



Radial Cement Bond  
GammaRay  
Casing Collar Log

Company Crestone Peak Resources  
Well Costigan 6-8-20  
Field Wattenberg  
County Weld State Colorado

Location:

API #: 05-123-30124

SEC 20 TWP 1N RGE 68W

Permanent Datum Ground Level Elevation  
Log Measured From Kelly Bushing 13 FT  
Drilling Measured From Kelly Bushing

CNL

Elevation

K.B. 5226

D.F. ---

G.L. 5213

Date

04-November-2019

Run Number

One

Depth Driller

8653

Depth Logger

7330

Bottom Logged Interval

7324

Top Log Interval

Surface

Open Hole Size

7 7/8

Type Fluid

Water

Density / Viscosity

8.34 lb/gal

Max. Recorded Temp.

225 °F

Estimated Cement Top

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Time Well Ready

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Time Logger on Bottom

8:20

Equipment Number

HD-0363

Location

Platteville, CO

Recorded By

Hayes

Witnessed By

Derek Dupree

Borehole Record

Run Number

Bit

From

To

Size

Weight

From

To

Grade

Top

Bottom

Casing Record

Size (in)

Wgt (lbs/ft)

Grade

Top

Bottom

Intermediate #1

Intermediate #2

Liner

<<< Fold Here >>>

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 Baker Hughes Wireline 02-november-2019  
Adjusted 17 FT to correlate with Baker Hughes  
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!!

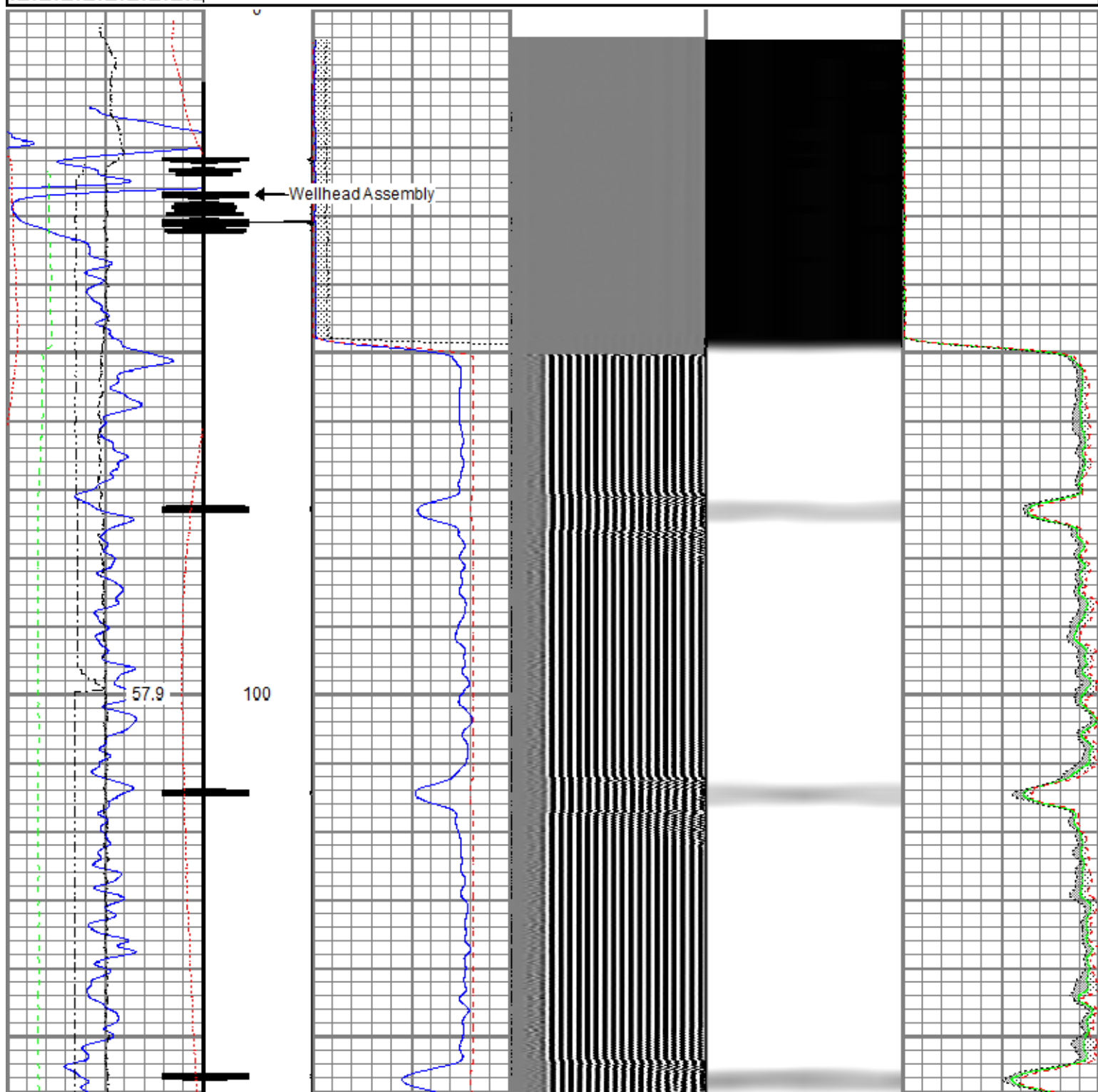


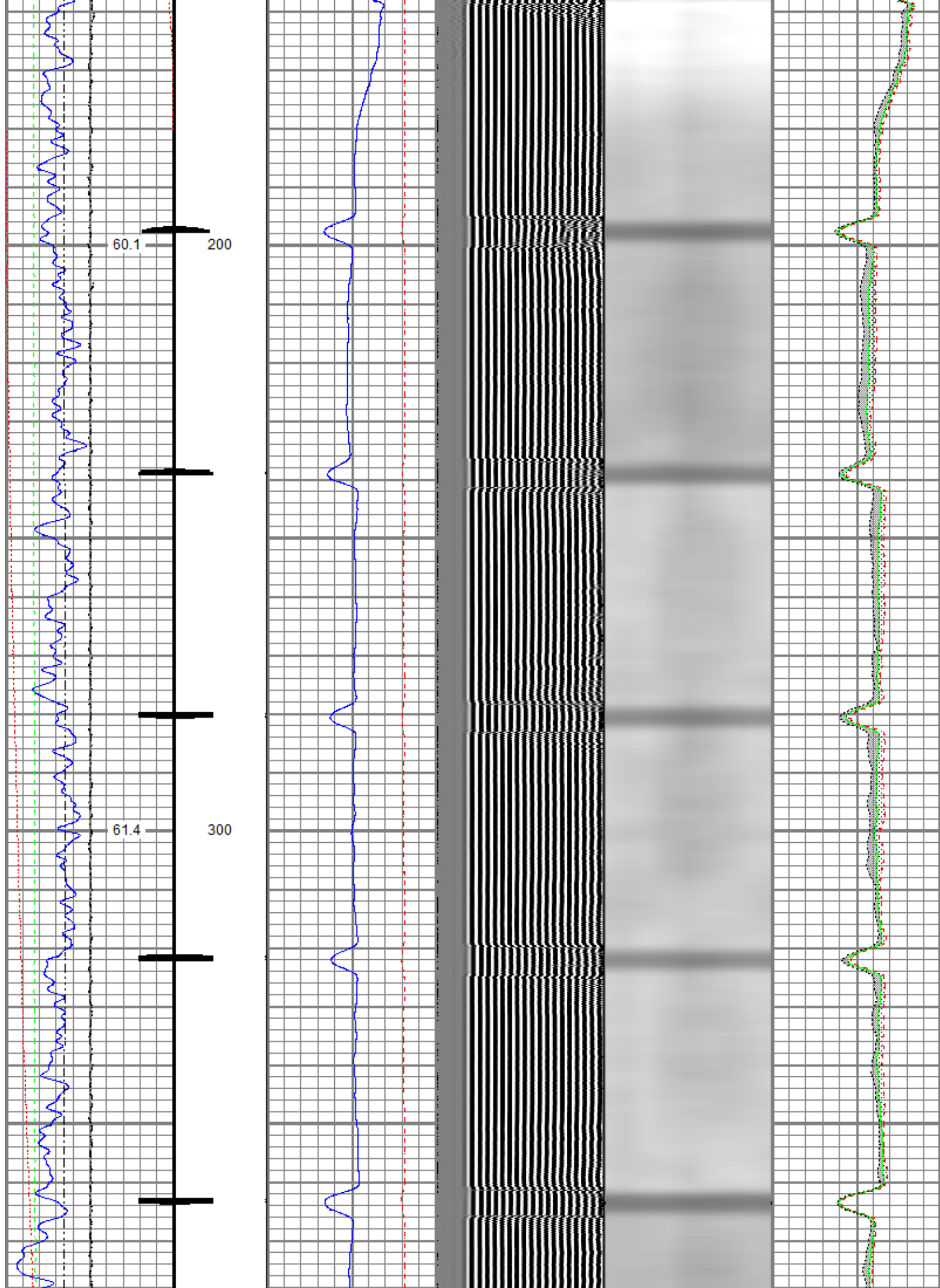
Main Pass

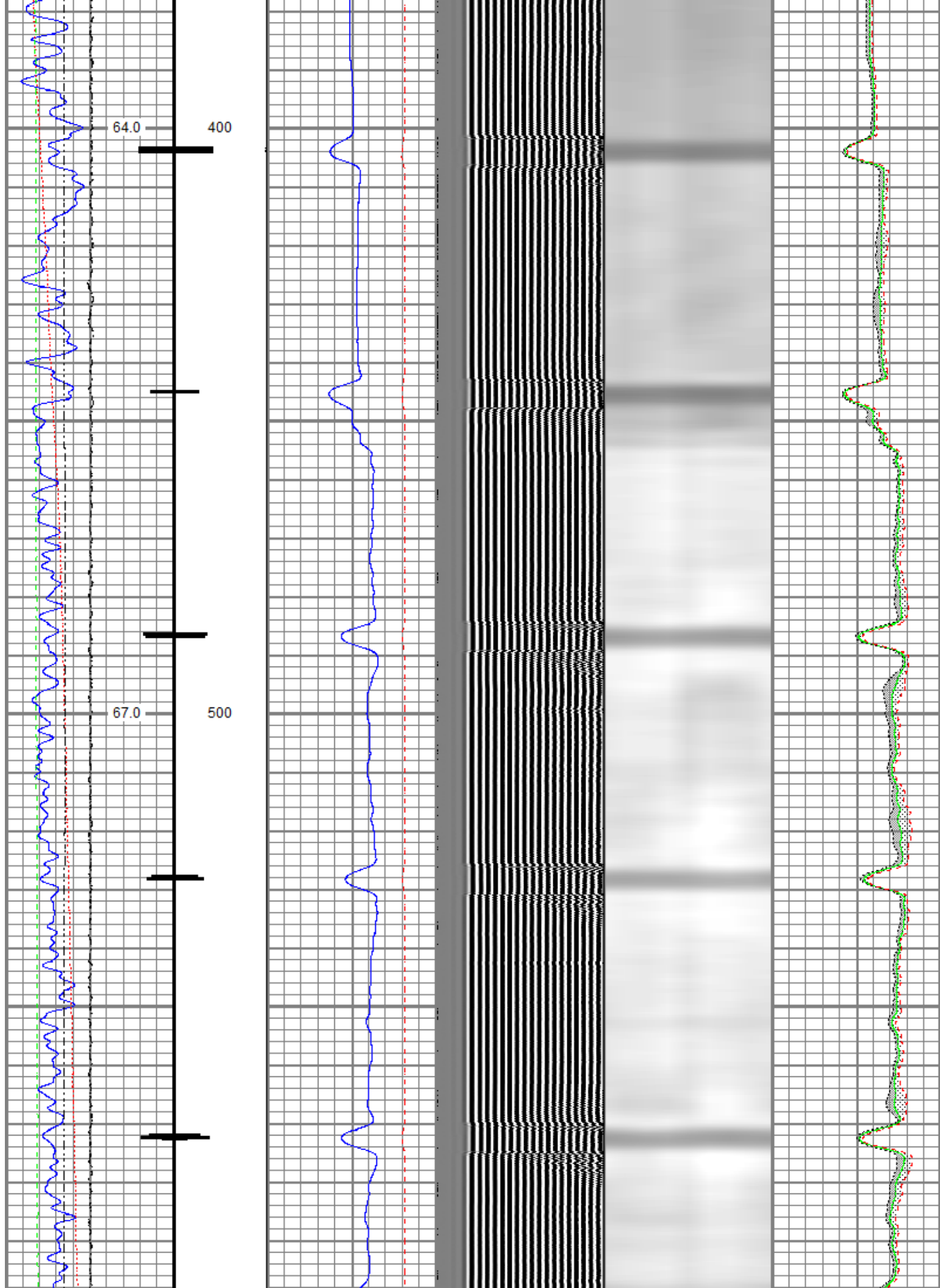
Logged With 0 Psi Induced Surface Pressure

Database File crestonpeak\_costigan 6-8-20rcblcnl\_11-4-2019.db  
 Dataset Pathname pass5.1  
 Presentation Format ros\_radll  
 Dataset Creation Mon Nov 04 11:16:26 2019  
 Charted by Depth in Feet scaled 1:240

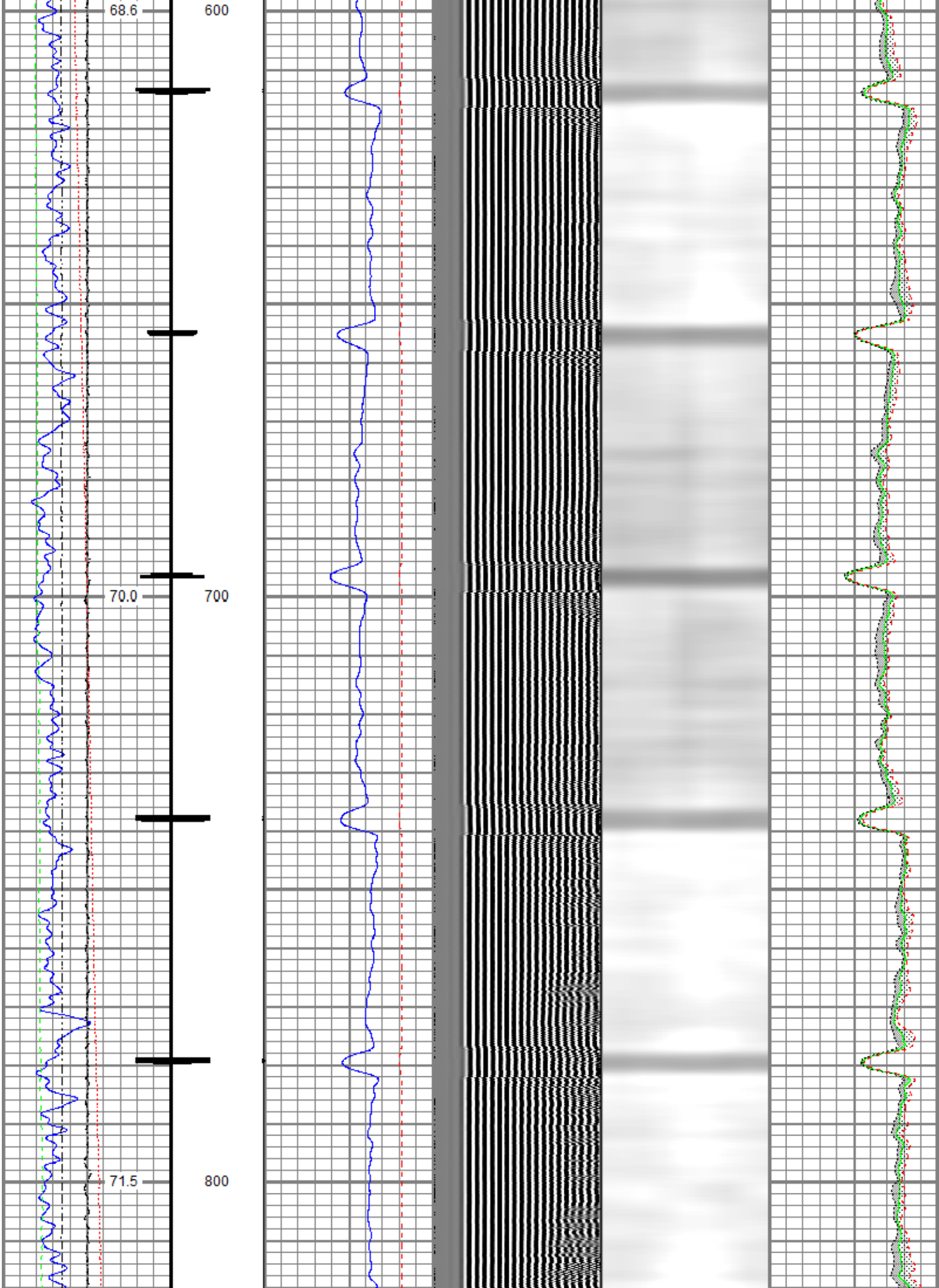
Gamma Ray	5	CCL\$2	0	0	3' Amplitude (mV) 100	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120					3' Amplitude x 5	200 (usec) 1200		0 100
Casing Collar Locator					0 (mV) 20			Minimum Amplitude
Temperature					3' Travel Time			0 100
0 (degF) 20					650 (usec) 150			Maximum Amplitude
Line Speed								0 100
-150 (ft/min) 150								
0 Line Tension (lb) 000								
Differential Temperature								
-2 (degF) 2								

