



Radial Cement Bond  
Gamma Ray  
Casing Collar Log

Company Whiting Oil & Gas Corporation				Company Whiting Oil & Gas Corporation			
Well Razor 27J-3412B				Well Razor 27J-3412B			
Field Wildcat				Field Wildcat			
County Weld				County Weld			
State Colorado				State Colorado			
Location:				API # : 05-123-38063			
SEC 27 TWP 10N RGE 58W				Other Services Gauge Ring Set RBP MIT			
Permanent Datum				Ground Level			
Log Measured From				Kelly Bushing			
Drilling Measured From				Kelly Bushing			
Elevation 4764'				Elevation			
K.B. 4785'				D.F. 4784'			
G.L. 4764'							
Date				14 November 2014			
Run Number				One			
Depth Driller				13,500 FT			
Depth Logger				5323 FT			
Bottom Logged Interval				5318 FT			
Top Log Interval				Surface			
Open Hole Size				8.750"			
Type Fluid				Water			
Density / Viscosity				8.34 lbm/gal			
Max. Recorded Temp.				194° F			
Estimated Cement Top				139 FT			
Time Well Ready				ROA			
Time Logger on Bottom				11:00 AM			
Equipment Number				HD 0255			
Location				Ft. Lupton, CO			
Recorded By				Brent Kalkwarf			
Witnessed By				Gary Chandler			
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							
Liner				4 1/2			
11.6				L-80			
5237 FT				13,478 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 Kelly Bushing at 21 FT  
Adjusted log - 1 FT to correlate with KB  
Gauge Ring/Junk Basket ran to 5442 FT prior to log run.  
RBP set at 5320 FT prior to log run and was correlated to Casing Tally Liner Top.  
Log ran from 5323 FT to surface.  
Log Ran with 1500 PSI Surface Induced Pressure  
  
Thank you for choosing FMC Technologies Completion Services, Inc.!!

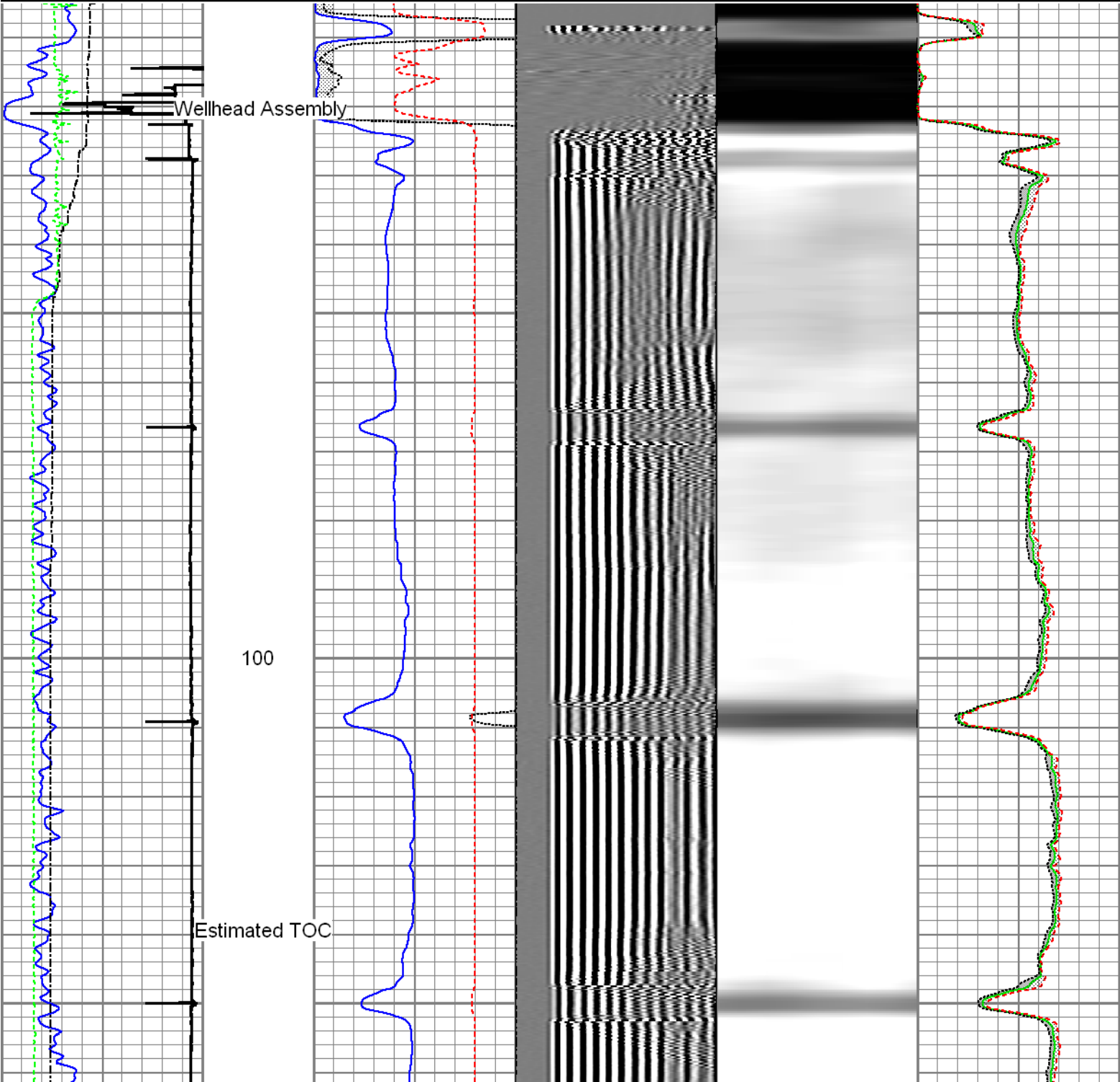


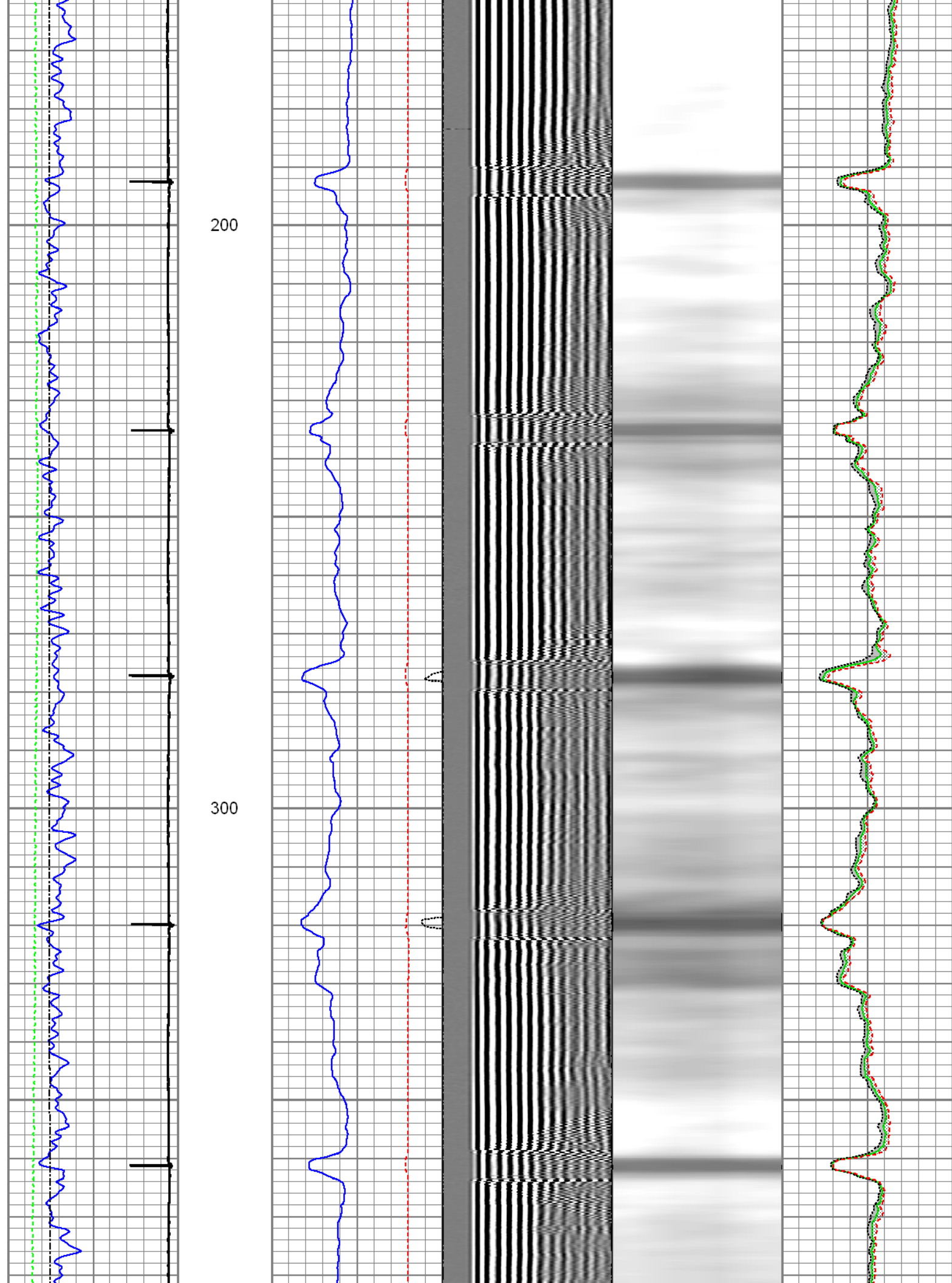
Main Pass

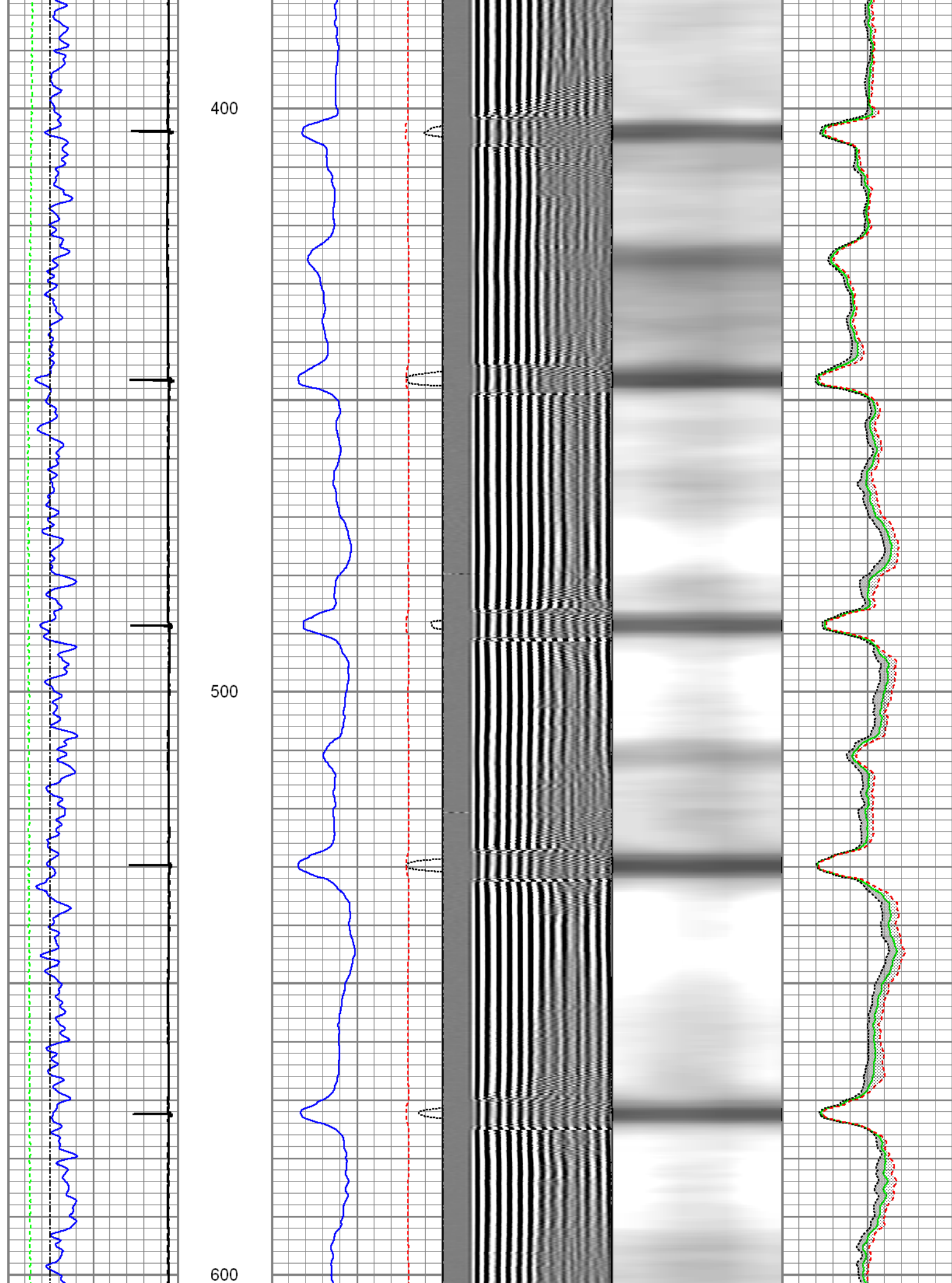
Recorded with 1500 PSI Surface Induced Pressure

Database File: 11-14-14\_whiting\_razor 27j-3412b\_mit\_rbl.db  
Dataset Pathname: pass12  
Presentation Format: rbt4\_mit  
Dataset Creation: Fri Nov 14 11:20:33 2014 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				





