



Radial Cement Bond  
Gamma Ray  
Casing Collar Log

Company Ursa Operating Company LLC  
Well Boies Ranch B-19N FED 23B-19-2-97  
Field Sulphur Creek  
County Rio Blanco State Colorado

Location: API #: 05-103-12296  
SEC 19 TWP 2S RGE 97W  
Permanent Datum Ground Level Elevation 6304.8'  
Log Measured From Kelly Bushing 21 FT  
Drilling Measured From Kelly Bushing  
Other Services  
PN  
Elevation  
K.B. 6325.8'  
D.F. 6324.8'  
G.L. 6304.8'

Date	30-NOV-2018			
Run Number	Two			
Depth Driller	11029 FT			
Depth Logger	10940 FT			
Bottom Logged Interval	10926 FT			
Top Log Interval	Surface			
Open Hole Size	8.750"			
Type Fluid	Fresh Water			
Density / Viscosity	8.34 lb/gal			
Max. Recorded Temp.	257.8°F			
Estimated Cement Top	See Log			
Time Well Ready	ROA			
Time Logger on Bottom	22:00			
Equipment Number	HD-0359			
Location	Grand Junction, CO			
Recorded By	Z. Fisher			
Witnessed By	Luke Grieger			
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	J55	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 21 FT  
Log ran from 10926 FT to Surface  
Recorded Marker Joints at 5641-5653 FT, 7107-7119 FT, and 9521-9532 FT  
Log ran with 0 PSI Surface Induced Pressure

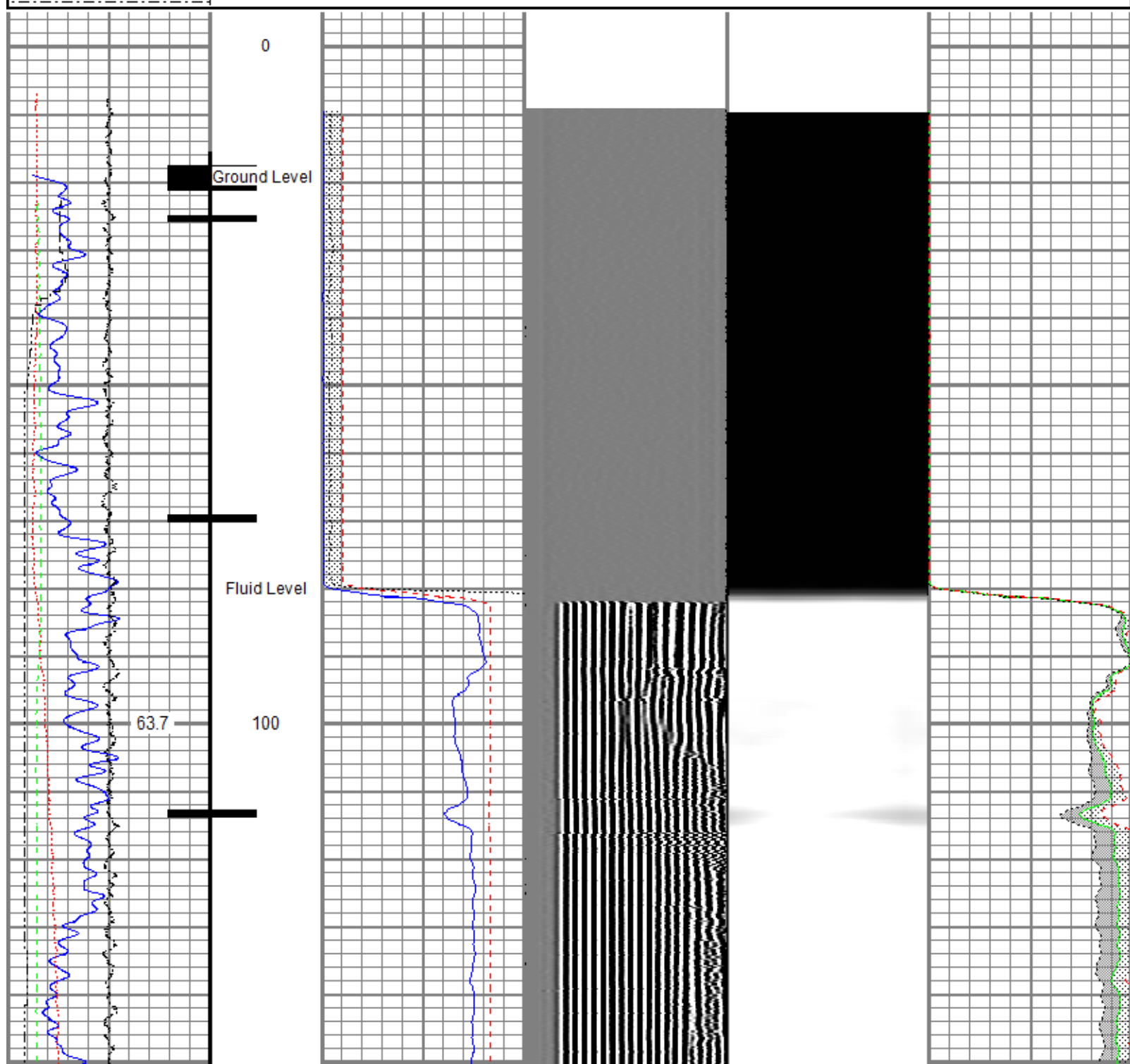
Thank you for choosing Reliance Oilfield Services, LLC!!

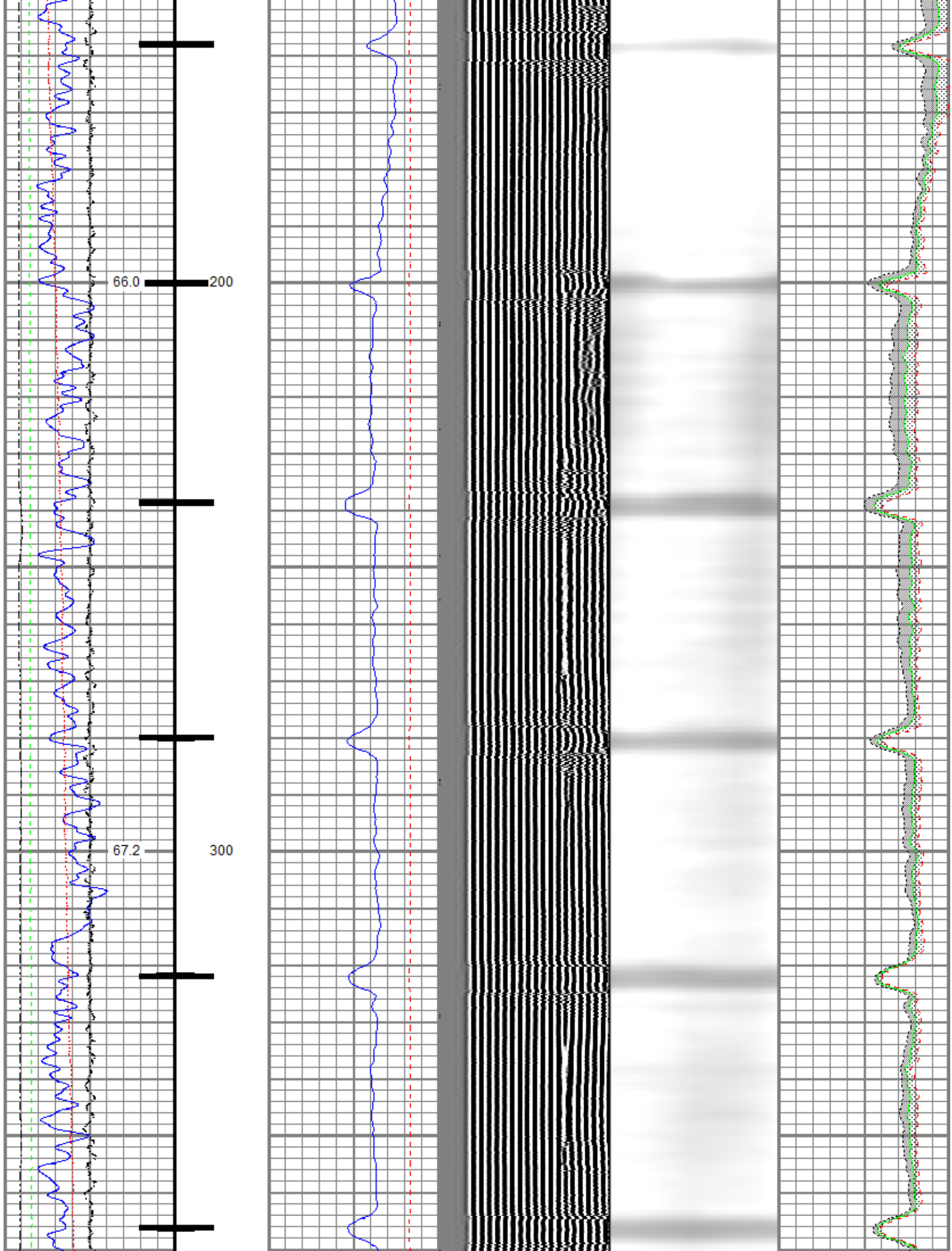
Main Pass

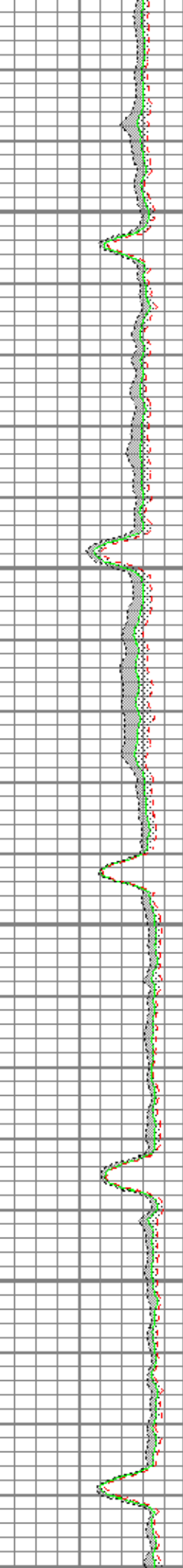
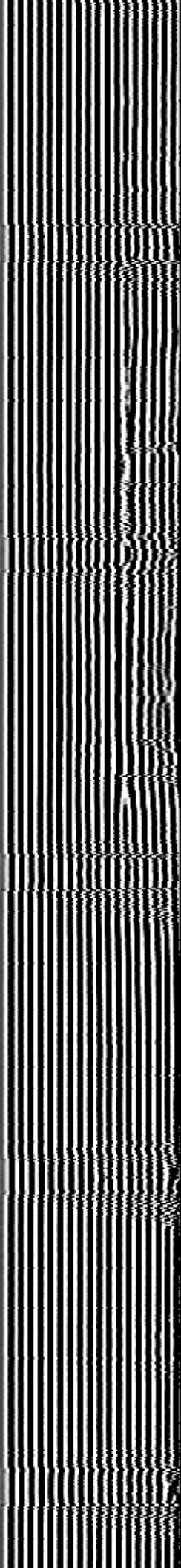
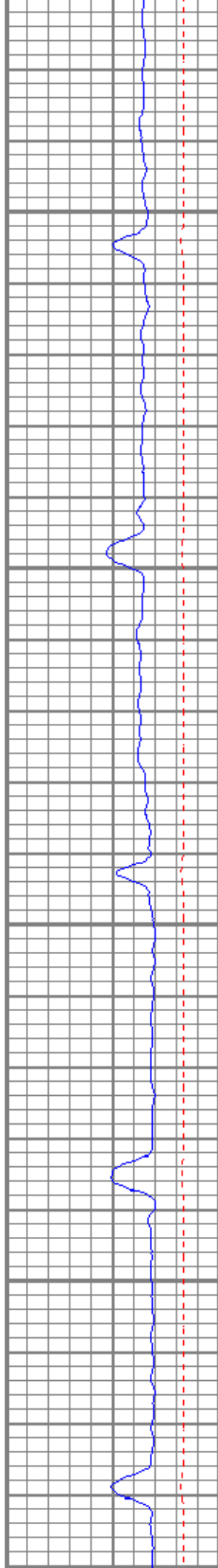
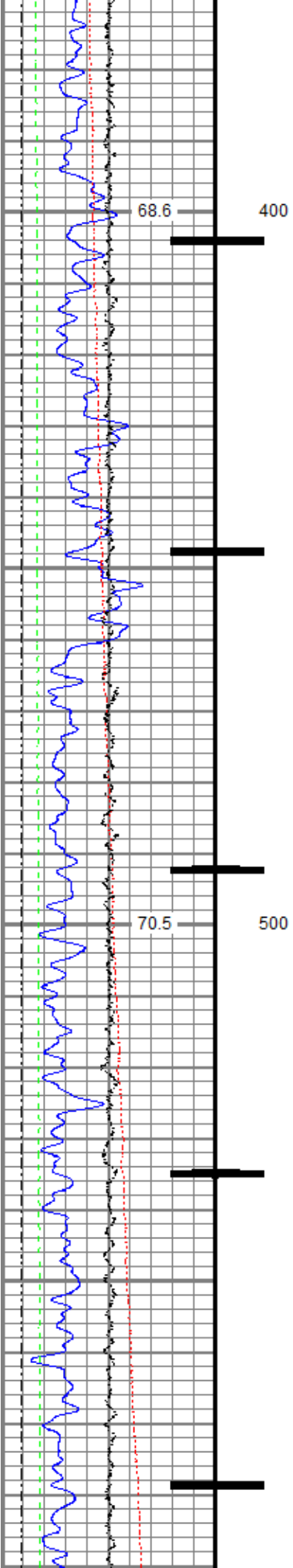


Database File ursa\_boies ranch b-19n fed 23blursa\_boies ranch b-19n fed 23b-19-2-97\_rbl\_11-30-18.db  
 Dataset Pathname main.1  
 Presentation Format ros\_radrii  
 Dataset Creation Sat Dec 01 12:51:35 2018  
 Charted by Depth in Feet scaled 1:240

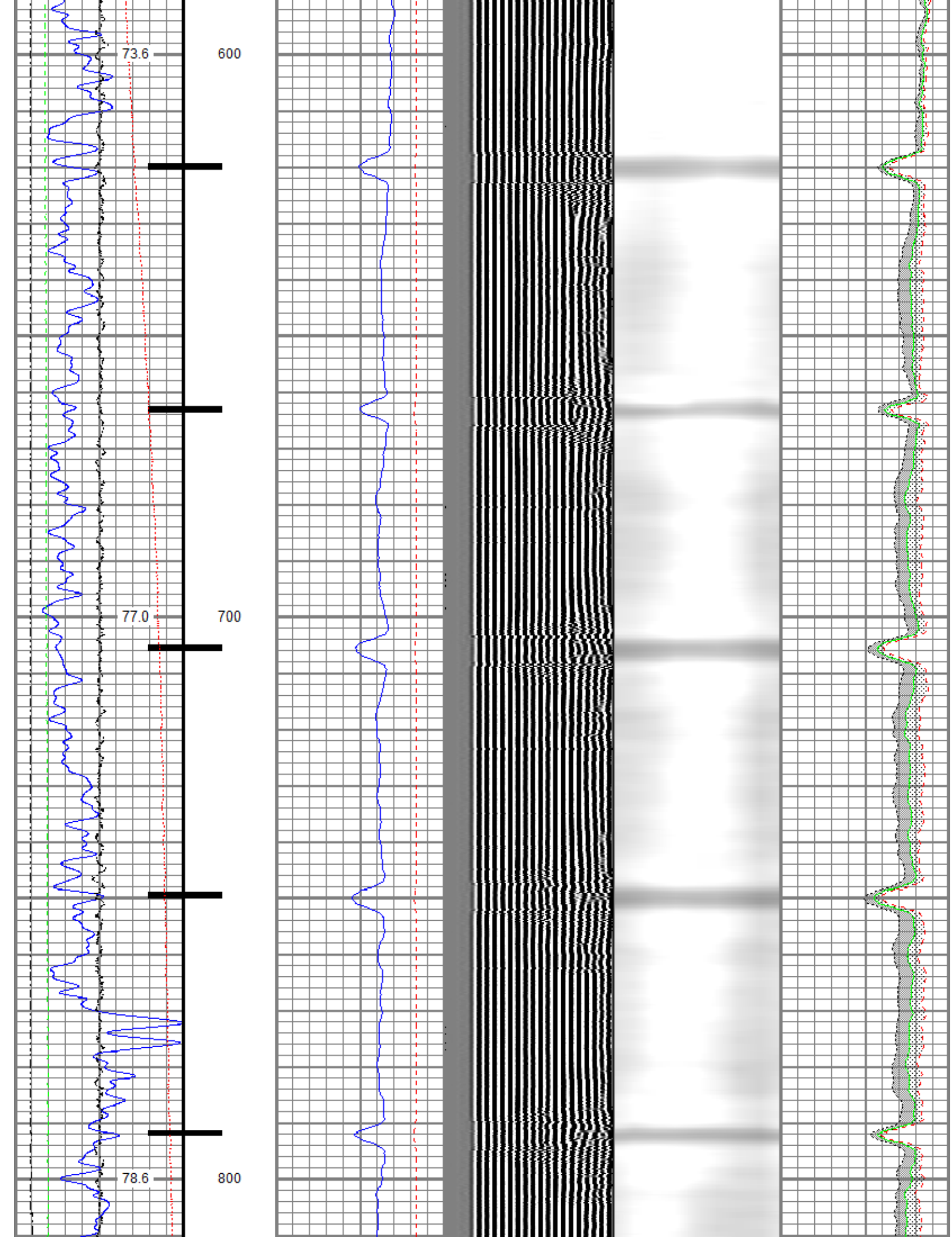
Gamma Ray	0	3' Amplitude (mV) 100	5' Variable Density Log	Sector Map	0	Average Amplitude 100
(GAPI) 120		3' Amplitude x 5	200 (usec) 1200			Minimum Amplitude
Casing Collar Locator	0	(mV) 20			0	100
Temperature (degF) 20		3' Travel Time				Maximum Amplitude
Line Speed	650	(usec) 150			0	100
(ft/min) 150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

