



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company Noble Energy Inc.		Company Noble Energy Inc.	
Well Wells Ranch State A36-686		Well Wells Ranch State A36-686	
Field Wattenberg		Field Wattenberg	
County Weld		County Weld	
State Colorado		State Colorado	
Location:		API #: 05-123-41510	
SEC 31 TWP 6N RGE 63W		Other Services	
Permanent Datum		Ground Level	
Log Measured From Kelly Bushing		Elevation 4656'	
Drilling Measured From Kelly Bushing		MIT	
Elevation		K.B. 4686'	
		D.F. 4685'	
		G.L. 4656'	
Date 25-JUL-2015			
Run Number One			
Depth Driller 16,483 FT			
Depth Logger 6966 FT			
Bottom Logged Interval 6966 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 136 FT			
Time Well Ready ROA			
Time Logger on Bottom 14:55			
Equipment Number HD-0119			
Location Fort Lupton, CO			
Recorded By W.Wacker			
Witnessed By Bill Mansfield			
Borehole Record		Tubing Record	
Run Number		To	
Bit		From	
From		To	
Size		Weight	
From		To	
Casing Record		Size (in)	
Surface Casing 9 5/8		Wgt (lbs/Ft) 36	
Intermediate #1 7		Grade J-55	
Intermediate #2		P-110	
Liner 4 1/2		P-110 IC	
		Top 30 FT	
		Bottom 804 FT	
		7184 FT	
		6979 FT	
		16412 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 +3 FT to correlate with Kelly Bushing
Log ran from 6966 FT to surface
Recorded with 2500 PSI surface induced pressure
Logging tools were coated with debris upon completion of operations

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

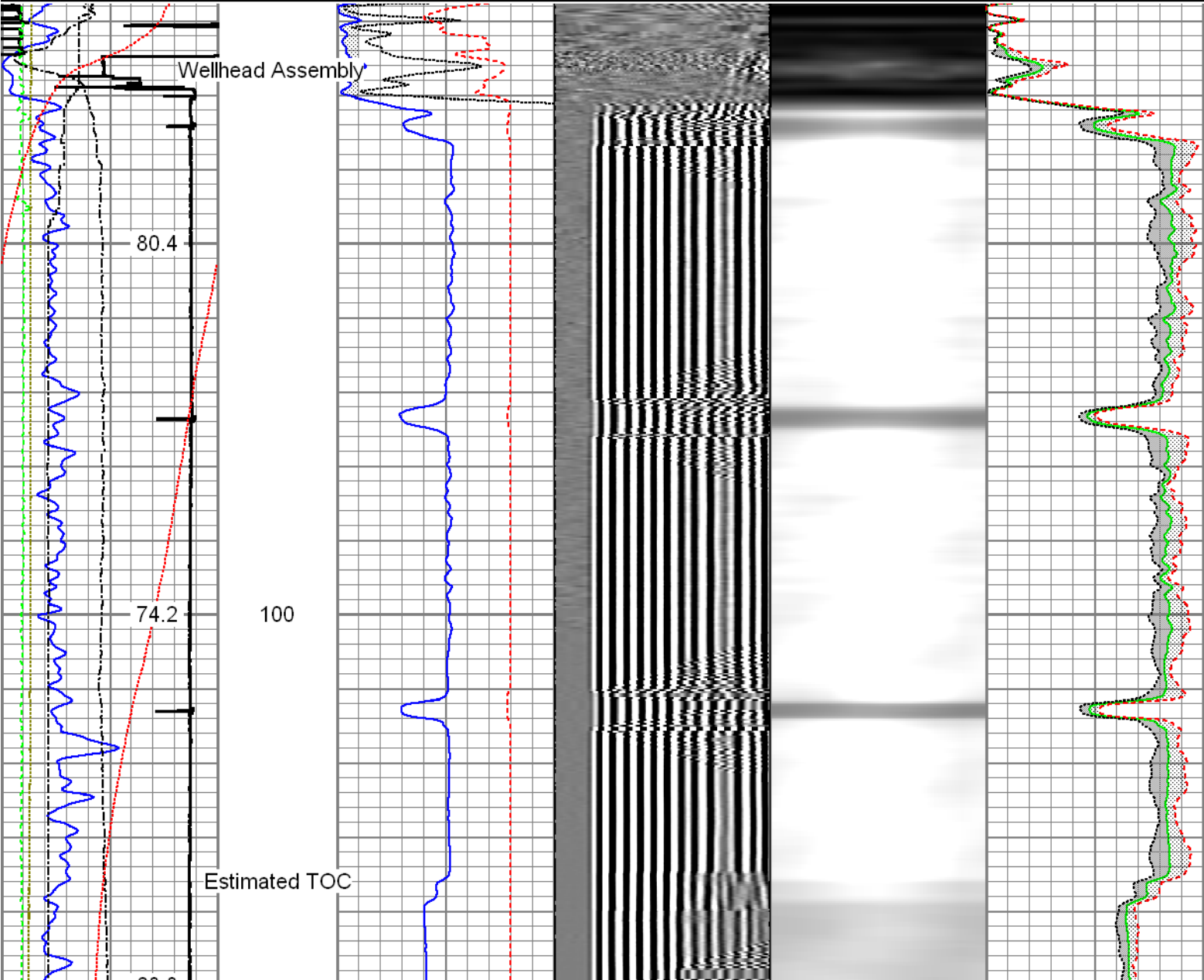


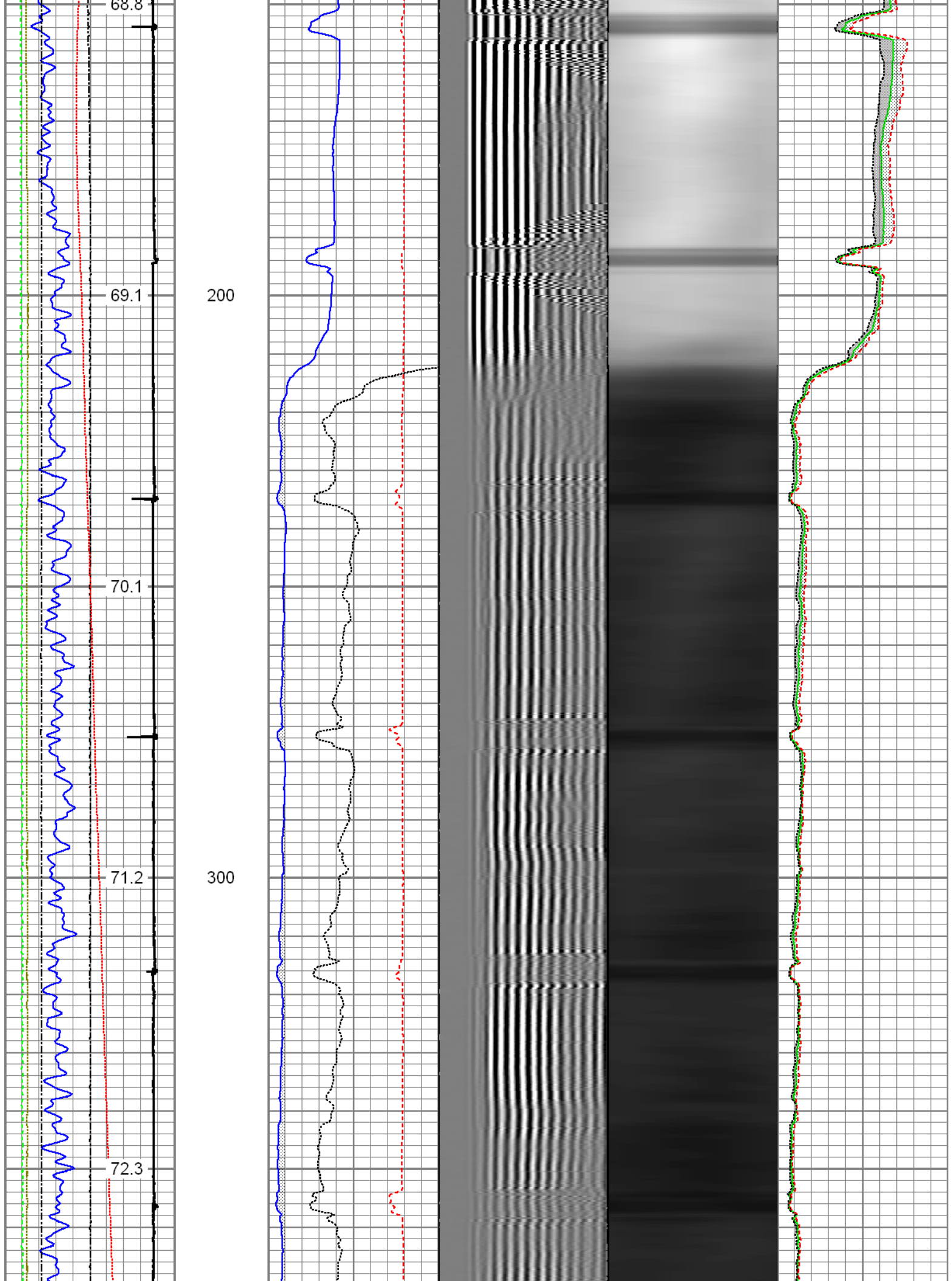
Main Pass

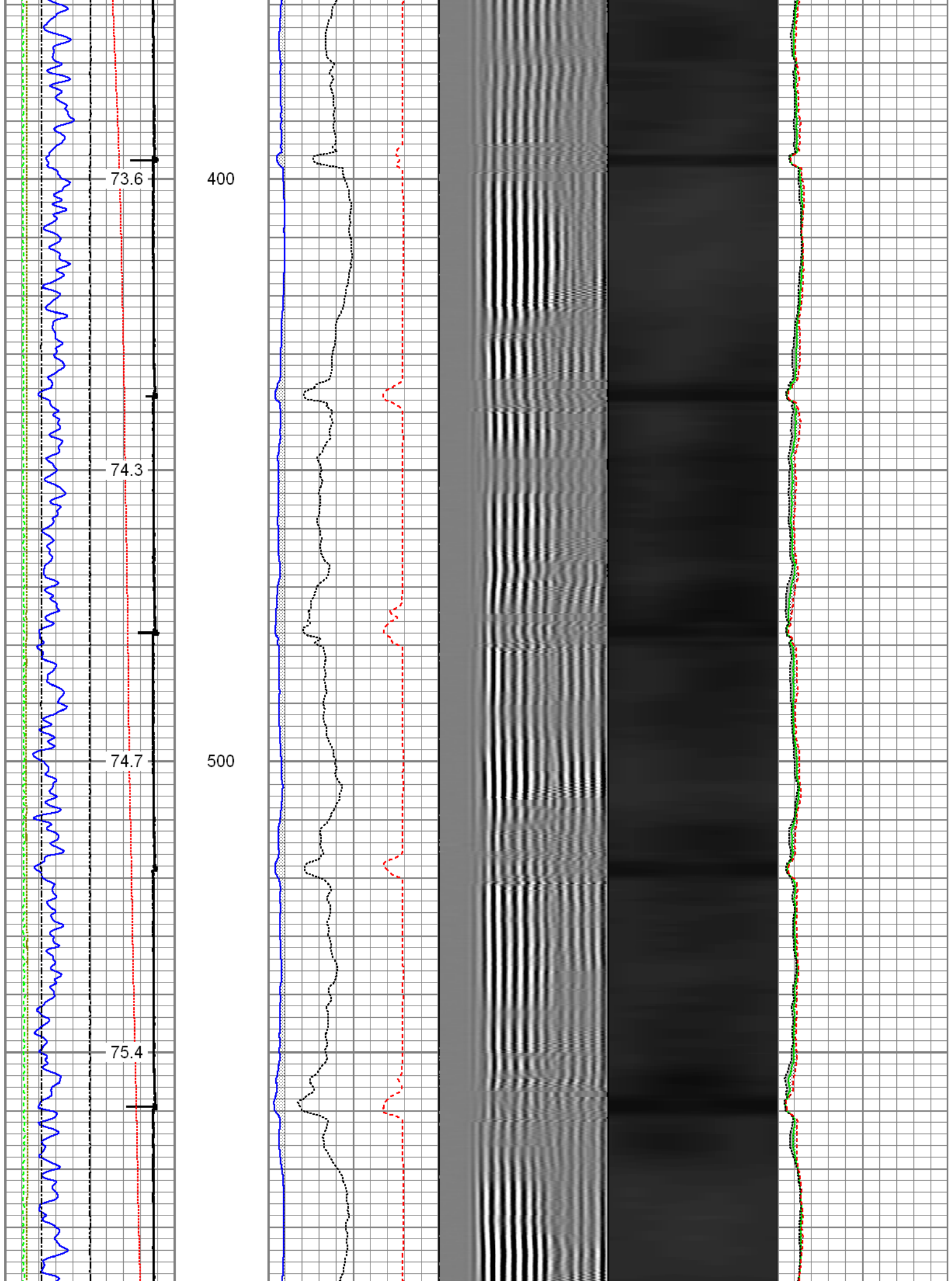
Recorded With 2500 PSI Surface Induced Pressure

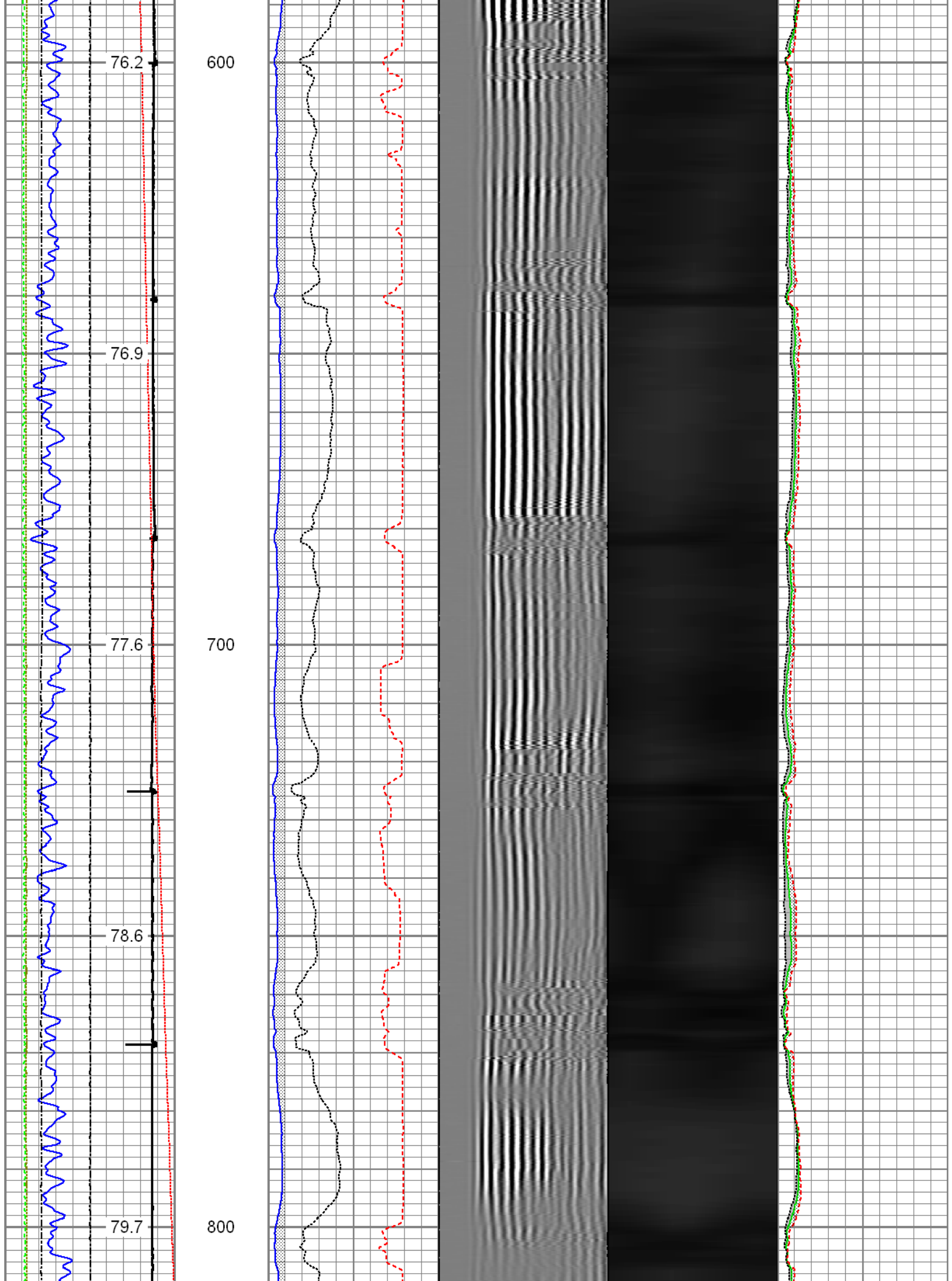
Database File: 07-25-15_noble energy_wells ranch state a36-686_mit_rbl.db
Dataset Pathname: 1main
Presentation Format: rbt4_mit
Dataset Creation: Sat Jul 25 15:00:39 2015 by Log 7.0 B1
Charted by: Depth in Feet scaled 1:240

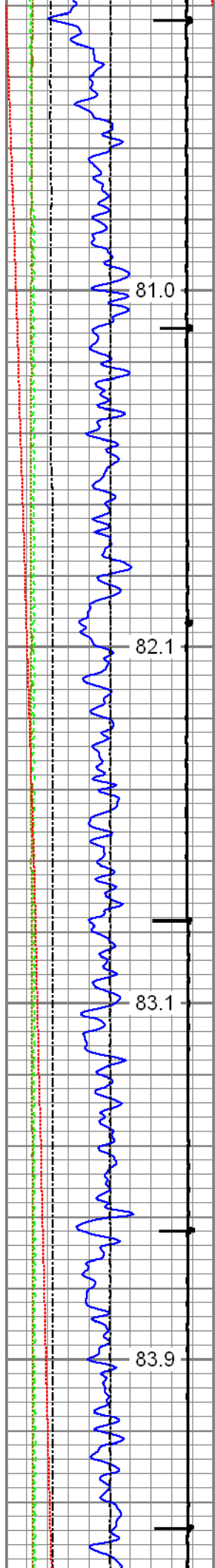
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Mimimum Amplitude
Line Speed	0 (mV) 20			0 100
-100 (ft/min) 100	3' Travel Time			Maximum Amplitude
Line Tension	650 (usec) 150			0 100
0 (lb) 2000				
Differential Temperature				
-2 (degF) 2				
-10 Deviation (°) 90				
Temperature				
0 (degF) 20				





