



Radial Cement Bond
Gamma Ray
Casing Collar Log

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

Well Azul 13-19HZ

Field Wattenberg

County Weld State Colorado

Location: API #: 05-123-46101

SEC 13 TWP 1N RGE 66W

Permanent Datum Ground Level Elevation 5050'
Log Measured From Kelly Bushing 21 FT
Drilling Measured From Kelly Bushing

Other Services
GR/JB
RBP
RBL 0 PSI
Elevation
K.B. 5071'
D.F. ---
G.L. 5050'

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Date	02-JUL-2018									
Run Number	Four									
Depth Driller	12583 FT									
Depth Logger	6650 FT									
Bottom Logged Interval	6635 FT									
Top Log Interval	Surface									
Open Hole Size	7.875"									
Type Fluid	Water									
Density / Viscosity	8.34 lb/gal									
Max. Recorded Temp.	208°F									
E estimated Cement Top	See Log									
Time Well Ready	ROA									
Time Logger on Bottom	10:32									
E equipment Number	HD-0325									
Location	Platteville, CO									
Recorded By	R. Cameron									
Witnessed By	Justin McMillen									
Borehole 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	1875 FT					
Intermediate #1	5.1/2	17	HCP-110	Surface	12573 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

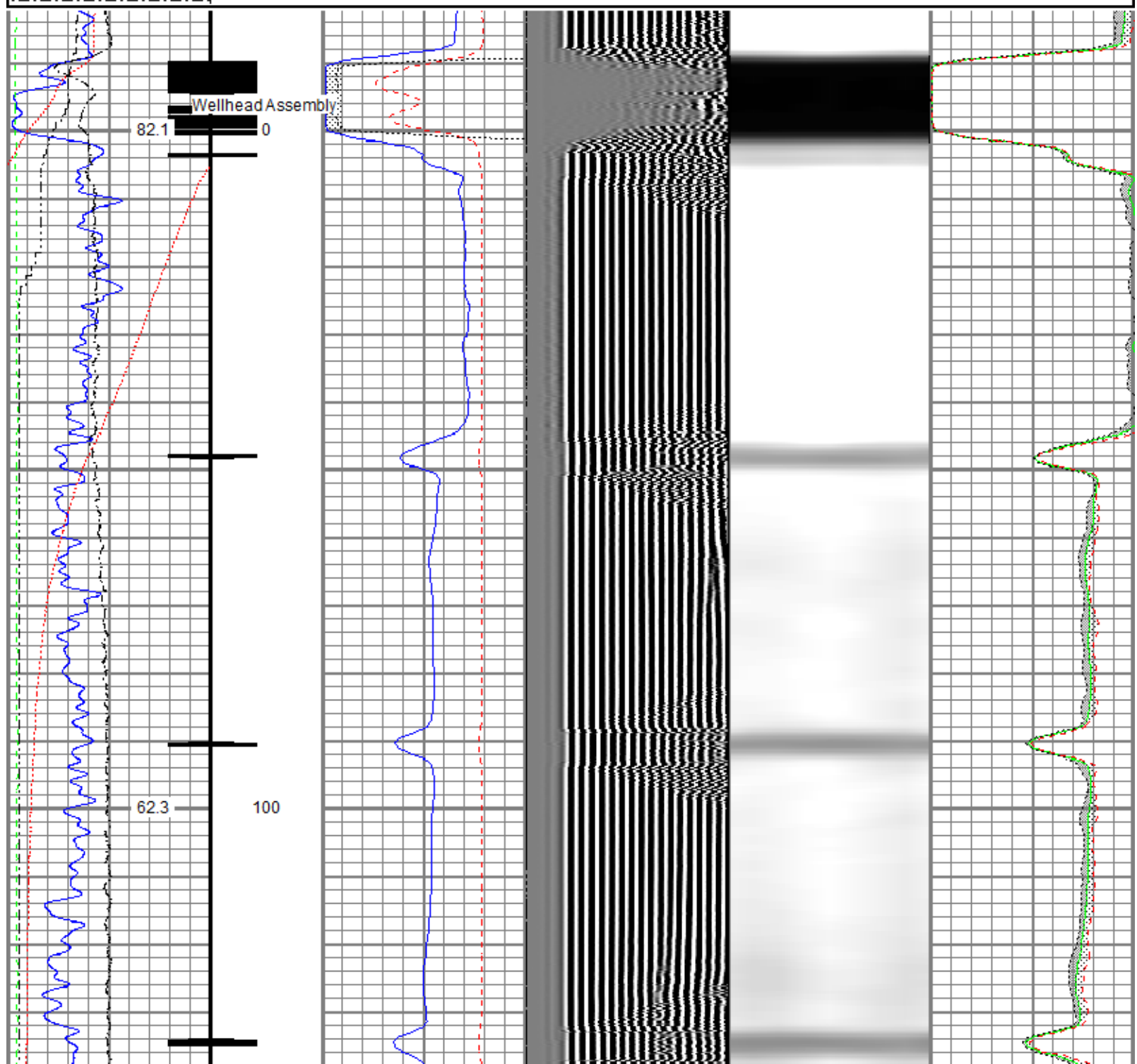
Log ran as per customer request
Depth referenced to Casing Tally reported Marker Joint Top at 6552 FT
Adjusted -17 FT to correlate with Marker Joint Top
Gauge Ring/Junk Basket ran to 7565 FT with no debris
5.50" RBP Set @ 6665 FT
Log ran from 6635 FT to surface
Recorded with 2800 PSI Surface Induced Pressure
Logging tools were clean and free of debris upon completion of operations
Thank you for choosing Reliance Oilfield Services, LLC!!

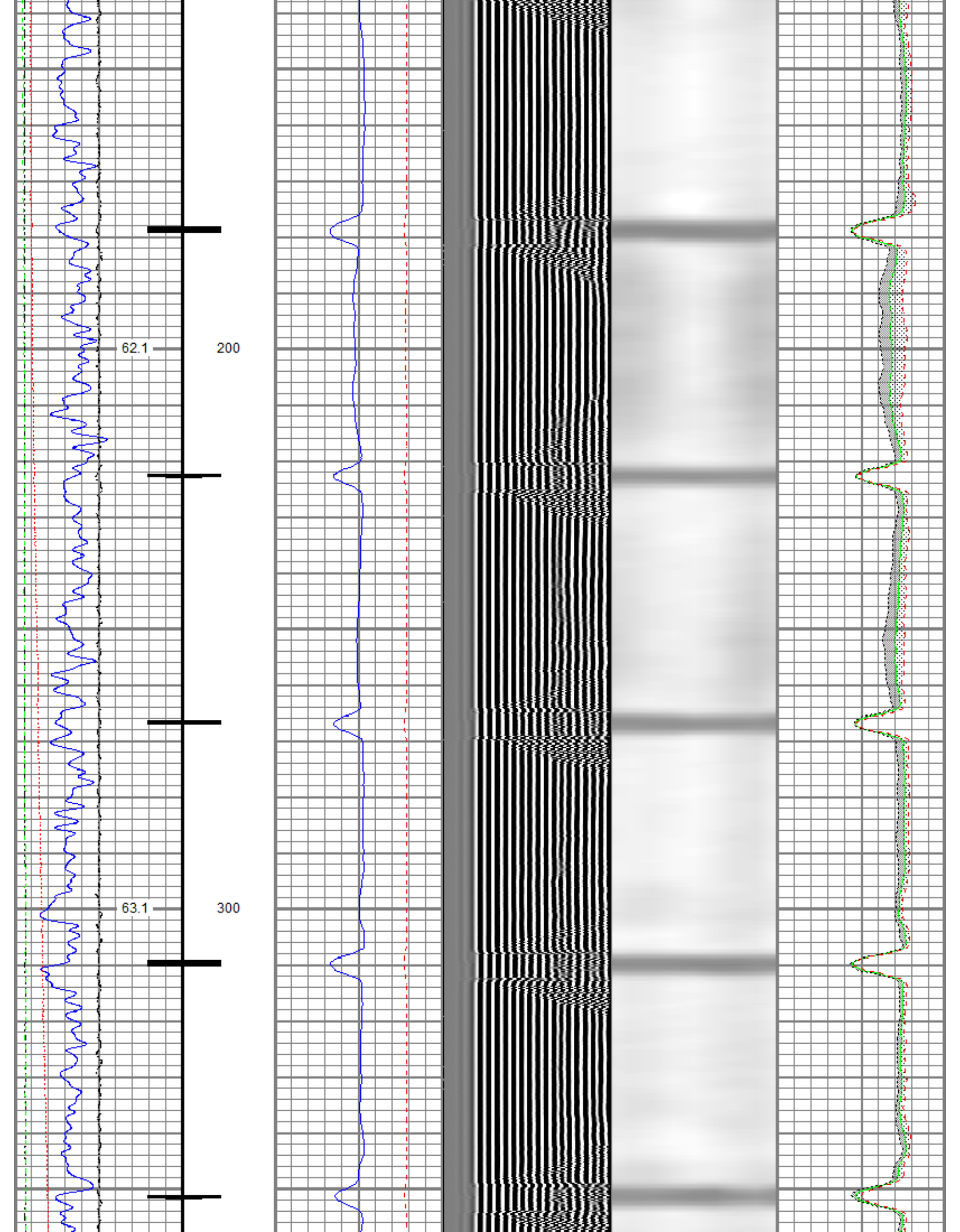
Main Pass

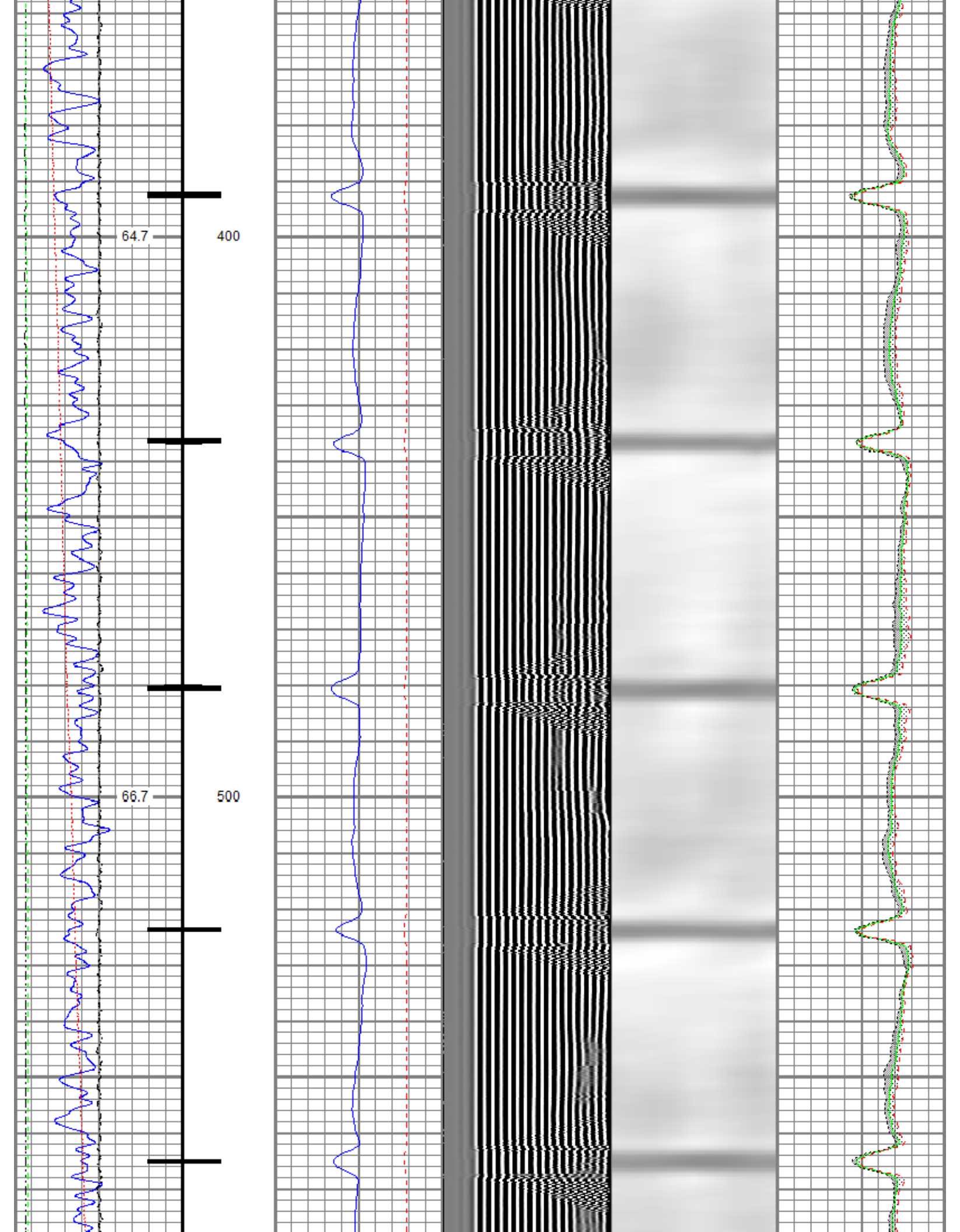


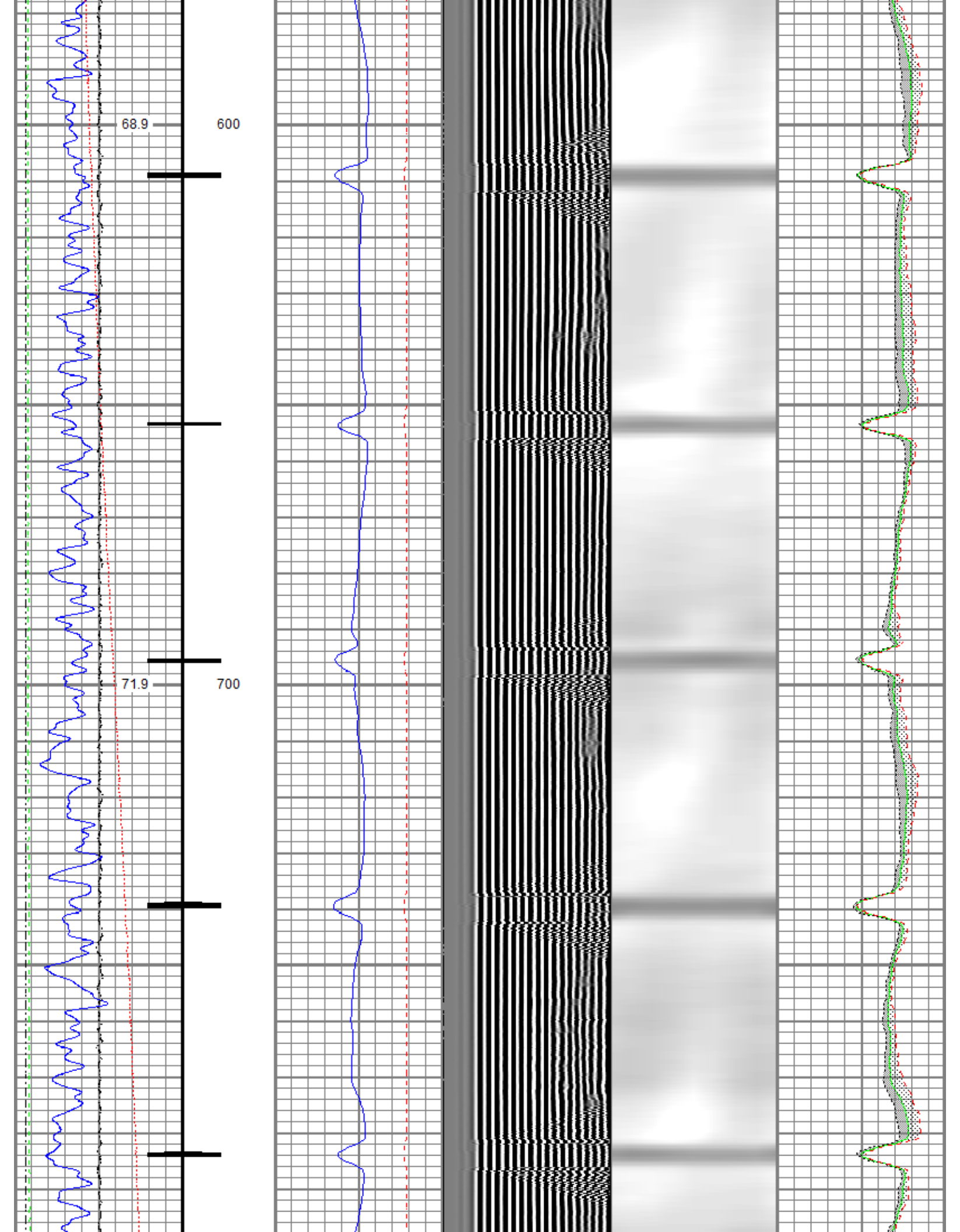
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Dataset Pathname	pass4
Presentation Format	ros_radri
Dataset Creation	Mon Jul 02 10:29:04 2018
Charted by	Depth in Feet scaled 1:240

