



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company Kerr-McGee Oil & Gas Onshore, L.P.
Well Puma Fed 4N-14HZ
Field Wattenberg
County Weld
State Colorado

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Location: API #: 05-123-42563

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 15-MAY-2017

Run Number Two

Depth Driller 13913 FT

Depth Logger 7805 FT

Bottom Logged Interval 7801 FT

Top Log Interval Surface

Open Hole Size 8.50"

Type Fluid Water

Density / Viscosity 8.34 lb/gal

Max. Recorded Temp. 231.5°F

Estimated Cement Top See Log

Time Well Ready ROA

Time Logger on Bottom 10:35 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 2248 FT

Intermediate #1 5 1/2 17 HC P110 Surface 13902 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 6714 FT
Adjusted +3 FT to correlate with Marker Joint
Gauge Ring/Junk Basket ran to 7845 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

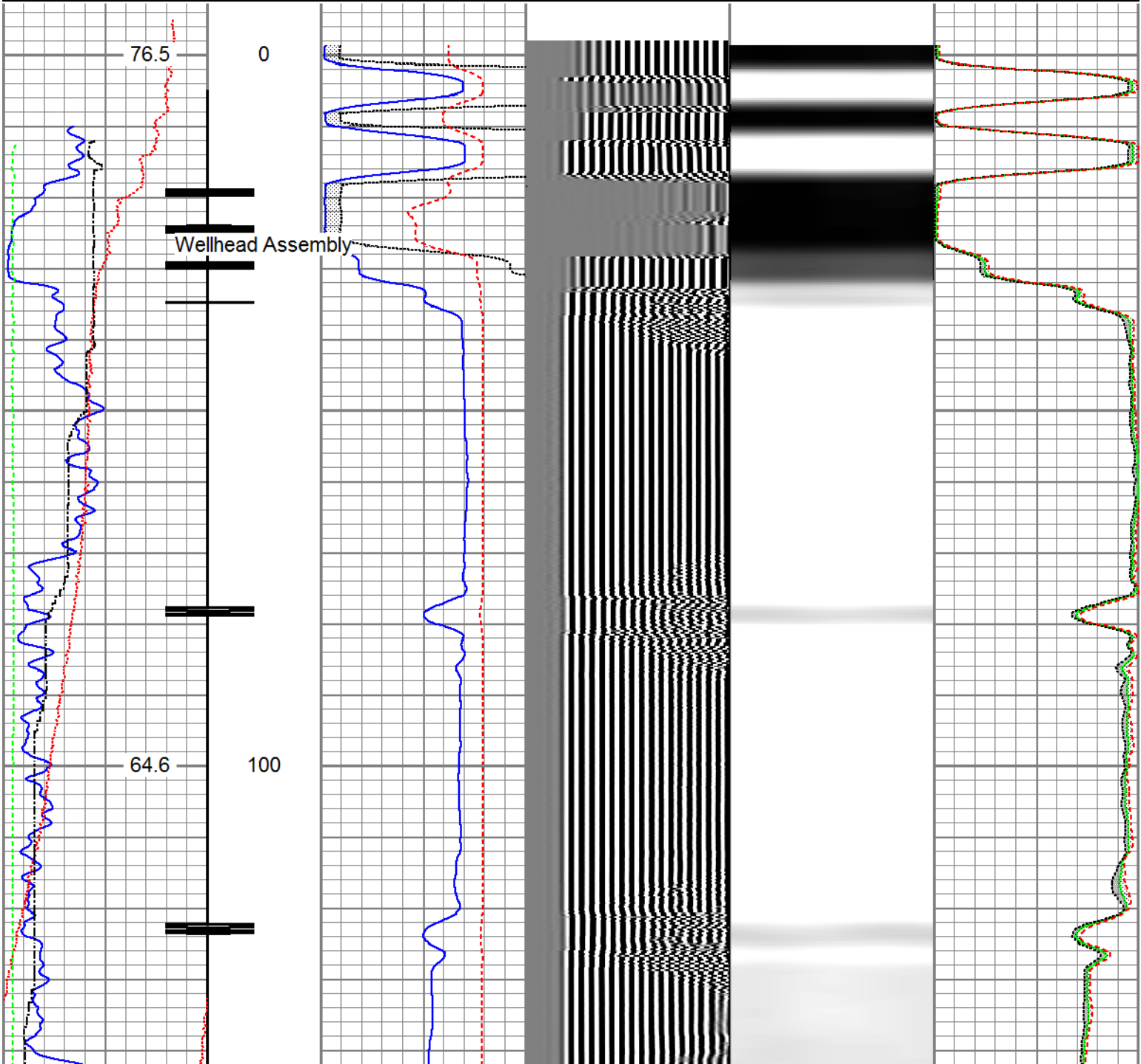
Thank you for choosing Reliance Oilfield Services, LLC!!

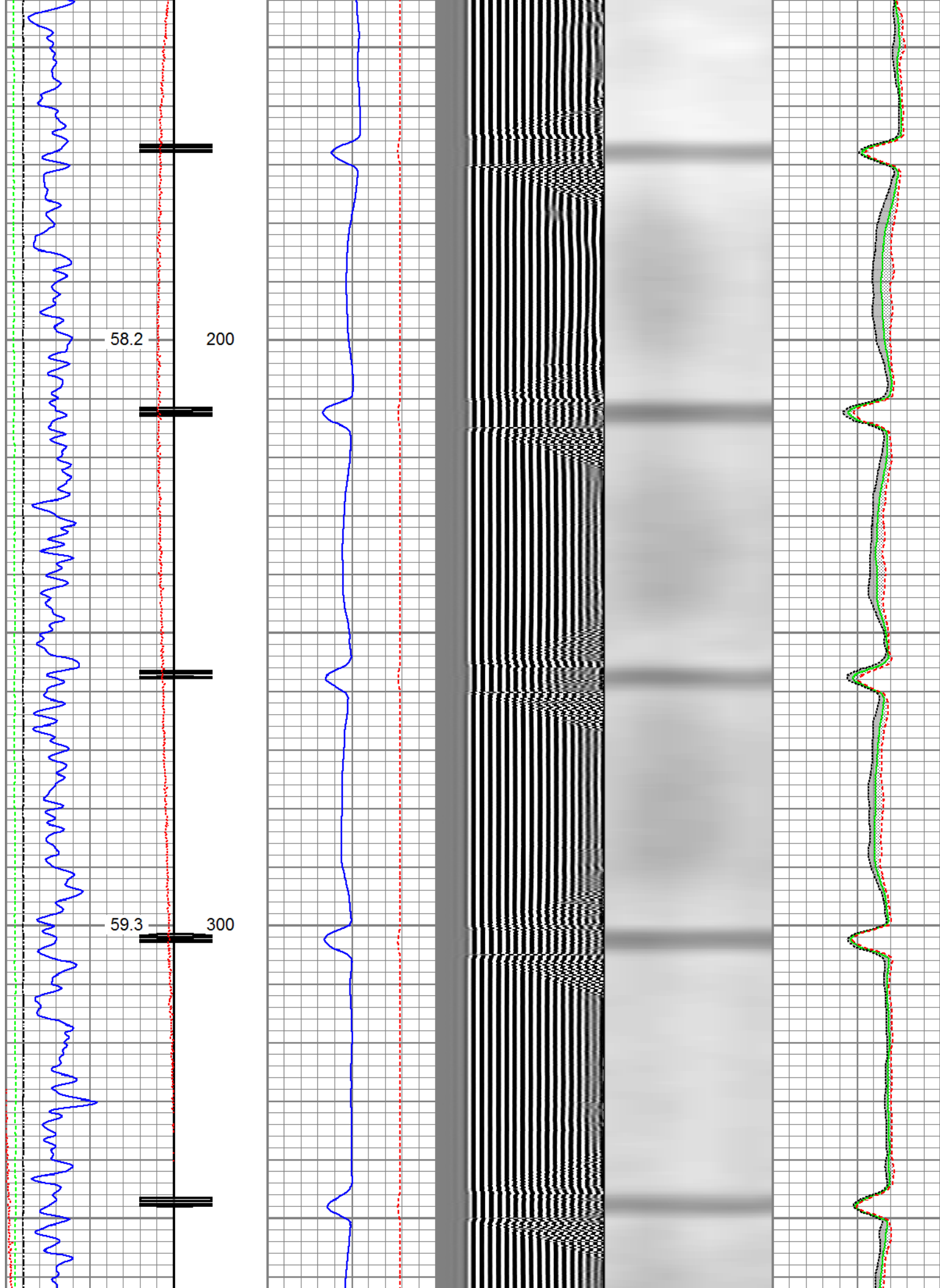


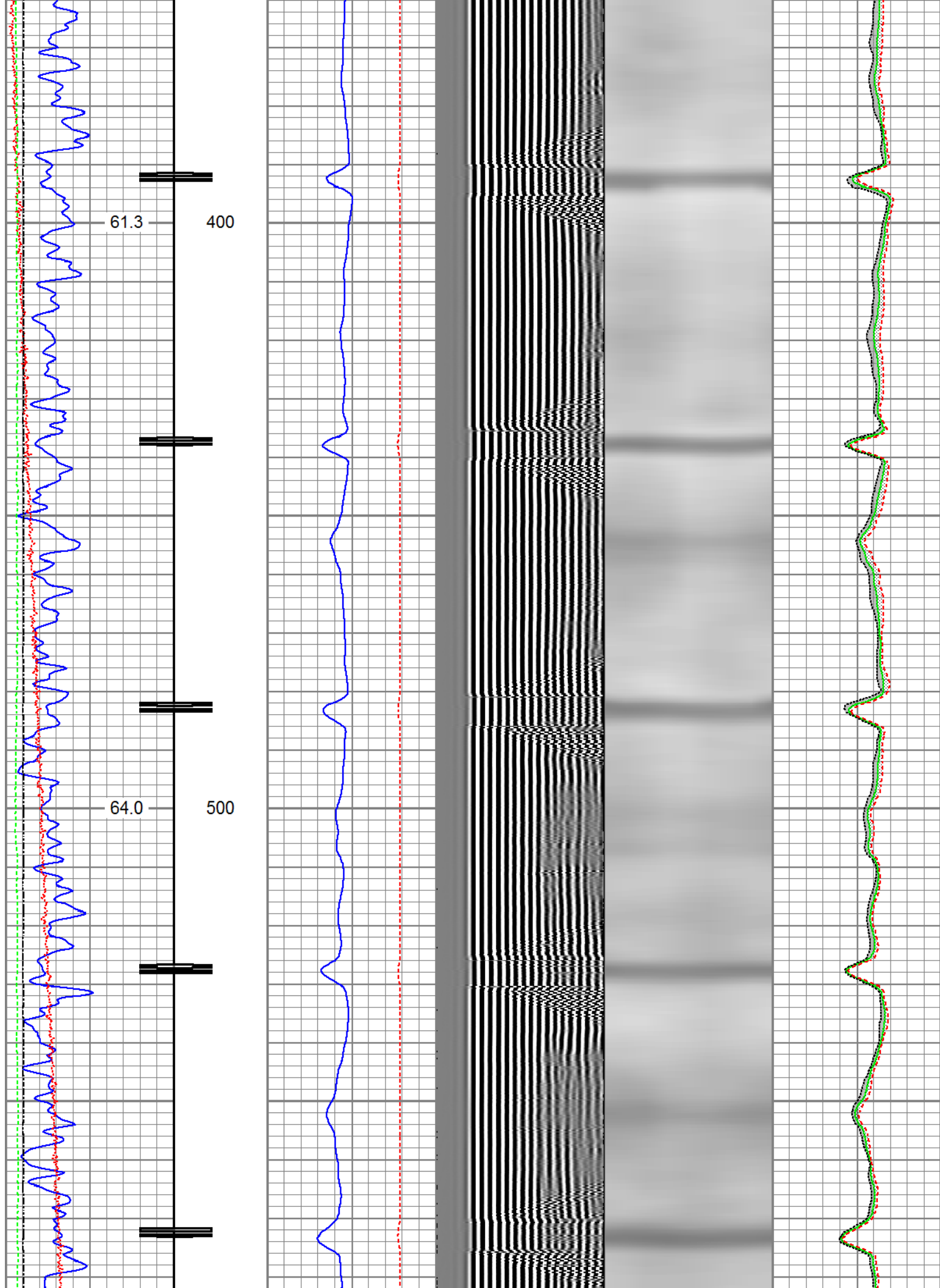
Main Pass

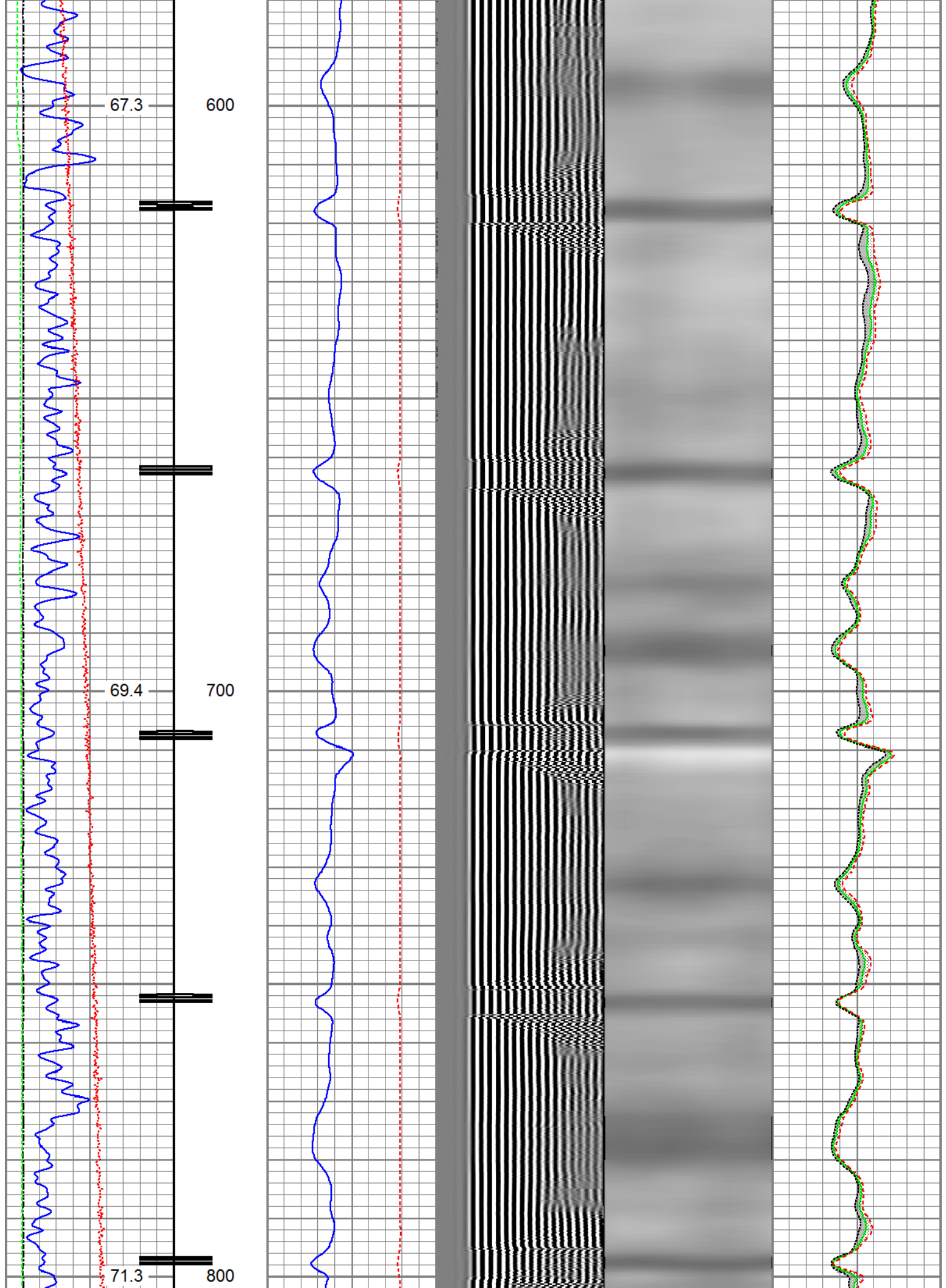
Recorded With 2800 PSI of Surface Induced Pressure

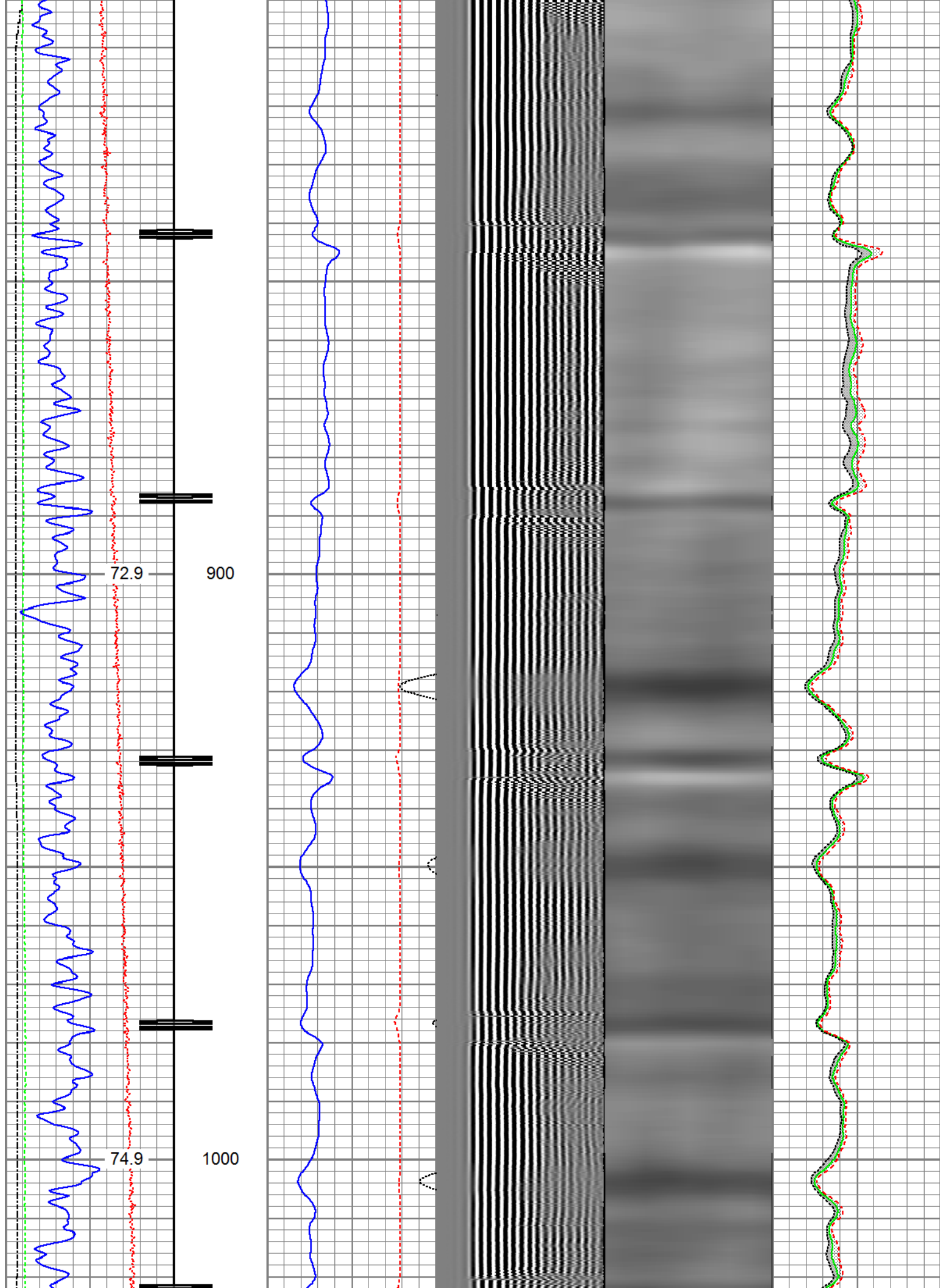
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Mimimum Amplitude
	0 (mV) 20			0 100
Temperature	3' Travel Time			Maximum Amplitude
0 (degF) 20	650 (usec) 150			0 100
Line Speed				
-150 (ft/min)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

