

# Radial Cement Bond Gamma Ray Casing Collar Log

Company Kerr McGee Oil & Gas Onshore LP				Company Kerr McGee Oil & Gas Onshore LP			
Well Barclay 16N-26HZ				Well Barclay 16N-26HZ			
Field Wattenberg				Field Wattenberg			
County Weld				County Weld			
State Colorado				State Colorado			
Location:				API # : 05-123-38906			
SEC 14 TWP 2N RGE 67W				Other Services Gauge Ring MIT			
Permanent Datum				Ground Level			
Log Measured From				Kelly Bushing			
Drilling Measured From				Kelly Bushing			
Elevation				4911'			
K.B. 4936'				D.F. 4935'			
G.L. 4911'							
Date				21-MAY-2015			
Run Number				Two			
Depth Driller				17196 FT			
Depth Logger				7499 FT			
Bottom Logged Interval				7484 FT			
Top Log Interval				Surface			
Open Hole Size				8.750"			
Type Fluid				Water			
Density / Viscosity				8.34 lb/gal			
Max. Recorded Temp.				235°F			
Estimated Cement Top				66 FT			
Time Well Ready				ROA			
Time Logger on Bottom				1:30 PM			
Equipment Number				HD-0343			
Location				Ft Lupton, CO			
Recorded By				R. Cameron			
Witnessed By				Steve Vigil			
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			
HCP-110				6650 FT			
17196 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.

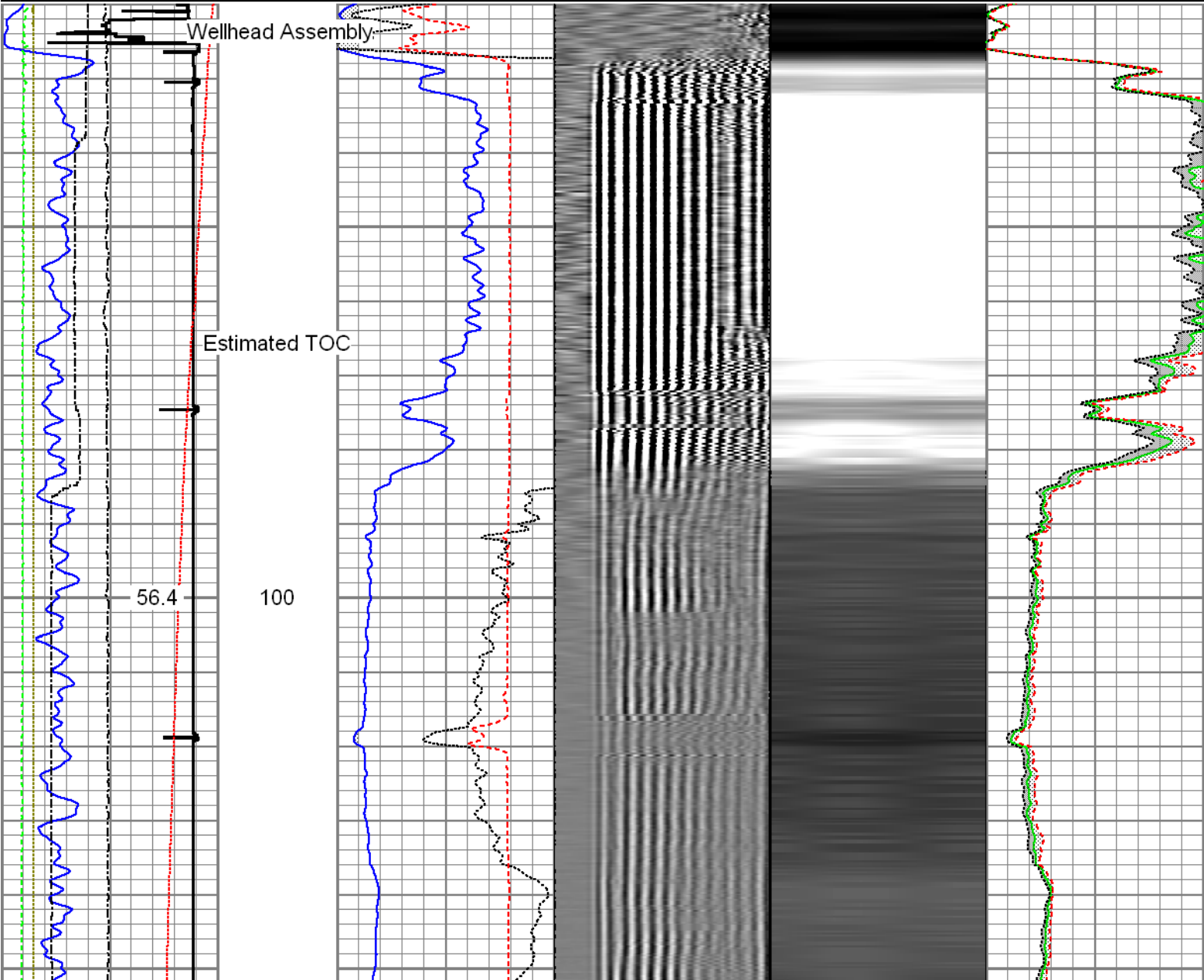
## Comments

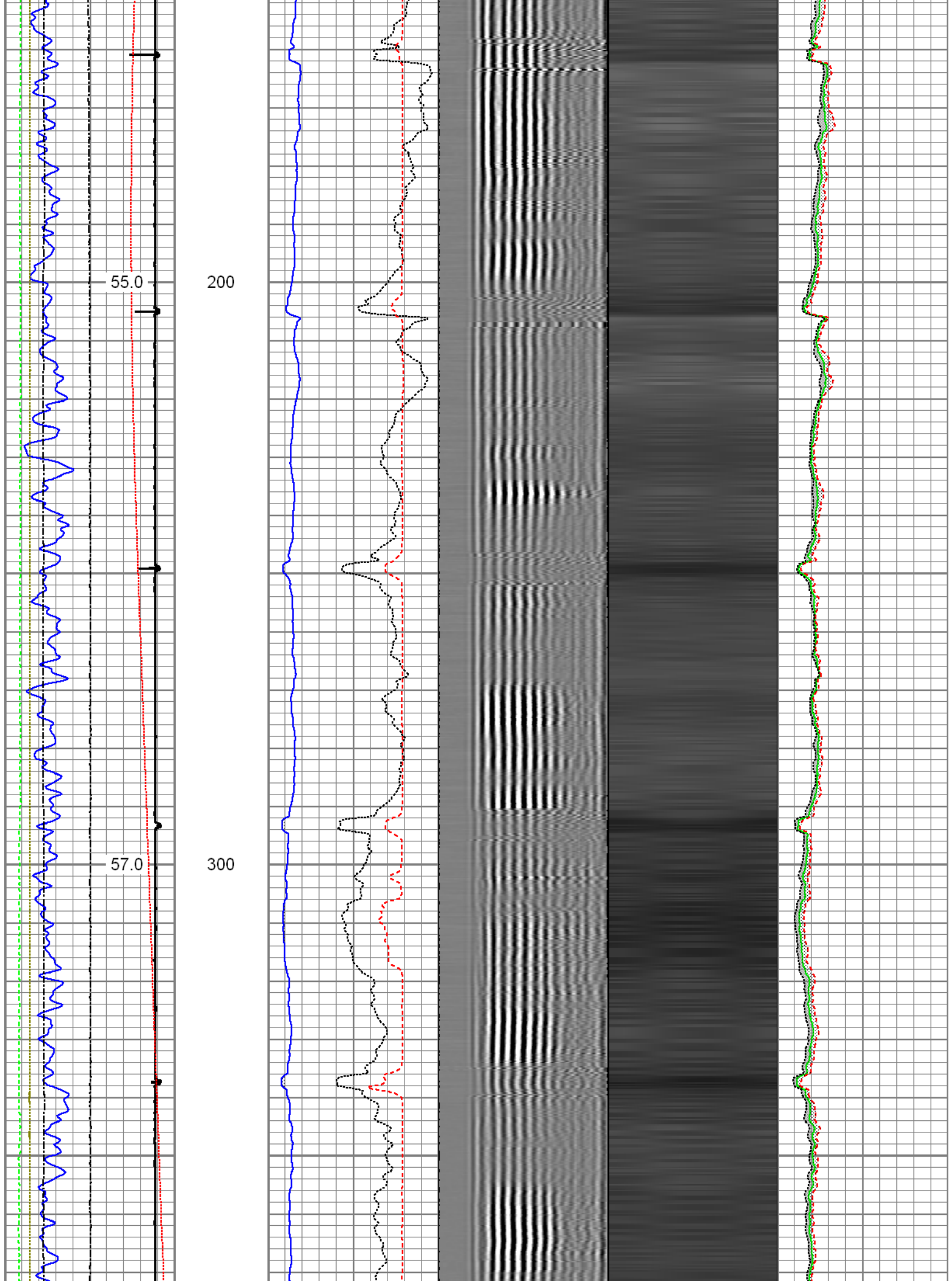
Log ran as per customer request.  
Depth referenced to casing tally reported liner top at 6650 FT.  
Adjusted log +4 FT to correlate with liner top.  
Gauge ring/junk basket ran to 7499 FT no debris was found after run.  
Log ran from 7499 FT to surface.  
Log ran with 2800 PSI surface induced pressure.  
No debris found on logging tools upon completion of run.

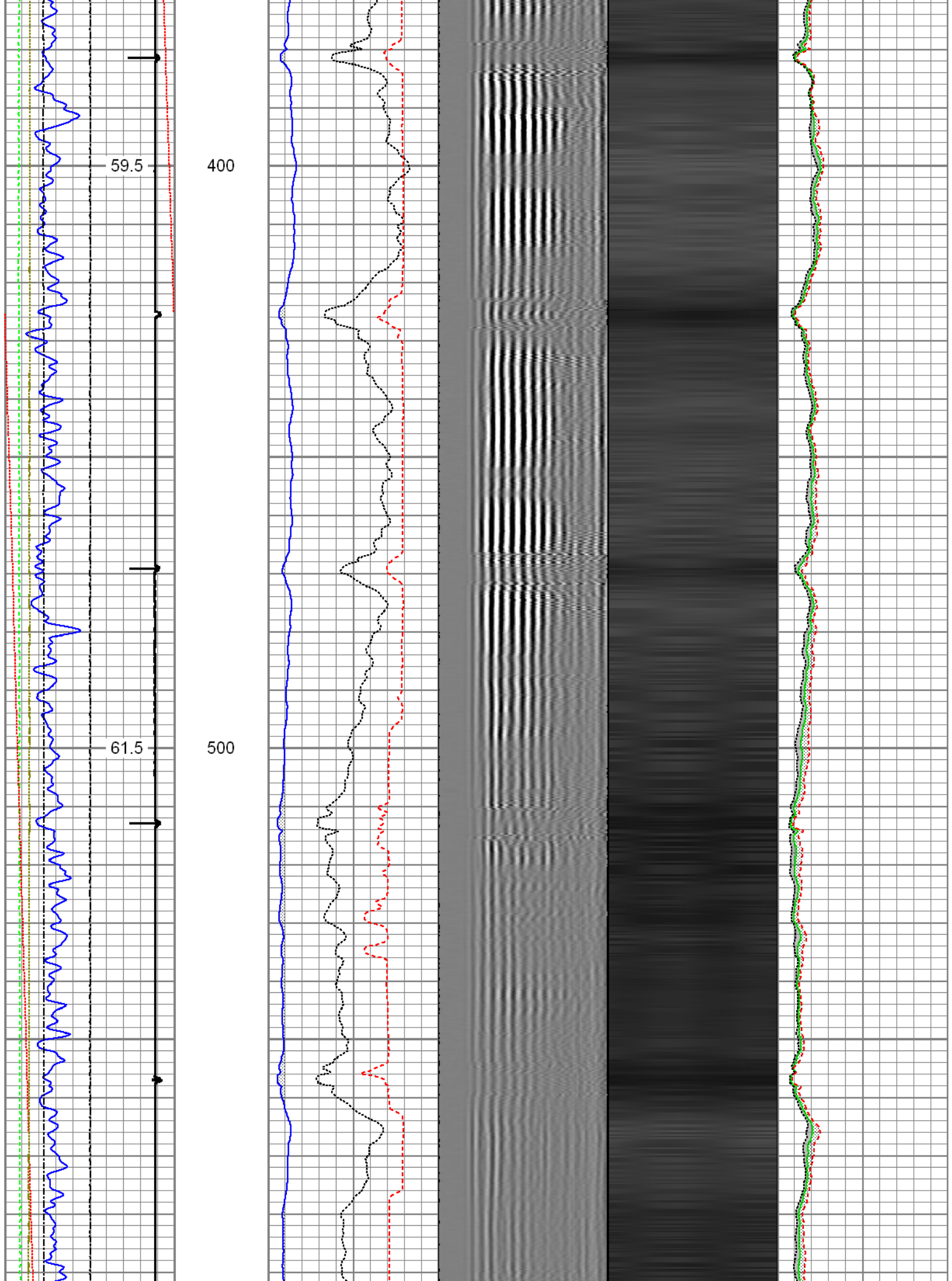
Thank you for choosing FMC Technologies Completion Services, Inc.!!

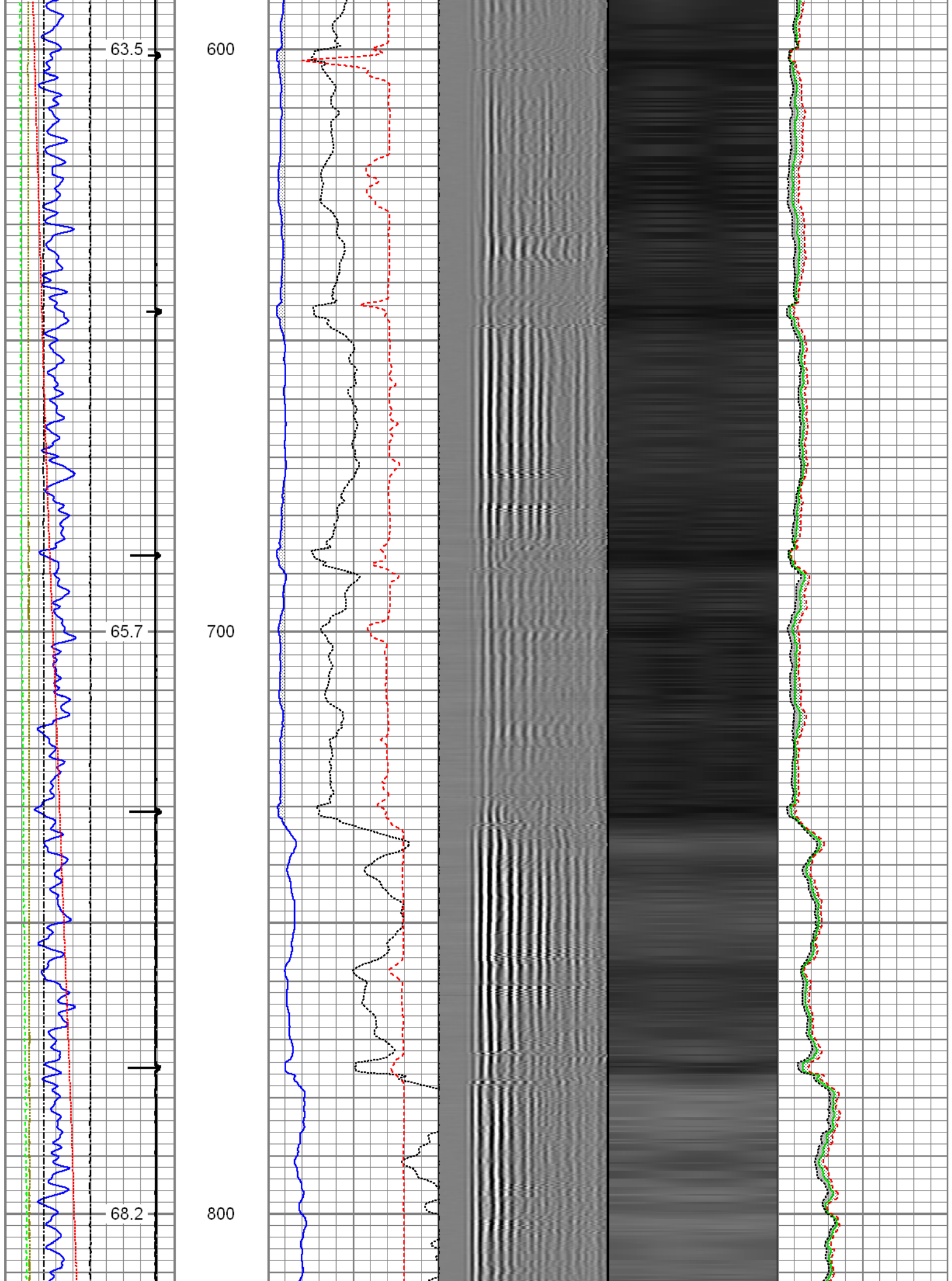
Database File: 0512338906\_anadarko\_barclay 16n-26hz\_05-21-15\_mit\_rbl.db  
Dataset Pathname: run3/pass5  
Presentation Format: rbt4\_mit  
Dataset Creation: Thu May 21 13:29:24 2015 by Log 7.0 B1  
Charted by: Depth in Feet scaled 1:240