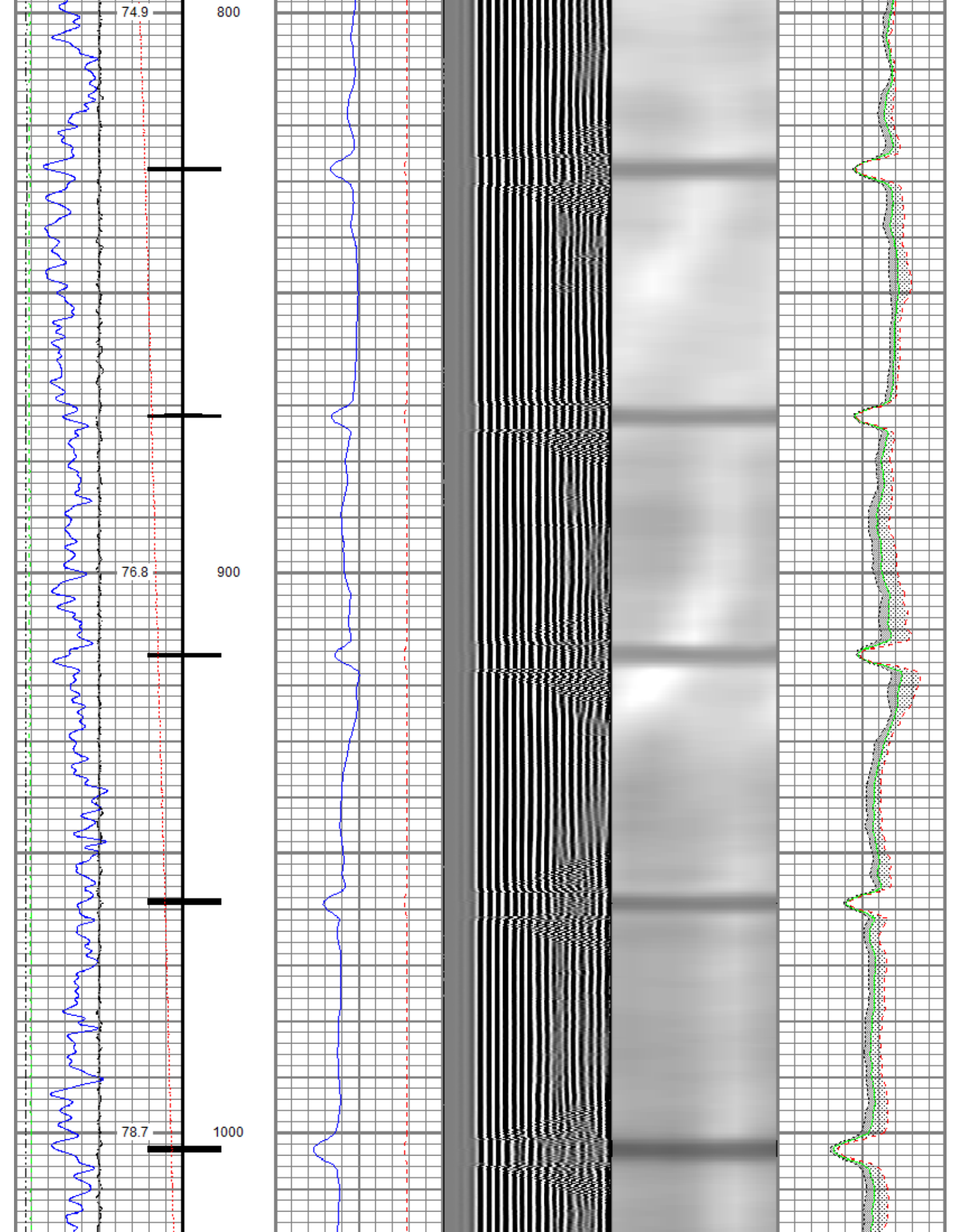
Gamma Ray	0	3' Amplitude (mV) 100	5' Variable Density Log	Sector Map	0	Average Amplitude 100
(GAPI) 120		3' Amplitude x 5	200 (usec) 1200			Minimum Amplitude
Casing Collar Locator	0	(mV) 20			0	100
Temperature (degF) 20		3' Travel Time				Maximum Amplitude
Line Speed	650	(usec) 150			0	100
(ft/min) 150						
Line Tension (lb) 2000						
Differential Temperature						
(degF) 2						

