

Radial Cement Bond Gamma Ray Casing Collar Log

Company	Kerr McGee Oil & Gas Onshore LP				
Well	Cobra 4N-14HZ				
Field	Wattenberg				
County	Weld				
State	Colorado				
Company	Kerr McGee Oil & Gas Onshore LP				
Well	Cobra 4N-14HZ				
Field	Wattenberg				
County	Weld	State	Colorado		
Location:	API # : 05-123-40407		Other Services Gauge Ring MIT		
SEC 23		TWP 2N	RGE 67W		
Permanent Datum	Ground Level	Elevation	4976'		
Log Measured From	Kelly Bushing	25 FT		K.B. 5001' D.F. 5000'	
Drilling Measured From	Kelly Bushing			G.L. 4976'	

Date	29-APR-2015
Run Number	Two
Depth Driller	13411 FT
Depth Logger	7968 FT
Bottom Logged Interval	7953 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	Surface
Time Well Ready	ROA
Time Logger on Bottom	10:15
Equipment Number	HD-0343
Location	Ft Lupton, CO
Recorded By	J. Raby
Witnessed By	Van Franke

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
Casing Record	Size (in)	Wgt (lbs/ft)	Grade	Top	Bottom		
Surface Casing	9 5/8	36	J-55	Surface	1194 FT		
Intermediate #1	7	26	P-110	Surface	8270 FT		
Intermediate #2							
Liner	4 1/2	11.6	HCP-110	7489 FT	13409 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.

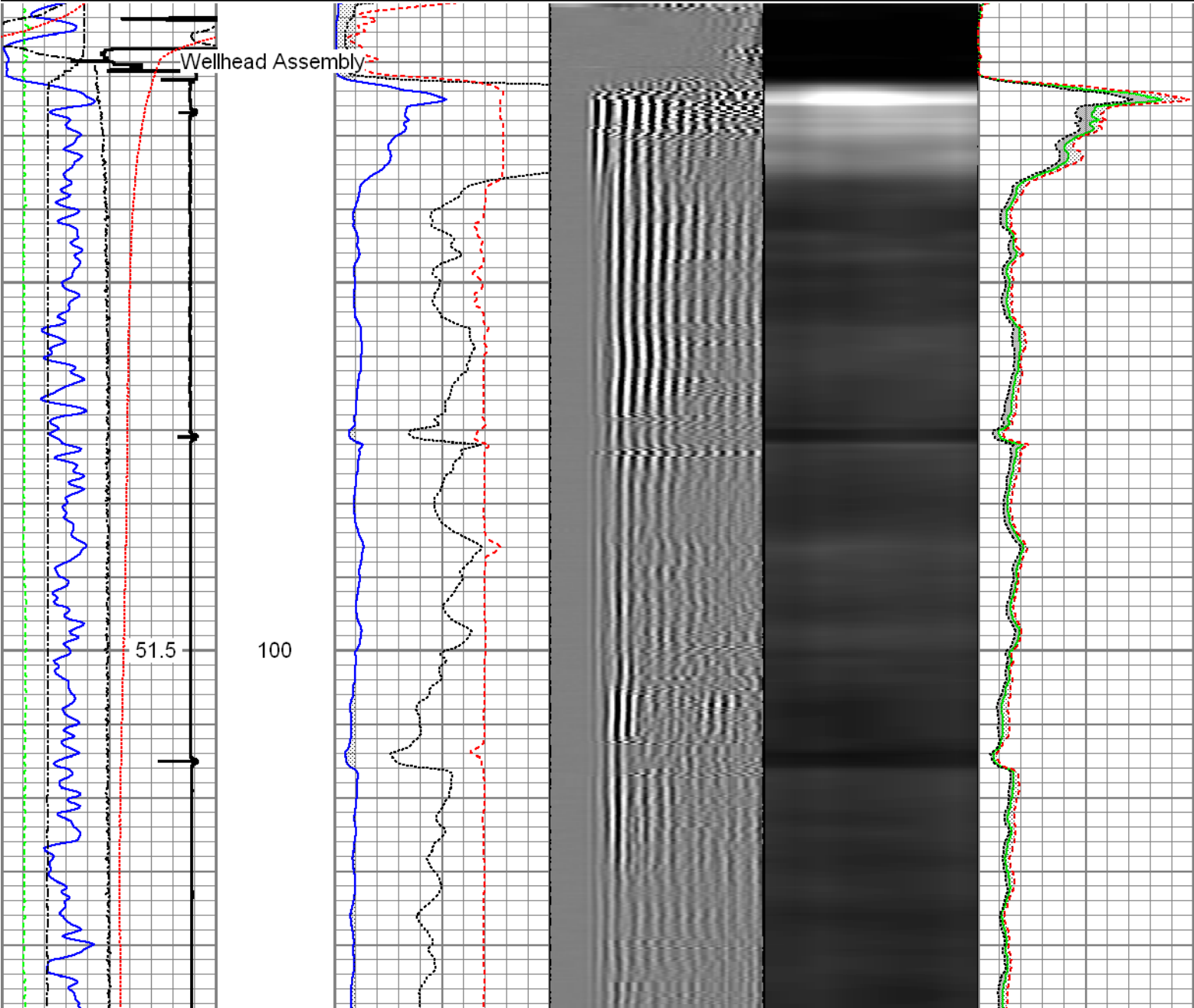
Comments

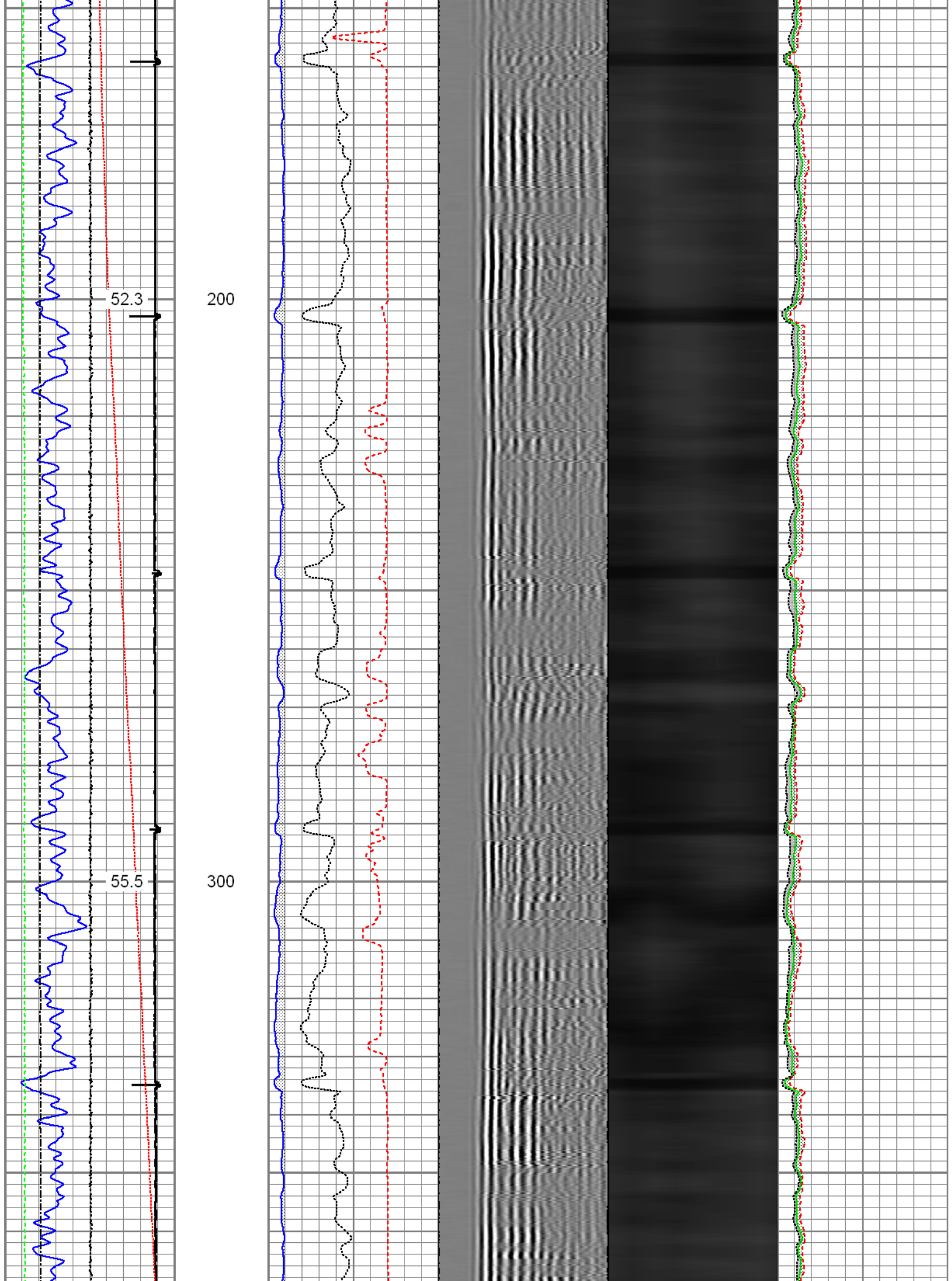
Log ran as per customer request.
 Depth referenced to casing tally reported liner top at 7489 FT.
 Adjusted log +1 FT to correlate with liner top.
 Gauge ring/junk basket ran to 7968 FT no debris was found after run.
 Log ran from 7953 FT to surface.
 Log ran with 2800 PSI surface induced pressure.
 No debris found on logging tools upon completion of run.

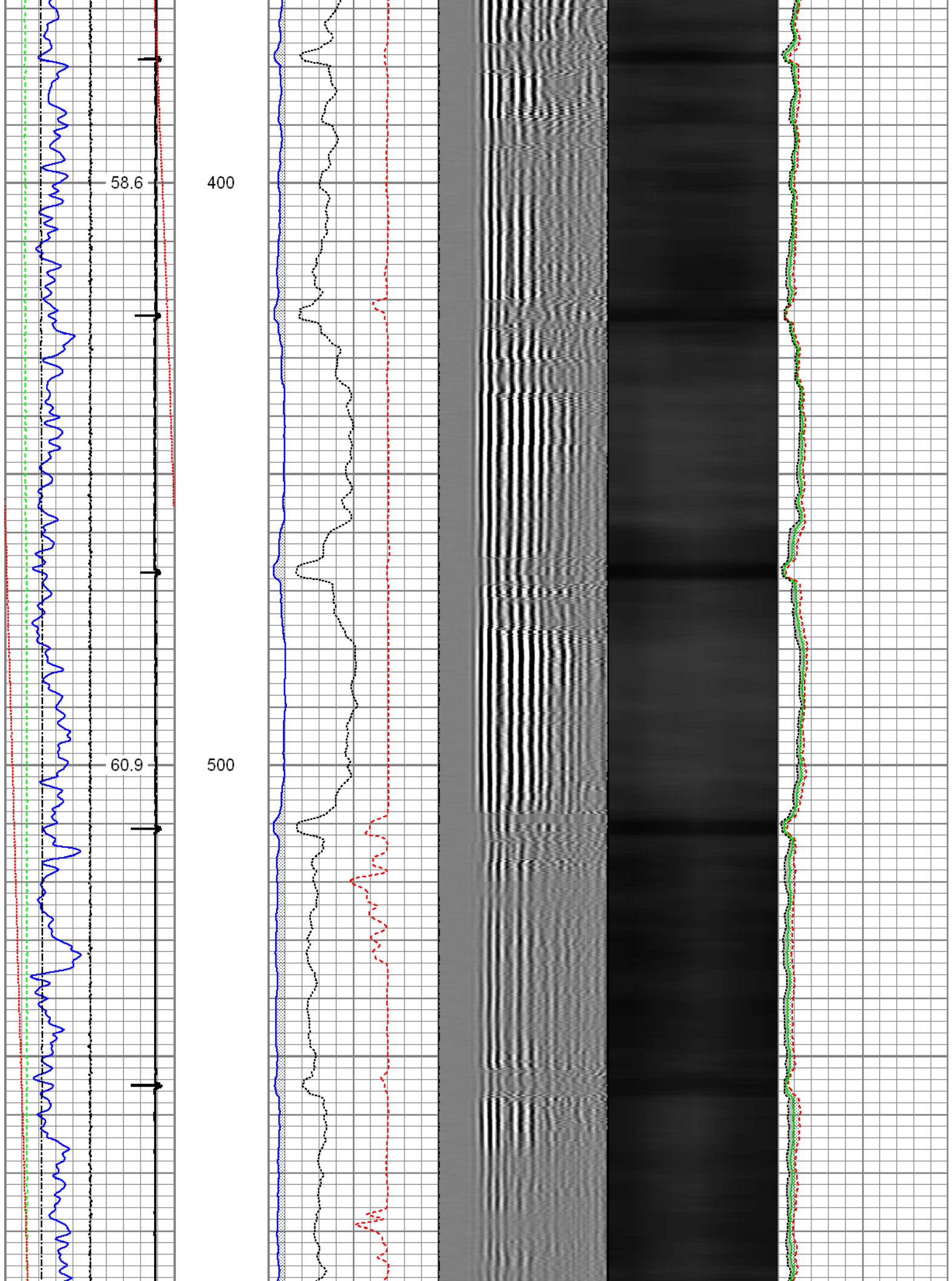
Thank you for choosing FMC Technologies Completion Services, Inc.!!

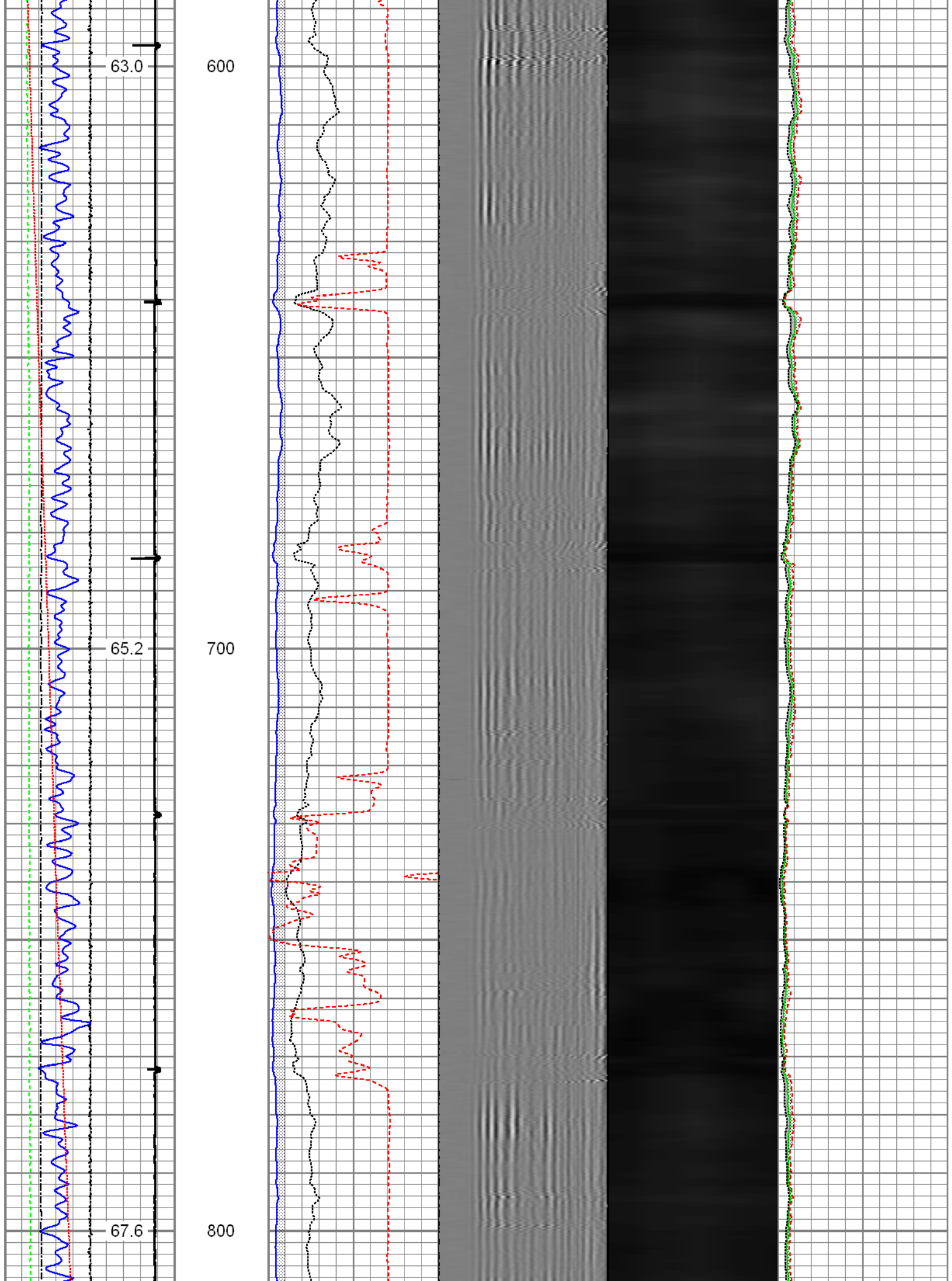
Database File: 0512340407_anadarko_cobra 4n-14hz_04-29-15_mit_rbl.db
Dataset Pathname: pass6
Presentation Format: rbt4_mit
Dataset Creation: Wed Apr 29 10:39:34 2015 by Log 7.0 B1
Charted by: Depth in Feet scaled 1:240

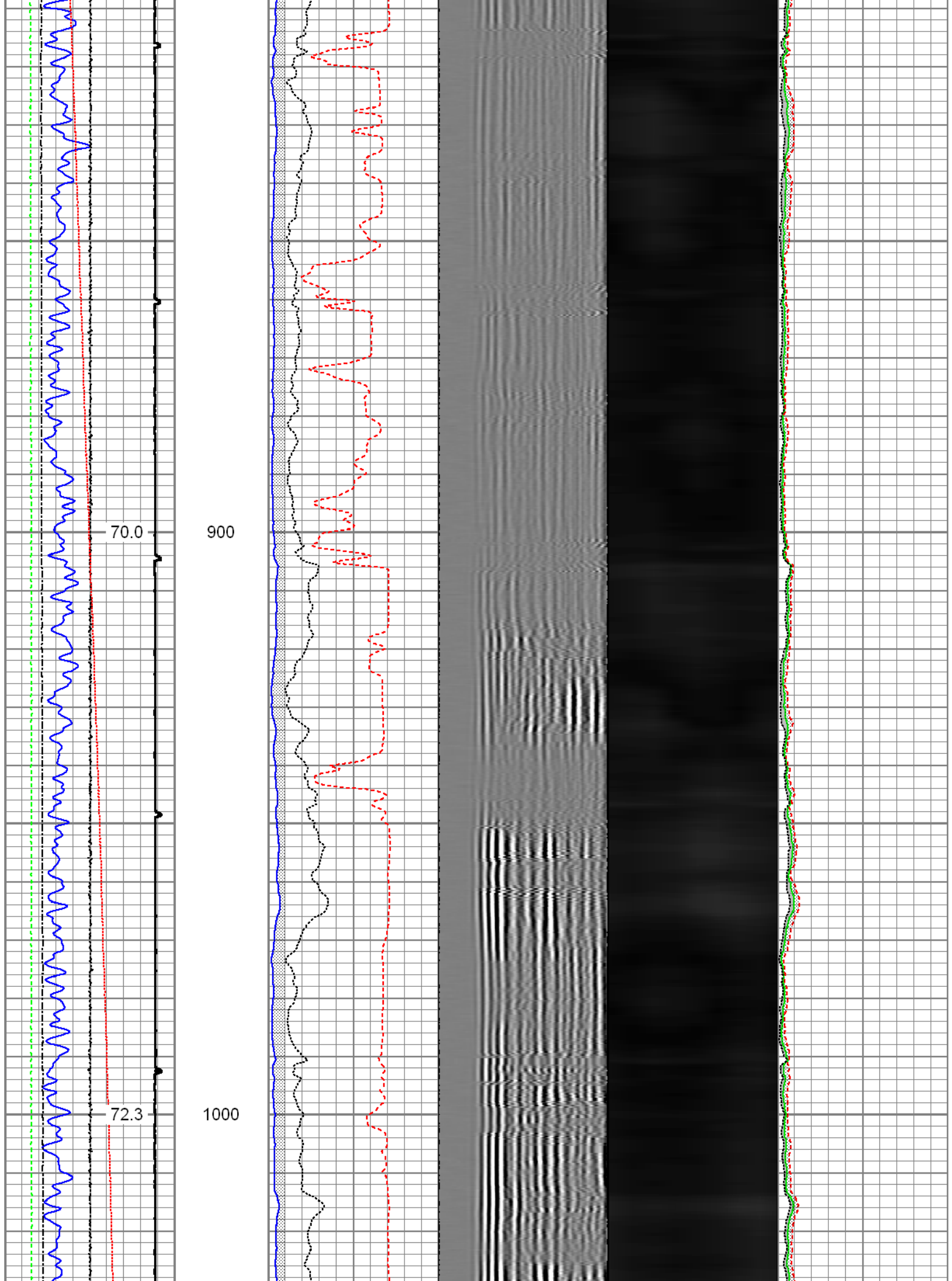
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Minimum Amplitude
Line Speed	0 (mV) 20			0 100
-100 (ft/min) 100	3' Travel Time			Maximum Amplitude
Line Tension	650 (usec) 150			0 100
0 (lb) 2000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

