



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	Kerr-McGee Oil & Gas Onshore, L.P.			Location:	API # : 05-123-43808	Other Services GR/JB
Well	Babcock 19N-33HZ			SEC 4	TWP 2N	RGE 67W
Field	Wattenberg			Permanent Datum	Ground Level	Elevation 4887'
County	Weld			Log Measured From	Kelly Bushing	20 FT
State	Colorado			Drilling Measured From	Kelly Bushing	Elevation 4887'

Date	26-JUL-2017		
Run Number	Two		
Depth Driller	12186 FT		
Depth Logger	7500 FT		
Bottom Logged Interval	7496 FT		
Top Log Interval	Surface		
Open Hole Size	7.875"		
Type Fluid	Water		
Density / Viscosity	8.34 lb/gal		
Max. Recorded Temp.	233 °F		
Estimated Cement Top	See Log		
Time Well Ready	ROA		
Time Logger on Bottom	12:21		
Equipment Number	HD-0331		
Location	Fort Lupton, CO		
Recorded By	R. Cameron		
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	1873 FT		
Intermediate #1	5 1/2	17	P-110	Surface	12178 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 6648 FT
Adjusted +6 FT to correlate with Marker Joint
Log ran with 2800 PSI surface induced pressure
Logging tools were clean and free of debris upon completion of operations

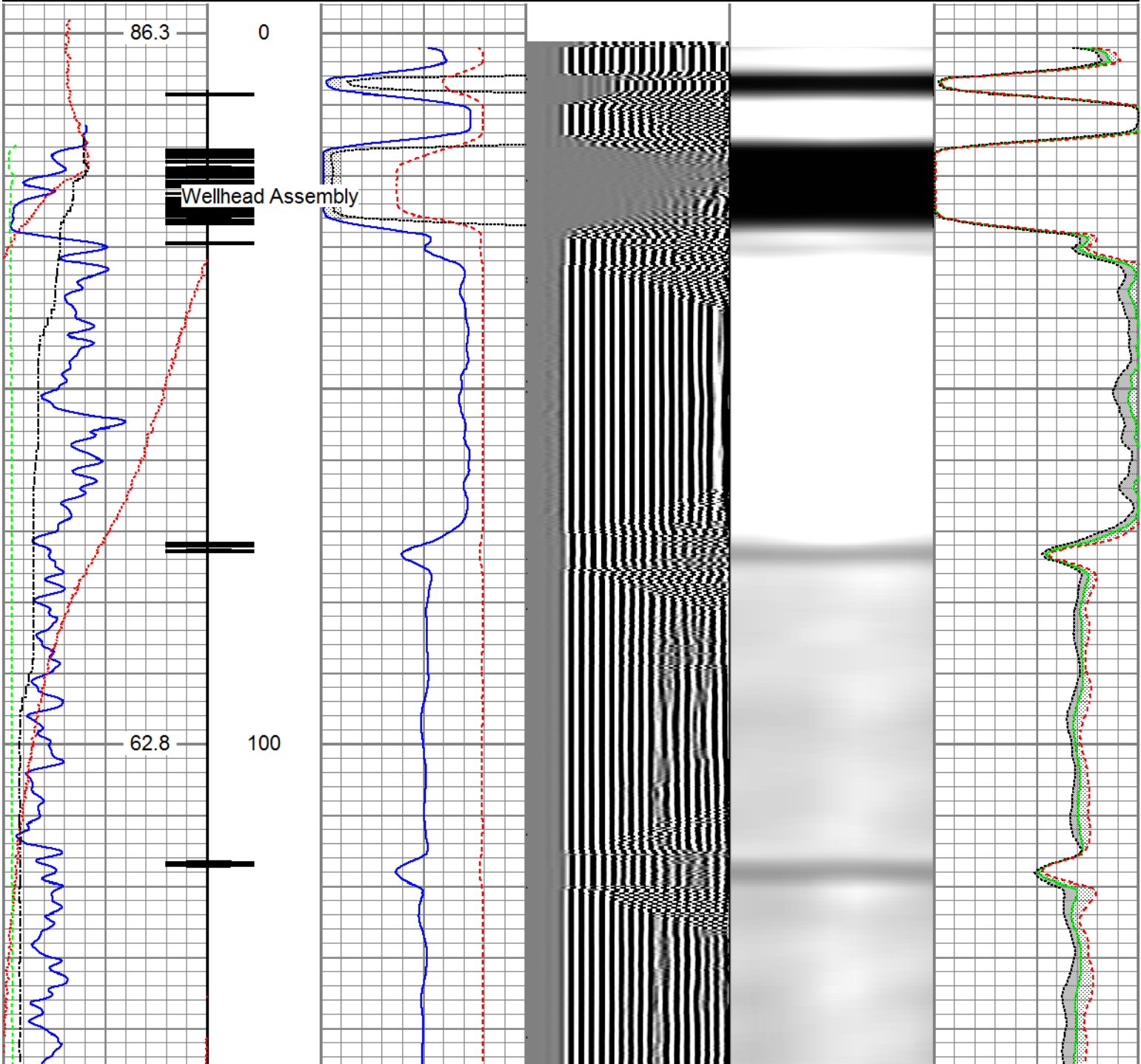
Thank you for choosing Reliance Oilfield Services, LLC!!

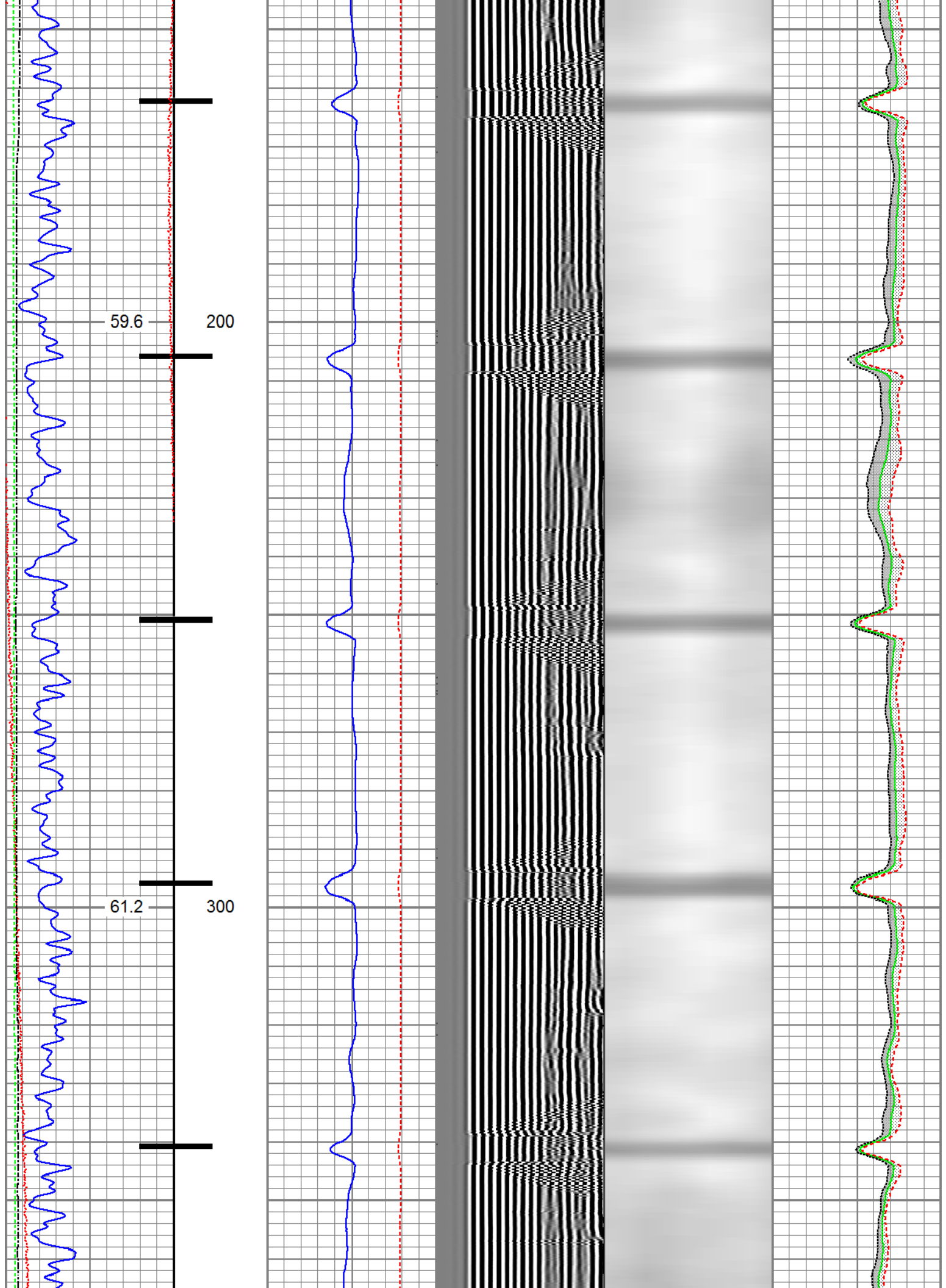


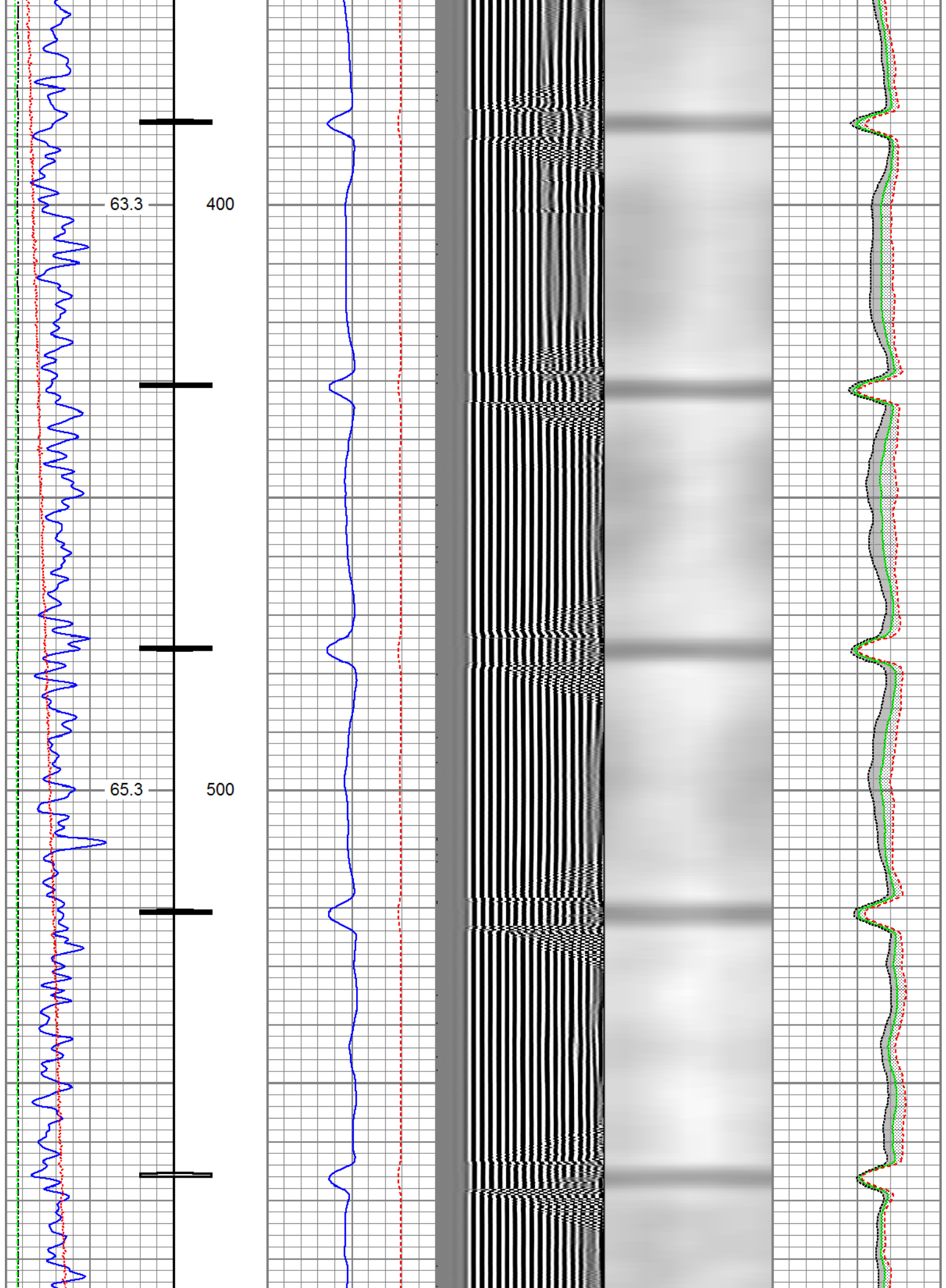
Main Pass

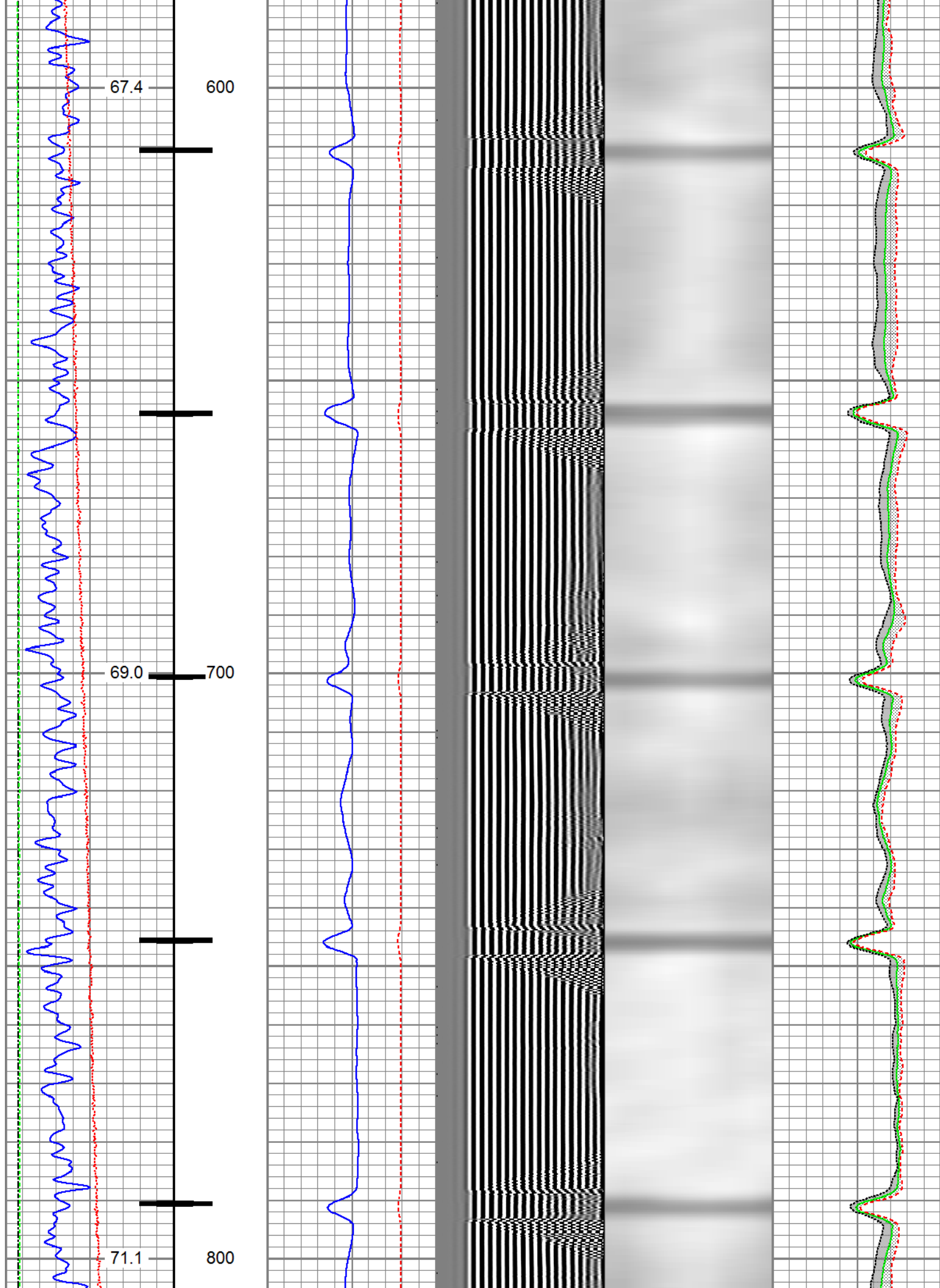
Recorded With 2800 PSI Surfaced Induced Pressure

