

# Radial Cement Bond Gamma Ray Casing Collar Log

Company	Whiting Oil & Gas Corporation	Company	Whiting Oil & Gas Corporation
Well	Razor 26I-2313A	Well	Razor 26I-2313A
Field	Wildcat	Field	Wildcat
County	Weld	County	Weld
State	Colorado	State	Colorado
Location:	APL # : 05-123-38485	Other Services	Gauge Ring Set RBP MIT
Permanent Datum	SHL: 2242' FSL 695' FEL Lat/Long: 40.808522/-103.825094	Elevation	K.B. 4741' D.F. 4740' G.L. 4720'
Log Measured From	SEC 26 TWP 10N RGE 58W		
Drilling Measured From	Ground Level Kelly Bushing Kelly Bushing	Elevation	4720' 21 FT

Date	July 26, 2014
Run Number	One
Depth Driller	13785 FT
Depth Logger	4846 FT
Bottom Logged Interval	4841 FT
Top Log Interval	Surface
Open Hole Size	8.765"
Type Fluid	Water
Density / Viscosity	8.34 lbm/gal
Max. Recorded Temp.	188°F
Estimated Cement Top	114 FT
Time Well Ready	ROA
Time Logger on Bottom	11:40 a.m.
Equipment Number	HD 0255
Location	Fort Lupton, CO
Recorded By	Zach Fisher
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	Surface	1555 FT		
Intermediate #1	7	29	L-80	Surface	6131 FT		
Intermediate #2							
Liner	4 1/2	11.6	L-80	4820 FT	13738 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.

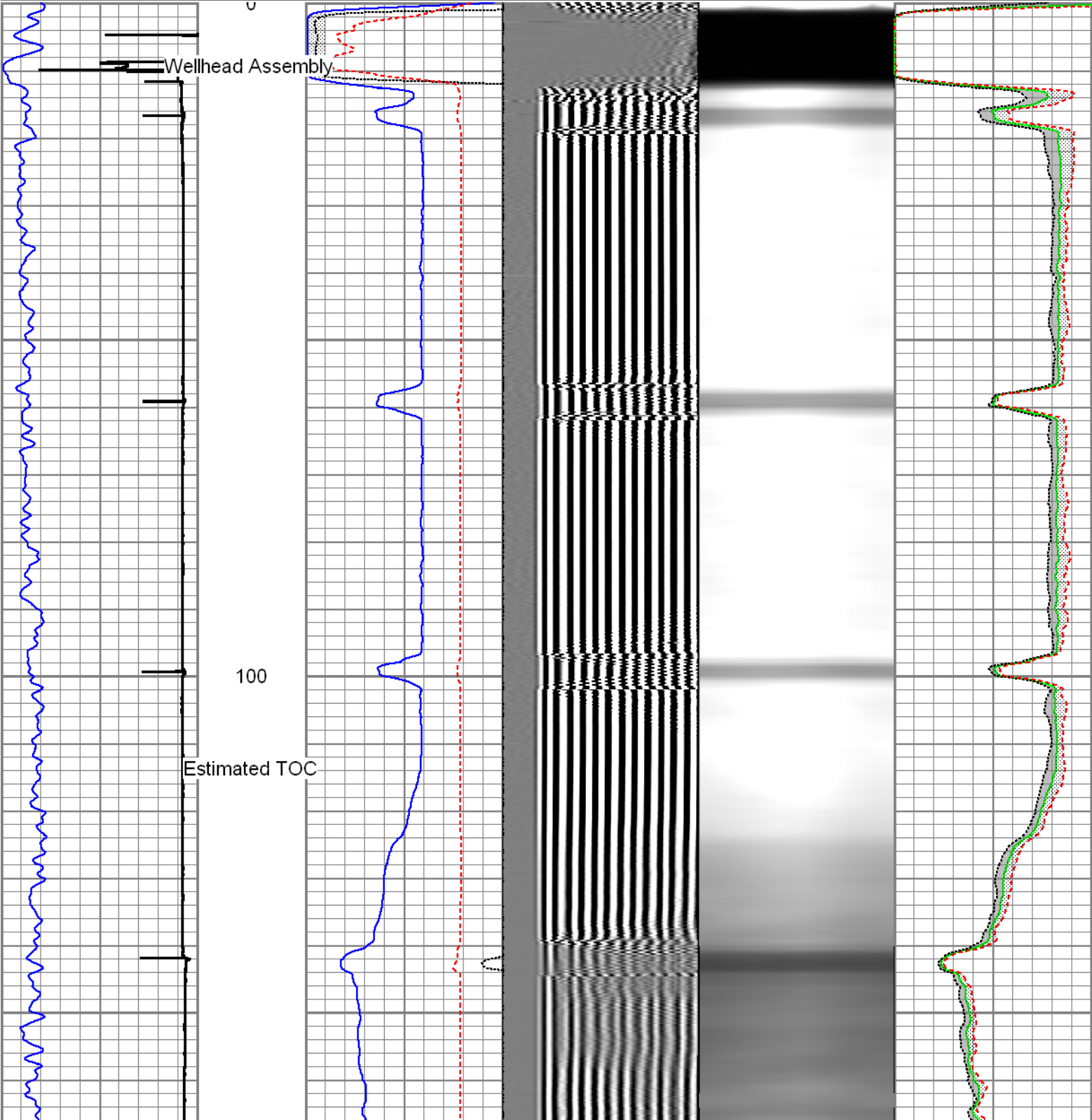
## Comments

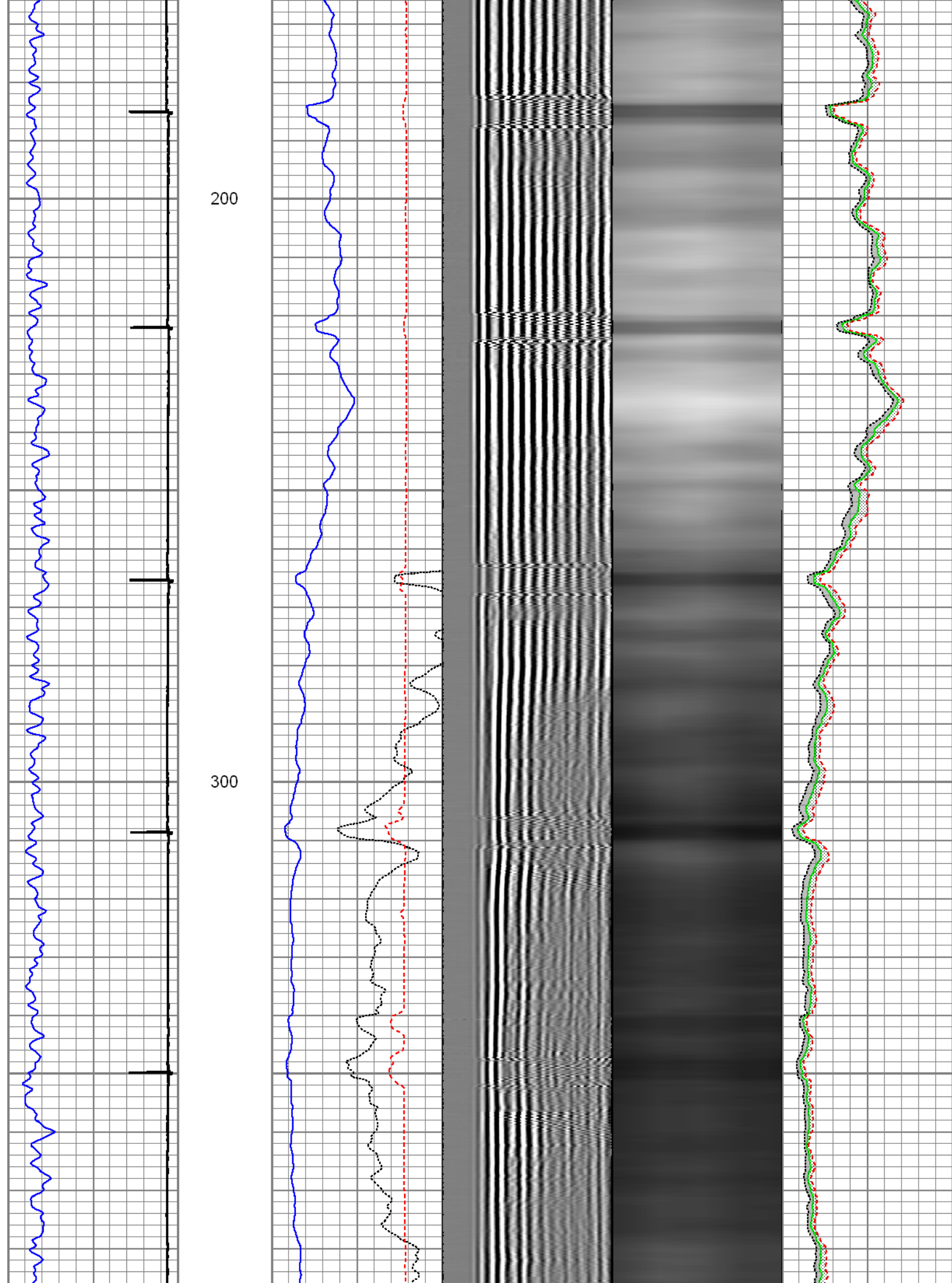
Log ran as per customer request.  
Depth reference to Casing Tally reported Liner Top at 4820 FT.  
Adjusted log -11 FT to correlate with Liner Top.  
Gauge Ring/Junk Basket ran to 4980 FT prior to log run.  
Retrievable Bridge Plug set at 4910 FT prior to log run.  
Log ran from 4846 FT to surface.  
Log Ran with 1500 PSI surface induced pressure.

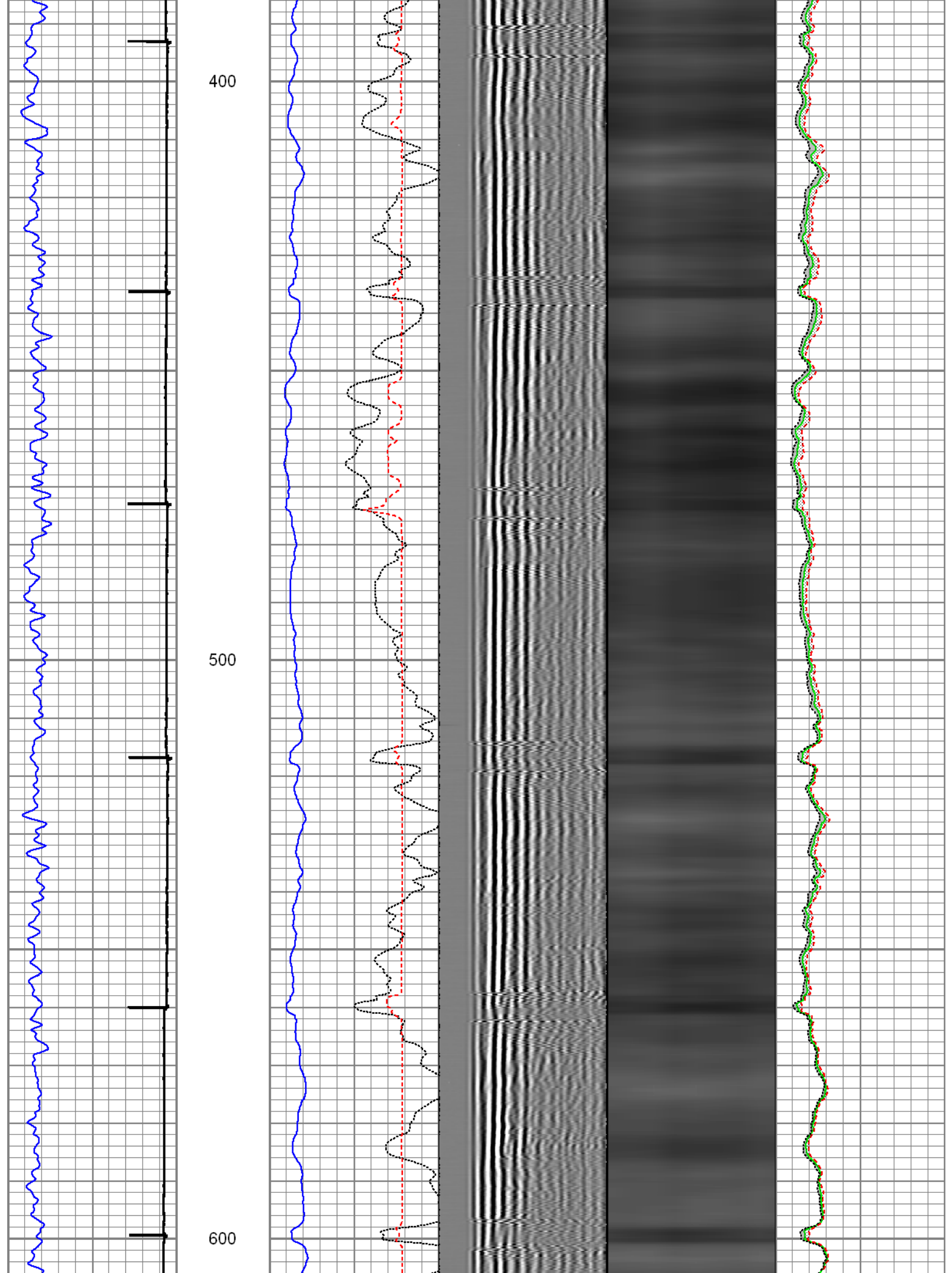
Thank you for choosing FMC Technologies Completion Services, Inc.!!

