



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company		Kerr-McGee Oil & Gas Onshore LP	
Well		Copperhead 28N-15HZ	
Field		Wattenberg	
County		Weld	
State		Colorado	
Location:		API #: 05-123-40563	
SEC 22		TWP 2N	
RGE 67W		Other Services	
Permanent Datum		Ground Level	
Log Measured From		Kelly Bushing	
Drilling Measured From		Kelly Bushing	
Elevation		5030'	
K.B. 5046'		D.F. 5045'	
G.L. 5030'		MIT	
Date		07-APR-2015	
Run Number		Two	
Depth Driller		13468 FT	
Depth Logger		7600 FT	
Bottom Logged Interval		7593 FT	
Top Log Interval		Surface	
Open Hole Size		8.750"	
Type Fluid		Water	
Density / Viscosity		8.34 lb/gal	
Max. Recorded Temp.		220°F	
Estimated Cement Top		36 FT	
Time Well Ready		ROA	
Time Logger on Bottom		16:55	
Equipment Number		HD-0343	
Location		Ft Lupton, CO	
Recorded By		Zach Fisher	
Witnessed By		Jeff Houghton	
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		7471 FT	
13415 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 casing tally reported liner top at 7471 FT.
Adjusted log -6.7 FT to correlate with liner top.
Gauge ring/junk basket ran to 7600 FT no debris found after run.
Log ran from 7600 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.!!

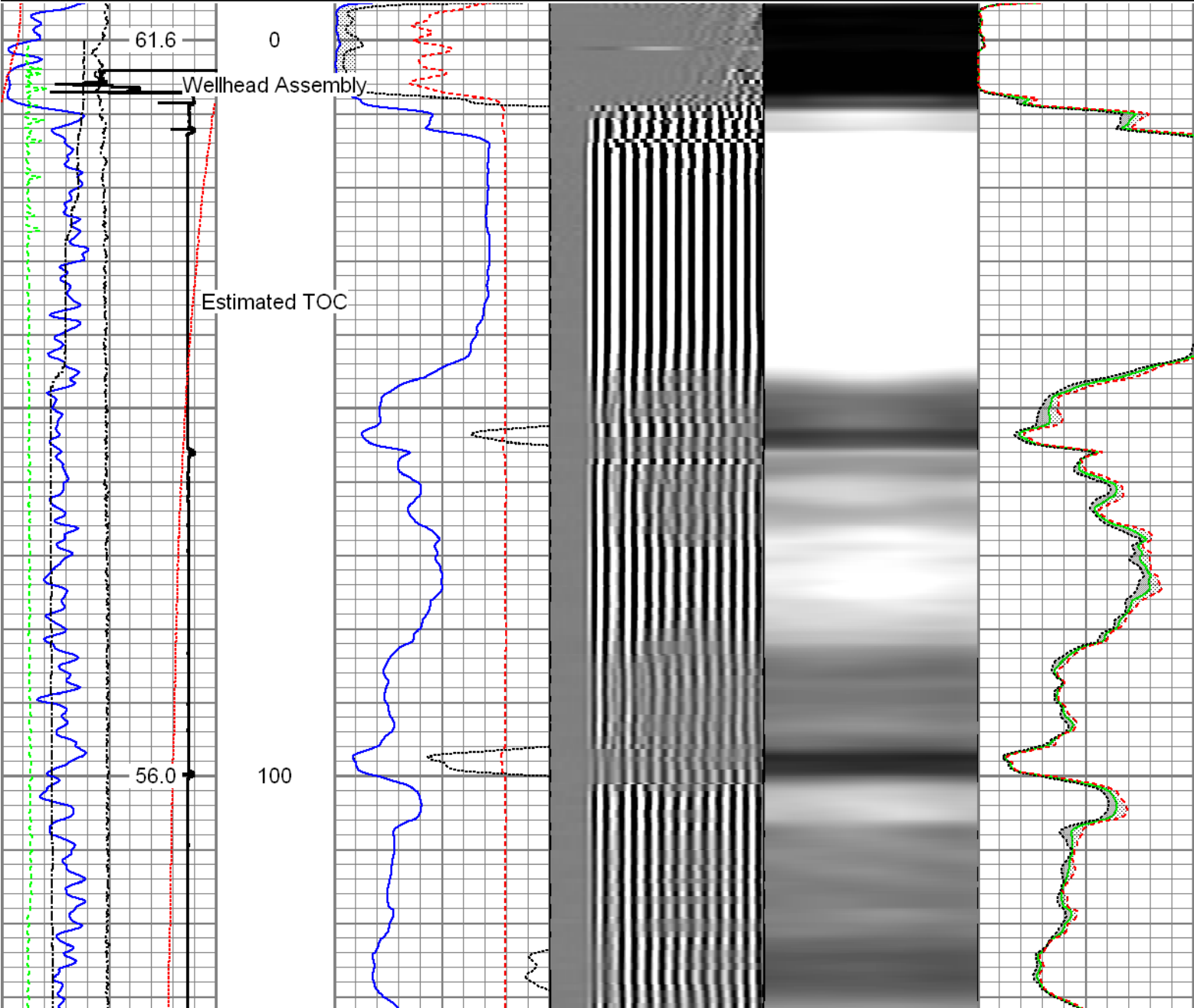


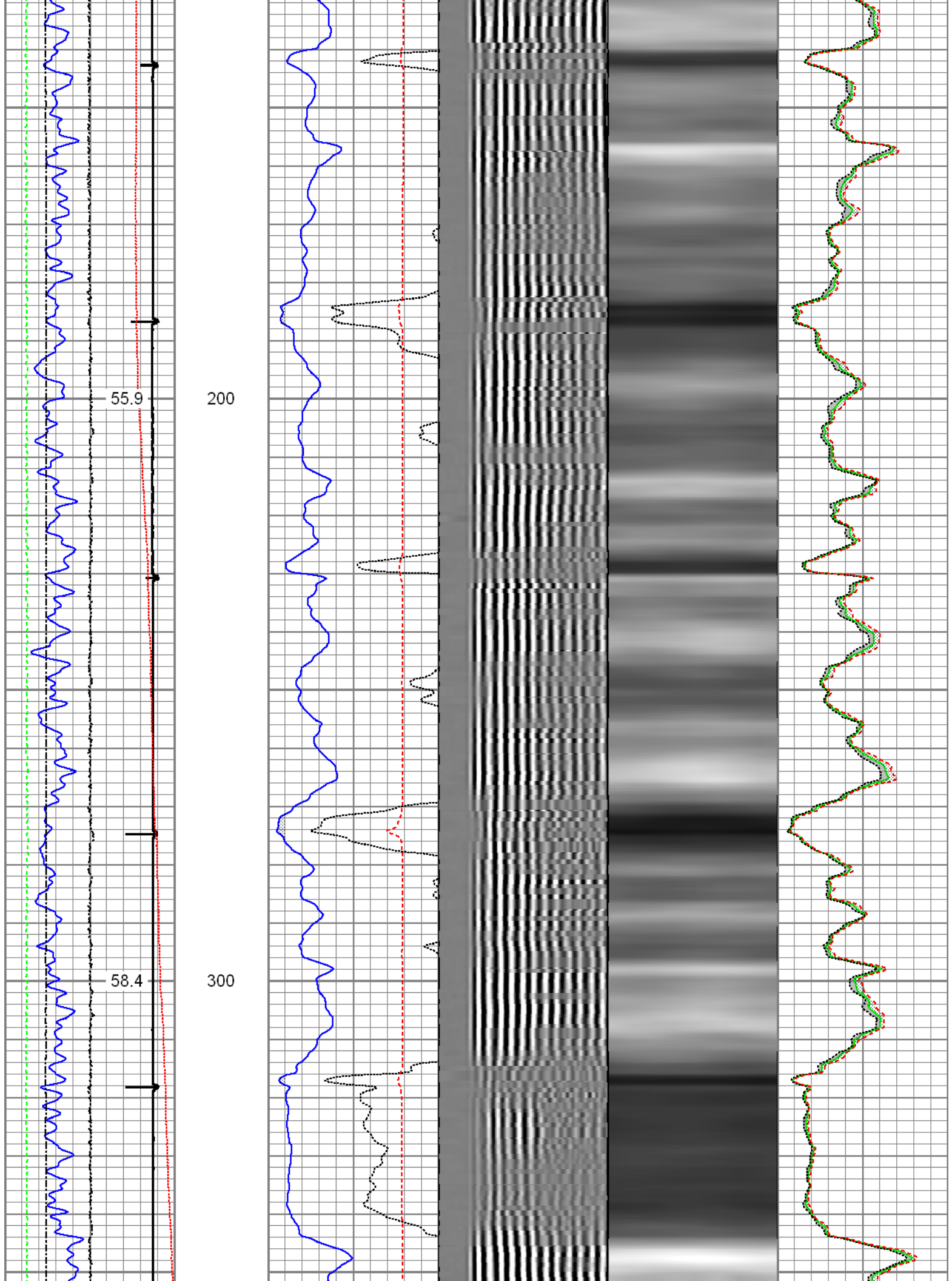
Main Pass

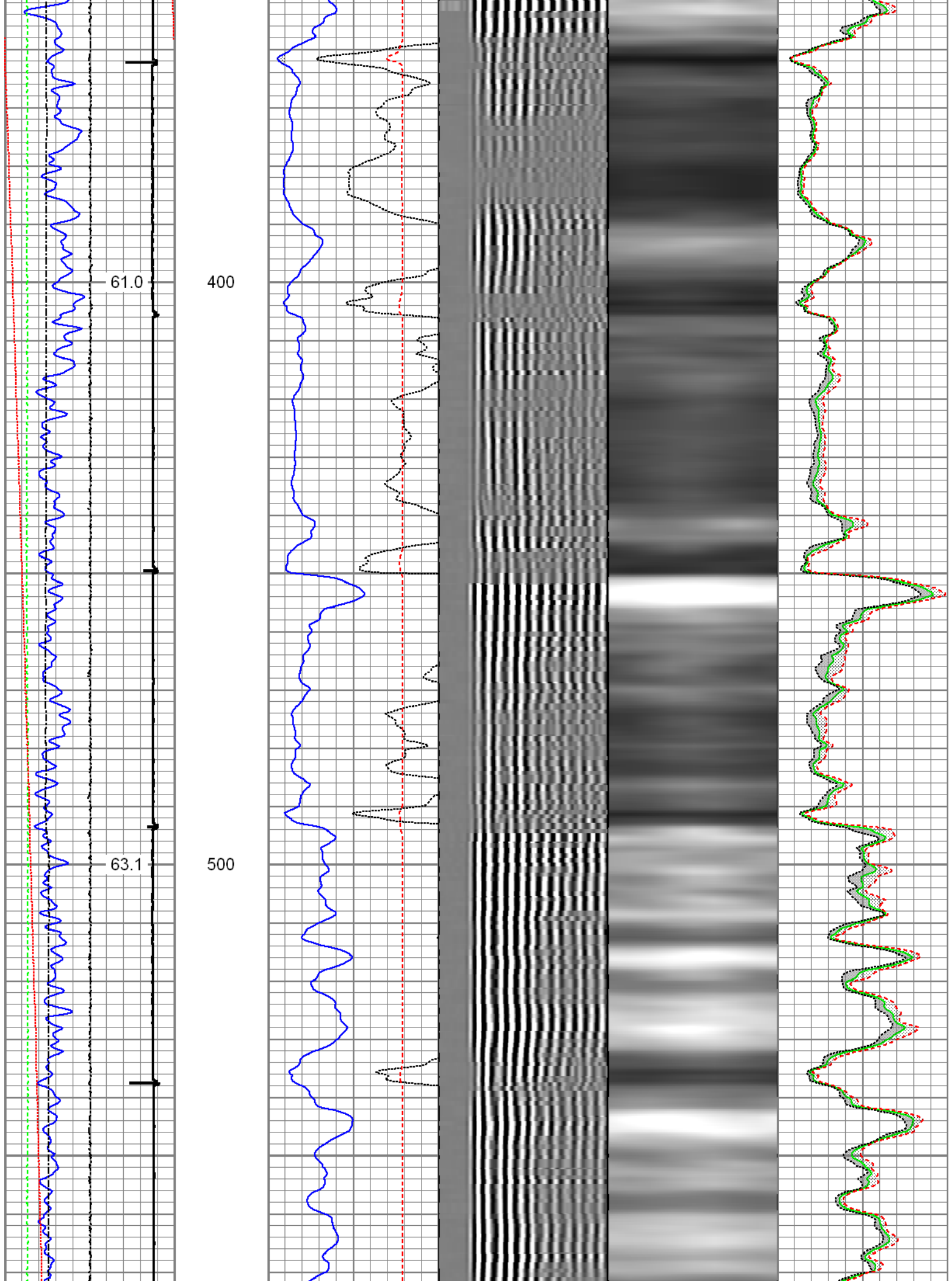
Recorded with 2800 PSI surface induced pressure

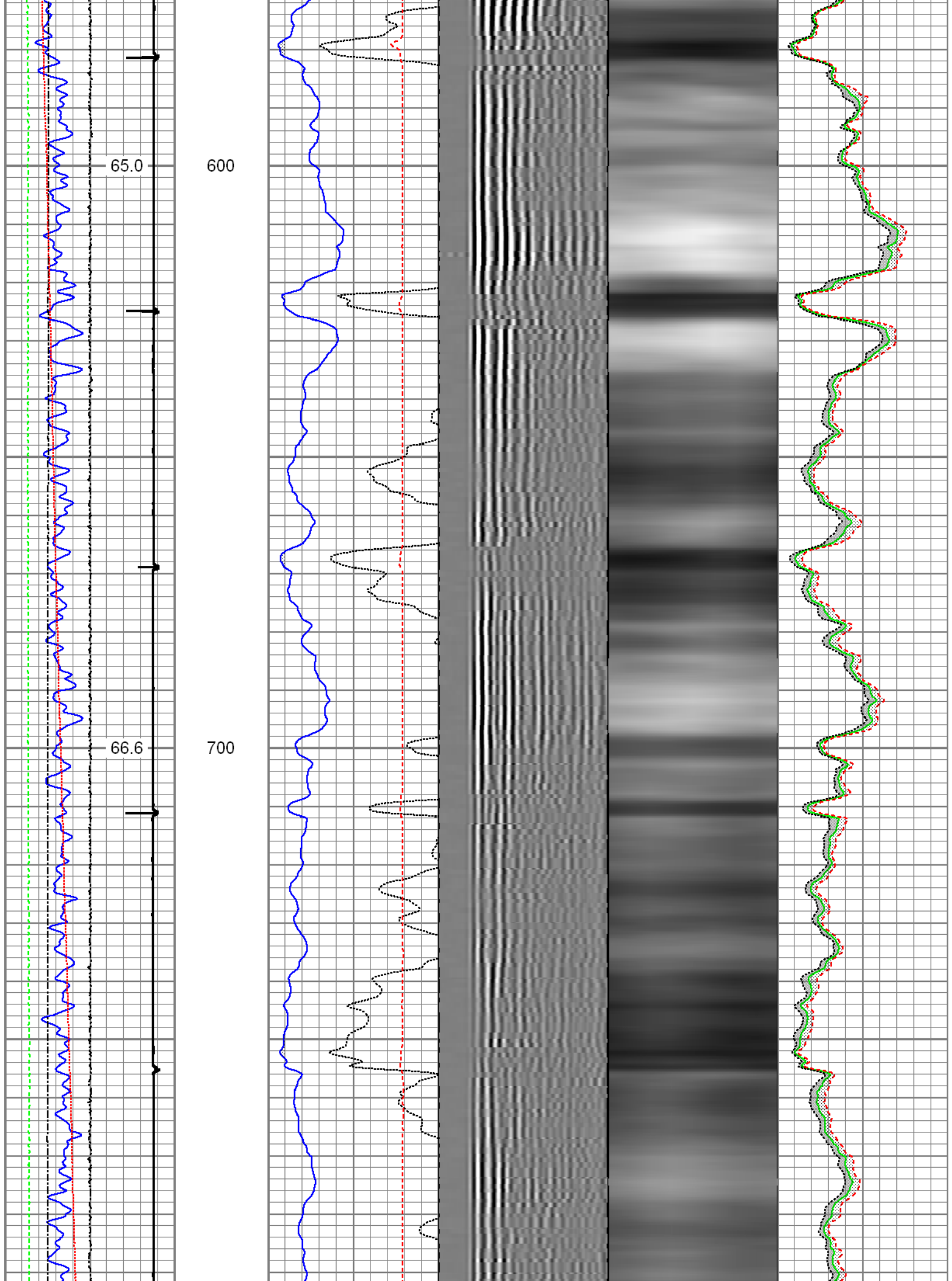
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Dataset Pathname: pass4
Presentation Format: rbt4_mit
Dataset Creation: Tue Apr 07 15:56:32 2015 by Log 7.0 B1
Charted by: Depth in Feet scaled 1:240

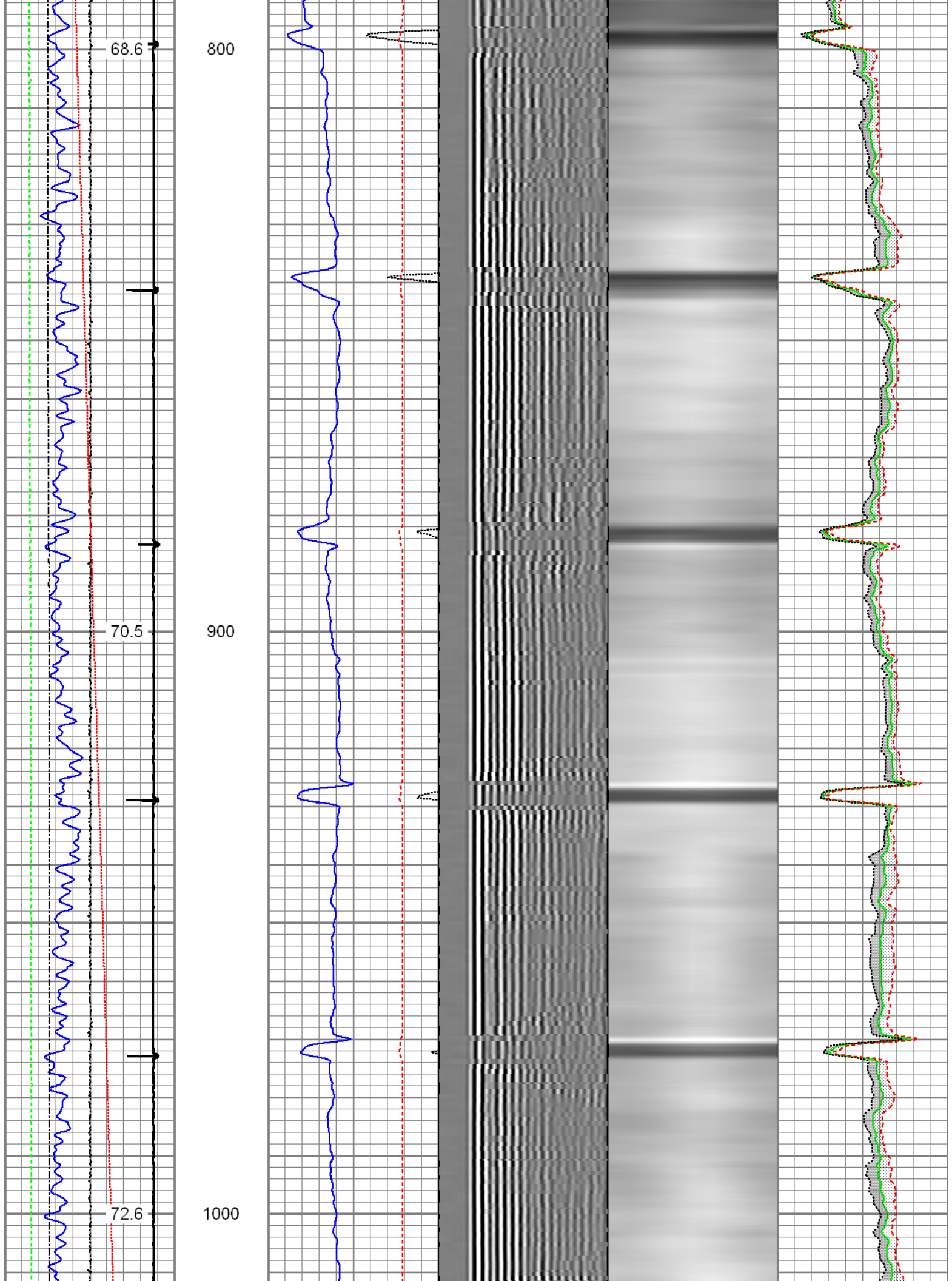
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Mimimum Amplitude
Line Speed	0 (mV) 20			0 100
-100 (ft/min) 100	3' Travel Time			Maximum Amplitude
Line Tension	650 (usec) 150			0 100
0 (lb) 2000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