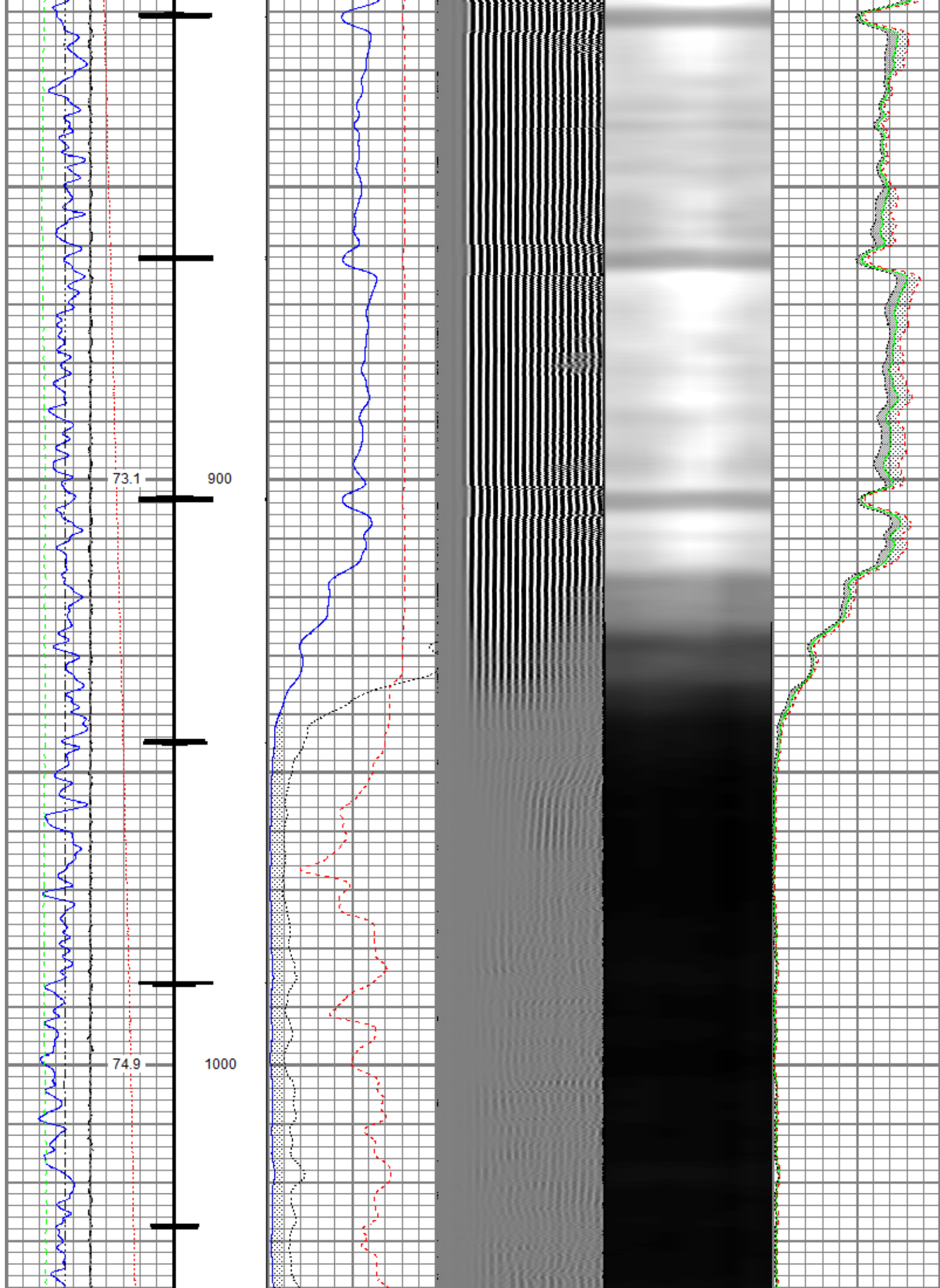


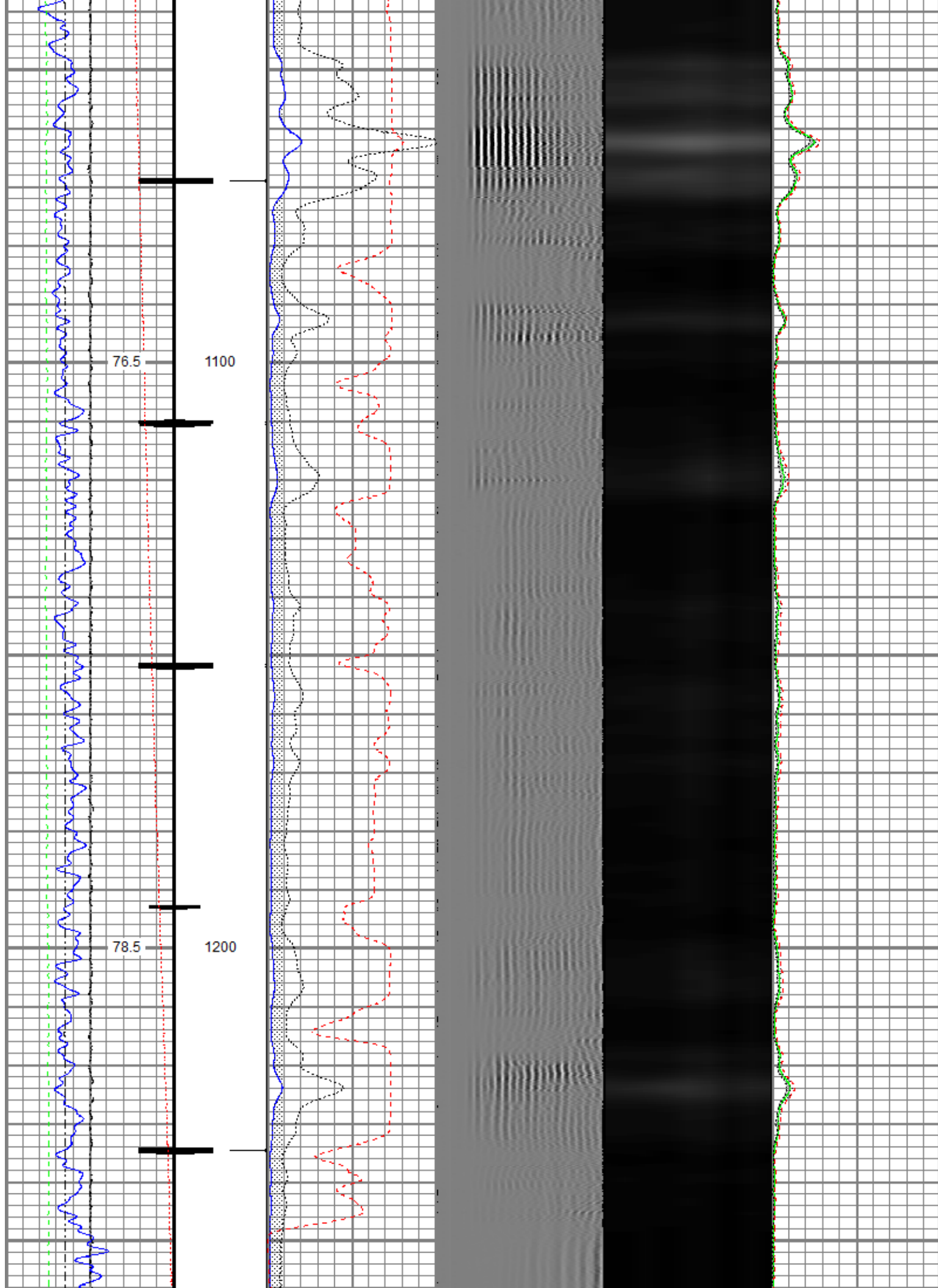


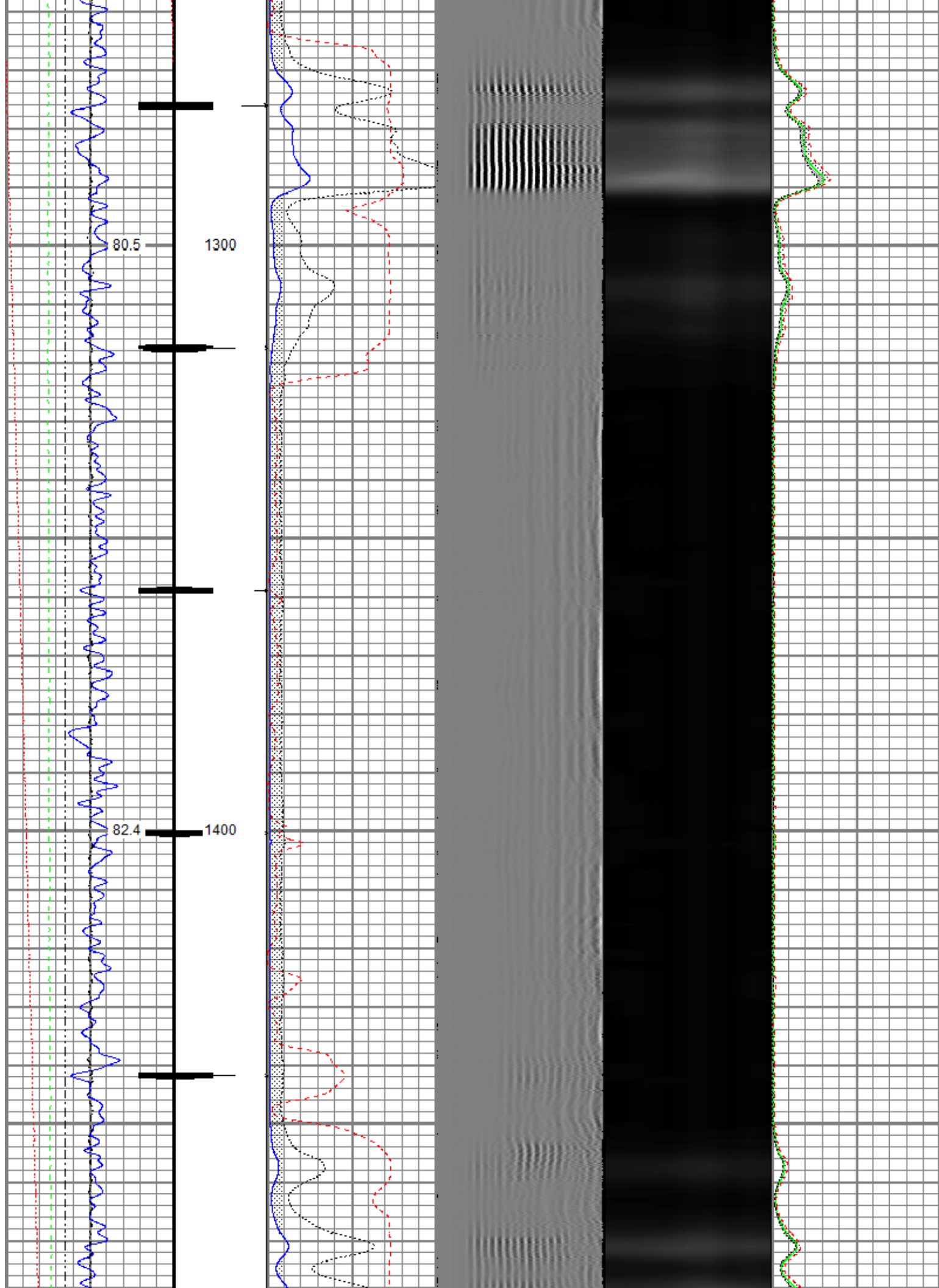




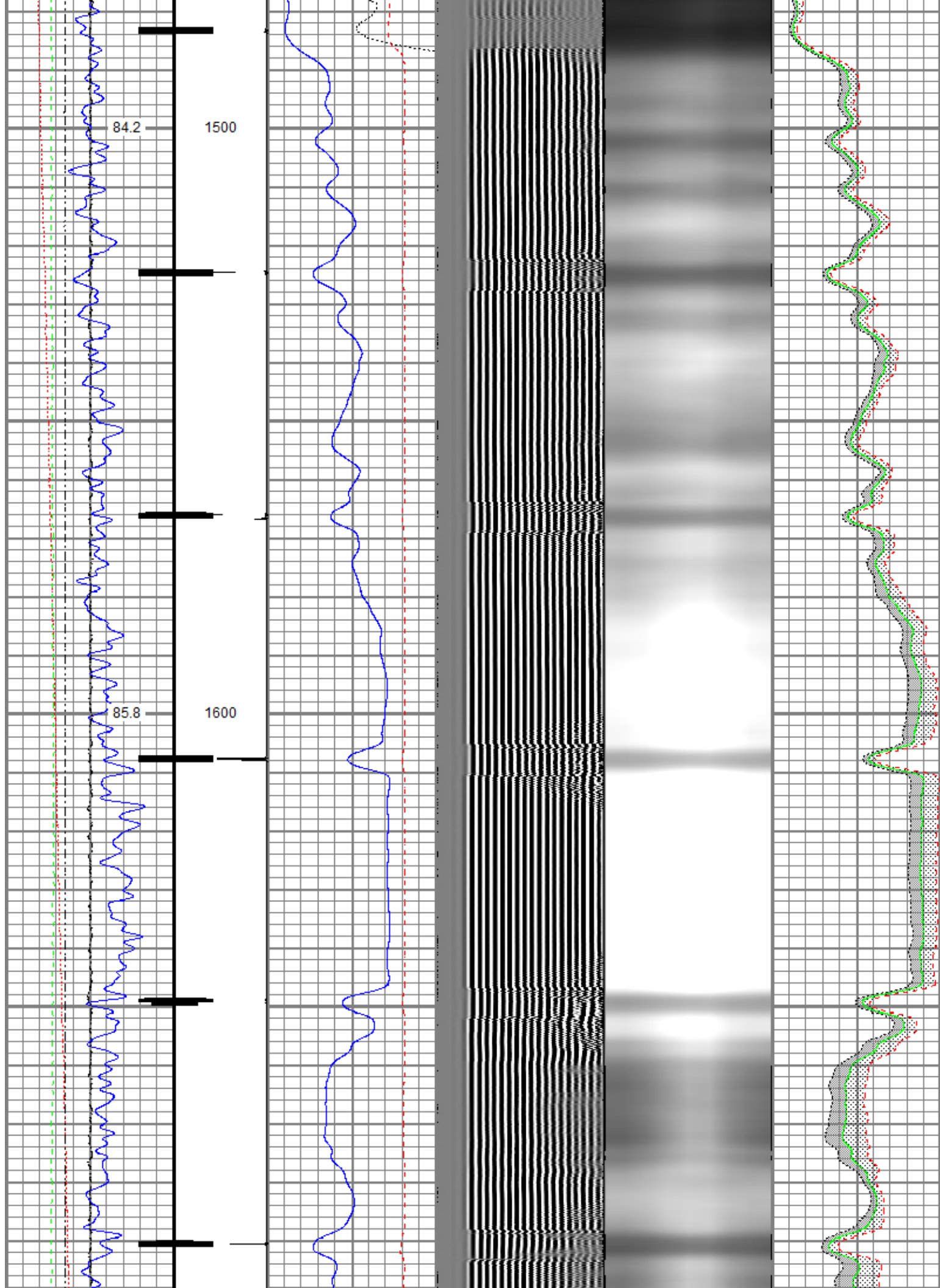


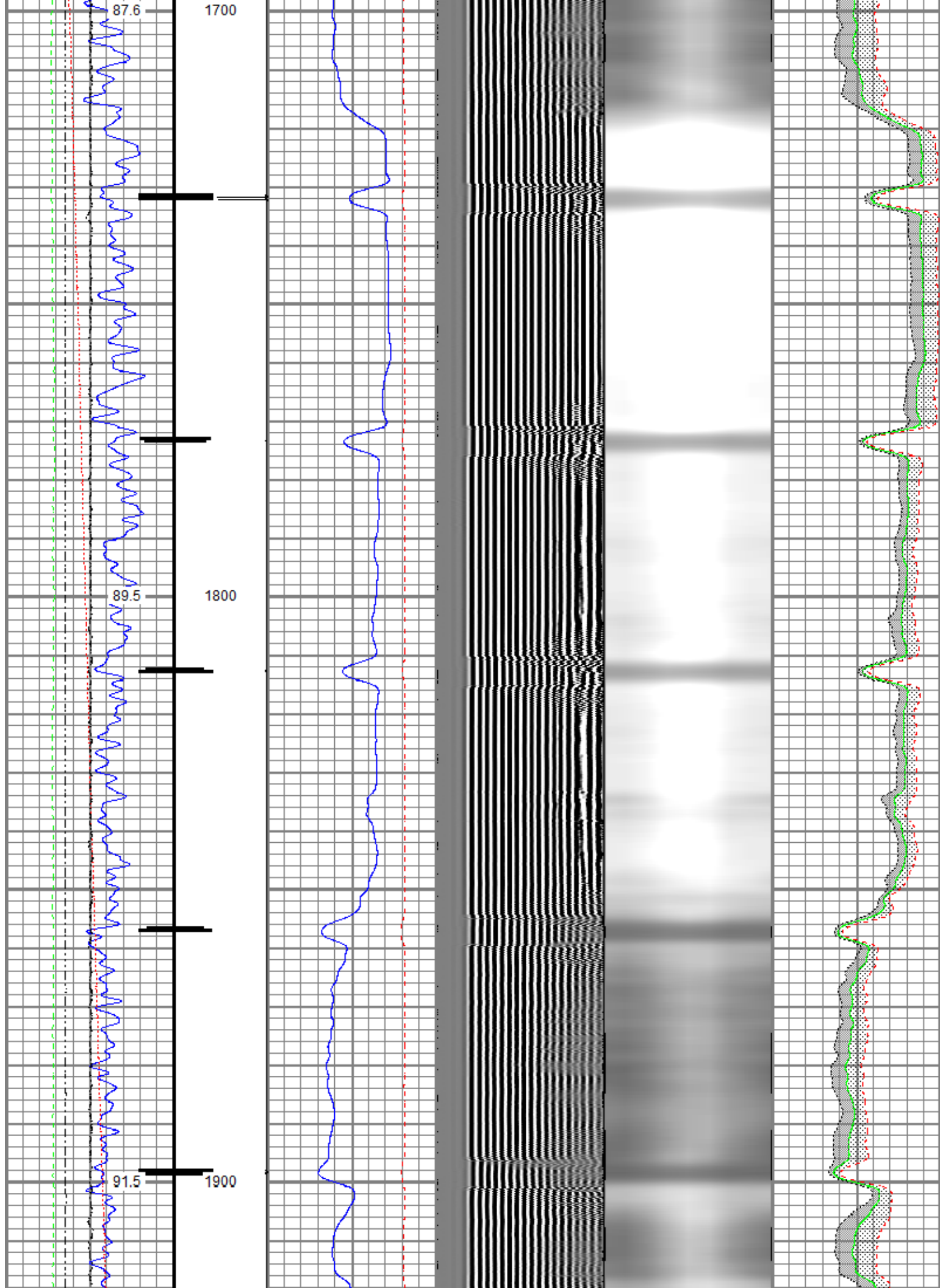


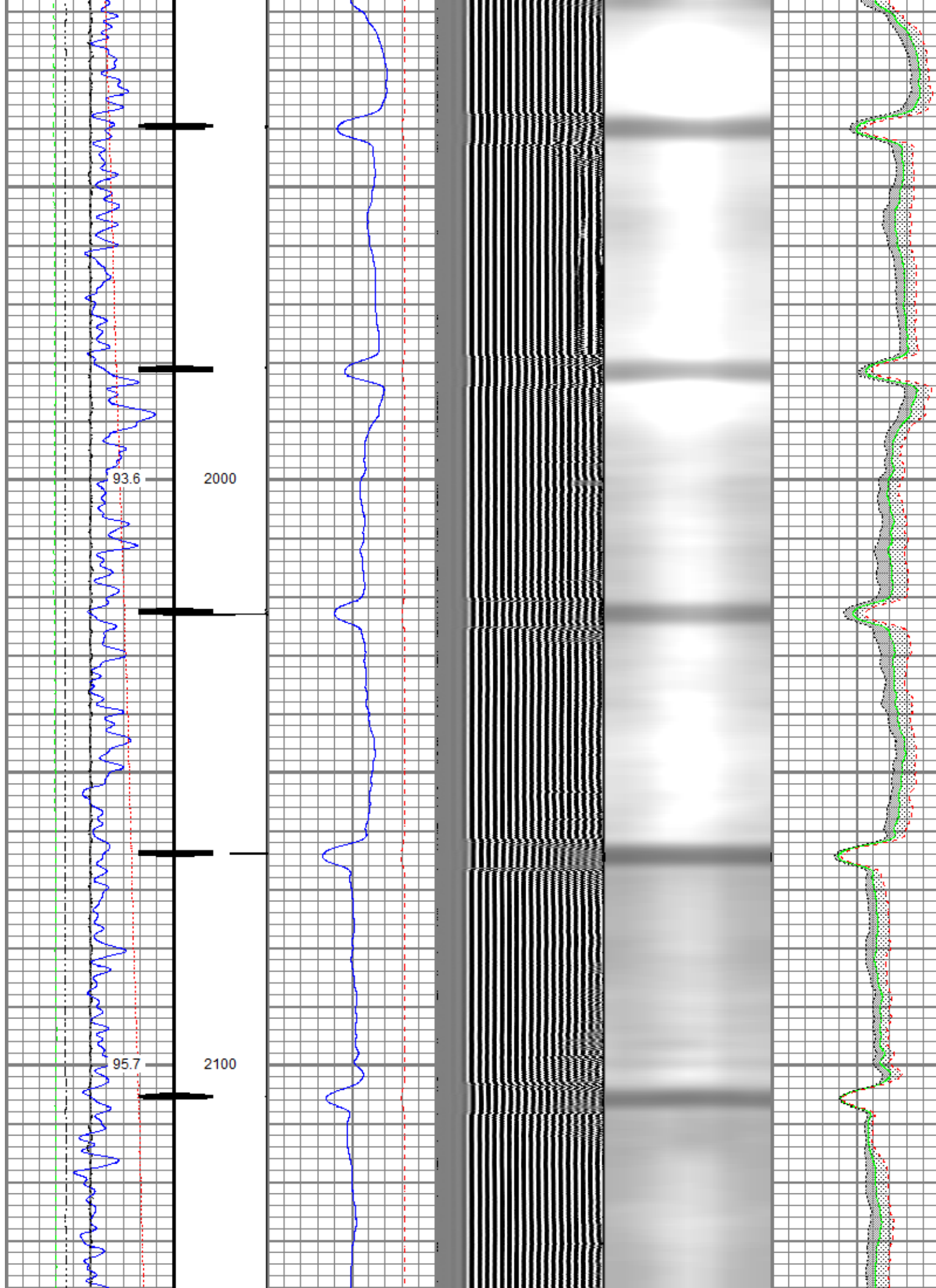




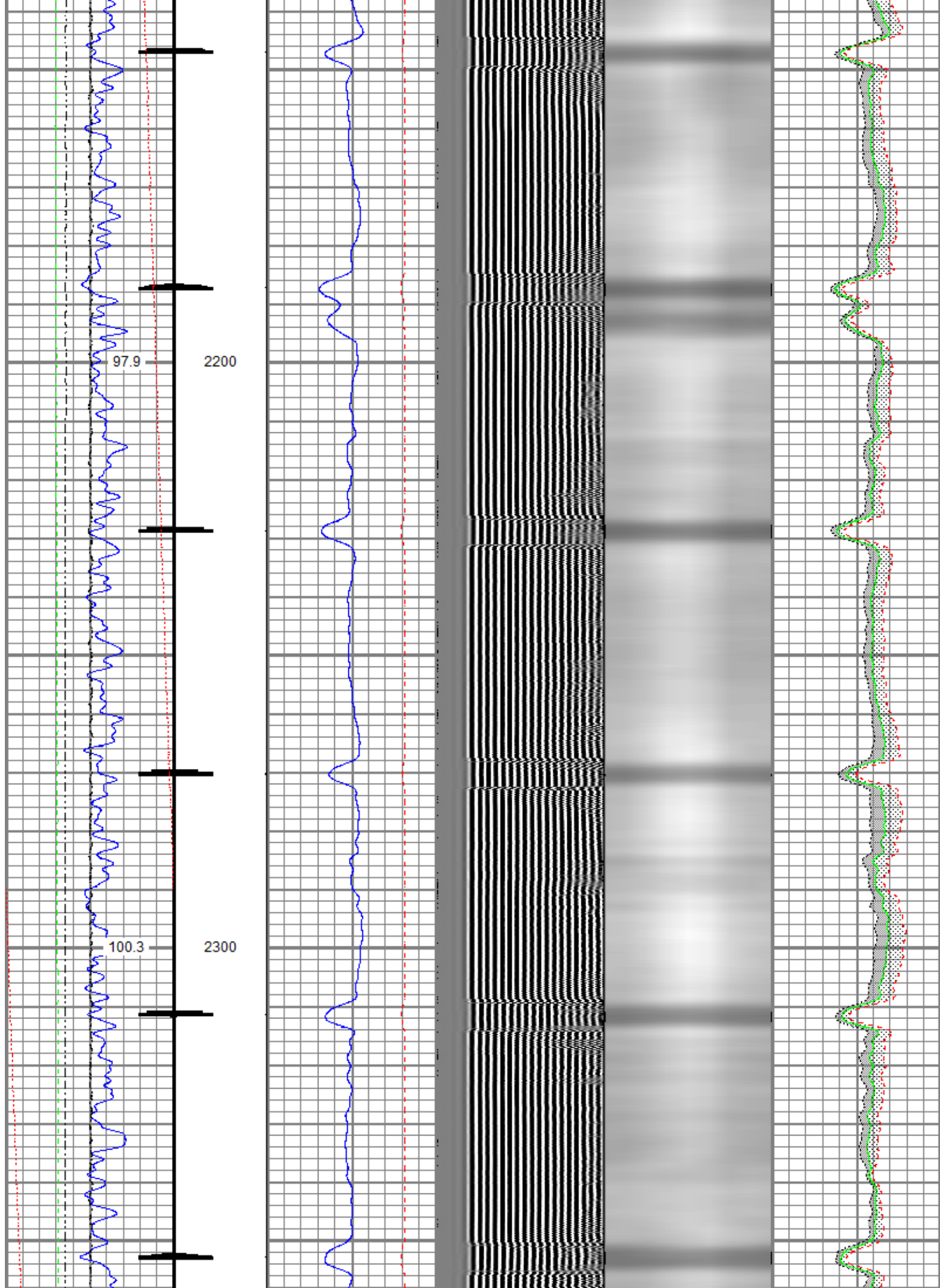




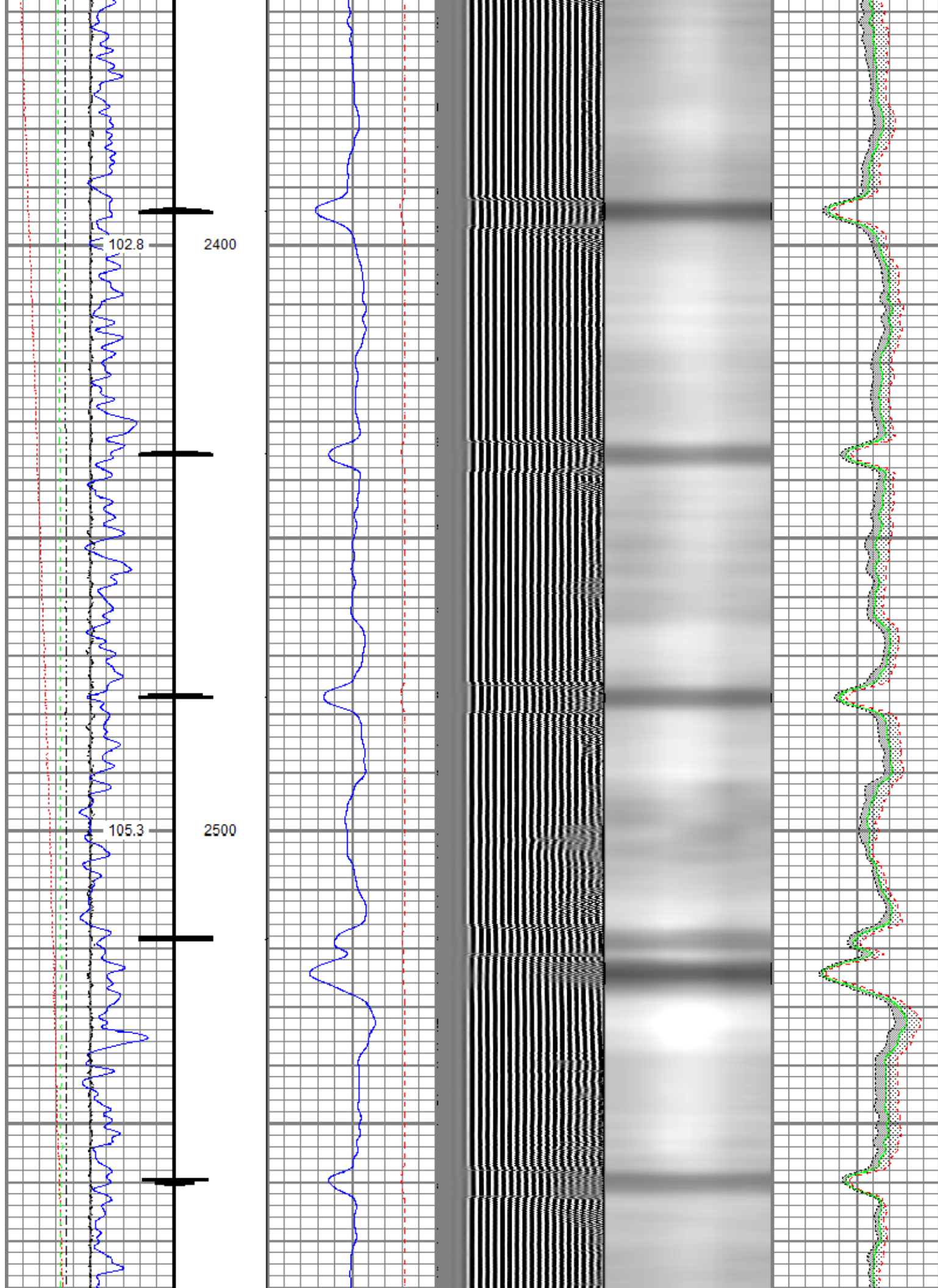


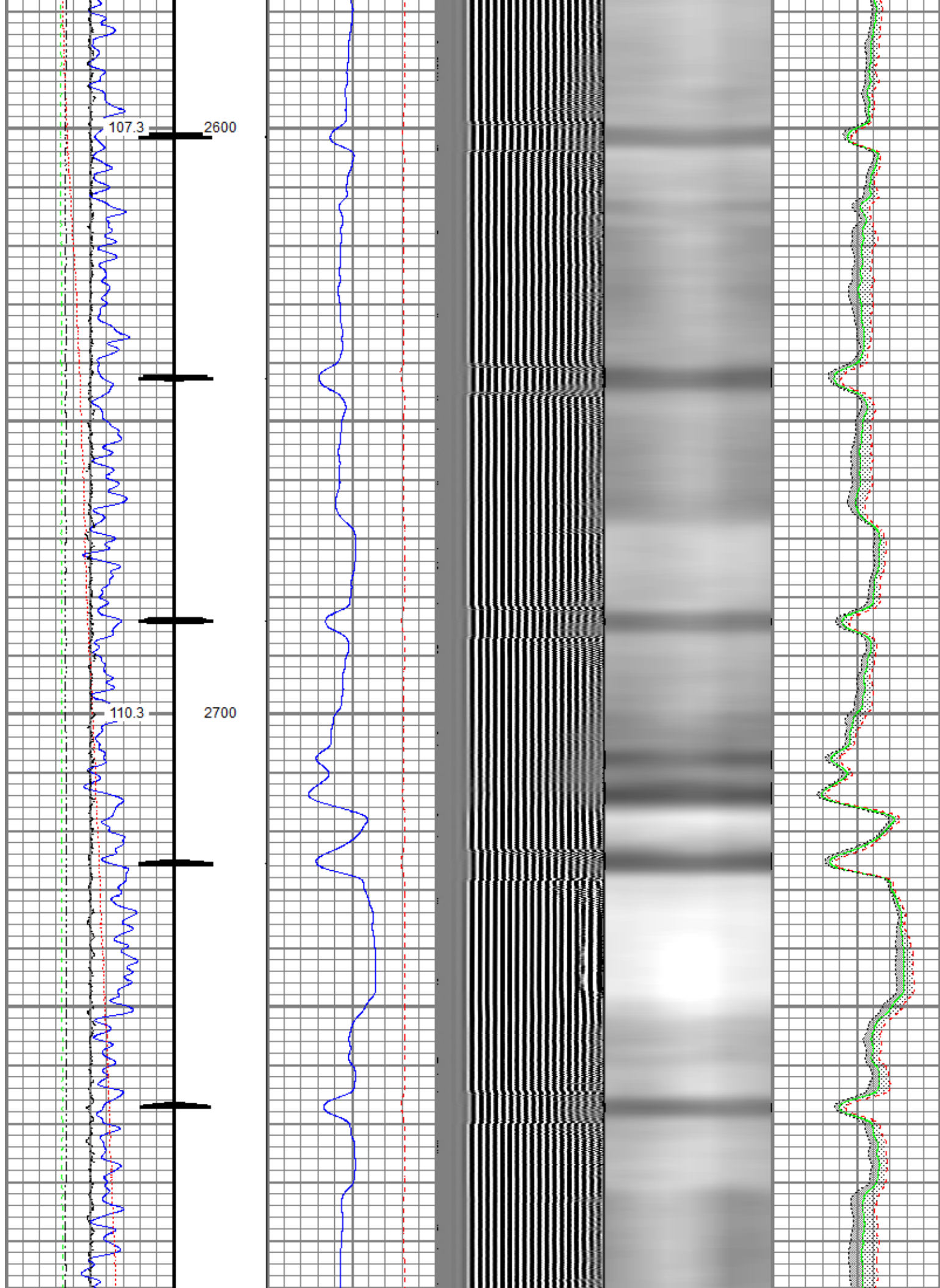


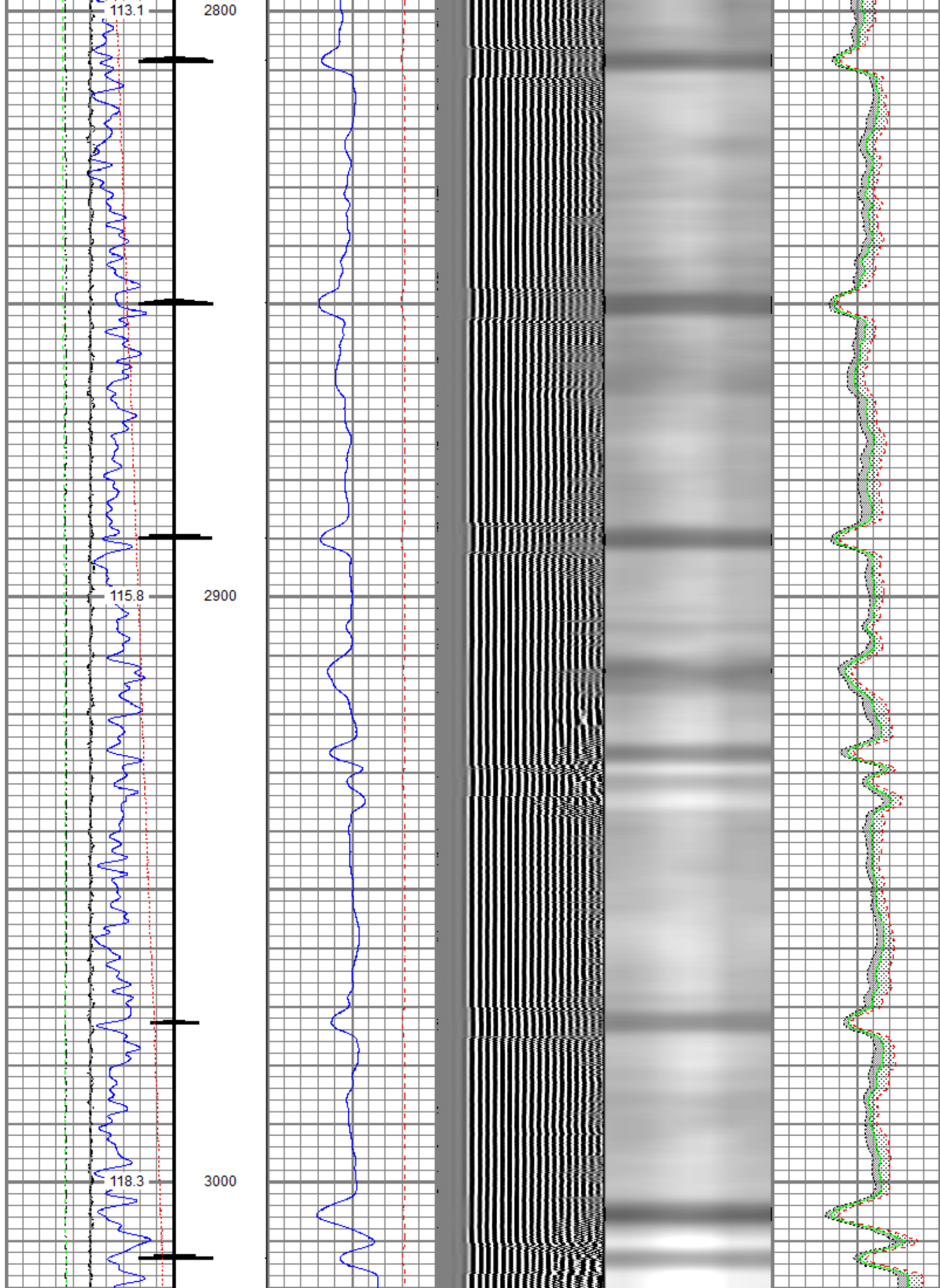




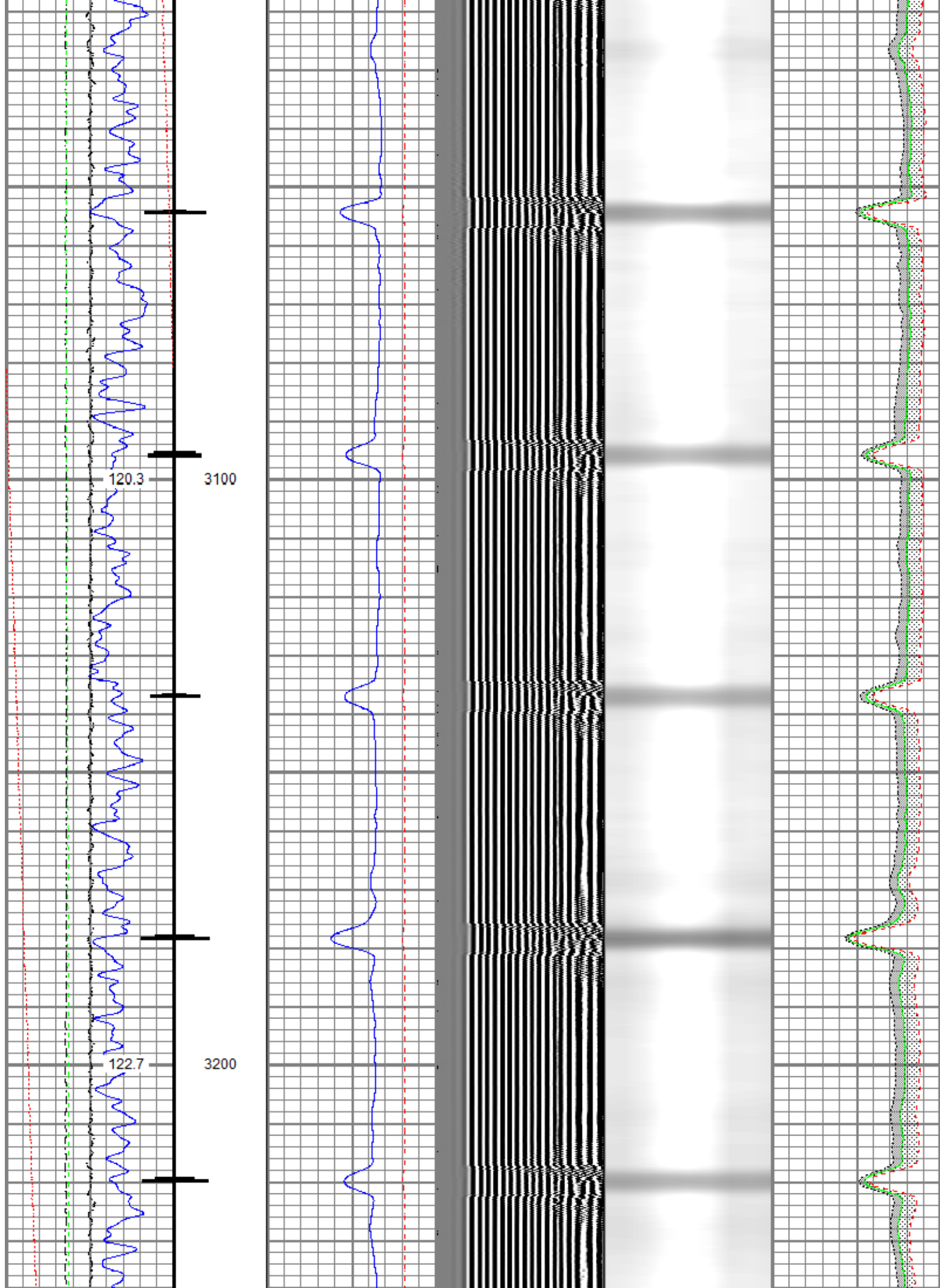




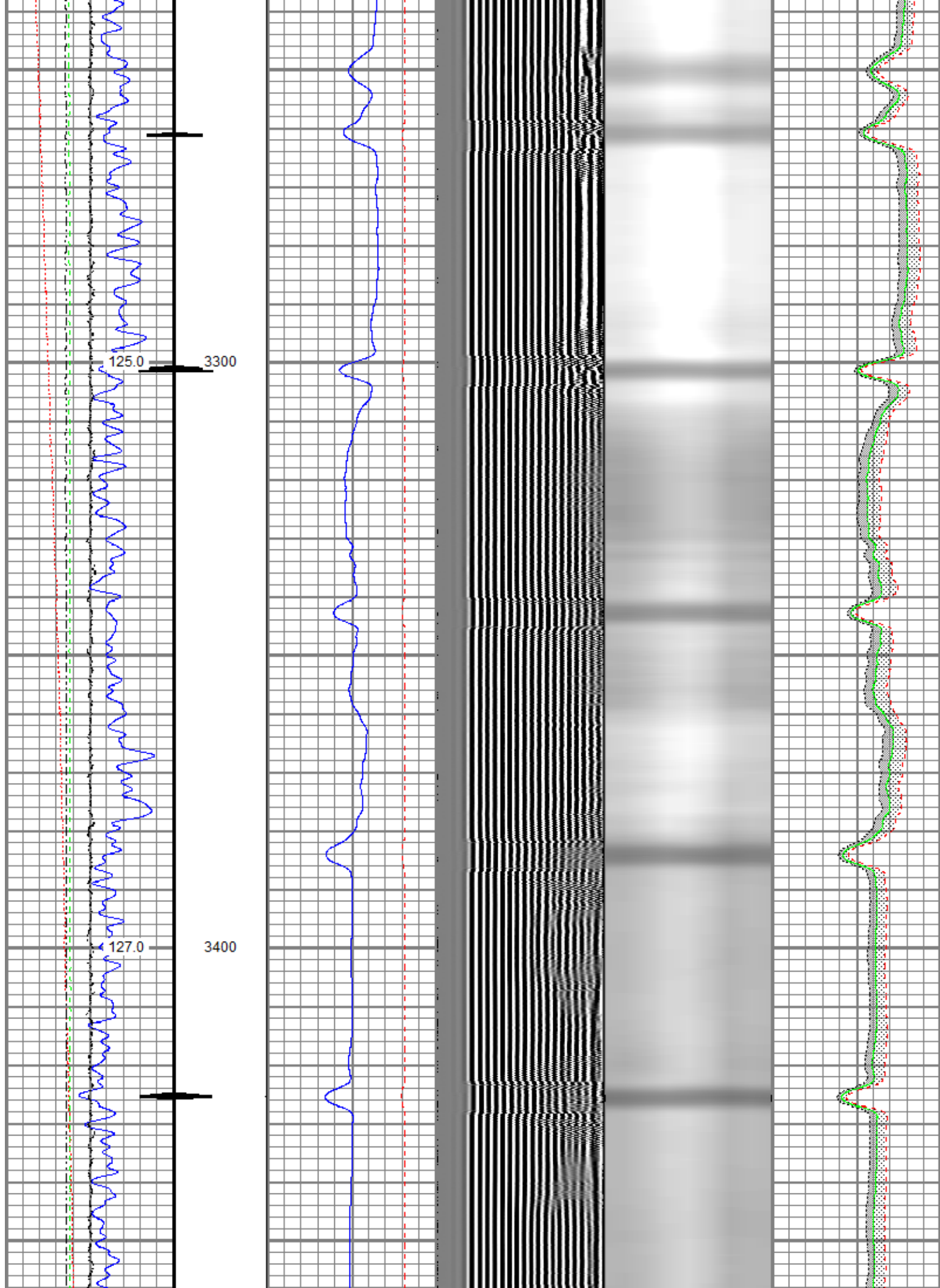


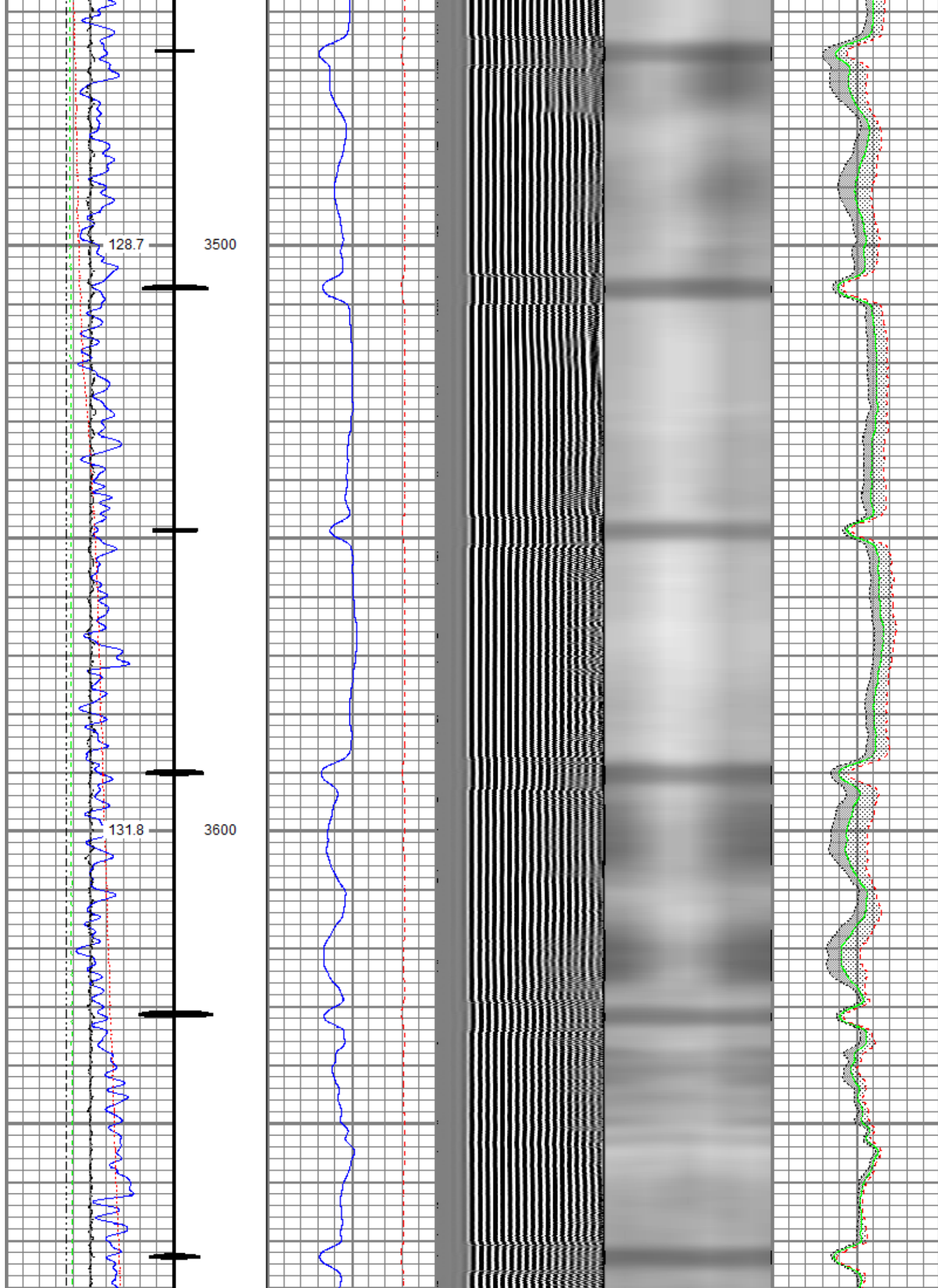


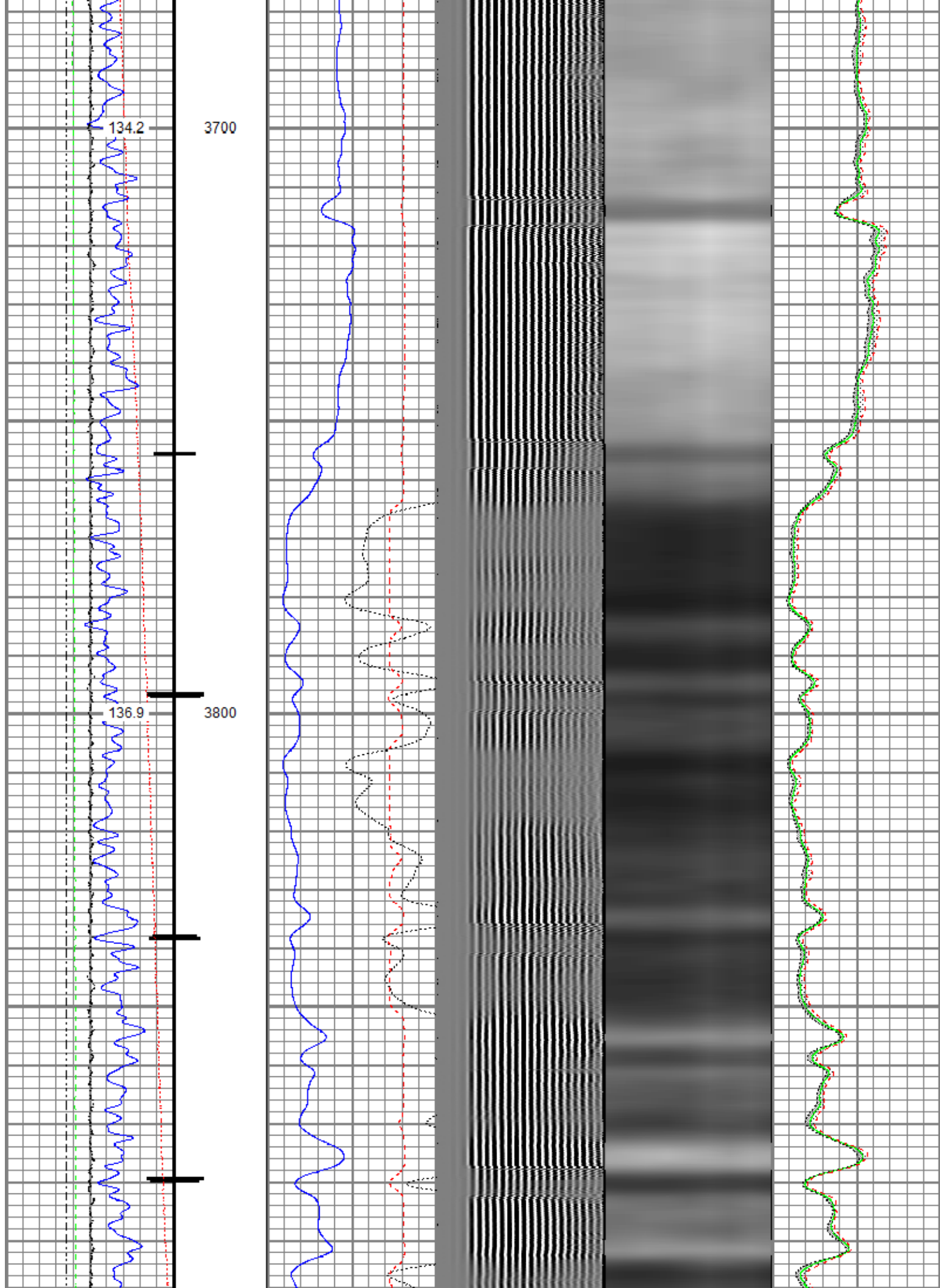




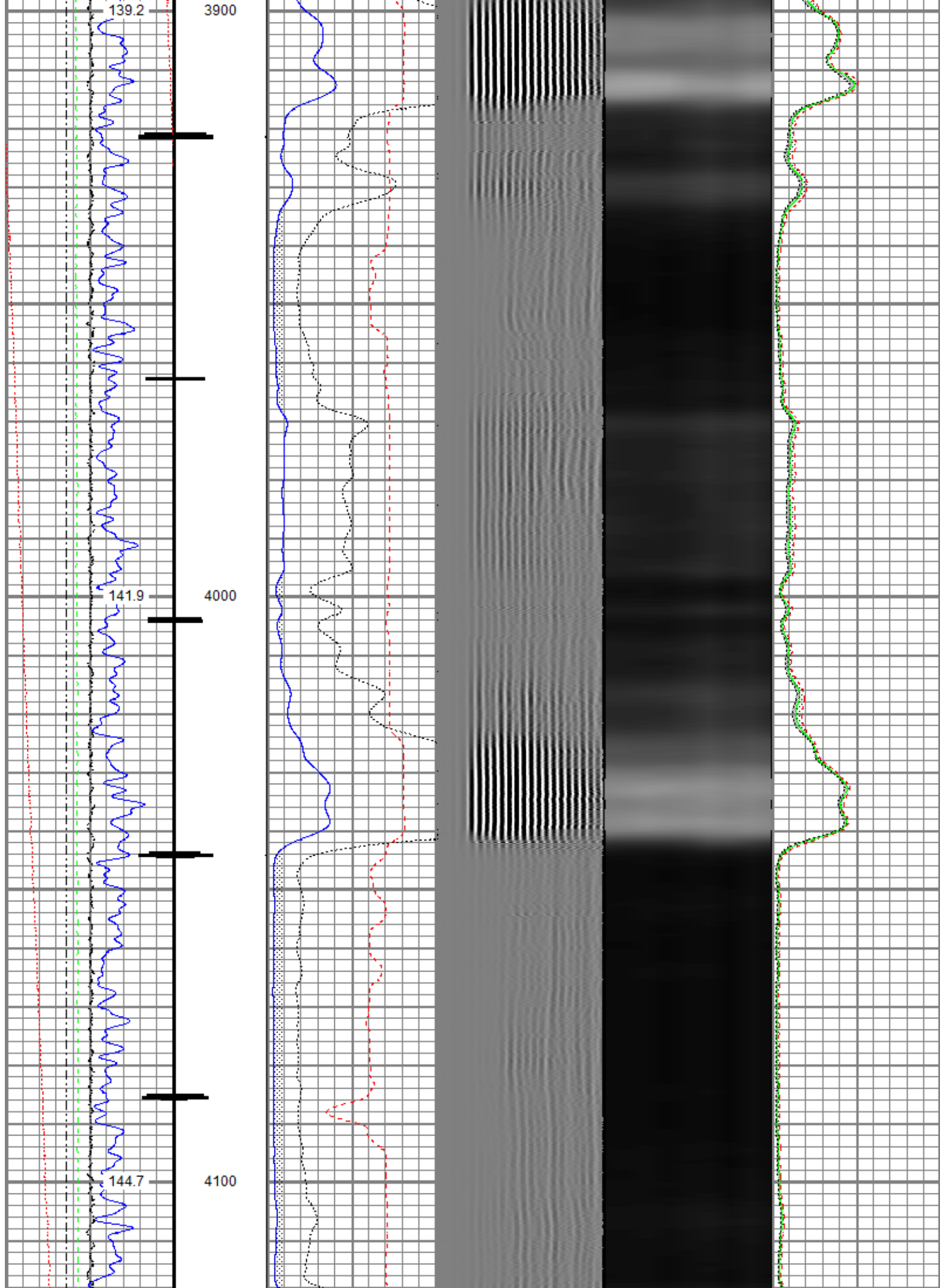




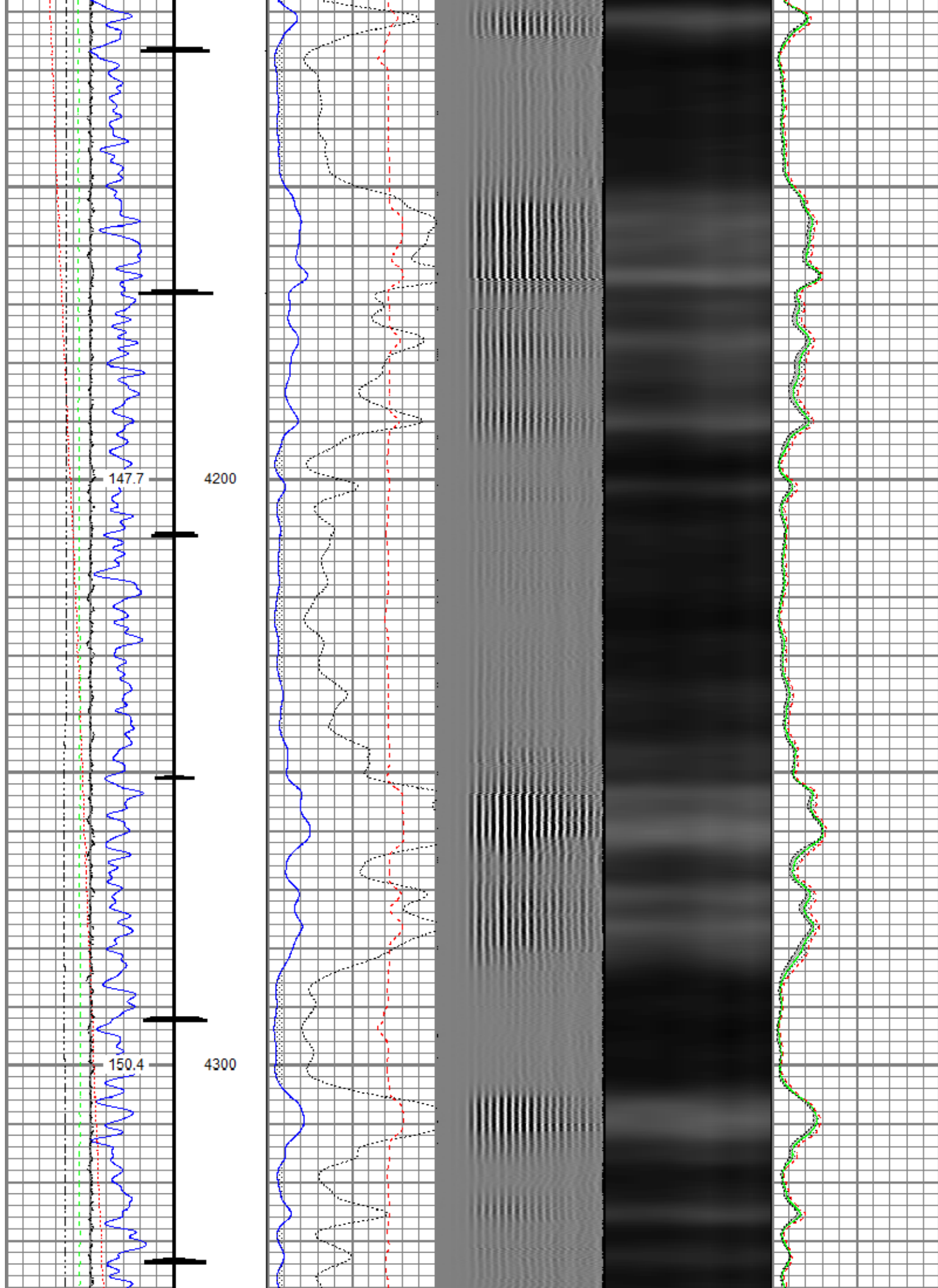


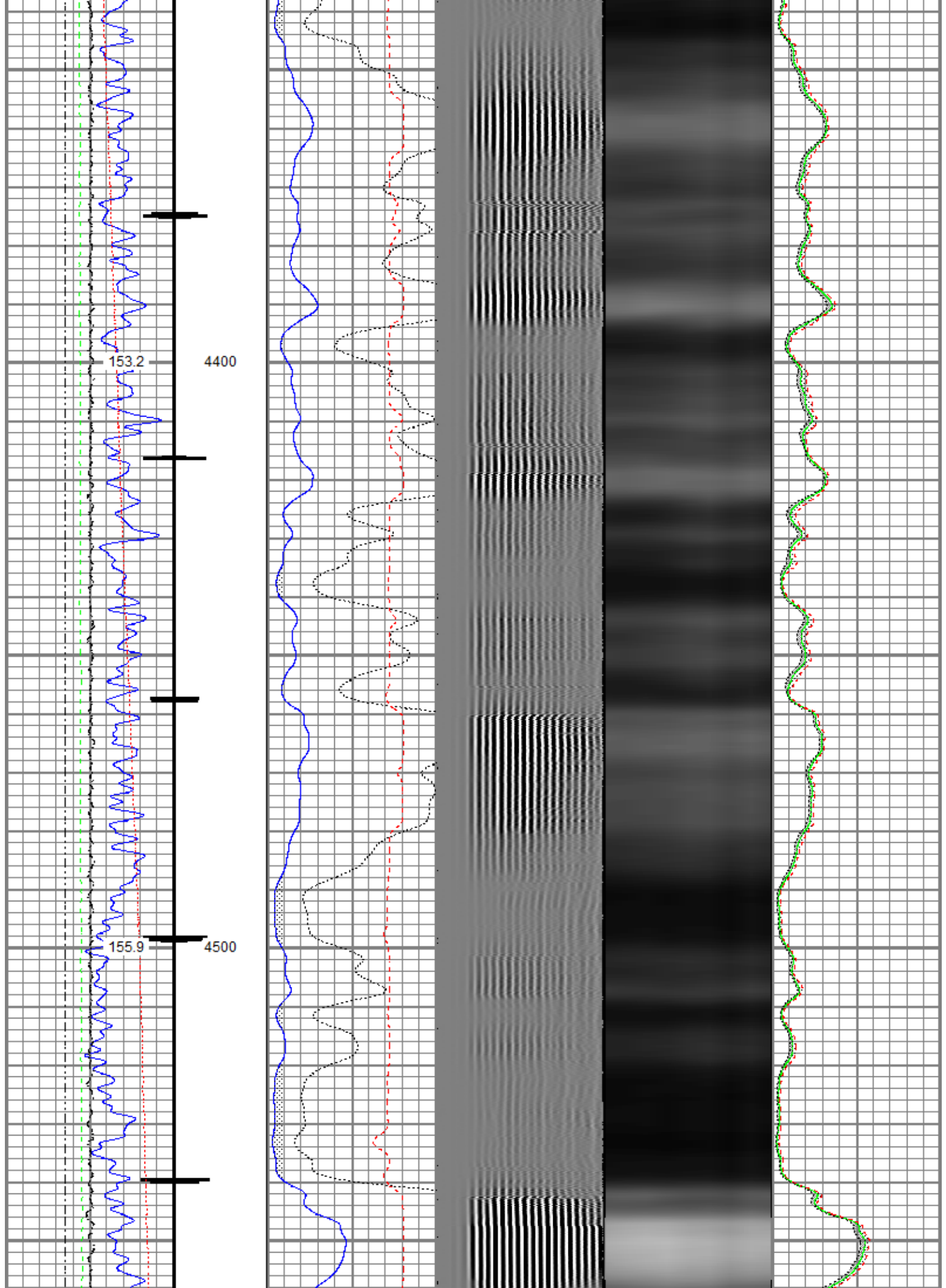


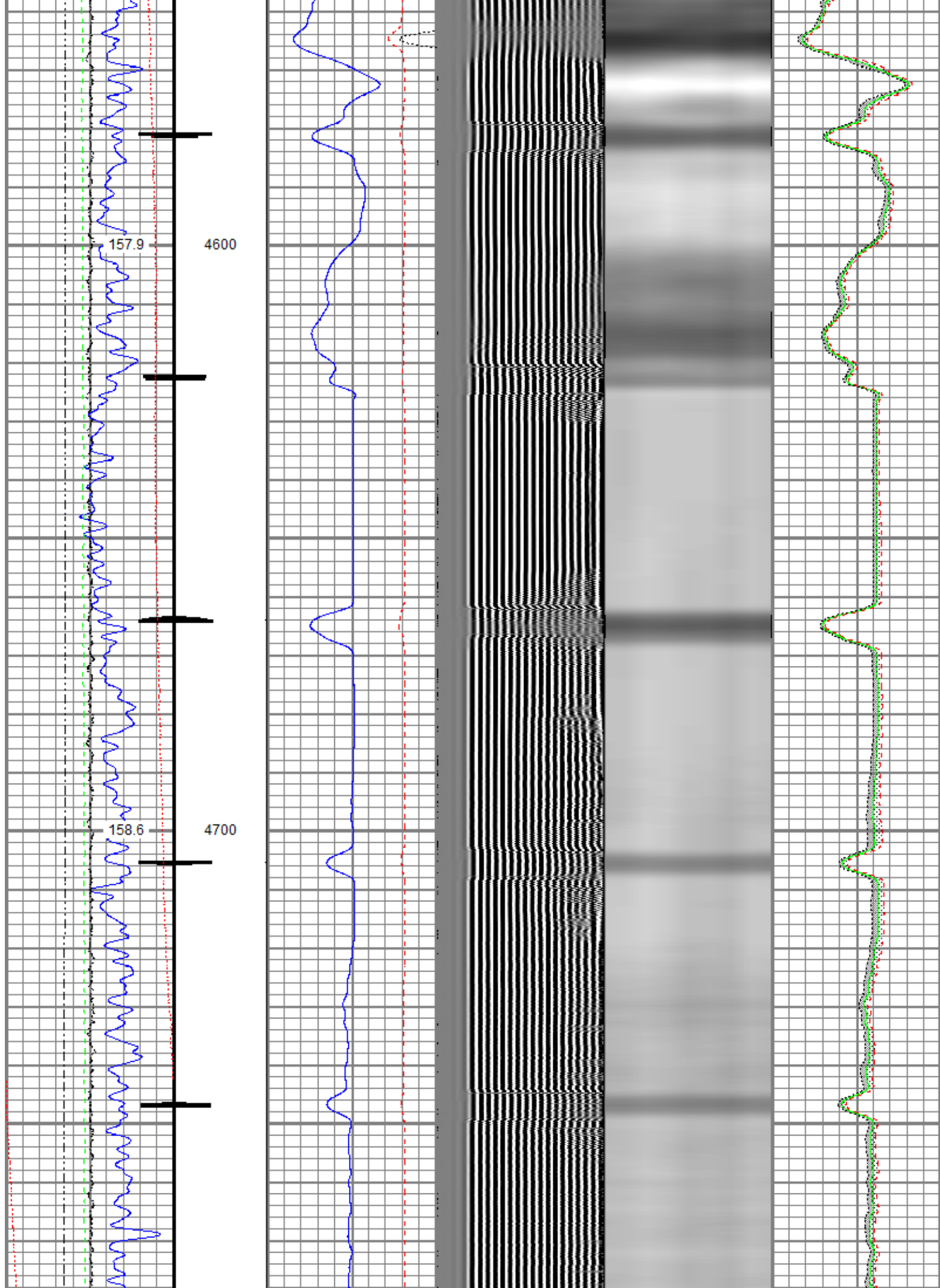




