



Radial Cement Bond  
Gamma Ray  
Casing Collar Log

Company Kerr-McGee Oil & Gas Onshore, L.P.  
Well Puma Fed 30N-14HZ  
Field Wattenberg  
County Weld  
State Colorado

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Location: API #: 05-123-42562

SEC 23 TWP 1N RGE 67W

Permanent Datum Ground Level Elevation 4991'

Log Measured From Kelly Bushing 32 FT

Drilling Measured From Kelly Bushing

Other Services  
Gauge Ring

Elevation  
K.B. 5023'  
D.F. ---  
G.L. 4991'

Date 14-May-2017

Run Number Two

Depth Driller 14100 FT

Depth Logger 7787 FT

Bottom Logged Interval 7784 FT

Top Log Interval Surface

Open Hole Size 8.50"

Type Fluid Water

Density / Viscosity 8.34 lb/gal

Max. Recorded Temp. 232°F

Estimated Cement Top See Log

Time Well Ready ROA

Time Logger on Bottom 10:46 AM

Equipment Number HD-0343

Location Fort Lupton, CO

Recorded By J. Fresquez

Witnessed By B. Jolly

Borehole Record

Run Number Bit From To

Tubing Record

Size Weight From To

Casing Record Size (in) Wgt (lbs/ft) Grade Top Bottom

Surface Casing 9 5/8 36 J-55 Surface 2246 FT

Intermediate #1 5 1/2 17 HC P110 Surface 14090 FT

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

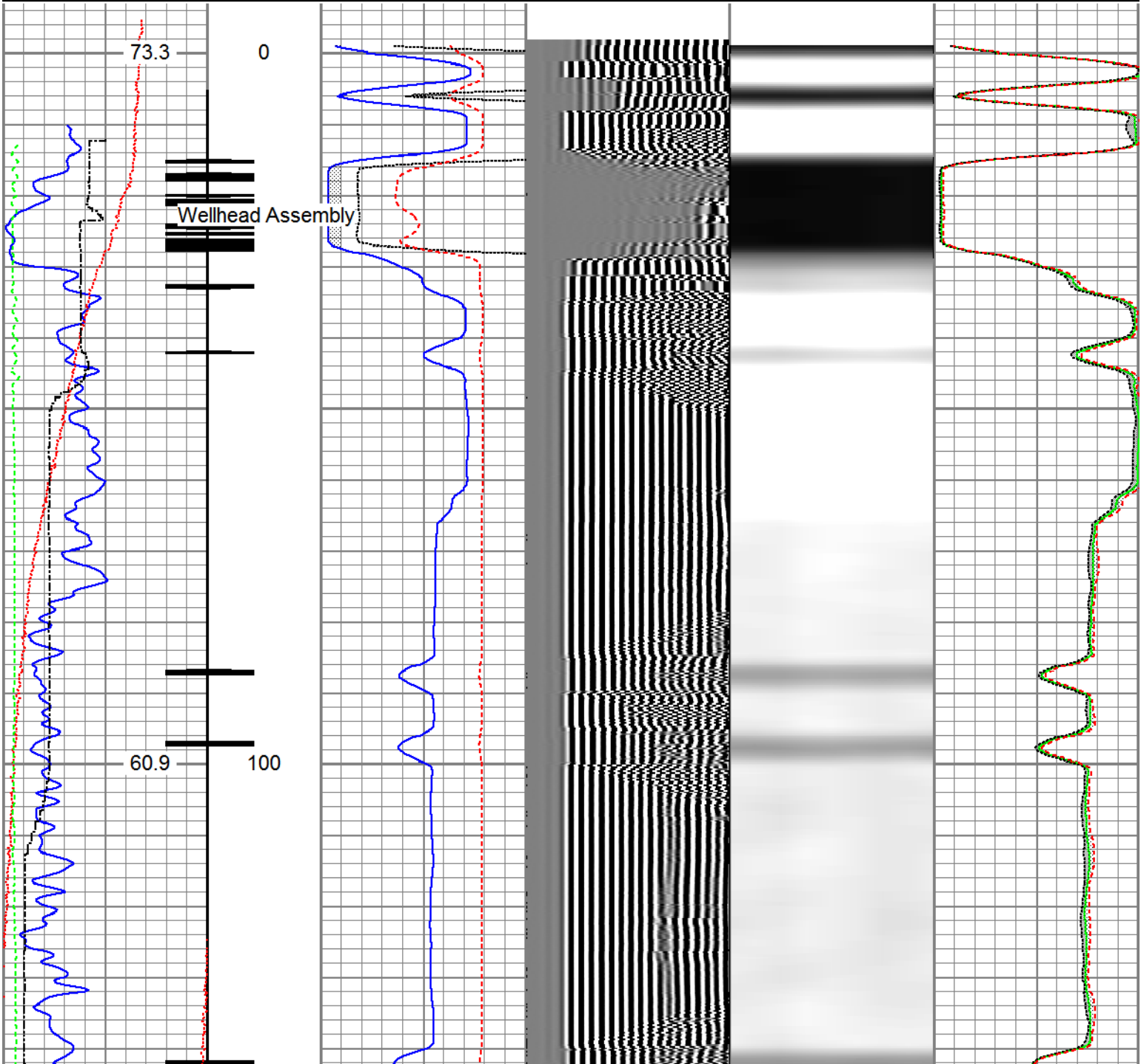
Log ran as per customer request  
Depth referenced to Casing Tally reported Marker Joint at 6916 FT  
Adjusted 0 FT to correlate with Marker Joint  
Gauge Ring/Junk Basket ran to 7834 FT with no debris  
Log ran from as deep as possible in heel to surface  
Log ran with 2800 PSI surface induced pressure  
Logging tools were clean and free of any debris upon completion of operations  
  
Thank you for choosing Reliance Oilfield Services, LLC!!

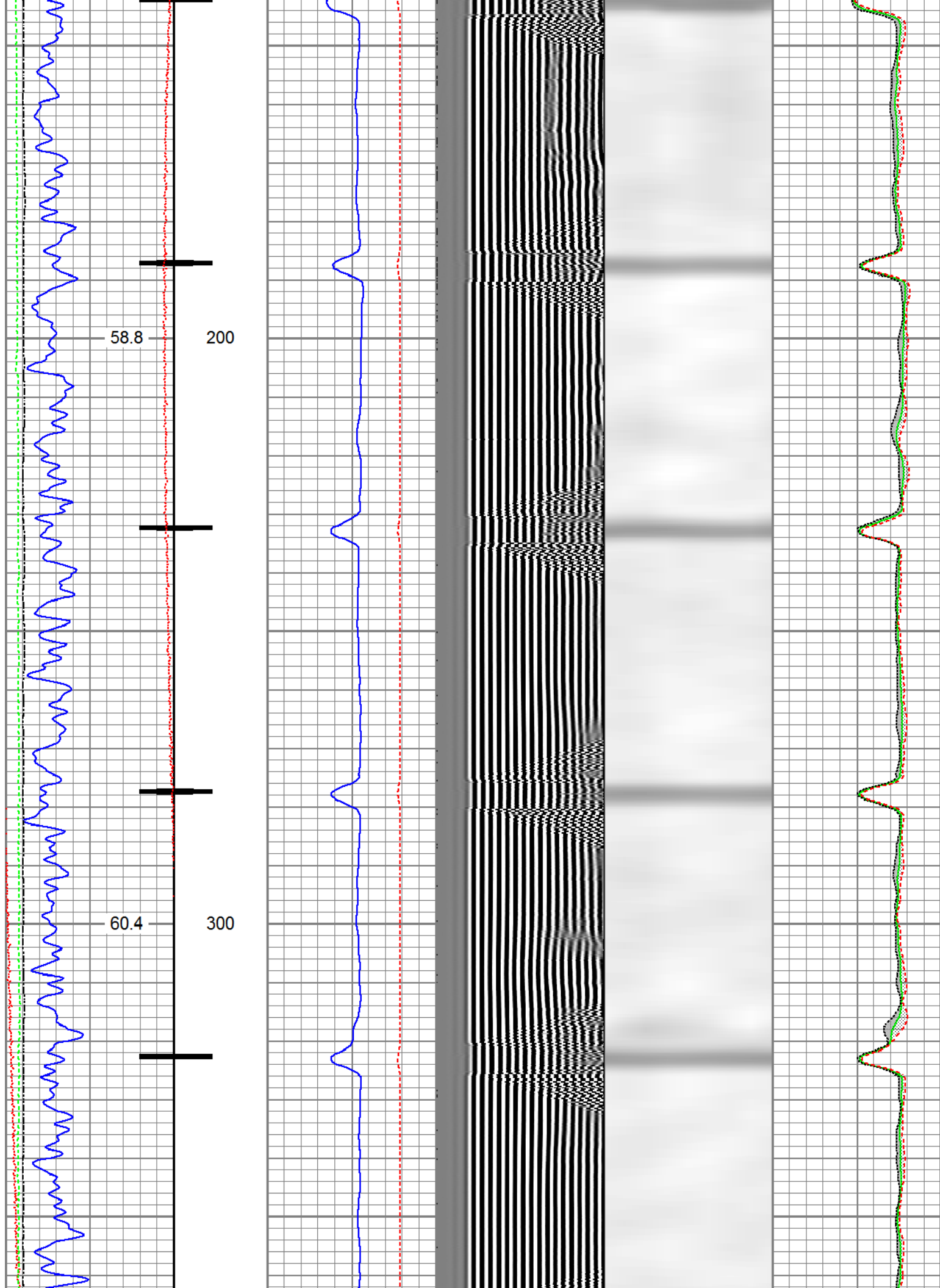


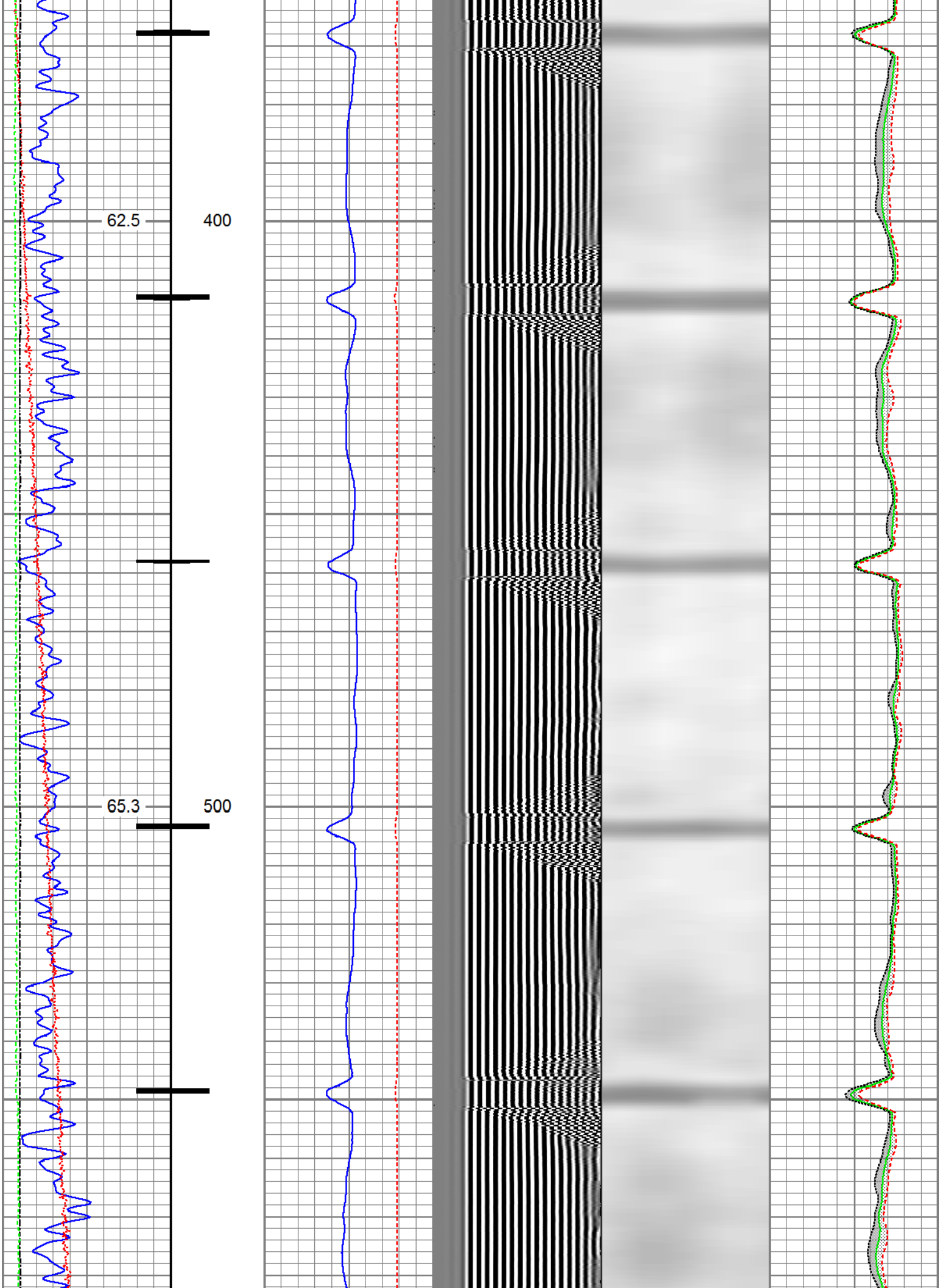
Main Pass

Recorded With 2800 PSI of Surface Induced Pressure

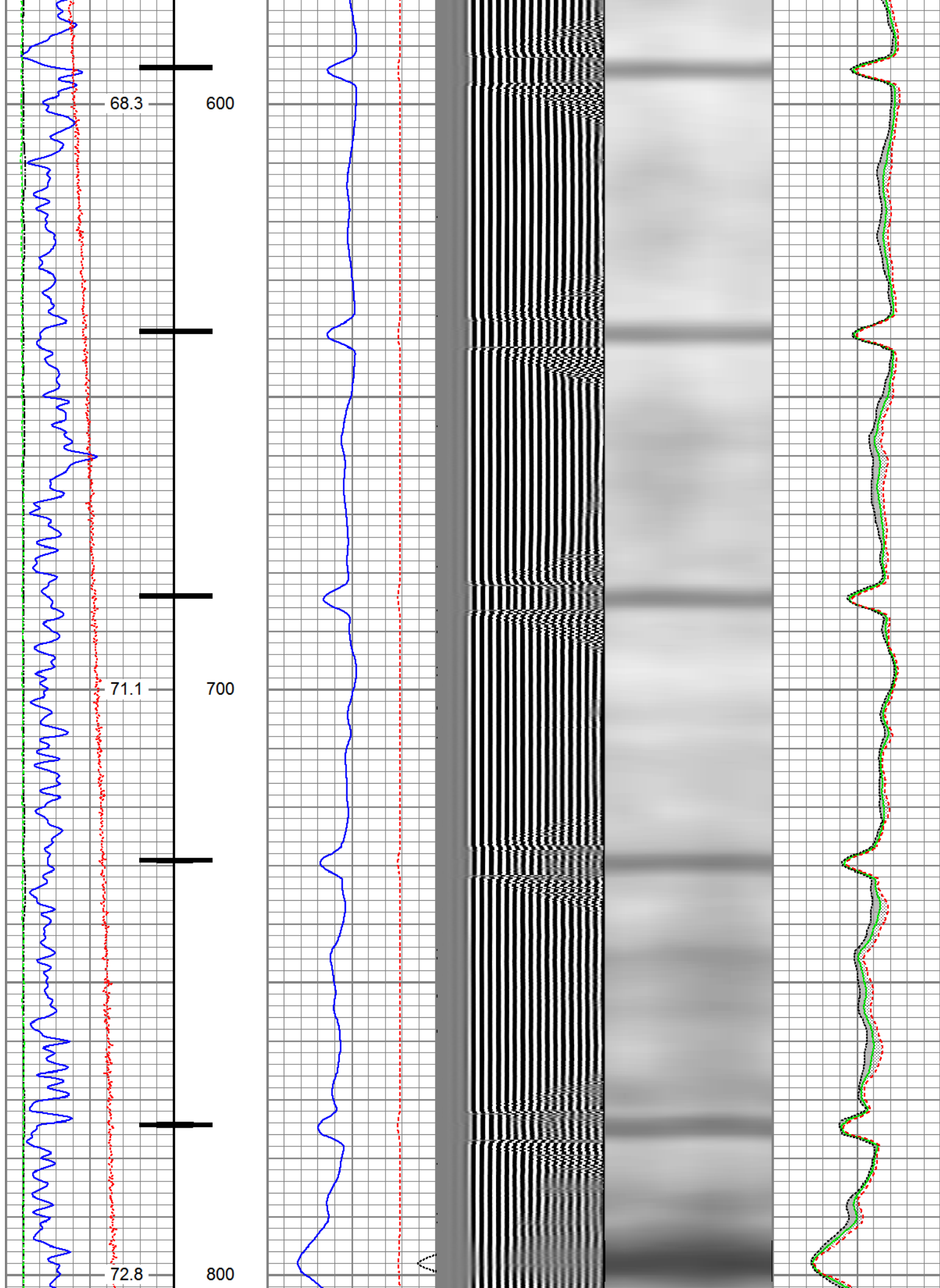
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Mimimum Amplitude
	0 (mV) 20			0 100
Temperature	3' Travel Time			Maximum Amplitude
0 (degF) 20	650 (usec) 150			0 100
Line Speed				
-150 (ft/min)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

