

Radial Cement Bond Gamma Ray Casing Collar Log

Company	Whiting Oil & Gas Corporation	Company	Whiting Oil & Gas Corporation
Well	Horsetail 30F-3105	Well	Horsetail 30F-3105
Field	Wildcat	Field	Wildcat
County	Weld	County	Weld
State	Colorado	State	Colorado
Location:	API #: 05-123-39202		
Permanent Datum	SEC 30 TWP 10N RGE 57W	Ground Level	Elevation 4780'
Log Measured From	Kelly Bushing	17 FT	Elevation 4780'
Drilling Measured From	Kelly Bushing		Elevation 4780'

Date	21-NOV-2014
Run Number	3
Depth Driller	13.013 FT
Depth Logger	4.910 FT
Bottom Logged Interval	4.910 FT
Top Log Interval	Surface
Open Hole Size	9.625"
Type Fluid	Water
Density / Viscosity	8.34 lbm/gal
Max. Recorded Temp.	195°F
Estimated Cement Top	72 FT
Time Well Ready	ROA
Time Logger on Bottom	12:45 P.M.
Equipment Number	HD-0134
Location	Fort Lupton, CO
Recorded By	W. Wacker
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	1588 FT		
Intermediate #1	7	29	L-80 \ P110	Surface	5,972 FT		
Intermediate #2							
Liner	4.5	11.6	L-80	4,891 FT	13,001 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.

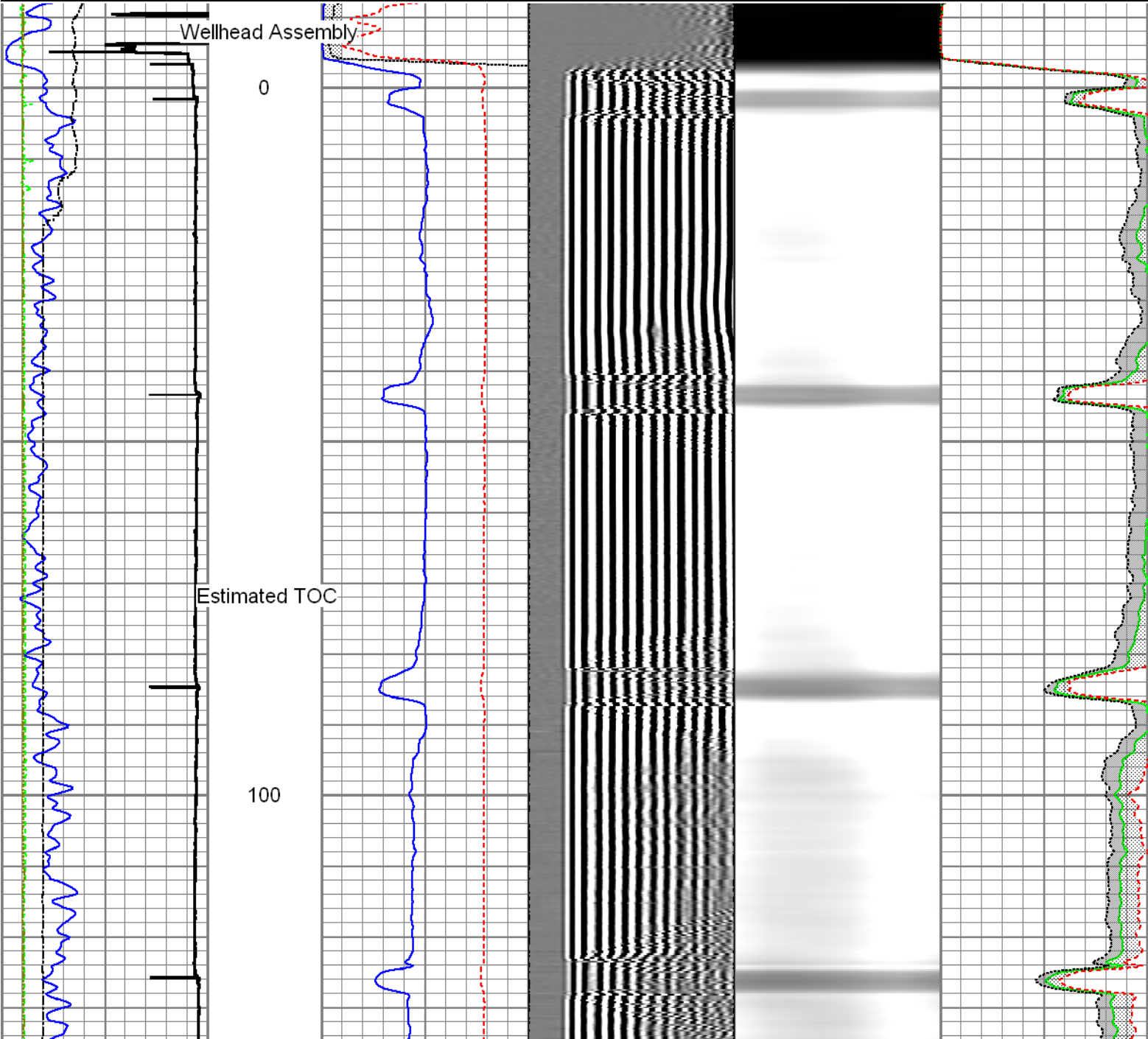
Comments

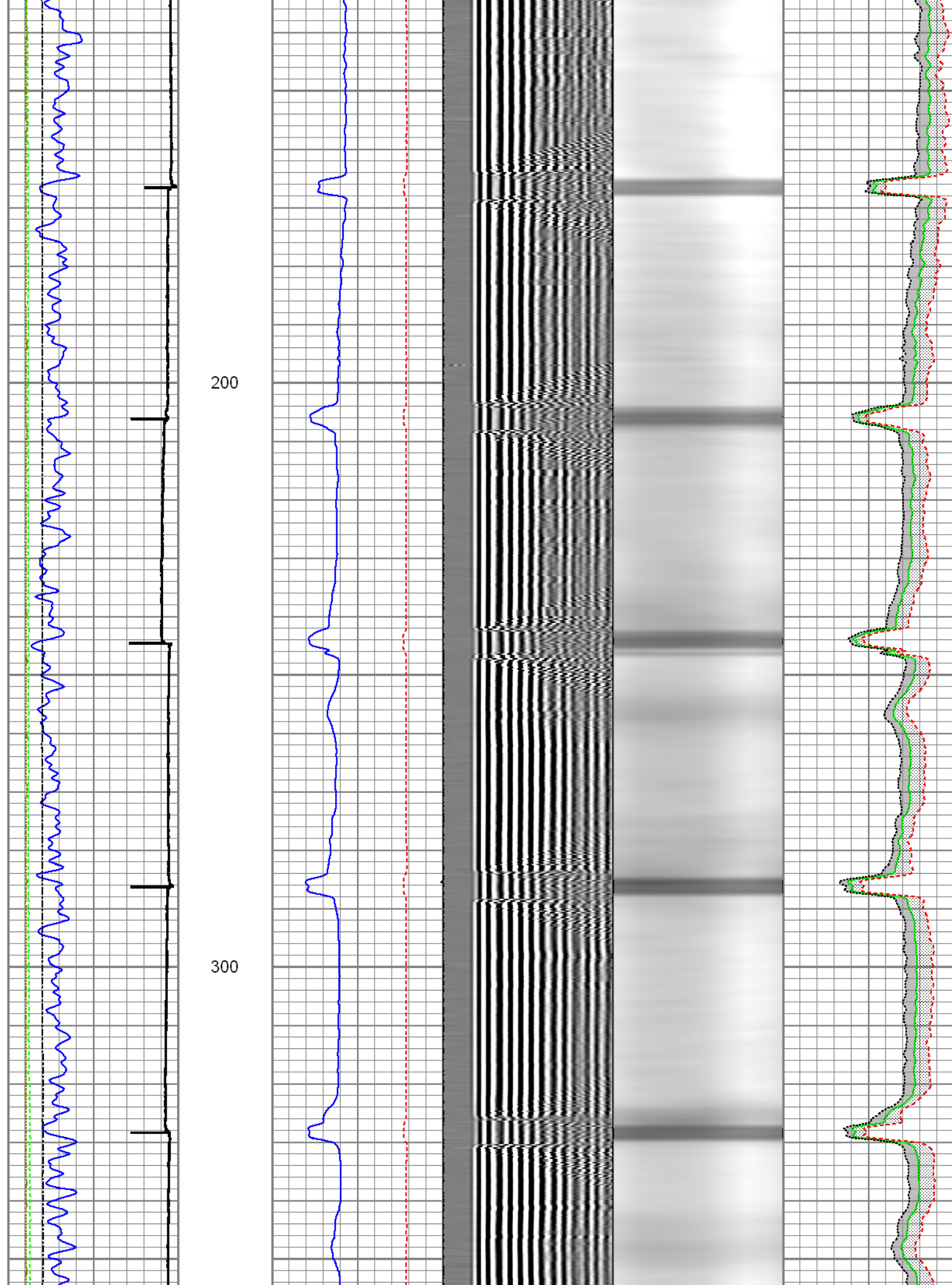
Log ran as per Customer request
 All wireline depths measured from KB zero at 17 FT.
 Depth referenced to Casing Tally reported Liner Top at 4,891 FT.
 Adjusted -20 FT from KB zero to correlate with Liner Top
 Gauge Ring / Junk Basket was run 5 joints below liner top prior to log run.
 Log ran from 4,910 FT to surface.
 Log ran with 1500 PSI surface induced pressure.

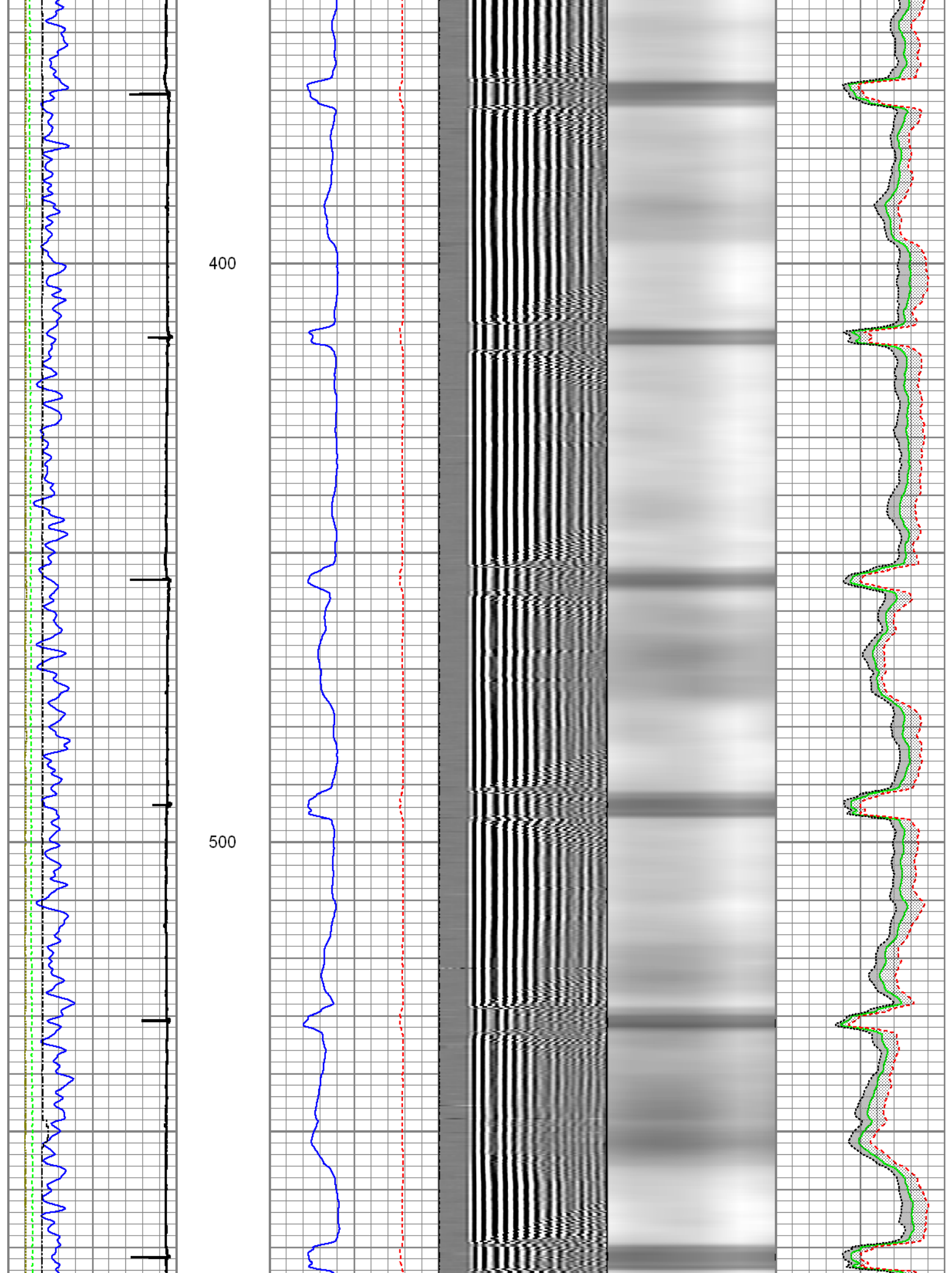
Thank you for choosing FMC Technologies Completion Services, Inc.!!

