



Radial Cement Bond  
Gamma Ray  
Casing Collar Log

Company PDC Energy Inc  
Well Pharaoh 2C  
Field Wattenberg  
County Weld State Colorado

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Field Wattenberg  
County Weld  
State Colorado

Location: API #: 05-123-48833  
SEC 36 TWP 5N RGE 64W  
Permanent Datum Ground Level Elevation 4593'  
Log Measured From Ground Level 0 FT  
Drilling Measured From Kelly Bushing  
Other Services  
Elevation  
K.B. 4621'  
D.F. ---  
G.L. 4593'

Date	10-FEB-2021	One		
Run Number		16845 FT		
Depth Driller		6887 FT		
Depth Logger		6874 FT		
Bottom Logged Interval		Surface		
Top Log Interval		8.5"		
Open Hole Size		Water		
Type Fluid		8.34 lb/gal		
Density / Viscosity		229°F		
Max. Recorded Temp.		See Log		
Estimated Cement Top		ROA		
Time Well Ready		11:55		
Time Logger on Bottom		HD-361		
Equipment Number		Platteville, CO		
Location		G. Lueck		
Recorded By		B. Myers		
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	20	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

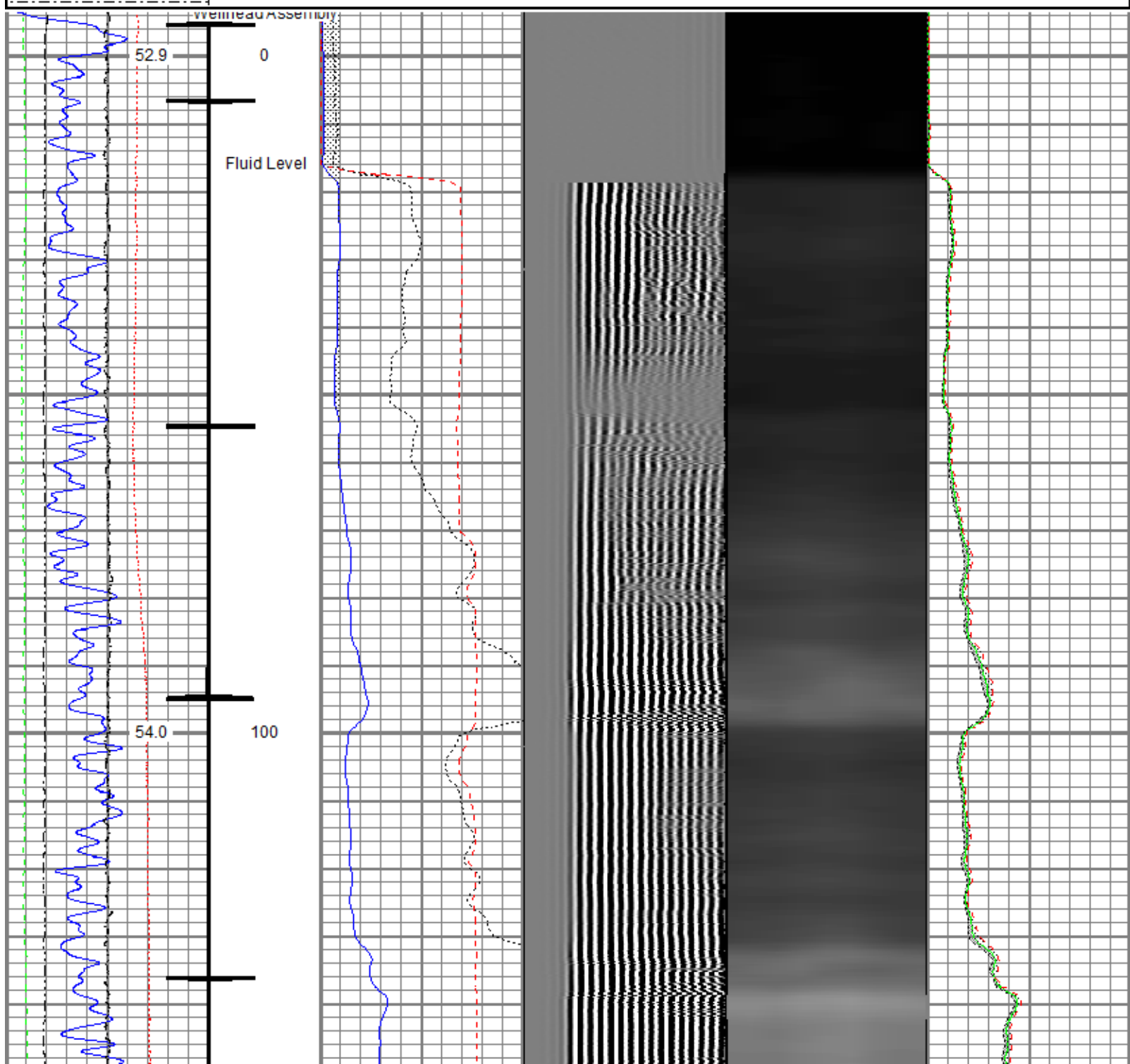
Log ran as per customer request  
Depth referenced to Casing Tally reported Marker Joint at 6012 FT  
Adjusted -5 FT to correlate with Marker Joint  
Log ran with 0 PSI Surface Induced Pressure  
Logging tools were clean and free of debris upon completion of operations  
Thank you for choosing Reliance Oilfield Services, LLC!!

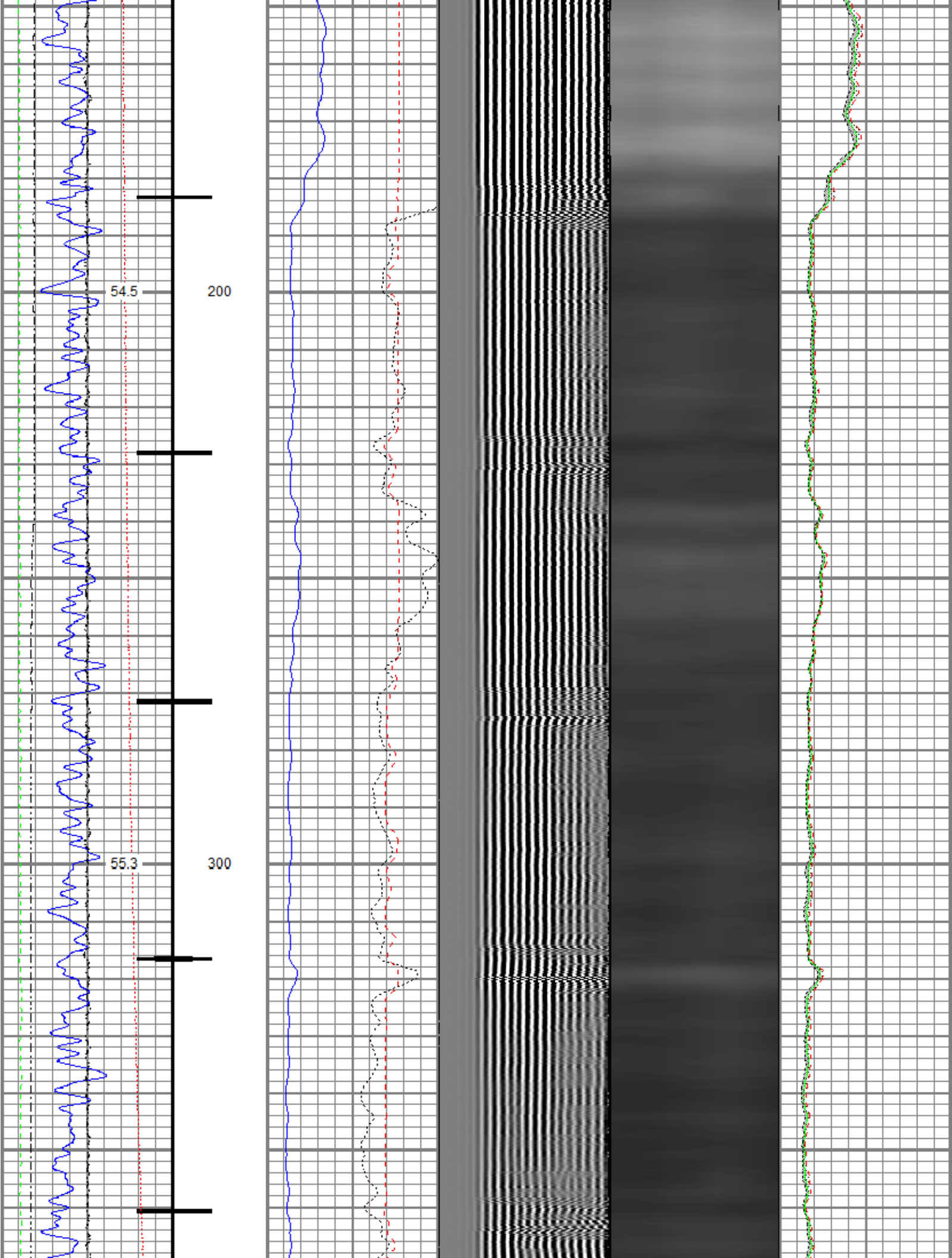
Main Pass

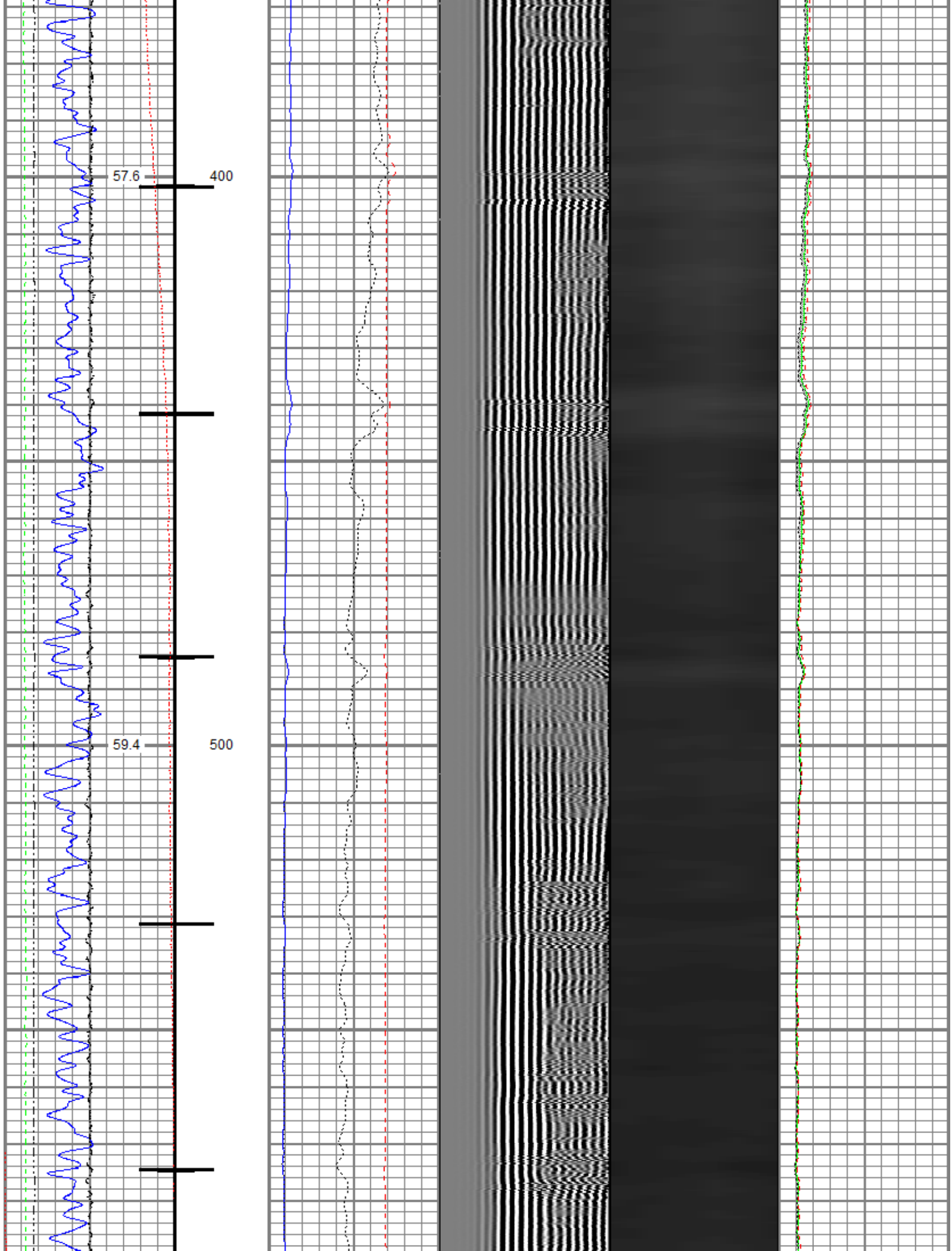


Database File pharaoh 2c\pdc\_pharaoh 2c\_rbl\_02-10-21.db  
 Dataset Pathname pass4.2  
 Presentation Format ros\_radri  
 Dataset Creation Fri Feb 12 18:11:51 2021  
 Charted by Depth in Feet scaled 1:240

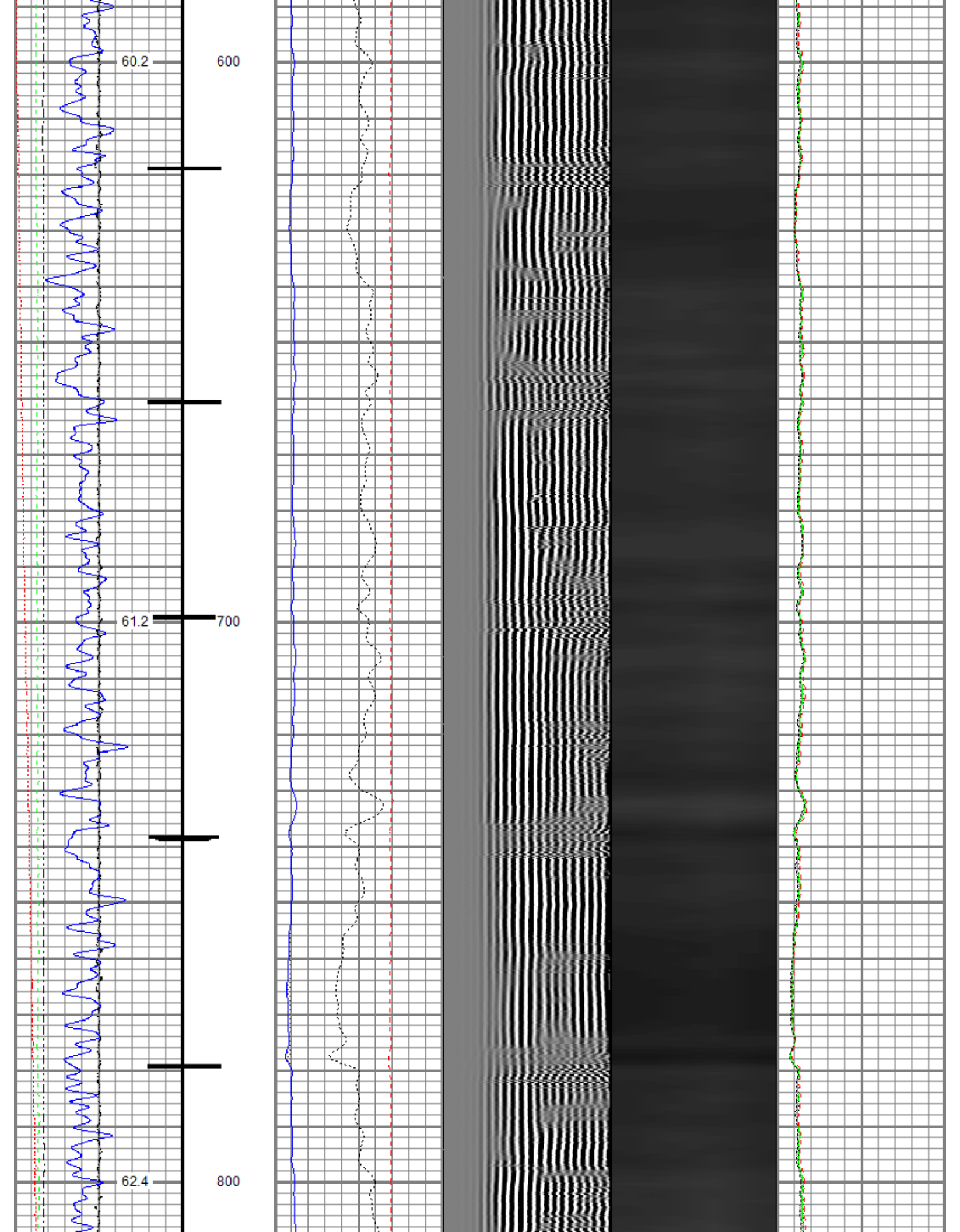
Gamma Ray	0	3' Amplitude (mV) 100	5' Variable Density Log	Sector Map	0	Average Amplitude 100
(GAPI) 120		3' Amplitude x 5	200 (usec) 1200			Minimum Amplitude
Casing Collar Locator	0	(mV) 20			0	100
Temperature (degF) 20		3' Travel Time				Maximum Amplitude
Line Speed	650	(usec) 150			0	100
(ft/min) 150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