Database File: 07-26-14\_whiting\_razor 26i-2313a\_mit\_rbl.db  
Dataset Pathname: 7Main  
Presentation Format: rbt4\_mit  
Dataset Creation: Sat Jul 26 11:40:08 2014 by Log SCH 111116  
Charted by: Depth in Feet scaled 1:240

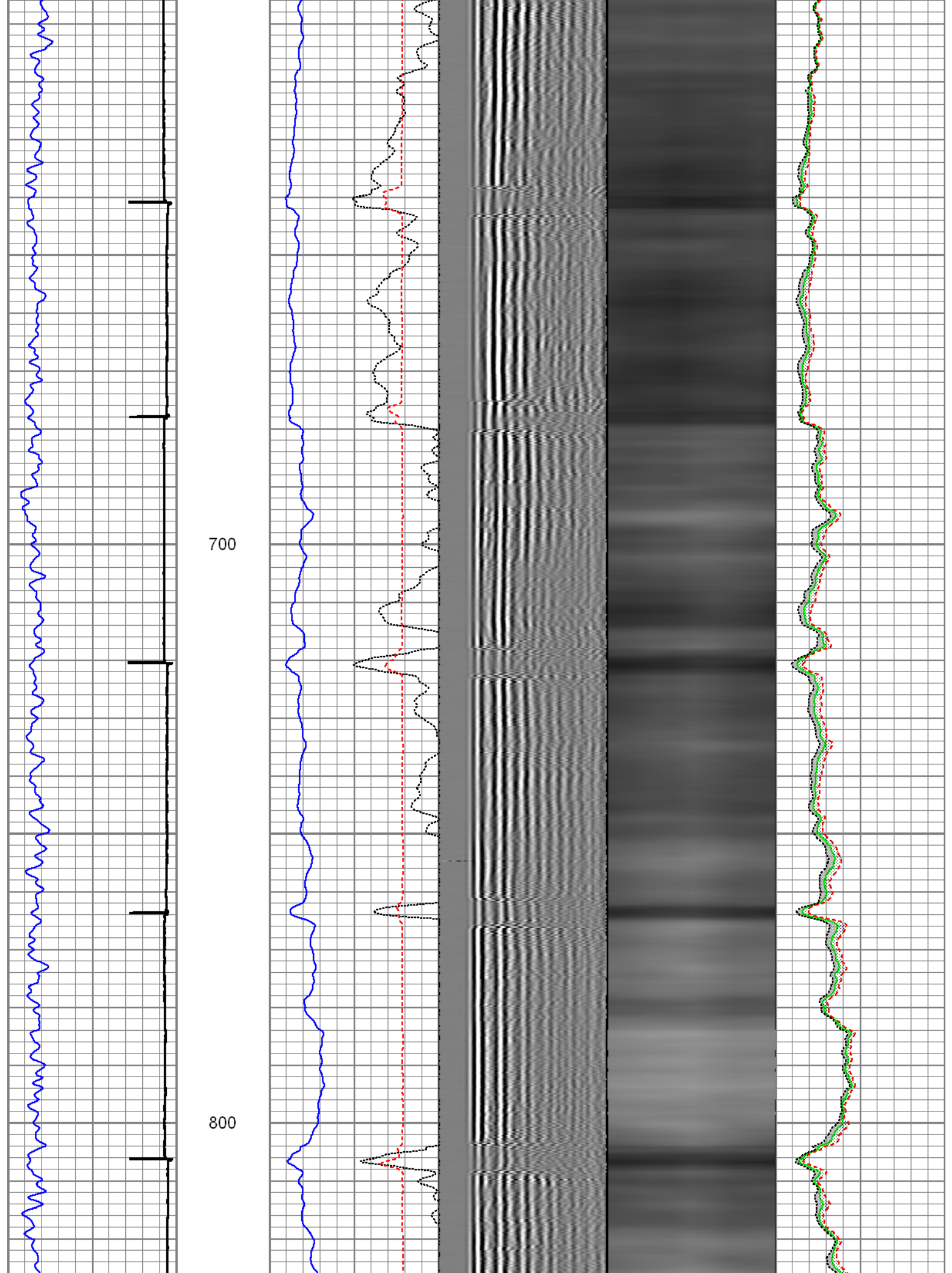
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Minimum Amplitude
	0 (mV) 20			0 100
	3' Travel Time			Maximum Amplitude
	650 (usec) 150			0 100

