



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company Kerr-McGee Oil & Gas Onshore, L.P.

Well Azul 13-23HZ

Field Wattenberg

County Weld State Colorado

Location: API #: 05-123-46099

Other Services
GR/JB
RBP
RBL 0 PSI

SEC 13 TWP 1N RGE 66W

Elevation

Permanent Datum Ground Level Elevation 5050'

Log Measured From Kelly Bushing 21 FT

Drilling Measured From Kelly Bushing

K.B. 5071'
D.F. ---
G.L. 5050'

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Well Azul 13-23HZ
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Date	04-JUL-2018						
Run Number	Four						
Depth Driller	12690 FT						
Depth Logger	6770 FT						
Bottom Logged Interval	6756 FT						
Top Log Interval	Surface						
Open Hole Size	7.875"						
Type Fluid	Water						
Density / Viscosity	8.34 lb/gal						
Max. Recorded Temp.	224°F						
E estimated Cement Top	See Log						
Time Well Ready	ROA						
Time Logger on Bottom	6:37						
E equipment Number	HD-0325						
Location	Platteville, CO						
Recorded By	R. Cameron						
Witnessed By	Justin McMillan						
	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	1841 FT	
Intermediate #1	5.1/2	17		HCP-110	Surface	12680 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

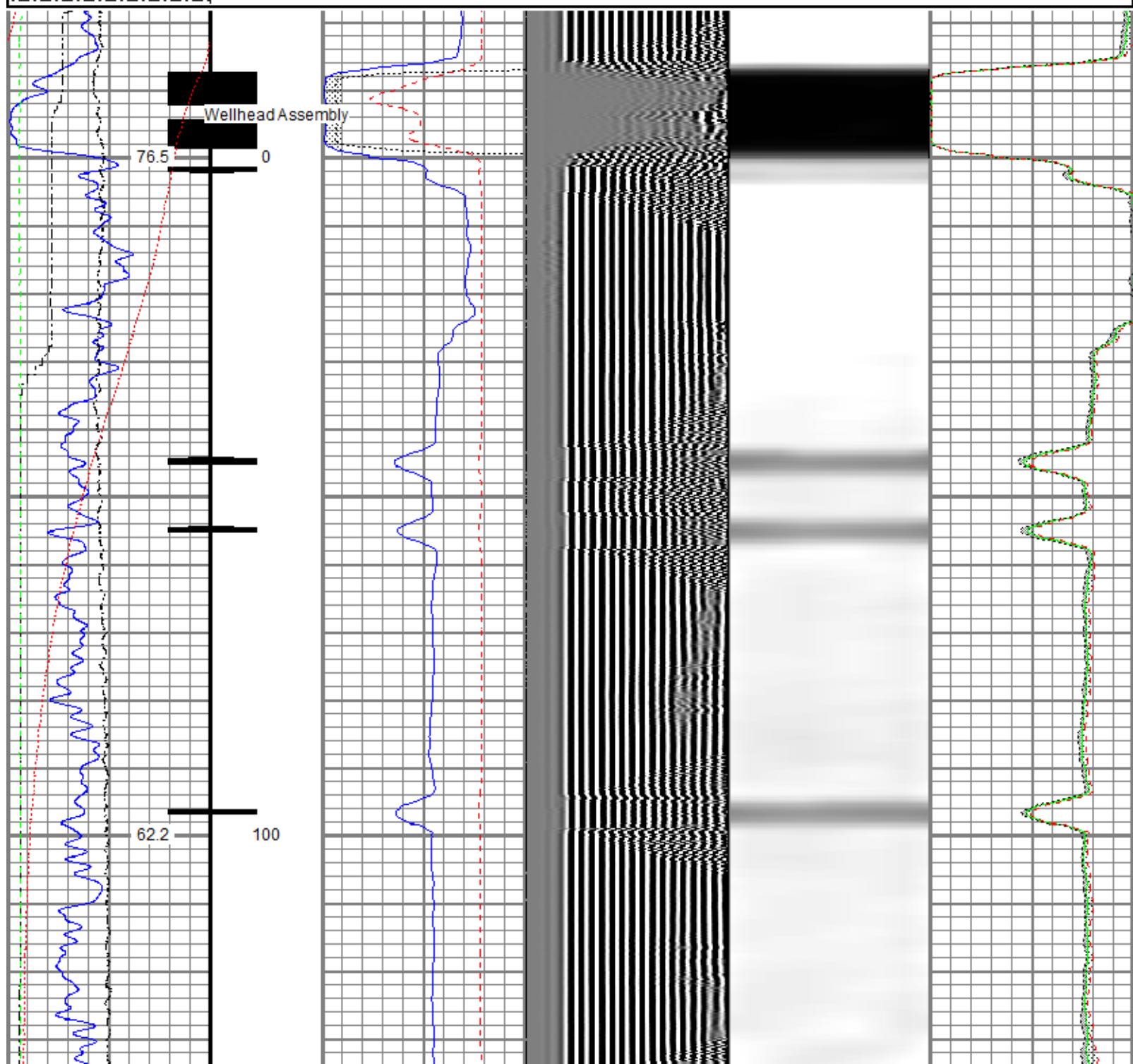
Log ran as per customer request
Depth referenced to Casing Tally reported Marker Joint Top at 6706 FT
Adjusted -18 FT to correlate with Marker Joint Top
Gauge Ring/Junk Basket ran to 7787 FT with no debris
5.50" RBP Set @ 6780 FT
Log ran from 6770 FT to surface
Recorded with 2800 PSI Surface Induced Pressure
Logging tools were clean and free of debris upon completion of operations
Thank you for choosing Reliance Oilfield Services, LLC!!

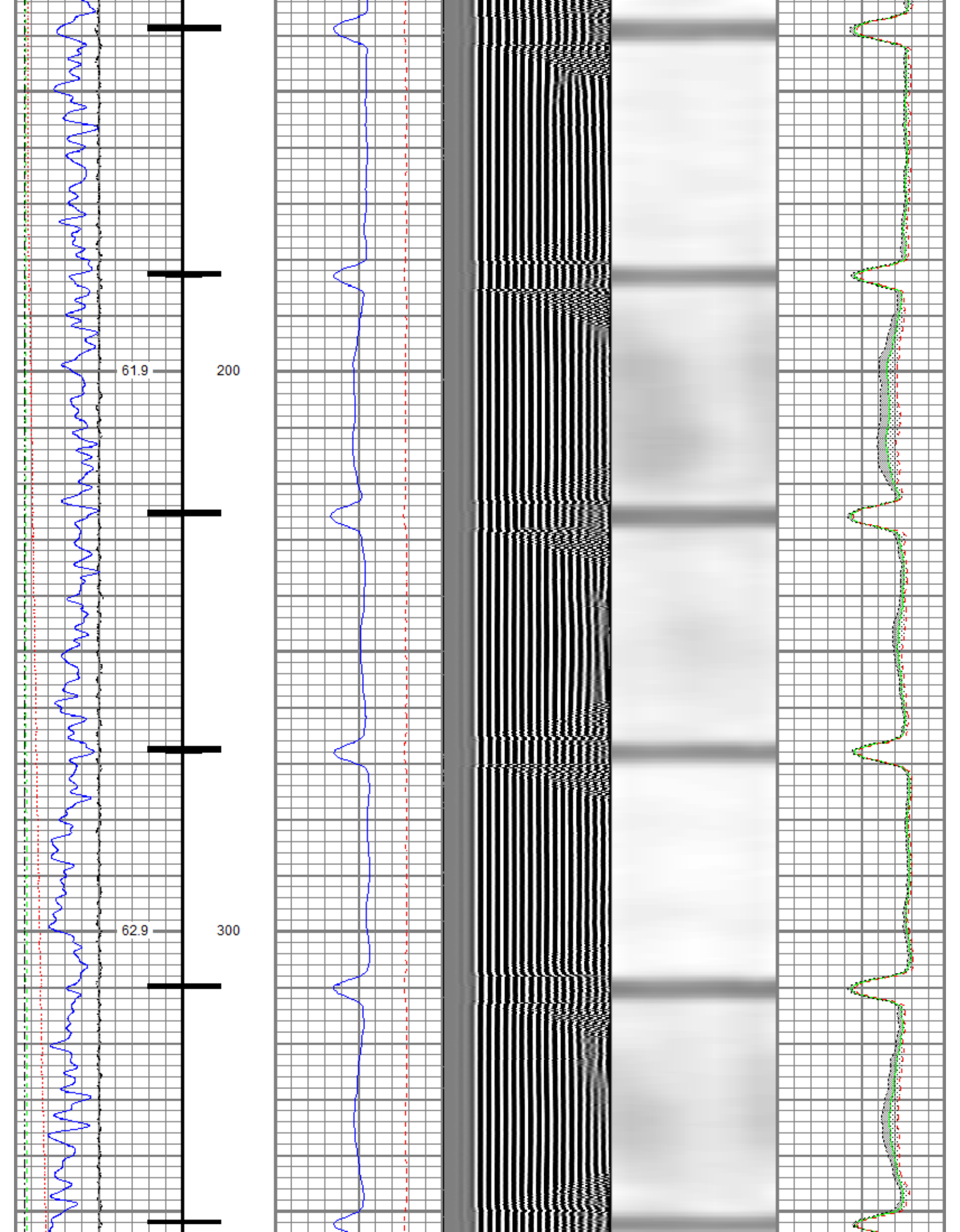
Main Pass

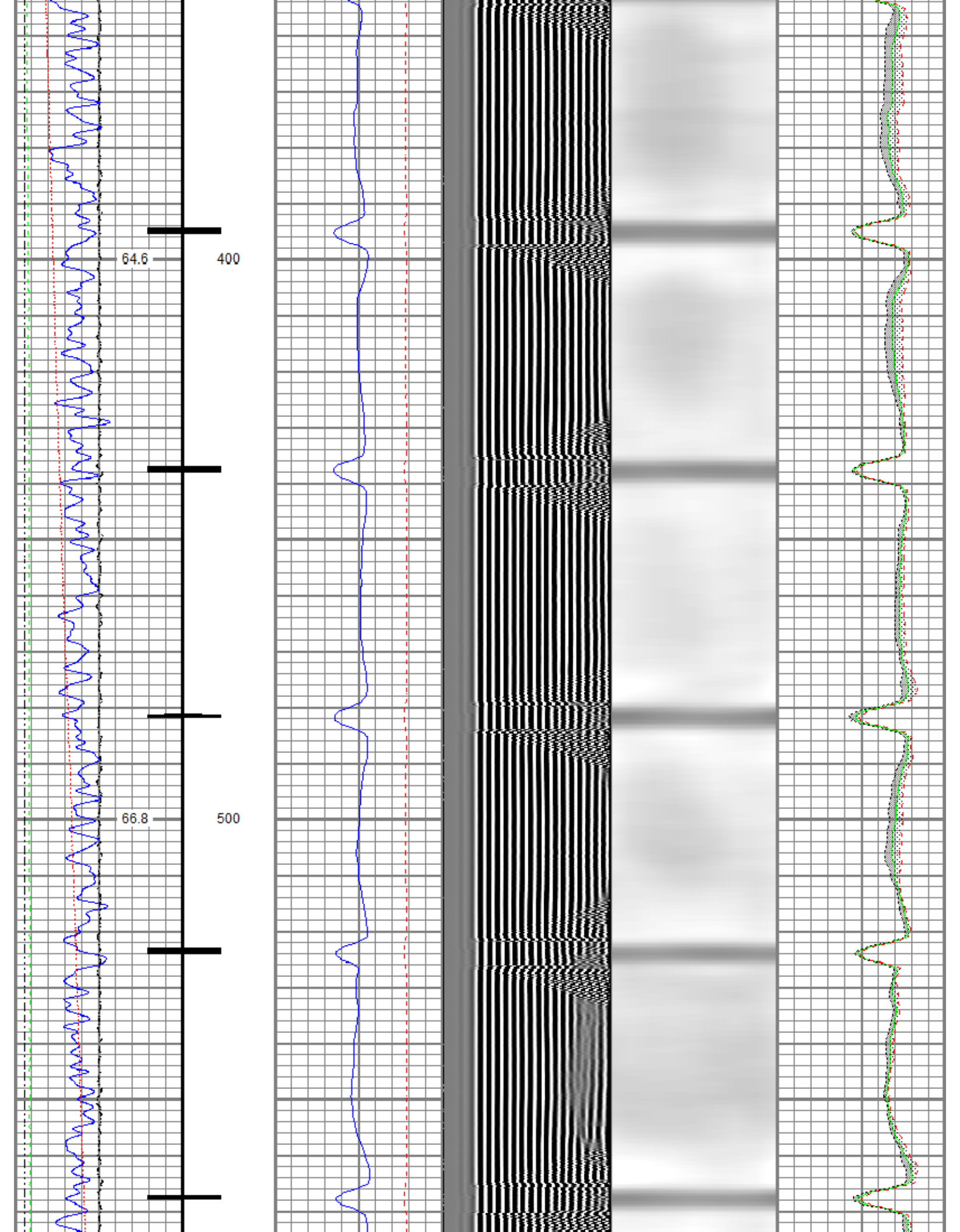


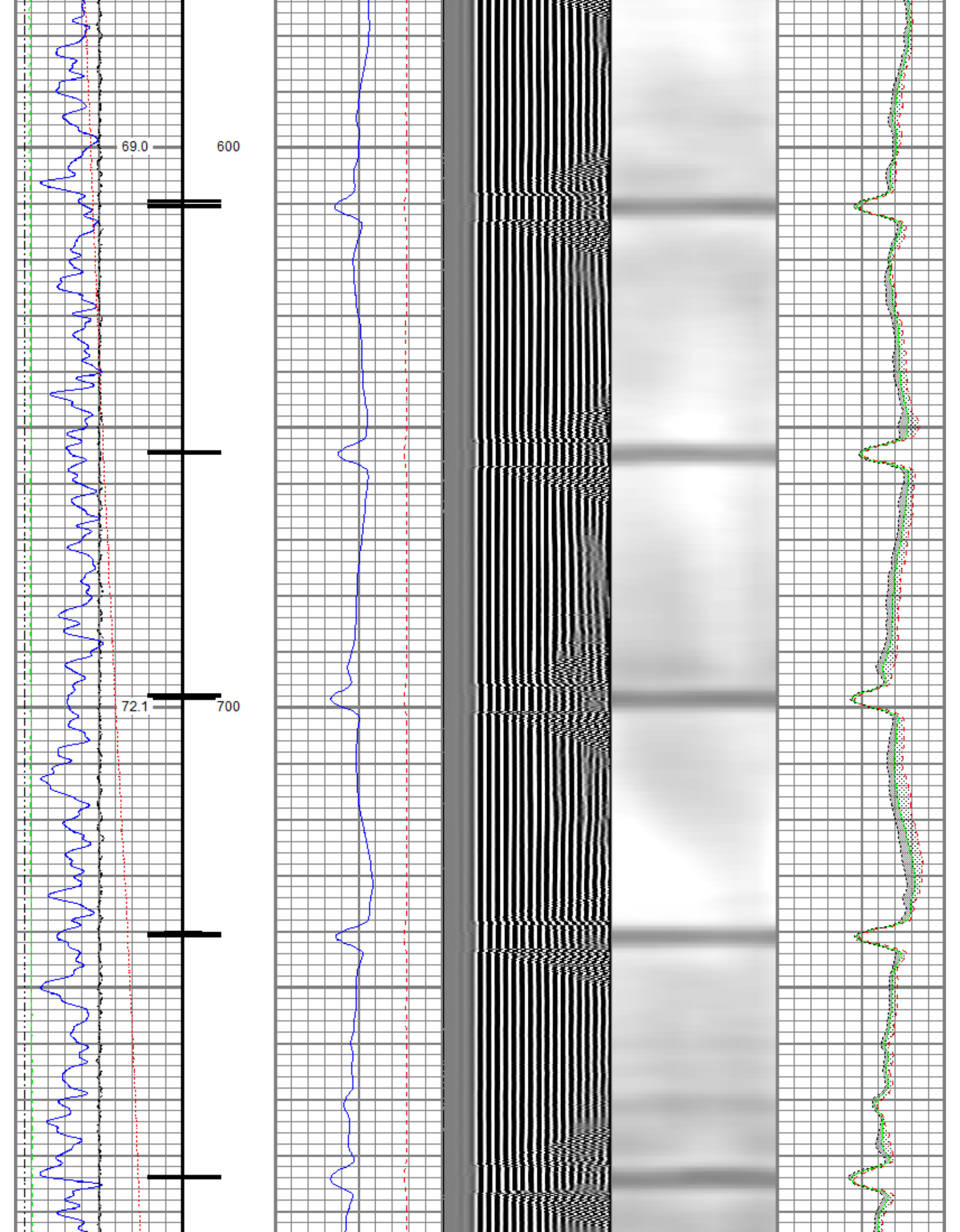
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 Dataset Pathname pass4
 Presentation Format ros_radri
 Dataset Creation Wed Jul 04 08:16:45 2018
 Charted by Depth in Feet scaled 1:240

