

Radial Cement Bond Gamma Ray Casing Collar Log

Company	Whiting Oil & Gas Corporation	Company	Whiting Oil & Gas Corporation
Well	Razor Fed 30K-1908	Well	Razor Fed 30K-1908
Field	Wildcat	Field	Wildcat
County	Weld	County	Weld
State	Colorado	State	Colorado
Location:	API #: 05-123-40212		
Permanent Datum	SEC 30	TWP 10N	RGE 58W
Log Measured From	Ground Level	Elevation	4828'
Drilling Measured From	Kelly Bushing	Elevation	21 FT
	Kelly Bushing	Other Services	Plug MIT Gauge ring
			Elevation
			K.B. 4849'
			D.F. 4848'
			G.L. 4828'

Date	7-AUG-2015
Run Number	Three
Depth Driller	13895 FT
Depth Logger	5181 FT
Bottom Logged Interval	5166 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	22 FT
Time Well Ready	ROA
Time Logger on Bottom	12:26 PM
Equipment Number	HD-0119
Location	Fort Lupton, CO
Recorded By	R. Cameron
Witnessed By	Casey Jackson
	A. Olmsted

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	1589 FT		
Intermediate #1	7	29	HCL-80	Surface	6315 FT		
Intermediate #2							
Liner	4 1/2	11.6	HCP-110	5135 FT	13895 FT		

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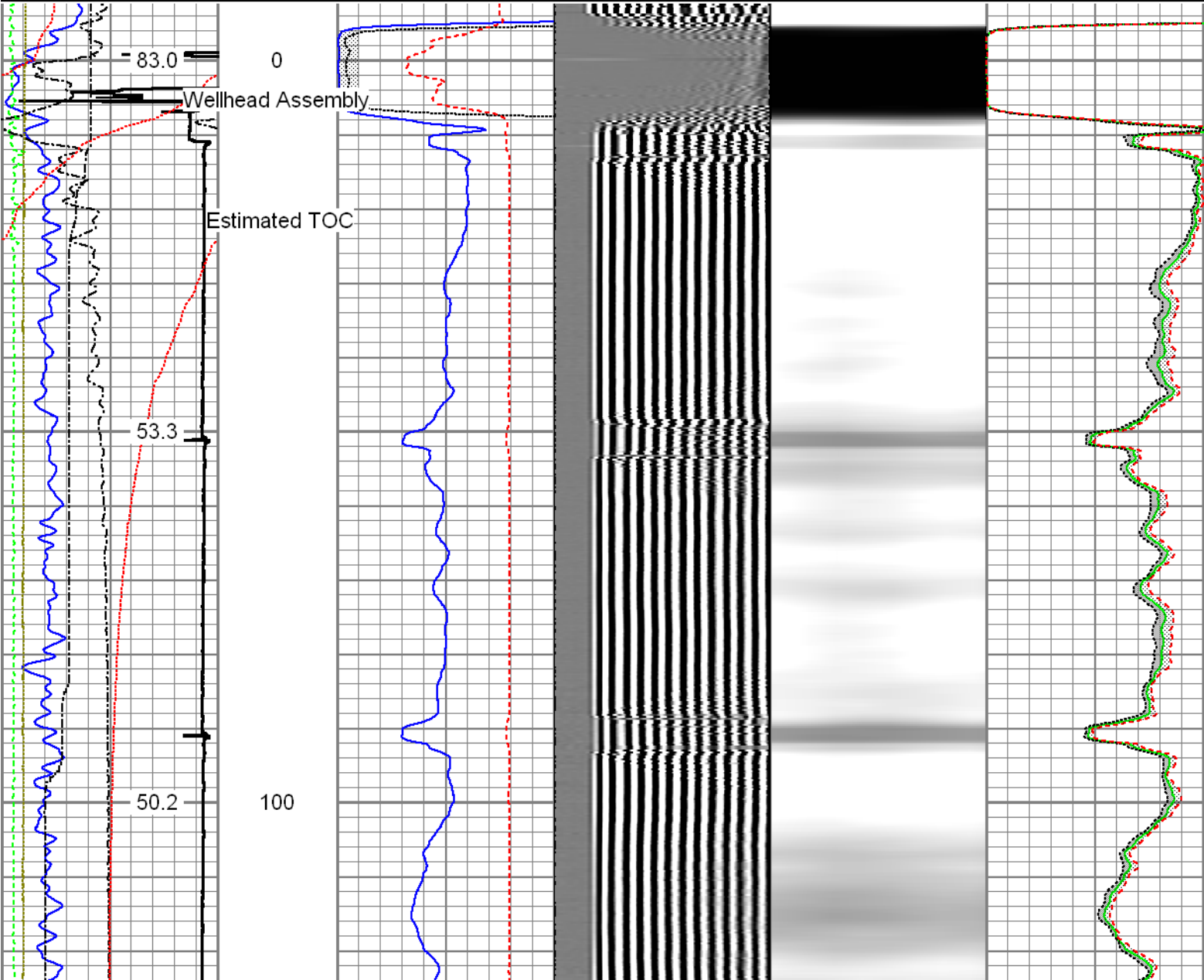
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs,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

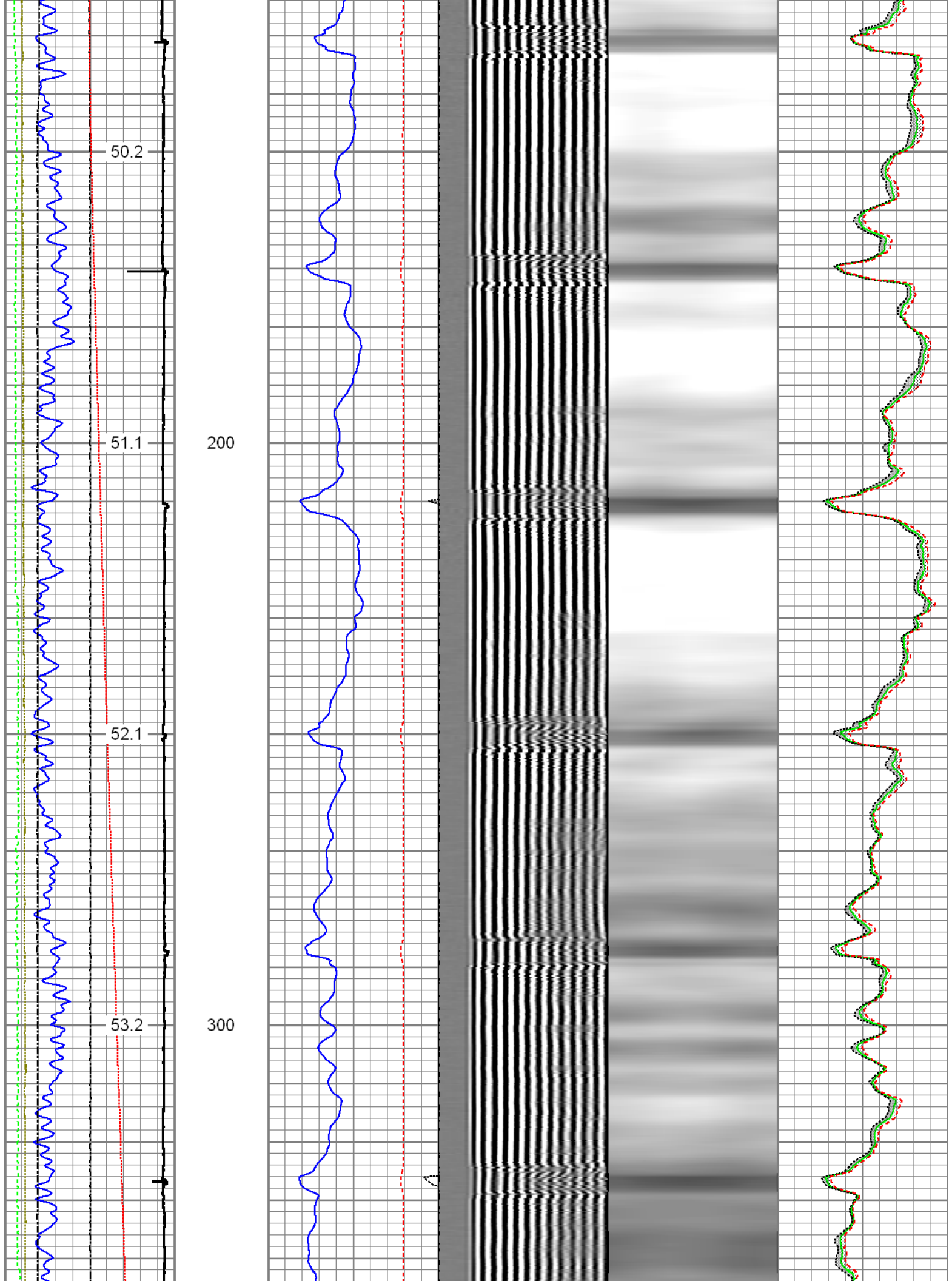
Comments

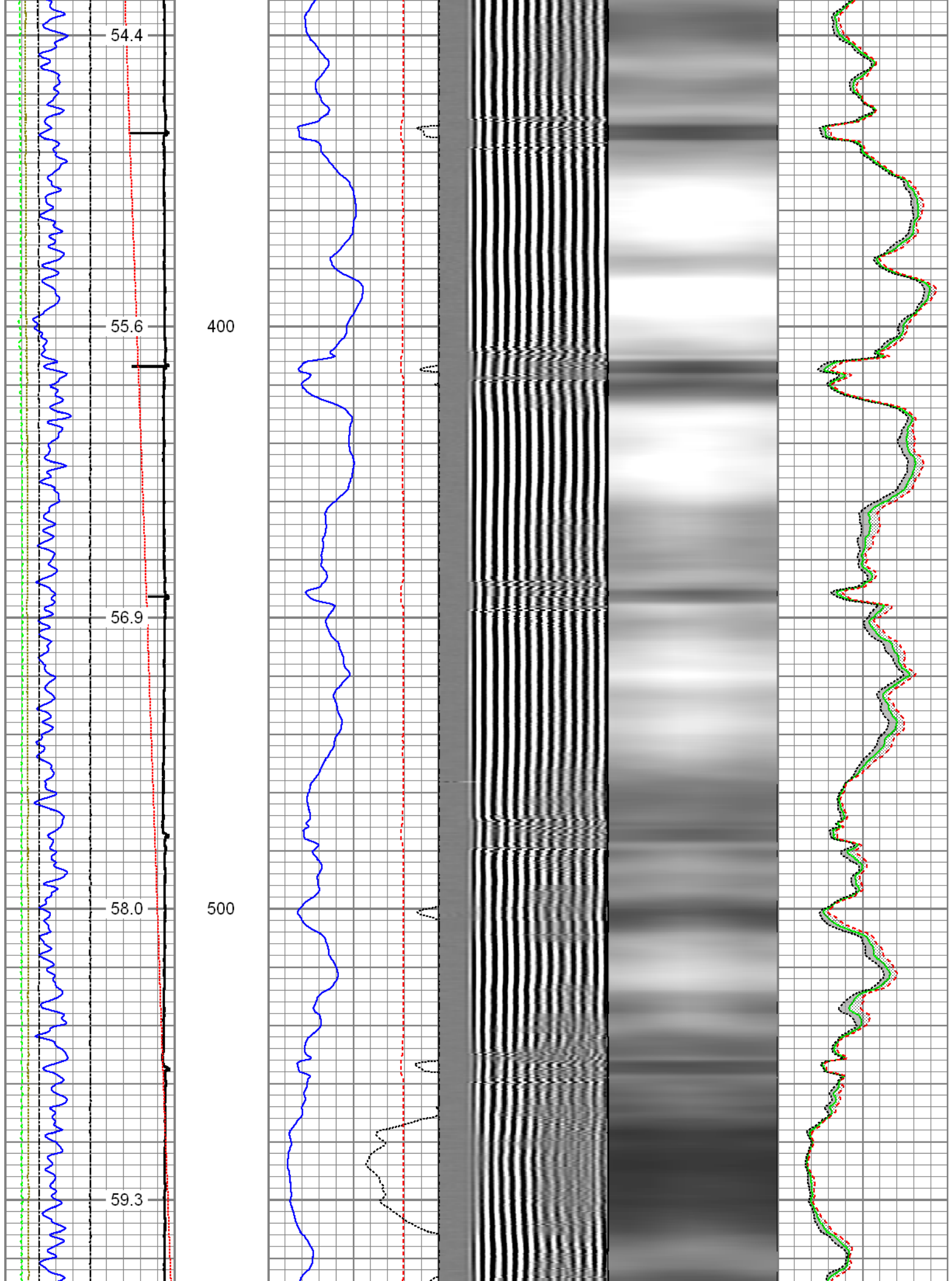
Log ran as per customer request
 Depth referenced to casing tally reported liner top @ 5135 FT
 Adjusted log -16 FT to correlate with liner top
 Log ran with 1500 PSI surface induced pressure
 No debris found on logging tools upon completion of operations
 Thank you for choosing FMC Technologies Completion Services, Inc.!!

