



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company		Whiting Oil & Gas Corporation	
Well		Horsetail 30G-3144	
Field		Wildcat	
County		Weld	
State		Colorado	
Location:		API #: 05-123-43028	
SEC 30 TWP 10N RGE 57W		GR/JB	
Permanent Datum		Ground Level	
Log Measured From		Kelly Bushing	
Drilling Measured From		Kelly Bushing	
Elevation		21 FT	
Other Services		K.B. 4759'	
		D.F. 4758'	
		G.L. 4738'	
Date		19-JAN-2017	
Run Number		Two	
Depth Driller		13790 FT	
Depth Logger		4966 FT	
Bottom Logged Interval		4961 FT	
Top Log Interval		Surface	
Open Hole Size		8.75"	
Type Fluid		Water	
Density / Viscosity		8.34 lb/gal	
Max. Recorded Temp.		187°F	
Estimated Cement Top		Surface	
Time Well Ready		ROA	
Time Logger on Bottom		09:25	
Equipment Number		HD-340	
Location		Fort Lupton, CO	
Recorded By		C. Bryan	
Witnessed By		Bradd Kothne	
Borehole Record		Tubing Record	
Run Number		Bit	
From		To	
Size		Weight	
From		To	
Casing Record		Size (in)	
Surface Casing		9 5/8	
Intermediate #1		5 1/2	
Intermediate #2		20	
Liner		Grade	
		J-55	
		HCP-110	
		Top	
		Surface	
		Bottom	
		2078 FT	
		13774 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 Marker Joint at 4944 FT
Adjusted log +29 FT to correlate with Marker Joint
Log ran from just below Marker Joint to Surface
Log ran with 1500 PSI surface induced pressure
Gauge Ring/Junk Basket ran to 4983' FT with no debris
Logging tools were clean and free of any debris upon completion of operations

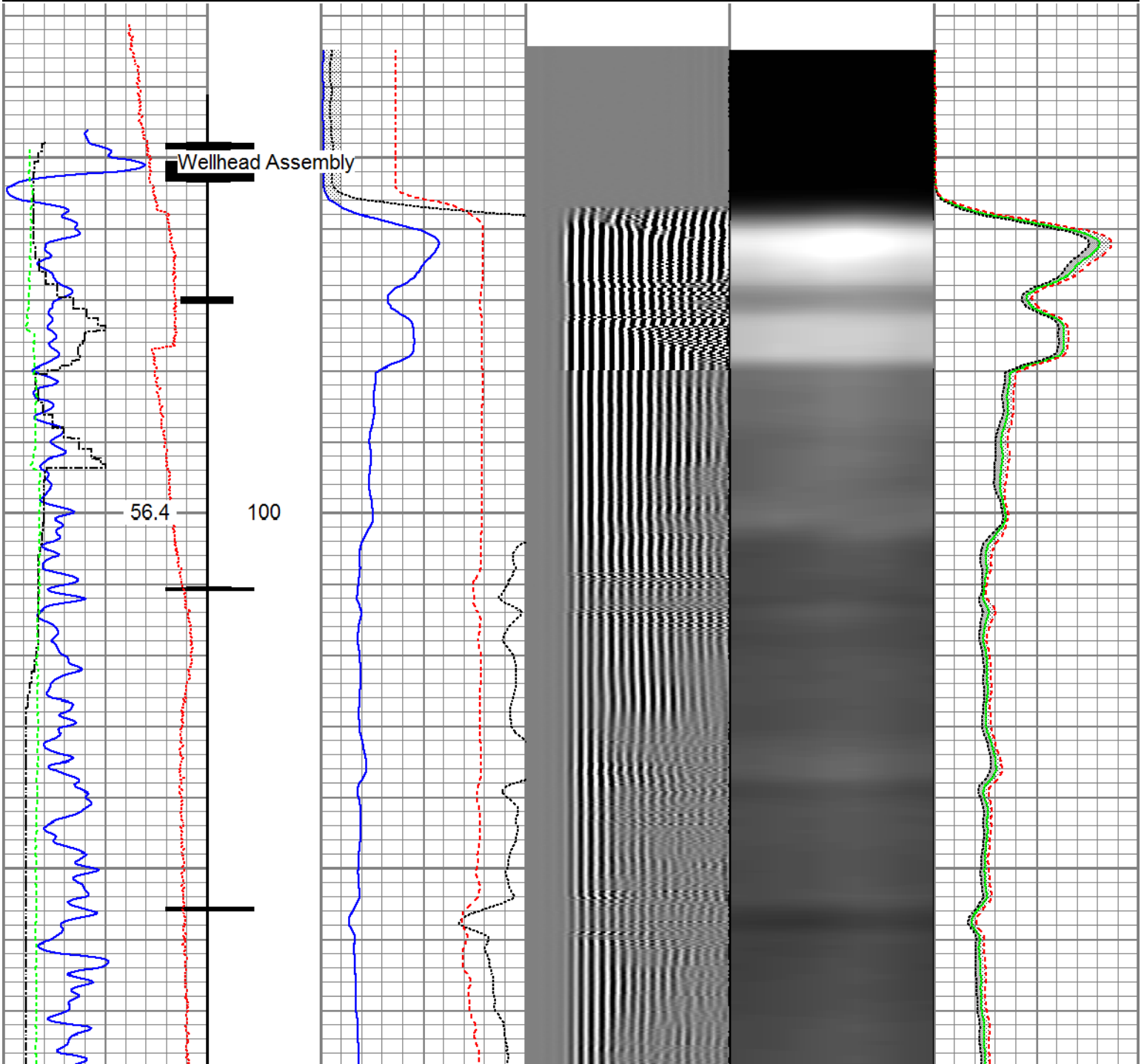
Thank you for choosing Reliance Oilfield Services, LLC!!