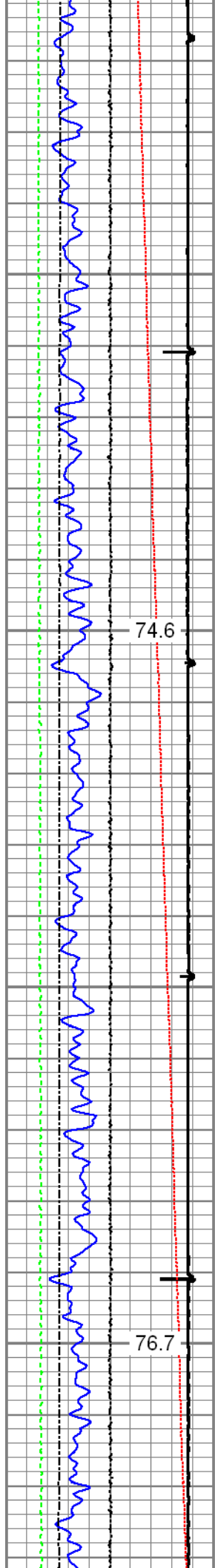






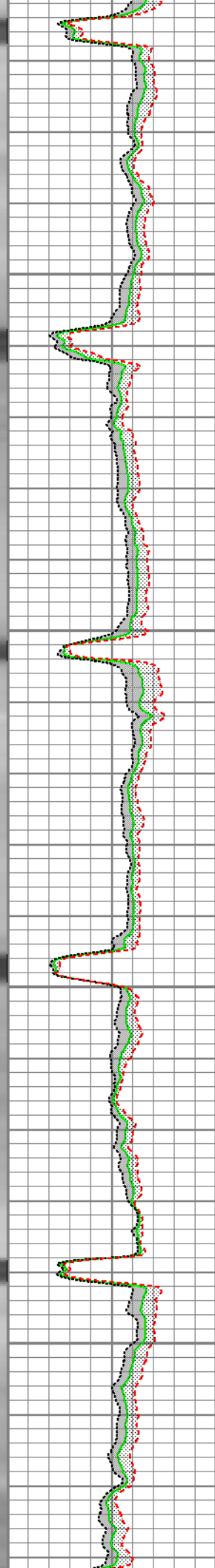
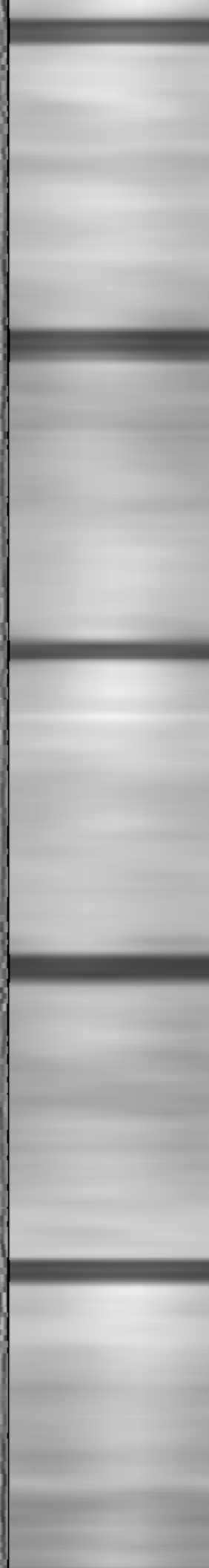
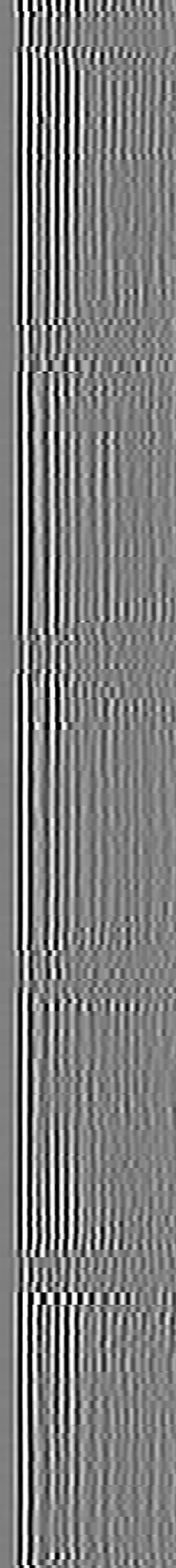
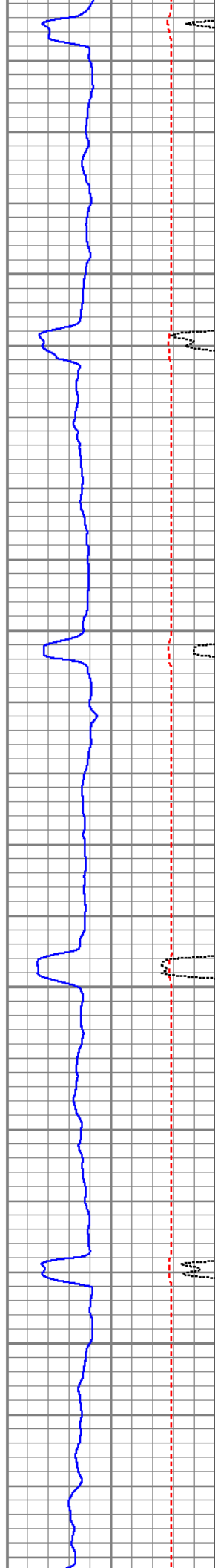