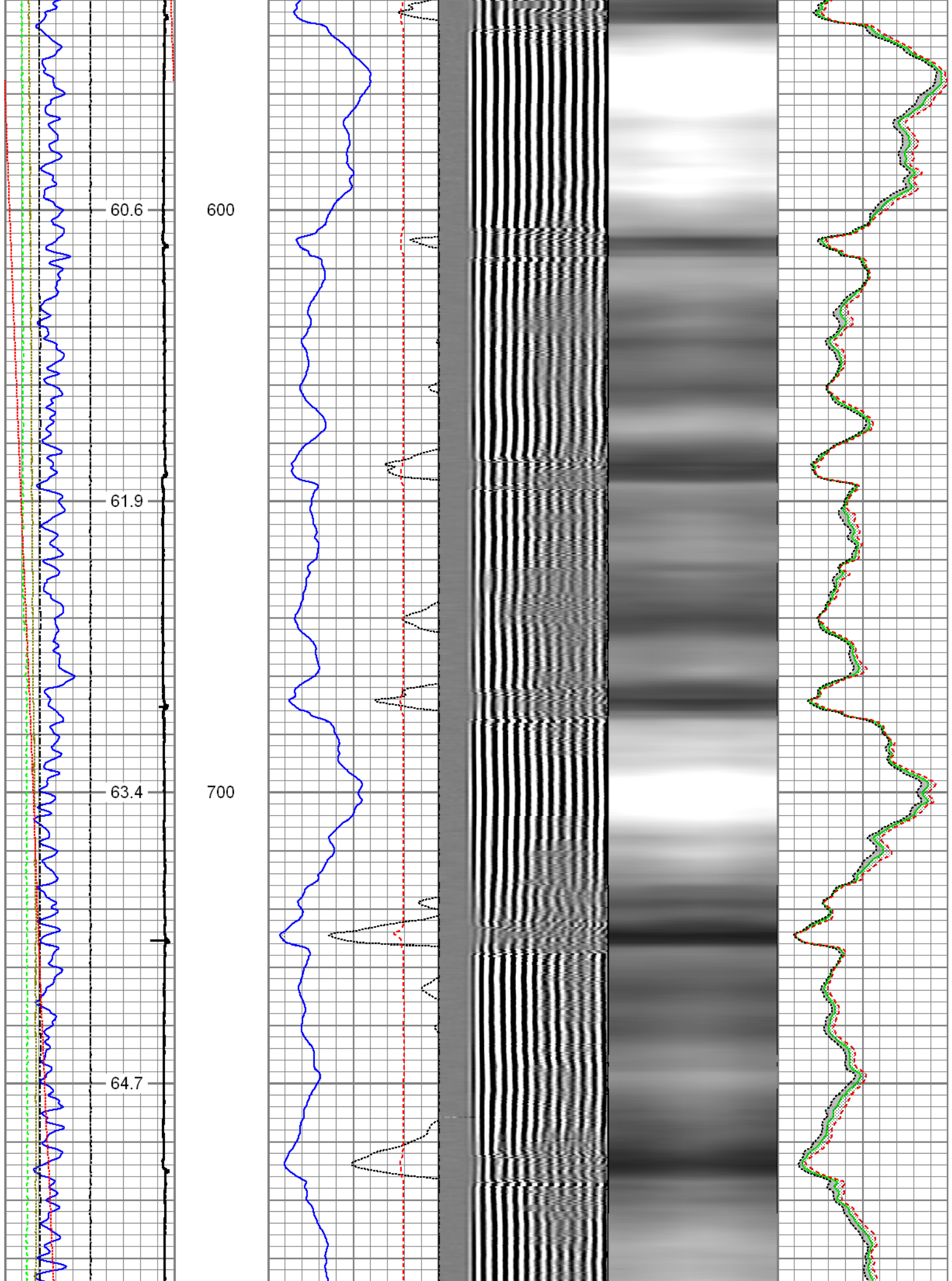
Database File: 08-07-15_whiting_razor fed 30k-1908_mit_rbl.db
Dataset Pathname: pass4
Presentation Format: rbt4_mit
Dataset Creation: Fri Aug 07 12:25:43 2015 by Log 7.0 B1
Charted by: Depth in Feet scaled 1:240

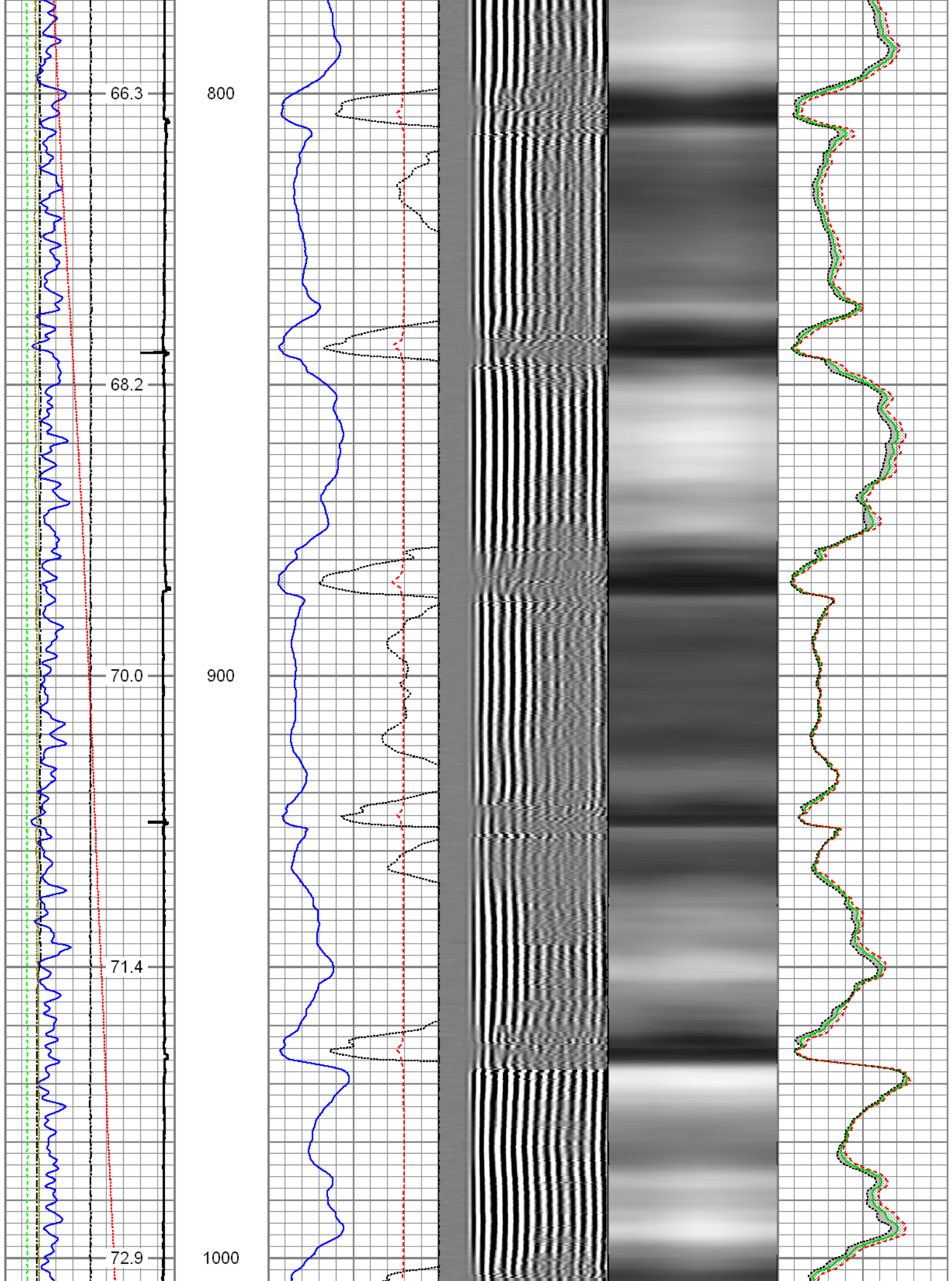
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Mimimum Amplitude
Line Speed	0 (mV) 20			0 100
-100 (ft/min) 100	3' Travel Time			Maximum Amplitude
Line Tension	650 (usec) 150			0 100
0 (lb) 2000				
Differential Temperature				
-2 (degF) 2				
-10 Deviation (°) 90				
Temperature				
0 (degF) 20				

