

Radial Cement Bond Gamma Ray Casing Collar Log

Company	Whiting Oil & Gas	Company	Whiting Oil & Gas
Well	Horsetail 30F-3107	Well	Horsetail 30F-3107
Field	Wildcat	Field	Wildcat
County	Weld	County	Weld
State	Colorado	State	Colorado
Location:	API #: 05-123-39201		
Permanent Datum	SEC 30	TWP 10N	RGE 57W
Log Measured From	Ground Level	Elevation	4780'
Drilling Measured From	Kelly Bushing	17 FT	
	Kelly Bushing		
		Other Services	
		JB/GR	
		RBP	
		MIT	
		Elevation	
		K.B. 4797 FT	
		D.F. 4796 FT	
		G.L. 4780 FT	

Date	11/21/2014
Run Number	One
Depth Driller	13.071 FT
Depth Logger	4900 FT
Bottom Logged Interval	4895 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Water
Density / Viscosity	8.34 lbm/gal
Max. Recorded Temp.	182°F
Estimated Cement Top	1558 FT
Time Well Ready	ROA
Time Logger on Bottom	12:30 PM
Equipment Number	HD-0119
Location	Fort Lupton, CO
Recorded By	B. Kalkwarf
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	1611 FT		
Intermediate #1							
Intermediate #2	7	26	P-110	Surface	5974 FT		
Liner	4 1/2	11.6	HCP-110	4838 FT	13,061 FT		

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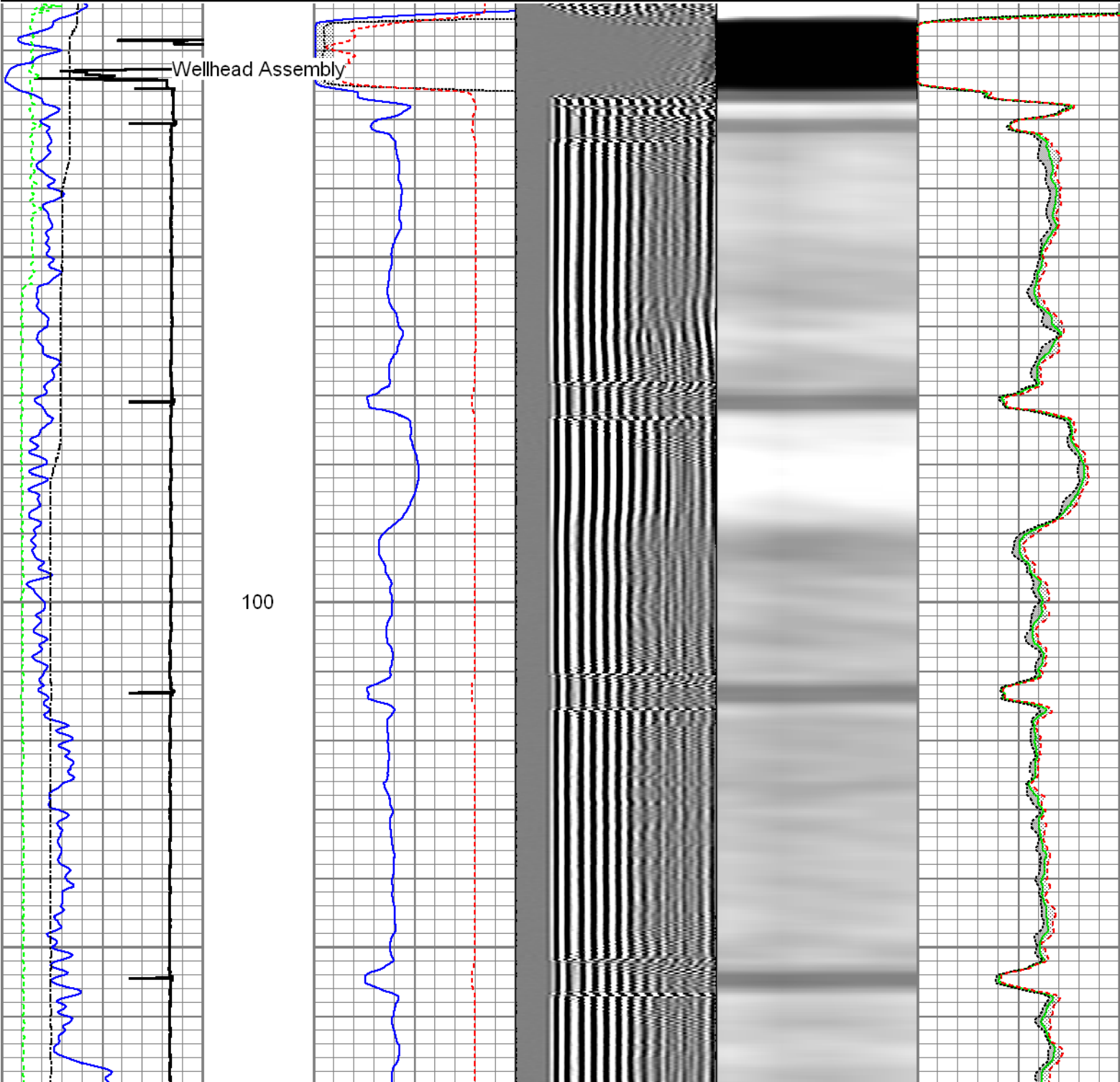
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, 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.

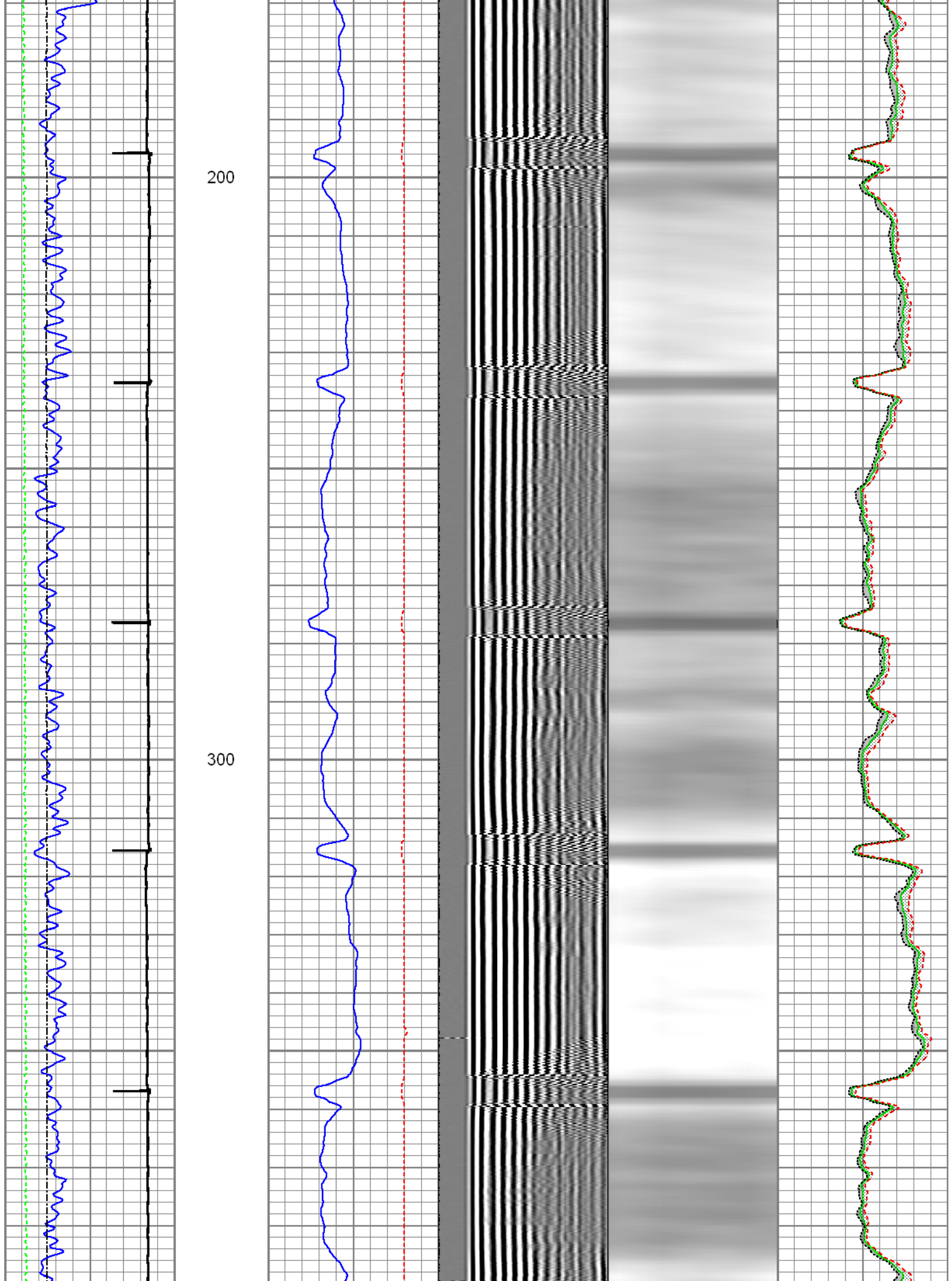
Comments

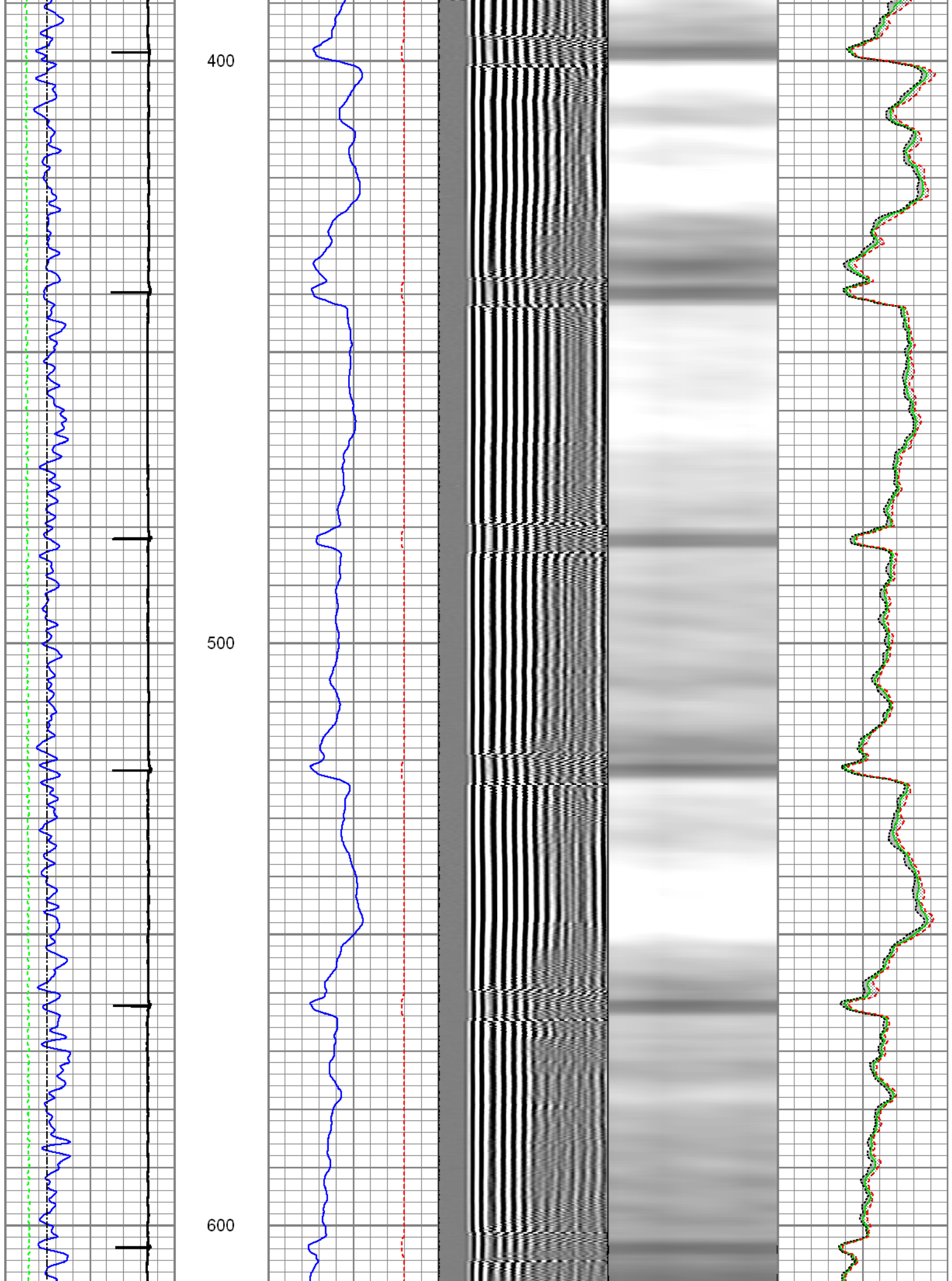
Log ran as per Customer request.
 Depth referenced to Casing Tally reported Liner top @ 4838 FT
 Adjusted log +7.5 FT to correlate with Liner Top.
 Set RBP at 4920 FT
 Log ran from below liner top to surface.
 Log ran with 1500 PSI surface induced pressure.
 No debris found on logging tools upon completion of operations.
 Thank you for choosing FMC Technologies Completion Services, Inc.!!