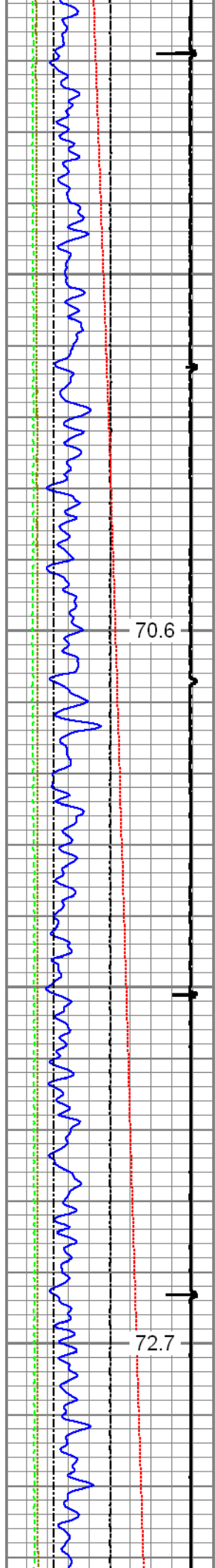
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Minimum Amplitude
Line Speed	0 (mV) 20			0 100
-100 (ft/min) 100	3' Travel Time			Maximum Amplitude
Line Tension	650 (usec) 150			0 100
0 (lb) 2000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





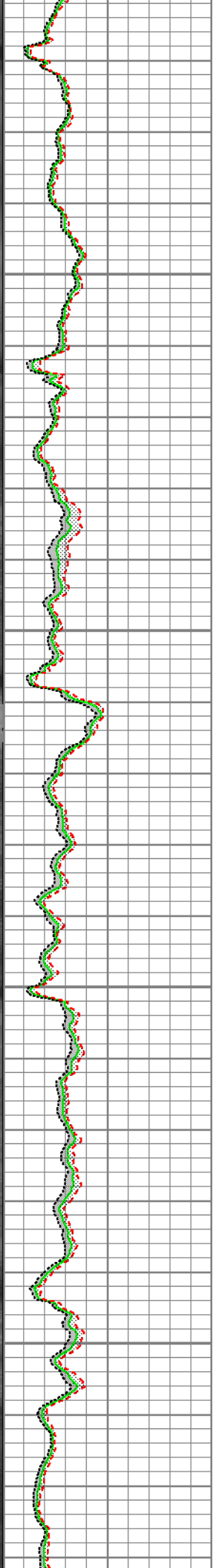
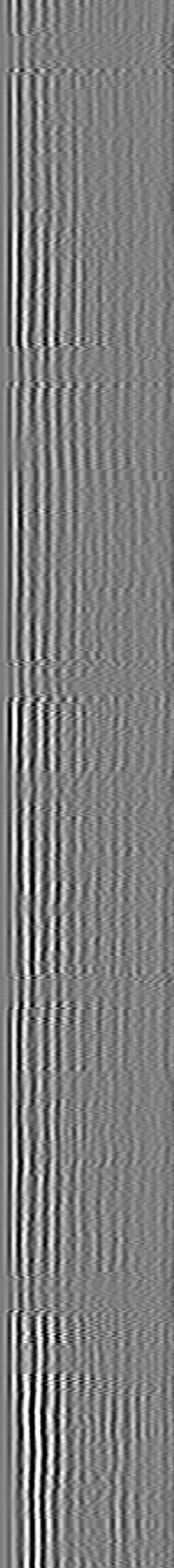
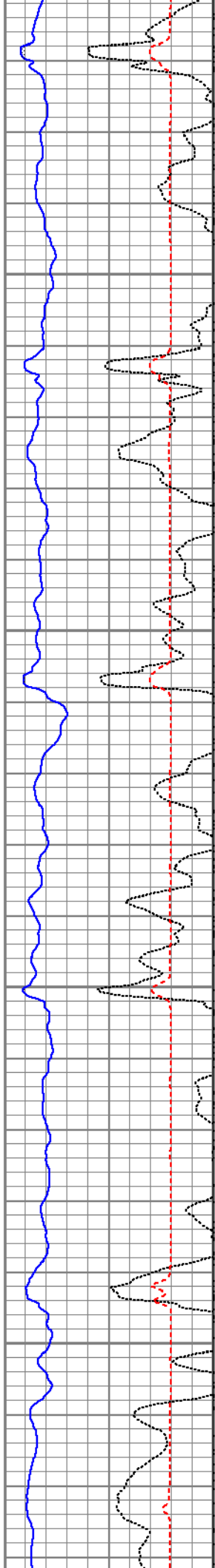