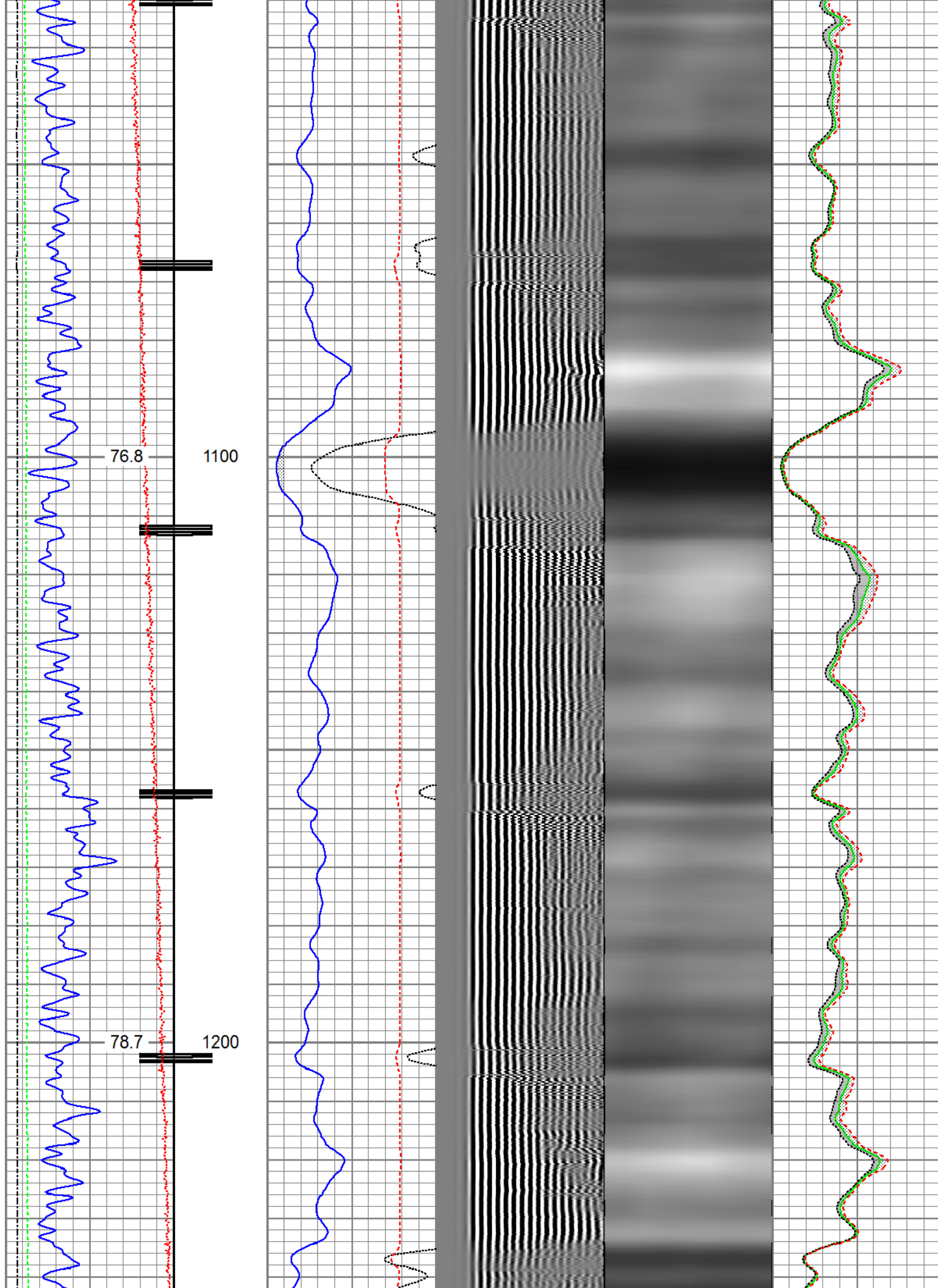


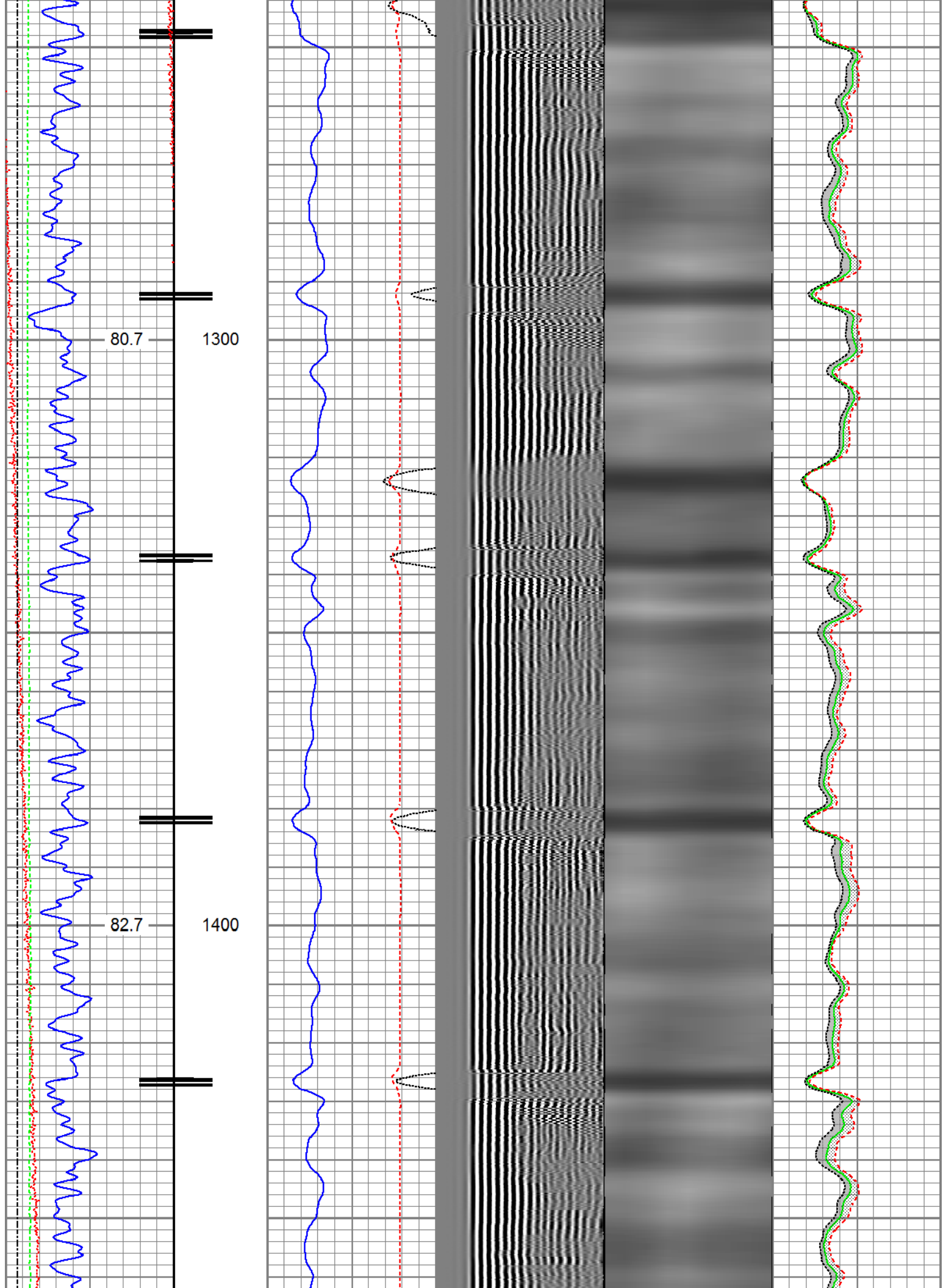


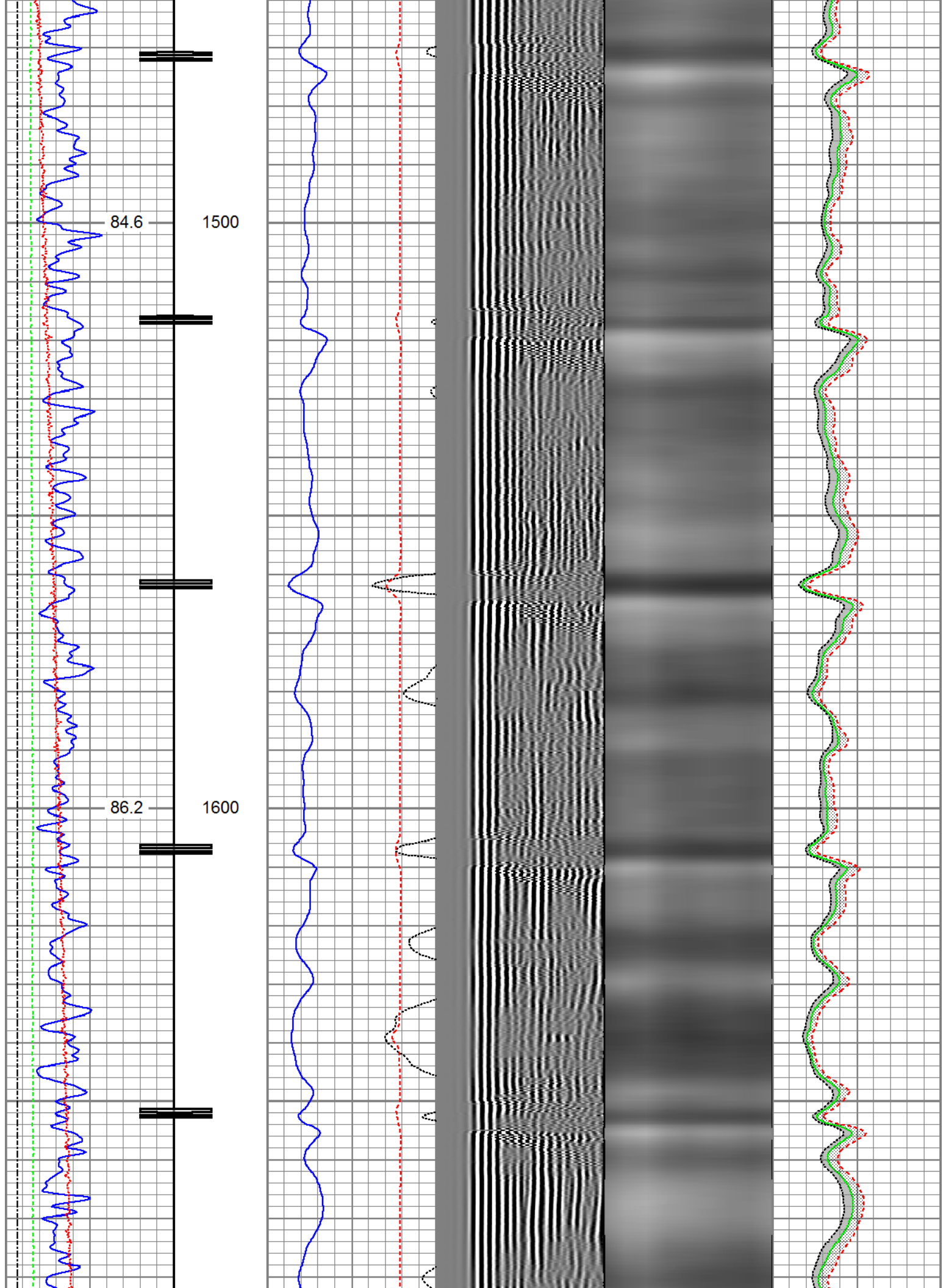


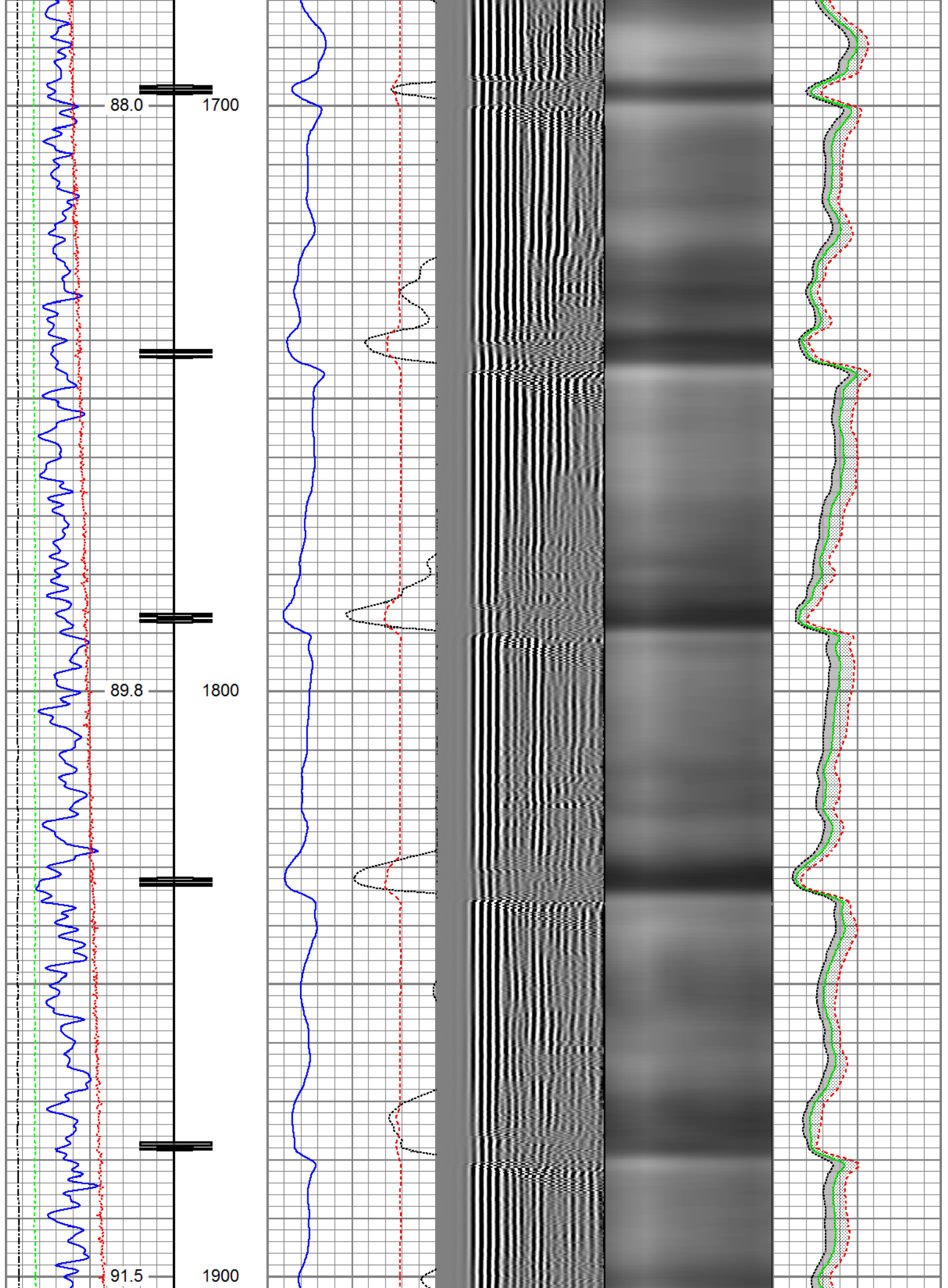


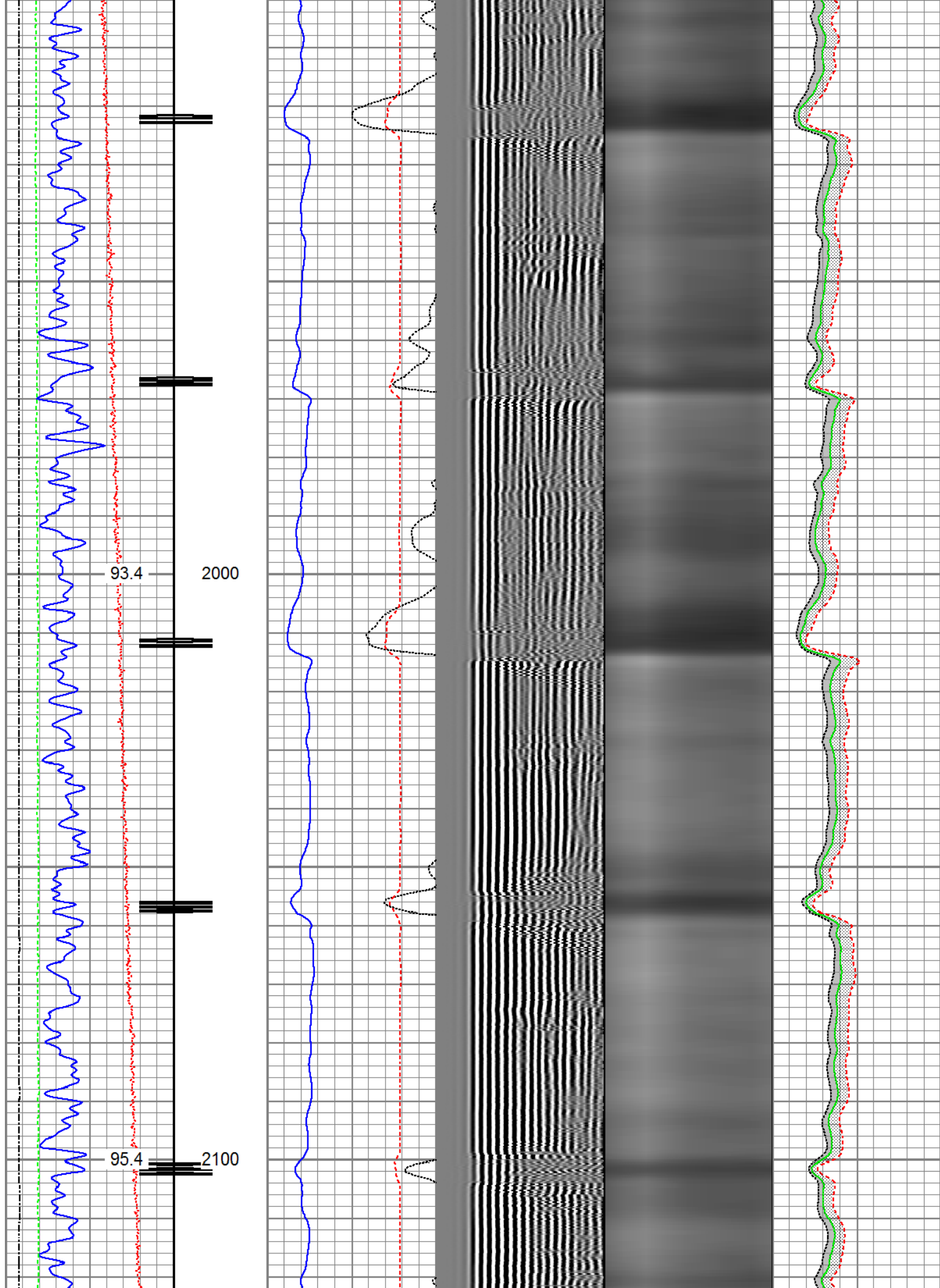


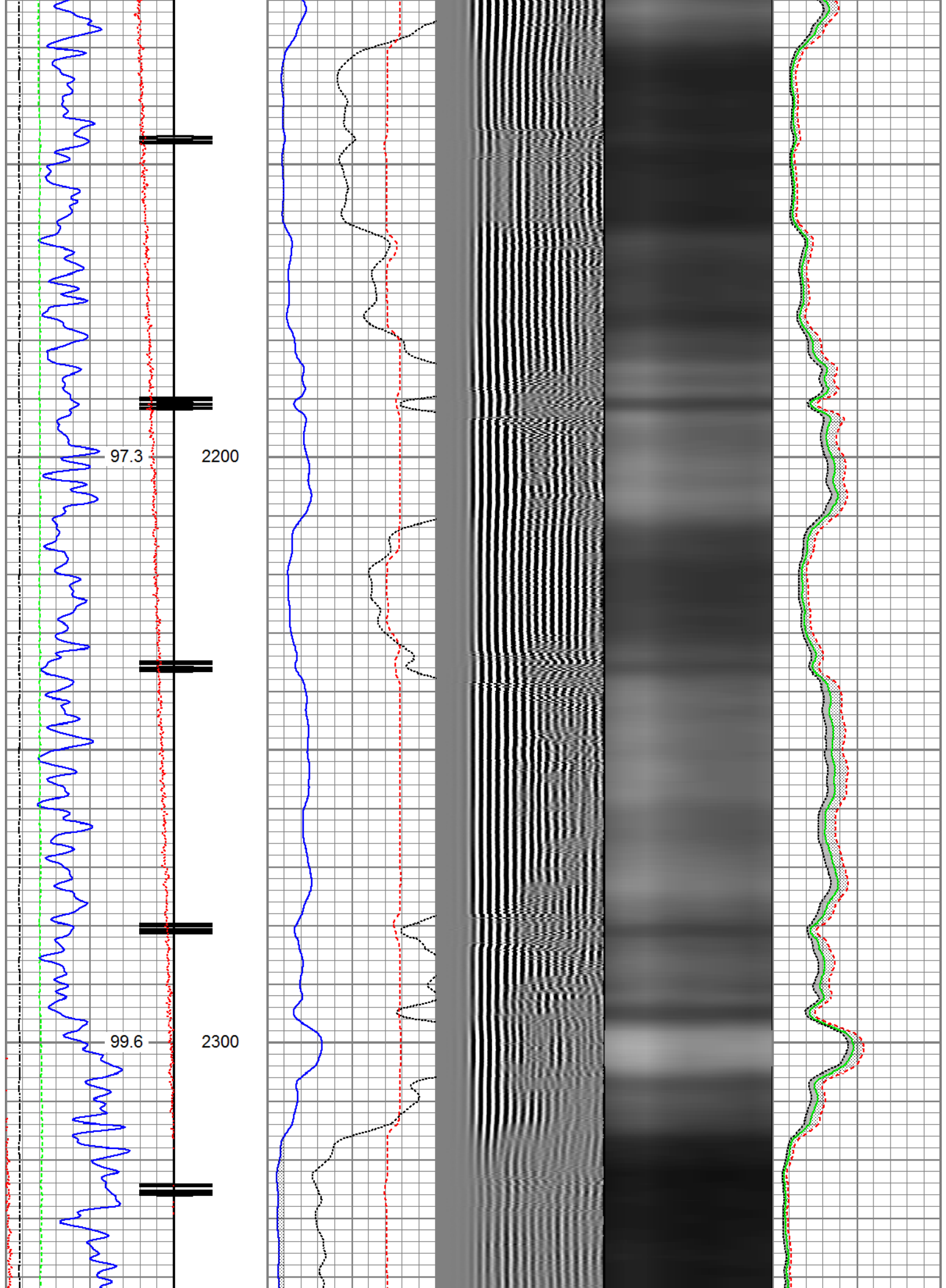


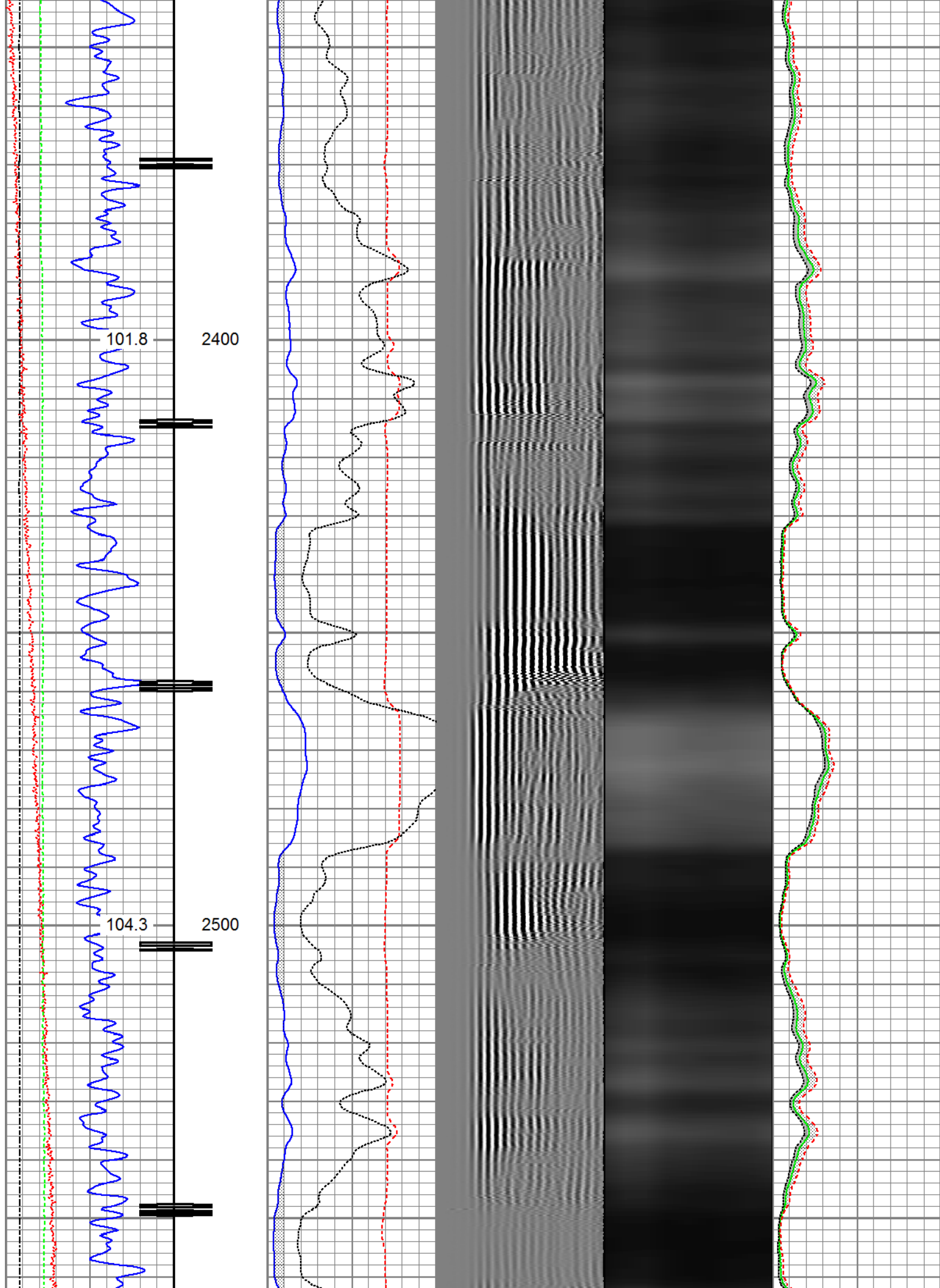


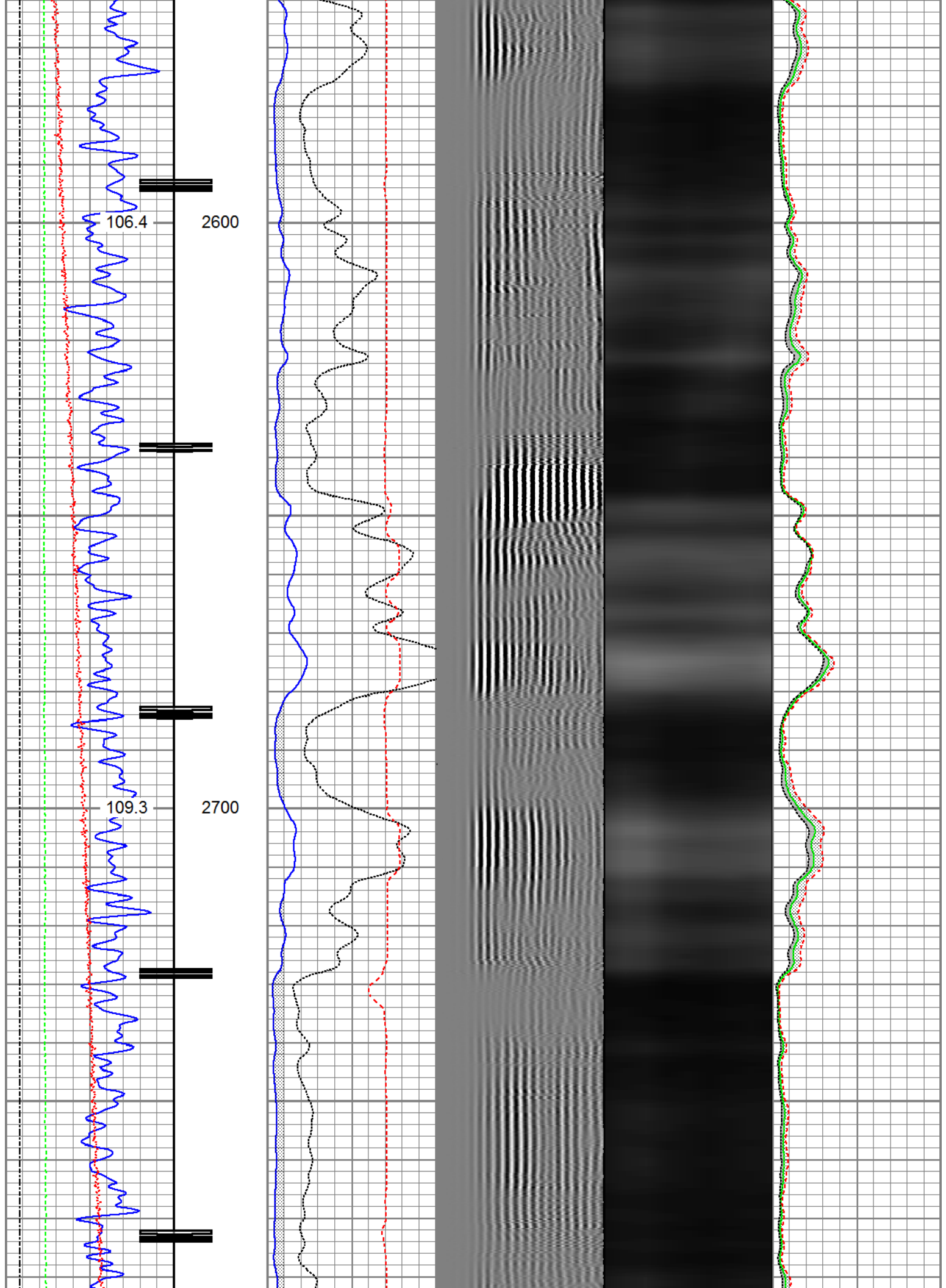


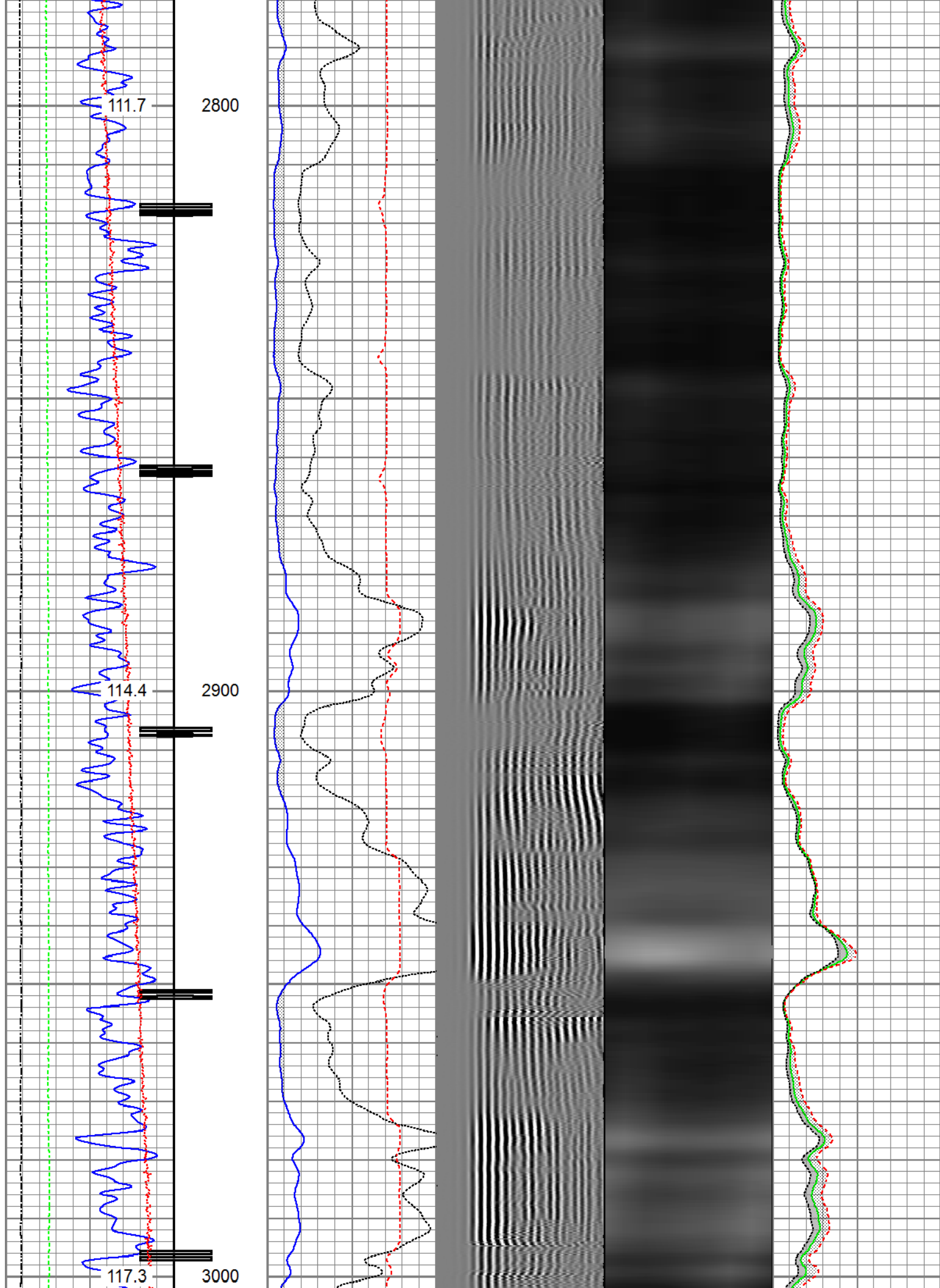


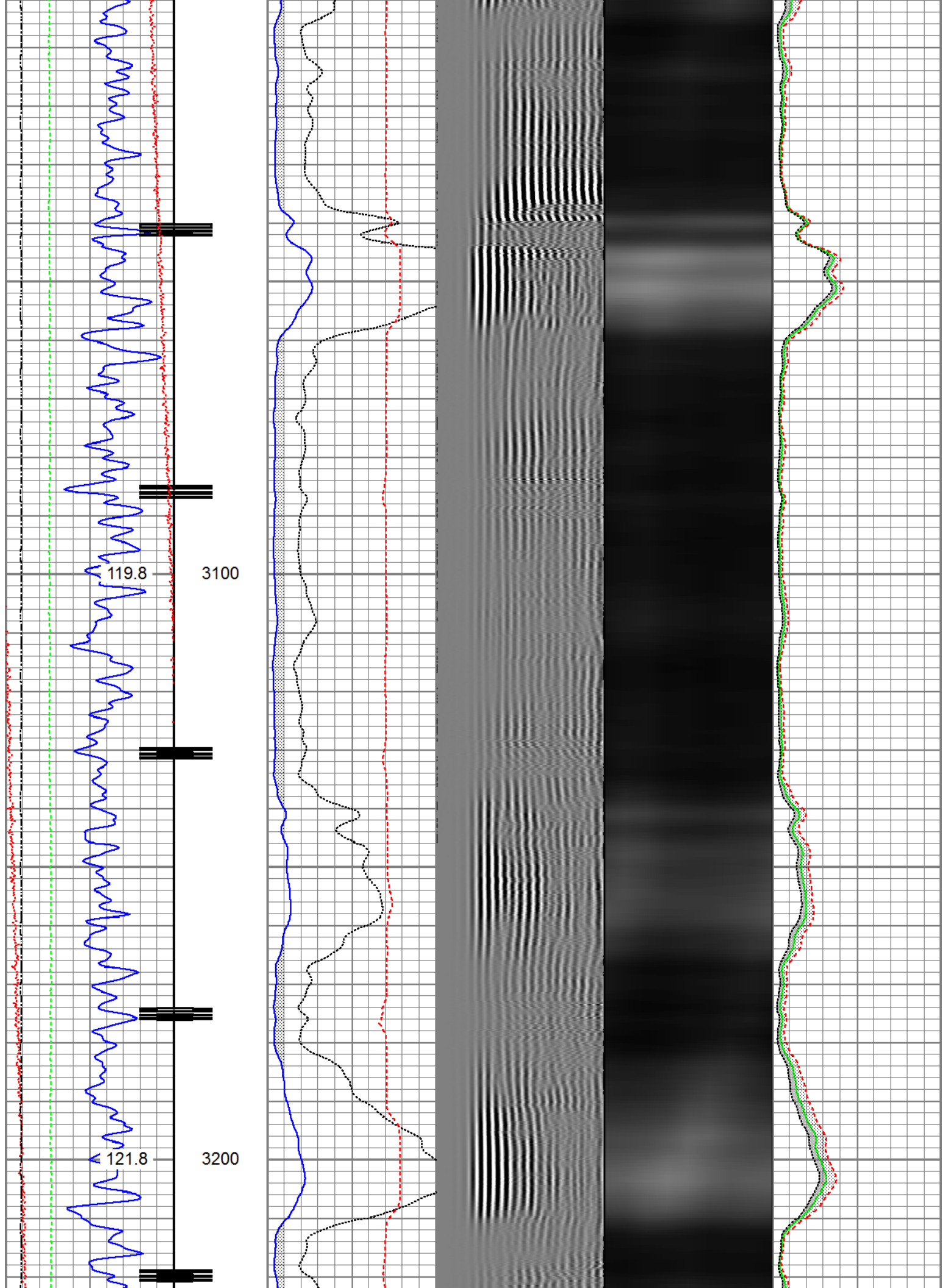


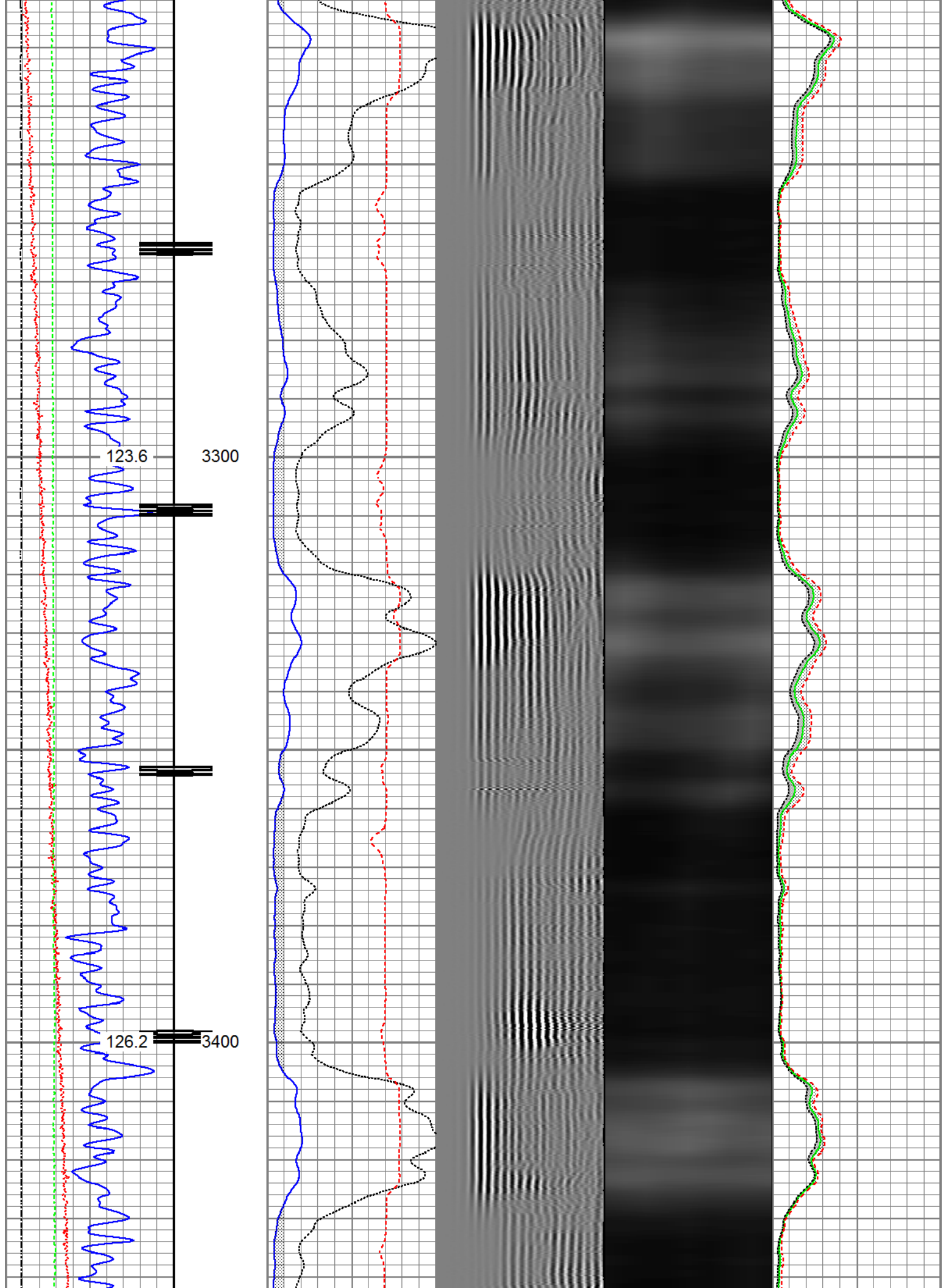


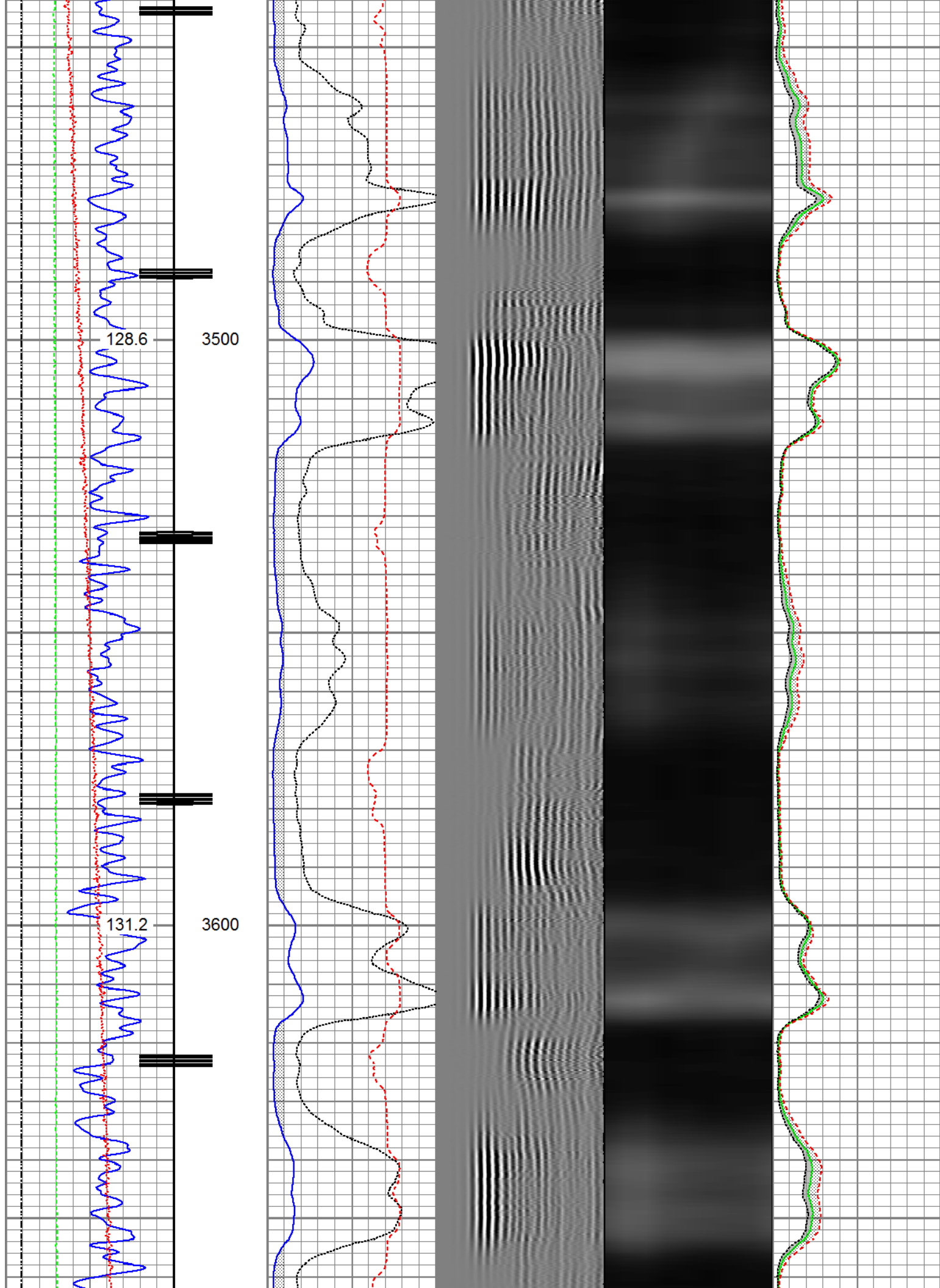


