



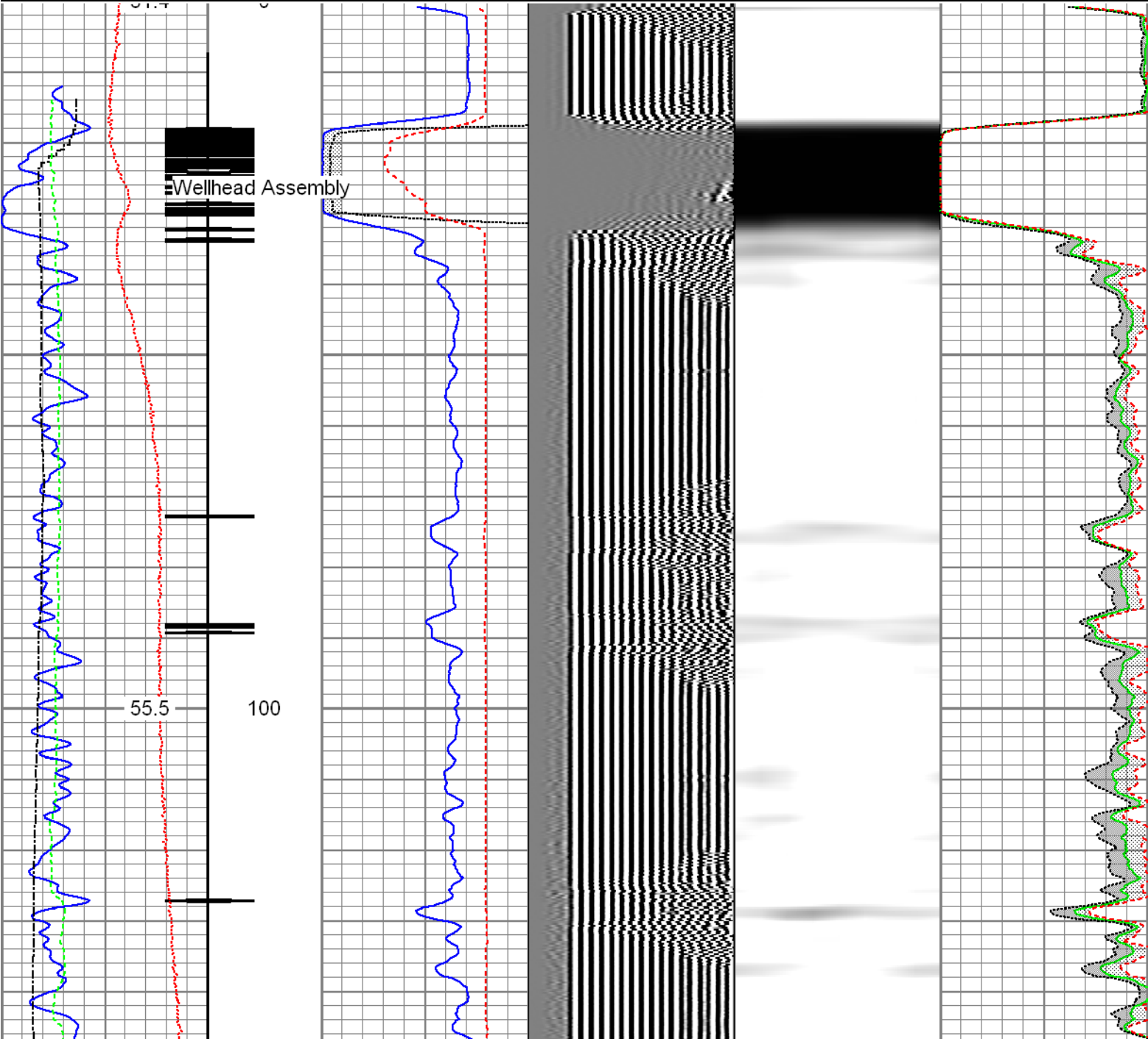
<<< Fold Here >>>
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible 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 Kelly Bushing at 30 FT Recorded Marker Joint at 5351-5362 FT Log ran from as deep as possible in heel to surface Recorded with 2500 PSI surface induced pressure Logging tools were clean and free of any debris upon completion of operations Thank you for choosing FMC Technologies Surface Integrated Services.

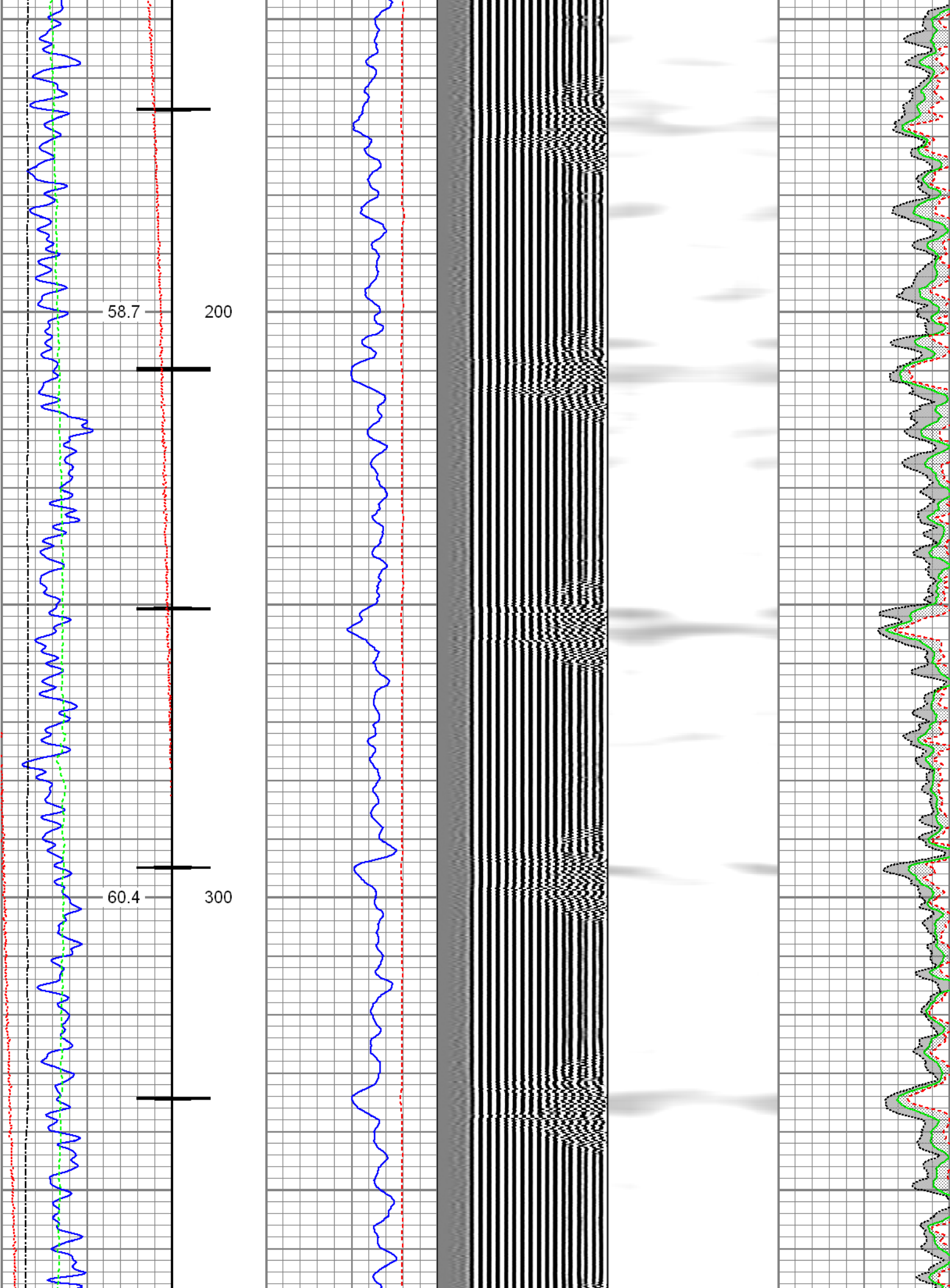


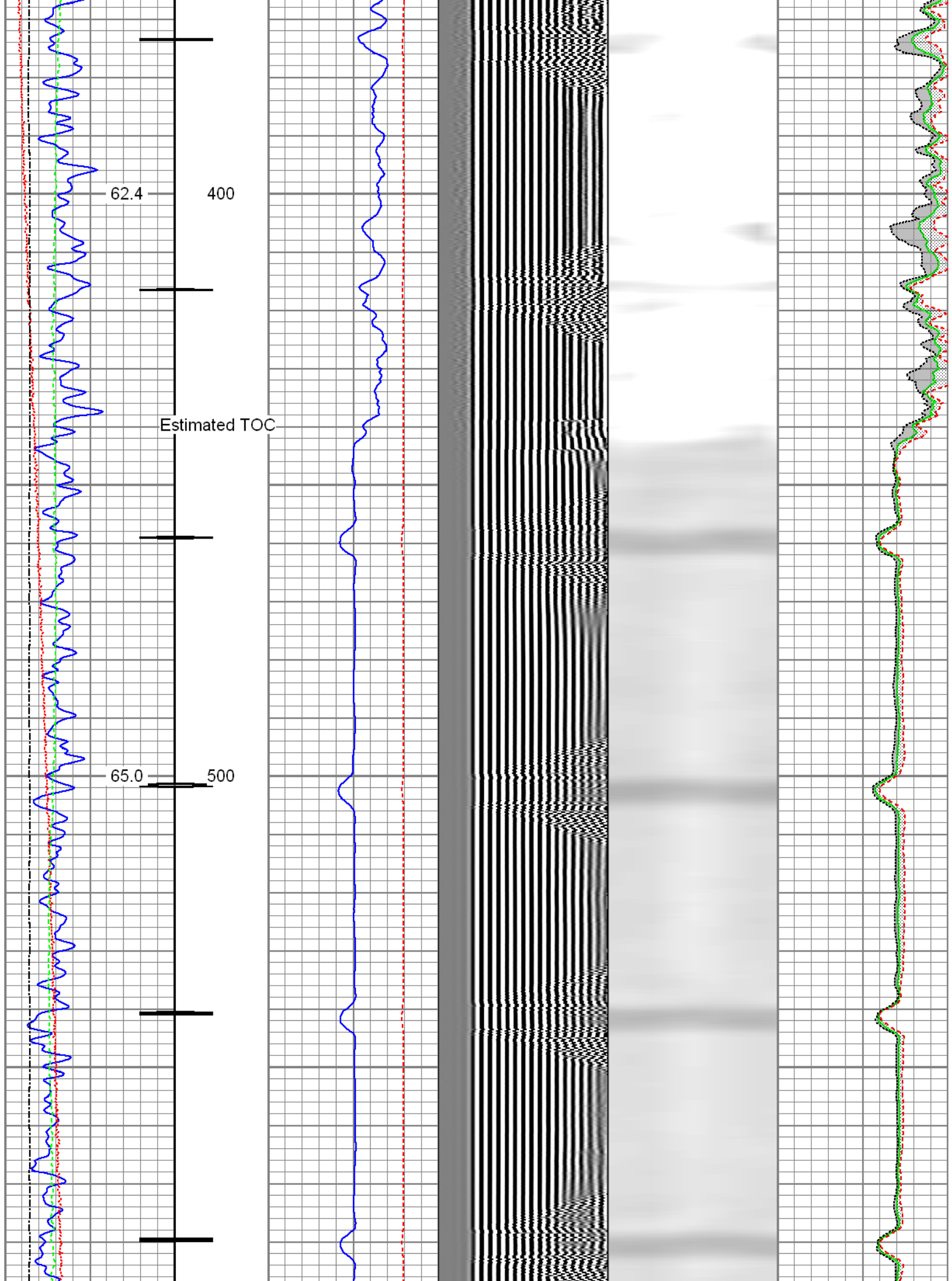
Recorded with 2500 PSI Surface Induced Pressure

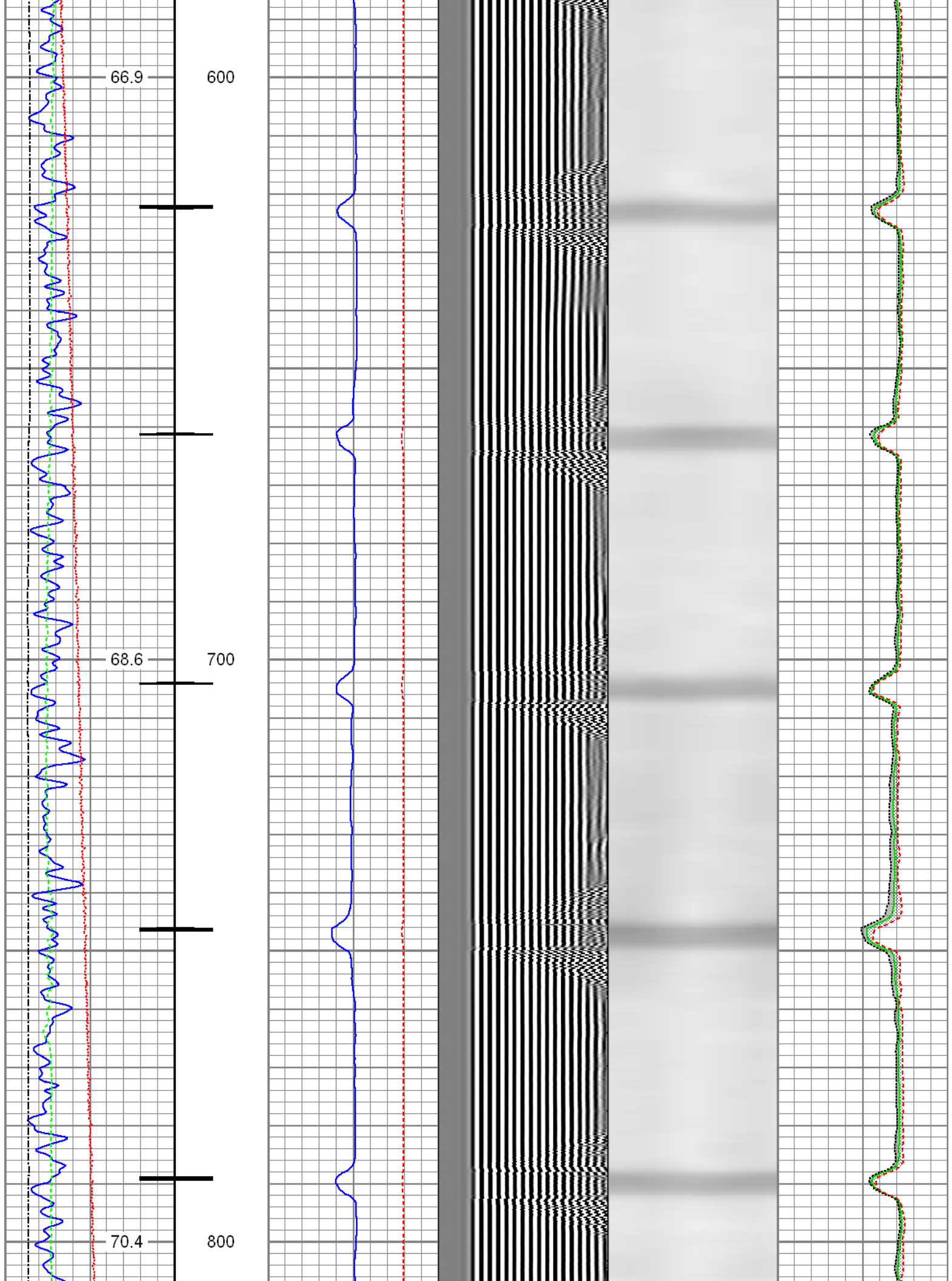
Database File: 03-03-16_noble energy_wells ranch bb01-649_rbl.db
Dataset Pathname: pass5.1
Presentation Format: radii
Dataset Creation: Thu Mar 03 09:25:06 2016 by Calc 7.0 B1
Charted by: Depth in Feet scaled 1:240