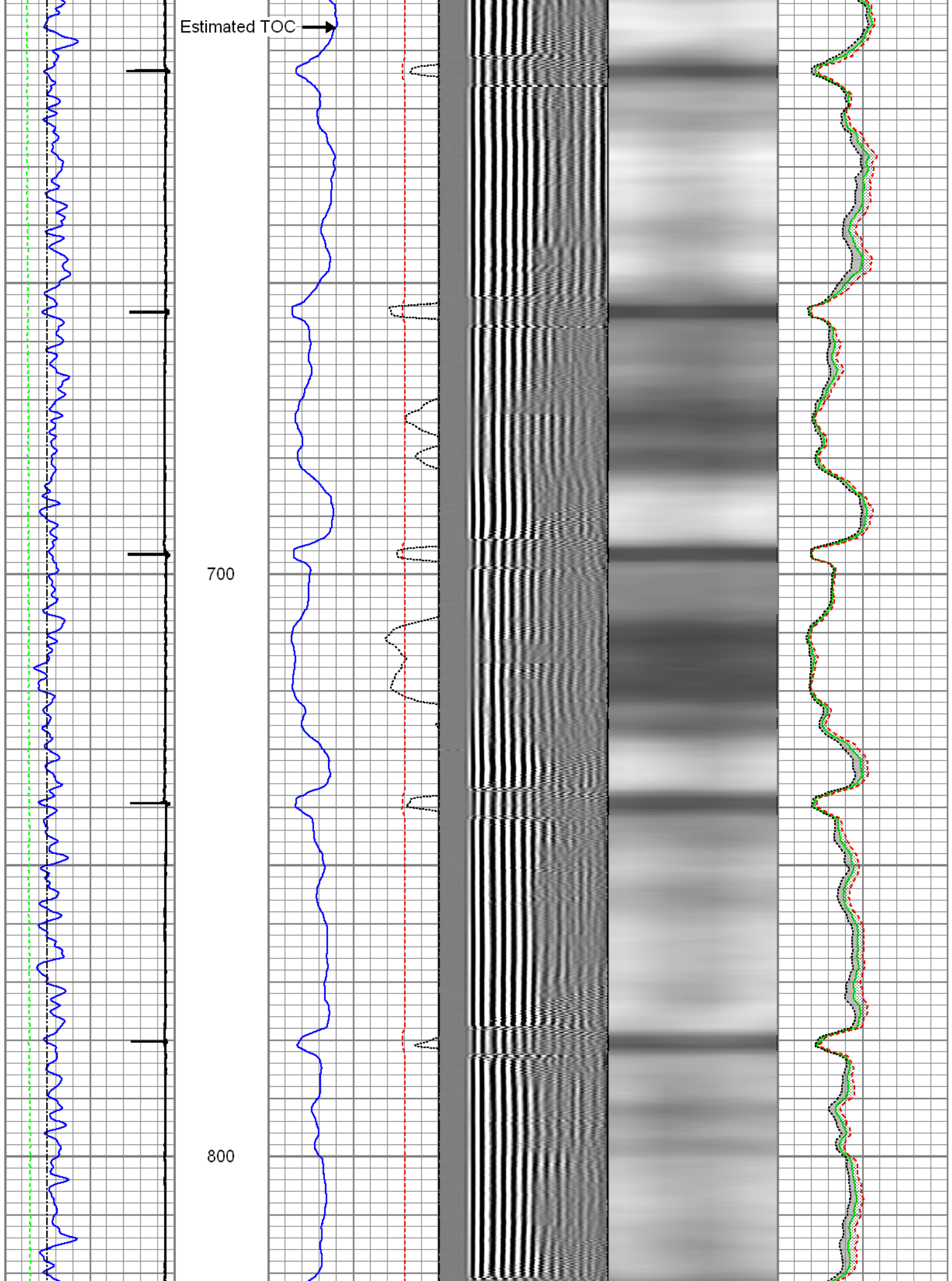


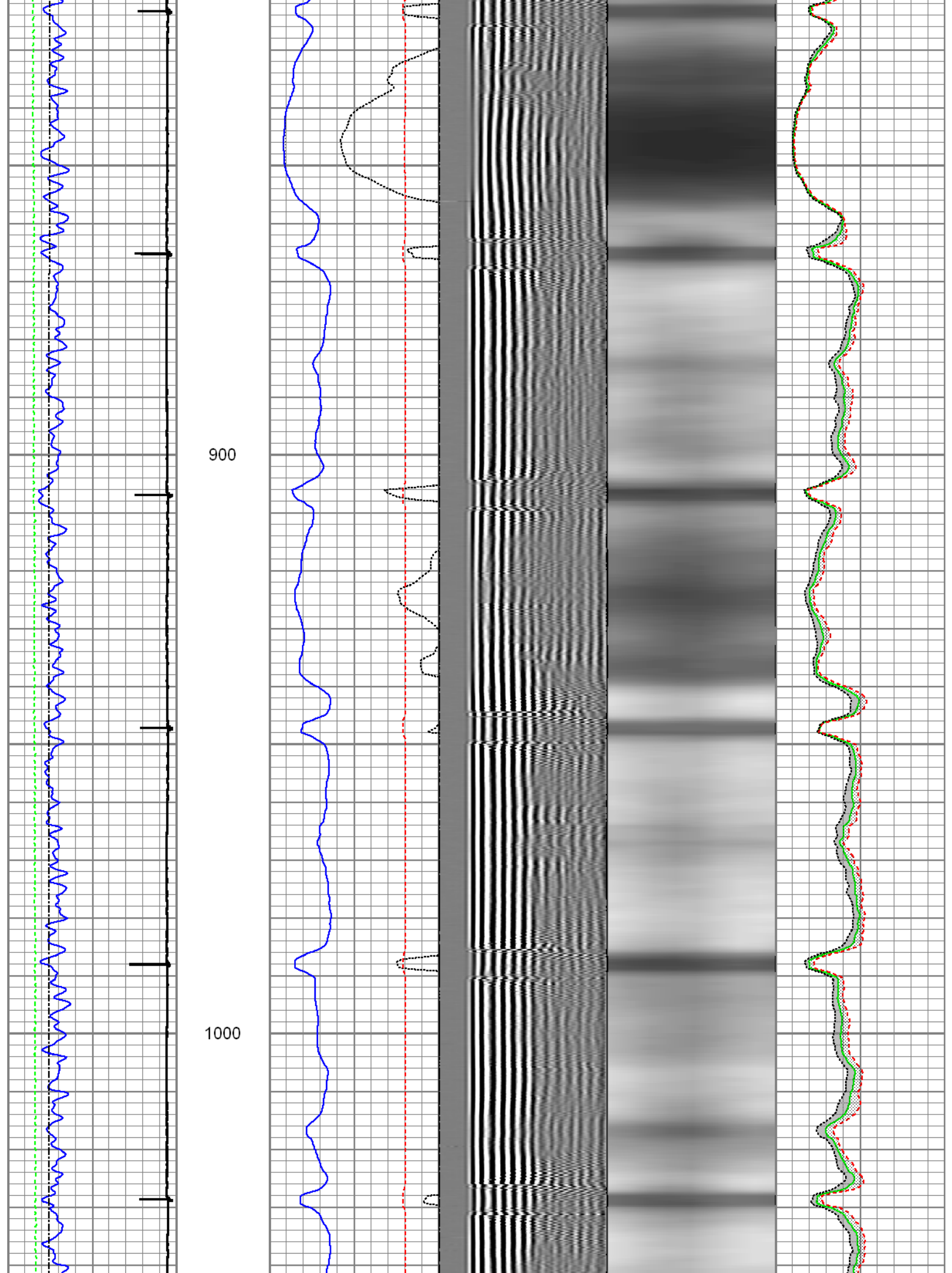


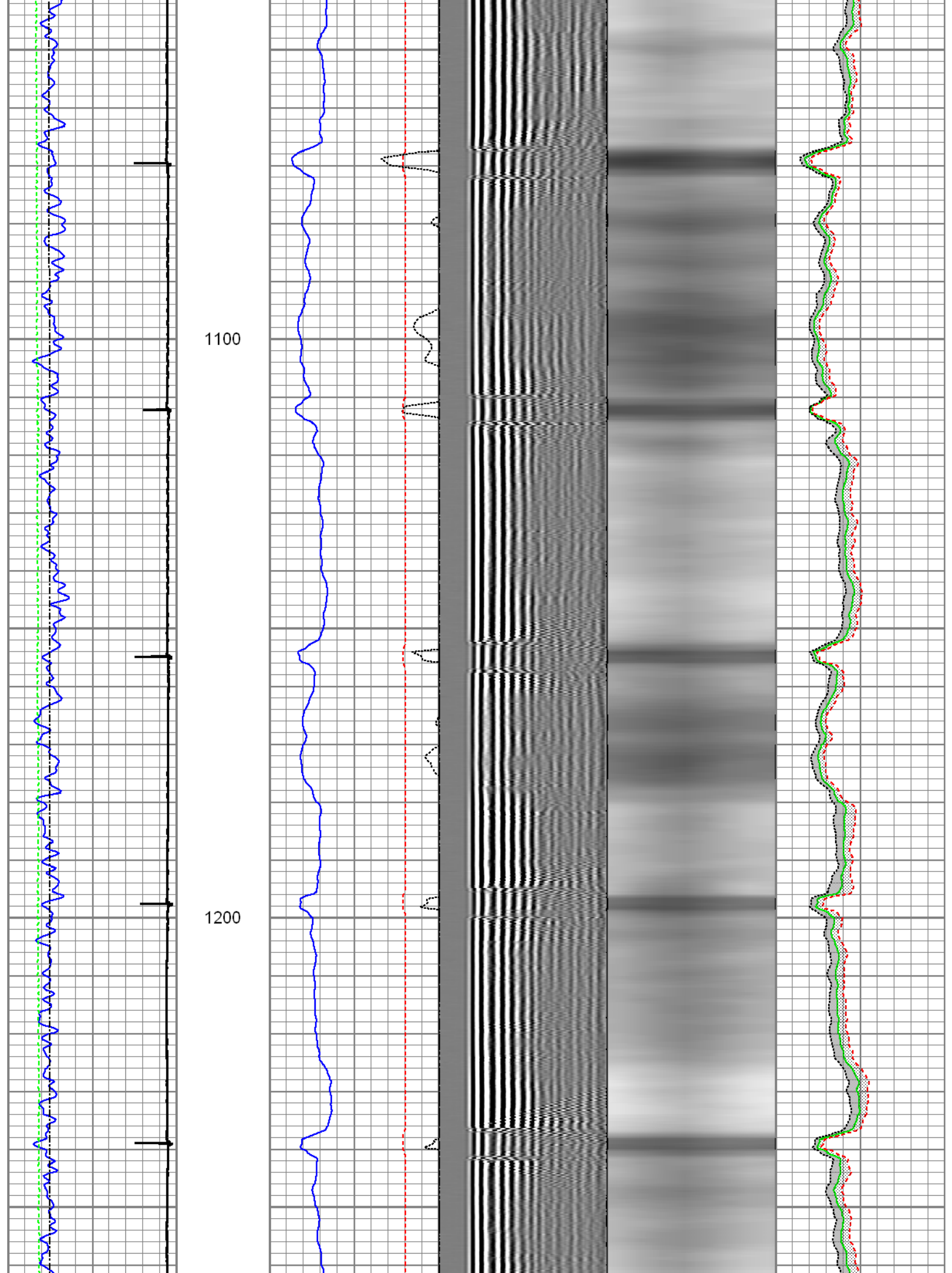
Estimated TOC →

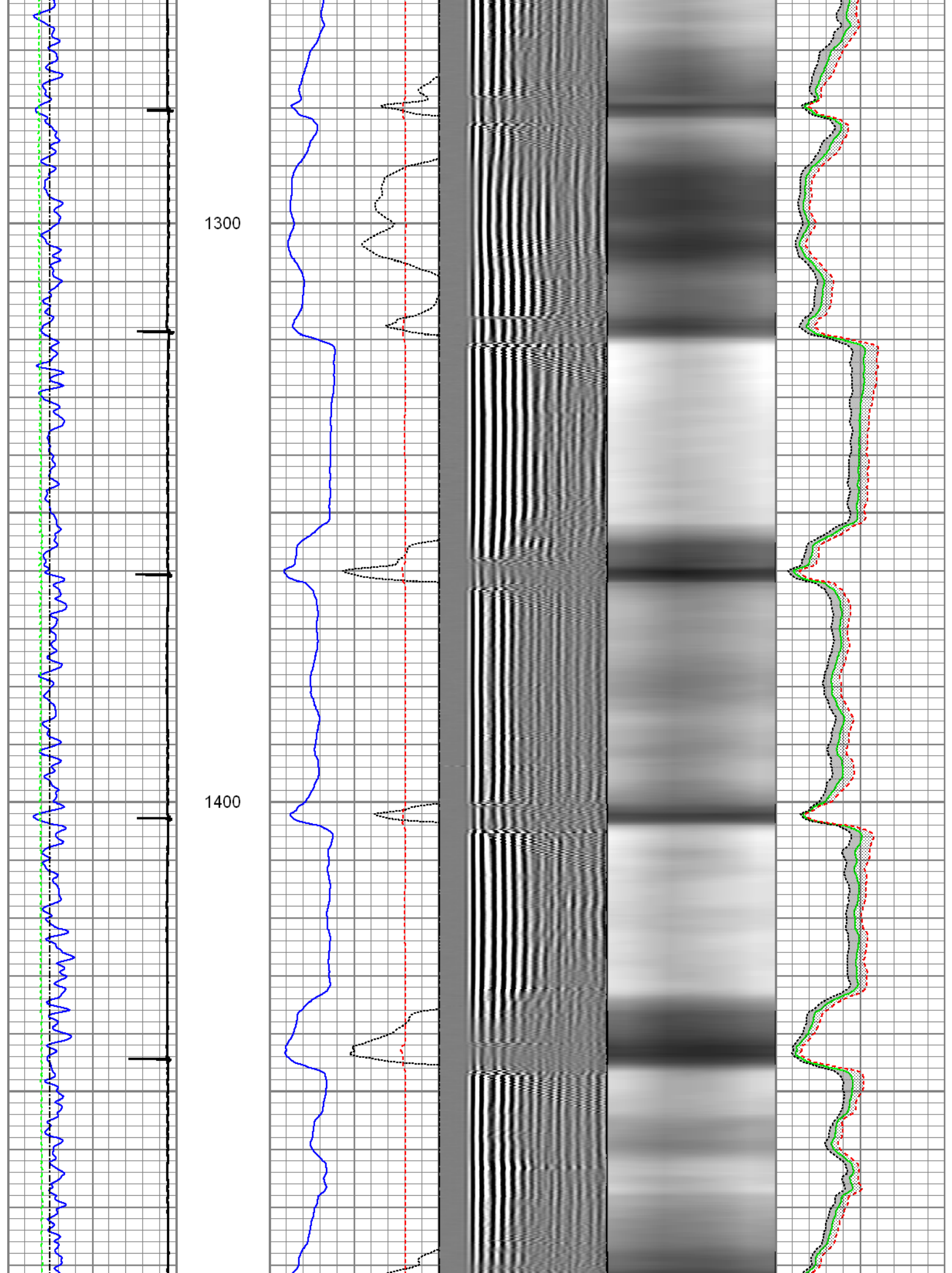
700

800

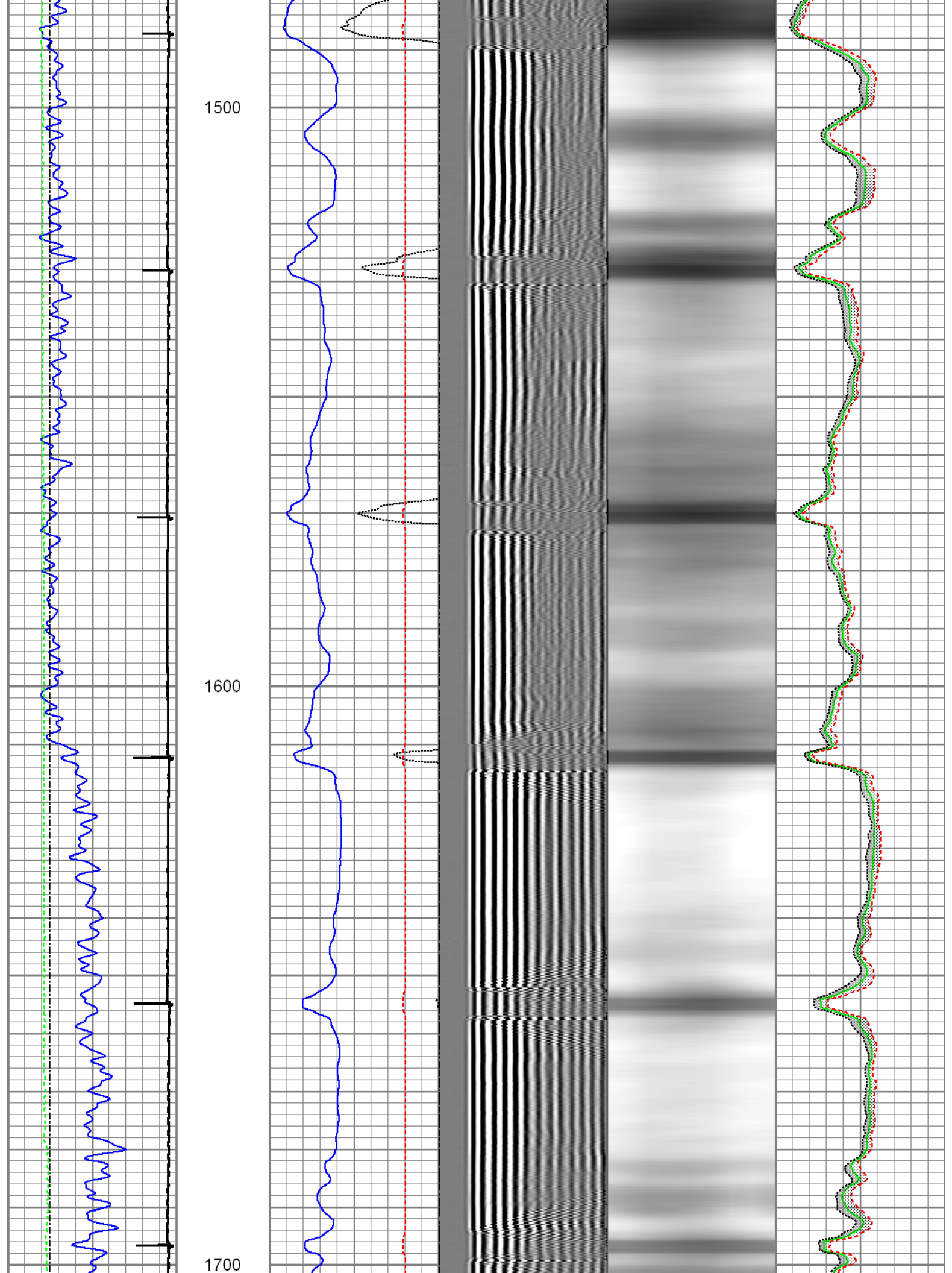