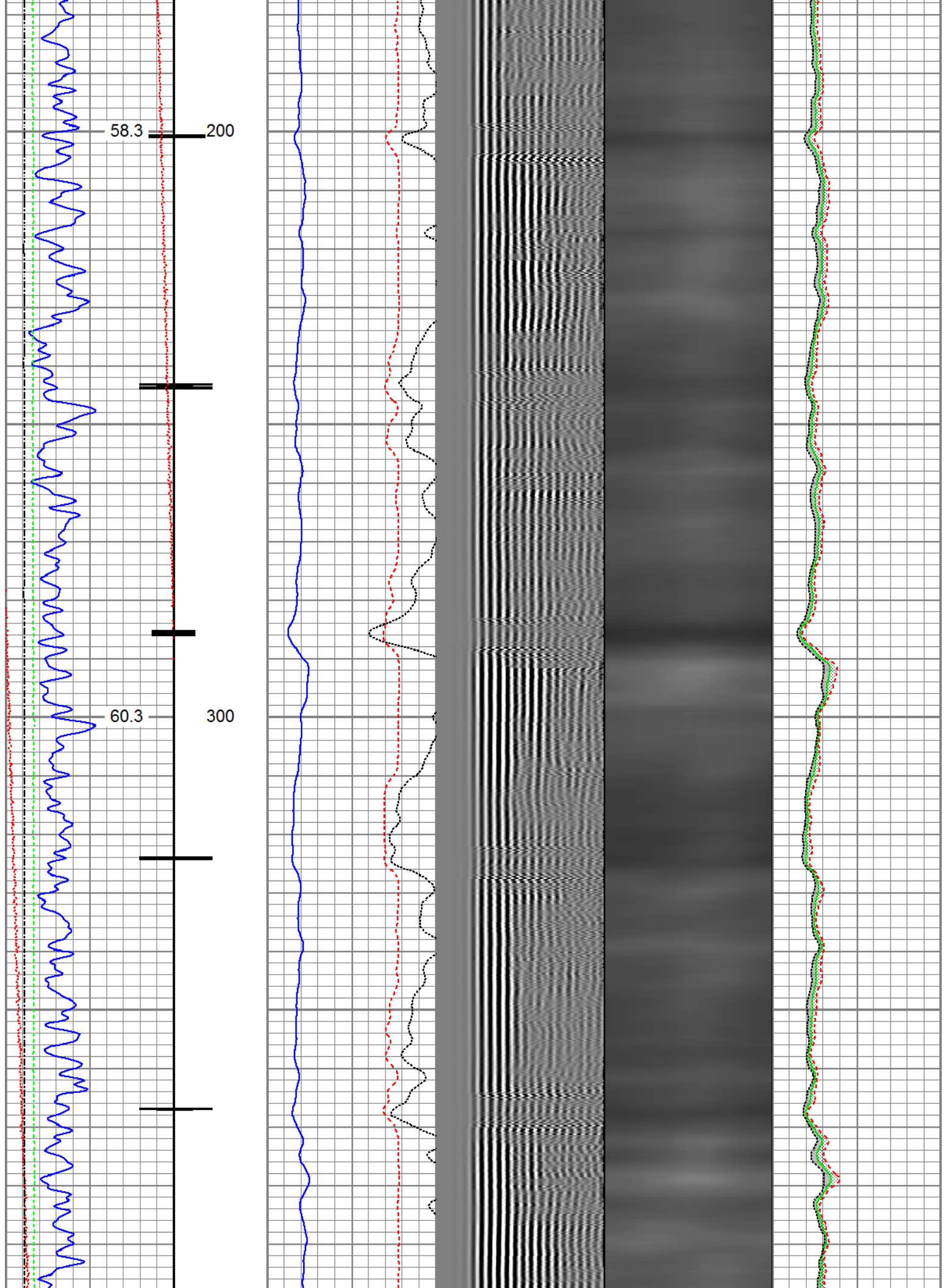


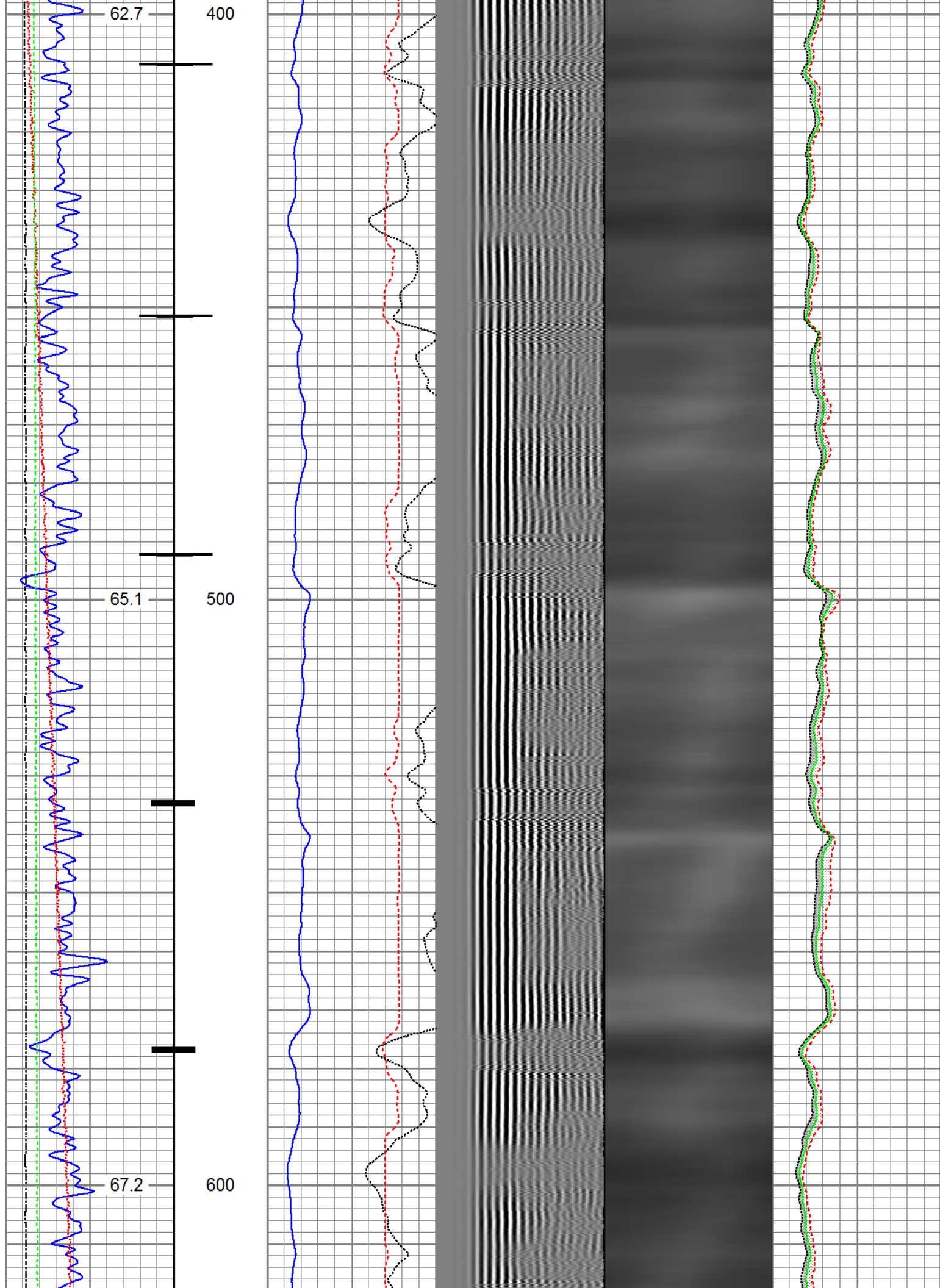
Main Pass

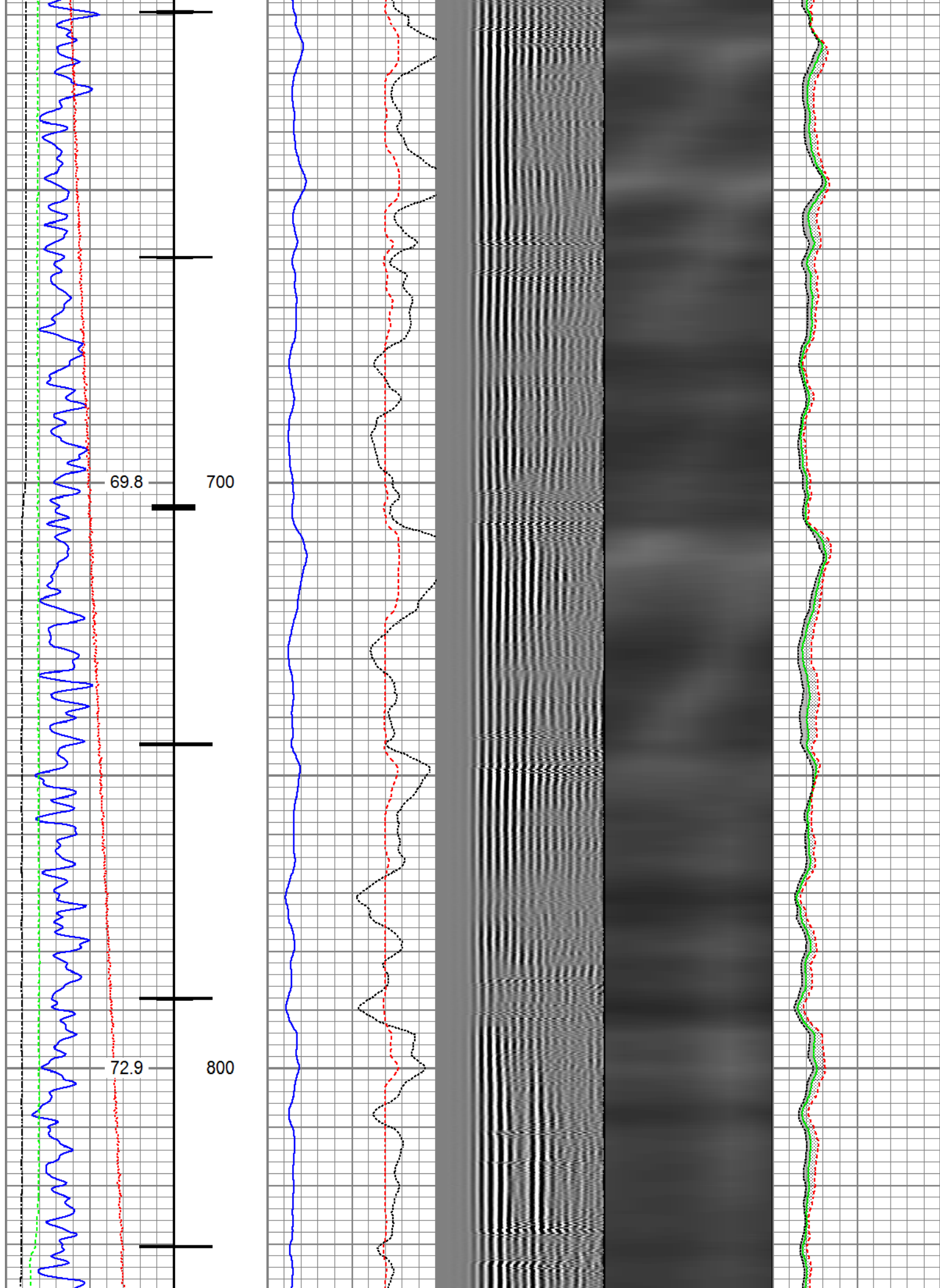
Recorded with 1500 PSI Surface Induced Pressure

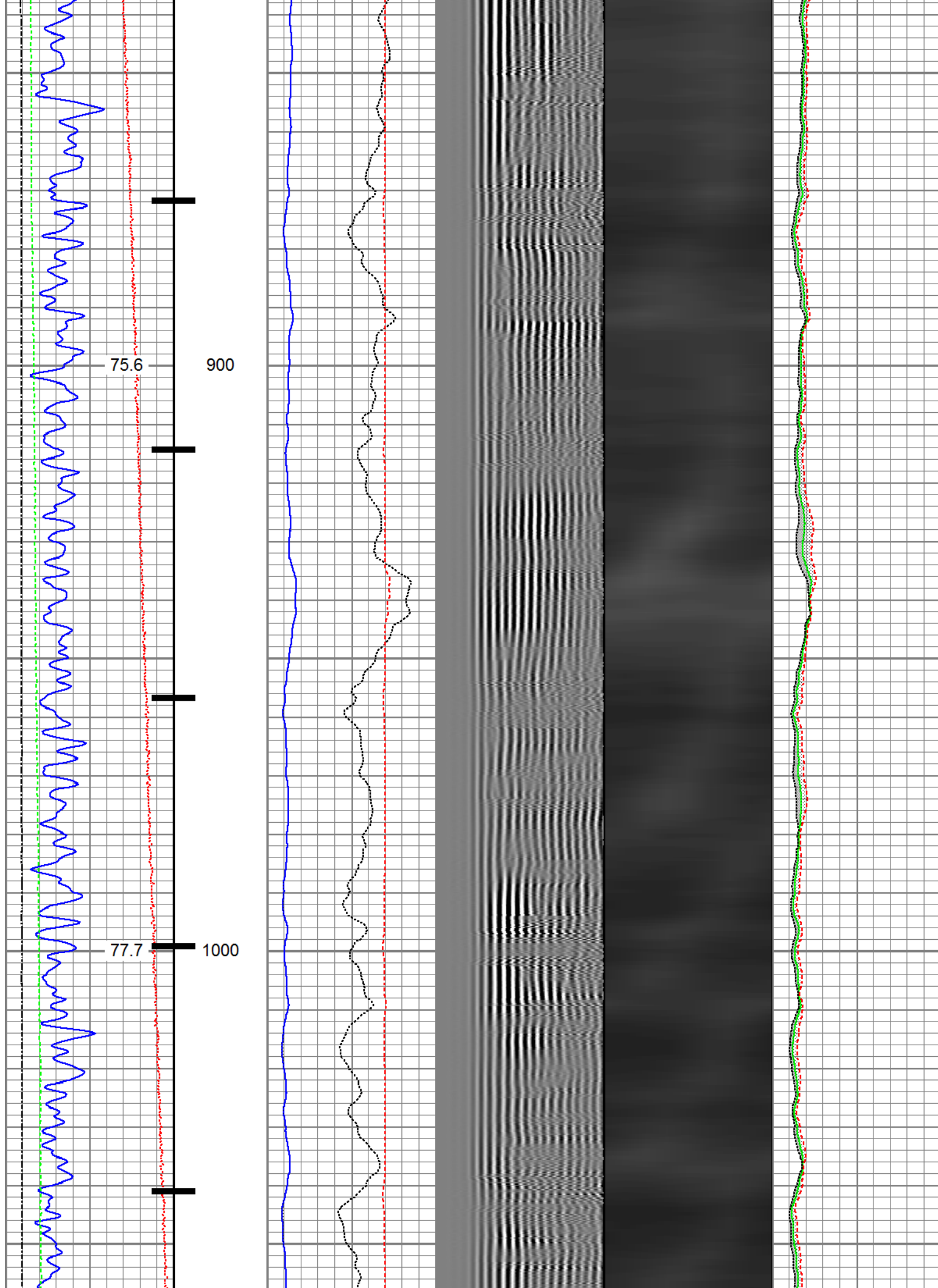
Gamma Ray			3' Amplitude			5' Variable Density Log		Sector Map		Average Amplitude	
0	(GAPI)	120	0	(mV)	100	200	1200			0	100
Casing Collar Locator			3' Amplitude x 5							Minimum Amplitude	
			0	(mV)	20					0	100
Temperature			3' Travel Time							Maximum Amplitude	
0	(degF)	20	650	(usec)	150					0	100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