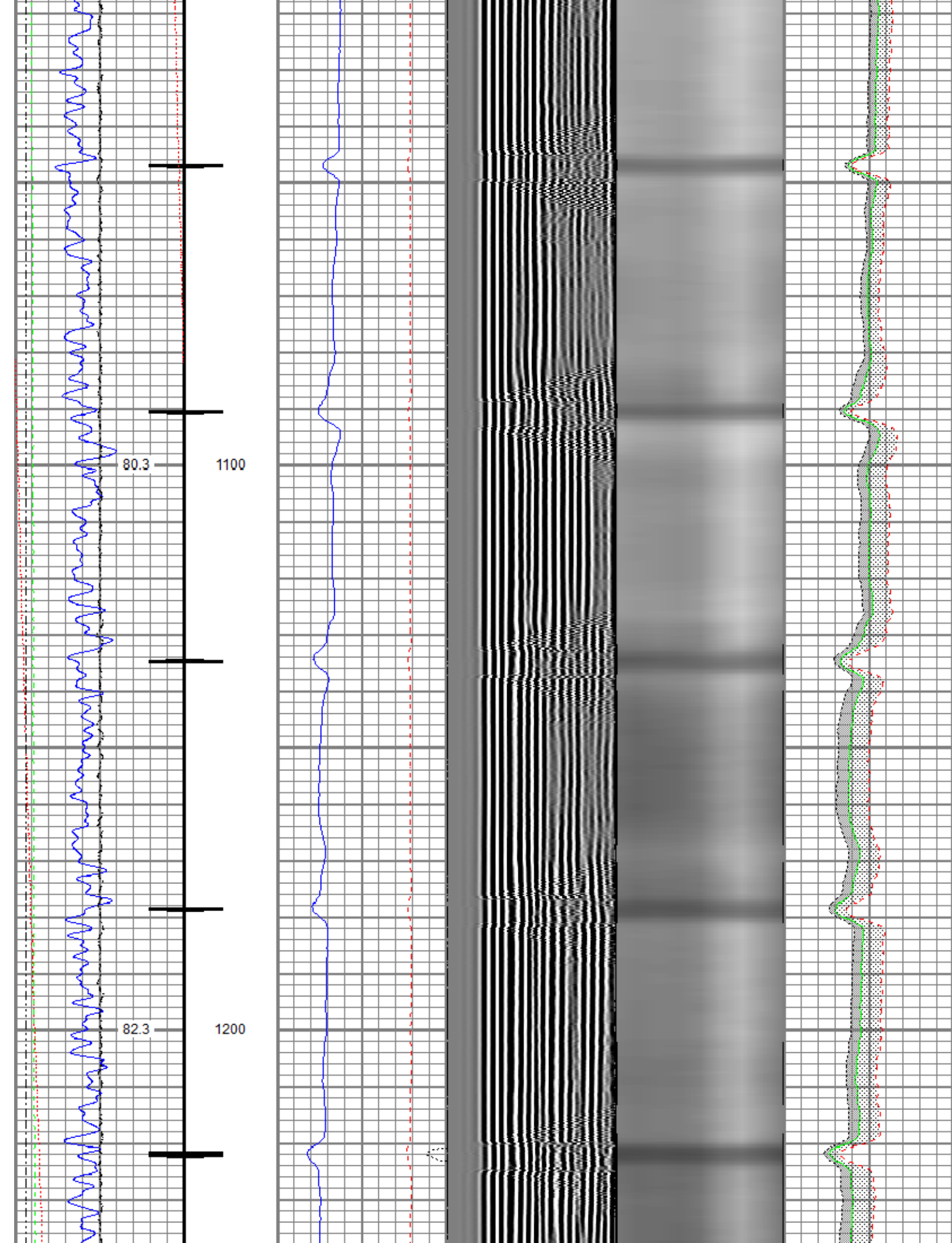


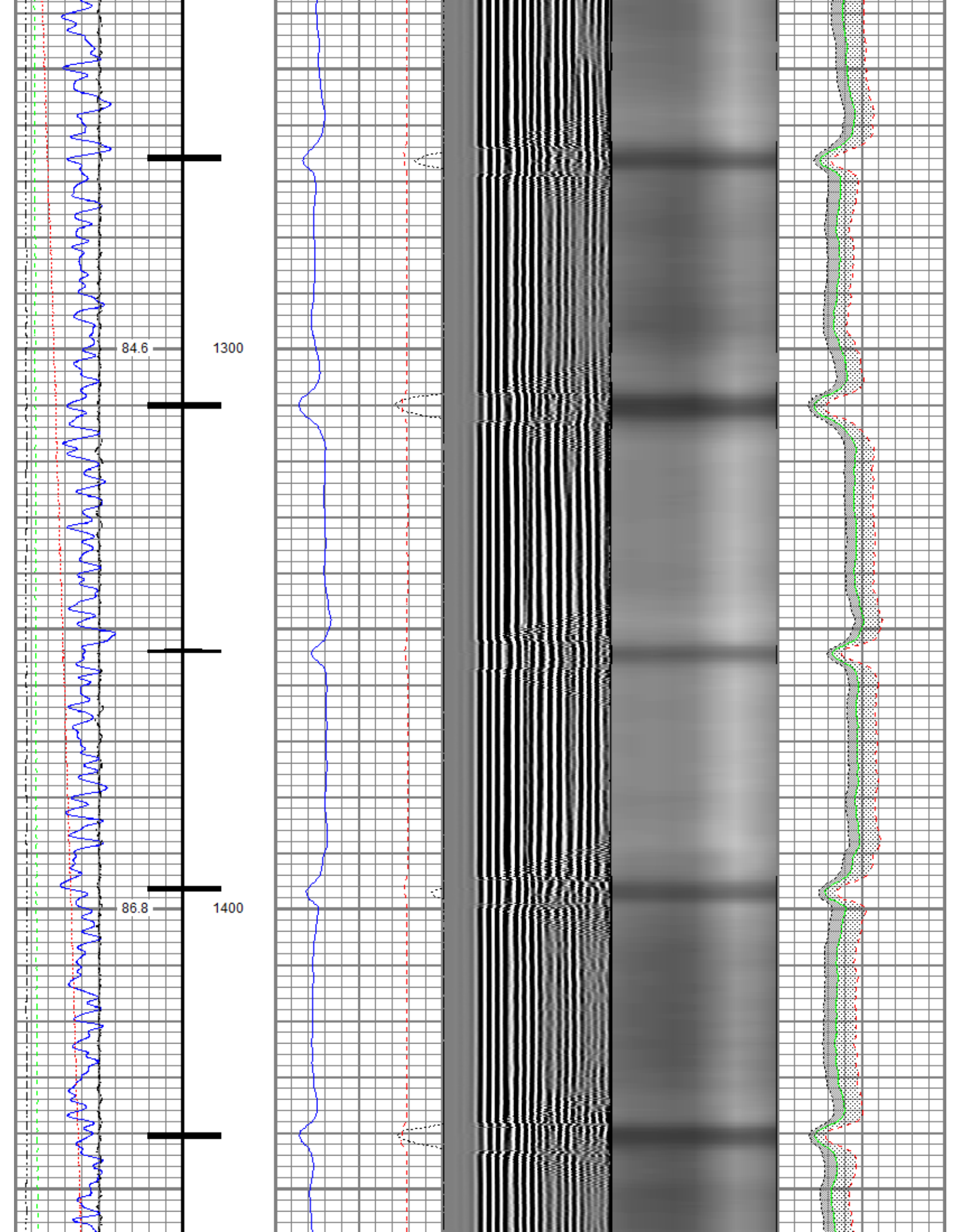


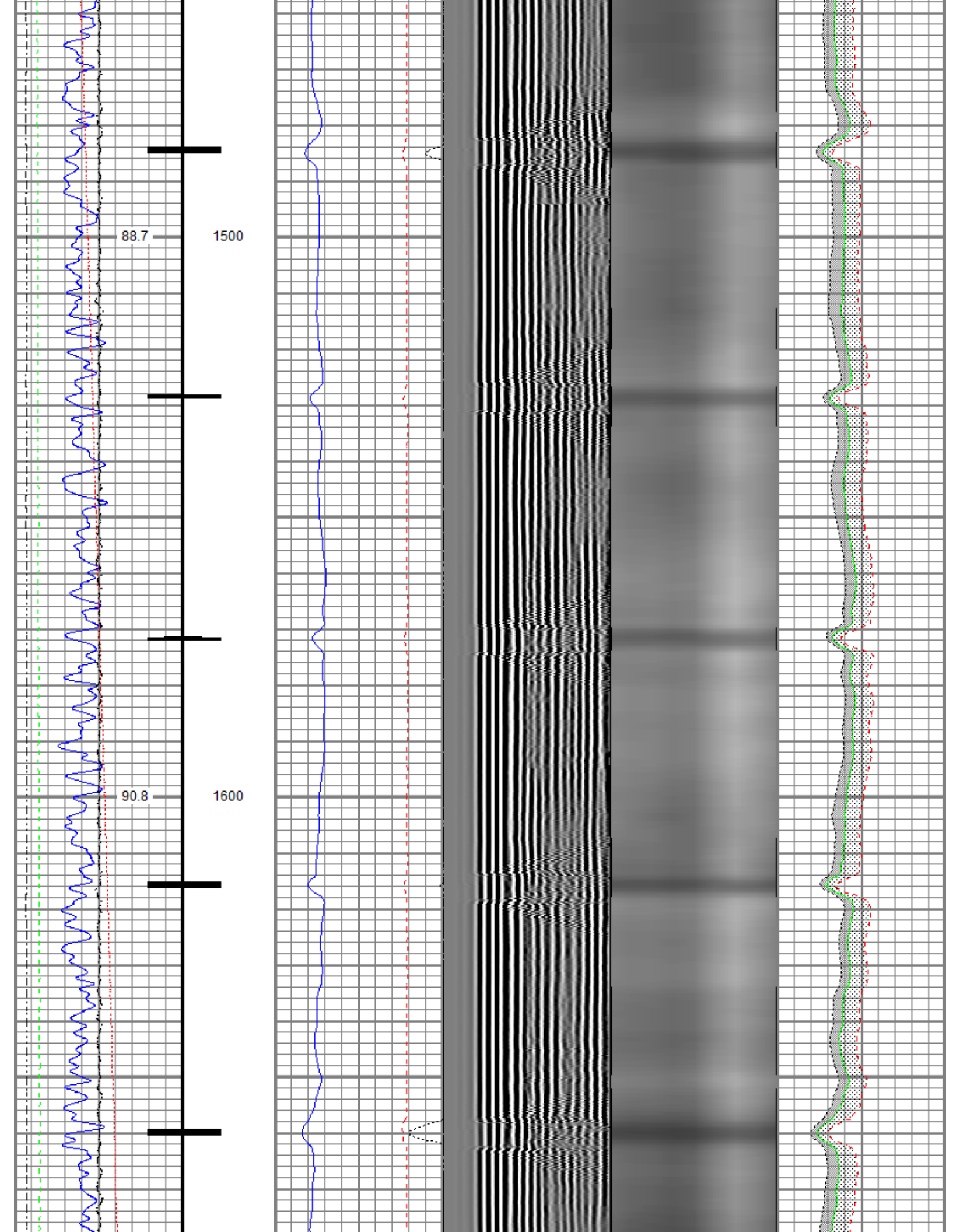


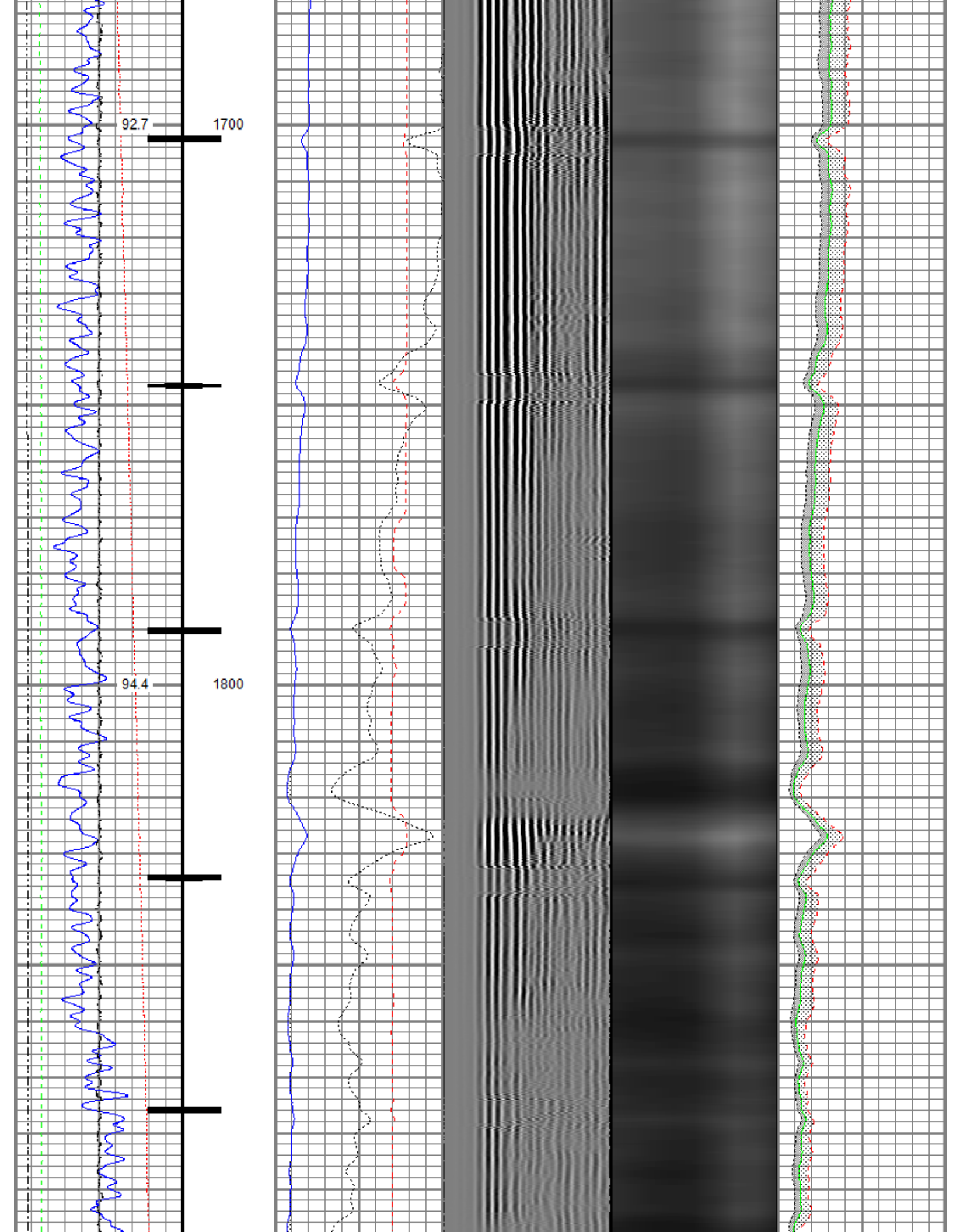


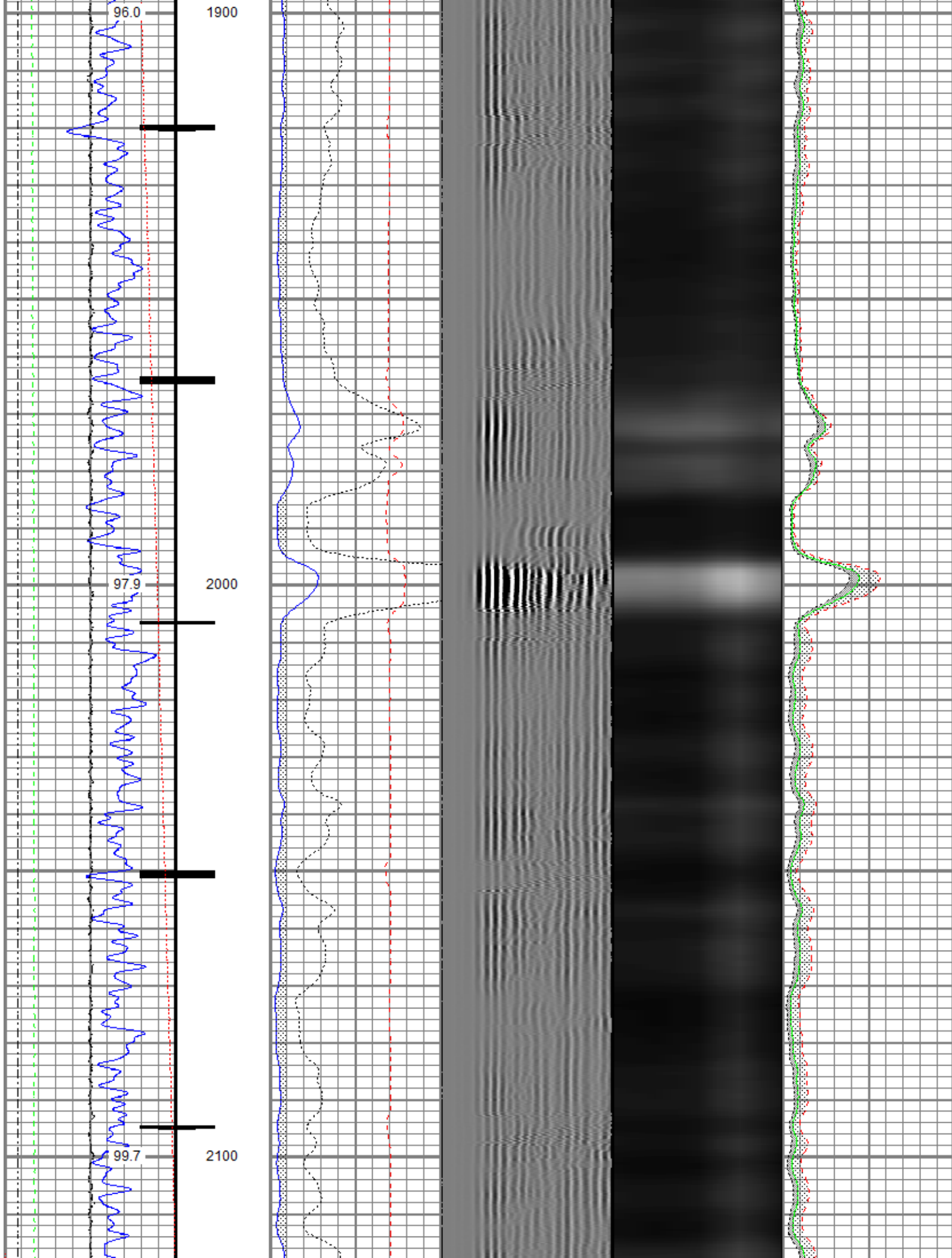


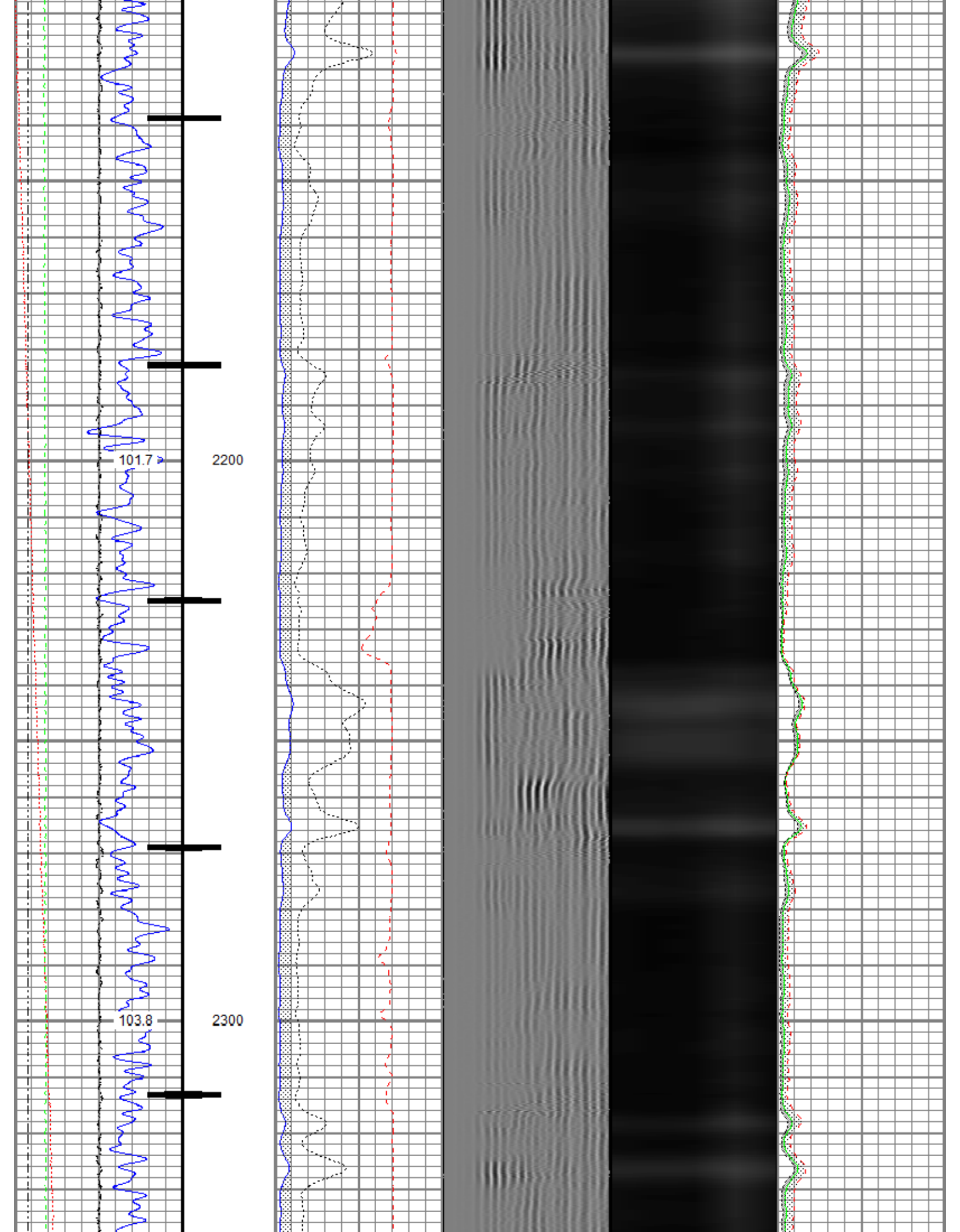


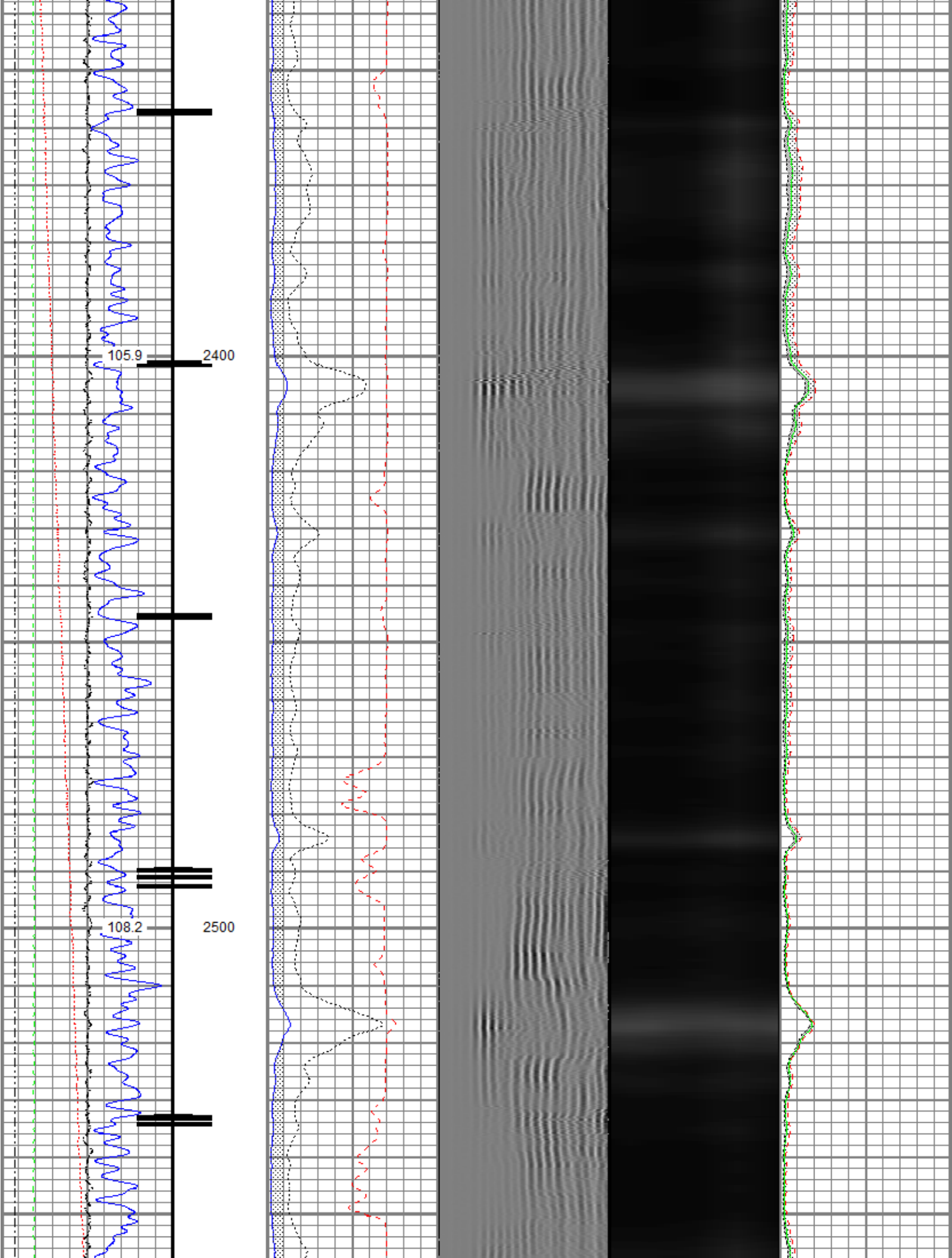


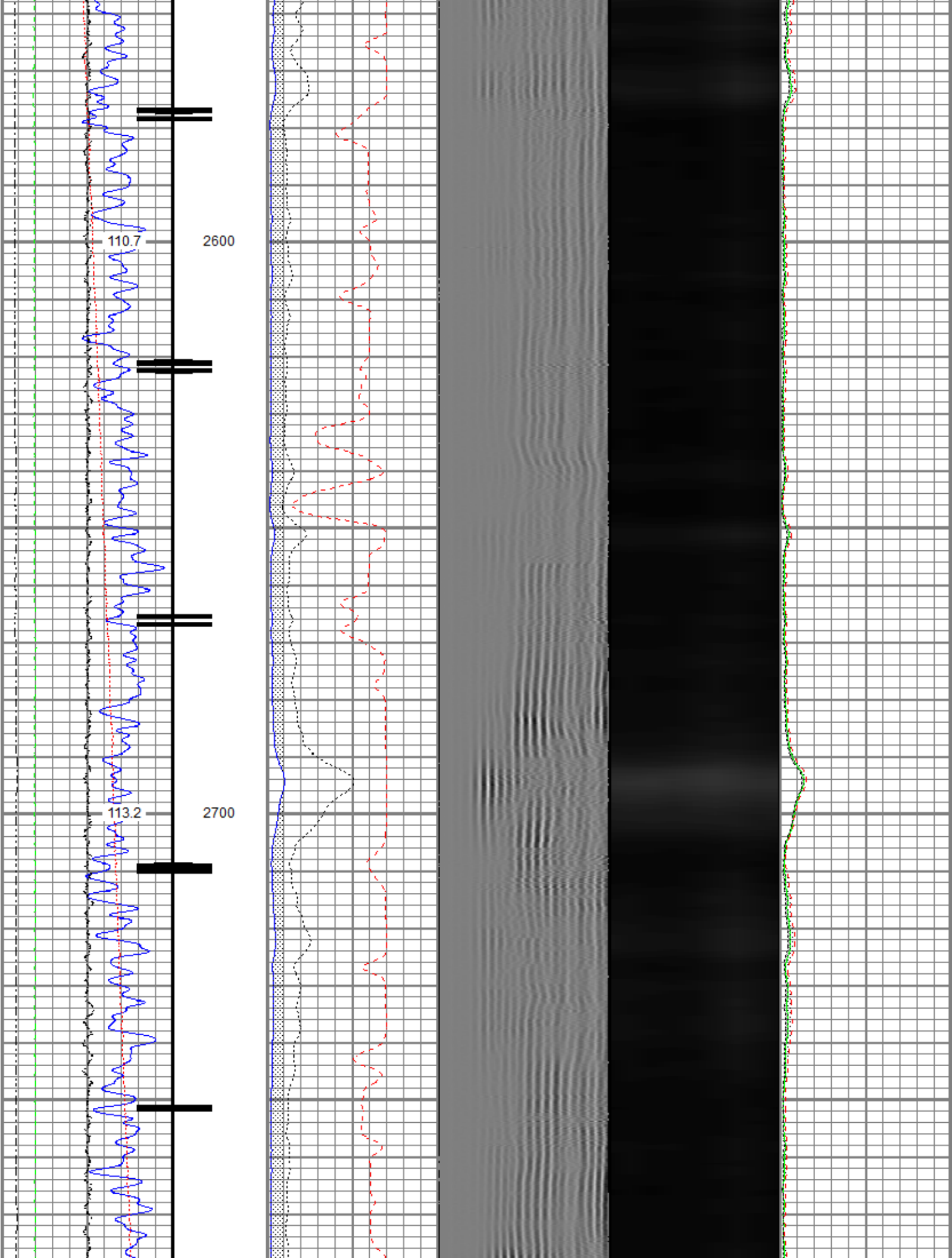


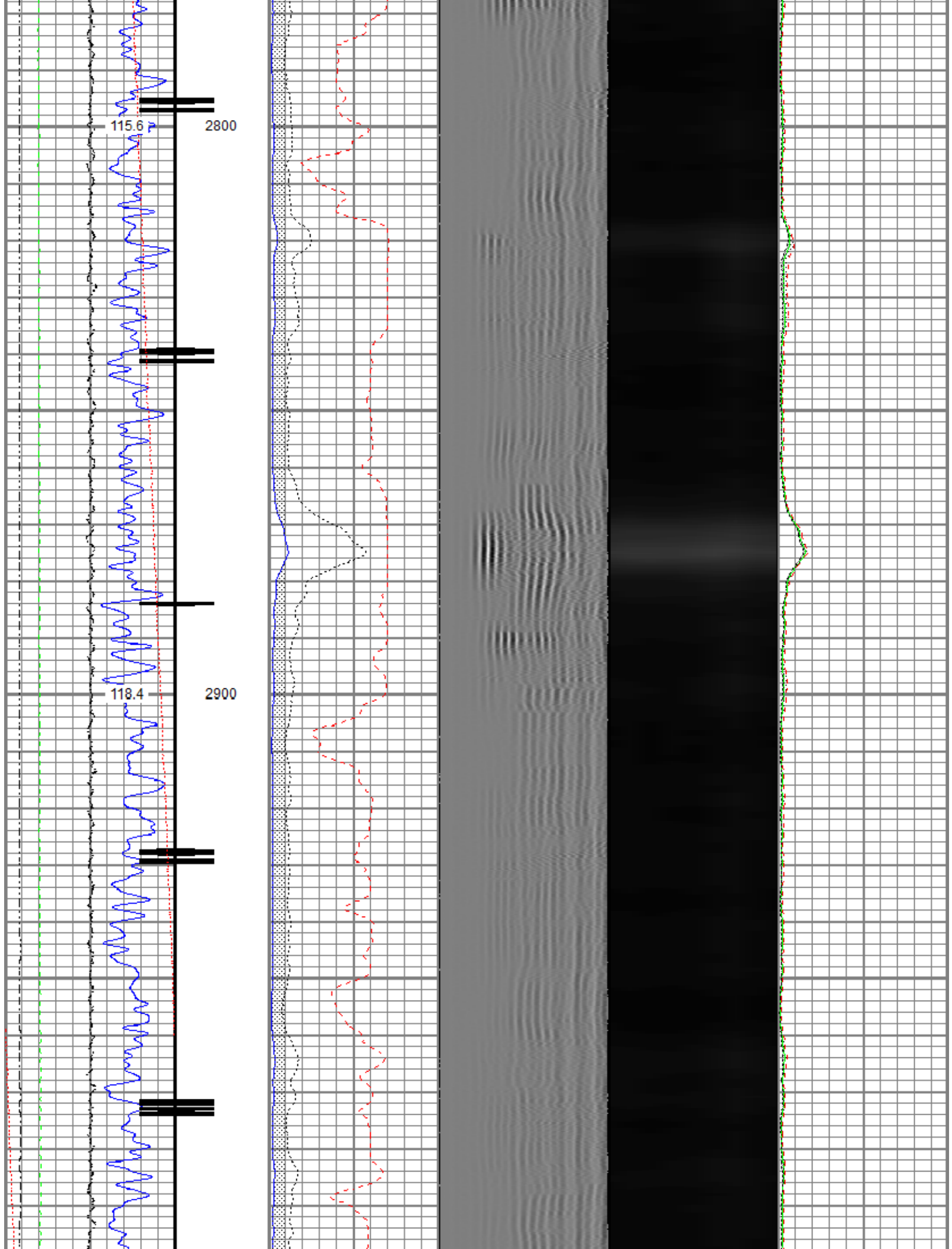


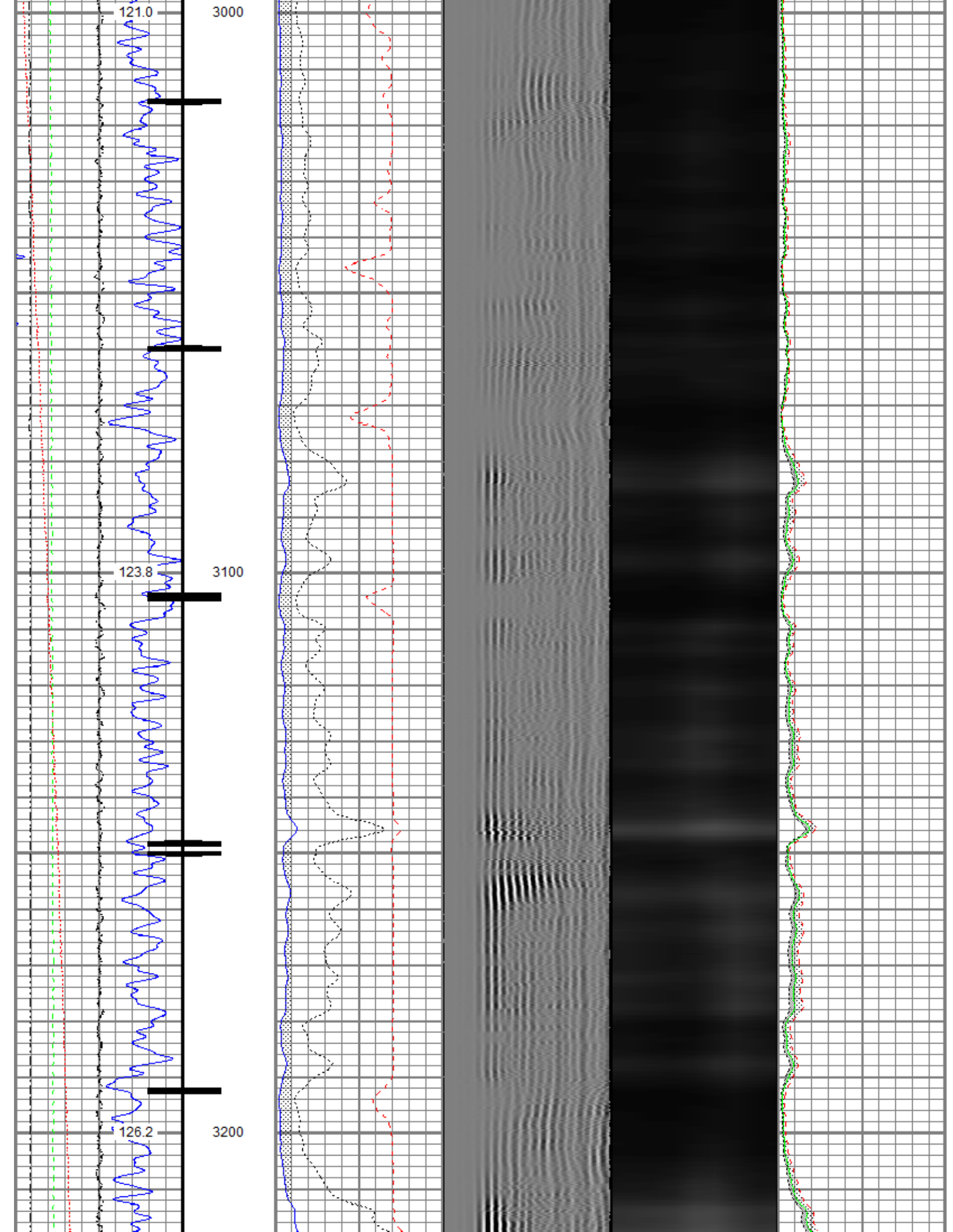


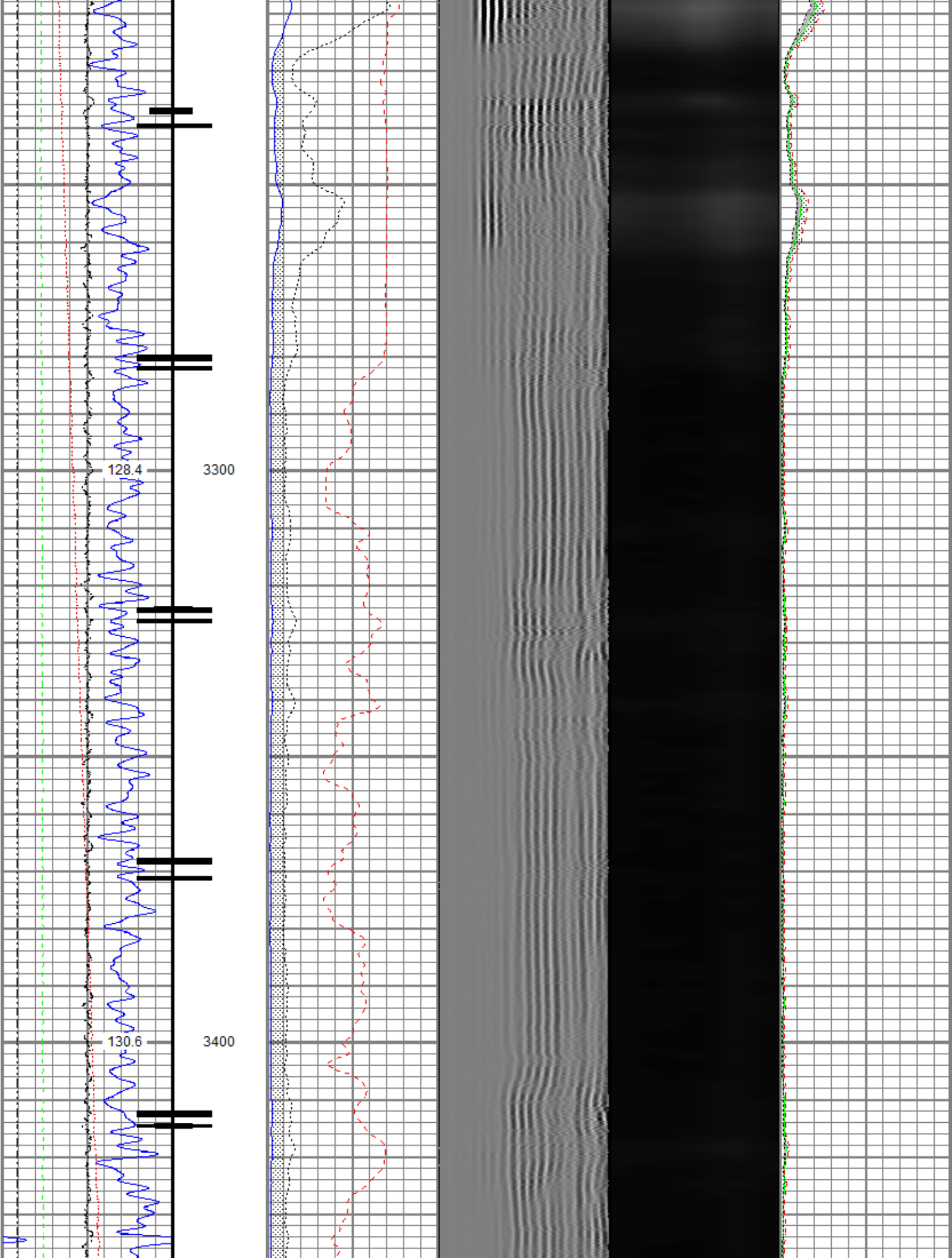