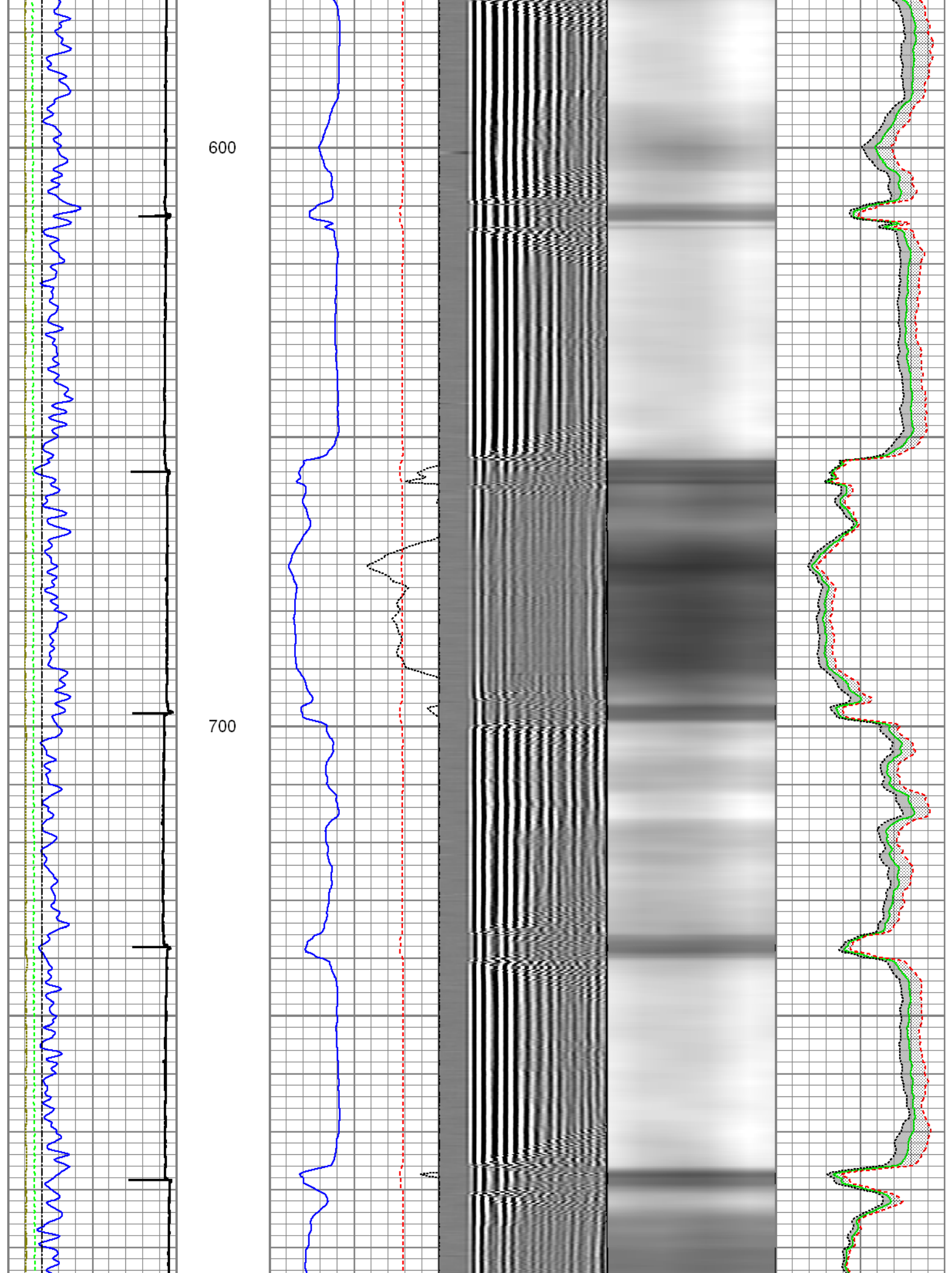
Database File: 11-21-14_whiting_horsetail 30f-3105_mit_rbl.db
Dataset Pathname: main
Presentation Format: rbt4_mit
Dataset Creation: Fri Nov 21 13:29:01 2014 by Log 7.0 B1
Charted by: Depth in Feet scaled 1:240

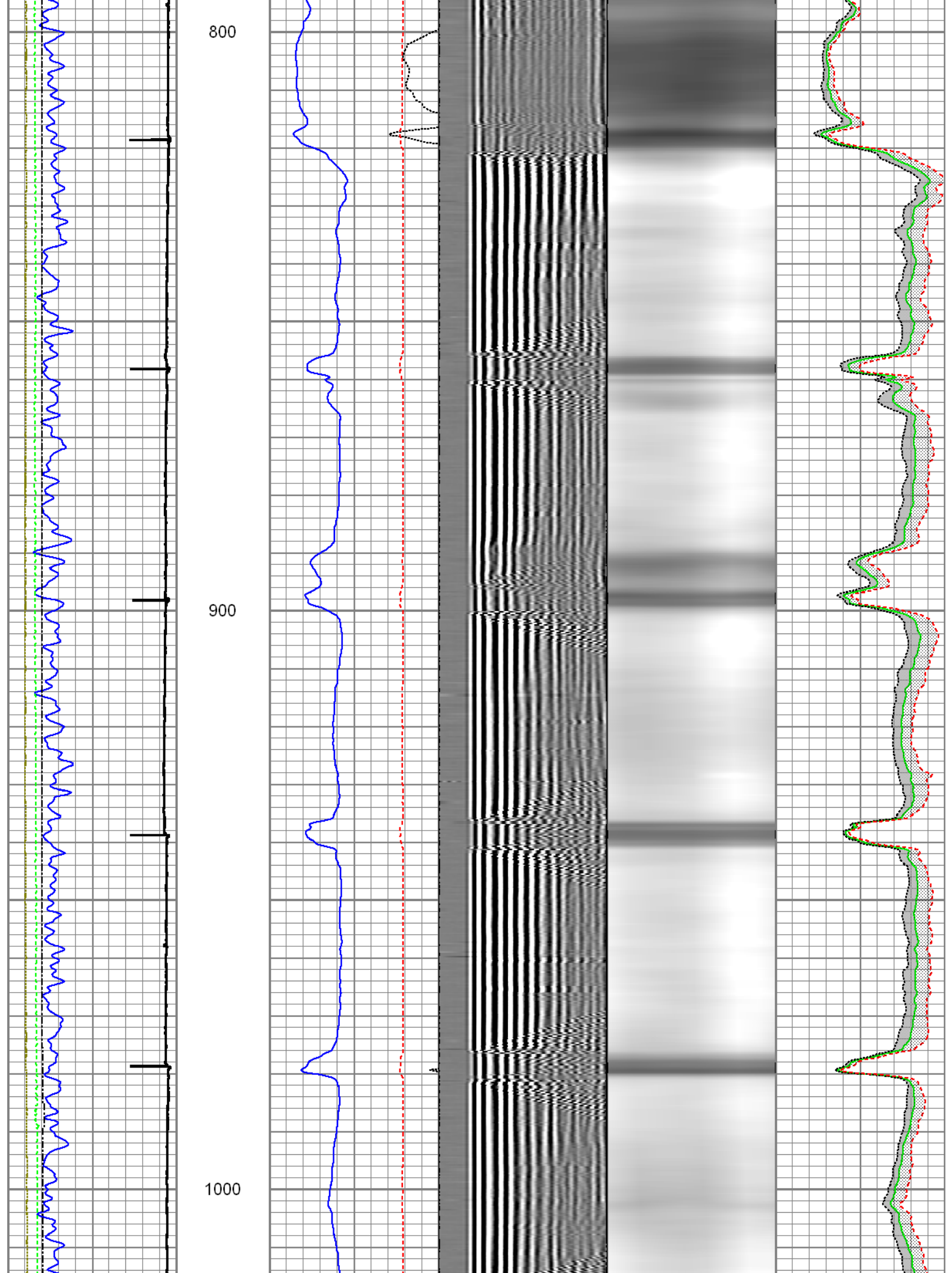
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Minimum Amplitude
Line Speed	0 (mV) 20			0 100
-100 (ft/min) 100	3' Travel Time			Maximum Amplitude
Line Tension	650 (usec) 150			0 100
0 (lb) 2000				
Wellbore Deviation				
-10 (°) 90				

