



Radial Cement Bond  
Gamma Ray  
Casing Collar Log

Company Noble Energy Inc.		Company Noble Energy Inc.	
Well Wells Ranch State A36-655		Well Wells Ranch State A36-655	
Field Wattenberg		Field Wattenberg	
County Weld		County Weld	
State Colorado		State Colorado	
Location:		API #: 05-123-41516	
SEC 31 TWP 6N RGE 63W		Other Services	
Permanent Datum		Ground Level	
Log Measured From Kelly Bushing		Elevation 4656'	
Drilling Measured From Kelly Bushing		Elevation	
		K.B. 4680'	
		D.F. 4679'	
		G.L. 4656'	
Date 17-JUL-2015			
Run Number One			
Depth Driller 16723 FT			
Depth Logger 6825 FT			
Bottom Logged Interval 6819 FT			
Top Log Interval Surface			
Open Hole Size 8.750"			
Type Fluid Water			
Density / Viscosity 8.34 lbm/gal			
Max. Recorded Temp. 230°F			
Estimated Cement Top 188 FT			
Time Well Ready ROA			
Time Logger on Bottom 12:10 PM			
Equipment Number HD-0119			
Location Fort Lupton, CO			
Recorded By Andrew Olmsted		Sam Hopper	
Witnessed By Bill Mansfield			
Borehole Record			
Run Number		Tubing Record	
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		6838.3 FT	
		16723 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 24 FT  
Adjusted -6 FT to correlate with Kelly Bushing  
Log ran from 13' 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:07-17-15\_noble energy\_wells ranch state a36-655\_mit\_rbl.db

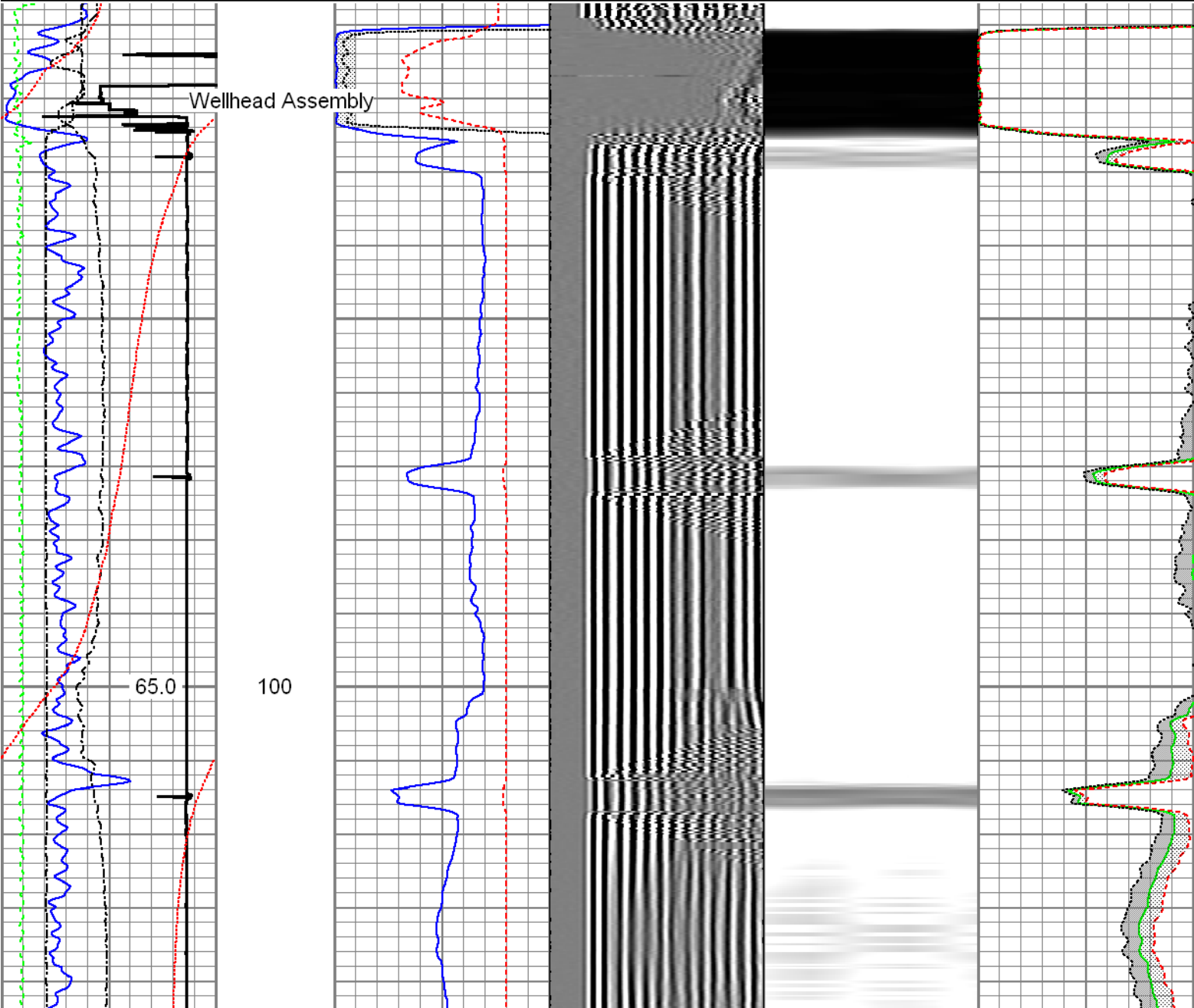
Dataset Pathname:pass8

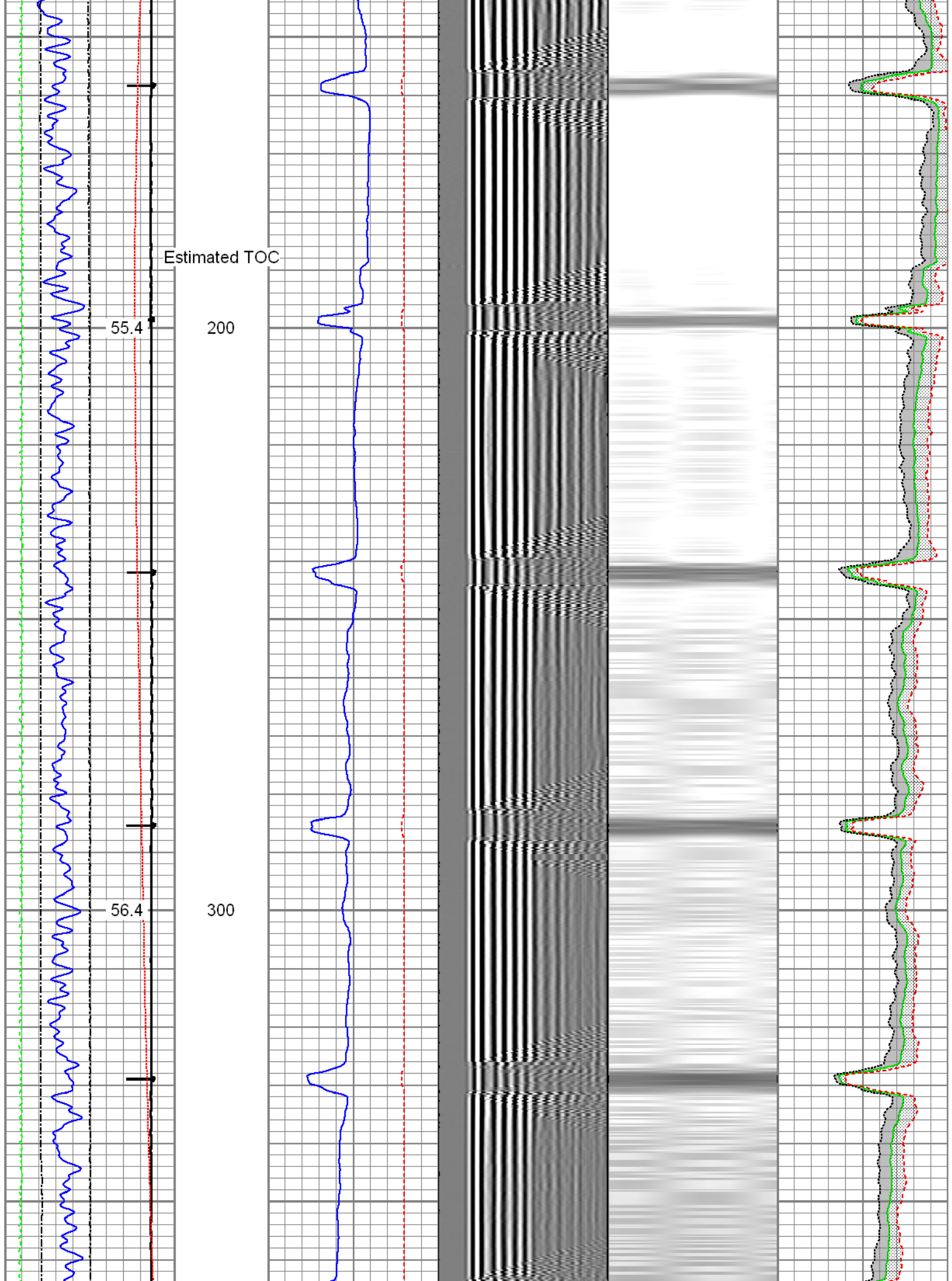
Presentation Format:rbt4\_mit

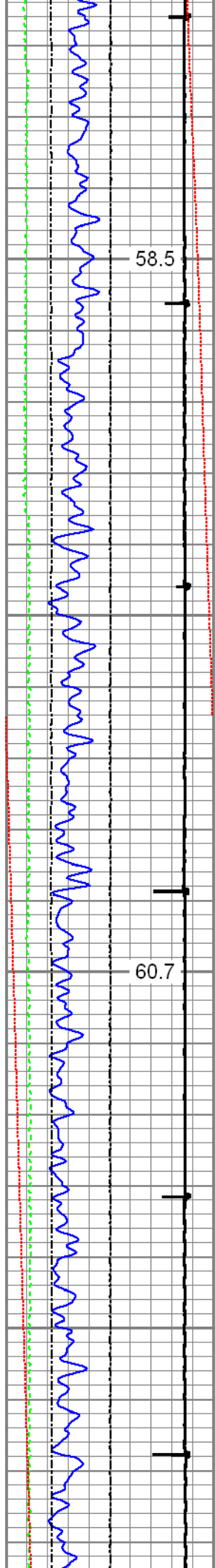
Dataset Creation:Fri Jul 17 12:04:35 2015 by Log 7.0 B1

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				

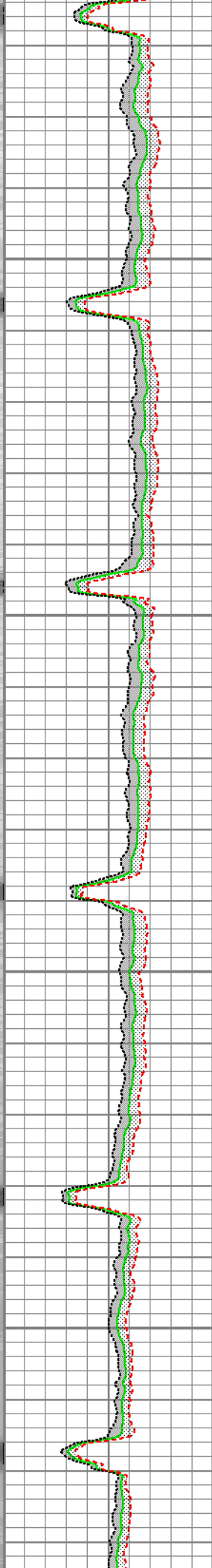
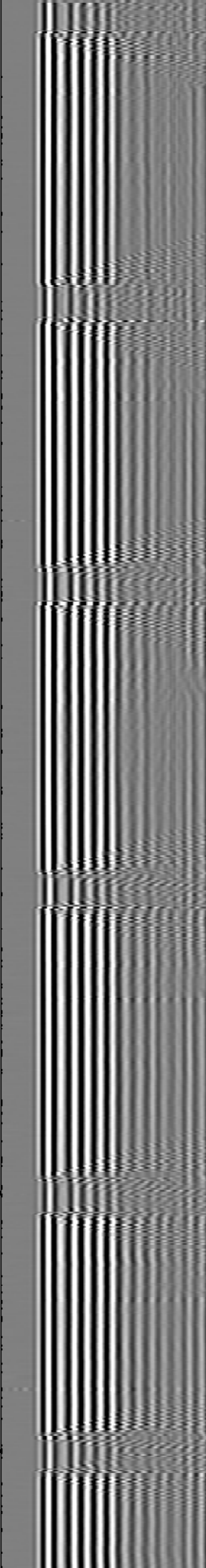
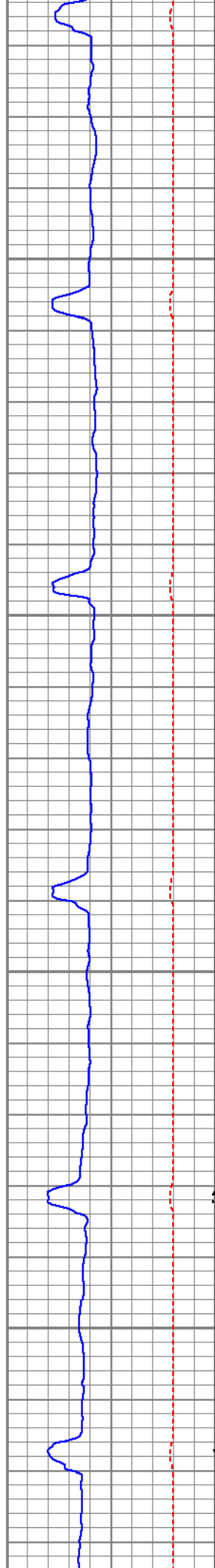