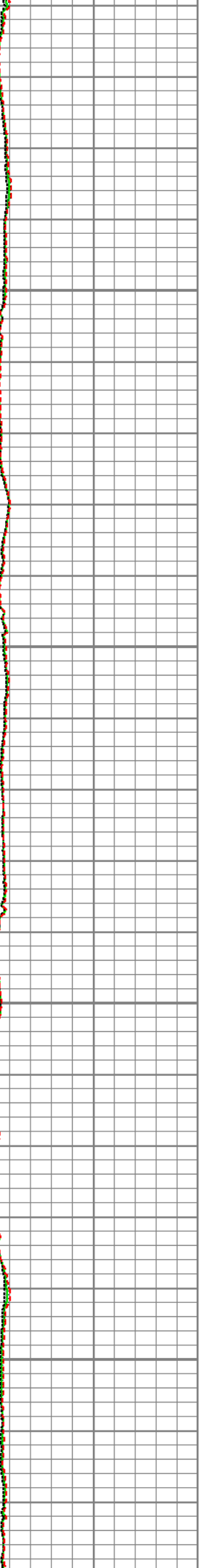
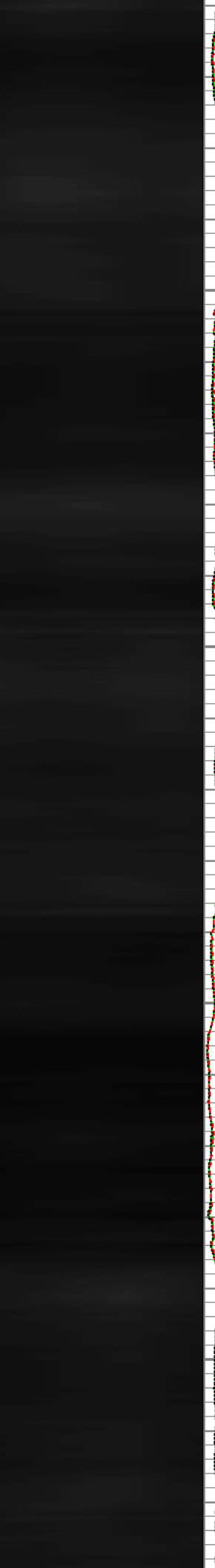
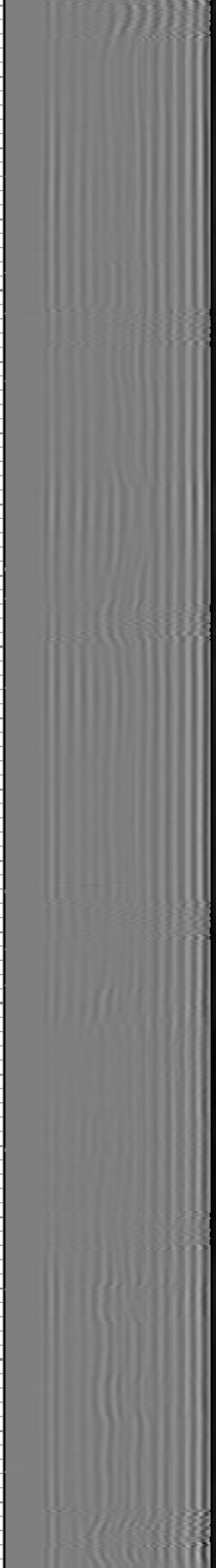
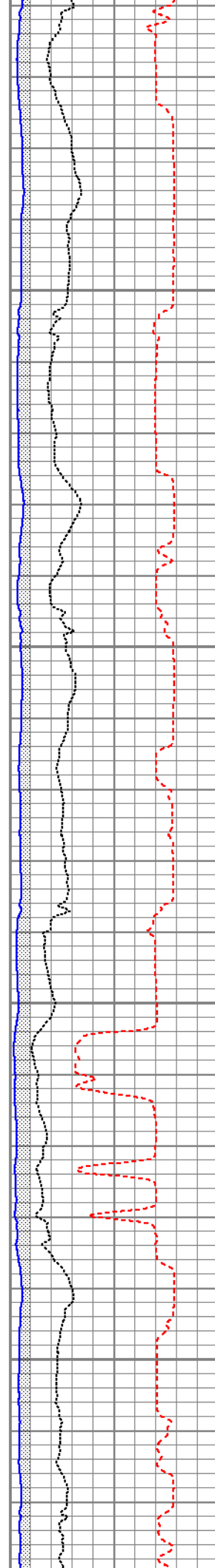


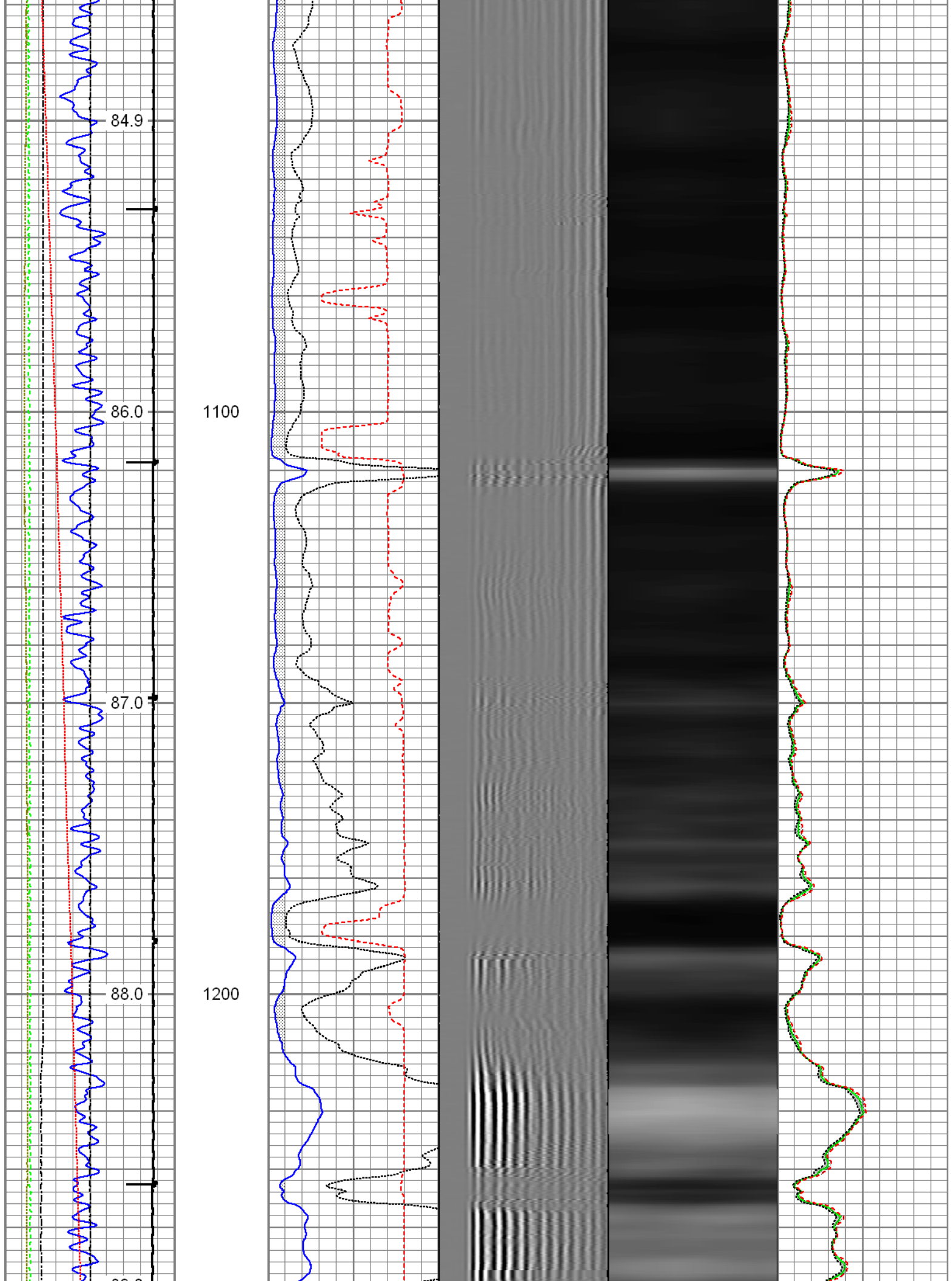


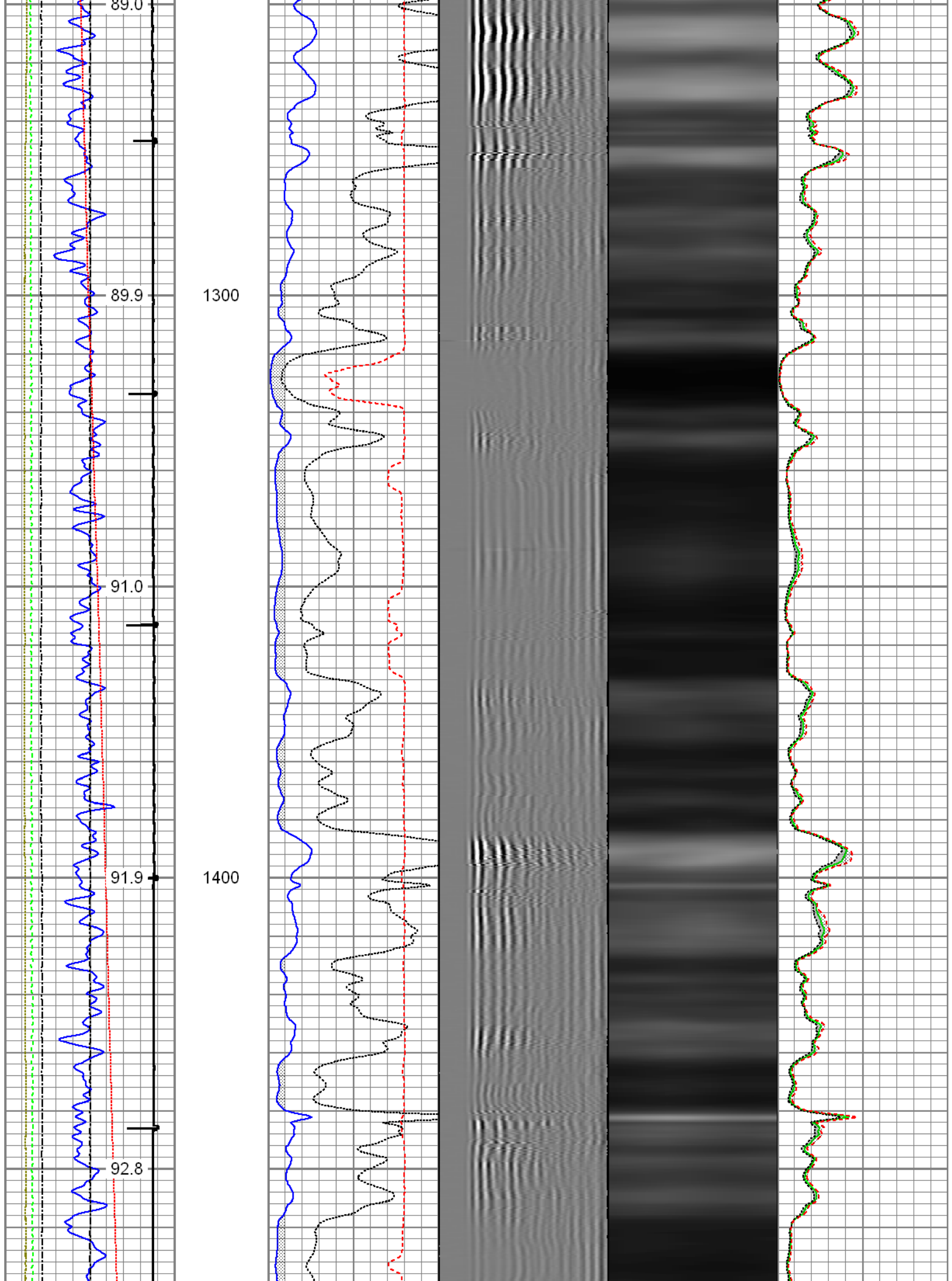


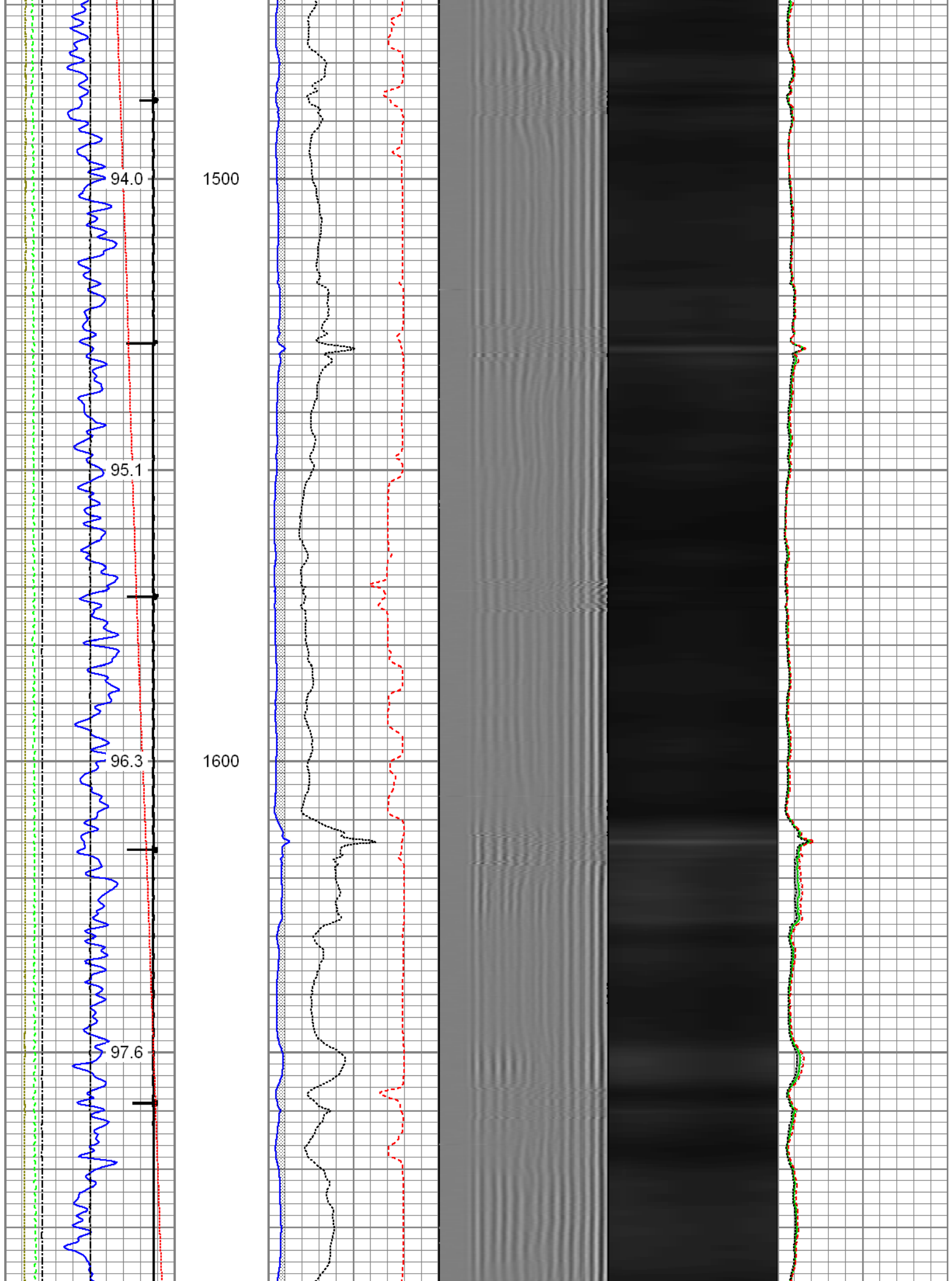
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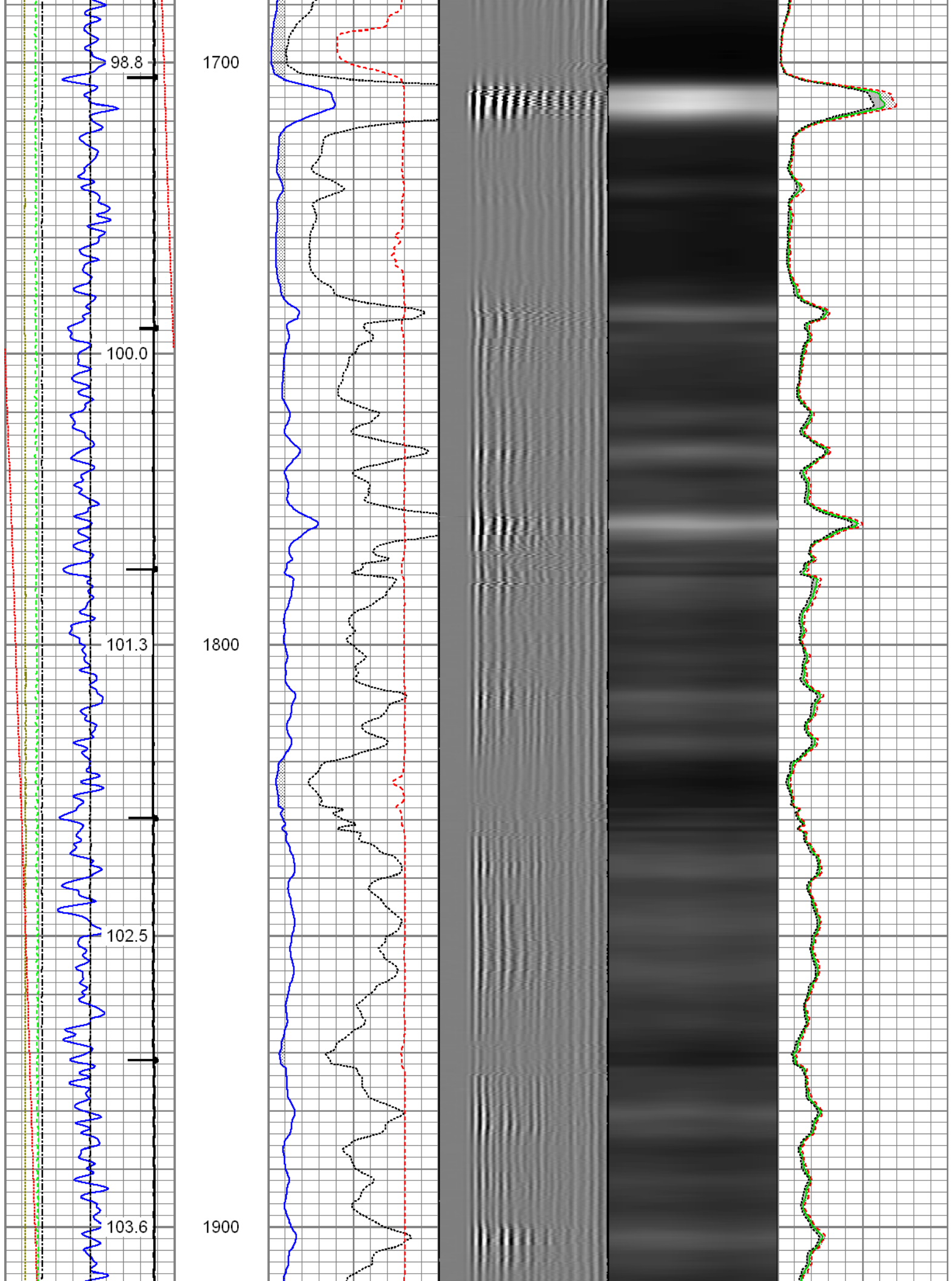
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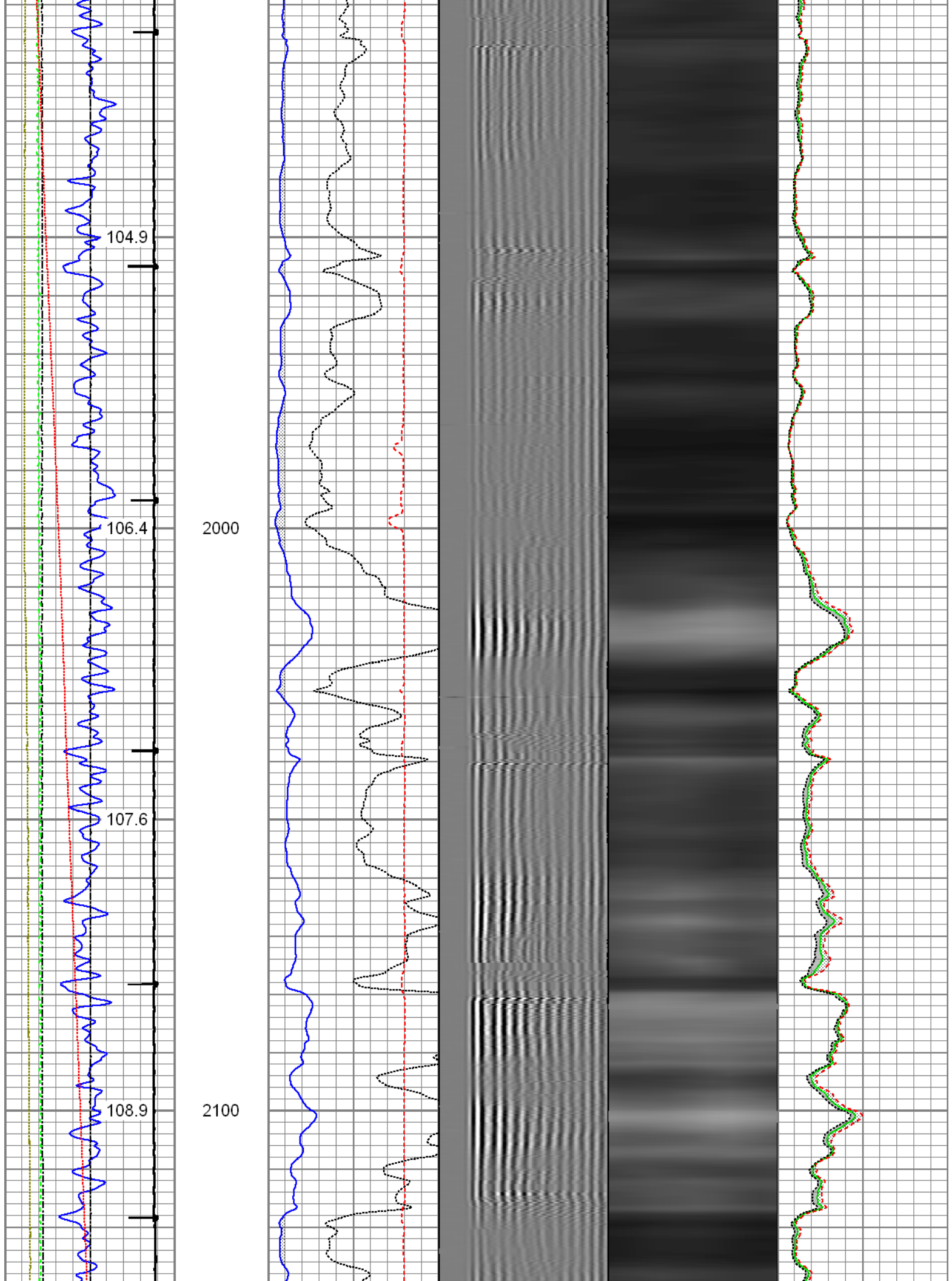