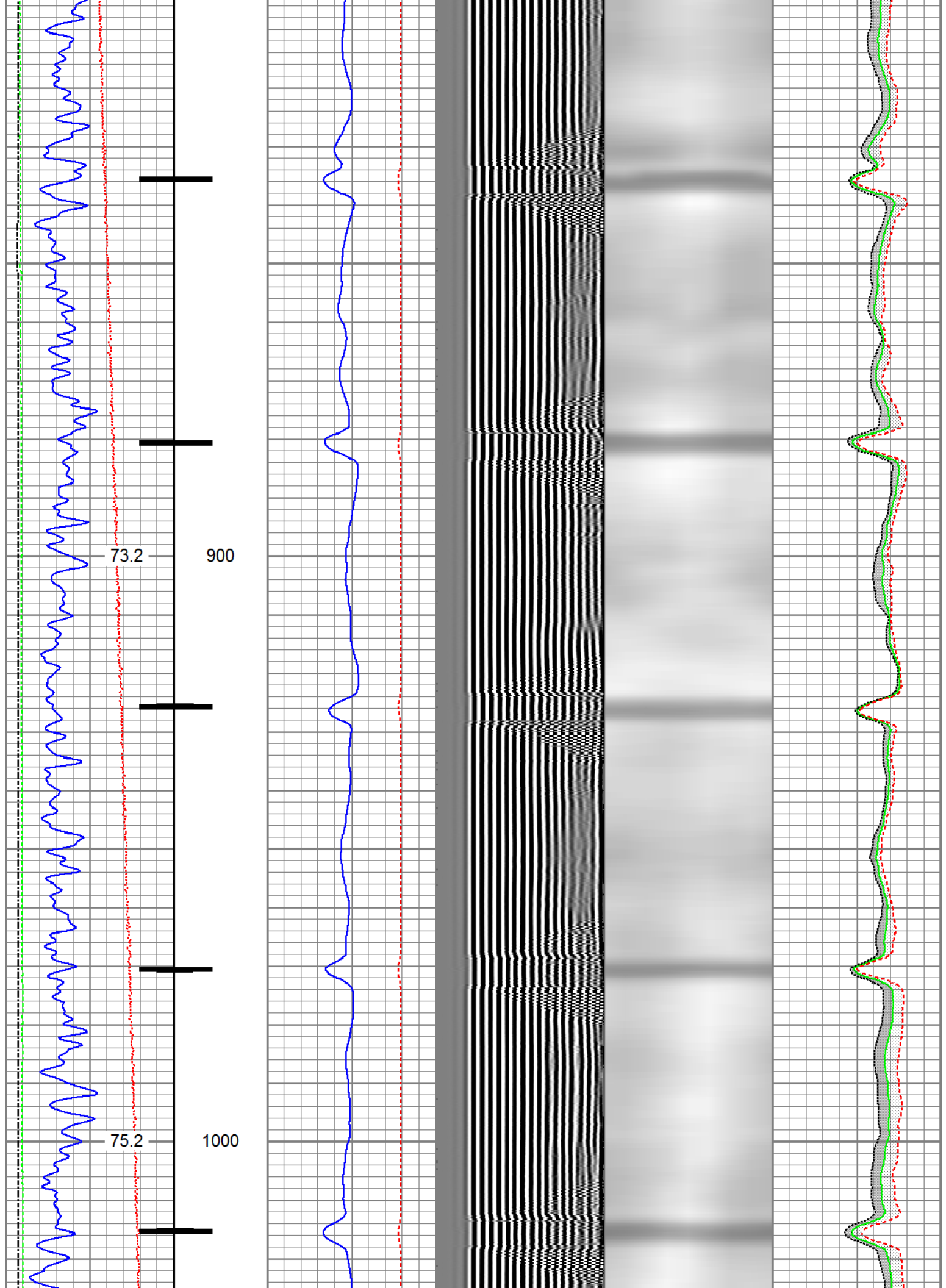
Gamma Ray 0 (GAPI) 120	3' Amplitude 0 (mV) 100	5' Variable Density Log 200 1200	Sector Map	Average Amplitude 0 100
Casing Collar Locator	3' Amplitude x 5 0 (mV) 20			Minimum Amplitude 0 100
Temperature 0 (degF) 20	3' Travel Time 650 (usec) 150			Maximum Amplitude 0 100
Line Speed -150 (ft/min) 150		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