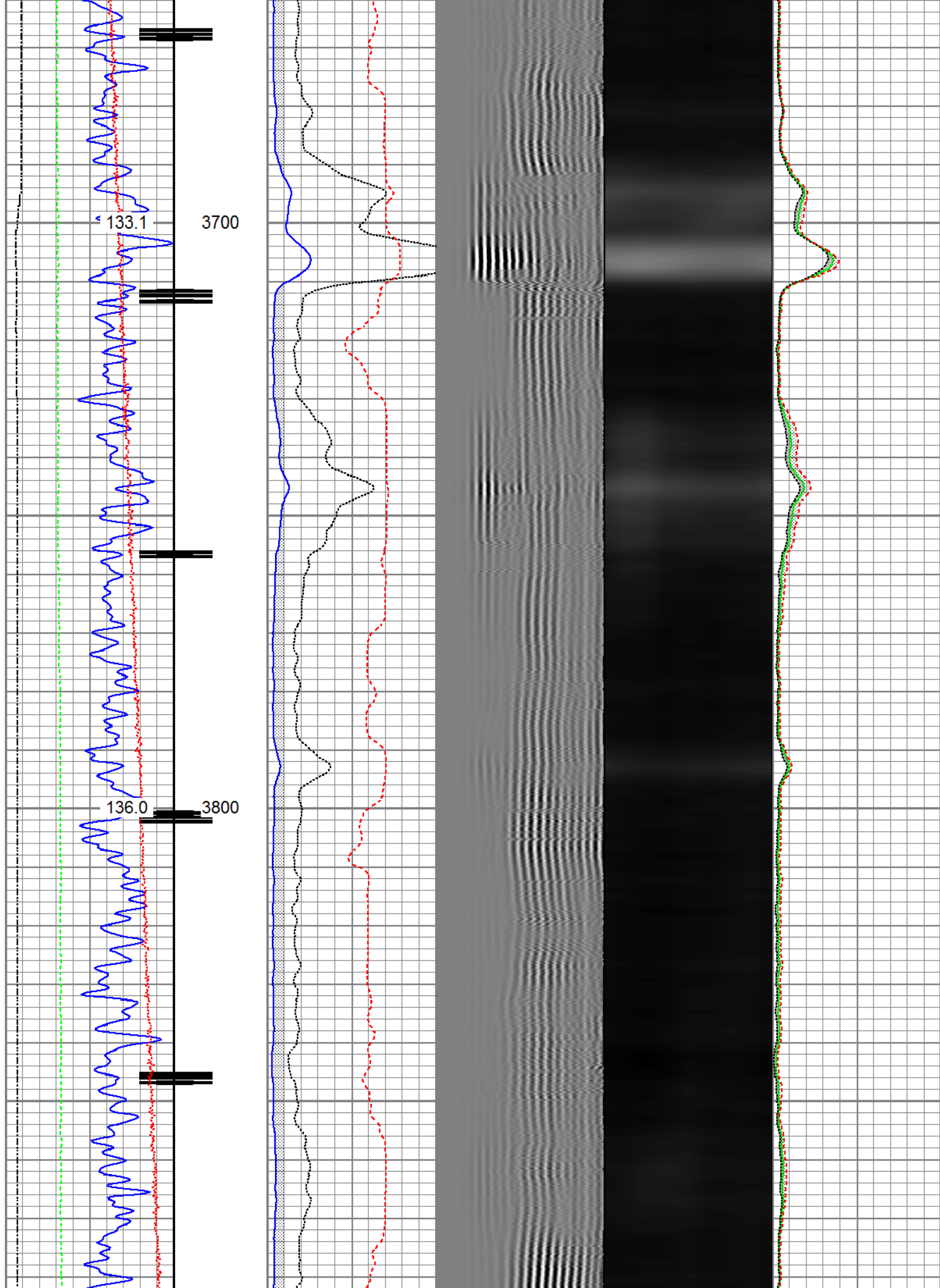


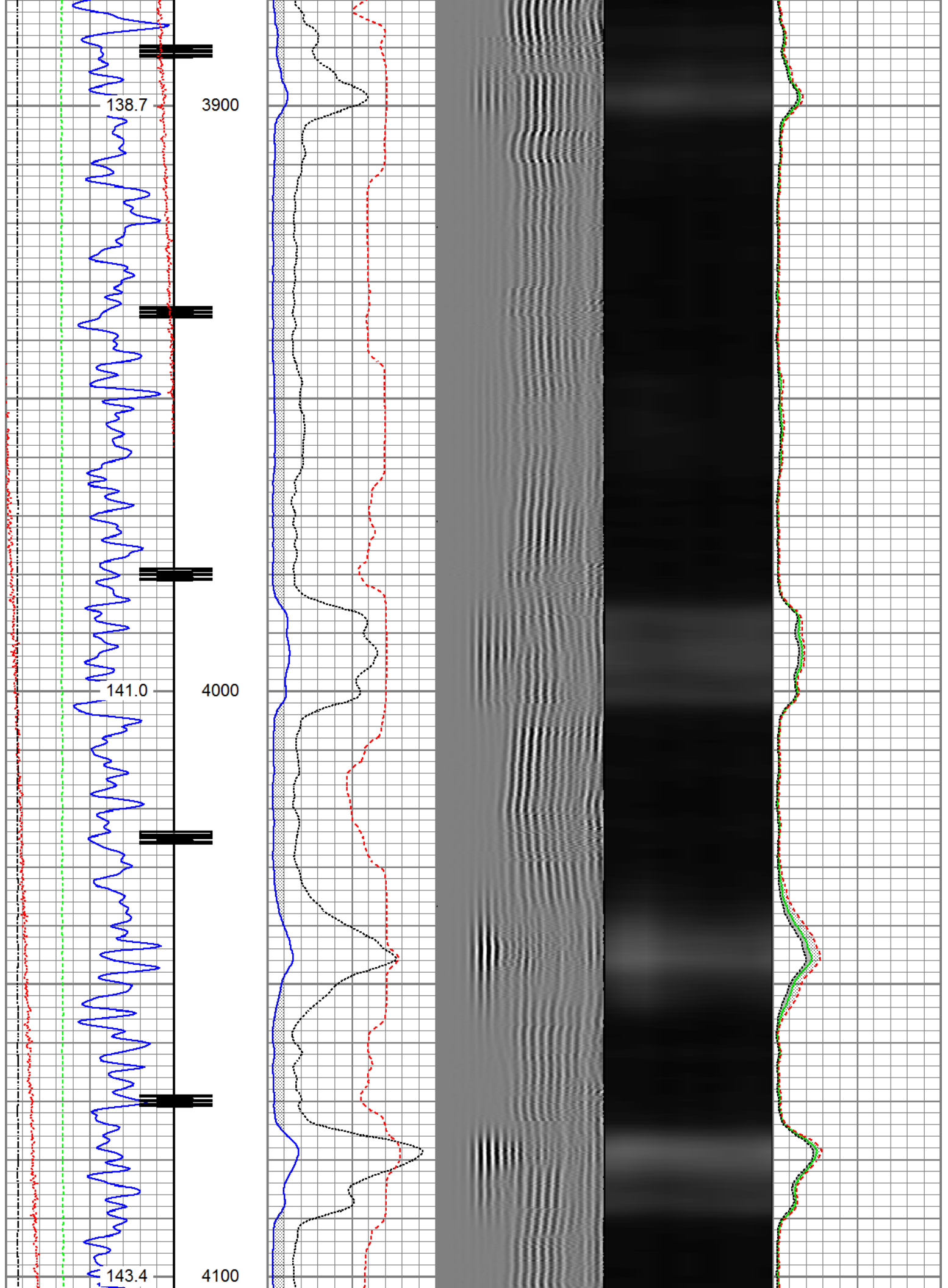


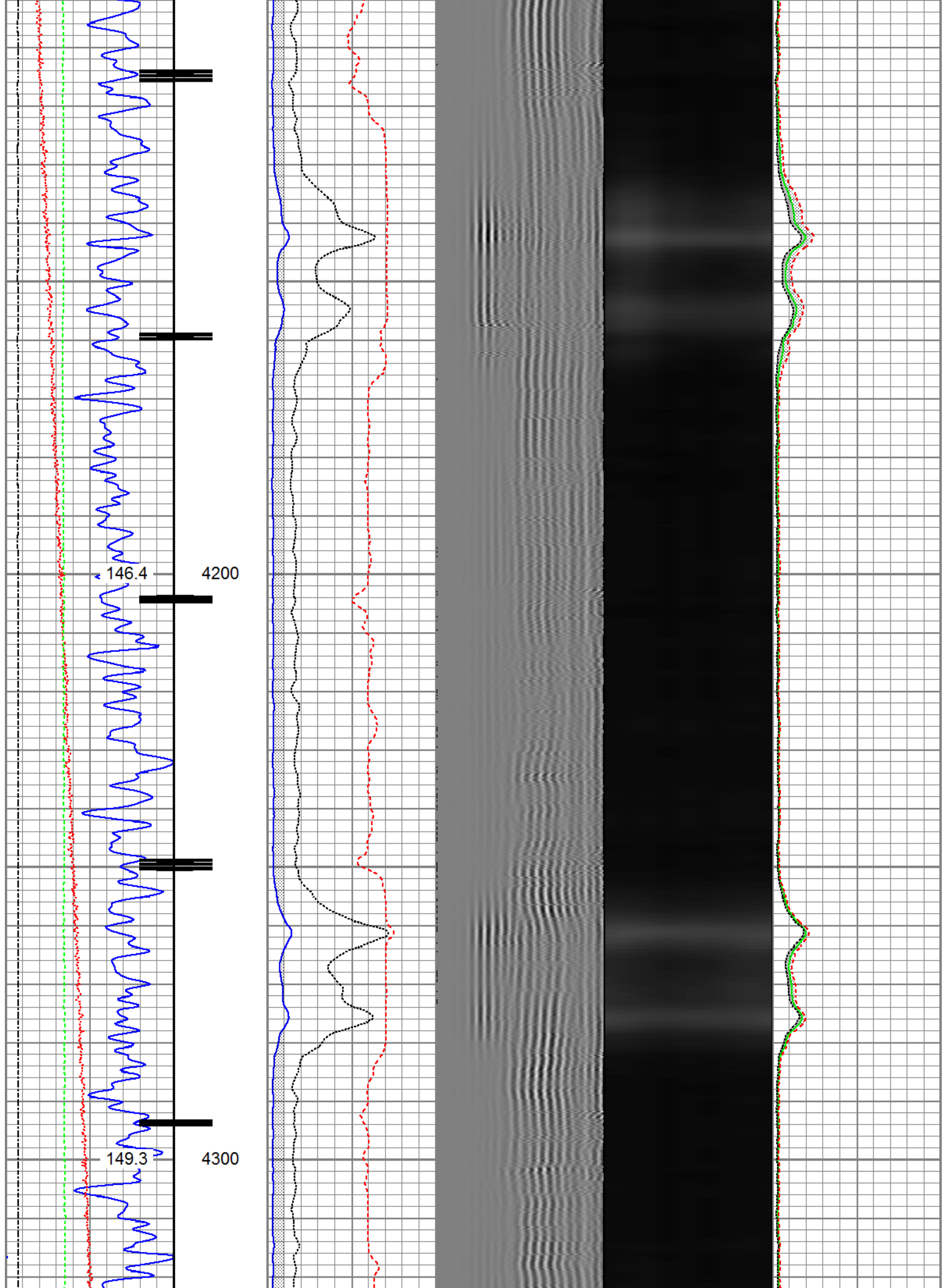


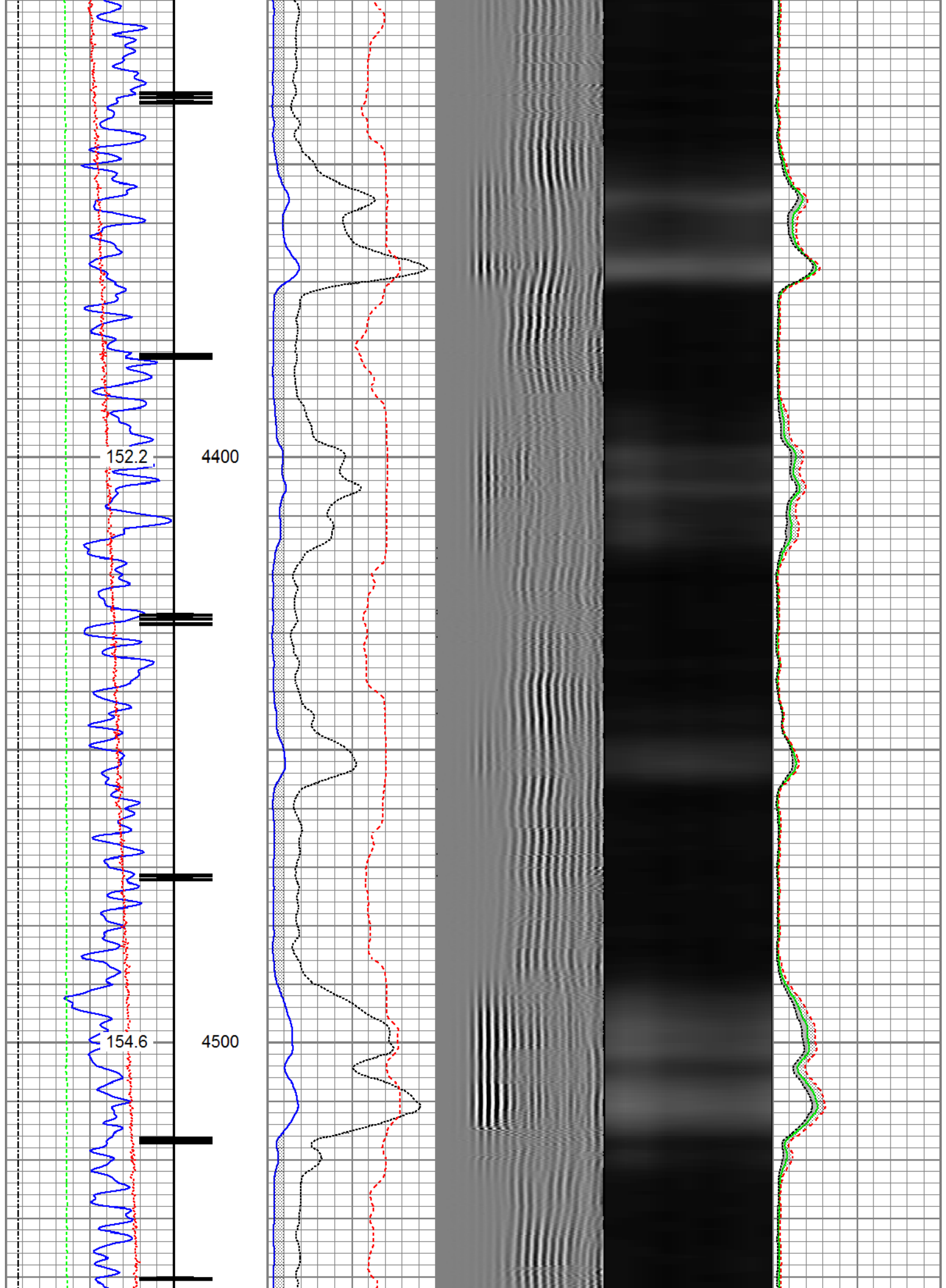


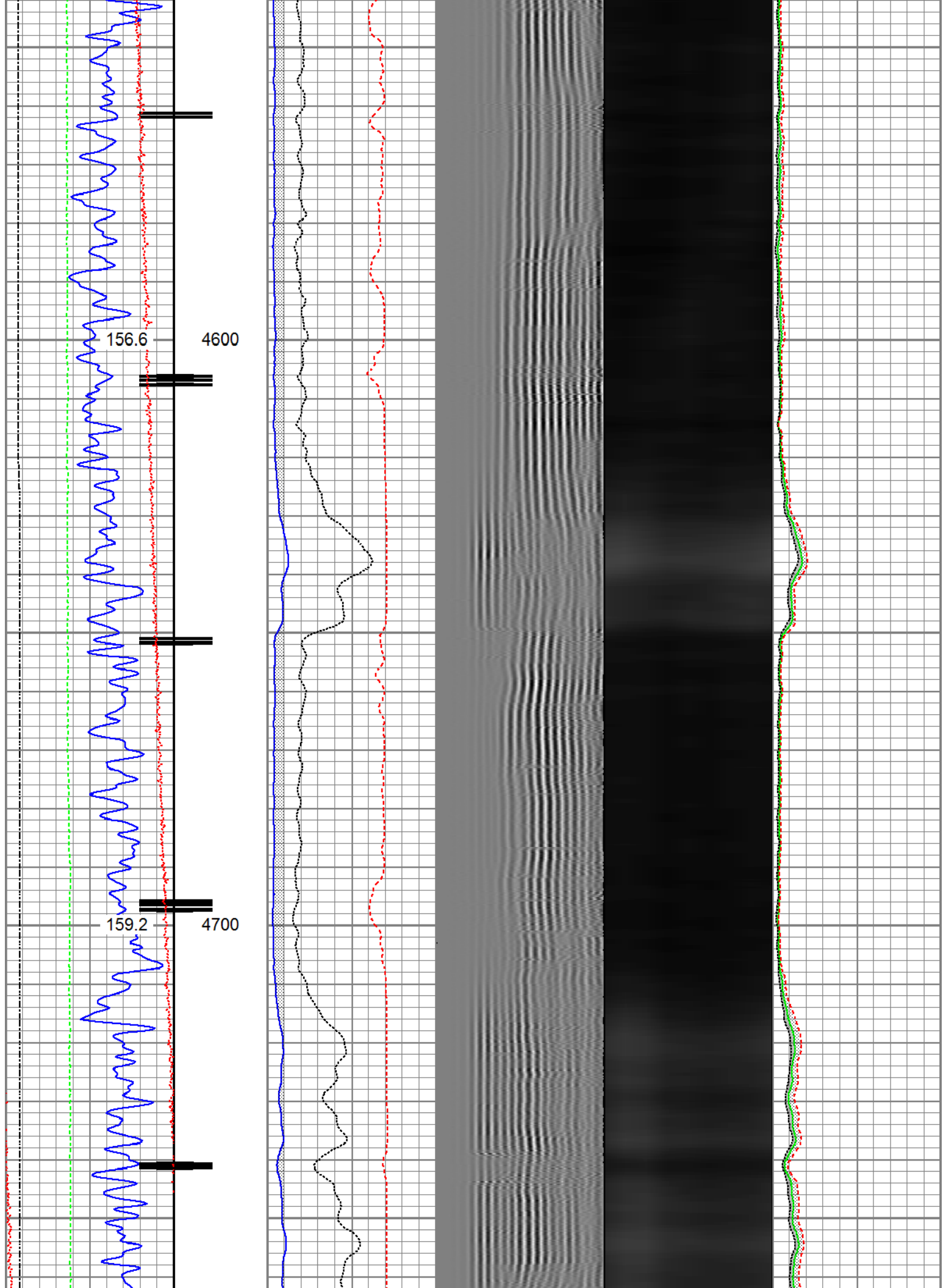


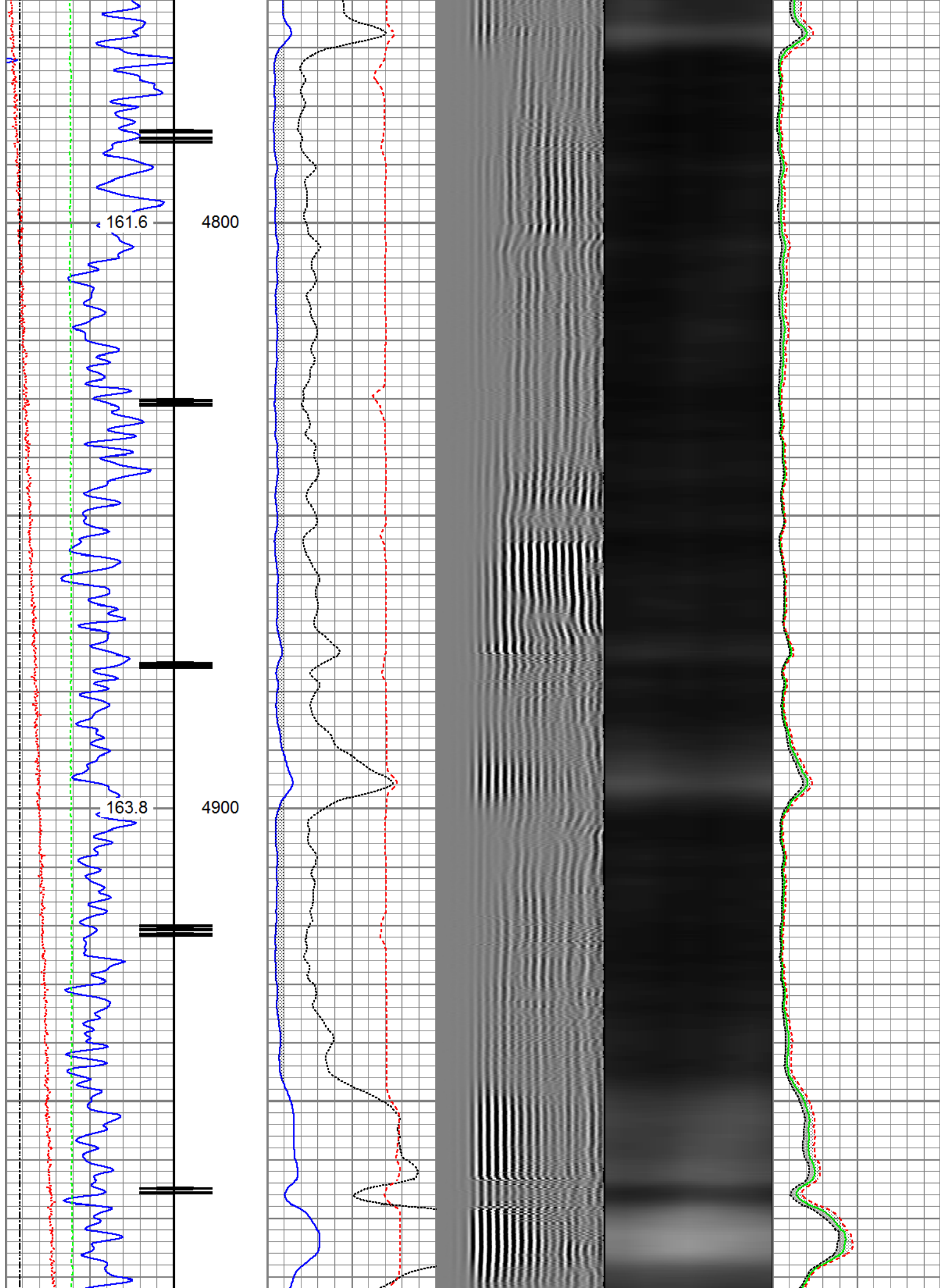


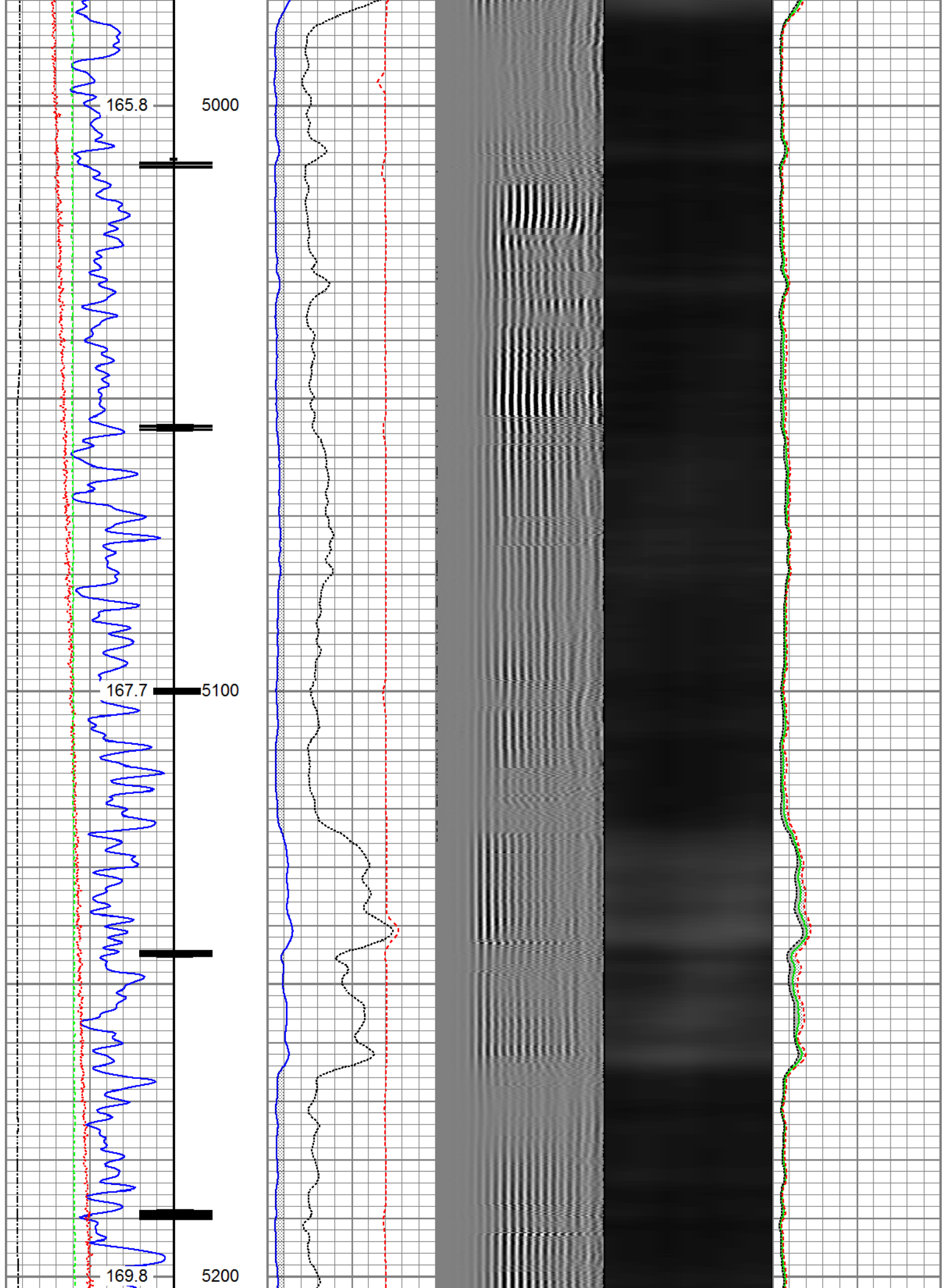


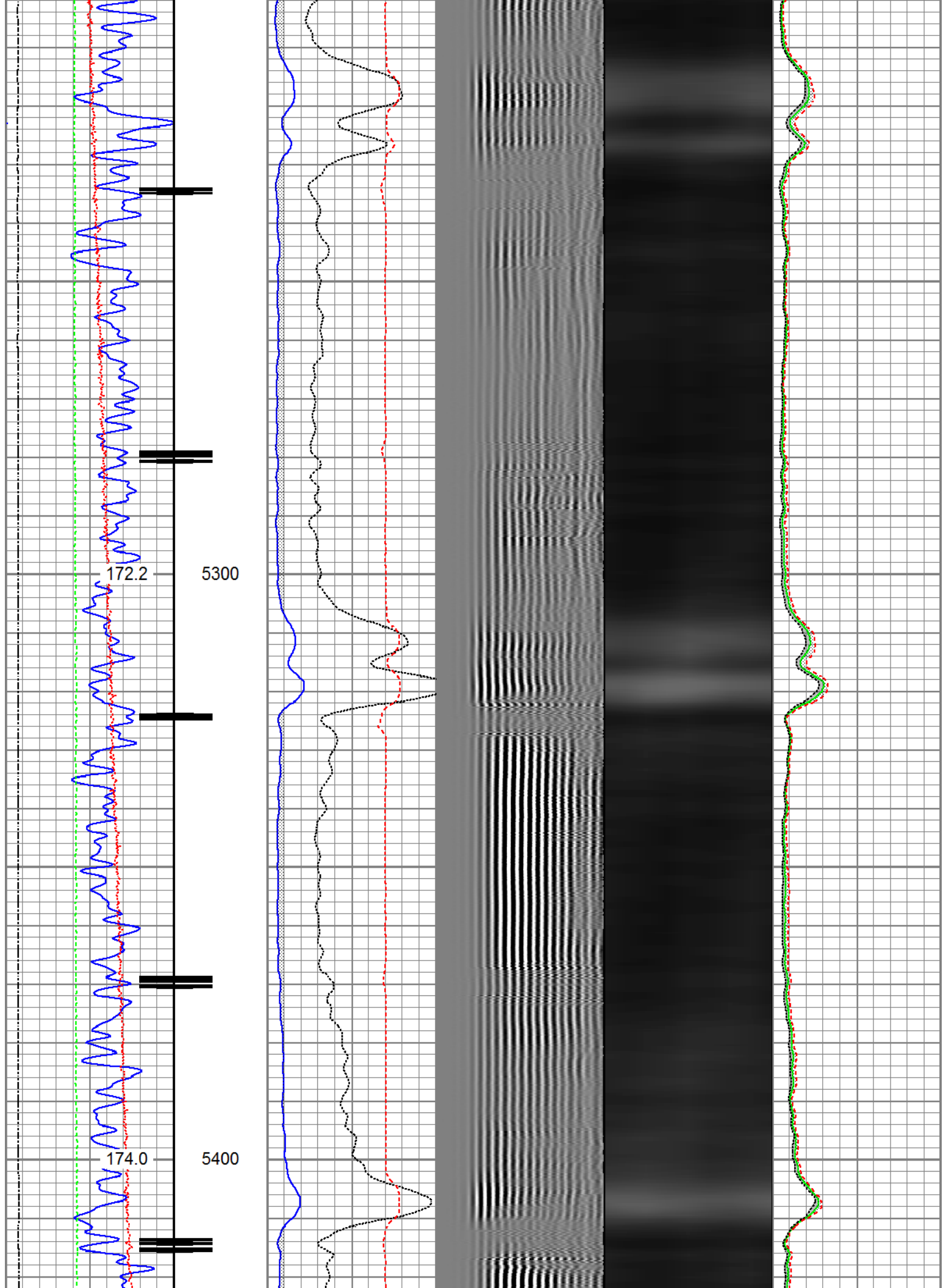


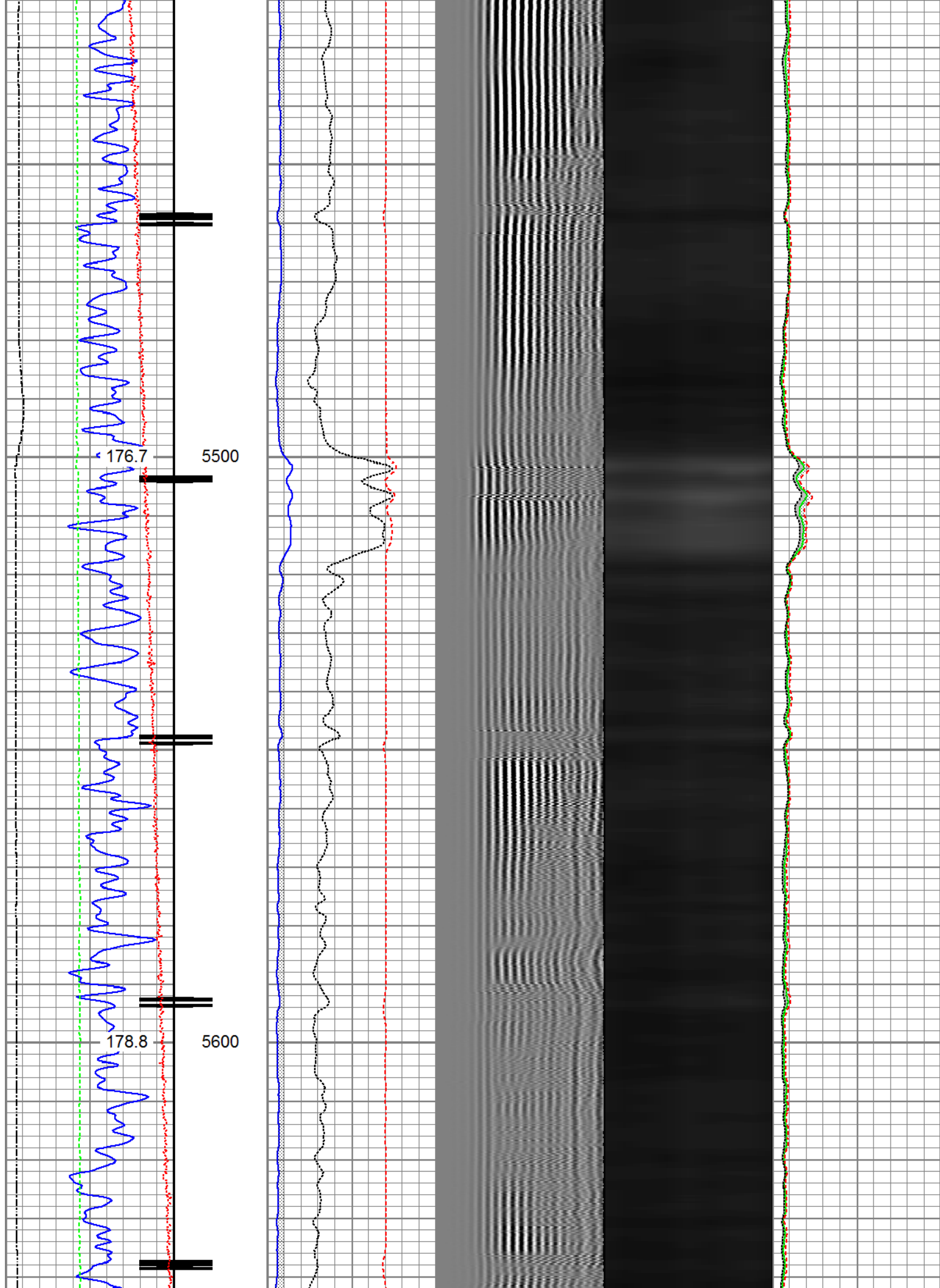


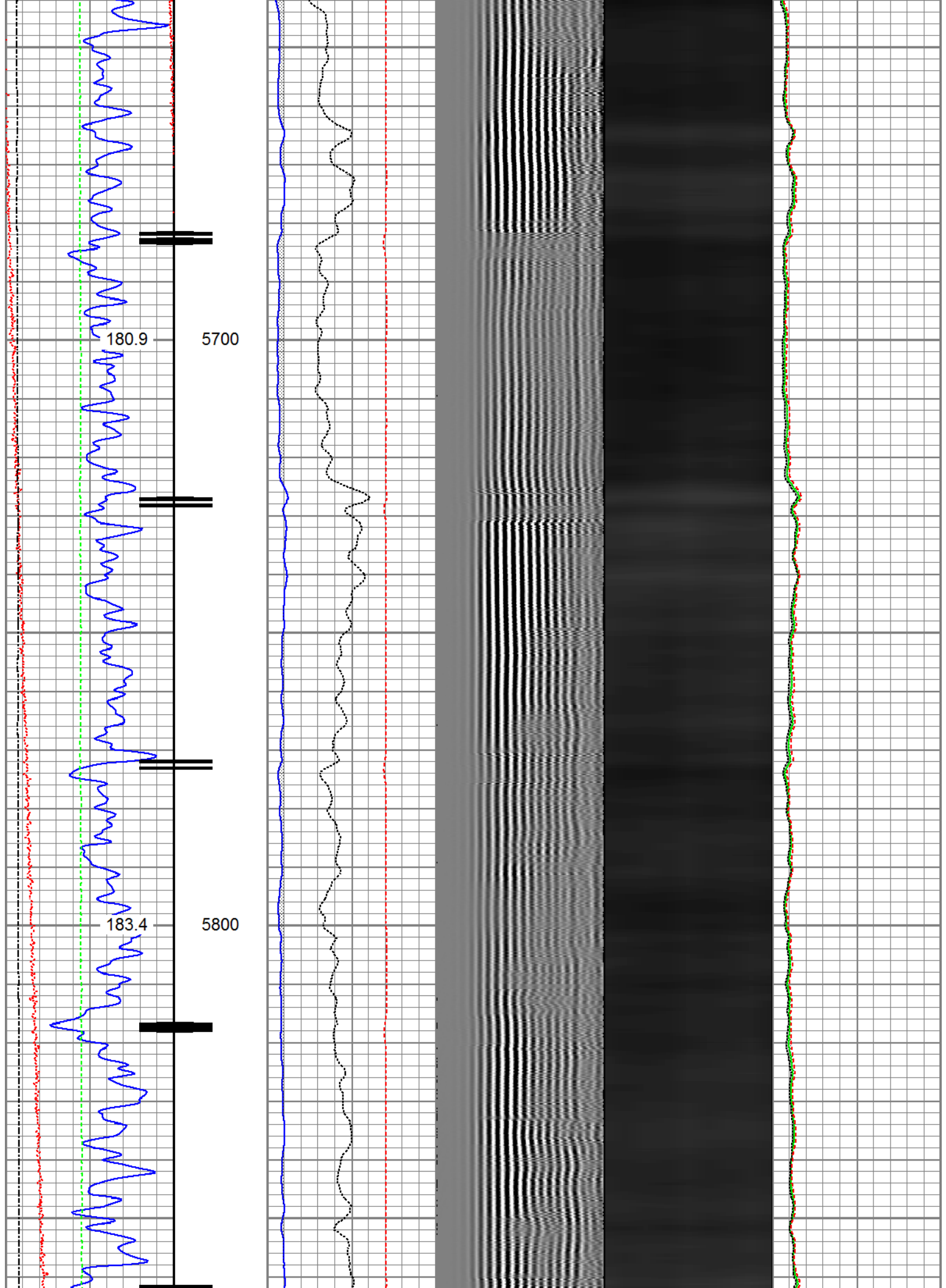


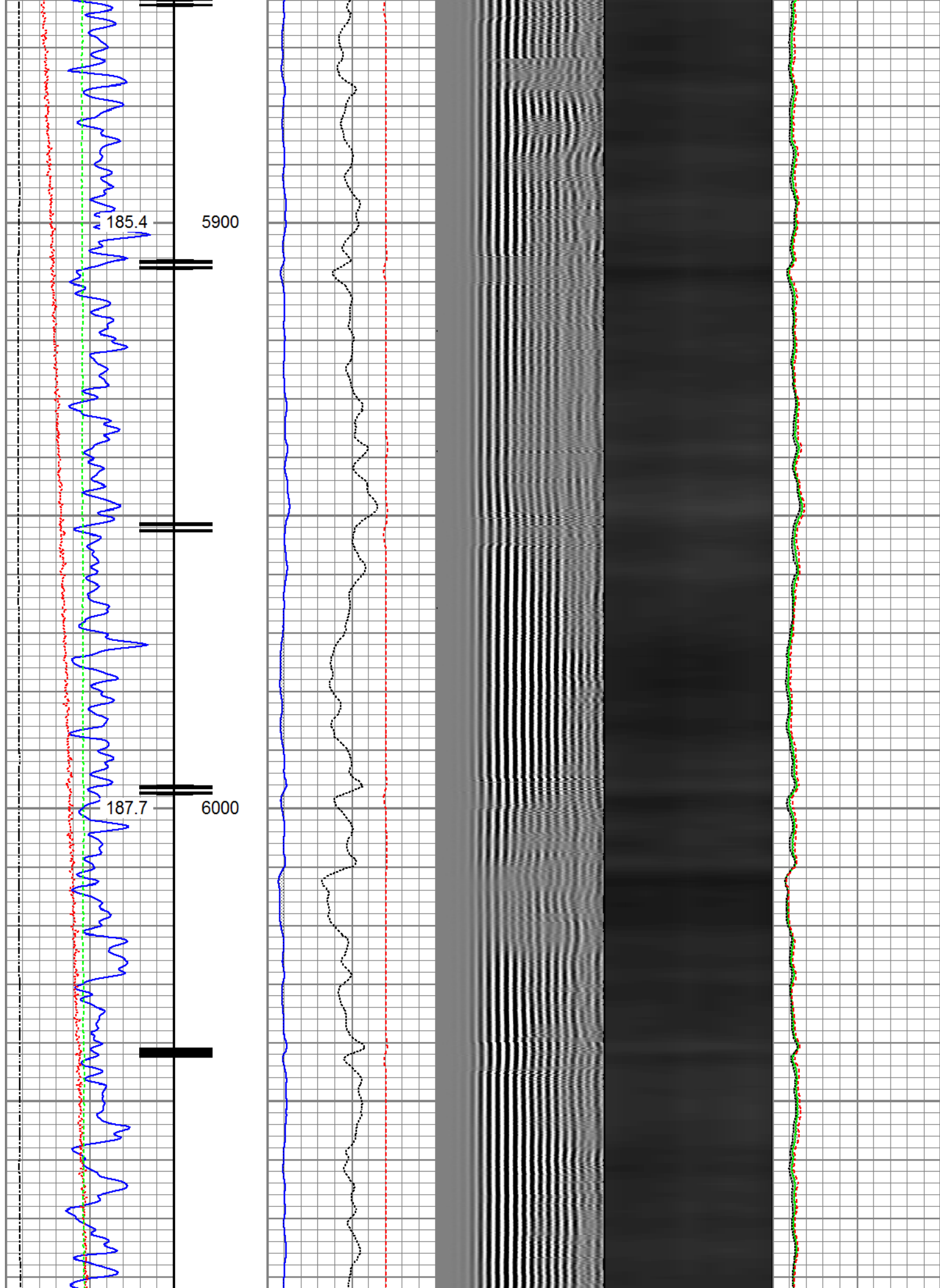


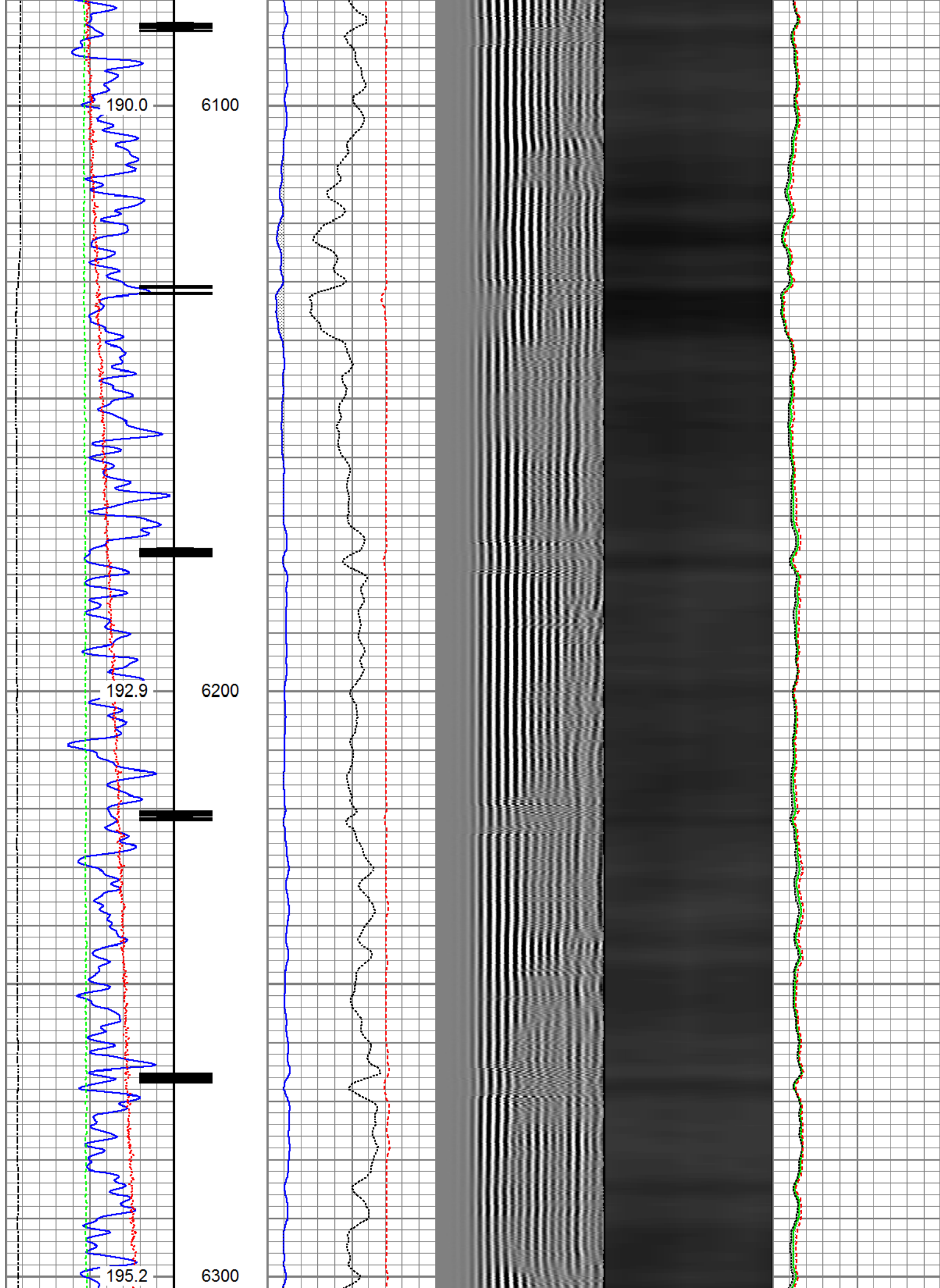


