

Radial Cement Bond Gamma Ray Casing Collar Log

Company	Whiting Oil and Gas Corporation	Company	Whiting Oil and Gas Corporation
Well	Razor 11G-1409A	Well	Razor 11G-1409A
Field	Wildcat	Field	Wildcat
County	Weld	County	Weld
State	Colorado	State	Colorado
Location:	API # : 05-123-38728	Other Services	GR RBP MIT
Permanent Datum	SEC 11 TWP 10N RGE 58W	Elevation	
Log Measured From	Ground Level	Elevation	4978'
Drilling Measured From	Kelly Bushing	Elevation	17 FT
	Kelly Bushing	Elevation	K.B. 4995' D.F. --- G.L. 4978'

Date	26-MAR-2015
Run Number	Three
Depth Driller	13760 FT
Depth Logger	5395 FT
Bottom Logged Interval	5250 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	190°F
Estimated Cement Top	Surface
Time Well Ready	ROA
Time Logger on Bottom	2:20 PM
Equipment Number	HD-0119
Location	Fort Lupton, CO
Recorded By	R. Fogarty
Witnessed By	Gary Chandler

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 LTC	Surface	1,879 FT		
Intermediate #1							
Intermediate #2	7	29	P-110	Surface	6,281 FT		
Liner	4 1/2	11.6	HCP-110	5,219 FT	13,760 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.

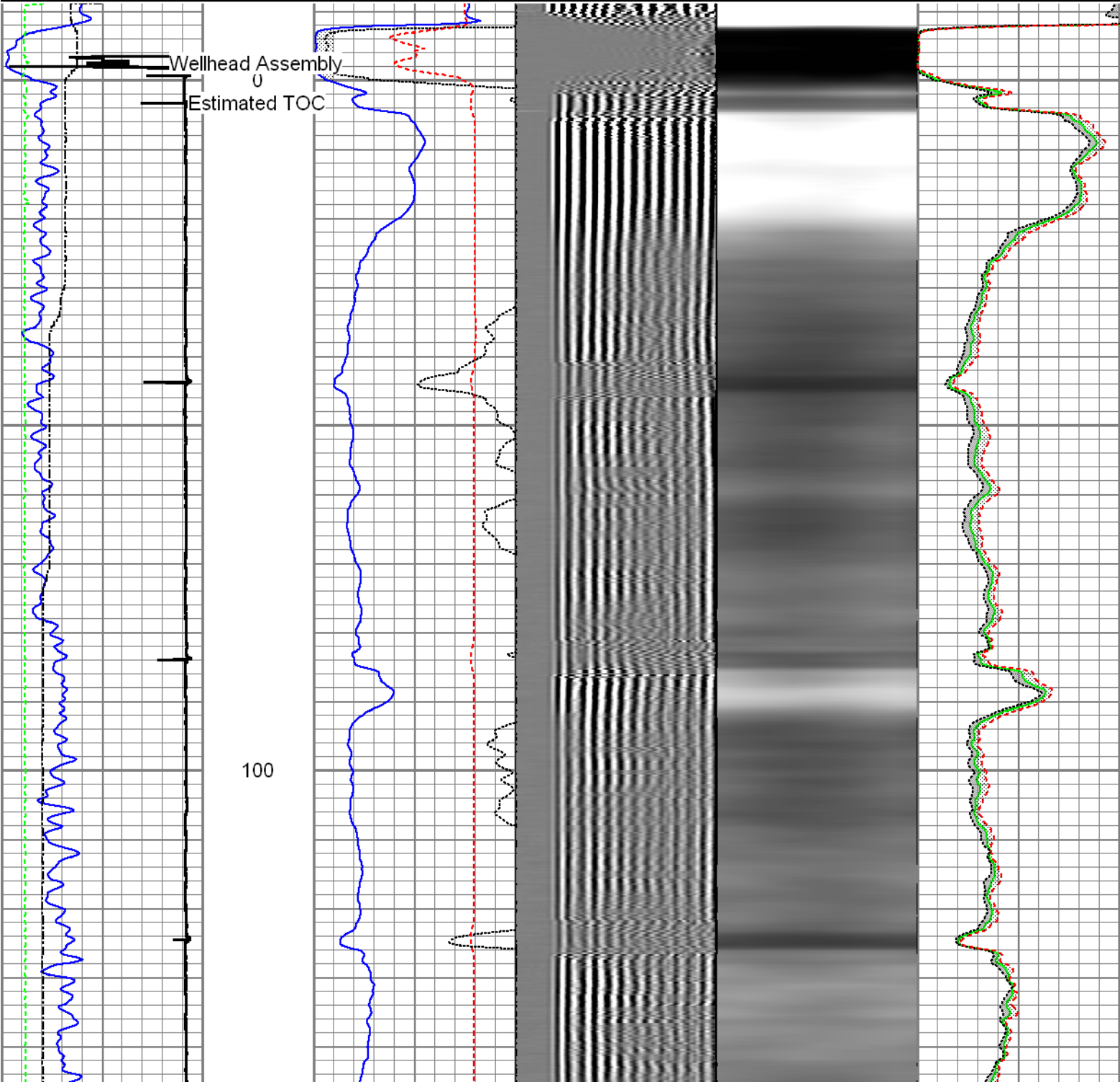
Comments

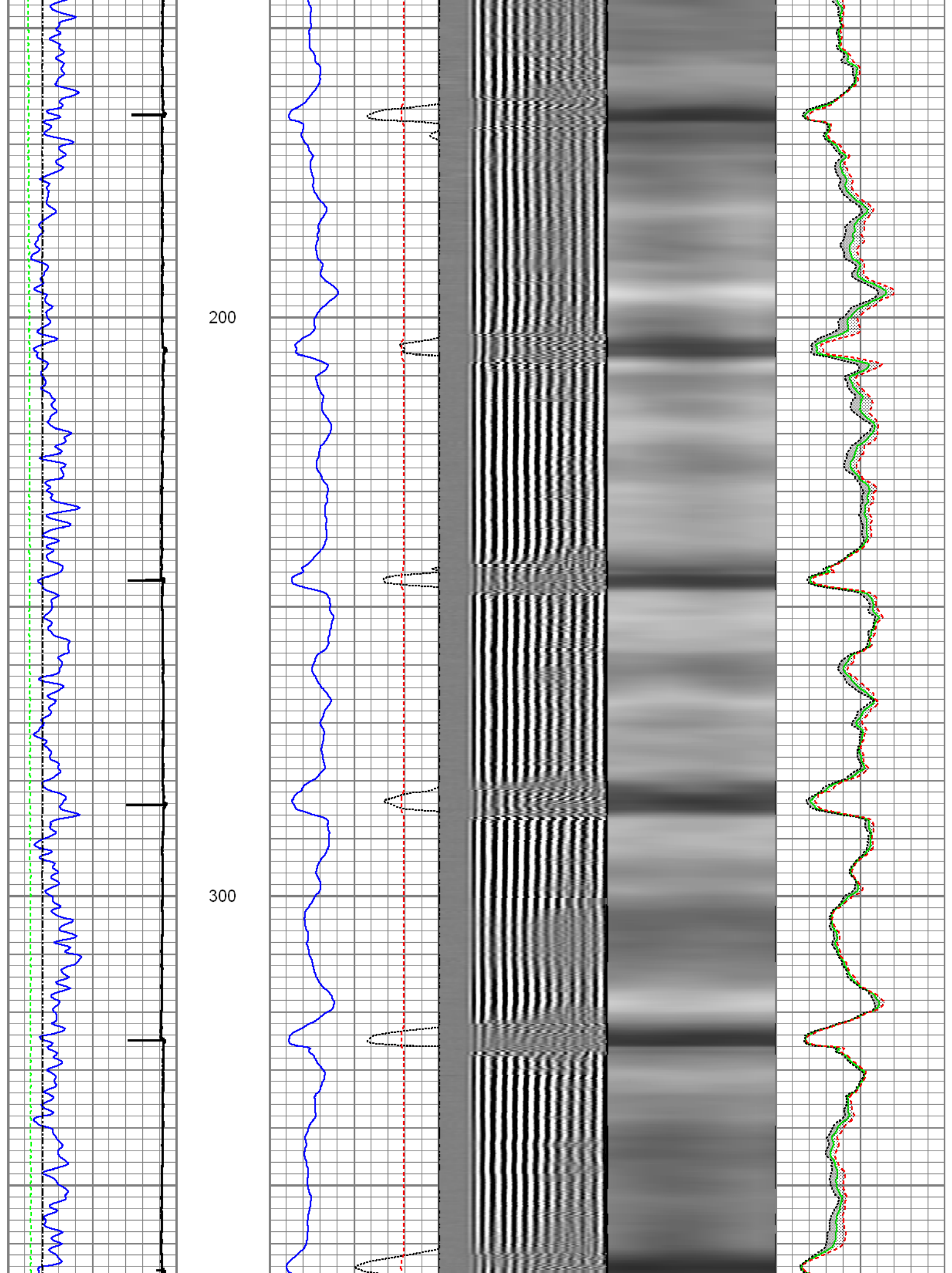
Log ran as per customer request.
 Depth referenced to casing tally reported liner top at 5219 FT.
 Adjusted log -24 FT to correlate with liner top.
 Log ran from below liner top to surface.
 Log ran with 1500 PSI surface induced pressure.
 Tools were very muddy upon completion of operations.

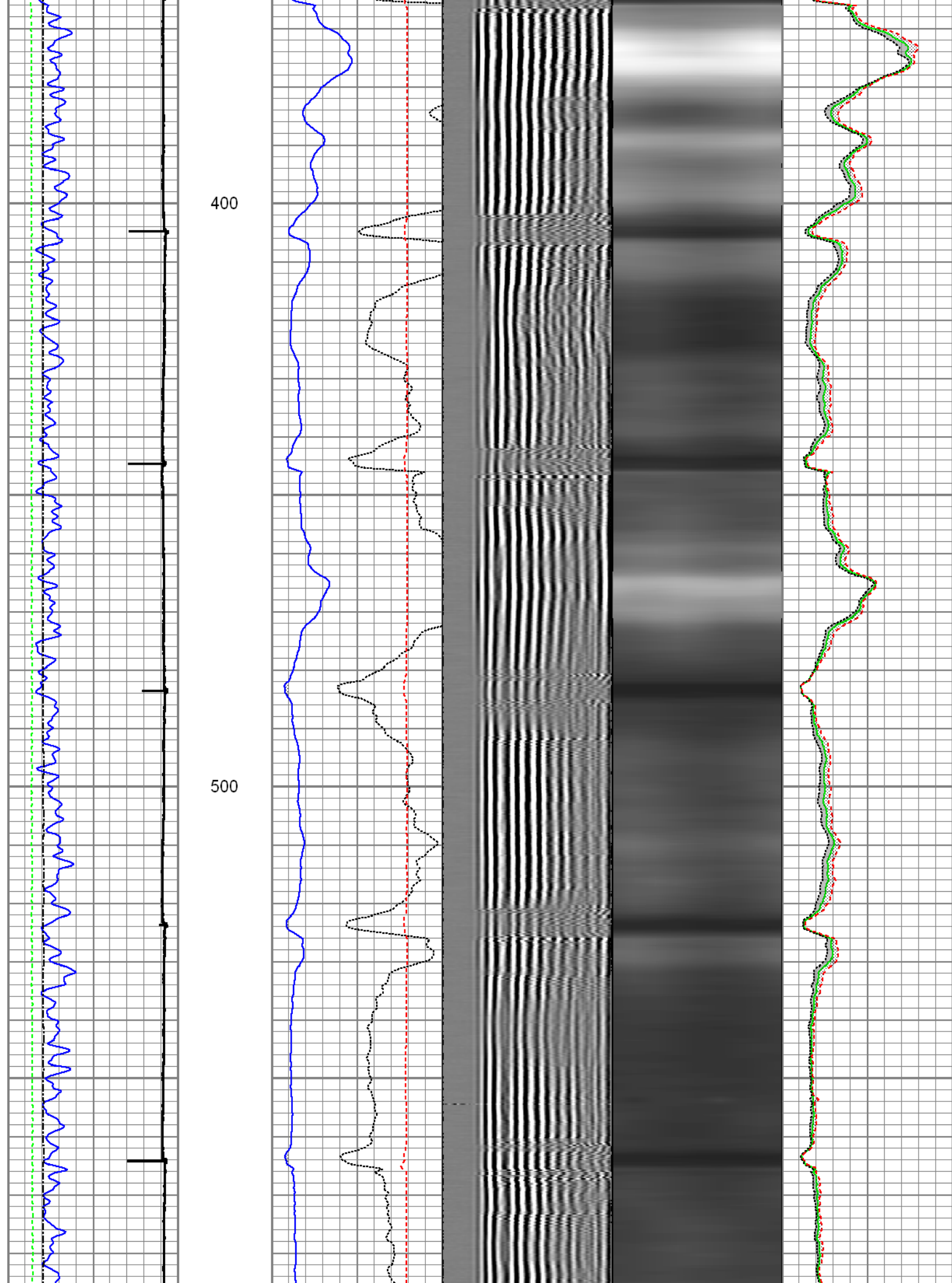
Thank you for choosing FMC Technologies Completion Services, Inc.!!