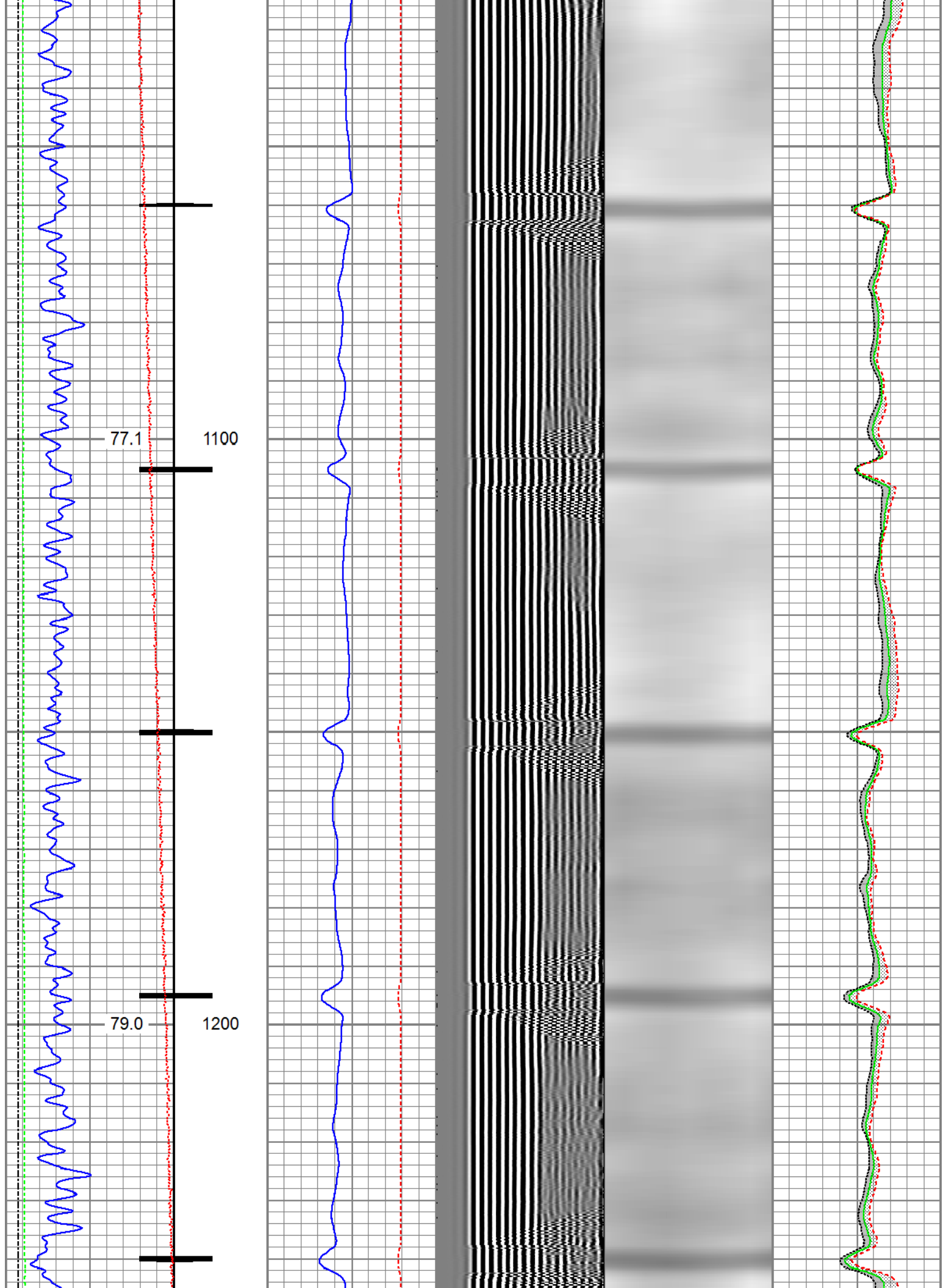


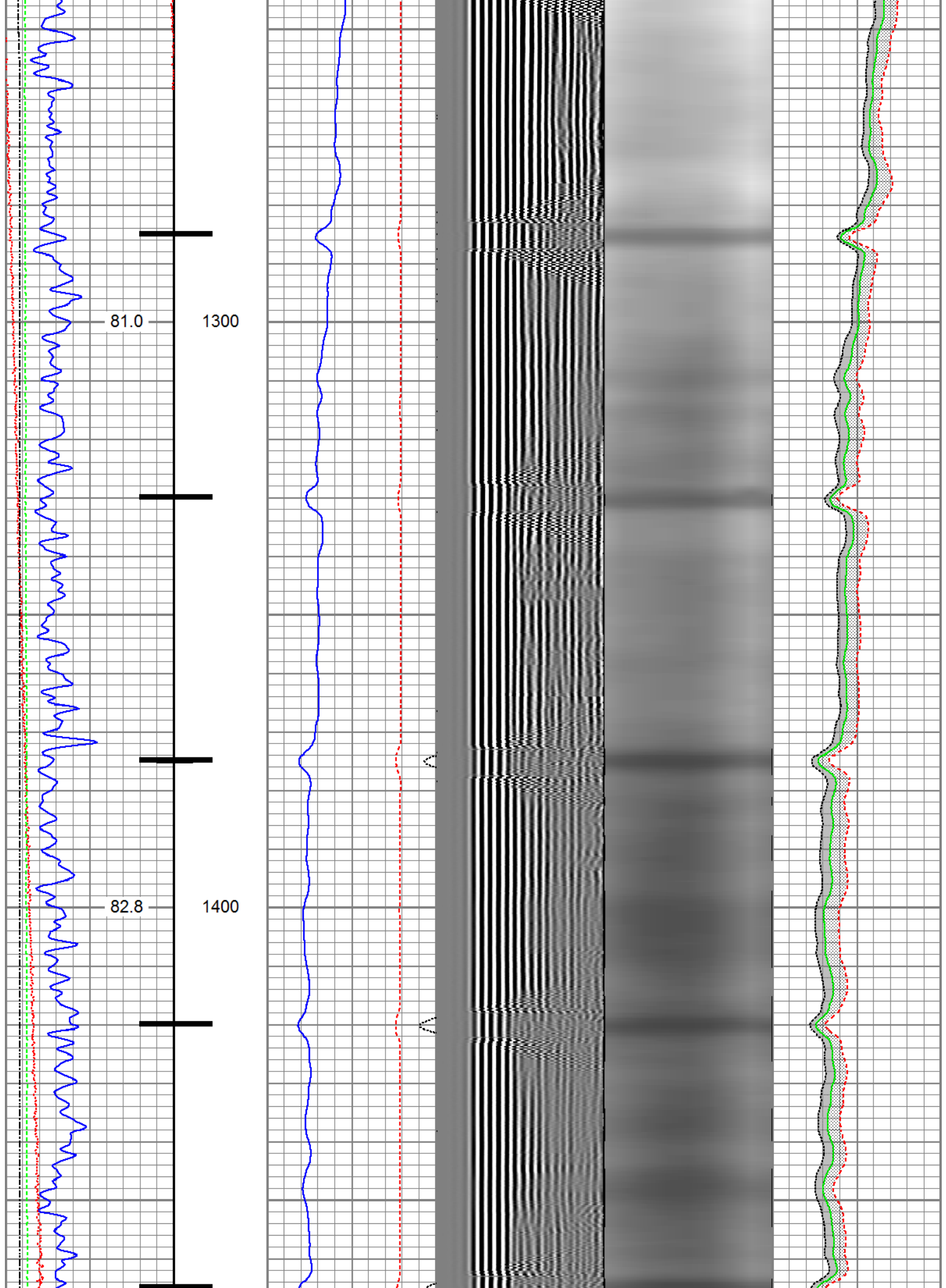


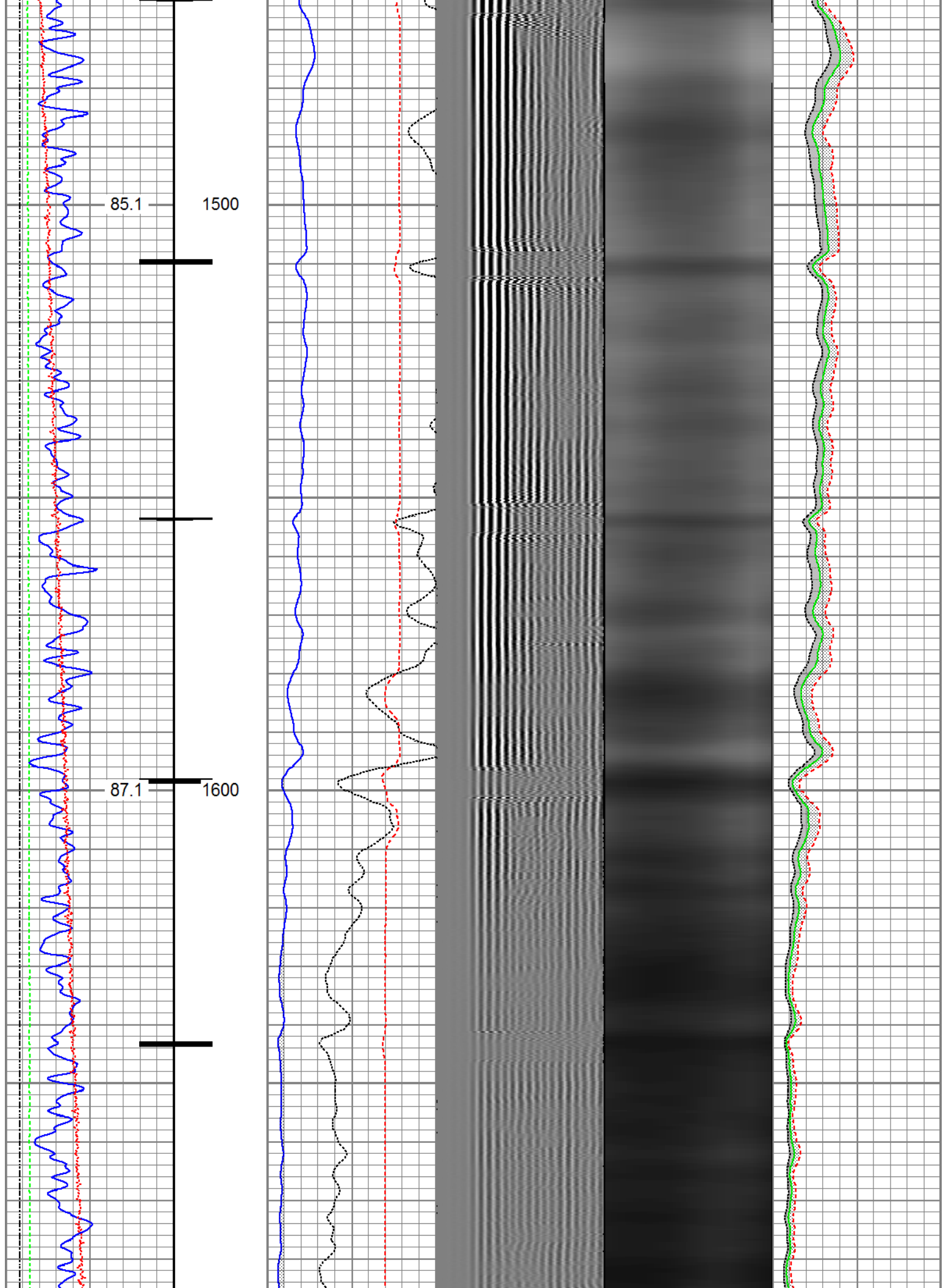


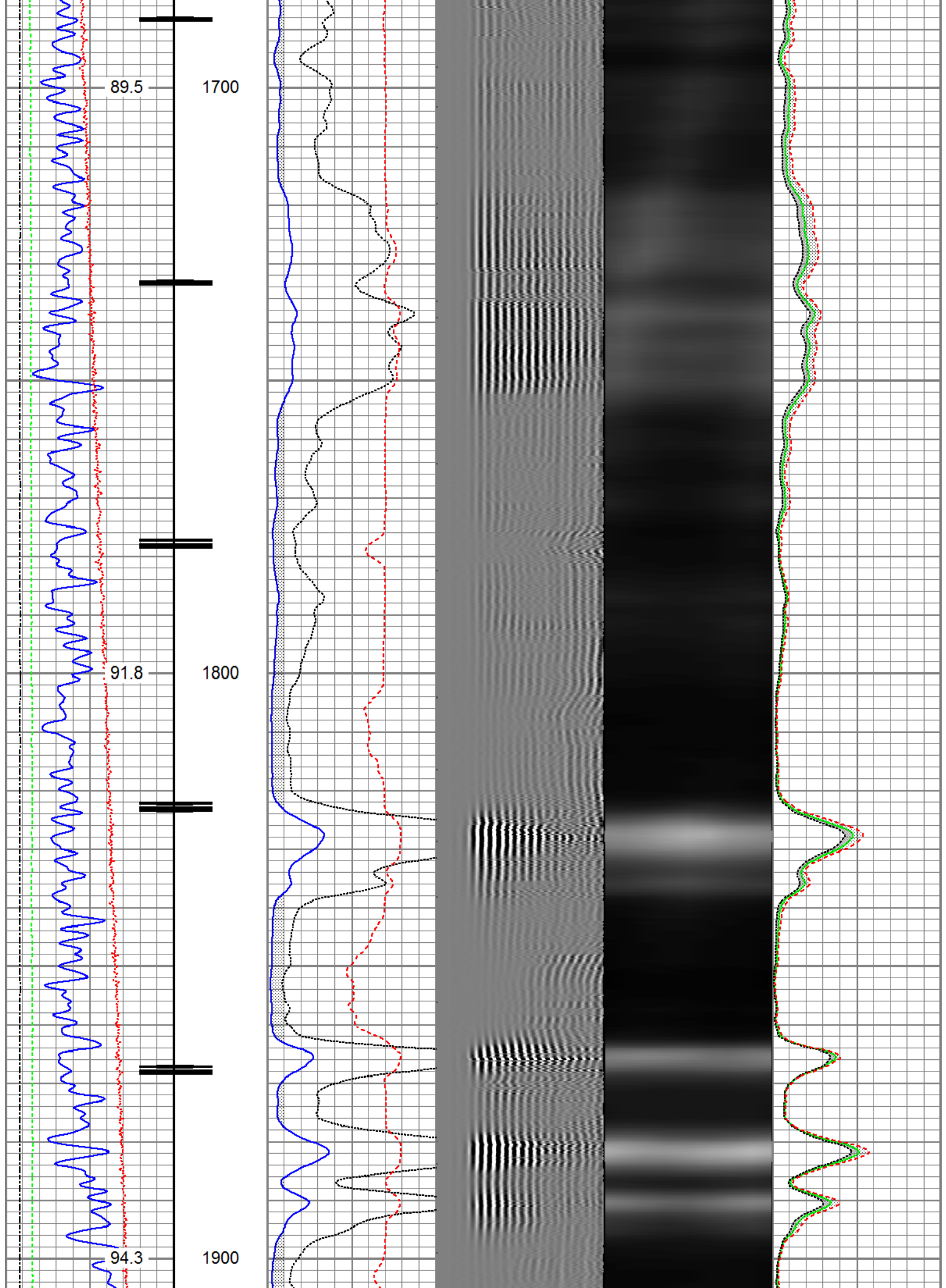


