



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company Noble Energy Inc.		Company Noble Energy Inc.	
Well Remora LC34-735		Well Remora LC34-735	
Field Wildcat		Field Wildcat	
County Weld		County Weld	
State Colorado		State Colorado	
Location:		API #: 05-123-40591	
Permanent Datum		Ground Level	
Log Measured From		Kelly Bushing	
Drilling Measured From		Kelly Bushing	
SEC 34 TWP 9N RGE 59W		Elevation 4816'	
		MIT	
		Other Services	
		Elevation	
		K.B. 4840'	
		D.F. 4839'	
		G.L. 4816'	
Date		19-Feb-2016	
Run Number		One	
Depth Driller		10076 FT	
Depth Logger		6160 FT	
Bottom Logged Interval		6155 FT	
Top Log Interval		Surface	
Open Hole Size		8.750"	
Type Fluid		Water	
Density / Viscosity		8.34 lbm/gal	
Max. Recorded Temp.		216°F	
Estimated Cement Top		260 FT	
Time Well Ready		ROA	
Time Logger on Bottom		8:10 A.M.	
Equipment Number		HD-0324	
Location		Fort Lupton, CO	
Recorded By		J. Morrison	
Witnessed By		Bill Mansfield	
Borehole Record		Tubing Record	
Run Number		Bit	
From		To	
Size		Weight	
From		To	
Casing Record		Size (in)	
Surface Casing		9 5/8	
Intermediate #1		7	
Intermediate #2		4 1/2	
Liner		11.6	
		P-1101C	
		6178 FT	
		10066 FT	

<<<< Fold Here >>>>

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
Recorded Marker Joints at 4994 FT and 5174 FT
Log ran from just 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 Surface Integrated Services.



Main Pass

Recorded with 2500 PSI Surface Induced Pressure

Database File:z:\logs_for_processing\logs to be reviewed\02-19-16_noble energy_remora lc34-735_mit_rbl\02-19-16_noble energy_remora lc34-735_mit_rbl.mdb

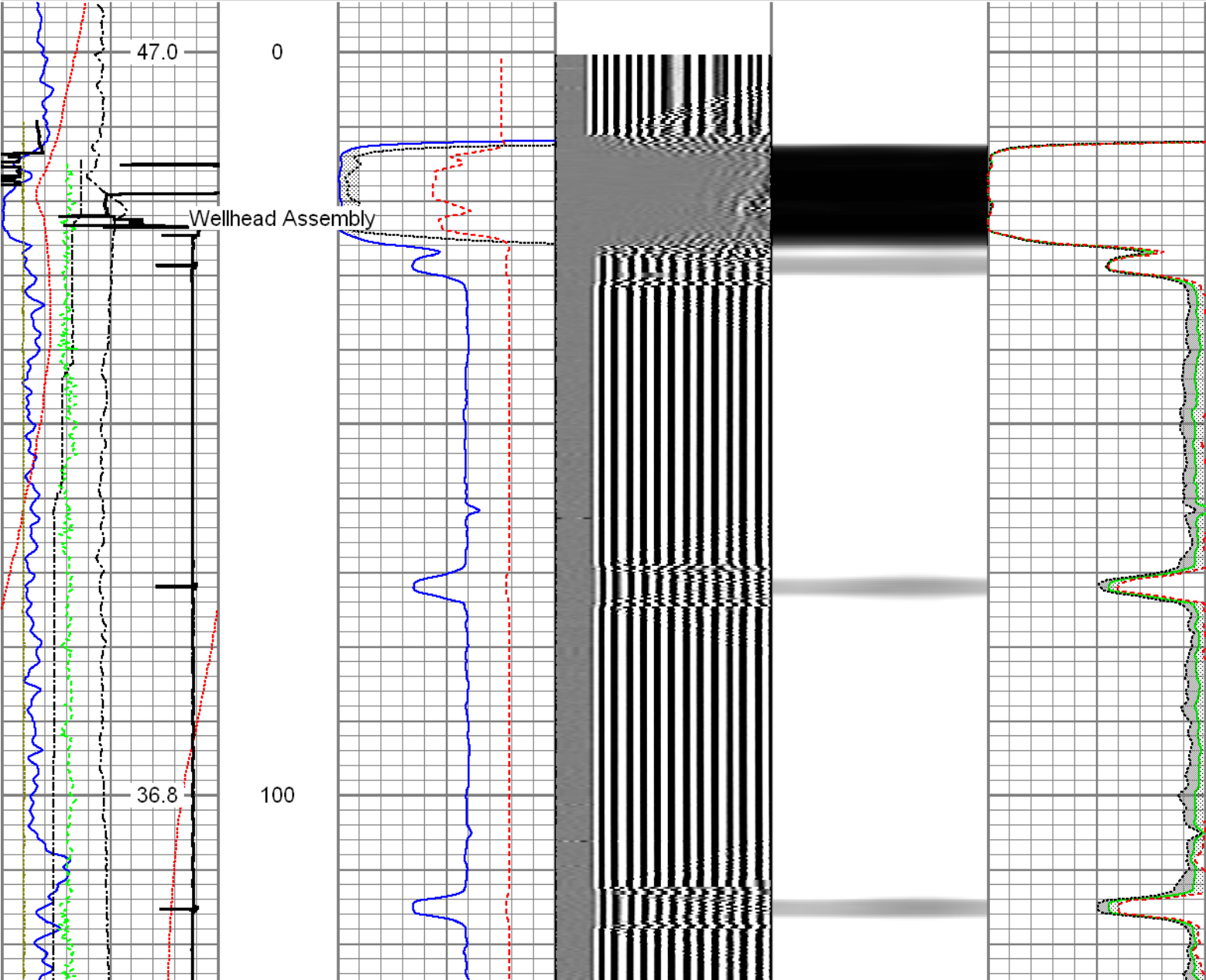
Dataset Pathname:Main.2

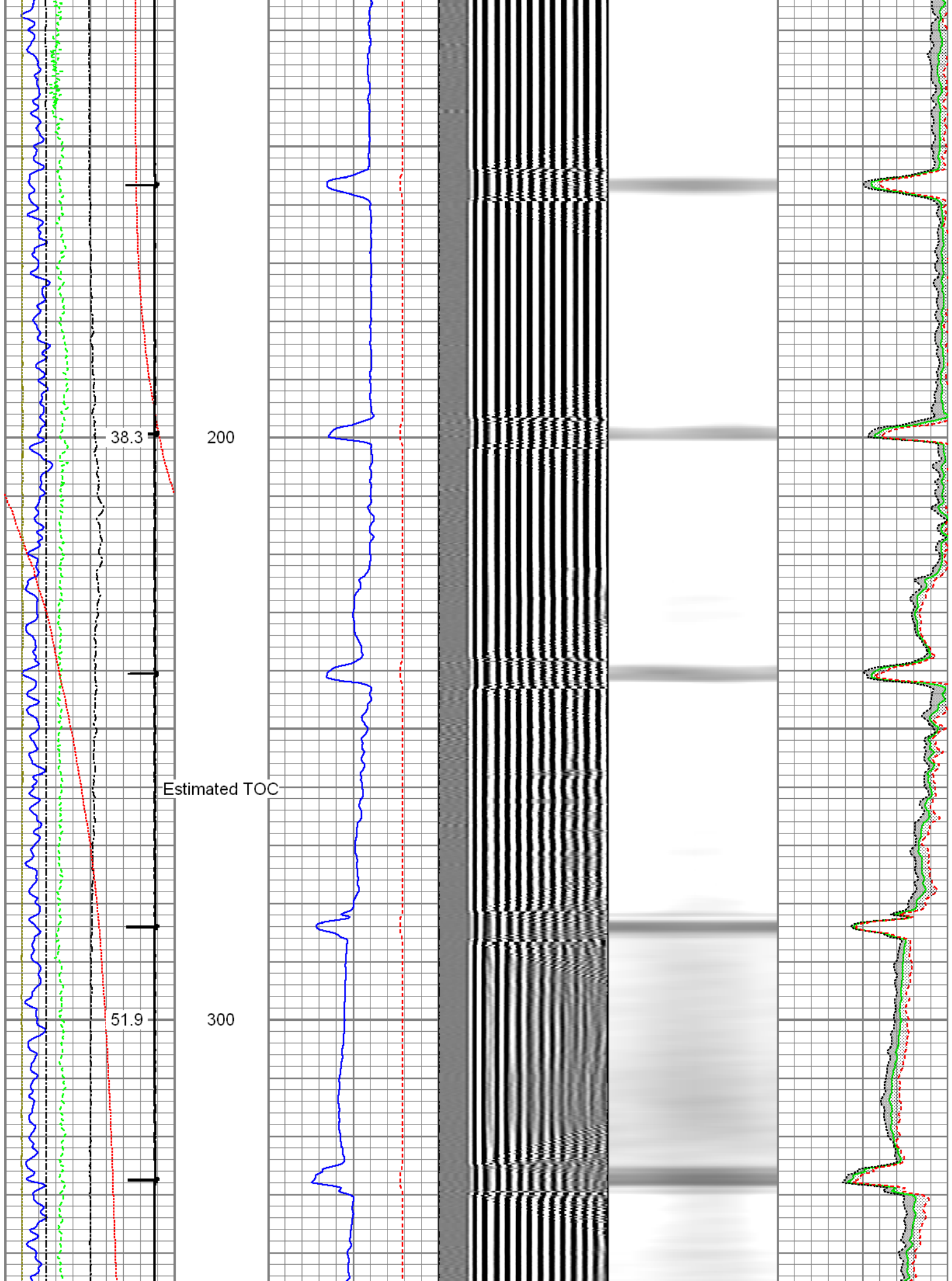
Presentation Format:rbt4_mit

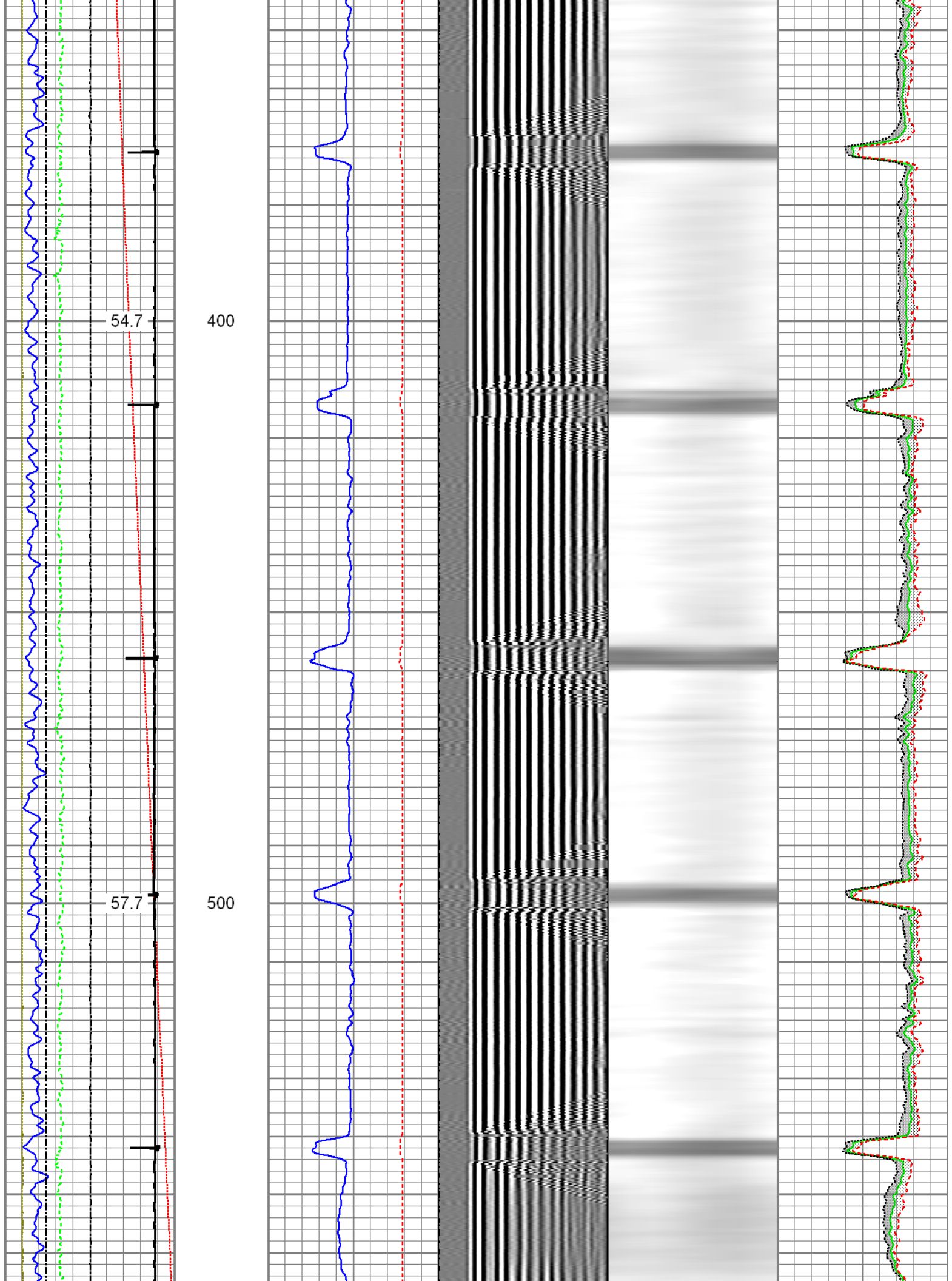
Dataset Creation:Fri Feb 19 15:37:09 2016 by Calc SCH 120430

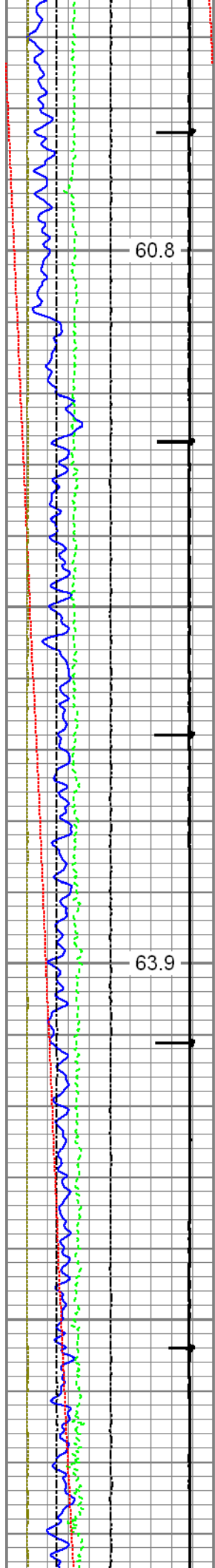
Charted by:Depth in Feet scaled 1:240

Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Line Speed	3' Amplitude x 5			Mimimum 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				
-10 Deviation (°) 90				
Casing Collar Locator				



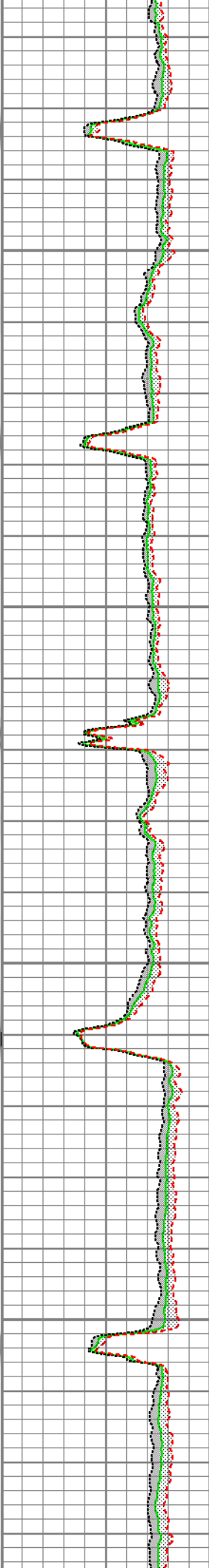
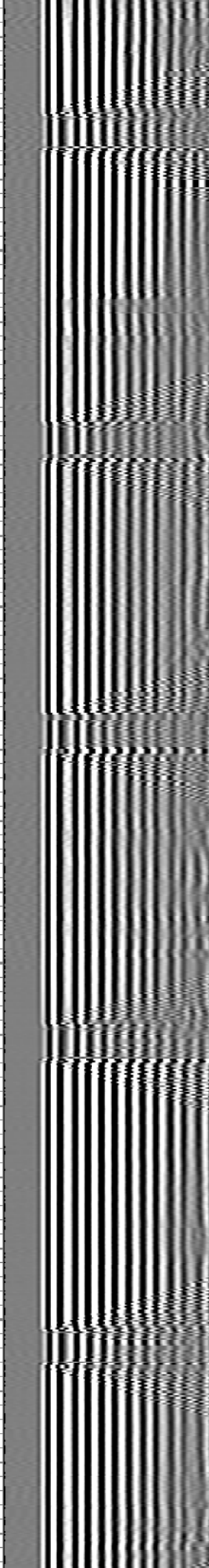
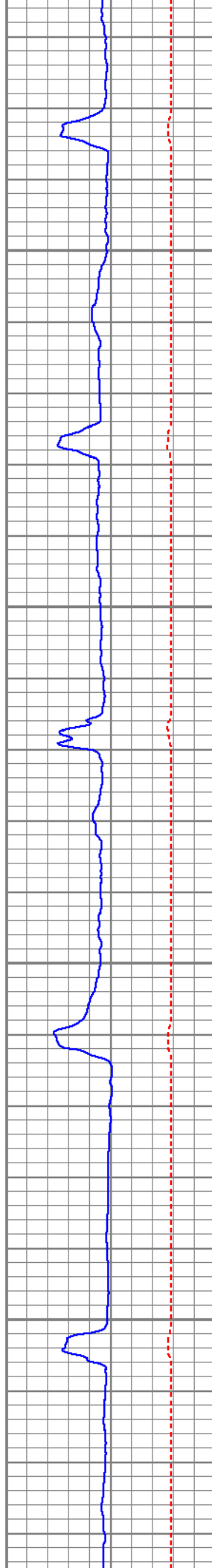