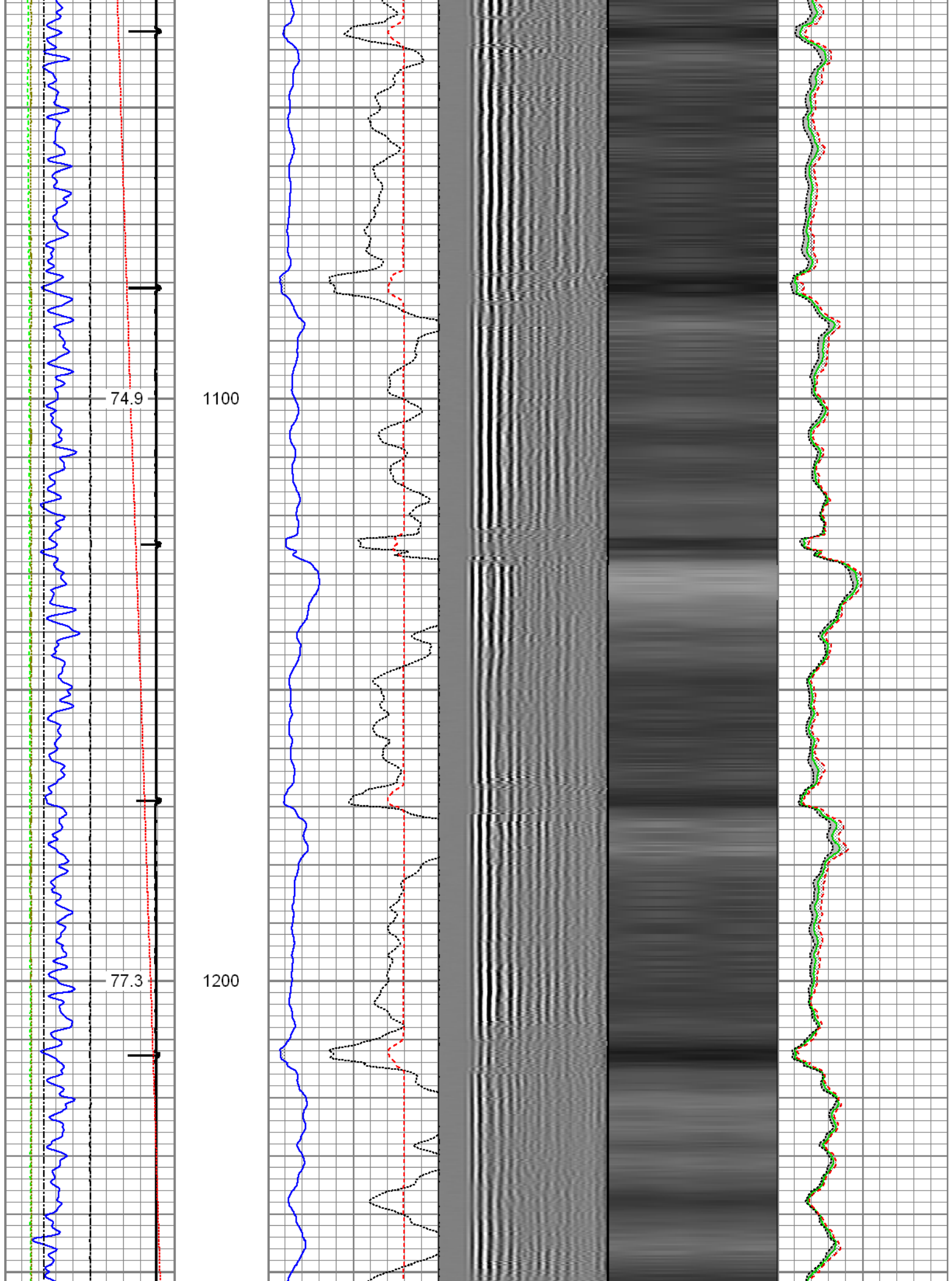


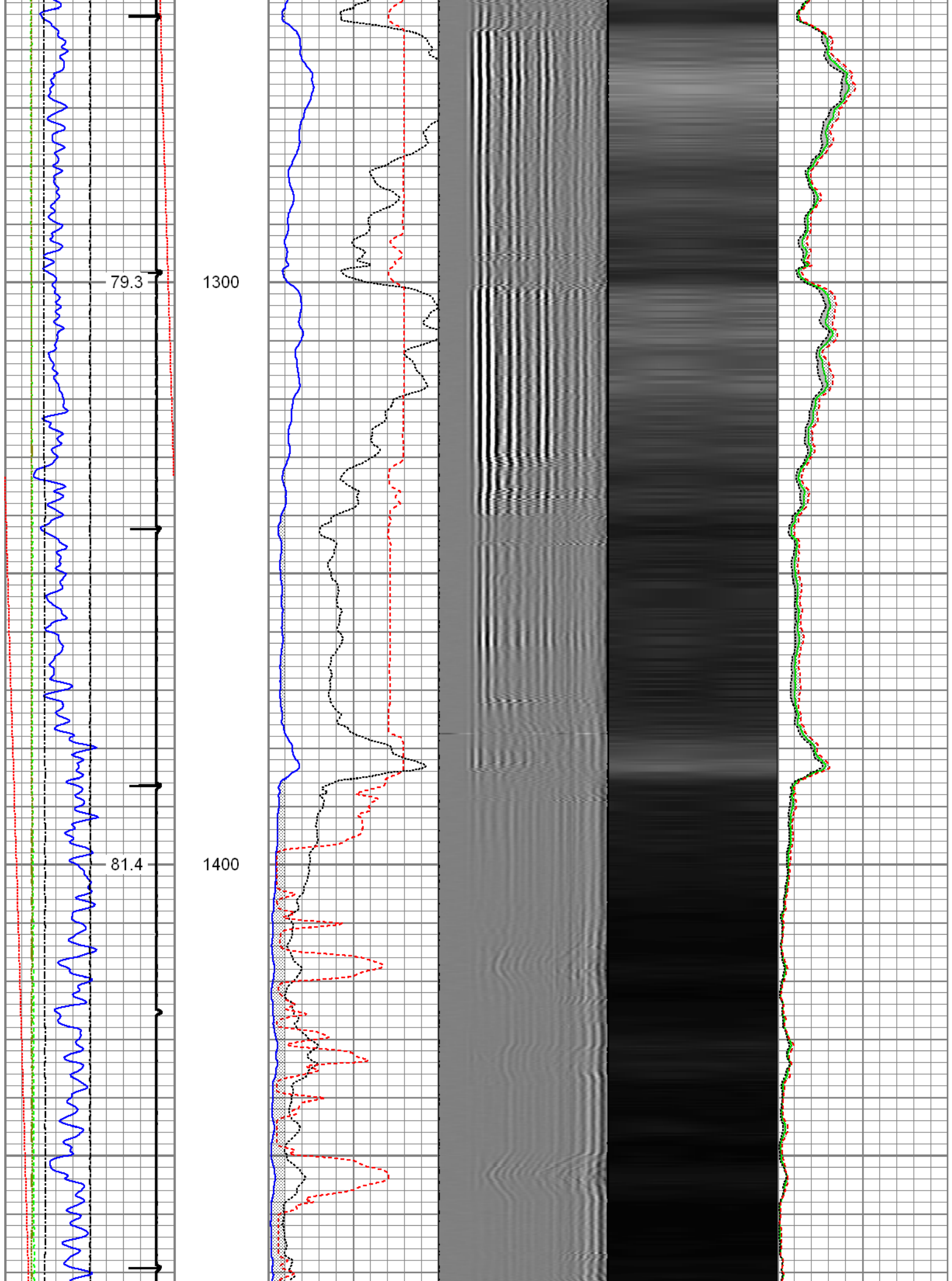


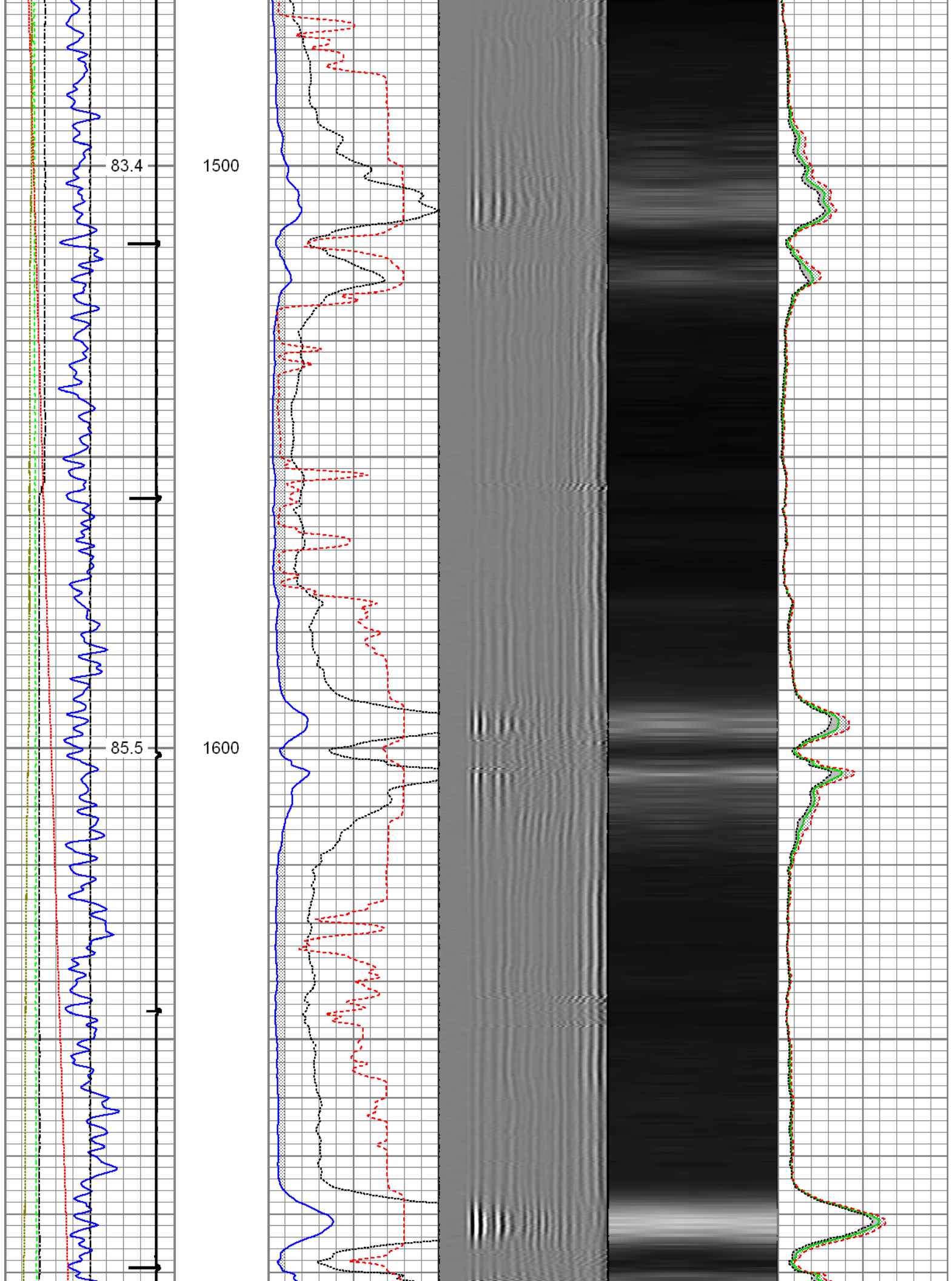
900

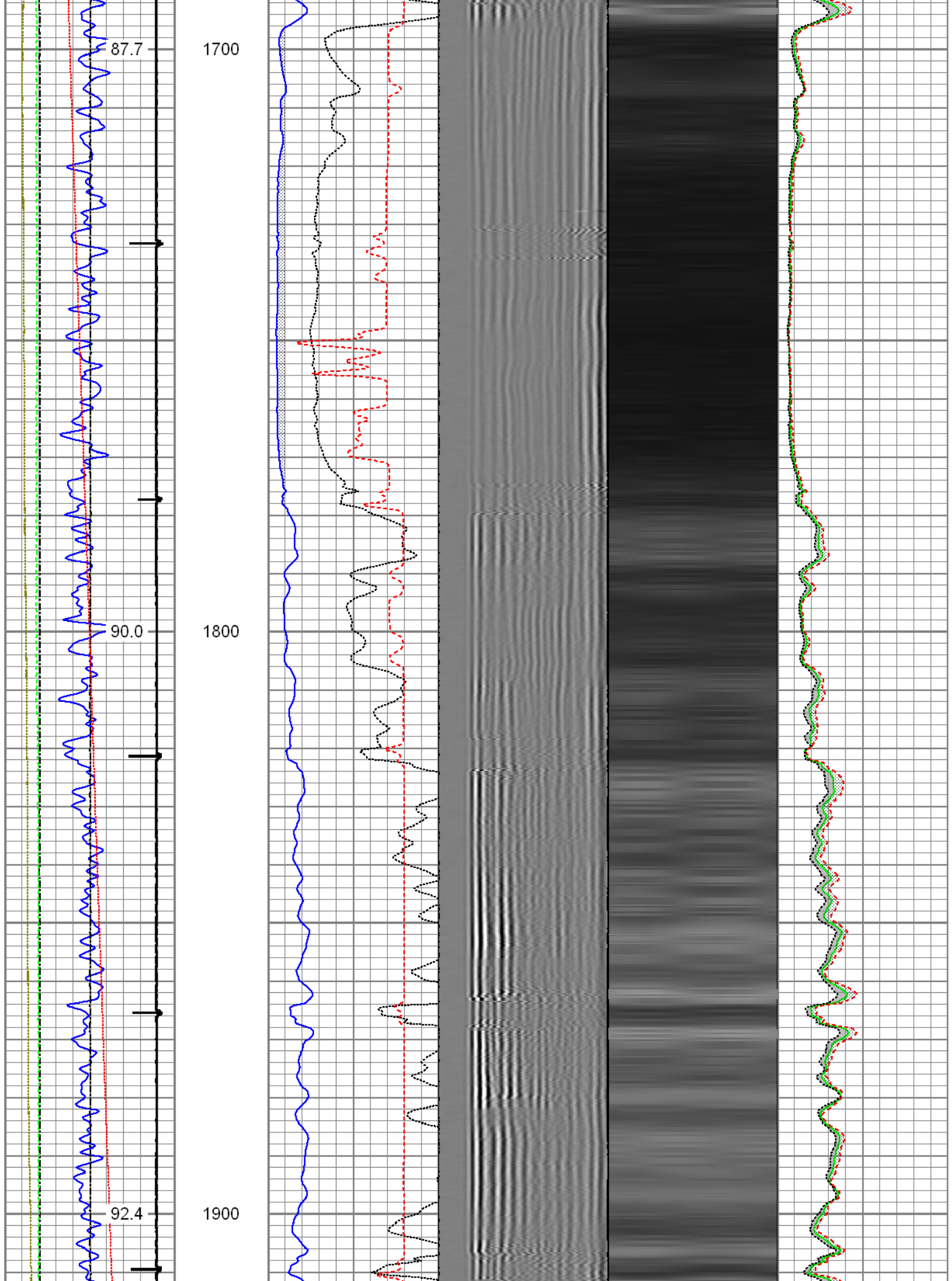
1000

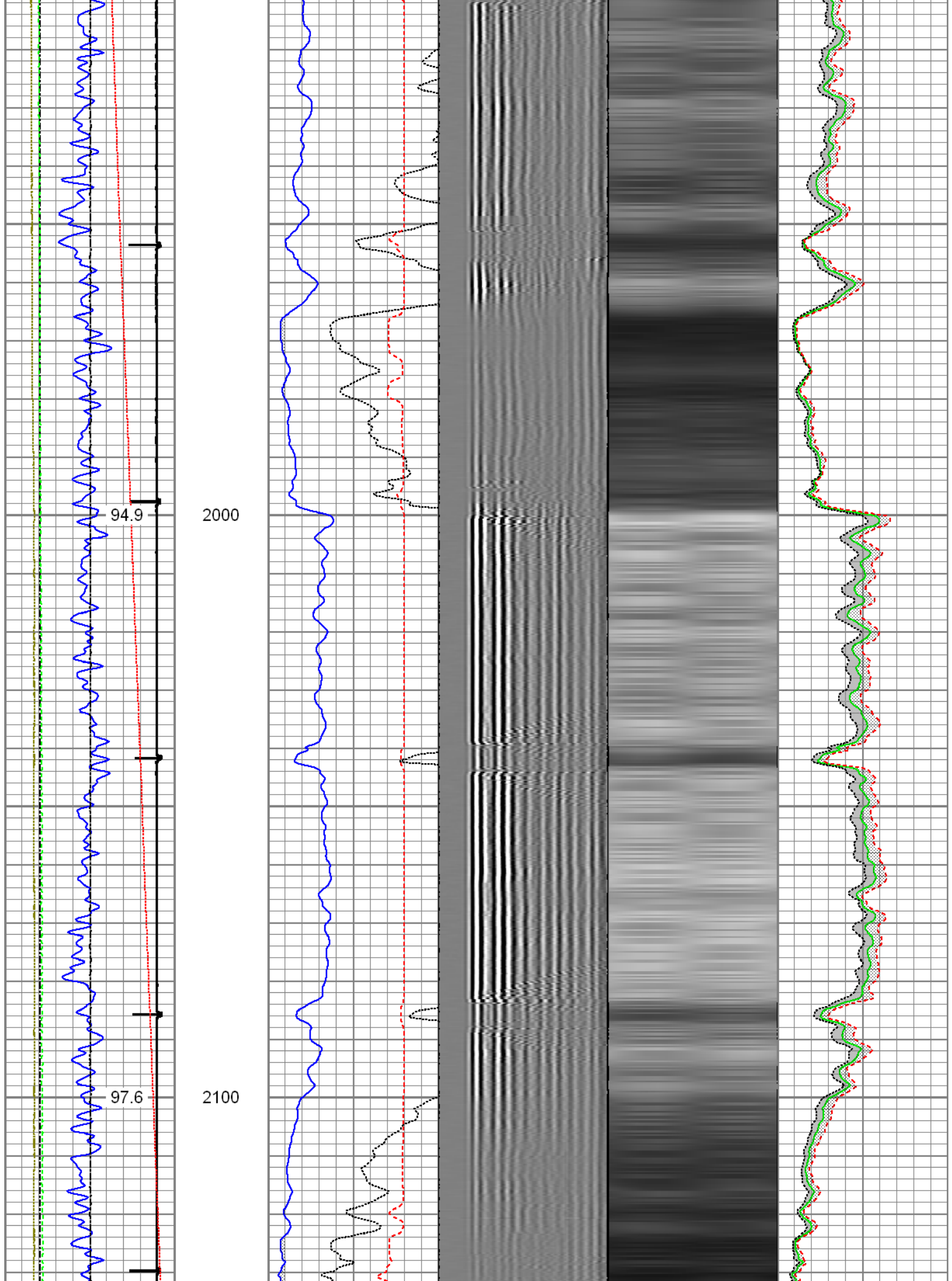


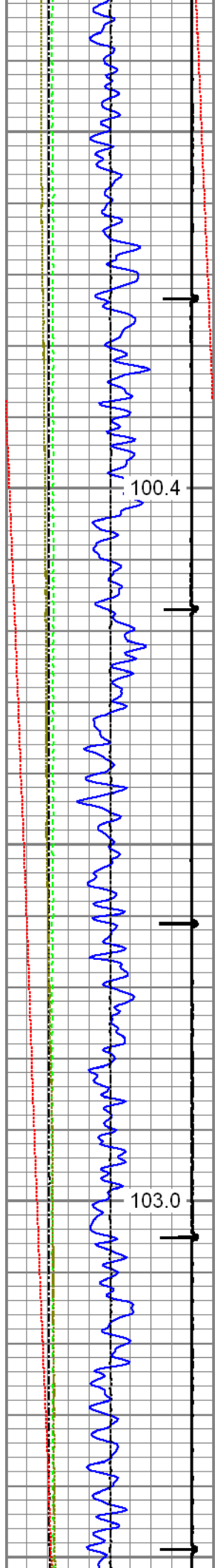






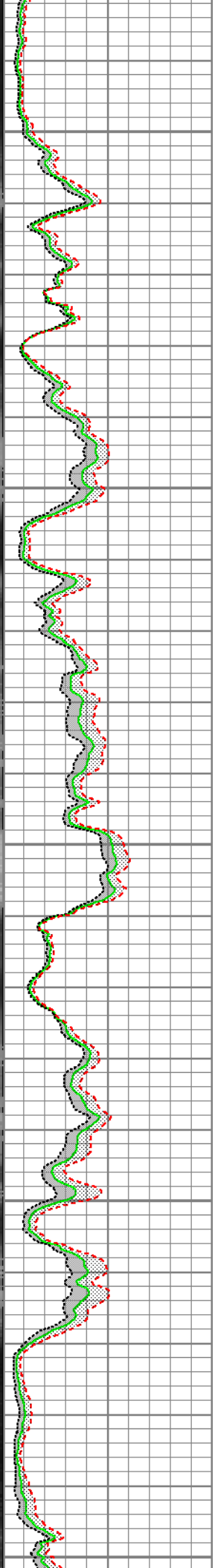
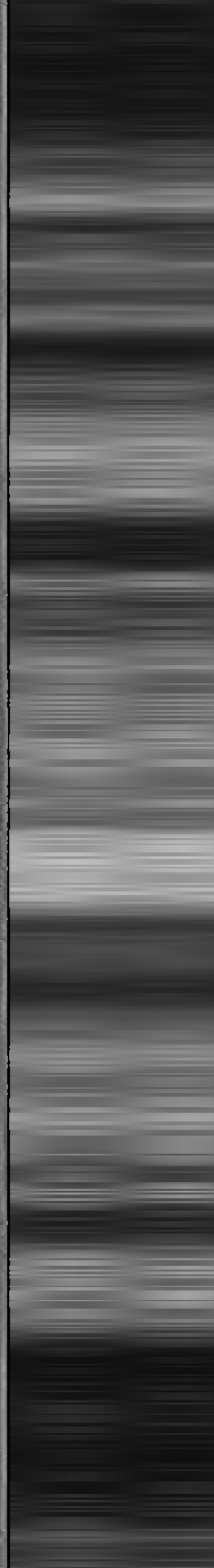
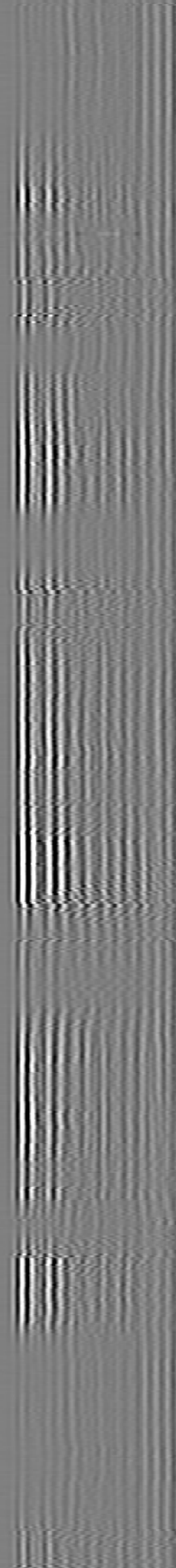
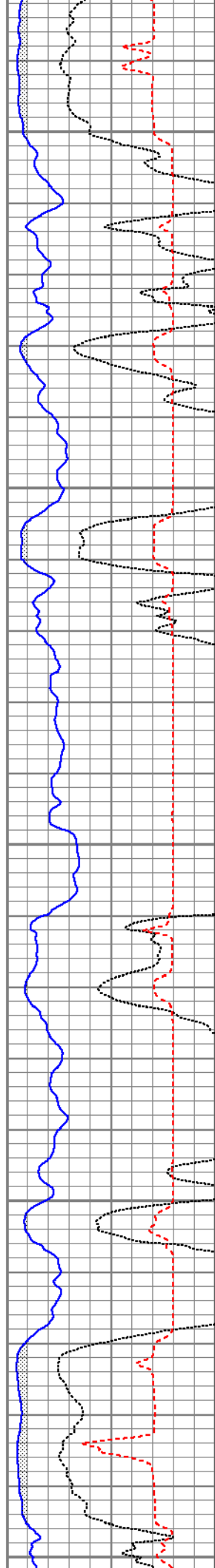


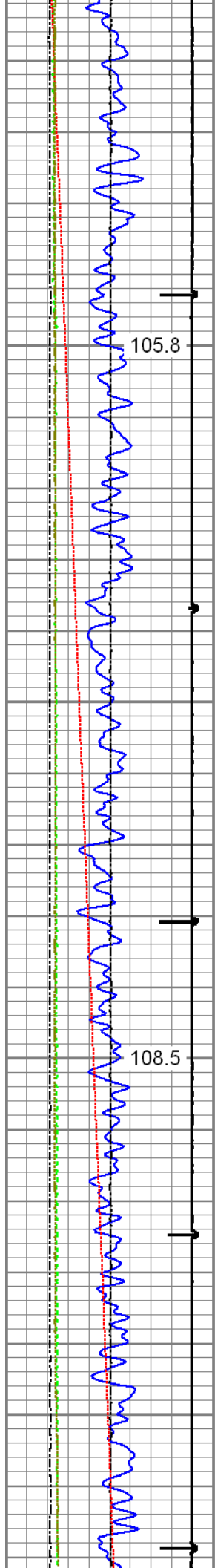




2200

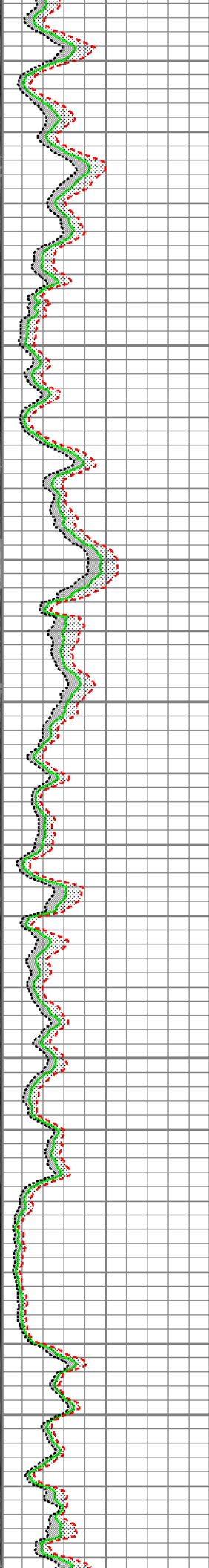
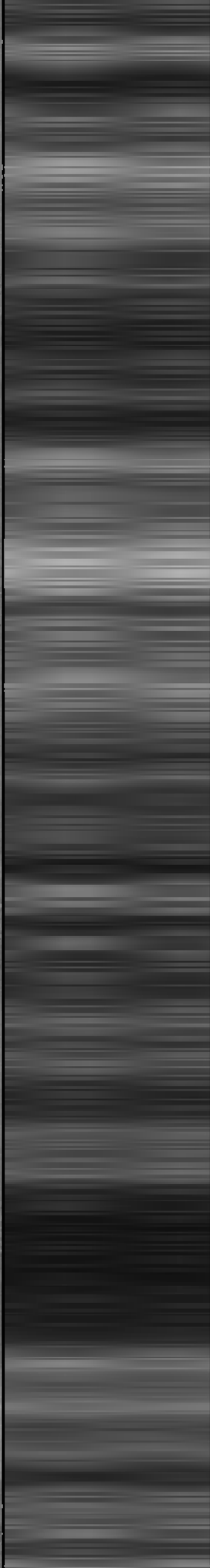
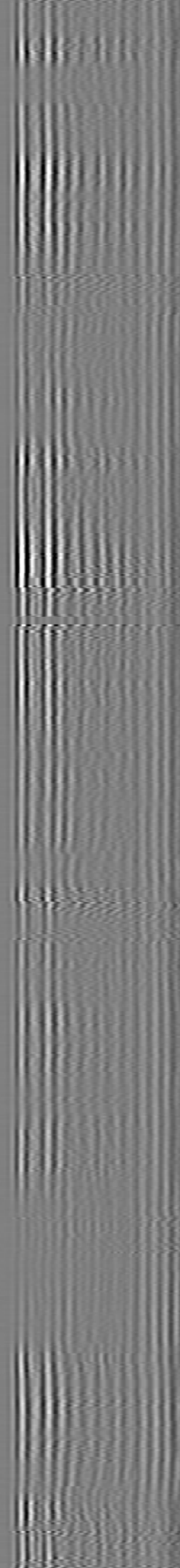
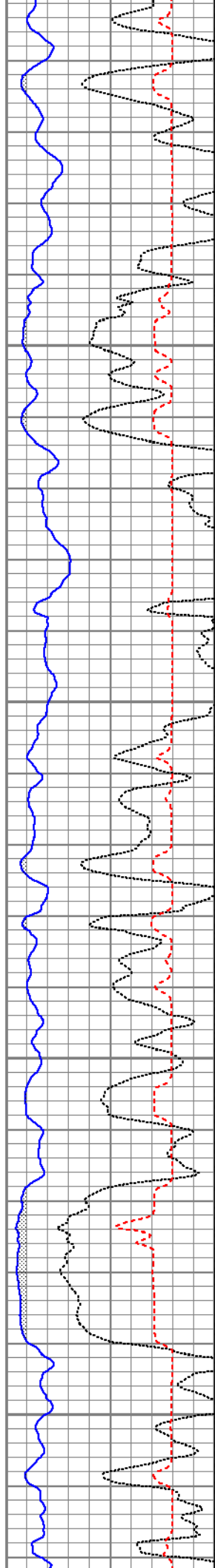
2300