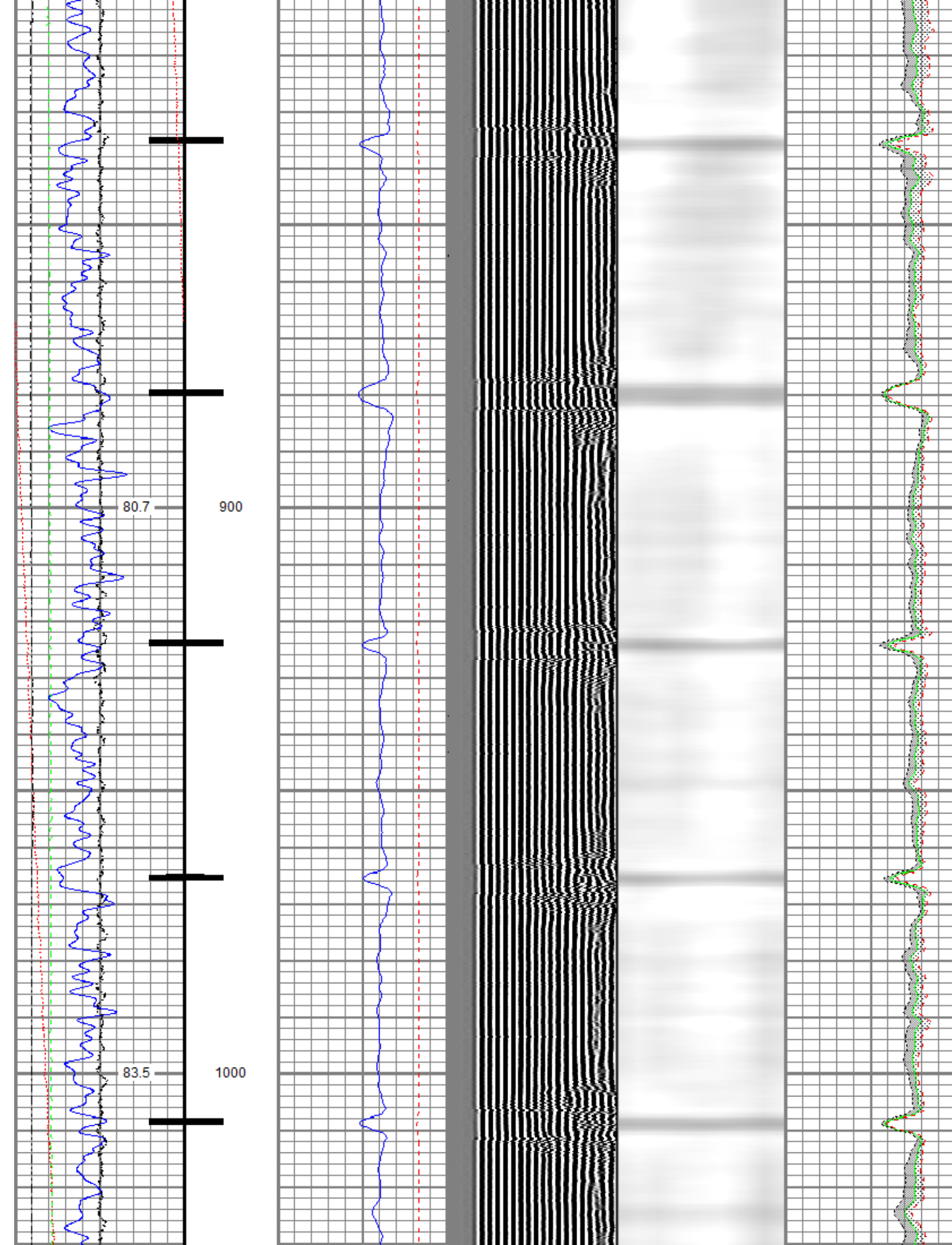


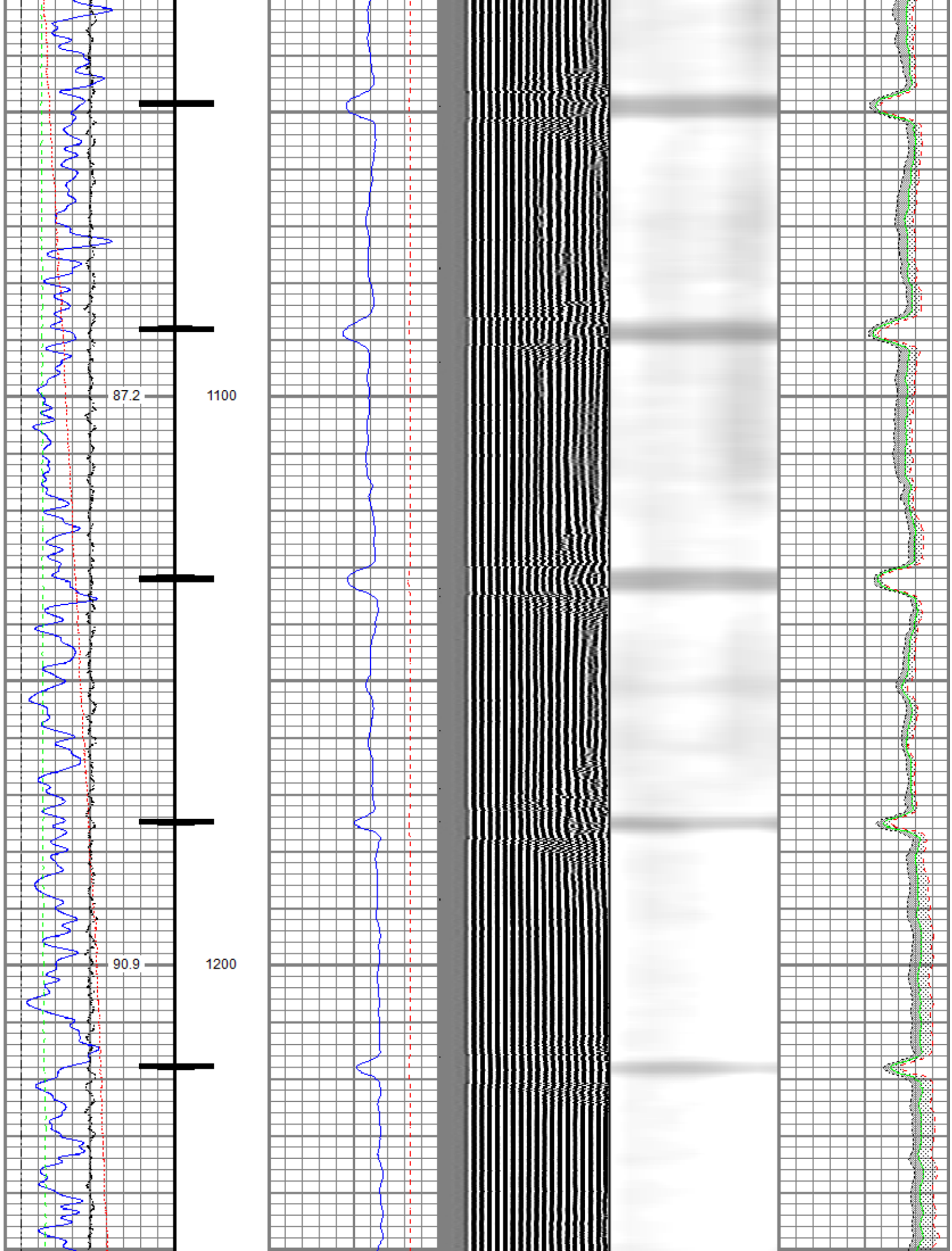




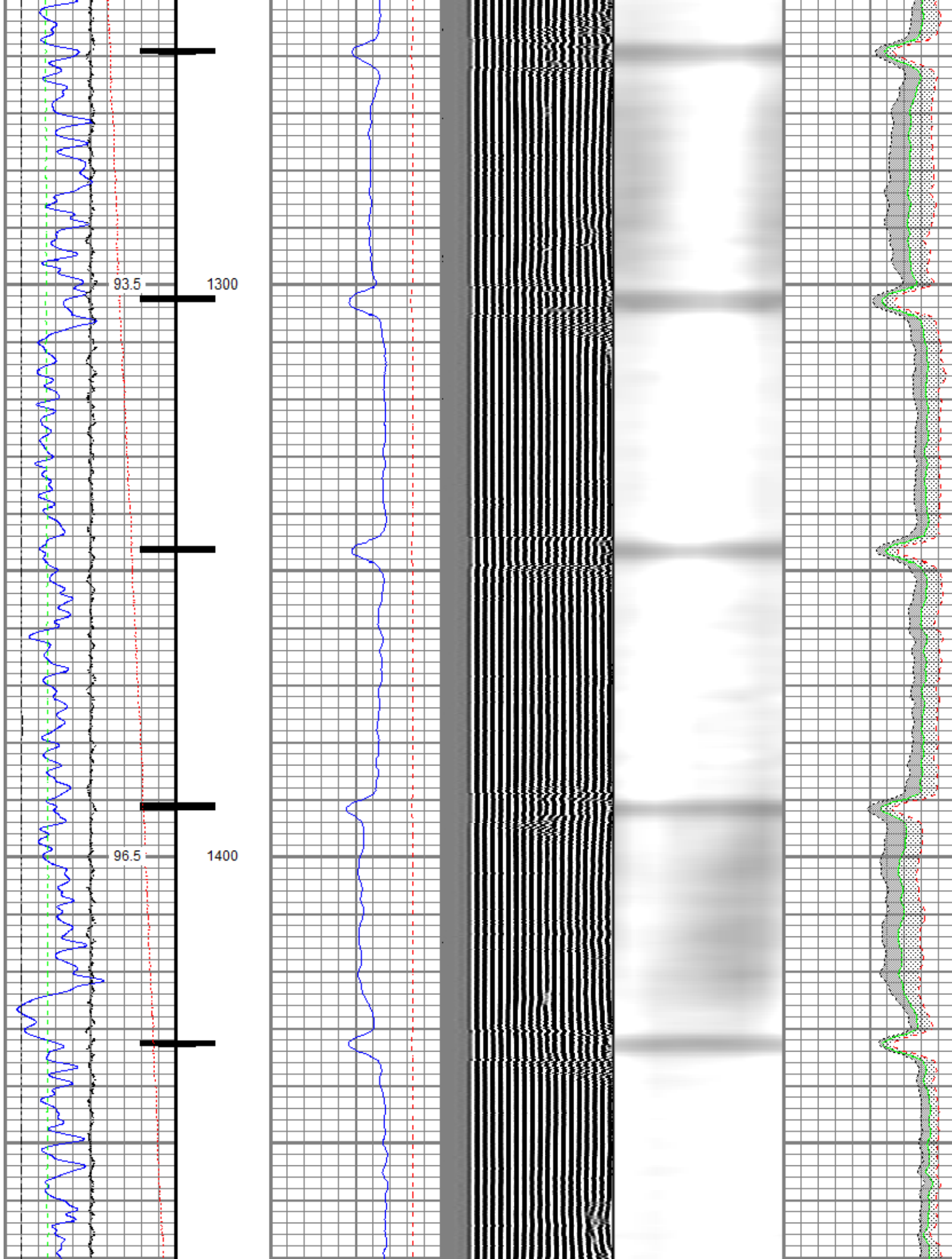




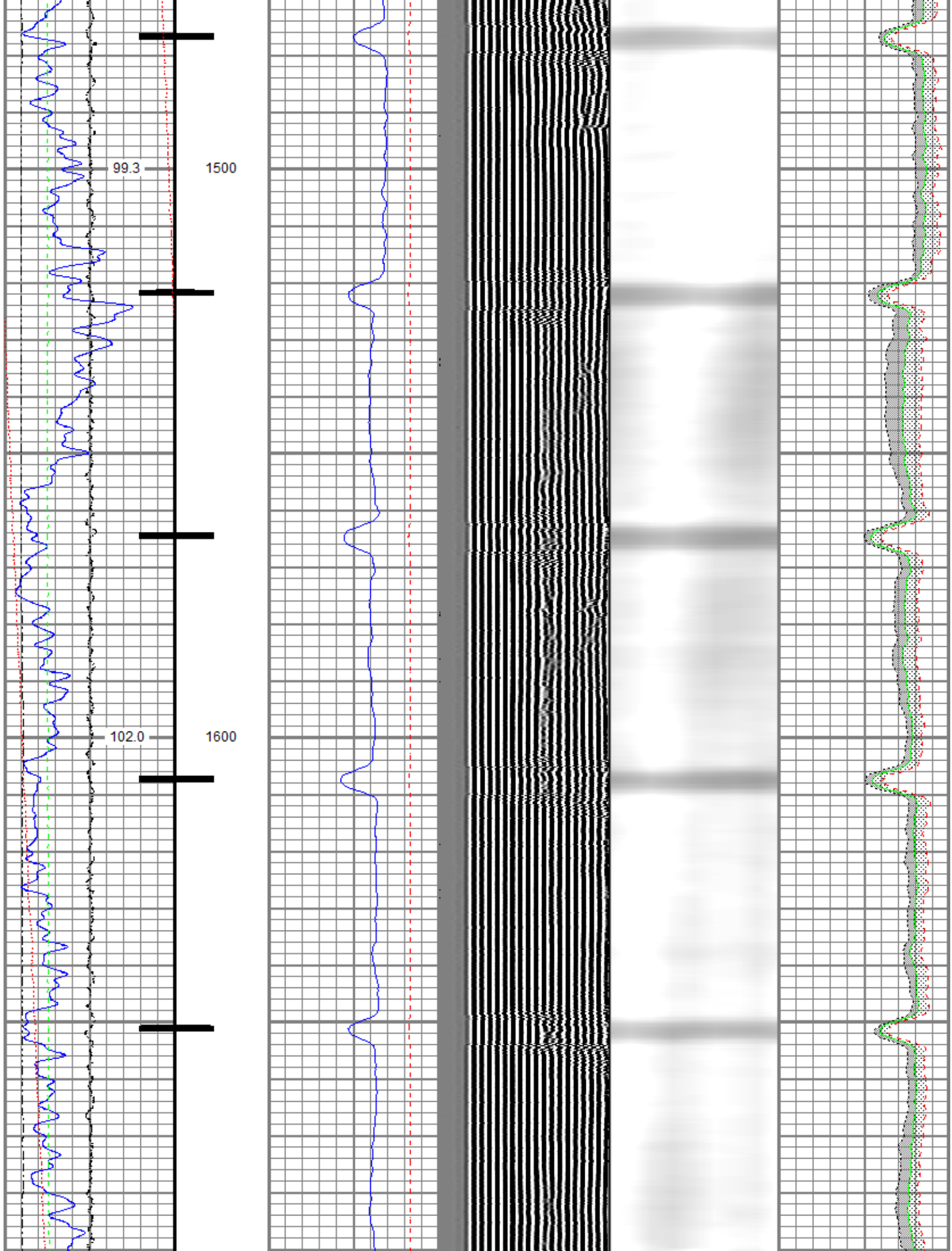


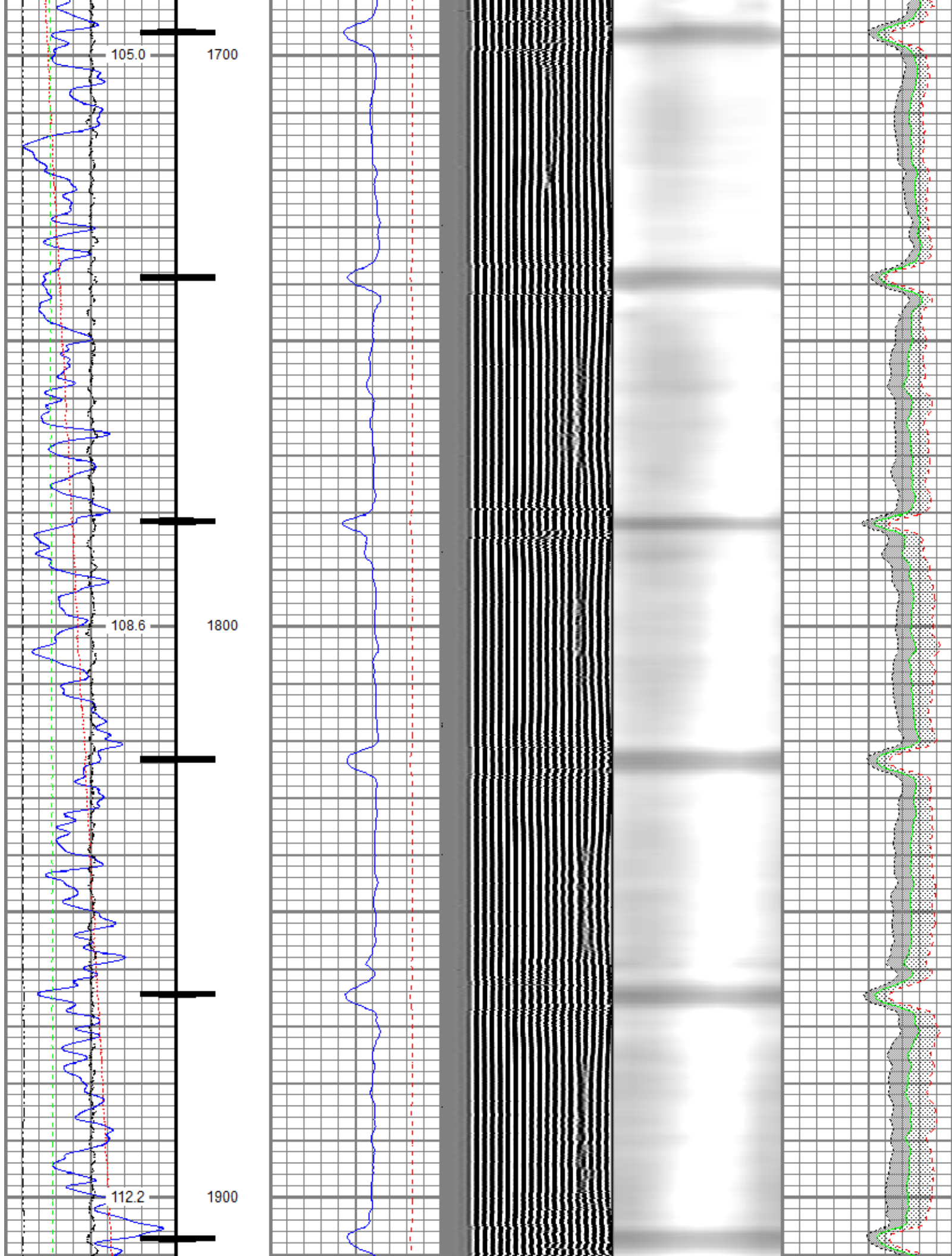


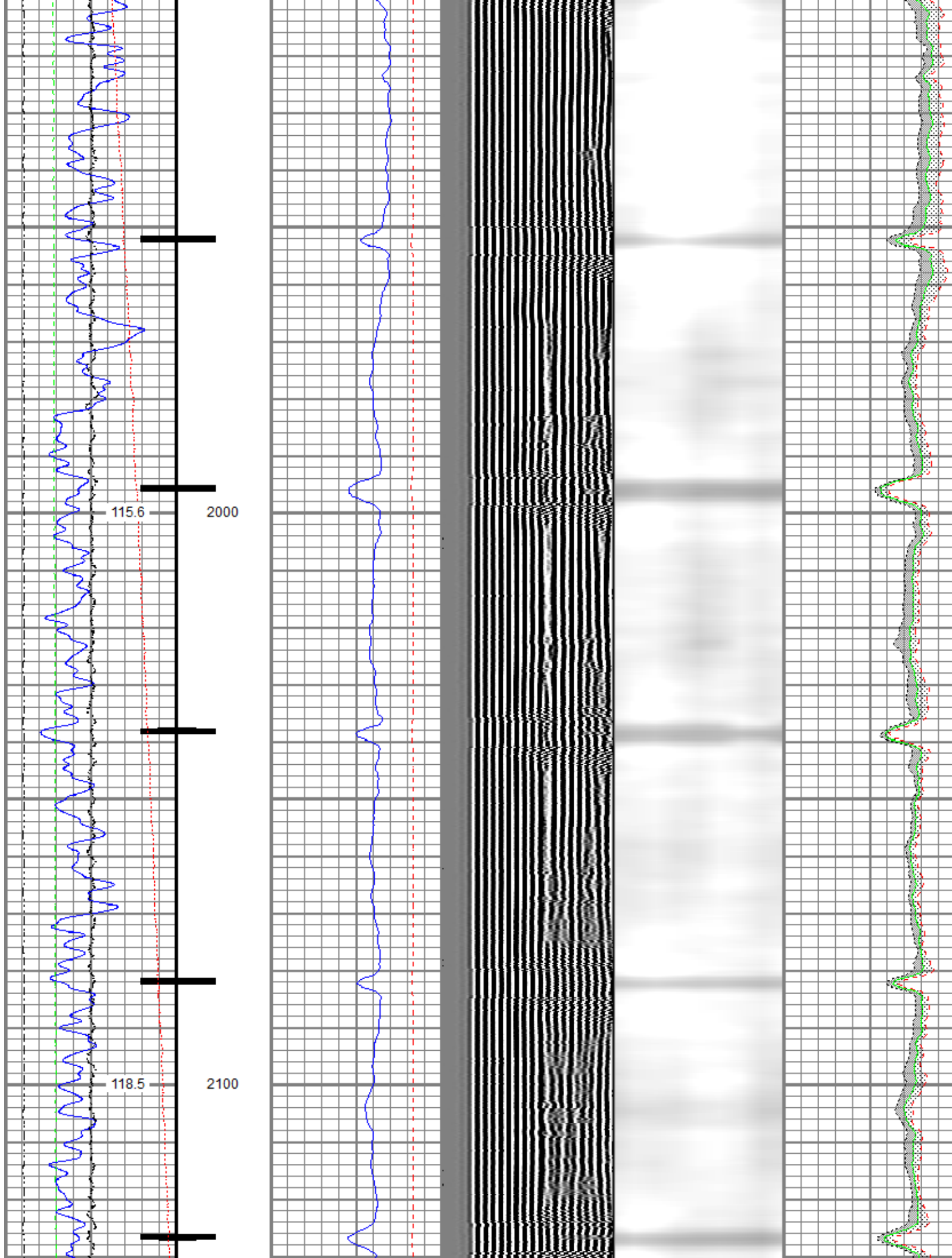




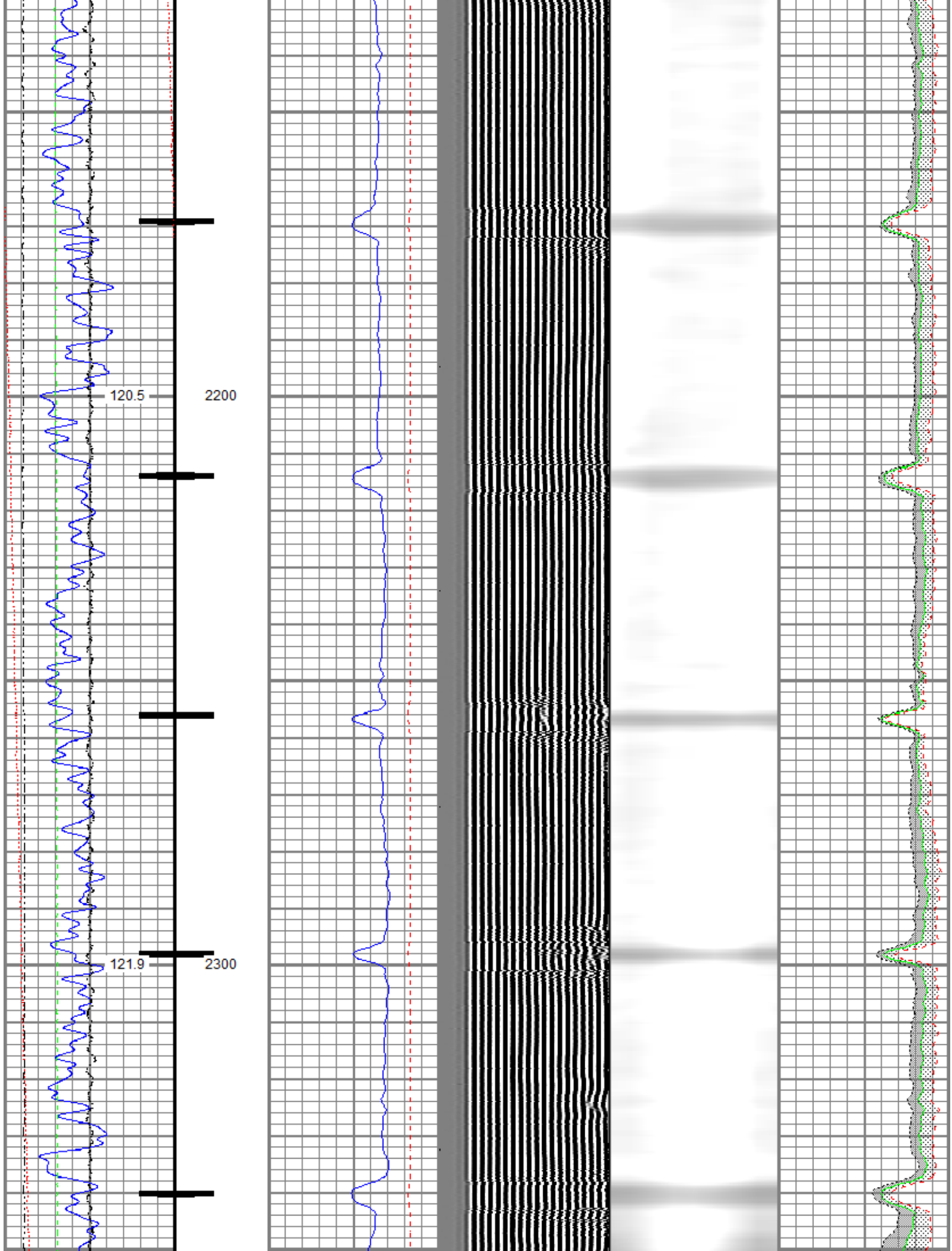