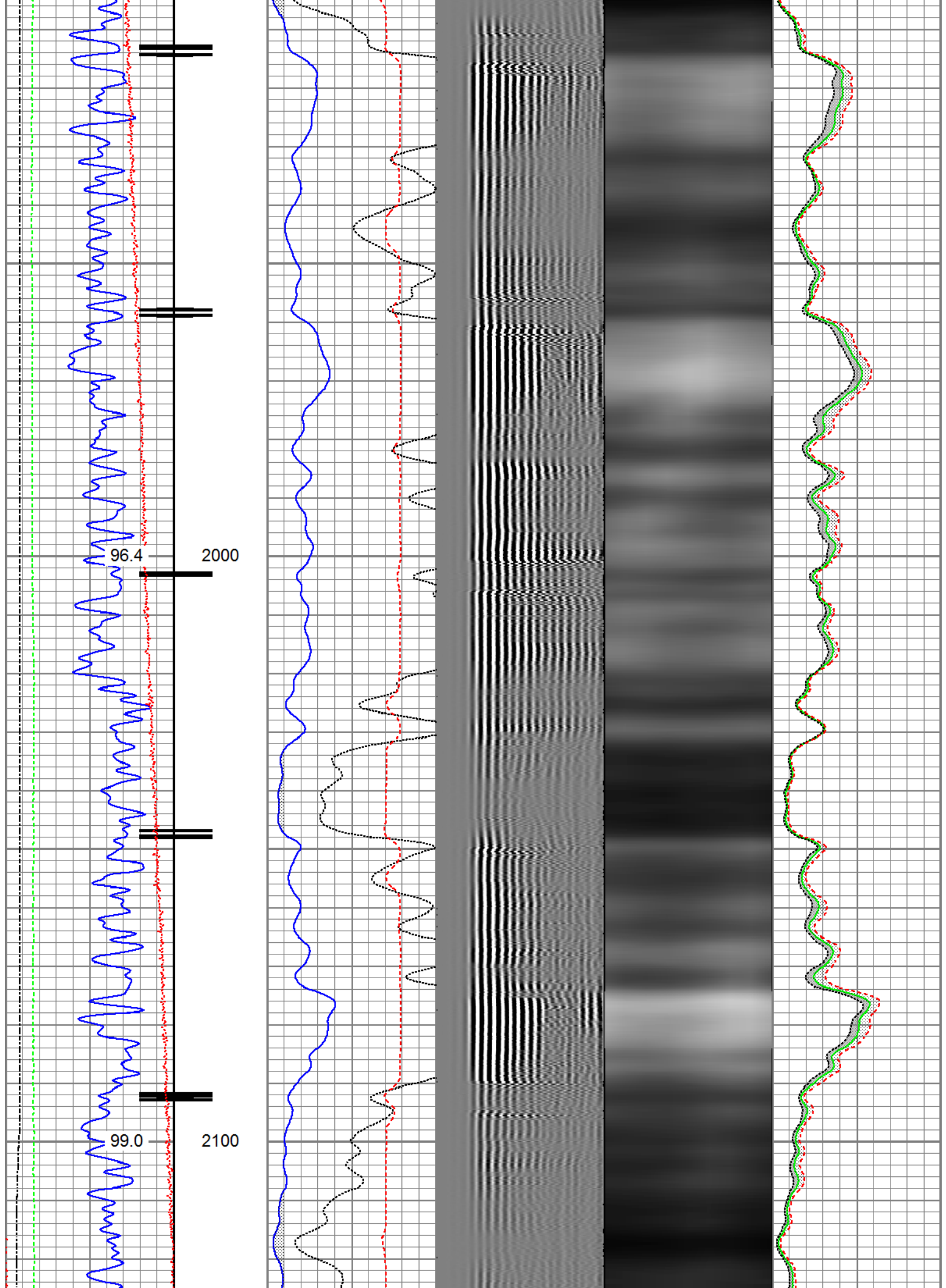


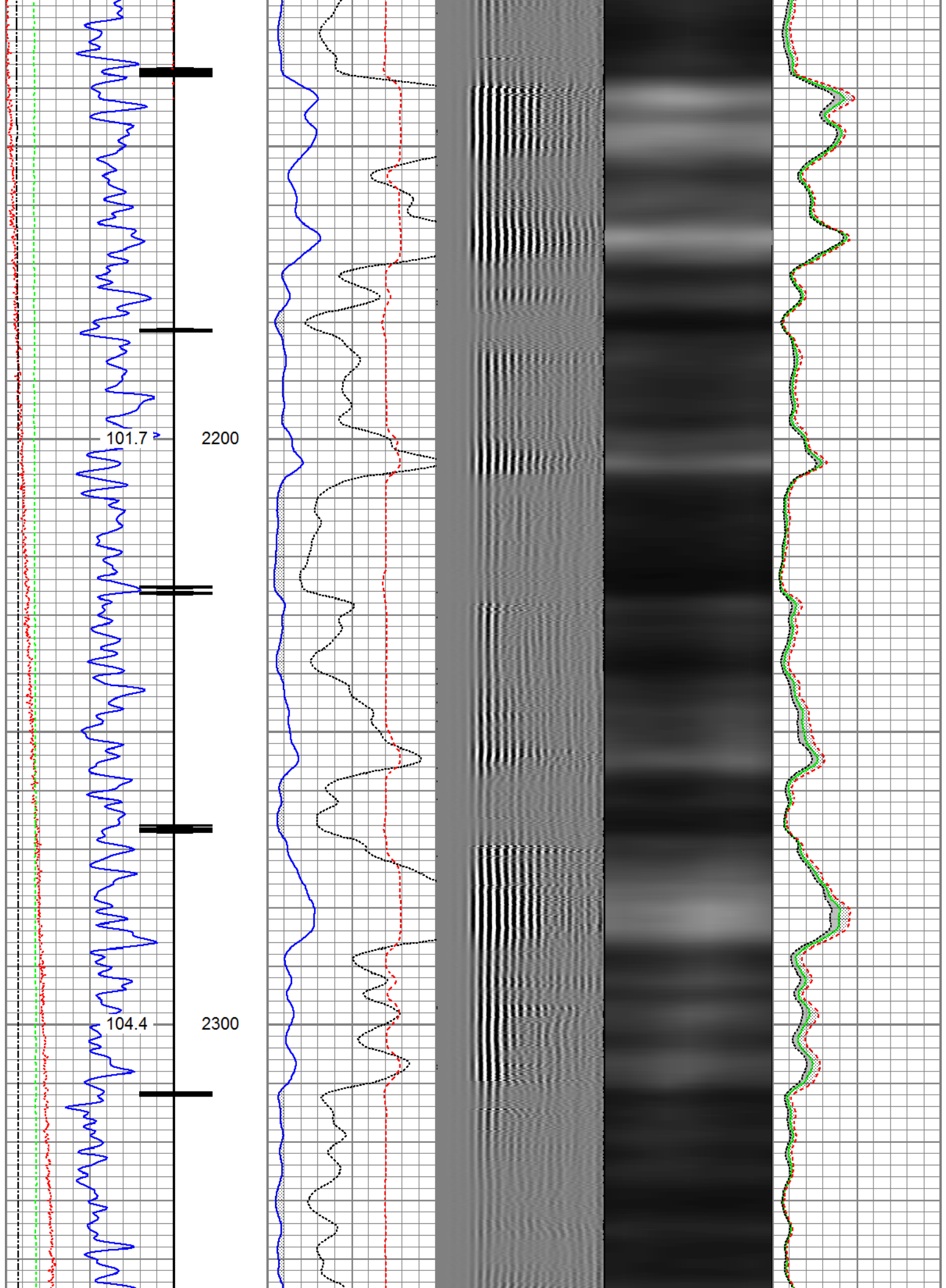


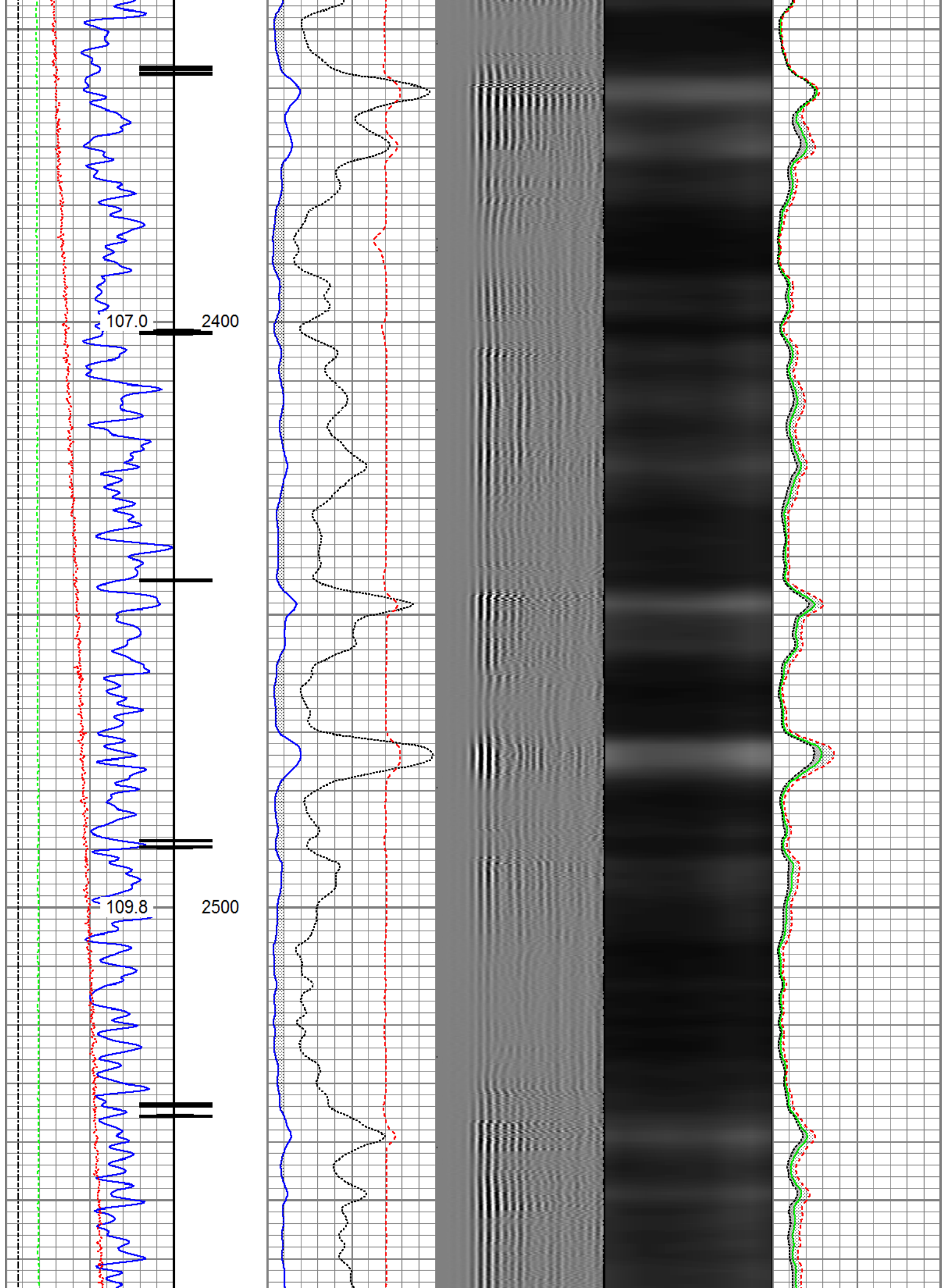


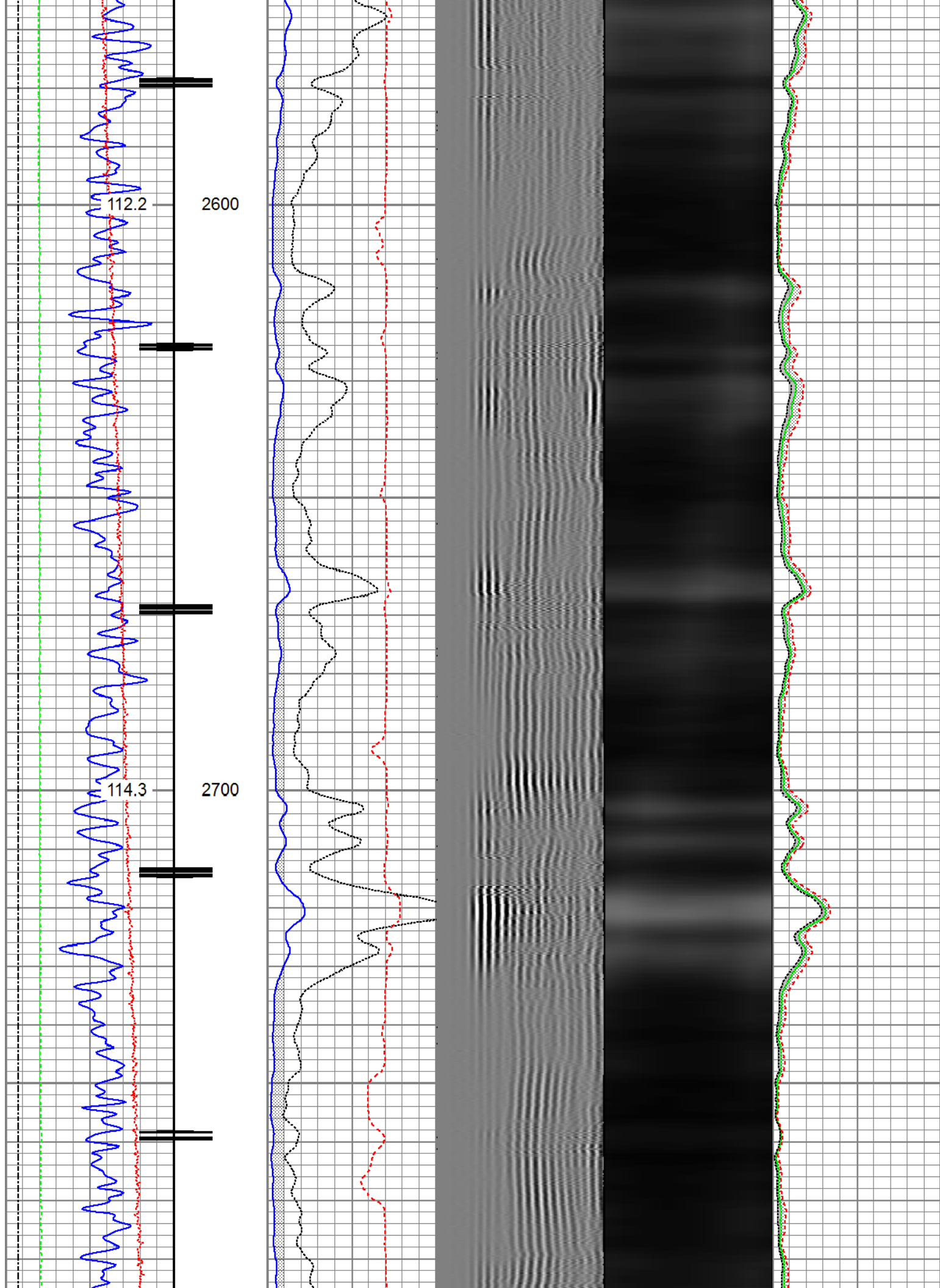


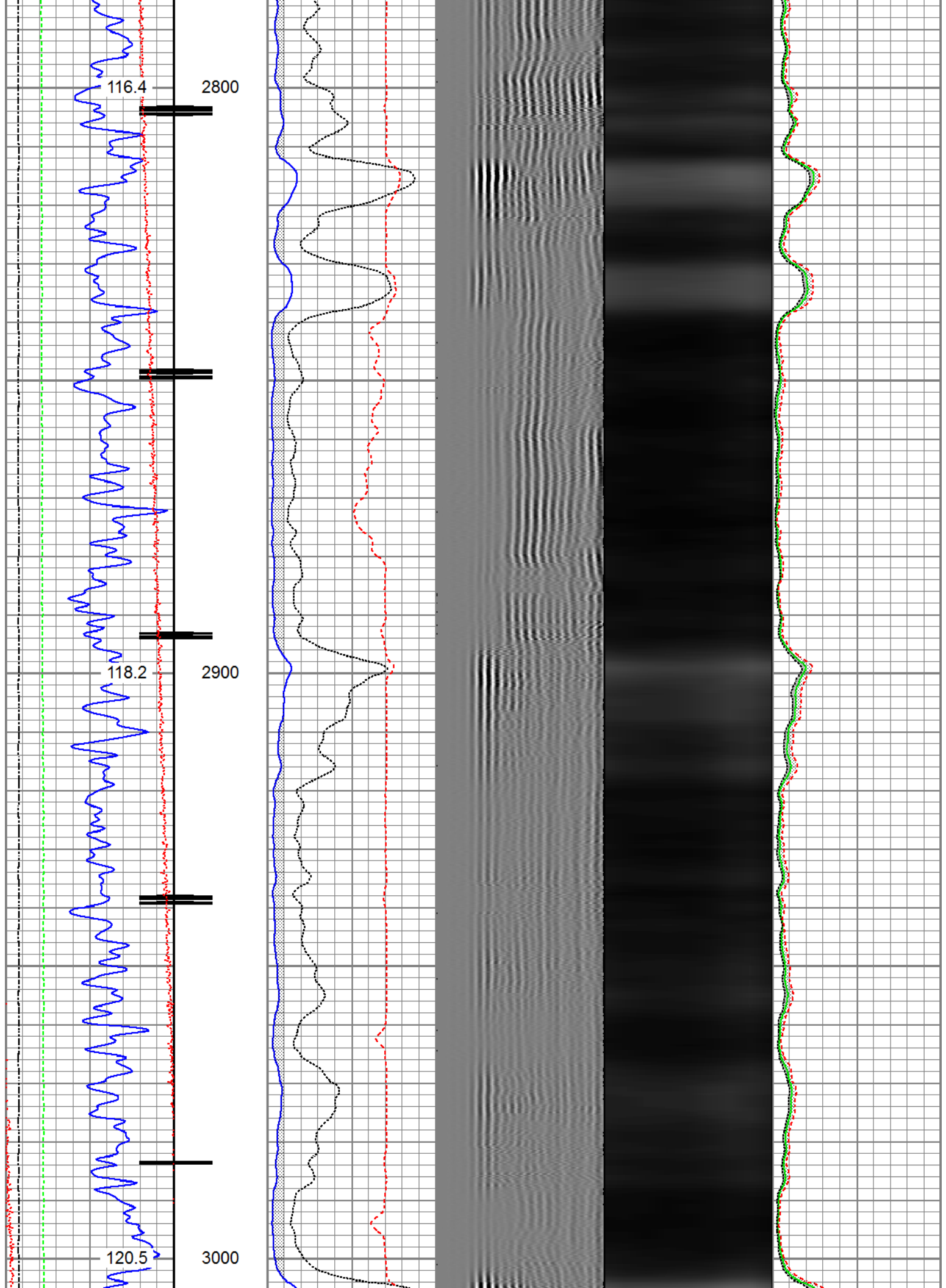