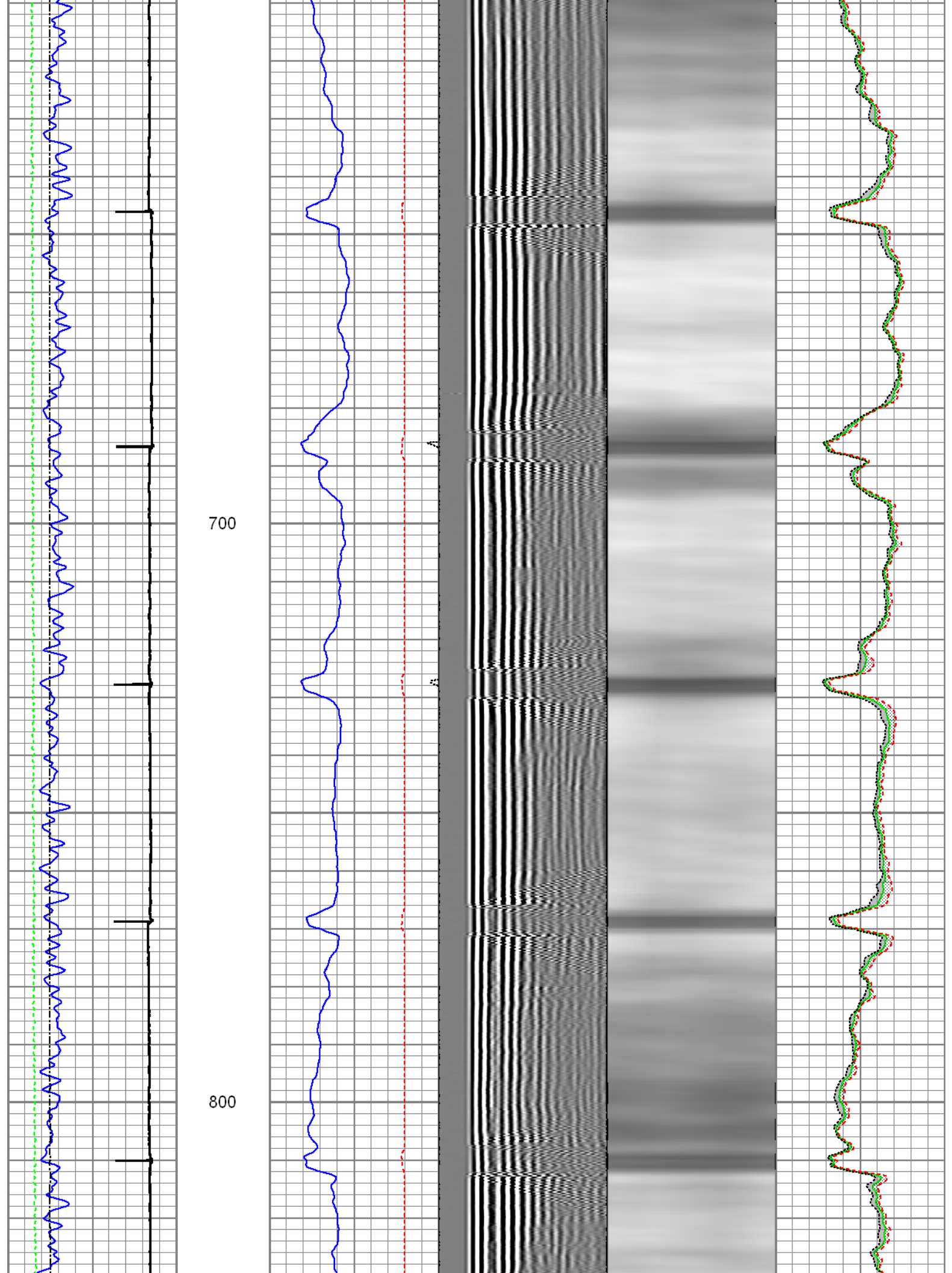
Database File: 0512339201 whiting horsetail 30f_3107a 11-21-14 mit rbt .db
Dataset Pathname: pass12
Presentation Format: rbt4_mit
Dataset Creation: Fri Nov 21 12:32:53 2014 by Log 7.0 B1
Charted by: Depth in Feet scaled 1:240

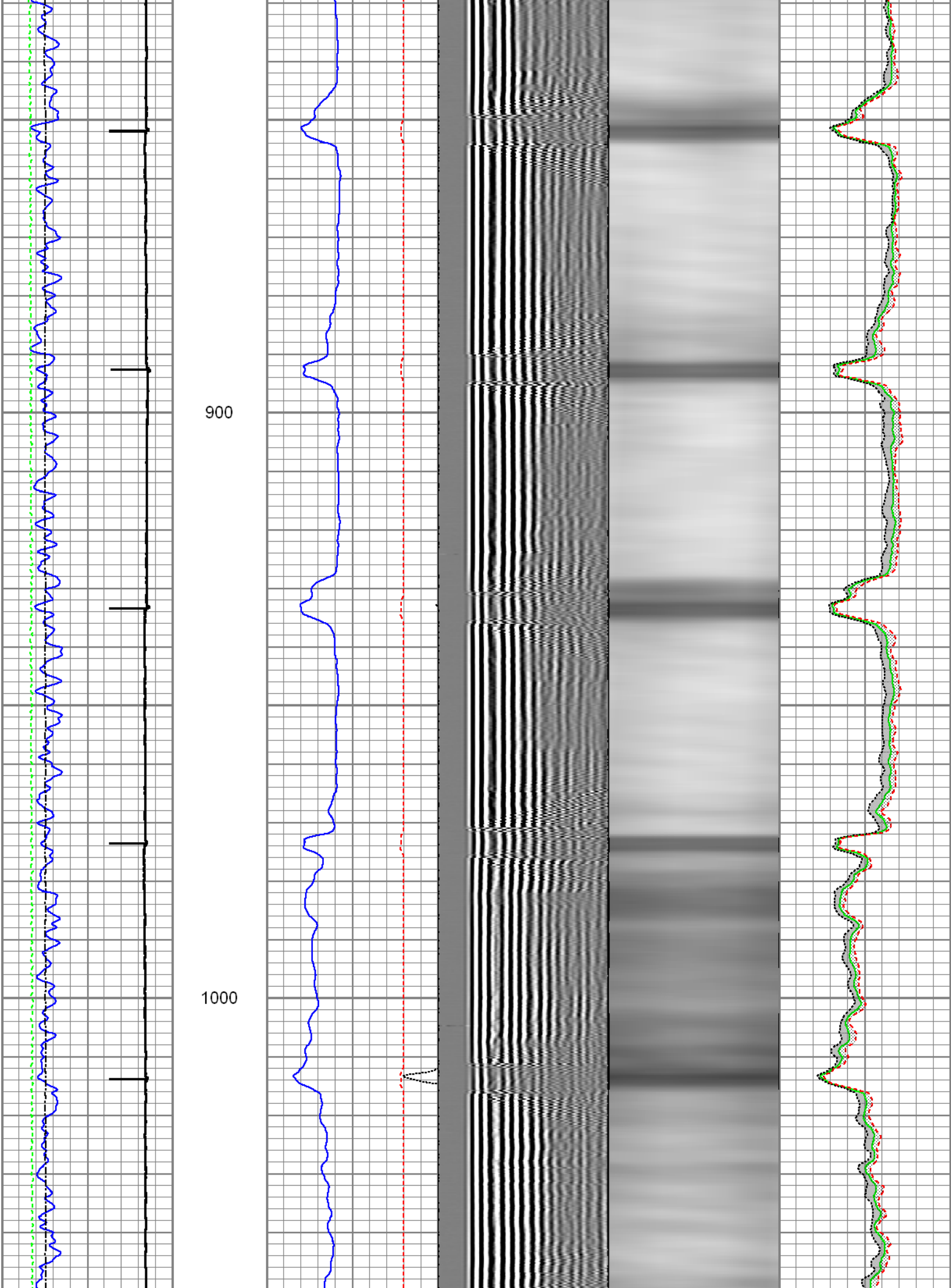
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Minimum Amplitude
Line Speed	0 (mV) 20			0 100
-100 (ft/min) 100	3' Travel Time			Maximum Amplitude
Line Tension	650 (usec) 150			0 100
0 (lb) 2000				

