



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	Kerr-McGee Oil & Gas Onshore, L.P.				
Well	Powers 13N-22HZ				
Field	Wattenberg				
County	Weld				
State	Colorado				
Company		Kerr-McGee Oil & Gas Onshore, L.P.			
Well		Powers 13N-22HZ			
Field		Wattenberg			
County		Weld			
State		Colorado			
Location:		API # : 05-123-41904			
SEC 22		TWP 2N		RGE 65W	
Permanent Datum		Ground Level		Elevation 4885'	
Log Measured From		Kelly Bushing		20 FT	
Drilling Measured From		Kelly Bushing			
		Elevation		K.B. 4905'	
				D.F. 4904'	
				G.L. 4885'	

Date	08-DEC-2015
Run Number	Two
Depth Driller	12765 FT
Depth Logger	7366 FT
Bottom Logged Interval	7361 FT
Top Log Interval	Surface
Open Hole Size	7.875"
Type Fluid	Water
Density / Viscosity	8.34 lbm/gal
Max. Recorded Temp.	239°F
Estimated Cement Top	Surface
Time Well Ready	ROA
Time Logger on Bottom	0930
Equipment Number	HD-0324
Location	Fort Lupton, CO
Recorded By	J. Amidei
Witnessed By	Mario Torres

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 8RD LTC	Surface	1881 FT		
Intermediate #1	5 1/2	17	P-110, HCP-110	Surface	12754 FT		
Intermediate #2							
Liner							

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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 Marker Joint at 6613 FT
Adjusted Log +16 FT to correlate with Marker Joint
Log ran from as deep as possible to surface
Recorded with 2800 PSI surface induced pressure

Thank you for choosing FMC Technologies Surface Integrated Services.



Main Pass

Recorded With 2800 PSI Surface Induced Pressure

Database File: c:\warrior\data\0512341904_anadarko_powers 13n-22hz_12-08-15_rb\0512341904_anadarko_powe

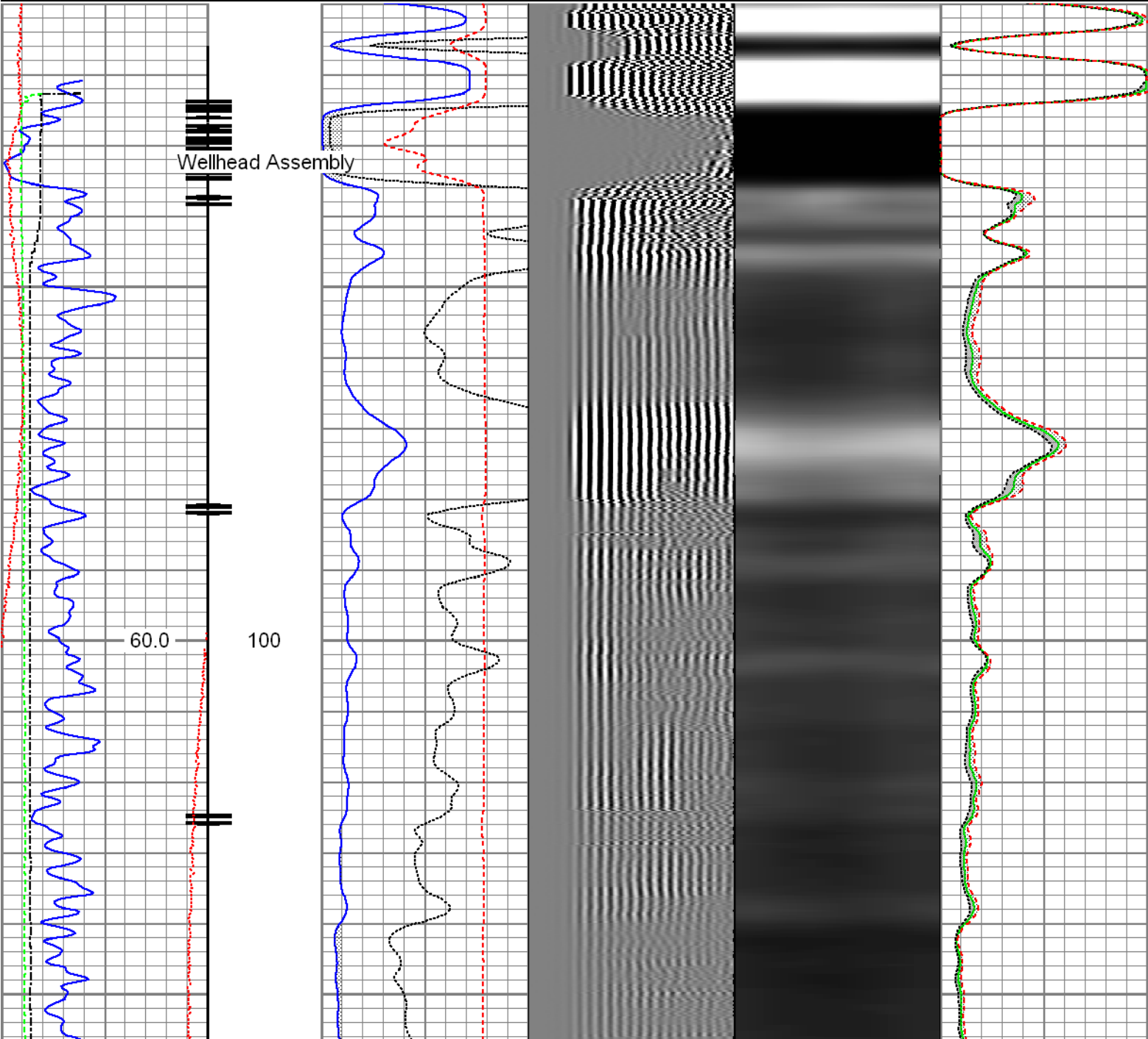
Dataset Pathname: pass5.3

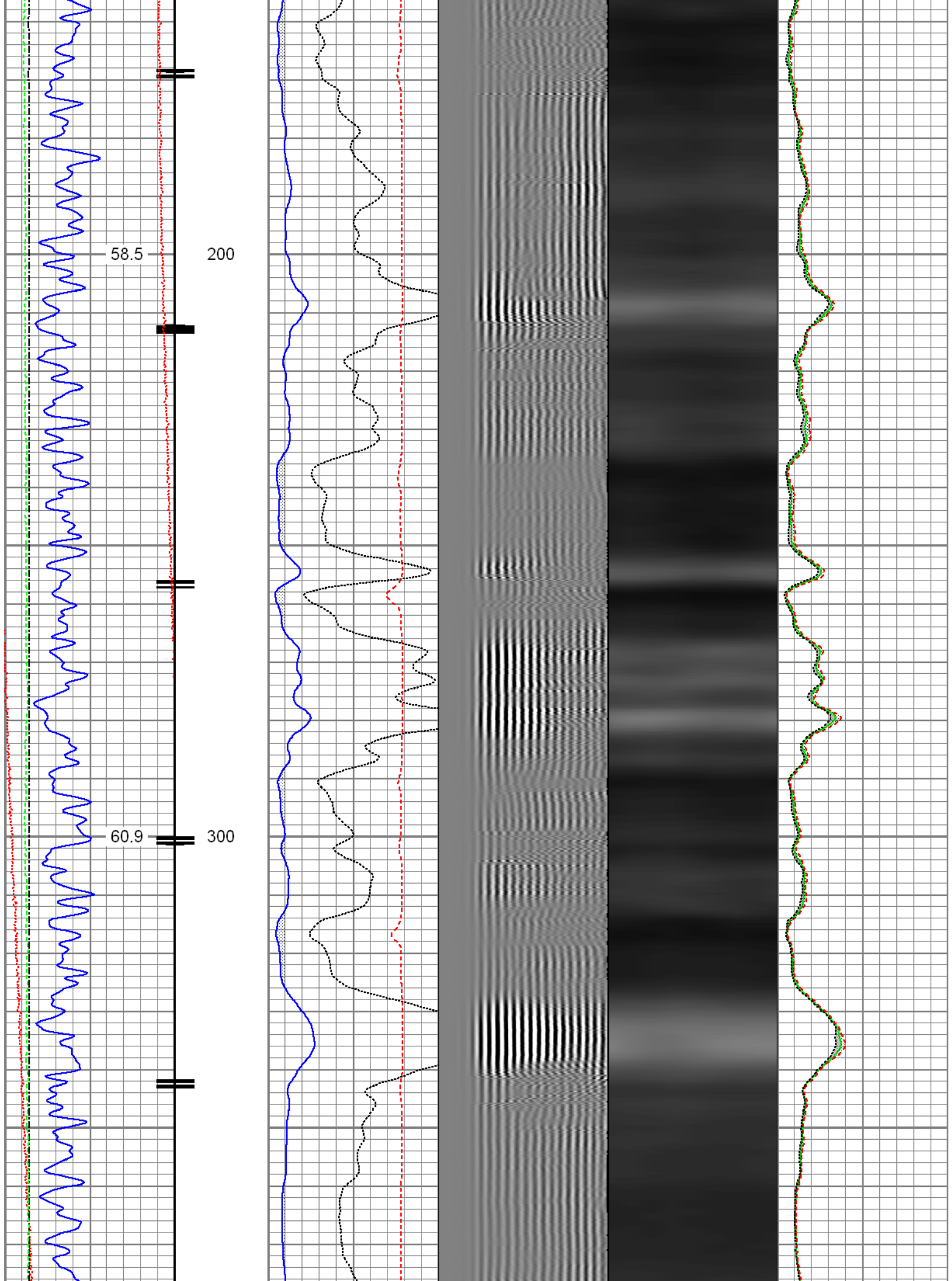
Presentation Format: radii

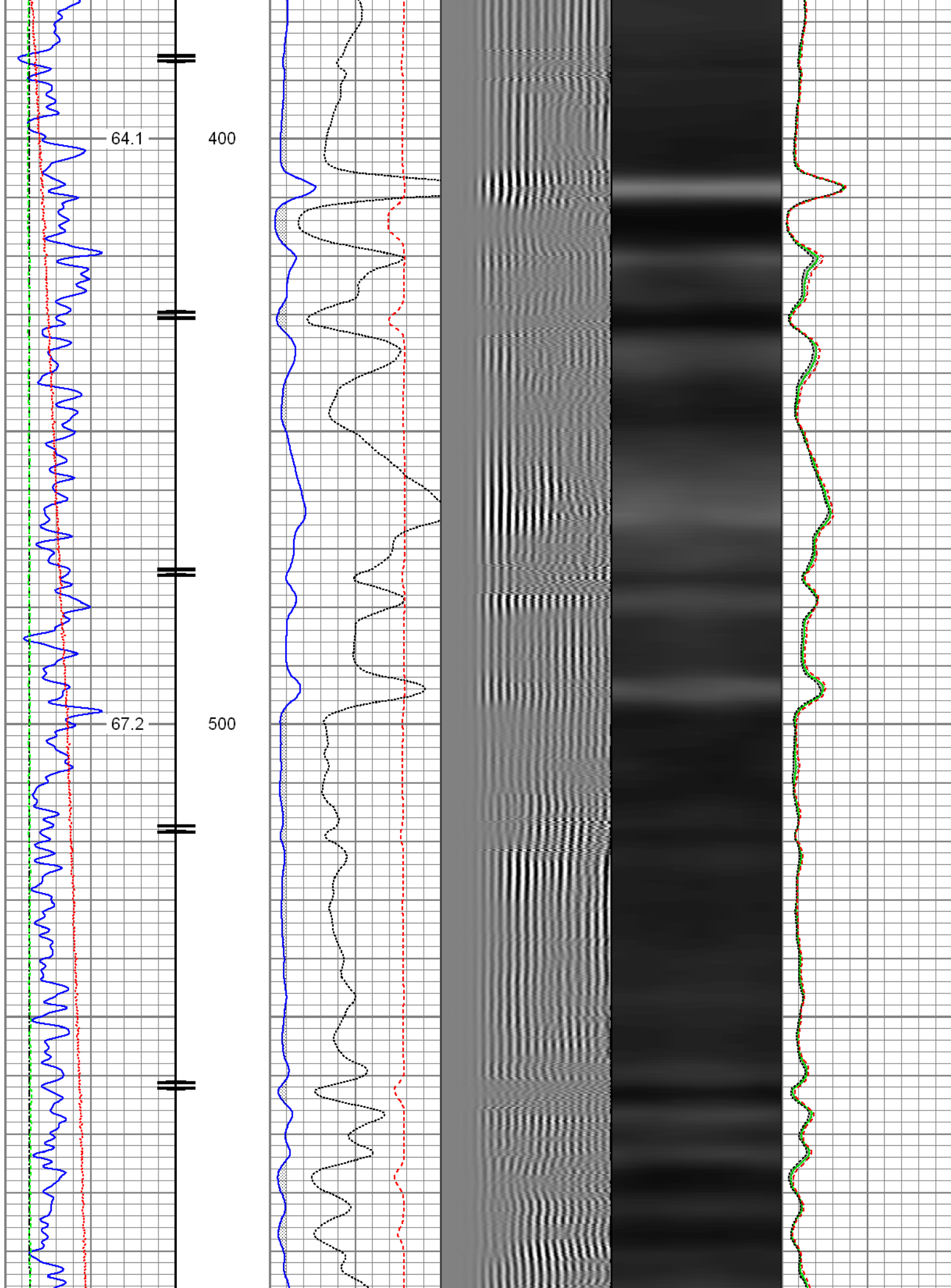
Dataset Creation: Wed Dec 09 10:38:39 2015 by Calc SCH 120430