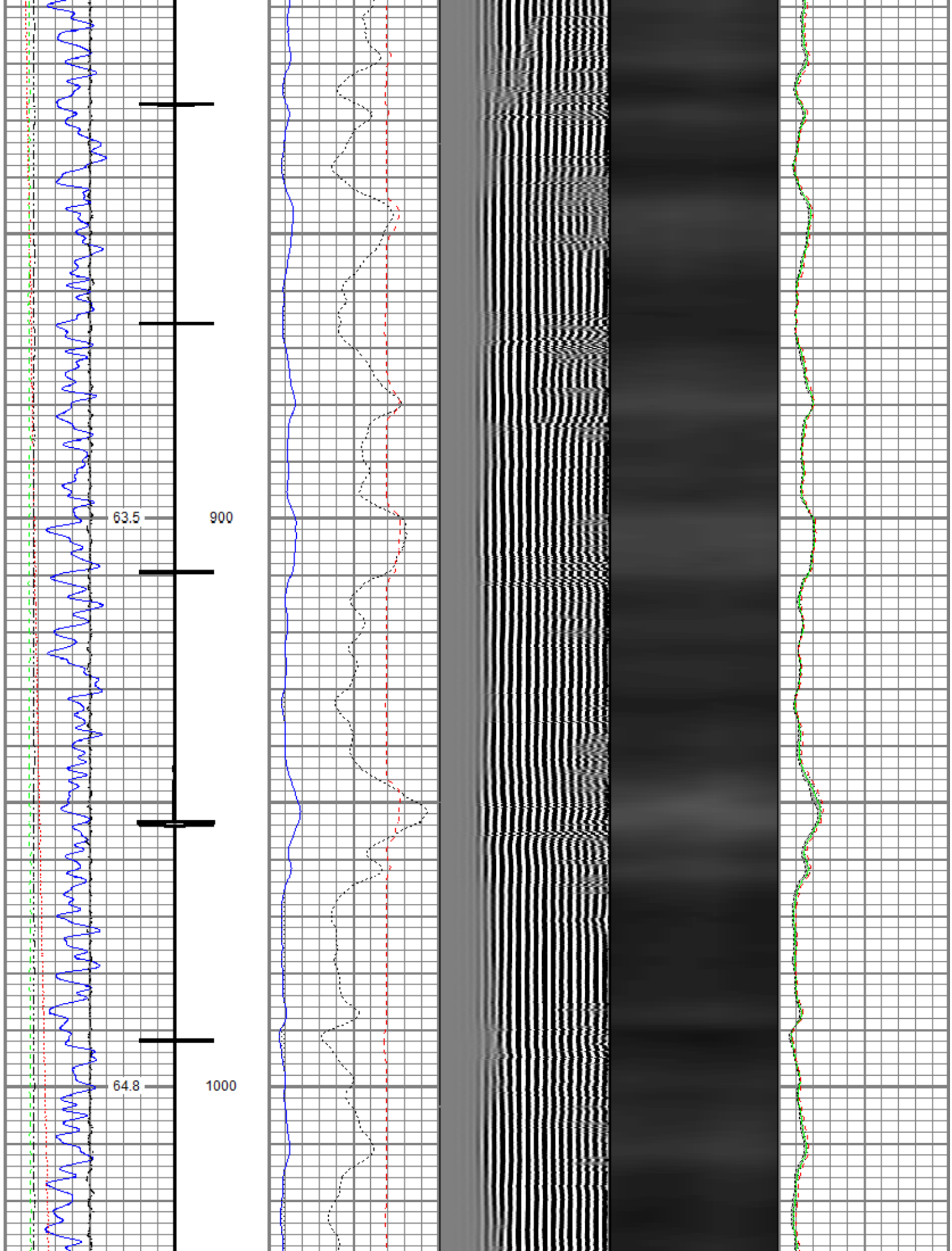


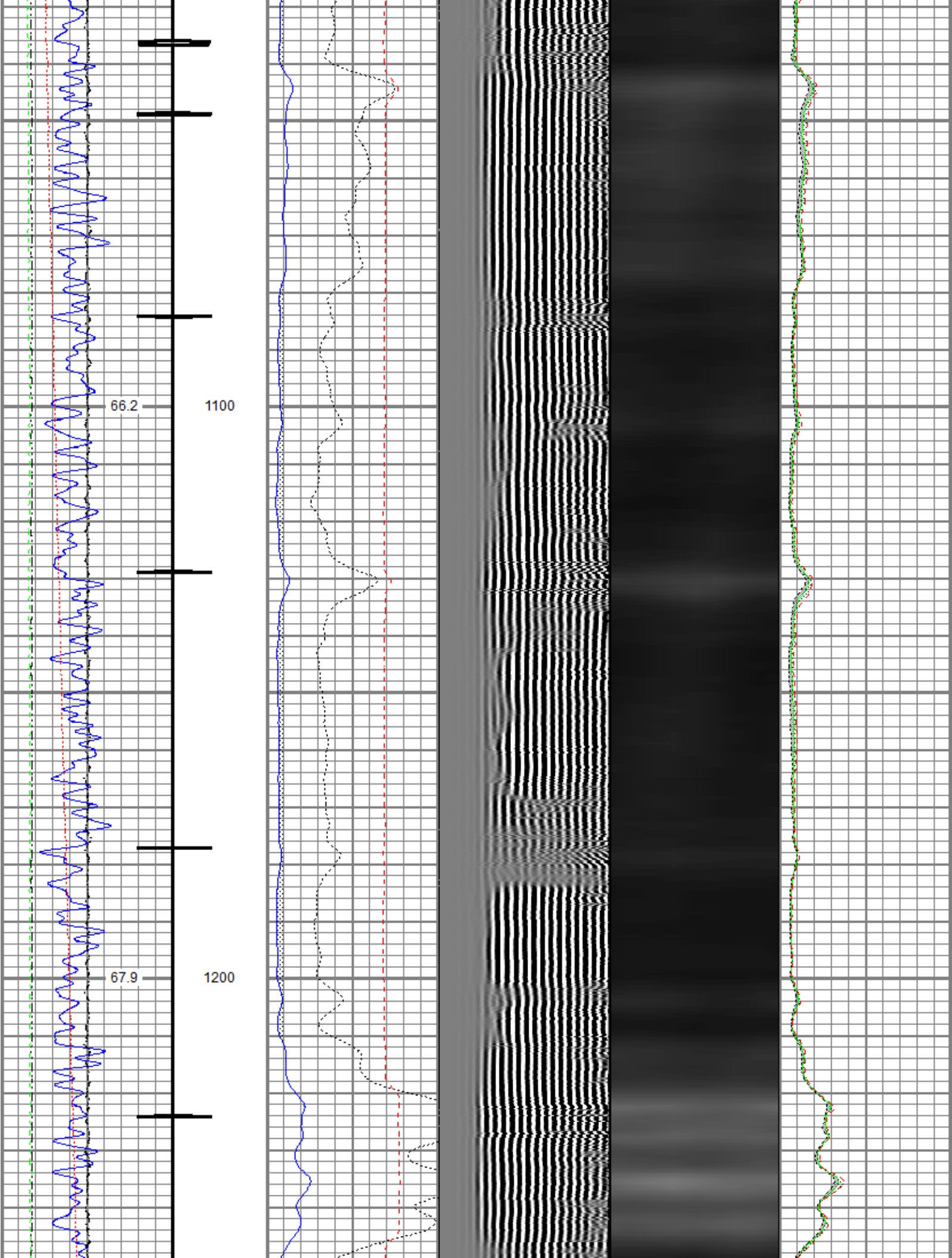




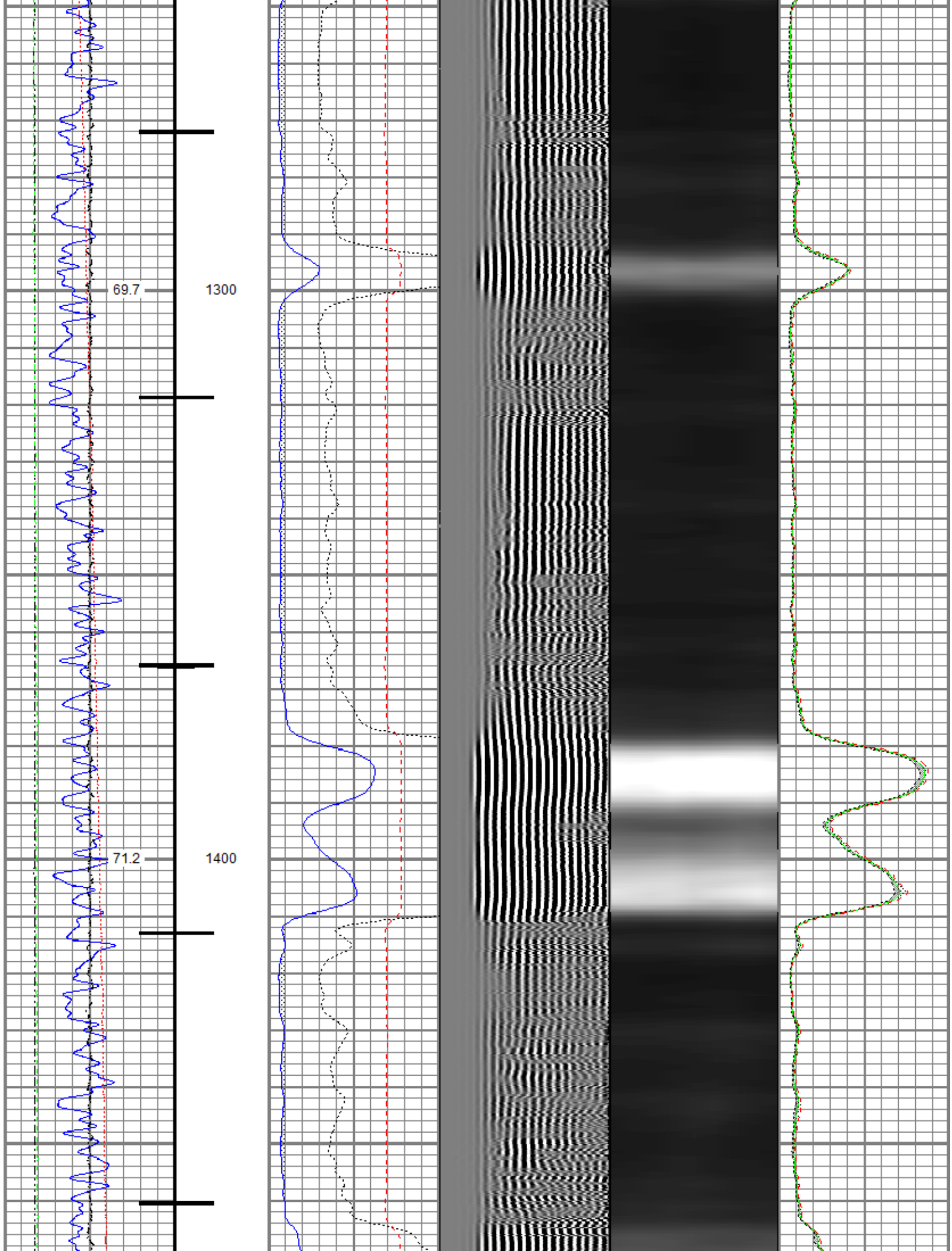




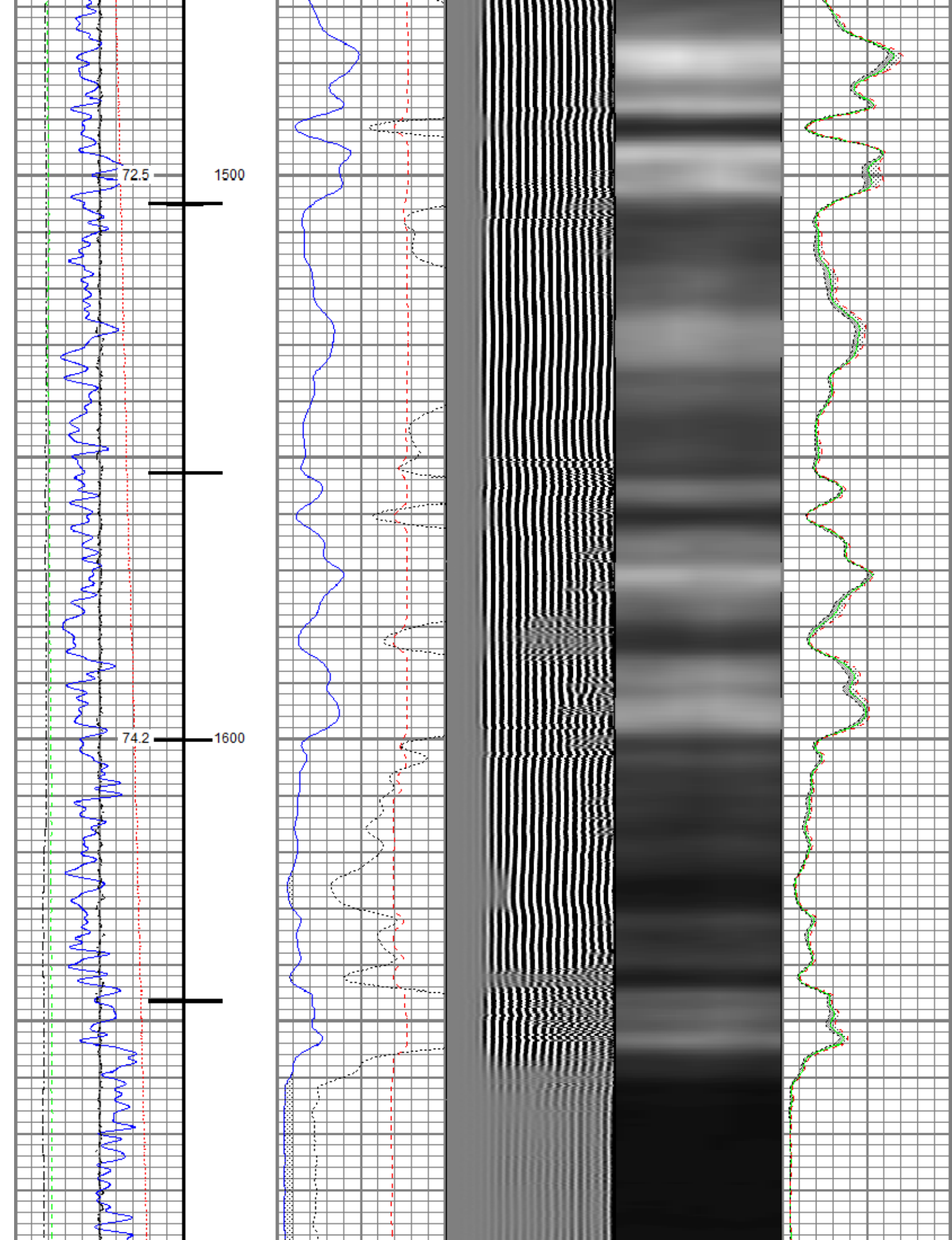


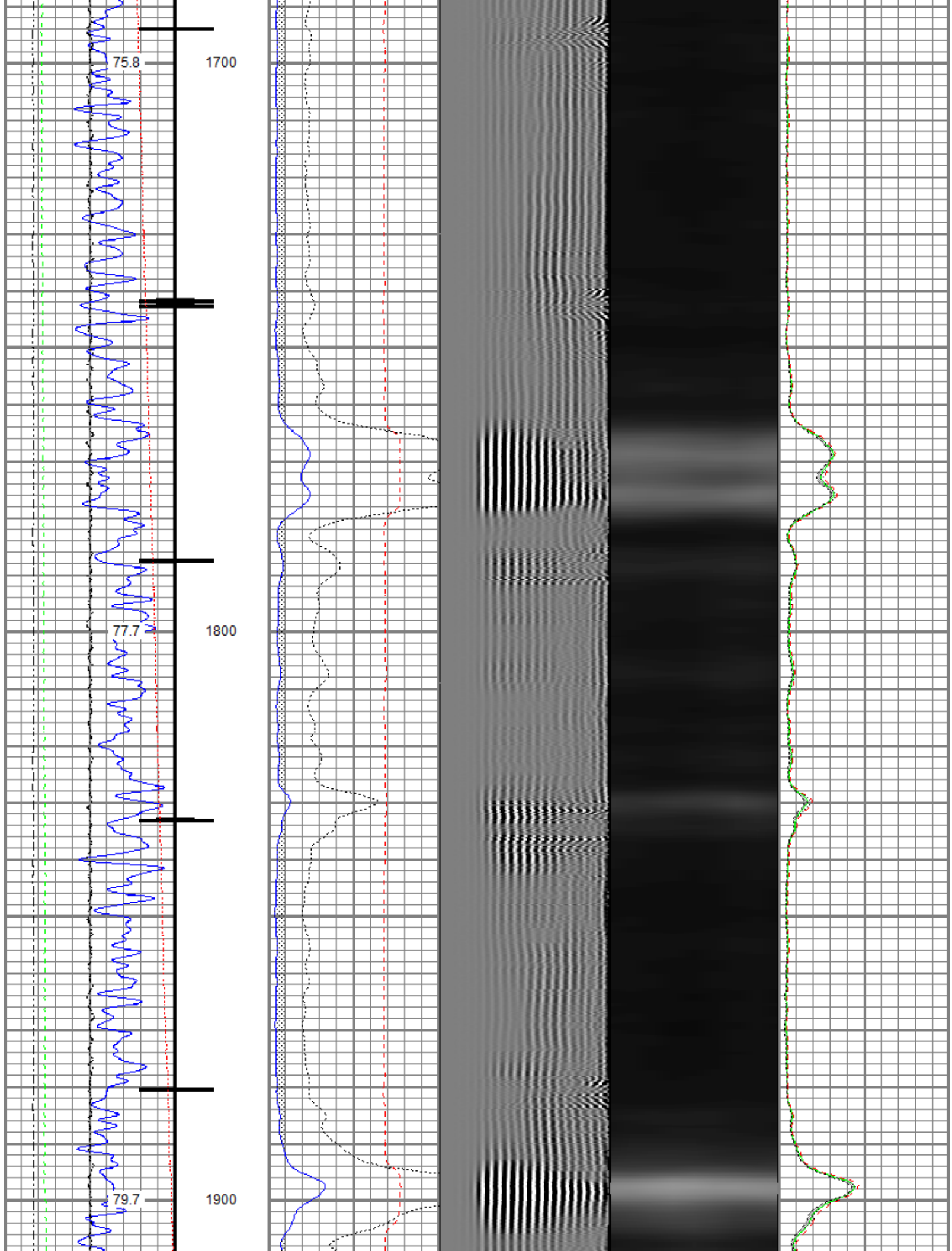


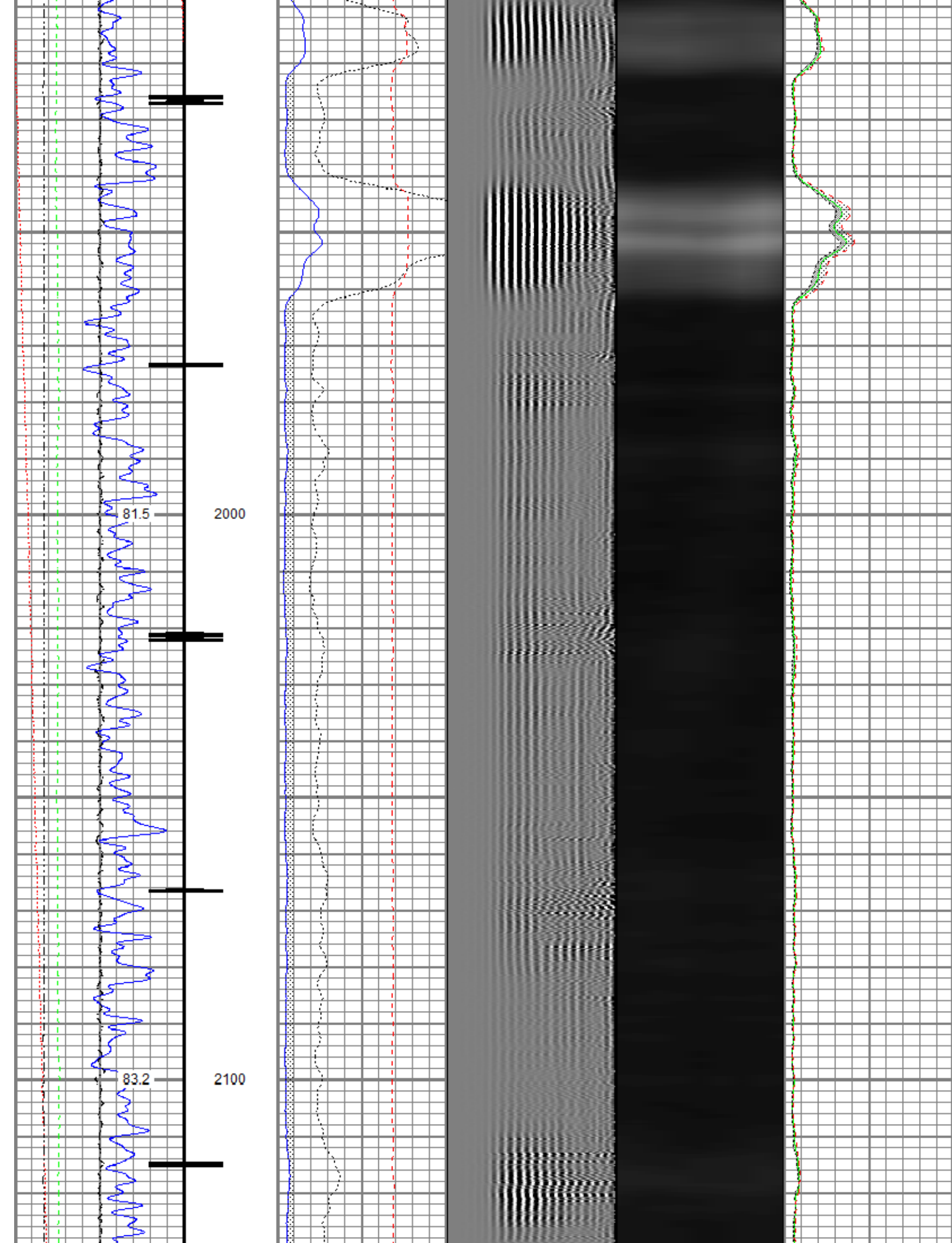


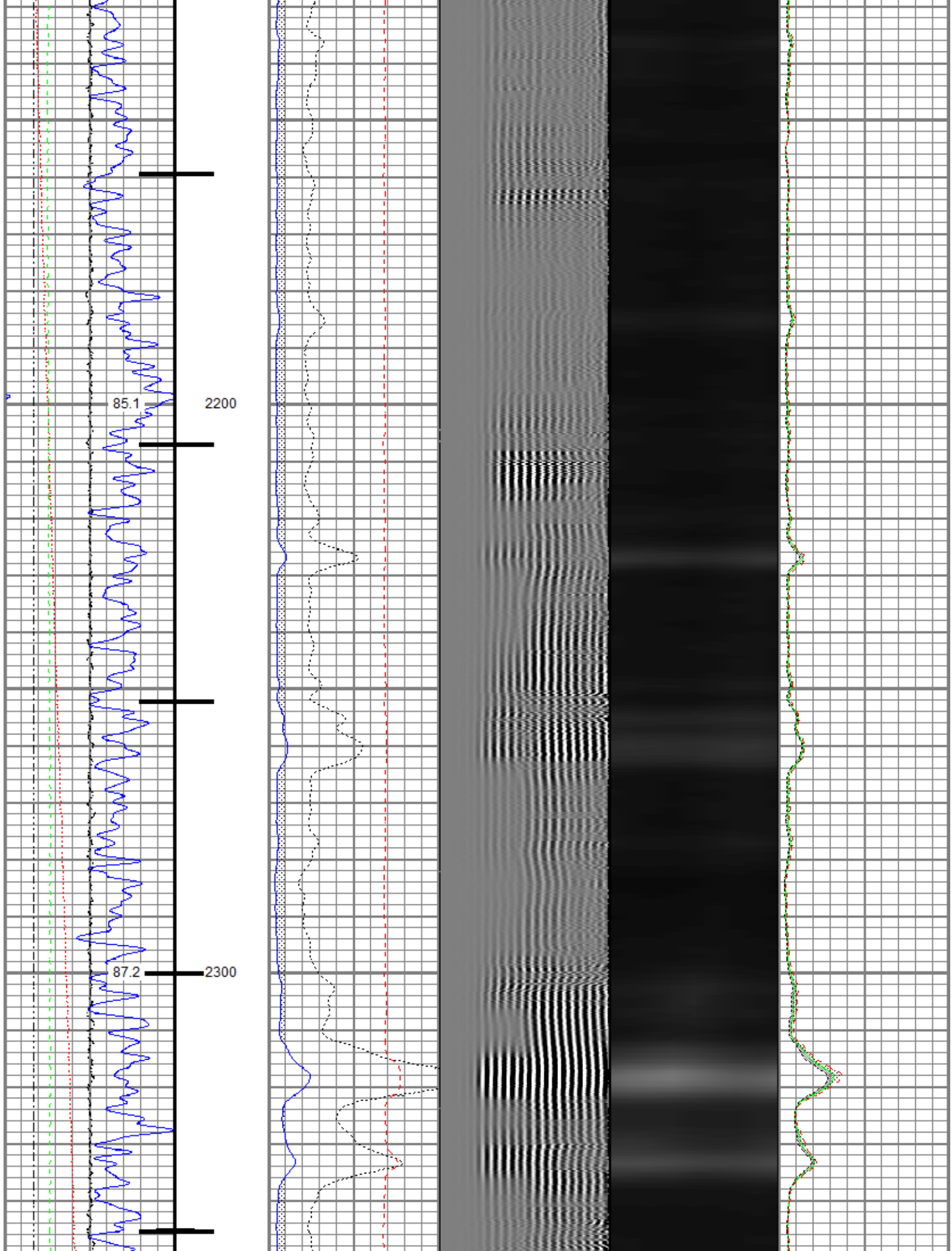




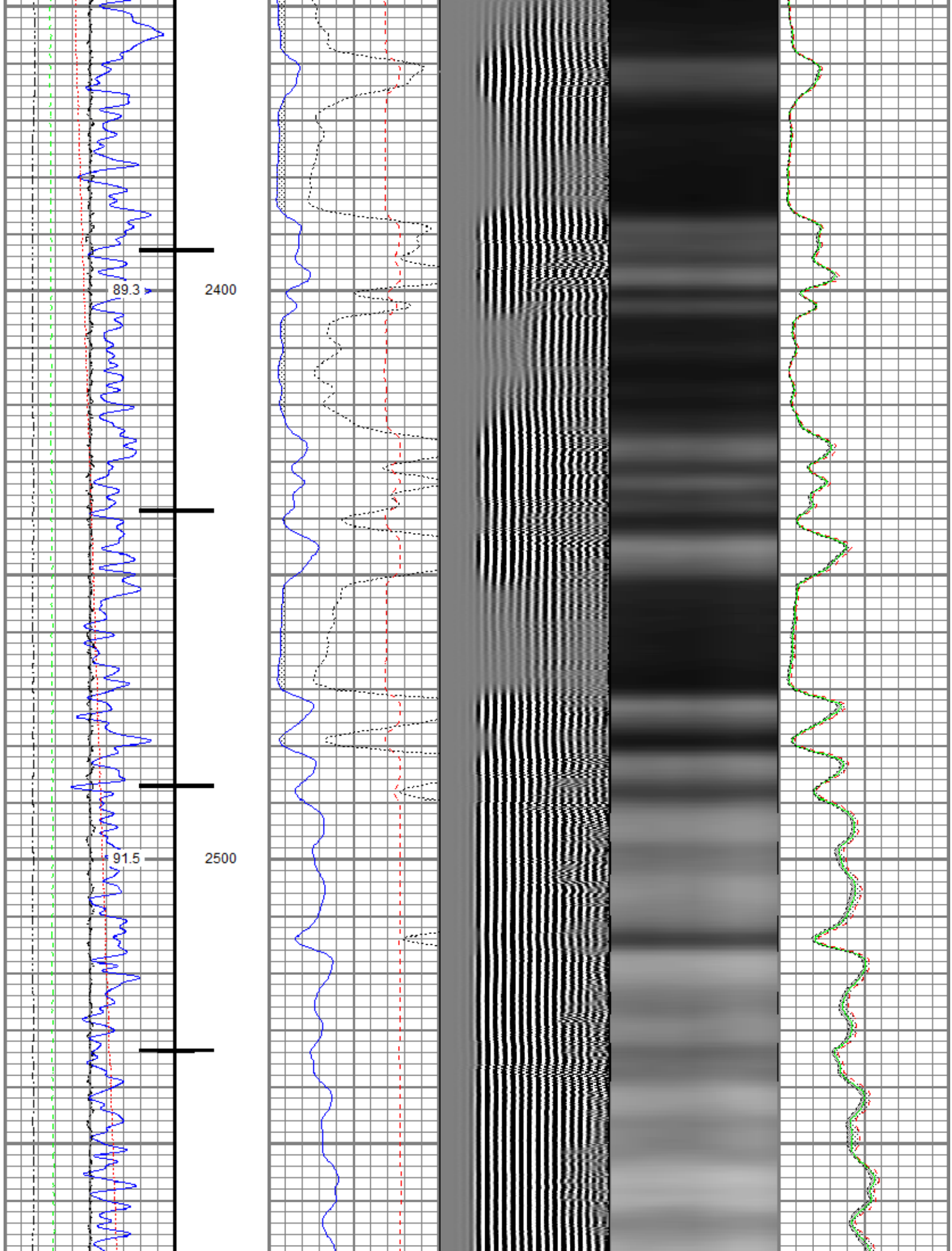


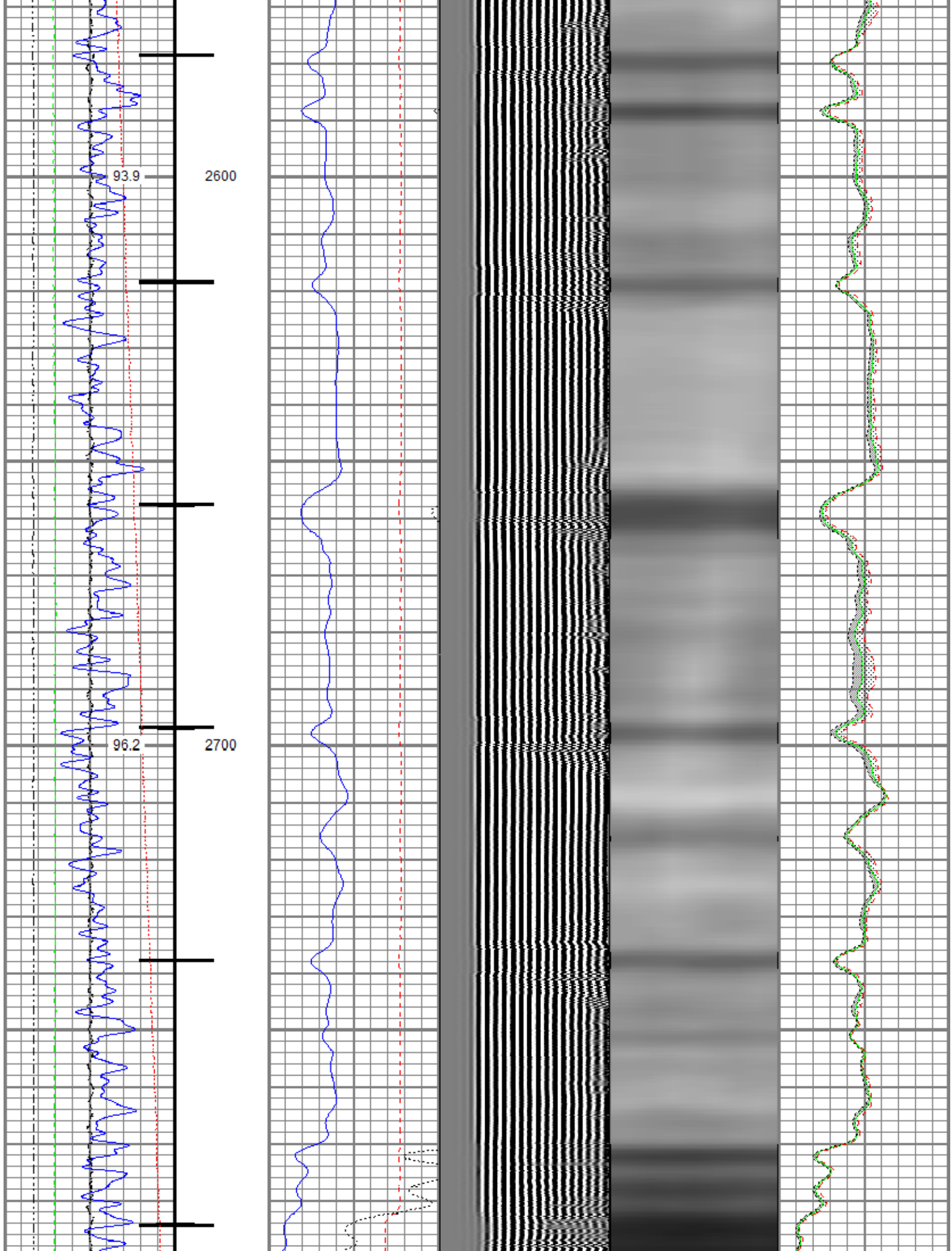


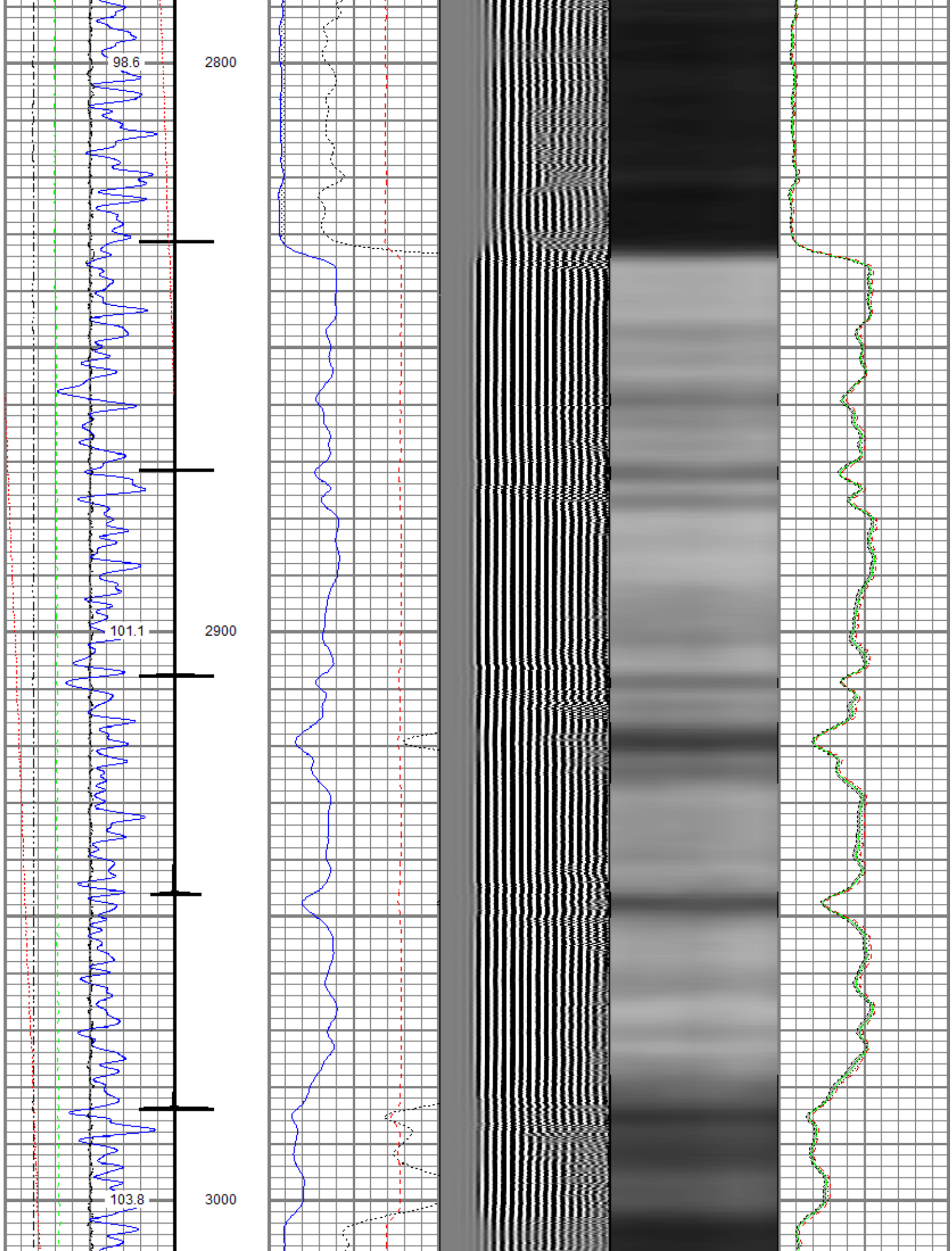




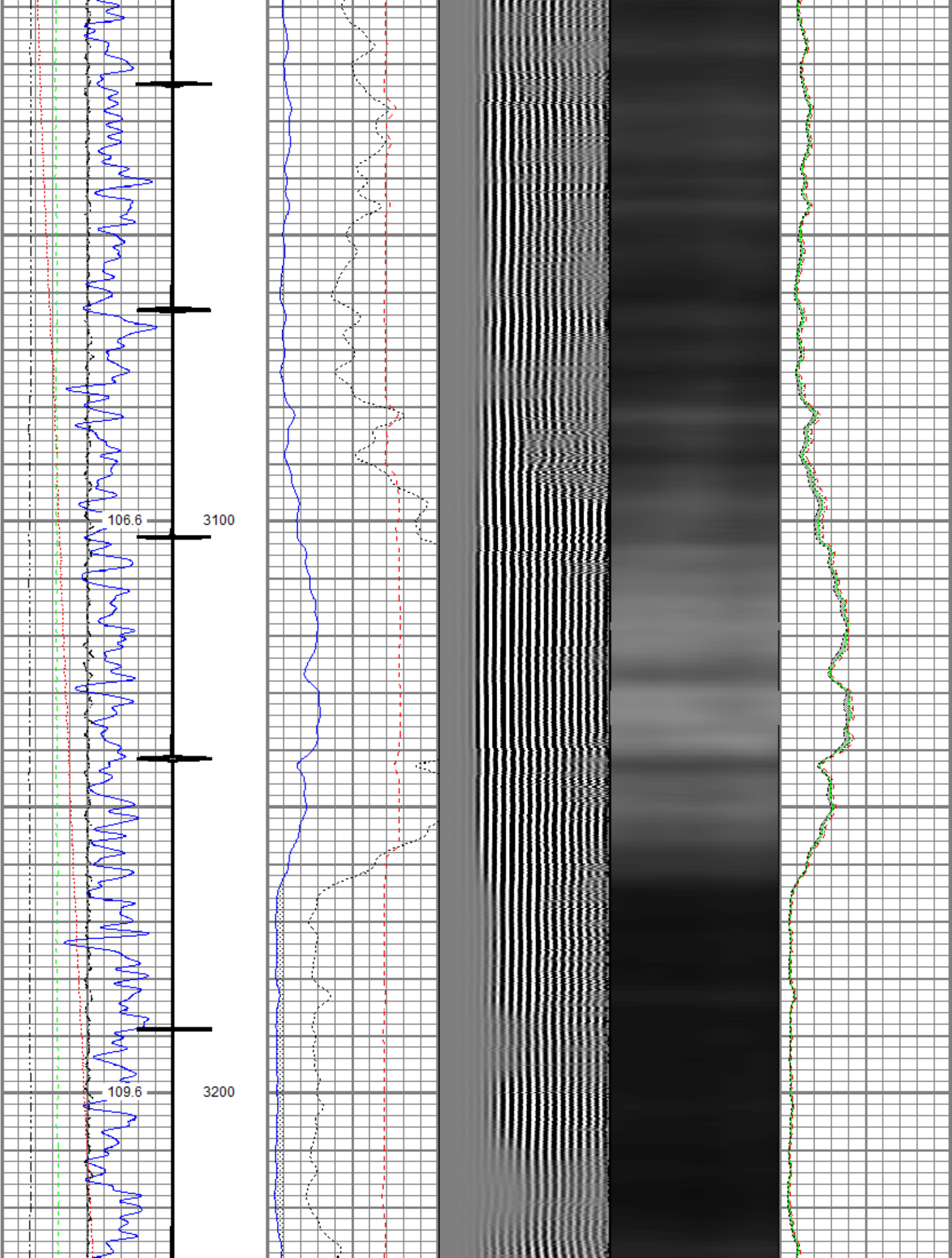




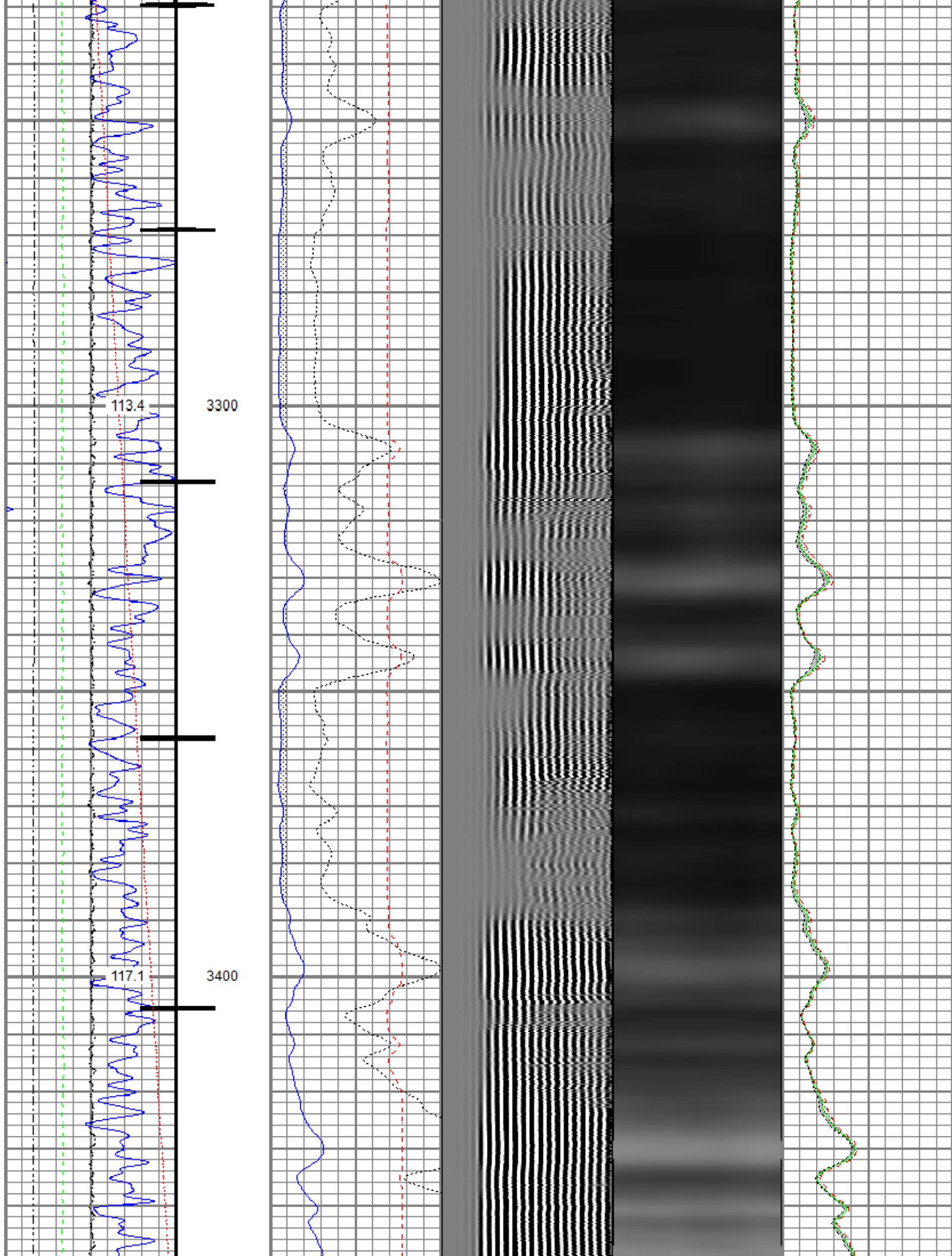


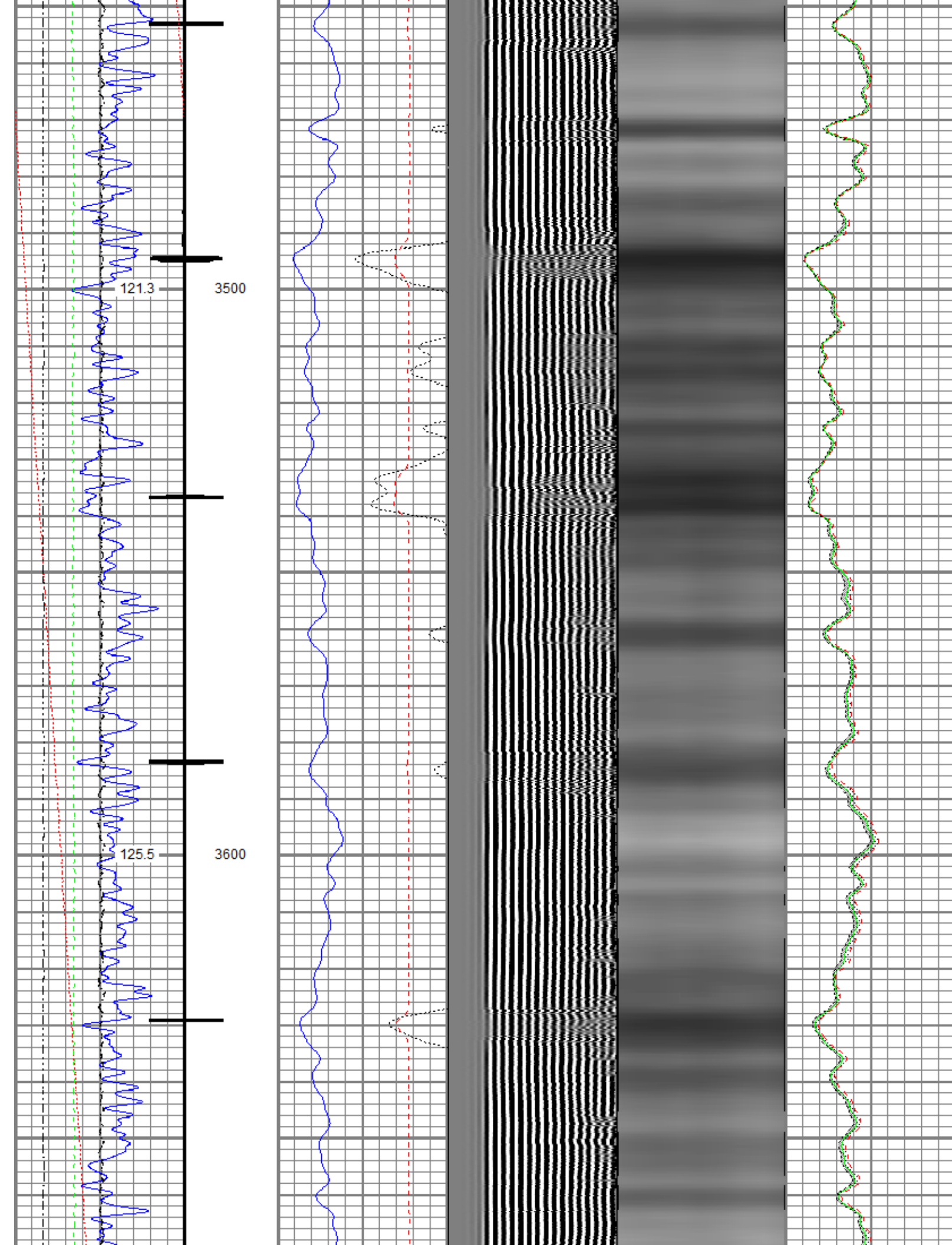


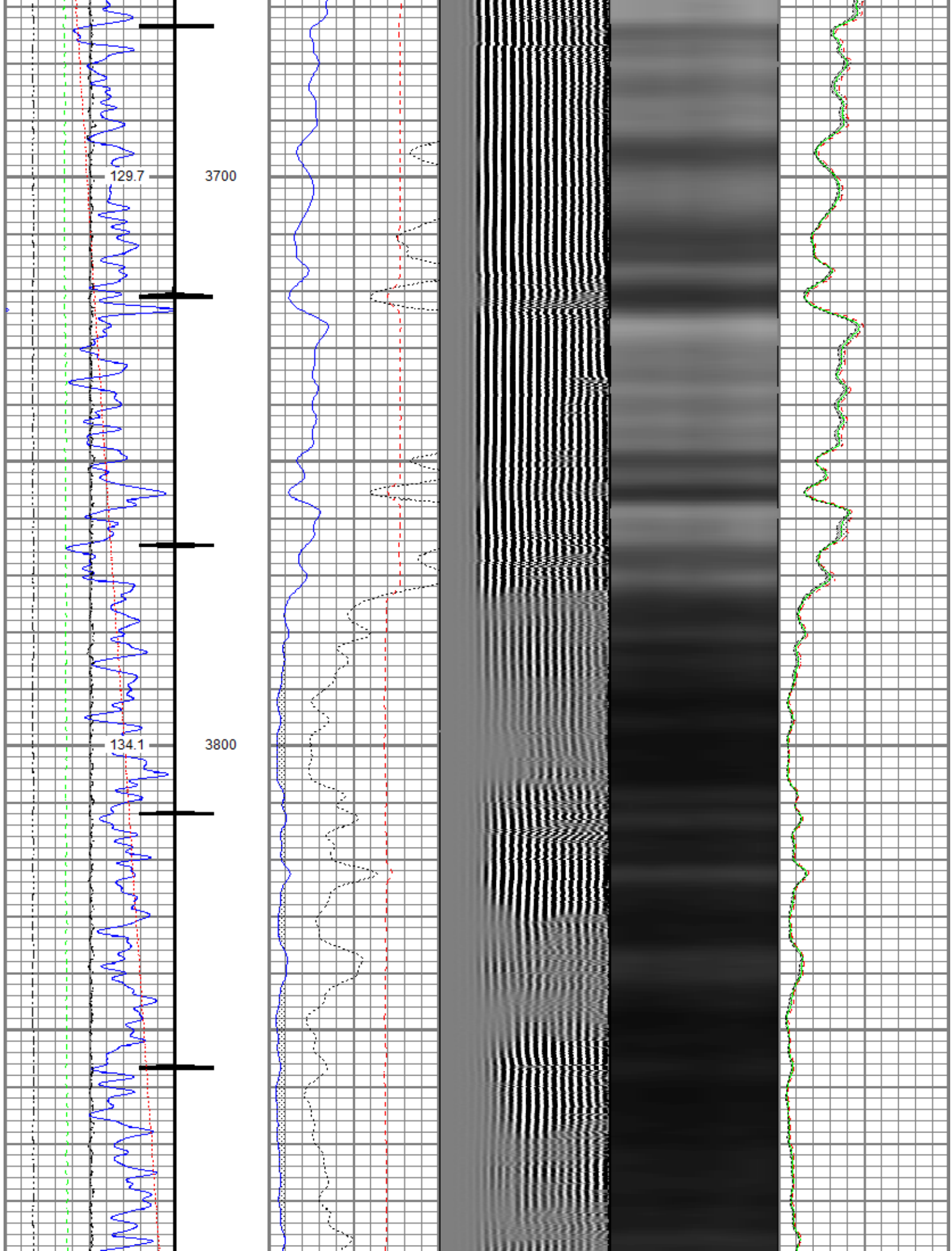




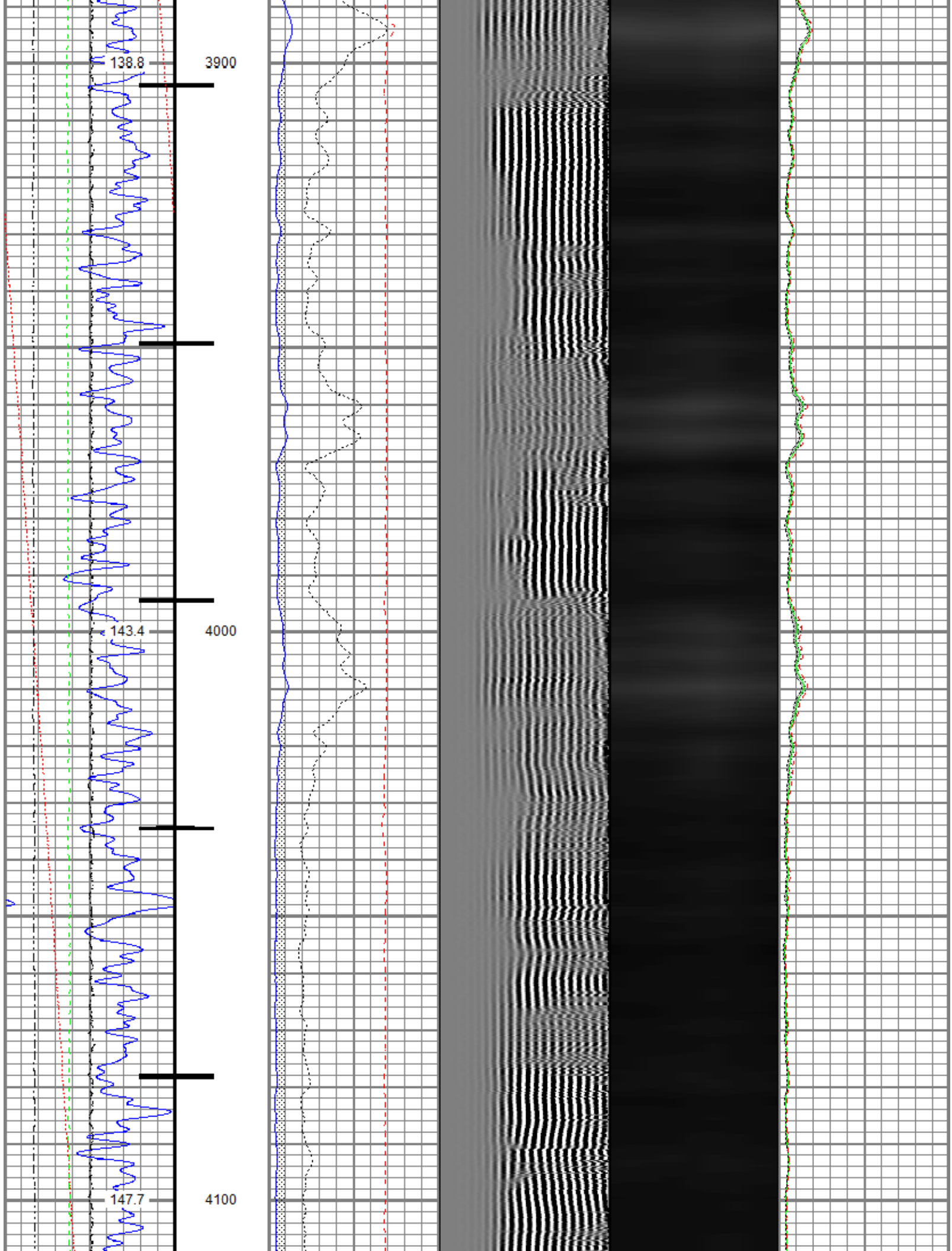




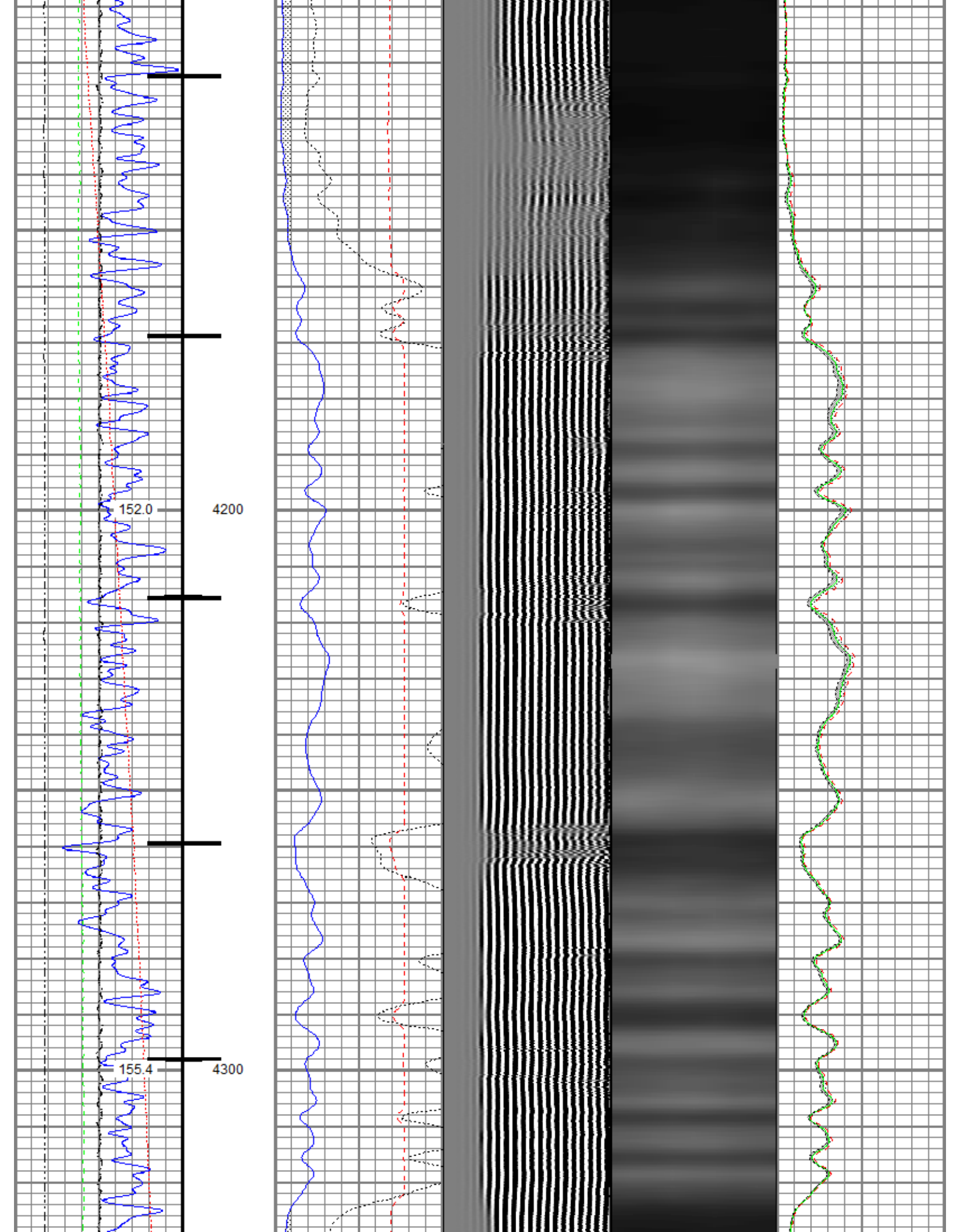


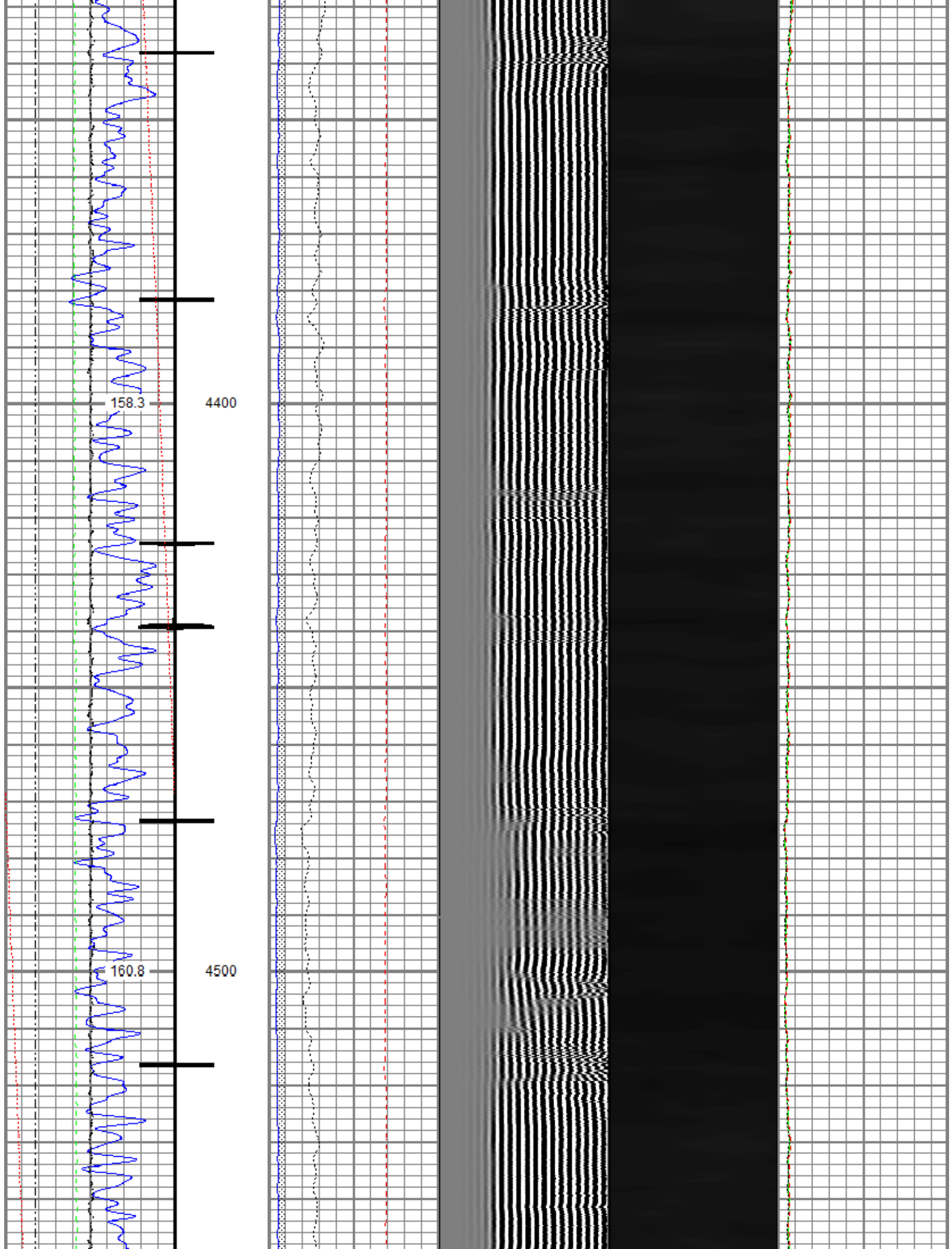


