



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company Noble Energy Inc.		Company Noble Energy Inc.	
Well Wells Ranch State A36-625		Well Wells Ranch State A36-625	
Field Wattenberg		Field Wattenberg	
County Weld		County Weld	
State Colorado		State Colorado	
Location:		API #: 05-123-41507	
SEC 31 TWP 6N RGE 63W		Other Services	
Permanent Datum		Ground Level	
Log Measured From Kelly Bushing		Elevation 4659'	
Drilling Measured From Kelly Bushing		Elevation	
		K.B. 4689'	
		D.F. 4688'	
		G.L. 4659'	
Date		18-JUL-2015	
Run Number		One	
Depth Driller		16964 FT	
Depth Logger		6968 FT	
Bottom Logged Interval		6962 FT	
Top Log Interval		Surface	
Open Hole Size		8.750"	
Type Fluid		Water	
Density / Viscosity		8.34 lbm/gal	
Max. Recorded Temp.		232°F	
Estimated Cement Top		108 FT	
Time Well Ready		ROA	
Time Logger on Bottom		8:47 AM	
Equipment Number		HD-0119	
Location		Fort Lupton, CO	
Recorded By		Andrew Olmsted	
Witnessed By		Sam Hopper	
Bill Mansfield			
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-1101C		6975.5 FT	
		16949 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 ran as per customer request
Depth referenced to Kelly Bushing at 30 FT
Adjusted -4 FT to correlate with Kelly Bushing
Log ran from 7' above liner top to surface
Recorded with 2500 PSI surface induced pressure
Logging tools were clean and free of any debris upon completion of operations

Thank you for choosing FMC Technologies Completion Services, Inc.!!

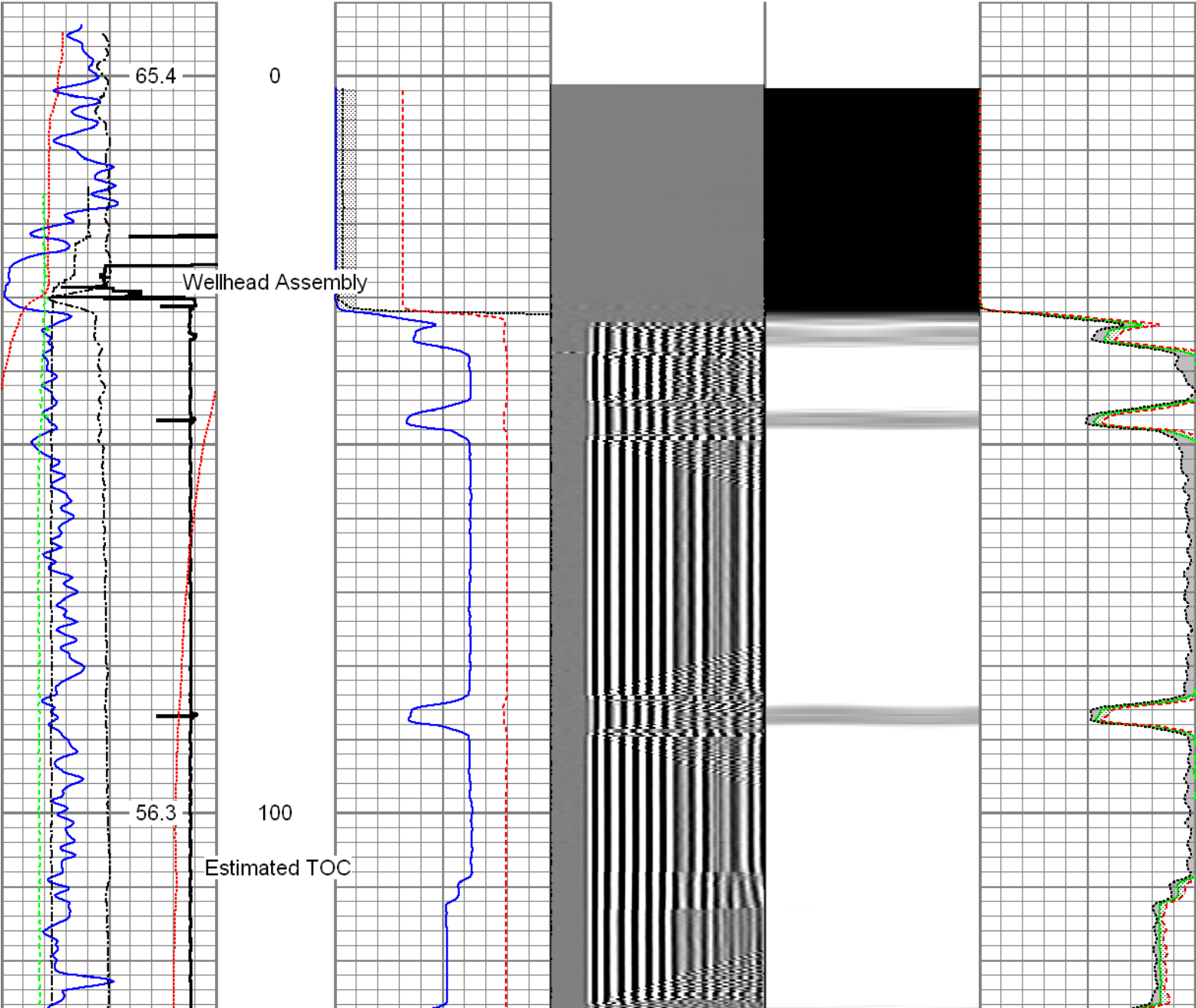


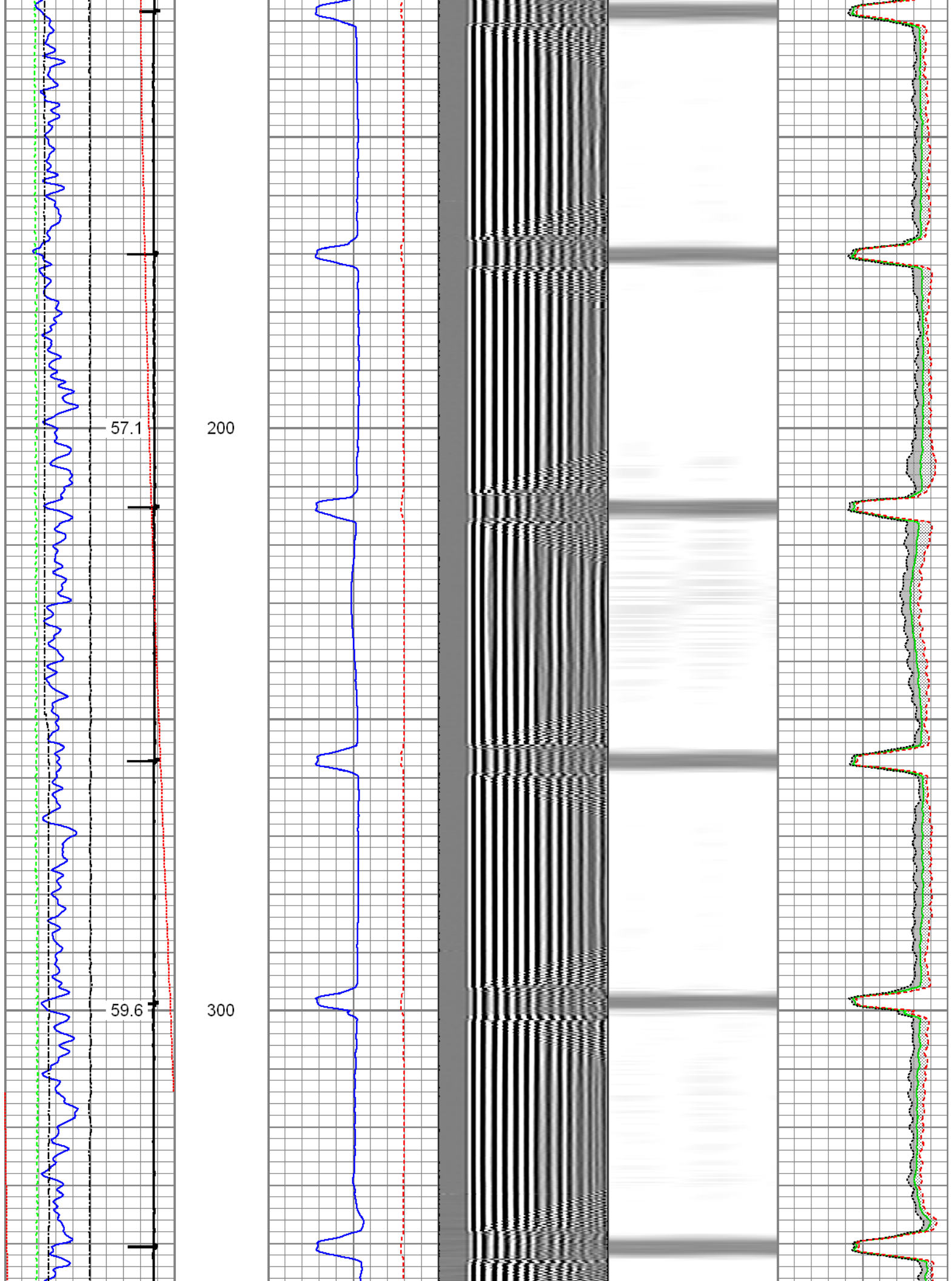
Main Pass

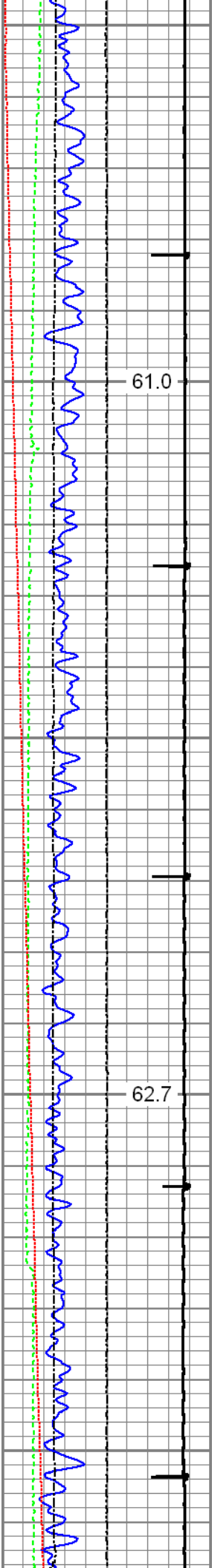
Recorded with 2500 PSI Surface Induced Pressure

Database File: 07-18-15_noble energy_wells ranch state a36-625_mit_rbl.db
Dataset Pathname: pass4
Presentation Format: rbt4_mit
Dataset Creation: Sat Jul 18 08:45:18 2015 by Log 7.0 B1
Charted by: Depth in Feet scaled 1:240

Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Mimimum Amplitude
Line Speed	0 (mV) 20			0 100
-100 (ft/min) 100	3' Travel Time			Maximum Amplitude
Line Tension	650 (usec) 150			0 100
0 (lb) 2000				
Differential Temperature				
-2 (degF) 2				
Temperature				
0 (degF) 20				

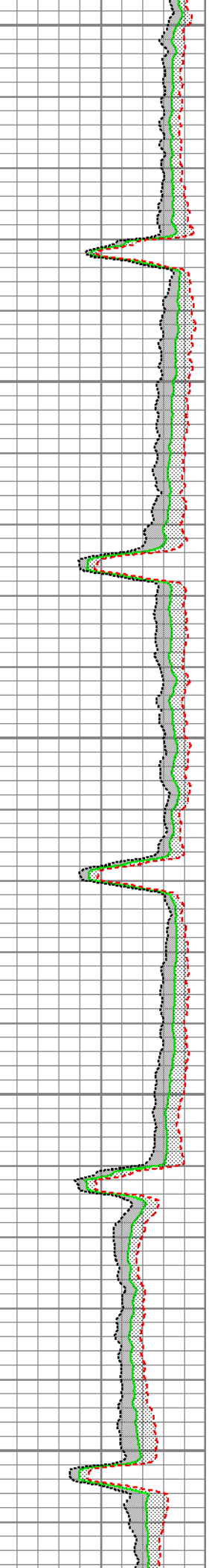
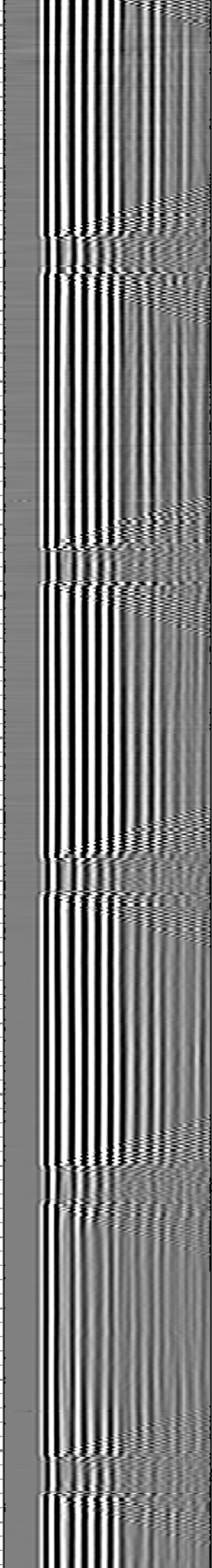
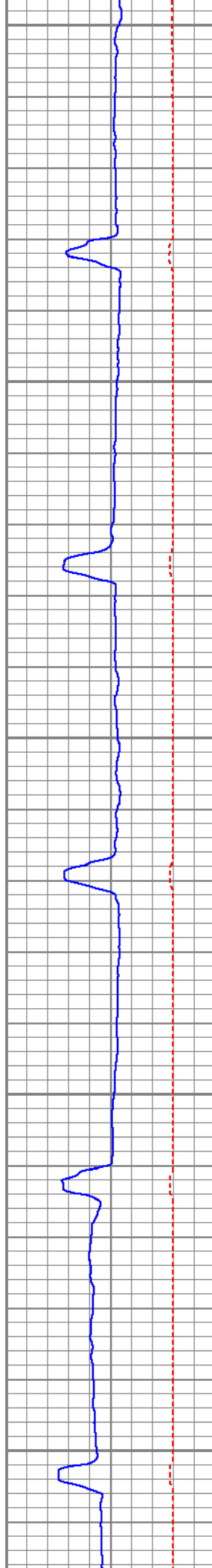