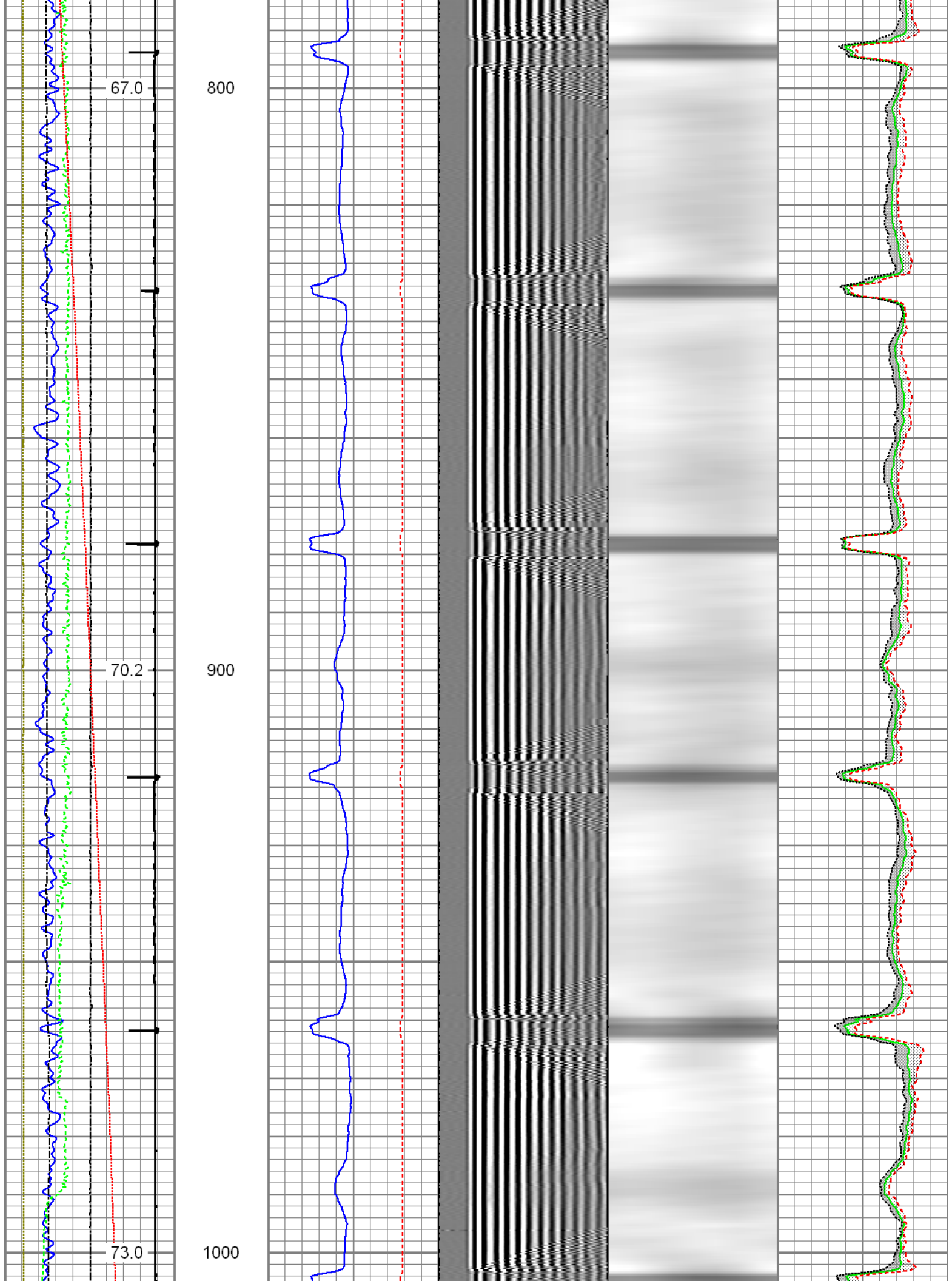


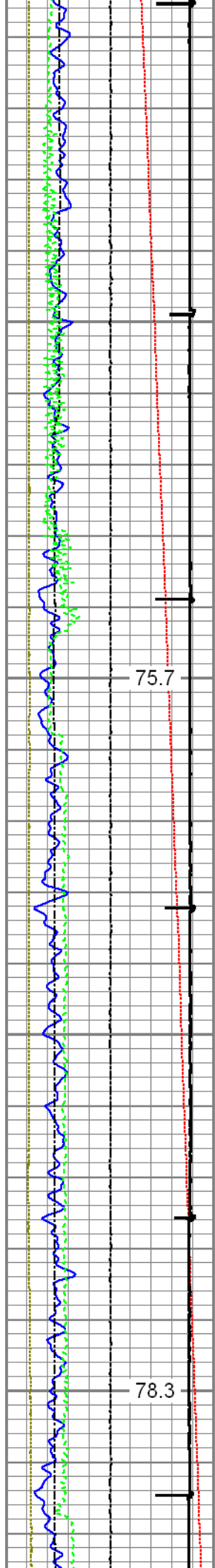


600

700

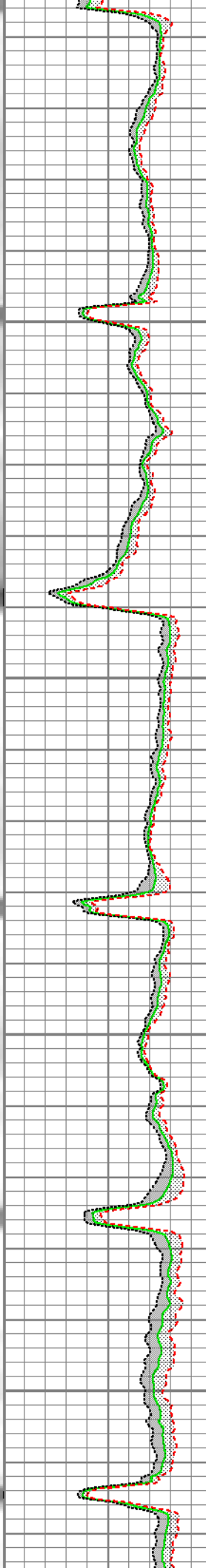
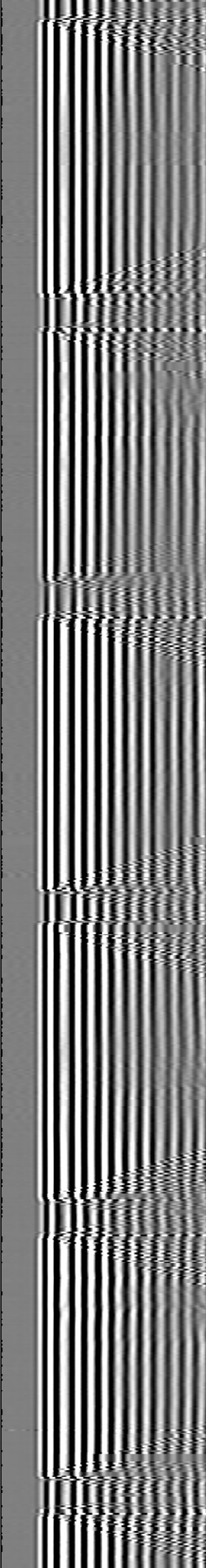
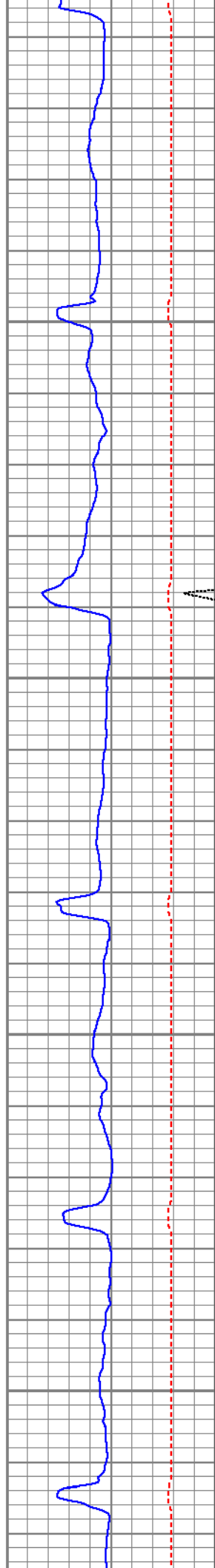