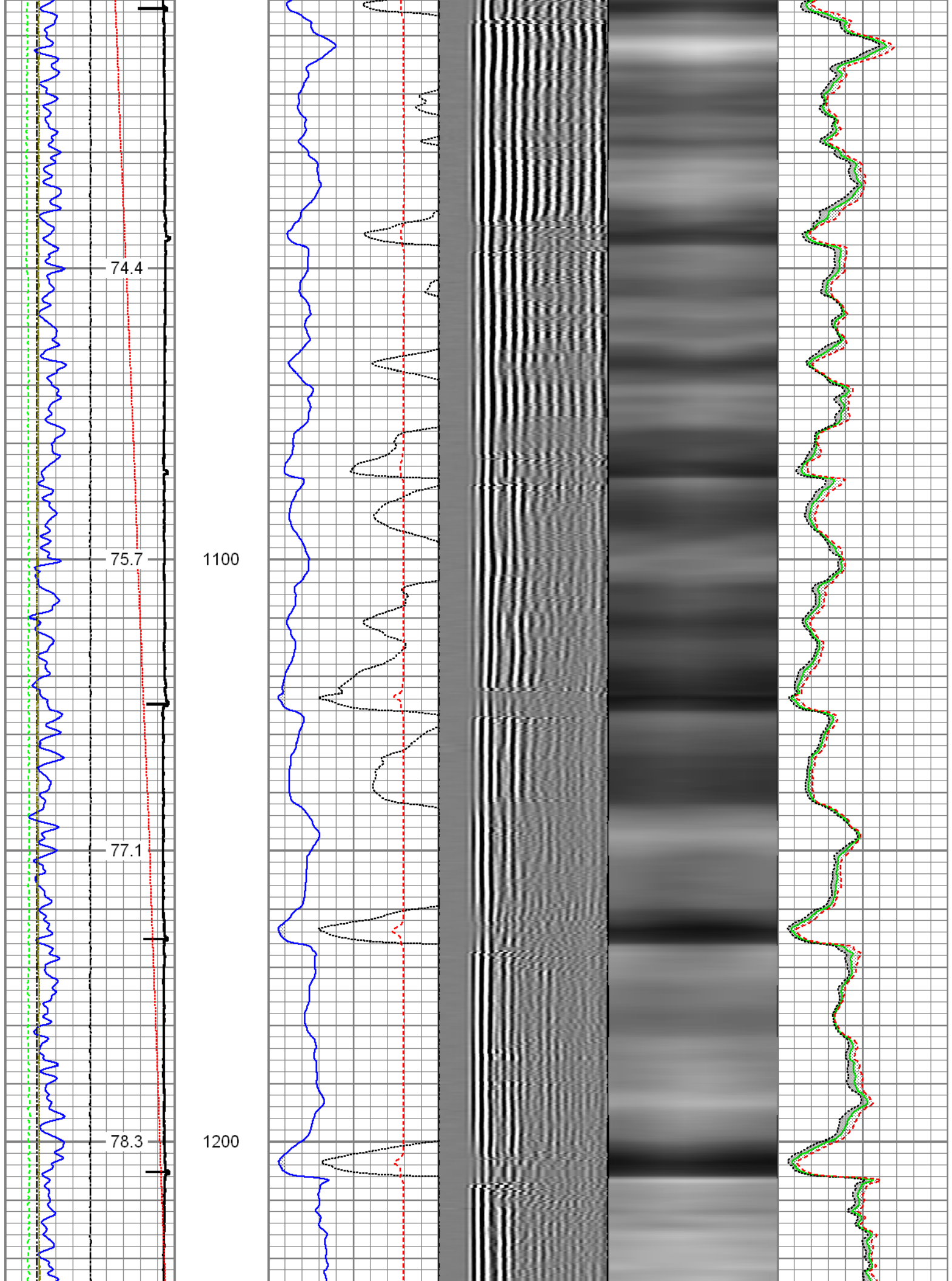


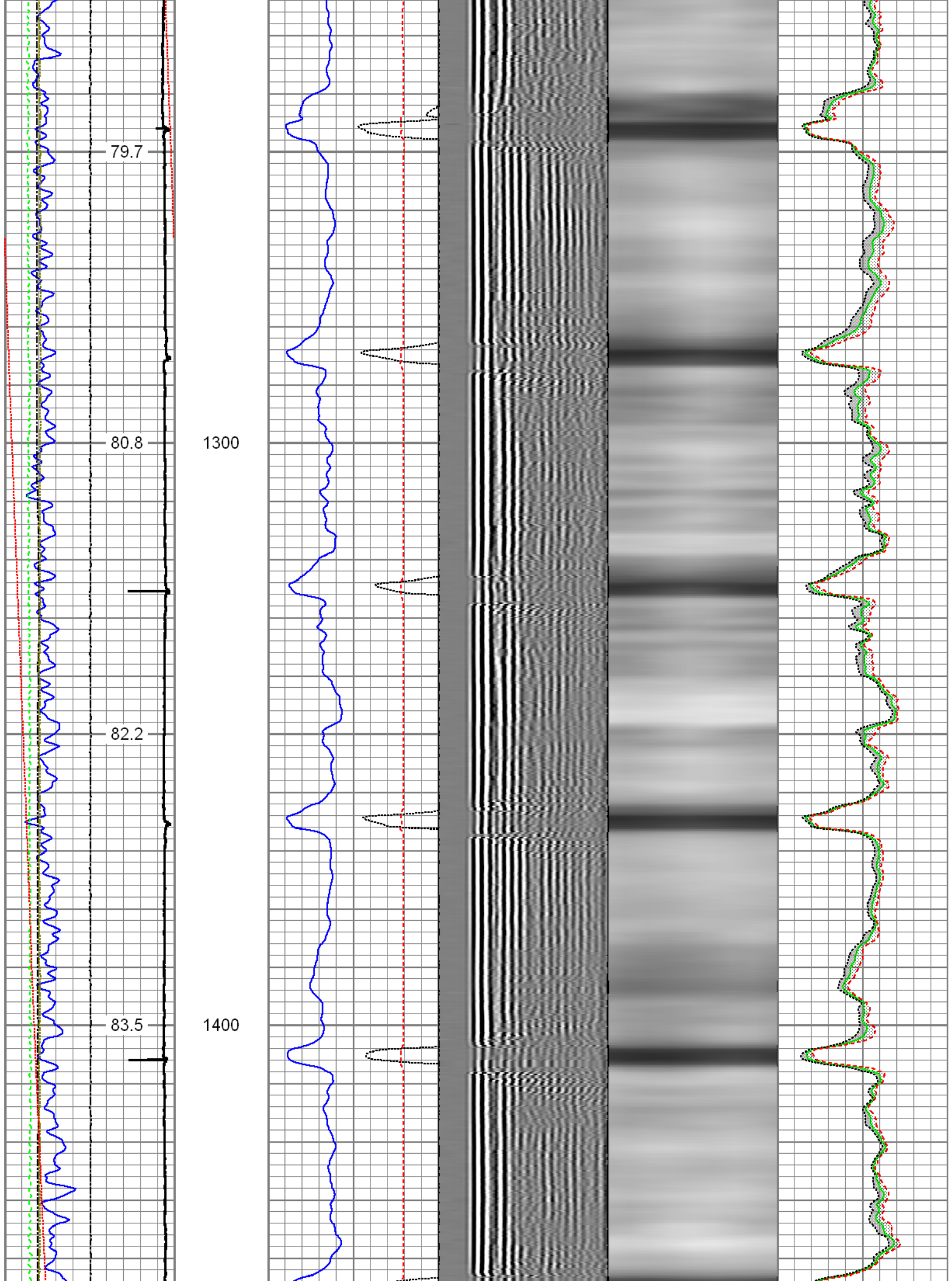


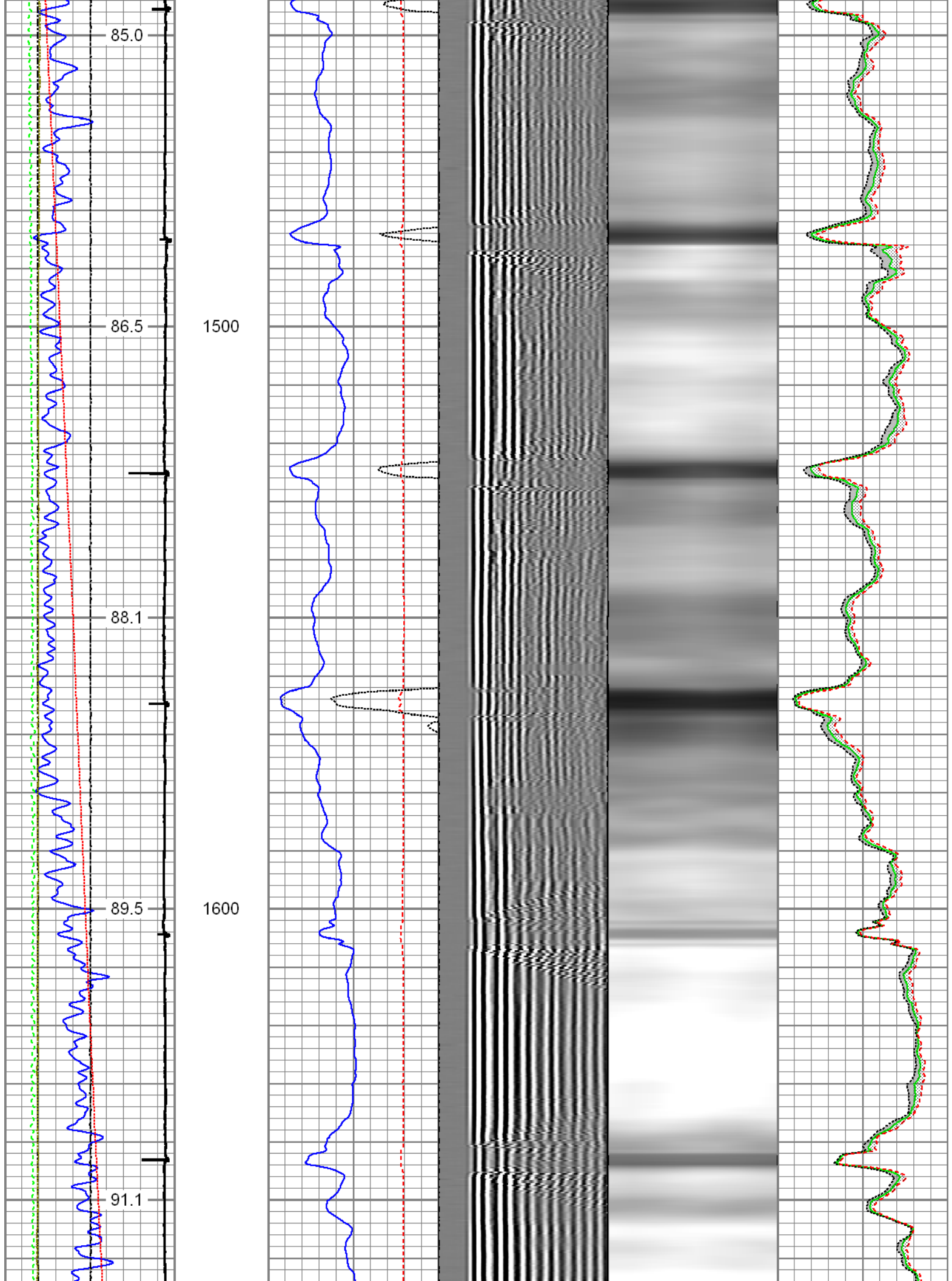


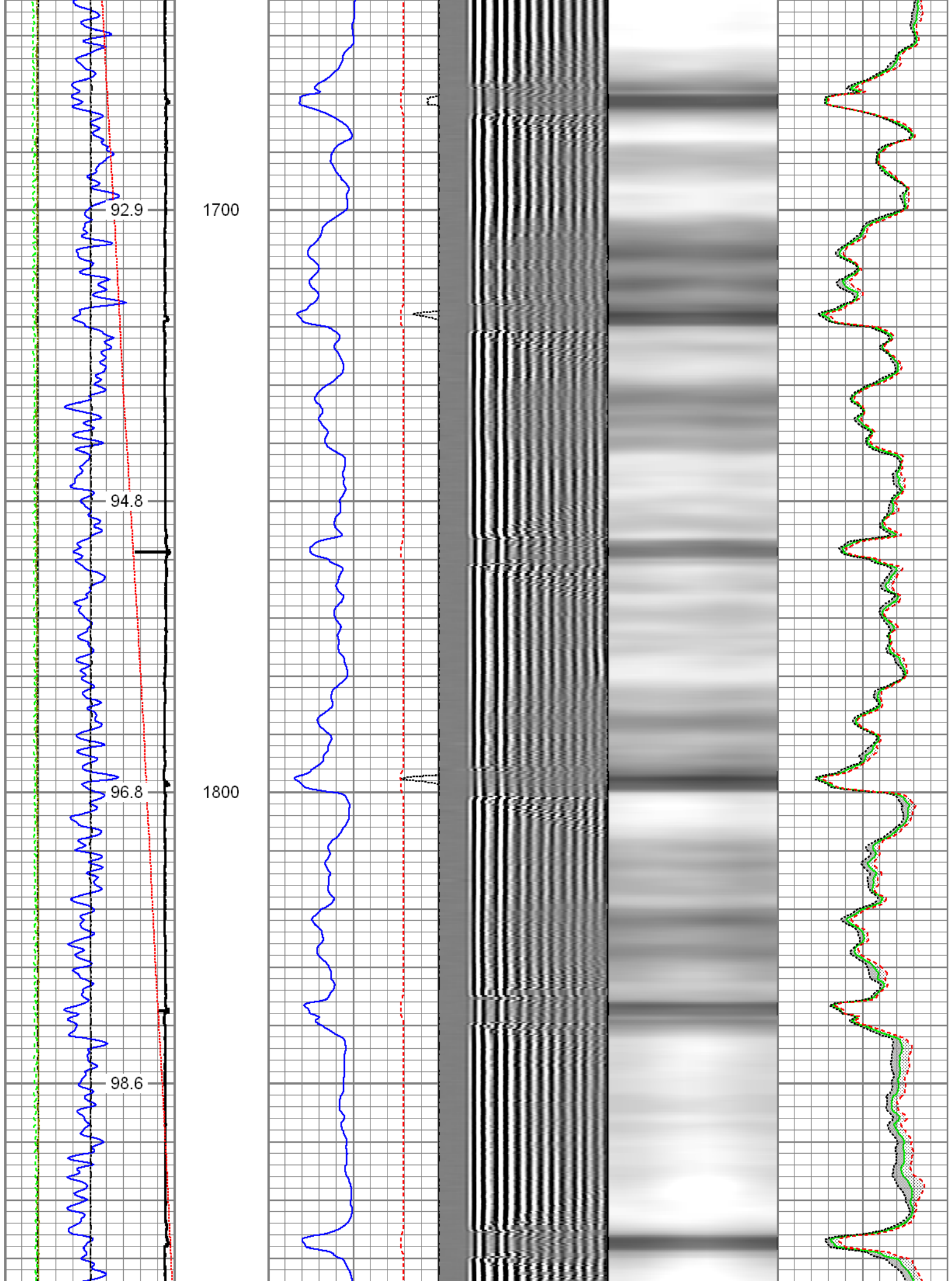


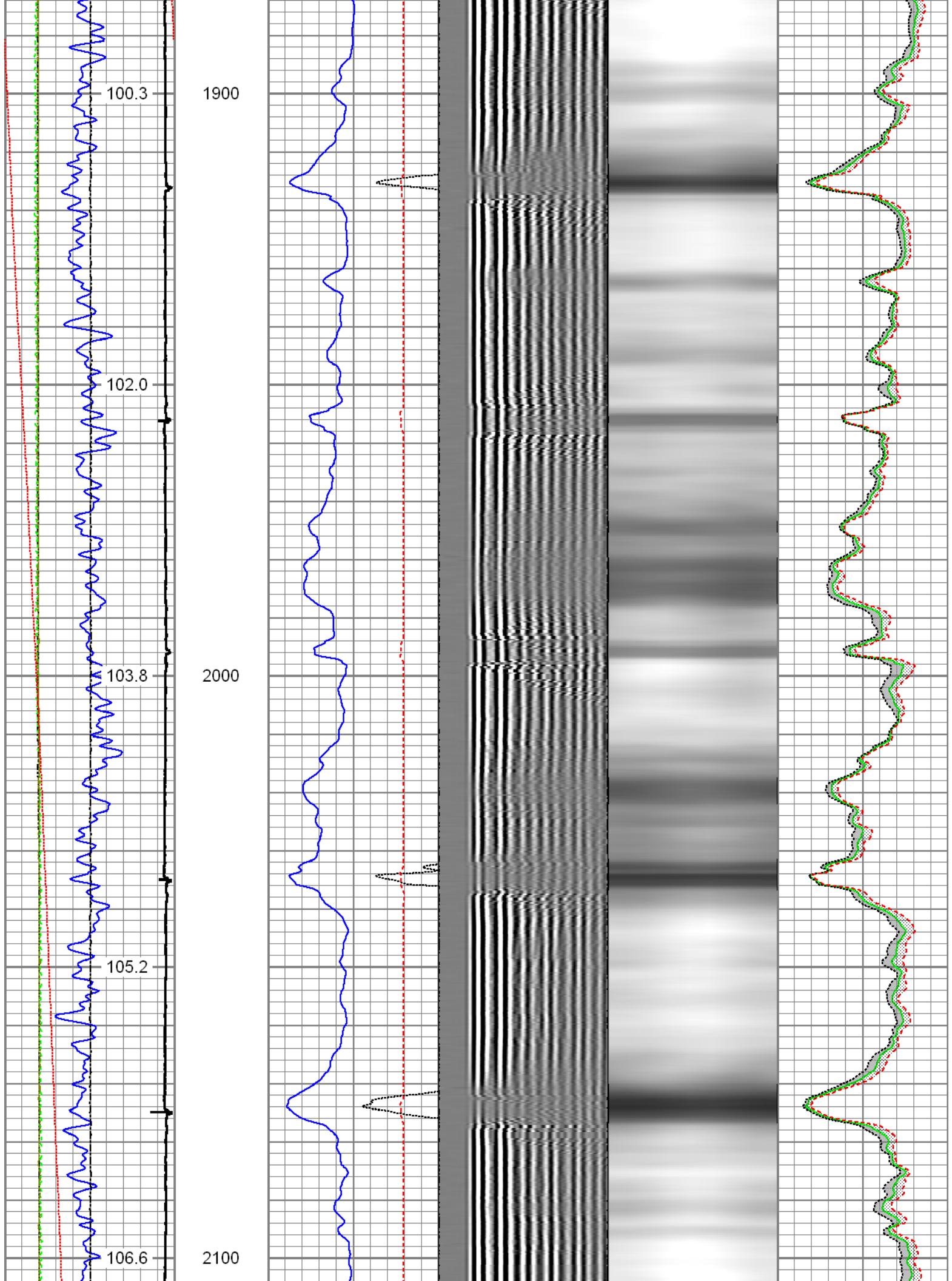