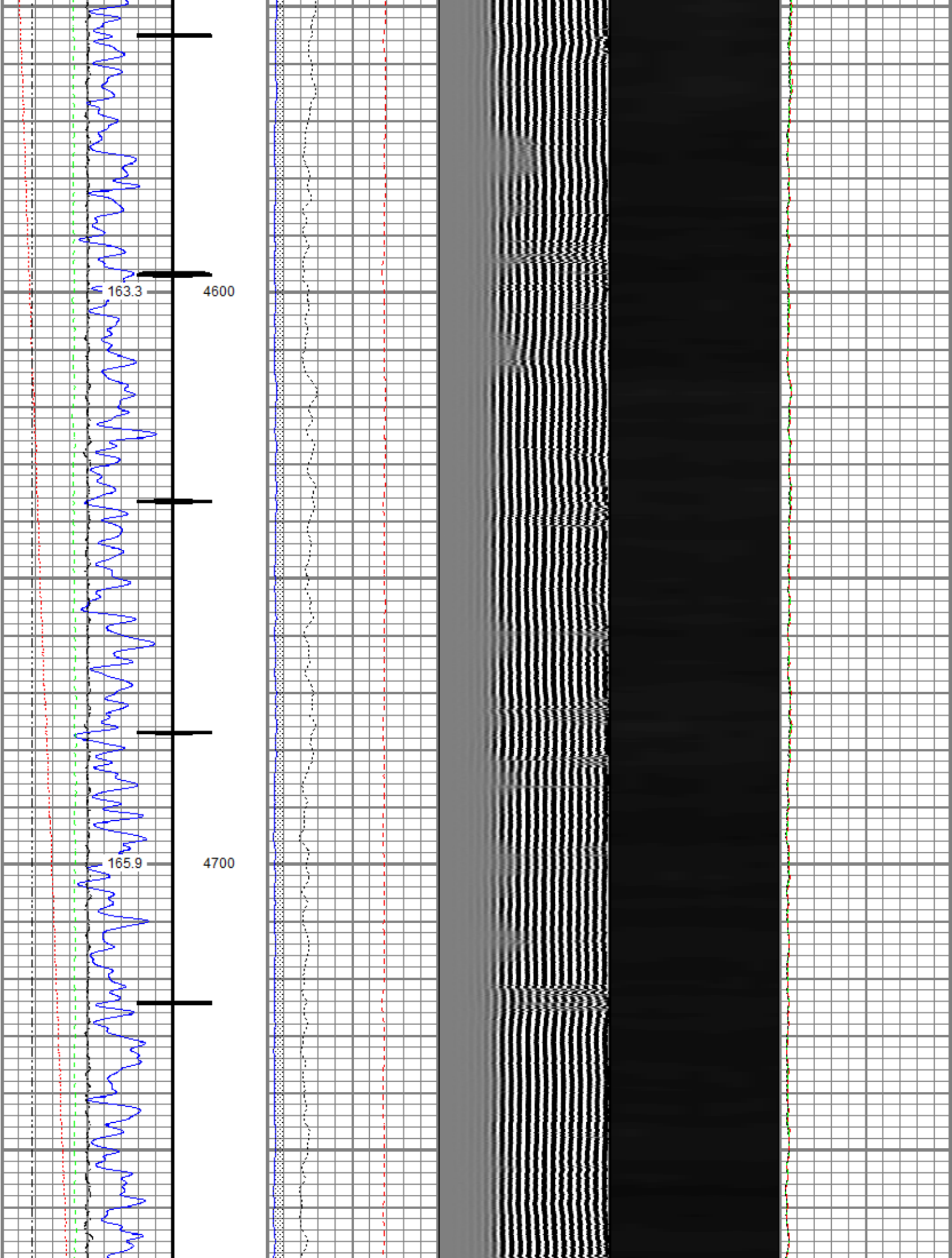




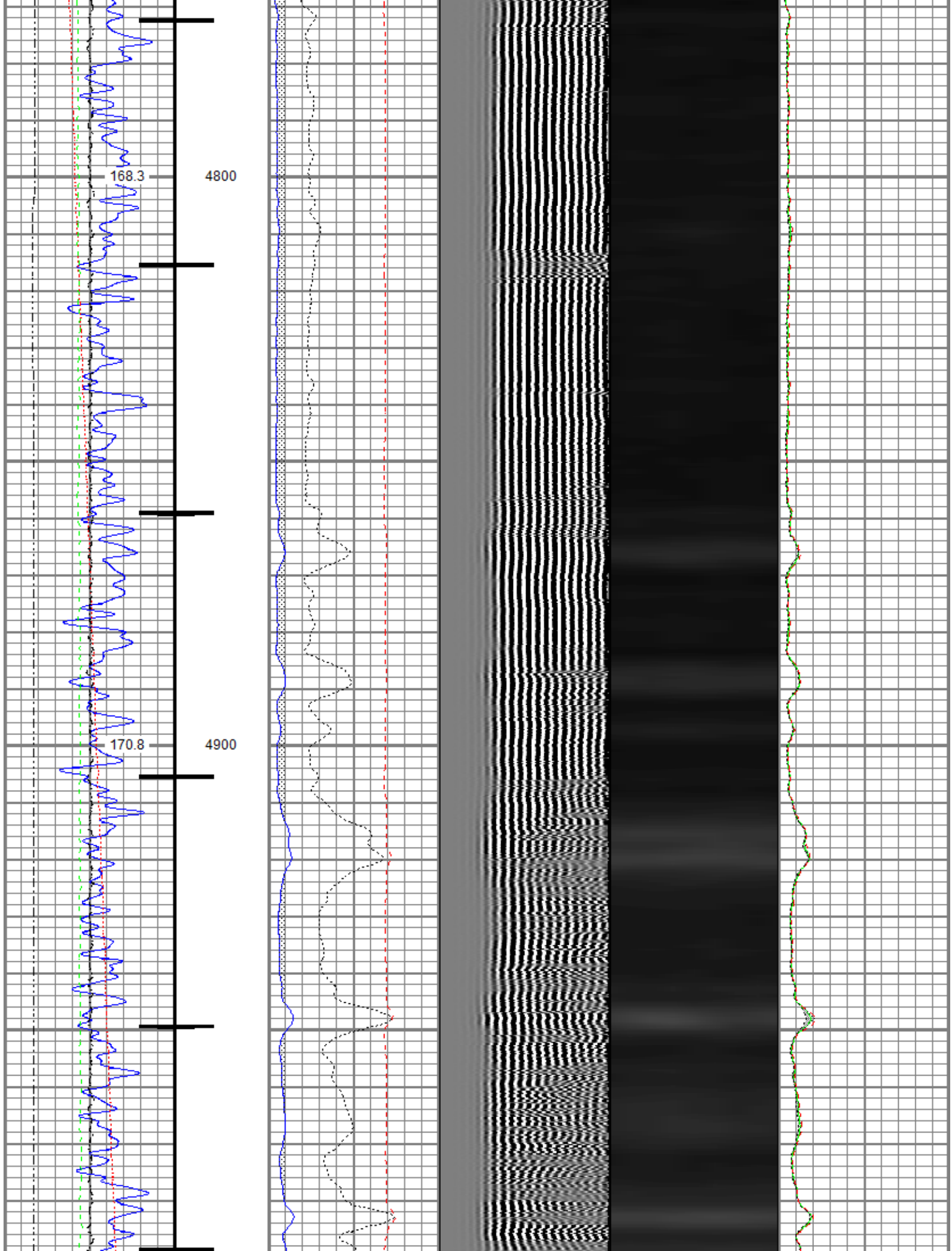




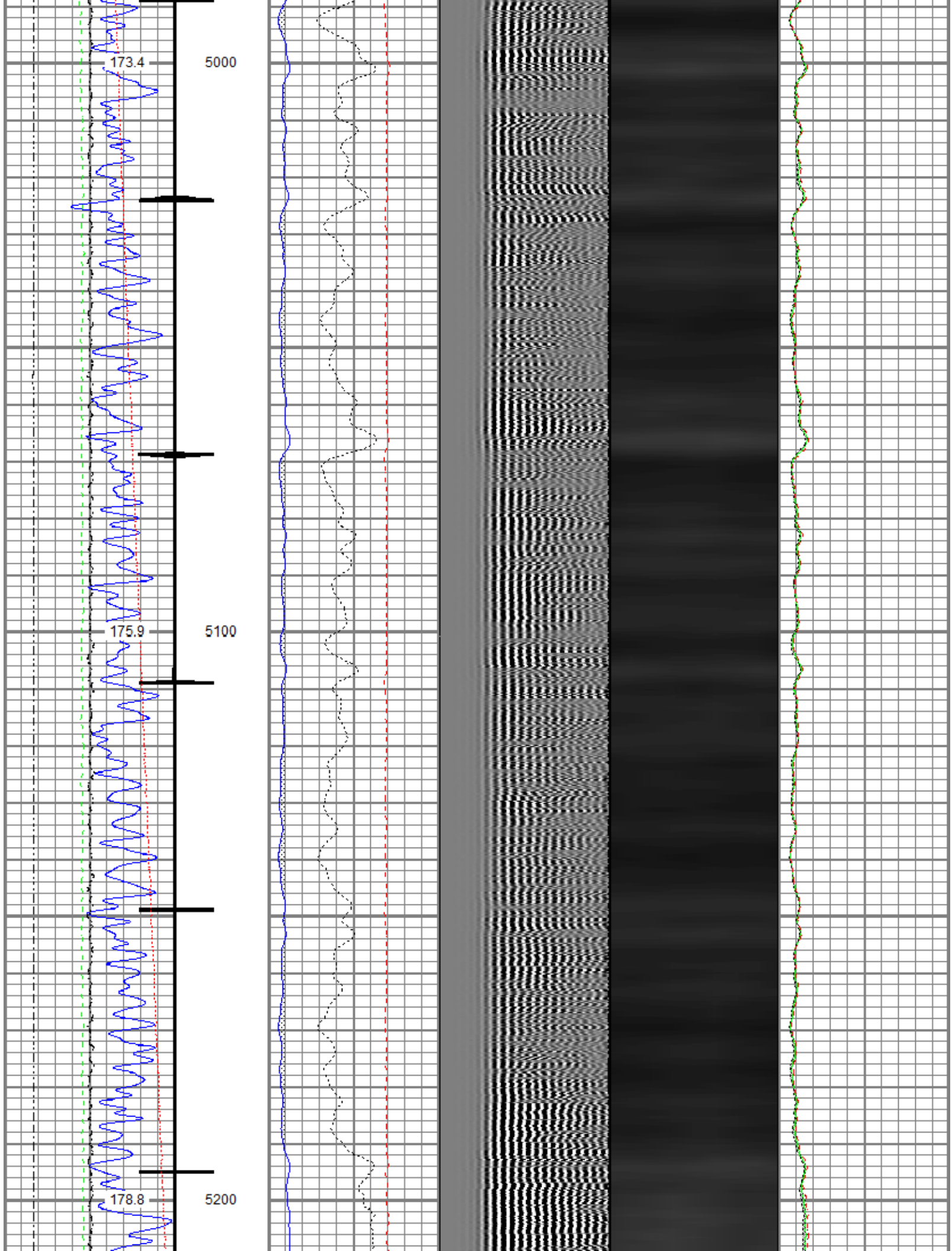


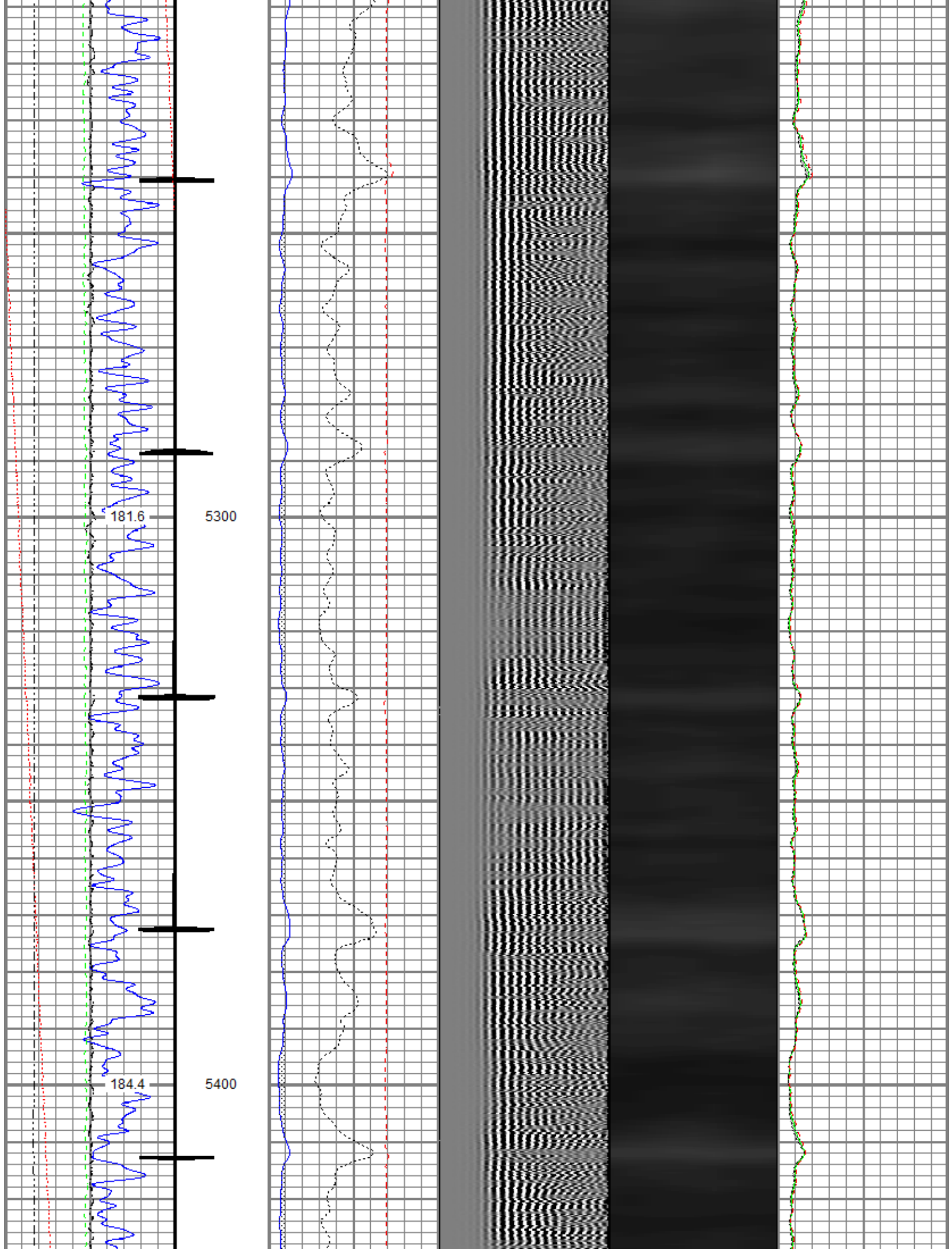


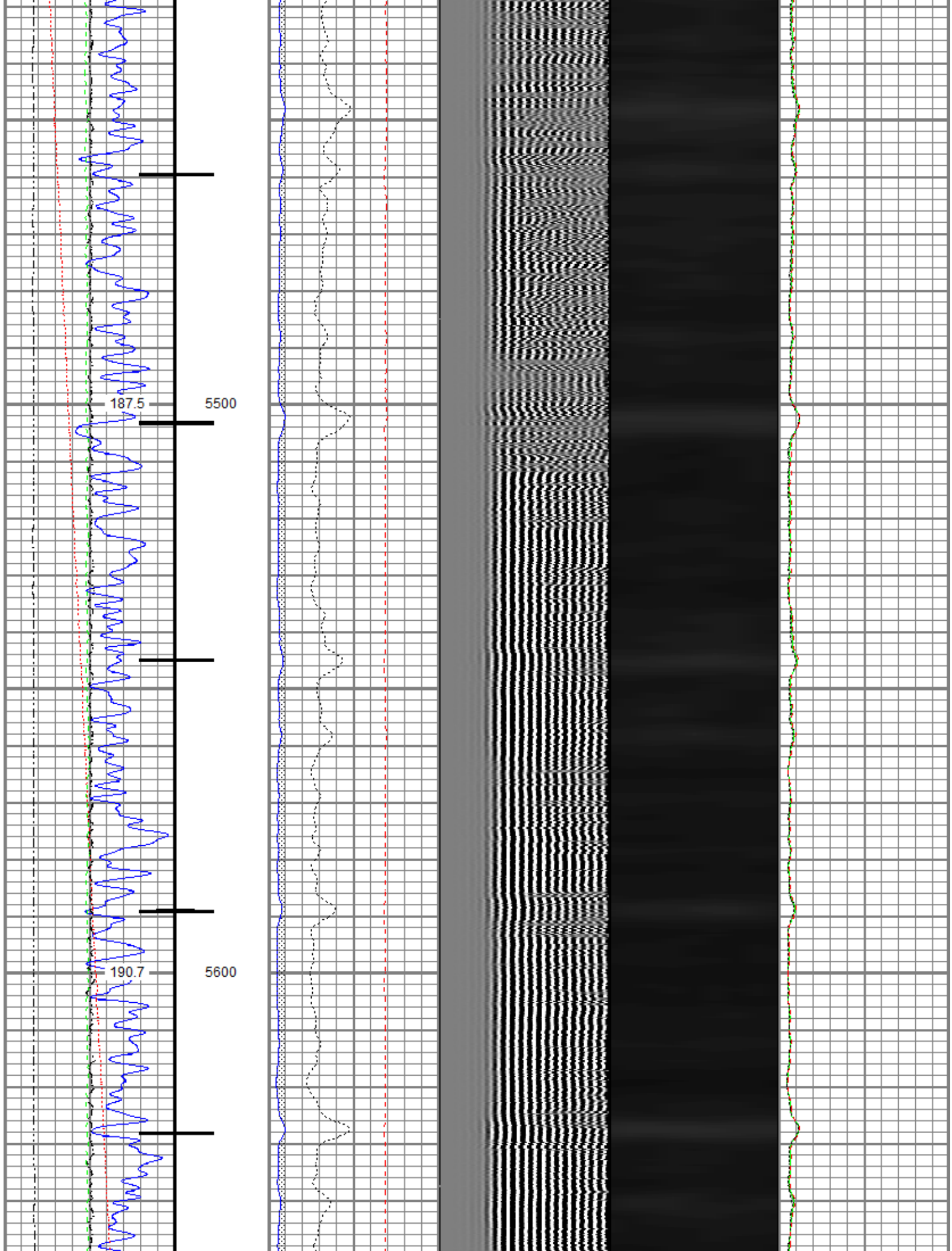




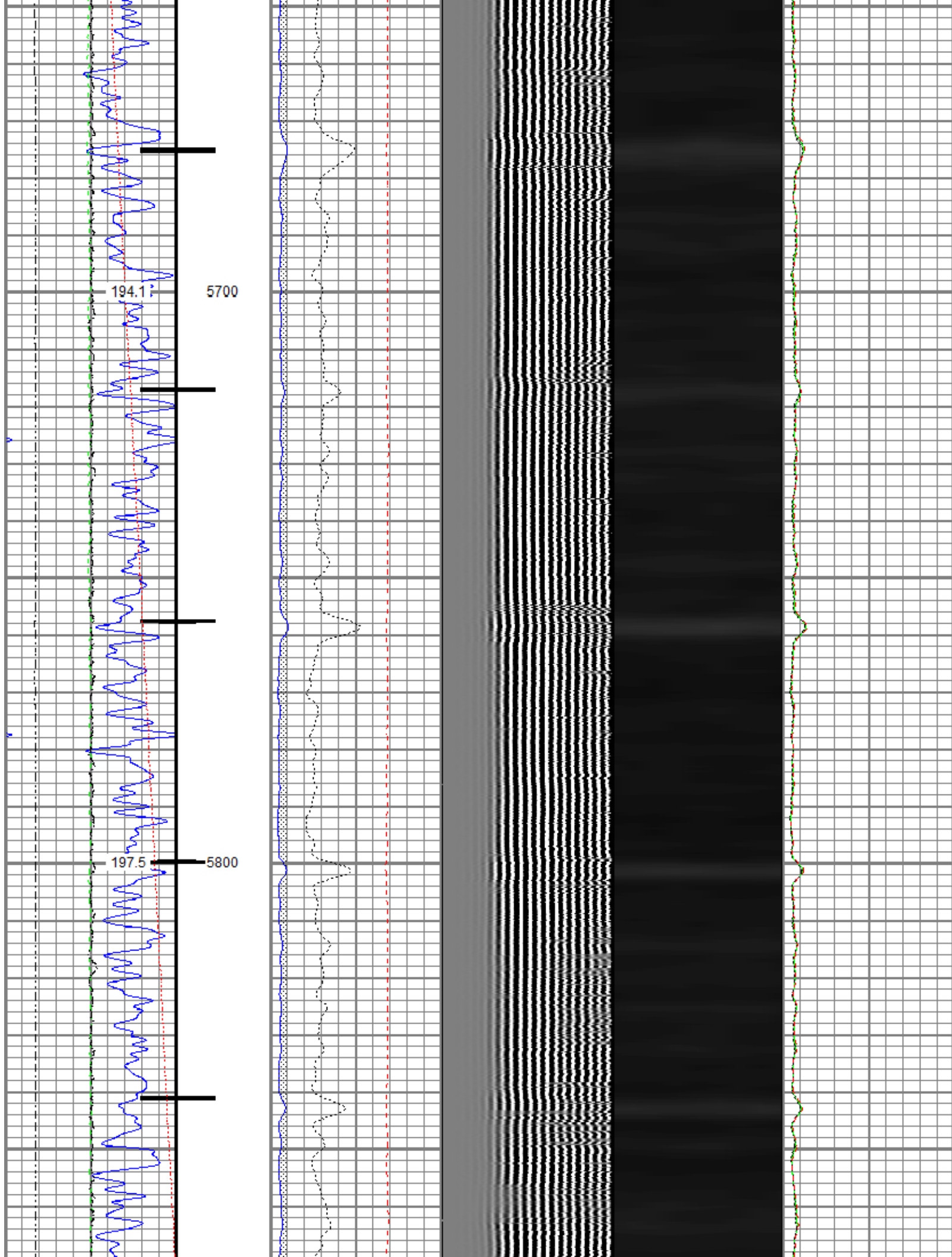


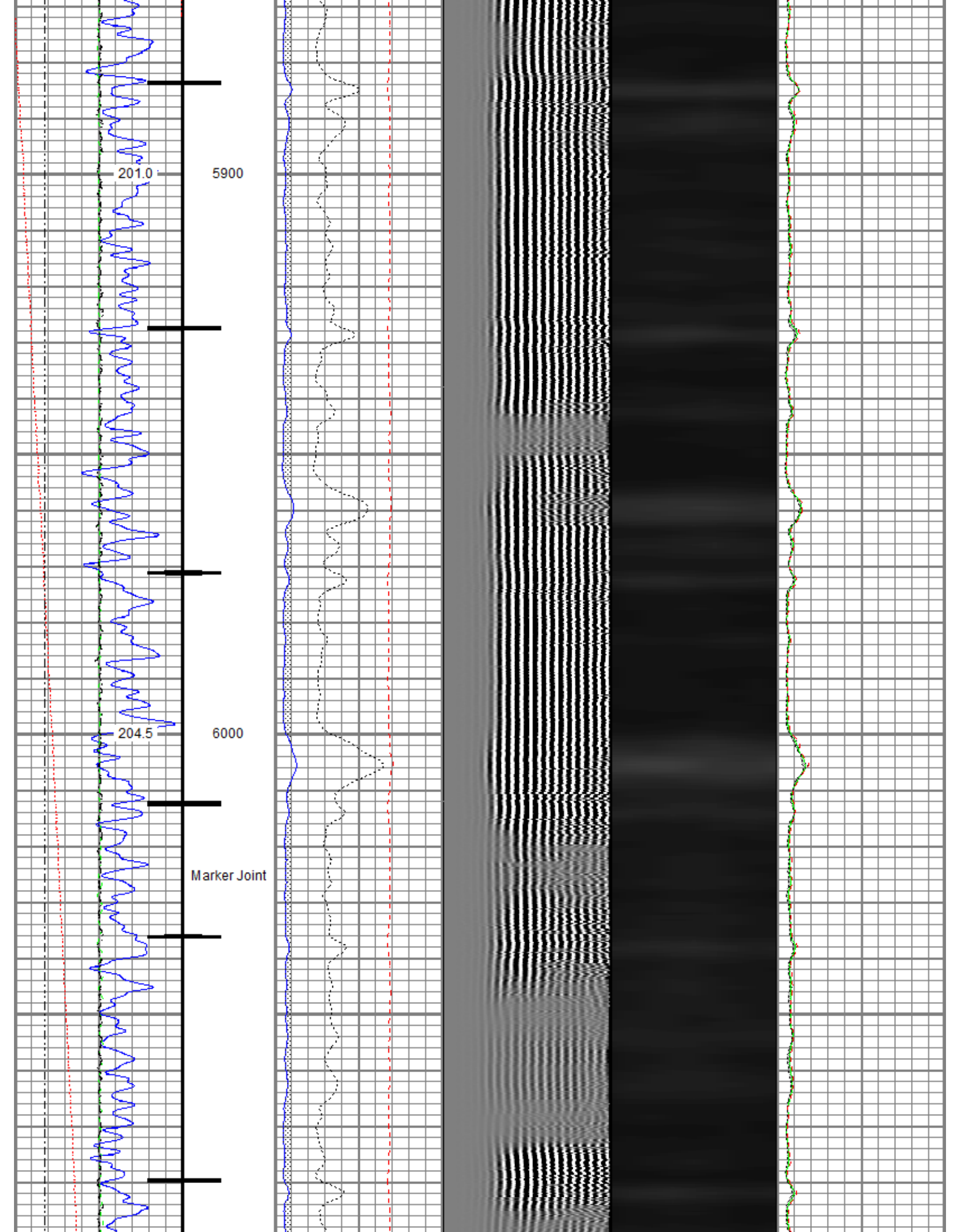


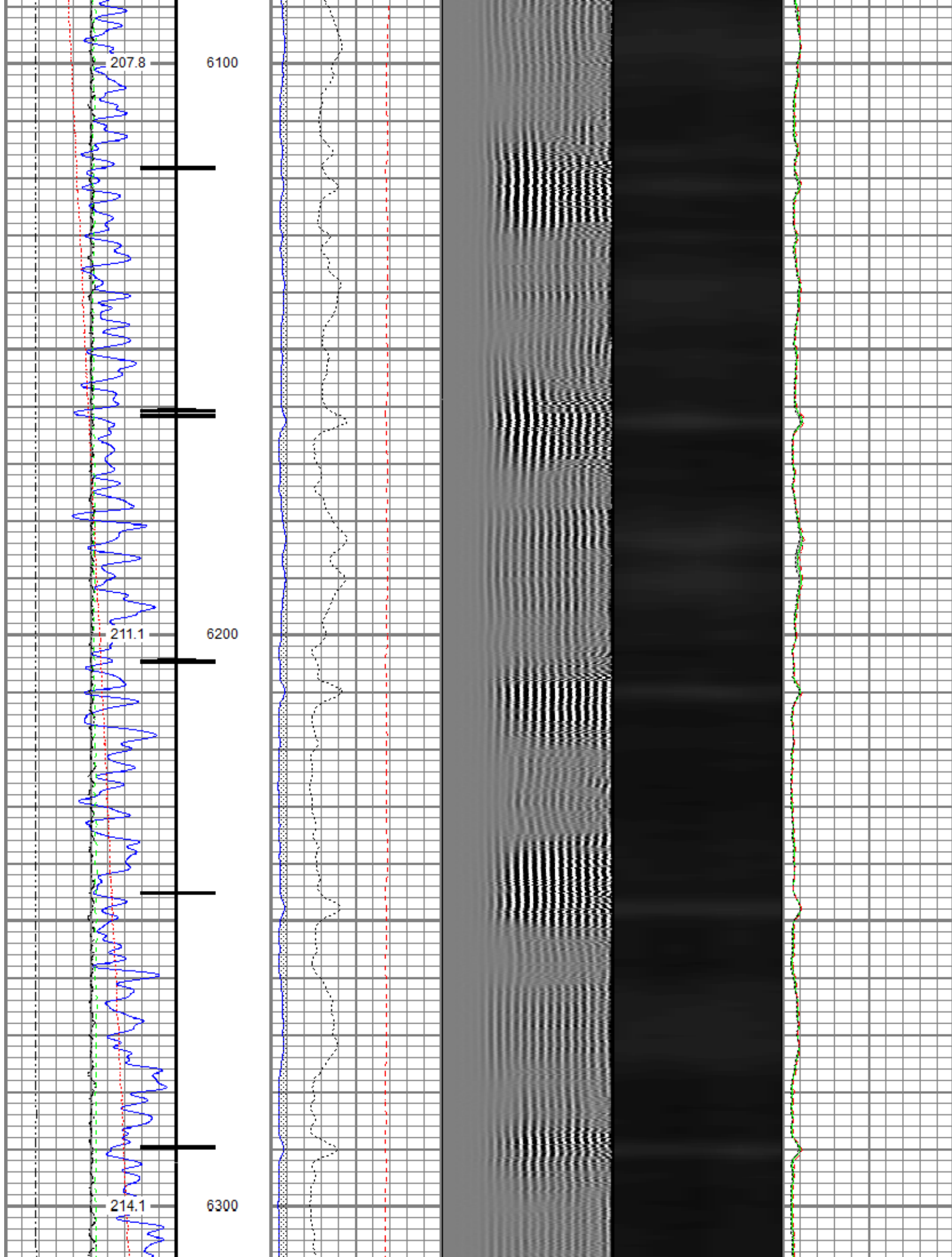




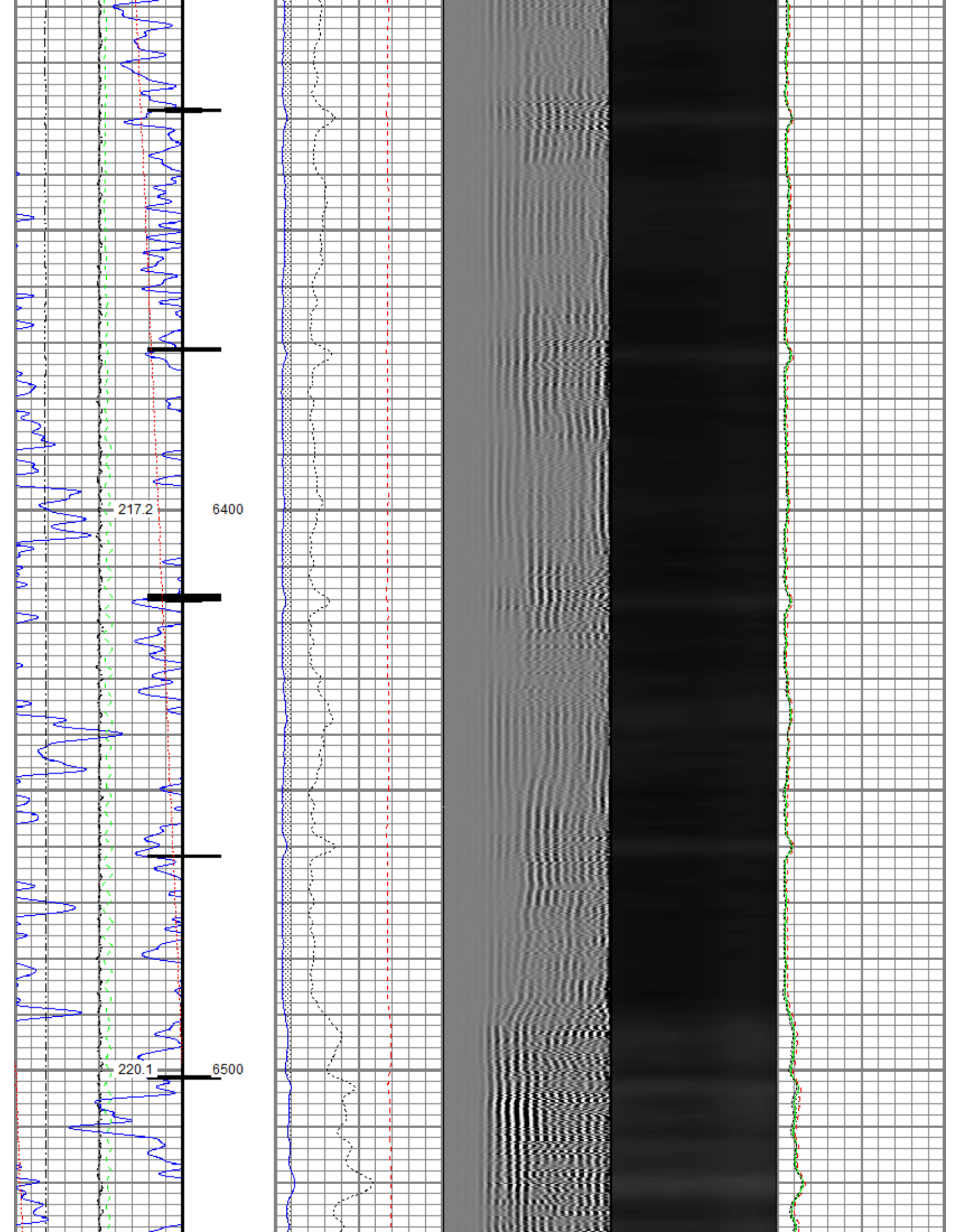


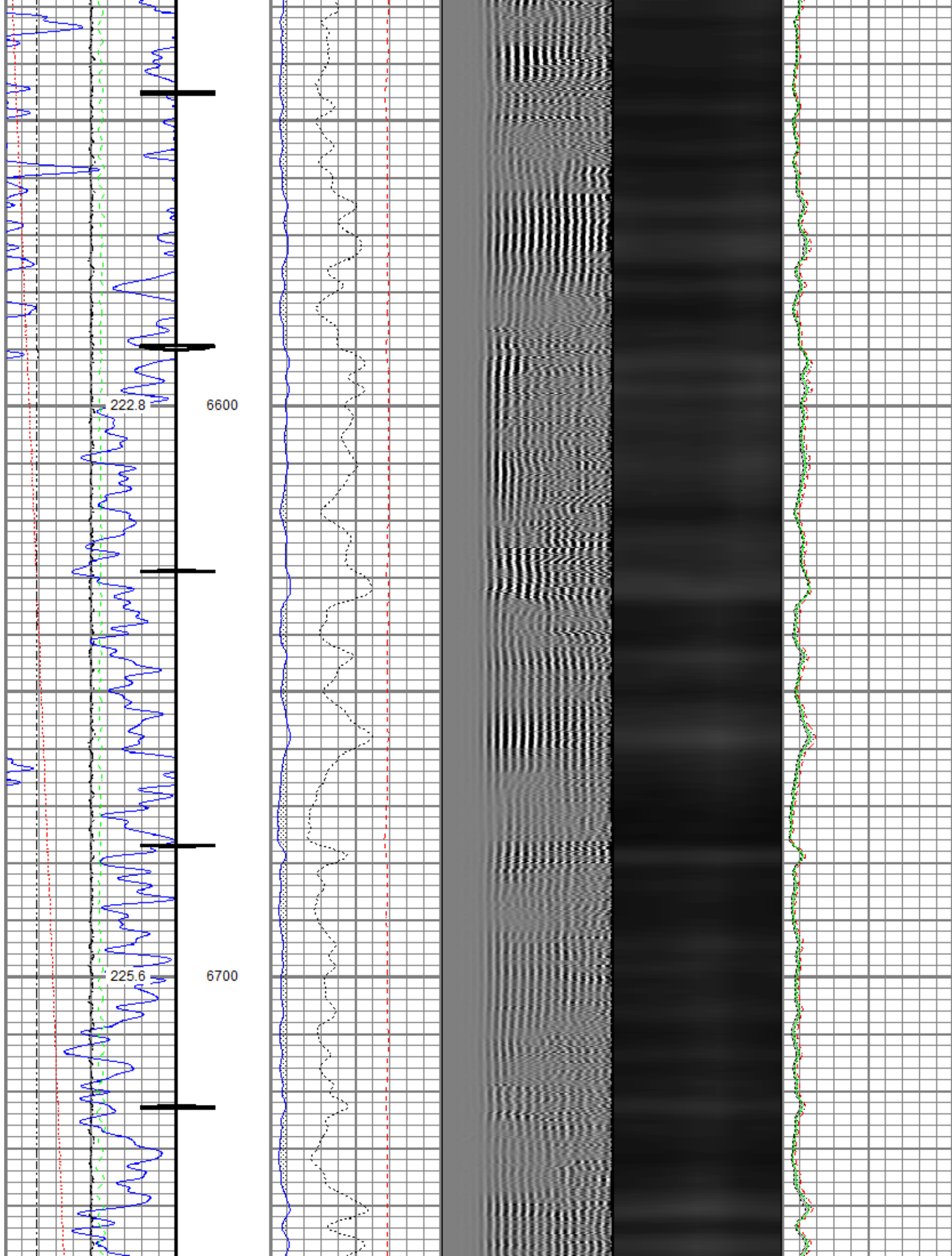


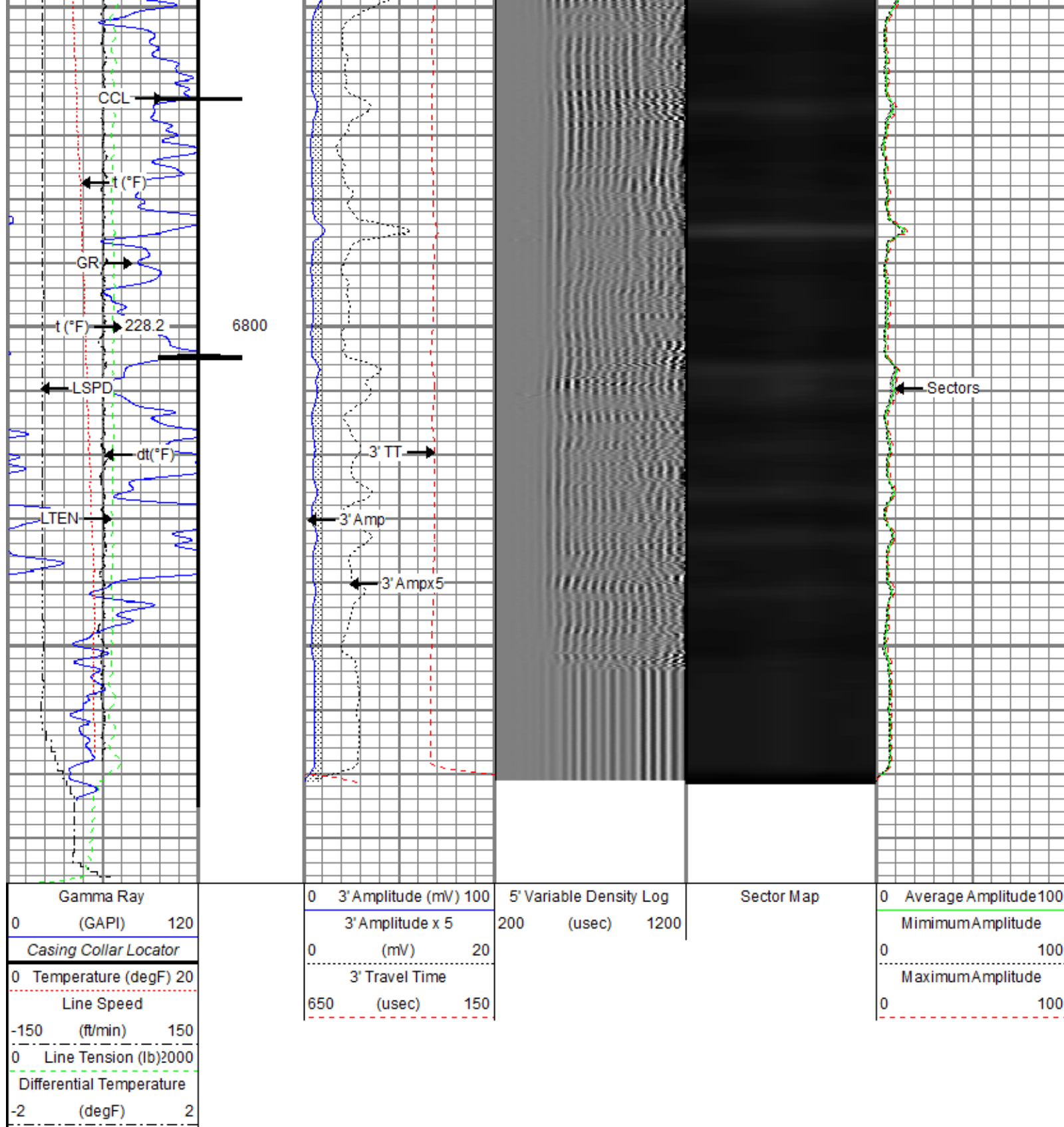












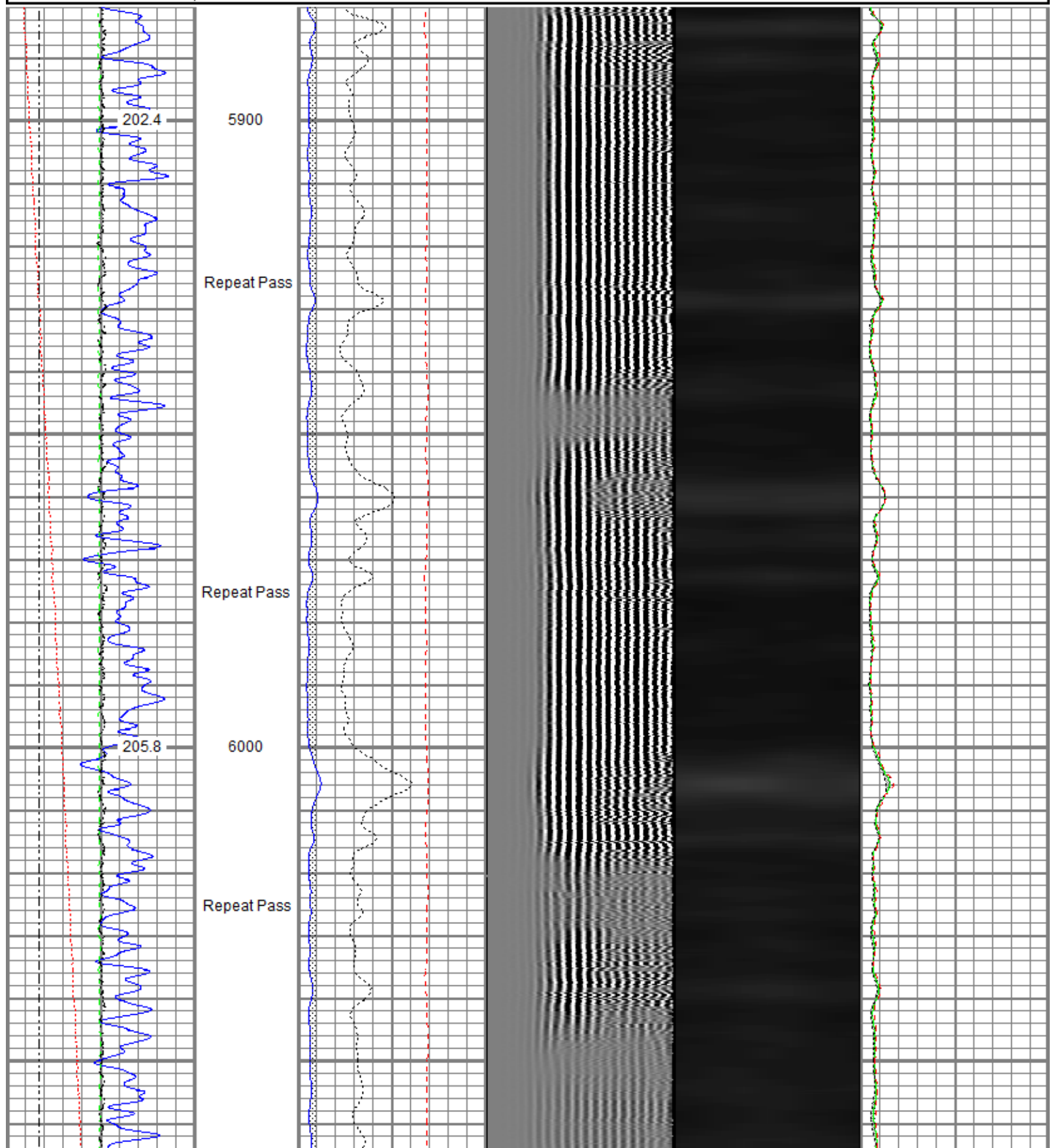
Repeat Pass

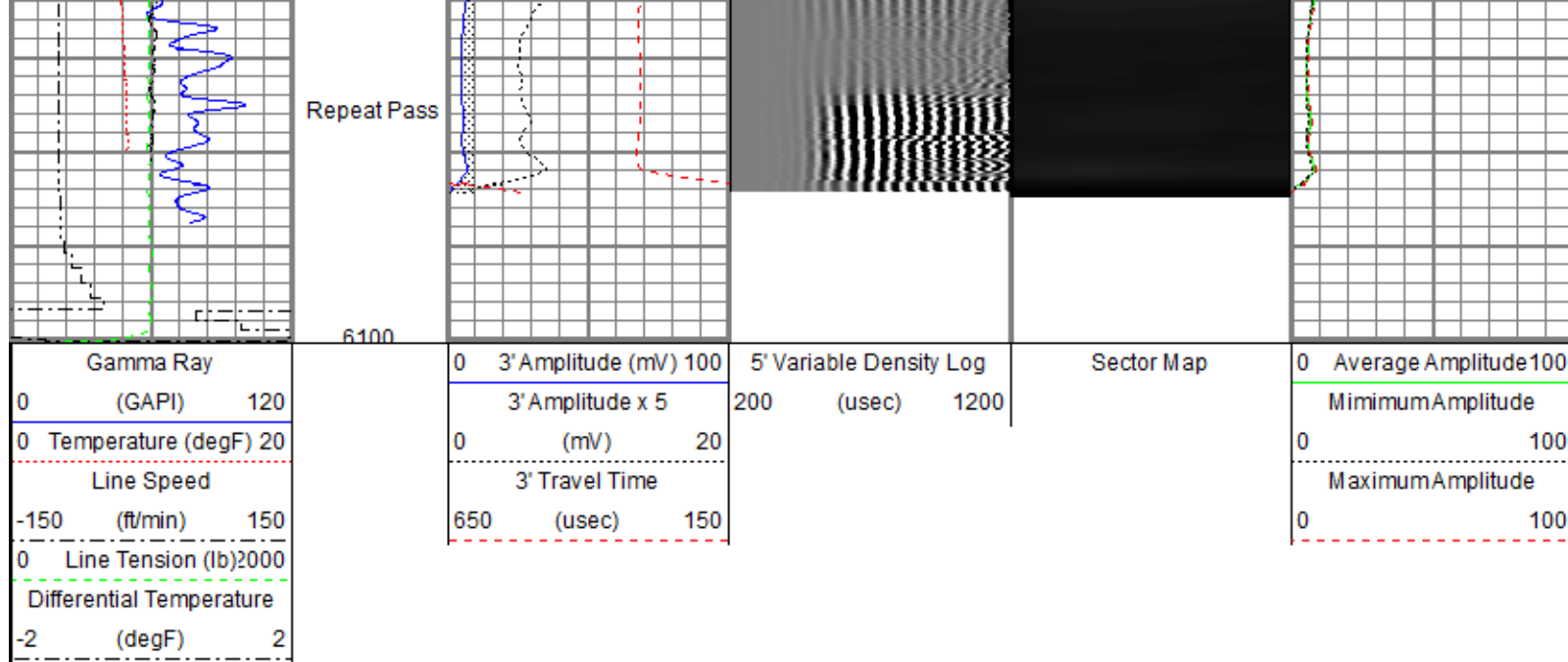
Recorded With 0 PSI Surface Induced Pressure

Database File pharaoh 2c\pdc\_pharaoh 2c\_rbl\_02-10-21.db  
 Dataset Pathname pass2.1  
 Presentation Format ros\_radil  
