



Radial Cement Bond
Gamma Ray
Casing Collar Log

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

Well Azul 13-22HZ

Field Wattenberg

County Weld State Colorado

Location: API #: 05-123-46119

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 13-22HZ
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Date	03-JUL-2018	Four		
Run Number		12509 FT		
Depth Driller		6563 FT		
Depth Logger		6554 FT		
Bottom Logged Interval		Surface		
Top Log Interval		7.875'		
Open Hole Size		Water		
Type Fluid		8.34 lb/gal		
Density / Viscosity		217°F		
Max. Recorded Temp.		See Log		
Estimated Cement Top		ROA		
Time Well Ready		17.46		
Time Logger on Bottom		HD-0325		
Equipment Number		Platteville, CO		
Location		R. Cameron		
Recorded By		Justin McMillen		
Witnessed By				
Borehole Record				
Run Number	Bit	From	To	Size
				Weight
				From
				To
Tubing Record				
Casing Record	Size (in)	Wgt (lbs/ft)	Grade	Top
Surface Casing	9 5/8	36	J-55	Surface
Intermediate #1	5 1/2	17	HCP-110	Surface
Intermediate #2				
Inner				

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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 6483 FT
Adjusted -14 FT to correlate with Marker Joint Top
Gauge Ring/Junk Basket ran to 7527 FT with no debris
5.50" RBP Set @ 6570 FT
Log ran from 6554 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!!

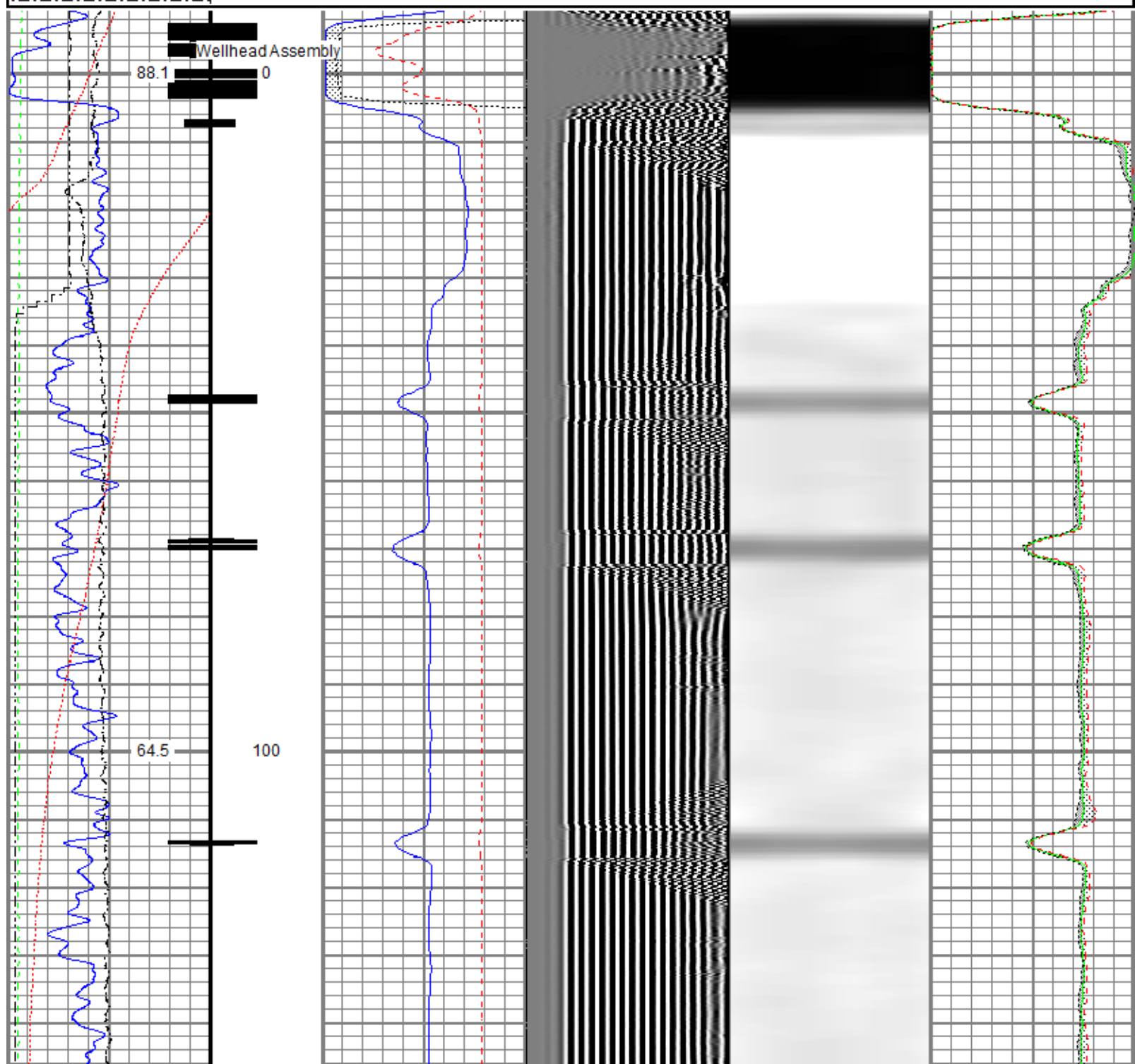
Main Pass

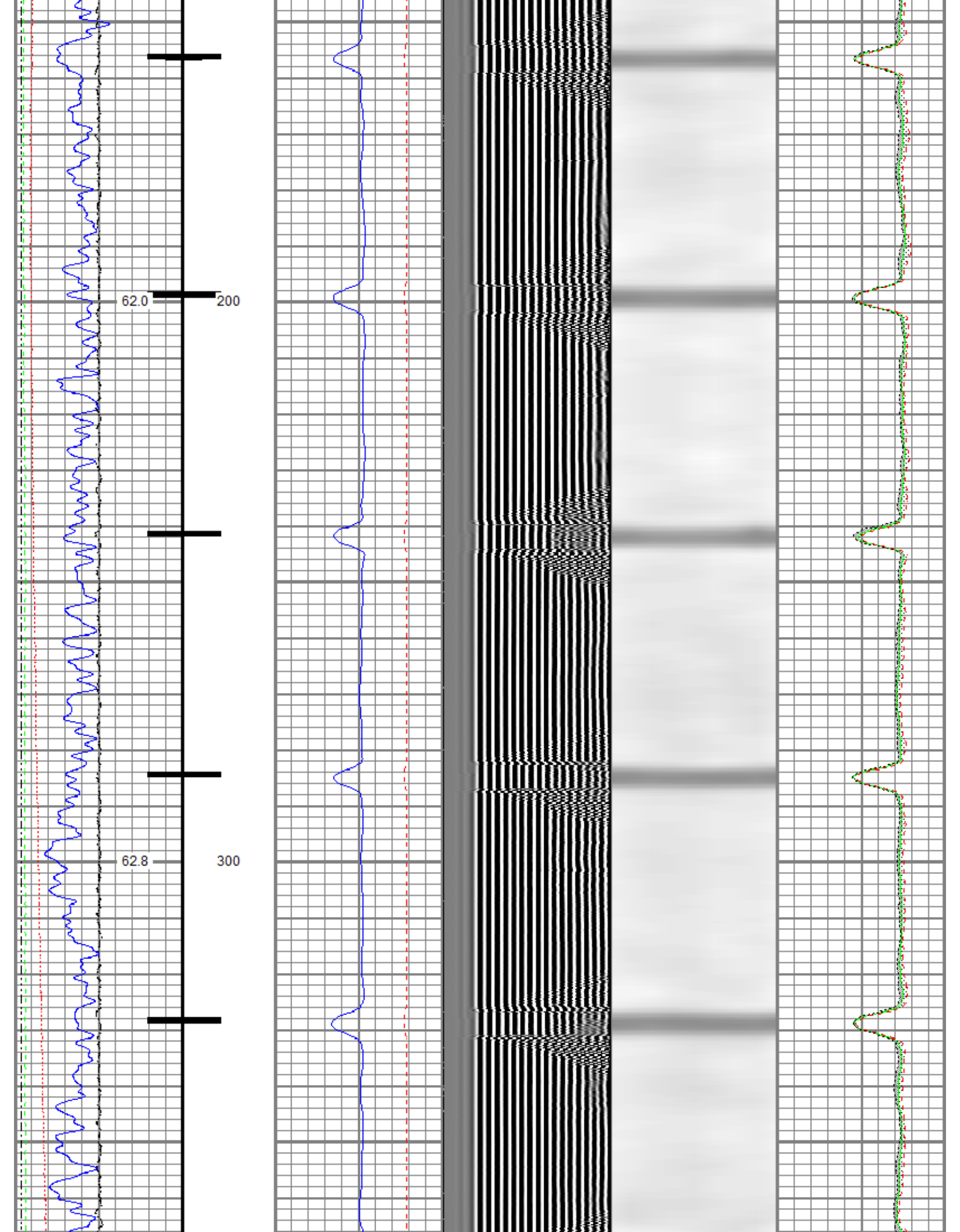


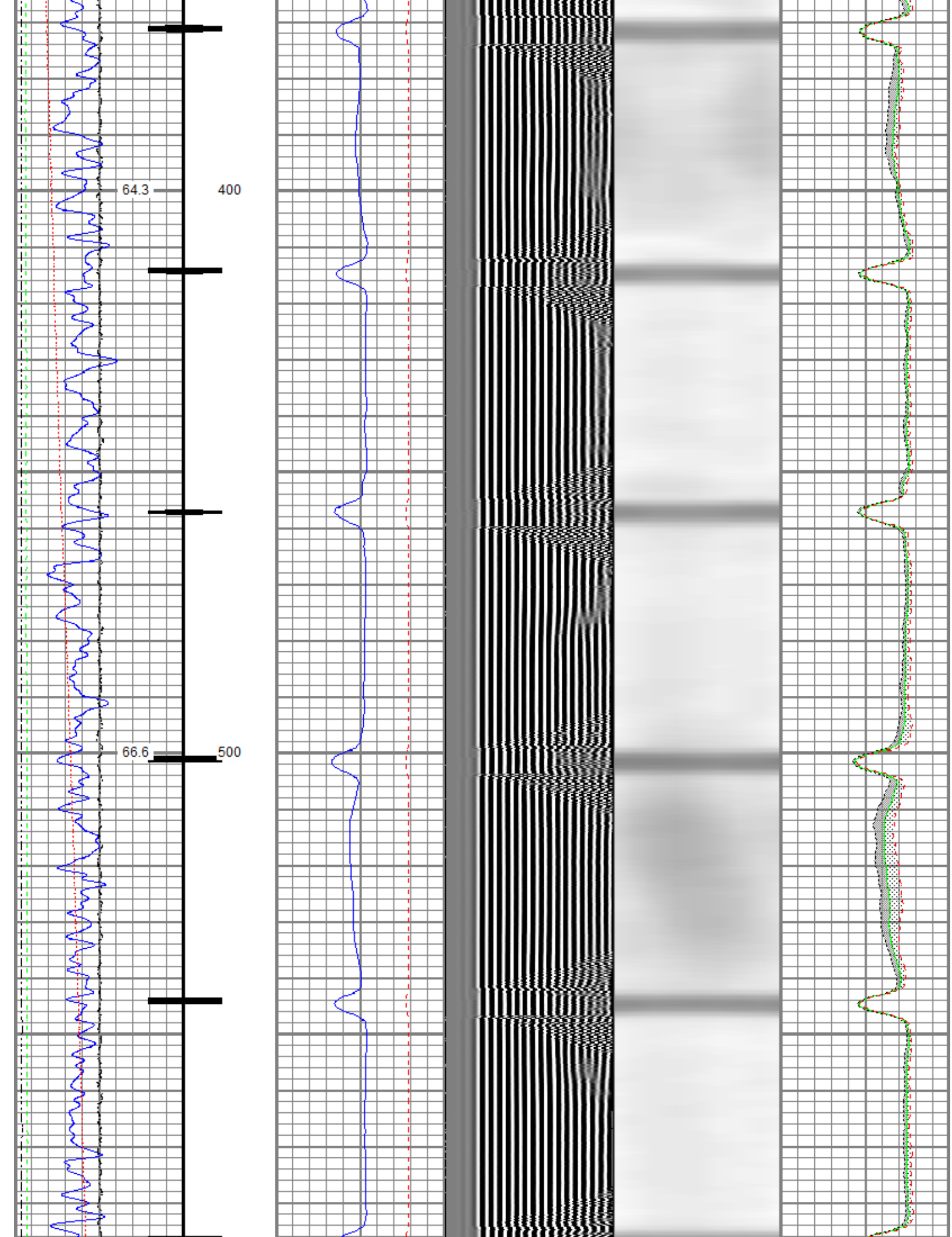
Recorded With 2800 PSI Surface Induced Pressure

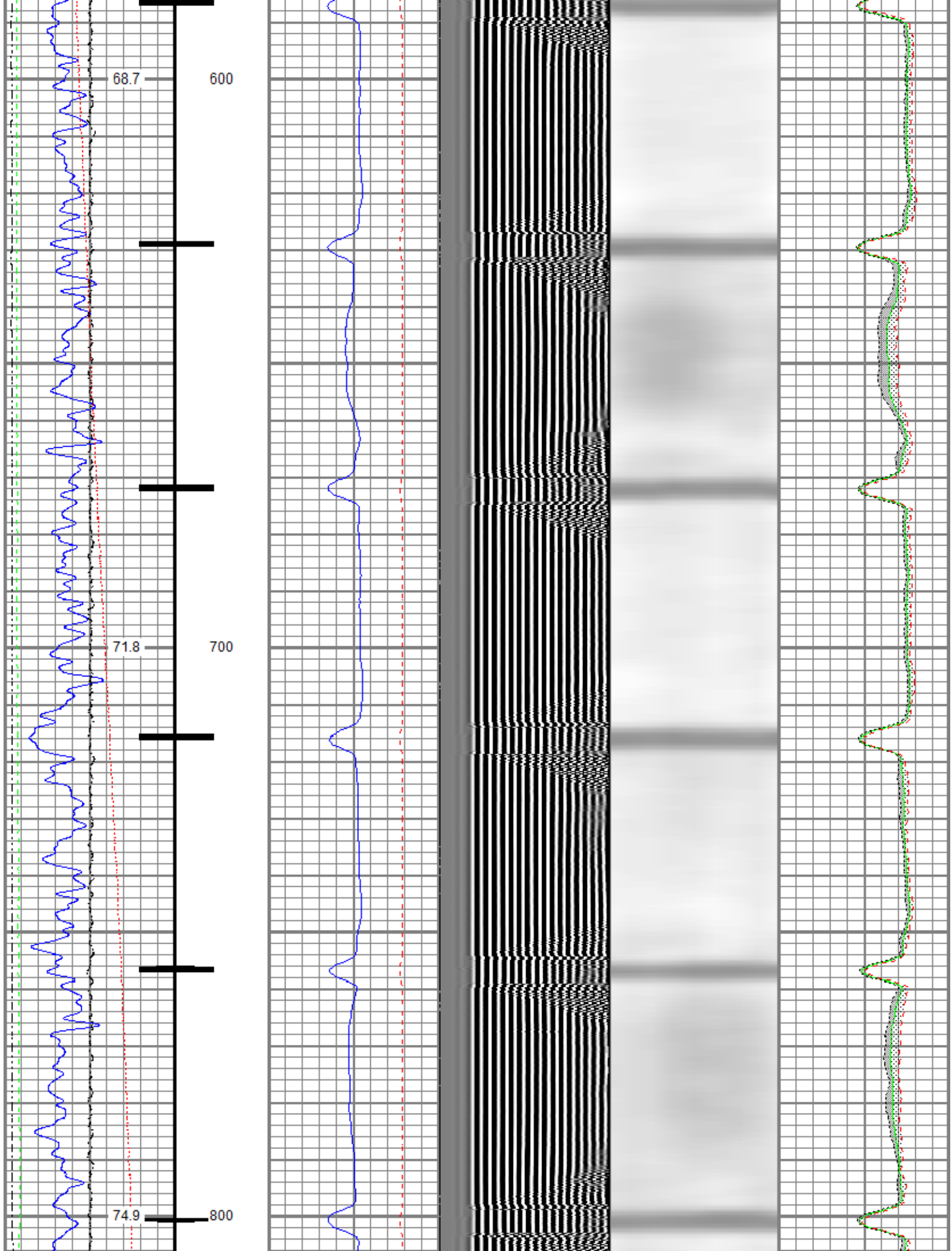
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 Dataset Pathname pass4
 Presentation Format ros_radrii
 Dataset Creation Tue Jul 03 17:55:41 2018
 Charted by Depth in Feet scaled 1:240