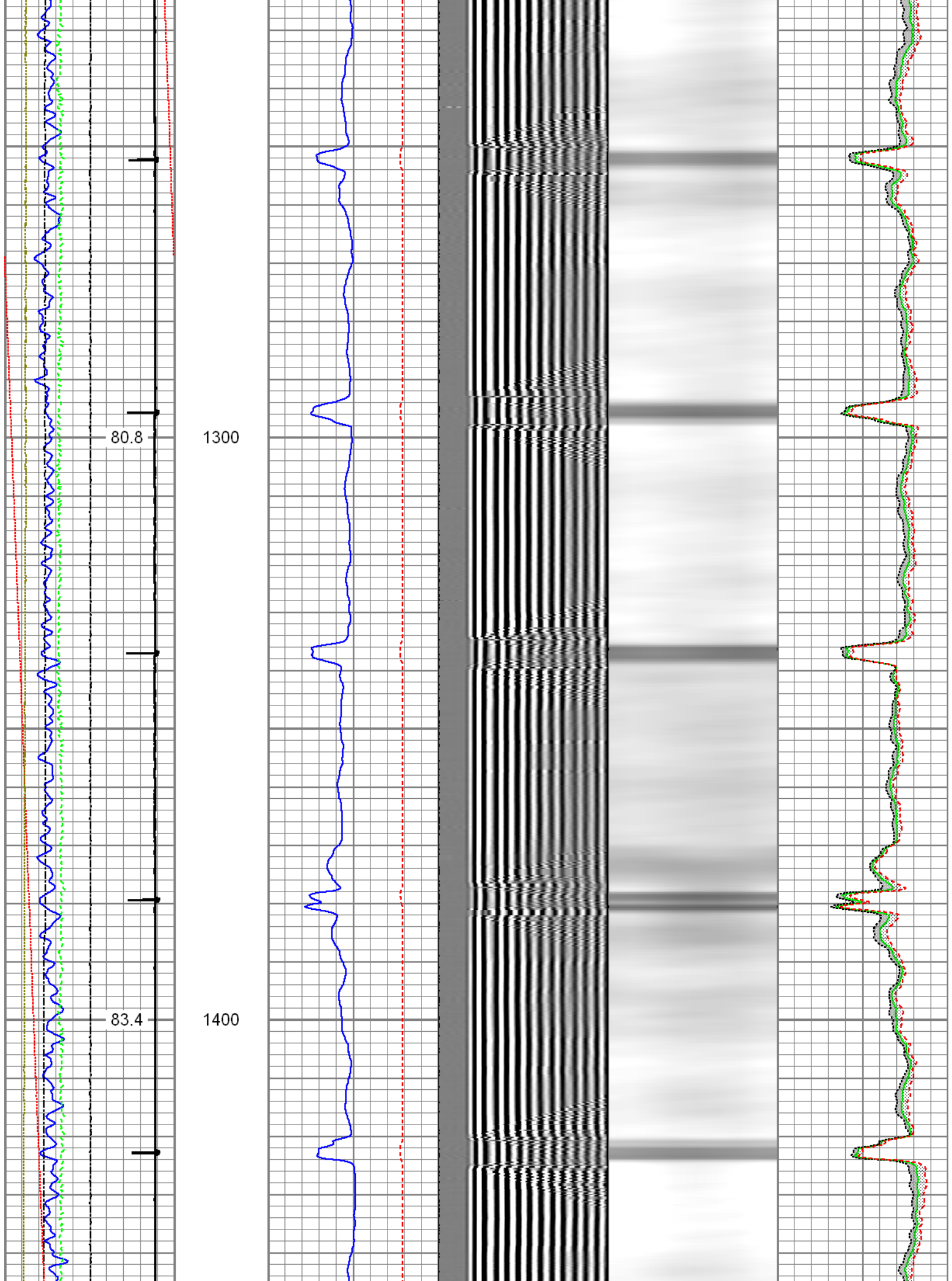


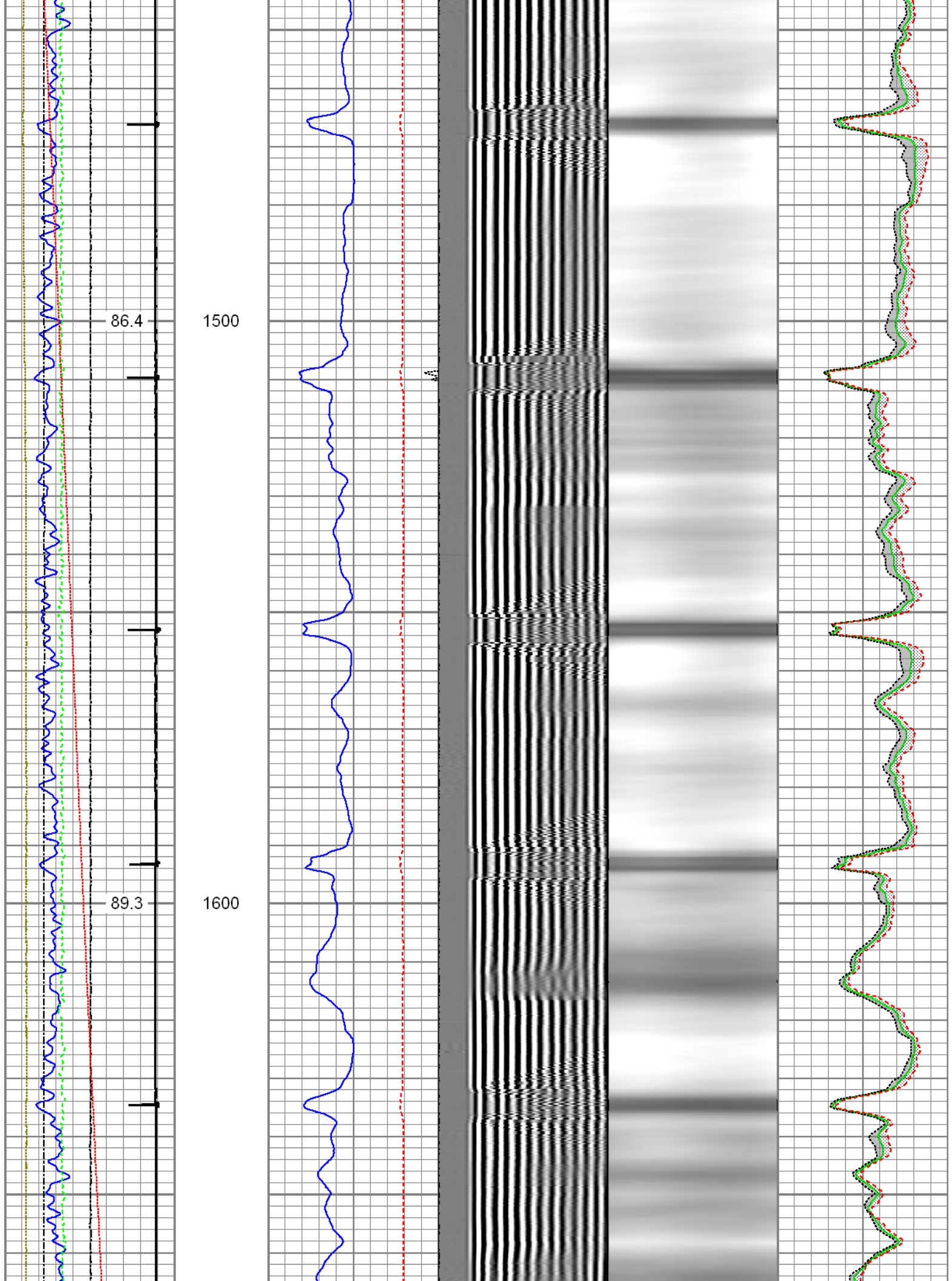


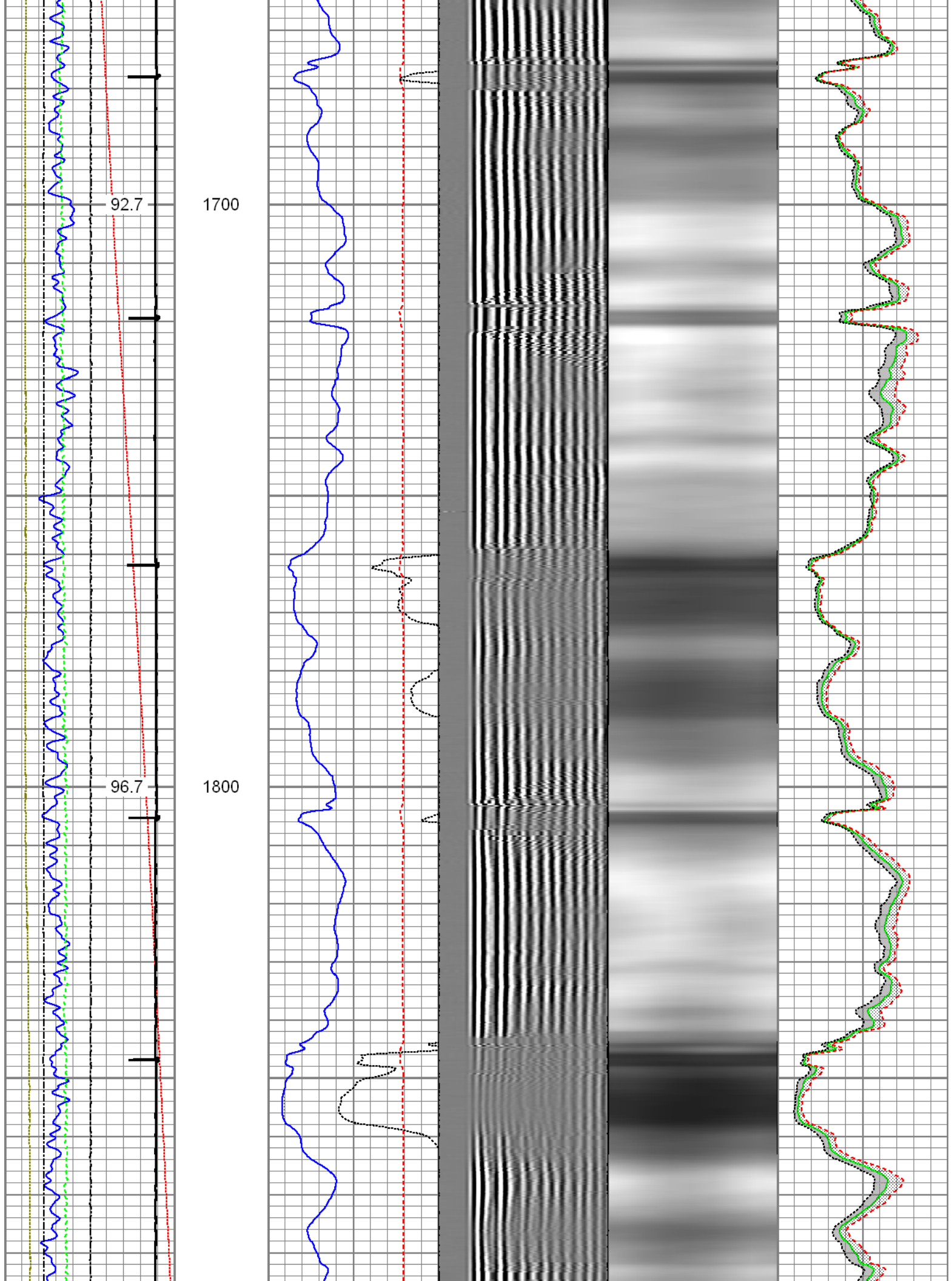
1100

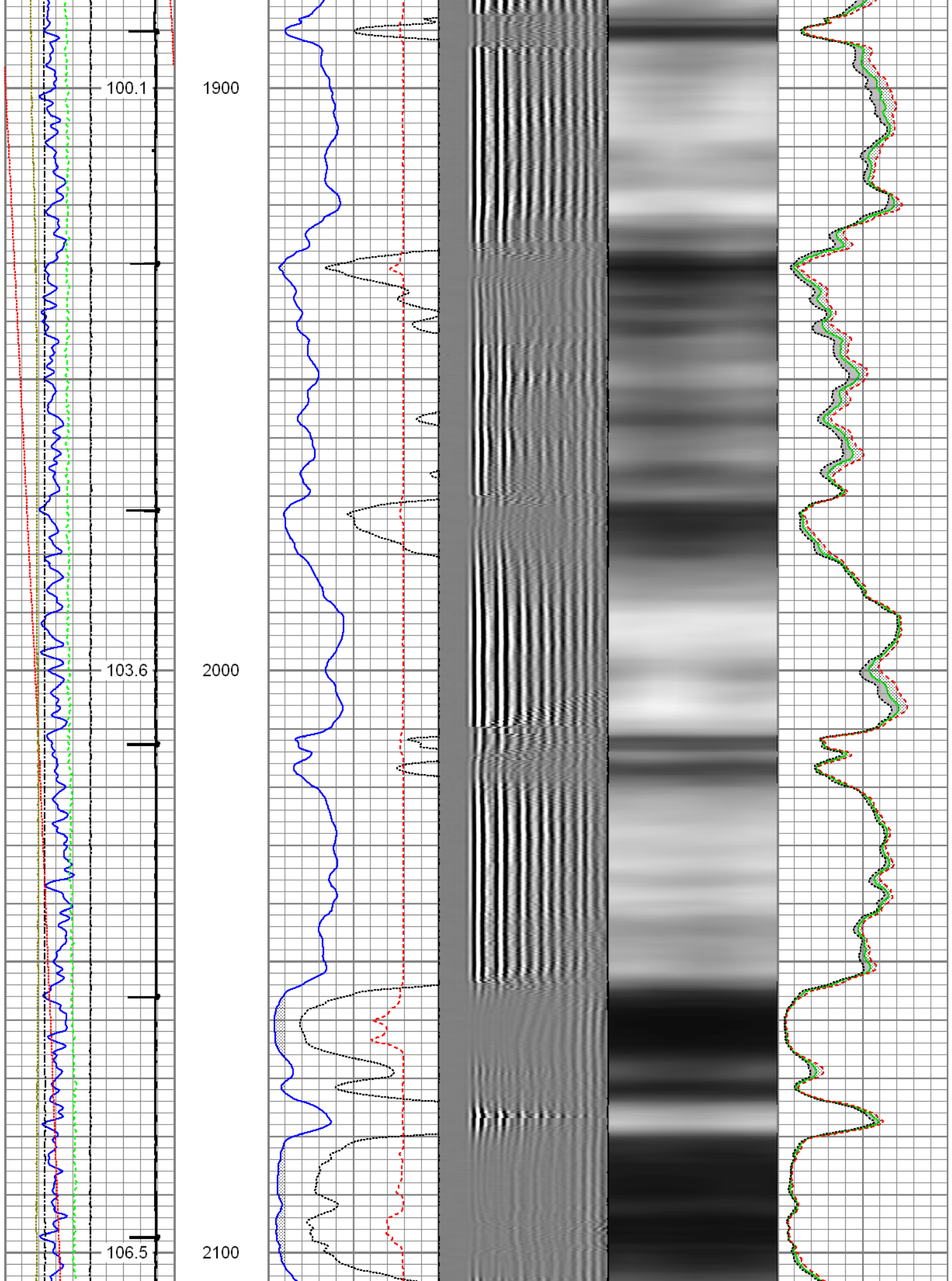
1200

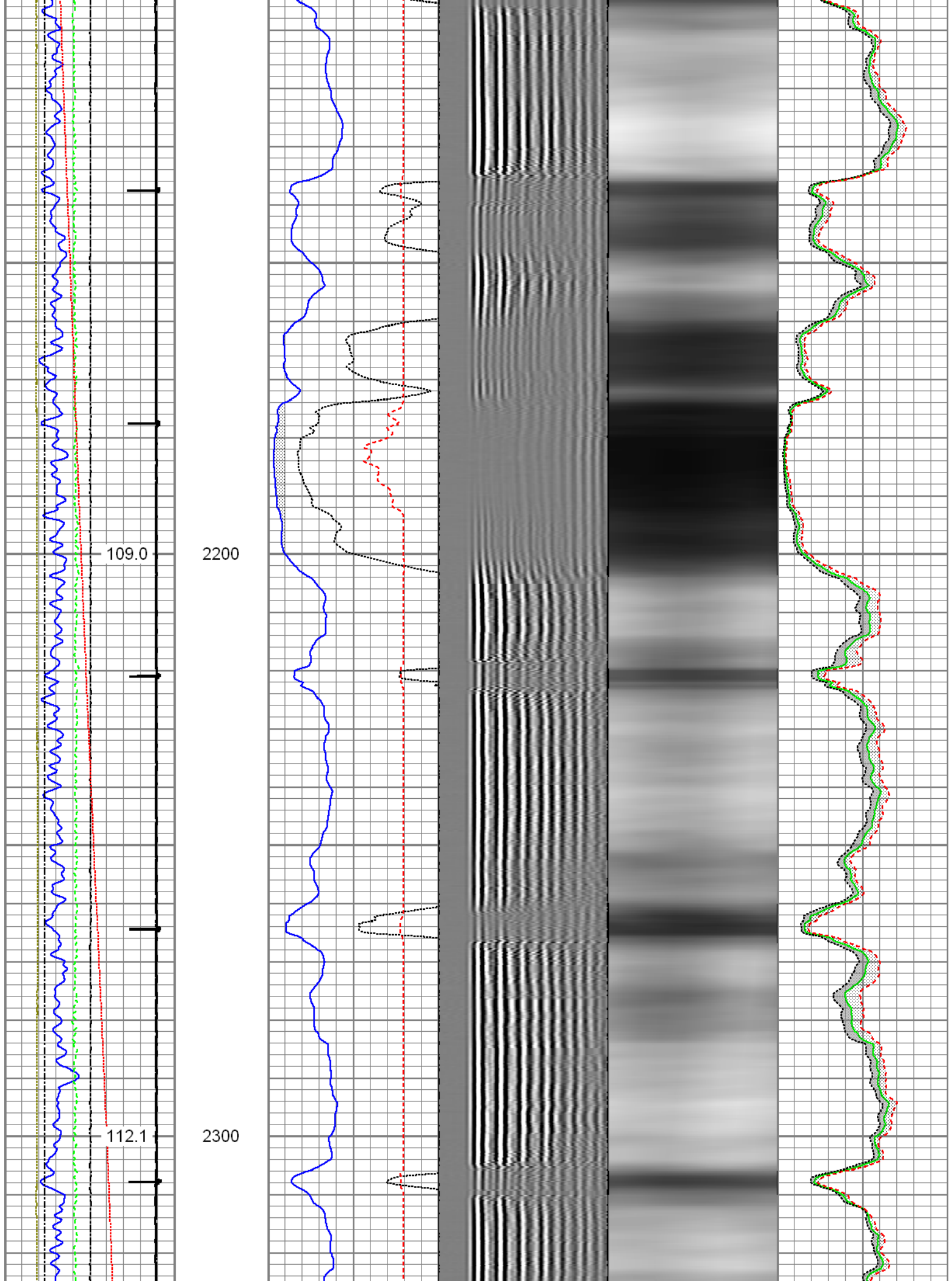