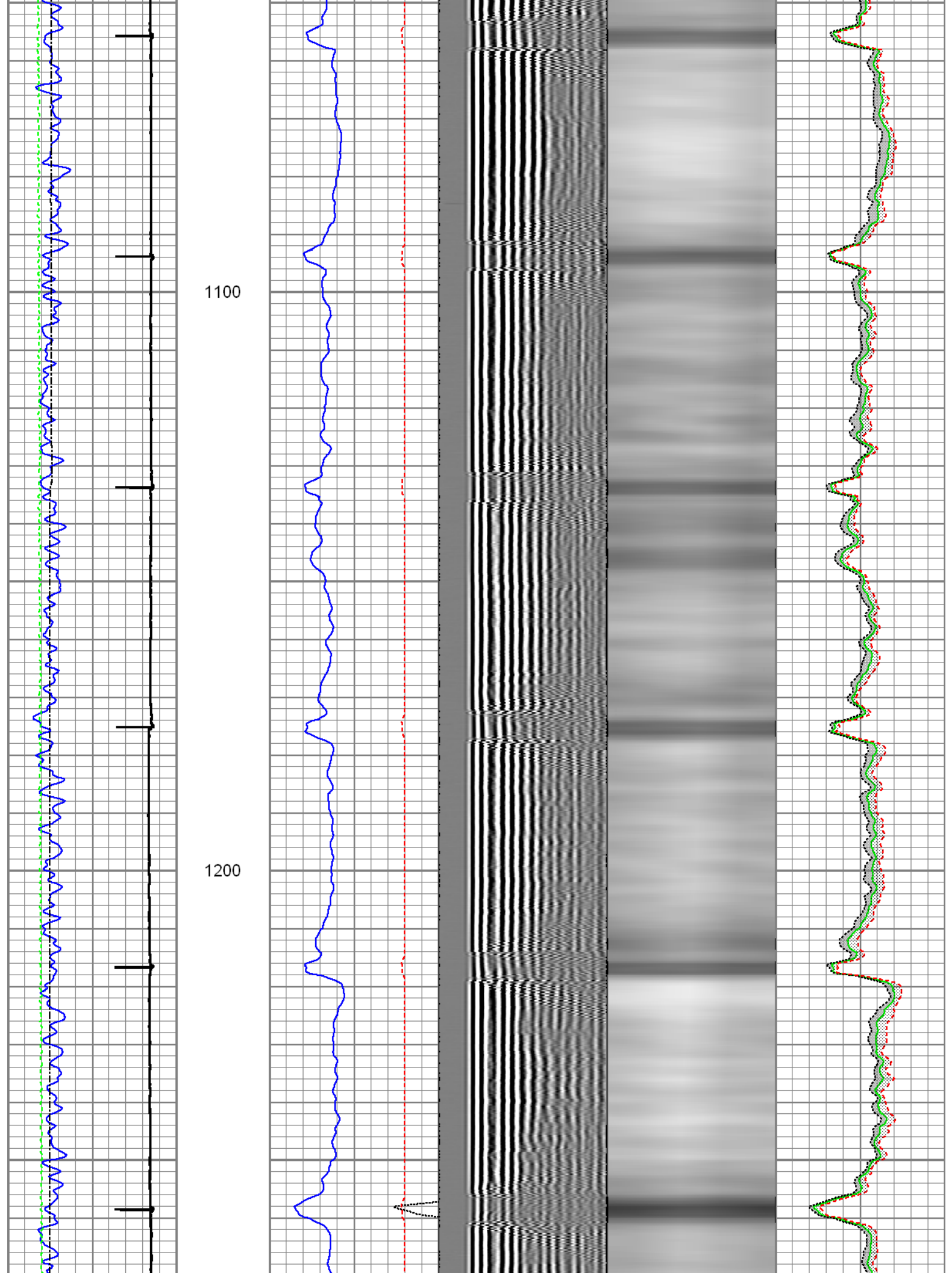


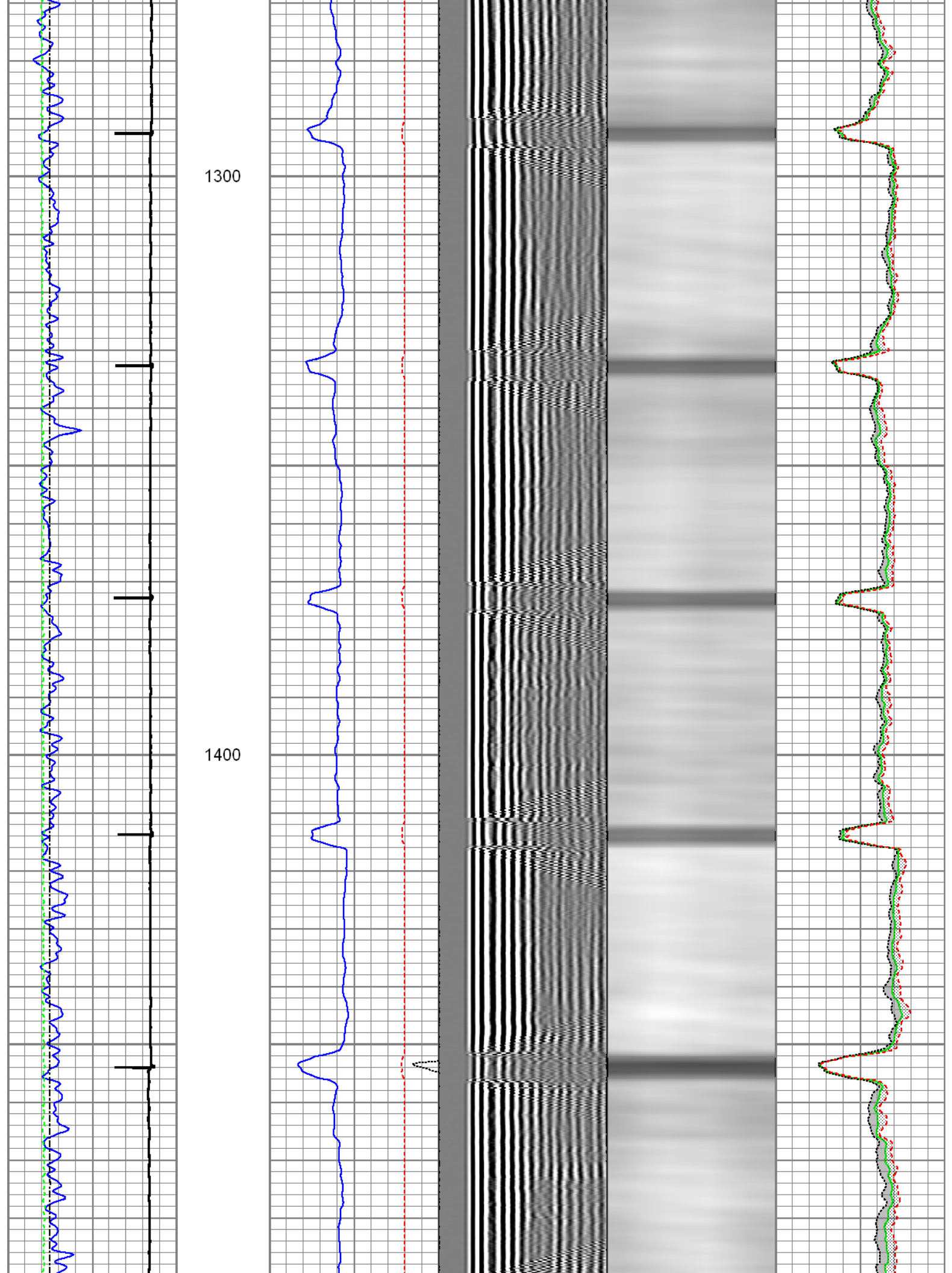


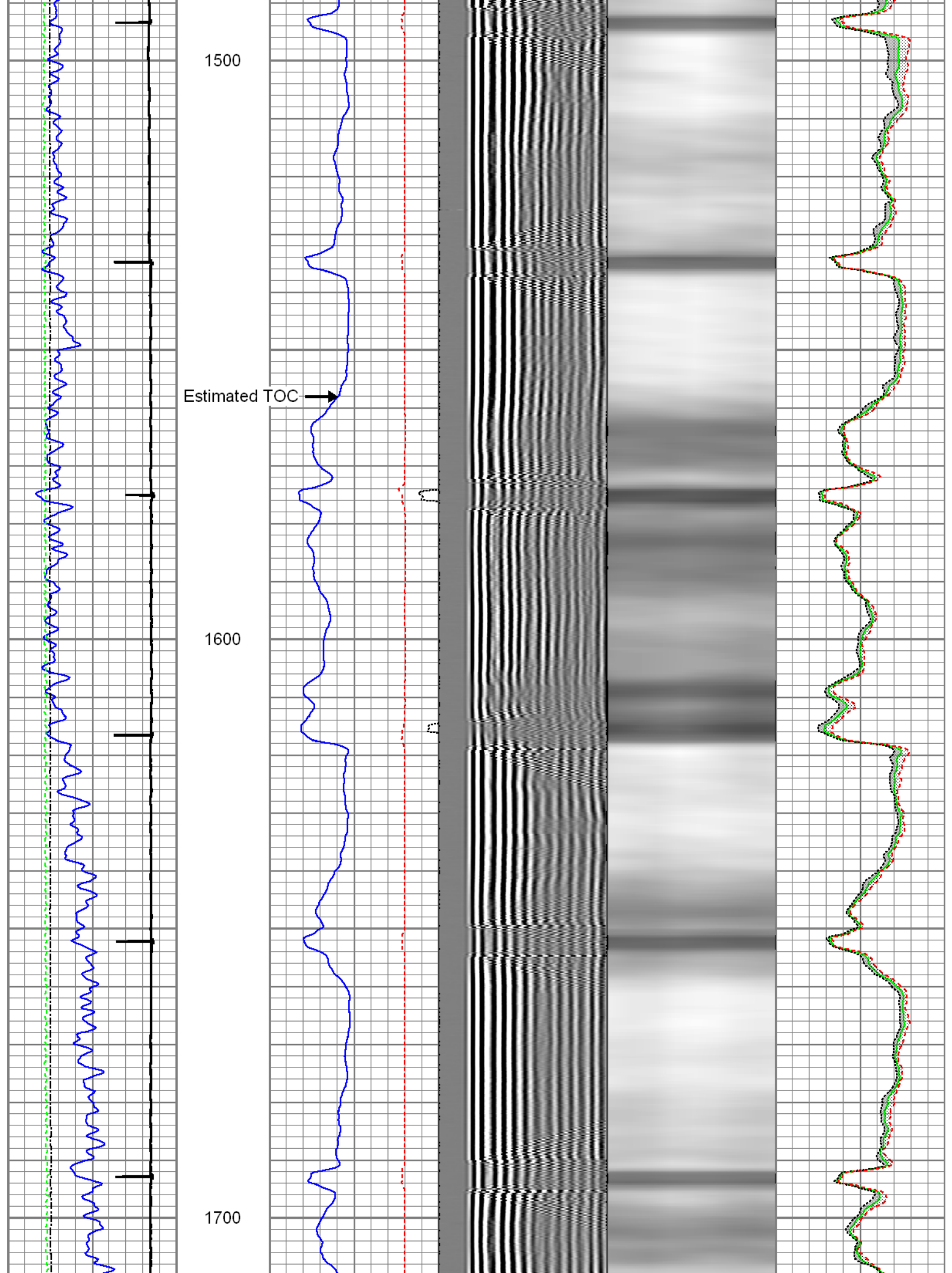


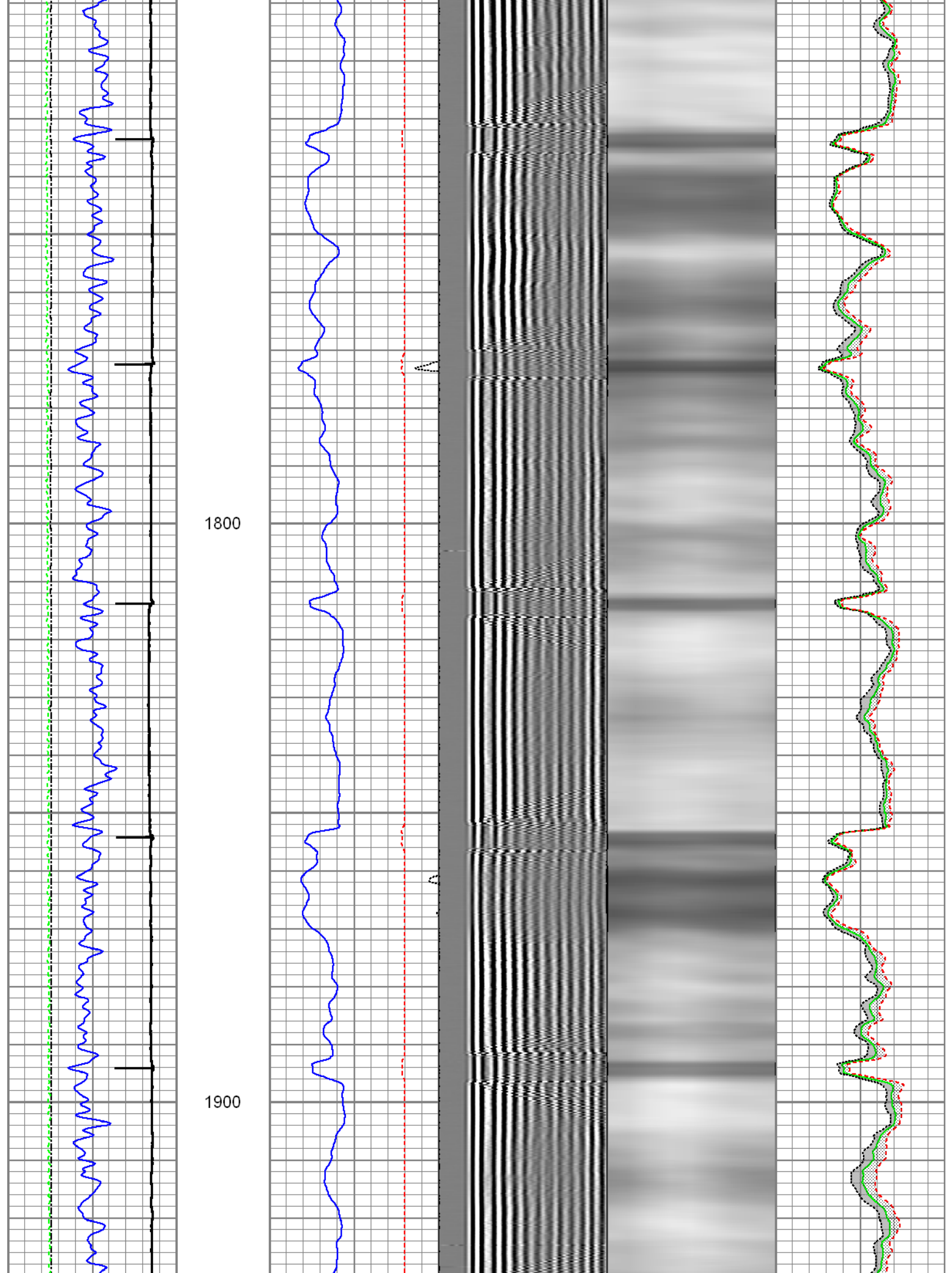