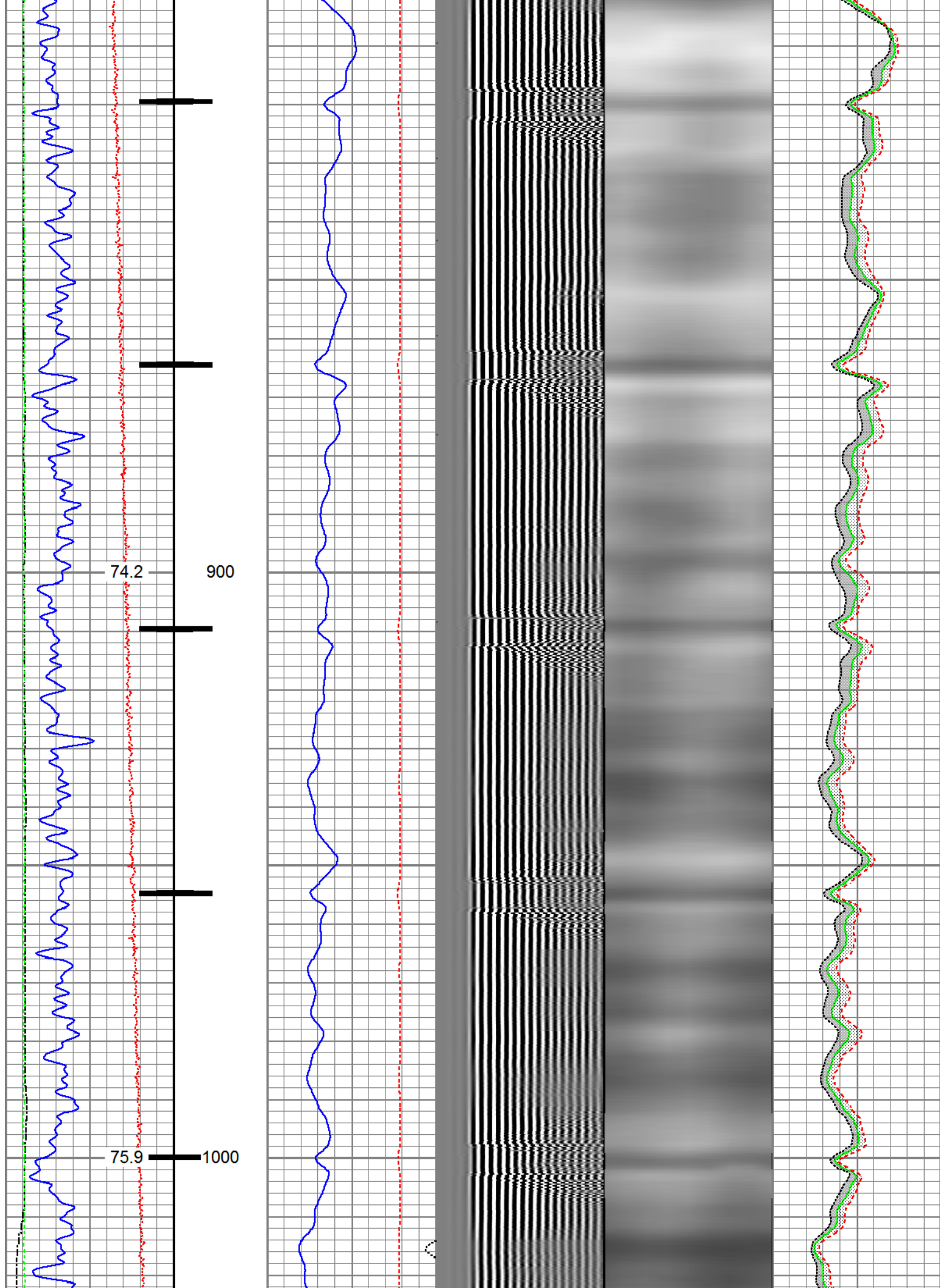


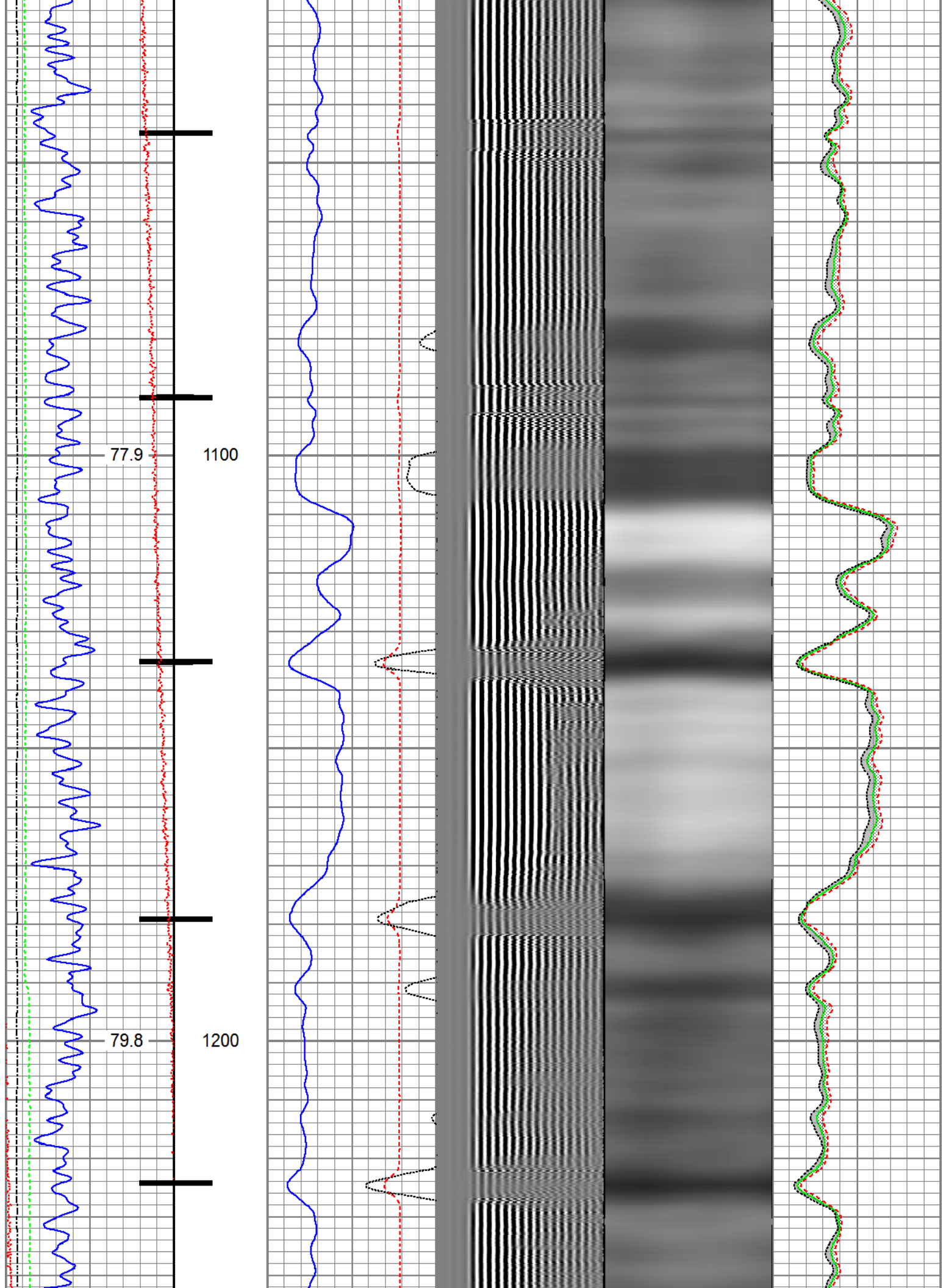


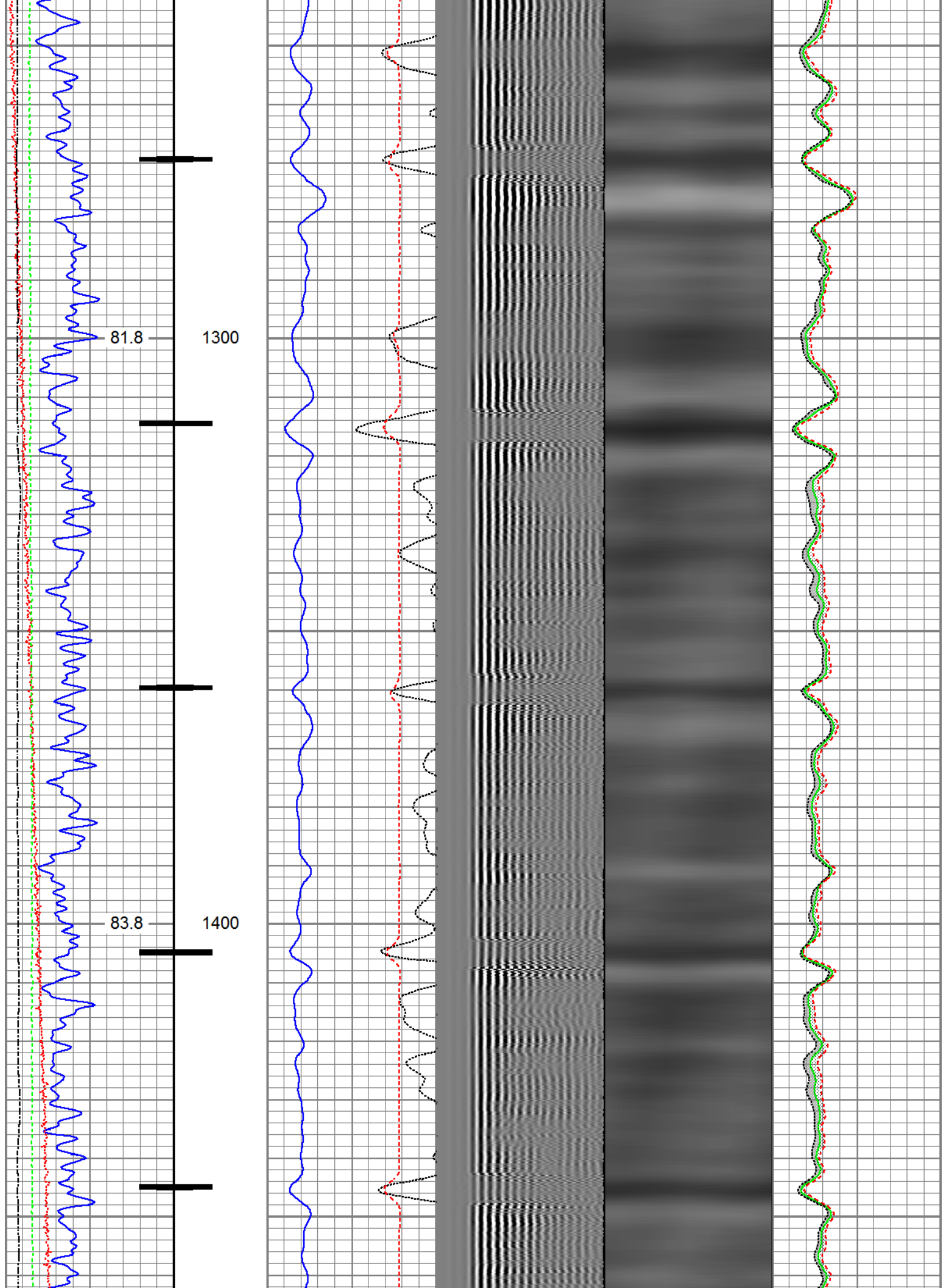




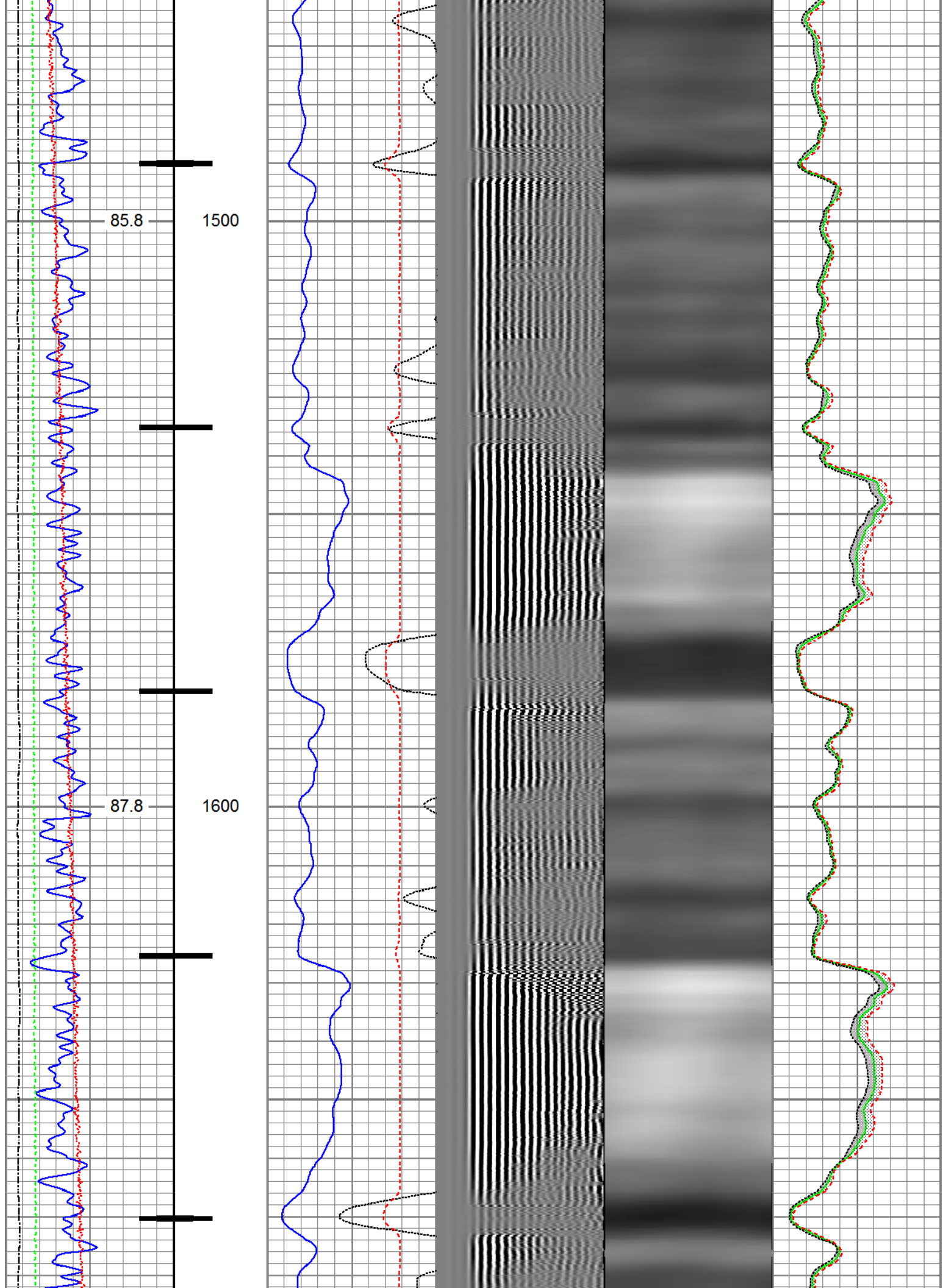




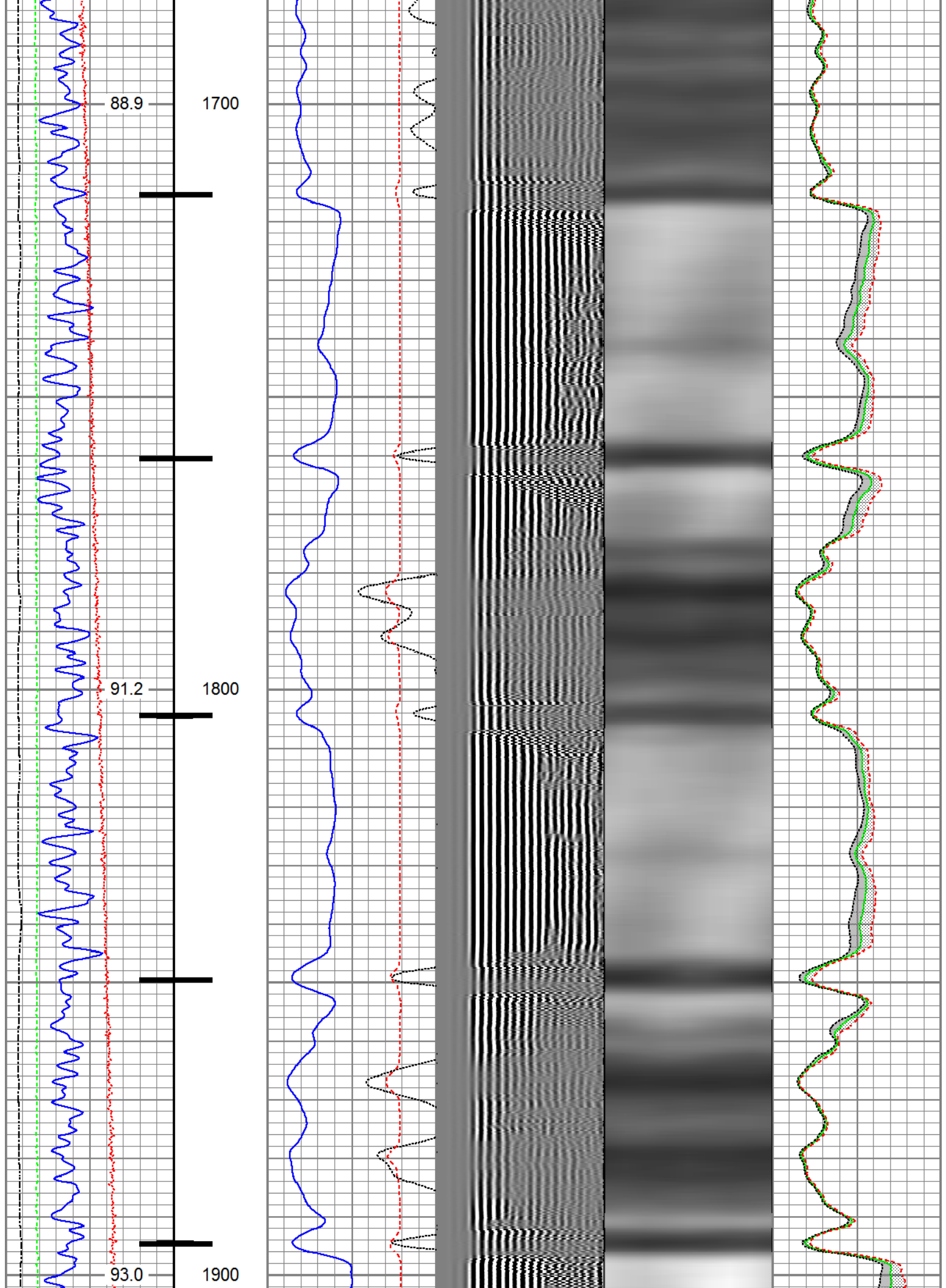


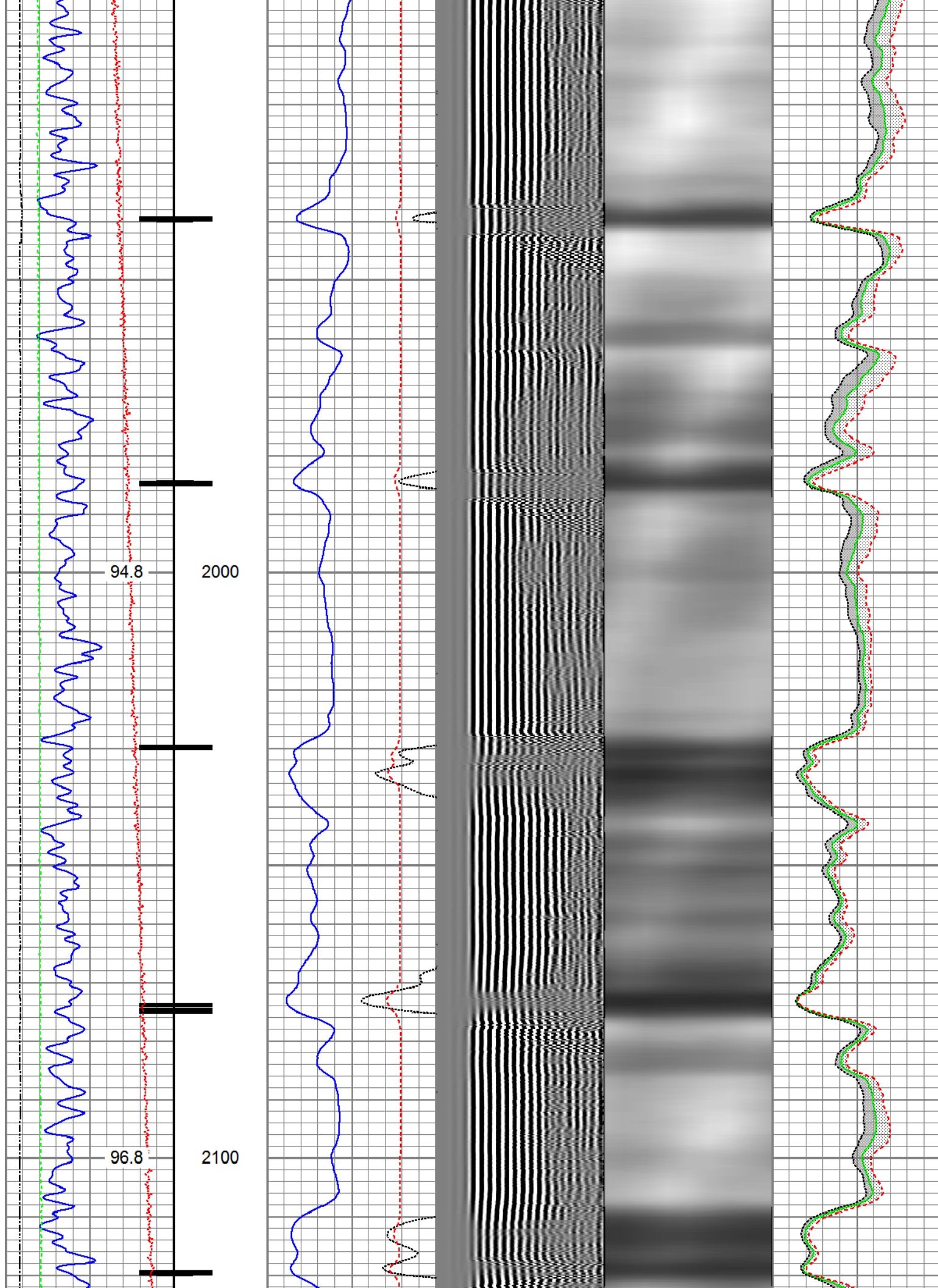


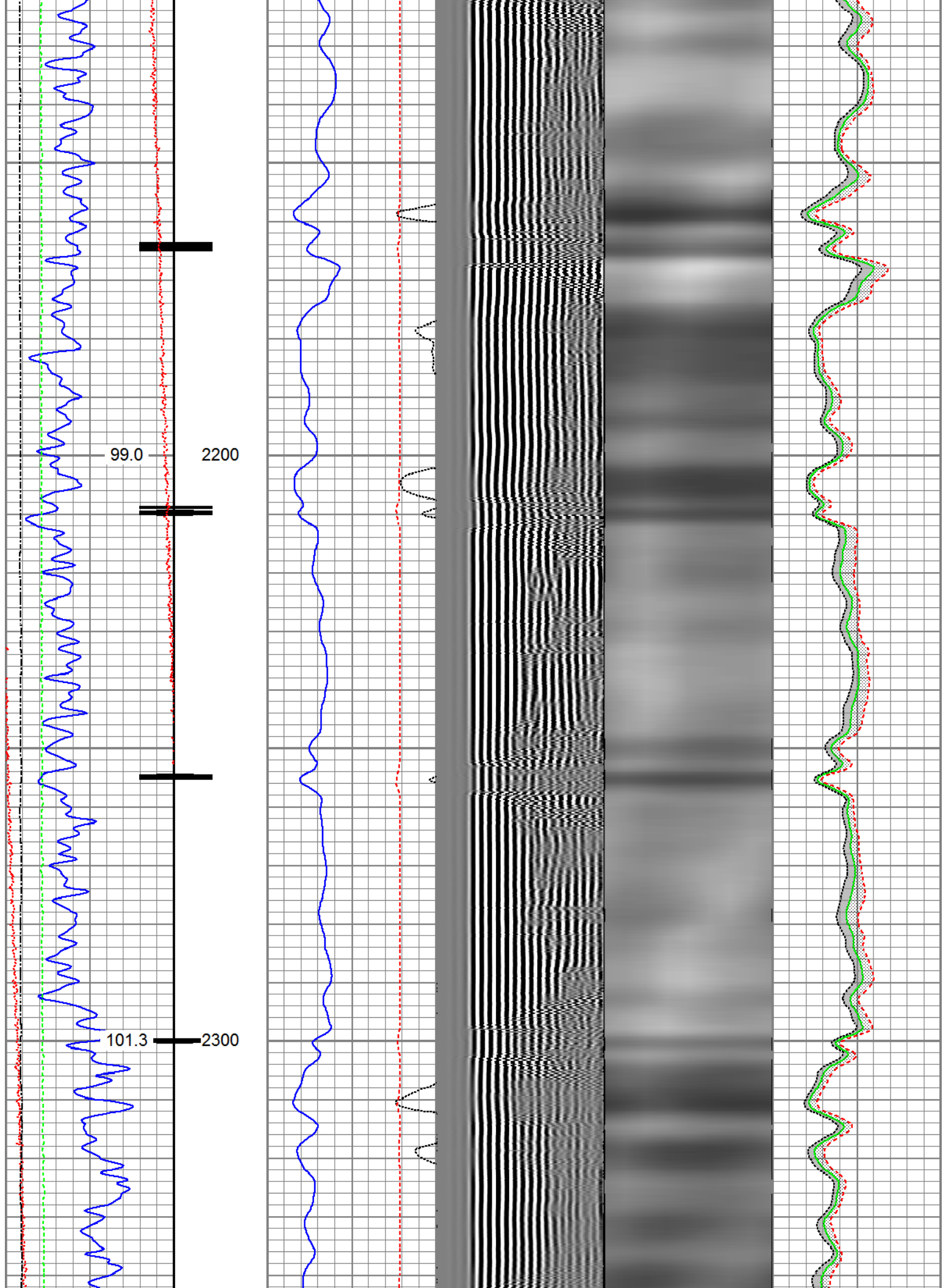




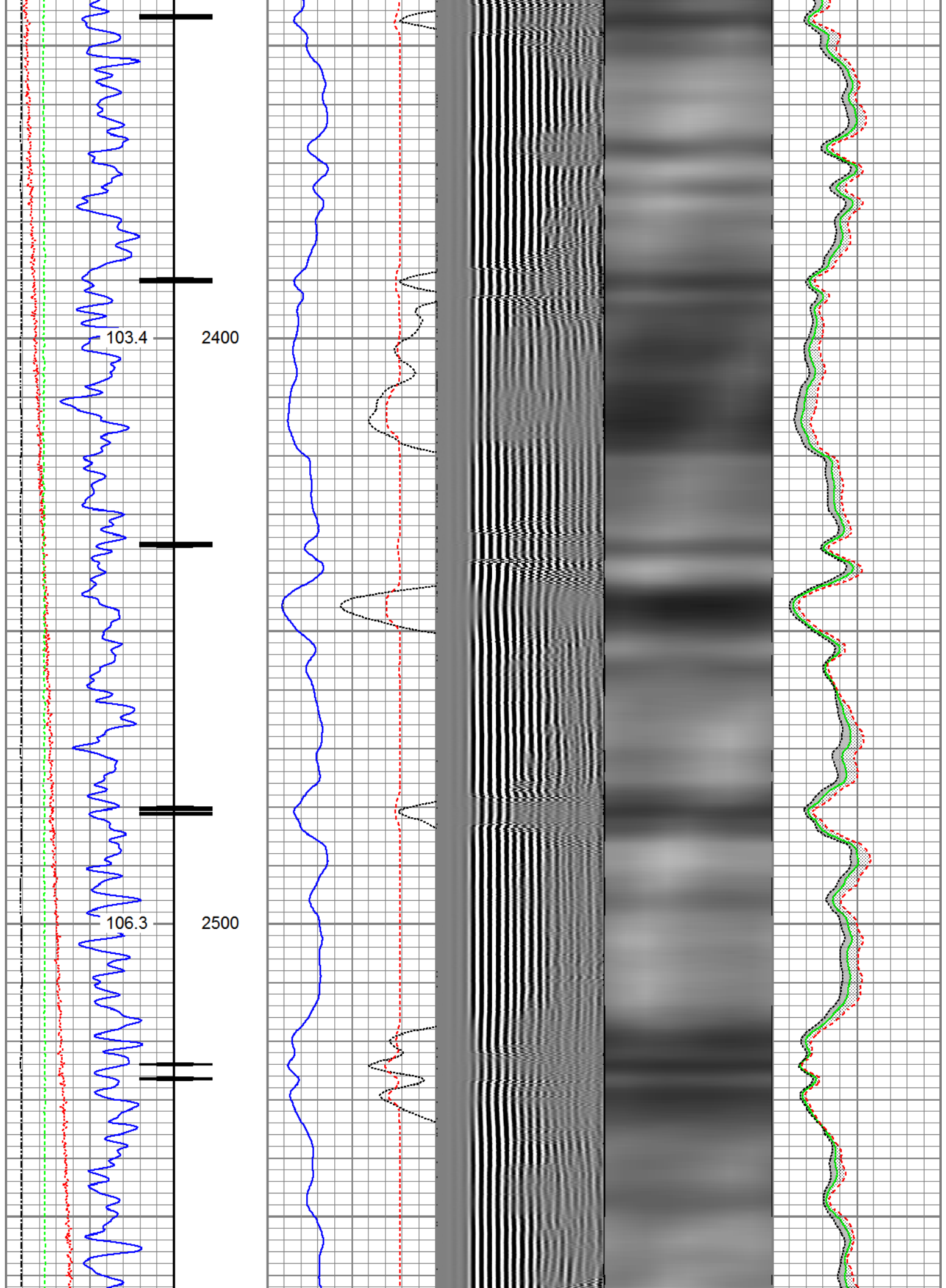


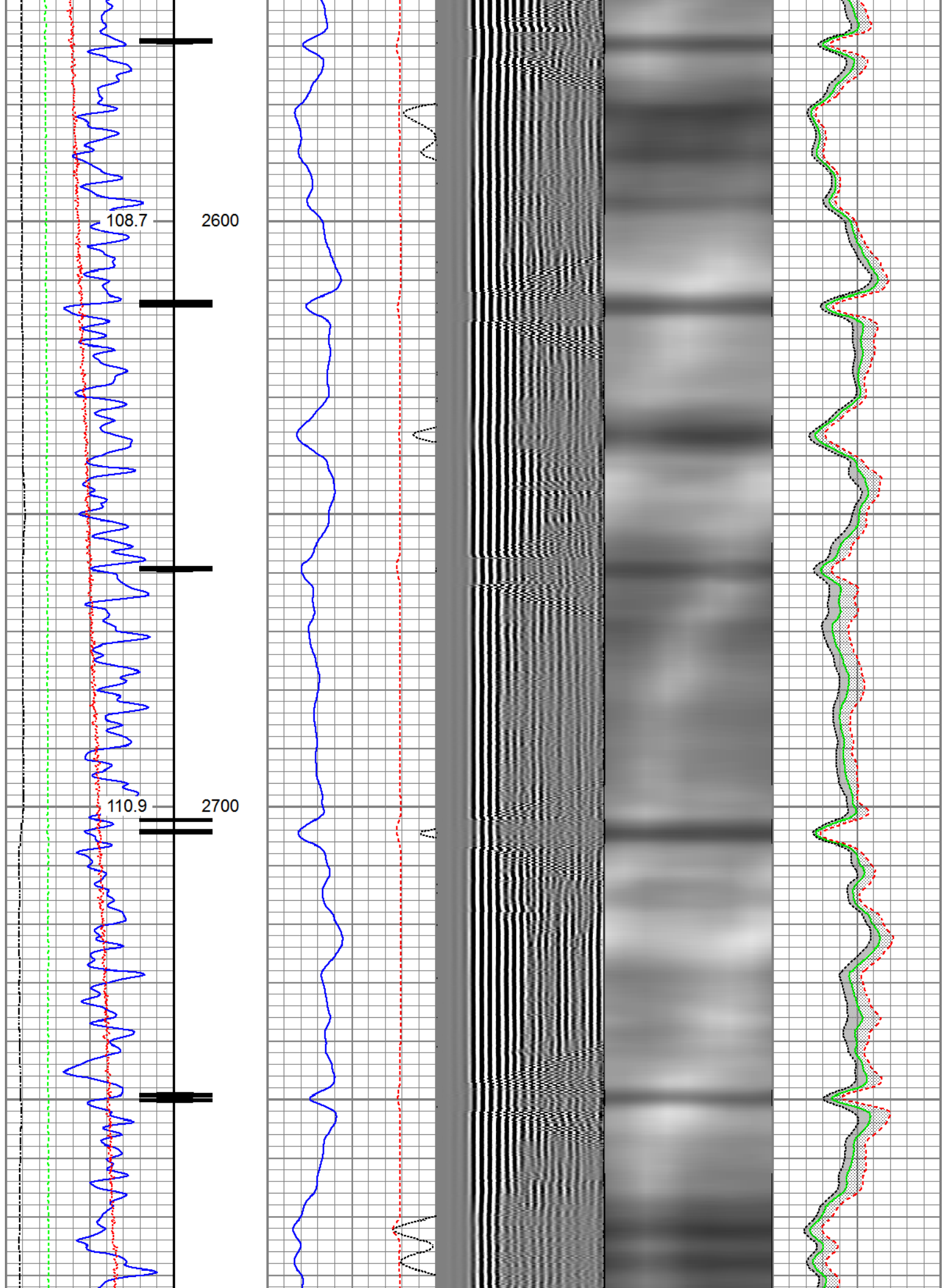




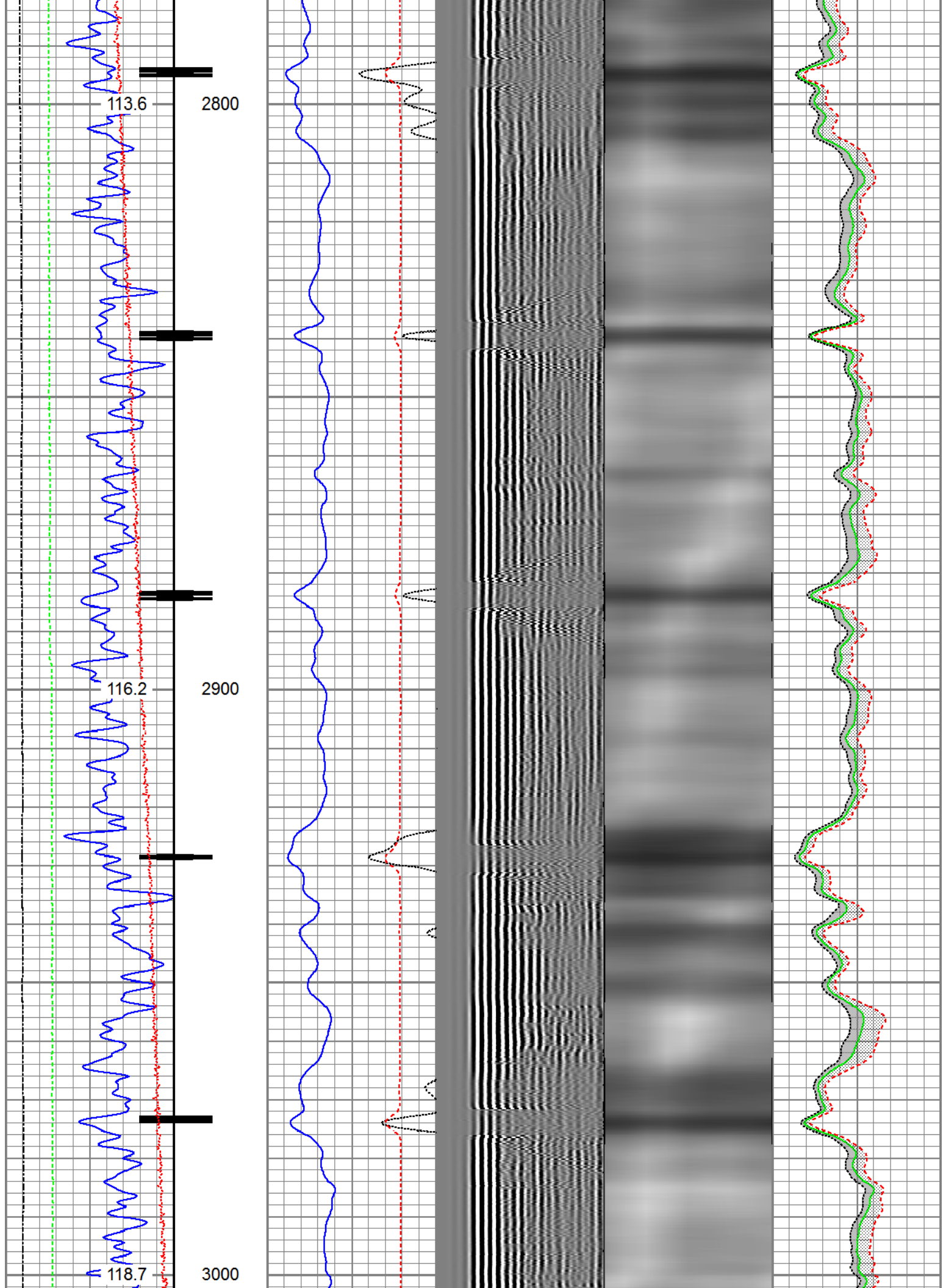


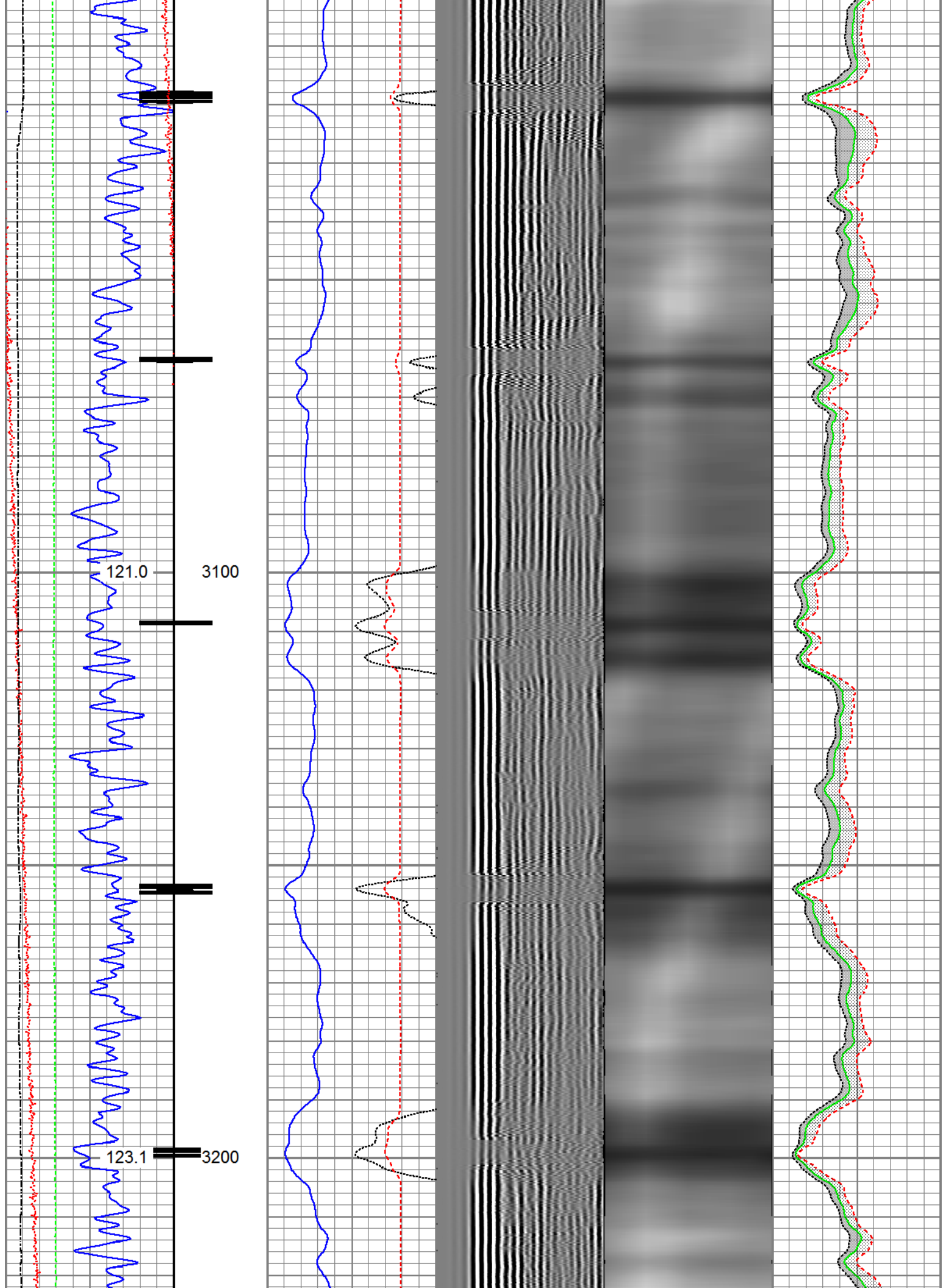


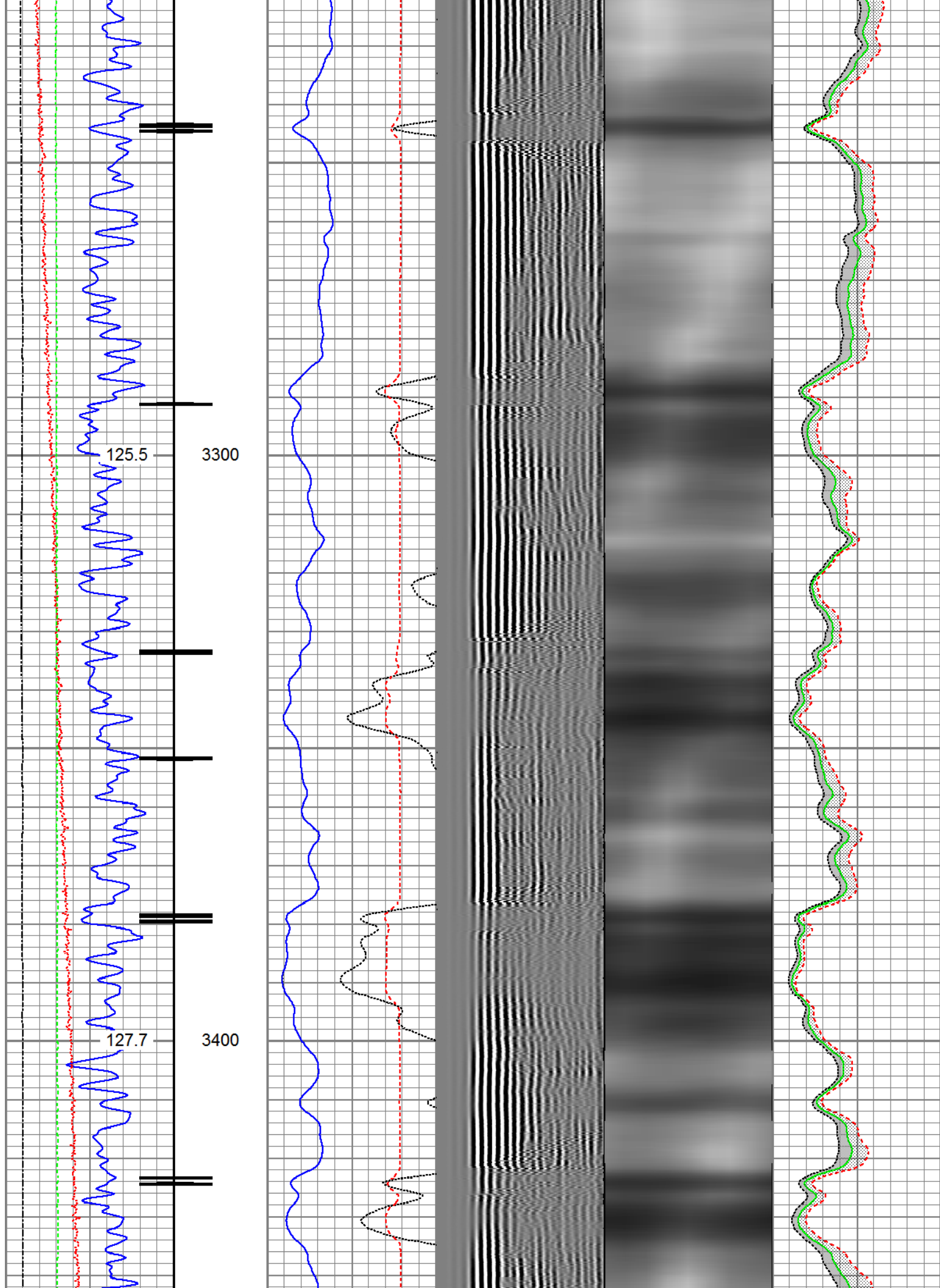




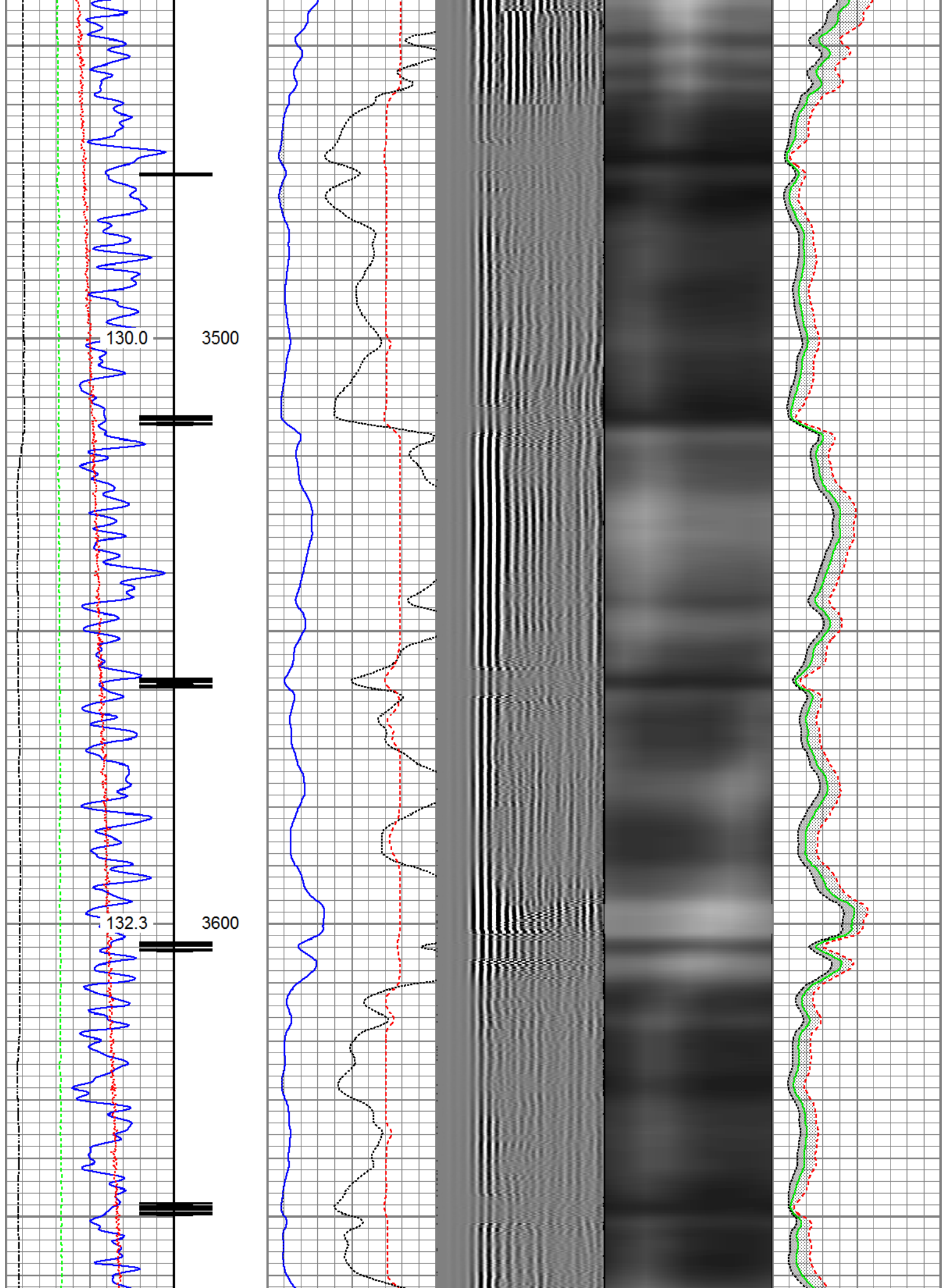


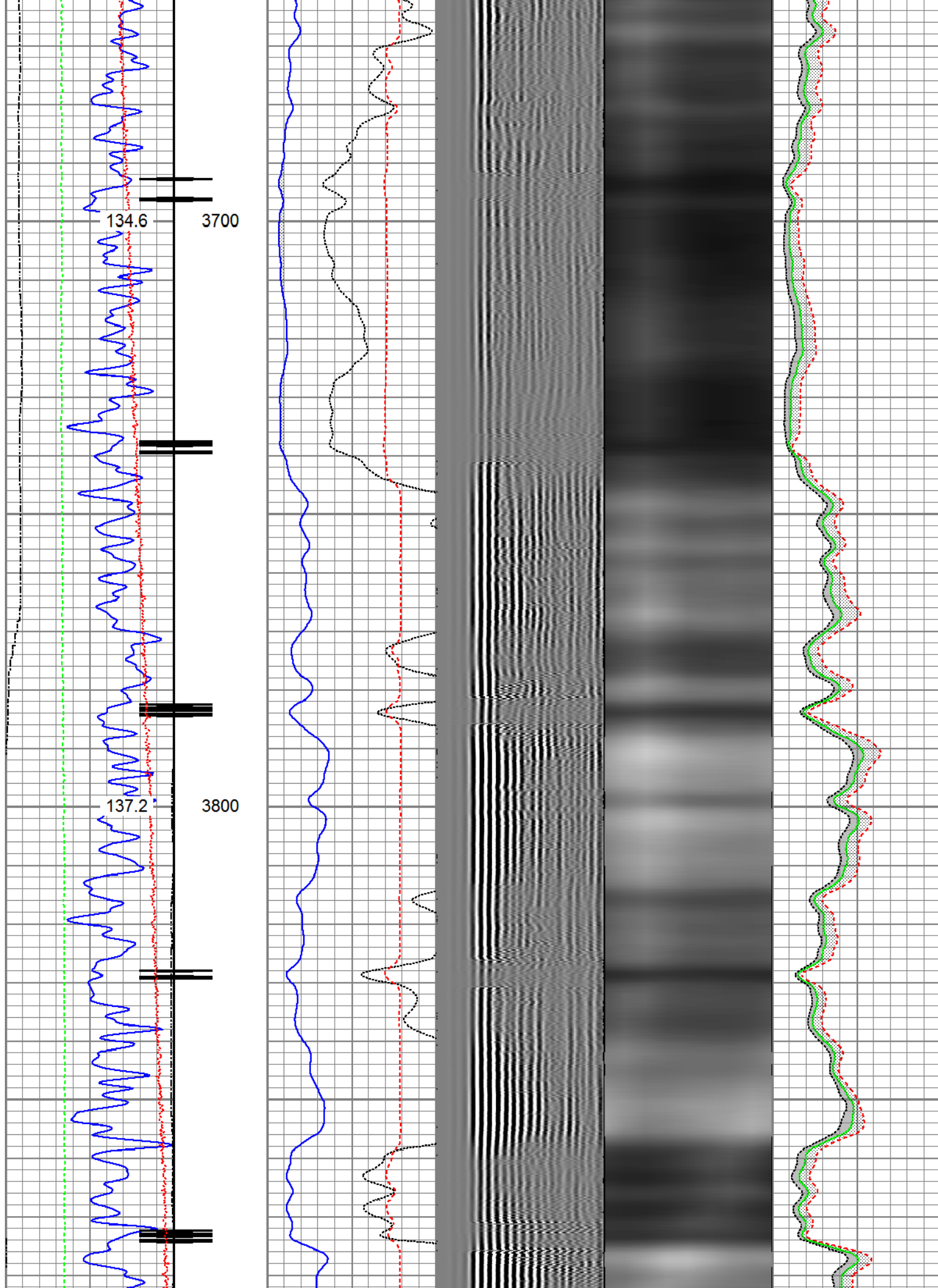




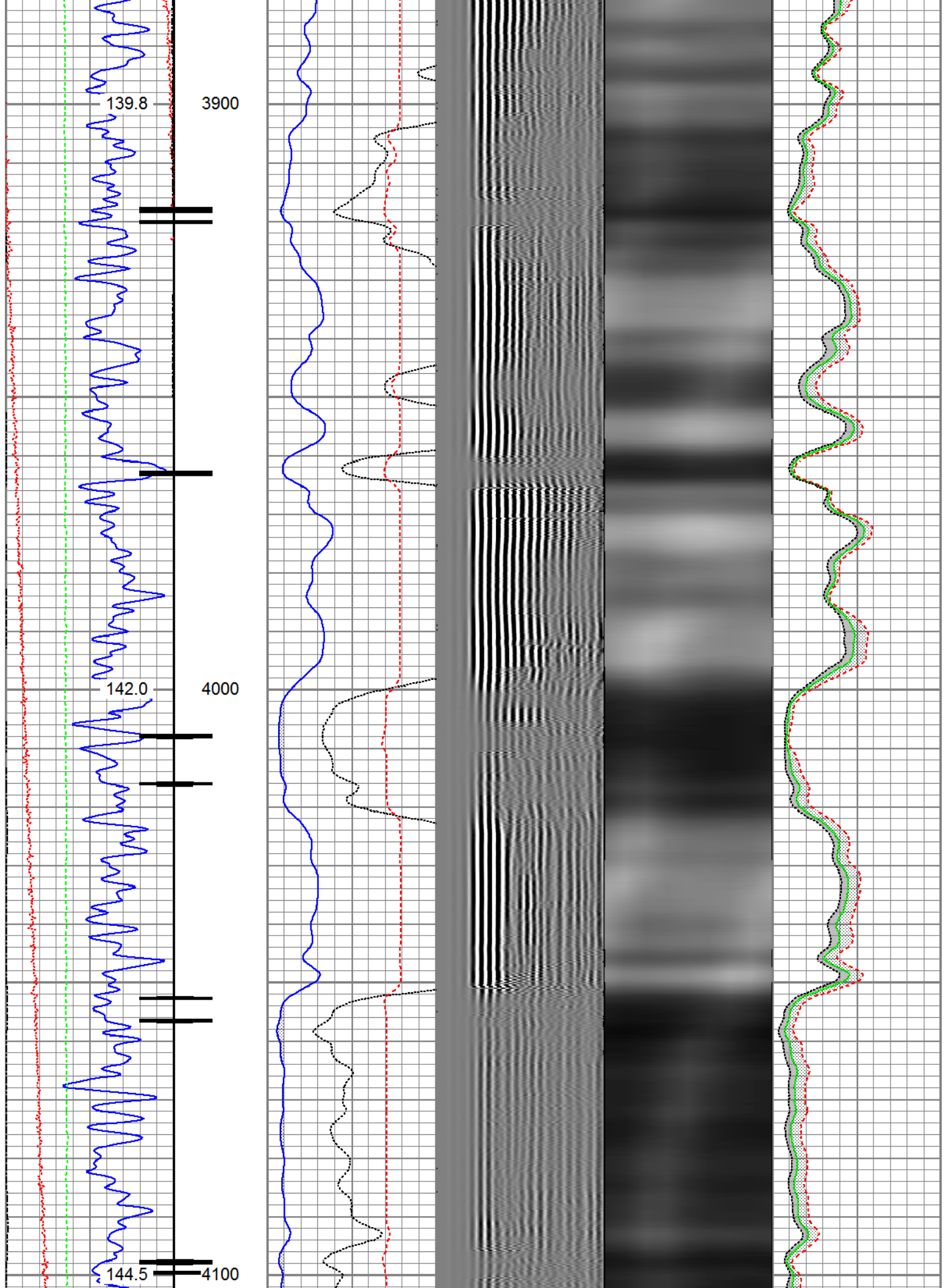


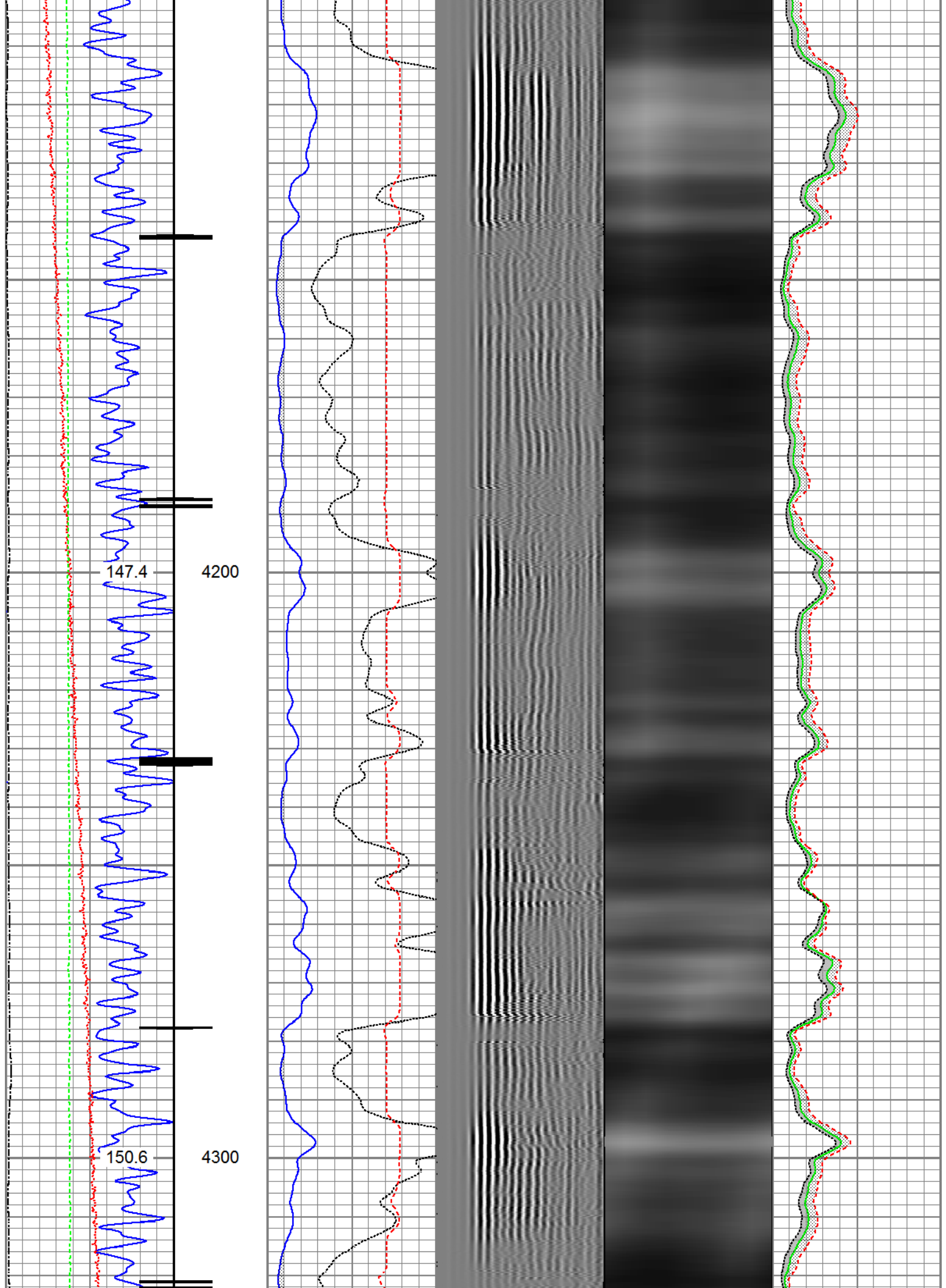


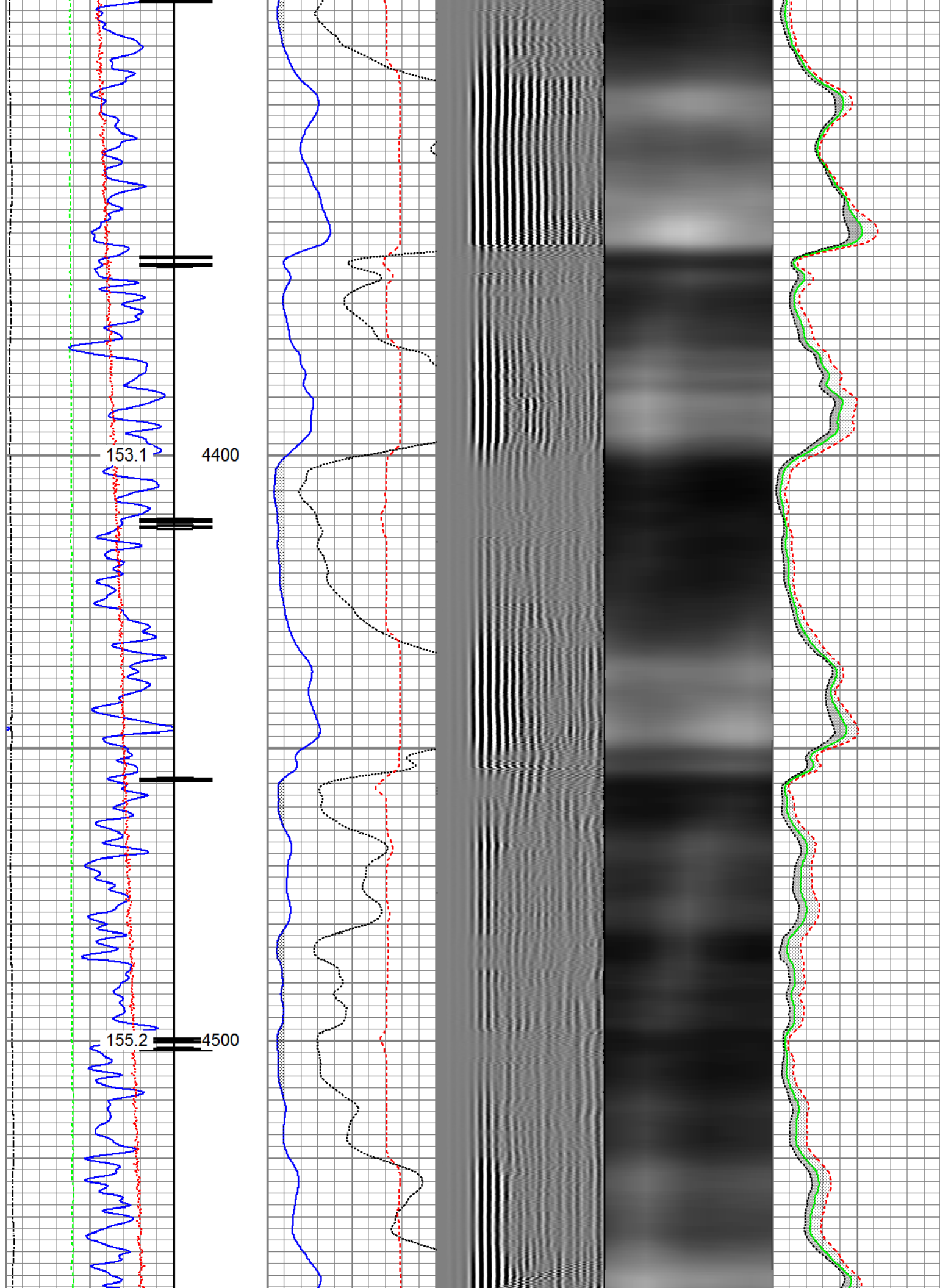


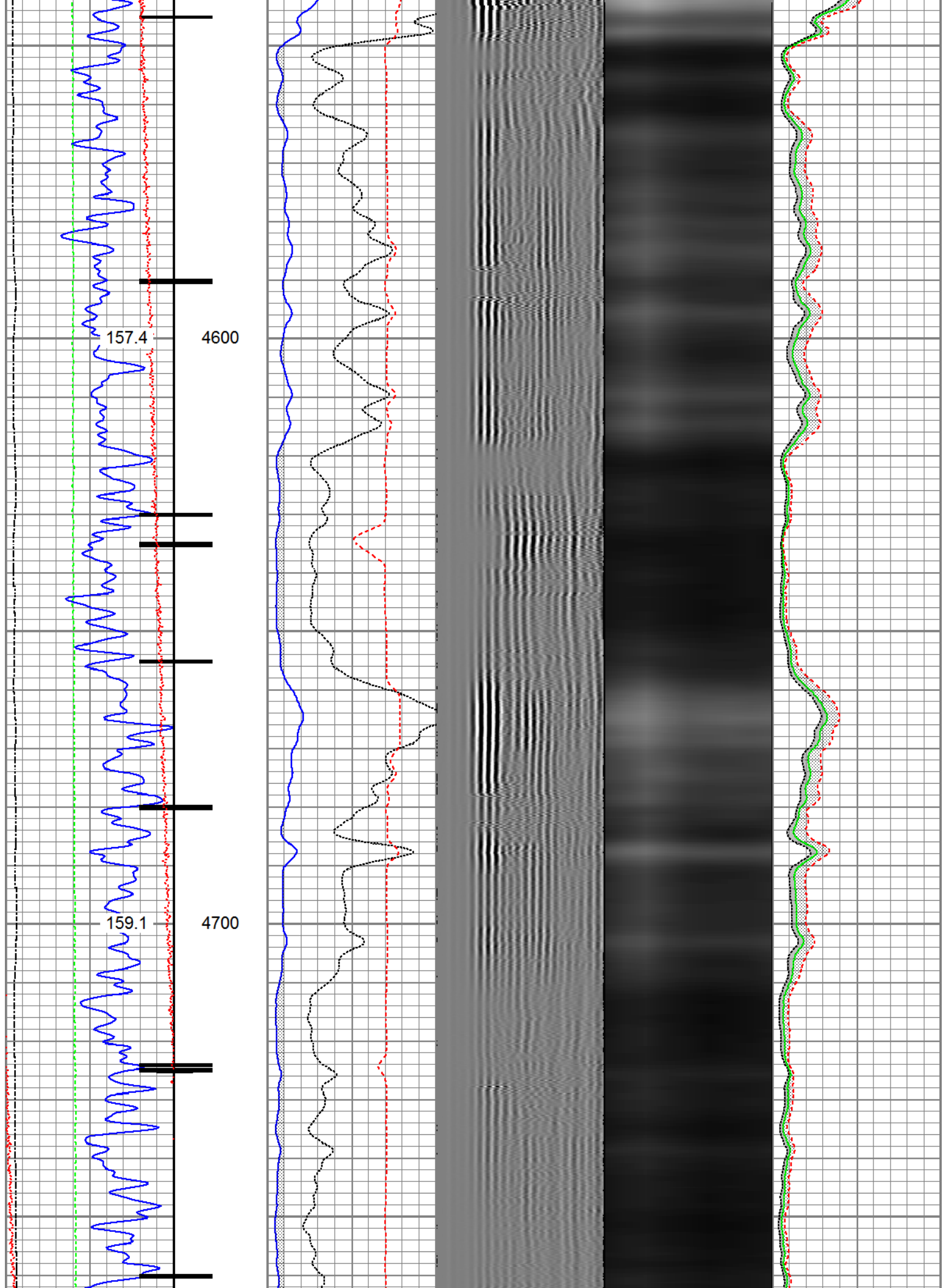