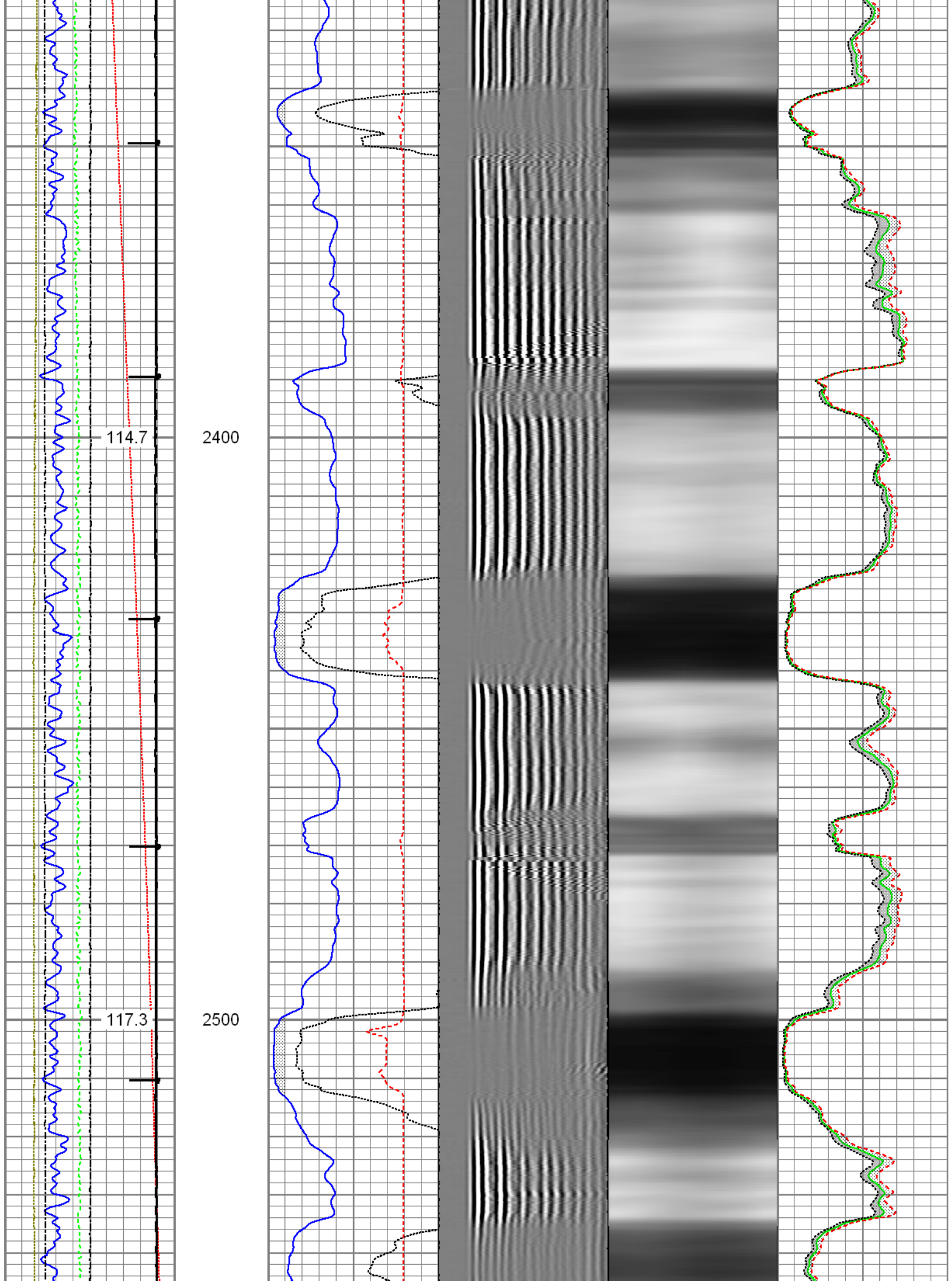


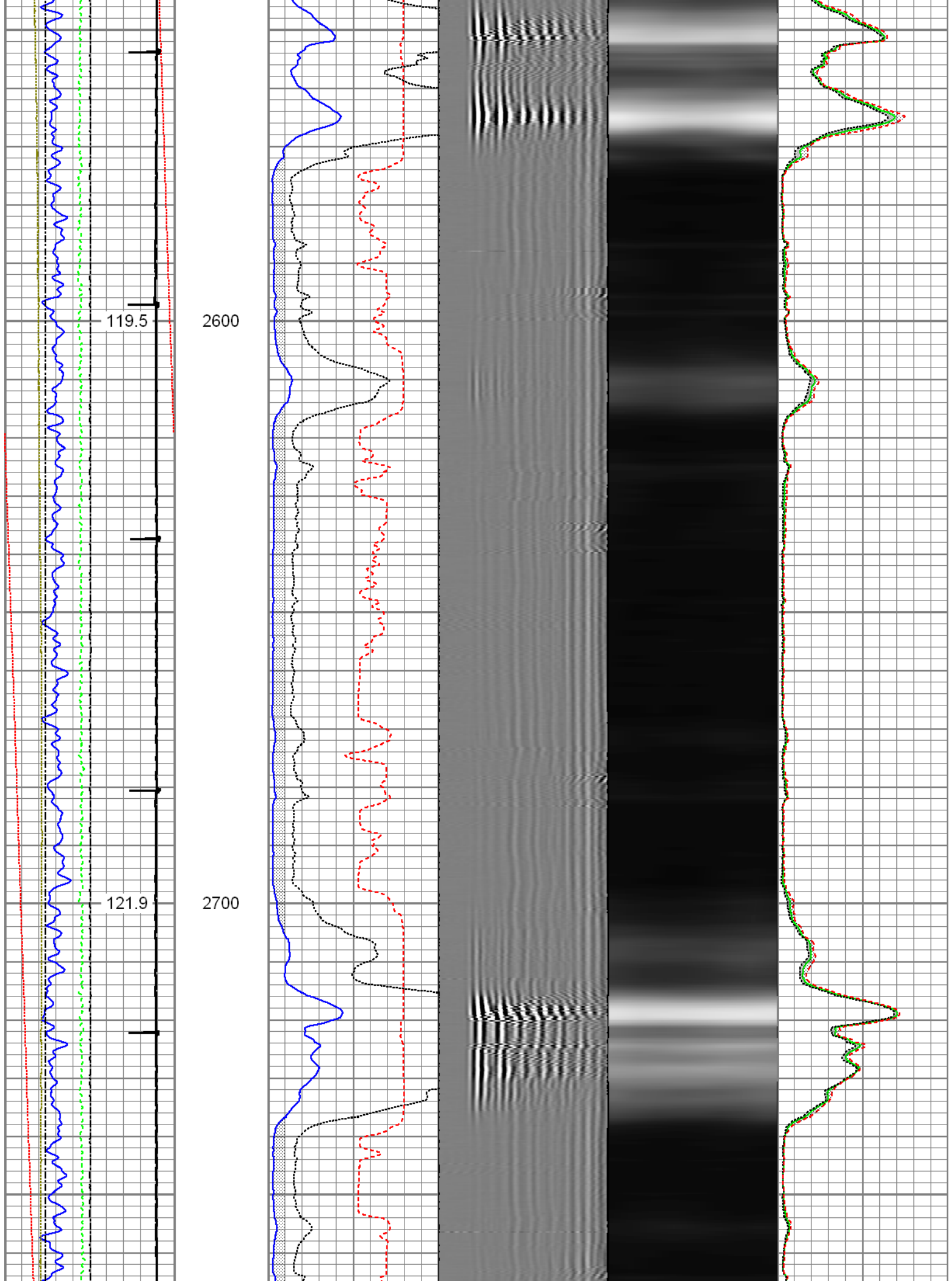


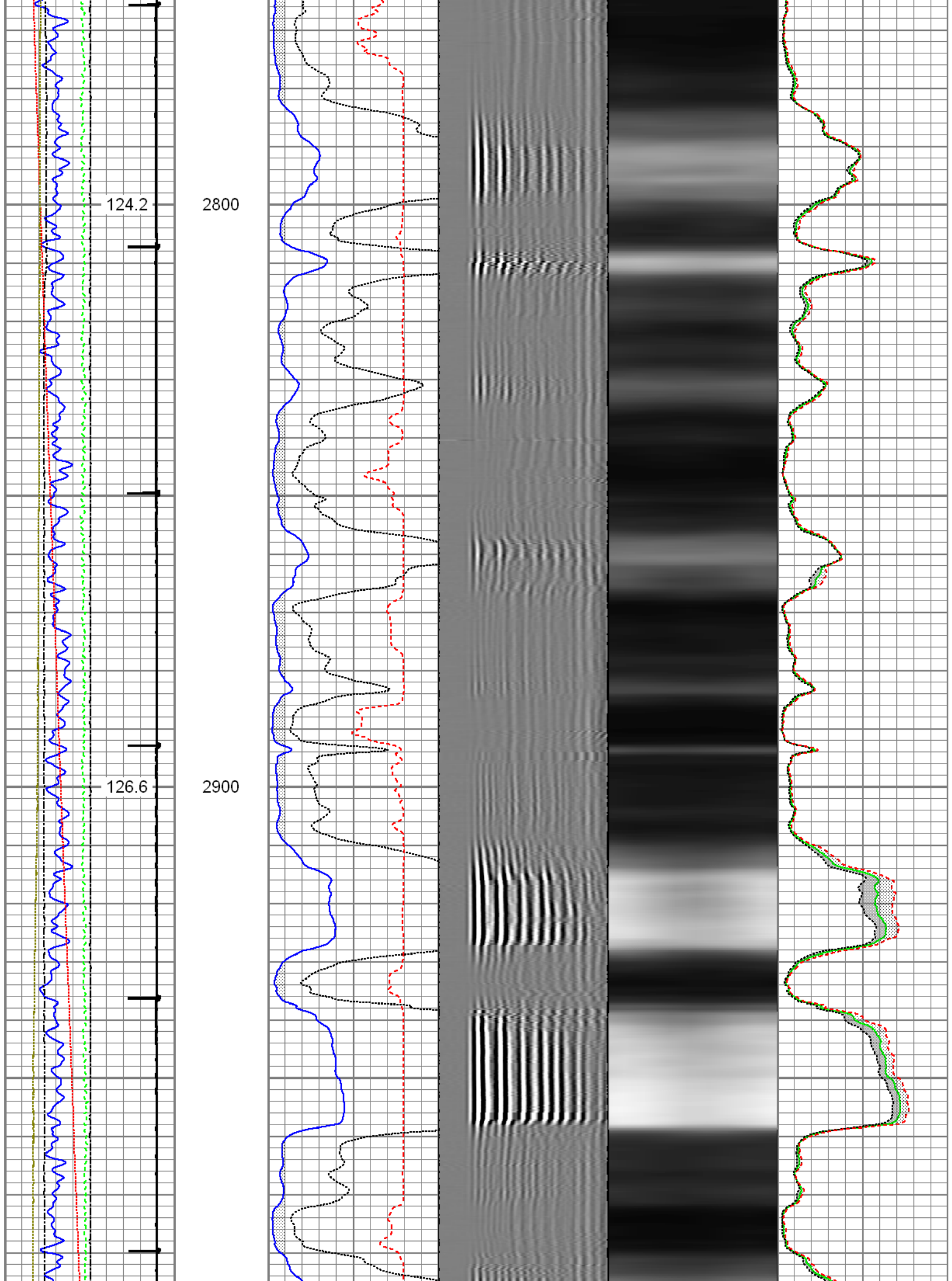


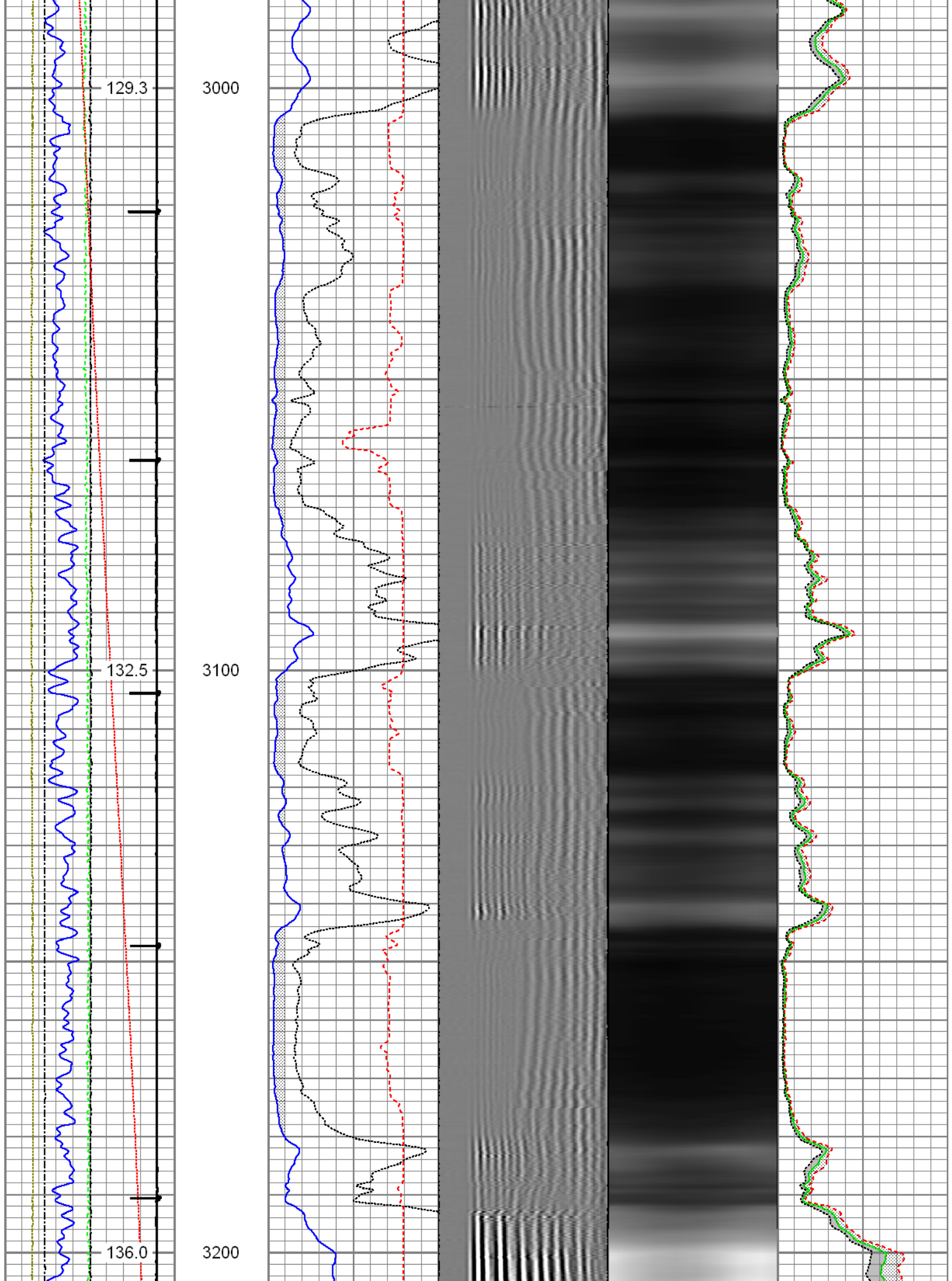


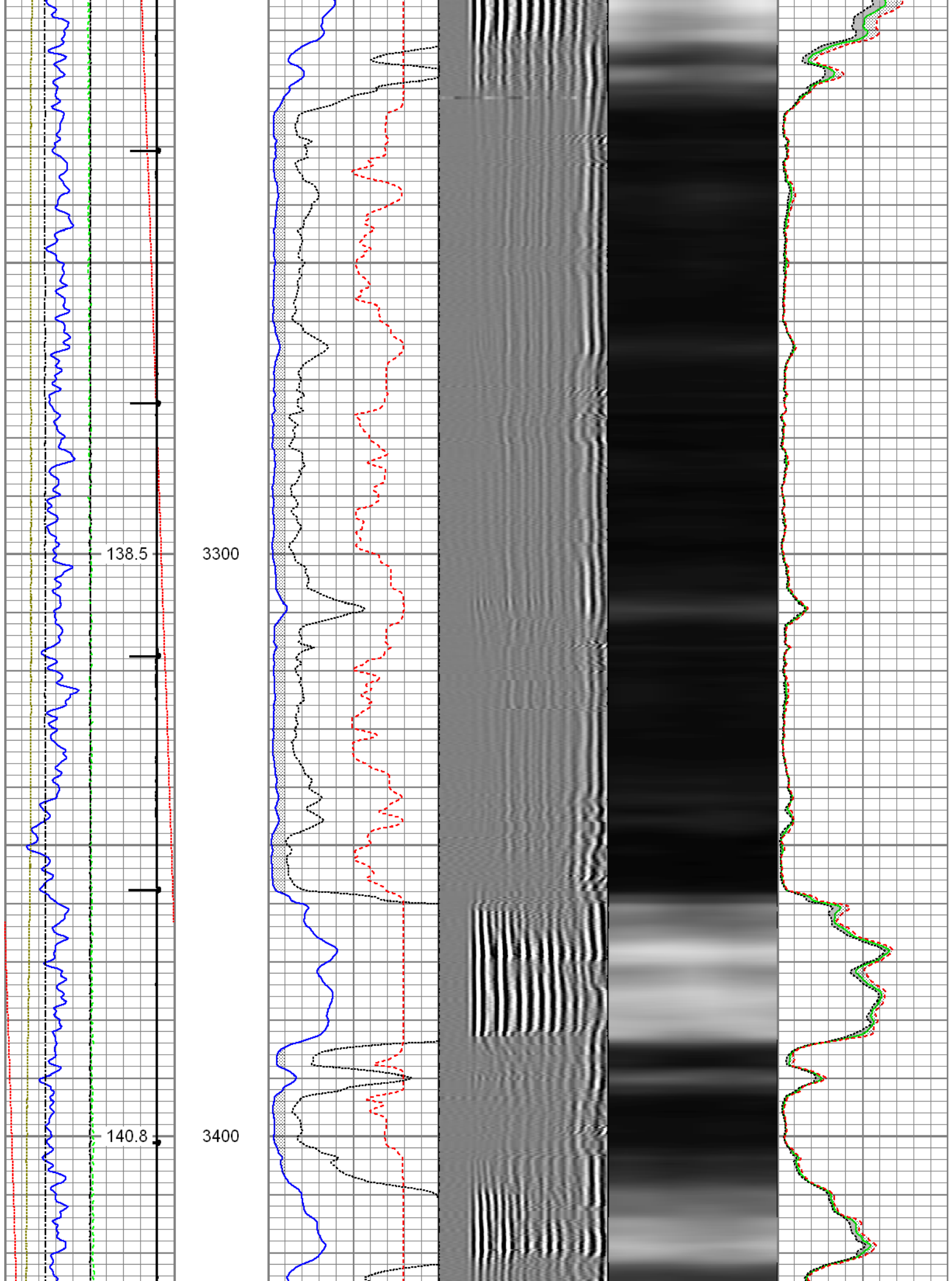