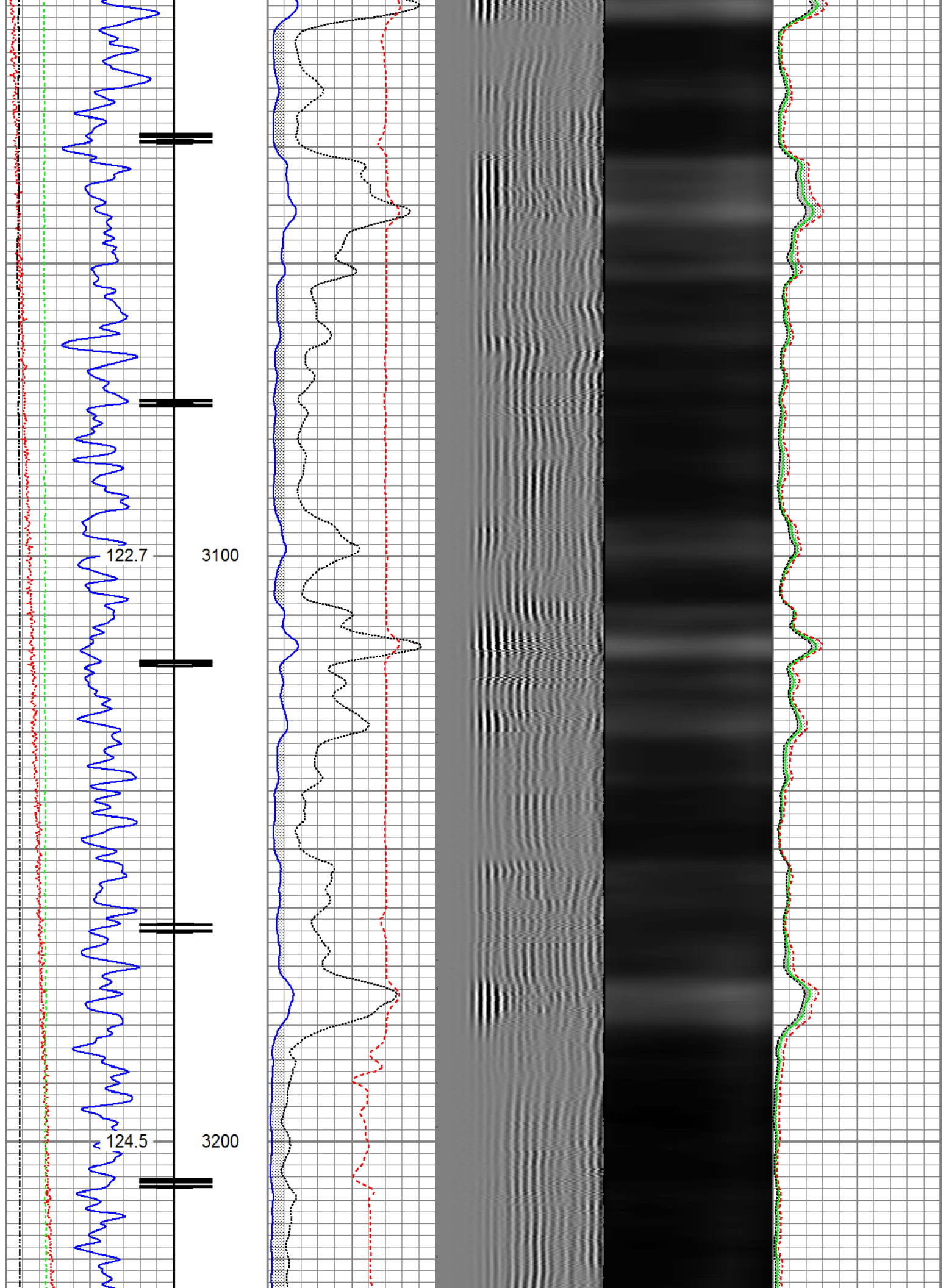


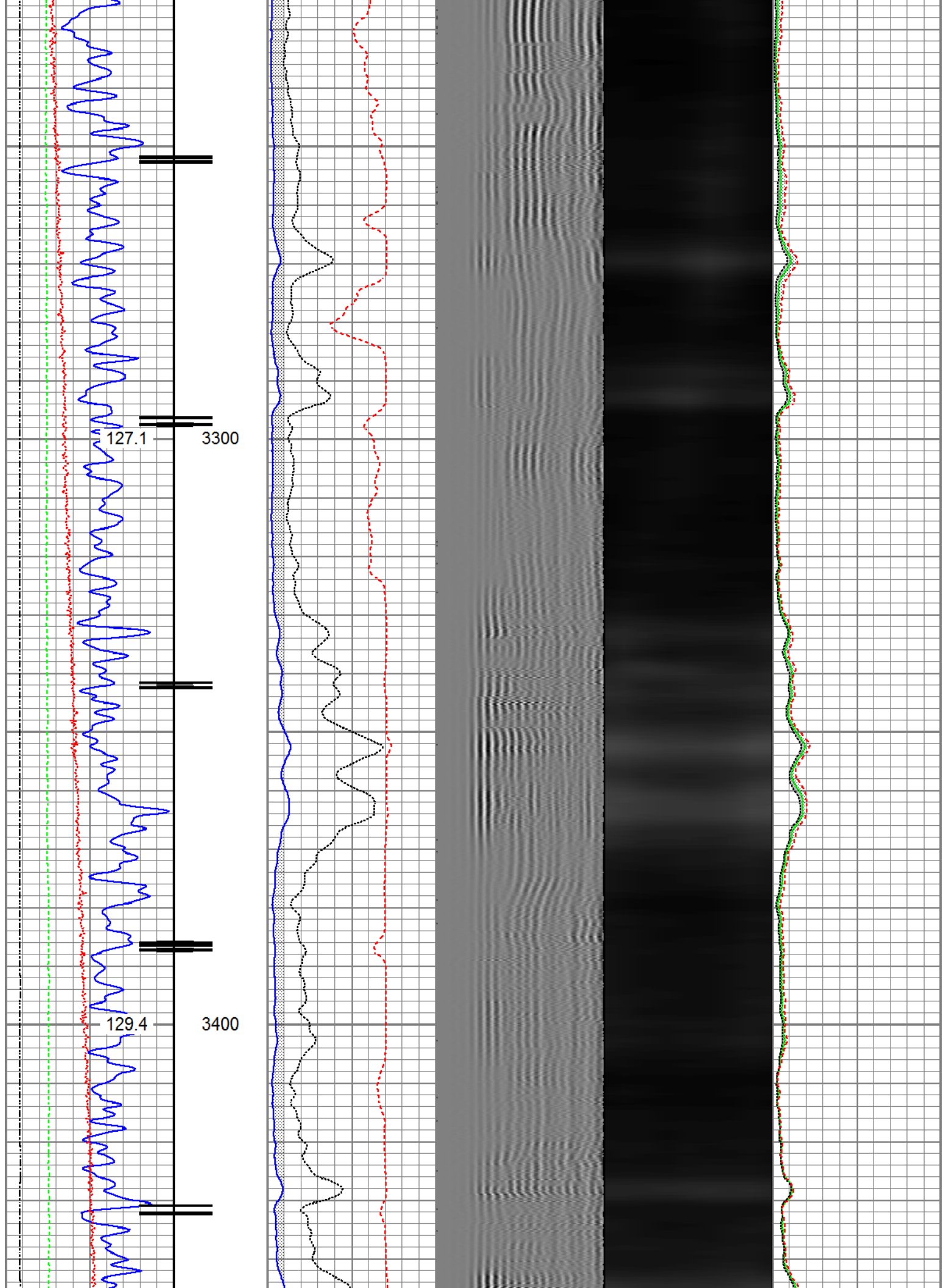


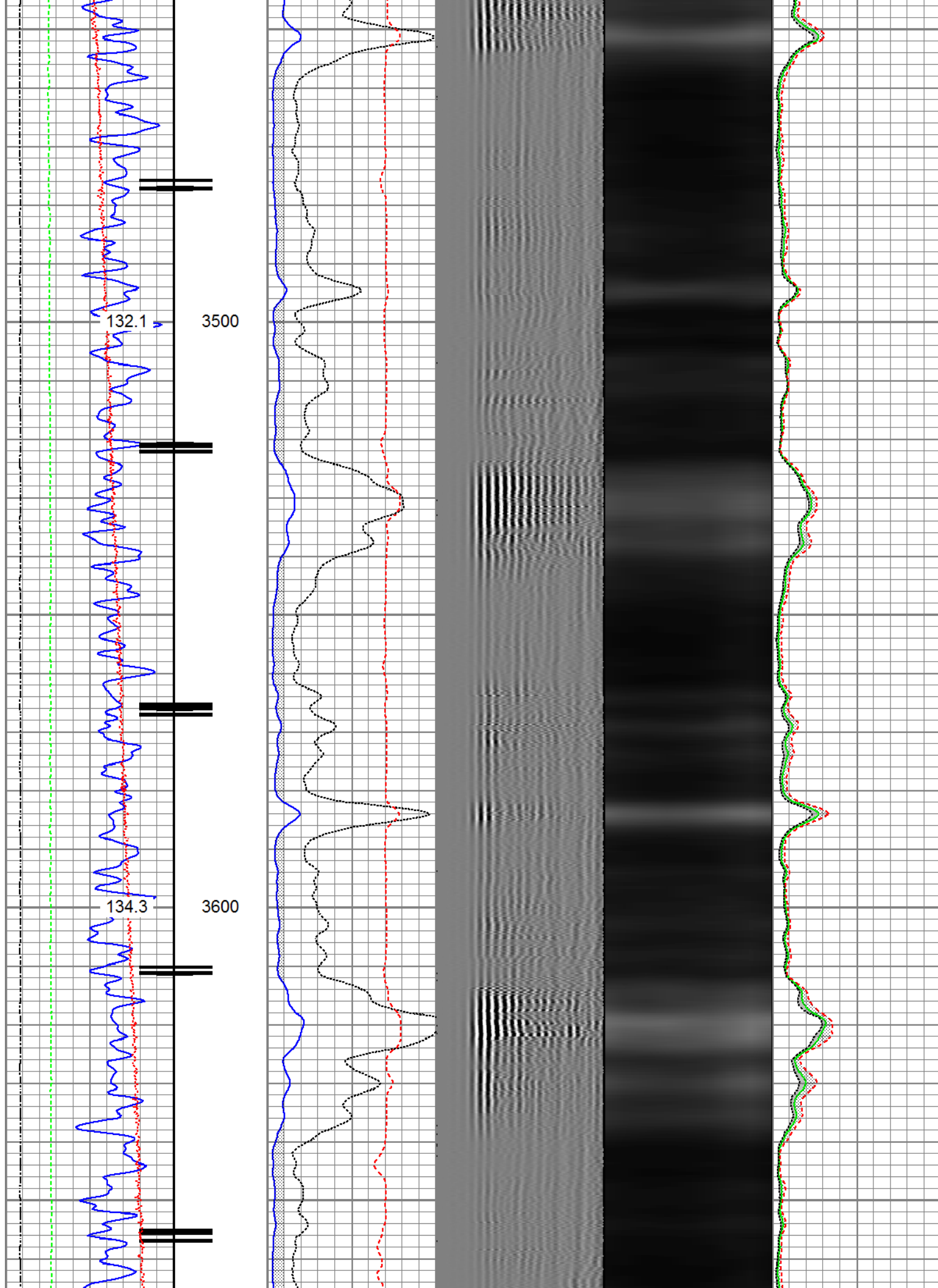


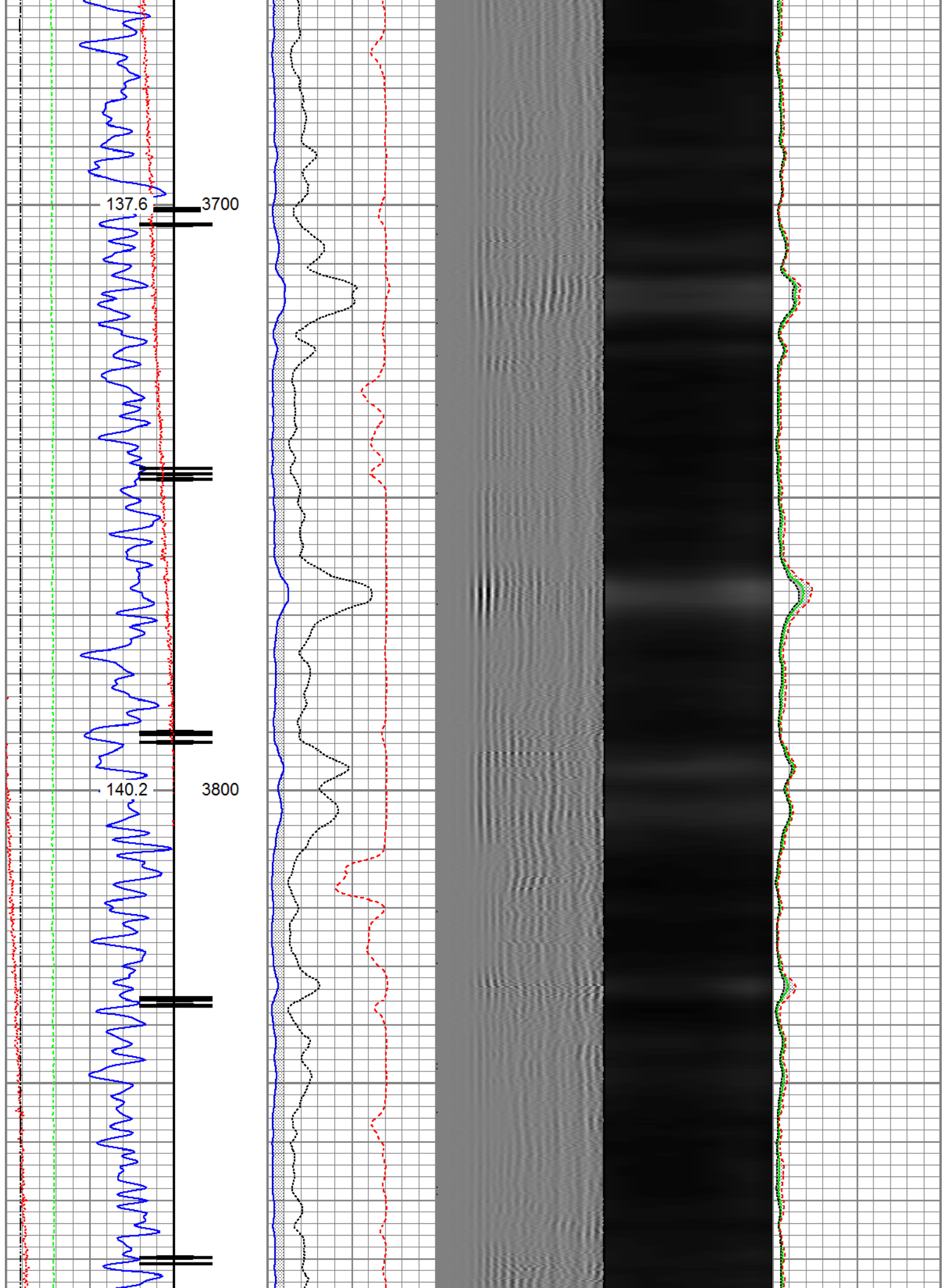