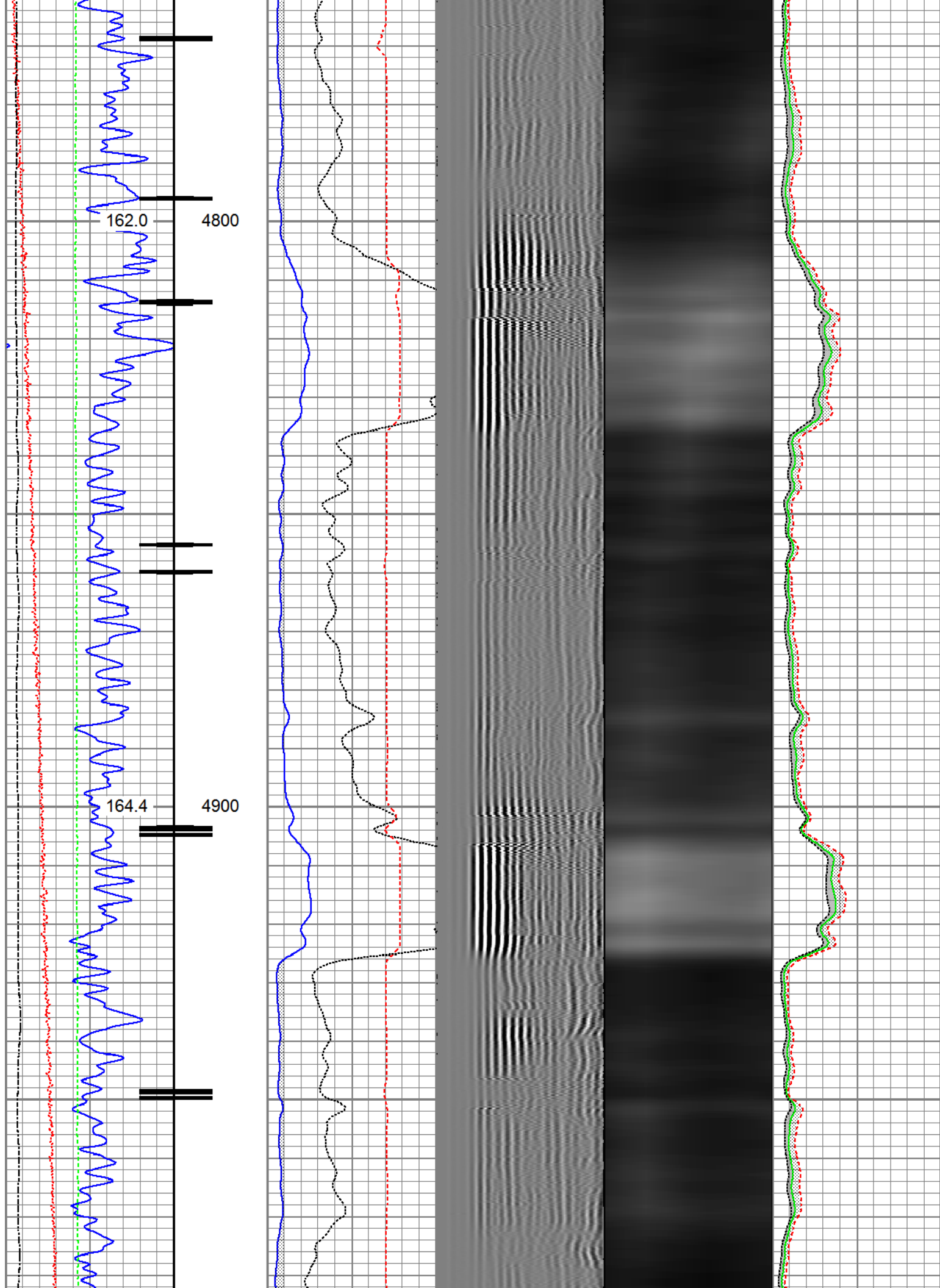




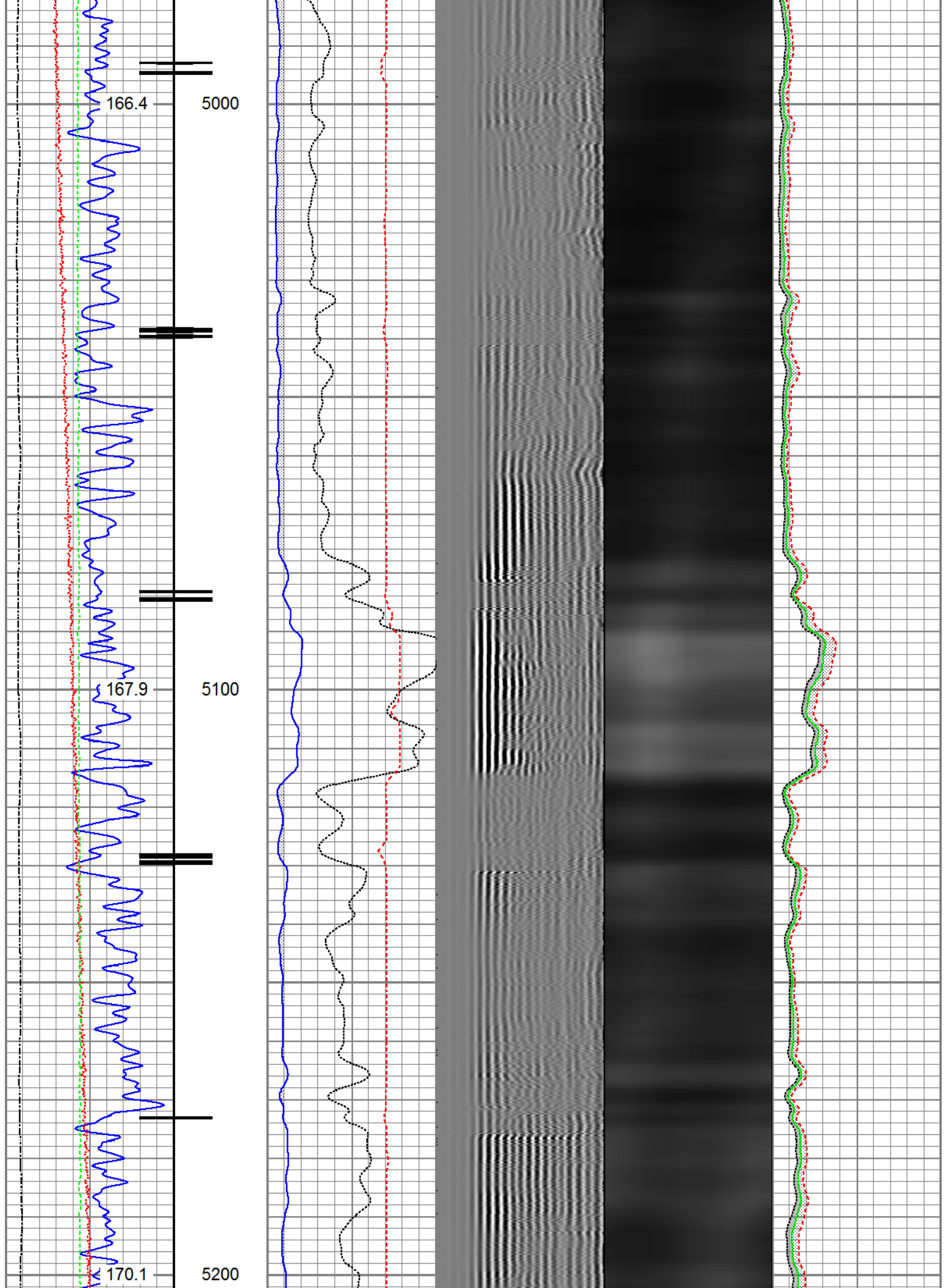


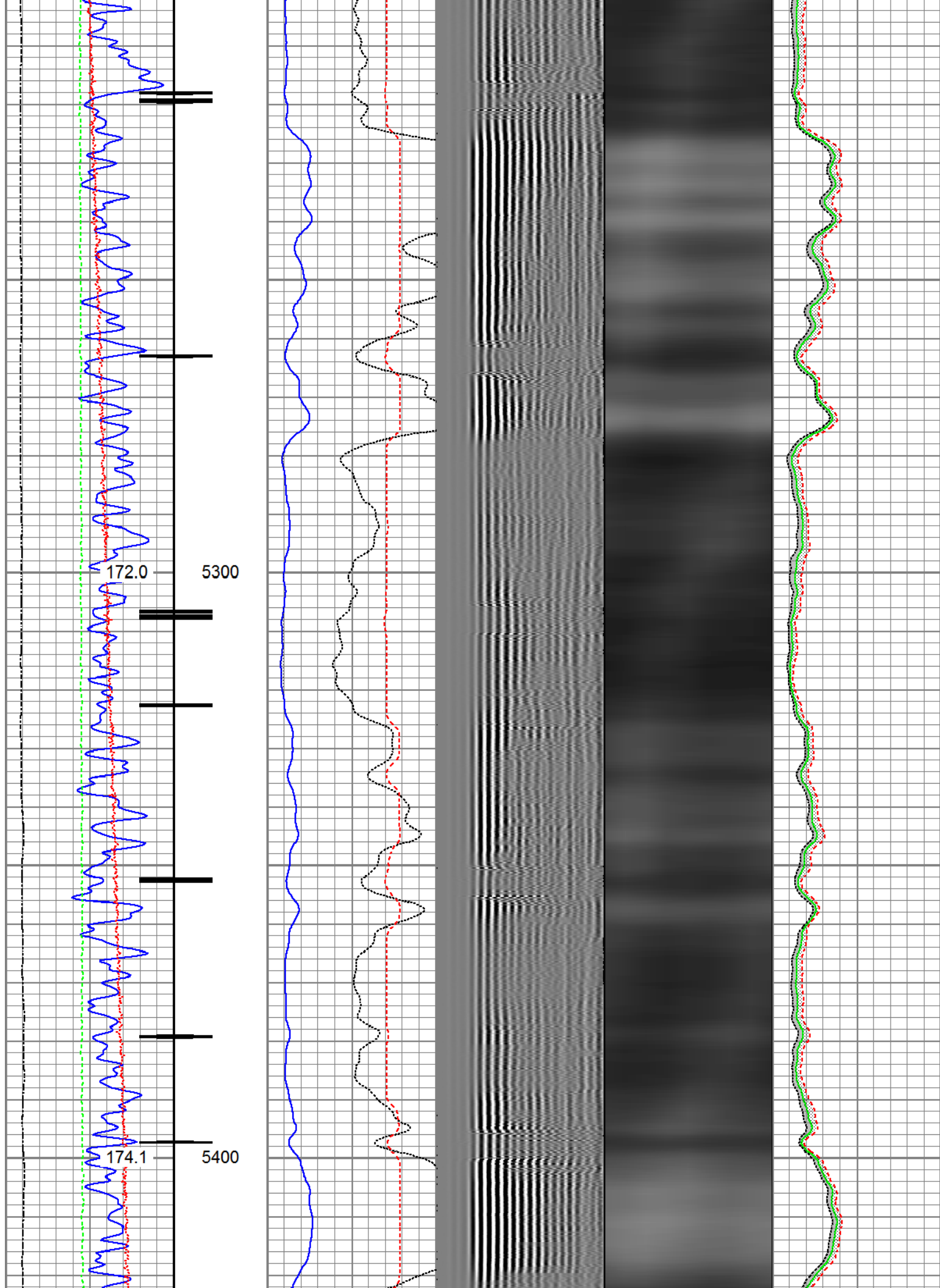


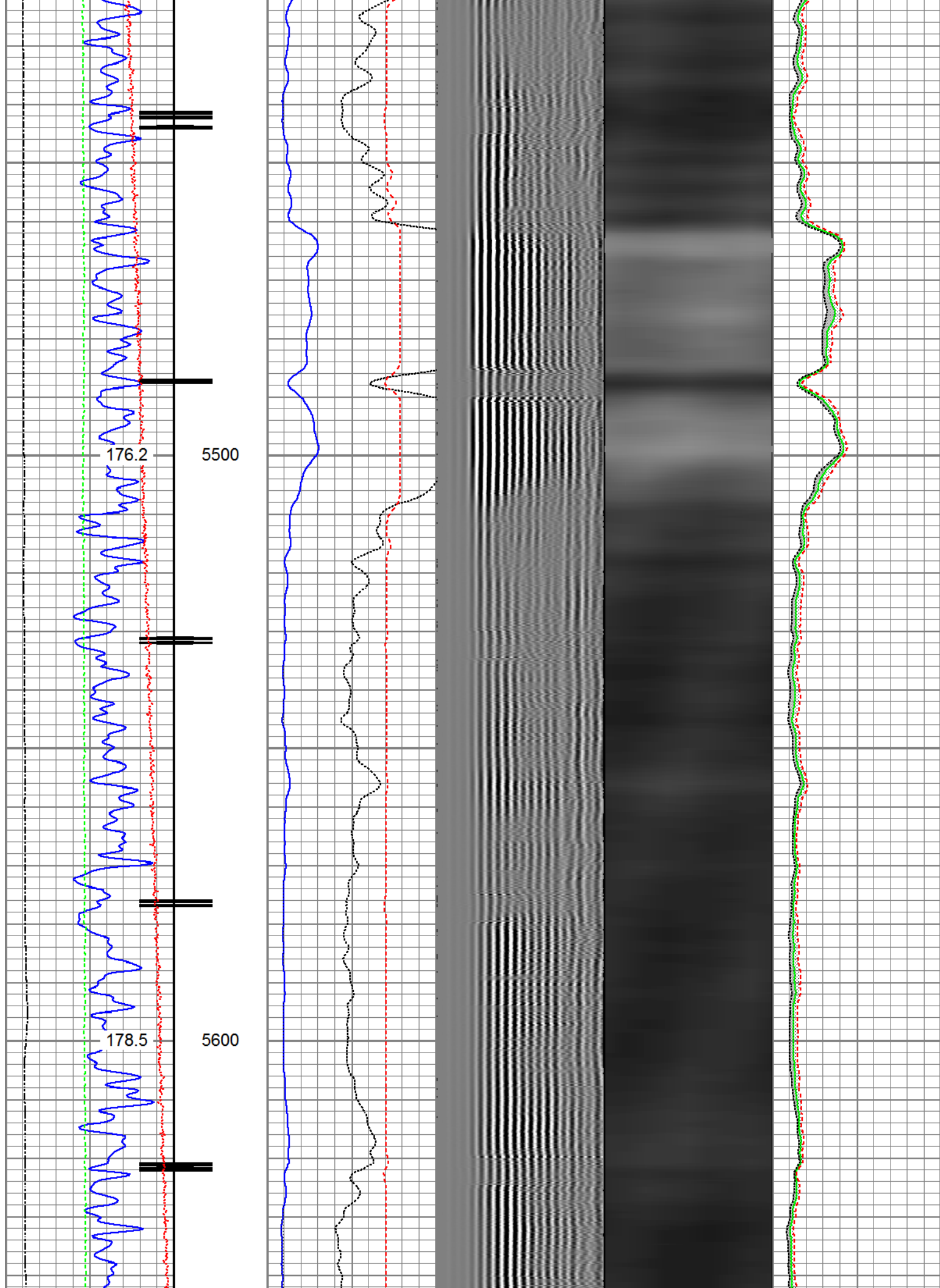


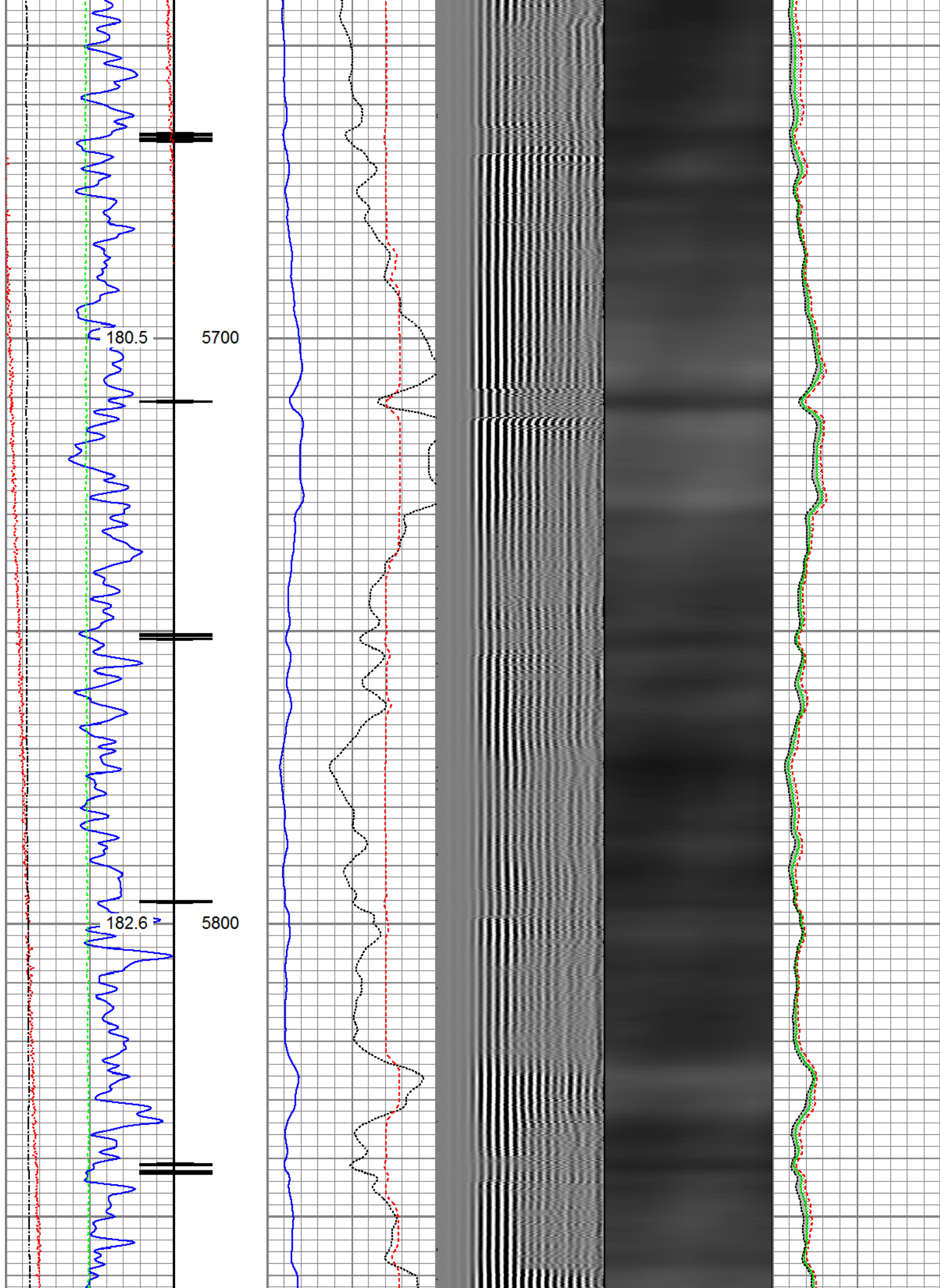




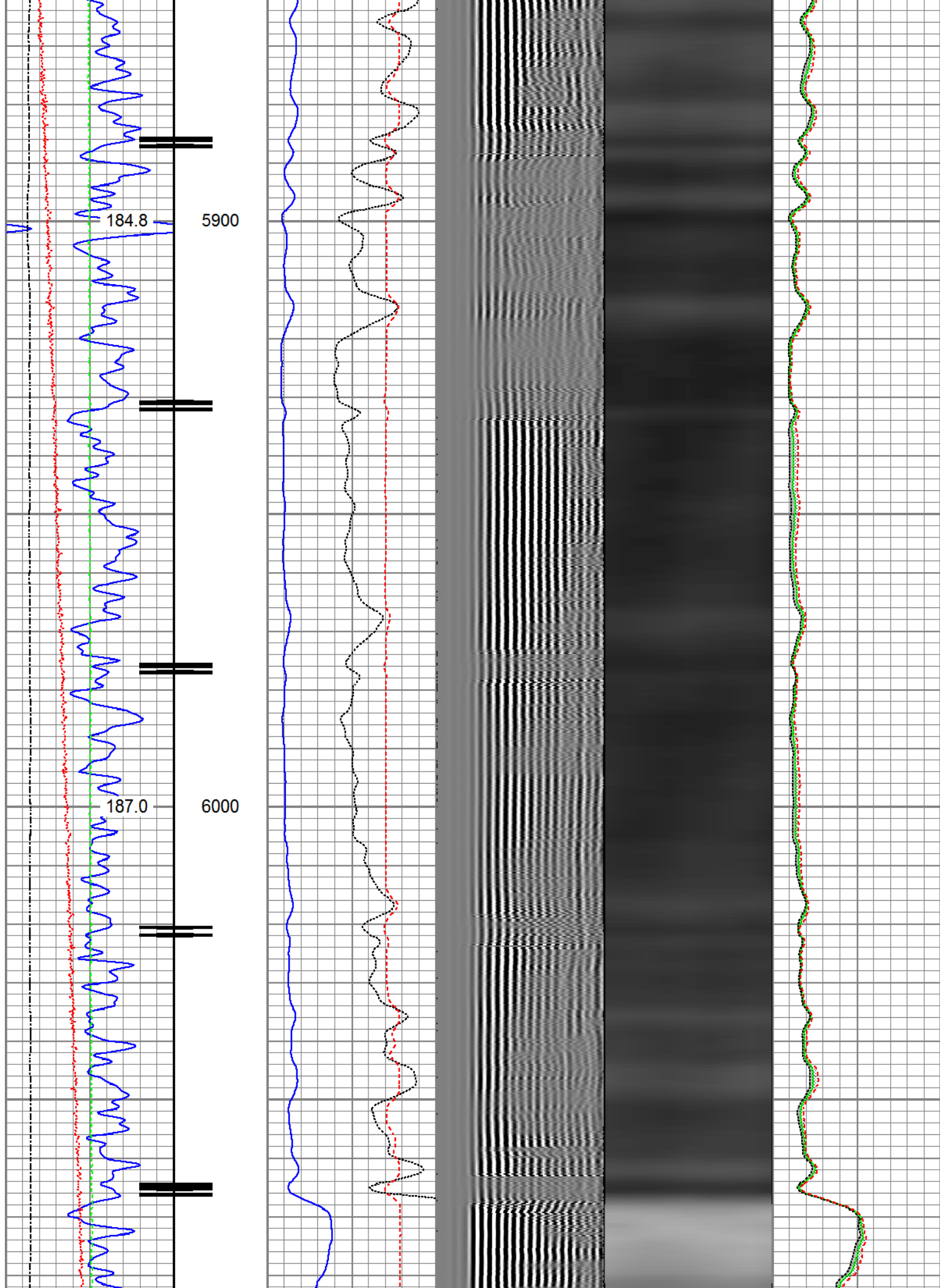


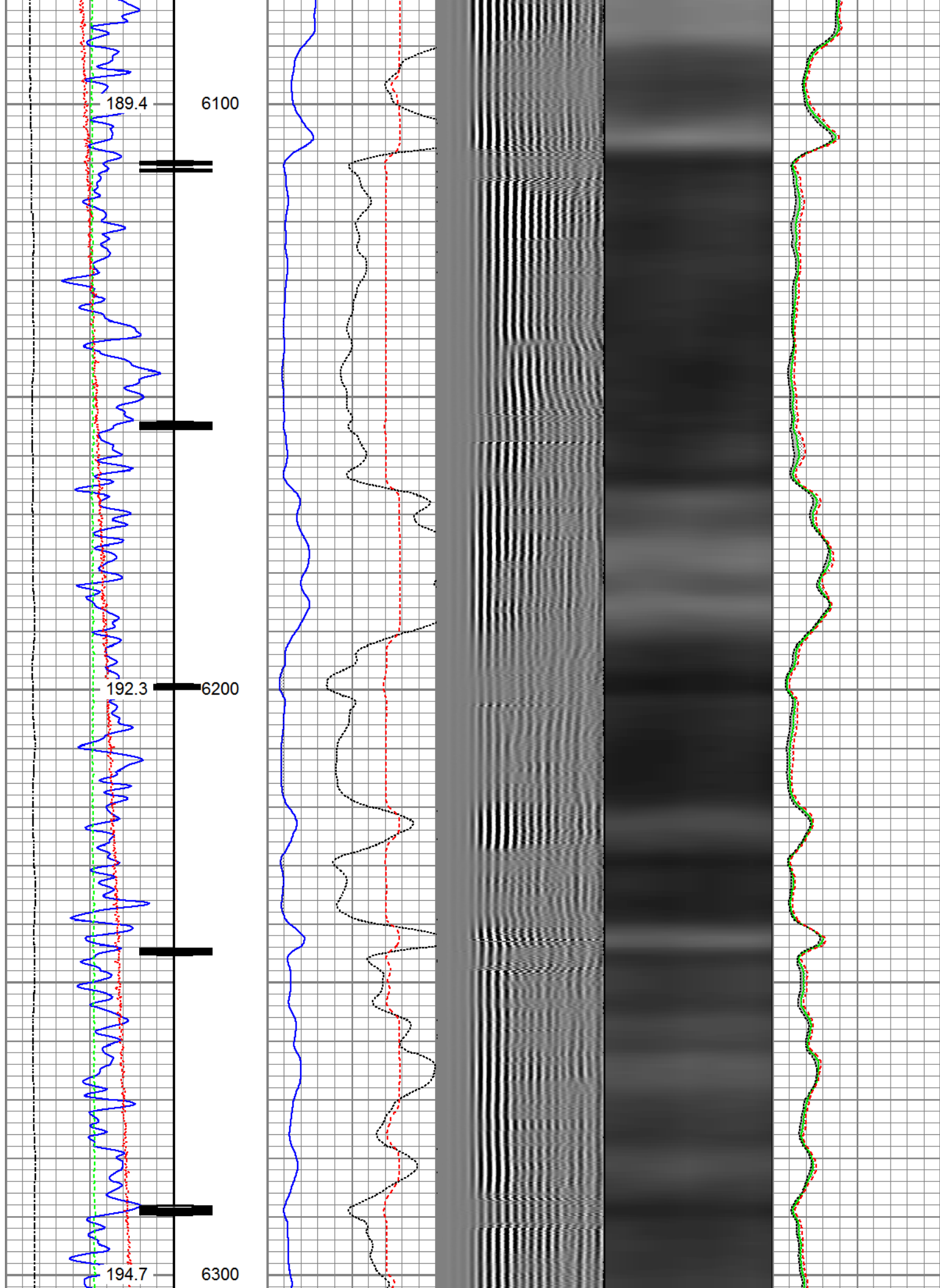


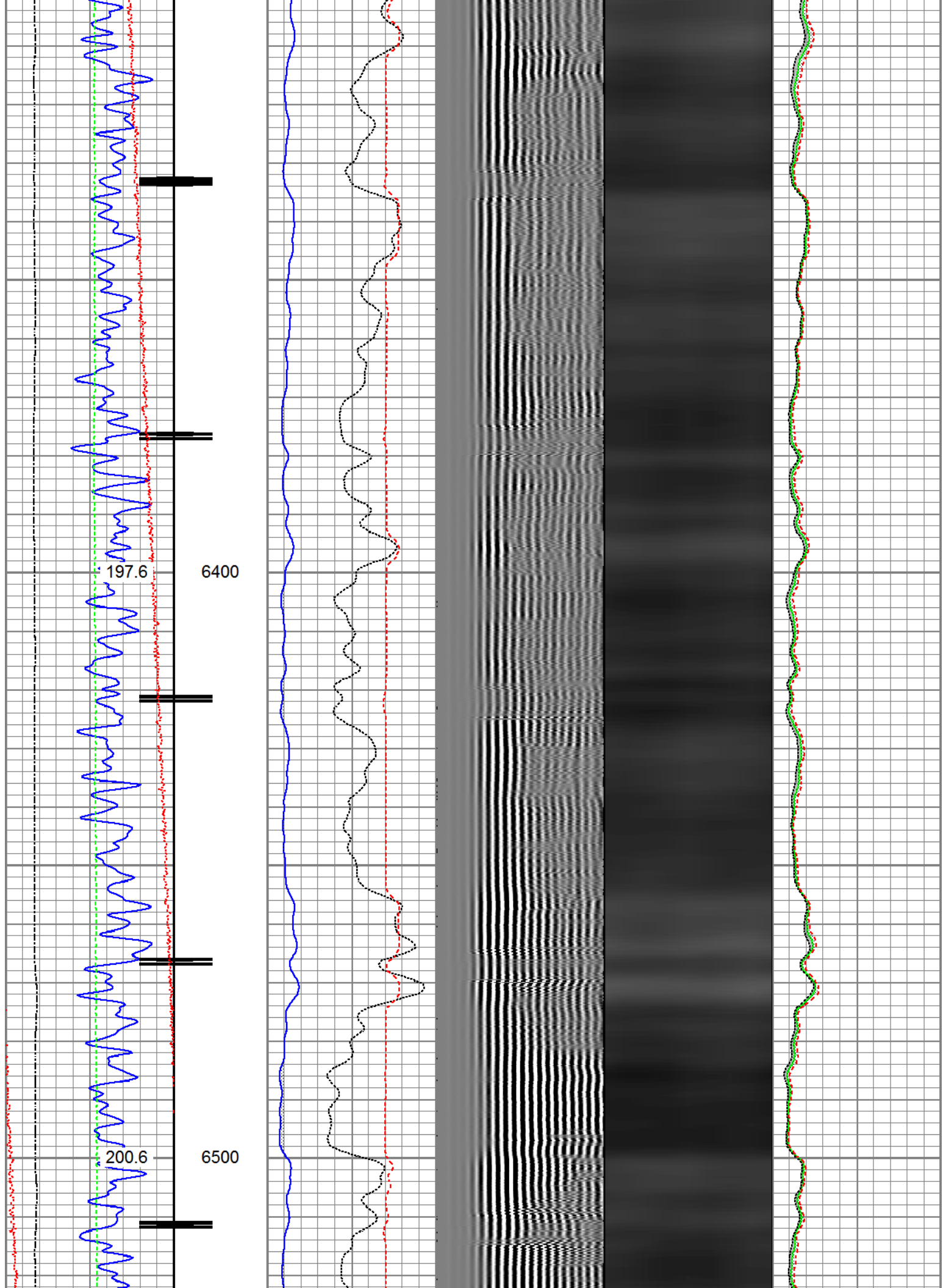


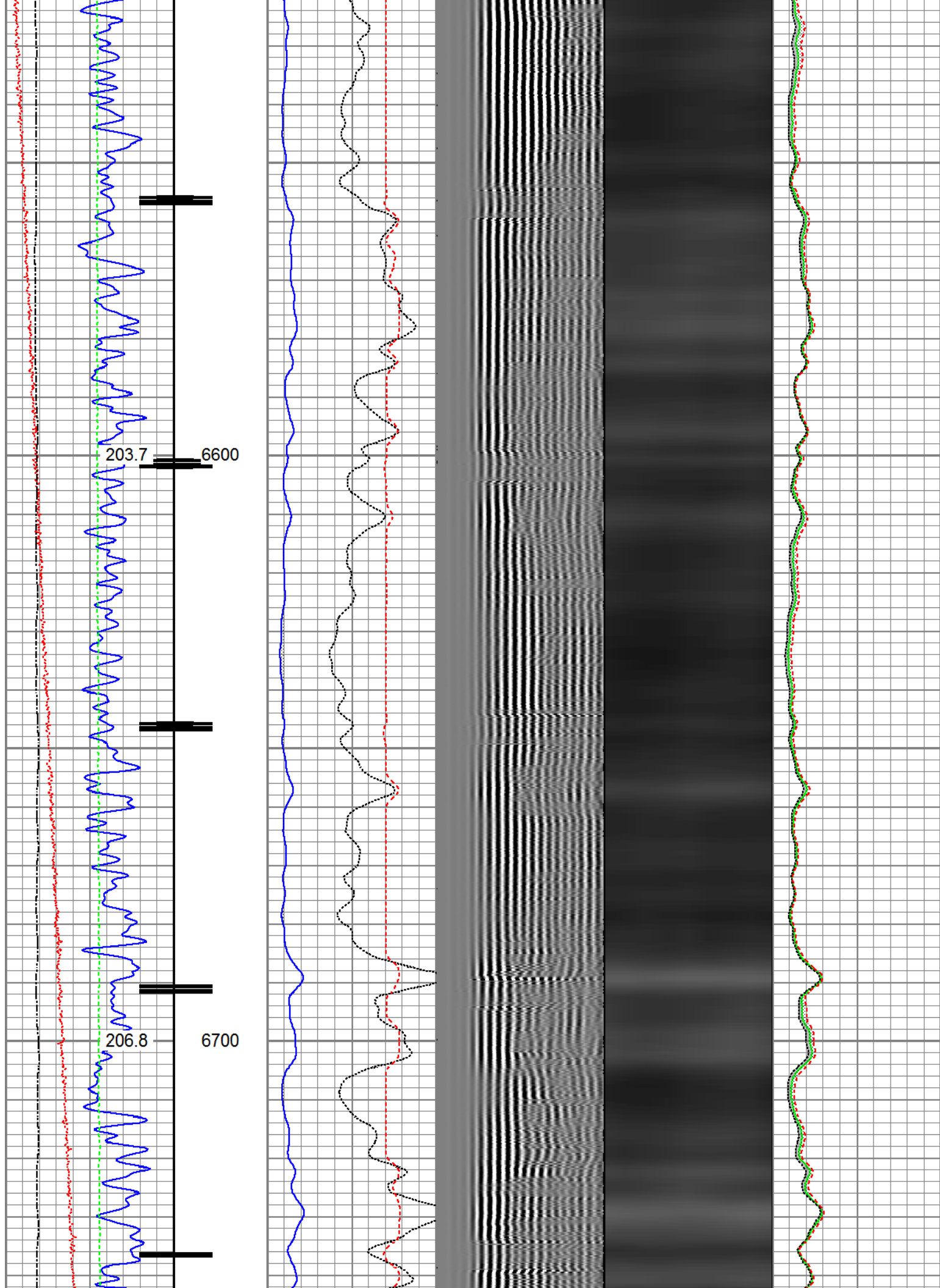




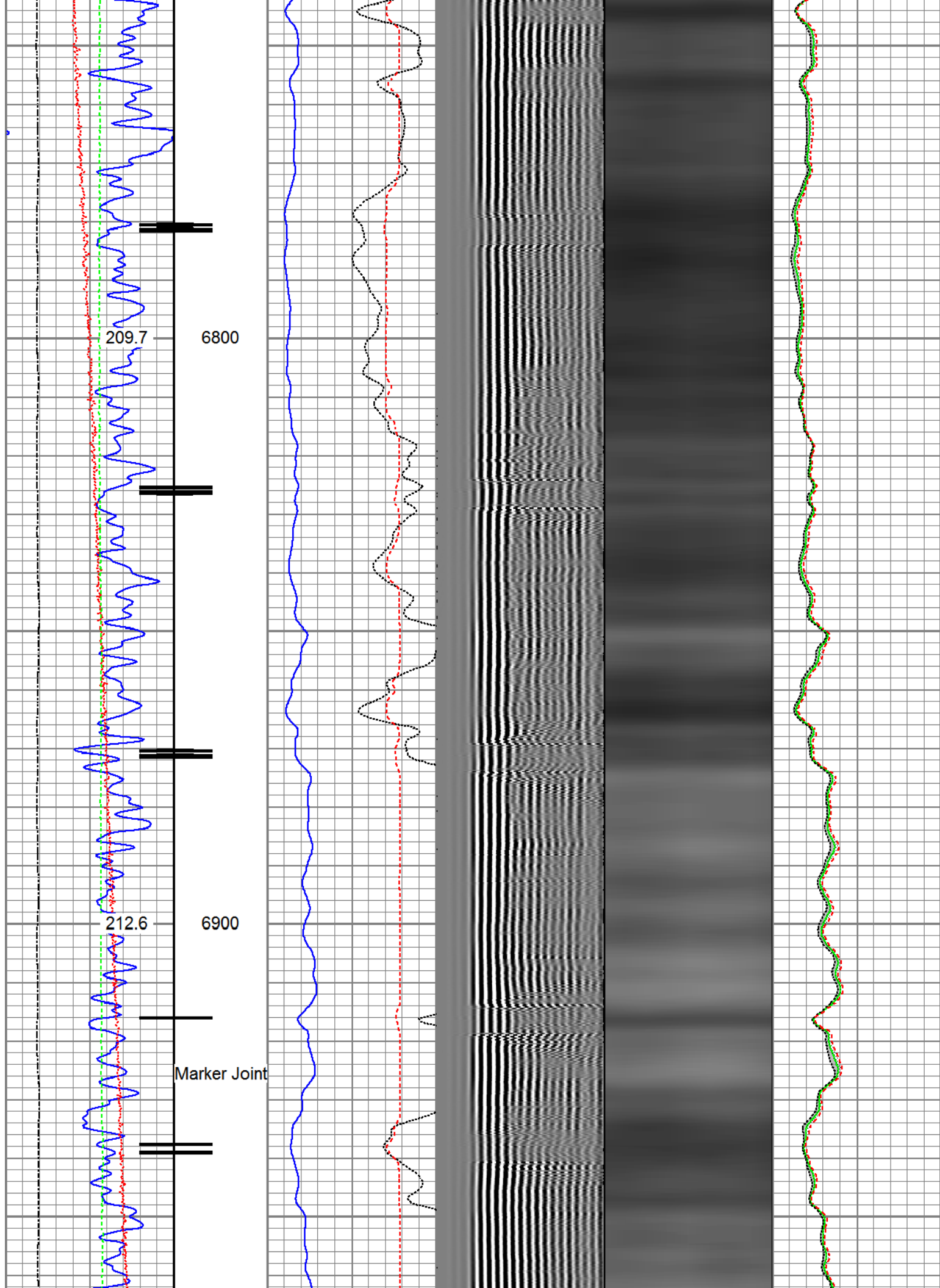


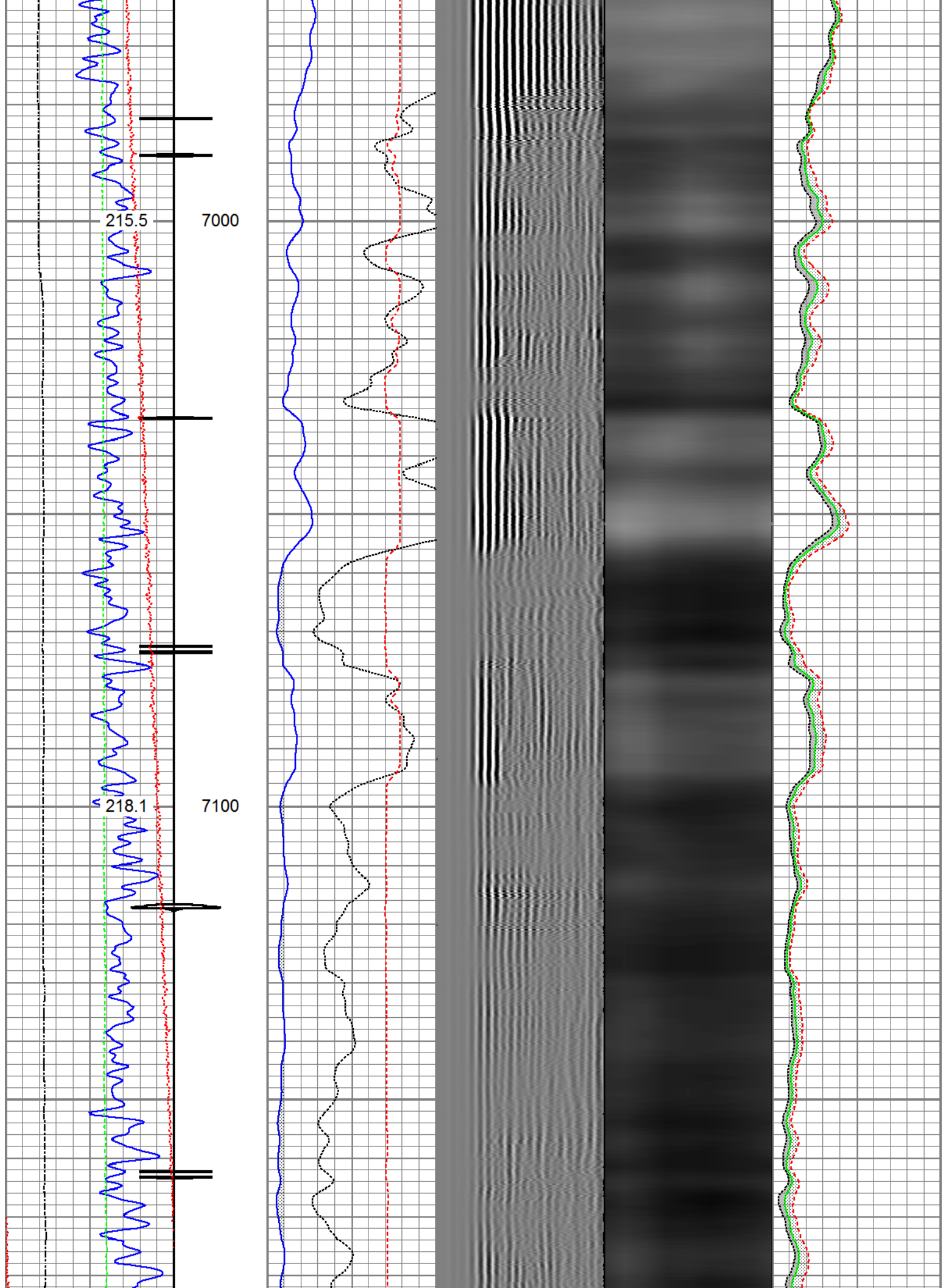


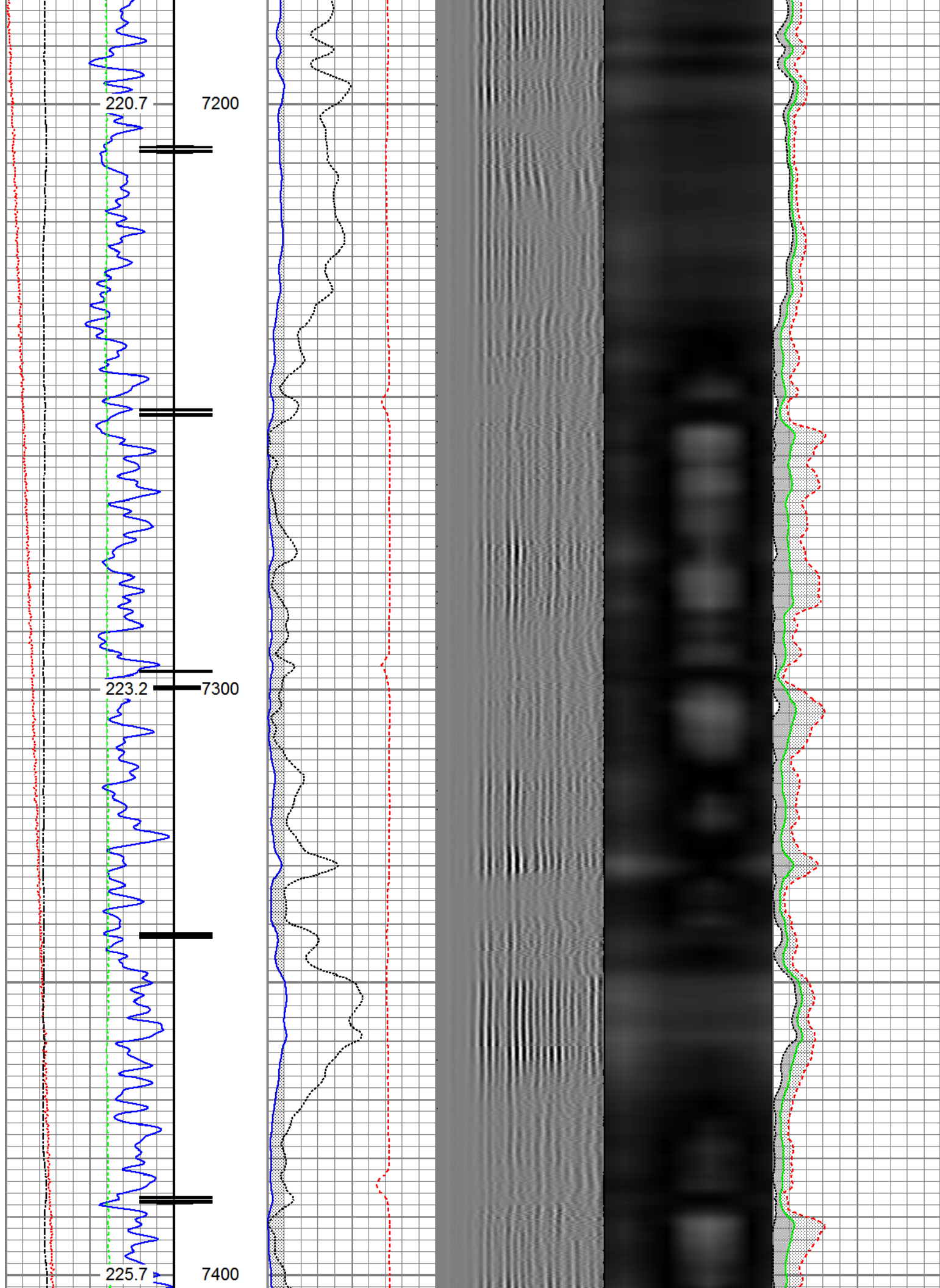


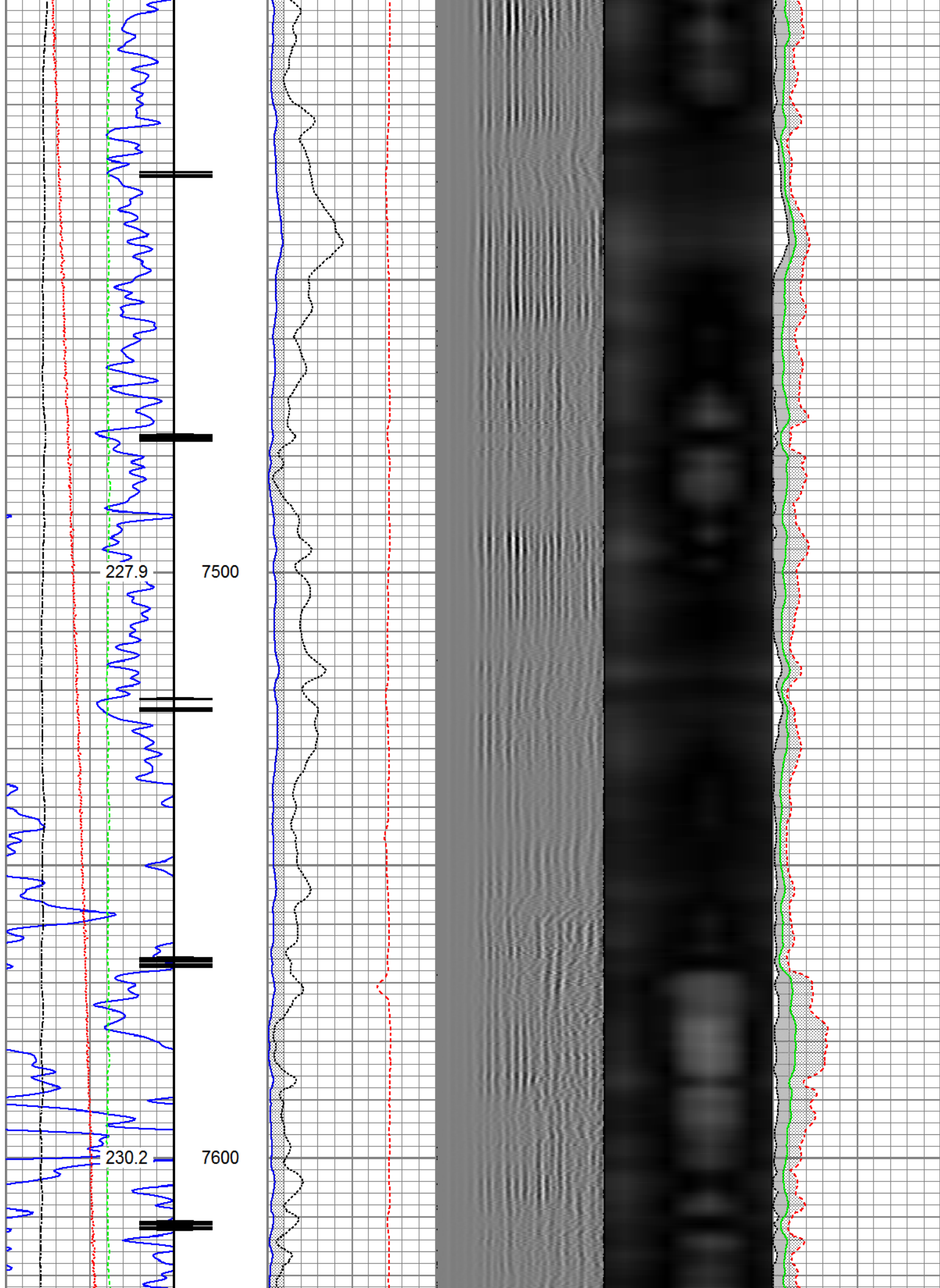




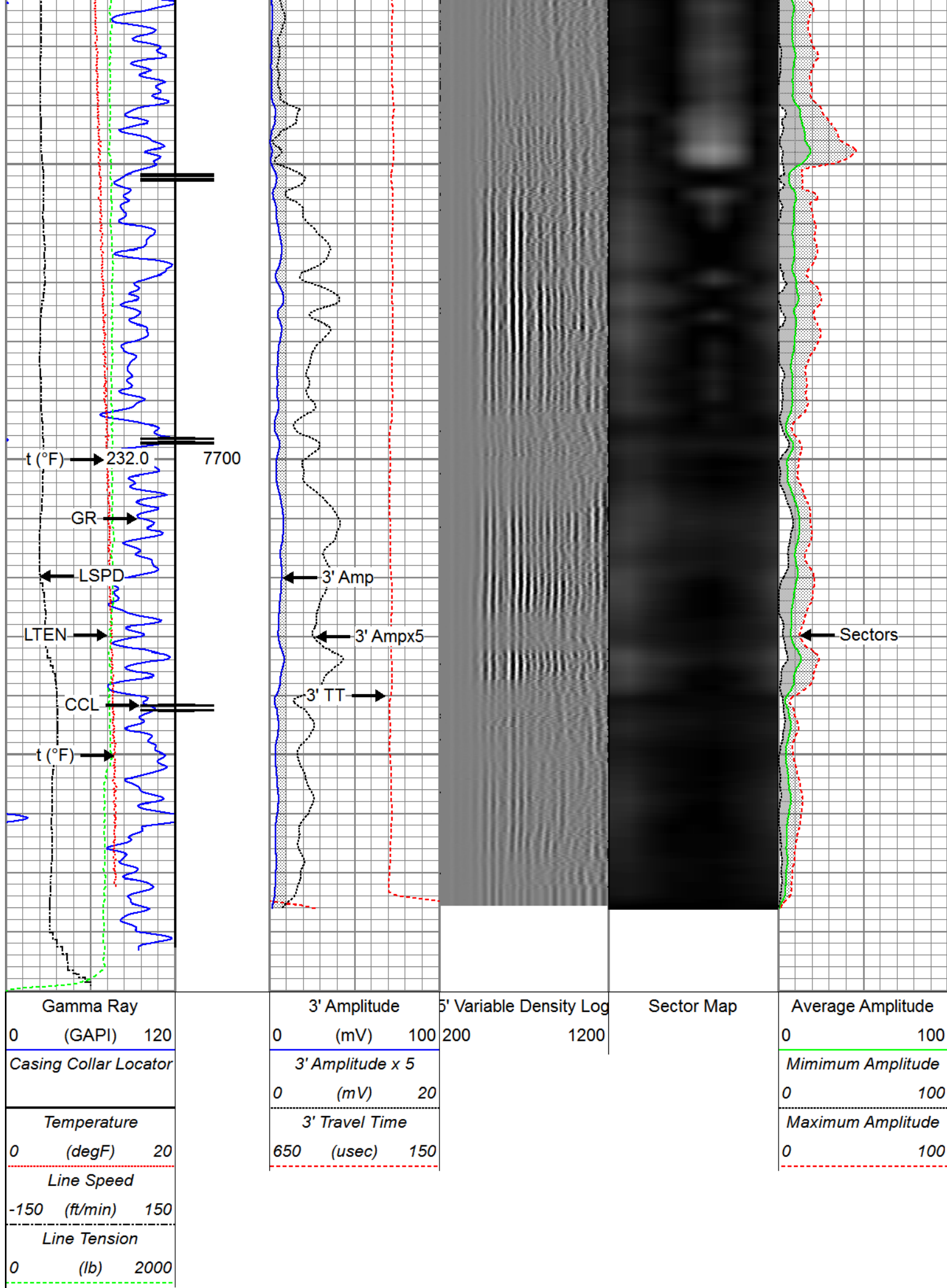












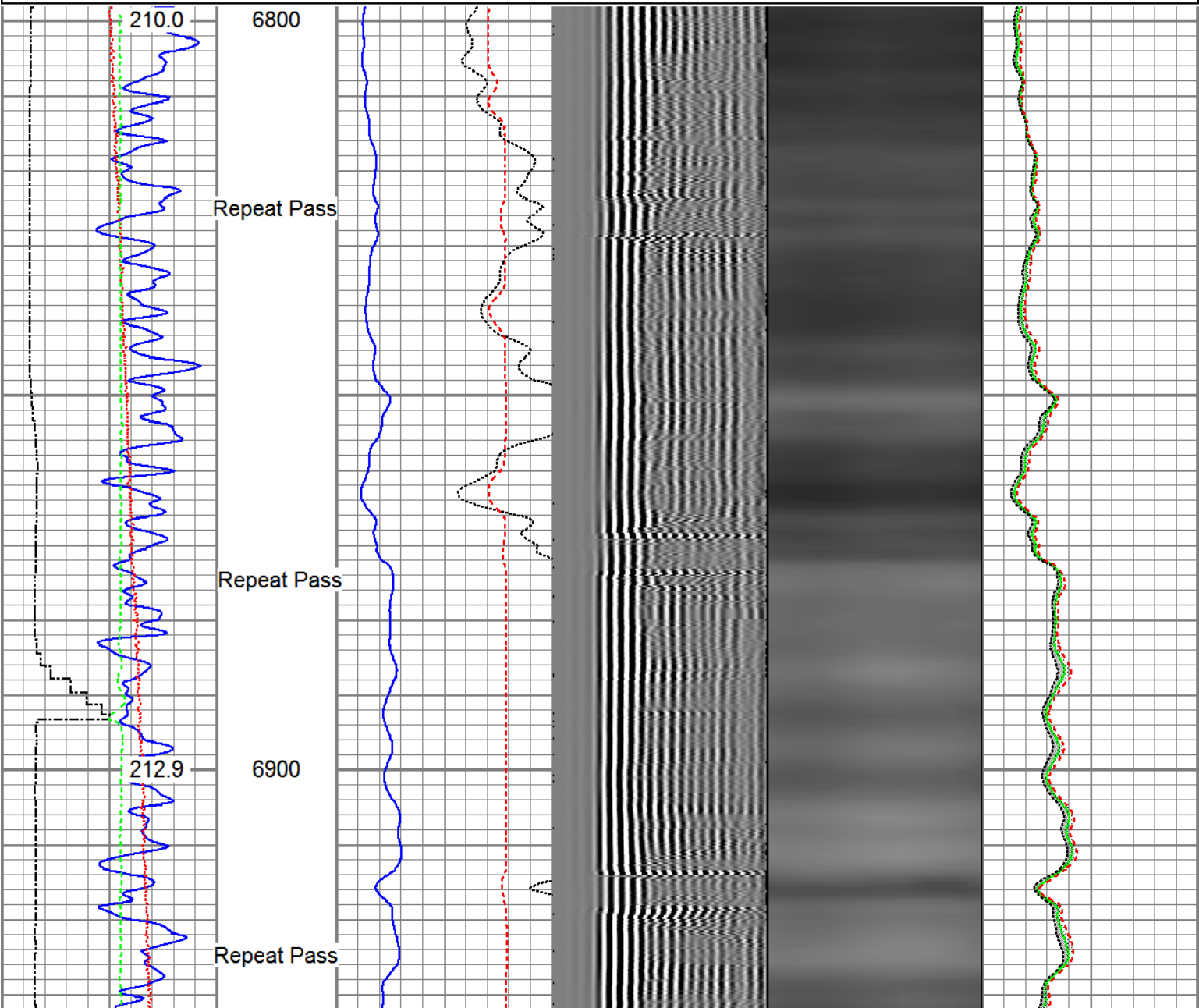


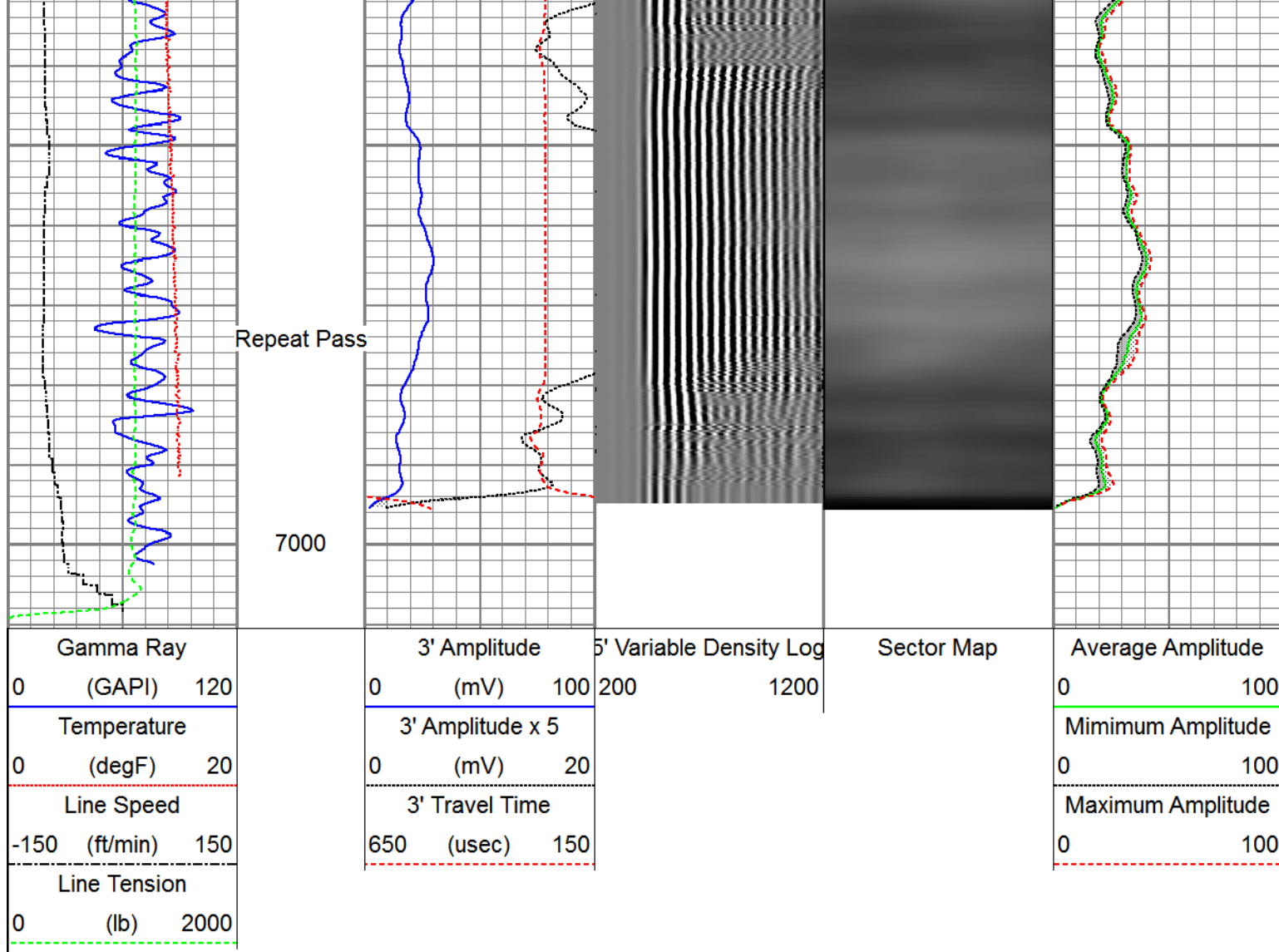
Repeat Pass



Recorded With 2800 PSI of Surface Induced Pressure