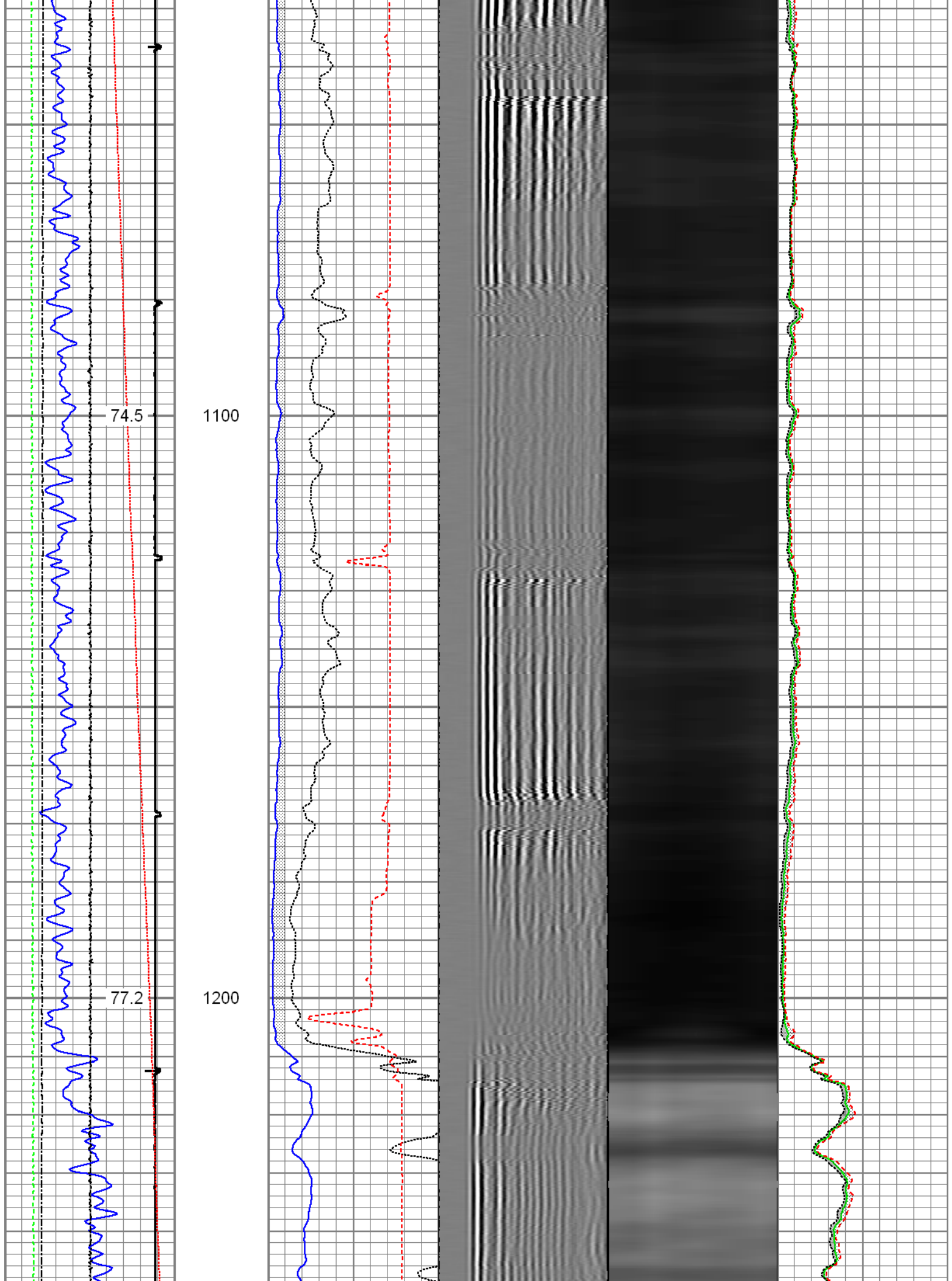


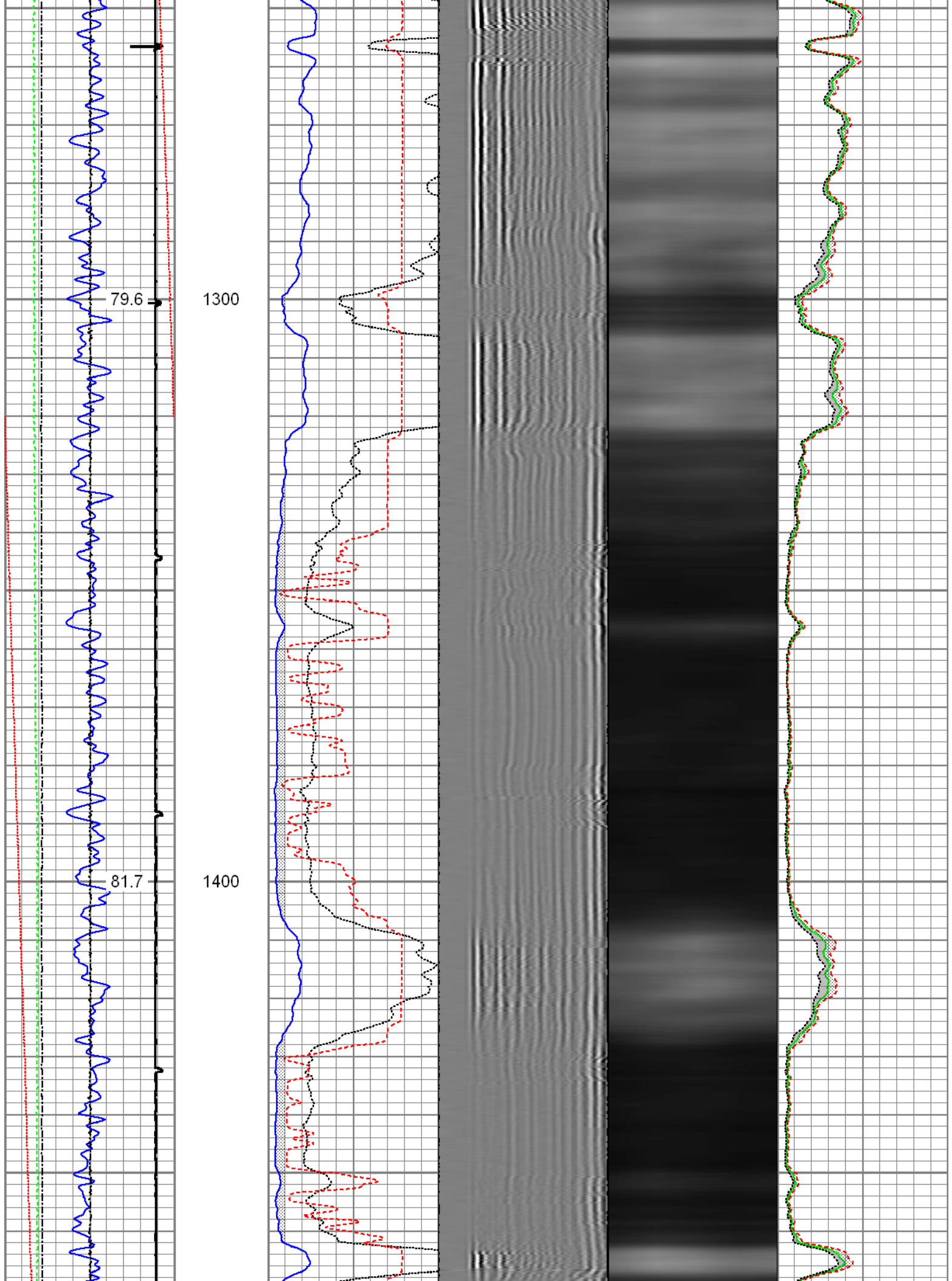


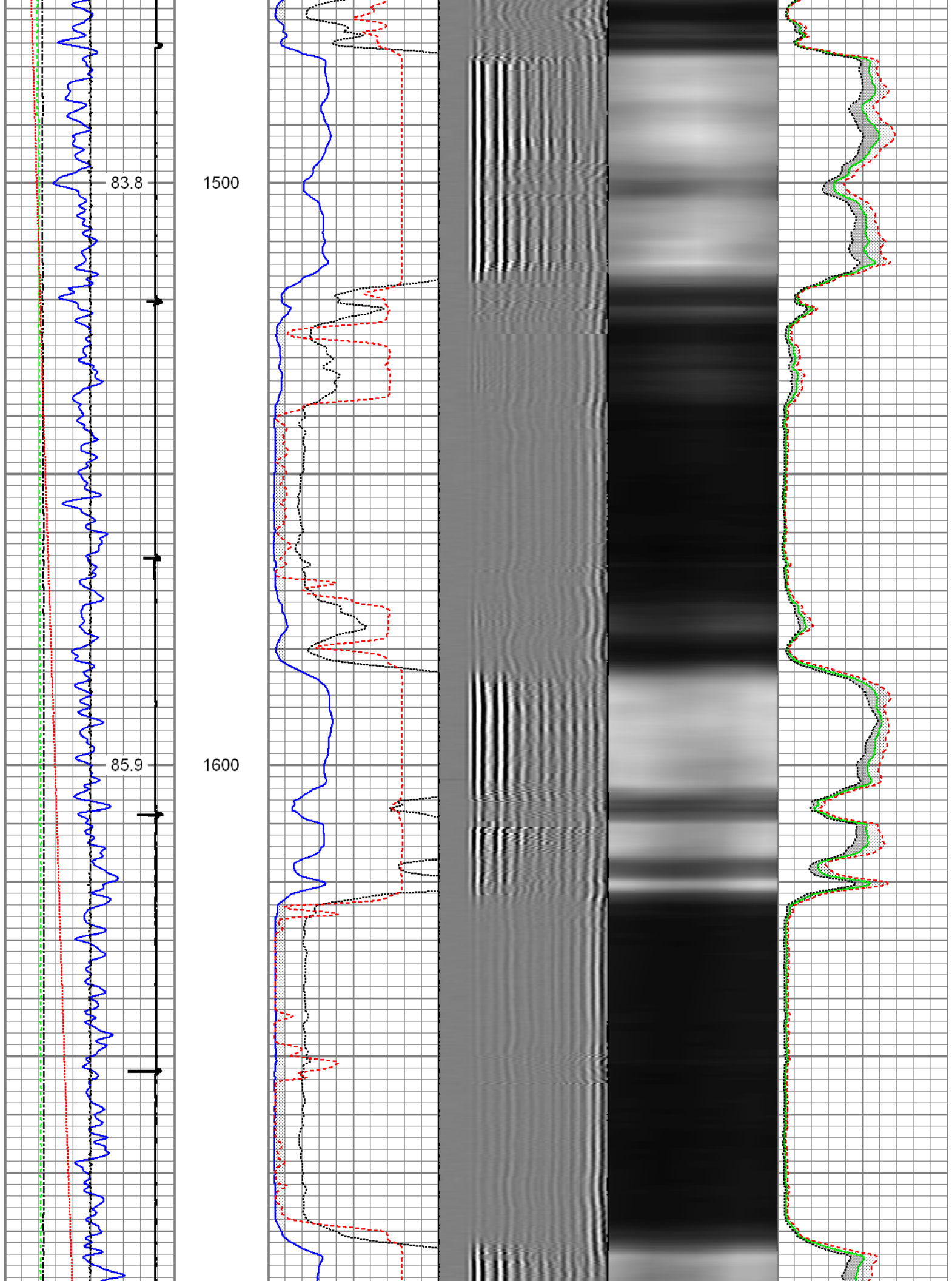


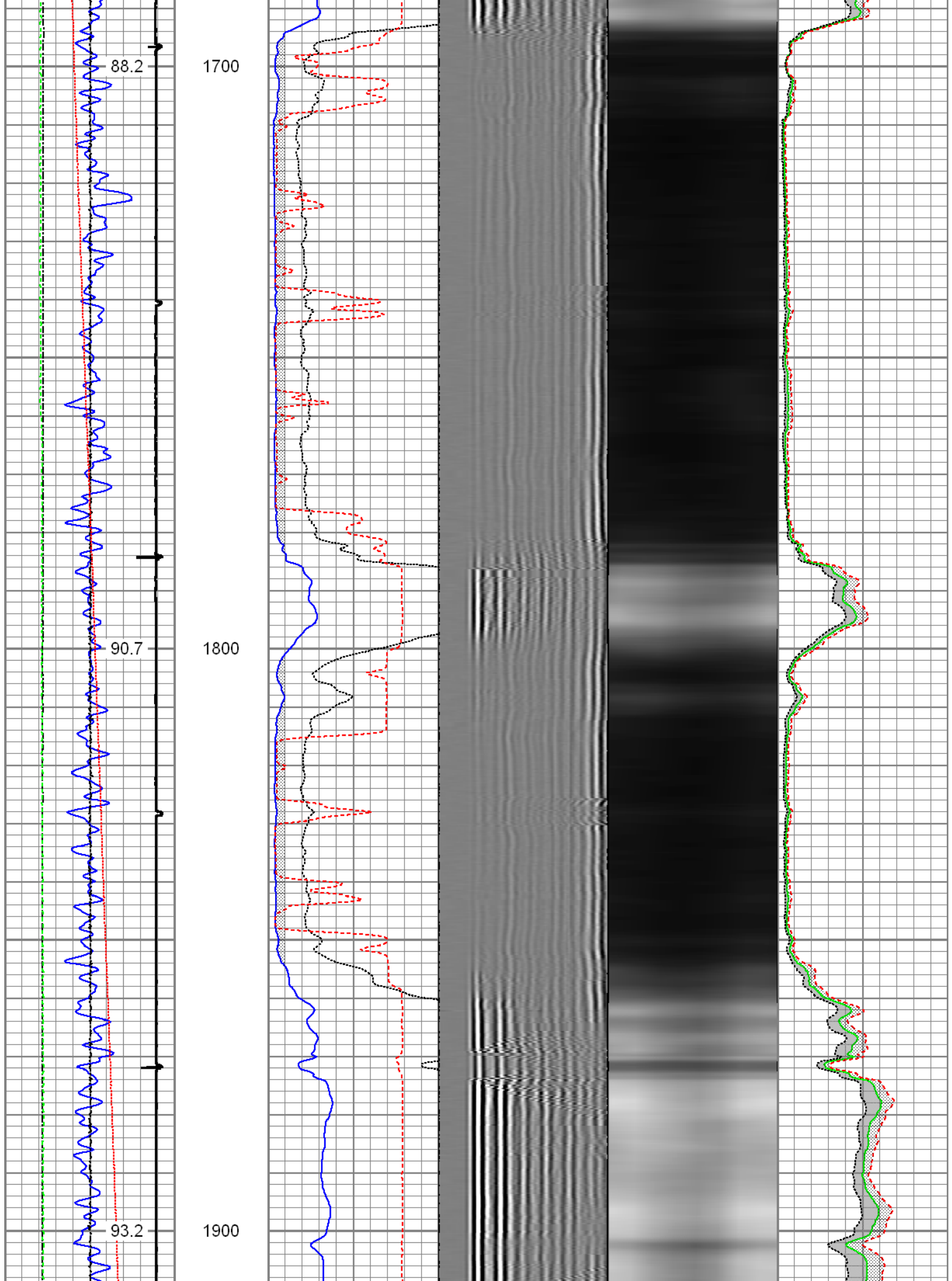


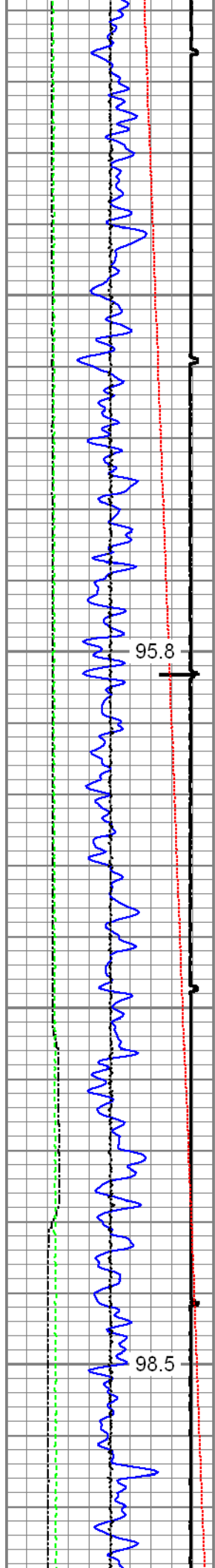










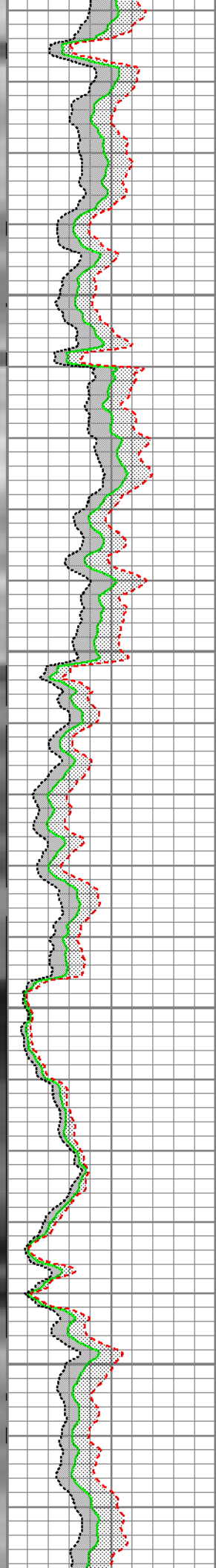
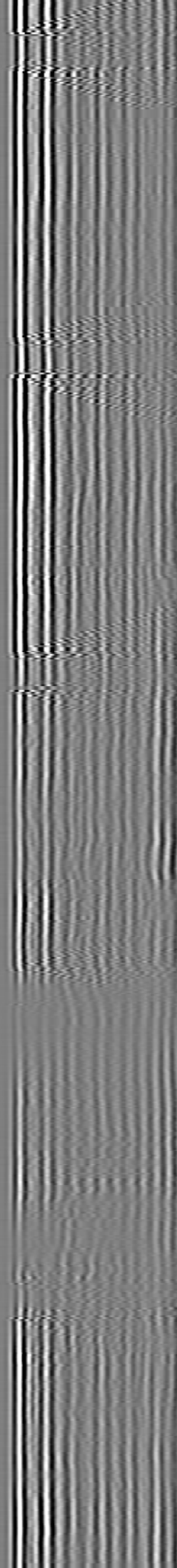
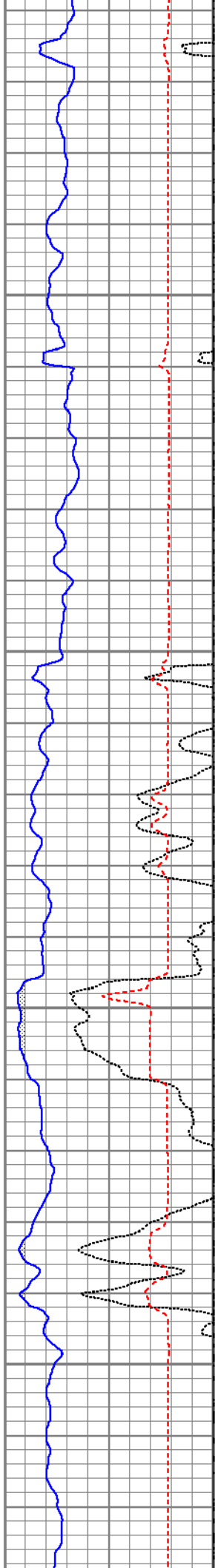