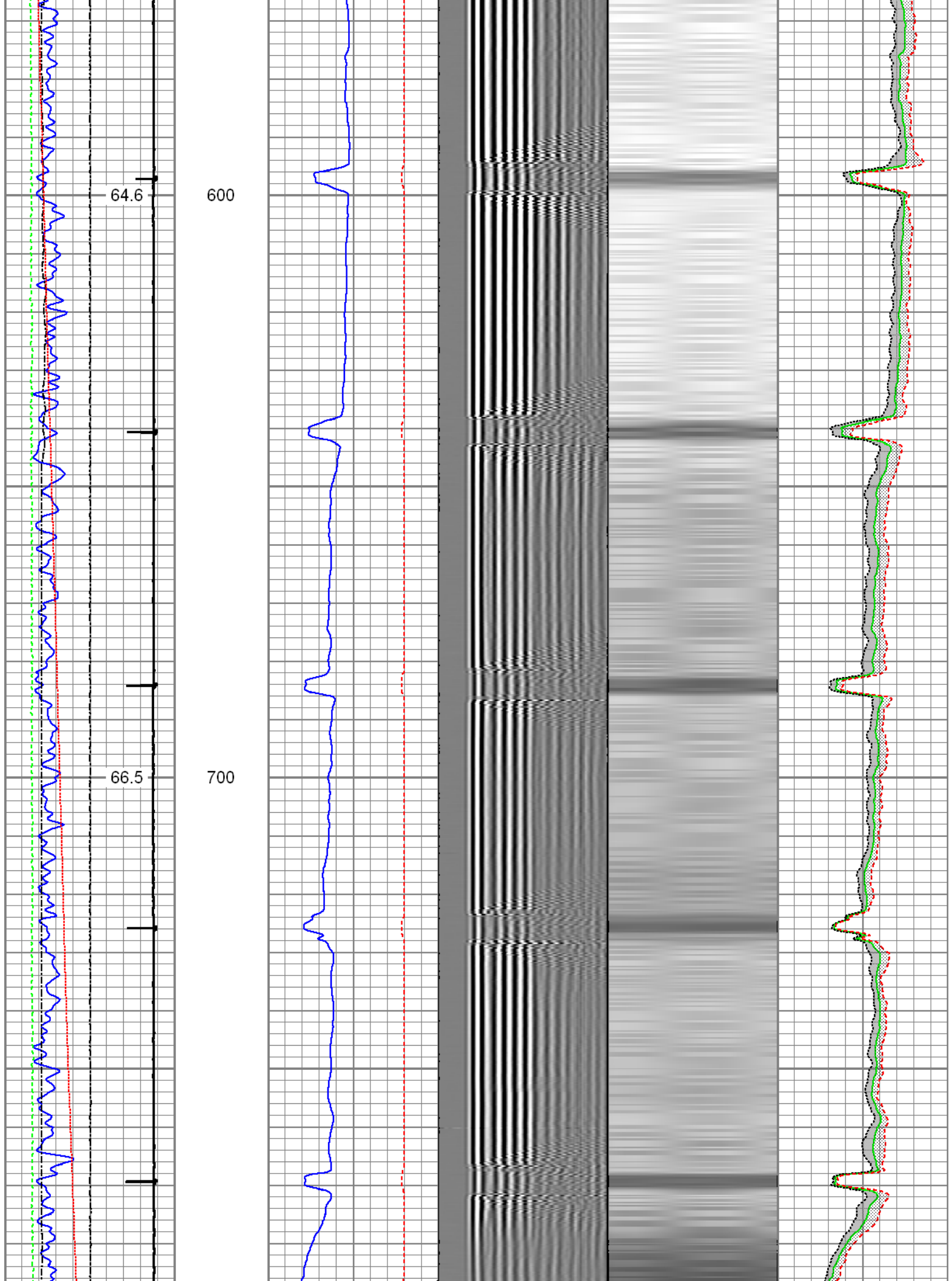


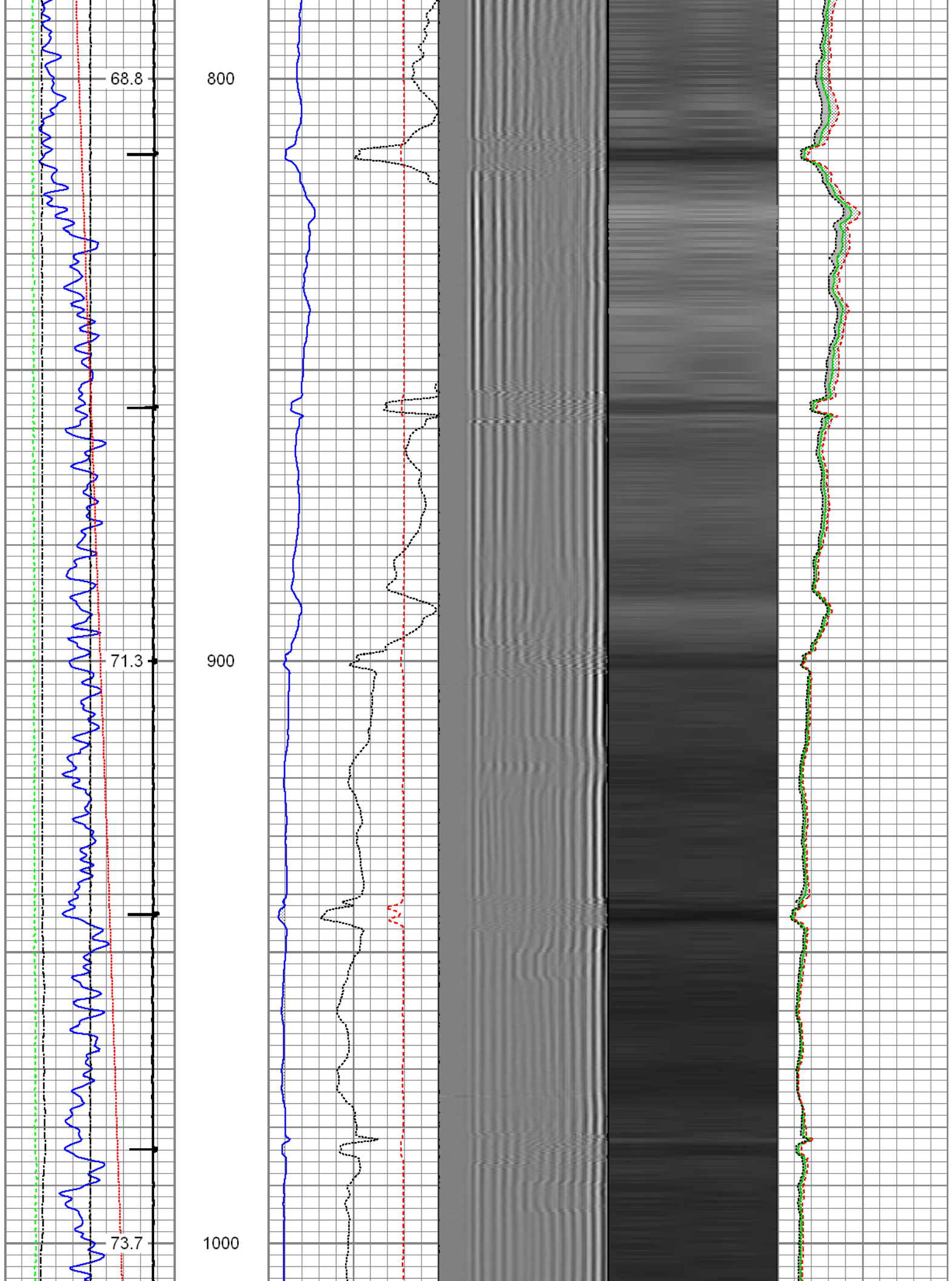


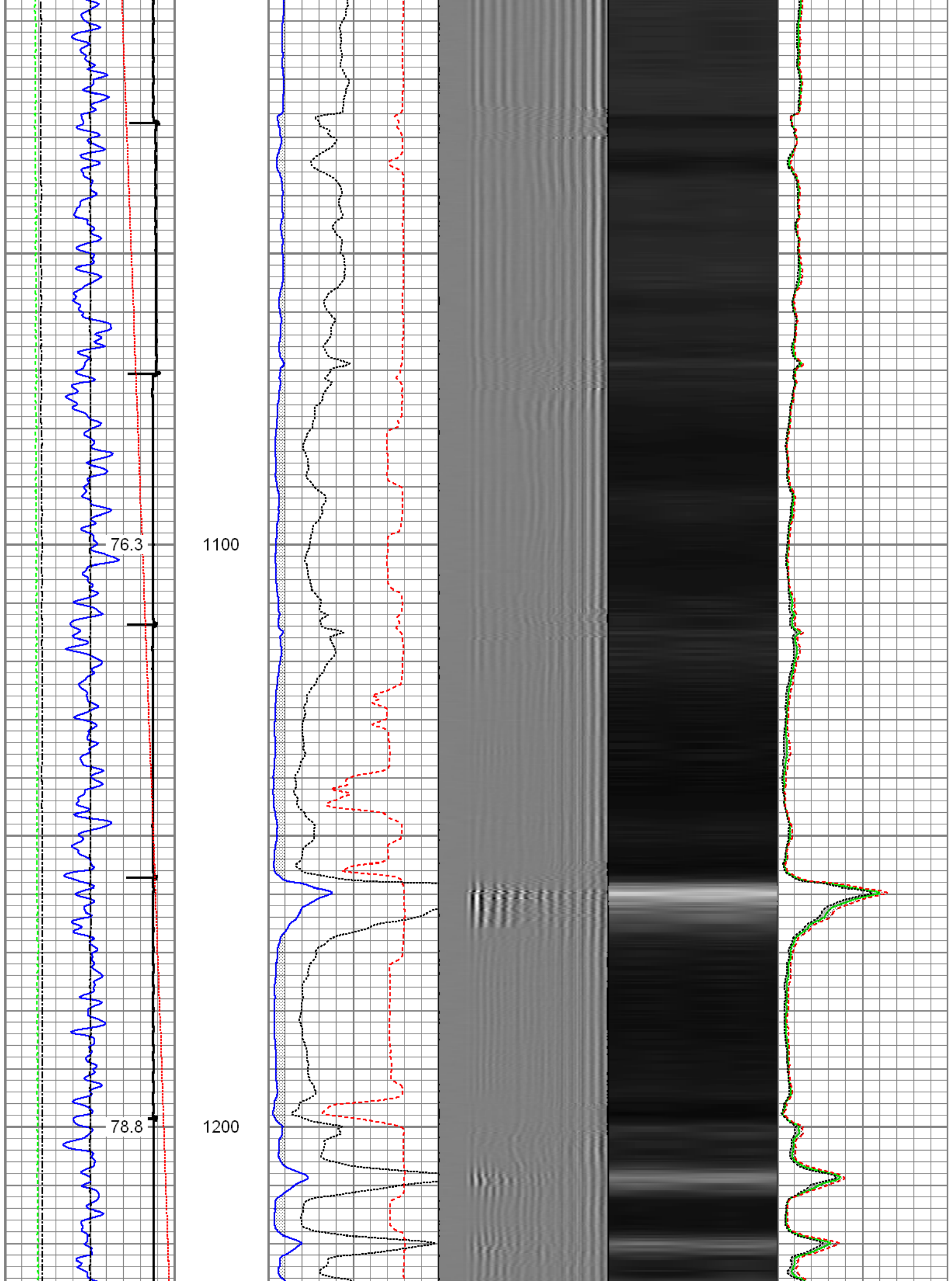
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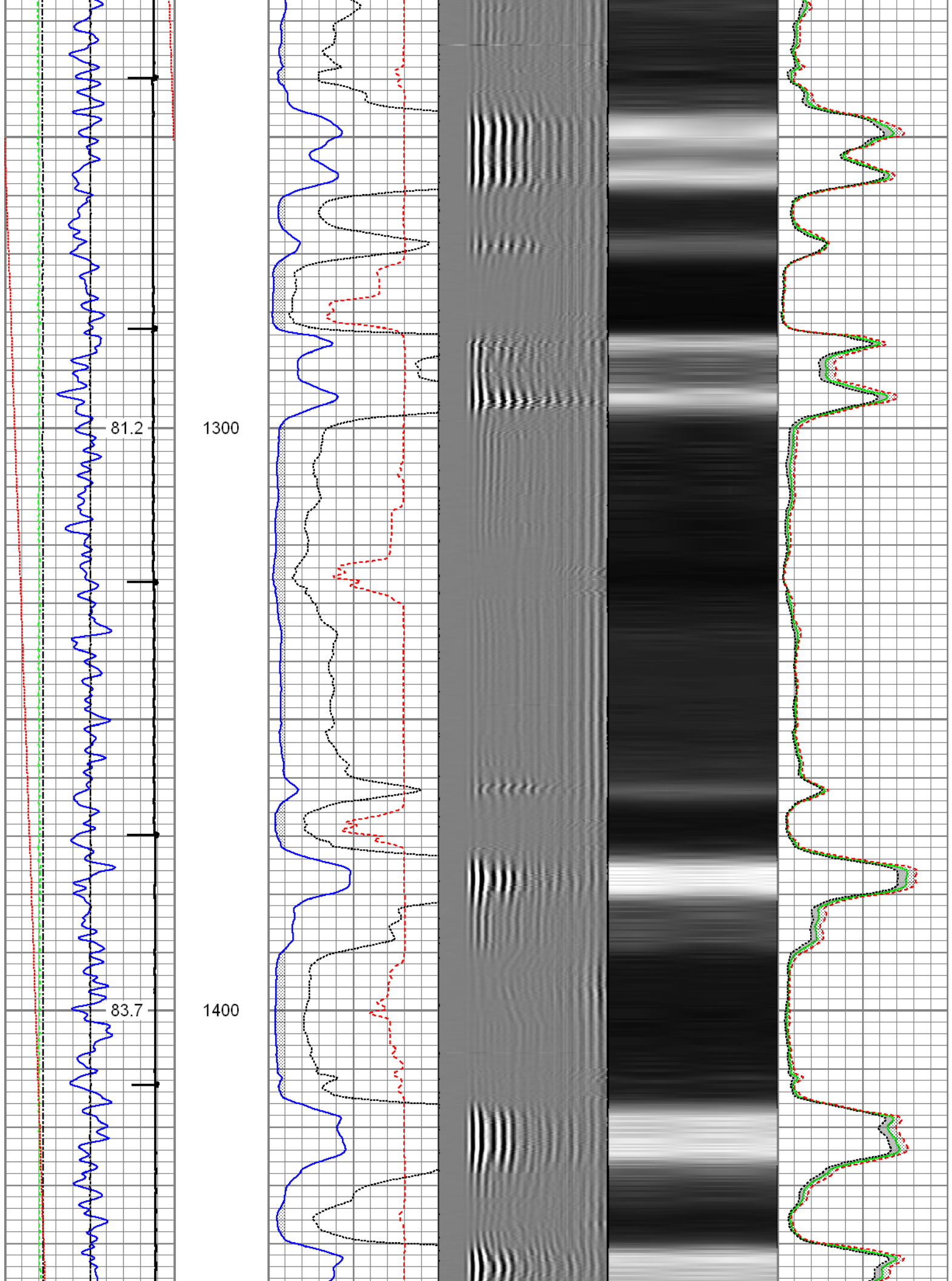
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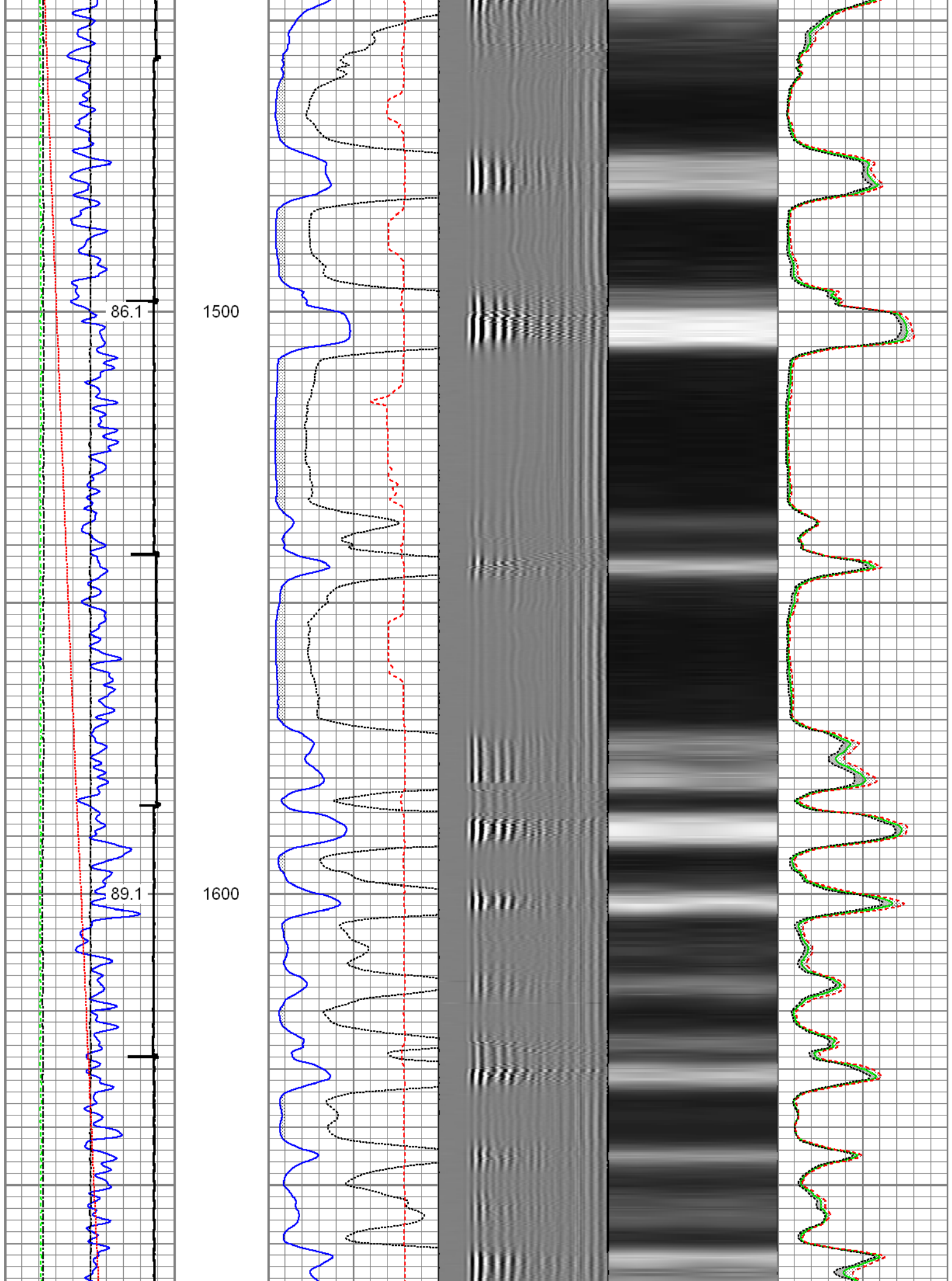