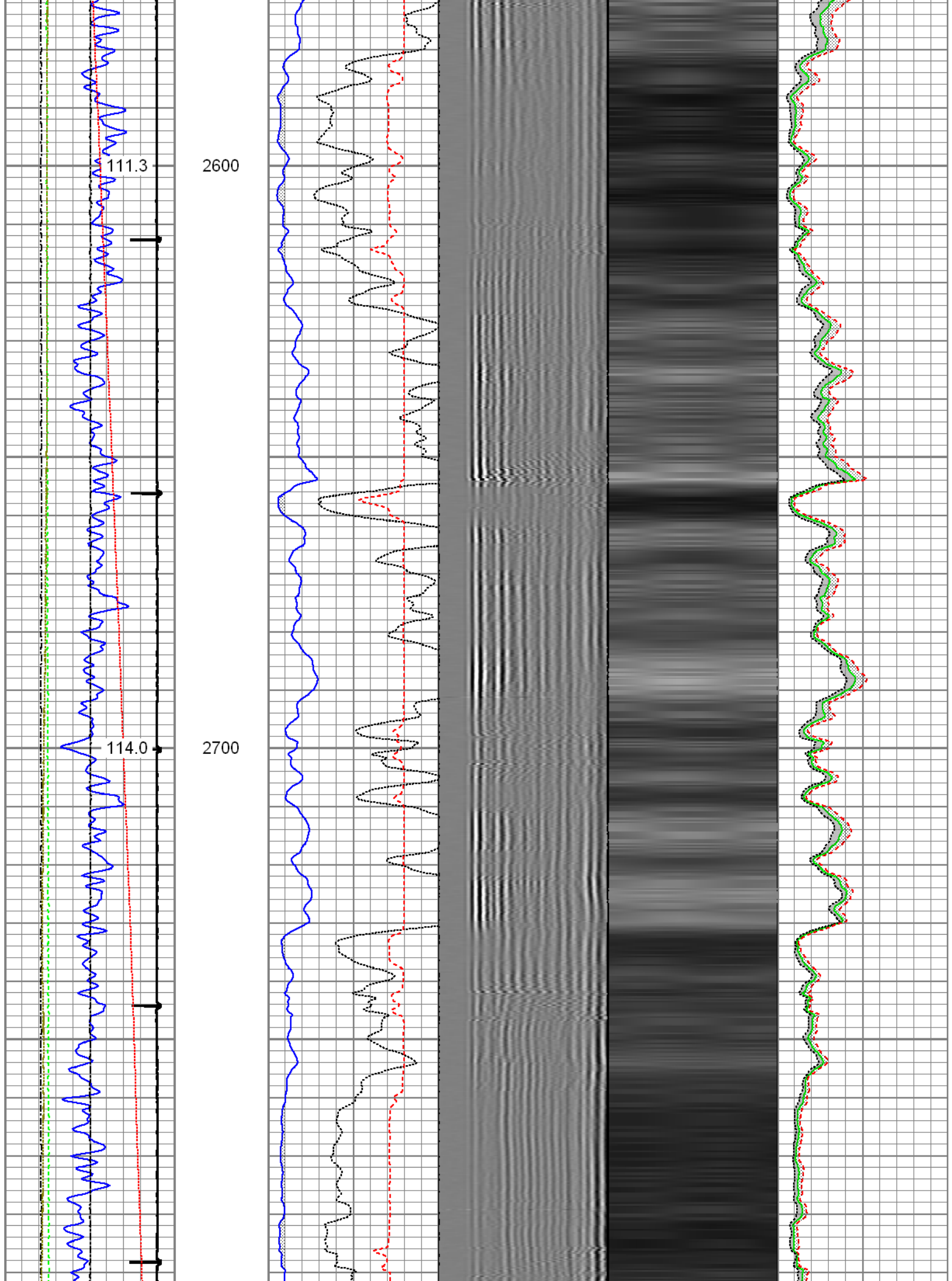


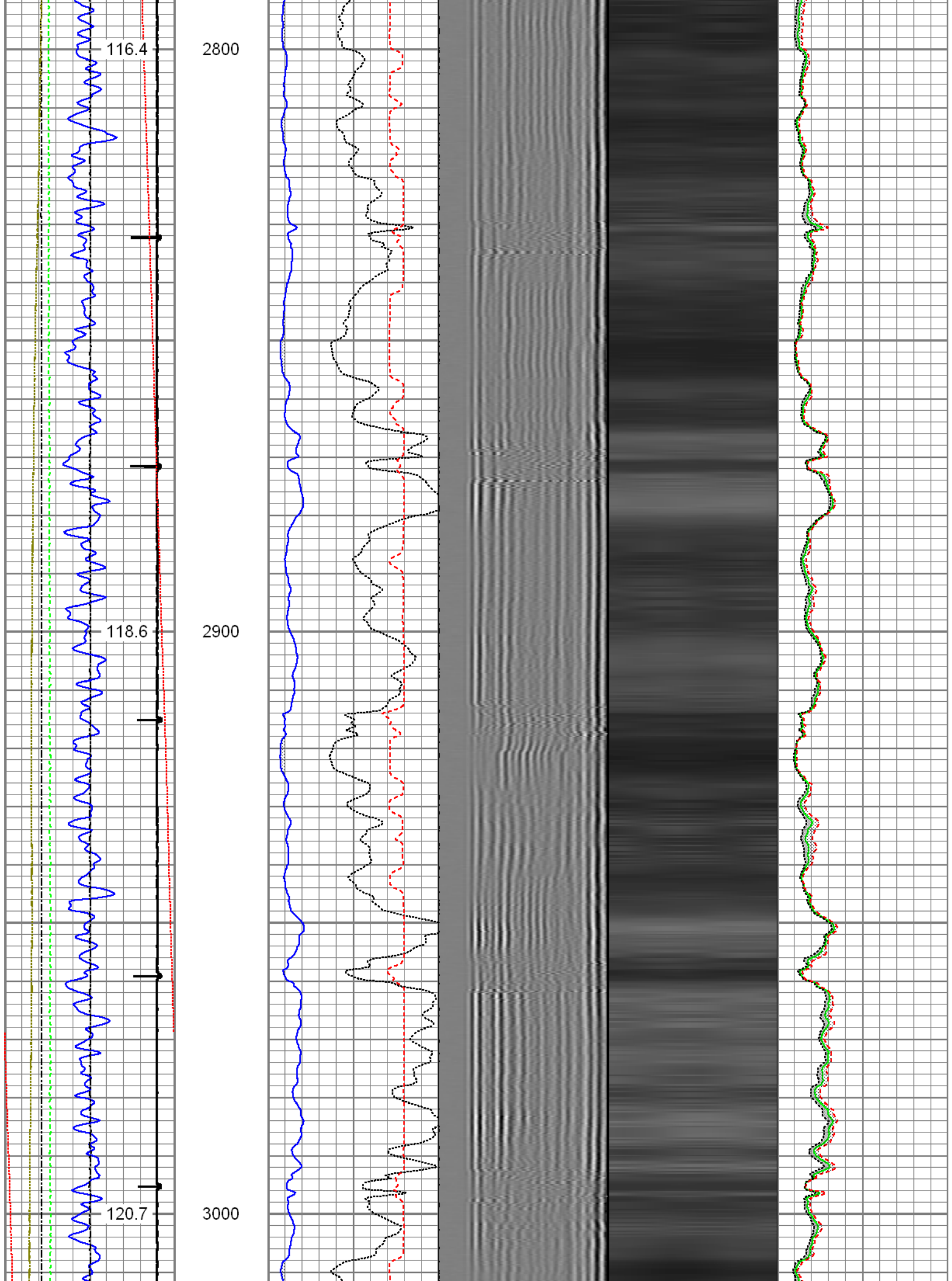


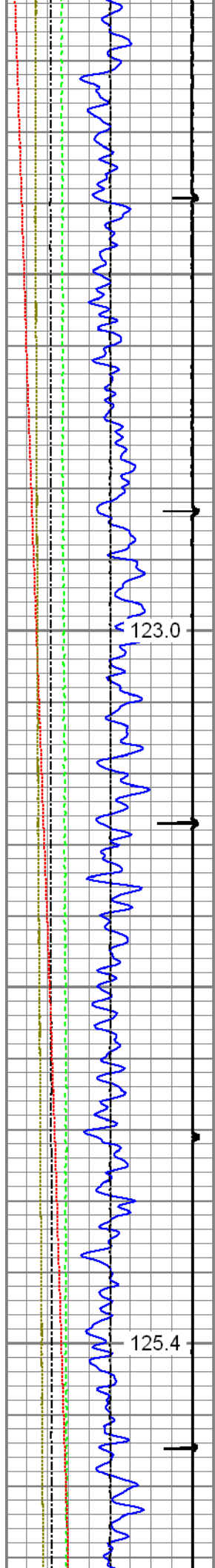
2400

2500



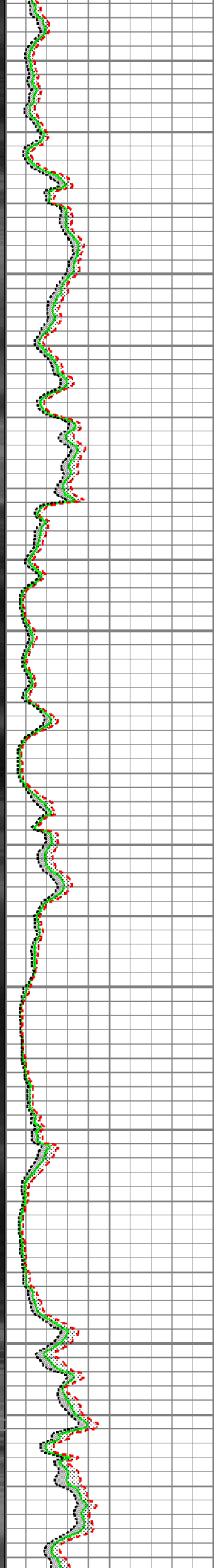
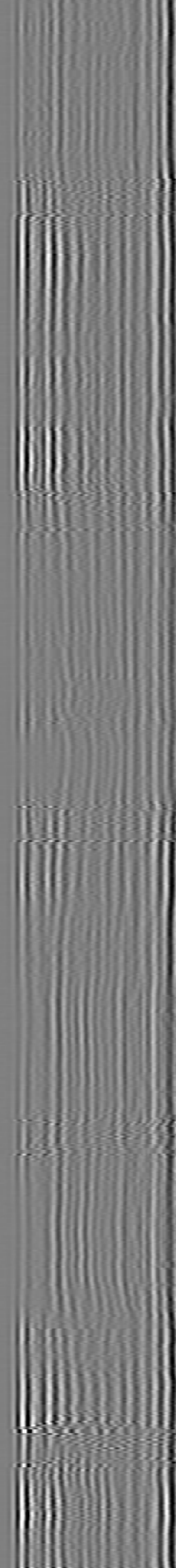
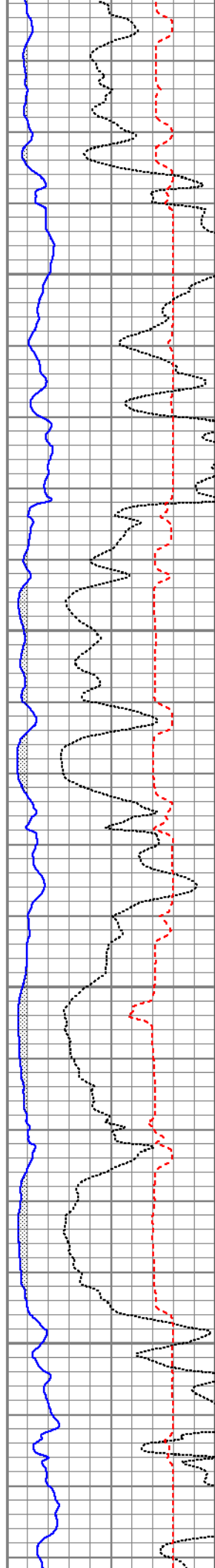