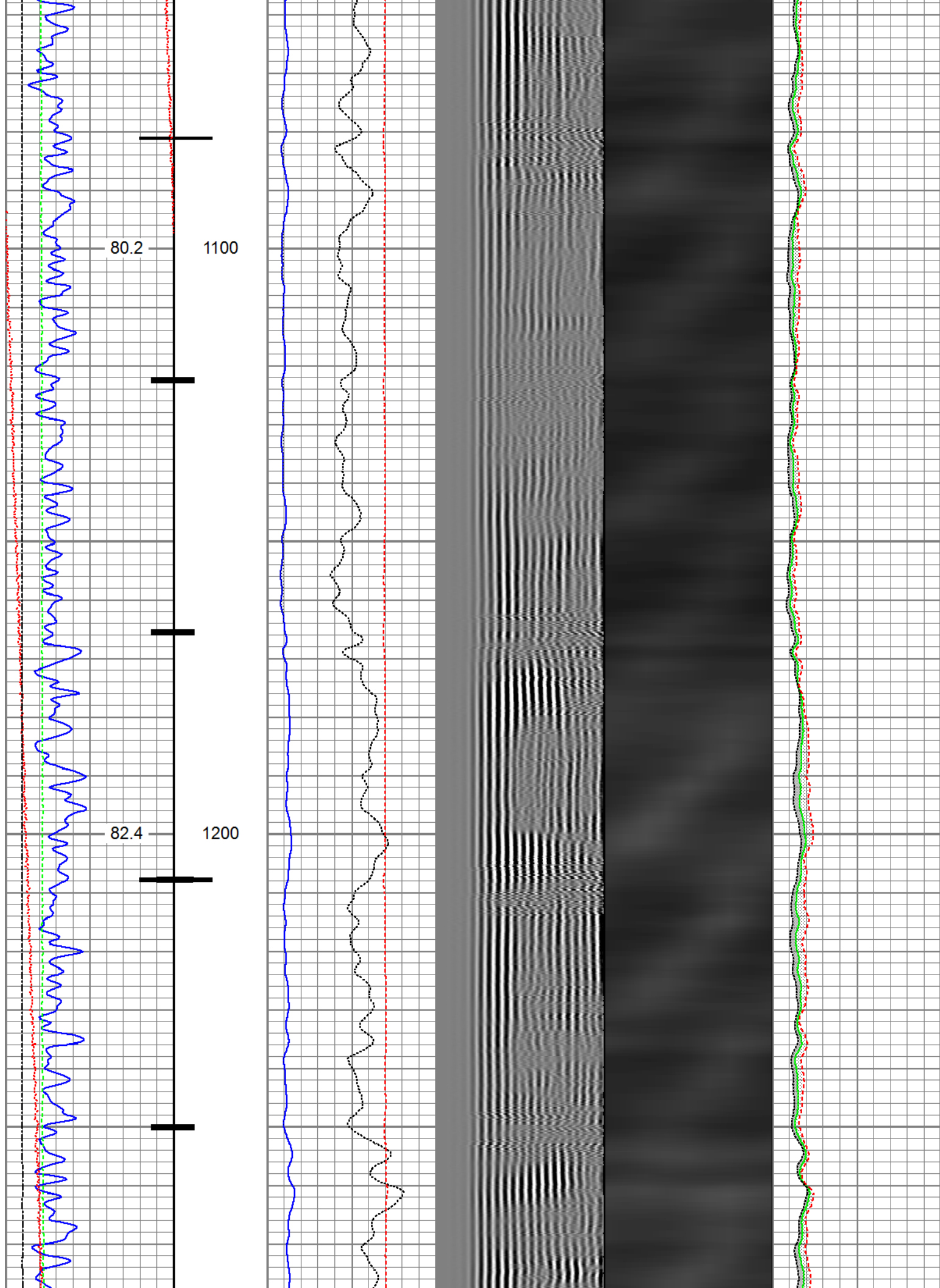


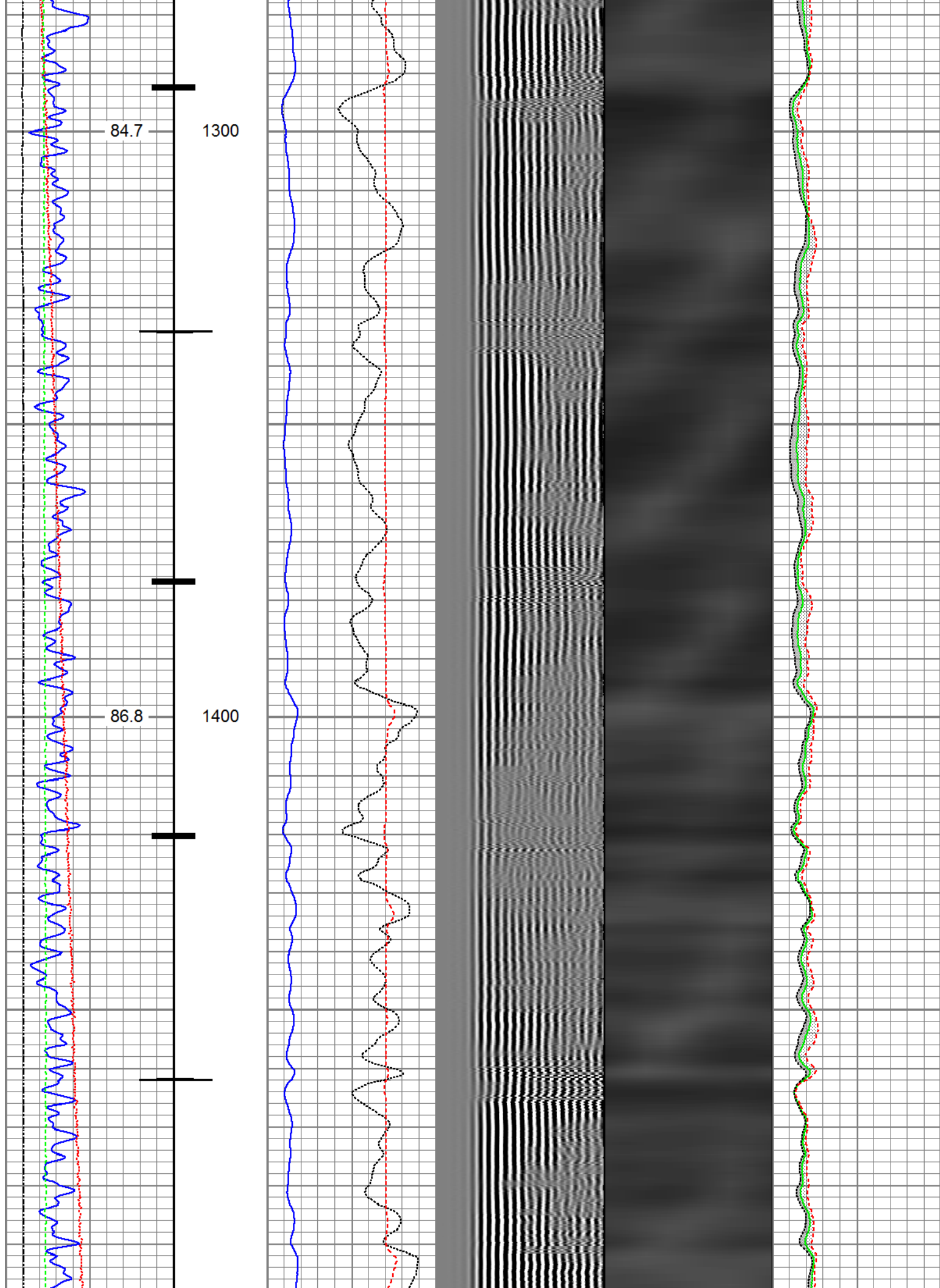


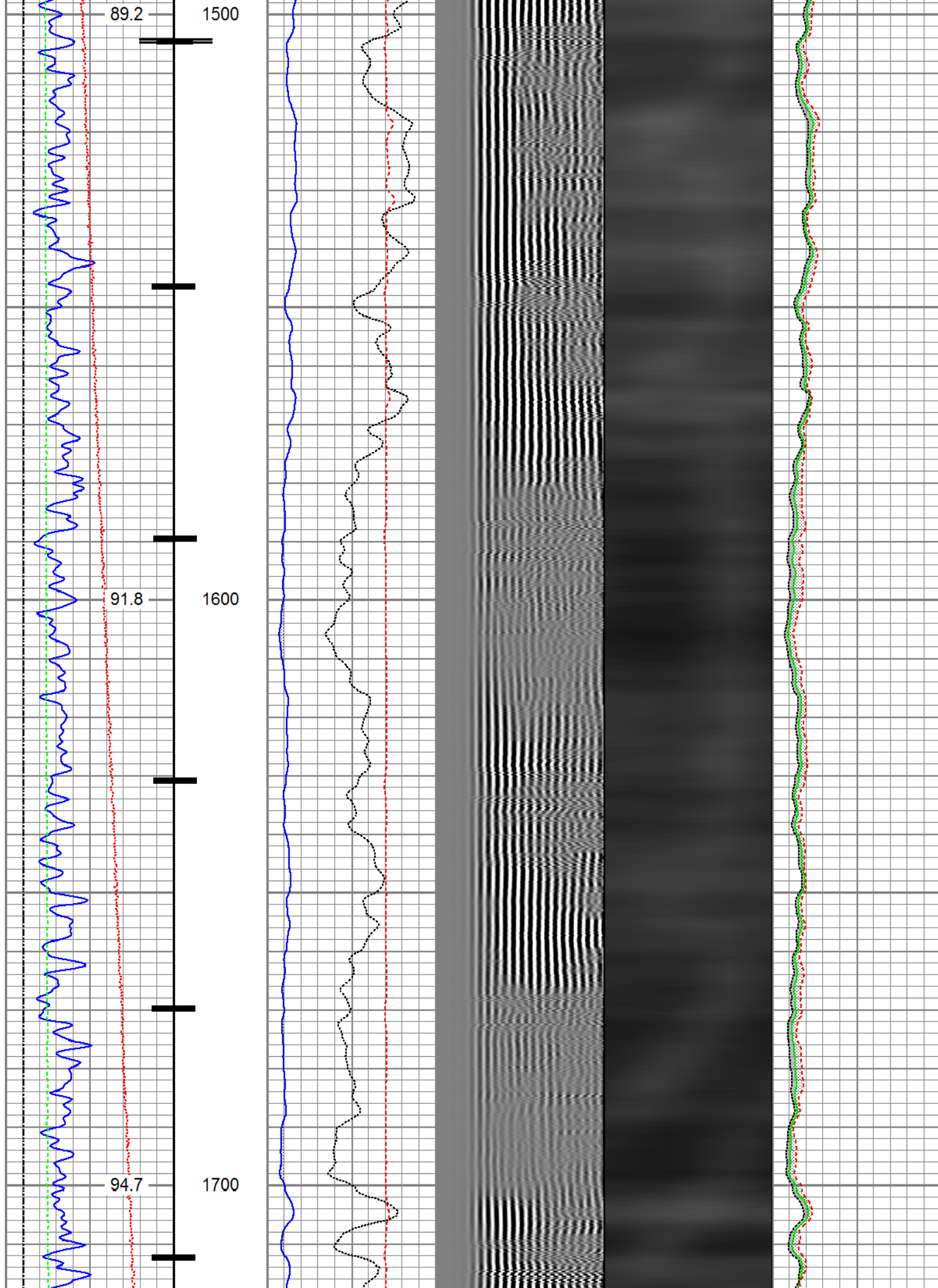


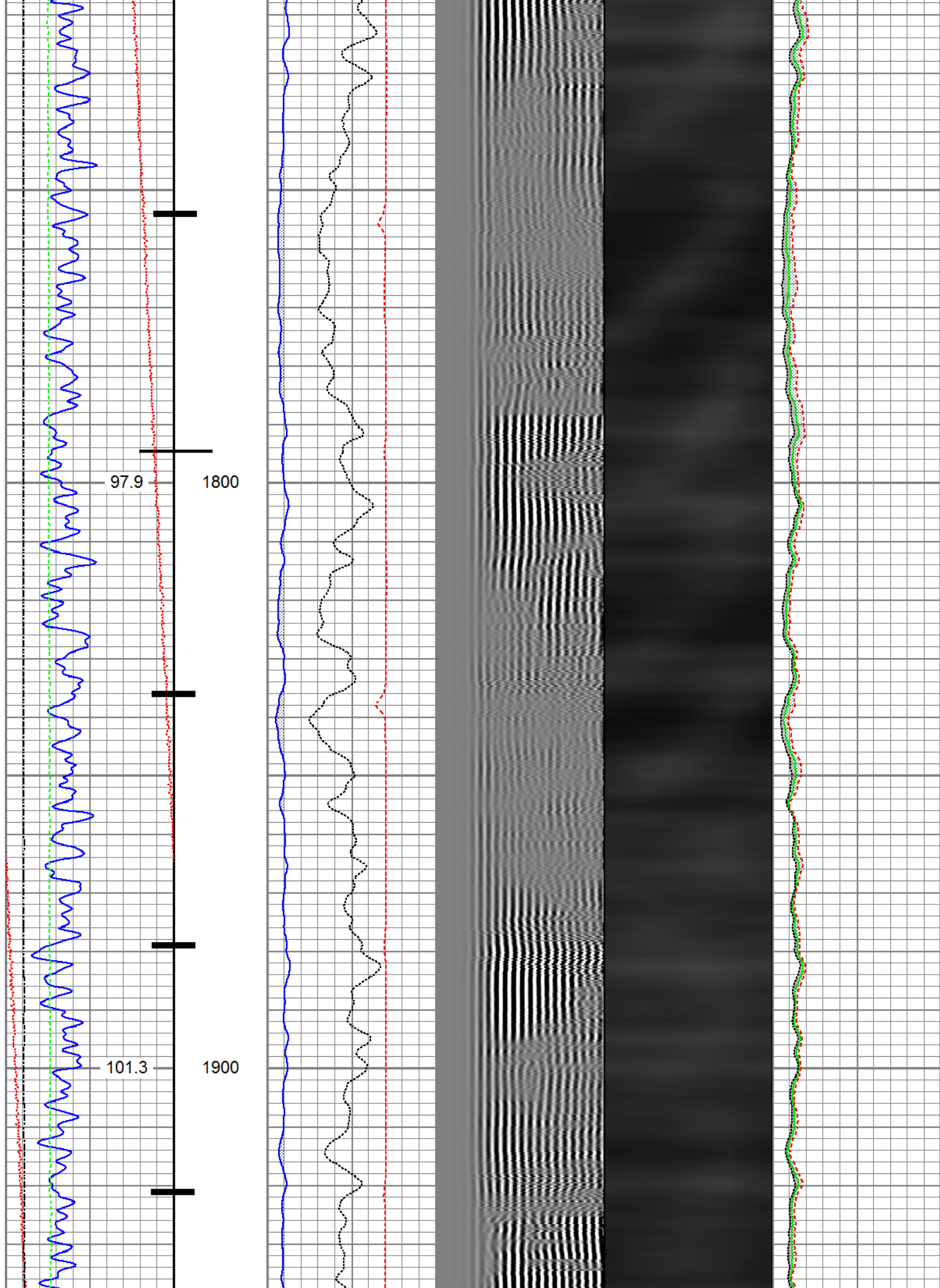


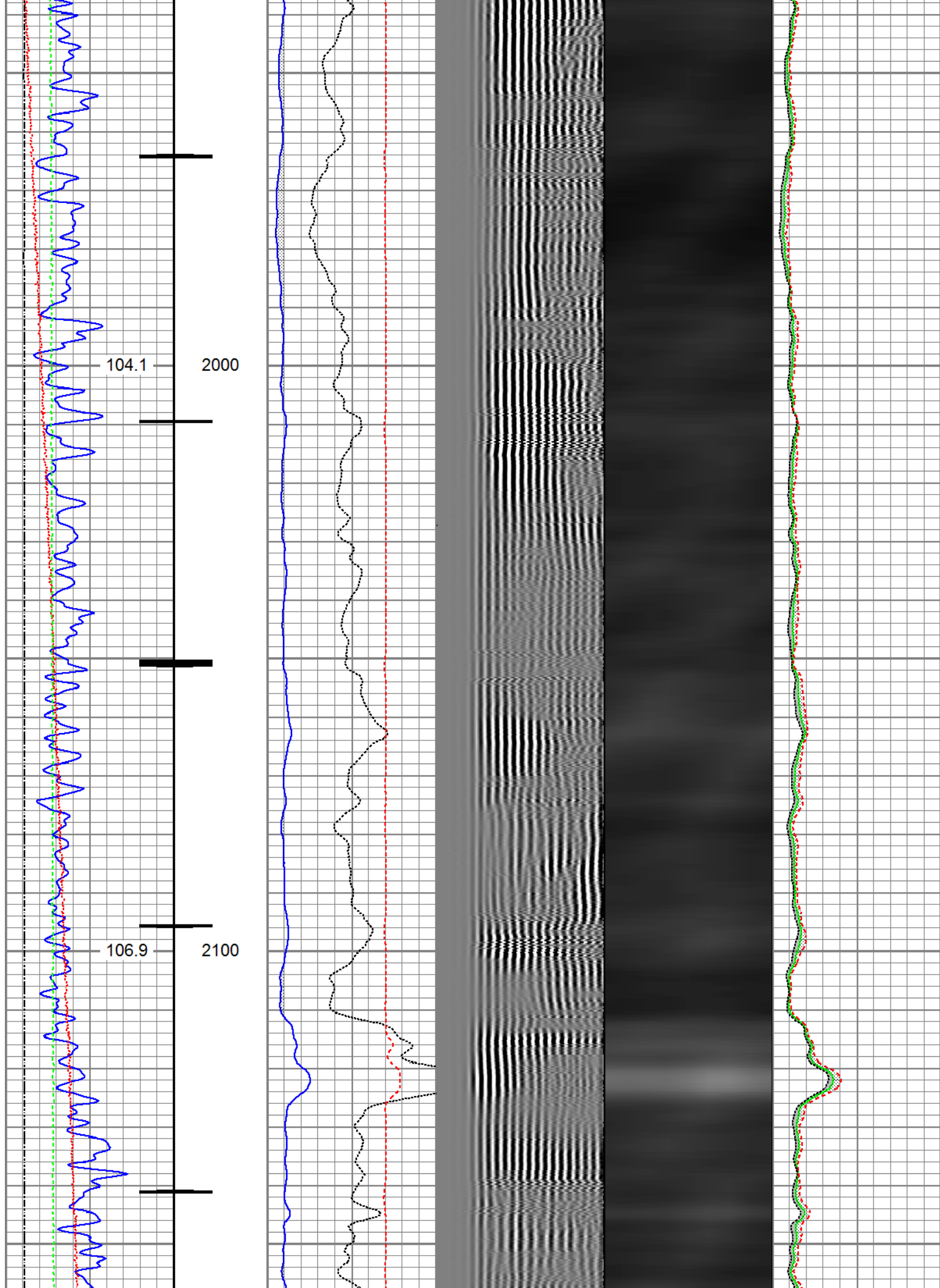