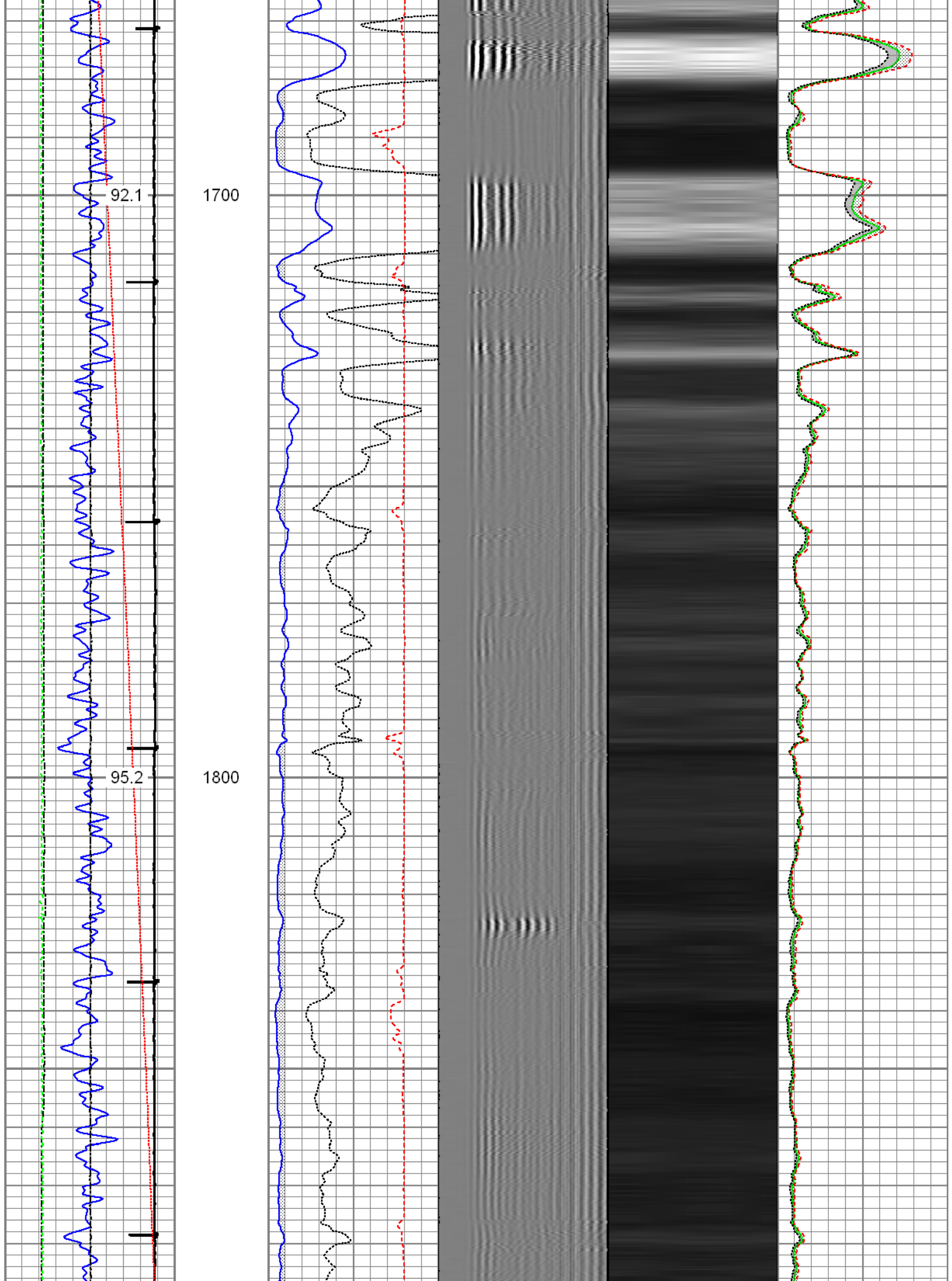


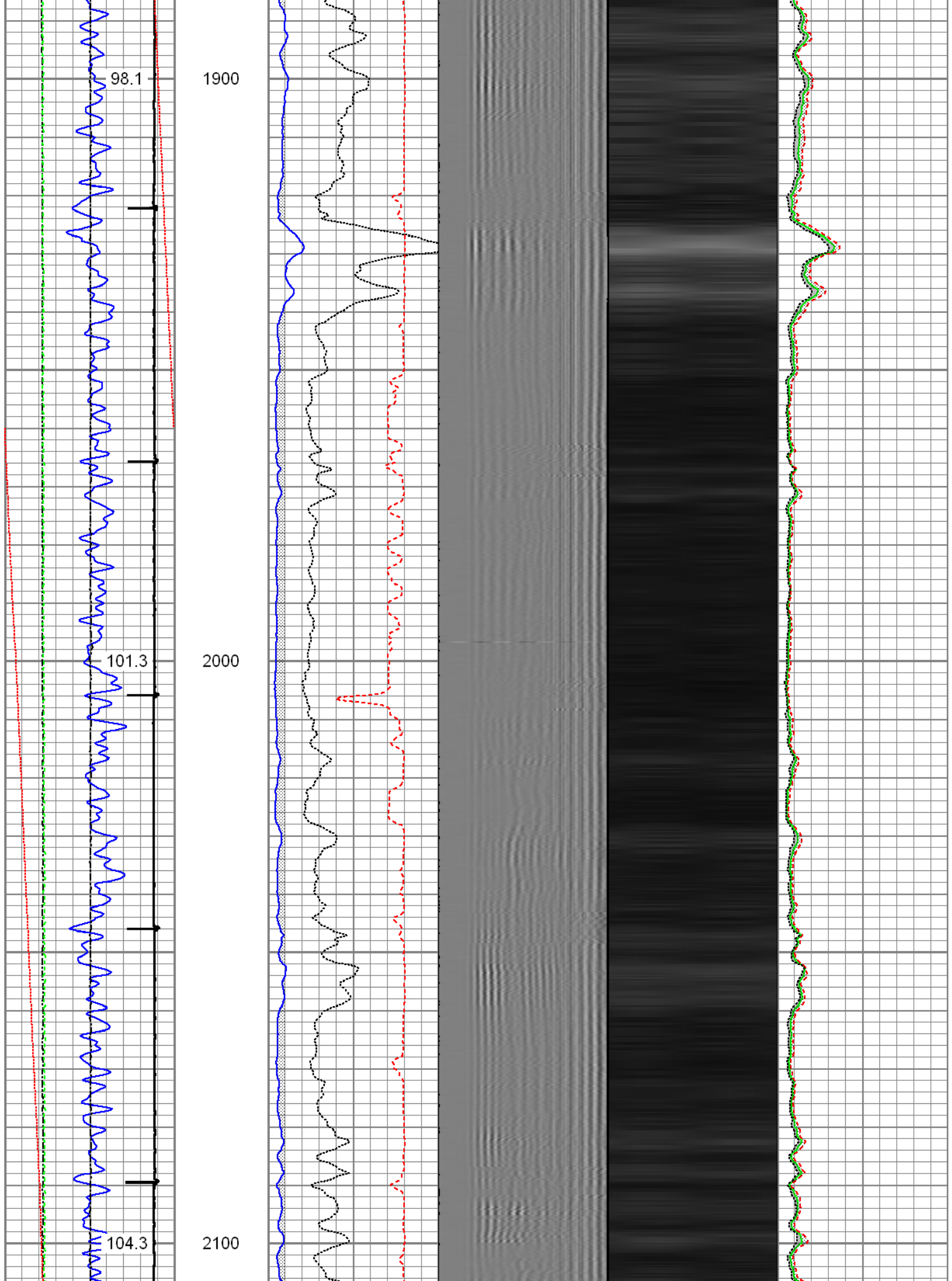


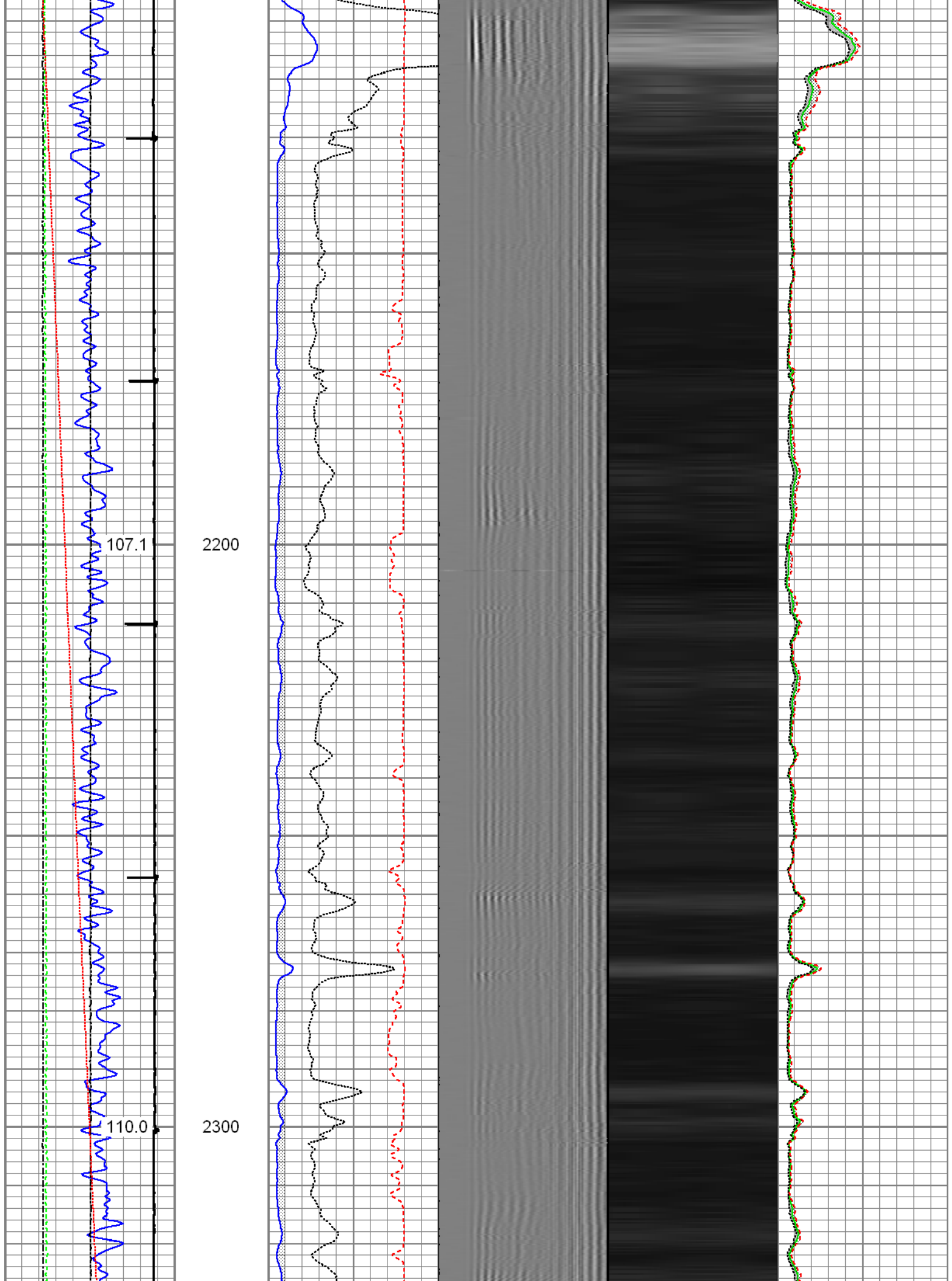


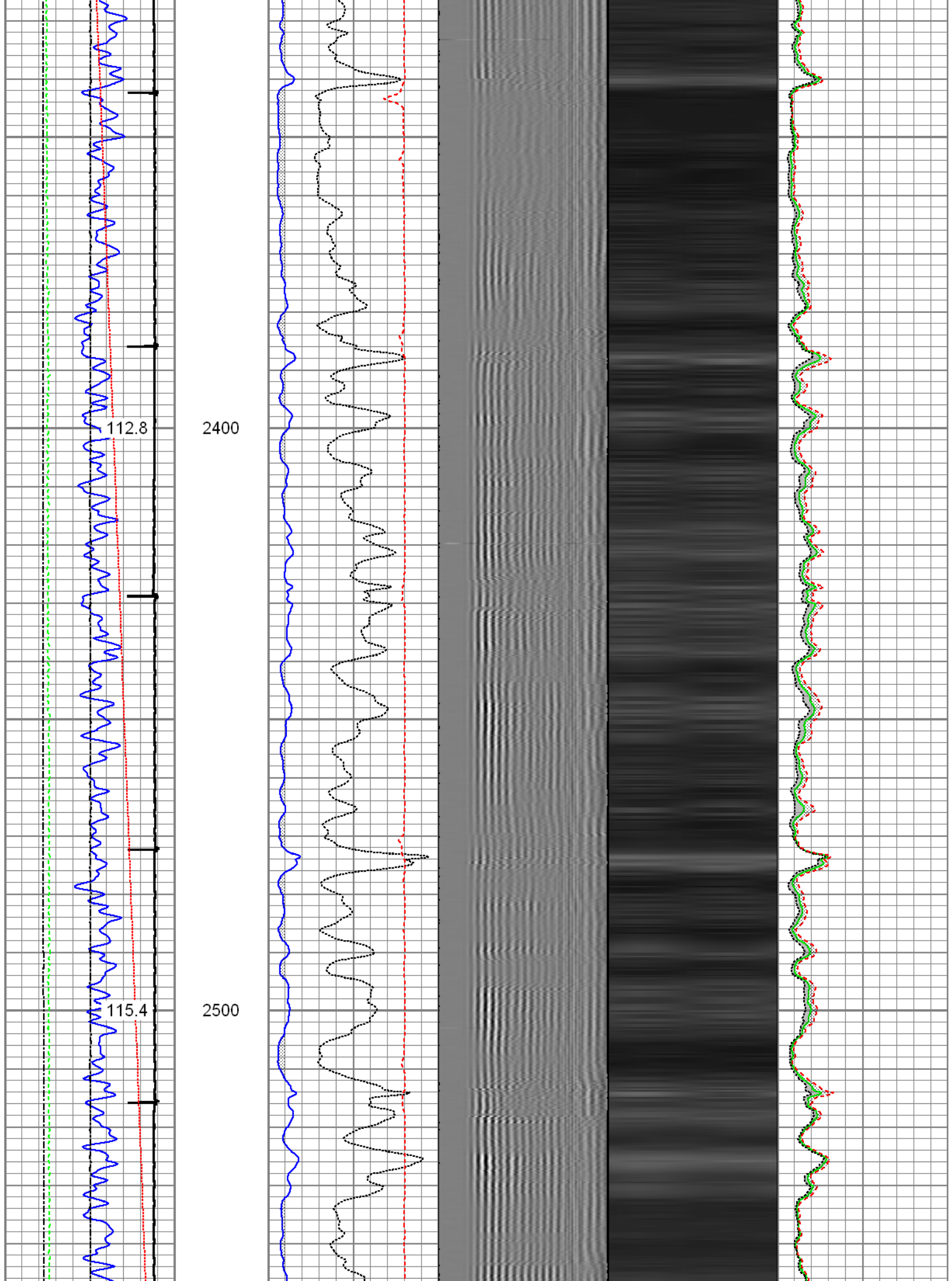


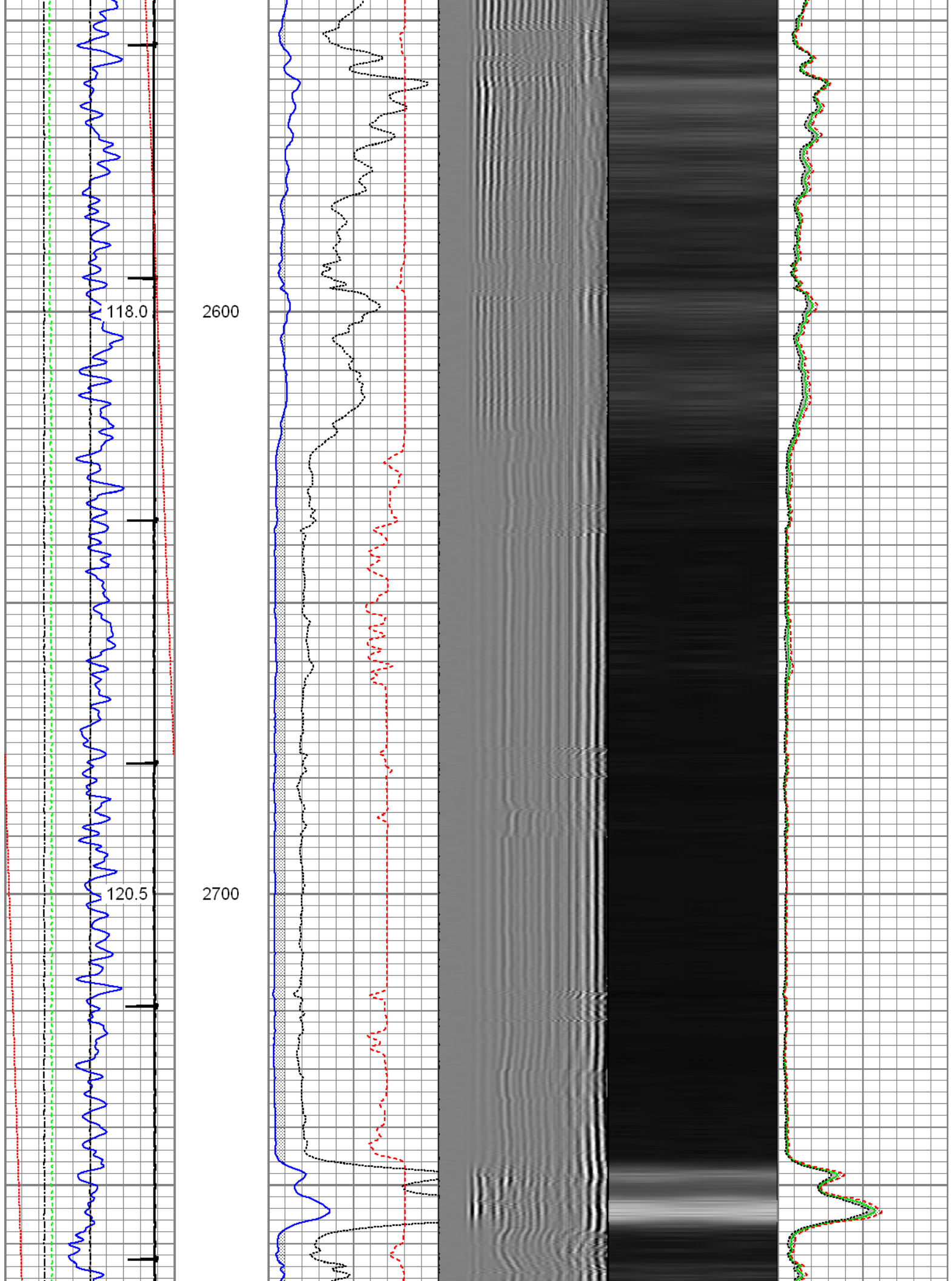


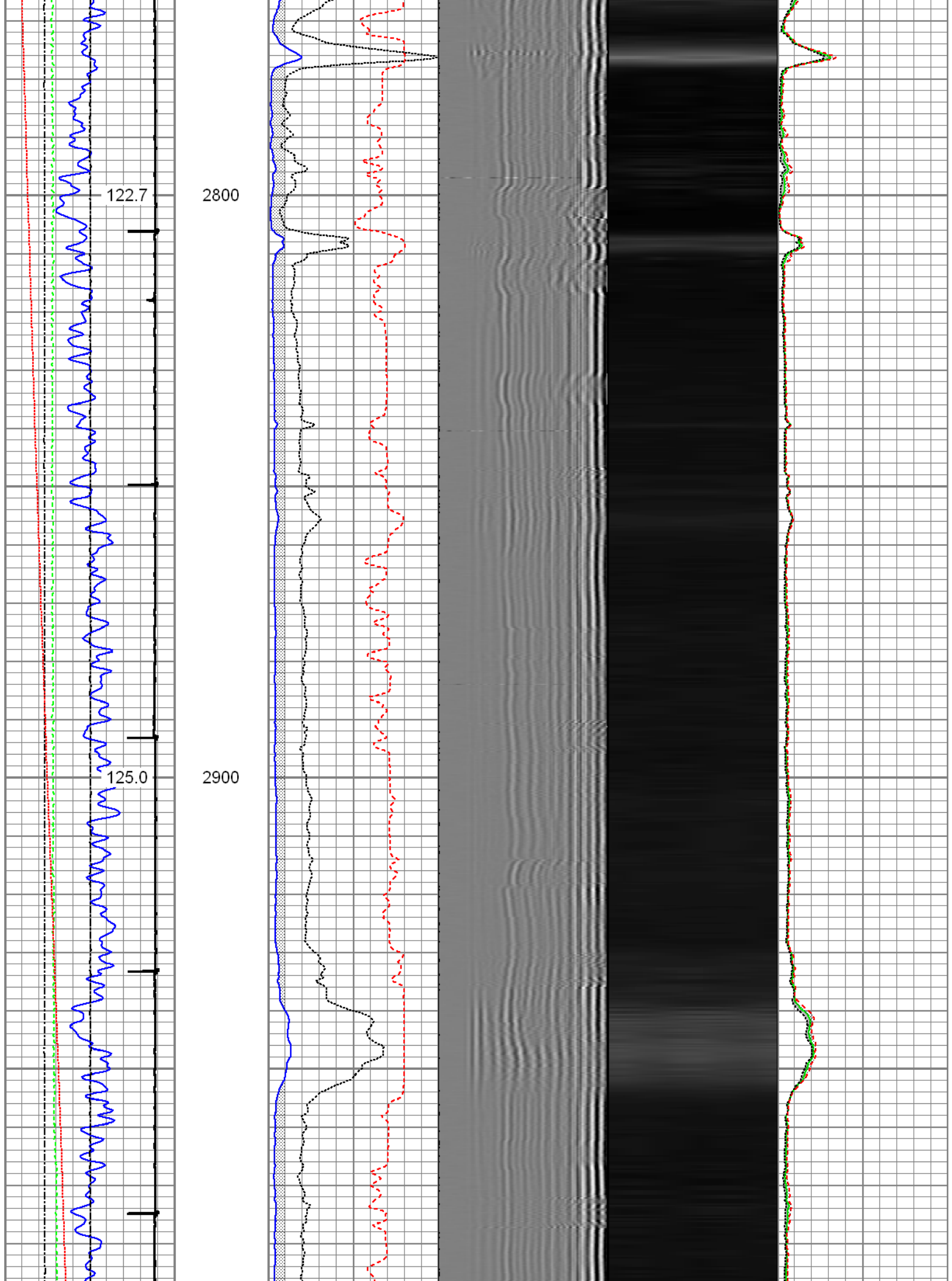