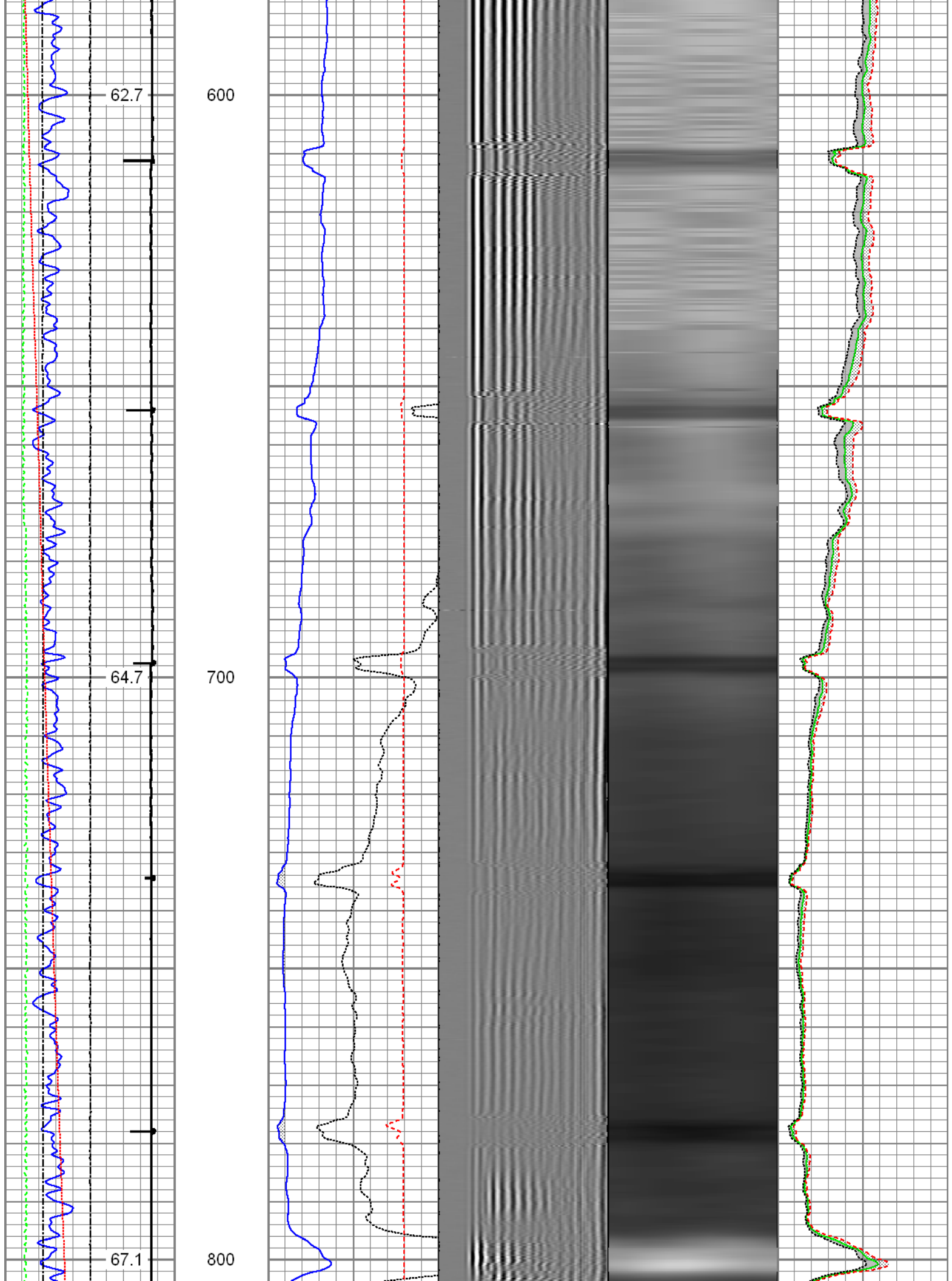


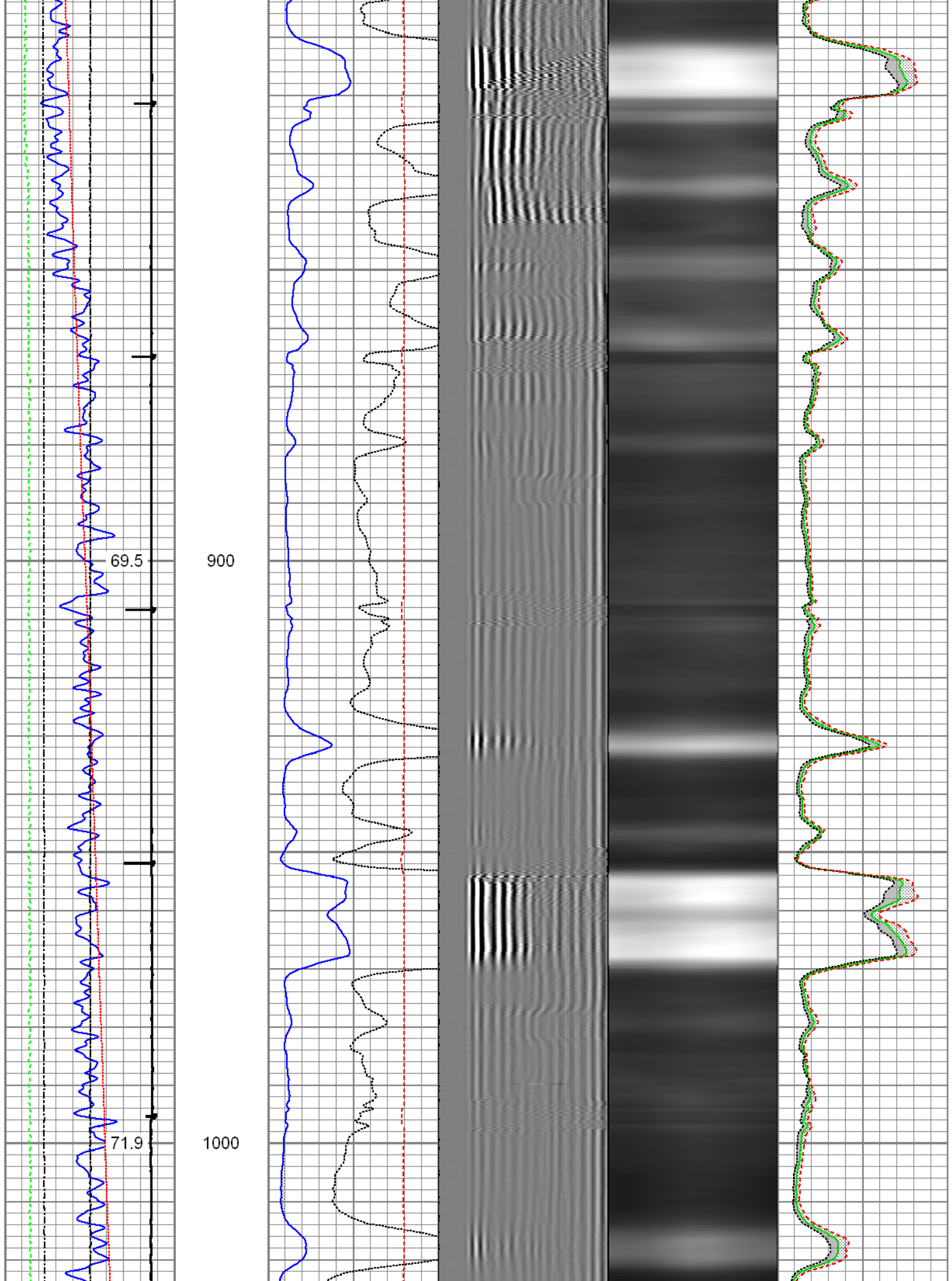
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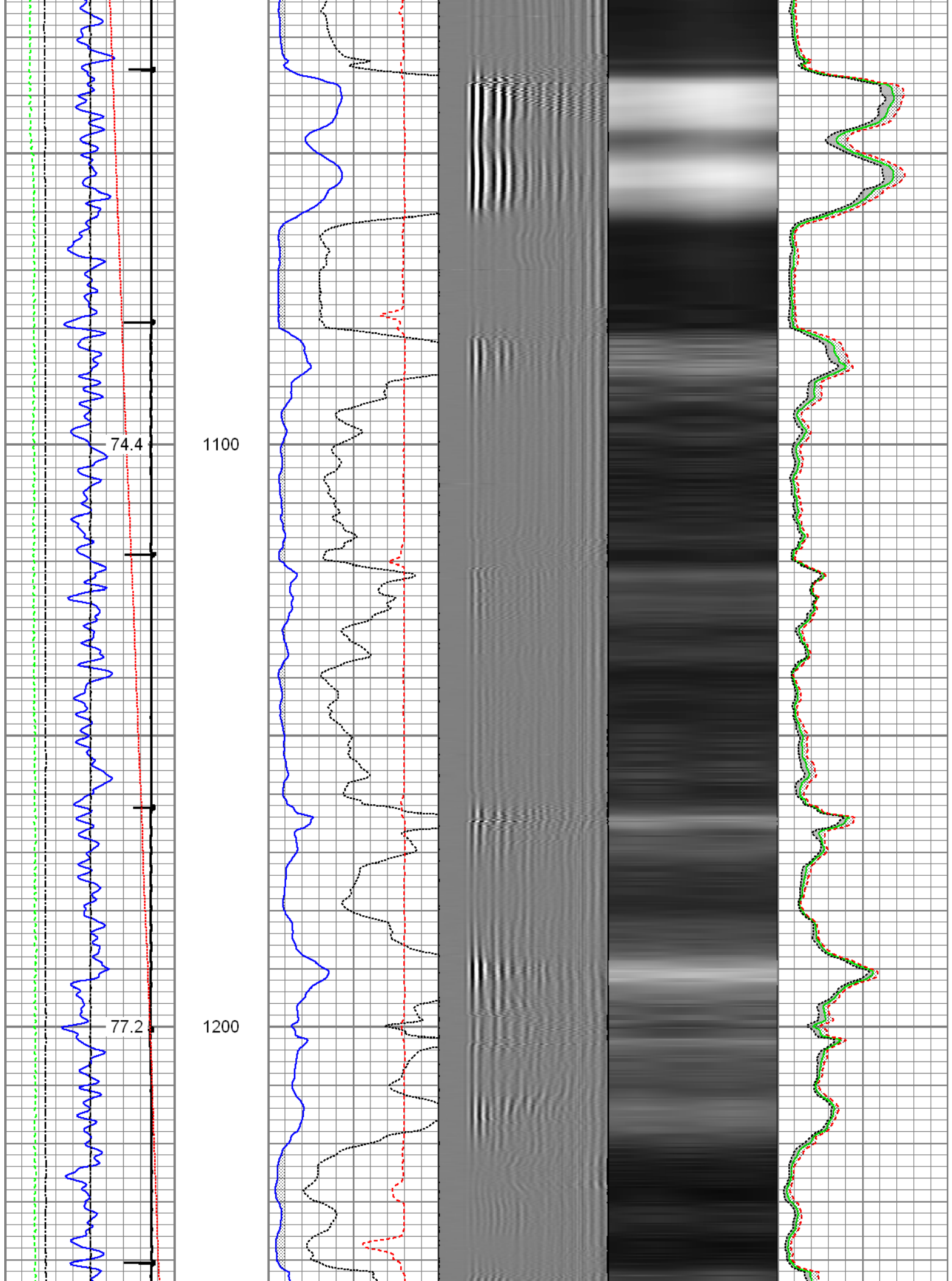
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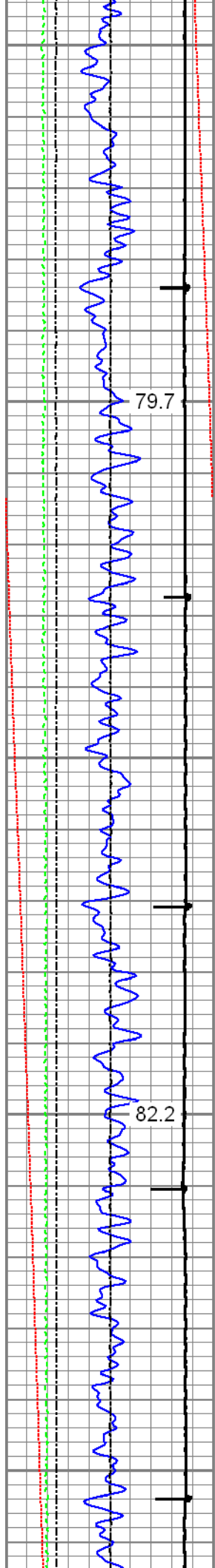










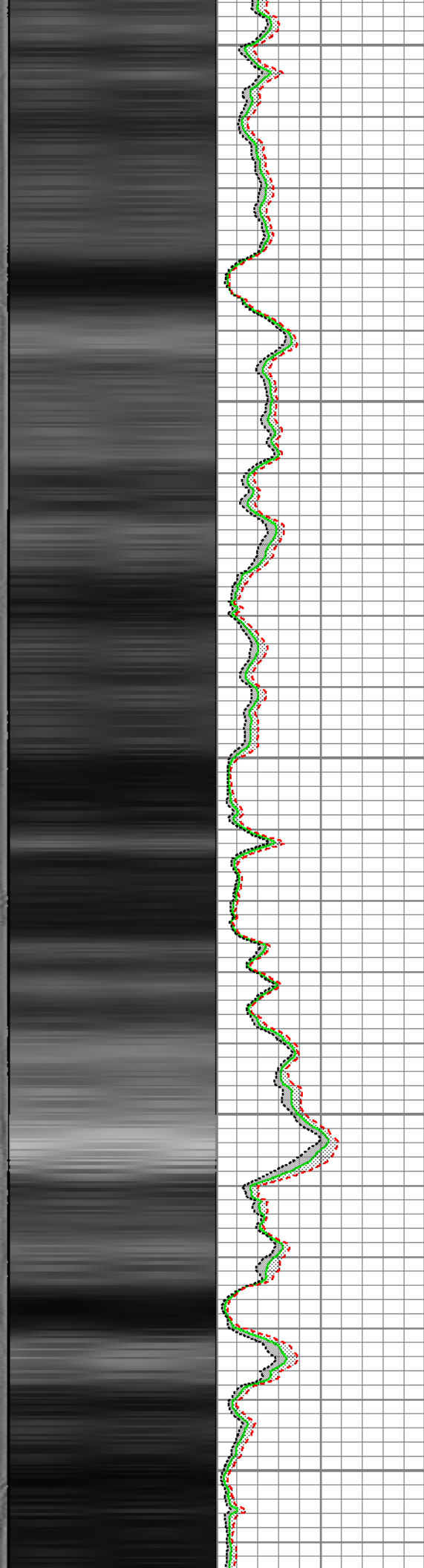
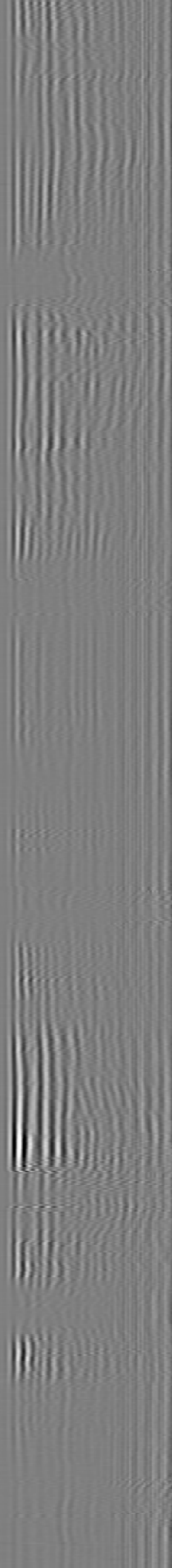
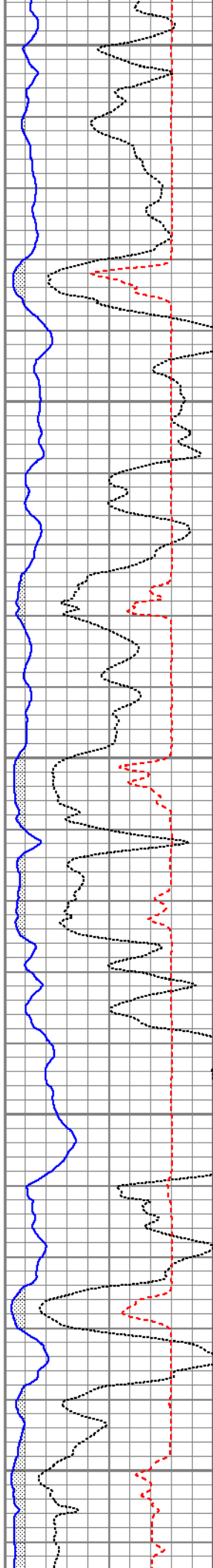