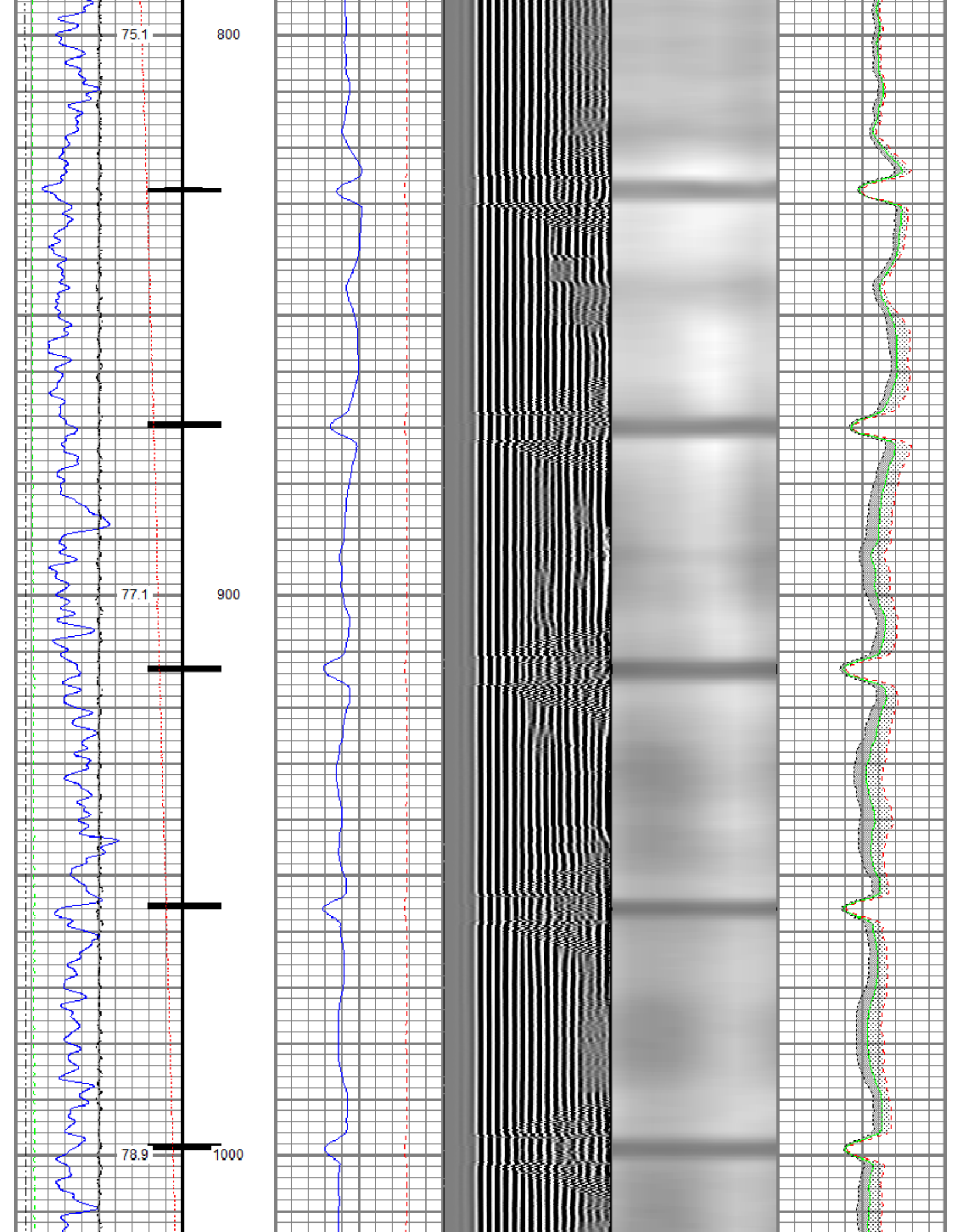
Gamma Ray	0	3' Amplitude (mV) 100	5' Variable Density Log	Sector Map	0	Average Amplitude 100
(GAPI) 120		3' Amplitude x 5	200			Minimum Amplitude
Casing Collar Locator	0	(mV) 20			0	100
Temperature (degF) 20		3' Travel Time				Maximum Amplitude
Line Speed	650	(usec) 150			0	100
-150 (ft/min) 150				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