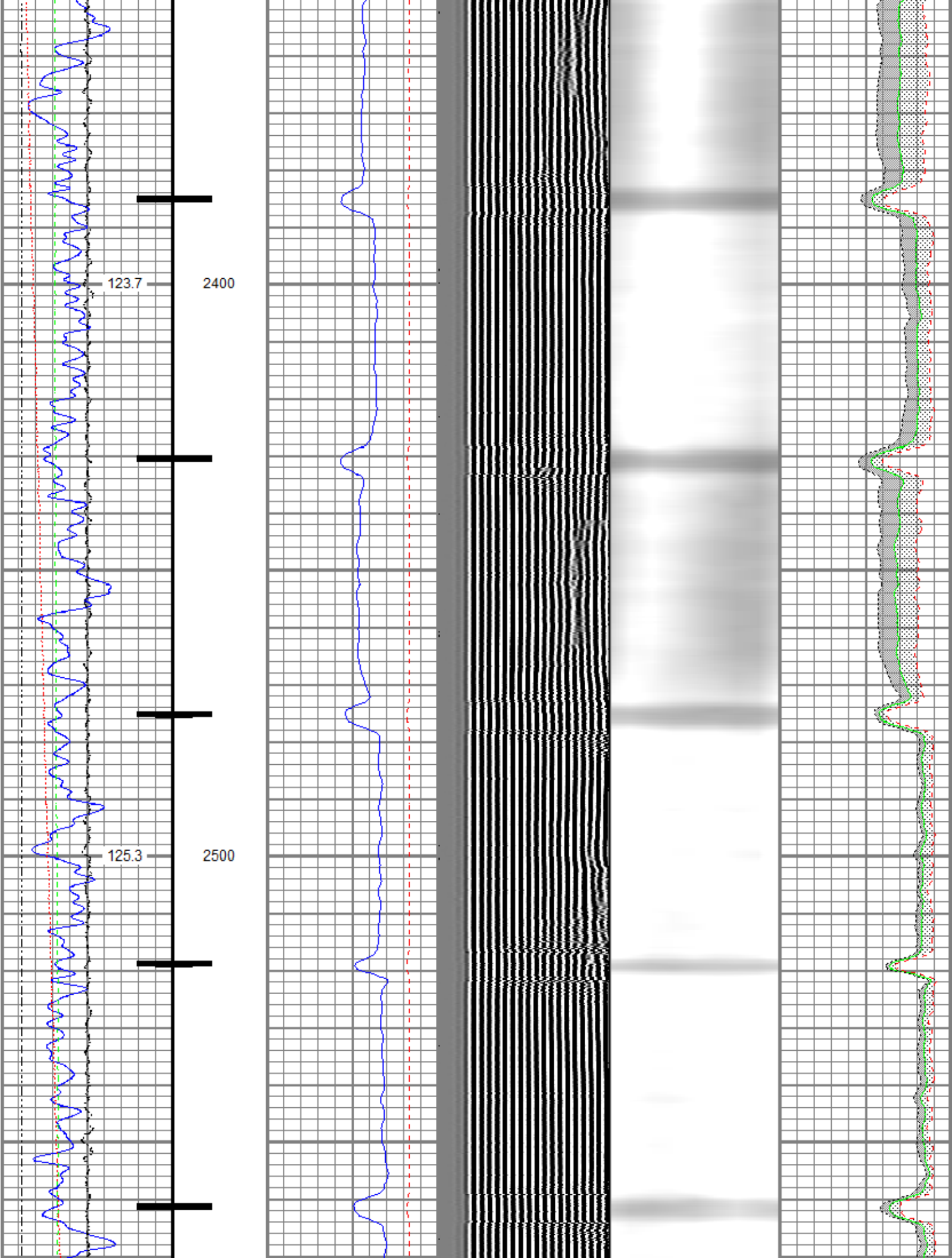


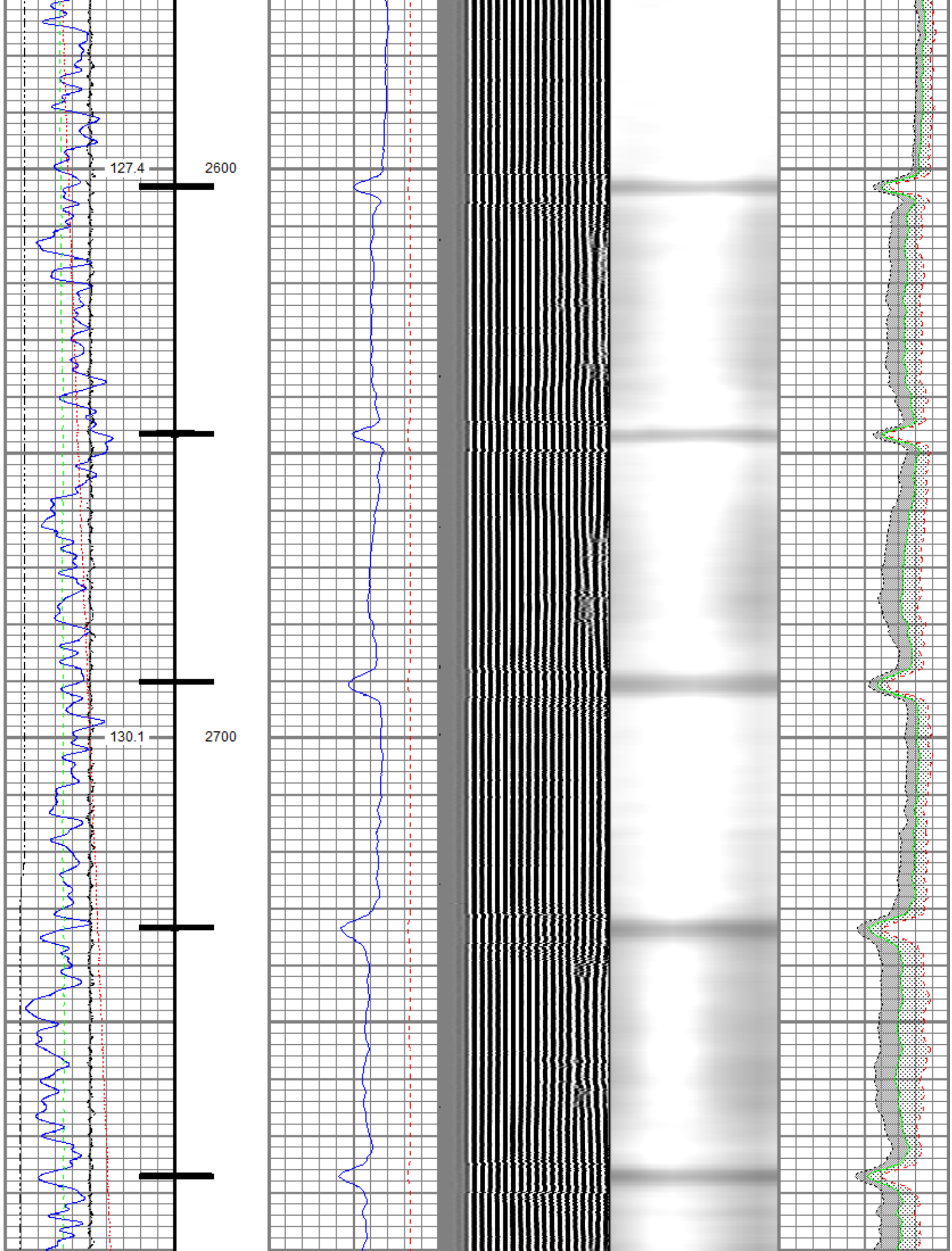


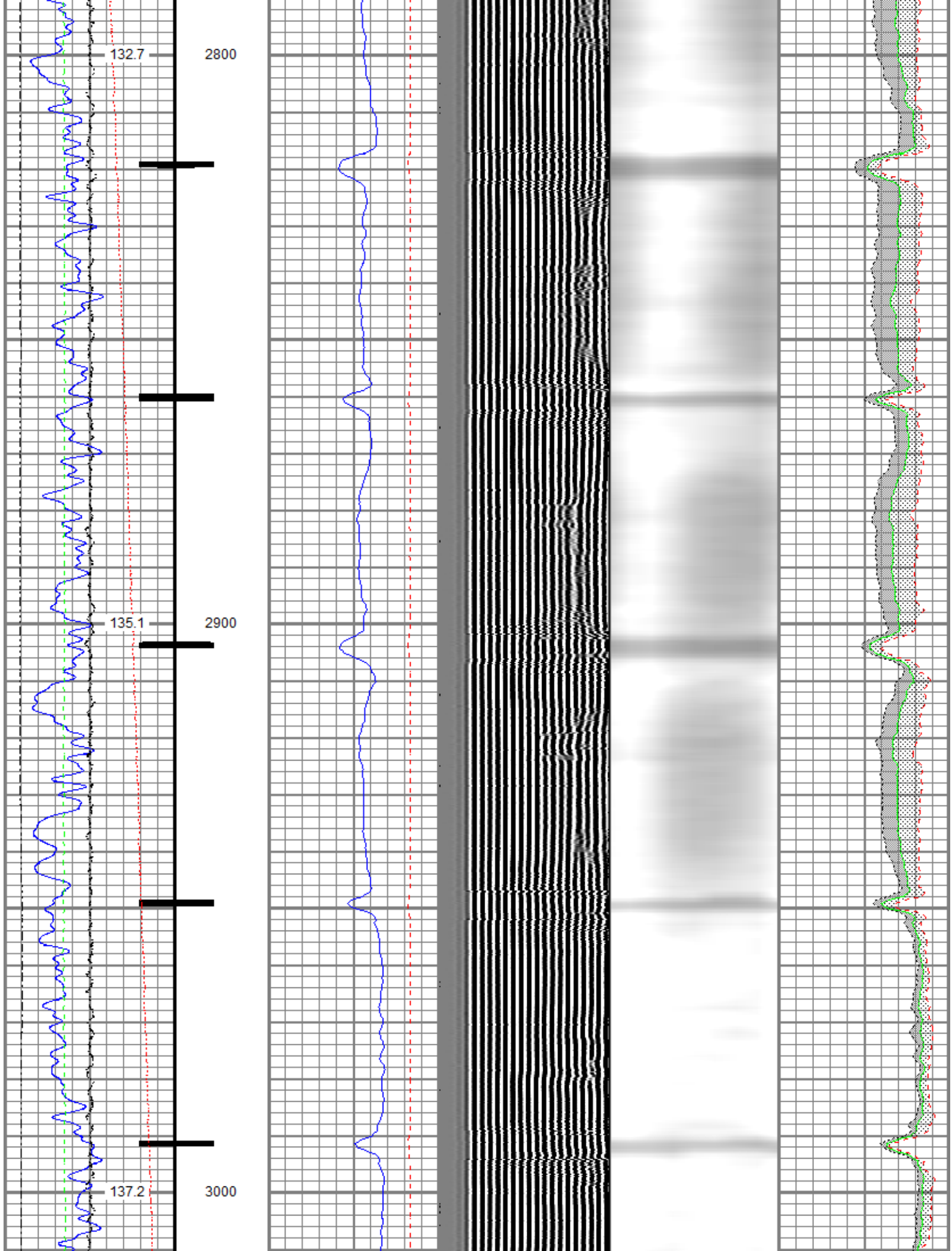




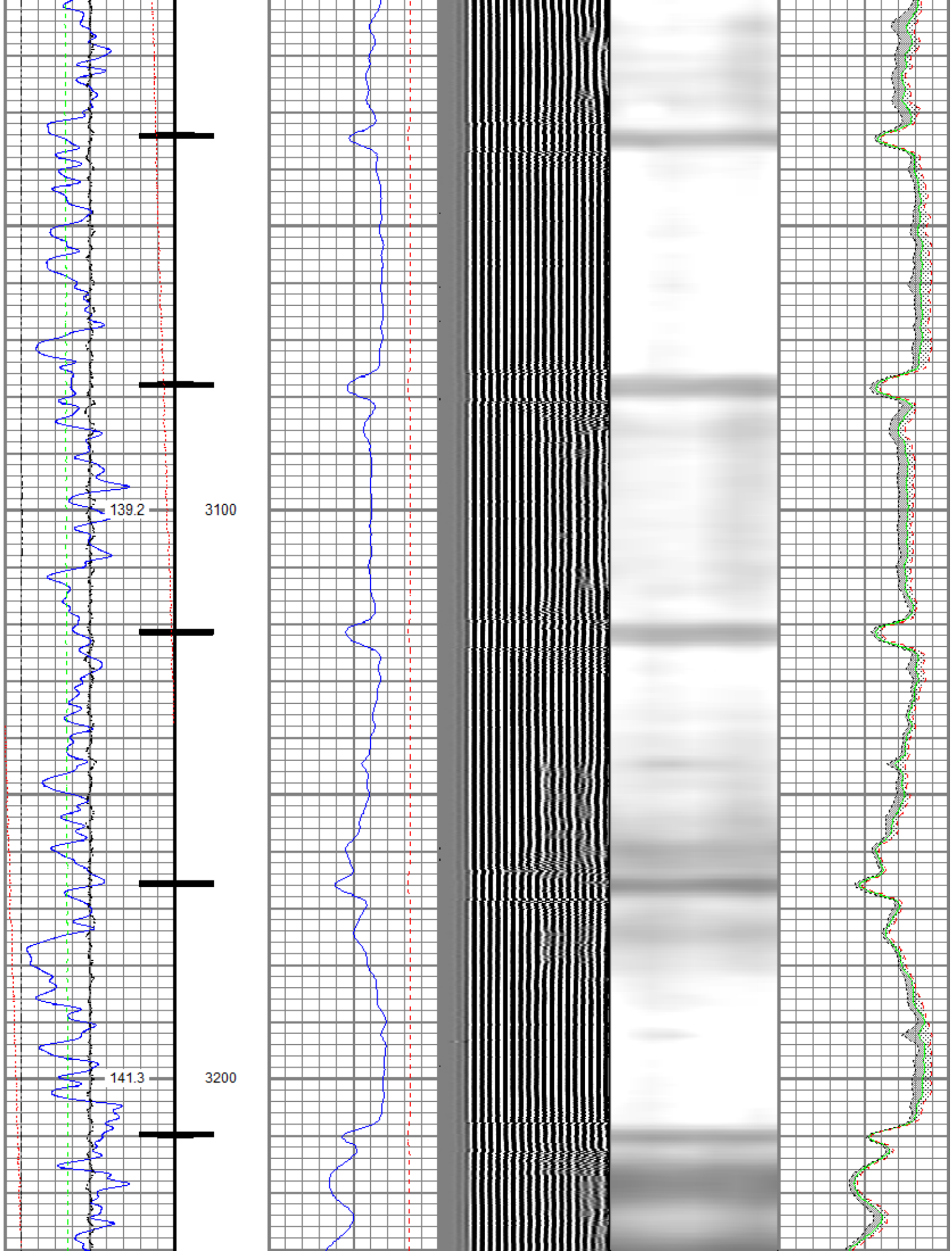




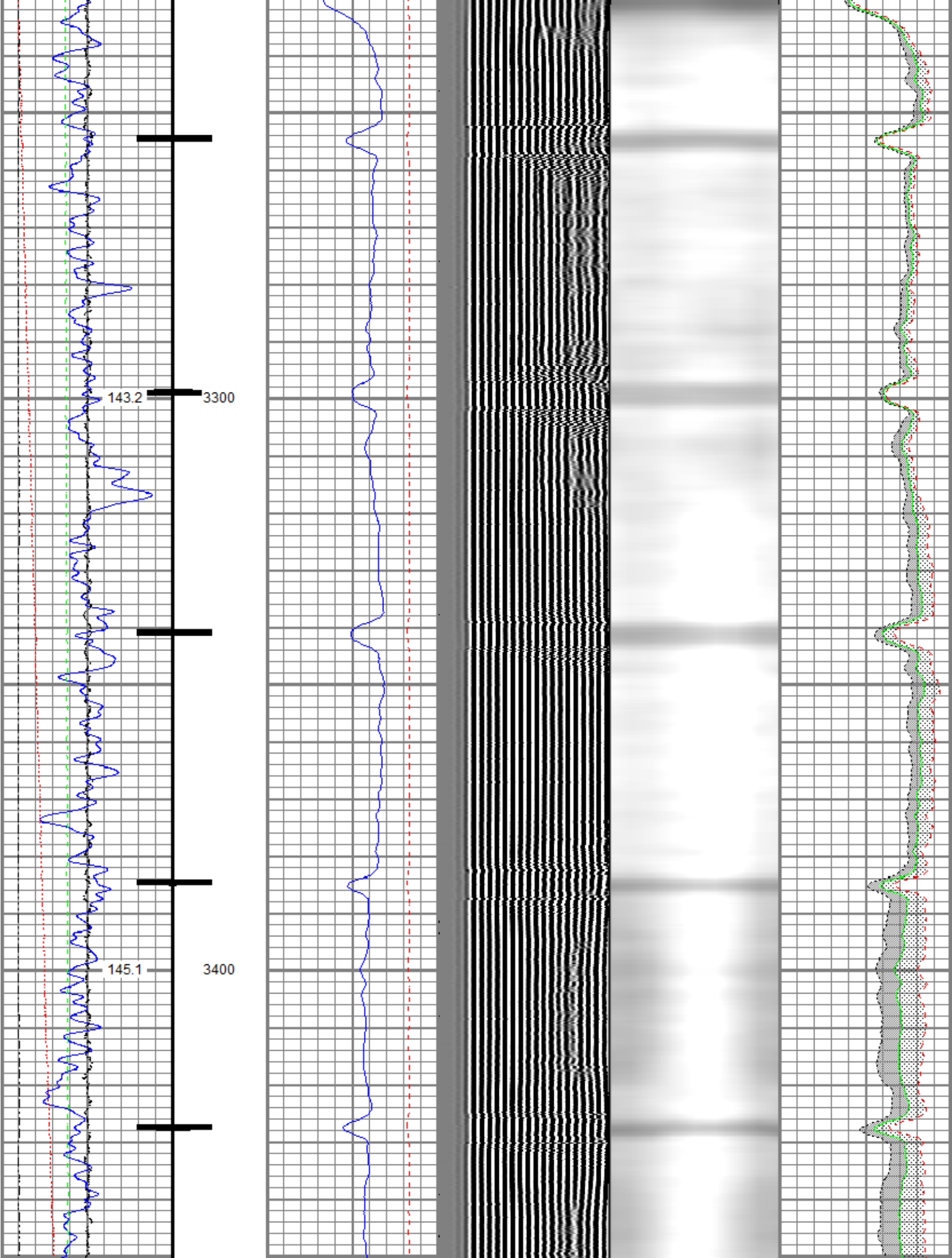


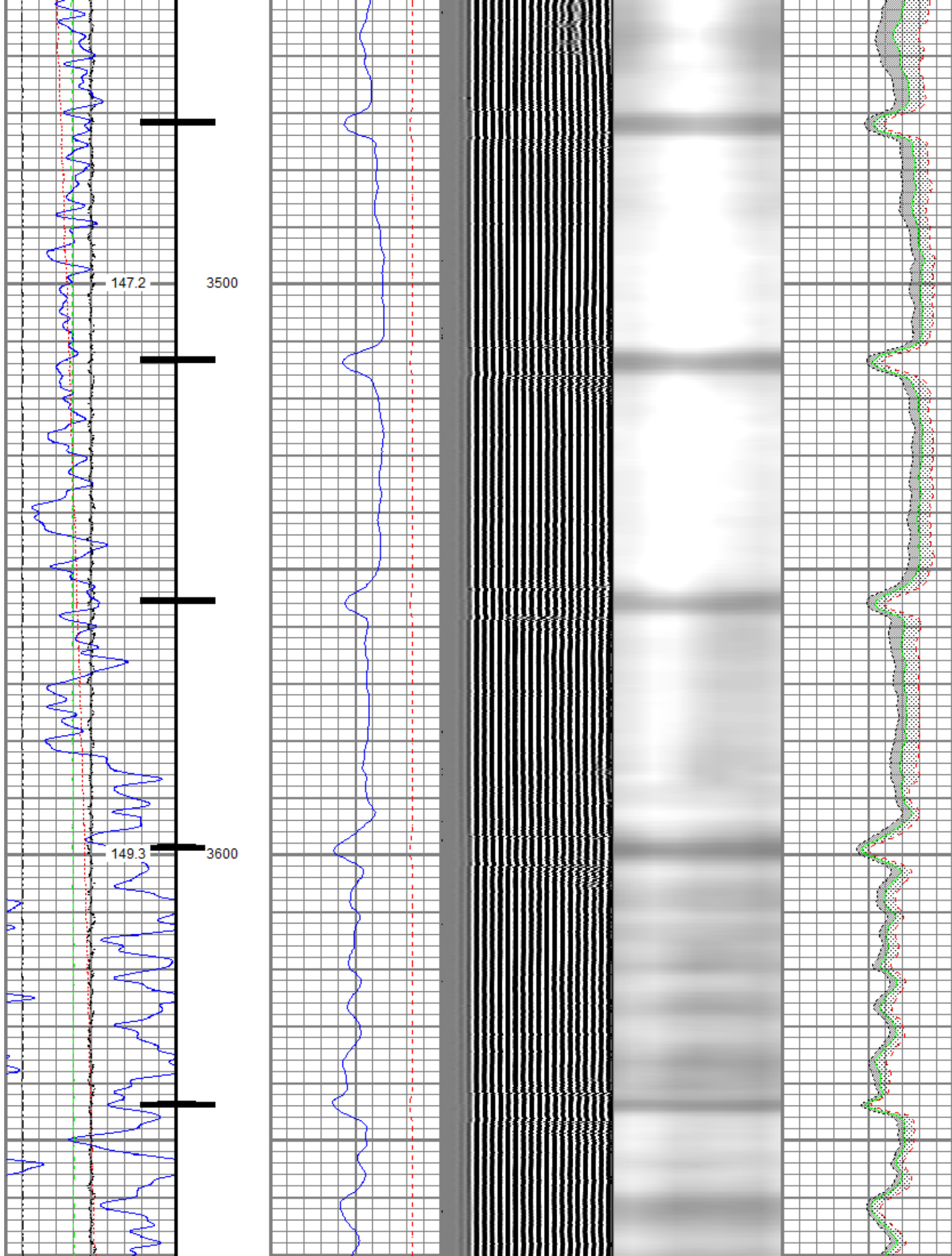


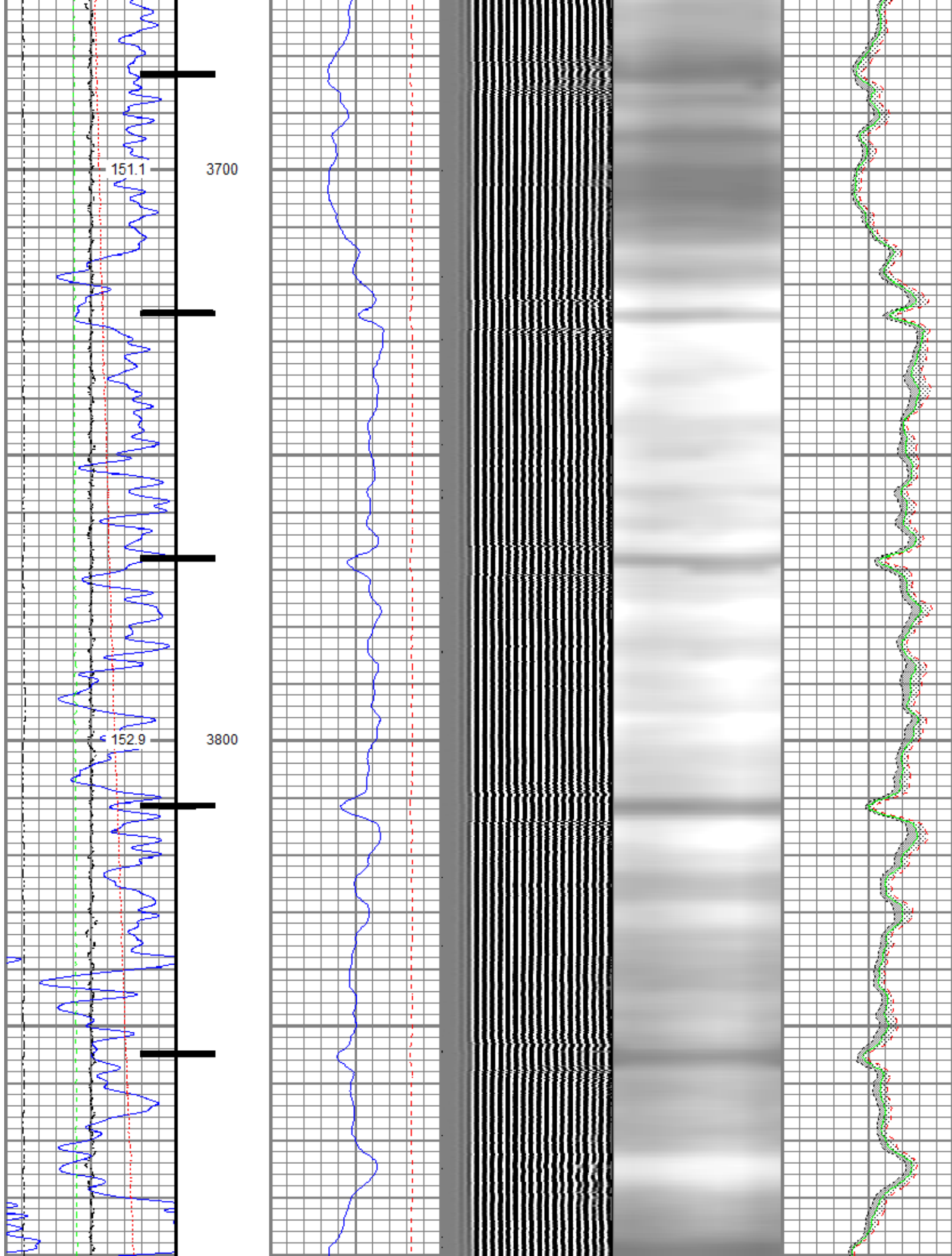




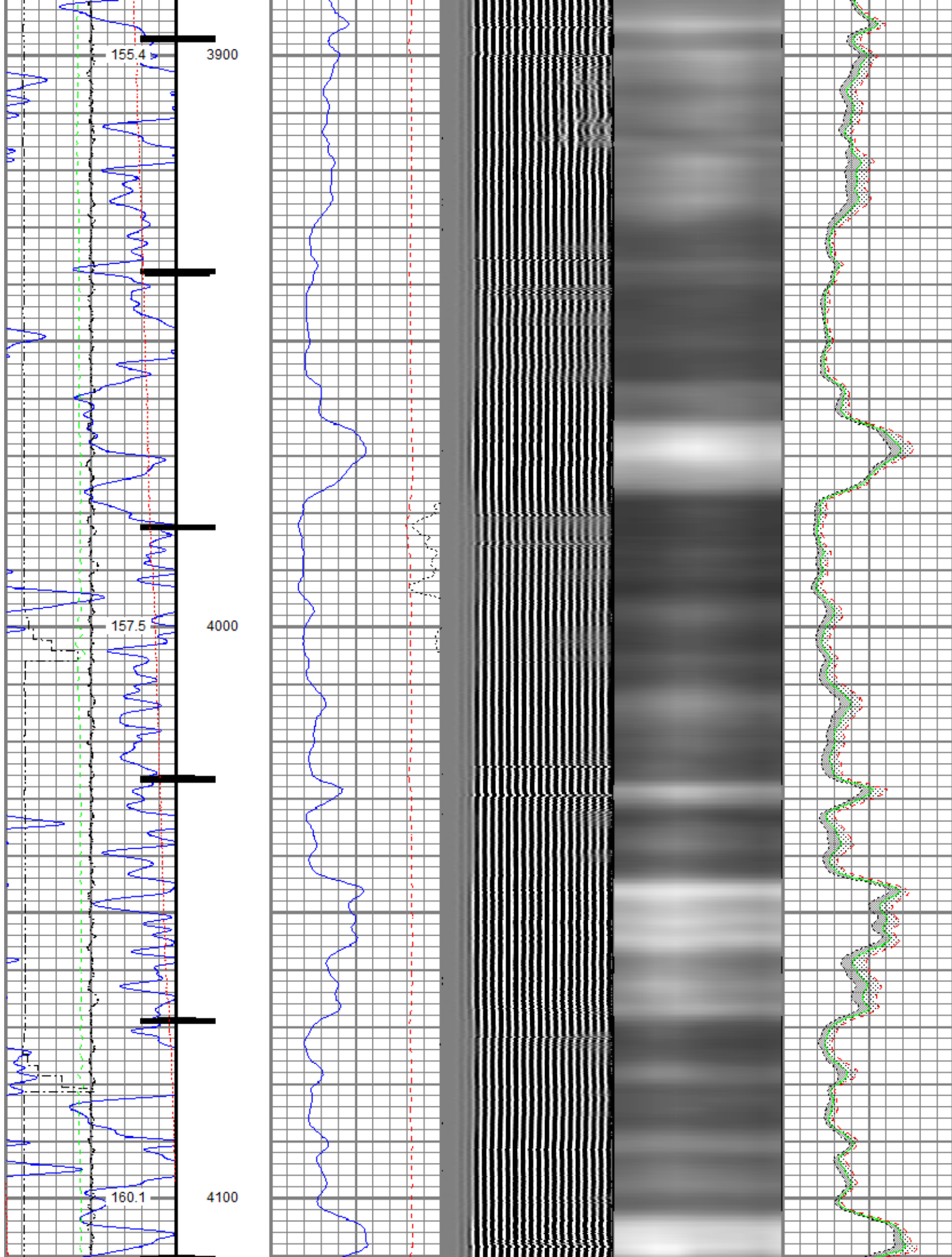