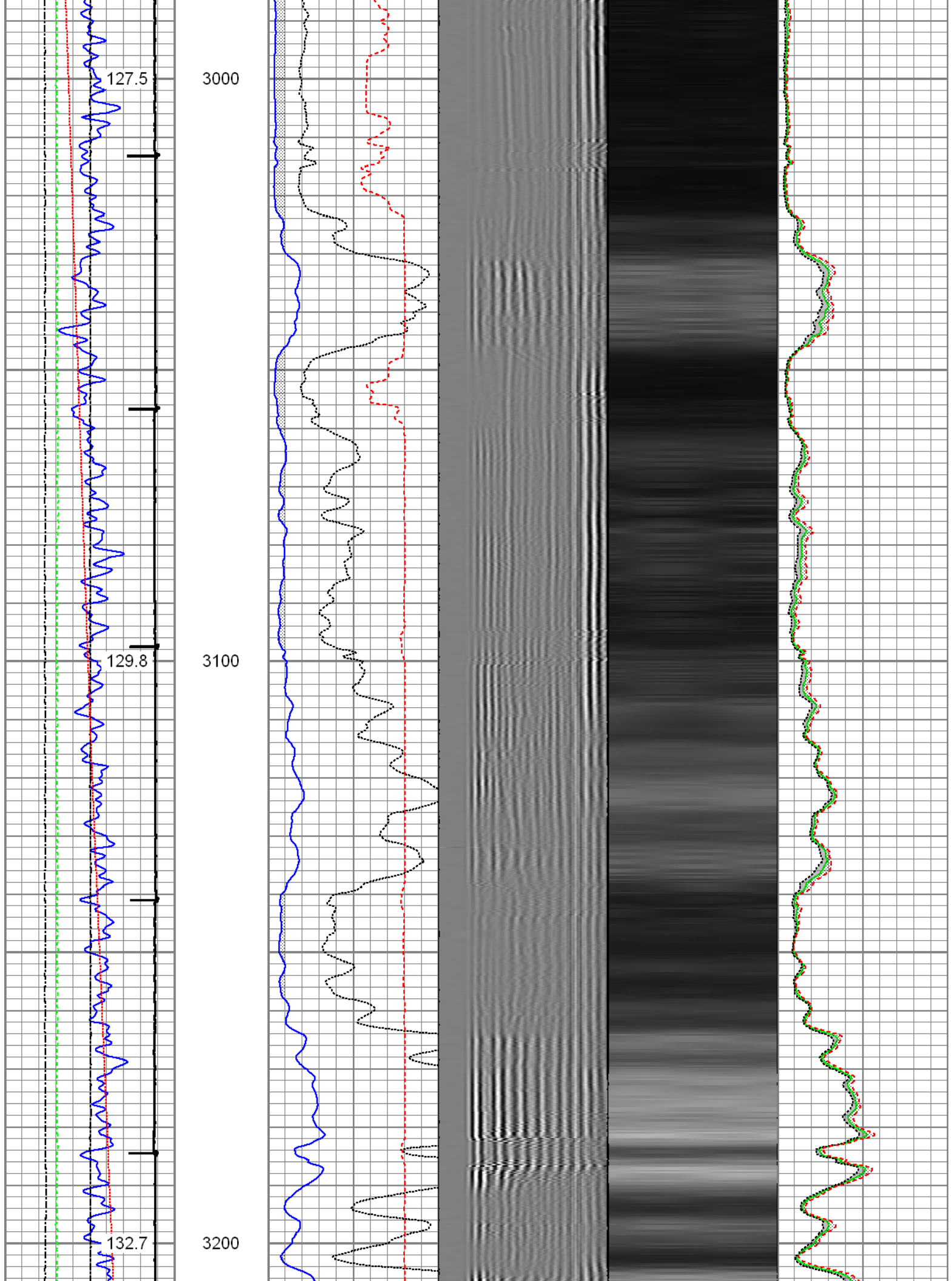


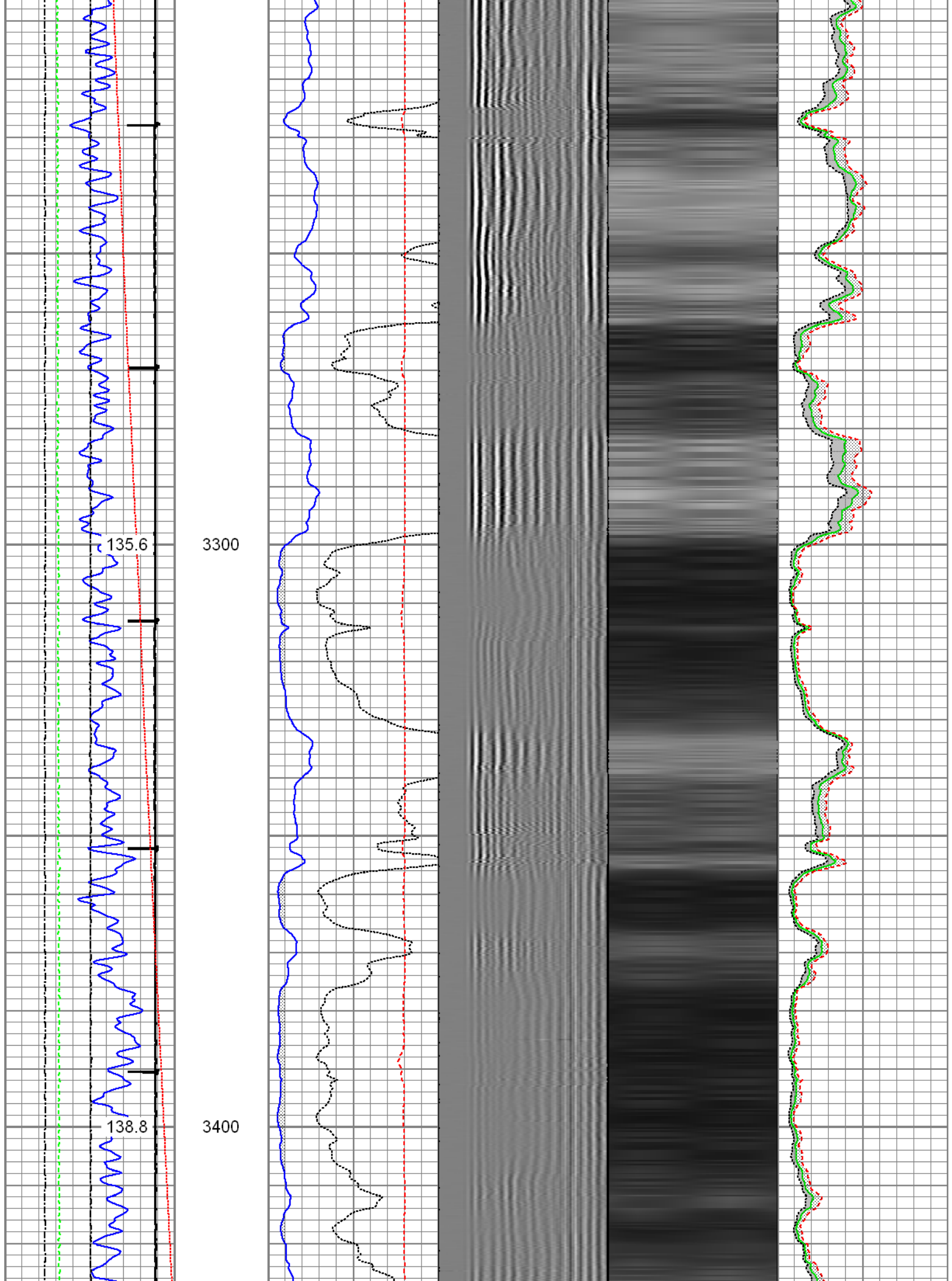


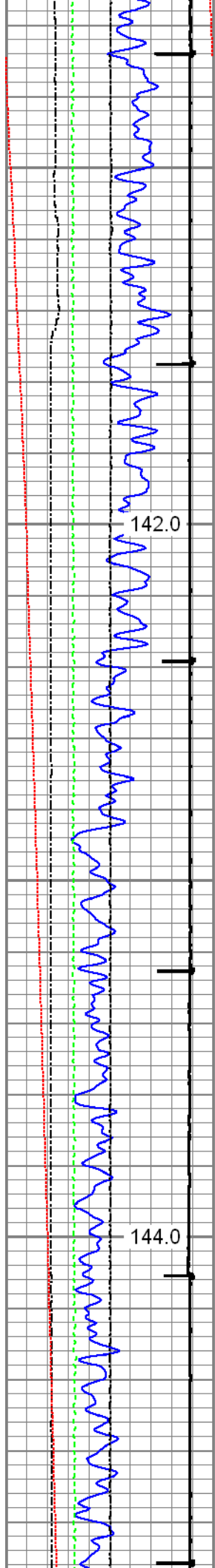






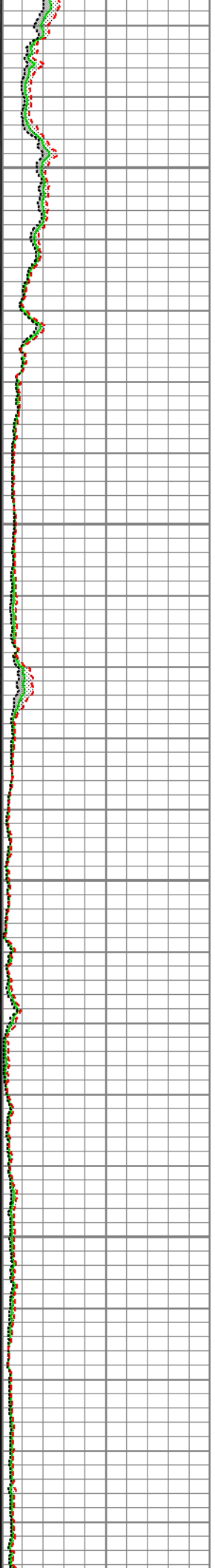
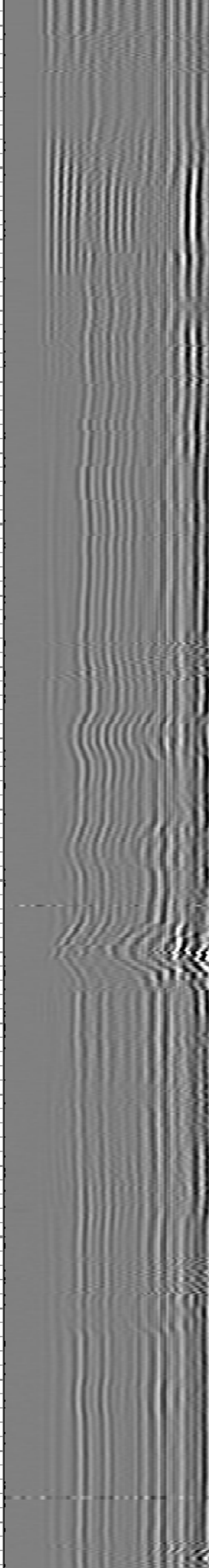
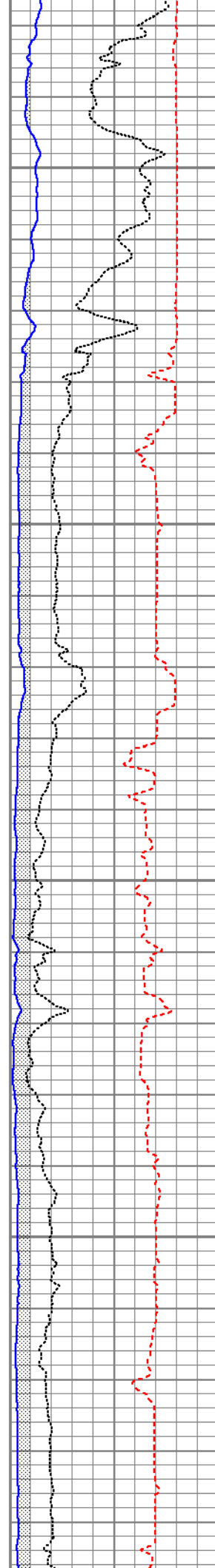