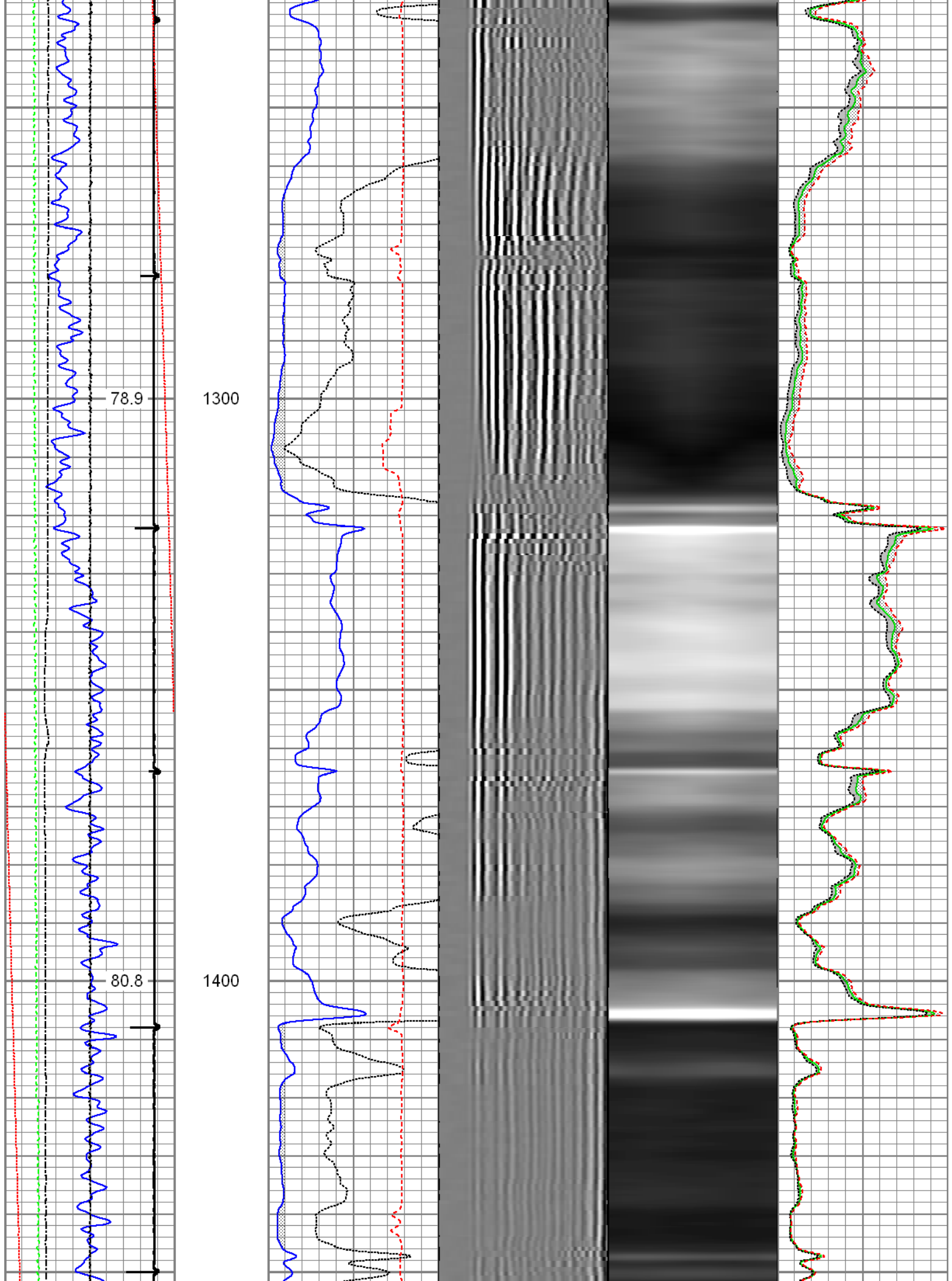


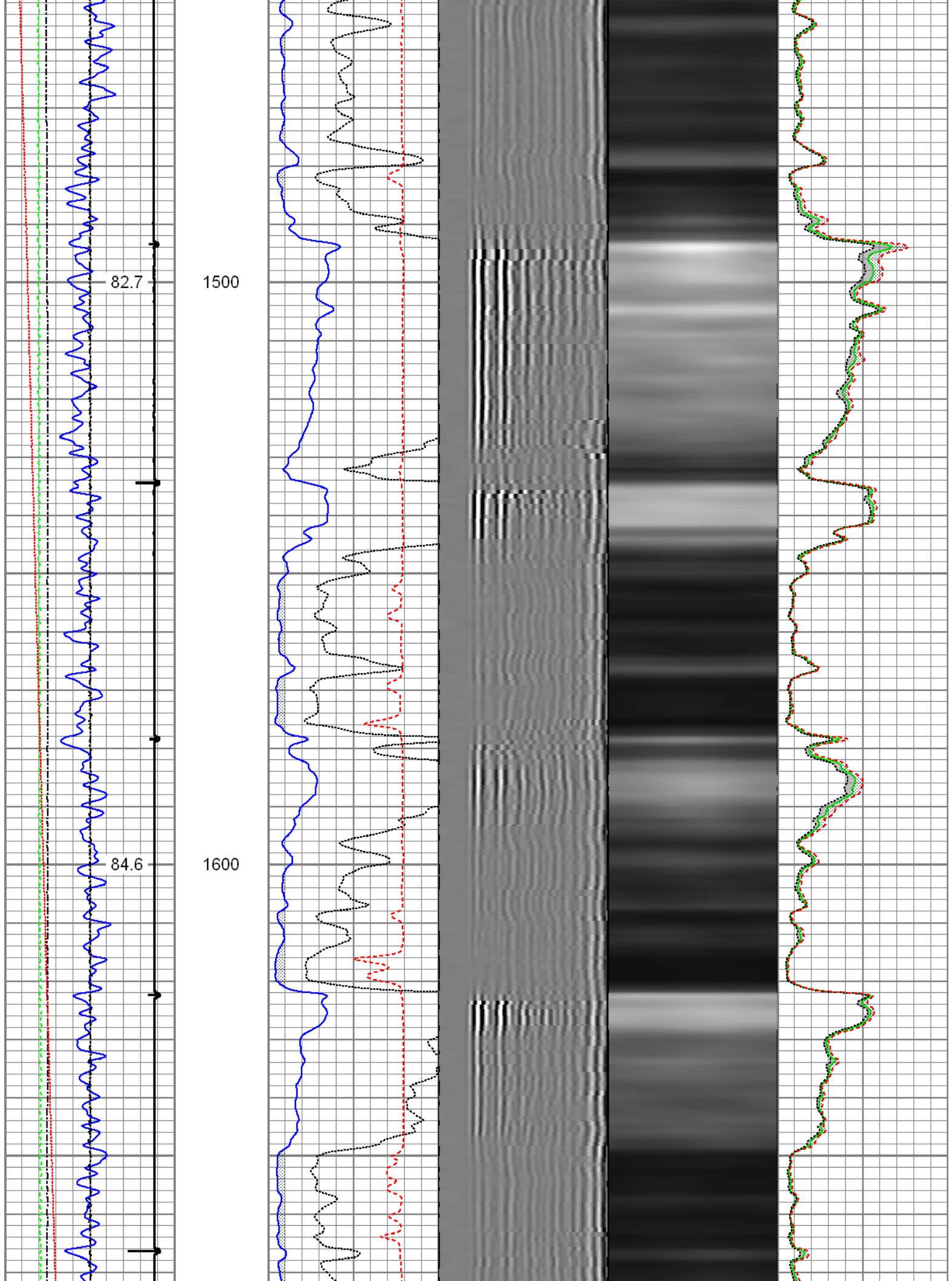


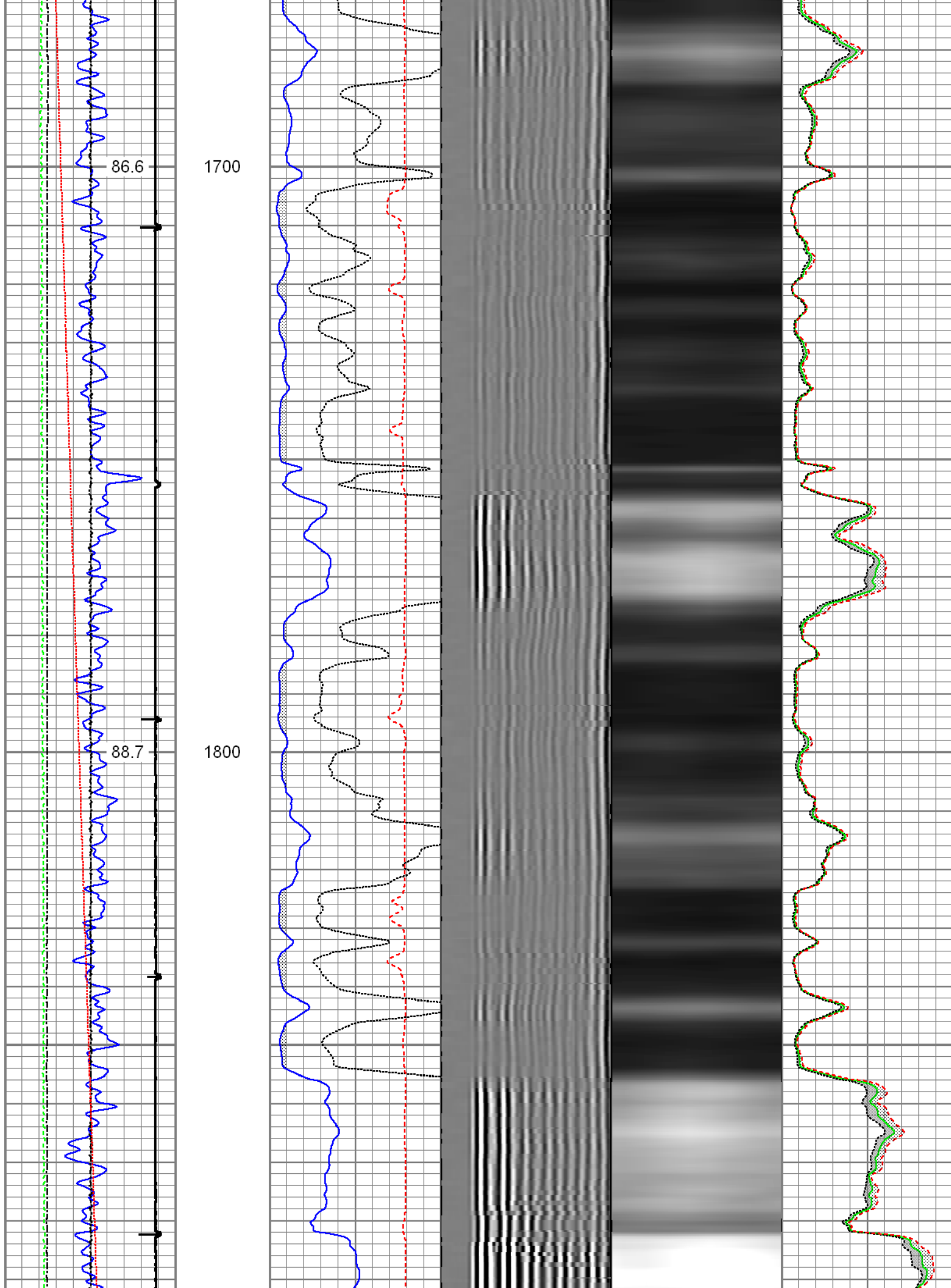
1100

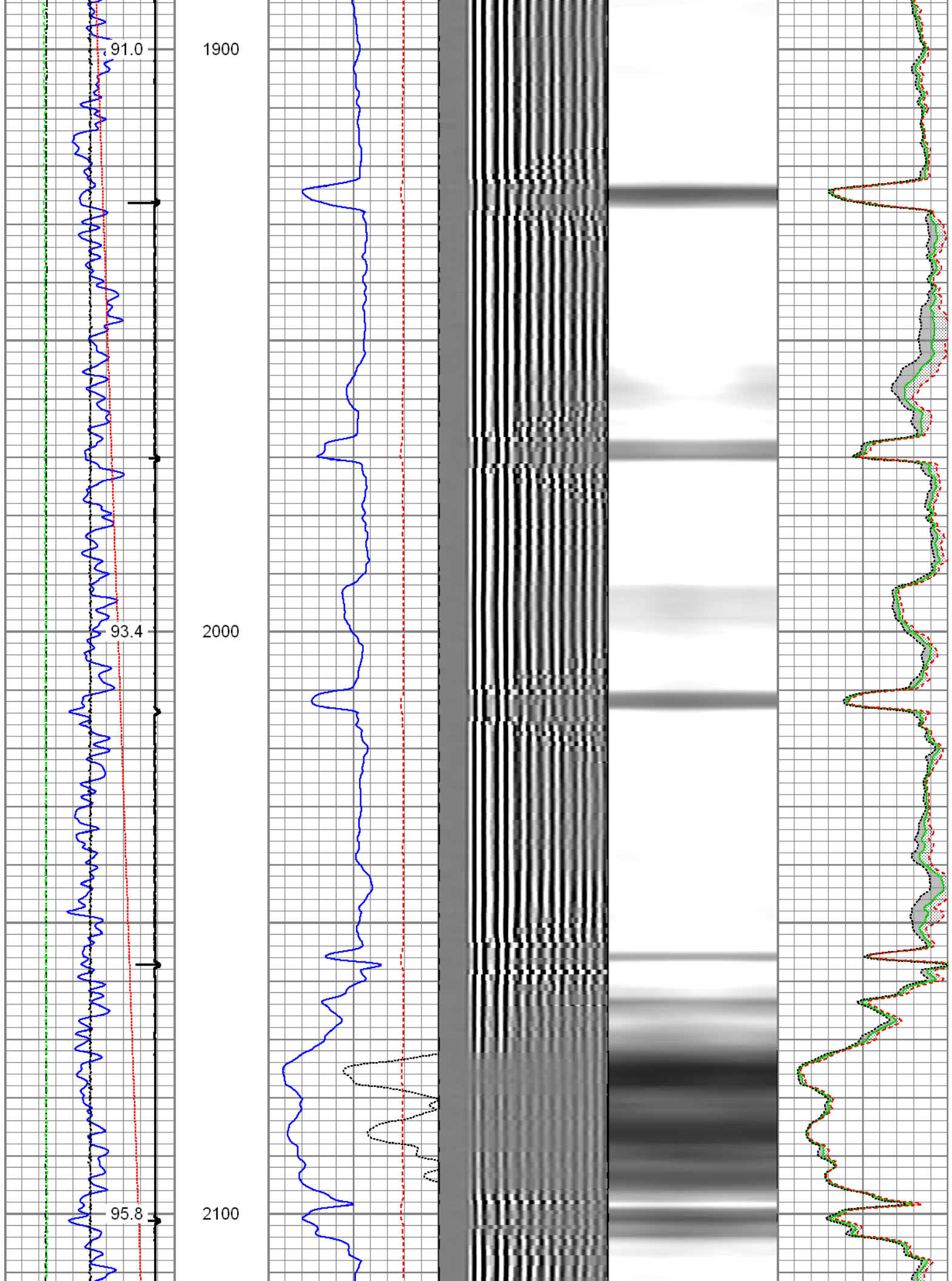
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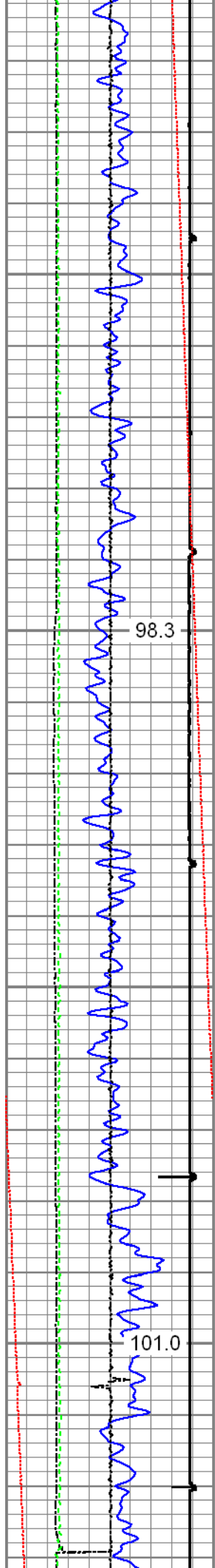






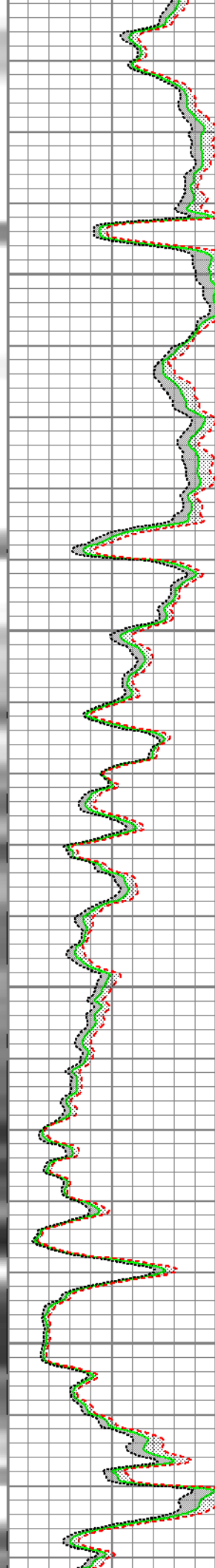
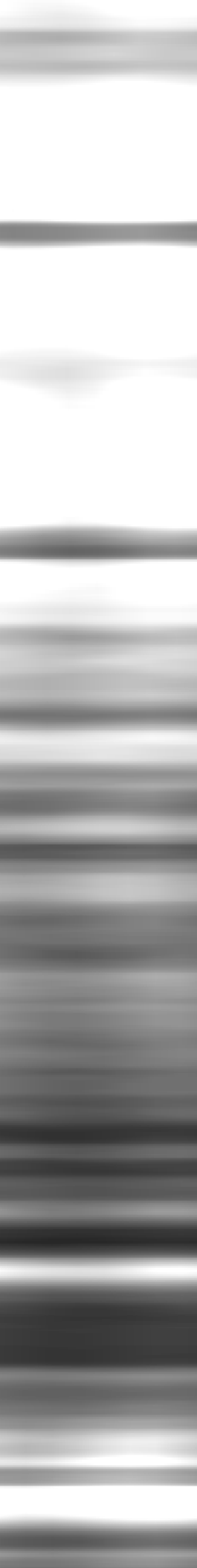
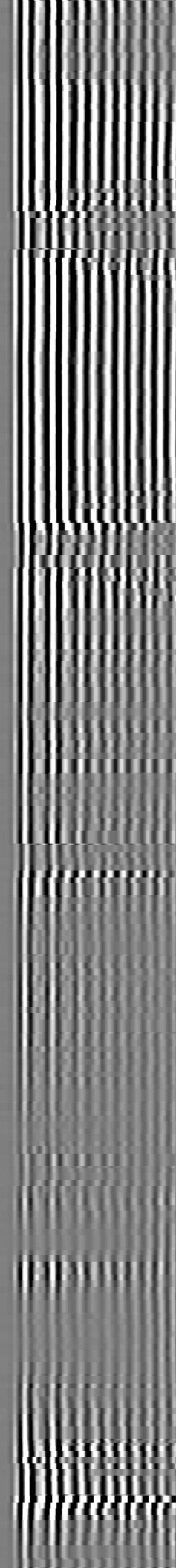
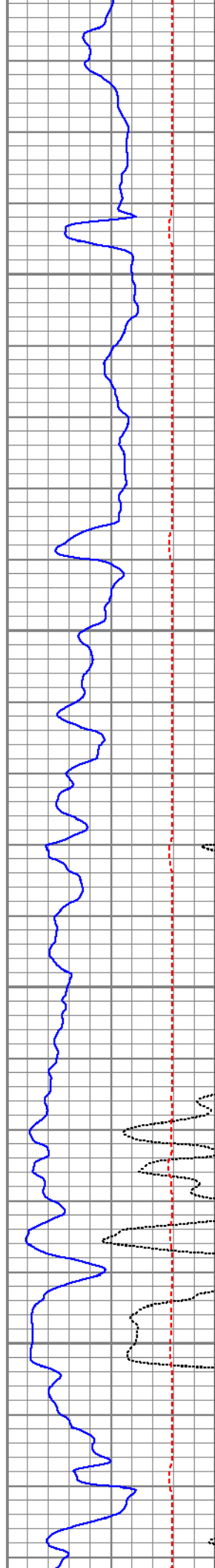