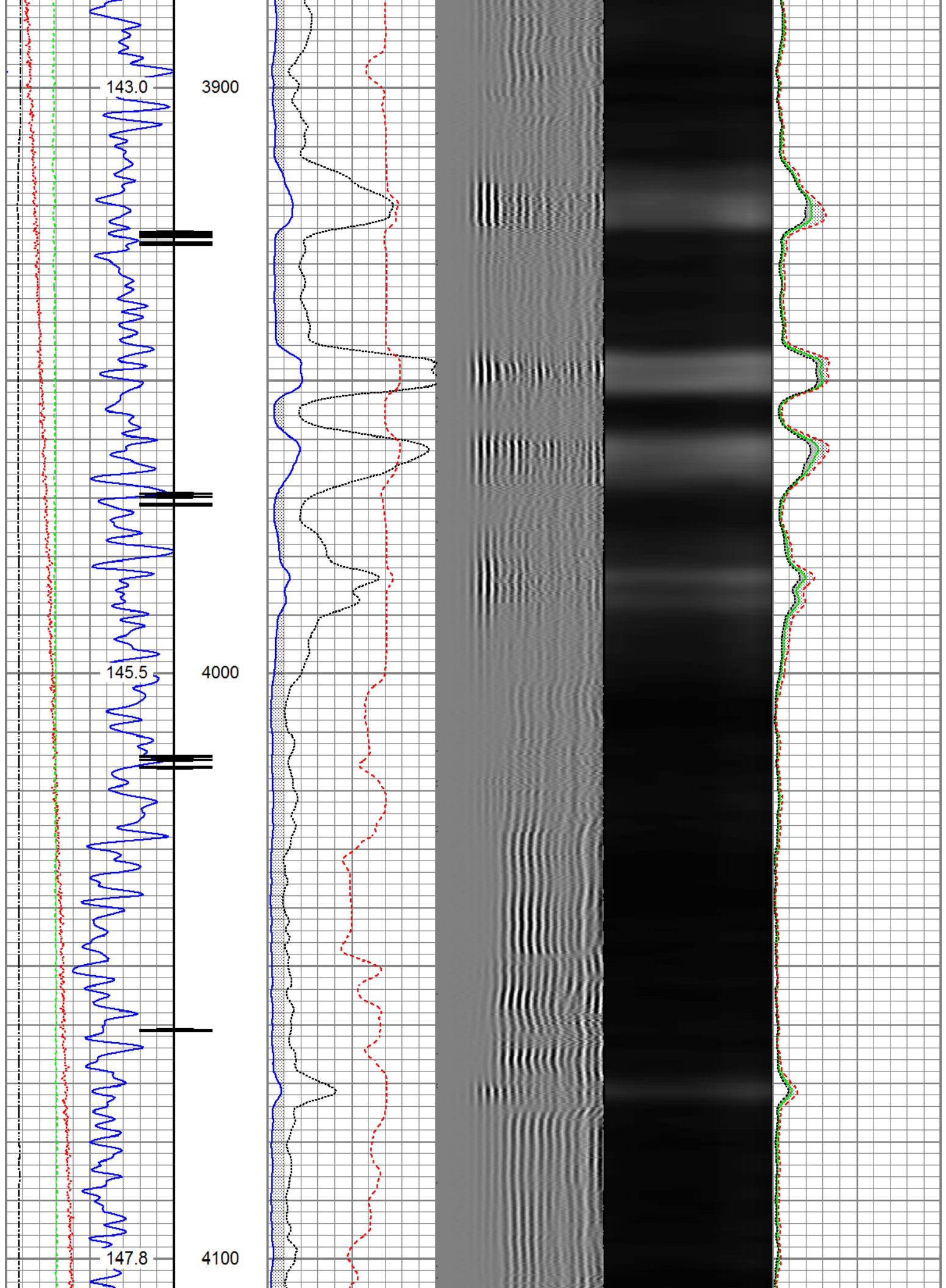


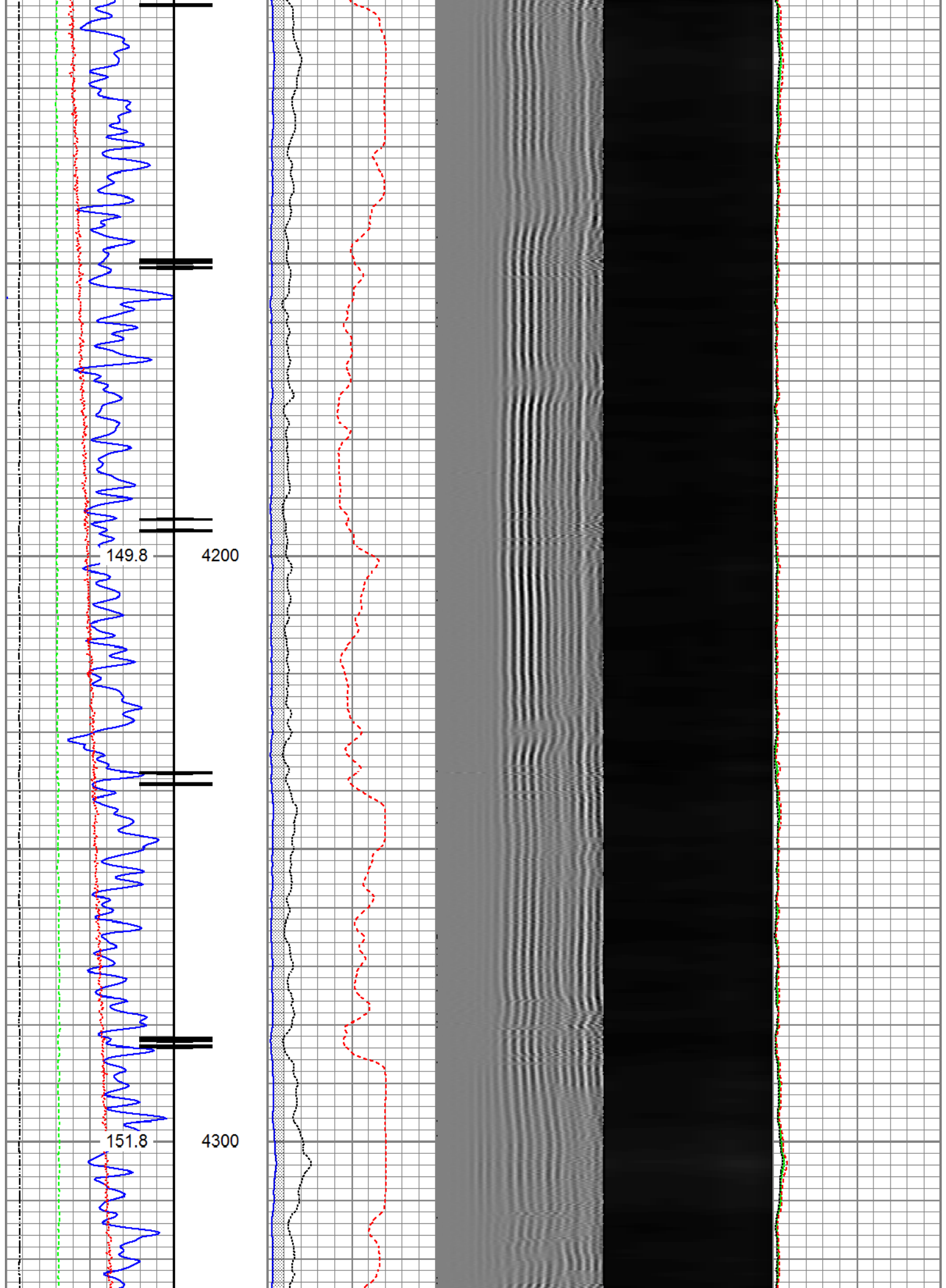


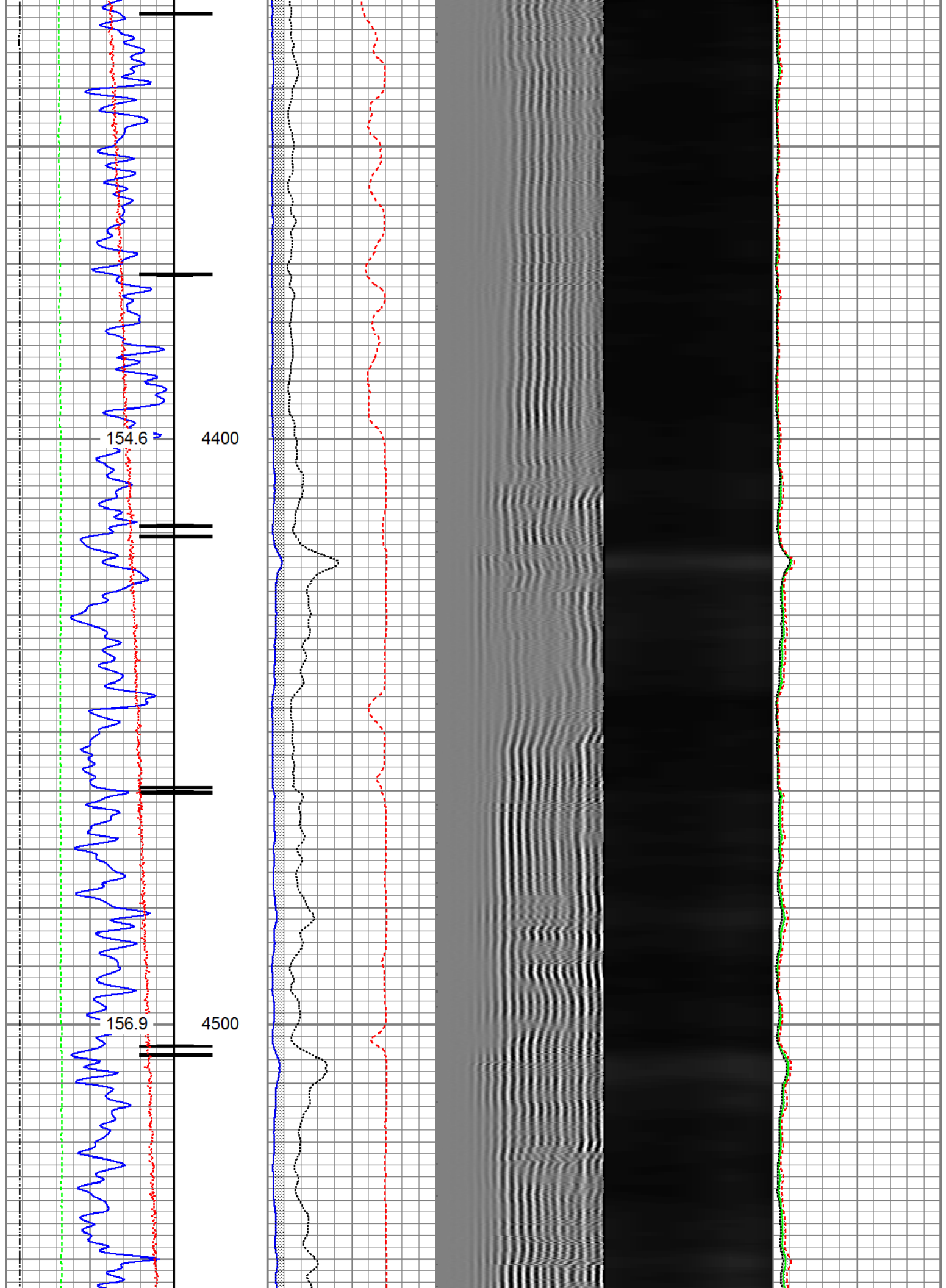


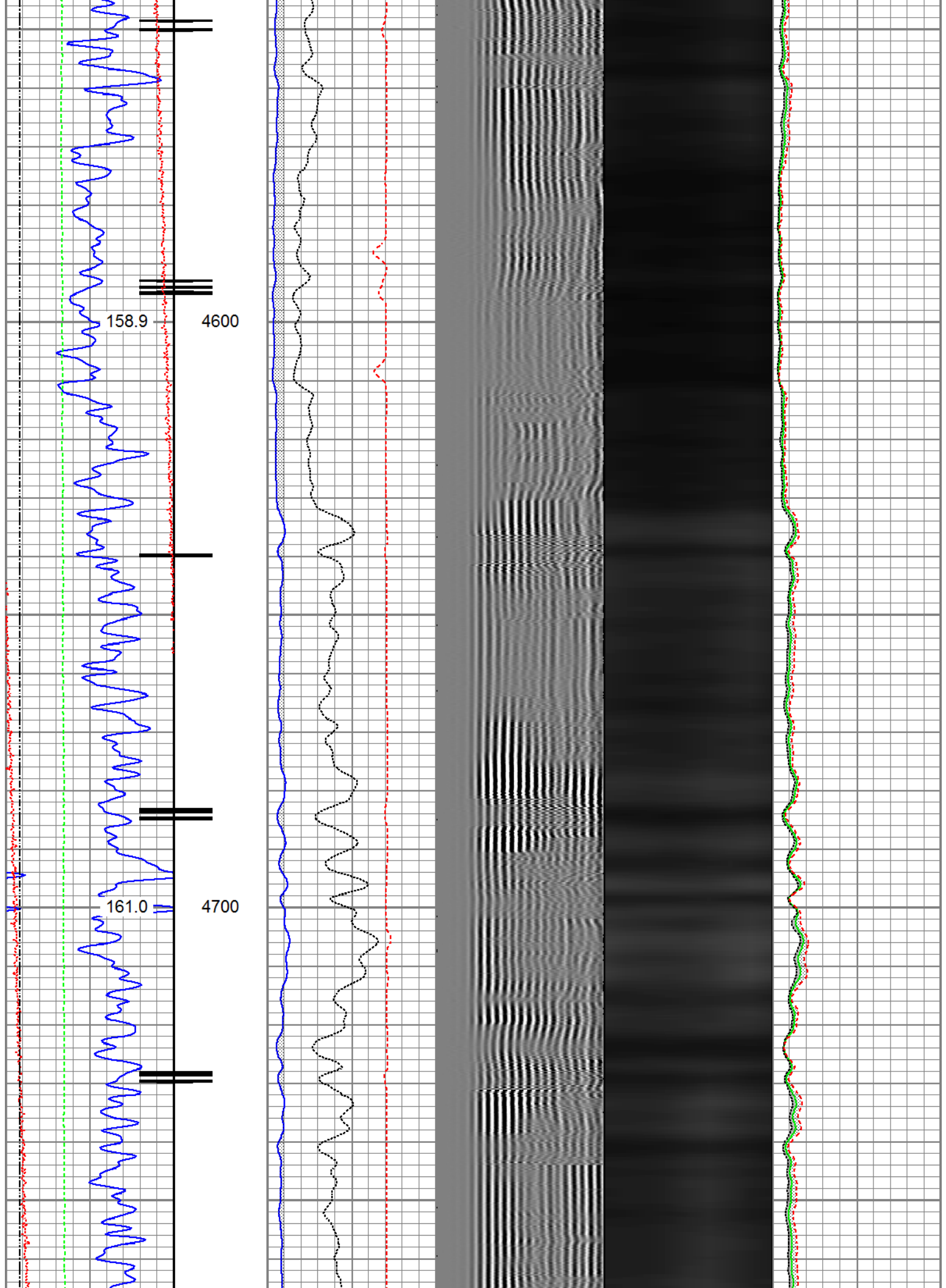