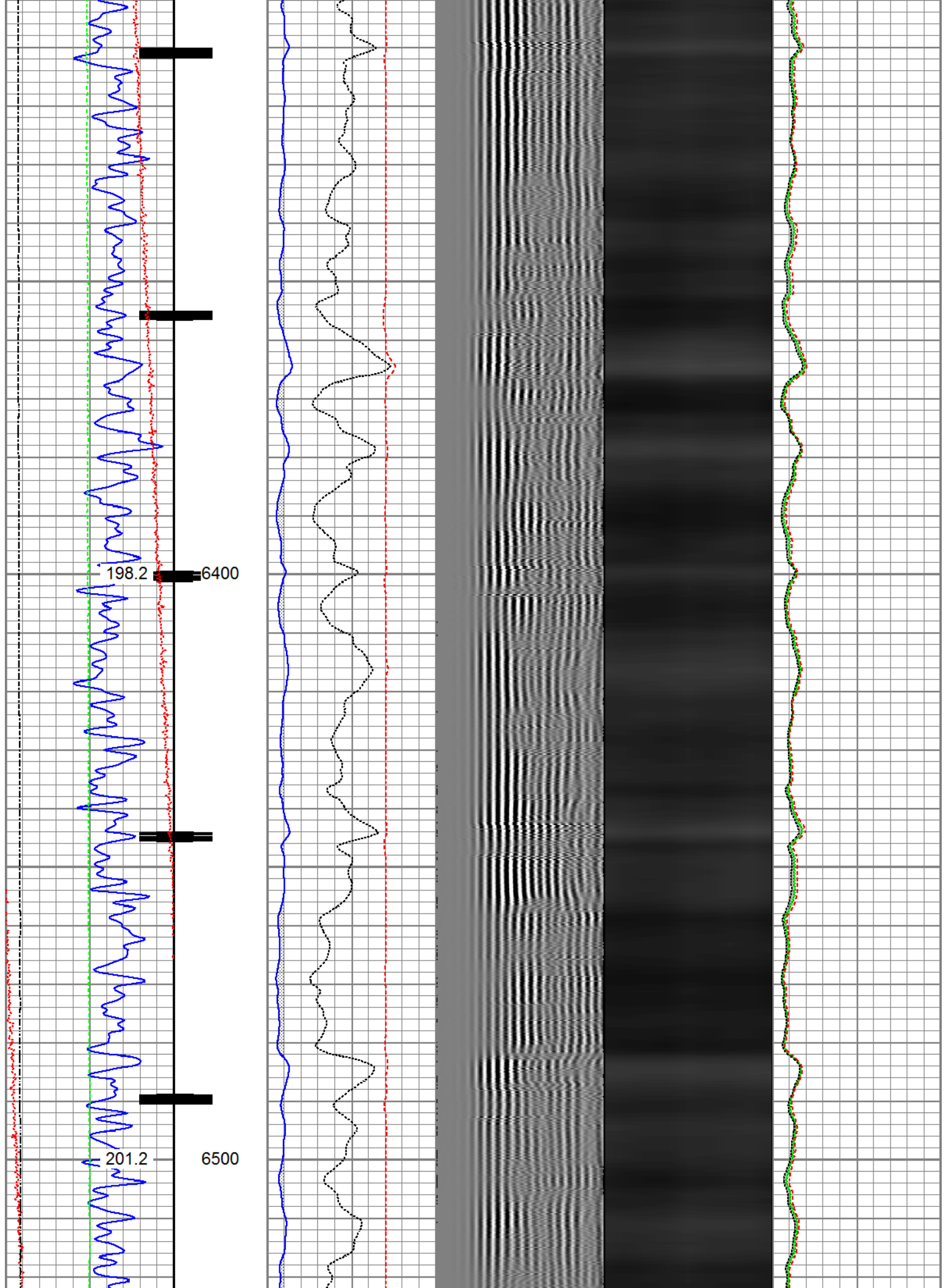


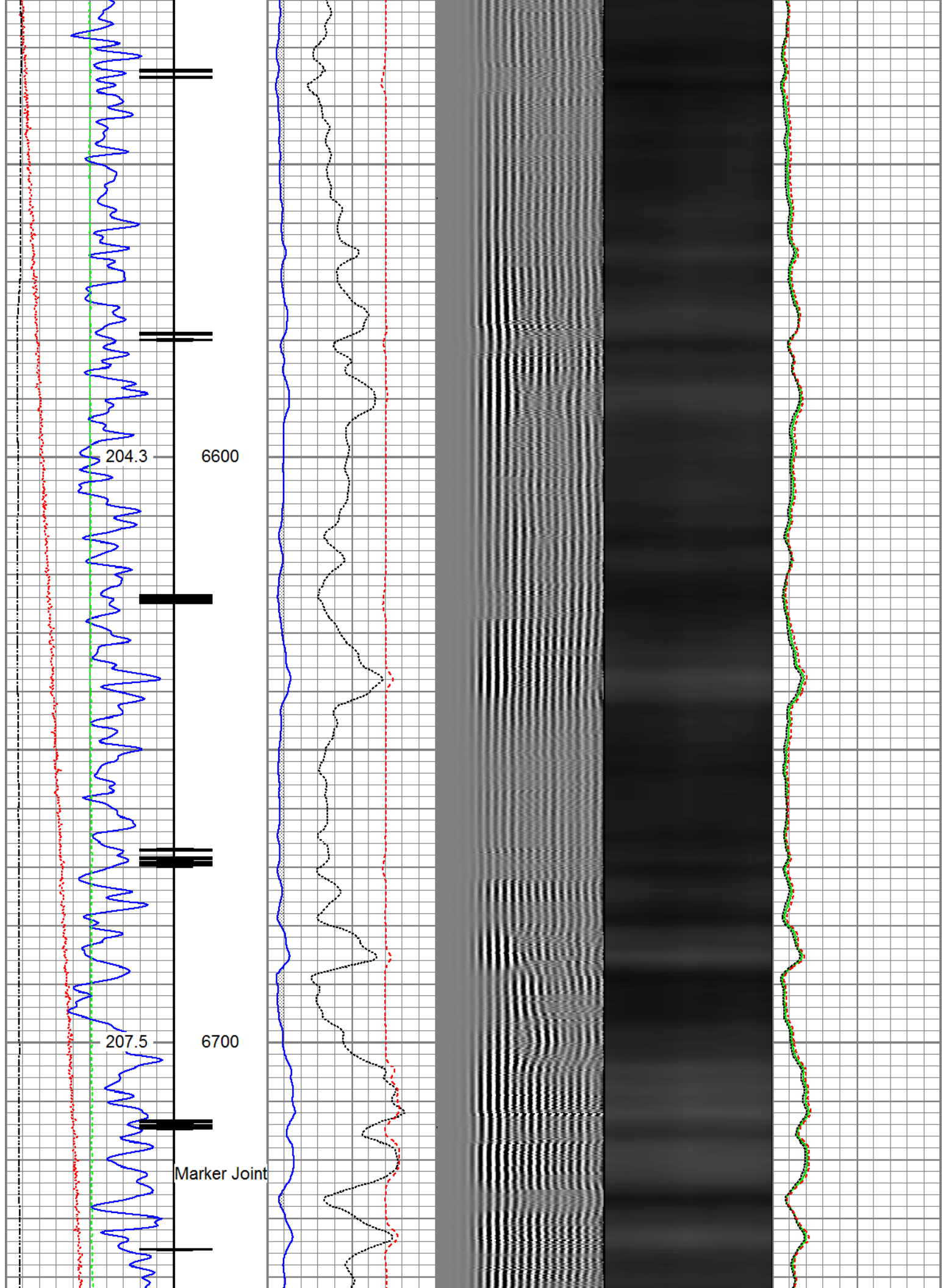


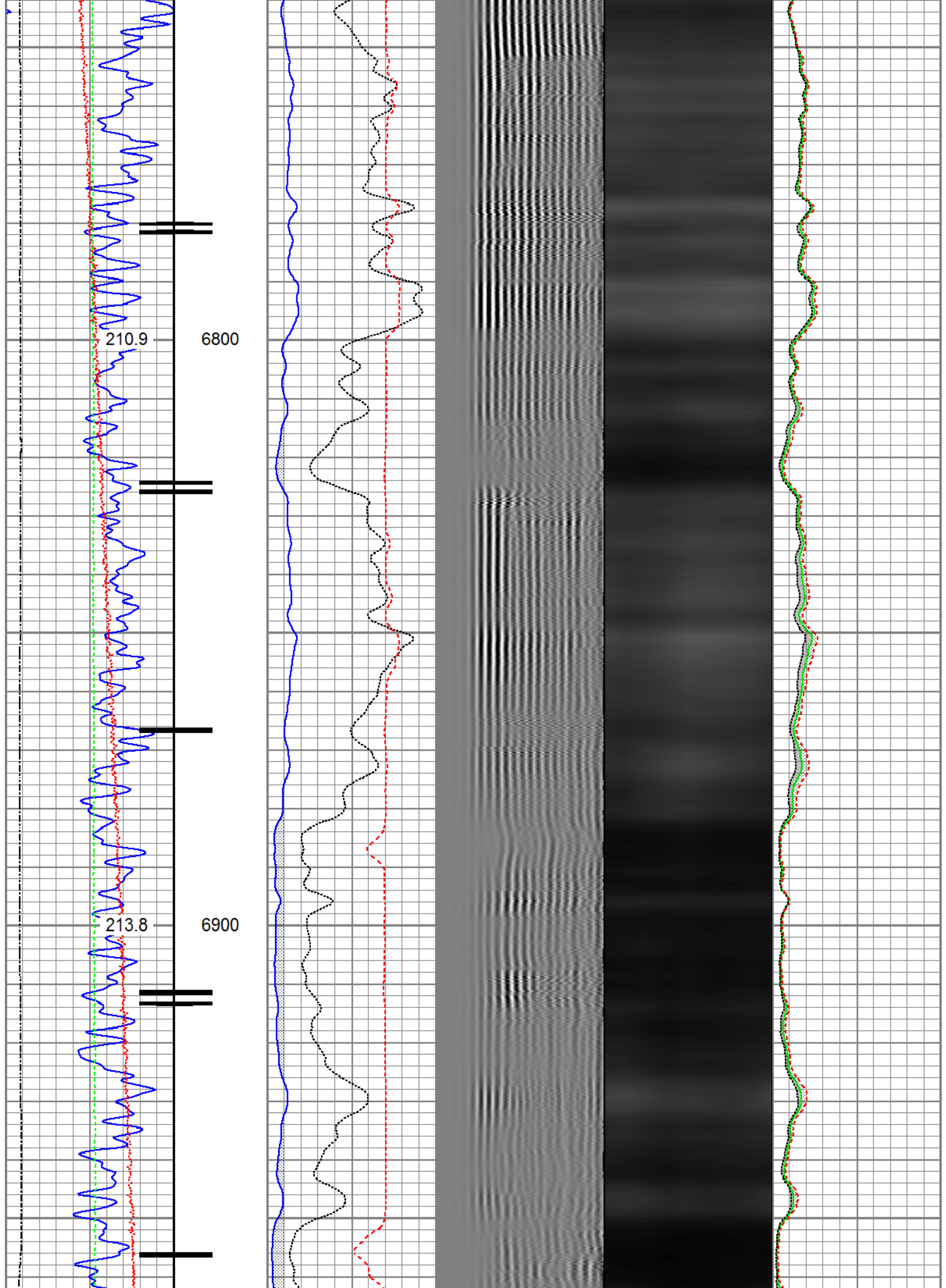


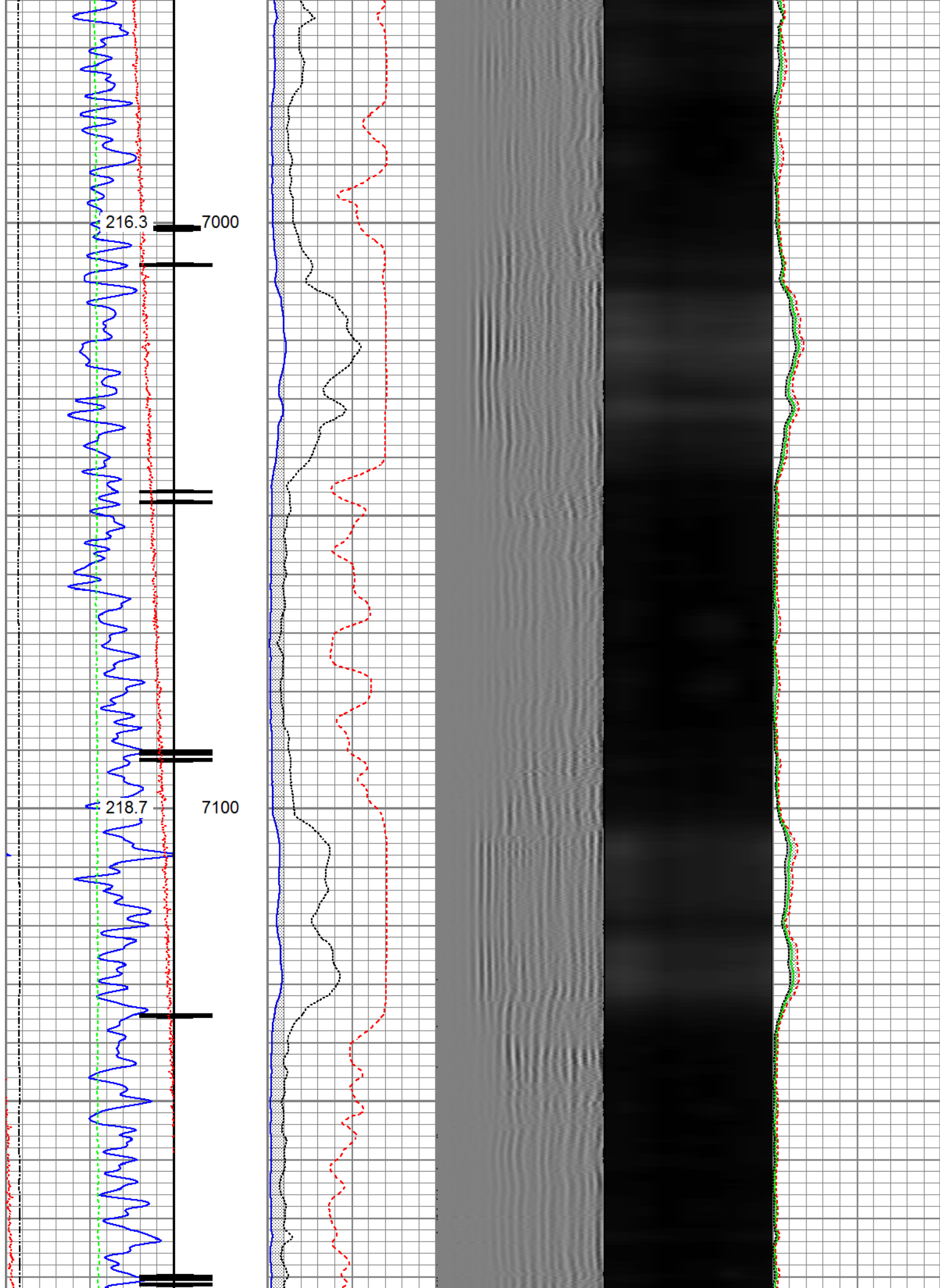


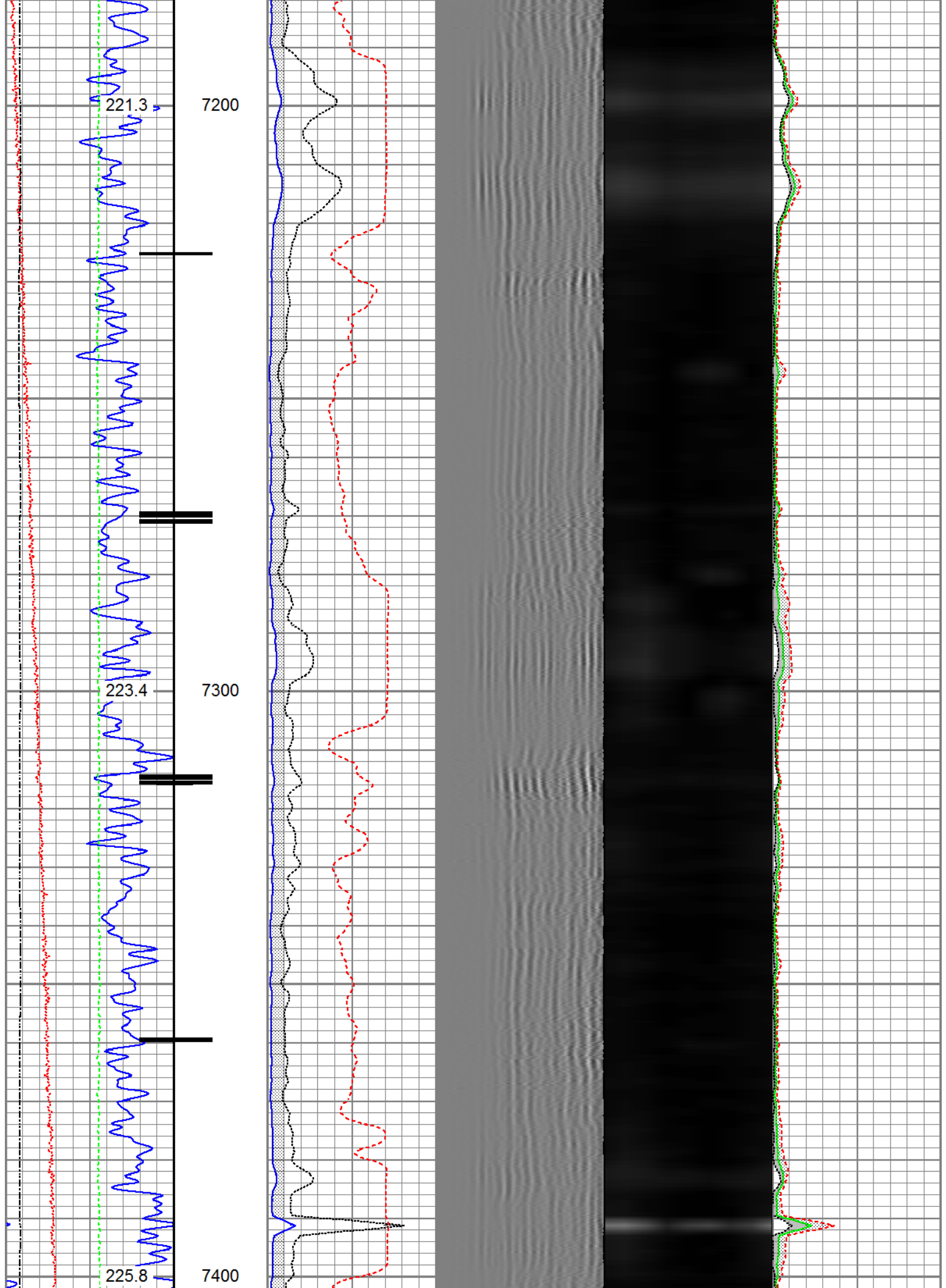


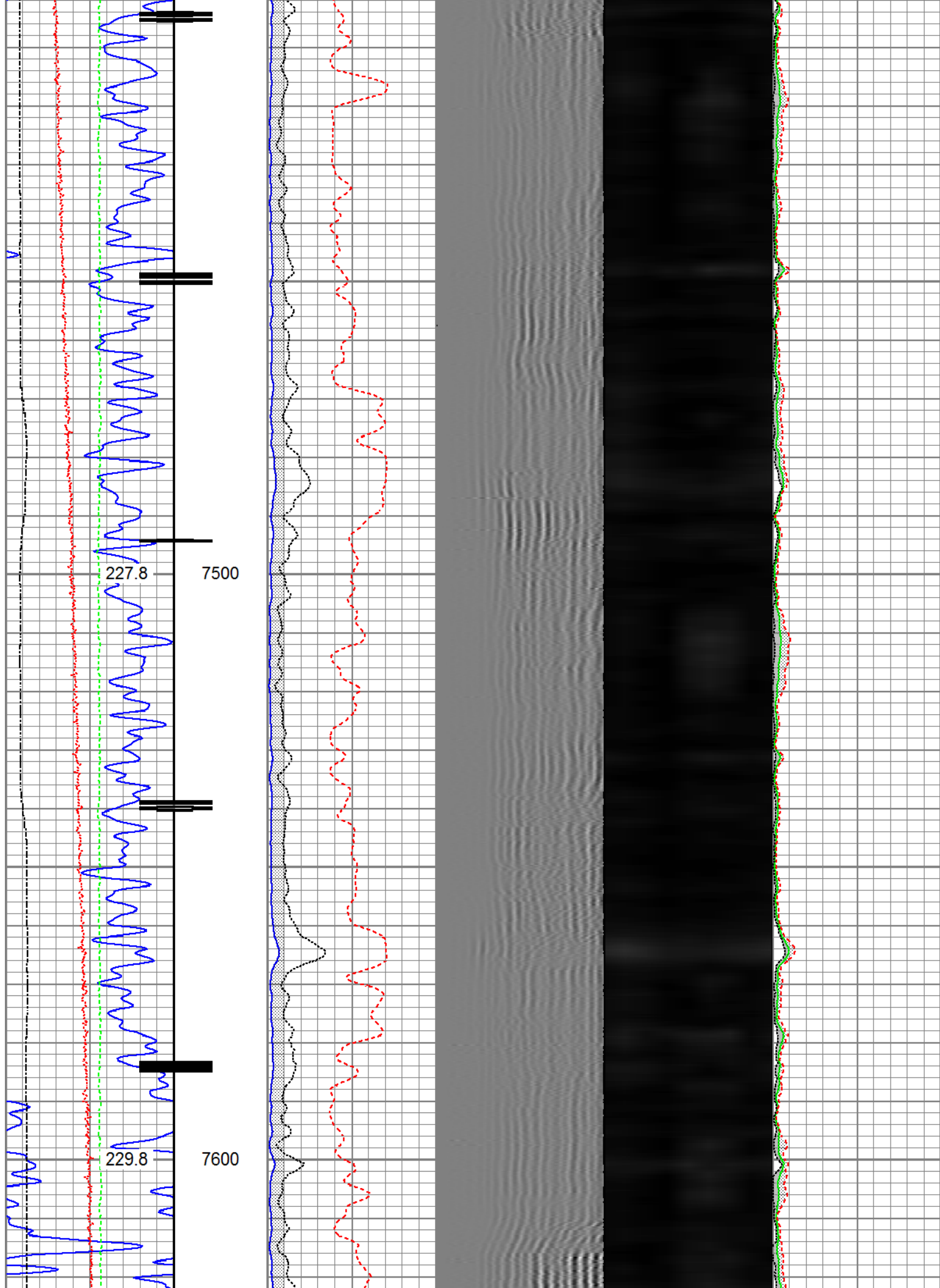


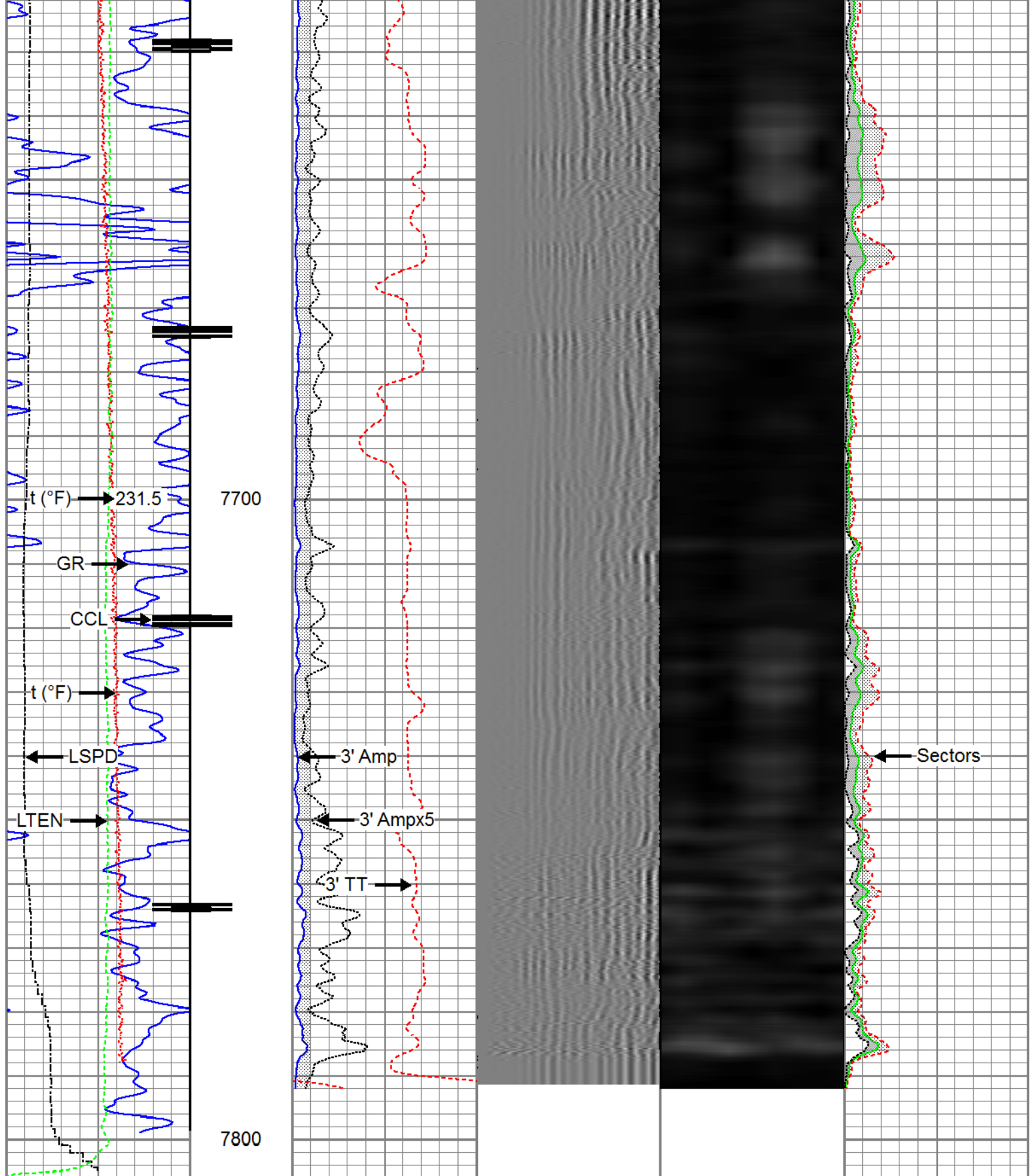












Gamma Ray 0 (GAPI) 120	3' Amplitude 0 (mV) 100	5' Variable Density Log 200 1200	Sector Map	Average Amplitude 0 100
Casing Collar Locator	3' Amplitude x 5 0 (mV) 20			Minimum Amplitude 0 100