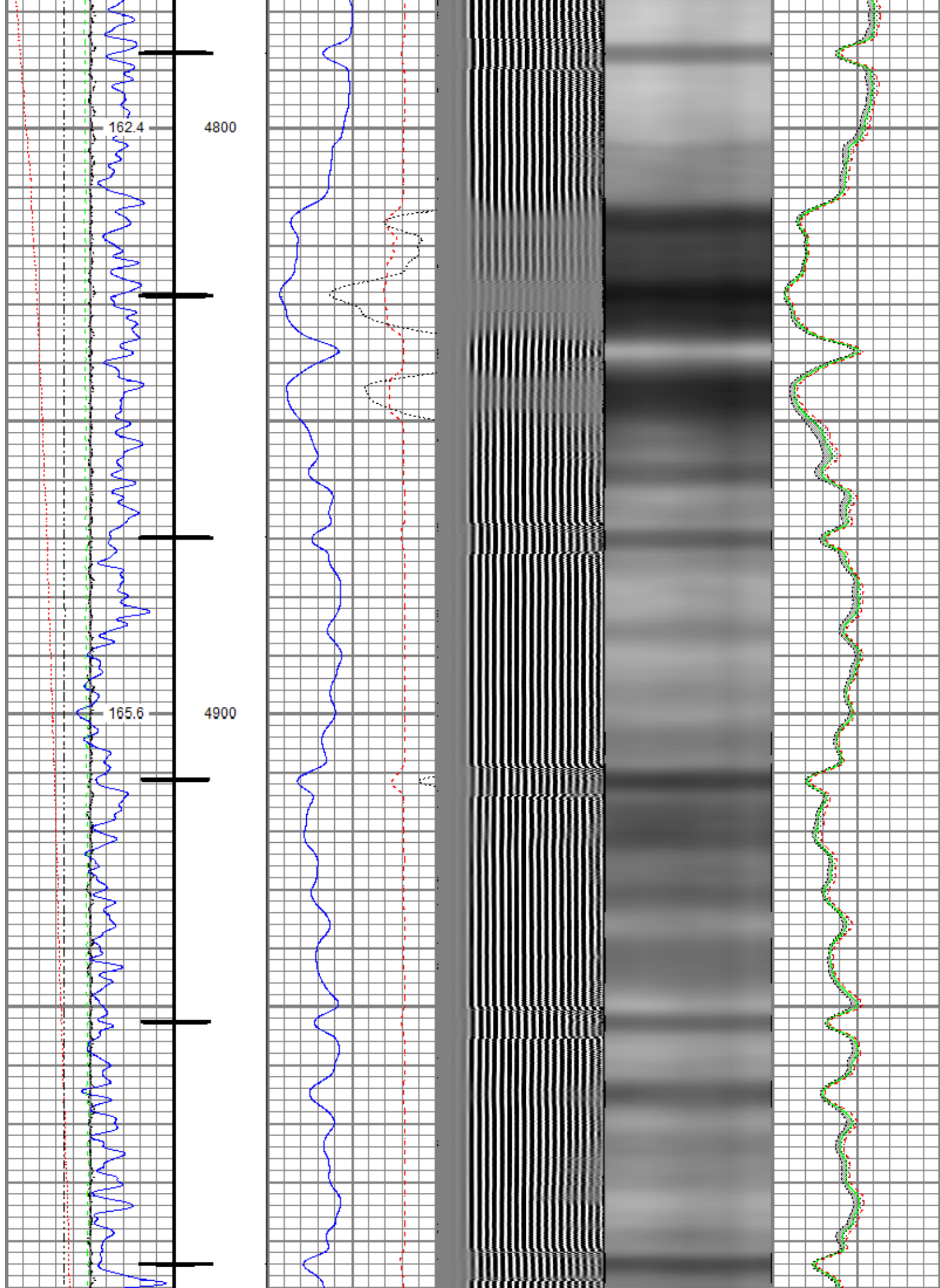




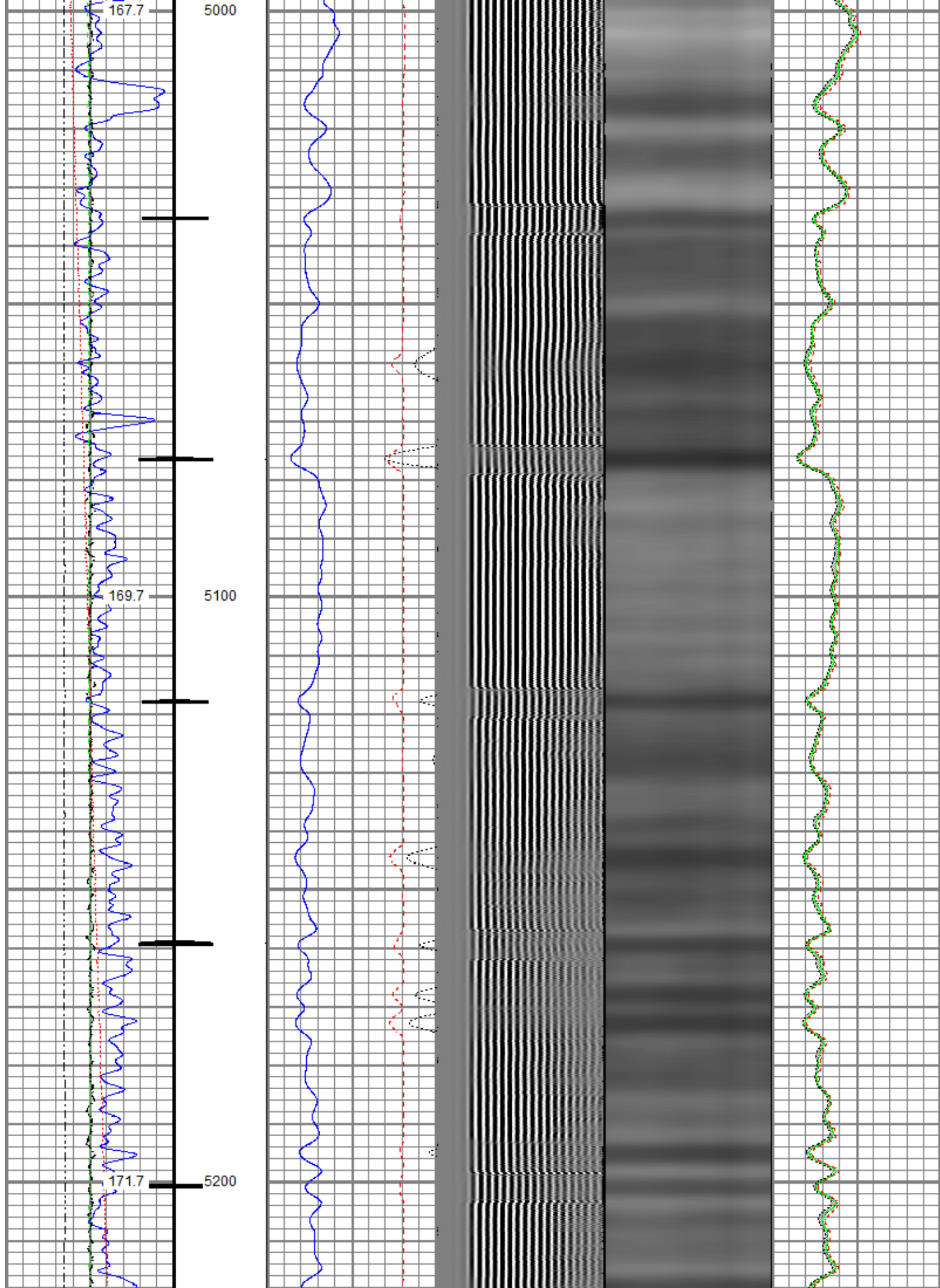


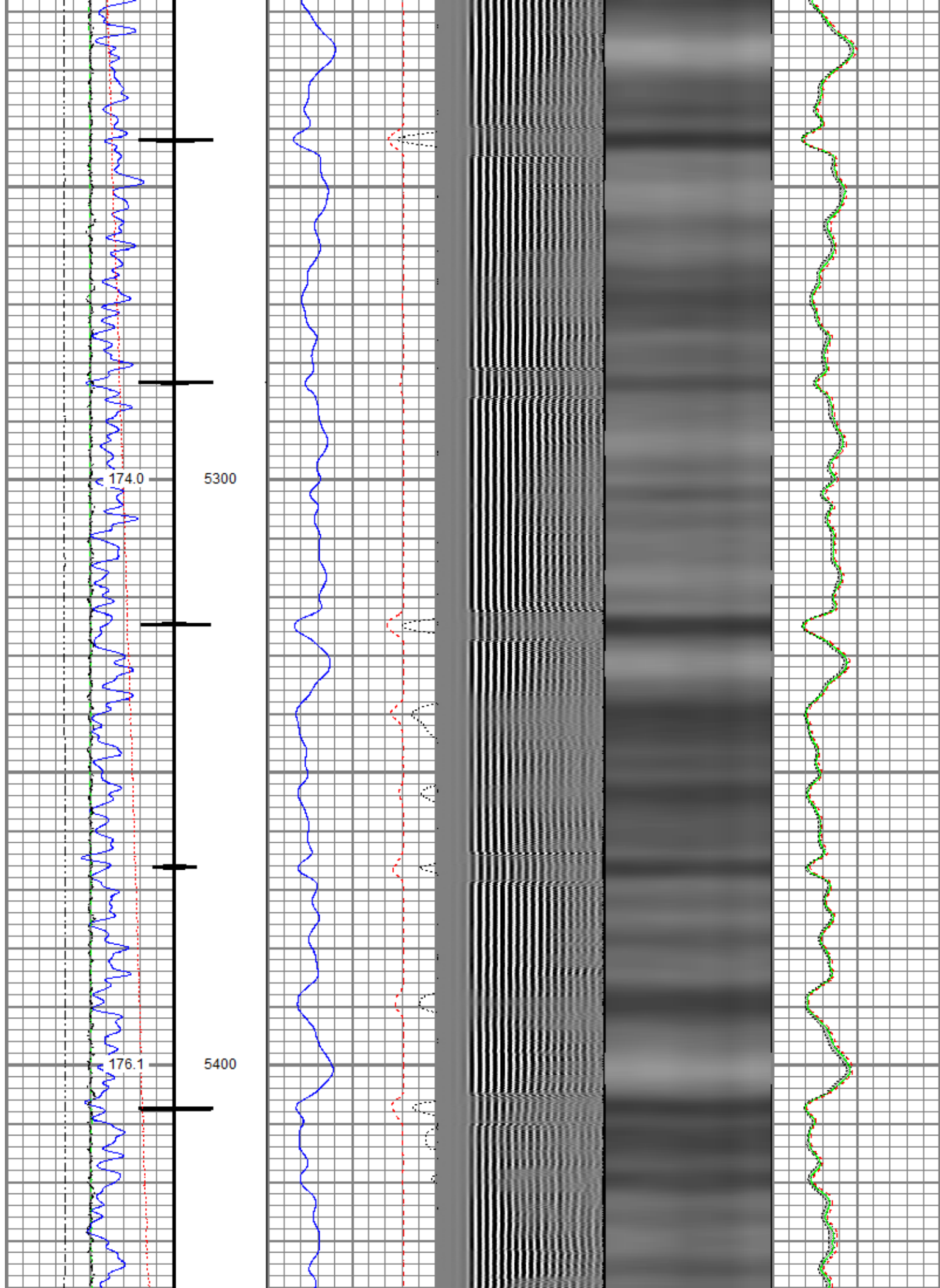


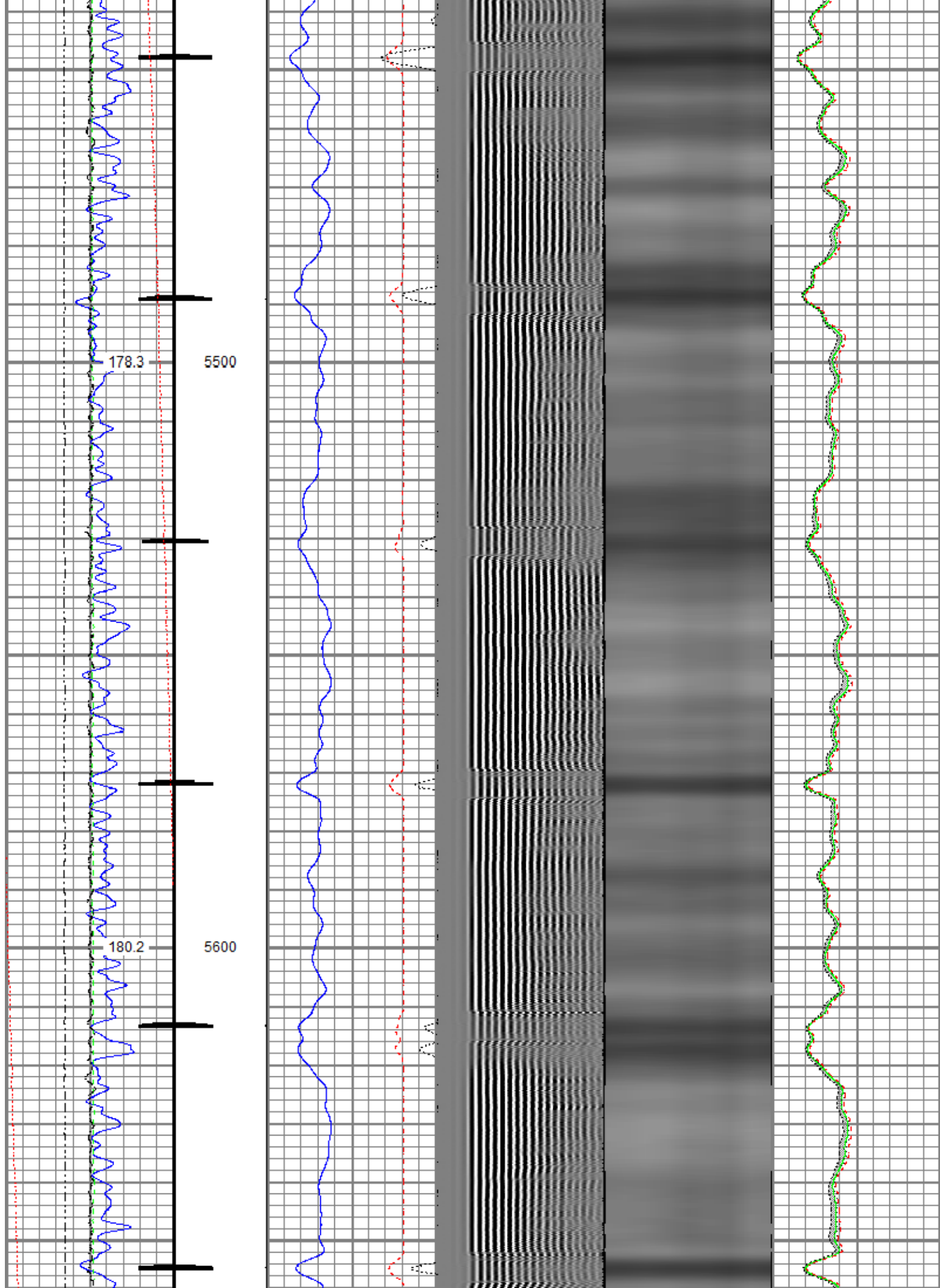




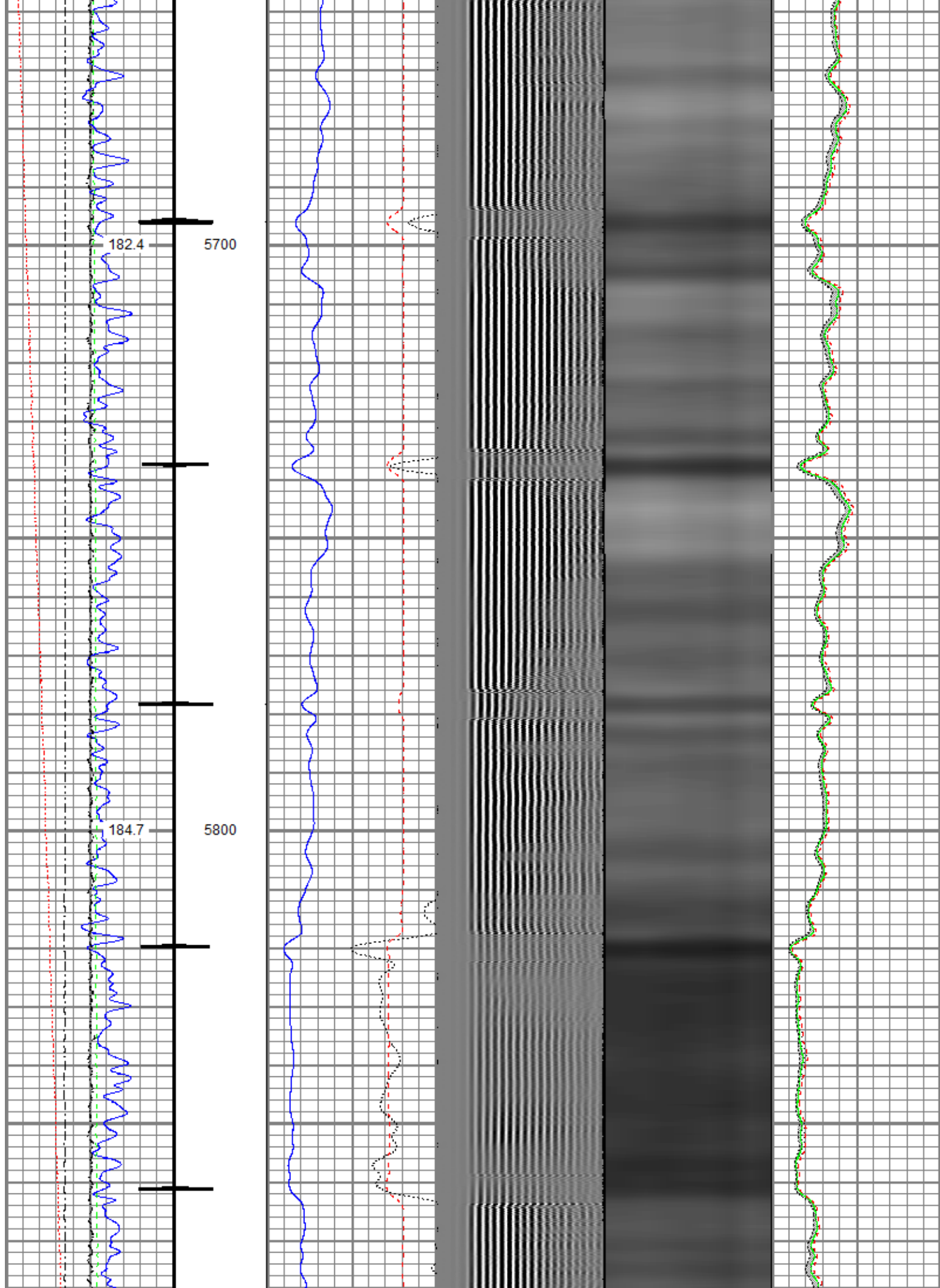


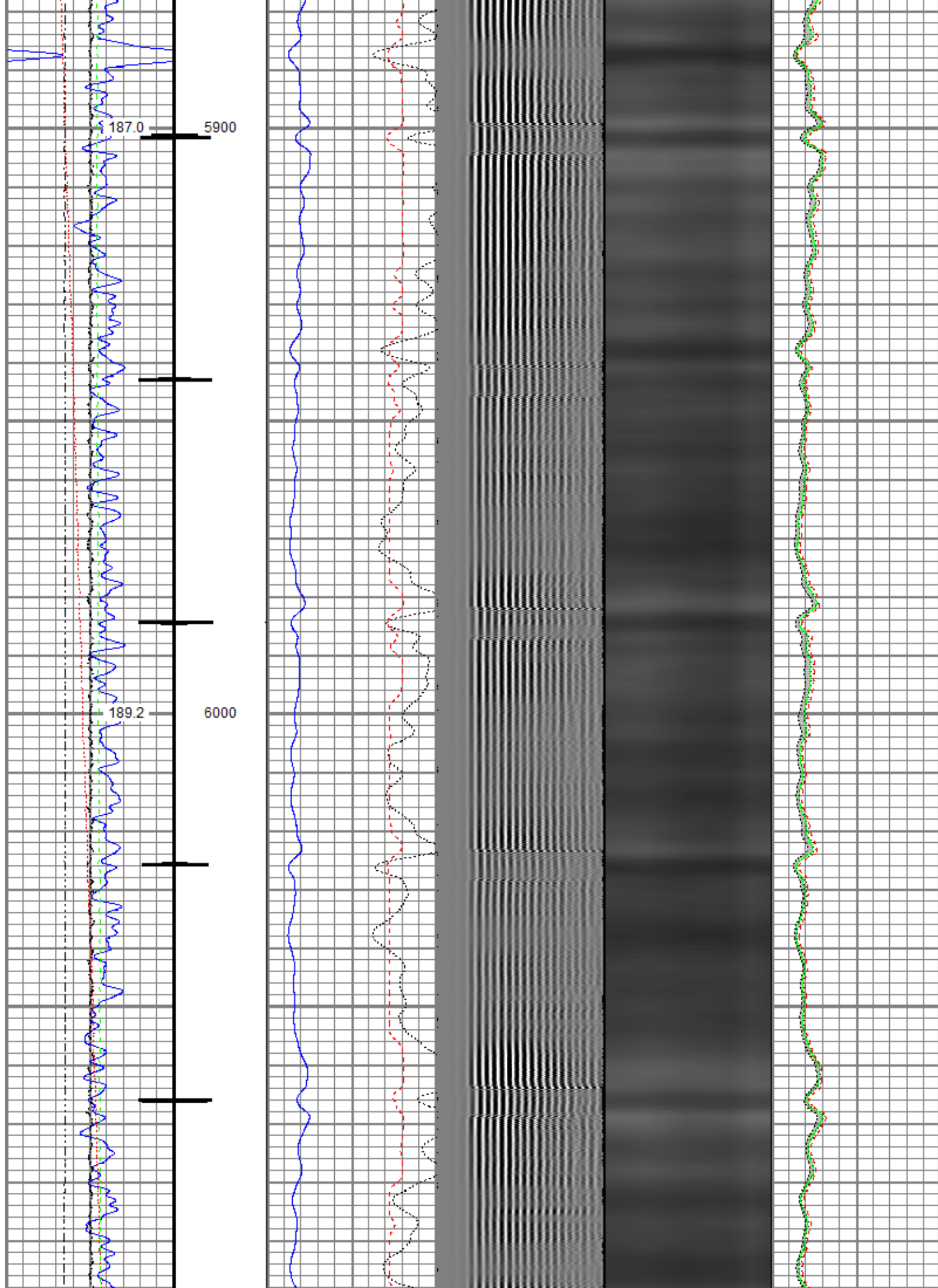


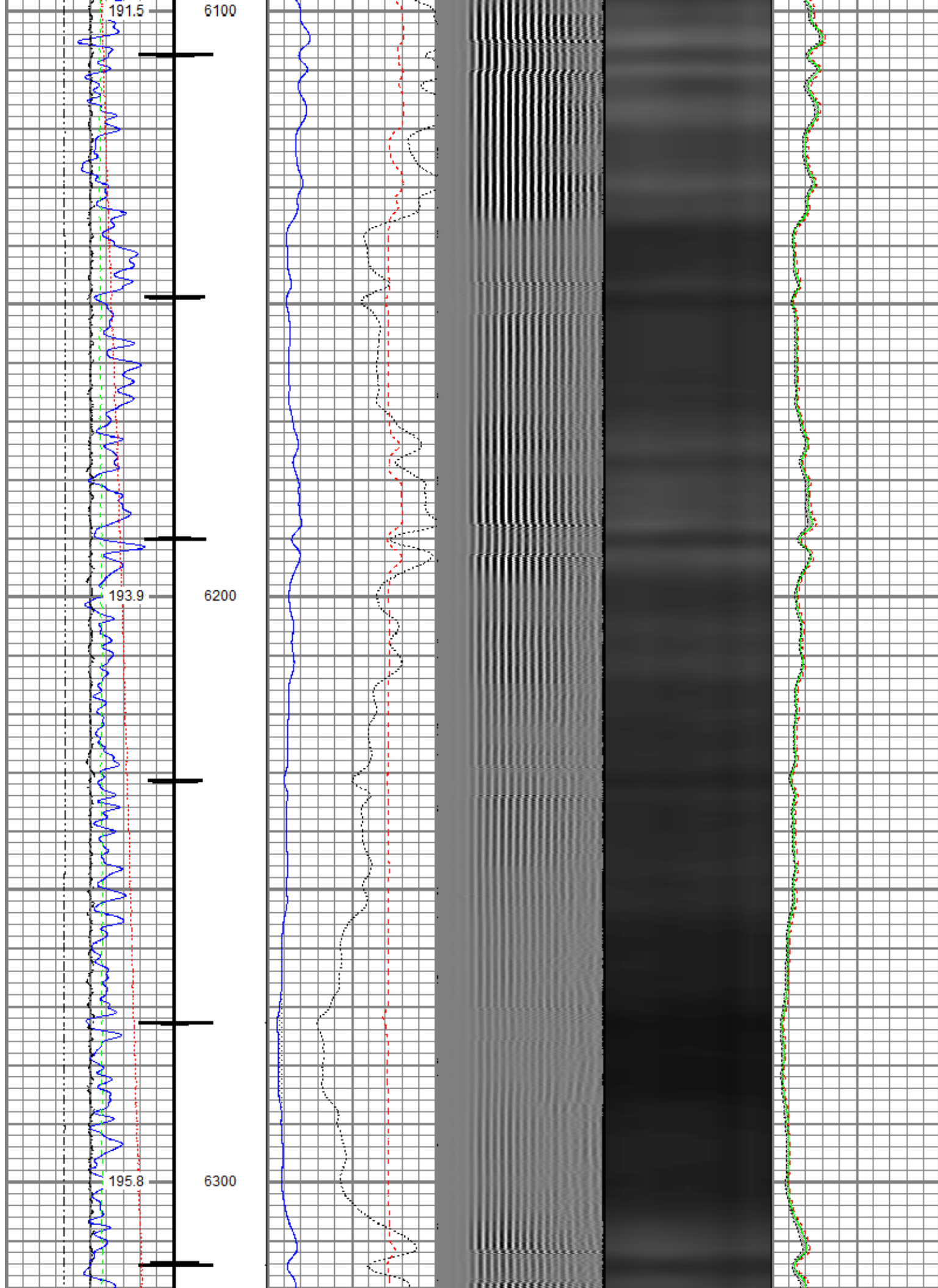




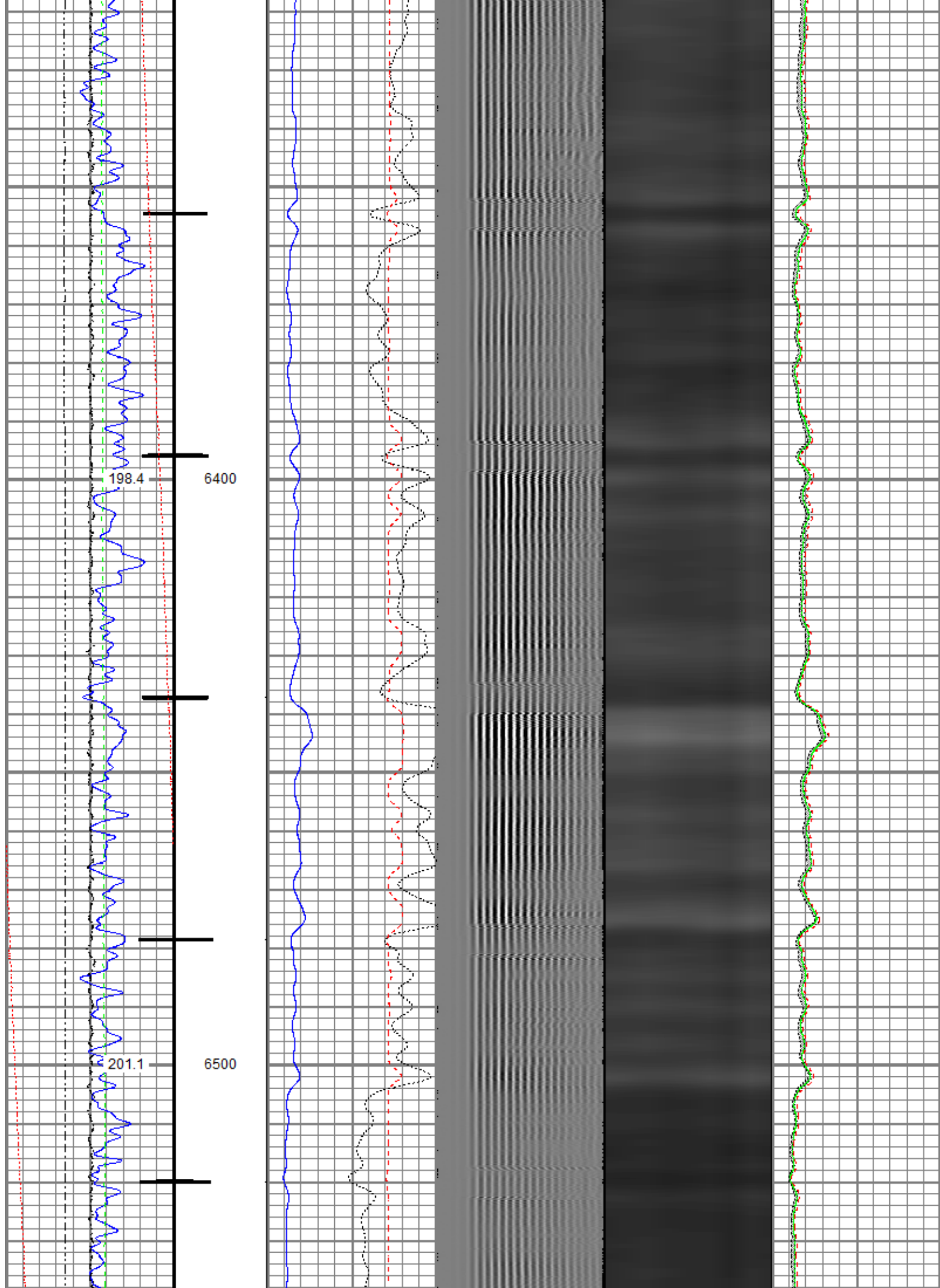


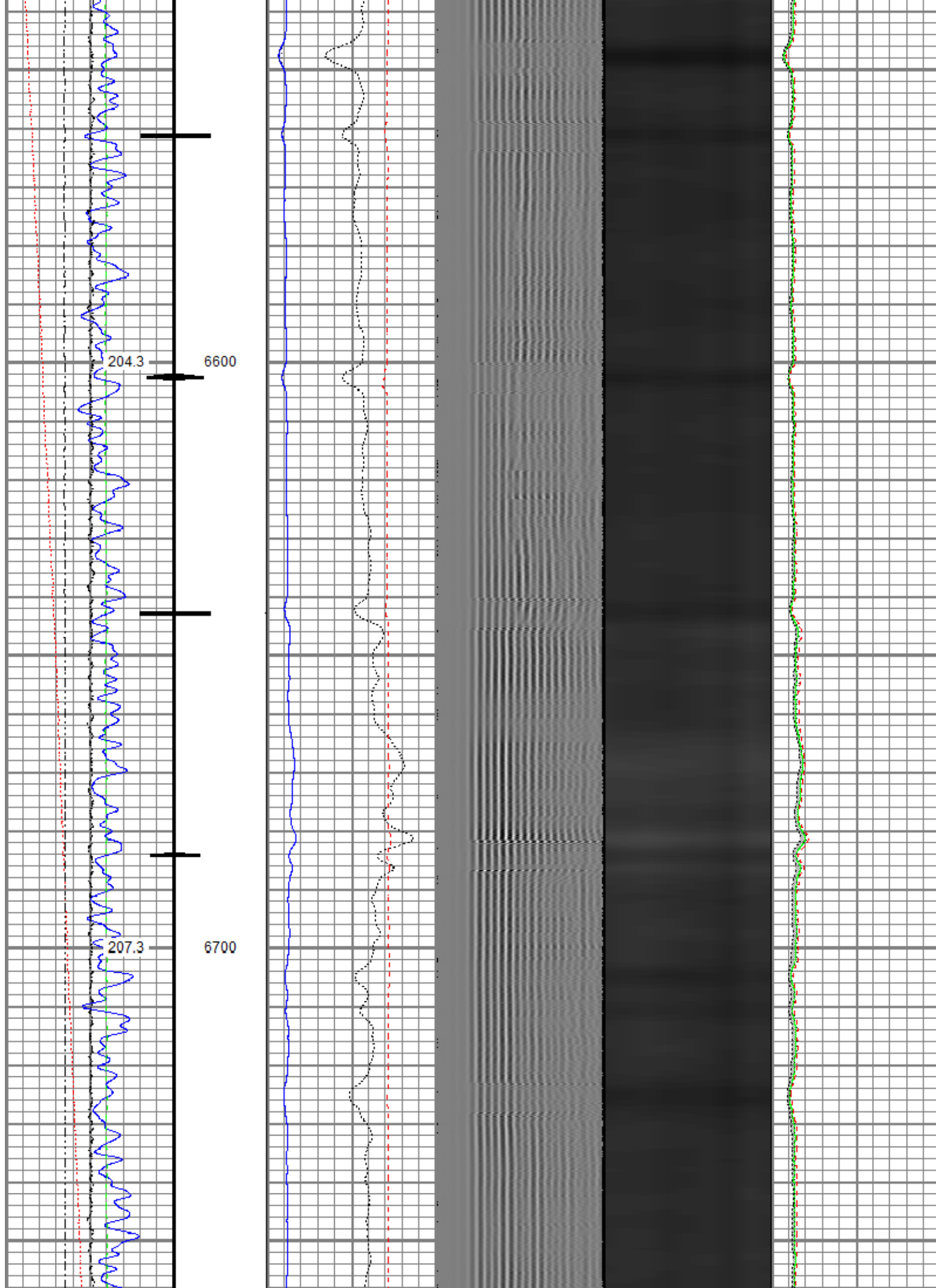


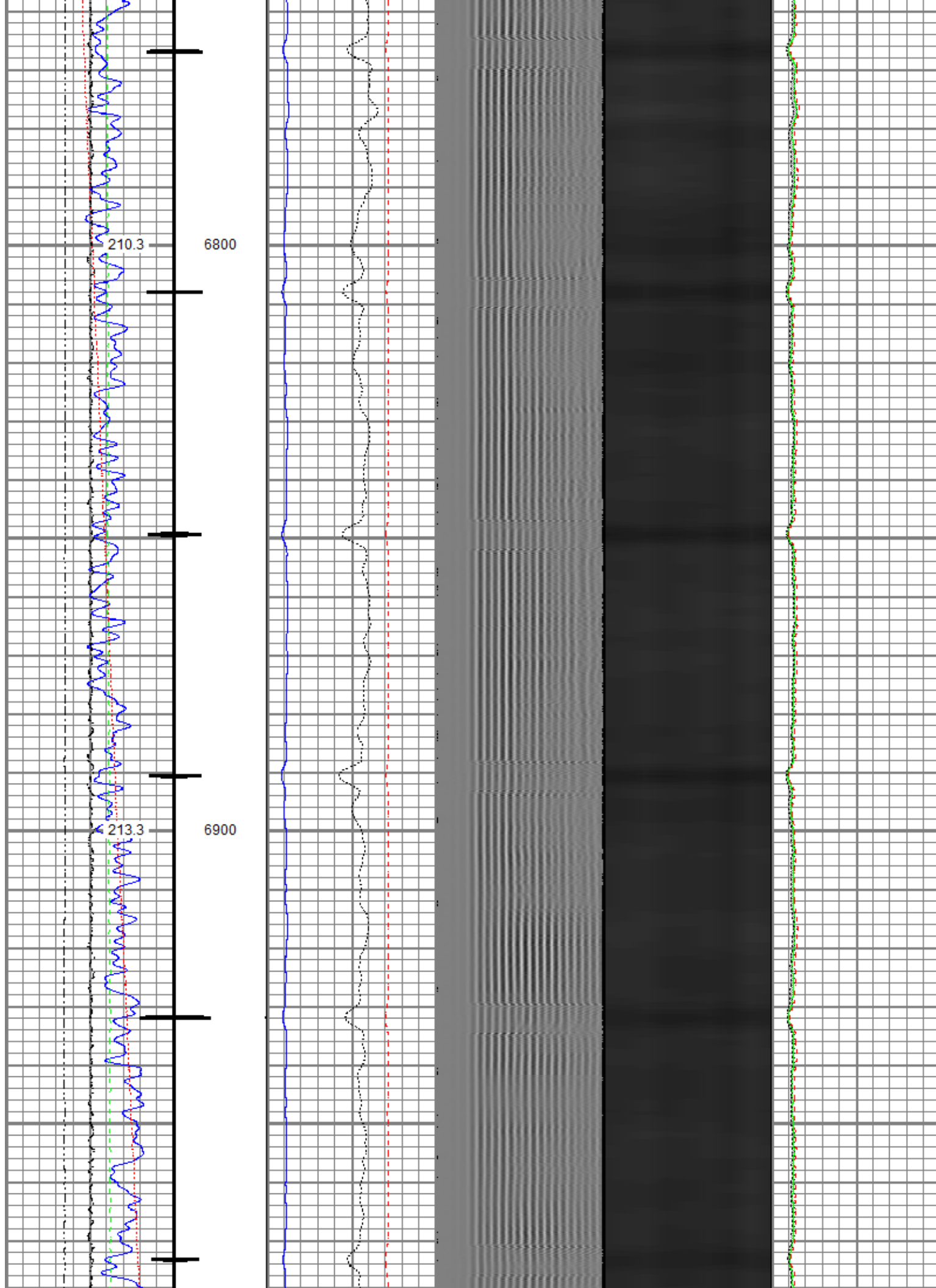




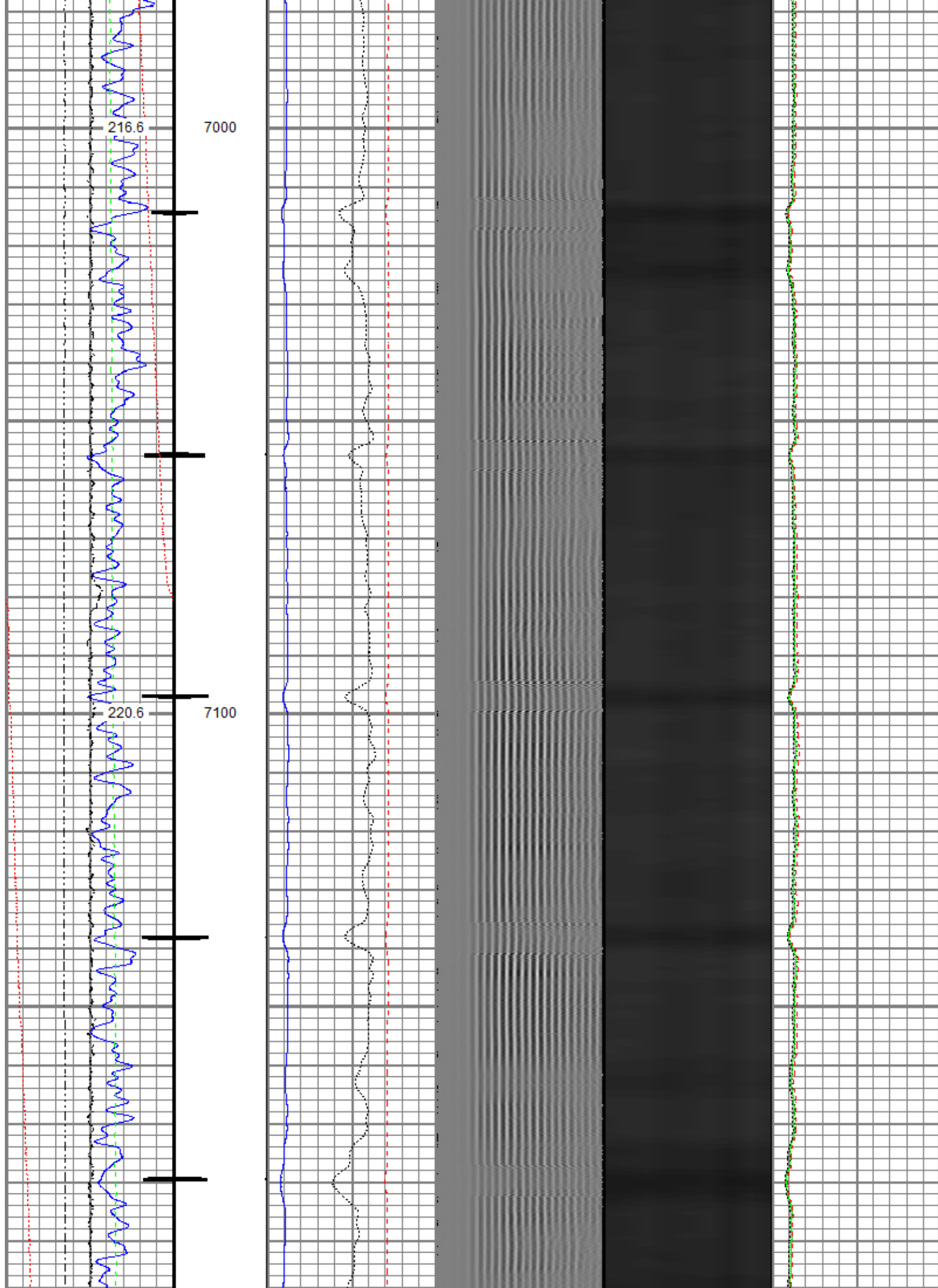


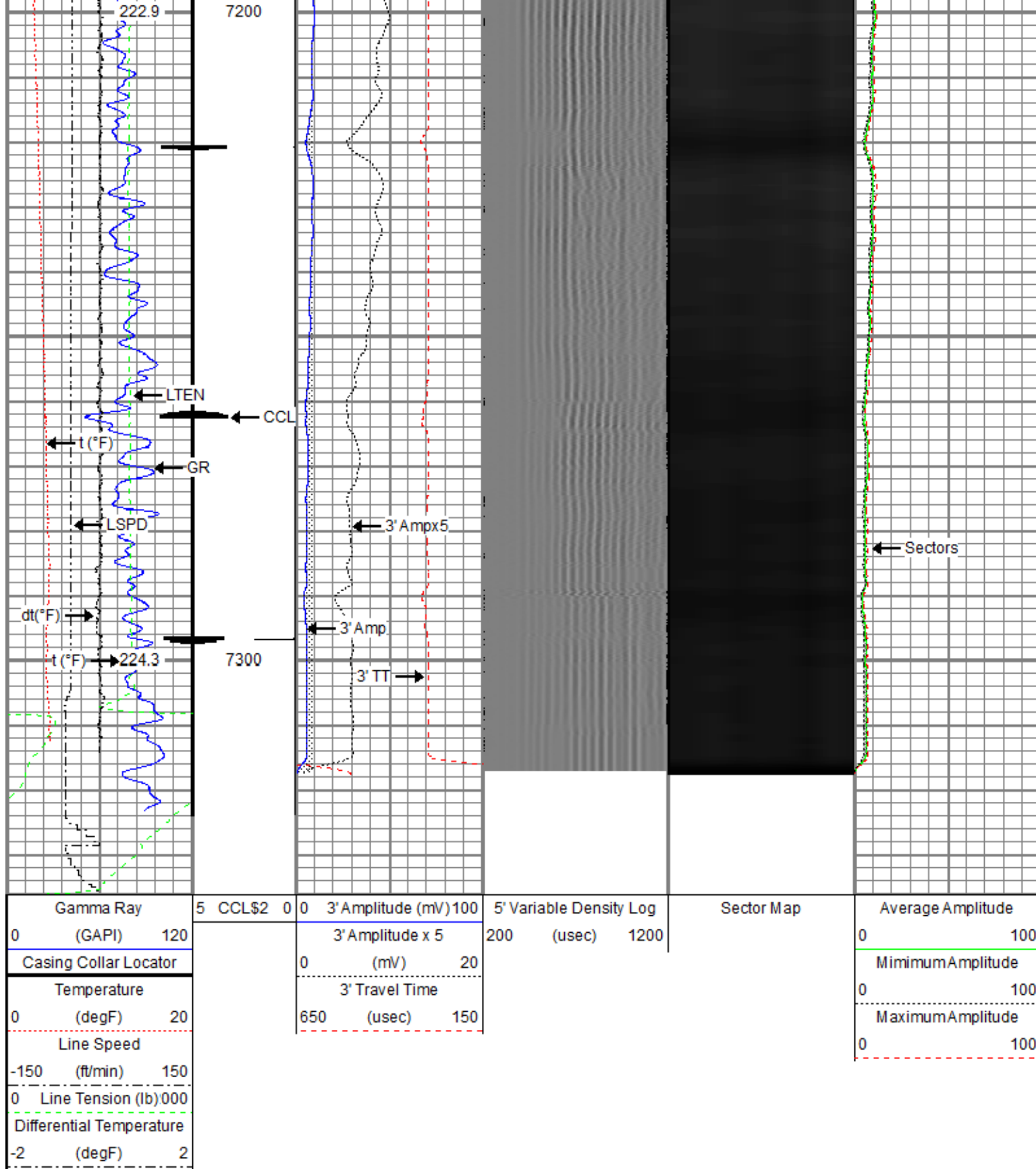












Repeat Pass

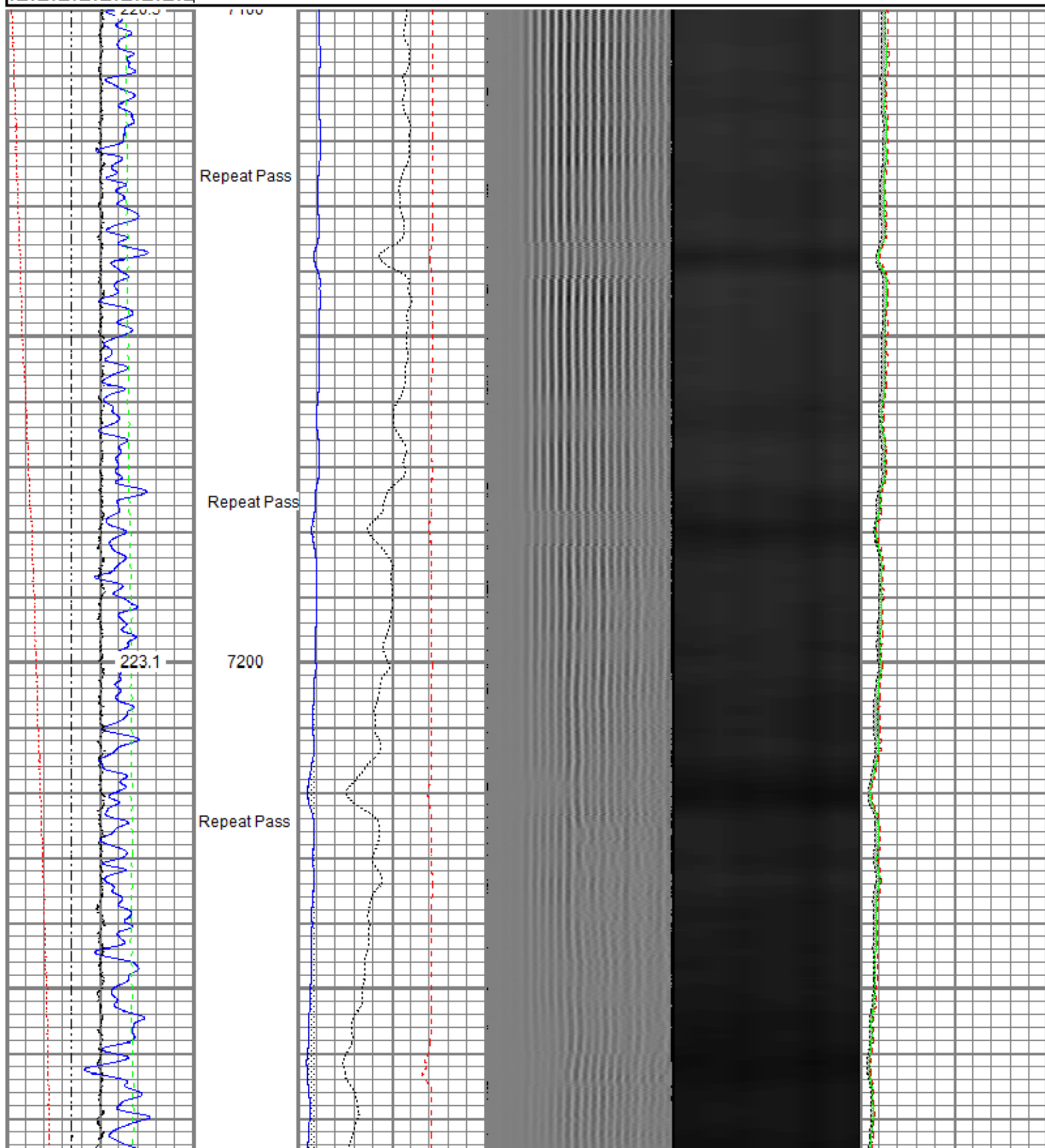
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 Presentation Format ros\_radil  
 Dataset Creation Mon Nov 04 08:19:51 2019

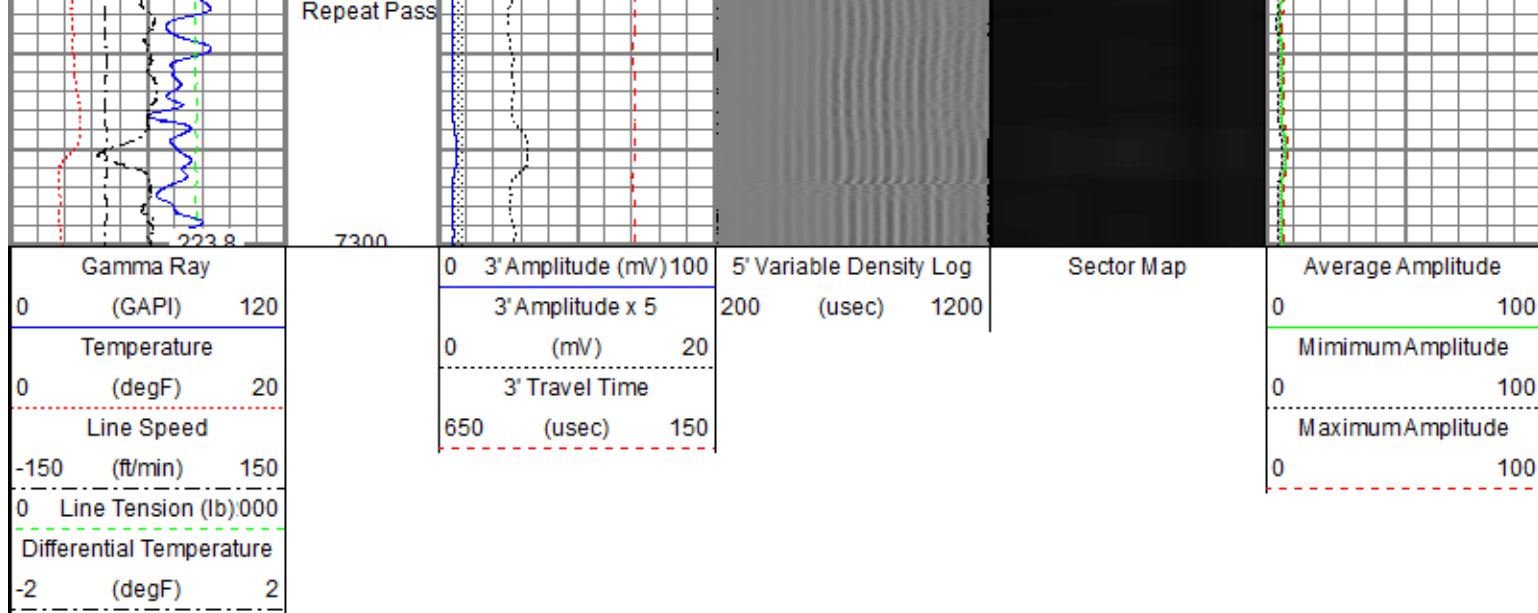