79.7

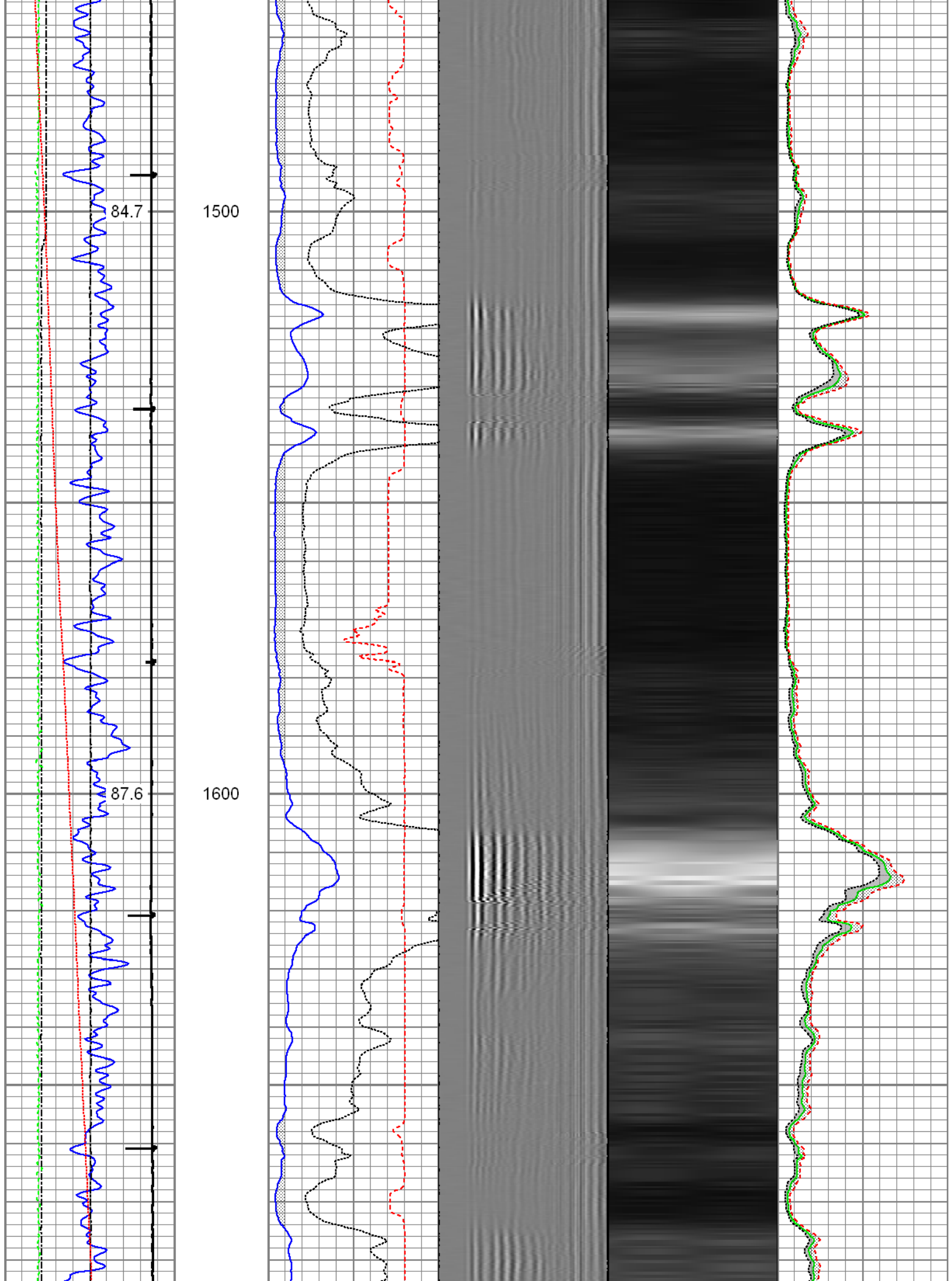
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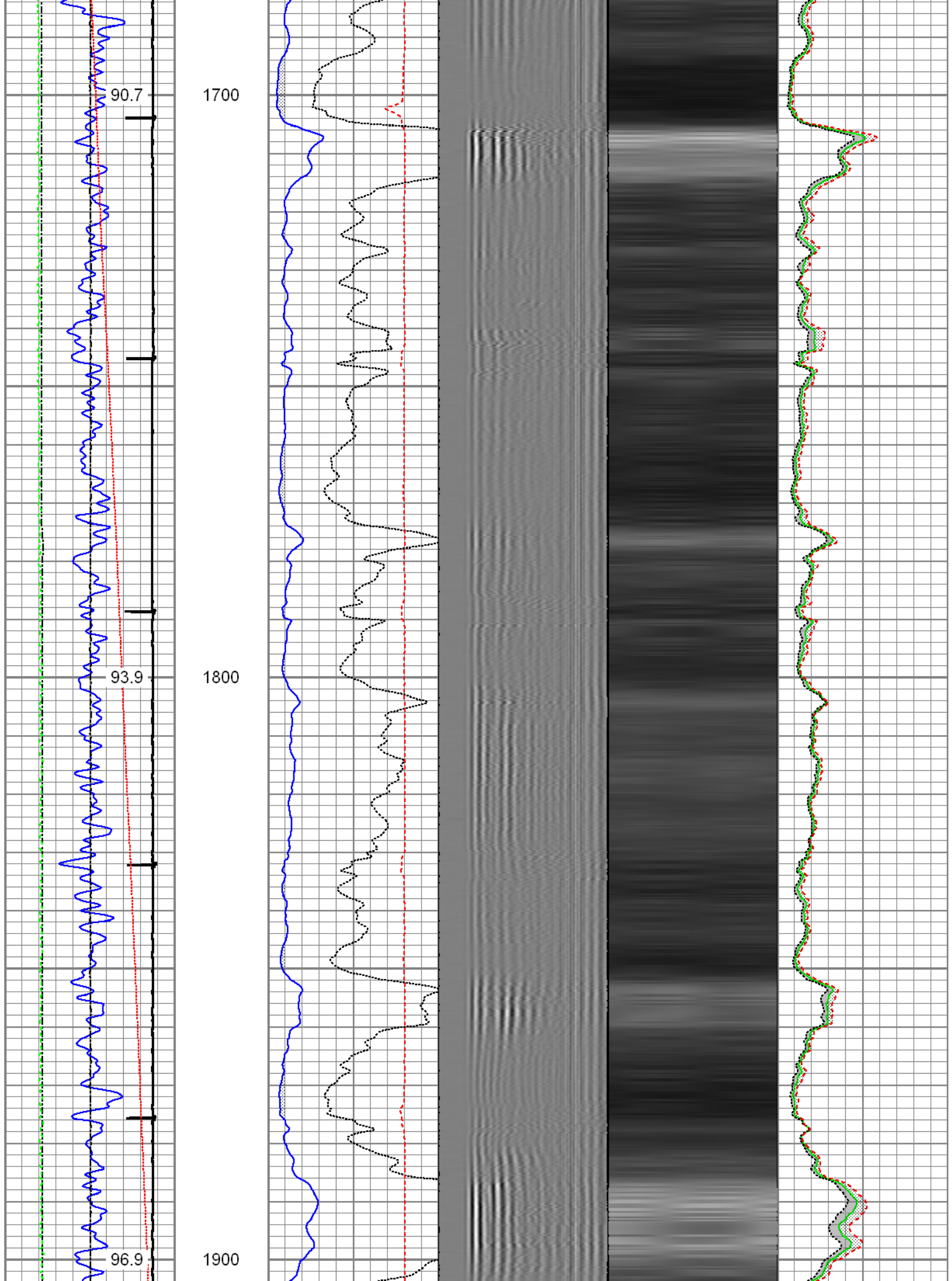
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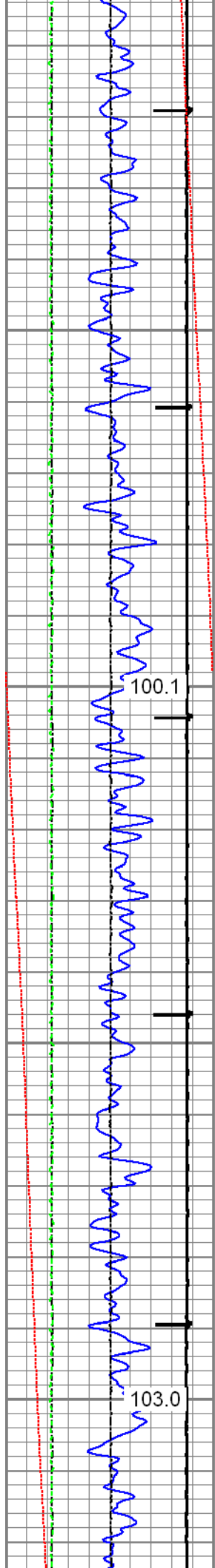
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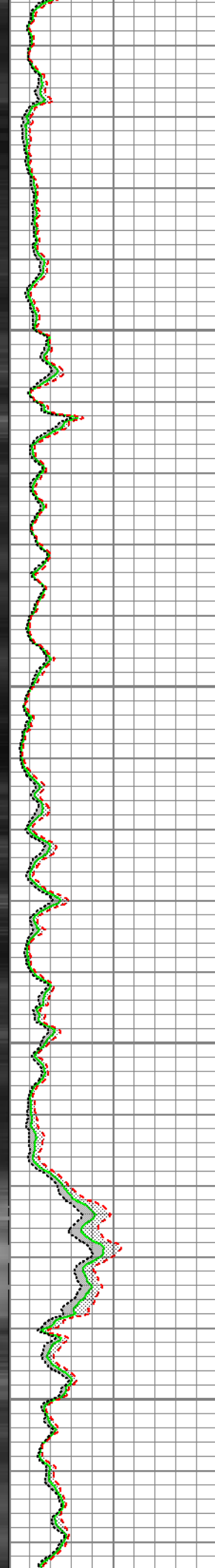
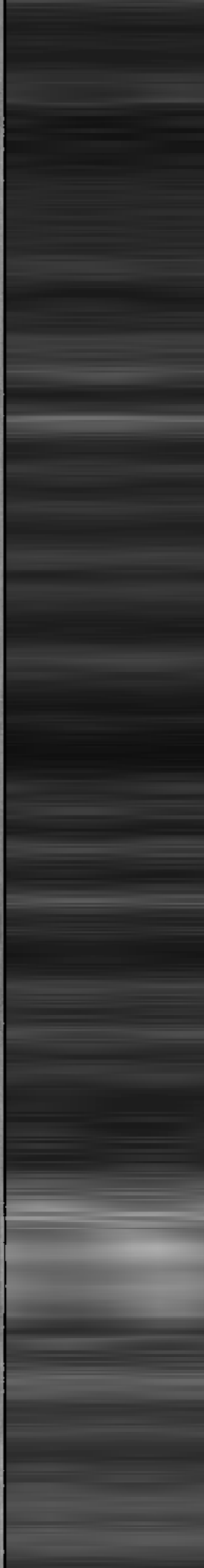
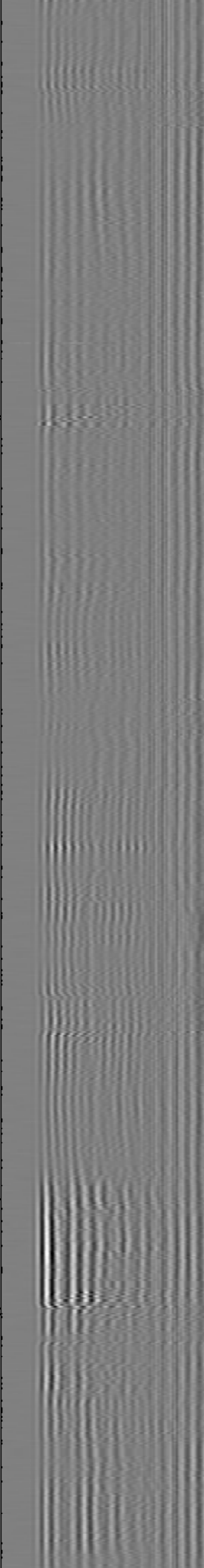
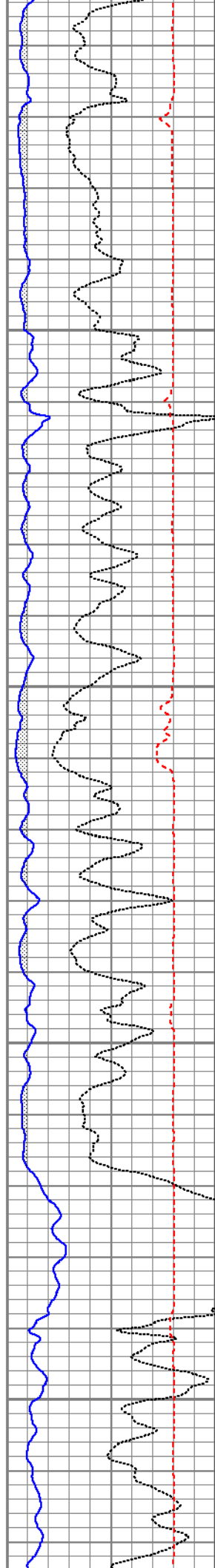