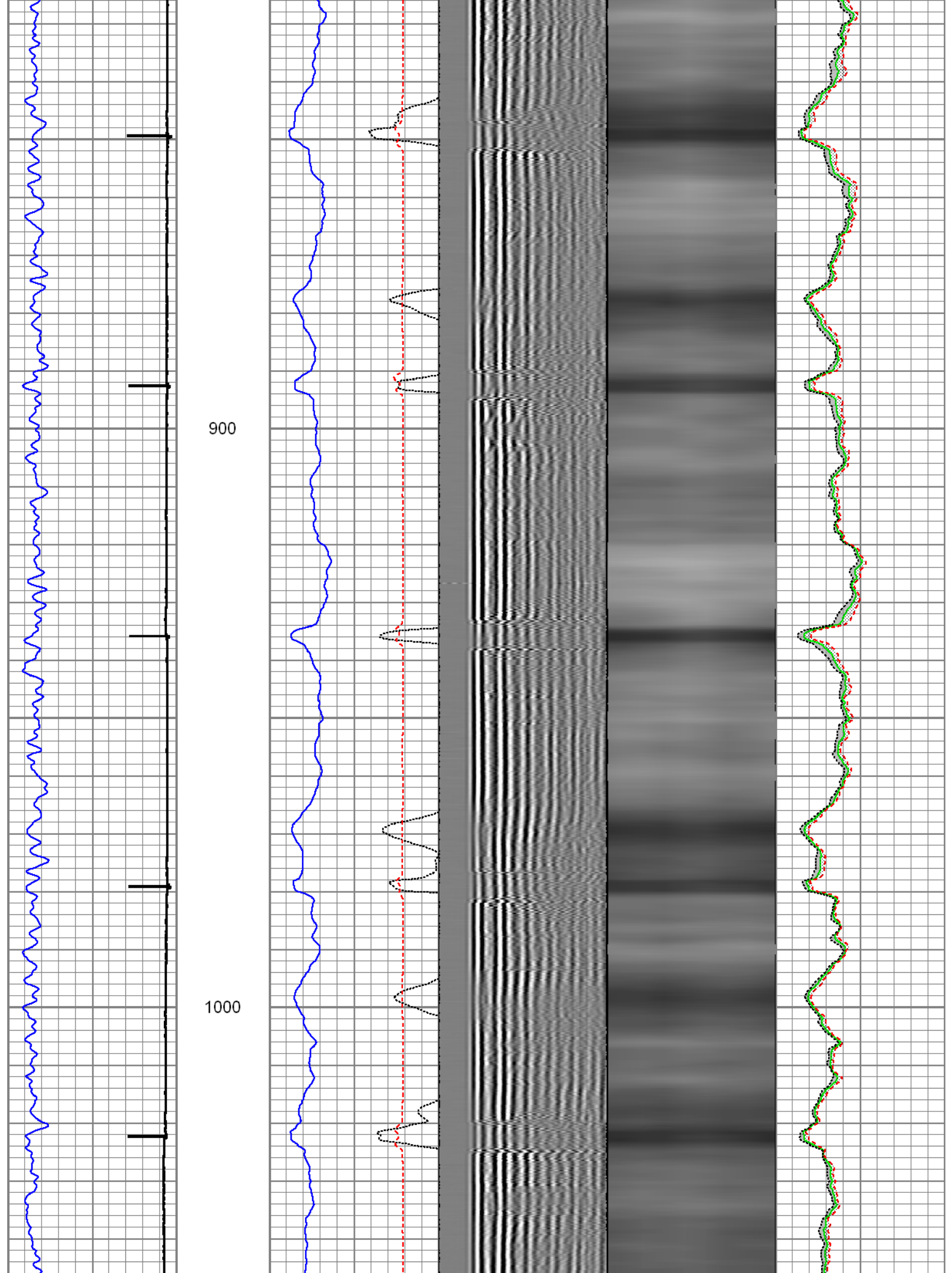


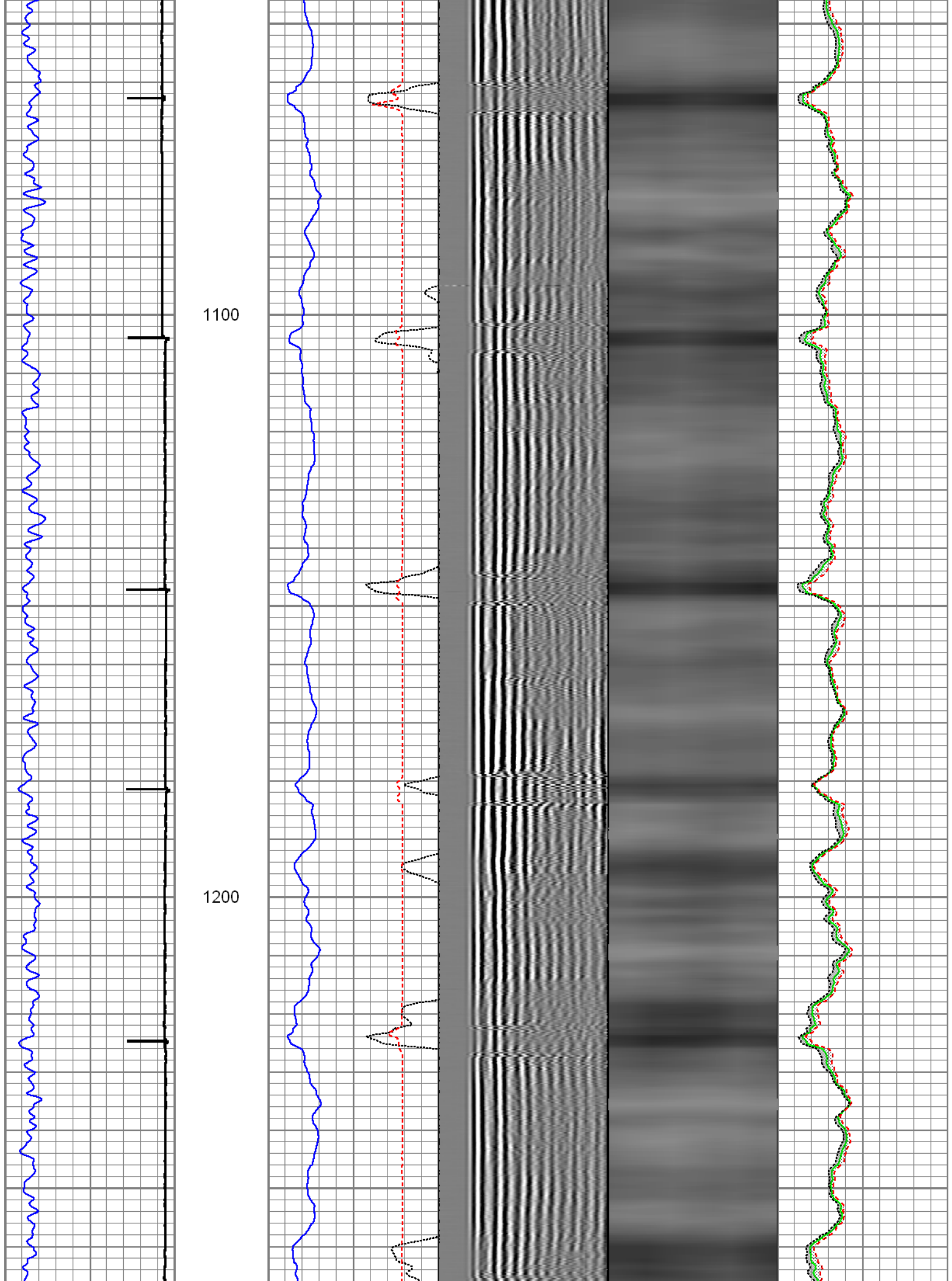


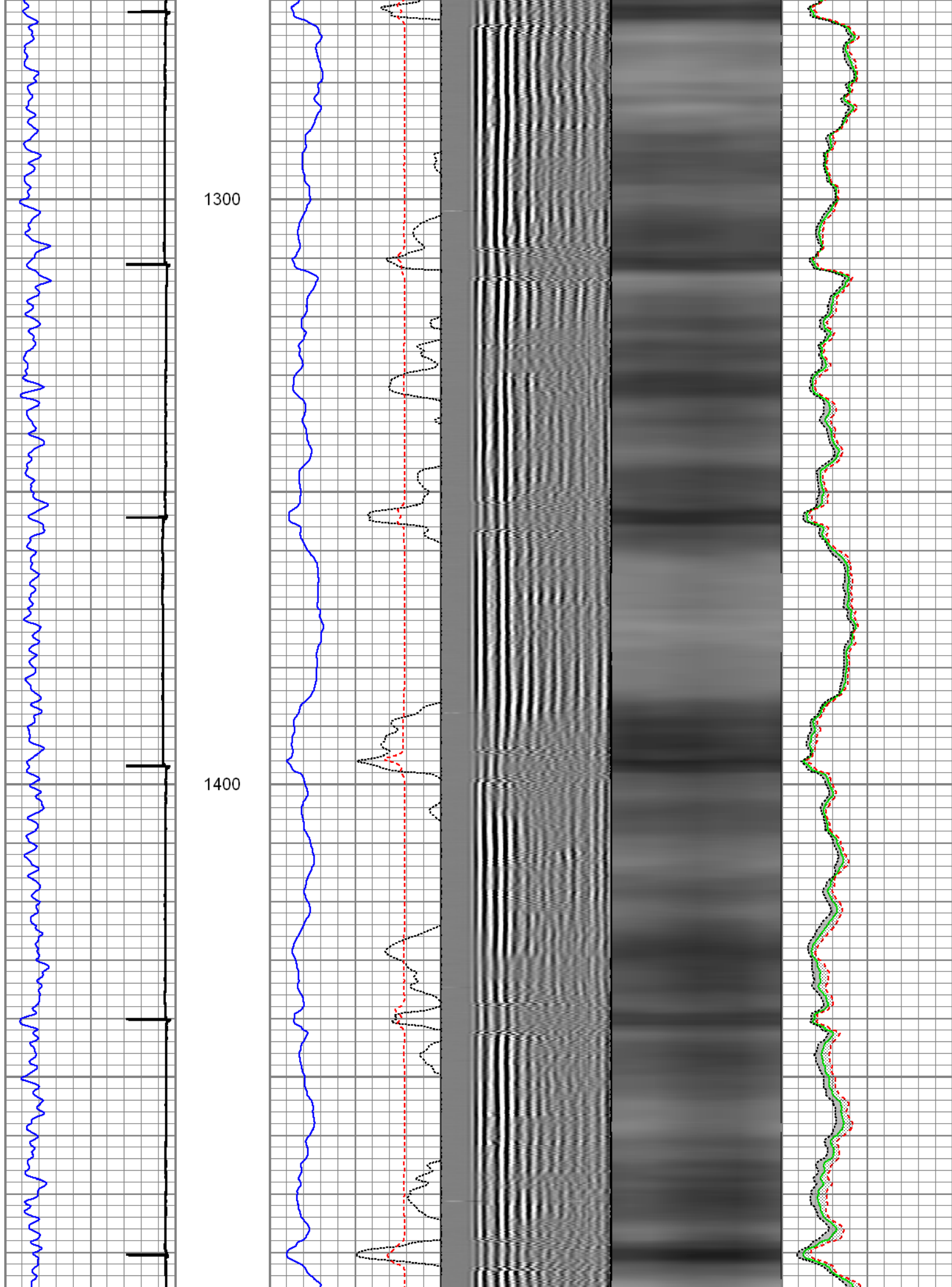




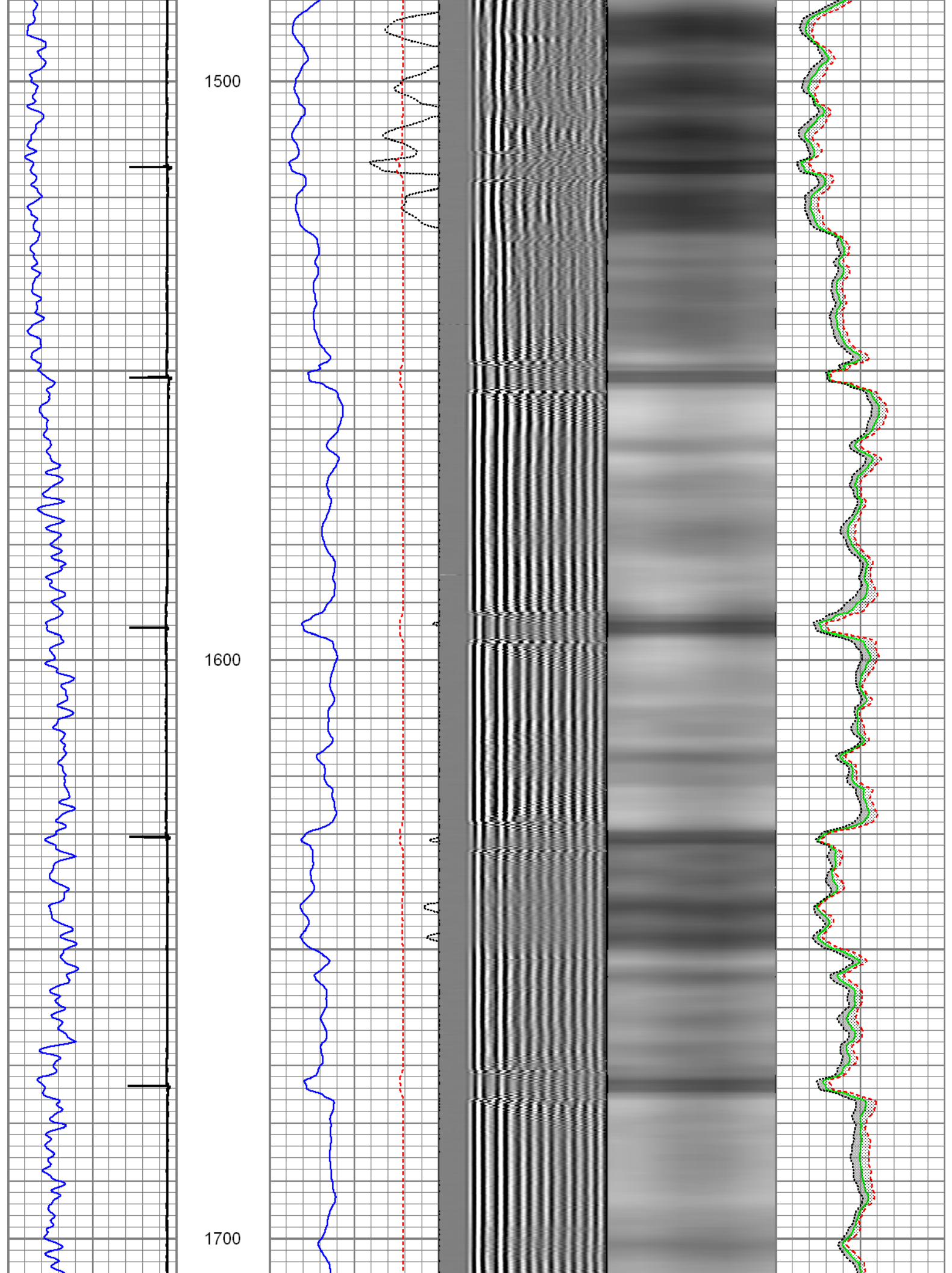


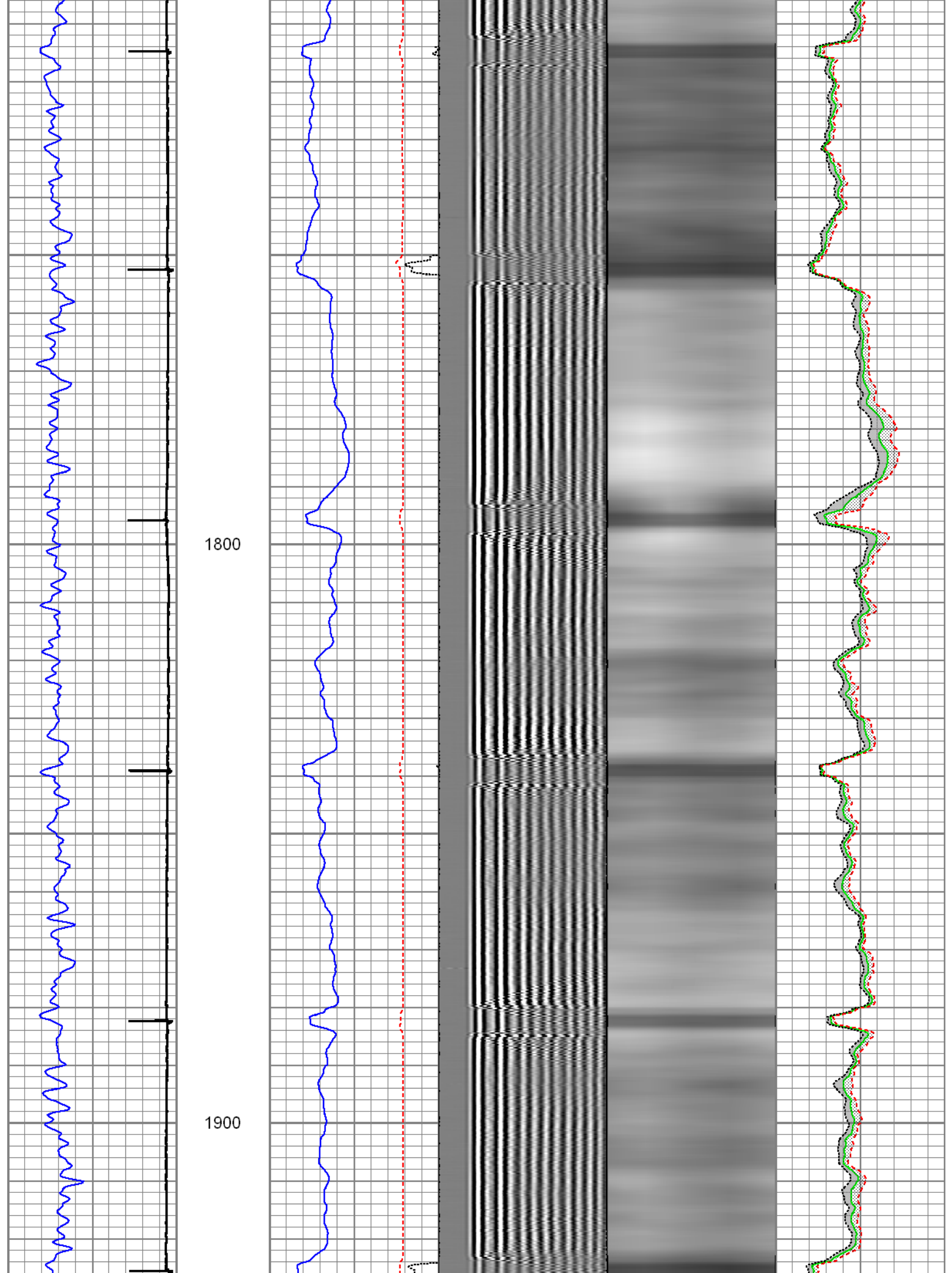