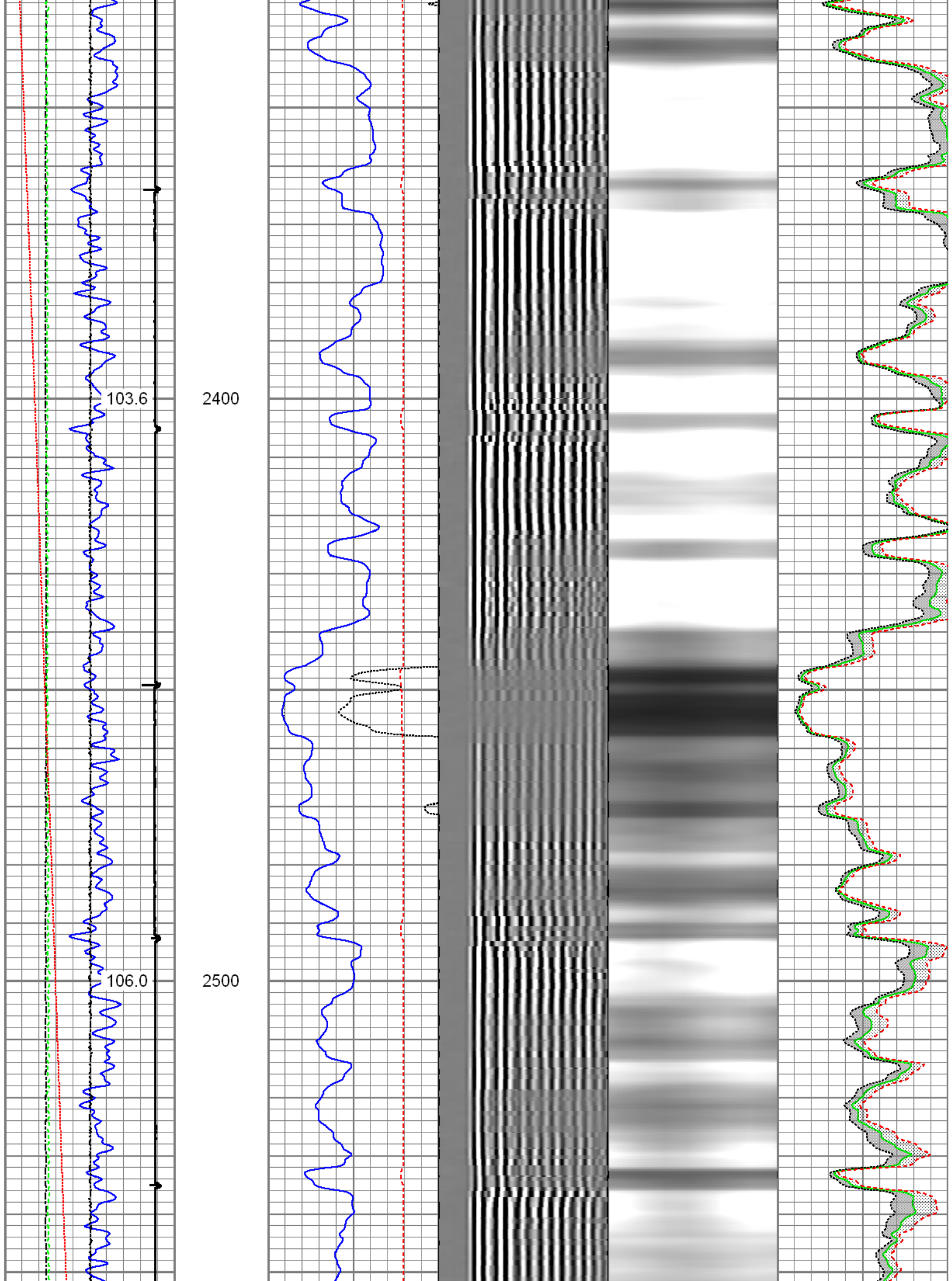


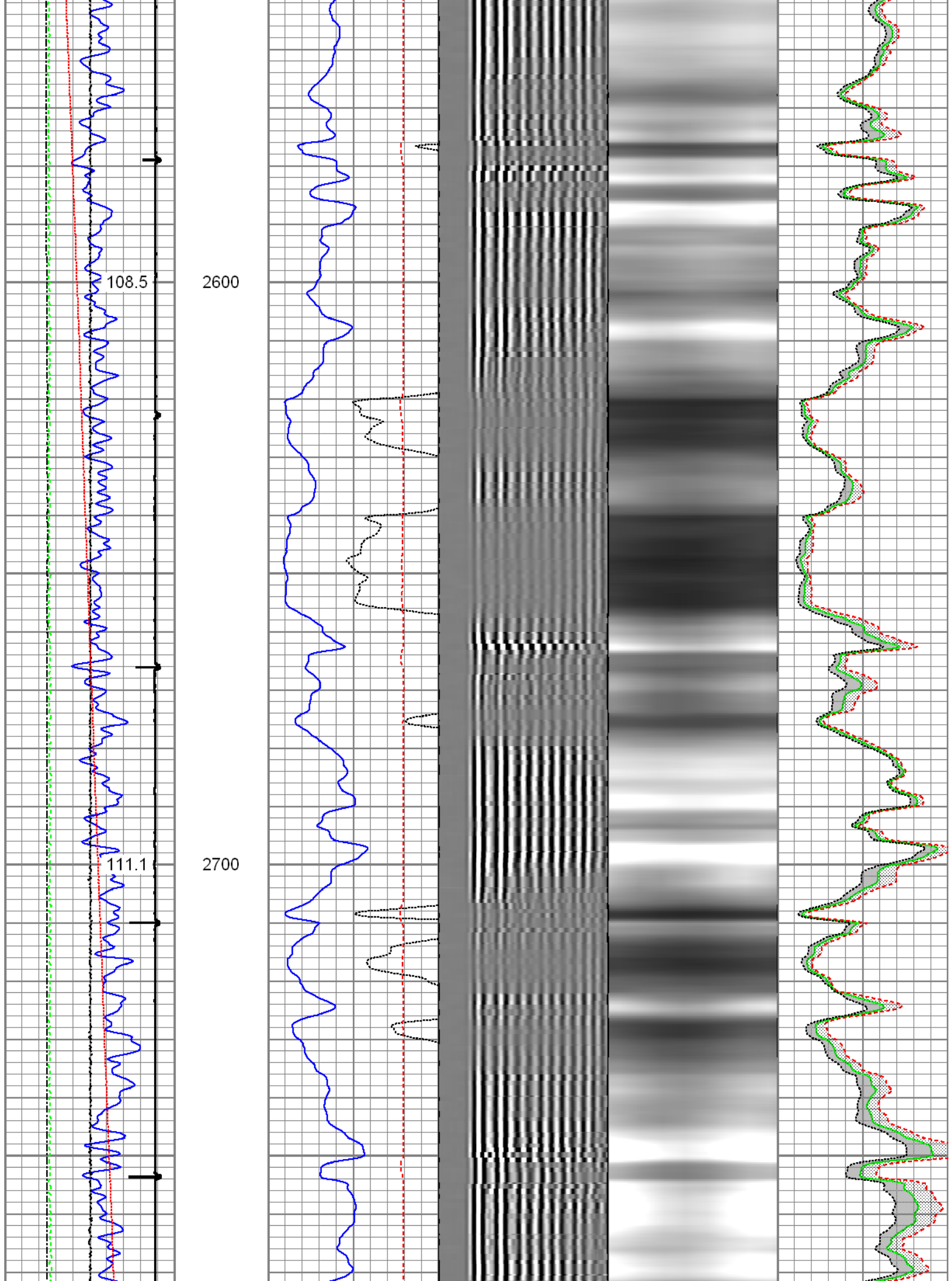


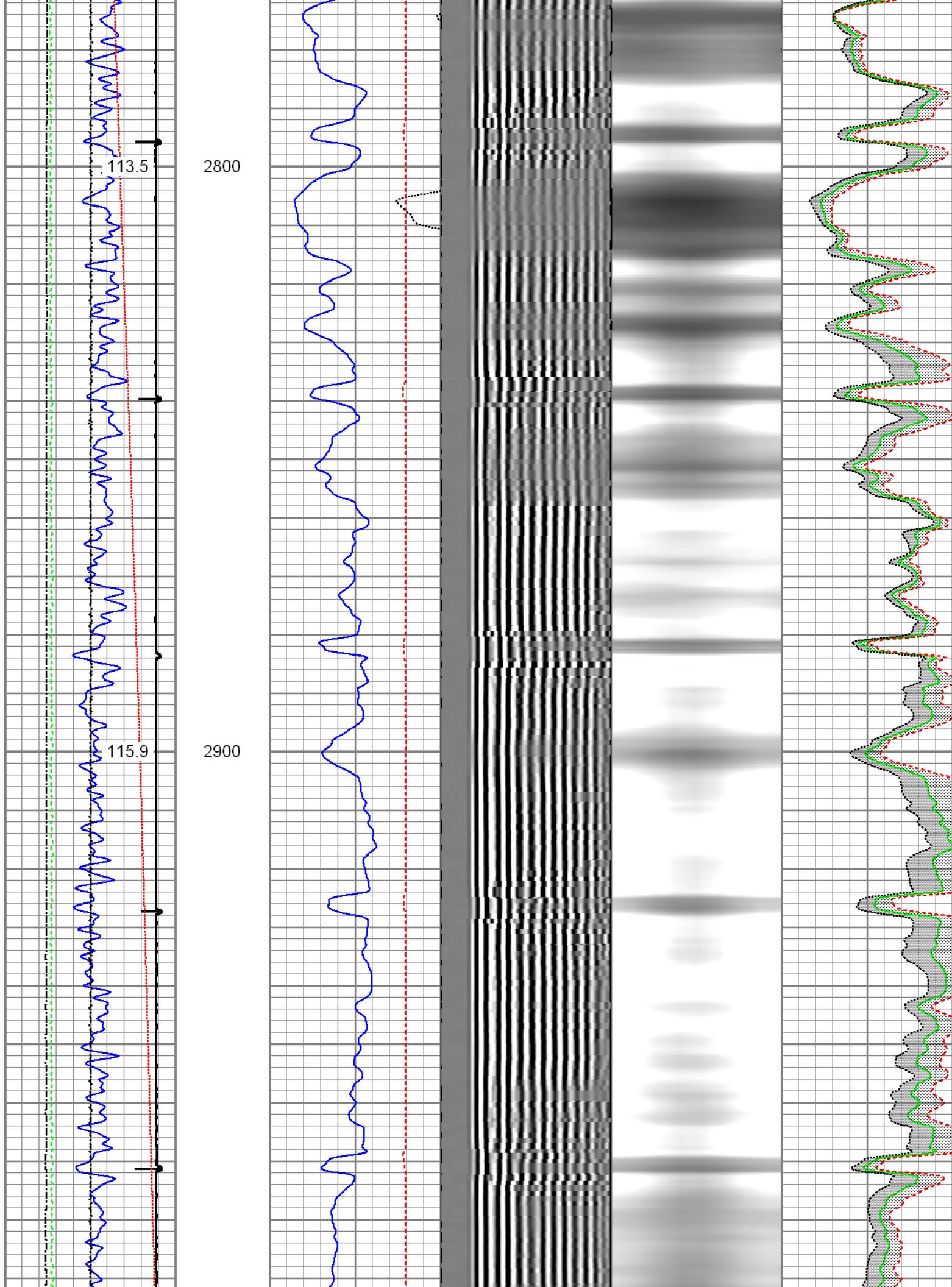
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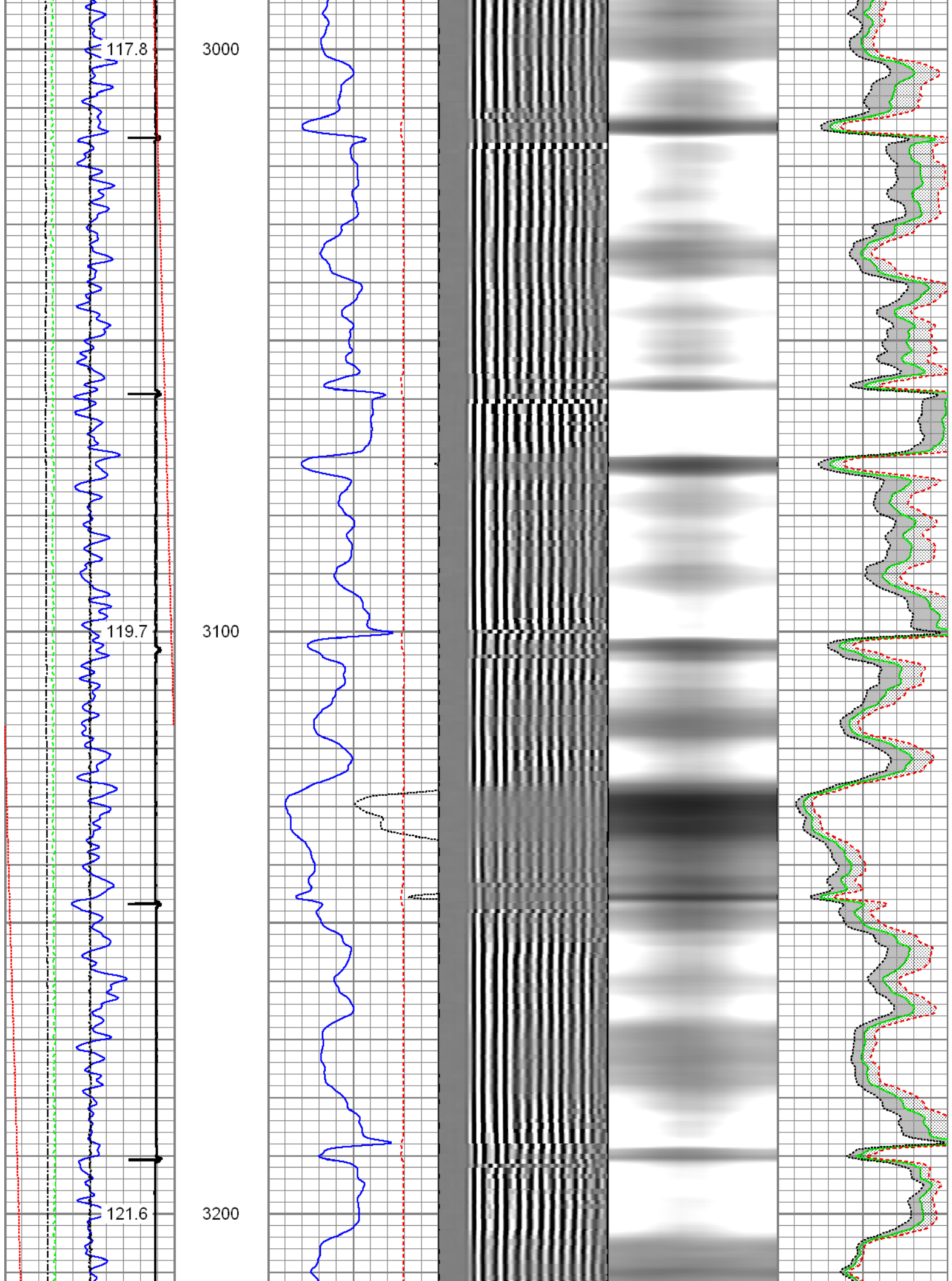
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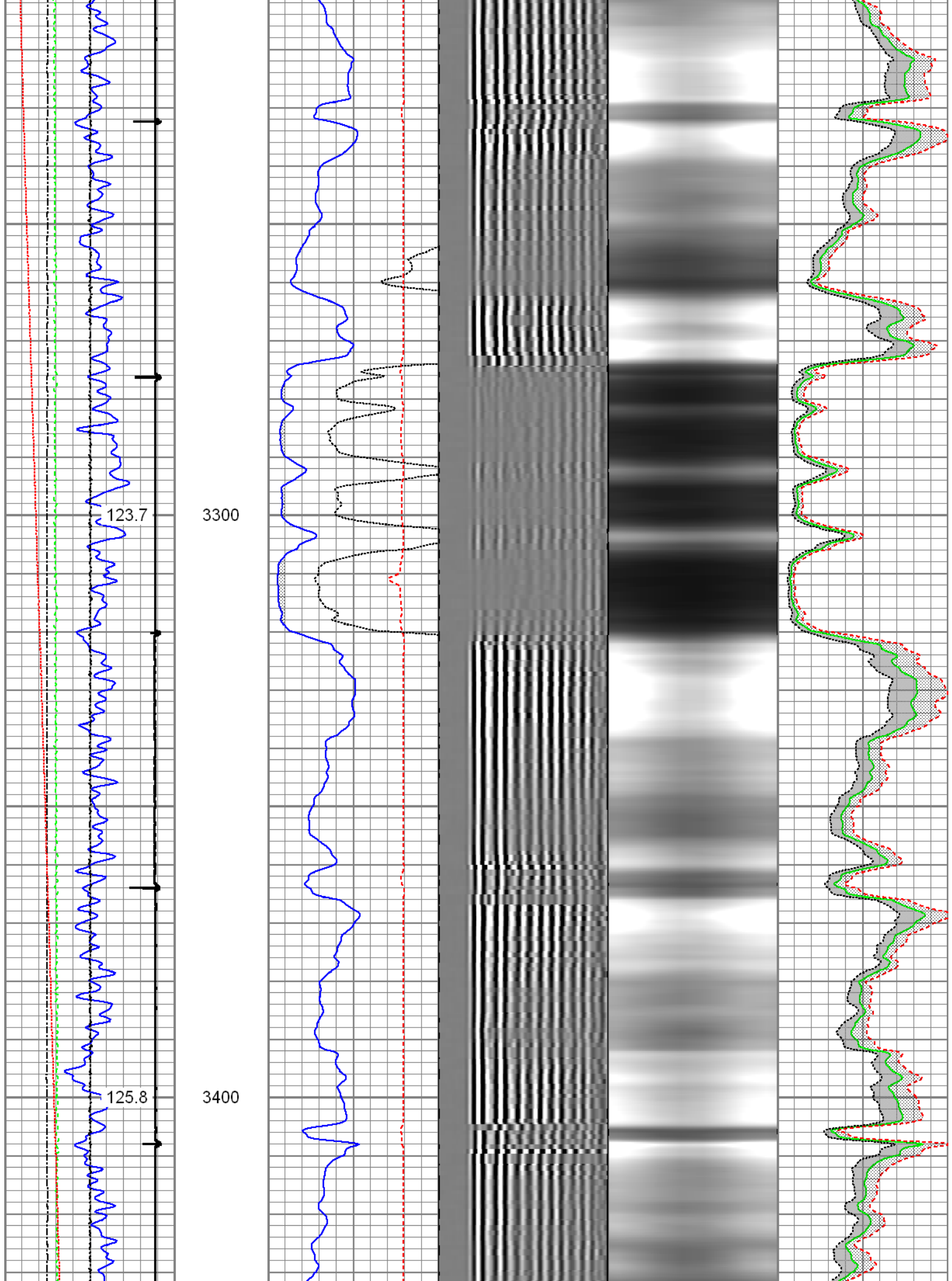