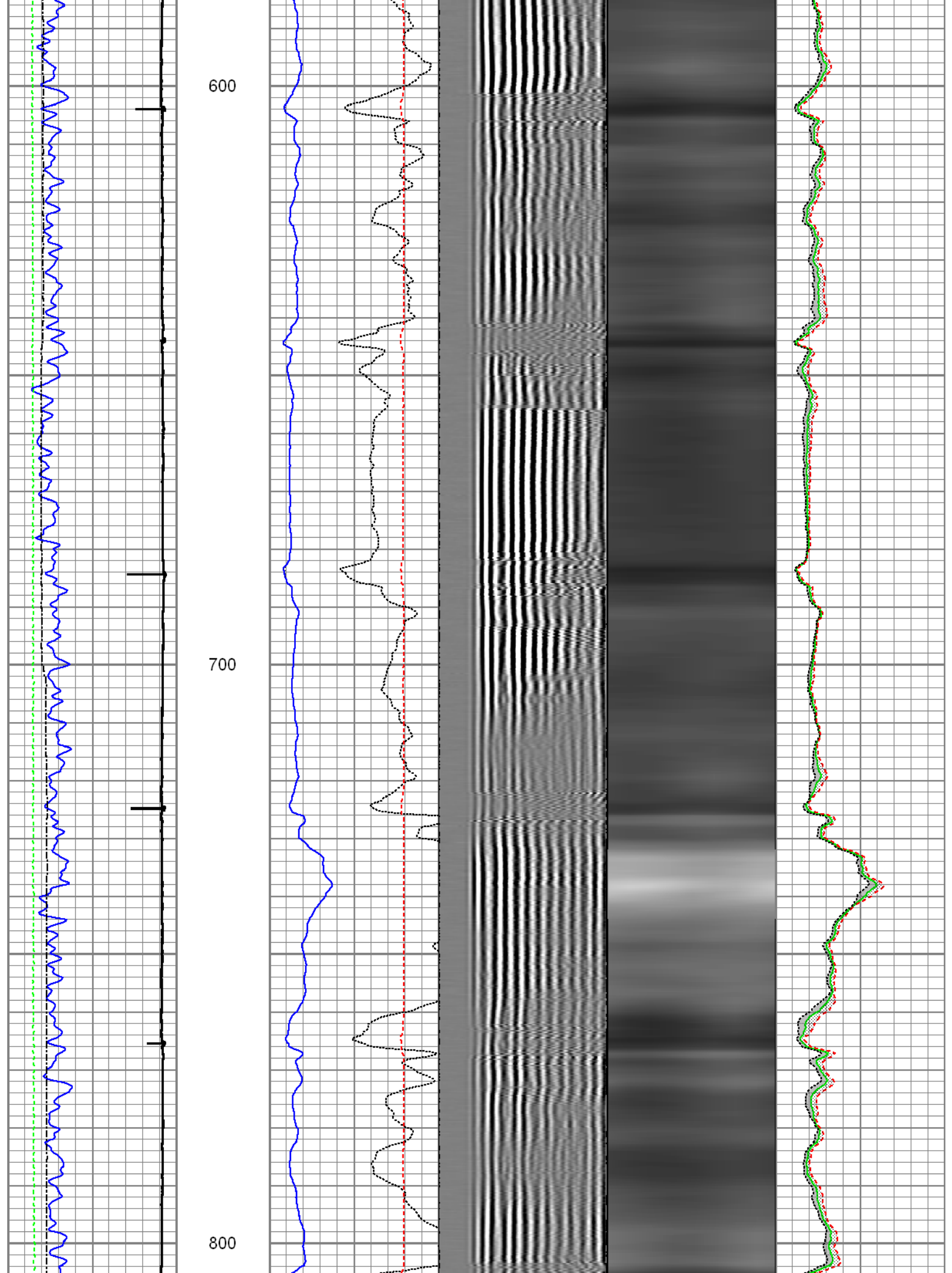
Database File: 03-26-15_whiting_razor 11g-1409a_mit_rbl.db
Dataset Pathname: pass14
Presentation Format: rbt4_mit
Dataset Creation: Thu Mar 26 13:20:14 2015 by Log 7.0 B1
Charted by: Depth in Feet scaled 1:240

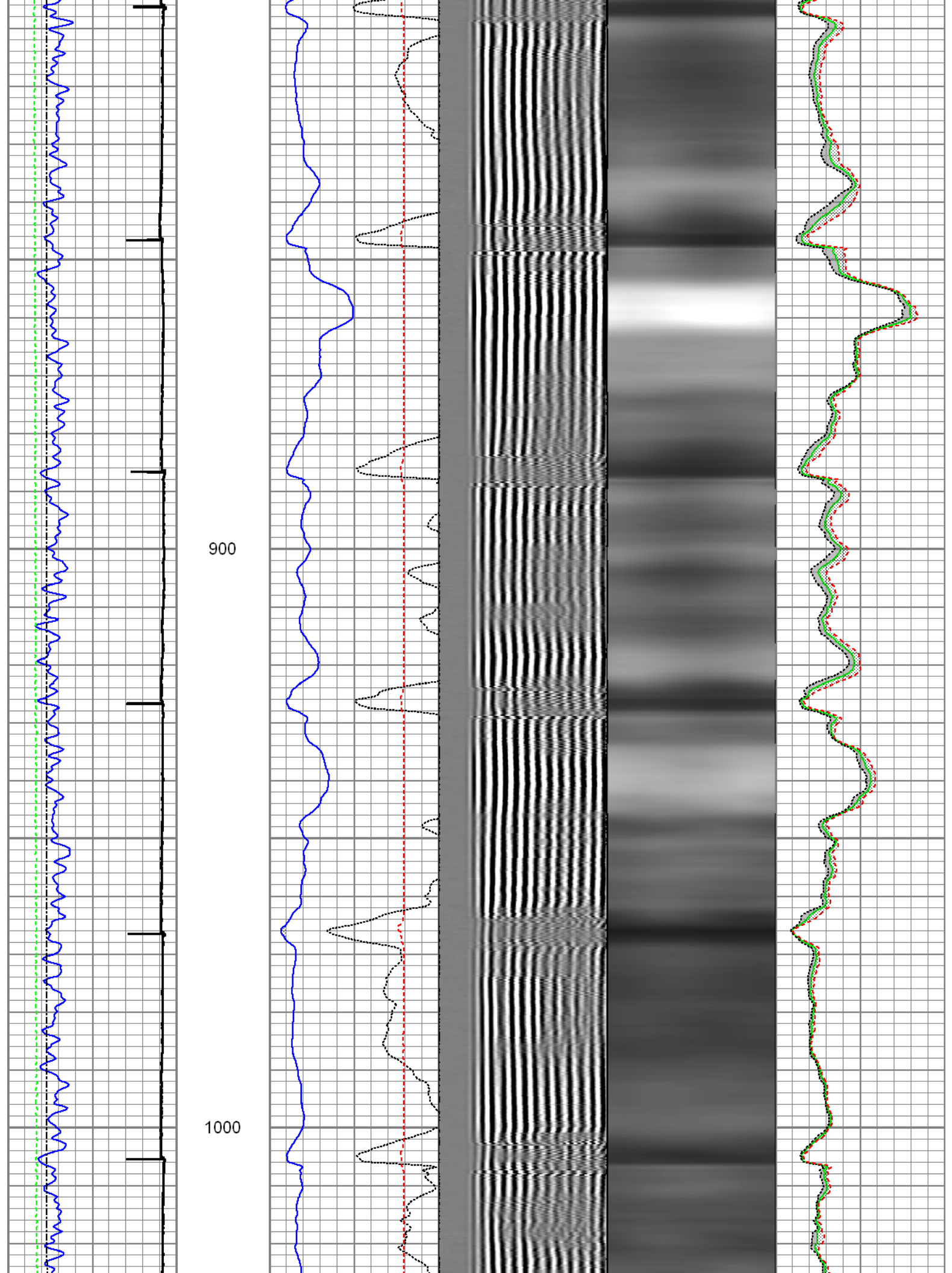
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Line Speed	3' Amplitude x 5			Mimimum Amplitude
-100 (ft/min) 100	0 (mV) 20			0 100
Line Tension	3' Travel Time			Maximum Amplitude
0 (lb) 2000	650 (usec) 150			0 100
Casing Collar Locator				