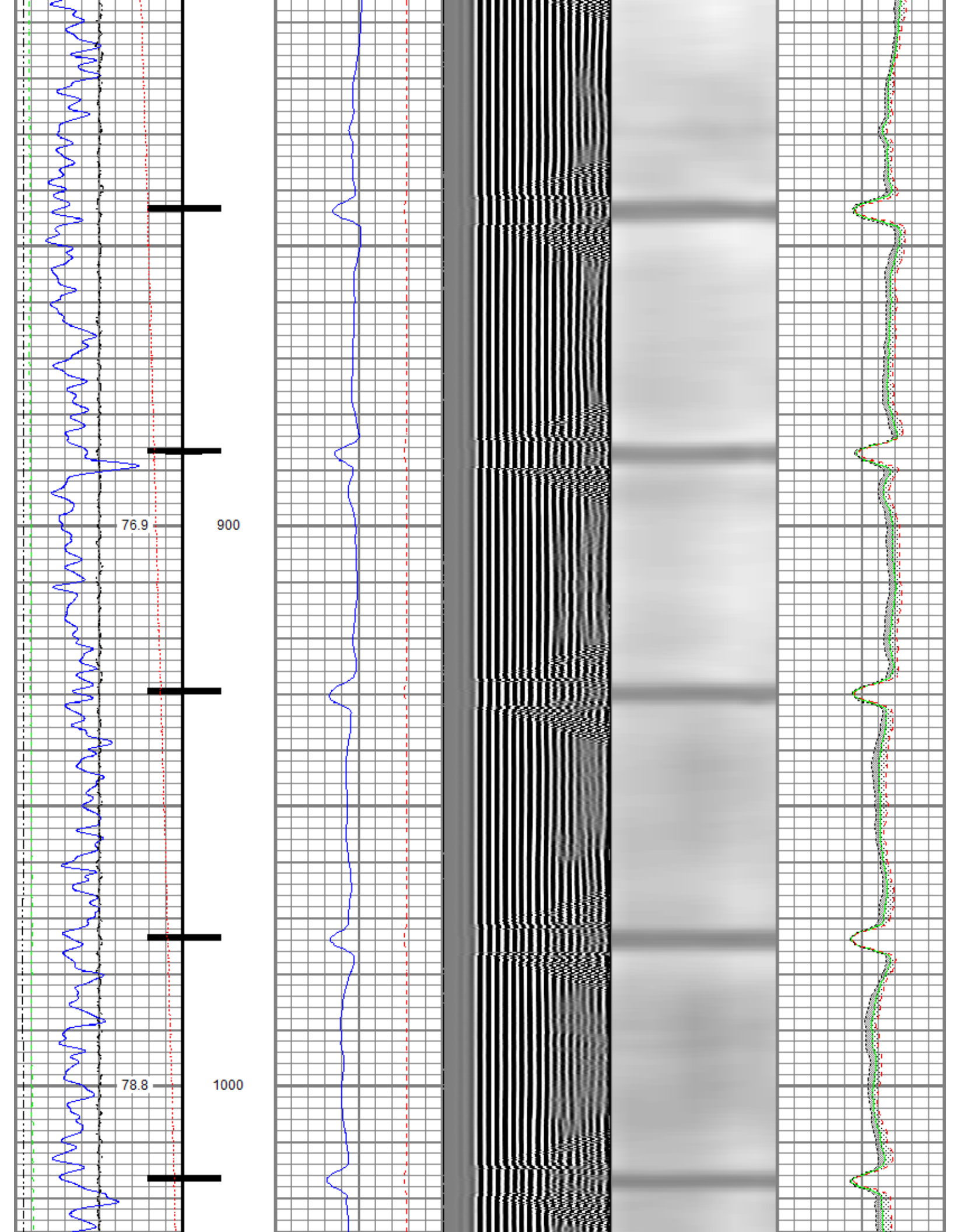
Gamma Ray	0	3' Amplitude (mV) 100	5' Variable Density Log	Sector Map	0	Average Amplitude 100
(GAPI) 120		3' Amplitude x 5	200			Minimum Amplitude
Casing Collar Locator	0	(mV) 20			0	100
Temperature (degF) 20		3' Travel Time				Maximum Amplitude
Line Speed	650	(usec) 150			0	100
-150 (ft/min) 150				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