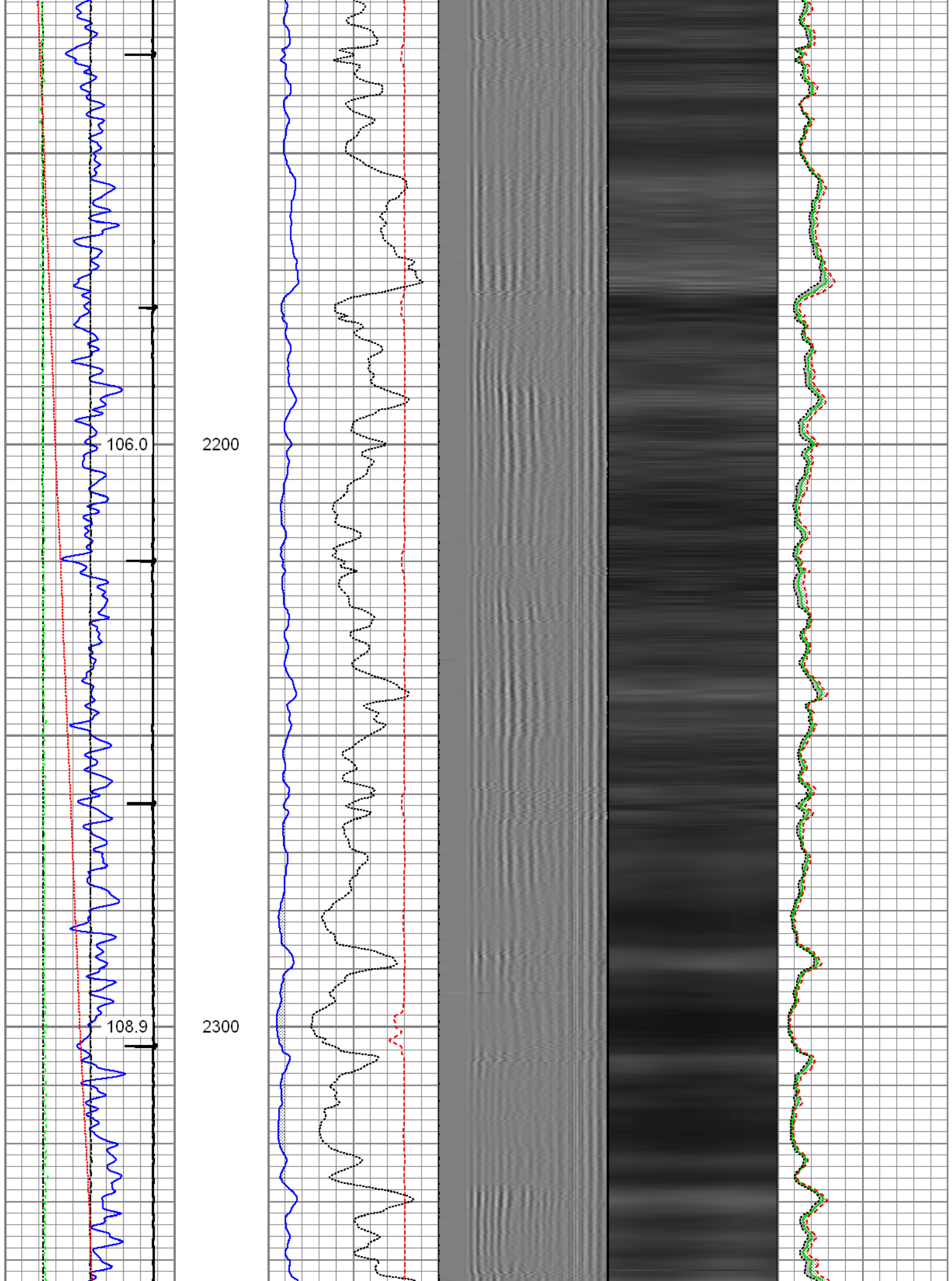




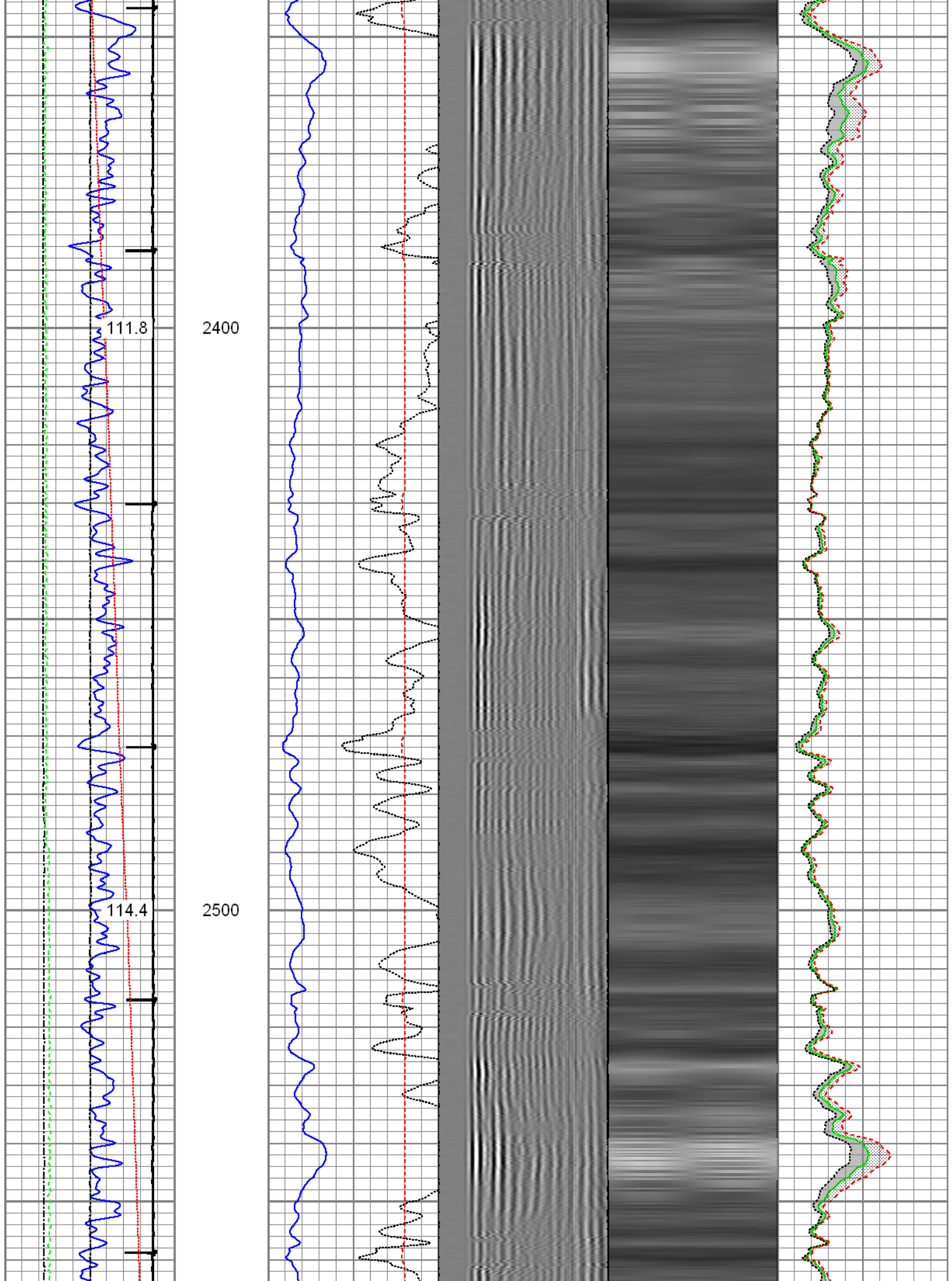
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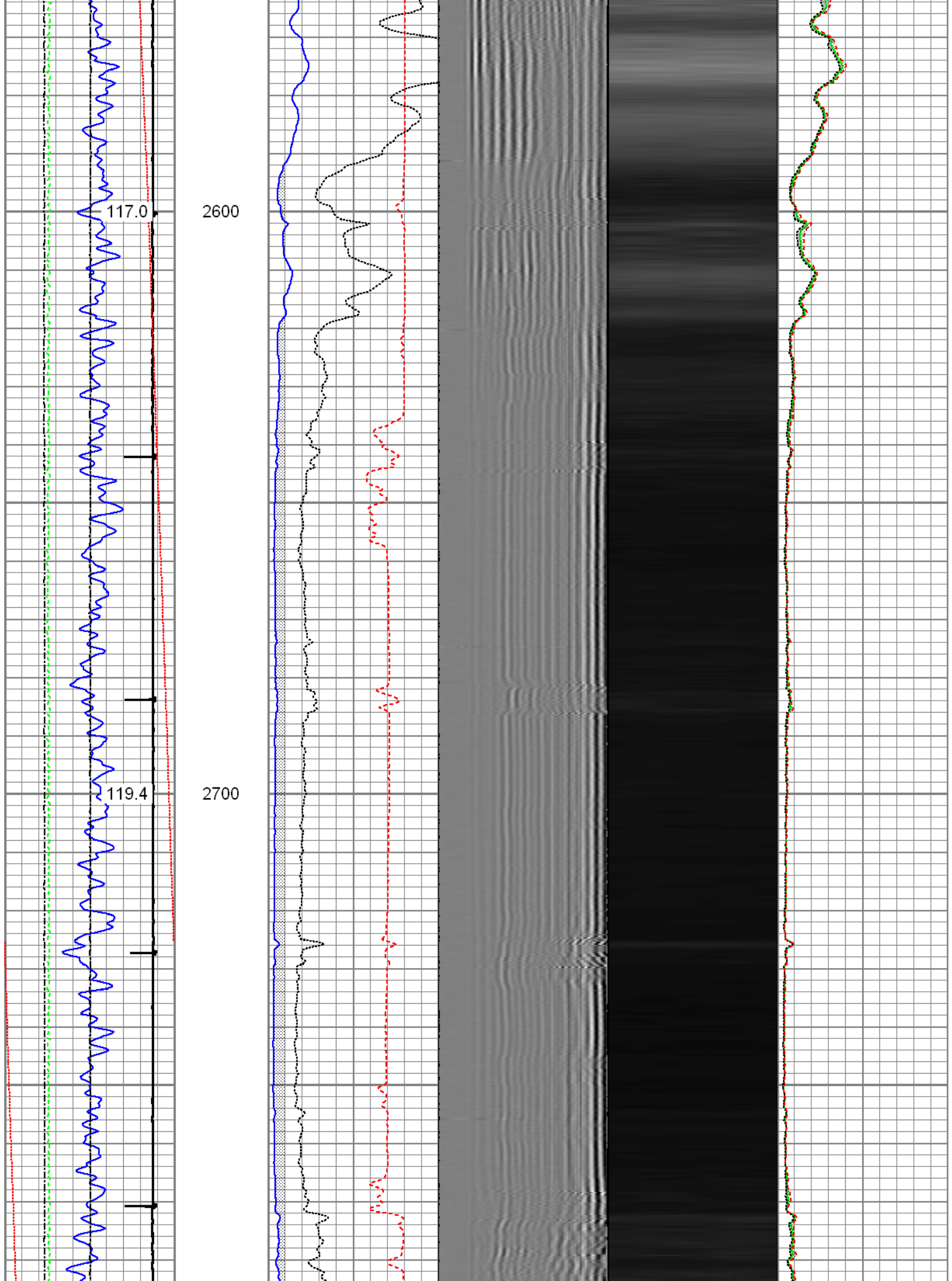
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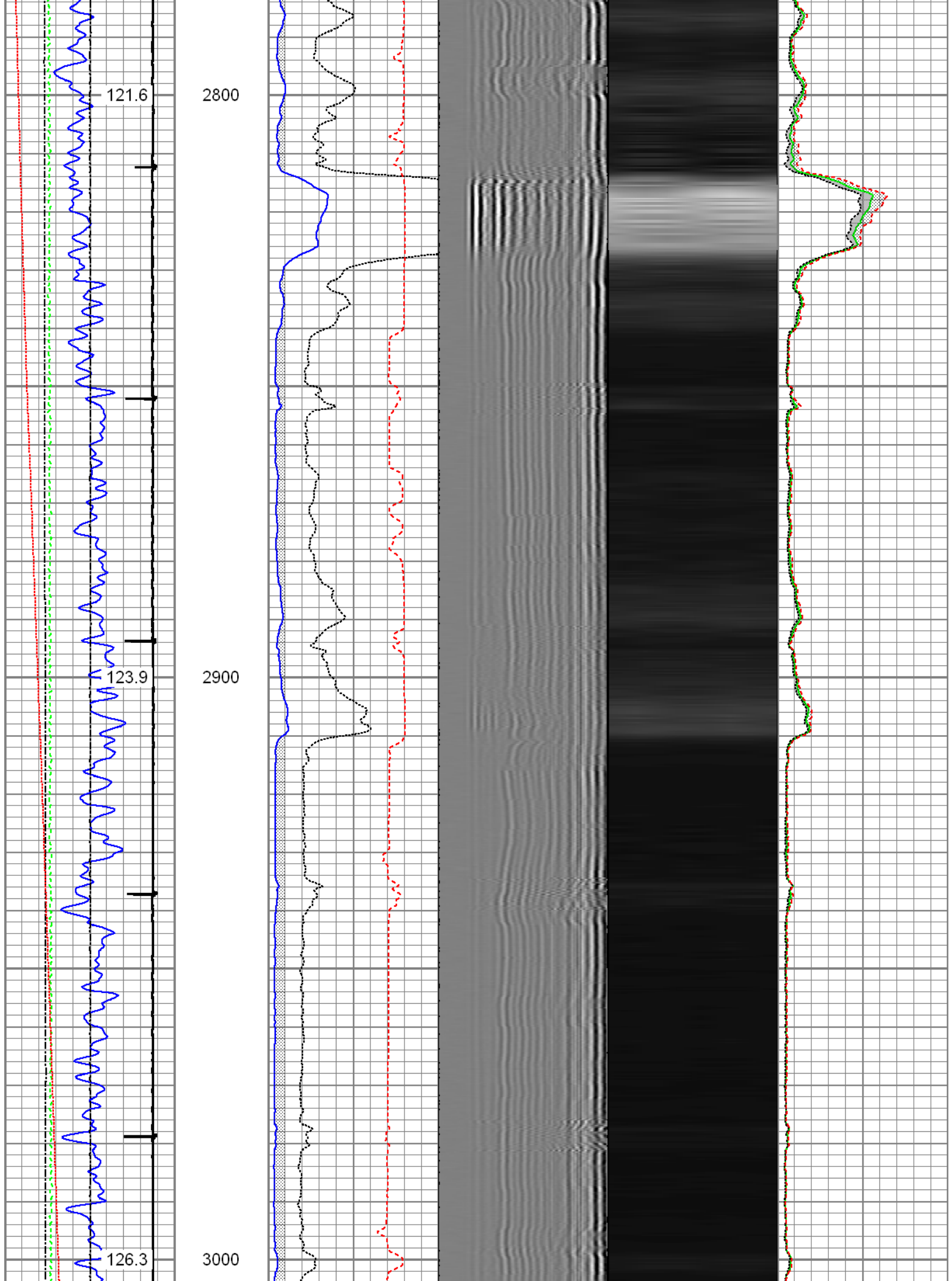