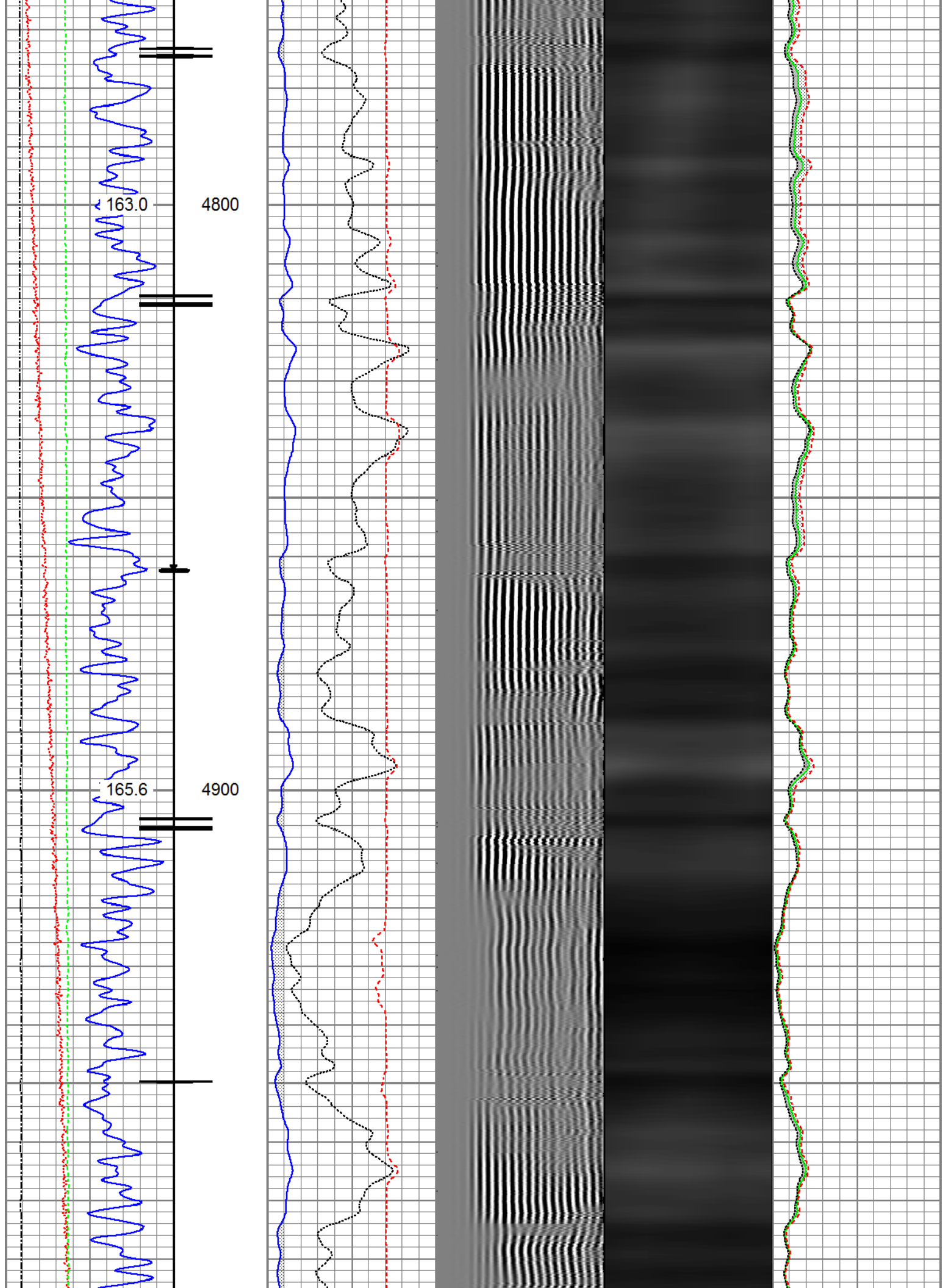


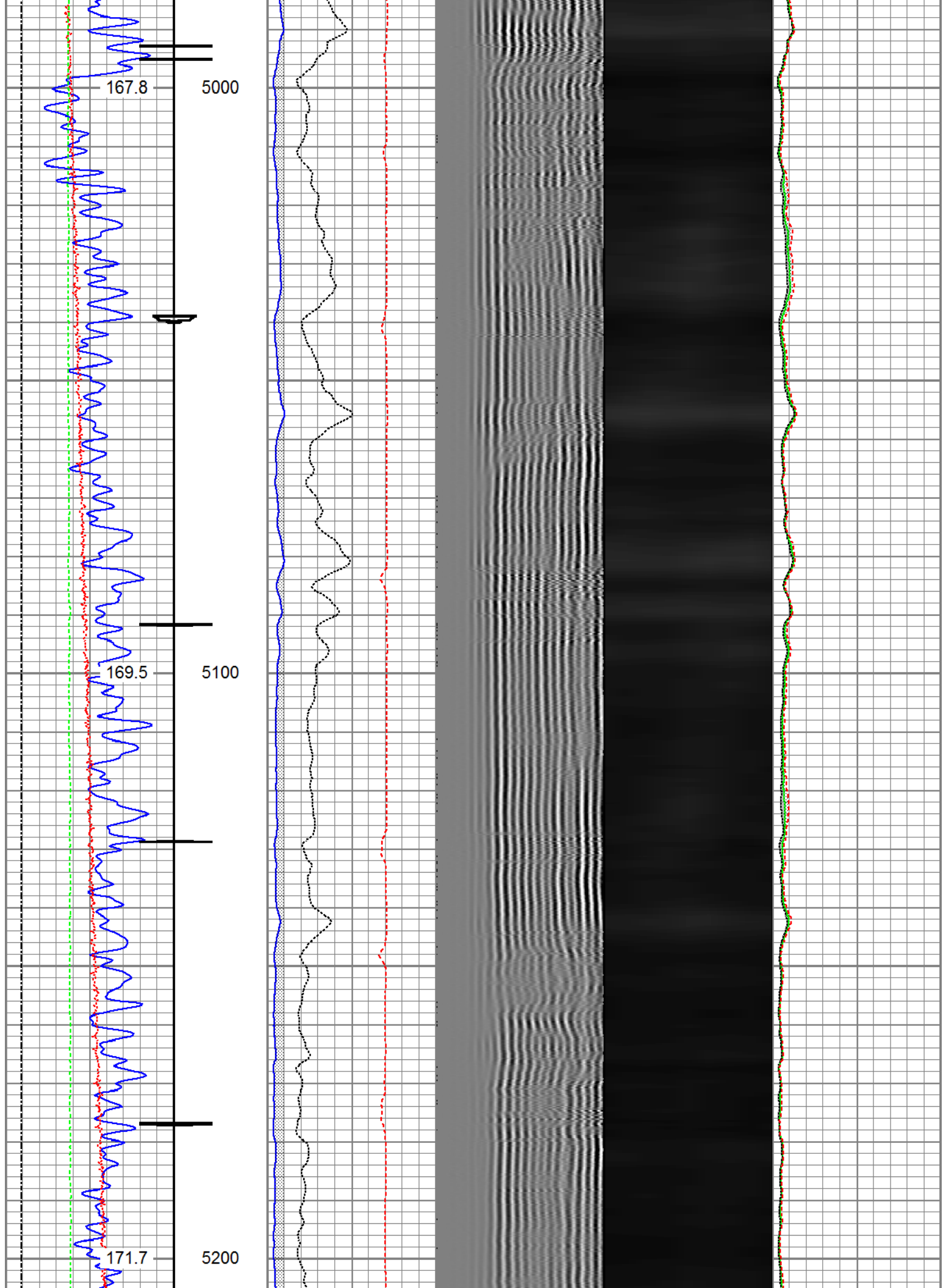


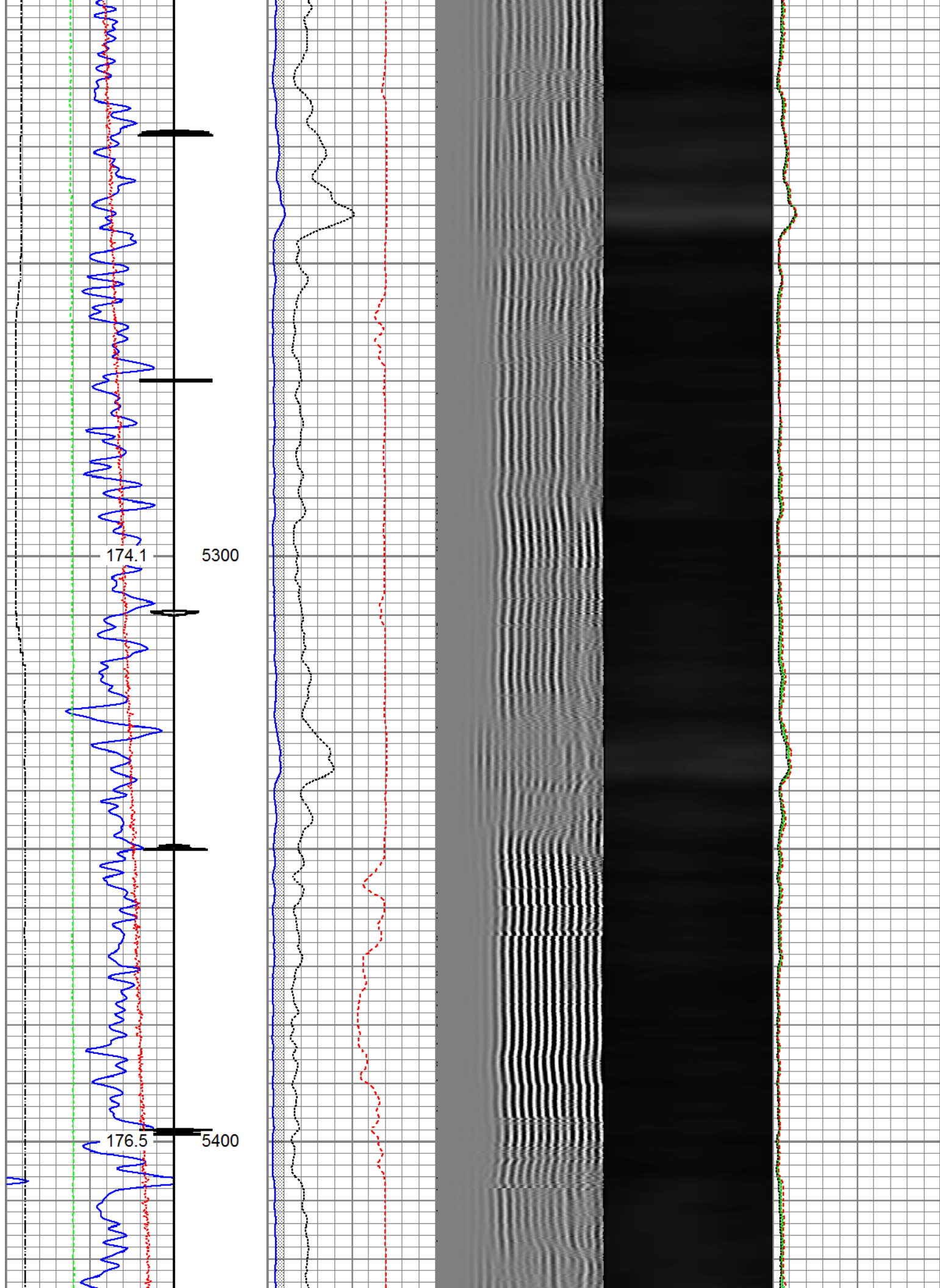


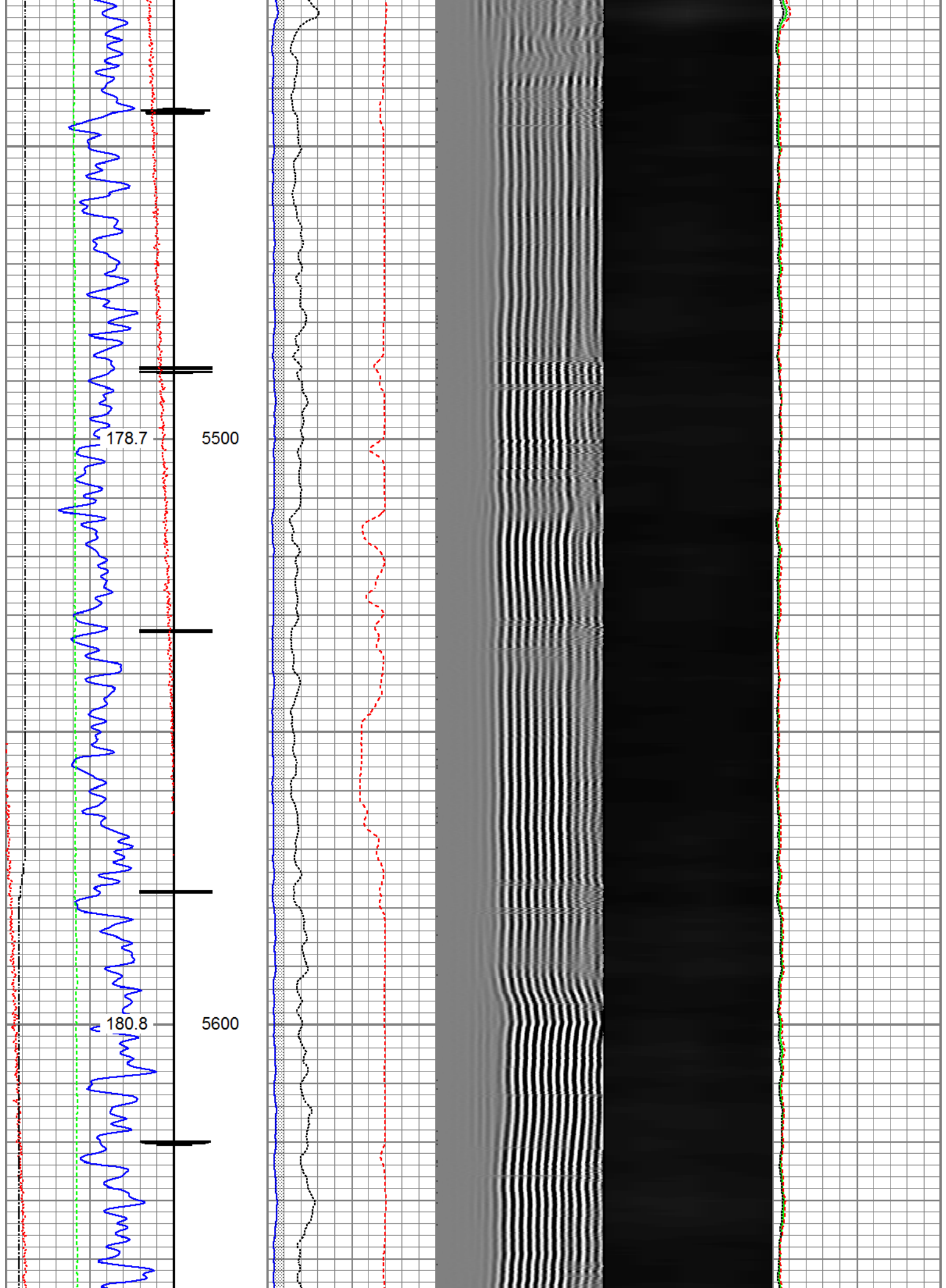


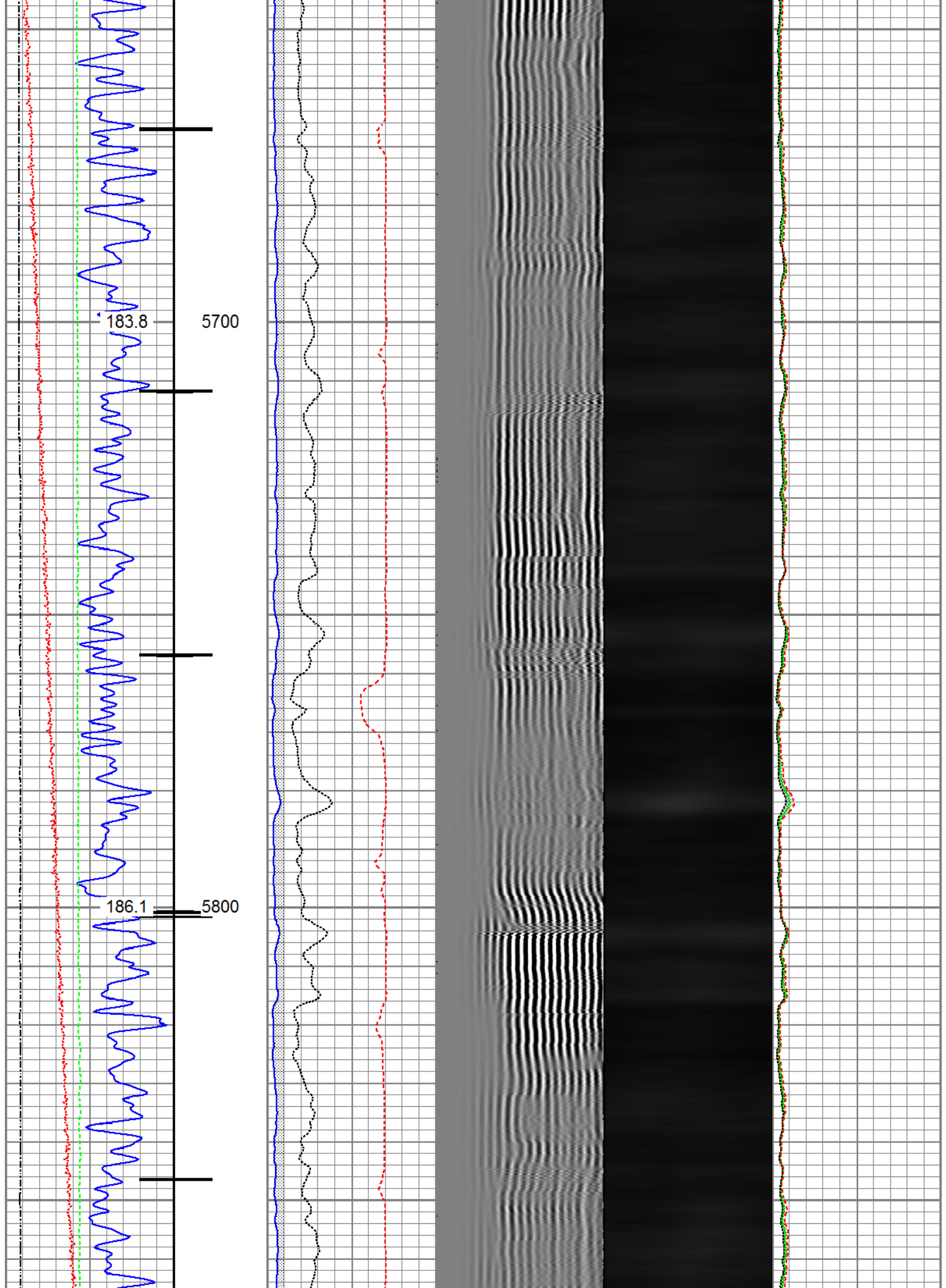