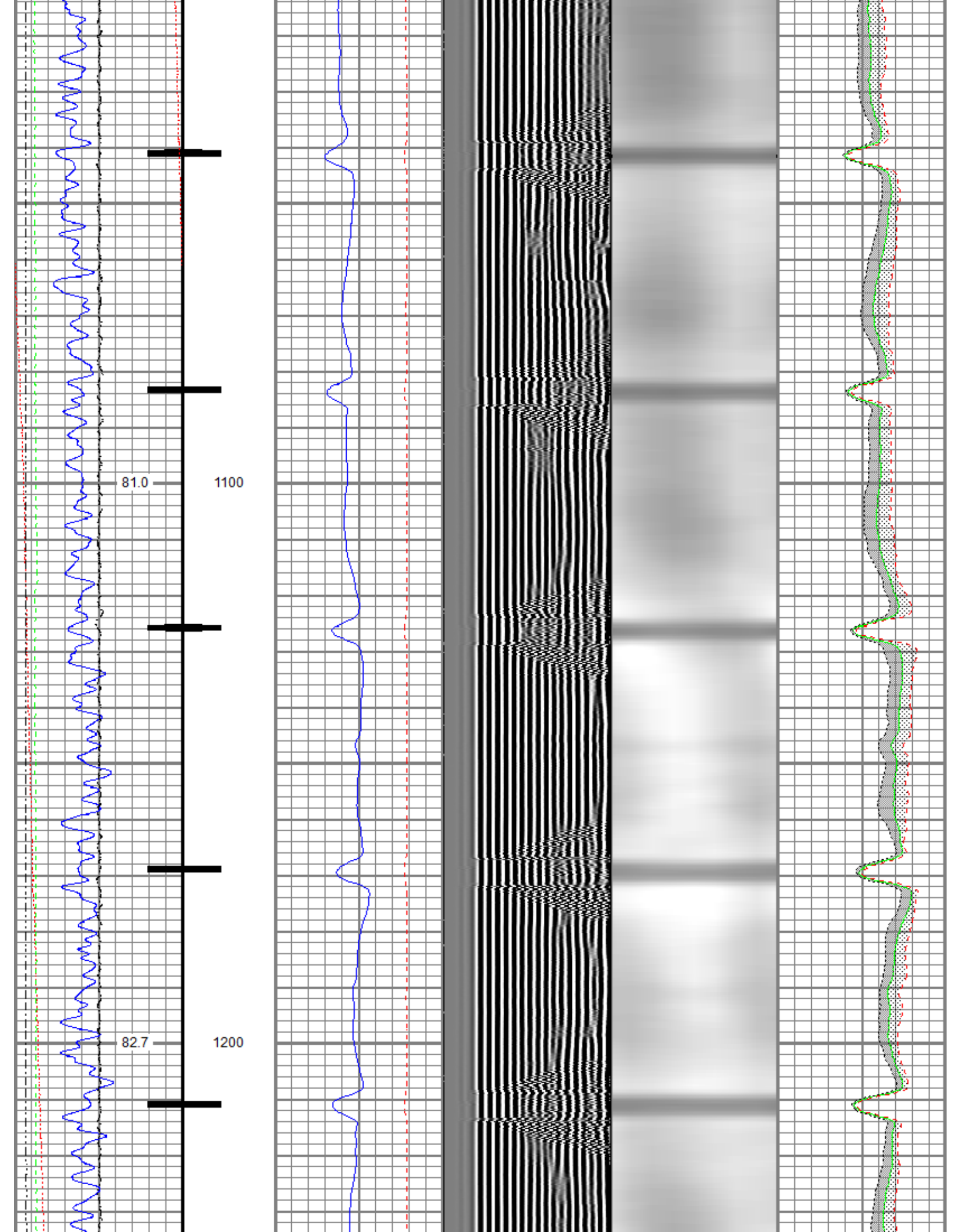


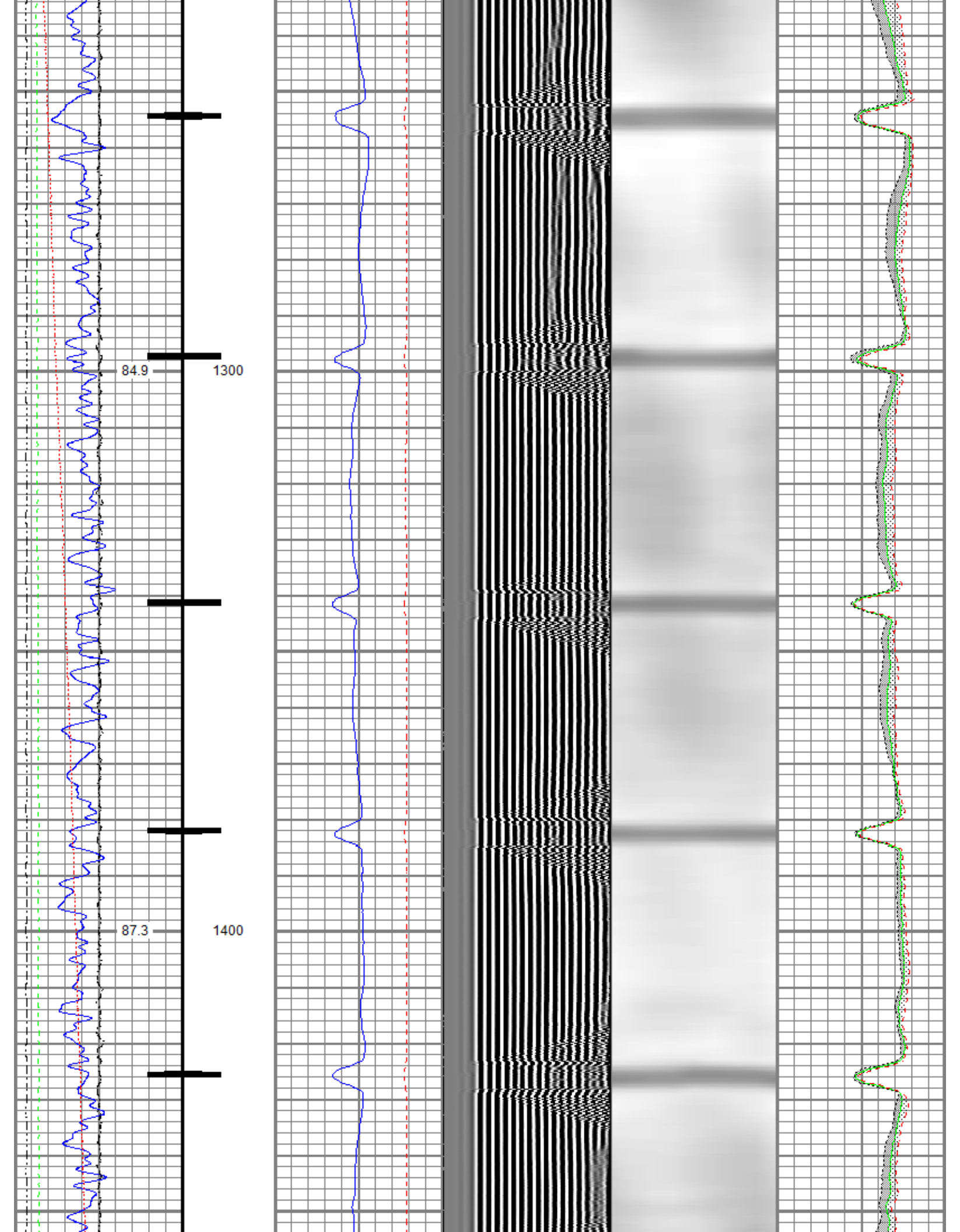


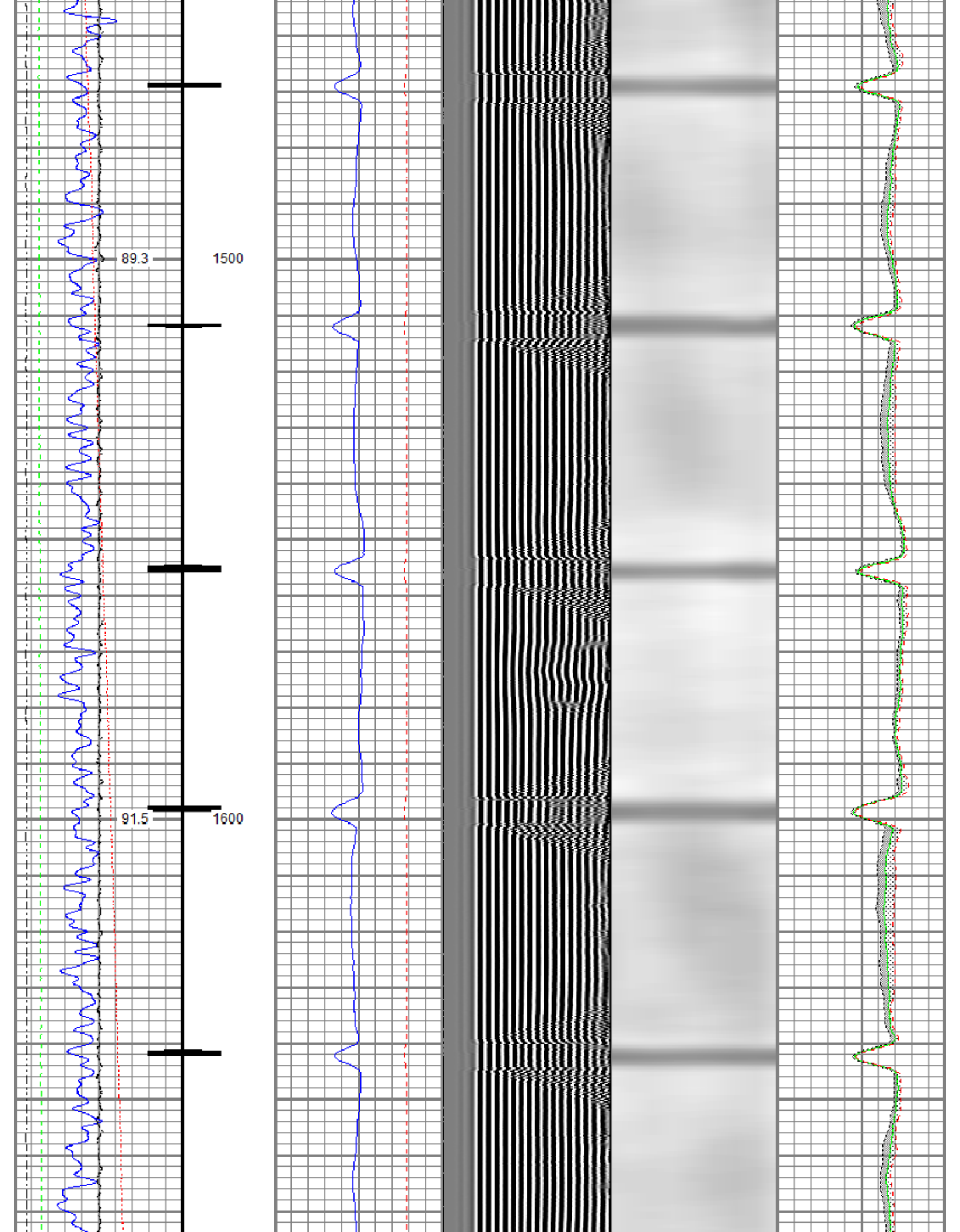


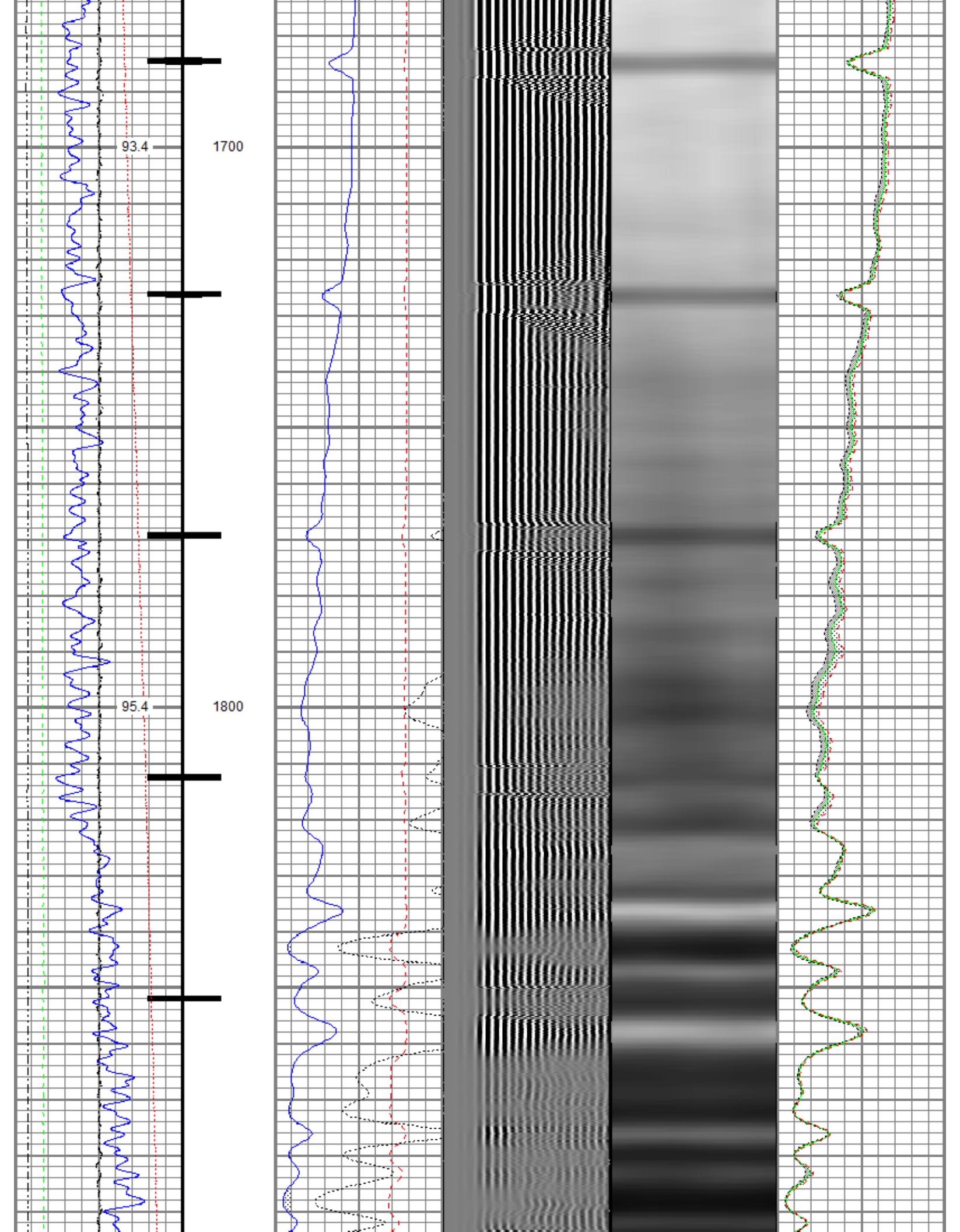


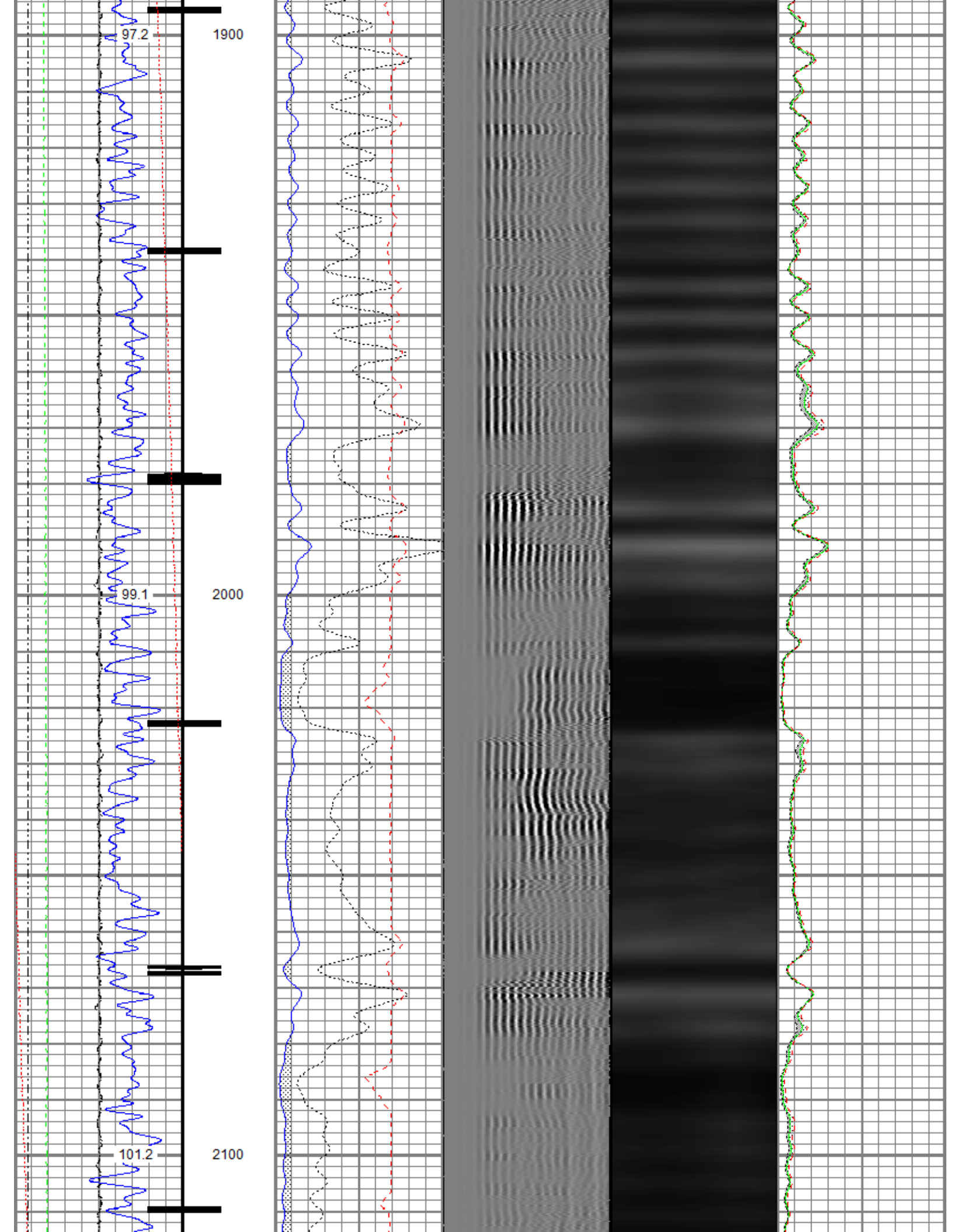


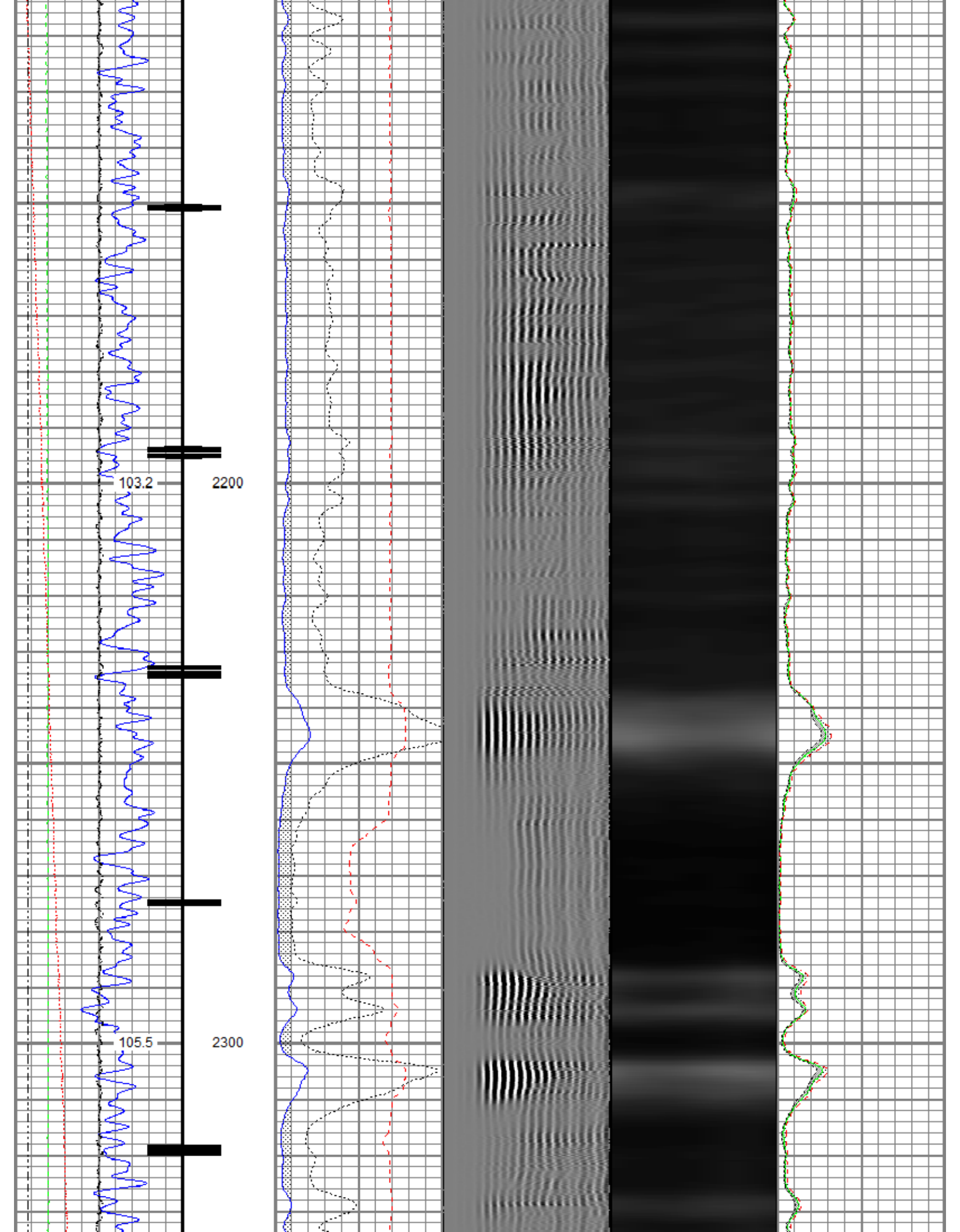


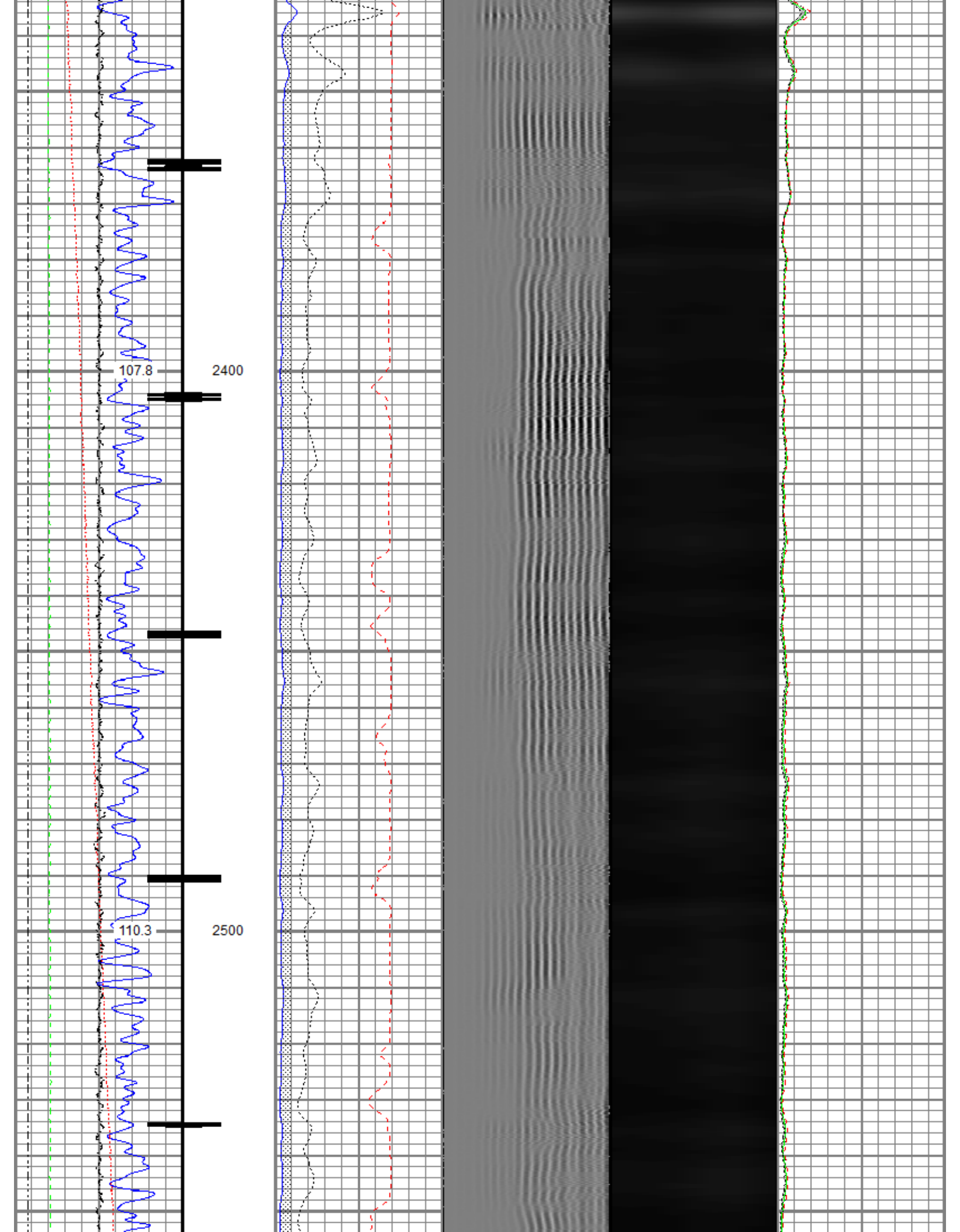


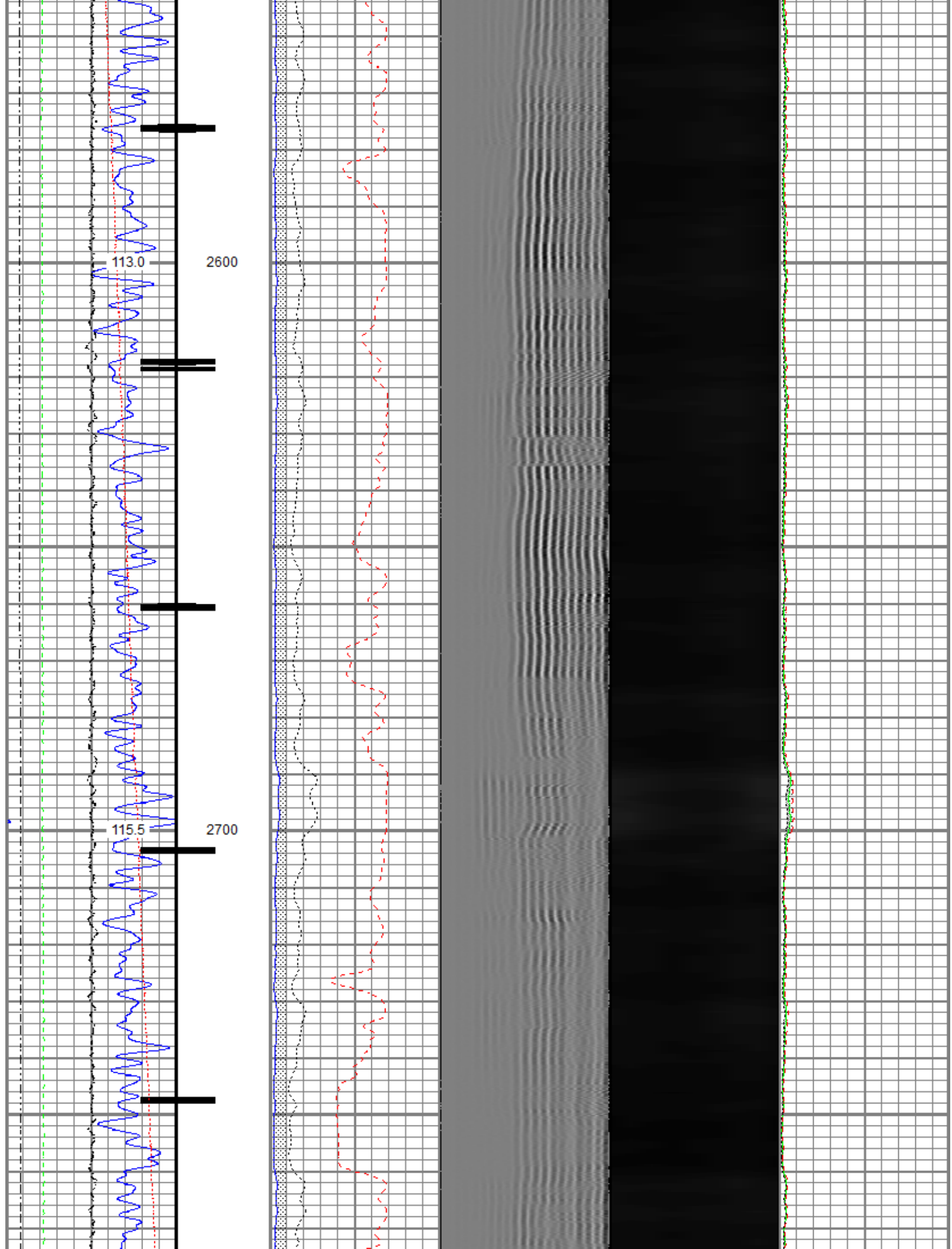


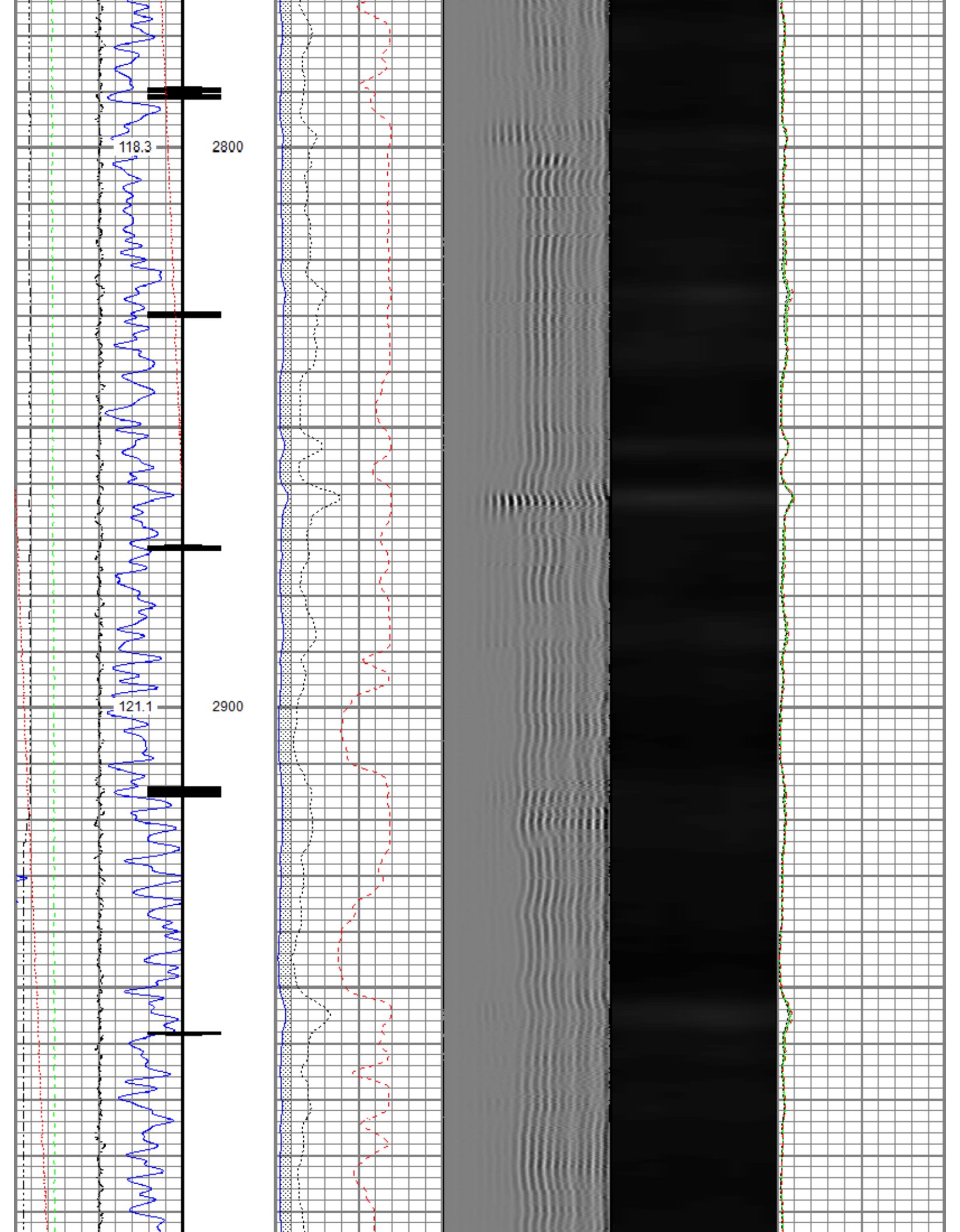


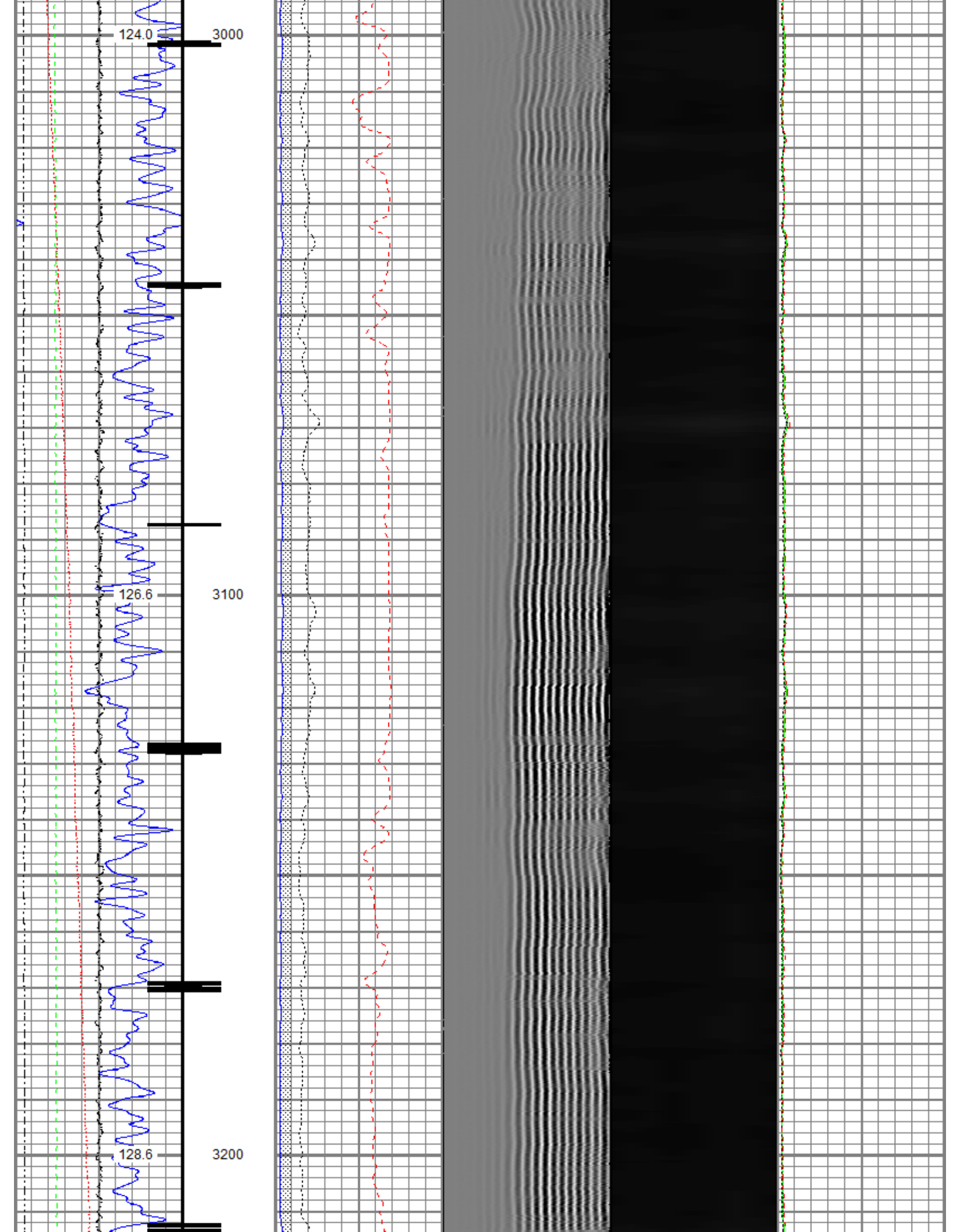


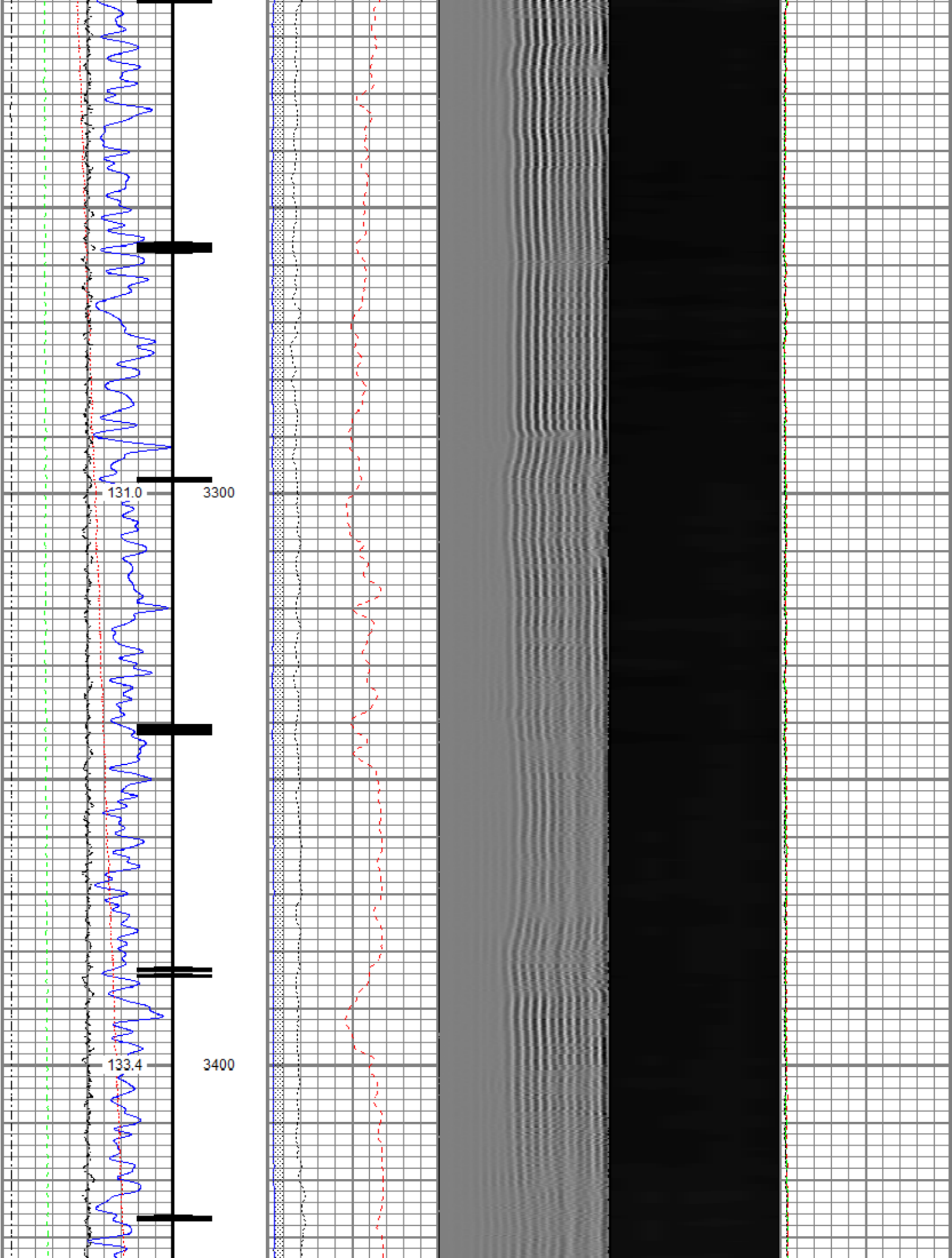


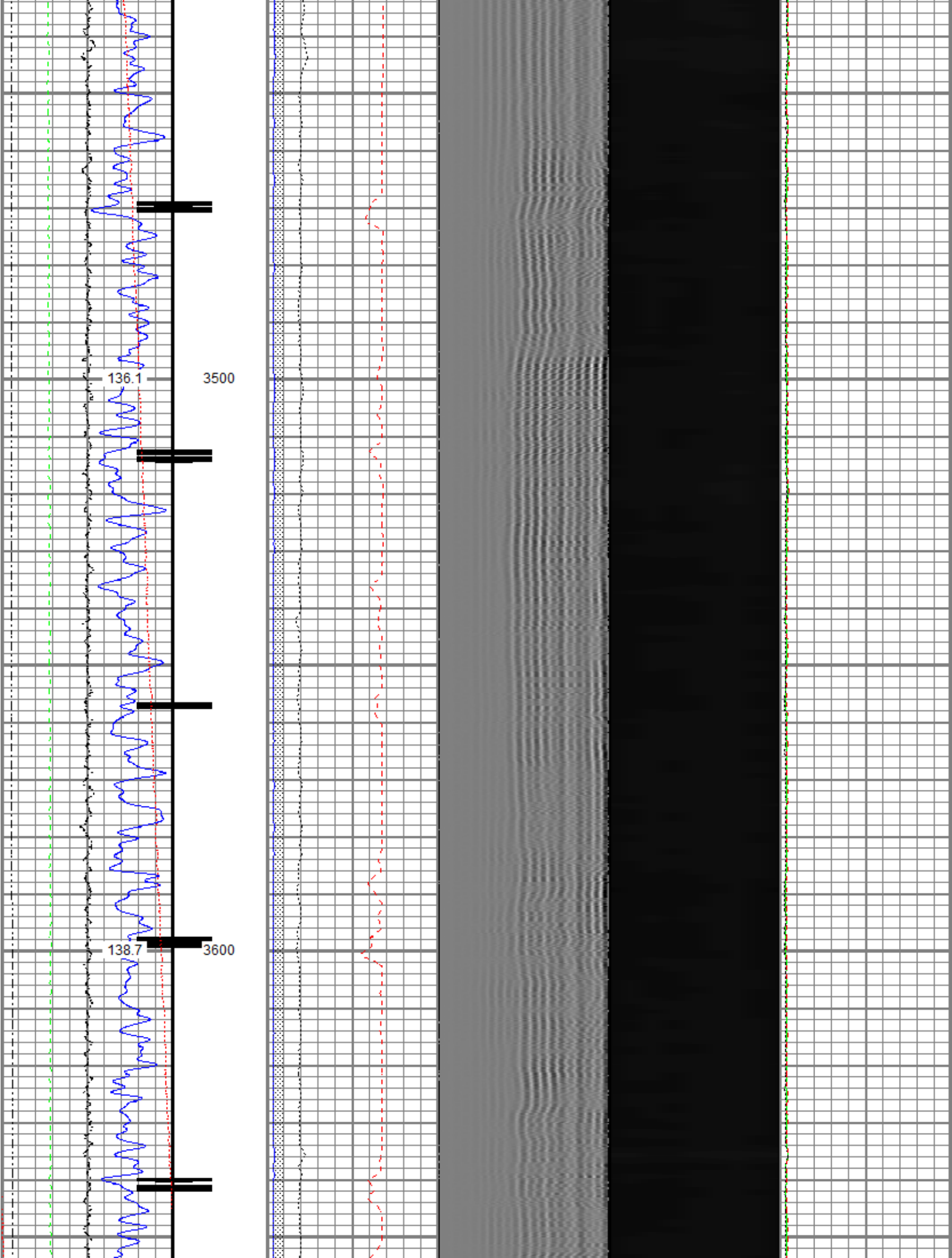


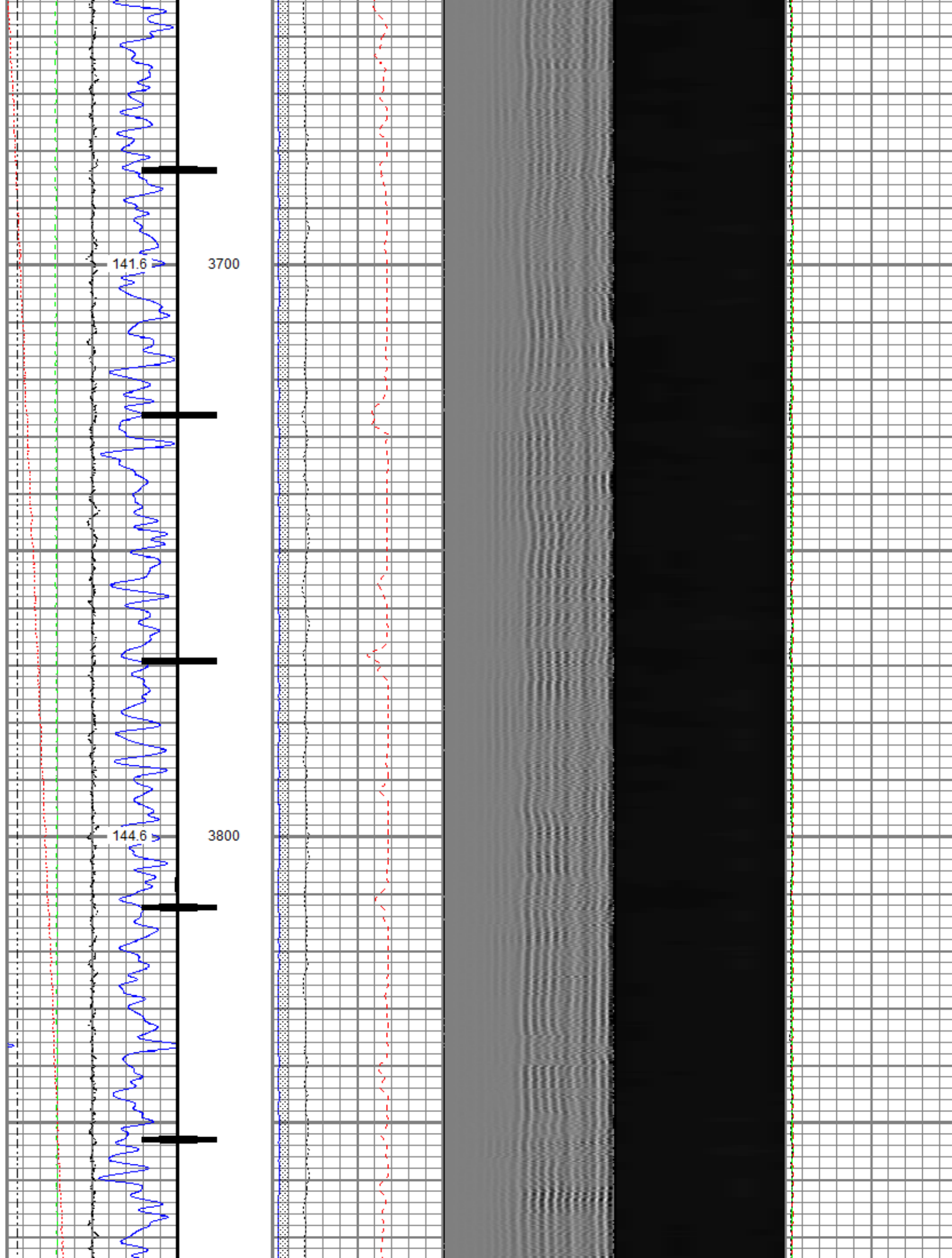


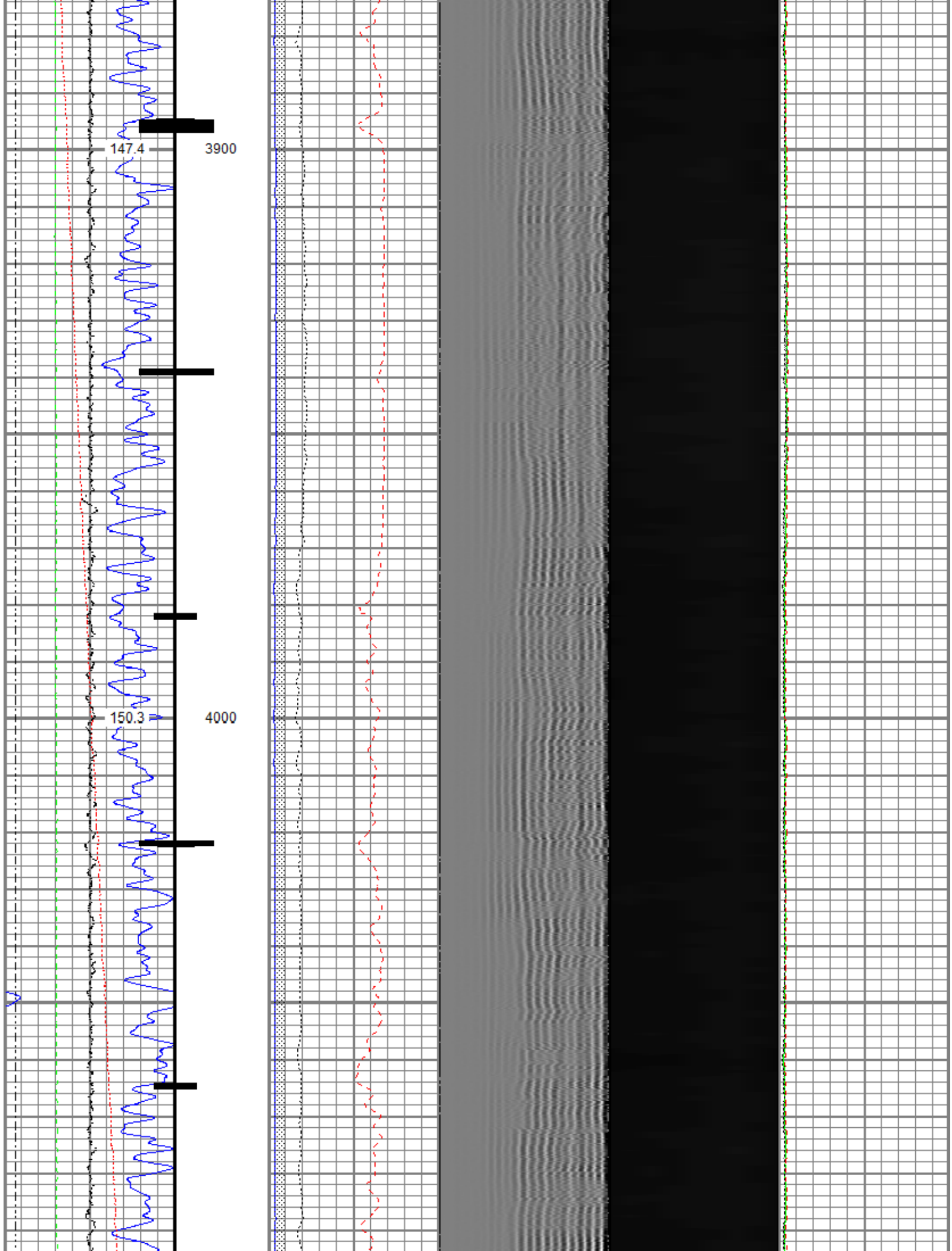


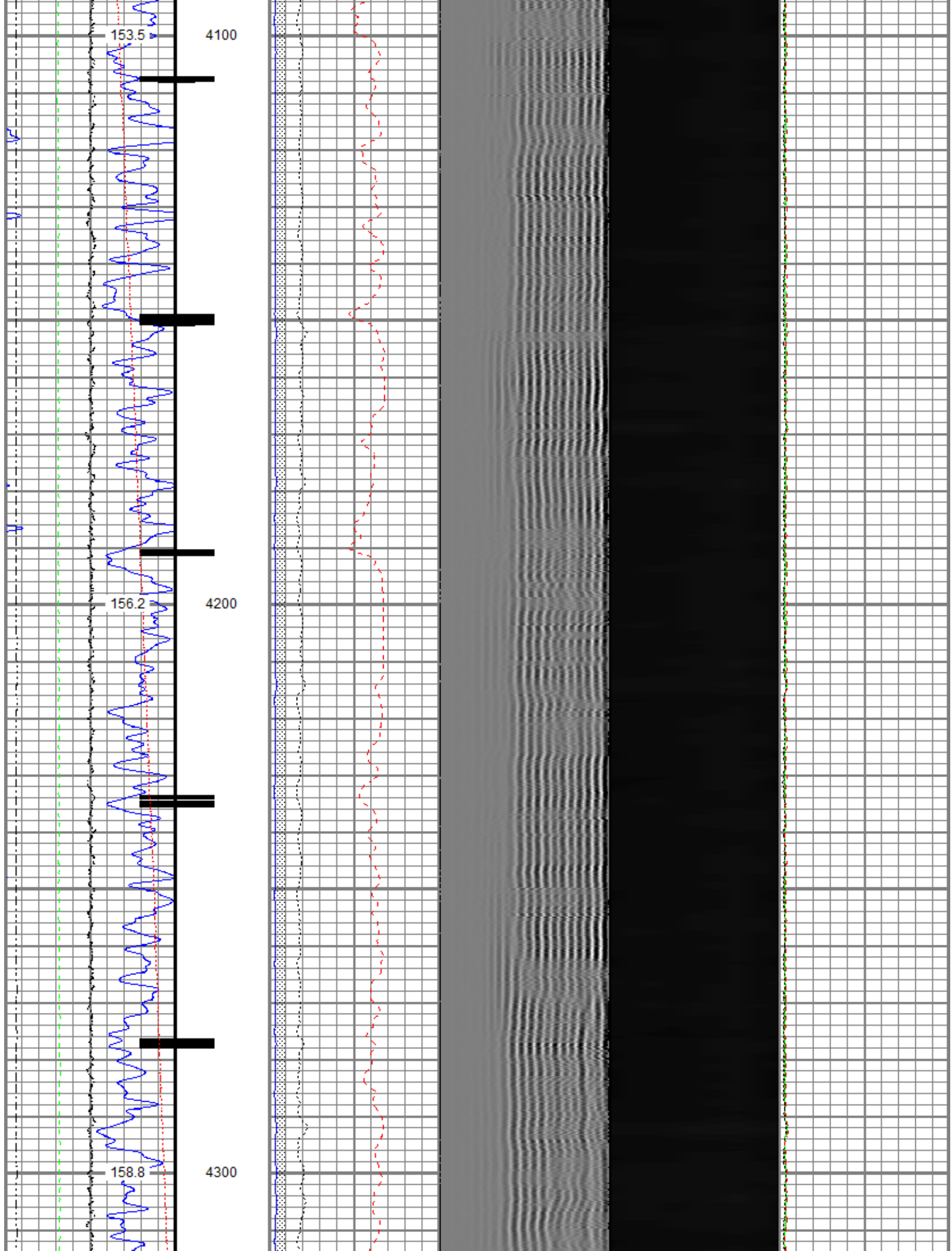


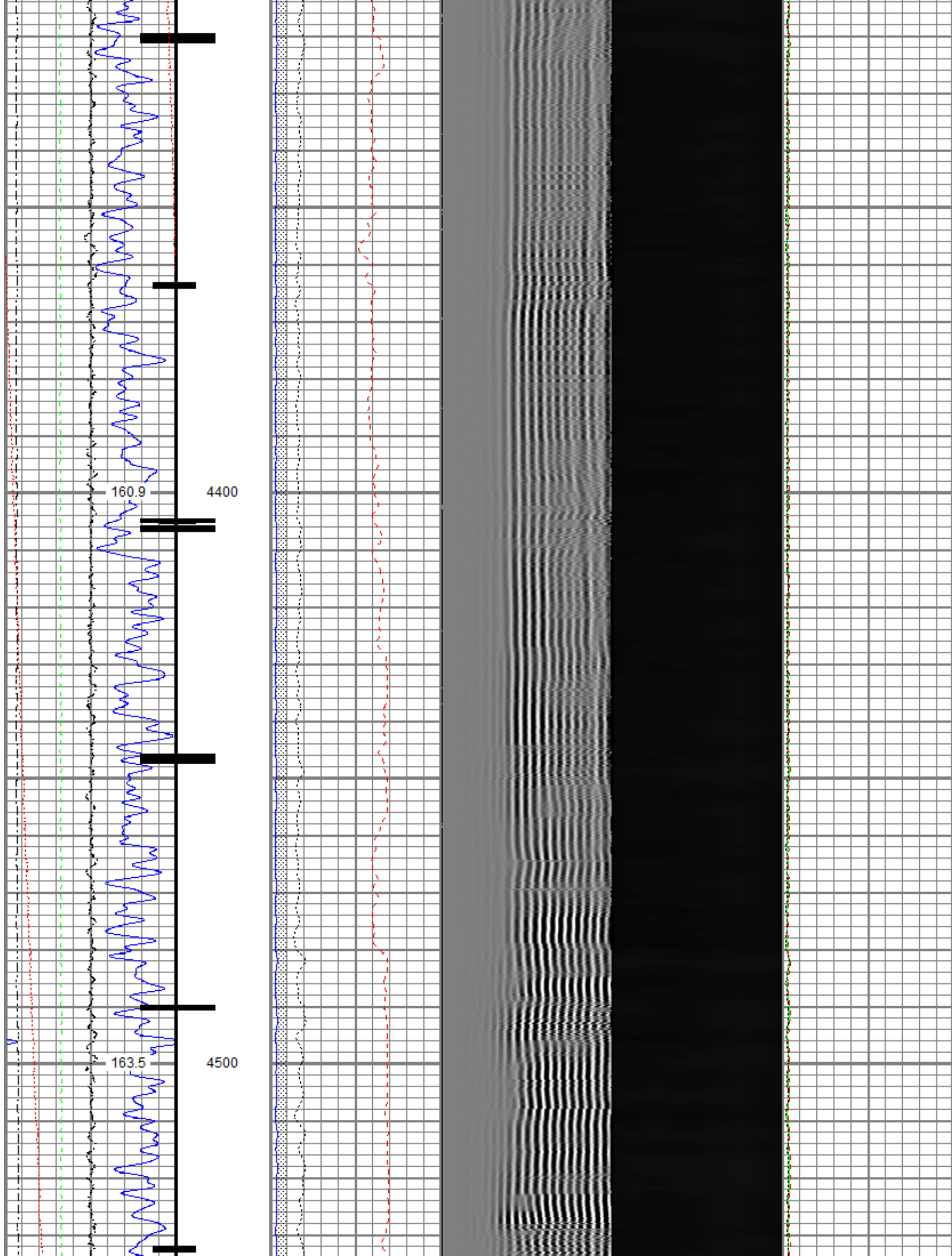


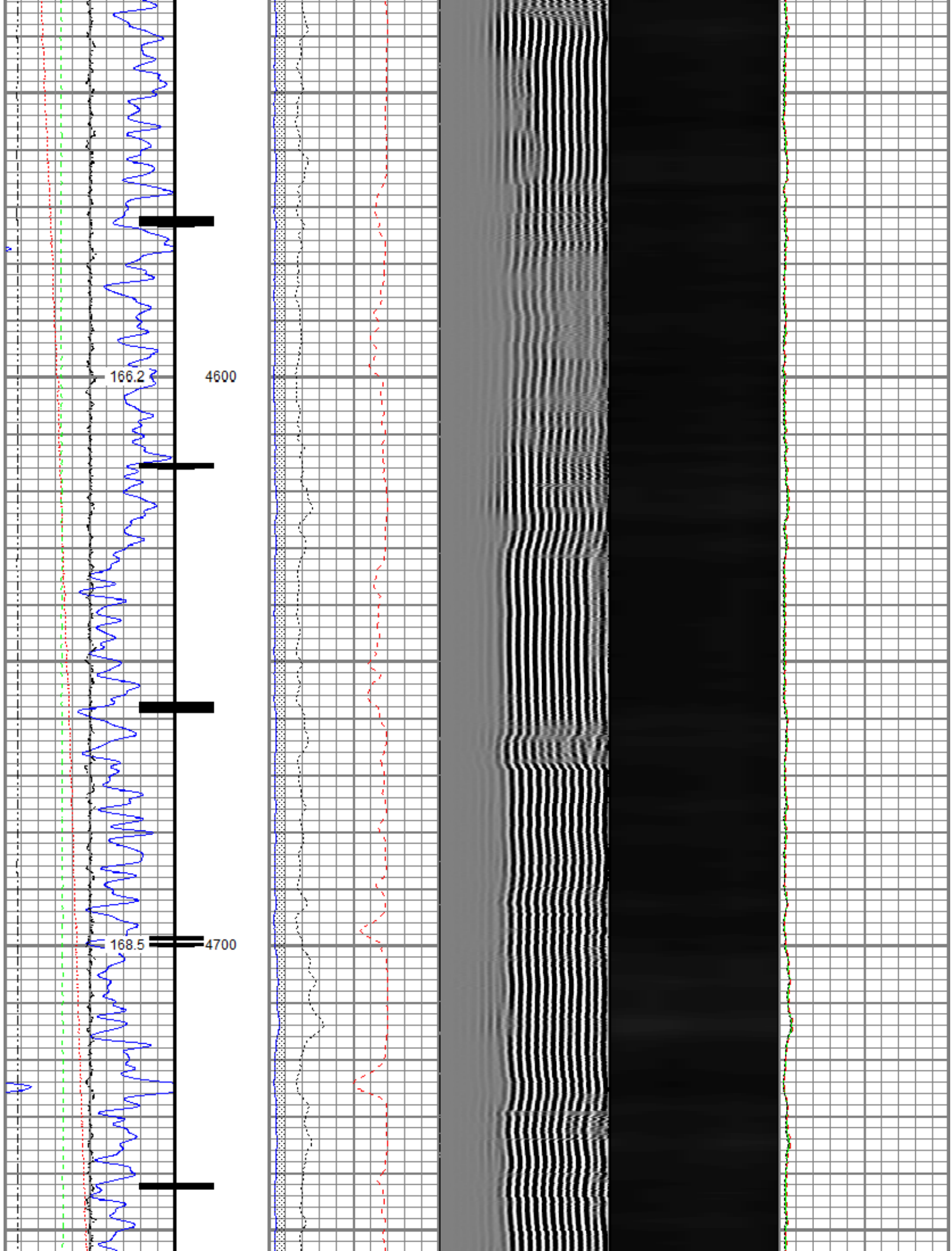


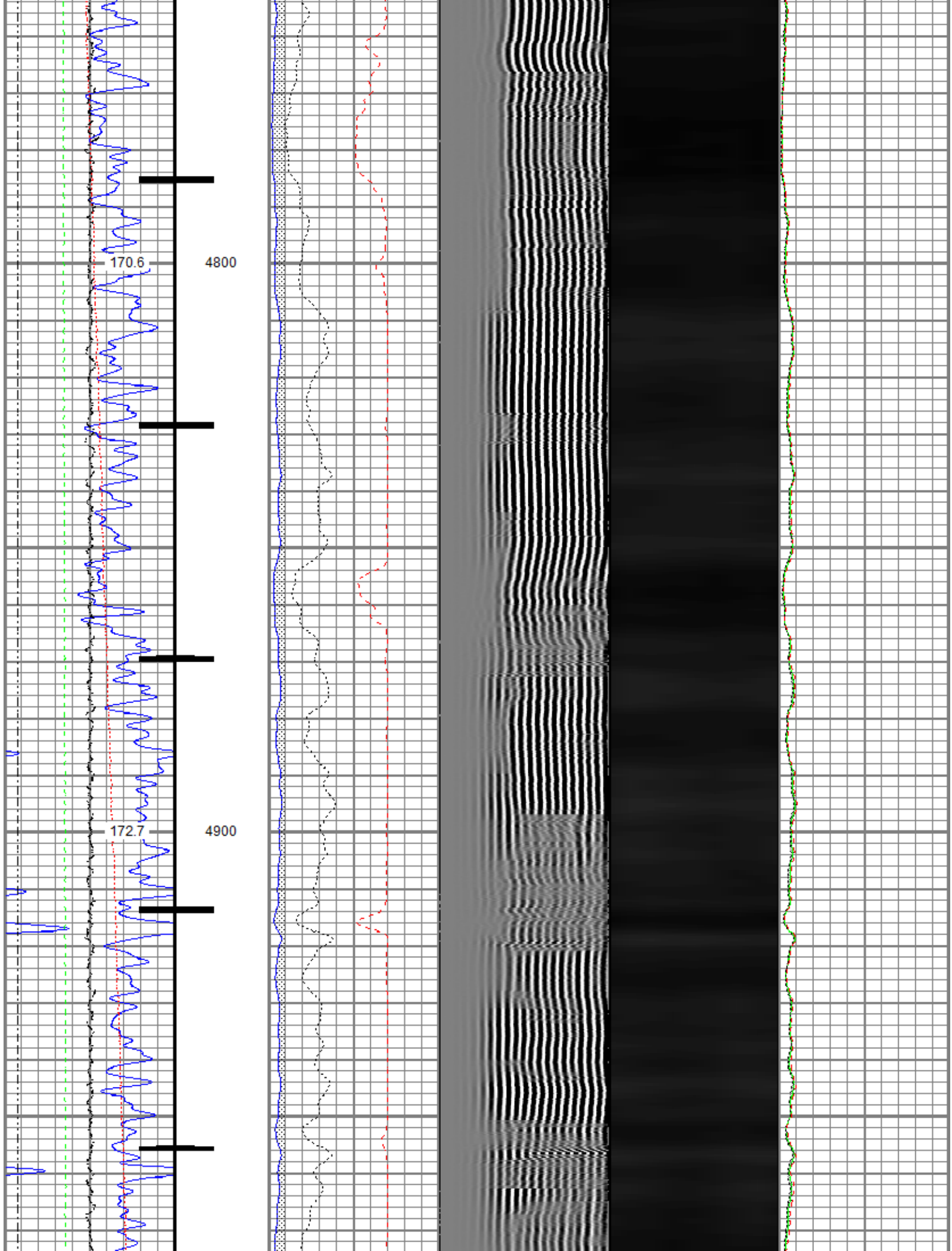


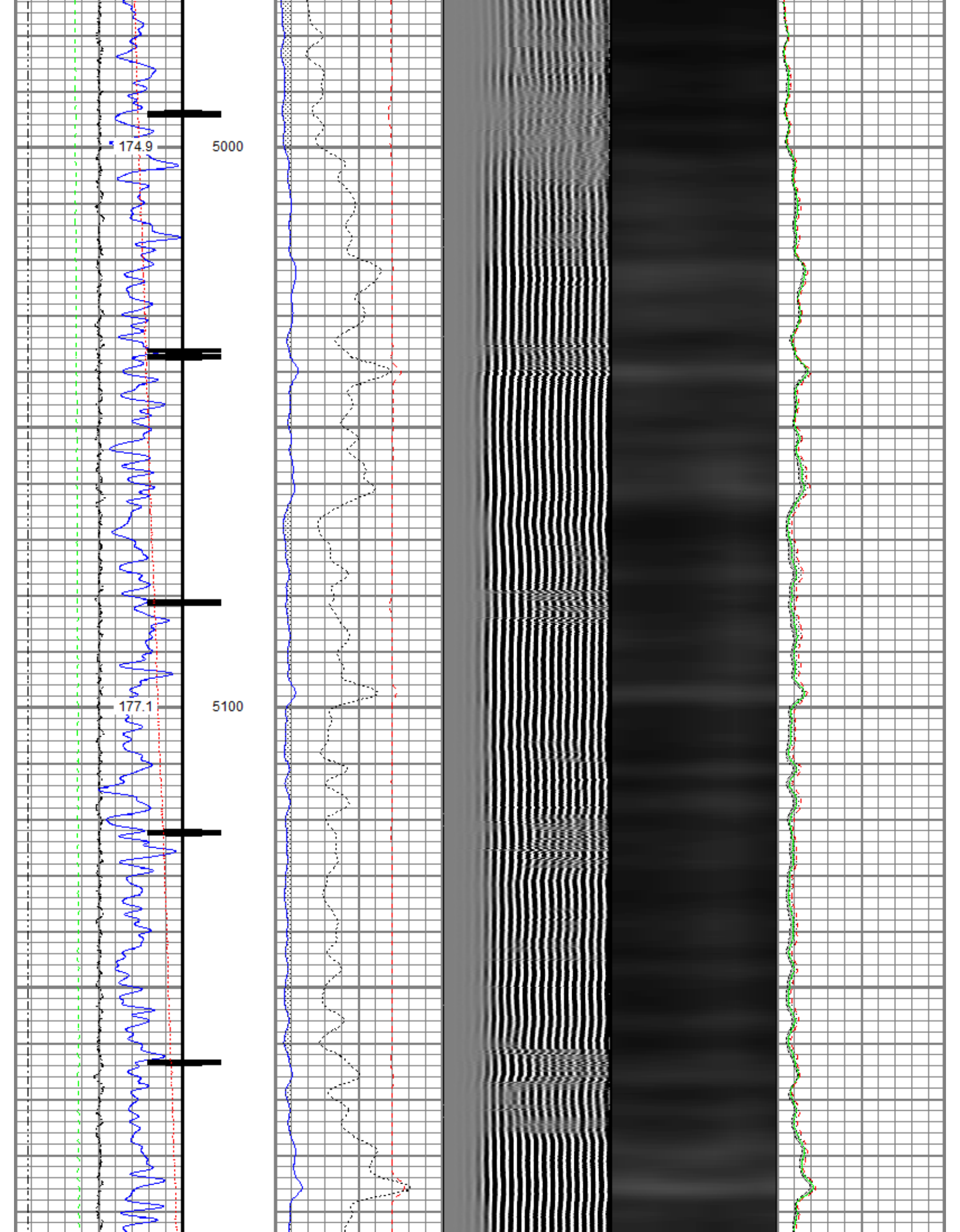


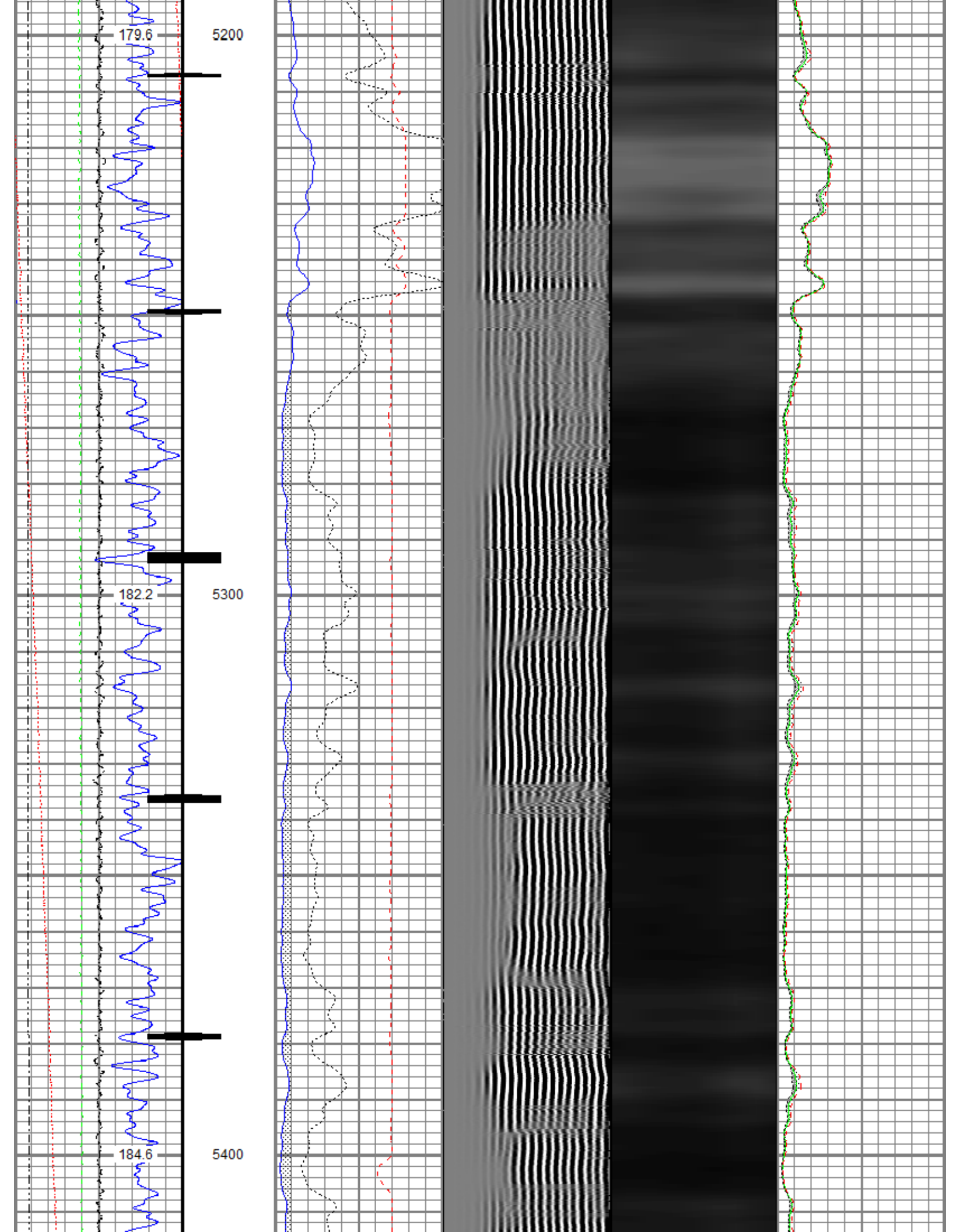


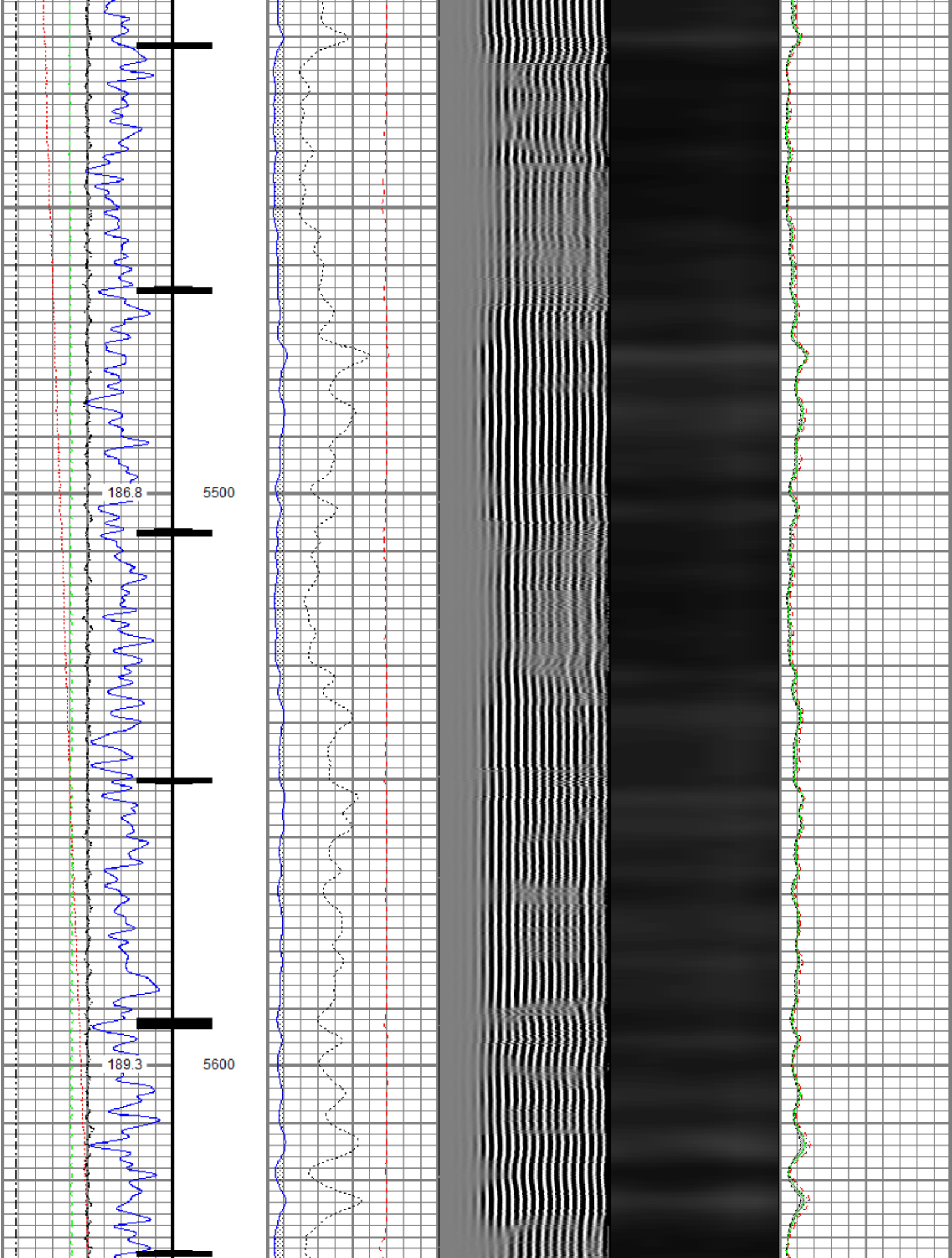