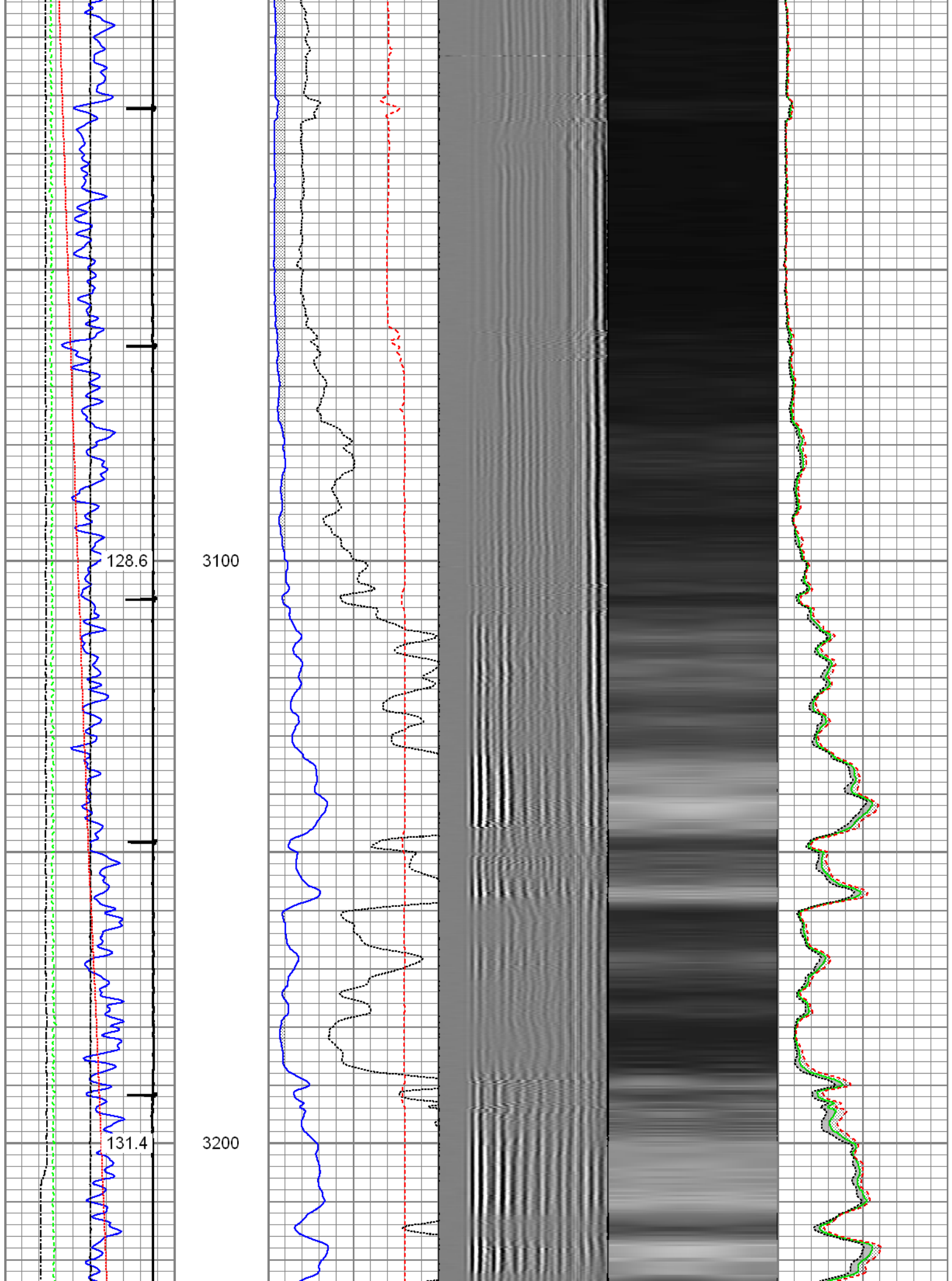




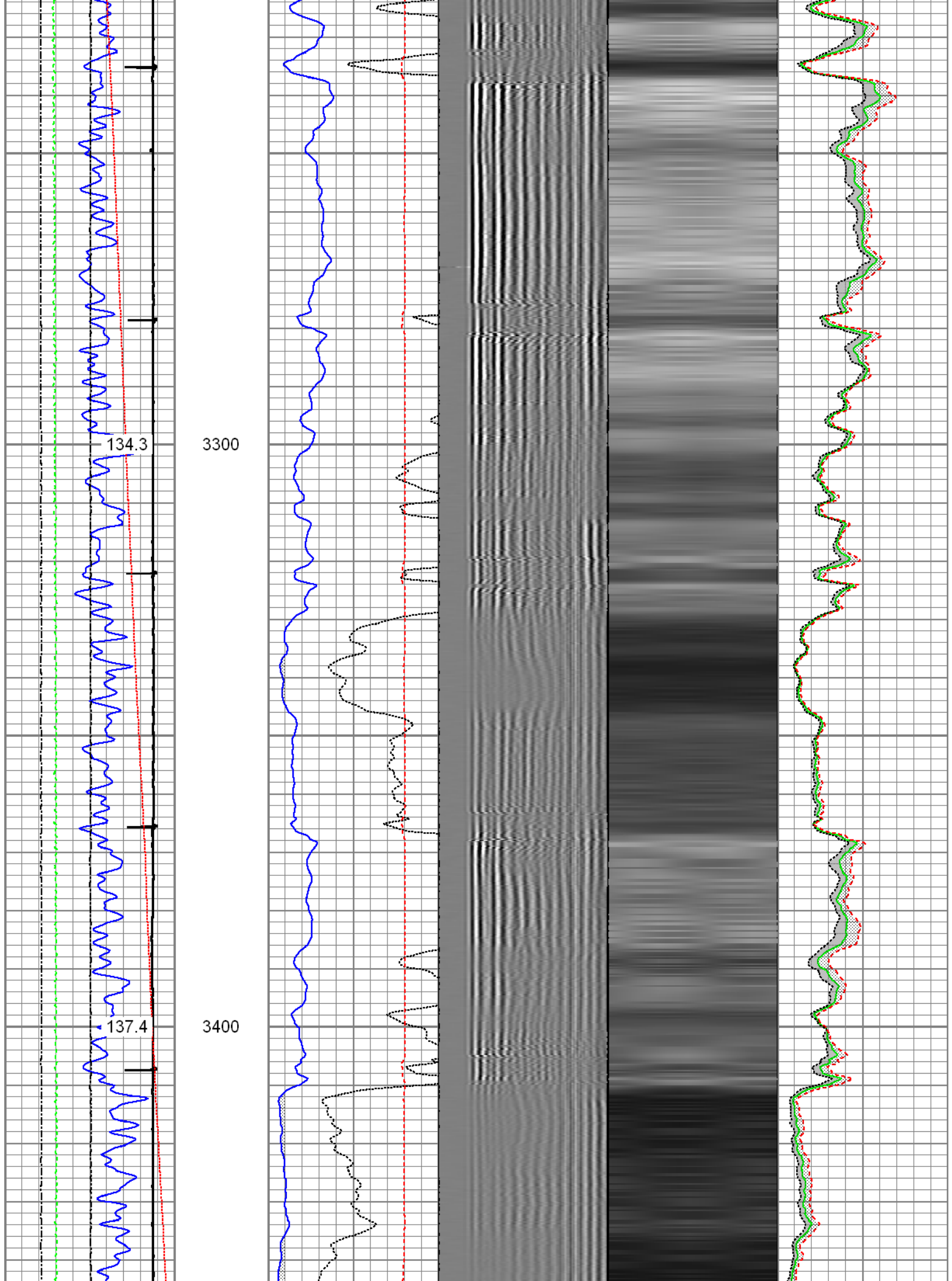


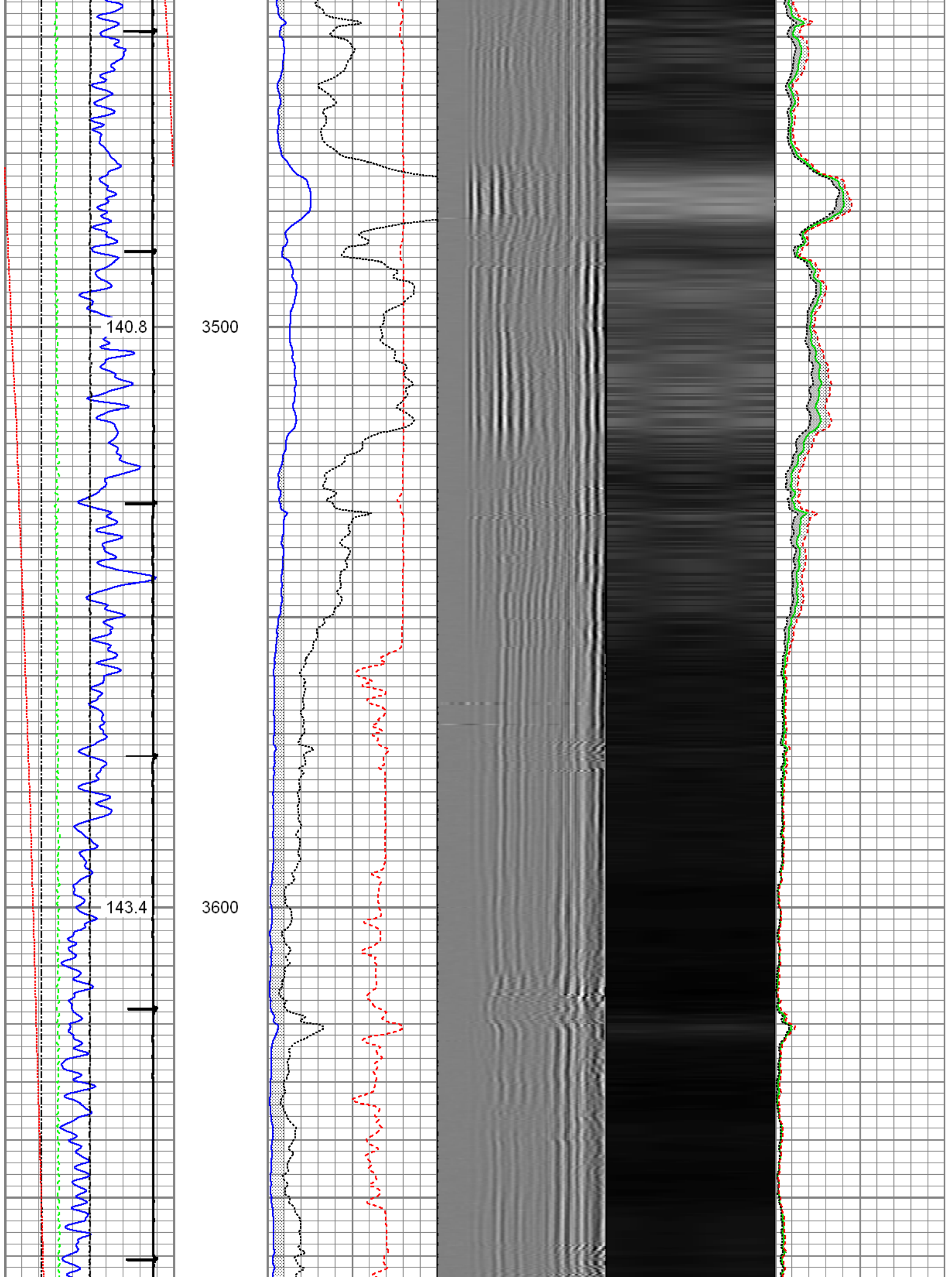


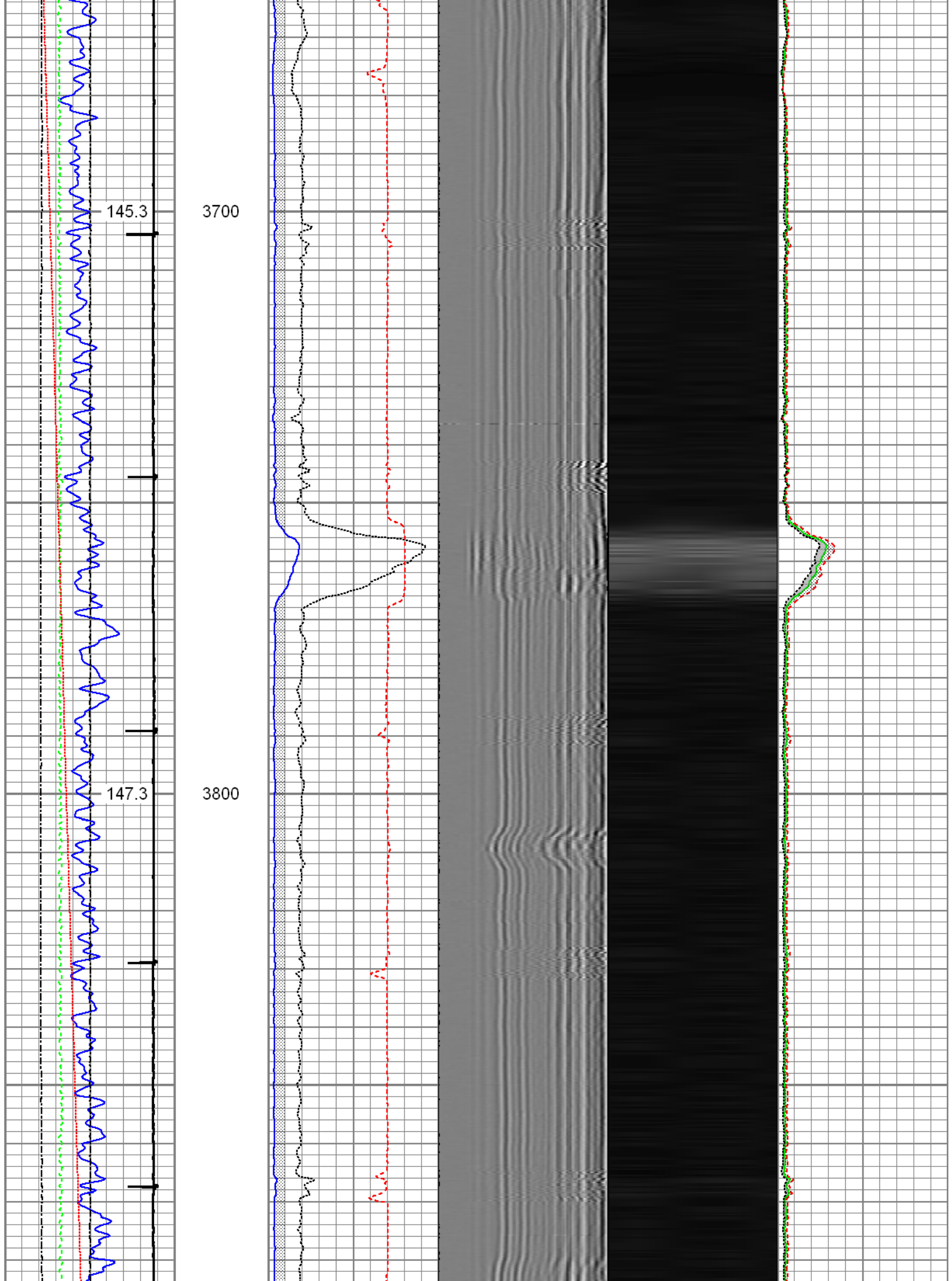


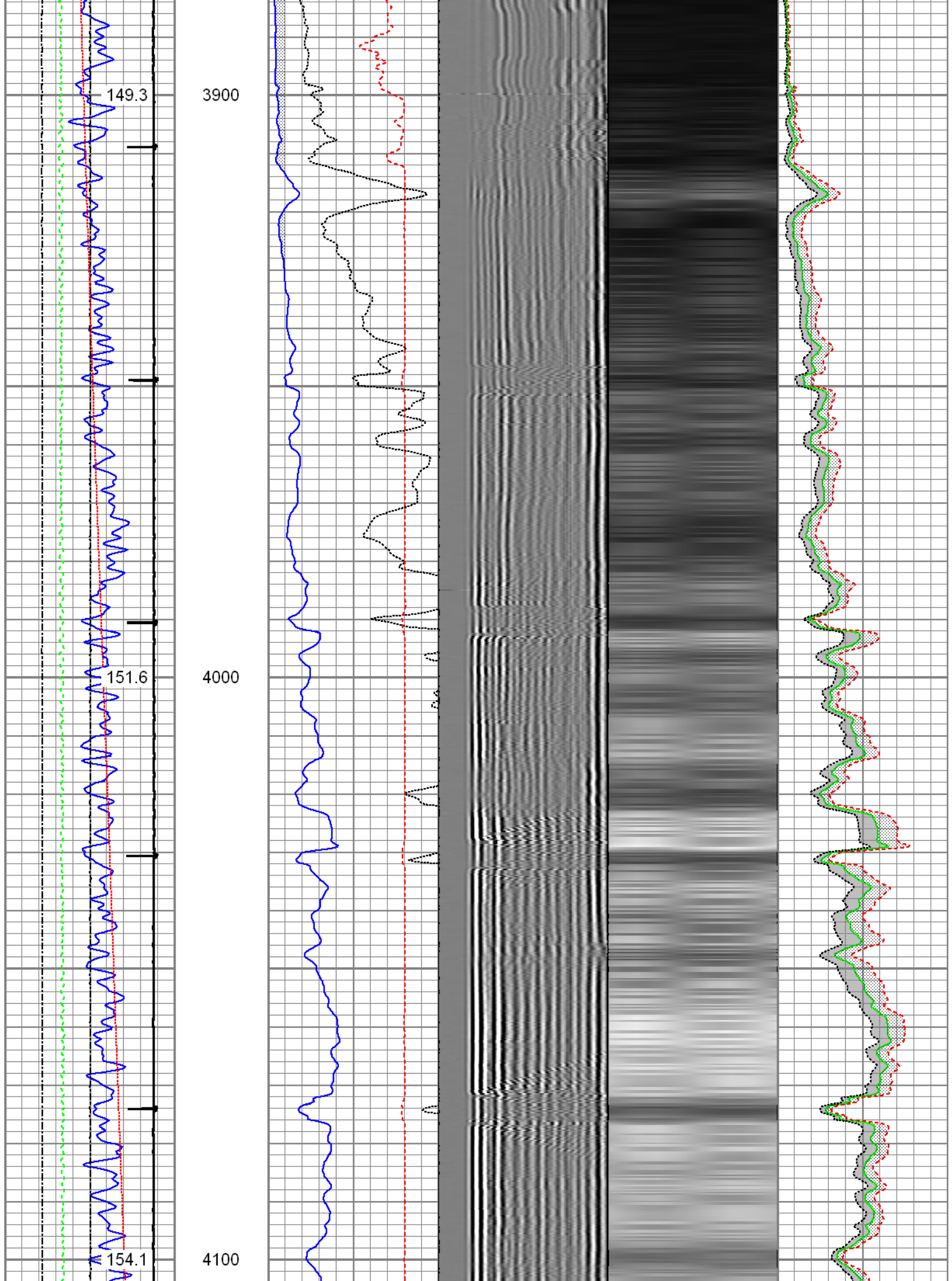




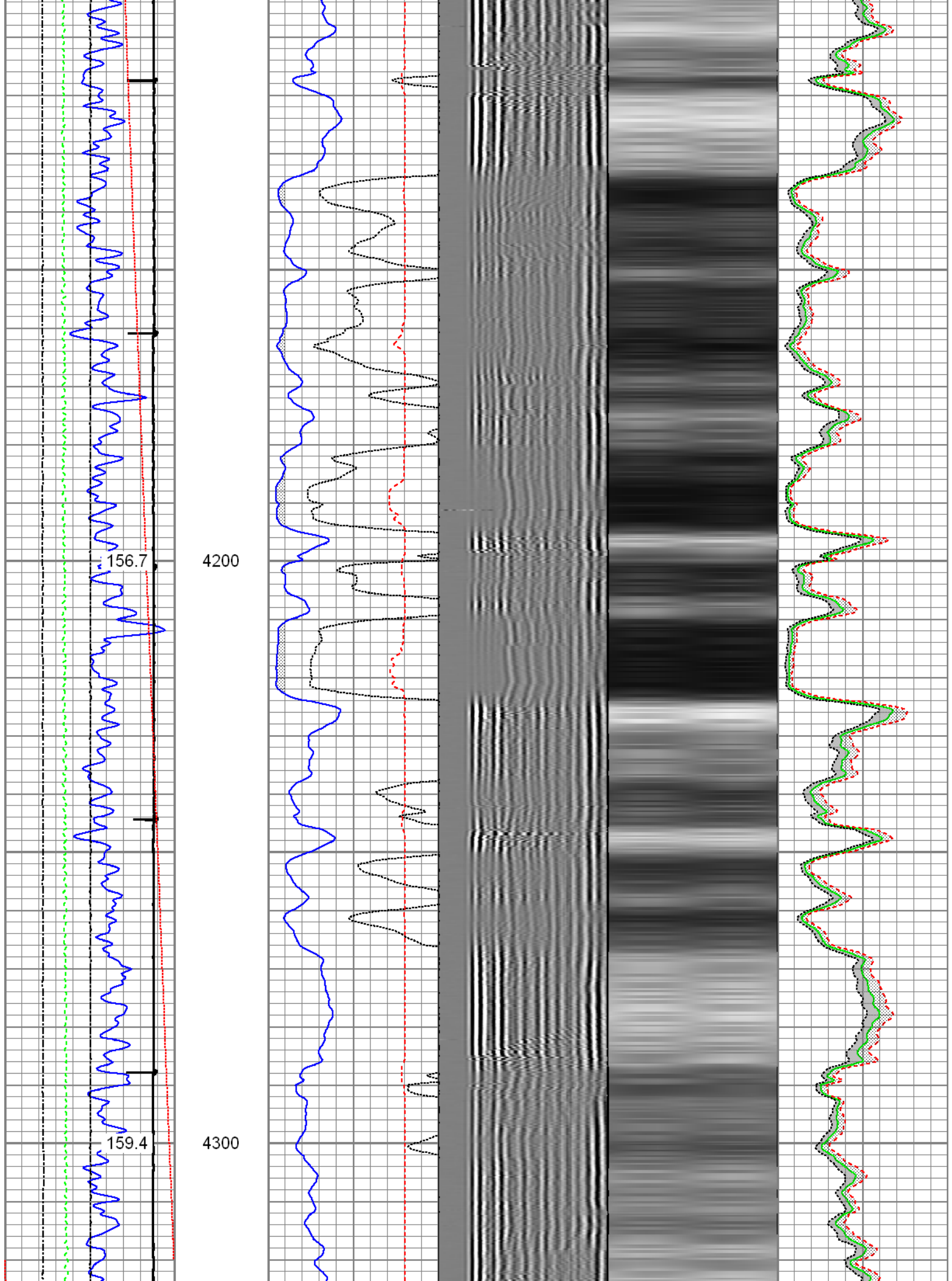


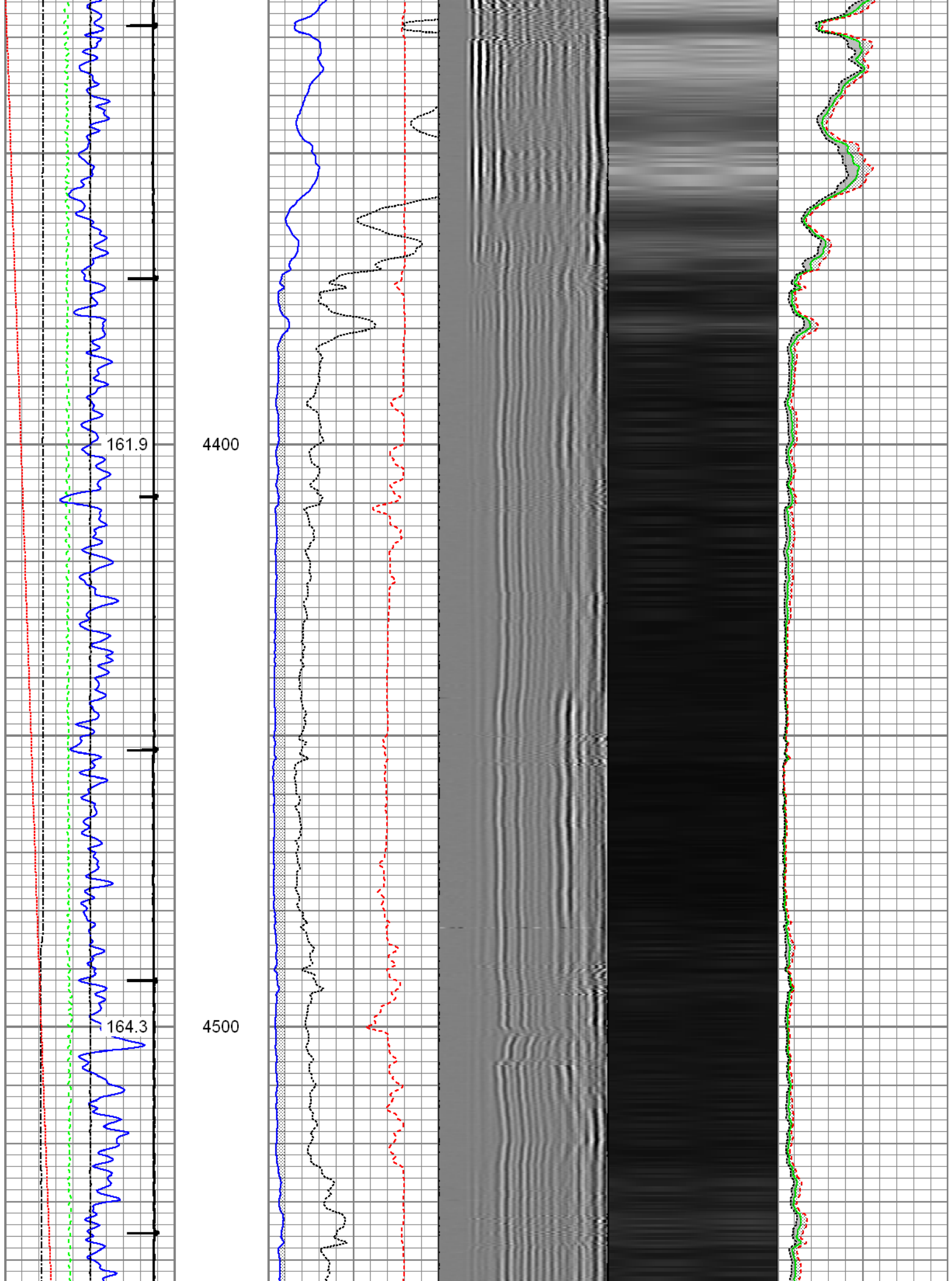


