



Radial Cement Bond  
Gamma Ray  
Casing Collar Log

Company TEP Rocky Mountain LLC  
Well Federal RWF 411-17  
Field Rulison  
County Garfield  
State Colorado

Company TEP Rocky Mountain LLC  
Well Federal RWF 411-17  
Field Rulison  
County Garfield  
State Colorado

Location: API #: 05-045-24030  
SEC 17 TWP 6S RGE 94W  
Permanent Datum Ground Level Elevation 6175'  
Log Measured From Kelly Bushing 24 FT  
Drilling Measured From Kelly Bushing  
Other Services  
Elevation  
K.B. 6199'  
D.F. ---  
G.L. 6175'

Date	23-JUN-2019	One		
Run Number		8944 FT		
Depth Driller		8874 FT		
Depth Logger		8860 FT		
Bottom Logged Interval		Surface		
Top Log Interval		8.750"		
Open Hole Size		Fresh Water		
Type Fluid		8.34 lb/gal		
Density / Viscosity		241°F		
Max. Recorded Temp.		See Log		
Estimated Cement Top		ROA		
Time Well Ready		18.25		
Time Logger on Bottom		HD-0331		
Equipment Number		Grand Junction, CO		
Location		A. Ellsworth		
Recorded By		Dustin Welsh		
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	4 1/2	11.6	P-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 Kelly Bushing at 24 FT  
Marker Joint logged from 4890-4913 FT  
Log ran with 0 PSI Surface Induced Pressure

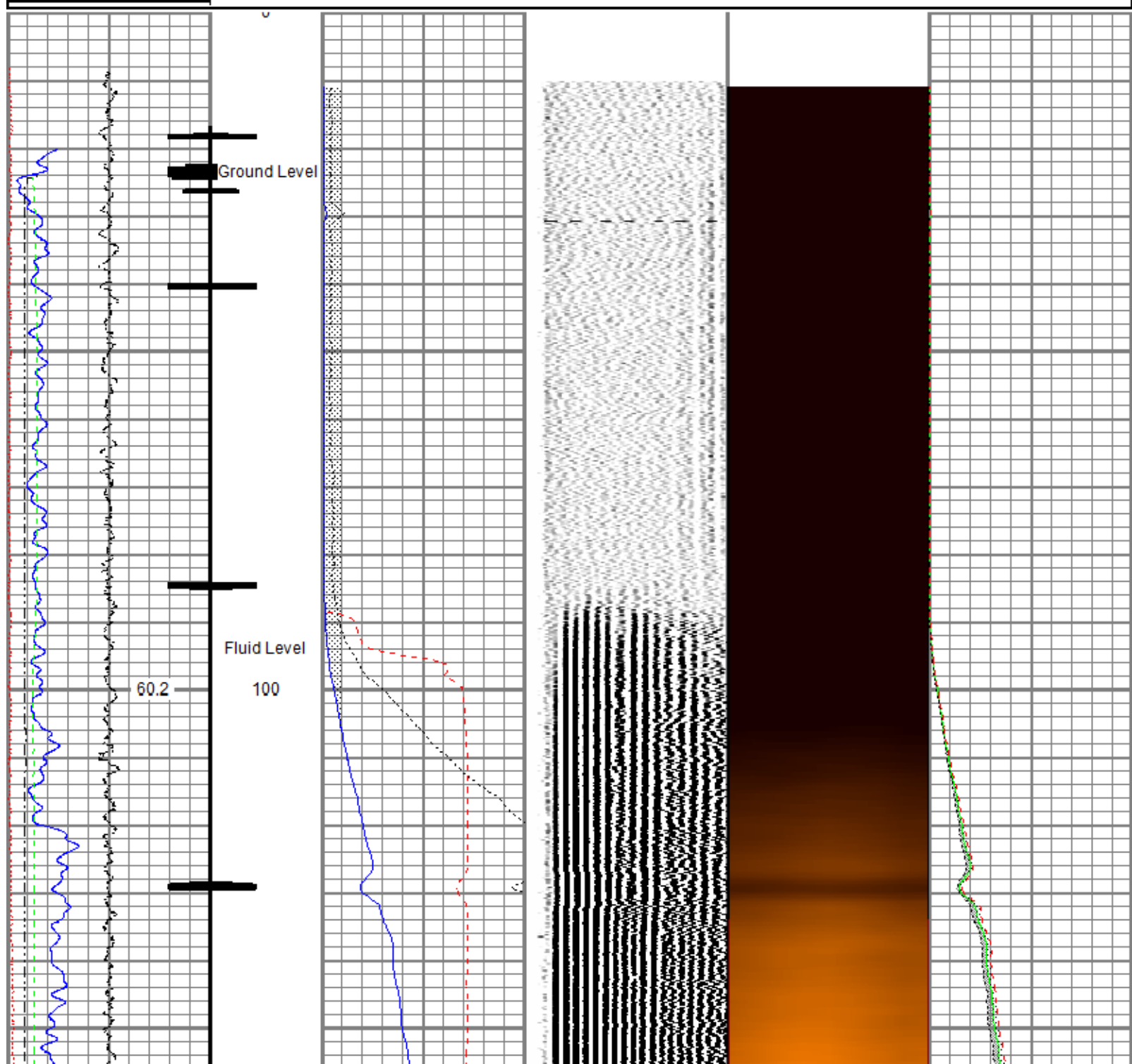
Thank you for choosing Reliance Oilfield Services, LLC!!

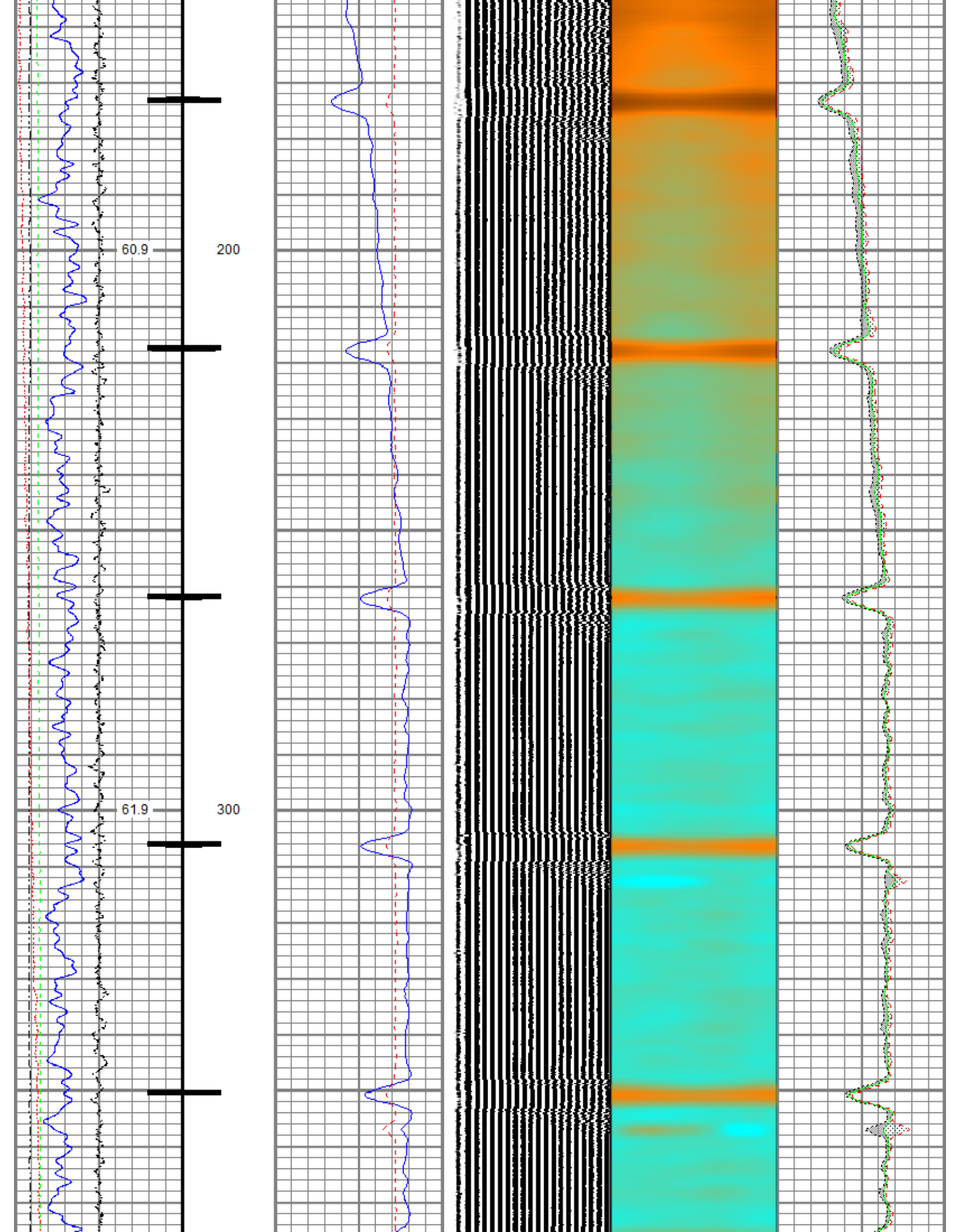
Main Pass

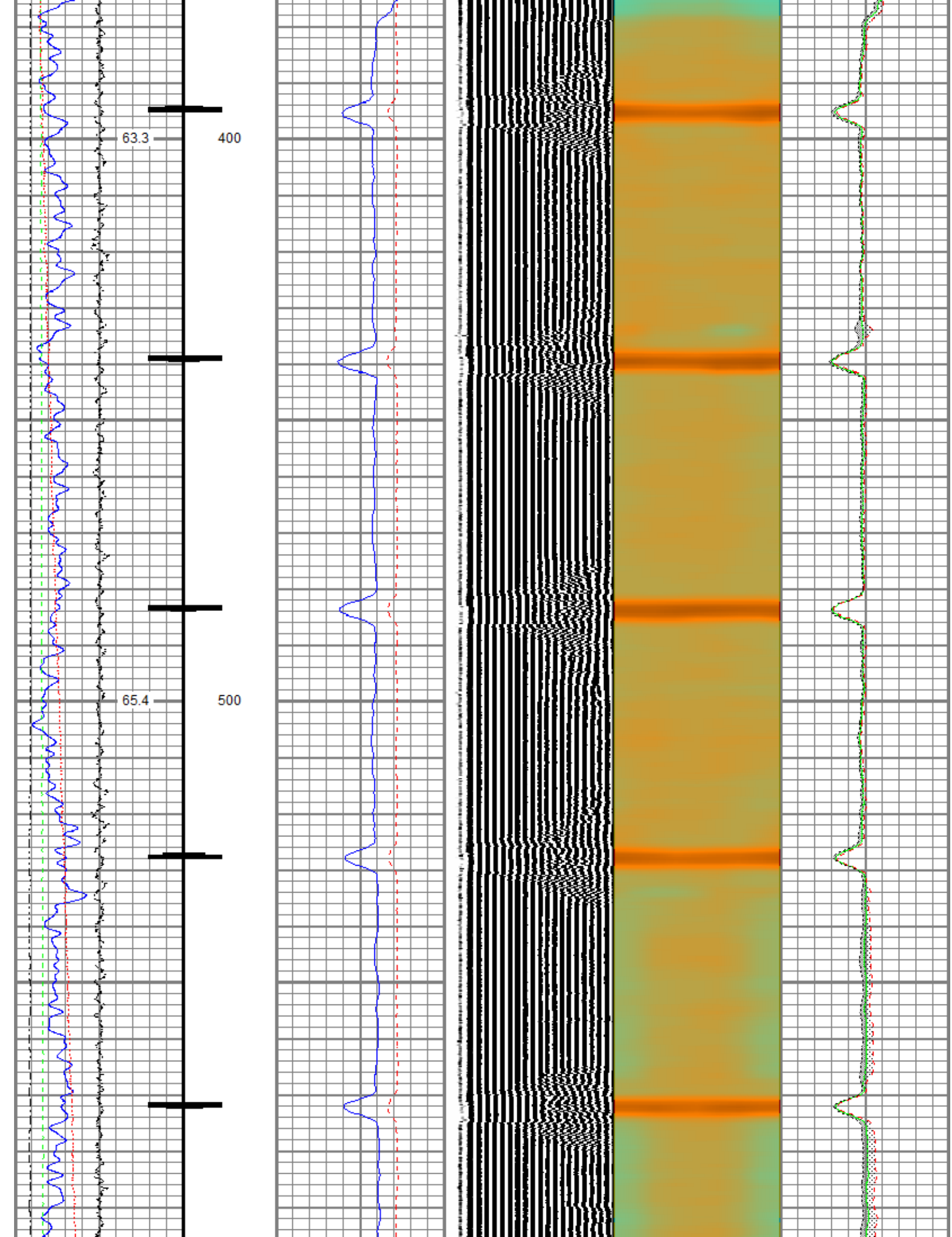


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 Dataset Pathname main.1  
 Presentation Format ros\_rbt004\_tep  
 Dataset Creation Mon Jun 24 11:11:54 2019  
 Charted by Depth in Feet scaled 1:240

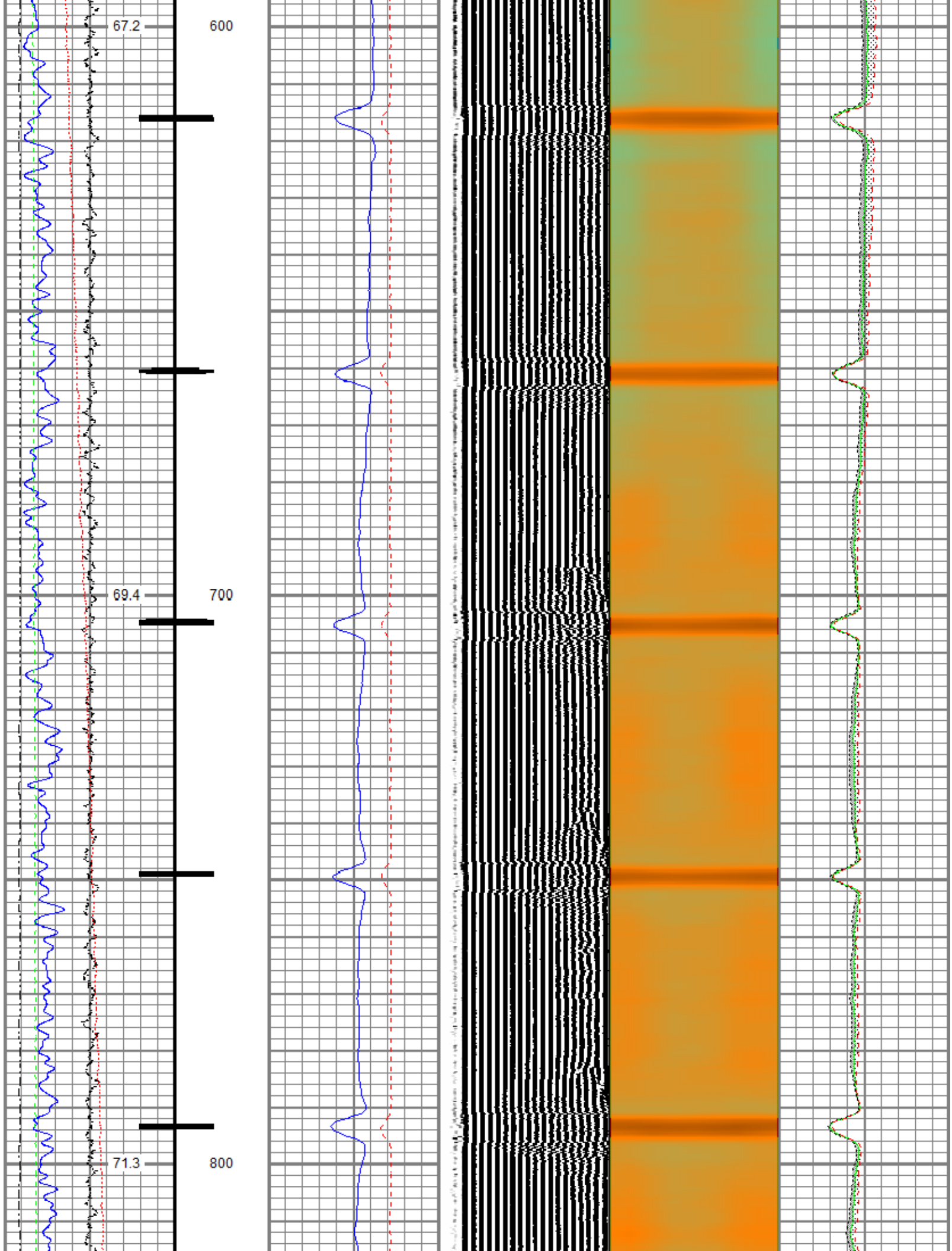
Gamma Ray	0	3' Amplitude (mV) 100	5' Variable Density Log	Sector Map	0	Average Amplitude 150
(GAPI) 200		3' Amplitude x 5	200 (usec) 1200			Minimum Amplitude
Line Speed	0	(mV) 20			0	150
(ft/min) 150		3' Travel Time				Maximum Amplitude
Line Tension (lb) 2000	0	(usec) 200			0	150
Differential Temperature						
(degF) 2	-2					
Temperature (degF) 20	0					
CCL 0	10					