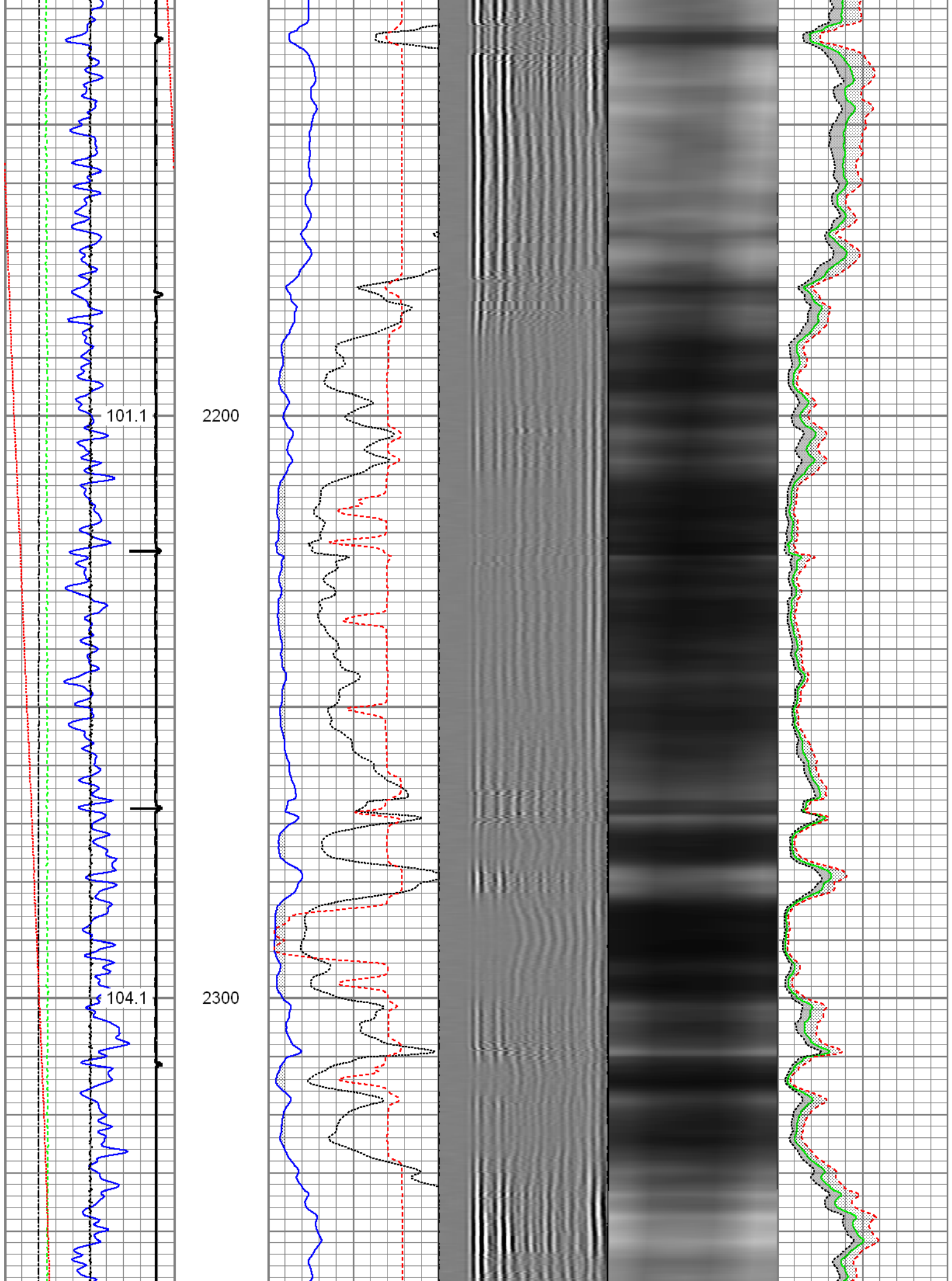
95.8

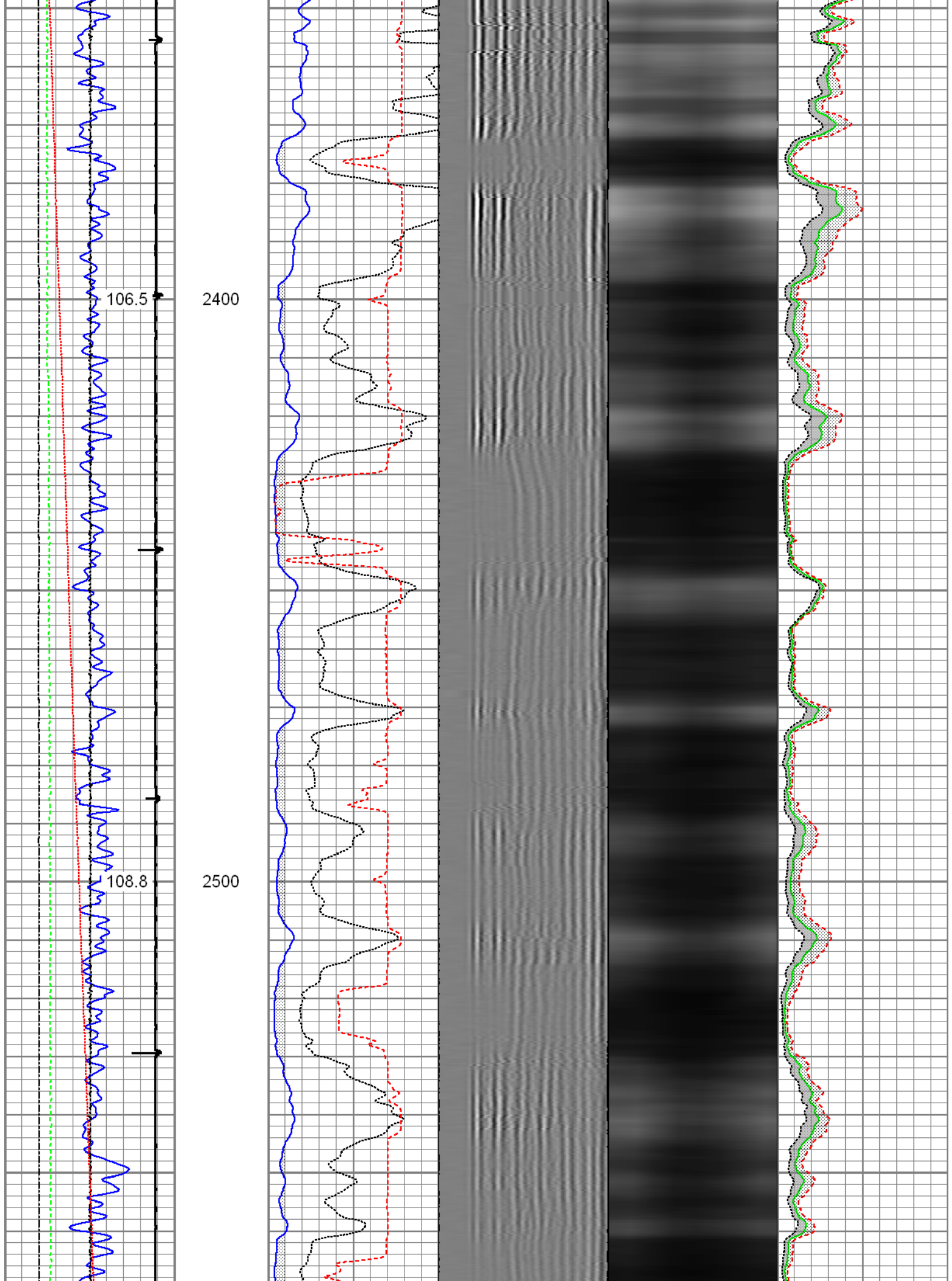
98.5

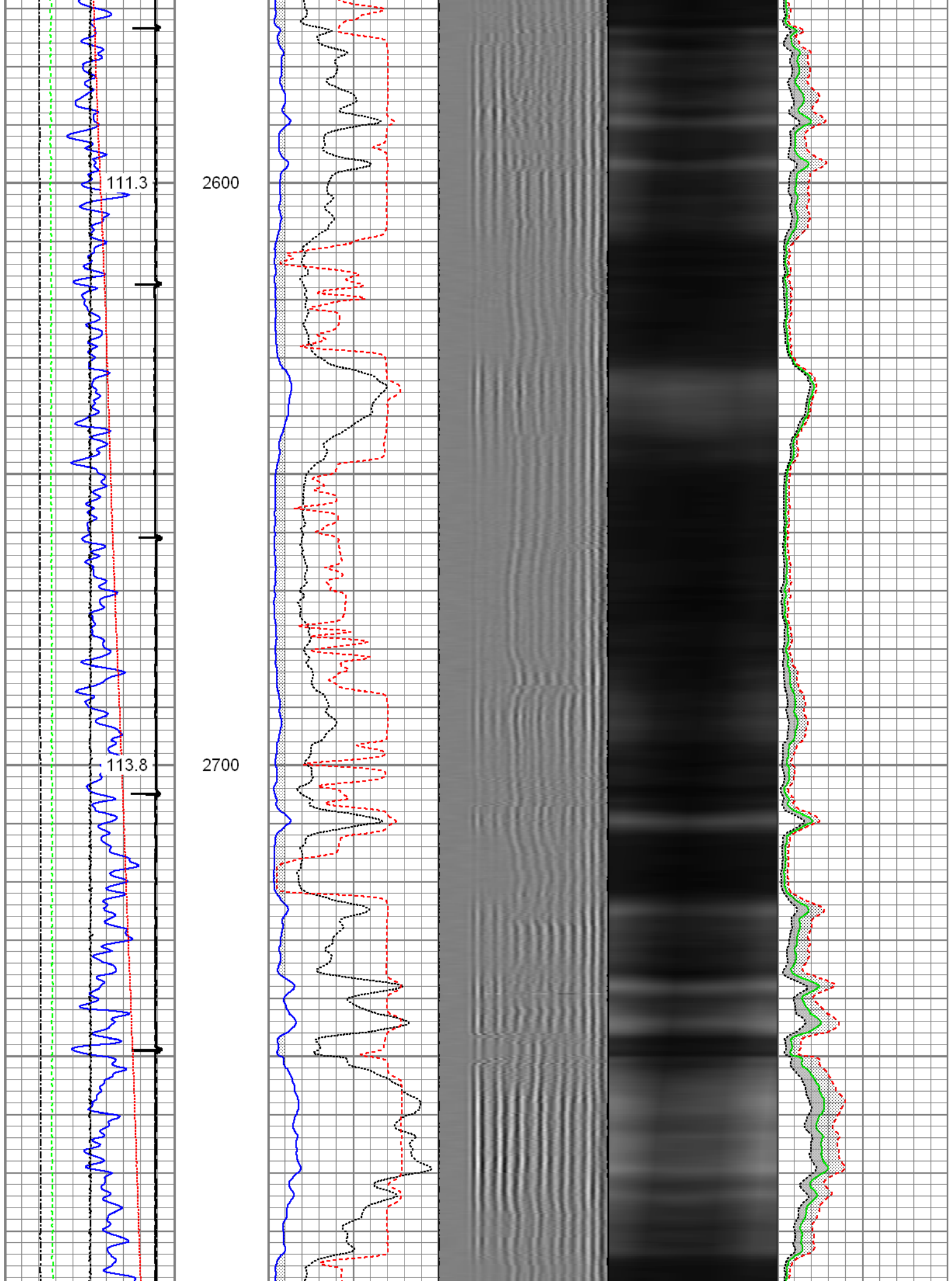
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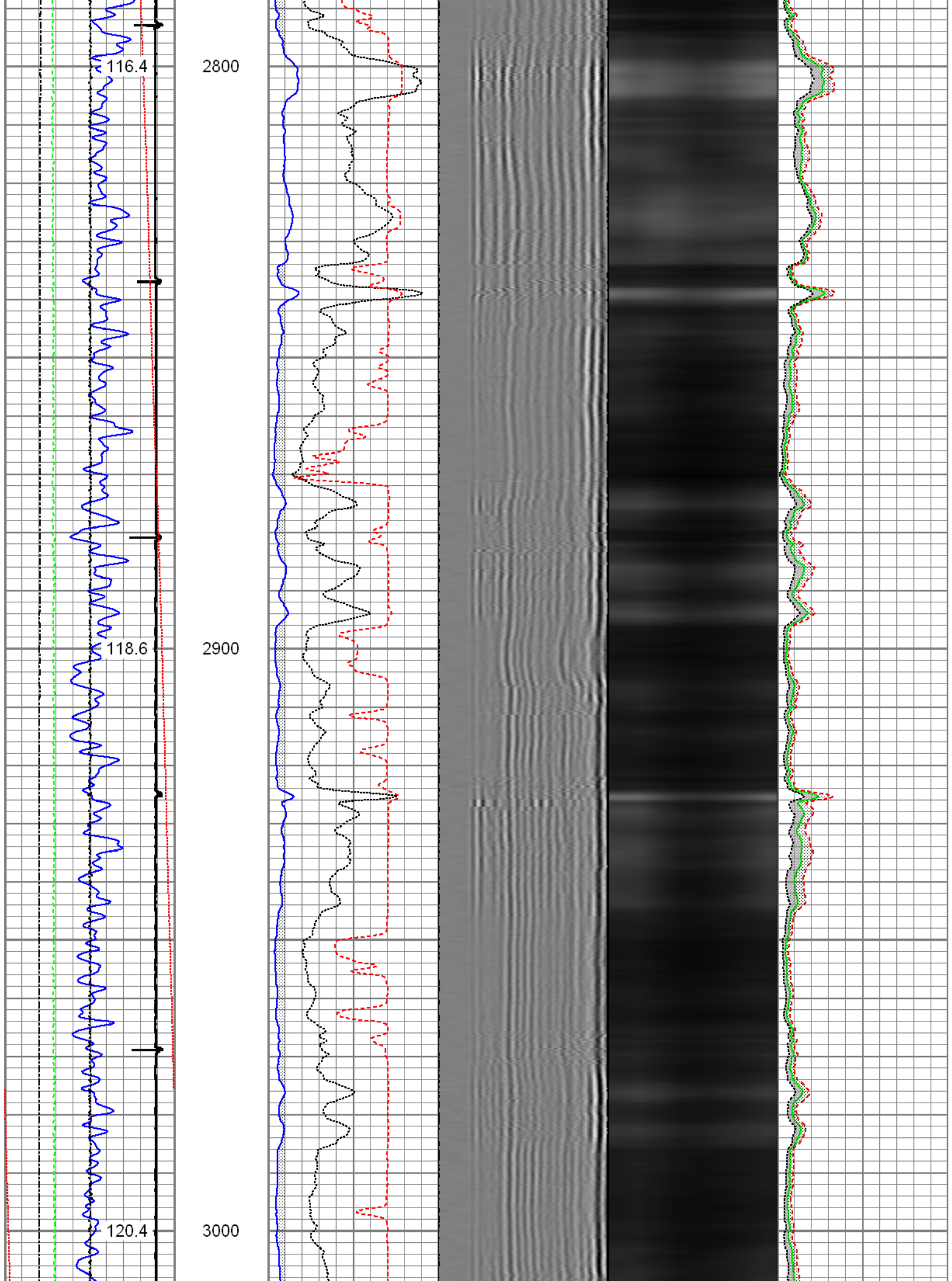
2100