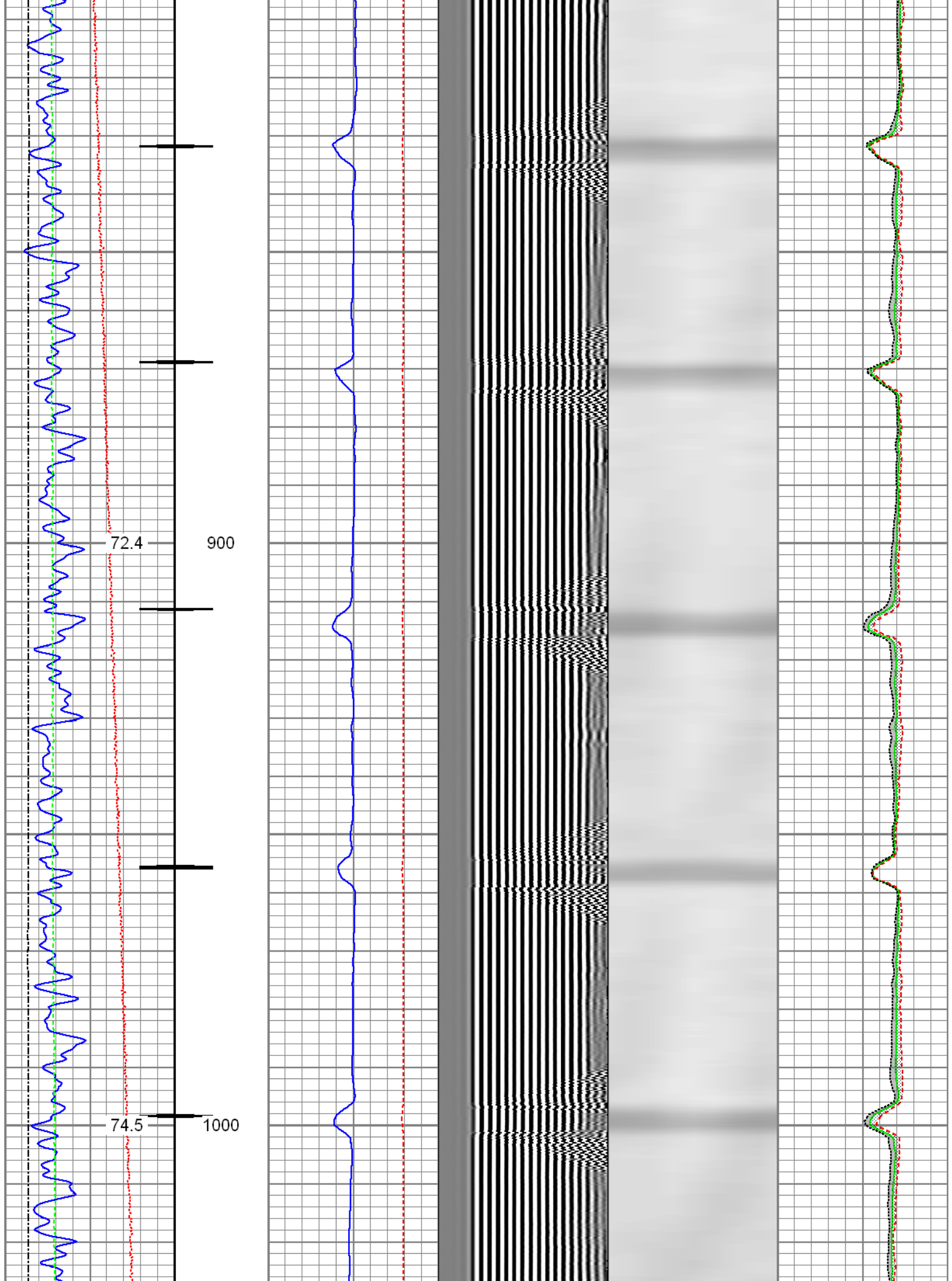
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Mimimum Amplitude
Temperature	0 (mV) 20			0 100
0 (degF) 20	3' Travel Time			Maximum Amplitude
Line Speed	650 (usec) 150			0 100
-150 (ft/min) 150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