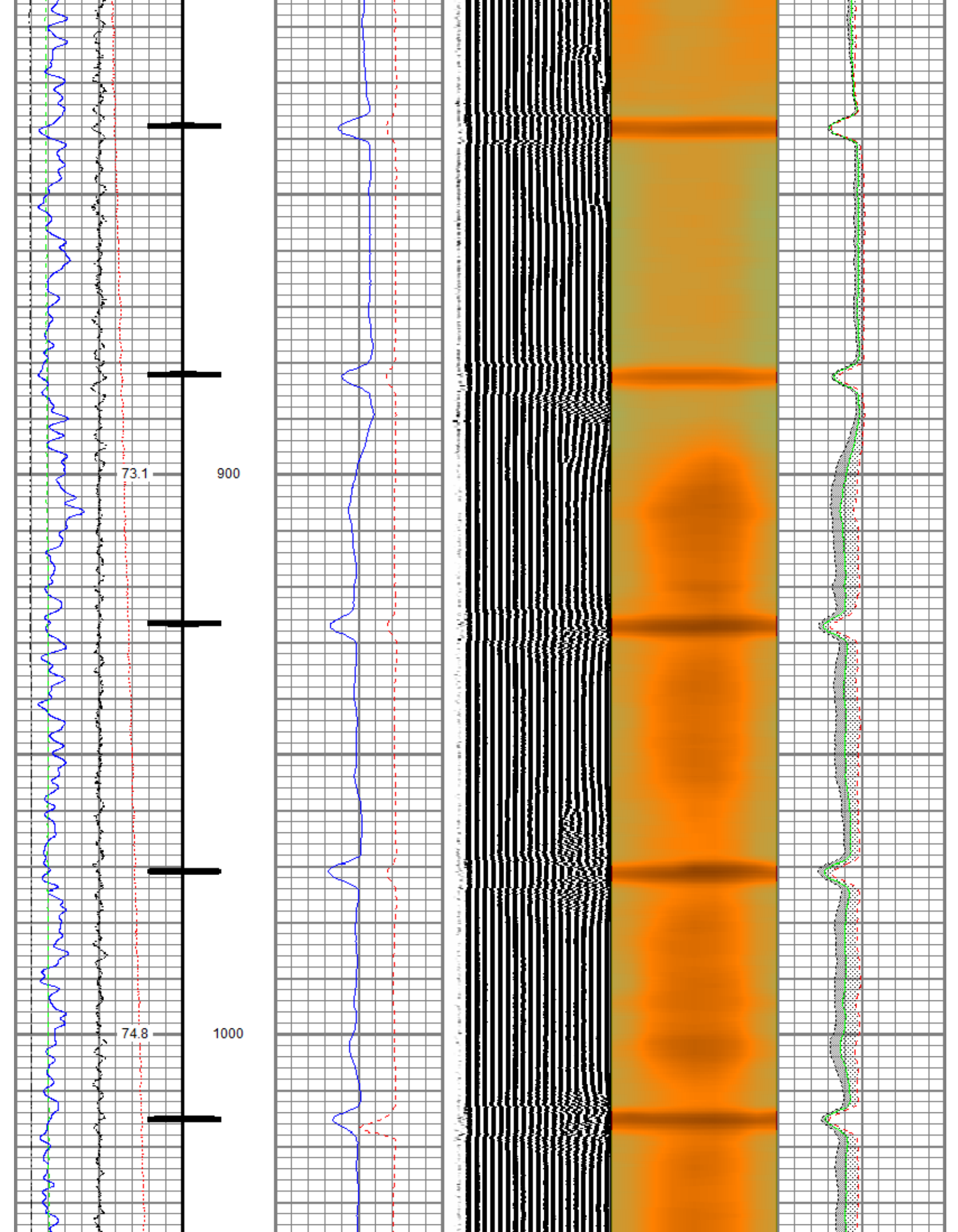


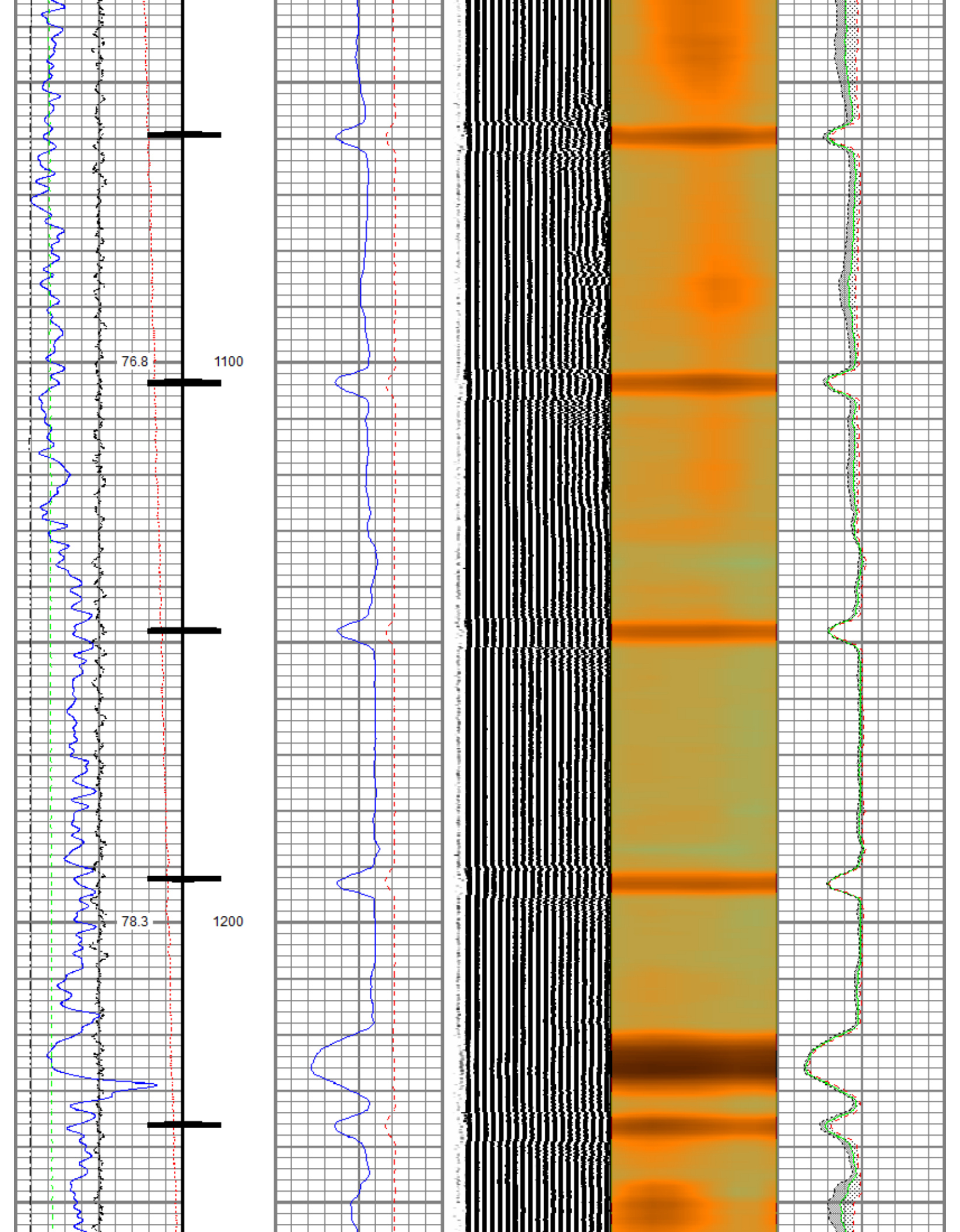


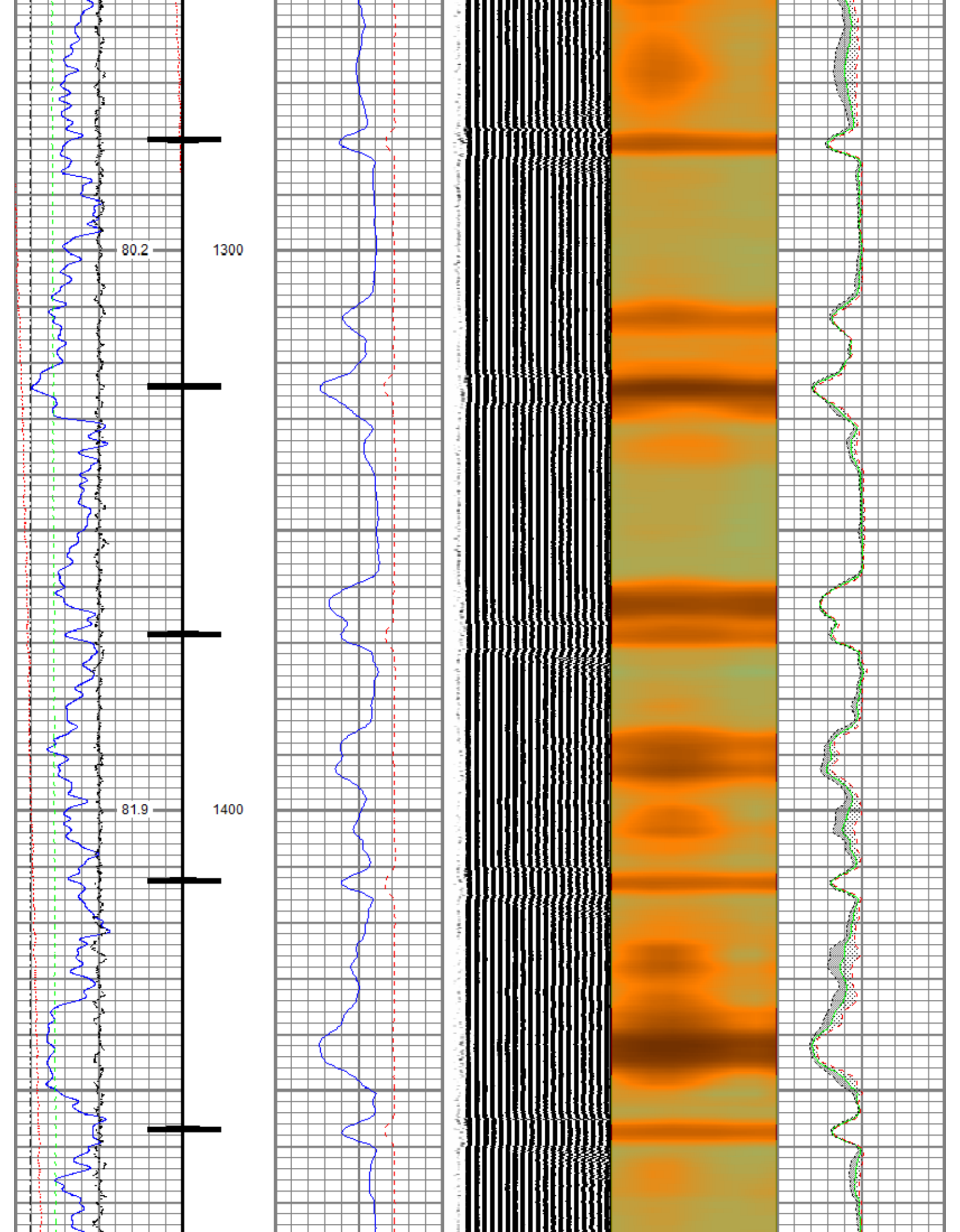




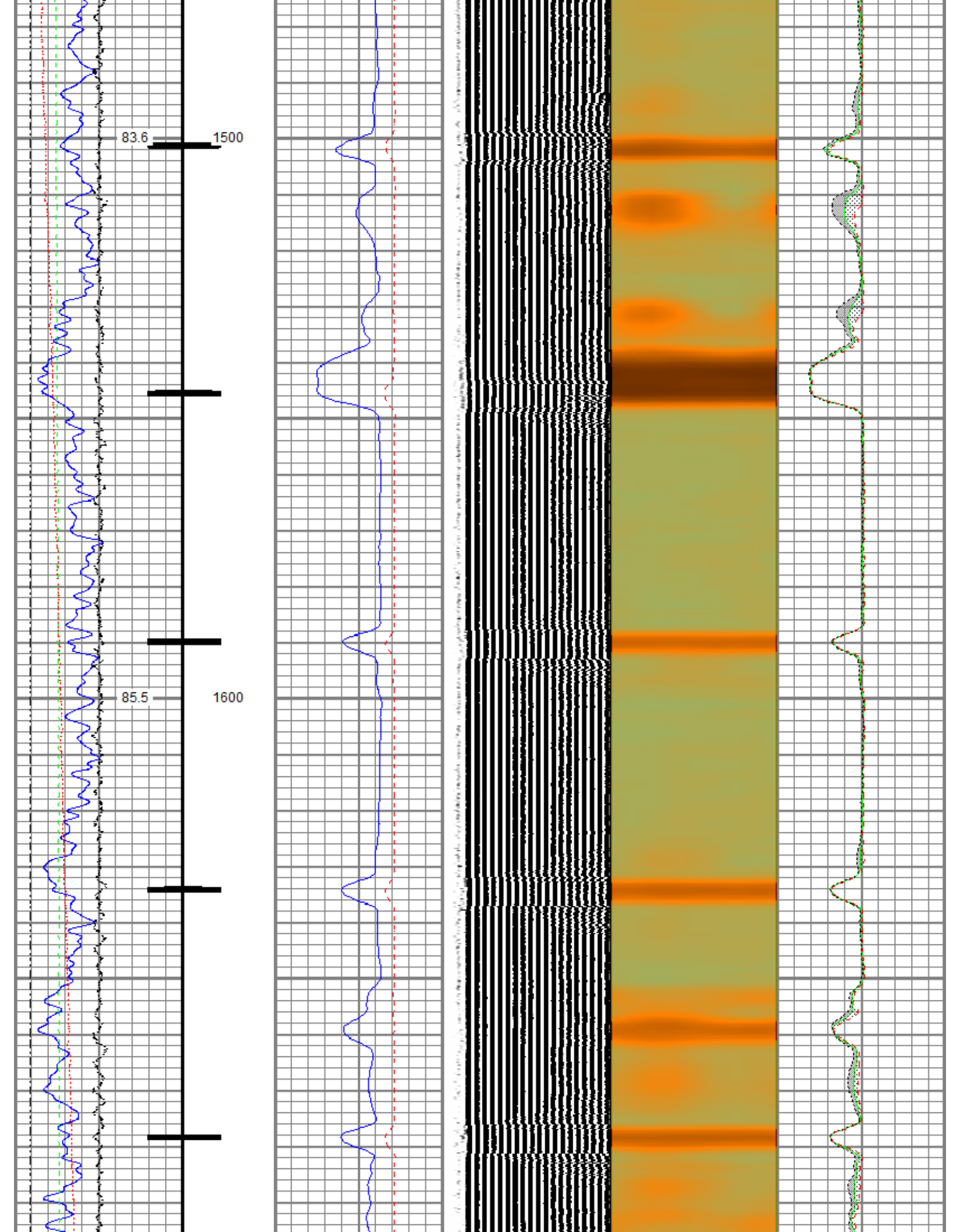


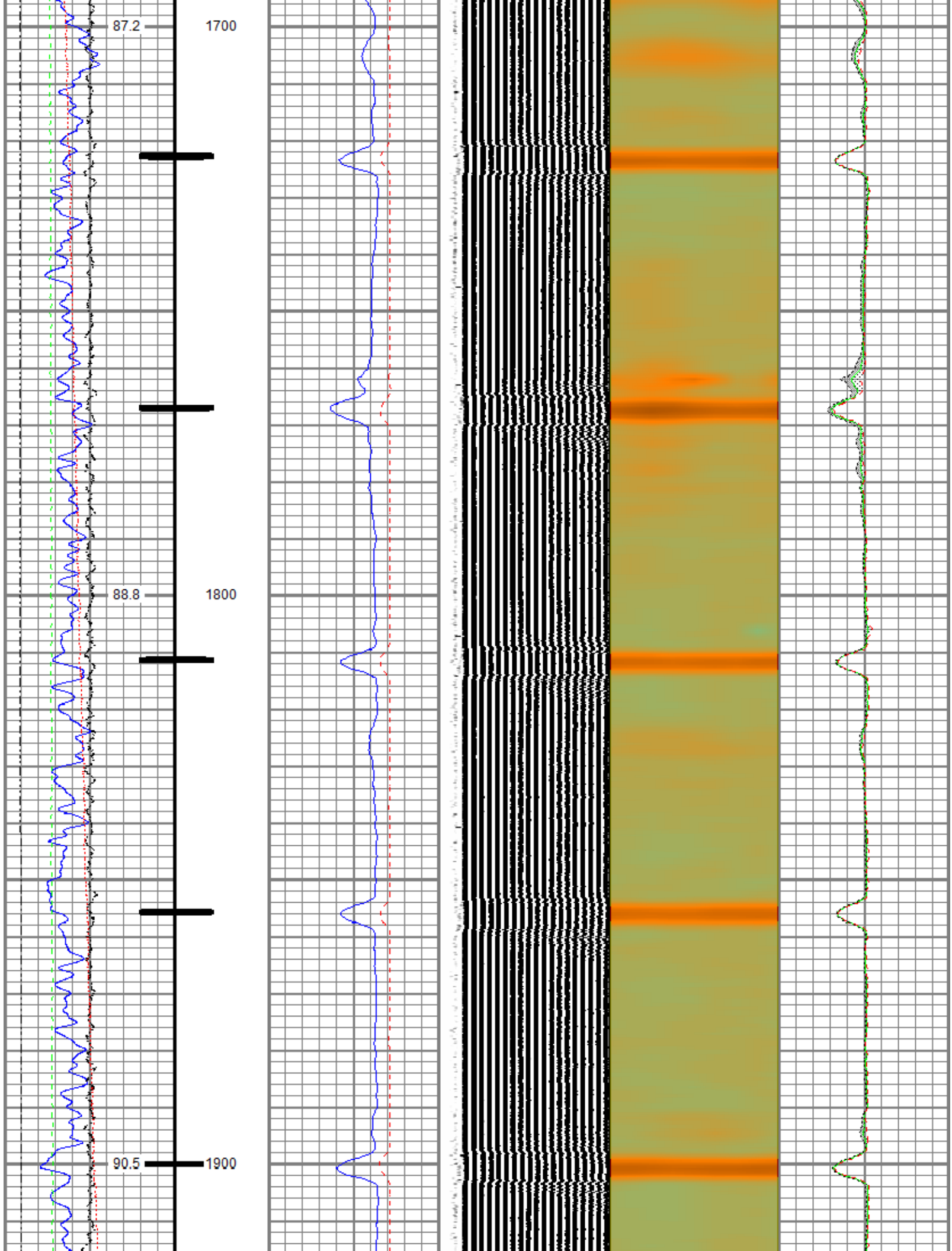


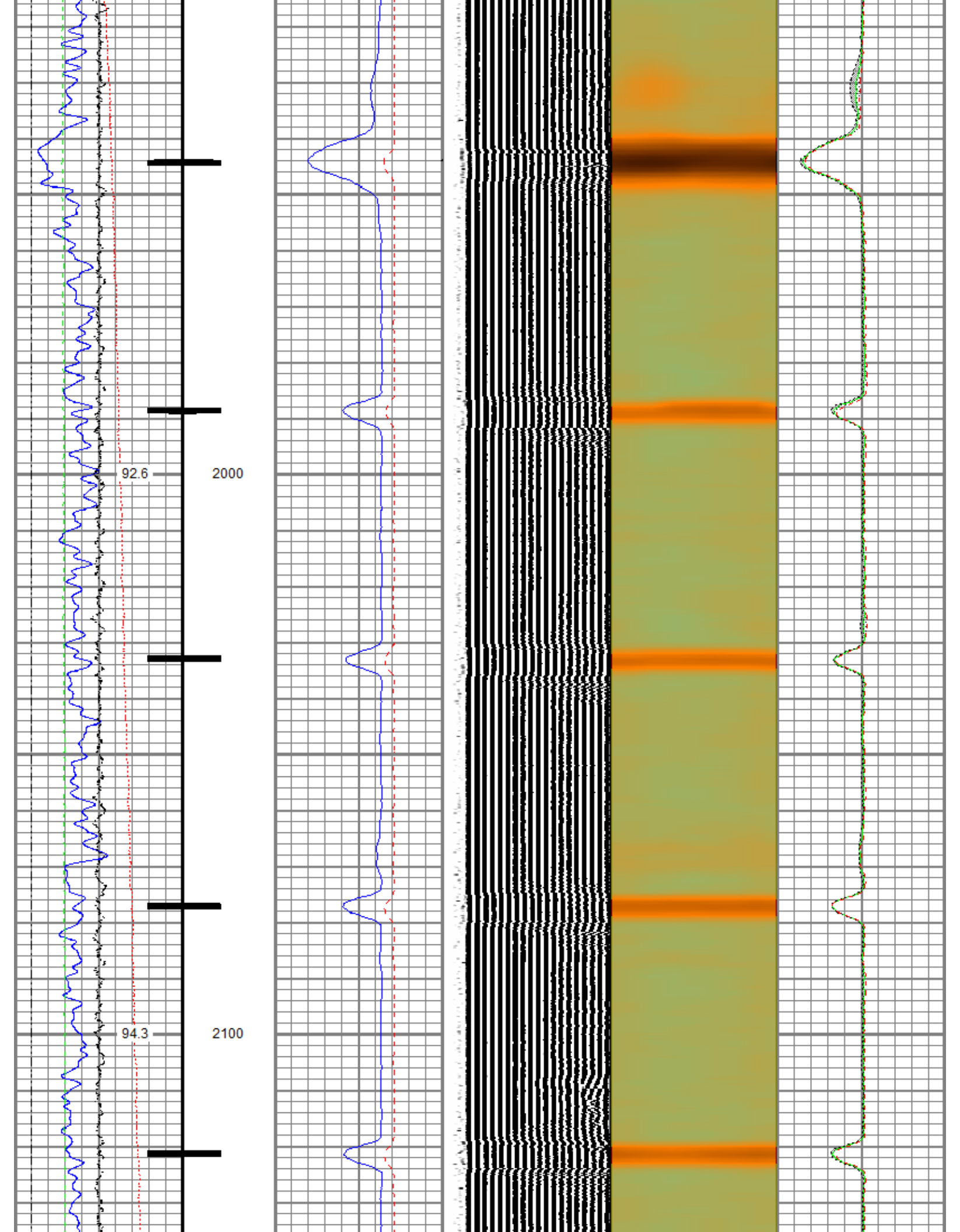


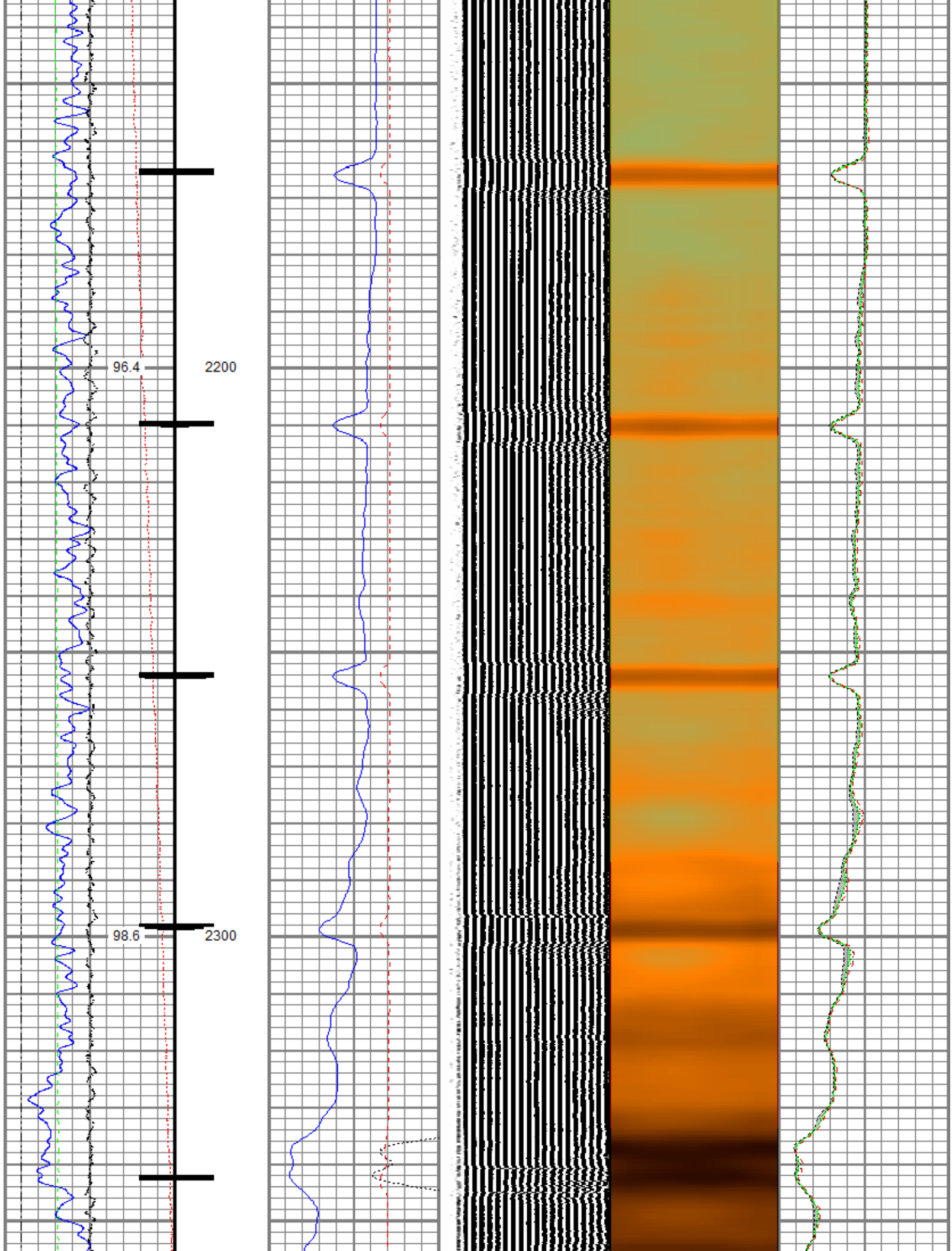




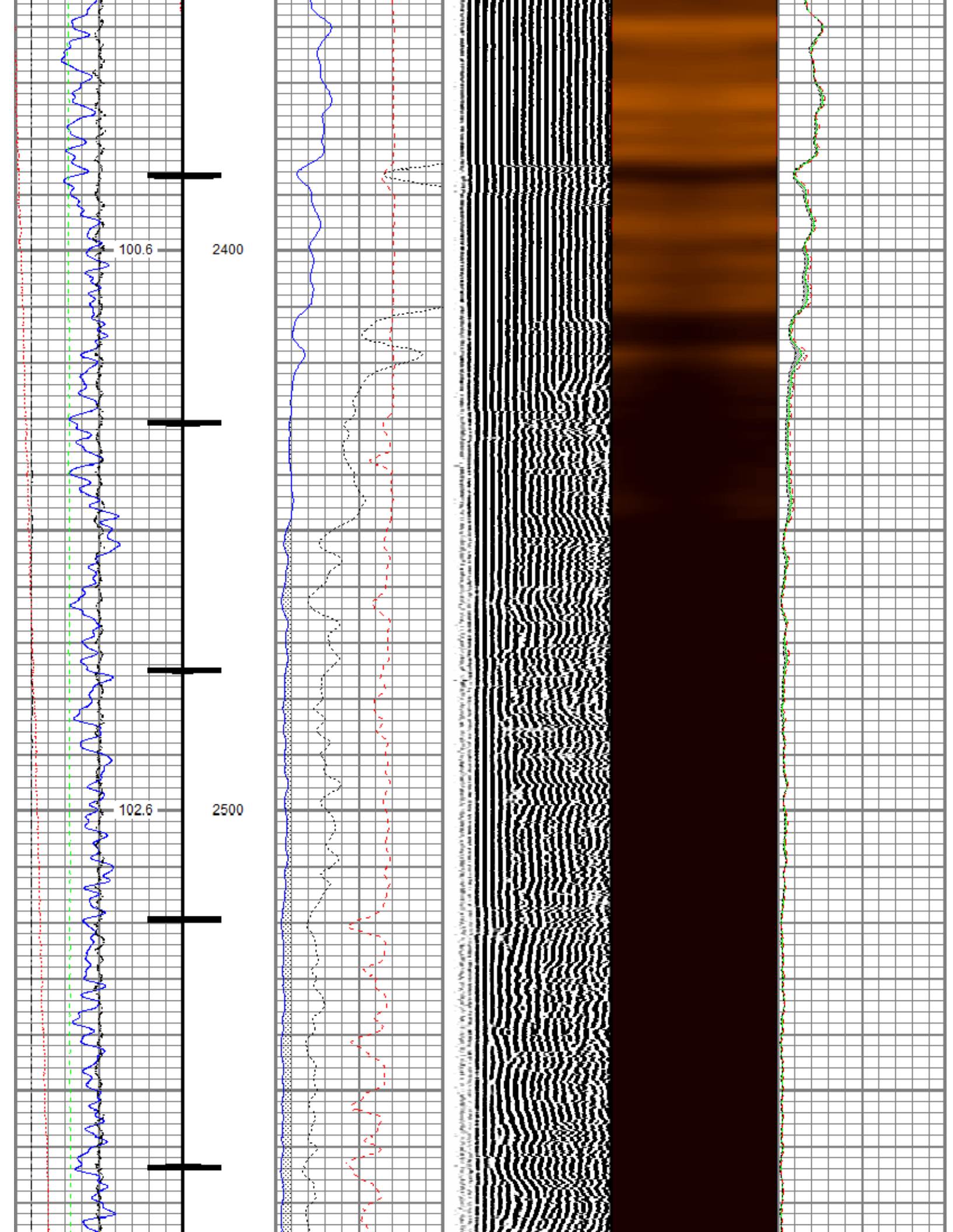


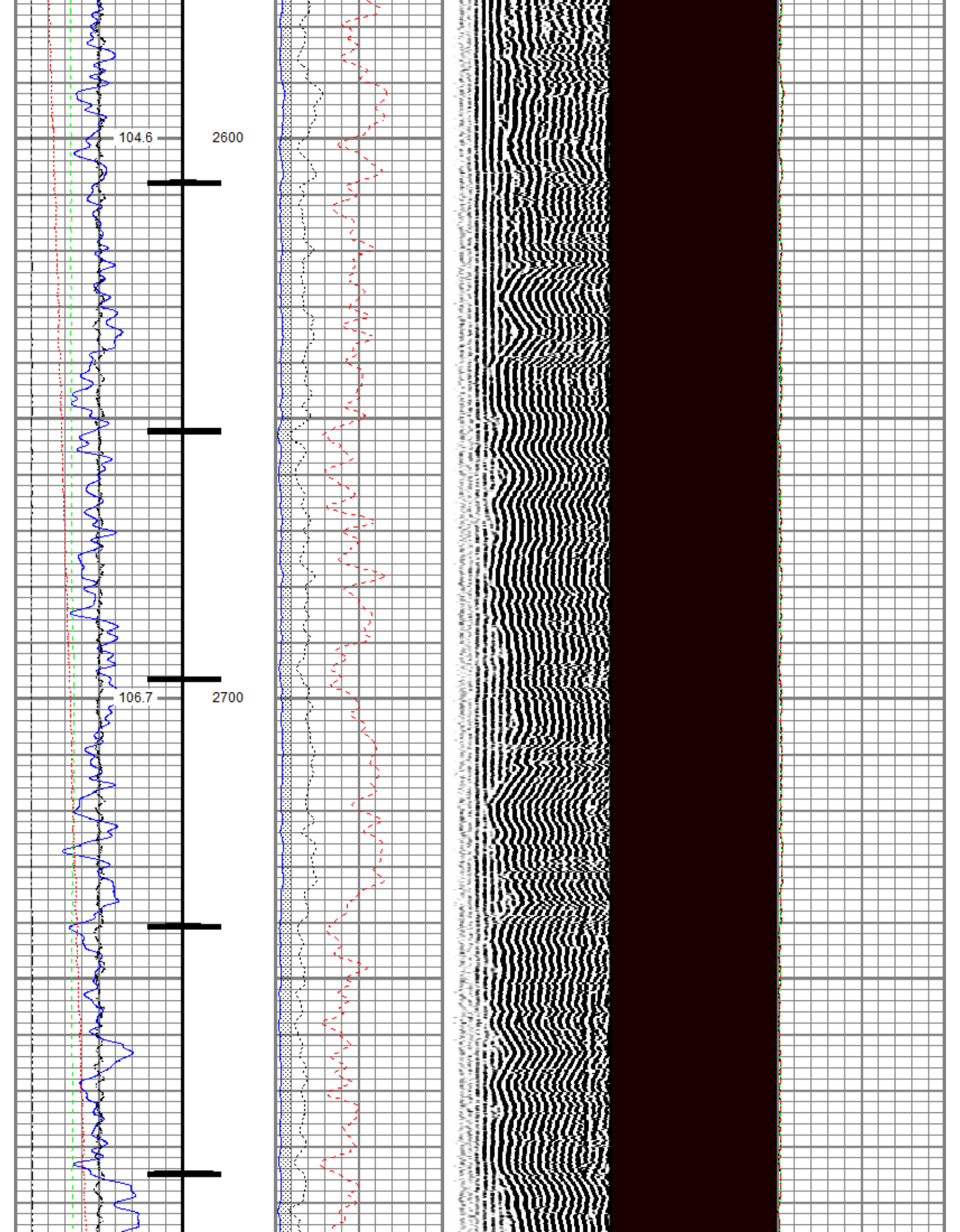