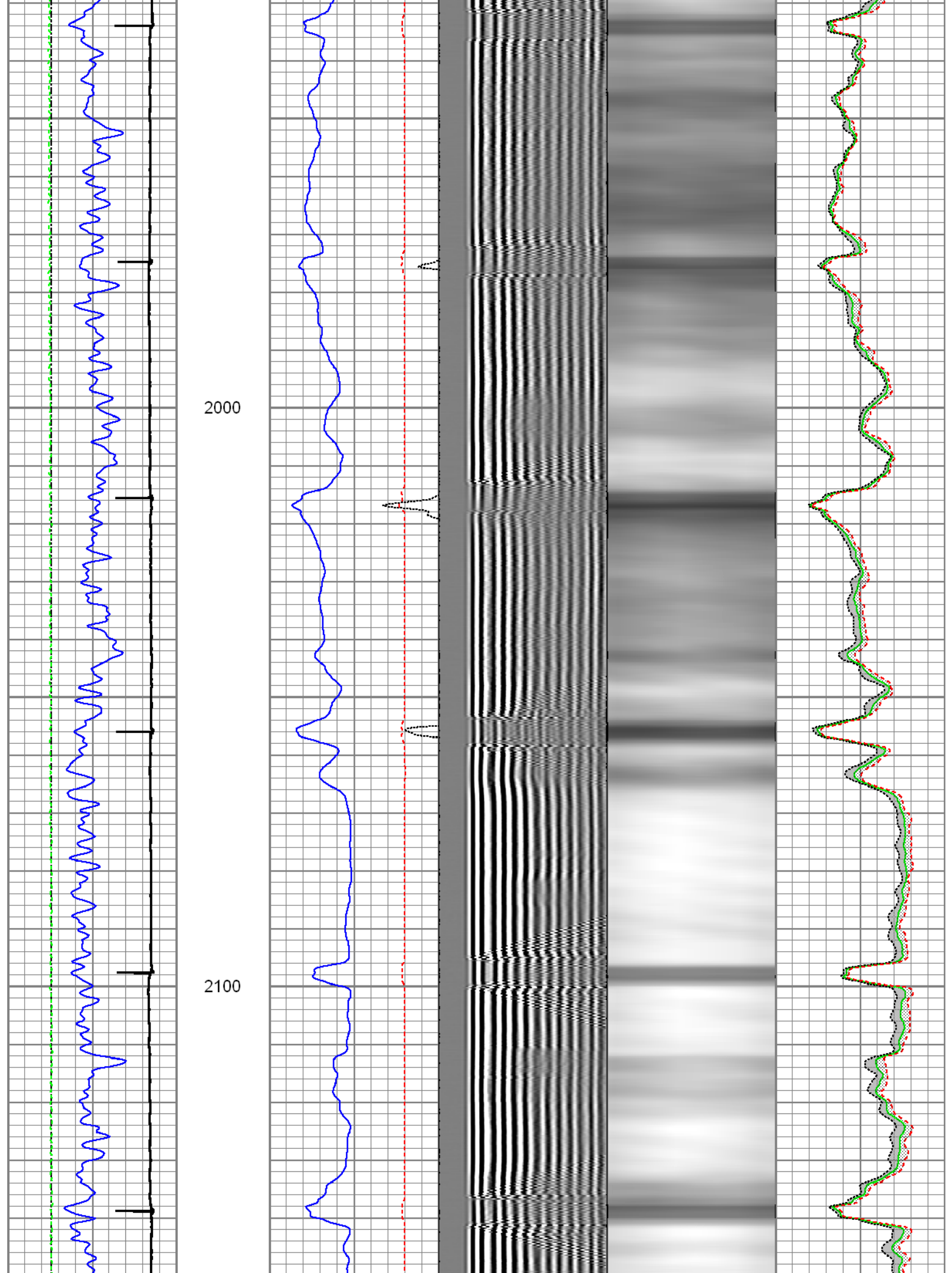


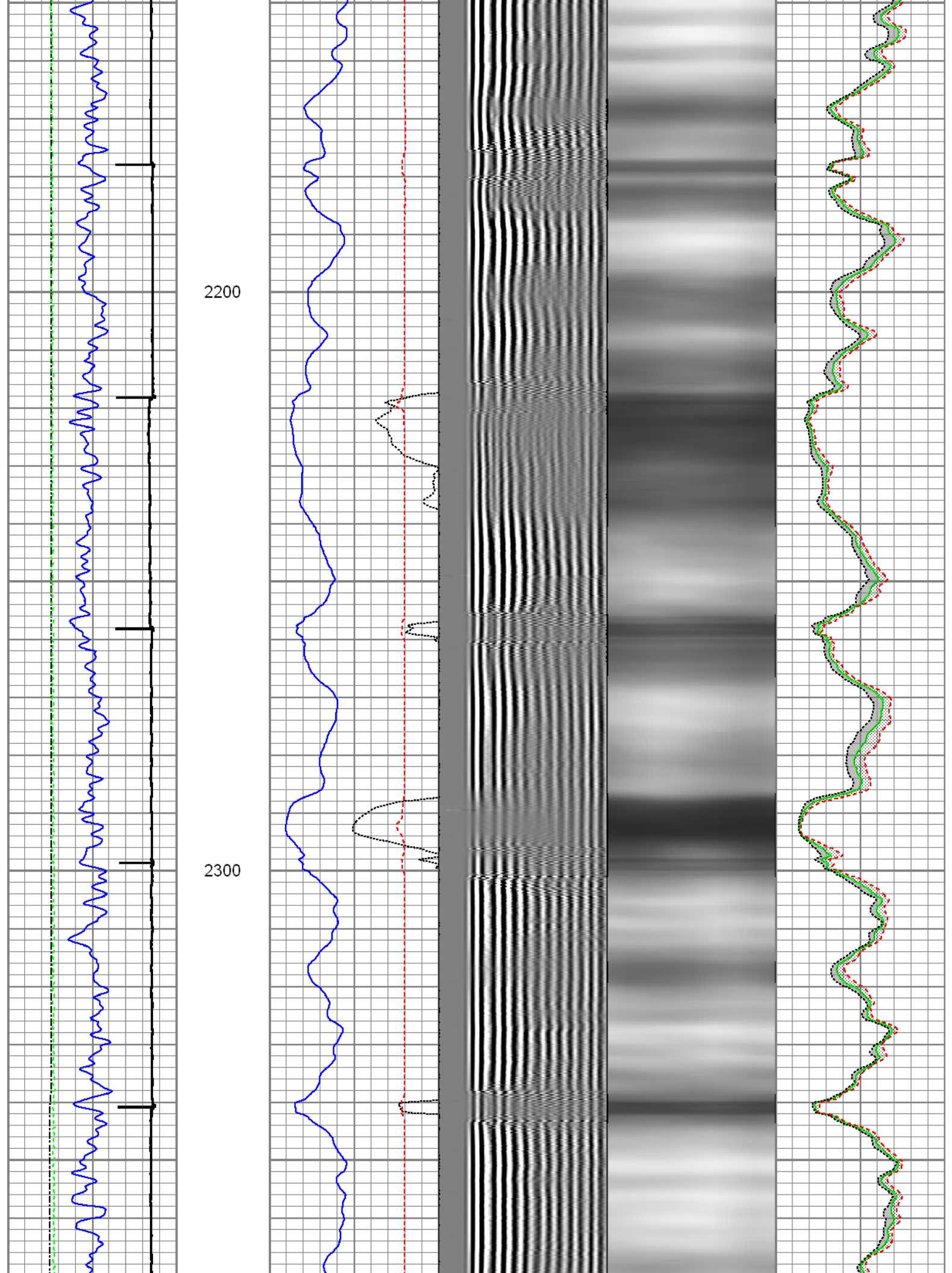


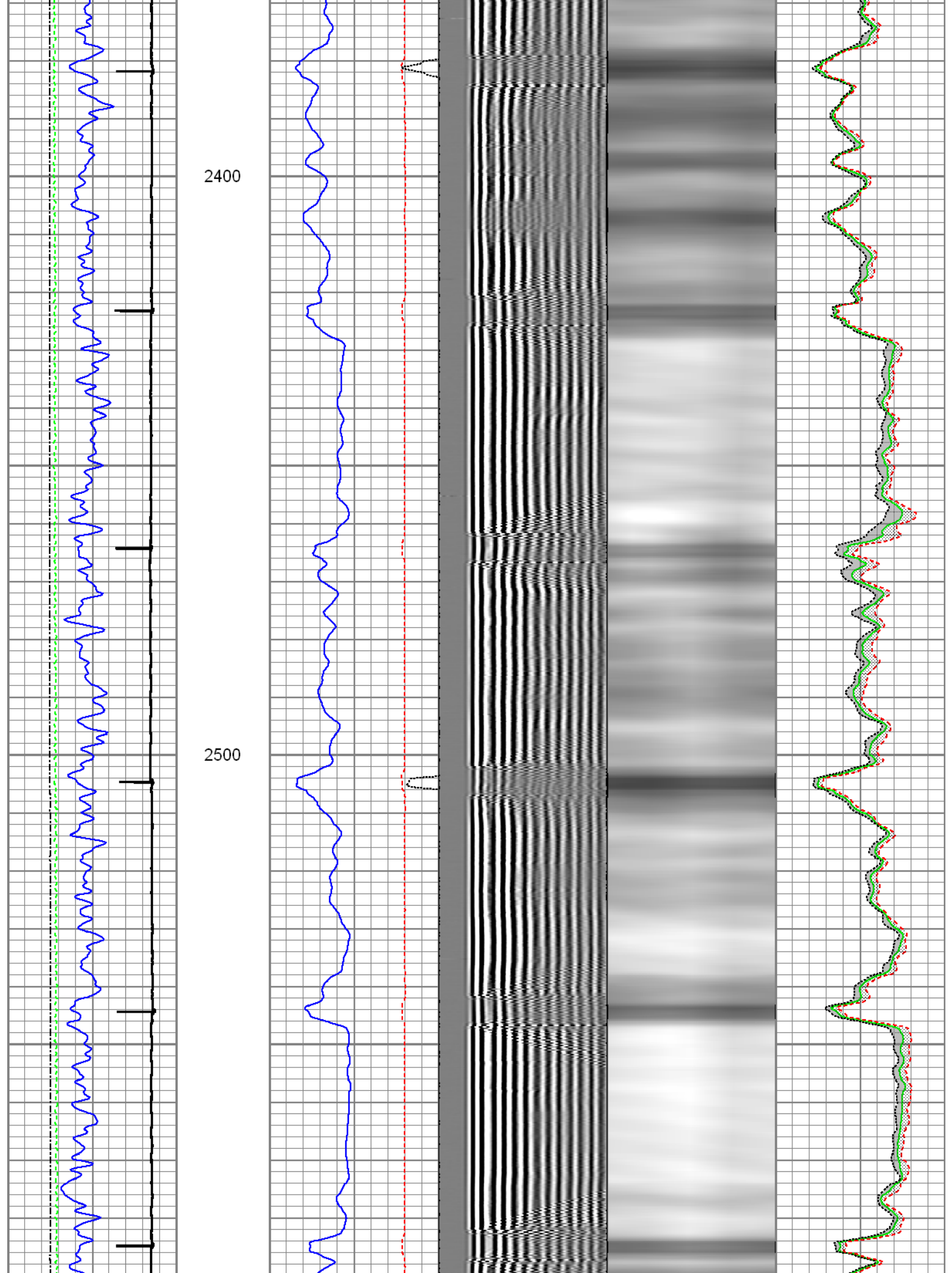


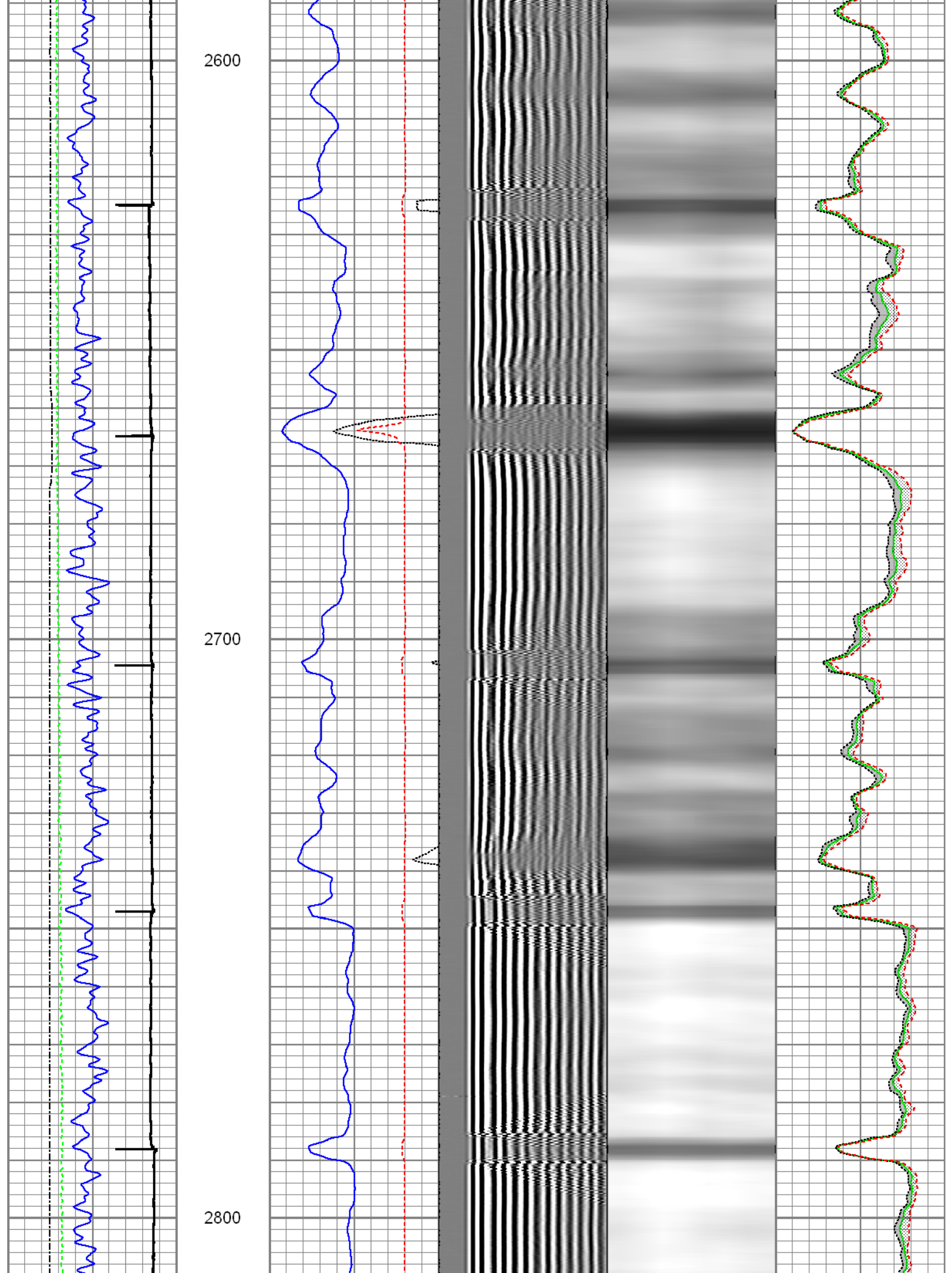


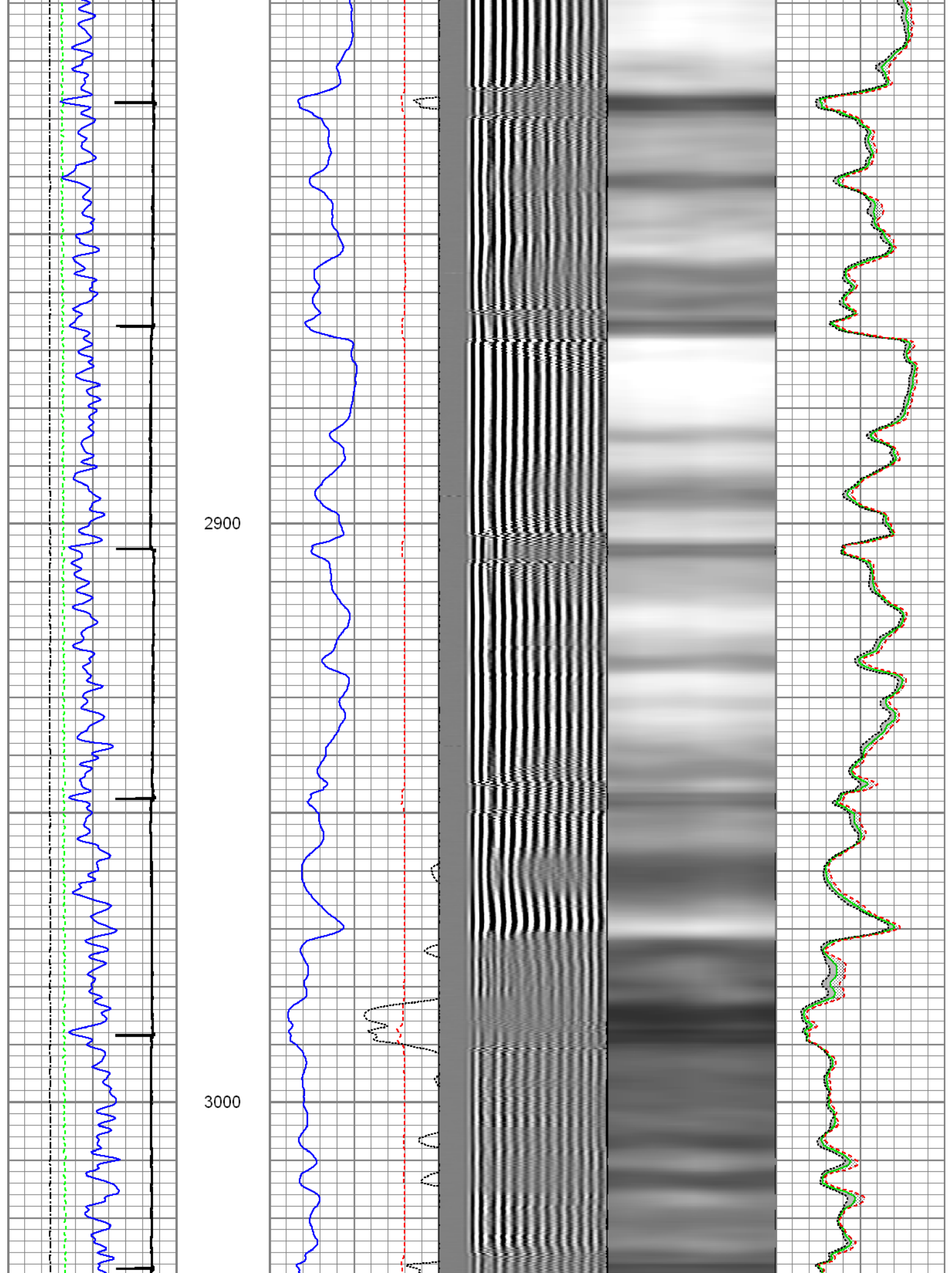