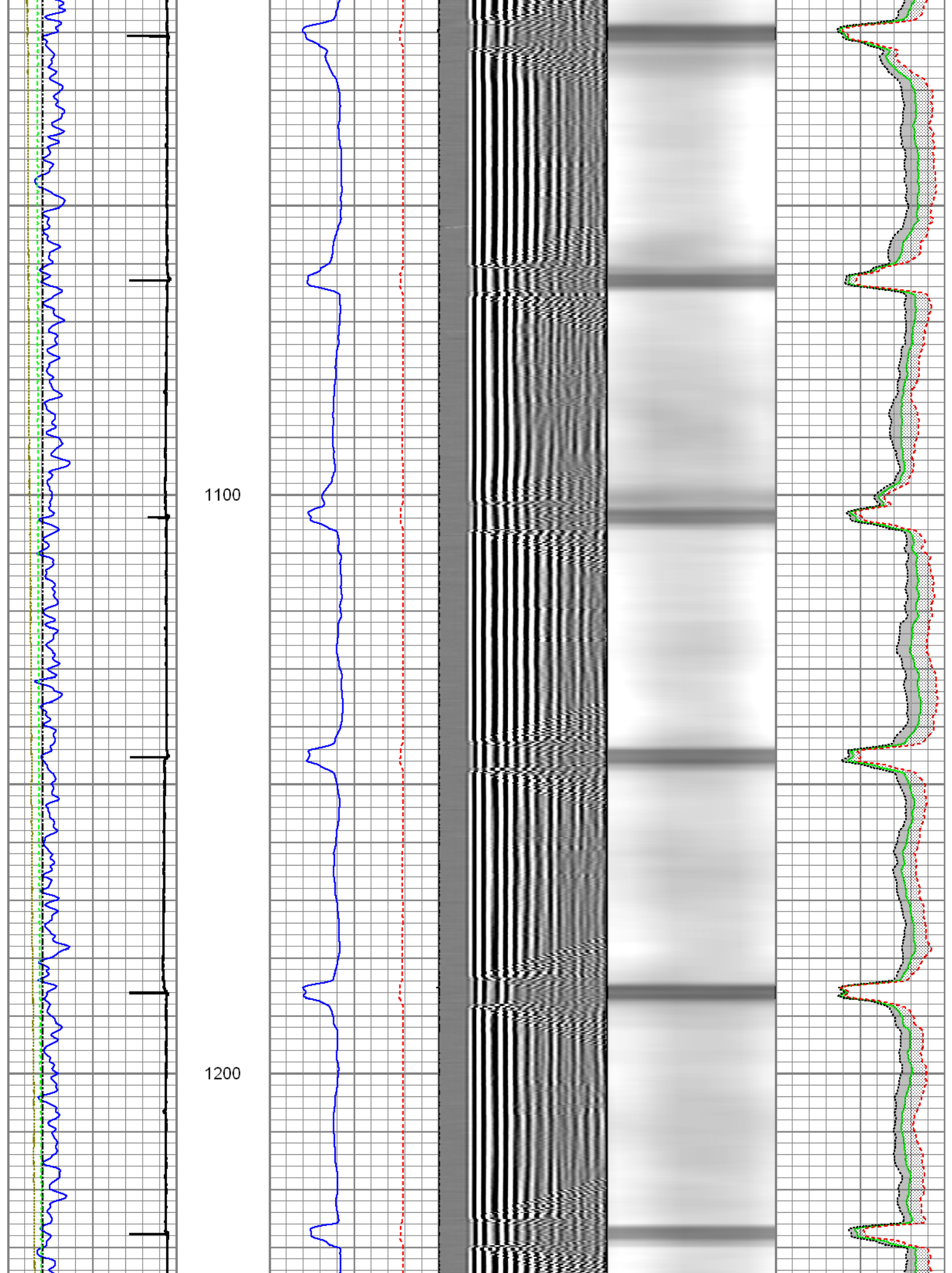


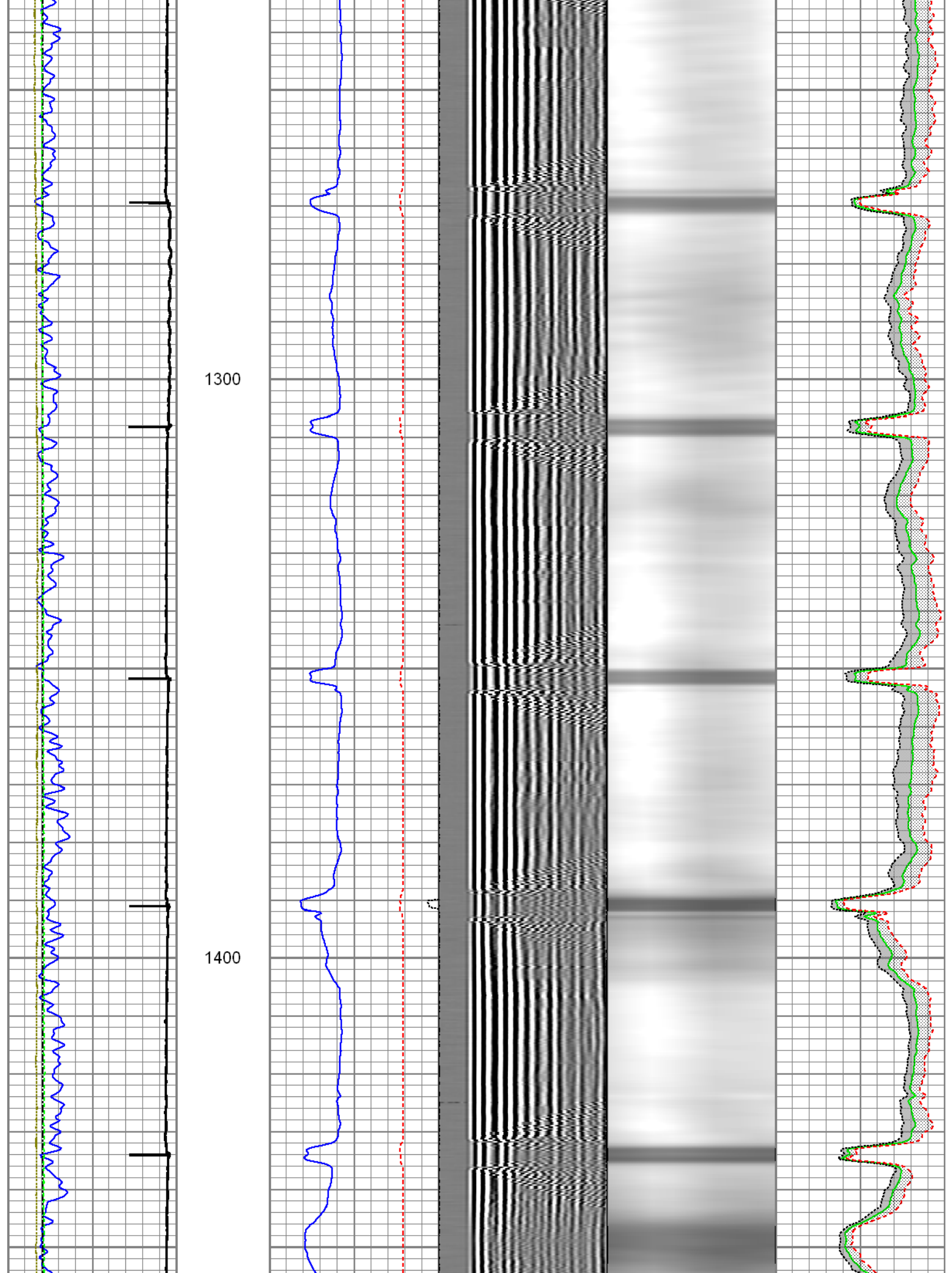


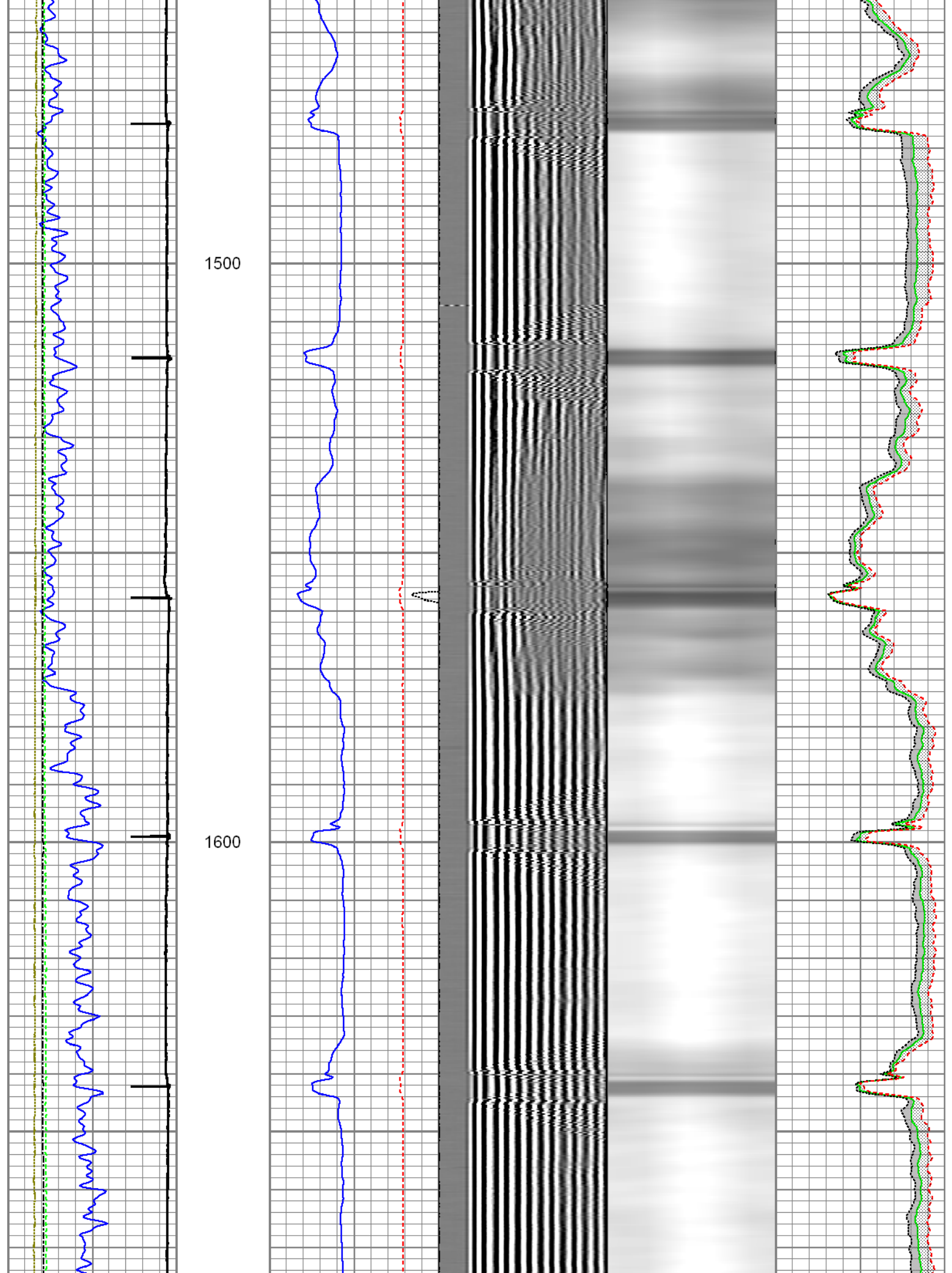


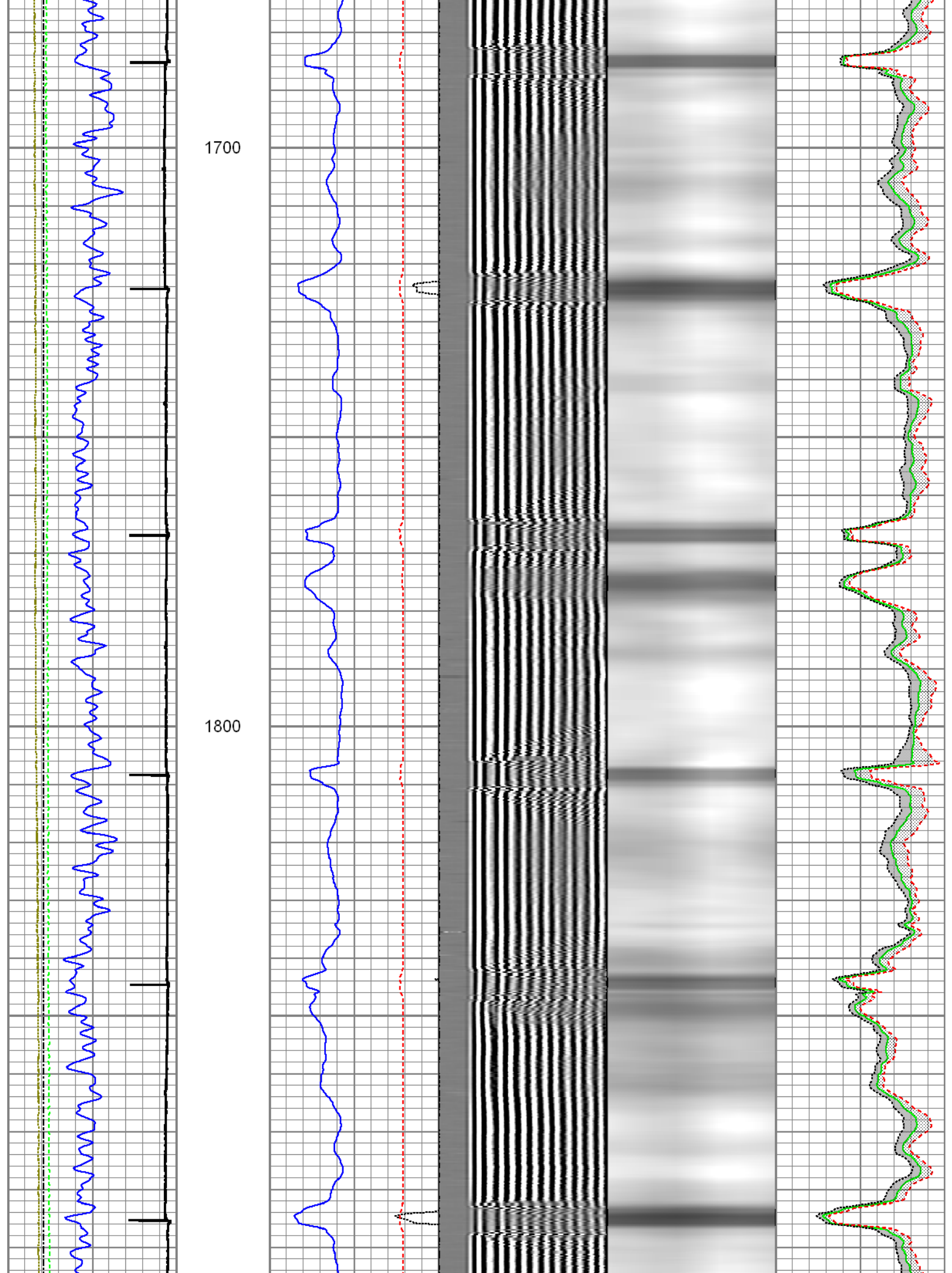


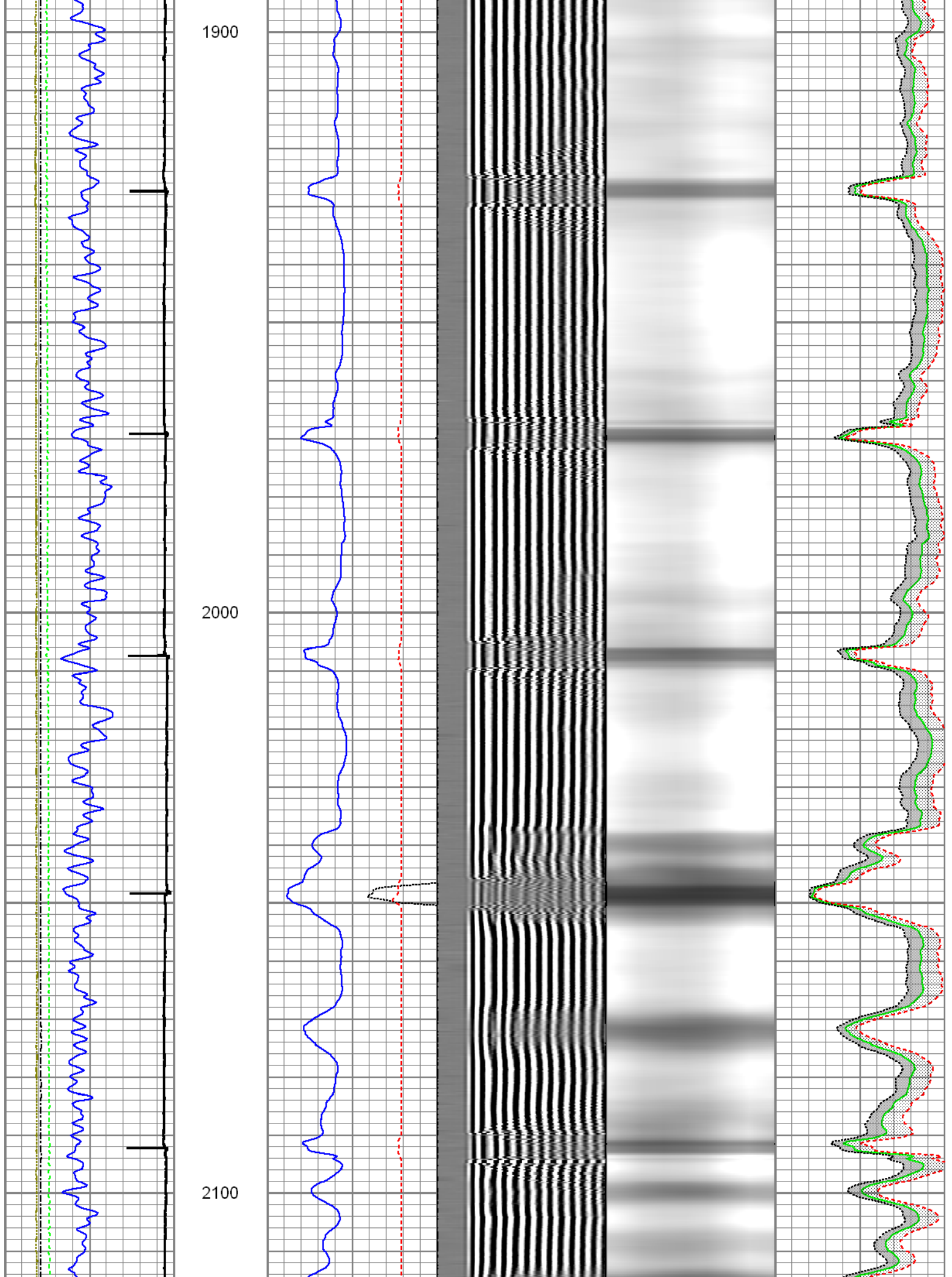