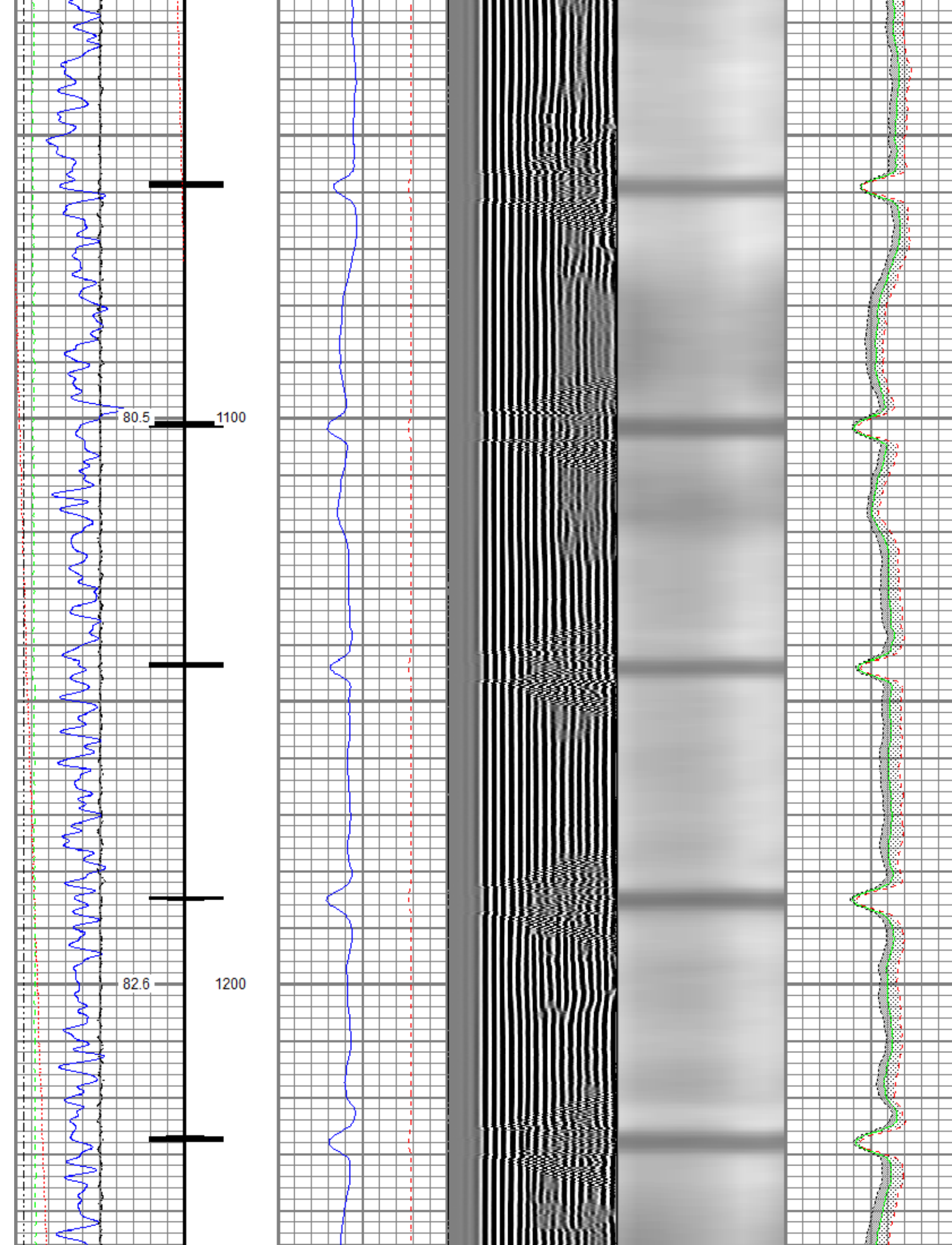


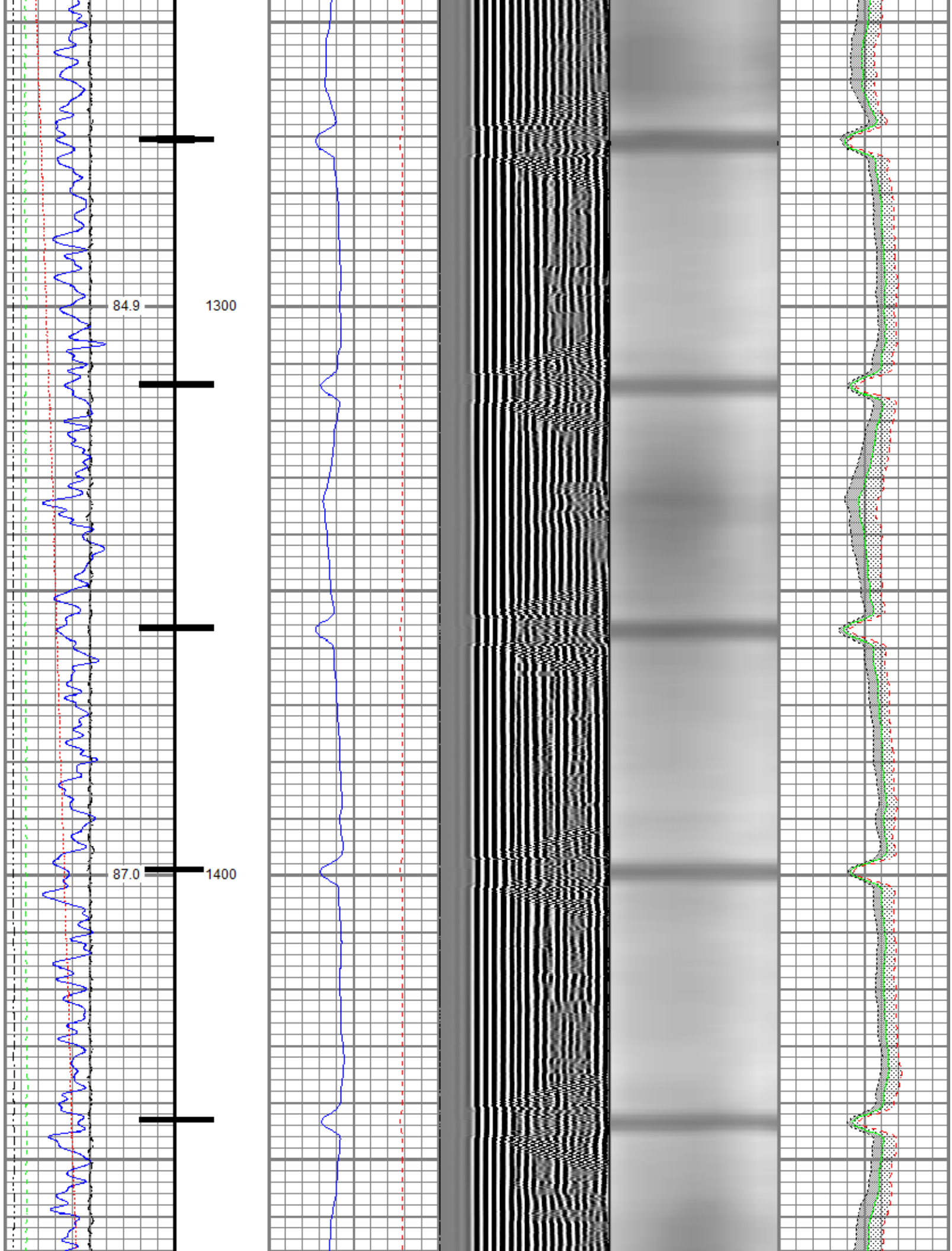


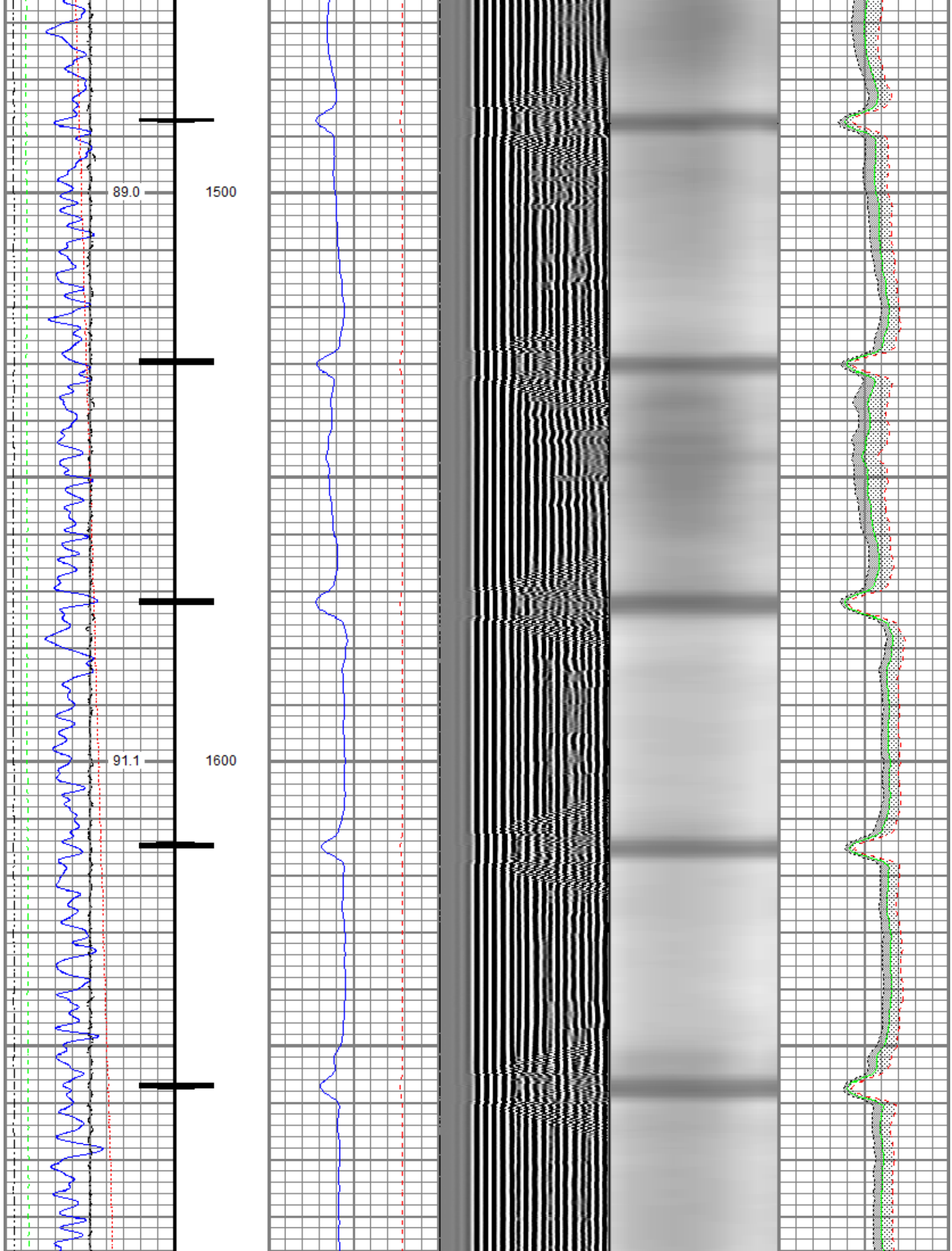


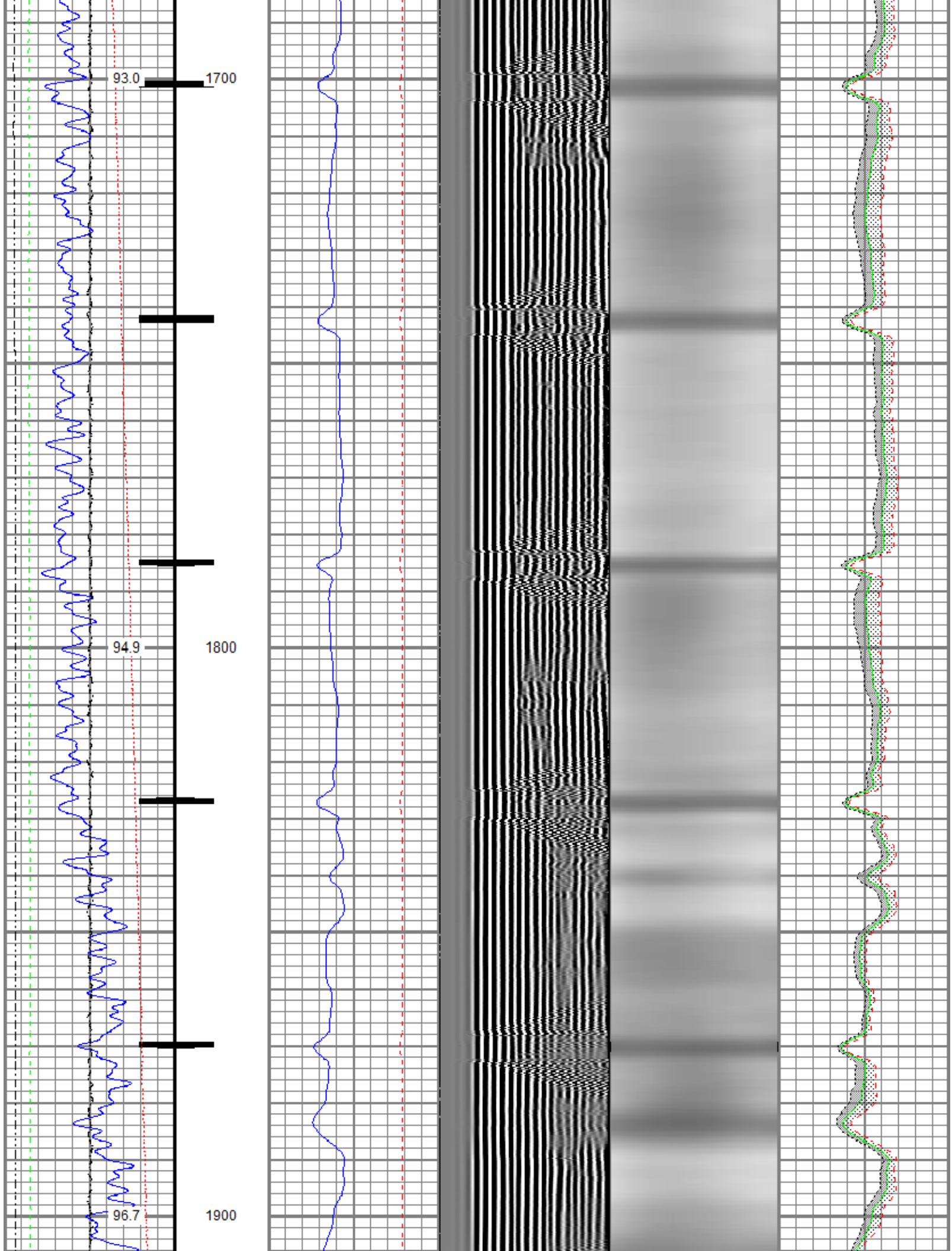


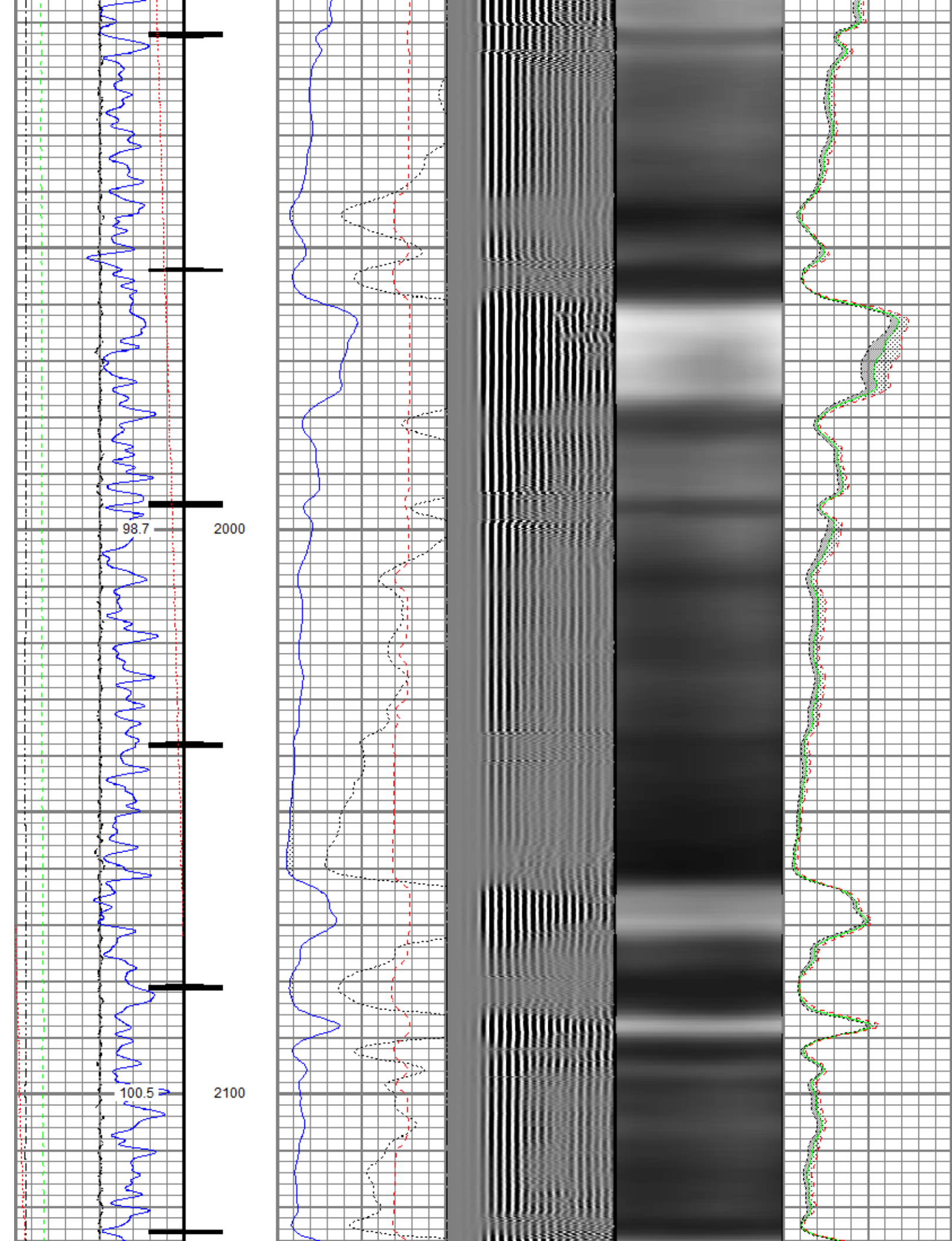


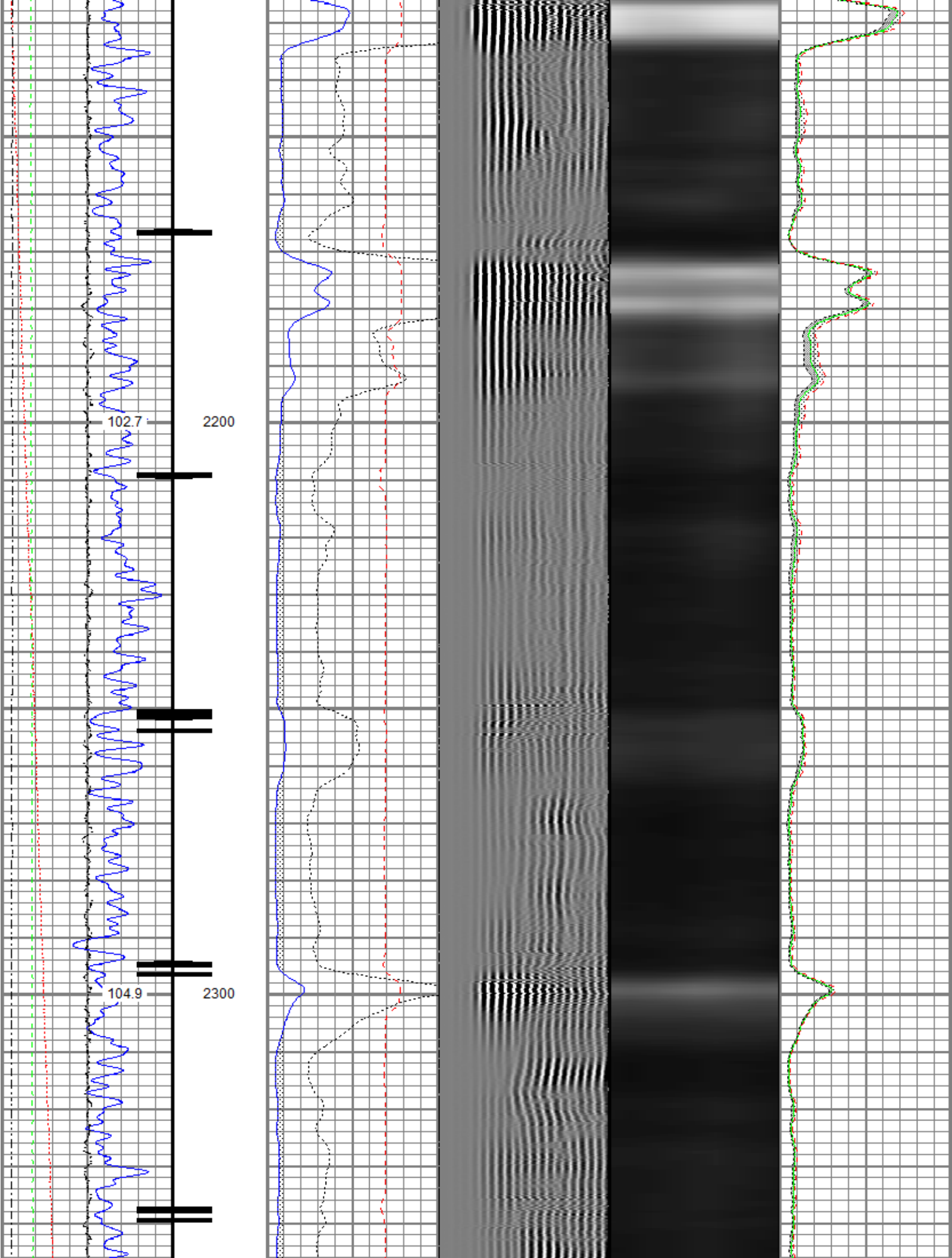


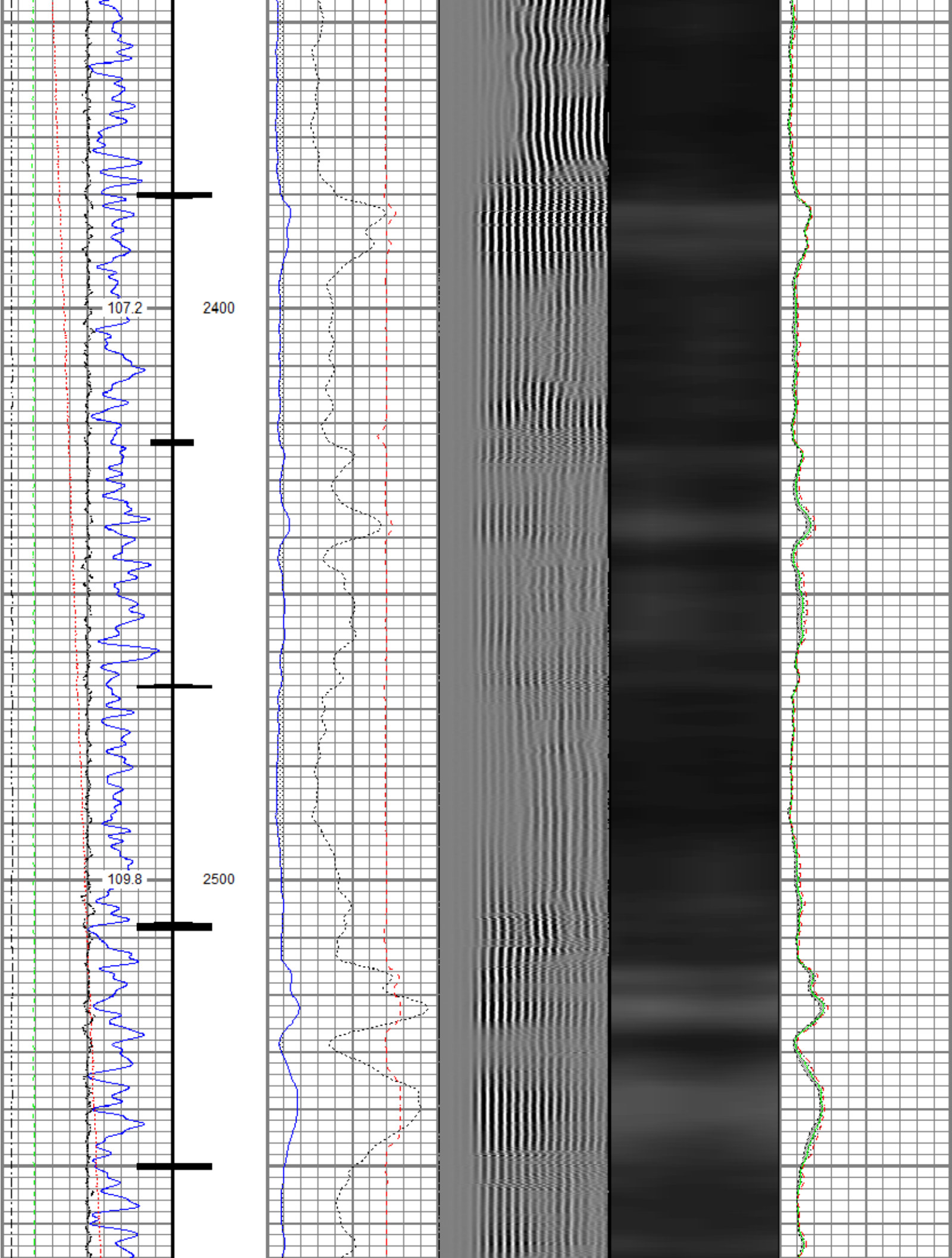


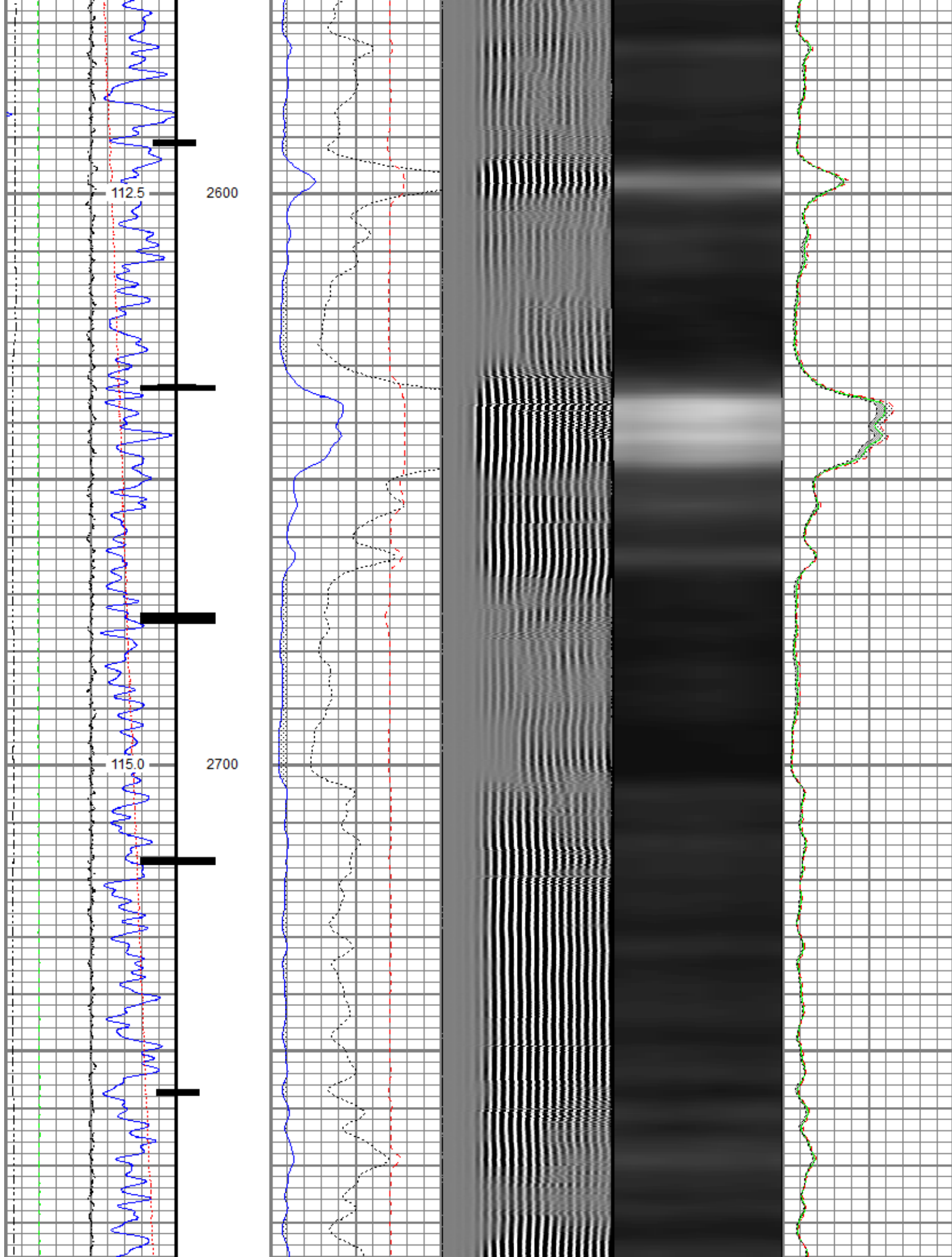


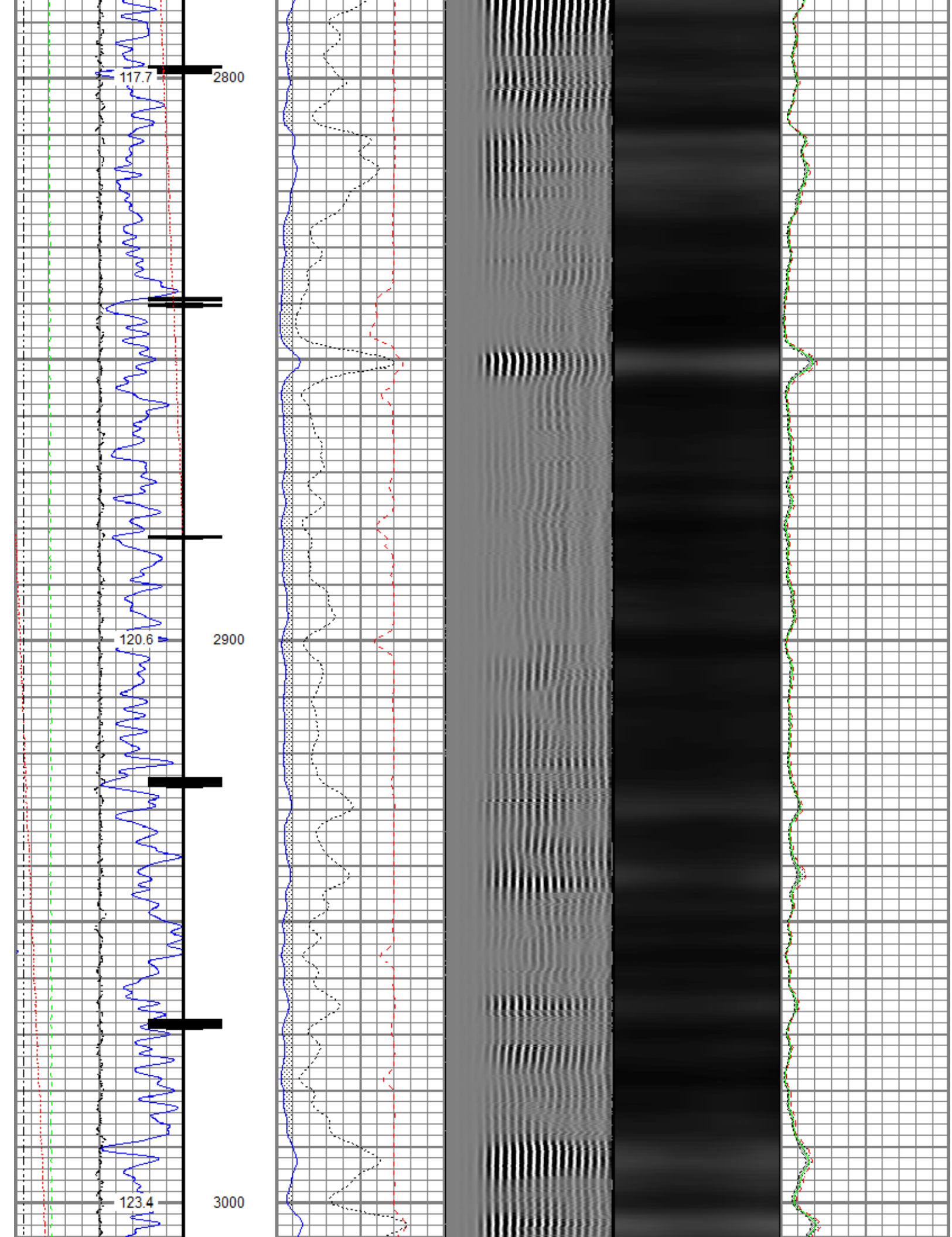