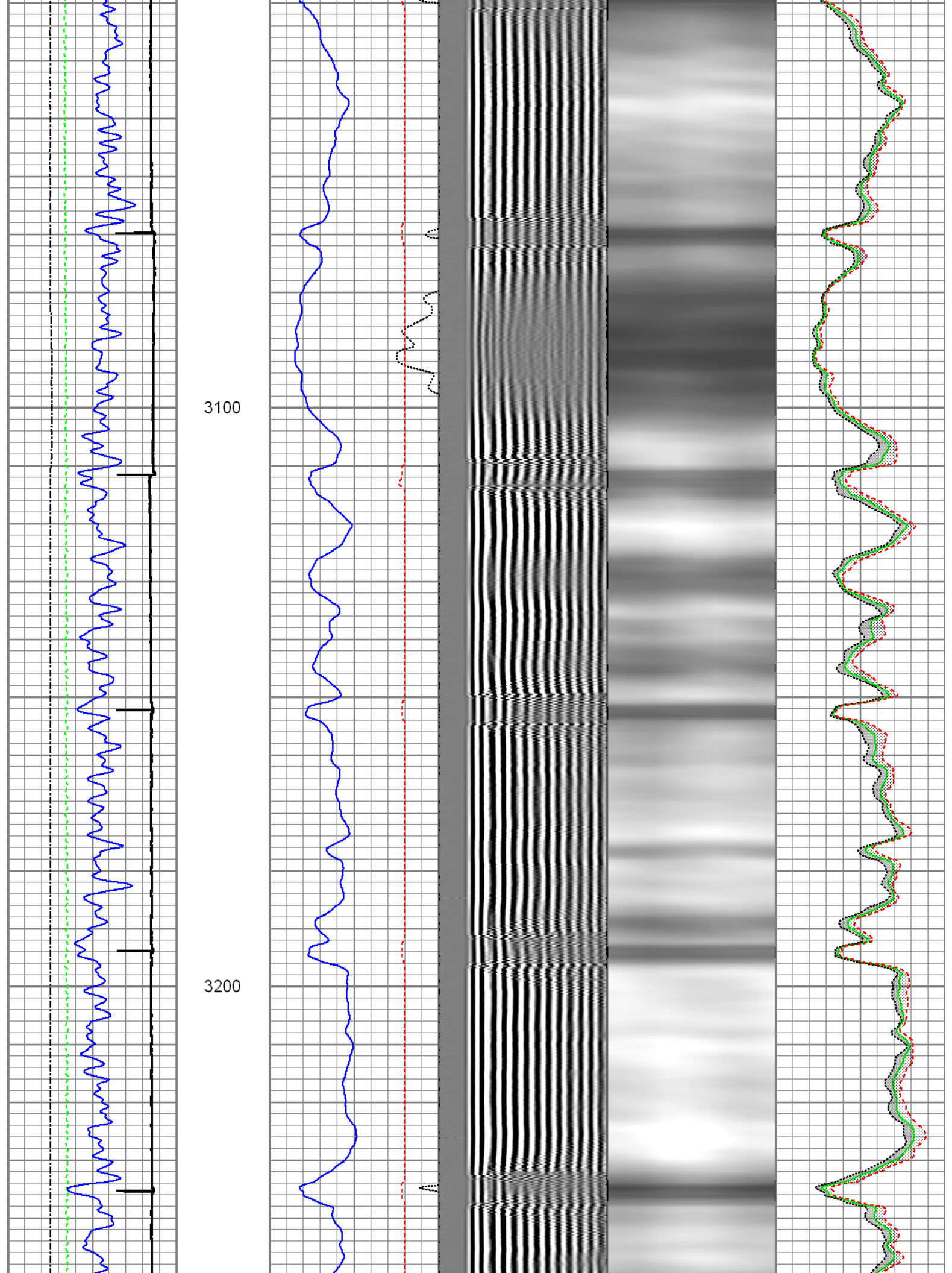


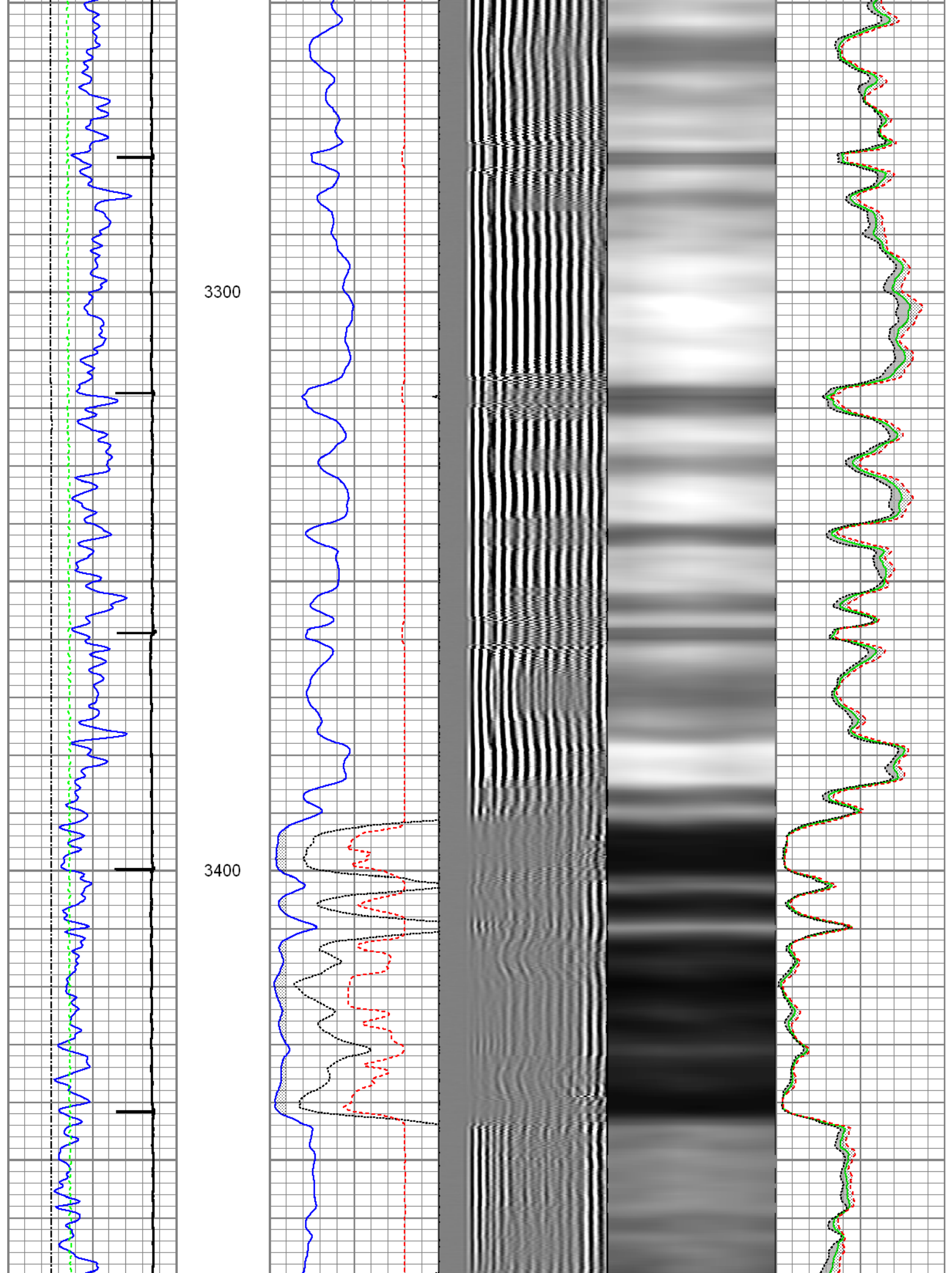


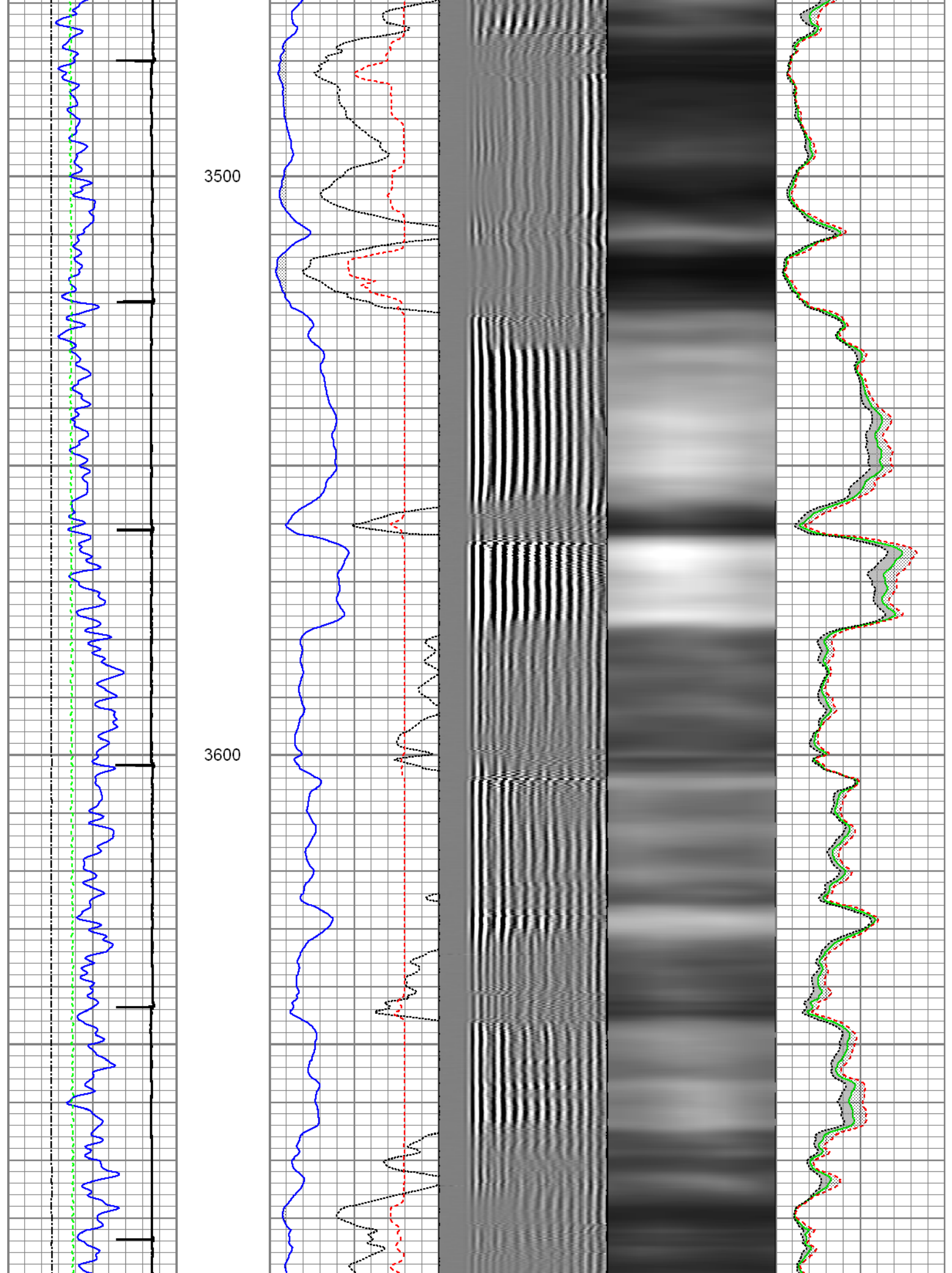








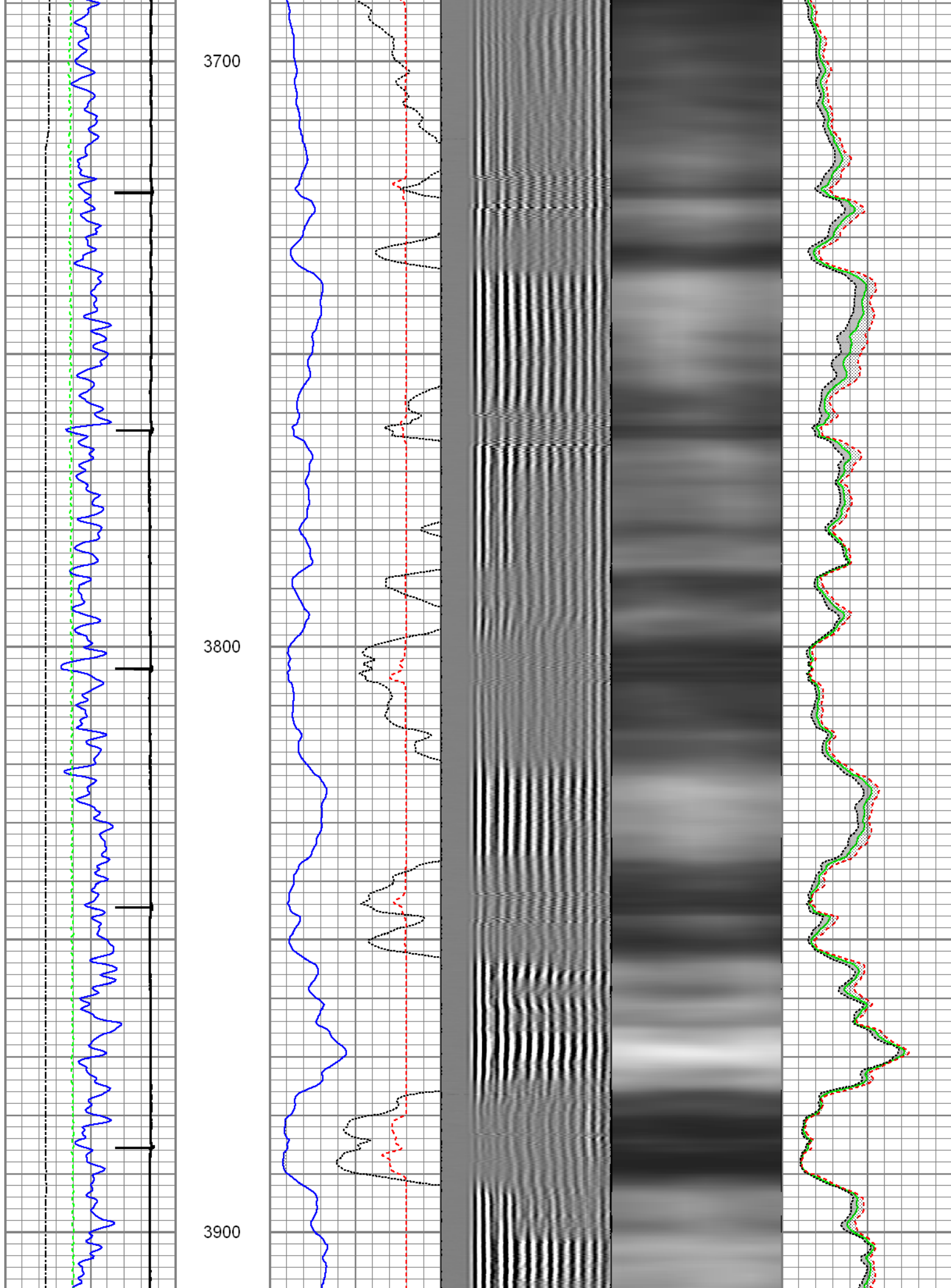