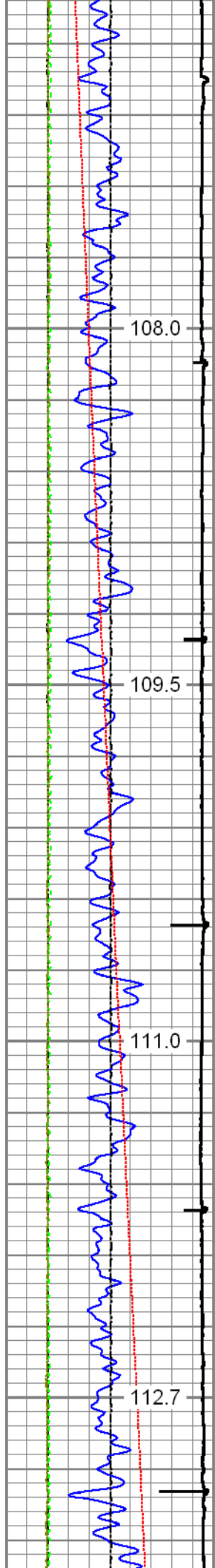






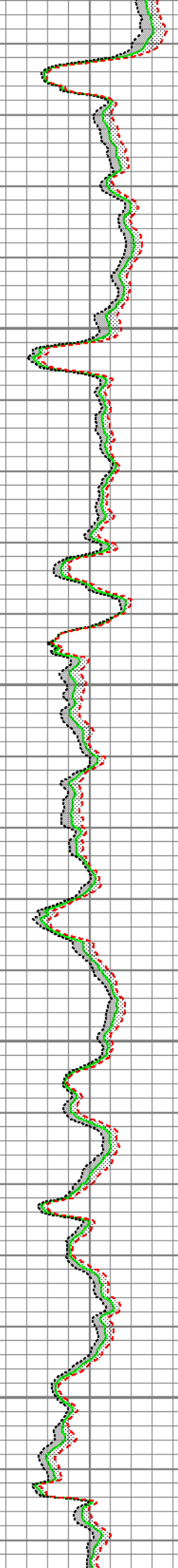
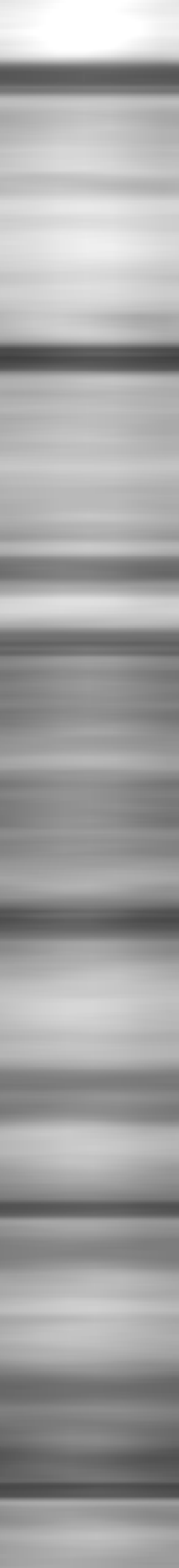
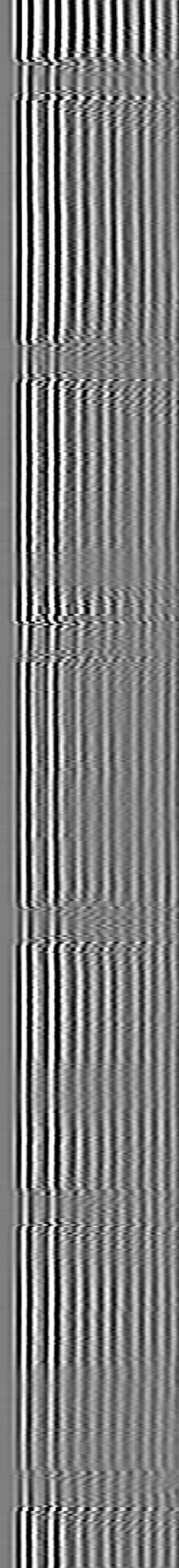
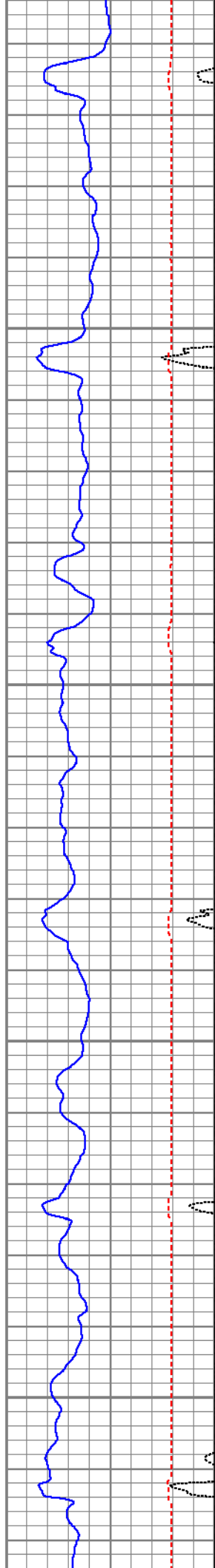