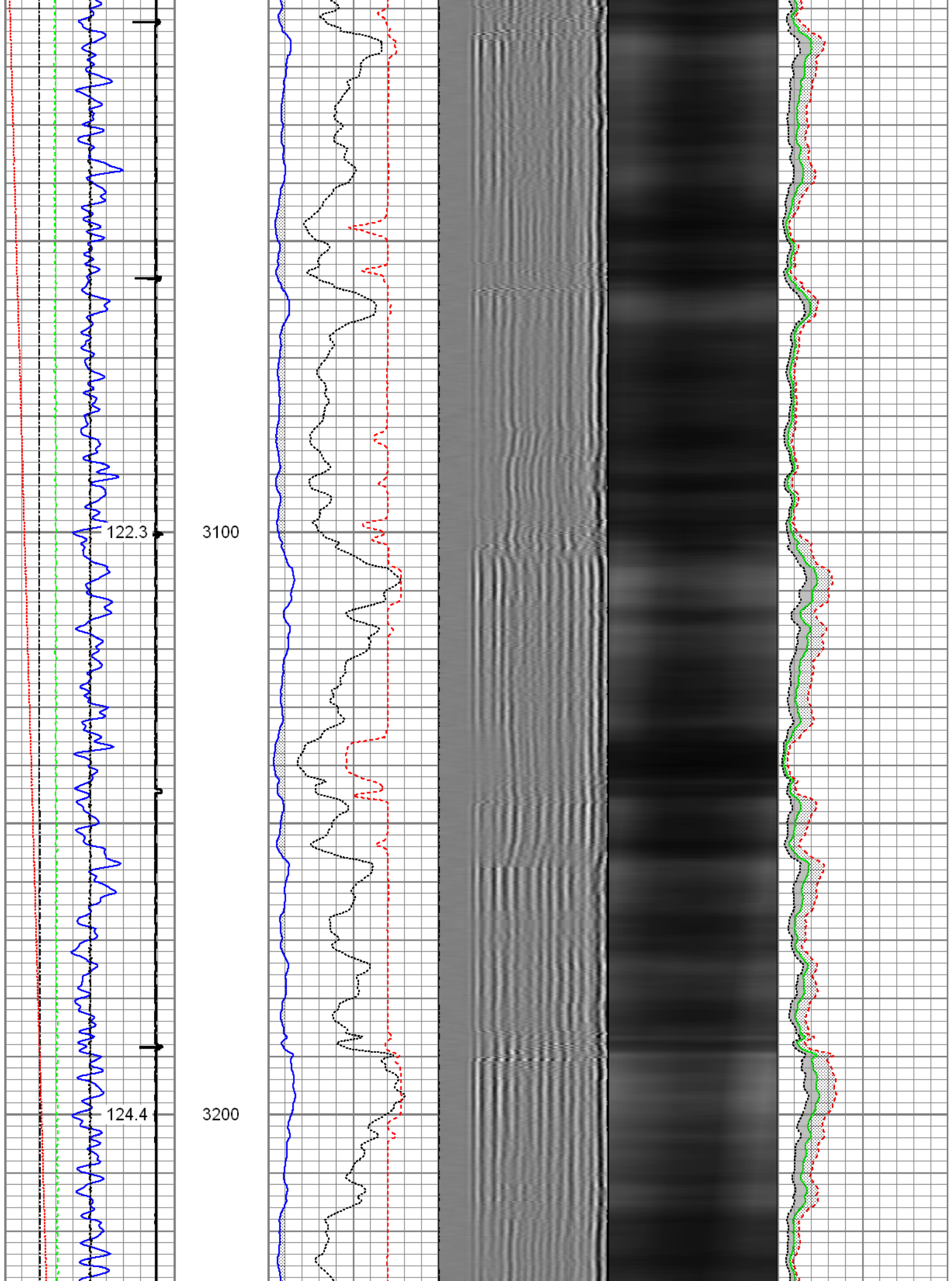


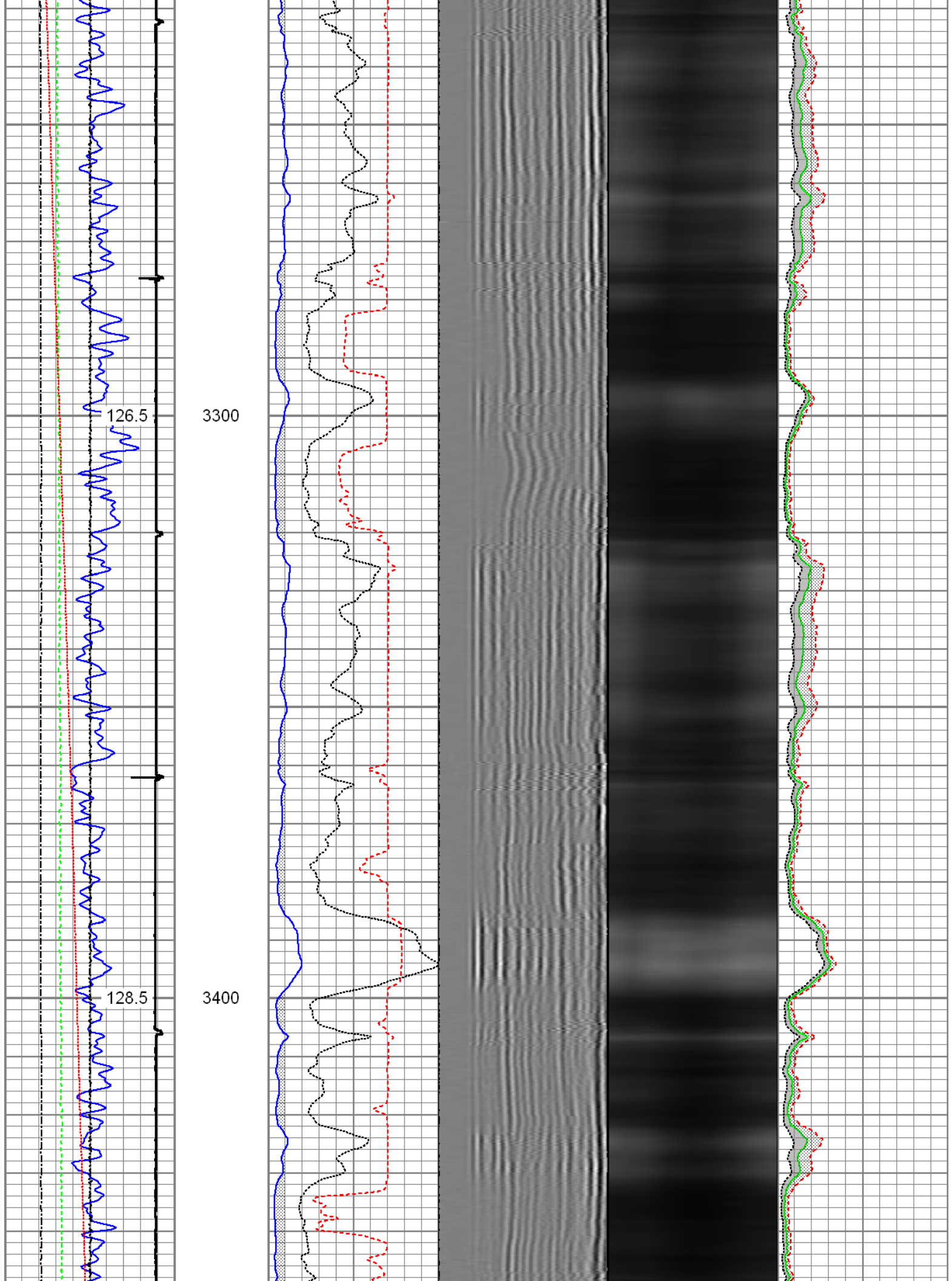


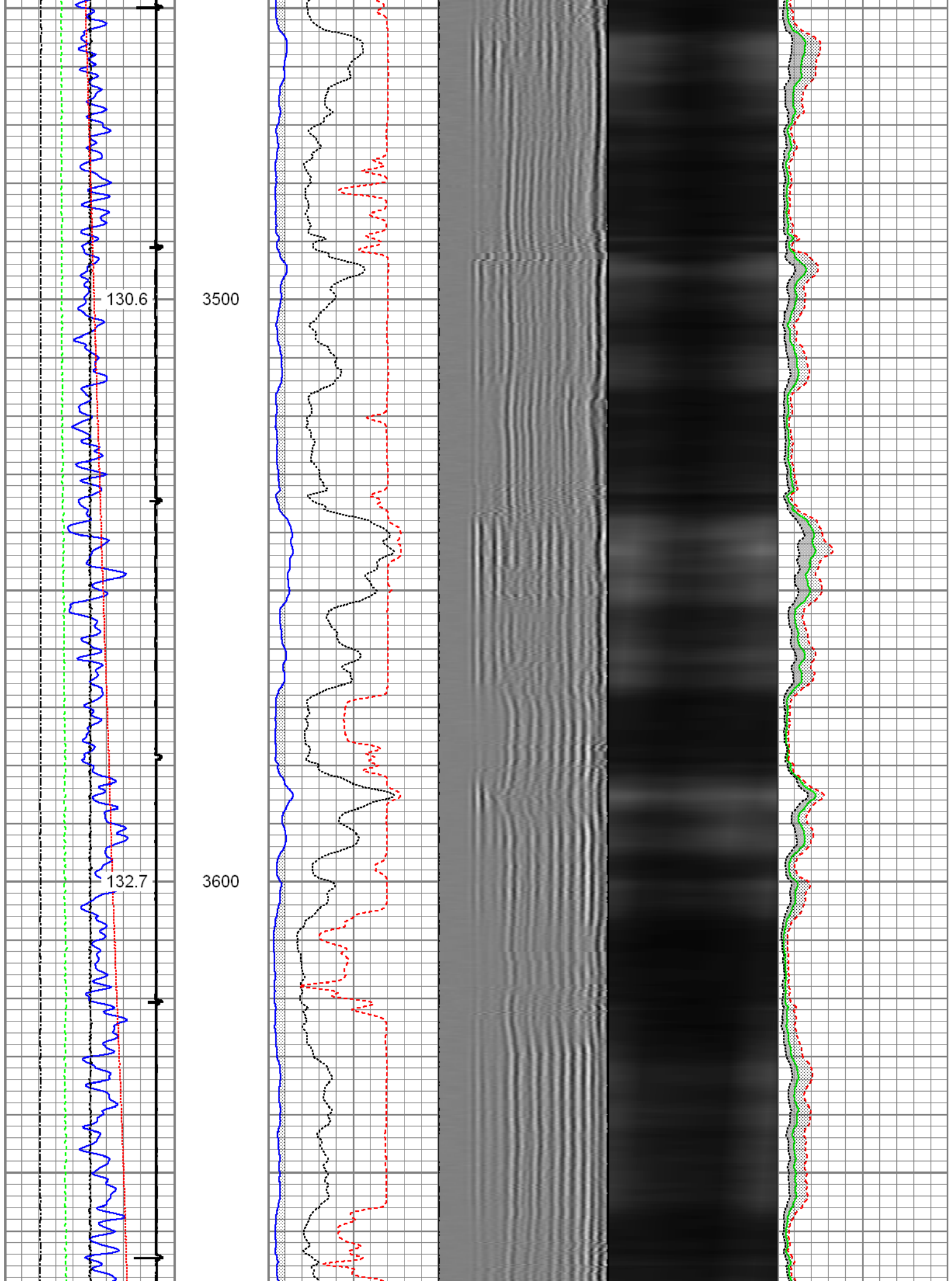


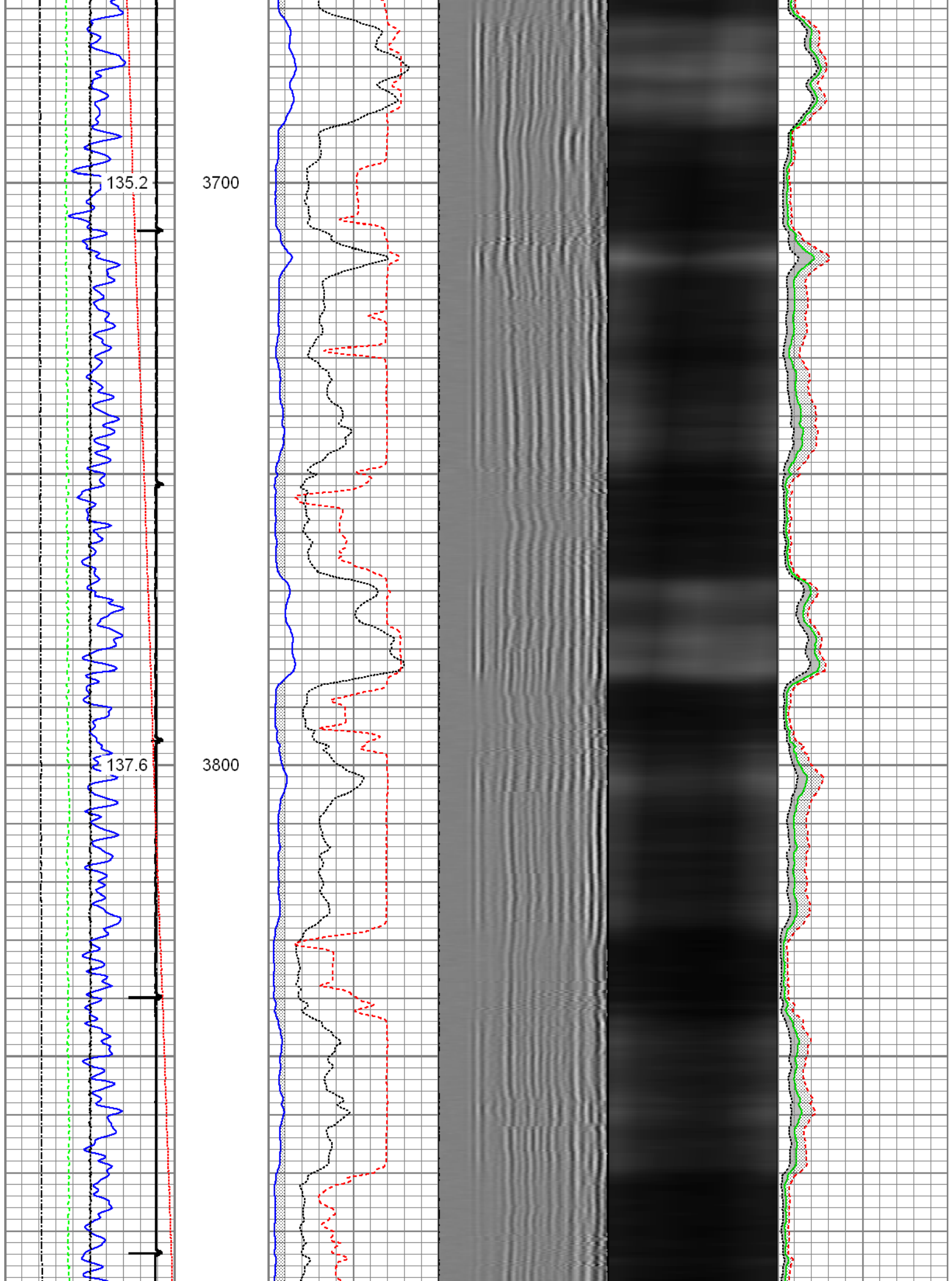


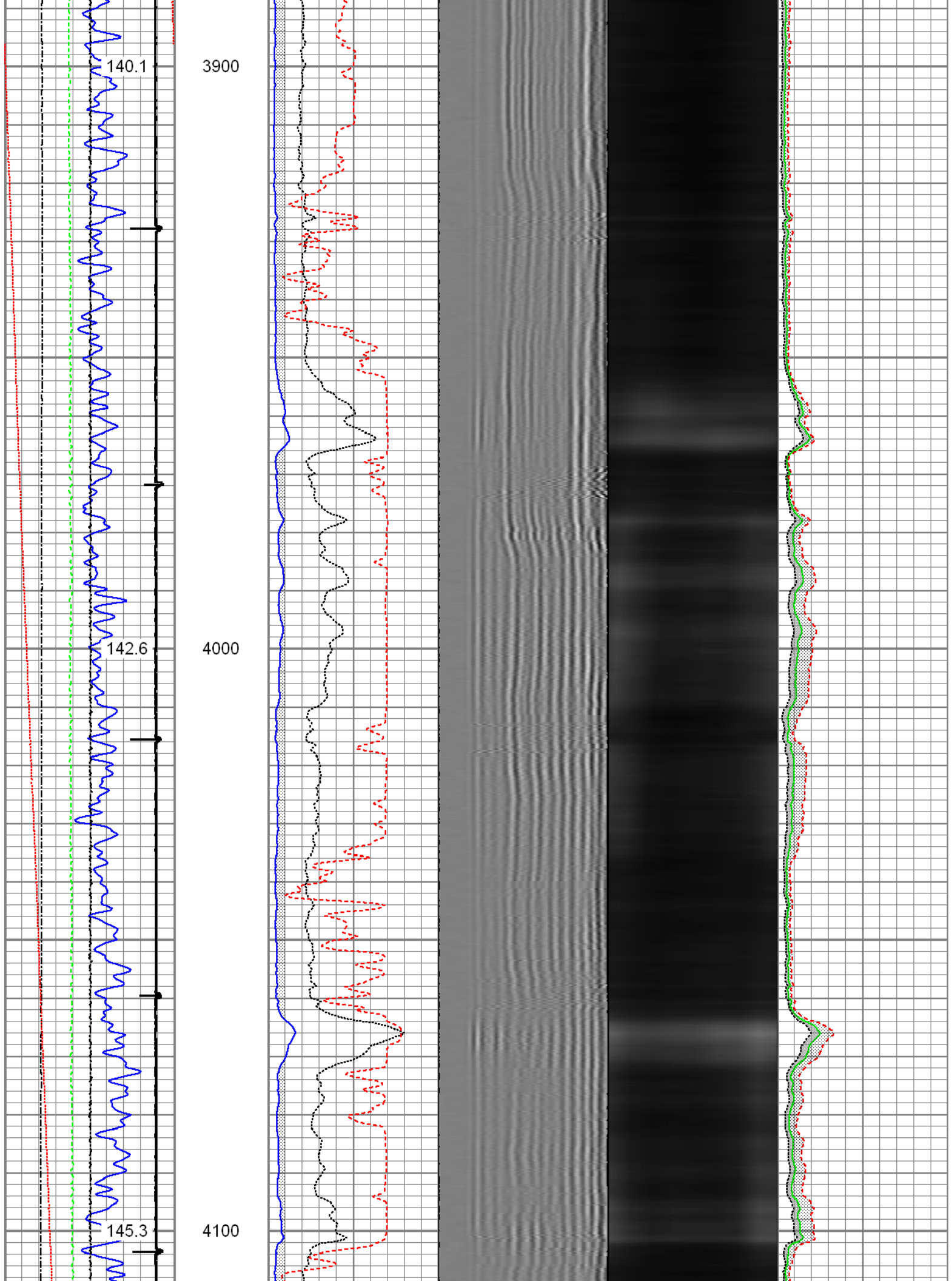


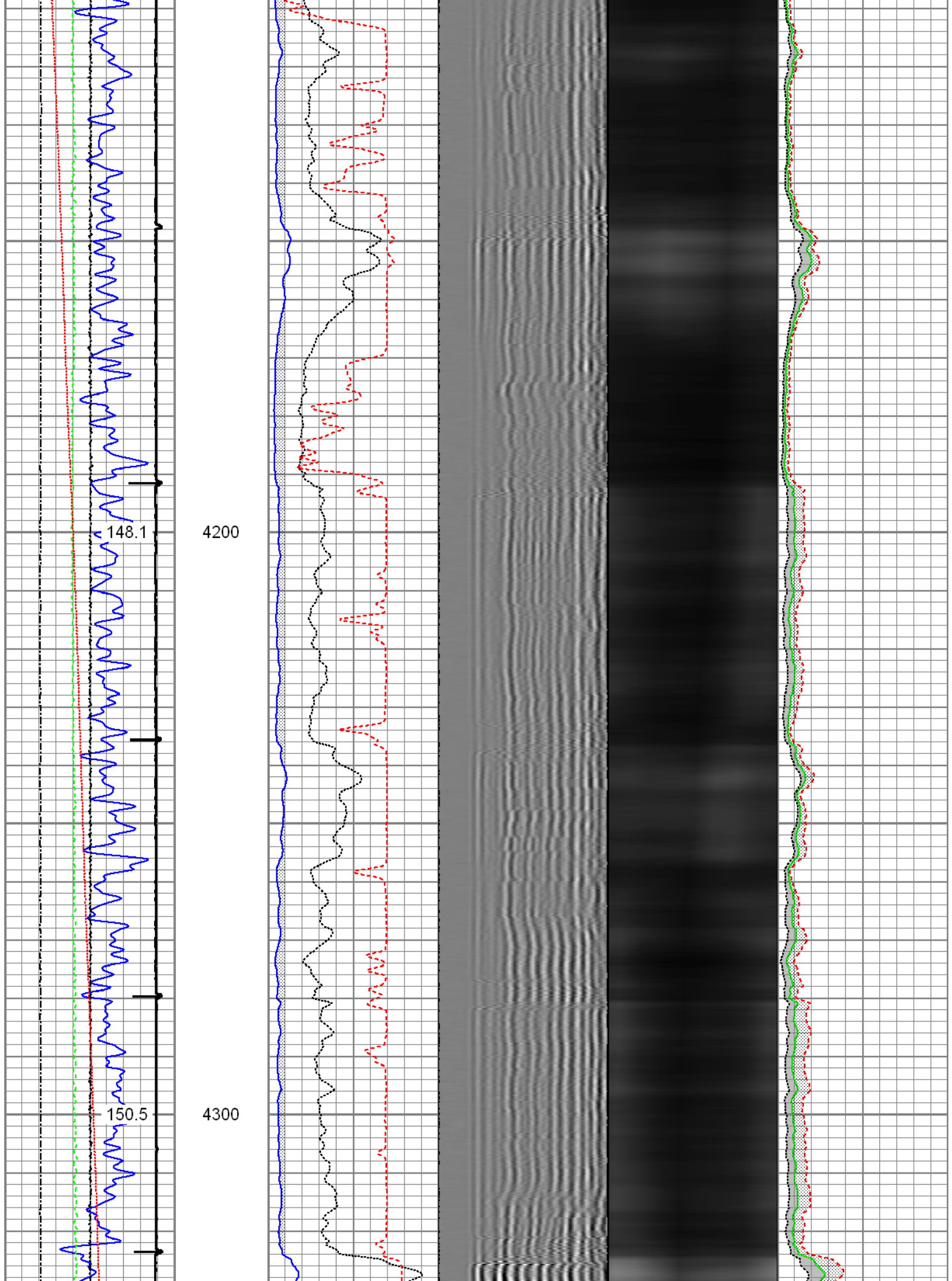


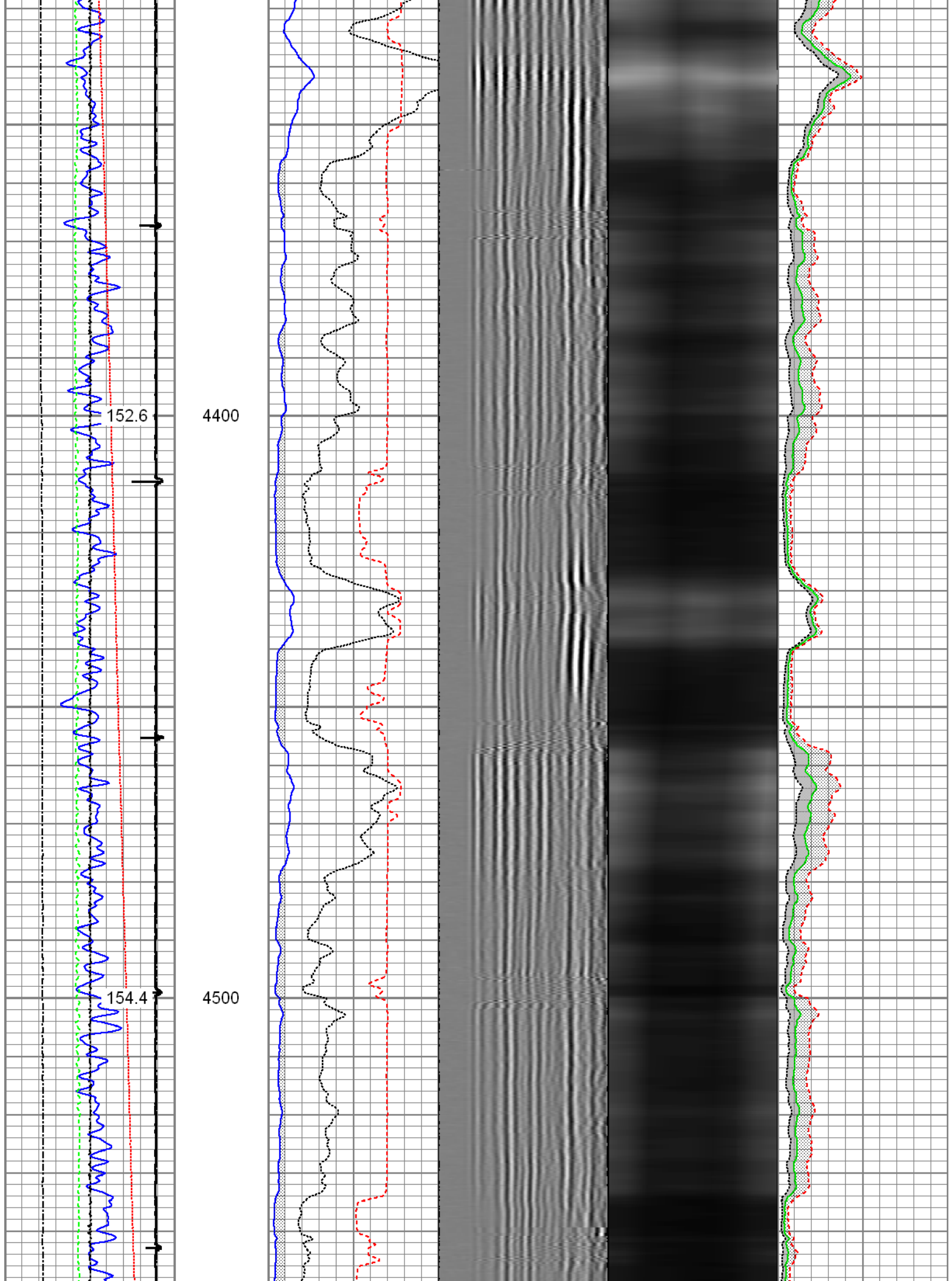


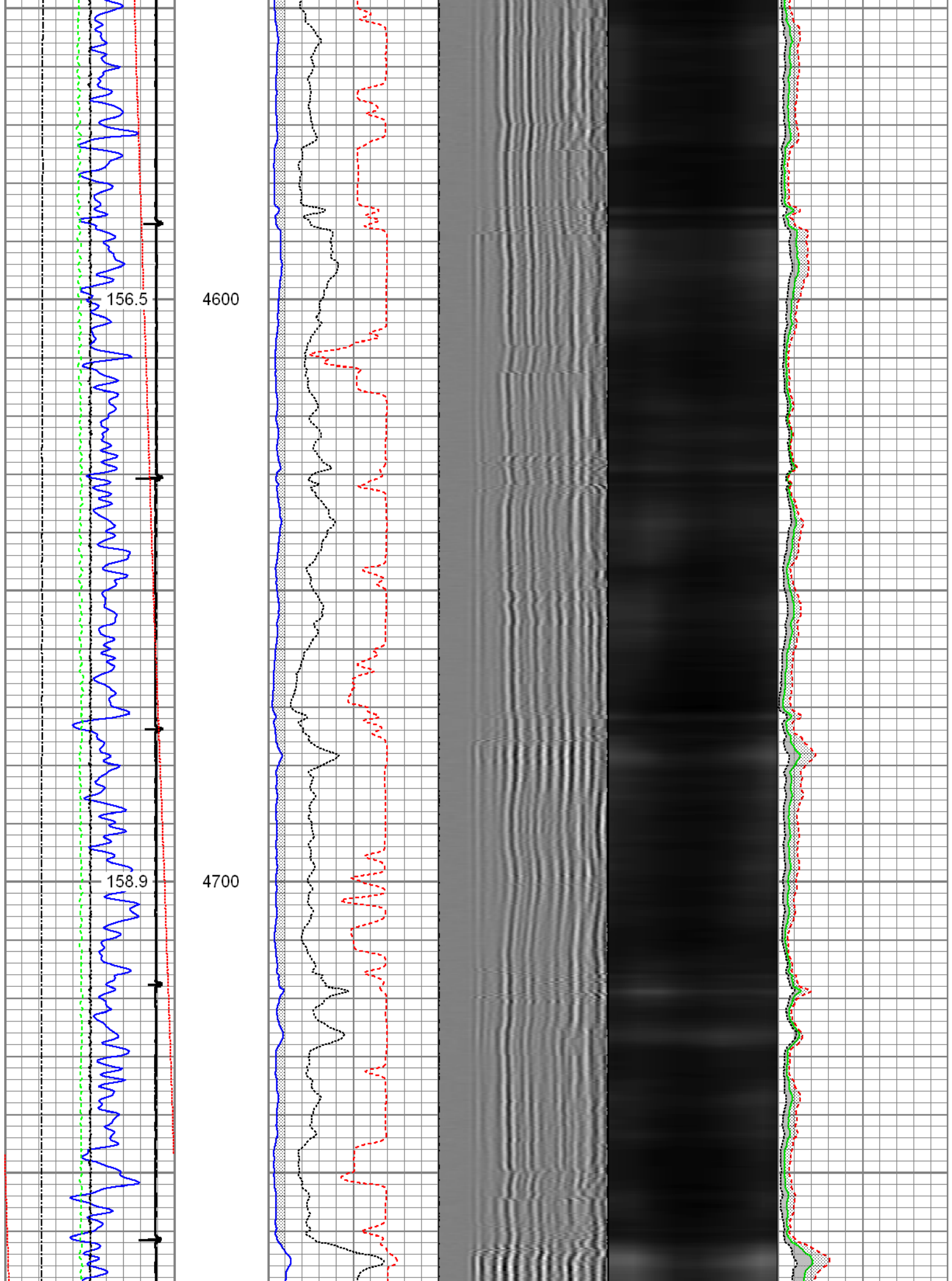


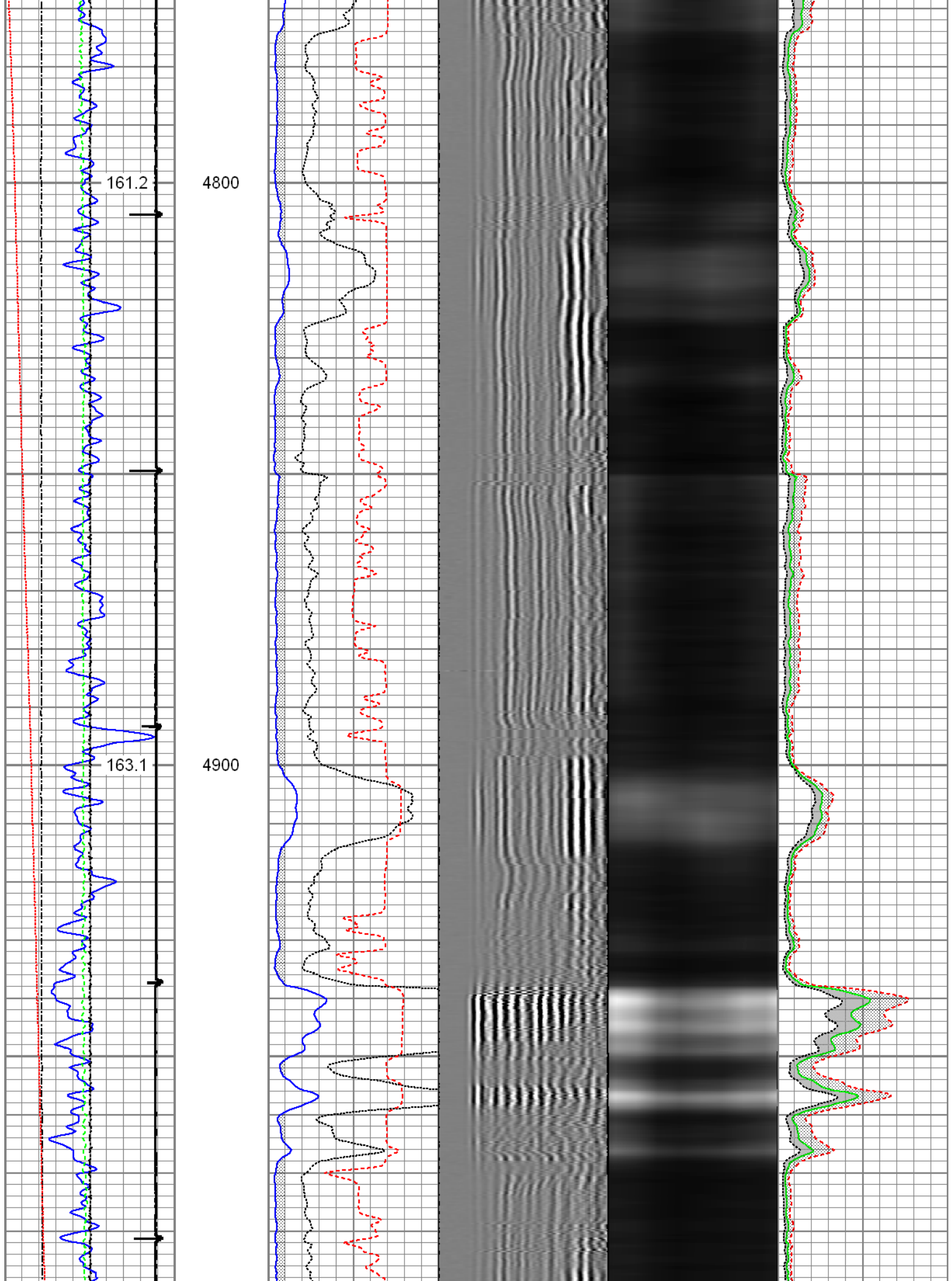


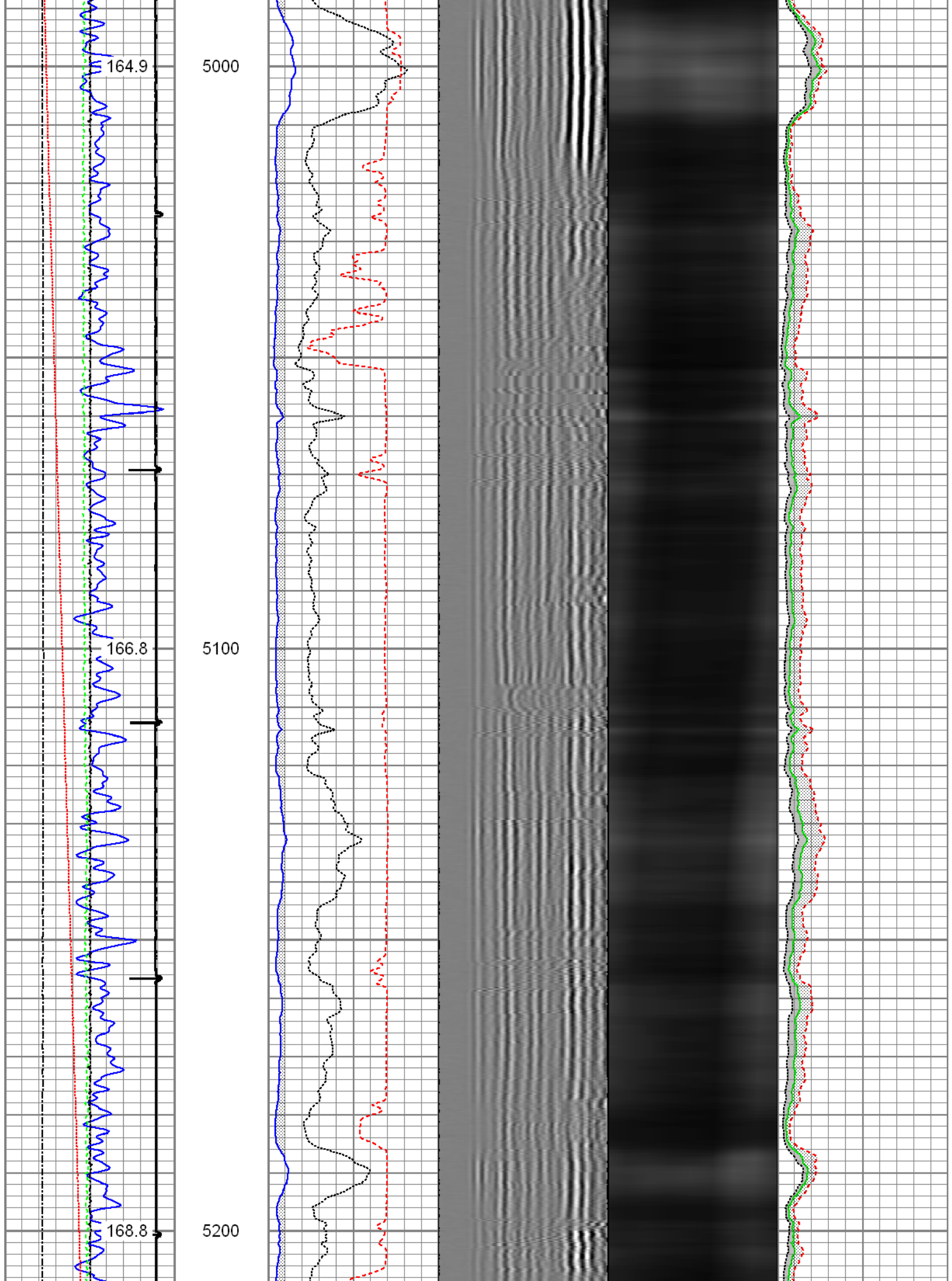


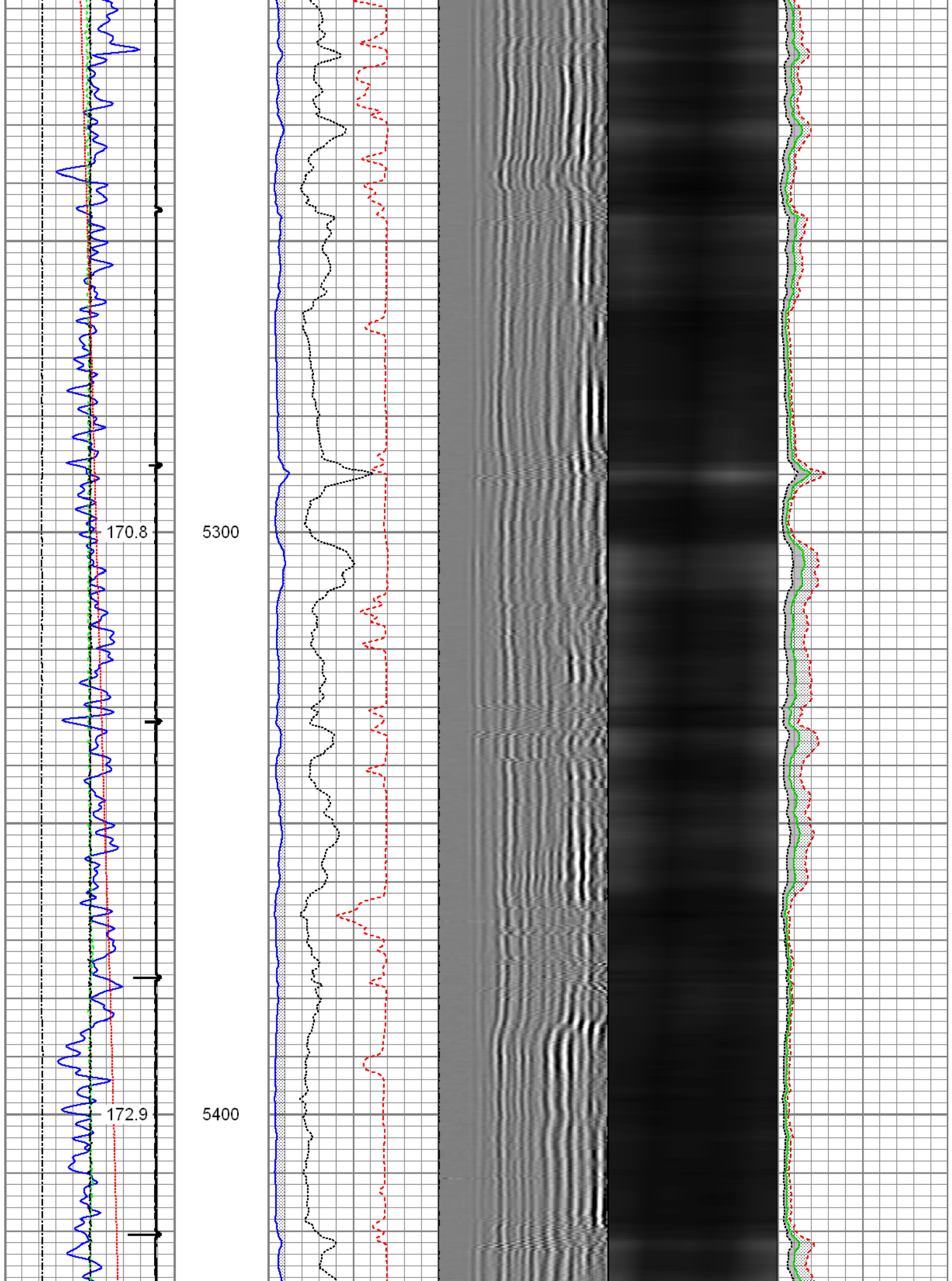


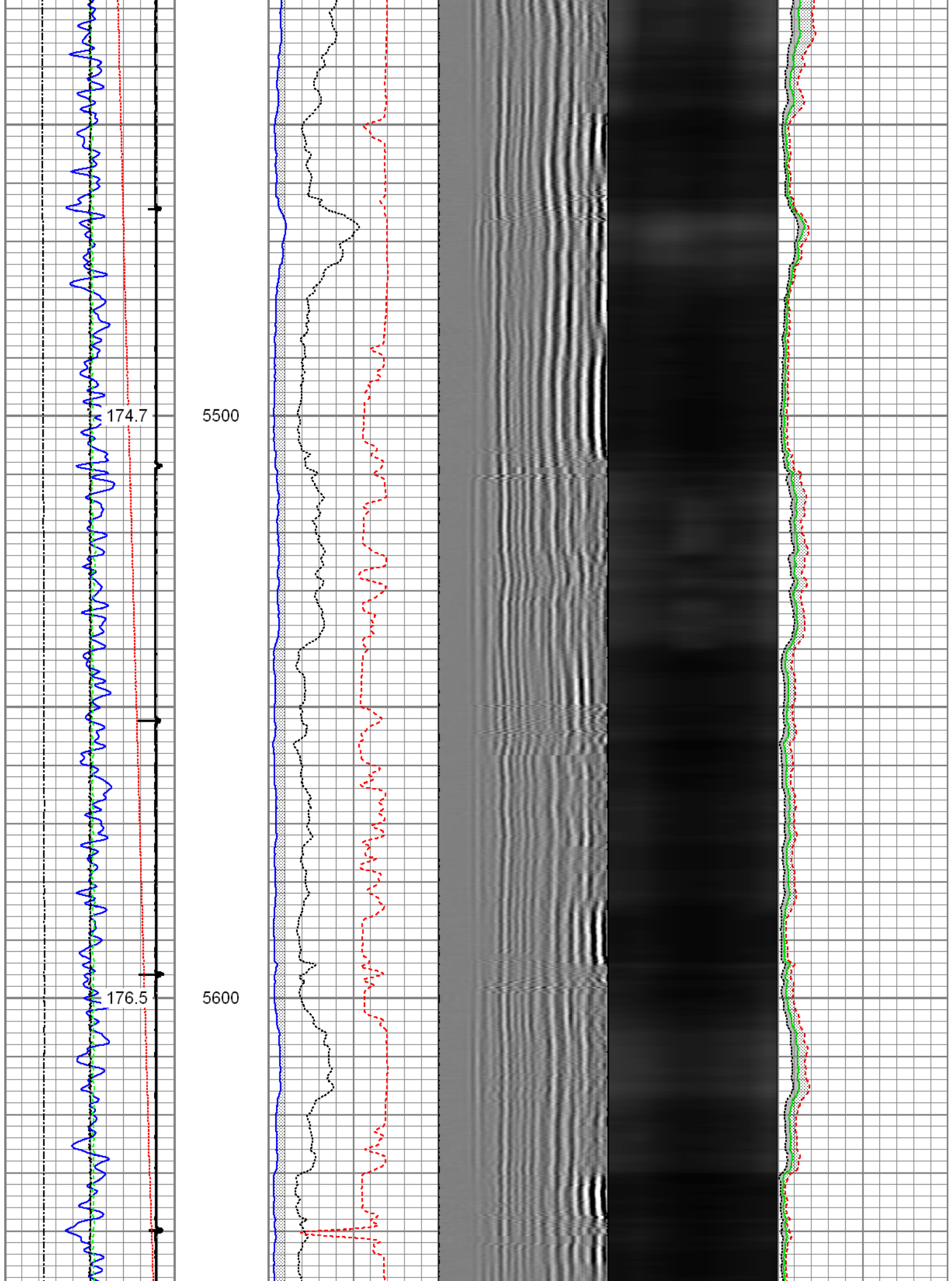


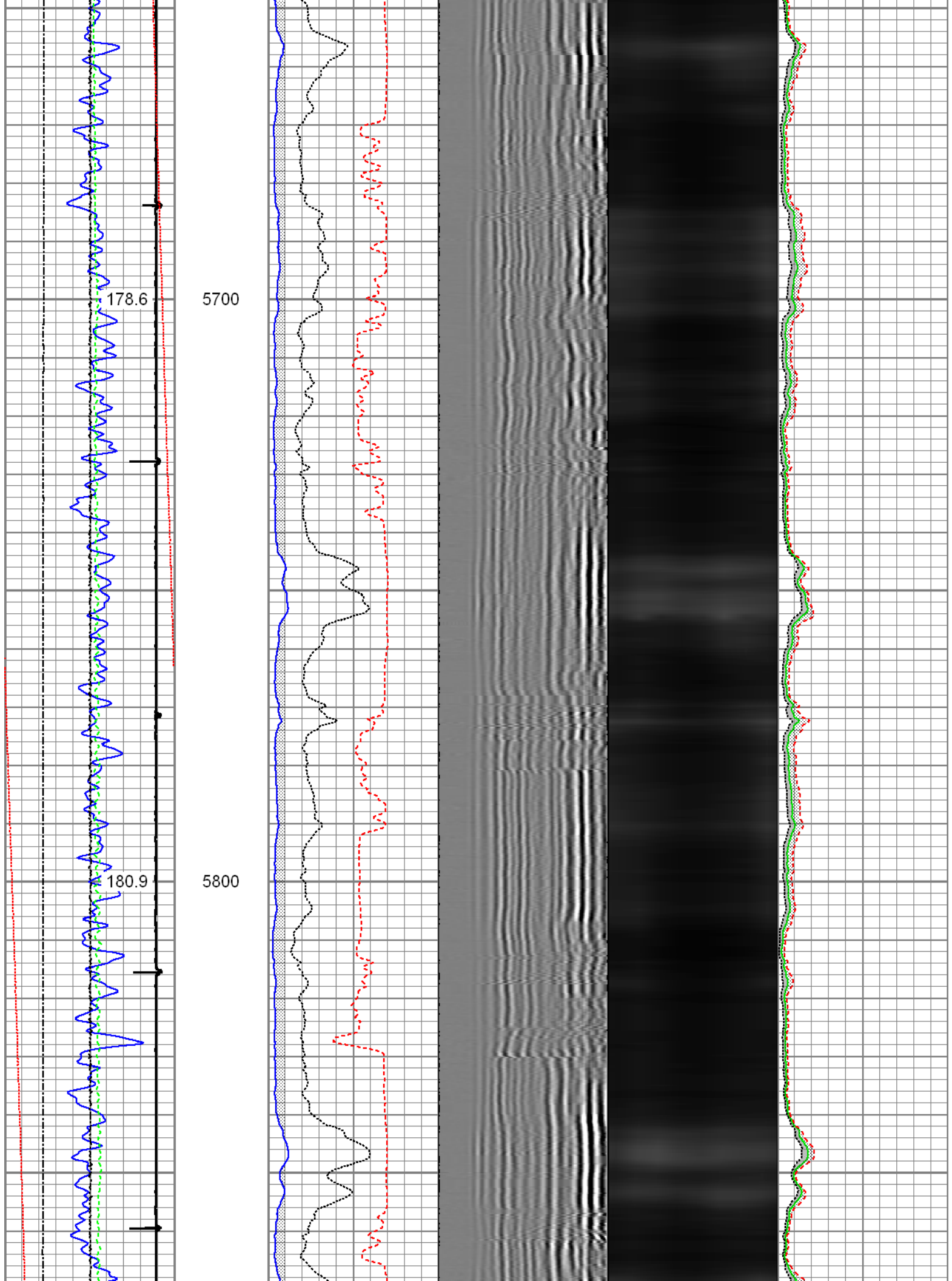


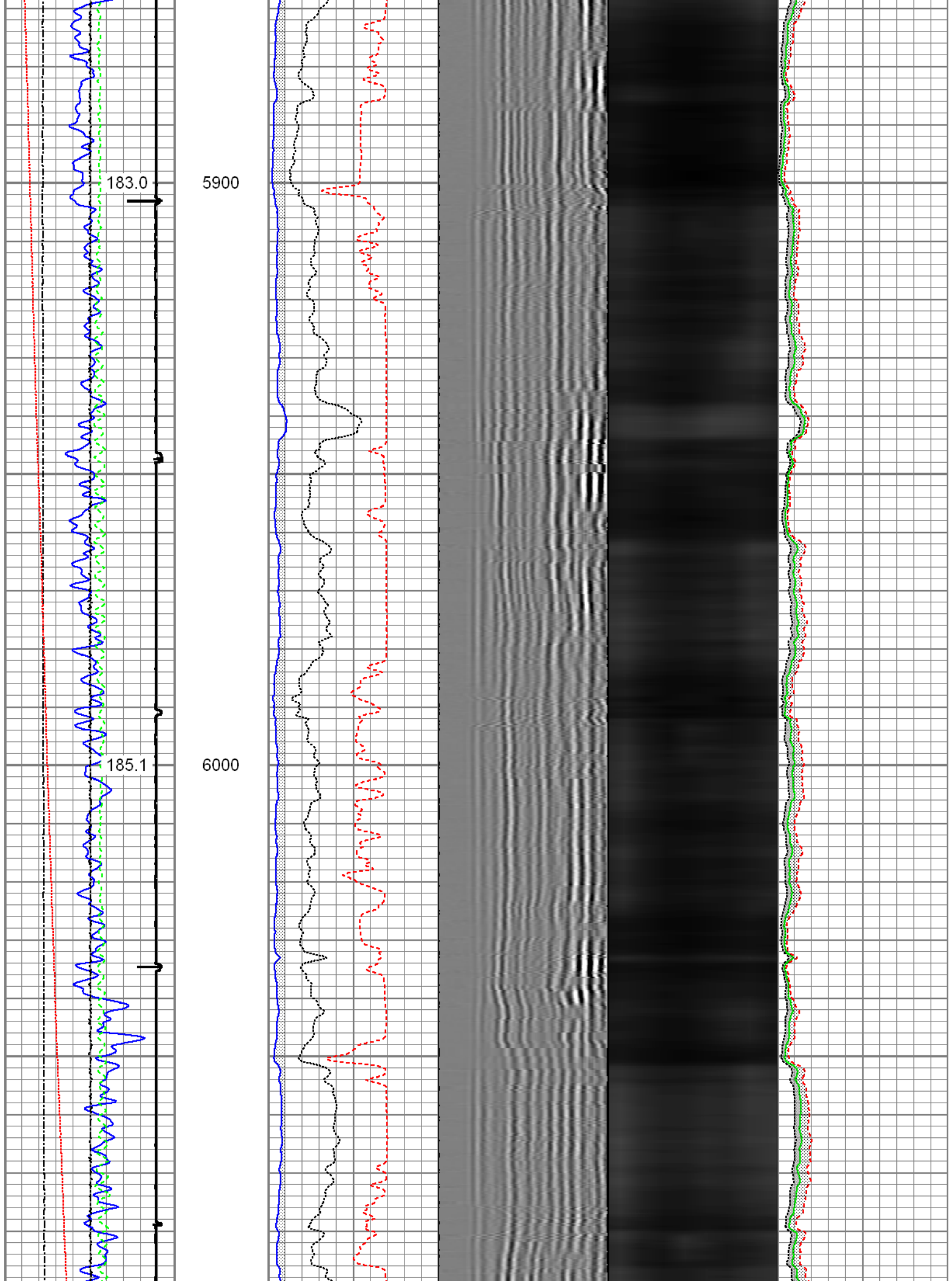


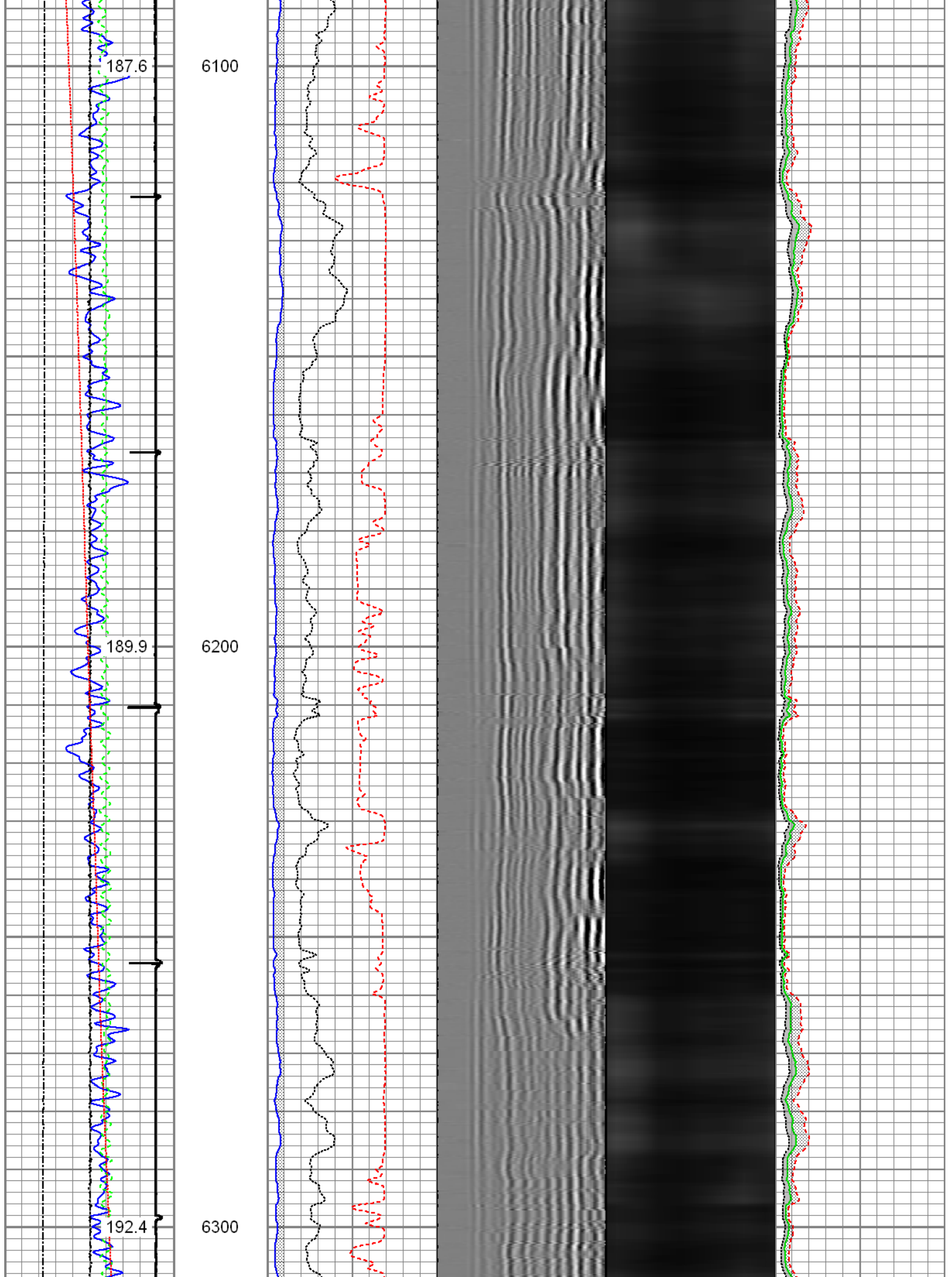


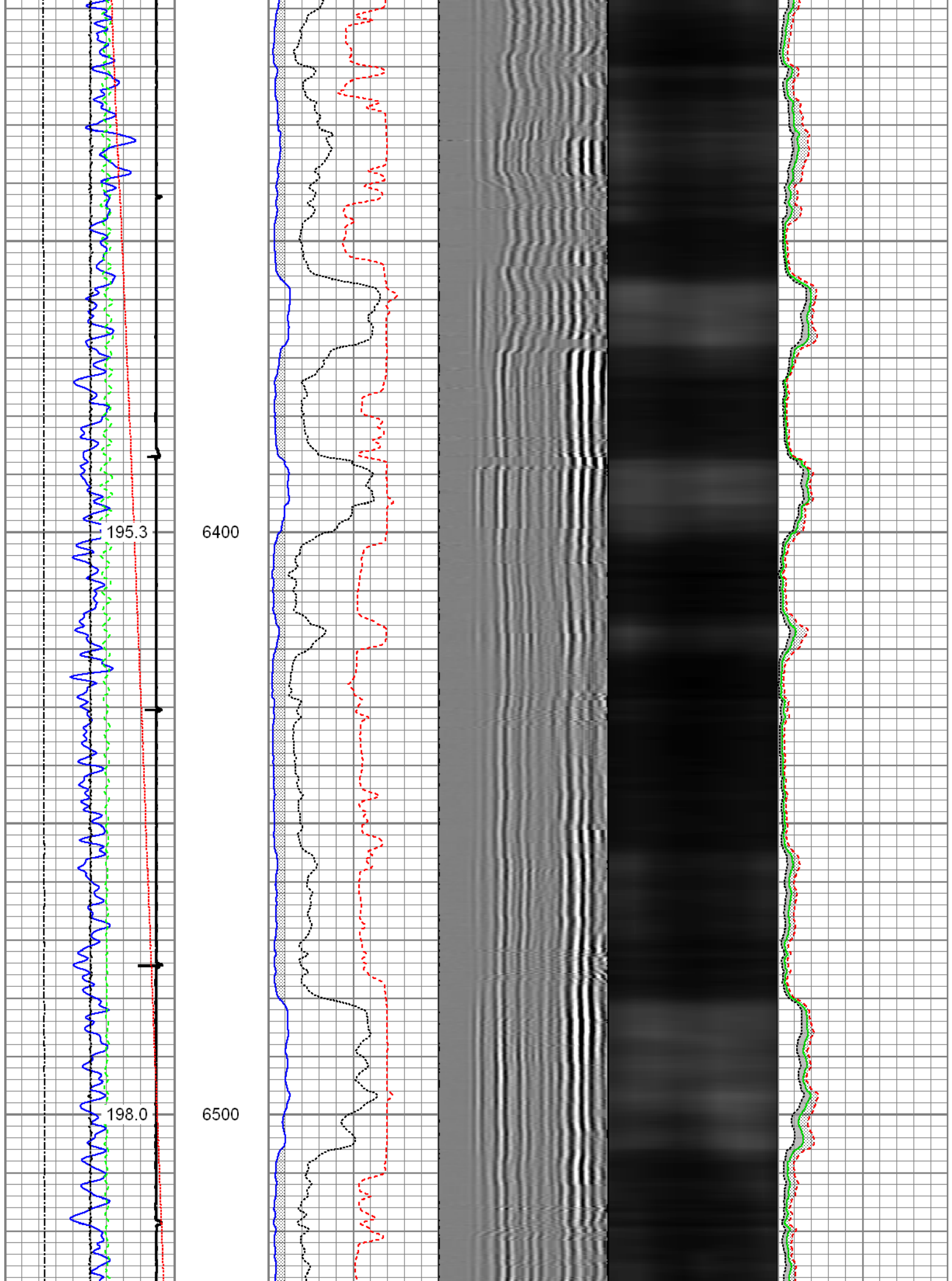


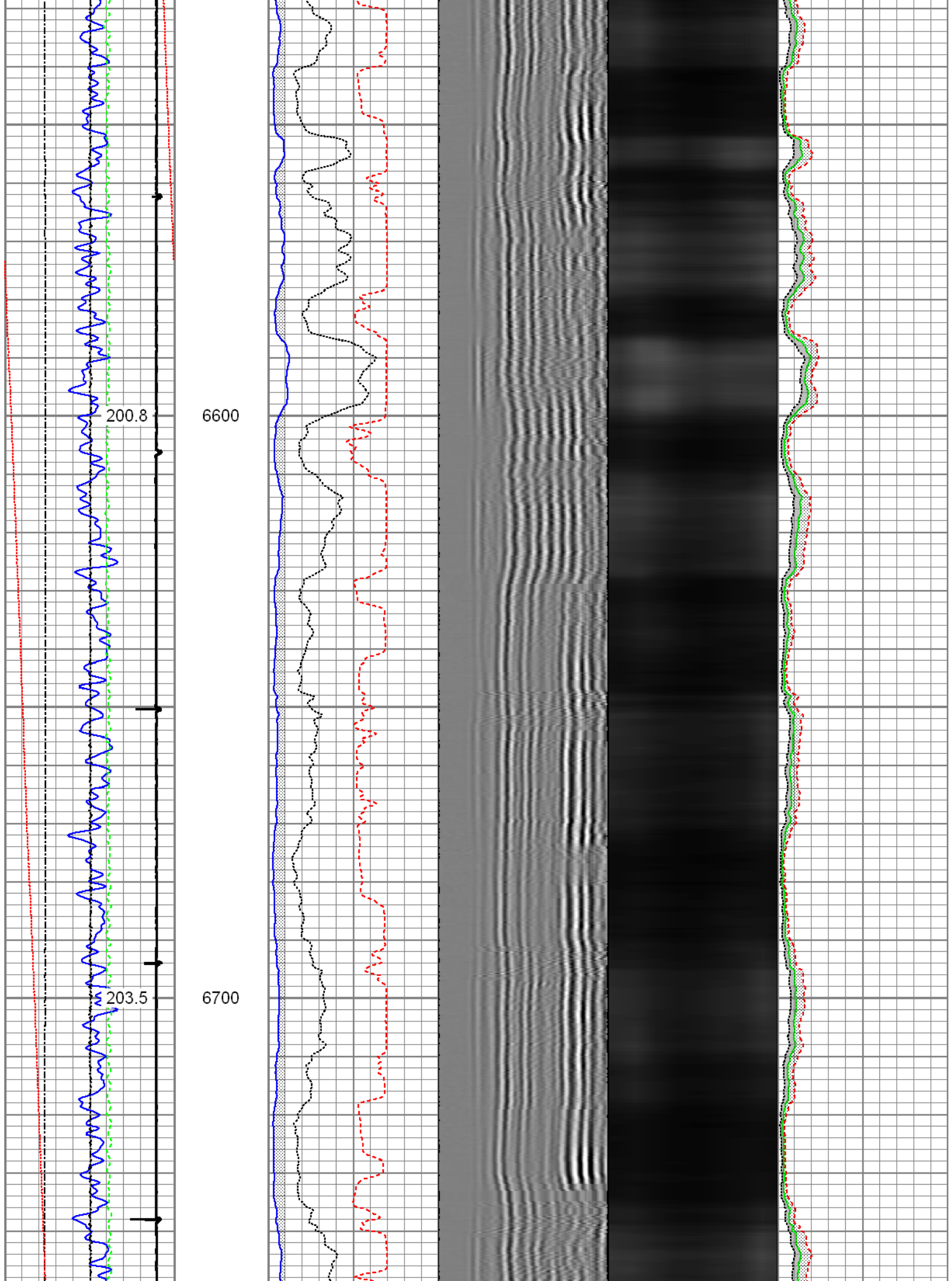


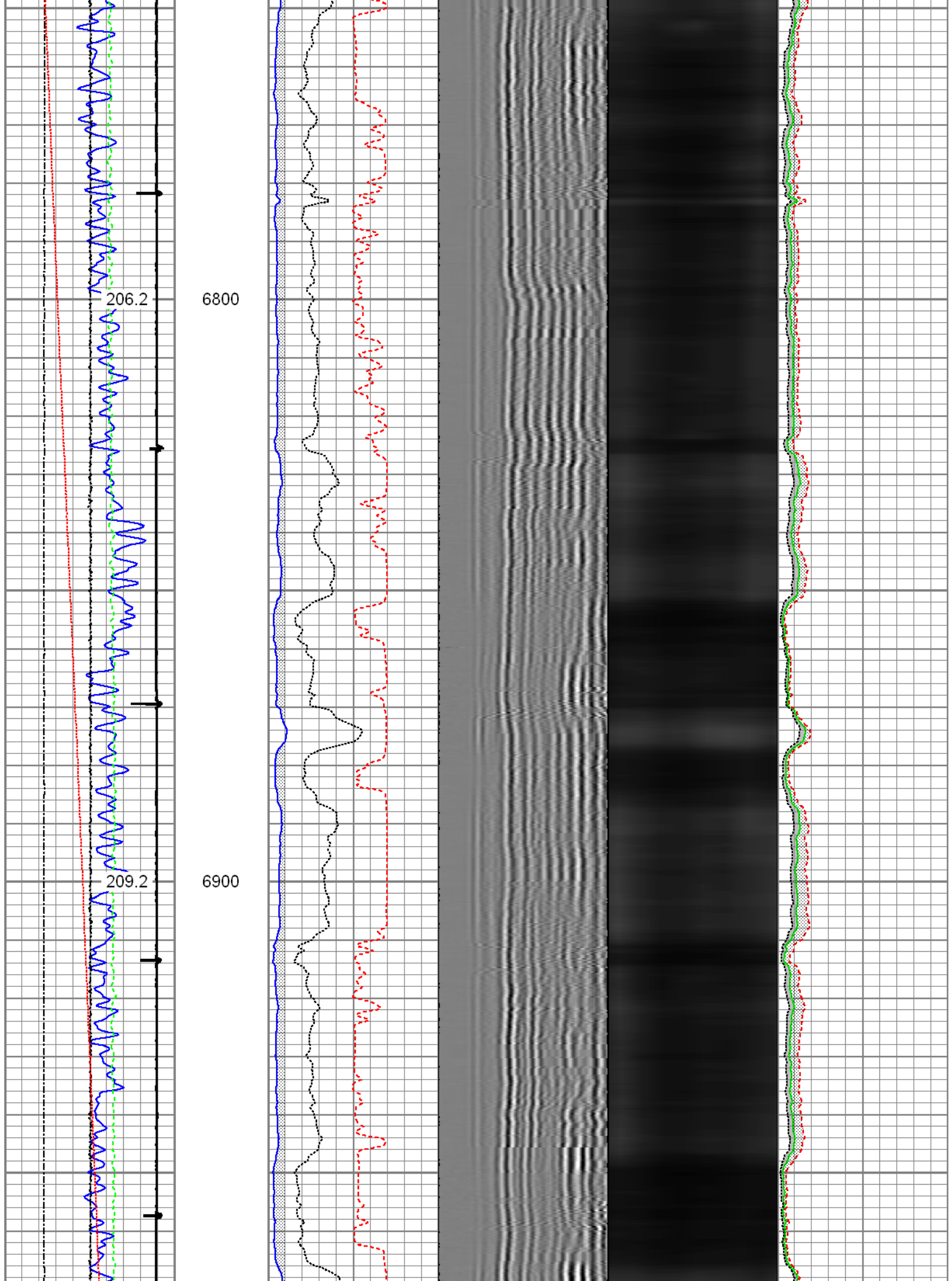


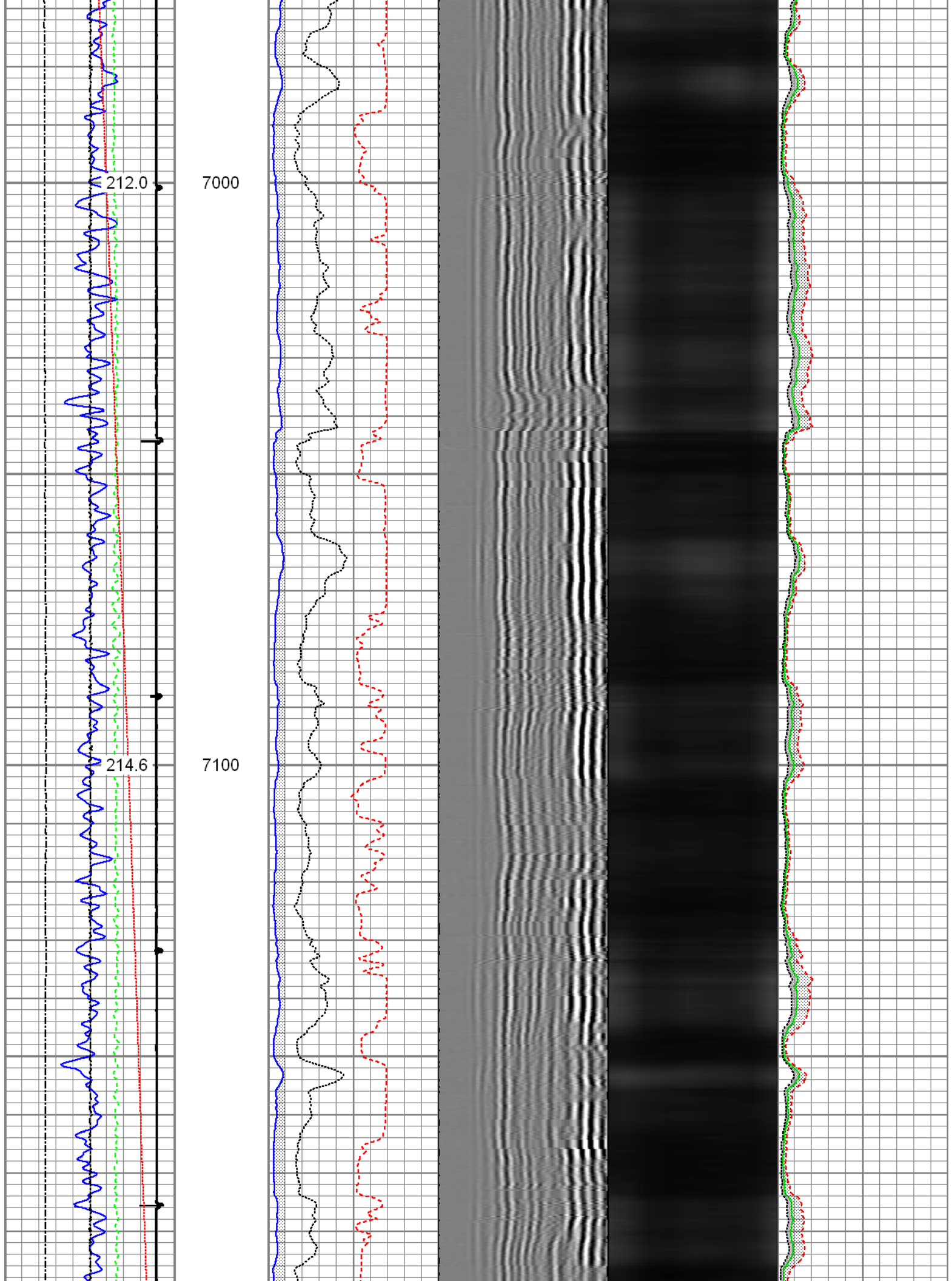


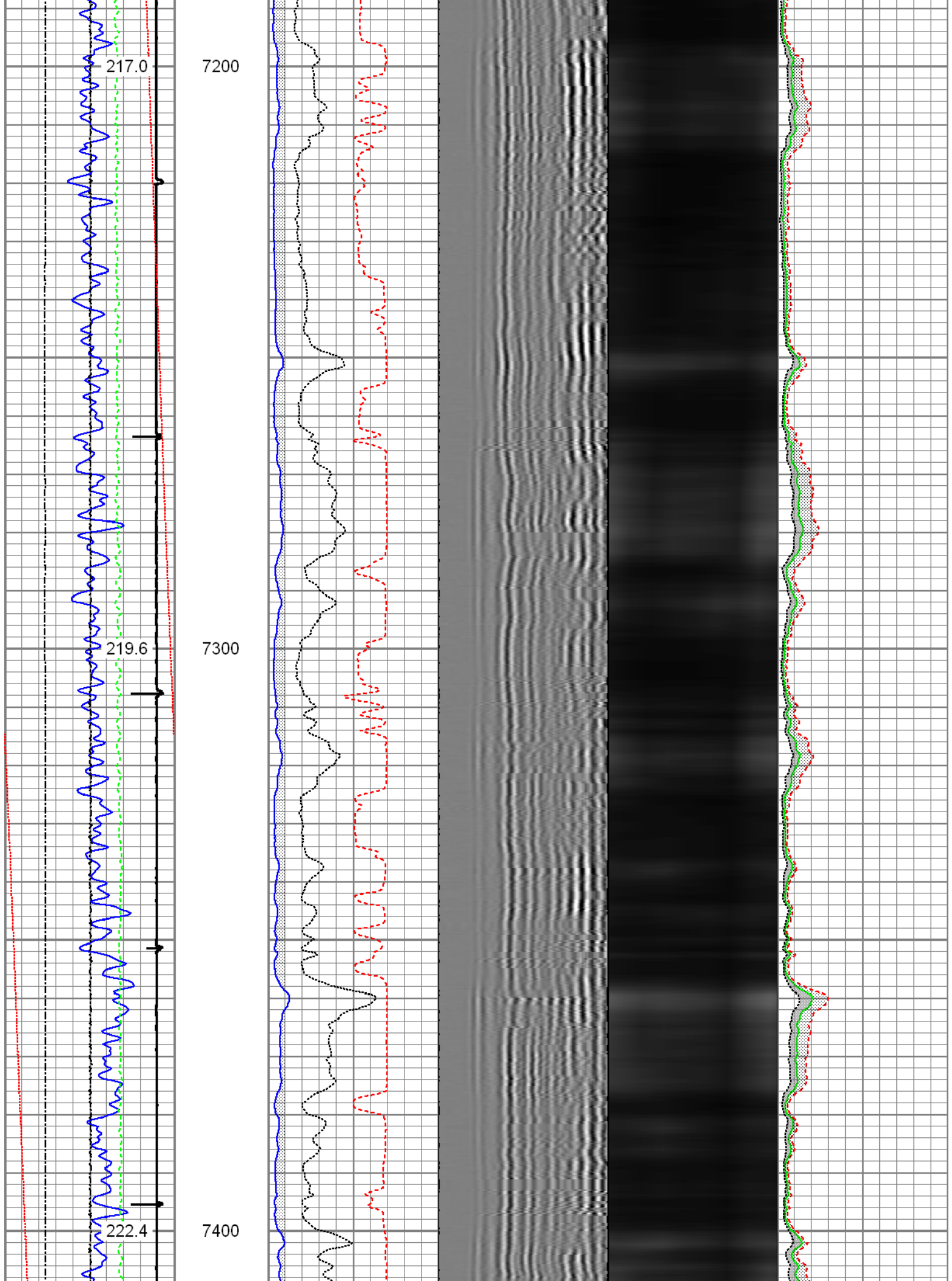


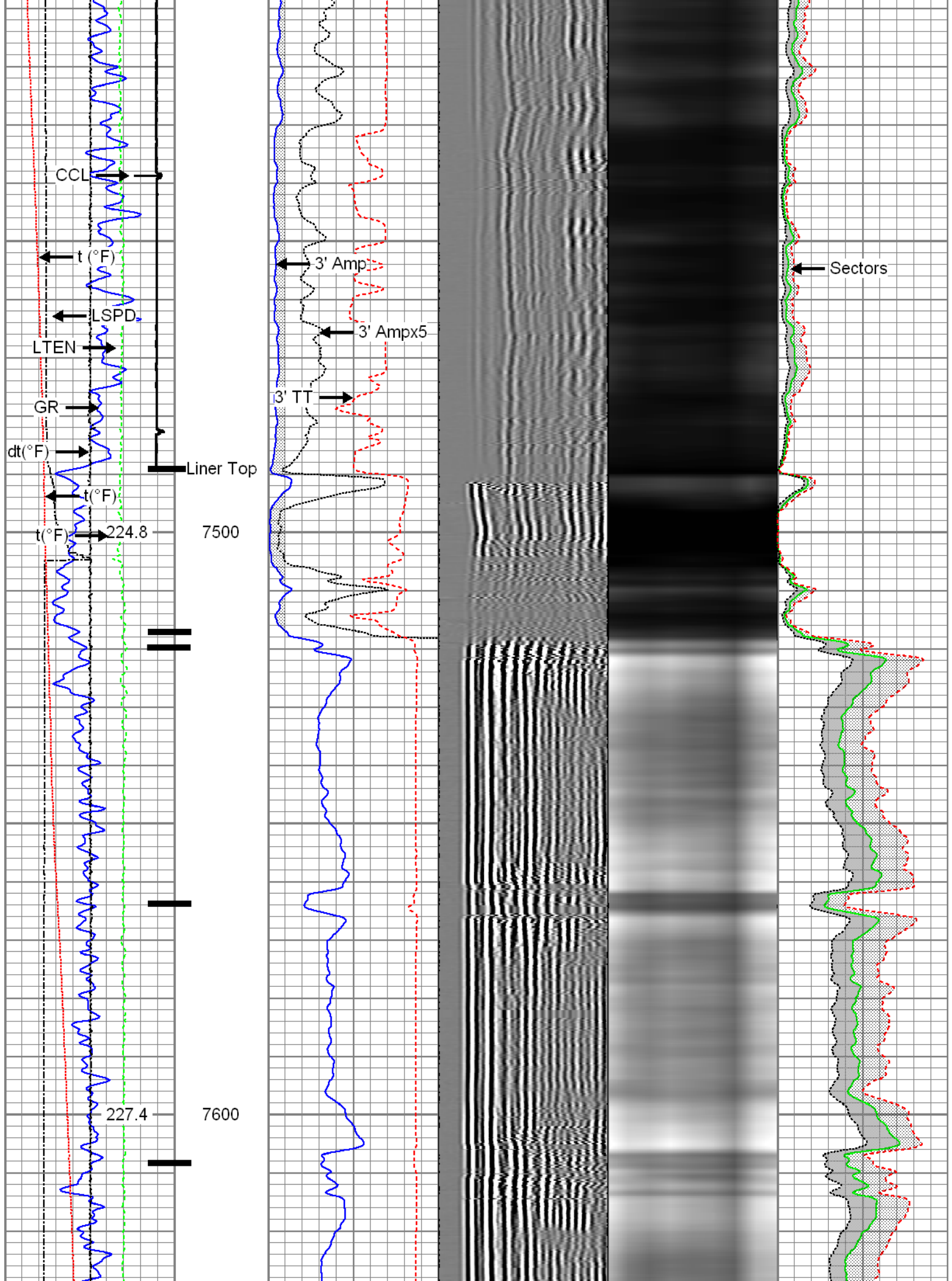


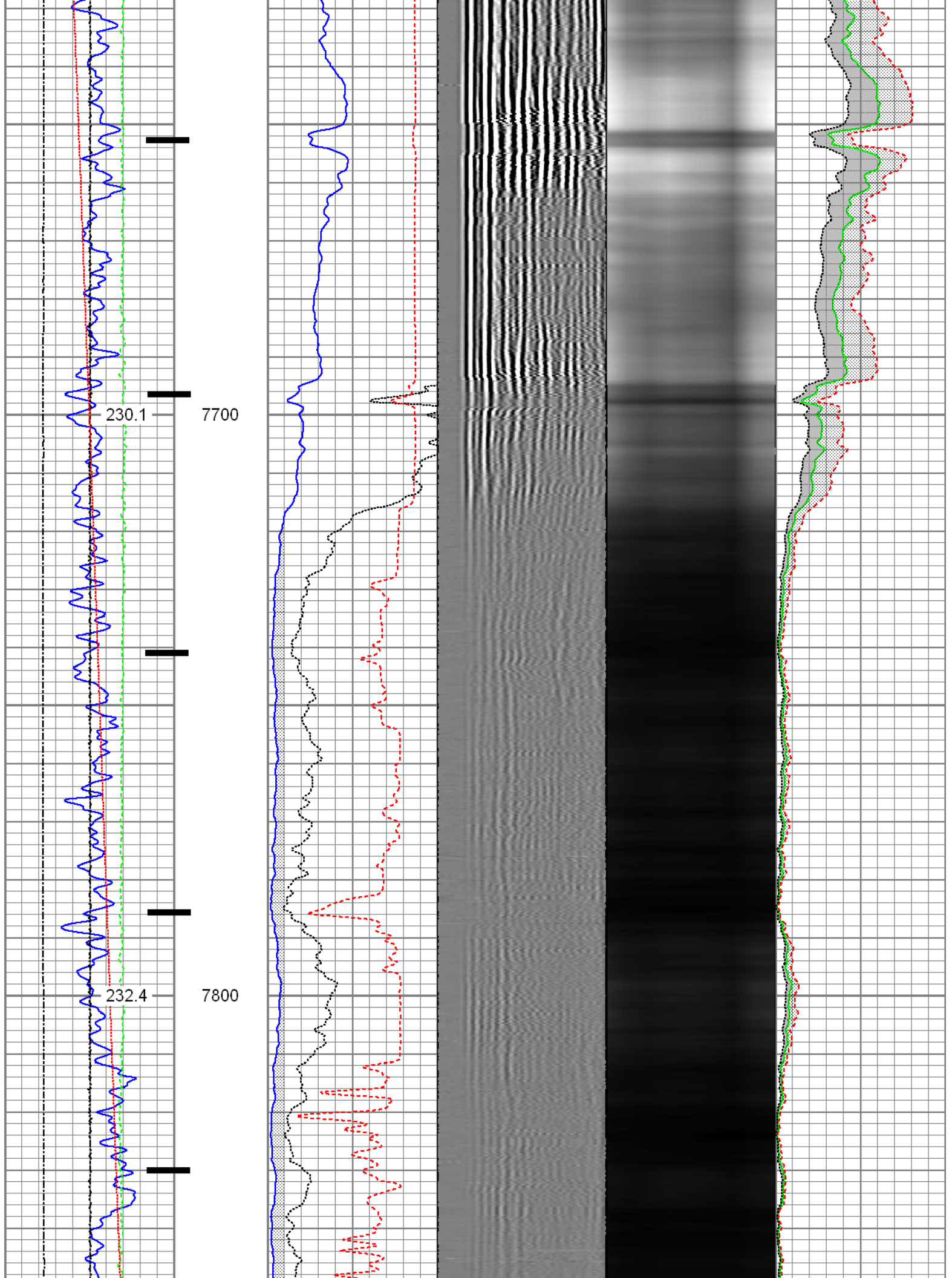


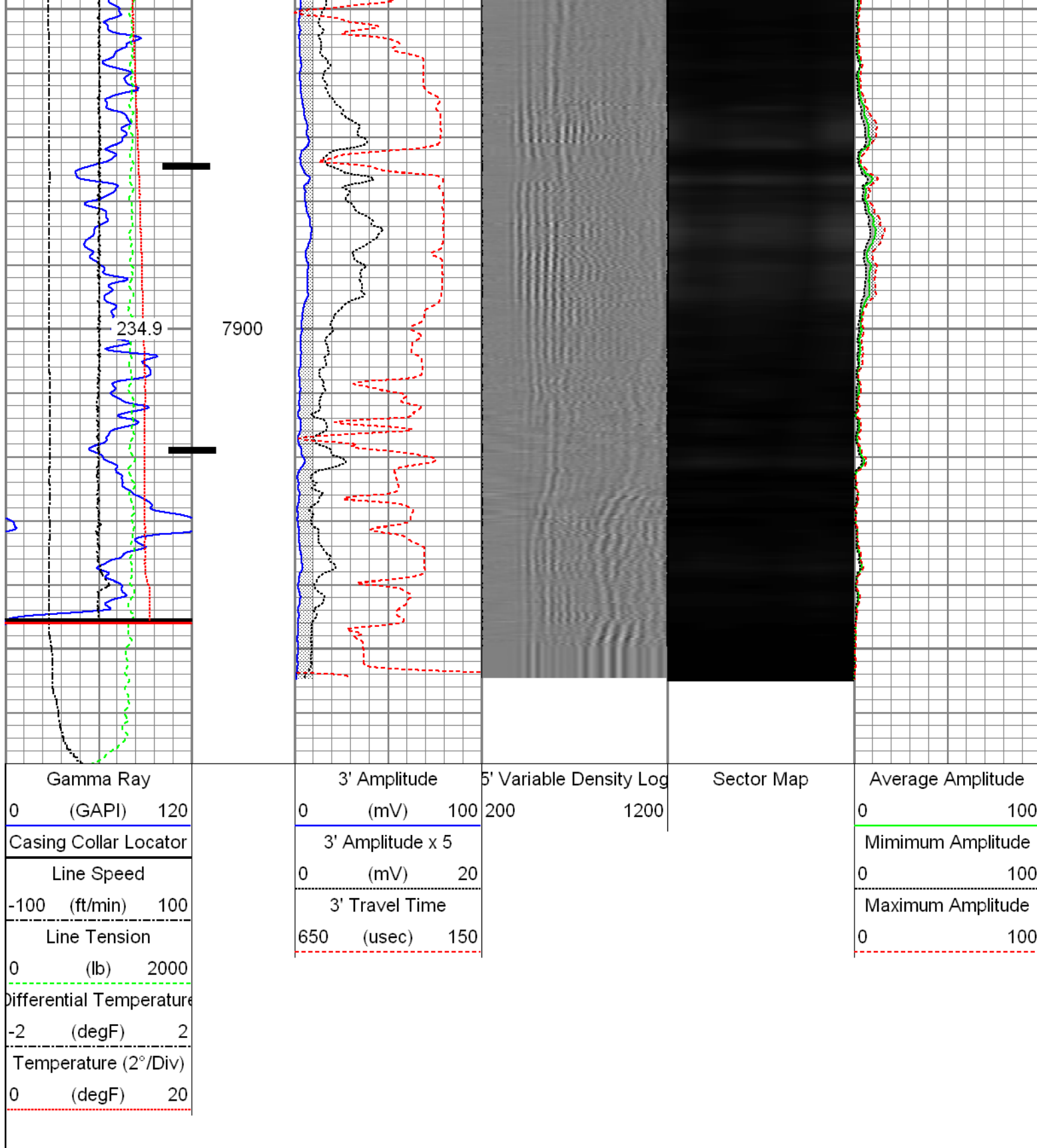










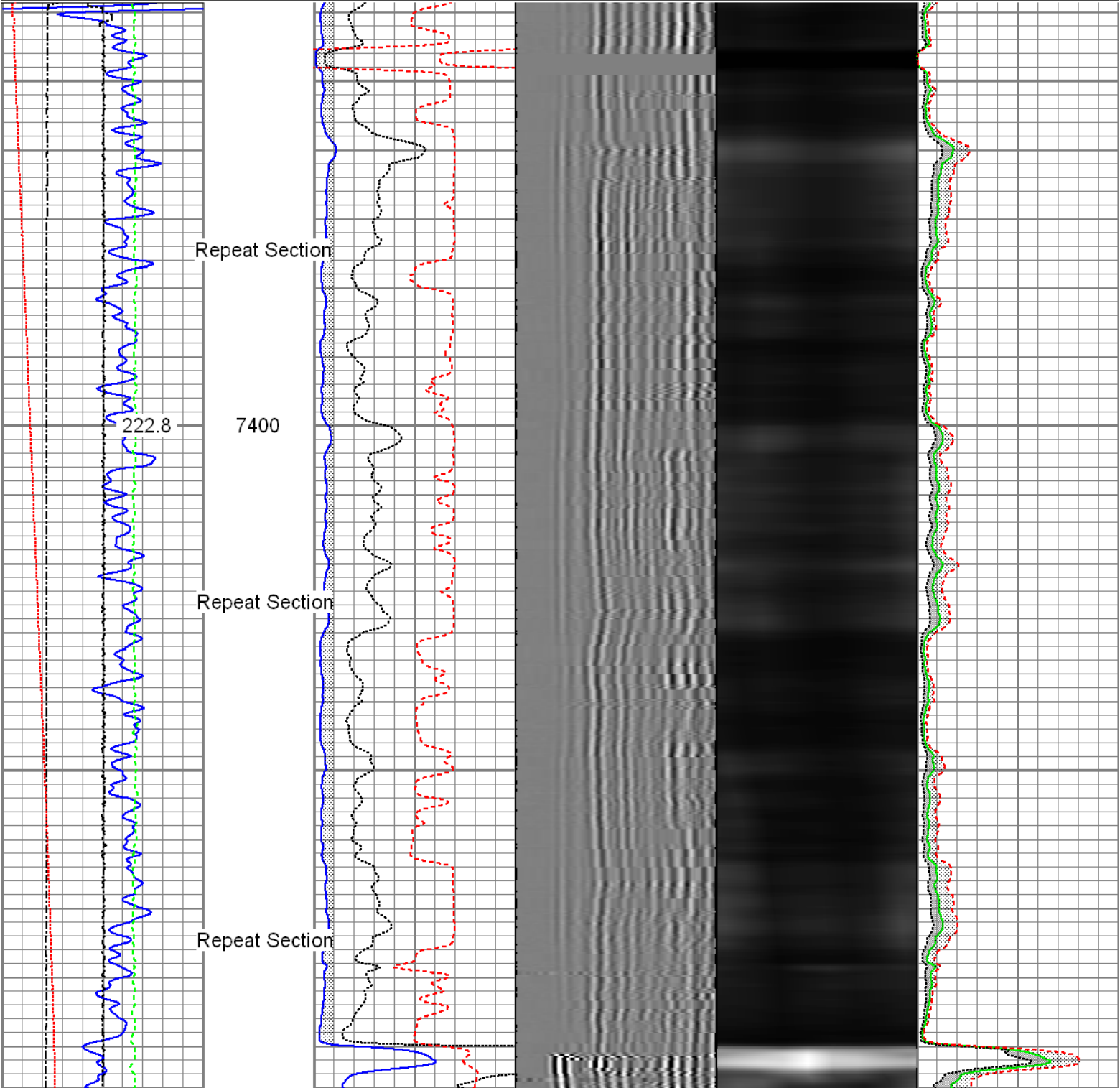


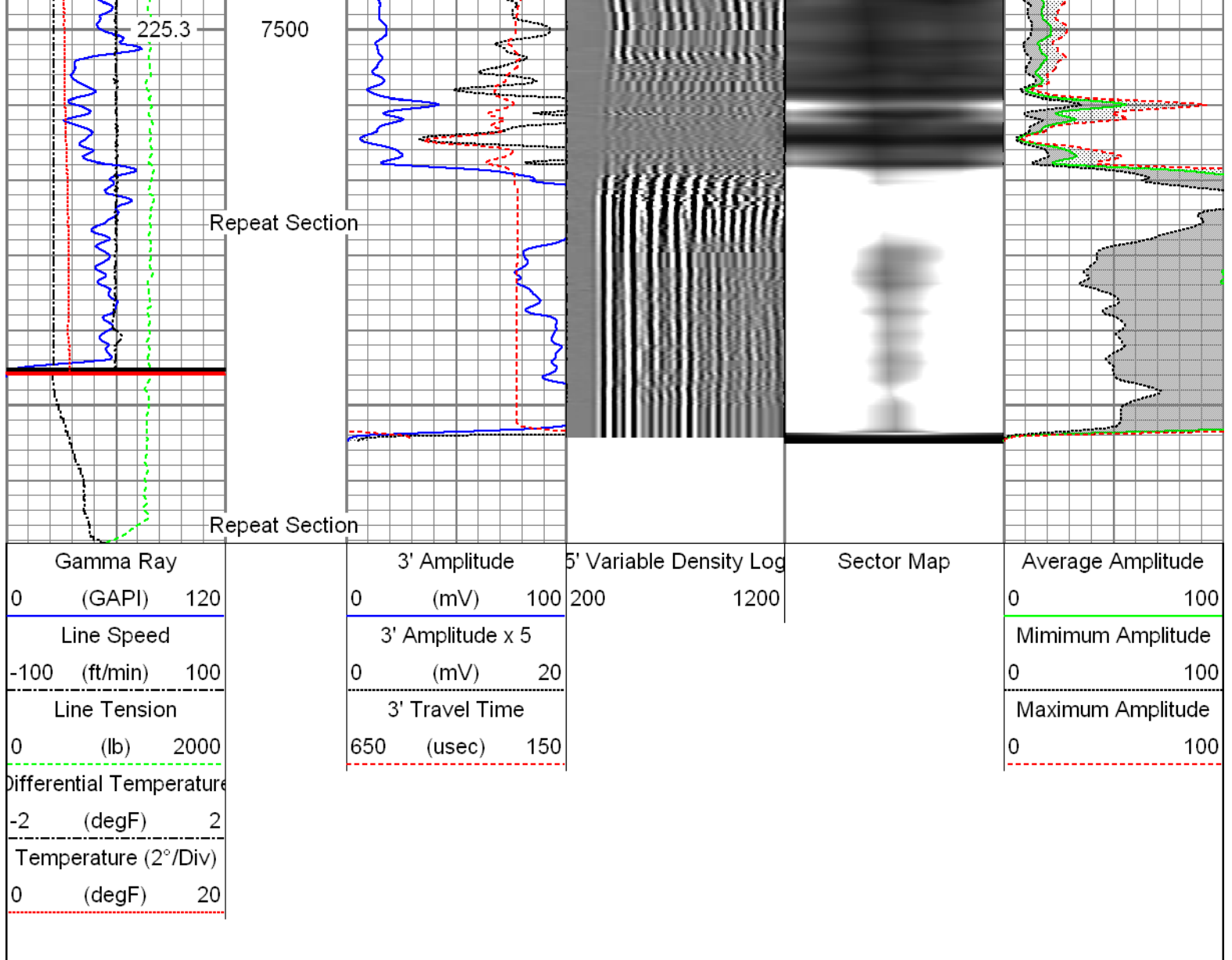
Repeat Pass