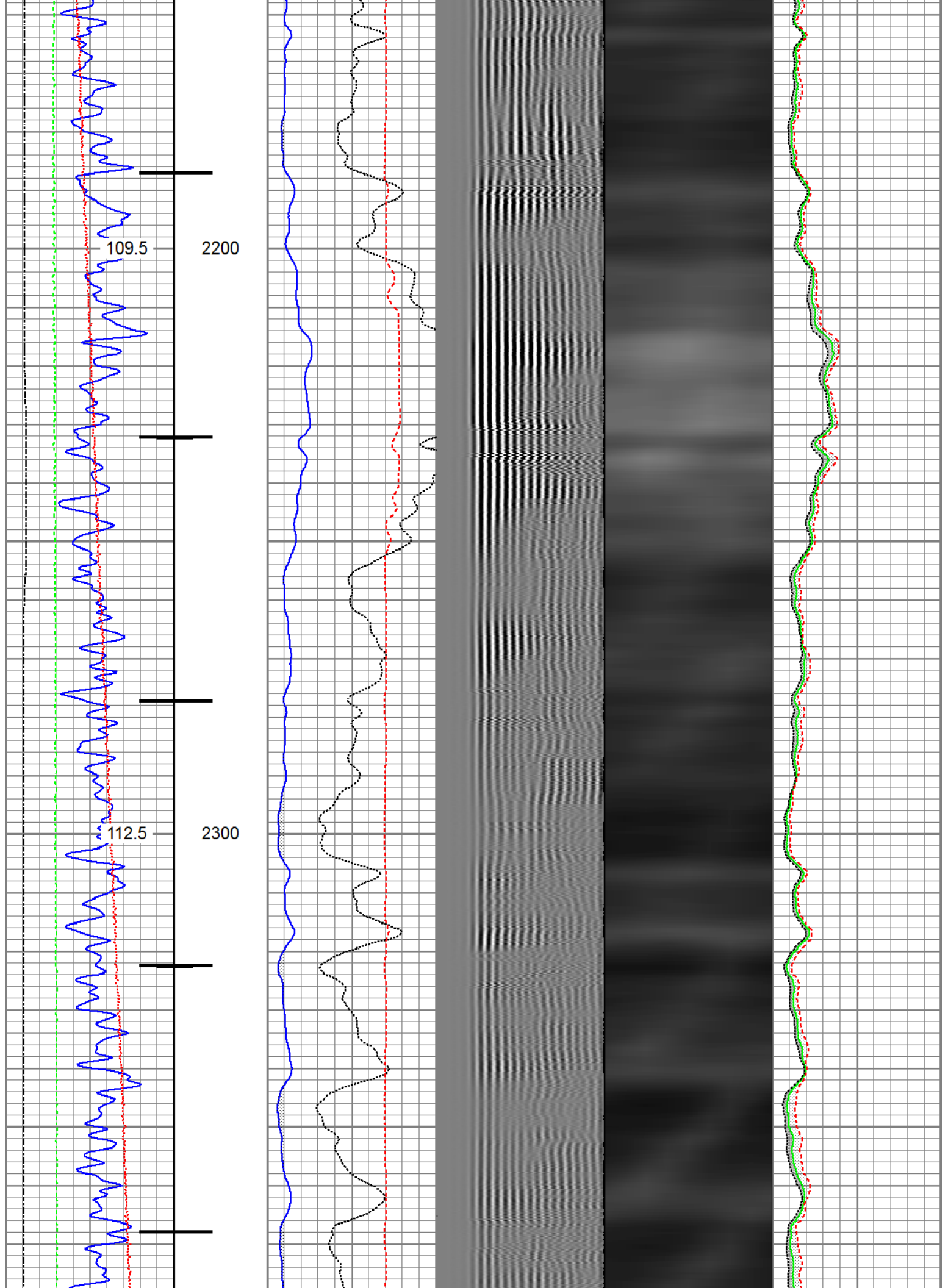


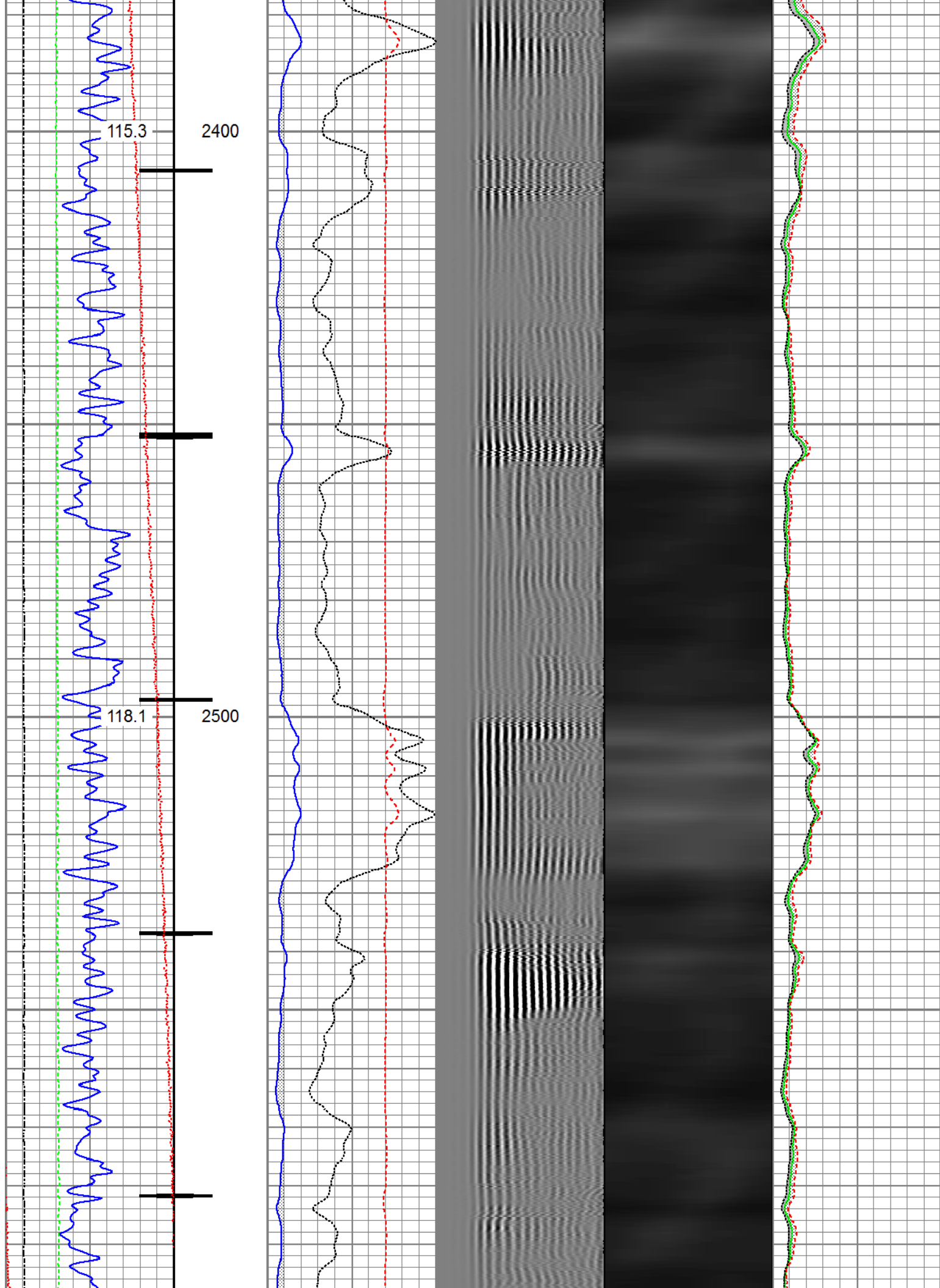


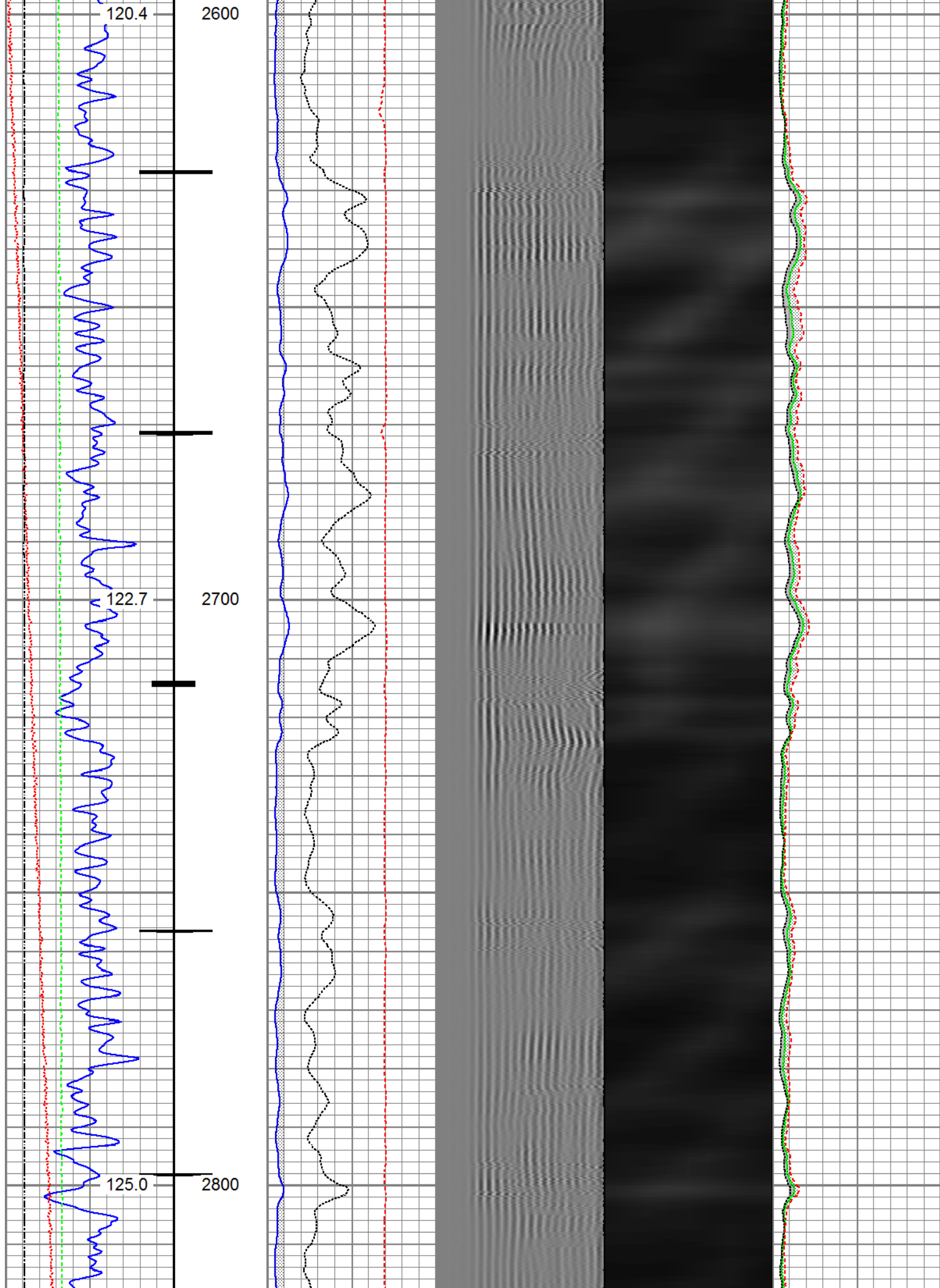


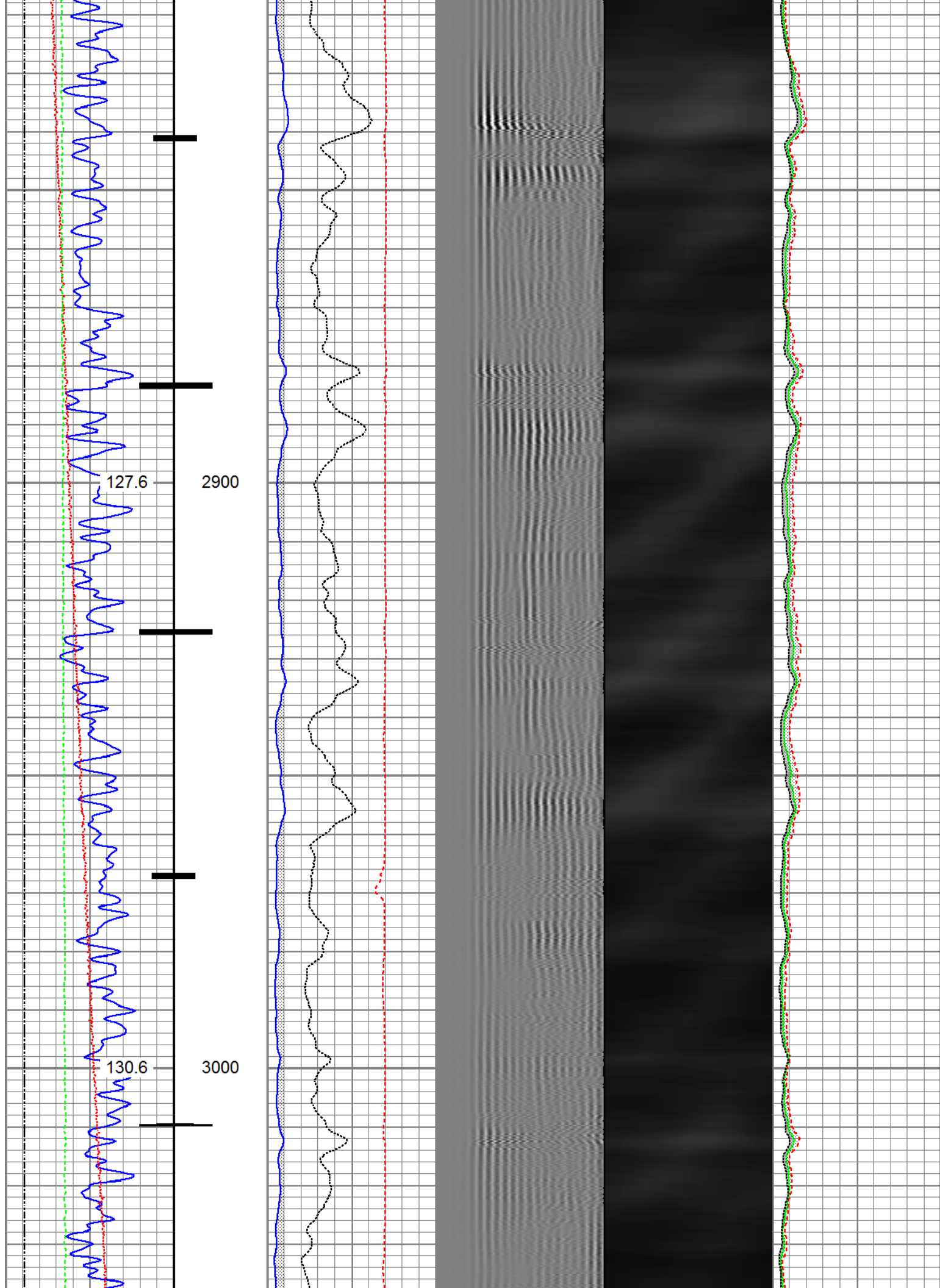


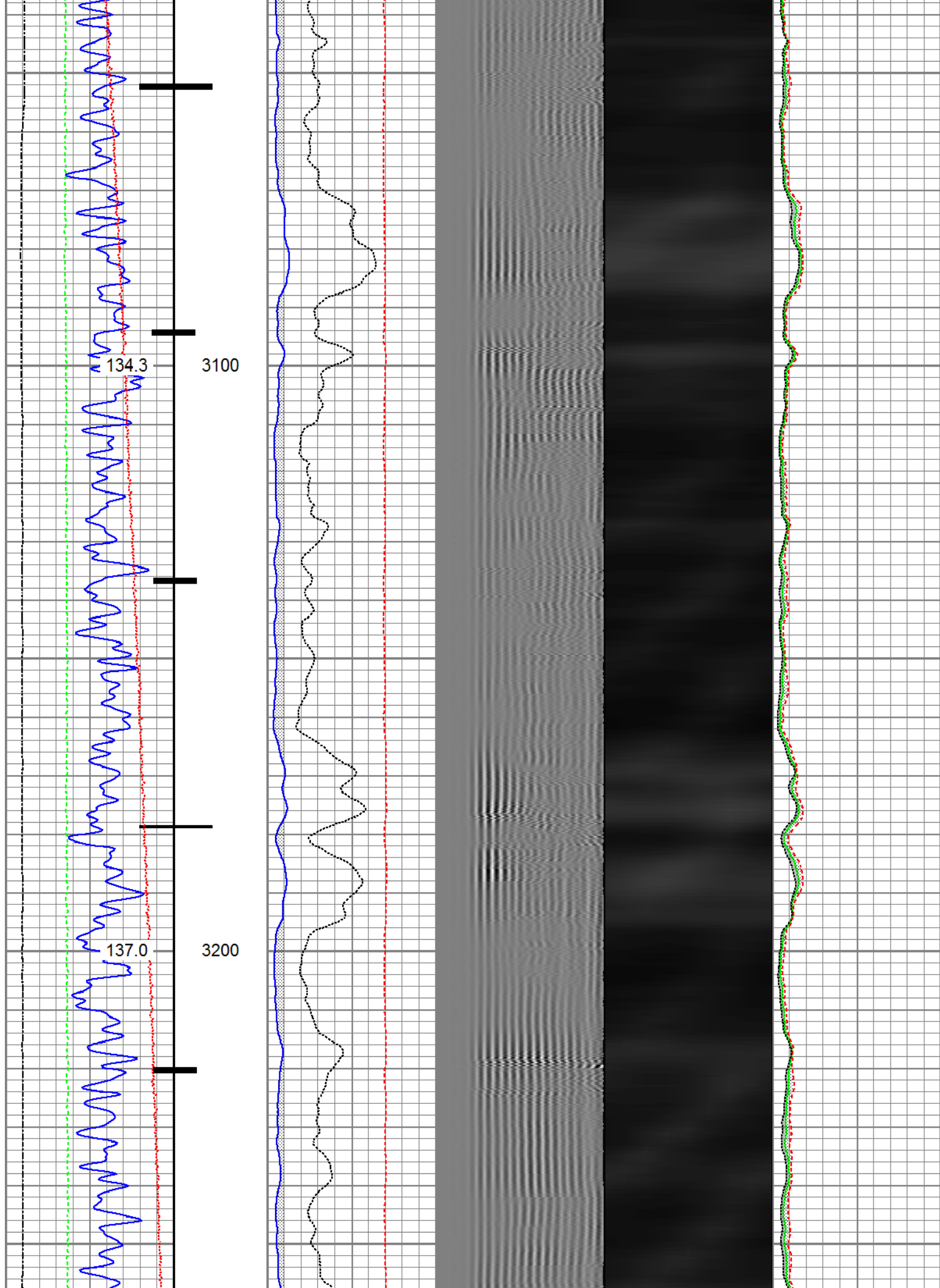


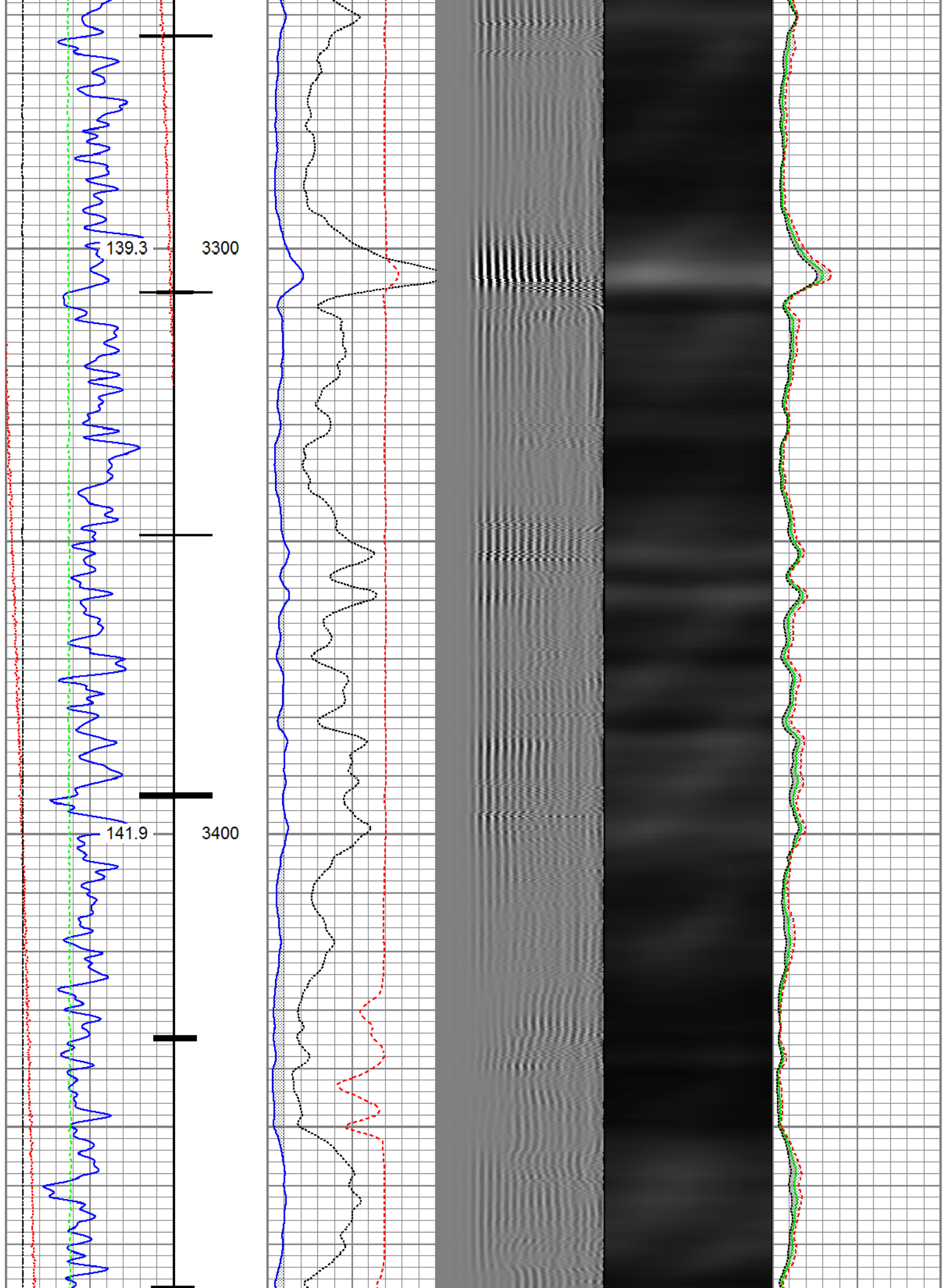