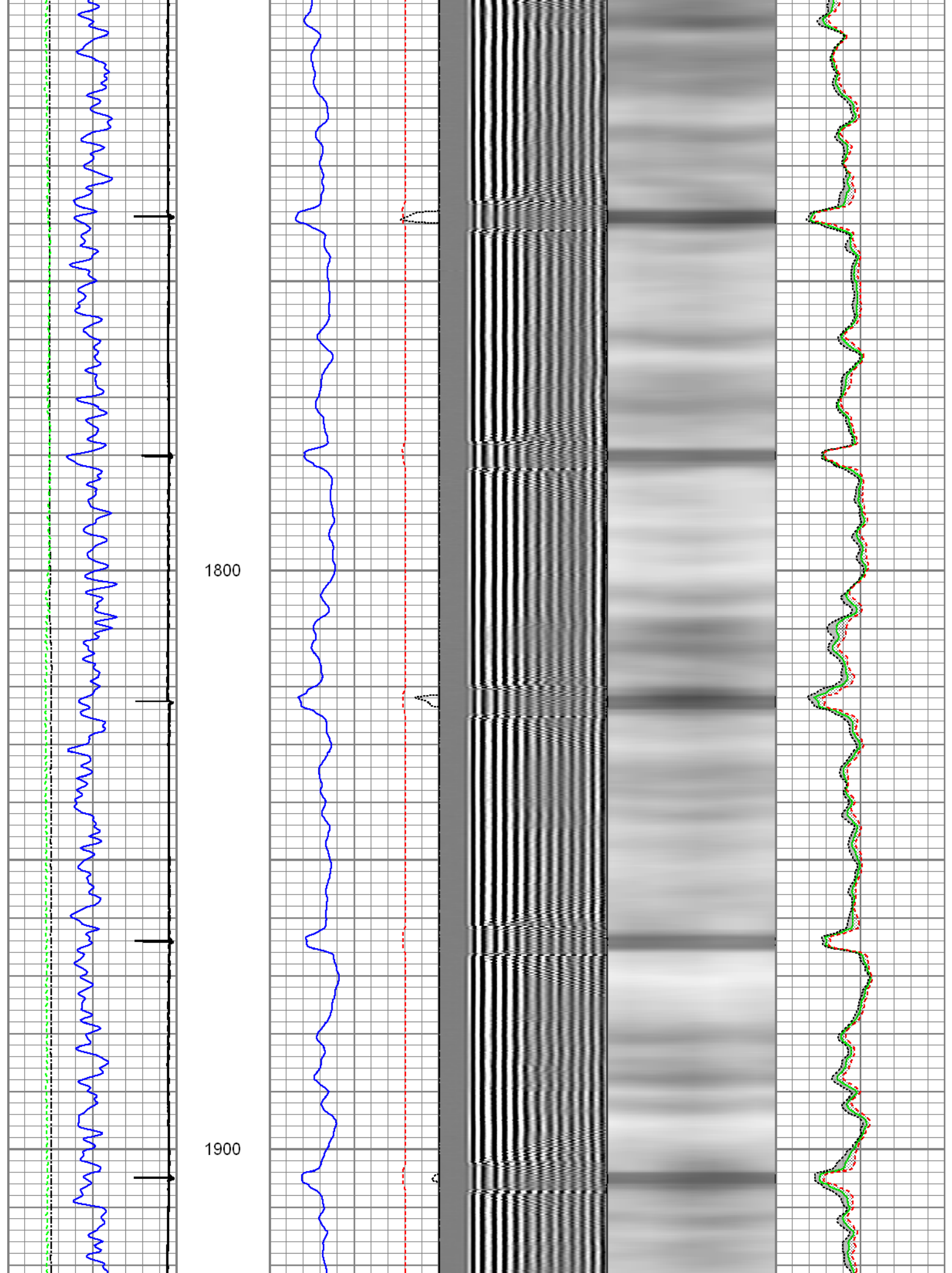


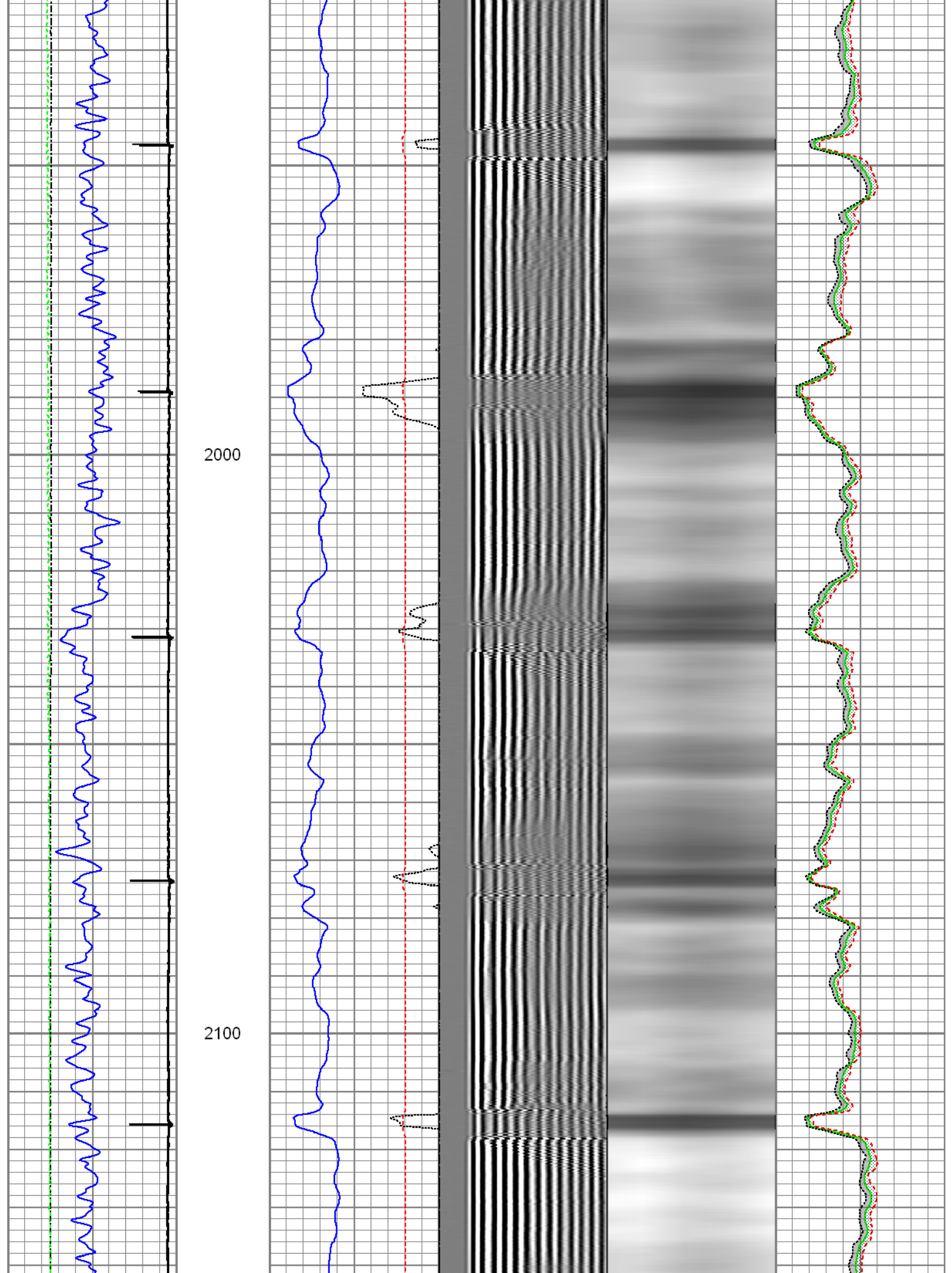


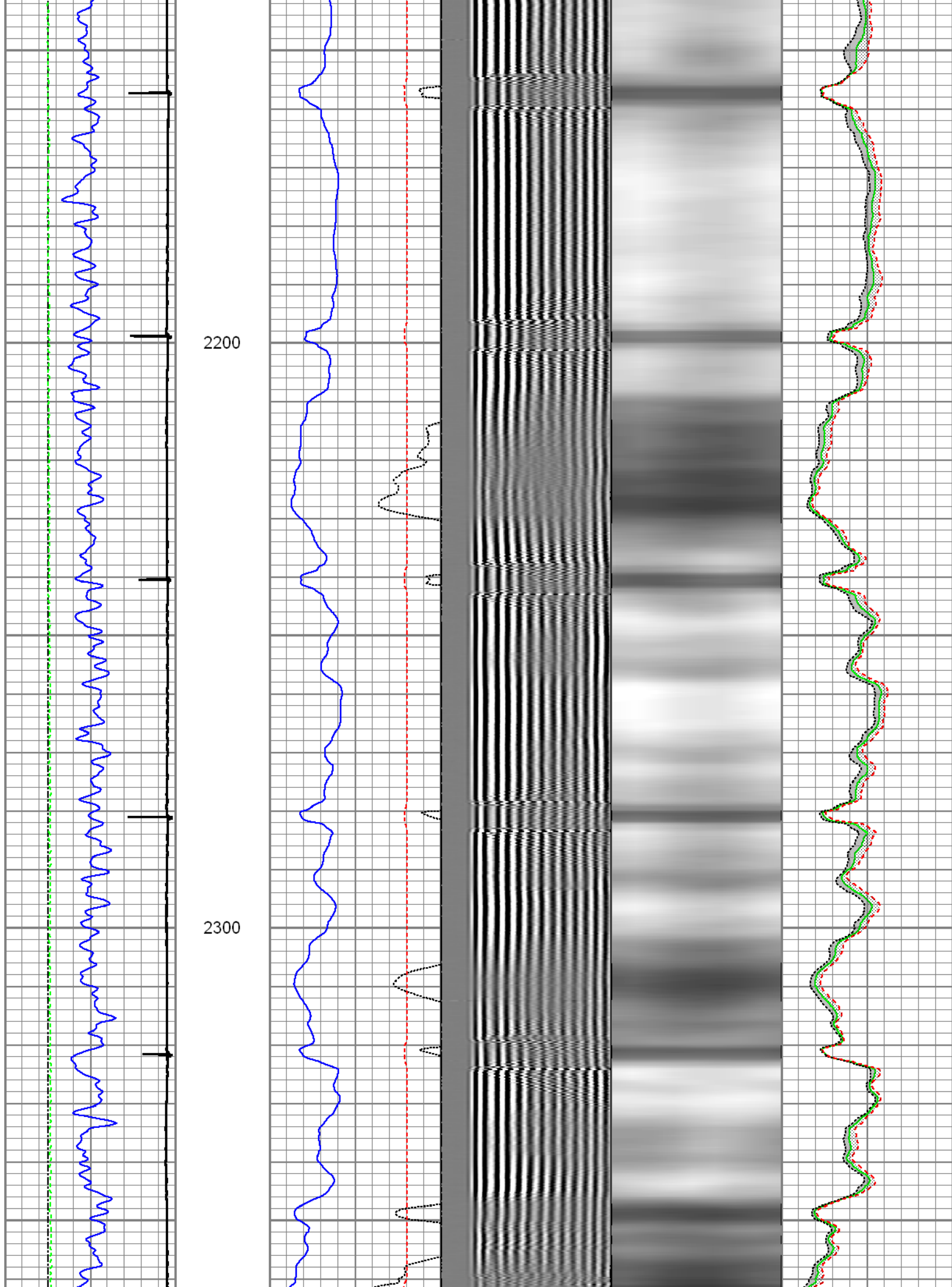




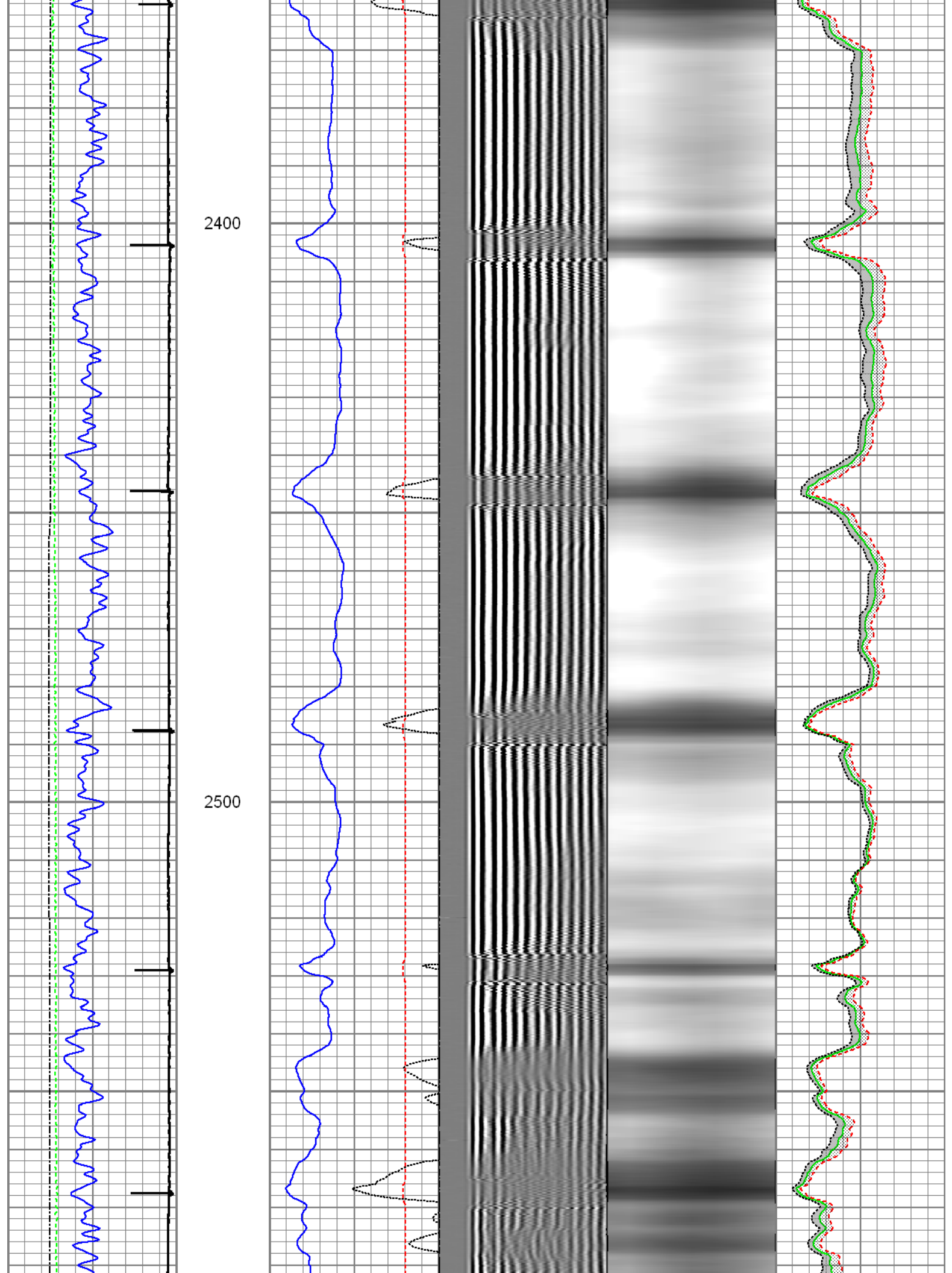


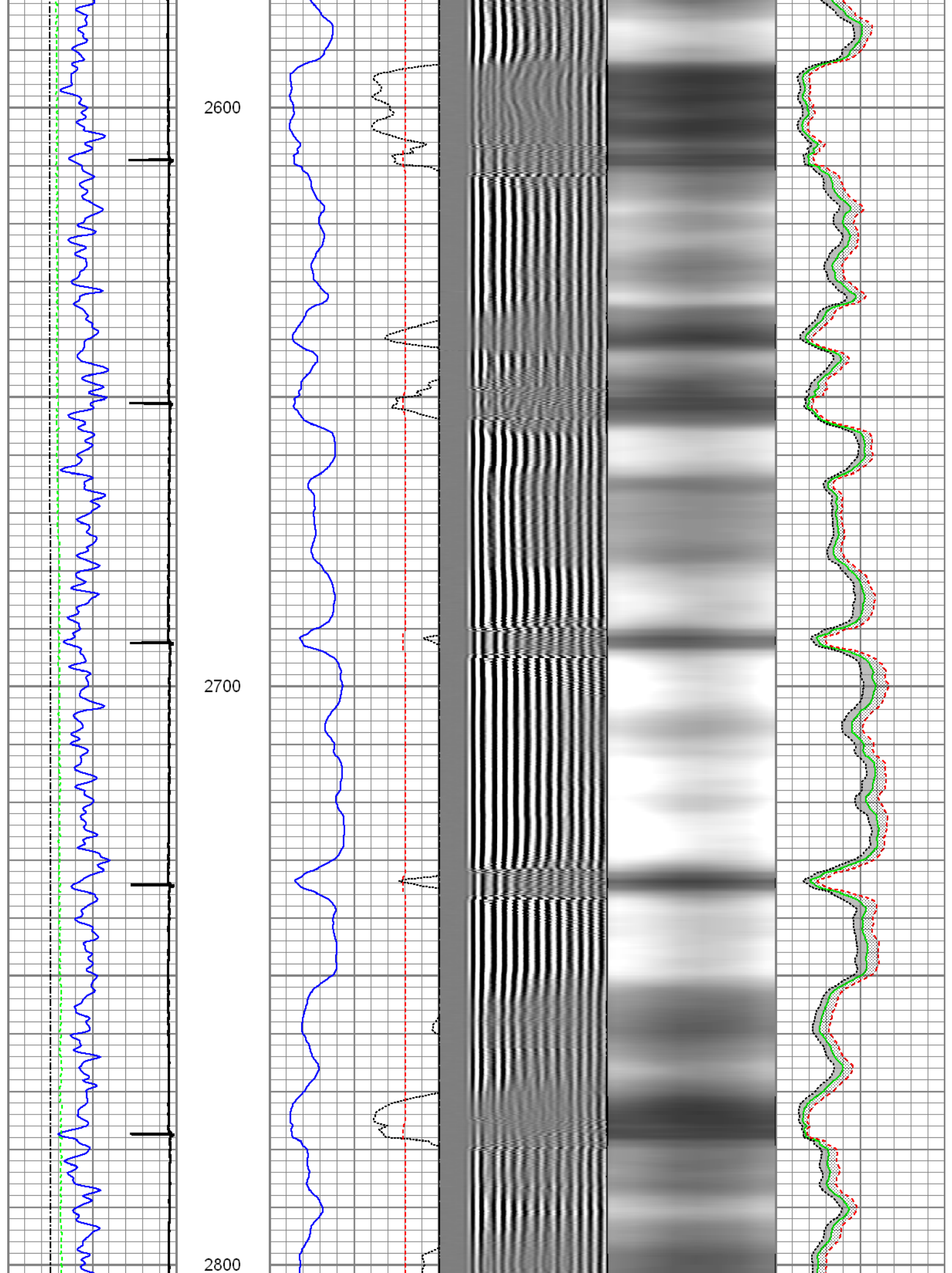