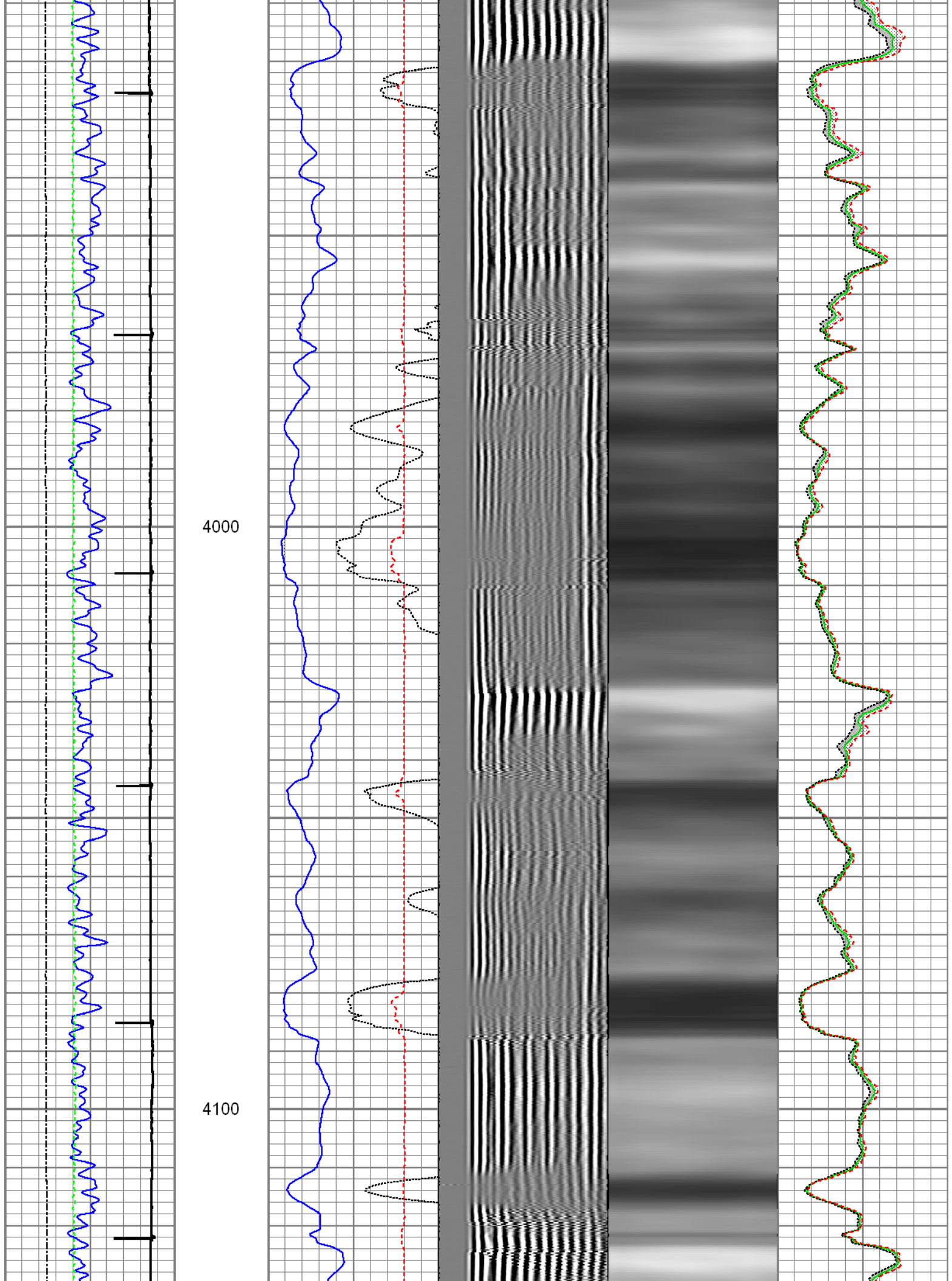


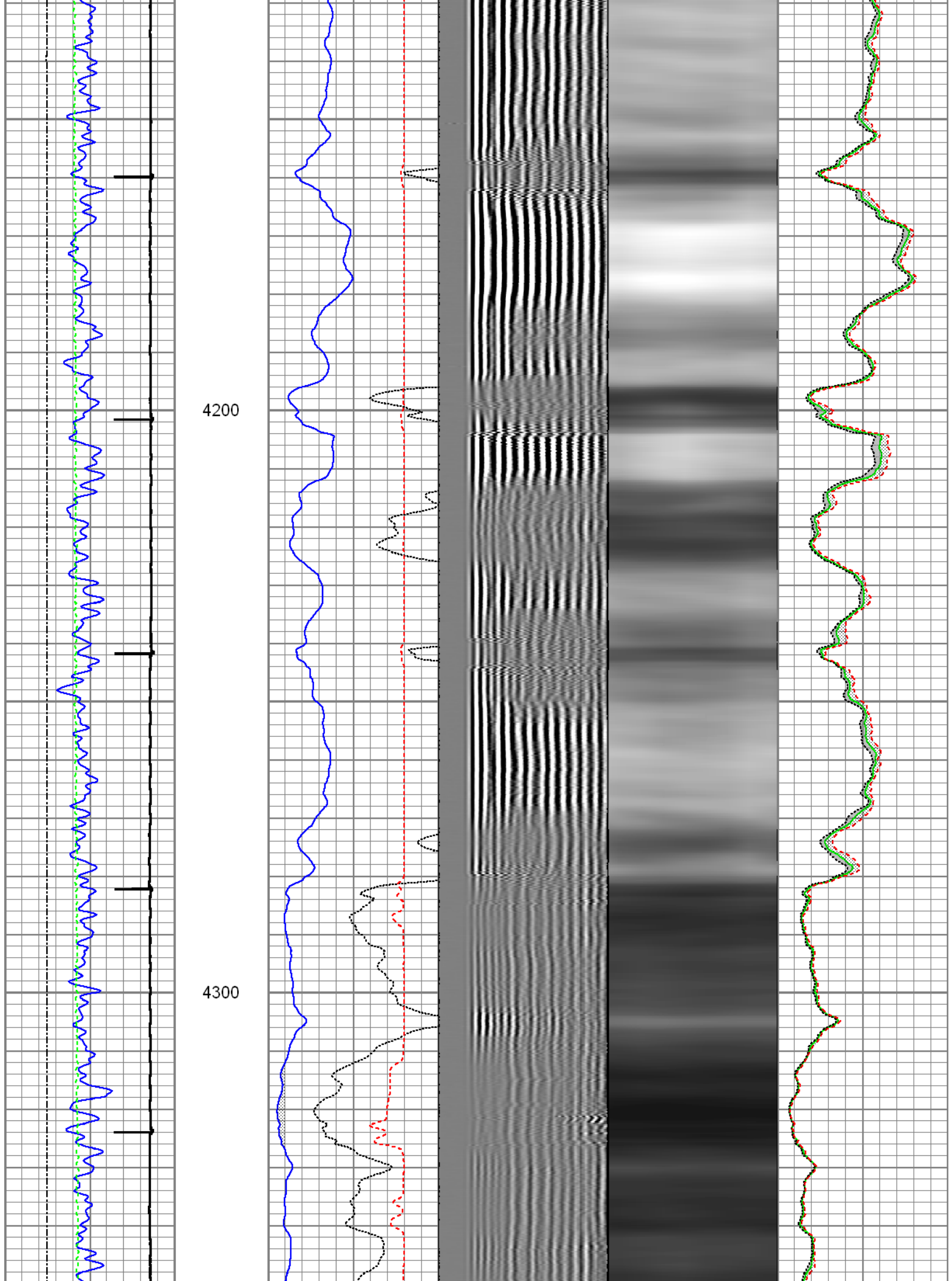
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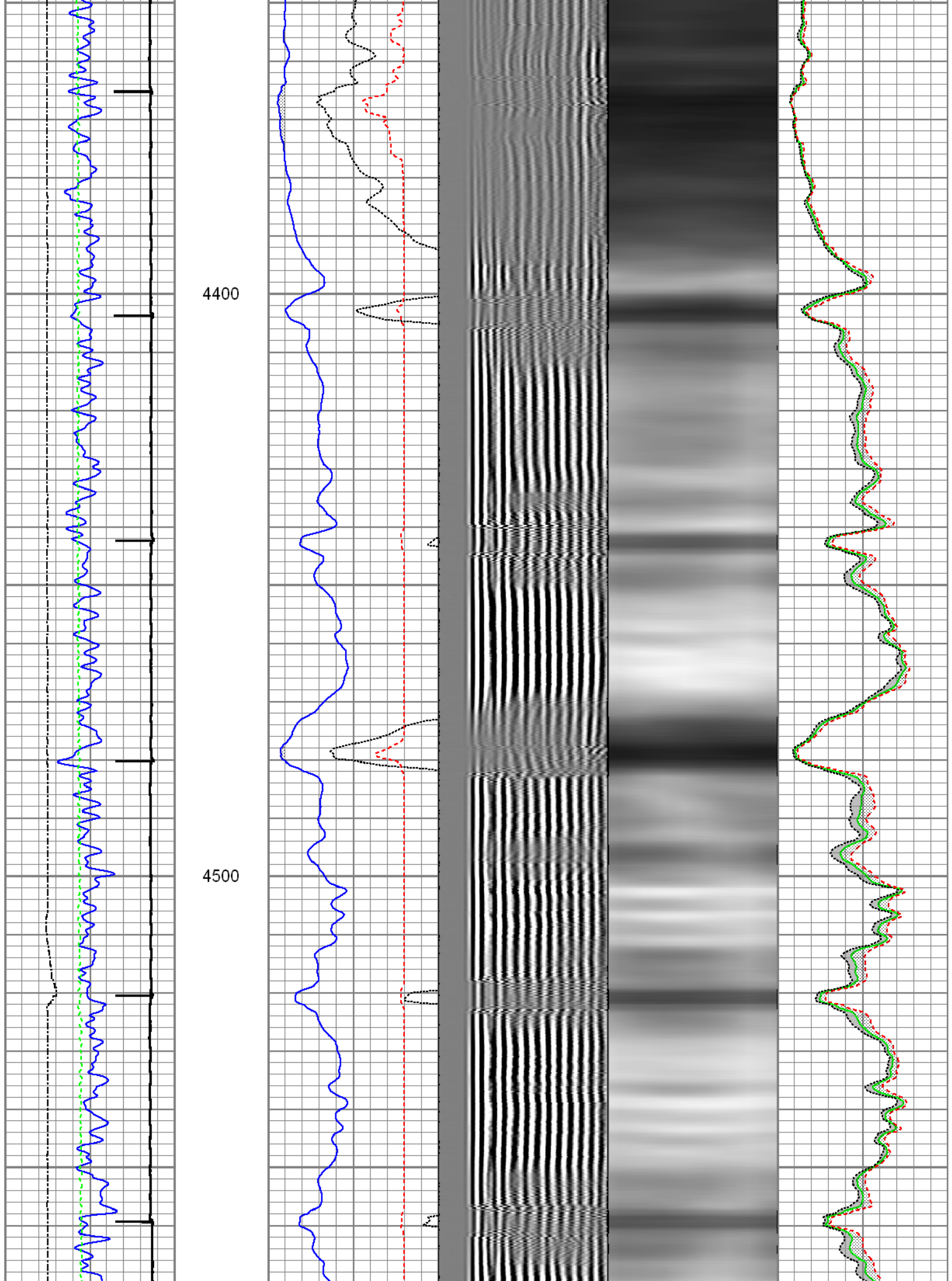
