



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	Kerr-McGee Oil & Gas Onshore, L.P.										
Well	Babcock 32N-33HZ										
Field	Wattenberg										
County	Weld										
State	Colorado										
Location:		API # : 05-123-43811								Other Services	
										JB/GR	
SEC 4		TWP 2N		RGE 67W							
Permanent Datum	Ground Level			Elevation			4887'				
Log Measured From	Kelly Bushing			21 FT							
Drilling Measured From	Kelly Bushing										
		K.B. 4908'			D.F. 4907'			G.L. 4887'			

Date 25-JUL-2017

Run Number	Two	
Depth Driller	12378 FT	
Depth Logger	7117 FT	
Bottom Logged Interval	7710 FT	
Top Log Interval	Surface	
Open Hole Size	7.875"	
Type Fluid	Water	
Density / Viscosity	8.34 lb/gal	
Max. Recorded Temp.	221°F	
Estimated Cement Top	See Log	
Time Well Ready	ROA	
Time Logger on Bottom	16:22	
Equipment Number	HD-340	
Location	Fort Lupton, CO	
Recorded By	Greg Lueck	
Witnessed By	Chris Hayes	

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To

Casing Record	Size (in)	Wgt (lbs/ft)	Grade	Top	Bottom
Surface Casing	9 5/8	36	J-55	Surface	1854 FT
Intermediate #1	5 1/2	20	P-110	Surface	12368 FT
Intermediate #2					
Liner					

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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 6888 FT
Adjusted -14 FT to correlate with Marker Joint
Gauge Ring/Junk Basket ran to 7790 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 debris upon completion of operations

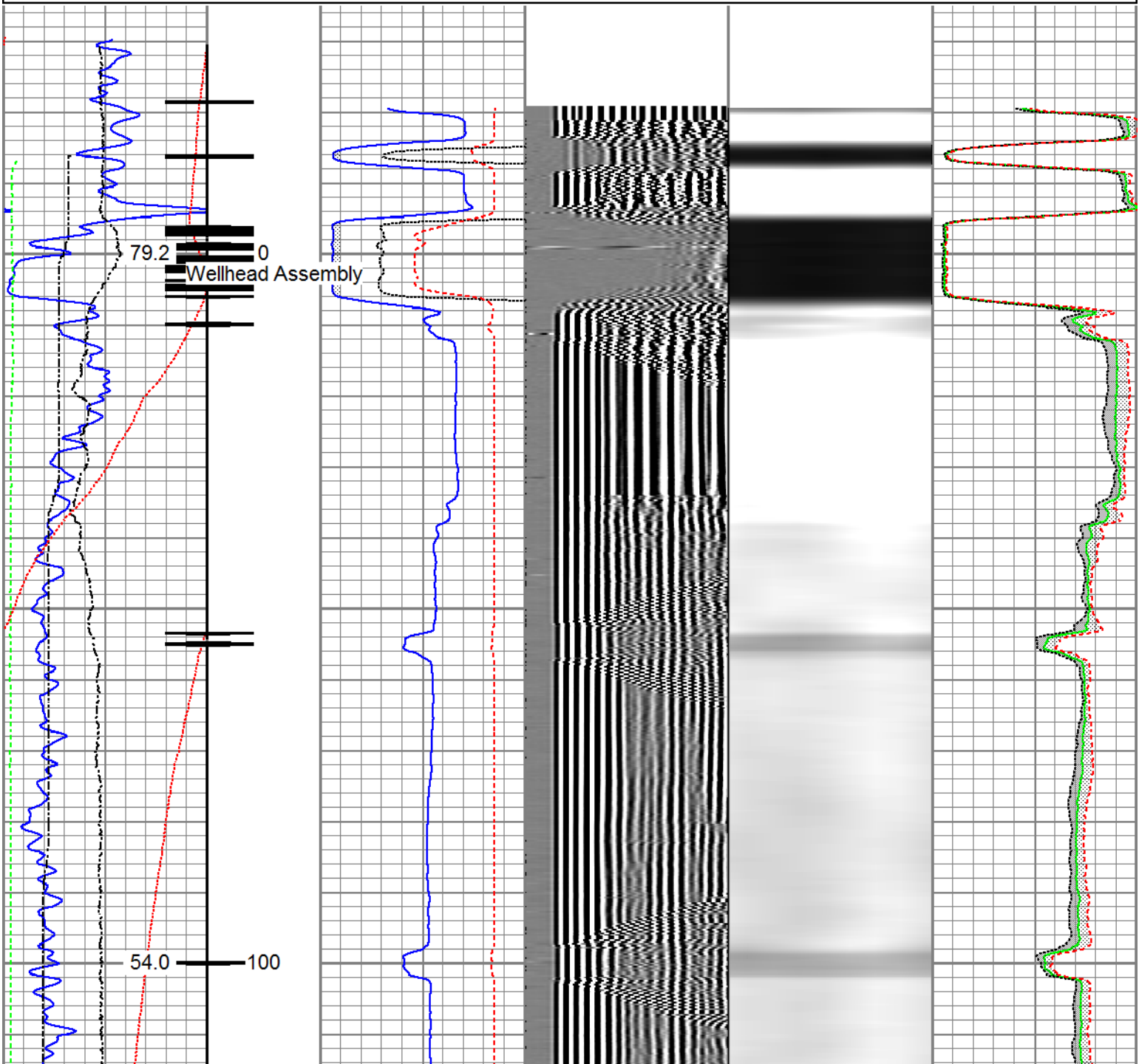
Thank you for choosing Reliance Oilfield Services, LLC!!

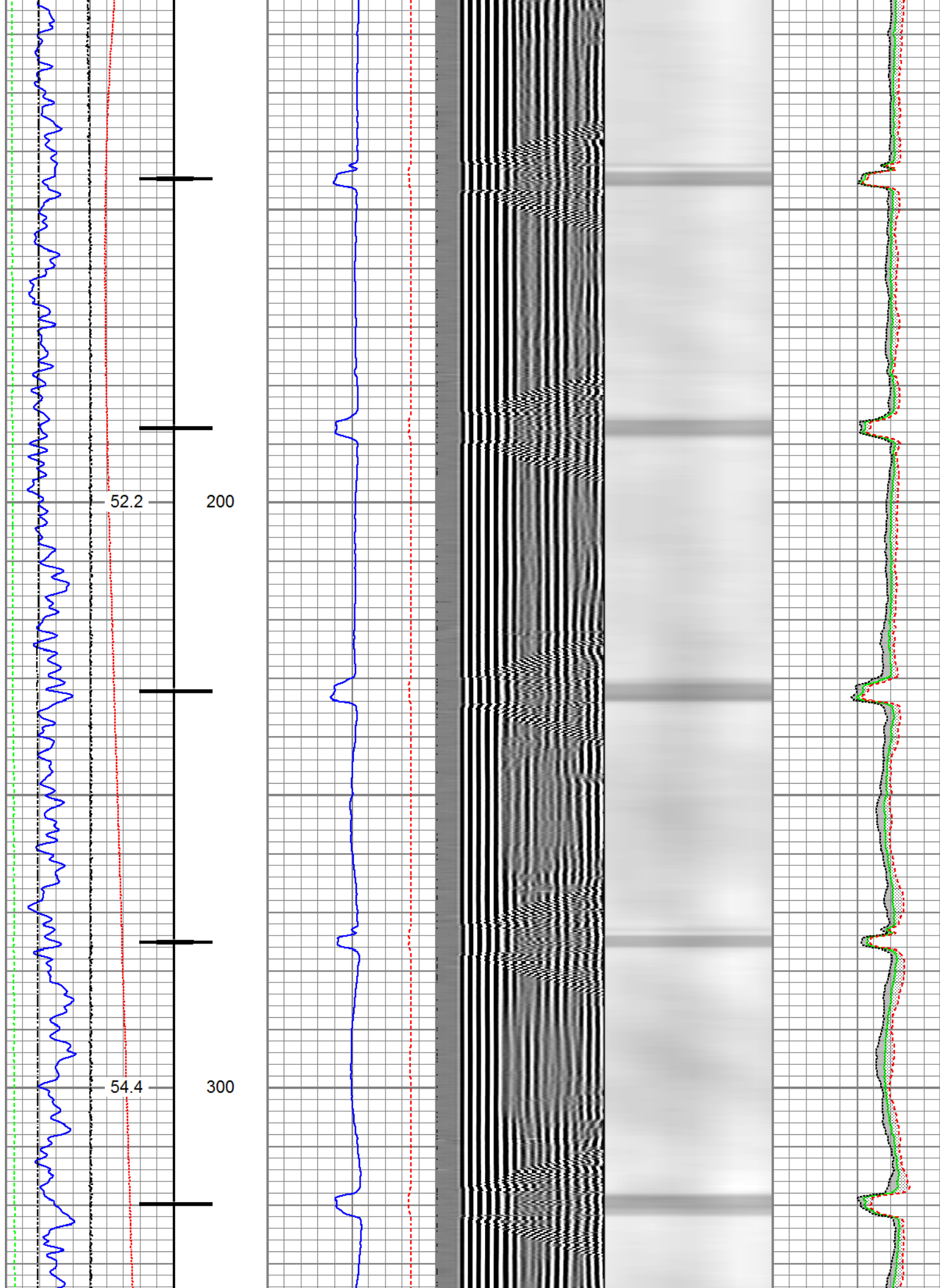


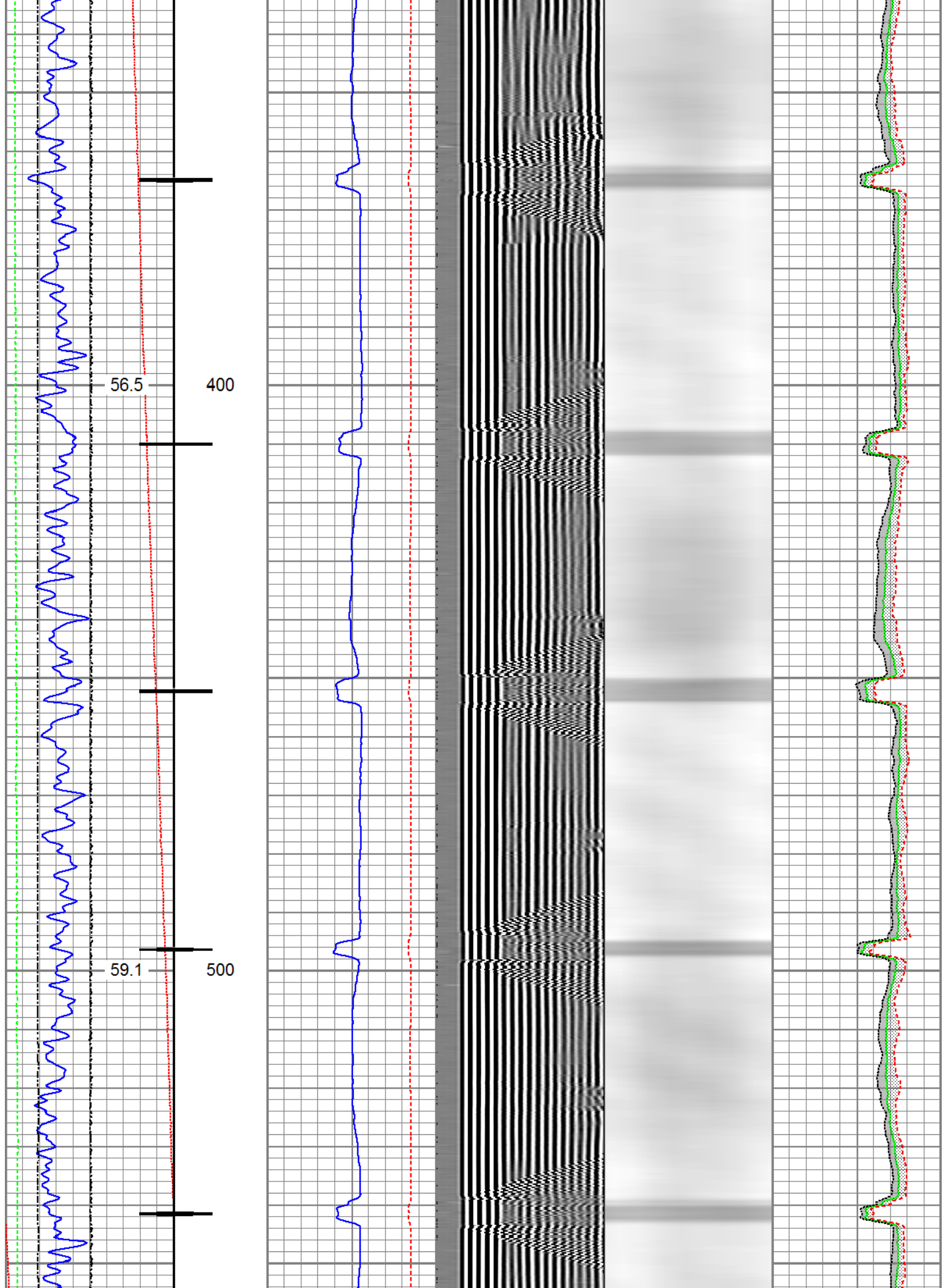
Main Pass

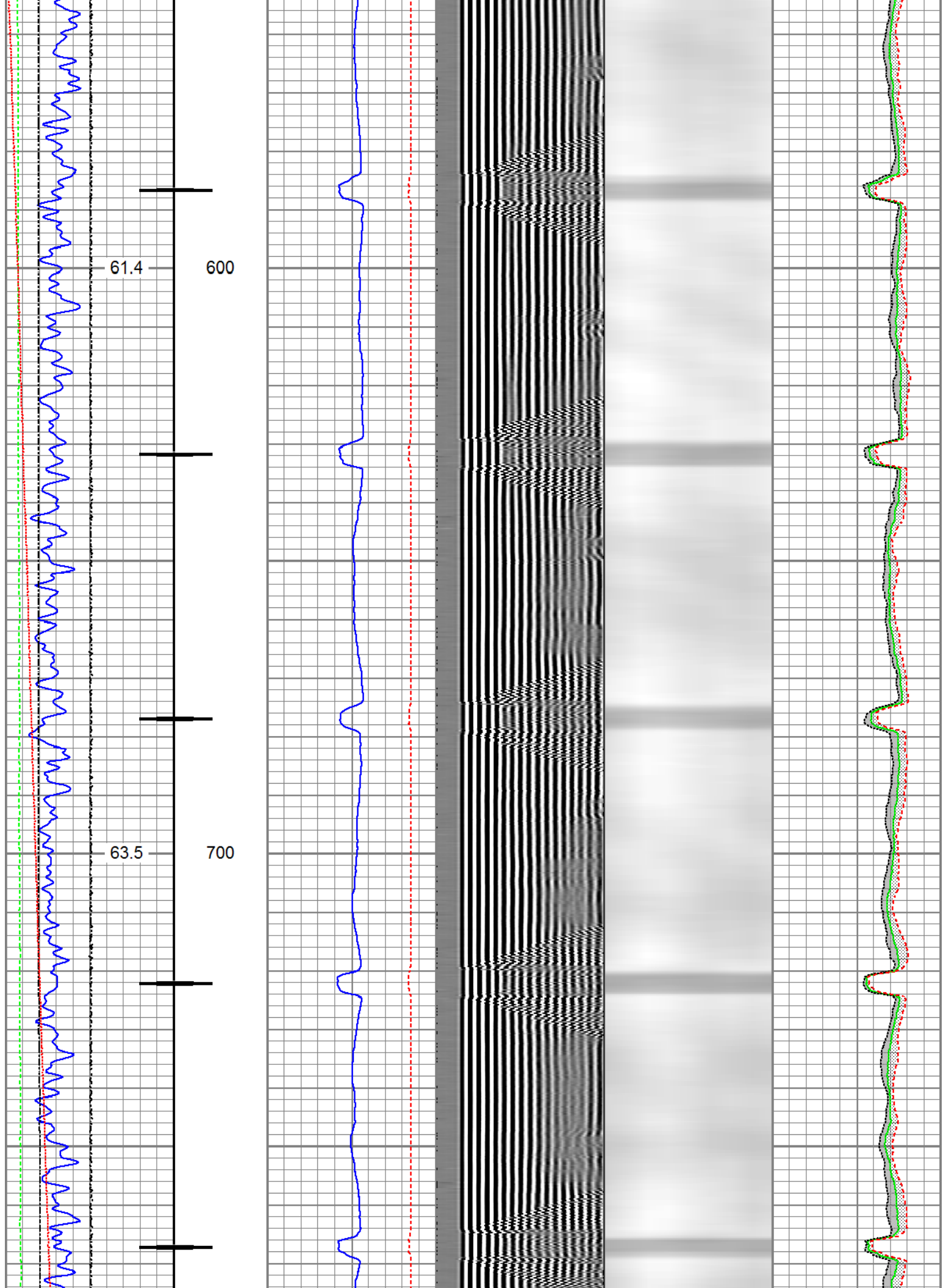
Recorded With 2800 PSI Surface Induced Pressure