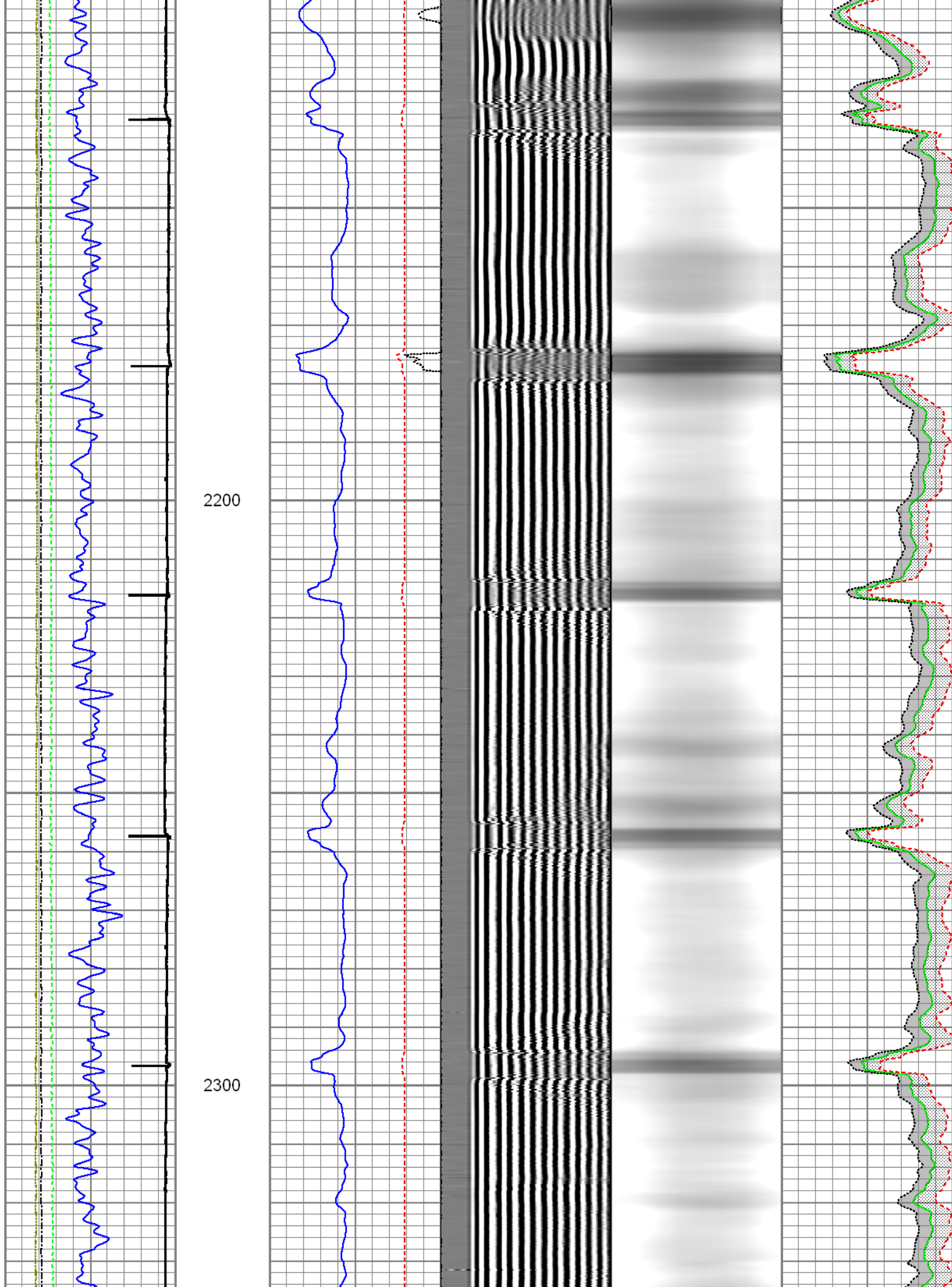


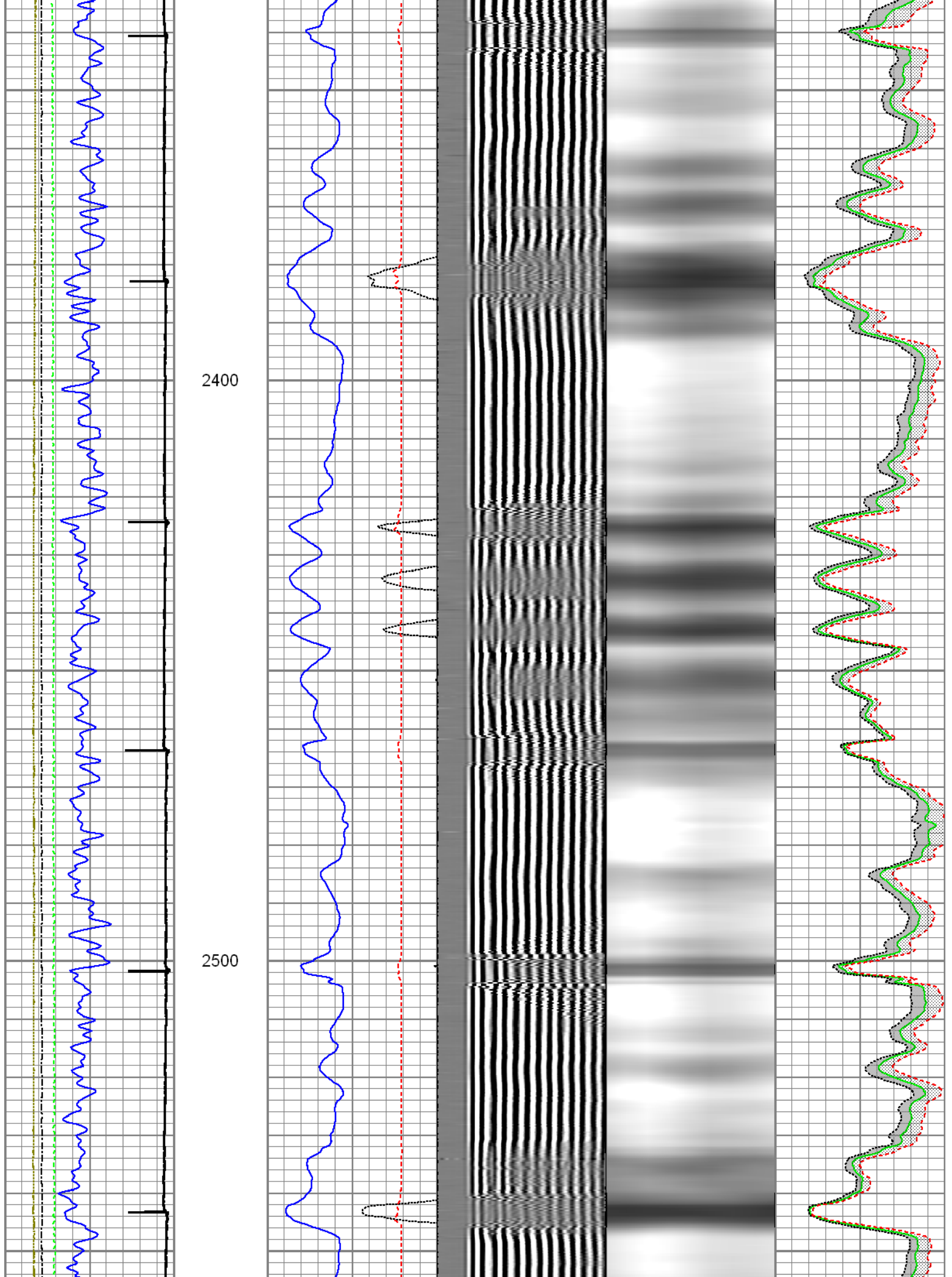




2200

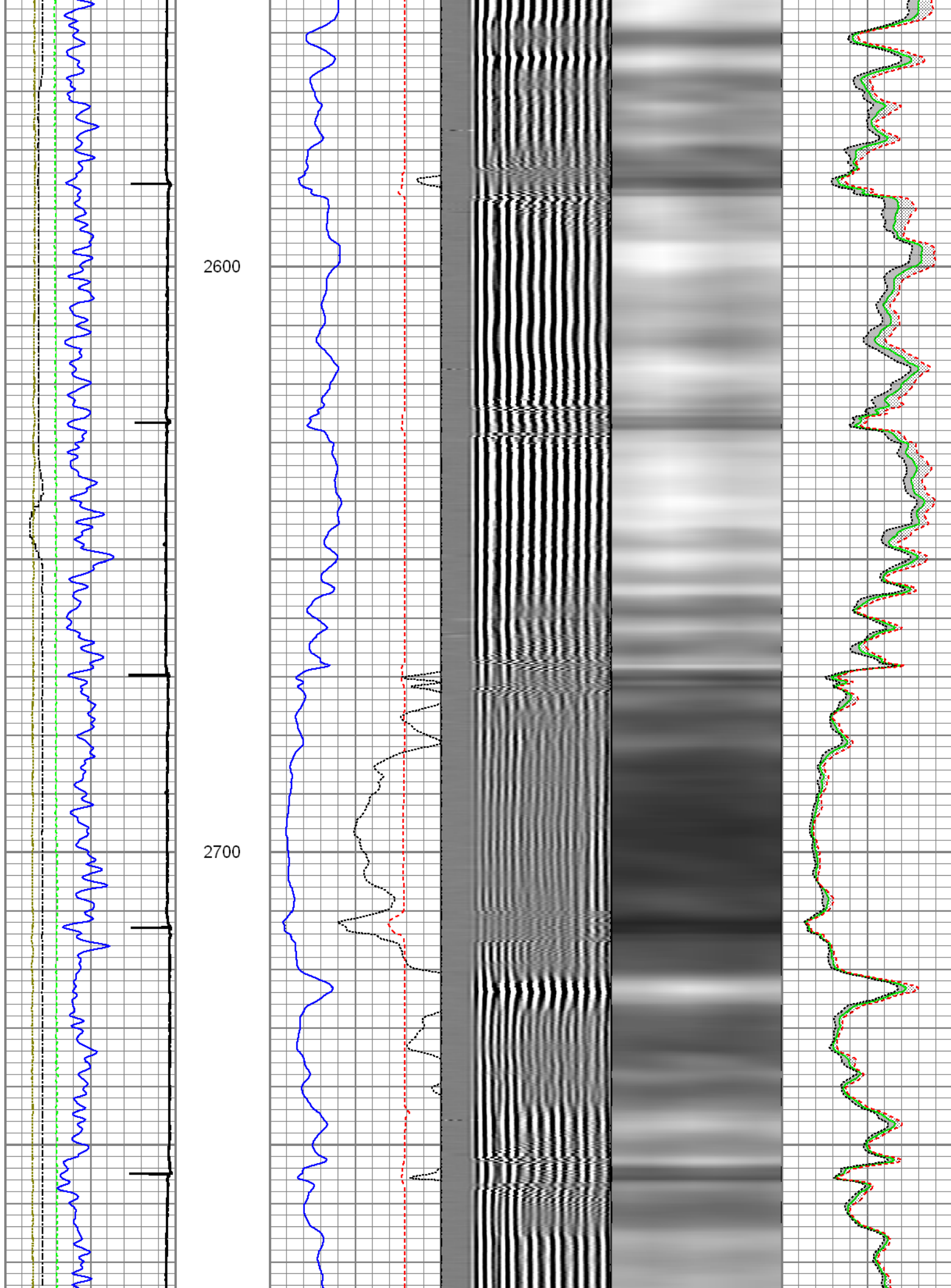
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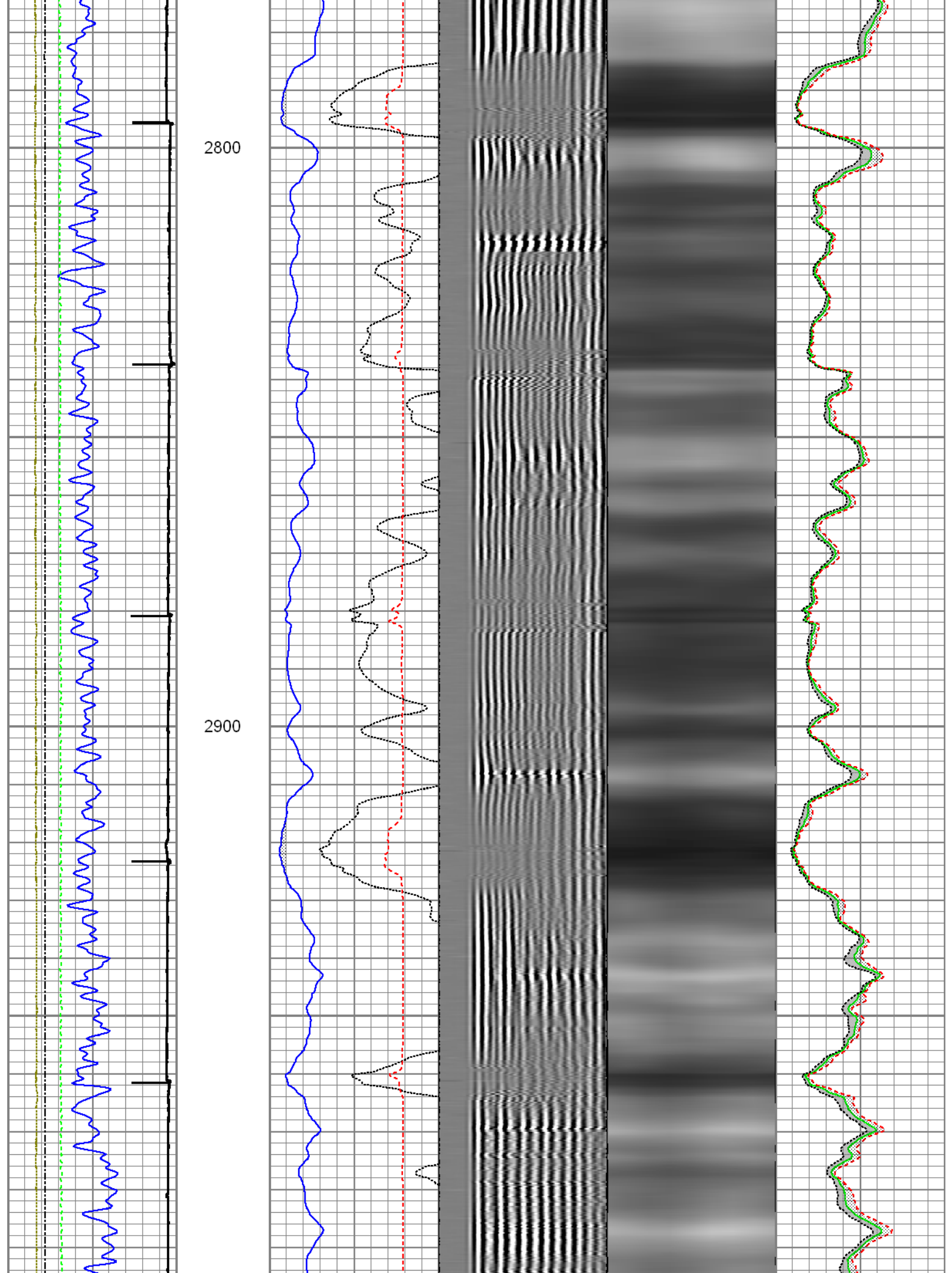