Recorded with 2800 PSI surface induced pressure

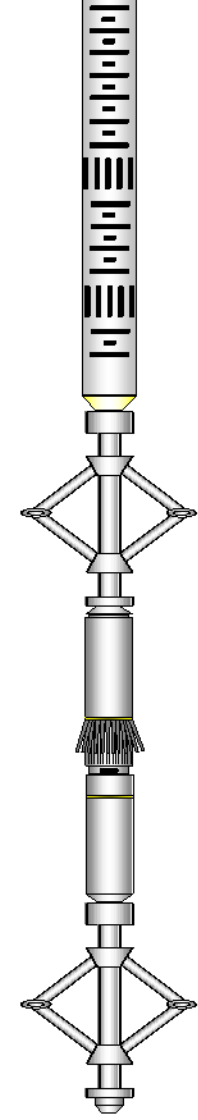
Database File: 0512340407_anadarko_cobra 4n-14hz_04-29-15_mit_rbl.db
 Dataset Pathname: pass4
 Presentation Format: rbt4_mit
 Dataset Creation: Wed Apr 29 10:24:58 2015 by Log 7.0 B1

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
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 (2°/Div)							
0	(degF) 20						





Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
GR	24.71		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
			UW_PRT-UW_PRT_016 (10025097) Platinum Resistance Thermometer	1.04	1.69	5.20
TEMP	23.32		UW_PRC-UW_PRC_057 (1101) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00

WVF3FT	15.85		UW_RBT-UW_RBT_004 (10013454) Sondex Ultrawire 3-1/8" Radial Bond Tool	9.47	3.13	140.00
WVFS1	15.85					
WVFS2	15.85					
WVFS3	15.85					
WVFS4	15.85					
WVFS5	15.85					
WVFS6	15.85					
WVFS7	15.85					
WVFS8	15.85					
CBLTEMP	15.85					
CBLROT	15.85					
WVF5FT	14.85					
			UW_PRC-UW_PRC_057 (1037) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