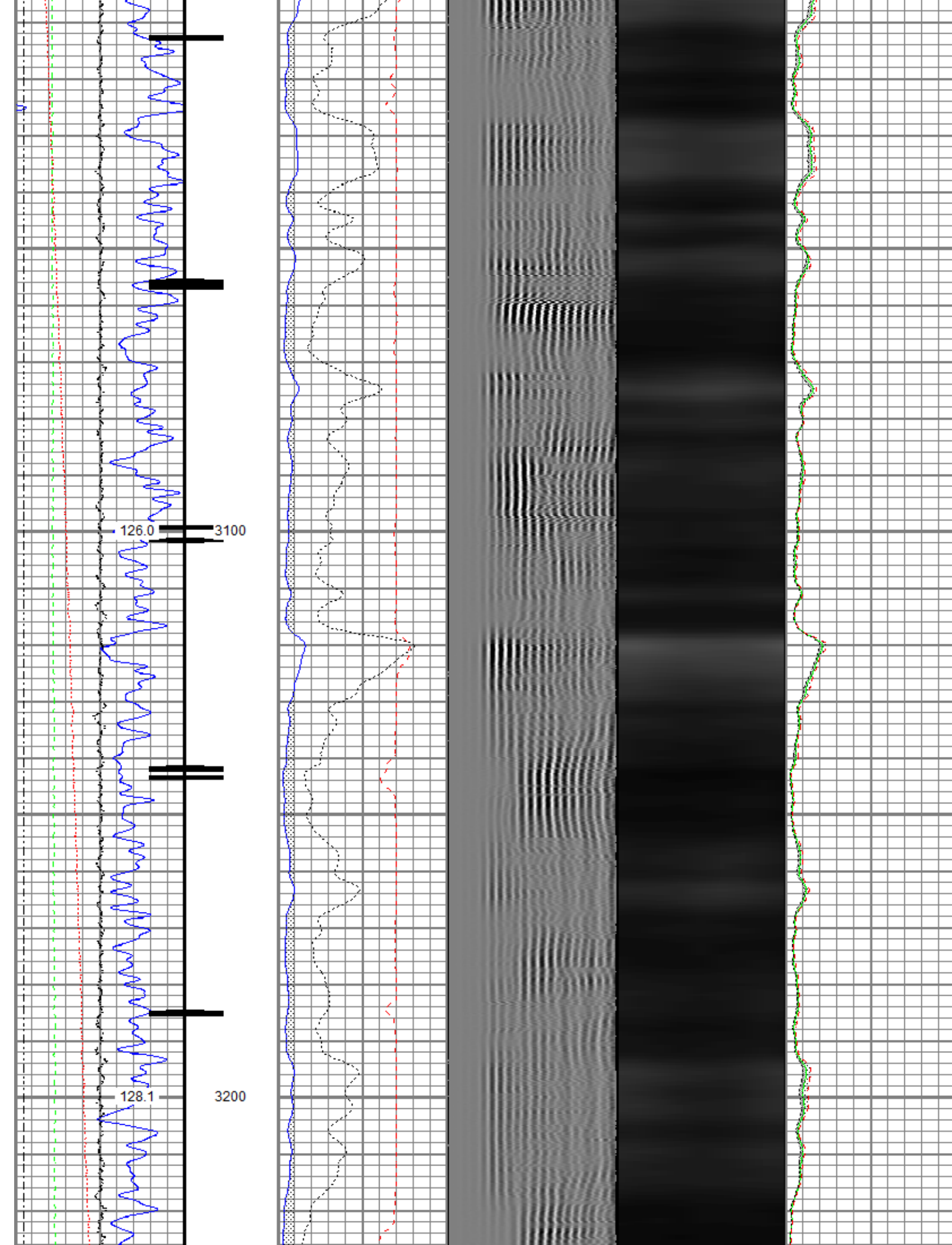


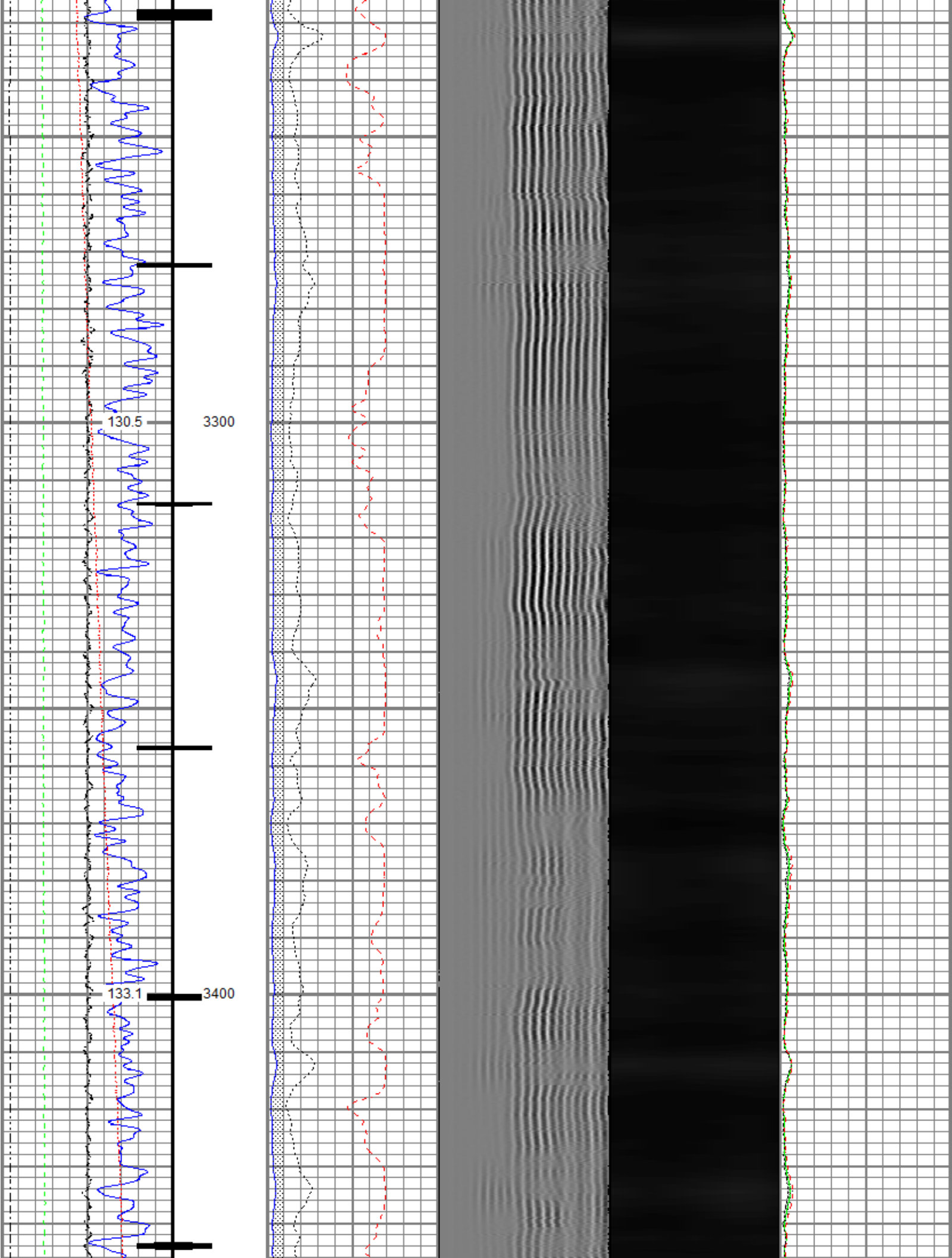


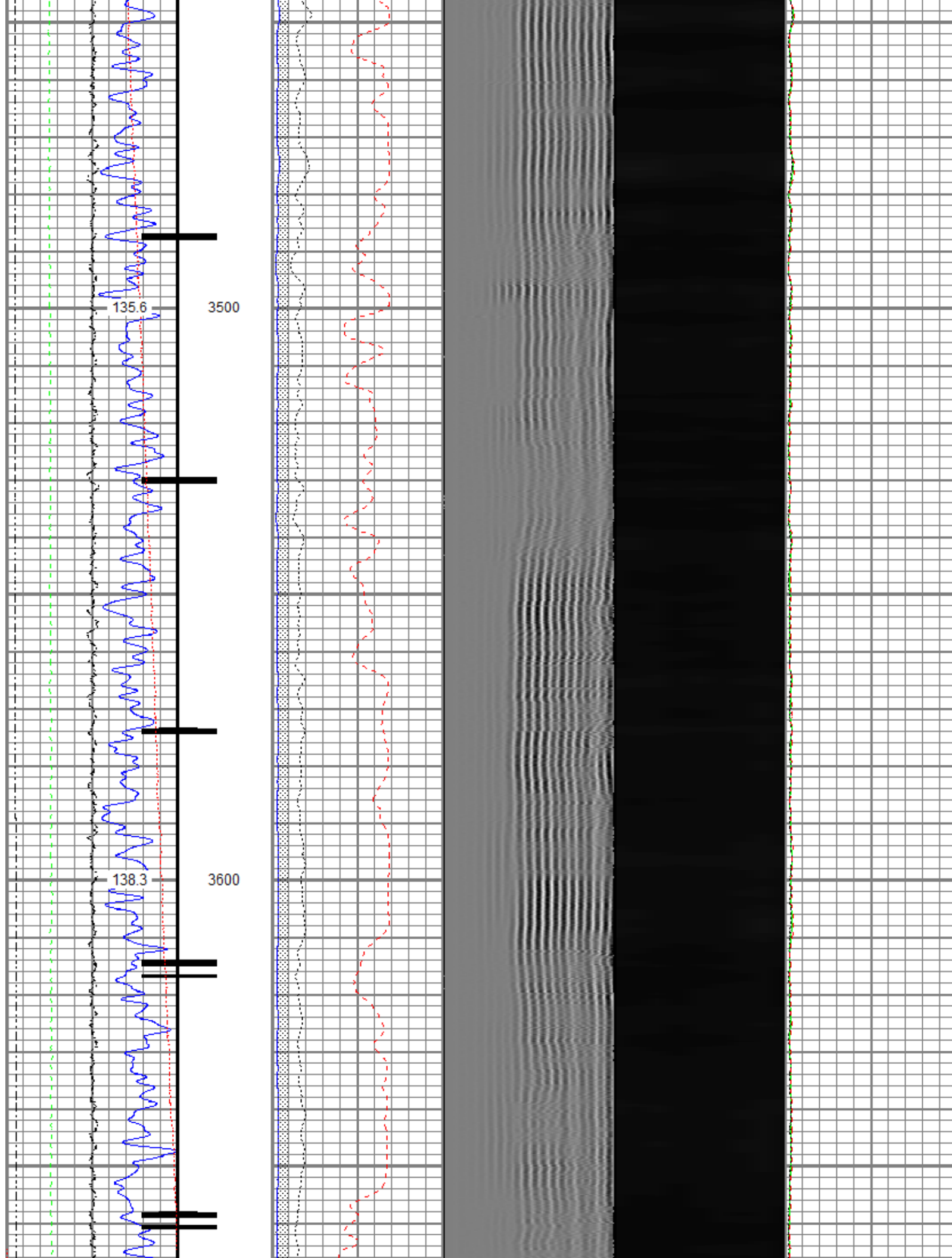


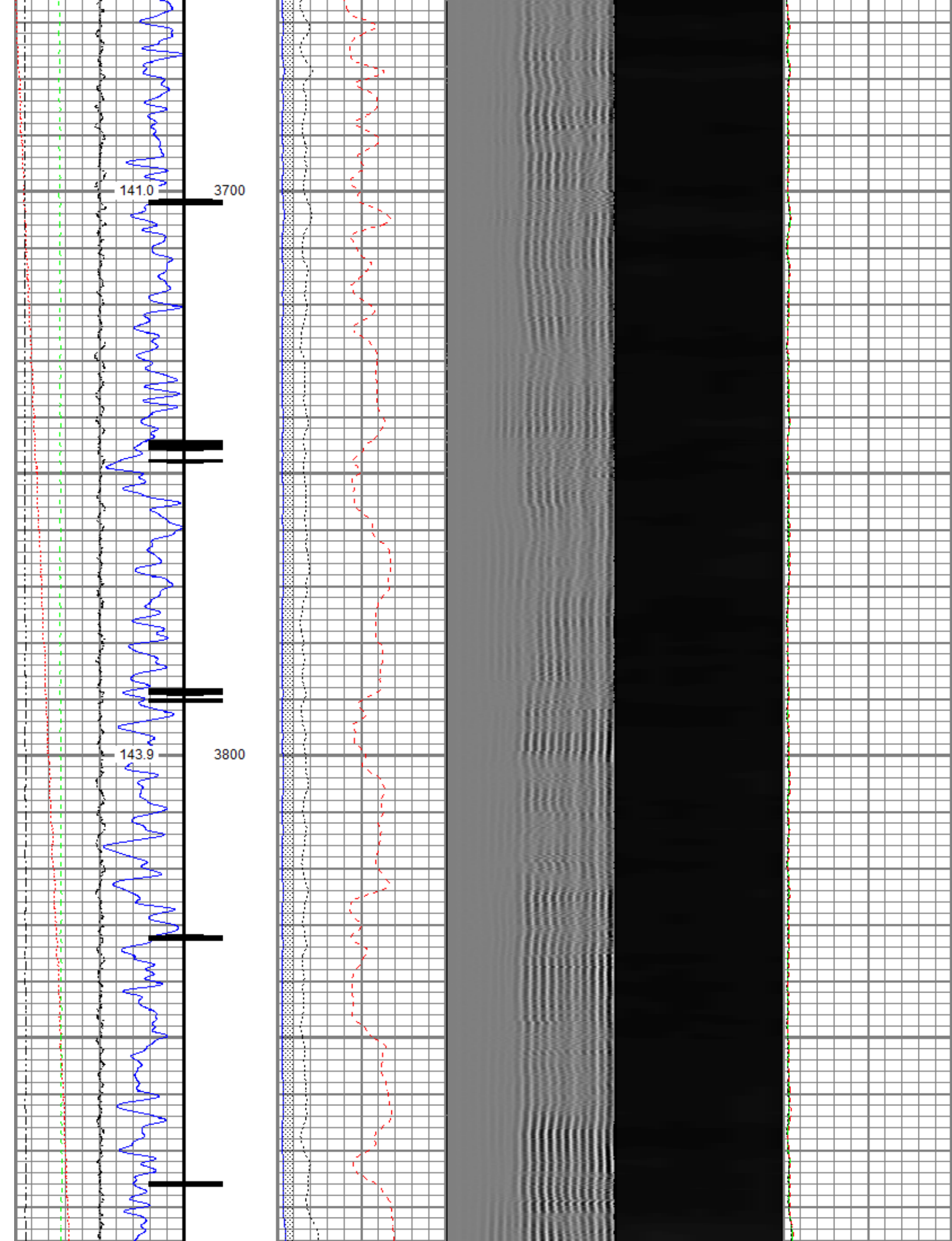


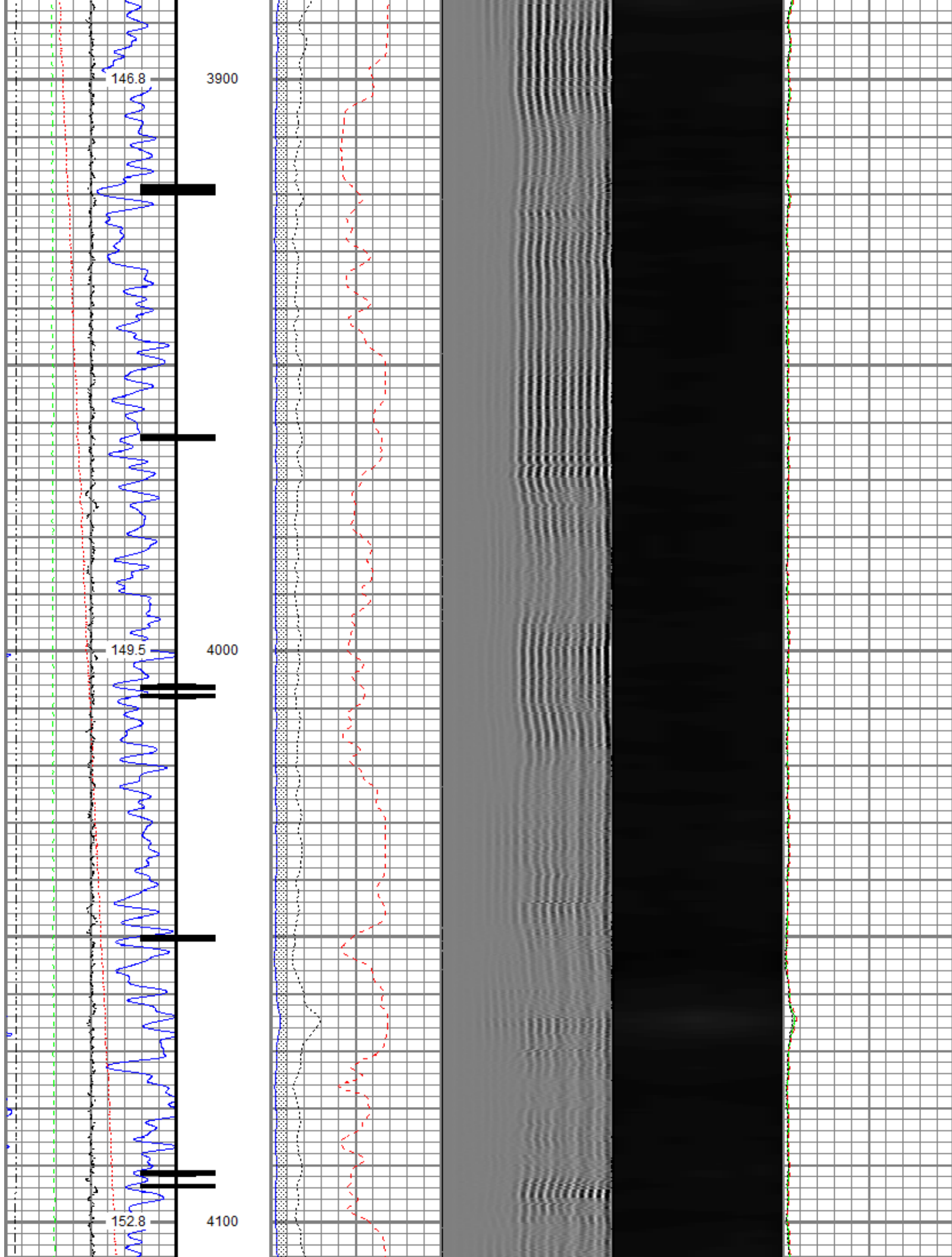


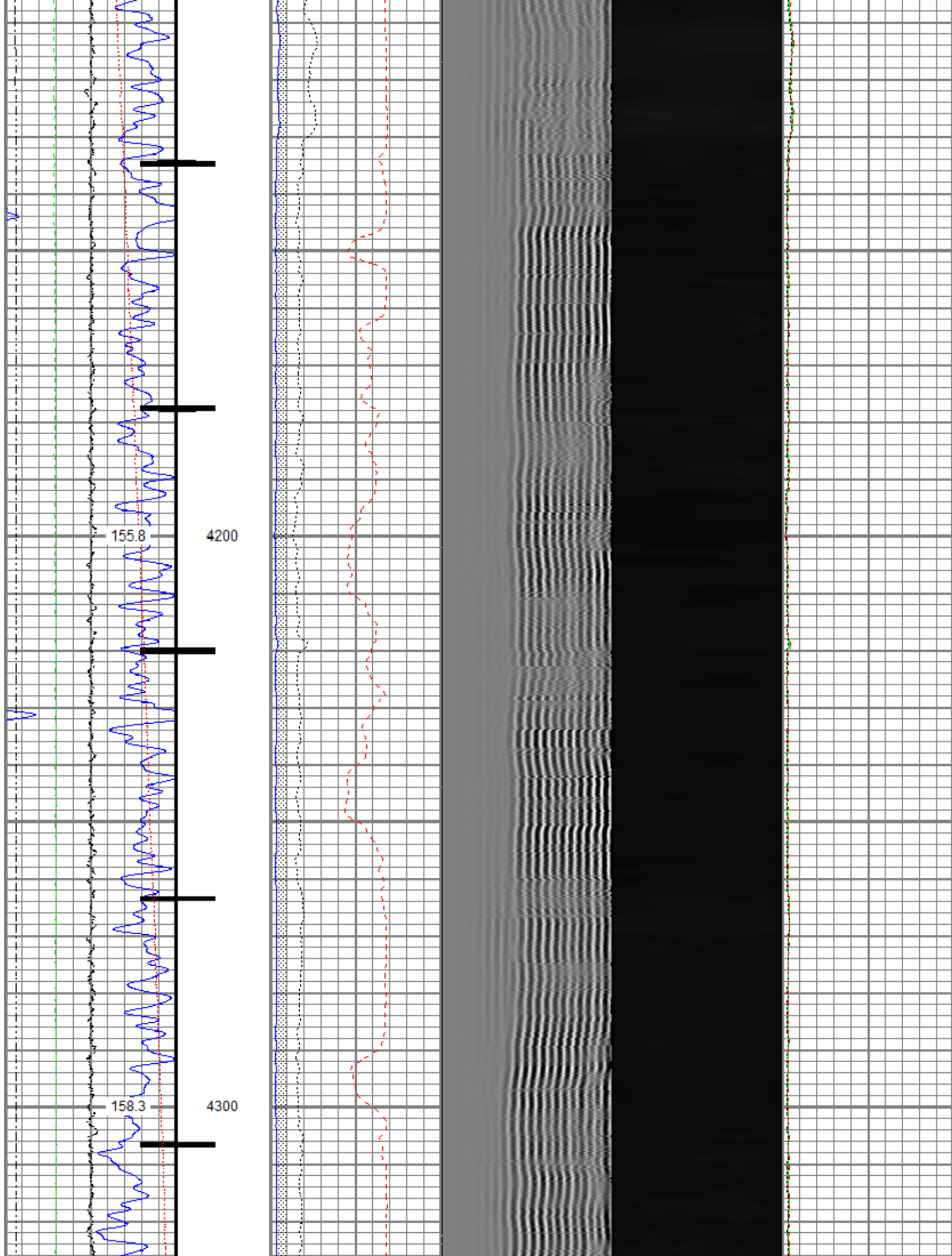


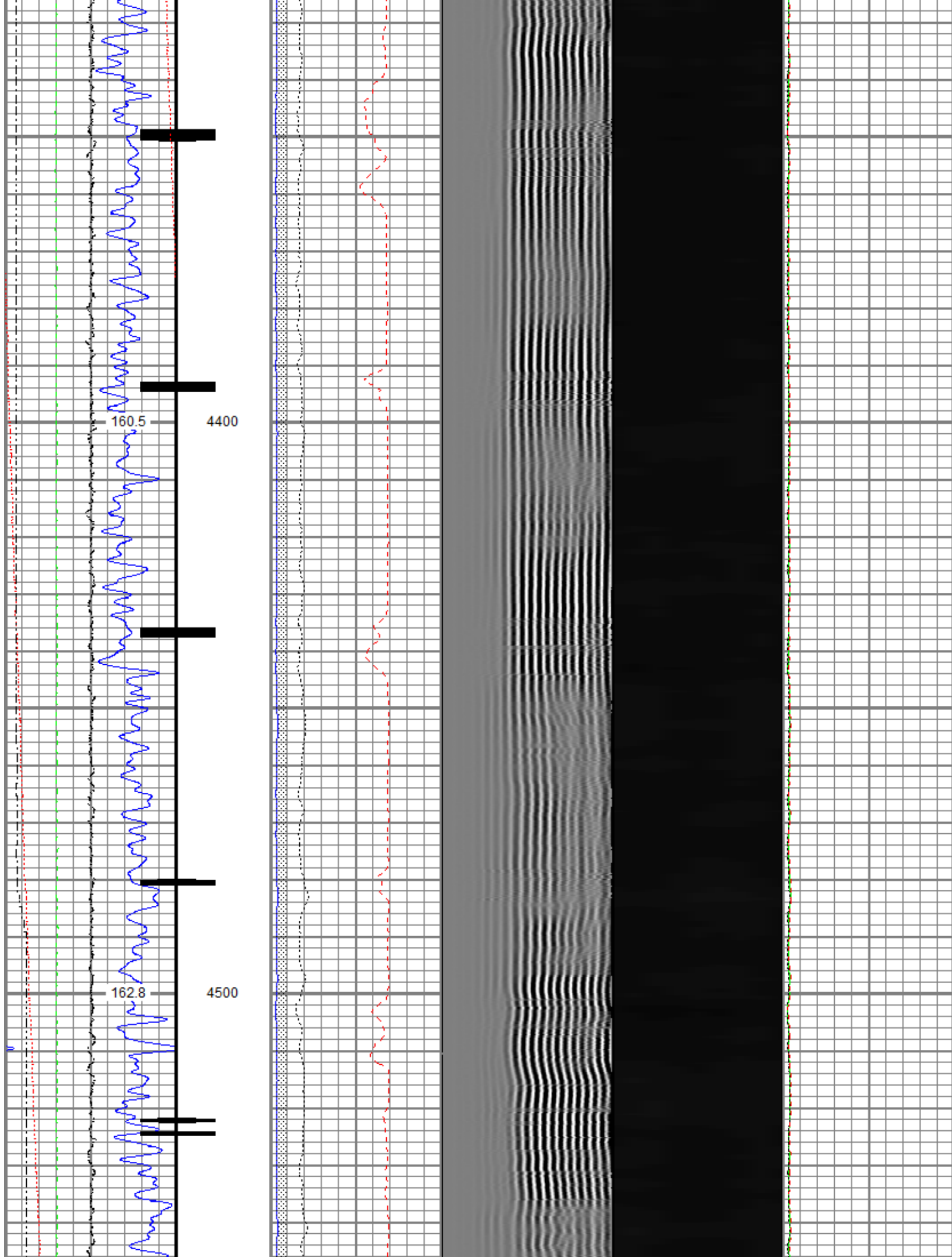


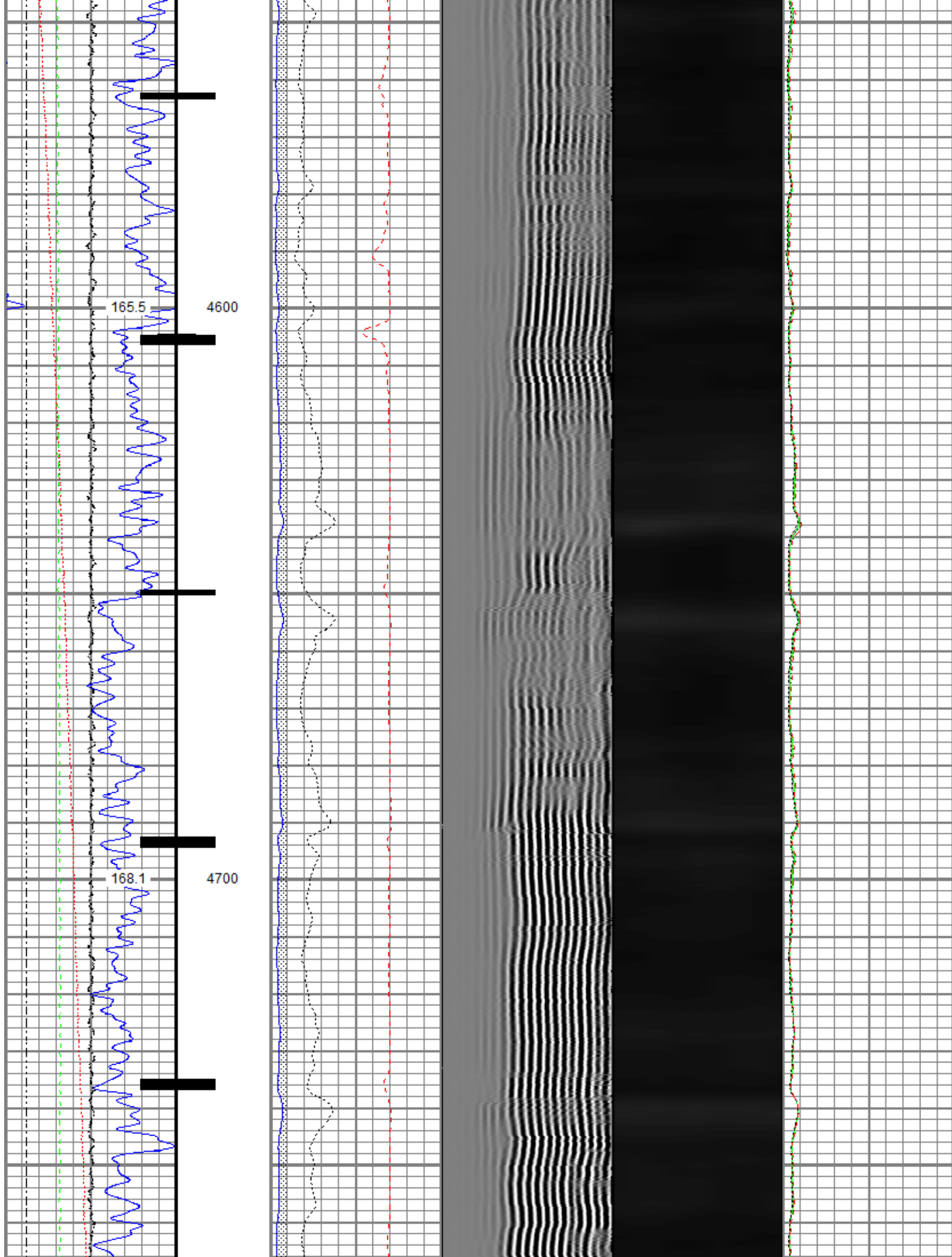