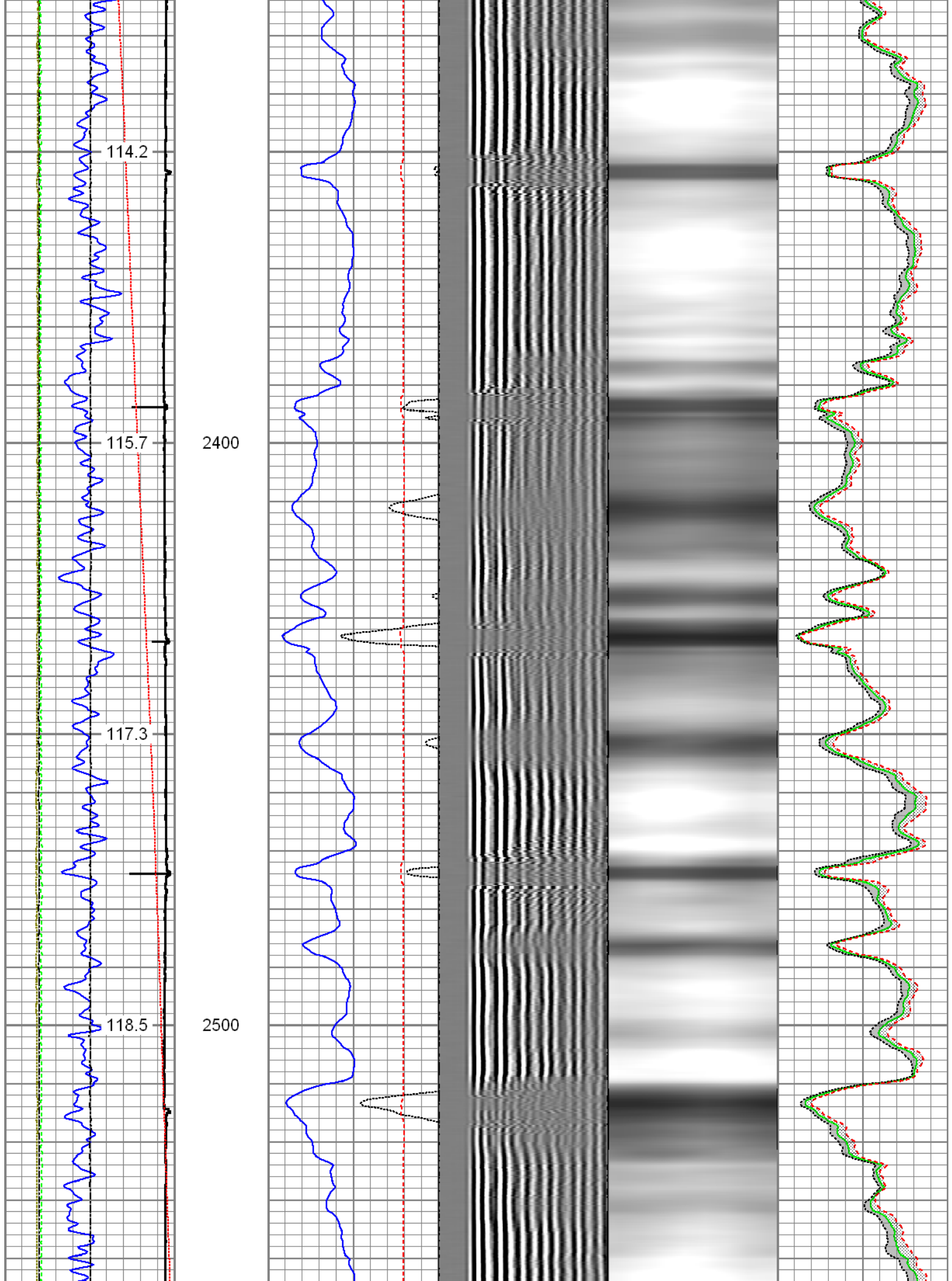


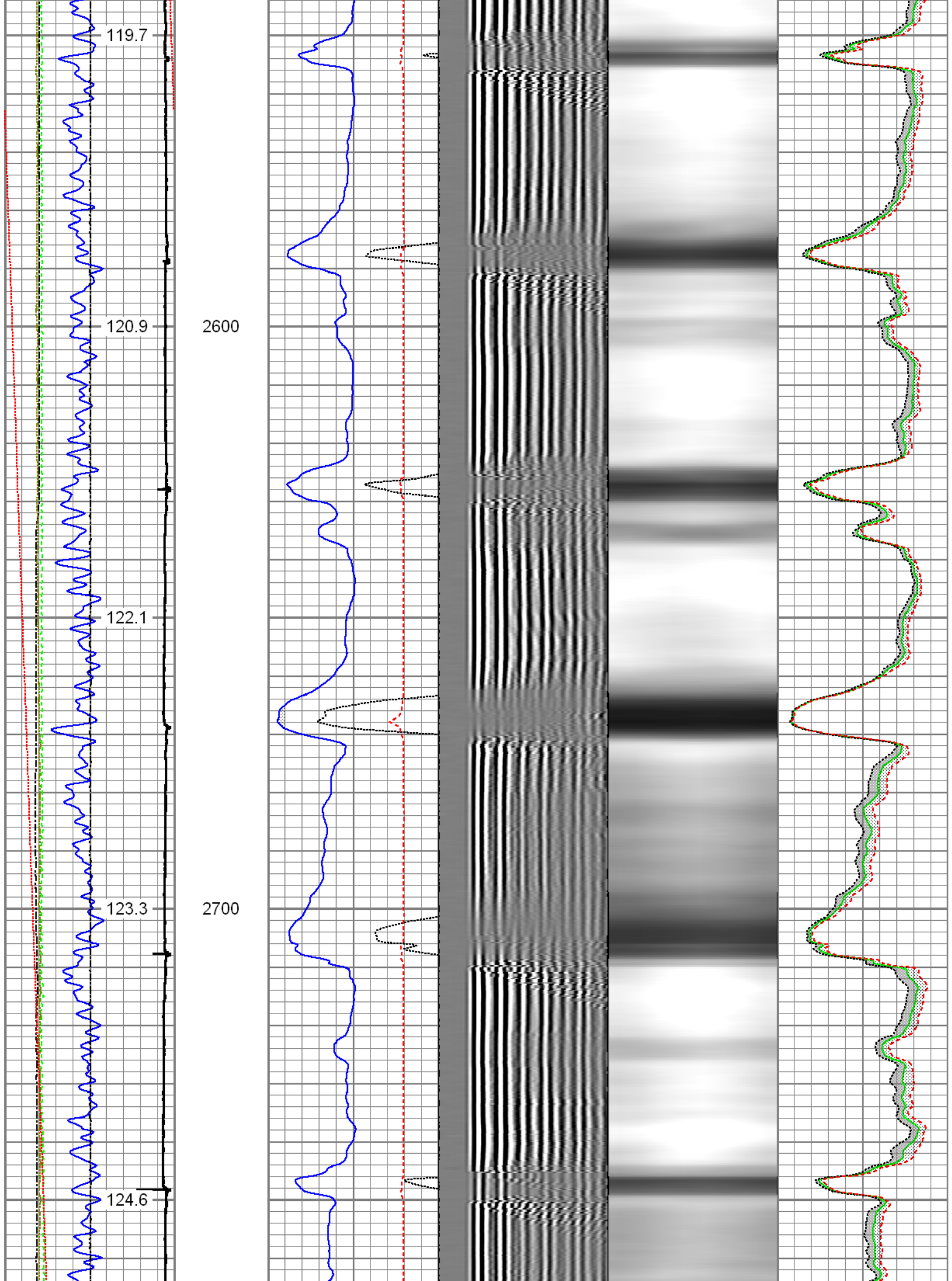


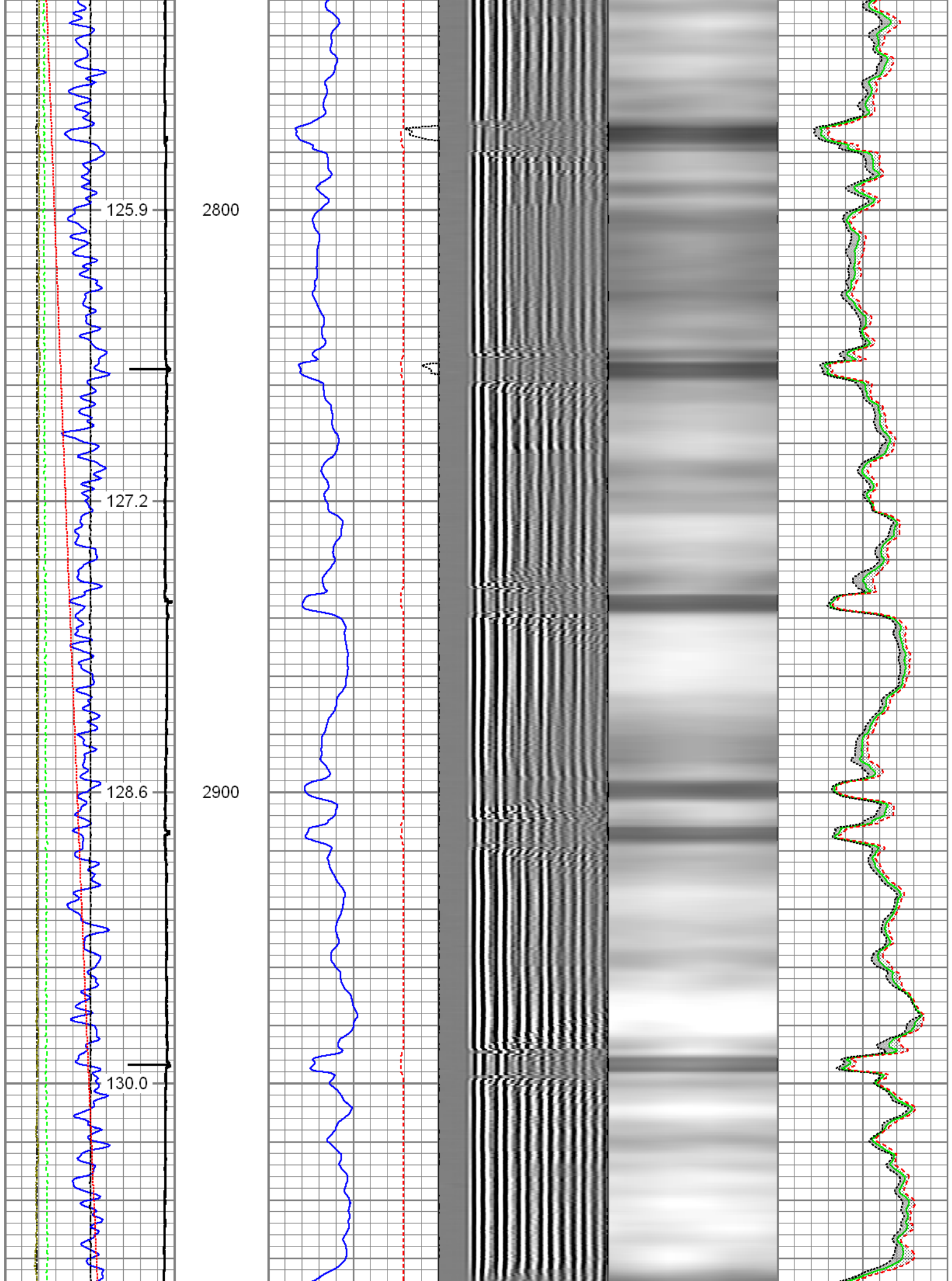
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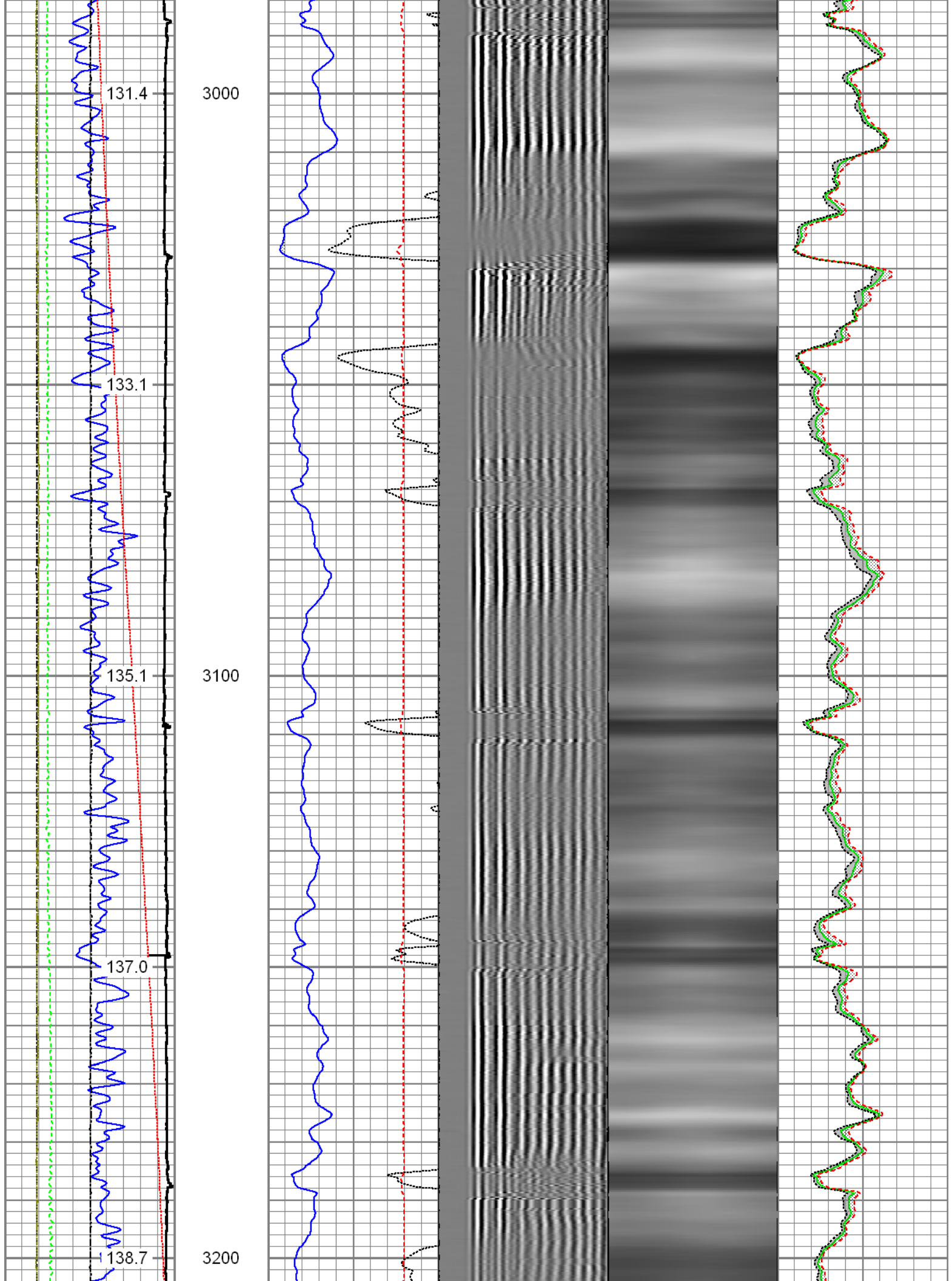
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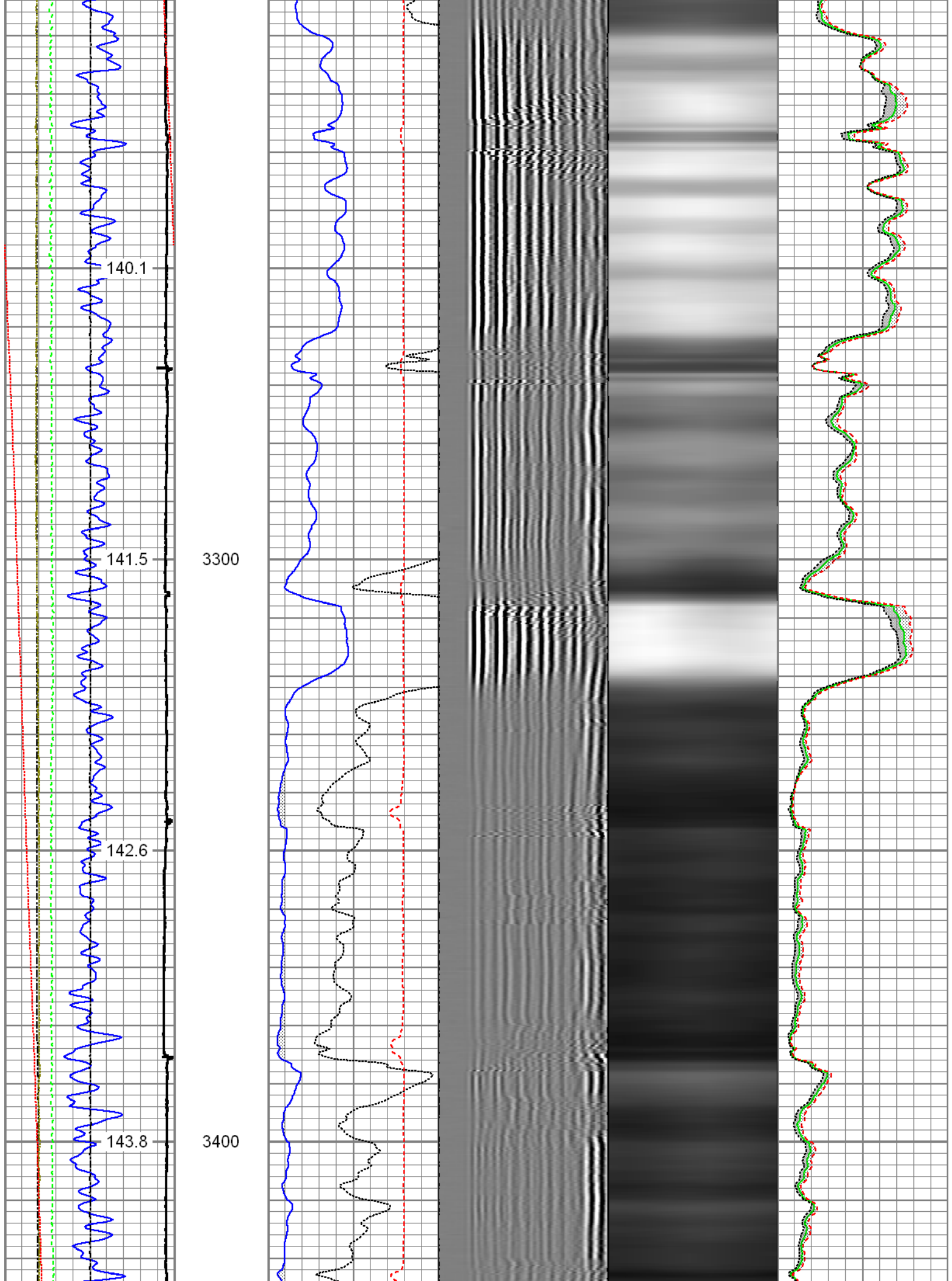