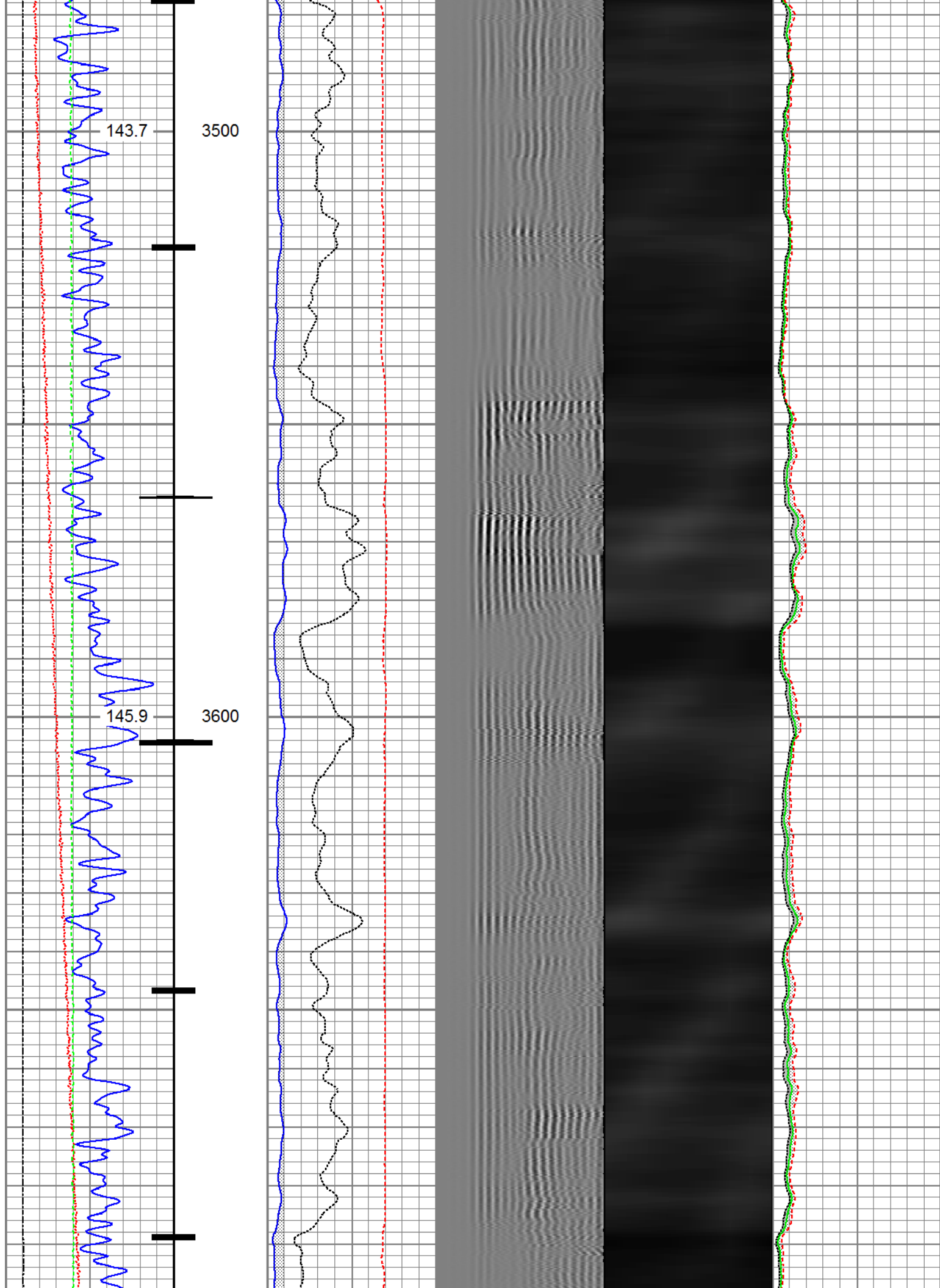


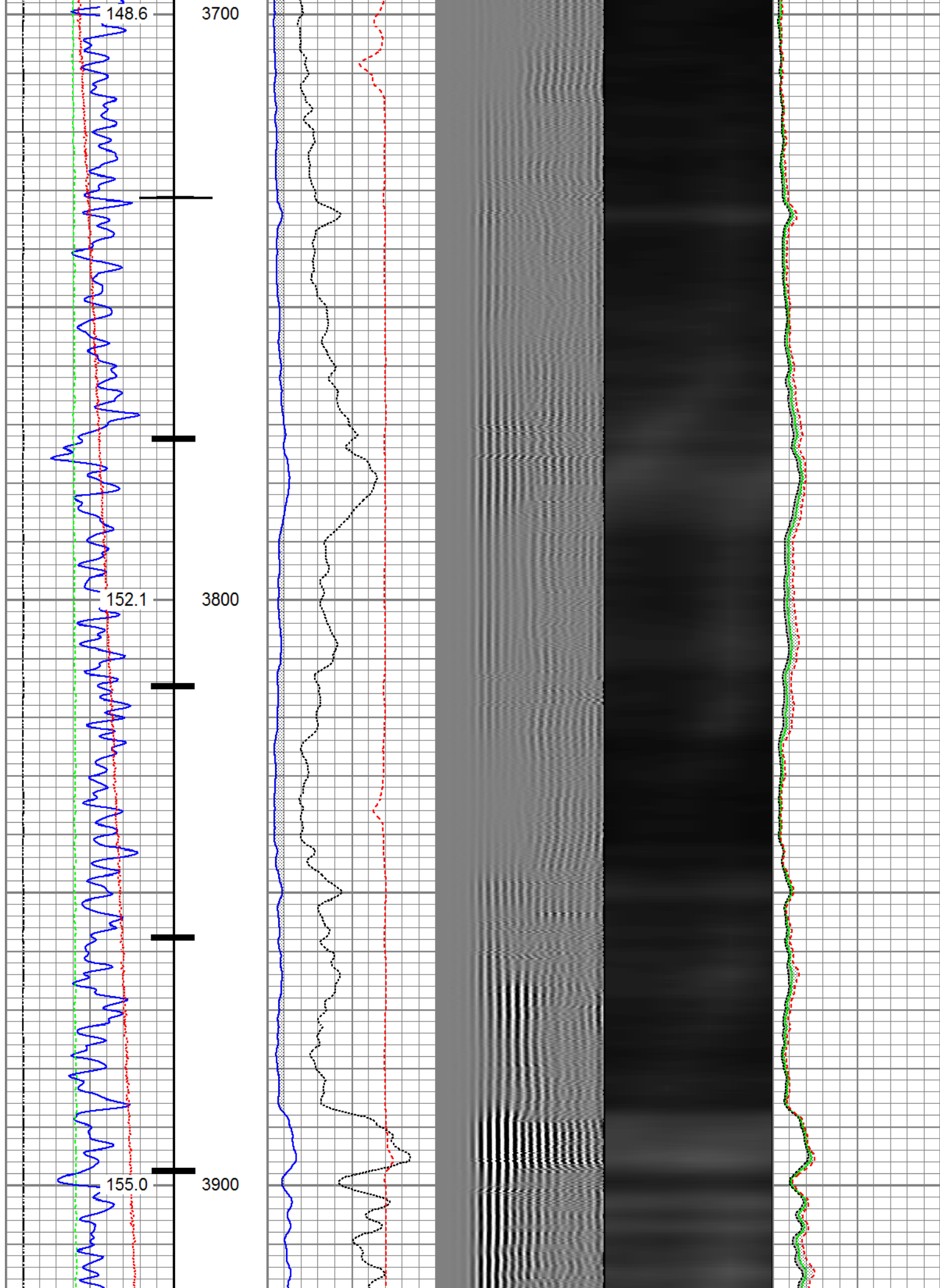


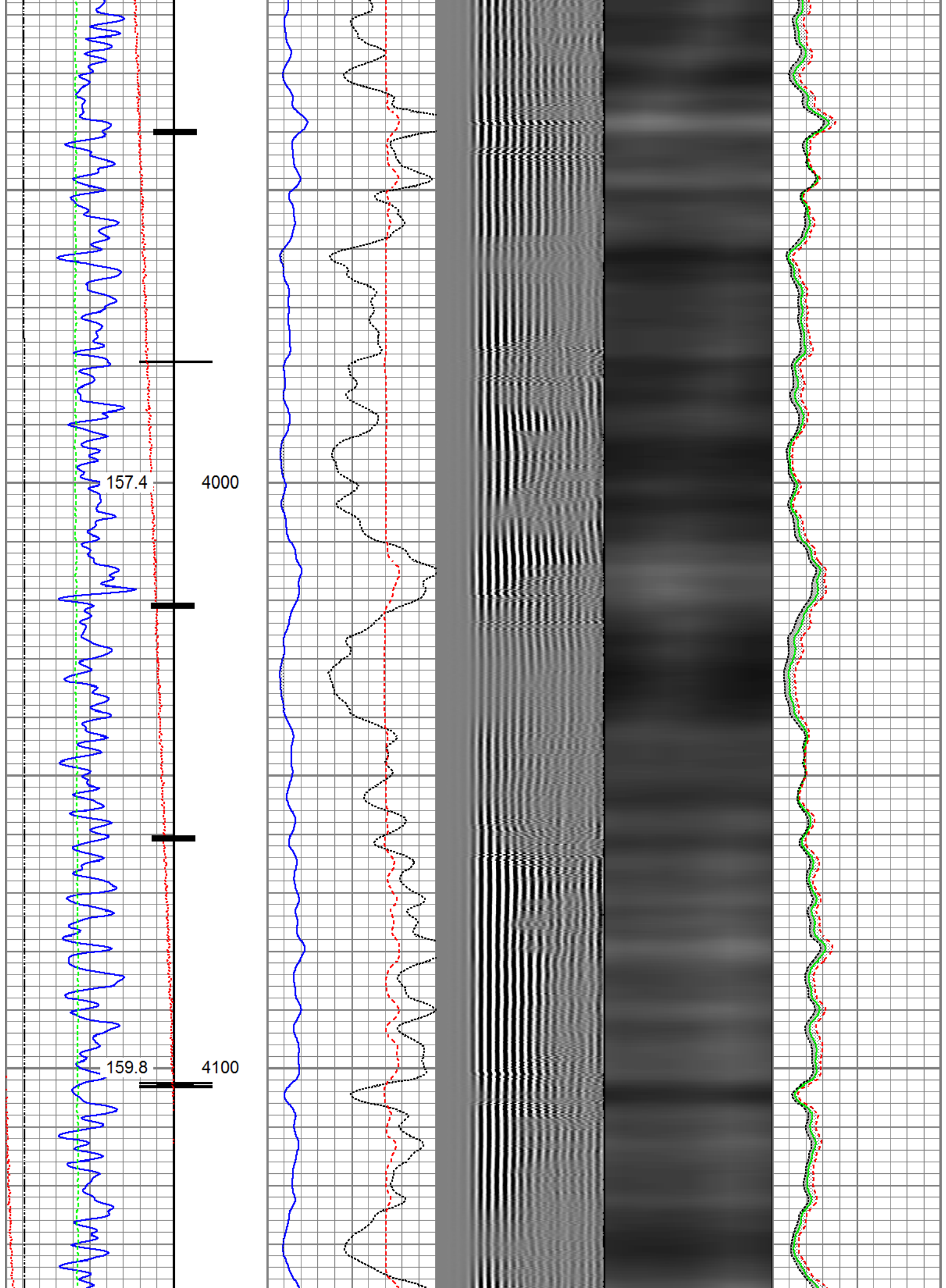


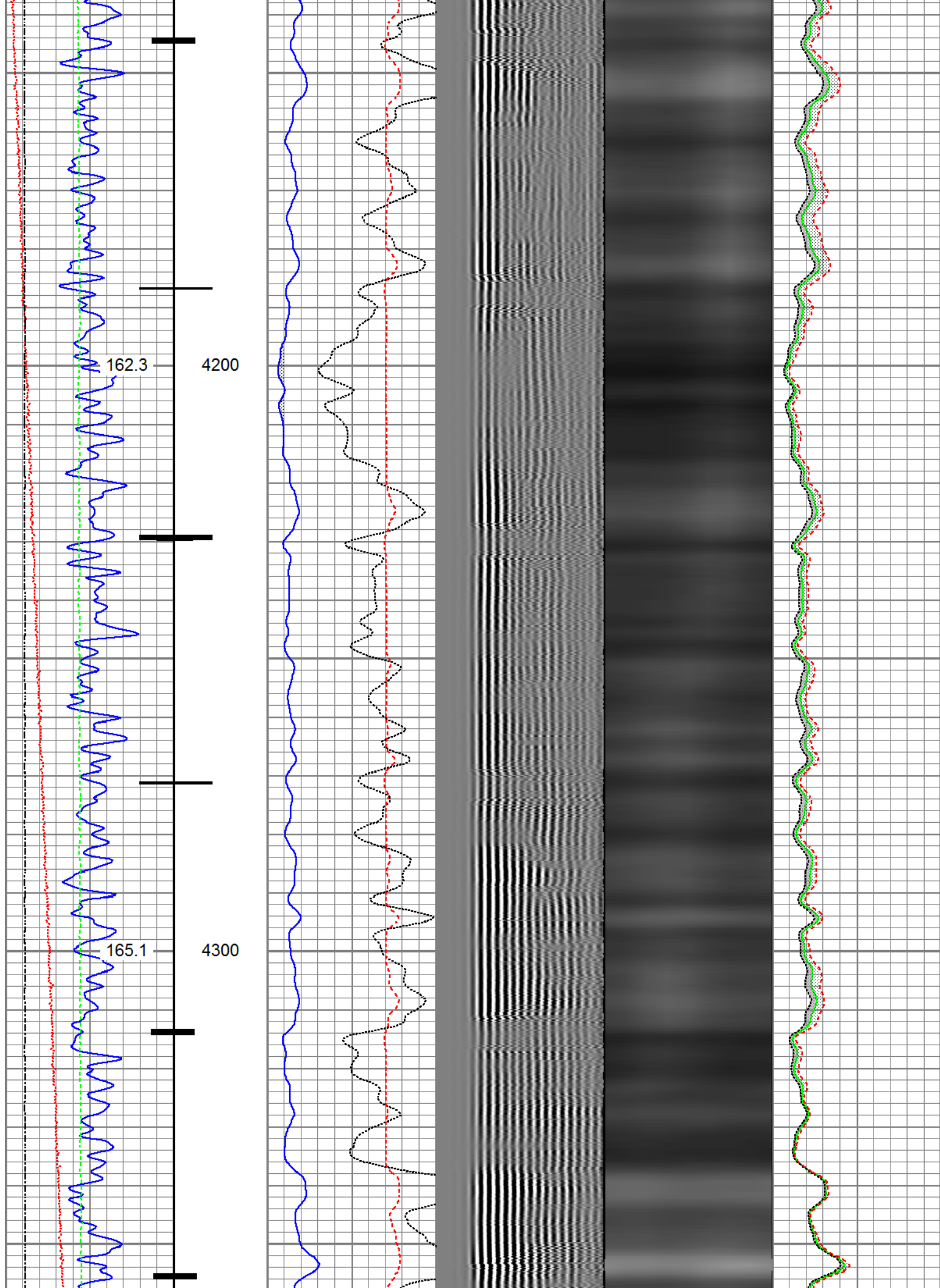


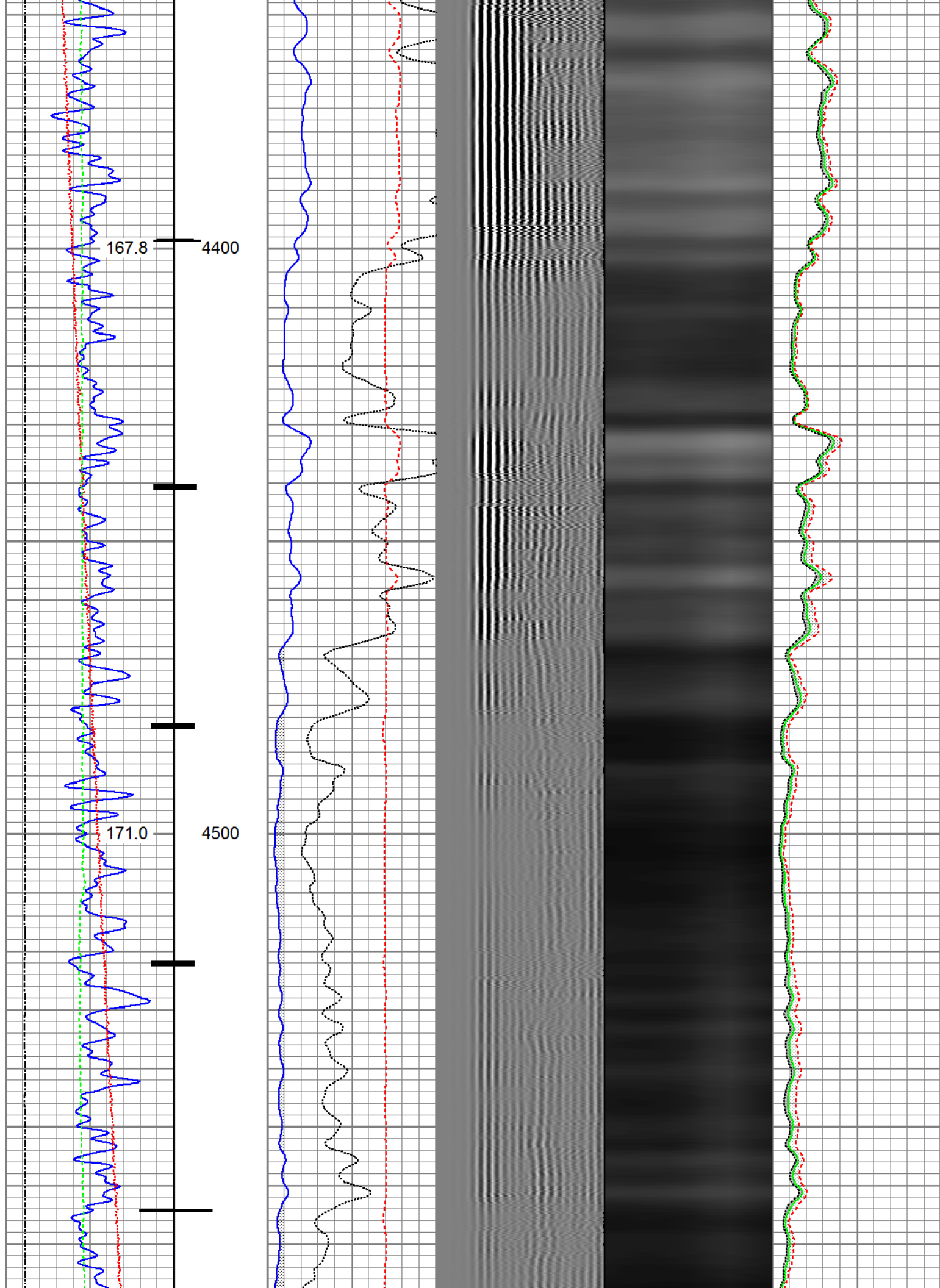