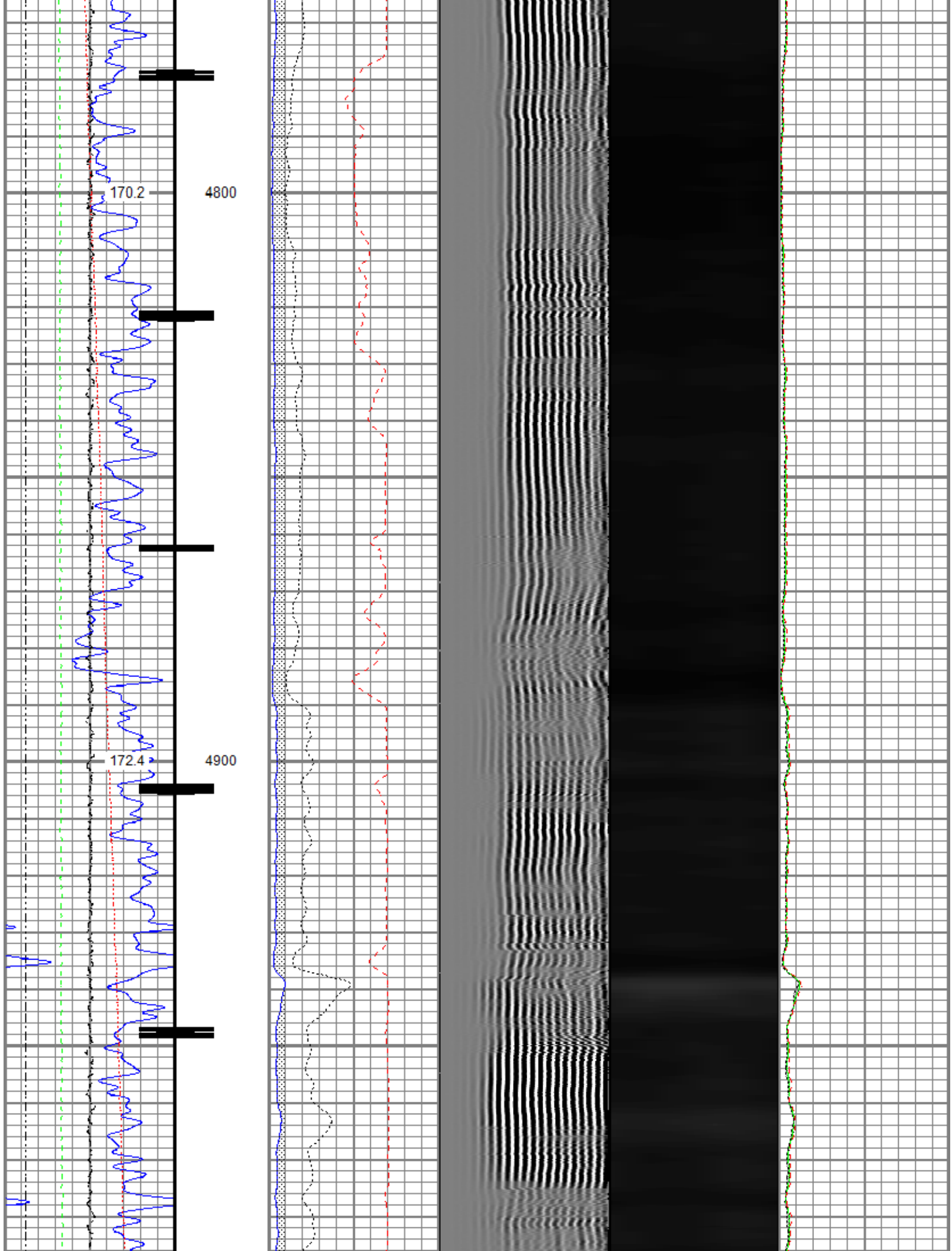


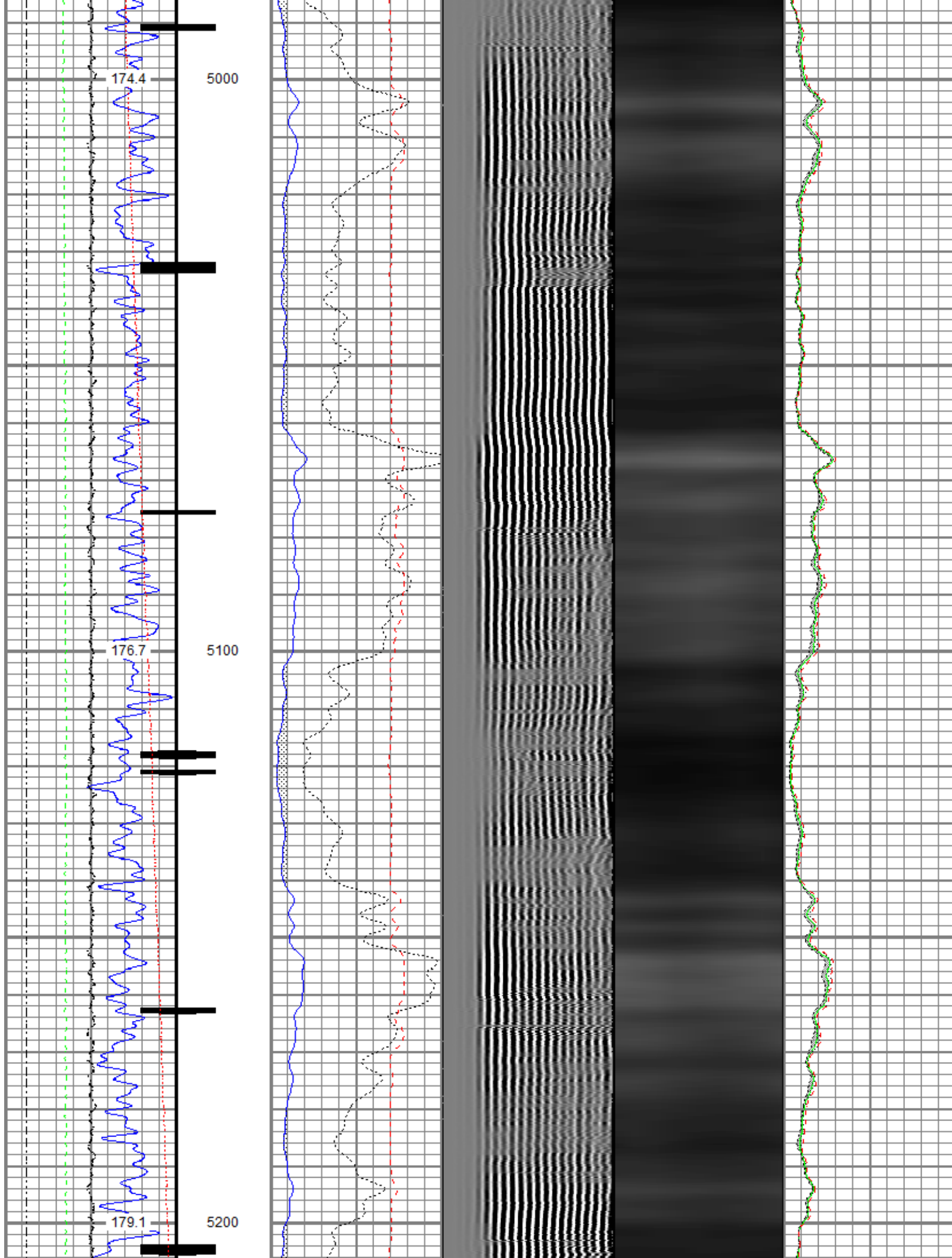


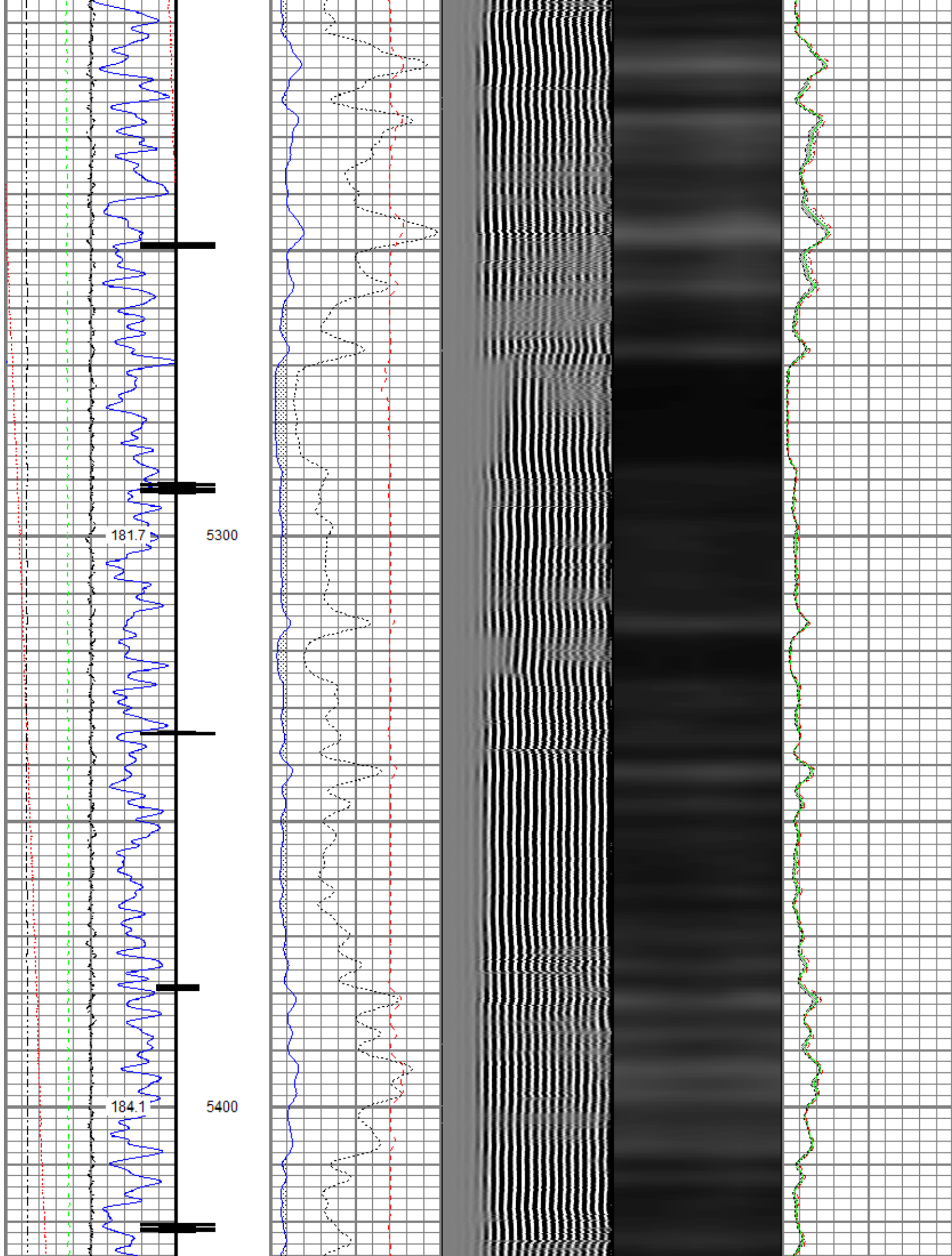


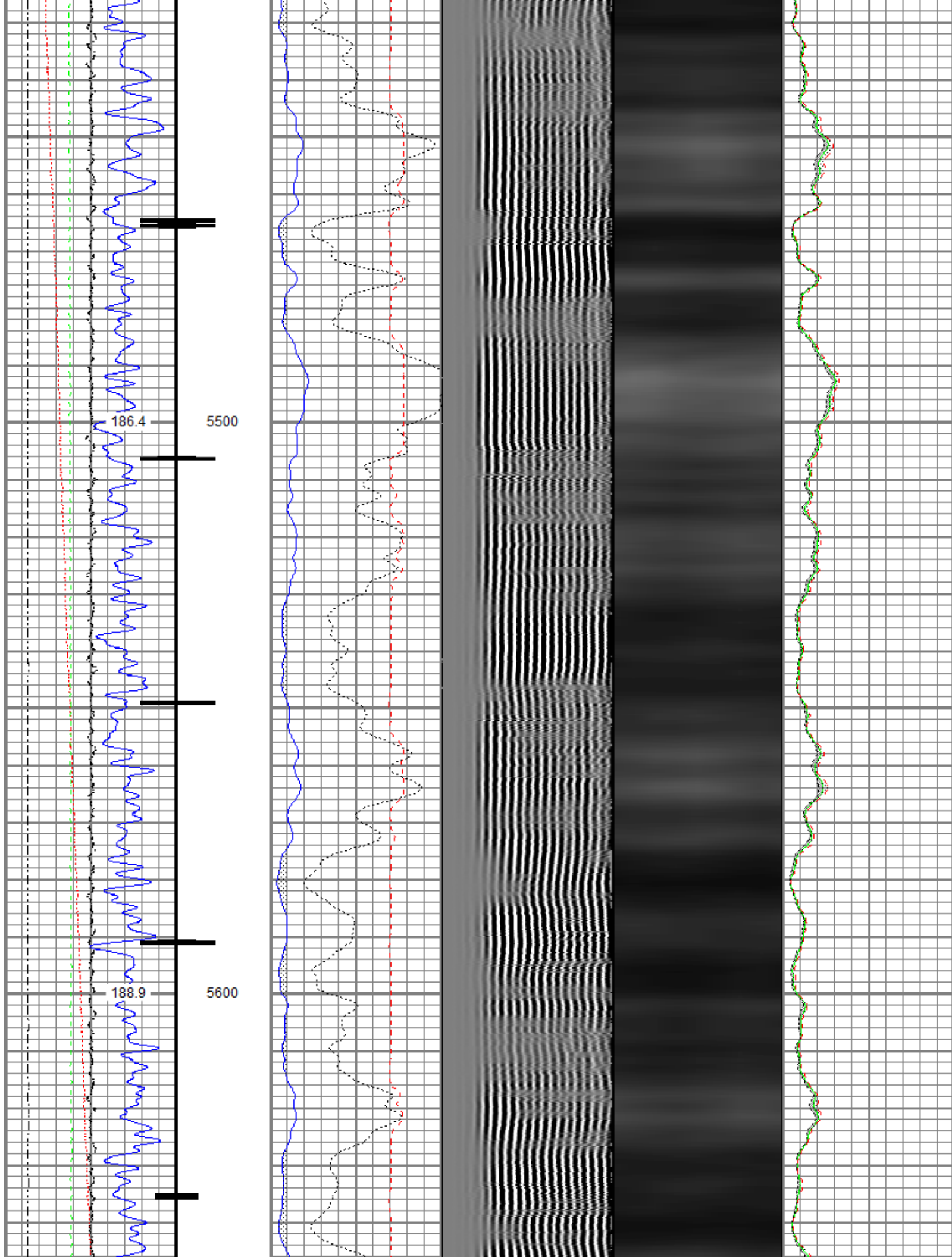


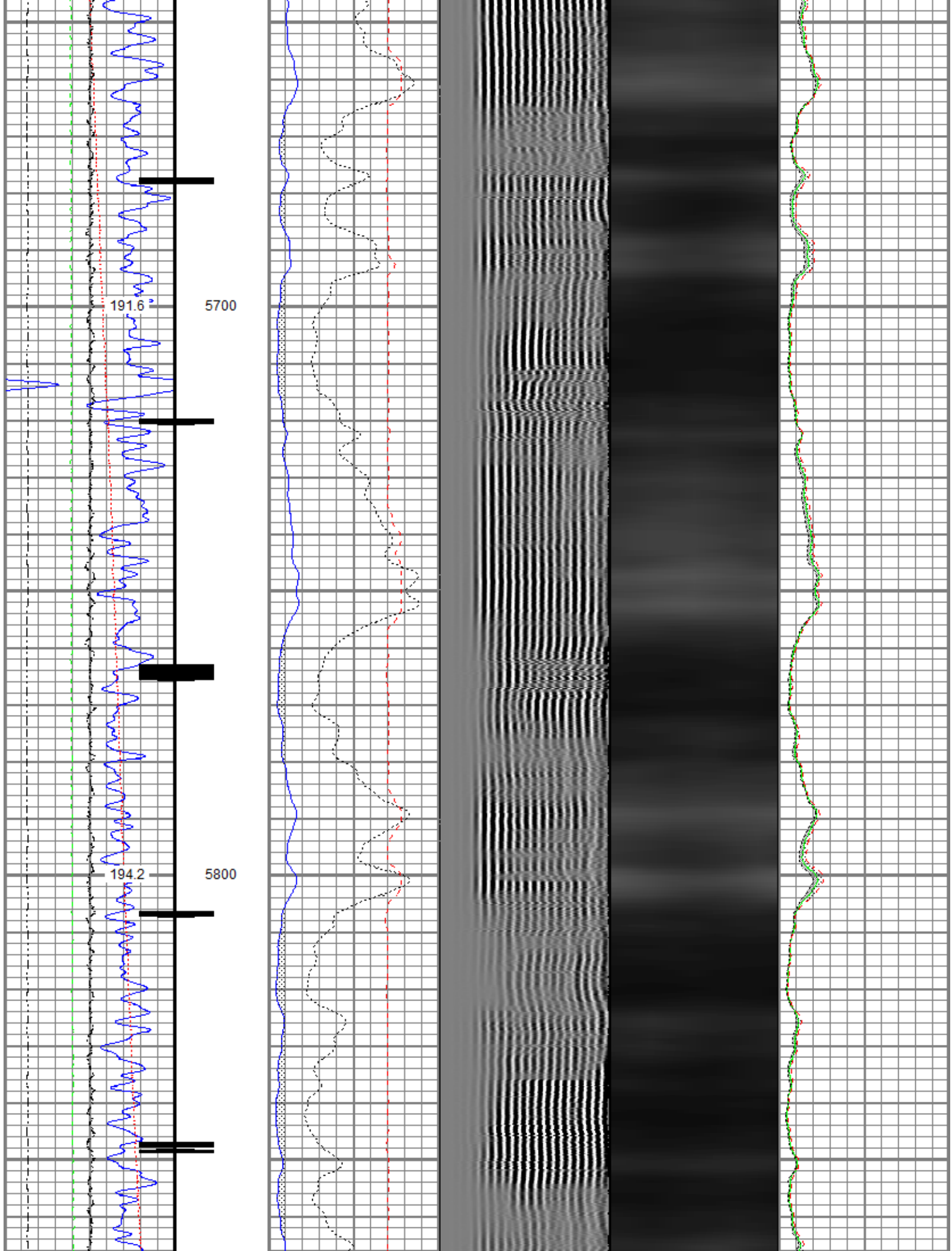


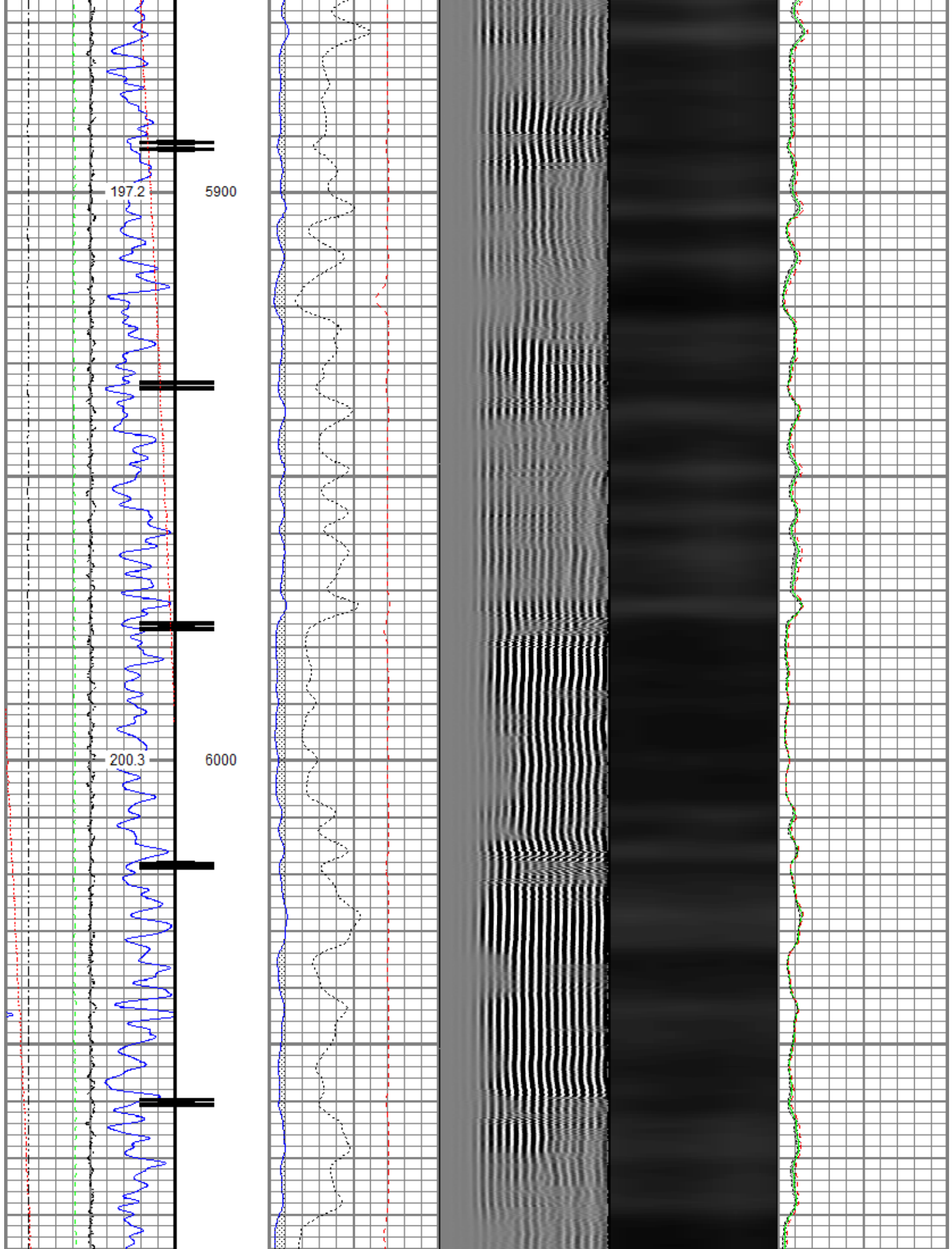


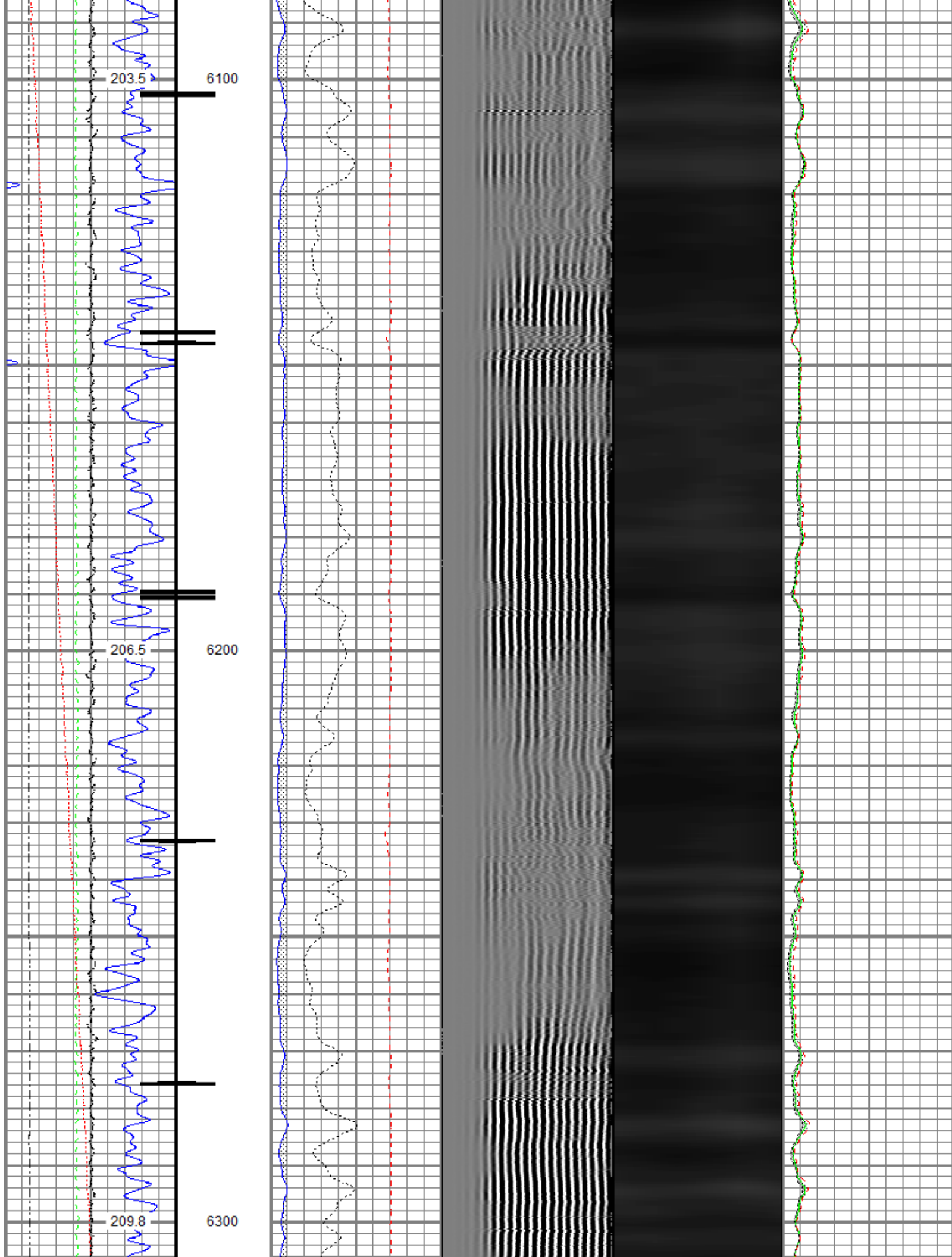


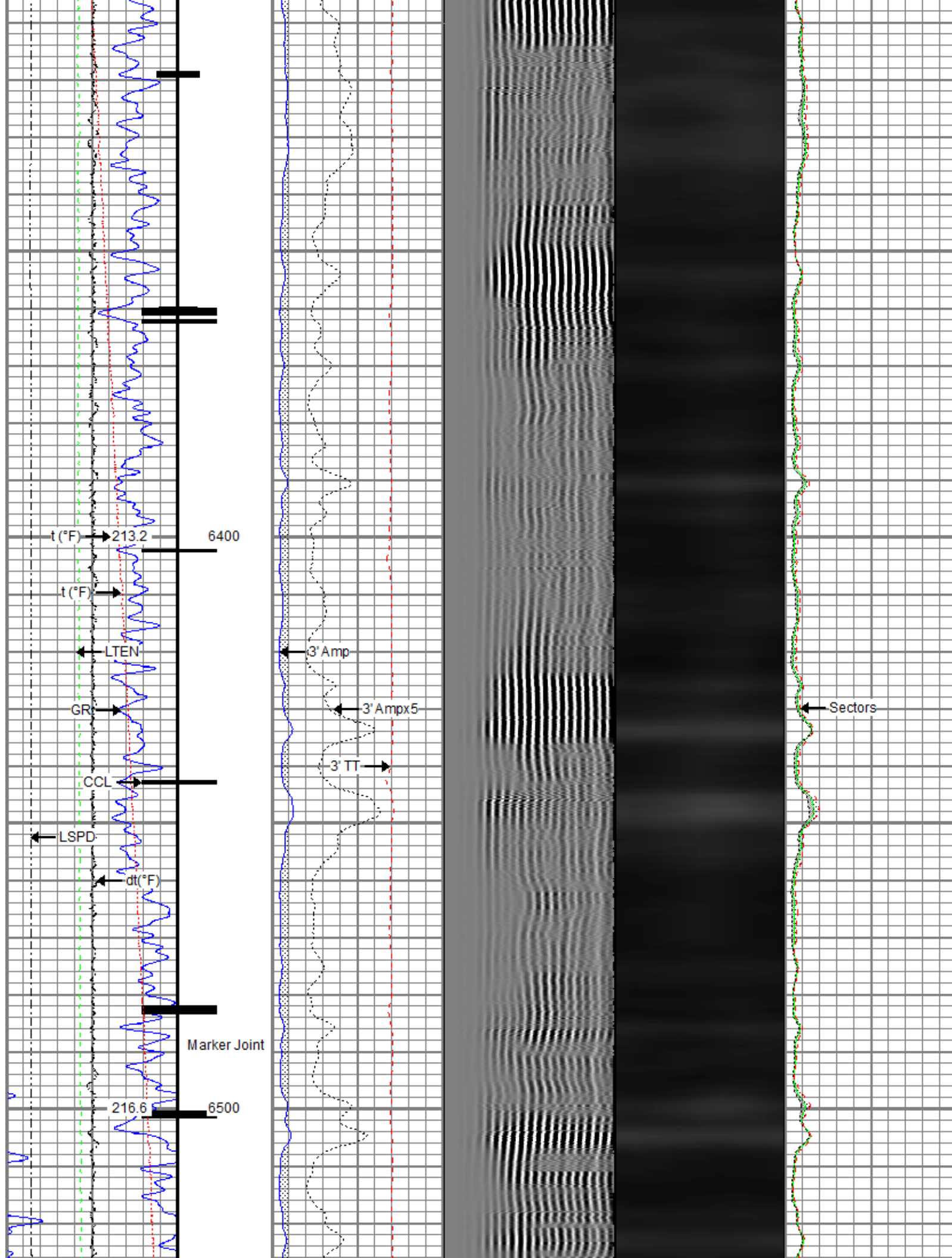


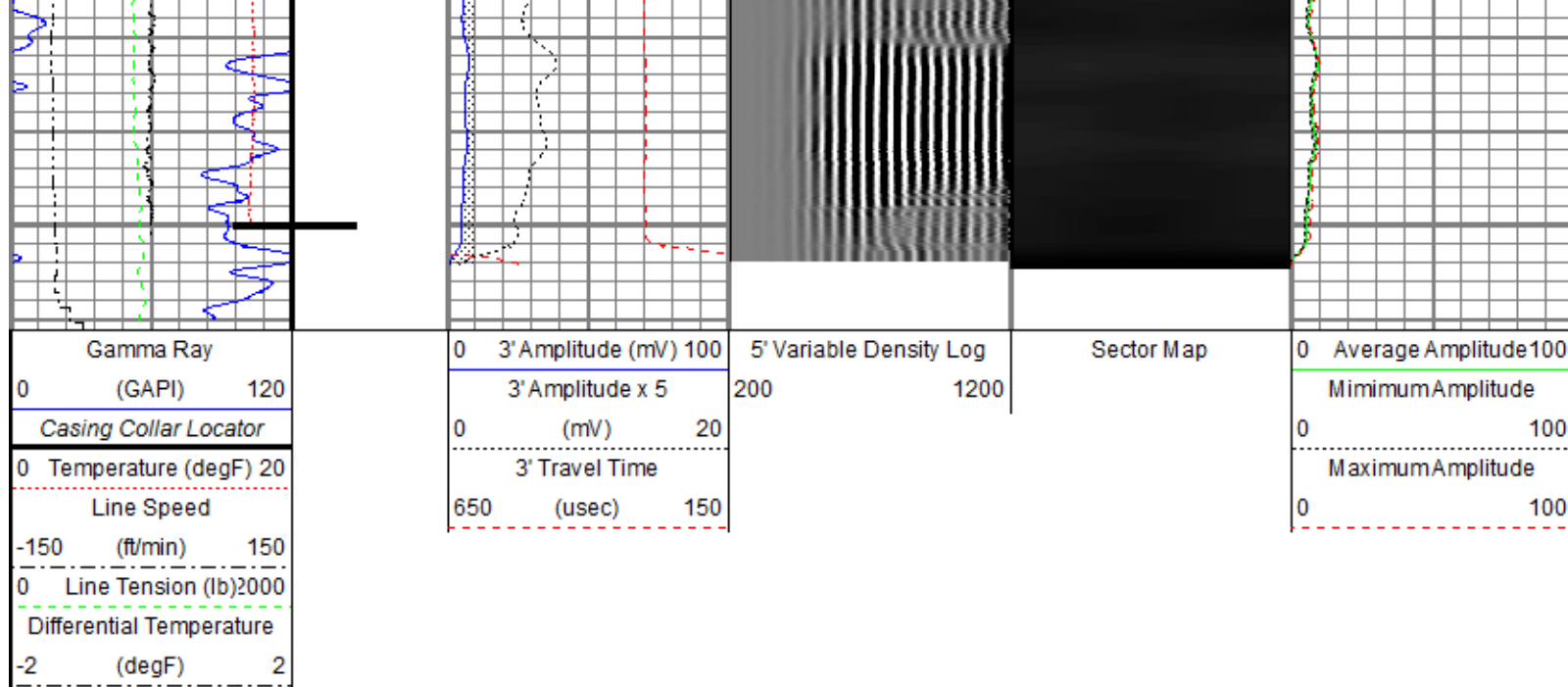