Charted by

Depth in Feet scaled 1:240

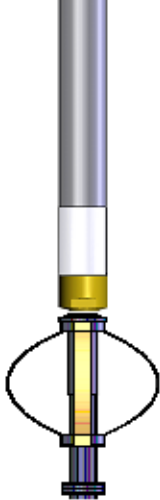
Gamma Ray			0	3' Amplitude (mV) 100		5' Variable Density Log		Sector Map	Average Amplitude	
0	(GAPI) 120		3' Amplitude x 5			200	(usec) 1200		0	100
Temperature			0	(mV) 20					MimimumAmplitude	
0	(degF) 20		3' Travel Time					0	100	
Line Speed			650	(usec) 150				MaximumAmplitude		
-150	(ft/min) 150							0	100	
0	Line Tension (lb) 000									
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 with 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	22.08					
WVFS8	19.84		Probe Radii-2750 RBT (FW1305-096) Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub	9.39	2.75	105.00
WVFS7	19.84					
WVFS6	19.84					
WVFS5	19.84					
WVFS4	19.84					
WVFS3	19.84					
WVFS2	19.84					
WVFS1	19.84					
WVFCAL	19.84					
WVF3FT	19.84		Probe CENT-2750 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.88	2.75	20.00
WVF5FT	18.84					
CCL\$2	11.83					
CCL\$1	11.83					
GR	10.50		Probe GR-CCL-2750 6PB (FW1810-044) 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		Probe CN-2750 BL (FW1308-020_A1483) Probe 2-3/4" Compensated Neutron with Bottom Load	5.03	2.75	60.00
	4.12		Probe CENT-2750 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.88	2.75	20.00
Dataset: crestonpeak_costigan 6-8-20rcblcnl_11-4-2019.db: field/well/run1/pass5.1 Total length: 28.90 ft Total weight: 283.60 lb O.D.: 2.75 in						

Calibration Report					
Database File	crestonpeak_costigan 6-8-20rcblcnl_11-4-2019.db				
Dataset Pathname	pass5.1				
Dataset Creation	Mon Nov 04 11:16:26 2019				