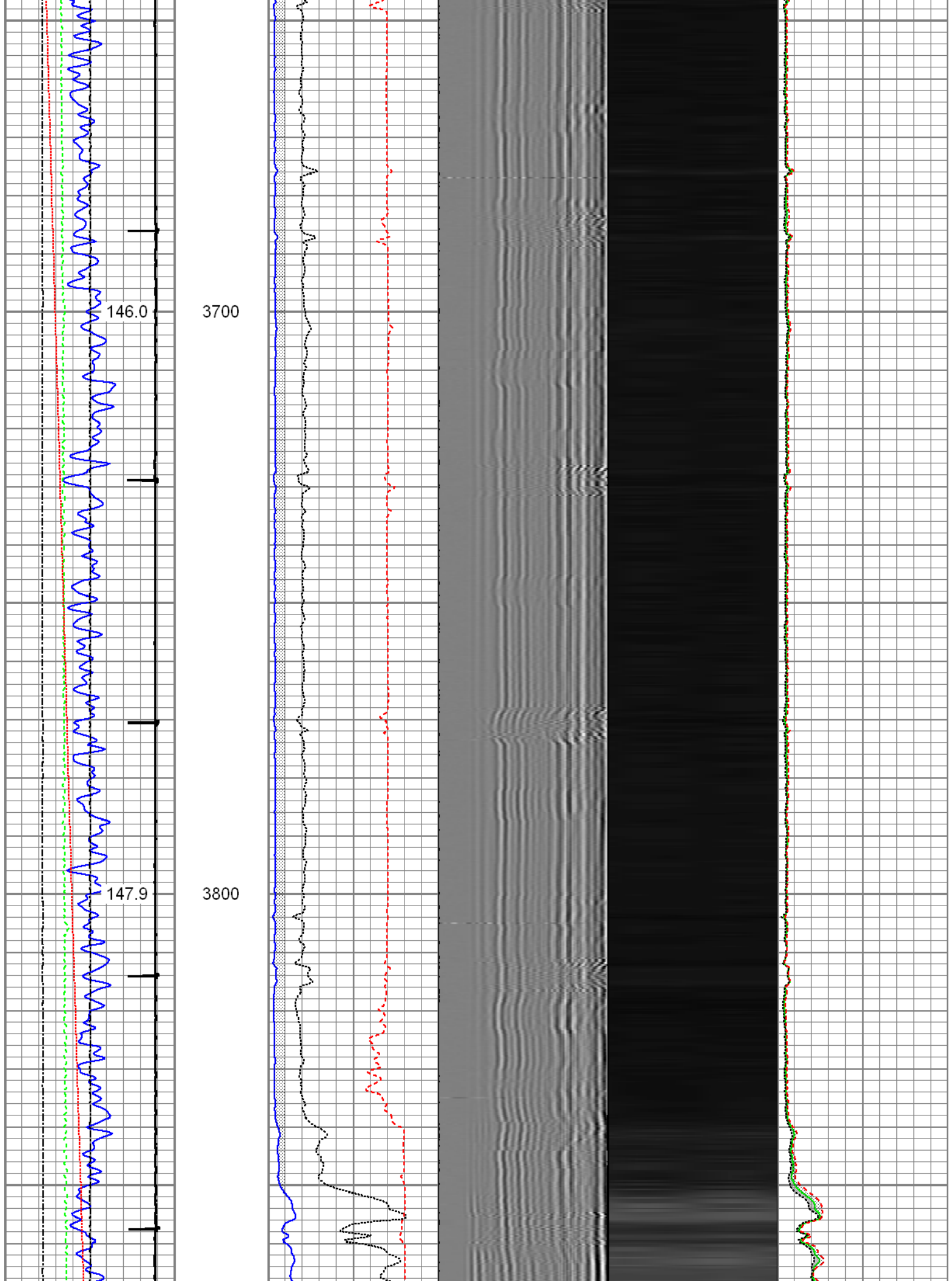


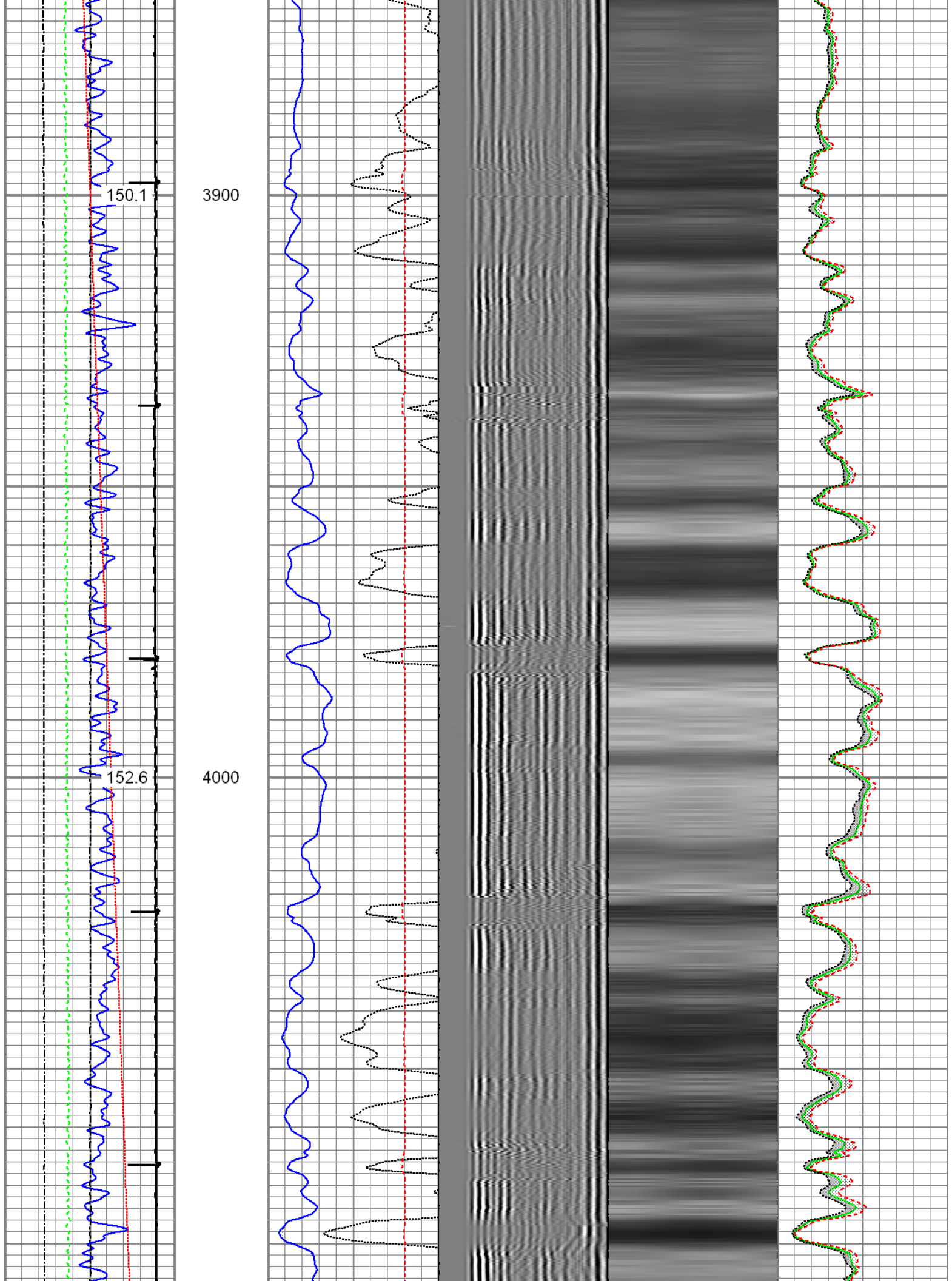


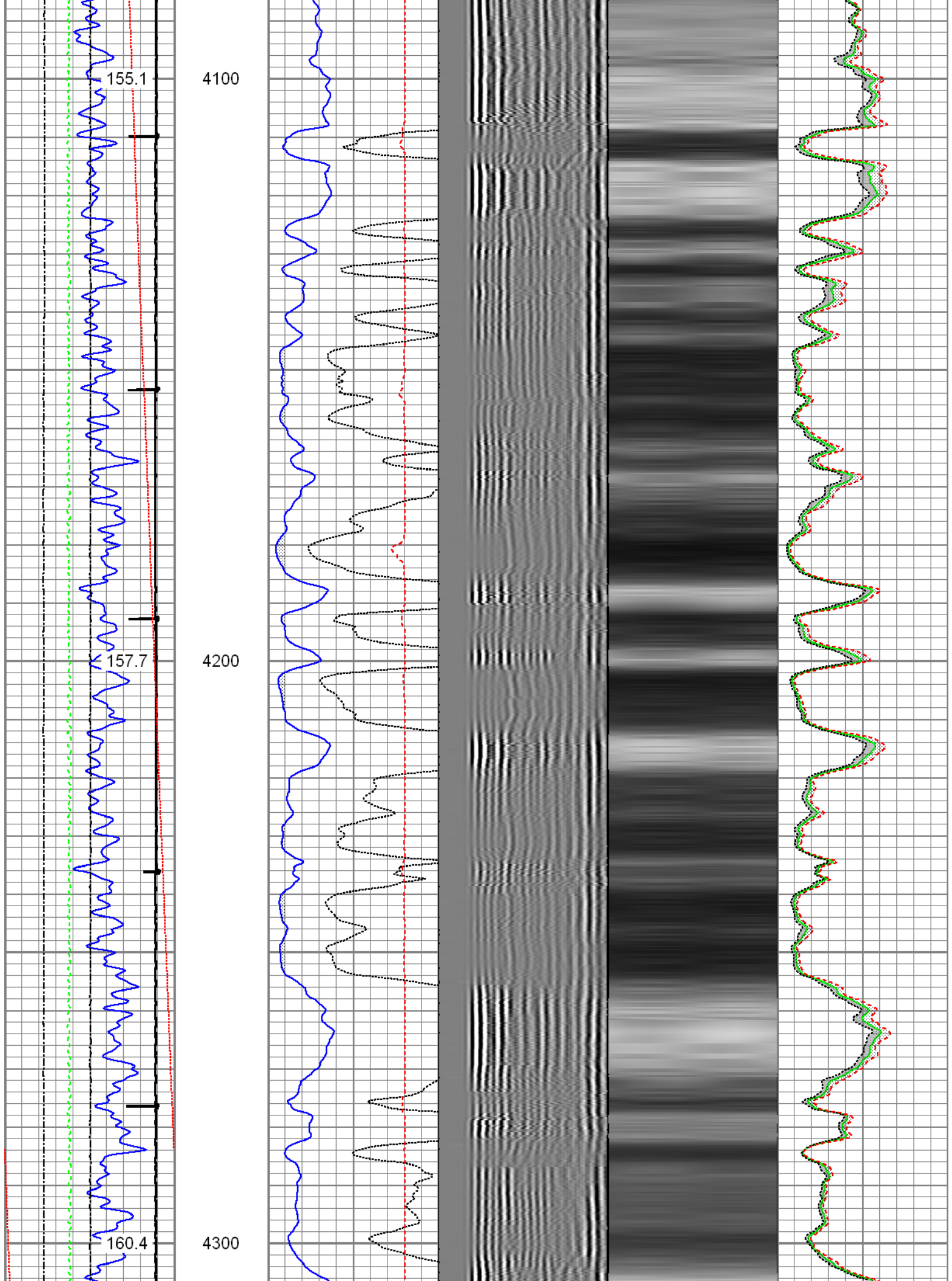
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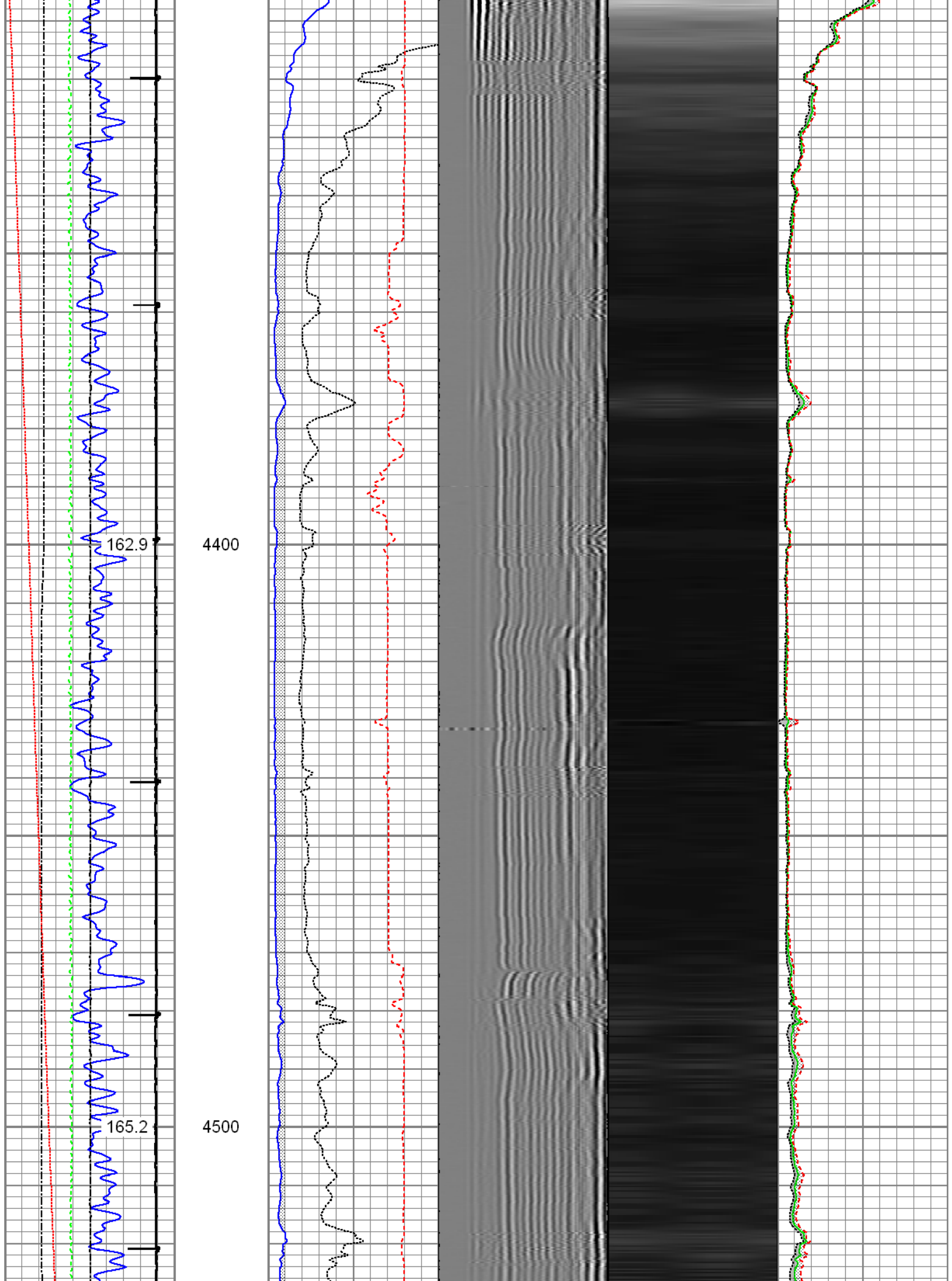
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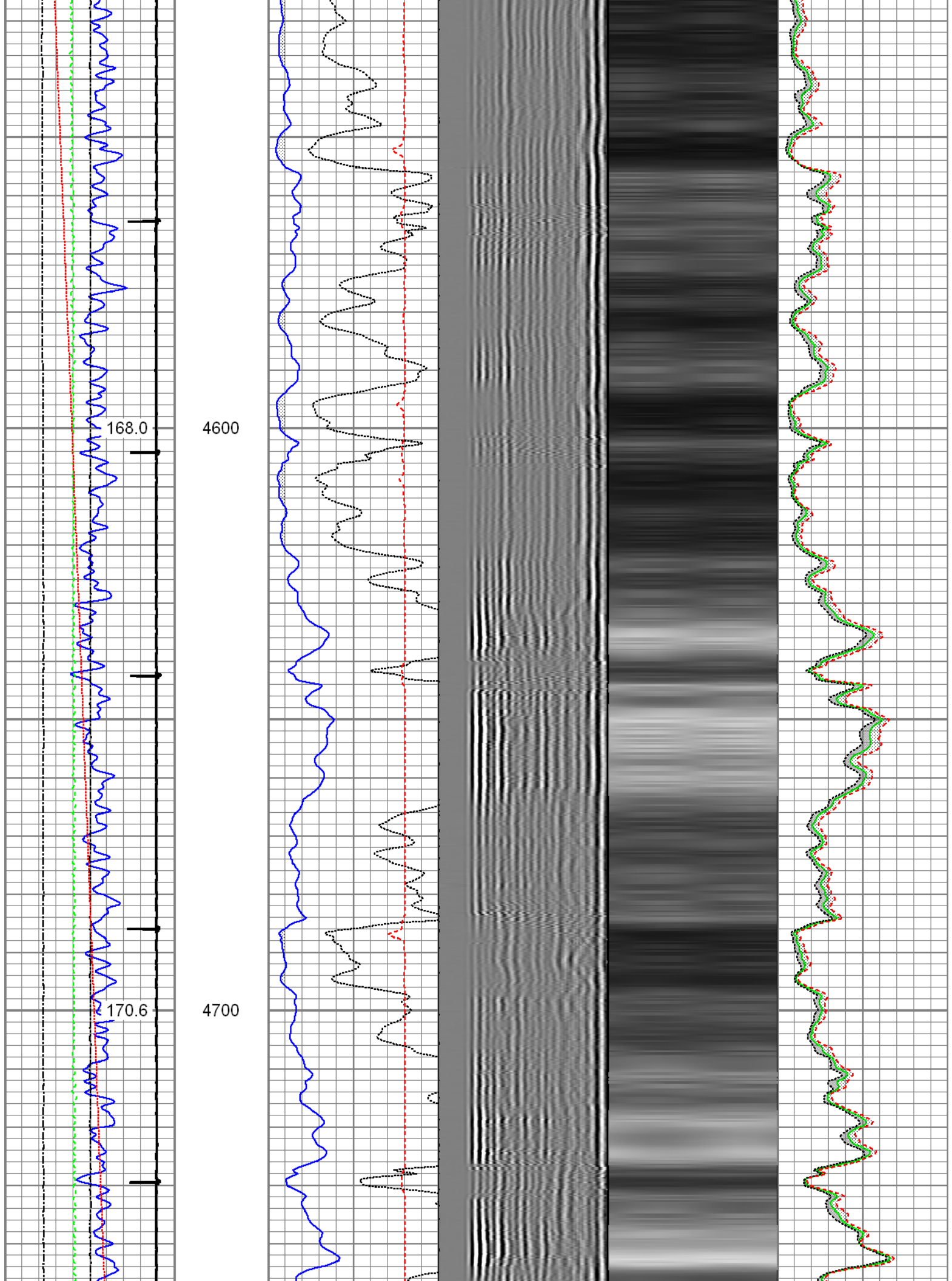


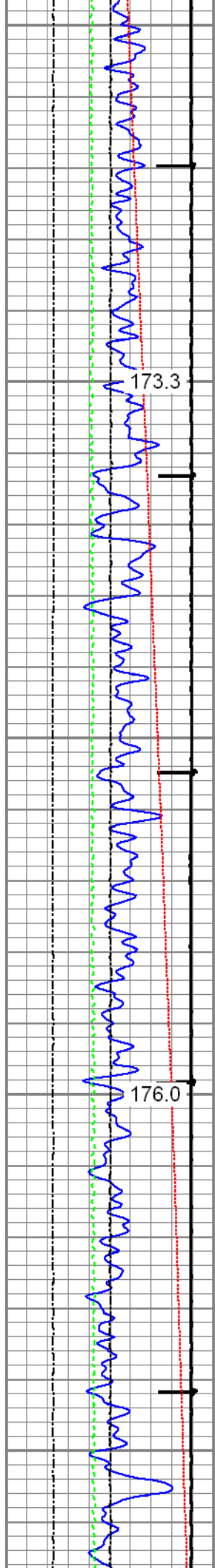






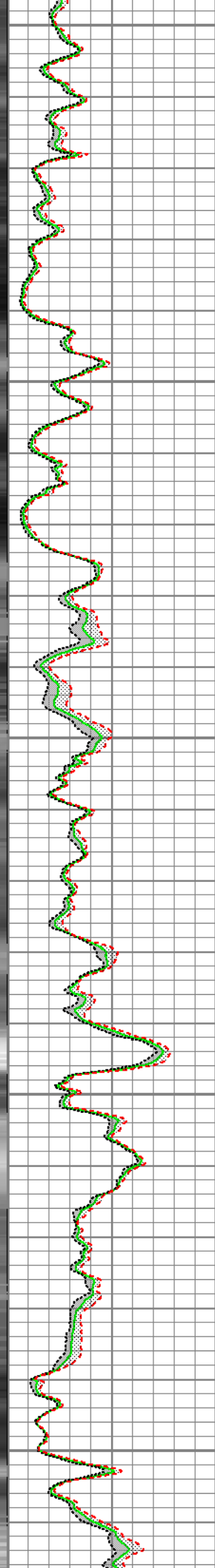
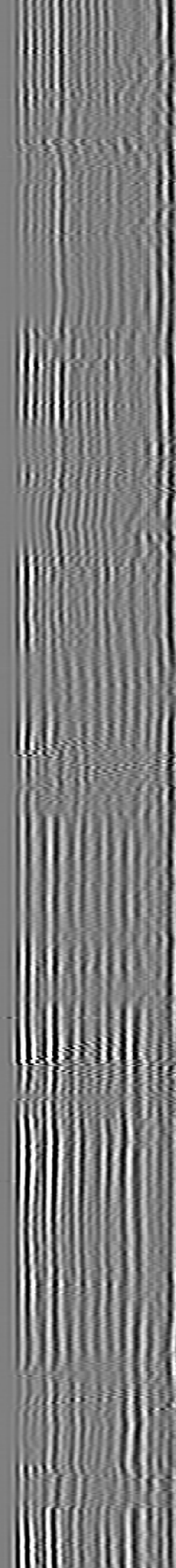
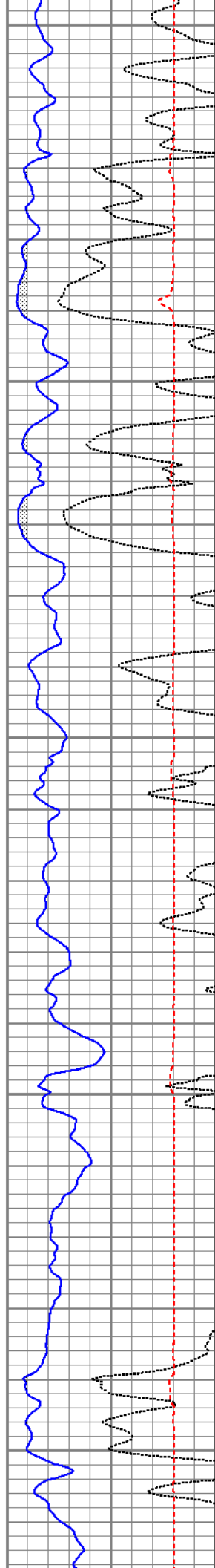