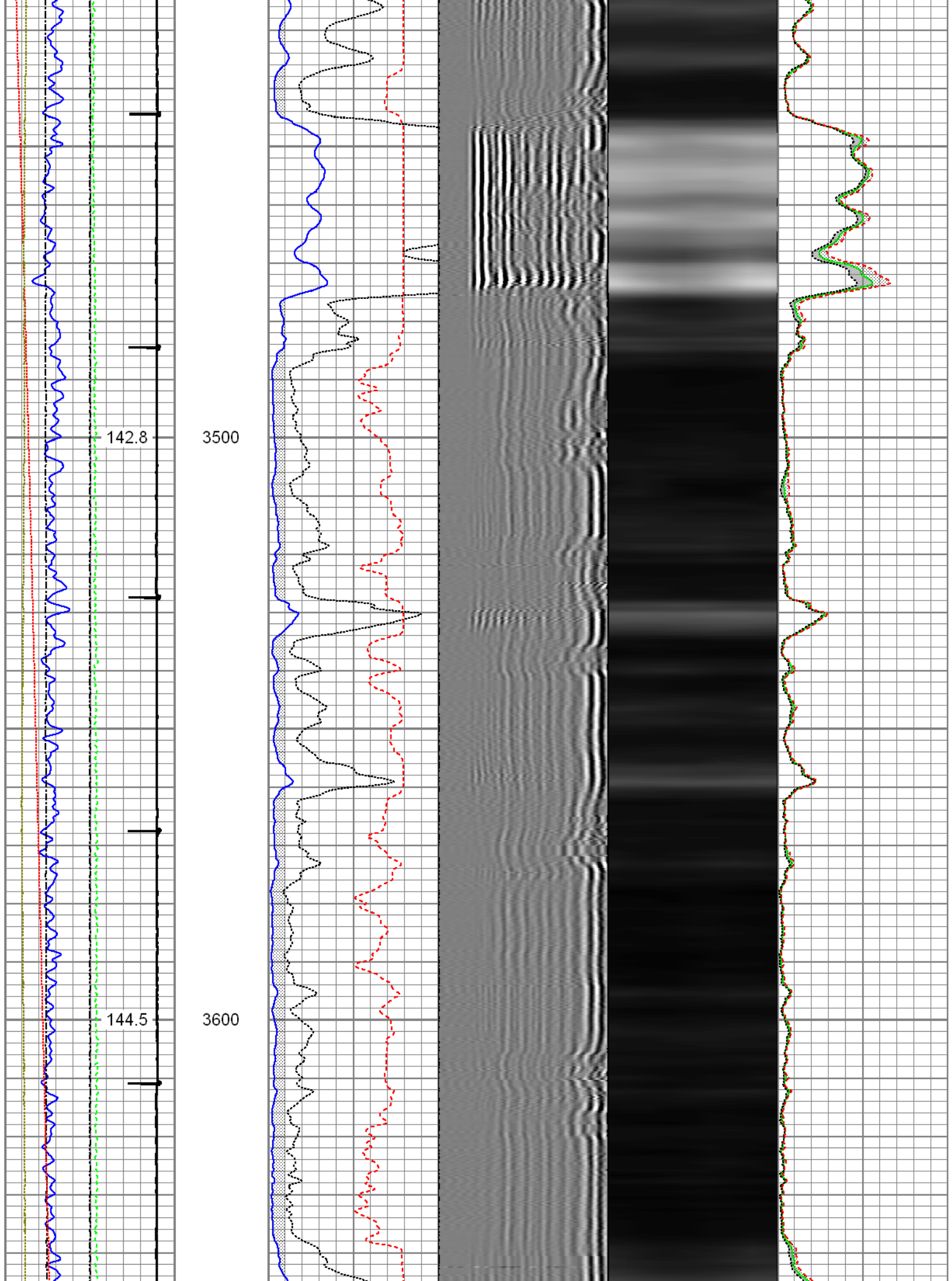


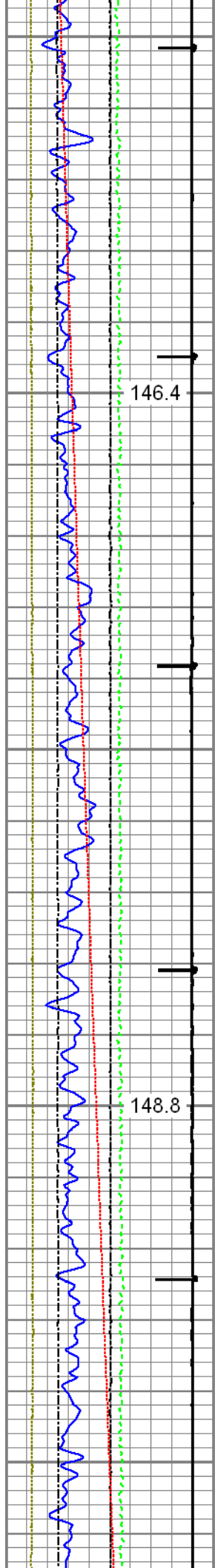






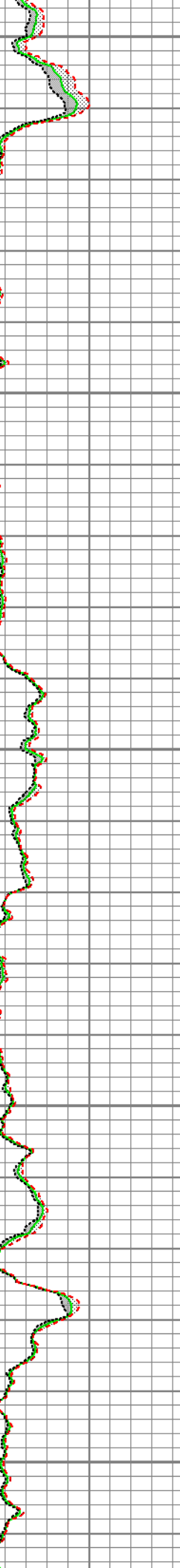
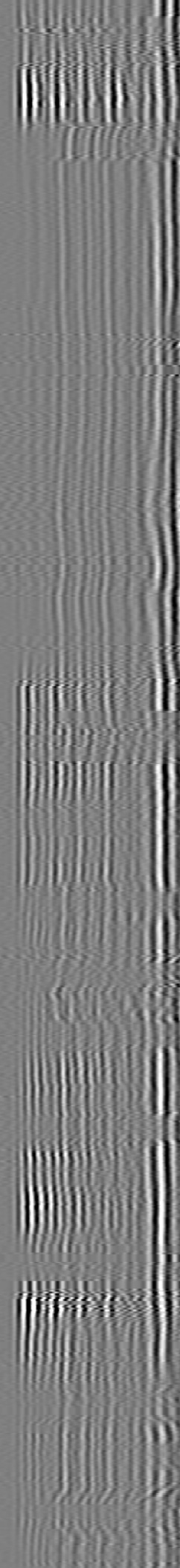
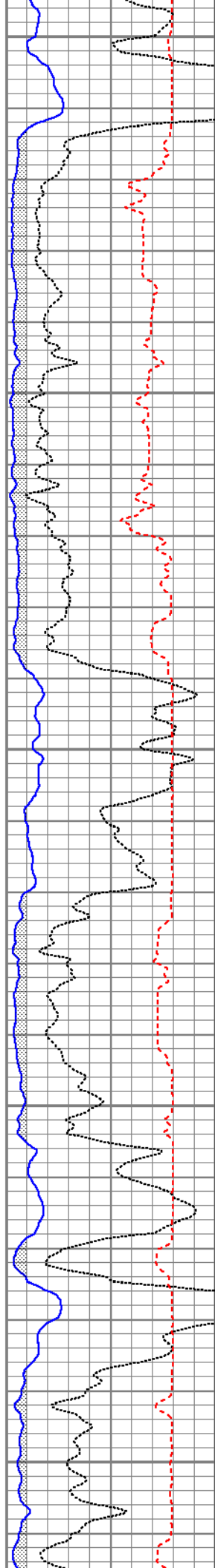