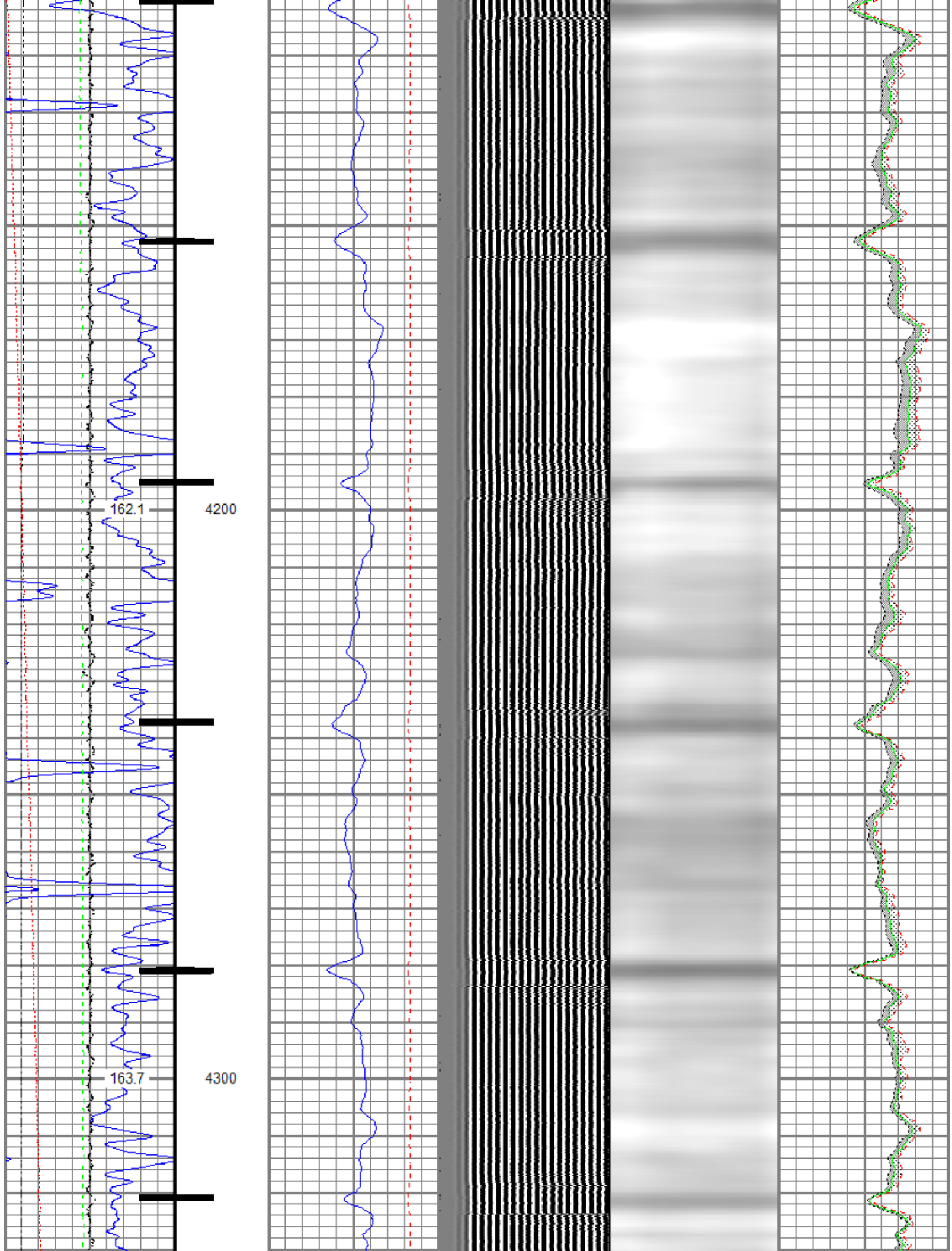


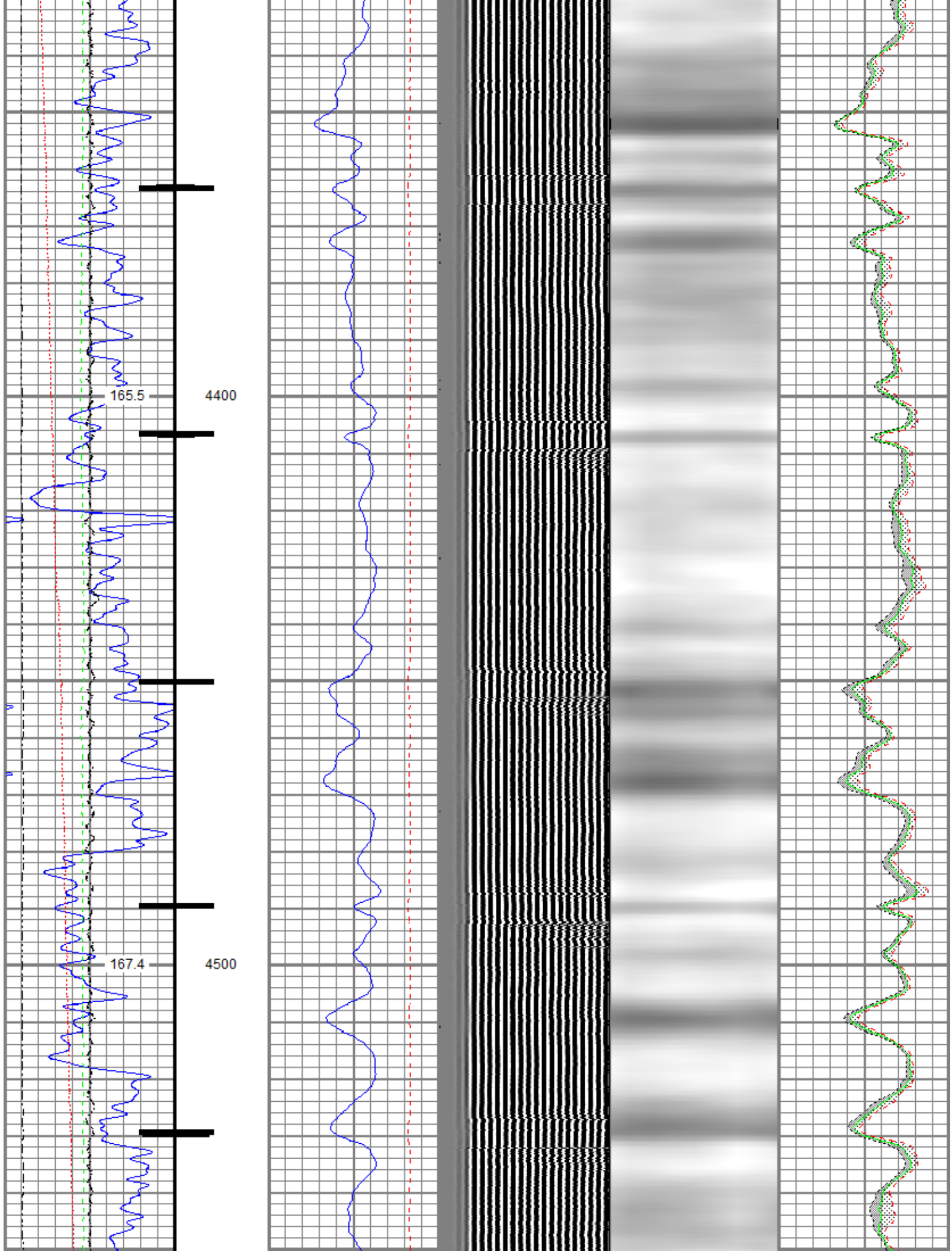


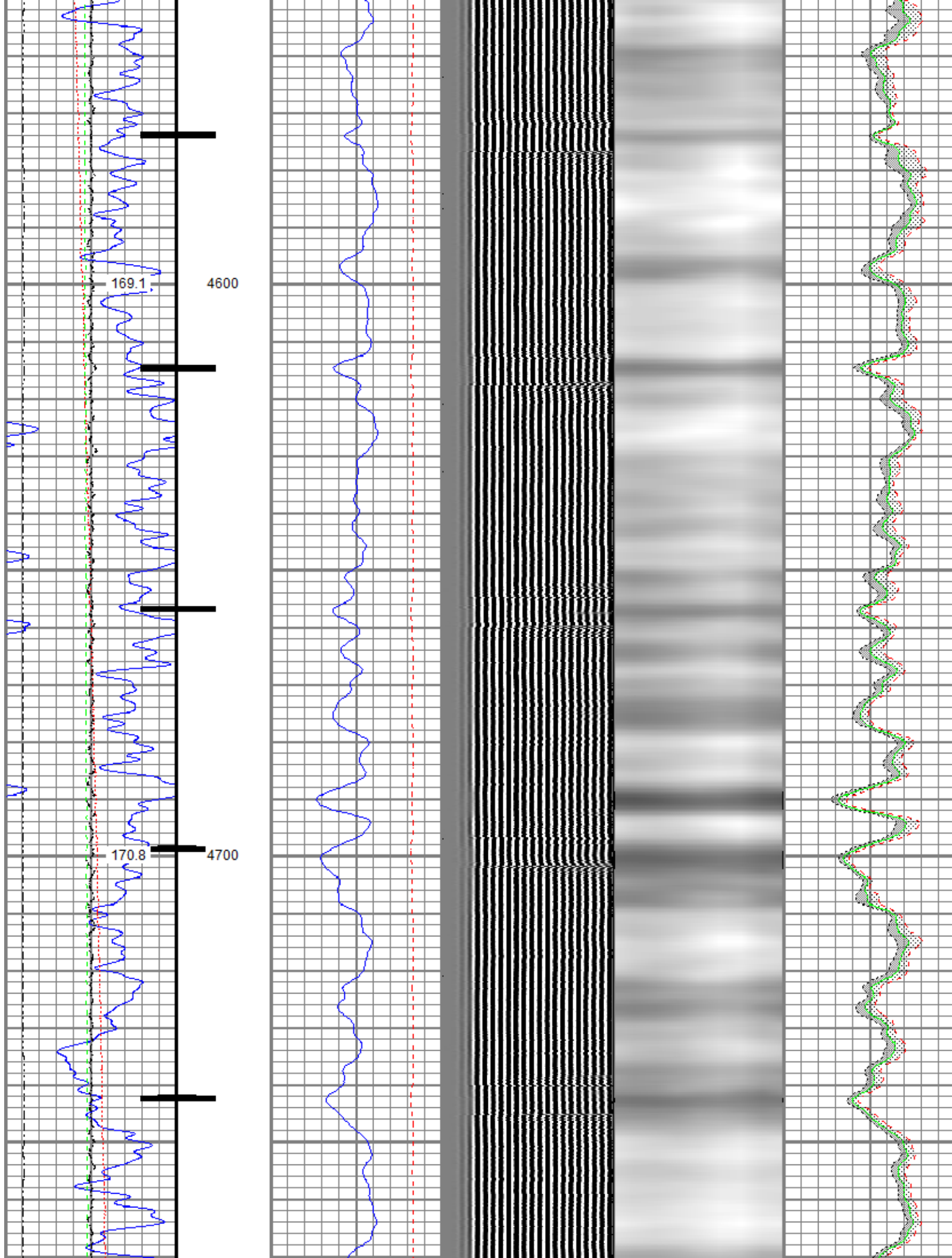




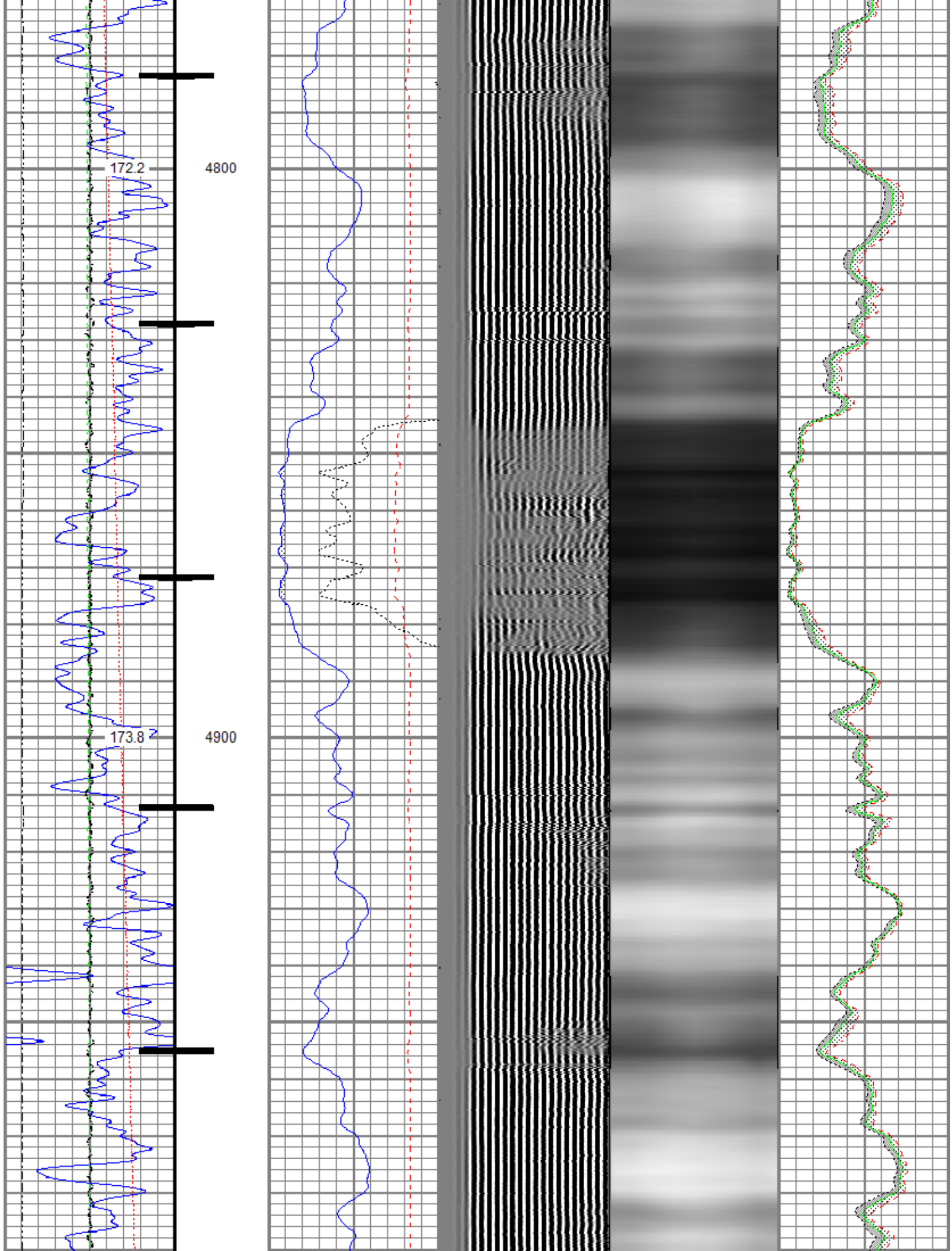


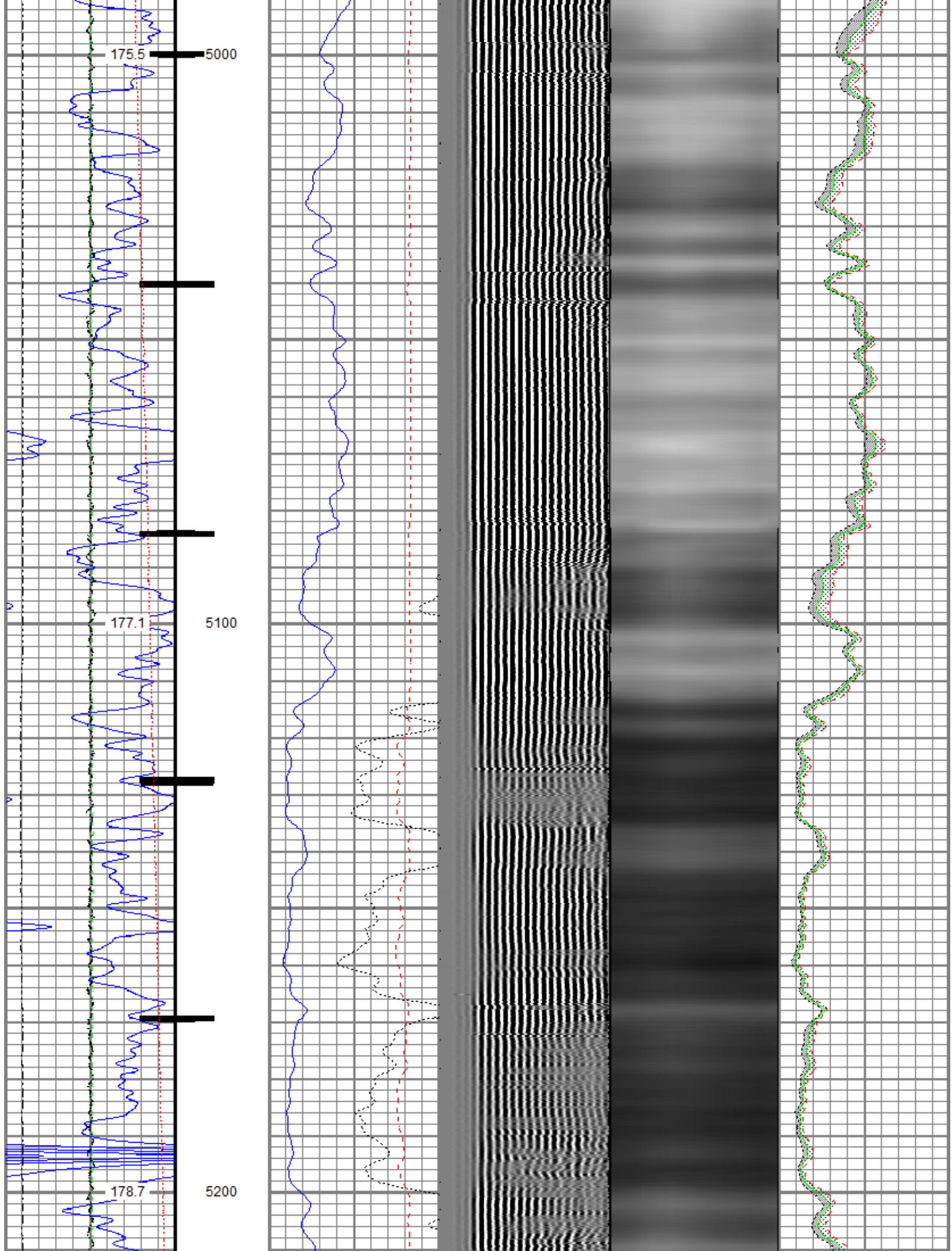


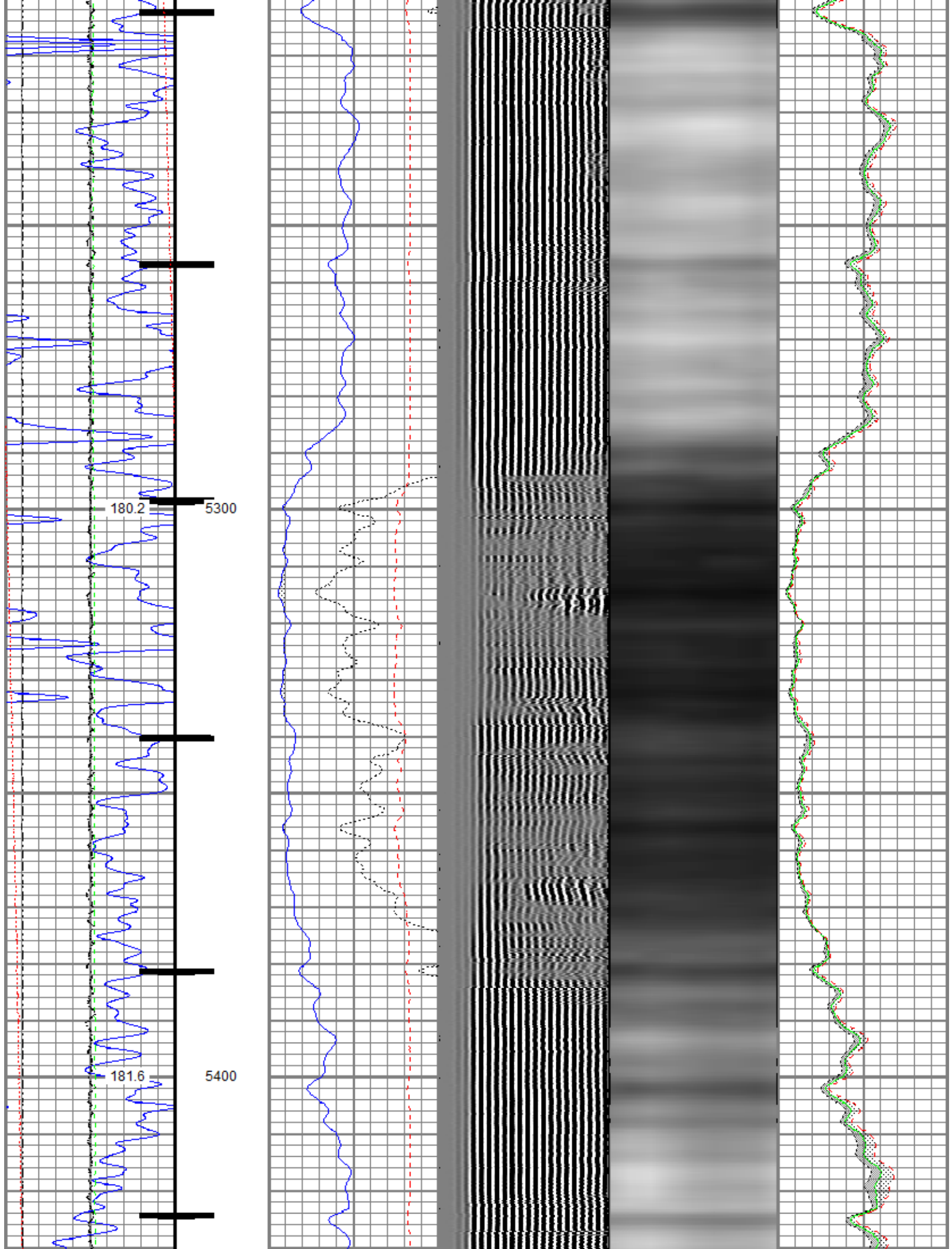




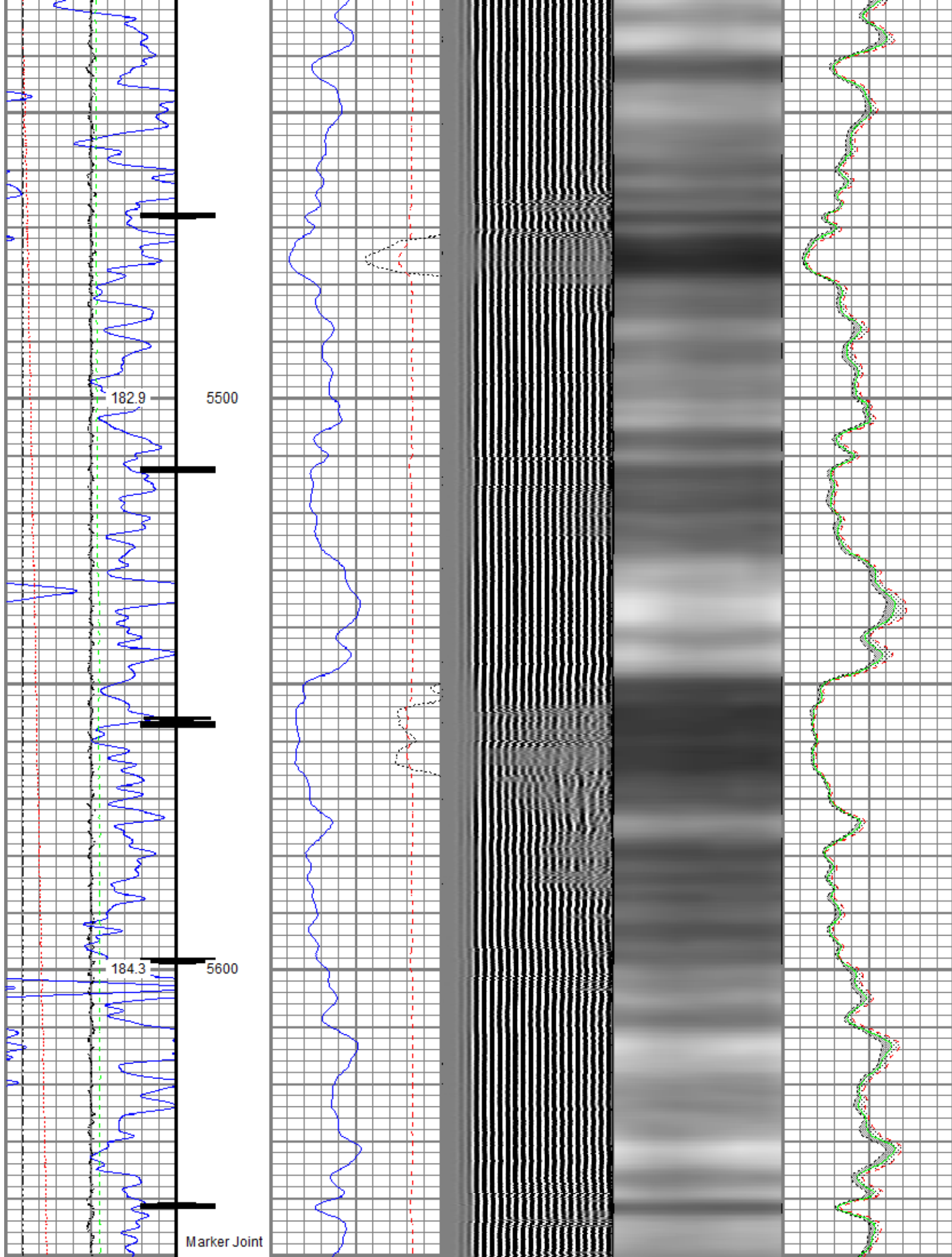