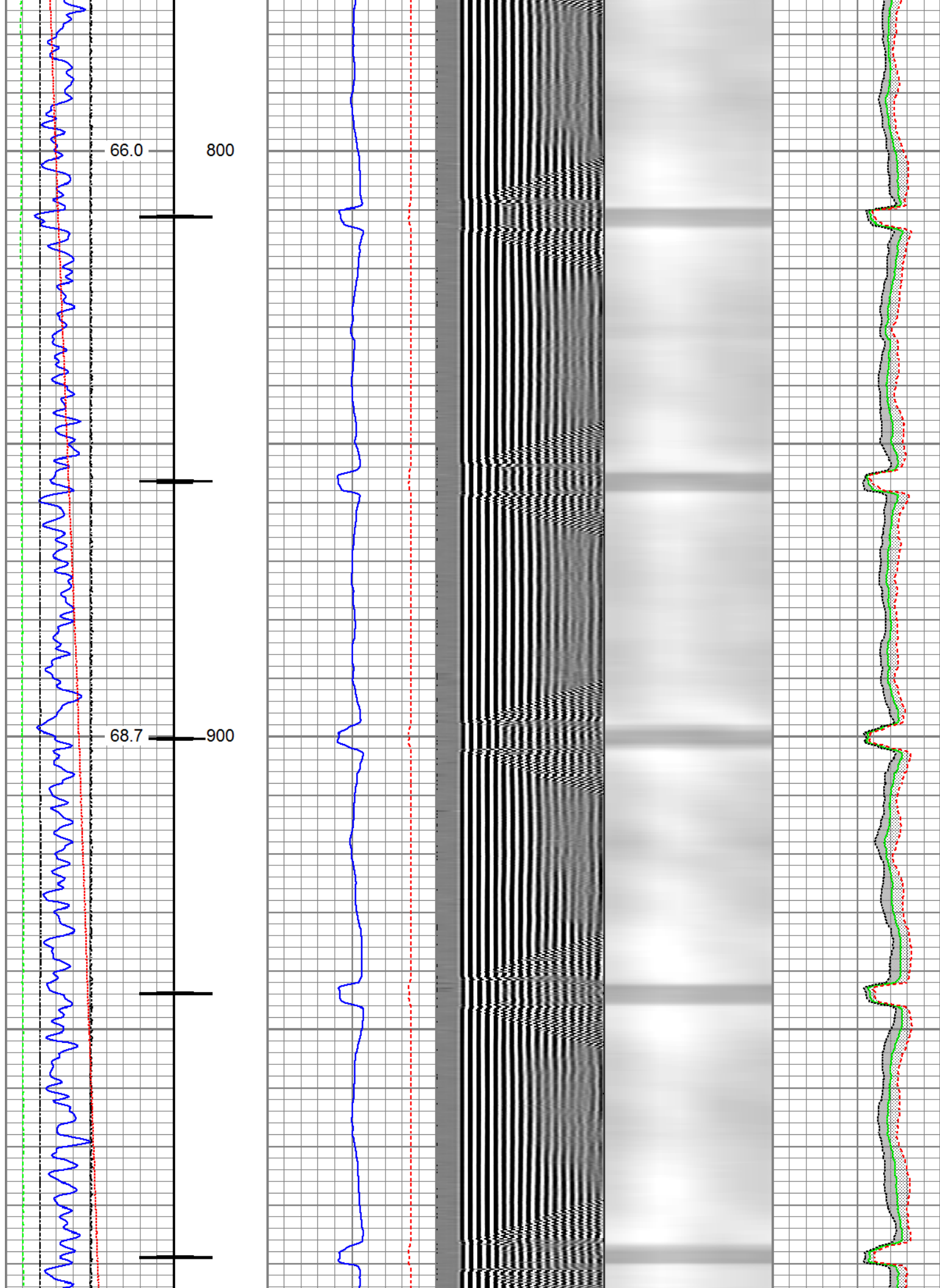
Gamma Ray	CCL	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120		0 (mV) 100	200 1200		0 100
Line Speed		3' Amplitude x 5			Minimum Amplitude
-150 (ft/min) 150		0 (mV) 20			0 100
Line Tension		3' Travel Time			Maximum Amplitude
0 (lb) 2000		650 (usec) 150			0 100
Differential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