2600

2700

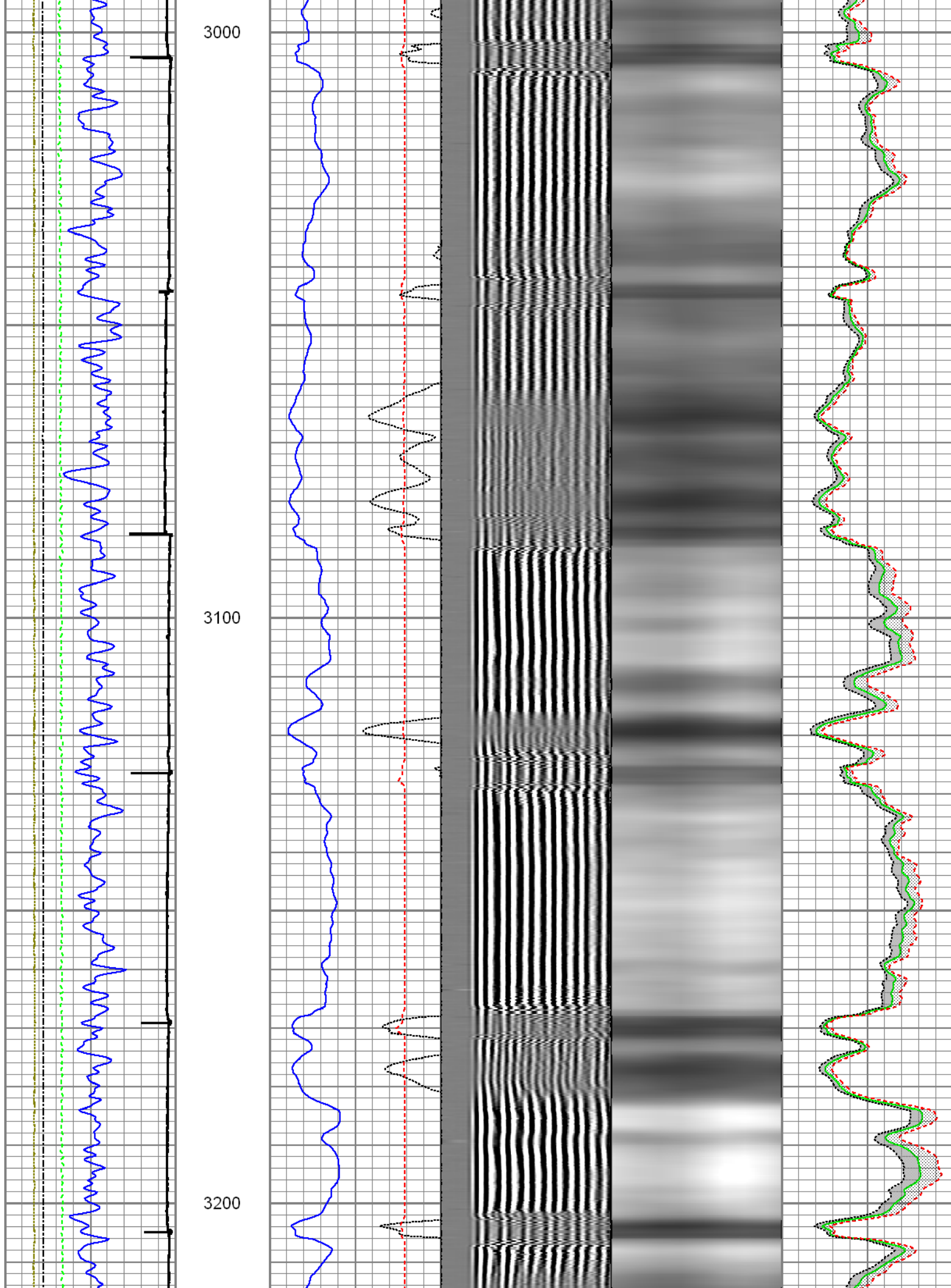


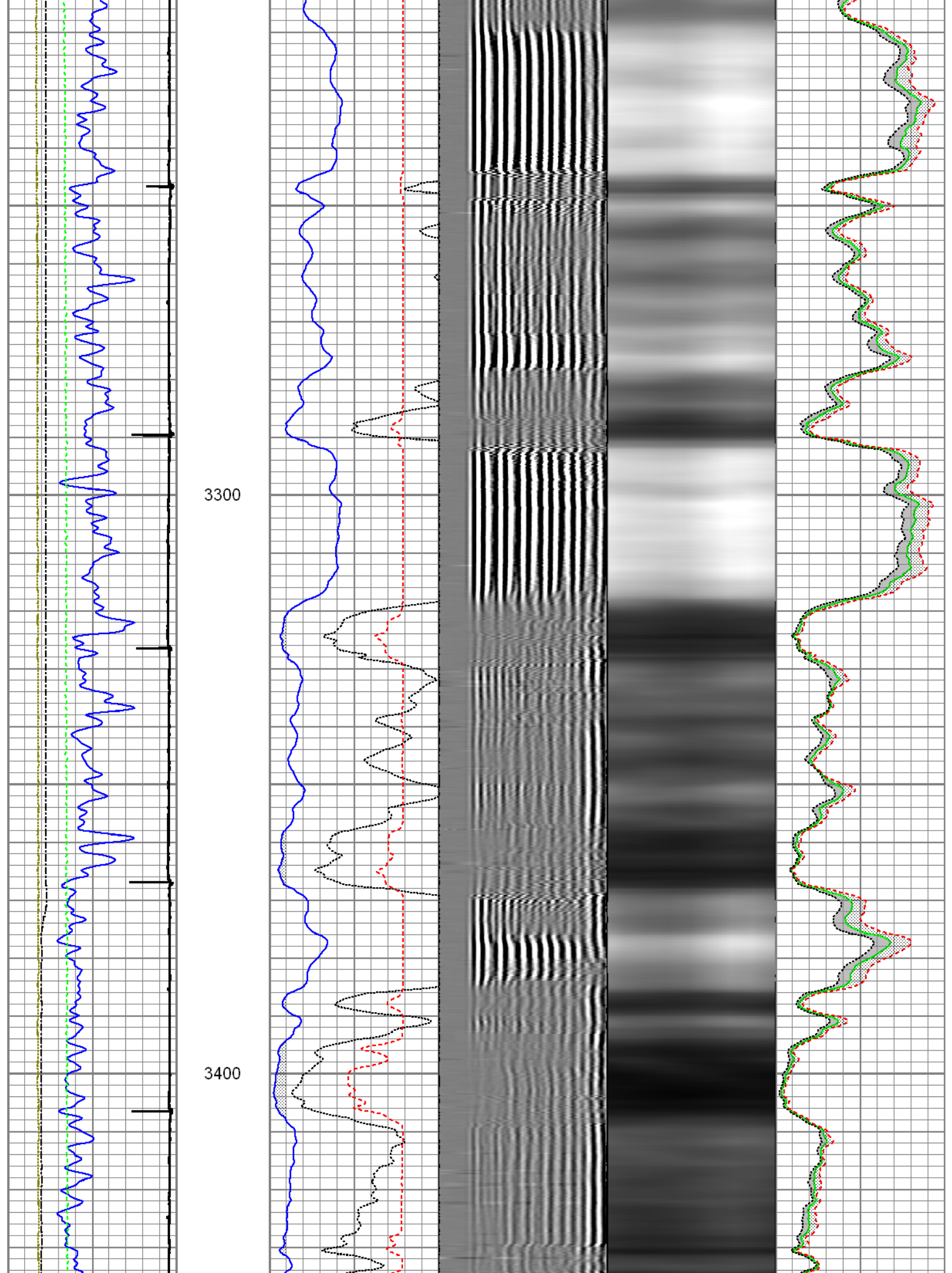


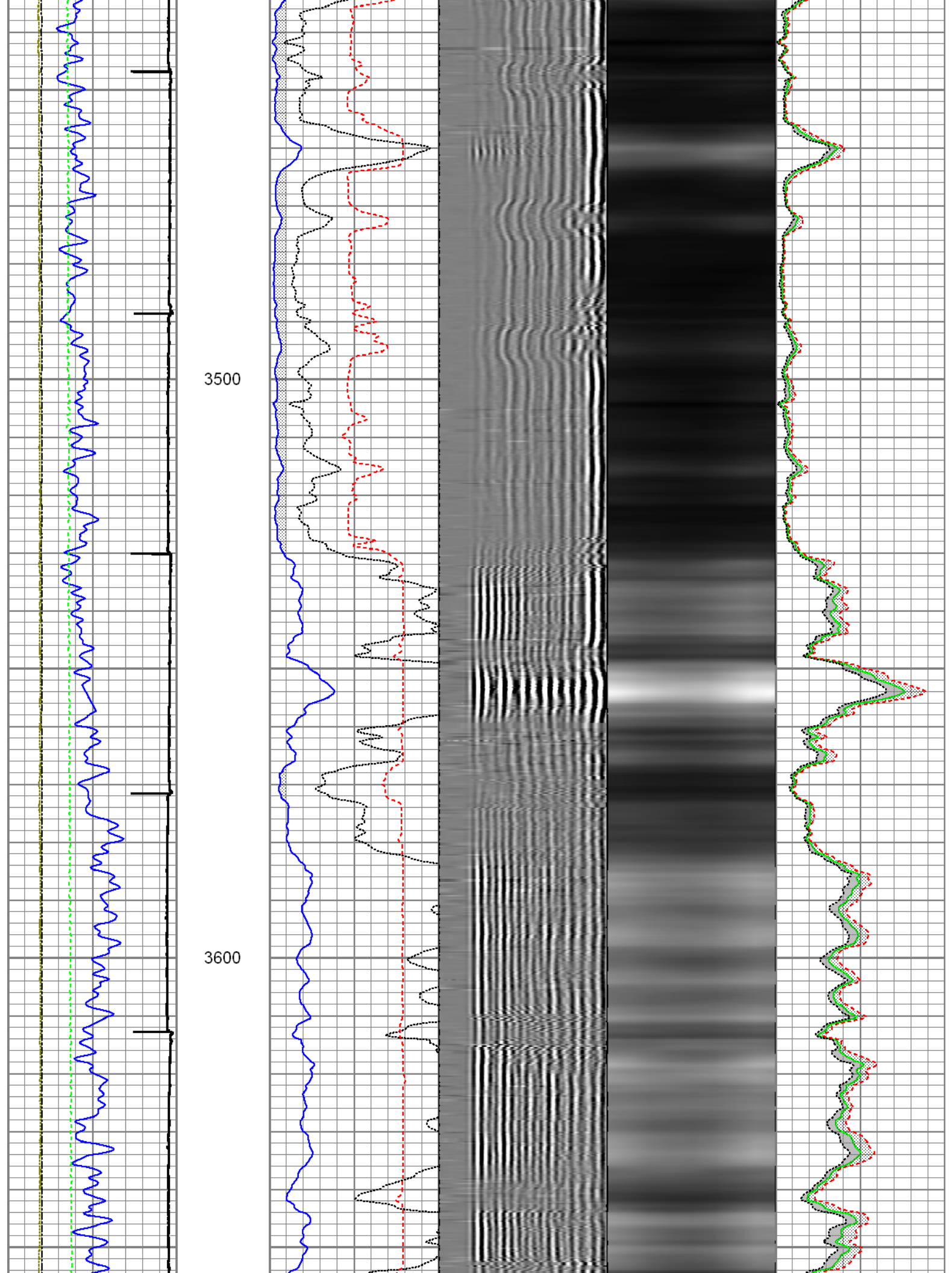
3000

3100

3200

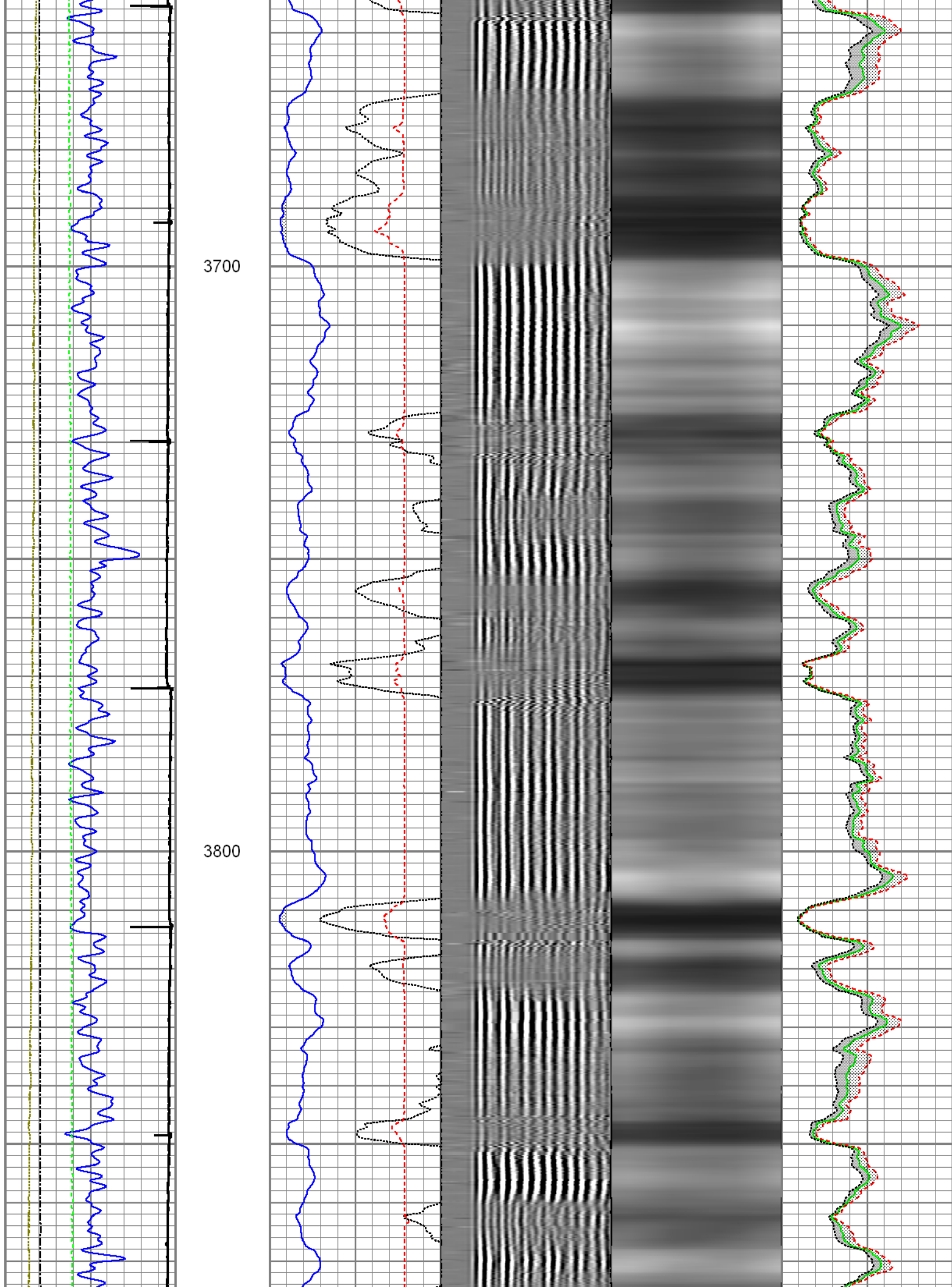