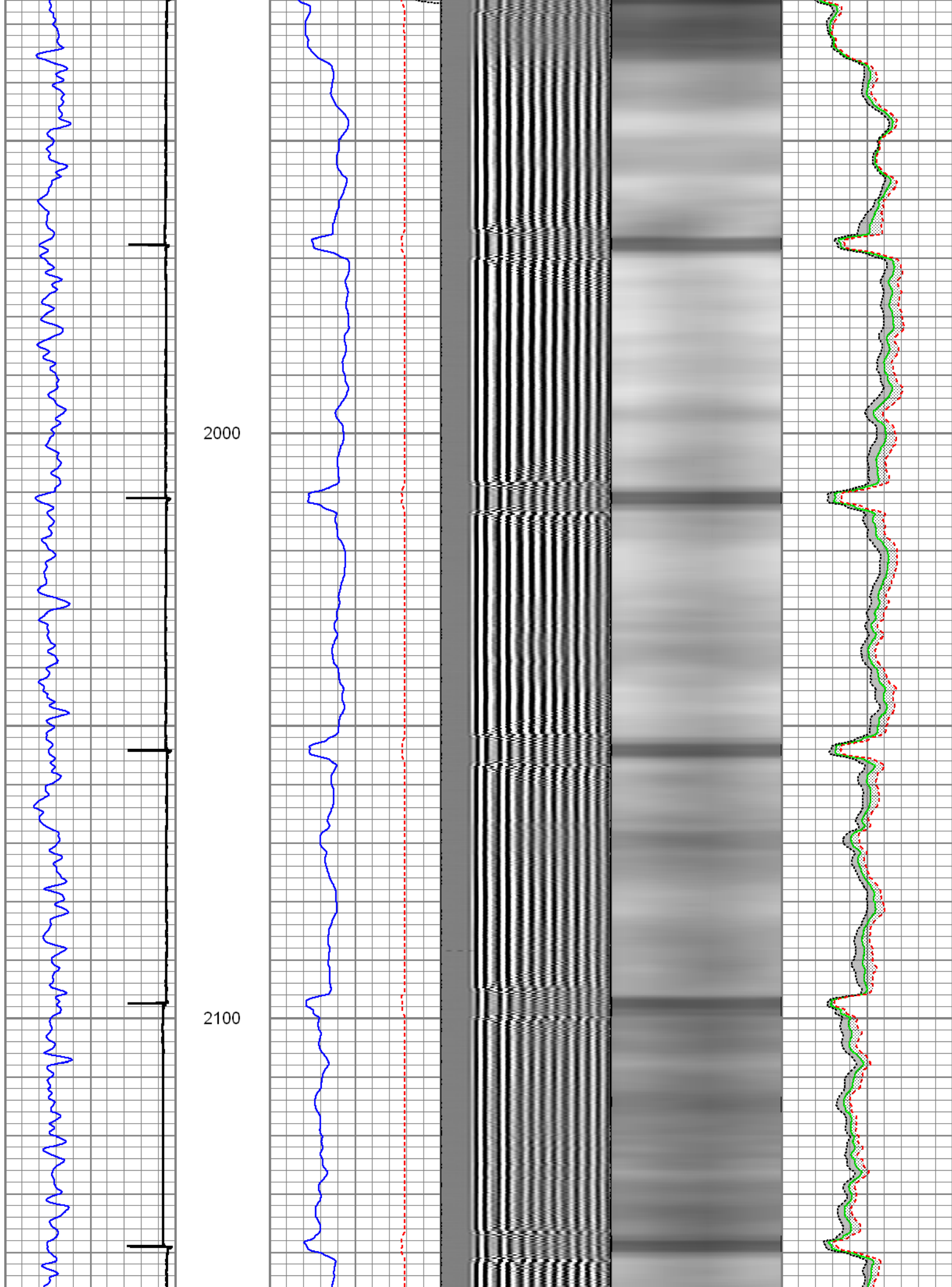


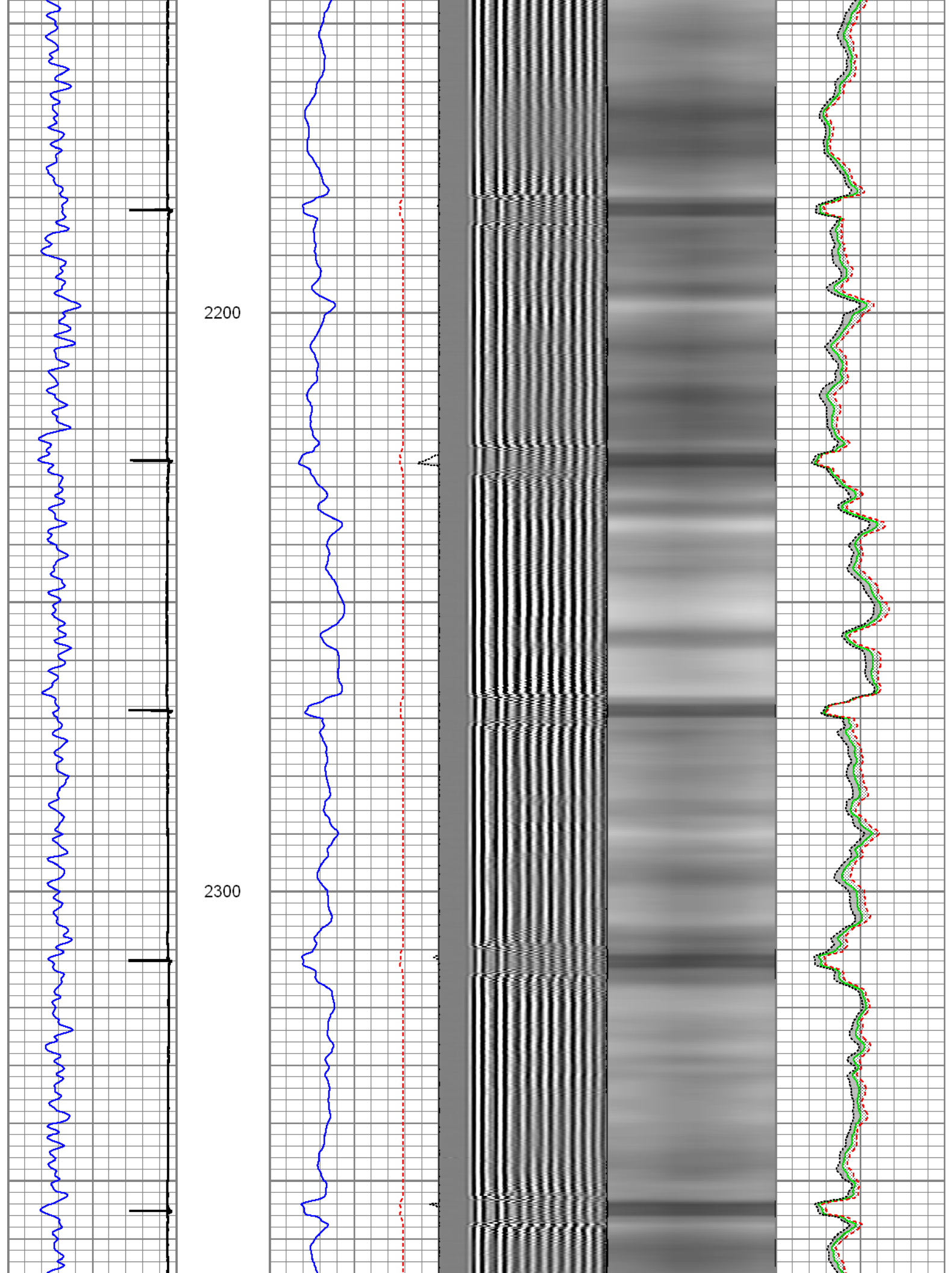








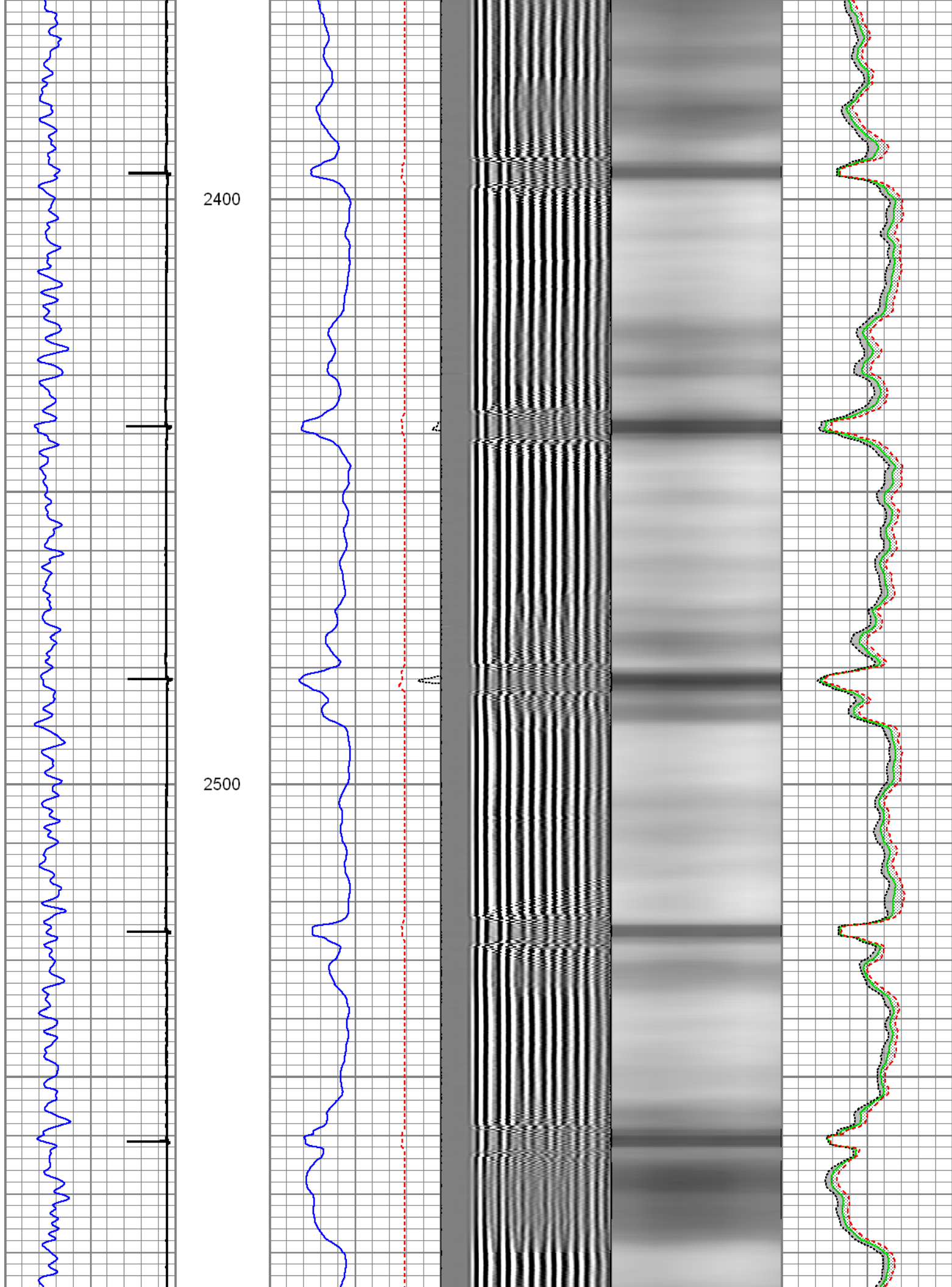


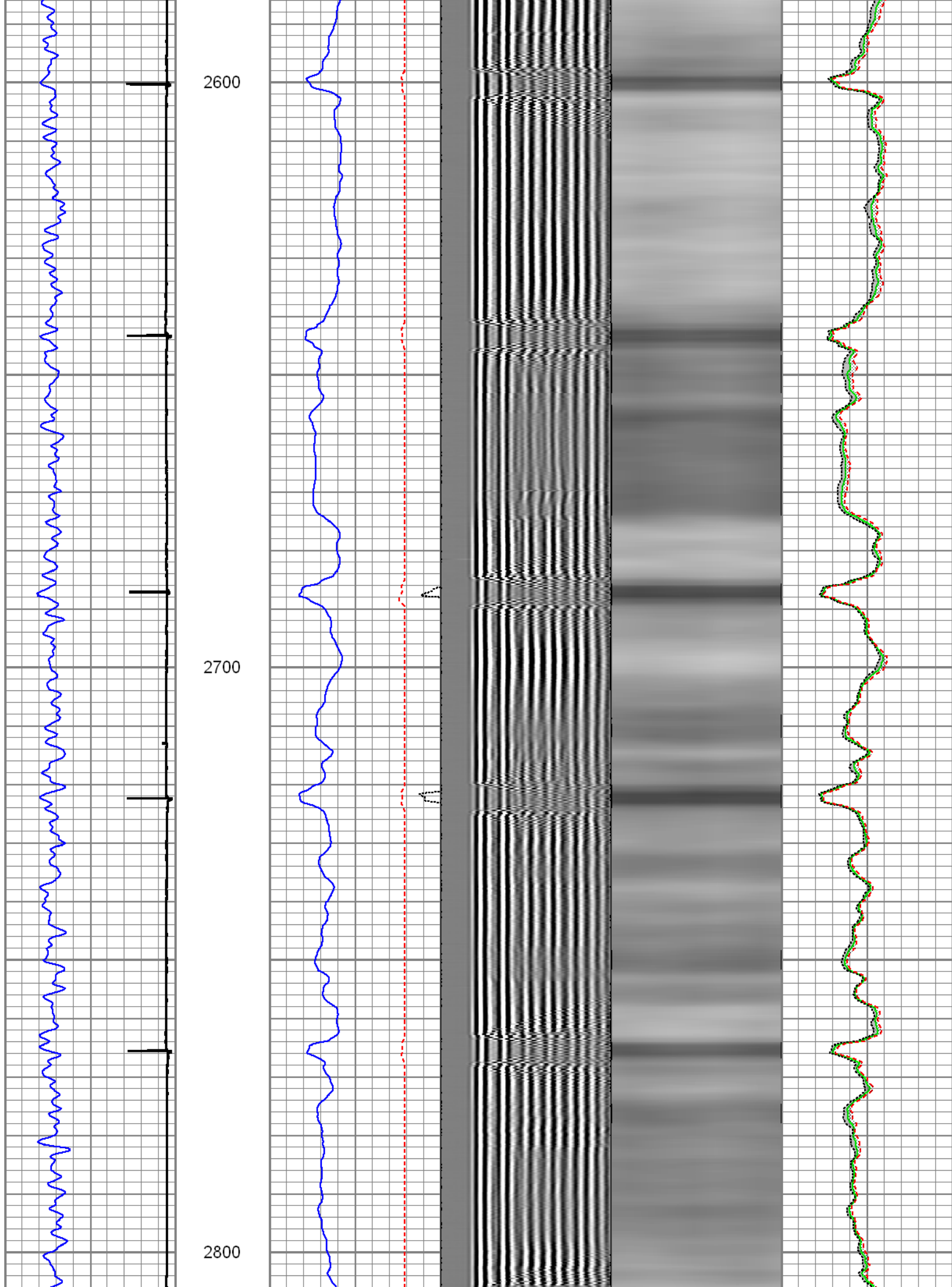