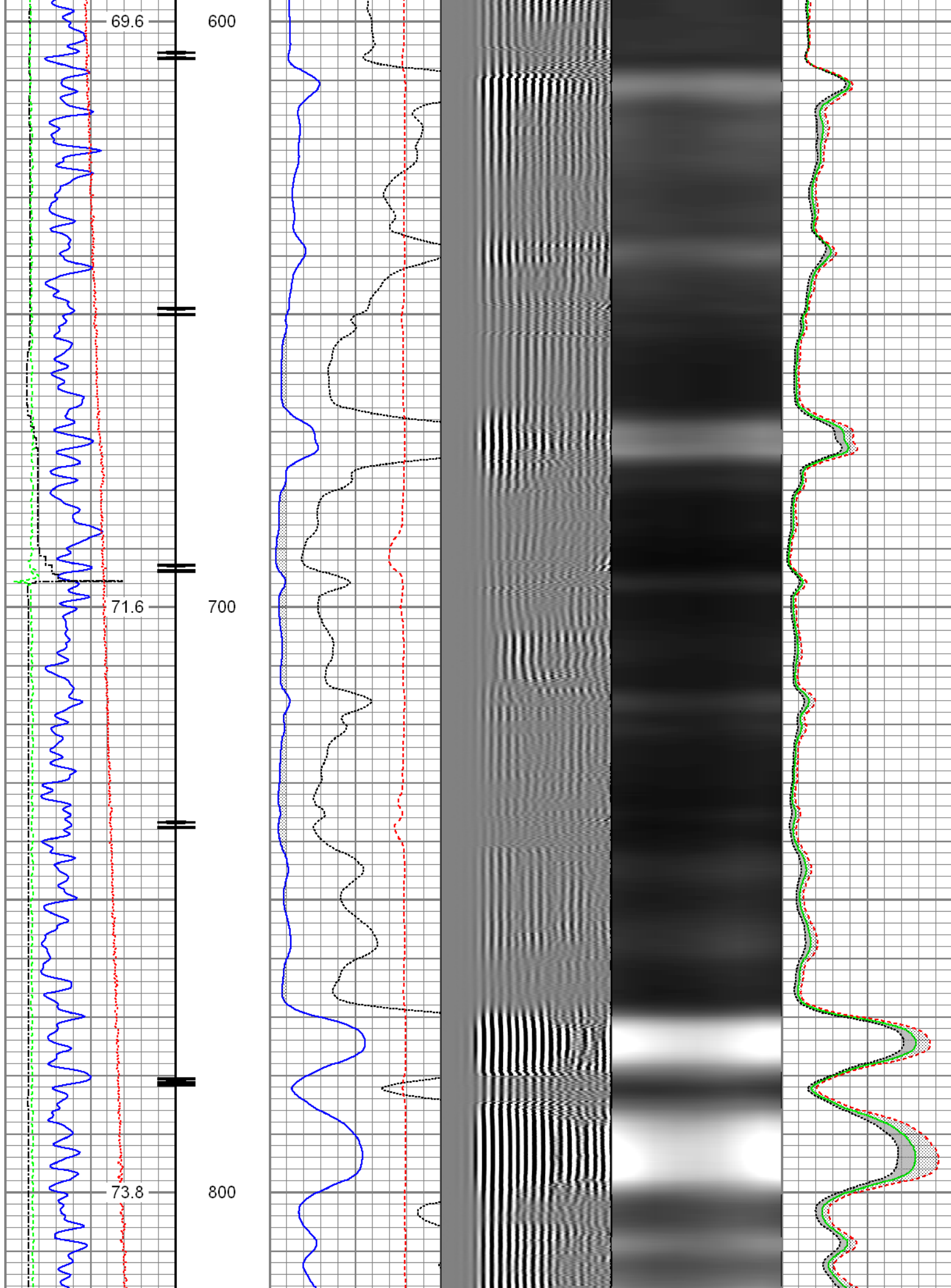
Charted by: Depth in Feet scaled 1:240

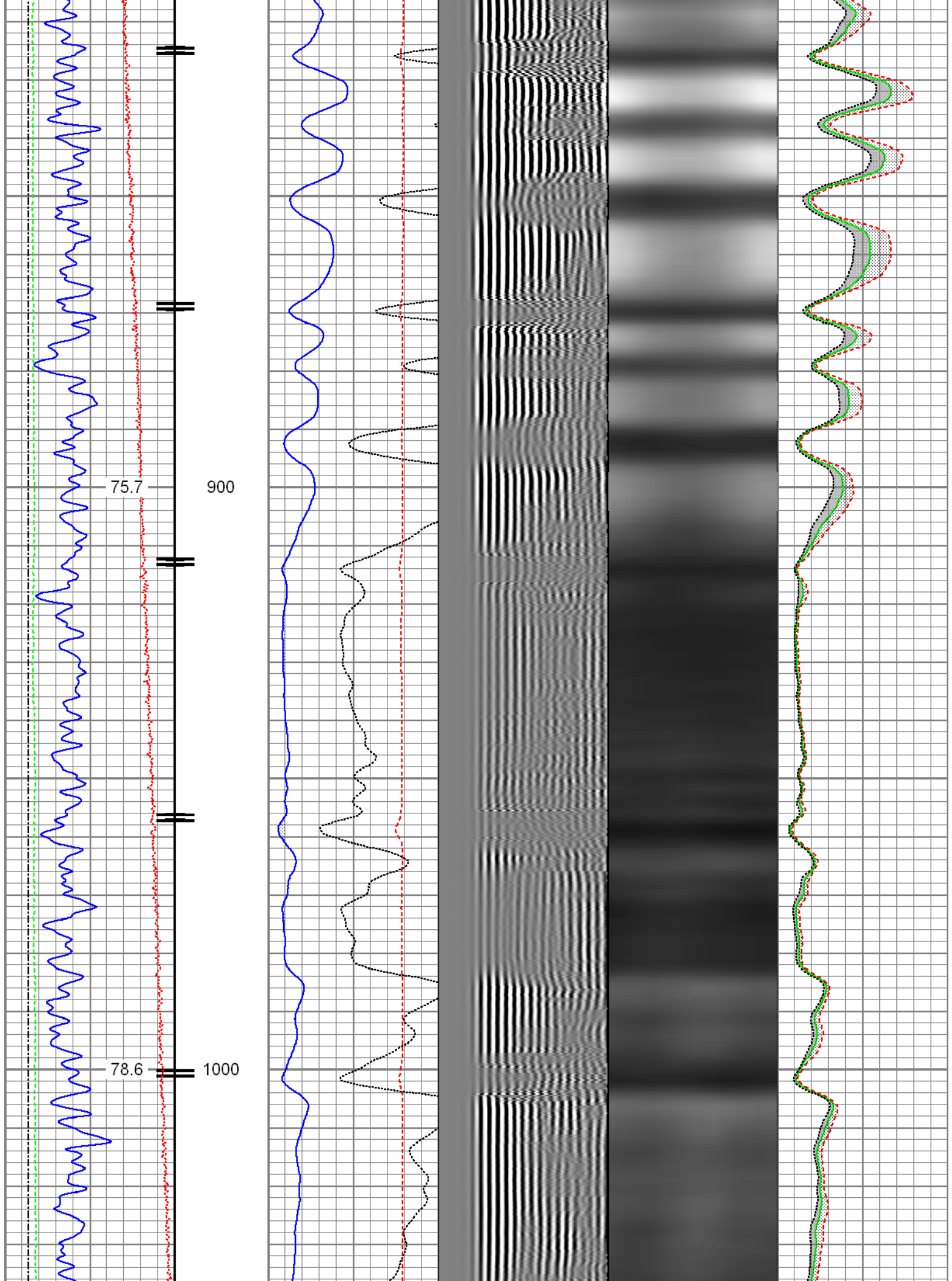
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Minimum Amplitude
Temperature	0 (mV) 20			0 100
0 (degF) 20	3' Travel Time			Maximum Amplitude
Line Speed	650 (usec) 150			0 100
-150 (ft/min) 150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