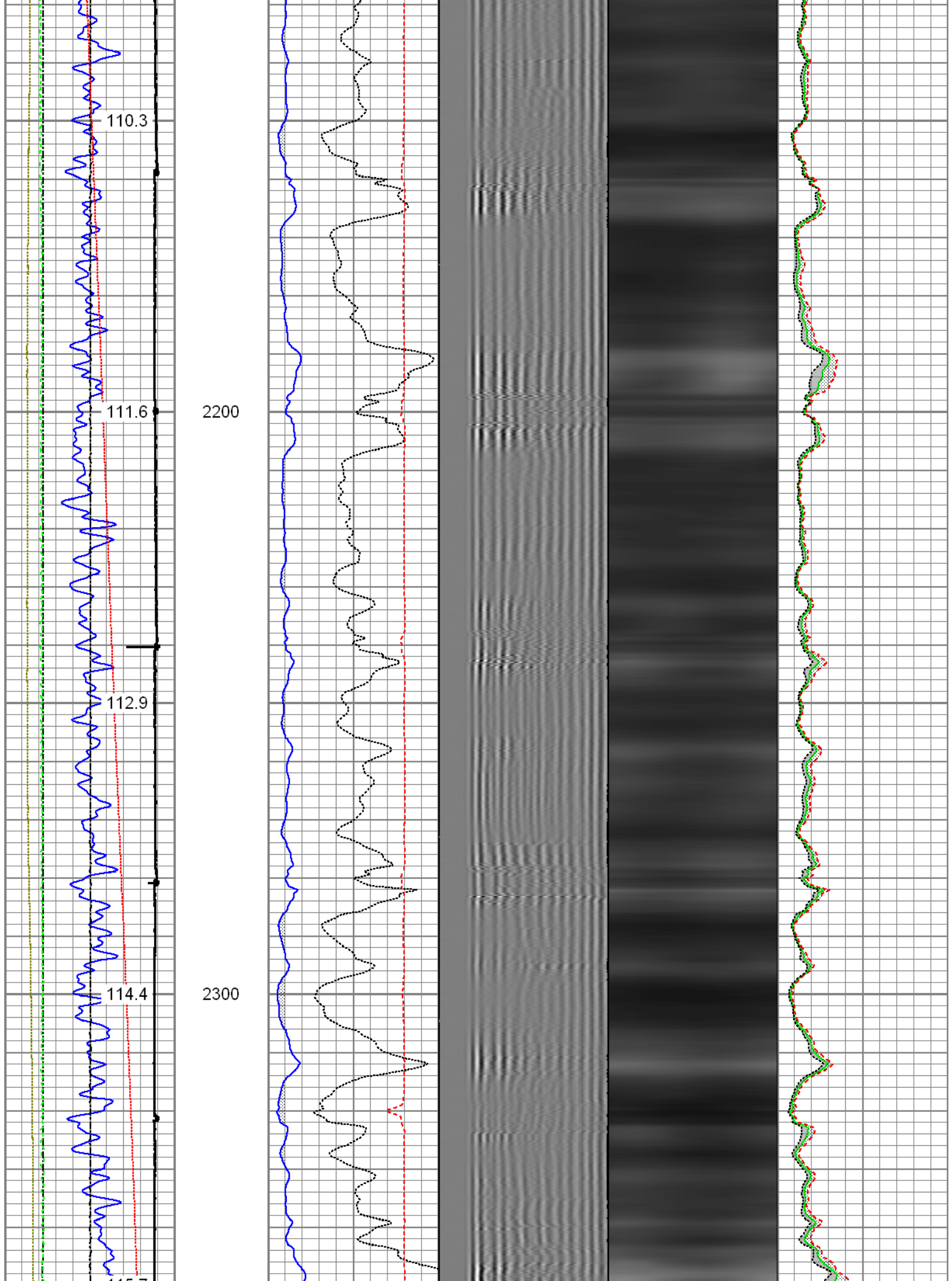


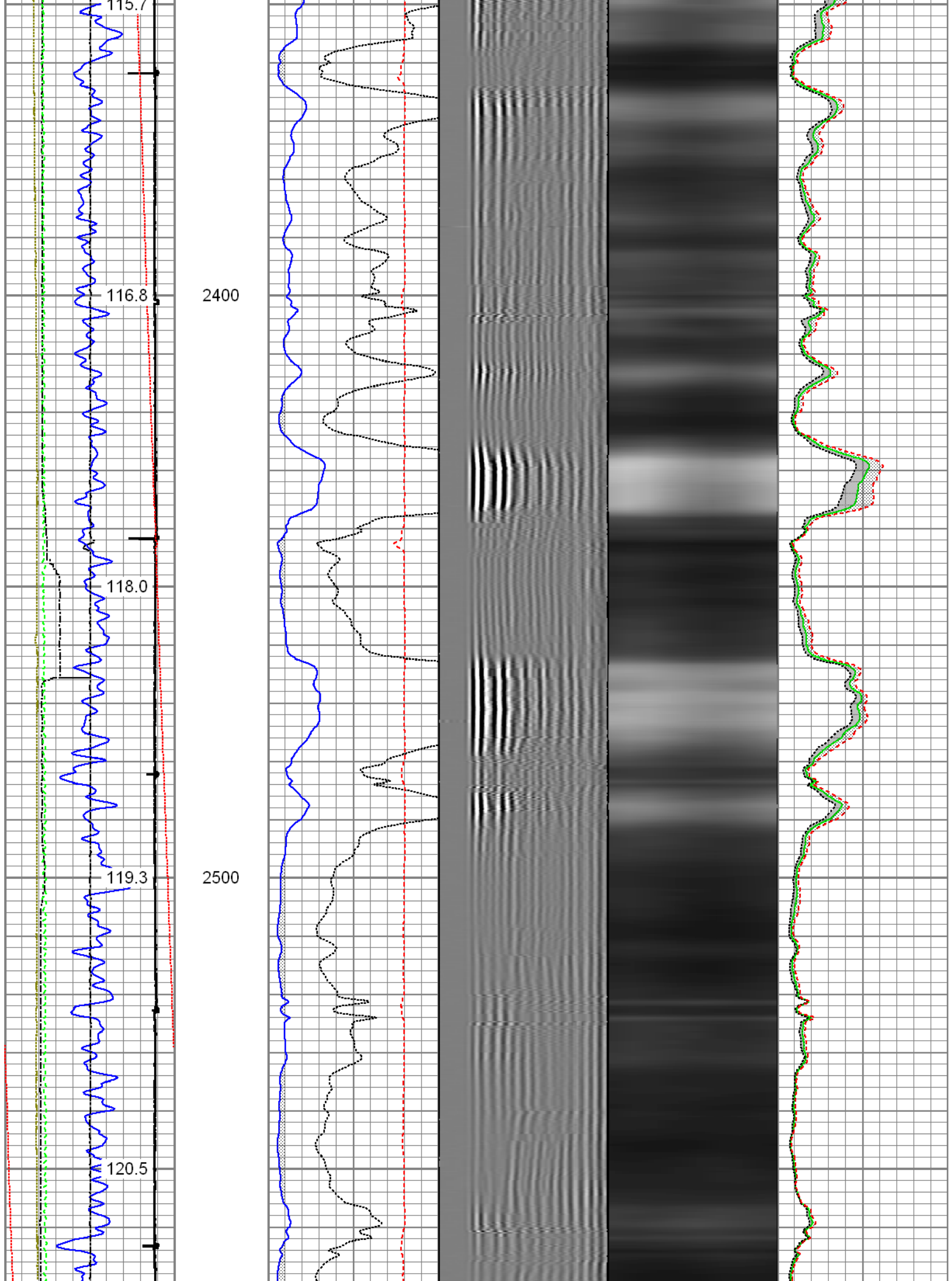


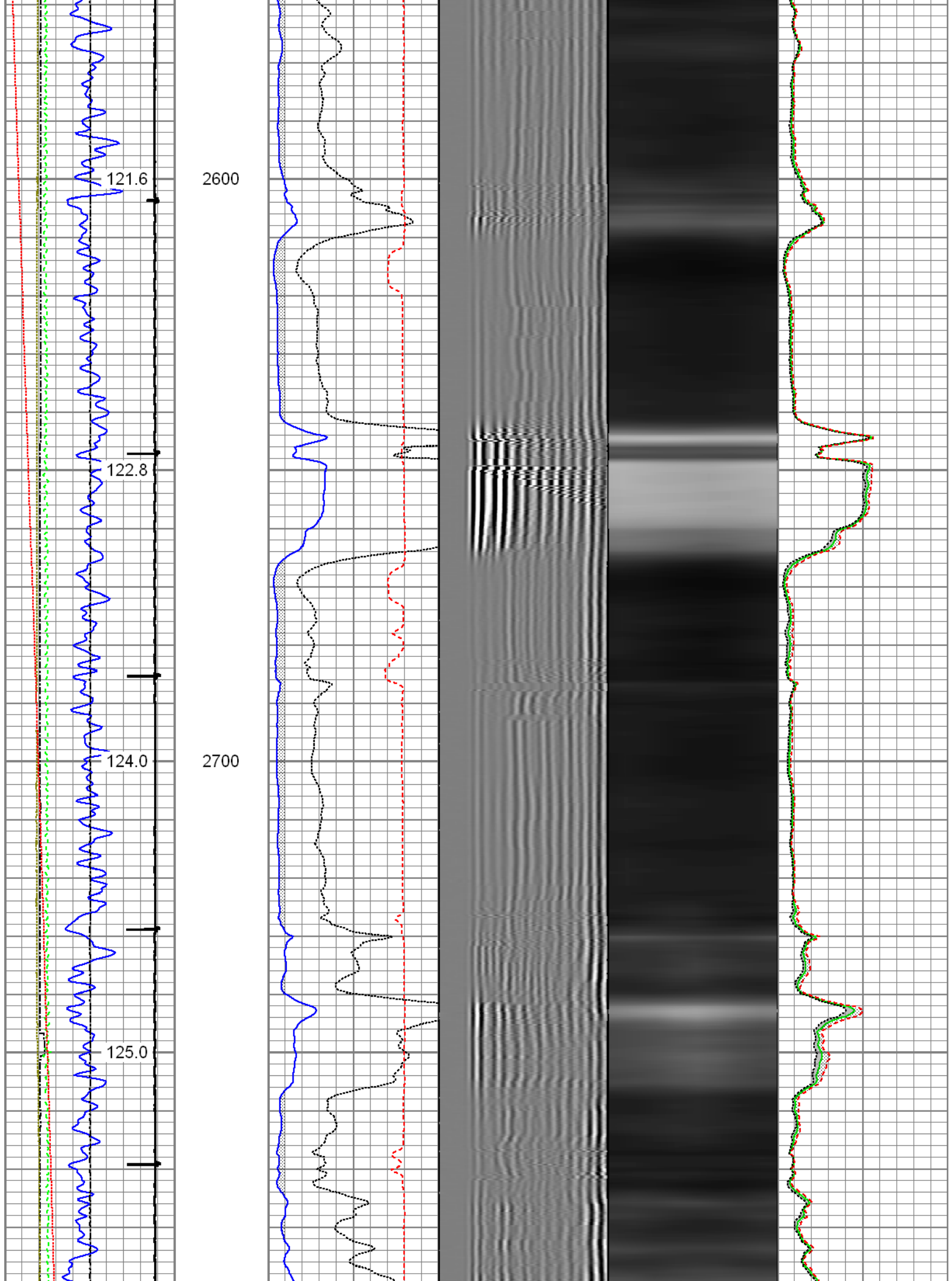


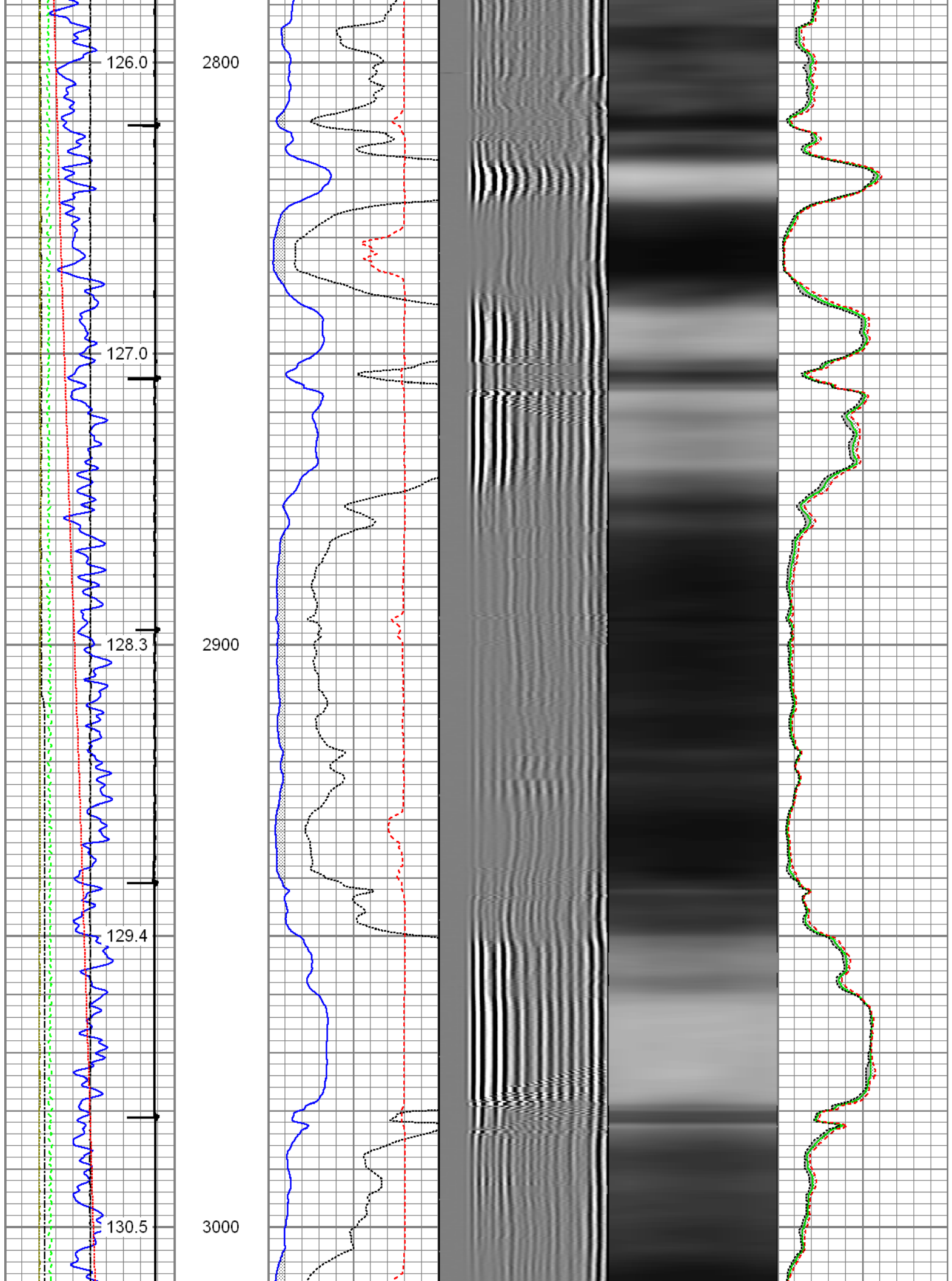


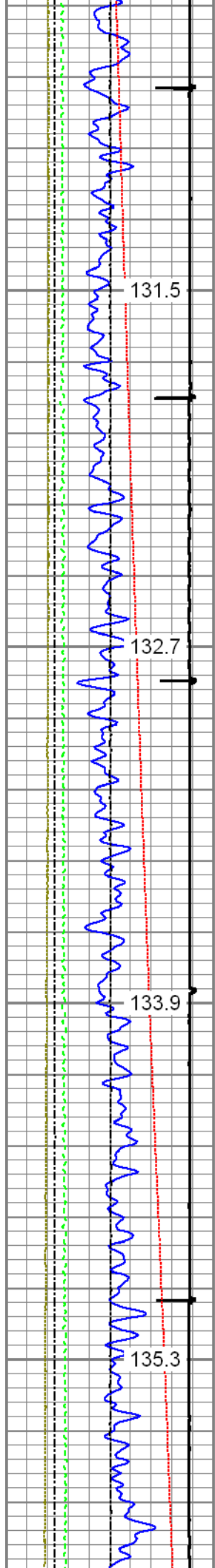






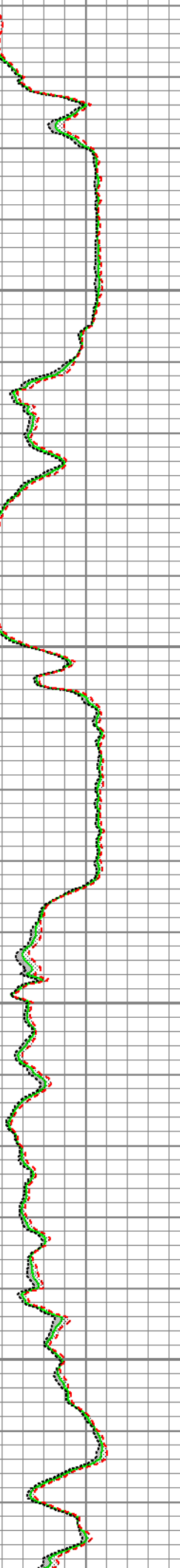
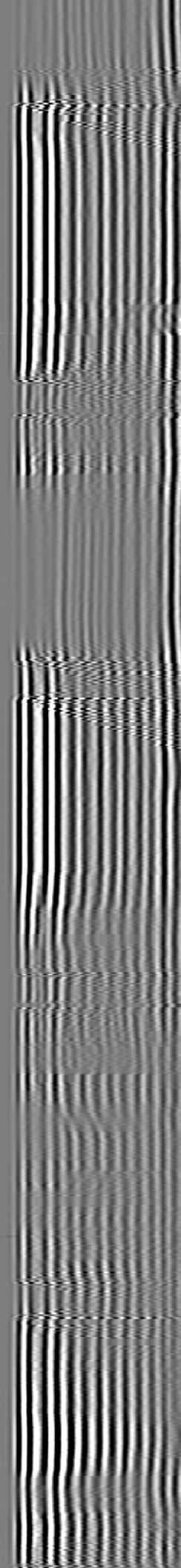
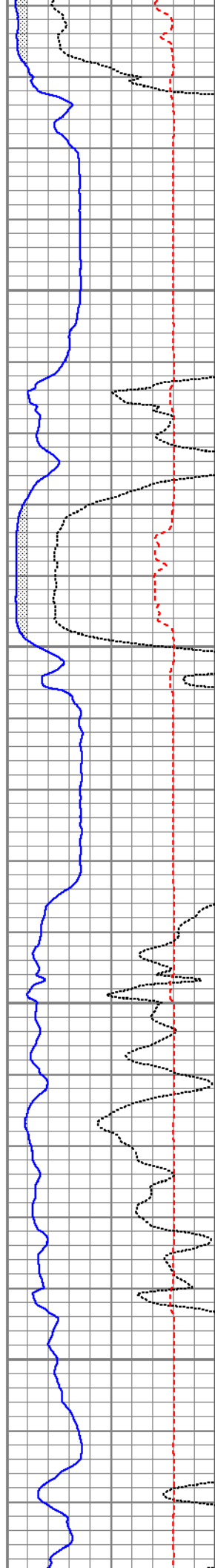