Database File	anadarko_puma fed 30n-14hz_14-may-2017_rbl\processed_0512342562_anadarko_puma fed 30n-
Dataset Pathname	pass7
Presentation Format	ros_radrii
Dataset Creation	Sun May 14 10:37:33 2017
Charted by	Depth in Feet scaled 1:240

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





Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
HeadVolt	19.54		Titan_Electric_Cable_Heads-Titan_1-11/16" Electric Cable Head with 1" Fishing Neck	1.03	1.69	5.40
			Probe_ELine_BowSpring_Centralizer-P_EB2-3/4" Electric Inline Bowspring Centralizer	2.8875	2.75	20.00
			Probe_RADII-C-P_RBT_2750 (FW1302-0029.19) Probe 2-3/4" Sector Cement Bond Tool with Temperature Probe	29.19	2.75	105.00
WVFS8	14.58					
WVFS7	14.58					
WVFS6	14.58					
WVFS5	14.58					
WVFS4	14.58					

WVFS3	14.58					
WVFS2	14.58					
WVFS1	14.58					
WVFCAL	14.58					
WVF3FT	14.58					
WVF5FT	13.58					
HEADVOLT	10.33					
			Probe_ELine_BowSpring_Centralizer-P_EB	2.8875	2.75	20.00
			Probe 2-3/4" Electric Inline Bowspring Centralizer			
DCCL	6.51					
CCL	6.51					
		Probe_GR_CCL-P_CGR_2750_S (FW12124.57)	2.75	2.75	55.00	
		Probe 2-3/4" Digital CCL / Gamma Ray Combined				
GR	3.77					
		Probe_ELine_BowSpring_Centralizer-P_EB	2.8875	2.75	20.00	
		Probe 2-3/4" Electric Inline Bowspring Centralizer				

Dataset: PROCESSED\_0512342562\_Anadarko\_Puma Fed 30N-14HZ\_05-14-17\_RBL.db: field/well/run1/pass9

Total length: 23.43 ft

Total weight: 225.40 lb

O.D.: 2.75 in