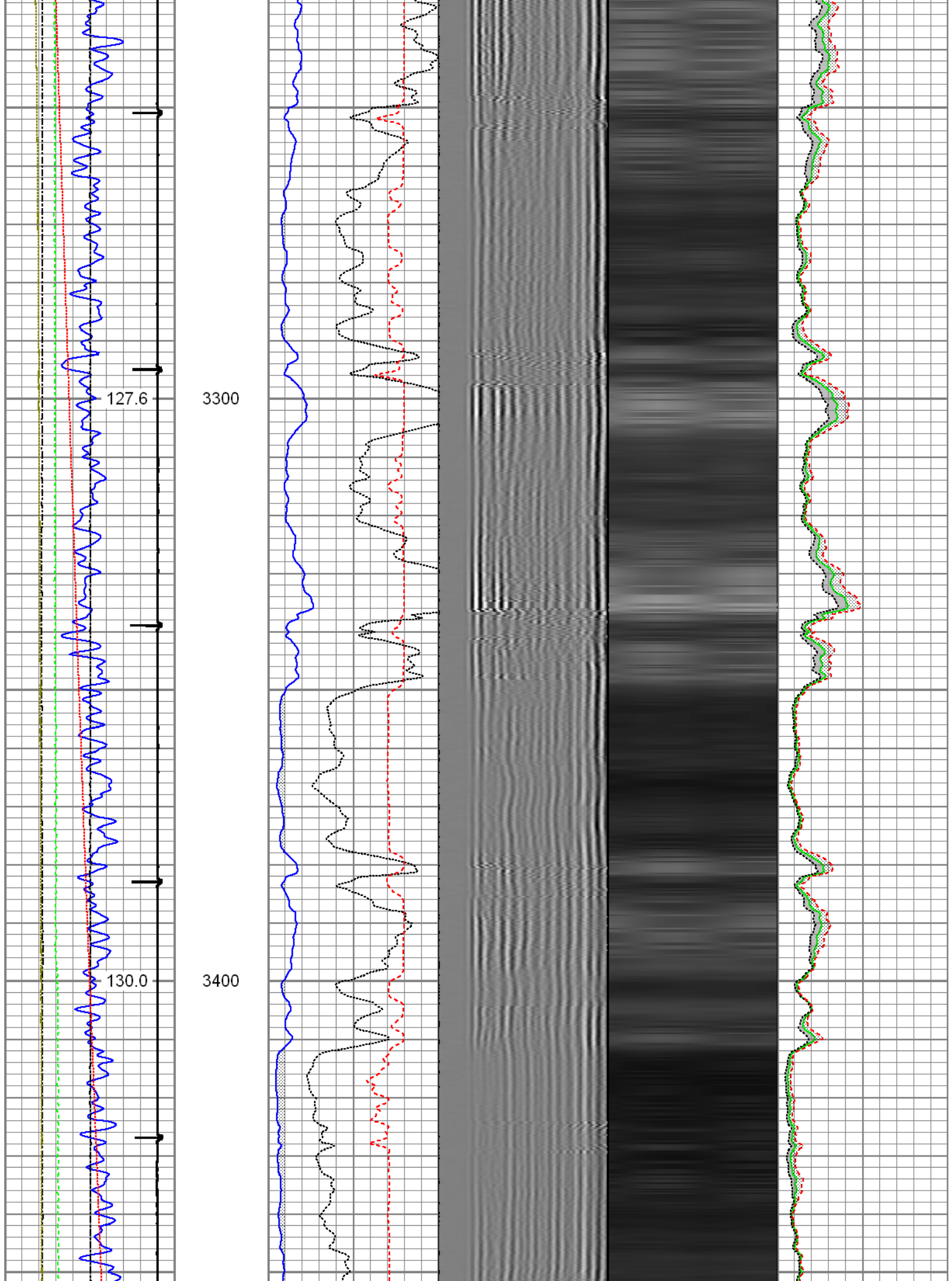


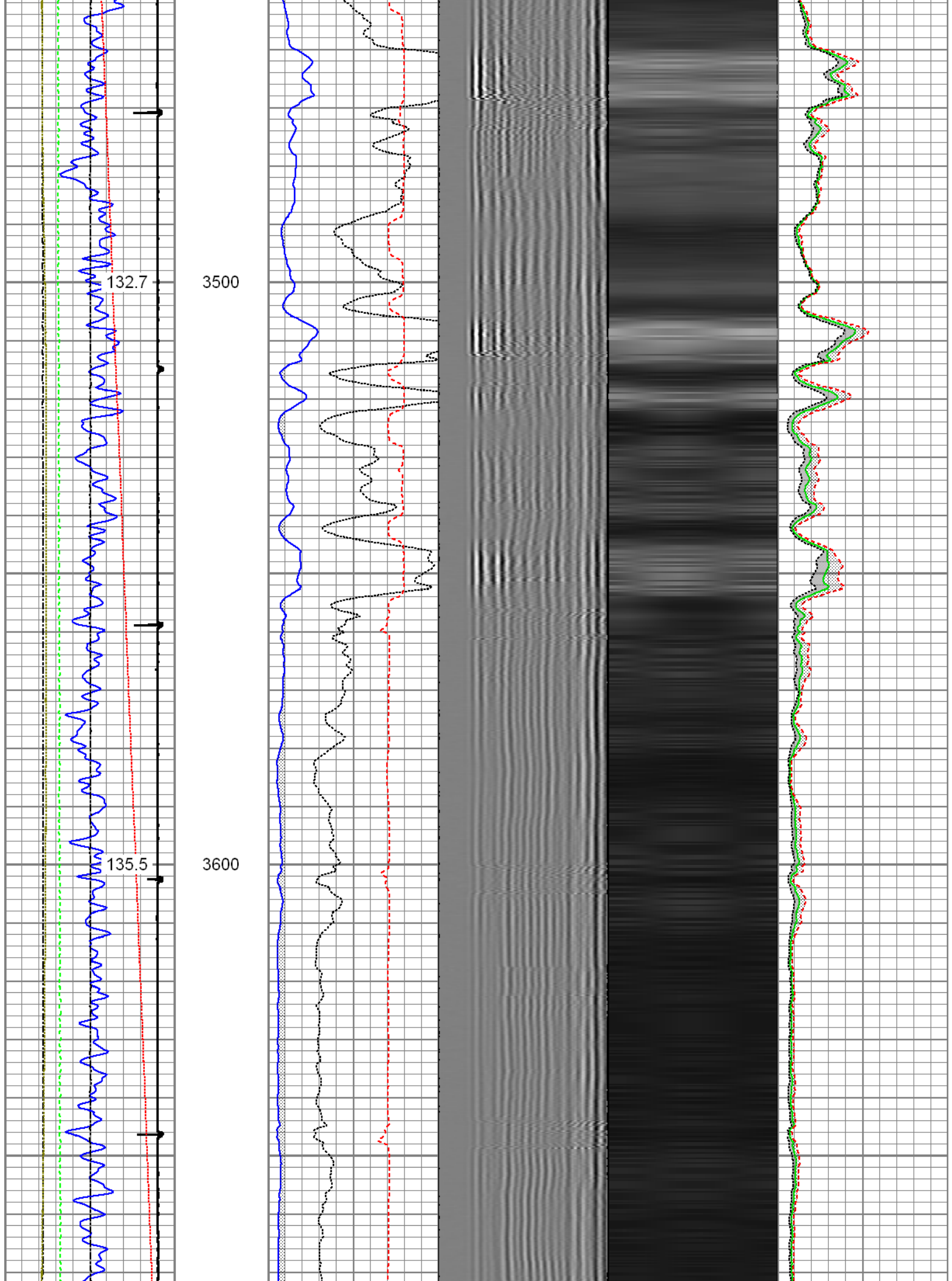


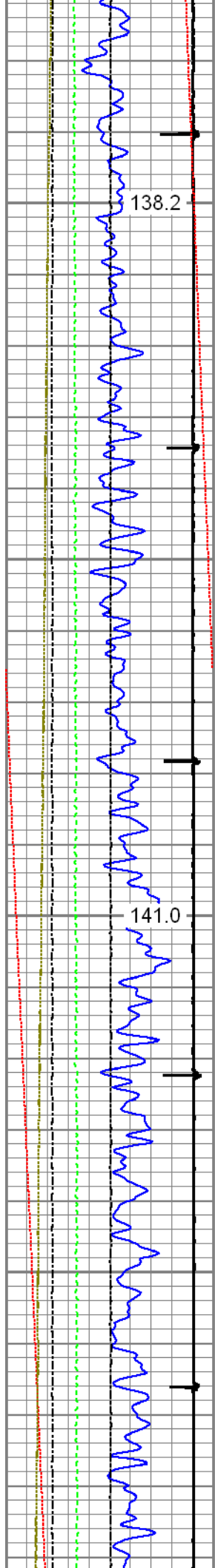
3100

3200



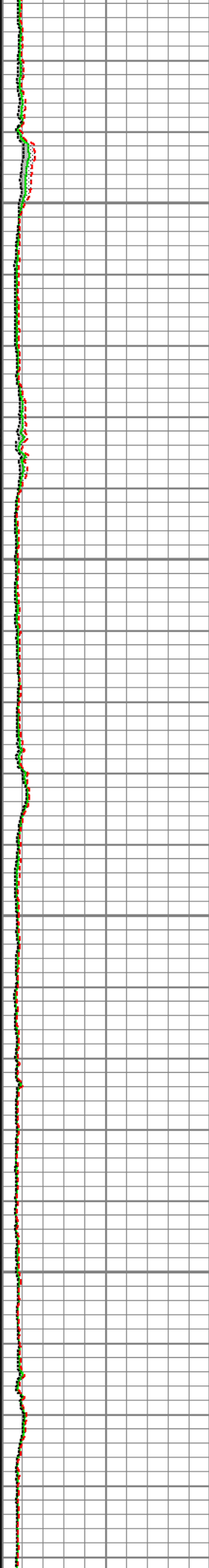
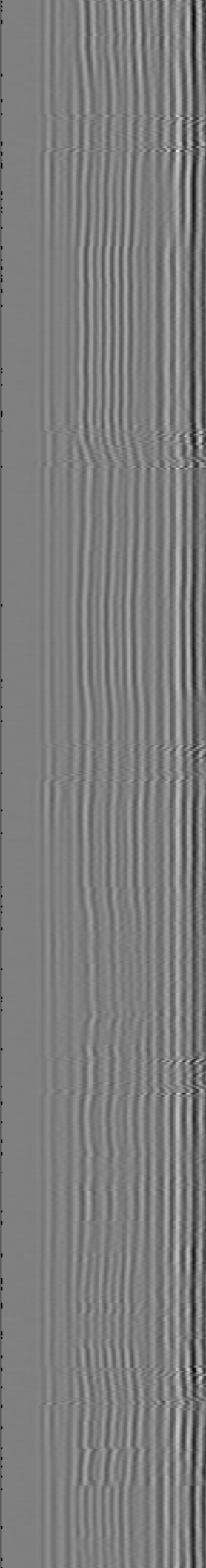
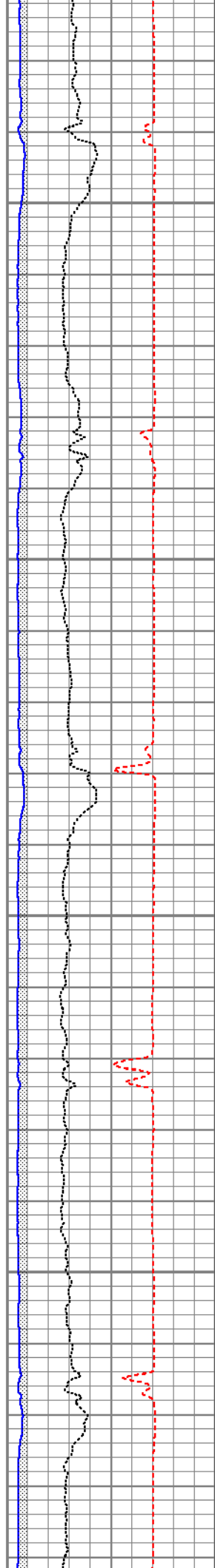