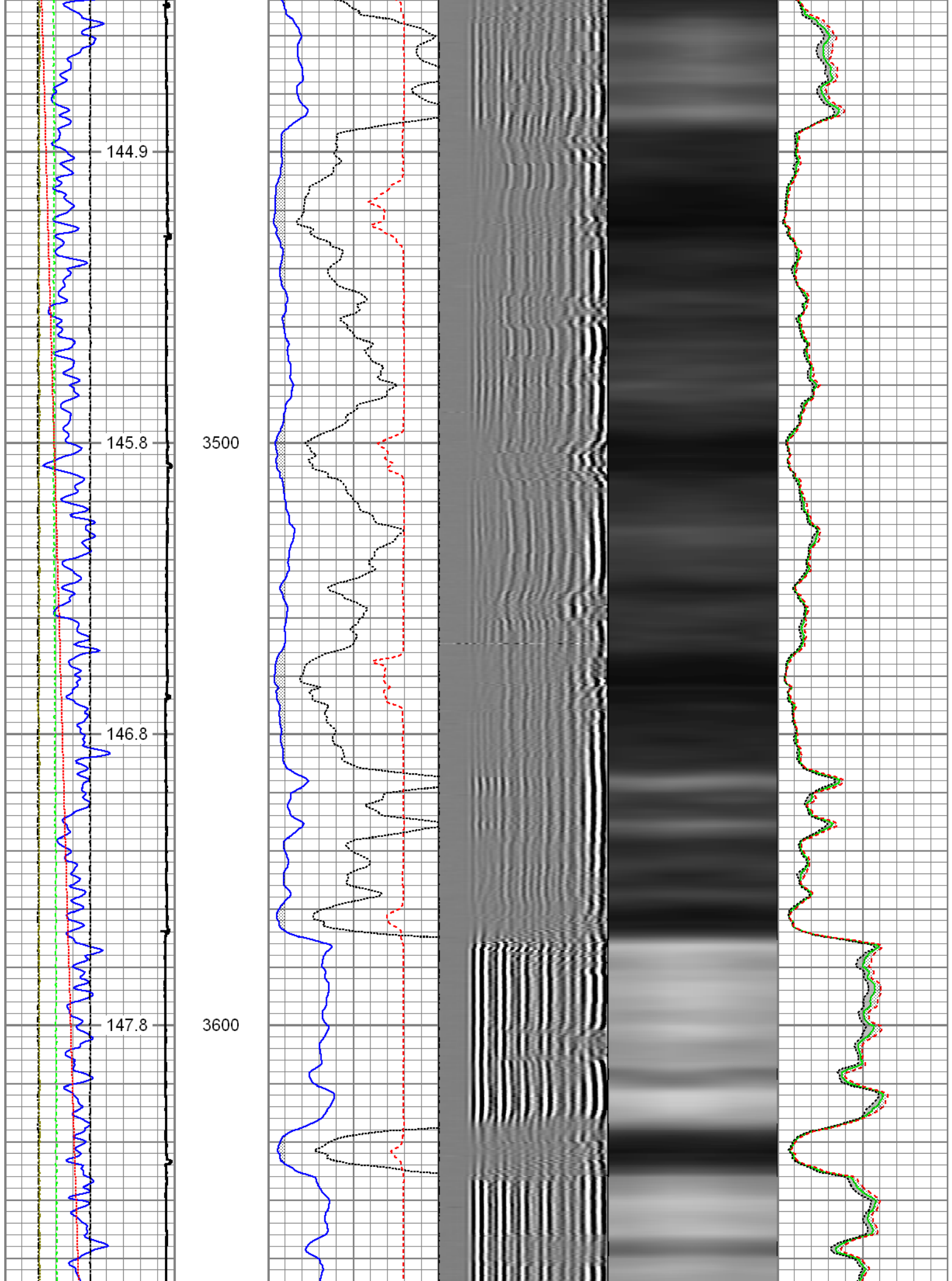


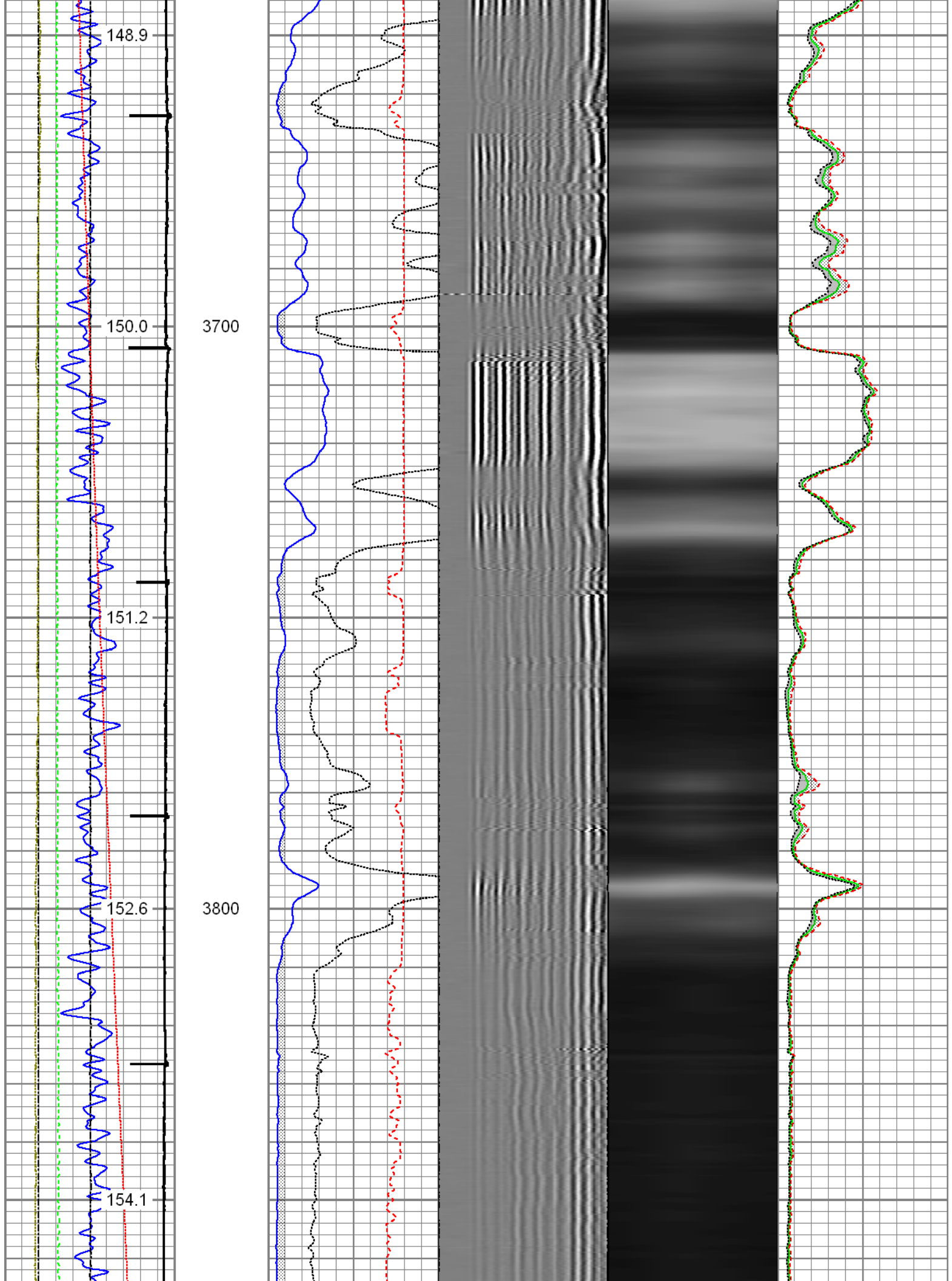


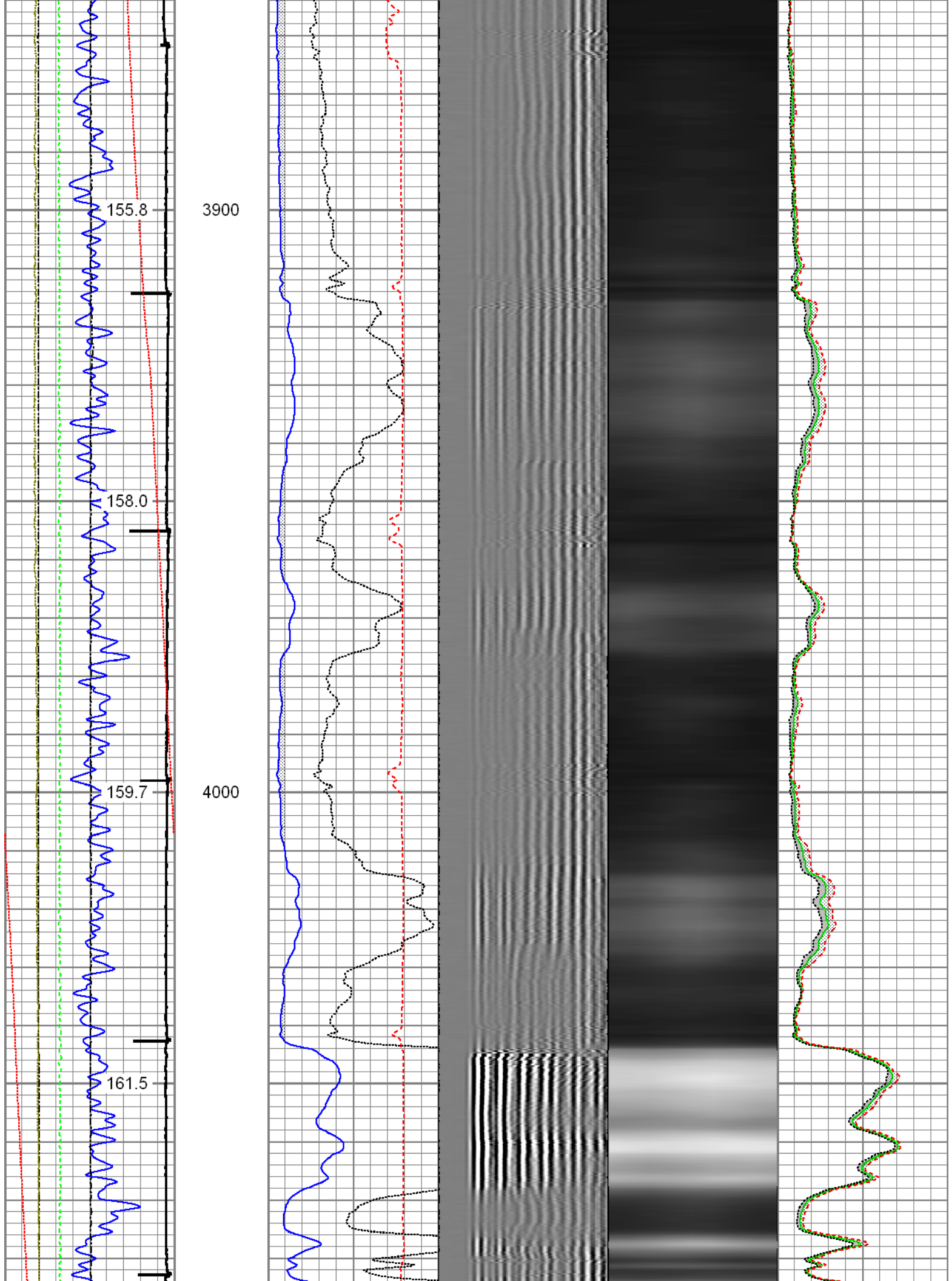


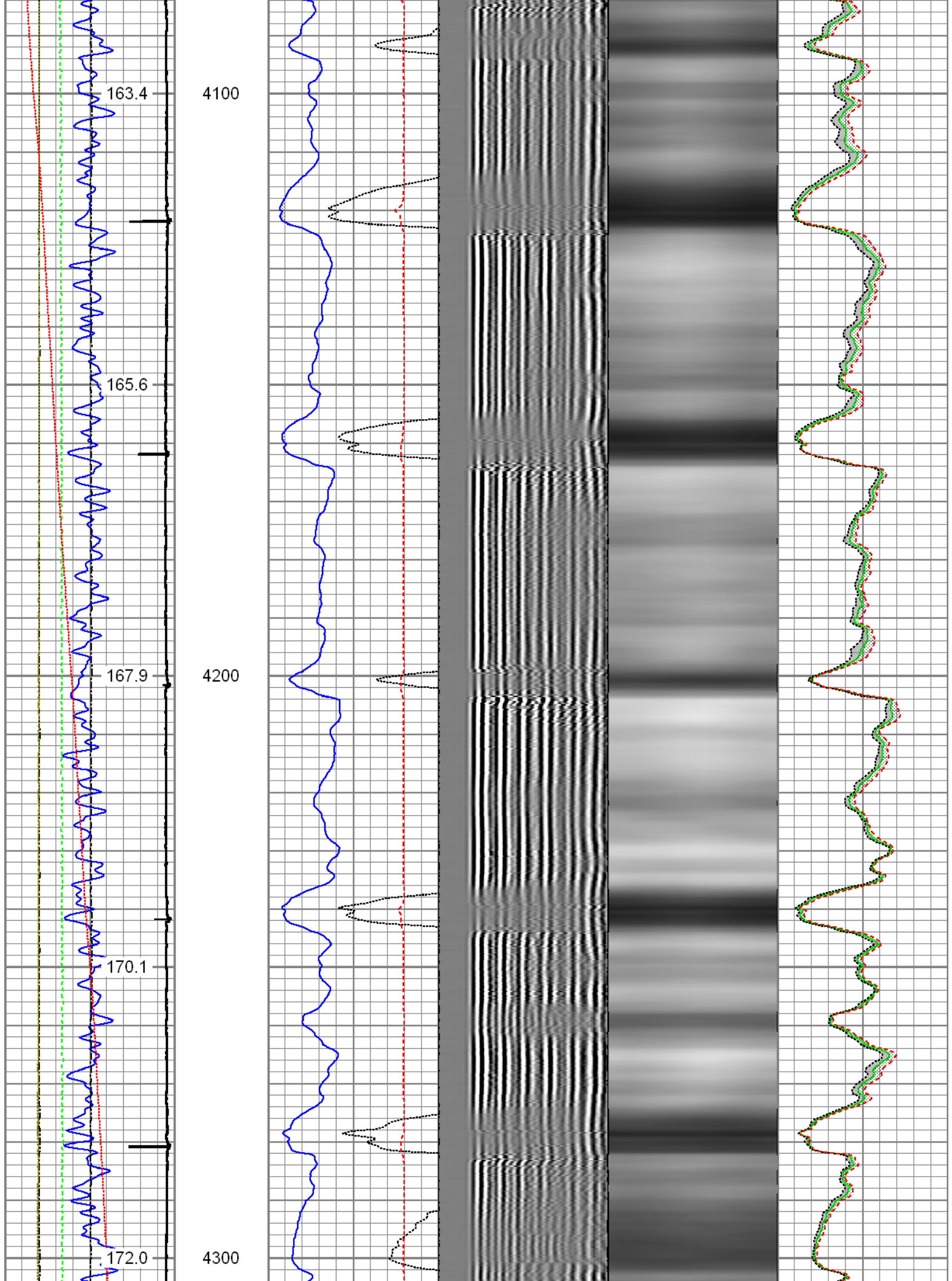


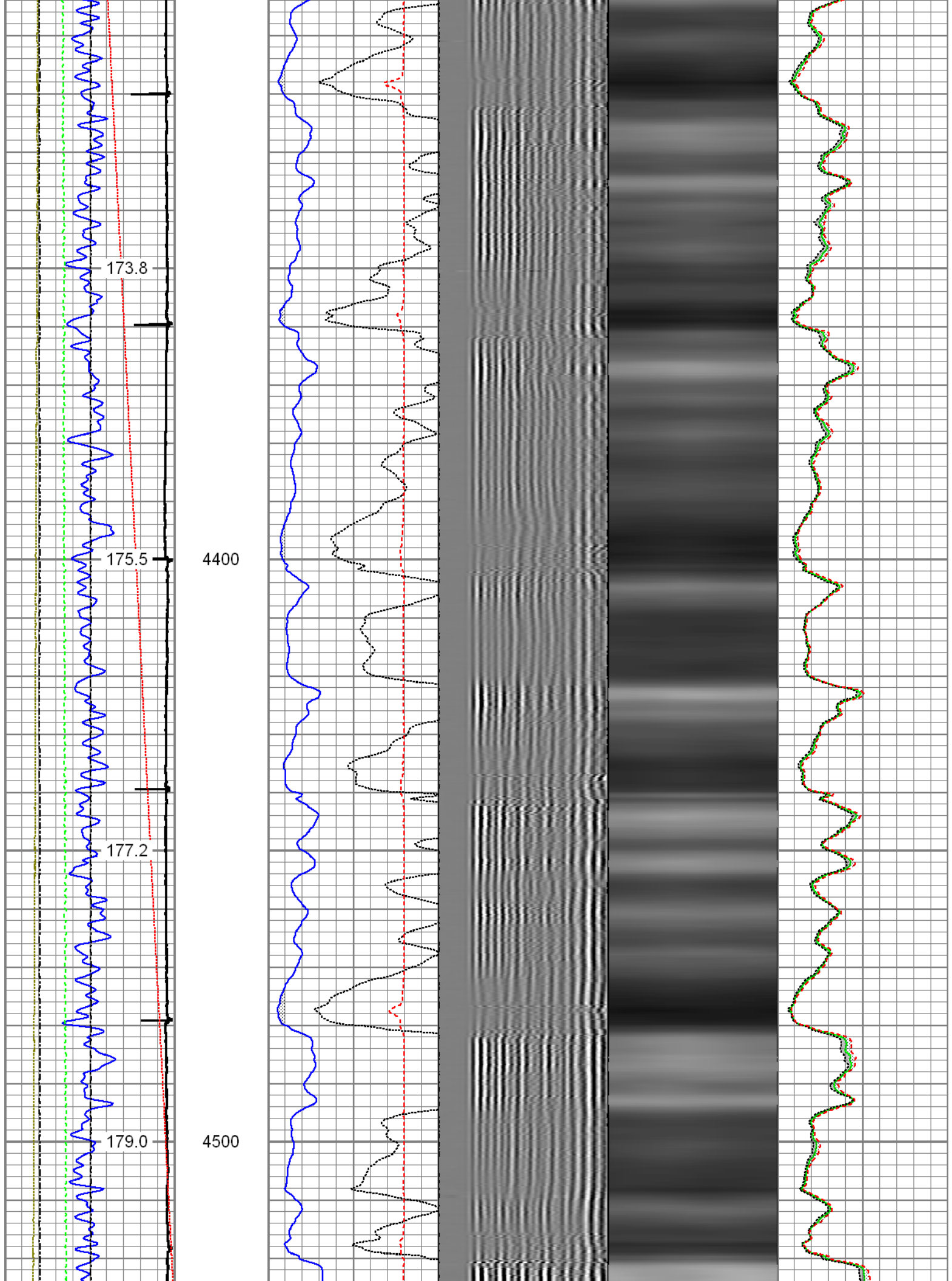


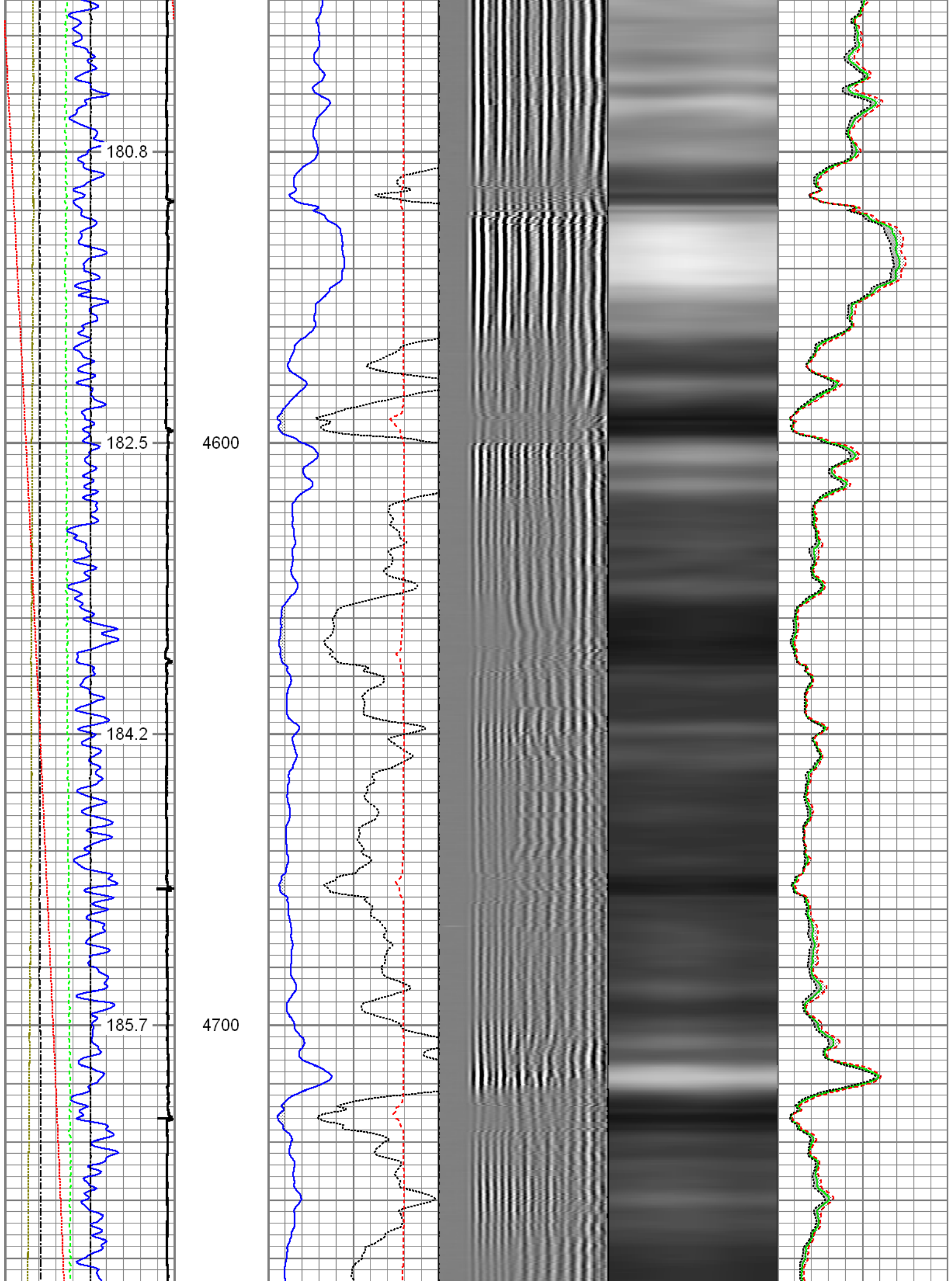


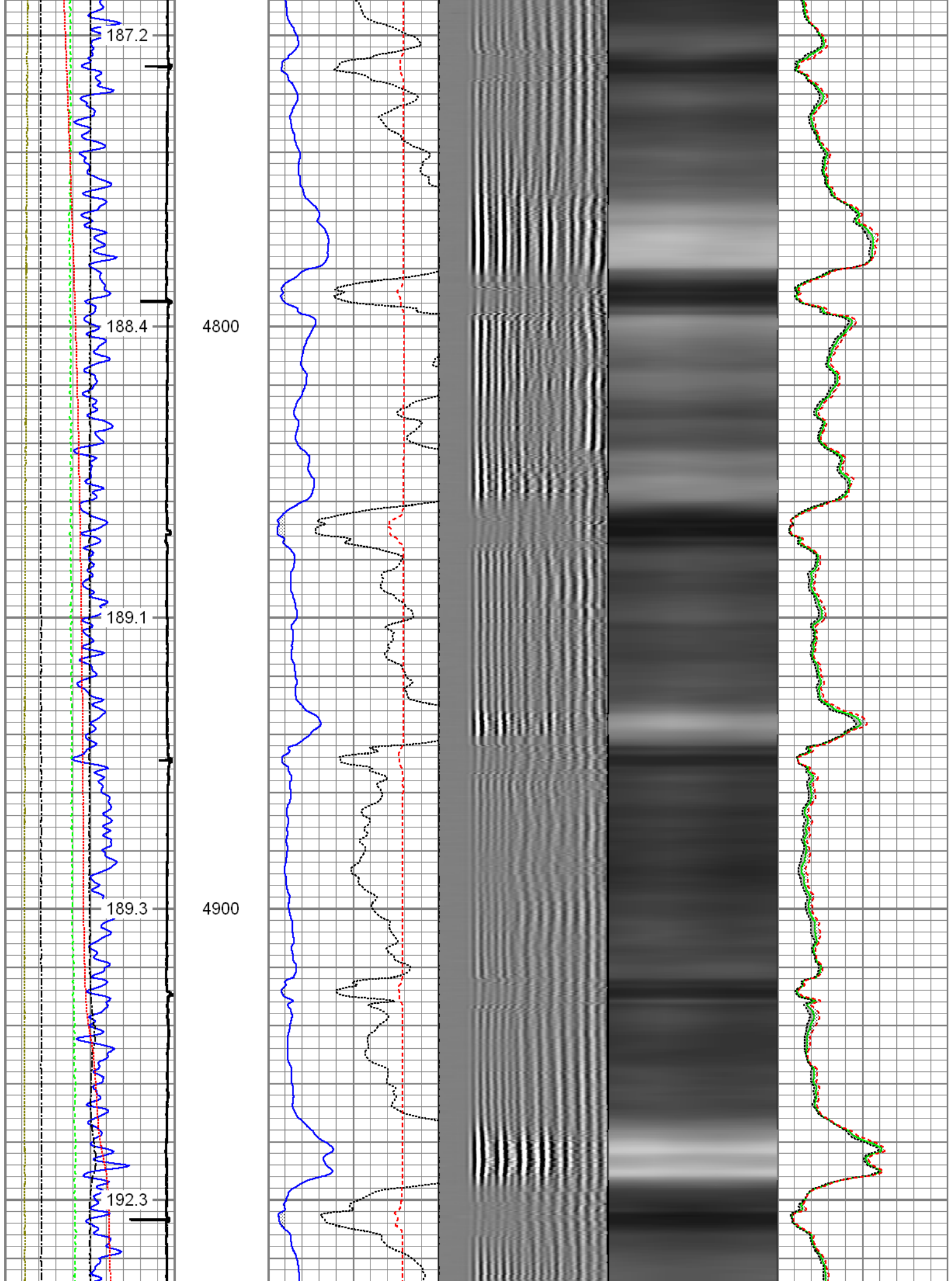


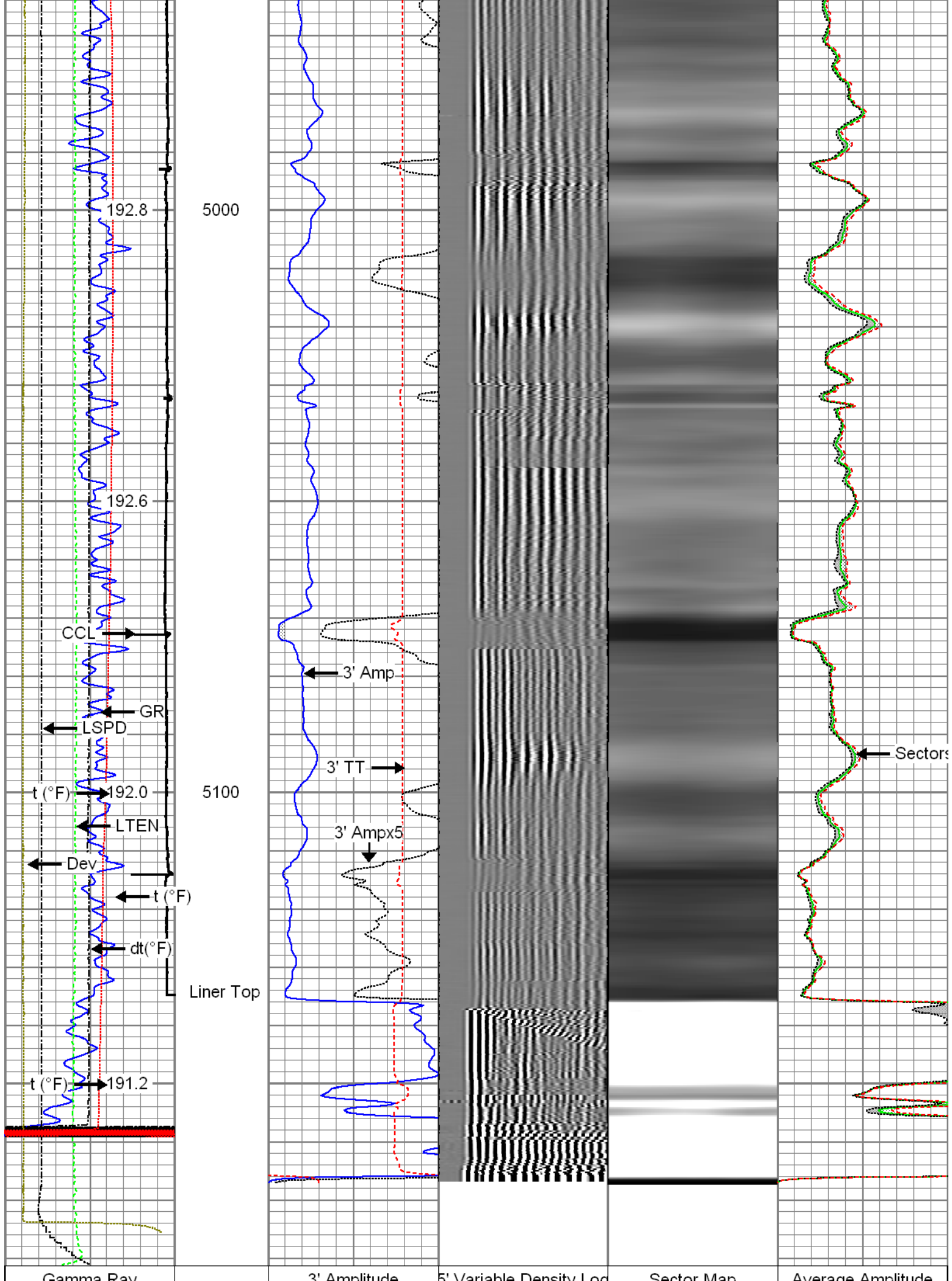






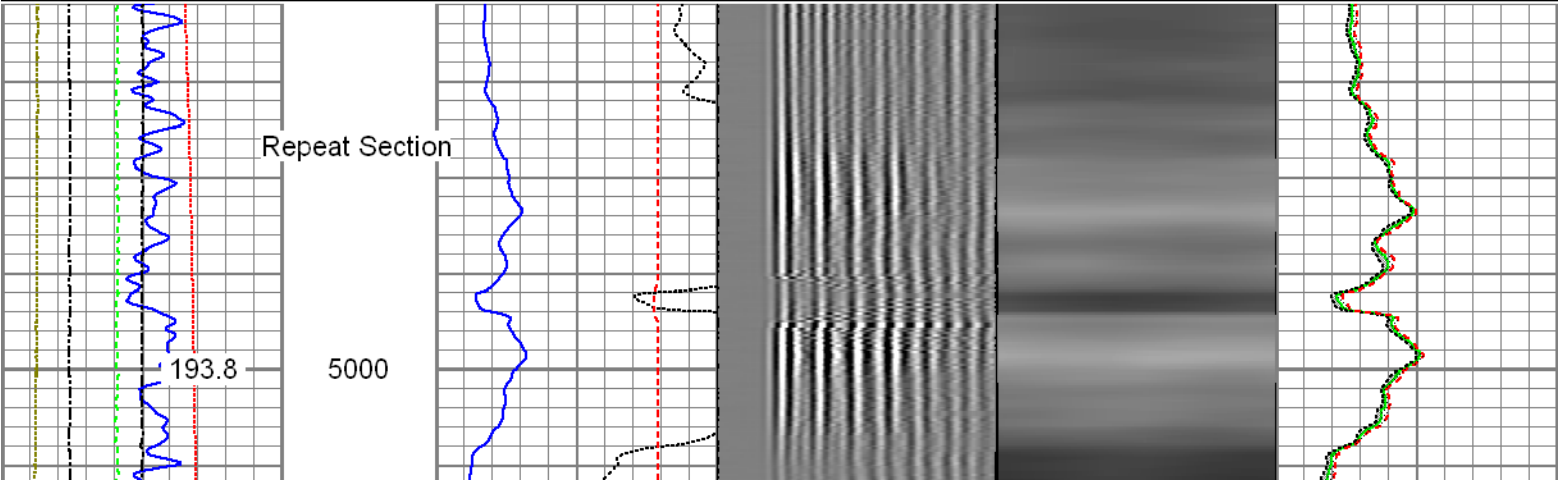


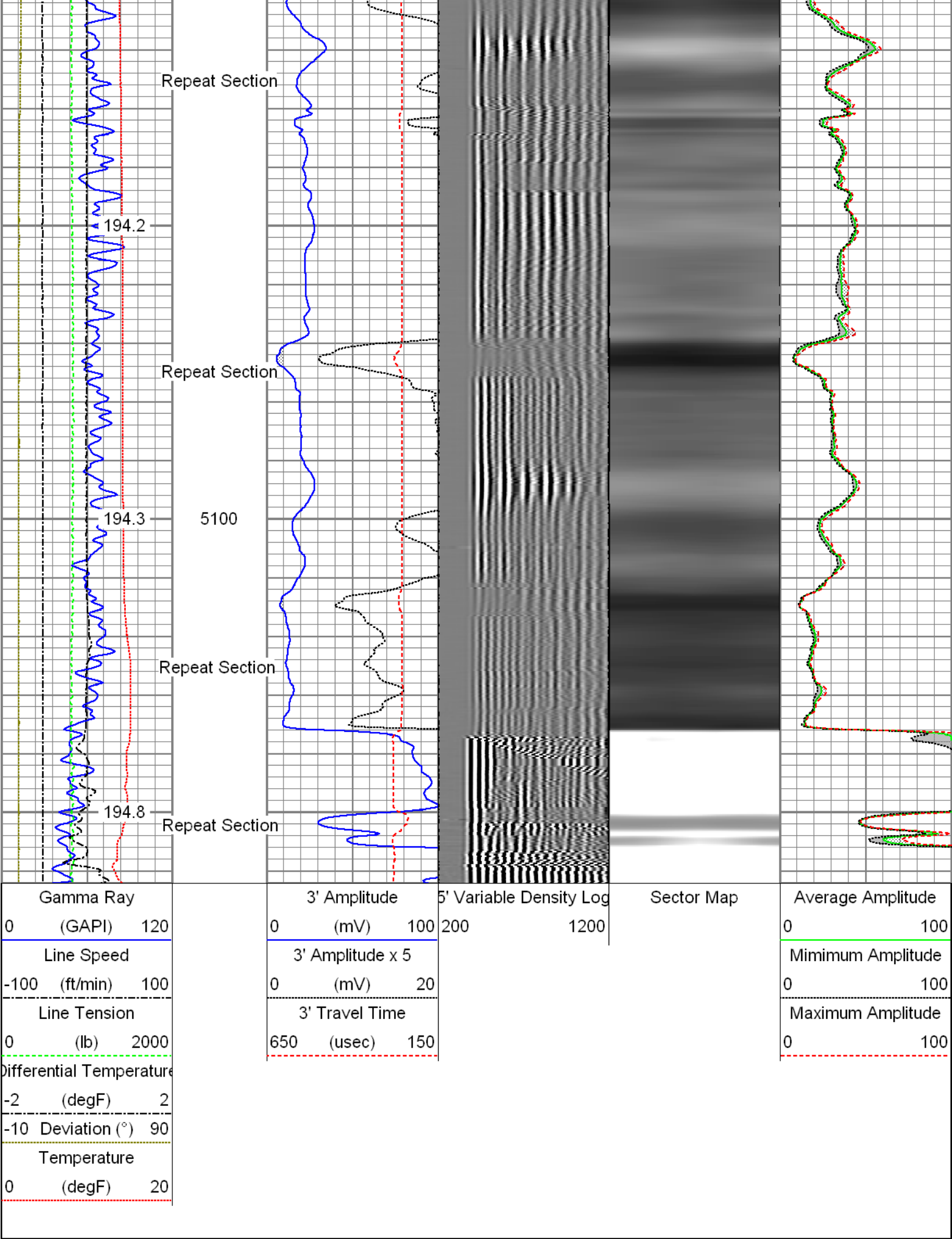




Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Minimum Amplitude
Line Speed	0 (mV) 20			0 100
-100 (ft/min) 100	3' Travel Time			Maximum Amplitude
Line Tension	650 (usec) 150			0 100
0 (lb) 2000				
Differential Temperature				
-2 (degF) 2				
-10 Deviation (°) 90				
Temperature				
0 (degF) 20				

<div>FMC Technologies</div>		Repeat Pass				
		Recorded with 1500 PSI Surface Induced Pressure				
Database File:		08-07-15_whiting_razor fed 30k-1908_mit_rbl.db				
Dataset Pathname:		pass2				
Presentation Format:		rbt4_mit				
Dataset Creation:		Fri Aug 07 12:16:35 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				Minimum 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
Differential Temperature						
-2 (degF) 2						
-10 Deviation (°) 90						
Temperature						
0 (degF) 20						





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

Database File: 08-07-15_whiting_razor fed 30k-1908_mit_rbl.db