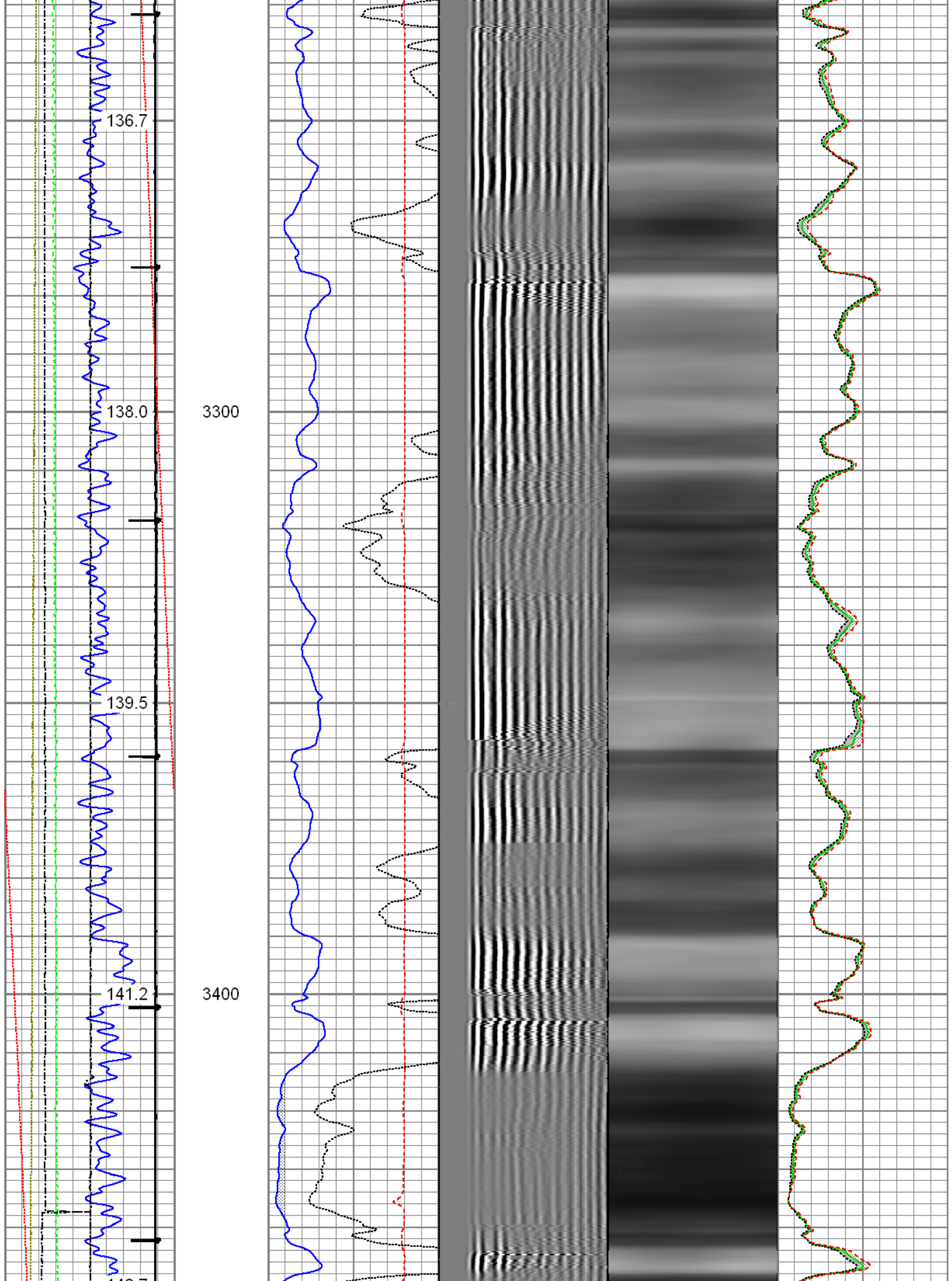


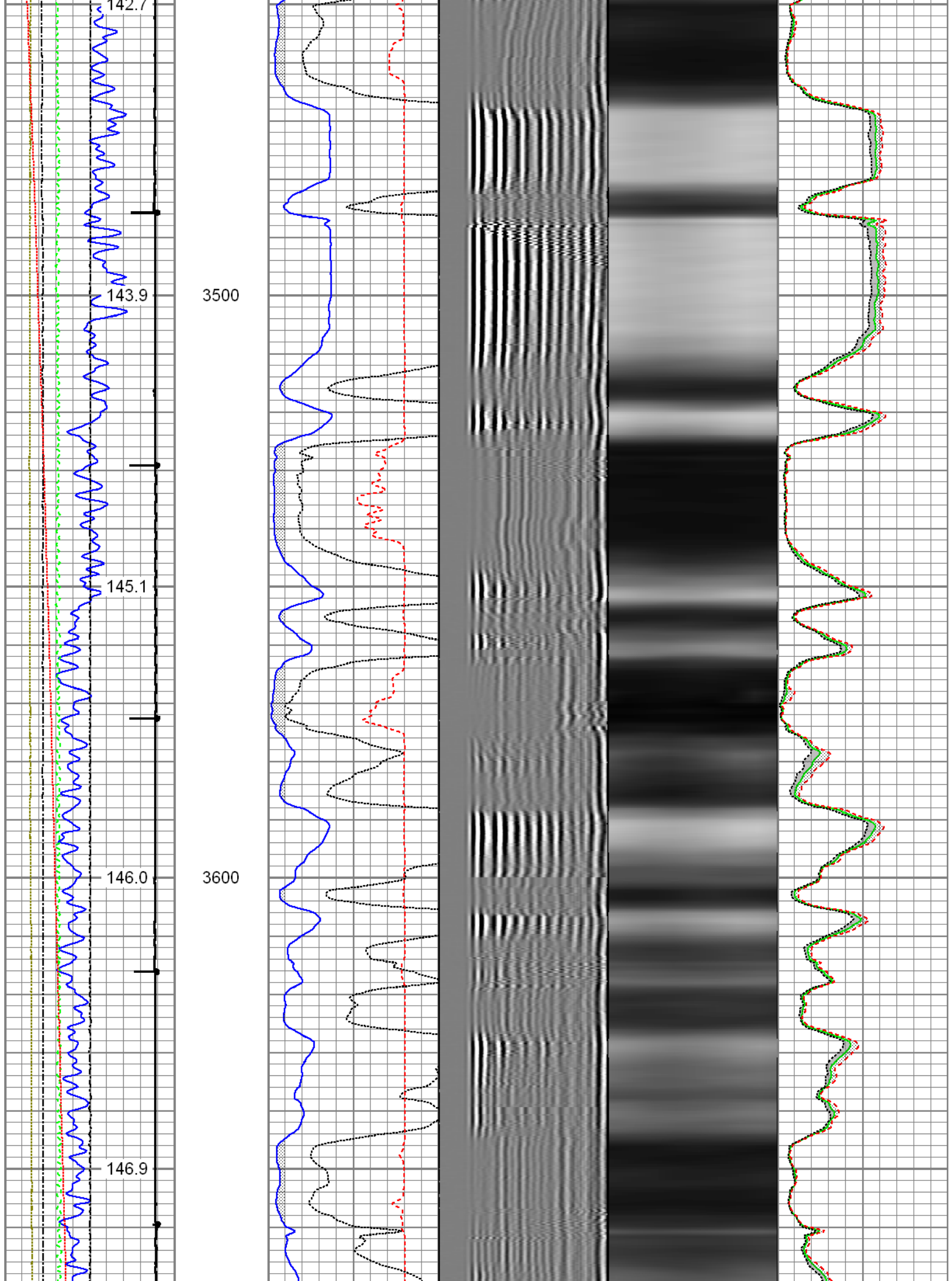


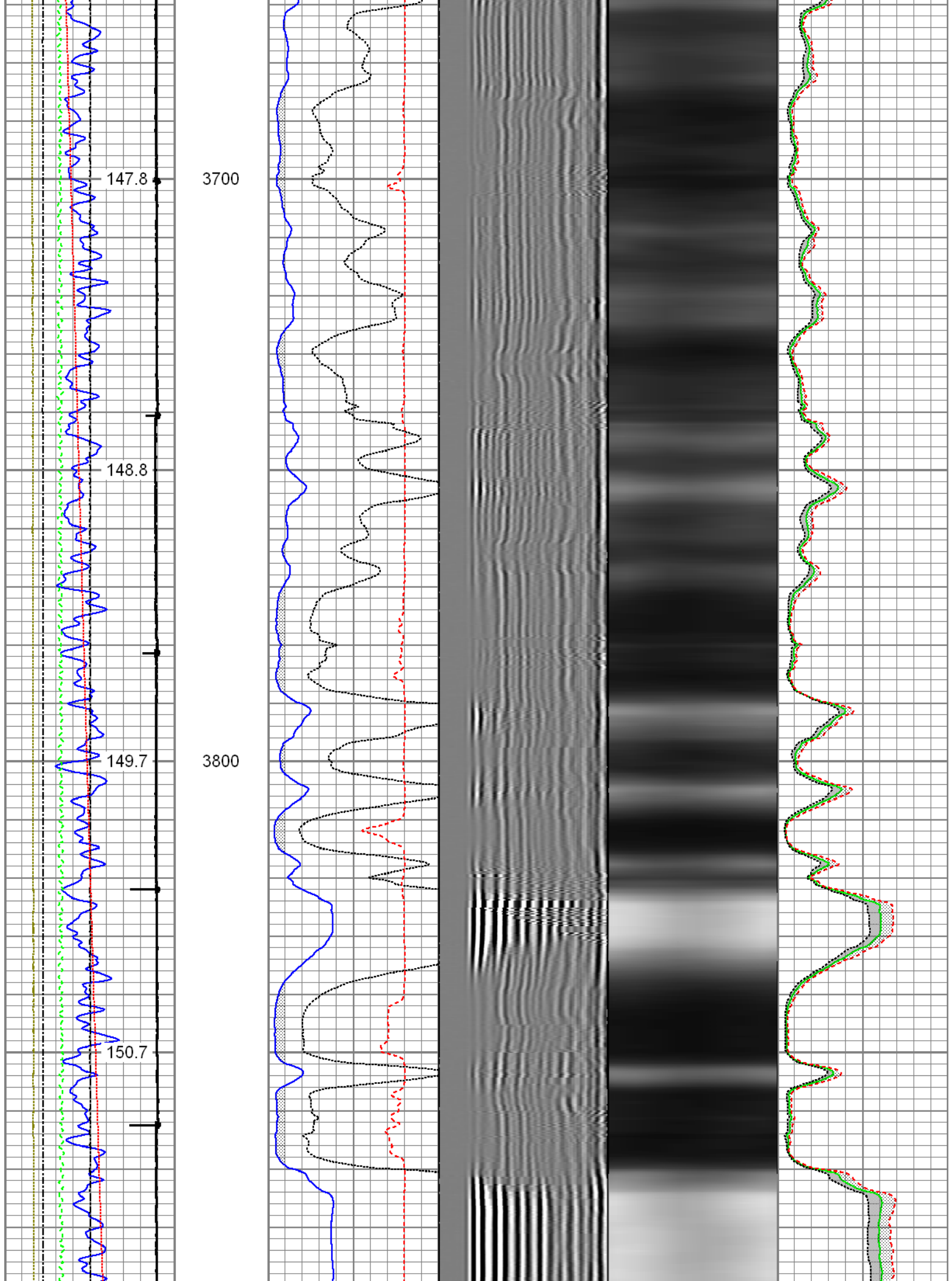
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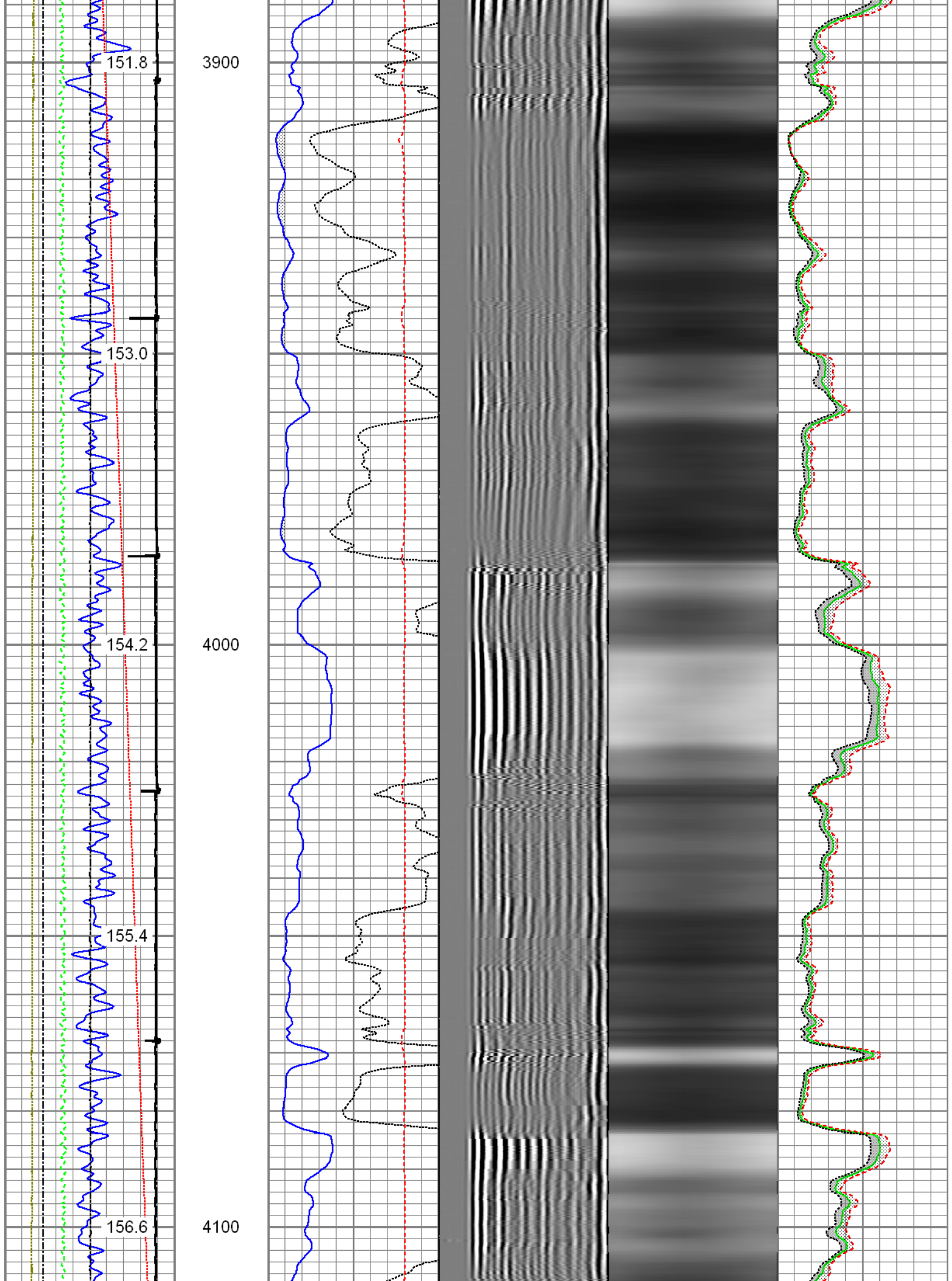
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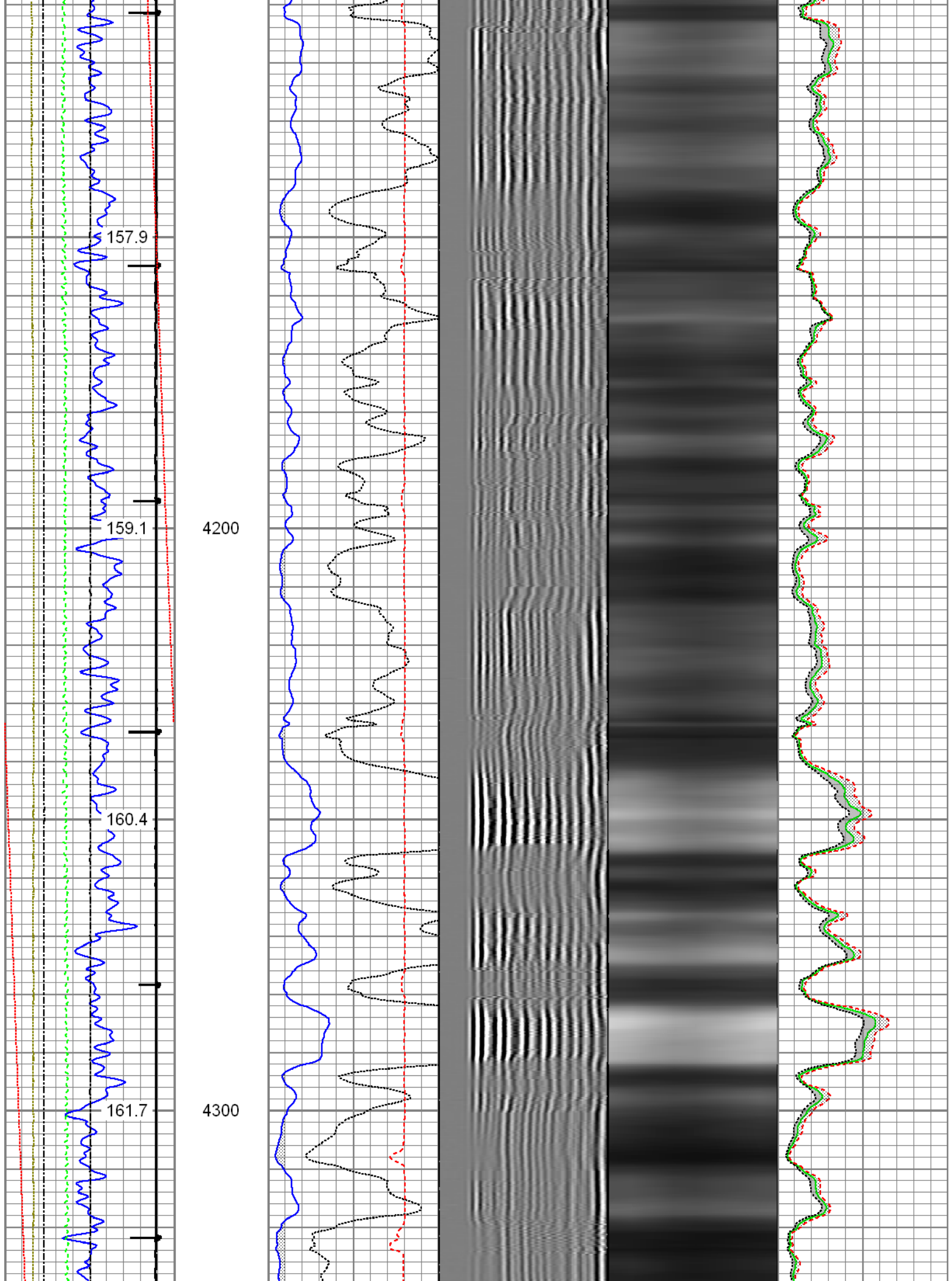