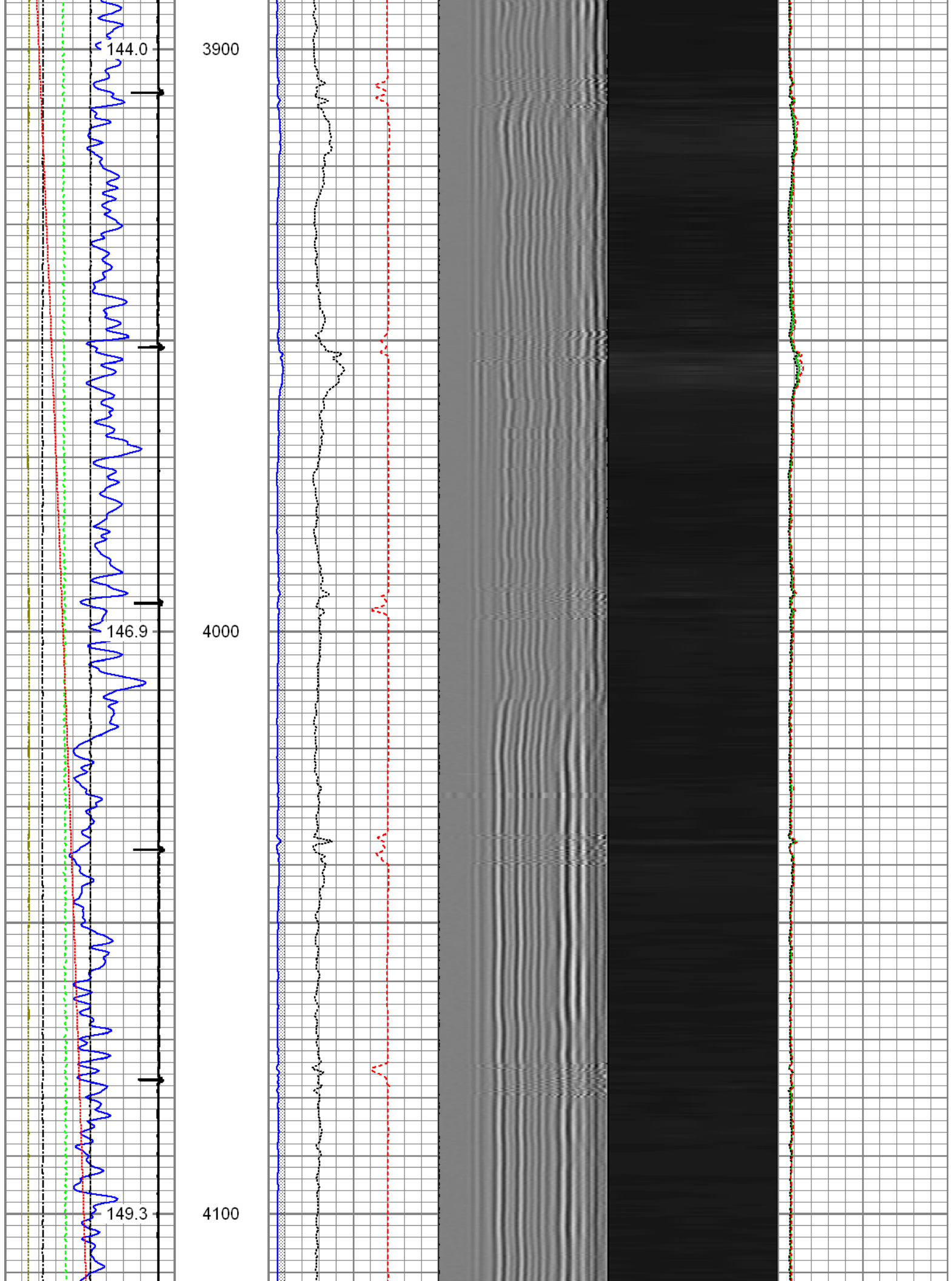


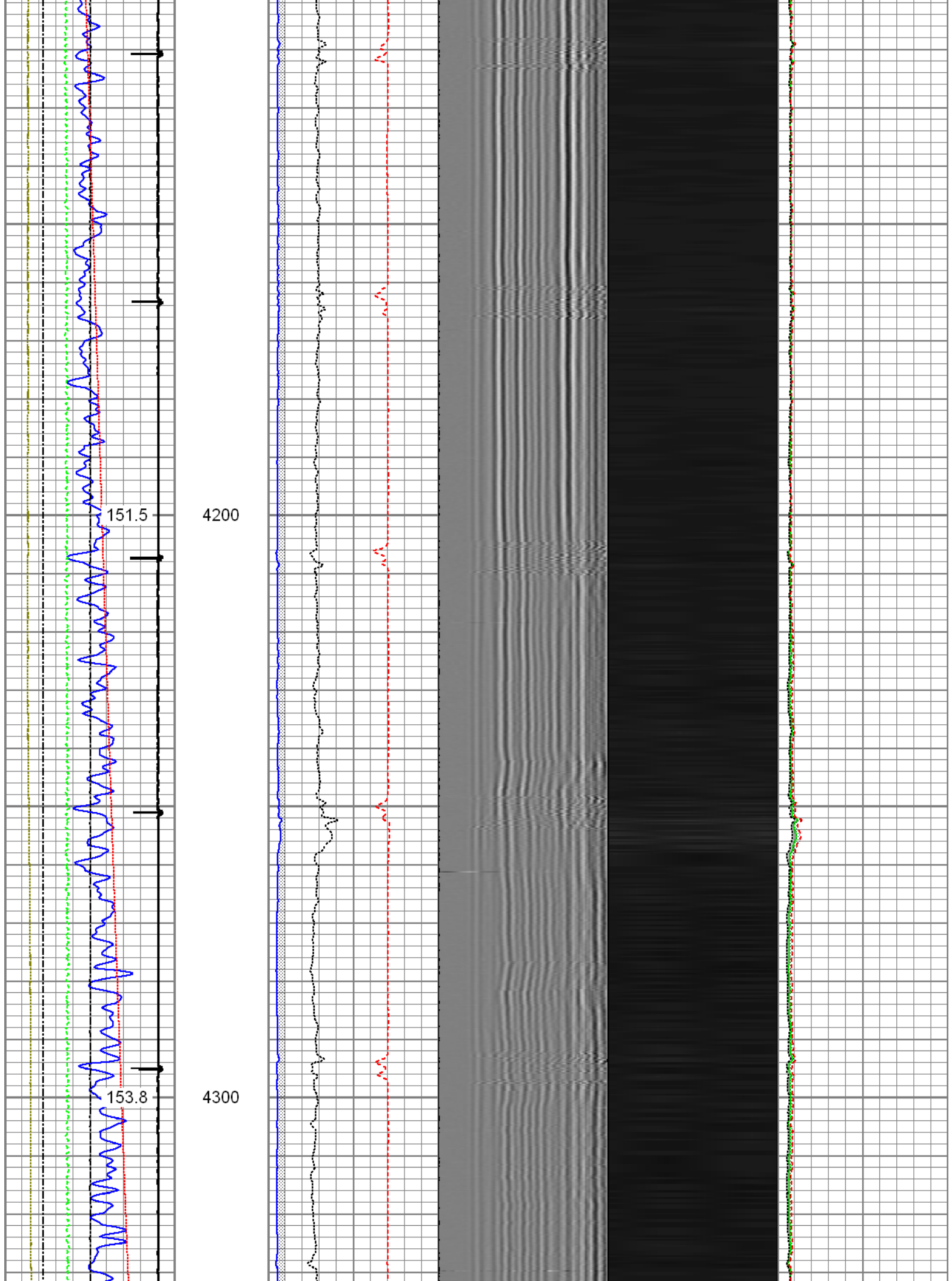


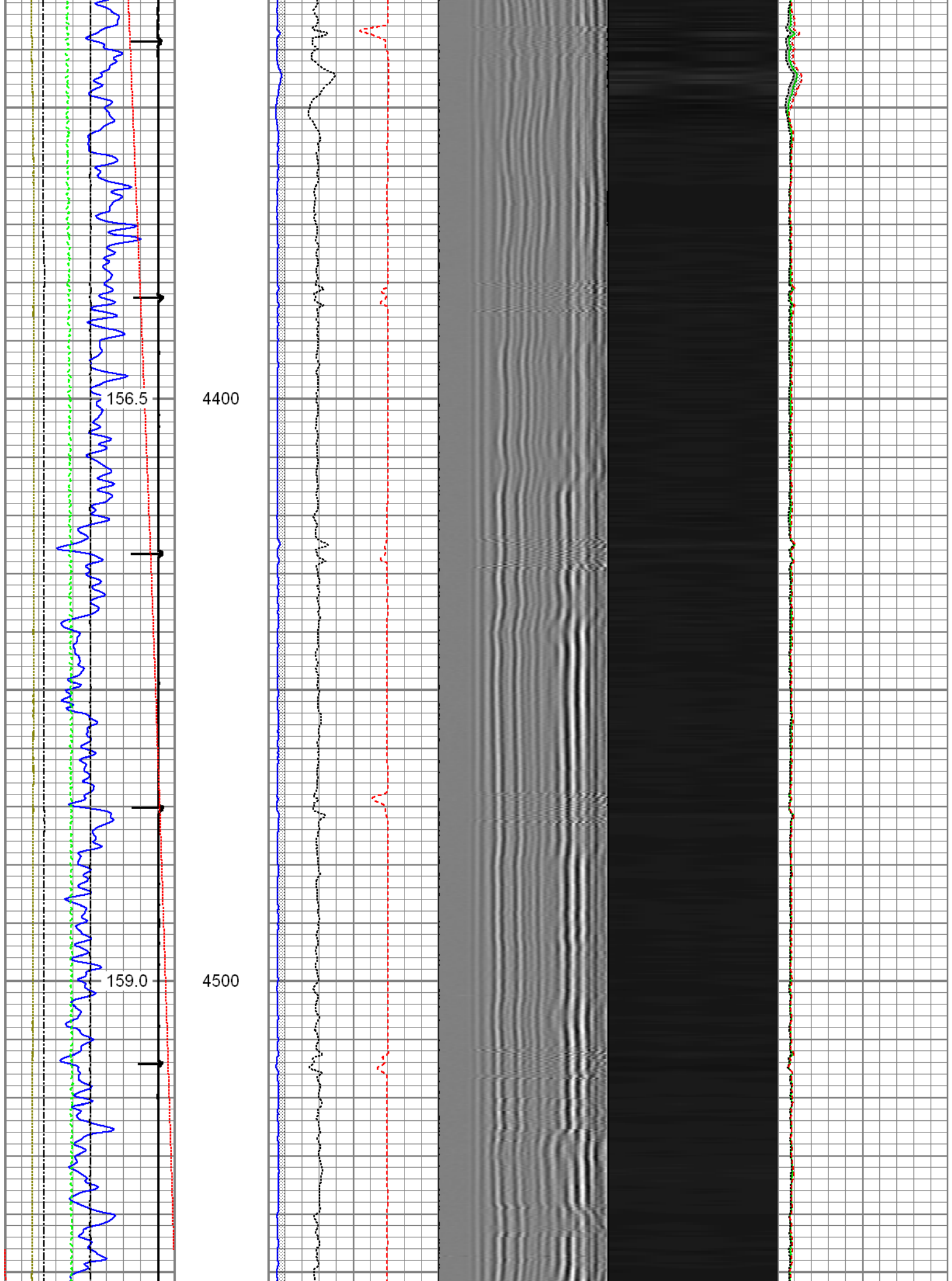
3700

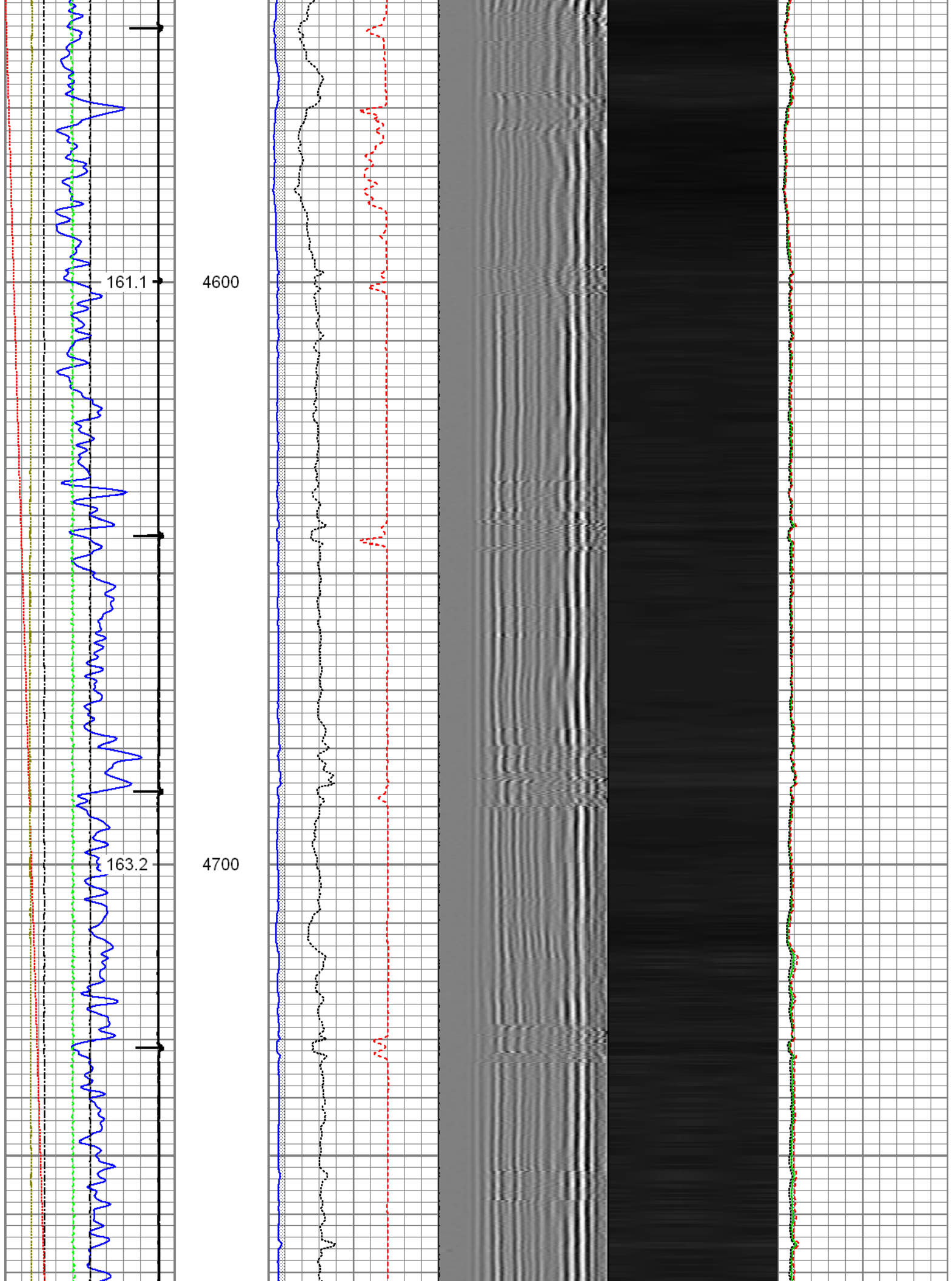
3800

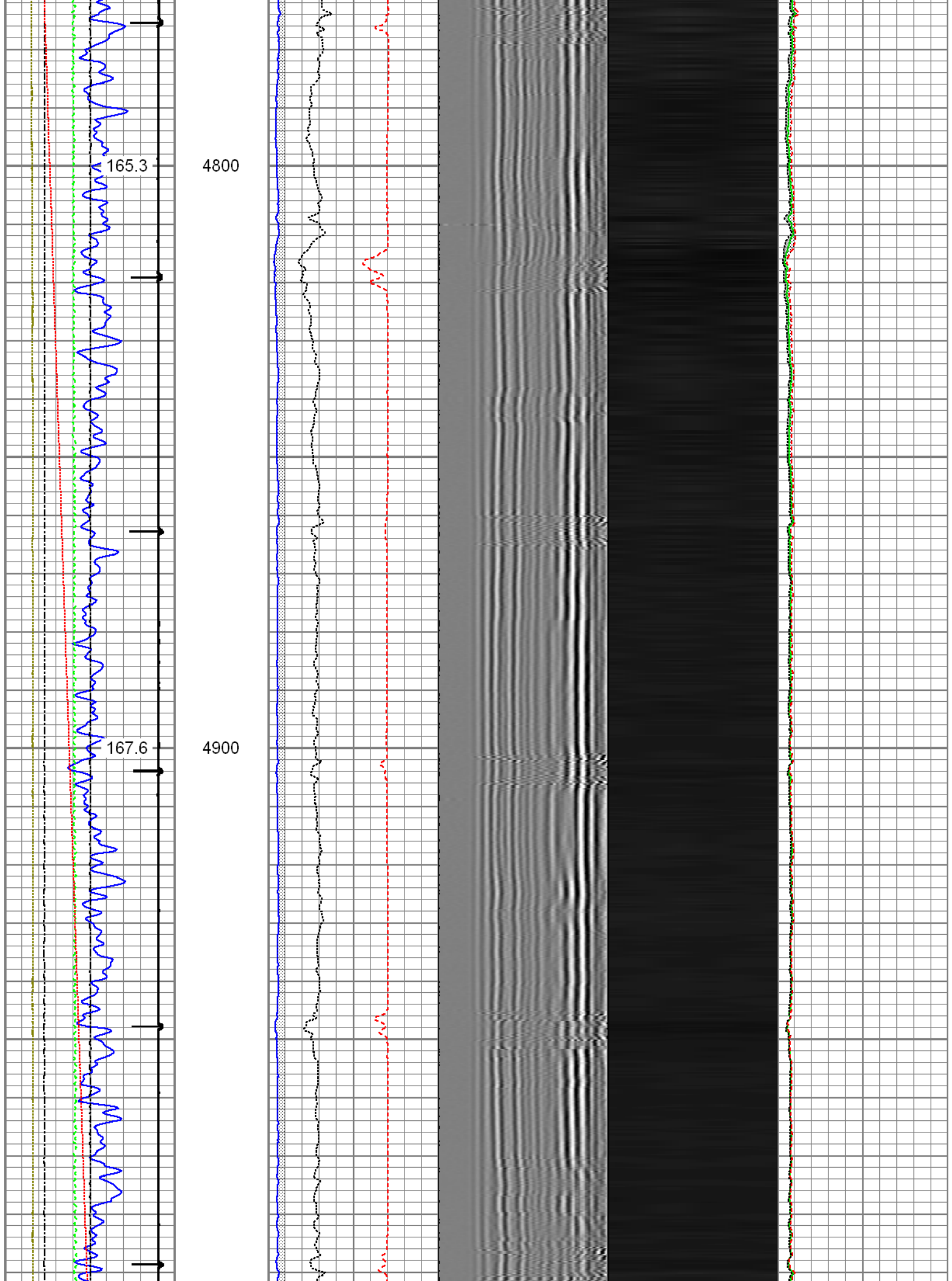


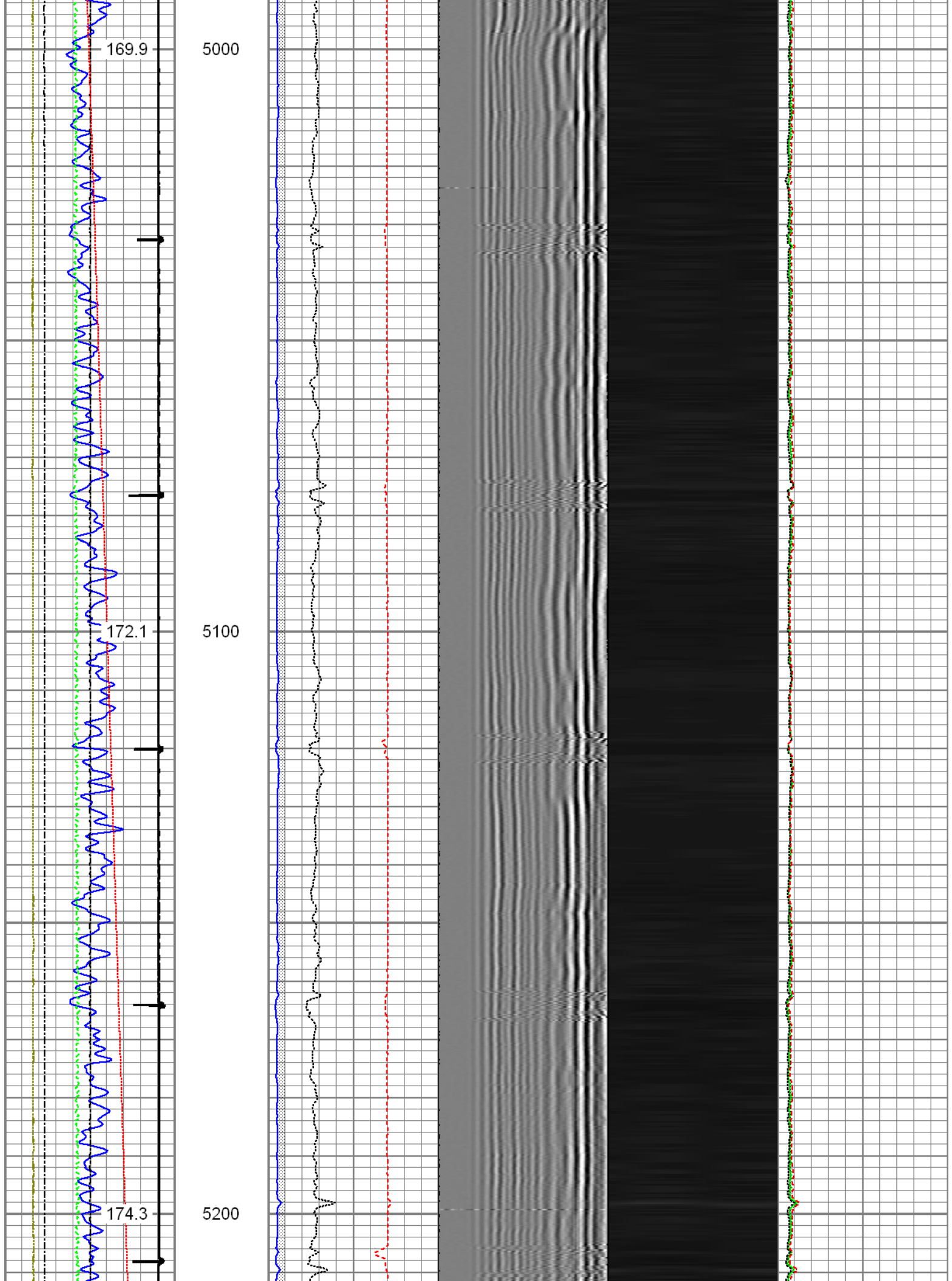


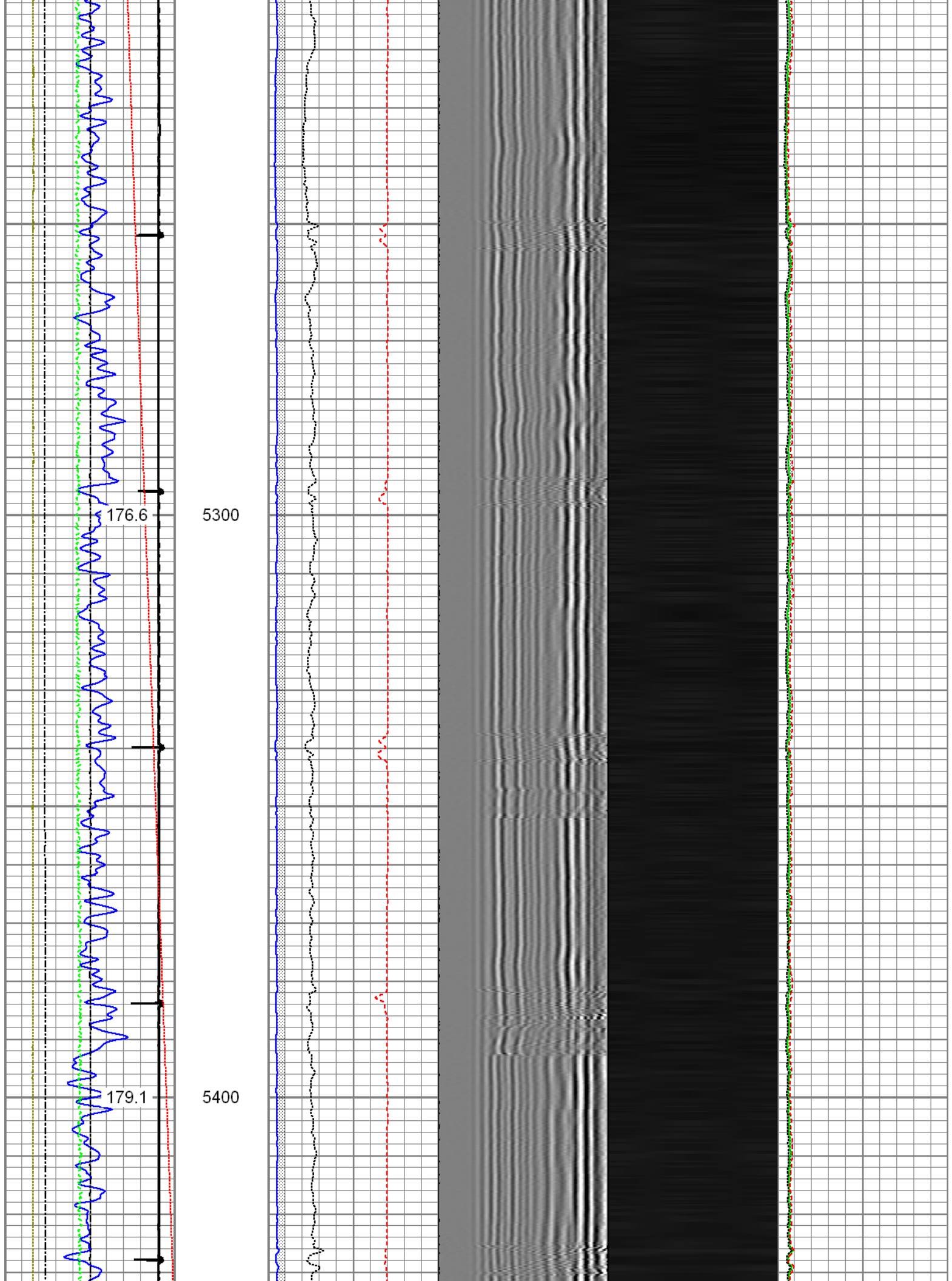


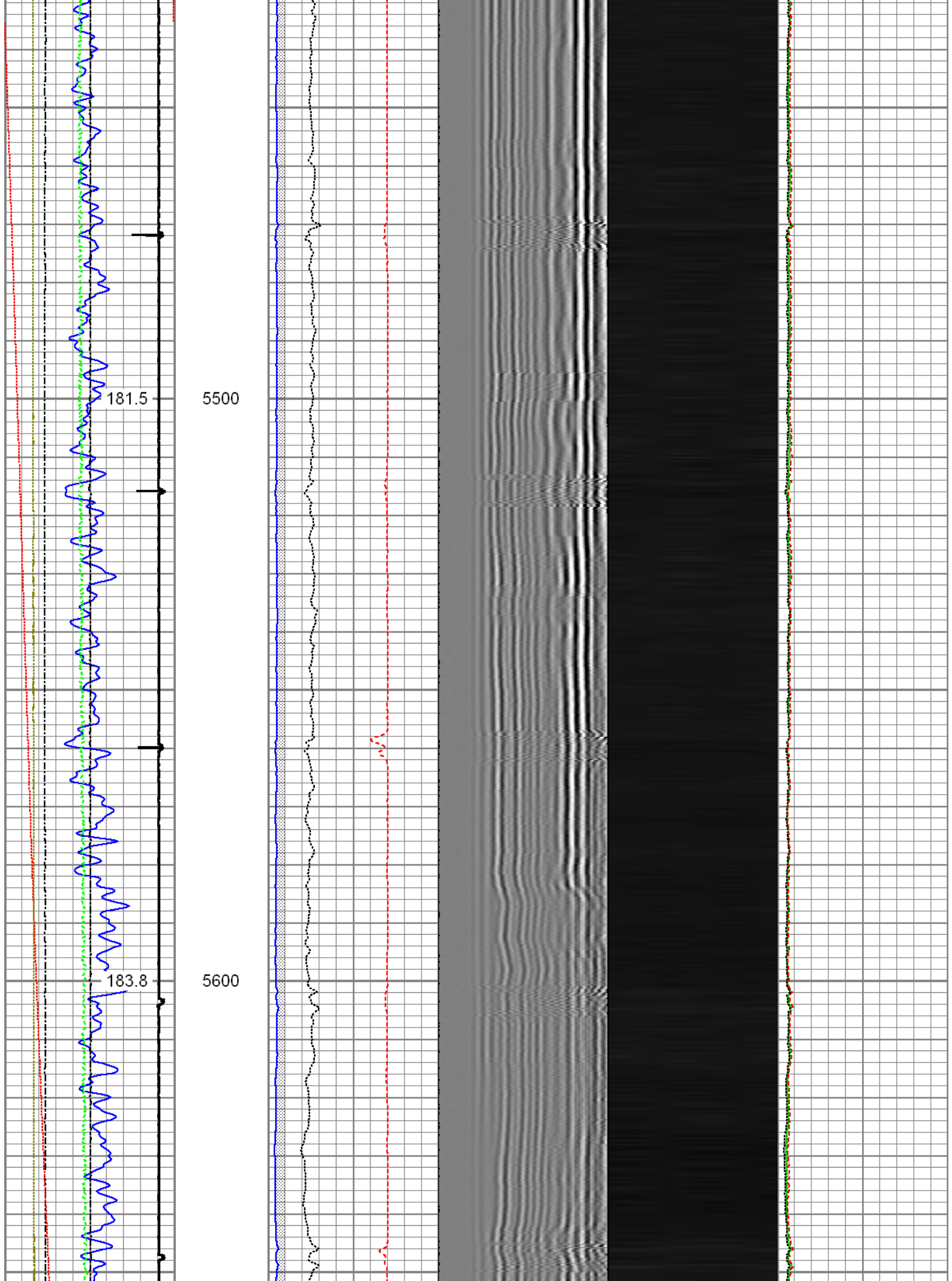


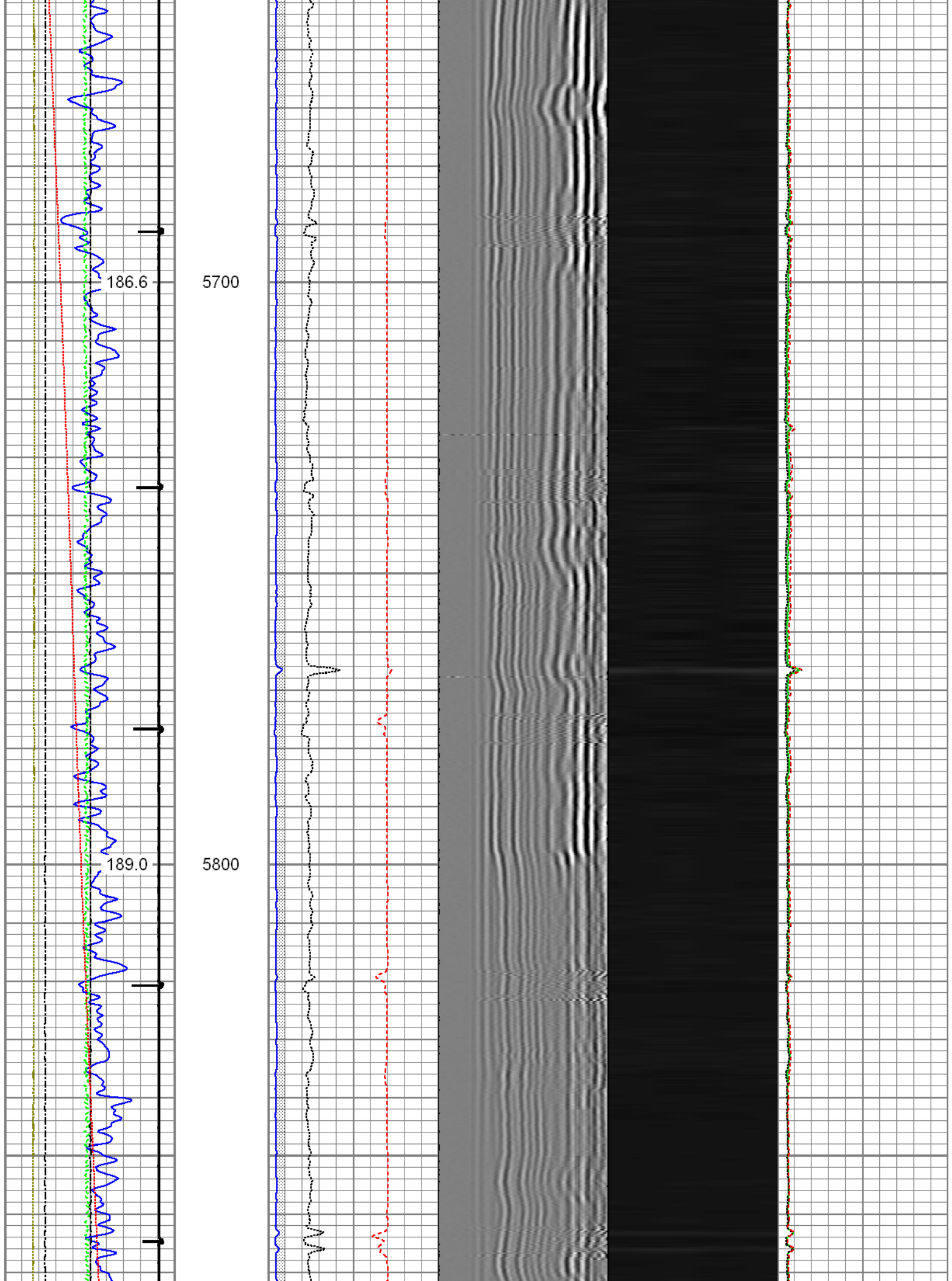


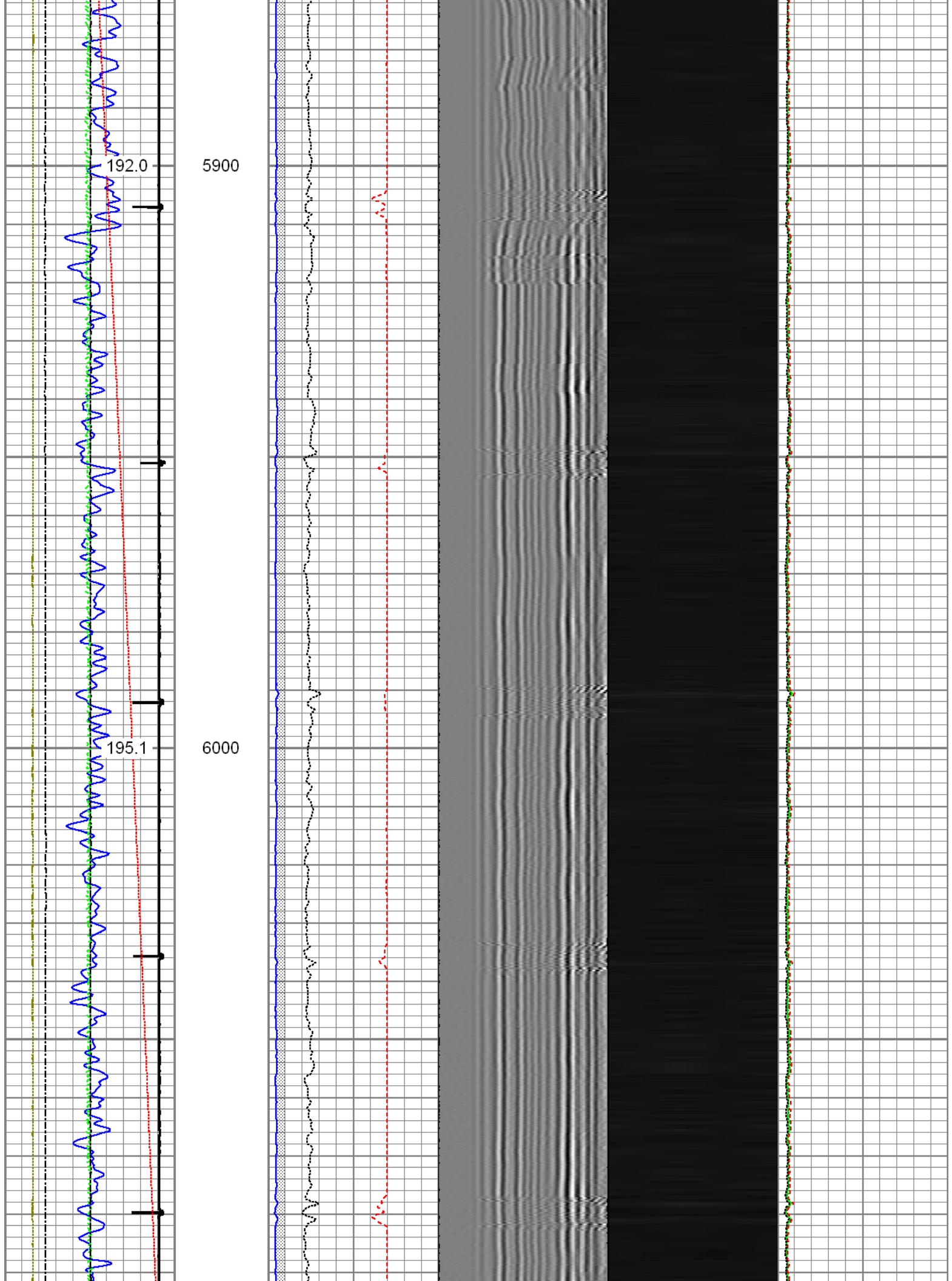


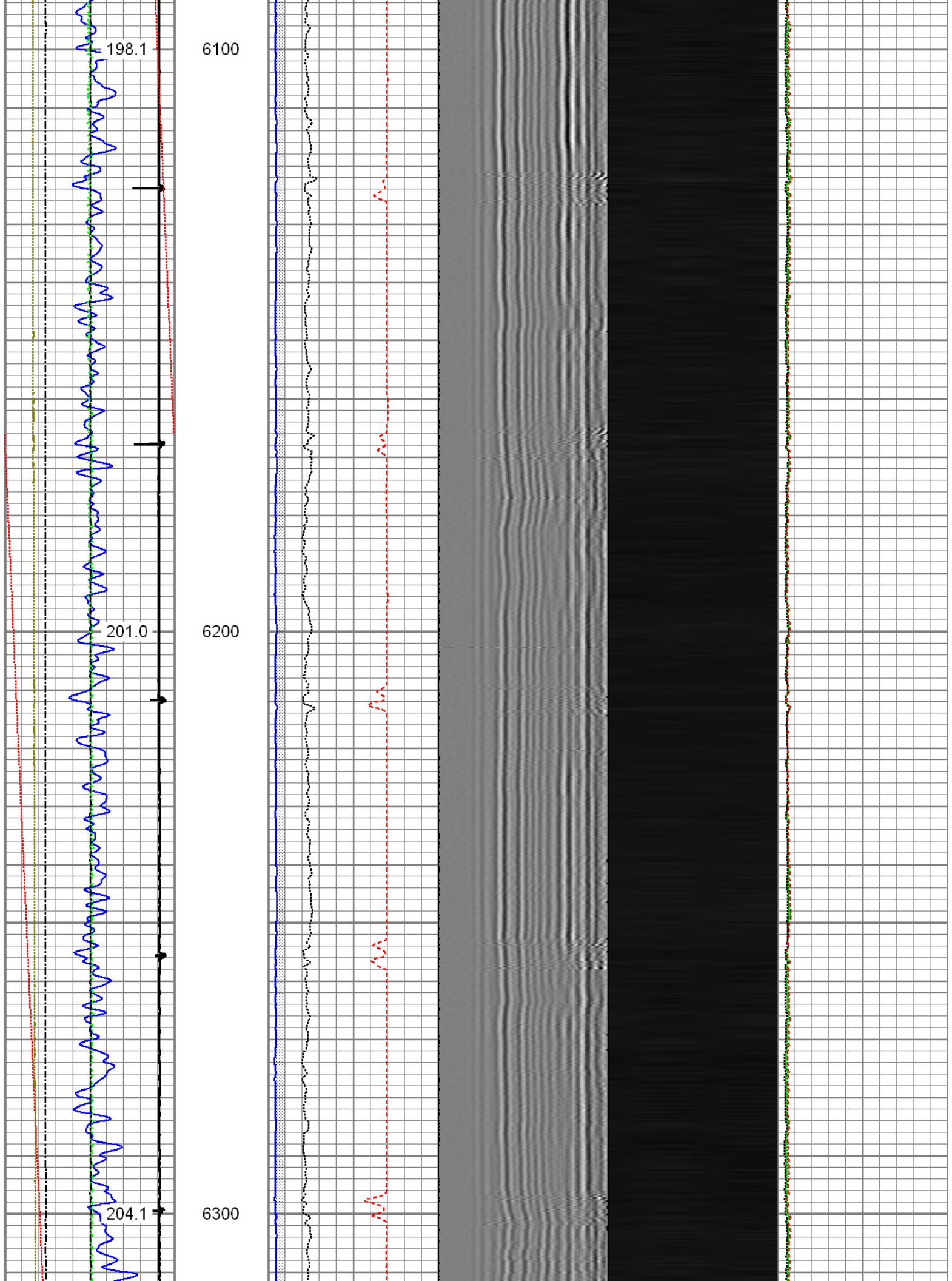


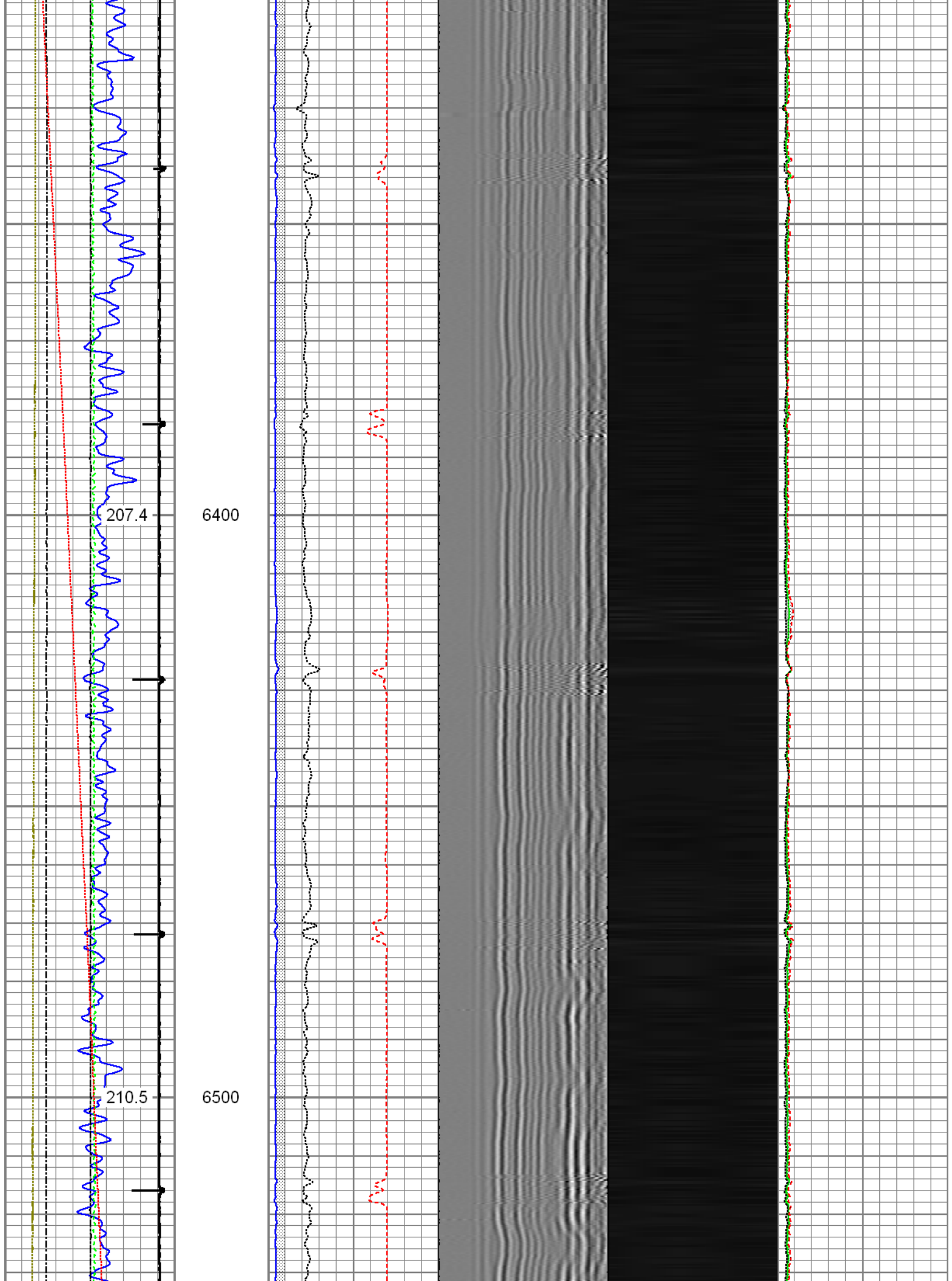


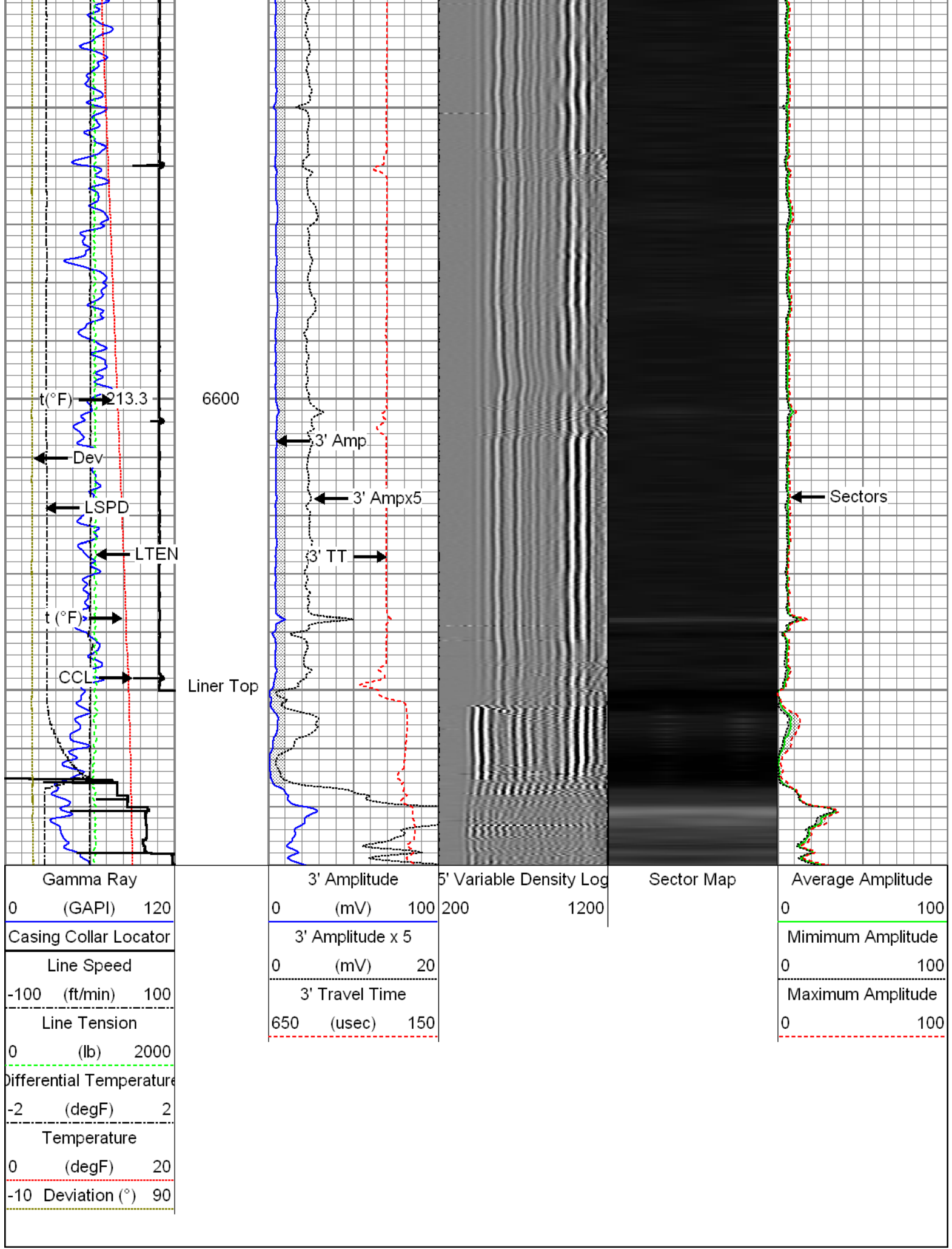








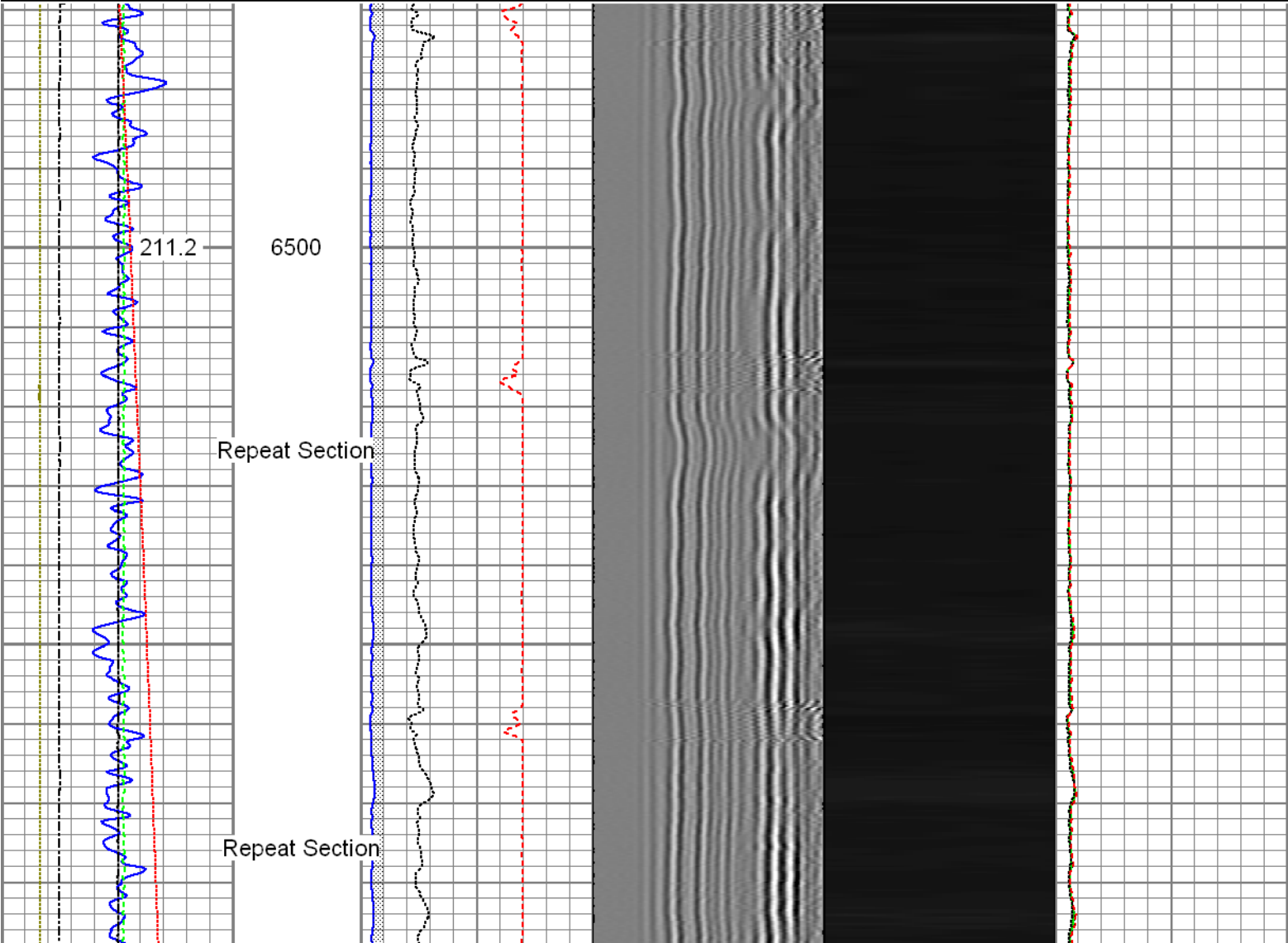


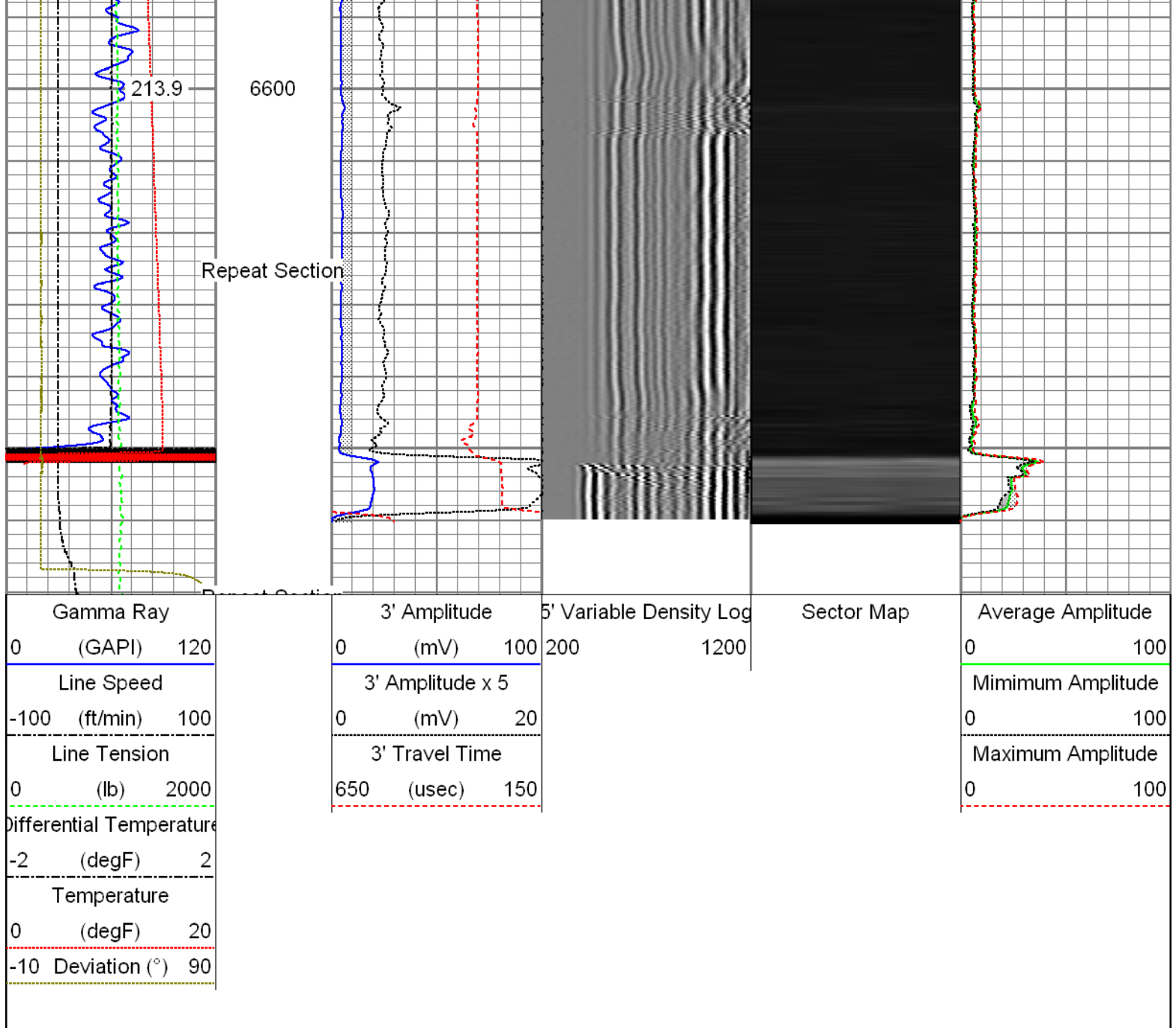


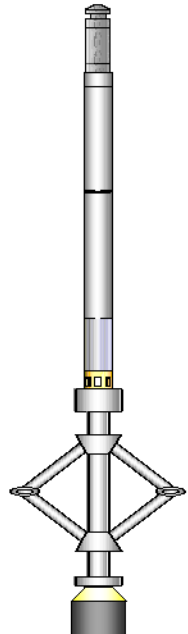
Recorded with 2800 PSI surface induced pressure

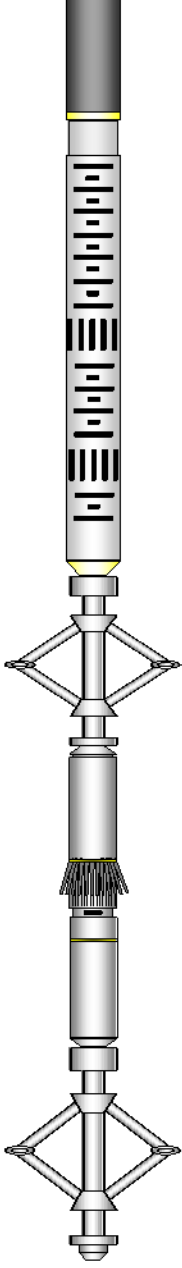
Database File: 0512338906\_anadarko\_barclay 16n-26hz\_05-21-15\_mit\_rbl.db  
 Dataset Pathname: run3/pass2  
 Presentation Format: rbt4\_mit  
 Dataset Creation: Thu May 21 13:11:13 2015 by Log 7.0 B1  
 Charted by: Depth in Feet scaled 1:240

Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
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				
-10 Deviation (°) 90				





Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
GR	24.28		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 (211461) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50
			UW_PGR-UW_PGR_020 (10024770) Production Gamma Ray	1.93	1.69	9.50
TEMP	22.89		UW_PRT-UW_PRT_016 (10025095) Platinum Resistance Thermometer	1.04	1.69	5.20
			UW_PRC #4 -UW_PRC_057 (1101) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	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					
MIT	5.41		UW_PRC-DSSRAC (080) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
			UW_MIT-UW_MIT40_027 (218949) 40 Multifinger Imaging Tool	4.54	2.75	61.10
			UW_PRC #3 -UW_PRC_057 (1038) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
			UW_BUL-UW_BUL_006 (218707) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20