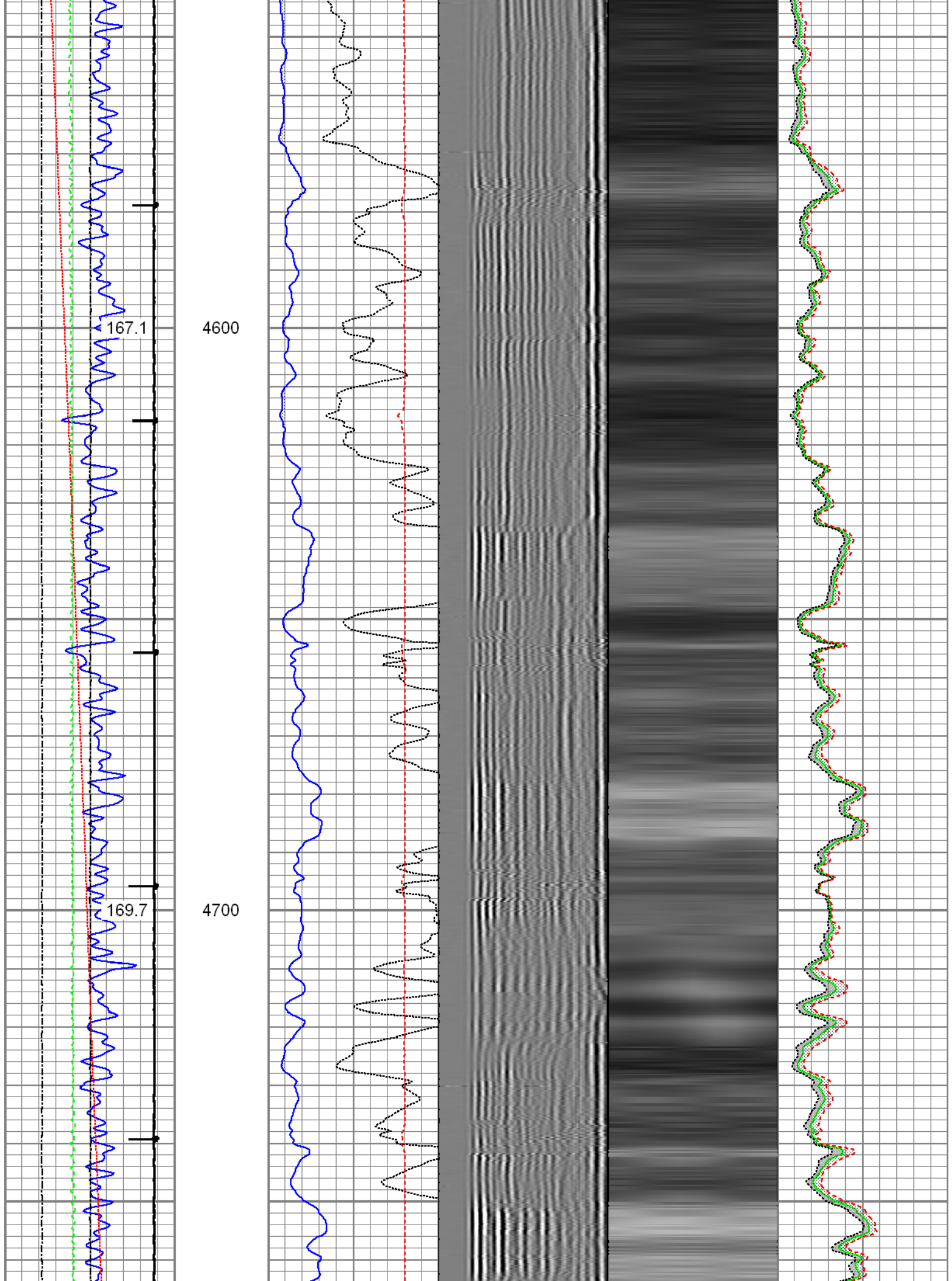


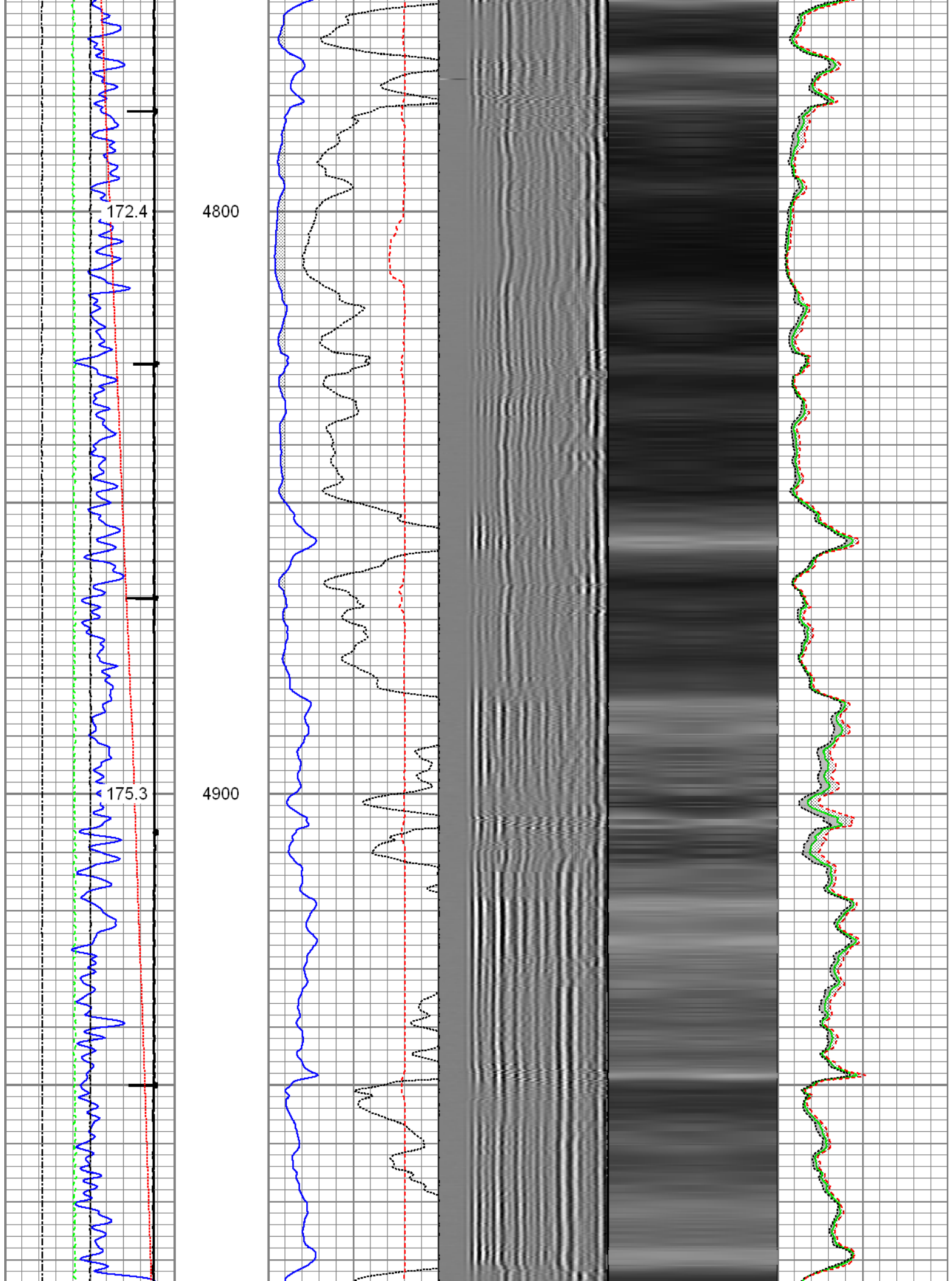




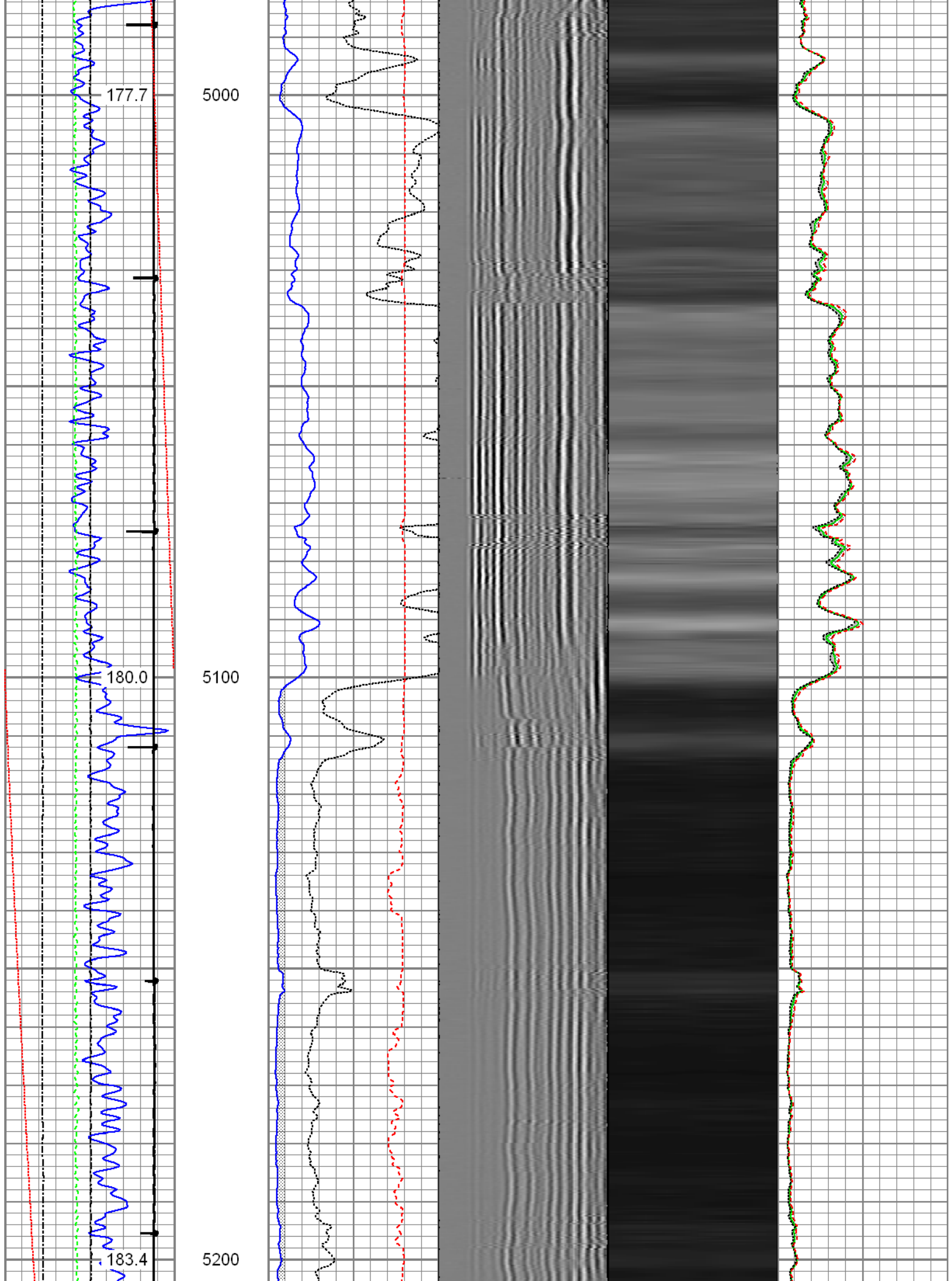


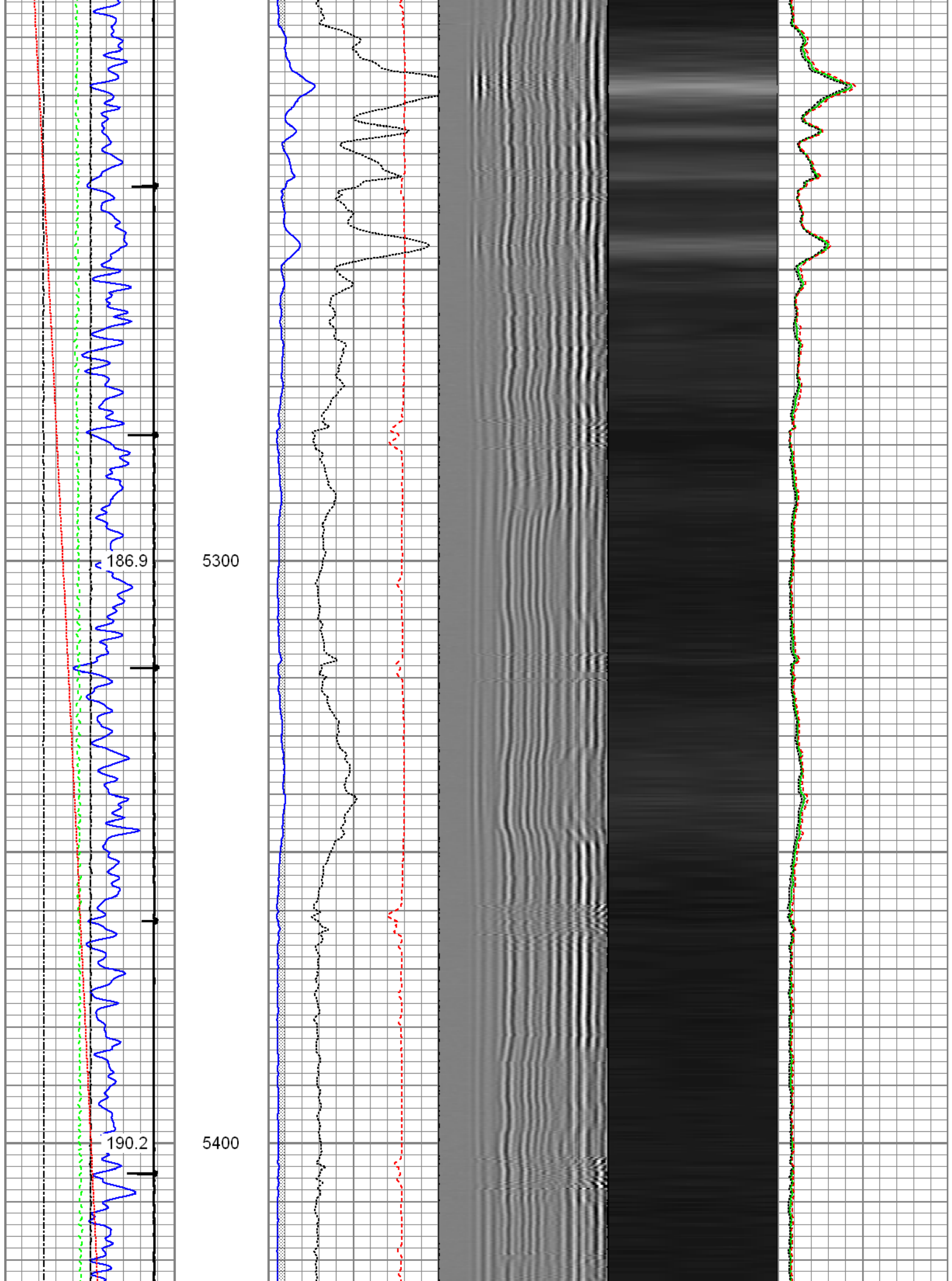


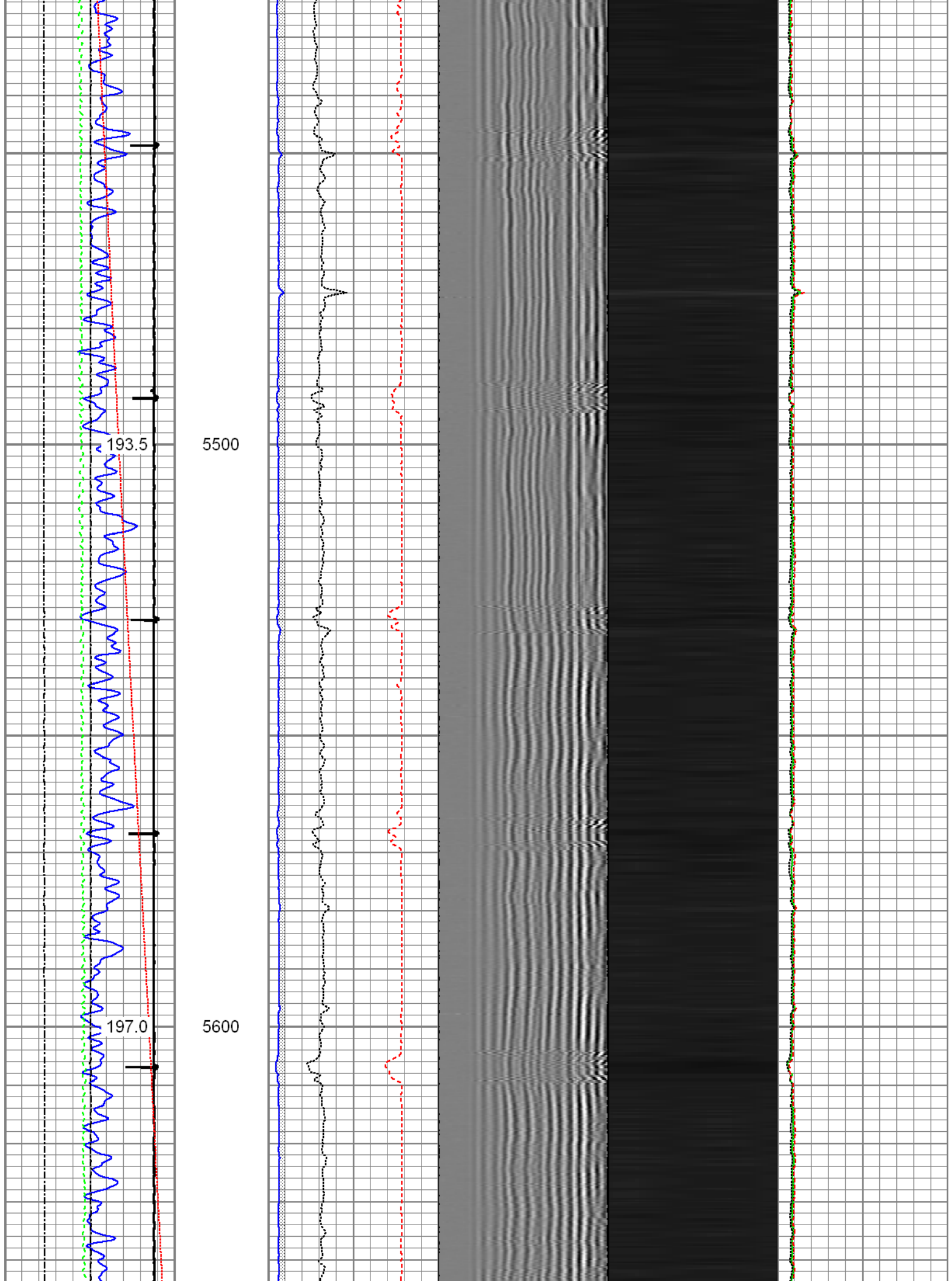


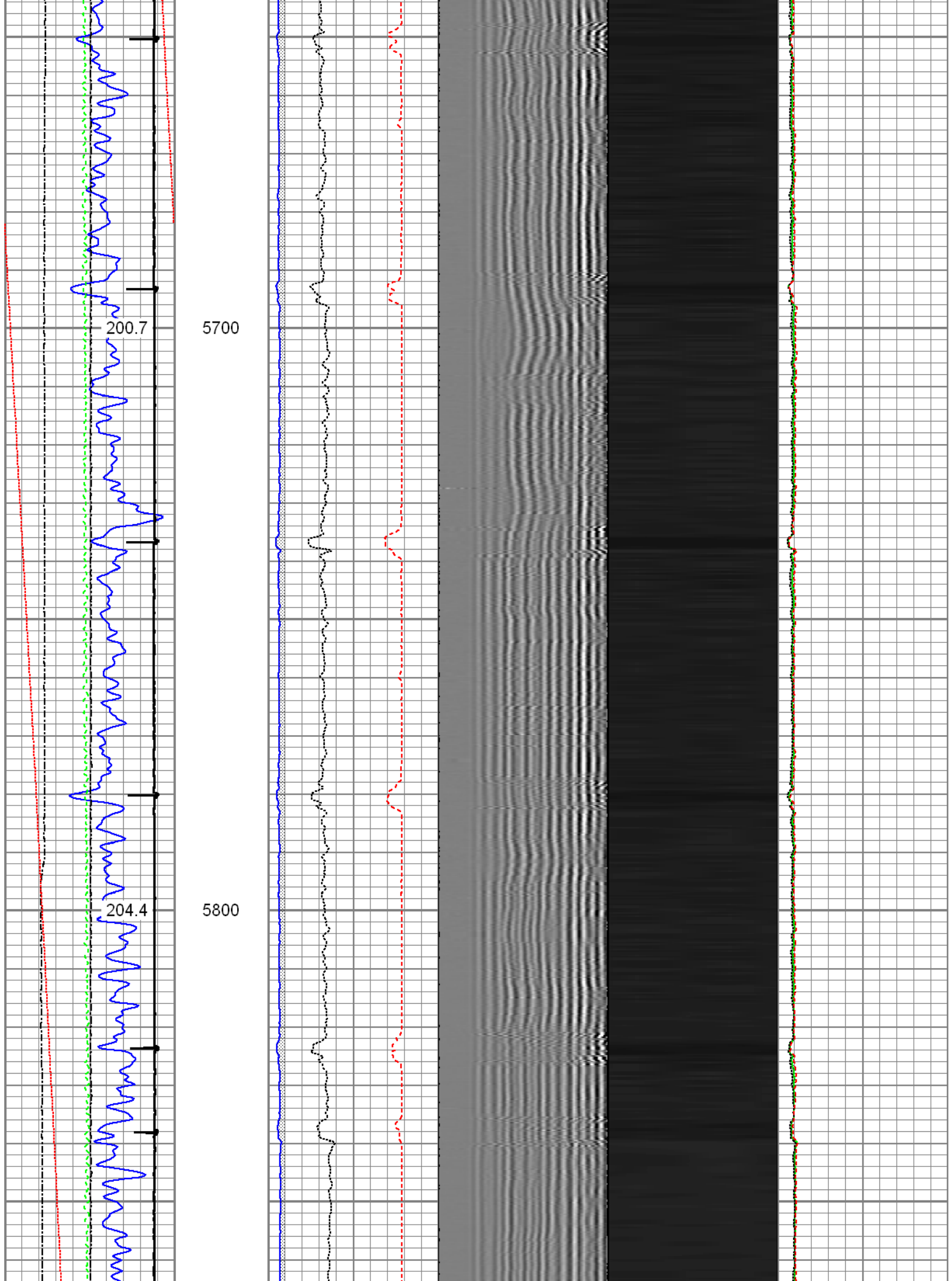