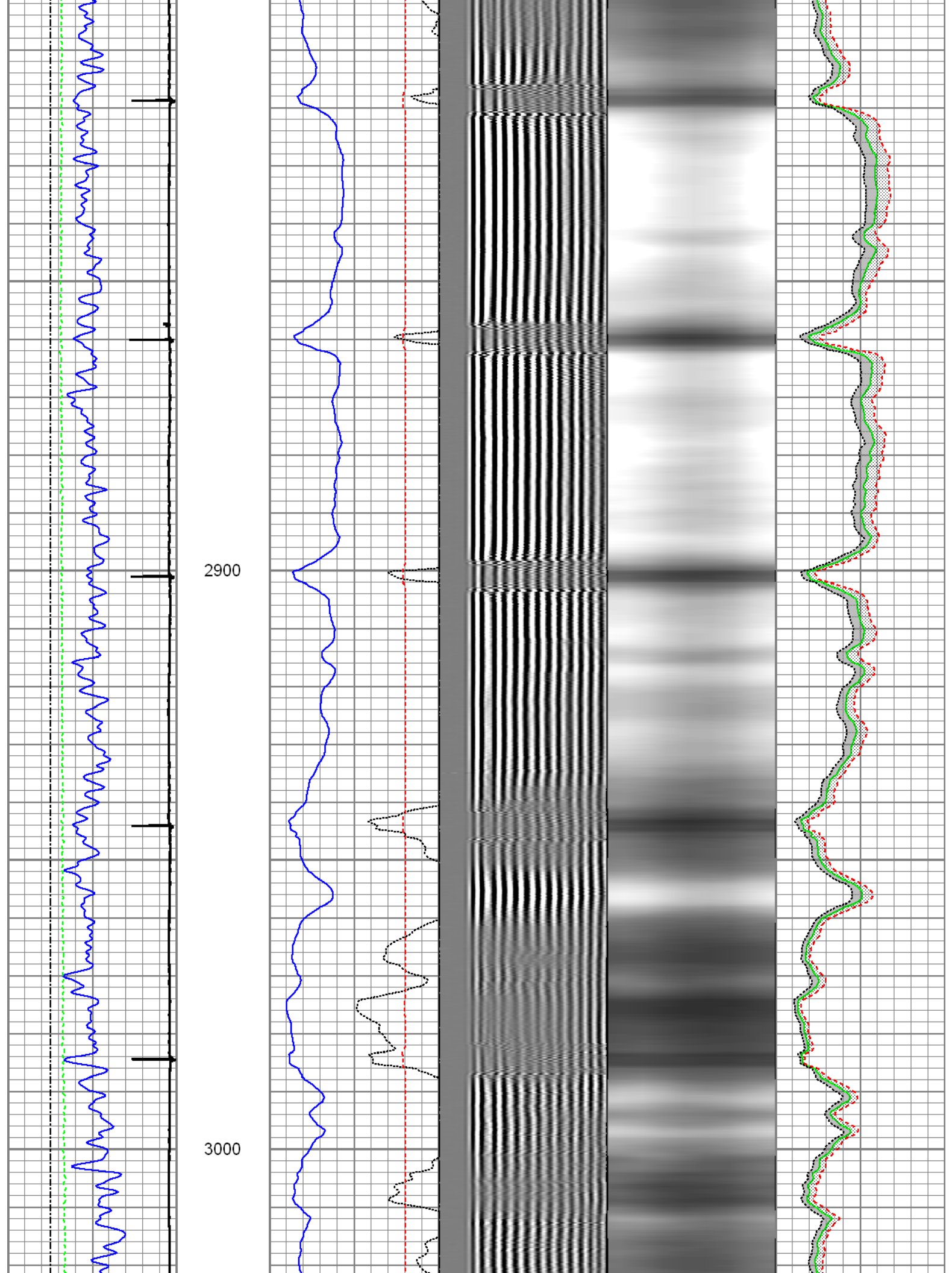




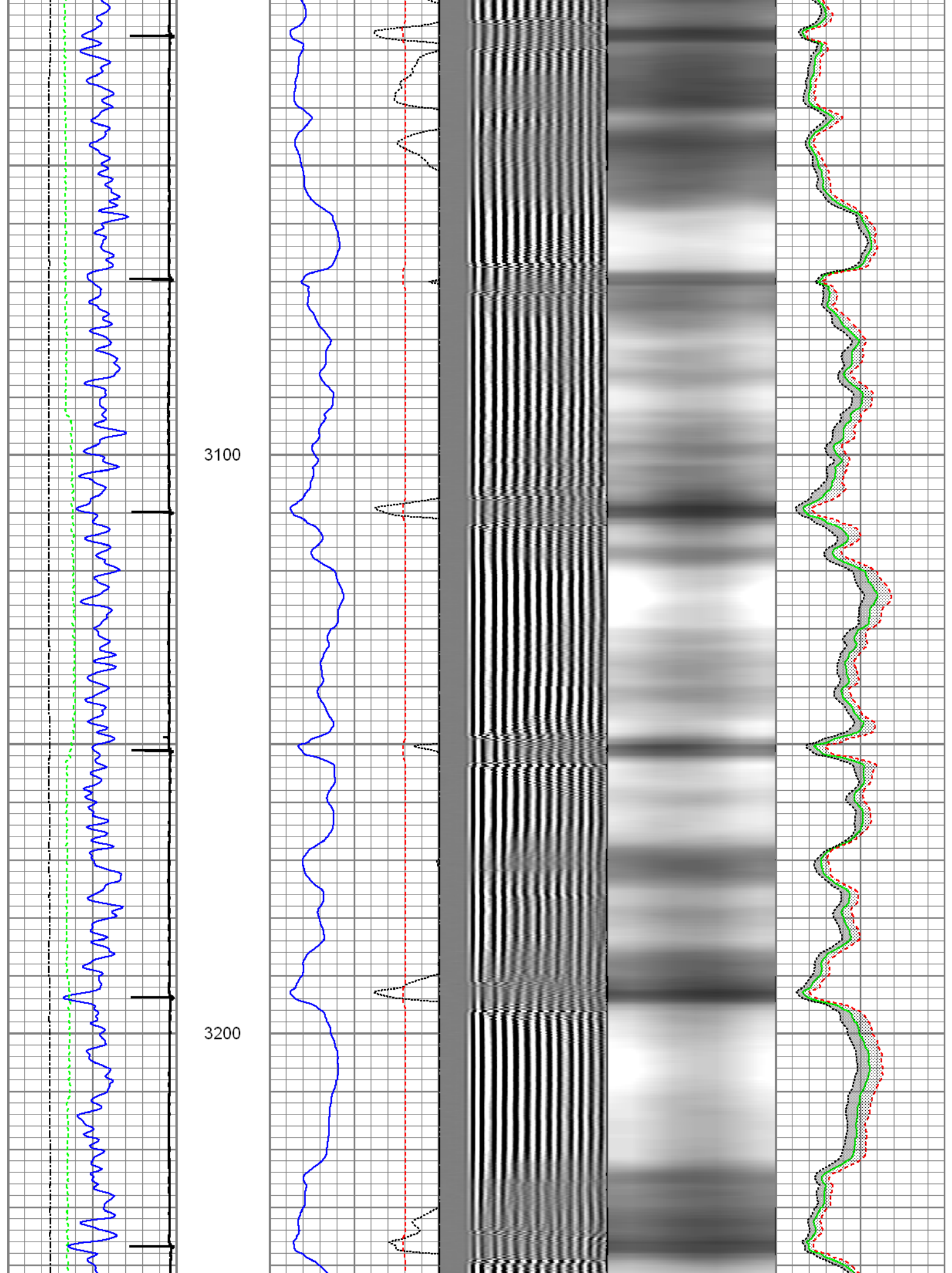




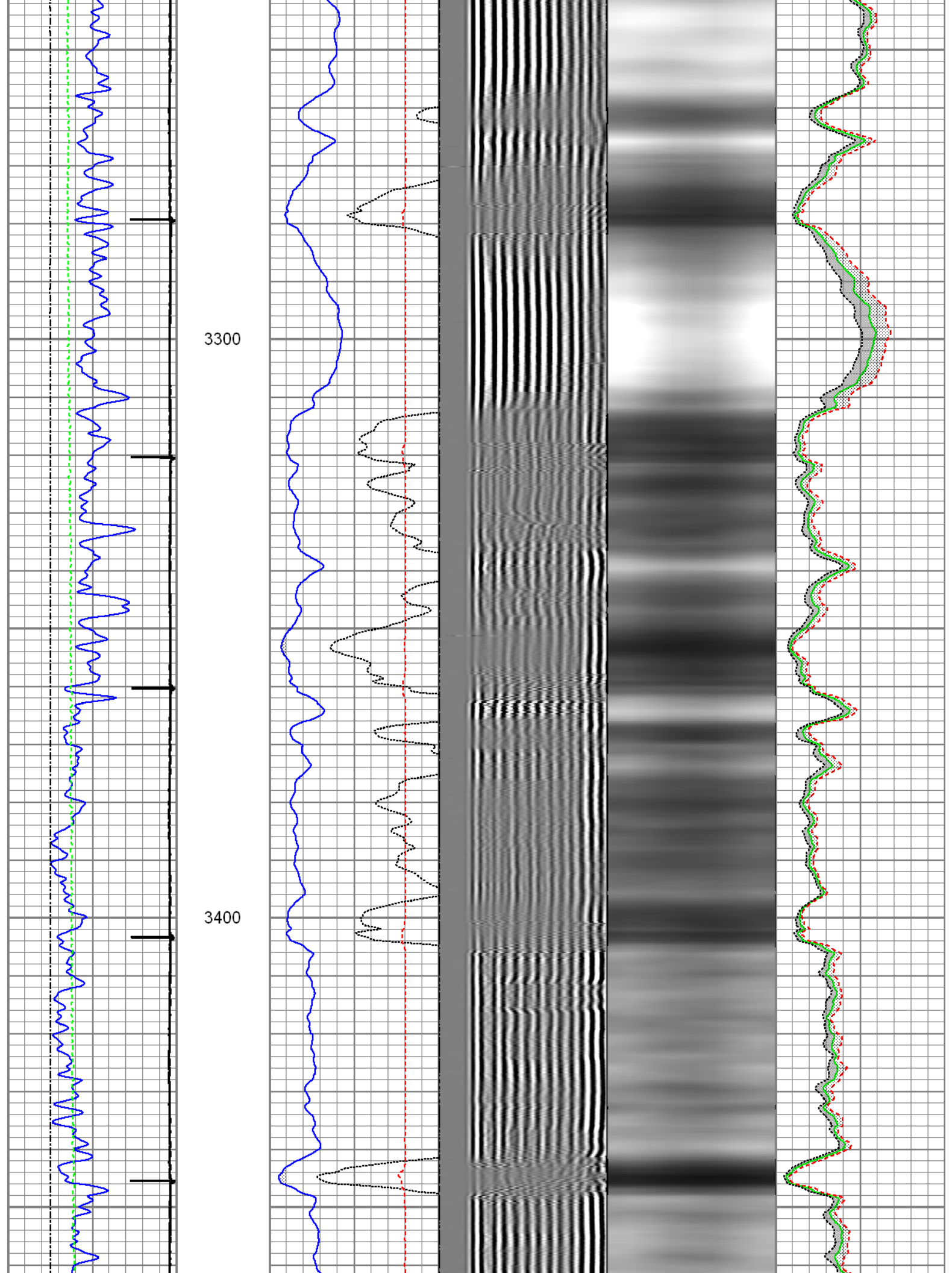


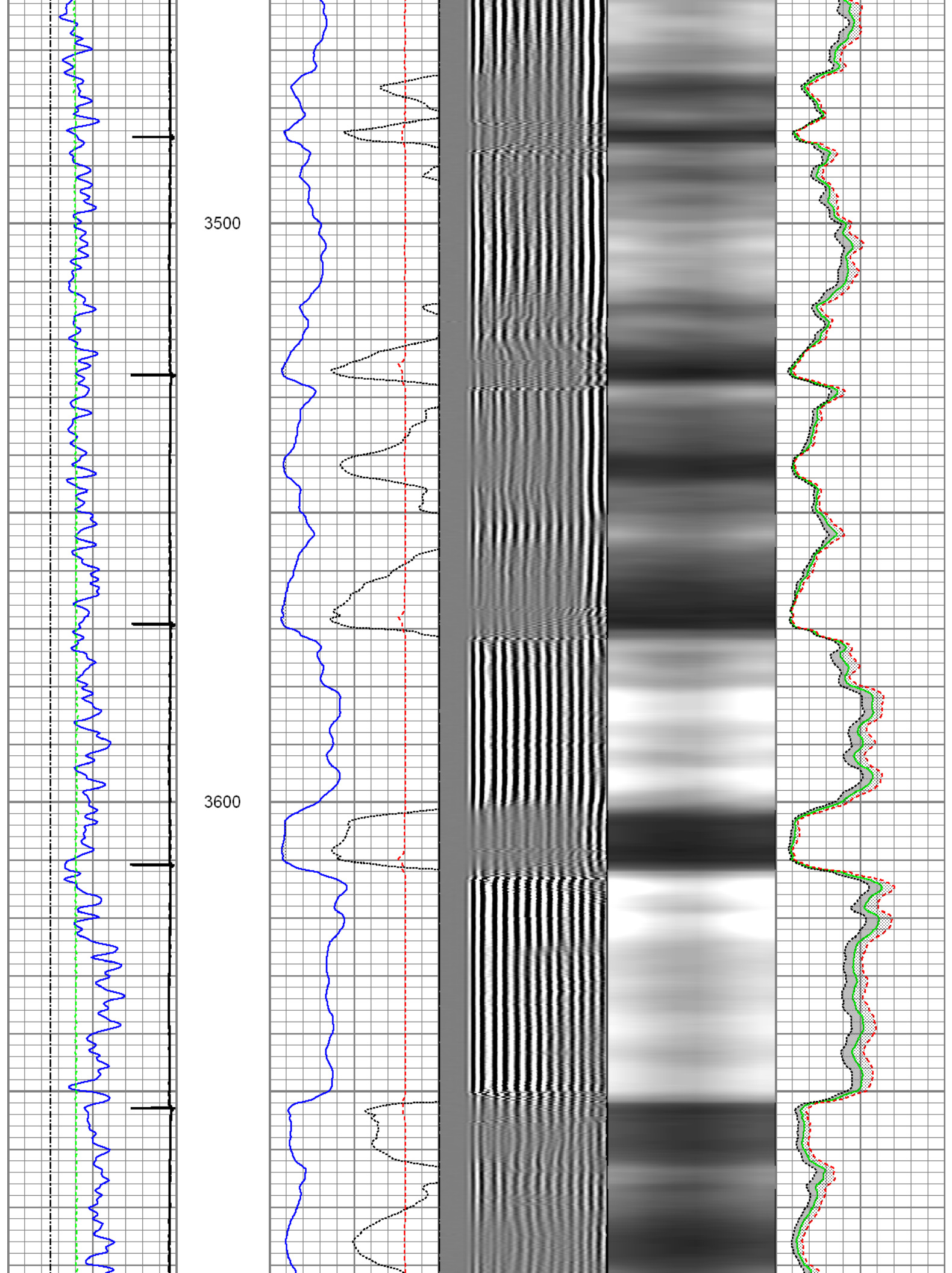


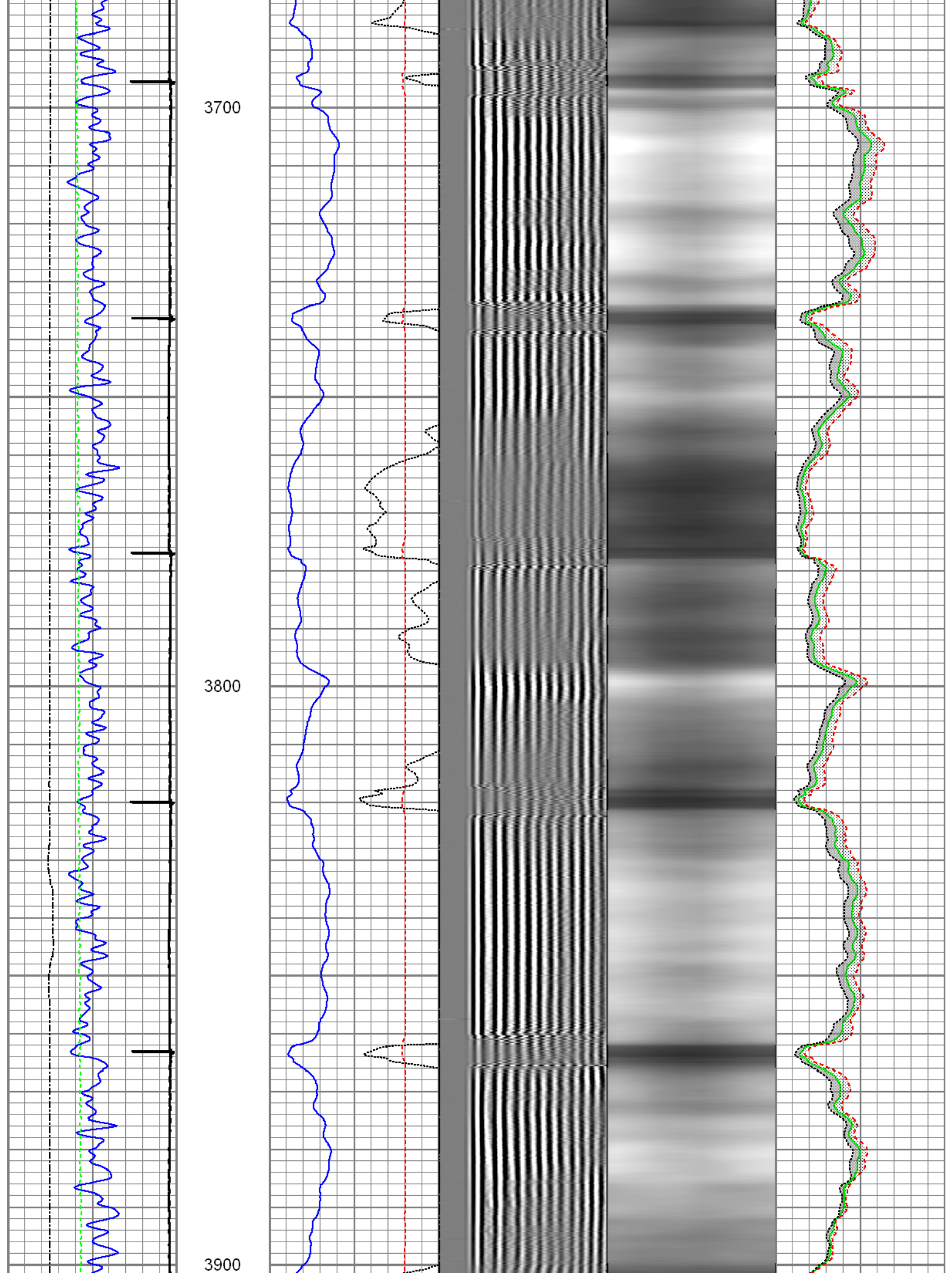