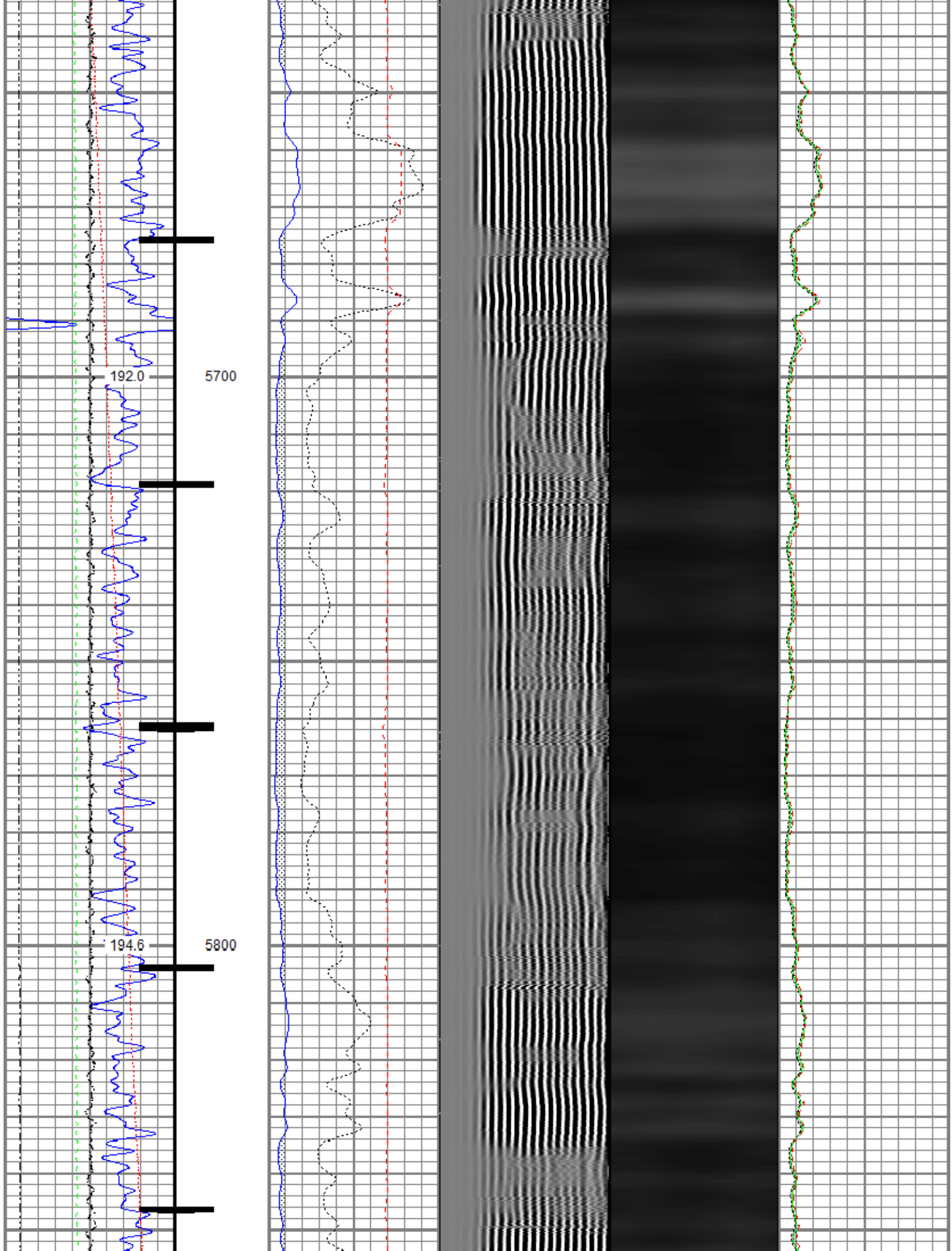


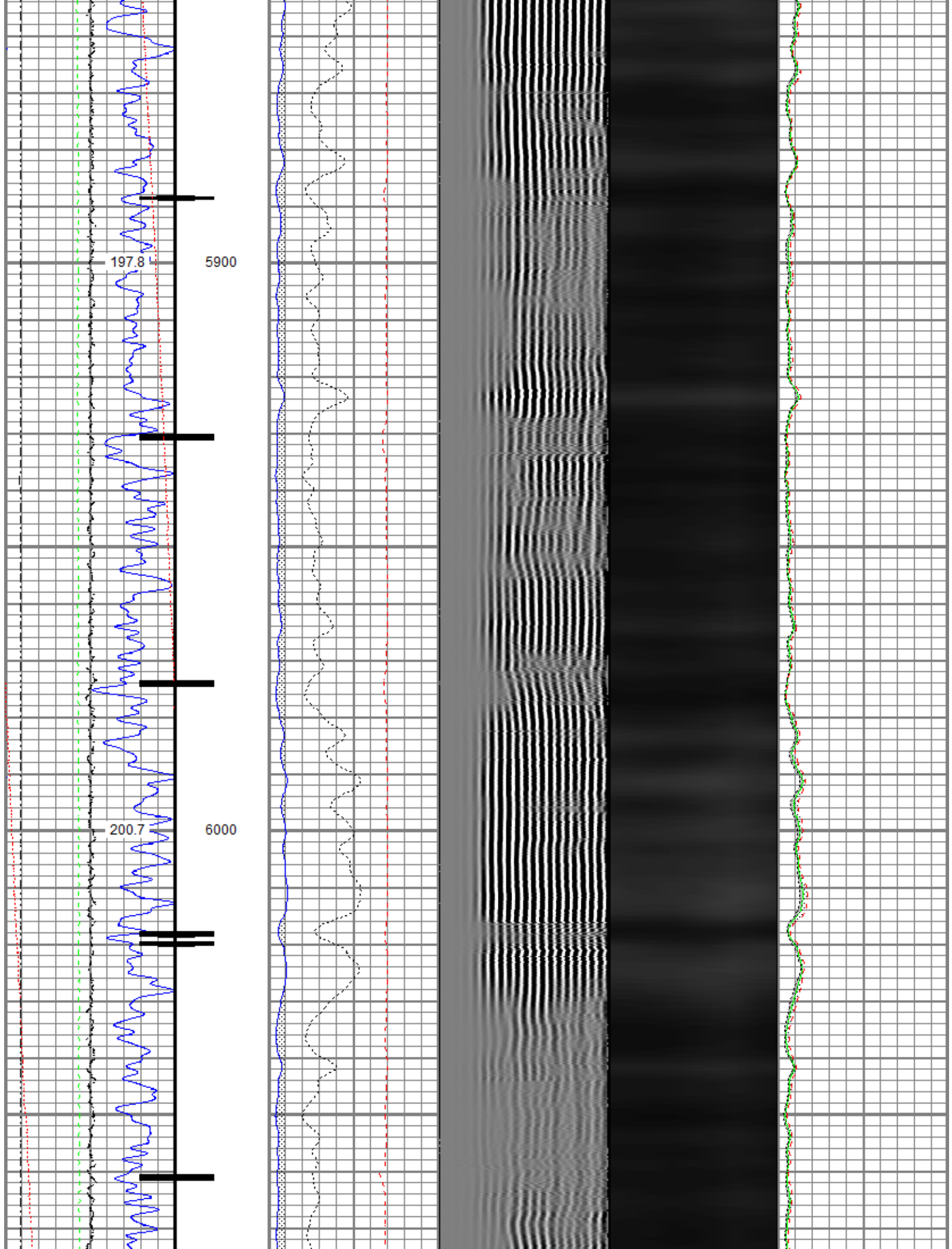


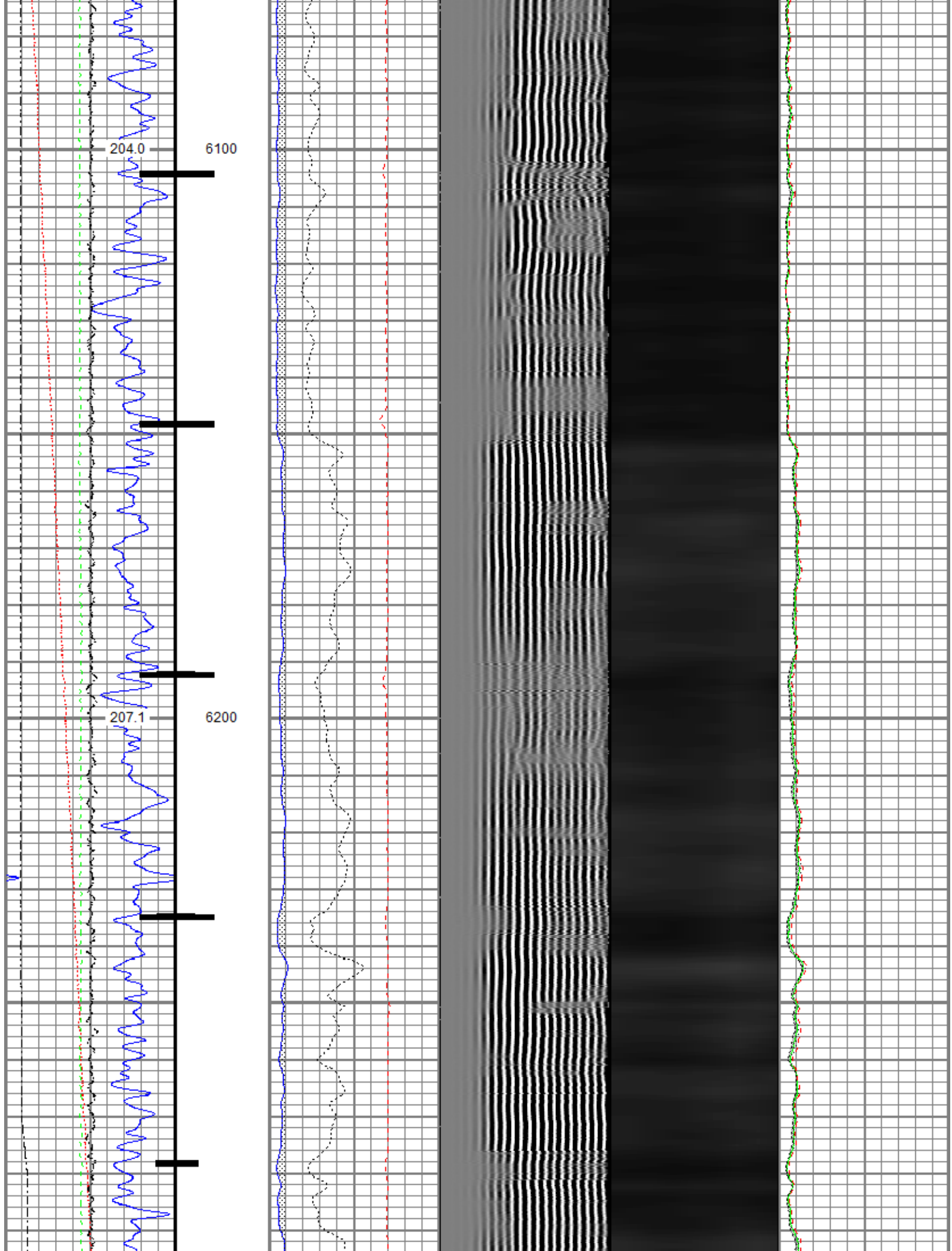


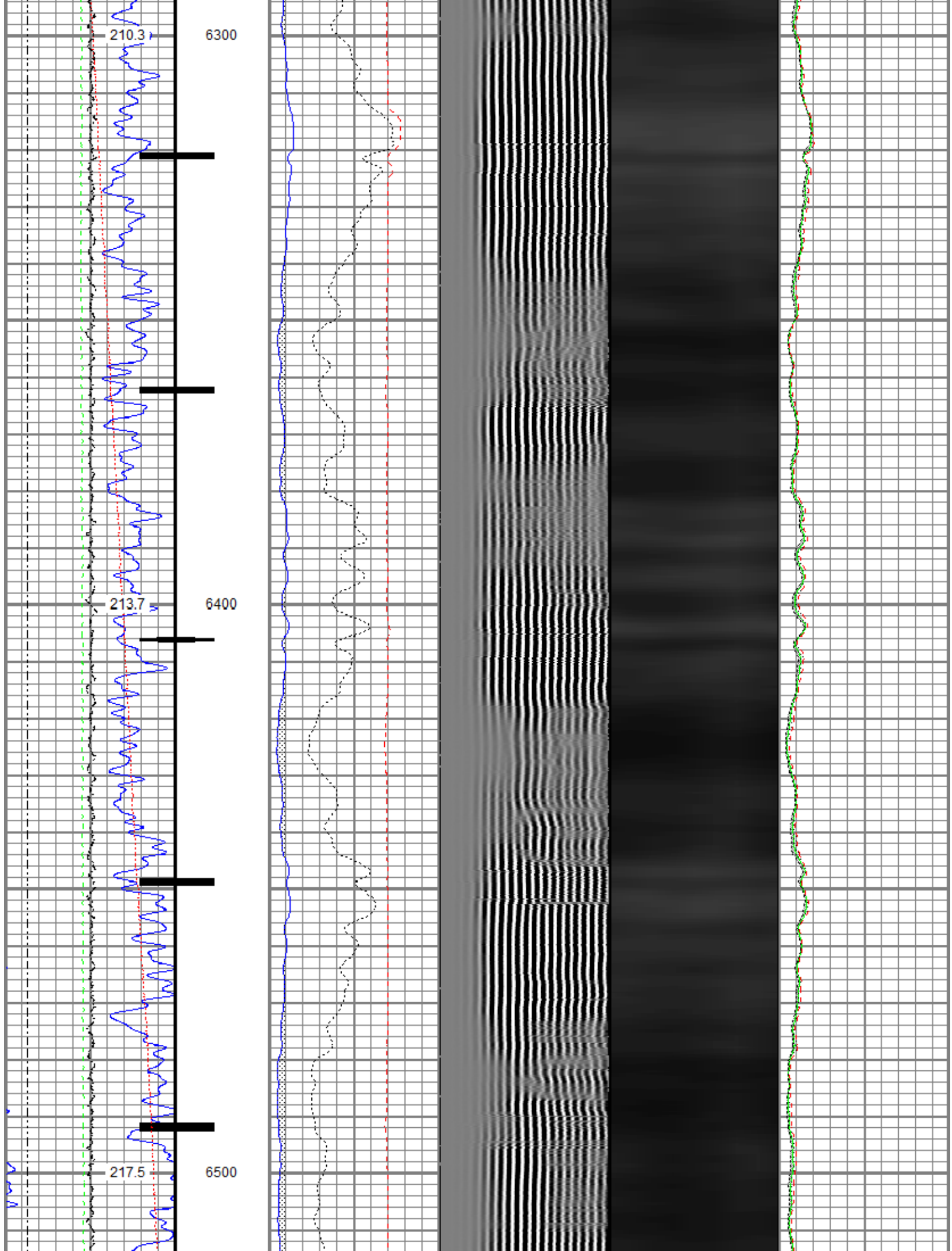


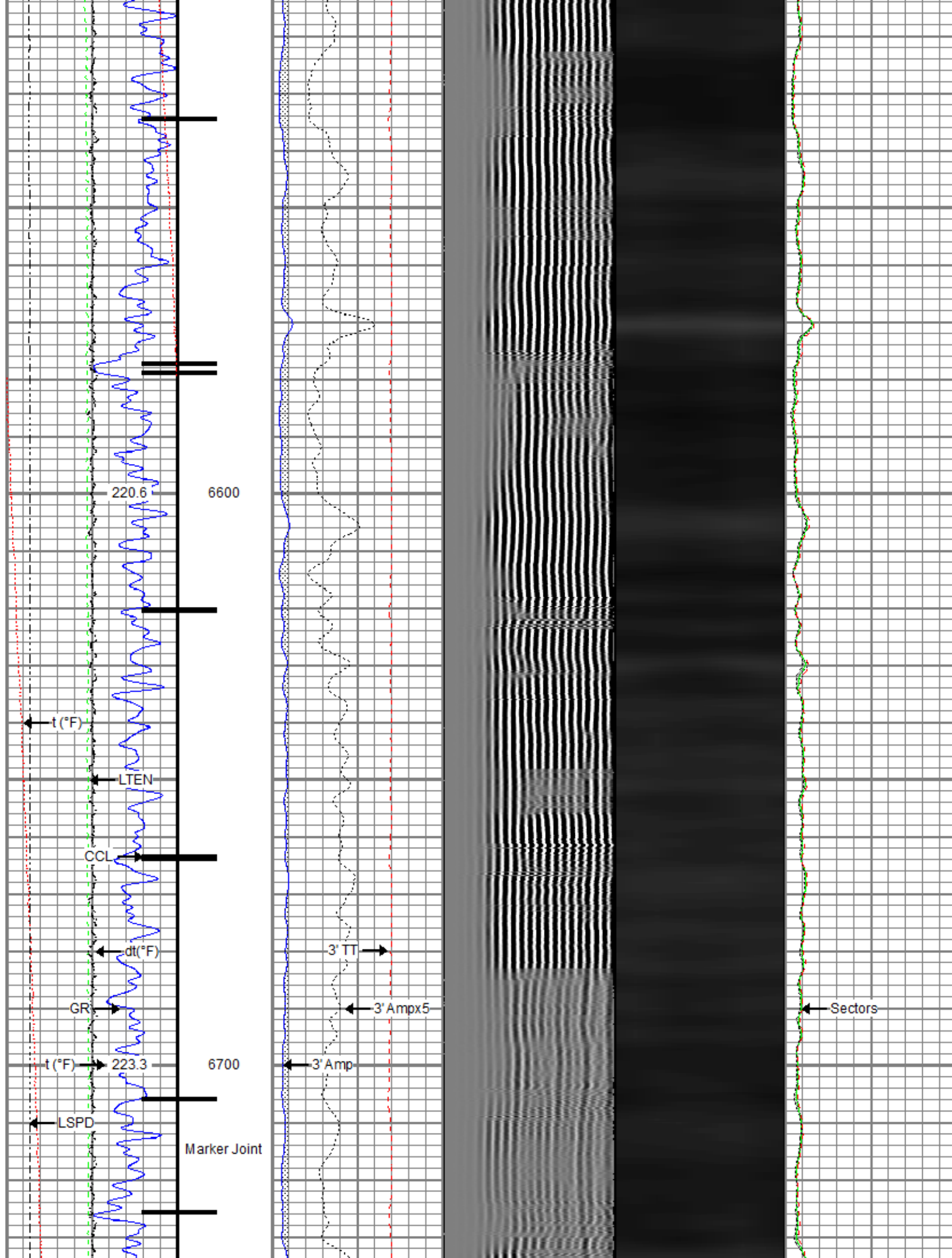


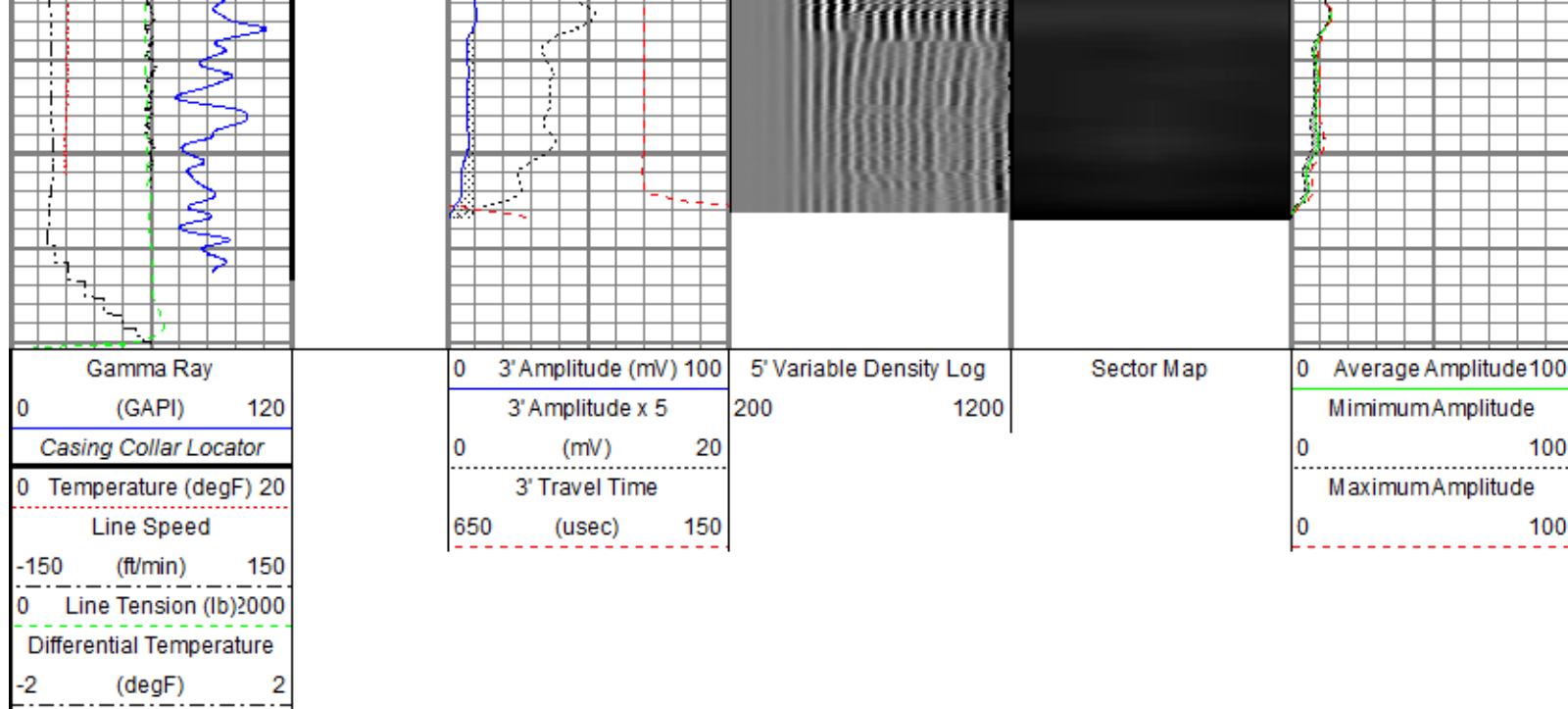








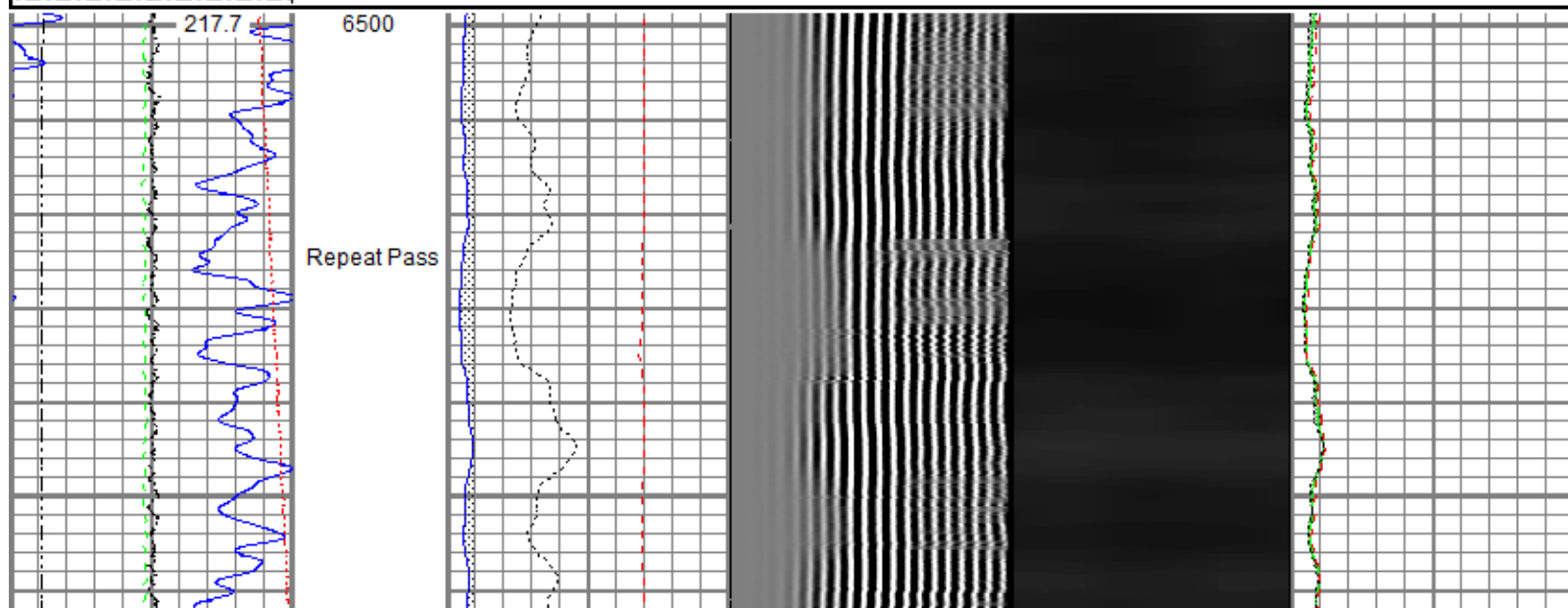
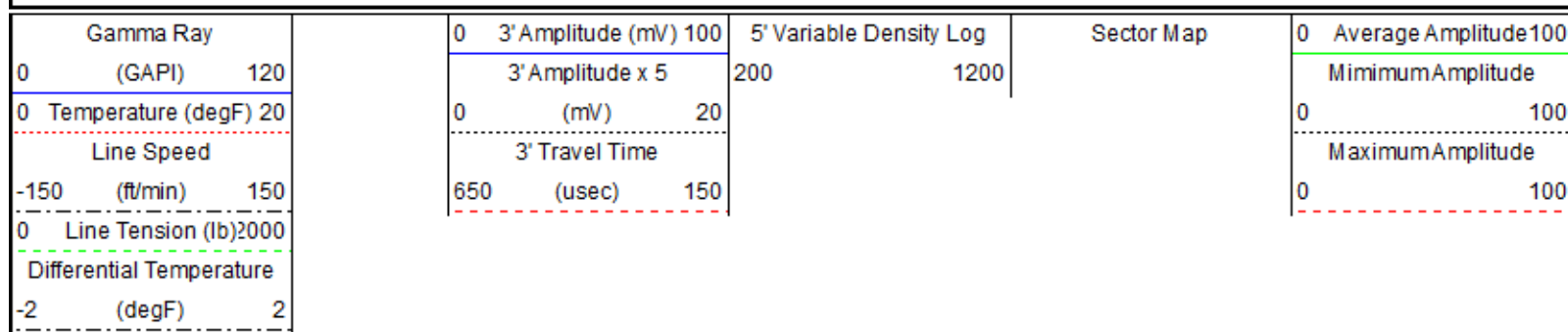


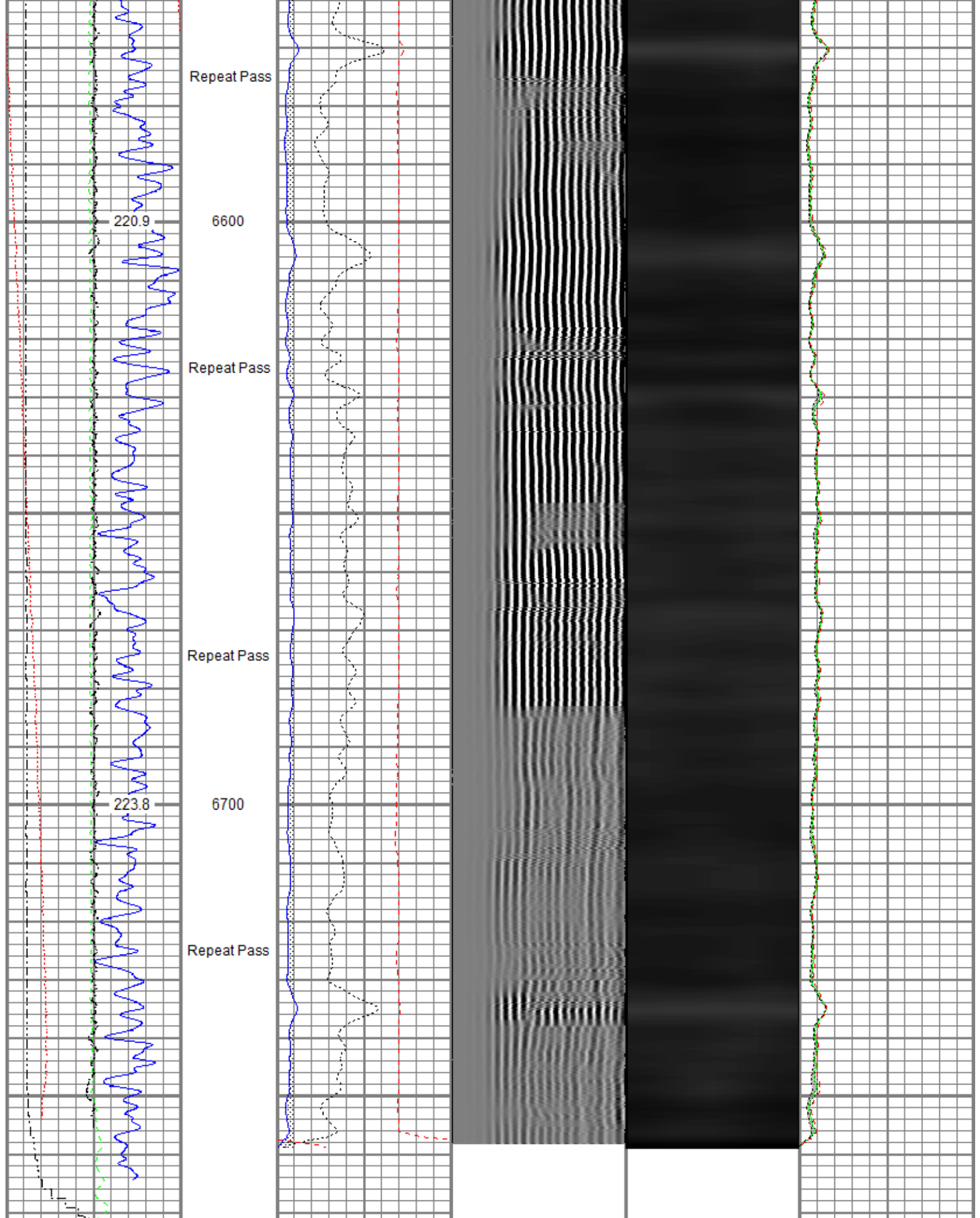


Repeat Pass

Recorded With 2800 PSI Surface Induced Pressure

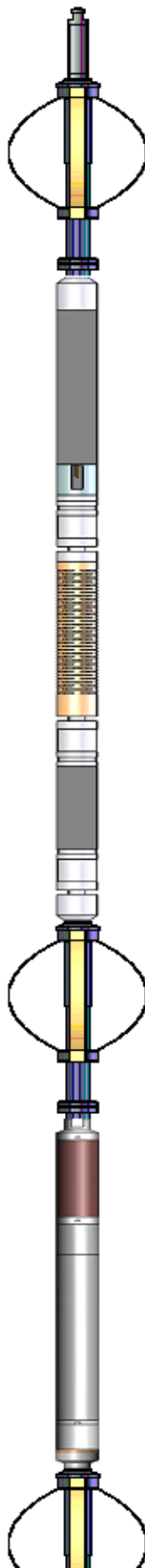
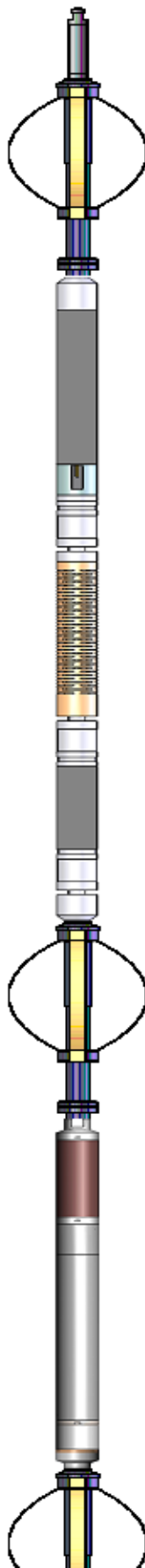
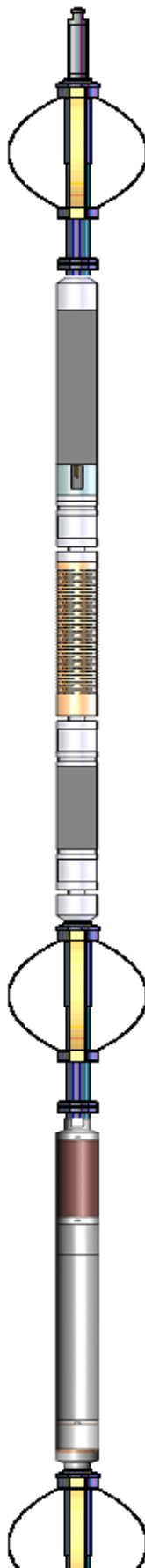
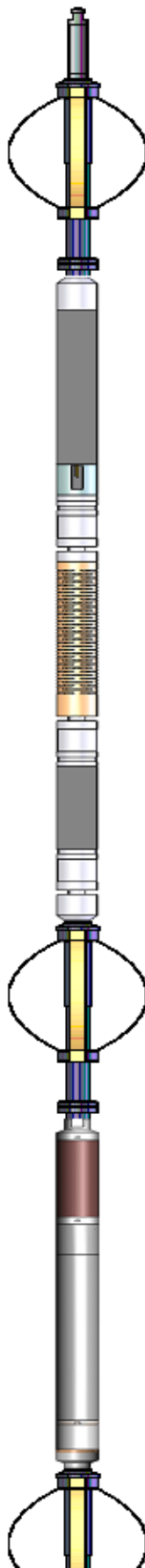
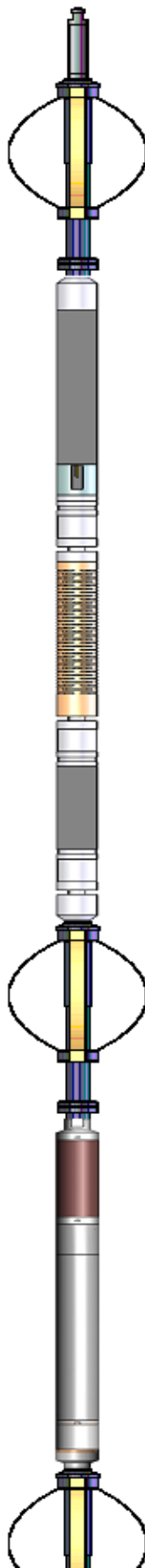
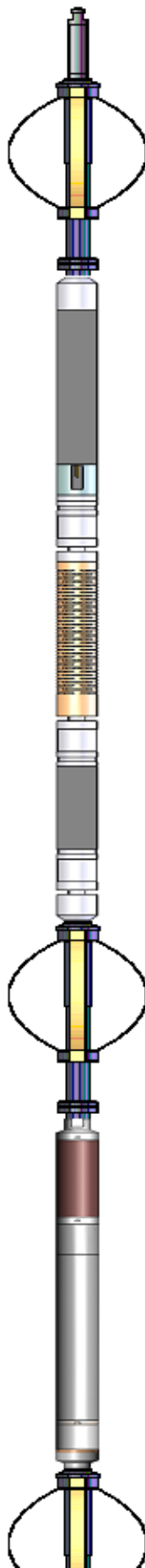
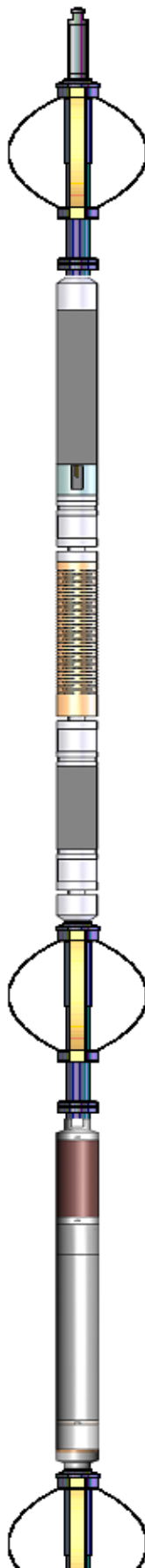
Database File: anadarko_azul 13-23hz\0512346099_anadarko_azul 13-23hz_07-04-18_2800 psi.db
Dataset Pathname: pass2
Presentation Format: ros_radri
Dataset Creation: Wed Jul 04 08:08:15 2018