MIT	5.41		UW_MIT-UW_MIT40_027 (218950) 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: 0512340407_Anadarko_Cobra 4N-14HZ_04-29-15_MIT_RBL.db: field/well/run1/pass6 Total Length: 28.96 ft Total Weight: 324.50 lb O.D. 3.13 in						

Calibration Report		
Database File:	0512340407_anadarko_cobra 4n-14hz_04-29-15_mit_rbl.db	
Dataset Pathname:	pass6	
Dataset Creation:	Wed Apr 29 10:39:34 2015 by Log 7.0 B1	
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: Wed Apr 29 09:44:54 2015

Ring size: (in)	4	Sens	5	Sens	6	Sens	7
Finger 01:	1439	276.0	1715	288.0	2003	299.0	2302
Finger 02:	1503	254.0	1757	259.0	2016	263.0	2279
Finger 03:	1418	277.0	1695	291.0	1986	298.0	2284
Finger 04:	1435	280.0	1715	290.0	2005	291.0	2296
Finger 05:	1471	273.0	1744	278.0	2022	281.0	2303
Finger 06:	1396	285.0	1681	295.0	1976	304.0	2280
Finger 07:	1419	285.0	1704	291.0	1995	299.0	2294
Finger 08:	1412	279.0	1691	288.0	1979	294.0	2273
Finger 09:	1404	285.0	1689	295.0	1984	301.0	2285
Finger 10:	1425	272.0	1697	288.0	1985	289.0	2274
Finger 11:	1408	286.0	1694	292.0	1986	299.0	2285
Finger 12:	1370	281.0	1651	298.0	1949	306.0	2255
Finger 13:	1464	268.0	1732	275.0	2007	275.0	2282