Temperature 0 (degF) 20	3' Travel Time 650 (usec) 150			Maximum Amplitude 0 100
Line Speed				

-150	(ft/min)	150
Line Tension		
0	(lb)	2000

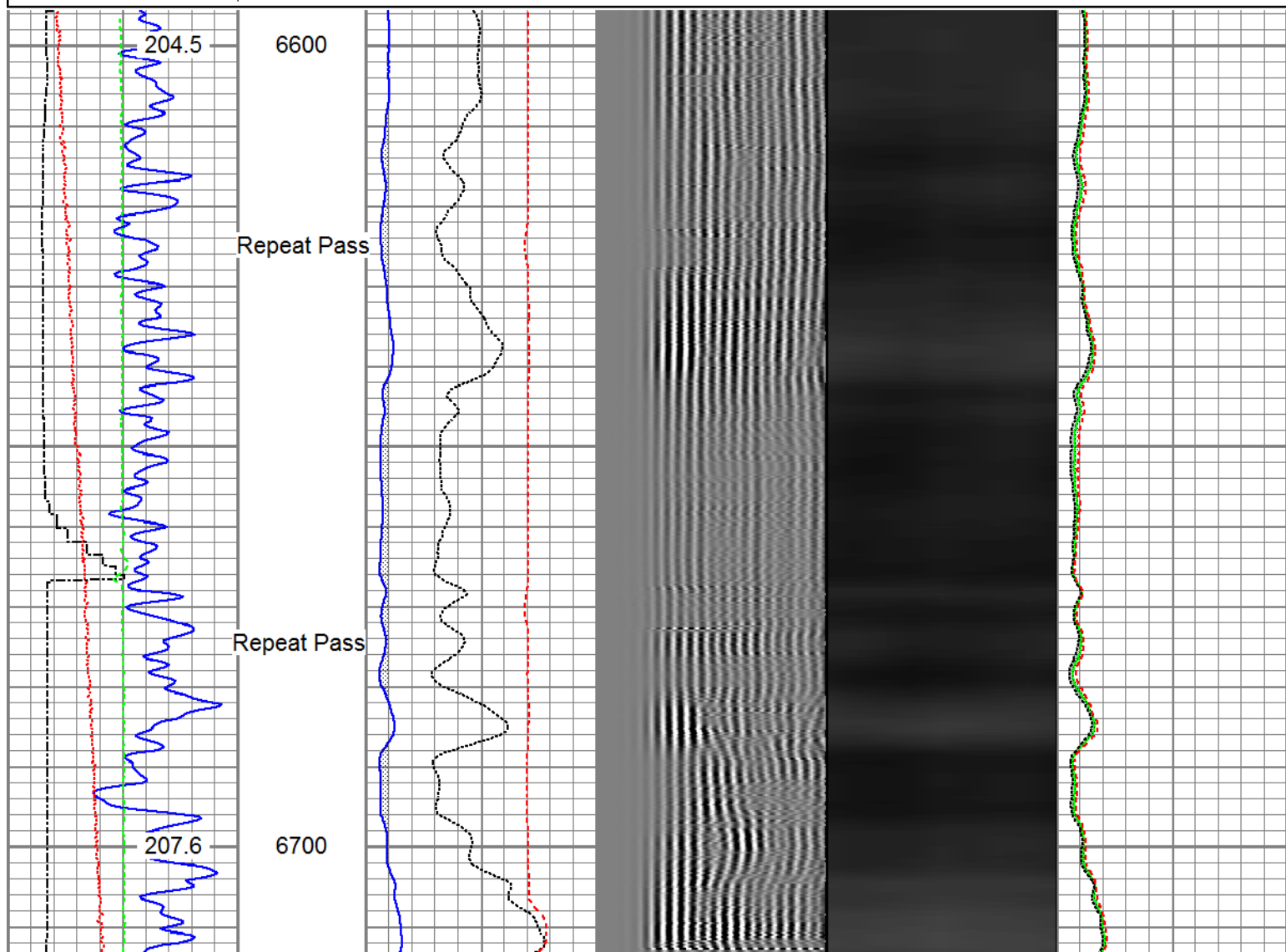


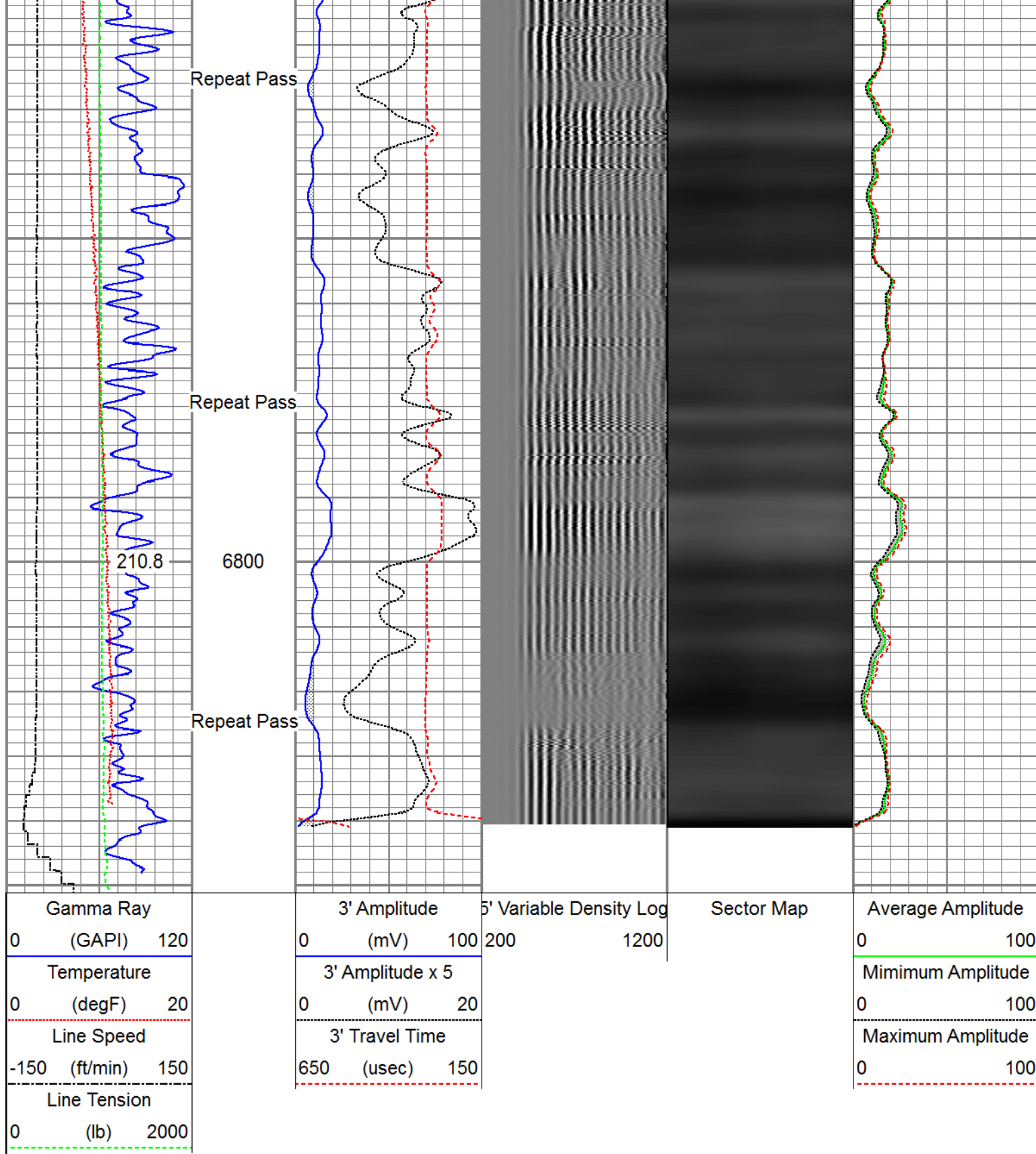
Repeat Pass

Recorded With 2800 PSI of Surface Induced Pressure

Database File: anadarko_puma fed 4n-14hz_15-may-2017_rbl\processed_0512342563_anadarko_puma fed 4n-14
 Dataset Pathname: pass2
 Presentation Format: ros_radri
 Dataset Creation: Mon May 15 10:26:01 2017