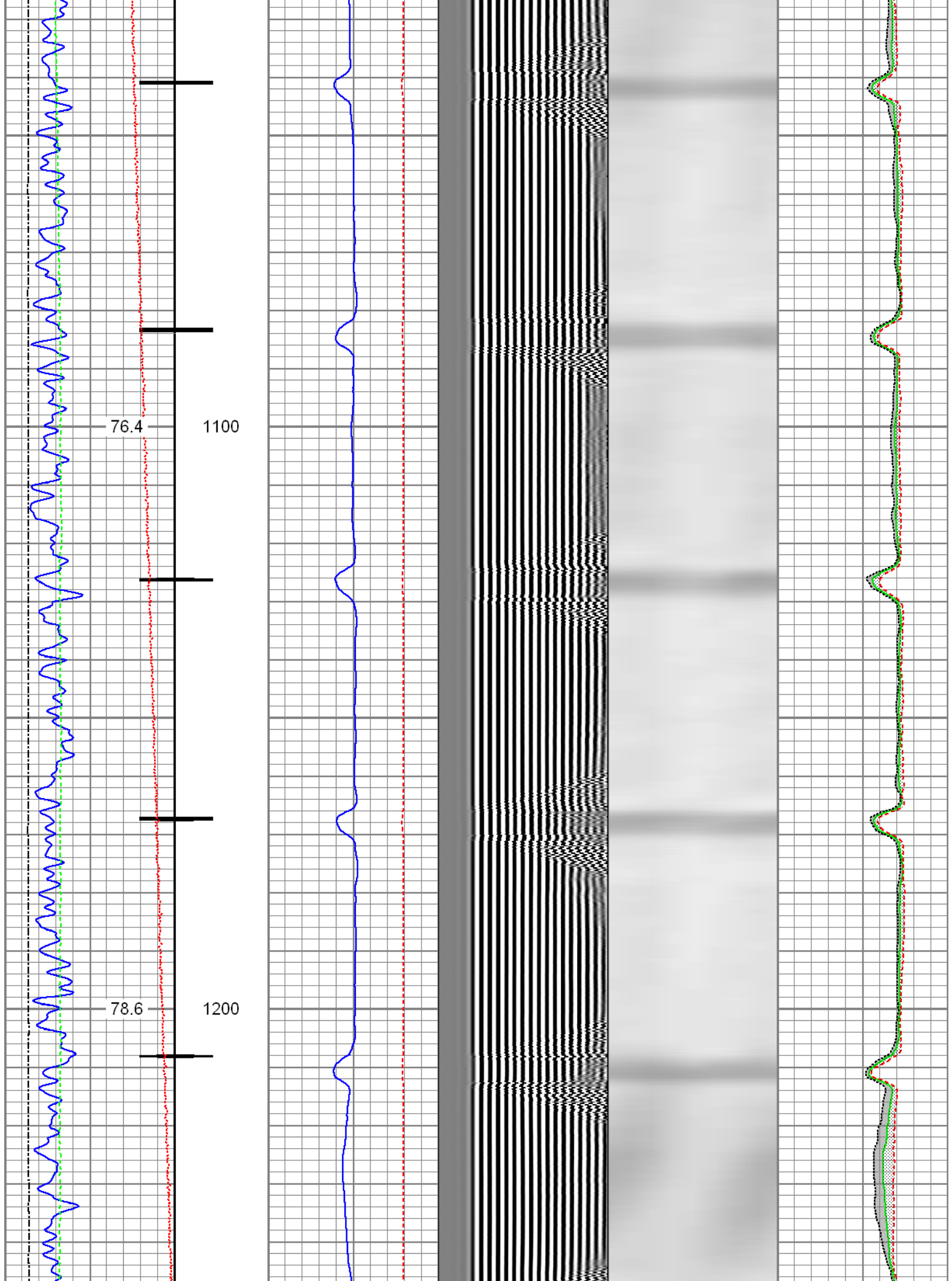


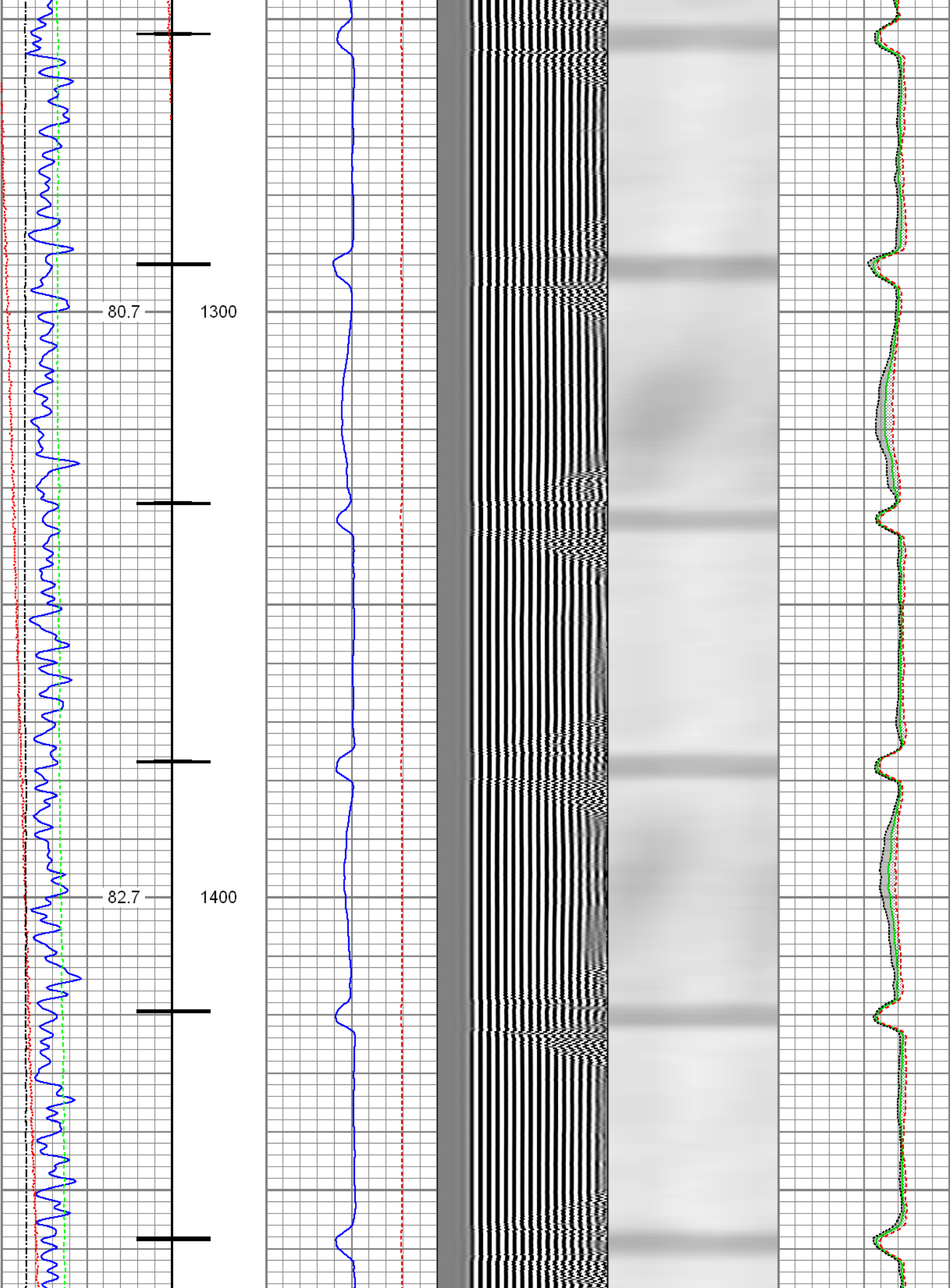


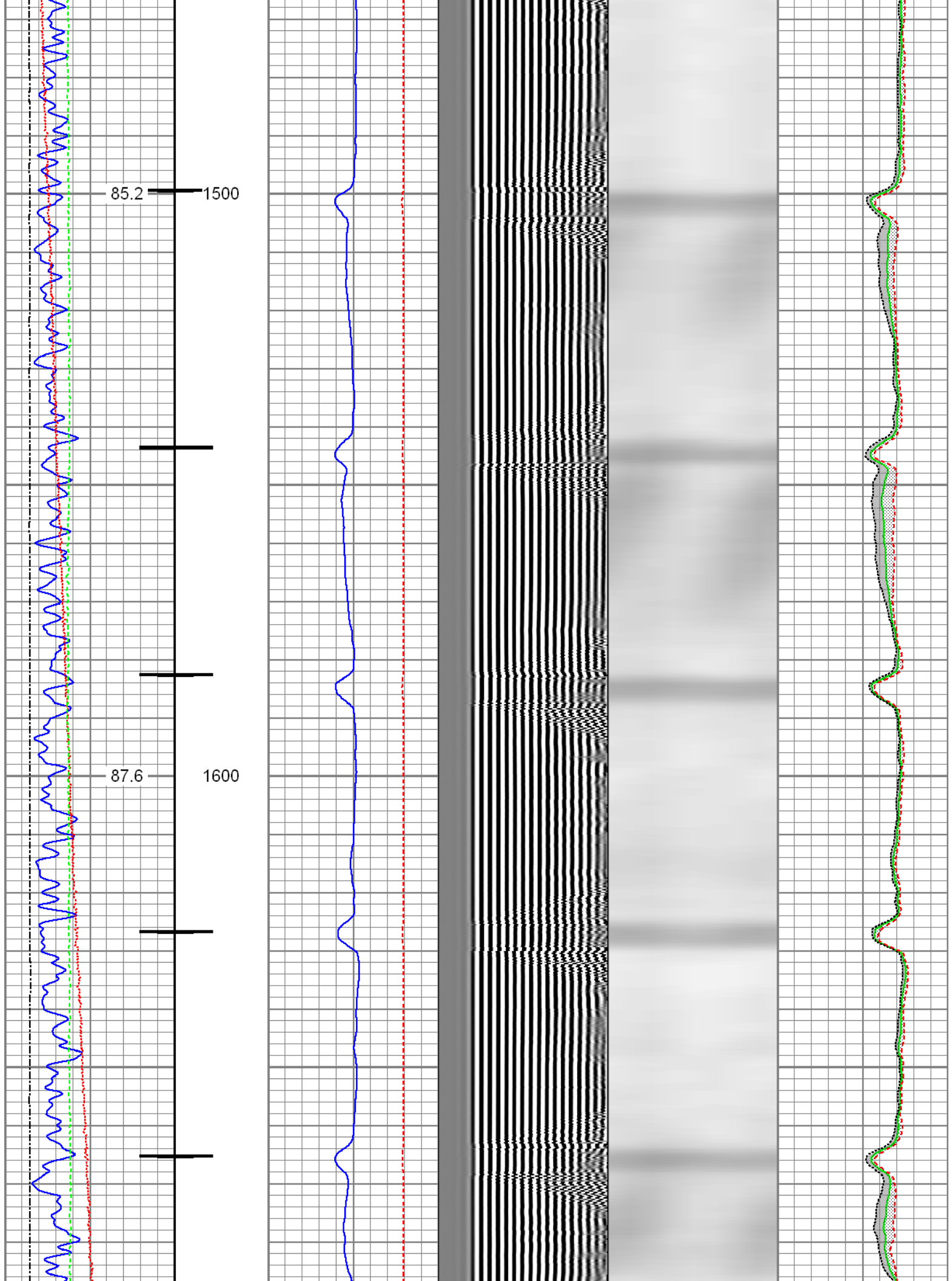


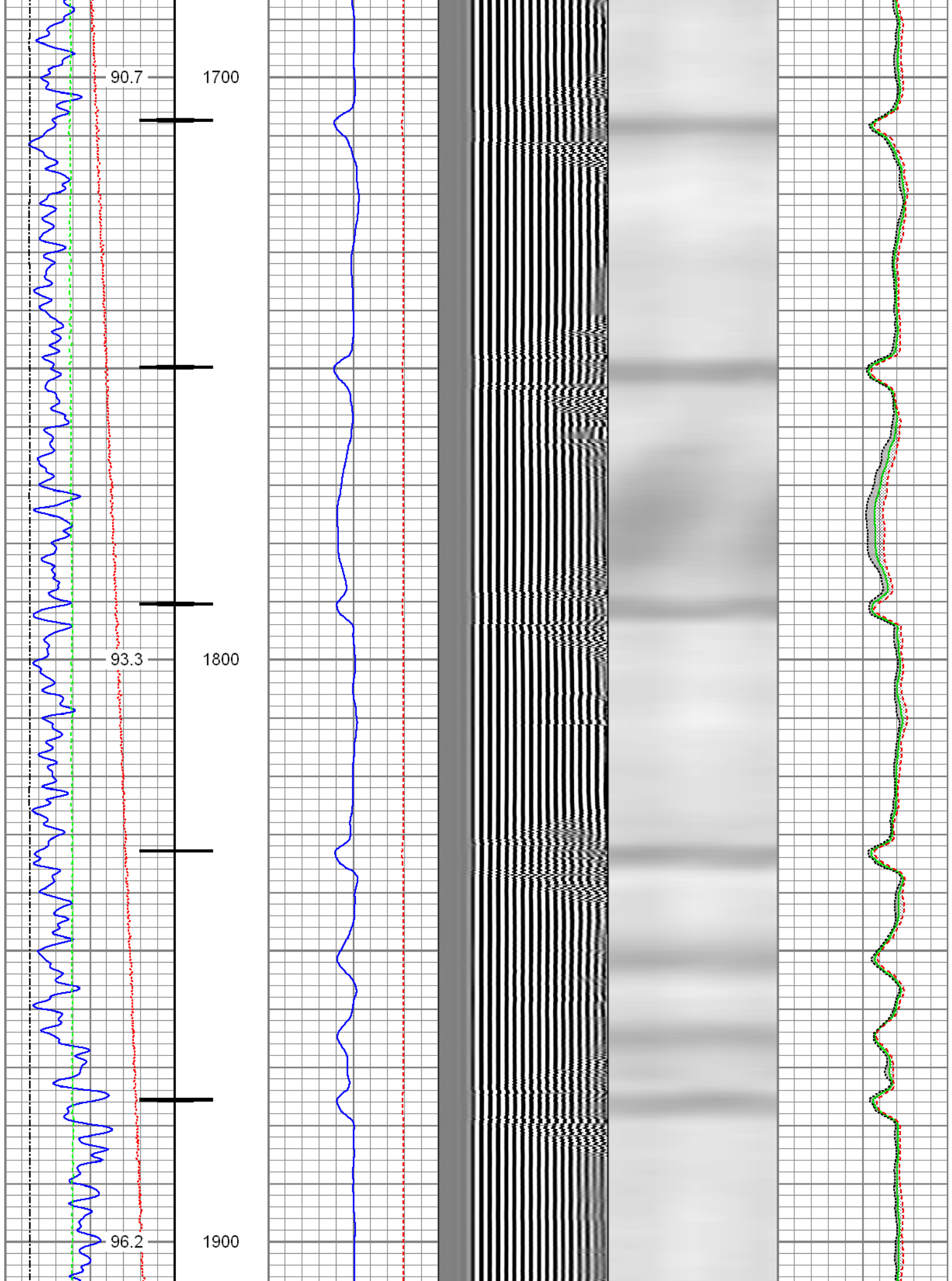


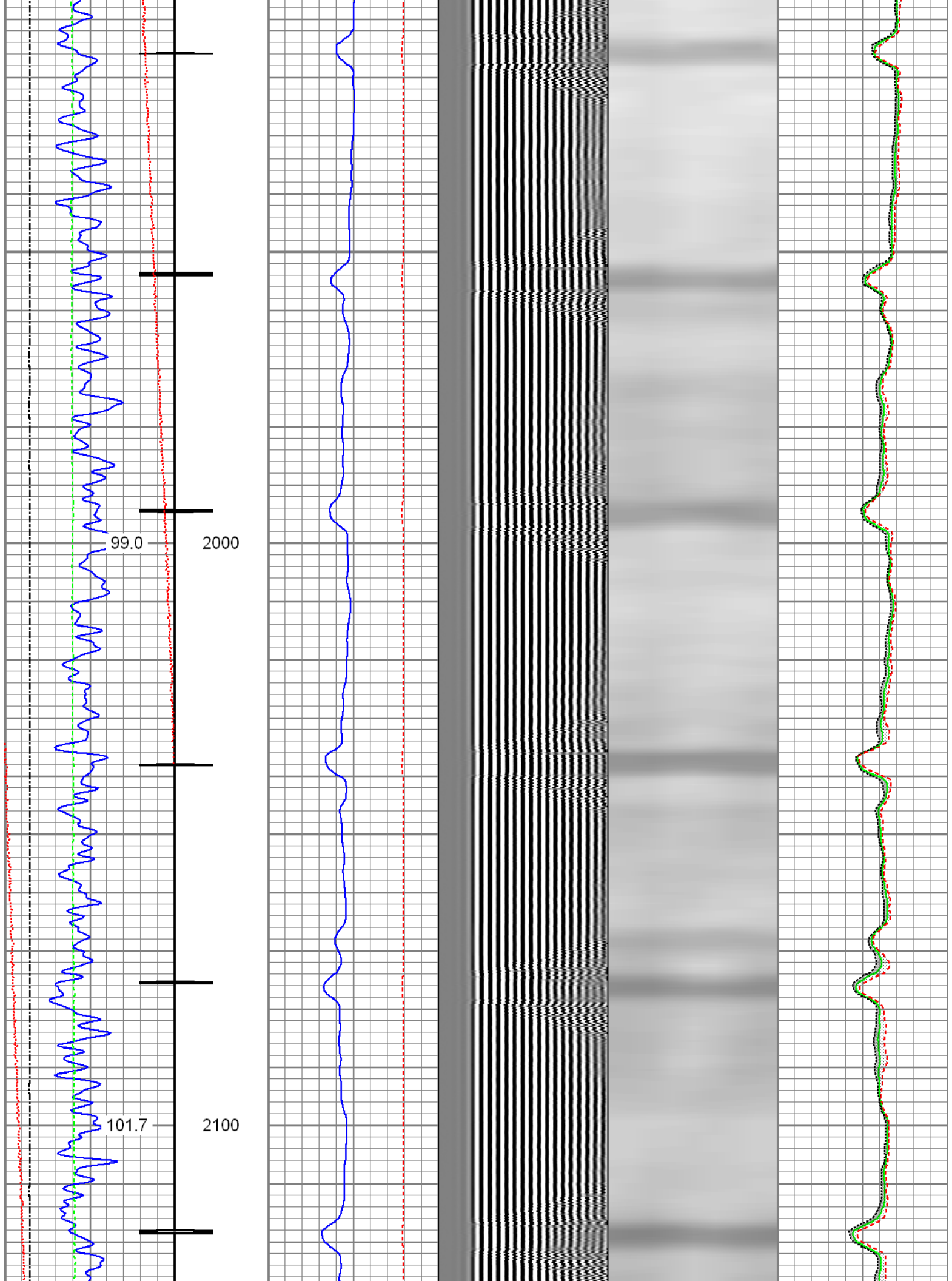


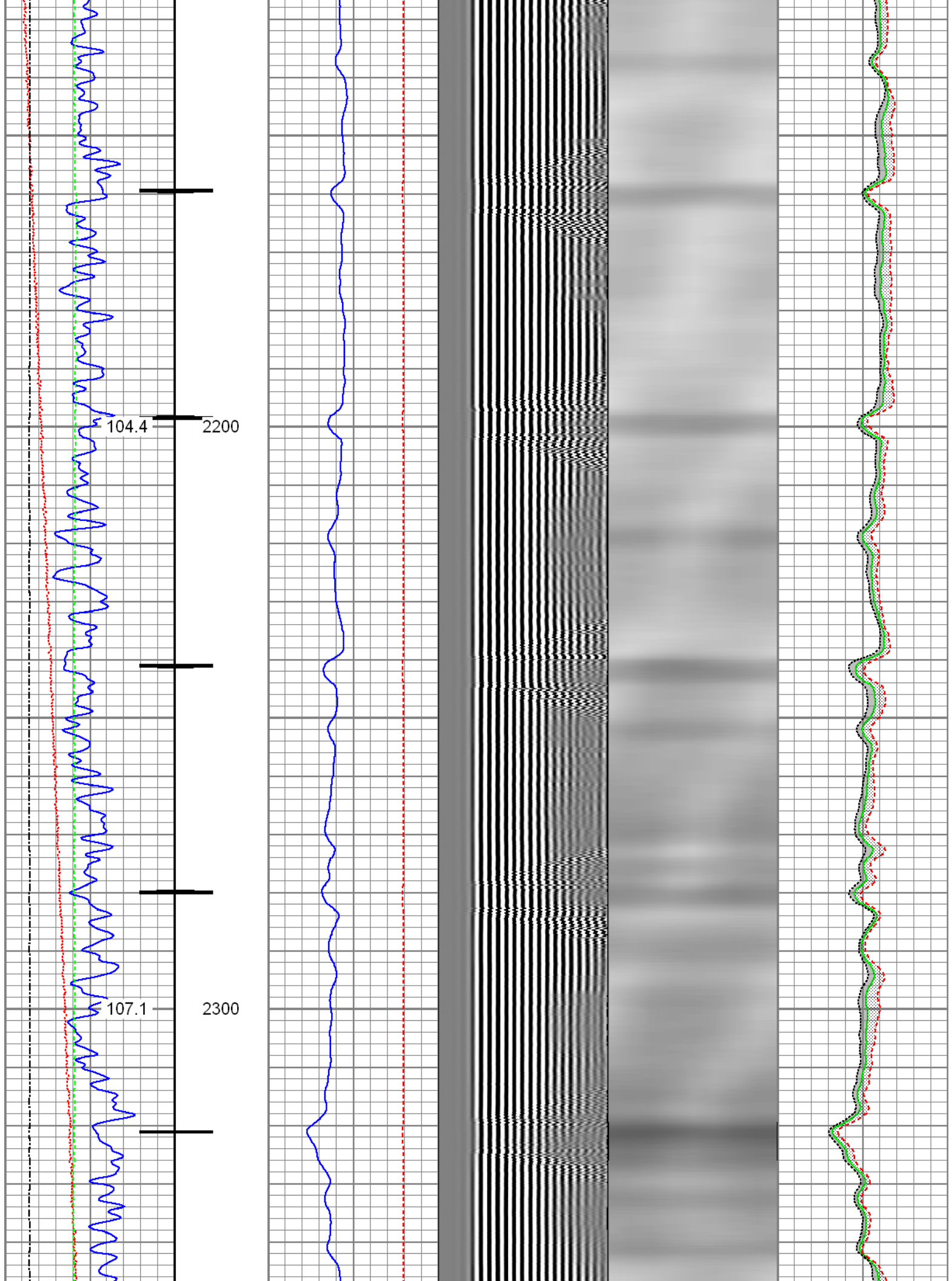


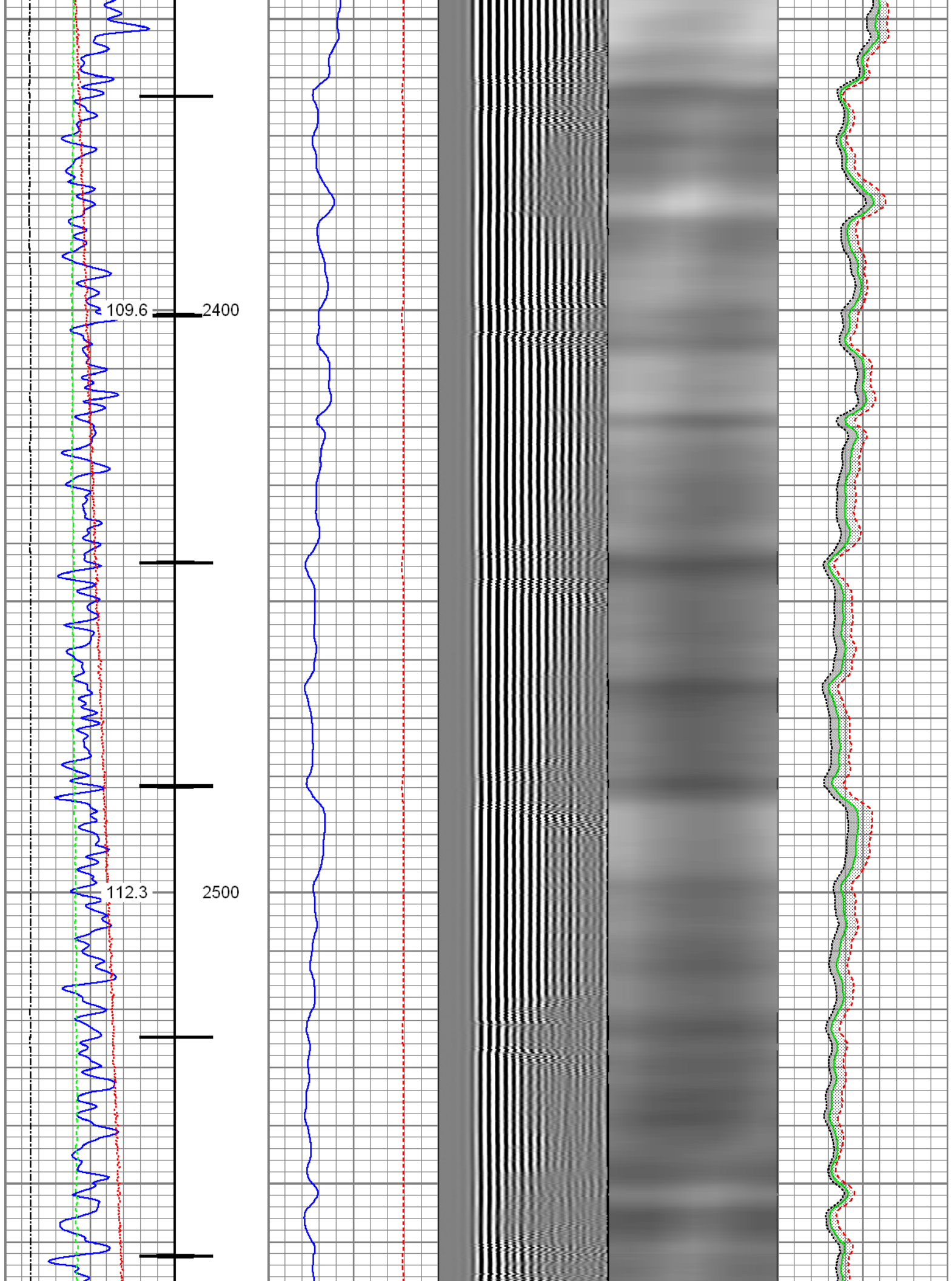


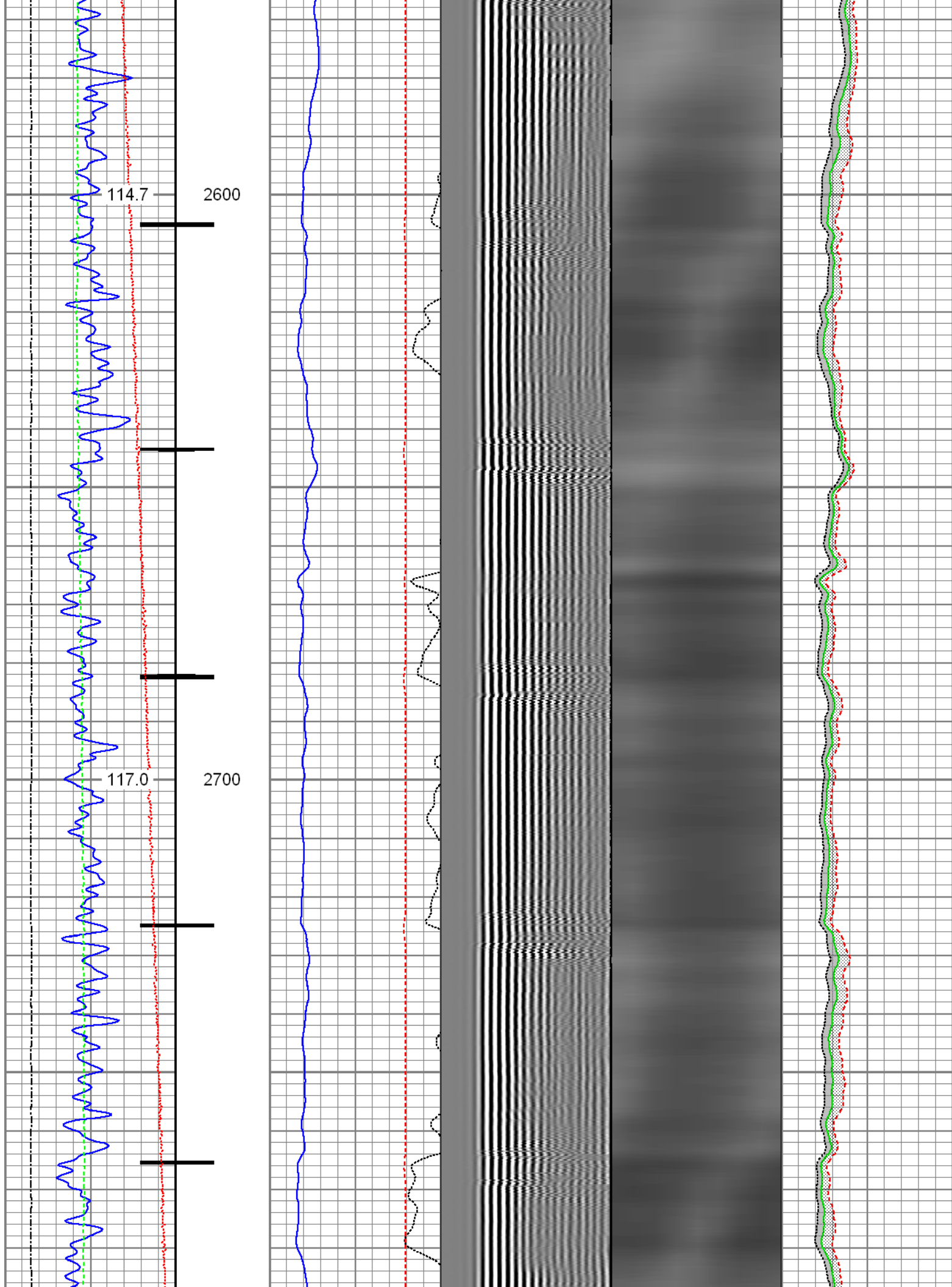


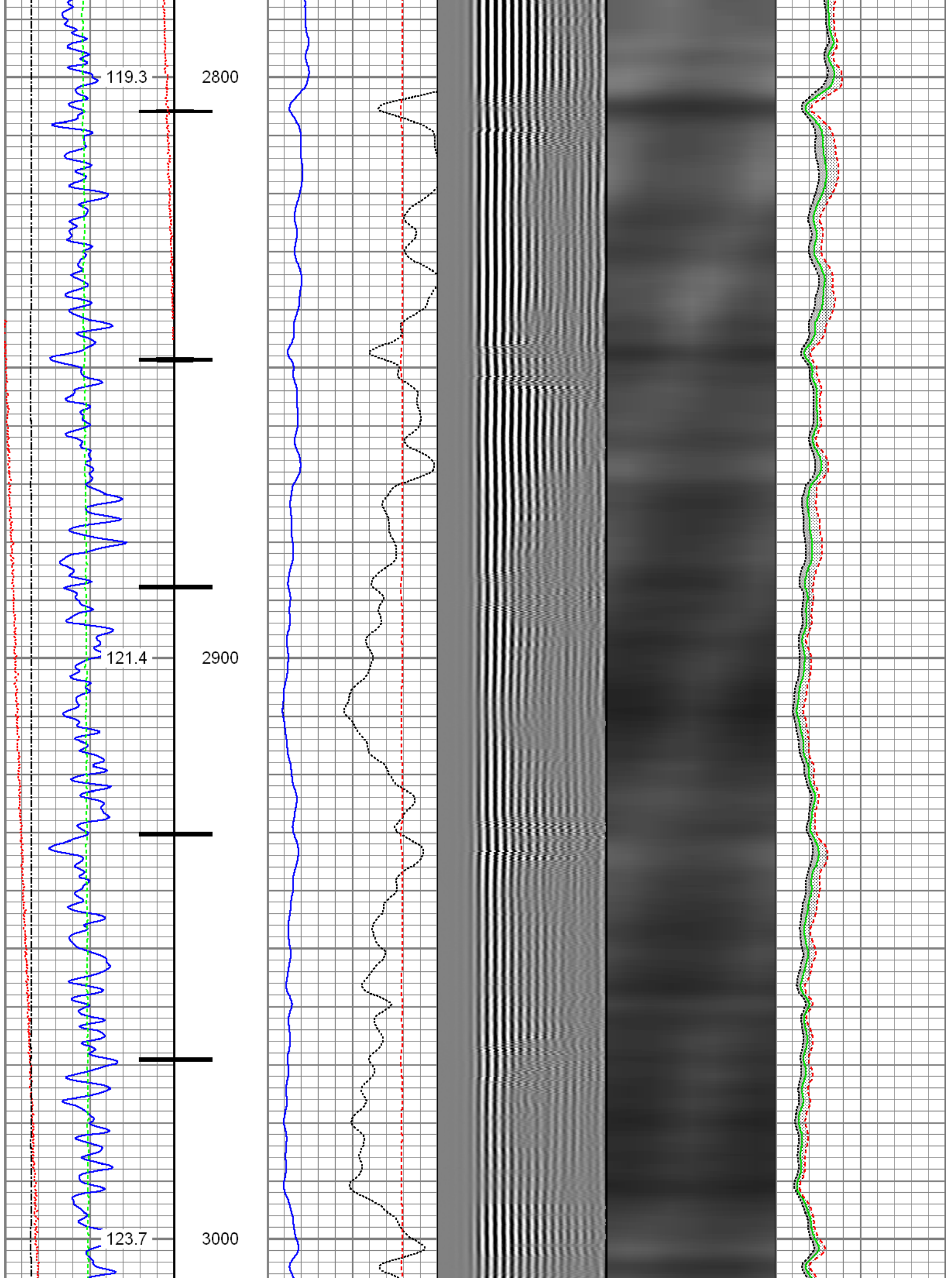


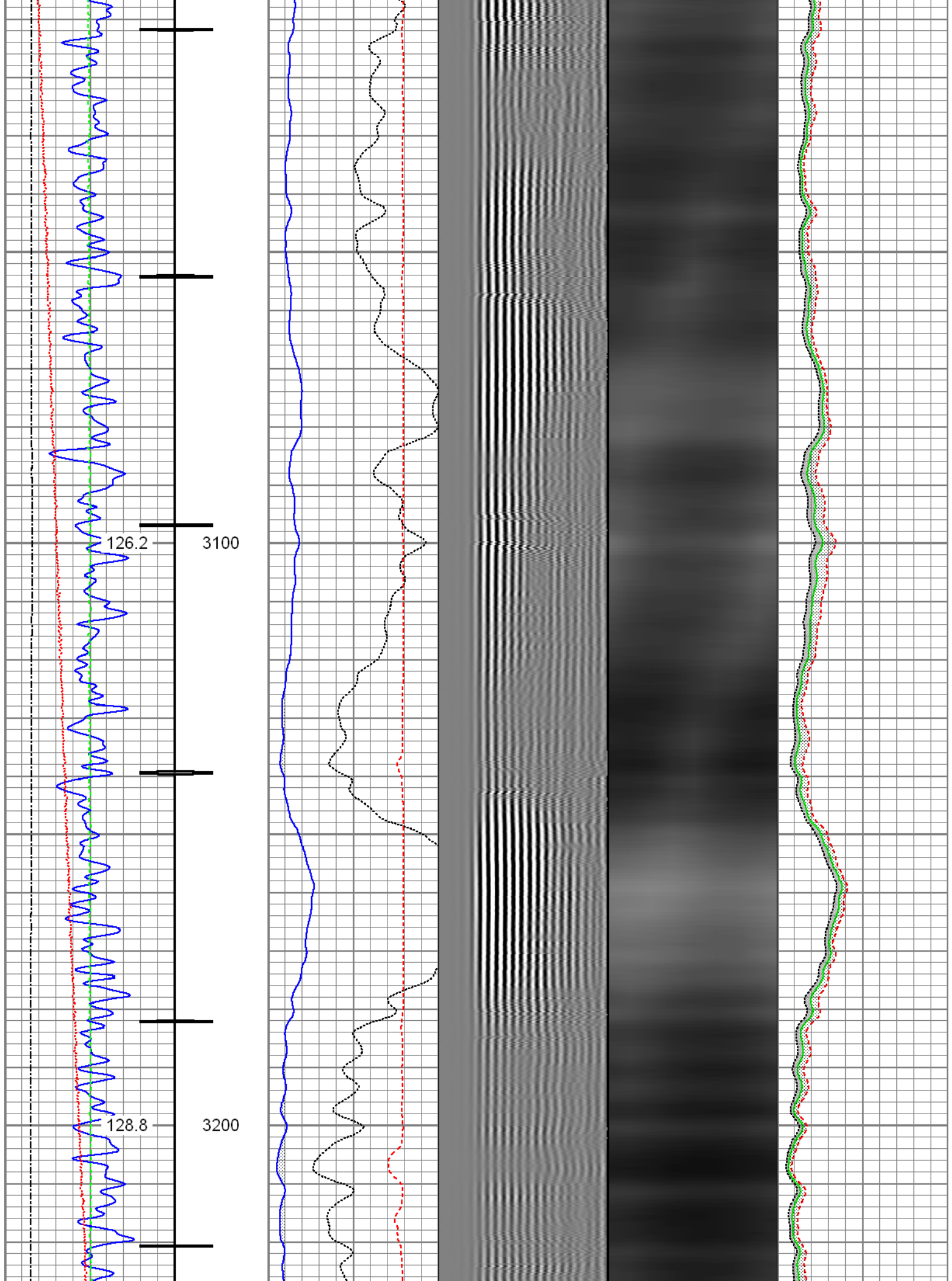


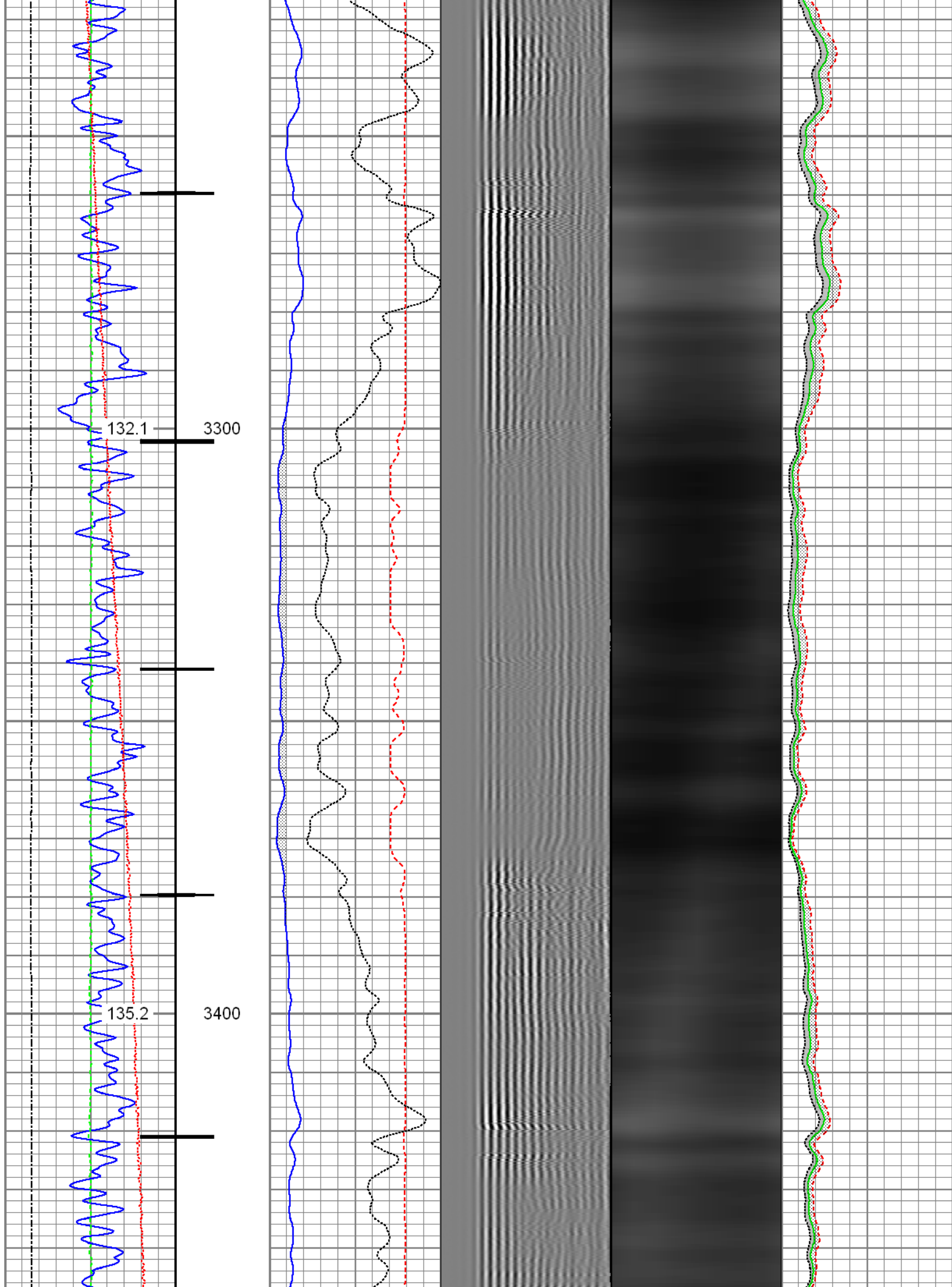


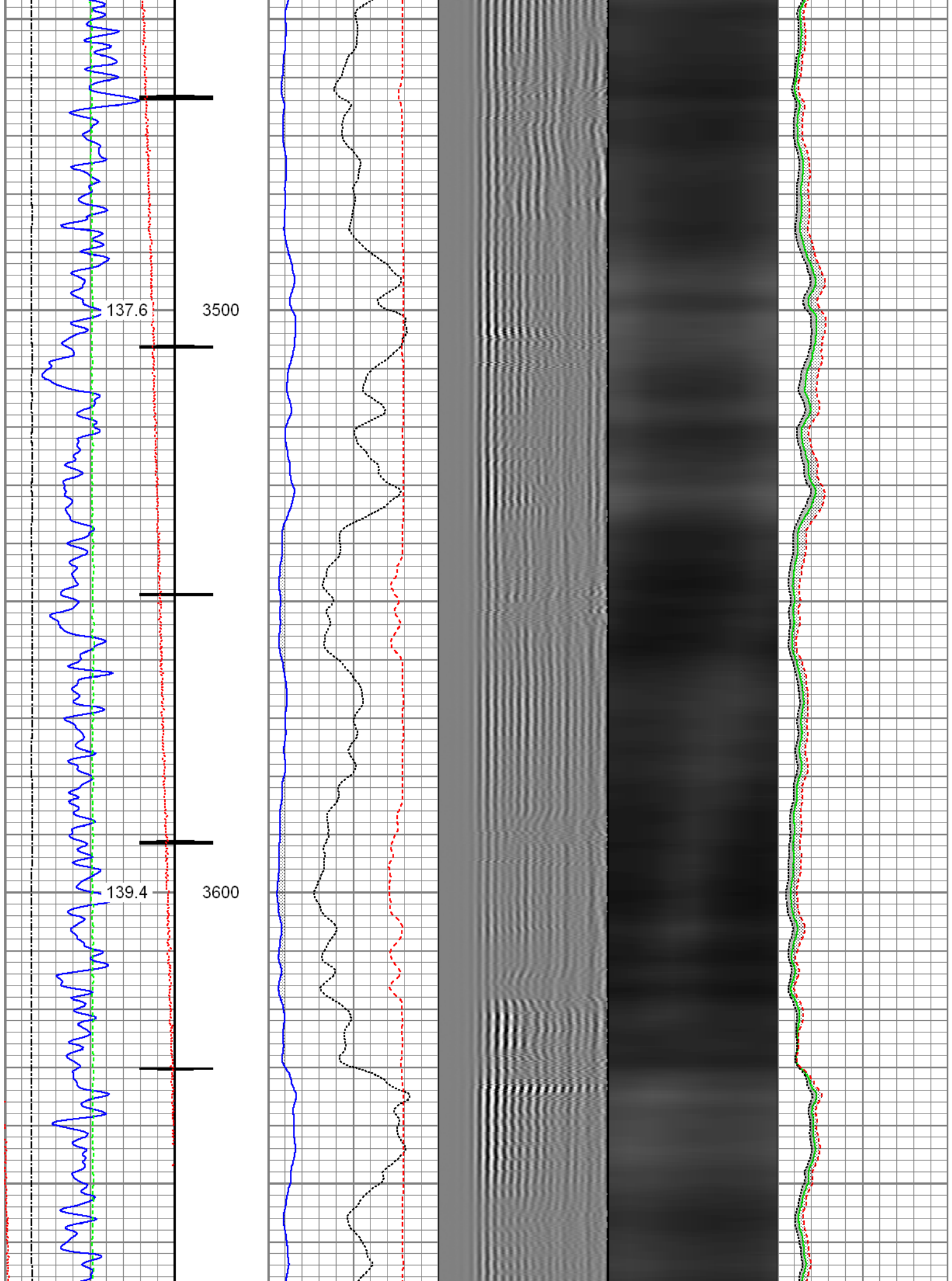