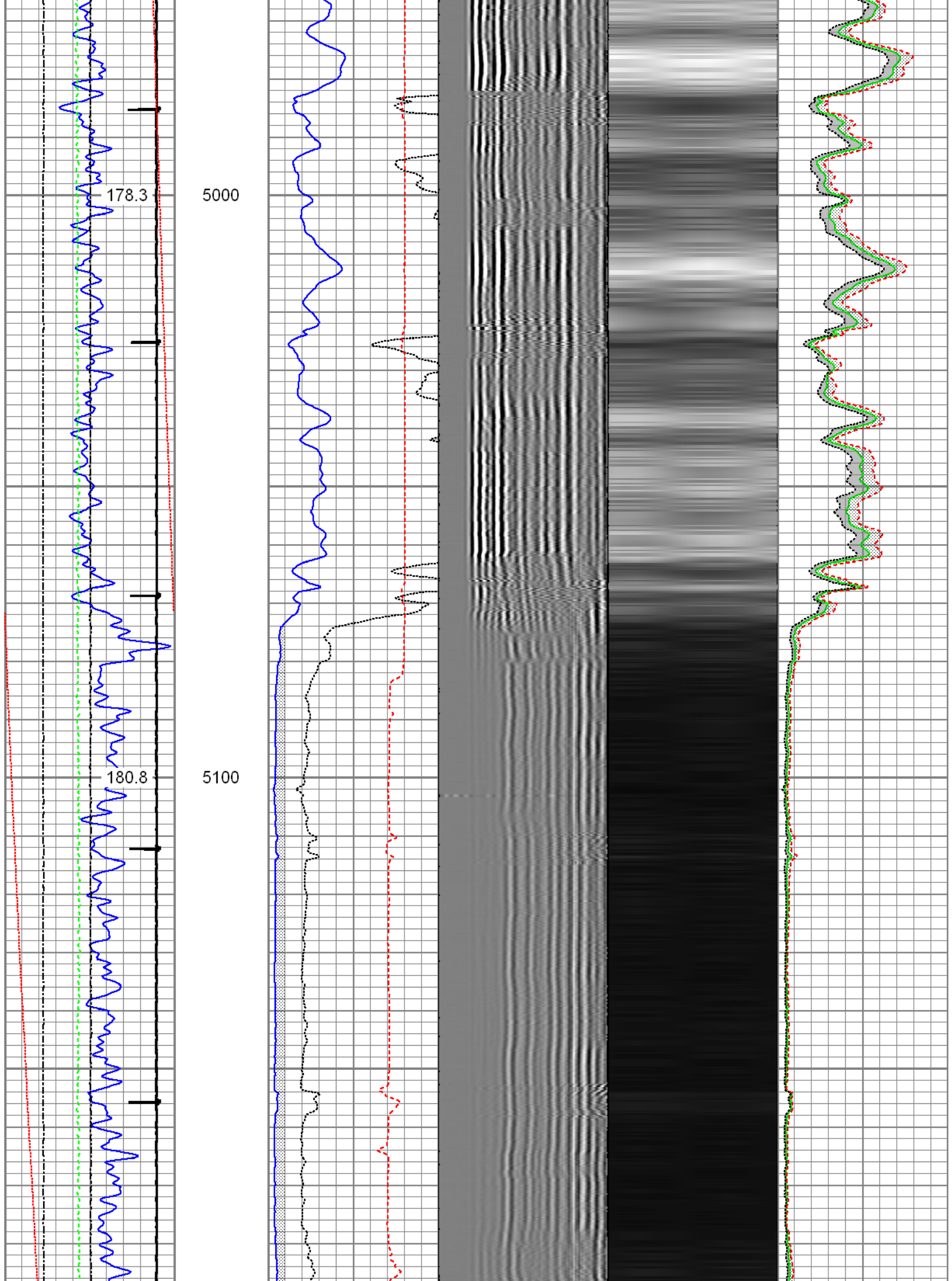


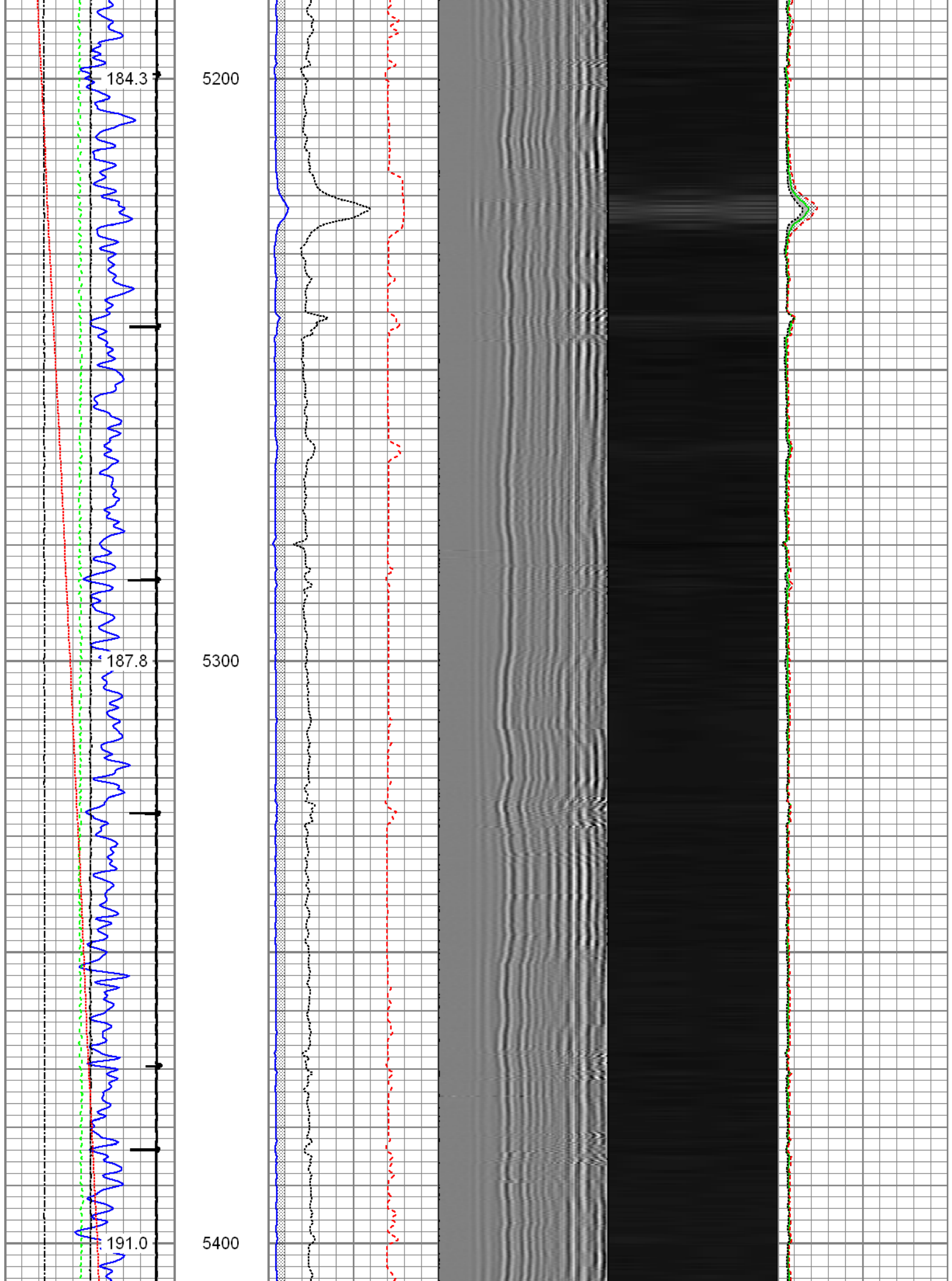


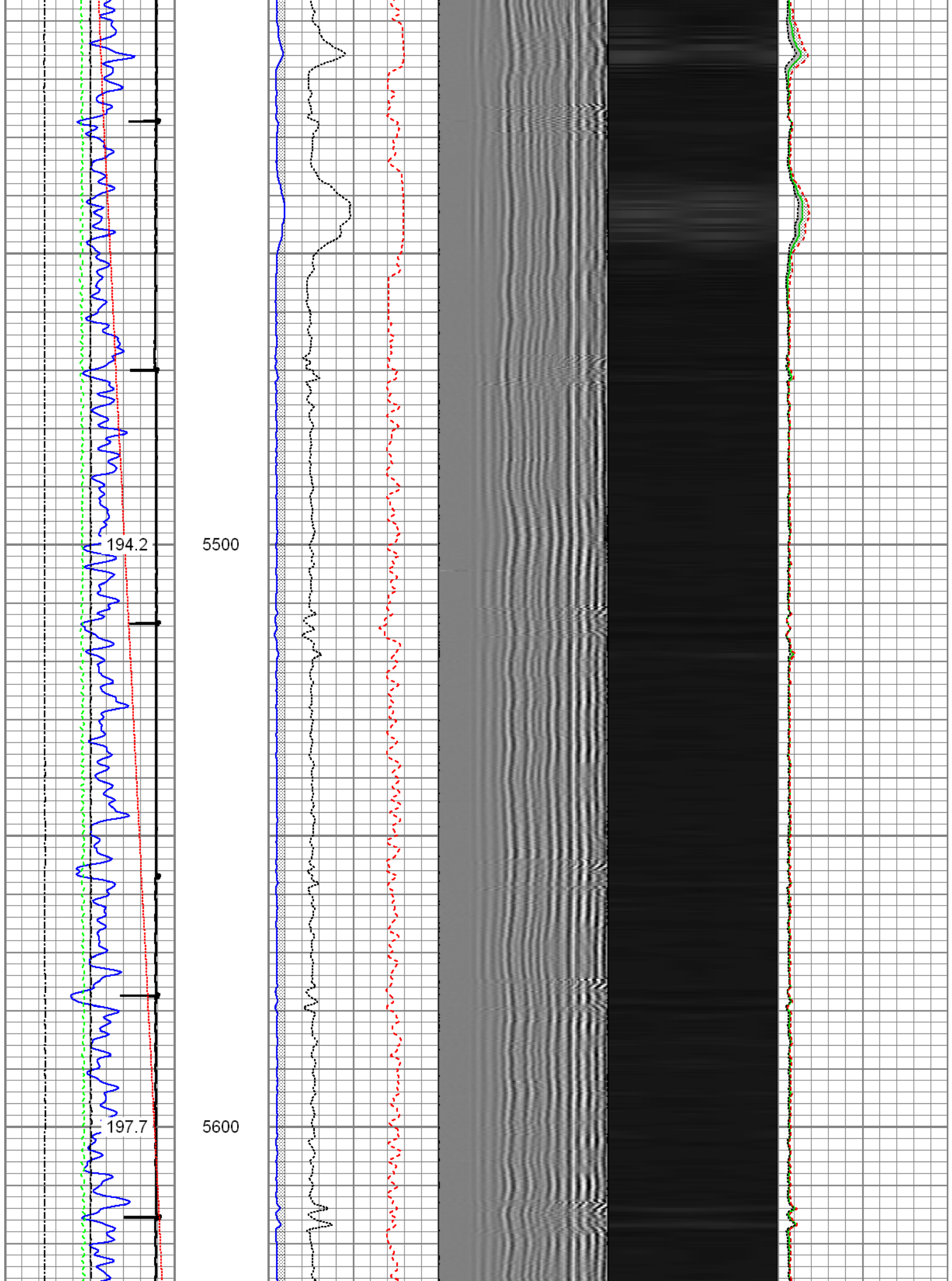
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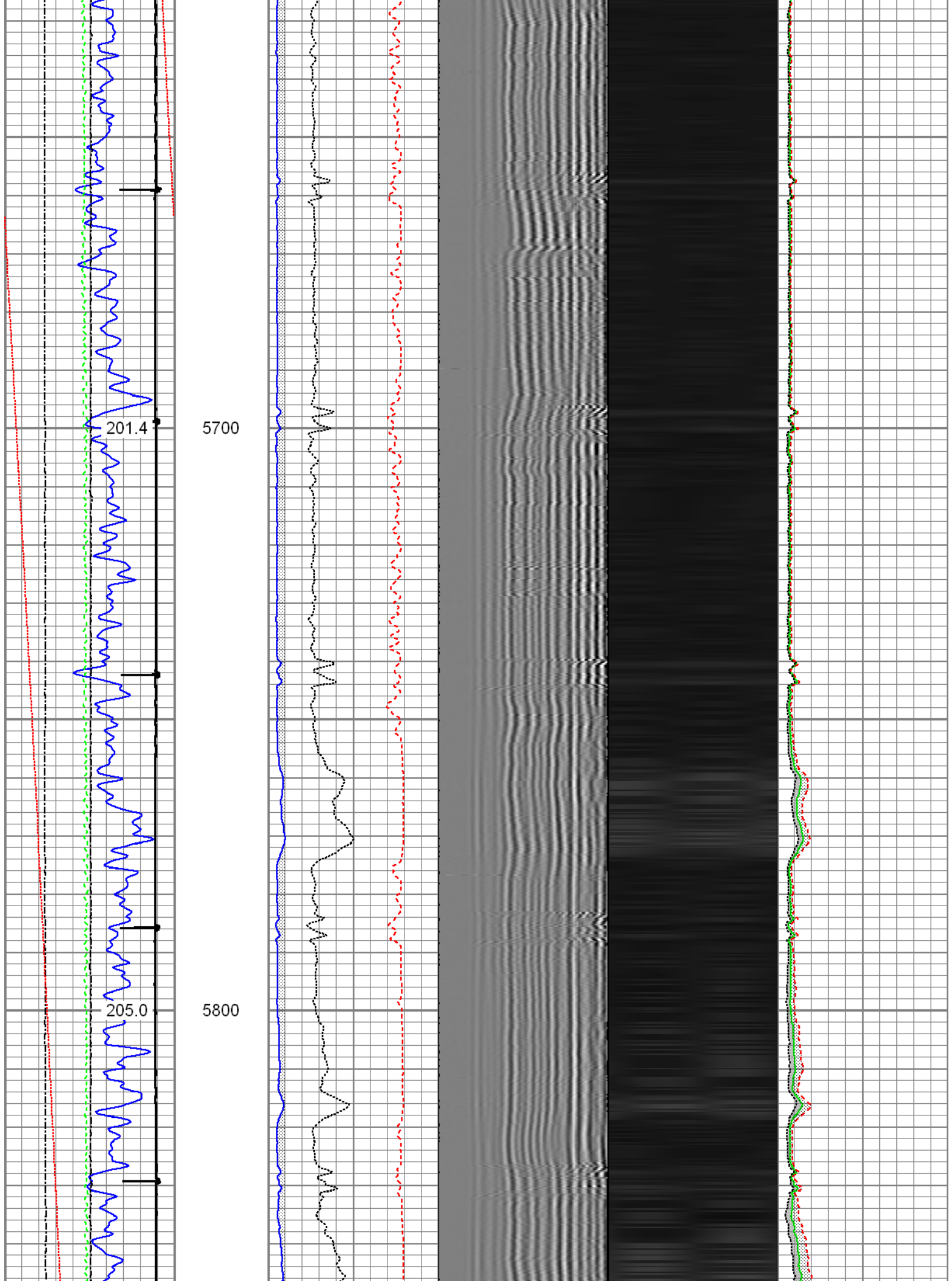
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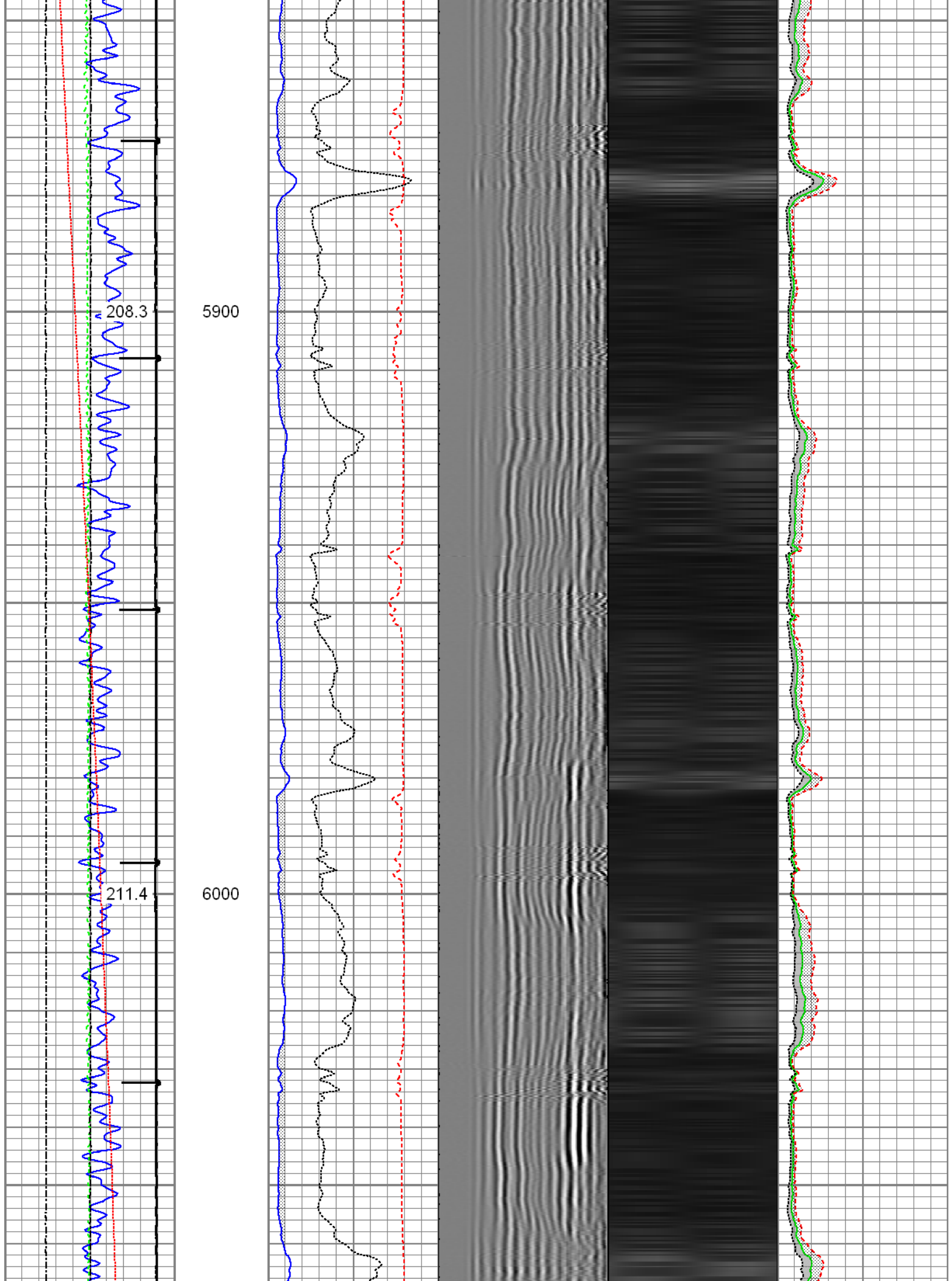


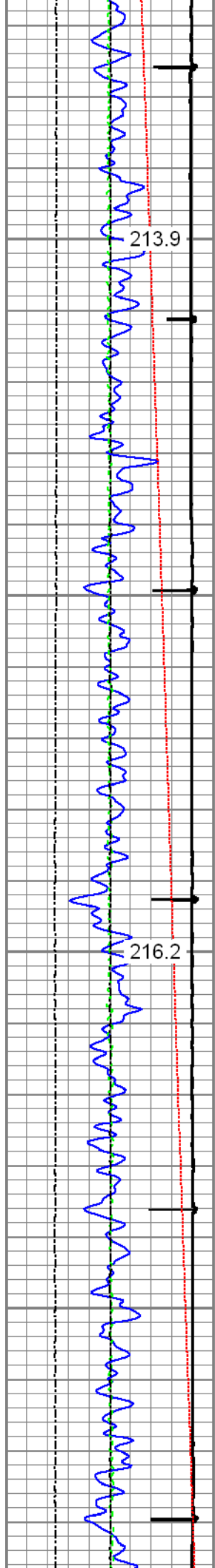










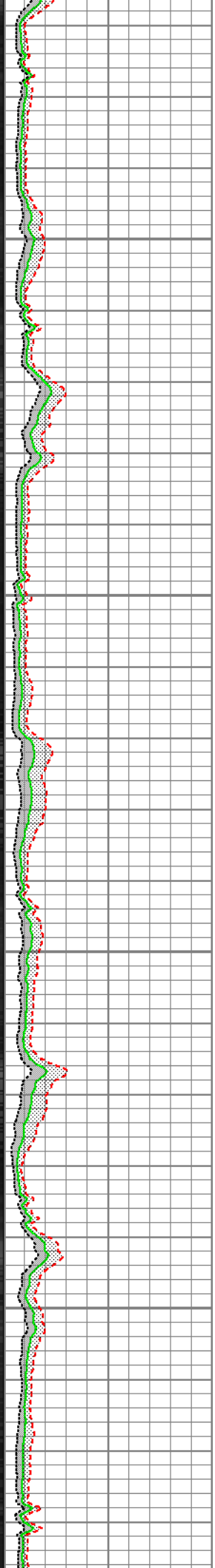
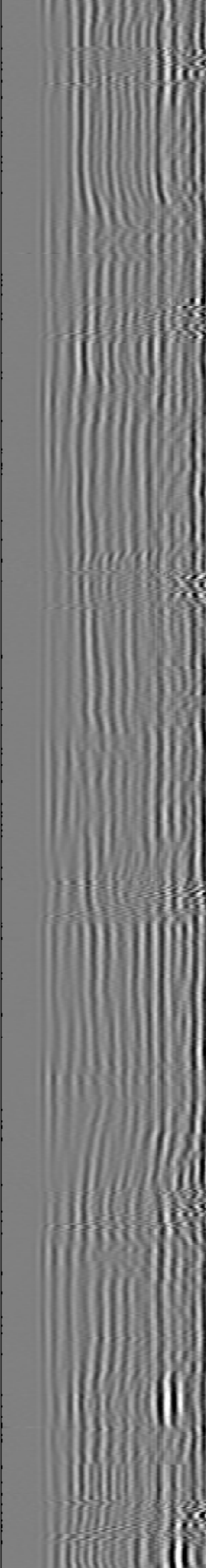
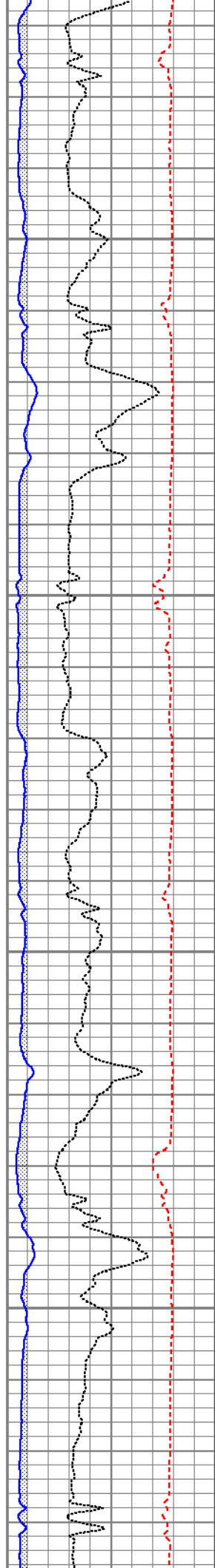