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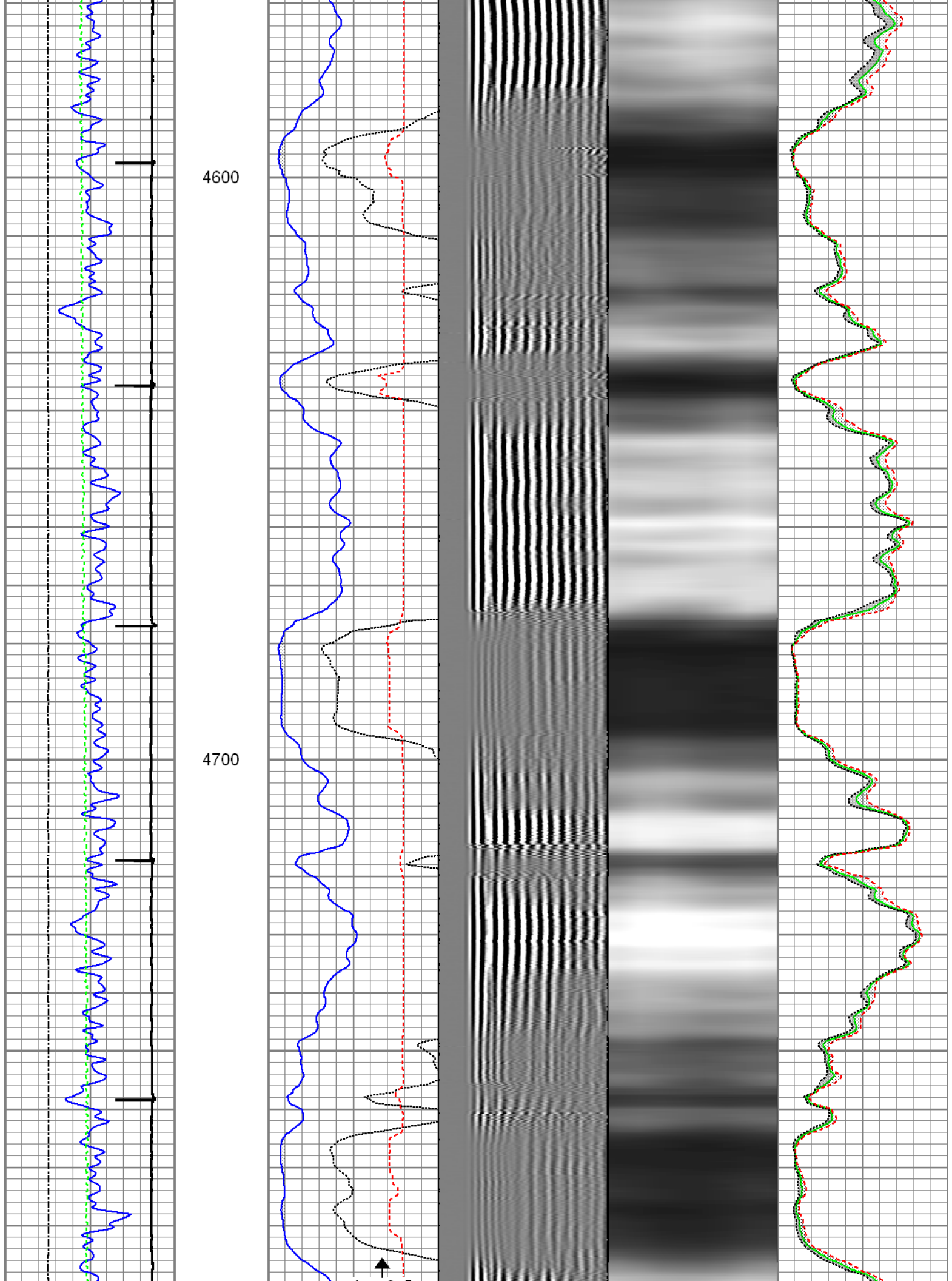
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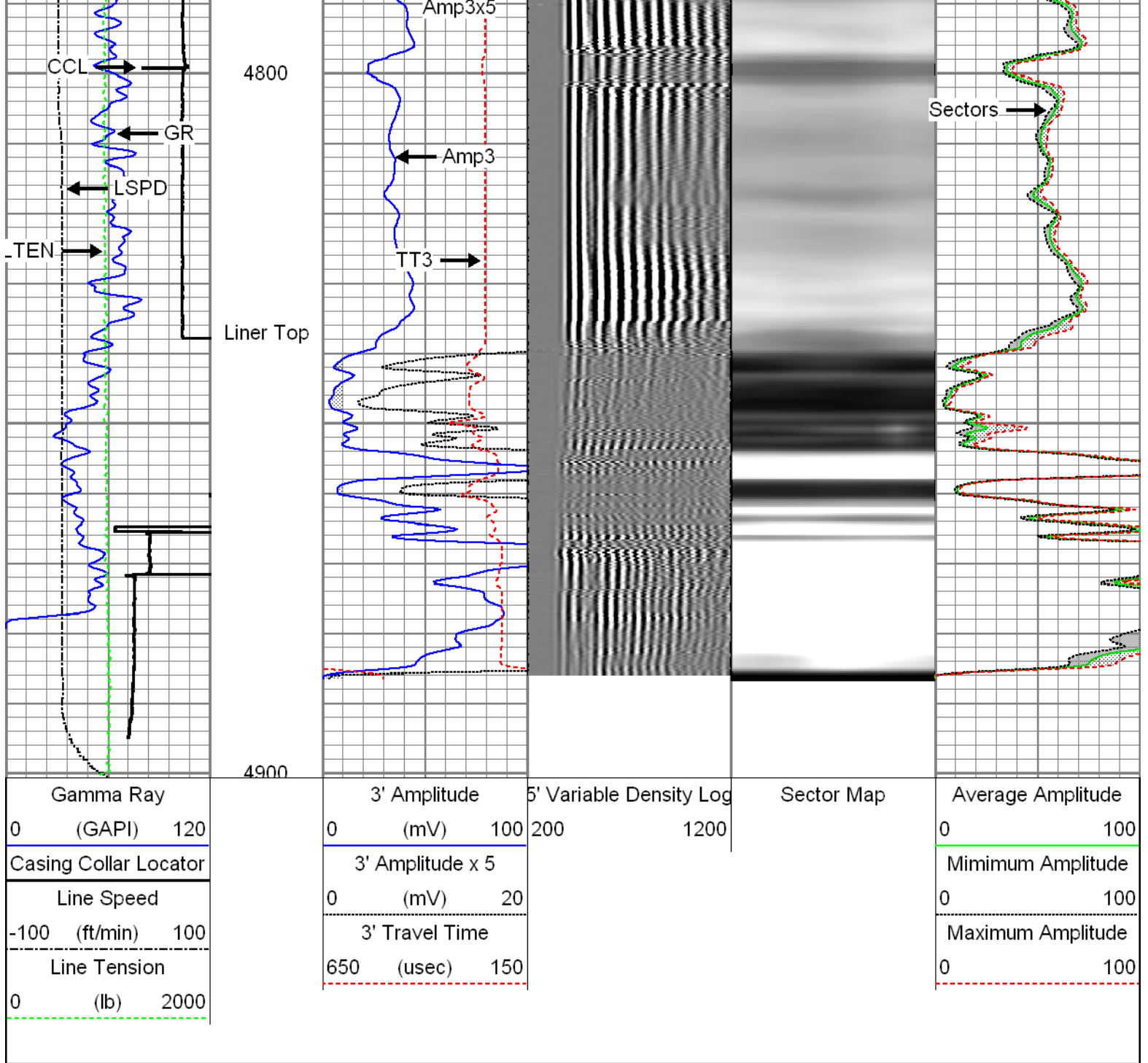