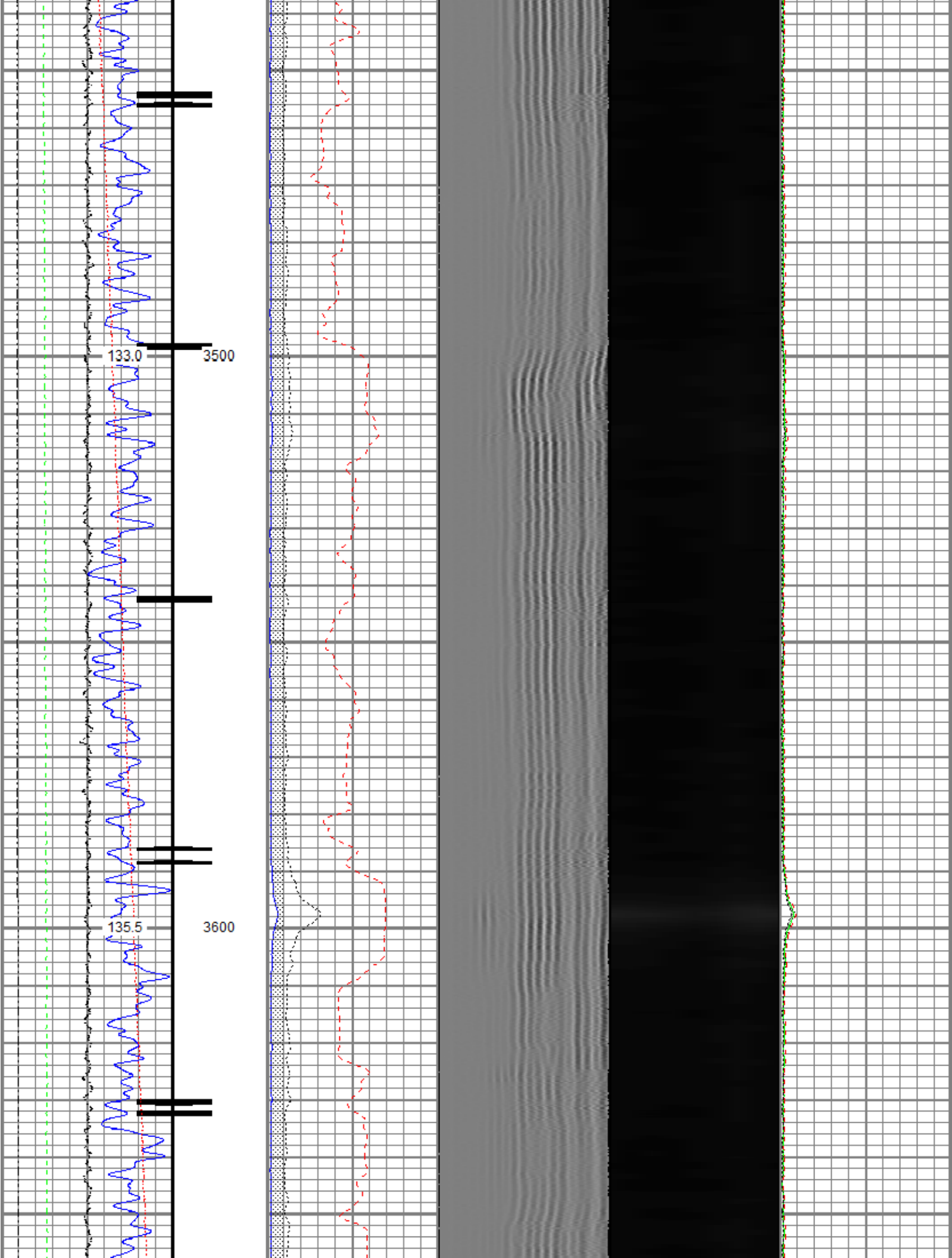


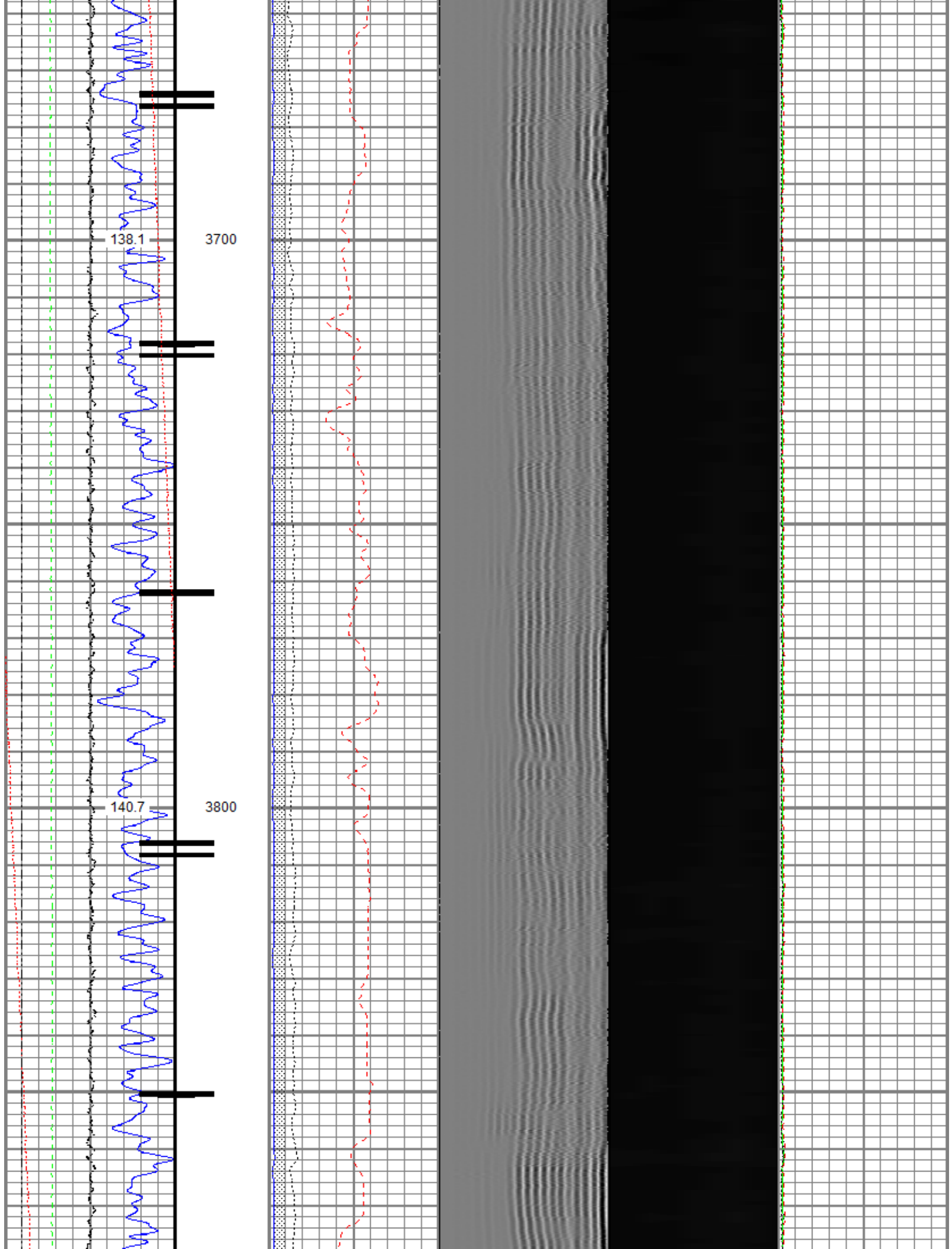


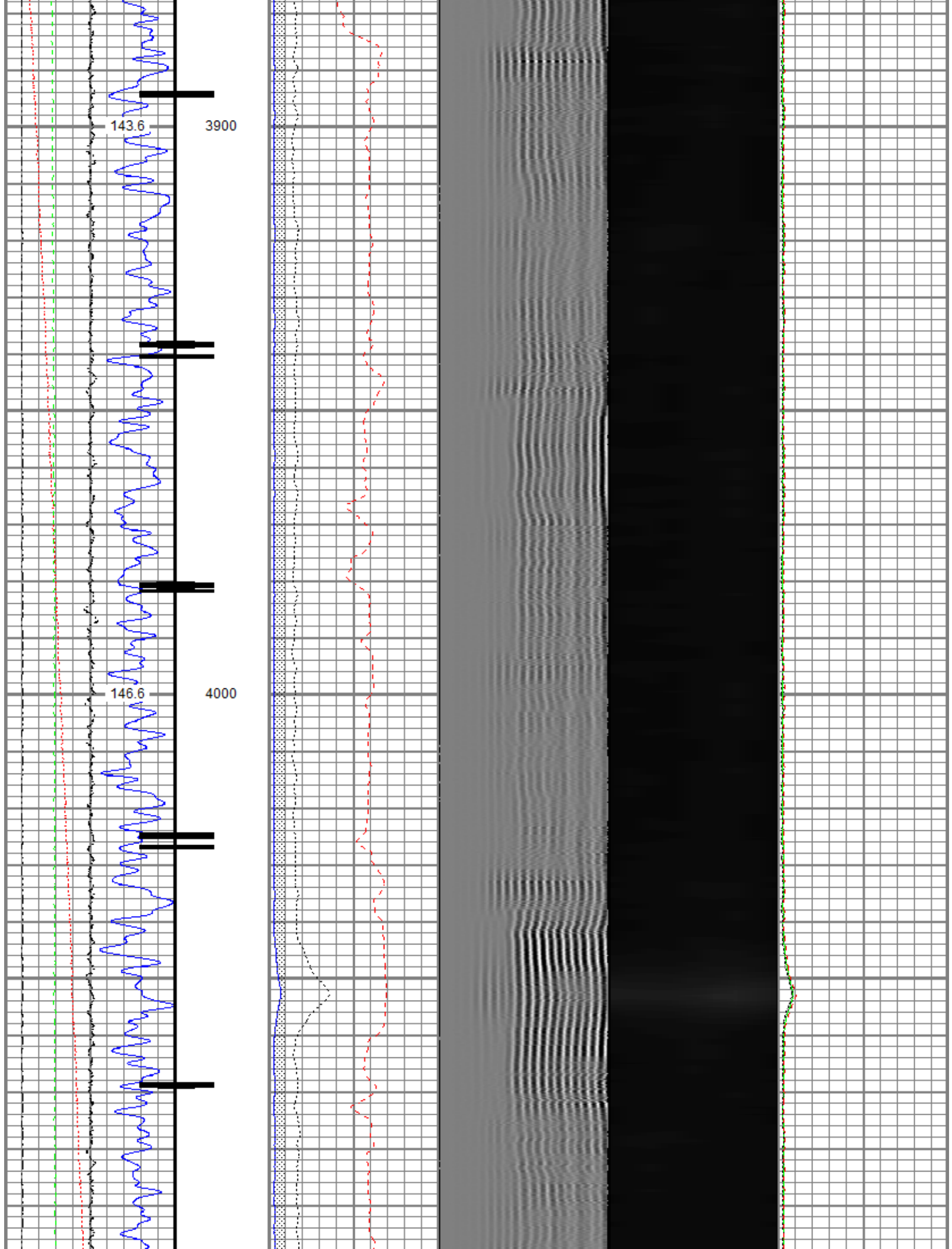


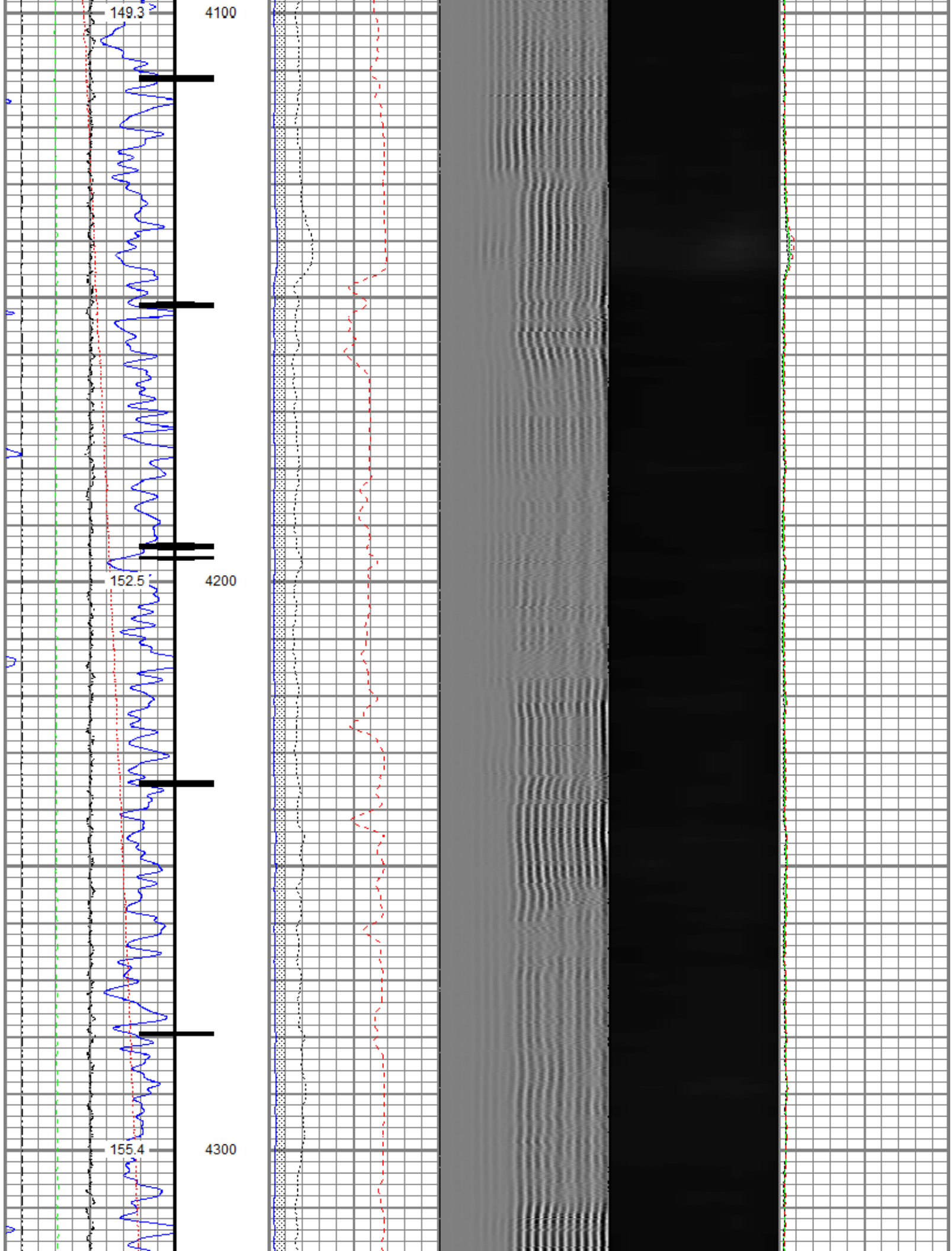


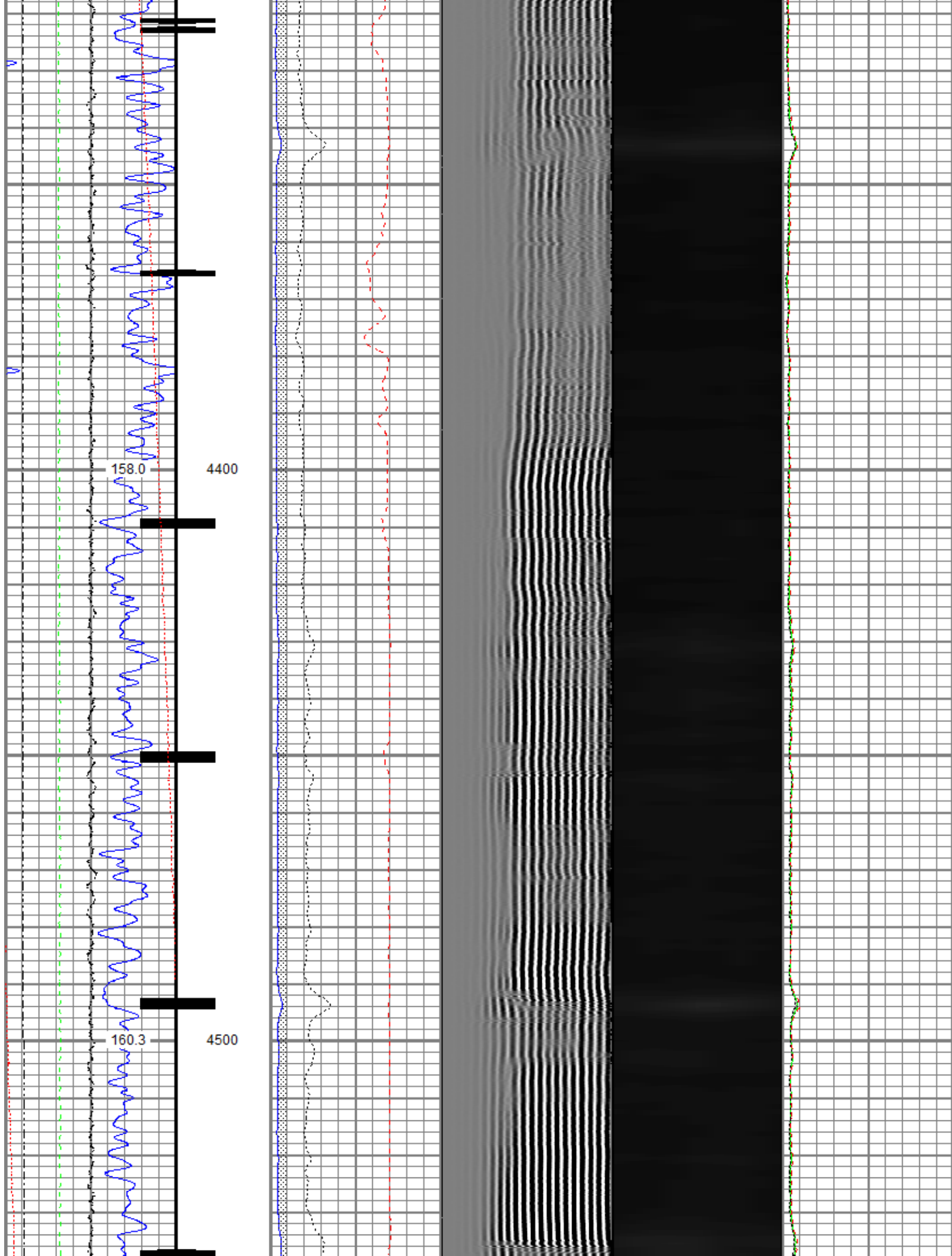


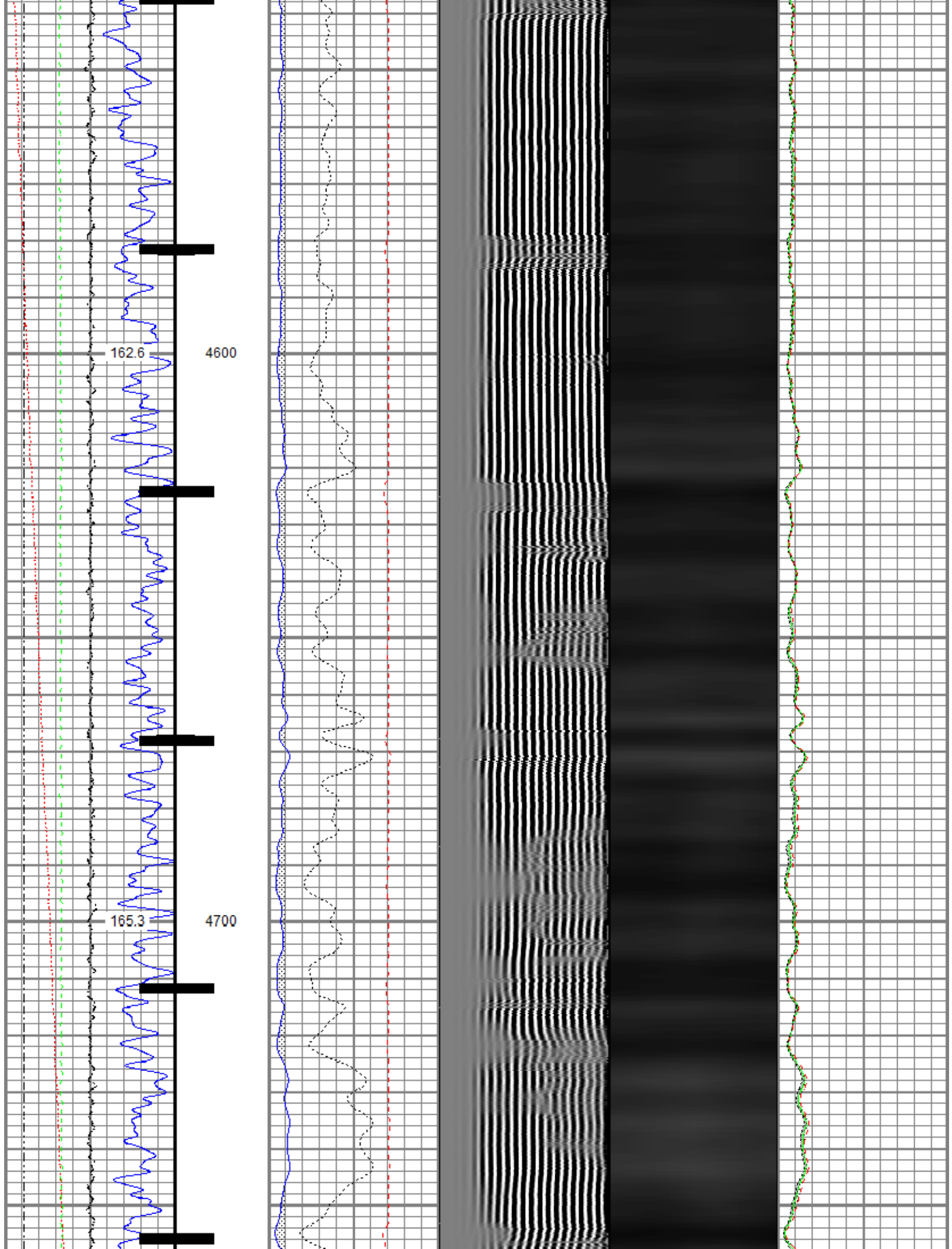


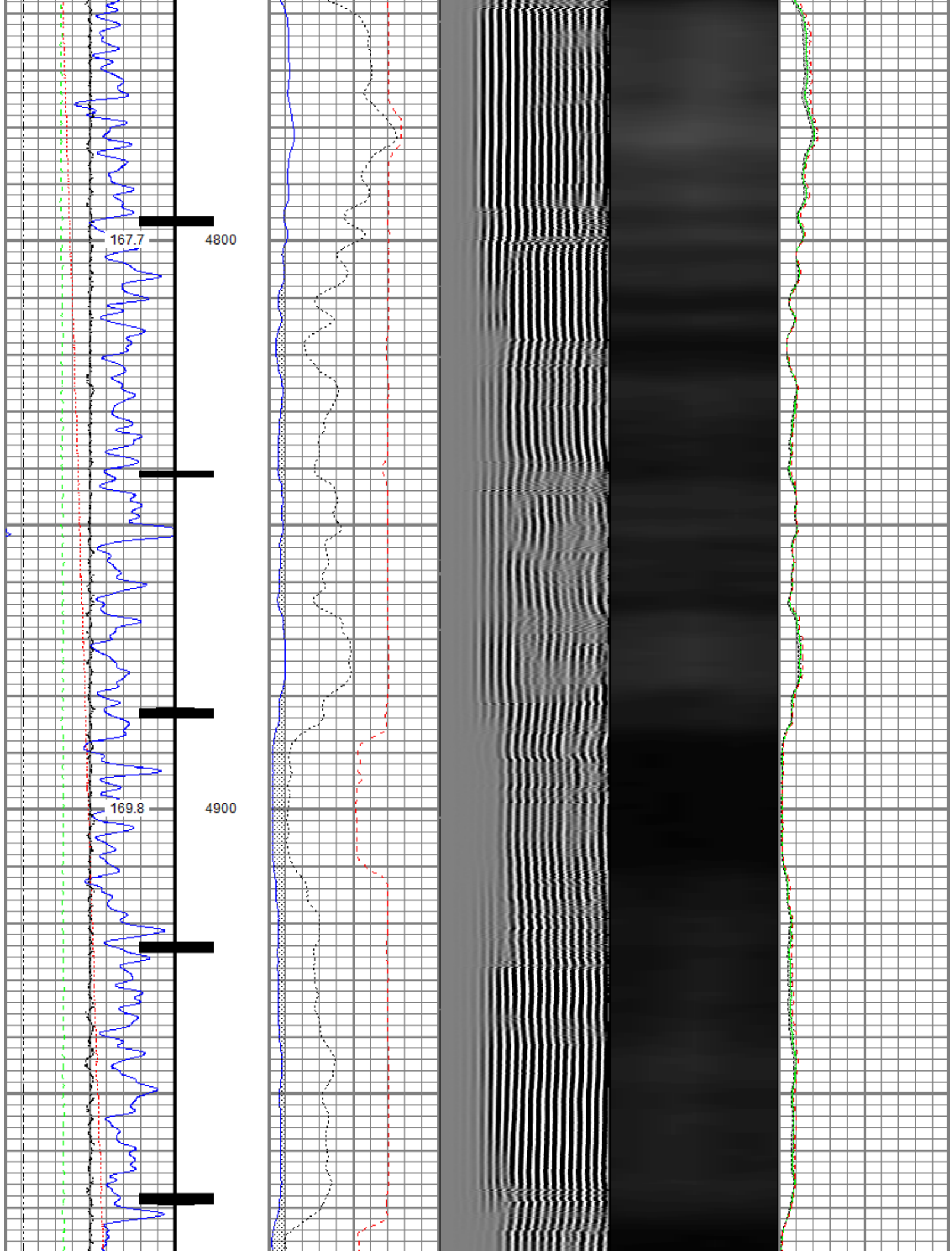


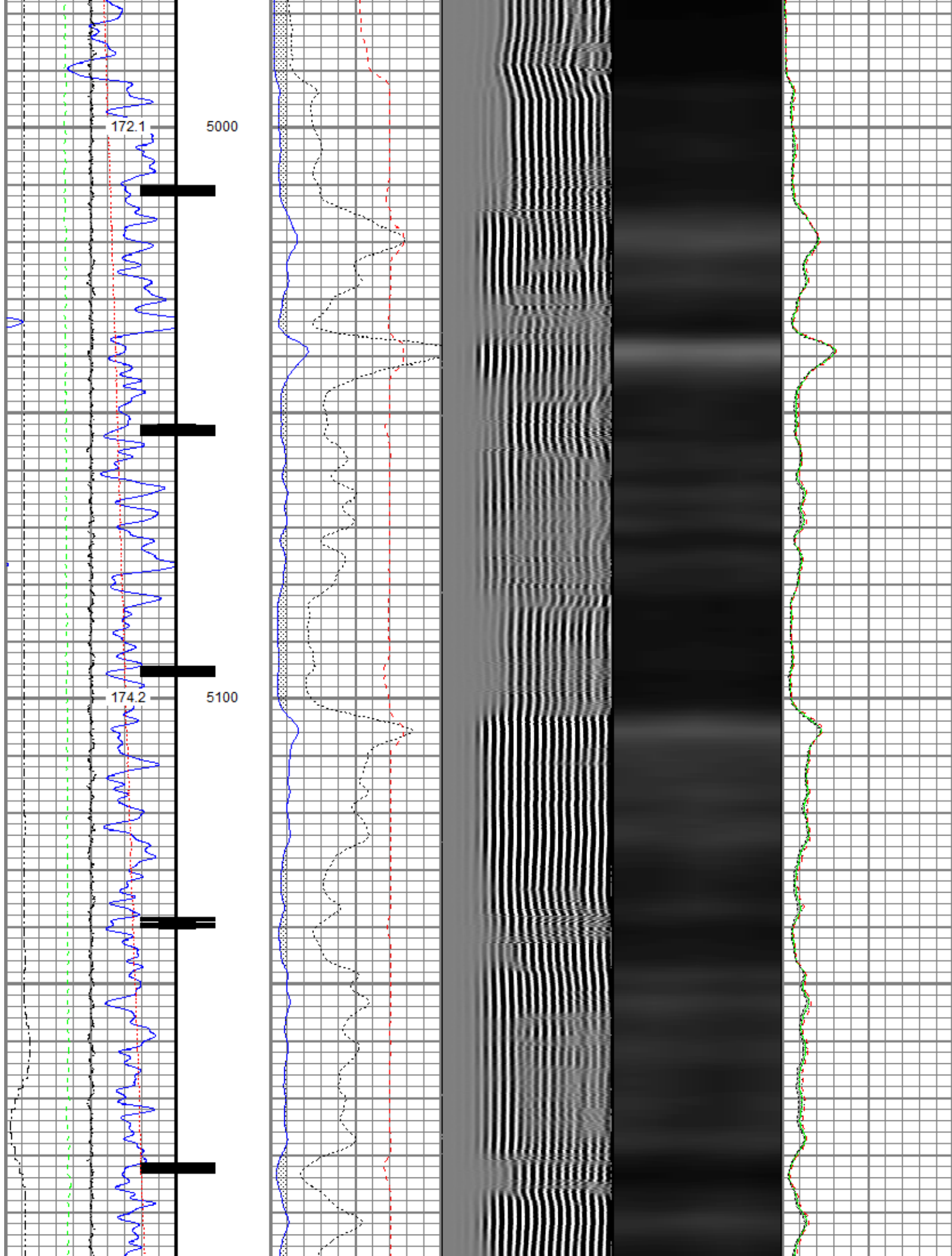


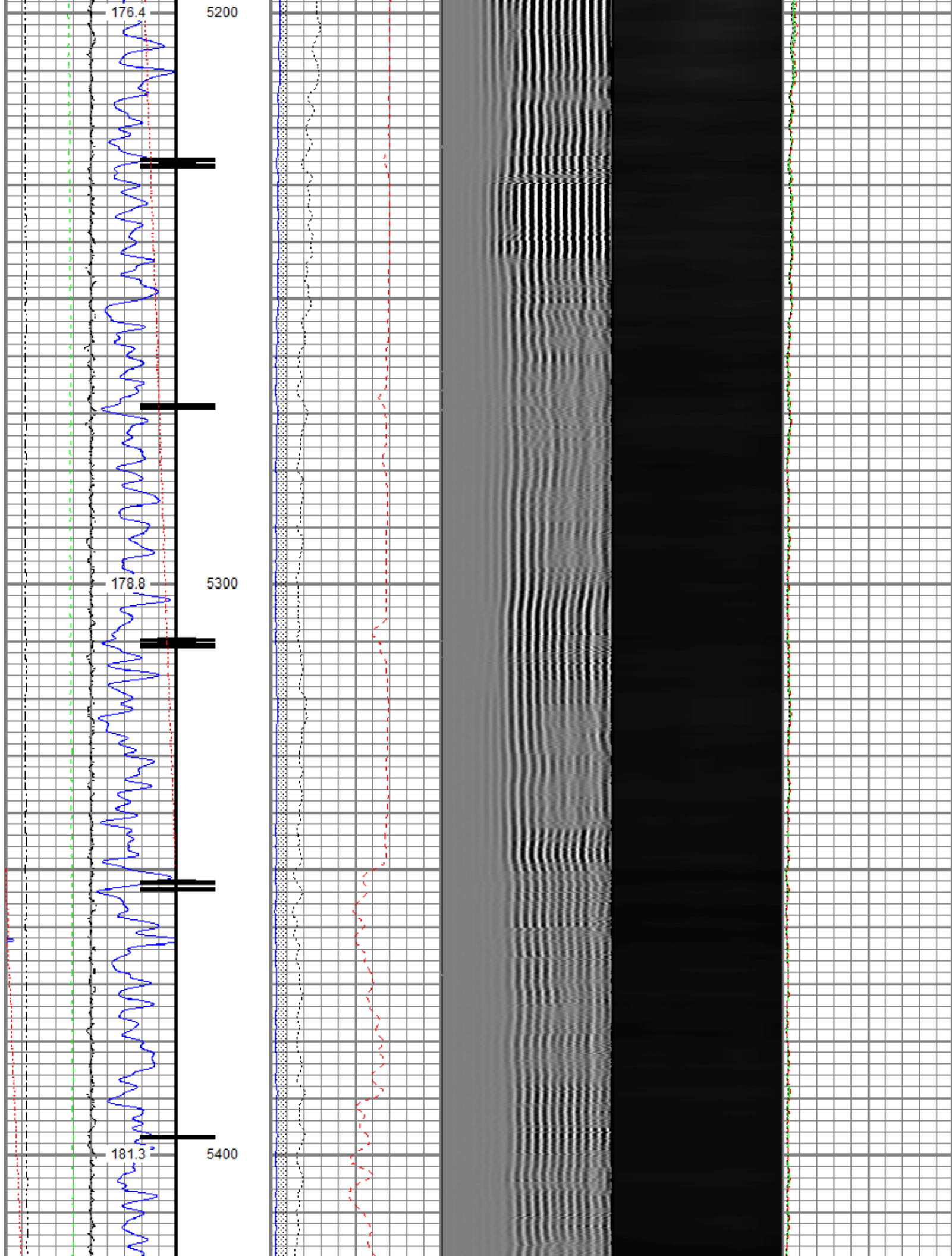


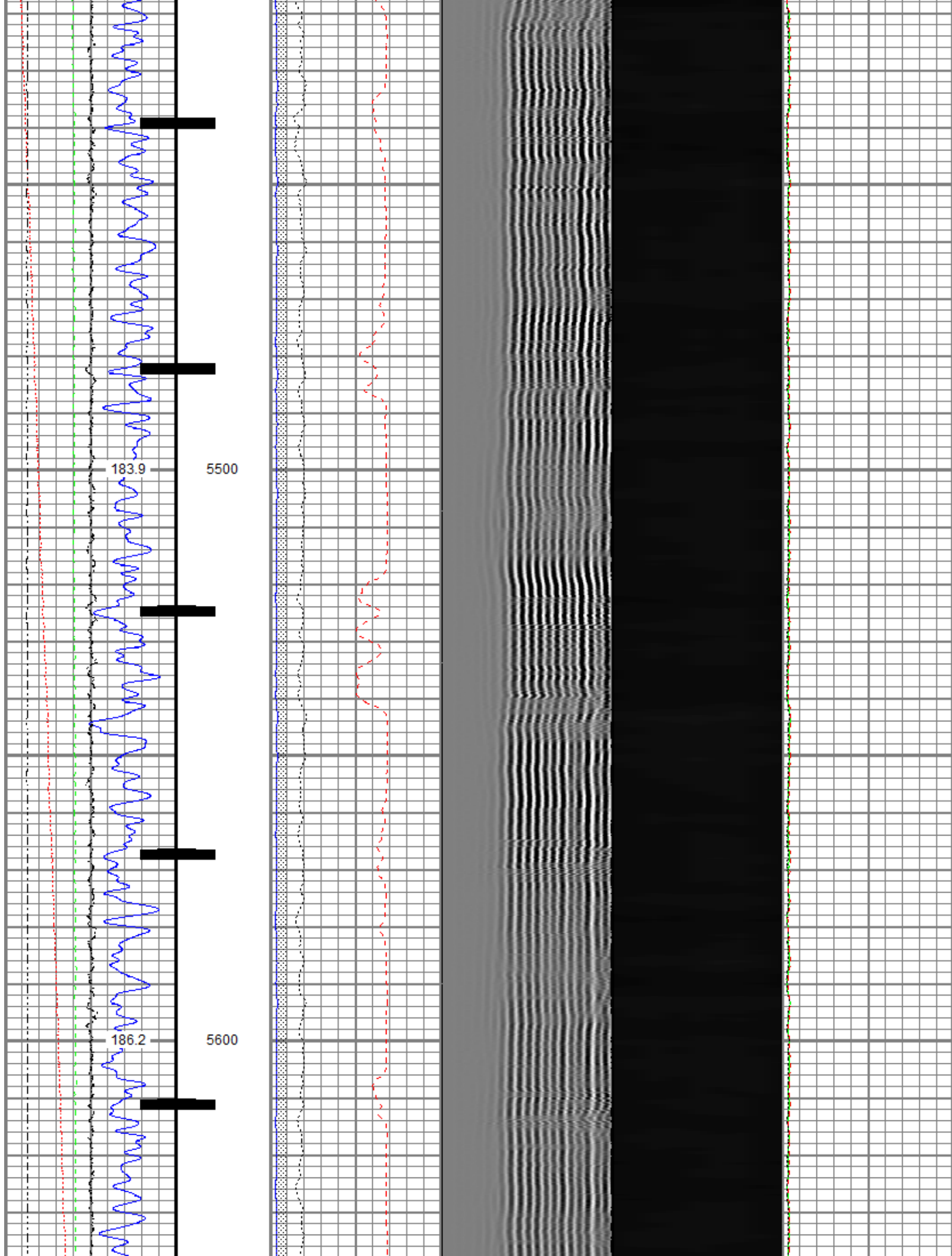


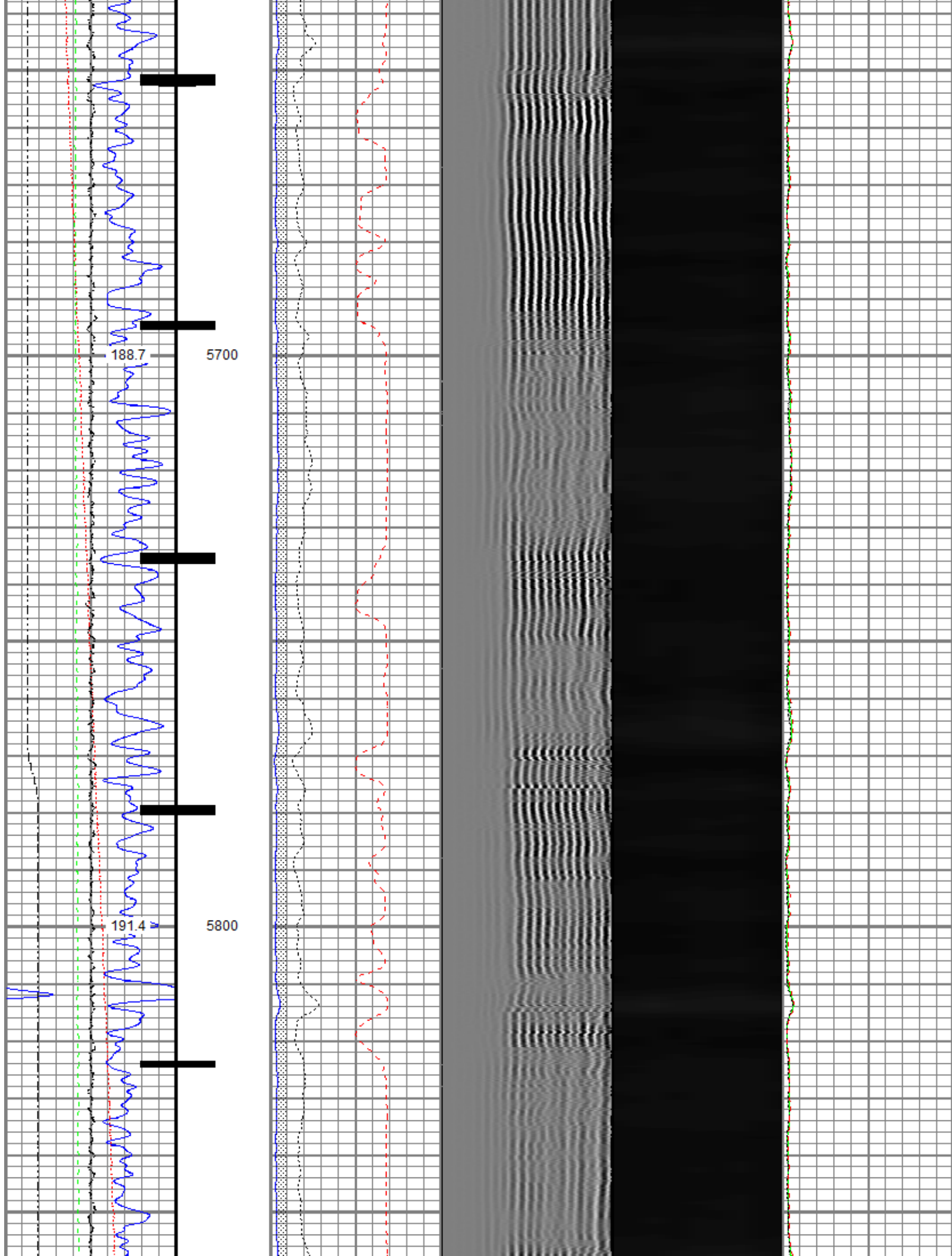