Finger 14:	1403	273.0	1676	285.0	1961	294.0	2255
Finger 15:	1395	292.0	1687	293.0	1980	304.0	2284
Finger 16:	1404	280.0	1684	290.0	1974	300.0	2274
Finger 17:	1418	287.0	1705	298.0	2003	307.0	2310
Finger 18:	1357	279.0	1636	287.0	1923	296.0	2219
Finger 19:	1420	280.0	1700	289.0	1989	299.0	2288
Finger 20:	1428	284.0	1712	290.0	2002	301.0	2303
Finger 21:	1384	291.0	1675	305.0	1980	315.0	2295
Finger 22:	1409	274.0	1683	280.0	1963	294.0	2257
Finger 23:	1406	284.0	1690	287.0	1977	299.0	2276
Finger 24:	1441	290.0	1731	284.0	2015	292.0	2307
Finger 25:	1421	288.0	1709	289.0	1998	300.0	2298
Finger 26:	1389	292.0	1681	294.0	1975	305.0	2280
Finger 27:	1447	281.0	1728	281.0	2009	293.0	2302
Finger 28:	1436	285.0	1721	291.0	2012	303.0	2315
Finger 29:	1485	272.0	1757	271.0	2028	285.0	2313
Finger 30:	1398	289.0	1687	286.0	1973	305.0	2278
Finger 31:	1434	288.0	1722	291.0	2013	304.0	2317
Finger 32:	1491	267.0	1758	277.0	2035	280.0	2315
Finger 33:	1443	285.0	1728	297.0	2025	306.0	2331
Finger 34:	1452	278.0	1730	288.0	2018	304.0	2322
Finger 35:	1502	263.0	1765	266.0	2031	277.0	2308