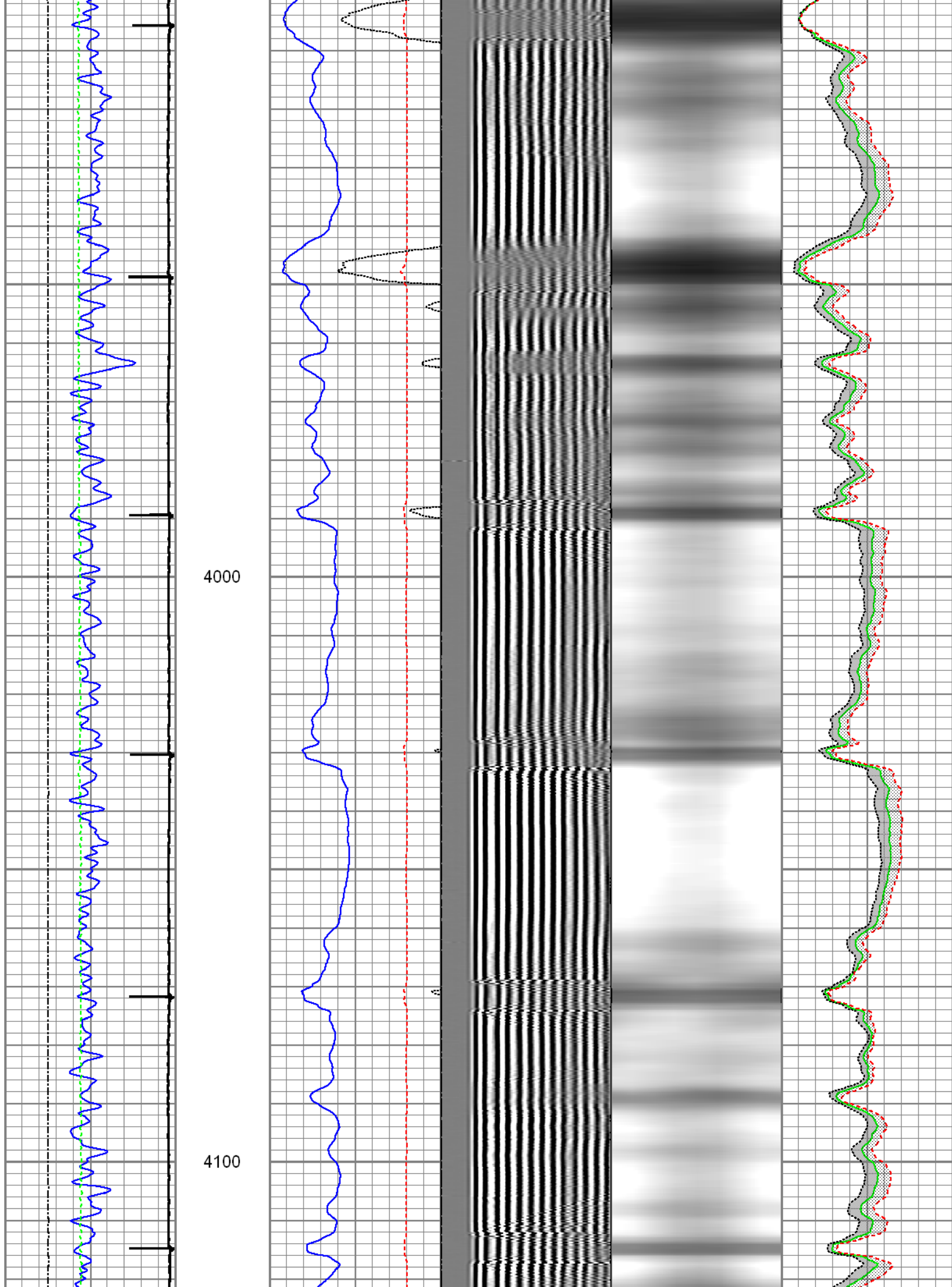




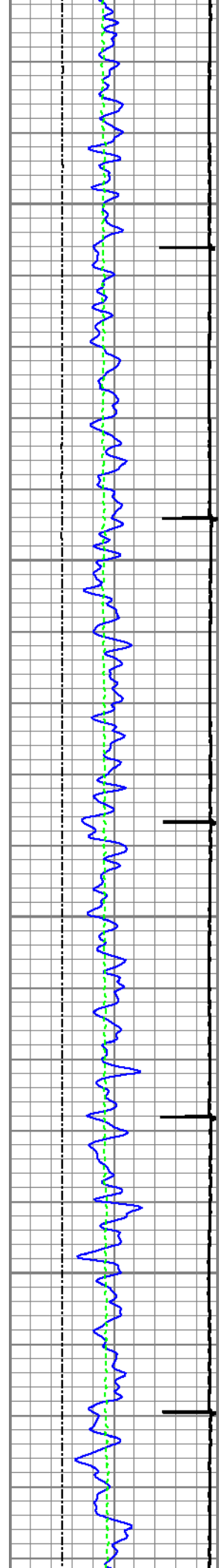






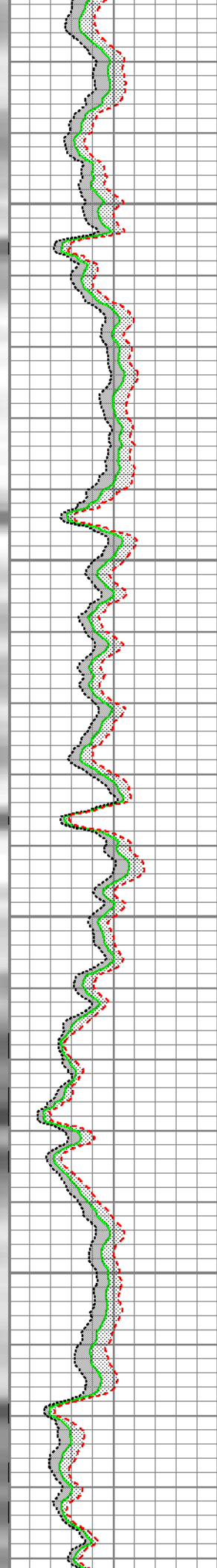
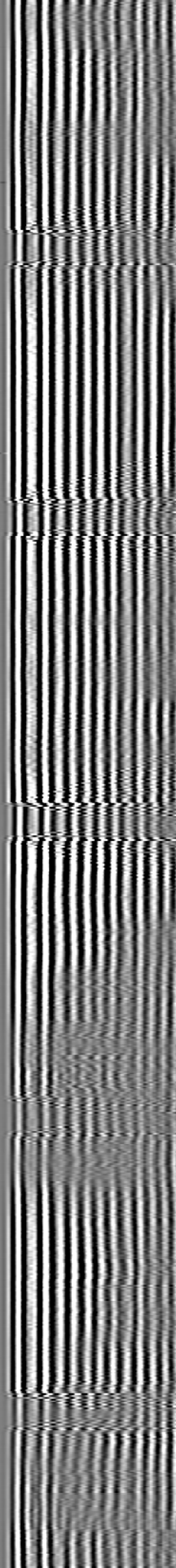
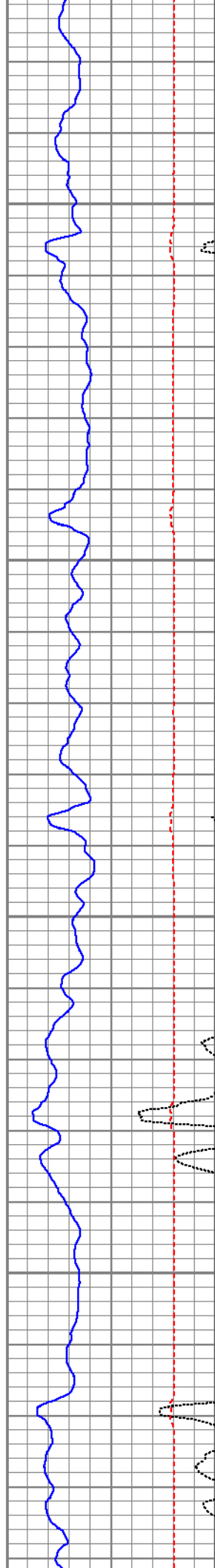