 Dataset Pathname: pass4
 Dataset Creation: Fri Aug 07 12:25:43 2015 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 Aug 07 11:39:25 2015

Ring size:	4	5	6	7
(in)	Sens	Sens	Sens	
Finger 01:	1440	282.0	1722	291.0
Finger 02:	1506	260.0	1766	258.0
Finger 03:	1428	284.0	1712	289.0
Finger 04:	1446	286.0	1732	289.0
Finger 05:	1485	278.0	1763	277.0
Finger 06:	1414	287.0	1701	296.0
Finger 07:	1434	286.0	1720	291.0
Finger 08:	1430	282.0	1712	290.0
Finger 09:	1420	286.0	1706	295.0
Finger 10:	1433	275.0	1708	287.0
Finger 11:	1419	284.0	1703	295.0
Finger 12:	1367	287.0	1654	299.0
Finger 13:	1465	270.0	1735	275.0
Finger 14:	1401	274.0	1675	285.0
Finger 15:	1393	287.0	1680	294.0
Finger 16:	1392	282.0	1674	292.0
Finger 17:	1401	292.0	1693	297.0
Finger 18:	1343	281.0	1624	283.0
Finger 19:	1395	288.0	1683	289.0
Finger 20:	1399	287.0	1686	289.0
Finger 21:	1354	300.0	1654	302.0
Finger 22:	1375	280.0	1655	283.0
Finger 23:	1379	288.0	1667	288.0
Finger 24:	1407	289.0	1696	286.0
Finger 25:	1334	287.0	1621	281.0
Finger 26:	1322	291.0	1613	288.0
Finger 27:	1415	286.0	1701	284.0
Finger 28:	1404	296.0	1700	290.0
Finger 29:	1459	278.0	1737	274.0
Finger 30:	1369	294.0	1663	291.0
Finger 31:	1404	296.0	1700	297.0
Finger 32:	1465	281.0	1746	276.0
Finger 33:	1419	296.0	1715	300.0
Finger 34:	1428	291.0	1719	290.0
Finger 35:	1482	269.0	1751	265.0

Finger 36:	1468	277.0	1745	280.0	2025	294.0	2319