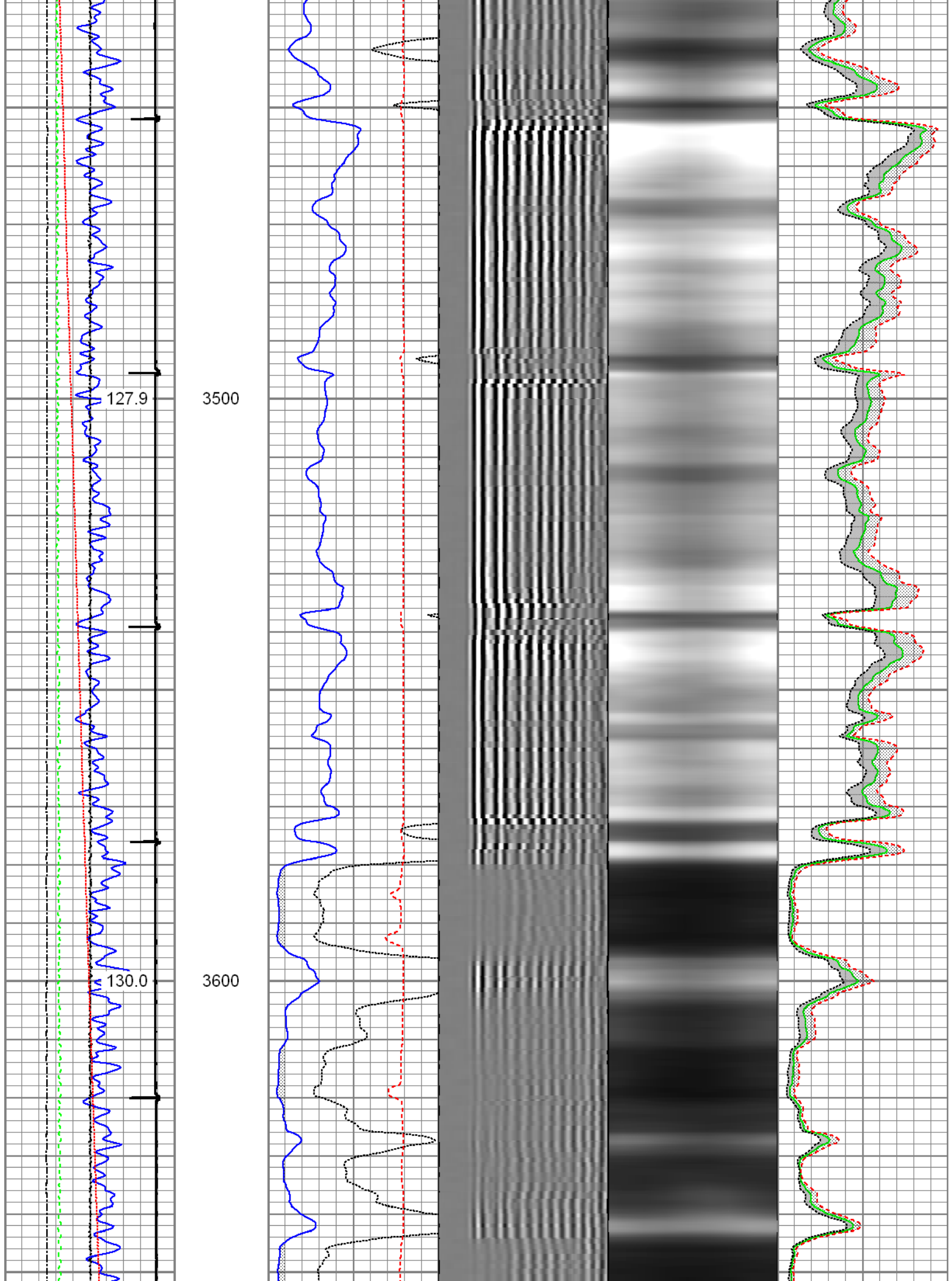


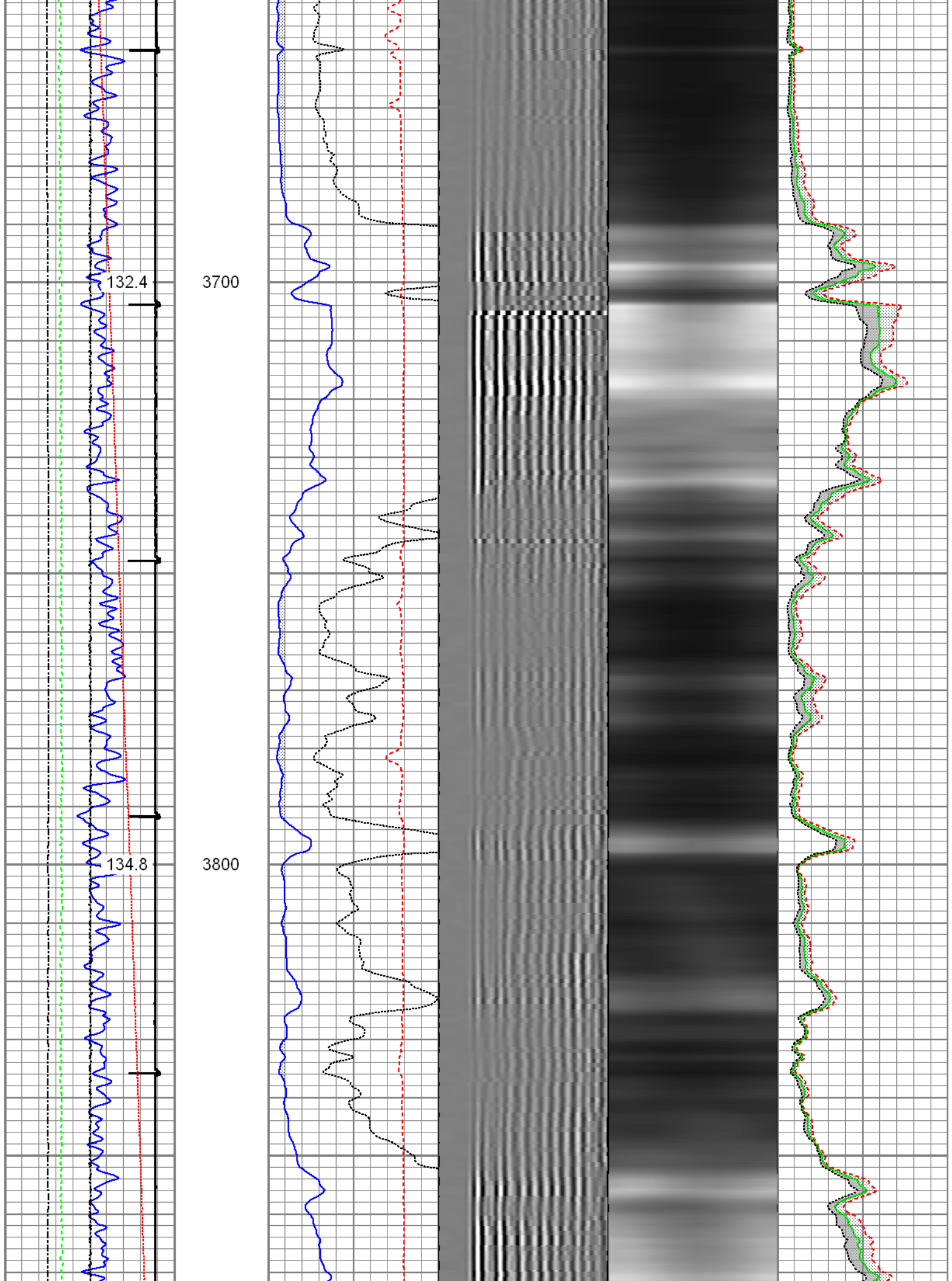


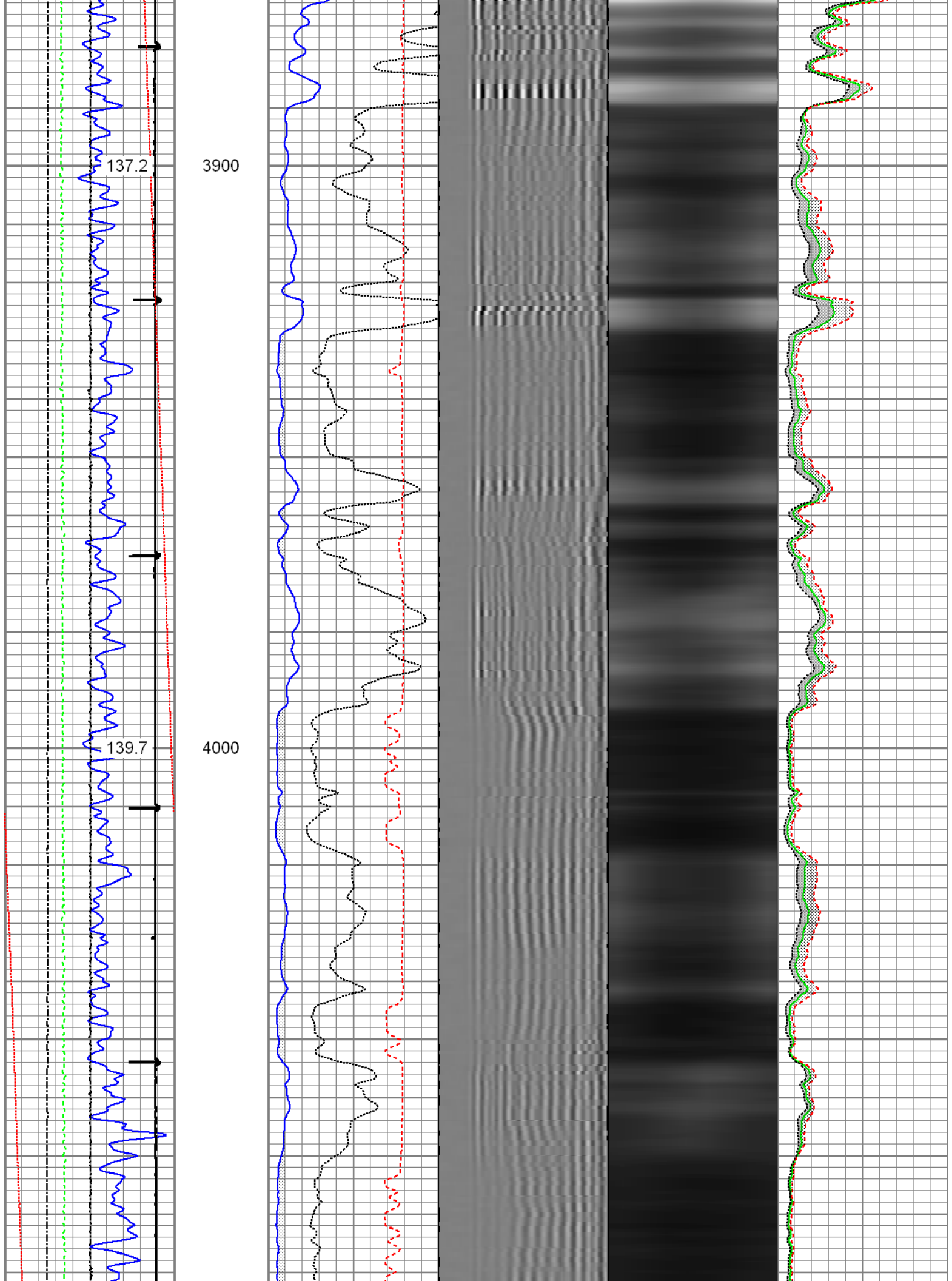


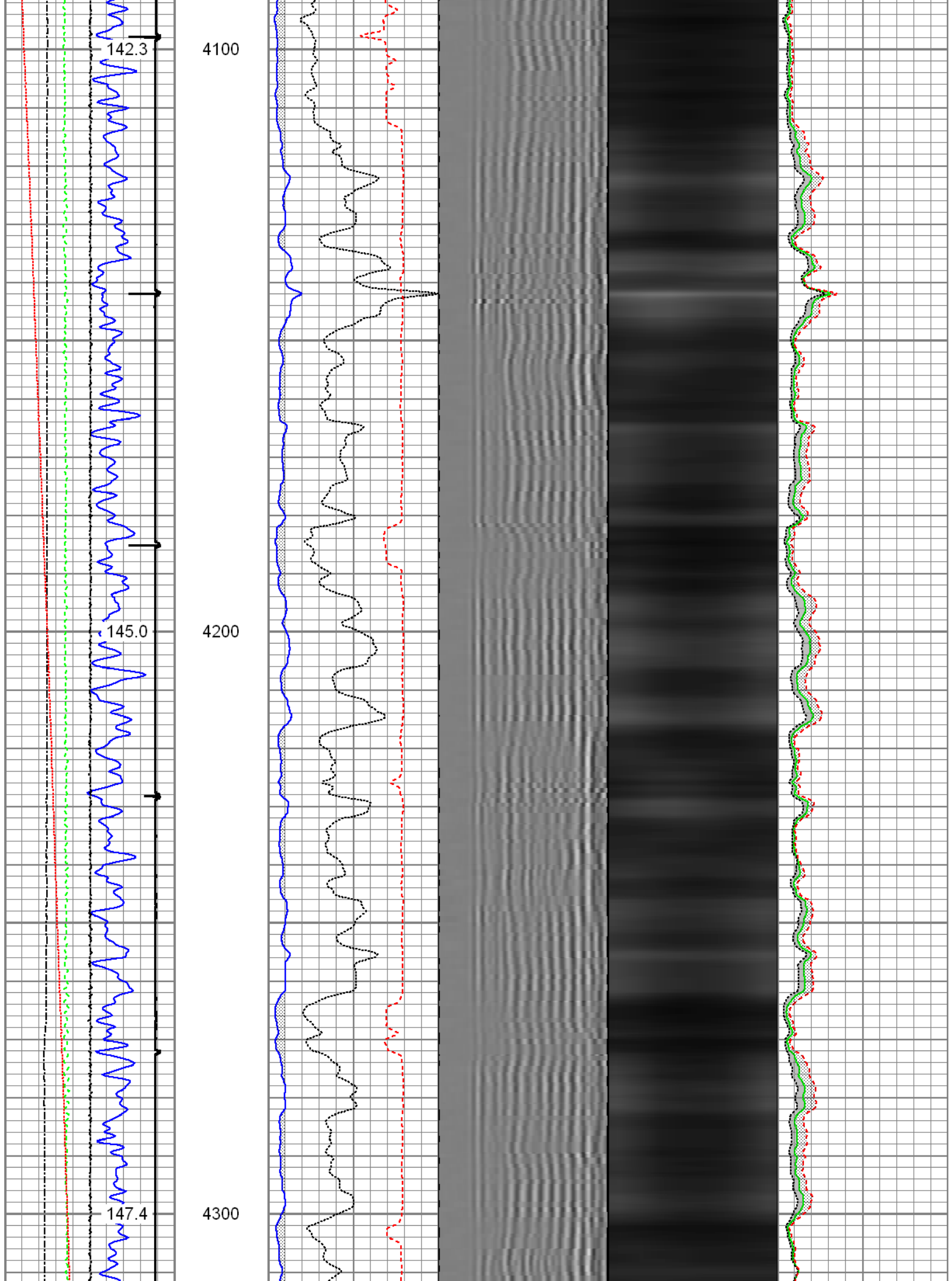


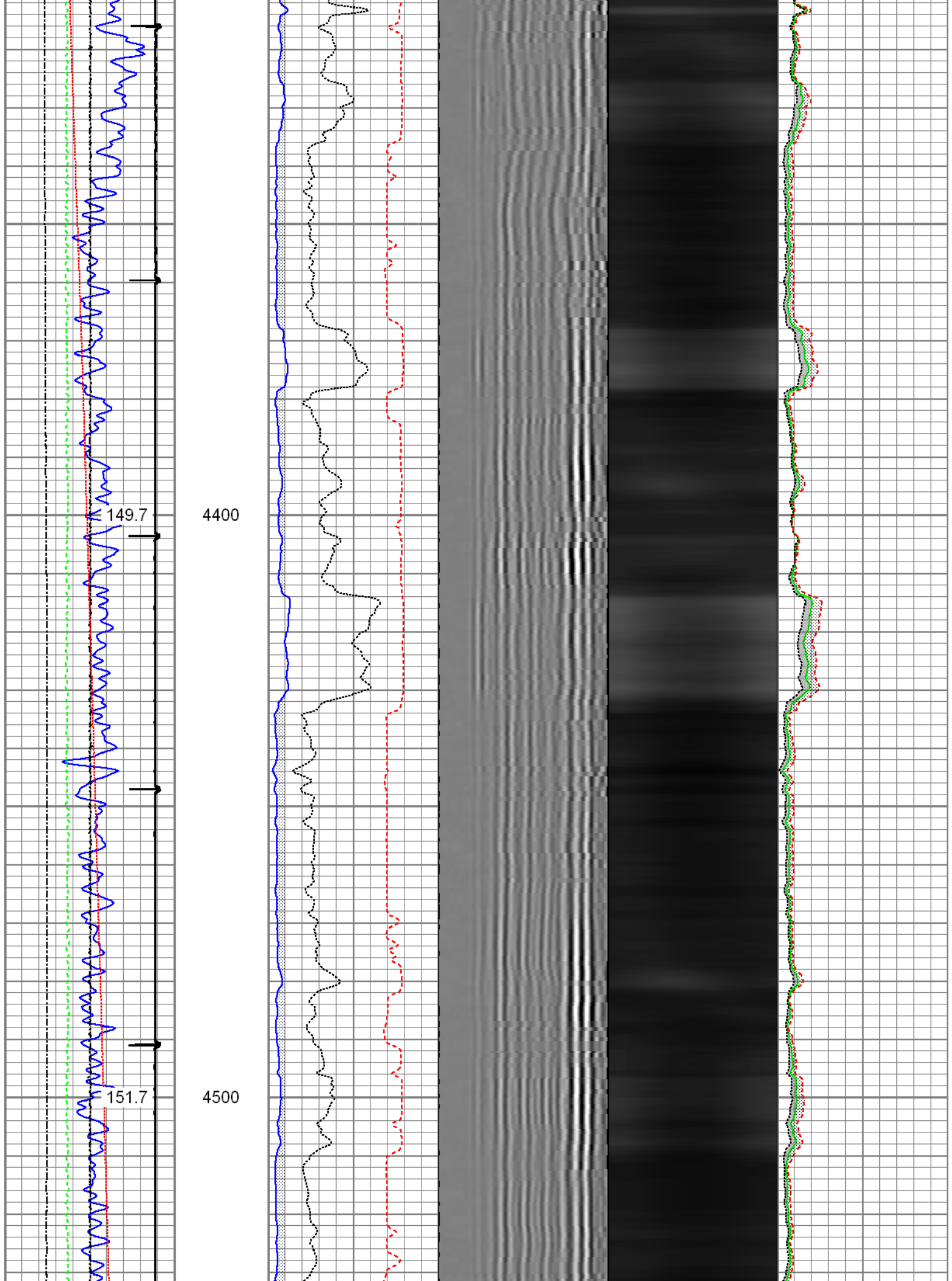


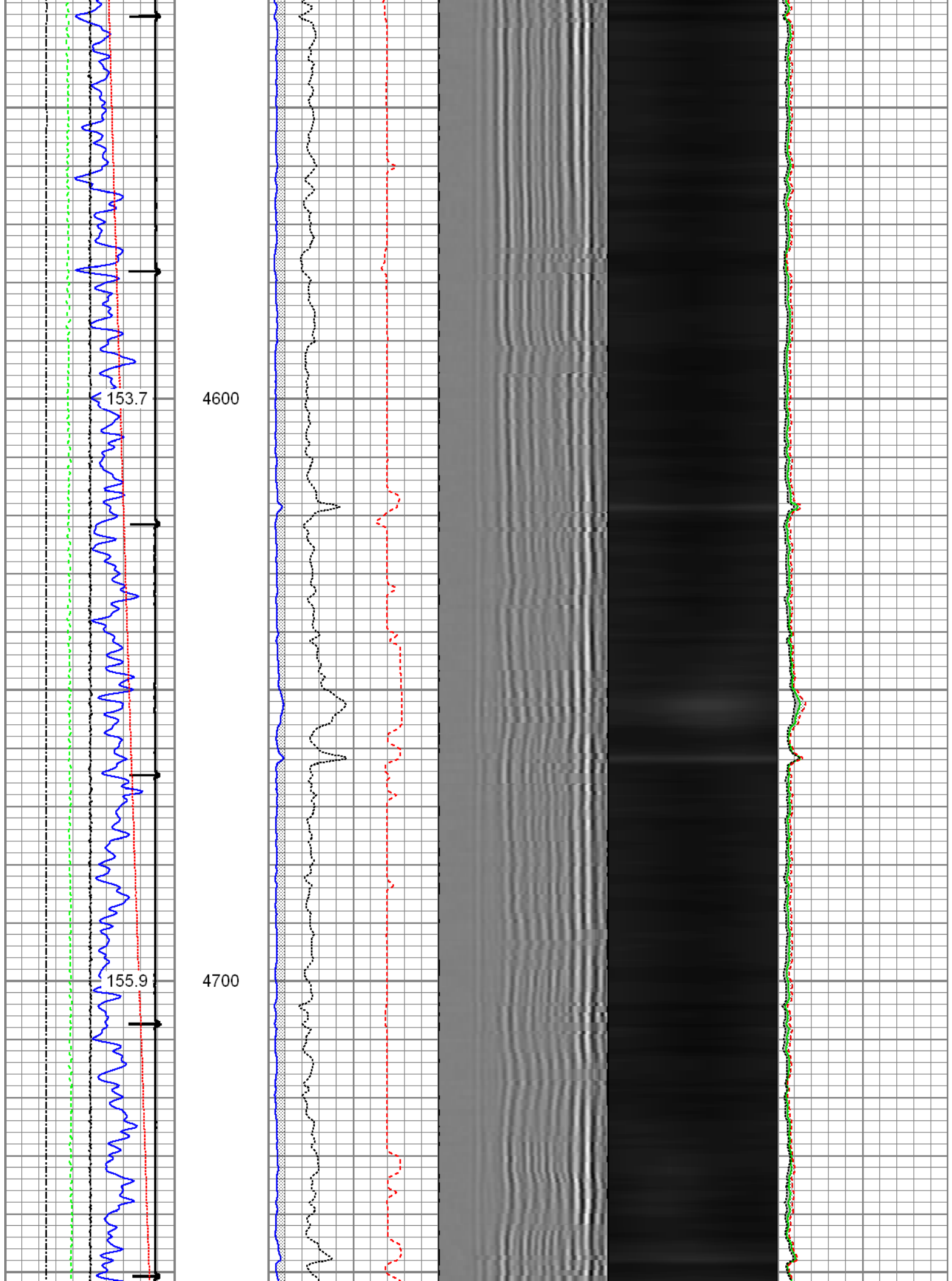


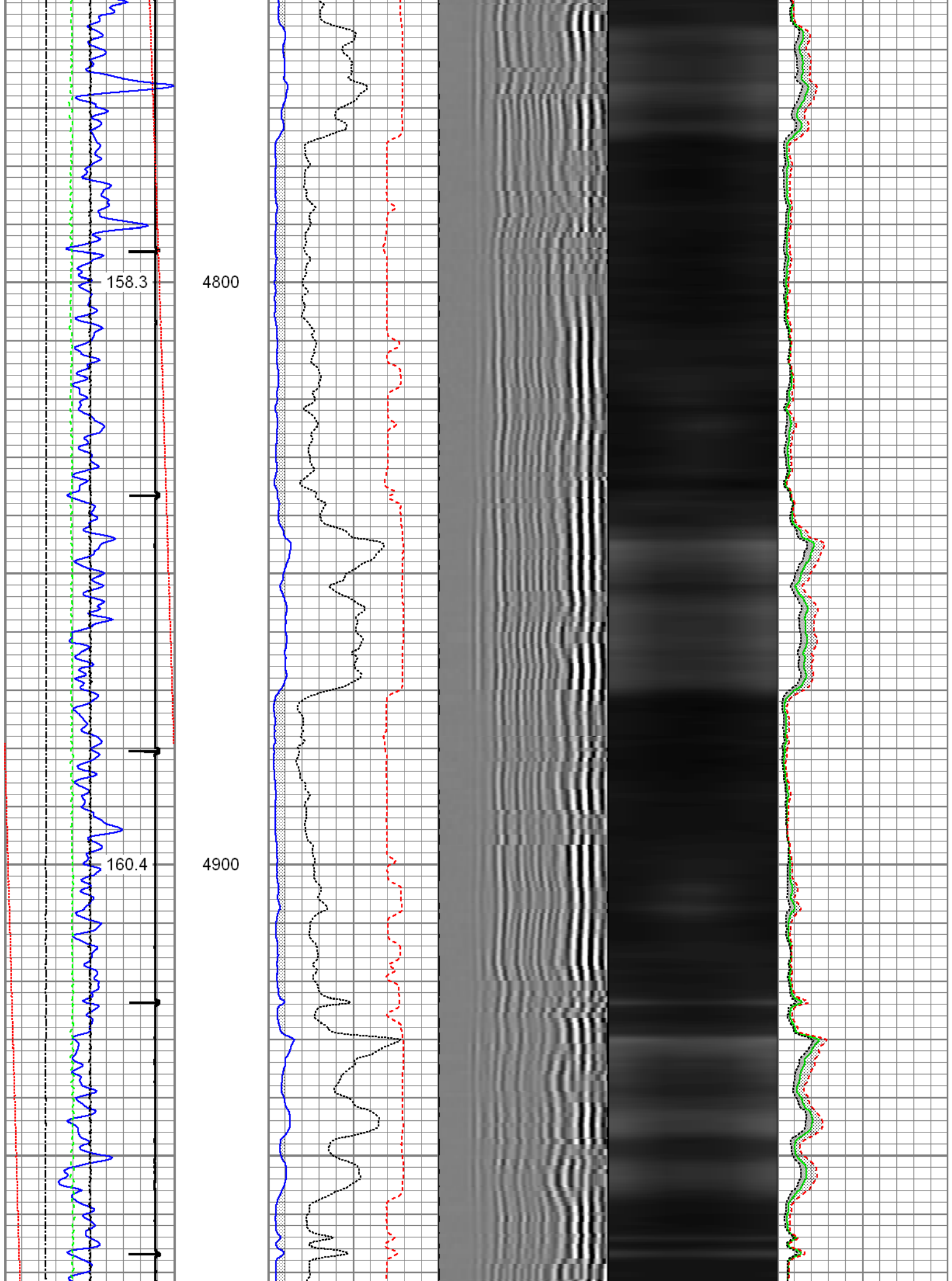


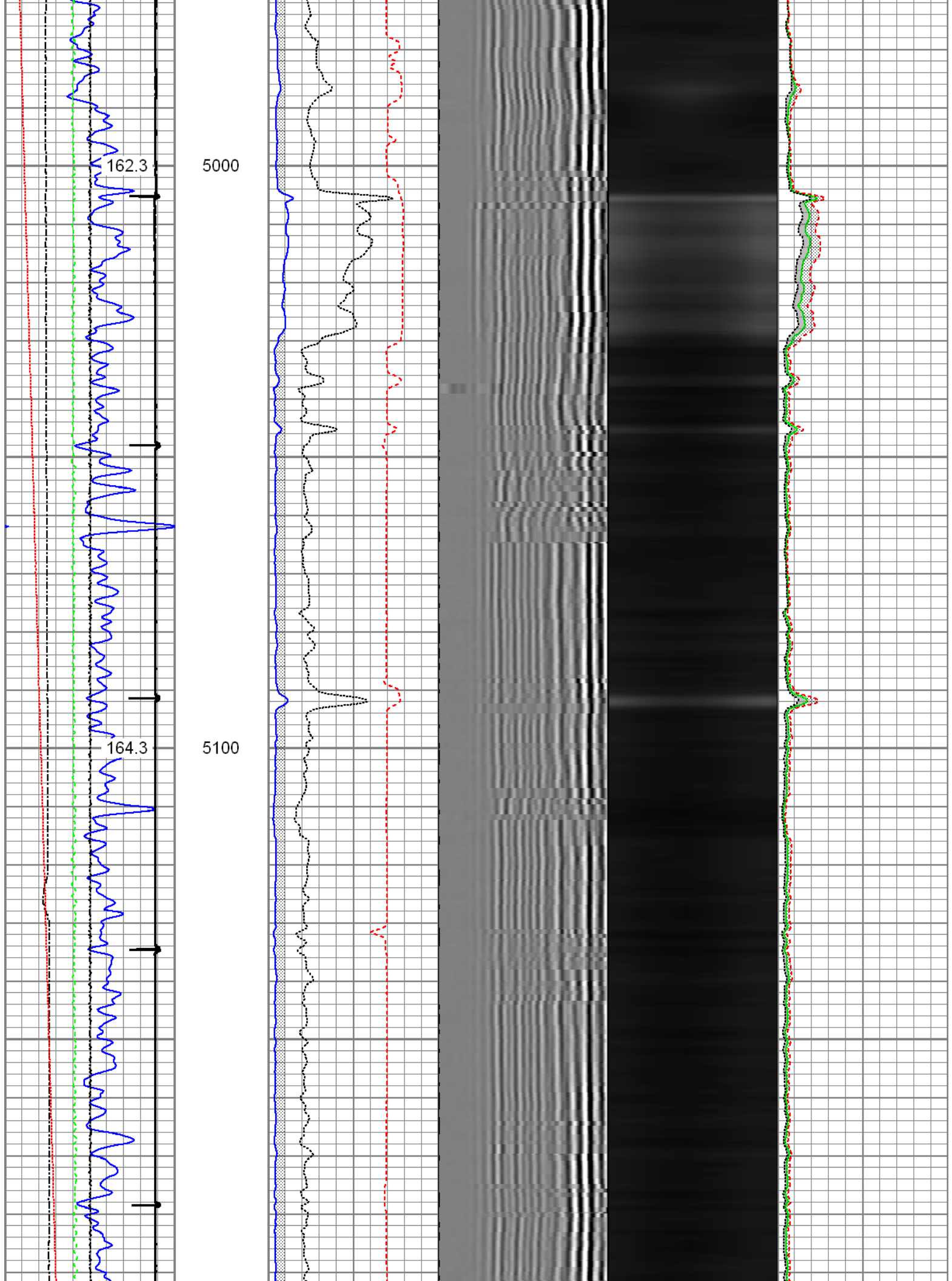


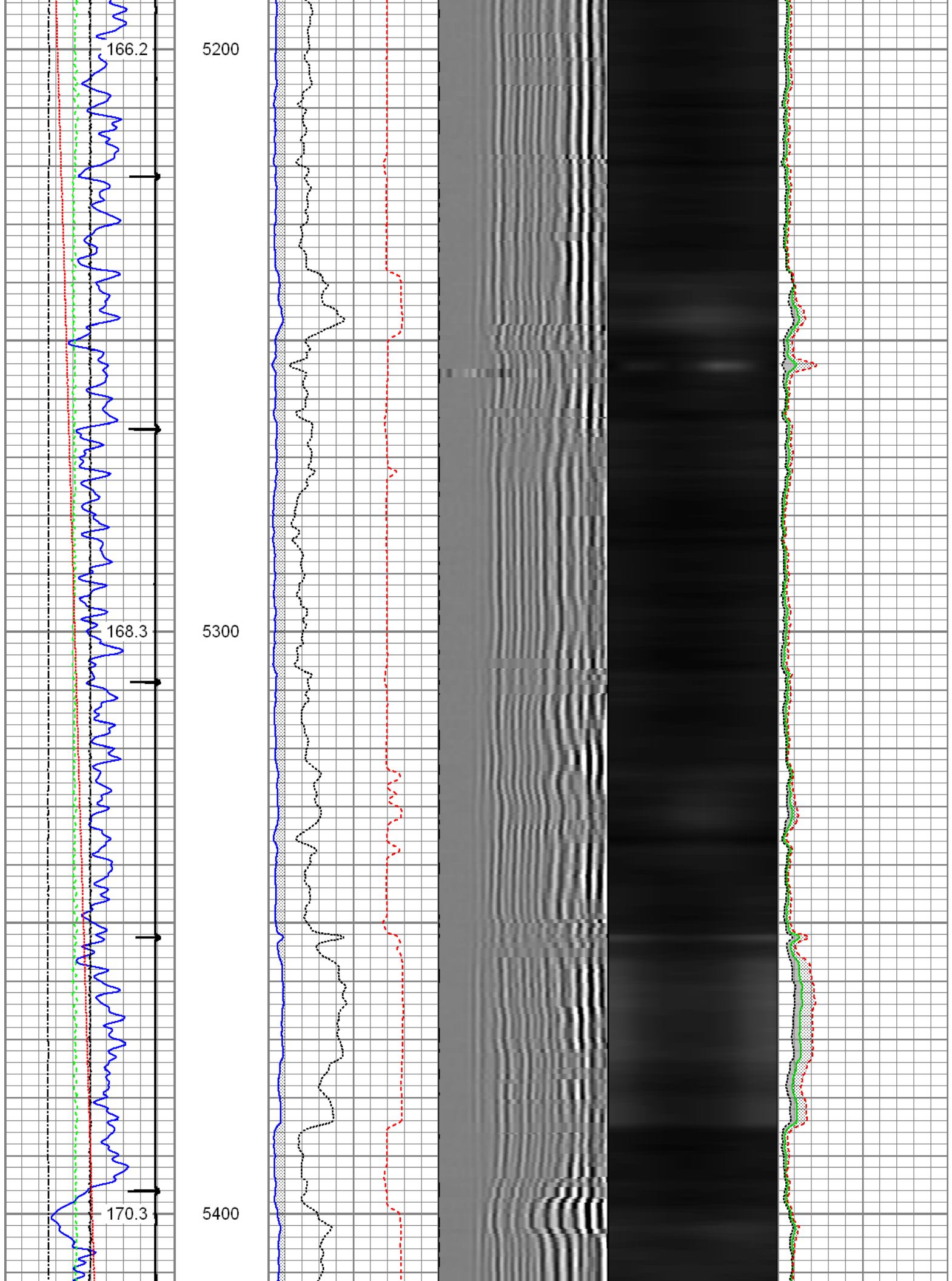


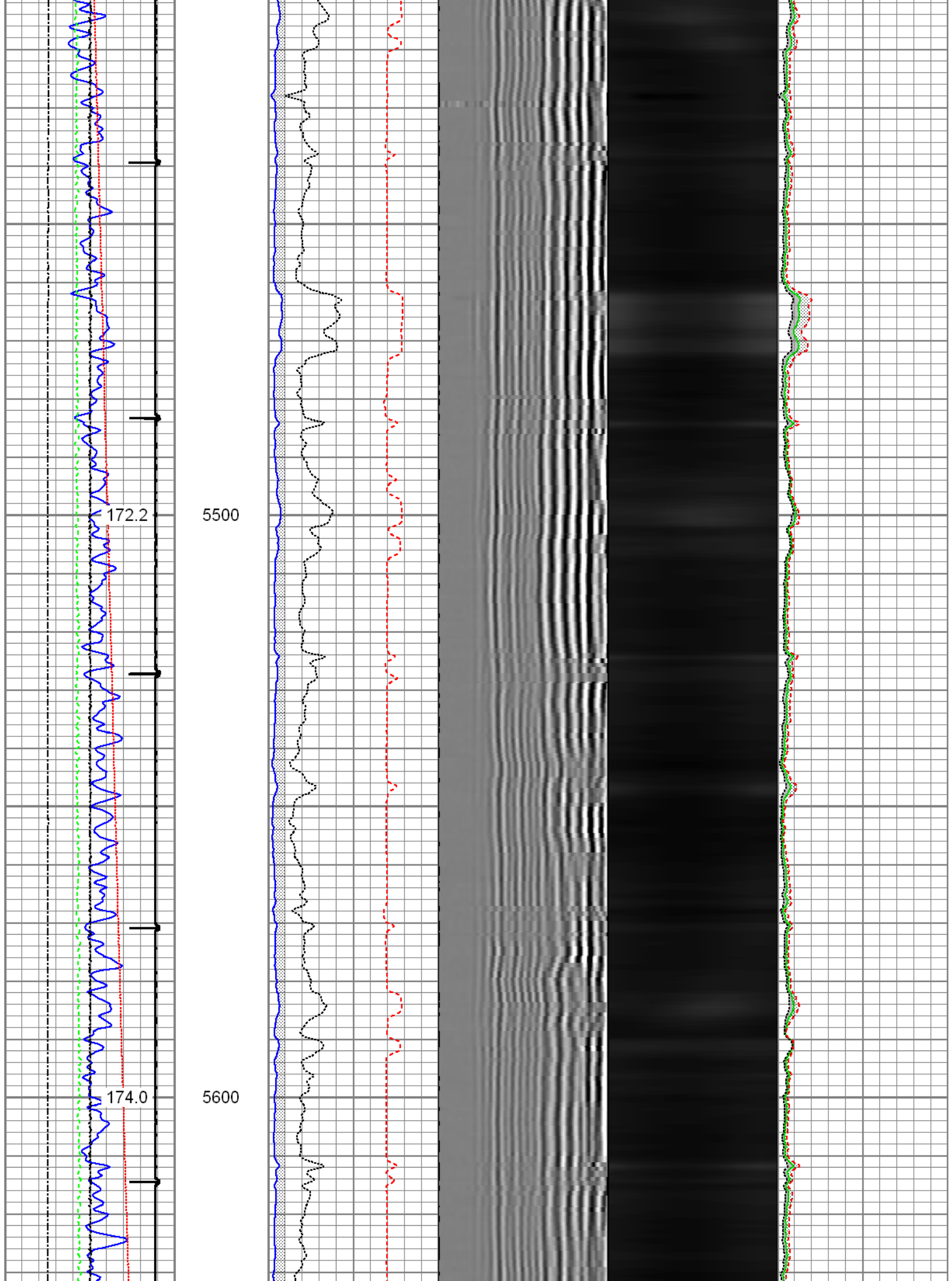


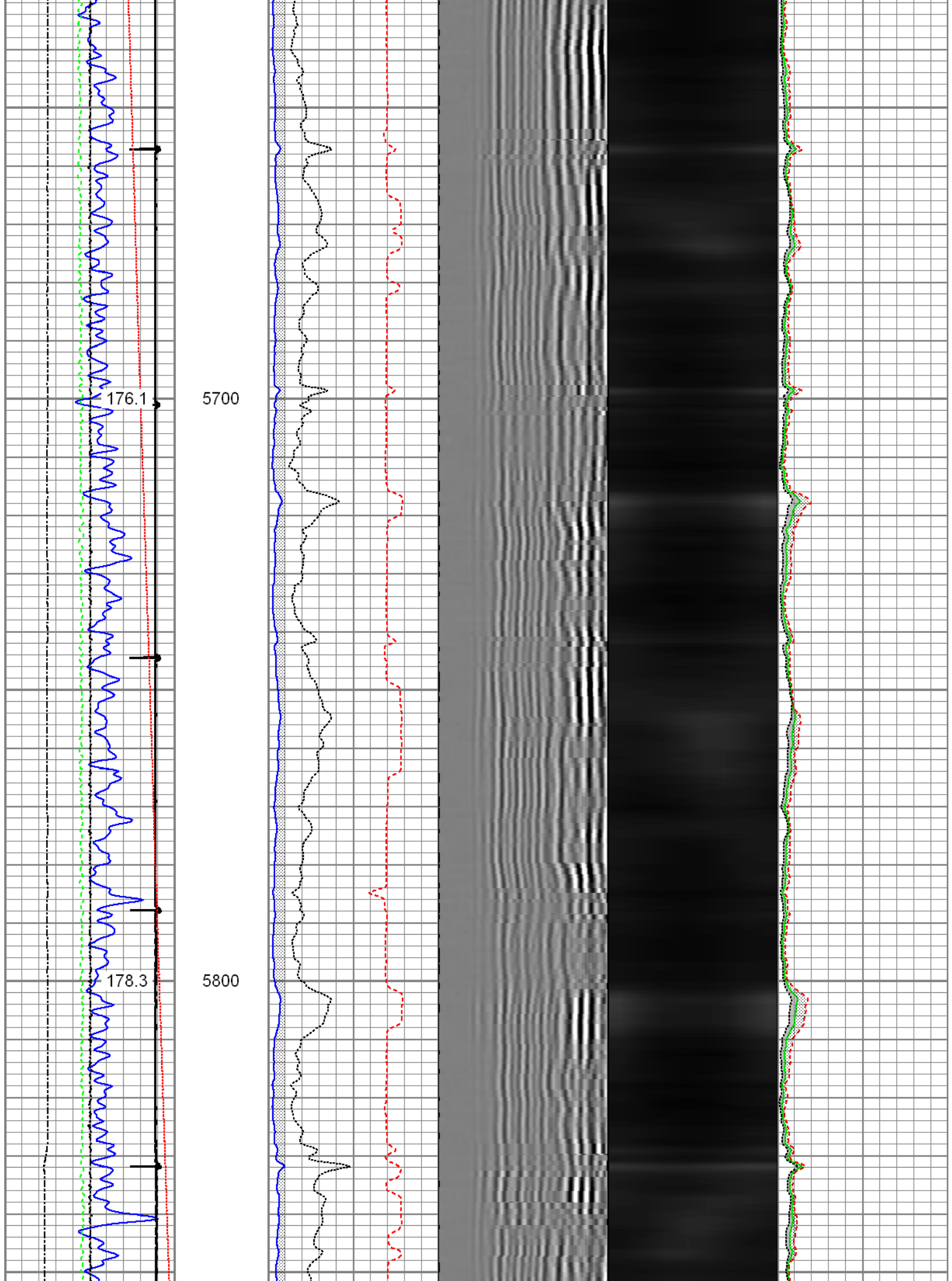


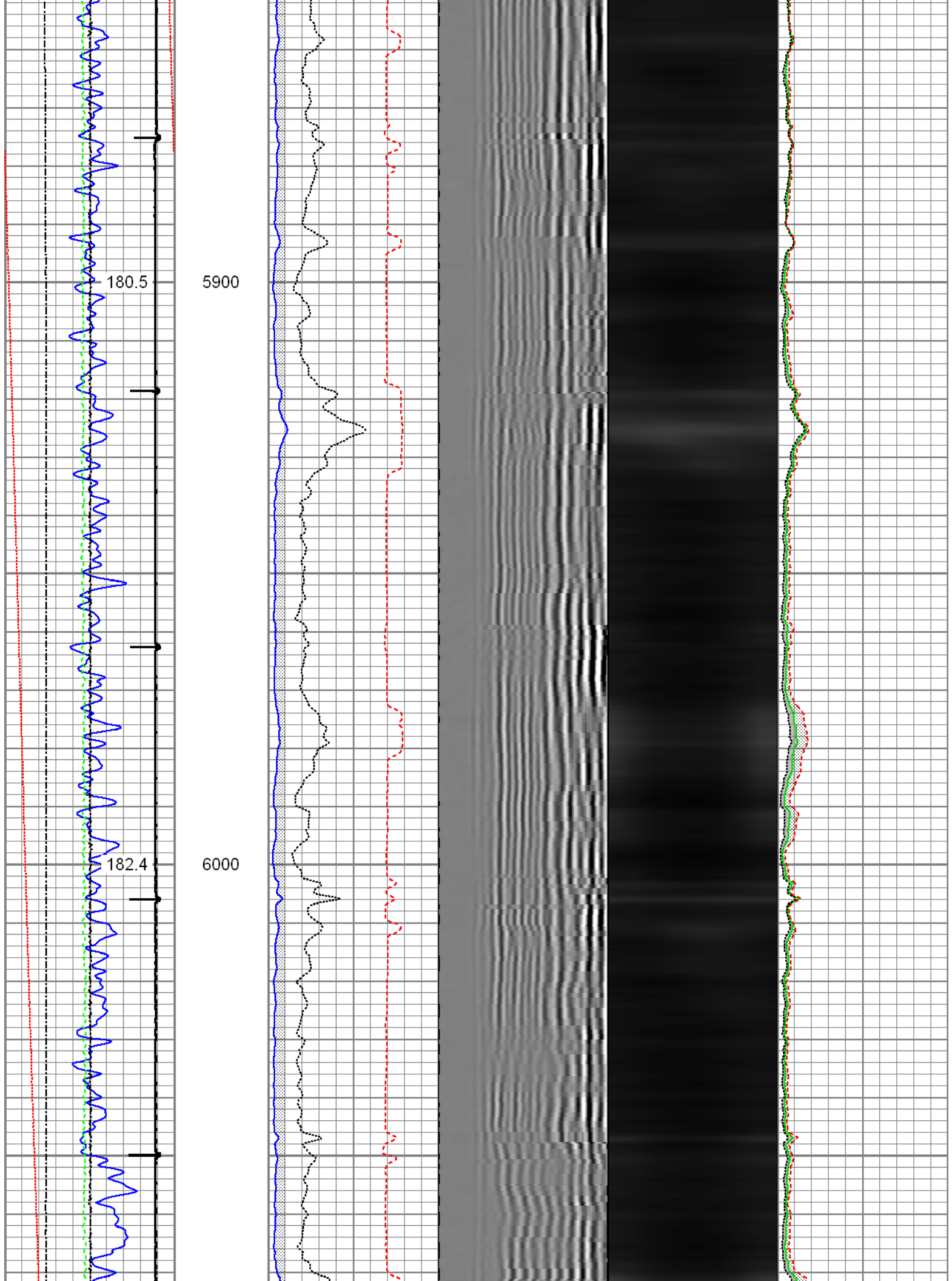


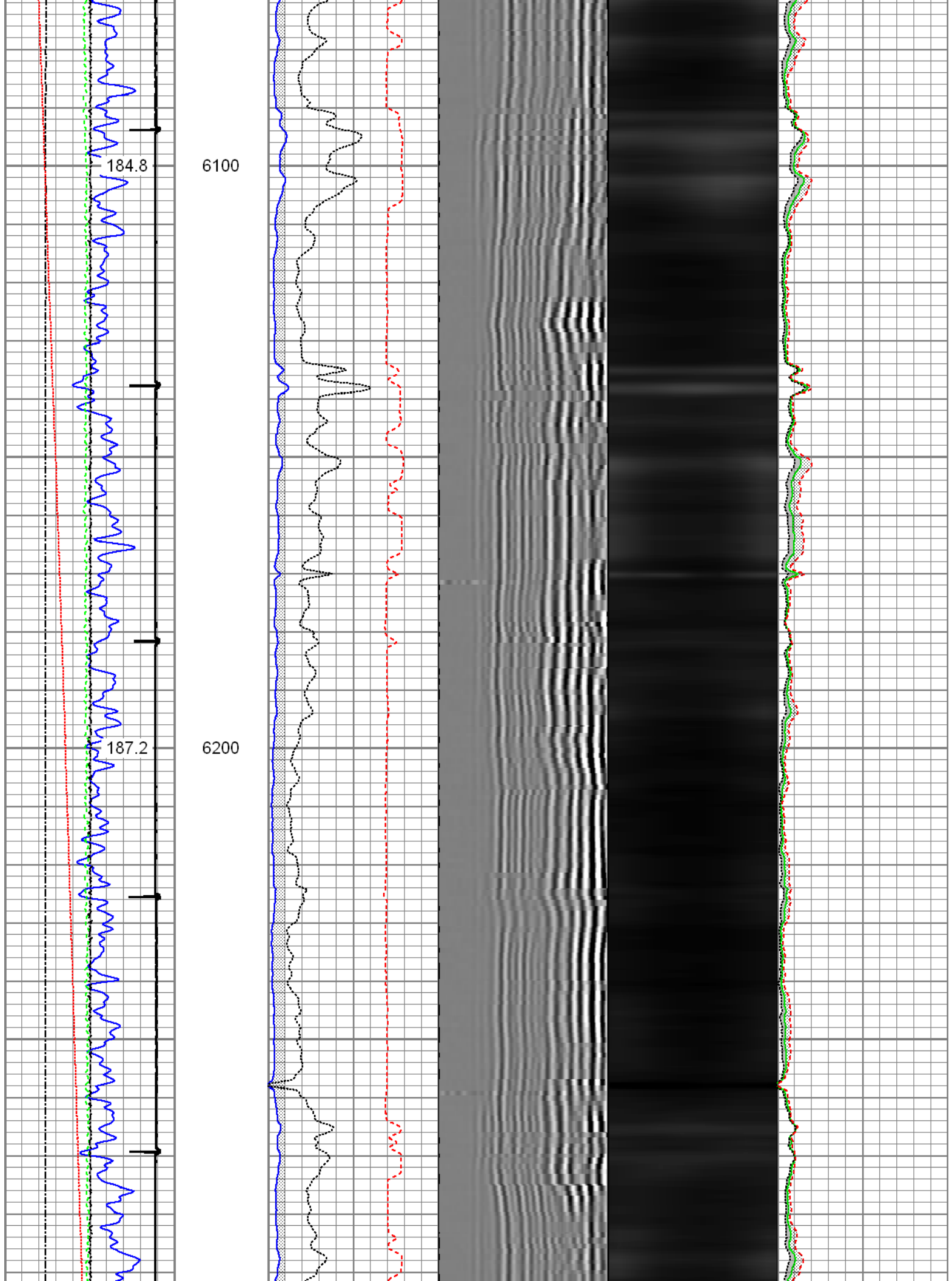


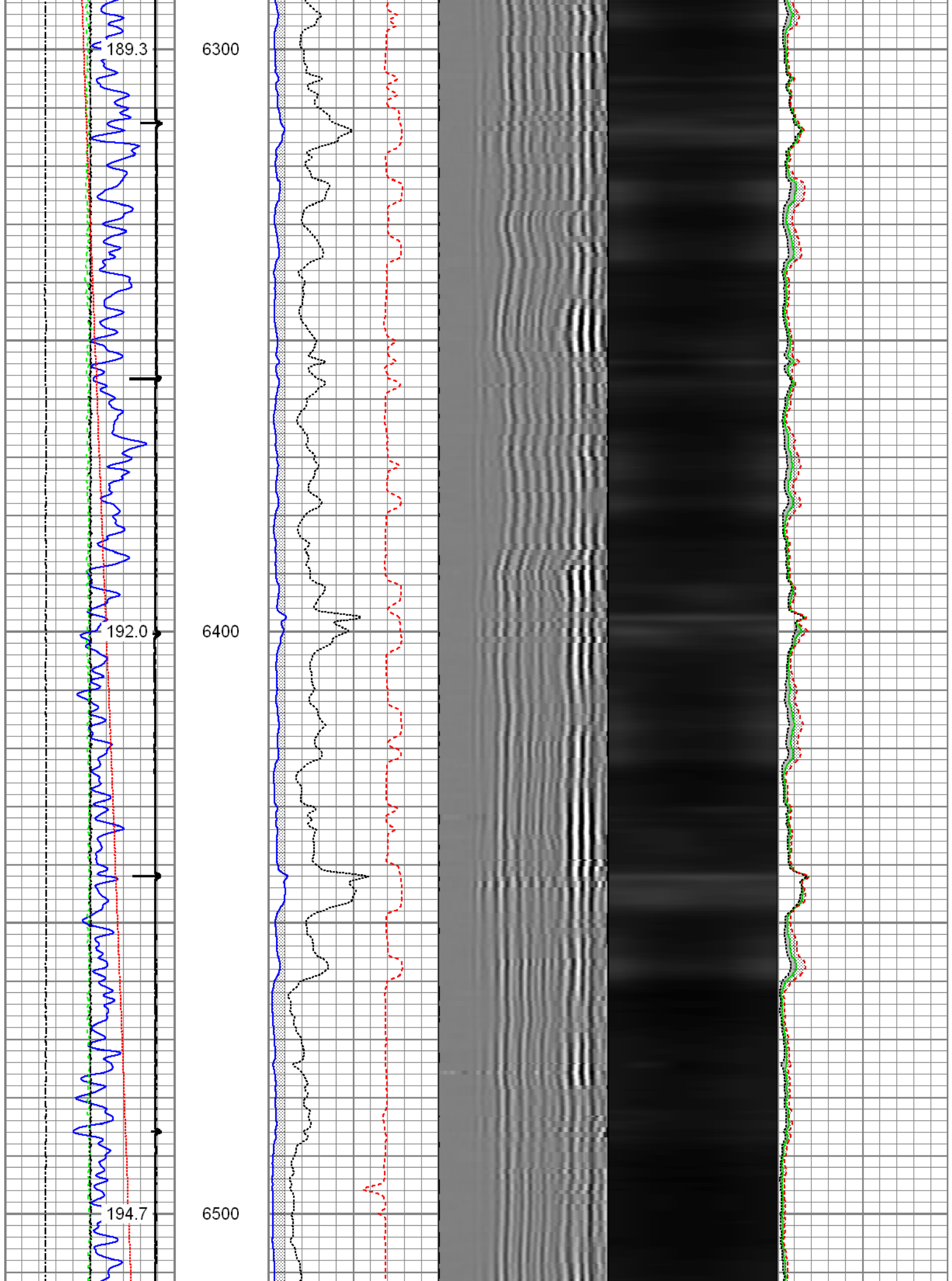


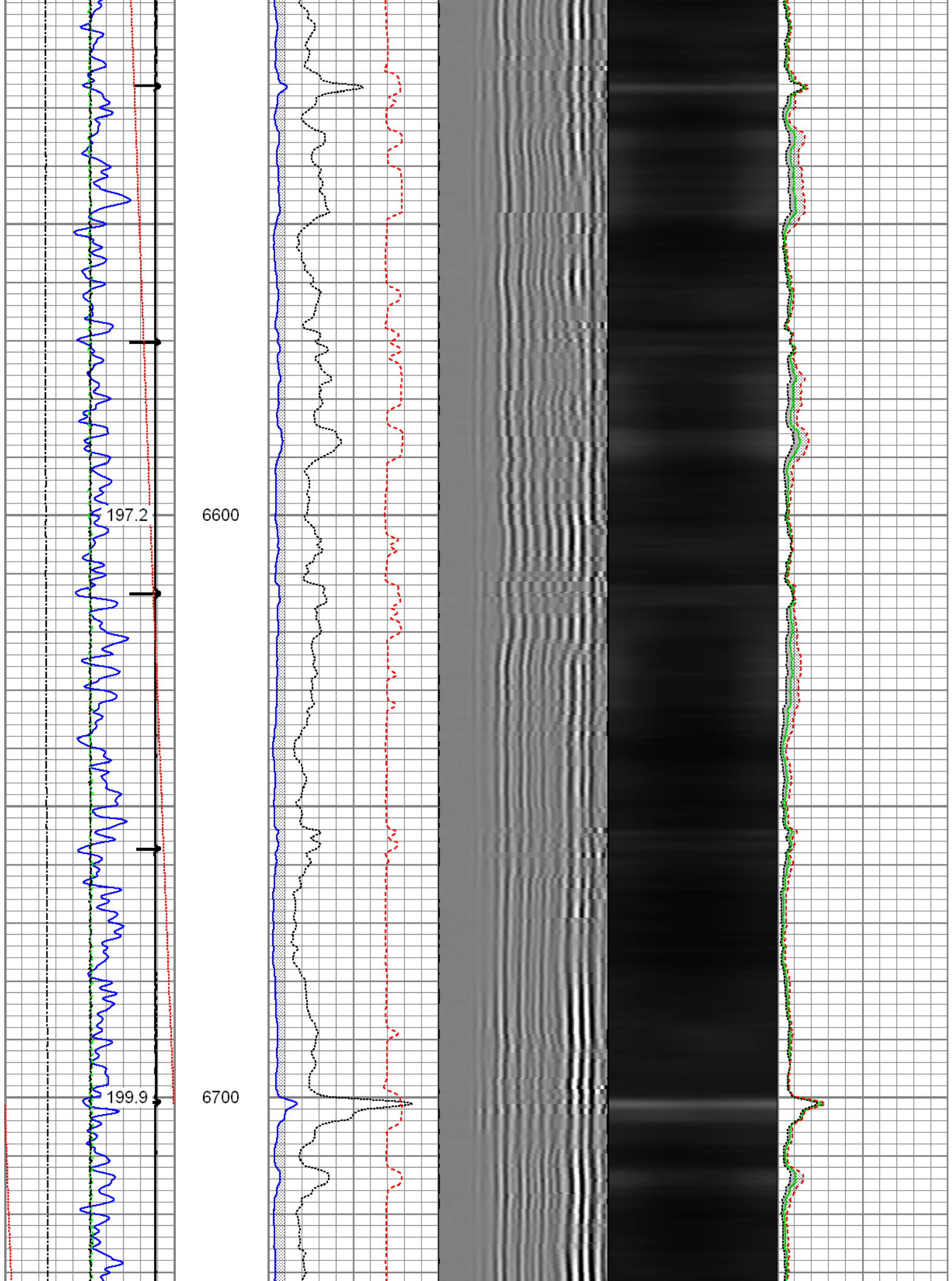


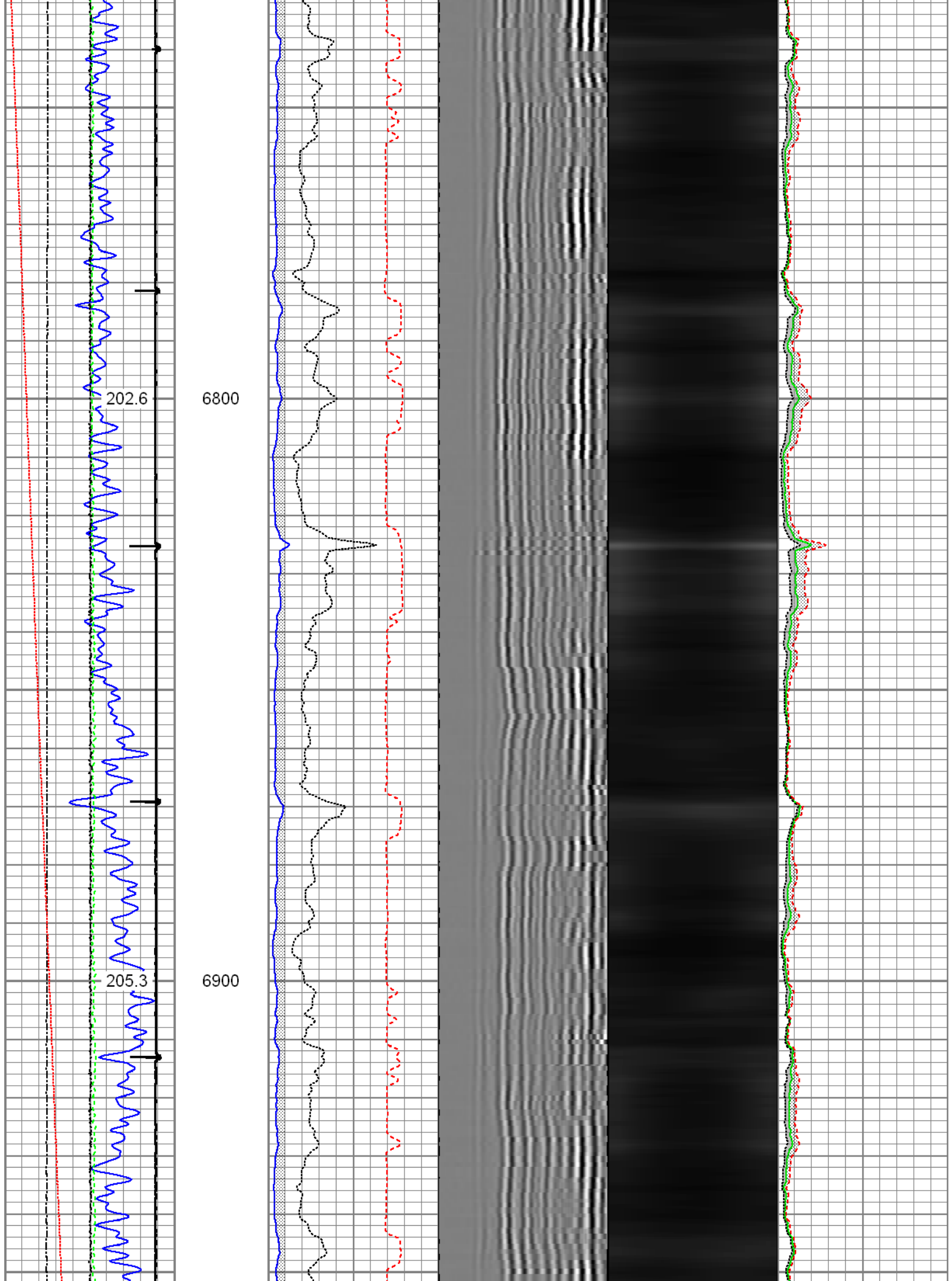


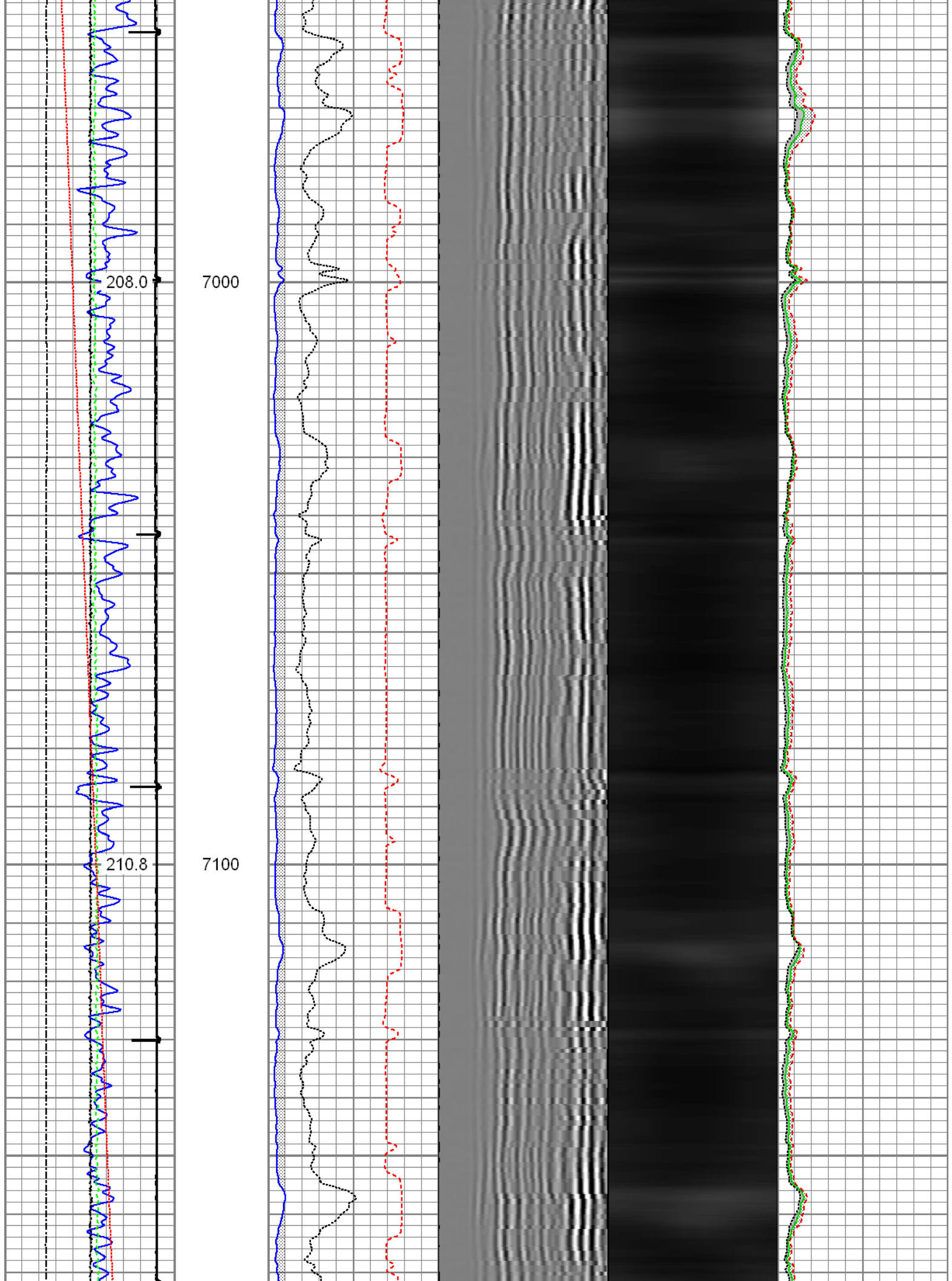


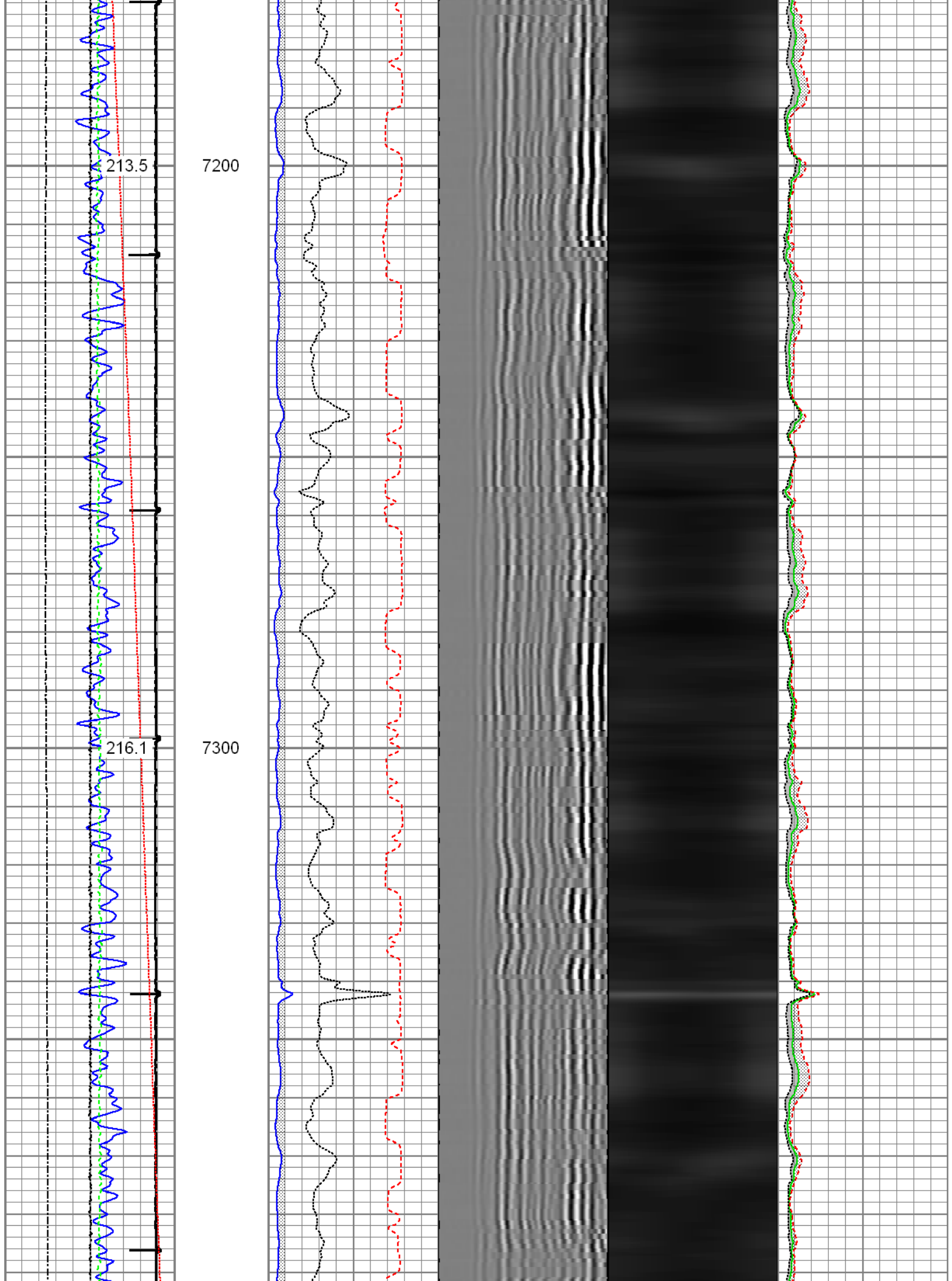


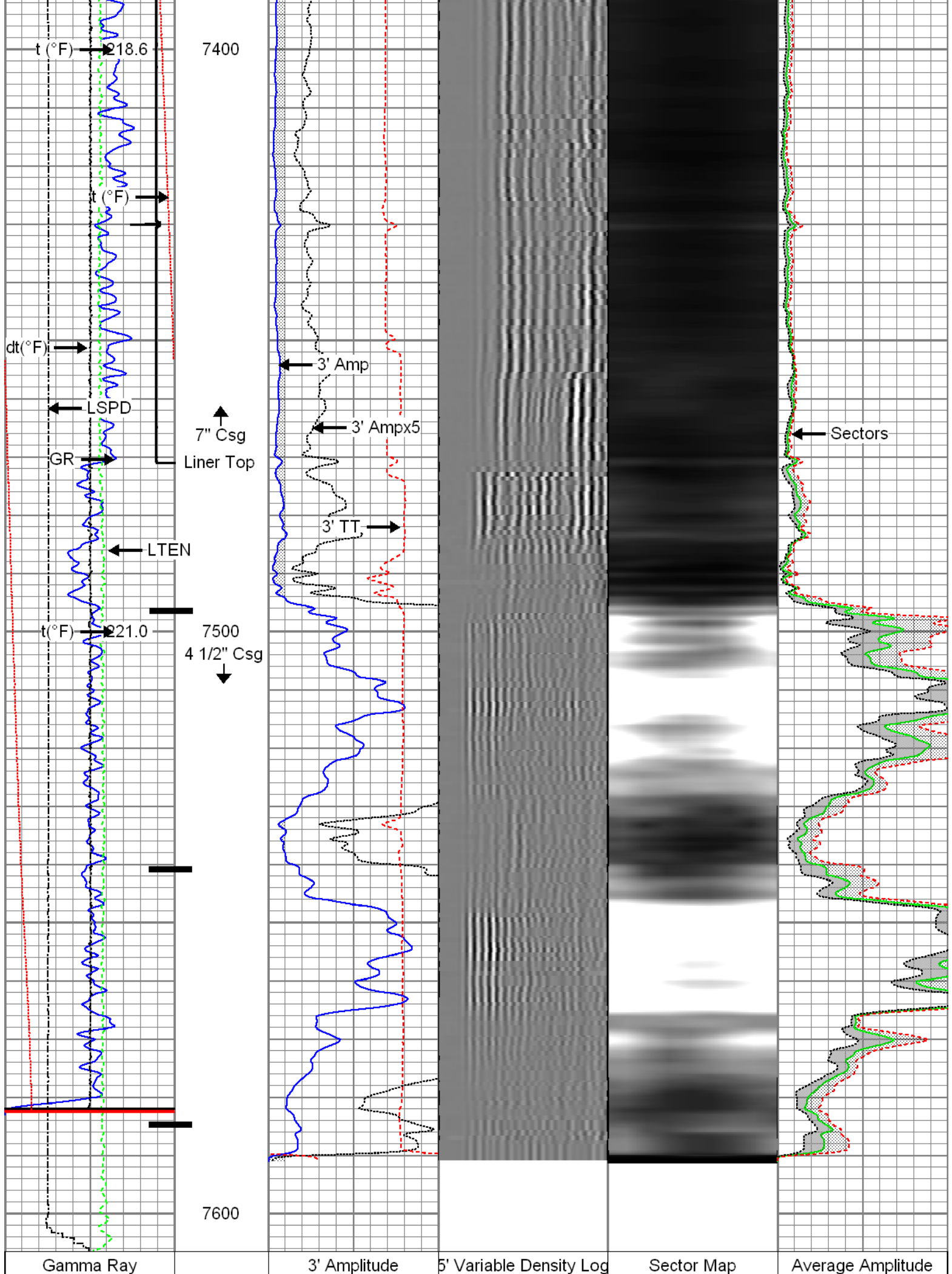







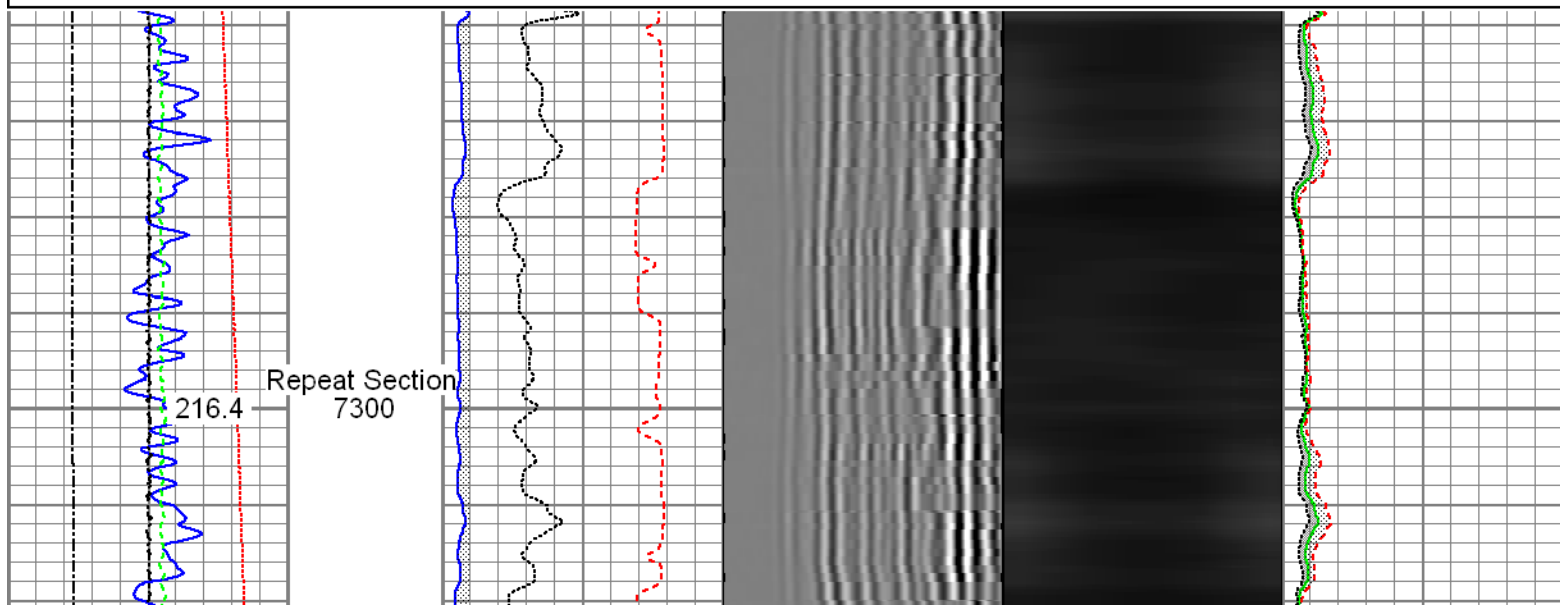


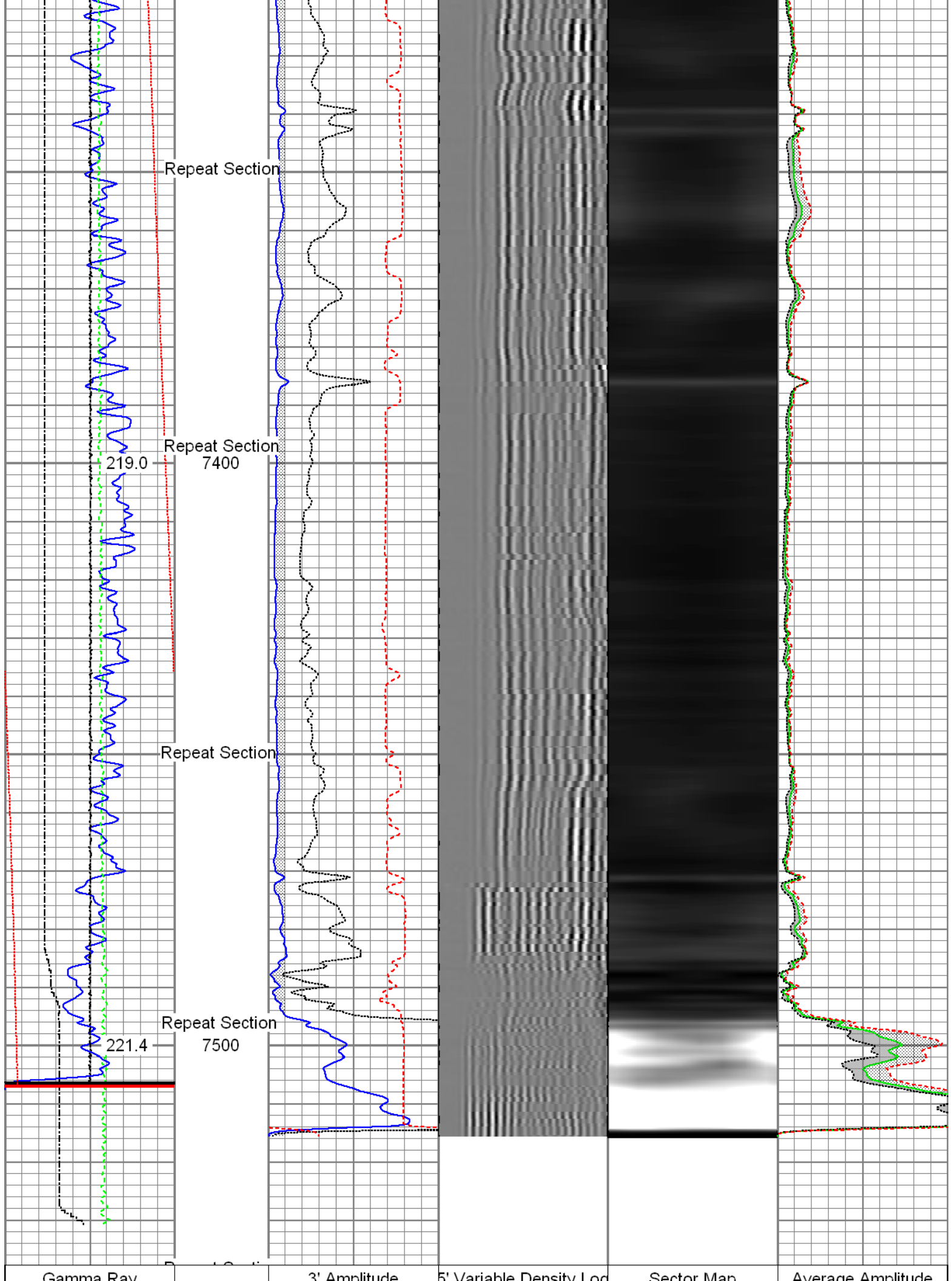




0 (GAPI) 120	0 (mV) 100 200 1200	0 100
Casing Collar Locator	3' Amplitude x 5	Minimum Amplitude
Line Speed	0 (mV) 20	0 100
-100 (ft/min) 100	3' Travel Time	Maximum Amplitude
Line Tension	650 (usec) 150	0 100
0 (lb) 2000		
Differential Temperature		
-2 (degF) 2		
Temperature (2°/Div)		
0 (degF) 20		

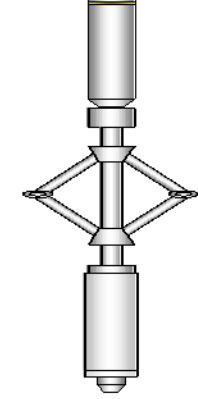
		<h2>Repeat Section</h2> <p>Recorded with 2800 PSI surface induced pressure</p>			
Database File: 0512340563_anadarko_copperhead 28n-15hz_04-07-15_mit_rbl.db Dataset Pathname: pass2 Presentation Format: rbt4_mit Dataset Creation: Tue Apr 07 15:43:00 2015 by Log 7.0 B1 Charted by: Depth in Feet scaled 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					