 Dataset Creation Fri Feb 12 18:14:09 2021  
 Charted by Depth in Feet scaled 1:240

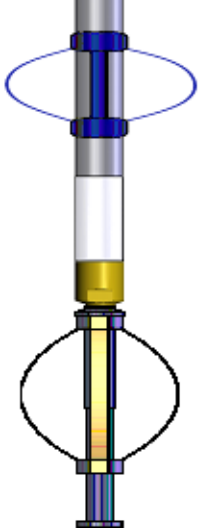


Gamma Ray			0 3' Amplitude (mV) 100			5' Variable Density Log			Sector Map			0 Average Amplitude 100		
0 (GAPI) 120			3' Amplitude x 5			200 (usec) 1200						Minimum Amplitude		
0 Temperature (degF) 20			0 (mV) 20									0 100		
Line Speed			3' Travel Time									Maximum Amplitude		
-150 (ft/min) 150			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	19.20		Titan CHD-14375 GO Titan 1-7/16" Assembled Electric Cable Head with 1" Fishing Neck	1.03	1.44	3.60
WVFS8	16.96		Probe Radii-2750 RBT (FW0712-020)	9.39	2.75	105.00
WVFS7	16.96		Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub			
WVFS6	16.96		SO BS CENT-2750-4500	1.33	3.25	10.00