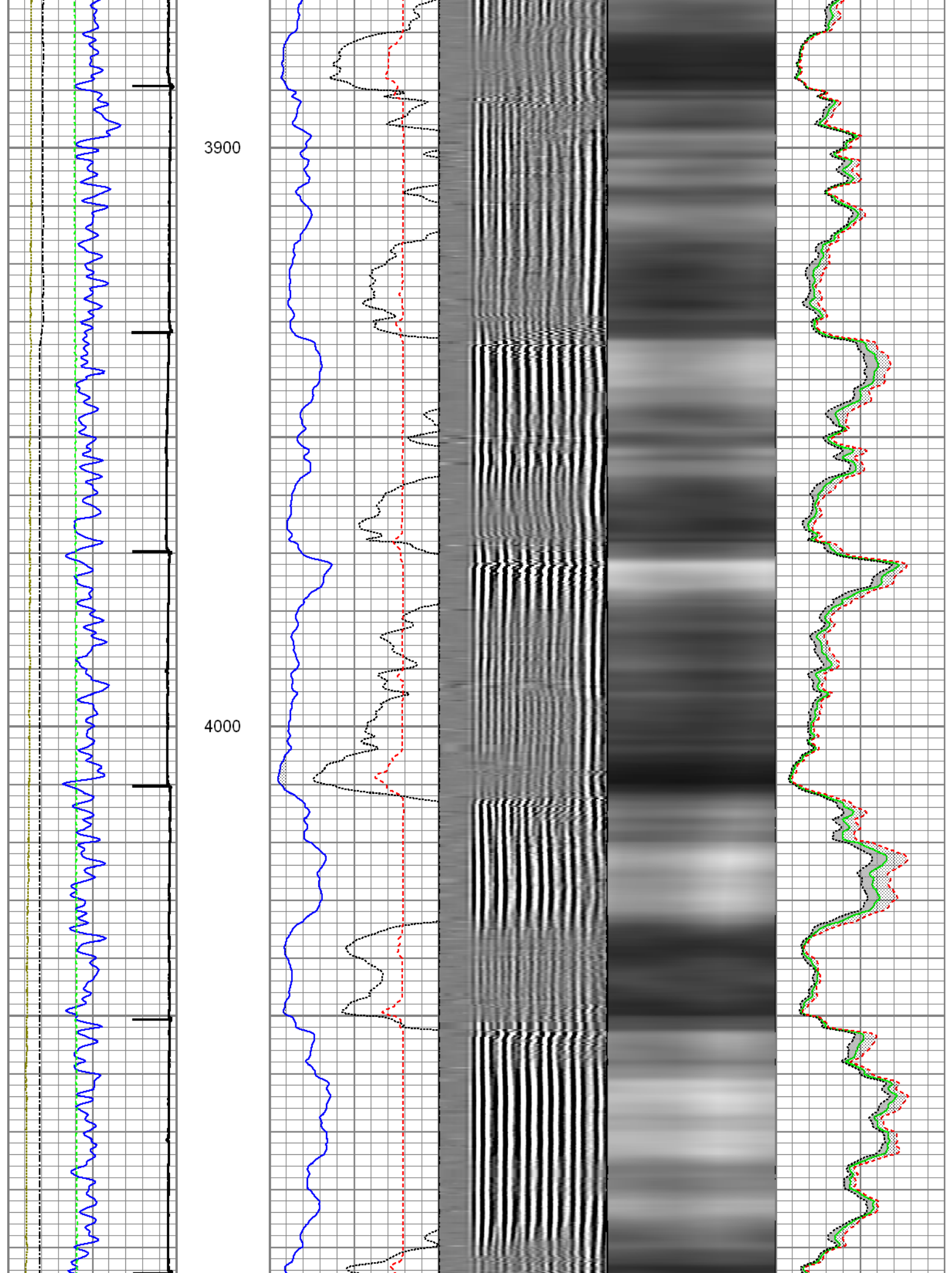




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3800

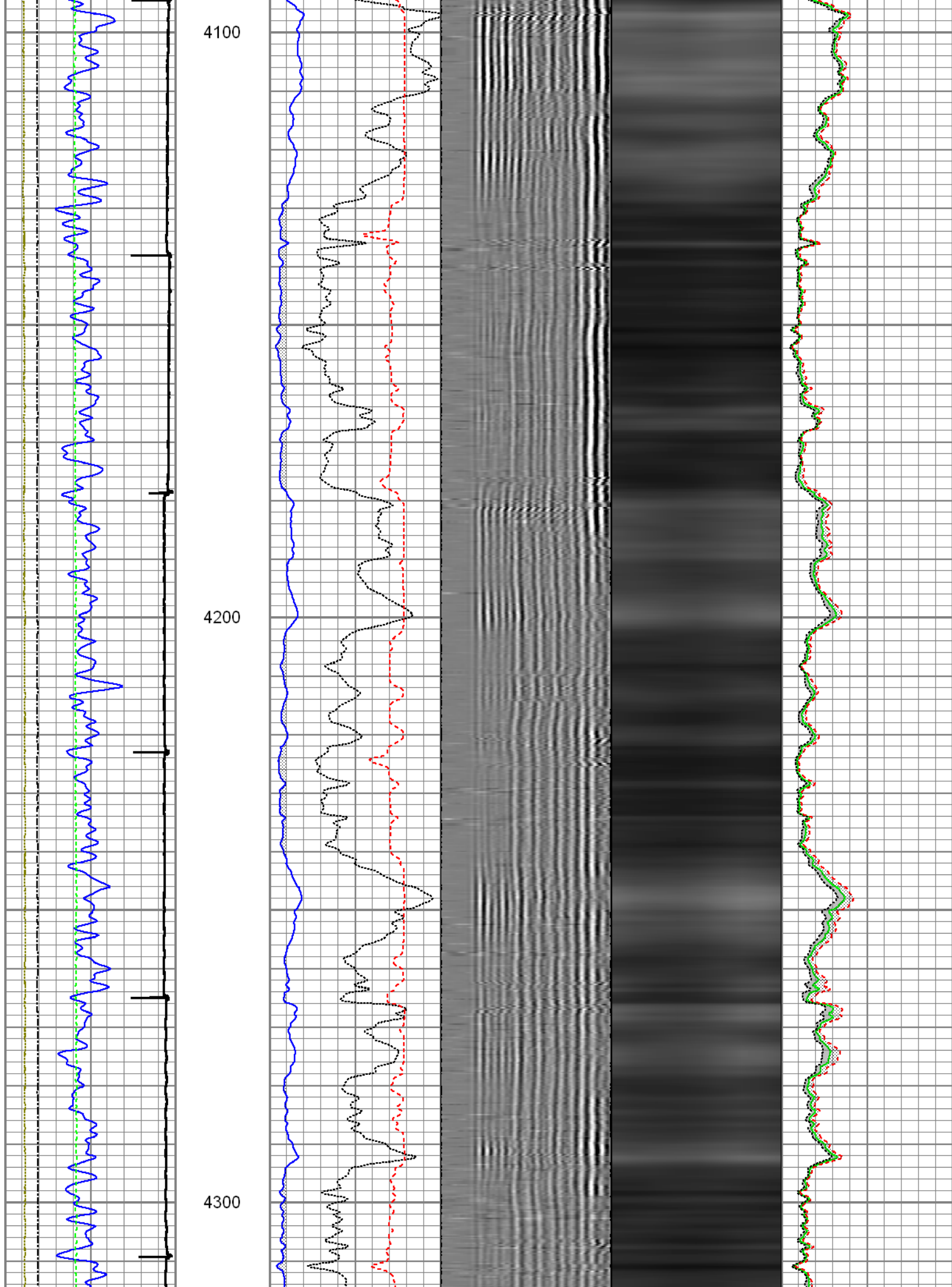


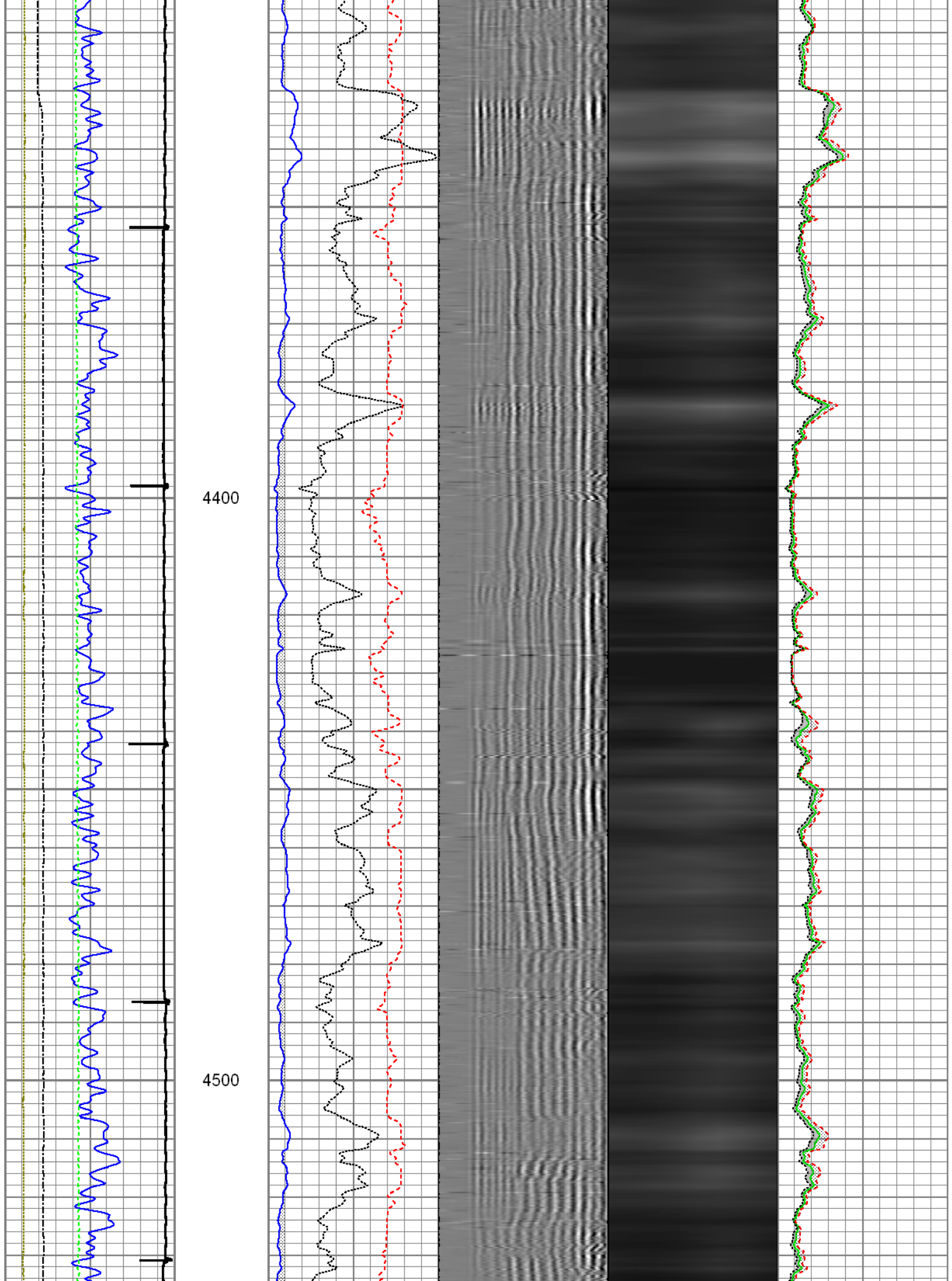