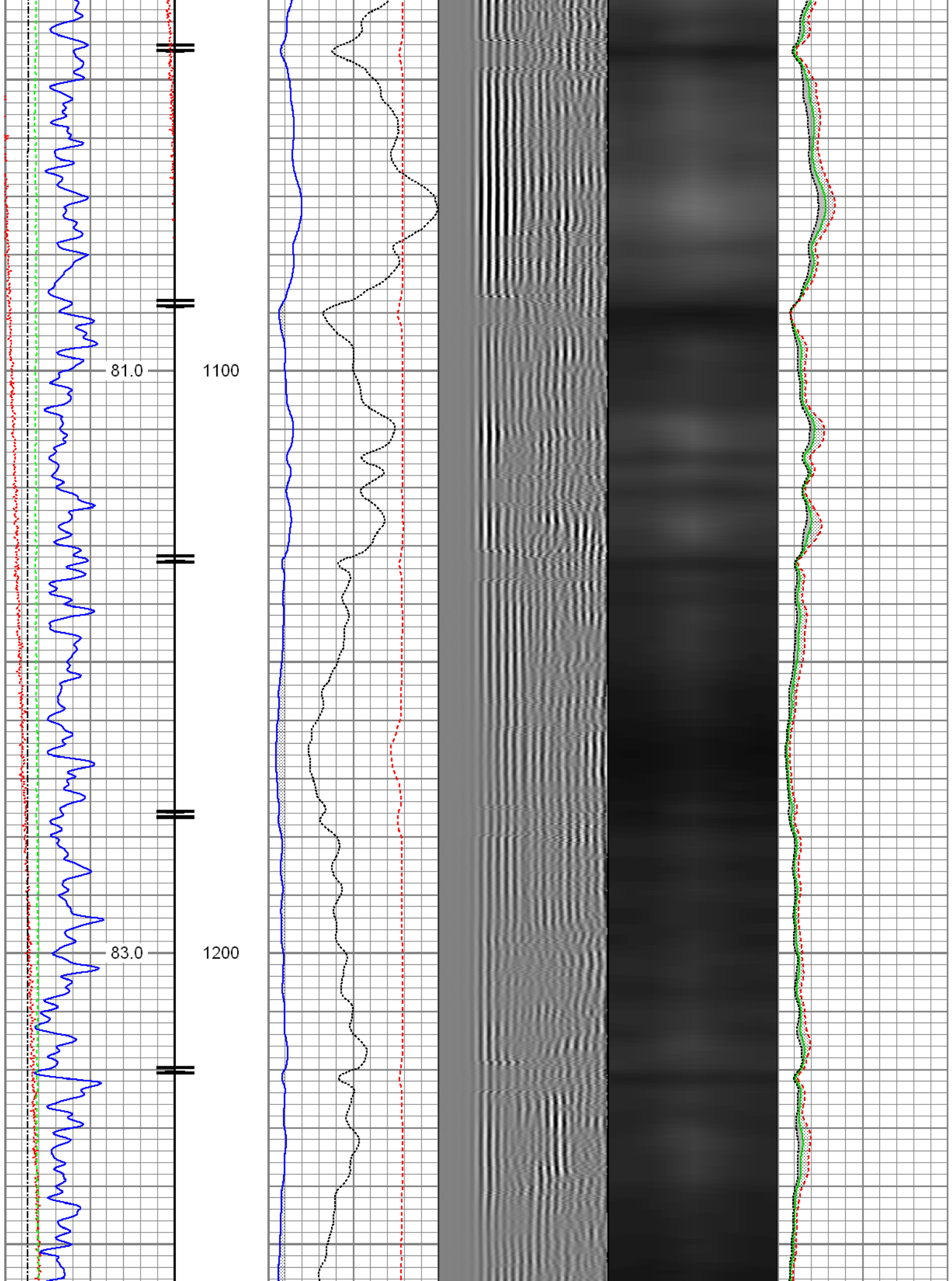


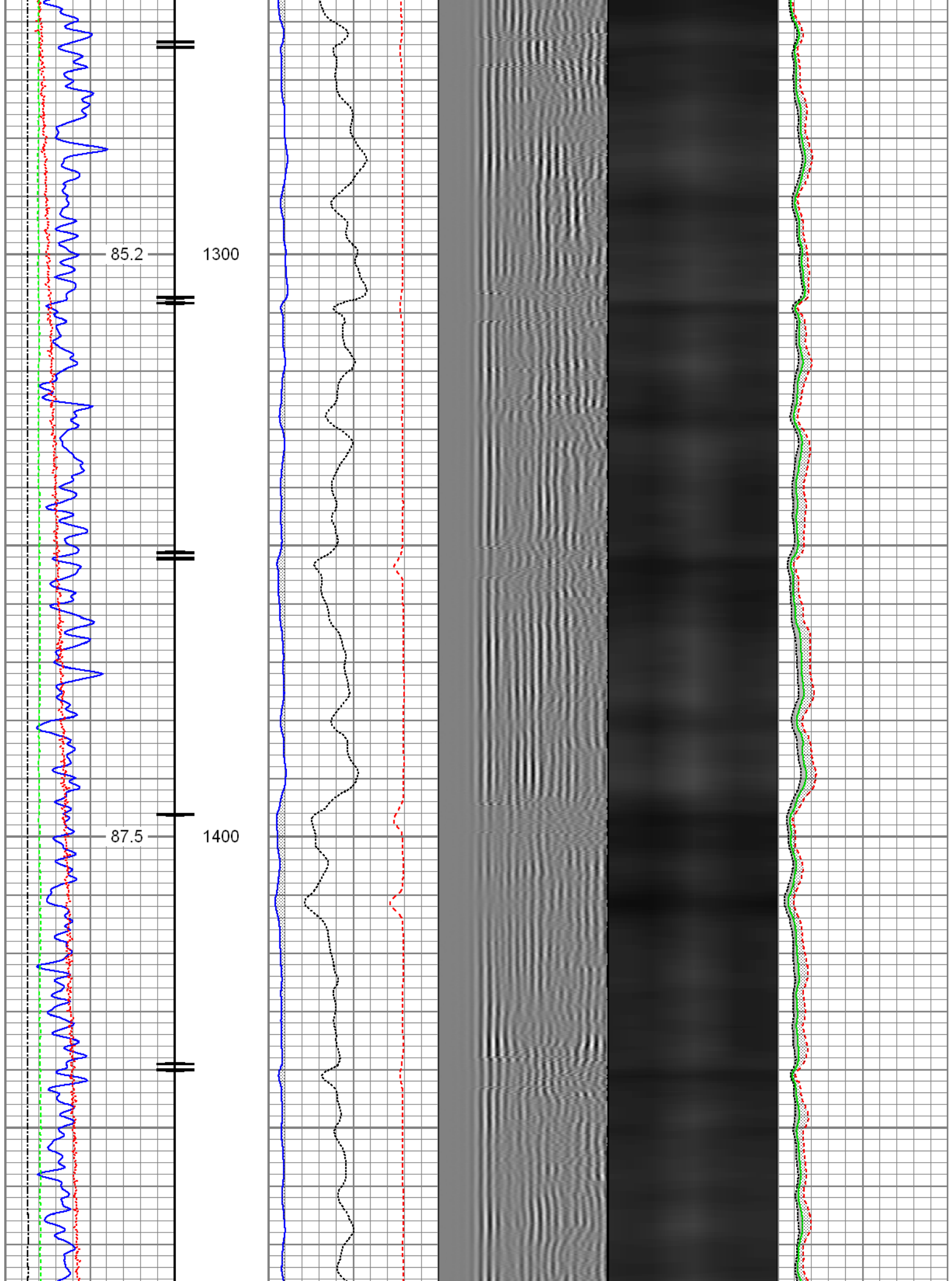


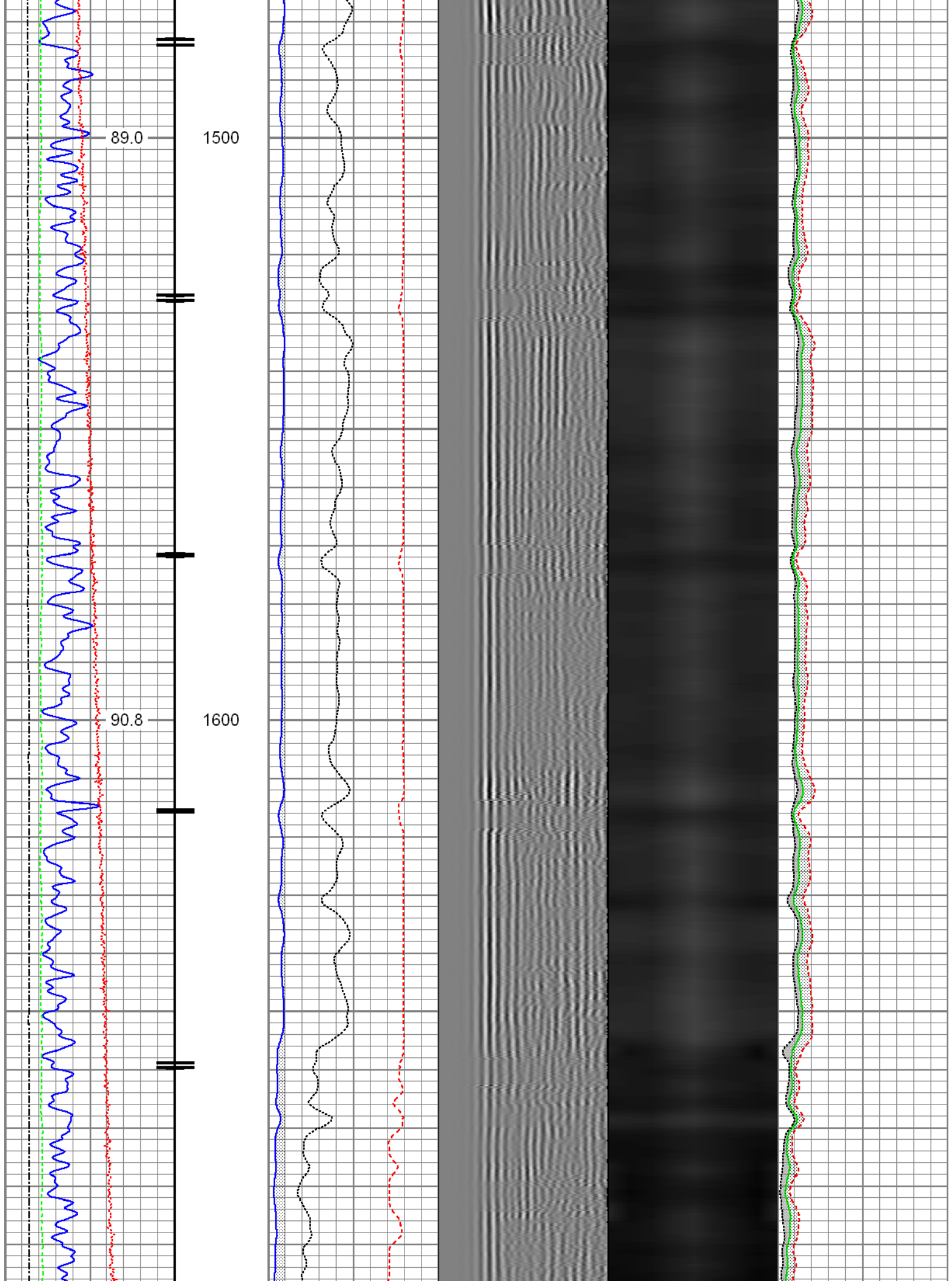


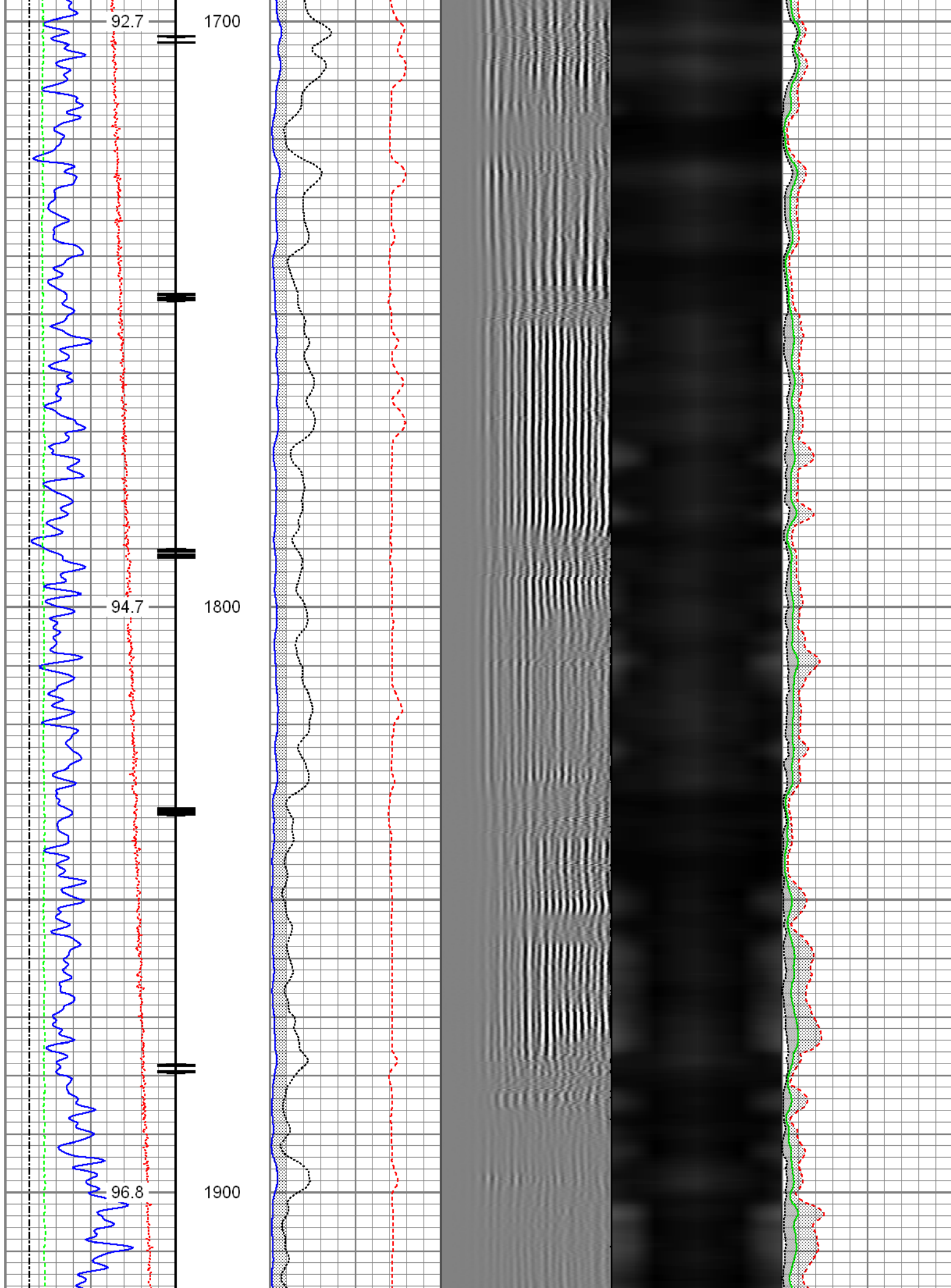


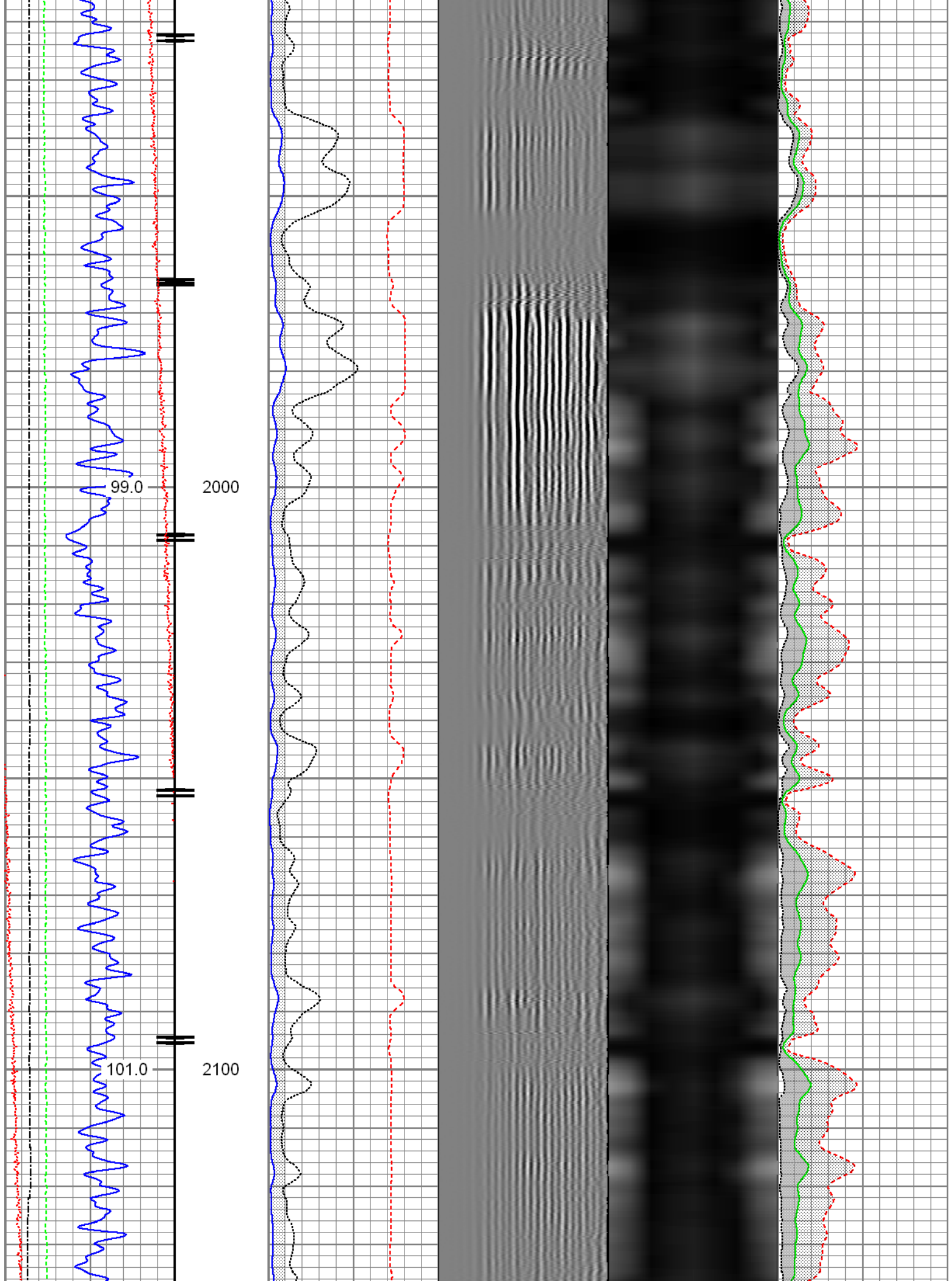


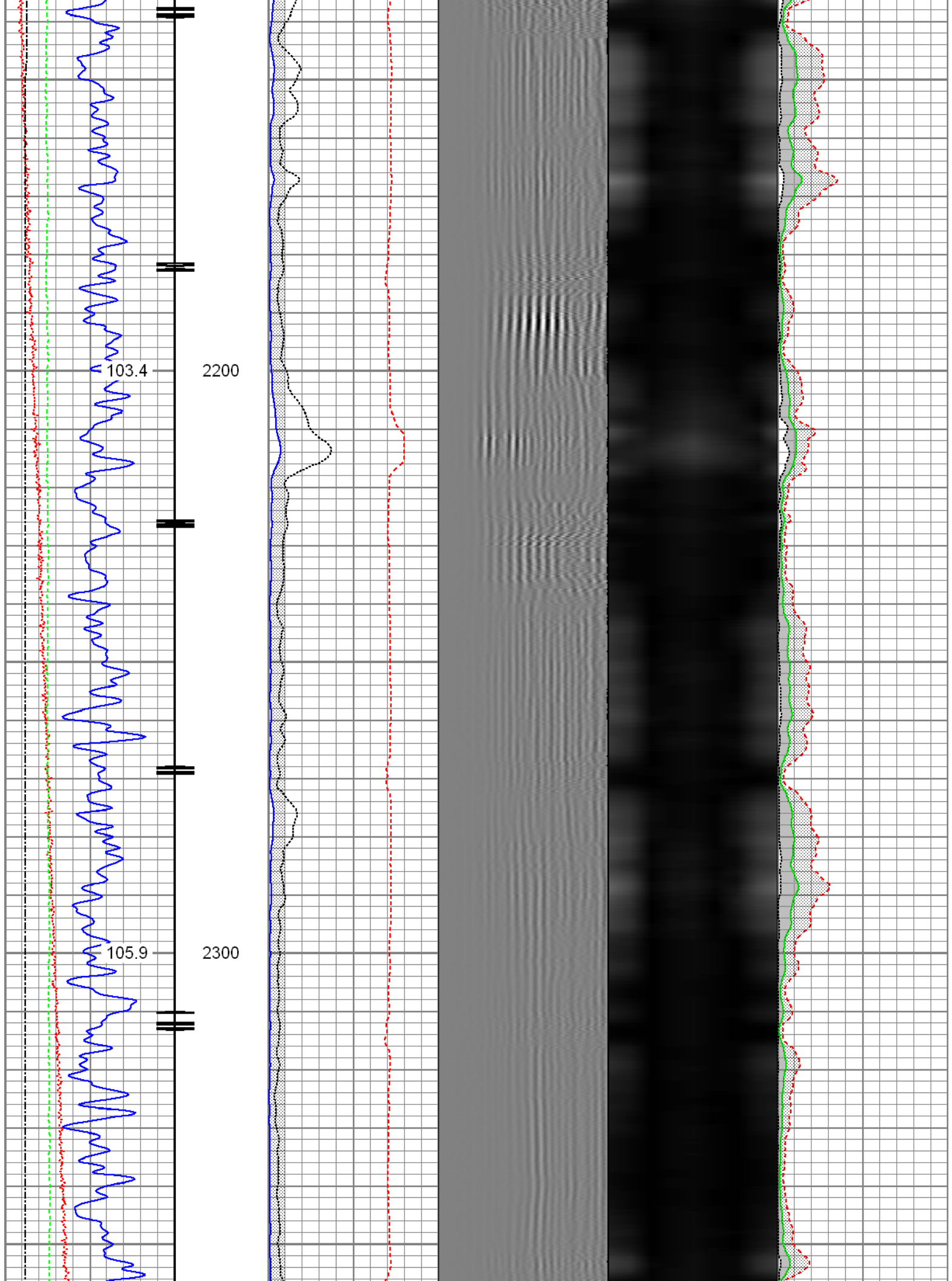


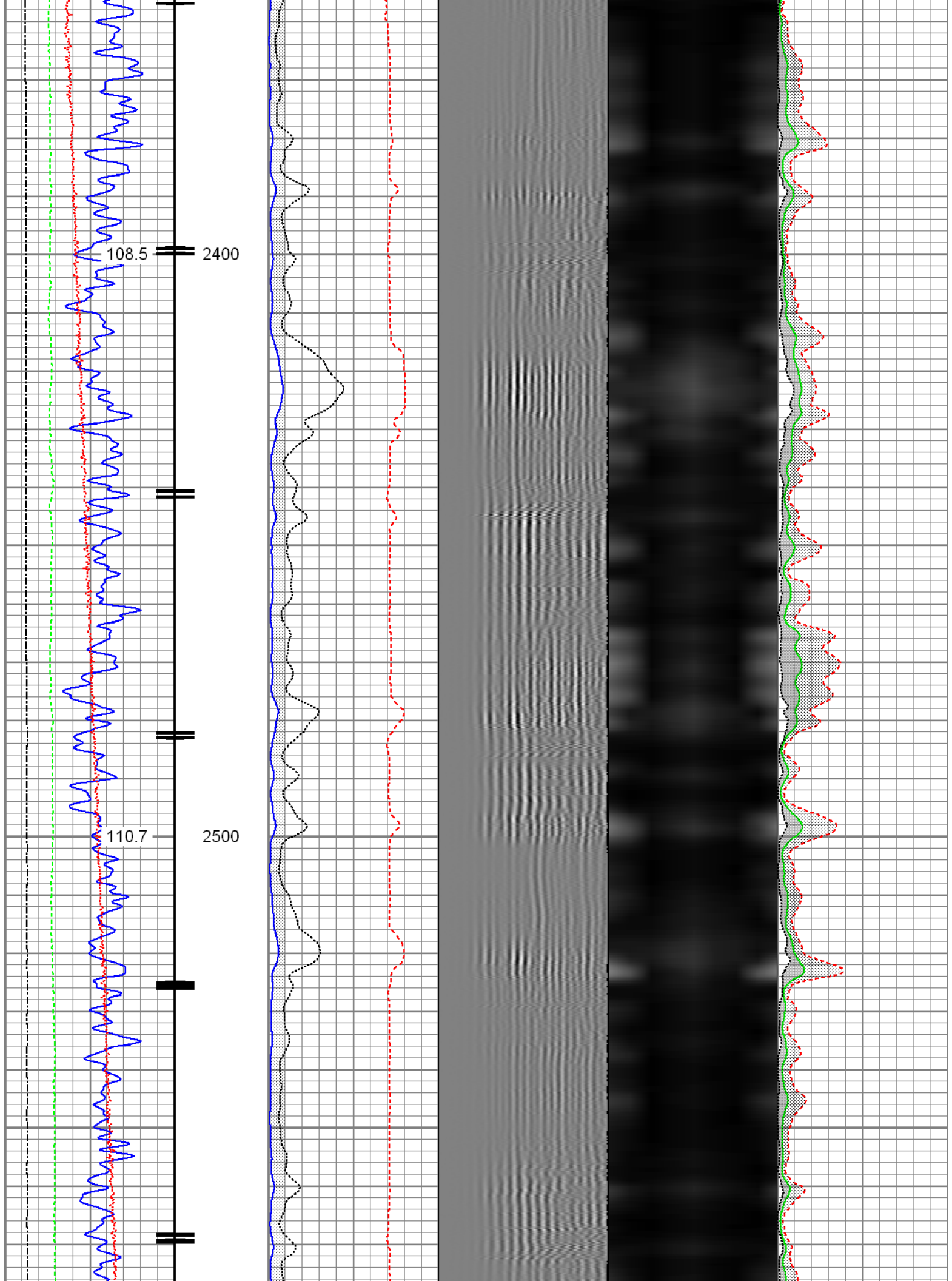


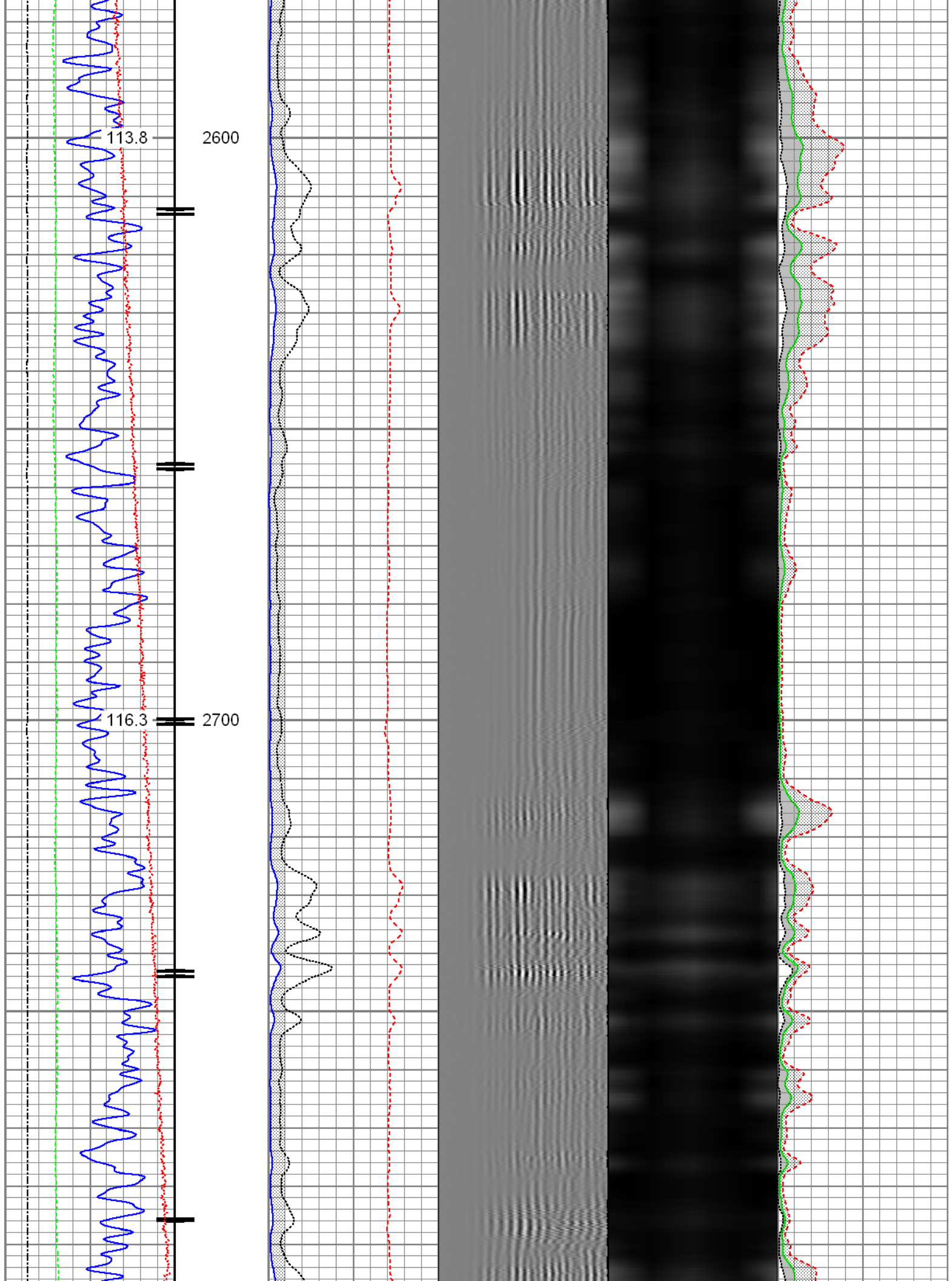


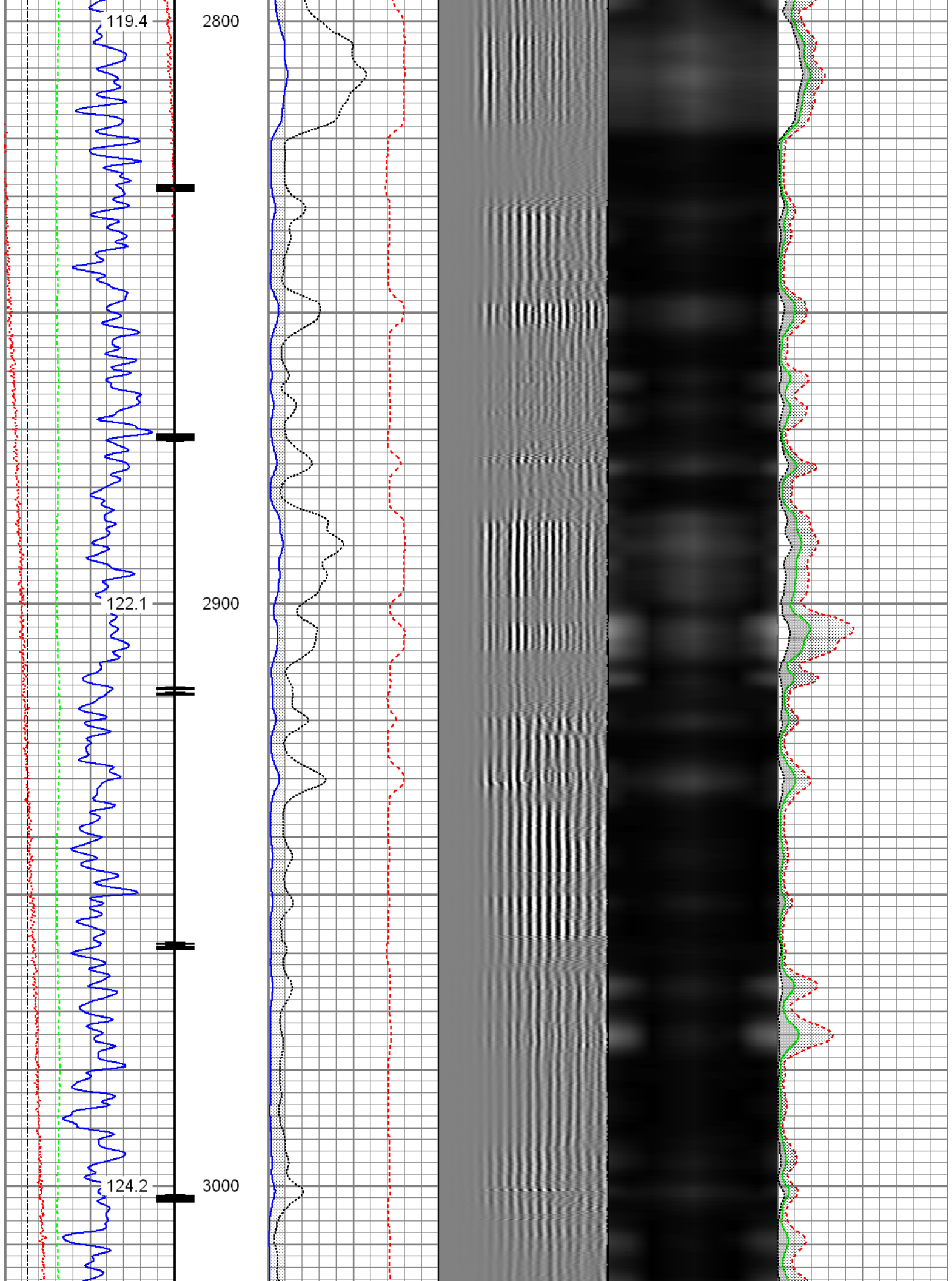


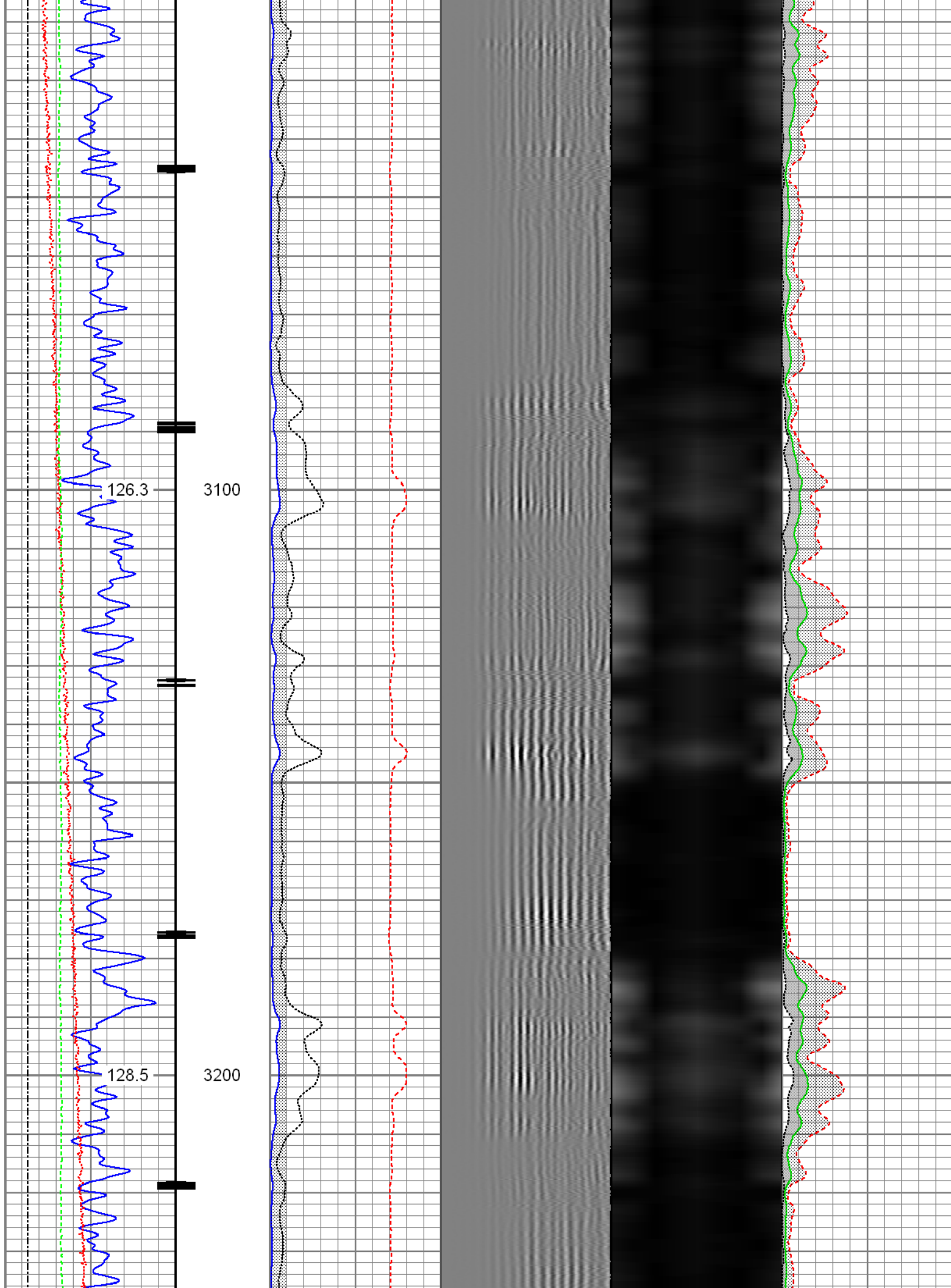


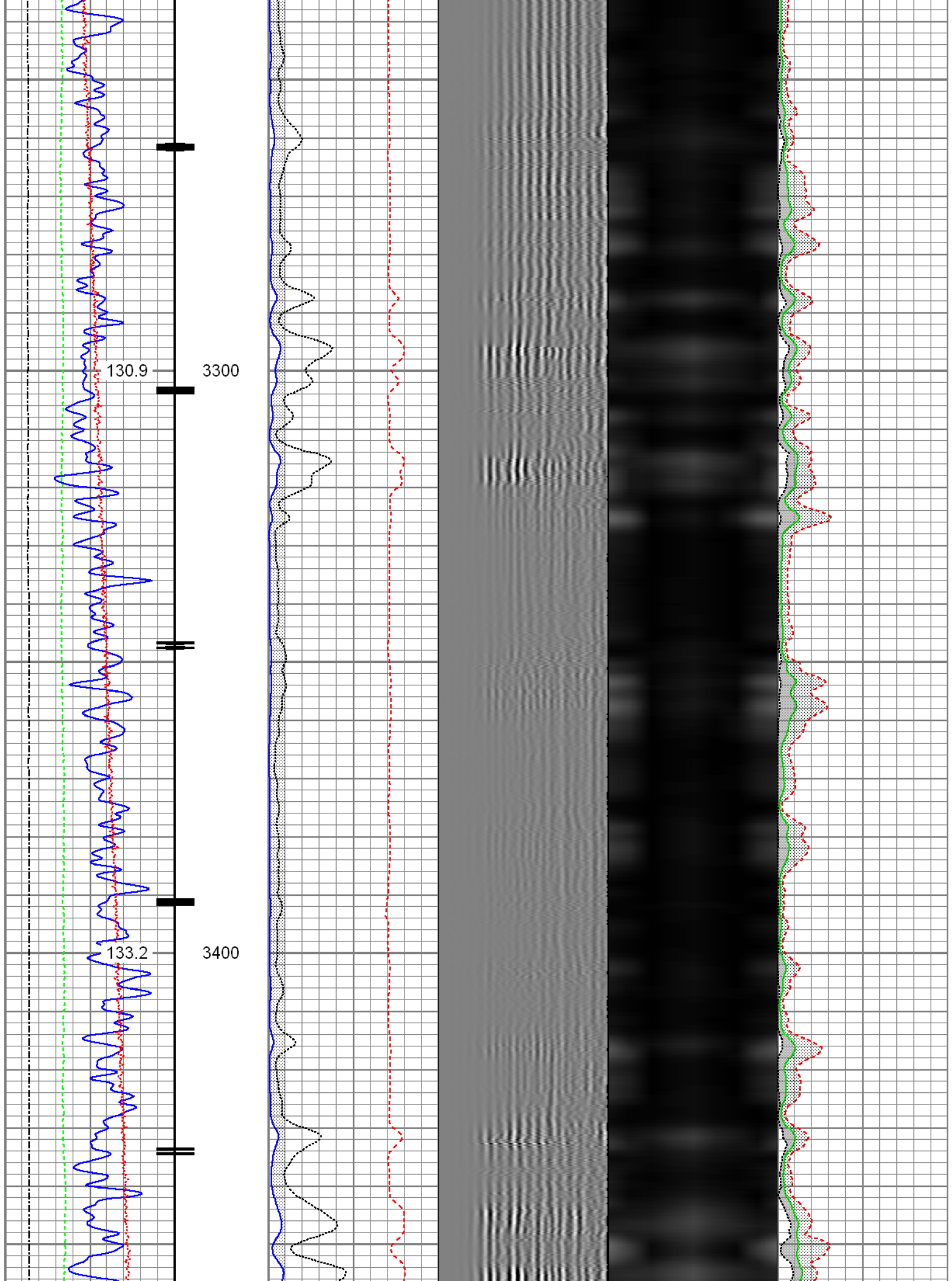


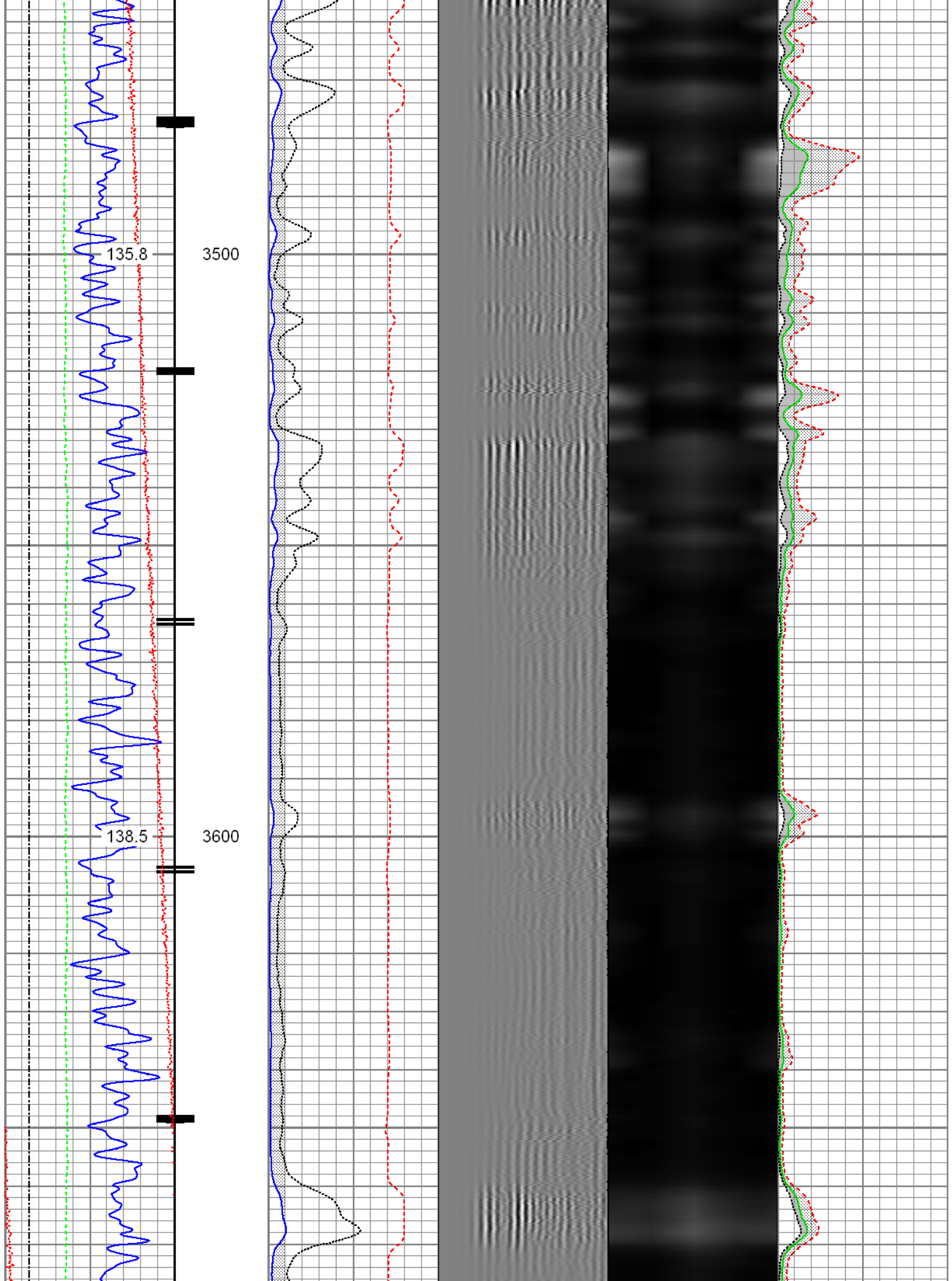


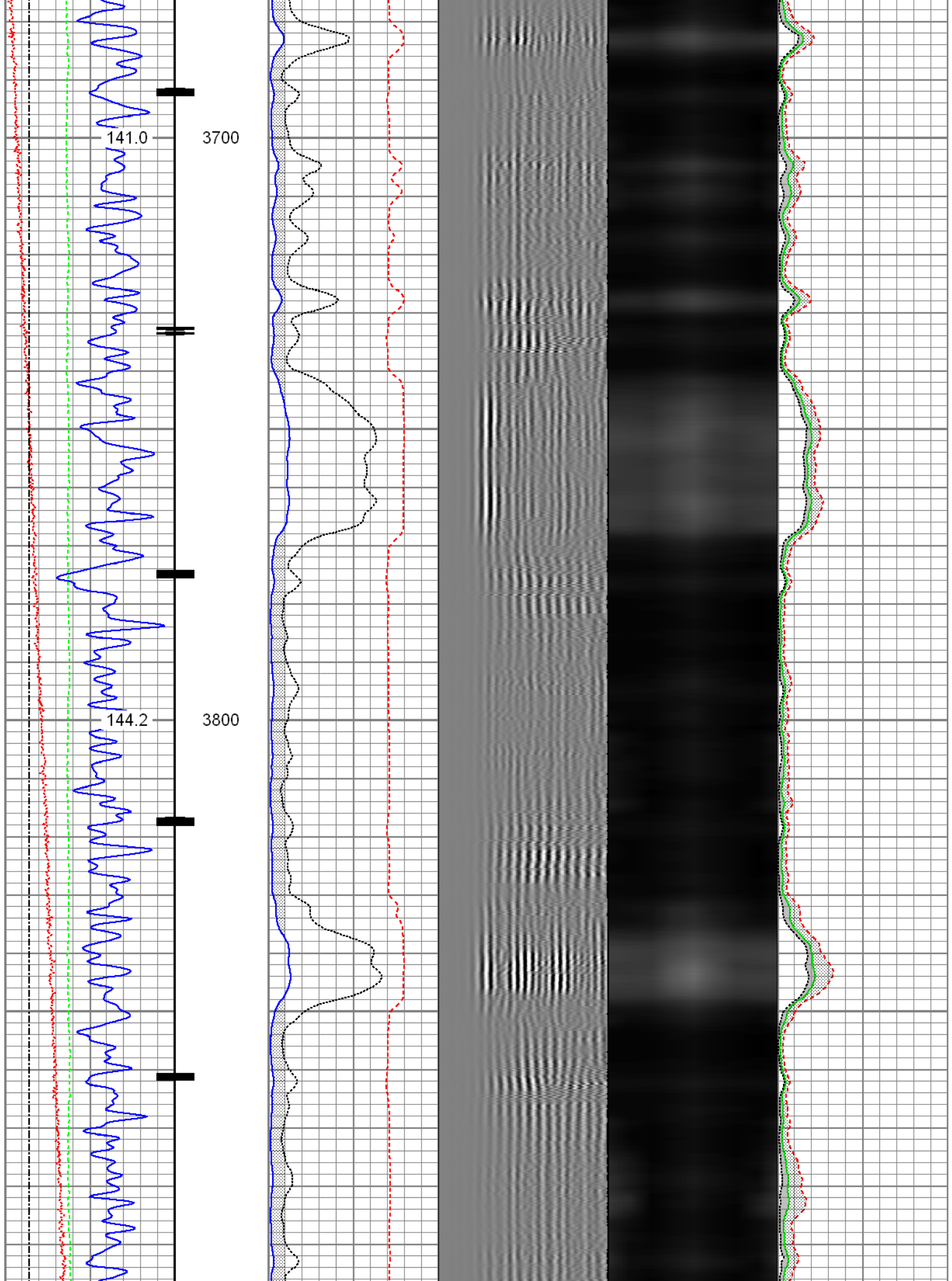


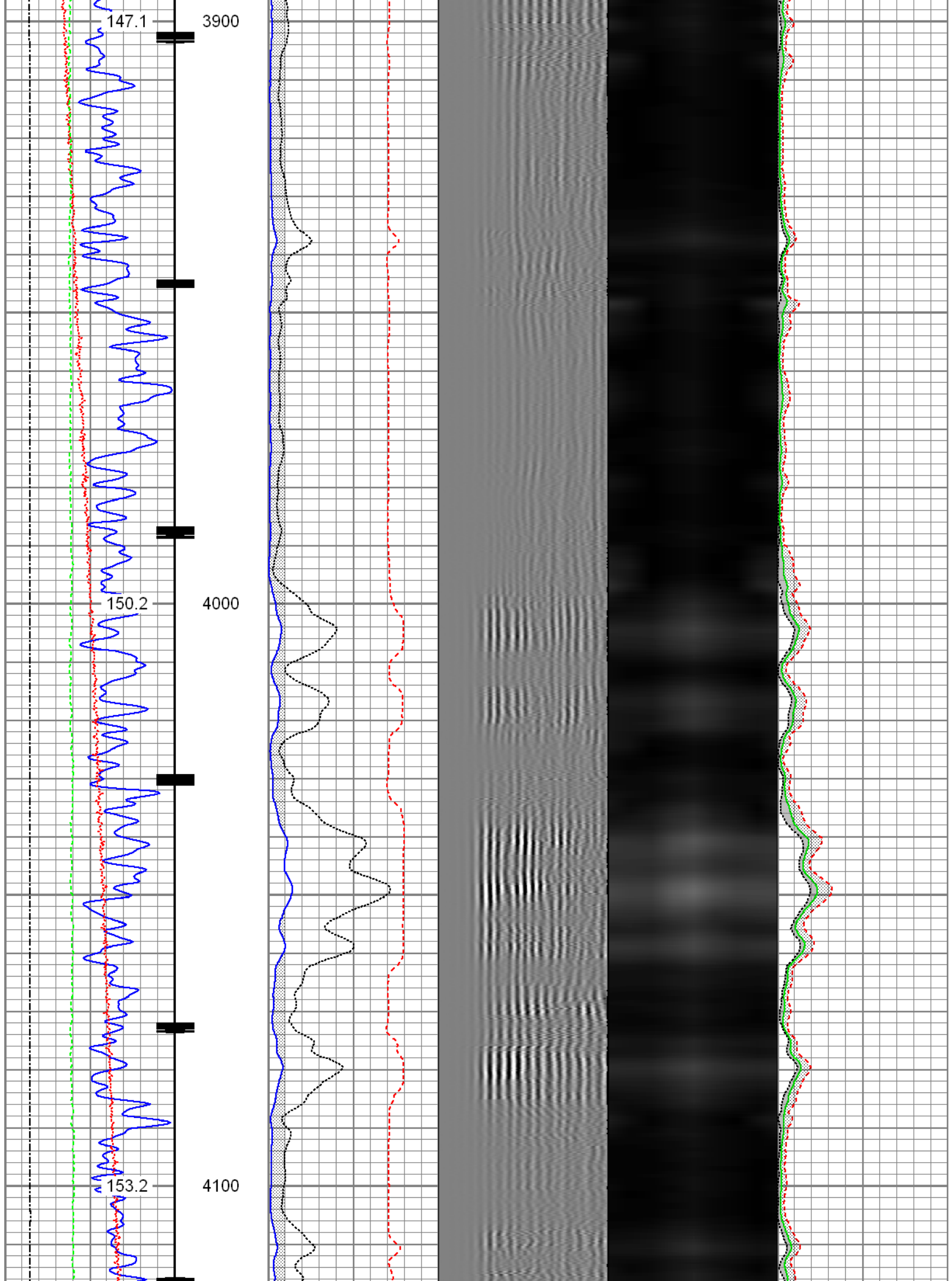


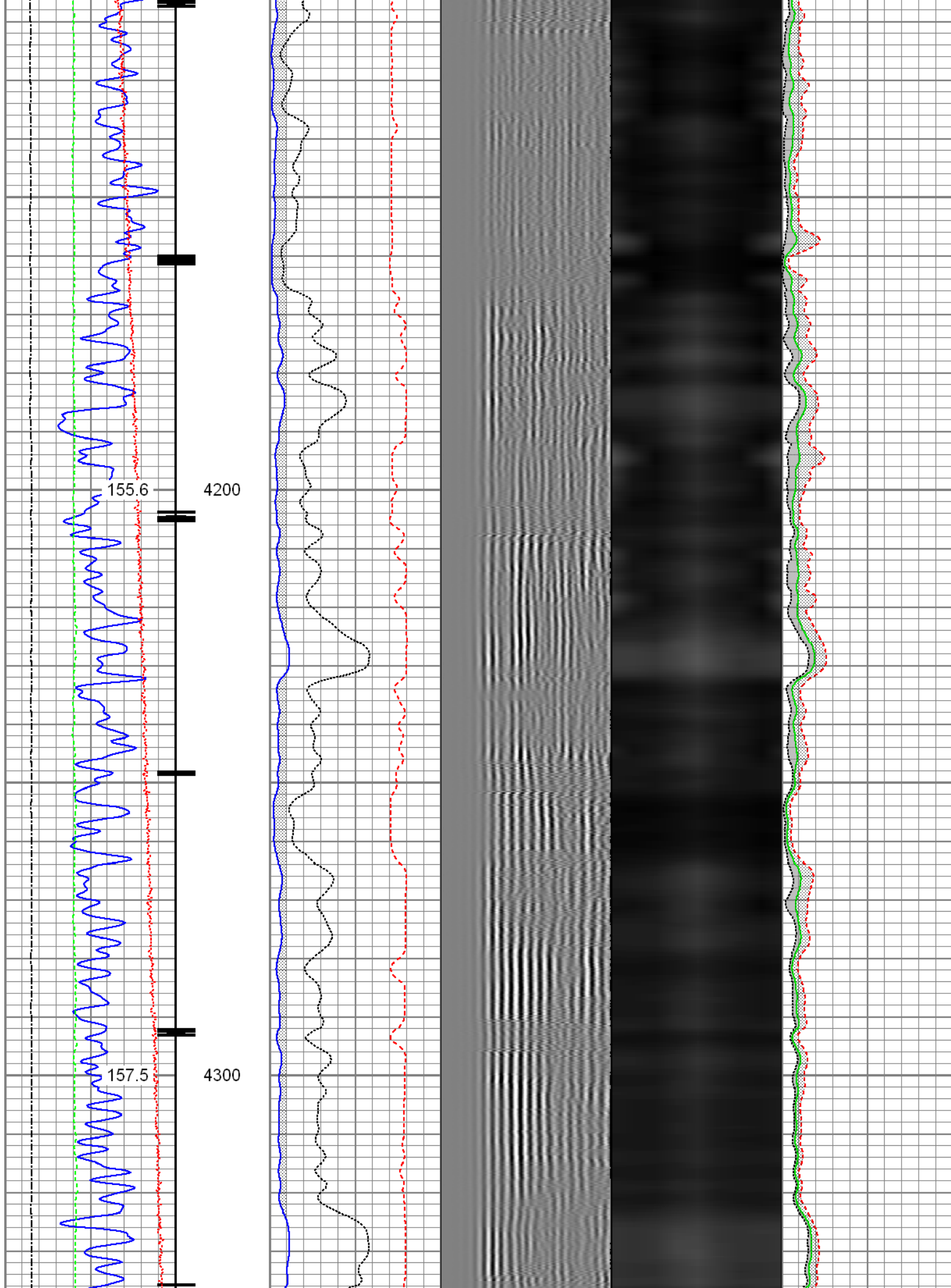


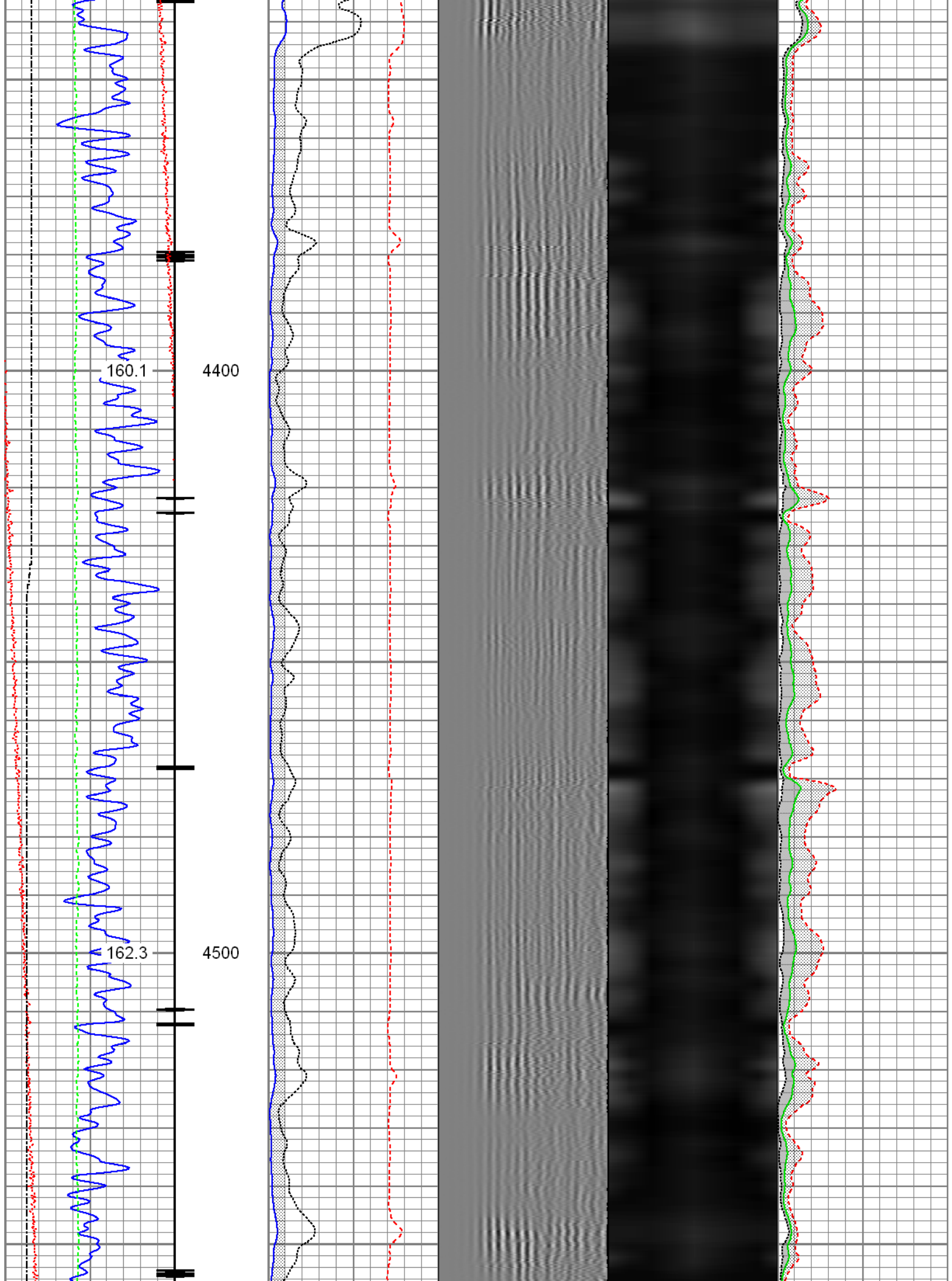


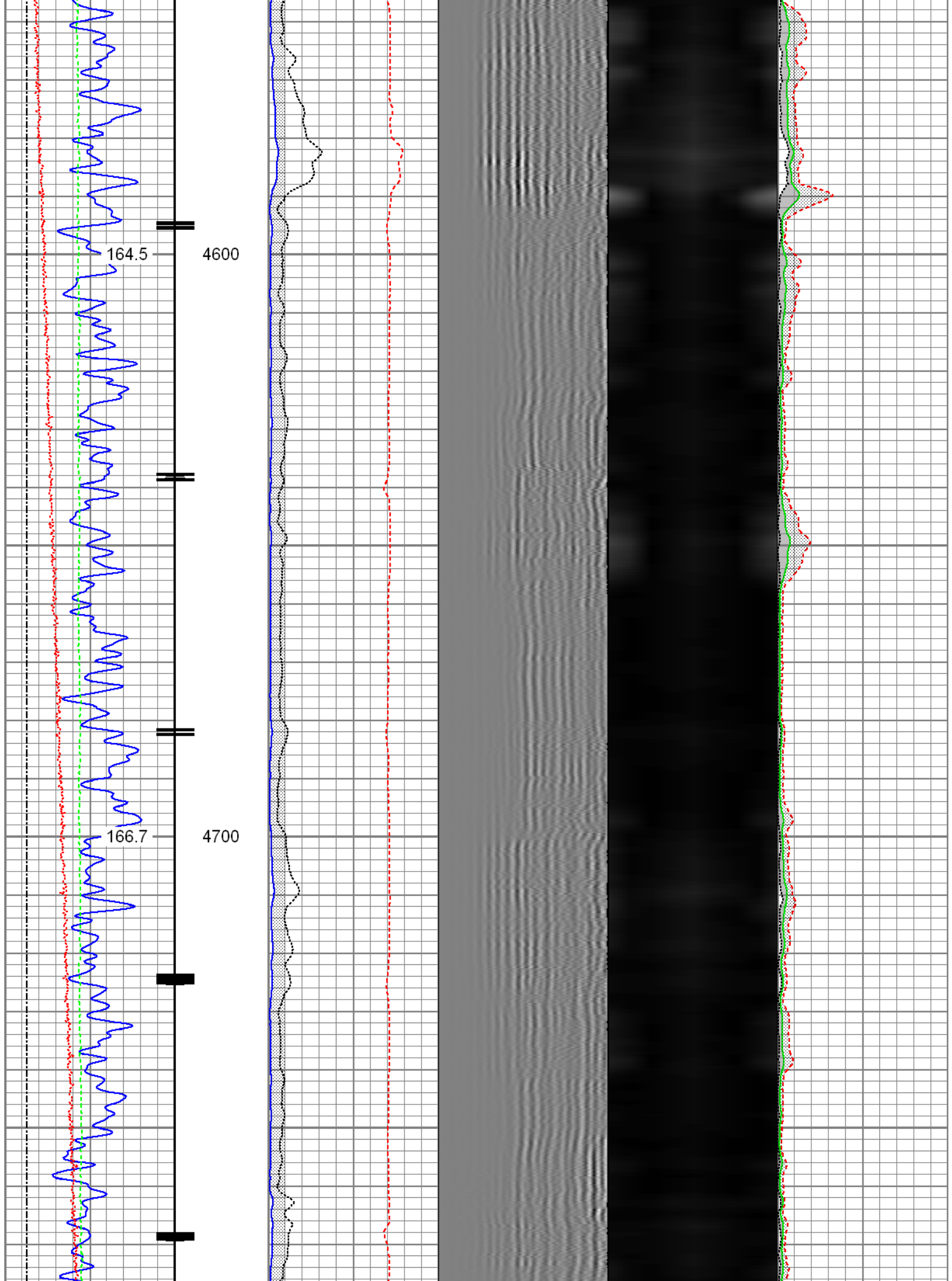


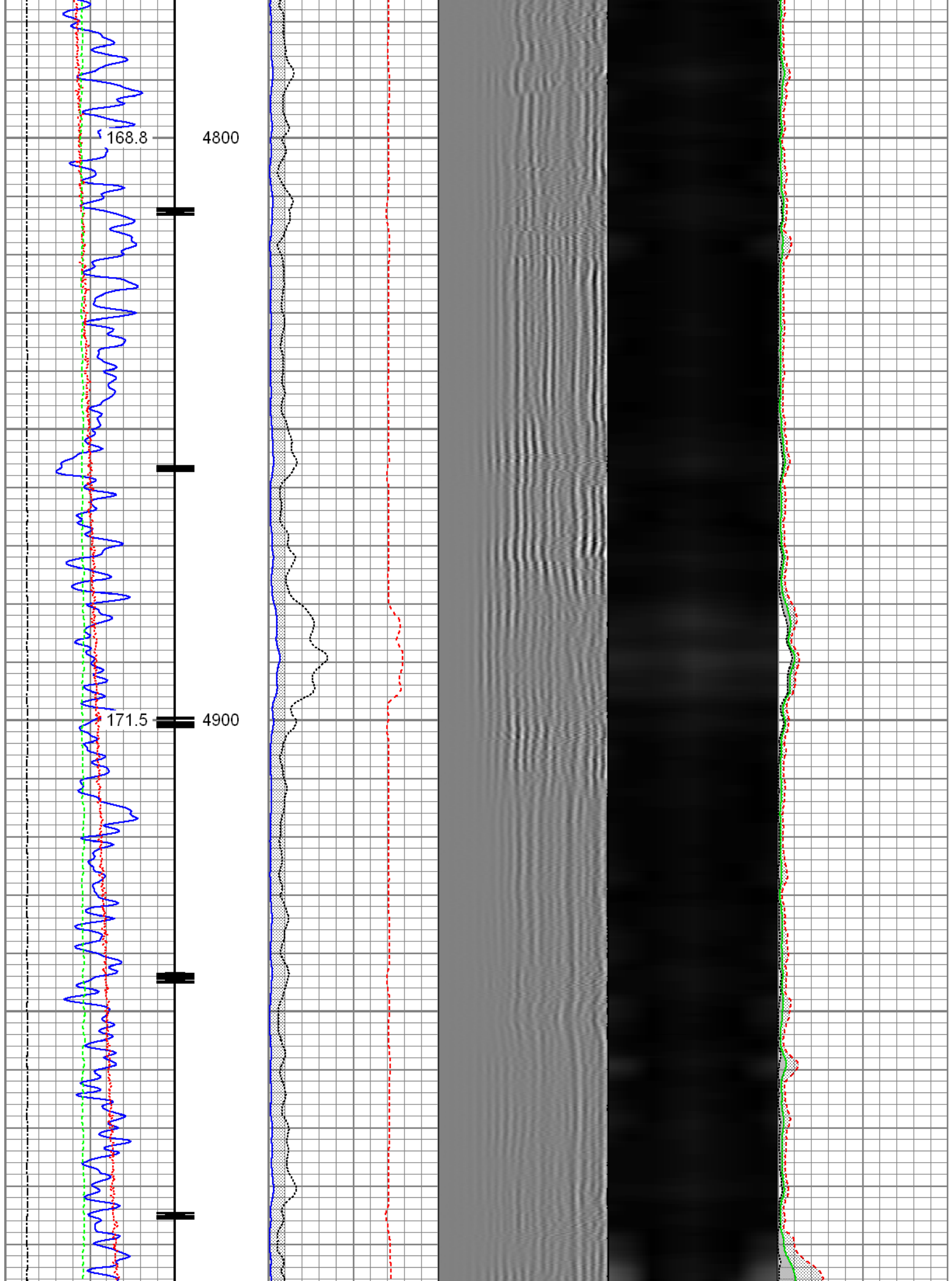


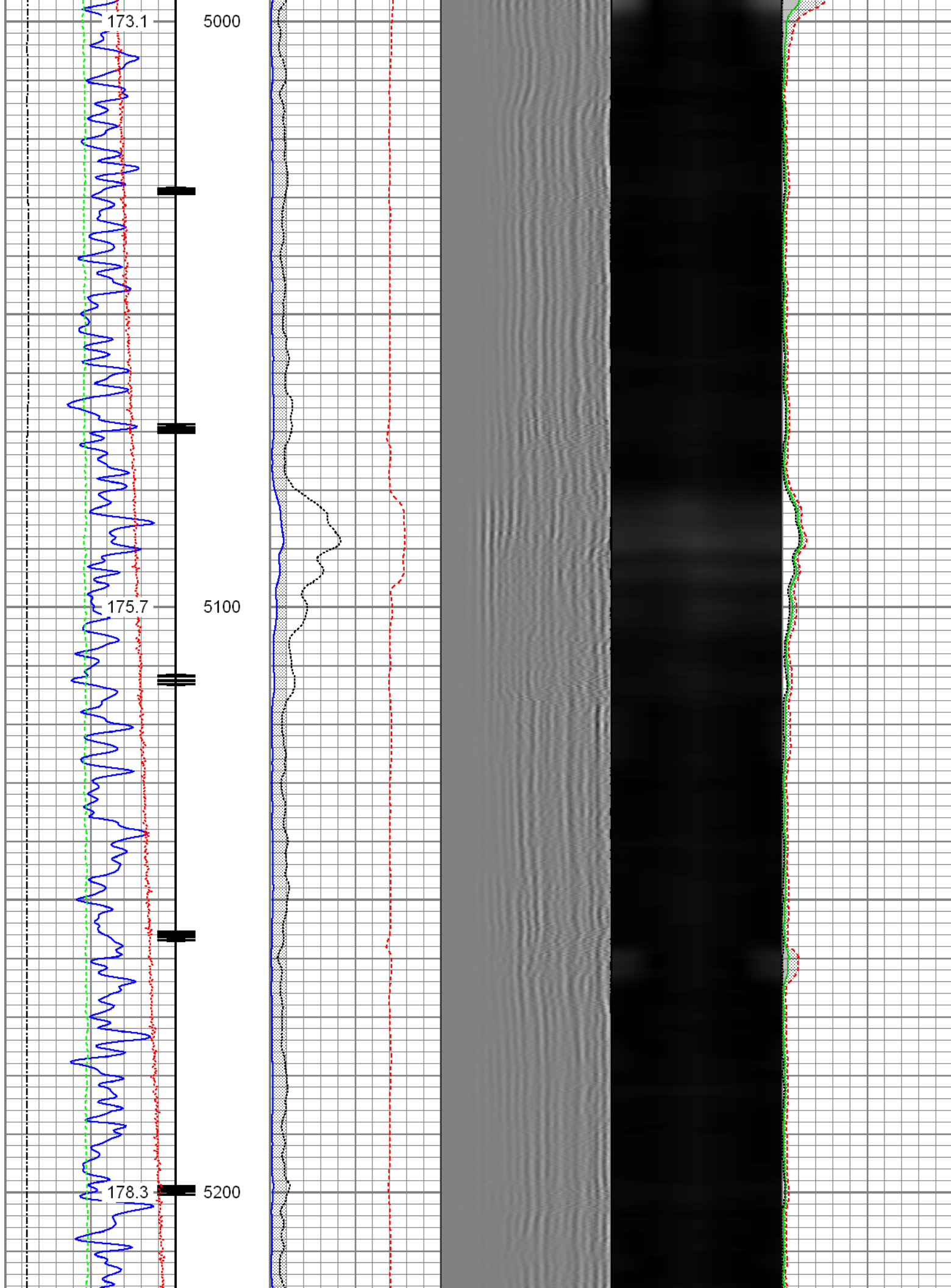


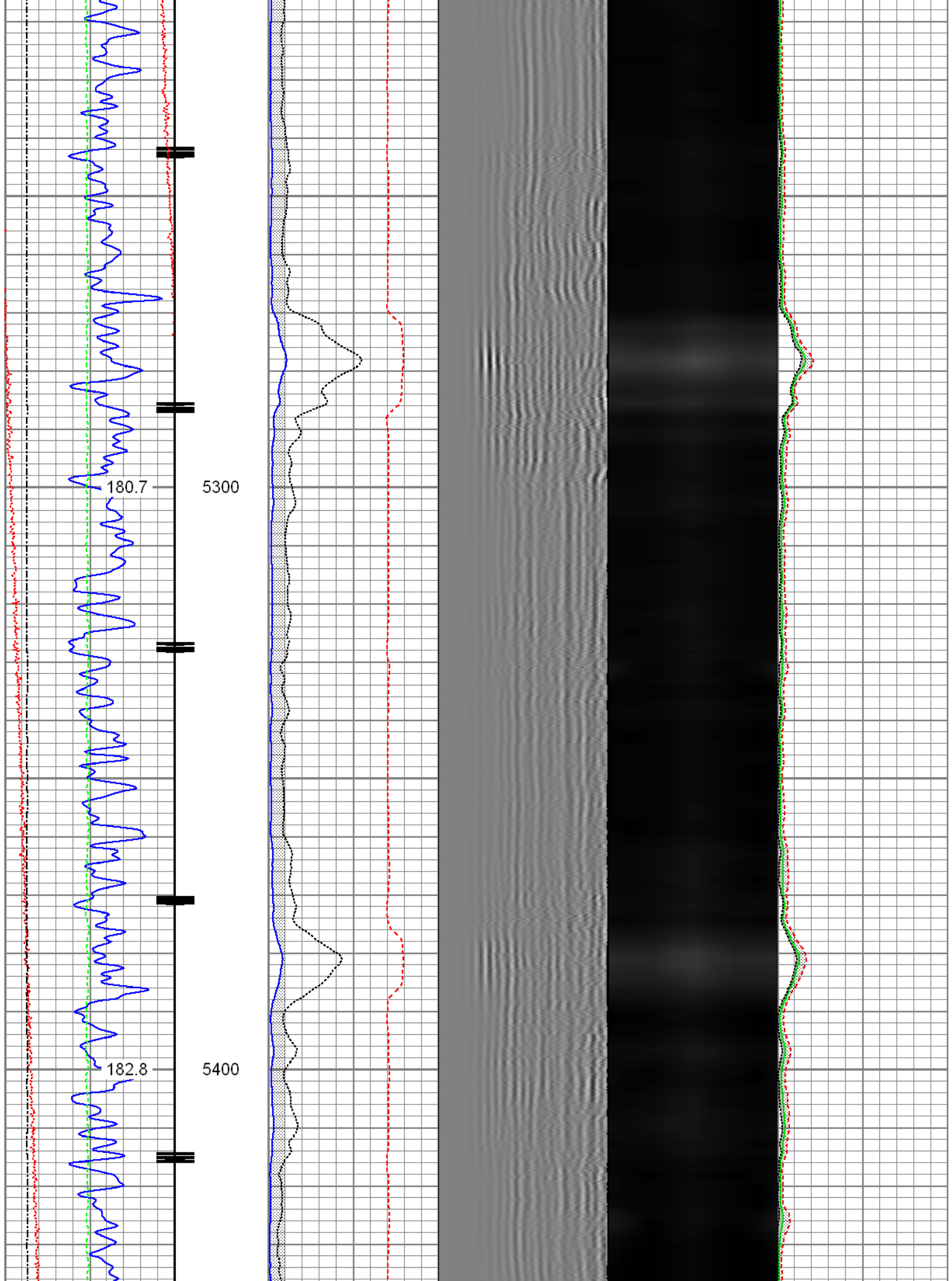


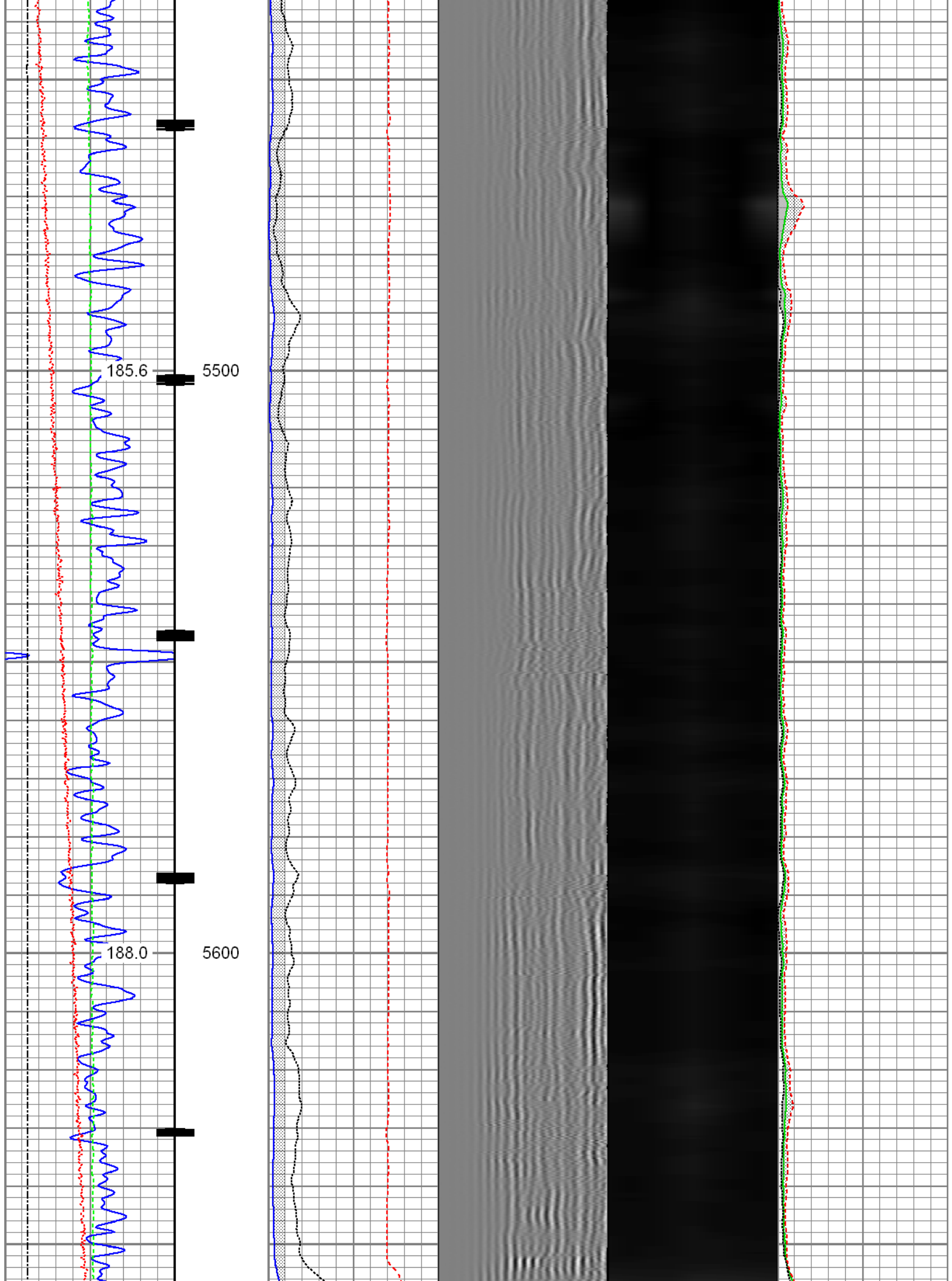


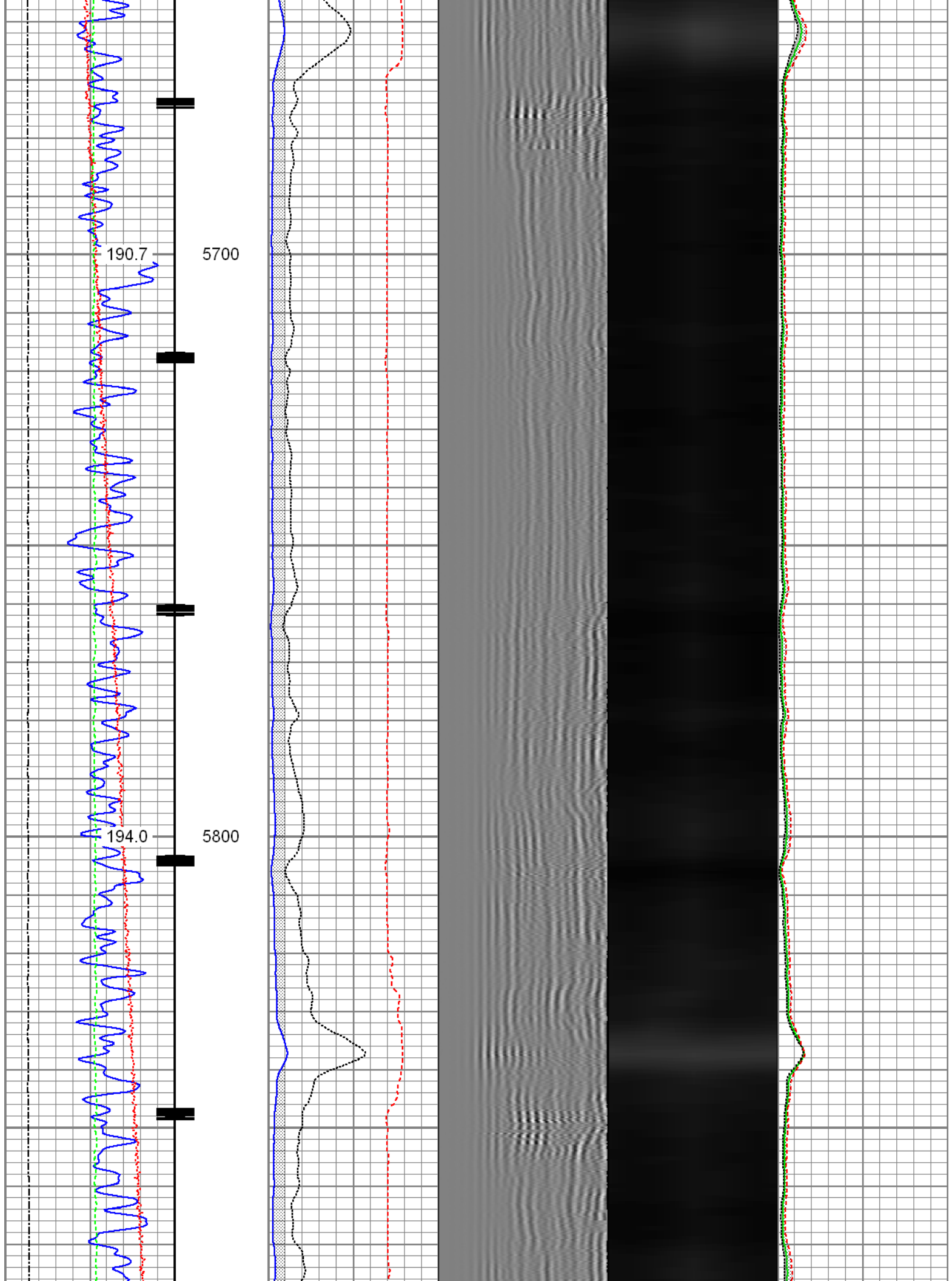