 Charted by: Depth in Feet scaled 1:240

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





Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
			Titan_Electric_Cable_Heads-Titan_1-11/16"	1.03	1.69	5.40
			Electric Cable Head with 1" Fishing Neck			
			Probe_ELine_BowSpring_Centralizer-P_EB	2.8875	2.75	20.00
			Probe 2-3/4" Electric Inline Bowspring Centralizer			

HeadVolt	19.54				
Temp	16.75				
WVFS8	14.58		Probe_RADII-C-P_RBT_2750 (FW1302-0029.19)	2.75	105.00
WVFS7	14.58		Probe 2-3/4" Sector Cement Bond Tool with Temperature Probe		
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_EB52.8875	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	55.00
			Probe 2-3/4" Digital CCL / Gamma Ray Combined		
GR	3.77				
			Probe_ELine_BowSpring_Centralizer-P_EB52.8875	2.75	20.00
			Probe 2-3/4" Electric Inline Bowspring Centralizer		
Dataset: PROCESSED_0512342563_Anadarko_Puma Fed 4N-14HZ_05-15-17_RBL.db: field/well/run1/pass4 Total length: 23.43 ft Total weight: 225.40 lb O.D.: 2.75 in					

Calibration Report	
Database File	C:\ProgramData\Warrior\Data\Anadarko_Puma Fed 4N-14HZ_15-MAY-2017_RBL\PROCESSED_05
Dataset Pathname	pass4
Dataset Creation	Mon May 15 10:34:10 2017
Gamma Ray Calibration Report	
Serial Number:	FW1212-026
Tool Model:	P_CGR_2750_S

Tool Model: P_RBT_2750
 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 Mon May 15 08:07:38 2017:

	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	



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State	Colorado