Finger 36:	1483	270.0	1753	279.0	2032	291.0	2323
Finger 37:	1456	280.0	1736	295.0	2031	298.0	2329
Finger 38:	1534	252.0	1786	261.0	2047	268.0	2315
Finger 39:	1451	281.0	1732	281.0	2013	286.0	2299
Finger 40:	1408	290.0	1698	295.0	1993	305.0	2298

Segmented Cement Bond Log Calibration Report

Serial Number: 10013454
Tool Model: UW_RBT_004

Calibration Casing Diameter: 7.000 in
Calibration Depth: 281.383 ft

Master Calibration, performed Wed Apr 29 09:58:01 2015:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	-0.001	0.621	1.000	62.165	98.225	1.120
5FT	-0.004	0.720	1.000	62.165	84.511	1.299
S1	-0.001	0.561	0.000	100.000	177.724	0.217
S2	-0.004	0.672	0.000	100.000	148.106	0.524

S3	-0.002	0.653	0.000	100.000	152.543	0.372
S4	-0.004	0.526	0.000	100.000	188.808	0.685
S5	-0.002	0.560	0.000	100.000	177.940	0.274
S6	-0.003	0.634	0.000	100.000	157.104	0.407
S7	-0.002	0.657	0.000	100.000	151.738	0.365
S8	-0.002	0.679	0.000	100.000	146.758	0.319

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:	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	Cobra 4N-14HZ
Field	Wattenberg
County	Weld
State	Colorado