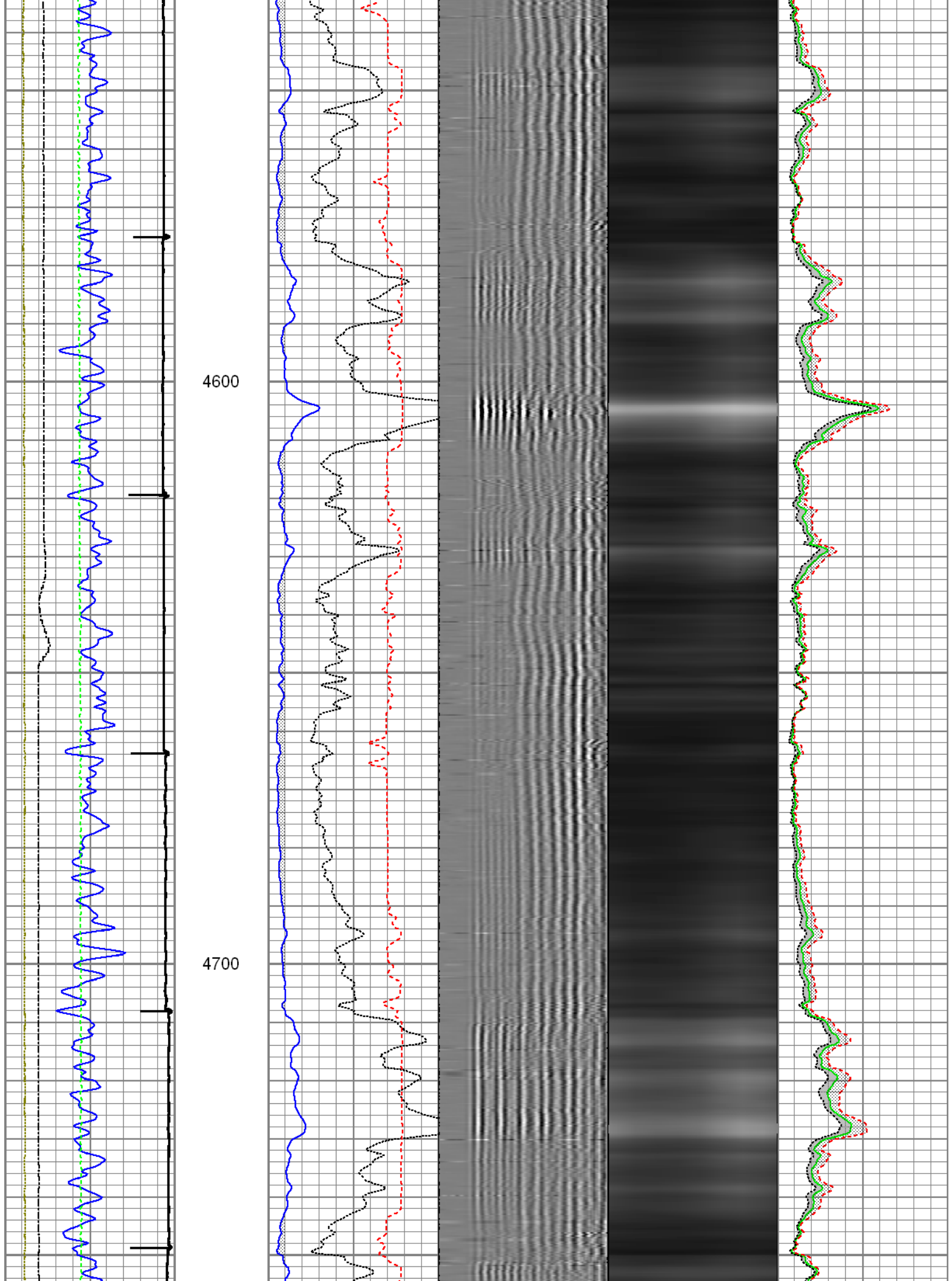
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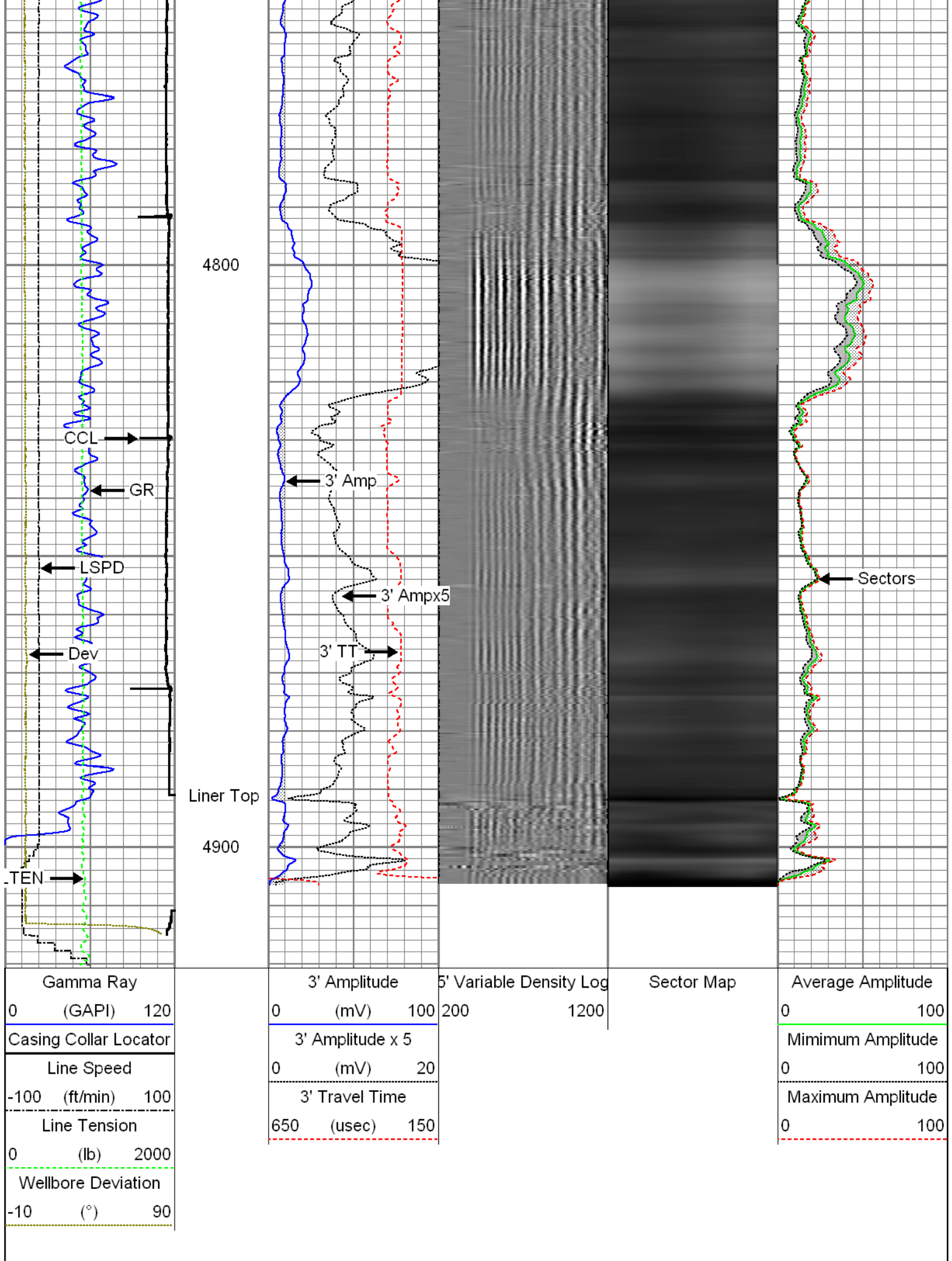
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4300