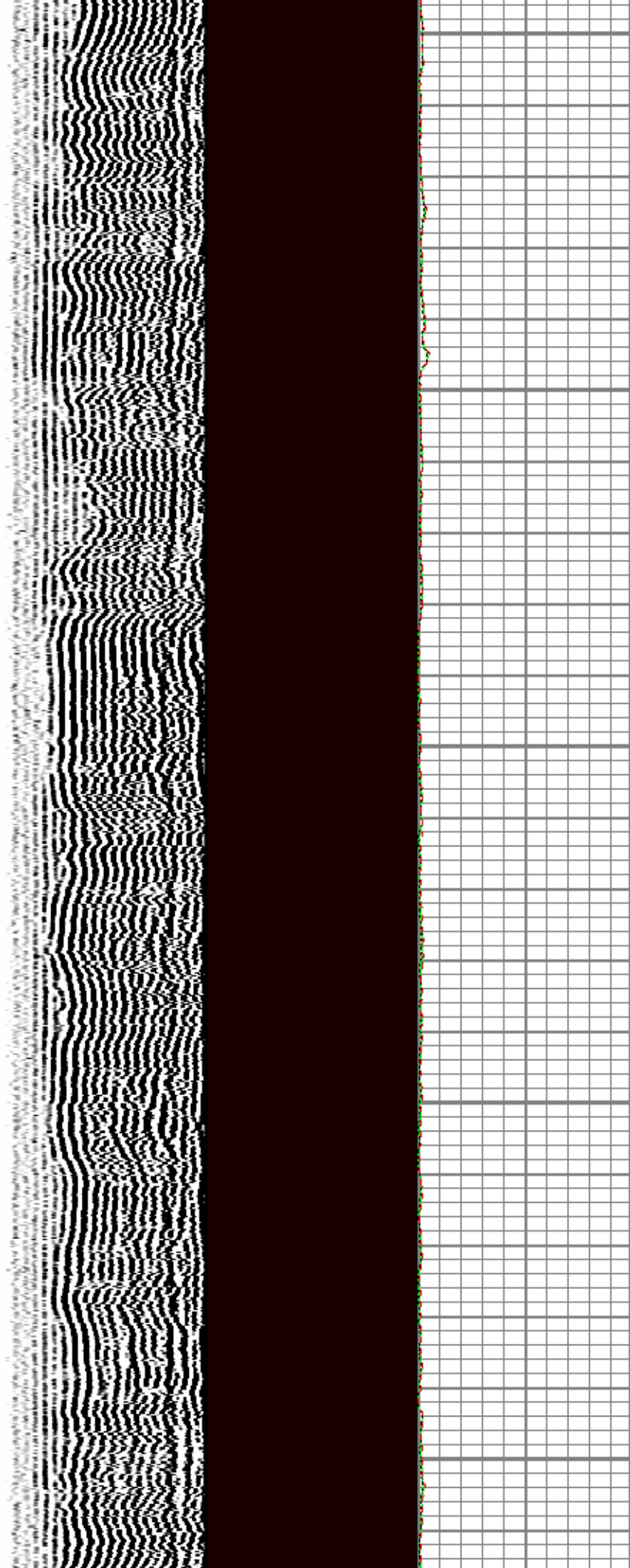
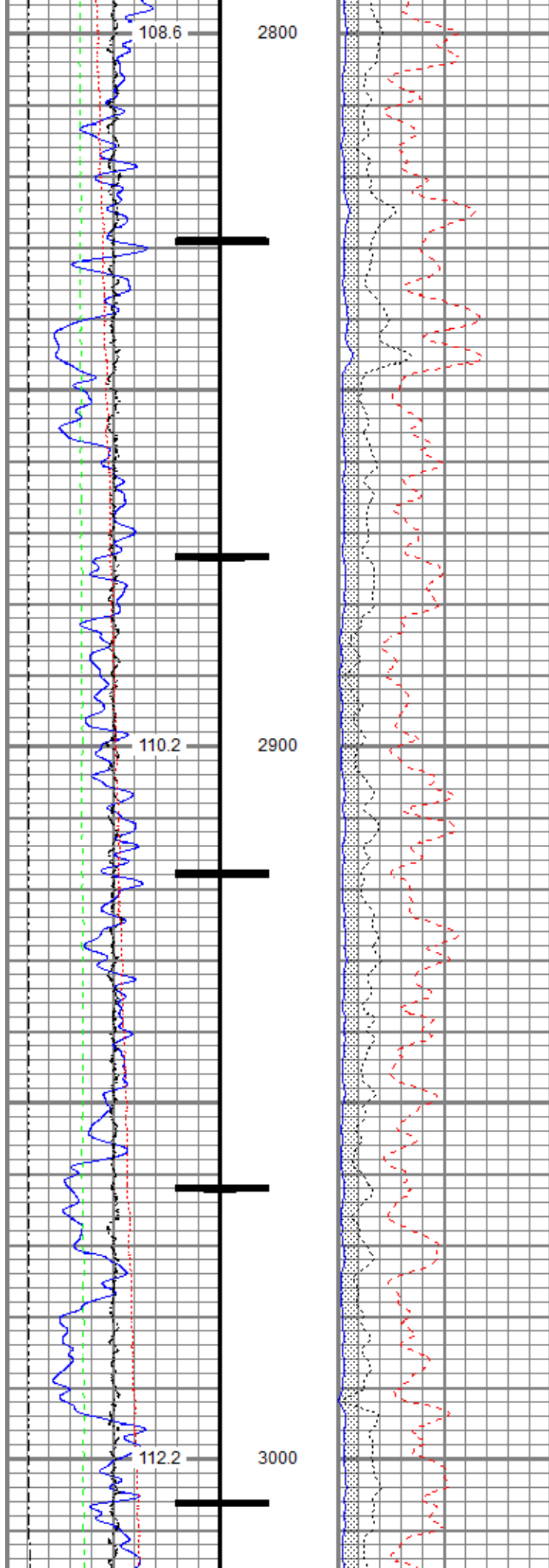




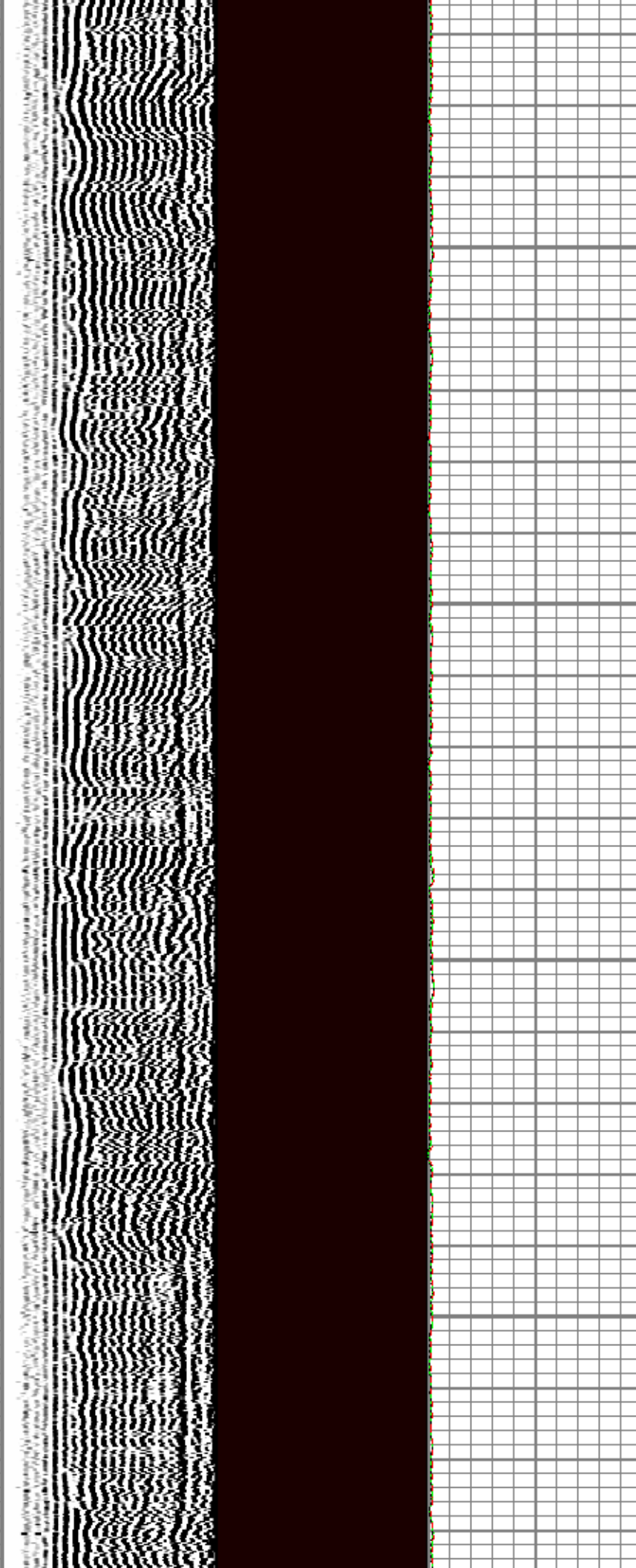
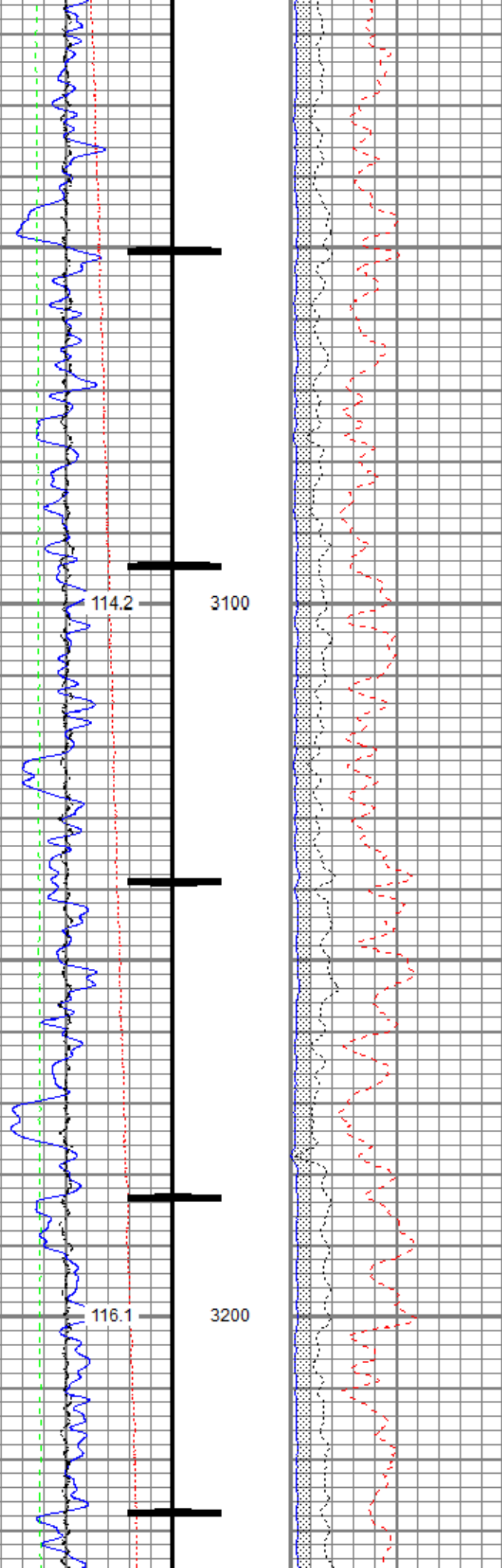




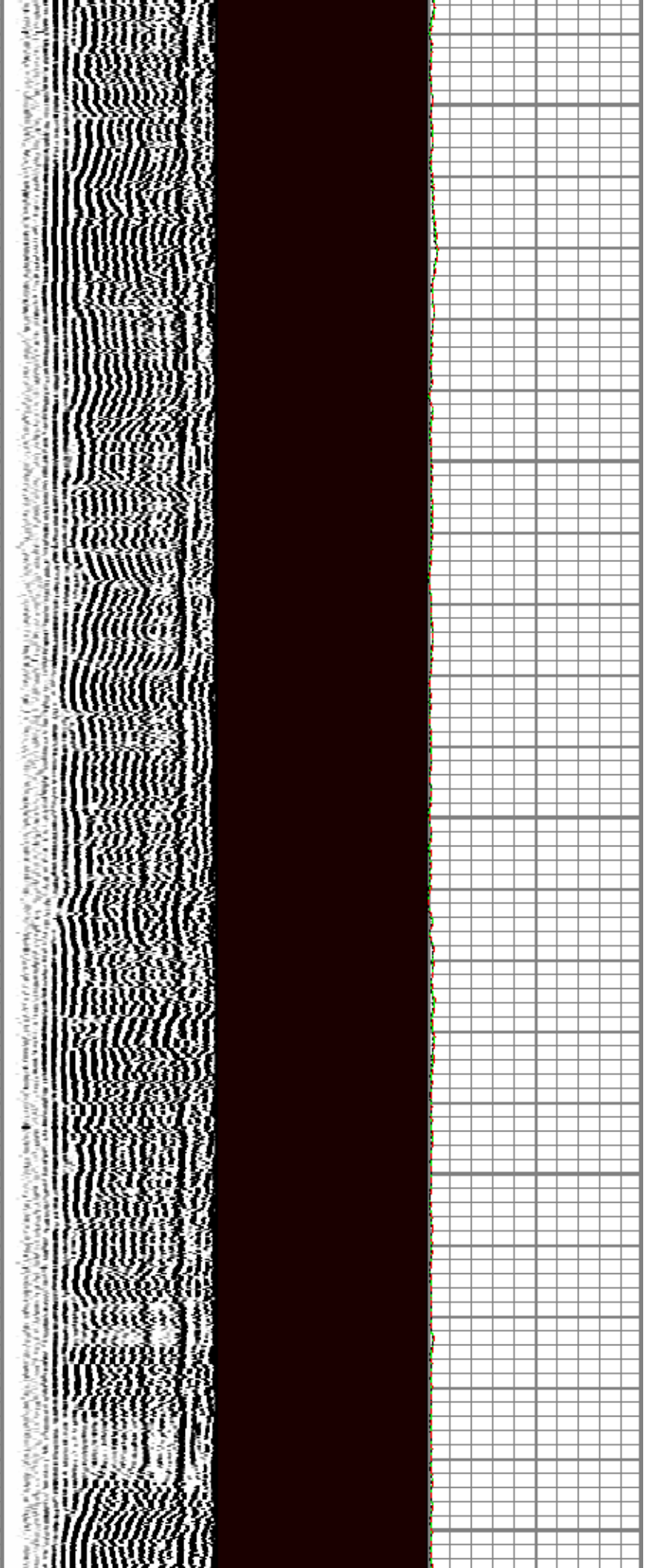
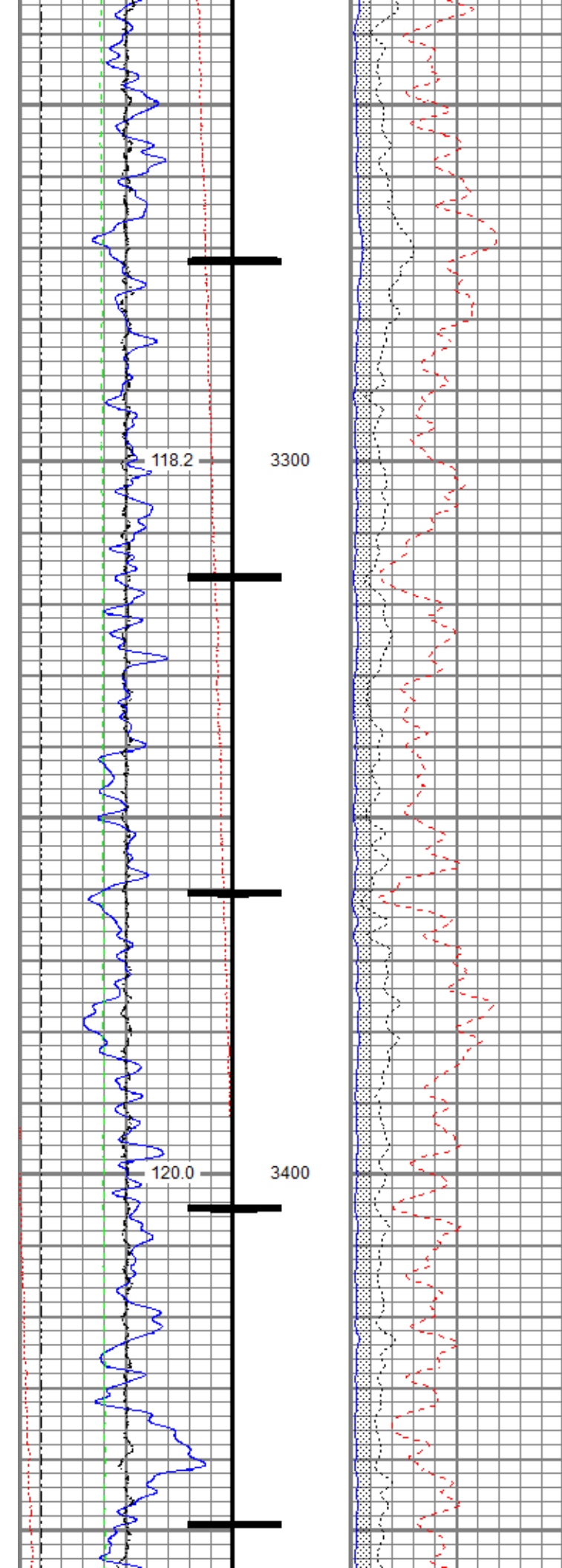


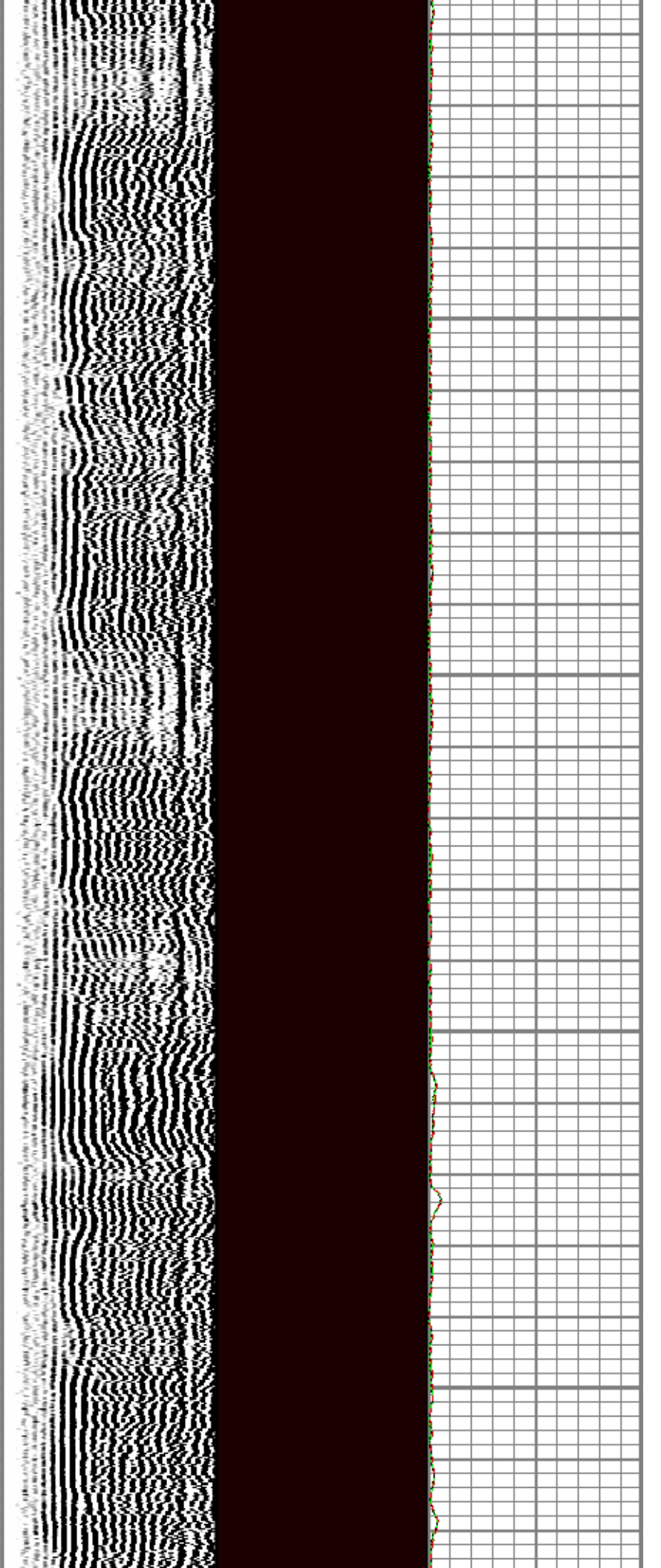
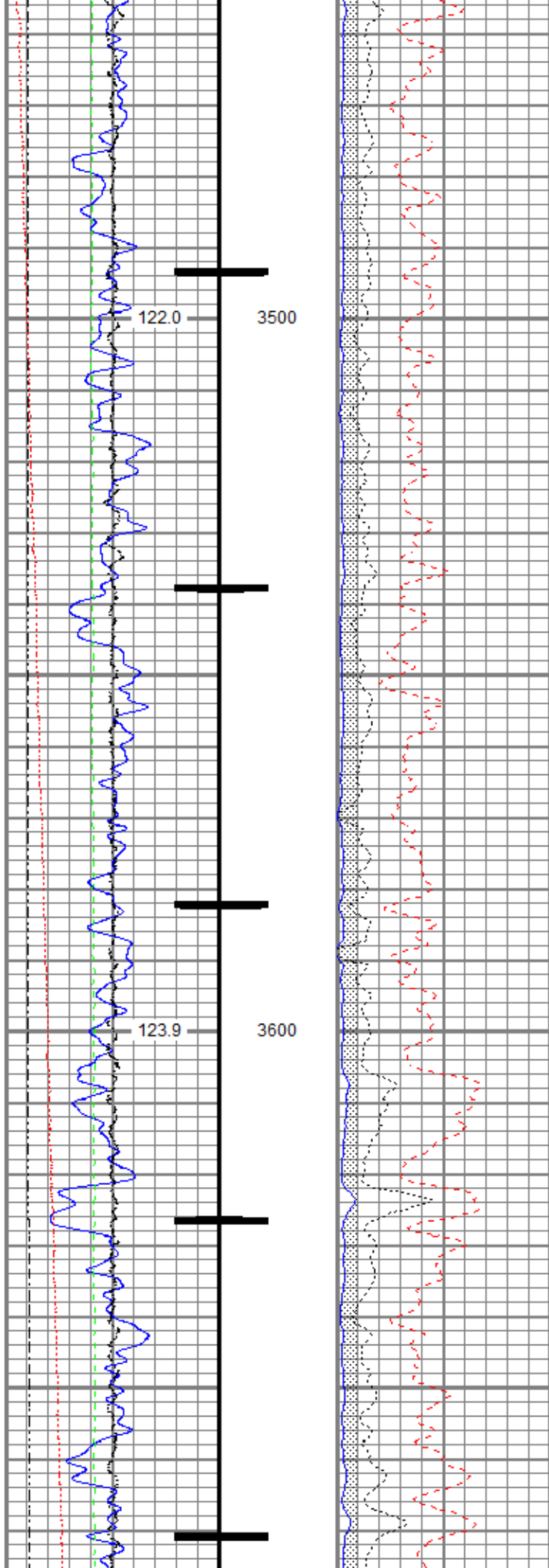