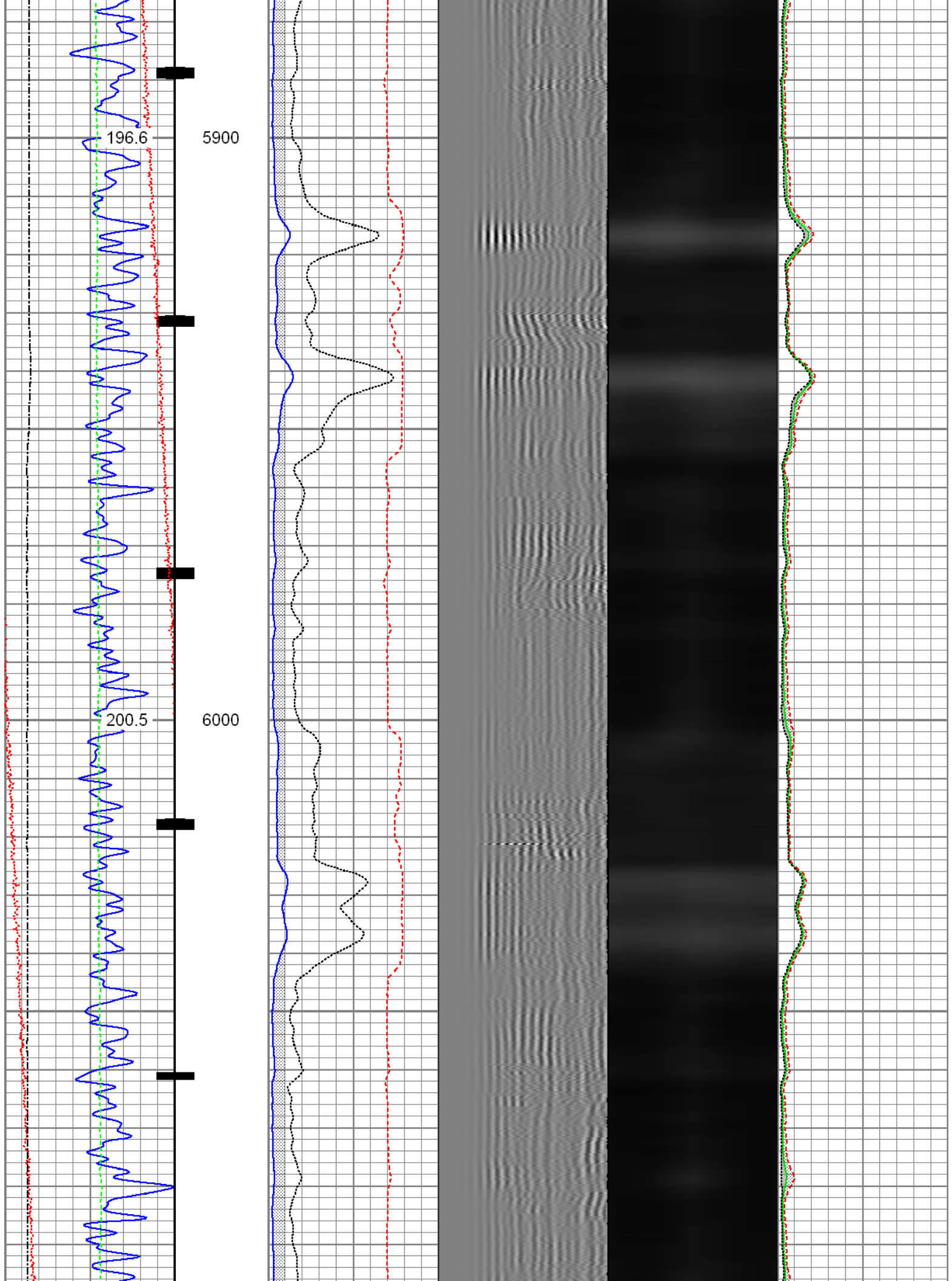


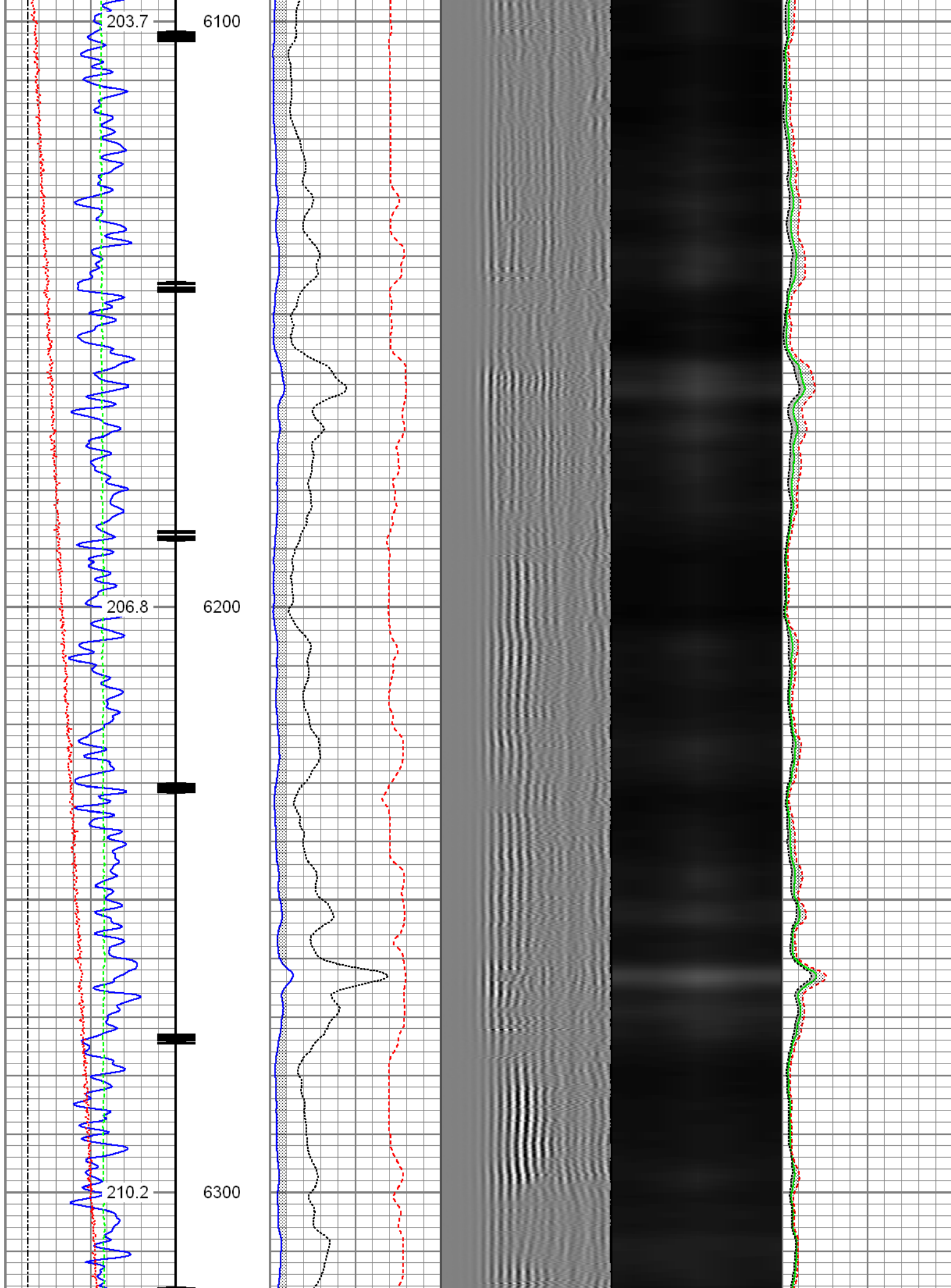


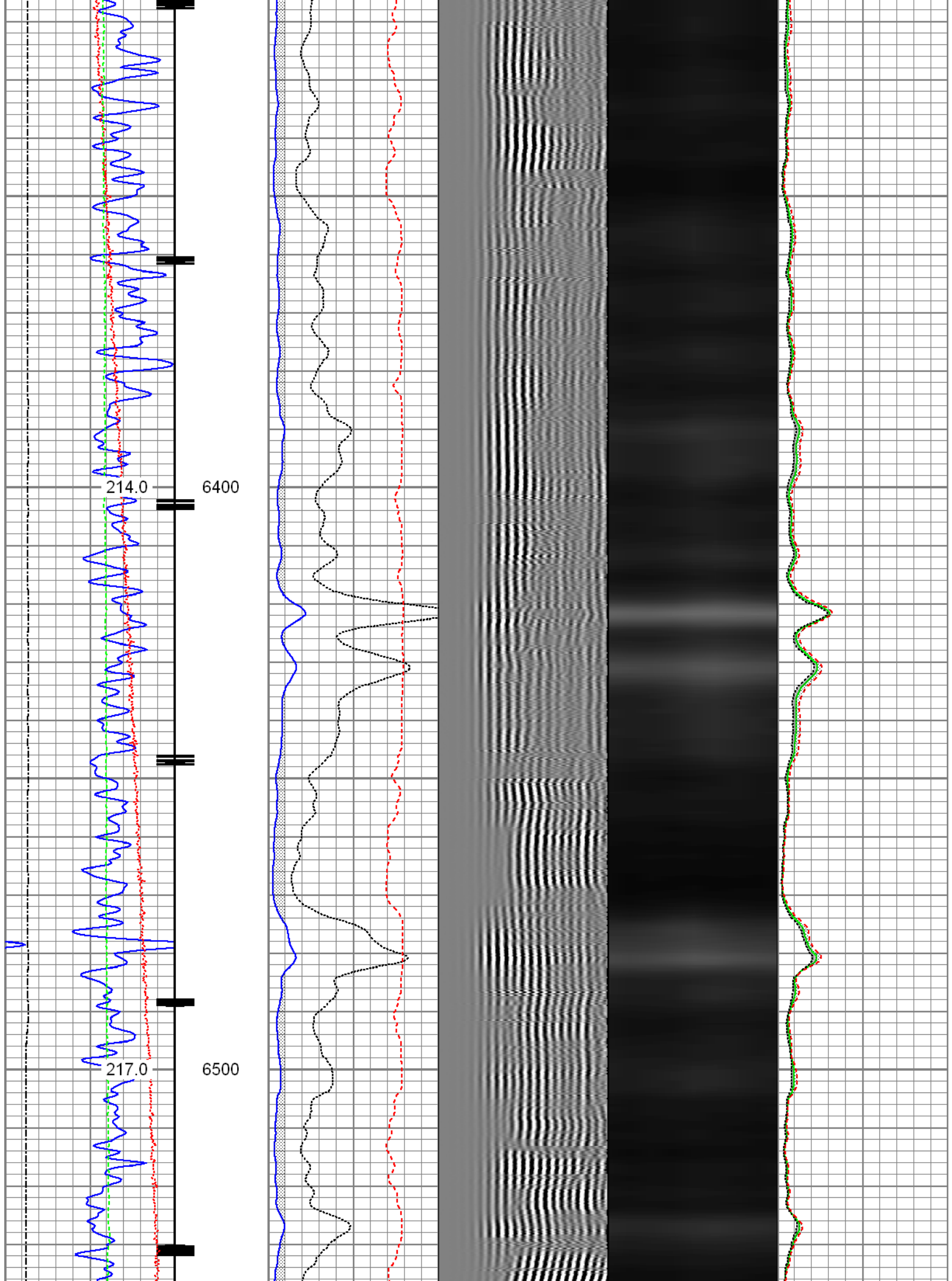


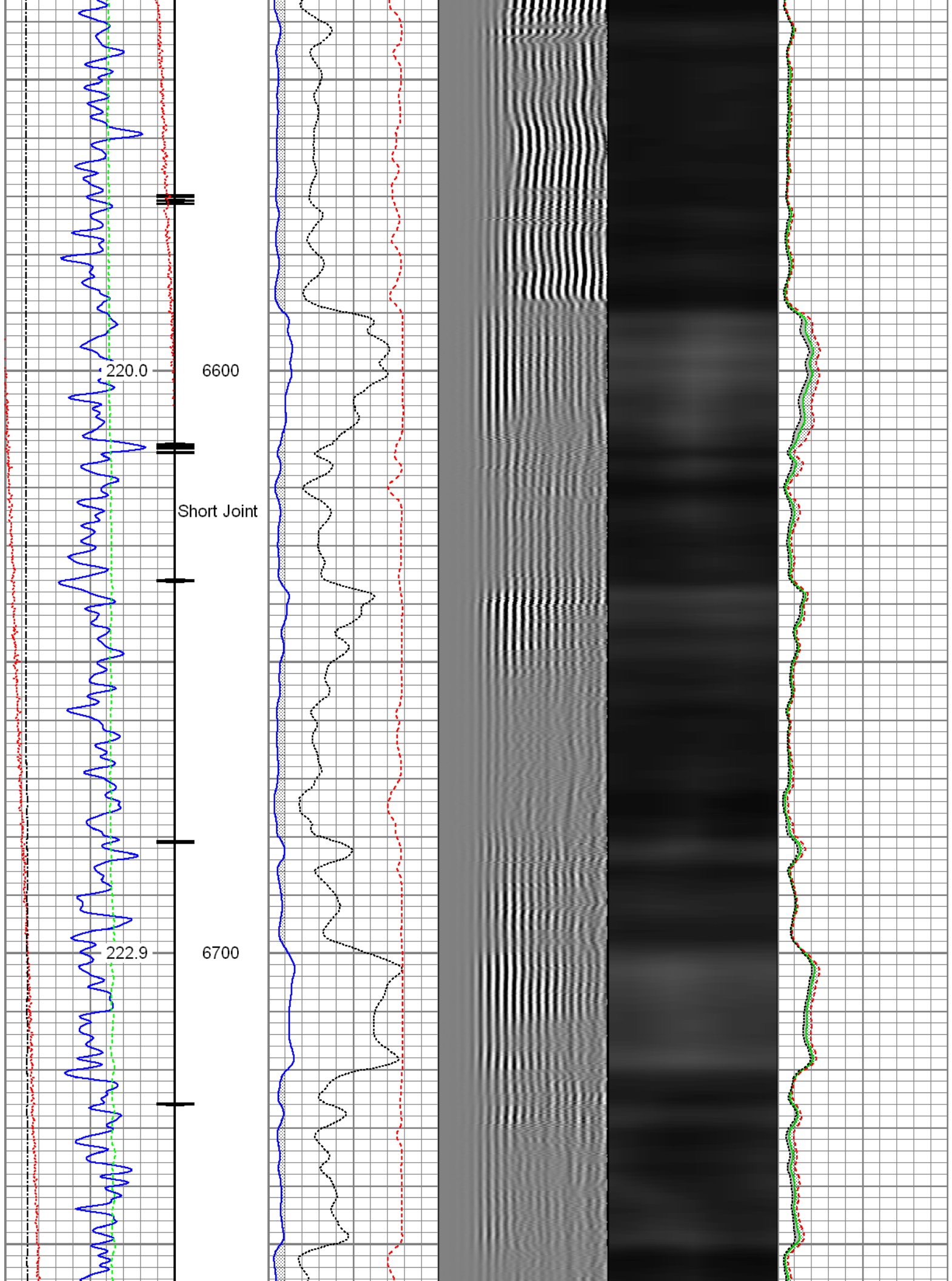


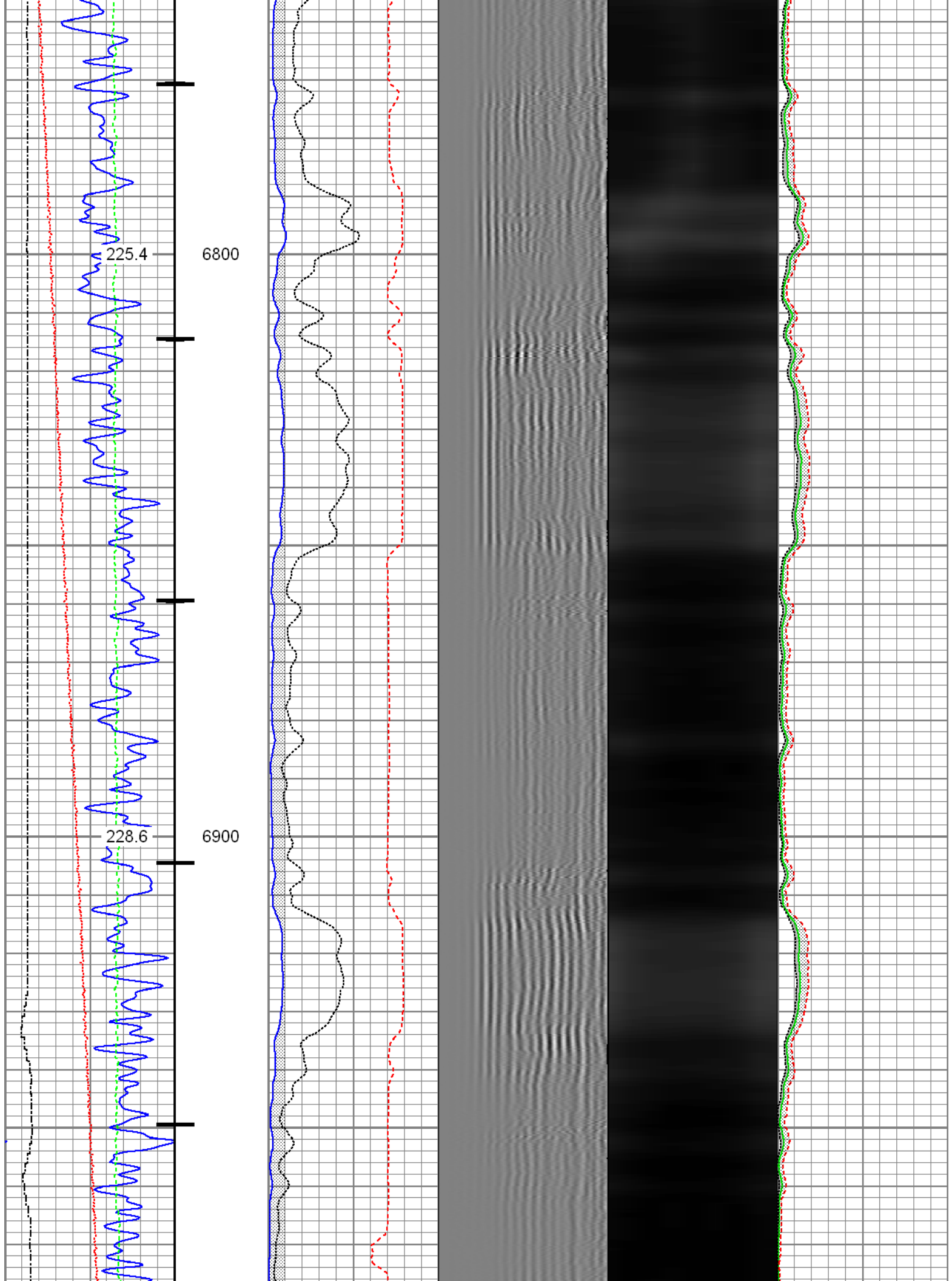


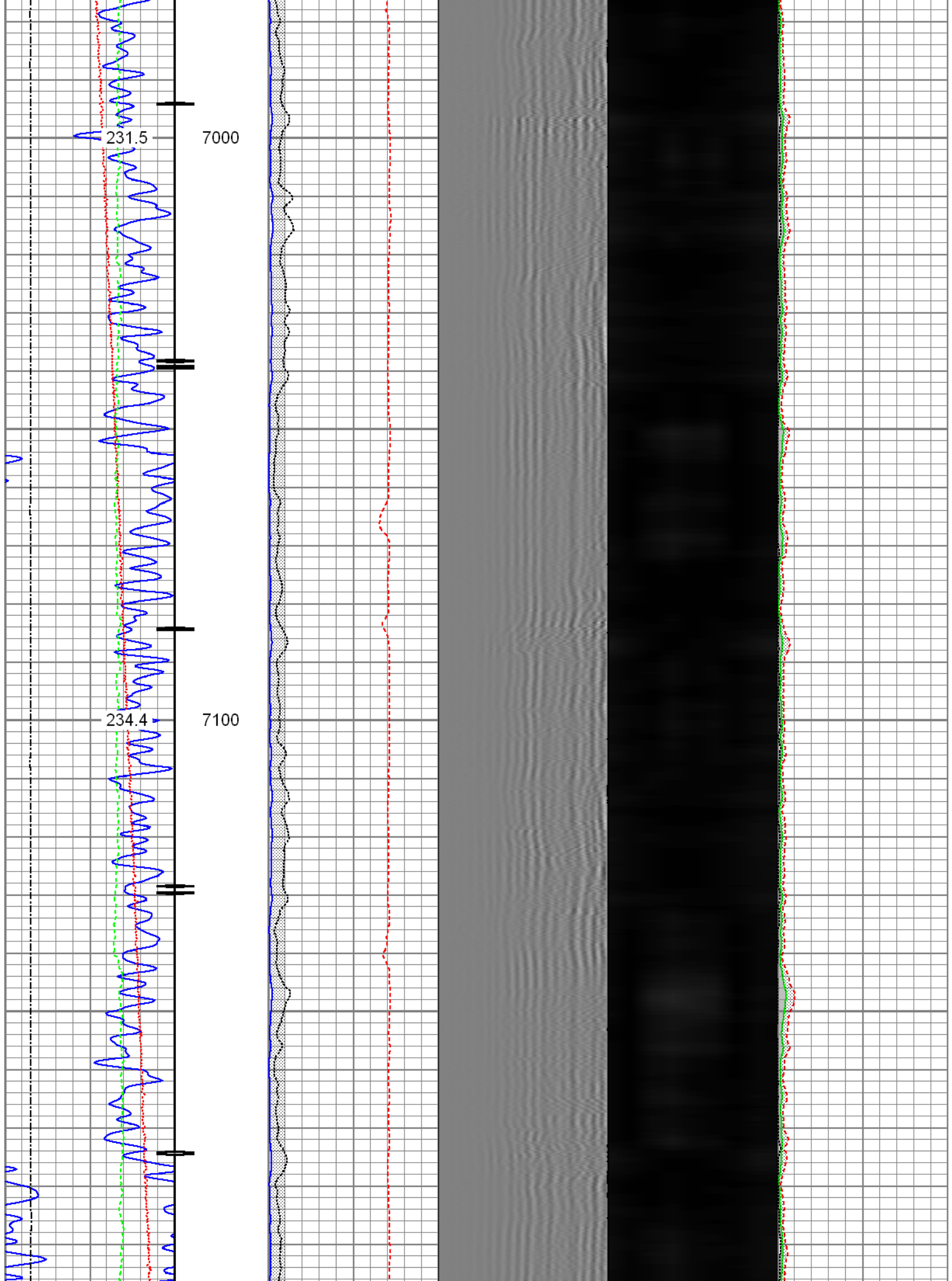


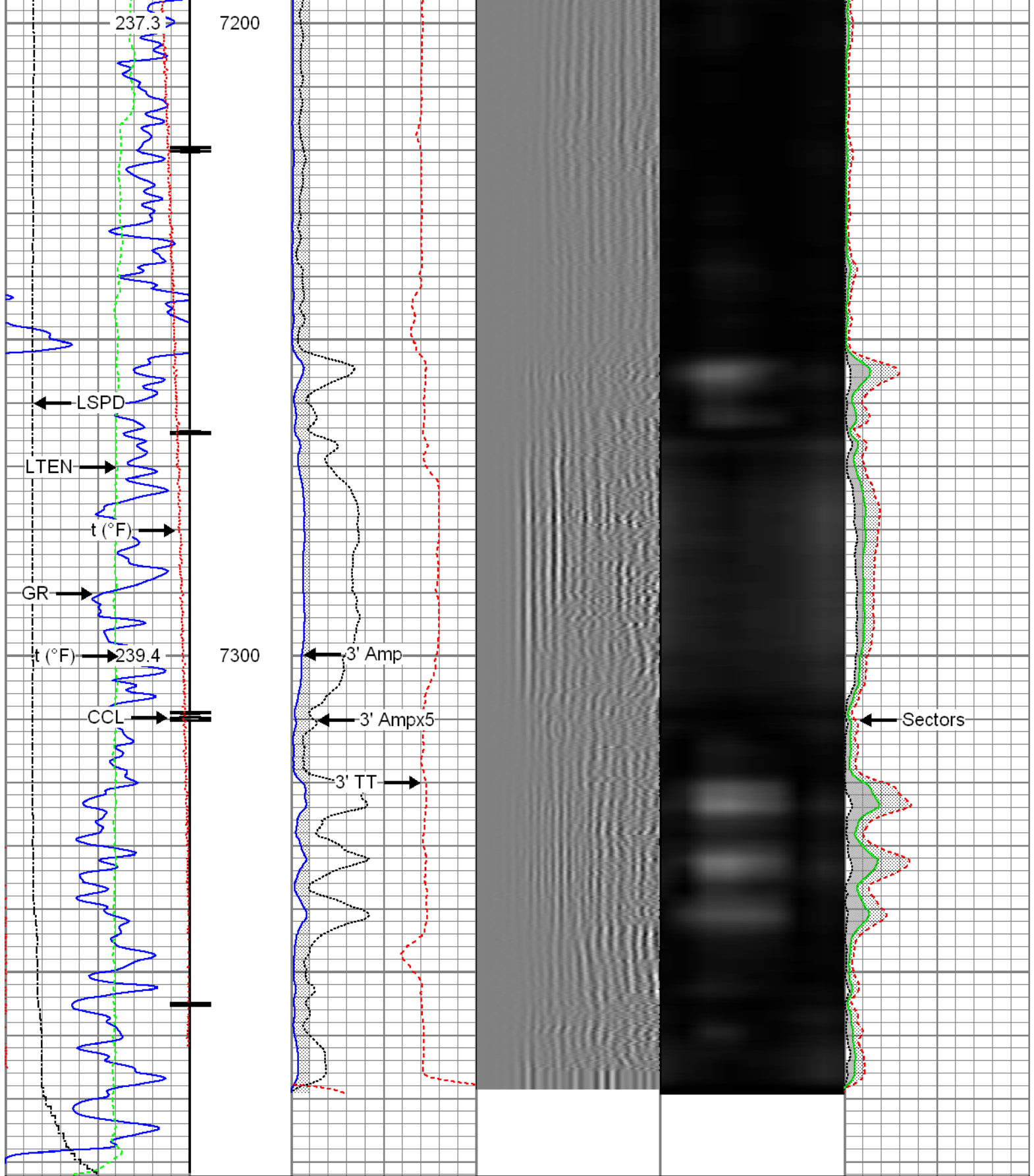












Gamma Ray (GAPI)	3' Amplitude (mV)	5' Variable Density Log	Sector Map	Average Amplitude (mV)
0 120	0 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5 (mV)			Minimum Amplitude (mV)
0 20	0 20			0 100
Temperature (degF)	3' Travel Time (usec)			Maximum Amplitude (mV)
0 20	650 150			0 100
Line Speed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

Line Tension		
0	(lb)	2000
<hr/>		

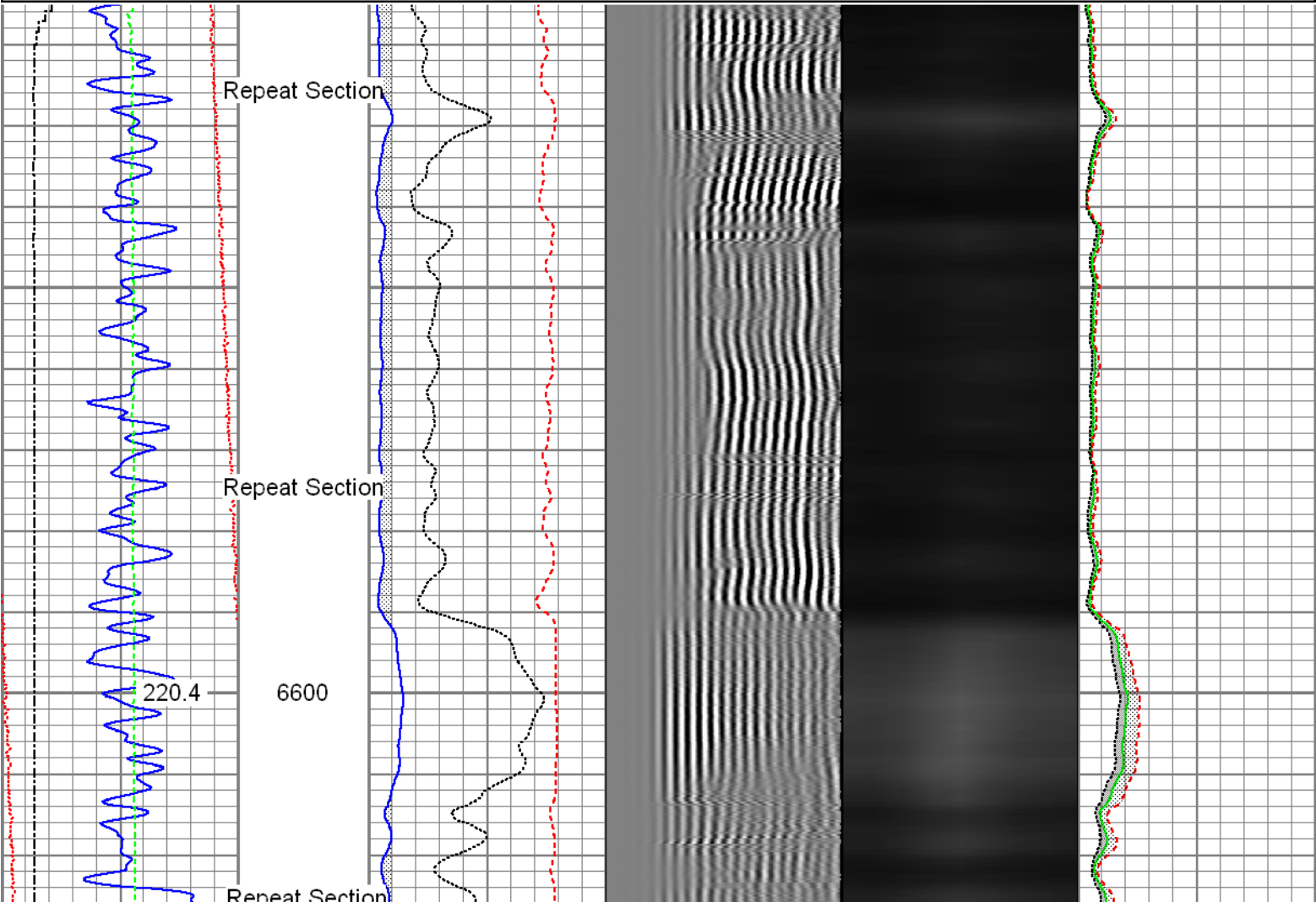


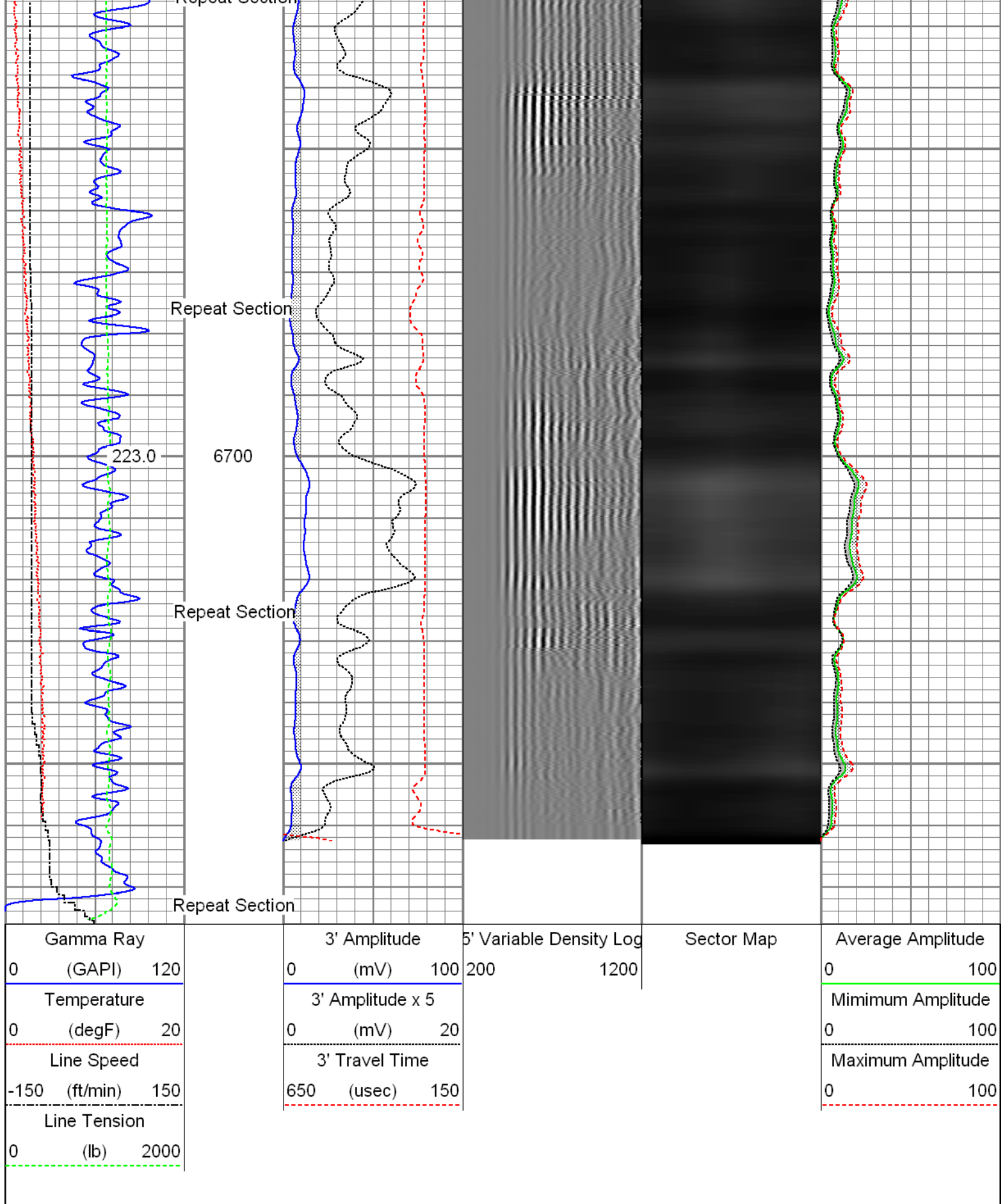
Repeat Pass


Recorded With 2800 PSI Surface Induced Pressure

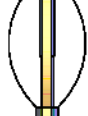


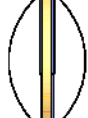