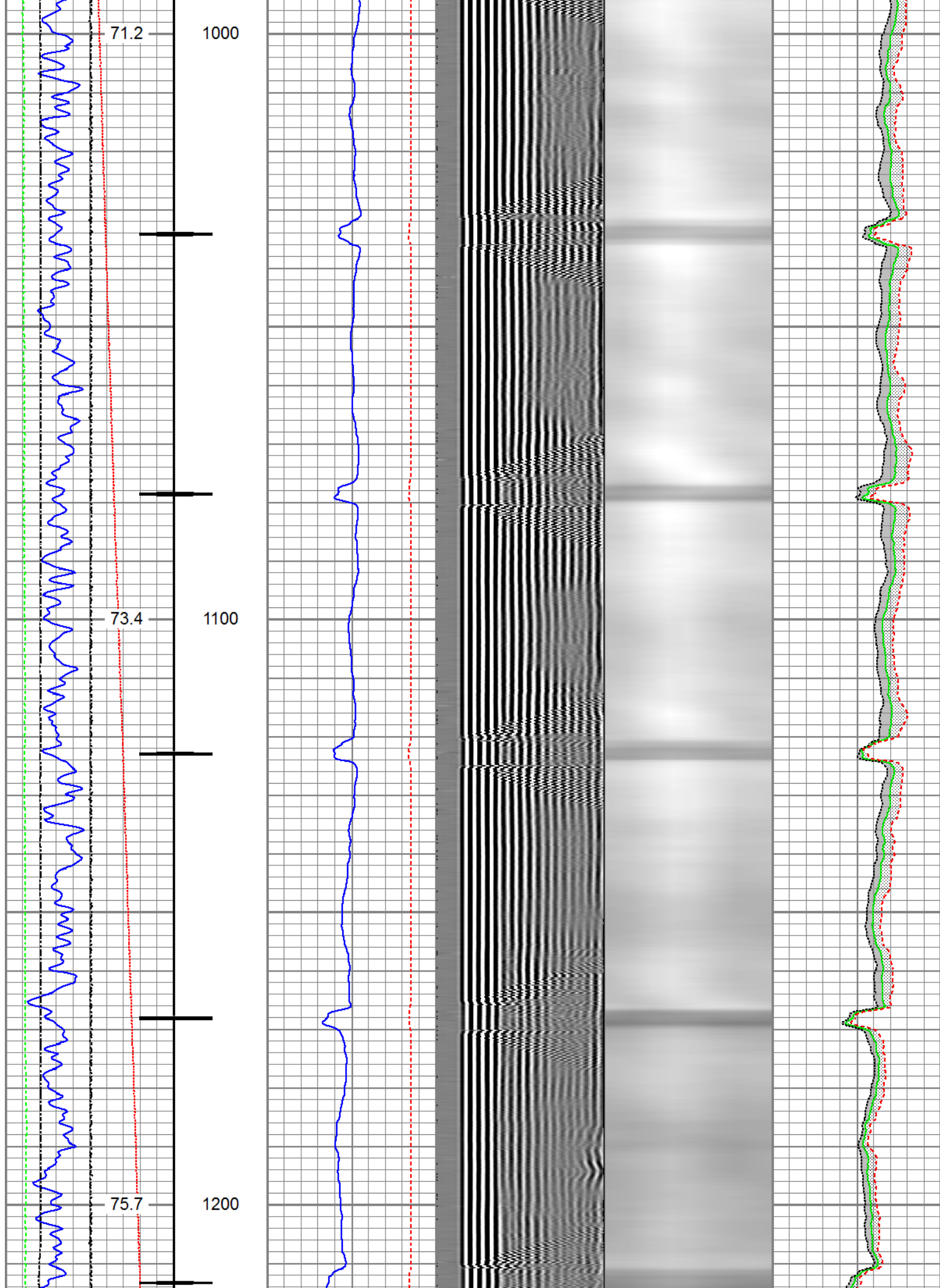


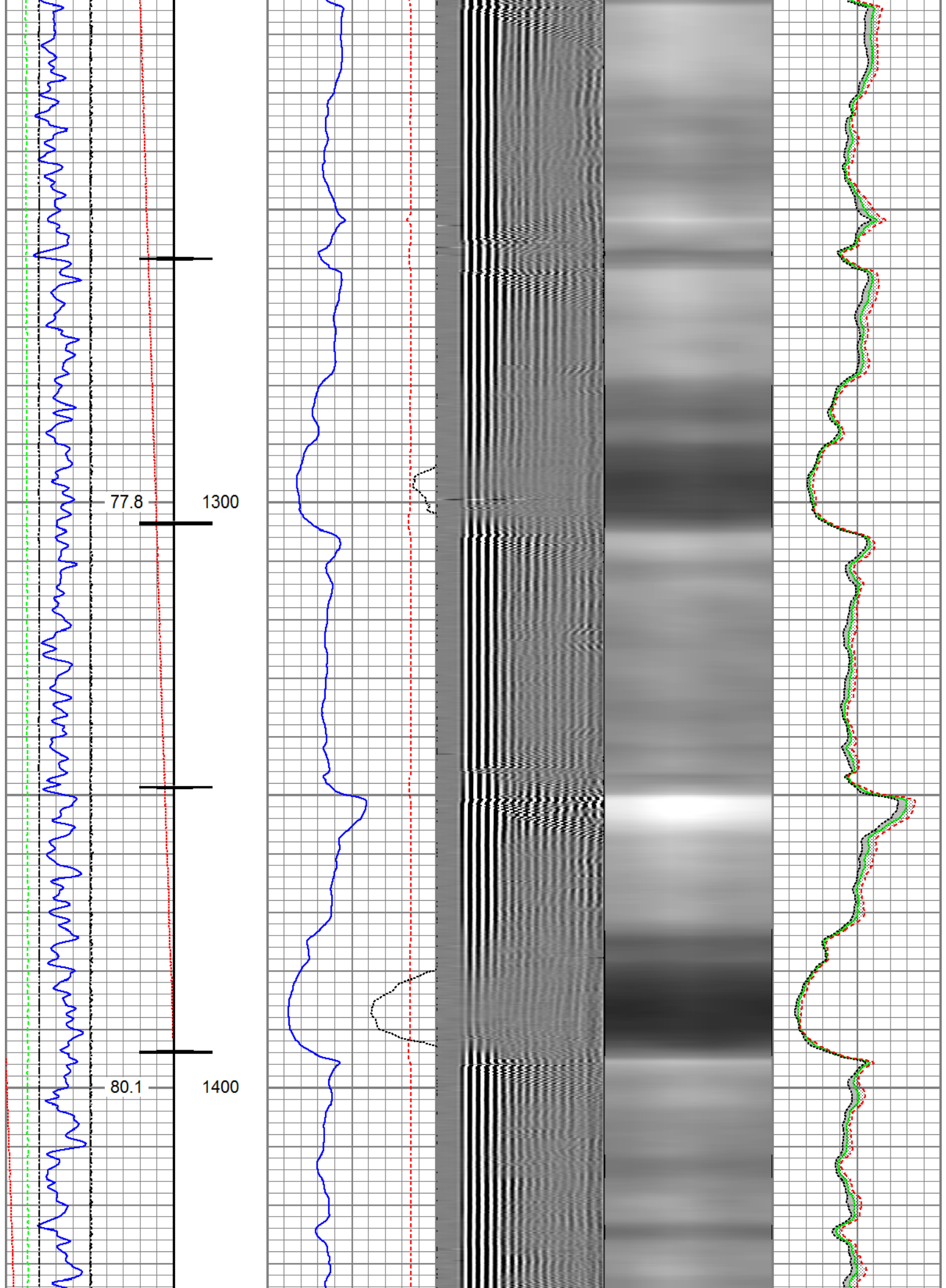


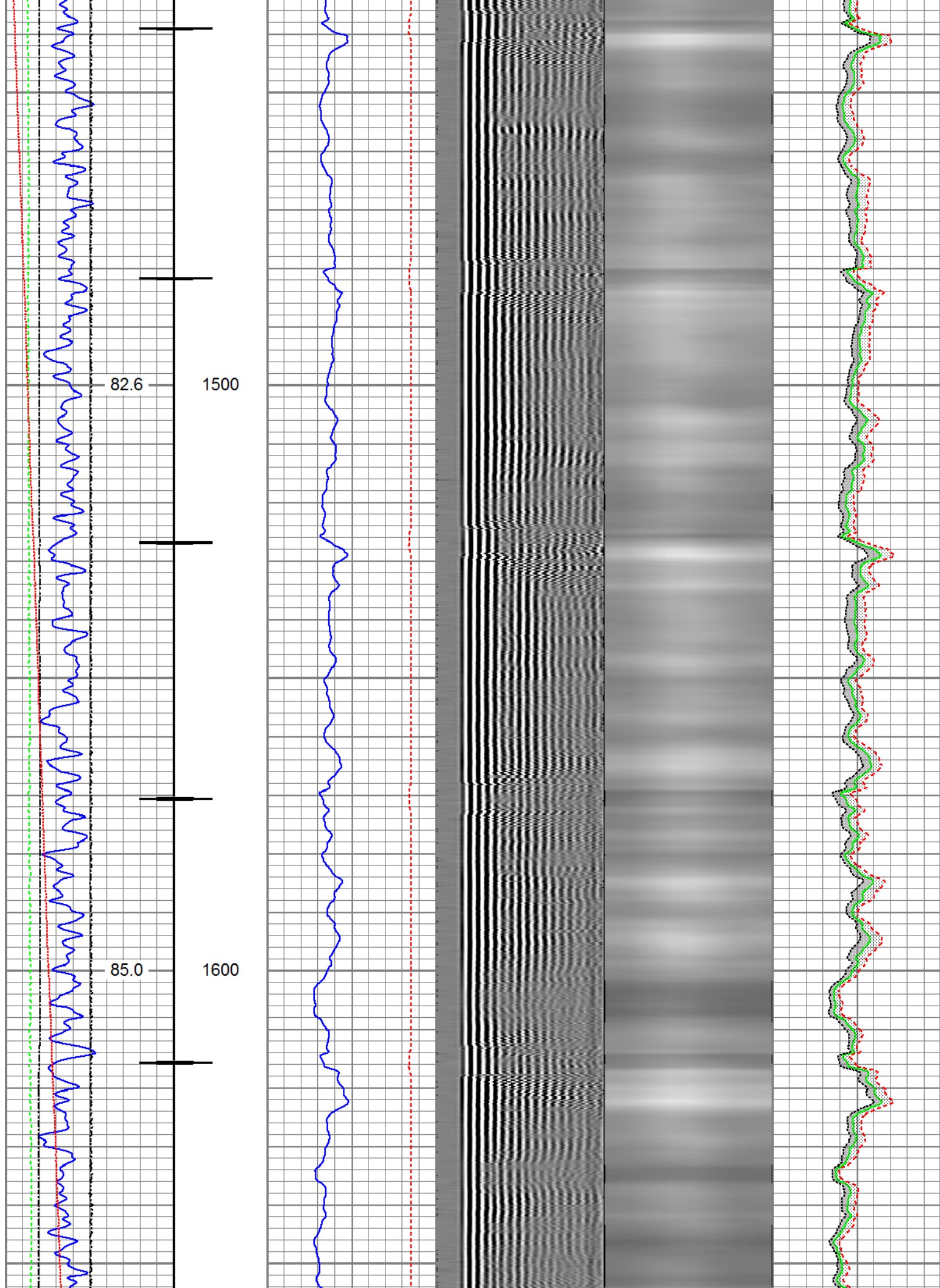


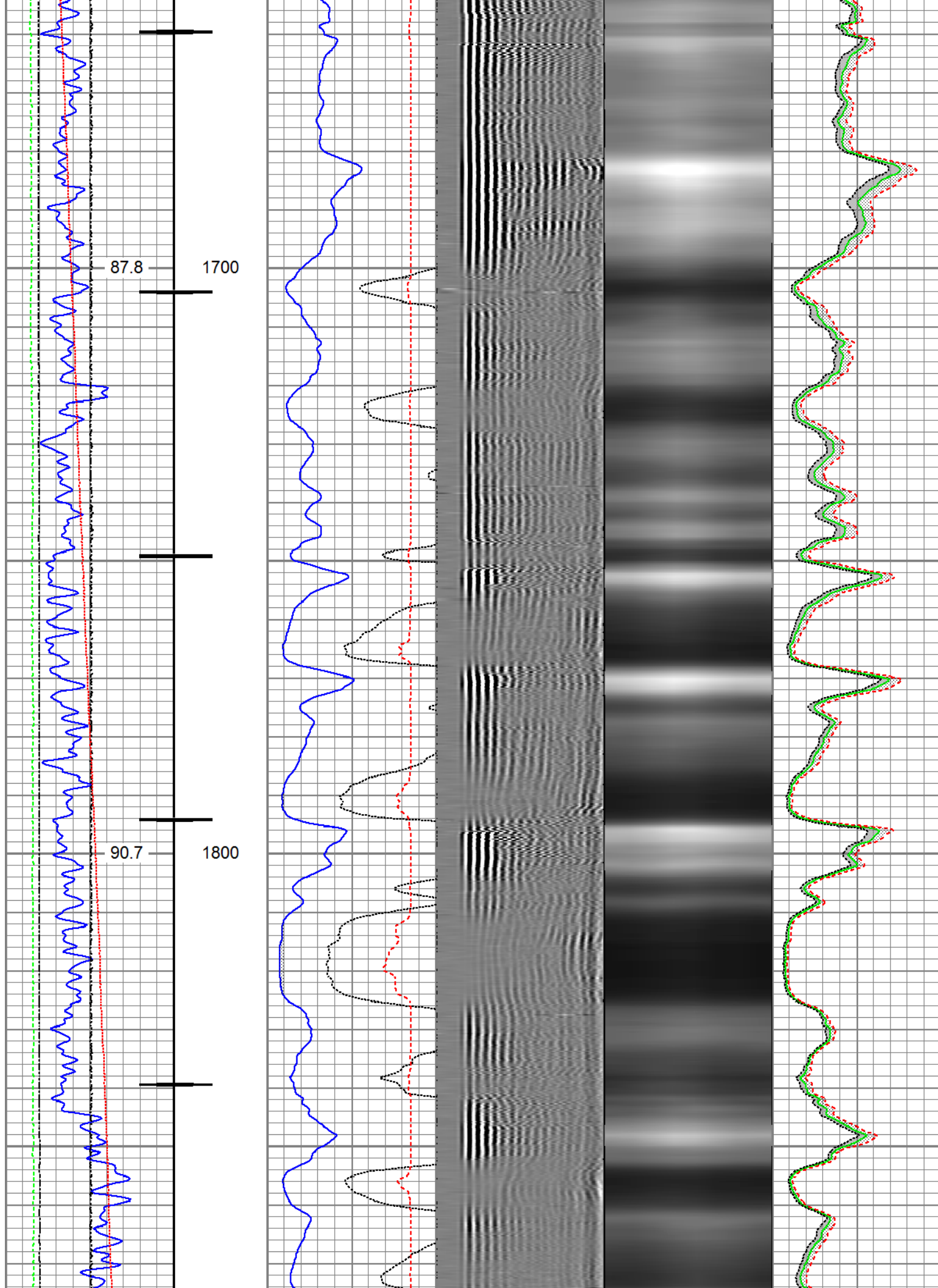


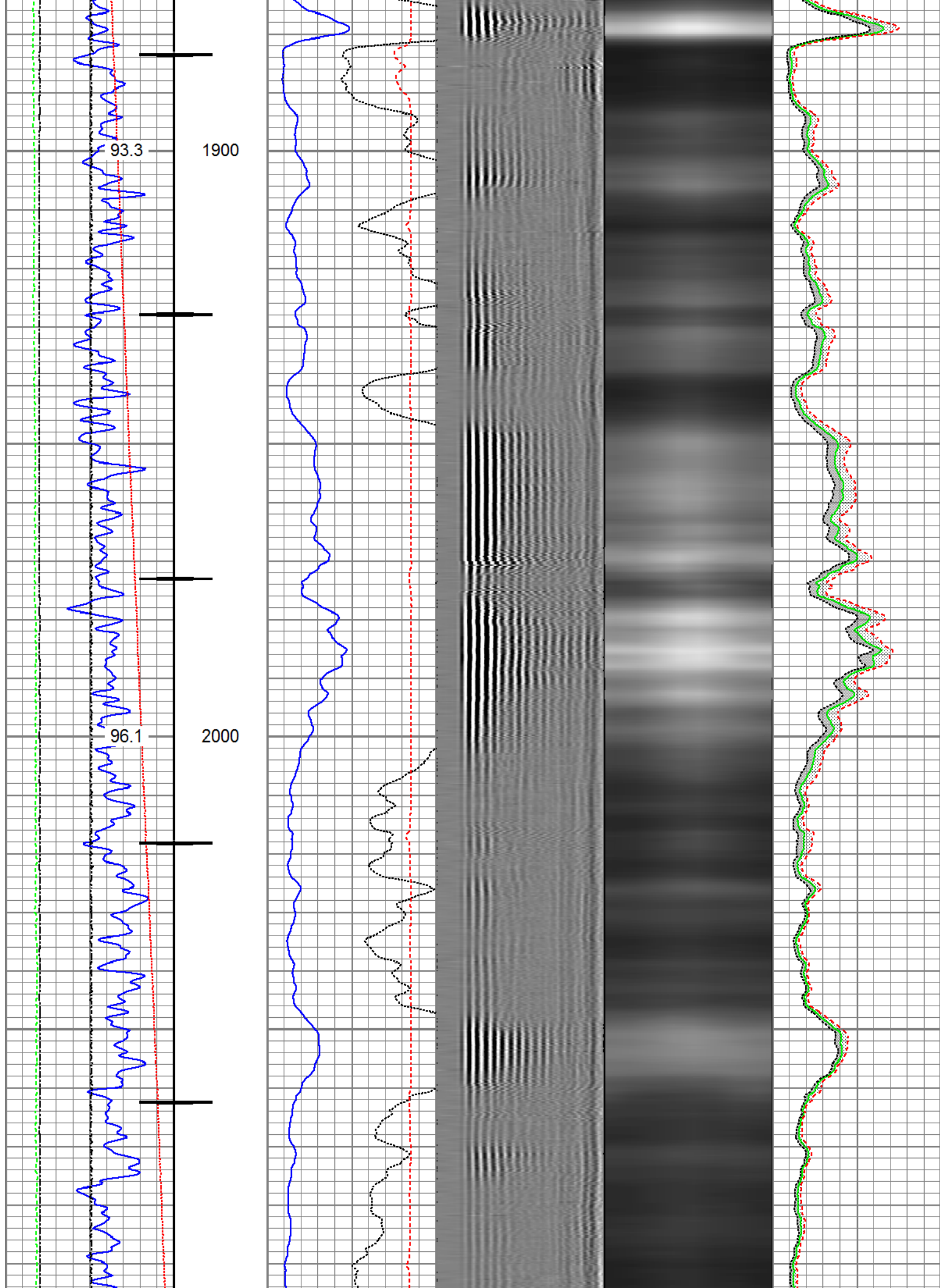


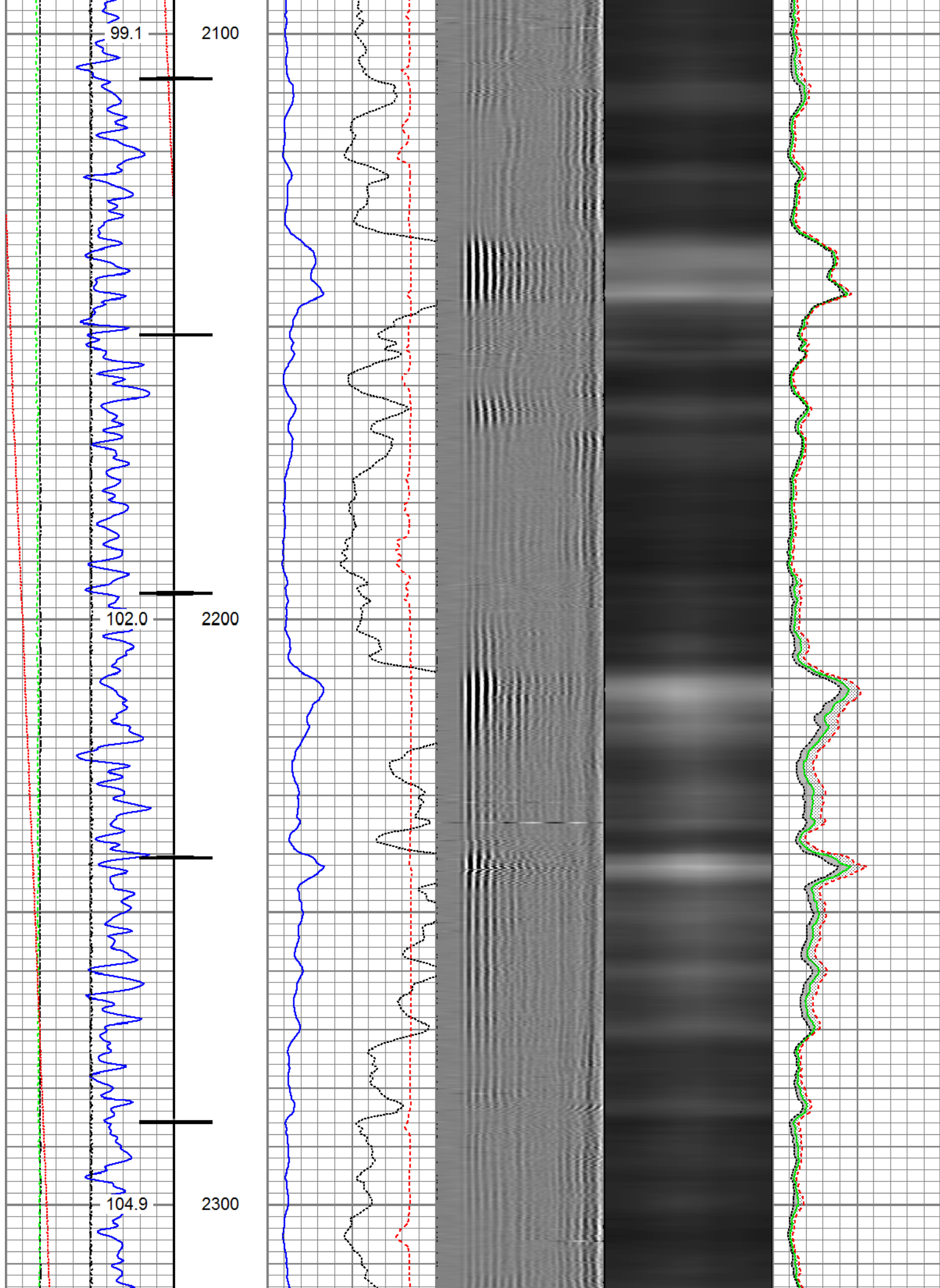


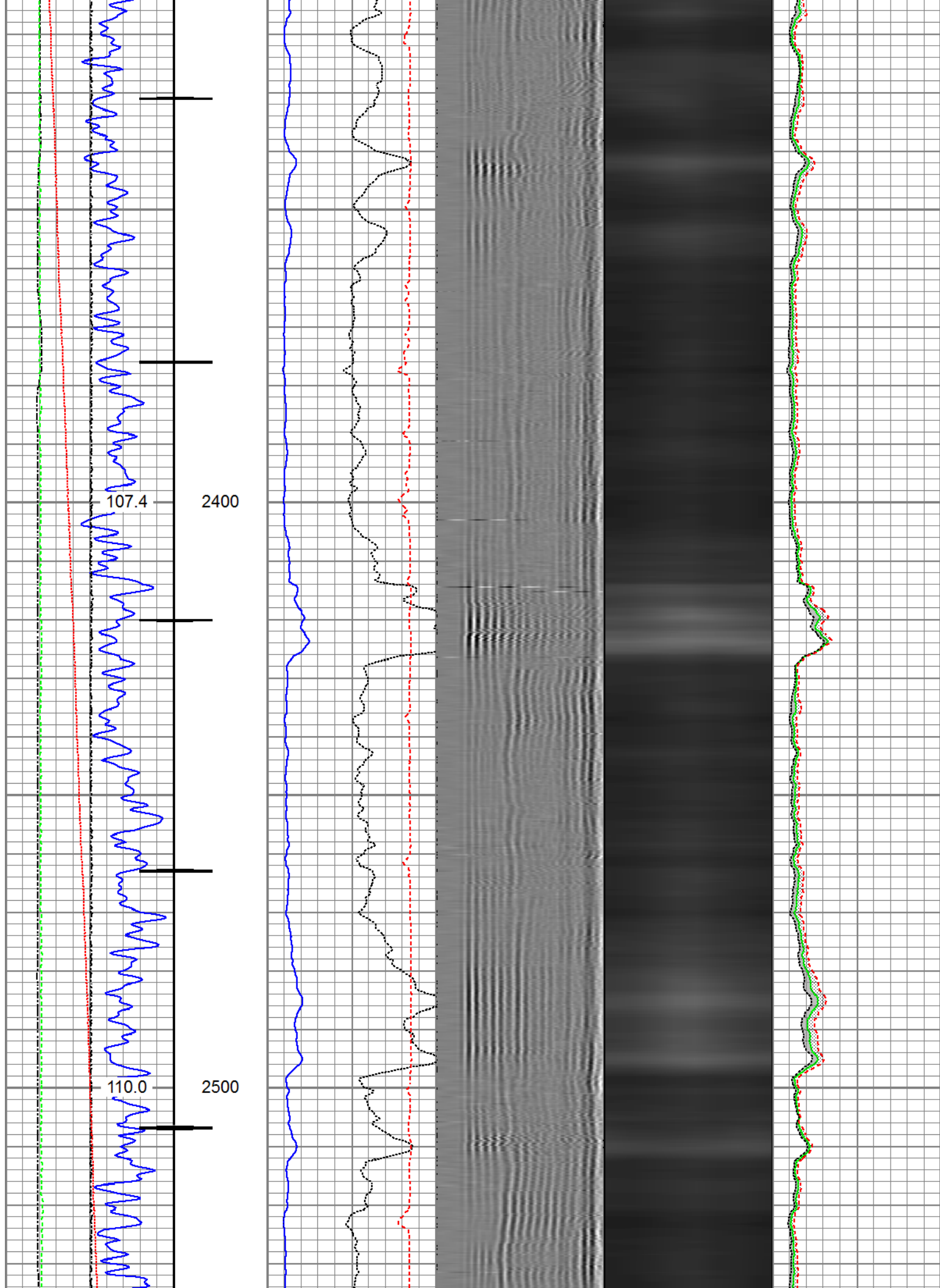


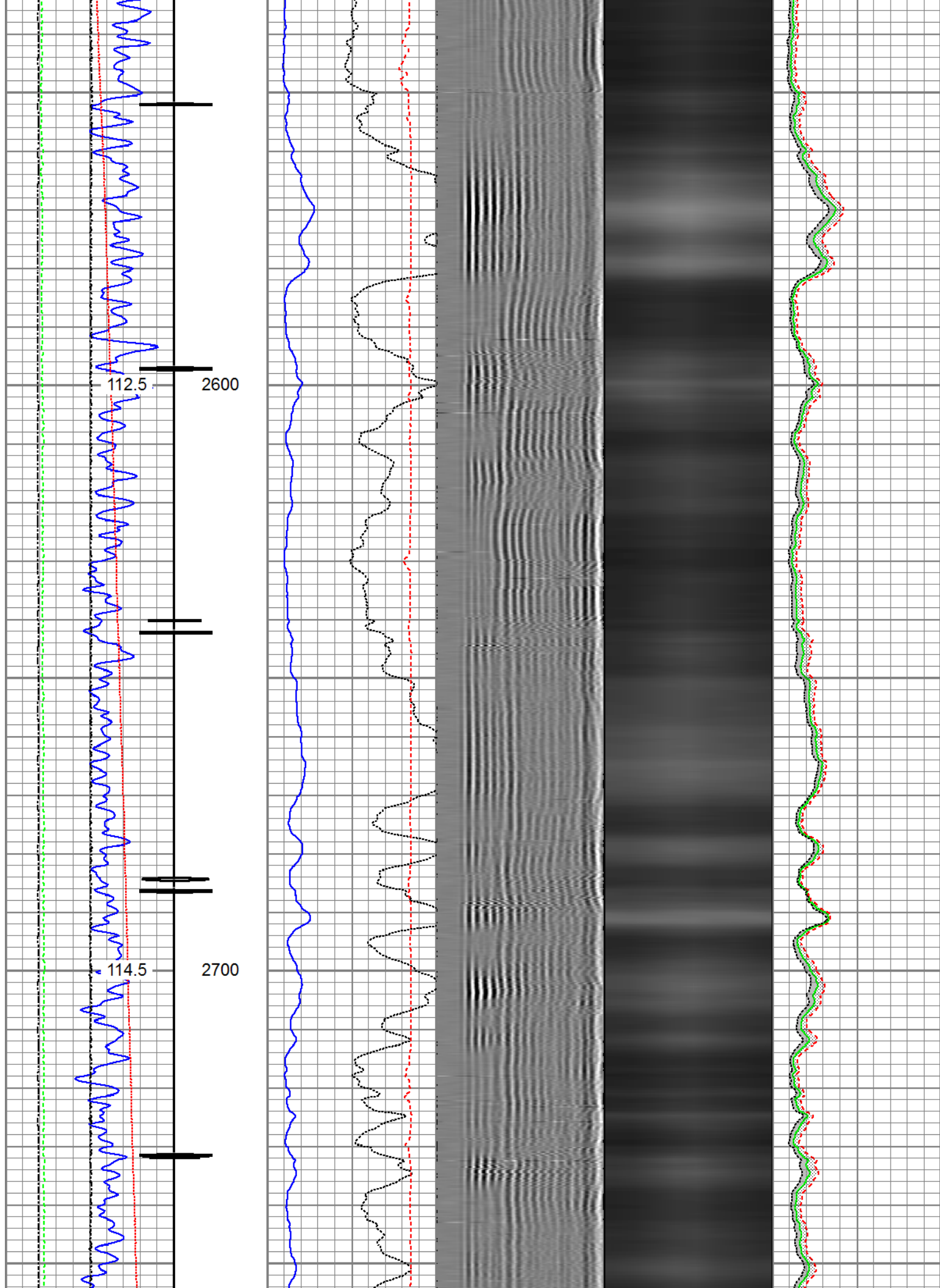


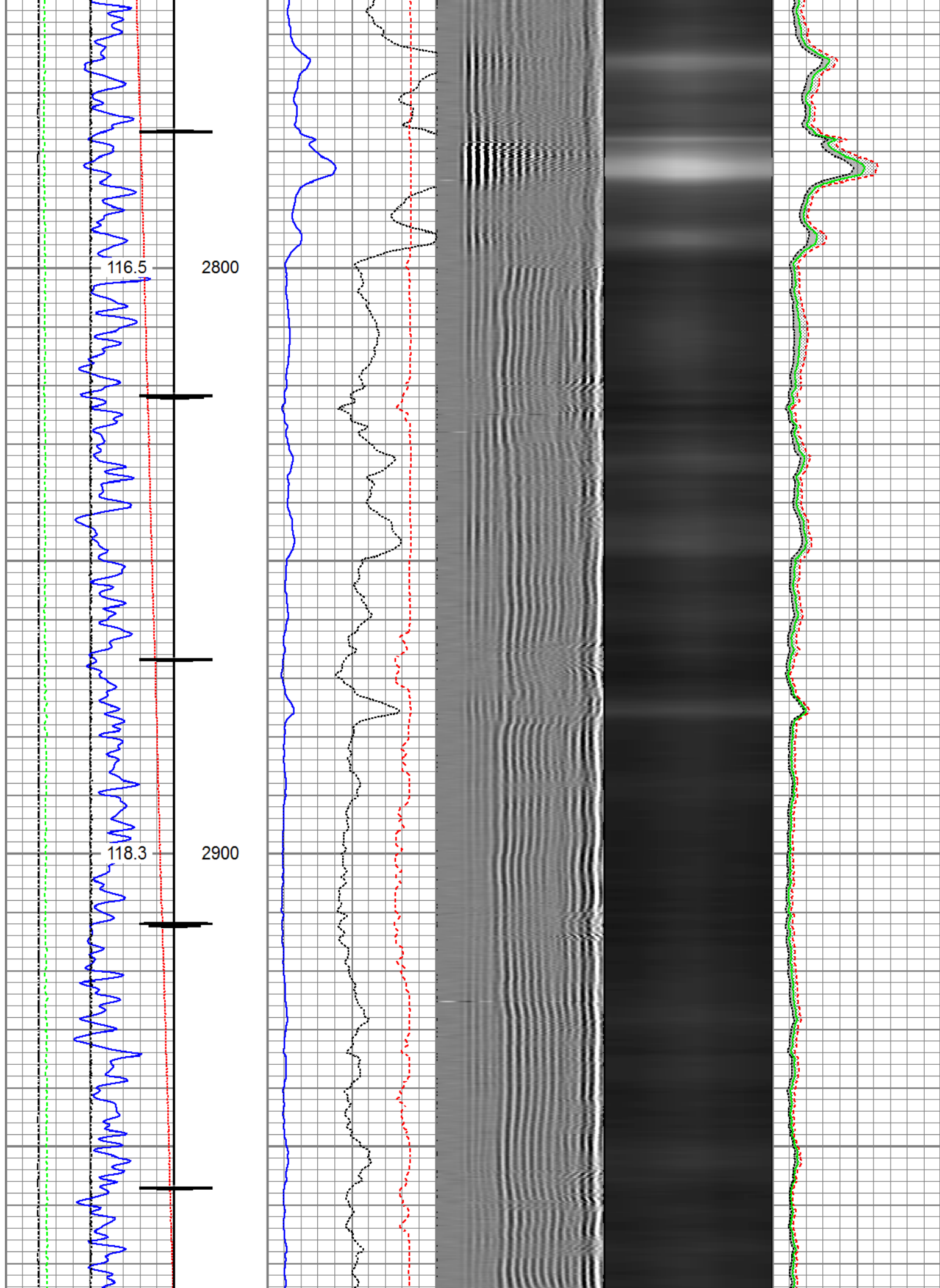


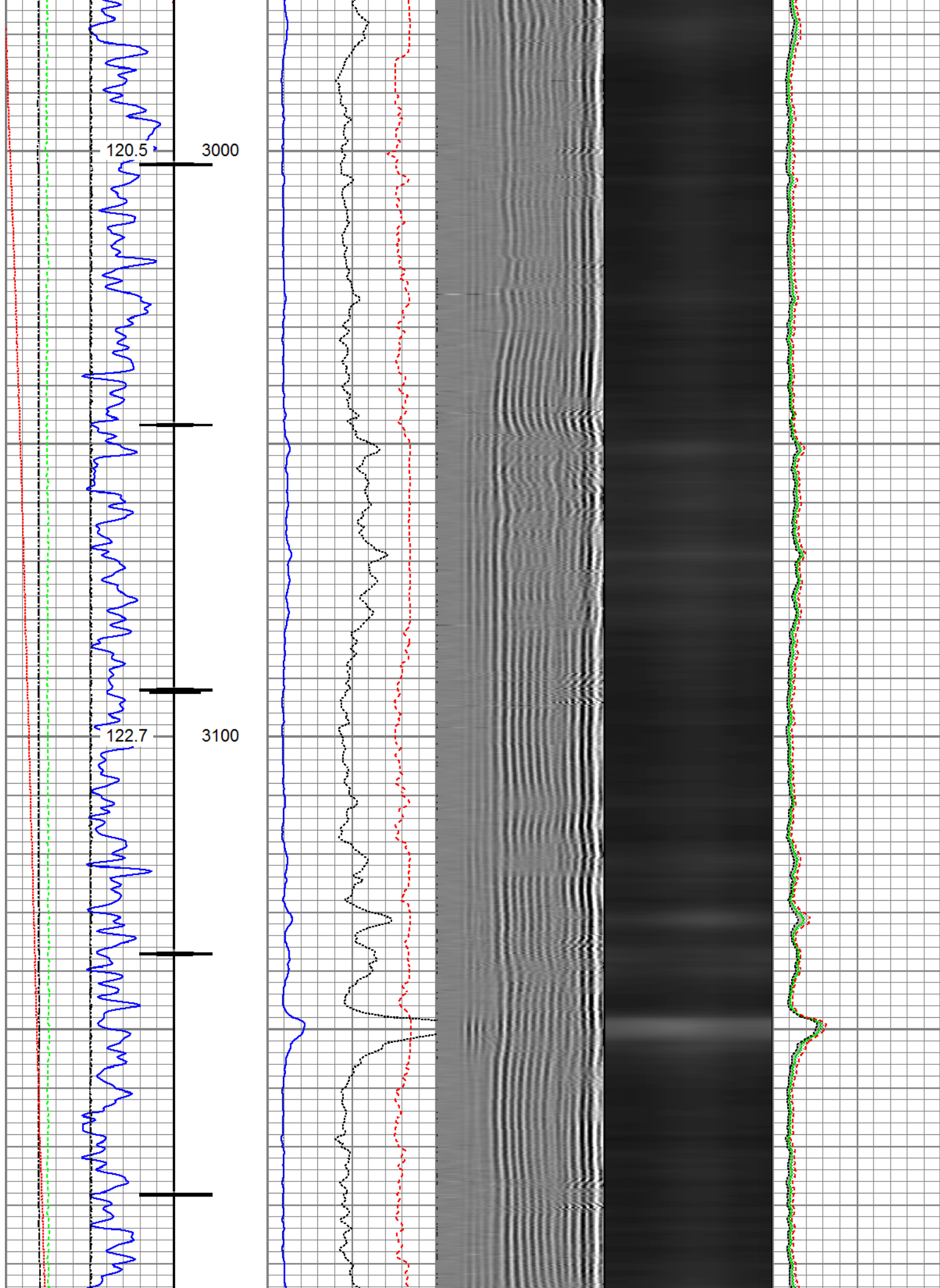


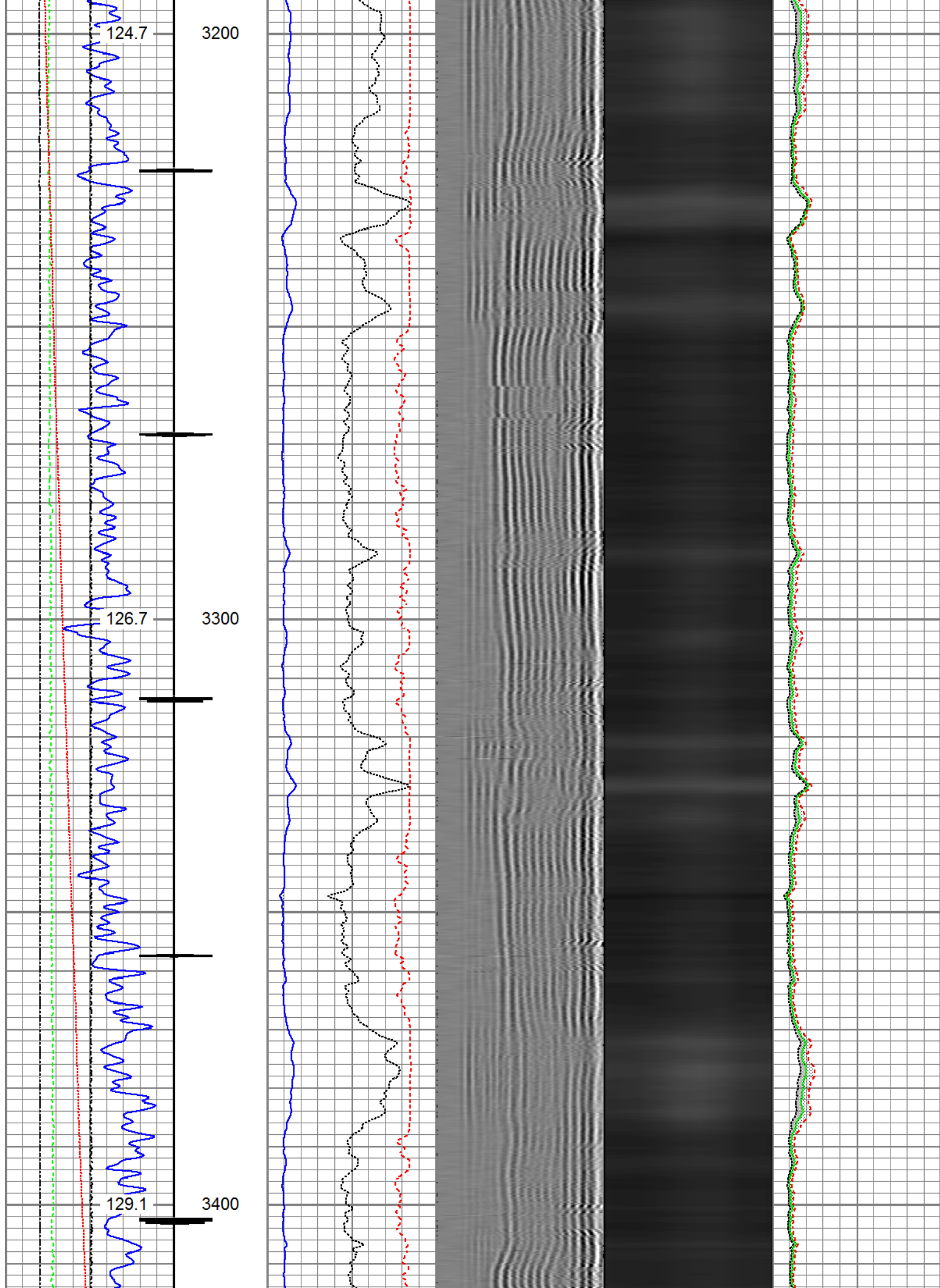


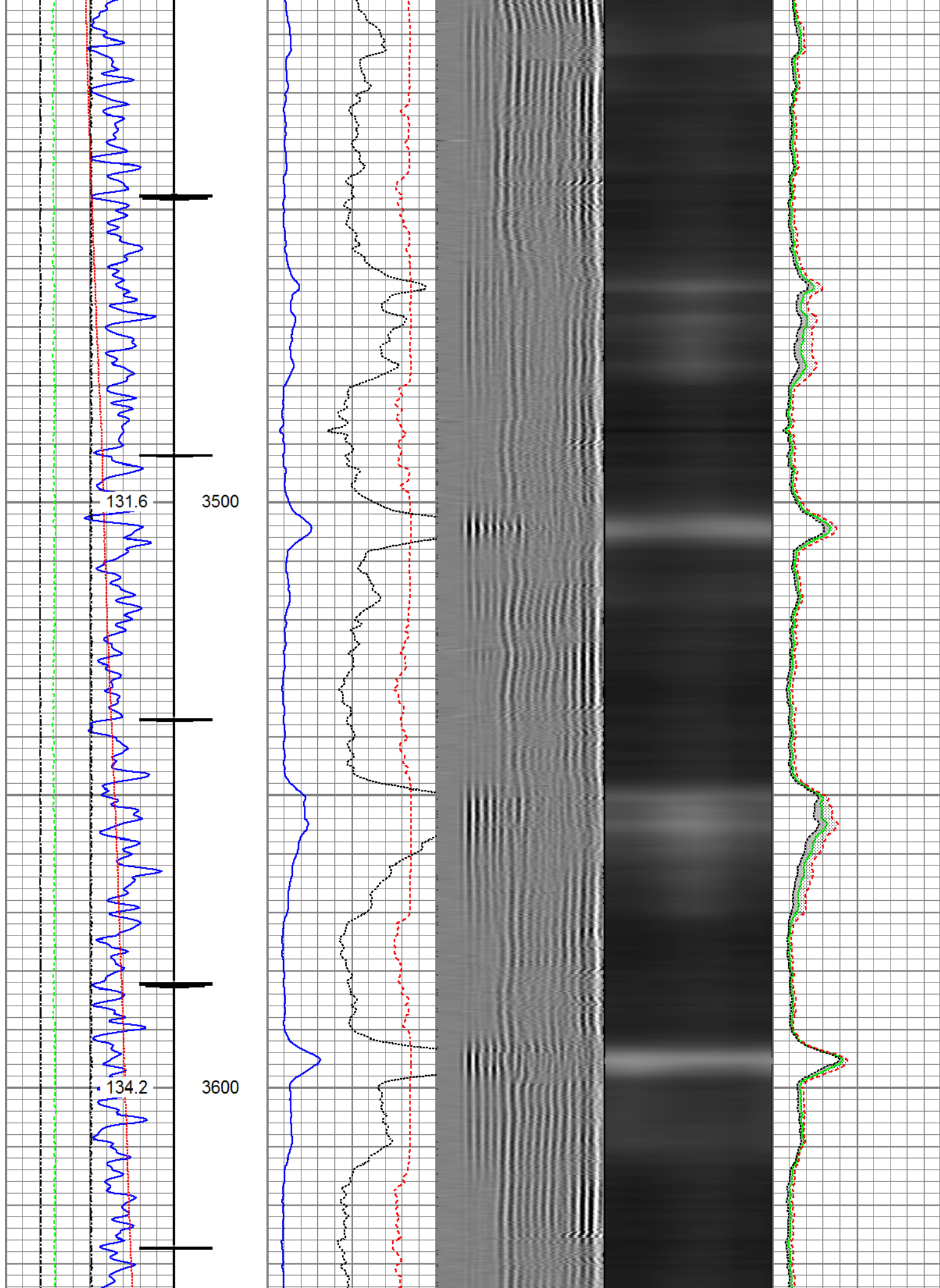


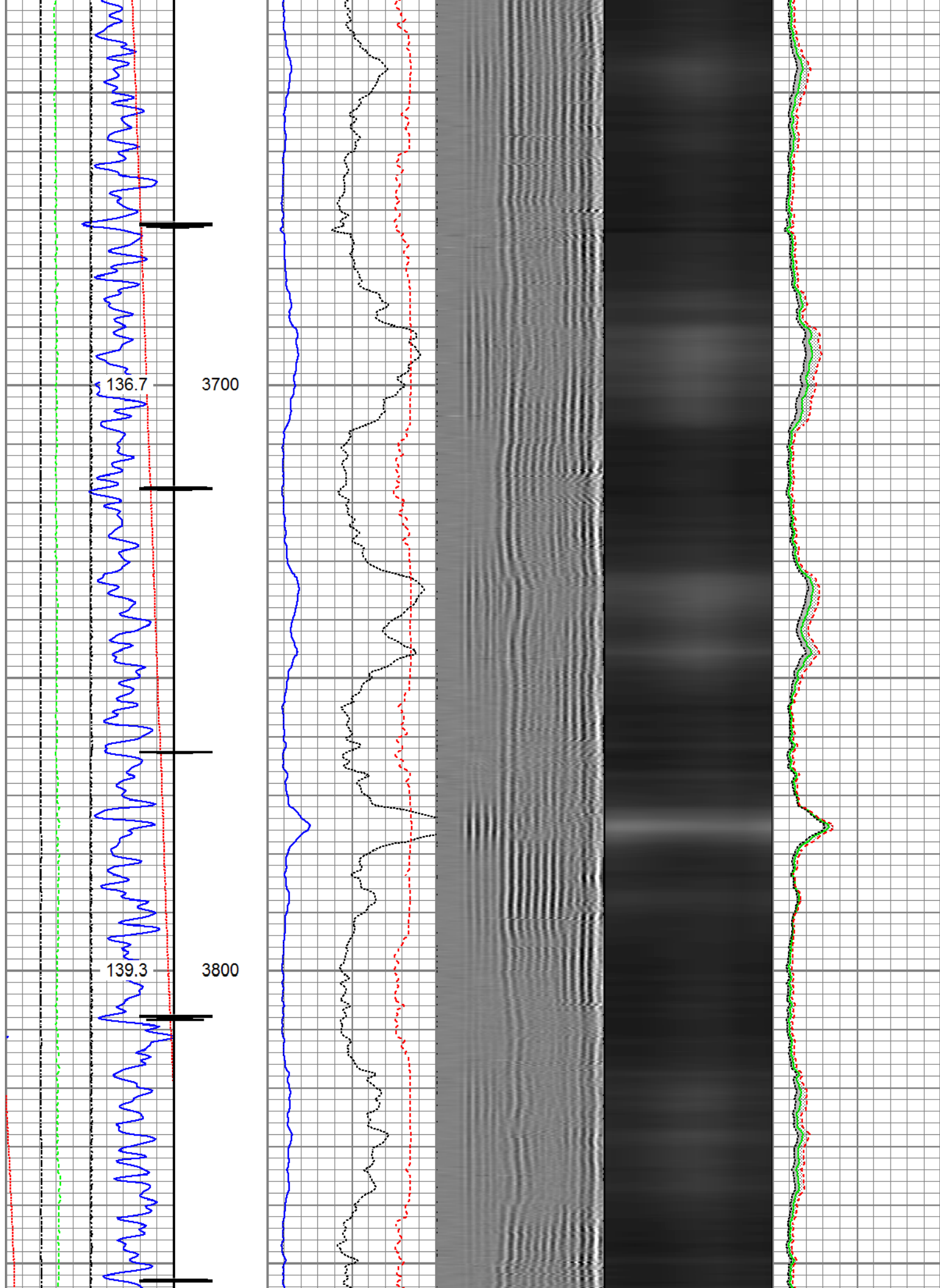


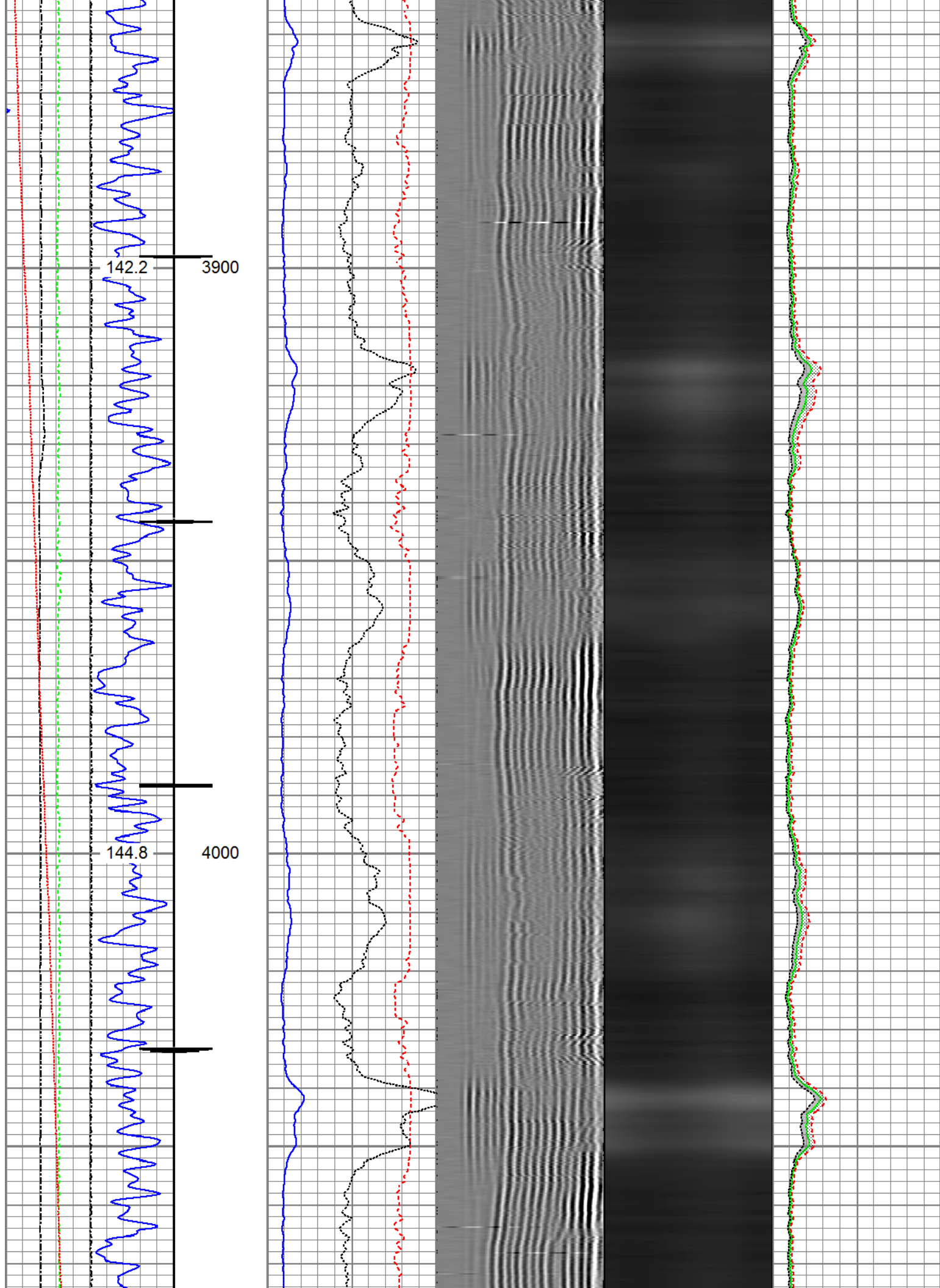


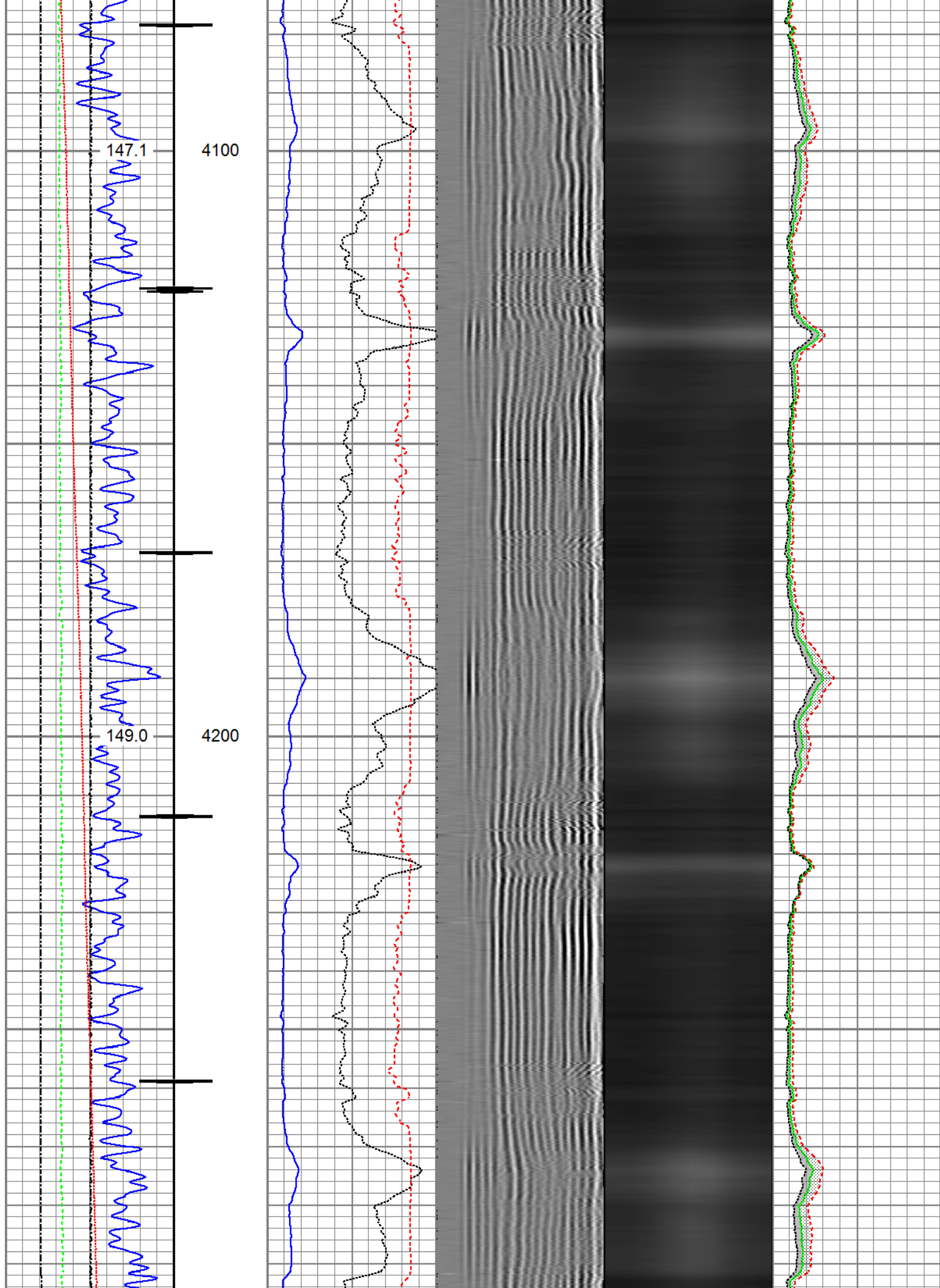


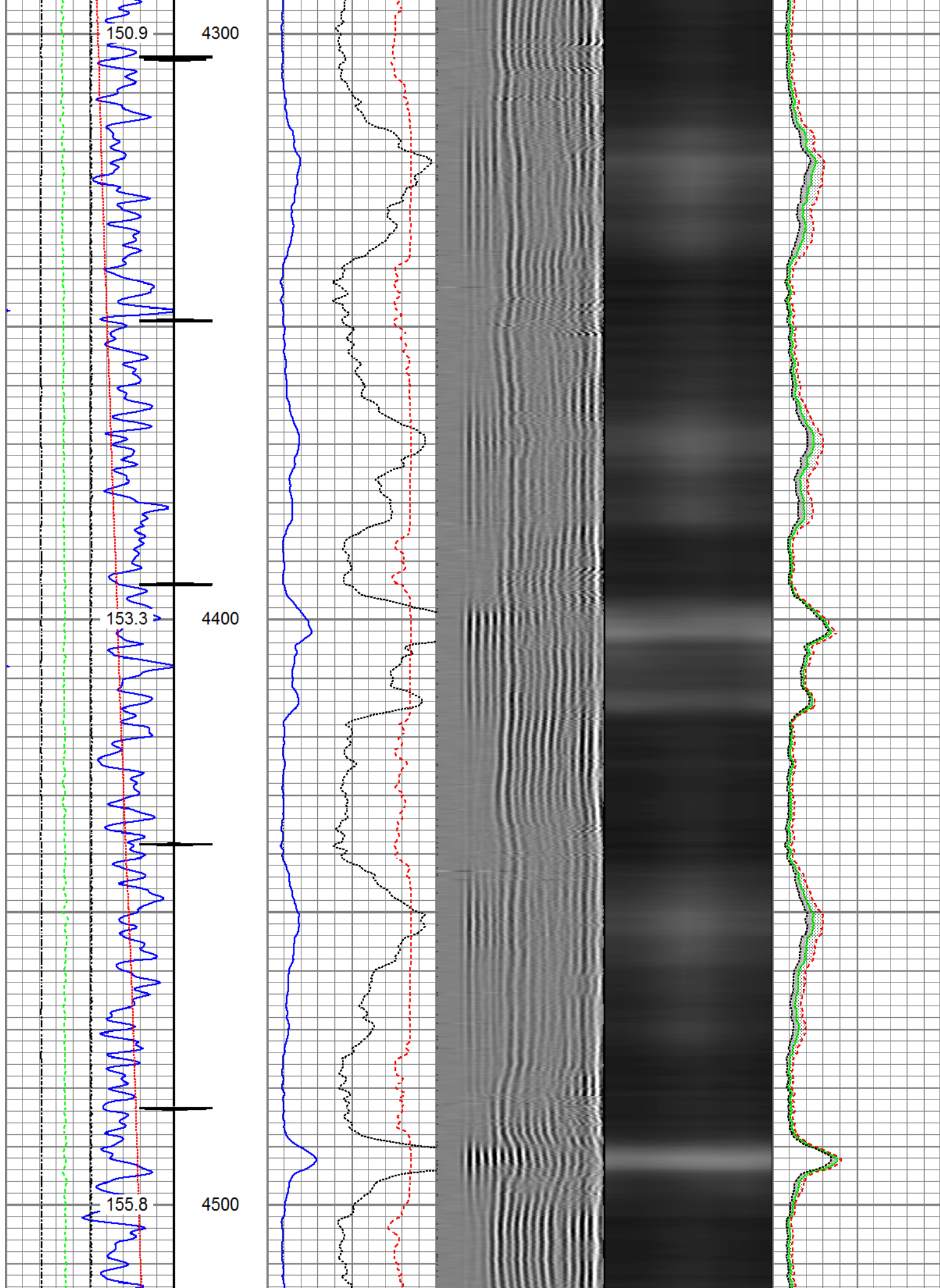


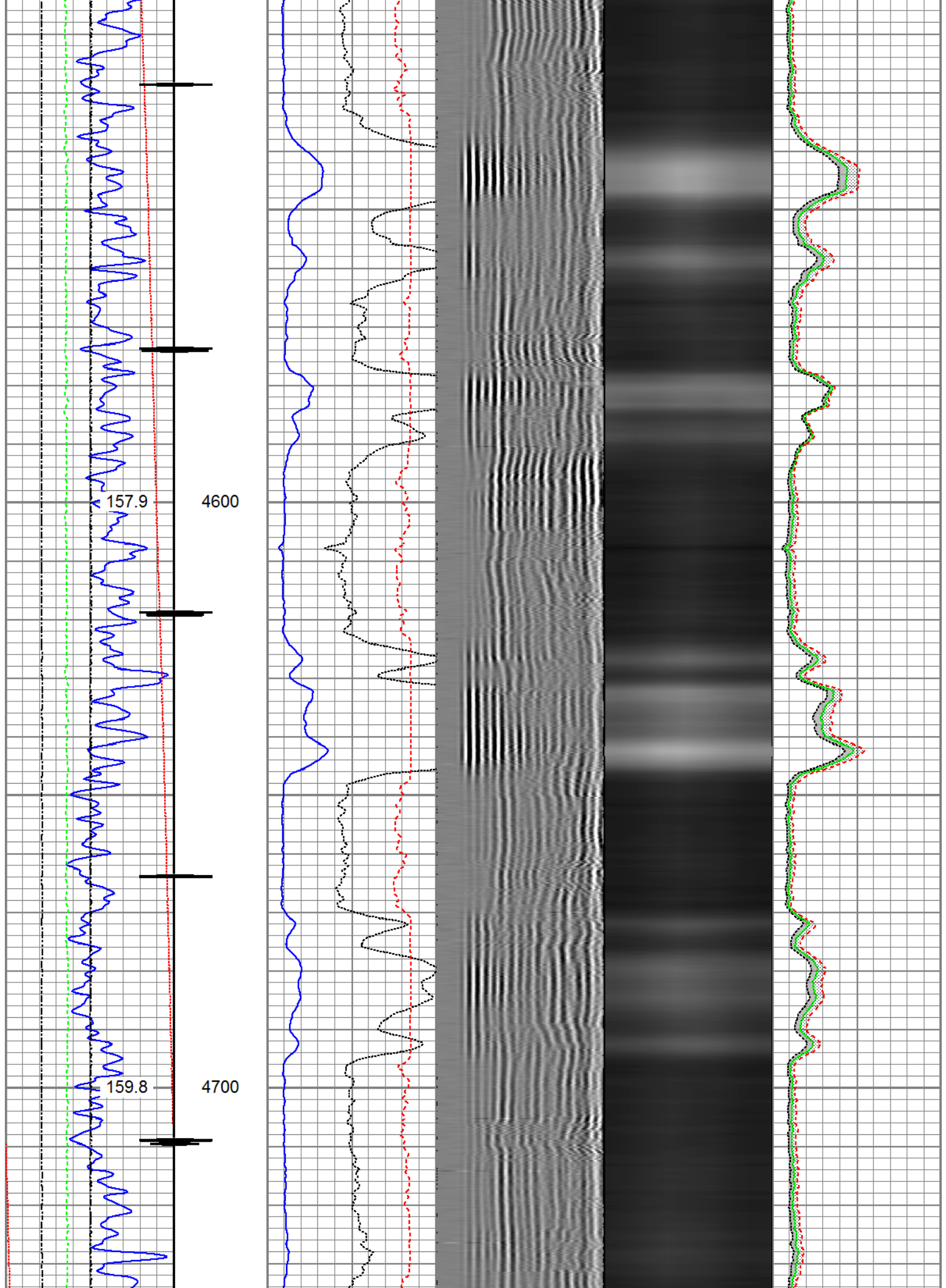


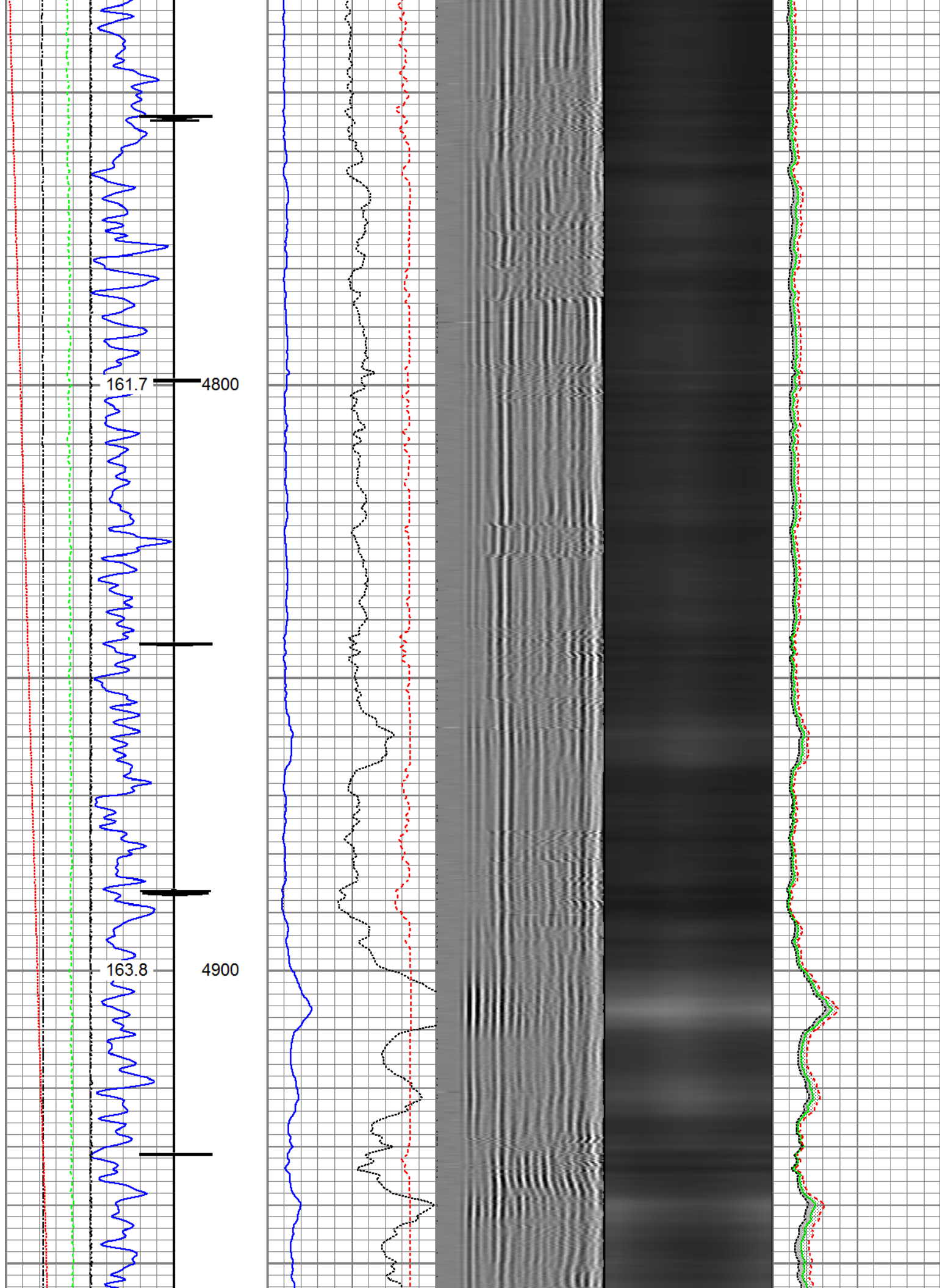