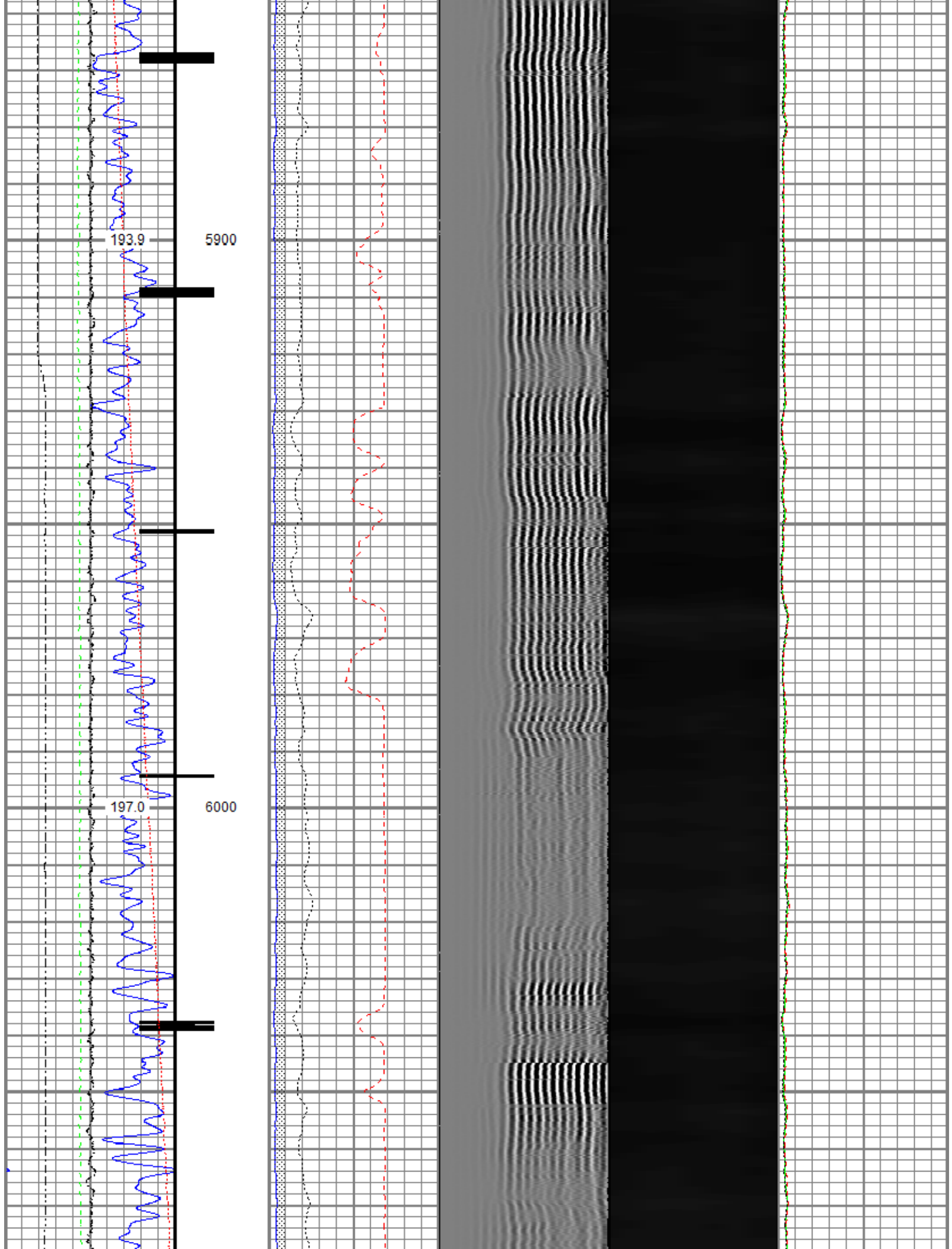


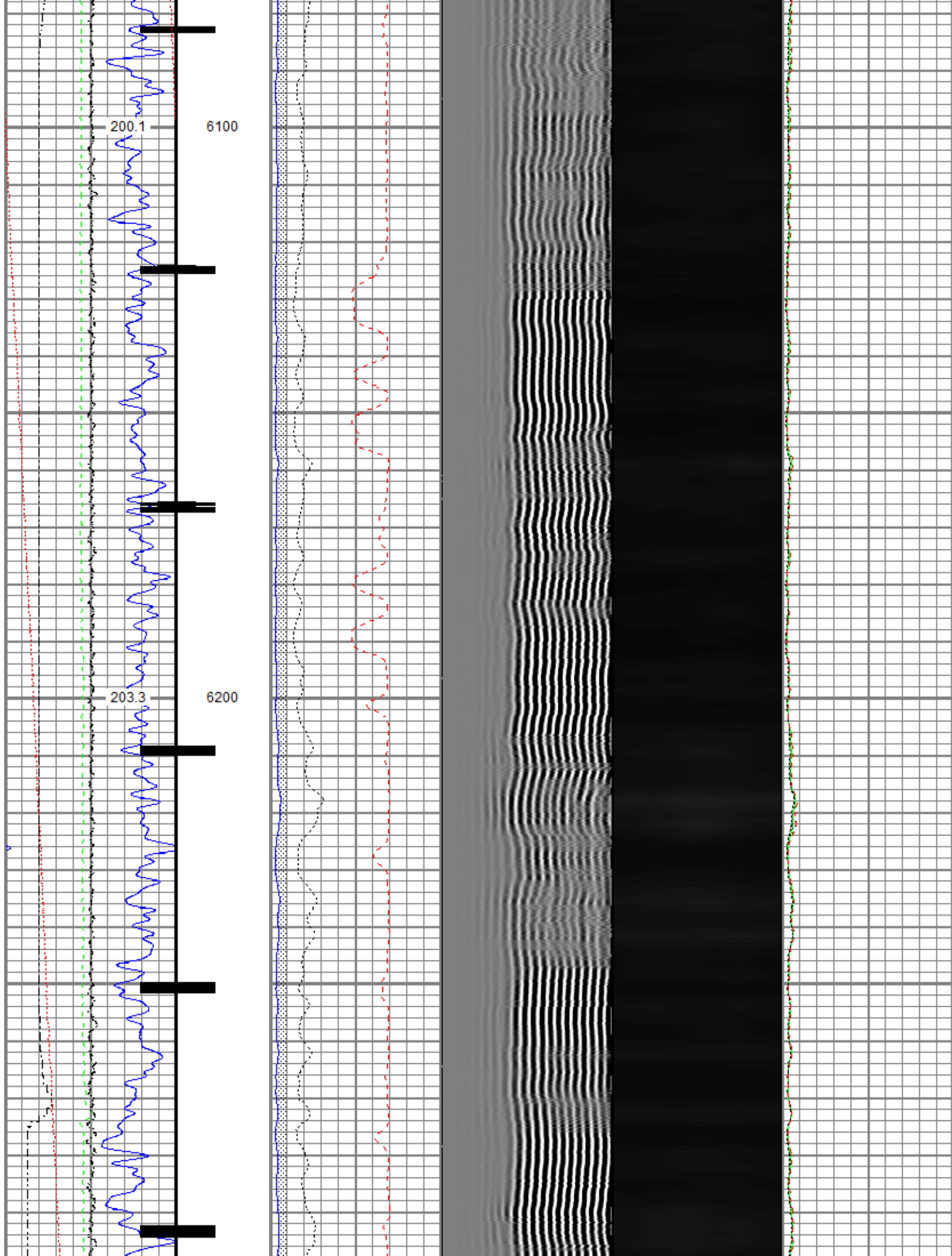


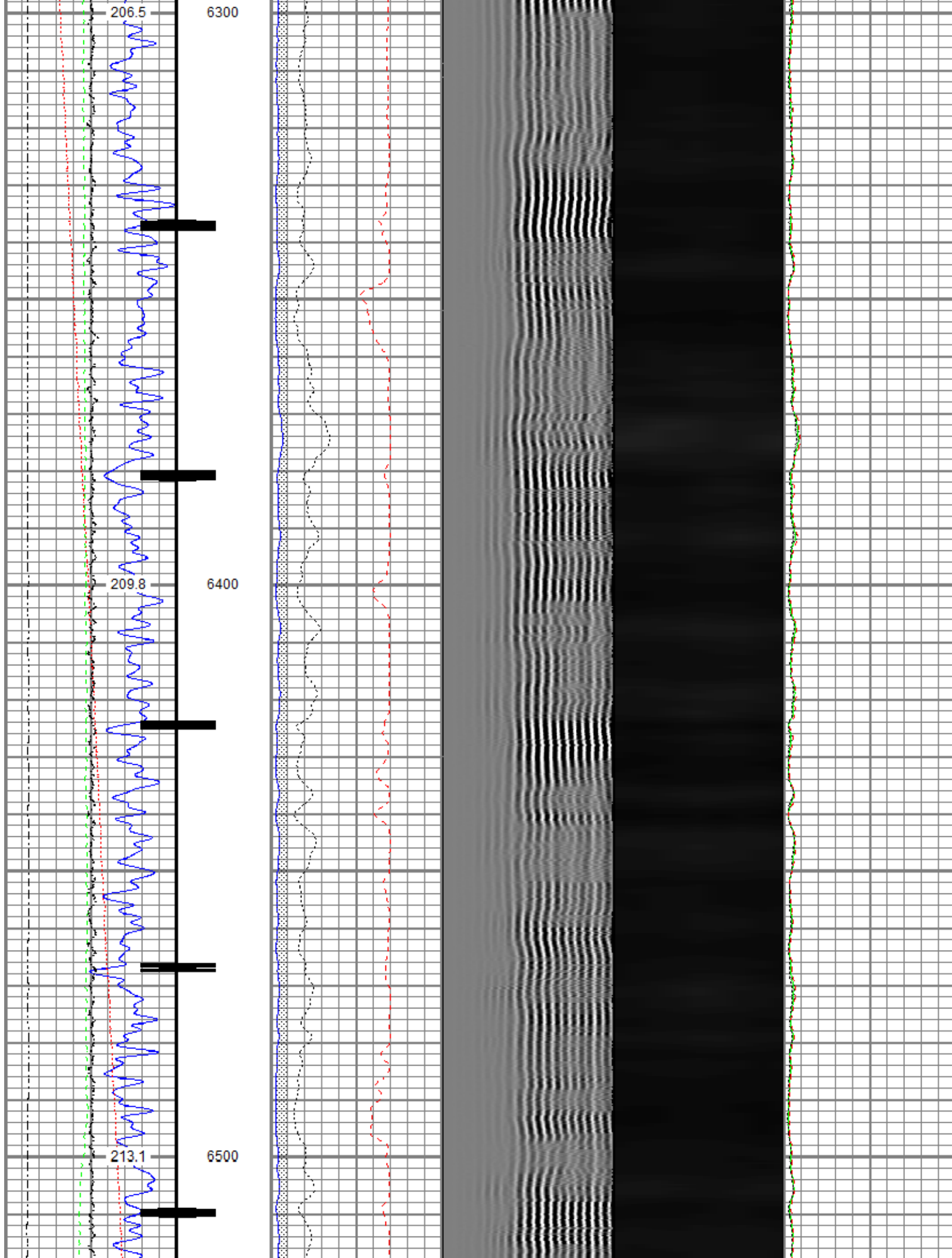


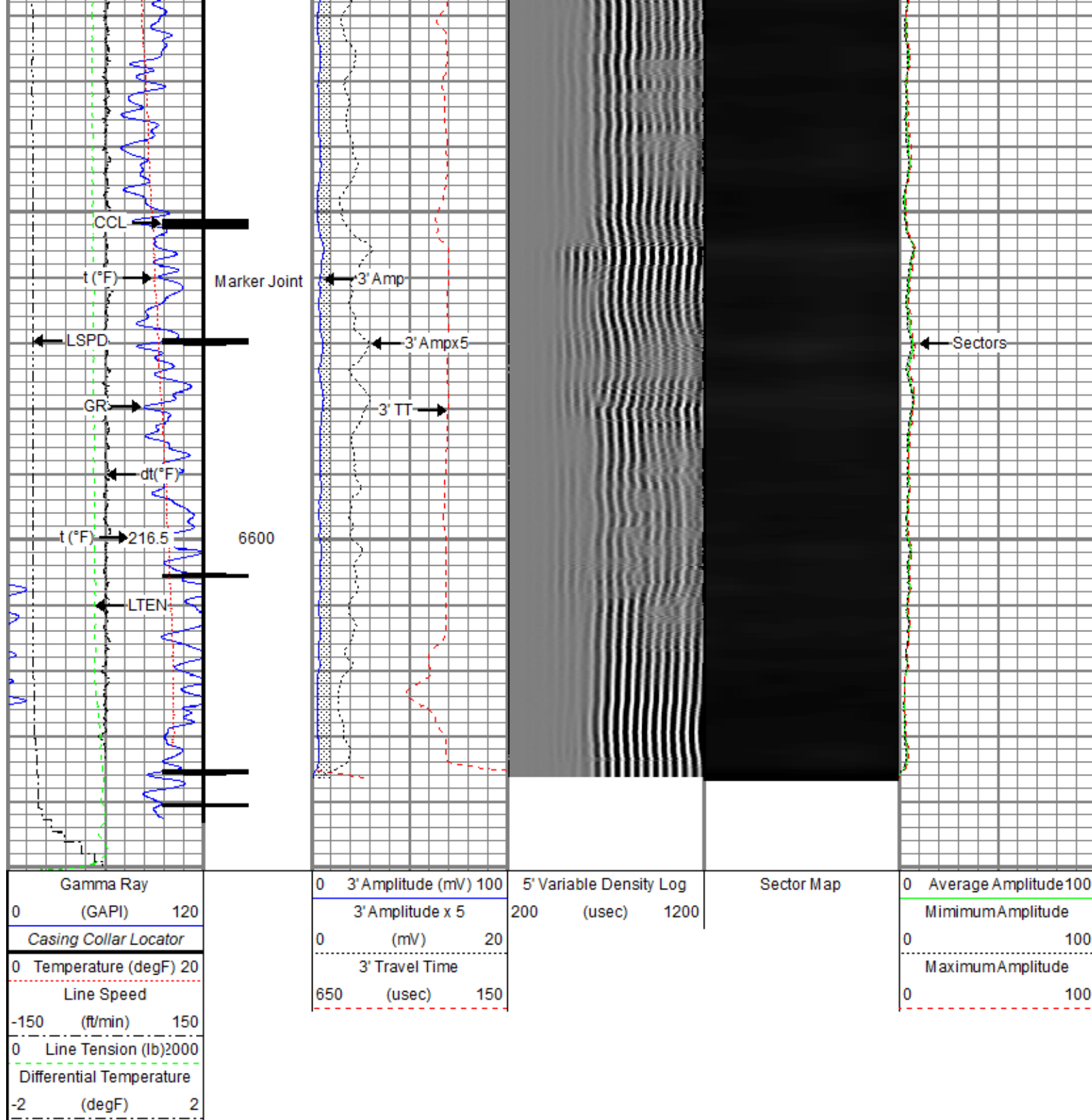








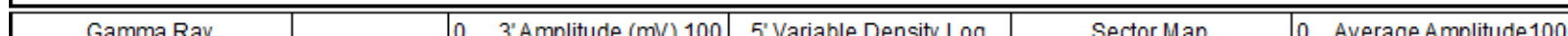




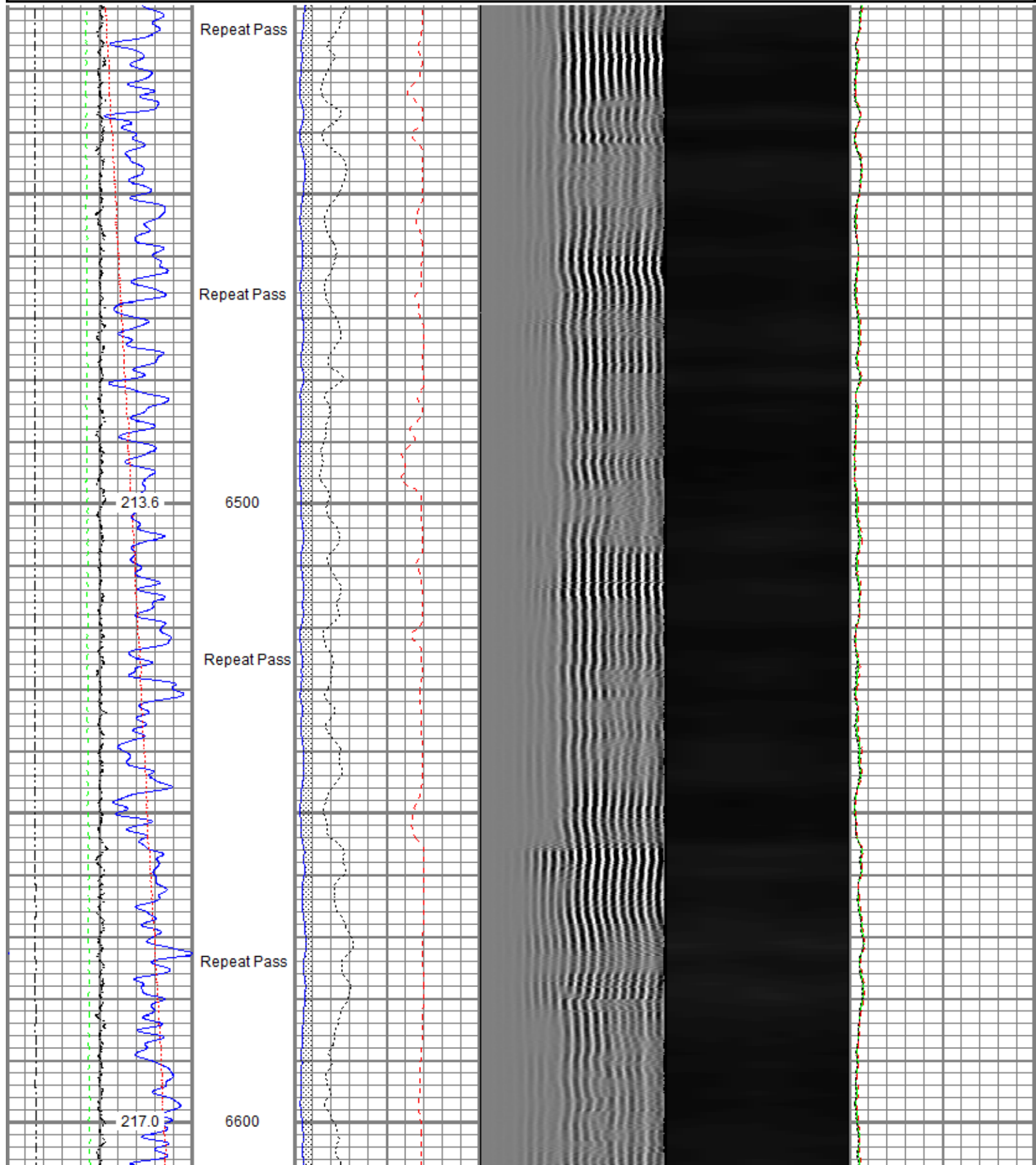
Repeat Pass

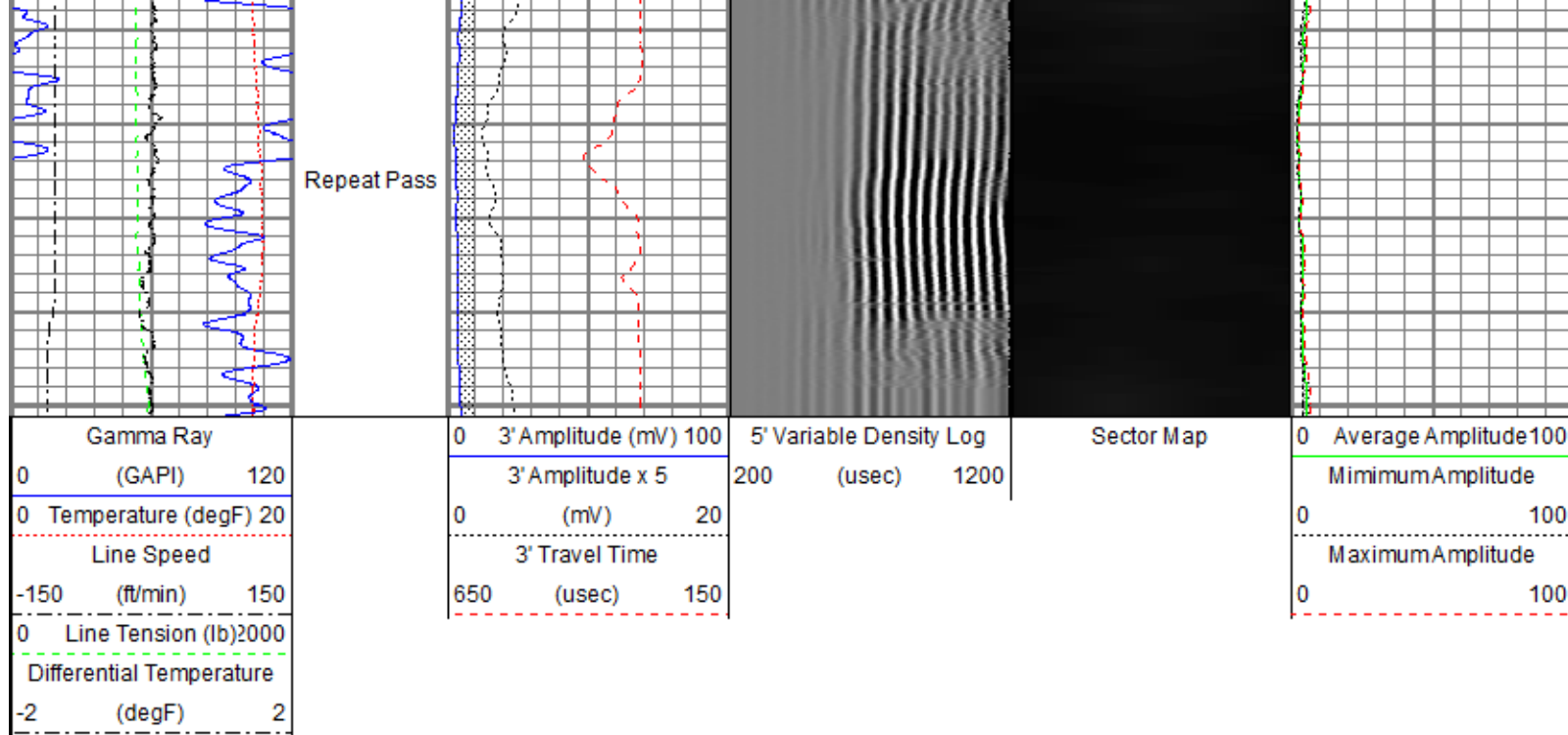
Recorded With 2800 PSI Surface Induced Pressure

Database File	0512346101_anadarko_azul 13-19hz_rbl_07-02-18\processed_0512346101_anadarko_azul 13-19hz_rbl_07-02-18_2800 psi