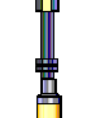
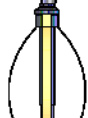
Database File:	c:\warrior\data\0512341904_anadarko_powers 13n-22hz_12-08-15_rbl\0512341904_anadarko_powe
Dataset Pathname:	pass3
Presentation Format:	radii
Dataset Creation:	Tue Dec 08 09:26:25 2015 by Log 7.0 B1
Charted by:	Depth in Feet scaled 1:240

<div>Gamma Ray</div> <div>0 (GAPI) 120</div> <hr/> <div>Temperature</div> <div>0 (degF) 20</div> <hr/> <div>Line Speed</div> <div>-150 (ft/min) 150</div> <hr/> <div>Line Tension</div> <div>0 (lb) 2000</div> <hr/>	<div>3' Amplitude</div> <div>0 (mV) 100</div> <hr/> <div>3' Amplitude x 5</div> <div>0 (mV) 20</div> <hr/> <div>3' Travel Time</div> <div>650 (usec) 150</div> <hr/>	<div>5' Variable Density Log</div> <div>200 1200</div>	<div>Sector Map</div>	<div>Average Amplitude</div> <div>0 100</div> <hr/> <div>Mimimum Amplitude</div> <div>0 100</div> <hr/> <div>Maximum Amplitude</div> <div>0 100</div> <hr/>