<div> <div>Database File</div> <div>C:\ProgramData\Warrior\Data\Anadarko_Puma Fed 30N-14HZ_14-MAY-2017_RBL\PROCESSED_0</div> </div> <div> <div>Dataset Pathname</div> <div>pass9</div> </div> <div> <div>Dataset Creation</div> <div>Sun May 14 10:45:45 2017</div> </div>		
Gamma Ray Calibration Report		
Serial Number:	FW1212-026	
Tool Model:	P_CGR_2750_S	
Performed:	Mon Aug 15 10:19:05 2016	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.6	cps
Sensitivity:	0.6000	GAPI/cps
Segmented Cement Bond Log Calibration Report		
Serial Number:	FW1302-002	
Tool Model:	P_RBT_2750	
Calibration Casing Diameter:	5.500	in
Calibration Depth:	45.102	ft

Database File	C:\ProgramData\Warrior\Data\Anadarko_Puma Fed 30N-14HZ_14-MAY-2017_RBL\PROCESSED_0
Dataset Pathname	pass9
Dataset Creation	Sun May 14 10:45:45 2017

# Gamma Ray Calibration Report

Serial Number:	FW1212-026	
Tool Model:	P_CGR_2750_S	
Performed:	Mon Aug 15 10:19:05 2016	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.6	cps
Sensitivity:	0.6000	GAPI/cps

## Segmented Cement Bond Log Calibration Report

Serial Number:	FW1302-002	
Tool Model:	P_RBT_2750	
Calibration Casing Diameter:	5.500	in
Calibration Depth:	45.102	ft



## Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.006	0.728	0.800	71.921	96.867	1.399
CAL	0.002	0.821				
5'	-0.002	0.575	0.800	71.921	123.181	1.074
SUM						
S1	-0.006	0.735	0.000	100.000	134.913	0.860
S2	0.000	0.738	0.000	100.000	135.583	-0.065
S3	0.002	0.730	0.000	100.000	137.309	-0.270
S4	0.000	0.710	0.000	100.000	140.934	-0.050
S5	-0.004	0.713	0.000	100.000	139.523	0.533
S6	-0.003	0.720	0.000	100.000	138.178	0.480
S7	-0.008	0.728	0.000	100.000	135.978	1.050
S8	-0.009	0.741	0.000	100.000	133.221	1.223

## Internal Reference Calibration, performed Wed Aug 03 10:40:08 2016:

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.002	0.821	1.000	0.000

## Air Zero Calibration, performed Sat May 13 09:53:02 2017:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.001		0.000		0.000	
5'	0.001		0.000		-0.000	
SUM						
S1	0.001		0.000		-0.001	
S2	0.000		0.000		0.000	
S3	0.001		0.000		0.001	
S4	0.002		0.000		-0.000	
S5	0.001		0.000		-0.000	
S6	0.001		0.000		-0.000	
S7	0.001		0.000		0.000	
S8	0.001		0.000		0.000	



Company Kerr-McGee Oil & Gas Onshore, L.P.  
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 Field Wattenberg  
 County Weld  
 State Colorado