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

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)	
GR	25.03		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	23.63		UW_PRT-UW_PRT_016 (10025095) Platinum Resistance Thermometer	1.04	1.69	5.20	
			UW_PRC #4 -DSSRAC (081) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00	
WVF3FT	16.60		UW_RBT-UW_RBT_004 (10022773) Sondex Ultrawire 3-1/8" Radial Bond Tool	9.47	3.13	140.00	
WVFS1	16.60						
WVFS2	16.60						
WVFS3	16.60						
WVFS4	16.60						
WVFS5	16.60						
WVFS6	16.60						
WVFS7	16.60						
WVFS8	16.60						
CBLTEMP	16.60		UW_PRC-DSSRAC (080) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00	
CBLROT	16.60						
WVF5FT	15.60		UW_MIT-UW_MIT40_042 (10012912) 40 Multifinger Imaging Tool	4.54	2.75	61.10	
MIT	6.59						

CCL TSTAMP	0.73 0.00		UW_PRC #3 -DSSRAC (084) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
			UW_CCL-UW_CCL_028 (10009470) Ultrawire 3-1/8" CCL	1.61	3.13	36.00
			UW_BUL-UW_BUL_006 (218707) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20
Dataset: 0512340563_Anadarko_Copperhead 28N-15HZ_04-07-15_MIT_RBL.db: field/well/run1/pass4 Total Length: 29.27 ft Total Weight: 360.50 lb O.D. 3.13 in						

Calibration Report			
Database File:	0512340563_anadarko_copperhead 28n-15hz_04-07-15_mit_rbl.db		
Dataset Pathname:	pass4		
Dataset Creation:	Tue Apr 07 15:56:32 2015 by Log 7.0 B1		
Multi-finger Imaging Tool Calibration Report			
Serial Number:	10012912		
Number of Fingers:	40		
Tool Model:	UW_MIT40_042		
Inclinometer Calibration Report			
Performed:	Mon Jul 15 09:39:36 2013		
Calibration Angle:	45		
	Inc X	Inc Y	
Vertical:	1968	1974	