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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

HeadVolt	19.49		Probe_IL_BS_Cent Probe 2-3/4" Inline Electrical Inline Bowspring Centralizer	2.88	2.75	10.00
Temp	16.72					
WVF3FT	14.55		Probe_RADII-C-2-3/4" (FW1302-002) Probe 2-3/4" Sector Cement Bond Tool with Temperature Probe	9.19	2.75	105.00
WVFCAL	14.55					
WVFS1	14.55					
WVFS2	14.55					
WVFS3	14.55					
WVFS4	14.55					
WVFS5	14.55					
WVFS6	14.55					
WVFS7	14.55					
WVFS8	14.55					
WVF5FT	13.55					
CCL	6.51		Probe_IL_BS_Cent Probe 2-3/4" Inline Electrical Inline Bowspring Centralizer	2.88	2.75	10.00
DCCL	6.51					
GR	3.77		Probe_CCL_GR-2.75"Digital (FW1307-038) Probe 2-3/4" Digital CCL / Gamma Ray Combined	4.54	2.75	55.00
			Probe_IL_BS_Cent Probe 2-3/4" Inline Electrical Inline Bowspring Centralizer	2.88	2.75	10.00
Dataset: 0512341904_anadarko_powers 13n-22hz_12-08-15_rbl.db: field/well/run1/pass5.3 Total Length: 23.40 ft Total Weight: 194.00 lb O.D. 2.75 in						

Calibration Report

Database File: c:\warrior\data\0512341904_anadarko_powers 13n-22hz_12-08-15_rbl\0512341904_anadarko_powers
 Dataset Pathname: pass5.3
 Dataset Creation: Wed Dec 09 10:38:39 2015 by Calc SCH 120430

Gamma Ray Calibration Report

Serial Number:	FW1307-038	
Tool Model:	2.75"Digital	
Performed:	Mon Dec 07 13:38:50 2015	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.6300	GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number:	FW1302-002	
Tool Model:	2-3/4"	
Calibration Casing Diameter:	5.500	in
Calibration Depth:	-36.106	ft

Master Calibration, performed Wed Dec 09 10:38:37 2015:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.008	0.661	0.800	71.921	108.960	-0.100
CAL	0.685	0.784				
5'	0.008	0.567	0.800	71.921	127.284	-0.232
SUM						
S1	0.006	0.622	0.000	100.000	162.198	-0.914