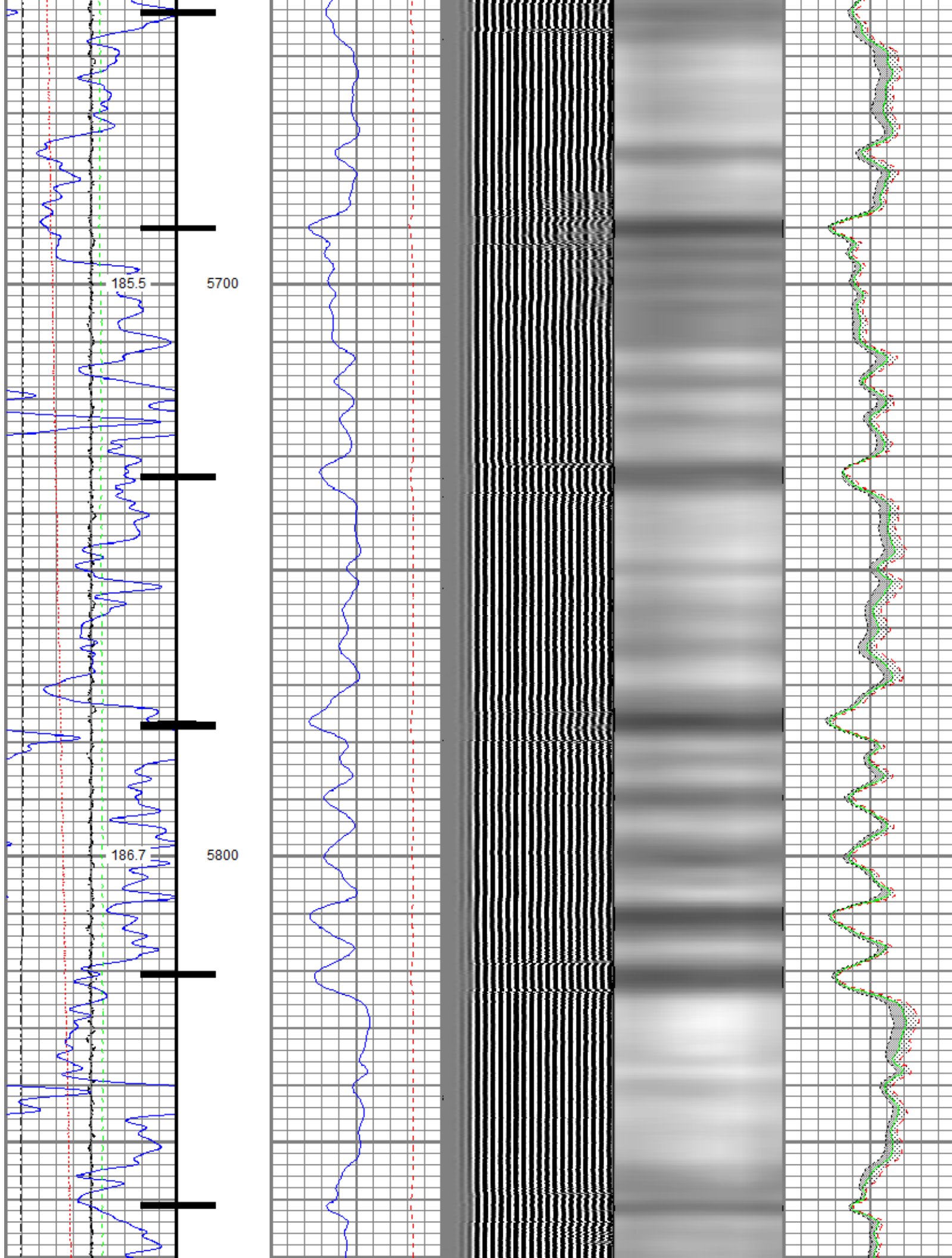


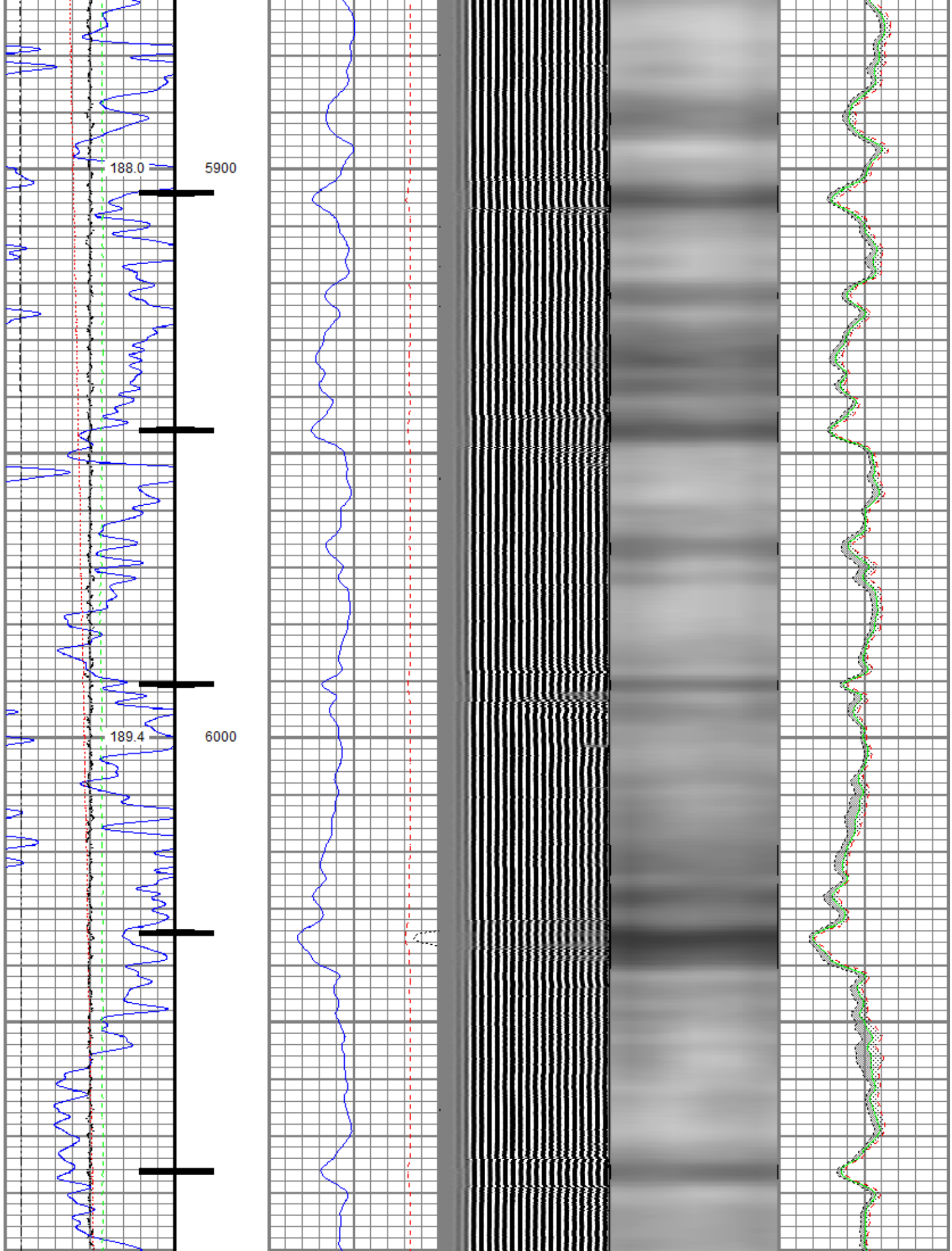




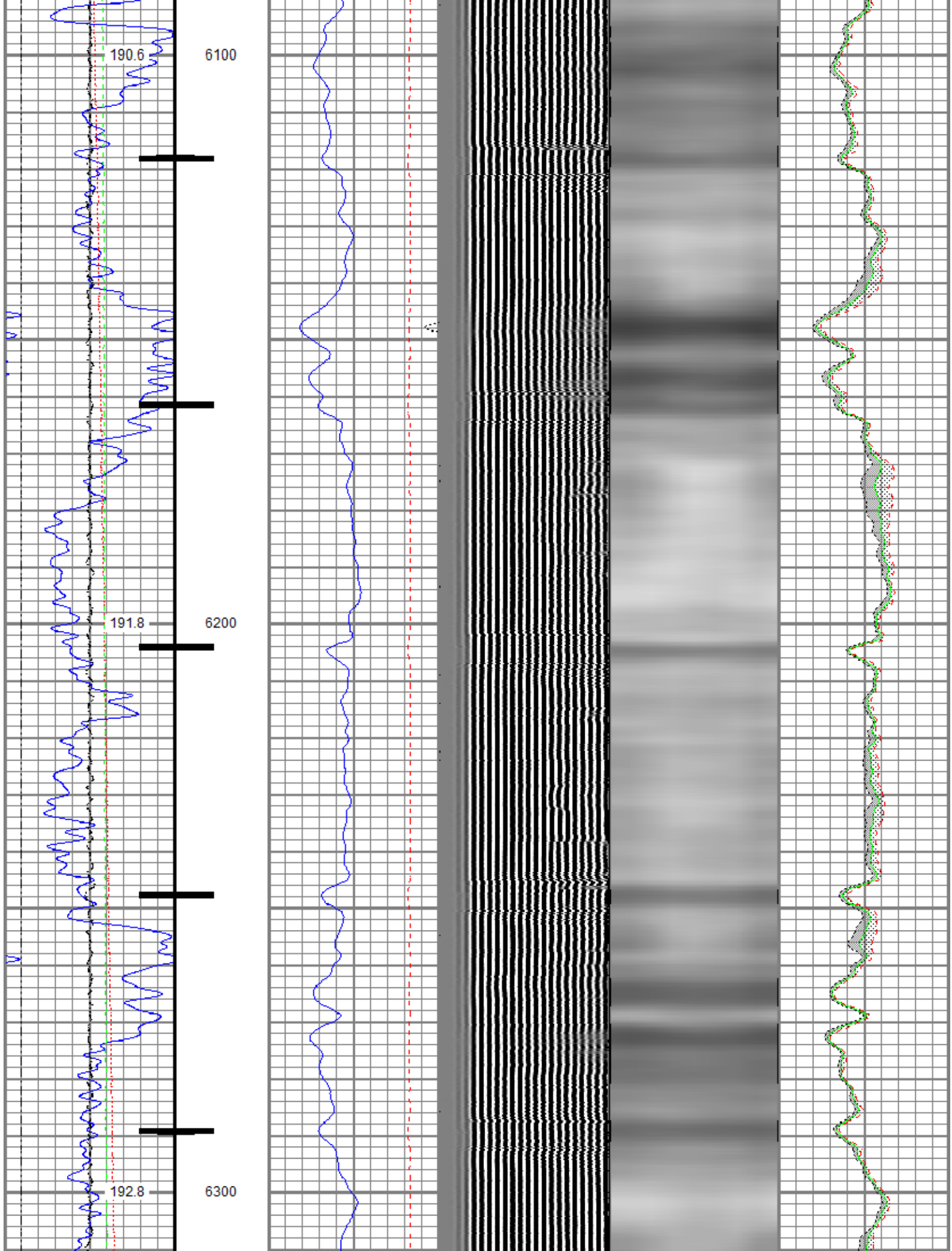


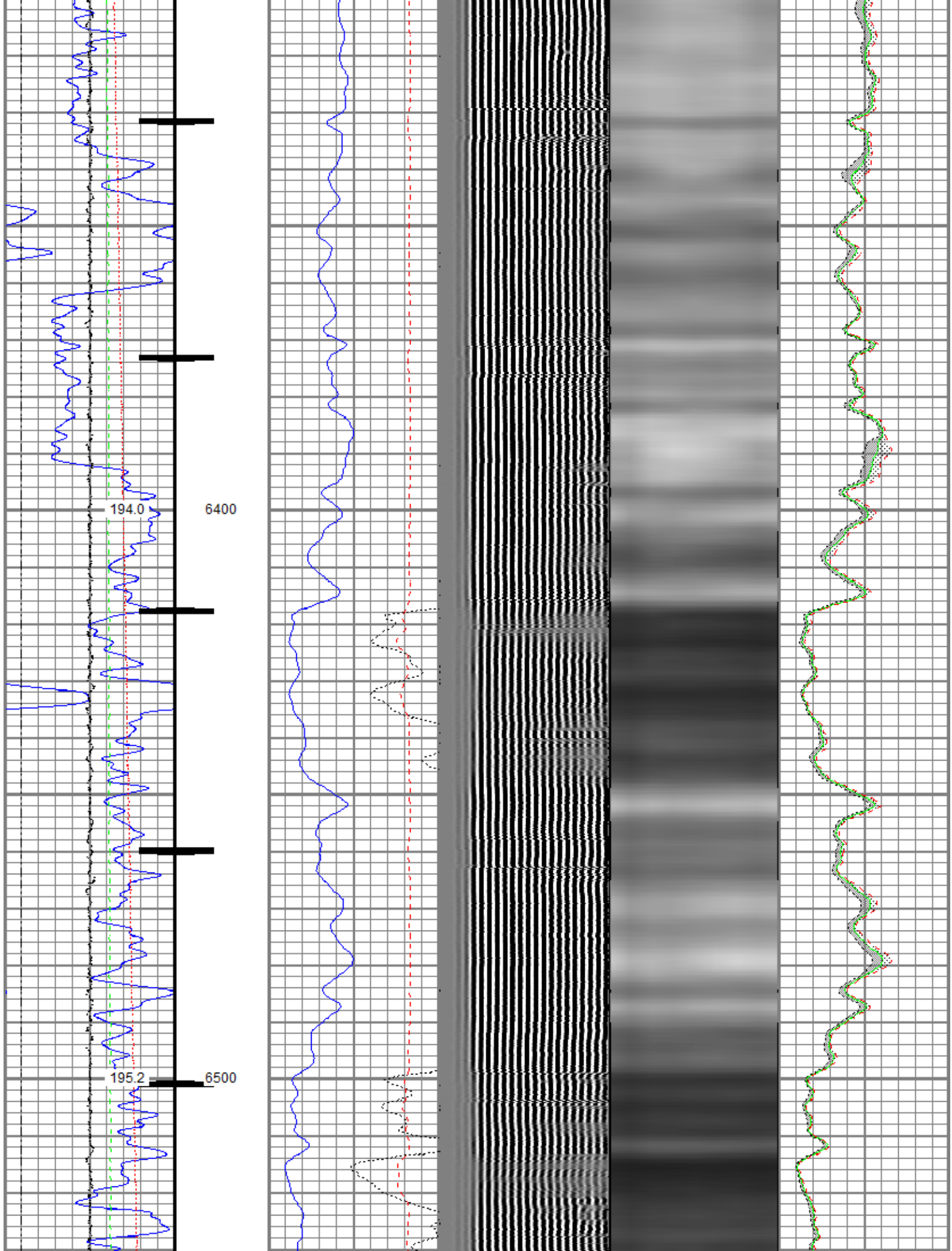


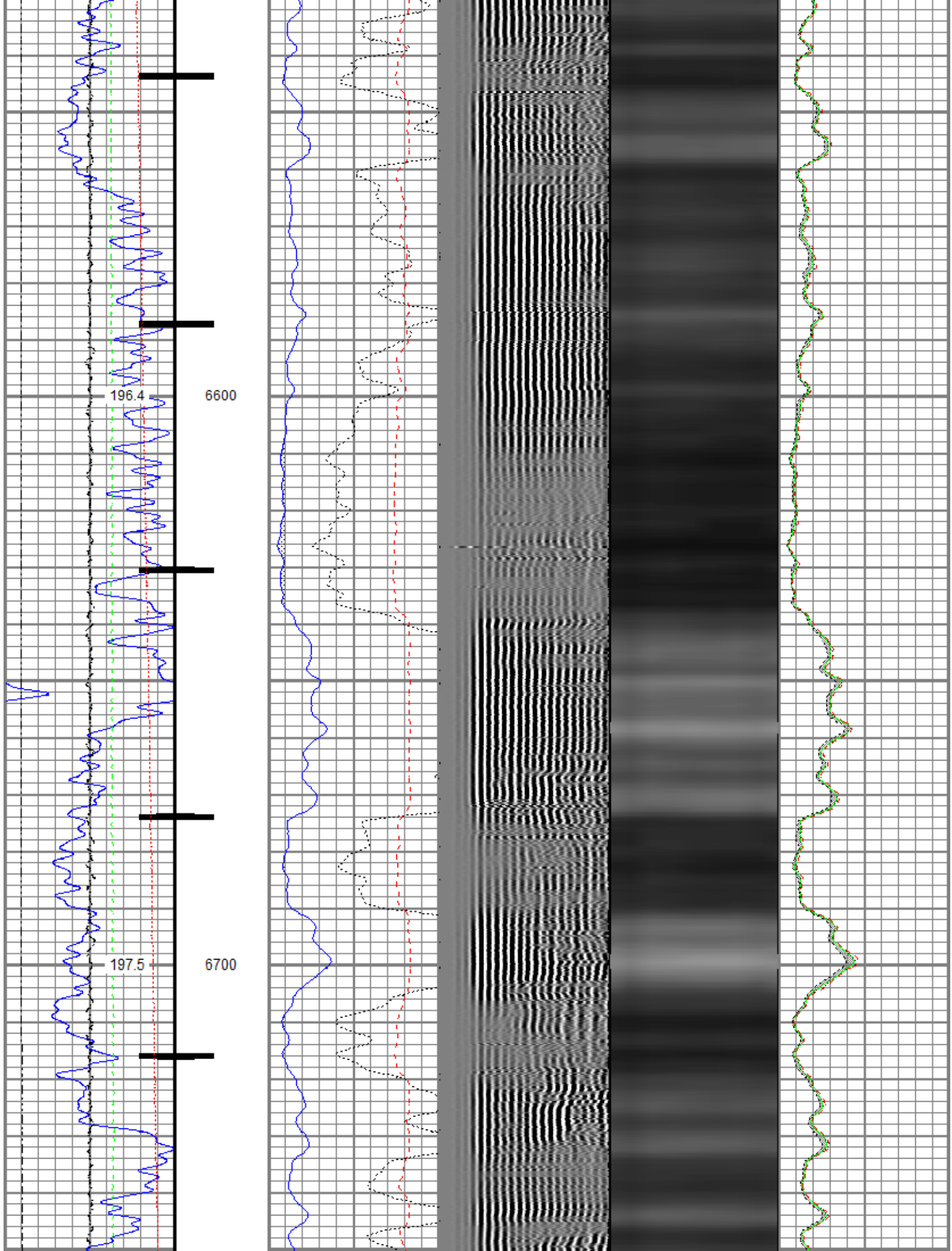




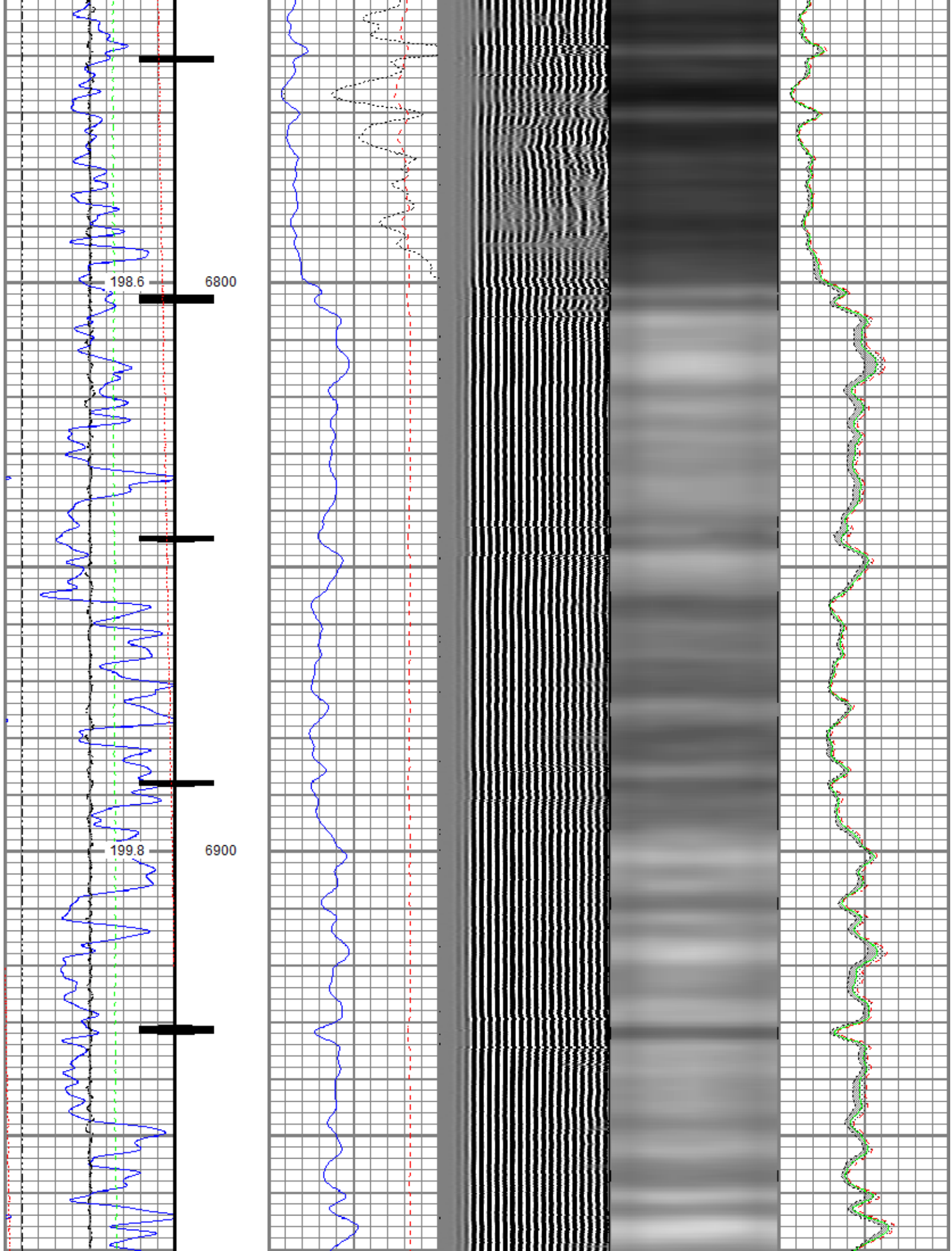


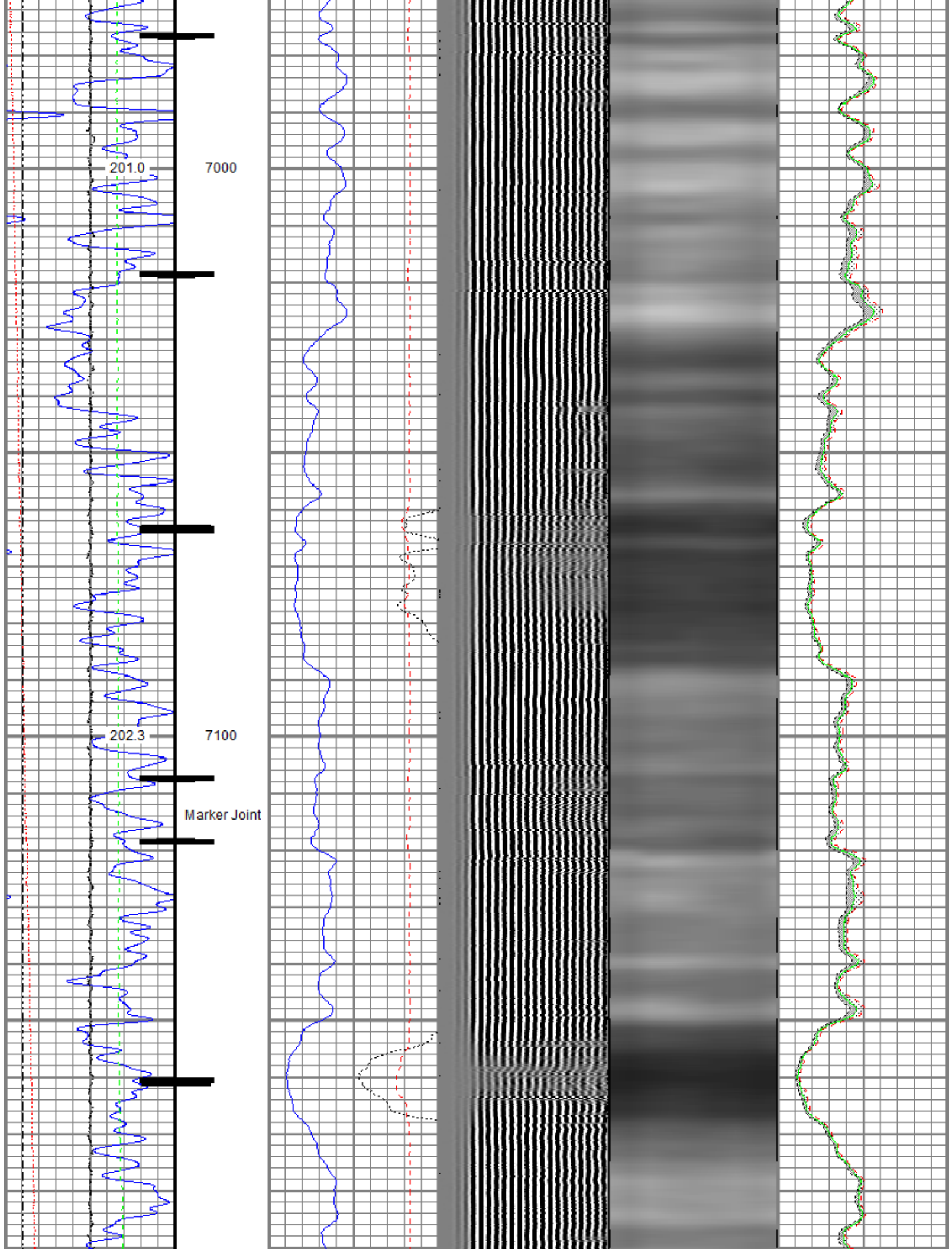


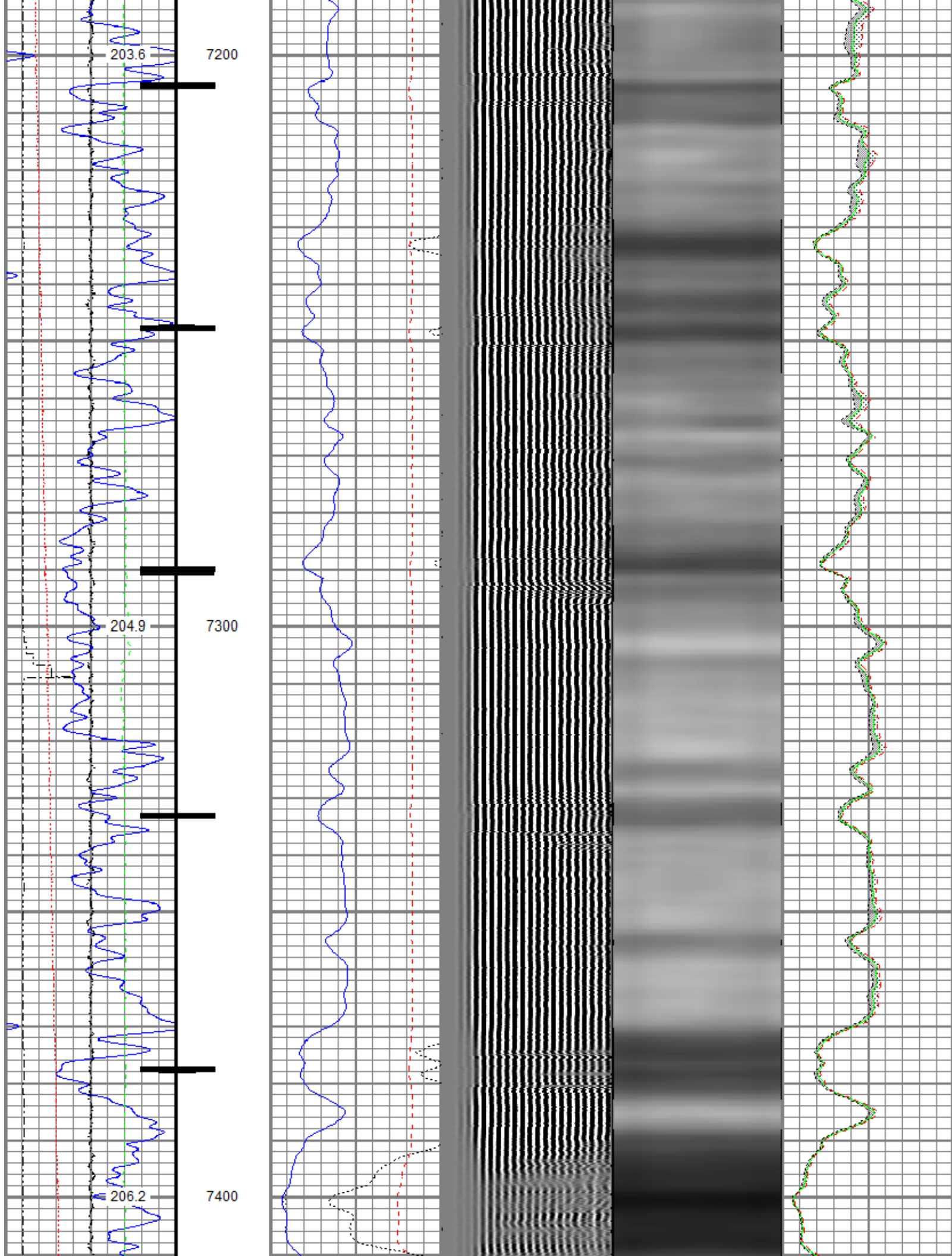