Charted by: Depth in Feet scaled 1:240






Gamma Ray (GAPI)	0	120	3' Amplitude (mV)	0	100	5' Variable Density Log	0	1200	Sector Map	0	100	Average Amplitude	0	100
Temperature (degF)	0	20	3' Amplitude x 5	0	20							Minimum Amplitude	0	100

Temperature (degF)	20	0	(mV)	20	0	Maximum Amplitude	100
Line Speed			3" Travel Time				
-150 (ft/min)	150	650	(usec)	150	0		100
0 Line Tension (lb)	2000						
Differential Temperature							
-2 (degF)	2						

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
TEMP	17.33		Titan CHD-14375 GO	1.03	1.44	3.60
			Titan 1-7/16" Assembled Electric Cable Head w/ 1" Fishing Neck			
			Probe CENT-2750	2.88	2.75	20.00
			Probe 2-3/4" Electric Inline Bowspring Centralizer			
WVFS8	15.09		Probe Radii-2750 RBT (FW1308-091)	9.39	2.75	105.00
WVFS7	15.09		Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub			
WVFS6	15.09					
WVFS5	15.09					
WVFS4	15.09					
WVFS3	15.09					
WVFS2	15.09					
WVFS1	15.09					
WVFCAL	15.09					
WVF3FT	15.09					
WVF5FT	14.09					
HEADVOLT	10.84		Probe CENT-2750	2.88	2.75	20.00
			Probe 2-3/4" Electric Inline Bowspring Centralizer			
CCL\$2	7.08					
CCL\$1	7.08					
GR	5.75		Probe GR-CCL-2750 6PB (101001)	4.80	2.75	55.00
			Probe 2-3/4" rev.1 Digital Scintillation Gamma Ray/CCL Combined with 6 Pin Bottom for CNT			
			Probe ADPT-6P-GO	0.28	2.75	2.00
			Probe 2-3/4" 6-Pin Top to GO Bottom Adaptor Sub			
			Probe CENT-2750	2.88	2.75	20.00

			Probe CLNT-2750 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.66	2.75	20.00
Dataset: 0512346099_Anadarko_Azul 13-23HZ_07-04-18_2800 PSI.db: field/well/run1/pass4 Total length: 24.15 ft Total weight: 225.60 lb O.D.: 2.75 in						

Calibration Report	
Database File	C:\ProgramData\Warrior\Data\Anadarko_Azul 13-23HZ\0512346099_Anadarko_Azul 13-23HZ_07-04-18_2800 PSI.db
Dataset Pathname	pass4
Dataset Creation	Wed Jul 04 08:16:45 2018