WVFS5	16.96		Slip Over 2-3/4" I.D. for 4-1/2" O.D. Casing Bow Spring Centralizer			
WVFS4	16.96					
WVFS3	16.96					
WVFS2	16.96					
WVFS1	16.96					
WVFCAL	16.96					
WVF3FT	16.96					
WVF5FT	15.96					
CCL\$2	11.83					
CCL\$1	11.83					
GR	10.50		Probe GR-CCL-2750 6PB (FW1304-132) Probe 2-3/4" rev.1 Digital Scintillation Gamma Ray/CCL Combined with 6 Pin Bottom for CNT	4.80	2.75	55.00

CNLSC CNSSC	4.53		SO BS CENT-2750-4500 Slip Over 2-3/4" I.D. for 4-1/2" O.D. Casing Bow Spring Centralizer	1.33	3.25	10.00
	4.12		Probe CN-2750 BL (FW1308-020_A1483) Probe 2-3/4" Compensated Neutron with Bottom Load	5.03	2.75	60.00
LOCTIM UTCTIM	0.00 0.00		Probe CENT-2750 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.88	2.75	20.00
Dataset: pdc_pharaoh 2c_rbl_02-10-21.db: field/well/run1/pass4.2 Total length: 23.14 ft Total weight: 263.60 lb O.D.: 3.25 in						

Calibration Report				
Database File	c:\programdata\warrior\data\pharaoh 2c\pdc_pharaoh 2c_rbl_02-10-21.db			
Dataset Pathname	pass4.2			
Dataset Creation	Fri Feb 12 18:11:51 2021			
Compensated Neutron Calibration Report				
Model:		Probe CN - 2750 BL		
Serial Number:		FW1308-020_A1483		
SHOP CALIBRATION		Tue Dec 03 09:24:53 2019		
	Cal Tube	Units		
Tank Ratio	6.7797	SS/LS		
LS Detector	452.04	cps		
SS Detector	3241.60	cps		
Tool Ratio	7.1710	SS/LS		
Tool Gain	0.9454	---		
PRE-SURVEY VERIFICATION				
	SS Detector	LS Detector	Measured (p.u.)	Target (p.u.)
POST-SURVEY VERIFICATION				
	SS Detector	LS Detector	Measured (p.u.)	Target (p.u.)