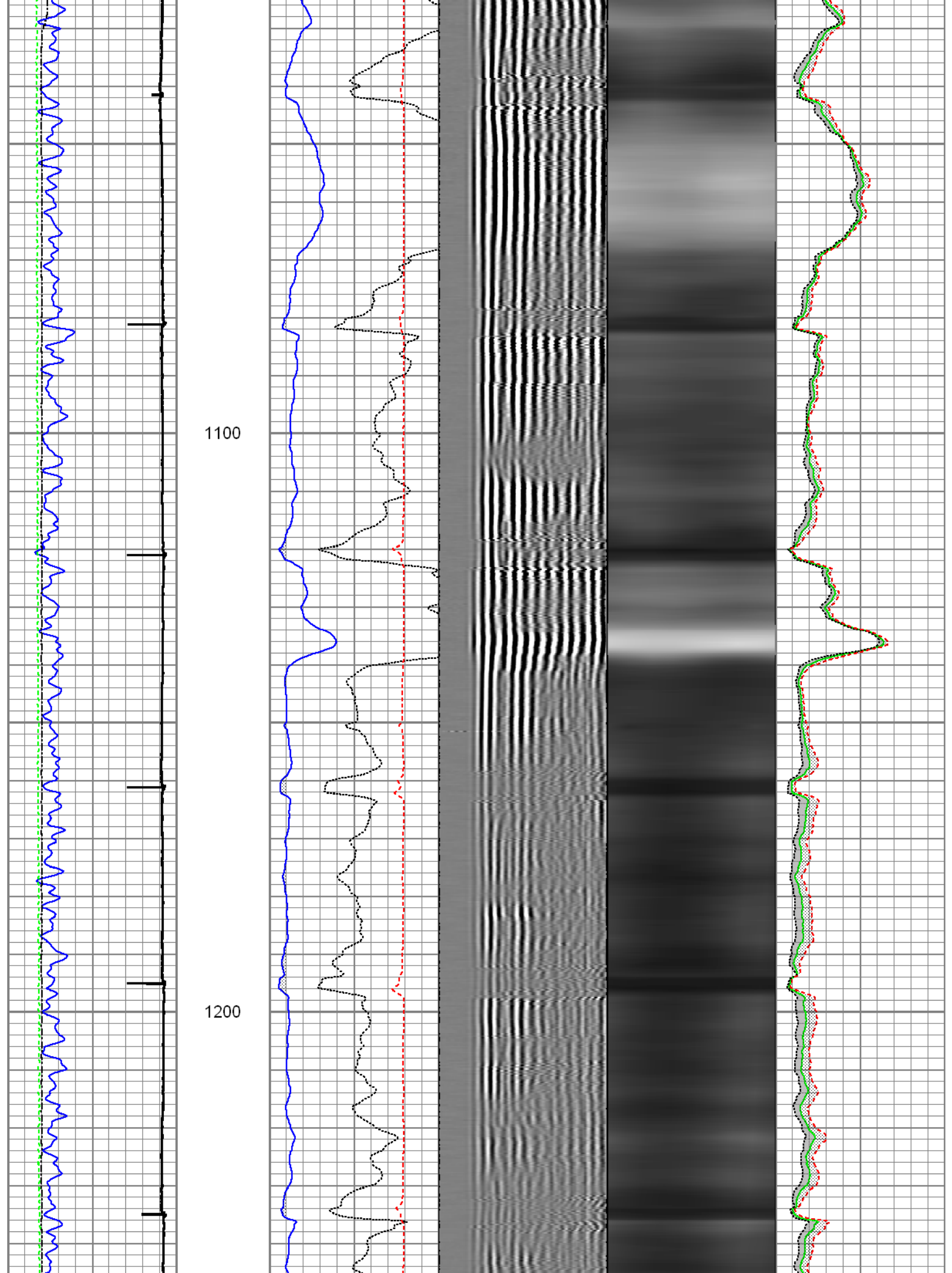


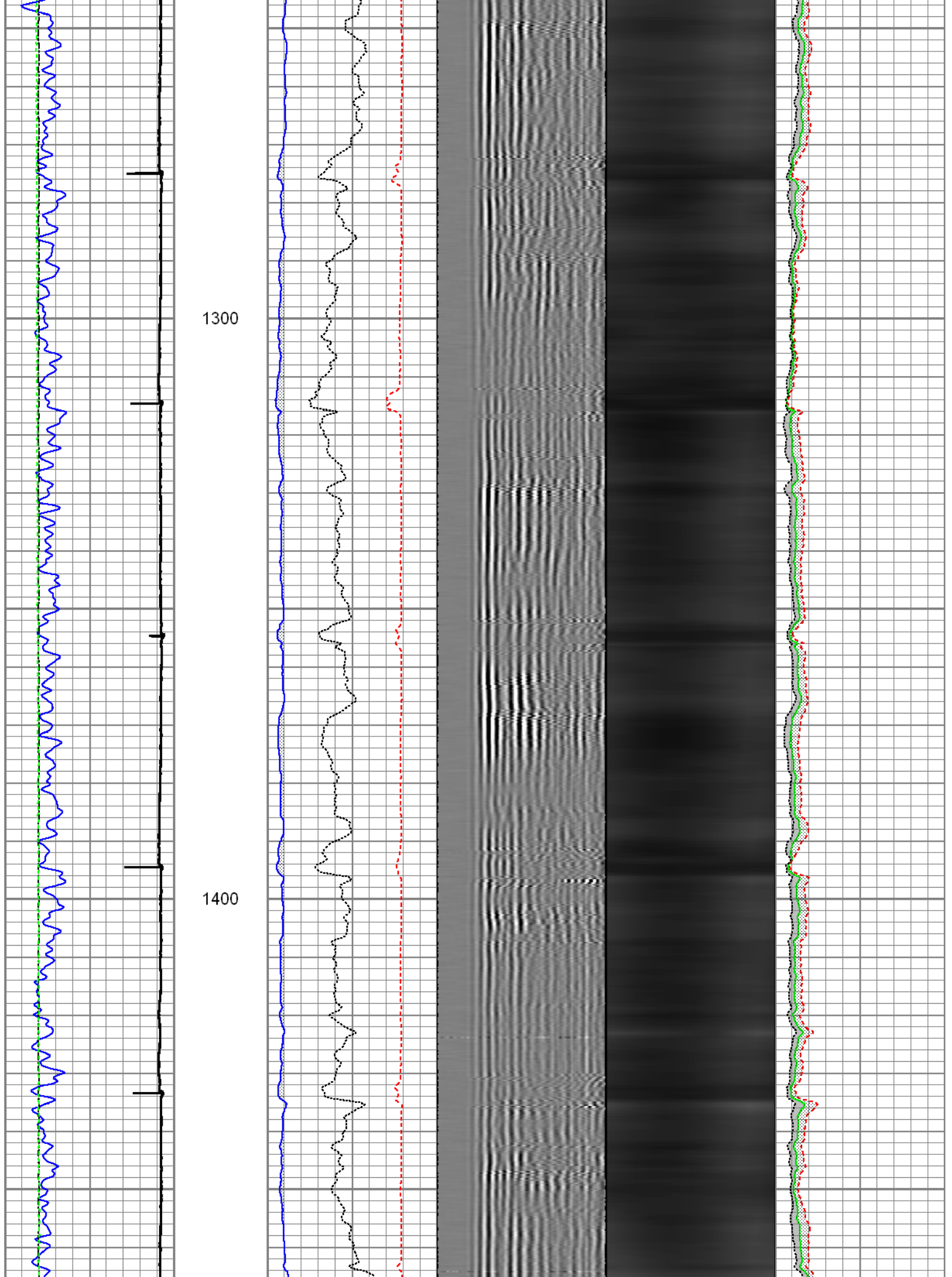


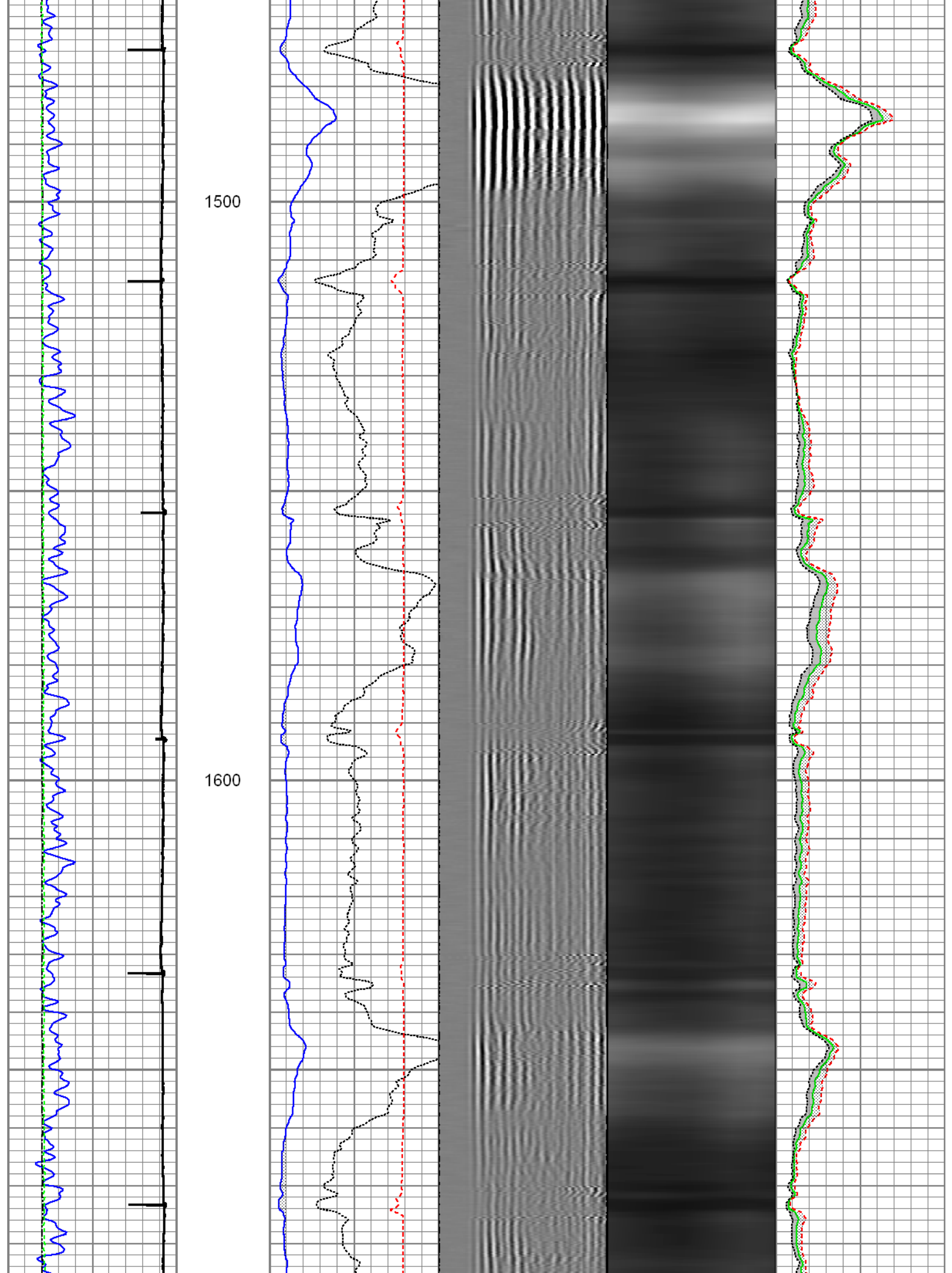


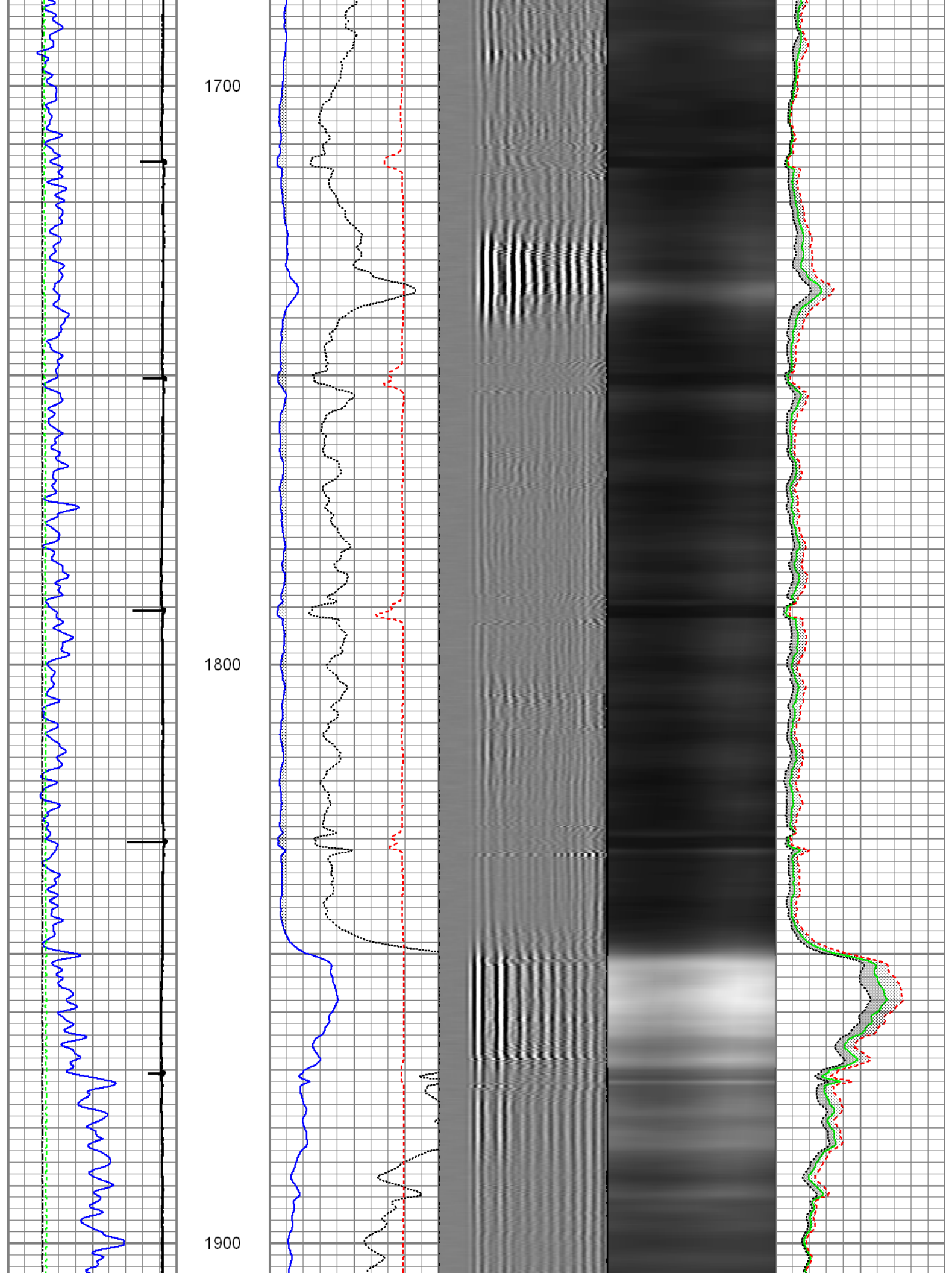


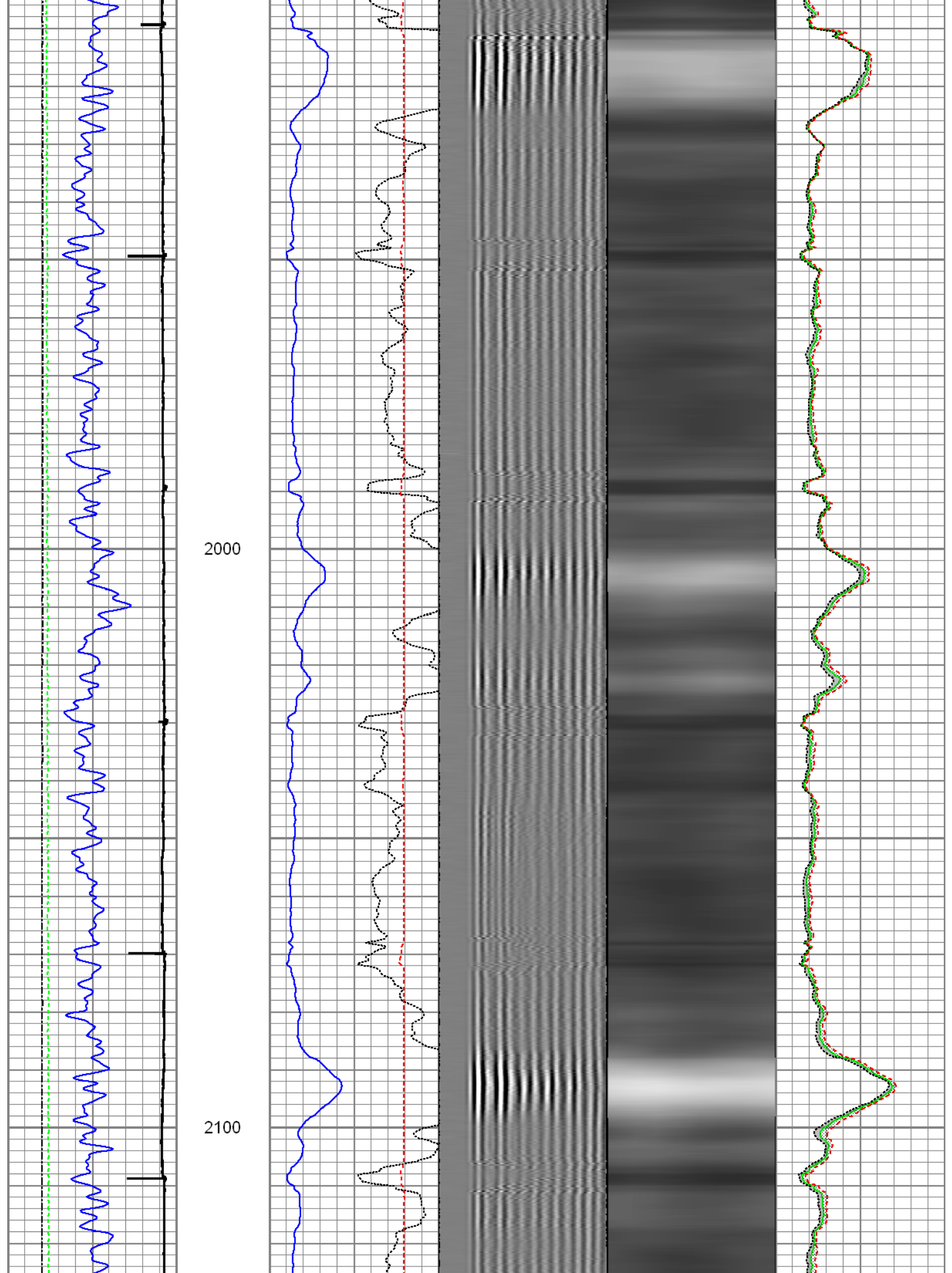