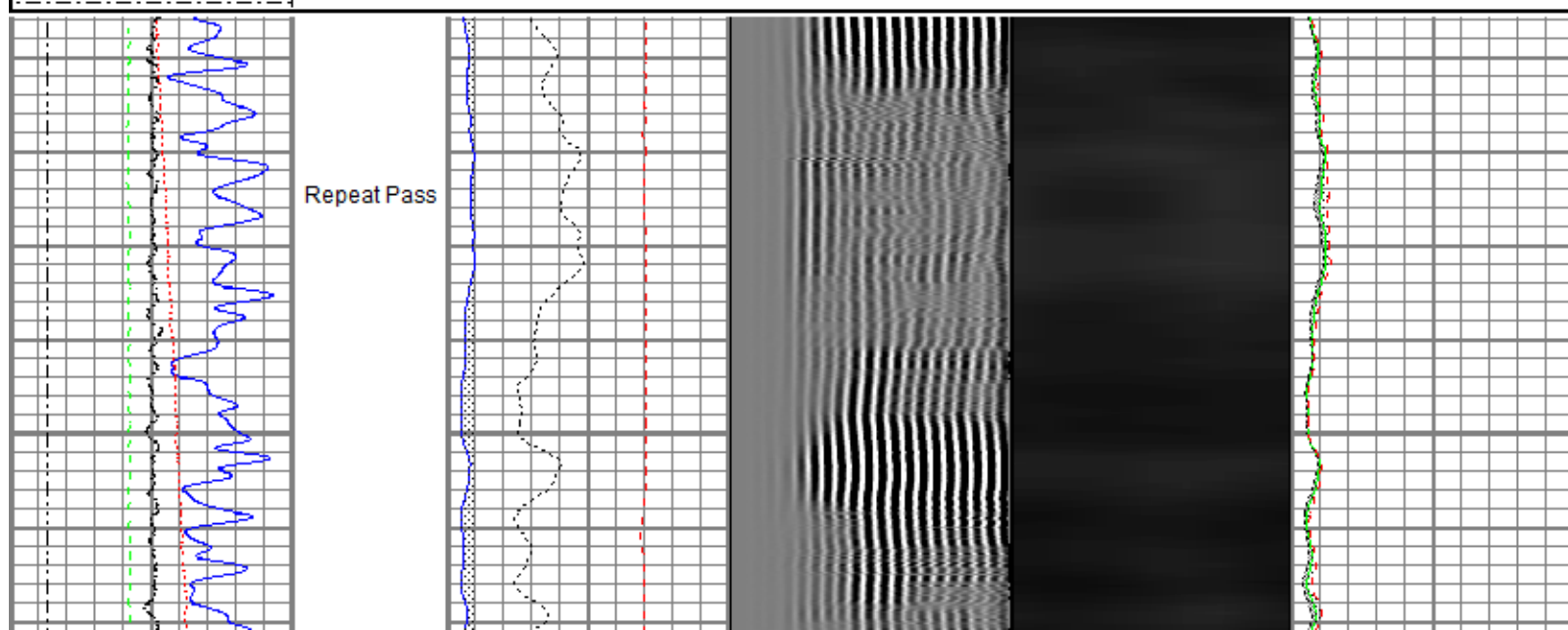
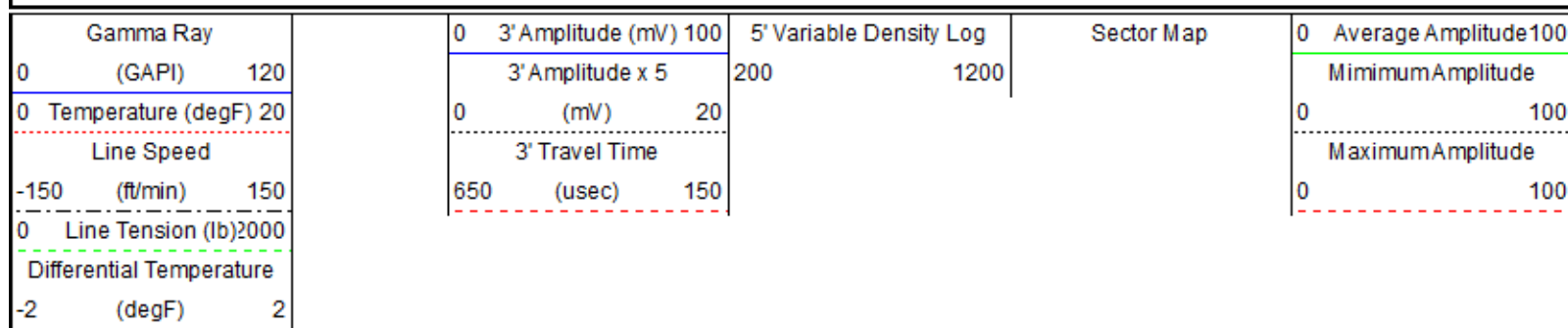


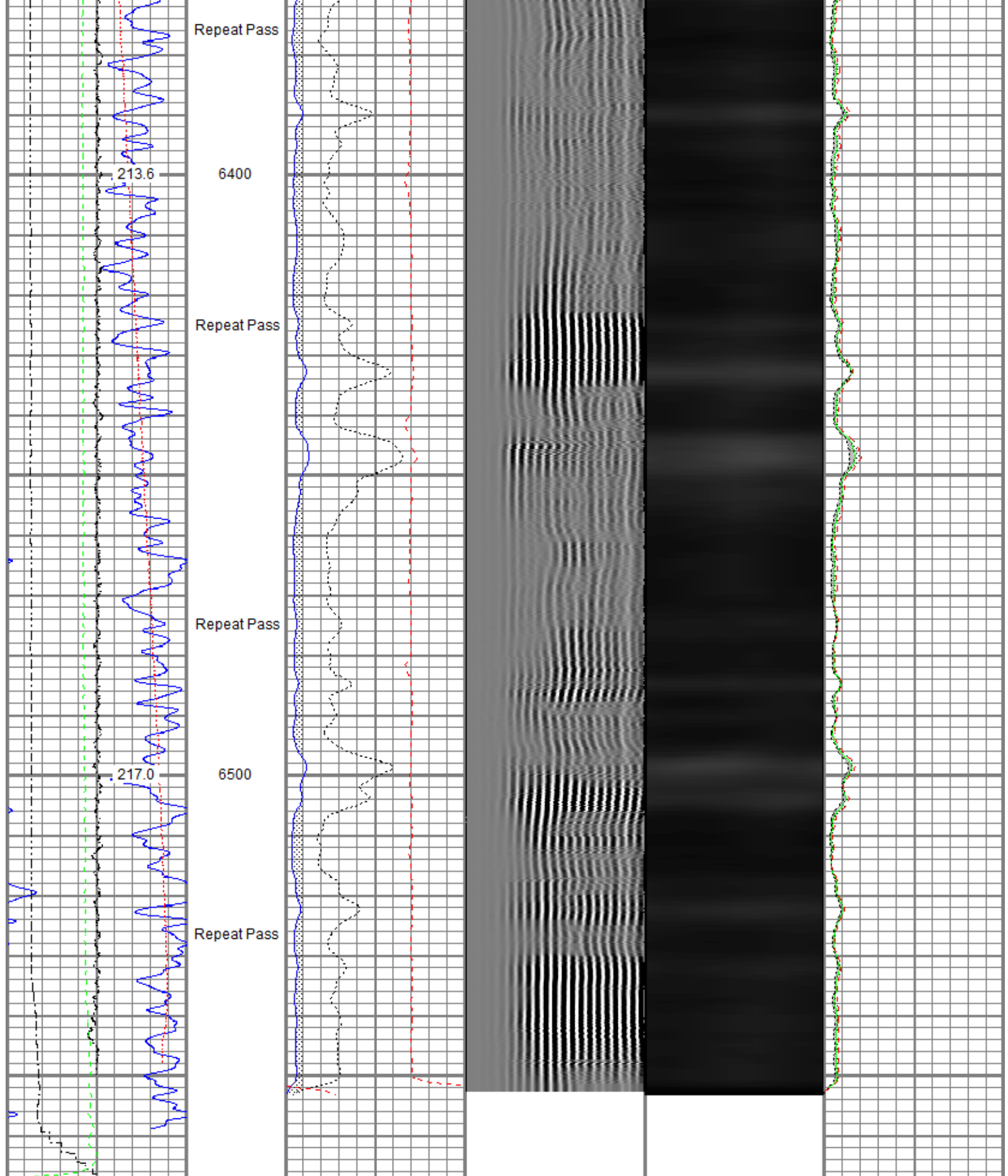


Repeat Pass

Recorded With 2800 PSI Surface Induced Pressure

Database File: anadarko_azul 13-22hz_10512346119_anadarko_azul 13-22hz_rbl_07-03-18_2800 psi.db
 Dataset Pathname: pass2
 Presentation Format: ros_radil
 Dataset Creation: Tue Jul 03 17:46:05 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	1200			Minimum Amplitude	
0	Temperature (degF)	0	(mV)	20		0		100
Line Speed		3' Travel Time					Maximum Amplitude	
-150	(ft/min)	650	(usec)	150		0		100
0	Line Tension (lb)	2000						

-2 (degF) 2

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

Dataset: 0512346119_Anadarko_Azul 13-22HZ_RBL_07-03-18_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 13-22HZ_0512346119_Anadarko_Azul 13-22HZ_RBL_07-03-18_2800 PSI.db
Dataset Pathname pass4
Dataset Creation Tue Jul 03 17:55:41 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

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



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