Gamma Ray Calibration Report		
Serial Number:	101001	
Tool Model:	2750 6PB	
Performed:	Sun Nov 12 11:25:32 2017	
Calibrator Value:	637.0	GAPI
Background Reading:	100.6	cps
Calibrator Reading:	981.1	cps
Sensitivity:	0.7235	GAPI/cps

Segmented Cement Bond Log Calibration Report		
Serial Number:	FW1308-091	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	5.500	in
Calibration Depth:	743.615	ft

Master Calibration, performed (Derived):						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.002	0.695	0.800	71.921	102.704	0.560
CAL	0.006	0.659				
5'	0.001	0.666	0.800	71.921	106.935	0.650
SUM						
S1	0.002	0.667	0.000	100.000	150.504	-0.339
S2	0.003	0.691	0.000	100.000	145.338	-0.372
S3	0.002	0.698	0.000	100.000	143.750	-0.352
S4	0.002	0.694	0.000	100.000	144.605	-0.322
S5	0.002	0.696	0.000	100.000	144.158	-0.297
S6	0.002	0.688	0.000	100.000	145.770	-0.298
S7	0.002	0.681	0.000	100.000	147.171	-0.281
S8	0.002	0.698	0.000	100.000	143.616	-0.272

Internal Reference Calibration, performed (Not Performed):						
	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.006	0.659	1.000	0.000

Air Zero Calibration, performed Sun Jul 01 13:32:00 2018:						
	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	

3'	0.006	0.000	0.000
5'	0.006	0.000	0.000
SUM			
S1	0.006	0.000	0.000
S2	0.006	0.000	0.000
S3	0.006	0.000	0.000
S4	0.006	0.000	0.000
S5	0.006	0.000	-0.000
S6	0.006	0.000	-0.000
S7	0.006	0.000	-0.000
S8	0.006	0.000	-0.000

Temperature Calibration Report

Serial Number: FW1308-091
Tool Model: 2750 RBT
Performed: Sun Nov 12 13:50:54 2017

	Reference	Reading
Low Reference:	100.00 degF	104.72 degF
High Reference:	350.00 degF	392.24 degF

Gain: 0.87
Offset: 8.94
Delta Spacing: 1



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Well Azul 13-23HZ
Field Wattenberg
County Weld
State Colorado