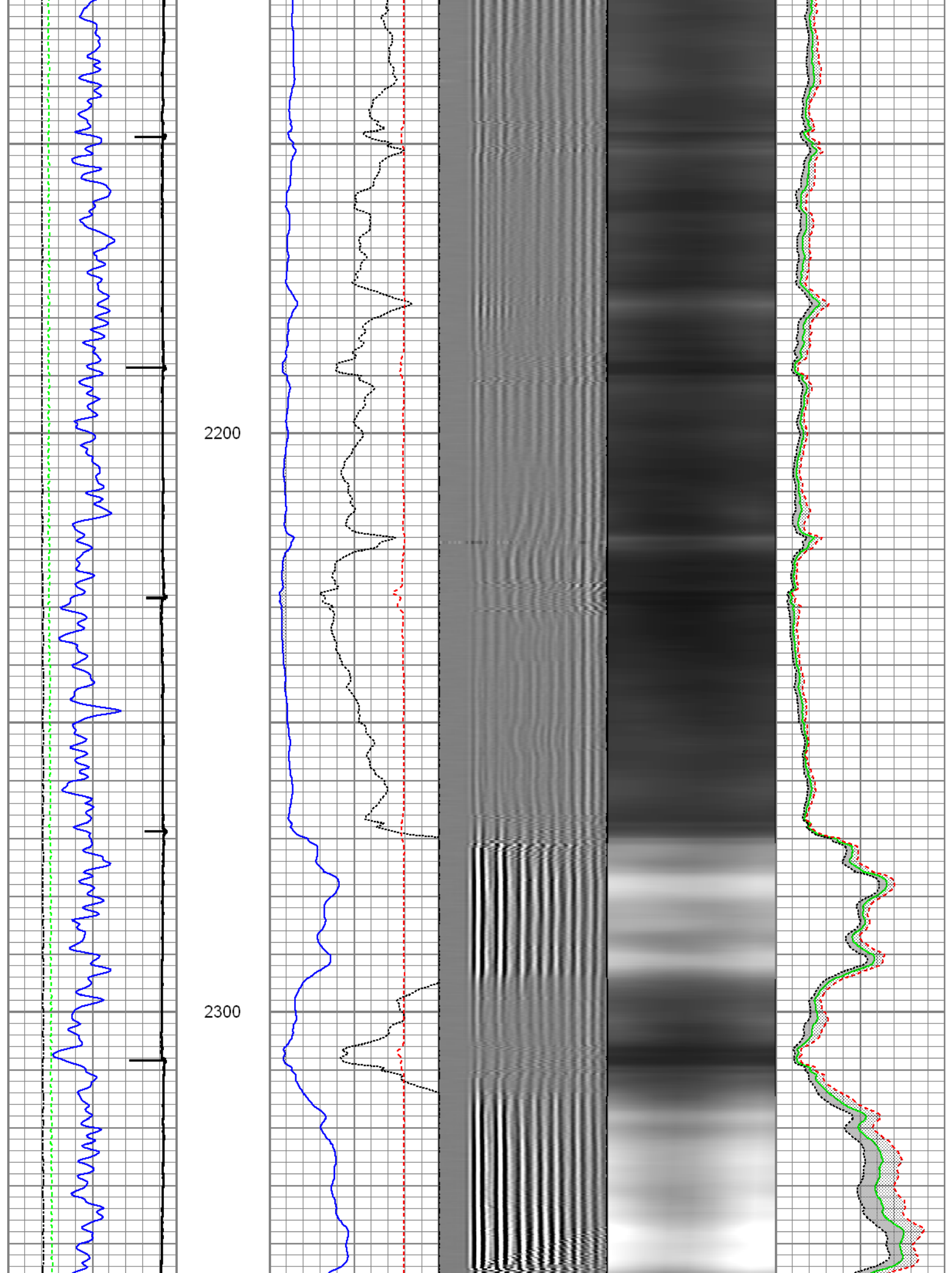






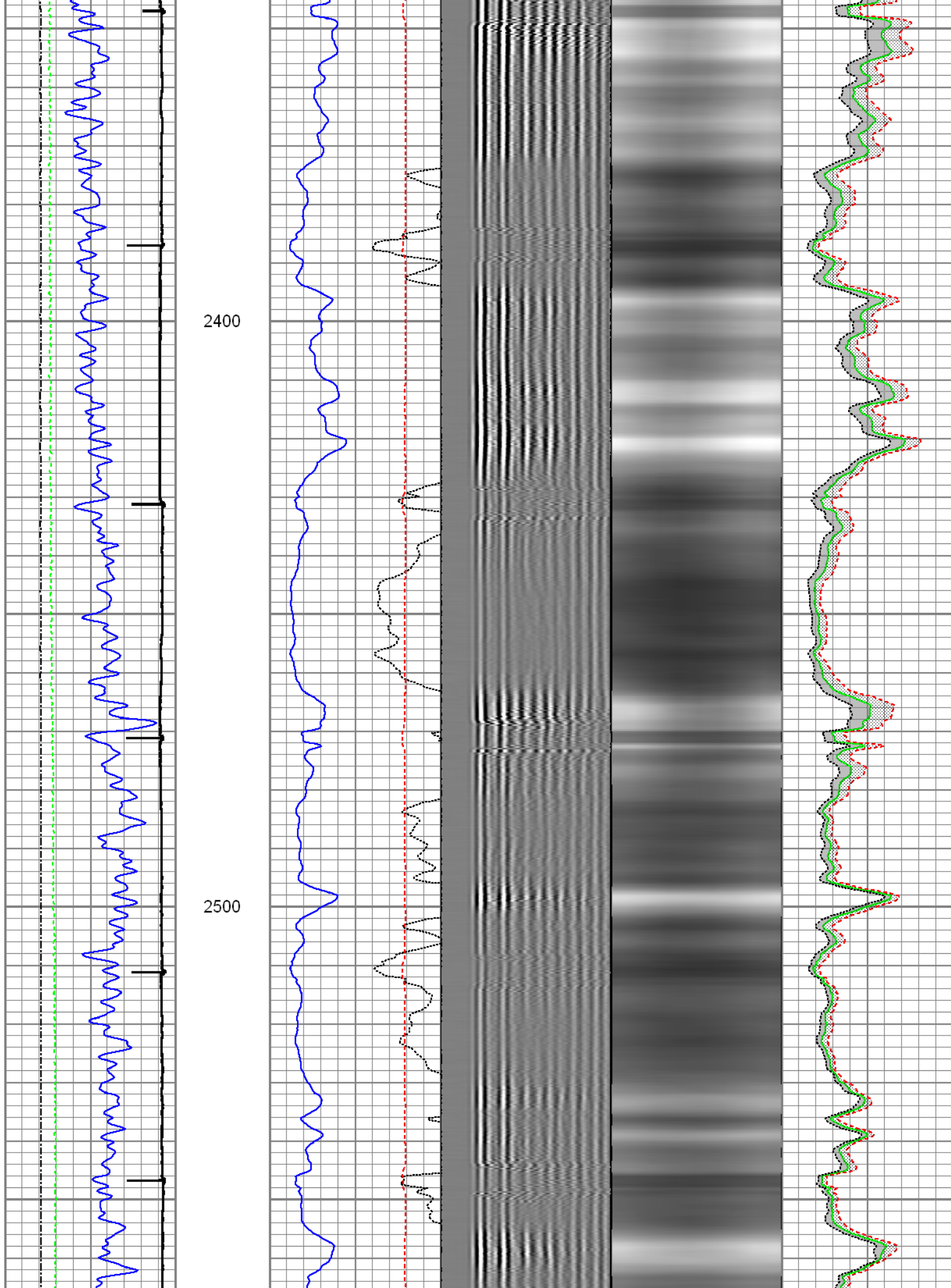






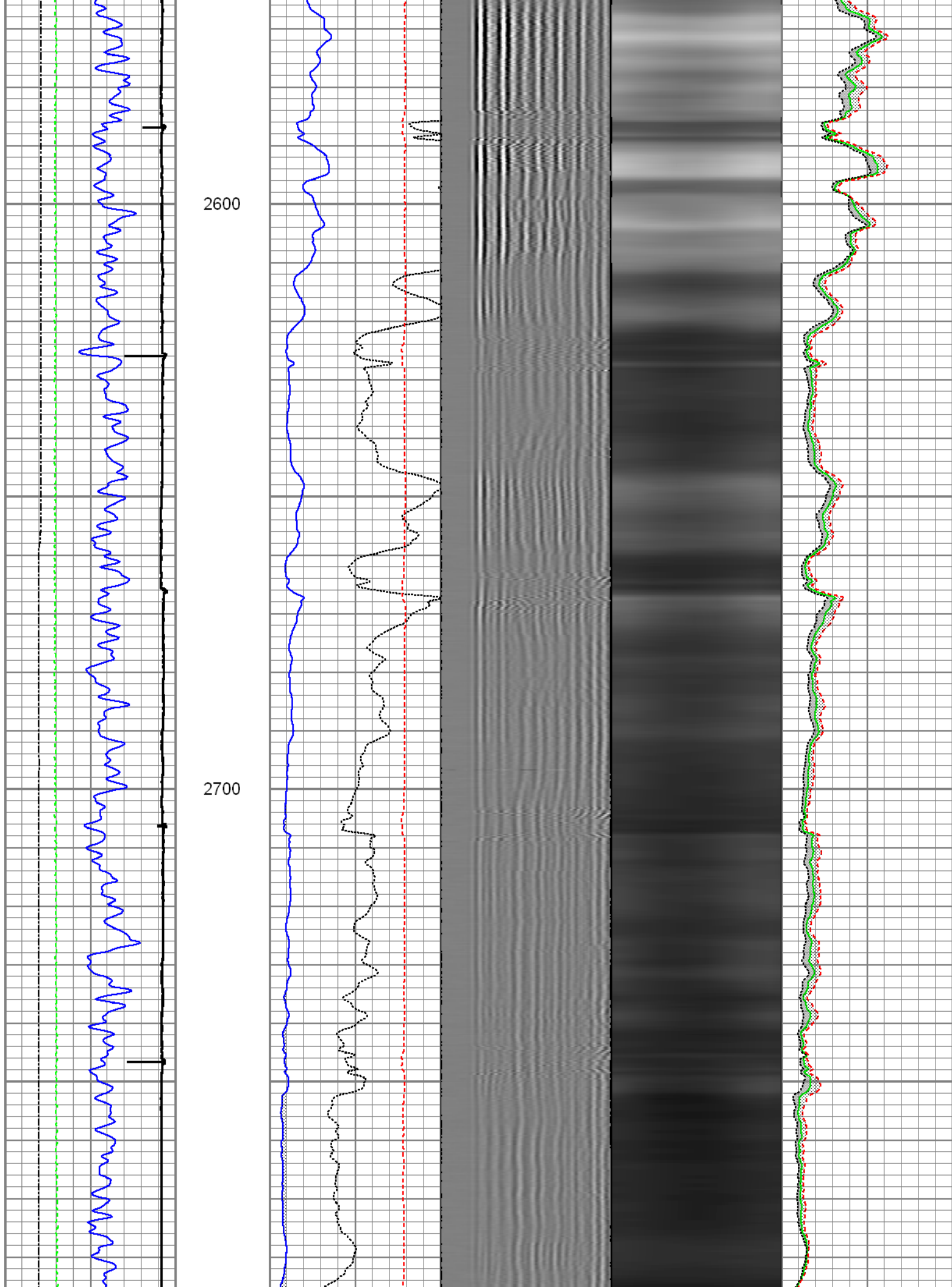
2400

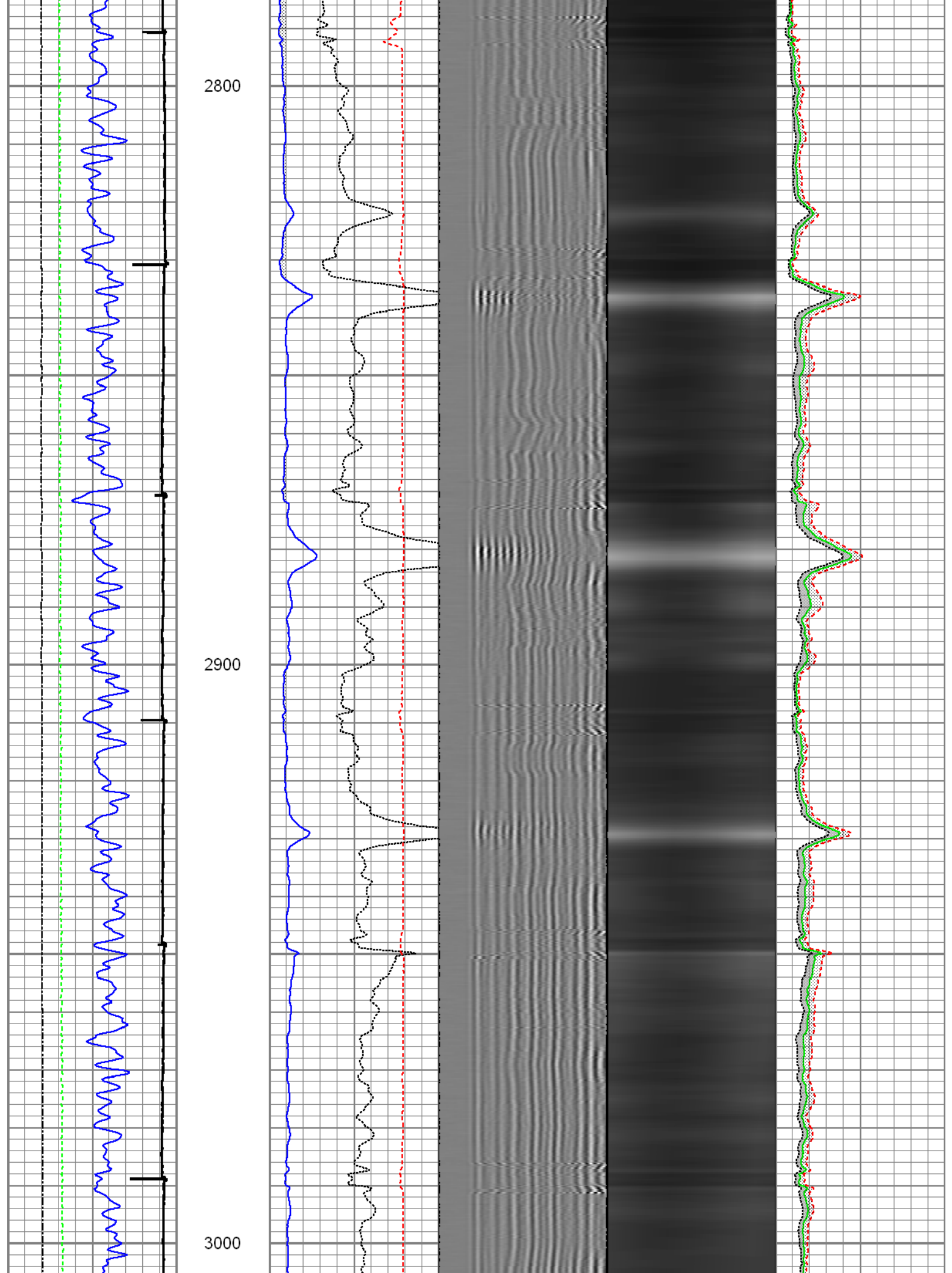