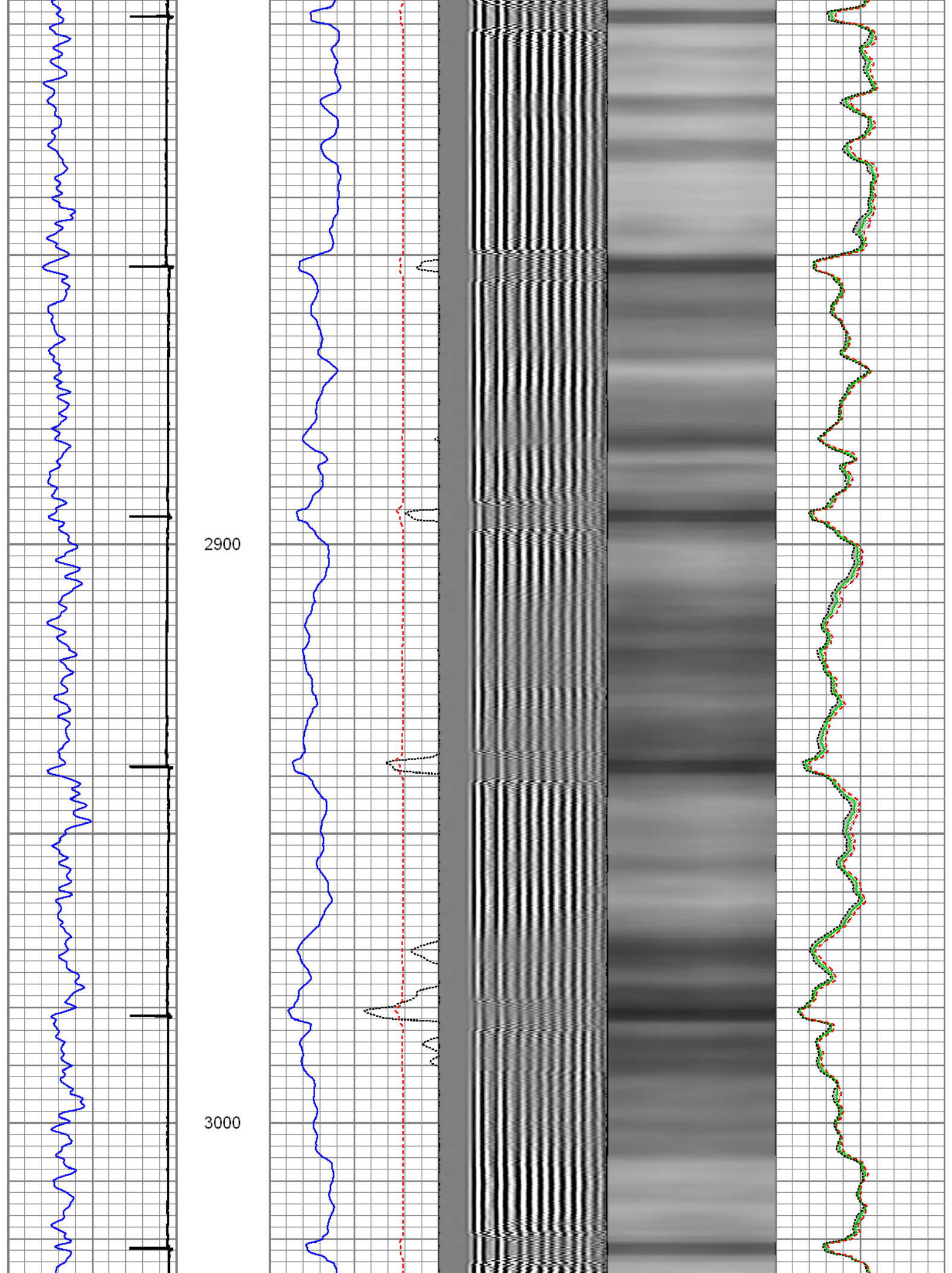


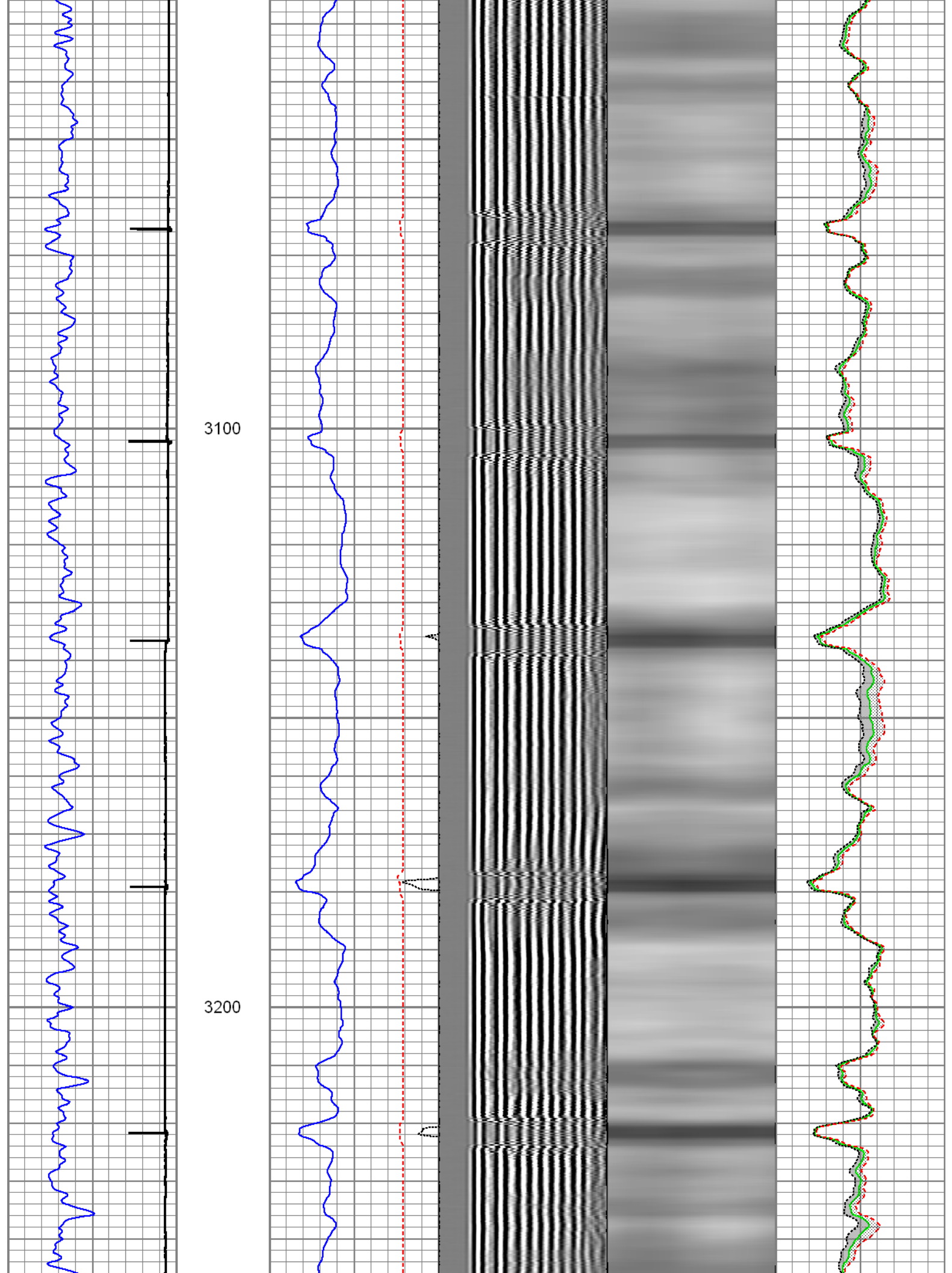
2400

2500





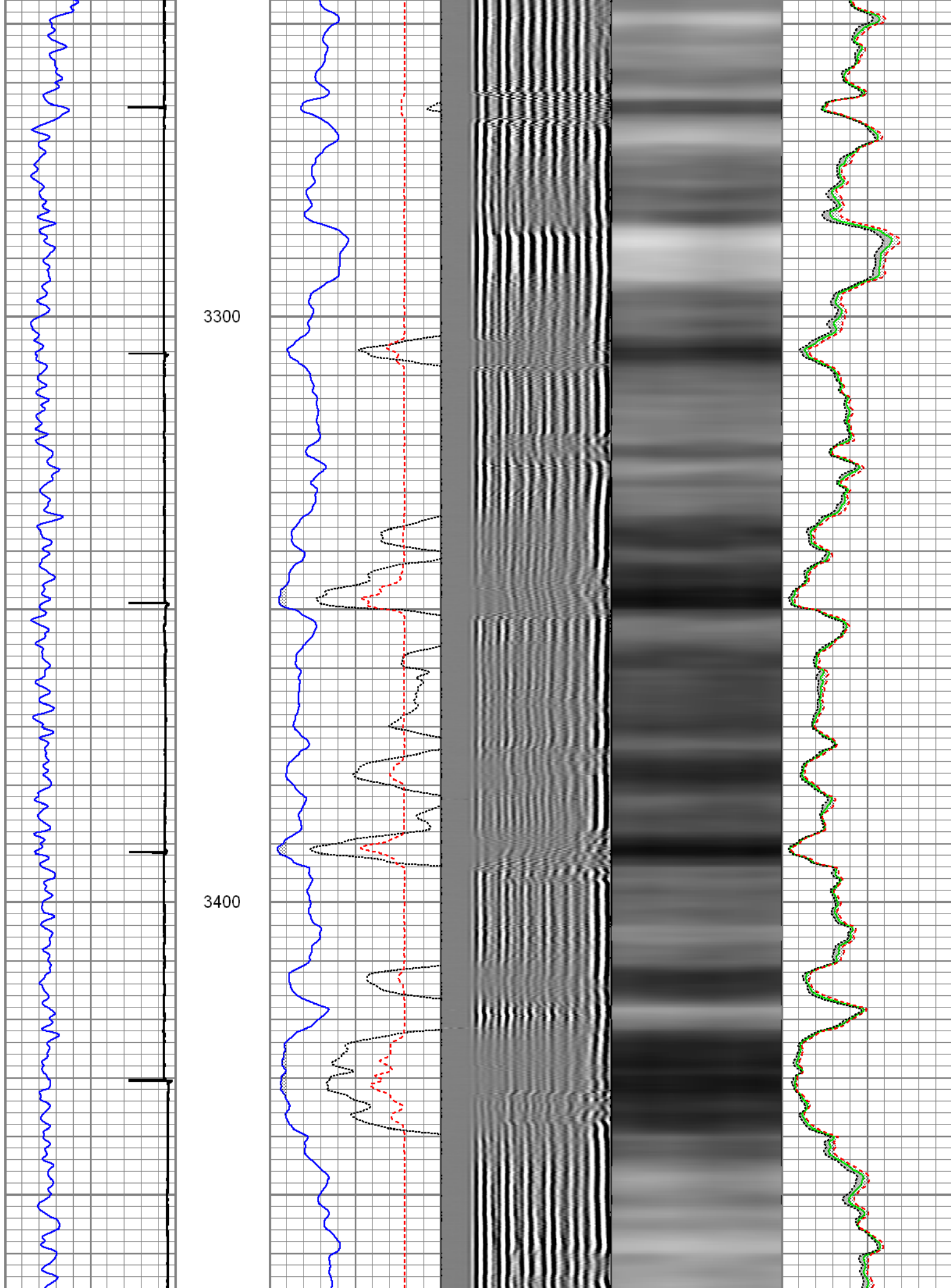


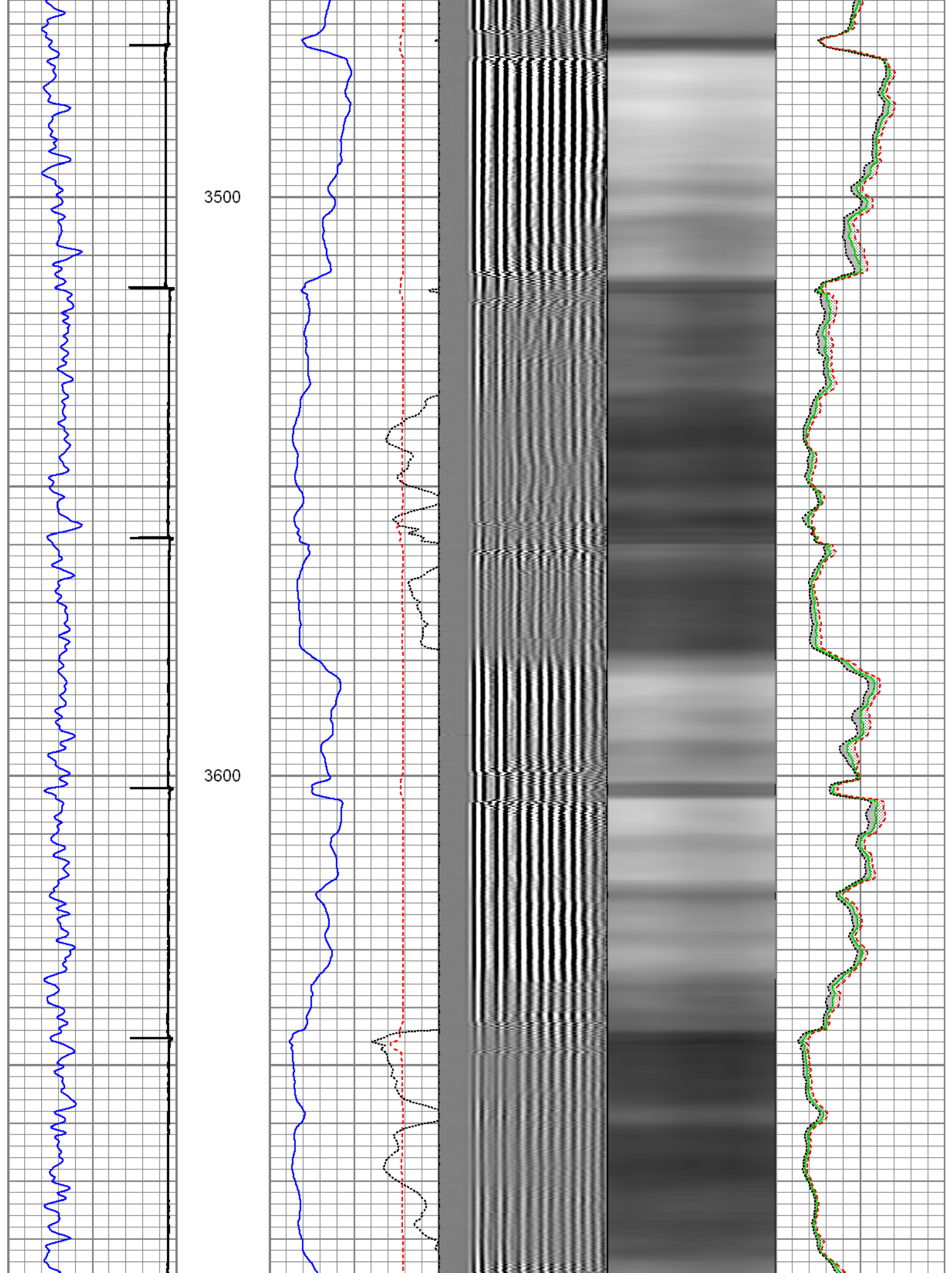




3300