Finger 1 up:	1740	1744	
Finger 31 up:	2215	1741	
Finger 21 up:	2205	2224	
Finger 11 up:	1731	2217	
Sensitivity ratio:	0.992868		
X-axis angle:	134.307		
Deviation const.:	335.589		

Finger Calibration Report						
Performed: Tue Apr 07 14:51:20 2015						
Ring size:	4	5	6	7		
(in)						
	Sens	Sens	Sens			
Finger 01:	1050 401.0	1451 397.0	1848 402.0	2250		
Finger 02:	1212 425.0	1637 397.0	2034 400.0	2434		
Finger 03:	1053 422.0	1475 414.0	1889 427.0	2316		
Finger 04:	1031 409.0	1440 399.0	1839 418.0	2257		
Finger 05:	1062 420.0	1482 408.0	1890 423.0	2313		
Finger 06:	1084 425.0	1509 406.0	1915 420.0	2335		
Finger 07:	1045 428.0	1473 403.0	1876 422.0	2298		
Finger 08:	1120 428.0	1548 403.0	1951 423.0	2374		
Finger 09:	1043 421.0	1464 395.0	1859 430.0	2289		
Finger 10:	1057 426.0	1483 396.0	1879 422.0	2301		
Finger 11:	1093 428.0	1521 390.0	1911 413.0	2324		
Finger 12:	1053 425.0	1478 406.0	1884 429.0	2313		
Finger 13:	1073 427.0	1500 382.0	1882 408.0	2290		
Finger 14:	1019 431.0	1450 385.0	1835 418.0	2253		
Finger 15:	1007 438.0	1445 401.0	1846 433.0	2279		
Finger 16:	1048 450.0	1498 394.0	1892 429.0	2321		
Finger 17:	958 434.0	1392 386.0	1778 427.0	2215		

Finger 17:	958	434.0	1392	386.0	1778	437.0	2215
Finger 18:	1112	438.0	1550	382.0	1932	414.0	2346
Finger 19:	1004	420.0	1424	380.0	1804	419.0	2223
Finger 20:	1009	432.0	1441	391.0	1832	428.0	2260
Finger 21:	1014	435.0	1449	387.0	1836	417.0	2253
Finger 22:	982	432.0	1414	390.0	1804	427.0	2231
Finger 23:	1044	443.0	1487	403.0	1890	432.0	2322
Finger 24:	1075	441.0	1516	385.0	1901	398.0	2299
Finger 25:	988	439.0	1427	398.0	1825	425.0	2250
Finger 26:	1079	411.0	1490	370.0	1860	389.0	2249