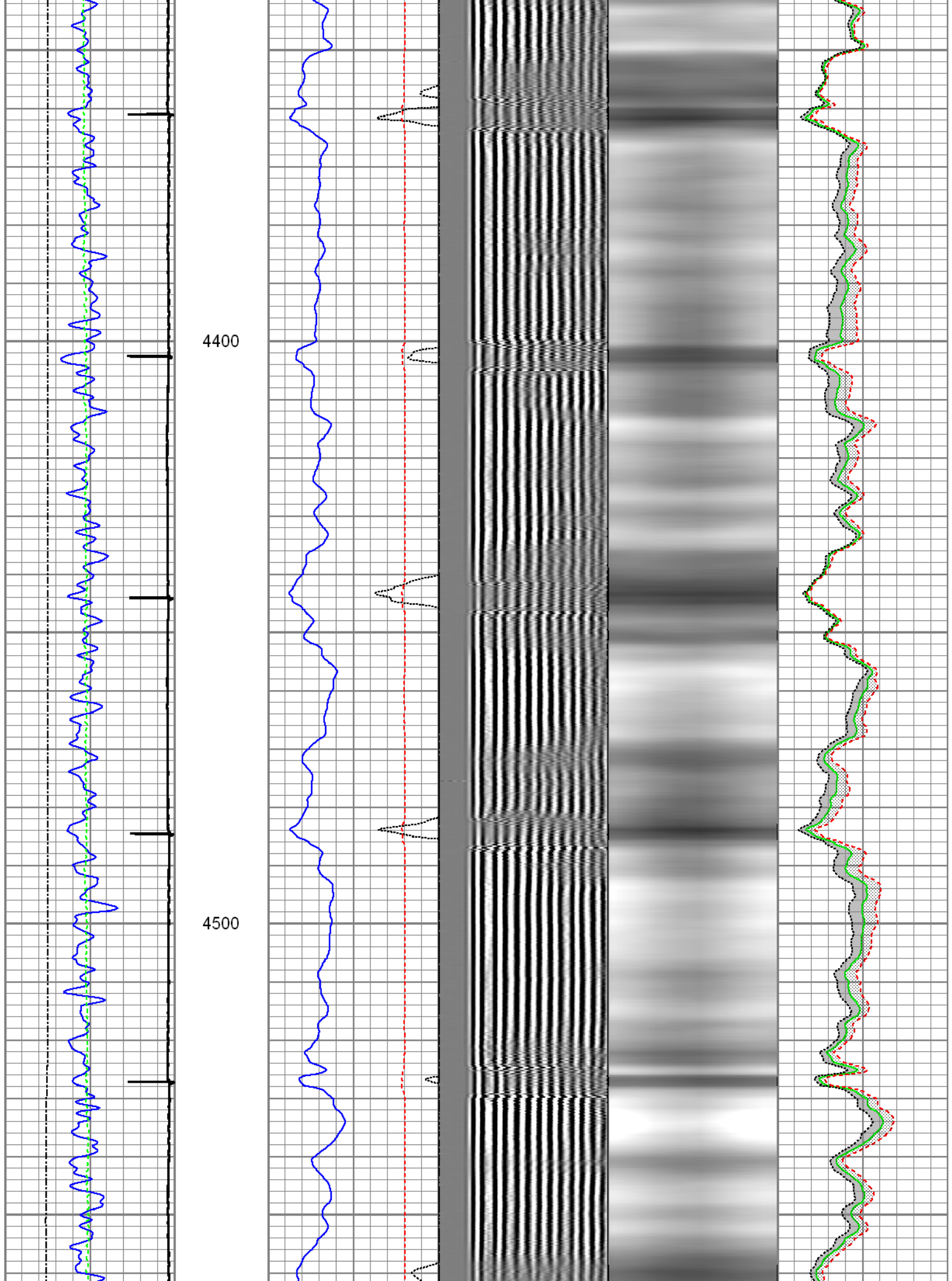


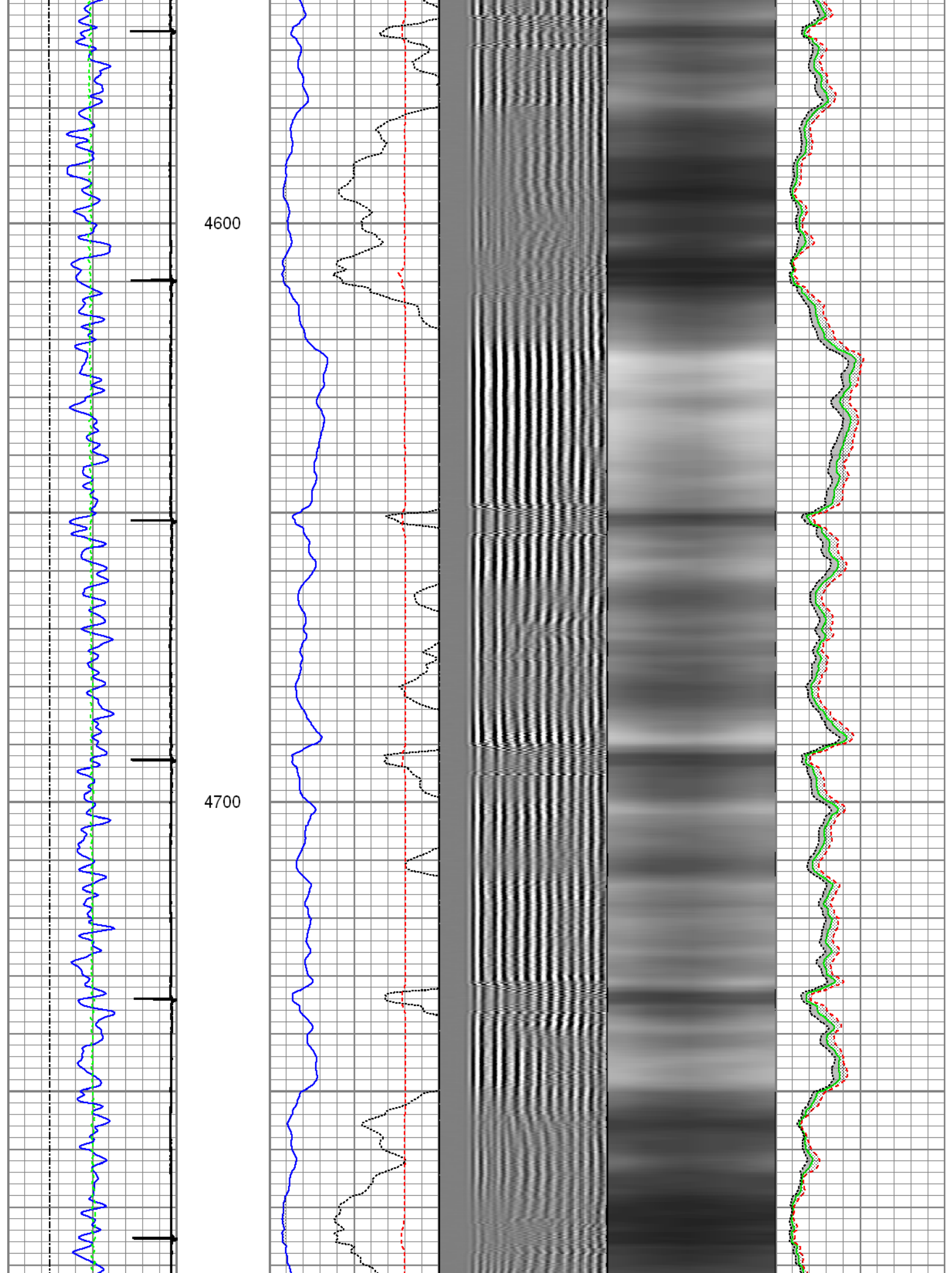


4200

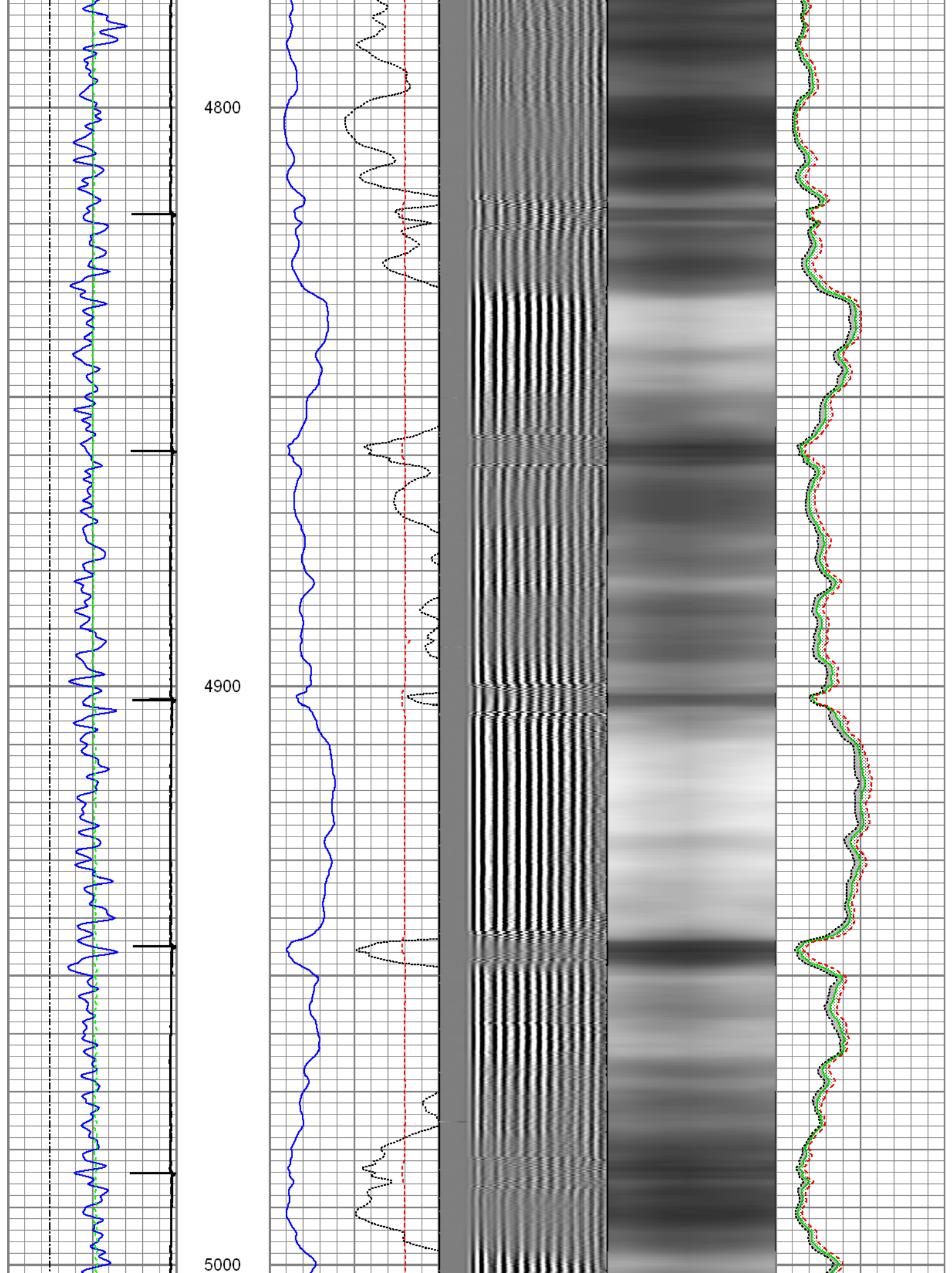
4300



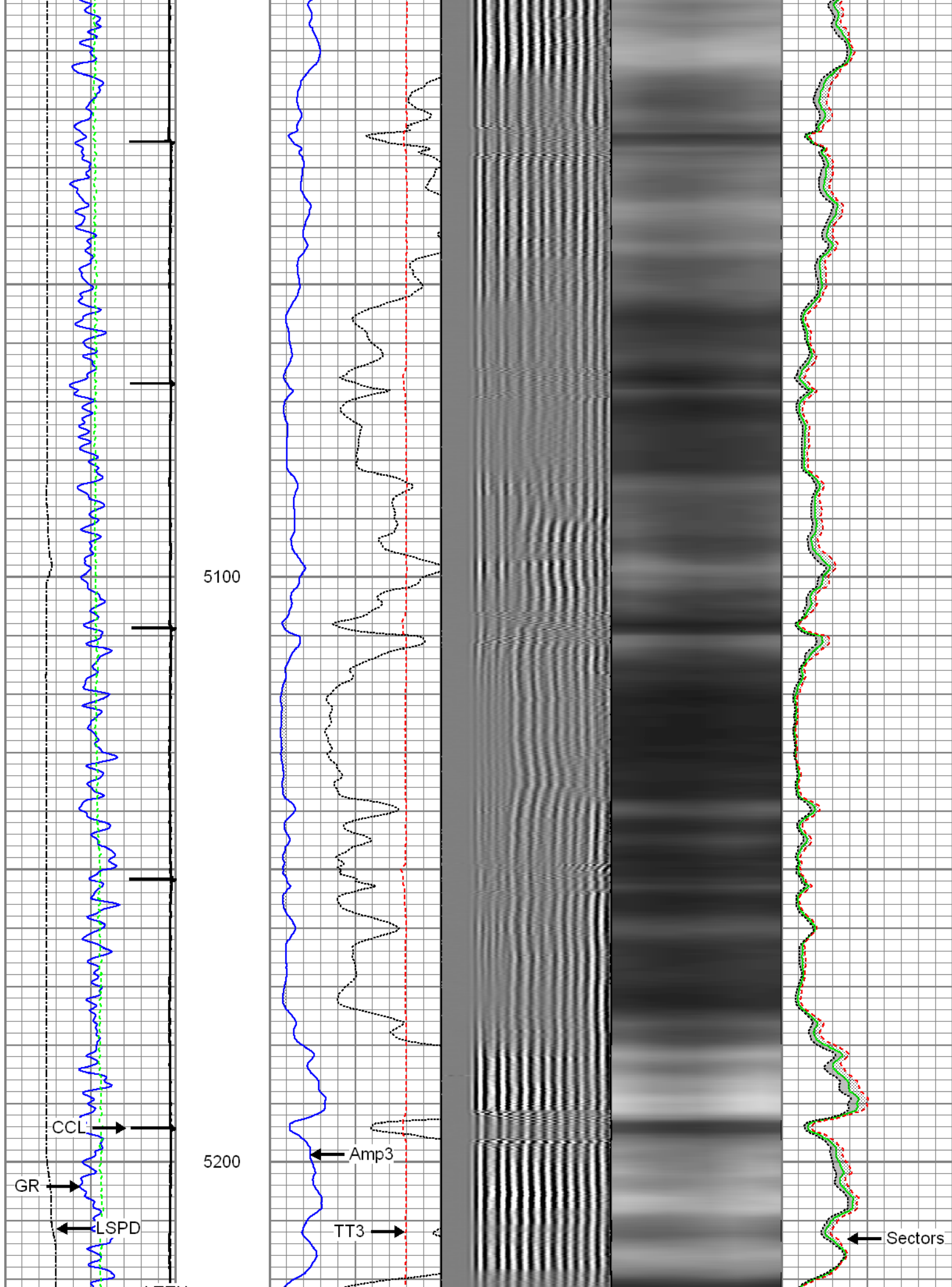


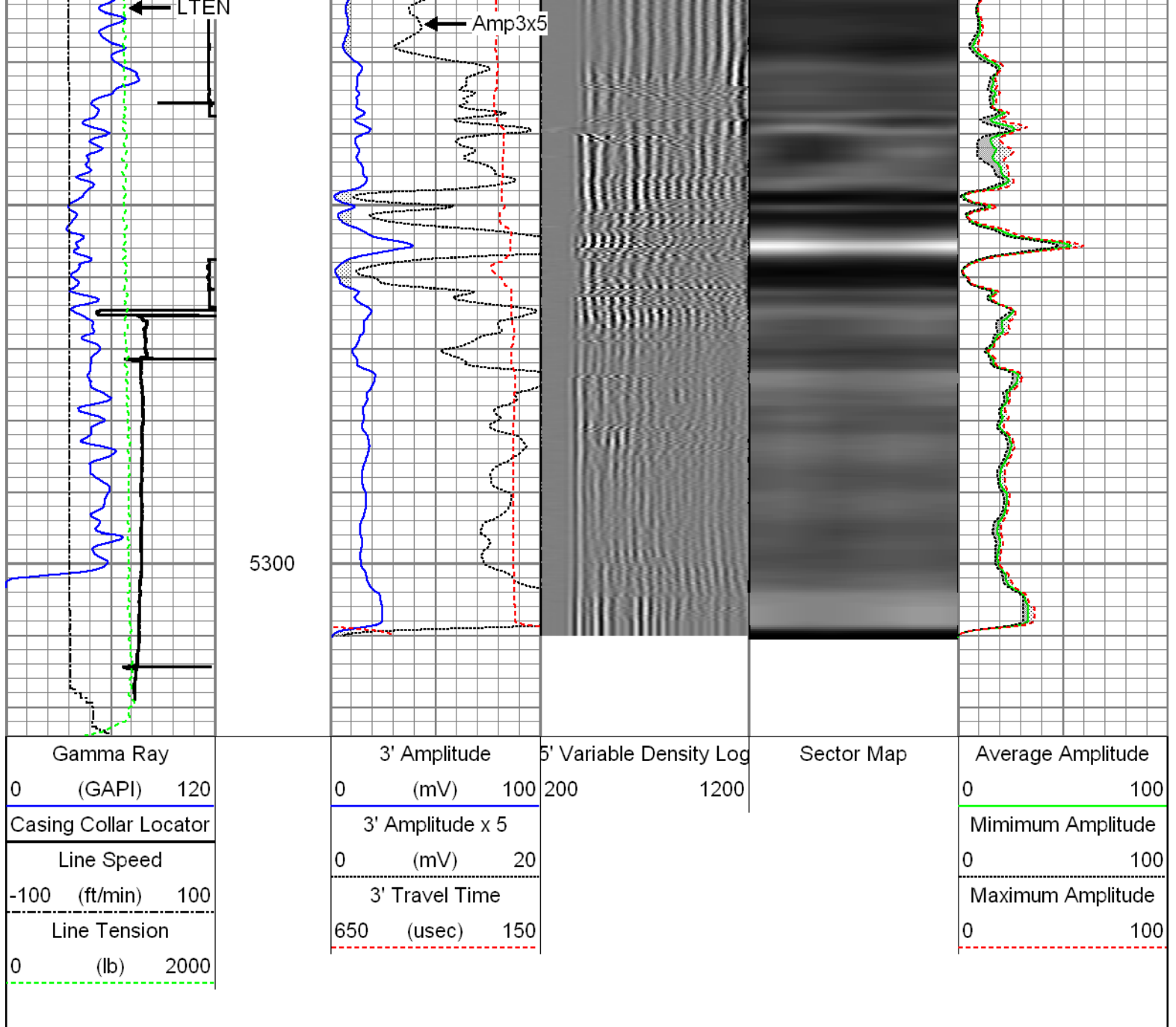








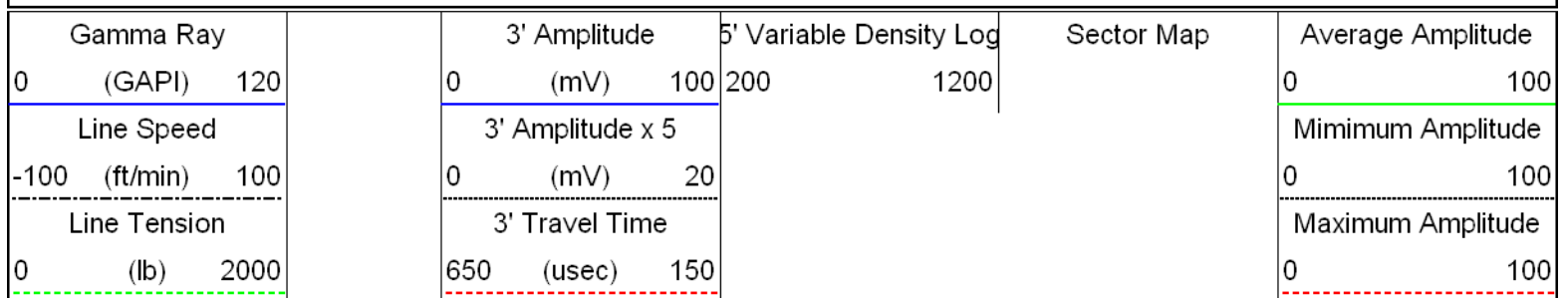


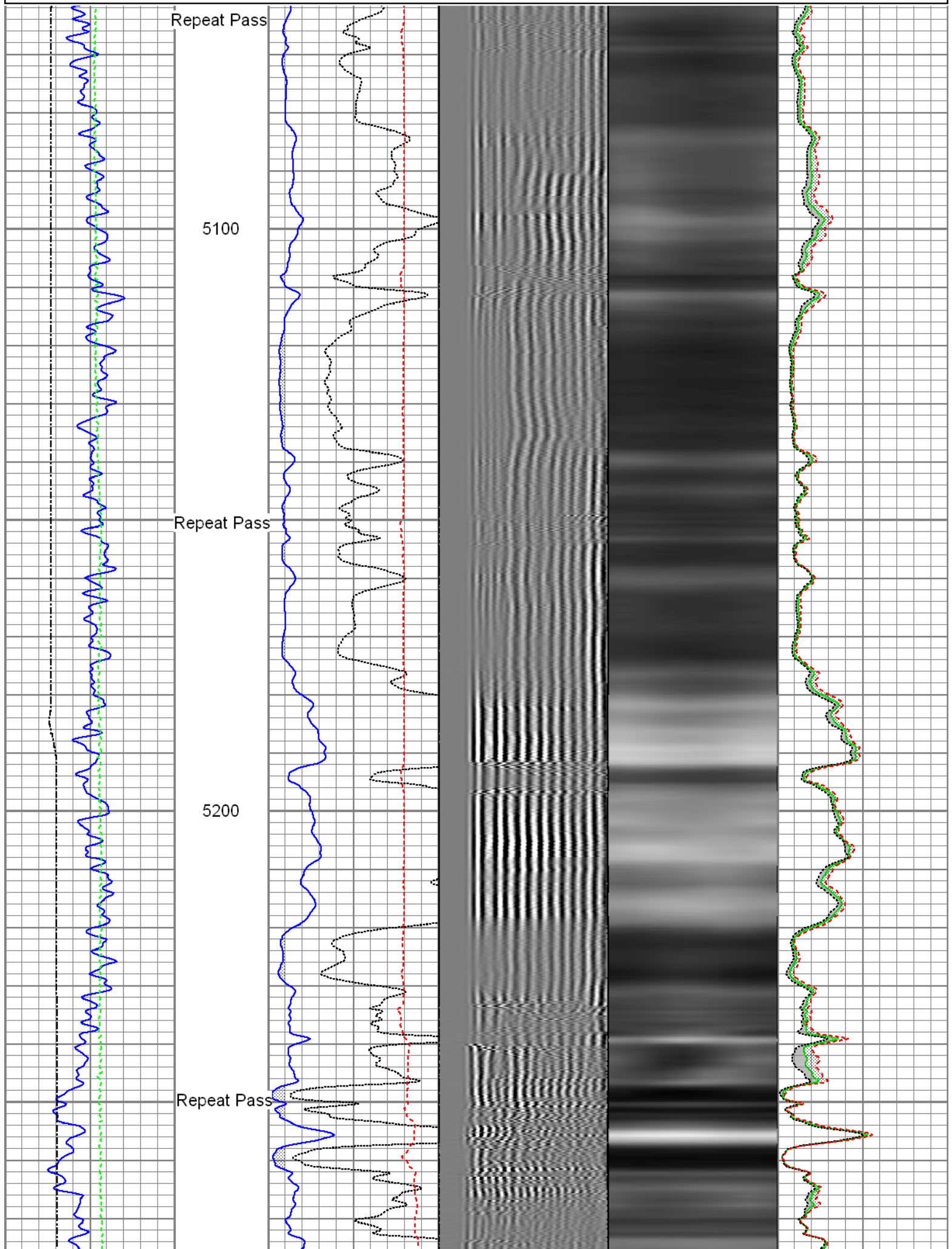


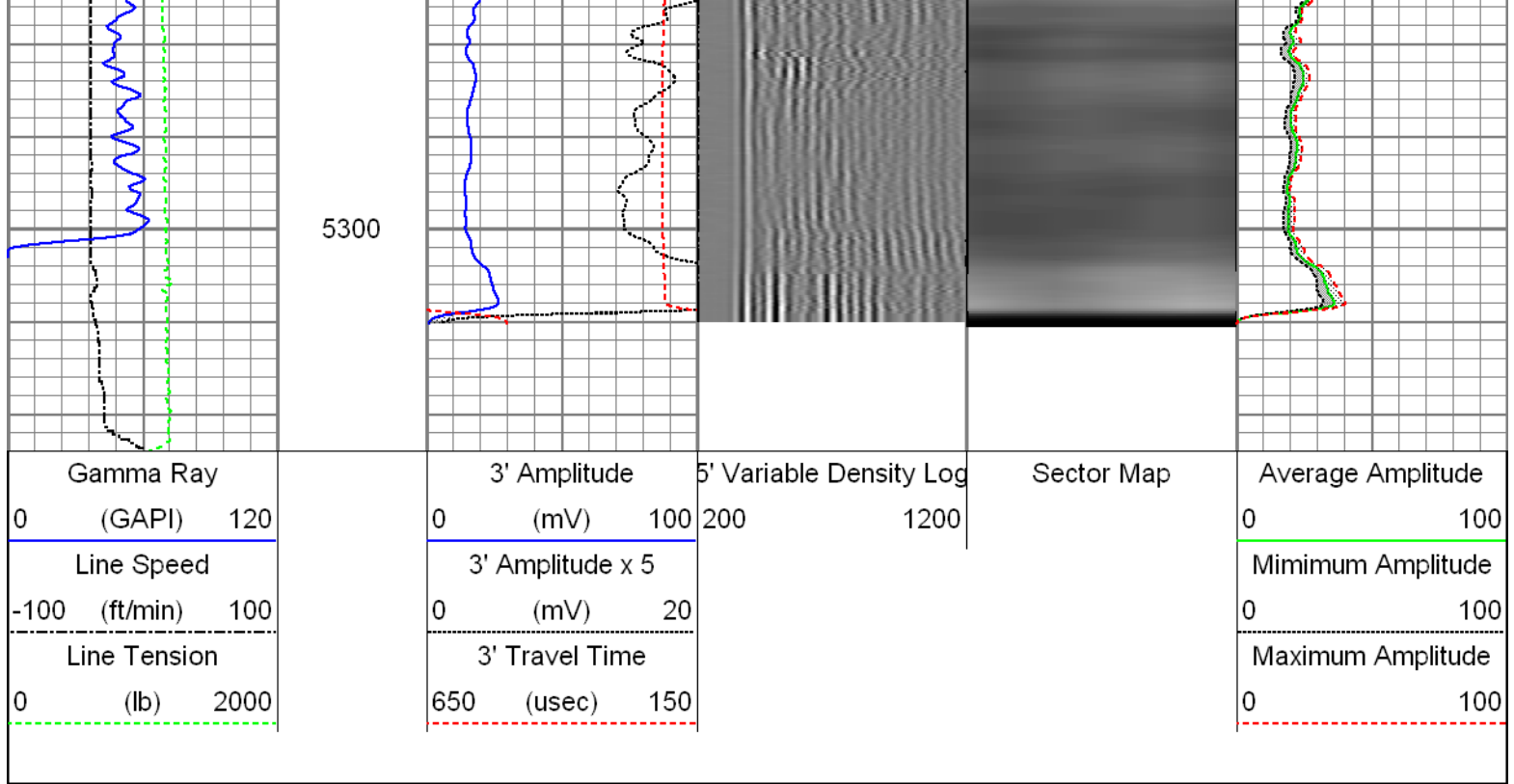
## Repeat Pass

Recorded with 1500 PSI Surface Induced Pressure

Database File: 11-14-14\_whiting\_razor 27j-3412b\_mit\_rbl.db  
 Dataset Pathname: pass10  
 Presentation Format: rbt4\_mit  
 Dataset Creation: Fri Nov 14 11:07:33 2014 by Log 7.0 B1  
 Charted by: Depth in Feet scaled 1:240

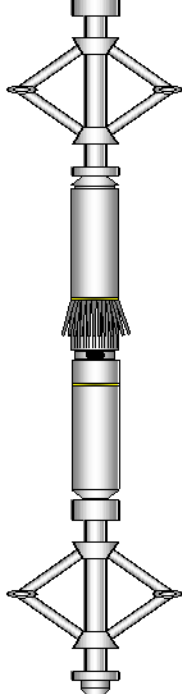






Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
GR	22.37		T_CH14375_1_GO Titan 1-7/16" Assembled Electric Cable Head with 1" Fishing Neck	1.03	1.44	4.00
			UW_AGS-UW_AGS_001 (215017) Sondex Adapter - GO Box to Sondex Pin	0.21	1.69	1.00
			UW_XTU-UW_XTU_002 (211461) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50
			UW_PGR-UW_PGR_020 (10013902) Production Gamma Ray	1.93	1.69	9.50
			UW_PRC-DSSRAC (082) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
WVFS1	14.99		UW_RBT-UW_RBT_004 (1063) Sondex Ultrawire 3-1/8" Radial Bond Tool	9.47	3.13	140.00
WVFS2	14.99					
WVFS3	14.99					
WVFS4	14.99					
WVFS5	14.99					
WVFS6	14.99					
WVFS7	14.99					
WVFS8	14.99					
CBLTEMP	14.99					
CBLROT	14.99					



WVF5FT	13.99		UW_PRC-DSSRAC (080) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00	
MIT	4.97		UW_MIT-UW_MIT40_027 (218950) 40 Multifinger Imaging Tool	4.54	2.75	61.10	
TSTAMP	0.00		UW_PRC #4 -DSSRAC (081) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00	
			UW_BUL-UW_BUL_006 (218707) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20	
Dataset: 11-14-14_whiting_razor 27j-3412b_mit_rbl.db: field/well/run1/pass12 Total Length: 26.62 ft Total Weight: 319.30 lb O.D. 3.13 in							

Calibration Report			
Database File:	11-14-14_Whiting_Razor 27J-3412B_MIT_RBL.db		
Dataset Pathname:	pass13		
Dataset Creation:	Fri Nov 14 13:34:18 2014 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:			Fri Nov 14 10:26:17 2014			
Ring size:	4	5	6	7		
(in)						
	Sens	Sens	Sens			
Finger 01:	1455	271.0	1726	288.0	2014	296.0
Finger 02:	1503	251.0	1754	256.0	2010	263.0
Finger 03:	1407	278.0	1685	292.0	1977	302.0
Finger 04:	1443	277.0	1720	287.0	2007	291.0
Finger 05:	1478	267.0	1745	275.0	2020	280.0
Finger 06:	1394	283.0	1677	295.0	1972	304.0
Finger 07:	1395	283.0	1678	290.0	1968	303.0
					2271	

Finger 08:	1398	281.0	1679	286.0	1965	295.0	2260