3400

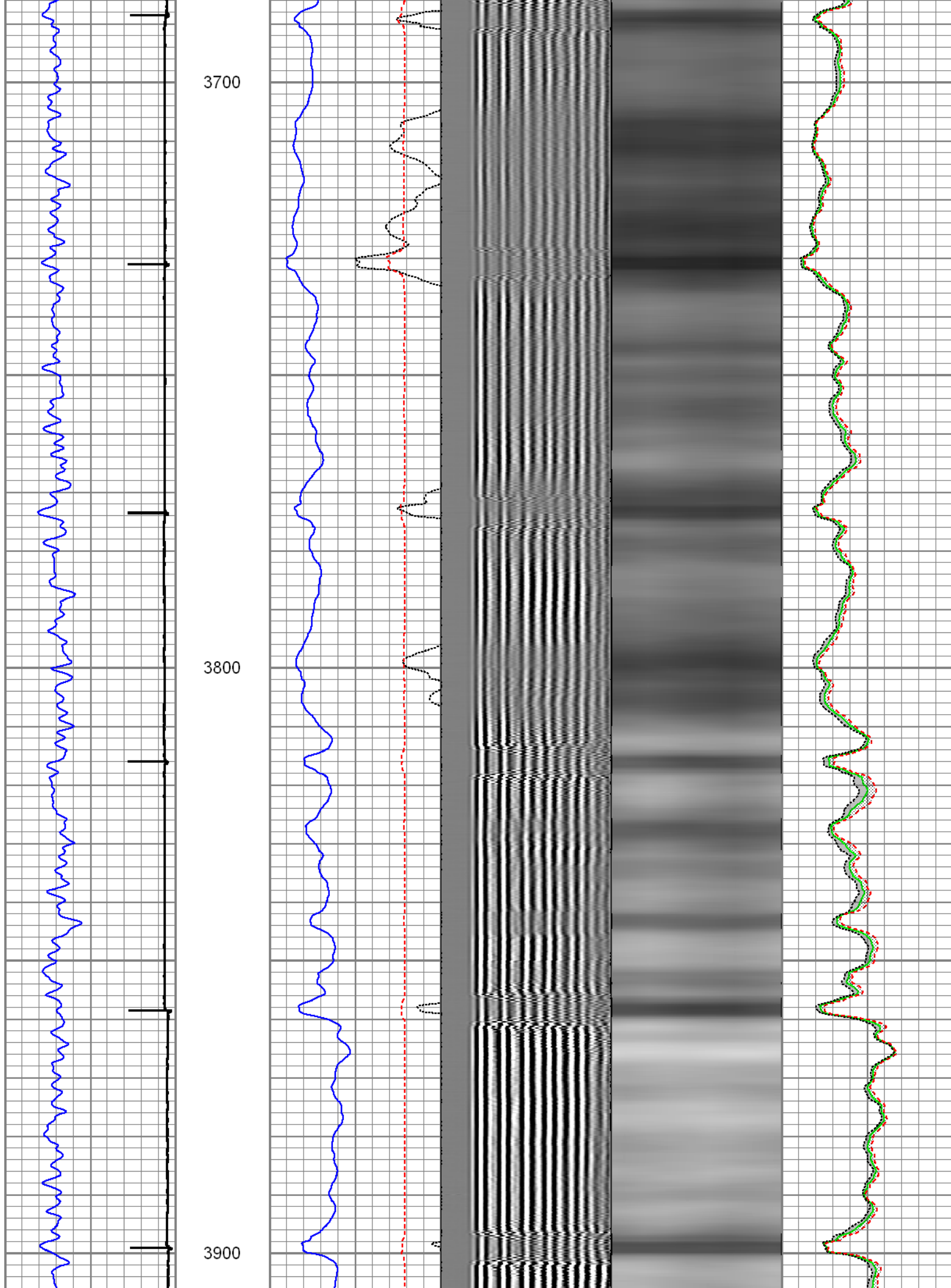


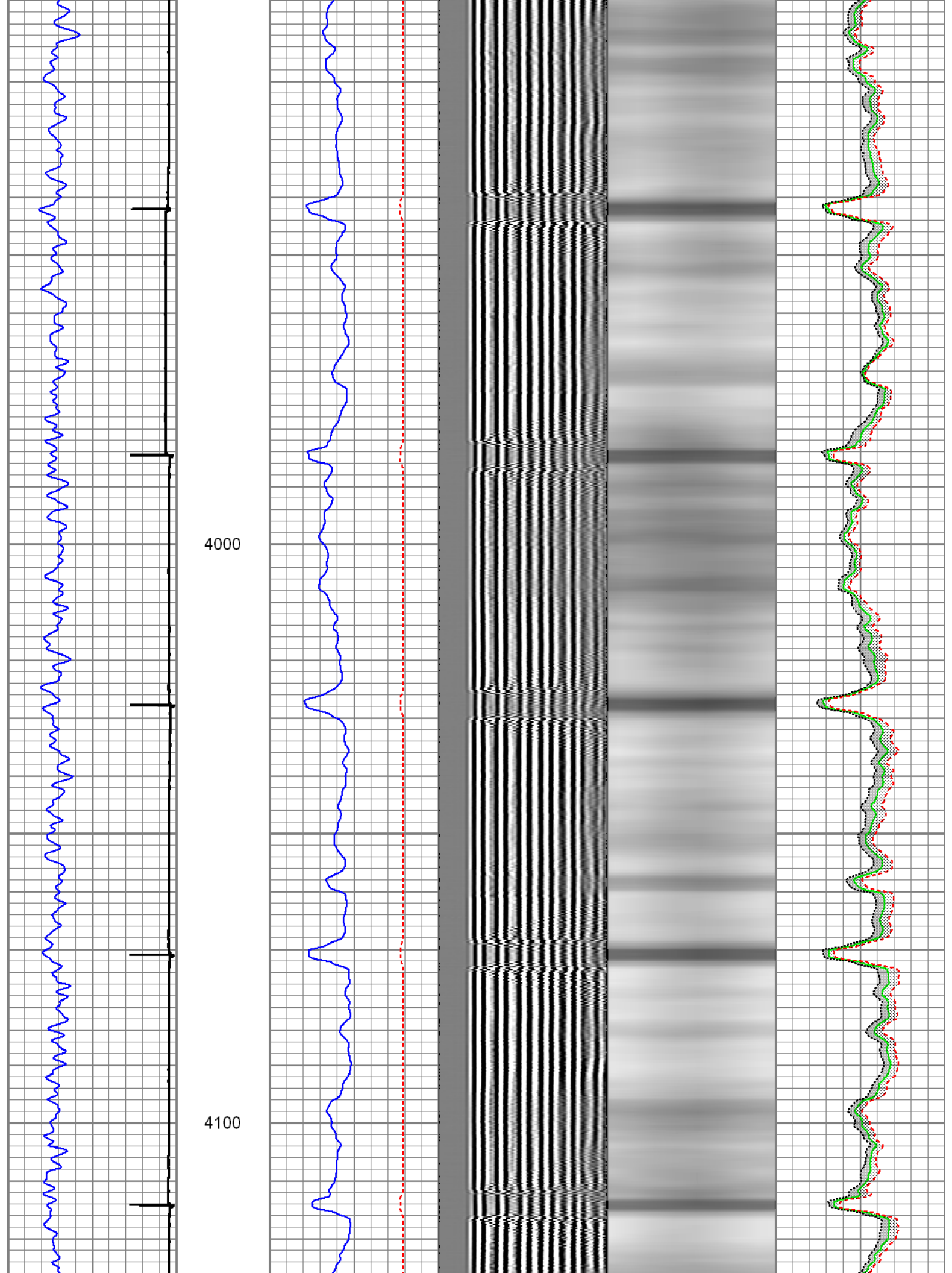


3700

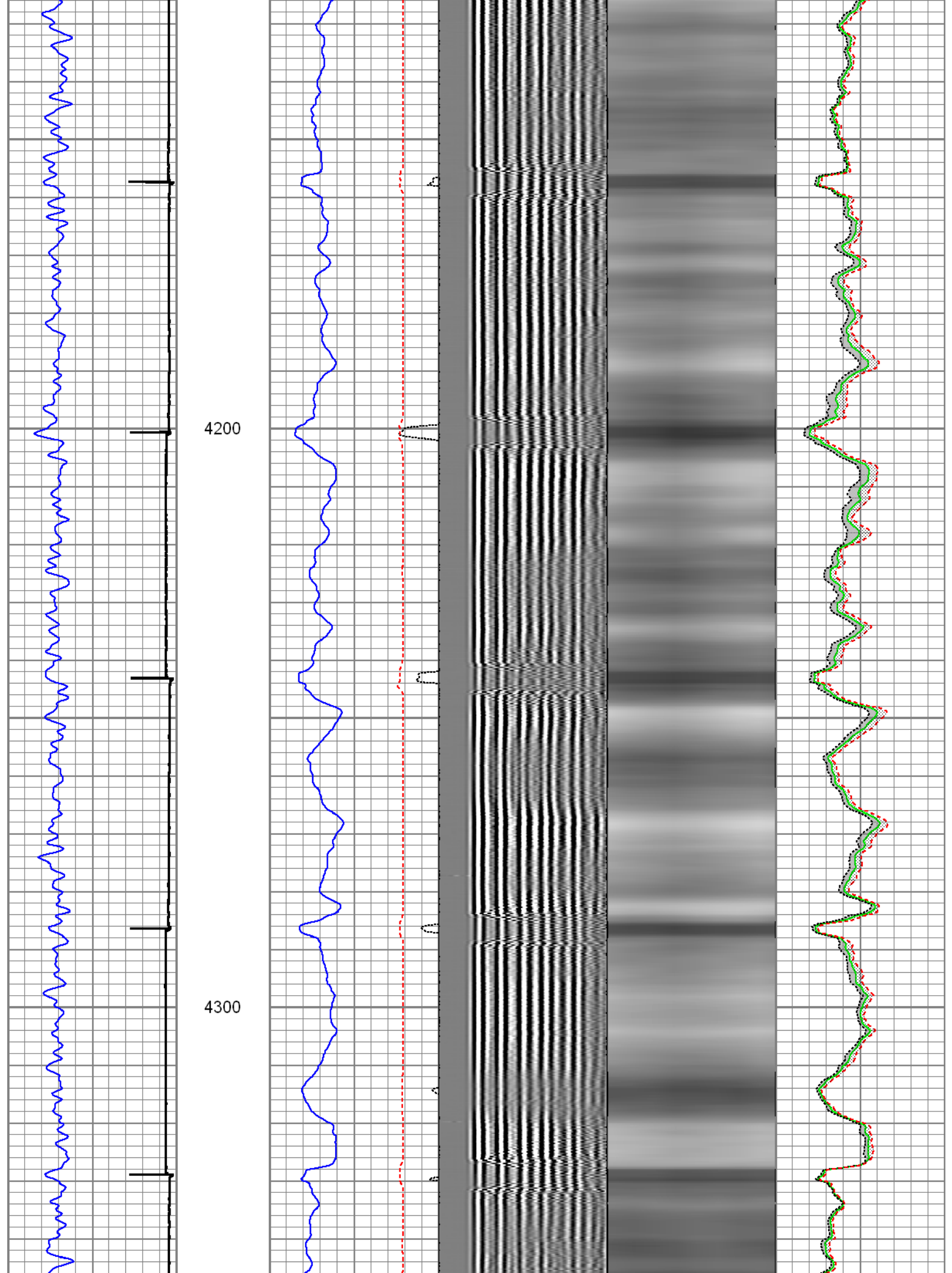
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3900