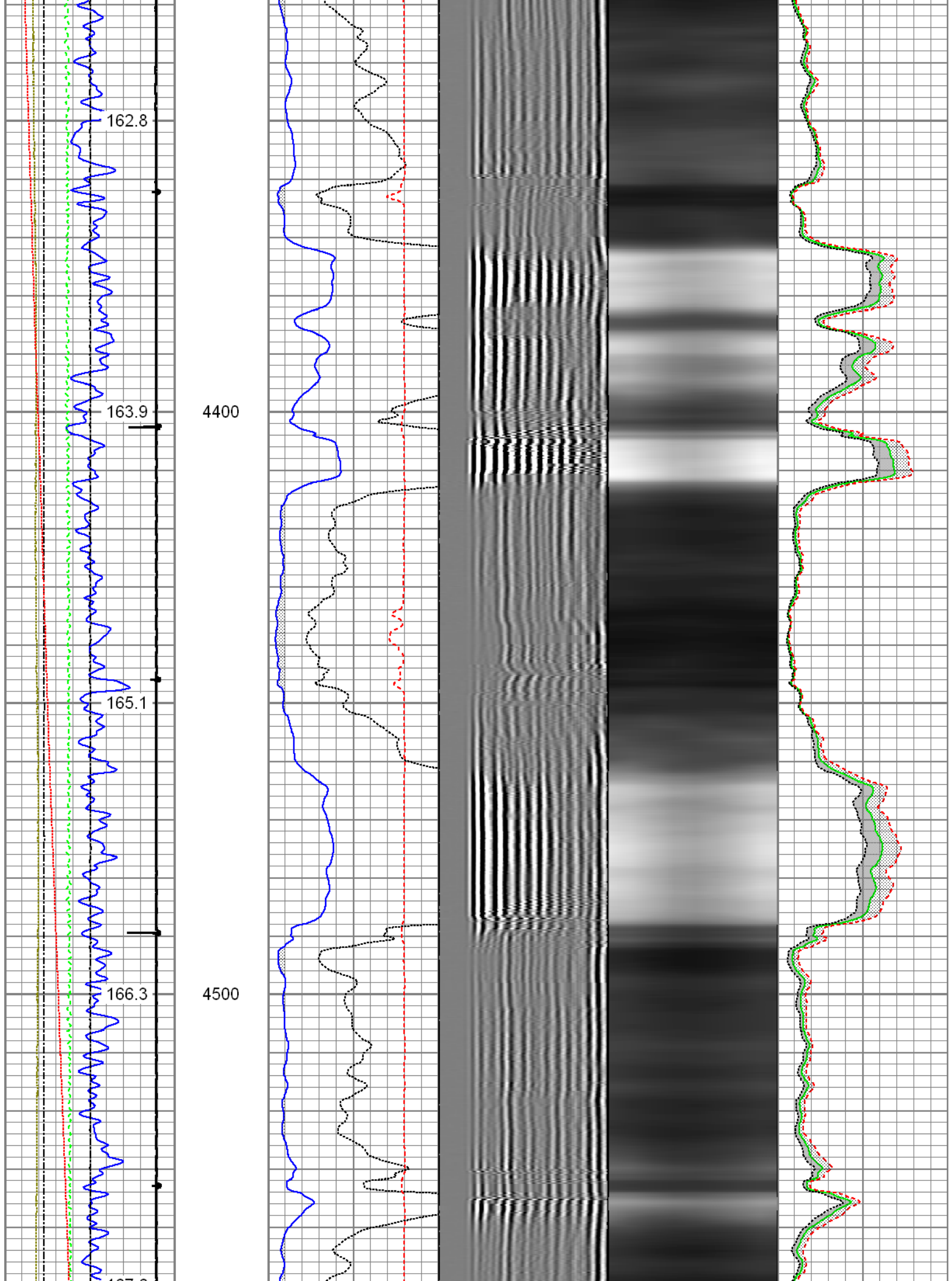


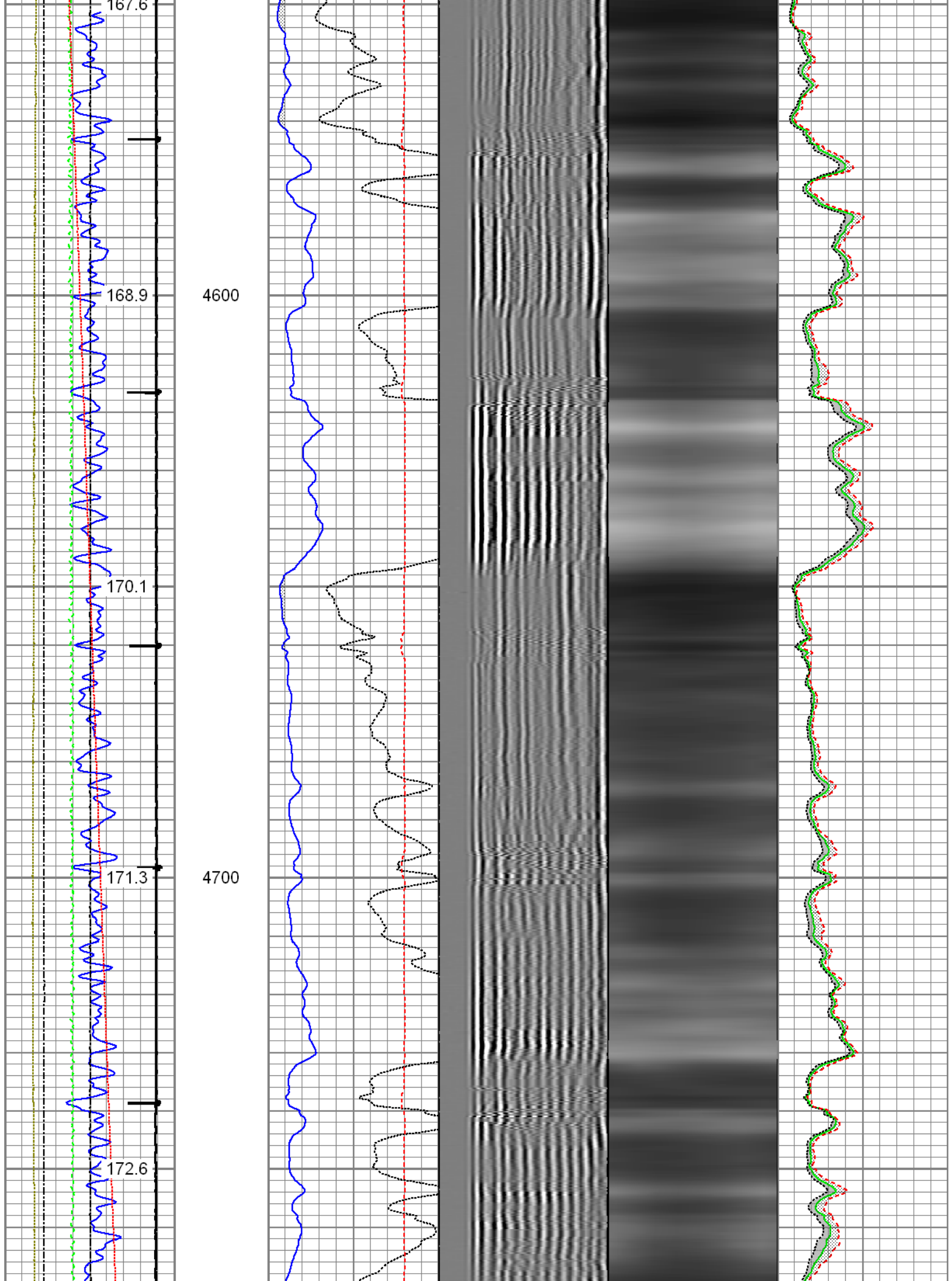


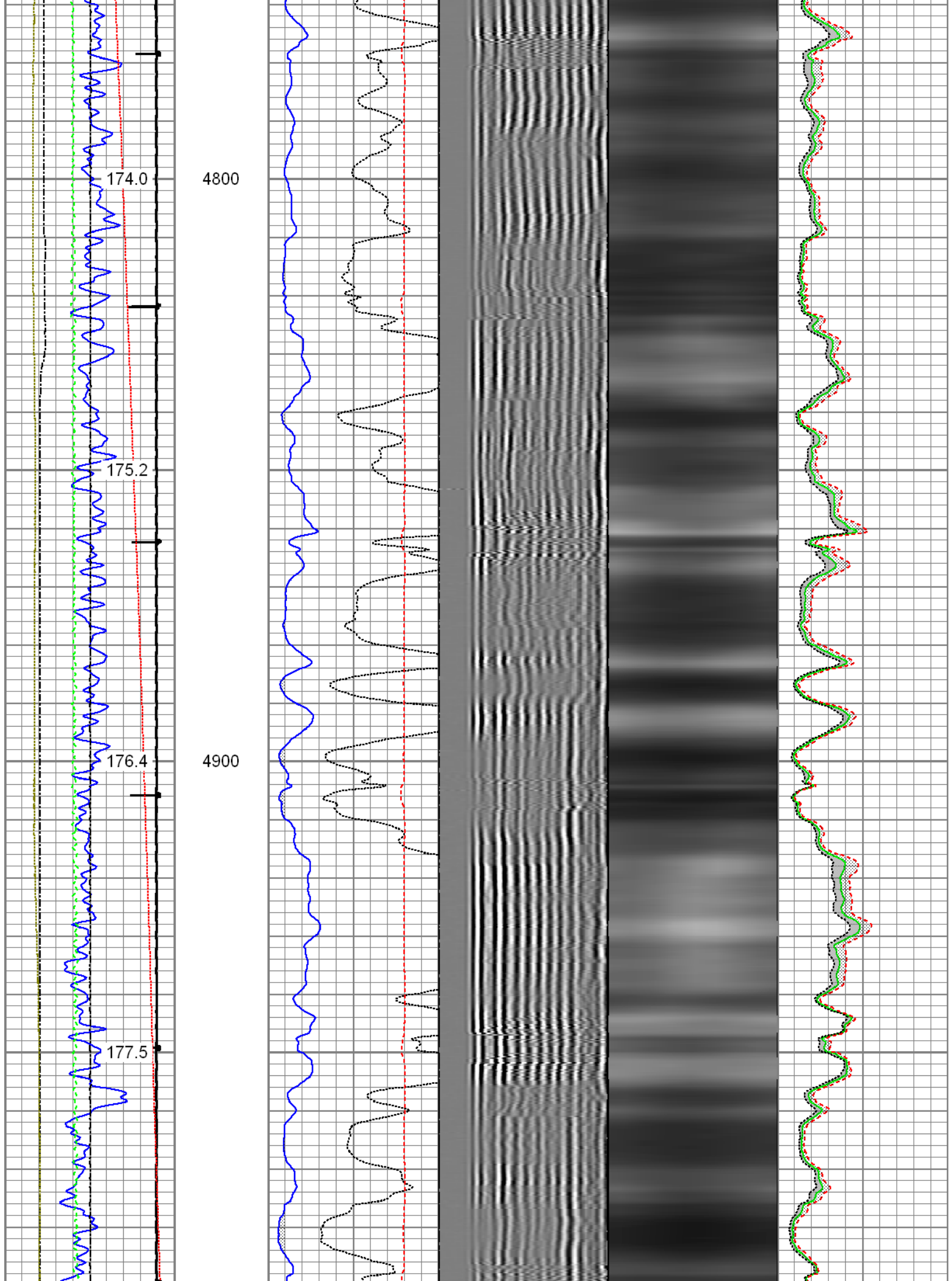


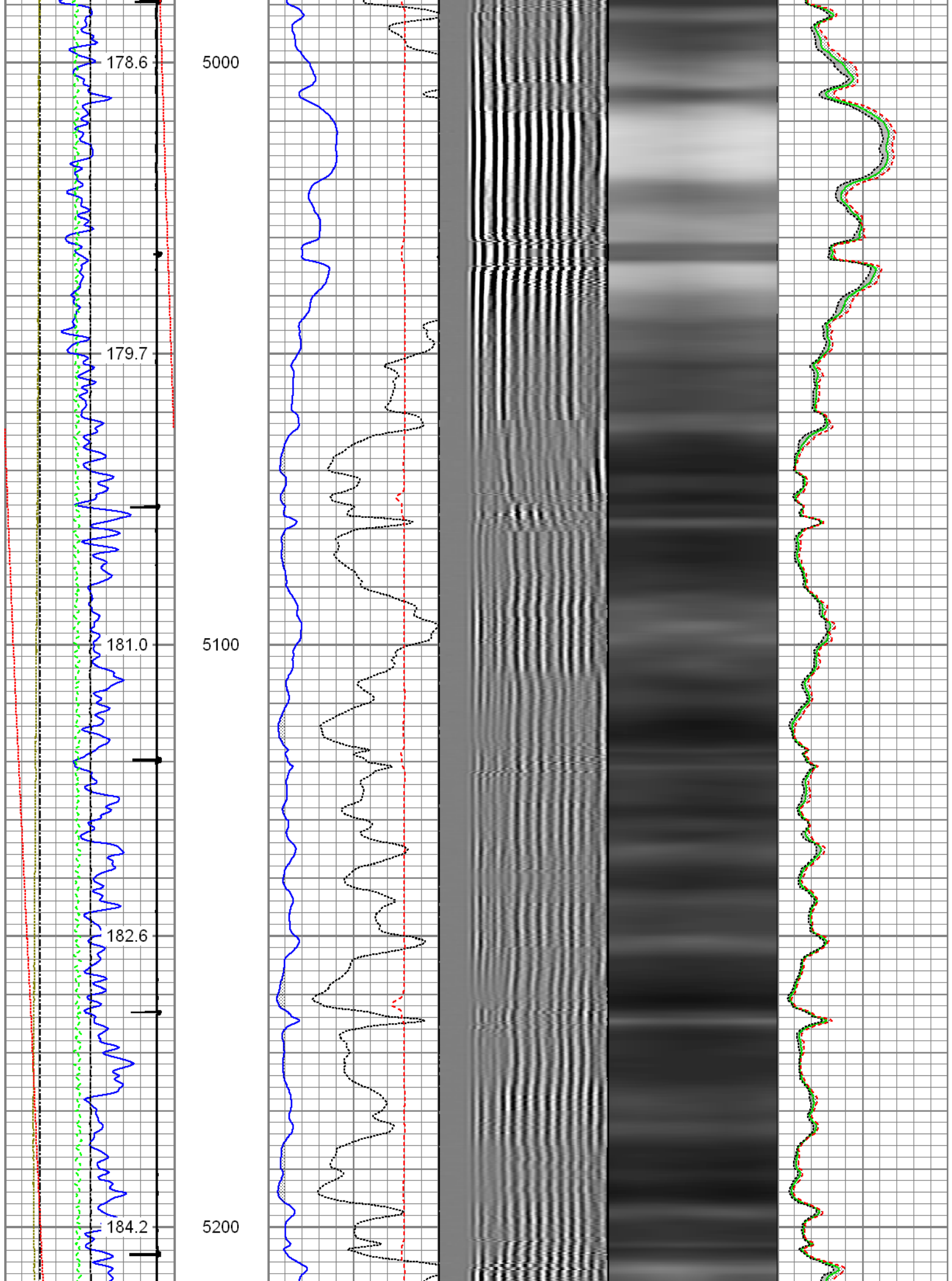


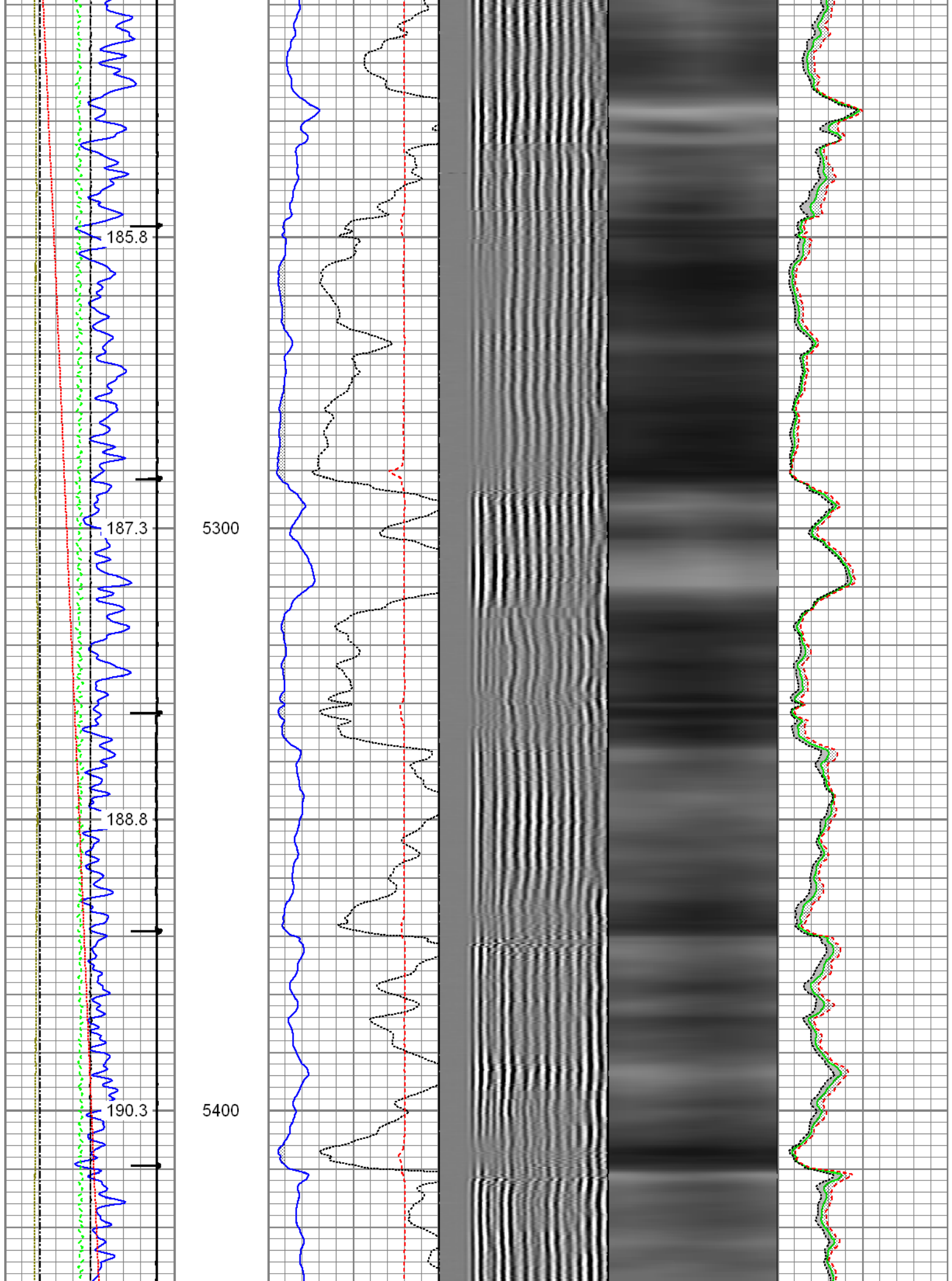


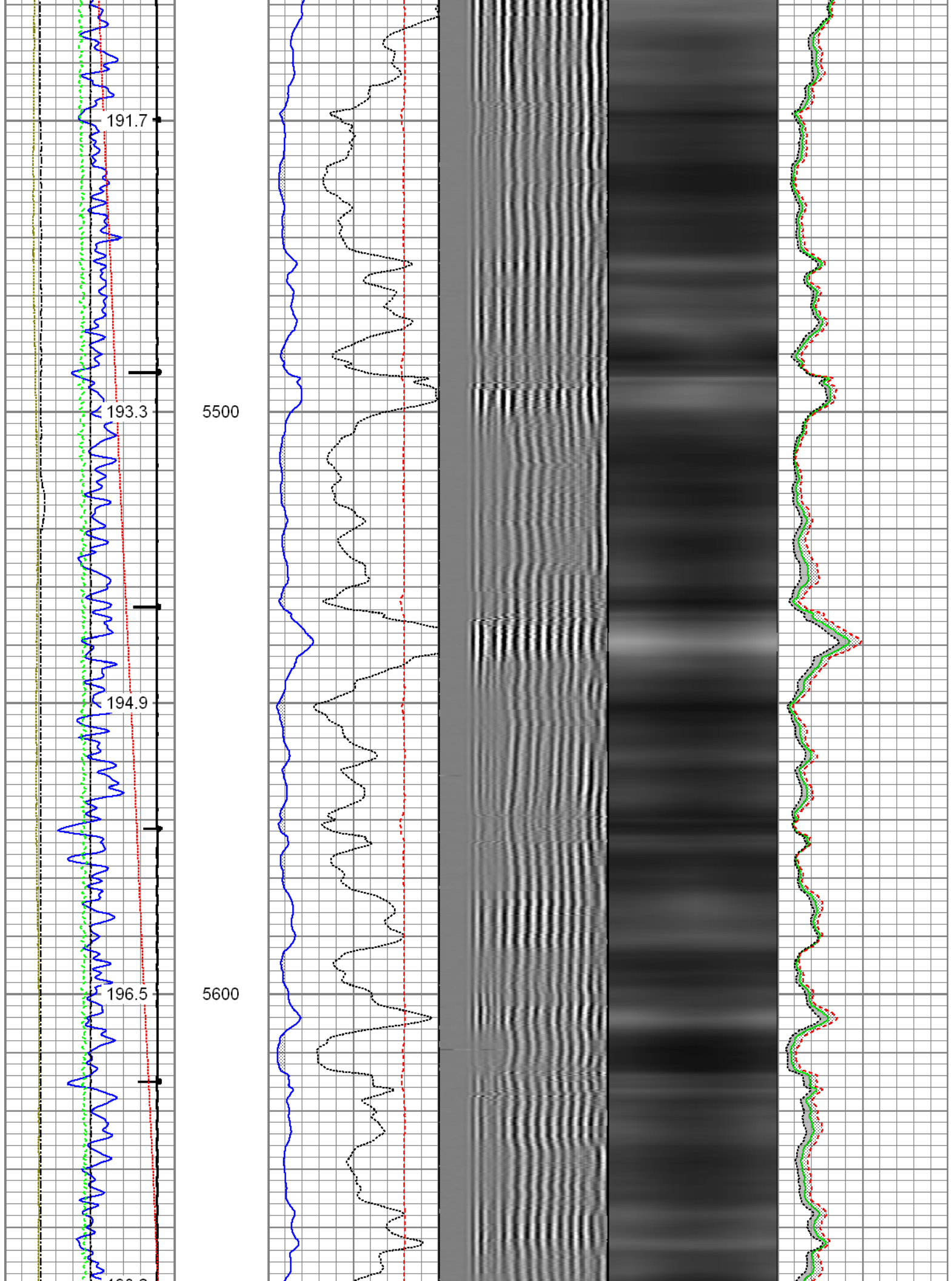


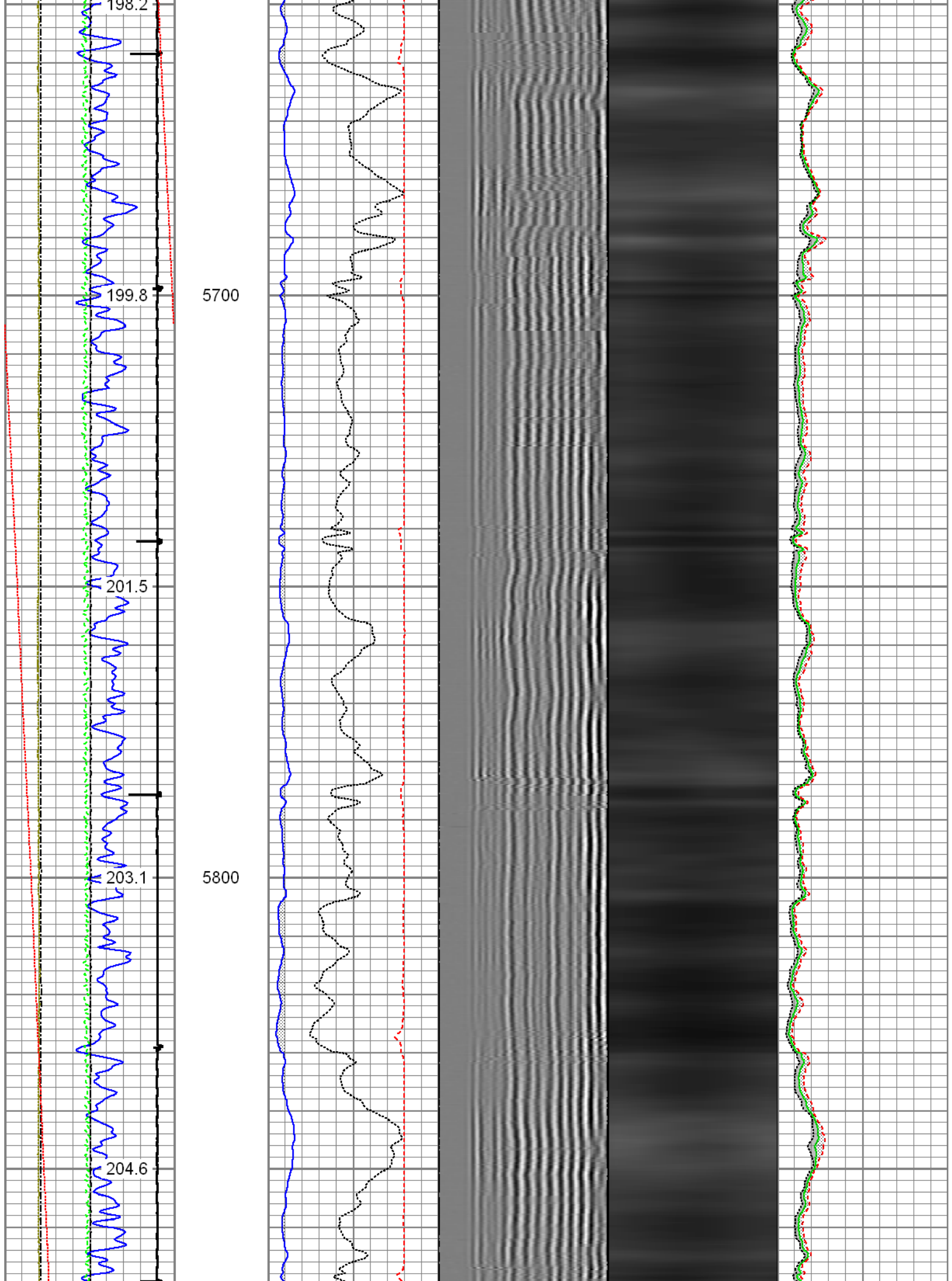