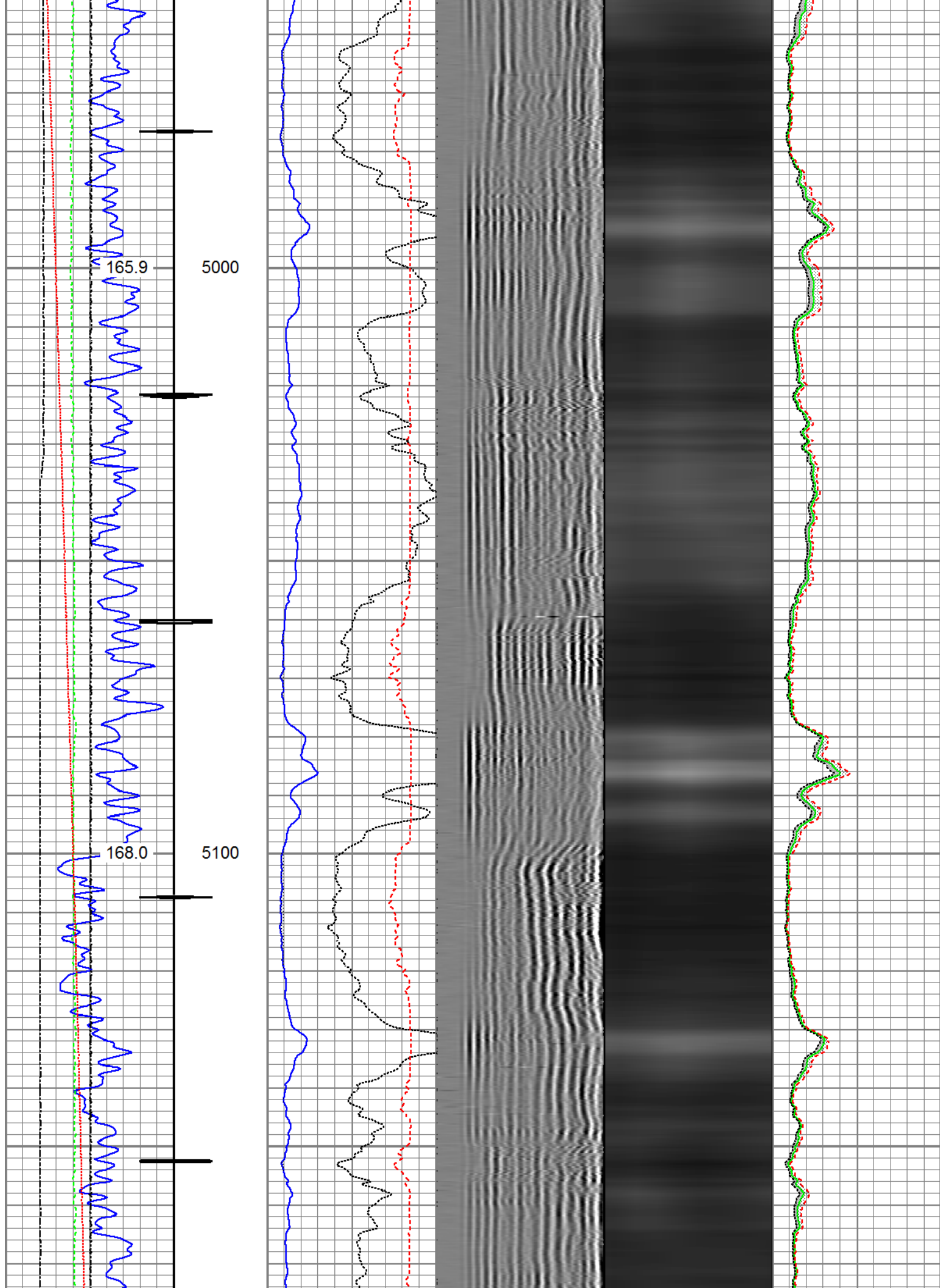


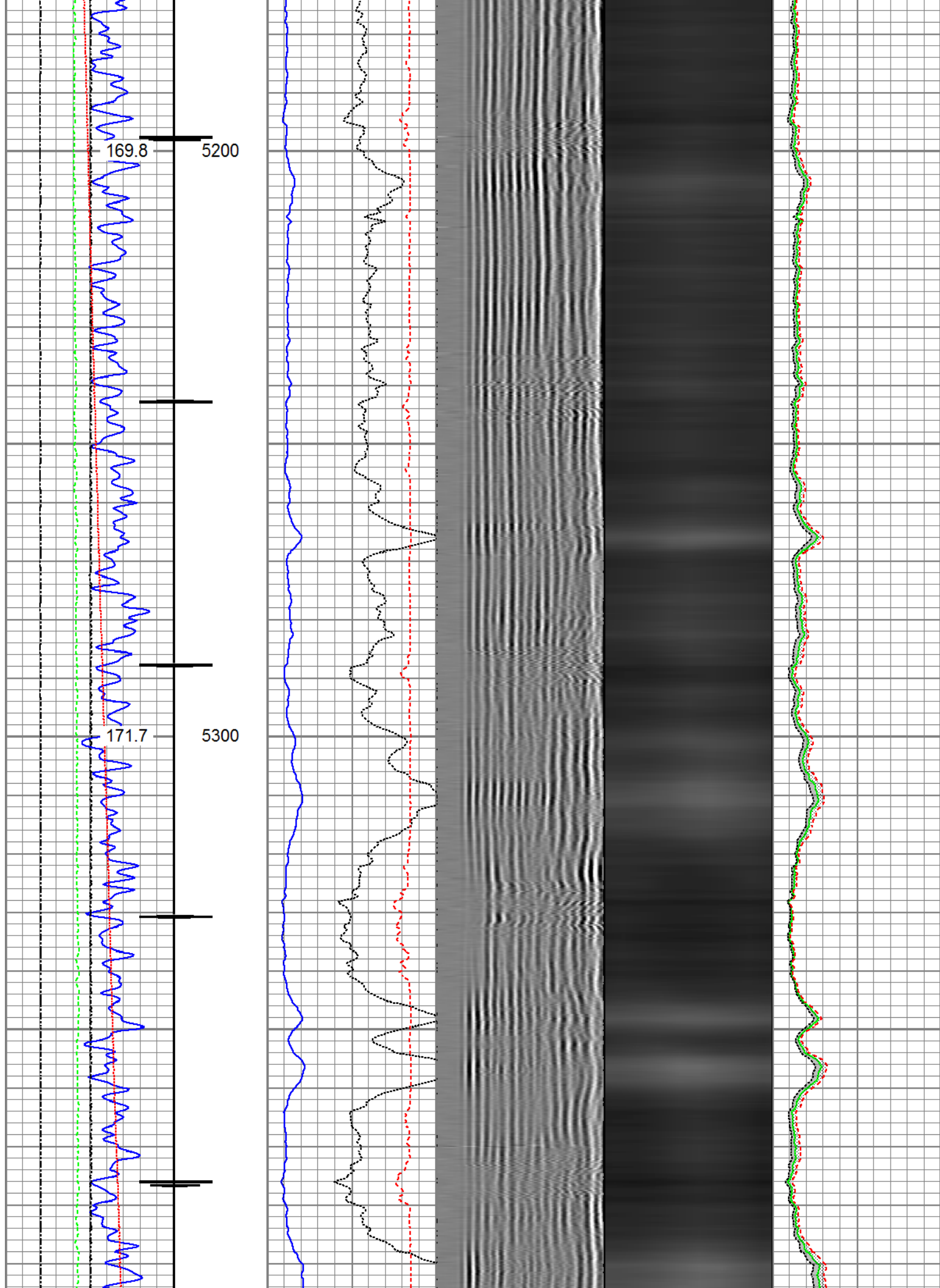


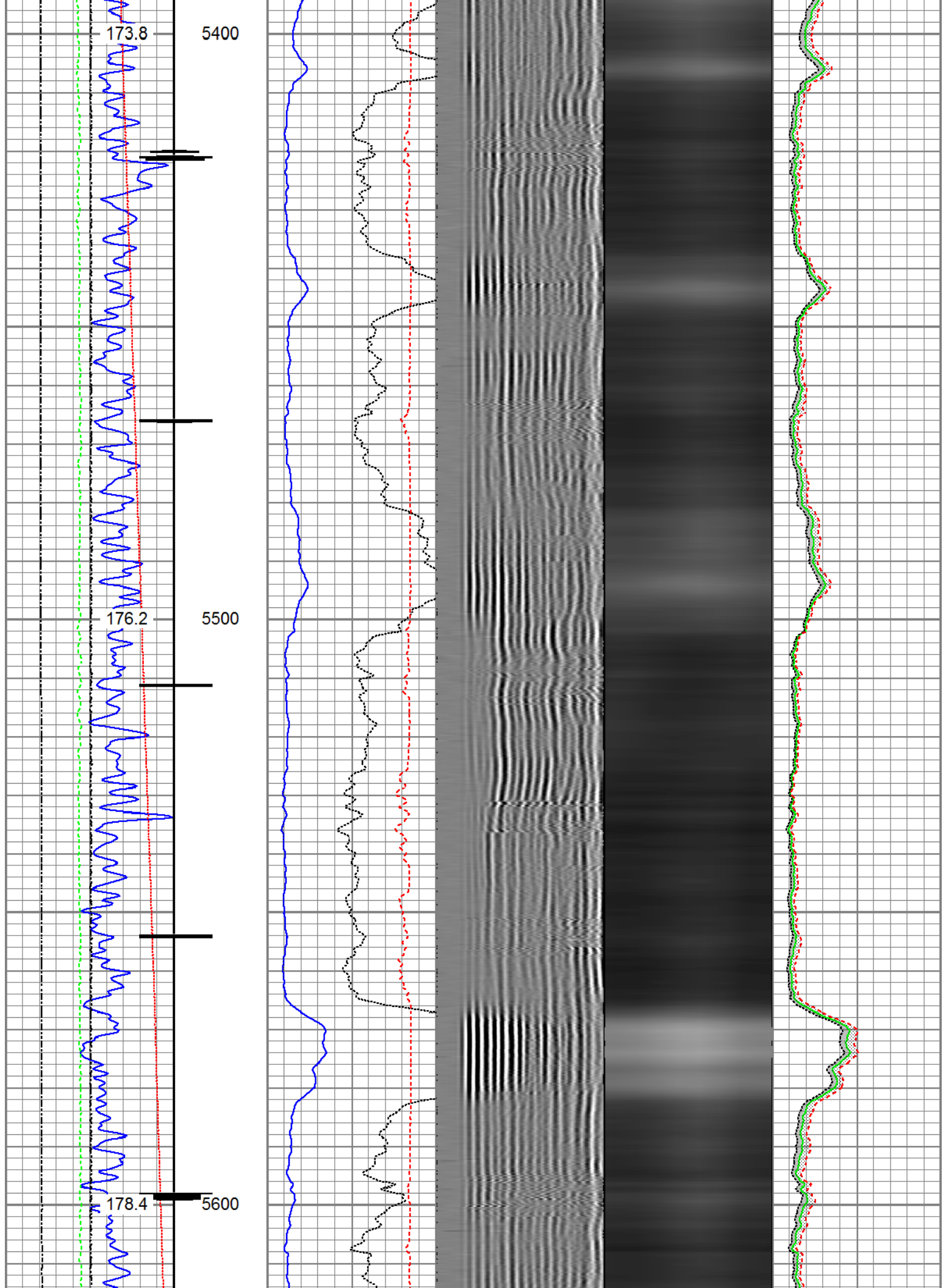


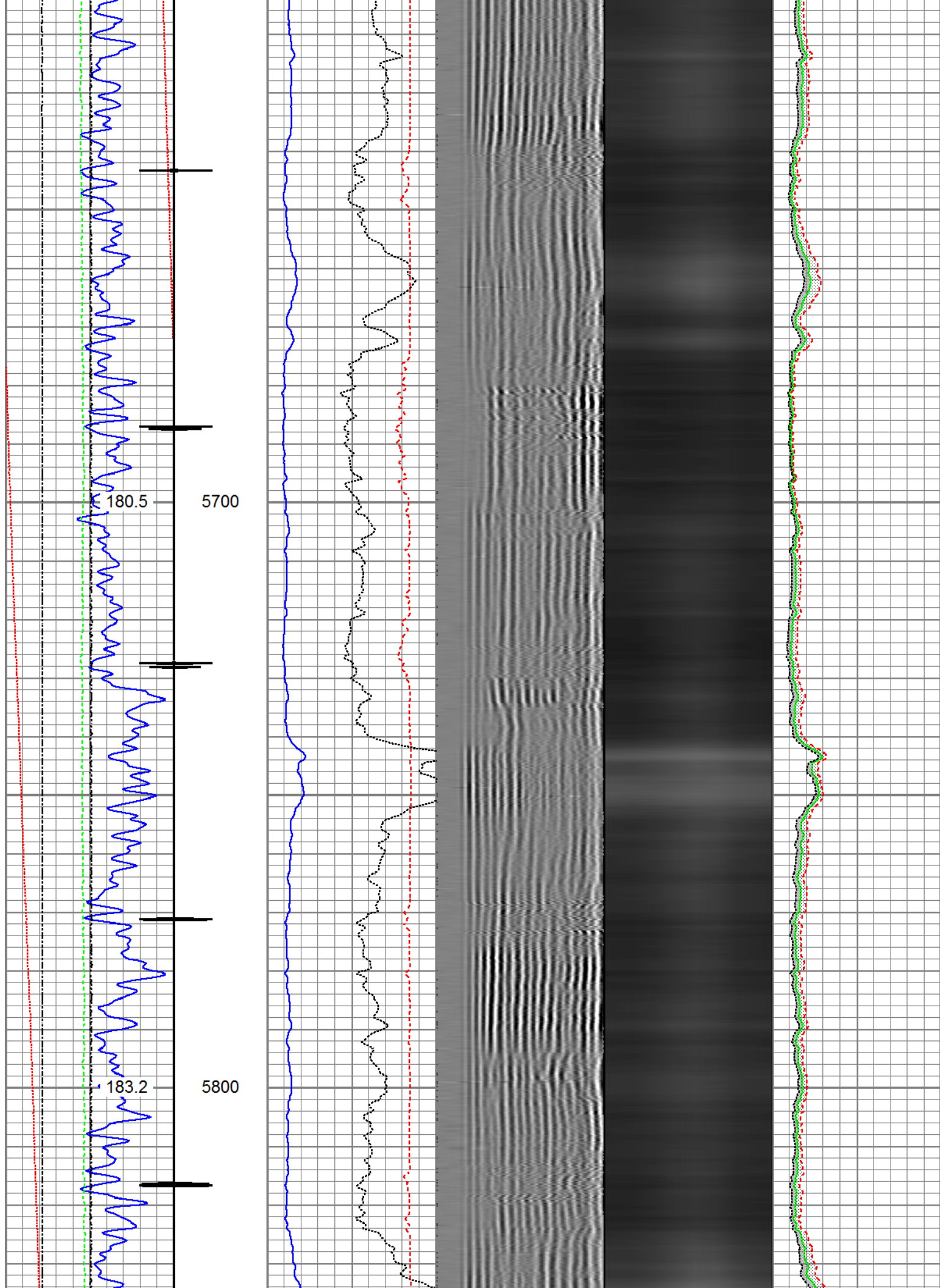


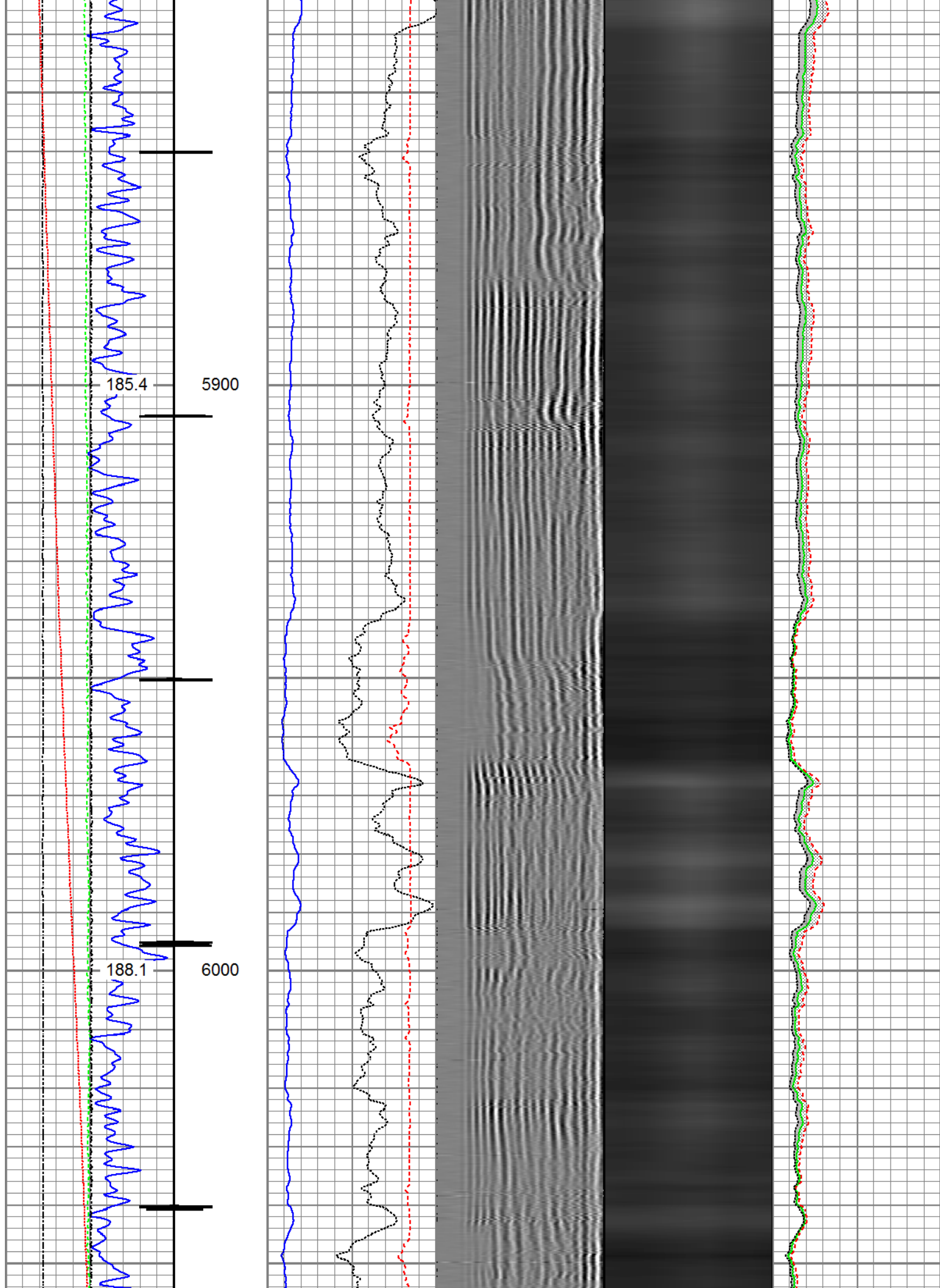


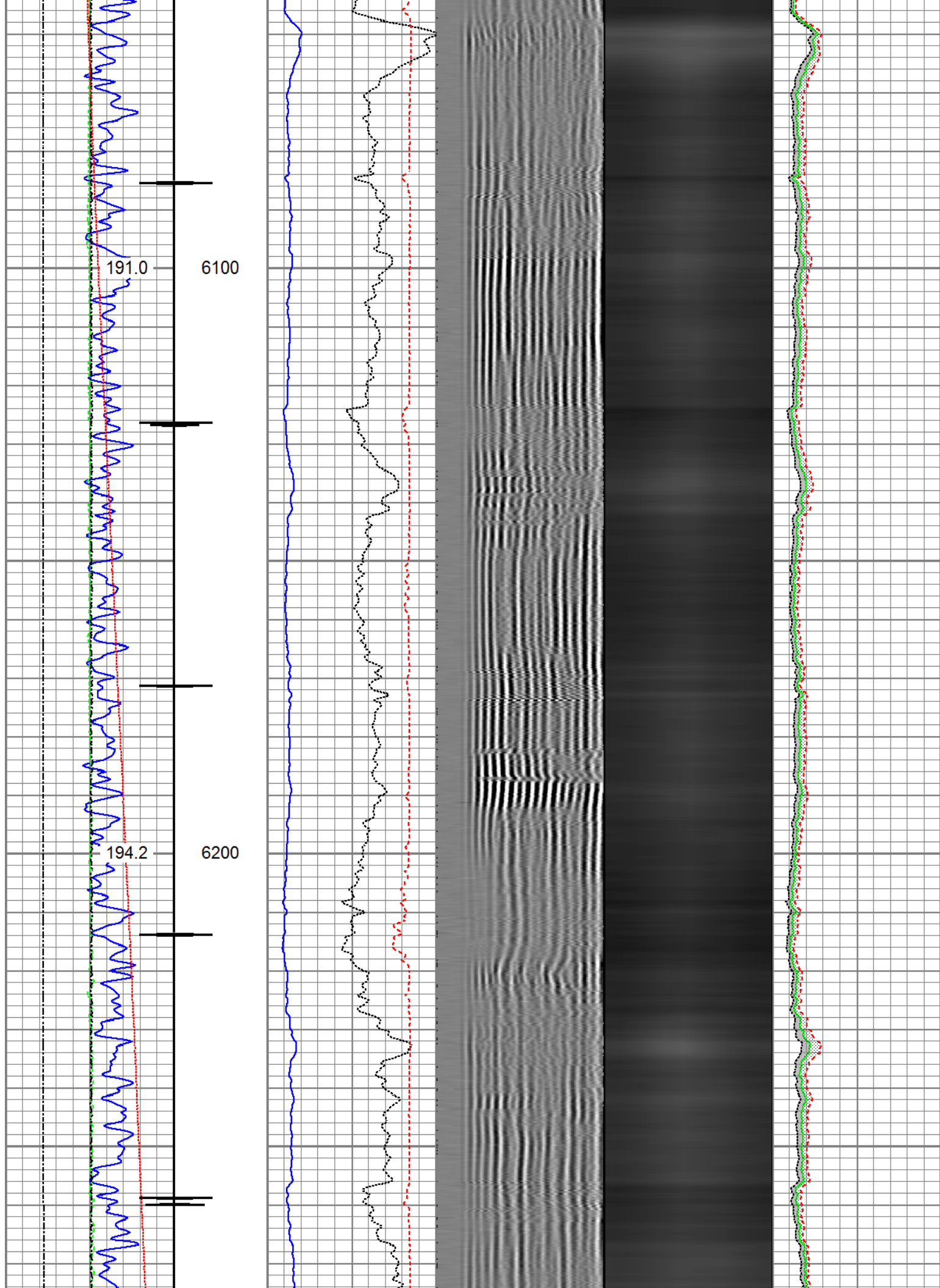


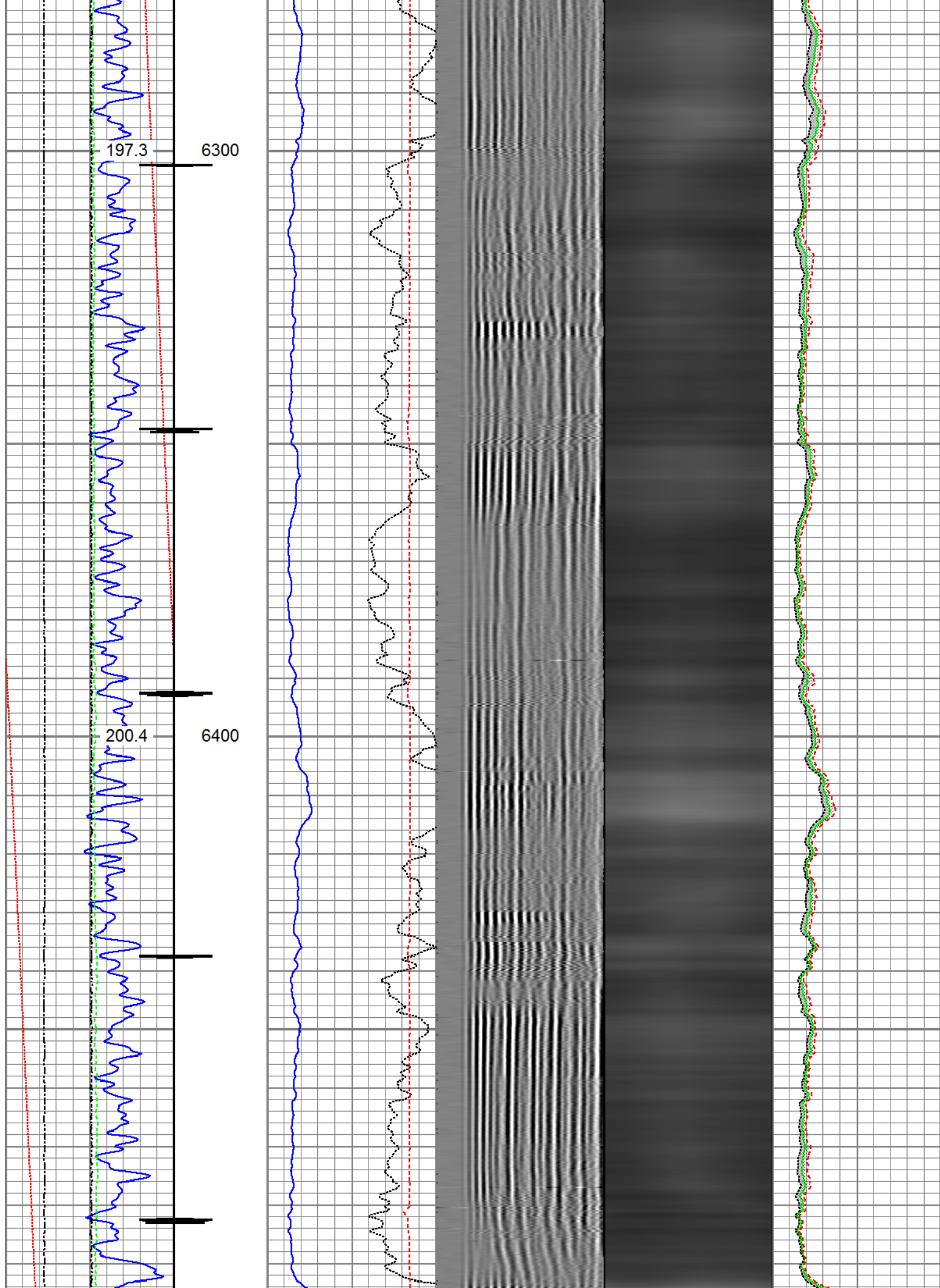


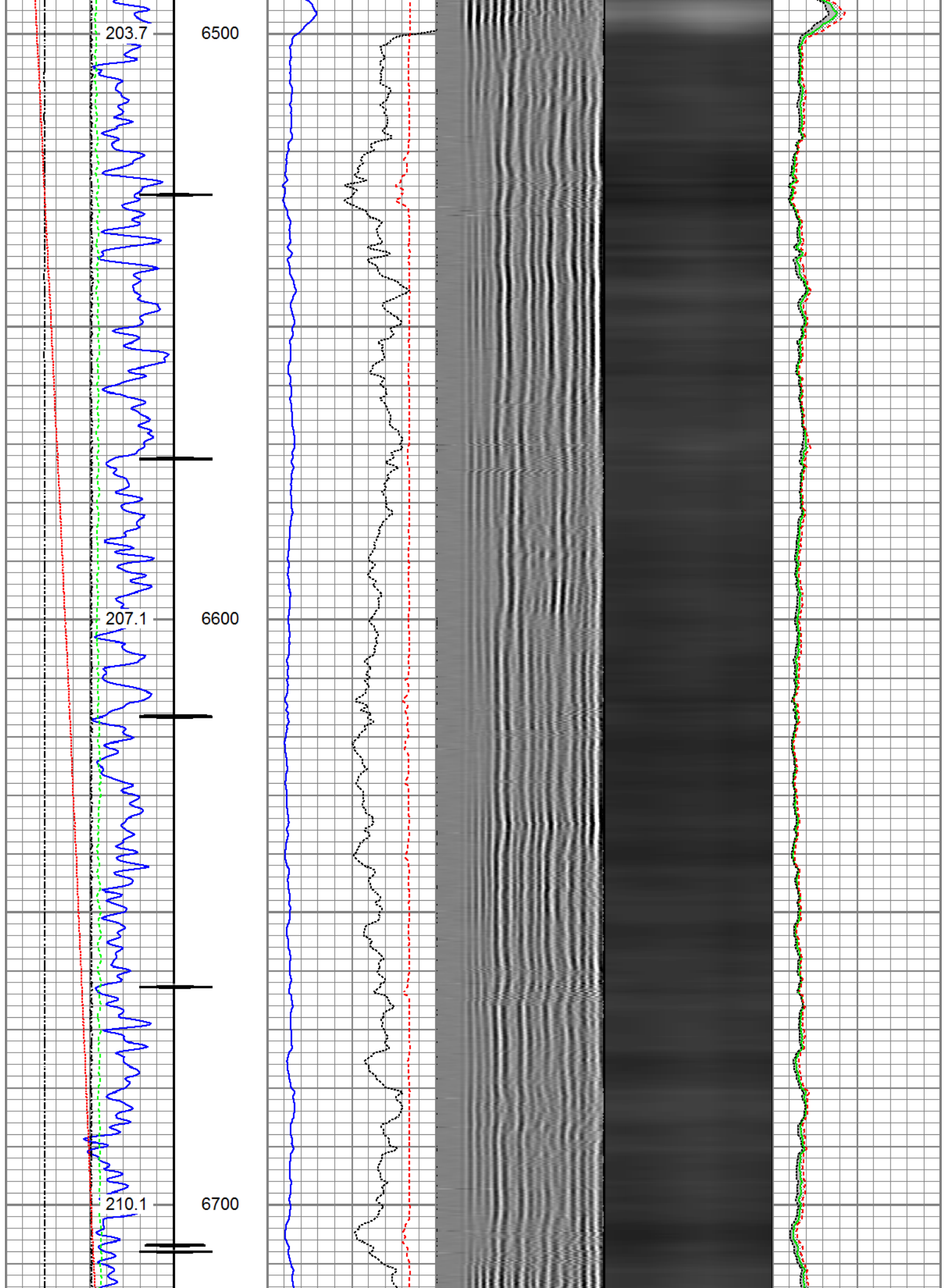


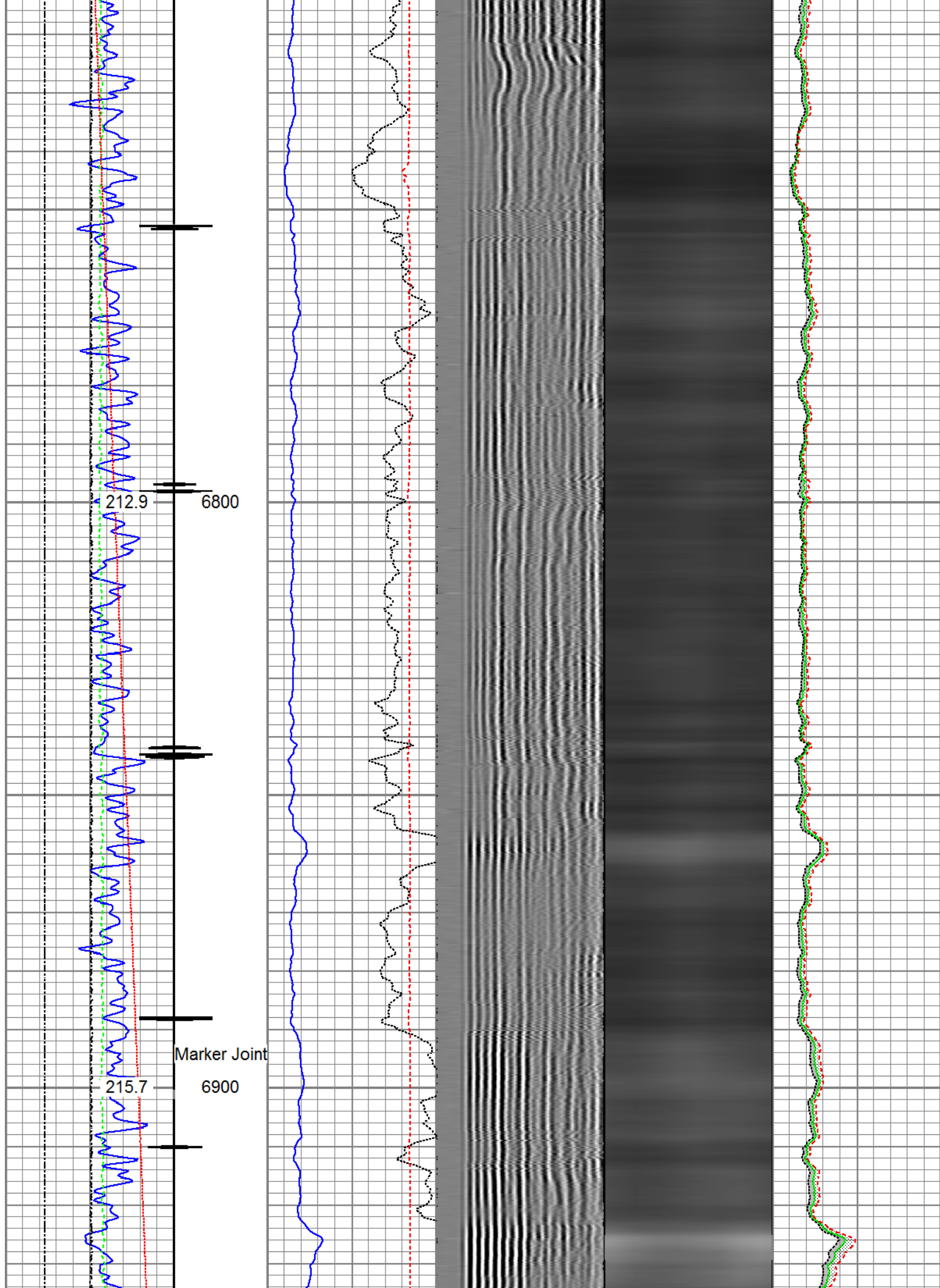


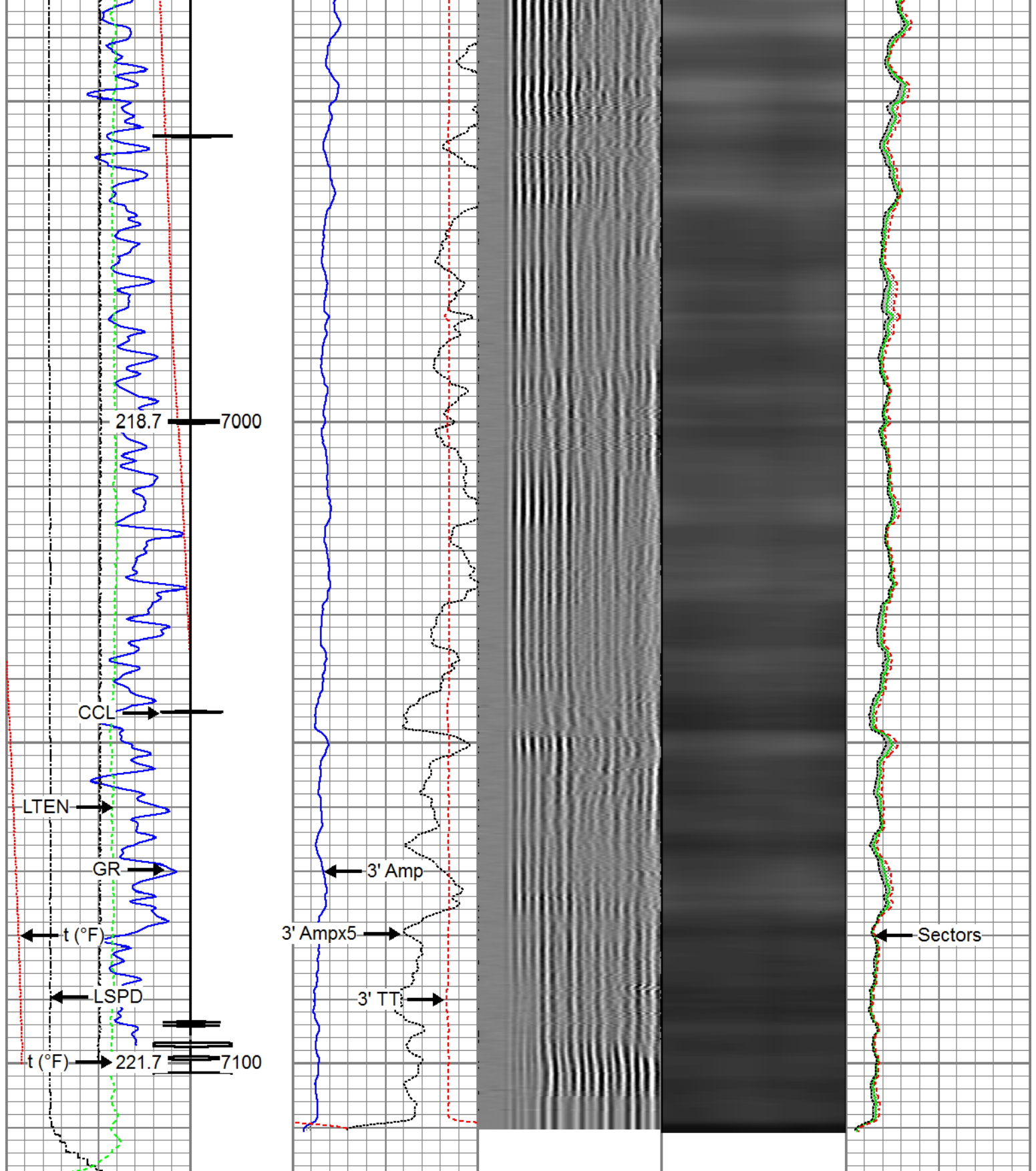












Gamma Ray (GAPI)	CCL	3' Amplitude (mV)	5' Variable Density Log	Sector Map	Average Amplitude
0 120		0 100	200 1200		0 100
Line Speed (ft/min)		3' Amplitude x 5 (mV)			Minimum Amplitude
-150 150		0 20			0 100
Line Tension (lb)		3' Travel Time (usec)			Maximum Amplitude
0 2000		650 150			0 100
Differential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