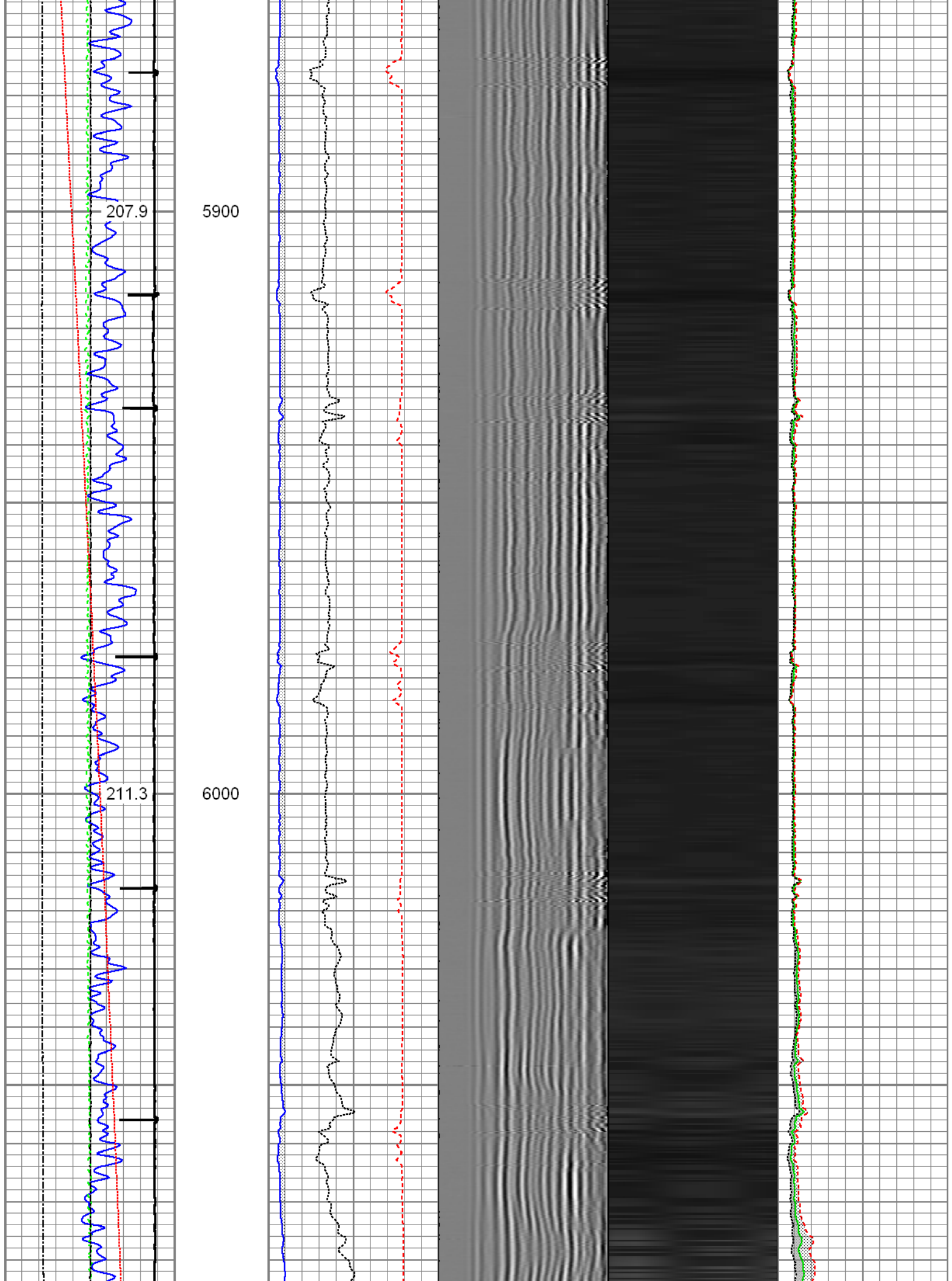


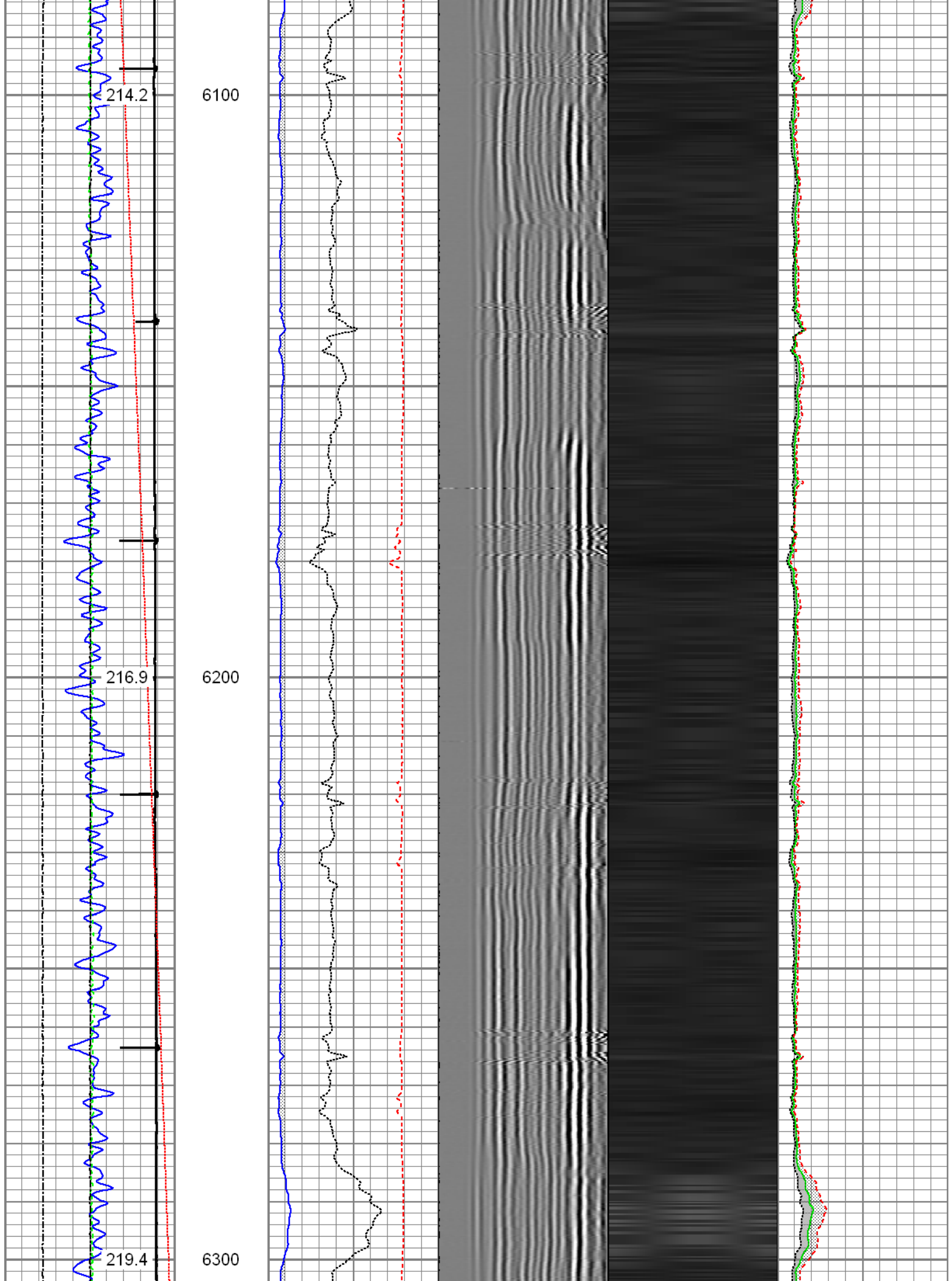


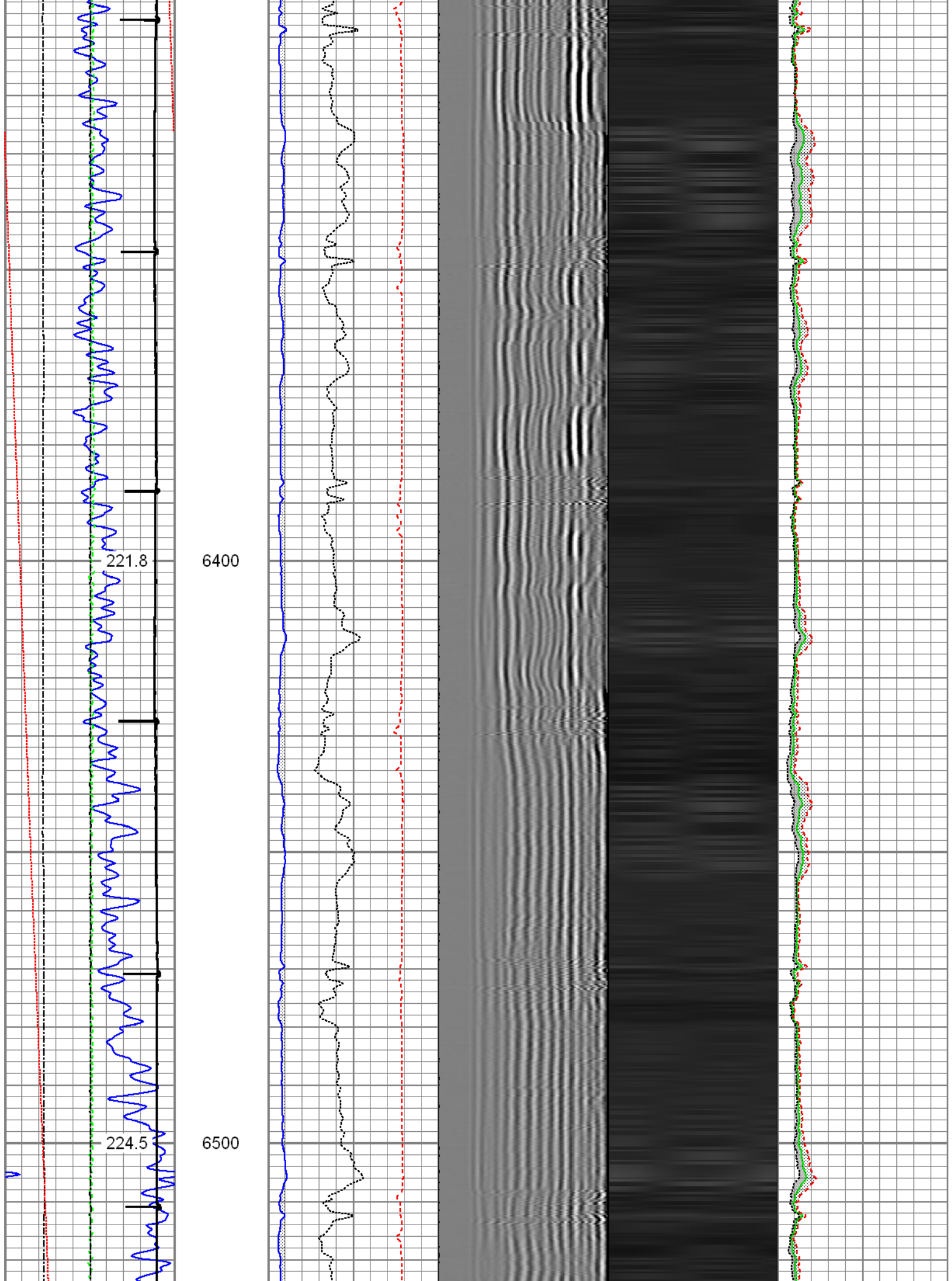


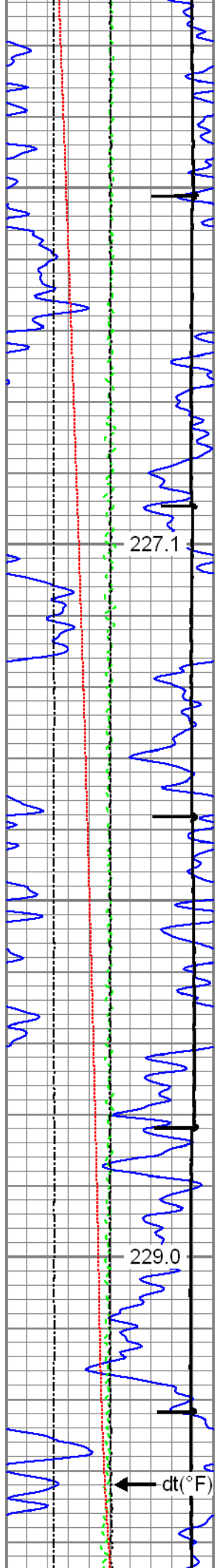










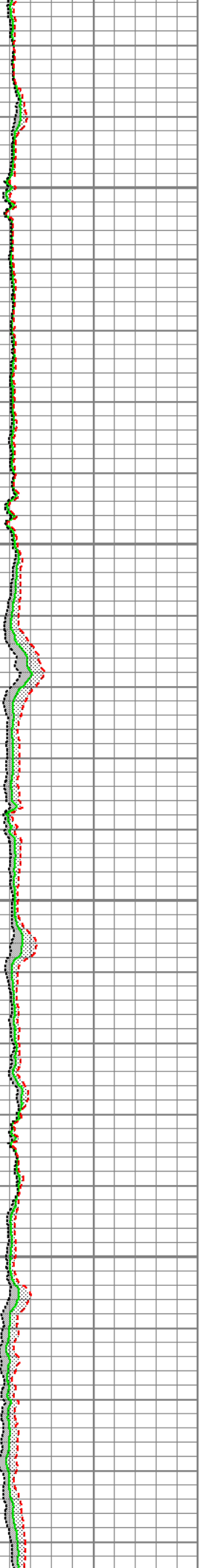
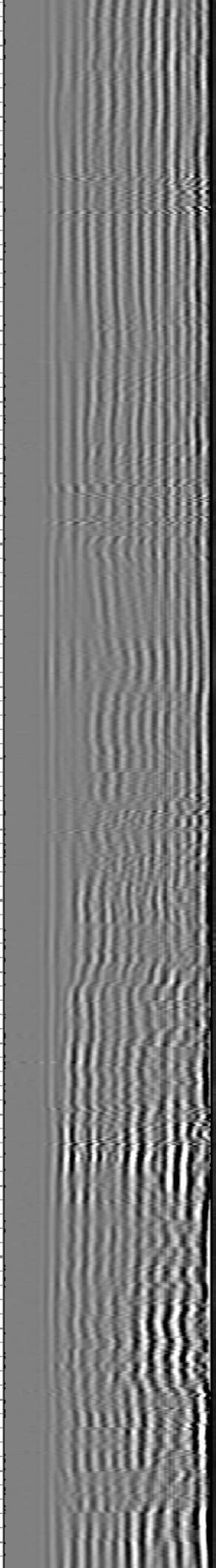
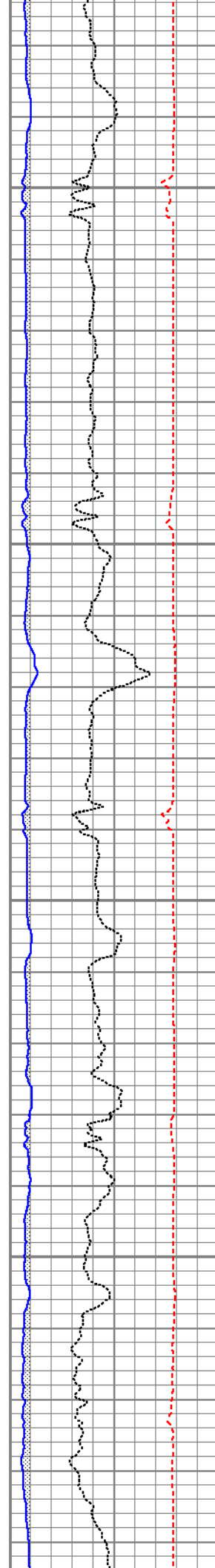