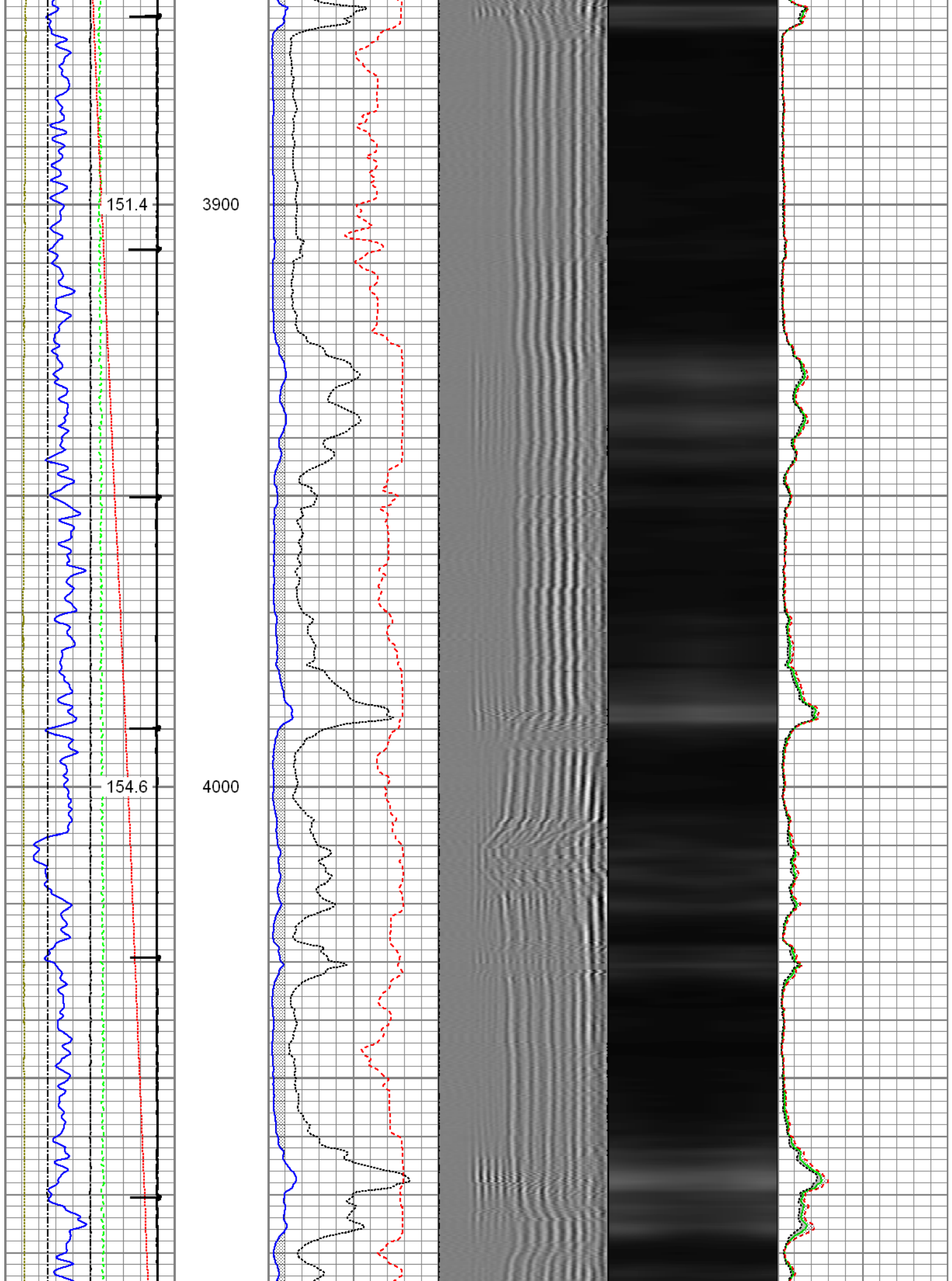


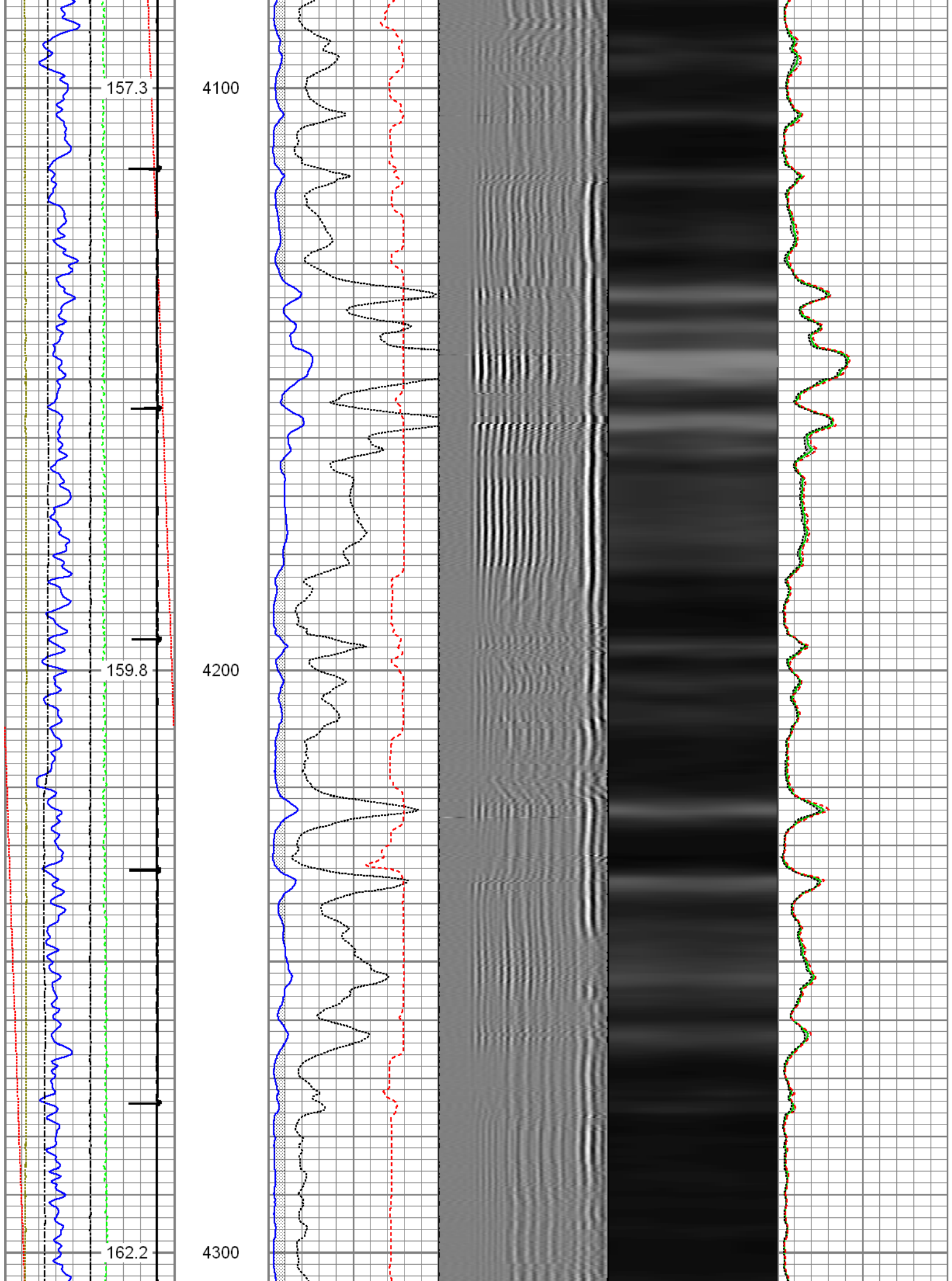


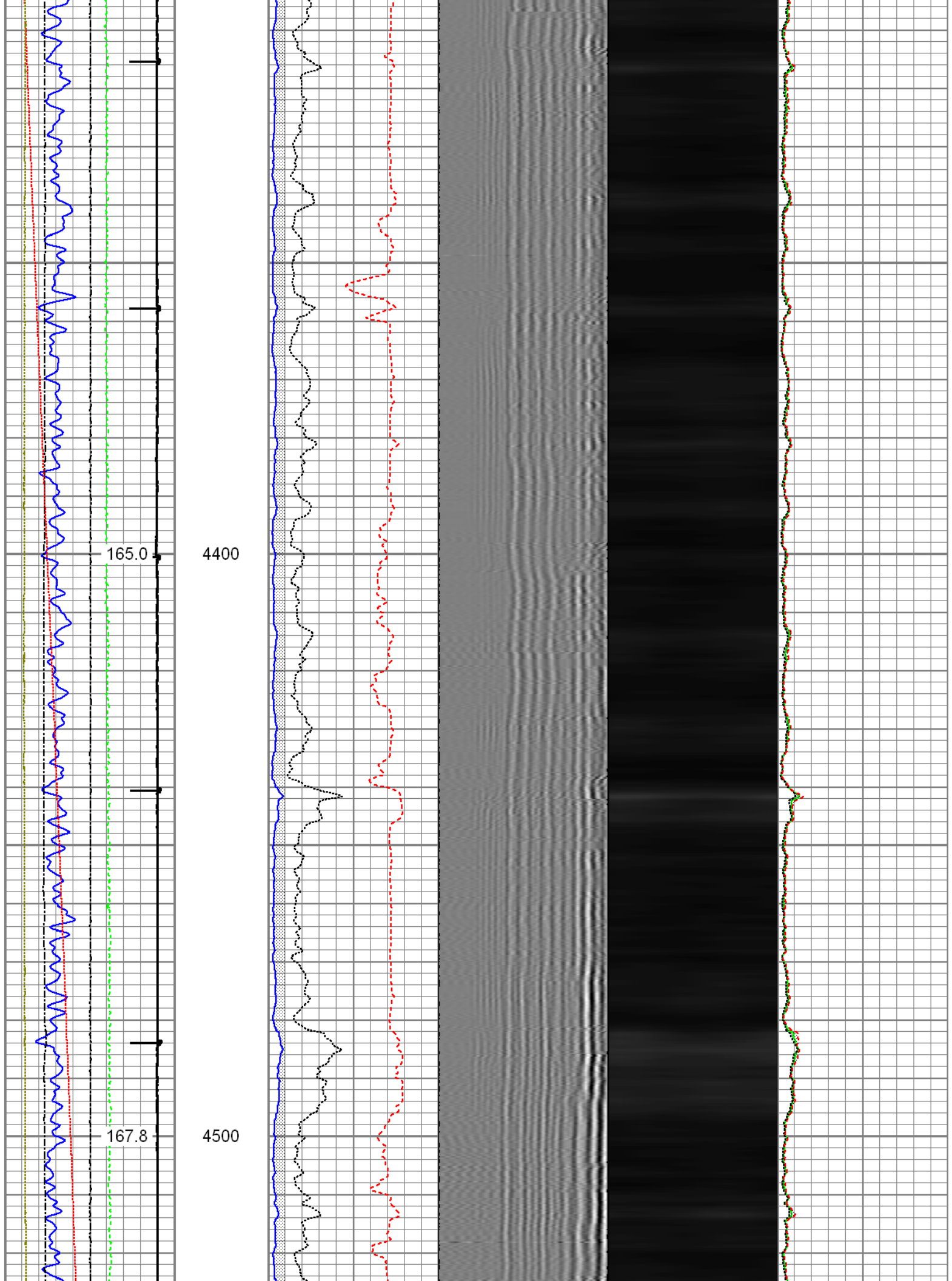
3700

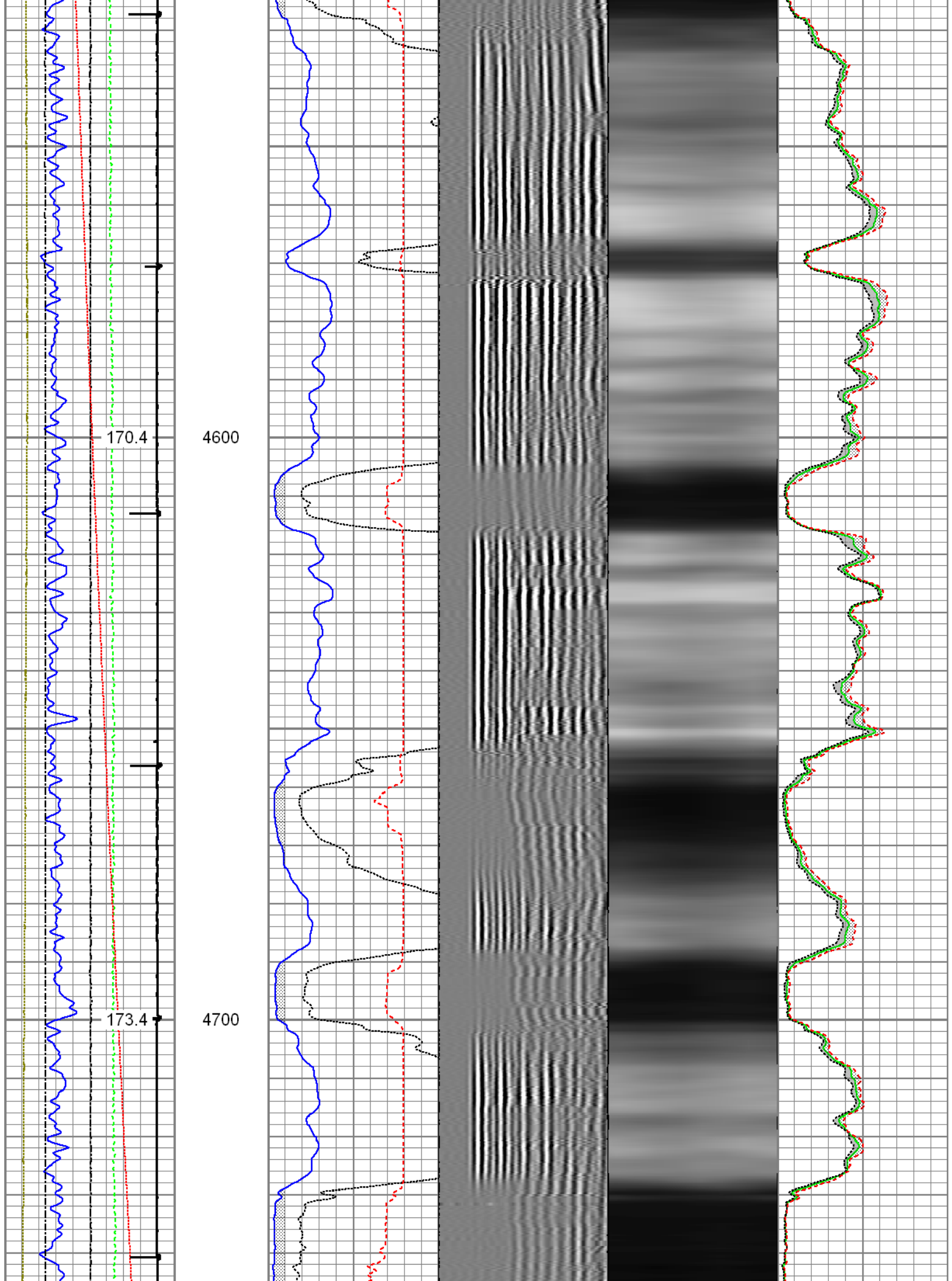
3800

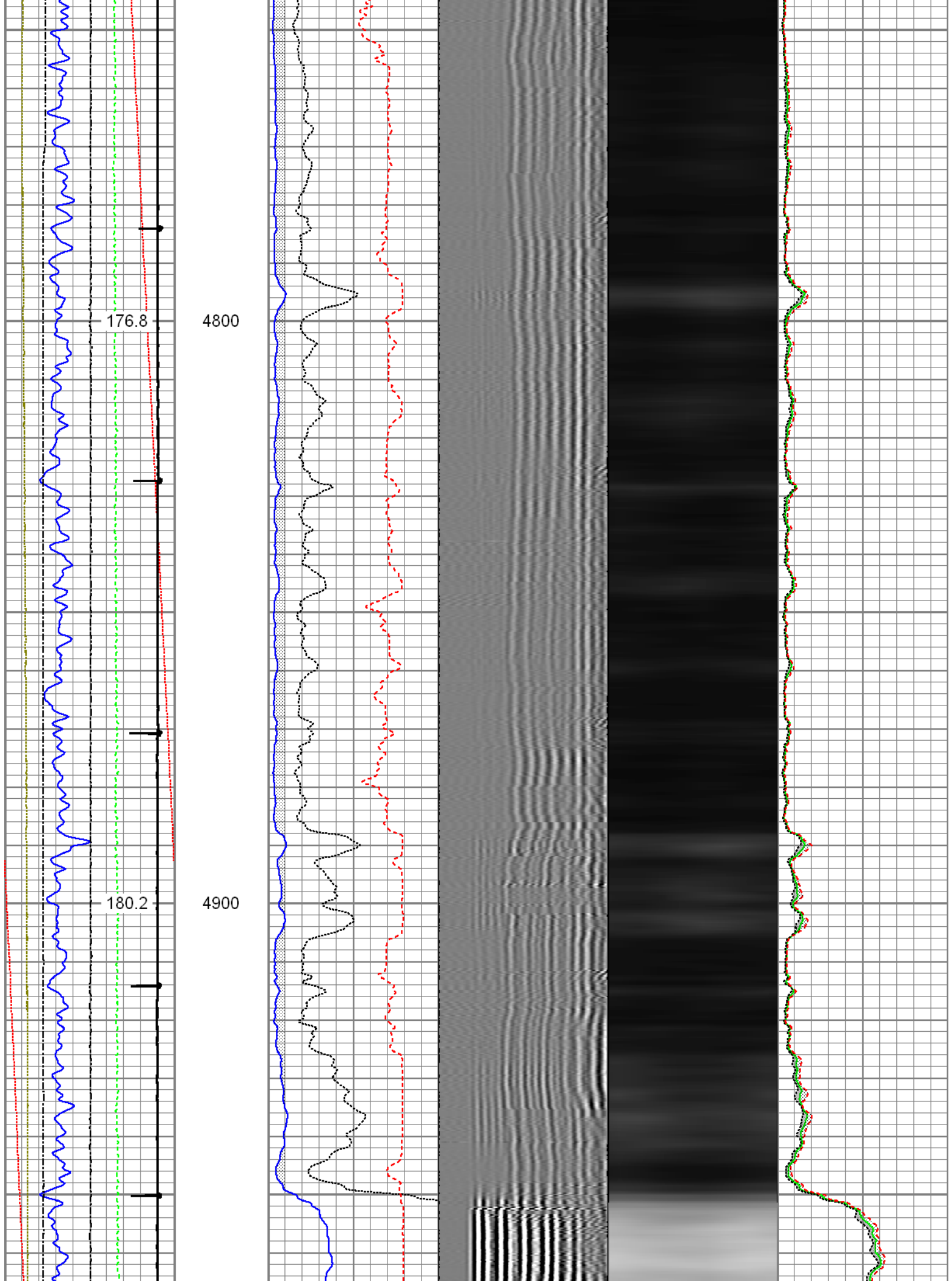


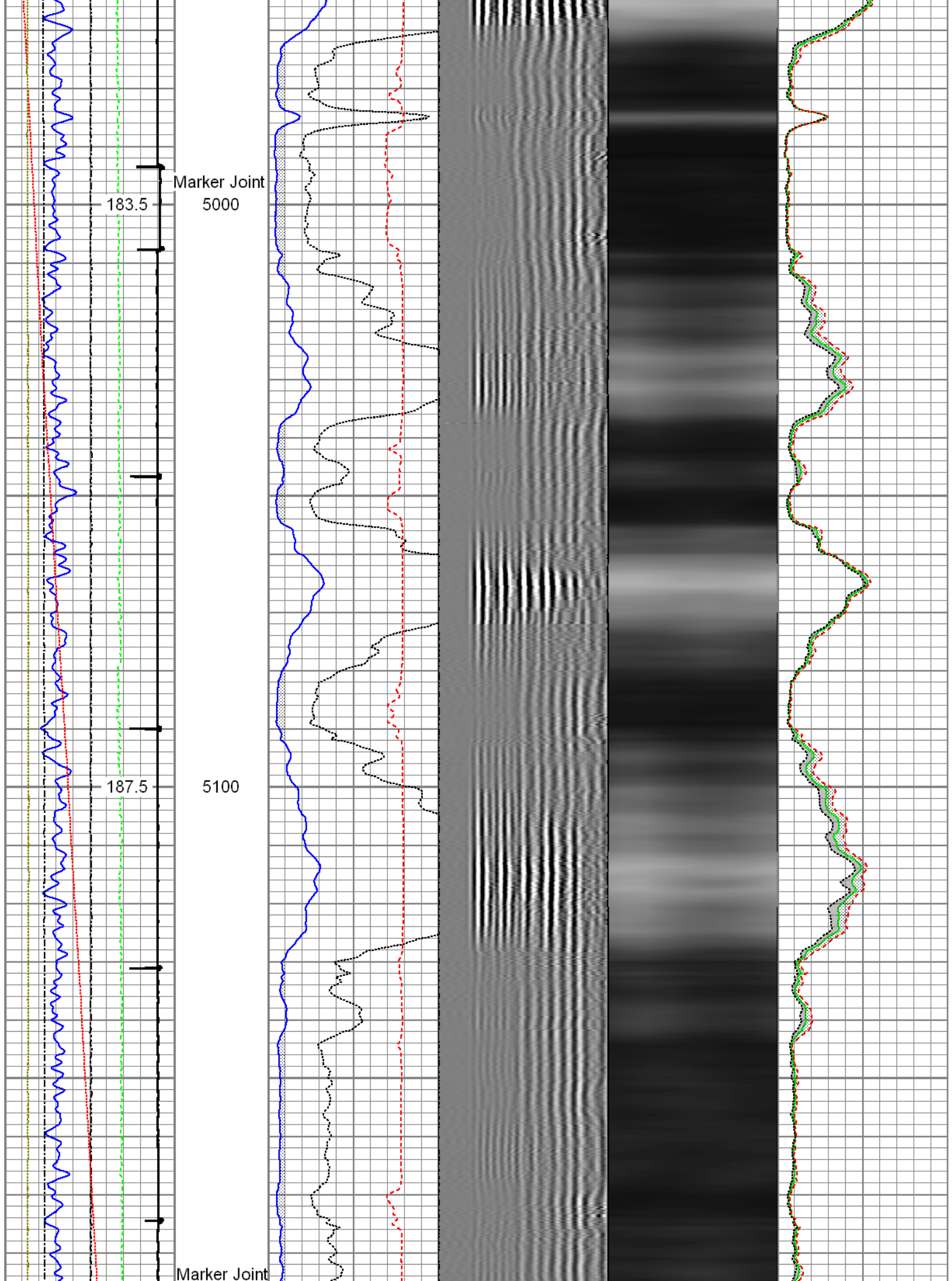