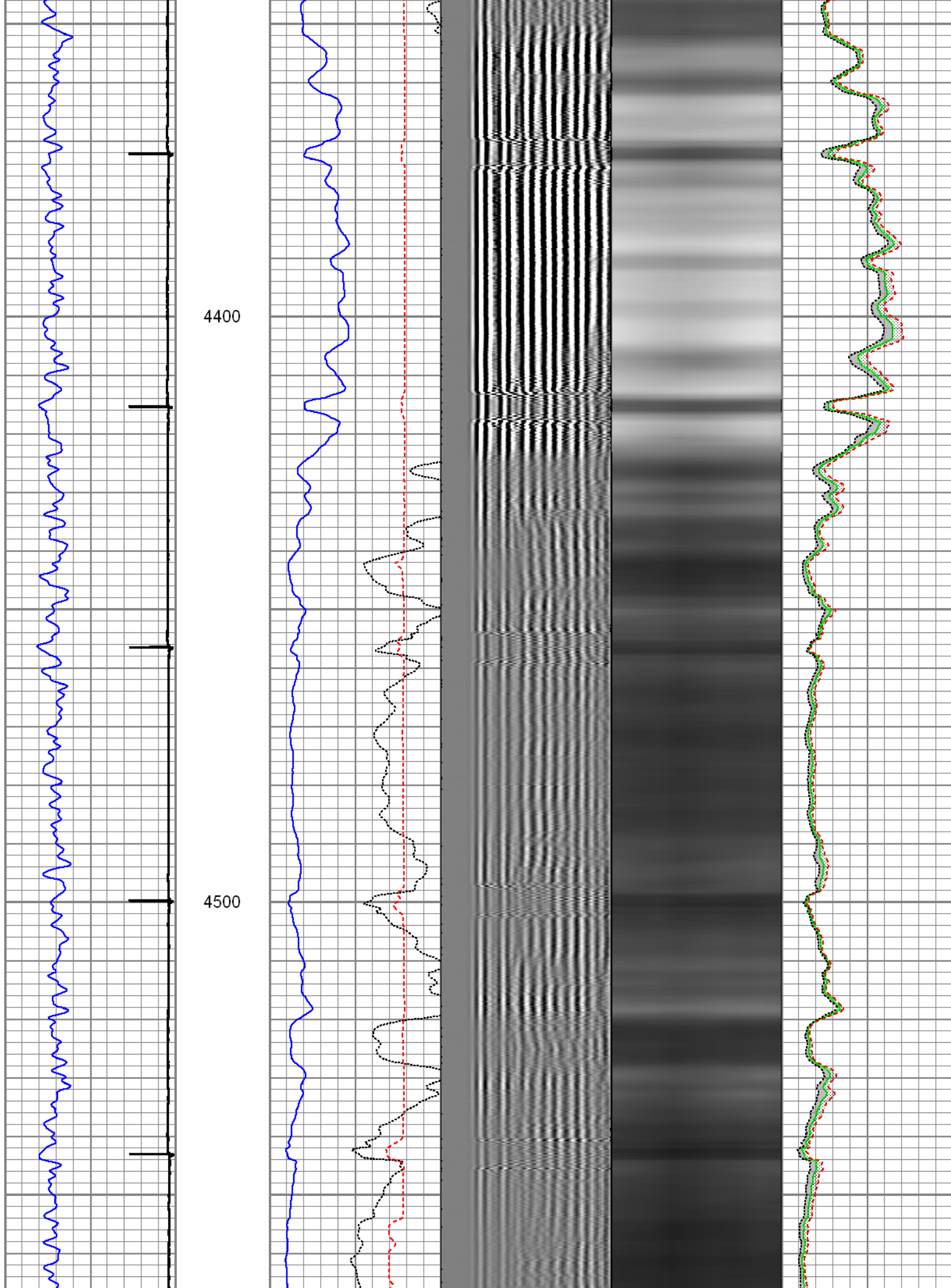






4400

4500



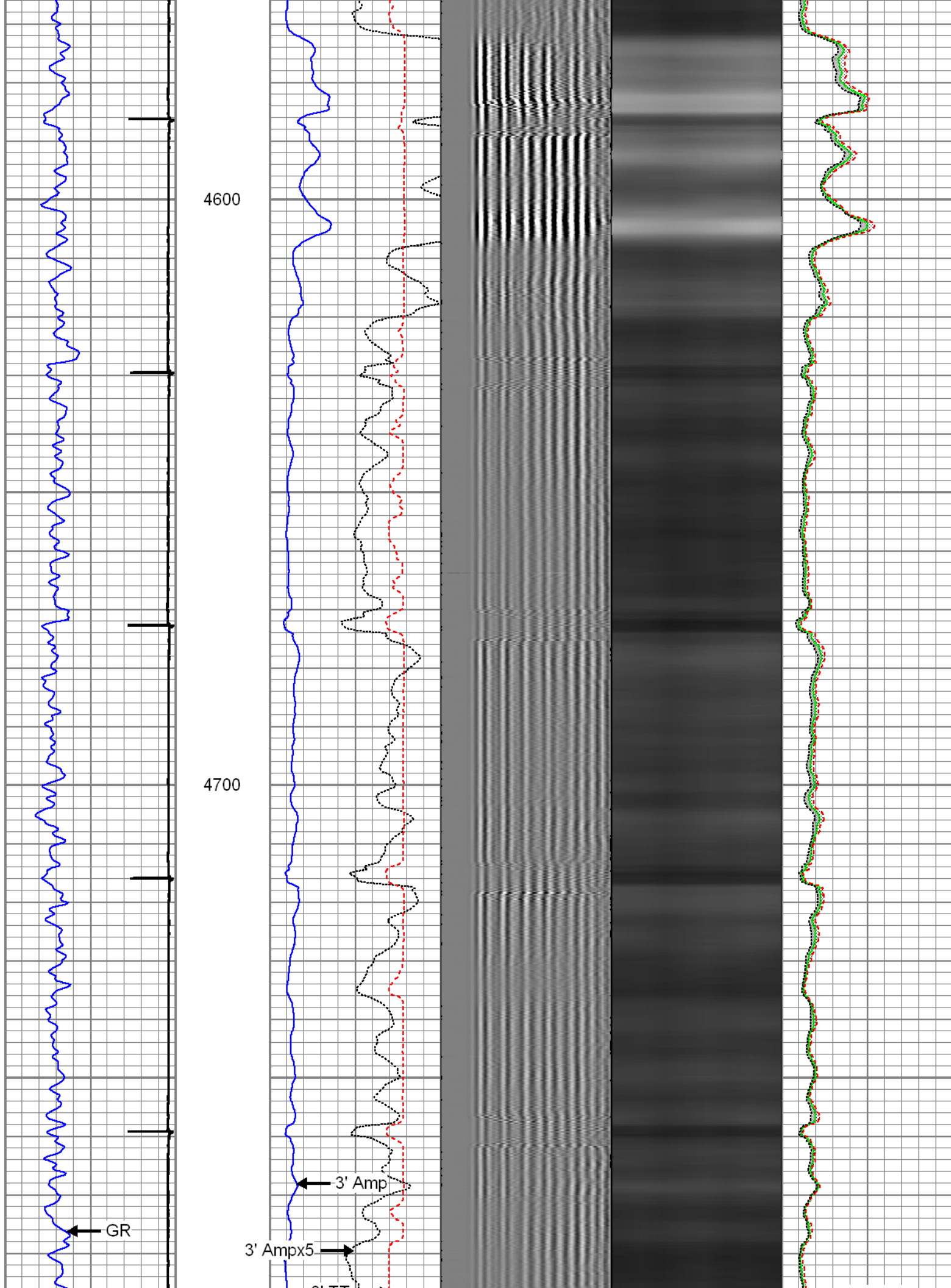
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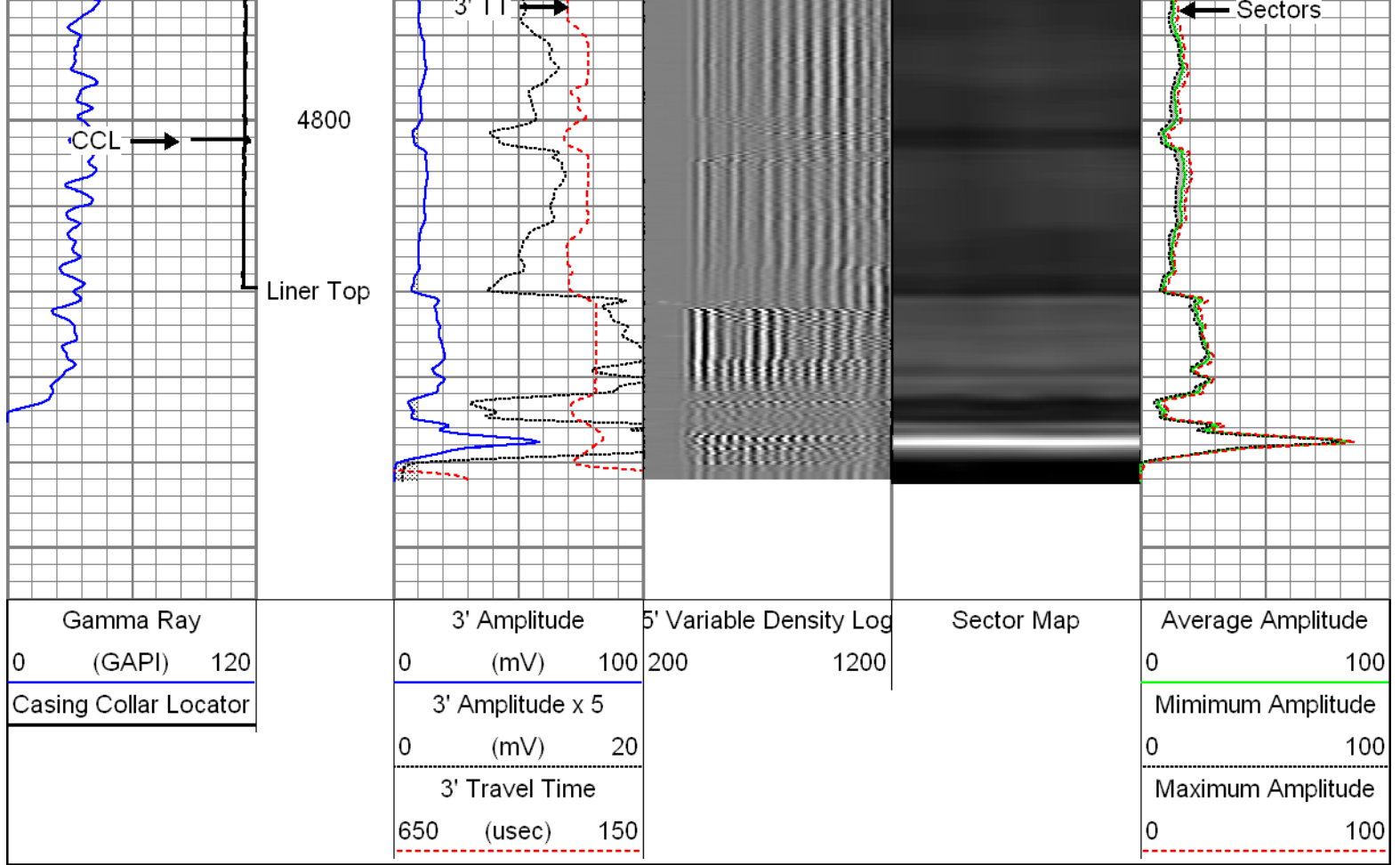
4700

GR

3' Amp

3' Ampx5

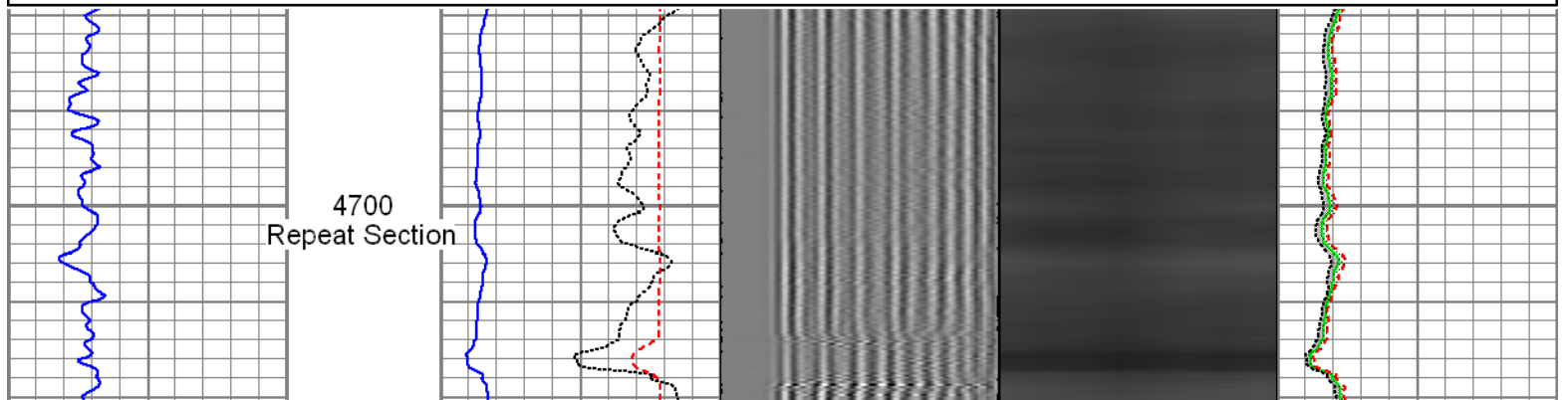
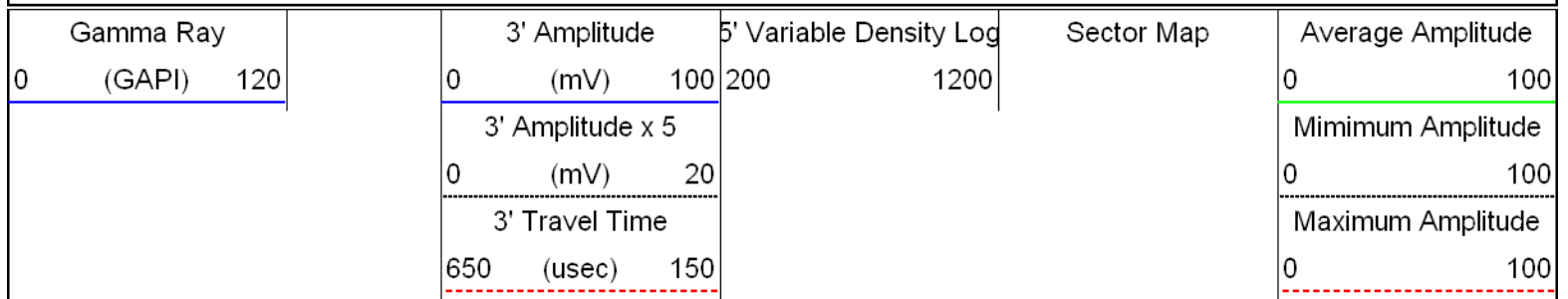