Finger 27:	1079	424.0	1503	392.0	1895	406.0	2301
Finger 28:	1061	412.0	1473	380.0	1853	394.0	2247
Finger 29:	997	418.0	1415	398.0	1813	415.0	2228
Finger 30:	1039	415.0	1454	394.0	1848	408.0	2256
Finger 31:	1095	413.0	1508	391.0	1899	400.0	2299
Finger 32:	1044	424.0	1468	408.0	1876	414.0	2290
Finger 33:	1133	408.0	1541	380.0	1921	379.0	2300
Finger 34:	1093	403.0	1496	391.0	1887	397.0	2284
Finger 35:	1041	422.0	1463	422.0	1885	427.0	2312
Finger 36:	1074	414.0	1488	408.0	1896	414.0	2310
Finger 37:	1066	409.0	1475	398.0	1873	406.0	2279
Finger 38:	1125	406.0	1531	393.0	1924	391.0	2315
Finger 39:	1075	393.0	1468	390.0	1858	397.0	2255
Finger 40:	1039	408.0	1447	403.0	1850	414.0	2264

Segmented Cement Bond Log Calibration Report						
Serial Number:		10022773				
Tool Model:		UW_RBT_004				
Calibration Casing Diameter:		7.000	in			
Calibration Depth:		2069.450	ft			
Master Calibration, performed Tue Apr 07 15:21:11 2015:						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	0.003	0.682	0.800	62.165	90.323	0.568
5FT	-0.001	0.650	0.800	62.165	94.302	0.915
S1	0.003	0.661	0.000	100.000	152.144	-0.503
S2	0.001	0.699	0.000	100.000	143.327	-0.180
S3	0.003	0.696	0.000	100.000	144.325	-0.395
S4	0.002	0.681	0.000	100.000	147.331	-0.349
S5	0.002	0.678	0.000	100.000	147.924	-0.356
S6	0.001	0.654	0.000	100.000	153.171	-0.219
S7	0.002	0.640	0.000	100.000	156.800	-0.383
S8	0.002	0.647	0.000	100.000	154.979	-0.335

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
9
10

cps
cps
cps

degF
degF
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	Copperhead 28N-15HZ
Field	Wattenberg
County	Weld
State	Colorado