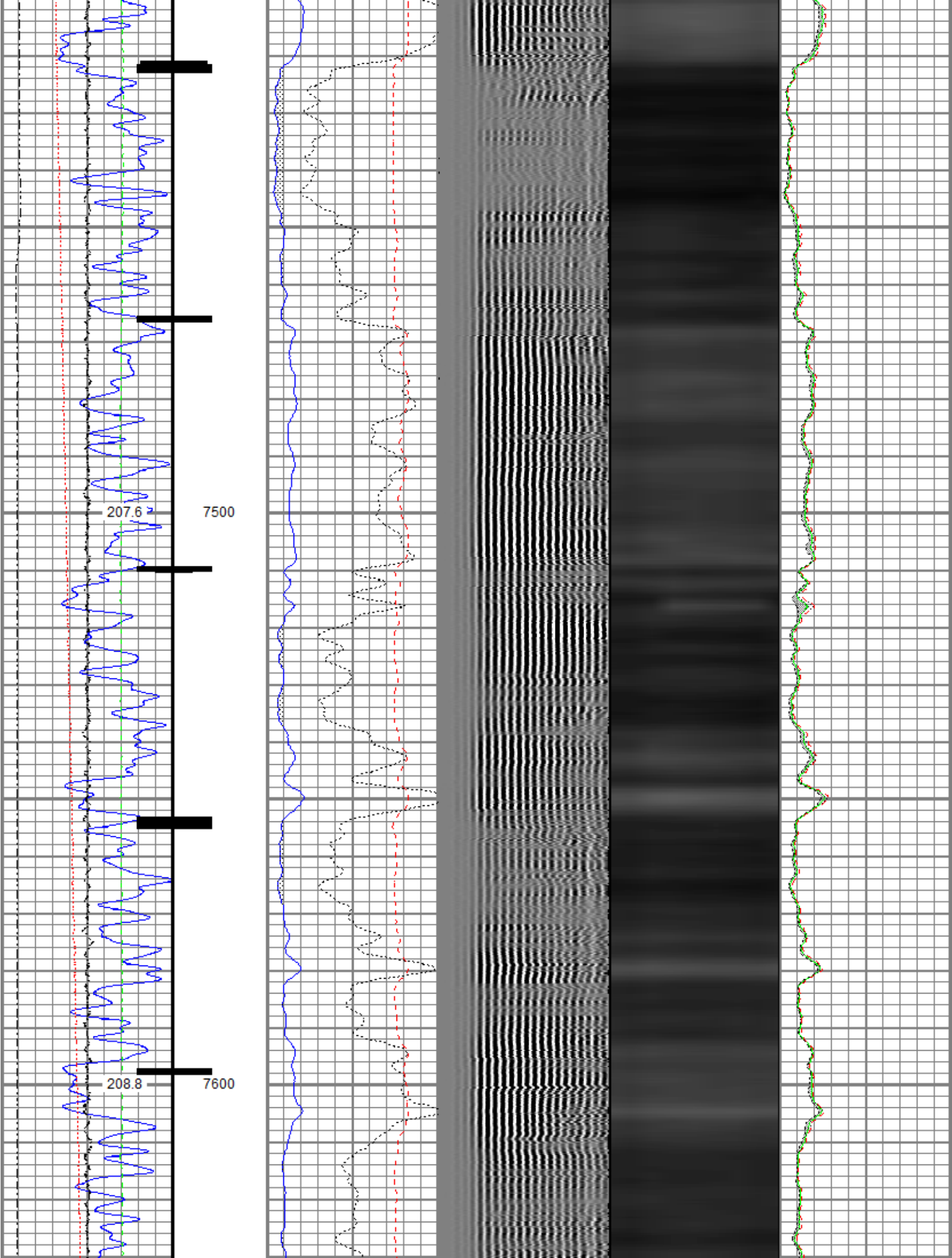


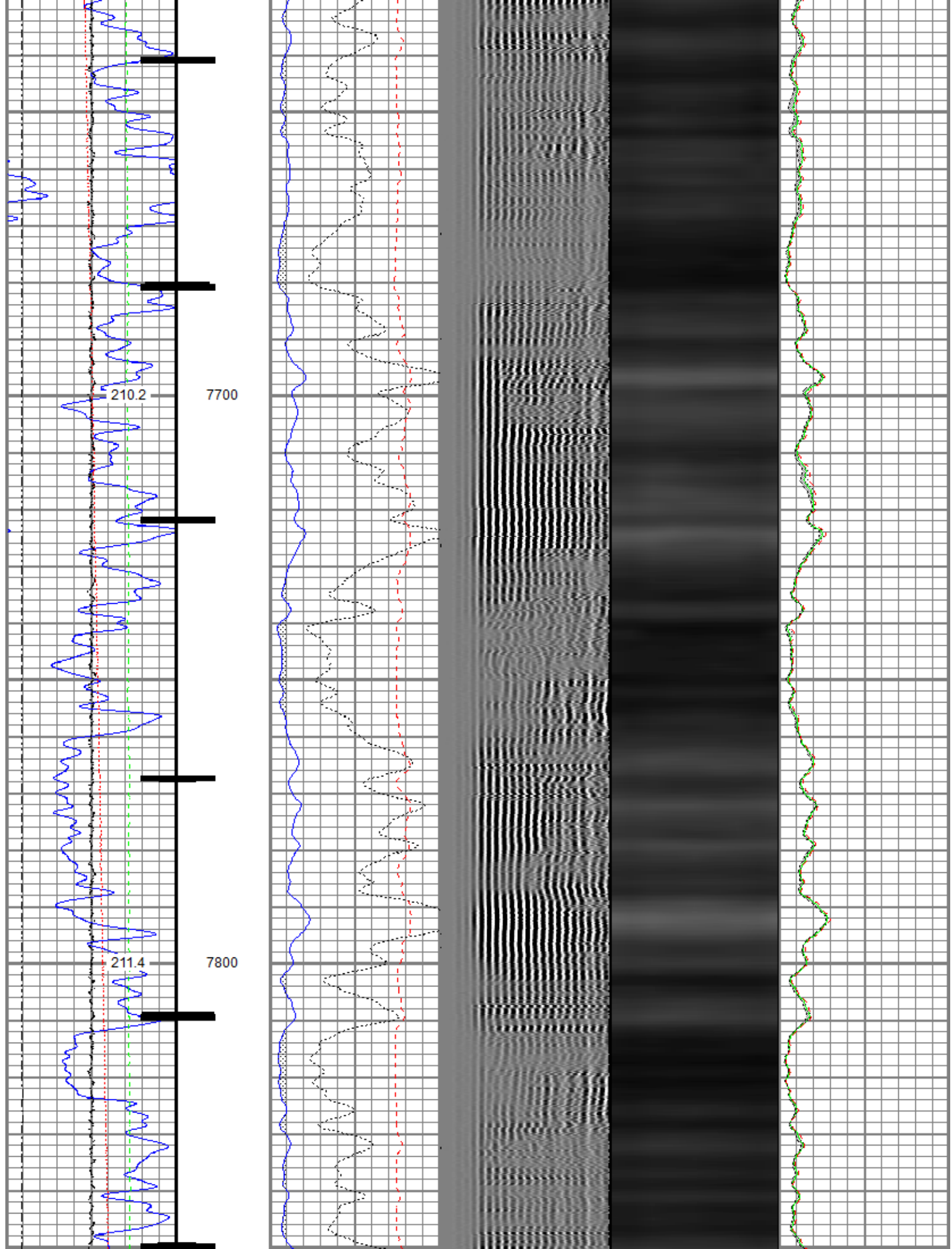


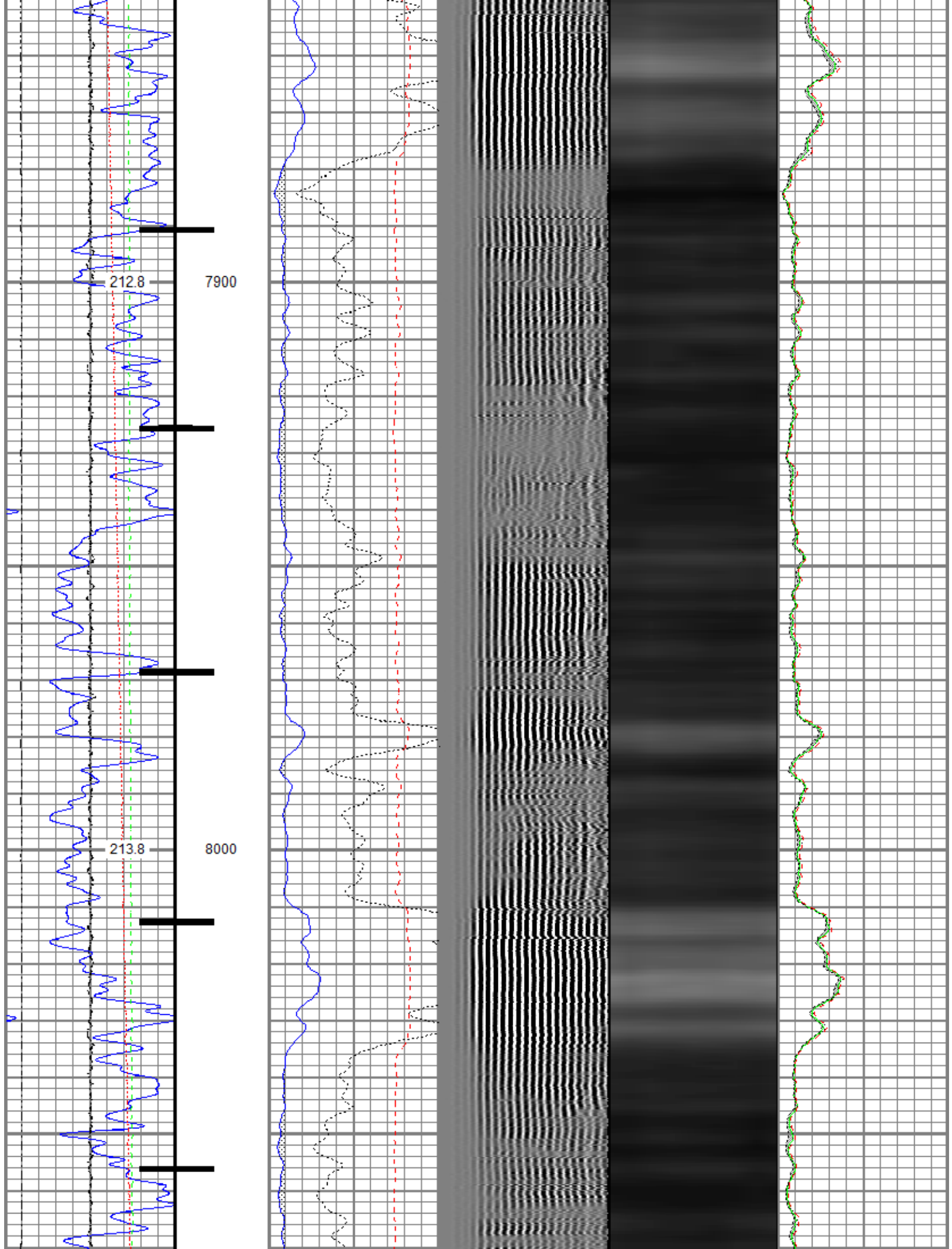




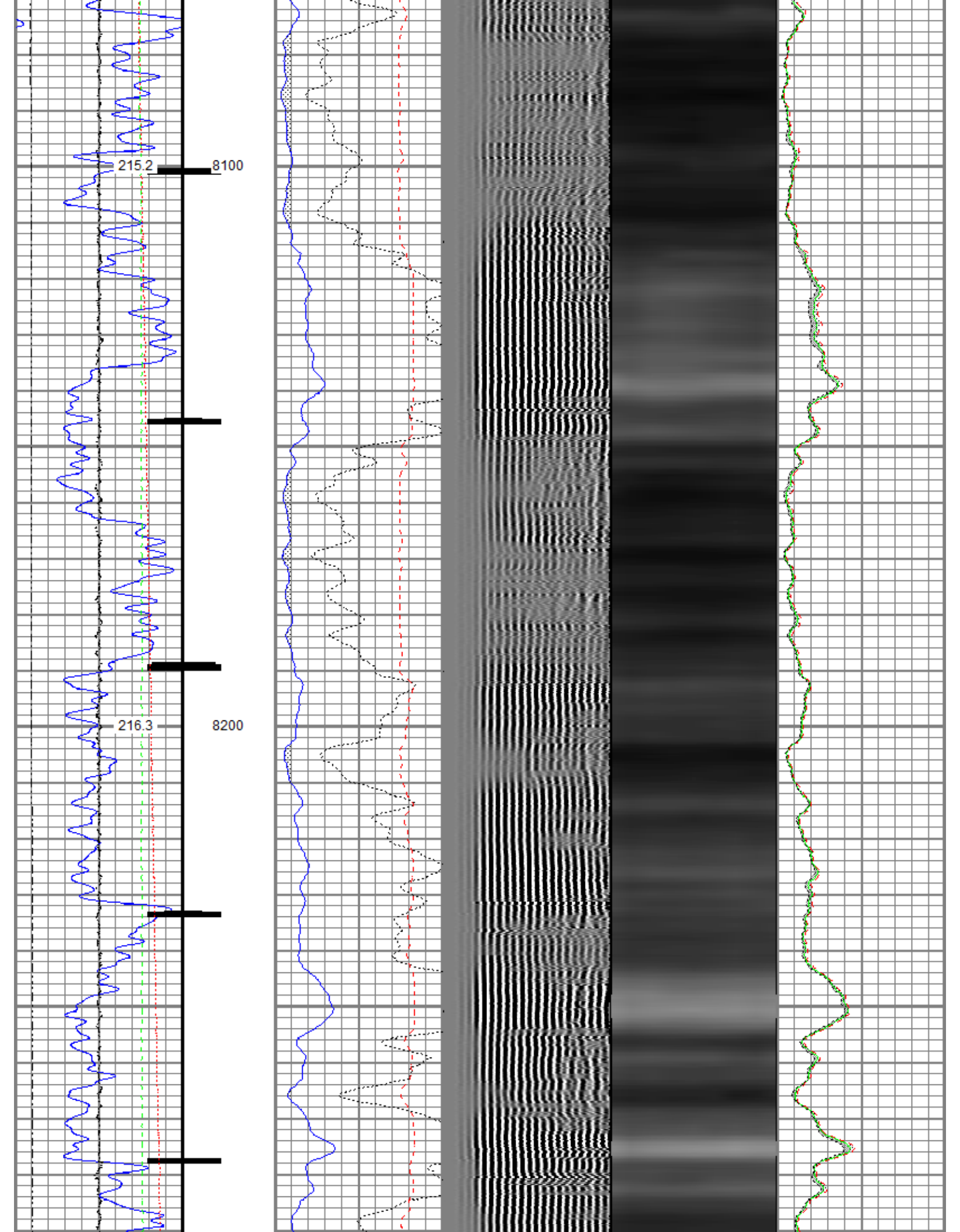


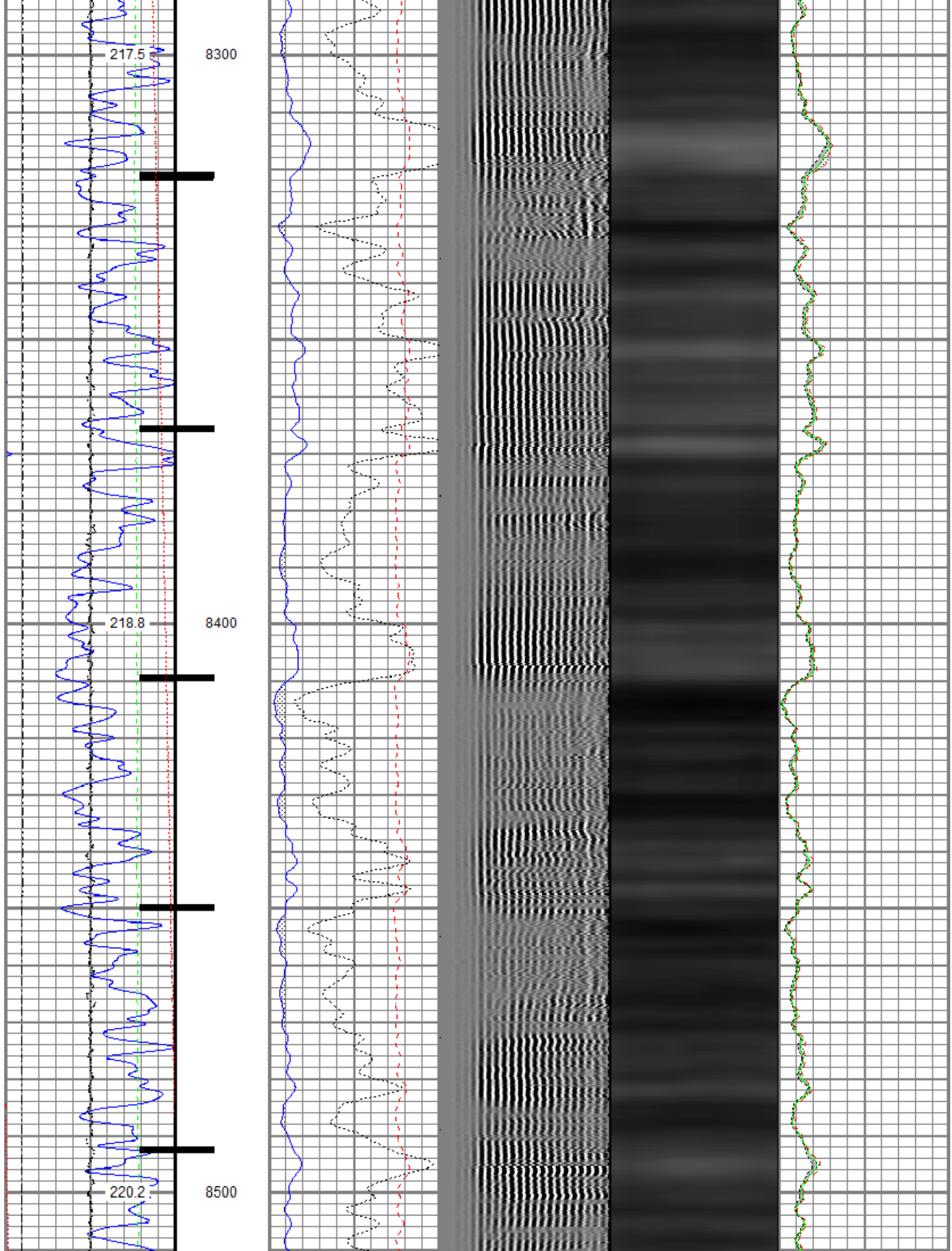


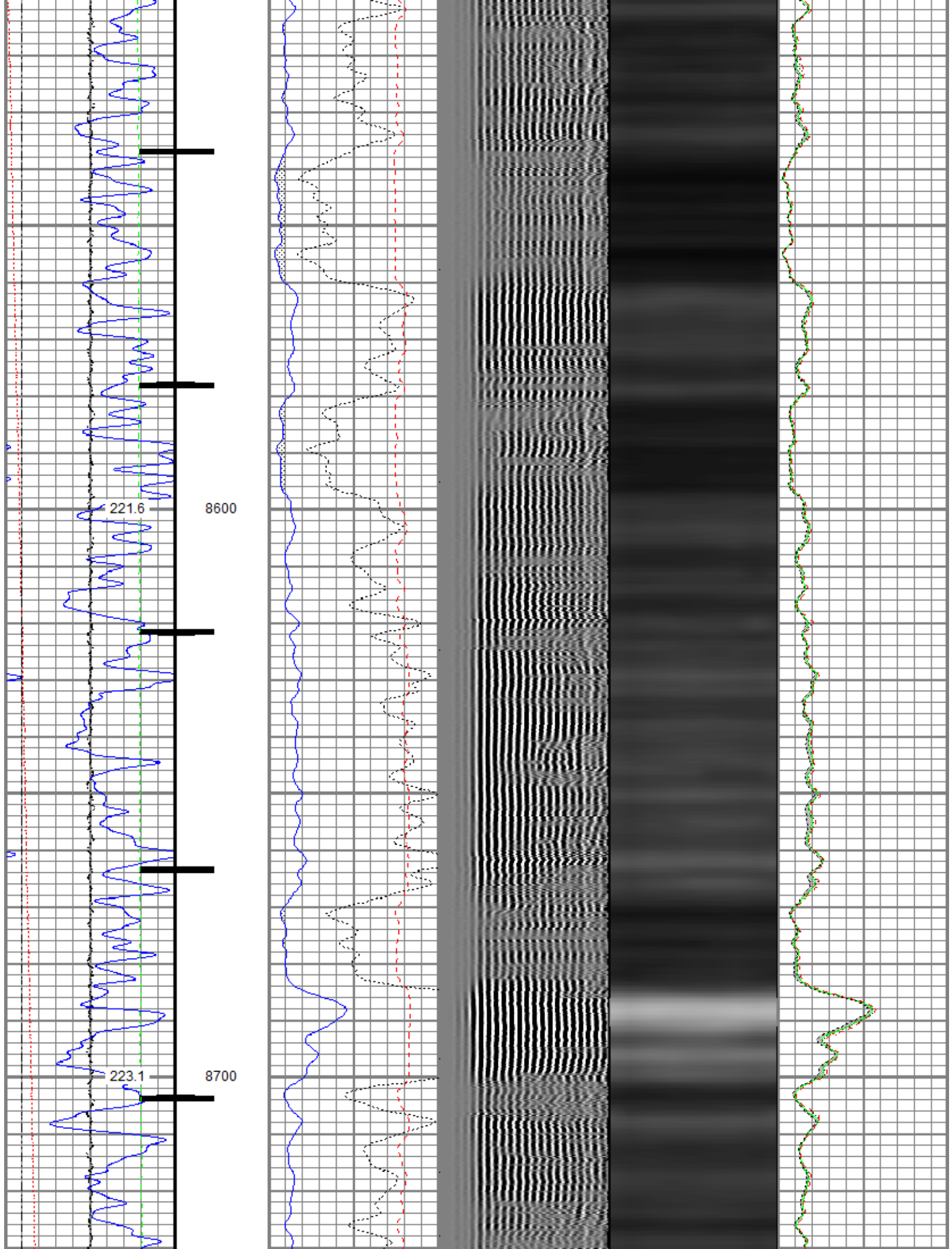




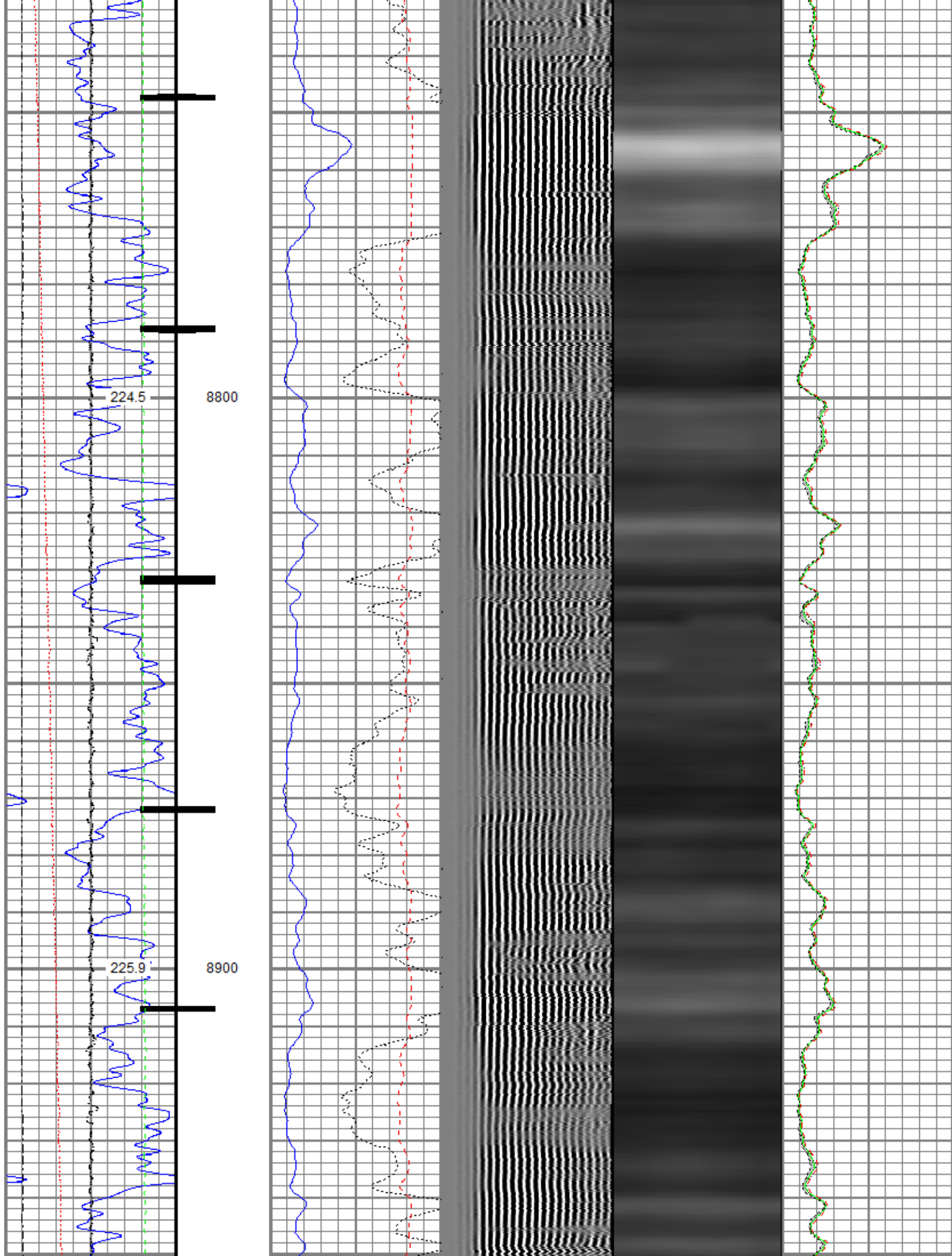