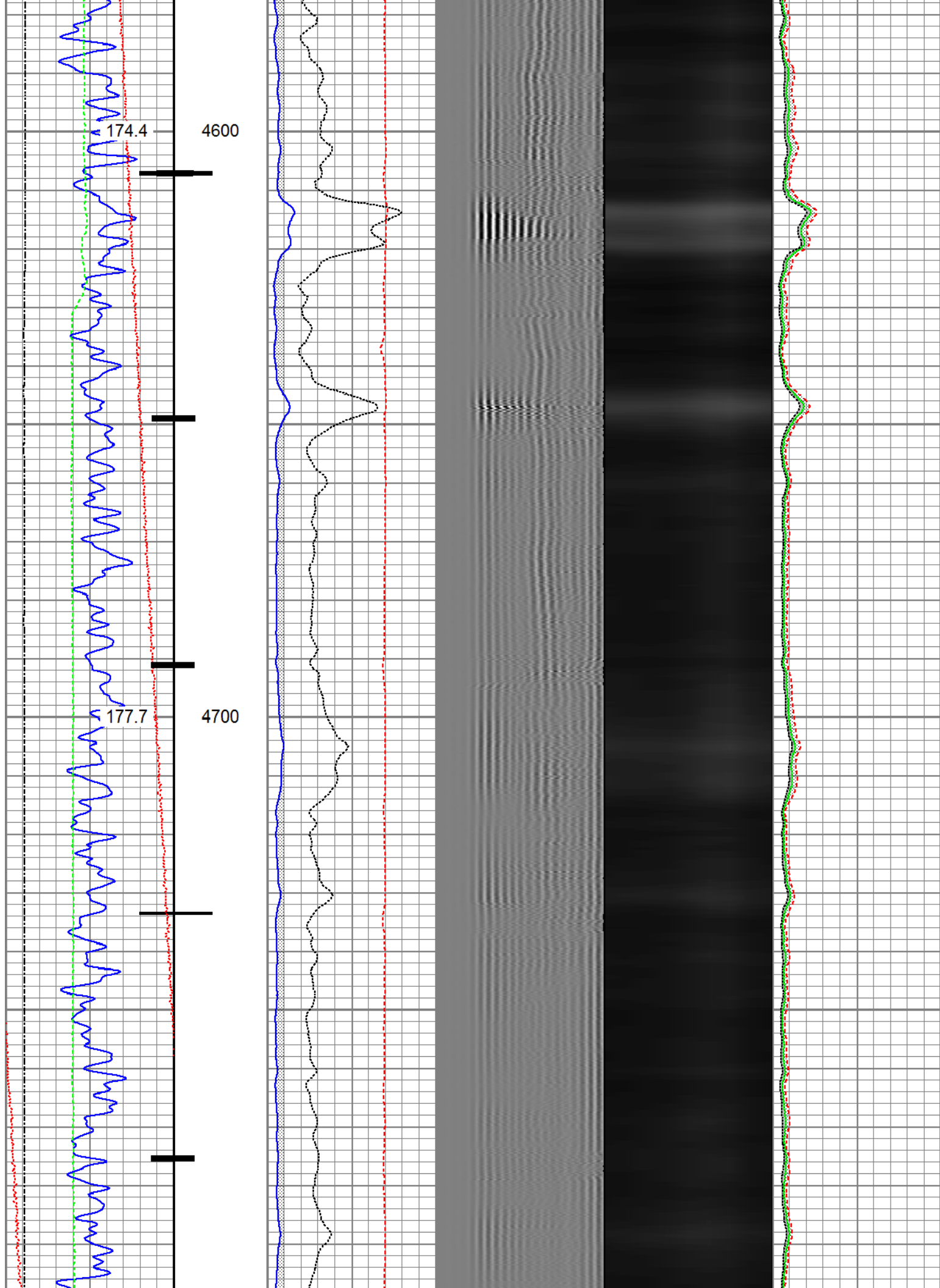


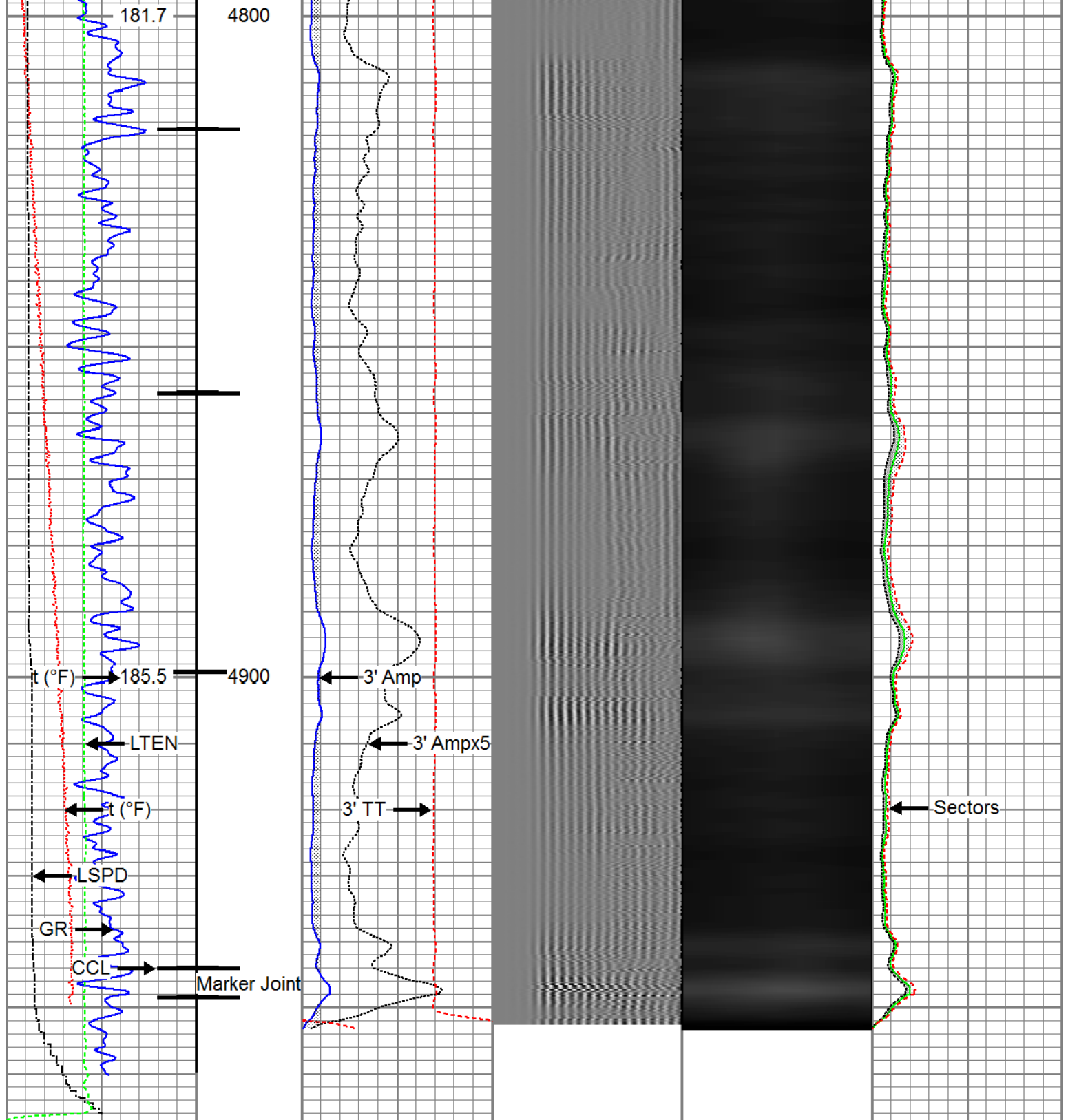












Gamma Ray (GAPI)	3' Amplitude (mV)	5' Variable Density Log	Sector Map	Average Amplitude (mV)
0 120	0 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5 (mV)			Minimum Amplitude (mV)
	0 20			0 100
Temperature (degF)	3' Travel Time (usec)			Maximum Amplitude (mV)
0 20	650 150			0 100
Line Speed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