Finger 09:	1414	284.0	1698	294.0	1992	303.0	2295
Finger 10:	1442	269.0	1711	281.0	1992	289.0	2281
Finger 11:	1404	283.0	1687	290.0	1977	301.0	2278
Finger 12:	1364	285.0	1649	298.0	1947	309.0	2256
Finger 13:	1466	261.0	1727	268.0	1995	276.0	2271
Finger 14:	1419	270.0	1689	281.0	1970	299.0	2269
Finger 15:	1410	286.0	1696	293.0	1989	306.0	2295
Finger 16:	1428	277.0	1705	284.0	1989	296.0	2285
Finger 17:	1417	286.0	1703	295.0	1998	306.0	2304
Finger 18:	1415	276.0	1691	285.0	1976	298.0	2274
Finger 19:	1462	279.0	1741	288.0	2029	298.0	2327
Finger 20:	1451	279.0	1730	290.0	2020	301.0	2321
Finger 21:	1384	292.0	1676	302.0	1978	317.0	2295
Finger 22:	1440	271.0	1711	282.0	1993	289.0	2282
Finger 23:	1443	282.0	1725	288.0	2013	298.0	2311
Finger 24:	1482	278.0	1760	283.0	2043	286.0	2329
Finger 25:	1457	284.0	1741	292.0	2033	299.0	2332
Finger 26:	1427	283.0	1710	297.0	2007	301.0	2308
Finger 27:	1487	272.0	1759	283.0	2042	286.0	2328
Finger 28:	1443	286.0	1729	290.0	2019	301.0	2320
Finger 29:	1533	262.0	1795	275.0	2070	276.0	2346
Finger 30:	1403	283.0	1686	290.0	1976	308.0	2284
Finger 31:	1460	284.0	1744	297.0	2041	302.0	2343
Finger 32:	1521	267.0	1788	276.0	2064	278.0	2342
Finger 33:	1443	285.0	1728	296.0	2024	300.0	2324
Finger 34:	1468	275.0	1743	294.0	2037	301.0	2338
Finger 35:	1492	260.0	1752	265.0	2017	271.0	2288
Finger 36:	1497	265.0	1762	279.0	2041	286.0	2327
Finger 37:	1475	276.0	1751	291.0	2042	295.0	2337
Finger 38:	1514	252.0	1766	255.0	2021	266.0	2287
Finger 39:	1454	268.0	1722	281.0	2003	283.0	2286
Finger 40:	1409	282.0	1691	298.0	1989	307.0	2296

Post Survey Calibration Check								
Performed: Fri Nov 14 13:34:08 2014								
Ring size: (in)	4	Nom. wear	5	Nom. wear	6	Nom. wear	7	Nom. wear
Finger 01:	4.007	0.003	4.997	-0.001	5.998	-0.001	7.004	0.002
Finger 02:	3.997	-0.001	4.983	-0.008	6.003	0.001	6.999	-0.001
Finger 03:	4.004	0.002	4.990	-0.005	5.993	-0.003	6.993	-0.003
Finger 04:	3.998	-0.001	4.984	-0.008	5.998	-0.001	7.002	0.001
Finger 05:	3.995	-0.002	4.996	-0.002	5.999	-0.001	7.003	0.002
Finger 06:	4.001	0.001	4.994	-0.003	6.000	-0.000	7.001	0.001
Finger 07:	4.002	0.001	4.992	-0.004	5.994	-0.003	6.993	-0.004
Finger 08:	4.006	0.003	4.992	-0.004	5.995	-0.003	6.994	-0.003
Finger 09:	4.002	0.001	4.997	-0.001	5.999	-0.000	7.002	0.001
Finger 10:	3.990	-0.005	4.997	-0.001	6.000	-0.000	7.004	0.002
Finger 11:	3.997	-0.001	4.988	-0.006	5.997	-0.002	7.001	0.001
Finger 12:	3.996	-0.002	4.995	-0.002	5.997	-0.001	6.999	-0.000
Finger 13:	4.001	0.000	4.994	-0.003	6.004	0.002	7.006	0.003
Finger 14:	4.003	0.001	4.991	-0.005	6.000	0.000	6.987	-0.007