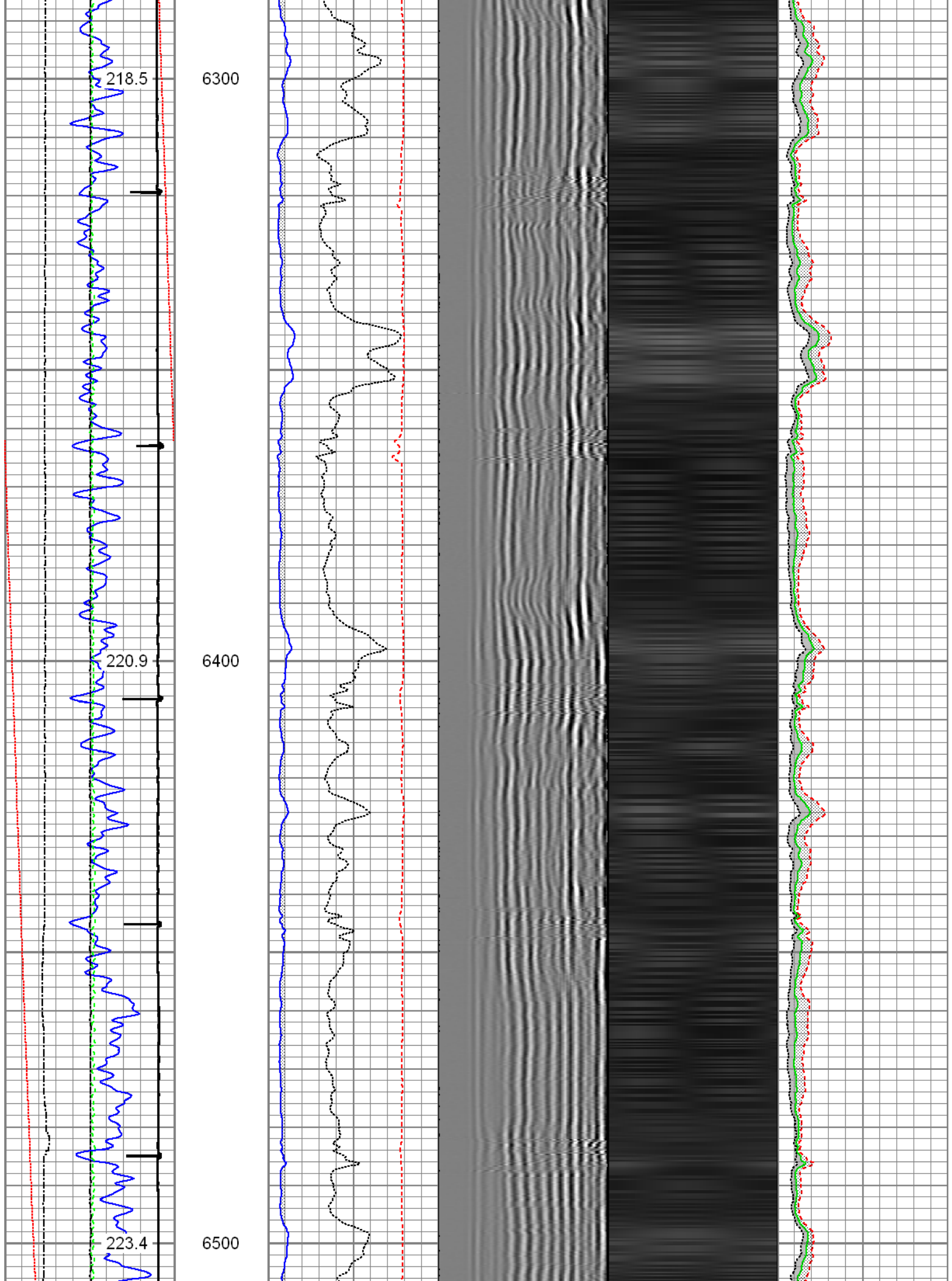
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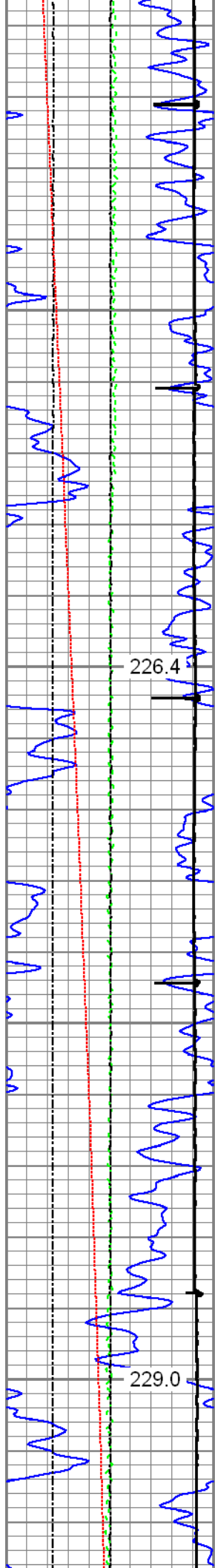
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6100

6200





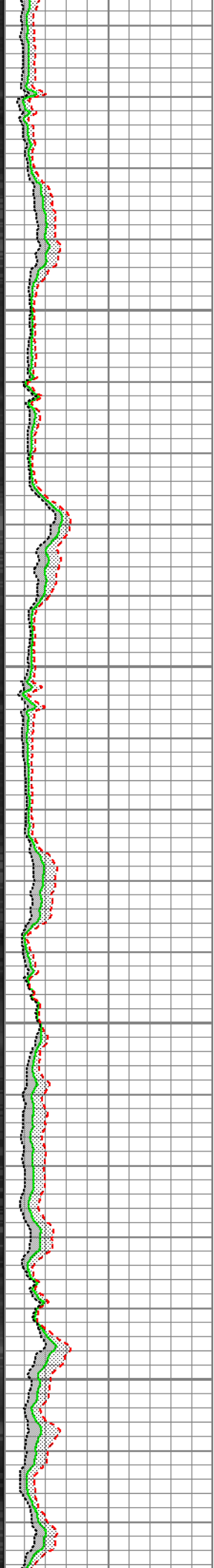
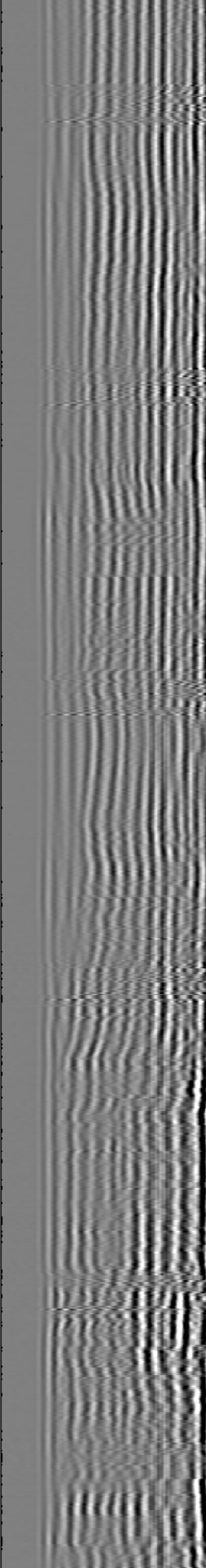
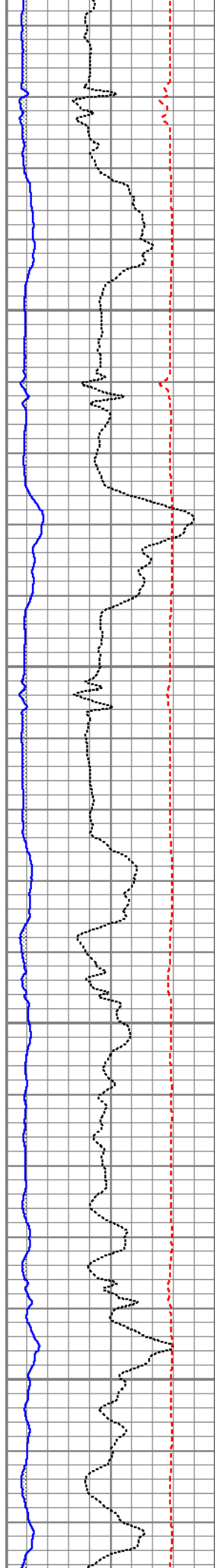


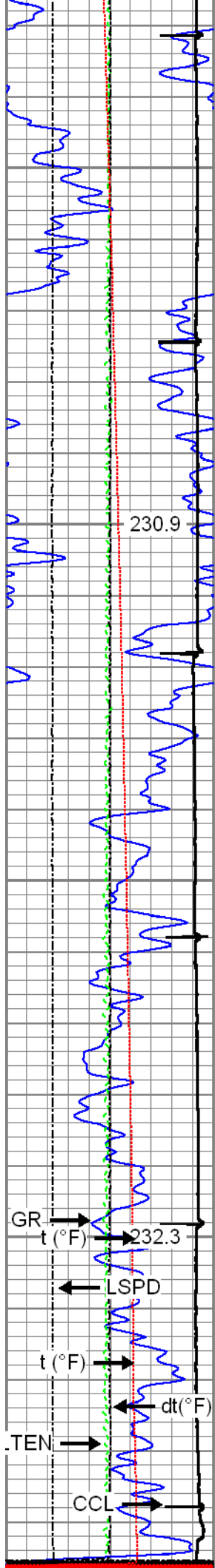
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229.0

6600

6700

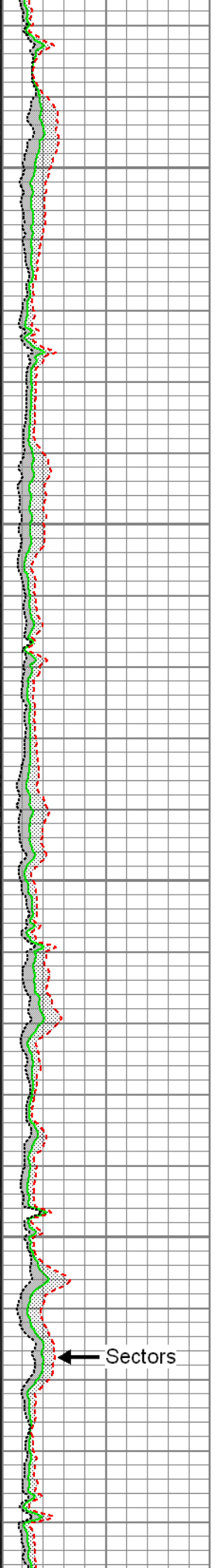
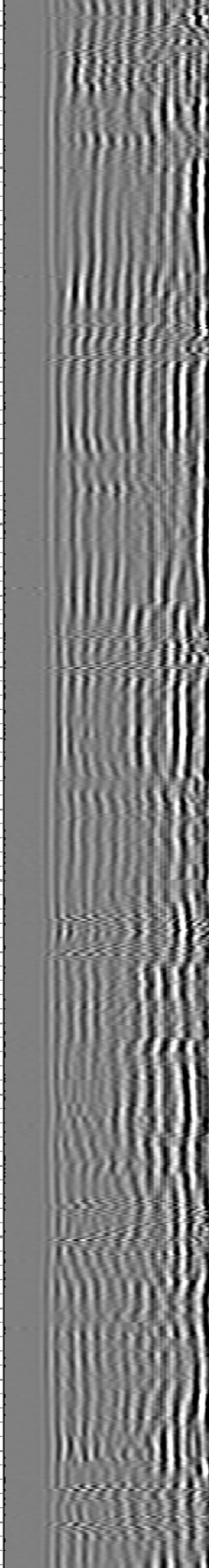
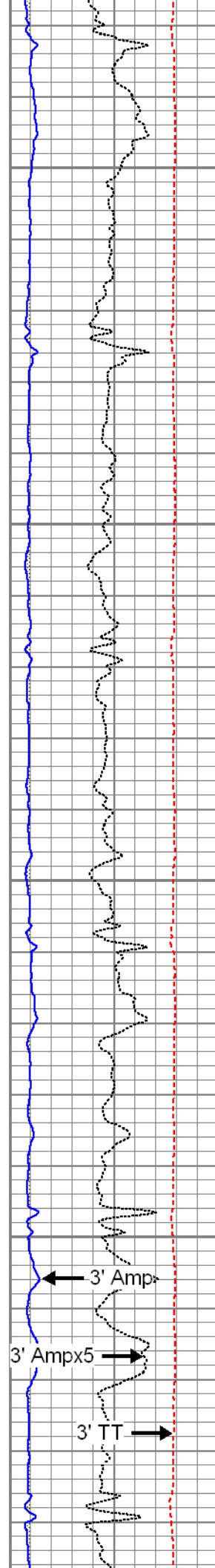


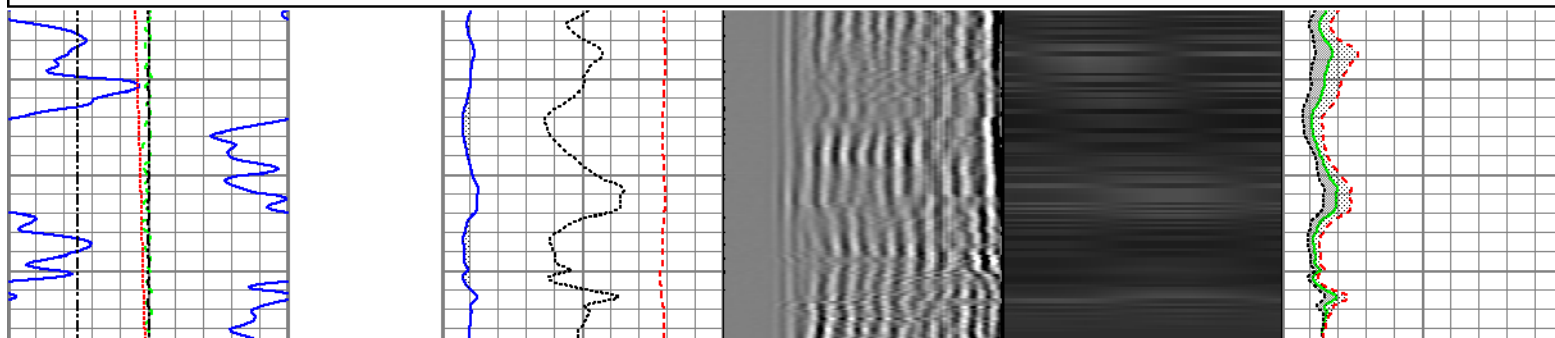
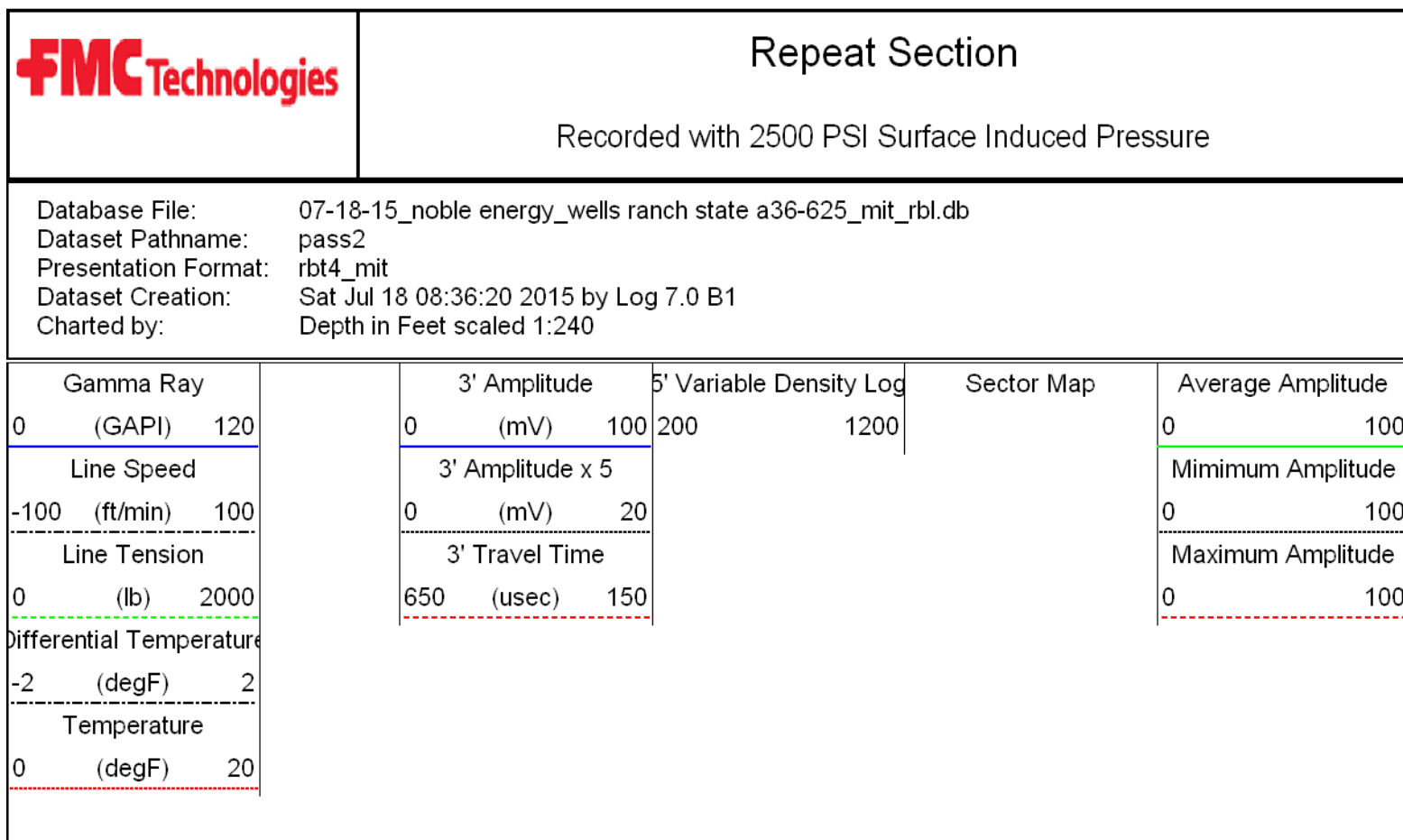
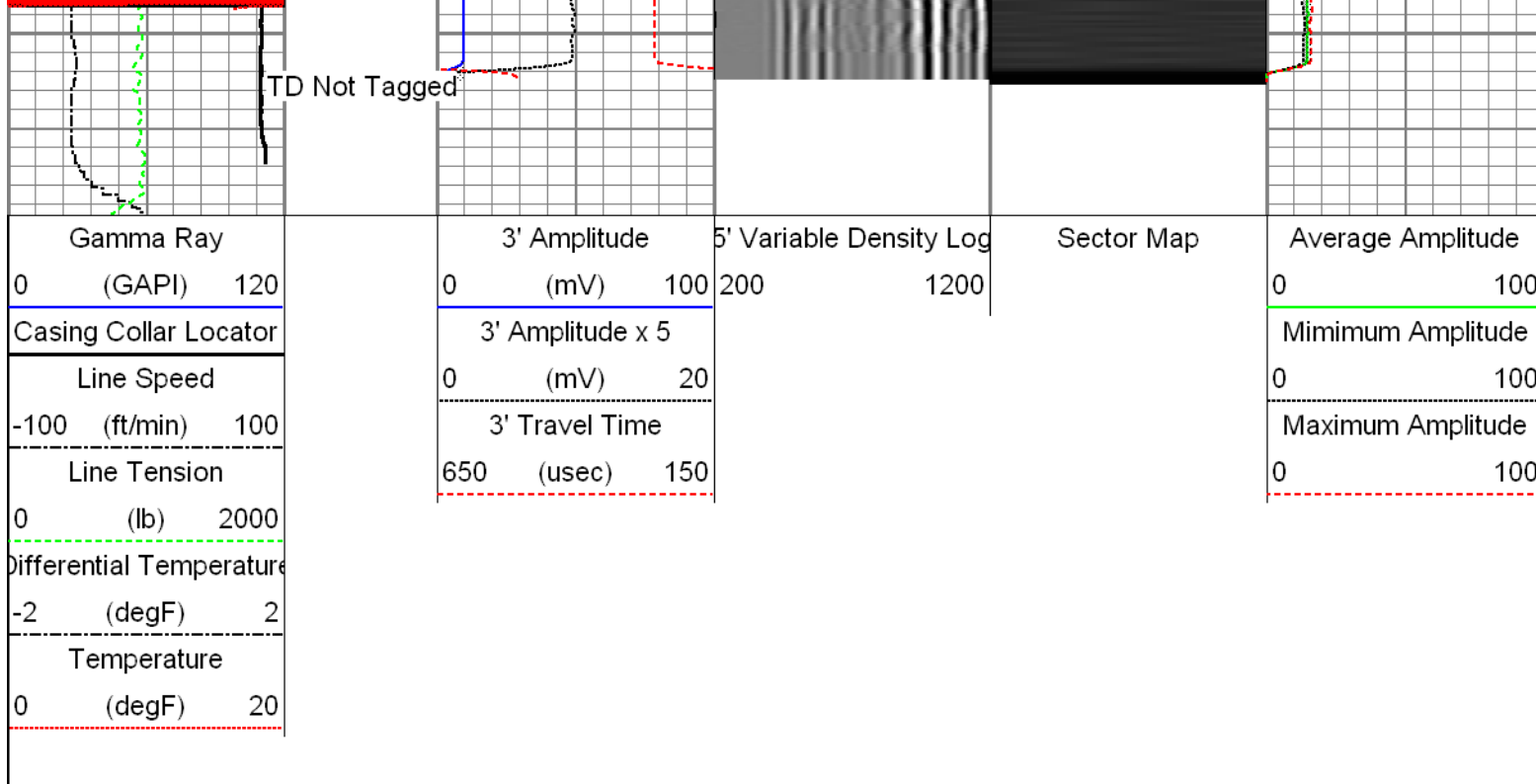