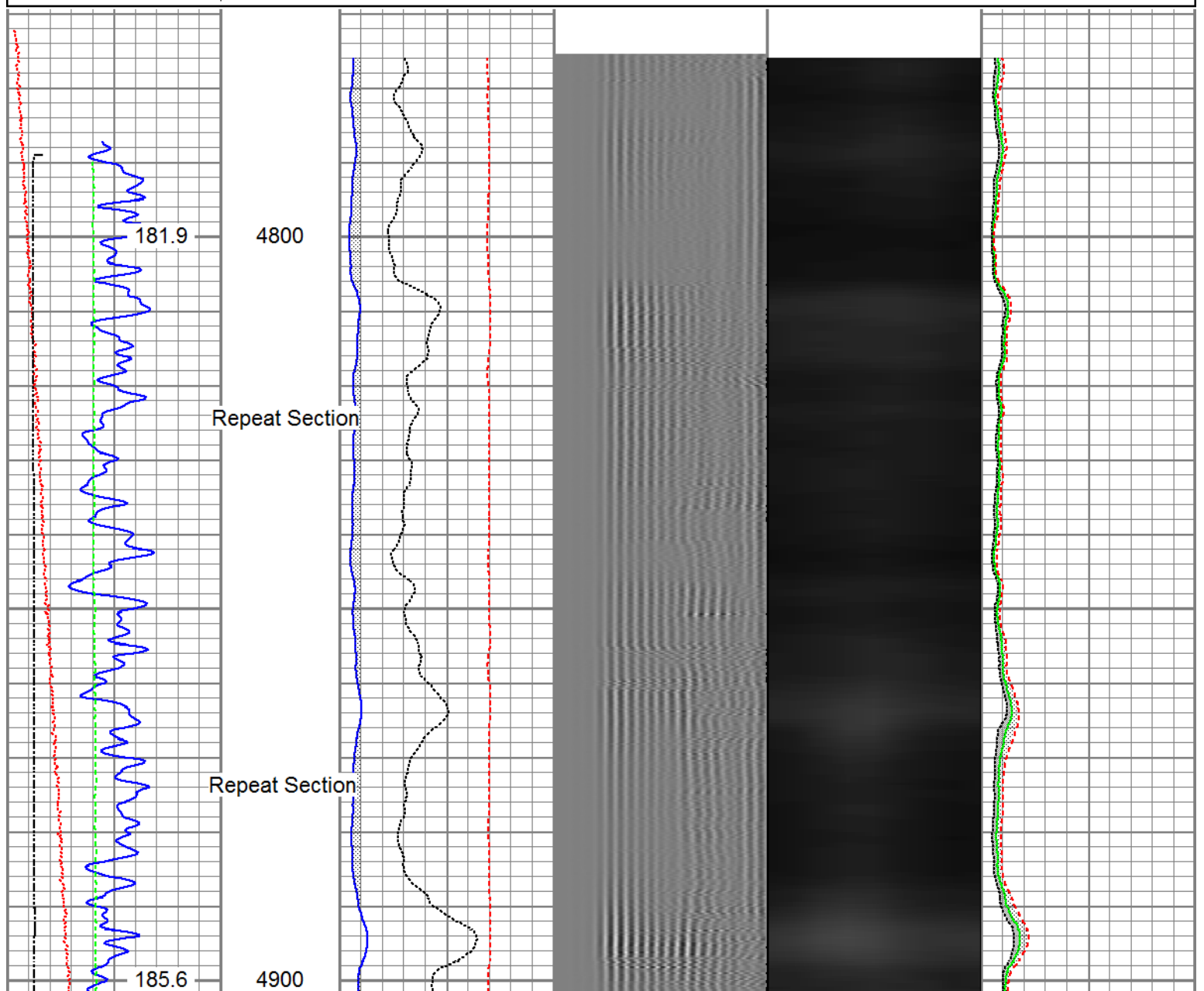


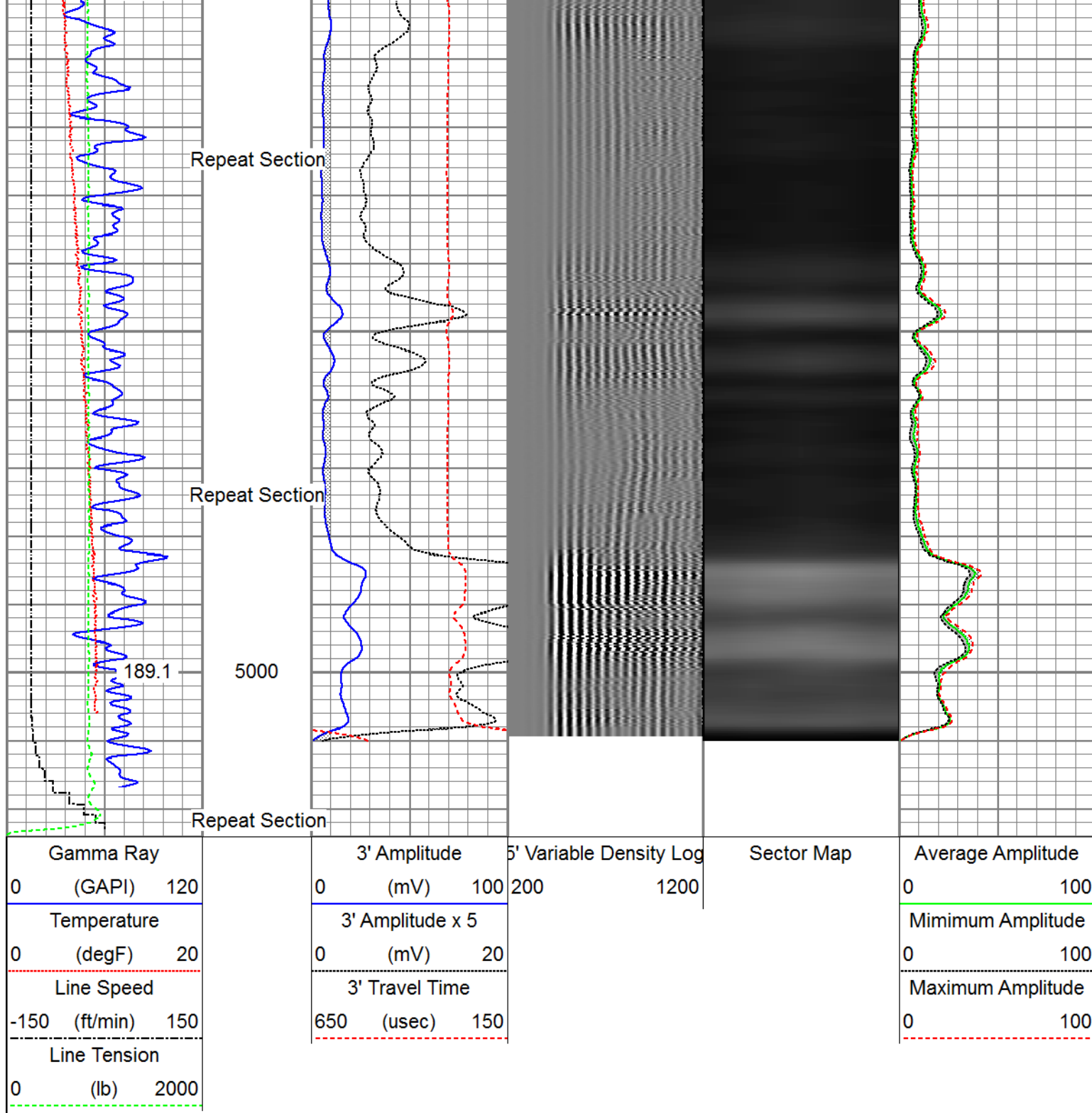
Repeat Pass


Recorded with 1500 PSI Surface Induced Pressure

Database File whiting_horsetail_30g-3144_18-jan-2017_cbl\whiting_horsetail_30g-3144_01-19-17_rbl.db
Dataset Pathname repeat
Presentation Format fmc_radli
Dataset Creation Thu Jan 19 10:43:39 2017
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
Temperature	3' Amplitude x 5			Minimum Amplitude
0 (degF) 20	0 (mV) 20			0 100
Line Speed	3' Travel Time			Maximum Amplitude
-150 (ft/min) 150	650 (usec) 150			0 100
Line Tension				
0 (lb) 2000				





Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
HeadVolt	19.51		Titan_Electric_Cable_Heads-Titan_1-11/16"	1.03	1.69	5.40
			Electric Cable Head with 1" Fishing Neck			
			Probe_ELine_BowSpring_Centralizer-P_EB	2.8875	2.75	20.00
			Probe 2-3/4" Electric Inline Bowspring Centralizer			

Temp	16.72				
WVFS8	14.55		Probe_RADII-C-P_RBT_2750 (FW1305-0969.19)	2.75	105.00
WVFS7	14.55		Probe 2-3/4" Sector Cement Bond Tool with Temperature Probe		
WVFS6	14.55				
WVFS5	14.55				
WVFS4	14.55				
WVFS3	14.55				
WVFS2	14.55				
WVFS1	14.55				
WVFCAL	14.55				
WVF3FT	14.55				
WVF5FT	13.55				
HEADVOLT	10.30				
			Probe_ELine_BowSpring_Centralizer-P_EB52.8875	2.75	20.00
			Probe 2-3/4" Electric Inline Bowspring Centralizer		
DCCL	6.51				
CCL	6.51				
			Probe_GR_CCL-P_CGR_2750_S (FW1307-4.54)	2.75	55.00
			Probe 2-3/4" Digital CCL / Gamma Ray Combined		
GR	3.77				
			Probe_ELine_BowSpring_Centralizer-P_EB52.8875	2.75	20.00
			Probe 2-3/4" Electric Inline Bowspring Centralizer		
Dataset: Whiting_Horsetail_30G-3144_01-19-17_RBL.db: field/well/run1/main Total length: 23.40 ft Total weight: 225.40 lb O.D.: 2.75 in					

Calibration Report		
Database File	C:\ProgramData\Warrior\Data\whiting_horsetail_30g-3144_18-jan-2017_cbl\Whiting_Horsetail_30G-3144_18-jan-2017_cbl	
Dataset Pathname	main	
Dataset Creation	Thu Jan 19 10:47:24 2017	
Gamma Ray Calibration Report		
Serial Number:	FW1307-038	
Tool Model:	P_CGR_2750_S	
Performed:	Sat Feb 06 11:43:09 2016	
Calibrator Value:	1.0	GAPI
Pass/Fail Result:	Pass	

Background Reading:	0.0	cps
Calibrator Reading:	1.6	cps
Sensitivity:	0.6061	GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number: FW1305-096
Tool Model: P_RBT_2750

Calibration Casing Diameter: 5.500 in
Calibration Depth: 24.760 ft

Master Calibration, performed Wed Jan 18 08:56:04 2017:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.000	0.560	0.800	71.921	126.958	0.771
CAL	0.001	0.584				
5'	0.001	0.546	0.800	71.921	130.437	0.725
SUM						
S1	0.001	0.555	0.000	100.000	180.369	-0.097
S2	0.000	0.555	0.000	100.000	180.333	-0.051
S3	0.000	0.550	0.000	100.000	181.992	-0.038
S4	0.000	0.555	0.000	100.000	180.274	-0.029
S5	-0.000	0.558	0.000	100.000	179.162	0.009
S6	0.000	0.560	0.000	100.000	178.498	-0.013
S7	0.000	0.563	0.000	100.000	177.758	0.000
S8	0.000	0.565	0.000	100.000	176.971	-0.028

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.001	0.584	1.000	0.000

Air Zero Calibration, performed Wed Jan 18 08:56:25 2017:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	0.001	0.000	-0.000
5'	0.000	0.000	0.000
SUM			
S1	0.001	0.000	-0.000
S2	0.000	0.000	-0.000
S3	0.001	0.000	-0.000
S4	0.000	0.000	-0.000
S5	0.000	0.000	-0.000
S6	0.000	0.000	-0.000
S7	0.000	0.000	-0.000
S8	0.000	0.000	-0.000

Company Whiting Oil & Gas Corporation
Well Horsetail 30G-3144





Field	Wildcat
County	Weld
State	Colorado