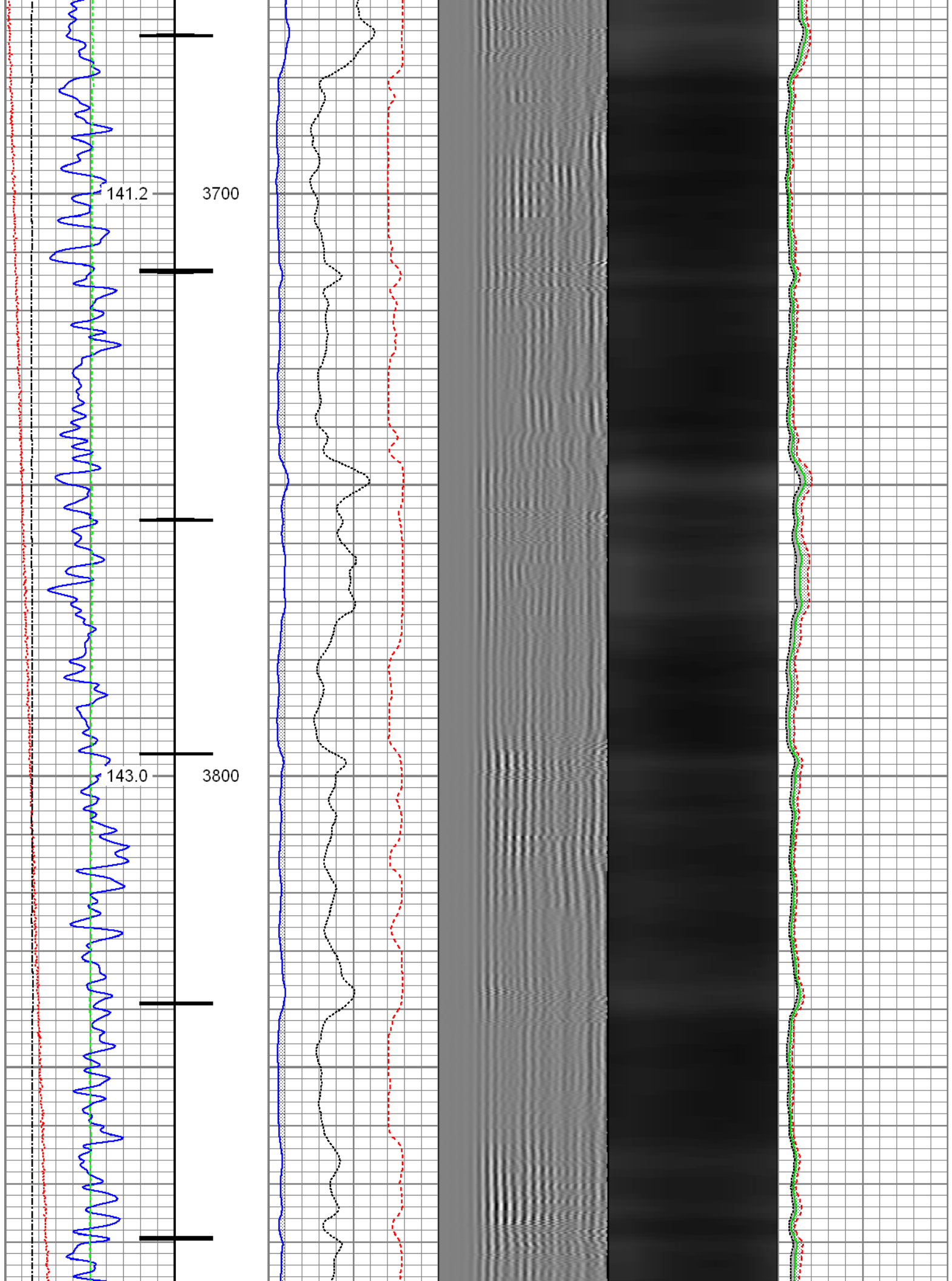


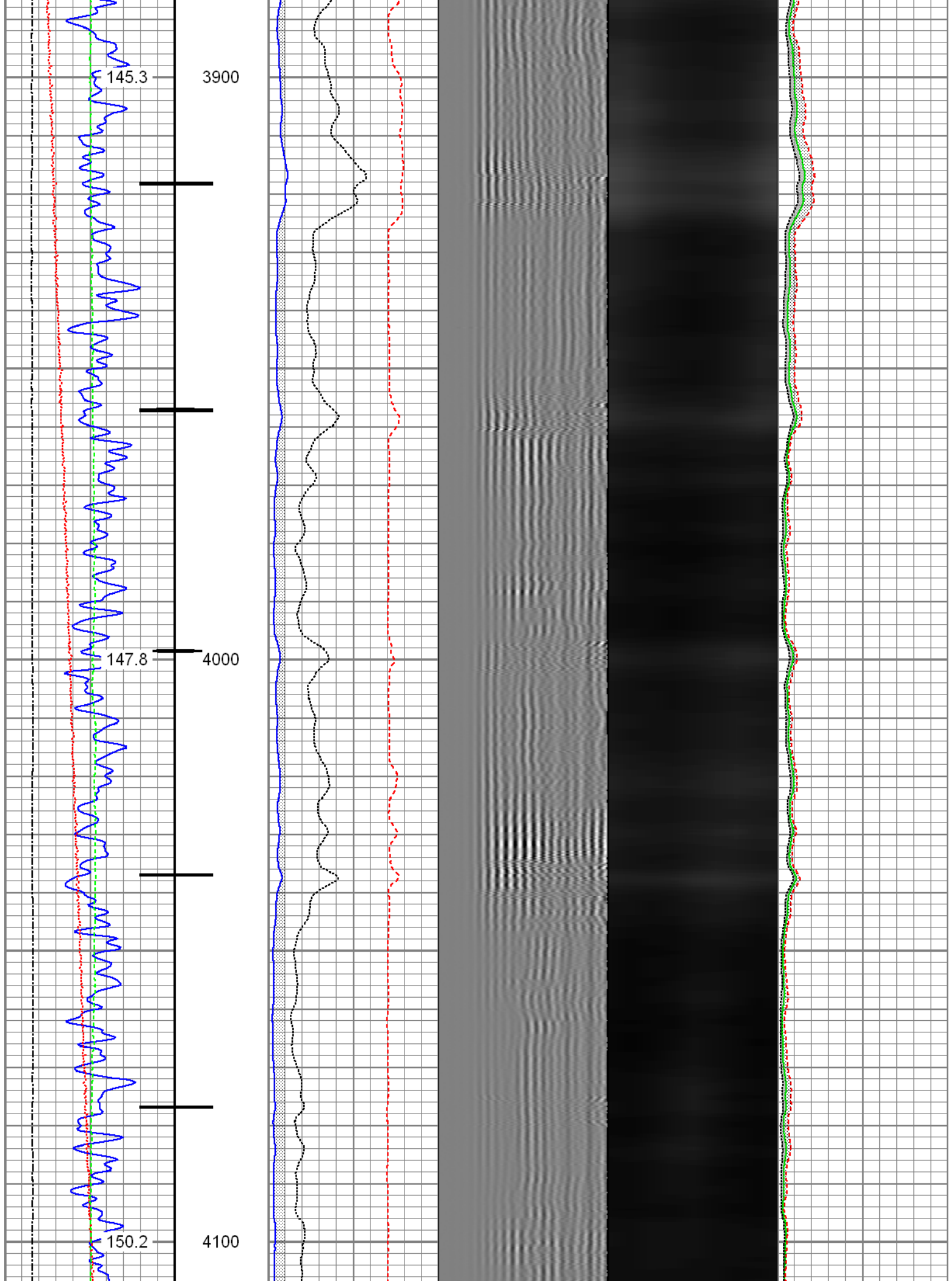


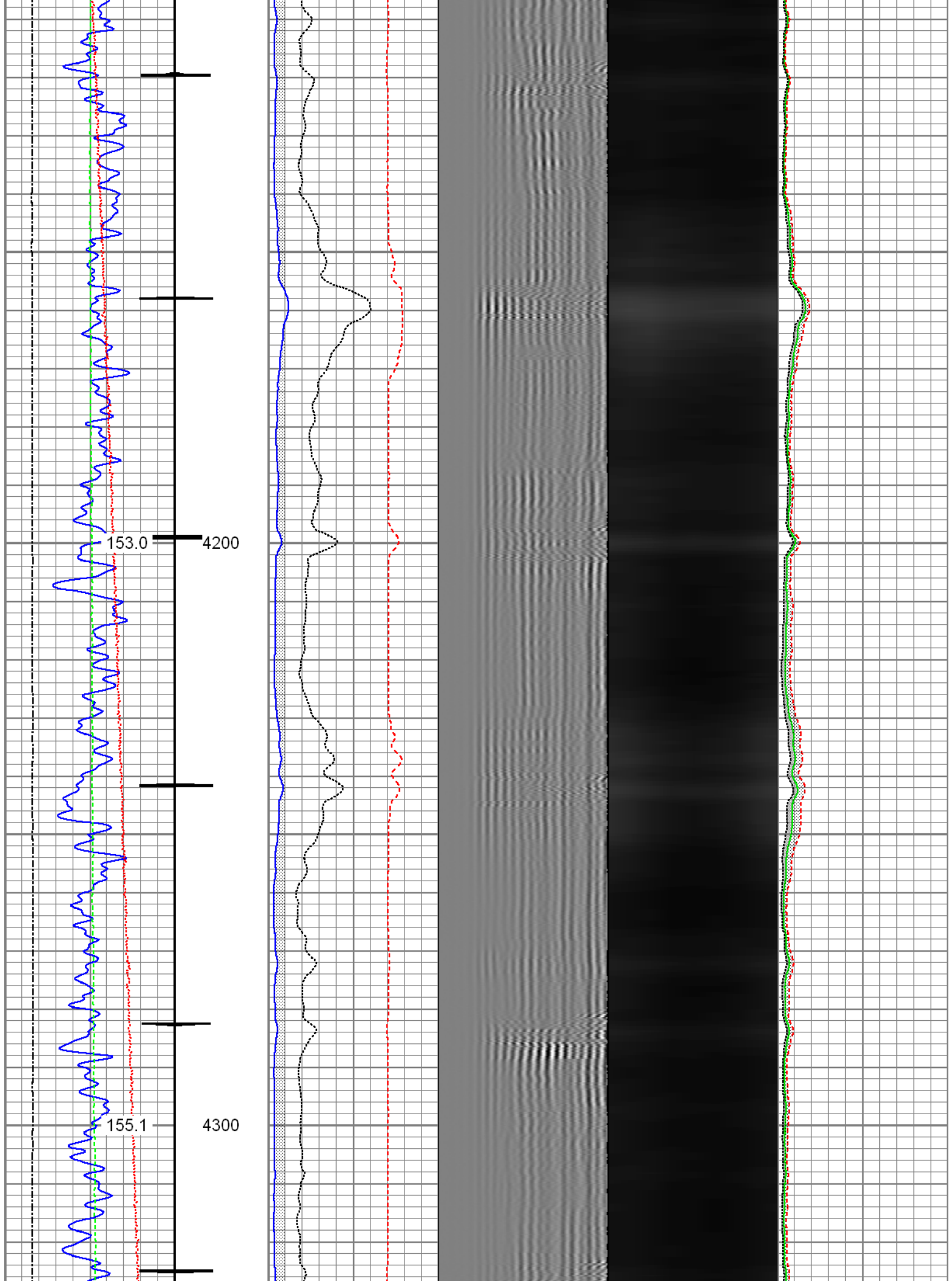


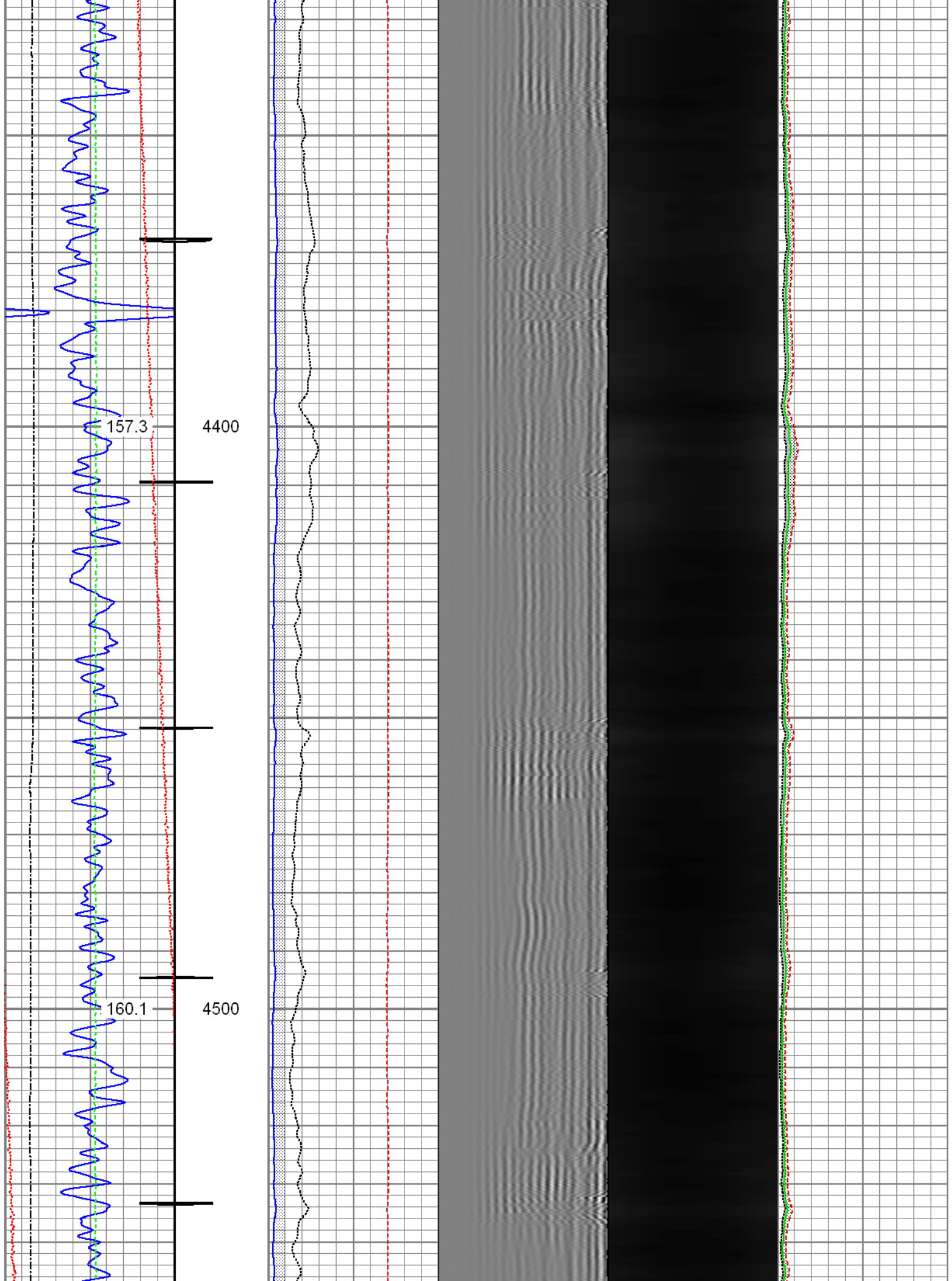


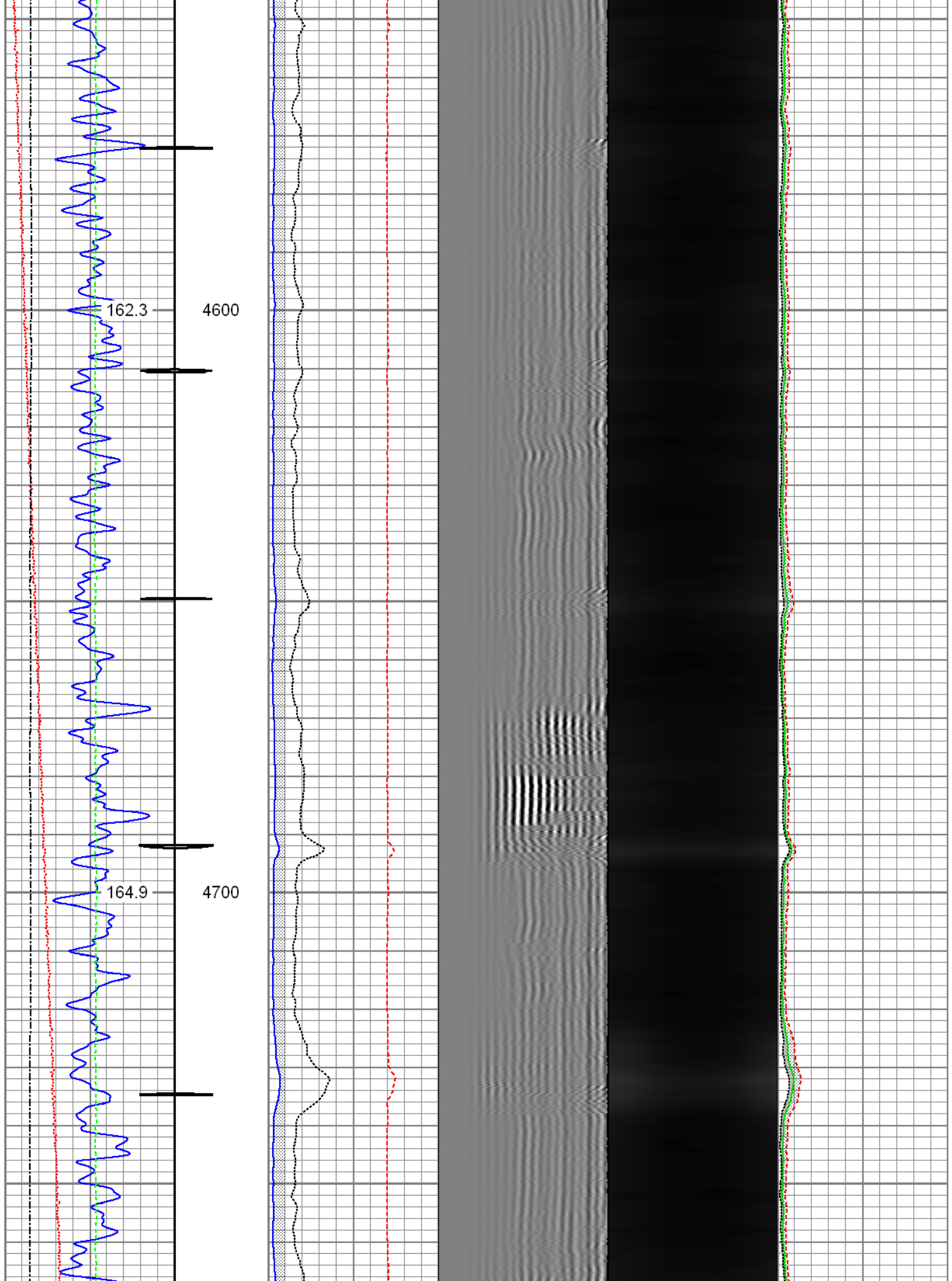


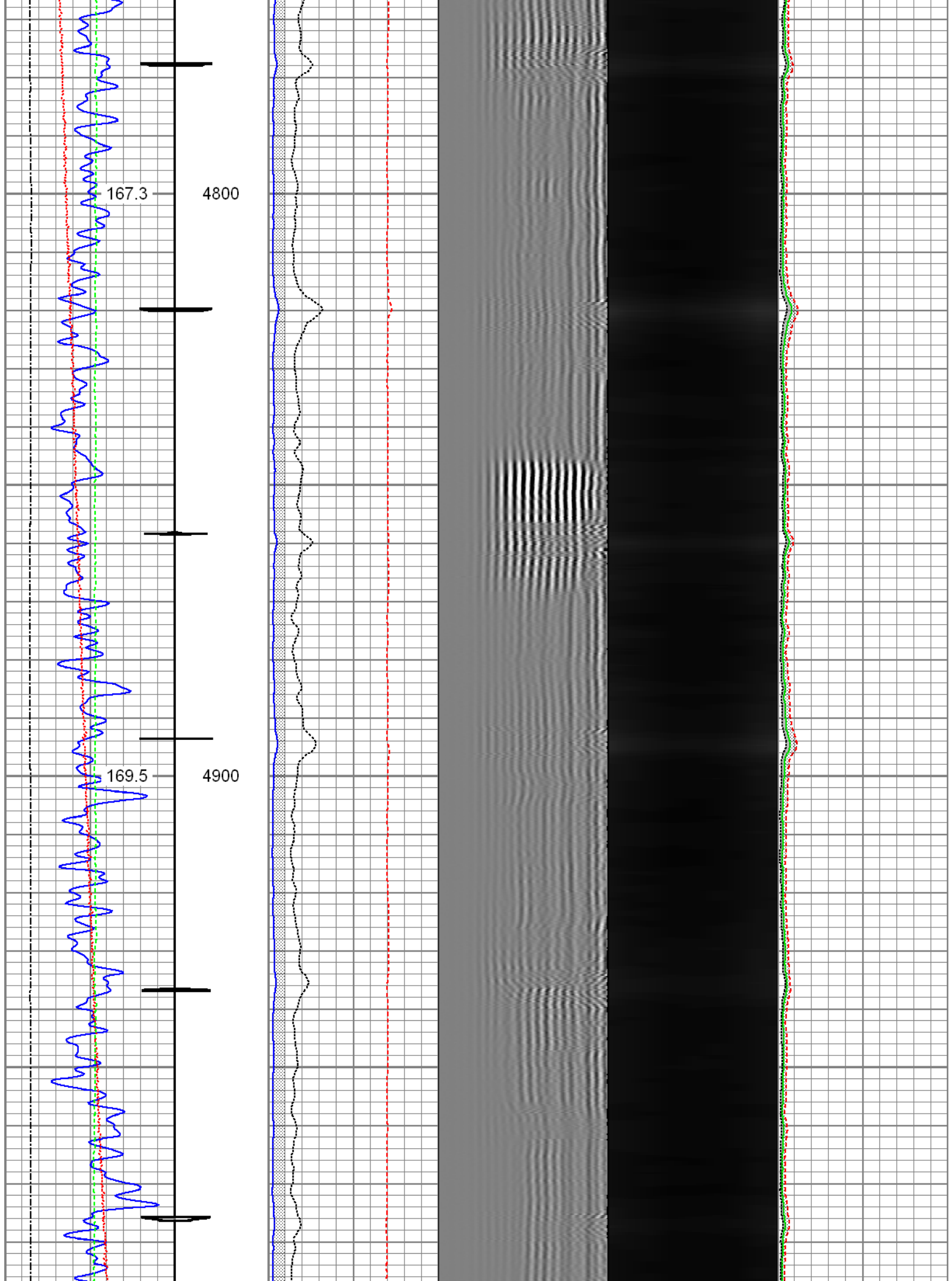


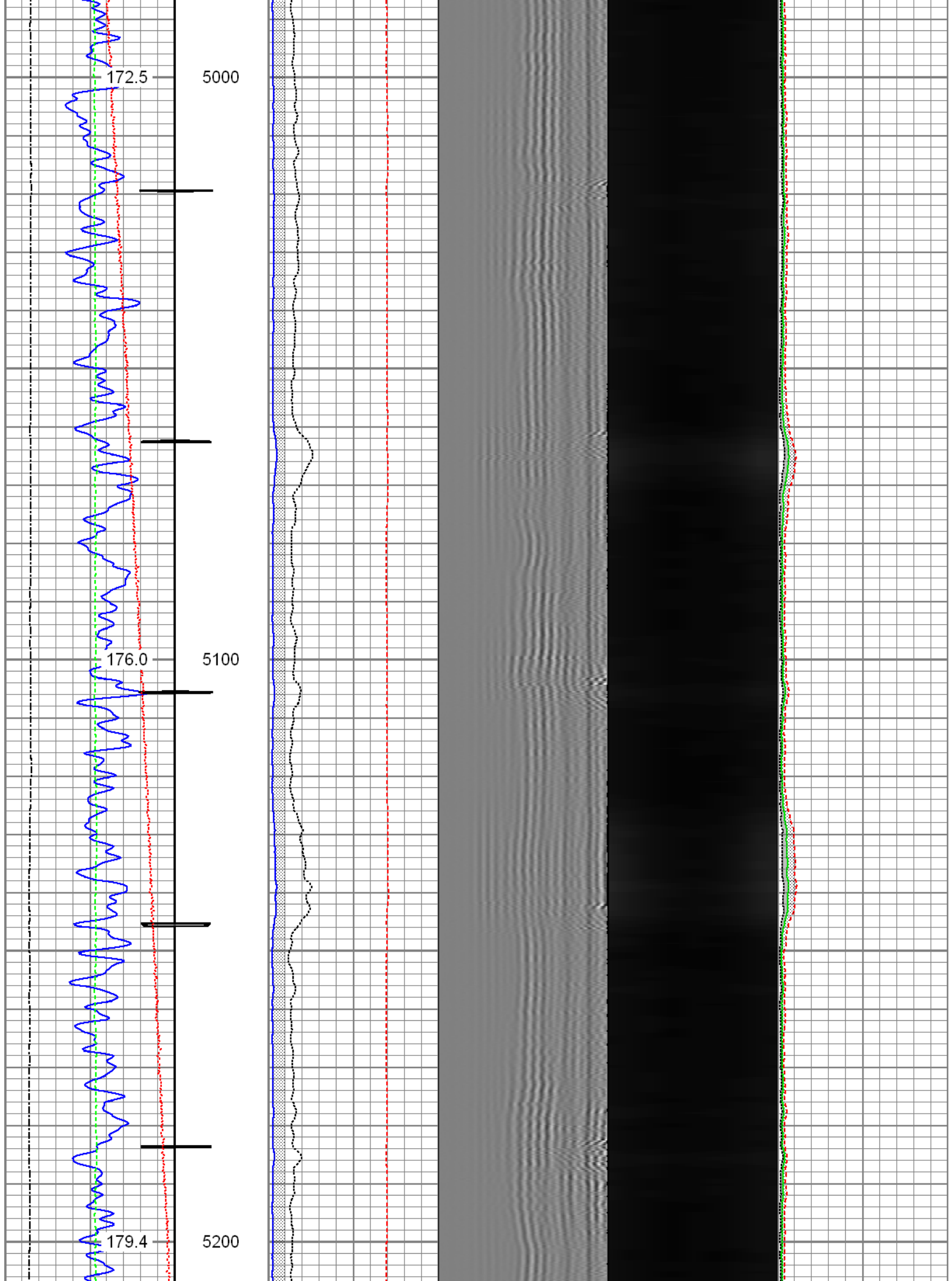


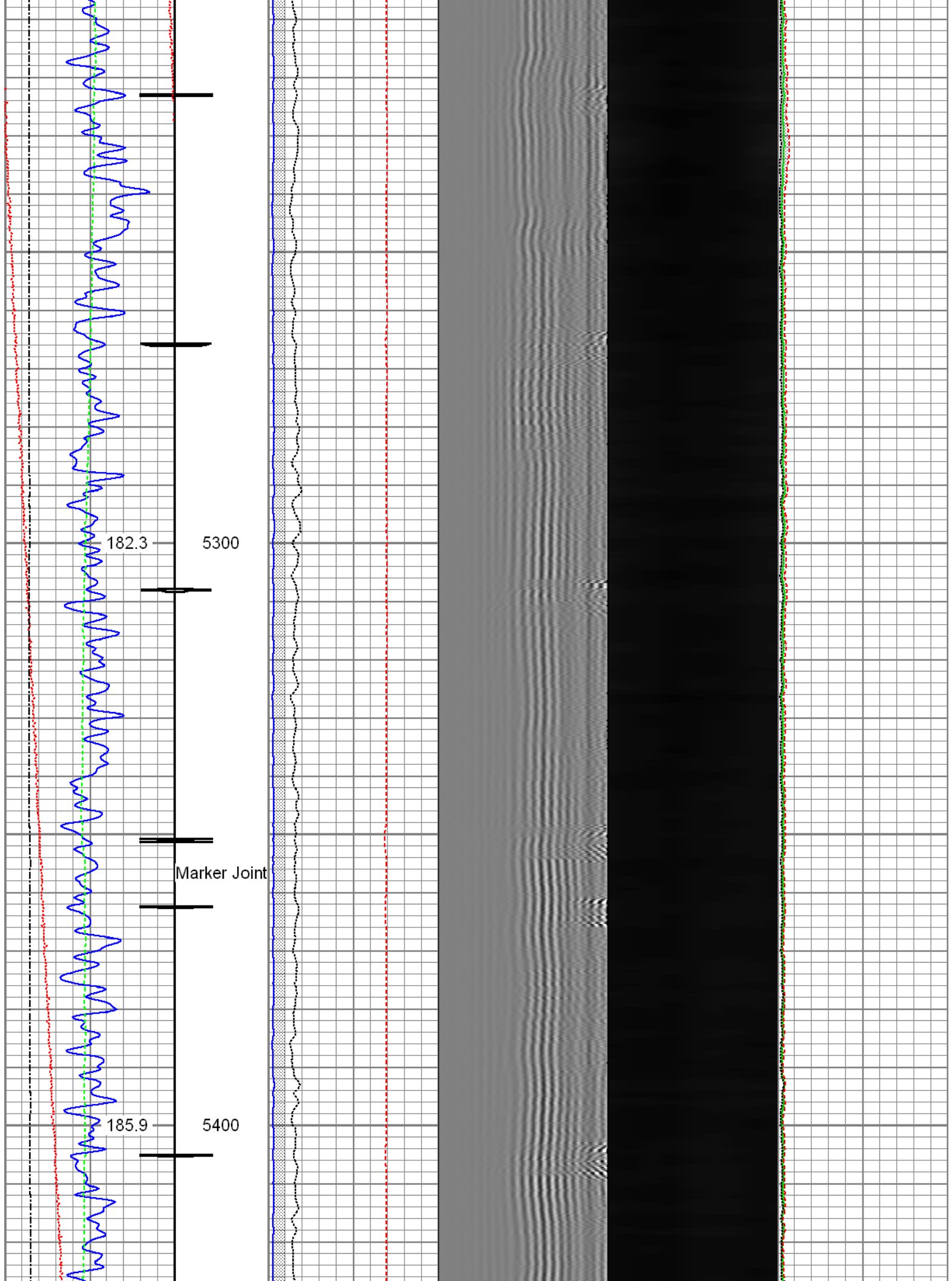


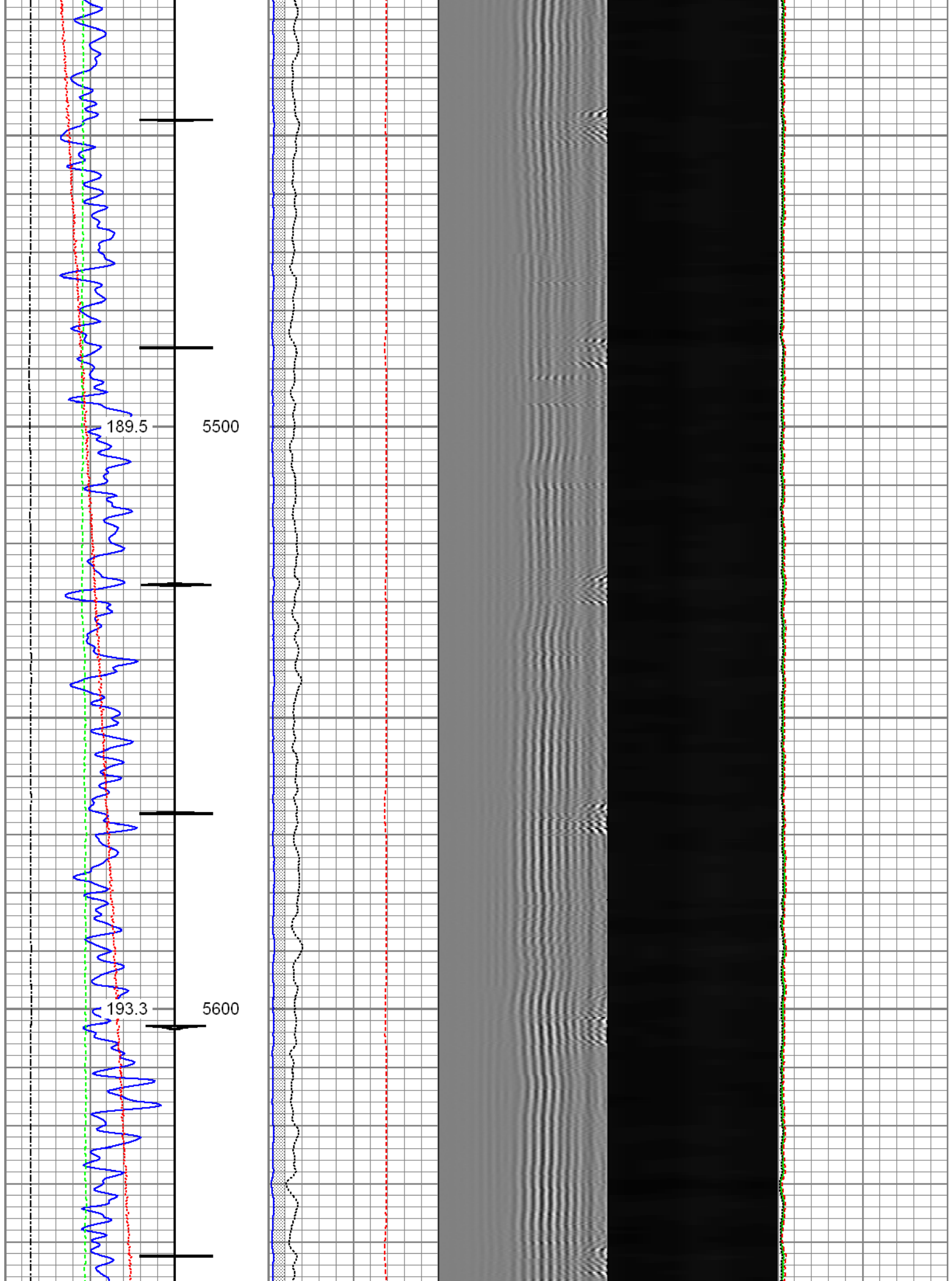


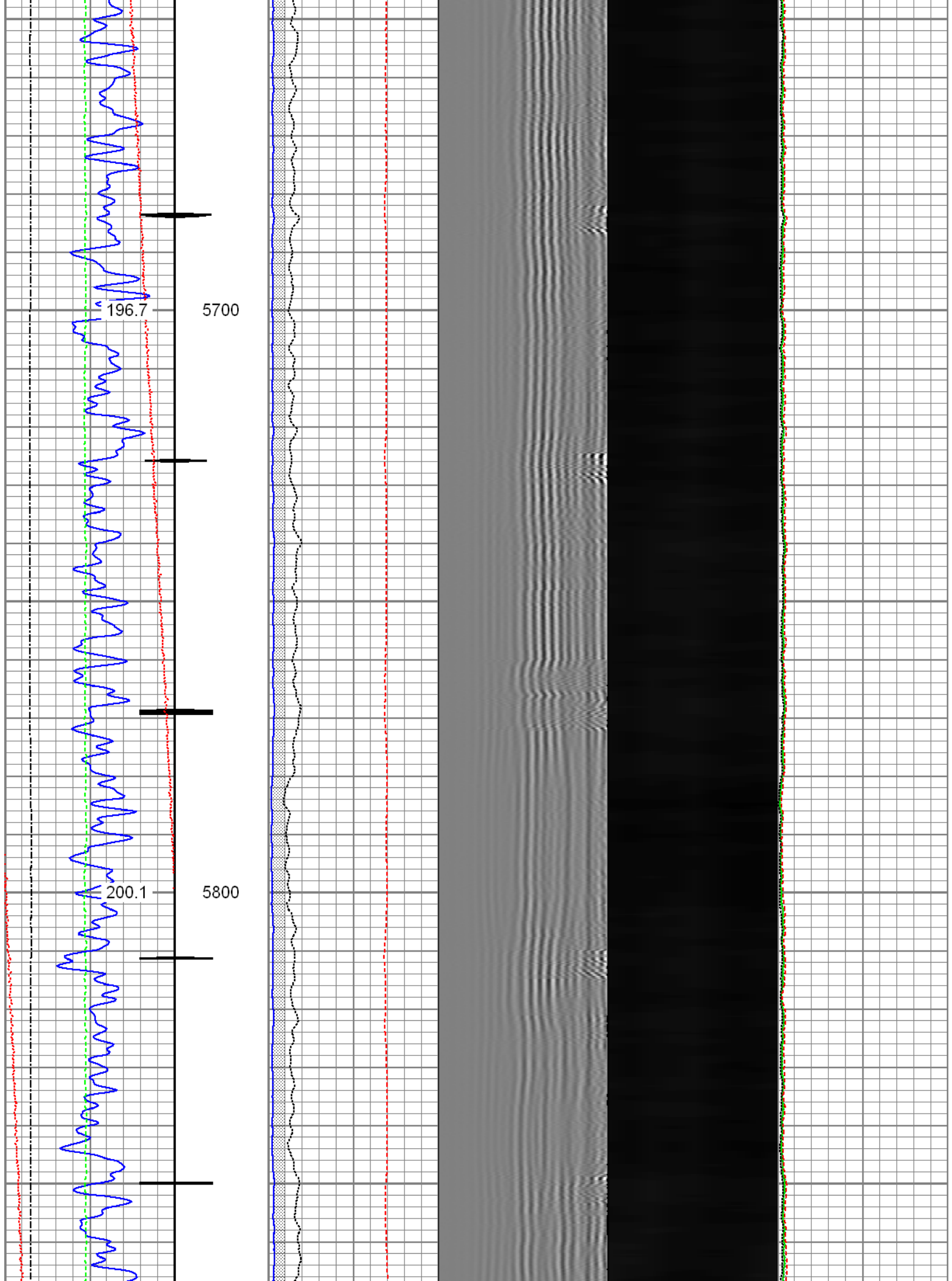


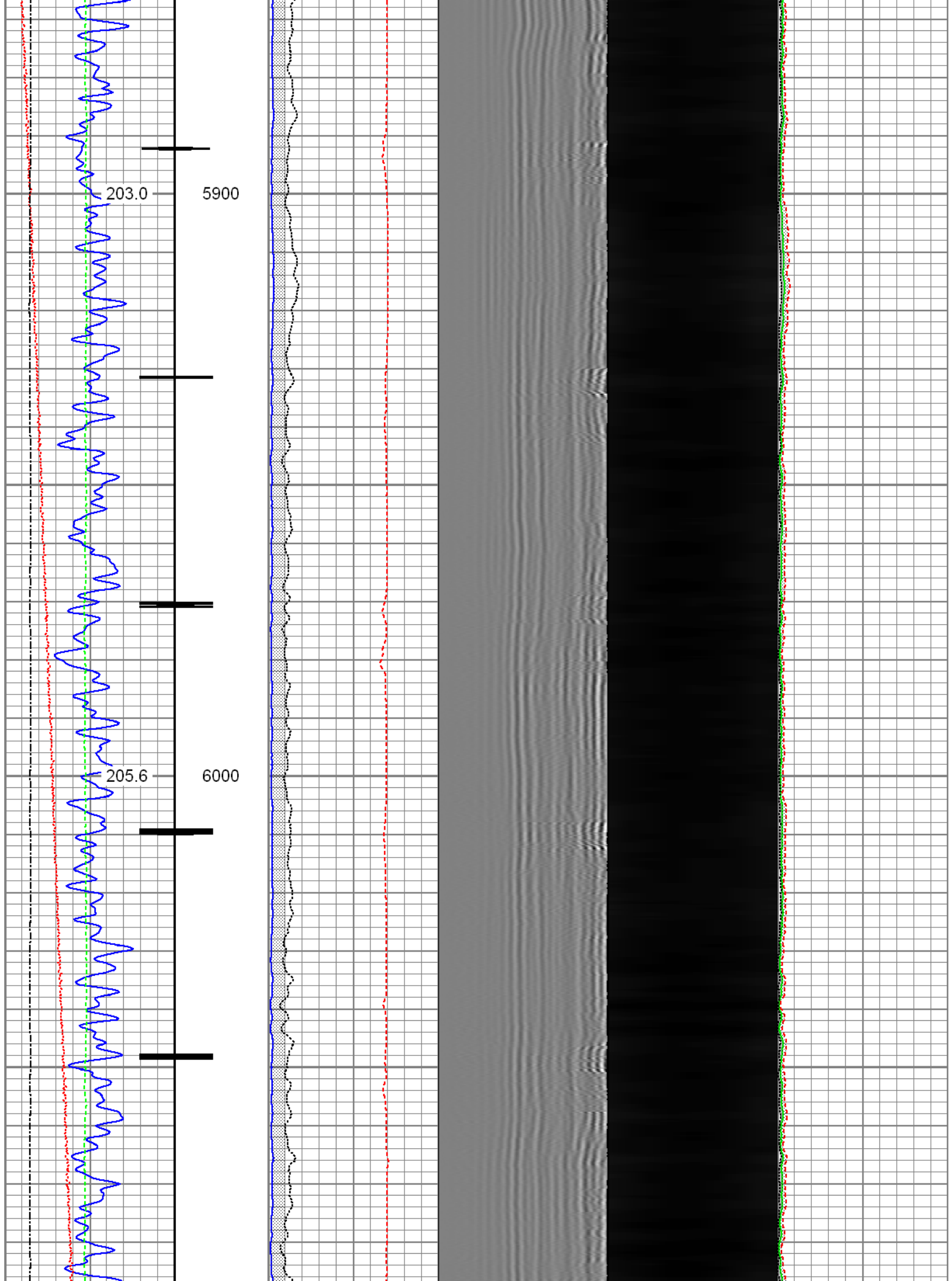


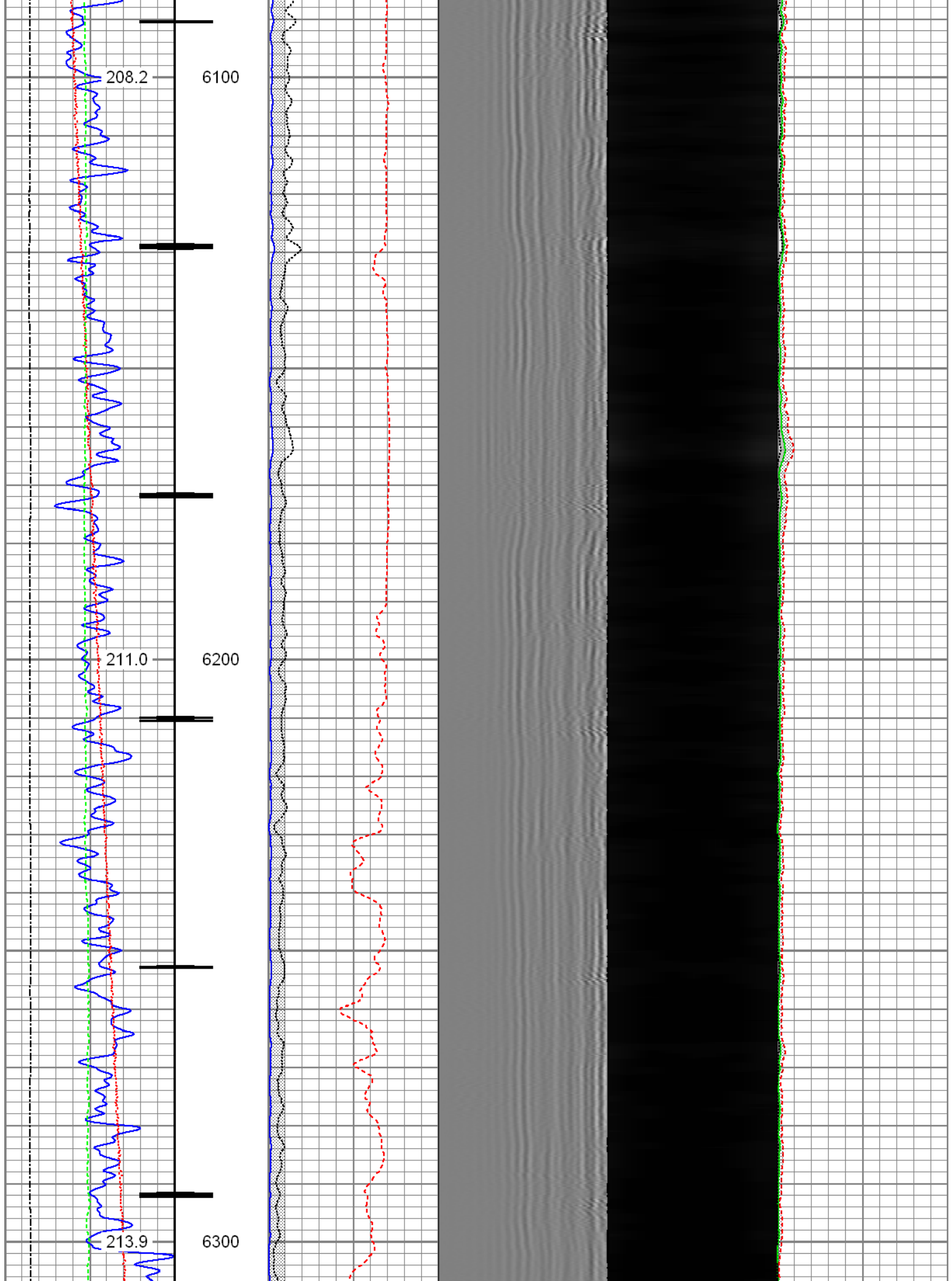