Compensated Neutron Calibration Report					
Type / Serial:		2750 BL / FW1308-020_A1483			
Source / Verifier:		/			
Temperature:					
SHOP CALIBRATION		Mon Oct 01 11:29:38 2018			
	Cal Tube	Units			
Tank Ratio		SS/LS			
Tank Porosity		pu			
LS Detector		cps			
SS Detector		cps			
Tool Ratio		SS/LS			
Tool Porosity		pu			
Tool Constant =					
Field Verifier	SS Detector	LS Detector	Ratio	Porosity	
PRE-SURVEY VERIFICATION					
	SS Detector	LS Detector	Ratio	Porosity	
POST-SURVEY VERIFICATION					
	SS Detector	LS Detector	Ratio	Porosity	

Gamma Ray Calibration Report			
Serial Number:	FW1810-044		
Tool Model:	2750 6PB		
Performed:	Sat Nov 10 12:23:27 2018		
Calibrator Value:	637.0	GAPI	
Background Reading:	105.3	cps	
Calibrator Reading:	1221.0	cps	
Sensitivity:	0.5709	GAPI/cps	

## Segmented Cement Bond Log Calibration Report

Serial Number: FW1305-096  
 Tool Model: 2750 RBT  
 Calibration Casing Diameter: 4.500 in  
 Calibration Depth: 36.867 ft

## Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.000	0.581	0.800	81.196	138.356	0.819
CAL	0.004	0.616				
5'	0.000	0.620	0.800	81.196	129.725	0.795
SUM						
S1	0.000	0.582	0.000	100.000	171.850	-0.047
S2	0.000	0.593	0.000	100.000	168.627	-0.020
S3	0.000	0.604	0.000	100.000	165.611	-0.030
S4	0.000	0.608	0.000	100.000	164.587	-0.079
S5	0.000	0.640	0.000	100.000	156.281	-0.011
S6	-0.000	0.625	0.000	100.000	159.955	0.015
S7	-0.000	0.591	0.000	100.000	169.054	0.013
S8	-0.000	0.589	0.000	100.000	169.703	0.044

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

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.004	0.616	1.000	0.000

## Air Zero Calibration, performed Mon Nov 04 07:52:40 2019:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.004		0.000		-0.000	
5'	0.004		0.000		0.000	
SUM						
S1	0.003		0.000		0.000	
S2	0.003		0.000		0.000	
S3	0.003		0.000		0.000	
S4	0.003		0.000		0.000	
S5	0.003		0.000		0.000	
S6	0.004		0.000		-0.000	
S7	0.004		0.000		-0.000	
S8	0.004		0.000		-0.000	

## Temperature Calibration Report

Serial Number: FW1305-096  
 Tool Model: 2750 RBT  
 Performed: Mon Oct 01 11:32:16 2018

	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 Spacing: 1





<b>Company</b>	Crestone Peak Resources
<b>Well</b>	Costigan 6-8-20
<b>Field</b>	Wattenberg
<b>County</b>	Weld
<b>State</b>	Colorado