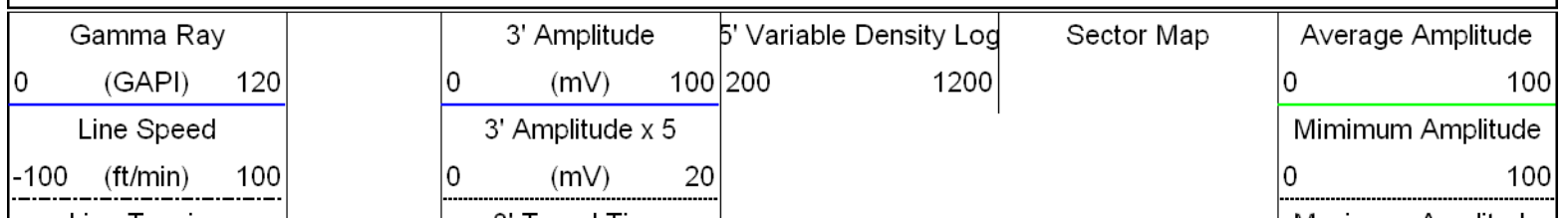


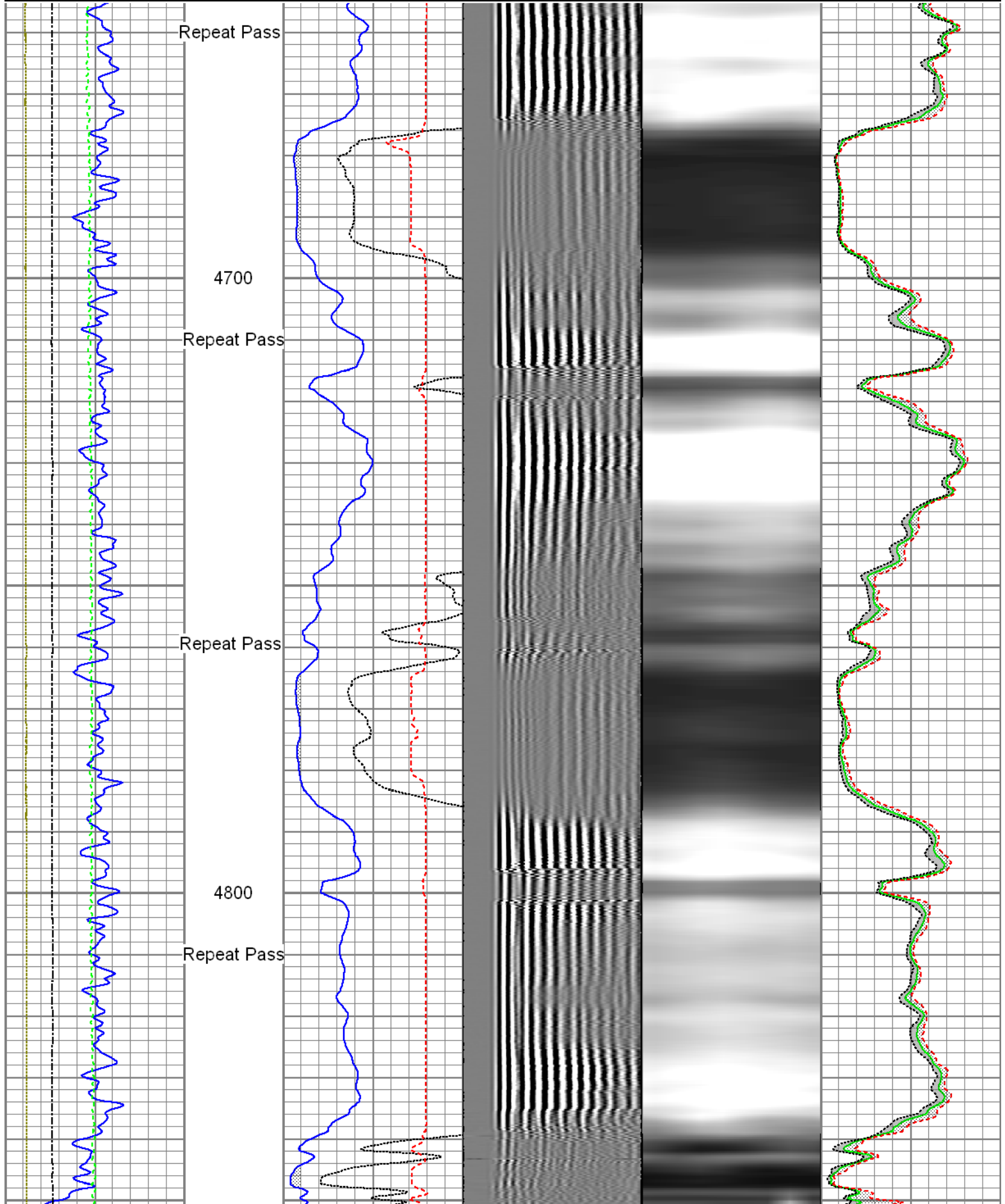
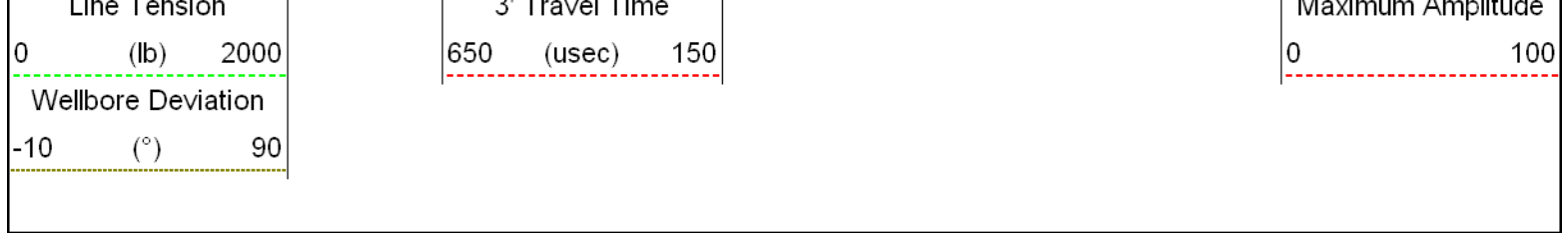


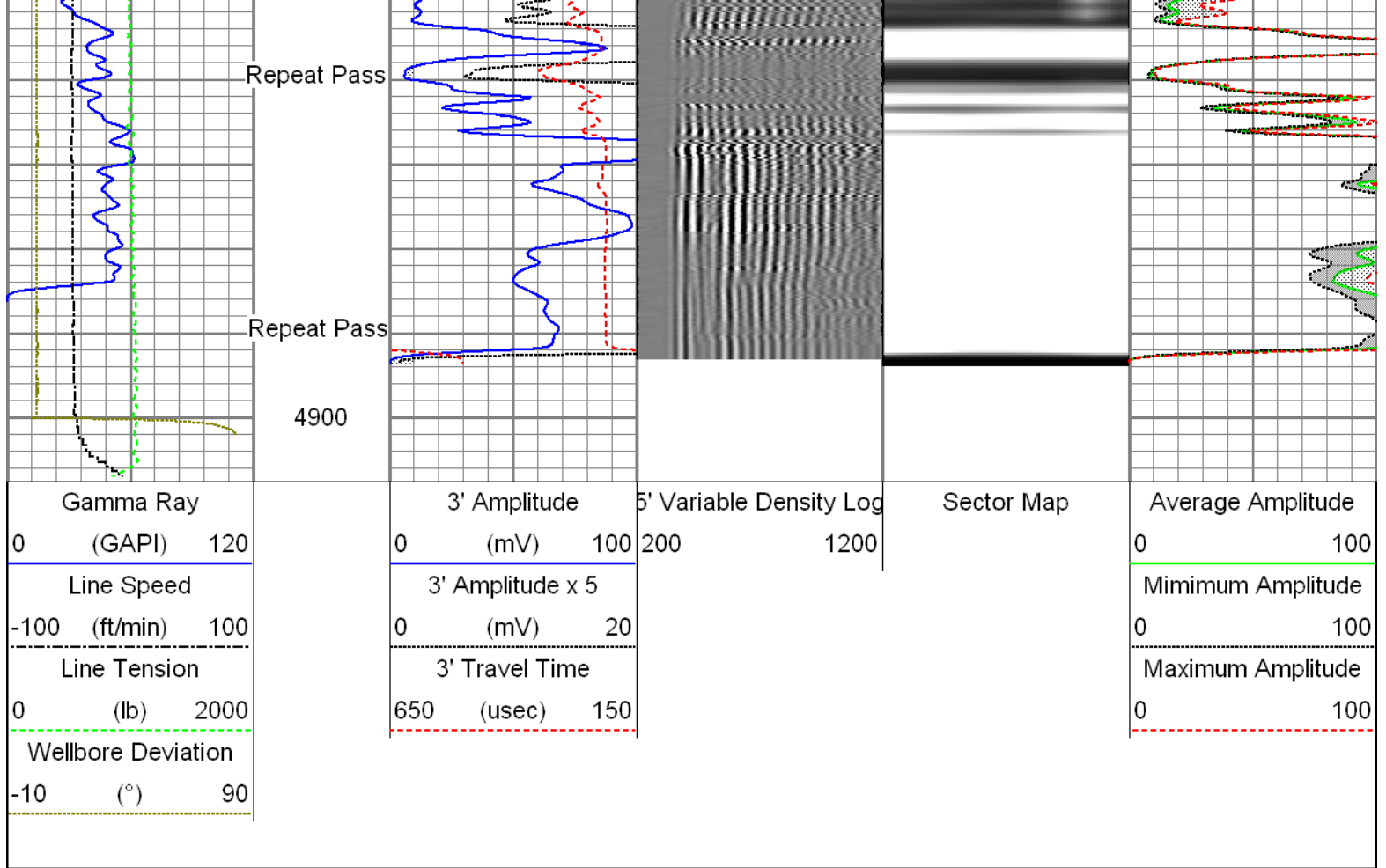
Repeat Pass

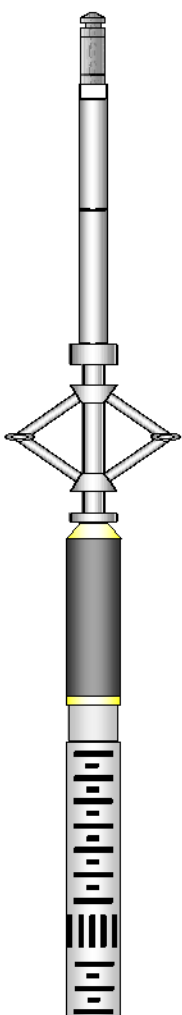

Recorded At 1500 PSI Surface Induced Pressure

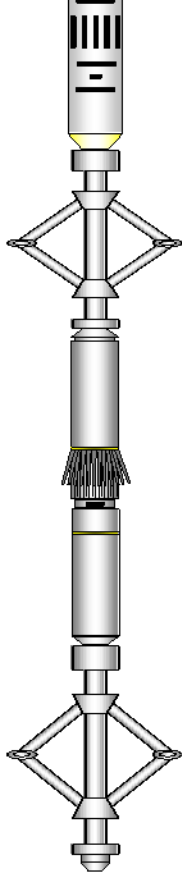
Database File: 0512339201 whiting horsetail 30f_3107a 11-21-14 mit rbt .db
 Dataset Pathname: pass11
 Presentation Format: rbt4_mit
 Dataset Creation: Fri Nov 21 12:19:56 2014 by Log 7.0 B1
 Charted by: Depth in Feet scaled 1:240







Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
GR	22.81		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 (10013899) Production Gamma Ray	1.93	1.69	9.50
			UW_PRC #4 -DSSRAC (081) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	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		UW_PRC-DSSRAC (080) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00	
WVFS7	15.42						
WVFS8	15.42						
CBLTEMP	15.42						
CBLROT	15.42						
WVF5FT	14.42	MIT	5.41	UW_MIT-UW_MIT40_042 (10014703) 40 Multifinger Imaging Tool	4.54	2.75	61.10
		TSTAMP	0.00	UW_PRC #3 -UW_PRC_057 (1102) 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
Dataset: 0512339201 Whiting Horsetail 30f_3107a 11-21-14 MIT RBT .db: field/well/run1/pass13 Total Length: 27.05 ft Total Weight: 319.30 lb O.D. 3.13 in							

Calibration Report			
Database File:	0512339201 whiting horsetail 30f_3107a 11-21-14 mit rbt .db		
Dataset Pathname:	pass12		
Dataset Creation:	Fri Nov 21 12:32:53 2014 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: Fri Nov 21 10:22:12 2014					
Ring size:	4	5	6	7		
(in)	Sens	Sens	Sens	Sens		
Finger 01:	1085	371.0	1456	375.0	1831	394.0
Finger 02:	1064	377.0	1441	381.0	1822	415.0
Finger 03:	1064	377.0	1441	381.0	1822	415.0

Finger 02:	1064	377.0	1441	391.0	1832	415.0	2247
Finger 03:	1054	371.0	1425	379.0	1804	405.0	2209
Finger 04:	1015	382.0	1397	402.0	1799	433.0	2232
Finger 05:	1034	366.0	1400	375.0	1775	397.0	2172
Finger 06:	993	369.0	1362	387.0	1749	414.0	2163
Finger 07:	1042	375.0	1417	384.0	1801	412.0	2213
Finger 08:	1008	381.0	1389	398.0	1787	426.0	2213
Finger 09:	1073	384.0	1457	388.0	1845	398.0	2243
Finger 10:	1030	373.0	1403	387.0	1790	409.0	2199
Finger 11:	1017	375.0	1392	393.0	1785	417.0	2202
Finger 12:	1106	374.0	1480	372.0	1852	383.0	2235
Finger 13:	1075	374.0	1449	391.0	1840	413.0	2253
Finger 14:	1028	384.0	1412	406.0	1818	430.0	2248
Finger 15:	995	377.0	1372	408.0	1780	434.0	2214
Finger 16:	1040	371.0	1411	397.0	1808	420.0	2228
Finger 17:	1085	363.0	1448	390.0	1838	404.0	2242
Finger 18:	1082	358.0	1440	383.0	1823	401.0	2224
Finger 19:	1078	372.0	1450	397.0	1847	415.0	2262
Finger 20:	982	364.0	1346	409.0	1755	430.0	2185
Finger 21:	1080	365.0	1445	394.0	1839	414.0	2253
Finger 22:	1078	364.0	1442	399.0	1841	416.0	2257
Finger 23:	1118	366.0	1484	398.0	1882	413.0	2295
Finger 24:	1102	342.0	1444	372.0	1816	388.0	2204
Finger 25:	1109	369.0	1478	404.0	1882	414.0	2296
Finger 26:	1054	350.0	1404	391.0	1795	412.0	2207
Finger 27:	1236	371.0	1607	399.0	2006	404.0	2410
Finger 28:	1079	342.0	1421	380.0	1801	402.0	2203
Finger 29:	1065	354.0	1419	395.0	1814	416.0	2230
Finger 30:	1049	360.0	1409	400.0	1809	422.0	2231
Finger 31:	1238	381.0	1619	407.0	2026	420.0	2446
Finger 32:	1093	353.0	1446	381.0	1827	394.0	2221
Finger 33:	1091	373.0	1464	406.0	1870	425.0	2295
Finger 34:	1072	356.0	1428	383.0	1811	404.0	2215
Finger 35:	1159	381.0	1540	403.0	1943	418.0	2361
Finger 36:	1051	345.0	1396	369.0	1765	391.0	2156
Finger 37:	1125	379.0	1504	398.0	1902	417.0	2319
Finger 38:	1092	359.0	1451	375.0	1826	396.0	2222
Finger 39:	1093	354.0	1447	364.0	1811	385.0	2196
Finger 40:	1009	383.0	1392	406.0	1798	433.0	2231

Segmented Cement Bond Log Calibration Report						
Serial Number:		1066				
Tool Model:		UW_RBT_004				
Calibration Casing Diameter:		5.500	in			
Calibration Depth:		36.410	ft			
Master Calibration, performed Fri Nov 21 10:24:45 2014:						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	0.005	1.000	1.000	71.921	71.251	0.670
5FT	-0.001	1.000	1.000	71.921	70.835	1.086
S1	0.005	1.000	0.000	100.000	100.540	-0.540
S2	0.004	1.000	0.000	100.000	100.368	-0.368
S3	0.004	1.000	0.000	100.000	100.375	-0.375
S4	0.004	1.000	0.000	100.000	100.368	-0.368
S5	0.004	1.000	0.000	100.000	100.450	-0.450
S6	0.004	1.000	0.000	100.000	100.368	-0.368
S7	0.004	1.000	0.000	100.000	100.412	-0.412
S8	0.004	1.000	0.000	100.000	100.396	-0.396

Gamma Ray Calibration Report

Serial Number:	10013899	
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
Well	Horsetail 30F-3107
Field	Wildcat
County	Weld
State	Colorado