125.8

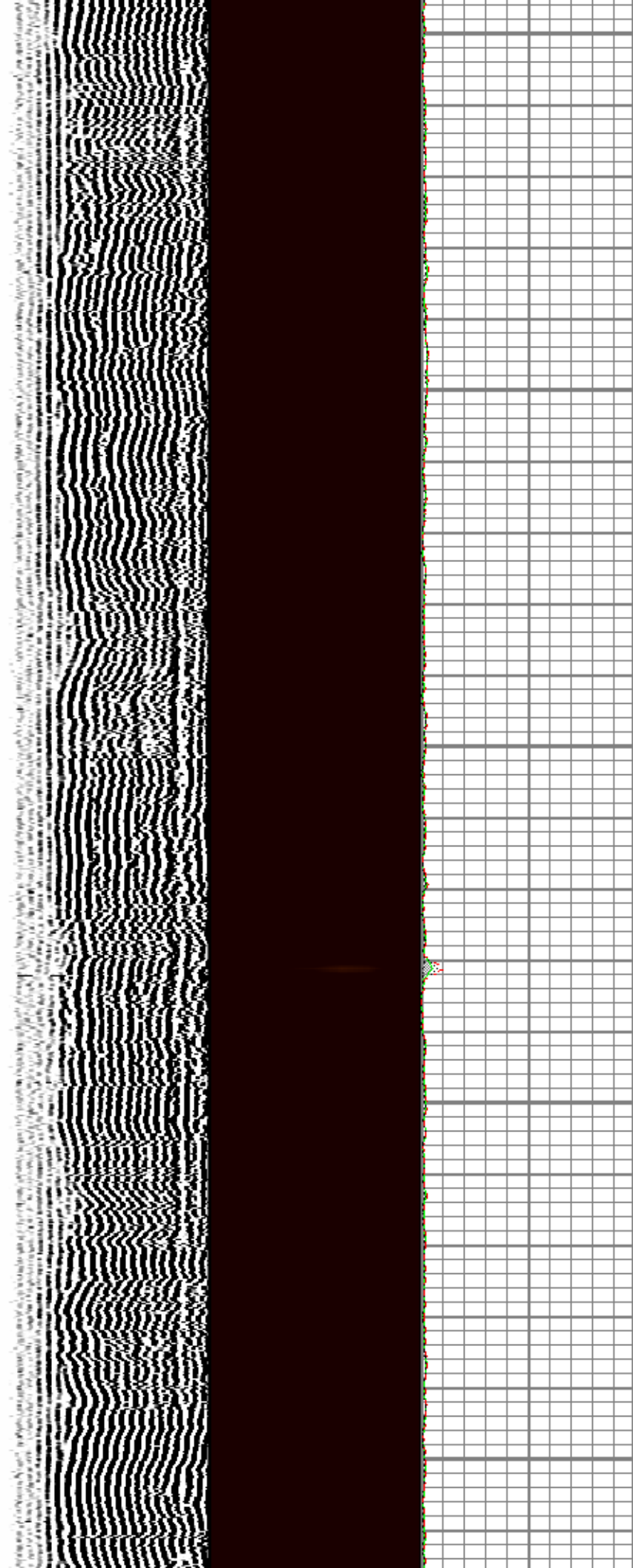
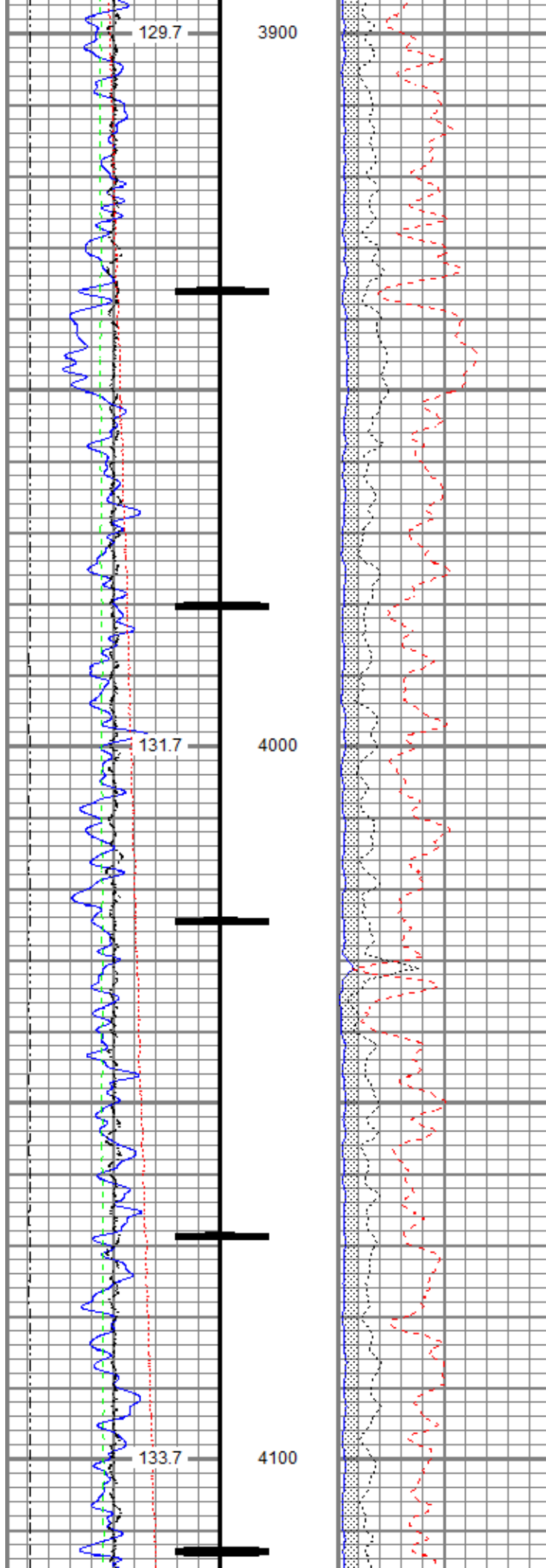
3700

127.9

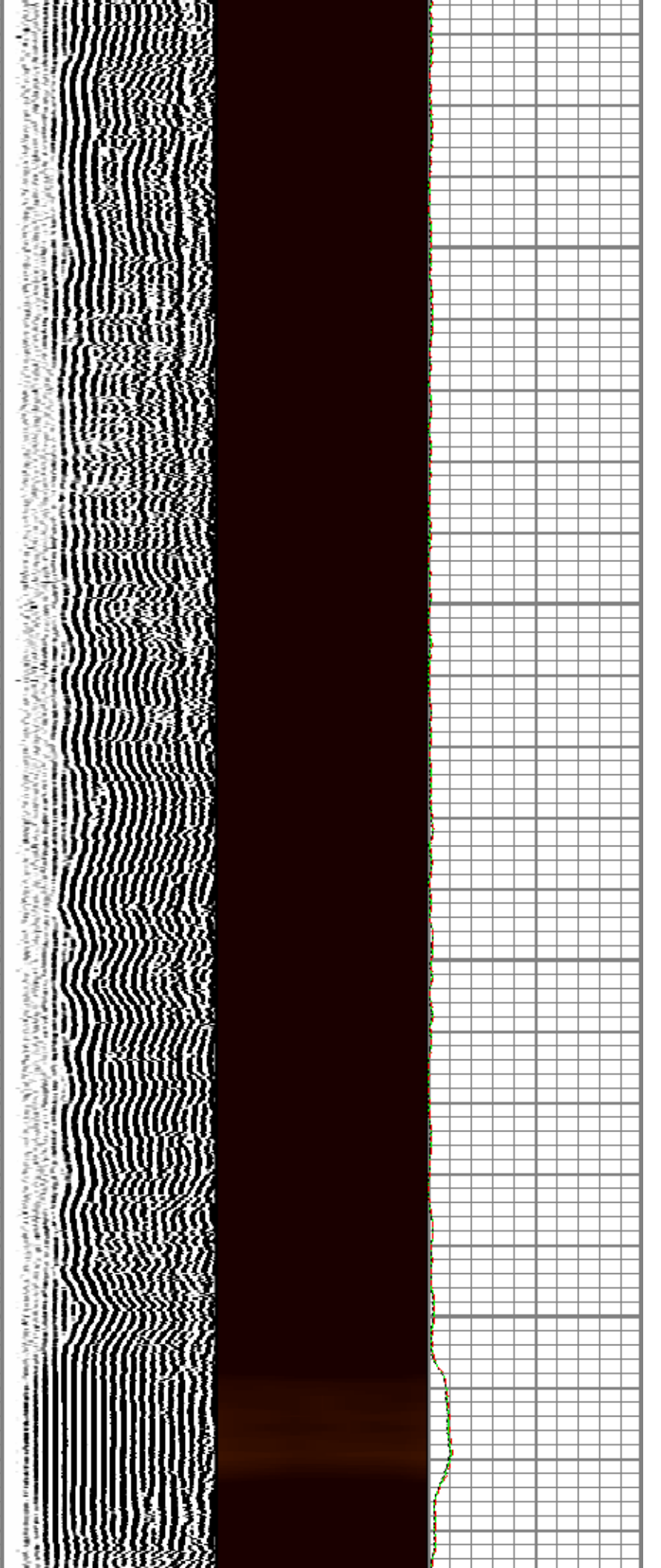
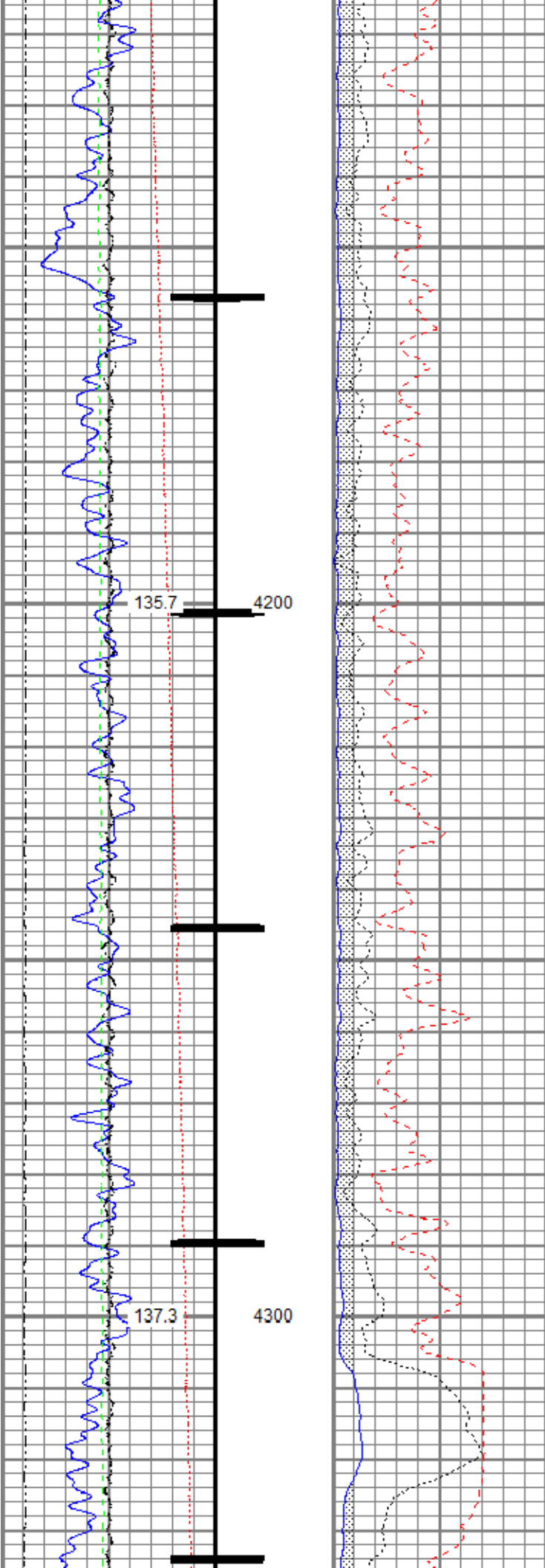
3800

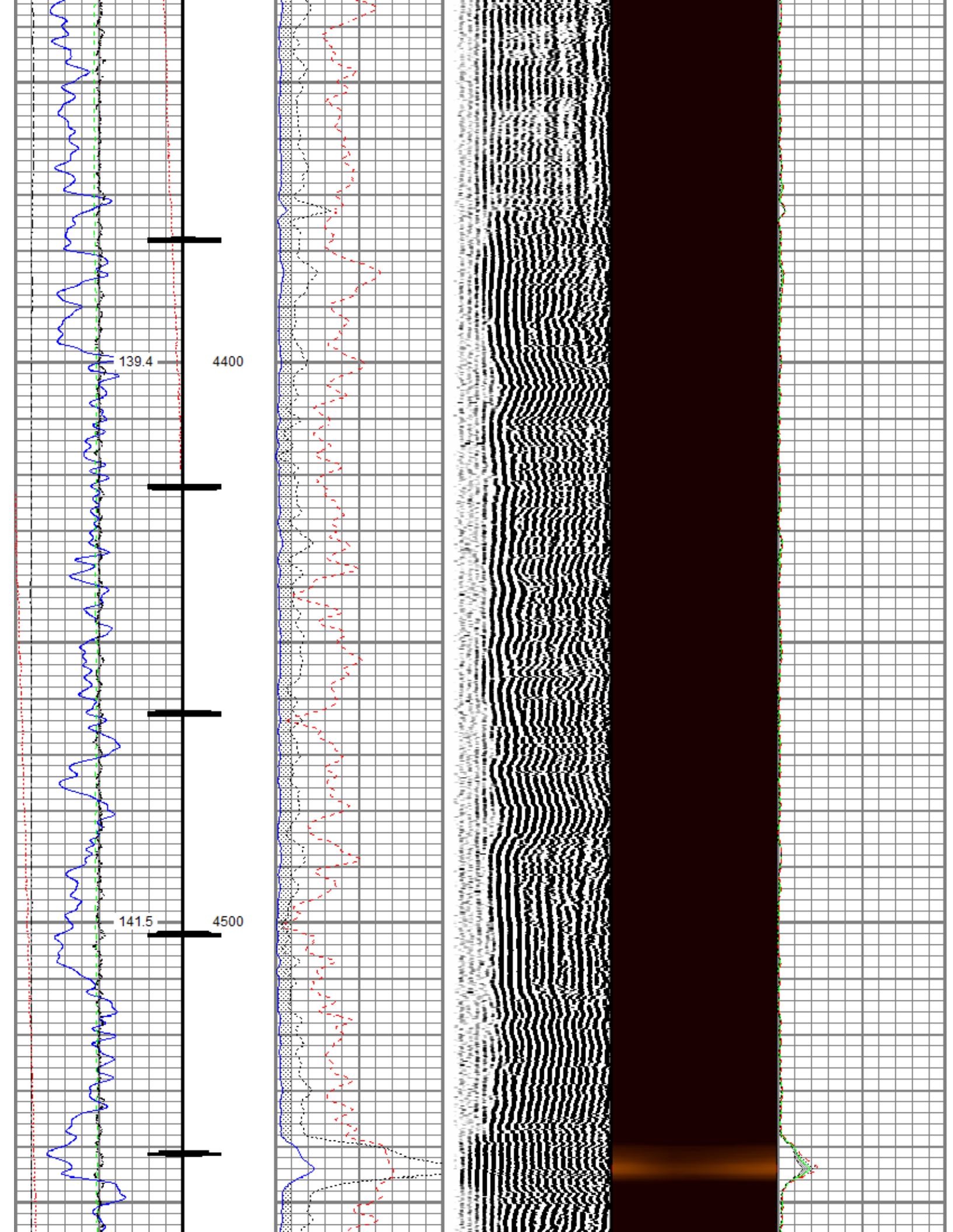
Vertical axis labels: 125.8, 127.9, 3700, 3800. The image contains a complex waveform plot with multiple overlapping signals in blue, red, and black. The plot is set against a grid background. The vertical axis is labeled with values 125.8 and 127.9, and the horizontal axis is labeled with values 3700 and 3800. The plot shows a complex waveform with multiple overlapping signals in blue, red, and black. The blue signal is the most prominent, showing a high-frequency oscillation. The red signal is a lower-frequency oscillation. The black signal is a complex waveform with many small peaks and valleys. The plot is set against a grid background.

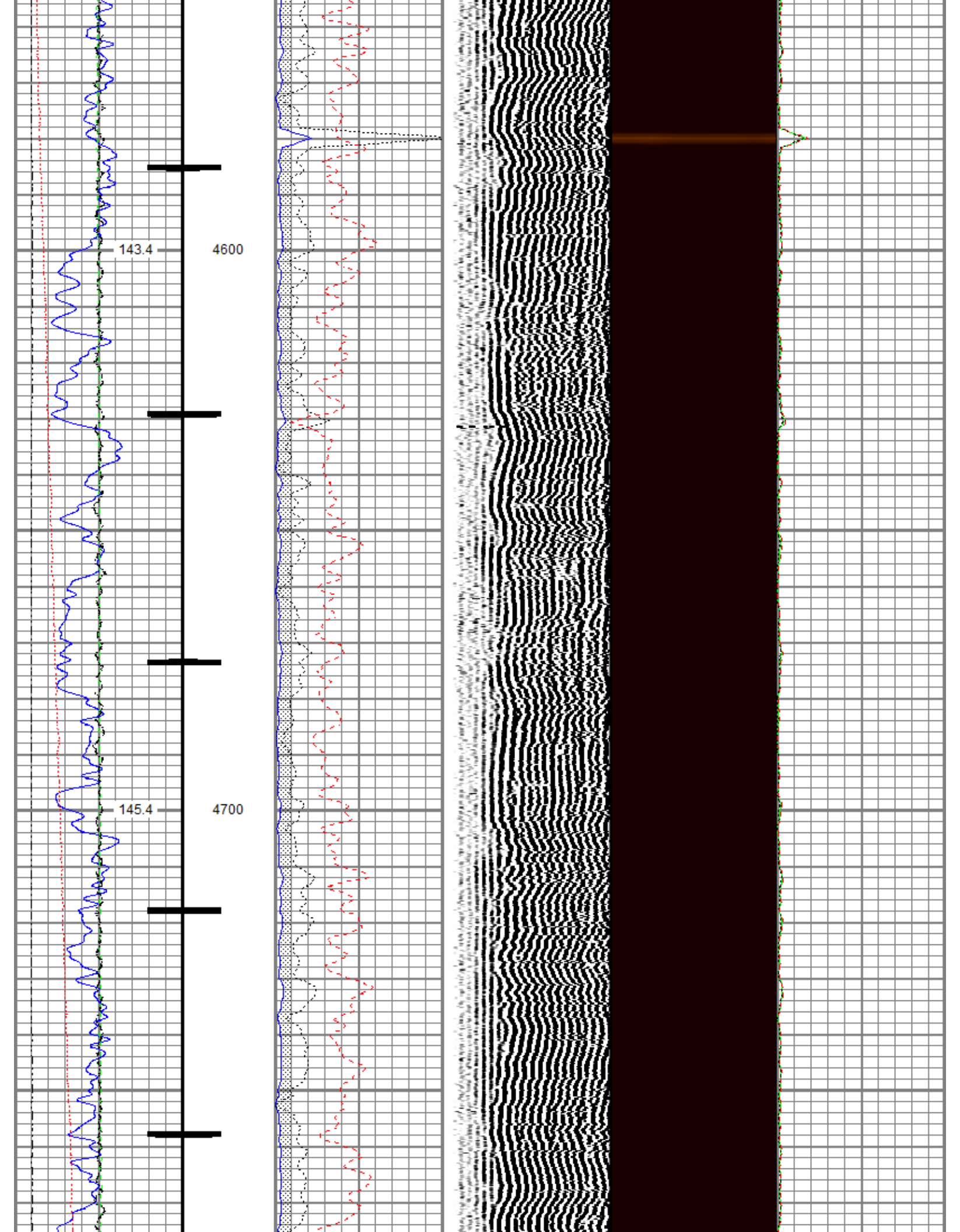




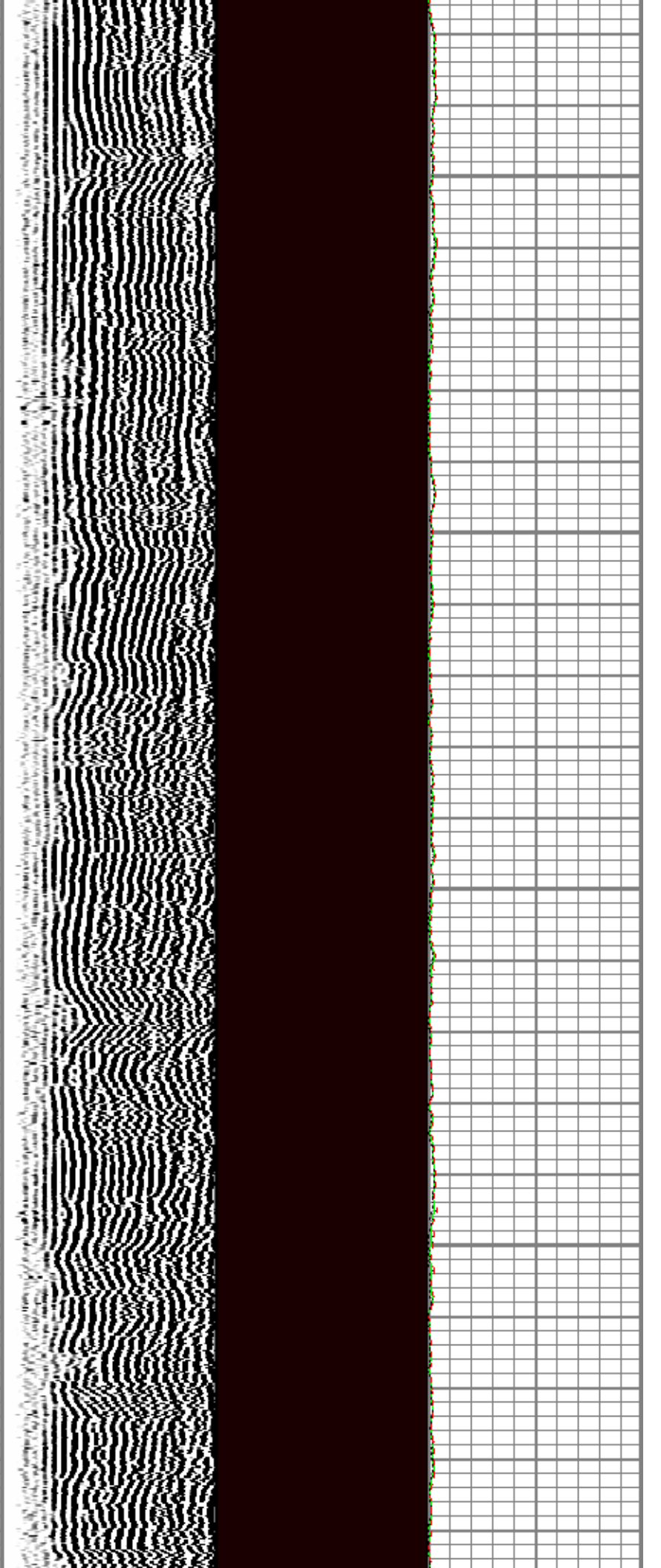
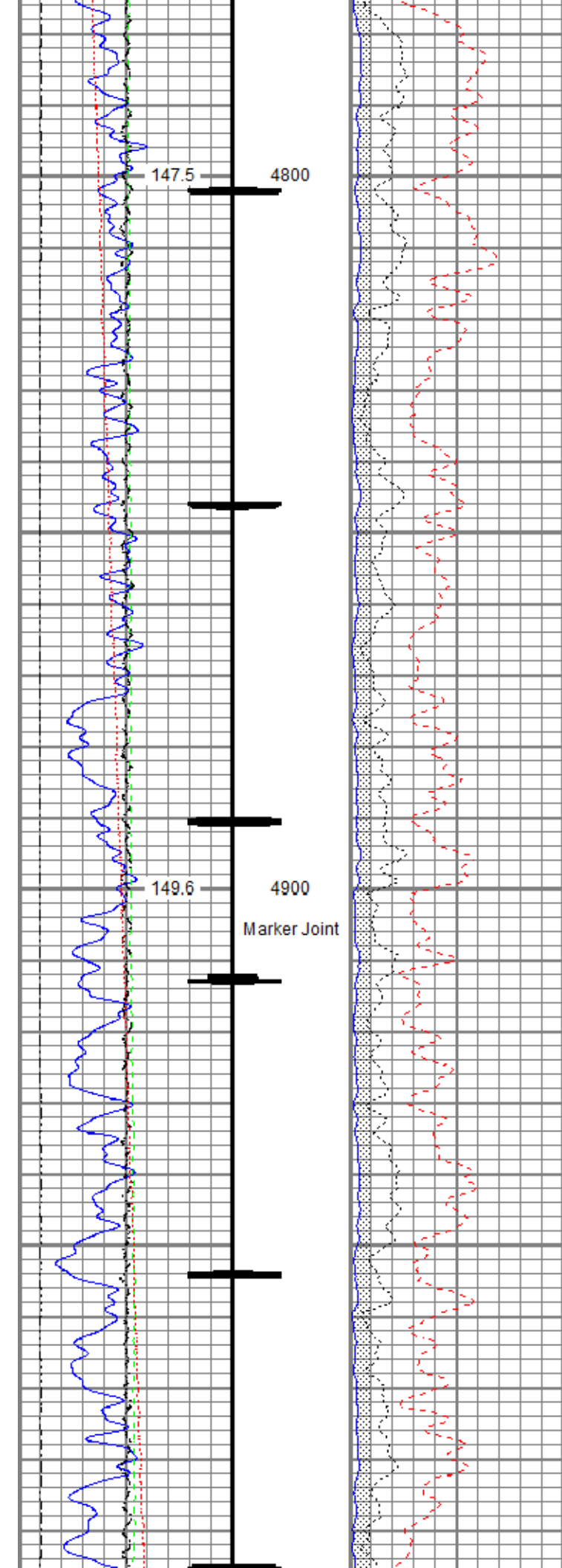