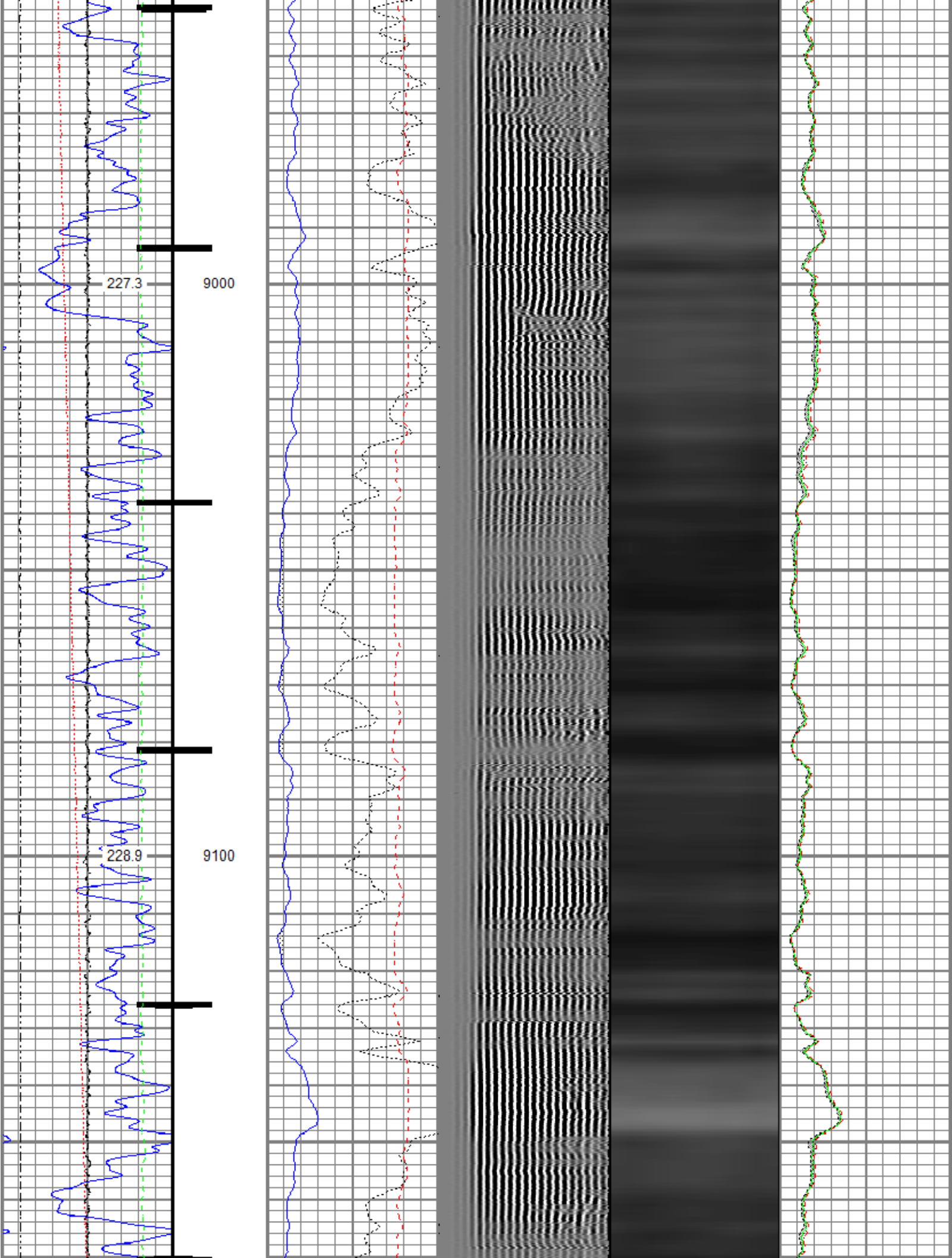


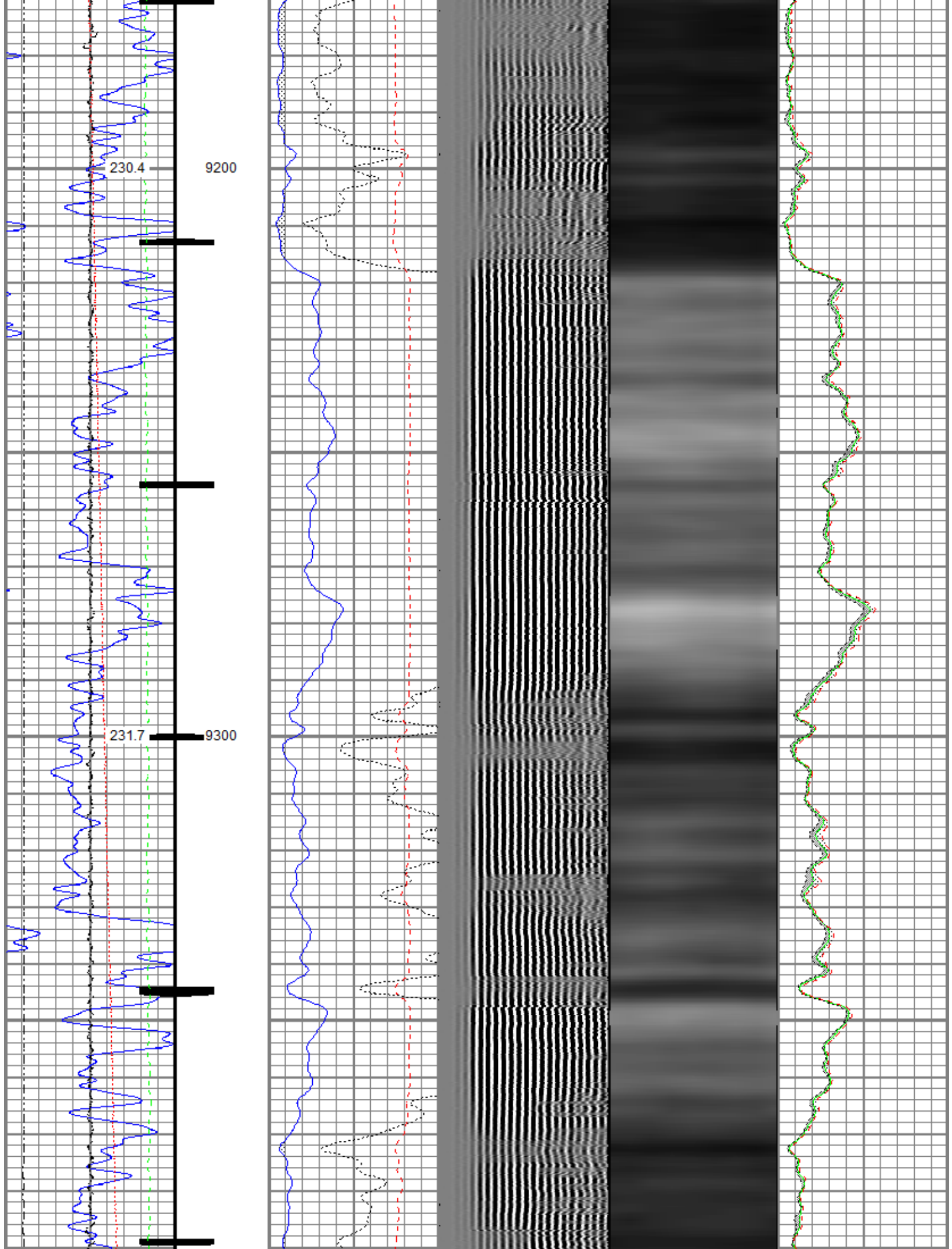




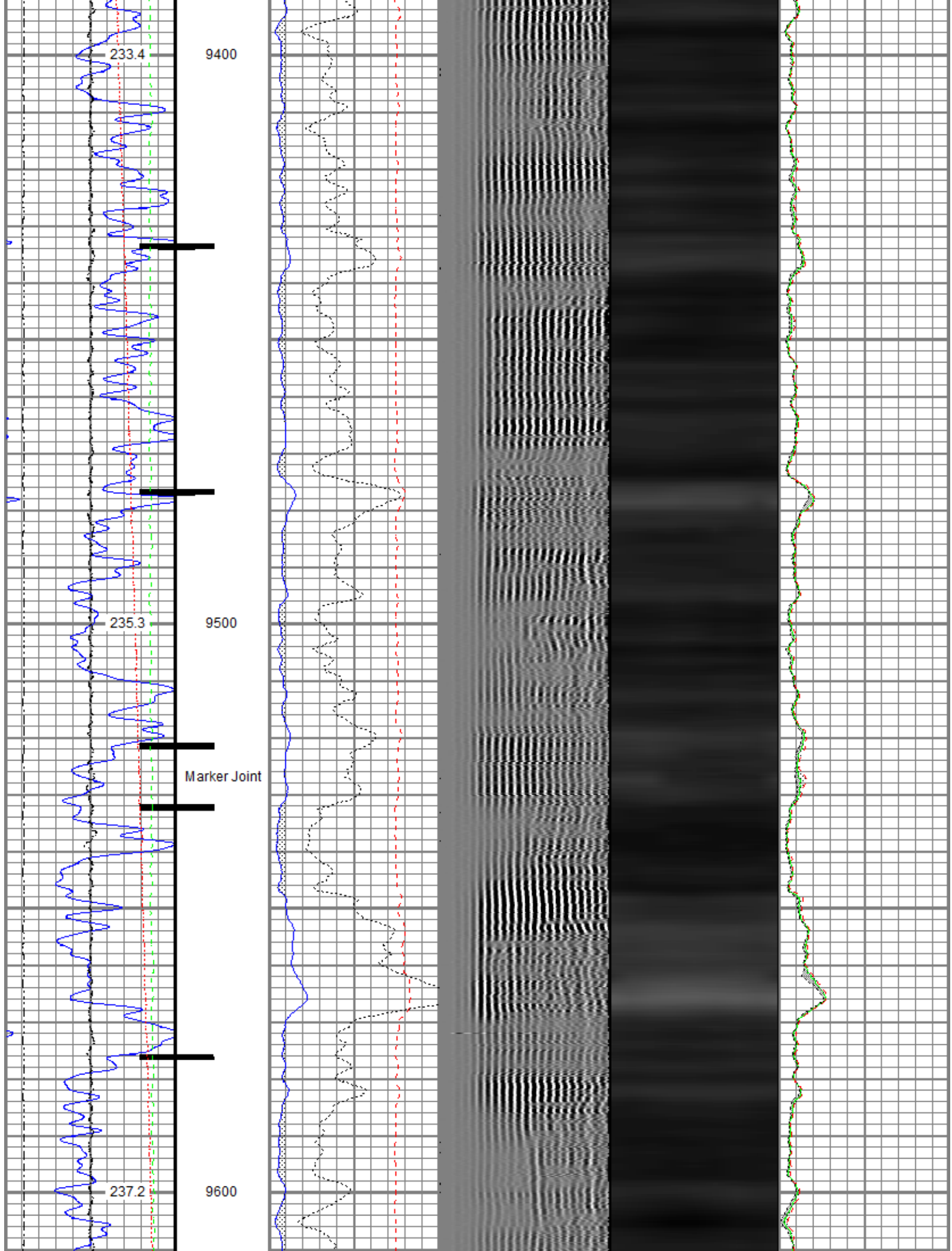


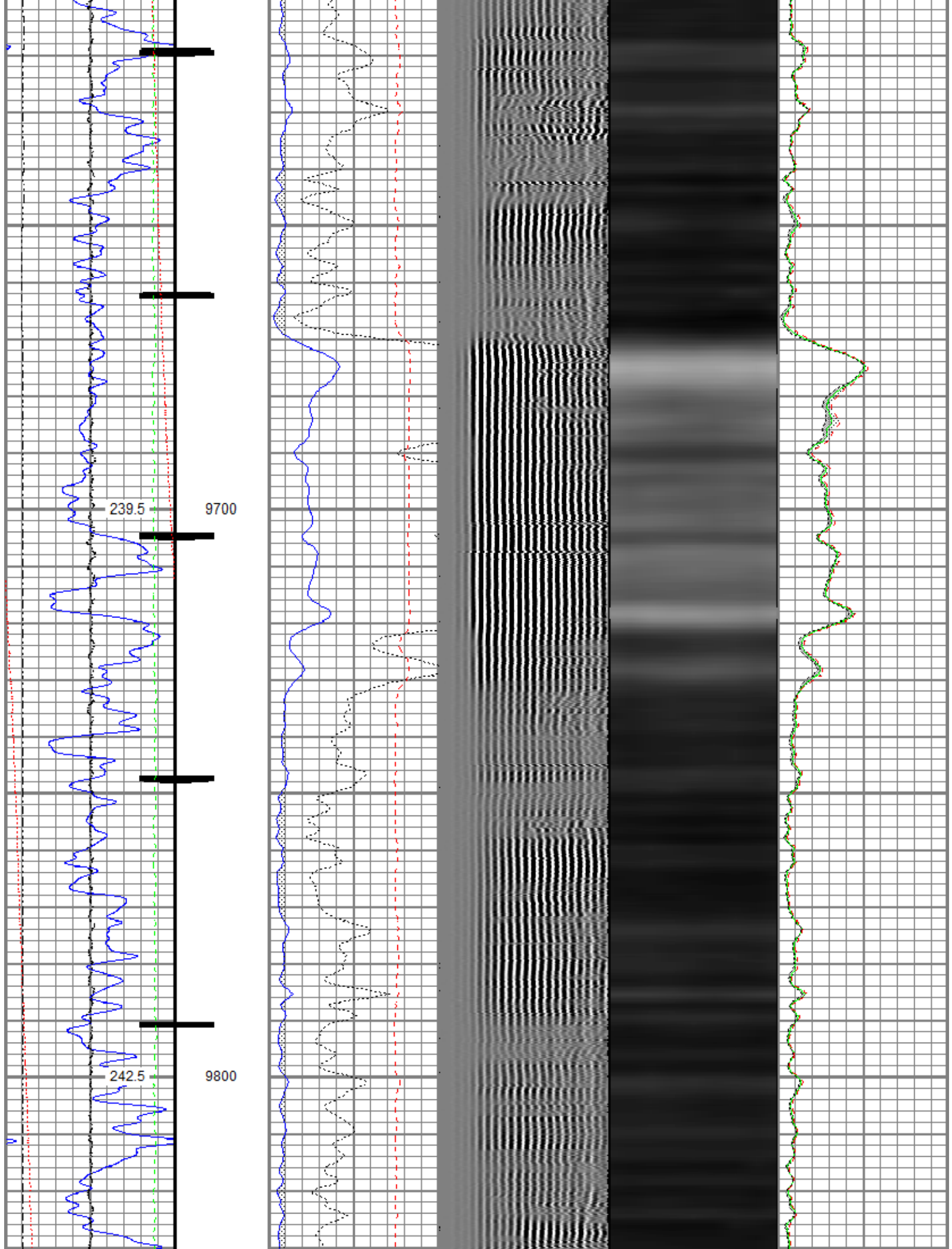


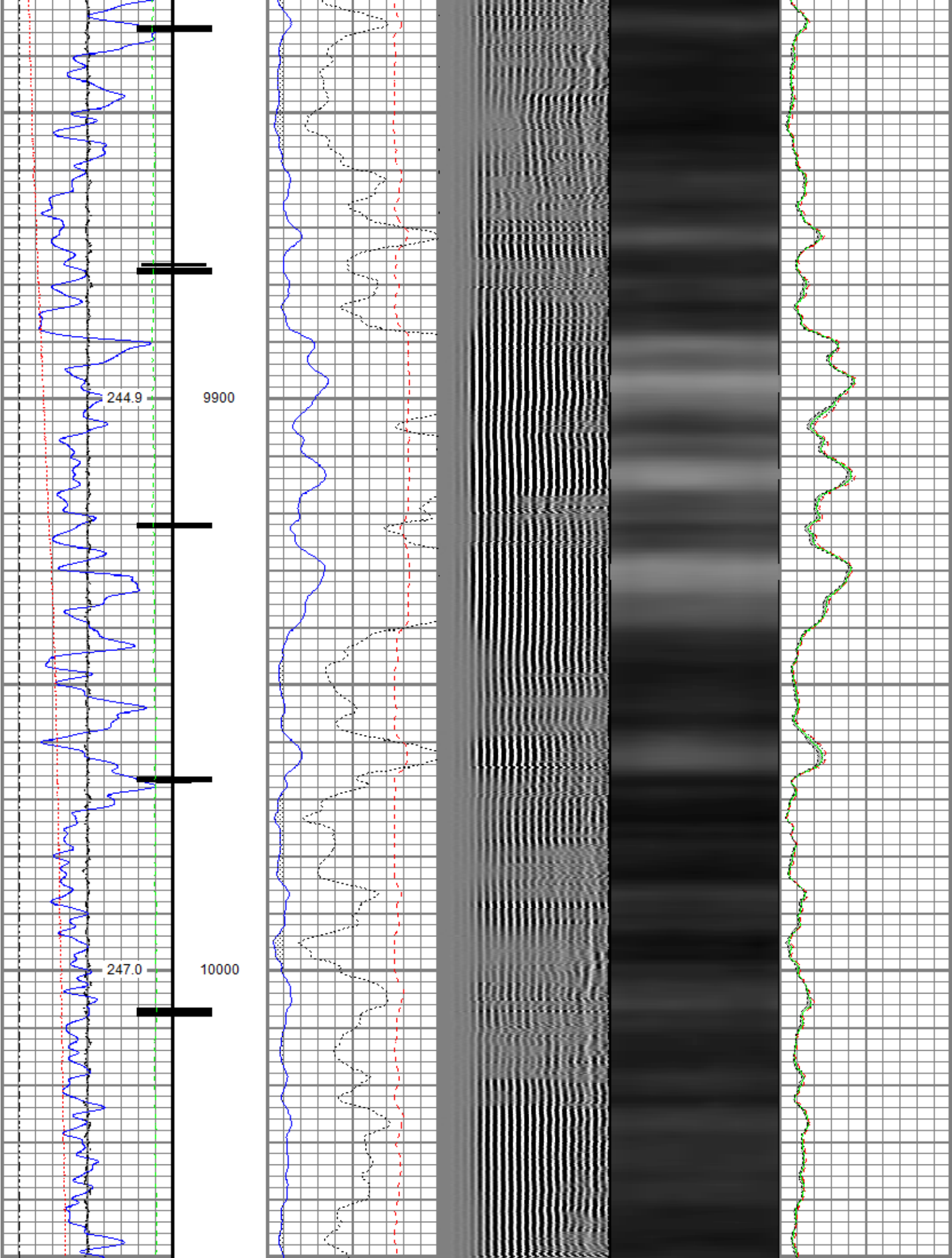




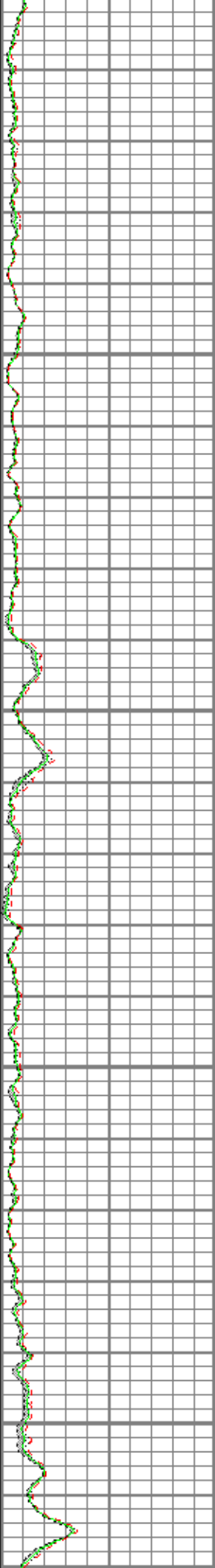
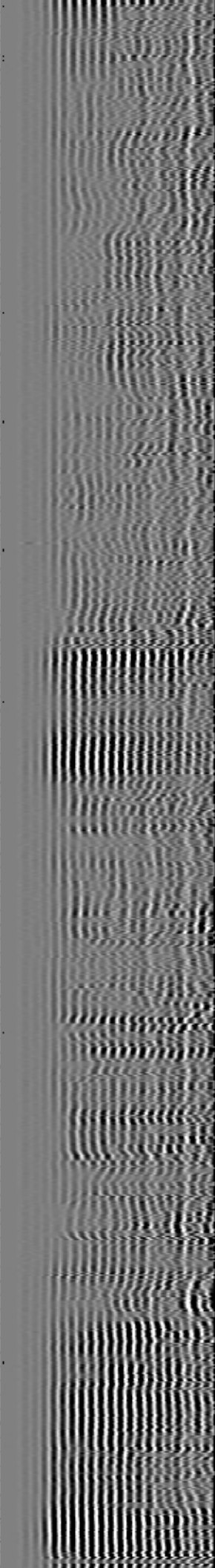
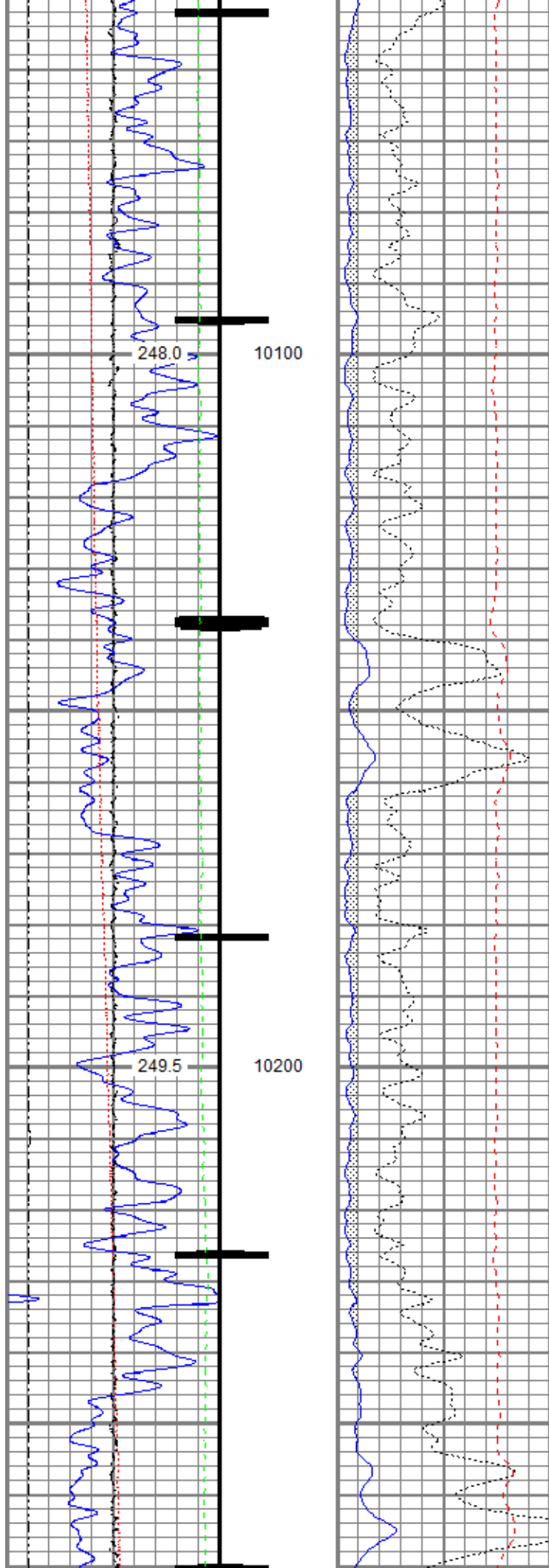