Dataset Pathname	pass2
Presentation Format	ros_radri
Dataset Creation	Mon Jul 02 10:19:20 2018
Charted by	Depth in Feet scaled 1:240



0	(GAPI)	120	0	3' Amplitude (mV) x 5	200	(usec)	1200	0	Average Amplitude	100
0	Temperature (degF)	20	0	(mV)	20			0	Minimum Amplitude	100
Line Speed			3' Travel Time			Maximum Amplitude				
-150	(ft/min)	150	650	(usec)	150	0		0		100
0	Line Tension (lb)	2000								
Differential Temperature										
-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: PROCESSED_0512346101_Anadarko_Azul 13-19HZ_RBL_07-02-18_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\0512346101_Anadarko_Azul 13-19HZ_RBL_07-02-18\PROCESSED_0512346101_Anadarko_Az					
Dataset Pathname	pass4					
Dataset Creation	Mon Jul 02 10:29:04 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	0.723	0.800	71.921	98.566	0.634
CAL	0.006	0.659				
5'	0.001	0.690	0.800	71.921	103.190	0.686
SUM						
S1	0.002	0.665	0.000	100.000	150.735	-0.227
S2	0.002	0.698	0.000	100.000	143.616	-0.257
S3	0.002	0.725	0.000	100.000	138.212	-0.211
S4	0.001	0.725	0.000	100.000	138.250	-0.205
S5	0.001	0.727	0.000	100.000	137.822	-0.201
S6	0.002	0.715	0.000	100.000	140.073	-0.213

S7	0.001	0.693	0.000	100.000	144.672	-0.200
S8	0.001	0.691	0.000	100.000	144.902	-0.184

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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State Colorado