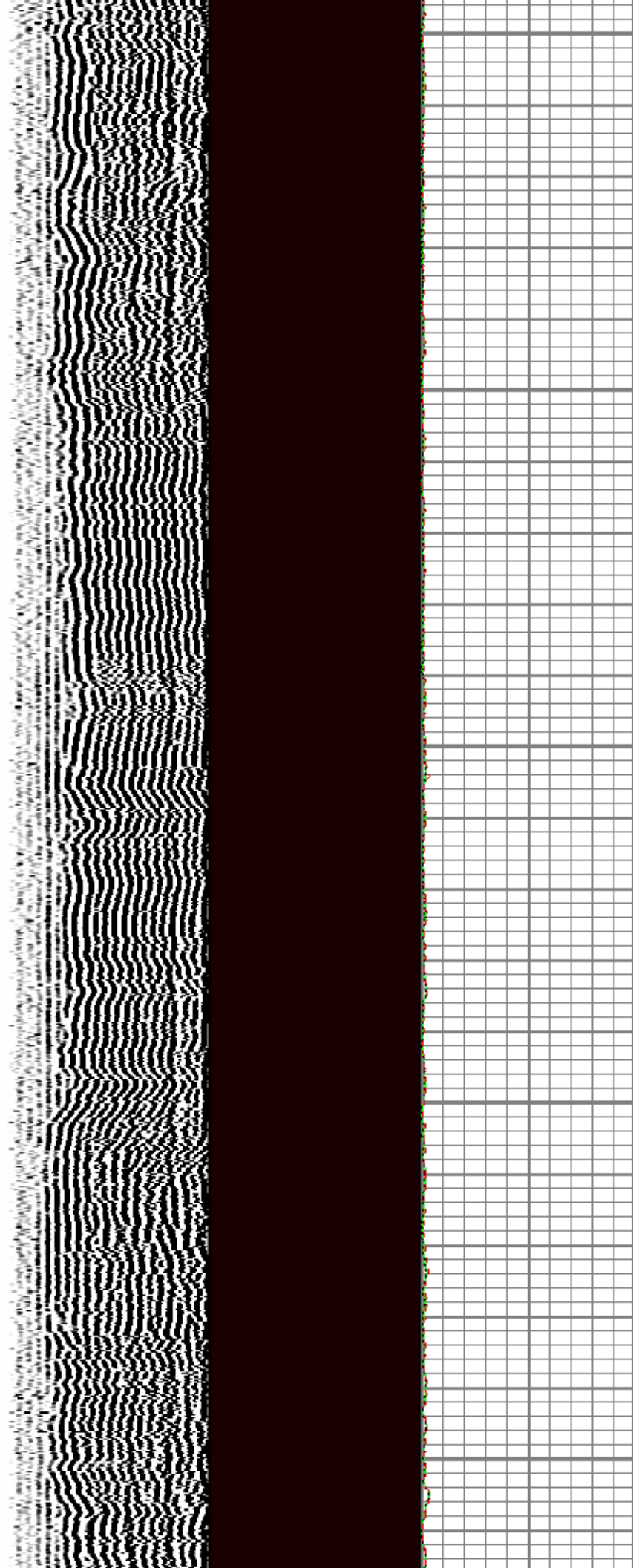
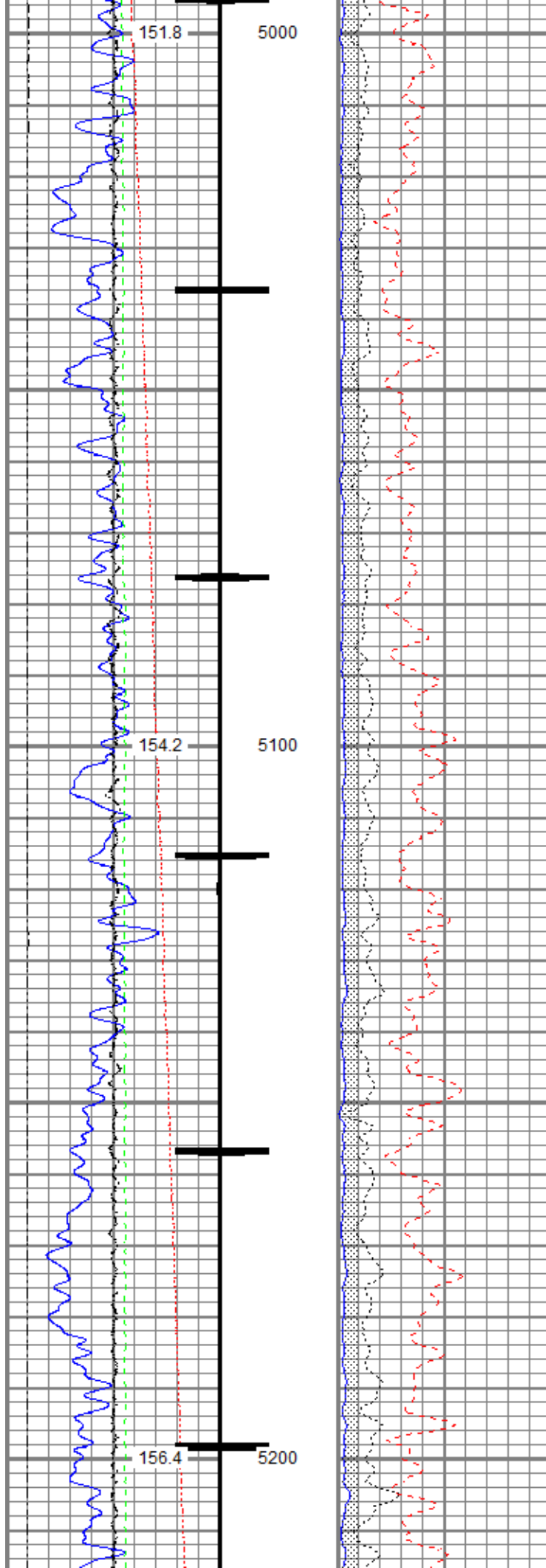