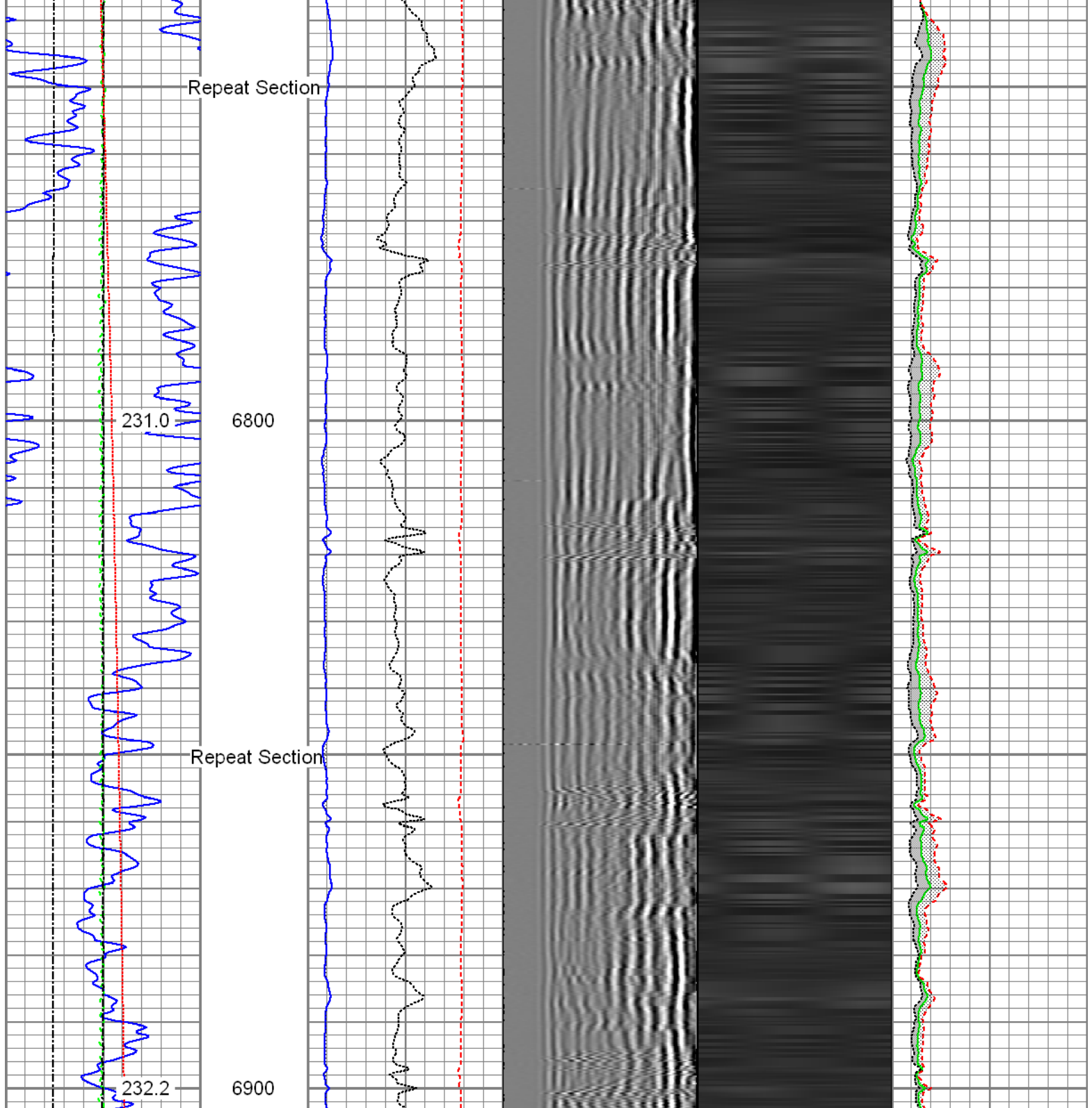
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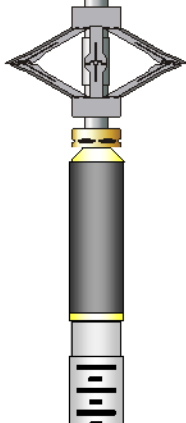
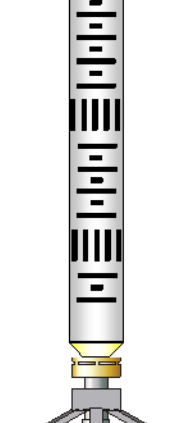
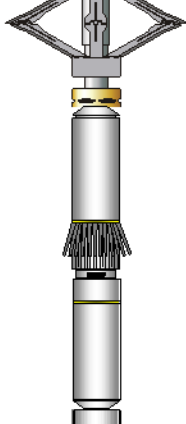
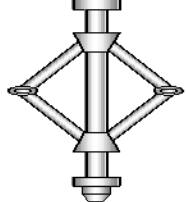
6900







Gamma Ray			3' Amplitude		5' Variable Density Log	Sector Map	Average Amplitude			
0	(GAPI)	120	0	100			200	1200	0	100
Line Speed			3' Amplitude x 5				Minimum Amplitude			
-100	(ft/min)	100	0	20			0			
Line Tension			3' Travel Time		Maximum Amplitude					
0	(lb)	2000	650	150	0				100	
Differential Temperature										
-2	(degF)	2								
Temperature										
0	(degF)	20								

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
GR	23.85		T_CH14375_1_GO Titan 1-7/16" Assembled Electric Cable Head with 1" Fishing Neck	1.03	1.44	4.00
			GOpin-GOpin 2" GO Pin to GO Pin Connection	0.23	2.00	5.00
			UW_AGS-UW_AGS_001 (218874) Sondex Adapter - GO Box to Sondex Pin	0.21	1.69	1.00
			UW_XTU-UW_XTU_002 (219135) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50
			UW_PGR-UW_PGR_020 (10019072) Production Gamma Ray	1.93	1.69	9.50
TEMP	22.45		UW_PRT-UW_PRT_016 (10025100) Platinum Resistance Thermometer	1.04	1.69	5.20
			UW_PRC-DSSRAC (083) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
WVF3FT	15.42		UW_RBT-UW_RBT_004 (1066) Sondex Ultrawire 3-1/8" Radial Bond Tool	9.47	3.13	140.00
WVFS1	15.42					
WVFS2	15.42					
WVFS3	15.42					
WVFS4	15.42					
WVFS5	15.42					
WVFS6	15.42					
WVFS7	15.42					
WVFS8	15.42					
CBLTEMP	15.42					
CBLROT	15.42					
WVF5FT	14.42					
			UW_PRC-DSSRAC (084) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
MIT	5.41		UW_MIT-UW_MIT40_042 (10020664) 40 Multifinger Imaging Tool	4.54	2.75	61.10
			UW_PRC #4 -UW_PRC_057 (1101) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
TSTAMP	0.00		UW_BUL-UW_BUL_006 (218707) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20

Total Weight: 329.50 lb
O.D. 3.13 in

Calibration Report

Database File: 07-18-15_Noble Energy_Wells Ranch State A36-625_MIT_RBL.db
Dataset Pathname: pass5
Dataset Creation: Sat Jul 18 11:03:37 2015 by Log 7.0 B1

Multi-finger Imaging Tool Calibration Report

Serial Number: 10020664
Number of Fingers: 40
Tool Model: UW_MIT40_042

Inclinometer Calibration Report

Performed: Wed Nov 26 12:28:41 2014
Calibration Angle: 45

	Inc X	Inc Y
Vertical:	1946	1932
Finger 1 up:	1712	1699
Finger 31 up:	2180	1700
Finger 21 up:	2165	2167
Finger 11 up:	1708	2156
Sensitivity ratio:	1.00121	
X-axis angle:	134.04	
Deviation const.:	327.106	

Finger Calibration Report

Performed: Sat Jul 18 08:04:37 2015

Ring size:	4		5		6		7
(in)		Sens		Sens		Sens	
Finger 01:	1181	345.0	1526	379.0	1905	386.0	2291
Finger 02:	1193	354.0	1547	381.0	1928	391.0	2319
Finger 03:	1142	347.0	1489	377.0	1866	394.0	2260
Finger 04:	1153	365.0	1518	398.0	1916	409.0	2325
Finger 05:	1138	358.0	1496	390.0	1886	405.0	2291
Finger 06:	1173	356.0	1529	383.0	1912	388.0	2300
Finger 07:	1086	365.0	1451	408.0	1859	425.0	2284
Finger 08:	1138	355.0	1493	388.0	1881	409.0	2290
Finger 09:	1103	365.0	1468	396.0	1864	415.0	2279
Finger 10:	1025	363.0	1388	413.0	1801	440.0	2241
Finger 11:	1112	351.0	1463	381.0	1844	398.0	2242
Finger 12:	1087	357.0	1444	394.0	1838	413.0	2251
Finger 13:	1063	347.0	1410	391.0	1801	405.0	2206
Finger 14:	1042	348.0	1390	395.0	1785	406.0	2191
Finger 15:	1105	346.0	1451	376.0	1827	381.0	2208
Finger 16:	1054	346.0	1400	385.0	1785	399.0	2184
Finger 17:	1056	350.0	1406	390.0	1796	401.0	2197
Finger 18:	1006	346.0	1352	397.0	1749	413.0	2162
Finger 19:	1012	343.0	1355	391.0	1746	409.0	2155
Finger 20:	1049	349.0	1398	392.0	1790	405.0	2195
Finger 21:	1064	338.0	1402	382.0	1784	397.0	2181
Finger 22:	1063	348.0	1411	389.0	1800	398.0	2198
Finger 23:	1176	330.0	1506	353.0	1859	364.0	2223
Finger 24:	1036	343.0	1379	392.0	1771	404.0	2175
Finger 25:	1013	343.0	1356	391.0	1747	410.0	2157
Finger 26:	1084	344.0	1428	380.0	1808	399.0	2207
Finger 27:	1115	346.0	1461	388.0	1849	400.0	2249
Finger 28:	1099	345.0	1444	387.0	1831	402.0	2233
Finger 29:	1094	356.0	1450	397.0	1847	413.0	2260
Finger 30:	1145	345.0	1490	377.0	1867	390.0	2257
Finger 31:	1142	345.0	1487	382.0	1869	389.0	2258
Finger 32:	1179	342.0	1521	370.0	1891	379.0	2270

Finger 21:	1197	351.0	1528	376.0	1924	384.0	2308
Finger 33:	1151	354.0	1505	388.0	1893	399.0	2292
Finger 35:	1175	353.0	1528	388.0	1916	400.0	2316
Finger 36:	1217	346.0	1563	375.0	1938	387.0	2325
Finger 37:	1146	358.0	1504	395.0	1899	411.0	2310
Finger 38:	1109	366.0	1475	407.0	1882	423.0	2305
Finger 39:	1143	355.0	1498	392.0	1890	417.0	2307
Finger 40:	1172	355.0	1527	384.0	1911	401.0	2312

Post Survey Calibration Check								
Performed: Sat Jul 18 11:03:29 2015								
Ring size: (in)	4	Nom. wear	5	Nom. wear	6	Nom. wear	7	Nom. wear
Finger 01:	3.986	-0.007	5.009	0.004	5.993	-0.003	7.005	0.003
Finger 02:	3.991	-0.004	5.005	0.002	6.000	0.000	7.018	0.009
Finger 03:	3.988	-0.006	5.006	0.003	6.001	0.001	7.014	0.007
Finger 04:	3.990	-0.005	5.004	0.002	6.000	0.000	7.010	0.005
Finger 05:	3.987	-0.006	5.001	0.001	6.000	-0.000	7.012	0.006
Finger 06:	3.987	-0.006	5.002	0.001	6.002	0.001	7.013	0.006
Finger 07:	3.977	-0.012	5.007	0.004	5.998	-0.001	7.009	0.004
Finger 08:	3.988	-0.006	4.998	-0.001	6.002	0.001	7.007	0.004
Finger 09:	3.992	-0.004	4.996	-0.002	5.996	-0.002	7.009	0.004
Finger 10:	3.990	-0.005	5.003	0.001	6.005	0.003	7.011	0.005
Finger 11:	3.991	-0.004	5.009	0.005	6.005	0.003	7.008	0.004
Finger 12:	3.995	-0.002	5.004	0.002	6.003	0.001	7.007	0.004
Finger 13:	3.985	-0.007	5.006	0.003	5.996	-0.002	7.005	0.003
Finger 14:	3.978	-0.011	4.999	-0.000	5.989	-0.005	6.998	-0.001
Finger 15:	3.994	-0.003	5.013	0.006	5.996	-0.002	7.023	0.011
Finger 16:	3.993	-0.004	5.008	0.004	5.999	-0.001	7.014	0.007
Finger 17:	3.997	-0.001	5.011	0.005	5.998	-0.001	7.006	0.003
Finger 18:	3.990	-0.005	5.005	0.003	5.998	-0.001	7.029	0.015
Finger 19:	3.982	-0.009	5.006	0.003	6.003	0.001	7.017	0.008
Finger 20:	3.990	-0.005	5.006	0.003	6.000	0.000	7.007	0.003
Finger 21:	3.984	-0.008	5.007	0.004	6.001	0.001	7.015	0.007
Finger 22:	3.991	-0.004	5.008	0.004	5.997	-0.002	7.005	0.002
Finger 23:	3.985	-0.008	5.007	0.004	6.001	0.000	7.009	0.005
Finger 24:	3.983	-0.008	5.001	0.001	5.995	-0.002	7.005	0.002
Finger 25:	3.986	-0.007	5.001	0.001	6.002	0.001	7.007	0.003
Finger 26:	3.986	-0.007	5.006	0.003	6.002	0.001	7.009	0.004
Finger 27:	3.986	-0.007	5.002	0.001	5.999	-0.001	7.008	0.004
Finger 28:	3.989	-0.006	5.007	0.003	6.006	0.003	7.013	0.007
Finger 29:	3.837	-0.082	4.848	-0.076	5.827	-0.086	6.853	-0.073
Finger 30:	3.987	-0.007	5.000	-0.000	6.003	0.001	7.010	0.005
Finger 31:	3.986	-0.007	5.004	0.002	5.998	-0.001	7.013	0.007
Finger 32:	3.996	-0.002	5.011	0.005	5.999	-0.000	7.010	0.005
Finger 33:	3.995	-0.003	5.006	0.003	6.000	0.000	7.011	0.006
Finger 34:	3.988	-0.006	5.006	0.003	5.997	-0.002	7.012	0.006
Finger 35:	3.986	-0.007	5.003	0.002	5.994	-0.003	7.008	0.004
Finger 36:	3.990	-0.005	5.008	0.004	5.999	-0.000	7.014	0.007
Finger 37:	3.992	-0.004	5.005	0.002	5.997	-0.002	7.009	0.004
Finger 38:	3.990	-0.005	5.005	0.002	6.000	-0.000	7.012	0.006
Finger 39:	3.978	-0.011	5.012	0.006	6.000	0.000	6.986	-0.007
Finger 40:	3.985	-0.008	5.015	0.007	6.000	-0.000	7.003	0.002
Average:	3.984	-0.008	5.001	0.001	5.995	-0.002	7.006	0.003

Segmented Cement Bond Log Calibration Report								
Serial Number:					1066			
Tool Model:					UW_RBT_004			
Calibration Casing Diameter:					7.000	in		
Calibration Depth:					24.000	ft		

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	0.005	0.693	0.800	62.165	89.224	0.374
5FT	-0.001	0.653	0.800	62.165	93.804	0.915
S1	0.004	0.666	0.000	100.000	151.150	-0.601
S2	0.003	0.677	0.000	100.000	148.425	-0.449
S3	0.004	0.686	0.000	100.000	146.508	-0.565
S4	0.004	0.701	0.000	100.000	143.345	-0.532
S5	0.004	0.705	0.000	100.000	142.616	-0.527
S6	0.004	0.712	0.000	100.000	141.118	-0.529
S7	0.004	0.715	0.000	100.000	140.679	-0.558
S8	0.005	0.688	0.000	100.000	146.443	-0.692

Temperature Calibration Report

Serial Number: 10025100
 Tool Model: UW_PRT_016
 Performed: Wed Feb 11 13:47:59 2015

Point #	Reading		Reference	
1	13249.00	cps	68.00	degF
2	18454.00	cps	104.00	degF
3	29735.00	cps	176.00	degF
4	41457.00	cps	248.00	degF
5	52851.00	cps	320.00	degF
6	59128.00	cps	356.00	degF
7		cps		degF
8		cps		degF
9		cps		degF
10		cps		degF

Gamma Ray Calibration Report

Serial Number: 10019072
 Tool Model: UW_PGR_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: Noble Energy Inc.
 Well: Wells Ranch State A36-625
 Field: Wattenberg
 County: Weld
 State: Colorado