2500



2600

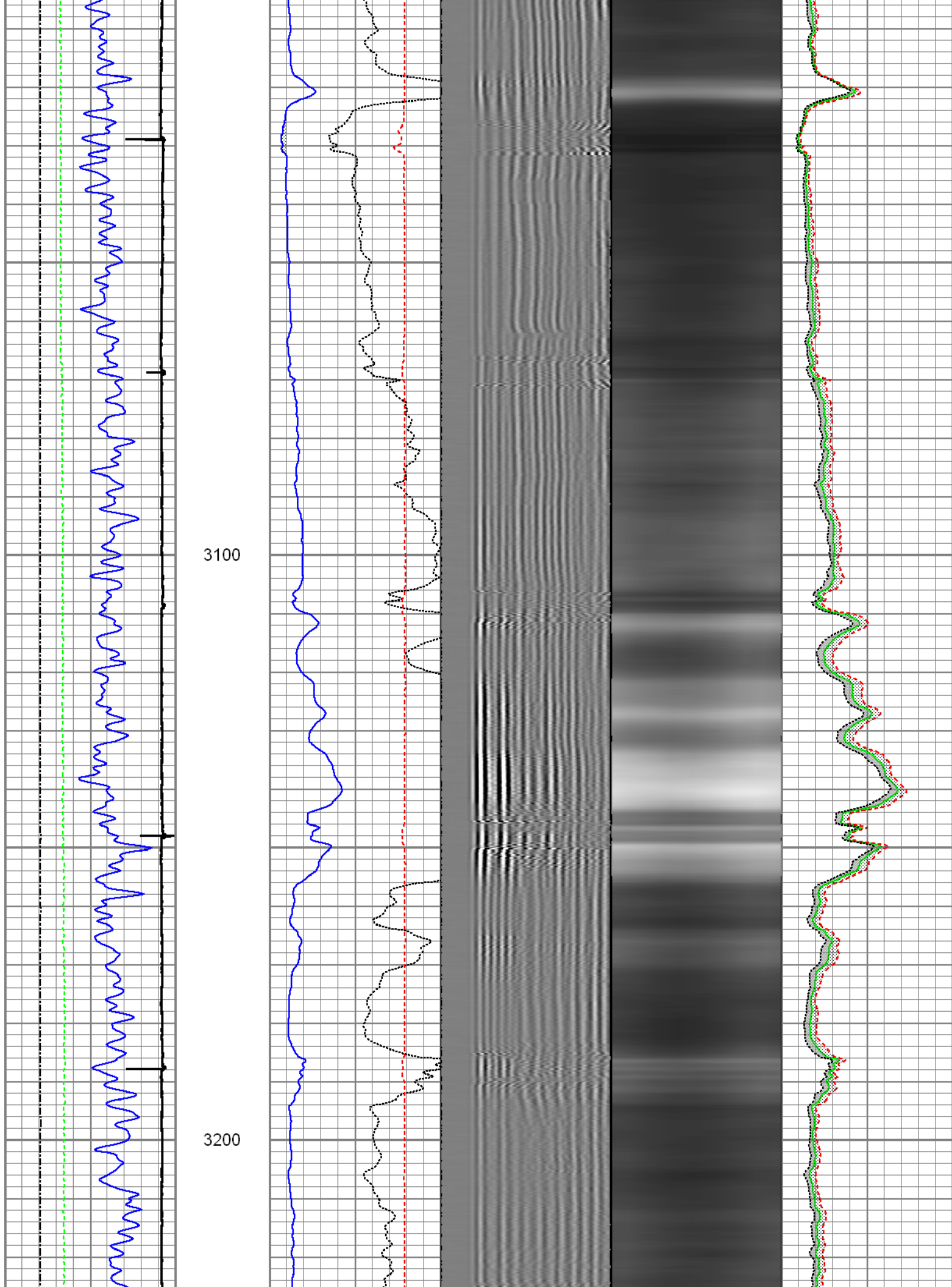
2700

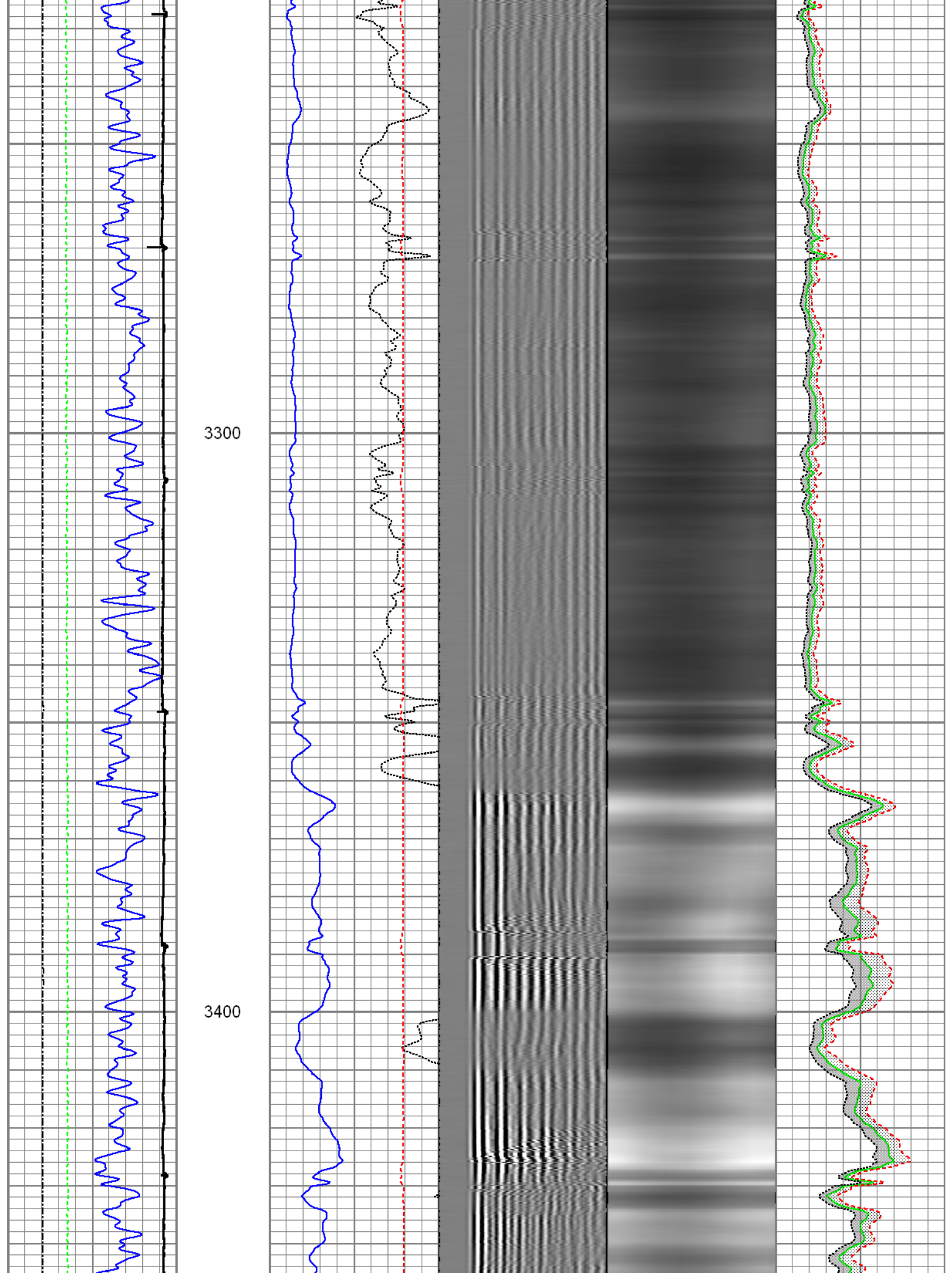


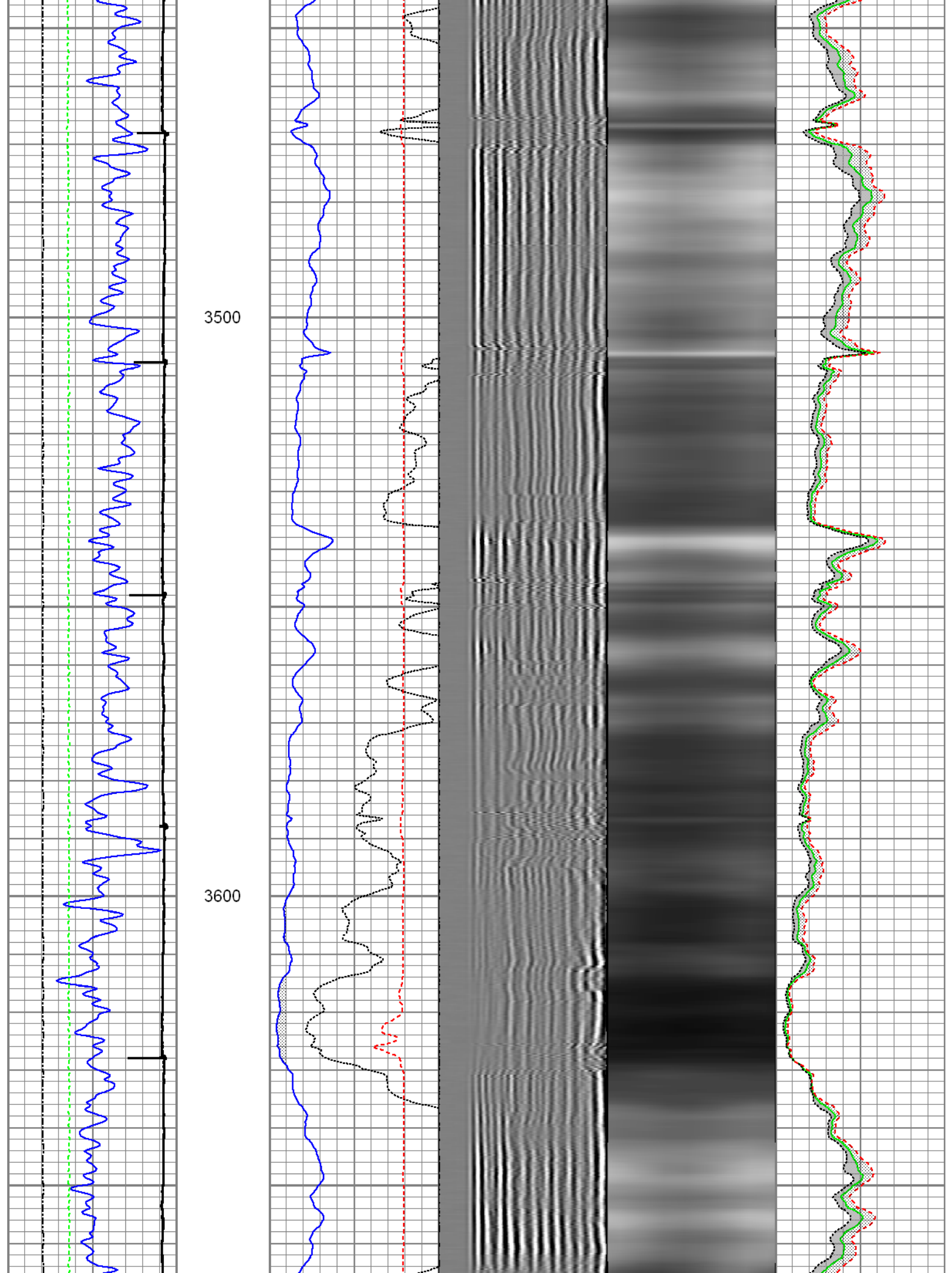


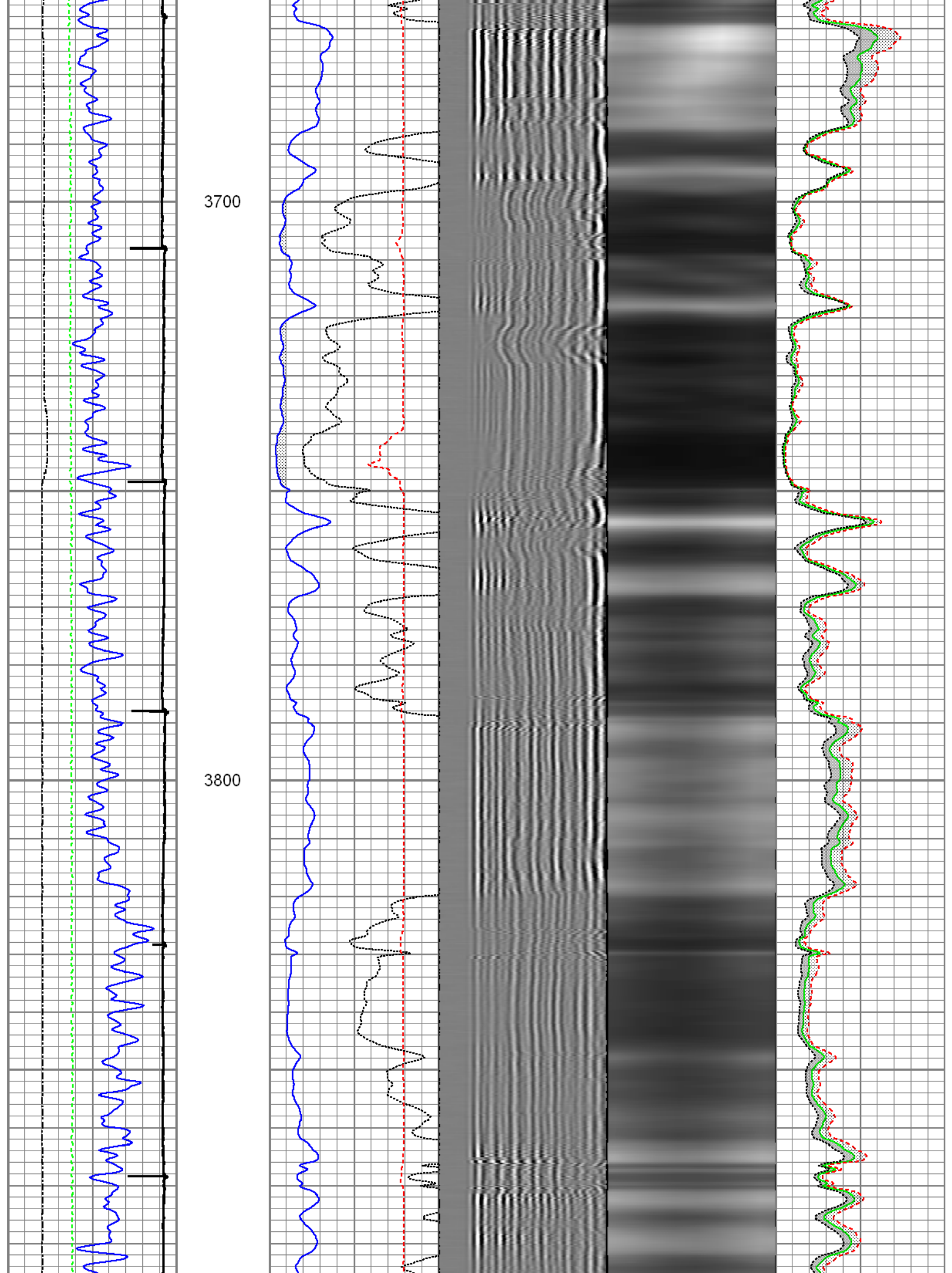
3100