TSTAMP	0.00					
Dataset: 0512338906_Anadarko_Barclay 16N-26HZ_05-21-15_MIT_RBL.db: field/well/run3/pass5 Total Length: 28.53 ft Total Weight: 324.50 lb O.D. 3.13 in						

Calibration Report			
Database File:	0512338906_anadarko_barclay 16n-26hz_05-21-15_mit_rbl.db		
Dataset Pathname:	run3/pass5		
Dataset Creation:	Thu May 21 13:29:24 2015 by Log 7.0 B1		
Multi-finger Imaging Tool Calibration Report			
Serial Number:	218949		
Number of Fingers:	40		
Tool Model:	UW_MIT40_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 31 down:	2210	2220	

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: Thu May 21 12:13:14 2015**

Ring size: (in)	4	Sens	5	Sens	6	Sens	7
Finger 01:	1377	275.0	1652	295.0	1947	307.0	2254
Finger 02:	1448	273.0	1721	289.0	2010	303.0	2313
Finger 03:	1665	272.0	1937	283.0	2220	286.0	2506
Finger 04:	1679	271.0	1950	280.0	2230	280.0	2510
Finger 05:	1542	258.0	1800	270.0	2070	280.0	2350
Finger 06:	1537	255.0	1792	263.0	2055	271.0	2326
Finger 07:	1354	272.0	1626	289.0	1915	301.0	2216
Finger 08:	1550	253.0	1803	266.0	2069	274.0	2343
Finger 09:	1426	266.0	1692	289.0	1981	296.0	2277
Finger 10:	1495	262.0	1757	279.0	2036	283.0	2319
Finger 11:	1484	259.0	1743	275.0	2018	280.0	2298
Finger 12:	1326	275.0	1601	298.0	1899	311.0	2210
Finger 13:	1584	277.0	1861	292.0	2153	292.0	2445
Finger 14:	1426	277.0	1703	299.0	2002	308.0	2310
Finger 15:	1545	260.0	1805	276.0	2081	283.0	2364
Finger 16:	1407	279.0	1686	298.0	1984	308.0	2292
Finger 17:	1642	268.0	1910	282.0	2192	286.0	2478
Finger 18:	1379	288.0	1667	308.0	1975	323.0	2298
Finger 19:	1639	258.0	1897	262.0	2159	264.0	2423
Finger 20:	1506	261.0	1767	280.0	2047	294.0	2341
Finger 21:	1588	250.0	1838	260.0	2098	268.0	2366
Finger 22:	1526	273.0	1799	285.0	2084	296.0	2380
Finger 23:	1341	272.0	1613	290.0	1903	304.0	2207
Finger 24:	1670	261.0	1931	270.0	2201	280.0	2481
Finger 25:	1351	286.0	1637	311.0	1948	323.0	2271
Finger 26:	1523	285.0	1808	296.0	2104	308.0	2412