Gamma Ray Calibration Report		
Serial Number:	FW1304-132	
Tool Model:	2750 6PB	
Performed:	Tue Dec 03 09:24:53 2019	
Calibrator Value:	637.0	GAPI
Background Reading:	109.1	cps



Calibrator Reading: 1009.7 cps  
Sensitivity: 0.7072 GAPI/cps

### Segmented Cement Bond Log Calibration Report

Serial Number: FW0712-020  
Tool Model: 2750 RBT  
Calibration Casing Diameter: 5.500 in  
Calibration Depth: 6.599 ft

Master Calibration, performed Wed Feb 10 07:54:58 2021:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.001	0.680	0.800	71.921	104.719	0.727
CAL	0.006	0.667				
5'	0.000	0.681	0.800	71.921	104.474	0.758
SUM						
S1	0.001	0.665	0.000	100.000	150.464	-0.090
S2	0.001	0.660	0.000	100.000	151.710	-0.098
S3	0.001	0.675	0.000	100.000	148.236	-0.103
S4	0.001	0.690	0.000	100.000	145.065	-0.126
S5	0.001	0.720	0.000	100.000	139.040	-0.145
S6	0.001	0.720	0.000	100.000	139.006	-0.132
S7	0.001	0.715	0.000	100.000	139.936	-0.112
S8	0.001	0.680	0.000	100.000	147.127	-0.099

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.006	0.667	1.000	0.000

Air Zero Calibration, performed Wed Feb 10 07:53:47 2021:

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

### Temperature Calibration Report

Serial Number: FW0712-020  
Tool Model: 2750 RBT  
Performed: Tue Dec 03 09:24:53 2019

	Reference	Reading
Low Reference:	100.00 degF	109.43 degF
High Reference:	350.00 degF	405.87 degF

Gain: 0.84  
Offset: 7.72  
Delta Reading:



Company	PDC Energy Inc
Well	Pharaoh 2C
Field	Wattenberg
County	Weld
State	Colorado