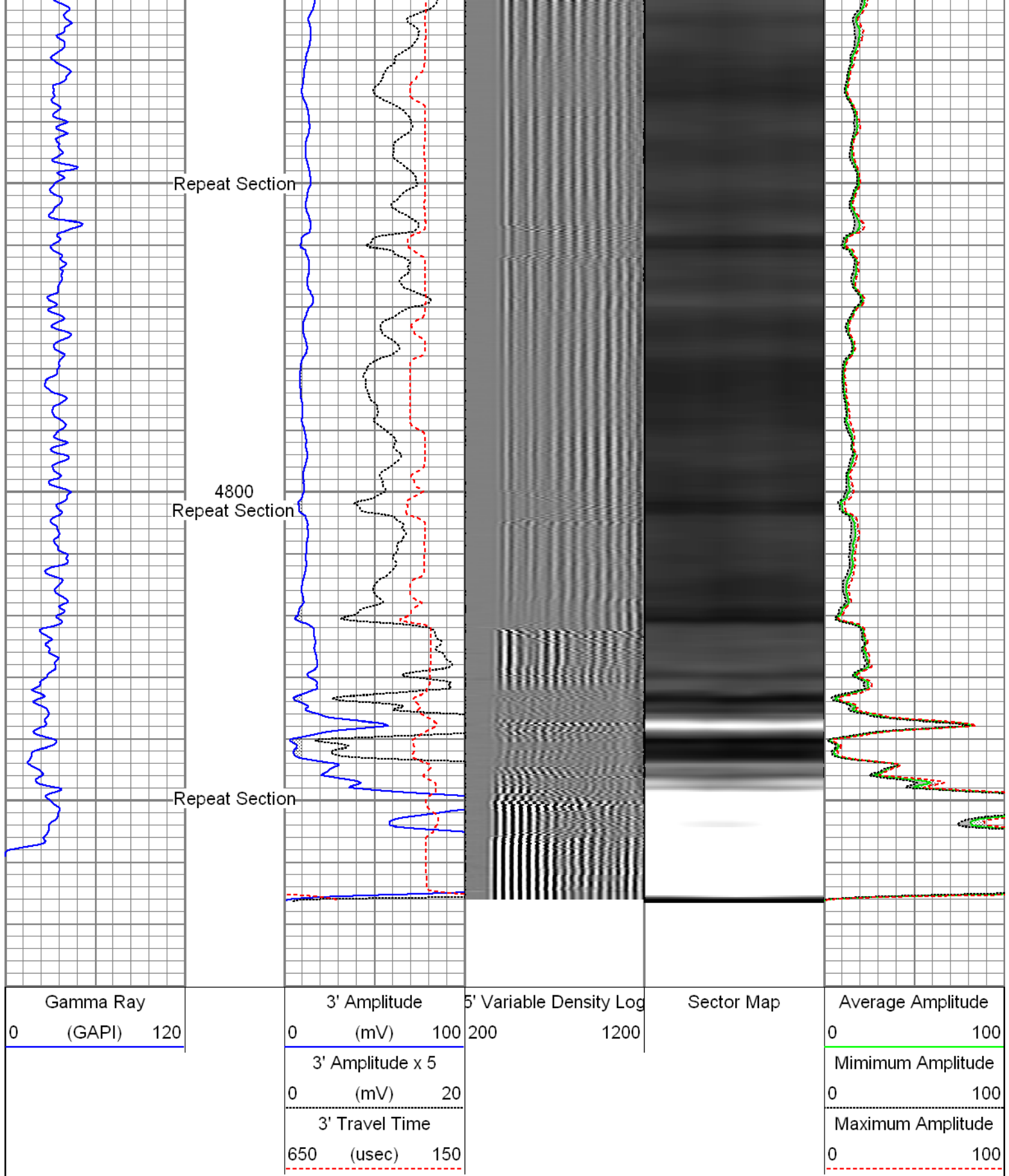
## Repeat Pass

Recorded with 1500 PSI Surface Induced Pressure.

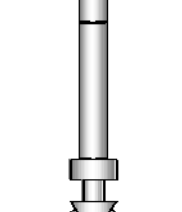

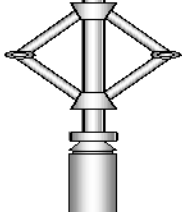
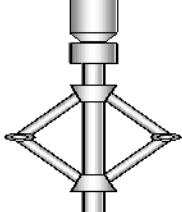
Database File: 07-26-14\_whiting\_razor 26i-2313a\_mit\_rbl.db  
 Dataset Pathname: RepeatPas  
 Presentation Format: rbt4\_mit  
 Dataset Creation: Sat Jul 26 11:30:59 2014 by Log SCH 111116  
 Charted by: Depth in Feet scaled 1:240







Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
			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

GR	22.37		UW_XTU-UW_XTU_002 (211461) 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-DSSRAC (080) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
WVFS1	14.99		UW_RBT-UW_RBT_004 (10013454) 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					
WVFS5FT	13.99					
MIT	4.97		UW_PRC-DSSRAC (082) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
			UW_MIT-UW_MIT40_042 (10014703) 40 Multifinger Imaging Tool	4.54	2.75	61.10
			UW_PRC #3 -DSSRAC (084) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
TSTAMP	0.00		UW_BUL-UW_BUL_006 (218707) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20
Dataset: 07-26-14_Whiting_Razor 26I-2313A_MIT_RBL.db: field/well/run1/7Main Total Length: 26.62 ft Total Weight: 319.30 lb O.D. 3.13 in						

#### Calibration Report

Database File: 07-26-14\_Whiting\_Razor 26I-2313A\_MIT\_RBL.db  
 Dataset Pathname: CalReport  
 Dataset Creation: Sat Jul 26 13:44:04 2014 by Log SCH 111116

## 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: Sat Jul 26 09:41:02 2014

Ring size:	4		5		6		7
(in)		Sens		Sens		Sens	
Finger 01:	1213	354.0	1567	377.0	1944	388.0	2332
Finger 02:	1157	367.0	1524	401.0	1925	416.0	2341
Finger 03:	1159	355.0	1514	383.0	1897	402.0	2299
Finger 04:	1104	371.0	1475	412.0	1887	432.0	2319
Finger 05:	1117	351.0	1468	381.0	1849	399.0	2248
Finger 06:	1118	364.0	1482	399.0	1881	415.0	2296
Finger 07:	1139	356.0	1495	383.0	1878	400.0	2278
Finger 08:	1096	361.0	1457	398.0	1855	418.0	2273
Finger 09:	1170	364.0	1534	387.0	1921	396.0	2317
Finger 10:	1107	356.0	1463	387.0	1850	398.0	2248
Finger 11:	1105	359.0	1464	391.0	1855	409.0	2264
Finger 12:	1178	357.0	1535	372.0	1907	377.0	2284
Finger 13:	1126	355.0	1481	387.0	1868	407.0	2275
Finger 14:	1096	366.0	1462	404.0	1866	418.0	2284
Finger 15:	1060	364.0	1424	406.0	1830	428.0	2258
Finger 16:	1132	360.0	1492	391.0	1883	406.0	2289
Finger 17:	1141	356.0	1497	373.0	1870	395.0	2265
Finger 18:	1189	352.0	1541	381.0	1922	395.0	2317
Finger 19:	1138	360.0	1498	389.0	1887	404.0	2291
Finger 20:	1053	360.0	1413	401.0	1814	419.0	2233
Finger 21:	1135	354.0	1489	384.0	1873	403.0	2276
Finger 22:	1131	358.0	1489	390.0	1879	406.0	2285
Finger 23:	1226	338.0	1564	365.0	1929	378.0	2307
Finger 24:	1143	365.0	1508	396.0	1904	410.0	2314
Finger 25:	1144	357.0	1501	393.0	1894	414.0	2308
Finger 26:	1183	358.0	1541	386.0	1927	398.0	2325
Finger 27:	1191	347.0	1538	379.0	1917	398.0	2315
Finger 28:	1159	361.0	1520	396.0	1916	413.0	2329
Finger 29:	1138	363.0	1501	403.0	1904	424.0	2328
Finger 30:	1140	358.0	1498	396.0	1894	421.0	2315
Finger 31:	1197	352.0	1549	381.0	1930	392.0	2322
Finger 32:	1142	364.0	1506	394.0	1900	420.0	2320
Finger 33:	1150	363.0	1513	394.0	1907	415.0	2322
Finger 34:	1138	366.0	1504	404.0	1908	421.0	2329
Finger 35:	1197	352.0	1549	379.0	1928	399.0	2327
Finger 36:	1138	363.0	1501	399.0	1900	419.0	2319
Finger 37:	1204	347.0	1551	375.0	1926	395.0	2321
Finger 38:	1233	350.0	1583	376.0	1959	393.0	2352
Finger 39:	1136	357.0	1493	392.0	1885	414.0	2299
Finger 40:	1089	373.0	1462	414.0	1876	436.0	2312

Ring size: (in)	4	Nom. wear	5	Nom. wear	6	Nom. wear	7	Nom. wear
Finger 01:	4.002	0.001	5.004	0.002	6.006	0.003	7.007	0.003
Finger 02:	4.003	0.002	5.003	0.001	6.001	0.001	7.005	0.003
Finger 03:	4.008	0.004	5.005	0.003	6.002	0.001	7.003	0.001
Finger 04:	4.010	0.005	5.004	0.002	6.002	0.001	7.003	0.002
Finger 05:	4.007	0.004	5.005	0.002	6.007	0.003	7.003	0.001
Finger 06:	4.006	0.003	5.006	0.003	6.003	0.001	7.005	0.002
Finger 07:	4.004	0.002	5.005	0.003	6.008	0.004	7.010	0.005
Finger 08:	4.004	0.002	5.005	0.003	6.006	0.003	7.005	0.003
Finger 09:	4.005	0.002	5.005	0.003	6.006	0.003	7.006	0.003
Finger 10:	4.008	0.004	5.005	0.002	6.002	0.001	7.002	0.001
Finger 11:	4.009	0.005	5.007	0.003	6.005	0.003	7.008	0.004
Finger 12:	4.010	0.005	5.003	0.002	6.005	0.003	7.004	0.002
Finger 13:	4.006	0.003	5.006	0.003	6.006	0.003	7.005	0.003
Finger 14:	4.007	0.004	5.006	0.003	6.004	0.002	7.007	0.003
Finger 15:	4.006	0.003	5.006	0.003	6.009	0.005	7.006	0.003
Finger 16:	4.005	0.002	5.006	0.003	6.001	0.001	7.002	0.001
Finger 17:	4.007	0.003	5.005	0.002	6.015	0.007	7.013	0.006
Finger 18:	4.005	0.003	5.007	0.004	6.005	0.003	7.005	0.002
Finger 19:	4.010	0.005	5.005	0.003	6.004	0.002	7.002	0.001
Finger 20:	4.005	0.003	5.006	0.003	6.005	0.002	7.003	0.001
Finger 21:	4.007	0.003	5.004	0.002	6.002	0.001	7.006	0.003
Finger 22:	4.008	0.004	5.002	0.001	6.001	0.001	7.002	0.001
Finger 23:	4.009	0.004	5.008	0.004	6.003	0.001	7.005	0.002
Finger 24:	4.004	0.002	5.003	0.002	6.002	0.001	7.003	0.002
Finger 25:	4.007	0.003	5.006	0.003	6.006	0.003	7.003	0.002
Finger 26:	4.002	0.001	5.003	0.002	6.002	0.001	7.004	0.002
Finger 27:	4.004	0.002	5.005	0.002	6.005	0.002	7.005	0.002
Finger 28:	4.007	0.003	5.007	0.004	6.008	0.004	7.006	0.003
Finger 29:	4.004	0.002	5.003	0.002	6.006	0.003	7.002	0.001
Finger 30:	4.006	0.003	5.006	0.003	6.007	0.003	7.010	0.005
Finger 31:	4.005	0.002	5.006	0.003	6.004	0.002	7.008	0.004
Finger 32:	4.015	0.007	5.006	0.003	6.008	0.004	7.007	0.004
Finger 33:	4.011	0.005	5.007	0.004	6.007	0.004	7.010	0.005
Finger 34:	4.006	0.003	5.004	0.002	6.004	0.002	7.006	0.003
Finger 35:	4.011	0.005	5.006	0.003	6.008	0.004	7.004	0.002
Finger 36:	4.006	0.003	5.007	0.003	6.007	0.003	7.003	0.002
Finger 37:	4.005	0.002	5.003	0.002	6.000	0.000	7.000	0.000
Finger 38:	4.009	0.004	5.008	0.004	6.005	0.002	7.005	0.003
Finger 39:	4.007	0.004	5.008	0.004	6.006	0.003	7.003	0.001
Finger 40:	4.003	0.001	5.004	0.002	6.005	0.002	7.007	0.003
Average:	4.007	0.003	5.005	0.003	6.005	0.002	7.005	0.003

Segmented Cement Bond Log Calibration Report

Serial Number: 10013454  
 Tool Model: UW\_RBT\_004  
 Calibration Casing Diameter: 7.000 in  
 Calibration Depth: 99.496 ft


Master Calibration, performed Sat Jul 26 10:58:40 2014:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	0.000	0.750	0.800	62.165	81.854	0.800
5FT	-0.001	0.847	0.800	62.165	72.388	0.888
S1	0.000	0.786	0.000	100.000	127.253	-0.009



S2	0.011	0.778	0.000	100.000	130.253	-1.386
S3	0.005	0.750	0.000	100.000	134.155	-0.611
S4	-0.002	0.723	0.000	100.000	137.827	0.336
S5	0.010	0.702	0.000	100.000	144.531	-1.406
S6	0.000	0.708	0.000	100.000	141.176	-0.005
S7	0.000	0.733	0.000	100.000	136.454	-0.057
S8	0.003	0.769	0.000	100.000	130.571	-0.370

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 & Gas Corporation
	Well	Razor 26I-2313A
	Field	Wildcat
	County	Weld
	State	Colorado