2	(degF)	2
Temperature		
0	(degF)	20

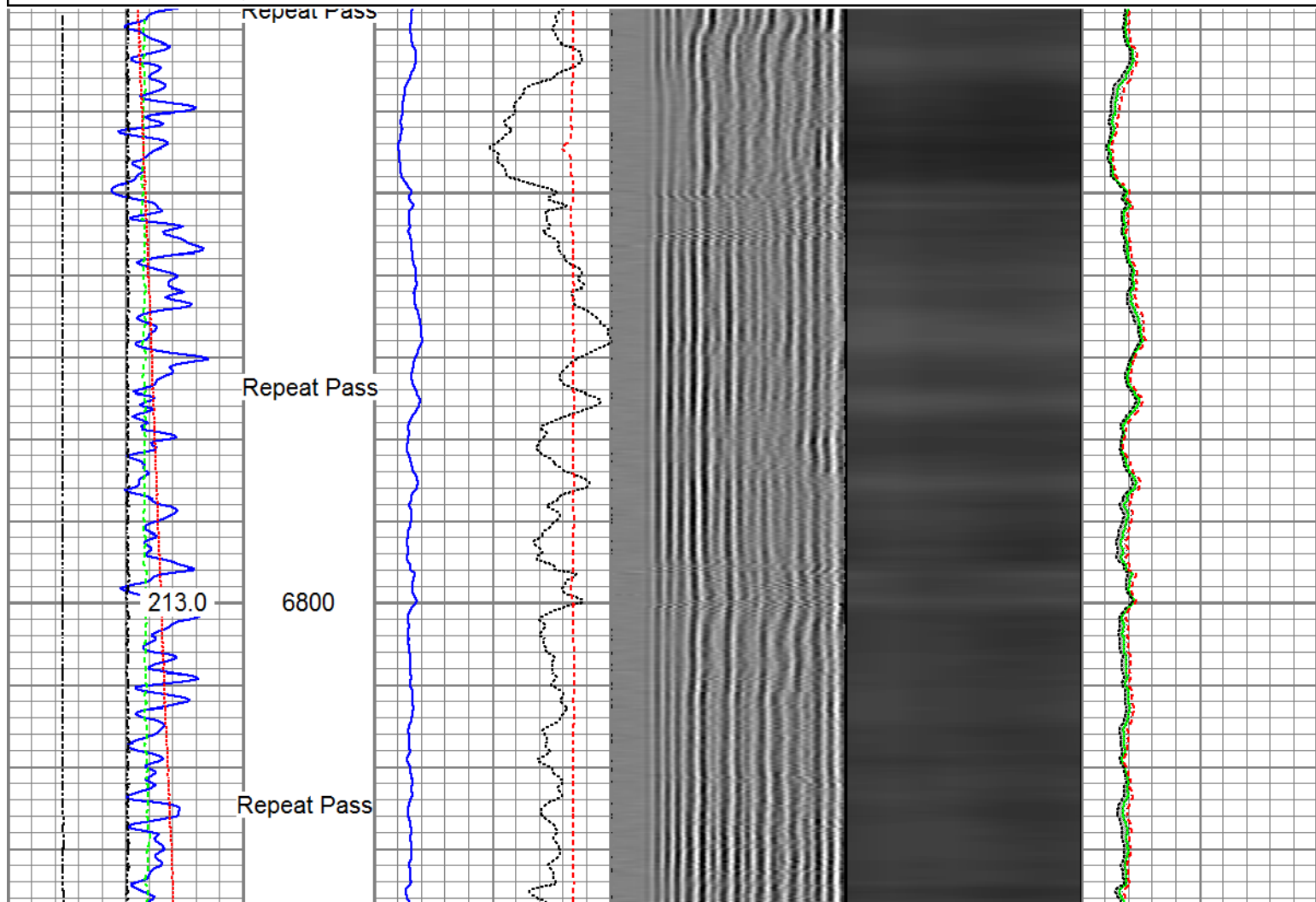


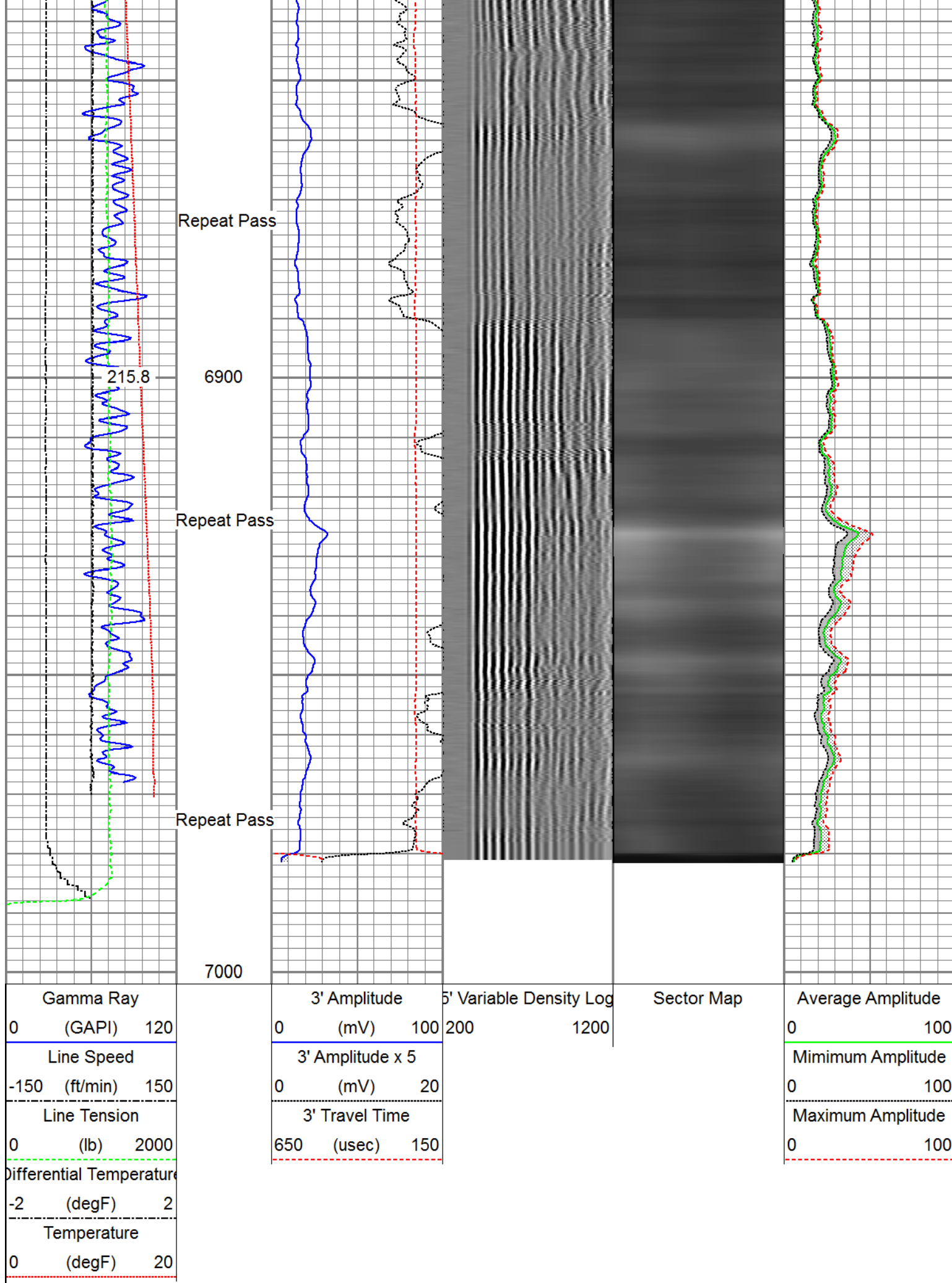
Repeat Pass

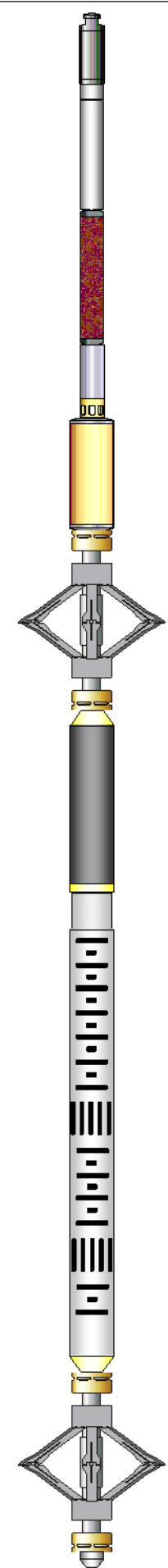
Recorded With 2800 PSI Surface Induced Pressure

Database File anadarko_babcock_32n-33hz_25-jul-2017_rbl\processed_0512343811_anadarko_babcock 32n-33h
Dataset Pathname pass10
Presentation Format ros_rbt004_sx
Dataset Creation Tue Jul 25 16:22:39 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
Line Speed	3' Amplitude x 5			Minimum Amplitude
-150 (ft/min) 150	0 (mV) 20			0 100
Line Tension	3' Travel Time			Maximum Amplitude
0 (lb) 2000	650 (usec) 150			0 100
Differential Temperature				
-2 (degF) 2				
Temperature				
0 (degF) 20				





Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	17.94		Titan_Electric_Cable_Heads-Titan_1-11/16"	1.03	1.69	5.40
			Electric Cable Head with 1" Fishing Neck			
			UW_AGS-UW_AGS_001 (219135)	0.21	1.69	1.00
			Sondex Adapter - GO Box to Sondex Pin			
			UW_XTU-UW_XTU_002 (10024085)	1.58	1.69	6.50
Crossover Ultrawire Toolbus to Ultralink						
UW_PGR-UW_PGR_020 (10024770)	1.92		1.69	9.50		
Production Gamma Ray						
UW_PRT-PRT_016 (10025097)	1.04		1.69	5.20		
Platinum Resistance Thermometer						
TEMP	16.54					
CCL	15.30	UW_CCL-UW_CCL_028 (10018437)	1.61	3.13	36.00	
		3-1/8" Ultrawire Casing Collar Locator				
		UW_PRC-DSS_RAC	2.55	2.75	32.00	
		5 Arm 2-3/4" Roller Centralizer				
			</			

Dataset: PROCESSED_0512343811_Anadarko_Babcock 32N-33HZ_RBL_07-25-17.db: field/well/run1/pass12
 Total length: 22.19 ft
 Total weight: 268.80 lb
 O.D.: 3.13 in

Calibration Report

Database File C:\ProgramData\Warrior\Data\anadarko_babcock_32n-33hz_25-jul-2017_RBL\PROCESSED_051234
 Dataset Pathname pass12
 Dataset Creation Tue Jul 25 16:30:17 2017

Segmented Cement Bond Log Calibration Report

Serial Number: 1063
 Tool Model: UW_RBT_004
 Calibration Casing Diameter: 7.000 in
 Calibration Depth: 305.118 ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	-0.083	1.093	0.800	71.921	60.452	5.830
5FT	-0.010	1.081	0.800	71.921	65.173	1.473
S1	-0.064	0.979	0.000	100.000	95.881	6.173
S2	-0.062	0.985	0.000	100.000	95.551	5.901
S3	-0.061	0.965	0.000	100.000	97.476	5.954
S4	-0.068	0.954	0.000	100.000	97.841	6.690
S5	-0.073	0.921	0.000	100.000	100.643	7.348
S6	-0.082	0.938	0.000	100.000	98.034	8.002
S7	-0.069	0.963	0.000	100.000	96.856	6.713
S8	-0.074	0.967	0.000	100.000	96.122	7.093

Temperature Calibration Report

Serial Number: 10025097
 Tool Model: PRT_016
 Performed: Sun Oct 11 12:34:58 2015

Point #	Reading	Reference
1	13053.00 cps	68.00 degF
2	18014.00 cps	104.00 degF
3	29668.00 cps	176.00 degF
4	41181.00 cps	248.00 degF
5	52983.00 cps	320.00 degF
6	58931.00 cps	356.00 degF
7	cps	degF
8	cps	degF
9	cps	degF
10	cps	degF

Gamma Ray Calibration Report

Serial Number: 10024770
 Tool Model: UW_PGR_020
 Performed: Mon Oct 12 16:33:44 2015

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
 Calibrator Reading: 1.0 cps

Sensitivity: 1.0000 GAPI/cps



Company	Kerr-McGee Oil & Gas Onshore, L.P.
Well	Babcock 32N-33HZ
Field	Wattenberg
County	Weld
State	Colorado