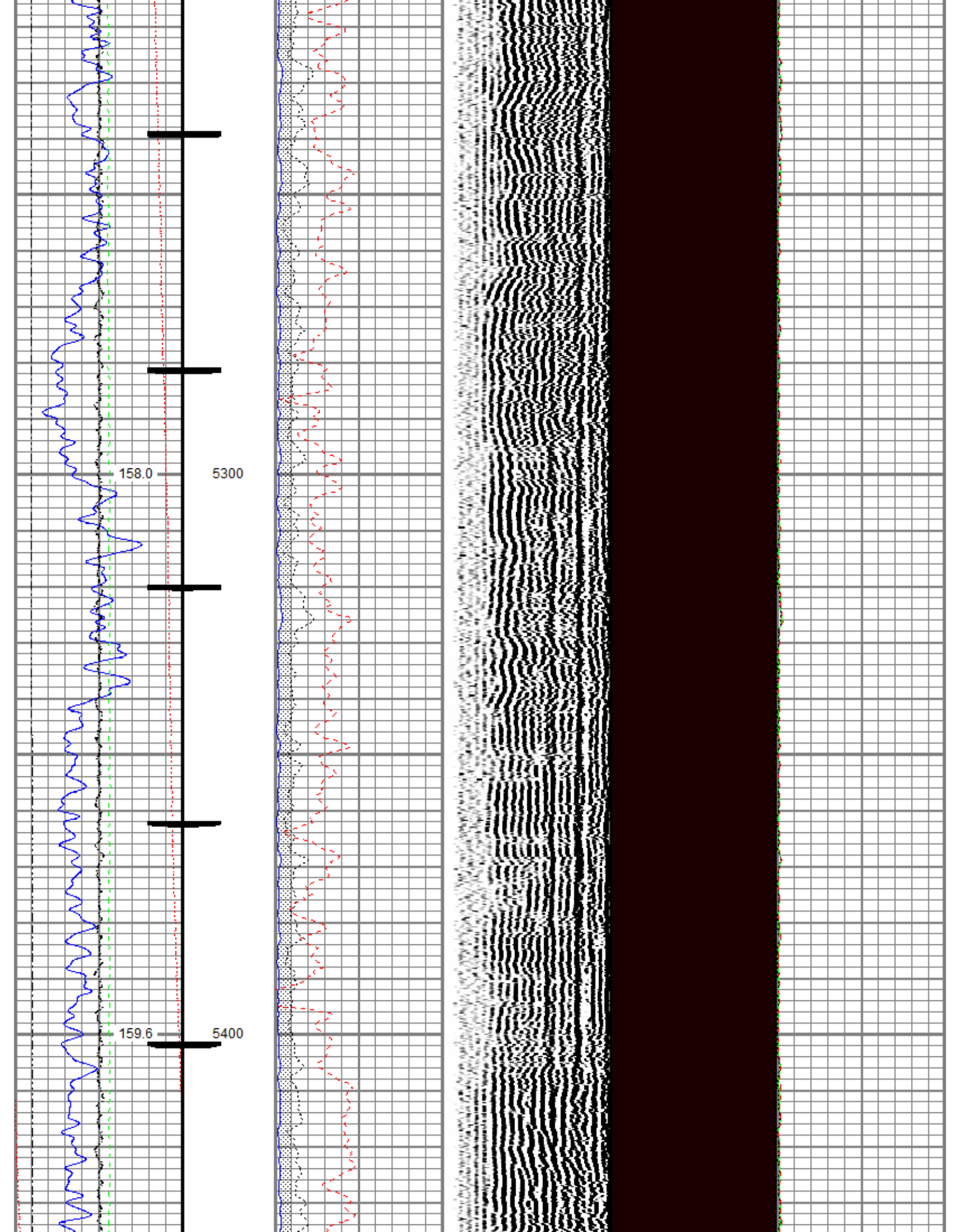


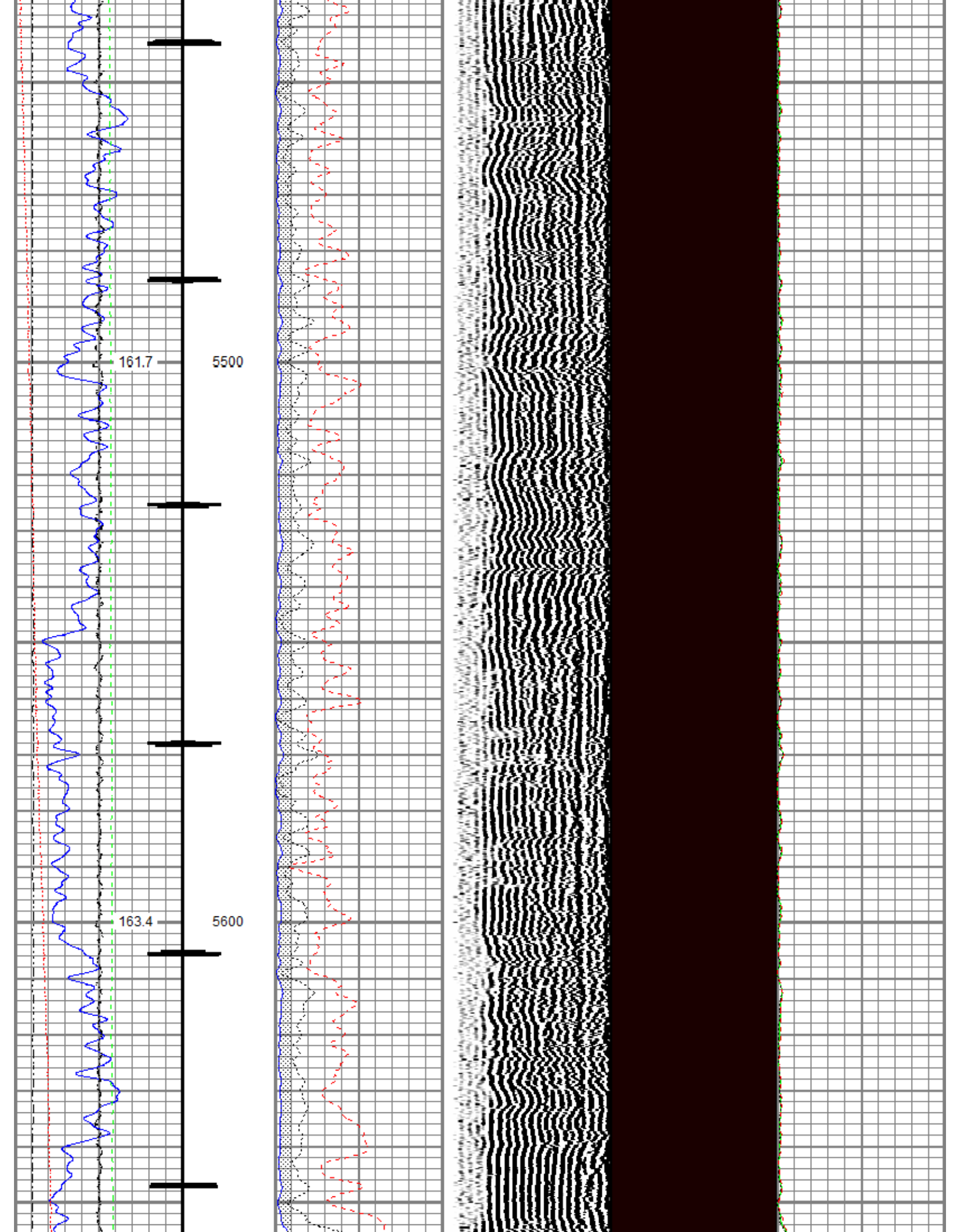




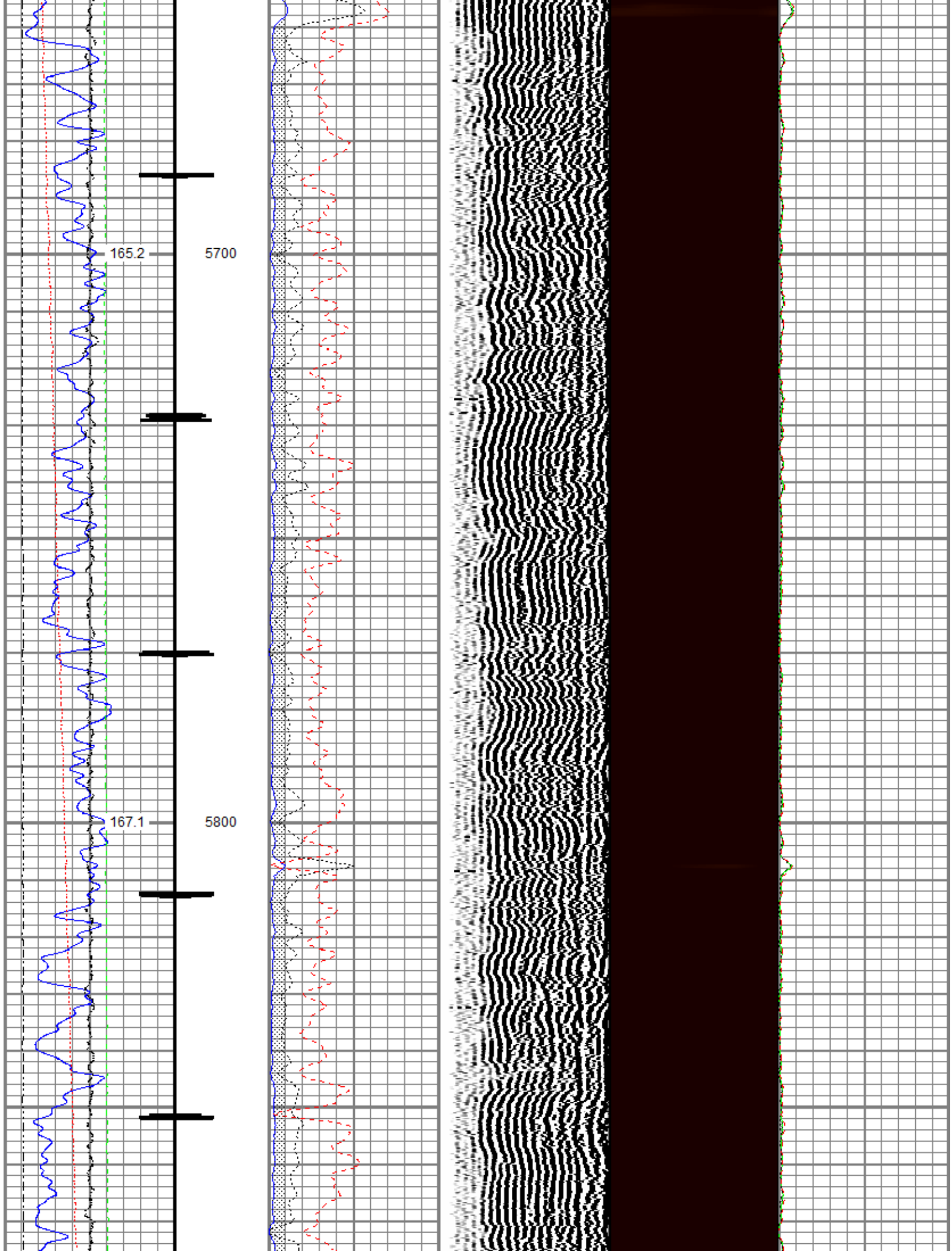




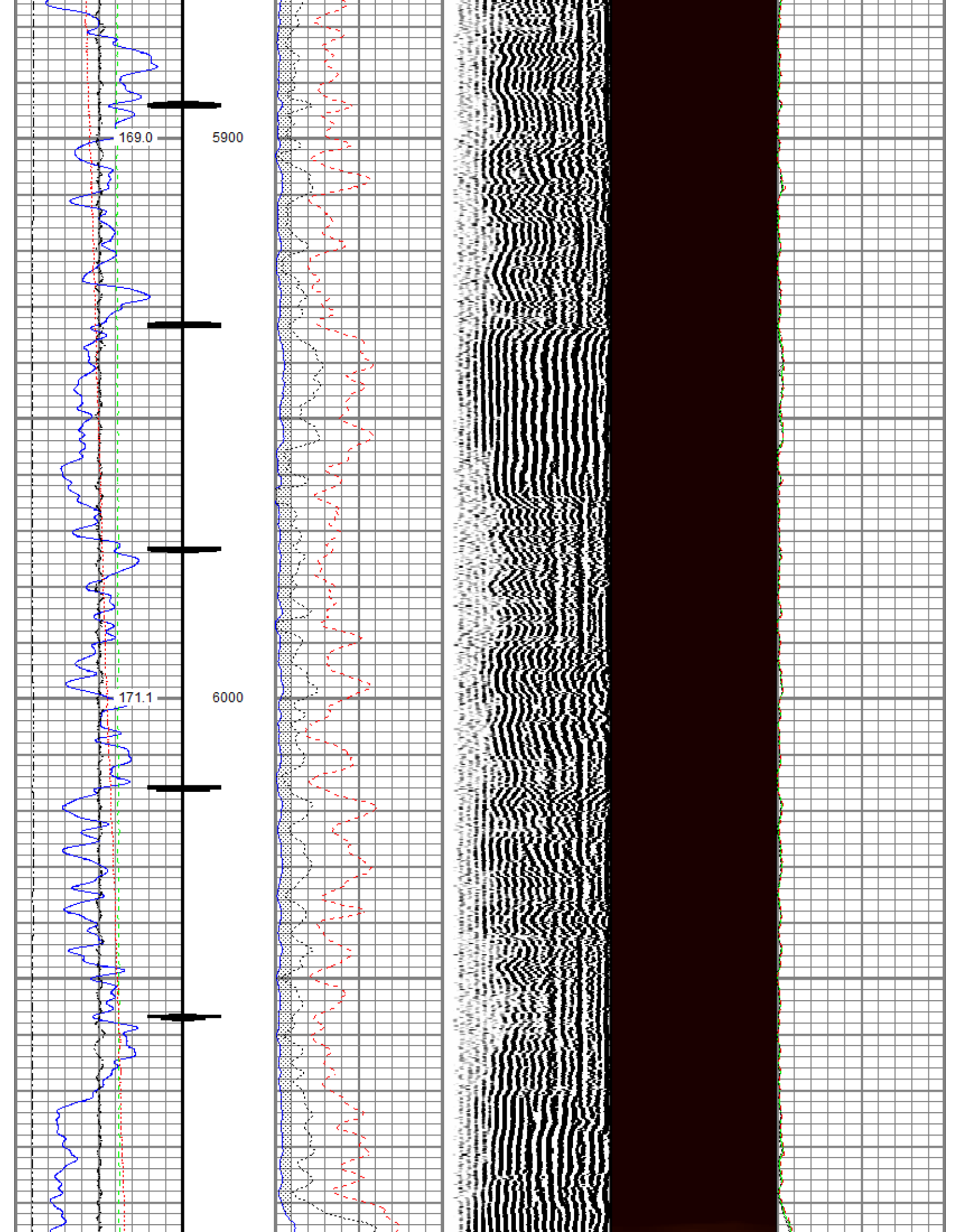


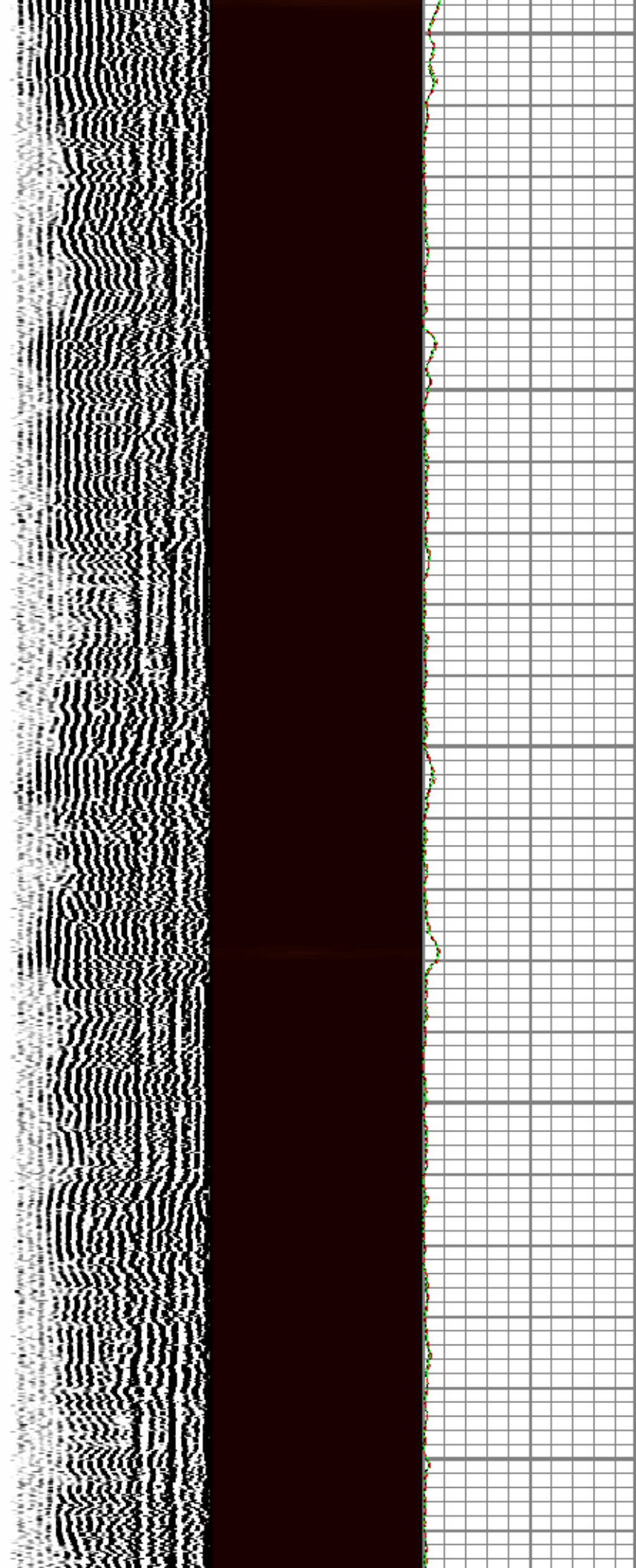
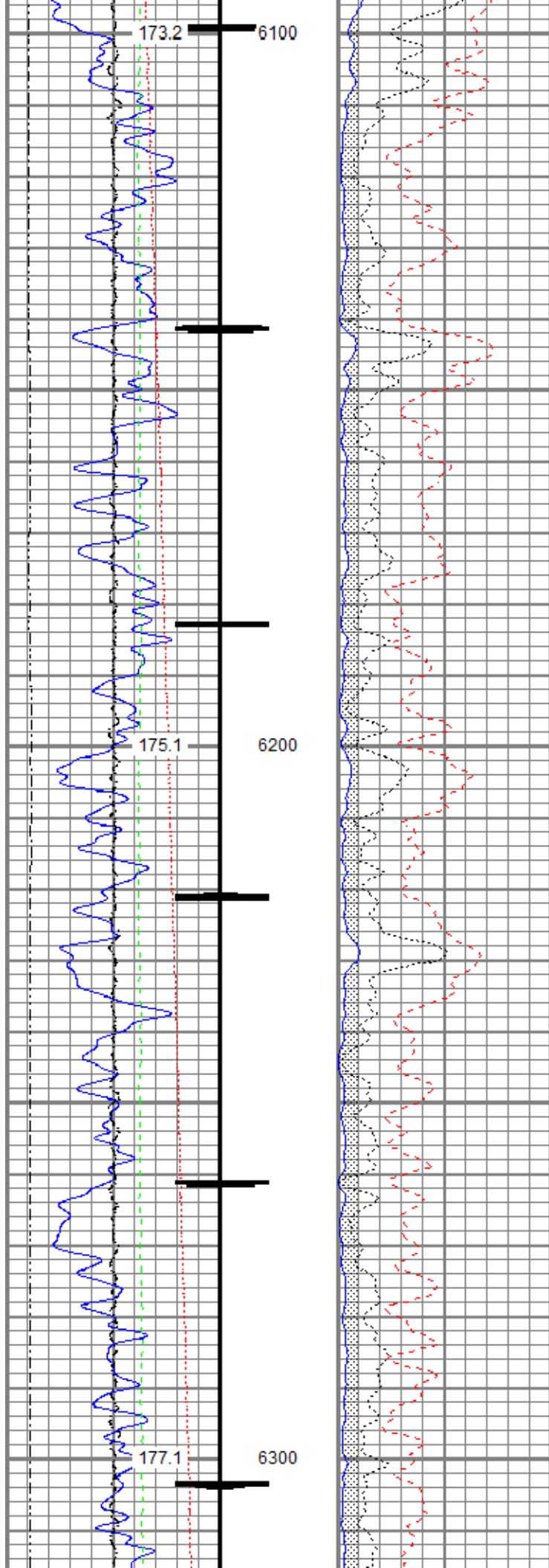


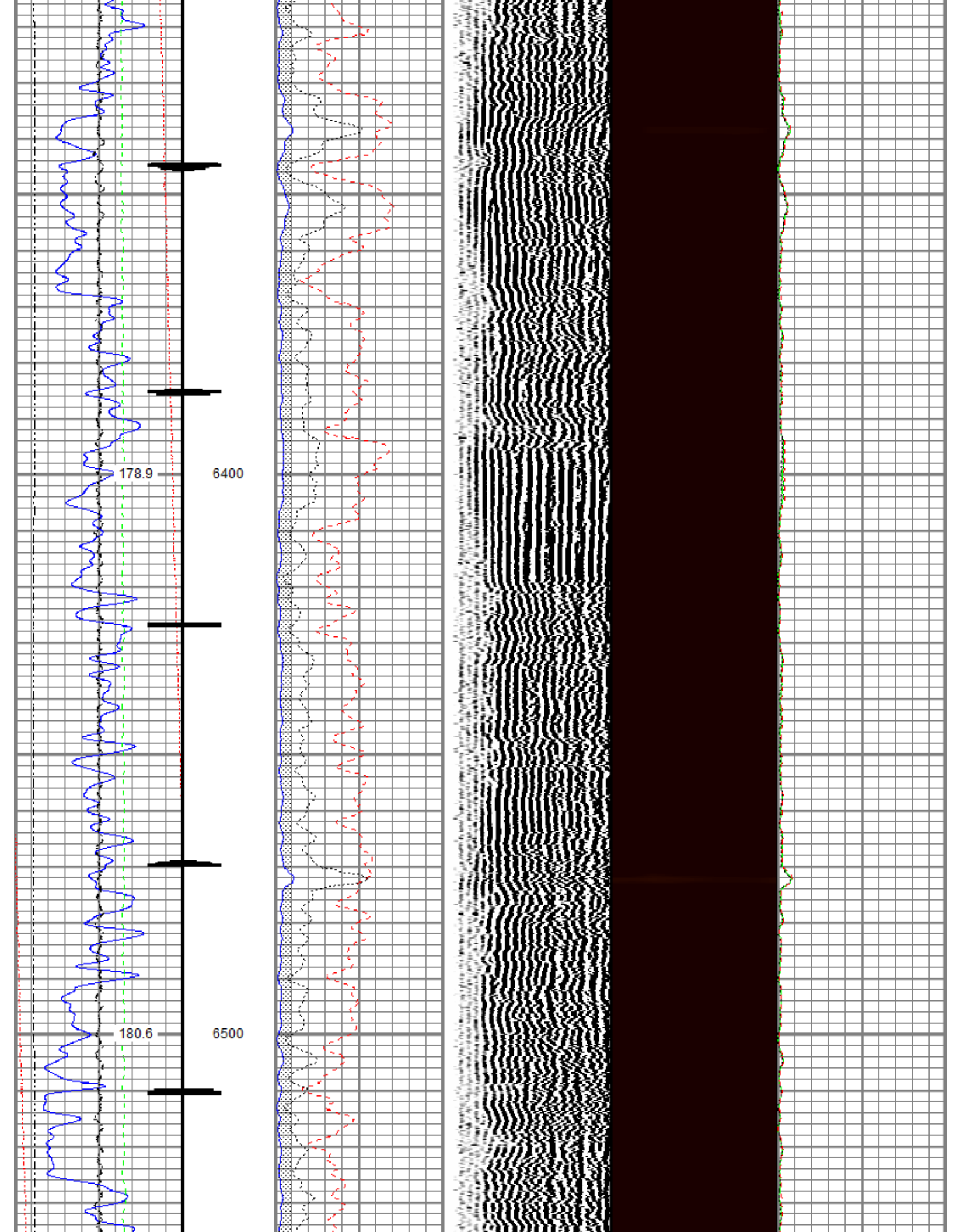




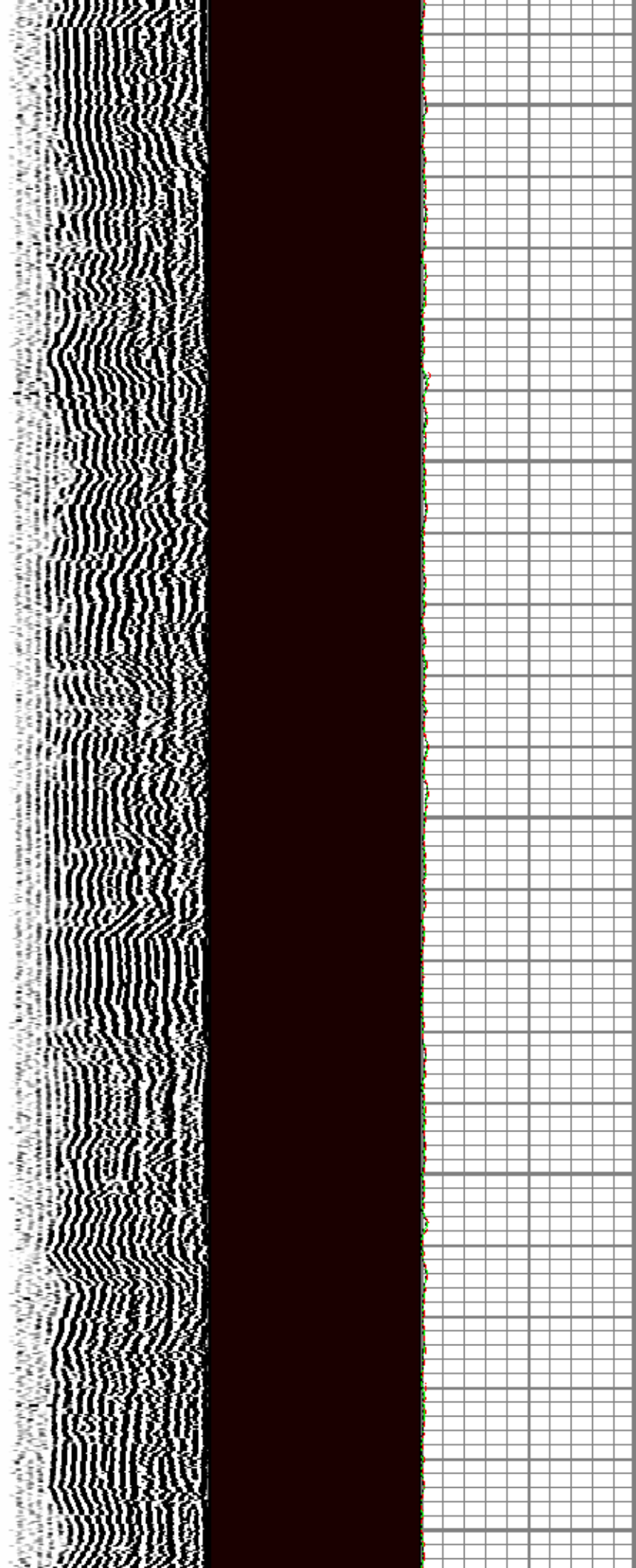
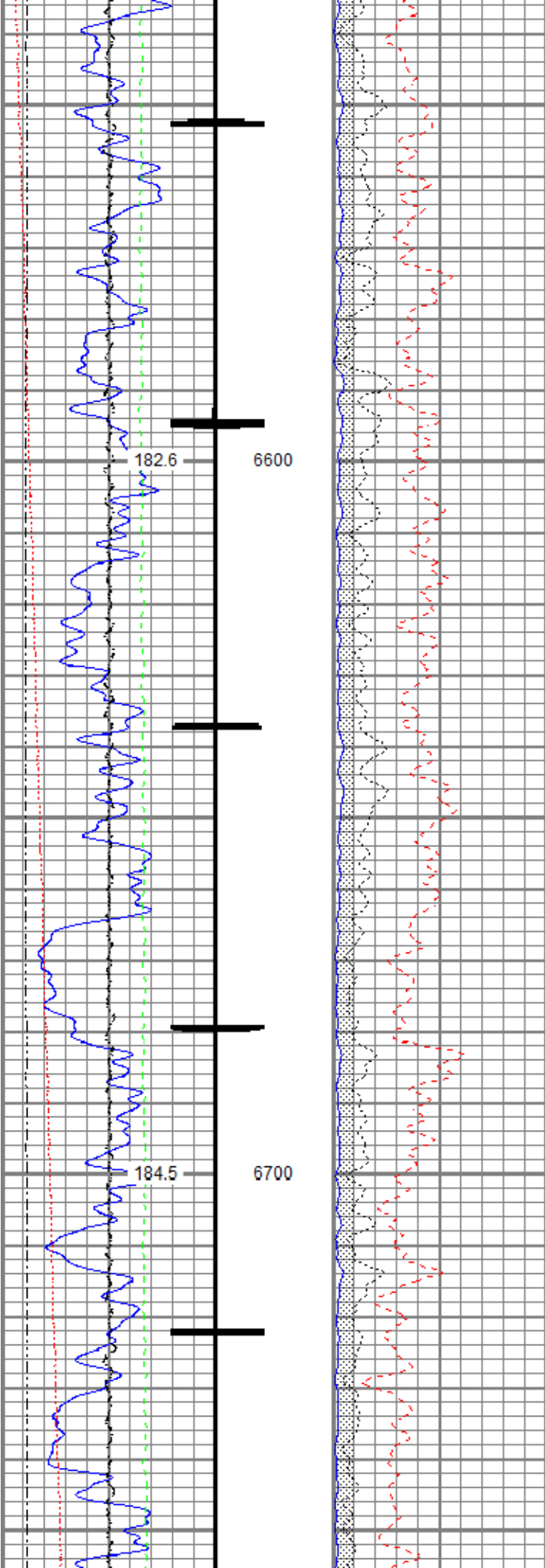




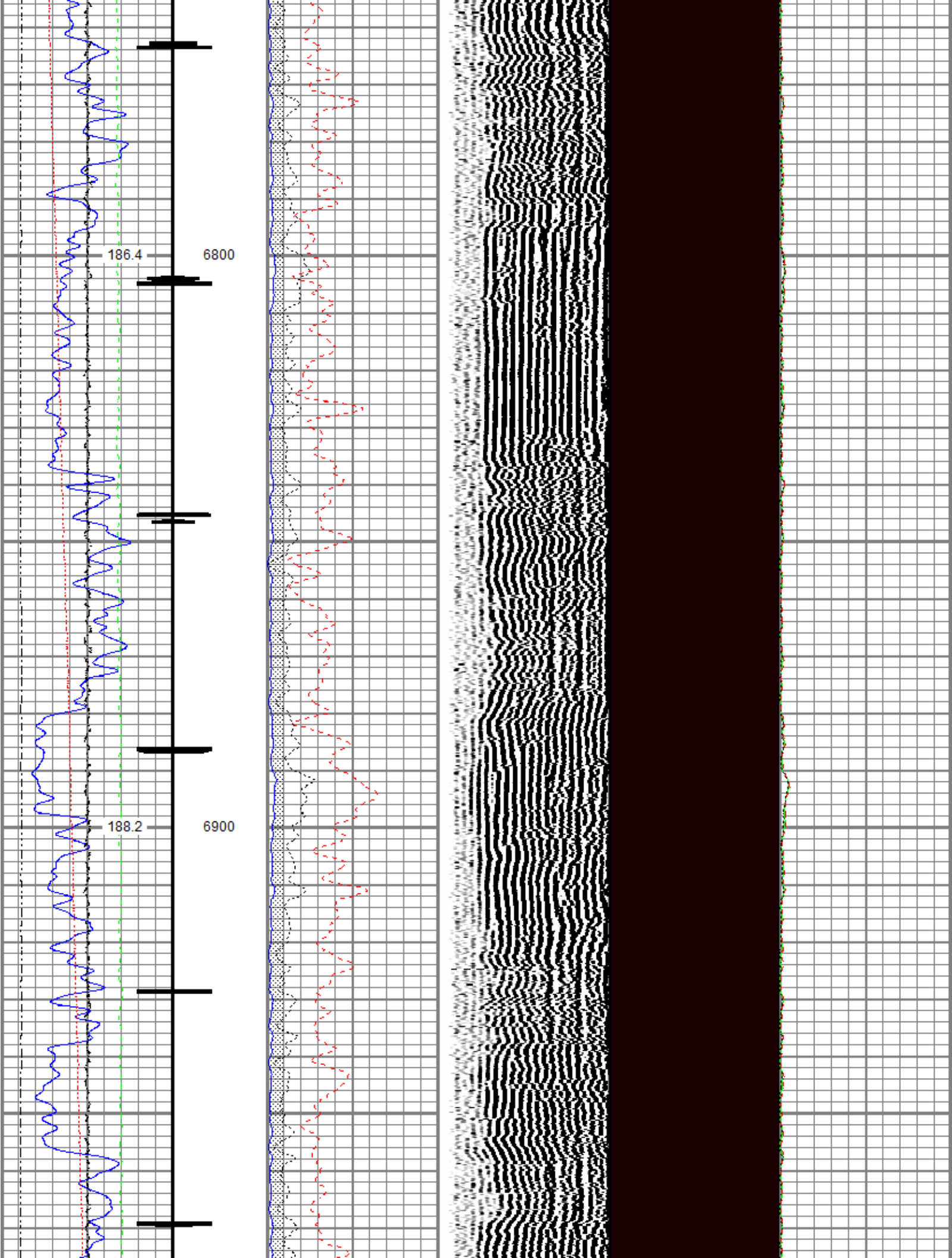


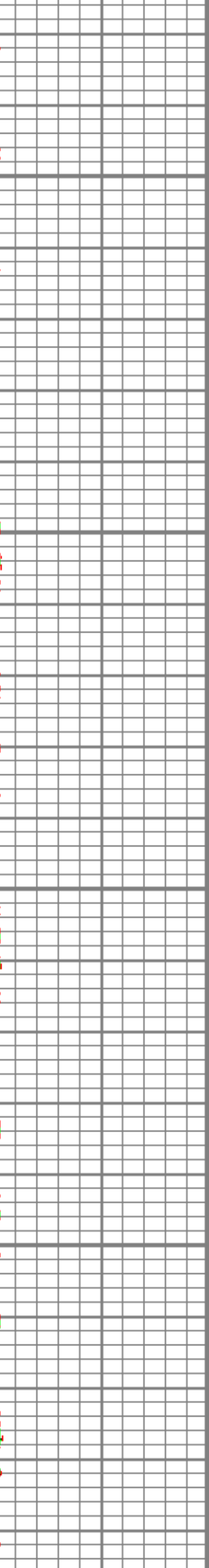
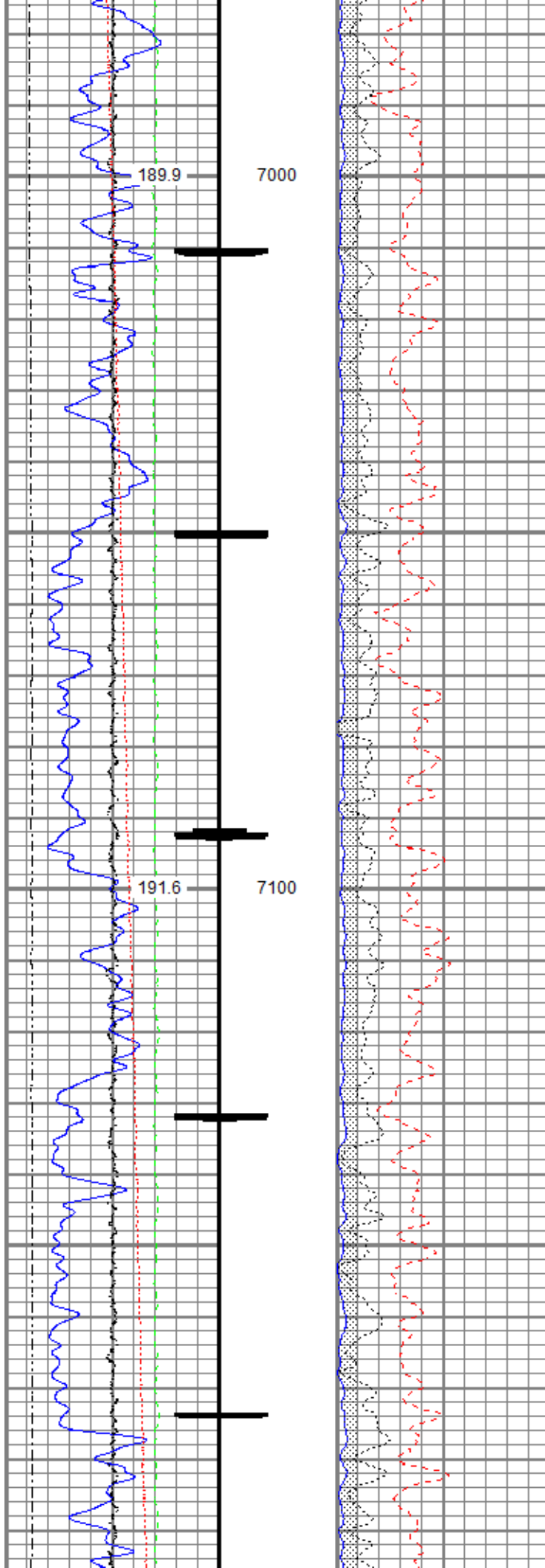