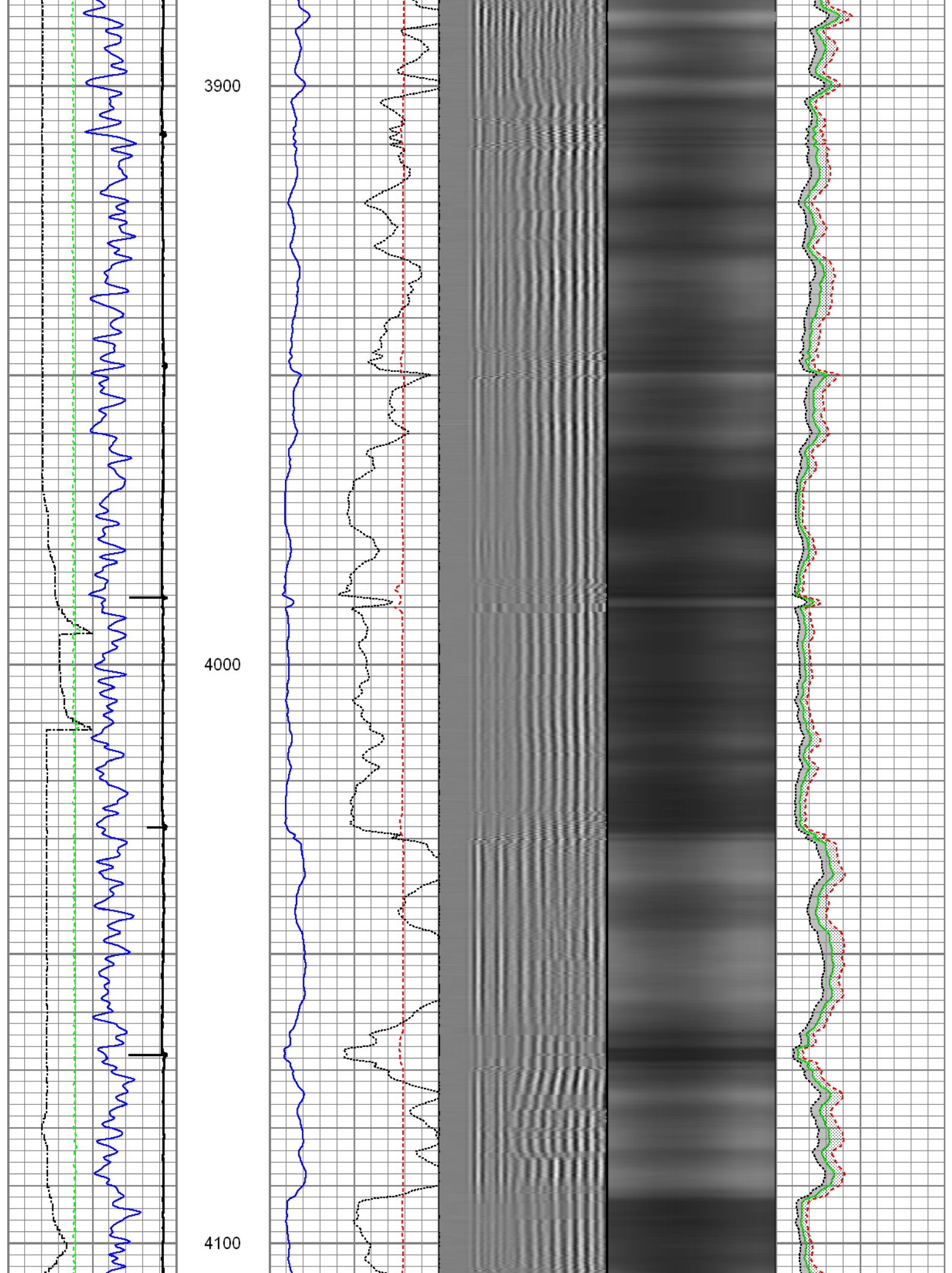
3200

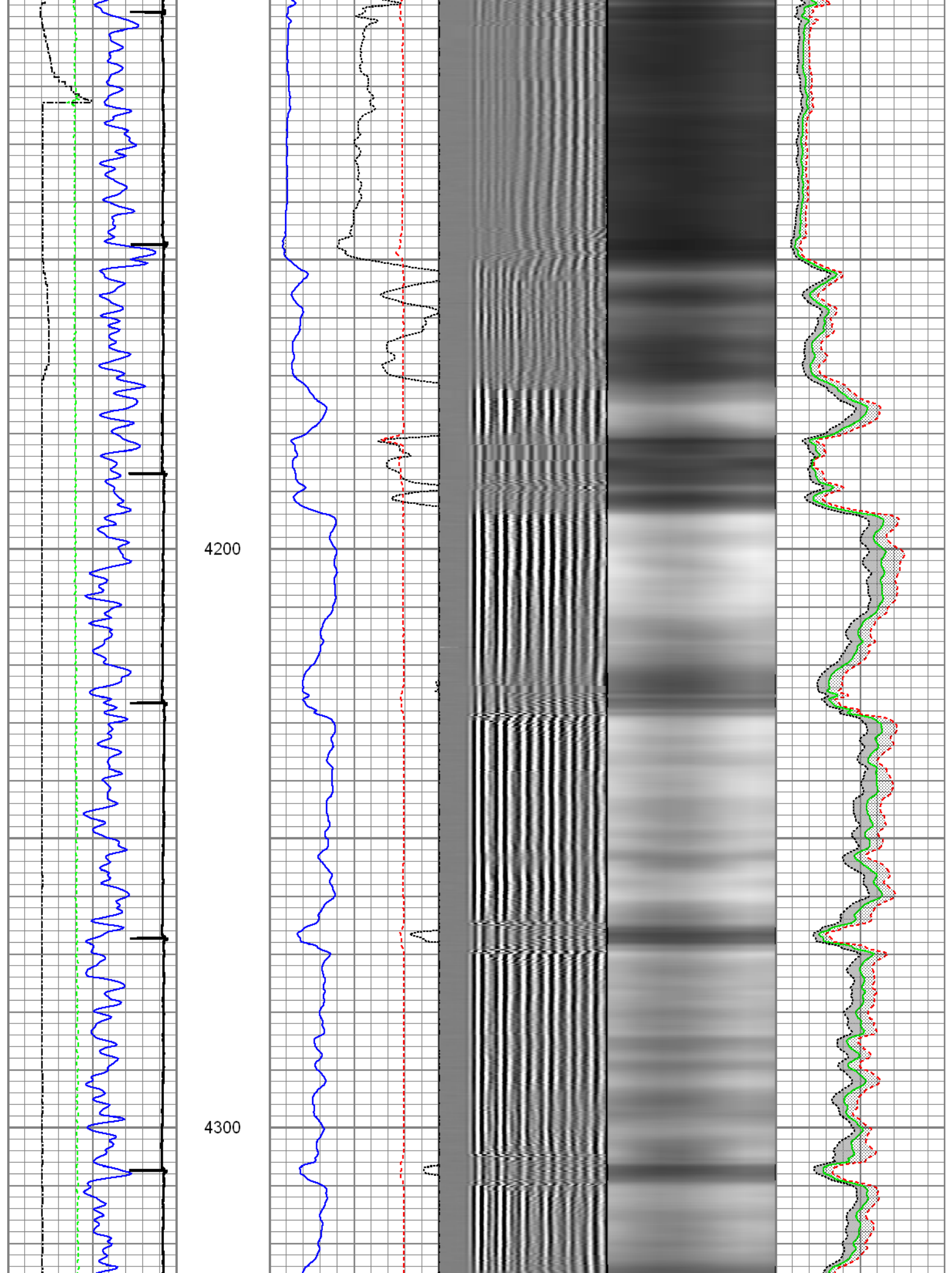


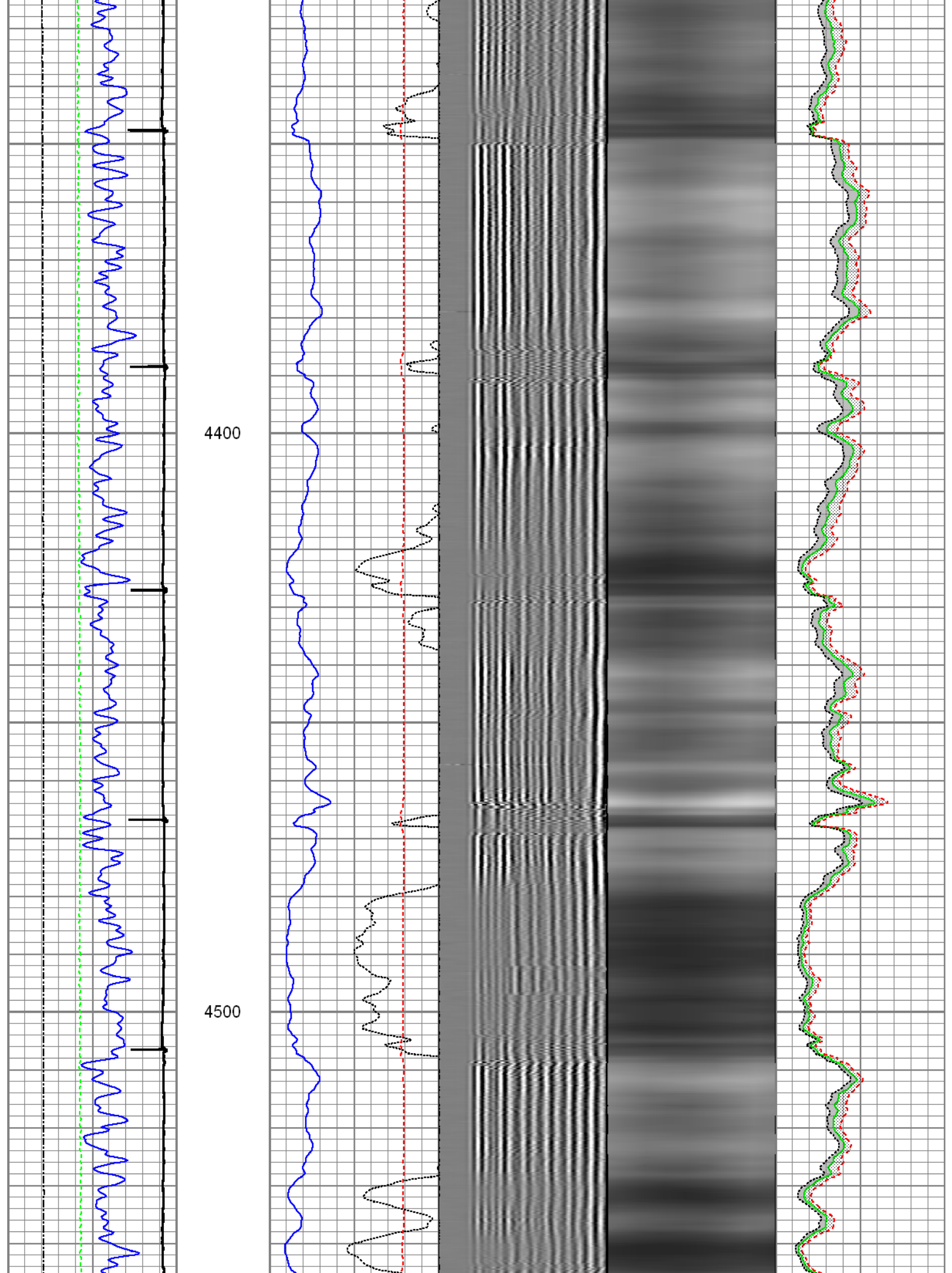


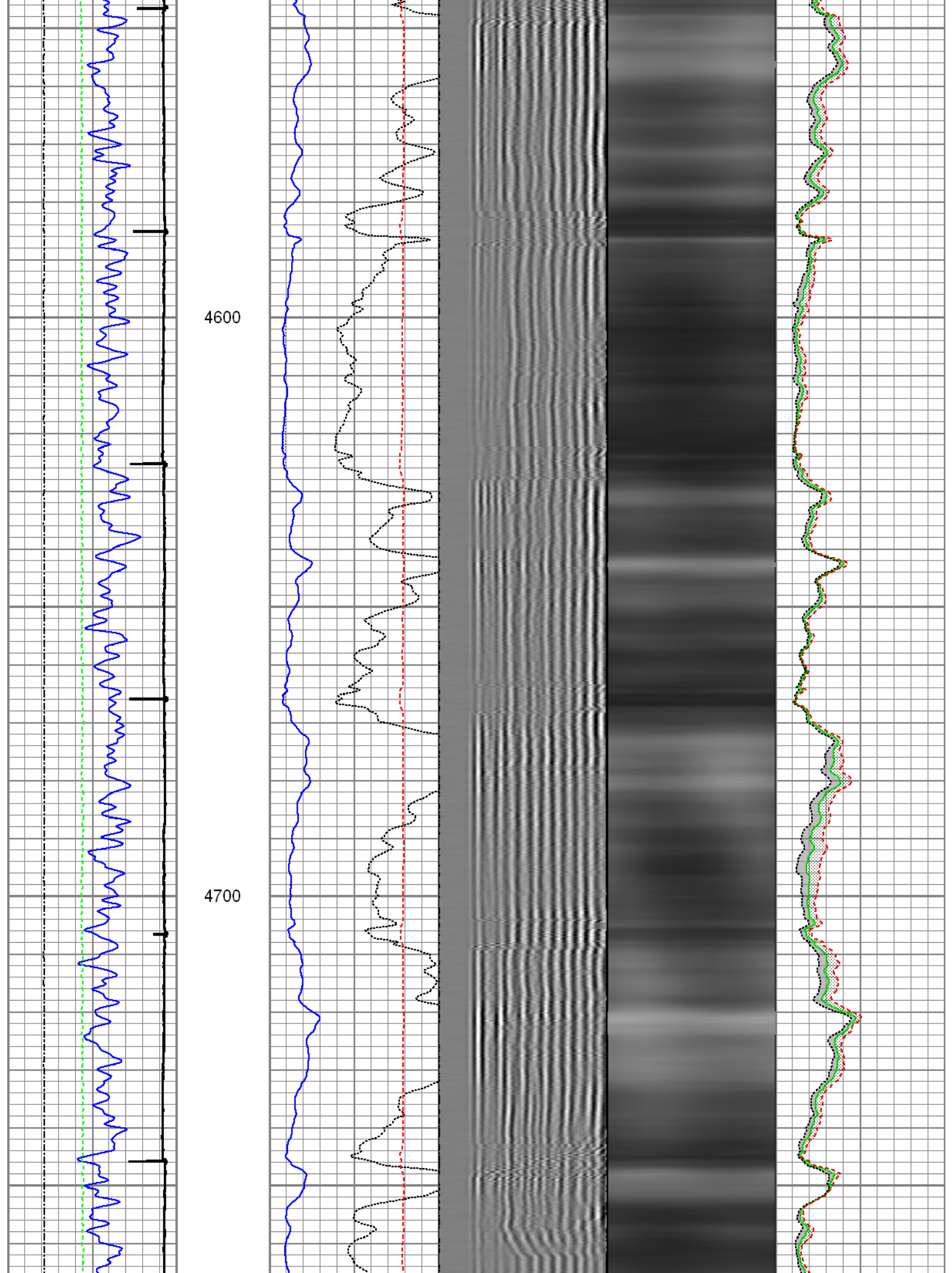