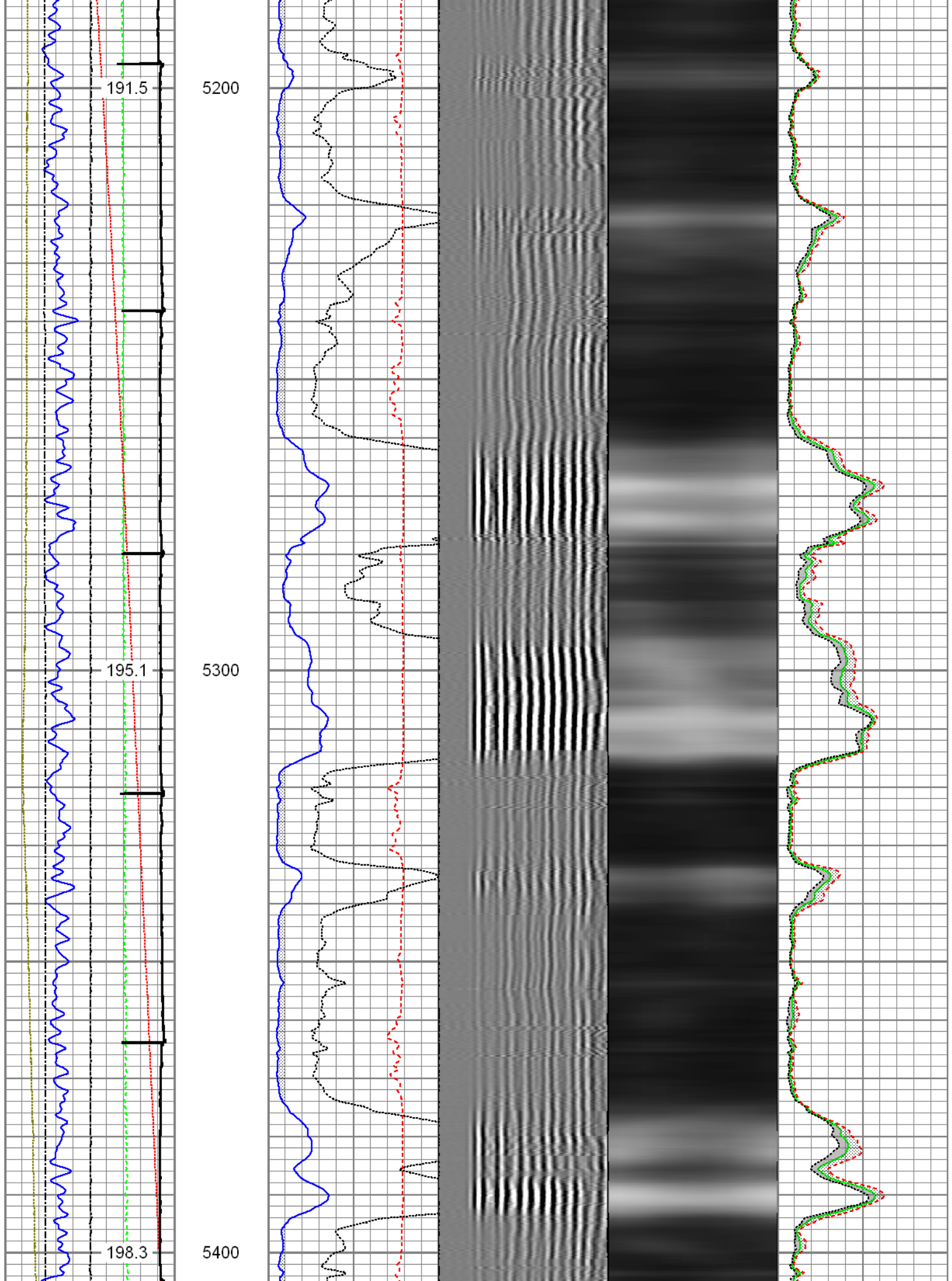


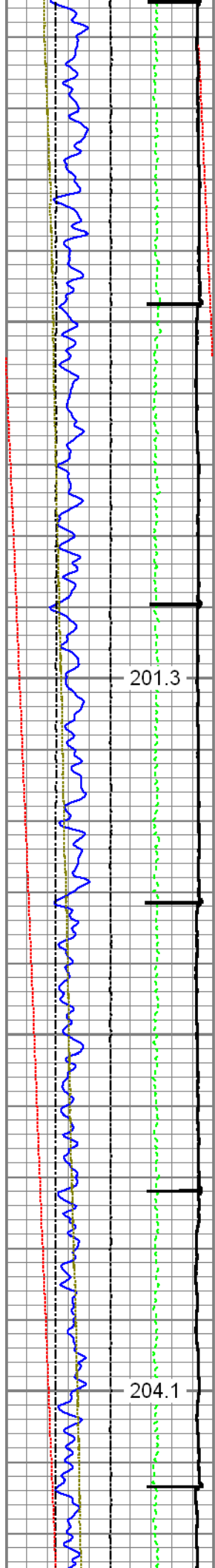






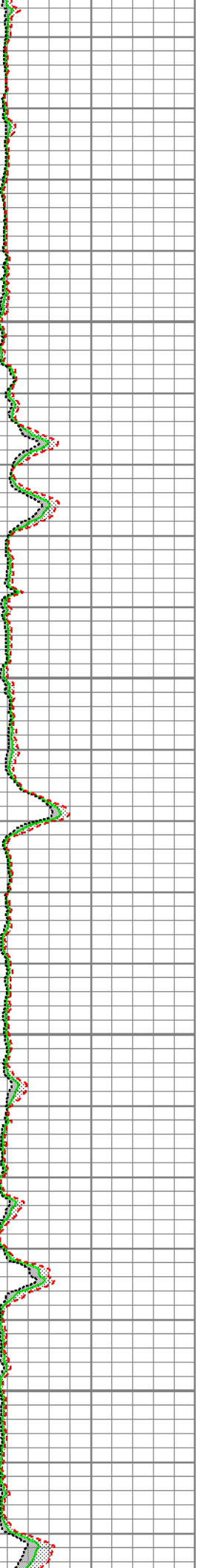
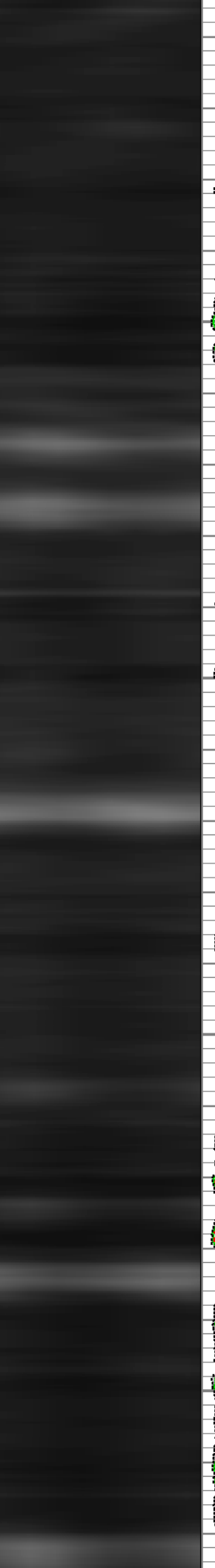
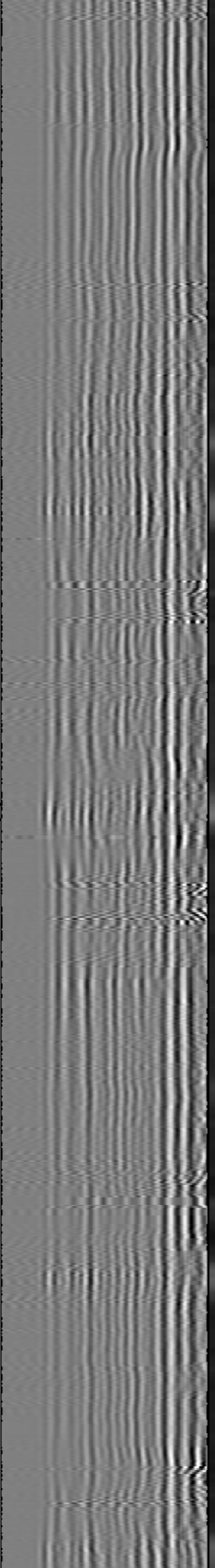
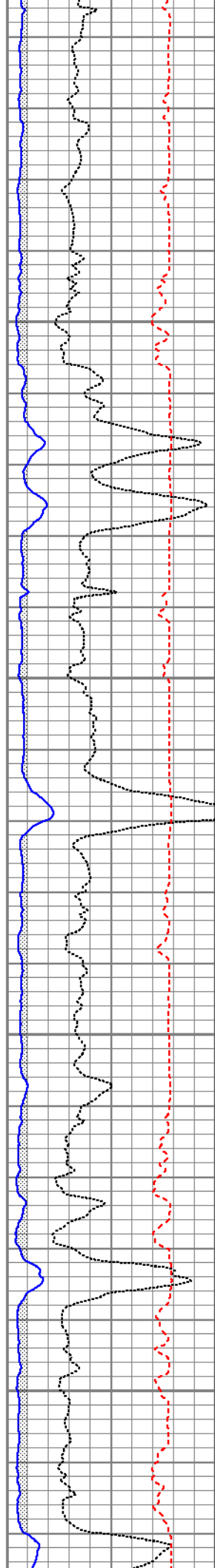