Finger 15:	4.005	0.002	4.991	-0.004	5.997	-0.001	7.000	0.000
Finger 16:	3.988	-0.006	4.987	-0.007	5.996	-0.002	7.000	0.000
Finger 17:	4.000	-0.000	4.994	-0.003	5.999	-0.000	7.003	0.002
Finger 18:	3.994	-0.003	4.992	-0.004	6.002	0.001	6.999	-0.000
Finger 19:	3.995	-0.003	4.995	-0.003	6.001	0.000	6.995	-0.002
Finger 20:	4.014	0.007	4.997	-0.001	5.997	-0.002	7.004	0.002
Finger 21:	4.004	0.002	4.993	-0.004	5.999	-0.000	7.000	-0.000
Finger 22:	3.998	-0.001	4.991	-0.005	5.998	-0.001	7.001	0.001
Finger 23:	4.000	-0.000	4.989	-0.005	5.993	-0.003	6.993	-0.003
Finger 24:	3.998	-0.001	4.984	-0.008	5.999	-0.001	7.005	0.003
Finger 25:	4.003	0.002	4.990	-0.005	5.998	-0.001	6.997	-0.002
Finger 26:	3.992	-0.004	4.986	-0.007	5.990	-0.005	6.999	-0.001
Finger 27:	3.999	-0.001	4.991	-0.004	5.999	-0.000	7.001	0.000

Finger 28:	4.001	0.001	4.994	-0.003	6.005	0.002	7.002	0.001
Finger 29:	3.995	-0.002	4.996	-0.002	5.994	-0.003	7.005	0.003
Finger 30:	3.998	-0.001	4.996	-0.002	6.000	0.000	6.983	-0.008
Finger 31:	4.003	0.001	4.995	-0.003	6.003	0.002	7.002	0.001
Finger 32:	4.005	0.003	4.991	-0.004	5.996	-0.002	7.002	0.001
Finger 33:	3.995	-0.003	4.995	-0.003	5.996	-0.002	7.000	0.000
Finger 34:	4.001	0.000	4.995	-0.003	5.999	-0.000	7.000	-0.000
Finger 35:	4.000	-0.000	4.999	-0.000	6.000	0.000	7.001	0.000
Finger 36:	3.994	-0.003	4.985	-0.007	5.997	-0.002	6.997	-0.002
Finger 37:	4.000	0.000	4.989	-0.005	5.997	-0.001	7.000	0.000
Finger 38:	3.995	-0.002	4.998	-0.001	6.002	0.001	7.002	0.001
Finger 39:	3.998	-0.001	4.988	-0.006	5.999	-0.000	7.002	0.001
Finger 40:	3.997	-0.001	4.989	-0.005	5.997	-0.002	6.996	-0.002
Average:	3.999	-0.000	4.992	-0.004	5.998	-0.001	6.999	-0.000

#### Segmented Cement Bond Log Calibration Report

Serial Number: 1063  
Tool Model: UW\_RBT\_004  
  
Calibration Casing Diameter: 5.500 in  
Calibration Depth: -38.245 ft

Master Calibration, performed Fri Nov 14 10:24:12 2014:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	-0.003	1.000	1.000	71.921	70.688	1.233
5FT	-0.006	1.000	1.000	71.921	70.491	1.430
S1	-0.004	1.000	0.000	100.000	99.635	0.365
S2	-0.004	1.000	0.000	100.000	99.605	0.395
S3	-0.004	1.000	0.000	100.000	99.639	0.361
S4	-0.004	1.000	0.000	100.000	99.558	0.442
S5	-0.004	1.000	0.000	100.000	99.646	0.354
S6	-0.004	1.000	0.000	100.000	99.648	0.352
S7	-0.003	1.000	0.000	100.000	99.690	0.310
S8	-0.003	1.000	0.000	100.000	99.685	0.315

#### Gamma Ray Calibration Report

Serial Number: 10013902  
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 & Gas Corporation  
Well Razor 27J-3412B  
Field Wildcat  
County Weld  
State Colorado