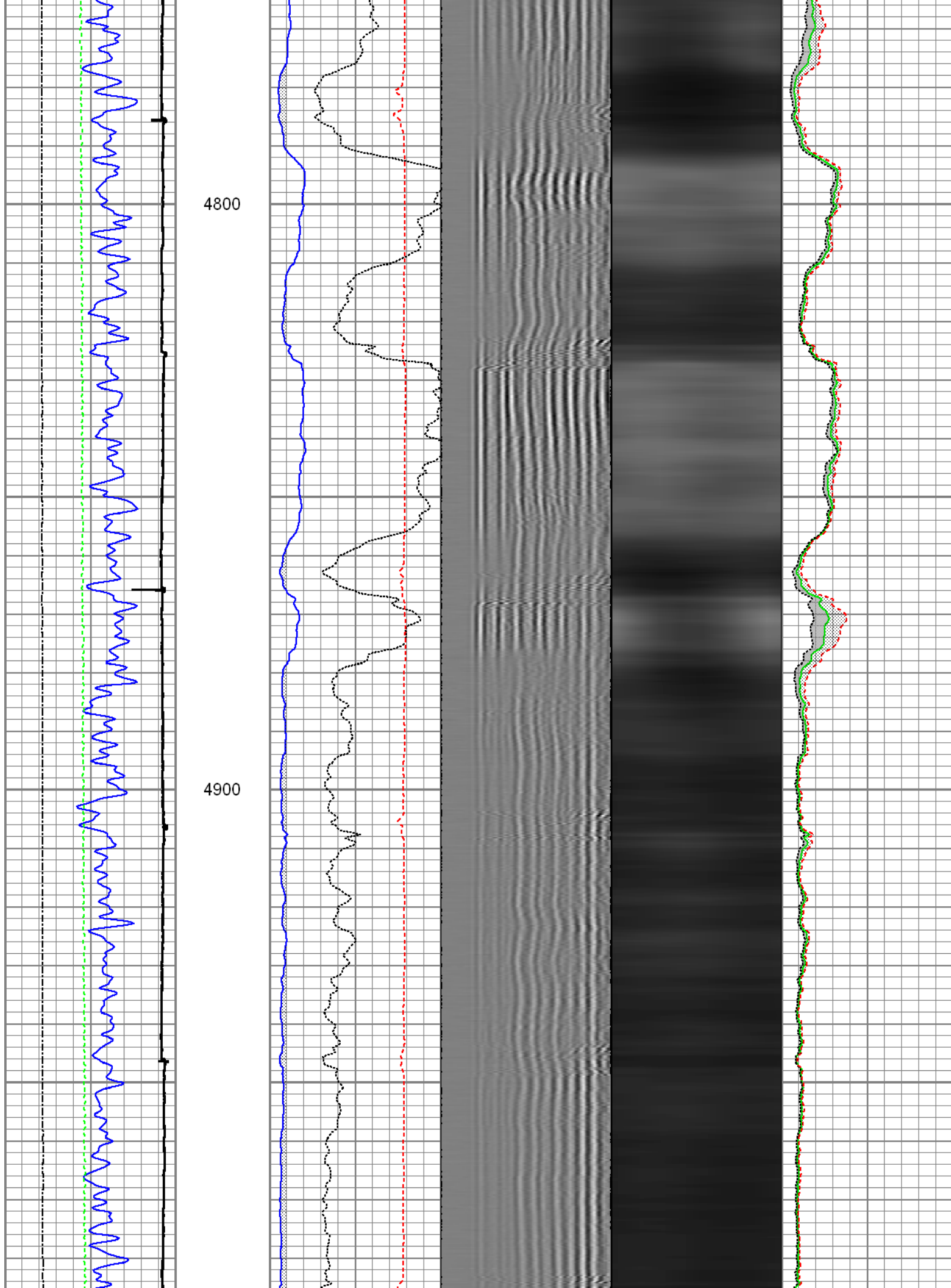


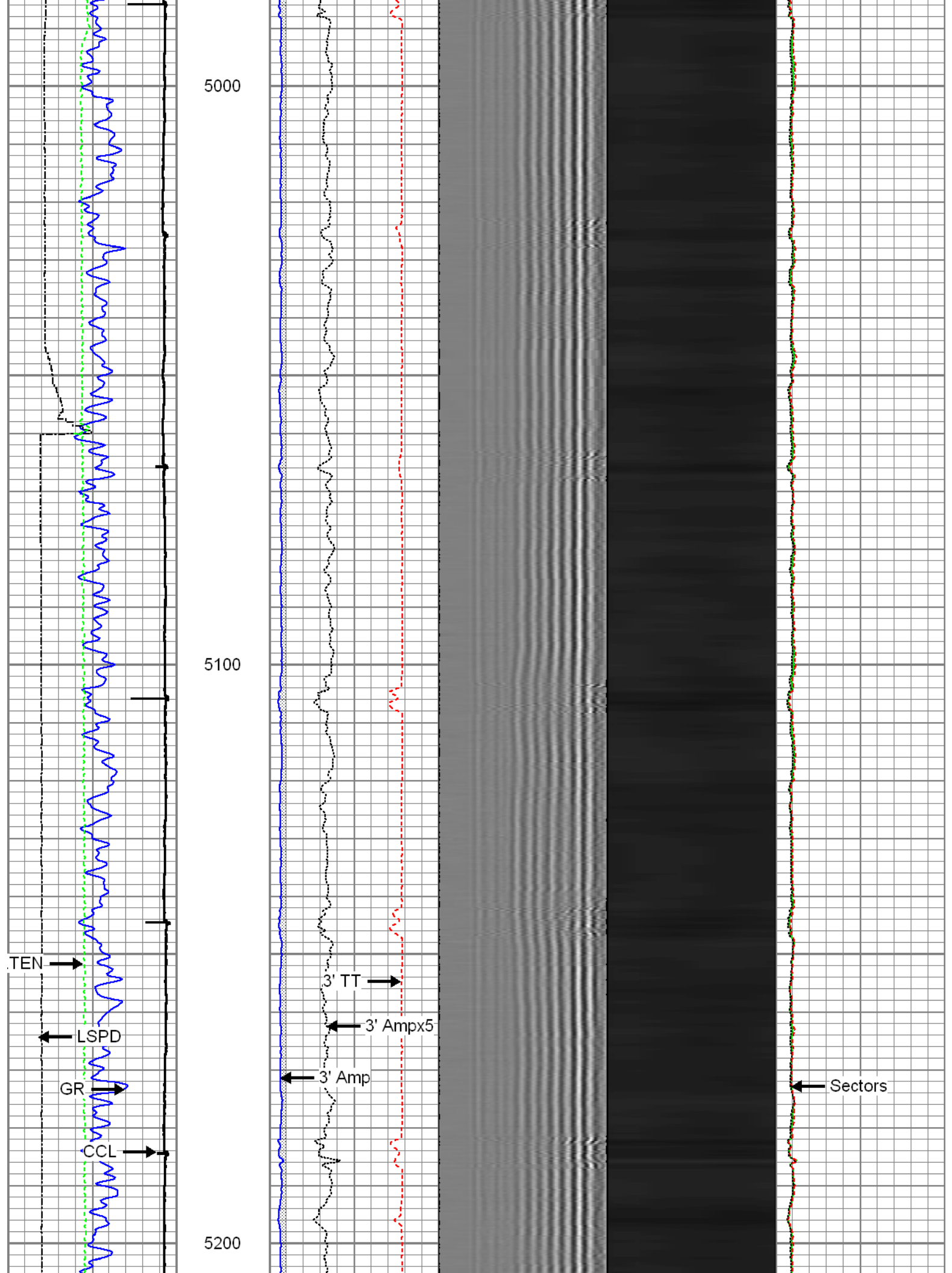


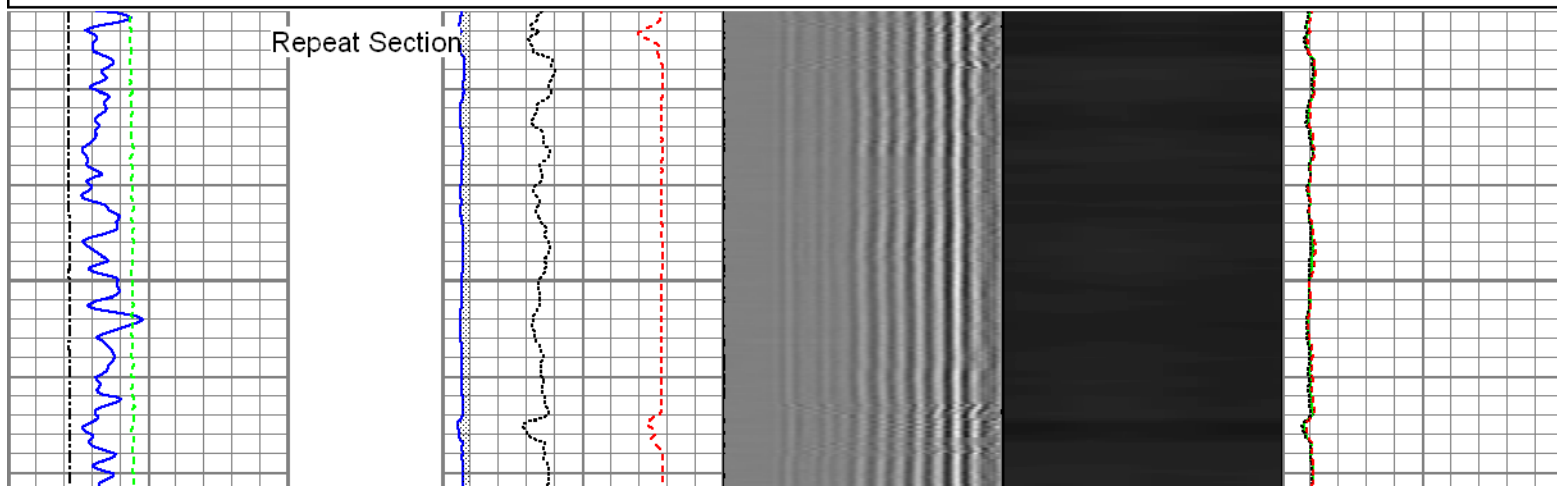
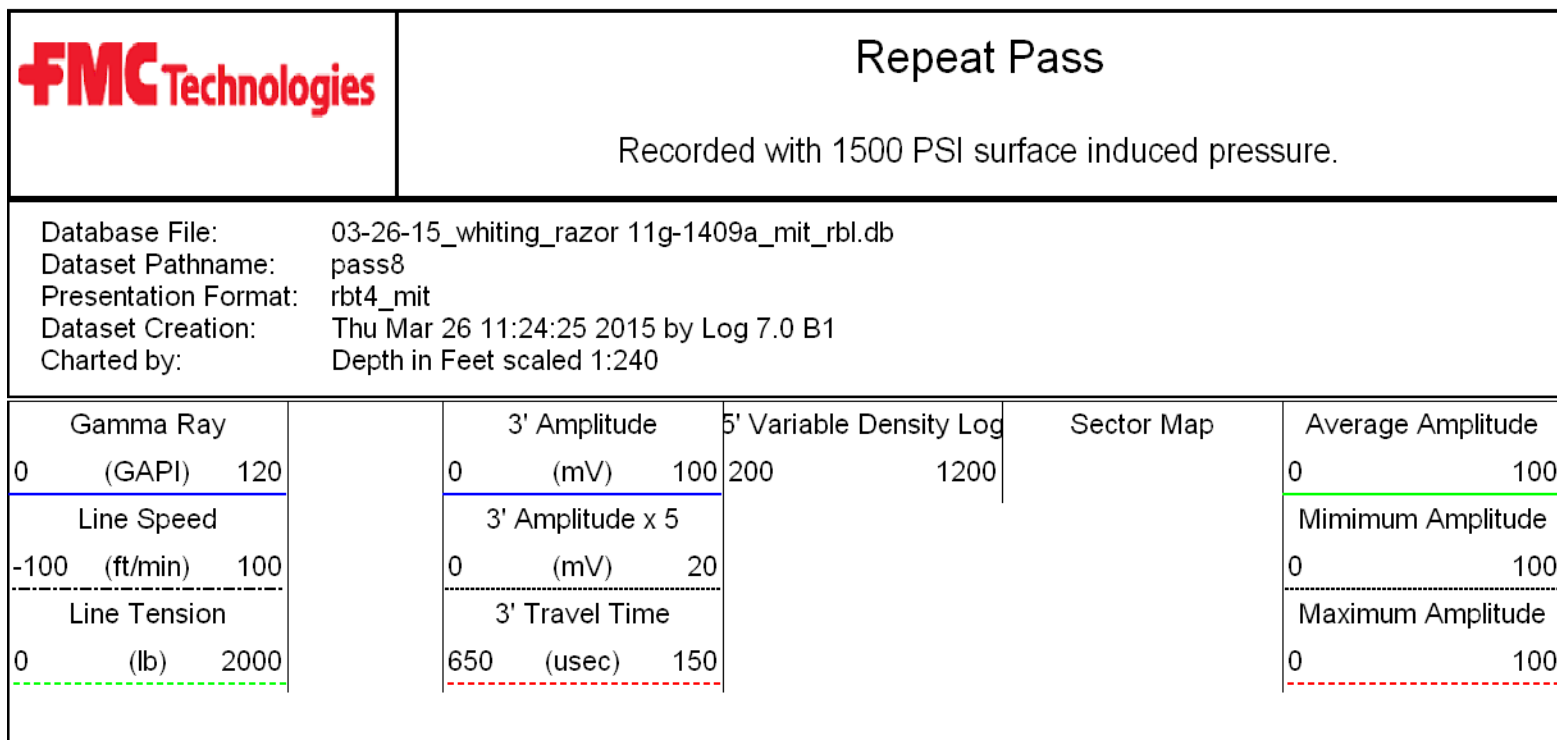
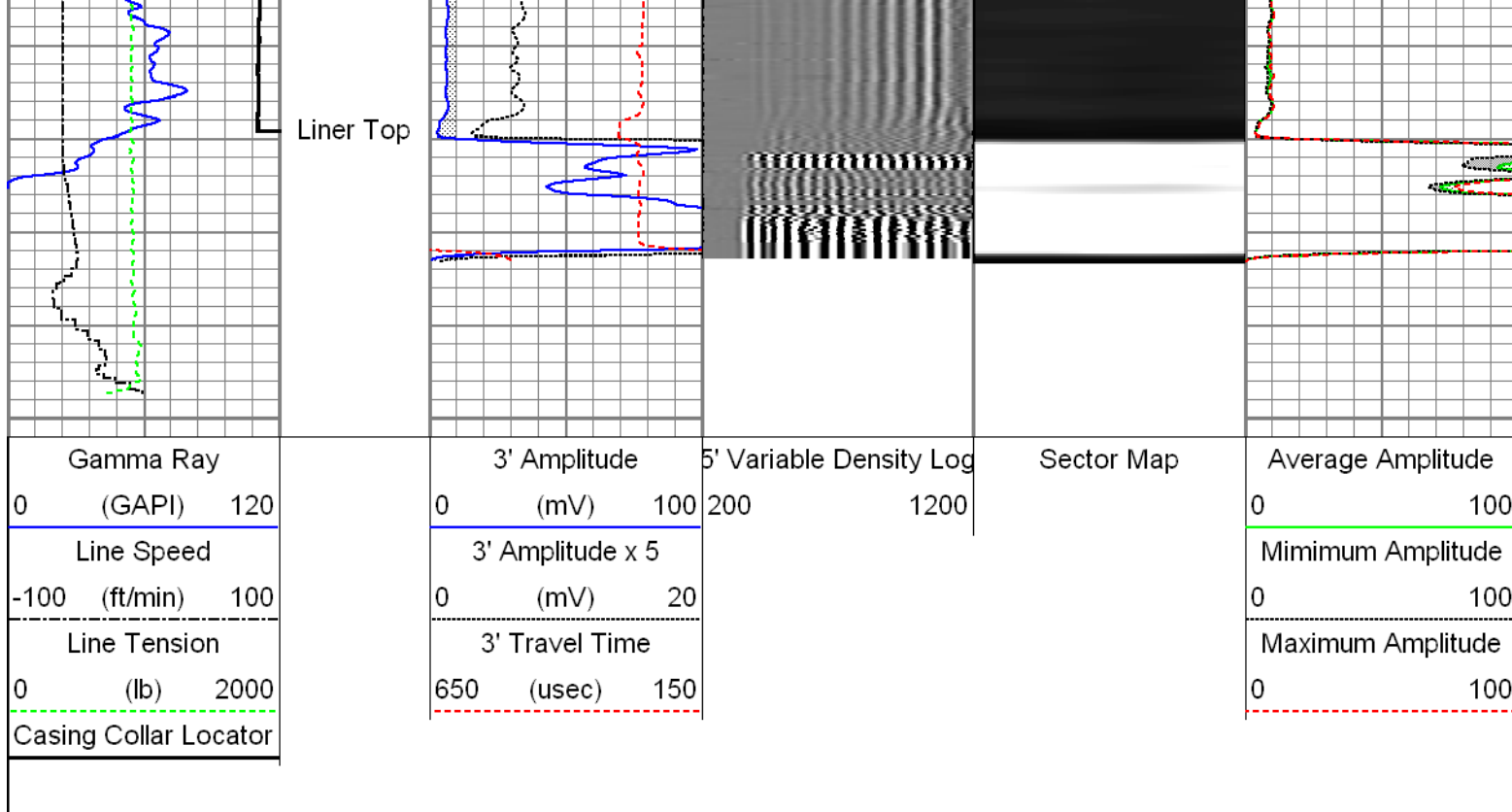