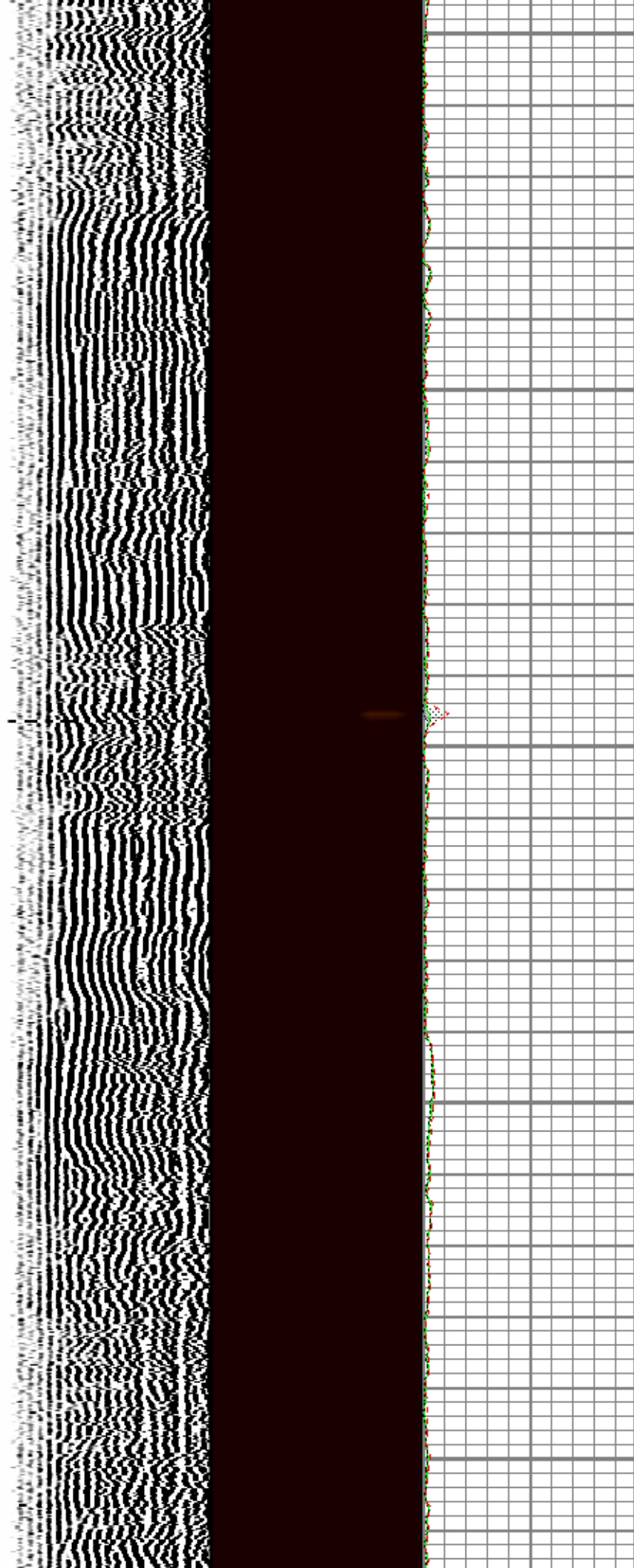
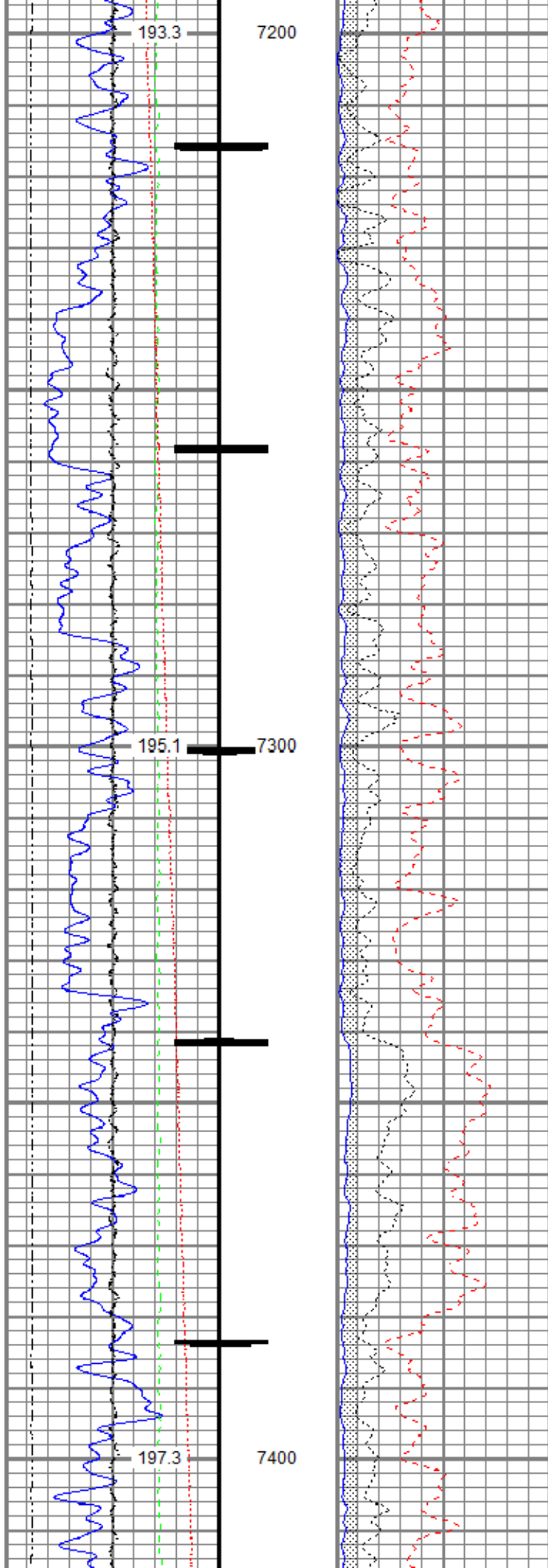




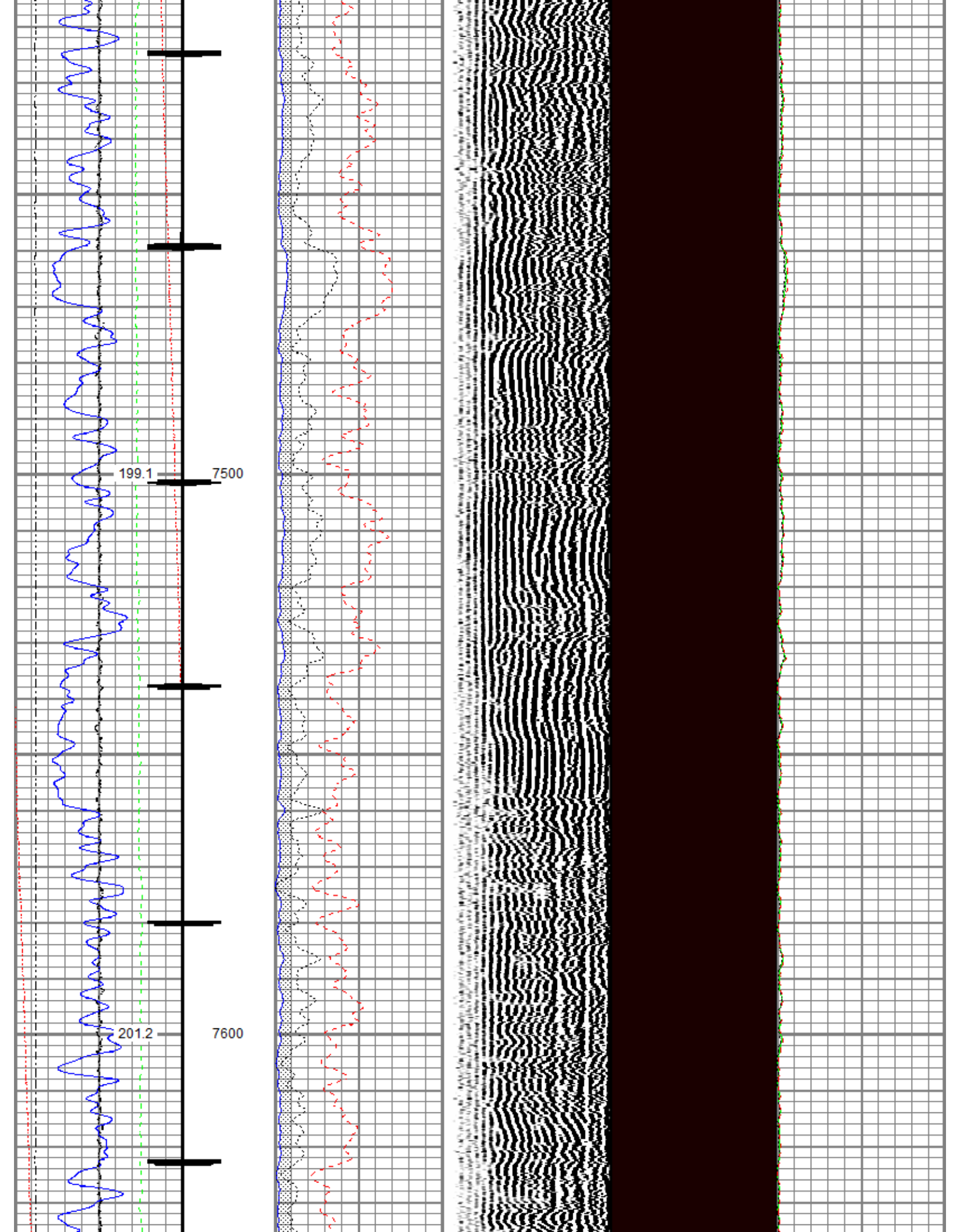




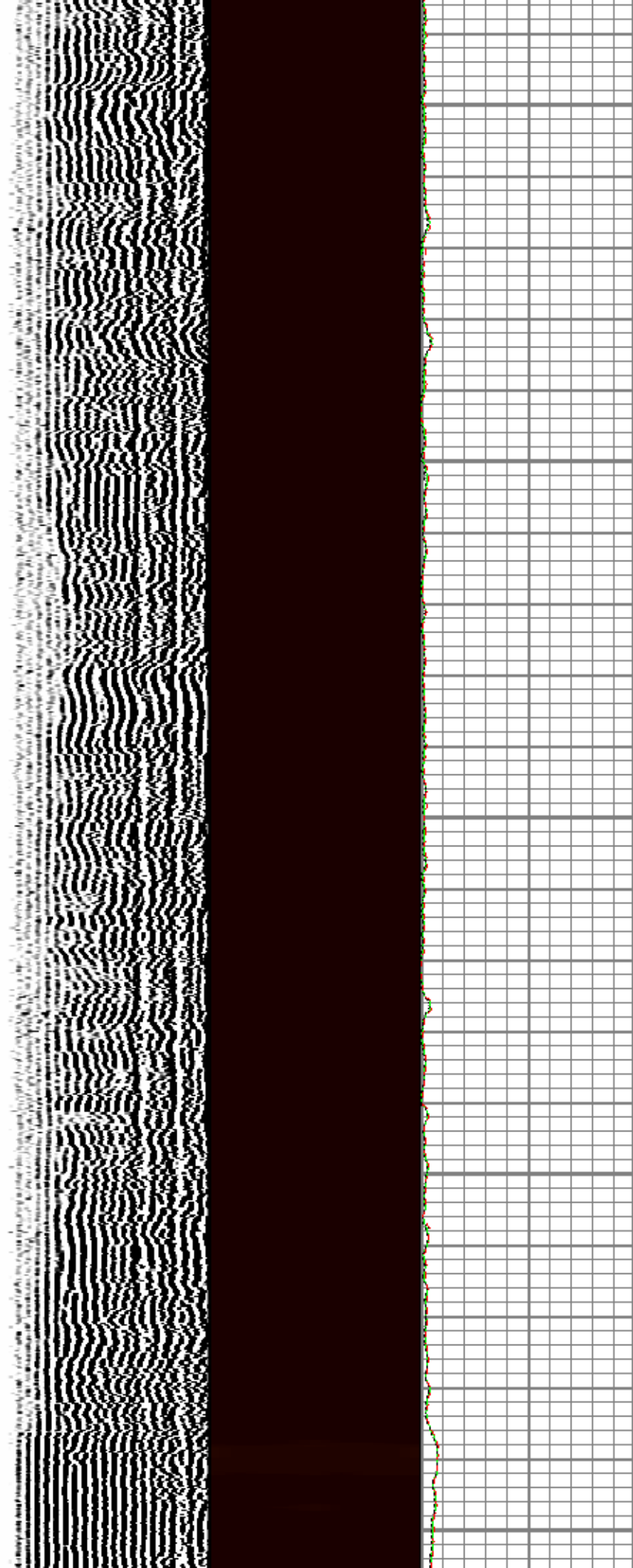
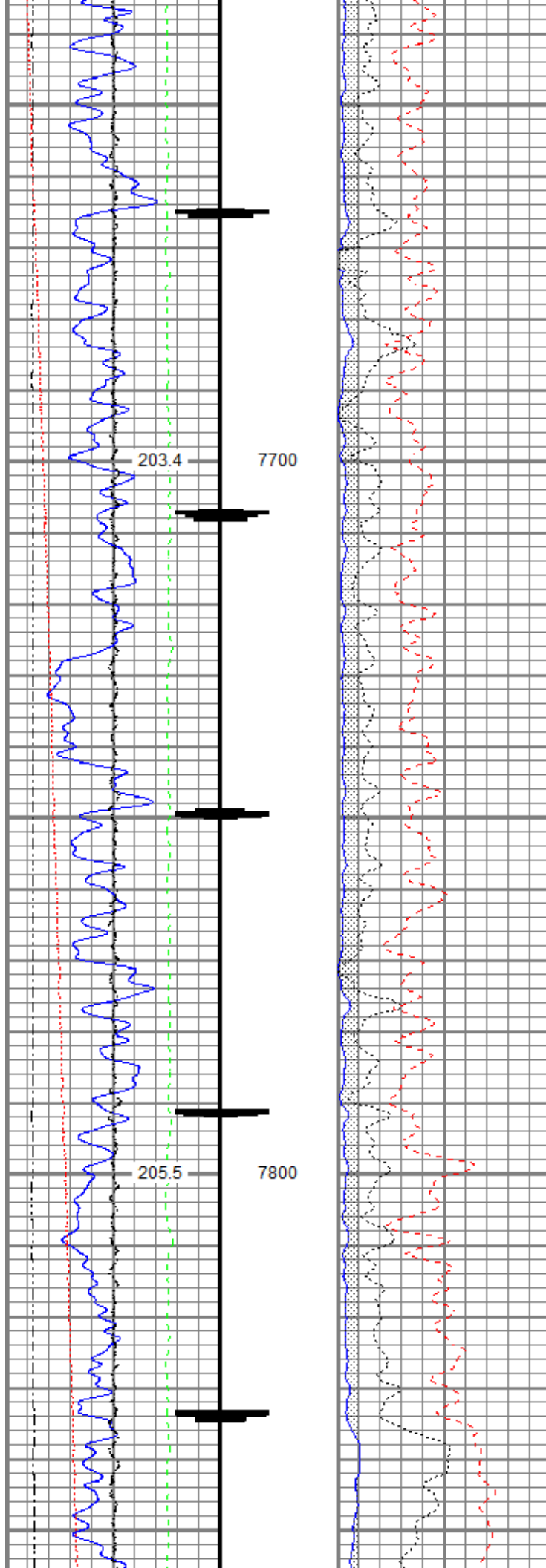


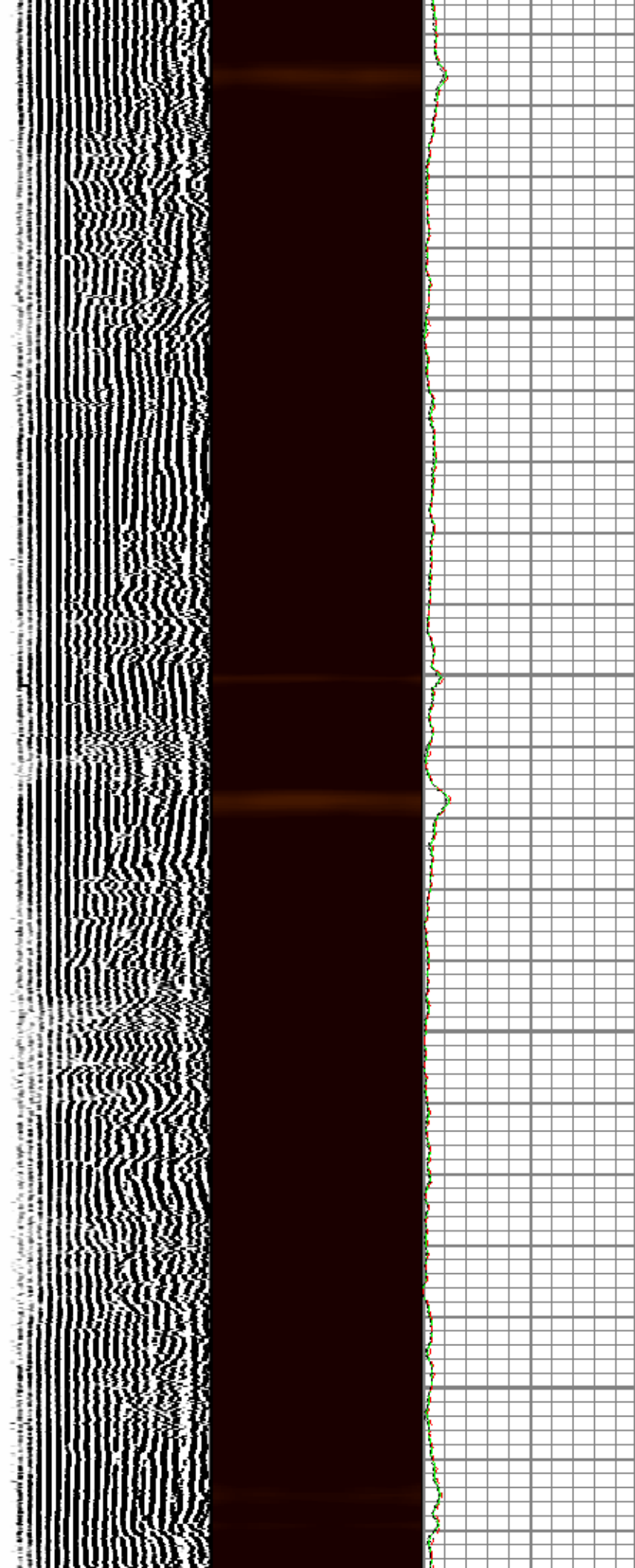
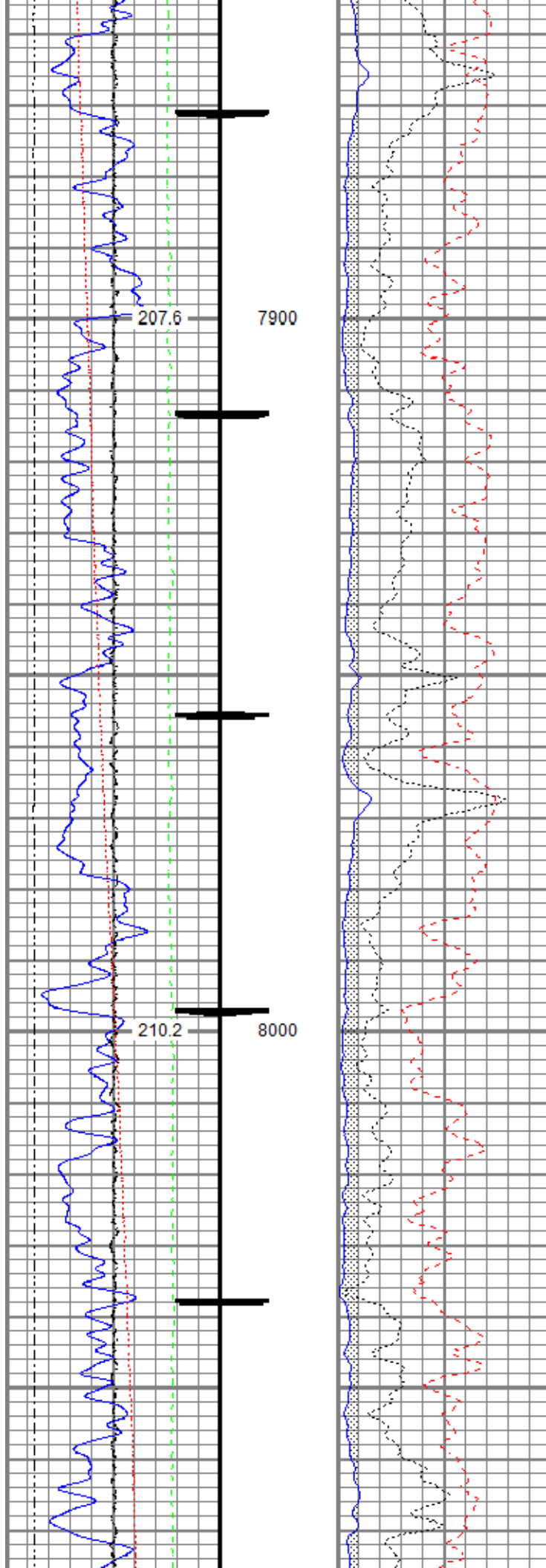


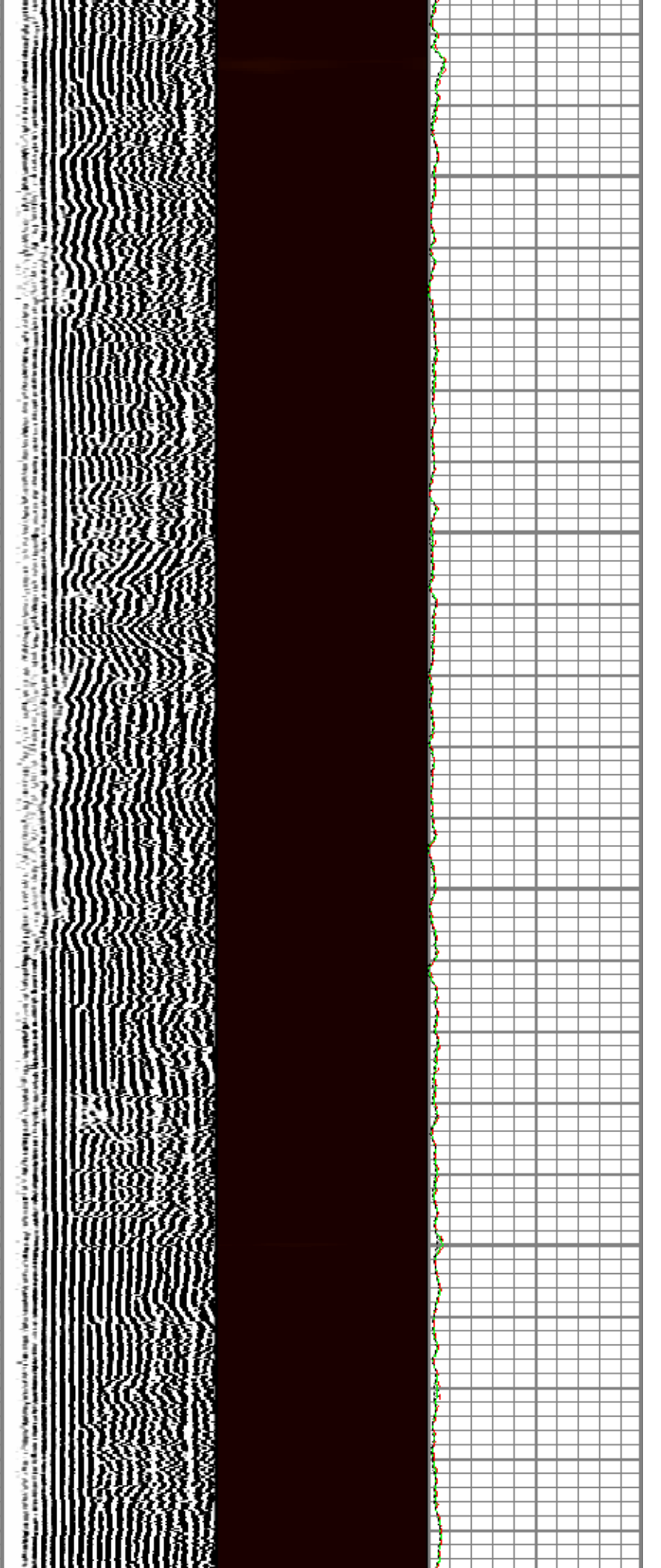
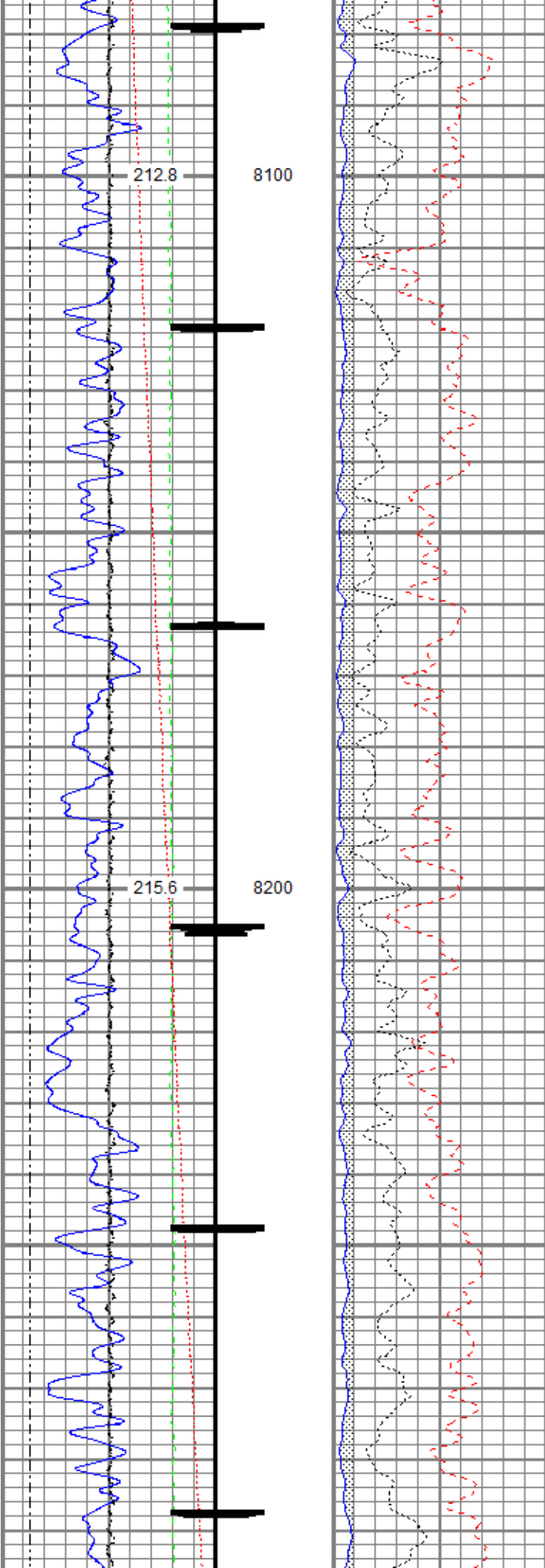