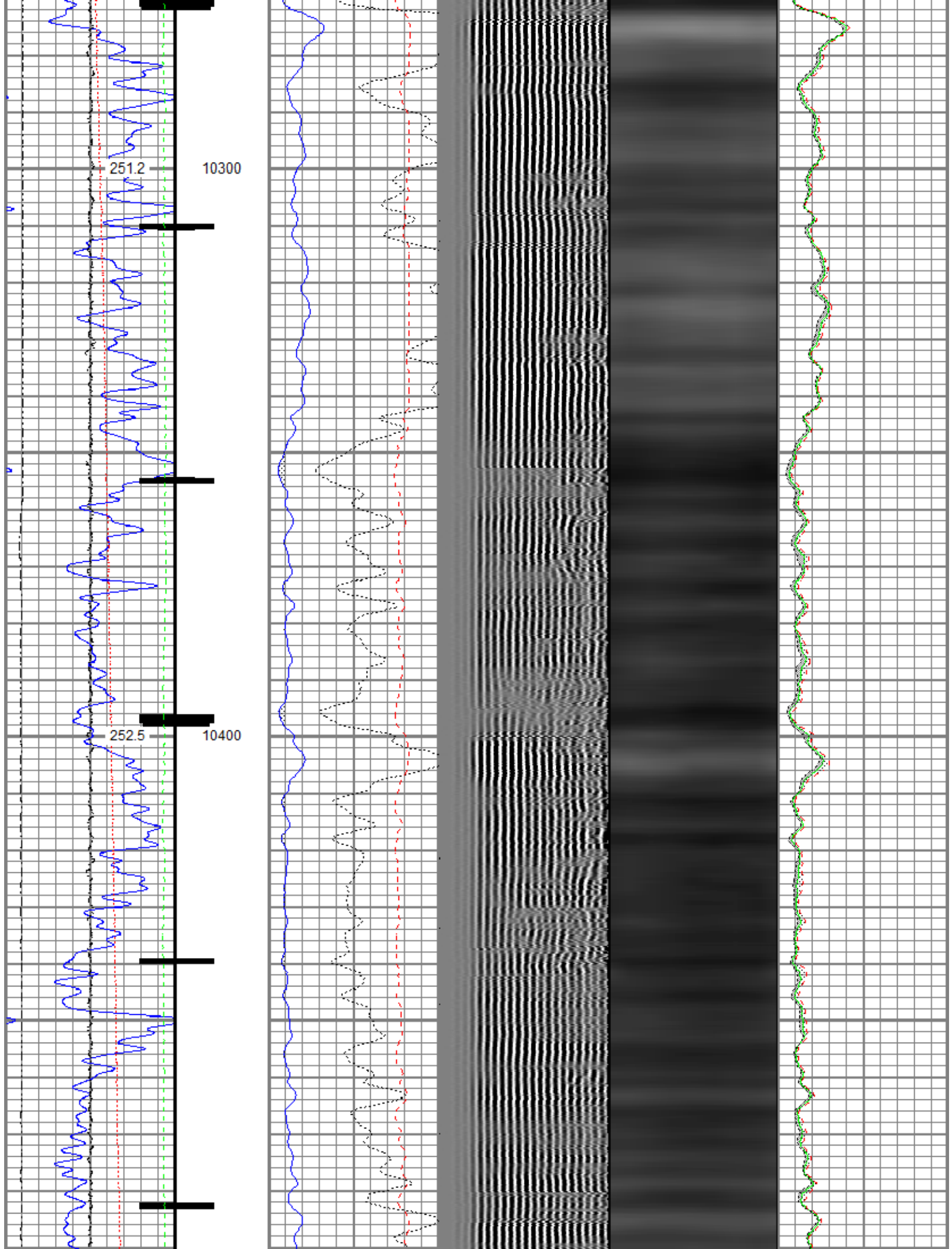


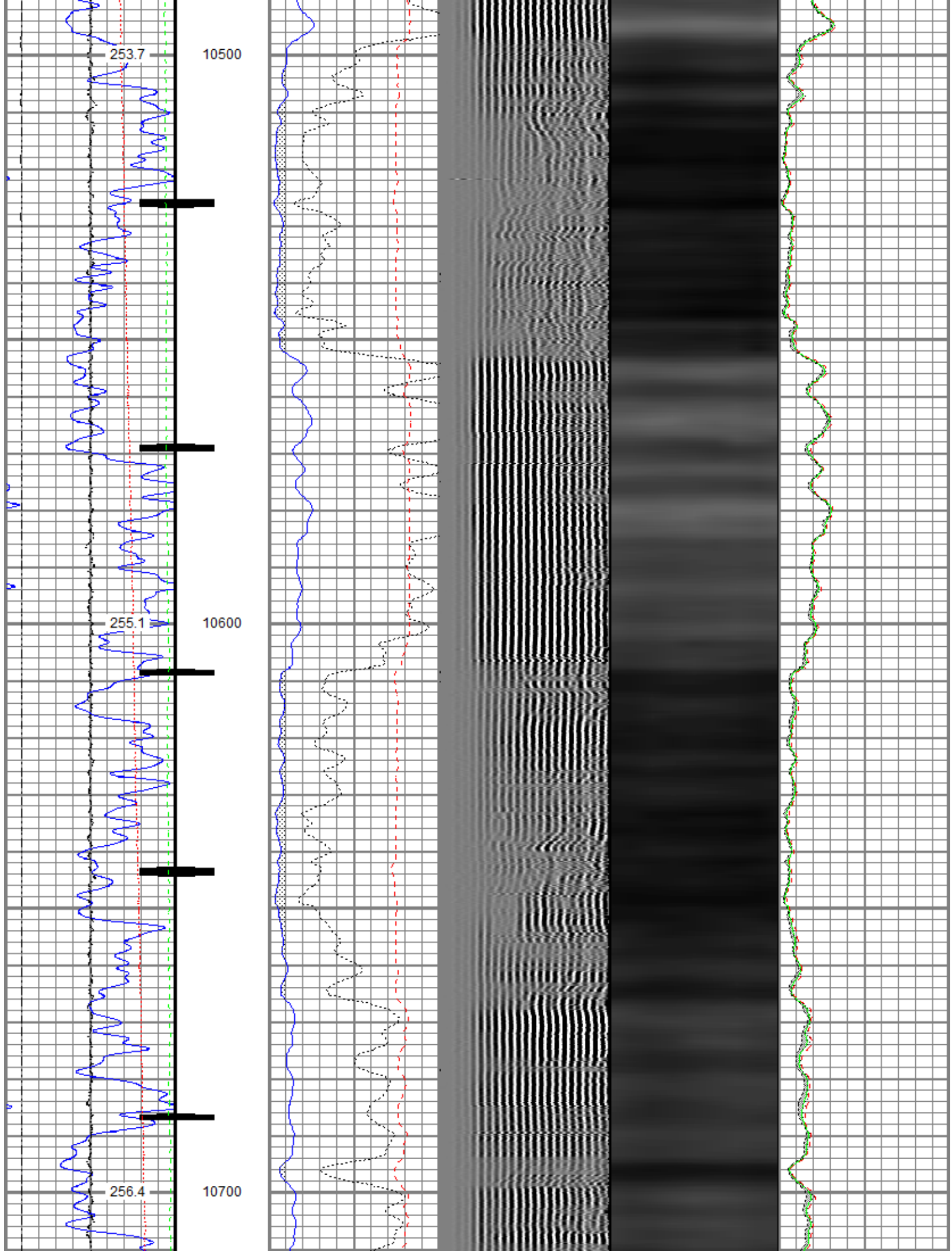




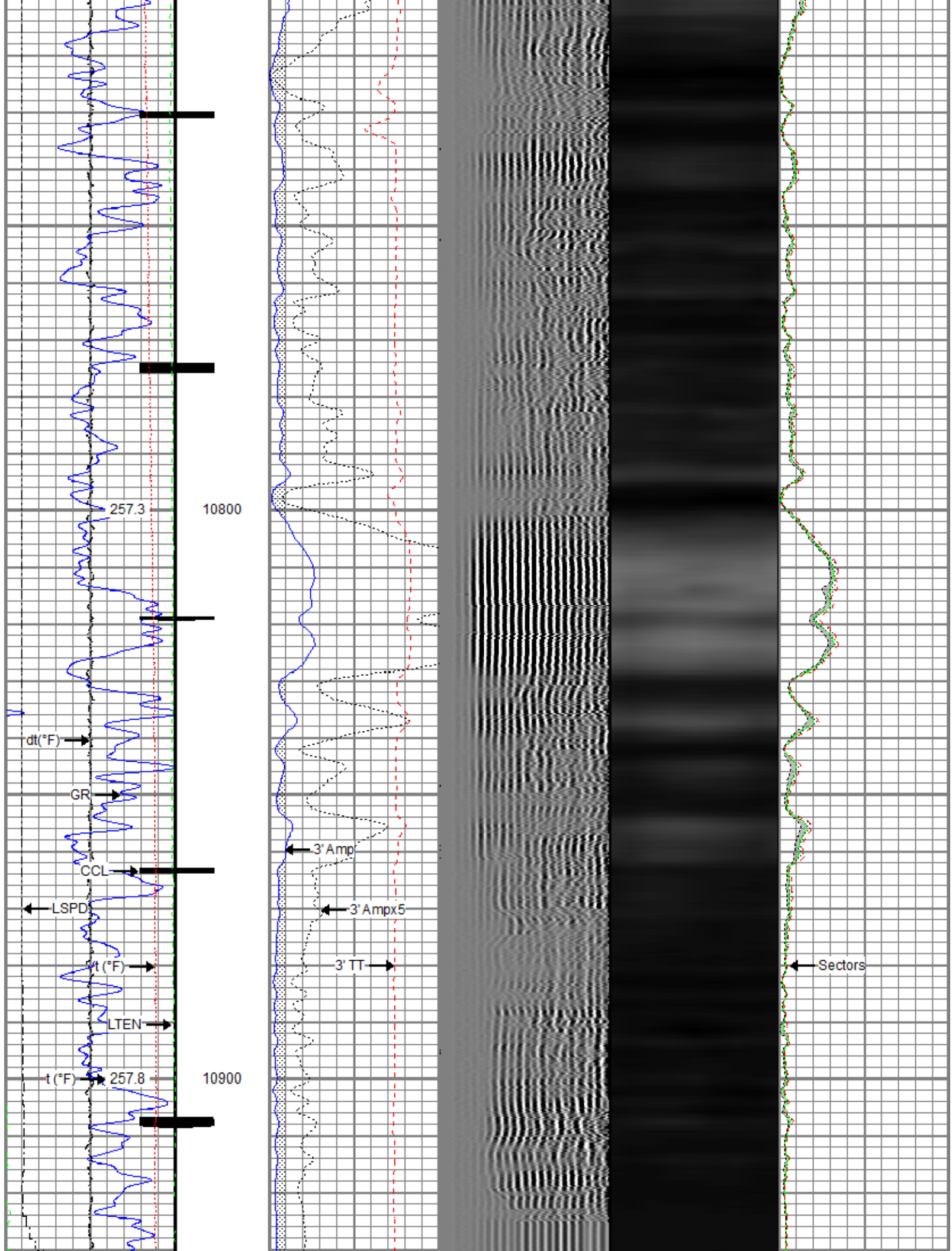


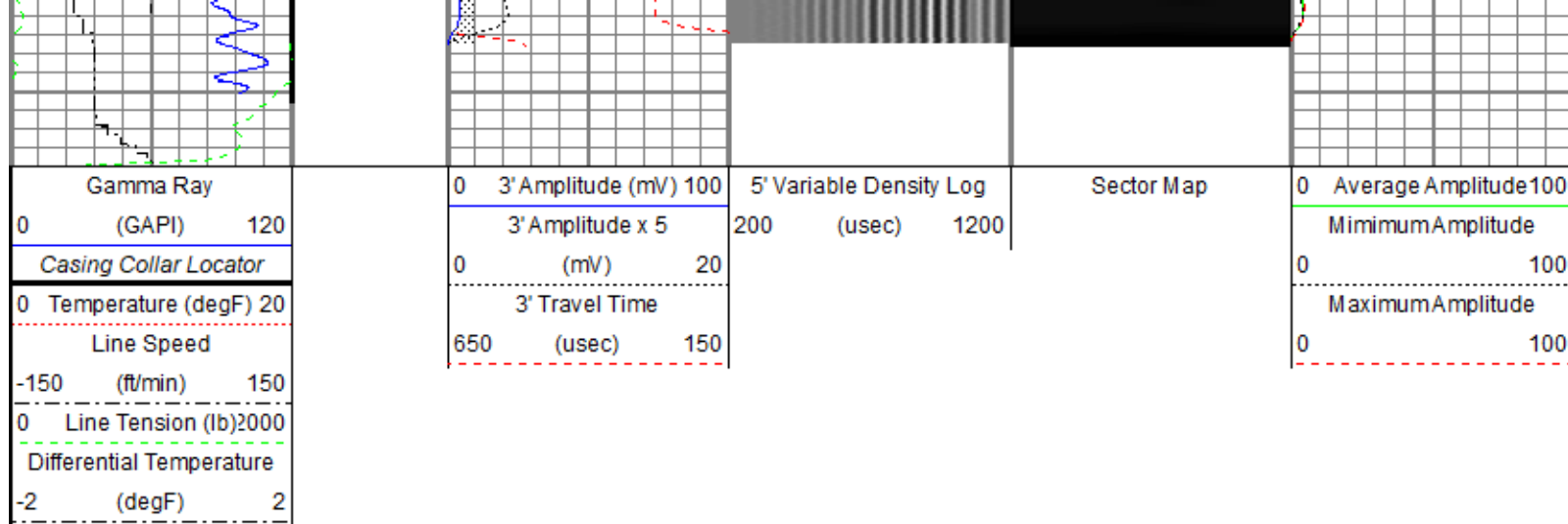








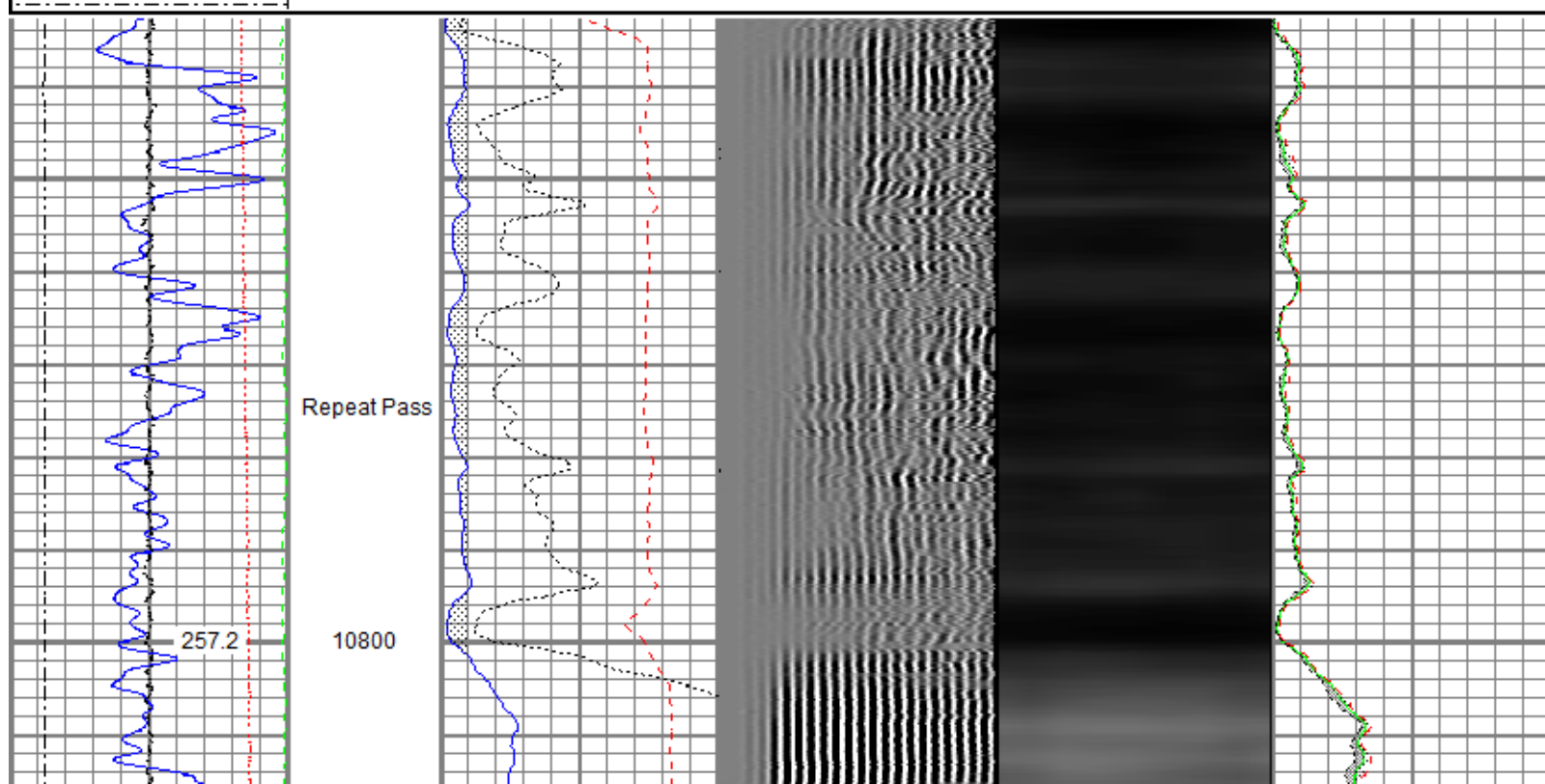
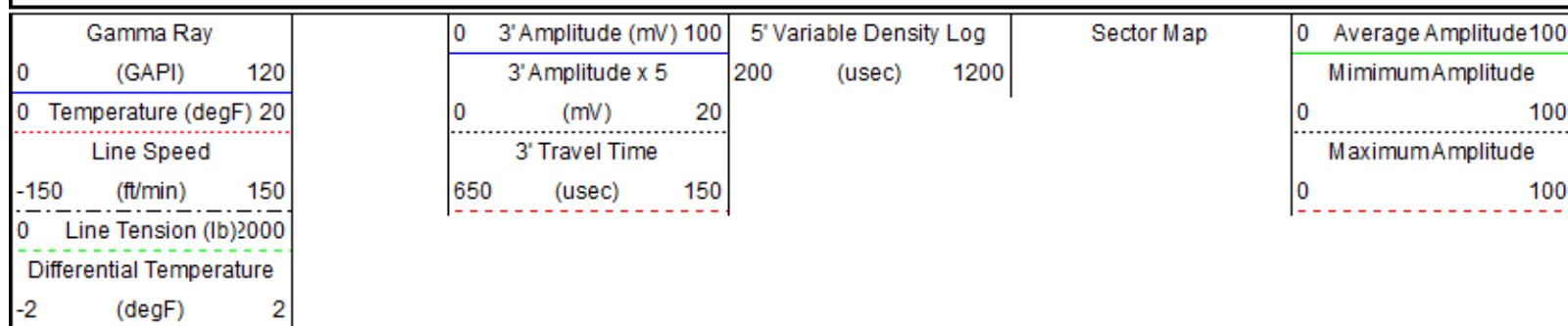


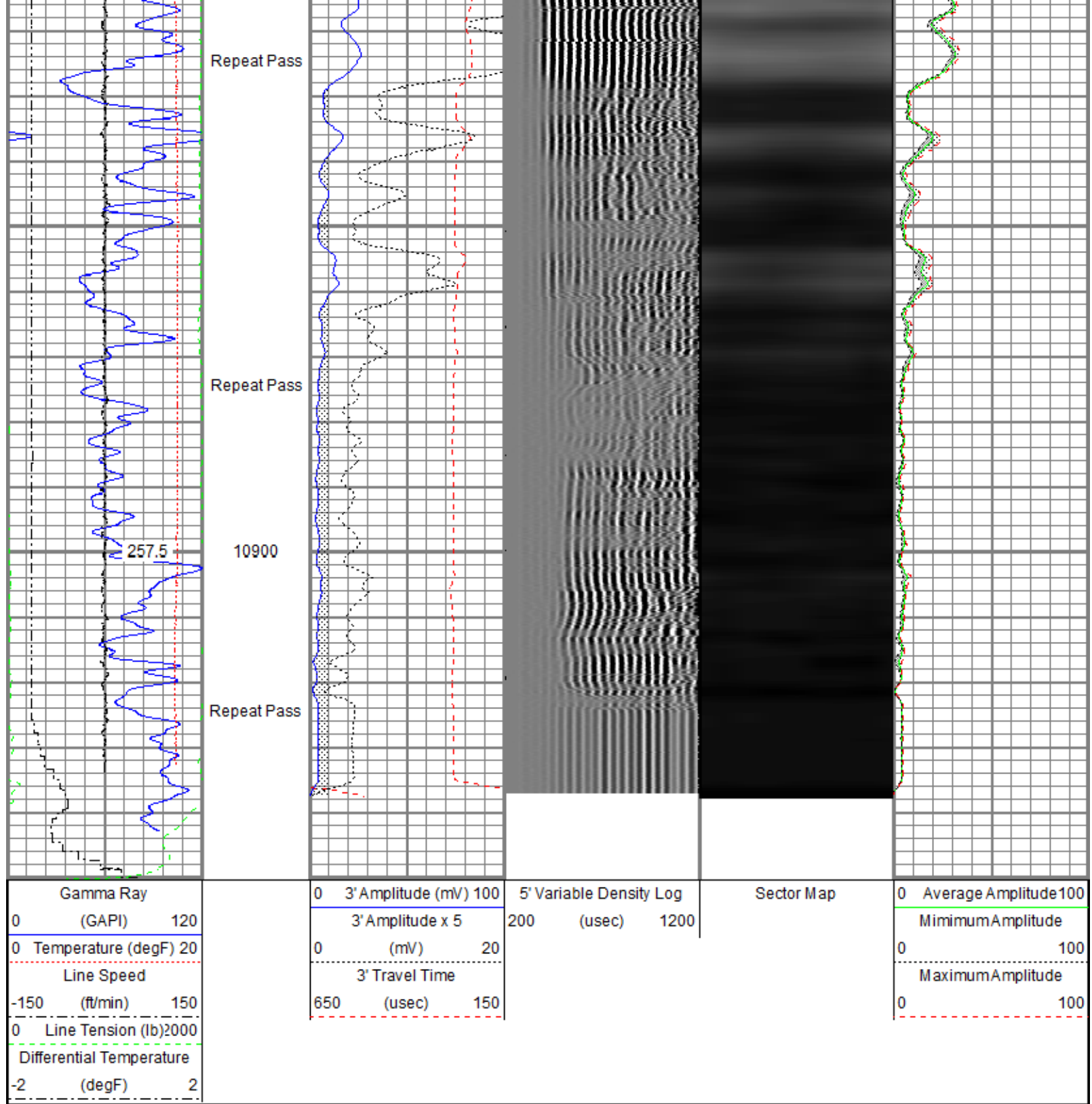


## Repeat Pass

Recorded With 0 PSI Surface Induced Pressure

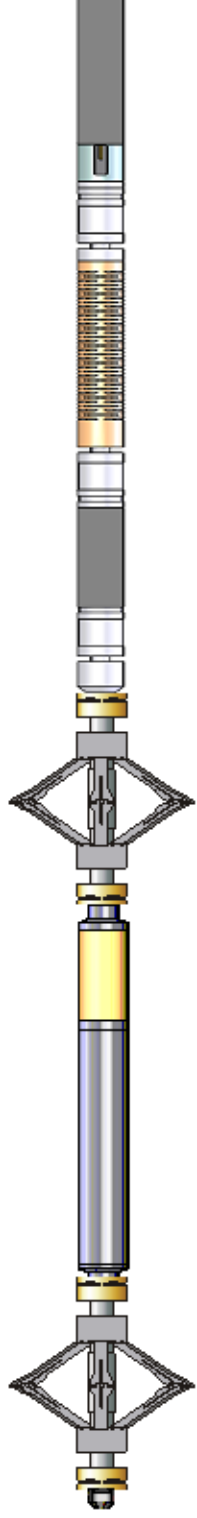
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 Dataset Pathname repeat.1  
 Presentation Format ros\_radrii  
 Dataset Creation Sat Dec 01 12:59:08 2018  
 Charted by Depth in Feet scaled 1:240





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
			DSS RAC-2750 5A GO DSS 2-3/4" Roller 5 Arm Centralizer w/ GO Ends	2.55	2.75	32.00



TEMP	16.33						
WVFS8	14.10			Probe Radii-2750 RBT (FW1311-021) Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub	9.39	2.75	105.00
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						
				DSS RAC-2750 5A GO DSS 2-3/4" Roller 5 Arm Centralizer w/ GO Ends	2.55	2.75	32.00
CCL\$2	6.42						
CCL\$1	6.42						
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: ursa_boies ranch b-19n fed 23b-19-2-97_rbl_11-30-18.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\ursa_boies ranch b-19n fed 23b\ursa_boies ranch b-19n fed 23b-19-2-97_rbl_11-30-18.db		
Dataset Pathname	main.1		
Dataset Creation	Sat Dec 01 12:51:35 2018		
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:	FW1311-021
Tool Model:	2750 RBT
Calibration Casing Diameter:	4.500 in
Calibration Depth:	27.809 ft

#### Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.009	0.821	0.800	81.196	98.920	-0.045
CAL	0.776	0.776				
5'	0.018	0.733	0.800	81.196	112.508	-1.266
SUM						
S1	0.009	0.932	0.000	100.000	108.337	-0.971
S2	0.008	0.878	0.000	100.000	115.056	-0.965
S3	0.008	0.790	0.000	100.000	127.906	-1.073
S4	0.008	0.741	0.000	100.000	136.293	-1.058
S5	0.009	0.742	0.000	100.000	136.371	-1.184
S6	0.009	0.751	0.000	100.000	134.832	-1.227
S7	0.009	0.804	0.000	100.000	125.829	-1.116
S8	0.010	0.903	0.000	100.000	112.044	-1.137

#### Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.776	0.776	1.000	0.000

#### Air Zero Calibration, performed Fri Nov 30 19:07:25 2018:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.007		0.000			0.000
5'	0.022		0.000			0.001
SUM						
S1	0.007		0.000			-0.001
S2	0.007		0.000			-0.001
S3	0.008		0.000			-0.000
S4	0.008		0.000			-0.000
S5	0.008		0.000			-0.000
S6	0.008		0.000			-0.000
S7	0.007		0.000			0.000
S8	0.007		0.000			-0.001

### Temperature Calibration Report

Serial Number:	FW1311-021
Tool Model:	2750 RBT
Performed:	Sun Nov 12 13:54:42 2017

	Reference	Reading
Low Reference:	100.00 degF	112.12 degF
High Reference:	350.00 degF	415.62 degF

Gain:	0.82
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Conn.	0.02
Offset	7.65
Delta Spacing	1



<b>Company</b>	Ursa Operating Company LLC
<b>Well</b>	Boies Ranch B-19N FED 23B-19-2-97
<b>Field</b>	Sulphur Creek
<b>County</b>	Rio Blanco
<b>State</b>	Colorado