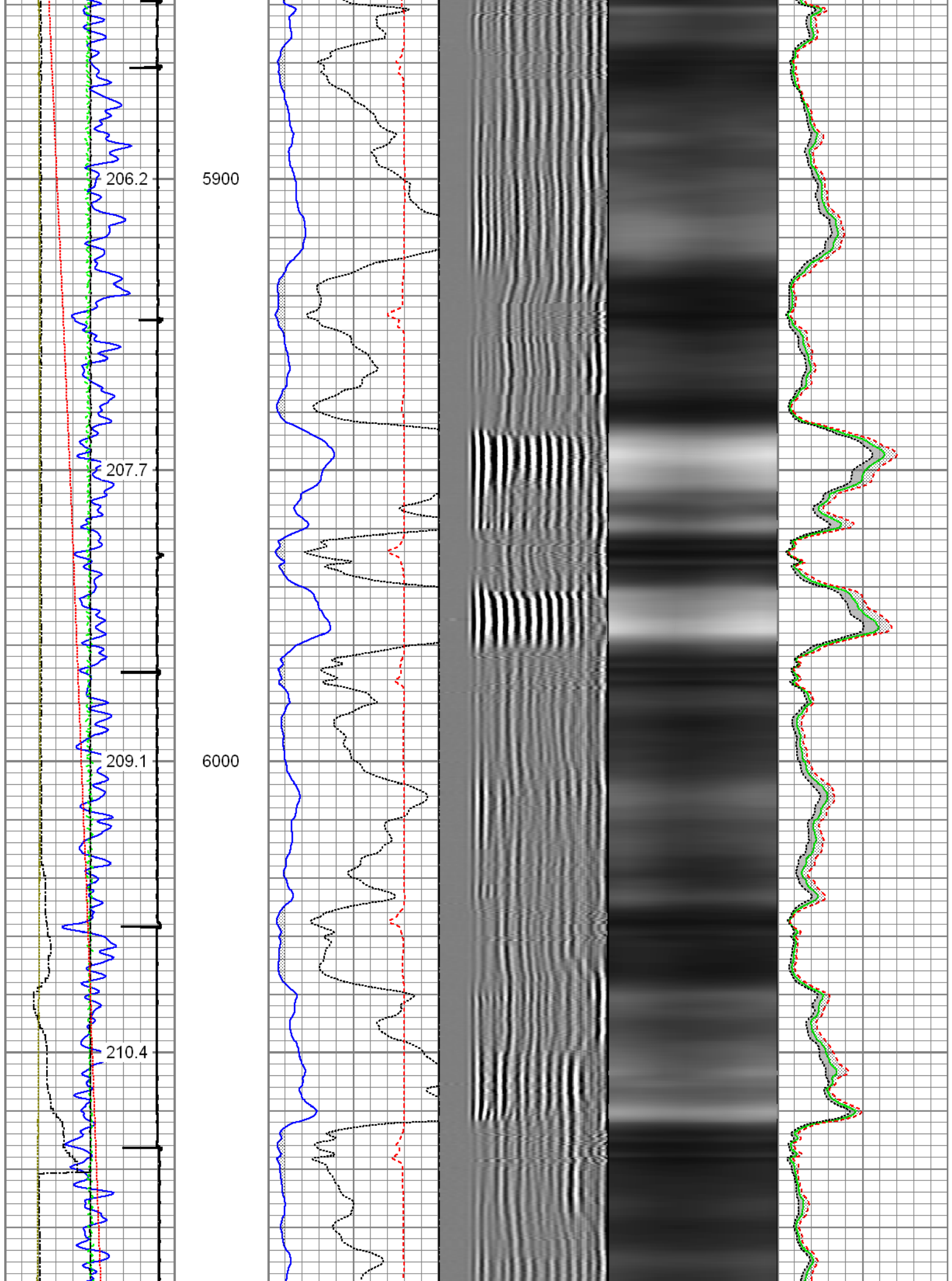


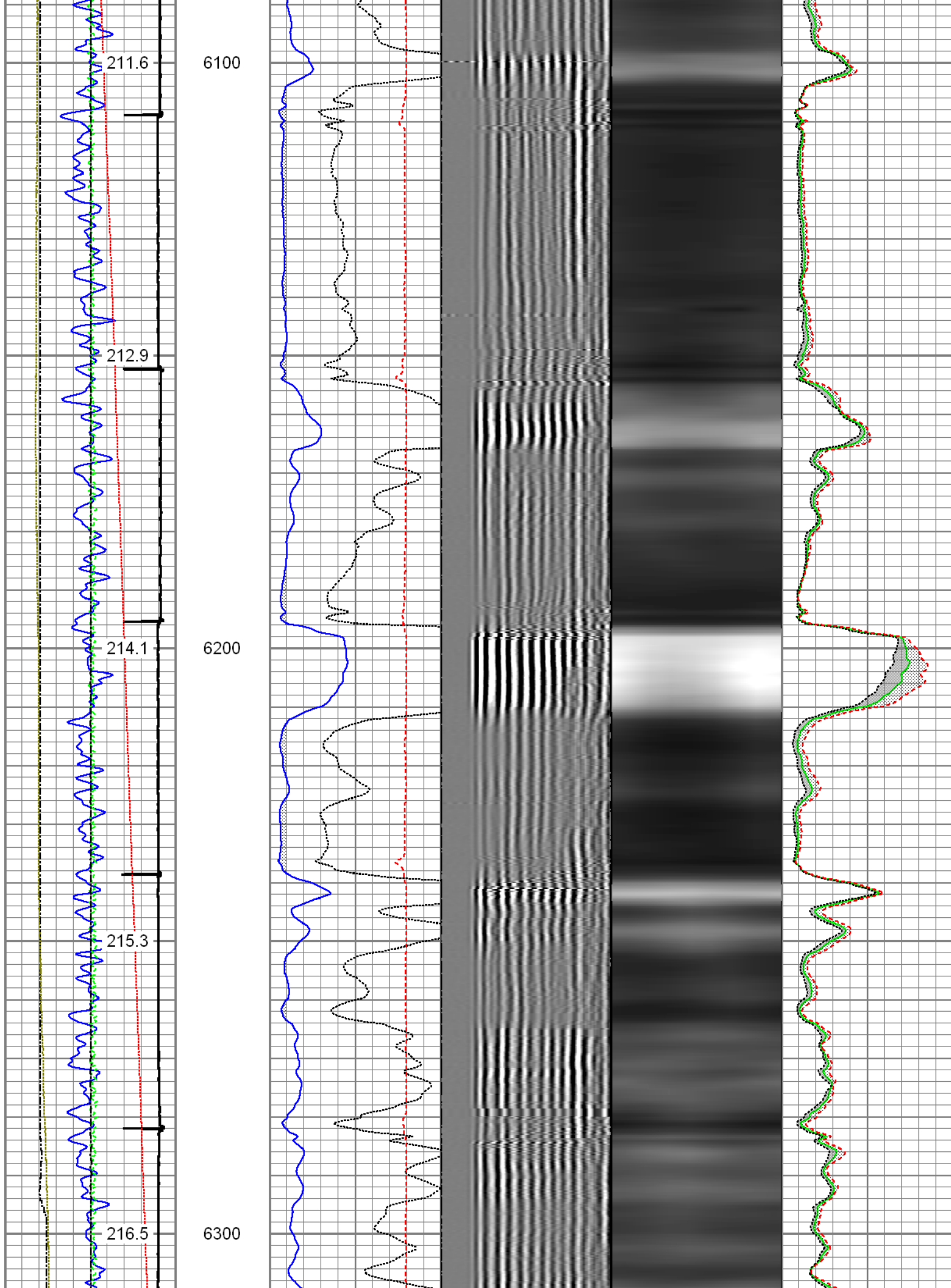


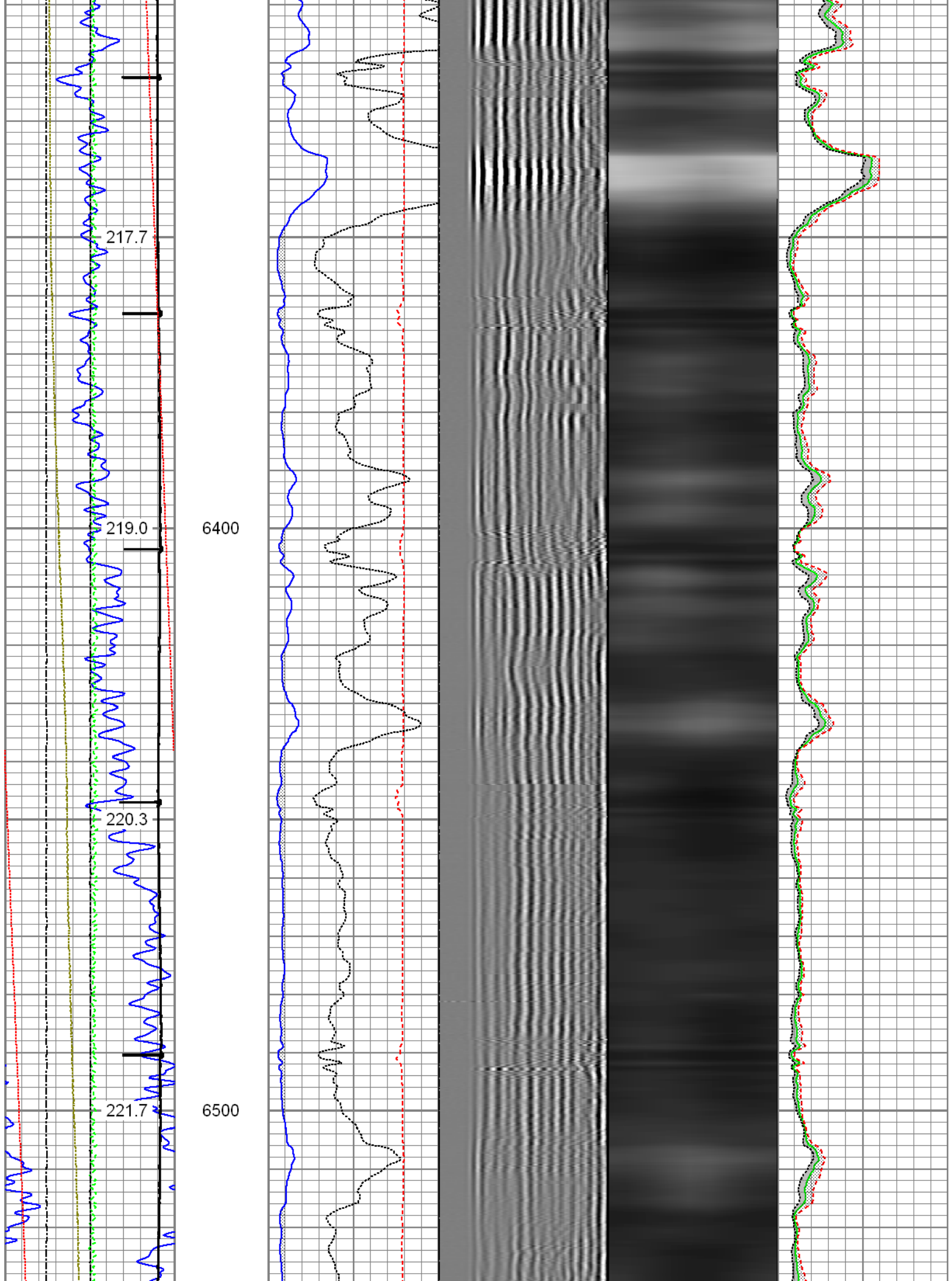


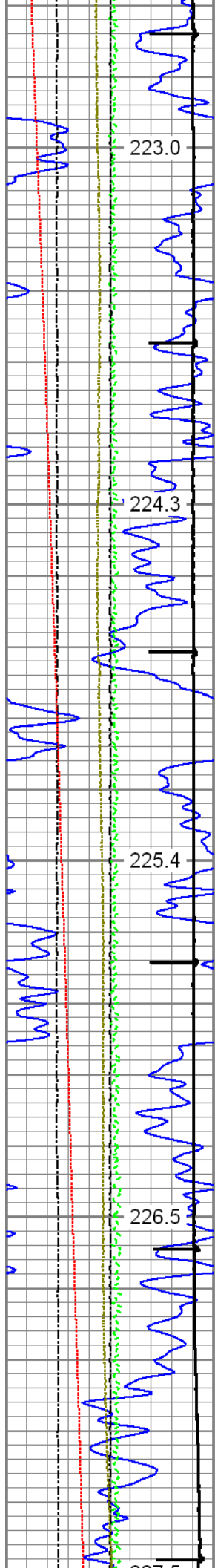






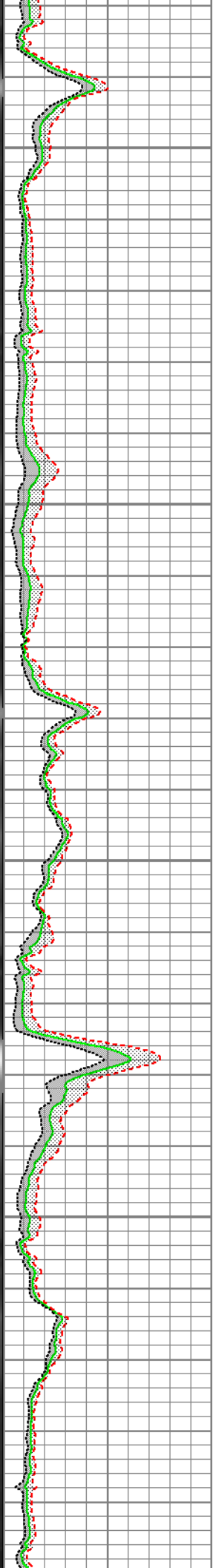
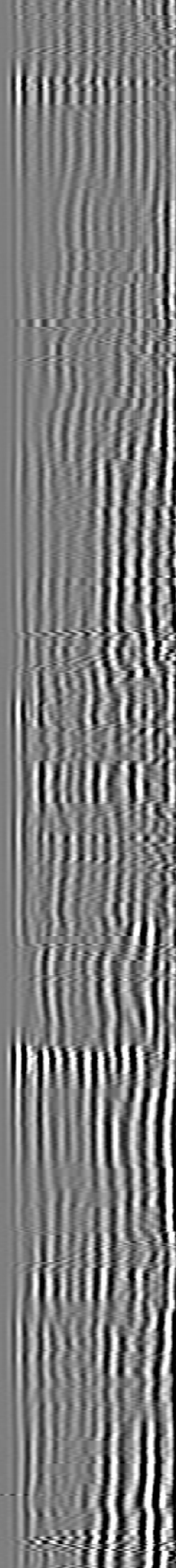