Finger 37:	1377	283.0	1660	277.0	1937	297.0	2234
Finger 38:	1518	259.0	1777	259.0	2036	272.0	2308
Finger 39:	1446	280.0	1726	281.0	2007	291.0	2298
Finger 40:	1414	294.0	1708	297.0	2005	307.0	2312

Segmented Cement Bond Log Calibration Report

Serial Number:	10013454
Tool Model:	UW_RBT_004
Calibration Casing Diameter:	7.000 in
Calibration Depth:	31.260 ft

Master Calibration, performed Fri Aug 07 11:40:39 2015:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	-0.001	0.695	0.800	62.165	88.155	0.863
5FT	-0.003	0.806	0.800	62.165	75.824	1.030
S1	-0.001	0.686	0.000	100.000	145.563	0.082
S2	-0.002	0.701	0.000	100.000	142.094	0.347
S3	-0.002	0.715	0.000	100.000	139.560	0.267
S4	-0.002	0.719	0.000	100.000	138.702	0.339
S5	-0.001	0.710	0.000	100.000	140.561	0.172
S6	-0.002	0.695	0.000	100.000	143.305	0.350
S7	-0.001	0.680	0.000	100.000	146.818	0.179
S8	-0.001	0.678	0.000	100.000	147.225	0.176

Temperature Calibration Report

Serial Number:	10025100
Tool Model:	UW_PRT_016
Performed:	Wed Feb 11 13:47:59 2015

Point #	Reading	Reference
1	13249.00 cps	68.00 degF
2	18454.00 cps	104.00 degF
3	29735.00 cps	176.00 degF
4	41457.00 cps	248.00 degF
5	52851.00 cps	320.00 degF
6	59128.00 cps	356.00 degF
7	cps	degF
8	cps	degF
9	cps	degF
10	cps	degF

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 Fed 30K-1908
Field	Wildcat
County	Weld
State	Colorado