S2	0.010	0.628	0.000	100.000	161.630	-1.572
S3	0.009	0.654	0.000	100.000	155.128	-1.456
S4	0.009	0.674	0.000	100.000	150.430	-1.427
S5	0.012	0.692	0.000	100.000	146.987	-1.781
S6	0.010	0.689	0.000	100.000	147.225	-1.437
S7	0.008	0.668	0.000	100.000	151.538	-1.243
S8	0.009	0.648	0.000	100.000	156.458	-1.434


Internal Reference Calibration, performed Wed Dec 31 17:00:00 1969:

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.685	0.784	1.000	0.000

Air Zero Calibration, performed Tue Dec 08 08:58:55 2015:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.008		0.000		-0.000	
5'	0.008		0.000		-0.000	
SUM						
S1	0.004		0.000		0.001	
S2	0.008		0.000		0.001	
S3	0.008		0.000		0.000	
S4	0.008		0.000		0.000	
S5	0.008		0.000		0.000	

S5	0.008	0.000	0.000
S6	0.008	0.000	0.000
S7	0.008	0.000	0.000
S8	0.008	0.000	0.000

	Company	Kerr-McGee Oil & Gas Onshore, L.P.
	Well	Powers 13N-22HZ
	Field	Wattenberg
	County	Weld
	State	Colorado