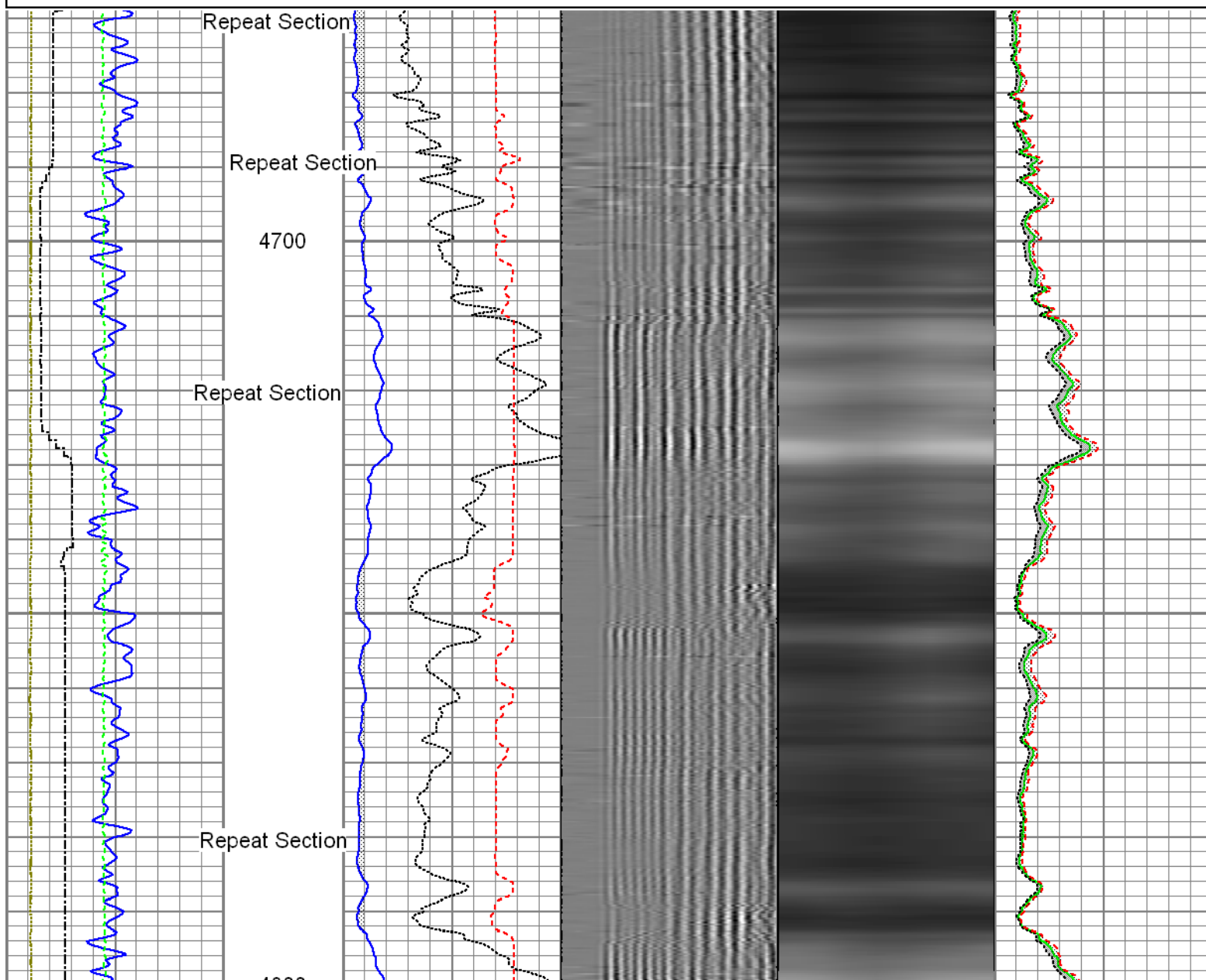


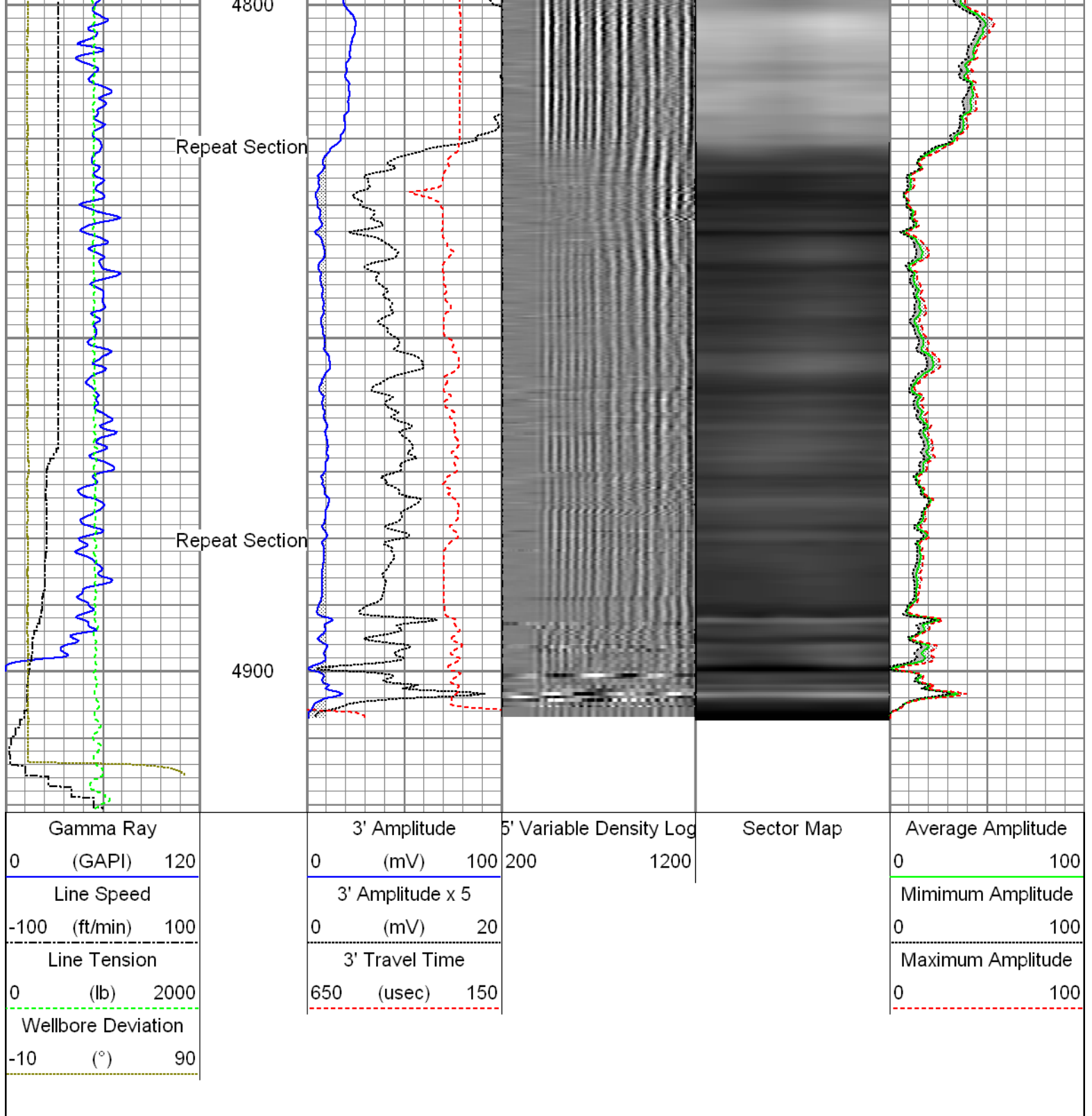


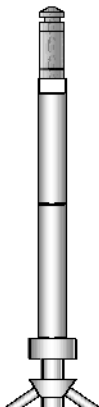



Database File: 11-21-14_whiting_horsetail 30f-3105_mit_rbl.db
 Dataset Pathname: repeat4
 Presentation Format: rbt4_mit
 Dataset Creation: Fri Nov 21 13:18:58 2014 by Log 7.0 B1
 Charted by: Depth in Feet scaled 1:240

Gamma Ray 0 (GAPI) 120	3' Amplitude 0 (mV) 100	5' Variable Density Log 200 1200	Sector Map	Average Amplitude 0 100
Line Speed -100 (ft/min) 100	3' Amplitude x 5 0 (mV) 20			Minimum Amplitude 0 100
Line Tension 0 (lb) 2000	3' Travel Time 650 (usec) 150			Maximum Amplitude 0 100
Wellbore Deviation -10 (°) 90				





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 (10013454) 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					
WVFS7	15.42					
WVFS8	15.42					
CBLTEMP	15.42		UW_PRC-DSSRAC (082) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
CBLROT	15.42					
WVF5FT	14.42					
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
TSTAMP	0.00		UW_BUL-UW_BUL_006 (218707) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20
Dataset: 11-21-14_whiting_horsetail 30f-3105_mit_rbl.db: field/well/run1/main Total Length: 27.05 ft Total Weight: 319.30 lb O.D. 3.13 in						

Calibration Report	
Database File:	11-21-14_whiting_horsetail 30f-3105_mit_rbl.db
Dataset Pathname:	main
Dataset Creation:	Fri Nov 21 13:29:01 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 21 12:02:21 2014			
Ring size:	4		5		6		7
(in)		Sens		Sens		Sens	
Finger 01:	1447	277.0	1724	292.0	2016	293.0	2309
Finger 02:	1495	254.0	1749	263.0	2012	262.0	2274
Finger 03:	1399	279.0	1678	298.0	1976	299.0	2275
Finger 04:	1432	278.0	1710	297.0	2007	288.0	2295
Finger 05:	1471	266.0	1737	285.0	2022	278.0	2300
Finger 06:	1388	278.0	1666	303.0	1969	300.0	2269
Finger 07:	1389	273.0	1662	301.0	1963	298.0	2261
Finger 08:	1396	267.0	1663	296.0	1959	292.0	2251
Finger 09:	1410	272.0	1682	302.0	1984	301.0	2285
Finger 10:	1434	259.0	1693	294.0	1987	289.0	2276
Finger 11:	1400	267.0	1667	302.0	1969	299.0	2268
Finger 12:	1359	272.0	1631	306.0	1937	307.0	2244
Finger 13:	1463	251.0	1714	276.0	1990	277.0	2267
Finger 14:	1412	256.0	1668	290.0	1958	296.0	2254
Finger 15:	1410	268.0	1678	299.0	1977	305.0	2282
Finger 16:	1421	263.0	1684	290.0	1974	300.0	2274
Finger 17:	1420	267.0	1687	300.0	1987	310.0	2297
Finger 18:	1417	258.0	1675	288.0	1963	302.0	2265
Finger 19:	1464	263.0	1727	289.0	2016	300.0	2316
Finger 20:	1456	263.0	1719	288.0	2007	309.0	2316
Finger 21:	1388	275.0	1663	302.0	1965	325.0	2290
Finger 22:	1444	259.0	1703	279.0	1982	298.0	2280
Finger 23:	1452	268.0	1720	283.0	2003	305.0	2308
Finger 24:	1487	270.0	1757	282.0	2039	296.0	2335
Finger 25:	1466	276.0	1742	284.0	2026	307.0	2333
Finger 26:	1432	279.0	1711	288.0	1999	310.0	2309
Finger 27:	1491	272.0	1763	276.0	2039	294.0	2333
Finger 28:	1451	282.0	1733	283.0	2016	307.0	2323
Finger 29:	1536	266.0	1802	269.0	2071	286.0	2357
Finger 30:	1407	283.0	1690	285.0	1975	308.0	2283
Finger 31:	1465	291.0	1756	288.0	2044	308.0	2352
Finger 32:	1524	275.0	1799	270.0	2069	284.0	2353
Finger 33:	1441	290.0	1731	295.0	2026	309.0	2335
Finger 34:	1467	286.0	1753	290.0	2043	305.0	2348
Finger 35:	1492	264.0	1756	266.0	2022	276.0	2298
Finger 36:	1491	273.0	1764	281.0	2045	289.0	2334
Finger 37:	1470	284.0	1754	293.0	2047	298.0	2345
Finger 38:	1508	256.0	1764	262.0	2026	269.0	2295
Finger 39:	1448	275.0	1723	286.0	2009	284.0	2293
Finger 40:	1404	288.0	1692	303.0	1995	303.0	2298

Segmented Cement Bond Log Calibration Report
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Serial Number:	10013454
Tool Model:	UW_RBT_004
Calibration Casing Diameter:	7.000 in
Calibration Depth:	-3.660 ft

Master Calibration, performed Fri Nov 21 12:04:50 2014:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	-0.002	0.850	0.800	62.165	72.041	0.914
5FT	-0.003	0.303	0.800	62.165	200.409	1.392
S1	-0.001	0.630	0.000	100.000	158.435	0.193
S2	-0.004	0.673	0.000	100.000	147.908	0.527
S3	-0.002	0.724	0.000	100.000	137.716	0.336
S4	-0.004	0.744	0.000	100.000	133.802	0.490
S5	-0.001	0.750	0.000	100.000	133.123	0.190
S6	-0.004	0.734	0.000	100.000	135.627	0.487
S7	-0.002	0.667	0.000	100.000	149.299	0.364
S8	-0.002	0.622	0.000	100.000	160.276	0.385

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 Corporation
 Well Horsetail 30F-3105
 Field Wildcat
 County Weld
 State Colorado