Finger 27:	1456	256.0	1712	272.0	1984	280.0	2264
Finger 28:	1621	274.0	1895	286.0	2181	291.0	2472
Finger 29:	1456	269.0	1725	285.0	2010	299.0	2309
Finger 30:	1409	272.0	1681	294.0	1975	302.0	2277
Finger 31:	1516	261.0	1777	277.0	2054	288.0	2342
Finger 32:	1333	260.0	1593	279.0	1872	293.0	2165
Finger 33:	1598	296.0	1894	310.0	2204	319.0	2523
Finger 34:	1531	266.0	1797	277.0	2074	285.0	2359
Finger 35:	1429	260.0	1689	278.0	1967	290.0	2257
Finger 36:	1581	277.0	1858	289.0	2147	296.0	2443
Finger 37:	1595	269.0	1864	281.0	2145	290.0	2435
Finger 38:	1487	269.0	1756	287.0	2043	299.0	2342
Finger 39:	1461	277.0	1738	294.0	2032	309.0	2341
Finger 40:	1581	281.0	1862	295.0	2157	303.0	2460

**Segmented Cement Bond Log Calibration Report**

Serial Number:	1066
Tool Model:	UW_RBT_004
Calibration Casing Diameter:	4.500 in
Calibration Depth:	6927.530 ft

Master Calibration, performed Thu May 21 13:23:55 2015:

Raw (v)		Calibrated (mv)		Results	
Zero	Cal	Zero	Cal	Gain	Offset

3FT	0.004	0.982	0.800	81.196	82.214	0.490
5FT	-0.001	0.552	0.800	81.196	145.221	0.972
S1	0.004	0.959	0.000	100.000	104.696	-0.399
S2	0.004	1.014	0.000	100.000	98.934	-0.366
S3	0.005	1.044	0.000	100.000	96.214	-0.451
S4	0.004	1.058	0.000	100.000	94.818	-0.351
S5	0.004	1.014	0.000	100.000	99.024	-0.363
S6	0.004	0.953	0.000	100.000	105.335	-0.377
S7	0.004	0.936	0.000	100.000	107.223	-0.397
S8	0.004	0.938	0.000	100.000	107.115	-0.434

#### Temperature Calibration Report

Serial Number: 10025095  
Tool Model: UW\_PRT\_016  
Performed: Wed Feb 11 13:43:20 2015

Point #	Reading	Reference
1	12798.00 cps	68.00 degF
2	18136.00 cps	104.00 degF
3	29513.00 cps	176.00 degF
4	40905.00 cps	248.00 degF
5	52487.00 cps	320.00 degF
6	58362.00 cps	356.00 degF
7	cps	degF
8	cps	degF
9	cps	degF
10	cps	degF

#### Gamma Ray Calibration Report

Serial Number: 10024770  
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: Kerr McGee Oil & Gas Onshore LP  
Well: Barclay 16N-26HZ  
Field: Wattenberg  
County: Weld  
State: Colorado