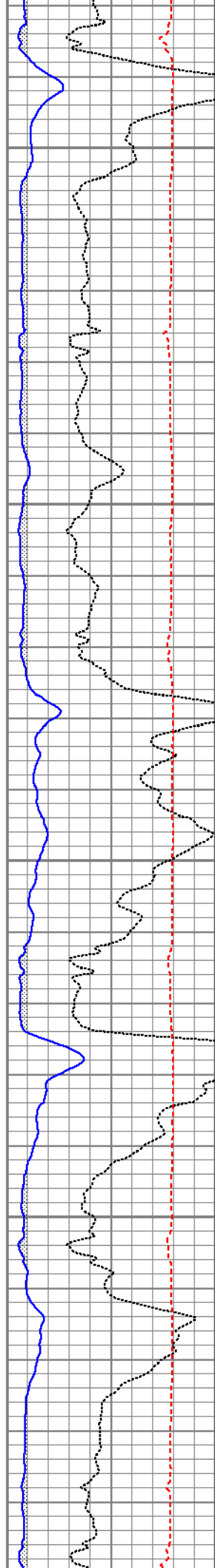


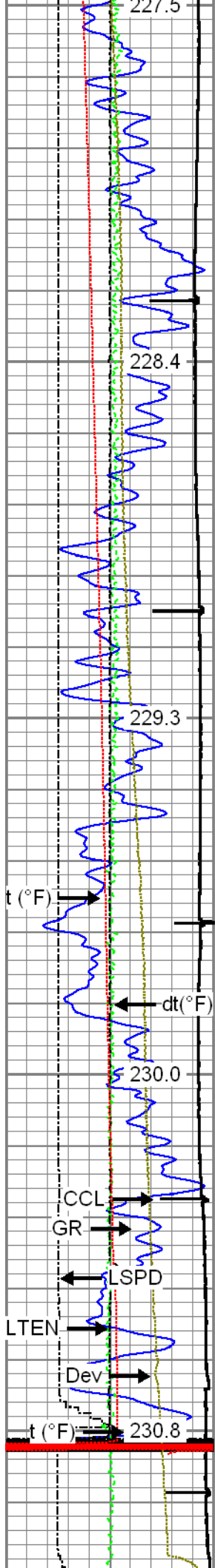




6600

6700

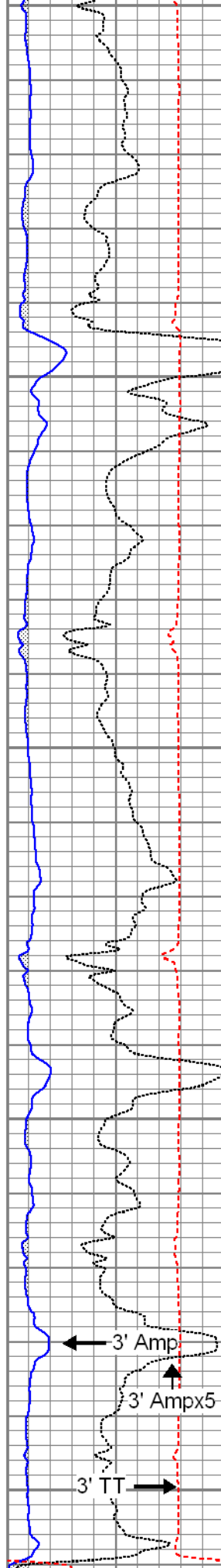




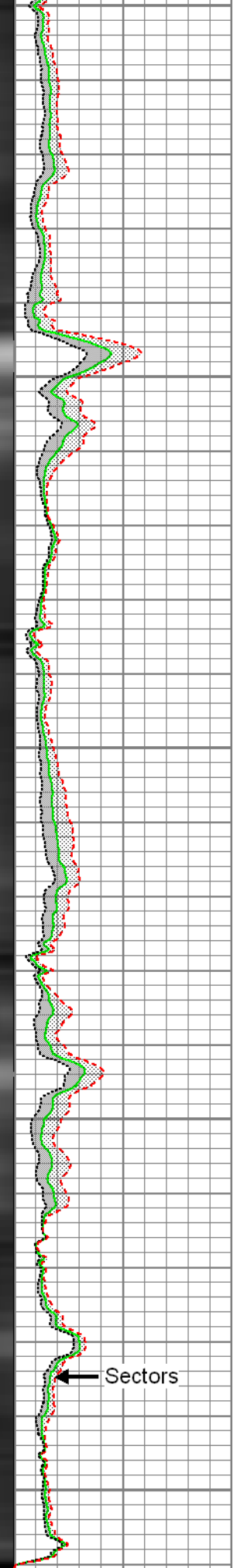
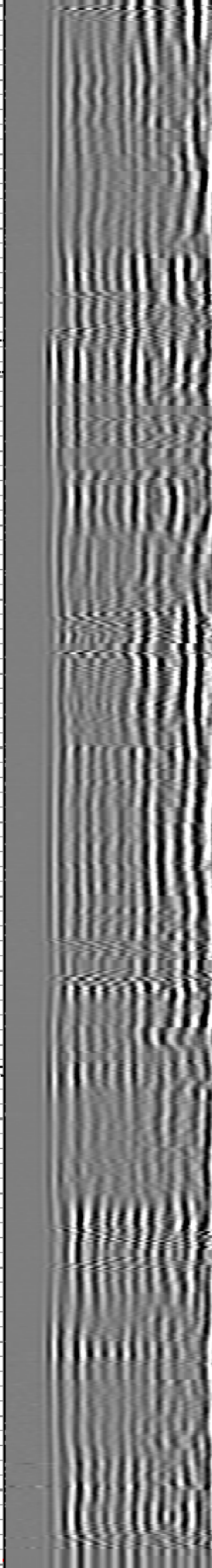
6800

6900

CCL
GR
LSPD
LTEN
Dev
 t ($^{\circ}\text{F}$)