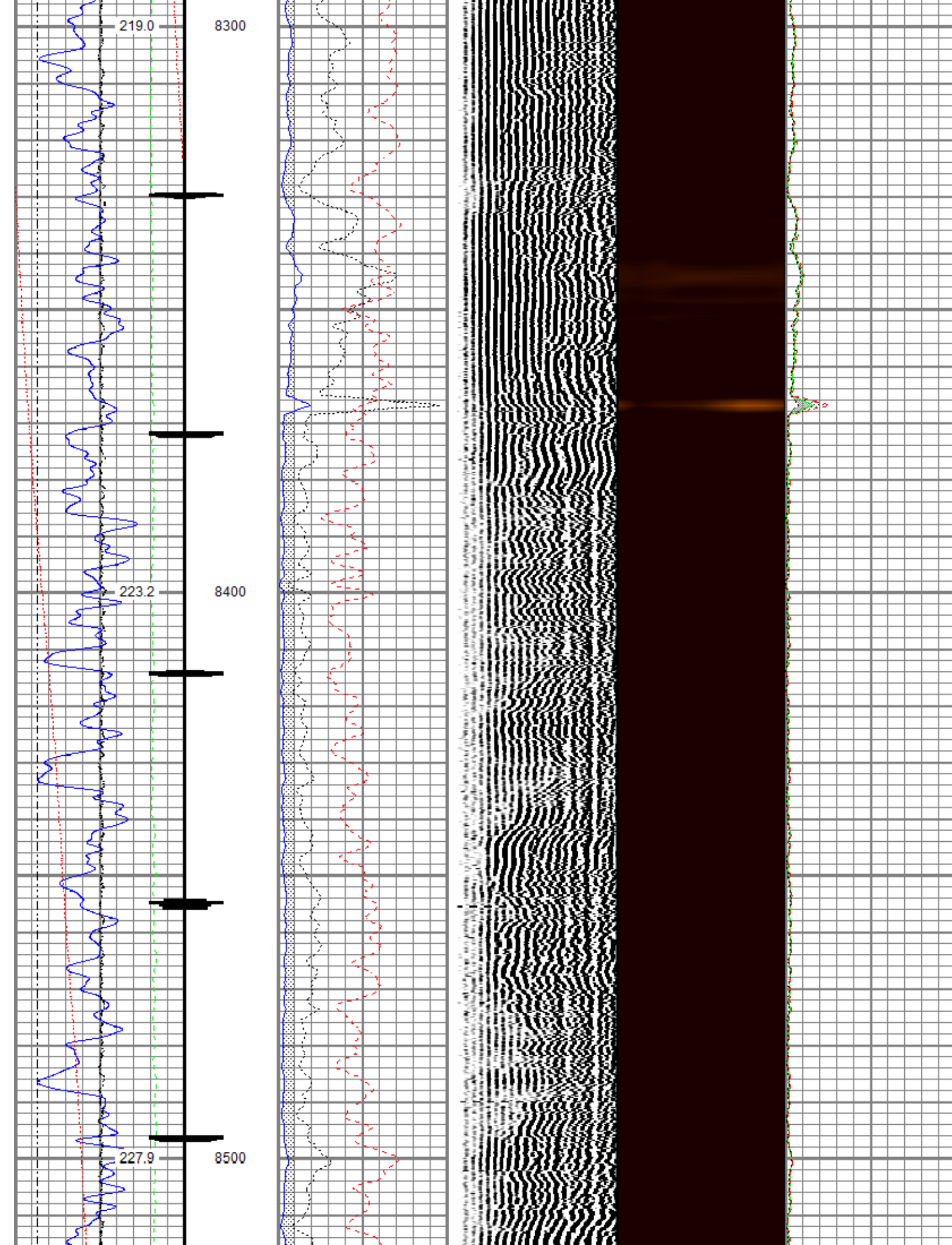


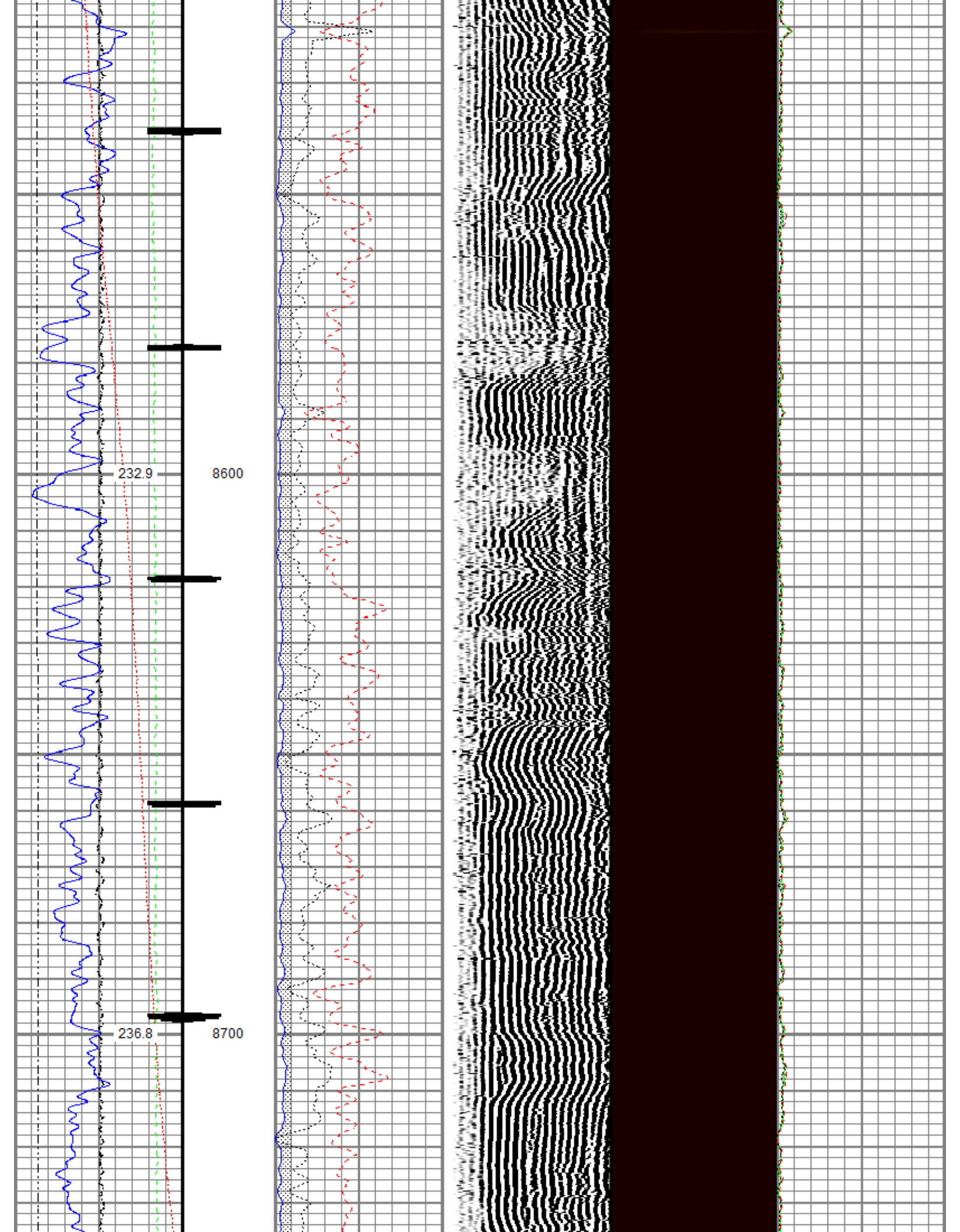


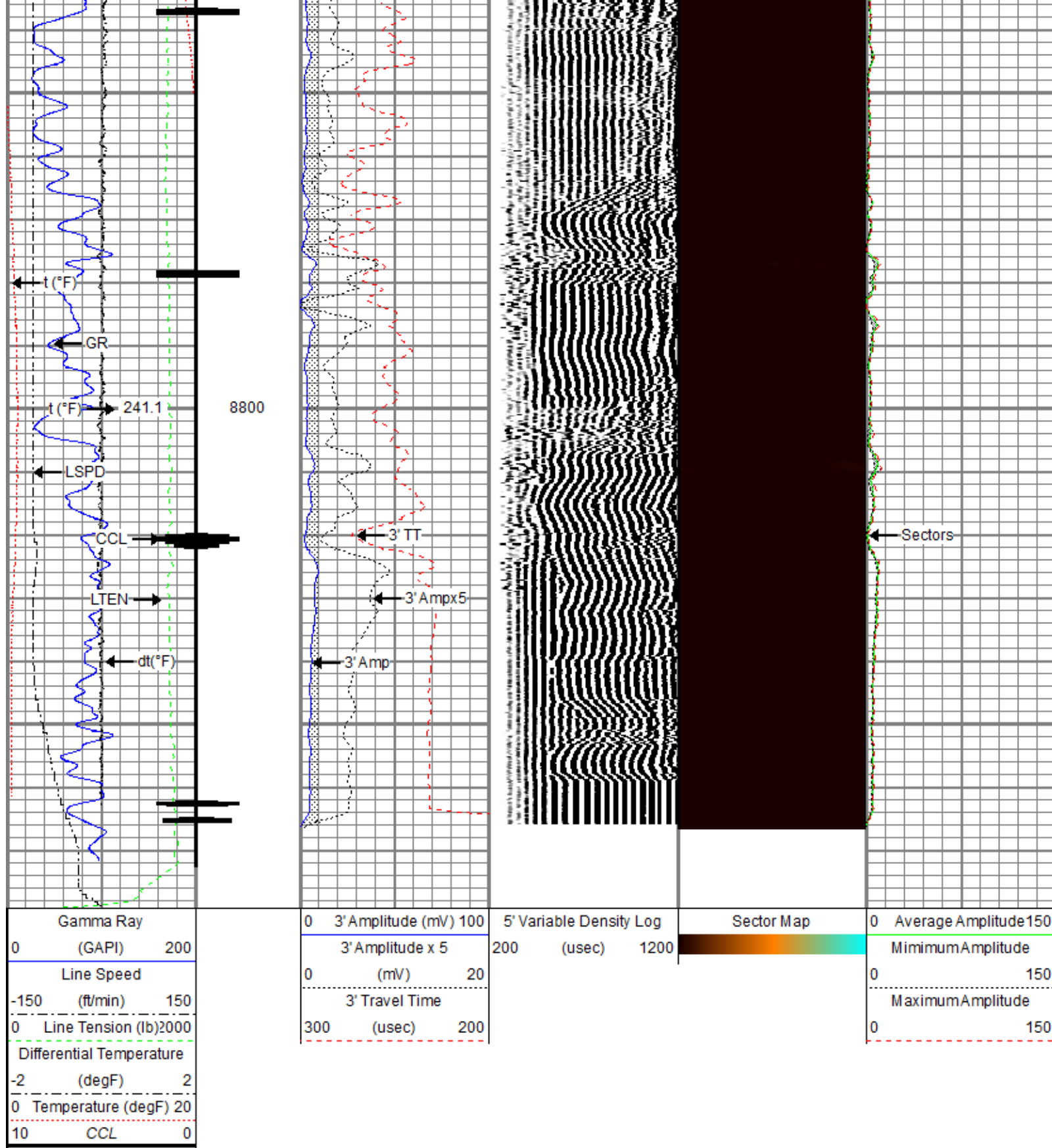












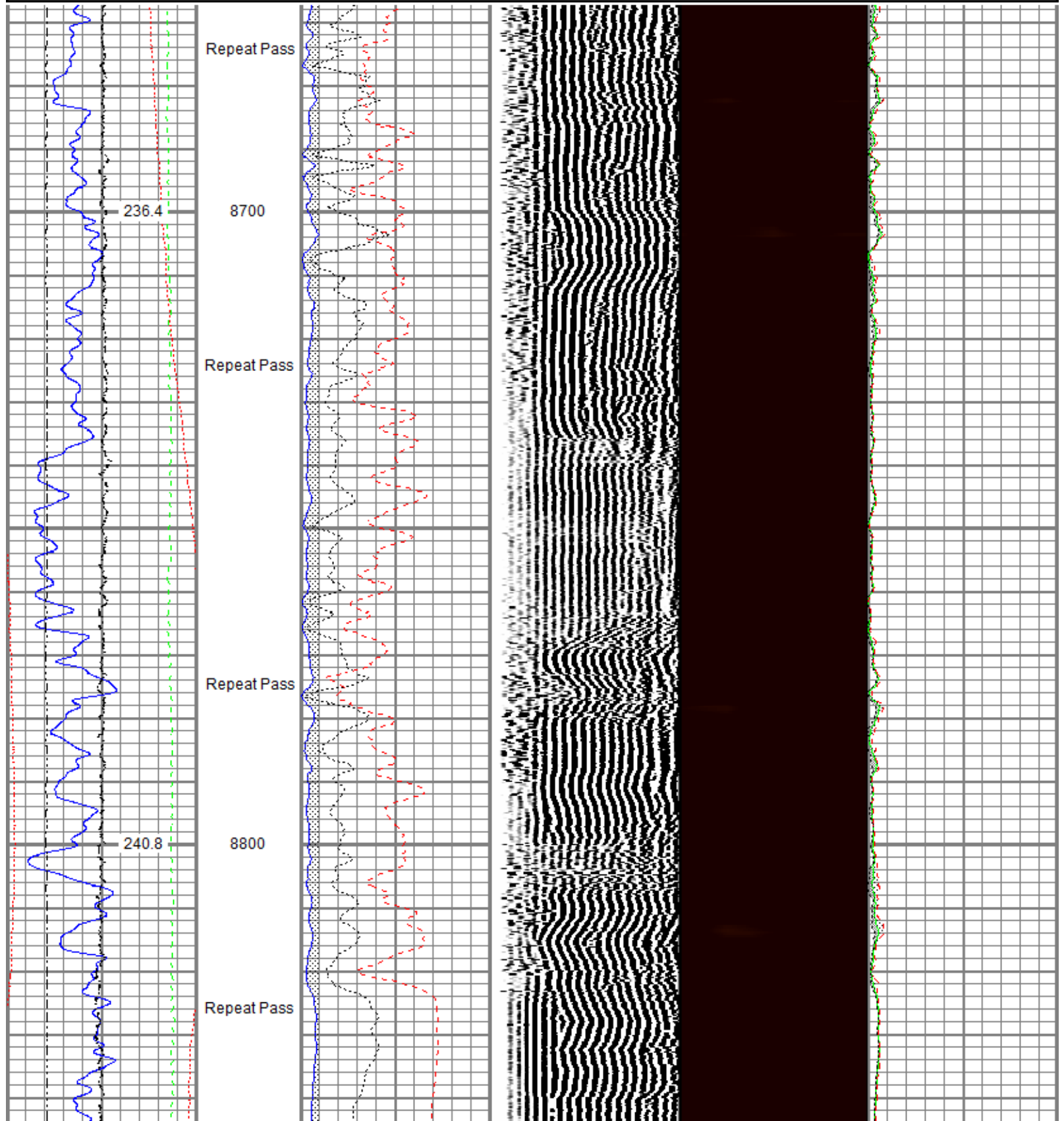
Repeat Pass

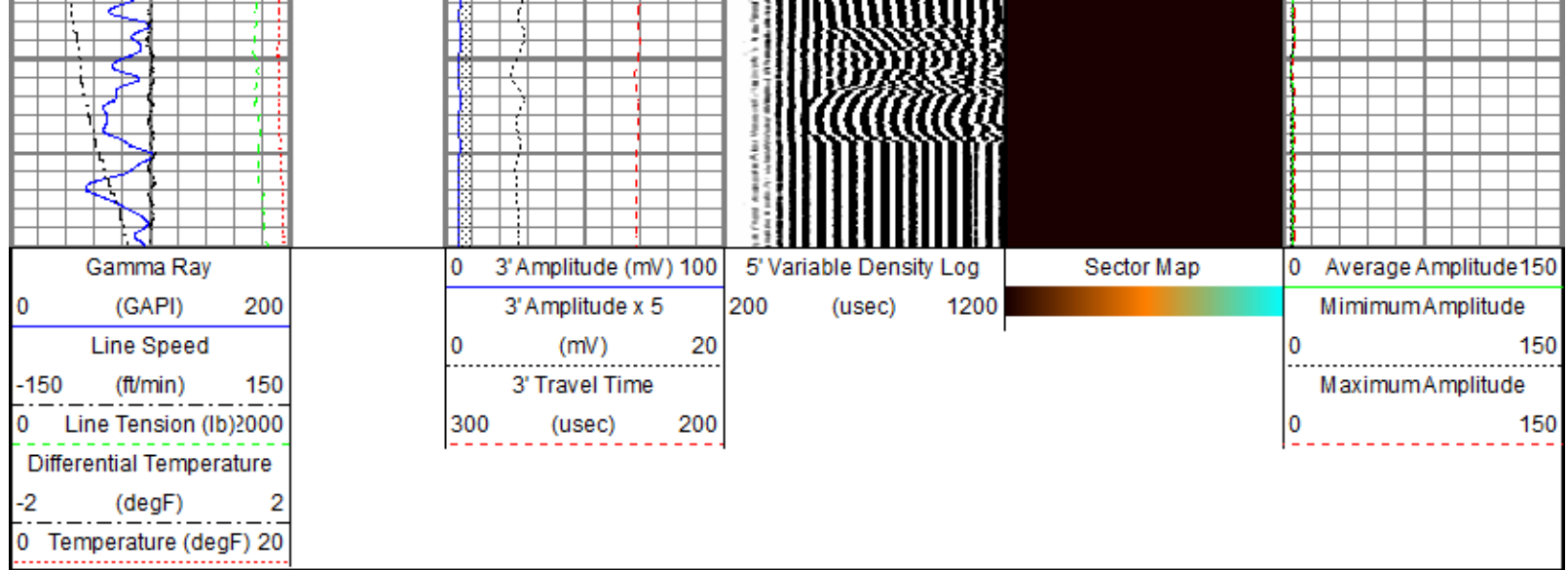
Recorded With 0 PSI Surface Induced Pressure

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 Dataset Pathname repeat.1  
 Presentation Format ros\_rbt004\_tep

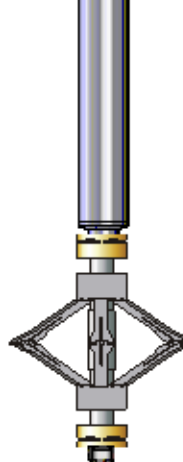


Gamma Ray			0 3' Amplitude (mV) 100			5' Variable Density Log			Sector Map			0 Average Amplitude 150		
0	(GAPI)	200	3' Amplitude x 5			200	(usec)	1200				Minimum Amplitude		
Line Speed			0 (mV) 20									0 150		
-150	(ft/min)	150	3' Travel Time									Maximum Amplitude		
Line Tension (lb)			300 (usec) 200									0 150		
Differential Temperature														
-2	(degF)	2												
Temperature (degF)														
0		20												





Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
TEMP	16.33		Titan CHD-14375 GO	1.03	1.44	3.60
			Titan 1-7/16" Assembled Electric Cable Head w/ 1" Fishing Neck			
			DSS RAC-2750 5A GO	2.55	2.75	32.00
			DSS 2-3/4" Roller 5 Arm Centralizer w/ GO Ends			
			Probe Radii-2750 RBT (101013)	9.39	2.75	105.00
			Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub			
WVFS8	14.10					
WVFS7	14.10					
WVFS6	14.10					
WVFS5	14.10					
WVFS4	14.10					
WVFS3	14.10					
WVFS2	14.10					
WVFS1	14.10					
WVFCAL	14.10					
WVF3FT	14.10					
WVF5FT	13.10					
CCL\$2	6.42		DSS RAC-2750 5A GO	2.55	2.75	32.00
	6.42		DSS 2-3/4" Roller 5 Arm Centralizer w/ GO Ends			

GR	5.18		Probe GR-CCL-2750 GOB (FW1307-038) Probe 2-3/4" rev.2 Digital Scintillation Gamma Ray/CCL Combined	4.51	2.75	55.00
			DSS RAC-2750 5A GO DSS 2-3/4" Roller 5 Arm Centralizer w/ GO Ends	2.55	2.75	32.00
			GO BN-14375 GO 1-7/16" Bull Nose with Go Box Top	0.25	1.44	1.00
Dataset: tep_federal rwf 411-17_rbl_06-23-19.db: field/well/run1/main.1 Total length: 22.82 ft Total weight: 260.60 lb O.D.: 2.75 in						

Calibration Report	
Database File	c:\programdata\warrior\data\tep_federal rwf 411-17_rbl_06-23-19\tep_federal rwf 411-17_rbl_06-23-19.db
Dataset Pathname	main.1
Dataset Creation	Mon Jun 24 11:11:54 2019

Gamma Ray Calibration Report		
Serial Number:	FW1307-038	
Tool Model:	2750 GOB	
Performed:	Sun Nov 12 12:44:12 2017	
Calibrator Value:	637.0	GAPI
Background Reading:	113.2	cps
Calibrator Reading:	1022.4	cps
Sensitivity:	0.7007	GAPI/cps

Segmented Cement Bond Log Calibration Report		
Serial Number:	101013	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	0.002	ft

Master Calibration, performed (Derived):						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.005	0.859	0.800	81.196	94.230	0.293
CAL	0.003	0.752				
5'	0.014	0.769	0.800	81.196	106.510	-0.698
SUM						
S1	0.009	0.992	0.000	100.000	101.738	-0.931
S2	0.007	0.907	0.000	100.000	111.107	-0.793
S3	0.006	0.808	0.000	100.000	124.661	-0.699
S4	0.007	0.768	0.000	100.000	131.295	-0.900
S5	0.007	0.783	0.000	100.000	128.867	-0.842
S6	0.006	0.818	0.000	100.000	123.222	-0.753
S7	0.005	0.877	0.000	100.000	114.583	-0.540
S8	0.007	0.970	0.000	100.000	103.878	-0.759


Internal Reference Calibration, performed (Not Performed):
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	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.003	0.752	1.000	0.000

Air Zero Calibration, performed Sun Jun 23 17:36:45 2019:						
	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.007		0.000		-0.000	
5'	0.020		0.000		-0.001	
SUM						
S1	0.009		0.000		0.001	
S2	0.008		0.000		0.000	
S3	0.008		0.000		-0.001	
S4	0.007		0.000		-0.000	
S5	0.008		0.000		-0.000	
S6	0.008		0.000		-0.000	
S7	0.008		0.000		-0.001	
S8	0.008		0.000		0.000	

Temperature Calibration Report					
Serial Number:	101013				
Tool Model:	2750 RBT				
Performed:	Sun Nov 12 13:21:13 2017				
	Reference		Reading		
Low Reference:	100.00 degF		112.30 degF		
High Reference:	350.00 degF		394.75 degF		
Gain:	0.89				
Offset:	0.60				
Delta Spacing	1				

	Company	TEP Rocky Mountain LLC
	Well	Federal RWF 411-17
	Field	Rulison
	County	Garfield
	State	Colorado