227.1

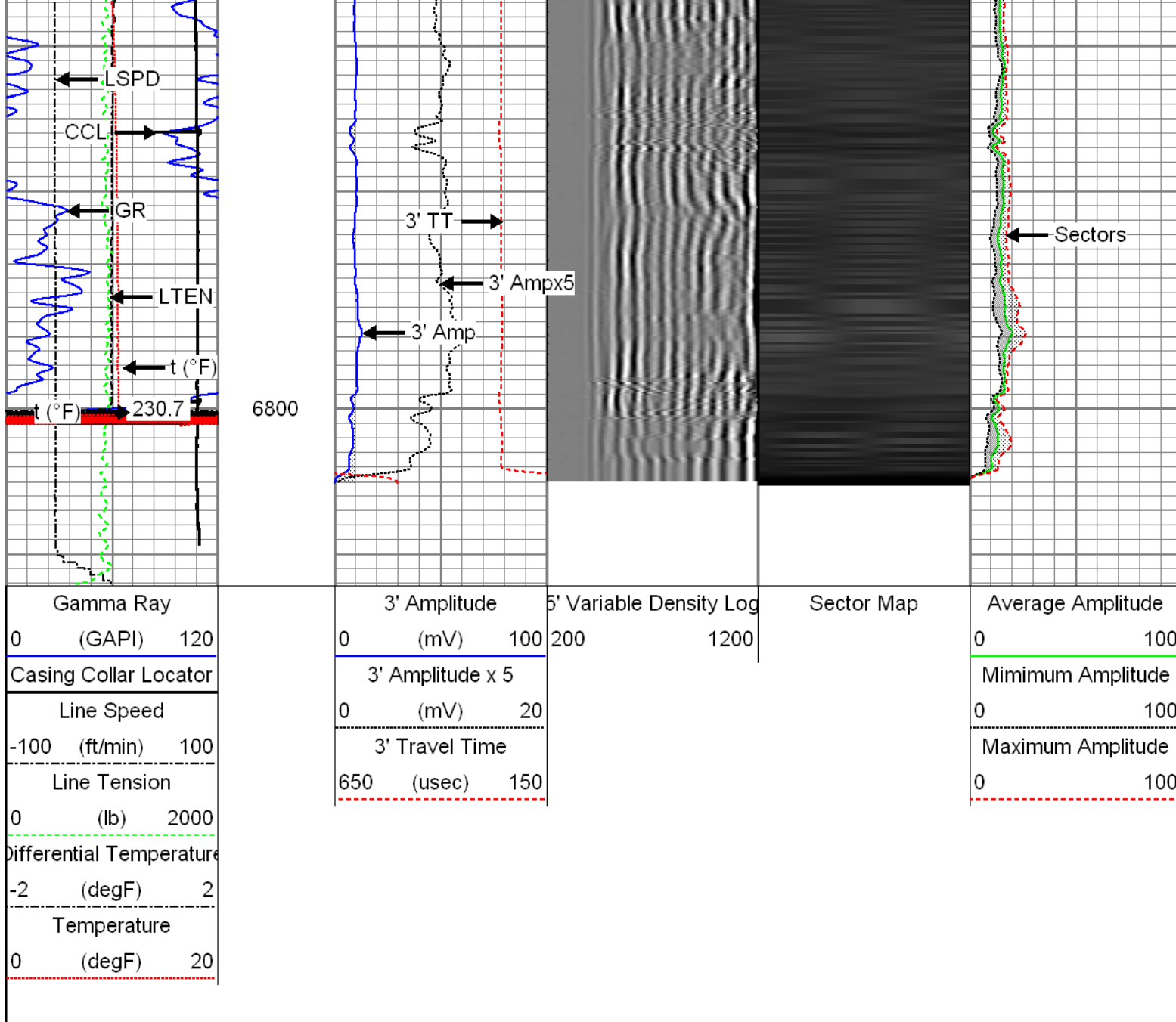
229.0

6600

6700



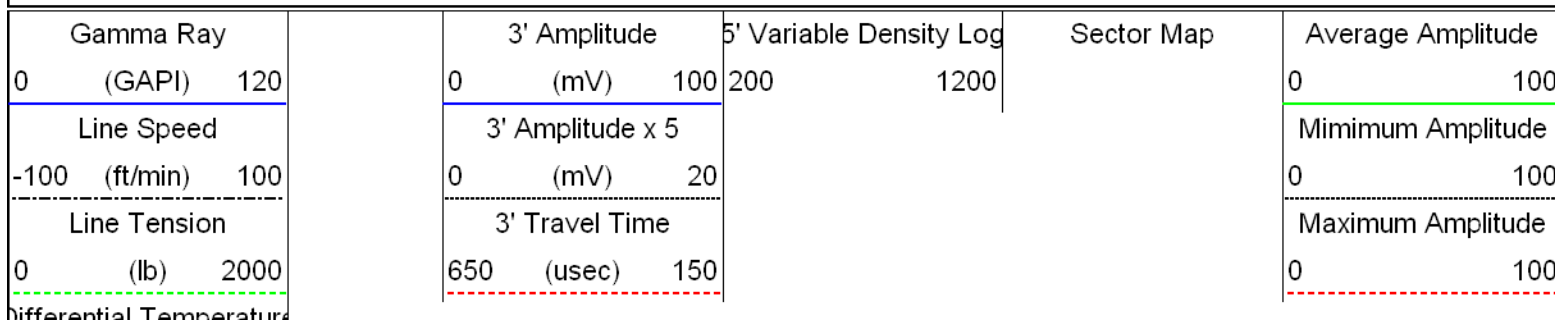




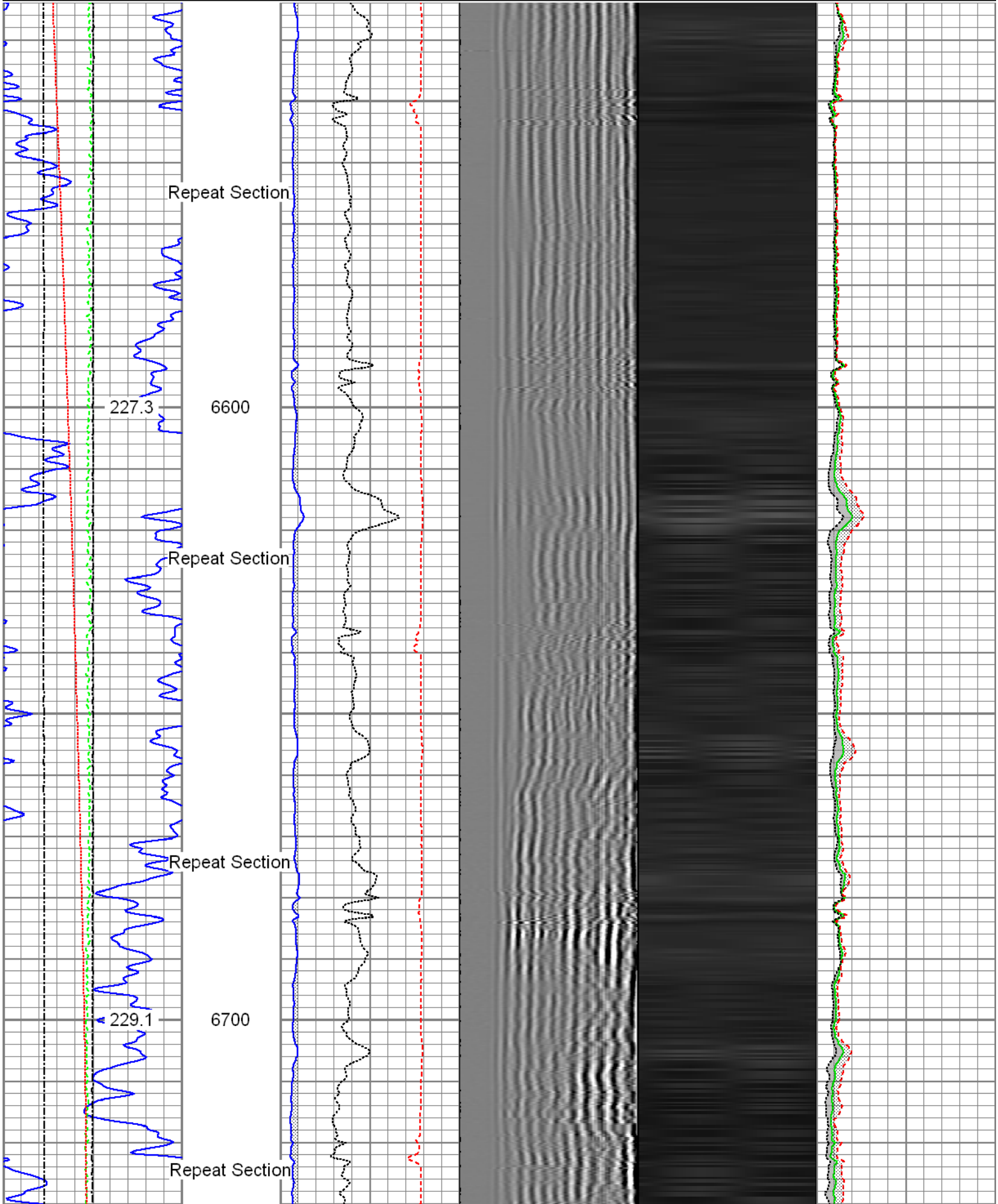
## Repeat Pass

Recorded with 2500 PSI Surface Induced Pressure

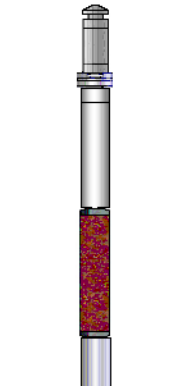
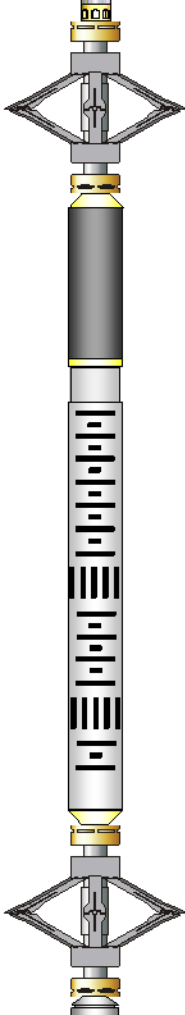
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 Dataset Pathname: pass4  
 Presentation Format: rbt4\_mit  
 Dataset Creation: Fri Jul 17 11:50:49 2015 by Log 7.0 B1  
 Charted by: Depth in Feet scaled 1:240

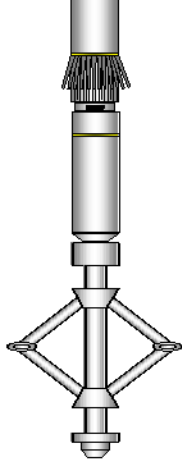


Differential Temperature		
-2	(degF)	2
Temperature		
0	(degF)	20



Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Line Speed	3' Amplitude x 5			Minimum Amplitude
-100 (ft/min) 100	0 (mV) 20			0 100
Line Tension	3' Travel Time			Maximum Amplitude
0 (lb) 2000	650 (usec) 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					
WVFS1	15.42		UW_RBT-UW_RBT_004 (1066) Sondex Ultrawire 3-1/8" Radial Bond Tool	9.47	3.13	140.00
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
Dataset: 07-17-15_Noble Energy_Wells Ranch State A36-655_MIT_RBL.db: field/well/run1/pass8 Total Length: 28.32 ft Total Weight: 329.50 lb O.D. 3.13 in						

Calibration Report		
Database File:	07-17-15_Noble Energy_Wells Ranch State A36-655_MIT_RBL.db	
Dataset Pathname:	pass8	
Dataset Creation:	Fri Jul 17 12:04:35 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: Fri Jul 17 11:09:22 2015						
Ring size:	4	5	6	7		
(in)						
	Sens	Sens	Sens			
Finger 01:	1177 345.0	1522 379.0	1901 386.0	2287		
Finger 02:	1189 351.0	1540 382.0	1922 391.0	2313		
Finger 03:	1136 339.0	1475 381.0	1856 392.0	2248		
Finger 04:	1077 424.0	1501 397.0	1898 413.0	2311		
Finger 05:	1128 349.0	1477 388.0	1865 406.0	2271		
Finger 06:	1158 341.0	1499 384.0	1883 391.0	2274		
Finger 07:	1069 357.0	1426 404.0	1830 430.0	2260		
Finger 08:	1122 339.0	1461 390.0	1851 413.0	2264		
Finger 09:	1091 352.0	1443 391.0	1834 421.0	2255		
Finger 10:	1006 352.0	1358 409.0	1767 442.0	2209		
Finger 11:	1094 337.0	1431 378.0	1809 401.0	2210		
Finger 12:	1069 340.0	1409 393.0	1802 425.0	2227		
Finger 13:	1044 330.0	1374 386.0	1760 415.0	2175		
Finger 14:	1022 330.0	1352 391.0	1743 417.0	2160		
Finger 15:	1007 330.0	1340 391.0	1727 417.0	2160		



Finger 15:	1087	332.0	1419	378.0	1797	392.0	2189
Finger 16:	1039	332.0	1371	380.0	1751	409.0	2160
Finger 17:	1039	341.0	1380	382.0	1762	412.0	2174
Finger 18:	990	338.0	1328	388.0	1716	426.0	2142
Finger 19:	997	338.0	1335	385.0	1720	417.0	2137
Finger 20:	1033	347.0	1380	385.0	1765	414.0	2179
Finger 21:	1052	339.0	1391	373.0	1764	406.0	2170
Finger 22:	1054	351.0	1405	381.0	1786	408.0	2194
Finger 23:	1166	339.0	1505	347.0	1852	372.0	2224
Finger 24:	1024	348.0	1372	384.0	1756	414.0	2170
Finger 25:	1012	348.0	1360	384.0	1744	417.0	2161
Finger 26:	1081	353.0	1434	376.0	1810	402.0	2212
Finger 27:	1114	359.0	1473	381.0	1854	411.0	2265
Finger 28:	1100	359.0	1459	381.0	1840	406.0	2246
Finger 29:	1097	371.0	1468	393.0	1861	417.0	2278
Finger 30:	1148	359.0	1507	374.0	1881	393.0	2274
Finger 31:	1151	359.0	1510	377.0	1887	392.0	2279
Finger 32:	1186	355.0	1541	365.0	1906	381.0	2287
Finger 33:	1204	362.0	1566	376.0	1942	383.0	2325
Finger 34:	1154	367.0	1521	387.0	1908	400.0	2308
Finger 35:	1180	364.0	1544	387.0	1931	398.0	2329
Finger 36:	1222	356.0	1578	374.0	1952	386.0	2338
Finger 37:	1151	365.0	1516	394.0	1910	409.0	2319
Finger 38:	1113	371.0	1484	407.0	1891	422.0	2313
Finger 39:	1137	358.0	1495	394.0	1889	408.0	2297
Finger 40:	1169	354.0	1523	387.0	1910	397.0	2307

Segmented Cement Bond Log Calibration Report						
Serial Number:		1066				
Tool Model:		UW_RBT_004				
Calibration Casing Diameter:		7.000	in			
Calibration Depth:		17.121	ft			
Master Calibration, performed Fri Jul 17 11:06:47 2015:						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	0.005	0.693	0.800	62.165	89.216	0.380
5FT	-0.001	0.653	0.800	62.165	93.804	0.915
S1	0.005	0.666	0.000	100.000	151.357	-0.739
S2	0.004	0.677	0.000	100.000	148.565	-0.544
S3	0.004	0.686	0.000	100.000	146.540	-0.587
S4	0.004	0.701	0.000	100.000	143.312	-0.509
S5	0.004	0.705	0.000	100.000	142.683	-0.575
S6	0.004	0.712	0.000	100.000	141.101	-0.517
S7	0.005	0.715	0.000	100.000	140.829	-0.665
S8	0.005	0.688	0.000	100.000	146.440	-0.690

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 A36-655
Field	Wattenberg
County	Weld
State	Colorado