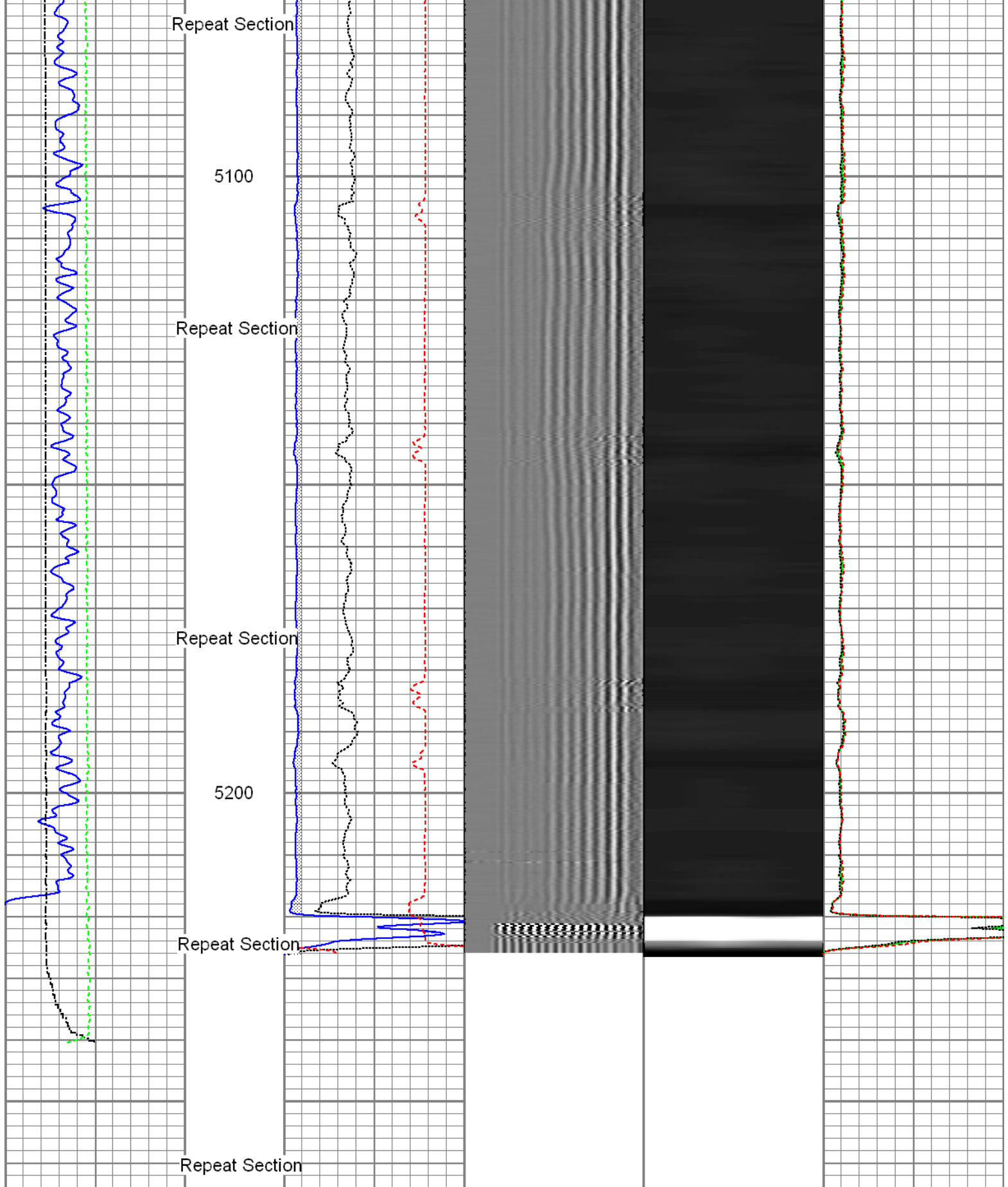
4800

4900



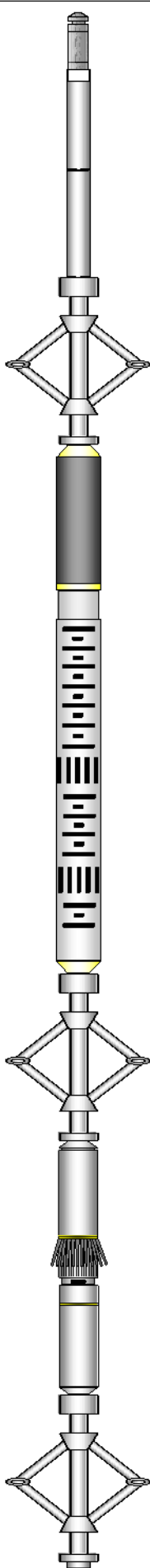
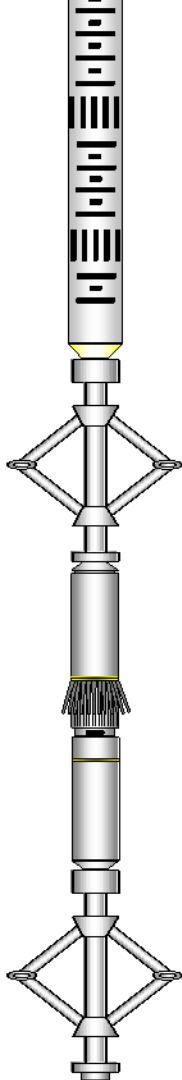






Gamma Ray (GAPI)	3' Amplitude (mV)	5' Variable Density Log	Sector Map	Average Amplitude
0 120	0 100	200 1200		0 100
Line Speed (ft/min)	3' Amplitude x 5 (mV)			Minimum Amplitude
-100 100	0 20			0 100
Line Tension (lb)	3' Travel Time (ms)			Maximum Amplitude
0 2000	0 150			0 100

0	(lb)	2000	650	(usec)	150	0	100

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
GR	23.67		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 (10012277) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50
			UW_PGR-UW_PGR_020 (050836) Production Gamma Ray	1.93	1.69	9.50
			UW_PRC #4 -UW_PRC_057 (1037) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
WVFS3FT	15.85		UW_RBT-UW_RBT_004 (10022773) 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					
WVFS5FT	14.85					
MIT	5.41		UW_PRC-UW_PRC_057 (1038) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
			UW_MIT-UW_MIT40_042 (10014703) 40 Multifinger Imaging Tool	4.54	2.75	61.10
			UW_PRC-UW_PRC_057 (1101) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
TSTAMP	0.00		UW_BUL-UW_BUL_006 (218707) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20

Dataset: 03-26-15_Whiting_Razor 11G-1409A_MIT_RBL.db: field/well/run1/pass14
Total Length: 27.92 ft
Total Weight: 319.30 lb
O.D. 3.13 in

Calibration Report

Database File: 03-26-15_whiting_razor 11g-1409a_mit_rbl.db
Dataset Pathname: pass14
Dataset Creation: Thu Mar 26 13:20:14 2015 by Log 7.0 B1

Multi-finger Imaging Tool Calibration Report

Serial Number: 10014703
Number of Fingers: 40
Tool Model: UW_MIT40_042

Inclinometer Calibration Report

Performed: Fri Sep 20 11:47:48 2013
Calibration Angle: 45

		Inc X	Inc Y
Vertical:		1963	1960
Finger 1 up:		1748	1727
Finger 31 up:		2195	1742
Finger 21 up:		2178	2188
Finger 11 up:		1727	2173
Sensitivity ratio:	1.00706		
X-axis angle:	132.825		
Deviation const.:	317.775		

Finger Calibration Report

Performed: Thu Mar 26 11:42:55 2015

Ring size:	4		5		6		7
(in)		Sens		Sens		Sens	
Finger 01:	1098	351.0	1449	391.0	1840	397.0	2237
Finger 02:	1044	357.0	1401	405.0	1806	420.0	2226
Finger 03:	1046	350.0	1396	394.0	1790	412.0	2202
Finger 04:	1013	361.0	1374	417.0	1791	436.0	2227
Finger 05:	1015	343.0	1358	391.0	1749	405.0	2154
Finger 06:	1022	357.0	1379	406.0	1785	420.0	2205
Finger 07:	1026	355.0	1381	397.0	1778	416.0	2194
Finger 08:	993	355.0	1348	410.0	1758	432.0	2190
Finger 09:	1067	362.0	1429	400.0	1829	406.0	2235
Finger 10:	1054	362.0	1416	404.0	1820	418.0	2238
Finger 11:	995	355.0	1350	406.0	1756	425.0	2181
Finger 12:	1101	353.0	1454	384.0	1838	389.0	2227
Finger 13:	1046	351.0	1397	403.0	1800	422.0	2222
Finger 14:	1016	363.0	1379	418.0	1797	435.0	2232
Finger 15:	987	361.0	1348	421.0	1769	438.0	2207
Finger 16:	1024	353.0	1377	408.0	1785	428.0	2213
Finger 17:	1072	347.0	1419	398.0	1817	409.0	2226
Finger 18:	1119	352.0	1471	398.0	1869	414.0	2283
Finger 19:	1067	354.0	1421	407.0	1828	421.0	2249
Finger 20:	997	351.0	1348	413.0	1761	434.0	2195
Finger 21:	1061	344.0	1405	398.0	1803	419.0	2222
Finger 22:	1057	346.0	1403	402.0	1805	420.0	2225
Finger 23:	1114	350.0	1464	402.0	1866	417.0	2283
Finger 24:	1080	318.0	1398	373.0	1771	389.0	2160
Finger 25:	1105	354.0	1459	408.0	1867	418.0	2285
Finger 26:	1053	336.0	1389	396.0	1785	415.0	2200
Finger 27:	1229	359.0	1588	406.0	1994	411.0	2405
Finger 28:	1103	332.0	1435	386.0	1821	406.0	2227
Finger 29:	1054	339.0	1393	401.0	1794	421.0	2215
Finger 30:	1024	338.0	1362	403.0	1765	424.0	2180

Finger 30:	1024	338.0	1382	403.0	1783	424.0	2189
Finger 31:	1251	364.0	1615	412.0	2027	417.0	2444
Finger 32:	1040	336.0	1376	390.0	1766	402.0	2168
Finger 33:	1211	373.0	1584	422.0	2006	431.0	2437
Finger 34:	1007	337.0	1344	396.0	1740	411.0	2151
Finger 35:	1157	361.0	1518	414.0	1932	421.0	2353
Finger 36:	1051	325.0	1376	377.0	1753	391.0	2144
Finger 37:	1102	349.0	1451	400.0	1851	414.0	2265
Finger 38:	1106	342.0	1448	387.0	1835	397.0	2232
Finger 39:	1081	331.0	1412	374.0	1786	385.0	2171
Finger 40:	1001	360.0	1361	419.0	1780	436.0	2216

Segmented Cement Bond Log Calibration Report

Serial Number:	10022773
Tool Model:	UW_RBT_004
Calibration Casing Diameter:	7.000 in
Calibration Depth:	310.798 ft

Master Calibration, performed Thu Mar 26 13:54:48 2015:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	0.002	0.727	0.800	62.165	84.699	0.596
5FT	-0.001	0.757	0.800	62.165	80.986	0.899
S1	0.002	0.686	0.000	100.000	146.304	-0.357
S2	0.001	0.726	0.000	100.000	137.950	-0.168
S3	0.002	0.736	0.000	100.000	136.243	-0.271
S4	0.001	0.730	0.000	100.000	137.238	-0.181
S5	0.002	0.728	0.000	100.000	137.917	-0.337
S6	0.001	0.694	0.000	100.000	144.243	-0.176
S7	0.001	0.678	0.000	100.000	147.782	-0.206
S8	0.001	0.677	0.000	100.000	147.918	-0.181

Gamma Ray Calibration Report

Serial Number:	050836
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	Whiting Oil and Gas Corporation
Well	Razor 11G-1409A
Field	Wildcat
County	Weld
State	Colorado