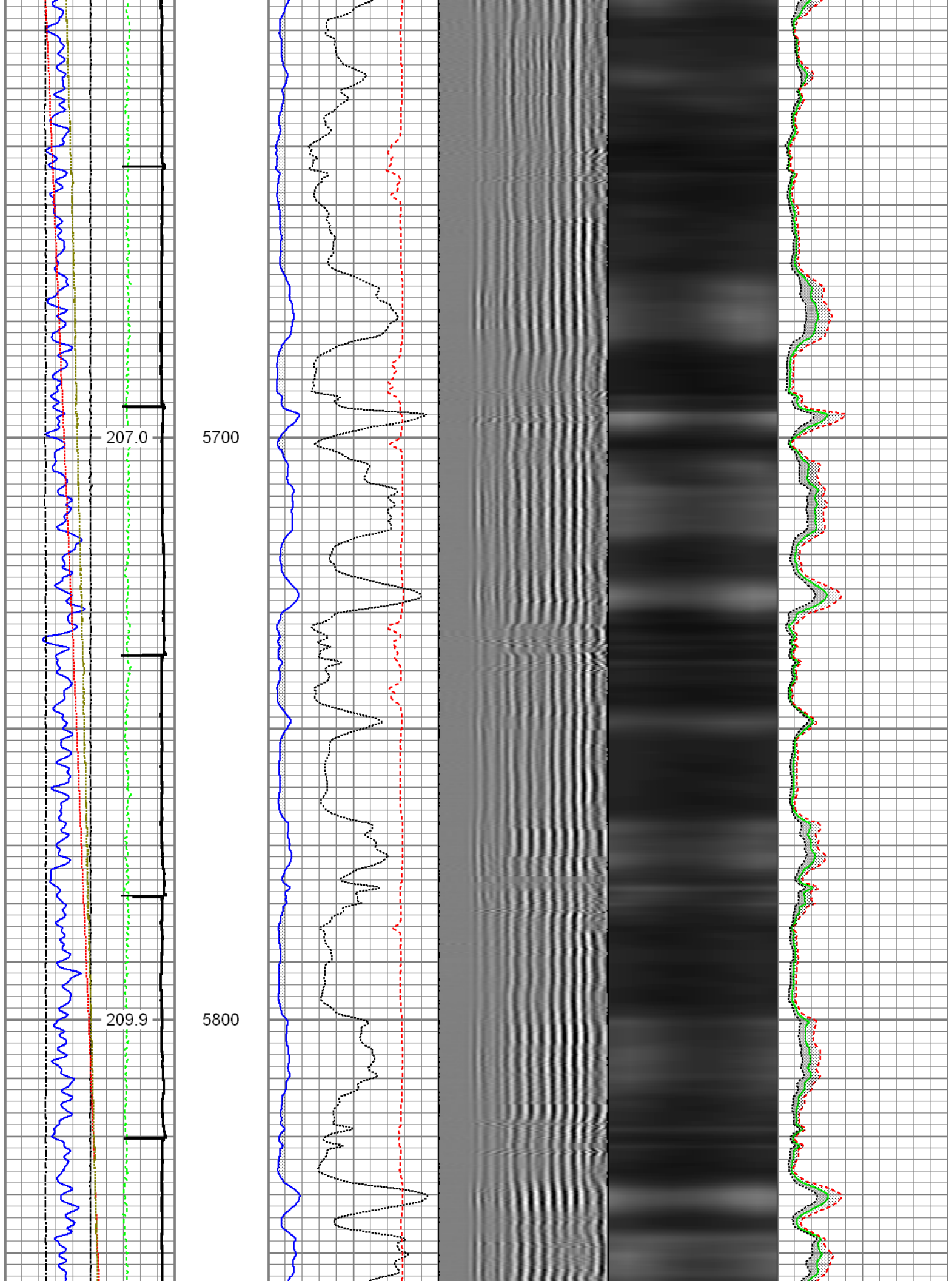


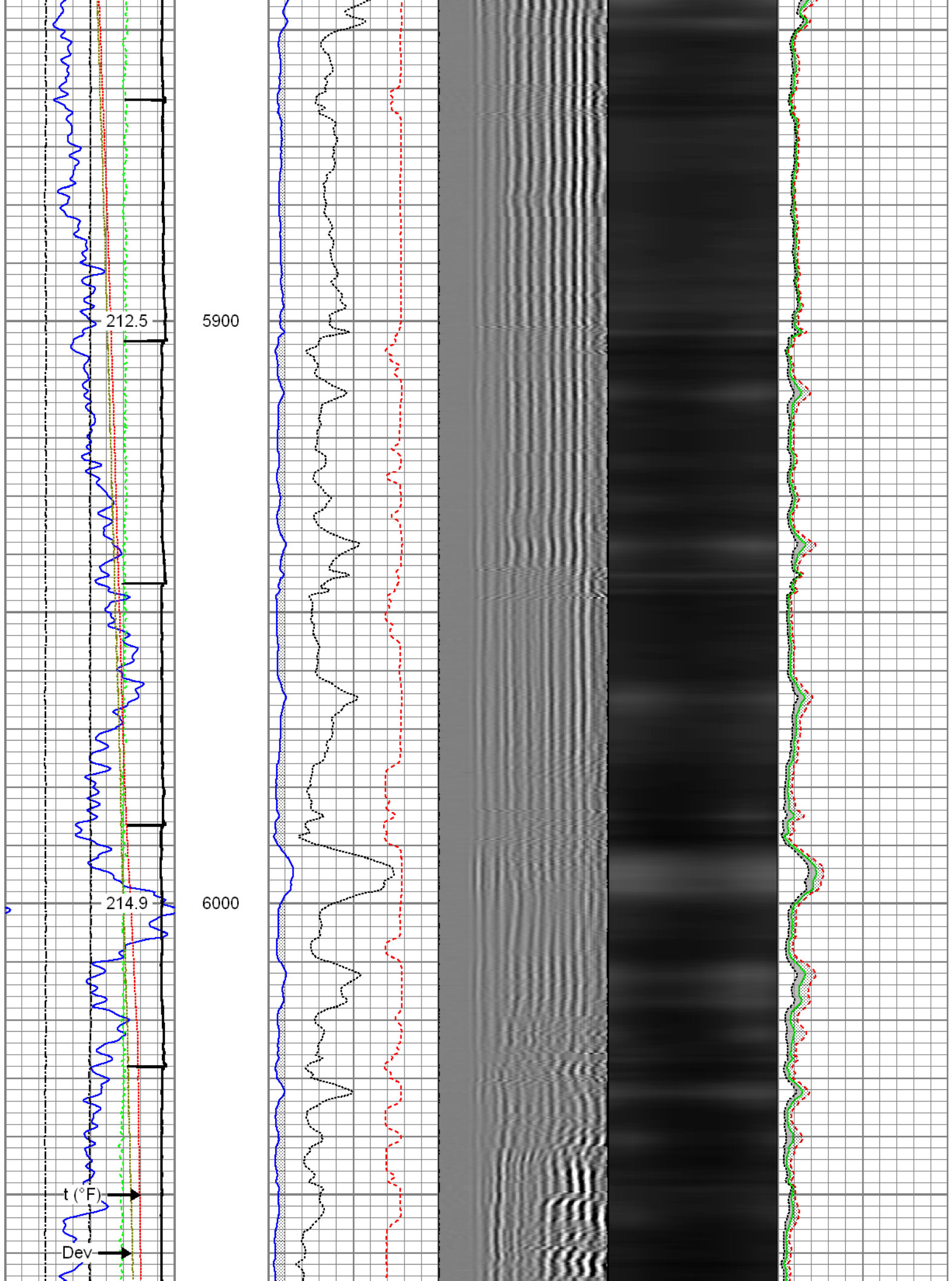


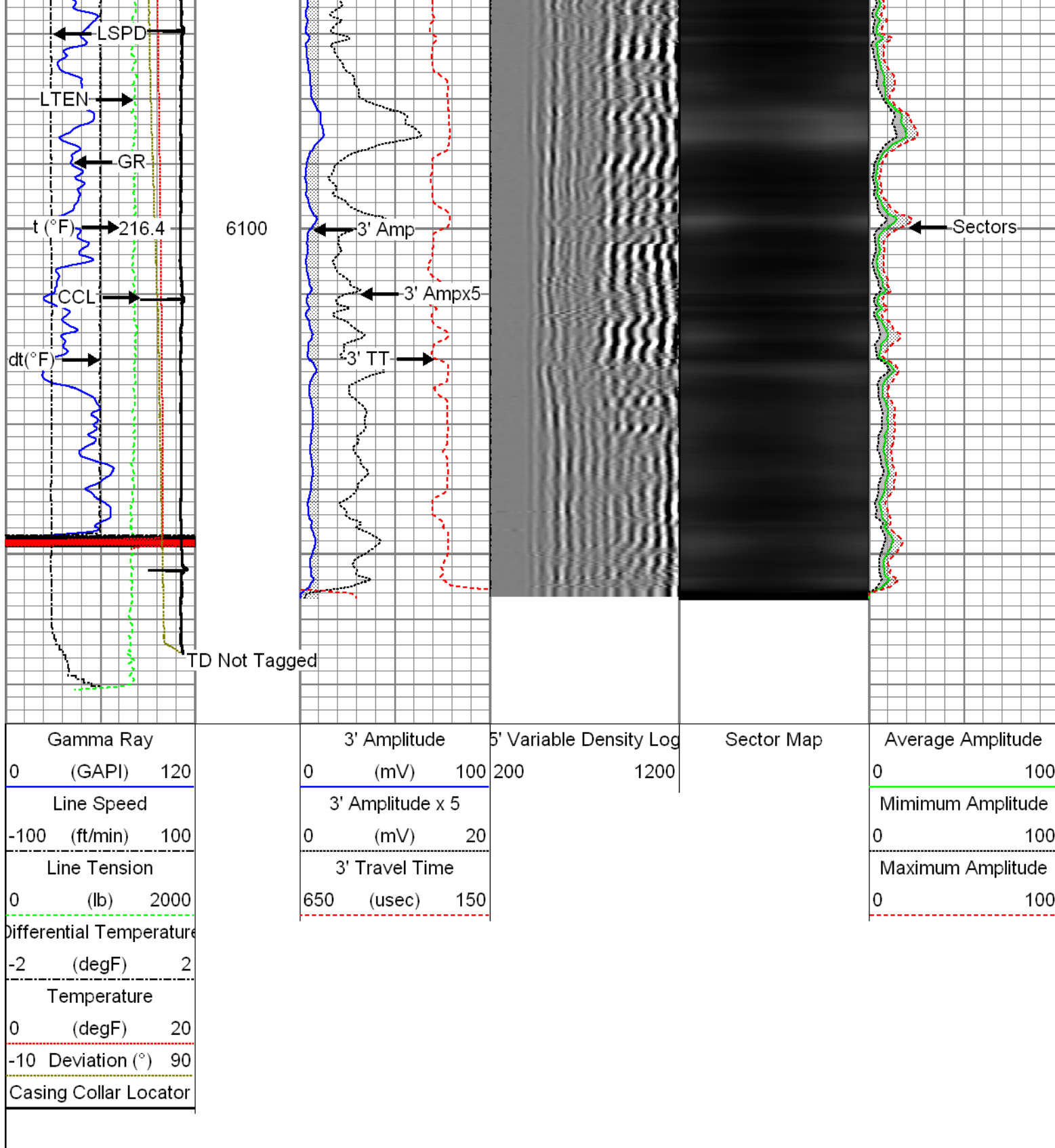
5500

5600







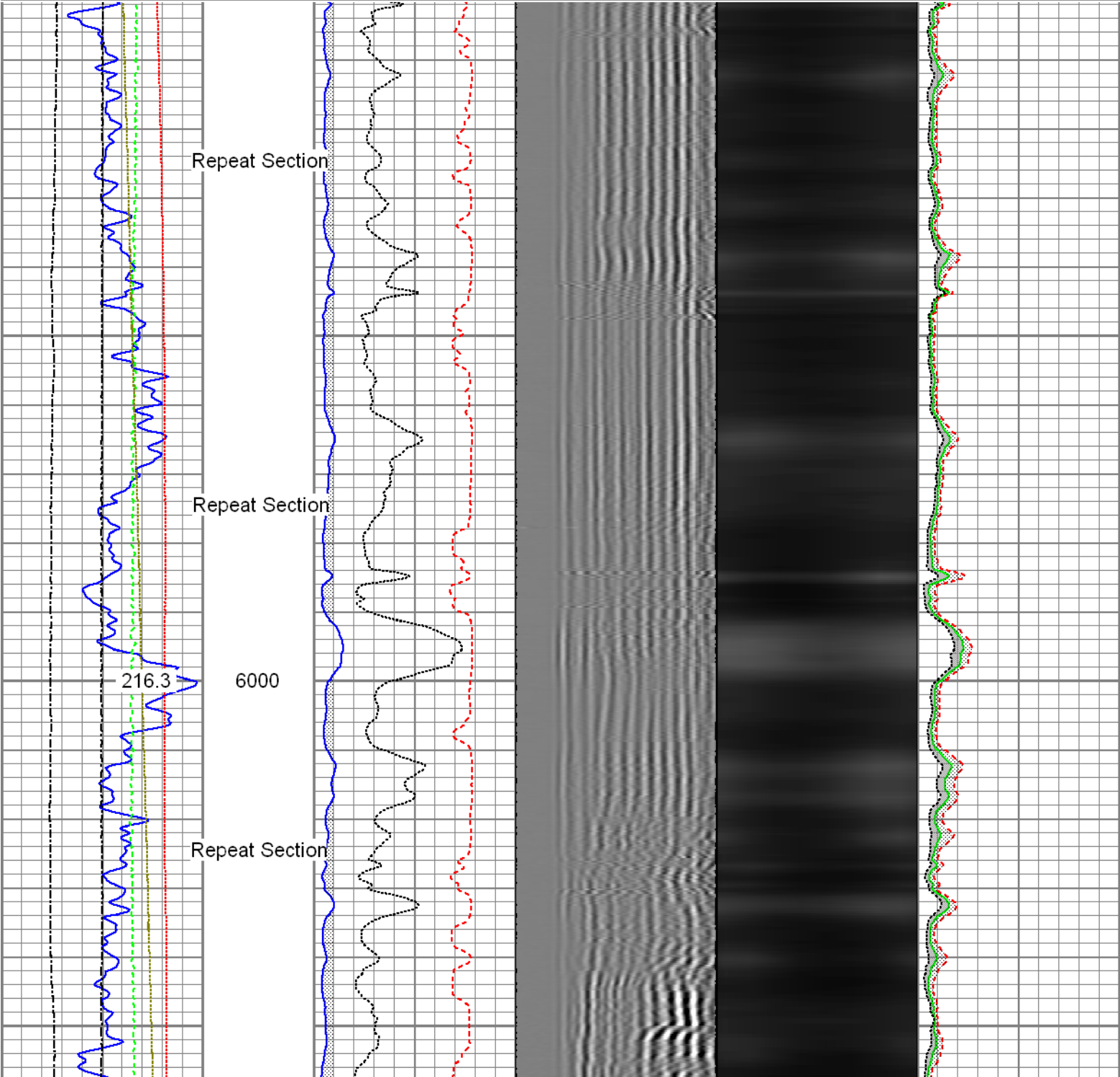


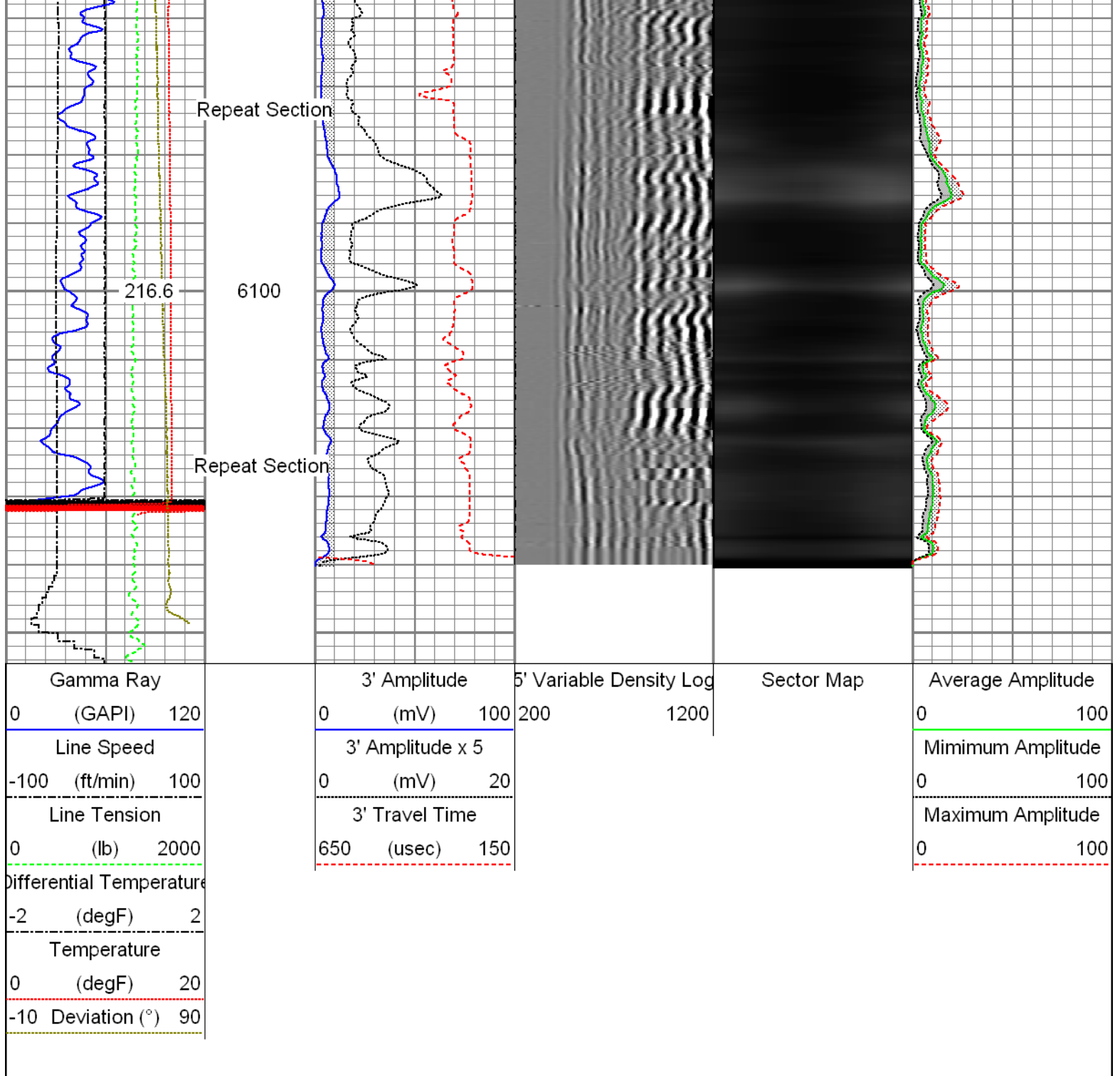
Repeat Pass

Recorded with 2500 PSI Surface Induced Pressure


Database File: z:\logs_for_processing\logs to be reviewed\02-19-16_noble energy_remora lc34-735_mit_rbl\02-19-16
Dataset Pathname: Repeat.1
Presentation Format: rbt4_mit
Dataset Creation: Mon Feb 22 12:37:58 2016 by Calc SCH 120430
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	0	100
Line Speed			3' Amplitude x 5				Mimimum 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							
-10	Deviation (°)	90							





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 (215017) Sondex Adapter - GO Box to Sondex Pin	0.21	1.69	1.00
			UW_XTU-UW_XTU_002 (10010522) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50
			UW_PGR-UW_PGR_020 (211727) Production Gamma Ray	1.93	1.69	9.50
			UW_PRT-UW_PRT_016 (10025097) Platinum Resistance Thermometer	1.04	1.69	5.20
TEMP	22.45		UW_PRC-DSSRAC (081) Sondex Adapter - GO Box to Sondex Pin	2.55	2.75	32.00

			2-3/4" DSS 5 Arm Roller Centralizer			
WVF3FT	15.42		UW_RBT-UW_RBT_004 (10022773)	9.47	3.13	140.00
WVFS1	15.42		Sondex Ultrawire 3-1/8" Radial Bond Tool			
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 #3 -DSSRAC (082)	2.55	2.75	32.00
			2-3/4" DSS 5 Arm Roller Centralizer			
MIT	5.41		UW_MIT-UW_MIT40_027 (218950)	4.54	2.75	61.10
			40 Multifinger Imaging Tool			
			UW_PRC #4 -UW_PRC_057 (1037)	2.98	2.75	32.00
			Sondex 2-3/4" 4-Arm Production Roller Centraliser			
TSTAMP	0.00		UW_BUL-UW_BUL_006 (10019616)	0.22	1.69	1.20
			Sondex Ultrawire Bullnose Terminator			
Dataset: 02-19-16_Noble Energy_Remora LC34-735_MIT_RBL.db: field/well/run1/Main.2 Total Length: 28.09 ft Total Weight: 324.50 lb O.D. 3.13 in						

Calibration Report	
Database File:	Z:\Logs_For_Processing\Logs to be reviewed\02-19-16_Noble Energy_Remora LC34-735_MIT_RBLV
Dataset Pathname:	Main.2
Dataset Creation:	Fri Feb 19 15:37:09 2016 by Calc SCH 120430
Multi-finger Imaging Tool Calibration Report	
Serial Number:	218950
Number of Fingers:	40
Tool Model:	UW_MIT40_027
Inclinometer Calibration Report	
Performed:	Fri, Oct, 10 10:41:51 2008
Calibration Angle:	45

		Inc X	Inc Y
Vertical:		1996	1975
Finger 1 up:		2238	2226
Finger 31 up:		1760	2216
Finger 21 up:		1769	1745
Finger 11 up:		2250	1738
Sensitivity ratio:	1.00023		
X-axis angle:	314.283		
Deviation const.:	339.139		

Finger Calibration Report

Performed: Fri Feb 19 07:29:49 2016

Ring size: (in)	4		5		6		7
		Sens		Sens		Sens	
Finger 01:	1457	271.0	1728	298.0	2026	300.0	2326
Finger 02:	1518	247.0	1765	266.0	2031	265.0	2296
Finger 03:	1431	275.0	1706	301.0	2007	305.0	2312
Finger 04:	1458	274.0	1732	292.0	2024	299.0	2323
Finger 05:	1499	267.0	1766	279.0	2045	285.0	2330
Finger 06:	1419	279.0	1698	297.0	1995	312.0	2307
Finger 07:	1446	276.0	1722	292.0	2014	309.0	2323
Finger 08:	1450	271.0	1721	288.0	2009	302.0	2311
Finger 09:	1437	278.0	1715	290.0	2005	311.0	2316
Finger 10:	1447	269.0	1716	278.0	1994	299.0	2293
Finger 11:	1435	281.0	1716	286.0	2002	310.0	2312
Finger 12:	1383	283.0	1666	289.0	1955	318.0	2273
Finger 13:	1484	265.0	1749	261.0	2010	285.0	2295
Finger 14:	1429	271.0	1700	275.0	1975	304.0	2279
Finger 15:	1416	285.0	1701	285.0	1986	313.0	2299
Finger 16:	1420	277.0	1697	281.0	1978	307.0	2285
Finger 17:	1420	285.0	1705	289.0	1994	314.0	2308
Finger 18:	1380	275.0	1655	282.0	1937	303.0	2240
Finger 19:	1418	282.0	1700	284.0	1984	303.0	2287
Finger 20:	1420	279.0	1699	286.0	1985	304.0	2289
Finger 21:	1358	292.0	1650	302.0	1952	318.0	2270
Finger 22:	1400	272.0	1672	282.0	1954	293.0	2247
Finger 23:	1402	279.0	1681	292.0	1973	296.0	2269
Finger 24:	1431	280.0	1711	287.0	1998	287.0	2285
Finger 25:	1397	281.0	1678	292.0	1970	293.0	2263
Finger 26:	1365	287.0	1652	297.0	1949	298.0	2247
Finger 27:	1428	278.0	1706	294.0	2000	285.0	2285
Finger 28:	1414	287.0	1701	300.0	2001	295.0	2296
Finger 29:	1479	268.0	1747	282.0	2029	274.0	2303
Finger 30:	1379	282.0	1661	300.0	1961	300.0	2261
Finger 31:	1411	285.0	1696	306.0	2002	298.0	2300
Finger 32:	1466	271.0	1737	284.0	2021	277.0	2298
Finger 33:	1427	284.0	1711	307.0	2018	302.0	2320
Finger 34:	1431	279.0	1710	301.0	2011	299.0	2310
Finger 35:	1484	256.0	1740	278.0	2018	269.0	2287
Finger 36:	1474	264.0	1738	291.0	2029	287.0	2316
Finger 37:	1454	281.0	1735	304.0	2039	296.0	2335
Finger 38:	1534	248.0	1782	269.0	2051	269.0	2320
Finger 39:	1456	267.0	1723	292.0	2015	286.0	2301
Finger 40:	1416	280.0	1696	308.0	2004	309.0	2313

Segmented Cement Bond Log Calibration Report

Serial Number:	10022773
Tool Model:	UW_RBT_004
Calibration Casing Diameter:	7.000 in
Calibration Depth:	24.000 ft

Master Calibration, performed Fri Feb 19 15:37:06 2016:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	0.003	0.778	0.800	62.165	79.132	0.599
5FT	-0.000	0.774	0.800	62.165	79.307	0.811
S1	0.004	0.783	0.000	100.000	128.326	-0.525
S2	0.001	0.818	0.000	100.000	122.382	-0.112
S3	0.001	0.796	0.000	100.000	125.765	-0.130
S4	0.002	0.742	0.000	100.000	135.187	-0.336
S5	0.004	0.724	0.000	100.000	138.865	-0.584
S6	0.003	0.712	0.000	100.000	141.086	-0.399
S7	0.002	0.728	0.000	100.000	137.750	-0.331
S8	0.002	0.762	0.000	100.000	131.641	-0.303

Temperature Calibration Report					
Serial Number:			10025097		
Tool Model:			UW_PRT_016		
Performed:			Wed Feb 11 13:44:44 2015		
Point #	Reading		Reference		
1	13053.00	cps	68.00	degF	
2	18014.00	cps	104.00	degF	
3	29668.00	cps	176.00	degF	
4	41181.00	cps	248.00	degF	
5	52983.00	cps	320.00	degF	
6	58931.00	cps	356.00	degF	
7		cps		degF	
8		cps		degF	
9		cps		degF	
10		cps		degF	

Gamma Ray Calibration Report			
Serial Number:	211727		
Tool Model:	UW_PGR_020		
Performed:	Mon Nov 23 09:56:50 2015		
Calibrator Value:	1.0	GAPI	
Background Reading:	0.0	cps	
Calibrator Reading:	1.0	cps	
Sensitivity:	0.6000	GAPI/cps	

	Company	Noble Energy Inc.
	Well	Remora LC34-735
	Field	Wildcat
	County	Weld
	State	Colorado