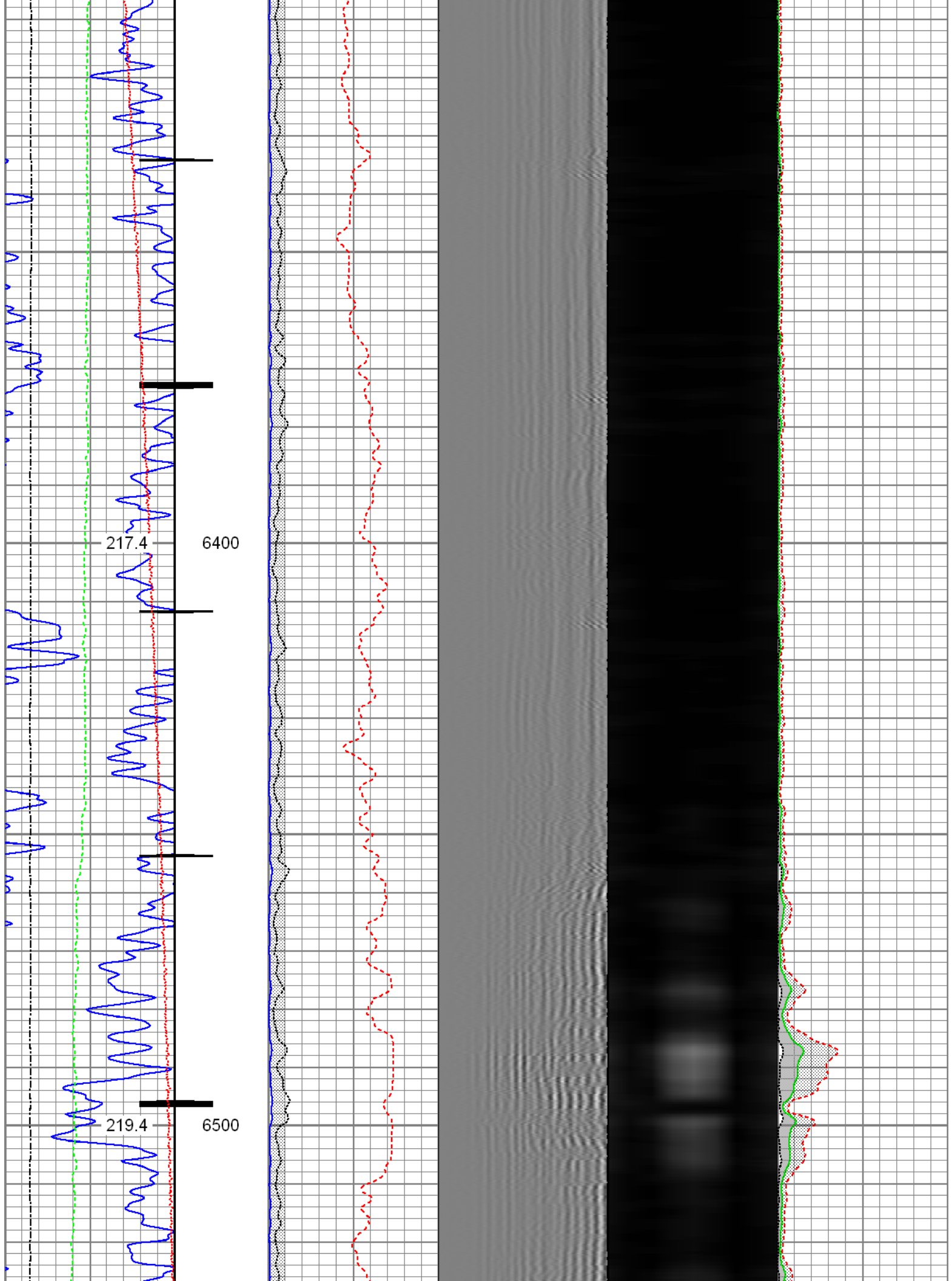


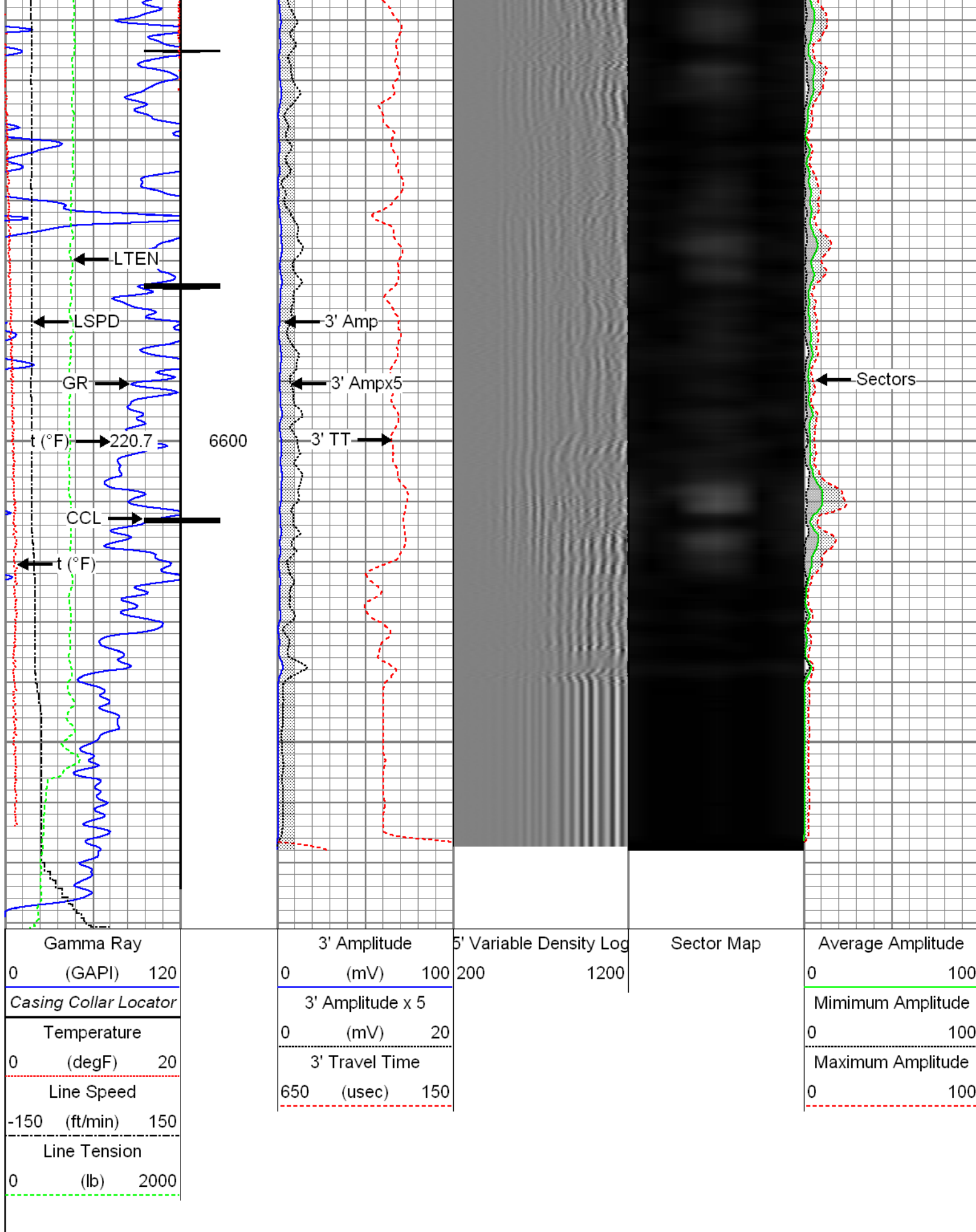






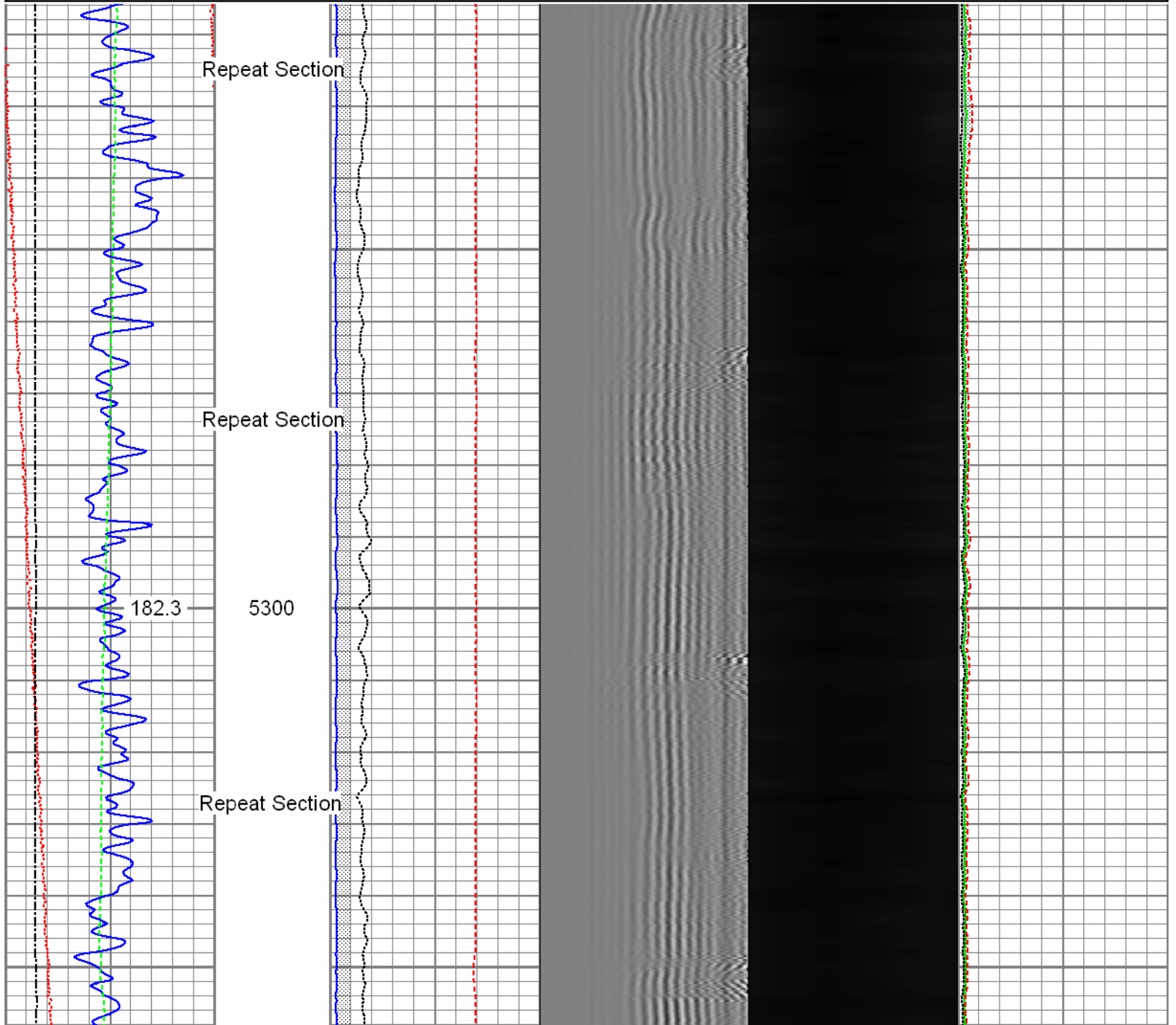


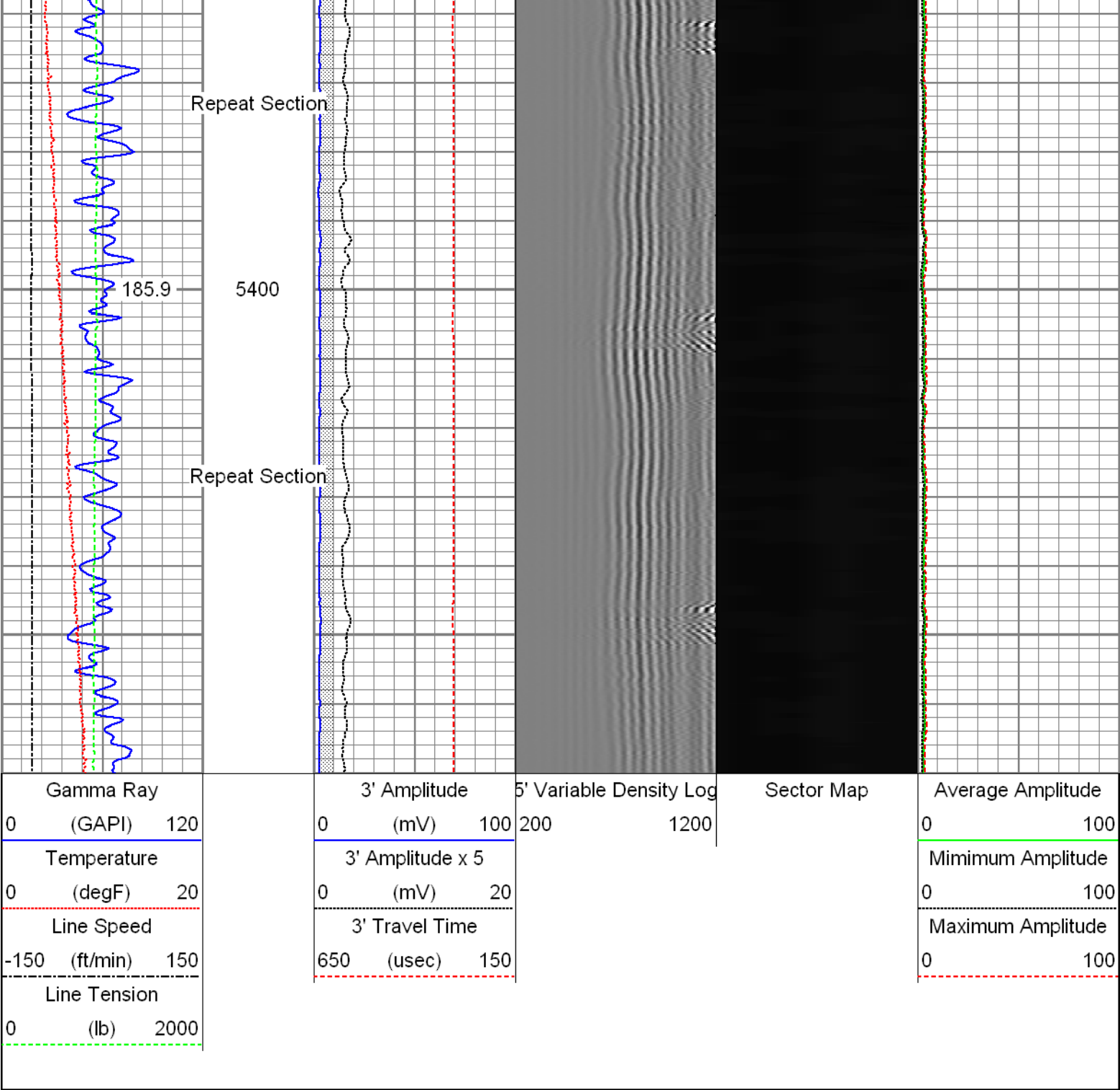


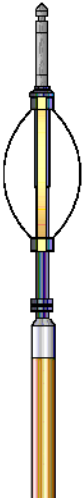


Database File: 03-03-16_noble energy_wells ranch bb01-649_rbl.db
 Dataset Pathname: pass3.1
 Presentation Format: radii
 Dataset Creation: Thu Mar 03 09:28:53 2016 by Calc 7.0 B1
 Charted by: Depth in Feet scaled 1:240

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





Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
HeadVolt	19.49		T_CH14375_1_GO Titan 1-7/16" Assembled Electric Cable Head with 1" Fishing Neck	1.03	1.44	4.00
			Probe_IL_BS_Cent Probe 2-3/4" Inline Electrical Inline Bowspring Centralizer	2.88	2.75	10.00

Sensitivity:

0.6061

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: 421.702 ft

Master Calibration, performed Thu Mar 03 09:25:00 2016:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.007	0.553	0.800	71.921	130.255	-0.171
CAL	0.007	0.668				
5'	0.007	0.476	0.800	71.921	151.679	-0.218
SUM						
S1	0.007	0.529	0.000	100.000	191.528	-1.314
S2	0.008	0.528	0.000	100.000	192.466	-1.611
S3	0.008	0.540	0.000	100.000	187.901	-1.465
S4	0.009	0.546	0.000	100.000	186.216	-1.721
S5	0.009	0.567	0.000	100.000	179.160	-1.538
S6	0.008	0.570	0.000	100.000	177.950	-1.456
S7	0.008	0.558	0.000	100.000	181.808	-1.511
S8	0.008	0.551	0.000	100.000	184.146	-1.518

Internal Reference Calibration, performed Thu Mar 03 07:41:23 2016:

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.007	0.667	0.007	0.668	1.001	0.000

Air Zero Calibration, performed Thu Mar 03 07:40:46 2016:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.006		0.000		0.000	
5'	0.007		0.000		-0.000	
SUM						
S1	0.007		0.000		0.000	
S2	0.007		0.000		-0.000	
S3	0.007		0.000		-0.000	
S4	0.006		0.000		0.000	
S5	0.007		0.000		-0.000	
S6	0.007		0.000		-0.000	
S7	0.006		0.000		-0.000	
S8	0.007		0.000		-0.000	



Company Noble Energy Inc.
Well Wells Ranch BB01-649
Field Wattenberg

	County	Weld
	State	Colorado