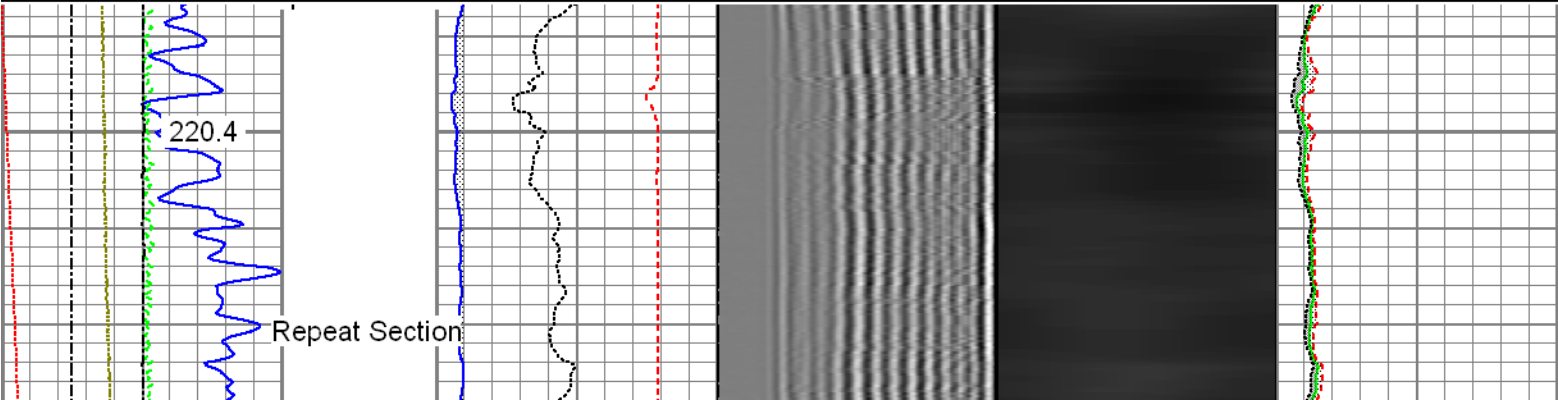
3' Amp
3' Ampx5
3' TT

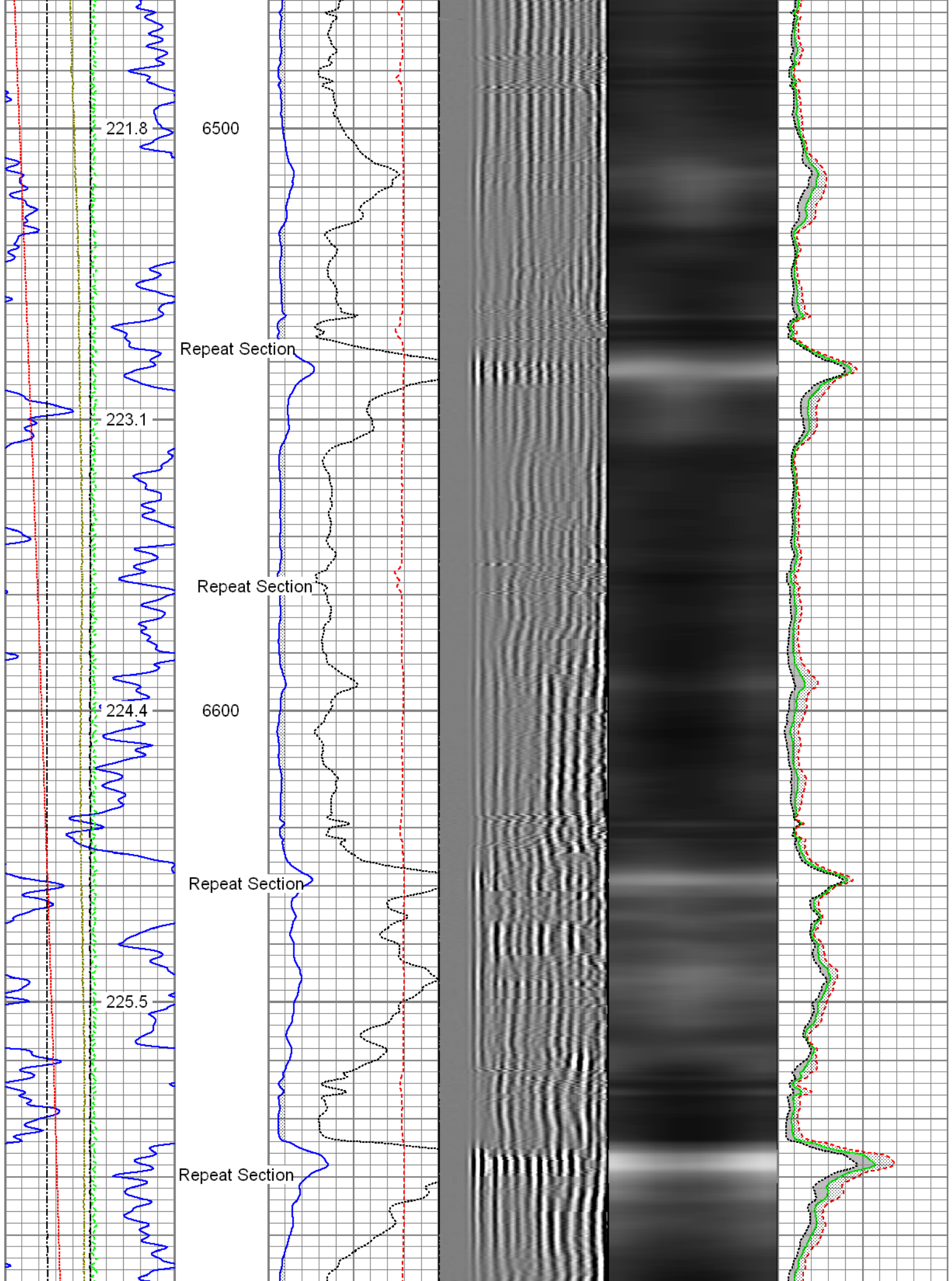


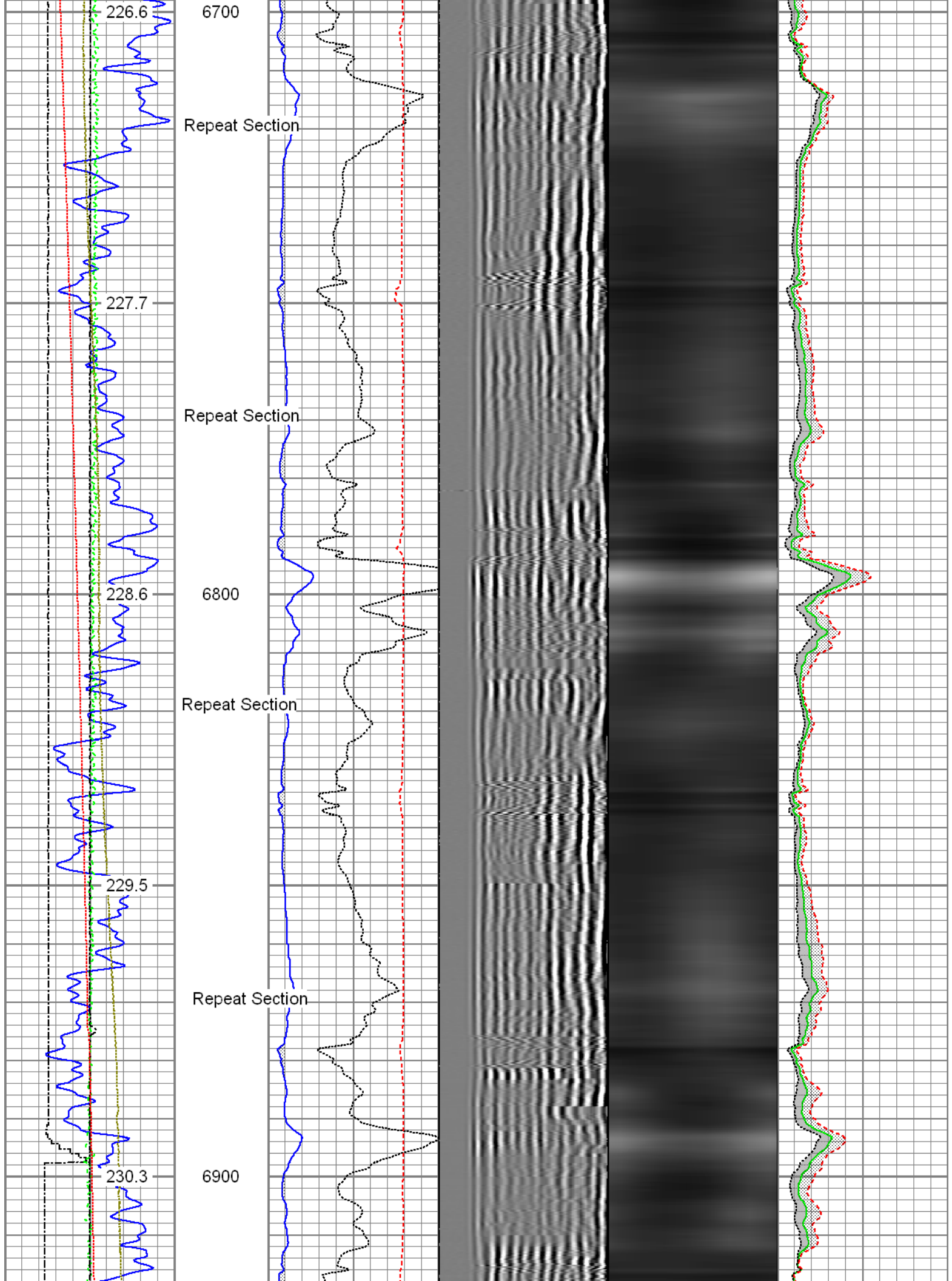
Sectors

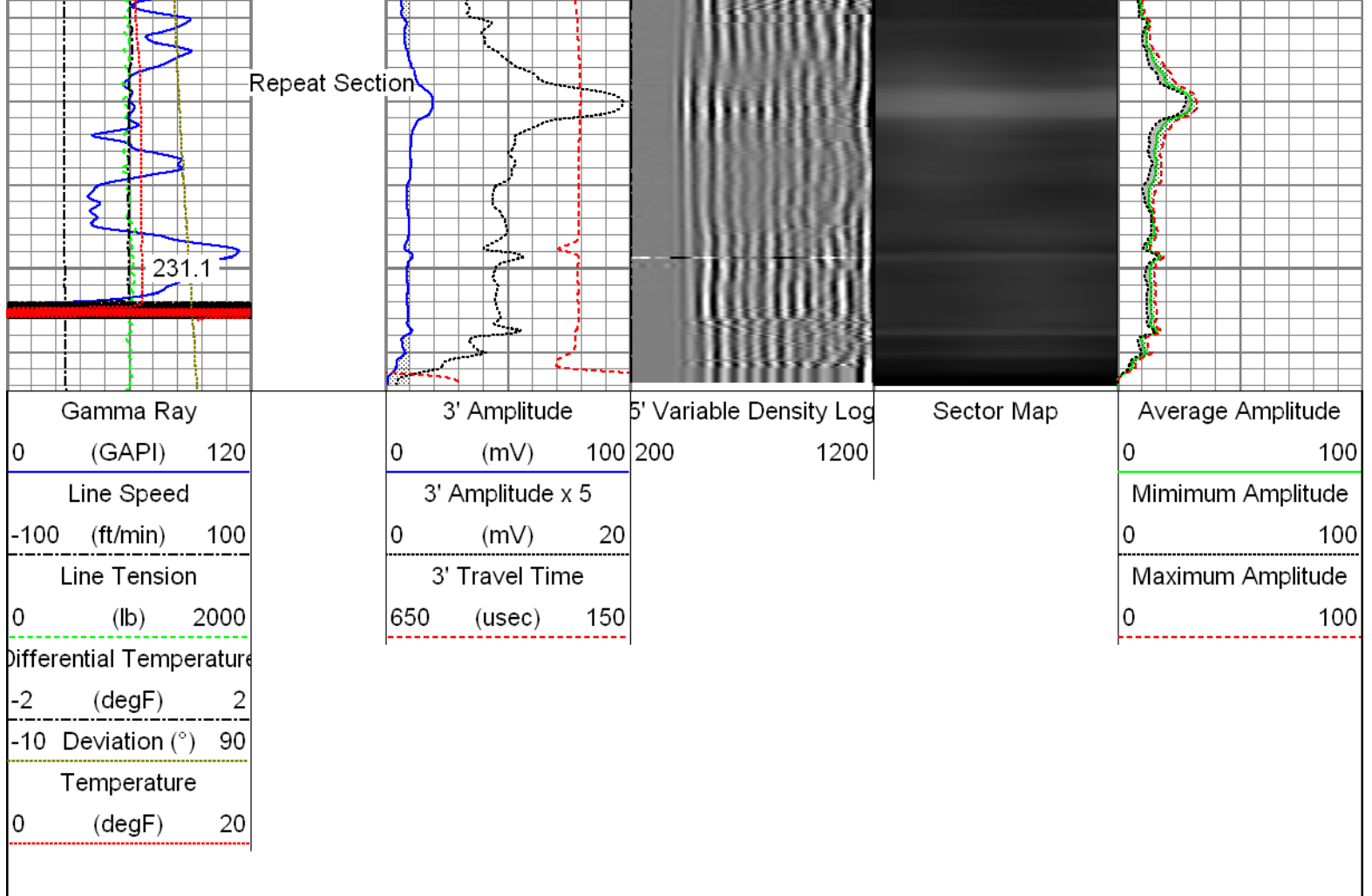
Gamma Ray 0 (GAPI) 120	3' Amplitude 0 (mV) 100	5' Variable Density Log 200 1200	Sector Map	Average Amplitude 0 100
Casing Collar Locator	3' Amplitude x 5 0 (mV) 20			Mimimum Amplitude 0 100
Line Speed -100 (ft/min) 100	3' Travel Time 650 (usec) 150			Maximum Amplitude 0 100
Line Tension 0 (lb) 2000				
Differential Temperature -2 (degF) 2				
-10 Deviation (°) 90				
Temperature 0 (degF) 20				

<div>FMC Technologies</div>		<div>Repeat Section</div> <div>Recorded With 2500 PSI Surface Induced Pressure</div>		
<div>Database File: 07-25-15_noble energy_wells ranch state a36-686_mit_rbl.db</div> <div>Dataset Pathname: repeat</div> <div>Presentation Format: rbt4_mit</div> <div>Dataset Creation: Sat Jul 25 14:35:32 2015 by Log 7.0 B1</div> <div>Charted by: Depth in Feet scaled 1:240</div>				
Gamma Ray 0 (GAPI) 120	3' Amplitude 0 (mV) 100	5' Variable Density Log 200 1200	Sector Map	Average Amplitude 0 100
Line Speed -100 (ft/min) 100	3' Amplitude x 5 0 (mV) 20			Mimimum Amplitude 0 100
Line Tension 0 (lb) 2000	3' Travel Time 650 (usec) 150			Maximum Amplitude 0 100
Differential Temperature -2 (degF) 2				
-10 Deviation (°) 90				
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
			UW_AGS-UW_AGS_001 (218874) Sondex Adapter - GO Box to Sondex Pin	0.21	1.69	1.00
			UW_XTU-UW_XTU_002 (218874) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50
			UW_PGR-UW_PGR_020 (10013899) Production Gamma Ray	1.93	1.69	9.50
TEMP	22.45		UW_PRT-UW_PRT_016 (10024052) Platinum Resistance Thermometer	1.04	1.69	5.20
			UW_PRC-DSSRAC (080) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
WVF3FT	15.42		UW_RBT-UW_RBT_004 (1063) Sondex Ultrawire 3-1/8" Radial Bond Tool	9.47	3.13	140.00
WVFS1	15.42					
WVFS2	15.42					
WVFS3	15.42					

[illegible]

Finger Calibration Report									
Performed:					Sat Jul 25 13:55:05 2015				
Ring size:	4	5	6	7					
(in)		Sens	Sens	Sens					

Finger 01:	1019	381.0	1400	389.0	1789	411.0	2200
Finger 02:	1162	392.0	1554	388.0	1942	406.0	2348
Finger 03:	1077	403.0	1480	406.0	1886	433.0	2319
Finger 04:	1067	387.0	1454	395.0	1849	423.0	2272
Finger 05:	1063	395.0	1458	399.0	1857	424.0	2281
Finger 06:	1069	399.0	1468	400.0	1868	418.0	2286
Finger 07:	1053	399.0	1452	400.0	1852	422.0	2274
Finger 08:	1079	394.0	1473	393.0	1866	418.0	2284
Finger 09:	1064	399.0	1463	394.0	1857	414.0	2271
Finger 10:	1071	398.0	1469	391.0	1860	412.0	2272
Finger 11:	1070	400.0	1470	388.0	1858	406.0	2264
Finger 12:	1071	401.0	1472	392.0	1864	410.0	2274
Finger 13:	1074	399.0	1473	382.0	1855	399.0	2254
Finger 14:	1059	409.0	1468	393.0	1861	408.0	2269
Finger 15:	1006	411.0	1417	402.0	1819	421.0	2240
Finger 16:	1019	414.0	1433	401.0	1834	420.0	2254
Finger 17:	932	390.0	1322	383.0	1705	421.0	2126
Finger 18:	1072	405.0	1477	383.0	1860	402.0	2262
Finger 19:	1029	405.0	1434	389.0	1823	409.0	2232
Finger 20:	1015	415.0	1430	399.0	1829	423.0	2252
Finger 21:	1030	418.0	1448	397.0	1845	409.0	2254
Finger 22:	994	416.0	1410	399.0	1809	423.0	2232
Finger 23:	958	414.0	1372	407.0	1779	435.0	2214
Finger 24:	1019	411.0	1430	387.0	1817	399.0	2216
Finger 25:	965	412.0	1377	404.0	1781	428.0	2209
Finger 26:	1101	405.0	1506	379.0	1885	395.0	2280
Finger 27:	1038	408.0	1446	396.0	1842	413.0	2255
Finger 28:	1054	398.0	1452	383.0	1835	404.0	2239
Finger 29:	987	403.0	1390	402.0	1792	427.0	2219
Finger 30:	1045	404.0	1449	394.0	1843	416.0	2259
Finger 31:	1054	397.0	1451	390.0	1841	411.0	2252
Finger 32:	1024	404.0	1428	403.0	1831	427.0	2258
Finger 33:	1114	397.0	1511	378.0	1889	394.0	2283
Finger 34:	1078	391.0	1469	387.0	1856	413.0	2269
Finger 35:	1012	405.0	1417	414.0	1831	441.0	2272
Finger 36:	1031	396.0	1427	402.0	1829	429.0	2258
Finger 37:	1088	399.0	1487	391.0	1878	412.0	2290
Finger 38:	1114	390.0	1504	390.0	1894	401.0	2295
Finger 39:	1112	382.0	1494	387.0	1881	404.0	2285
Finger 40:	1059	393.0	1452	399.0	1851	421.0	2272

Segmented Cement Bond Log Calibration Report						
Serial Number:		1063				
Tool Model:		UW_RBT_004				
Calibration Casing Diameter:		7.000	in			
Calibration Depth:		109.775	ft			
Master Calibration, performed Sat Jul 25 14:04:59 2015:						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	-0.002	0.843	0.800	62.165	72.604	0.980
5FT	-0.006	0.894	0.800	62.165	68.173	1.216
S1	-0.004	0.898	0.000	100.000	110.943	0.406
S2	-0.004	0.922	0.000	100.000	108.047	0.382
S3	-0.004	0.880	0.000	100.000	113.170	0.410
S4	-0.004	0.848	0.000	100.000	117.474	0.430
S5	-0.002	0.786	0.000	100.000	126.864	0.299
S6	-0.003	0.754	0.000	100.000	132.129	0.332
S7	-0.002	0.783	0.000	100.000	127.332	0.311
S8	-0.002	0.832	0.000	100.000	119.879	0.282

Temperature Calibration Report

Serial Number: 10024052
 Tool Model: UW_PRT_016
 Performed: Wed Feb 11 16:41:28 2015

Point #	Reading		Reference	
1	12242.00	cps	68.00	degF
2	18329.00	cps	104.00	degF
3	29563.00	cps	176.00	degF
4	41222.00	cps	248.00	degF
5	52988.00	cps	320.00	degF
6	58824.00	cps	356.00	degF
7		cps		degF
8		cps		degF
9		cps		degF
10		cps		degF

Gamma Ray Calibration Report

Serial Number: 10013899
 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 A36-686
 Field: Wattenberg
 County: Weld
 State: Colorado