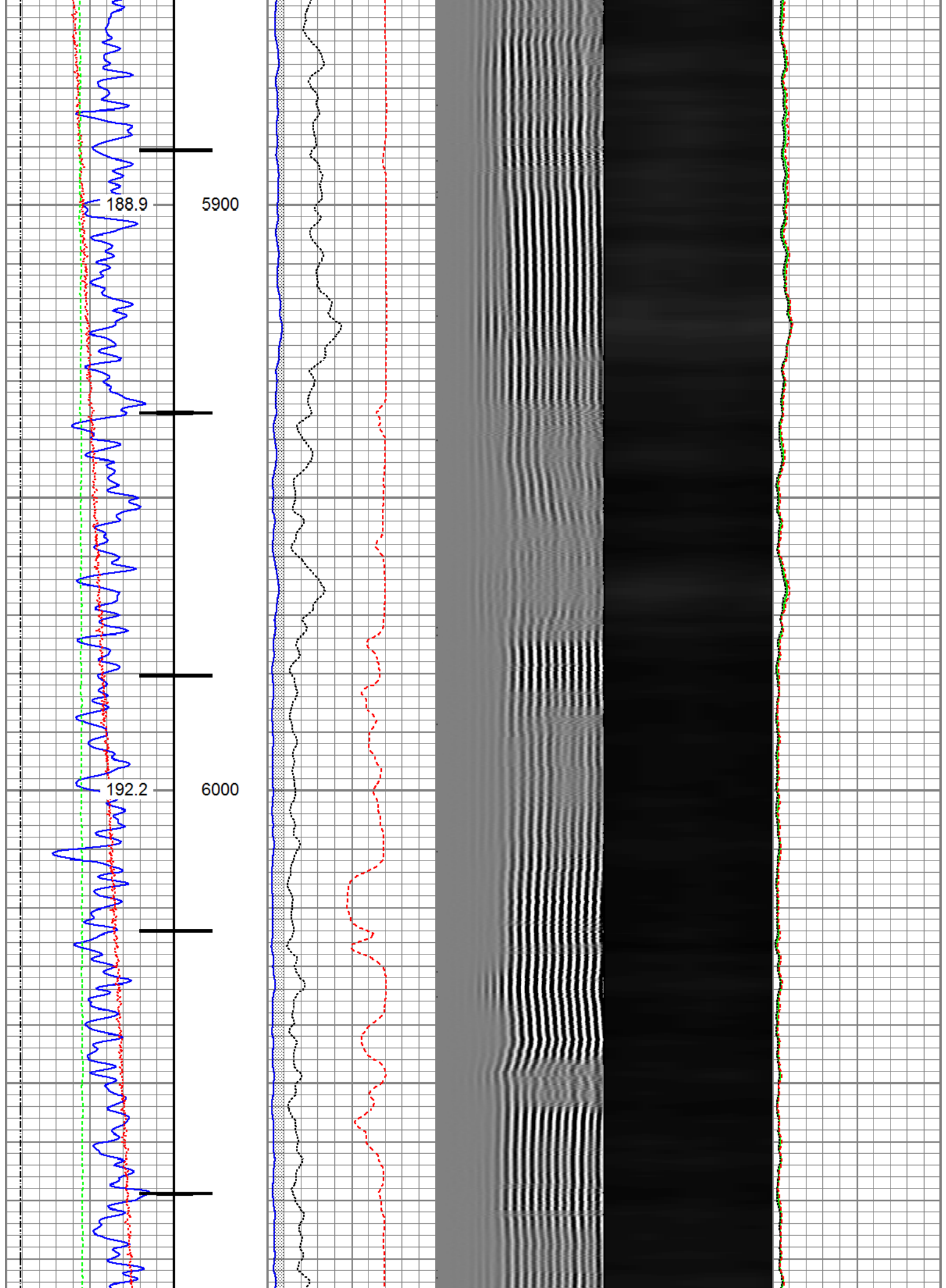


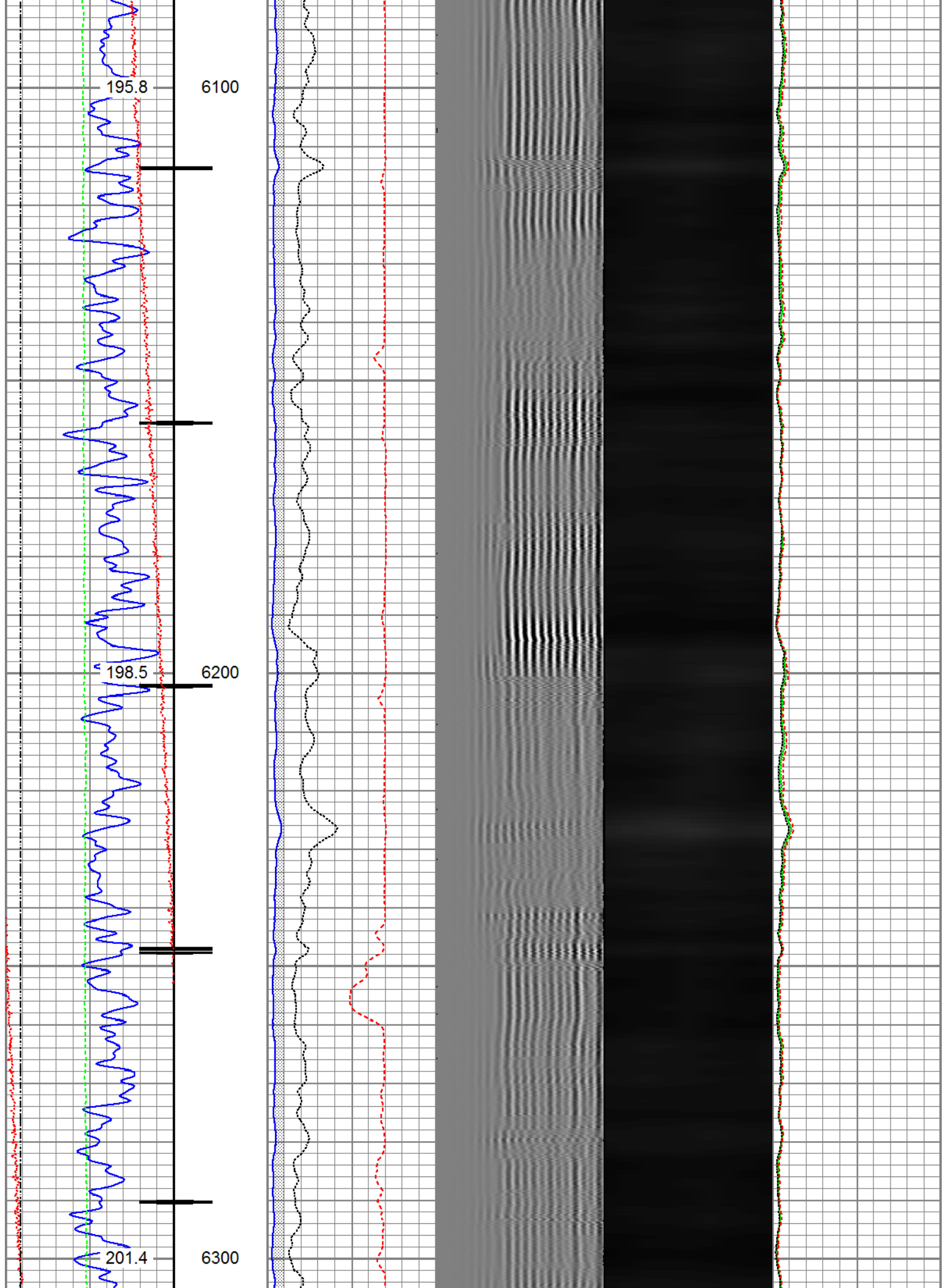


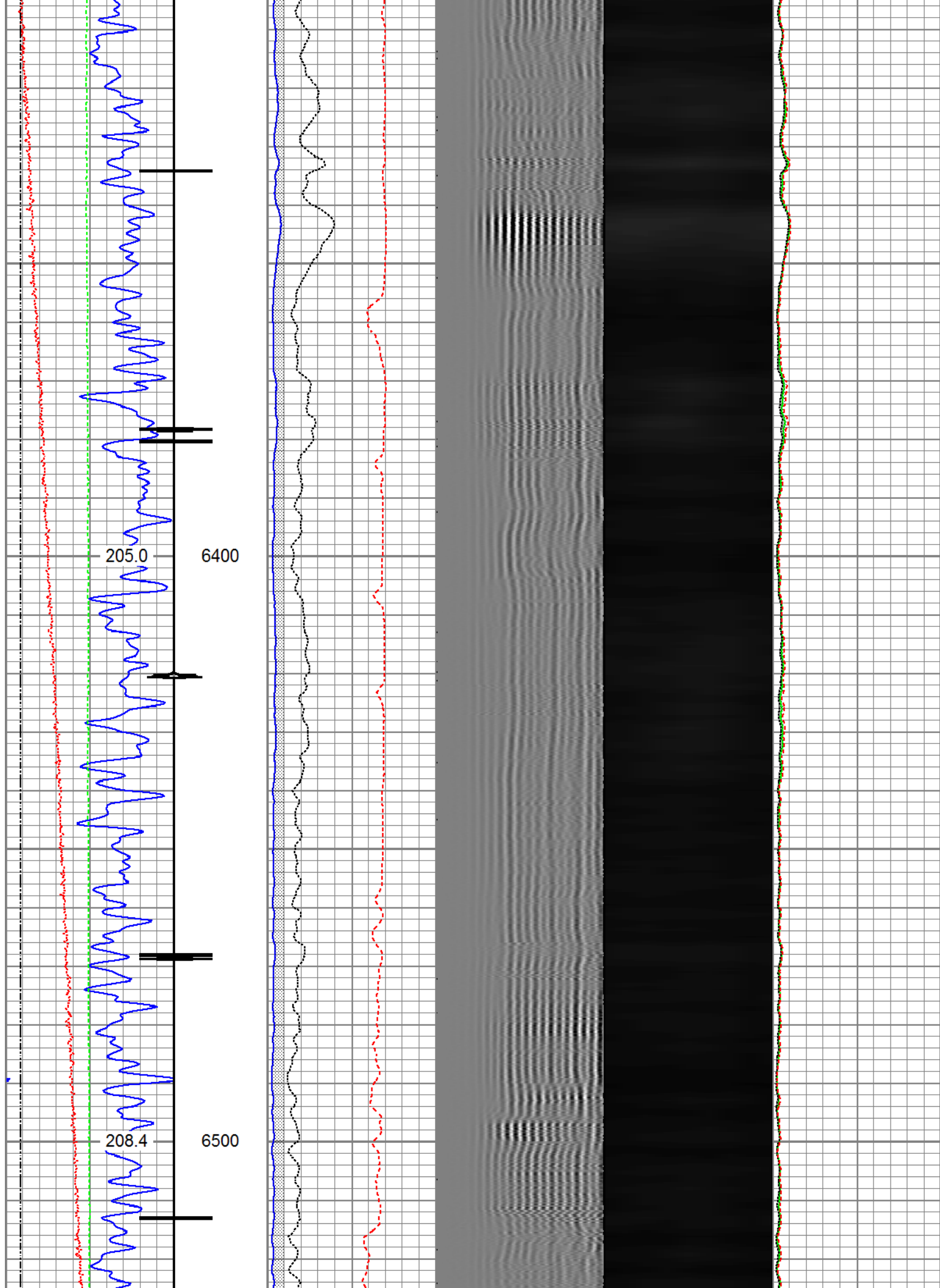


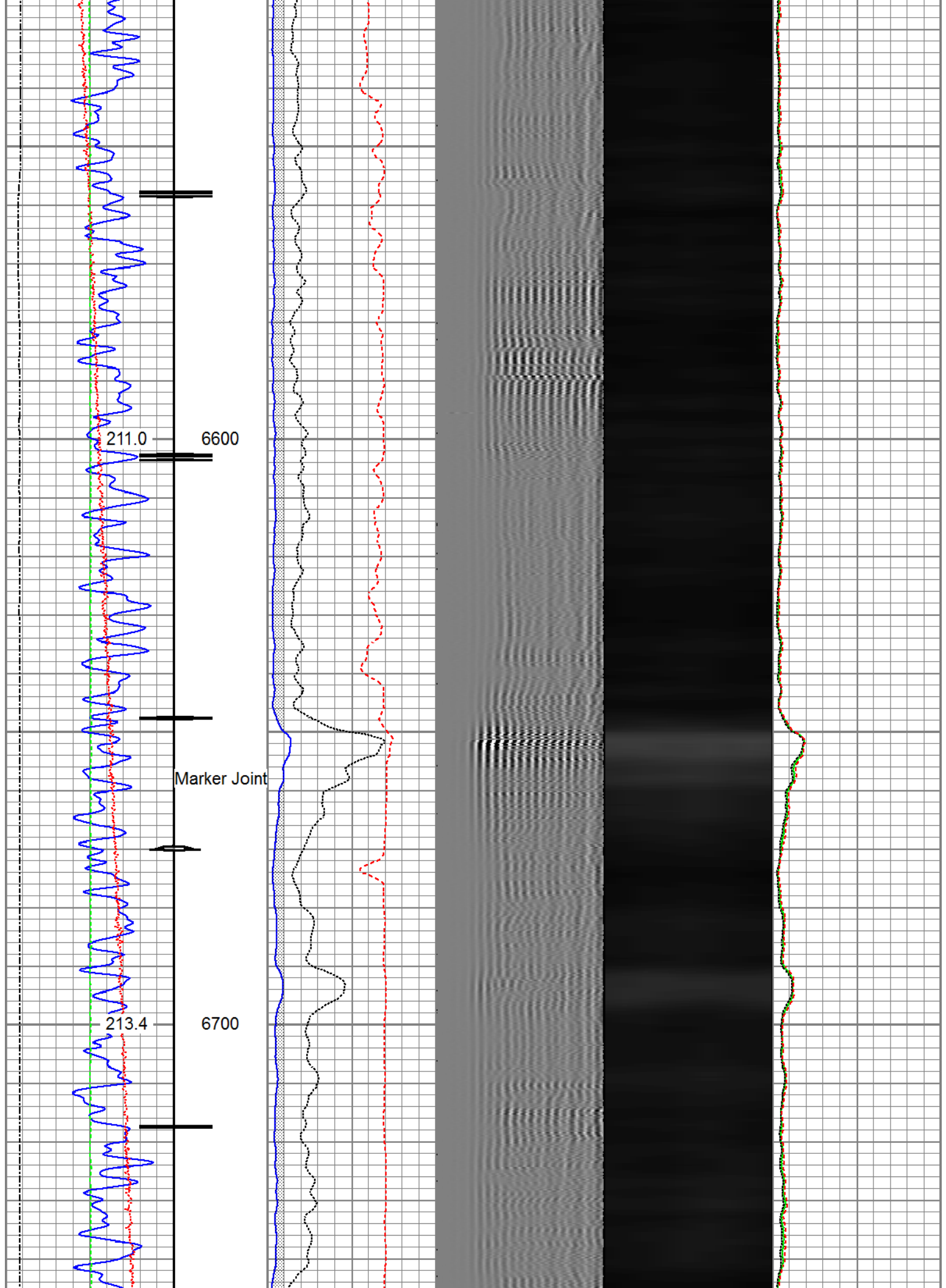


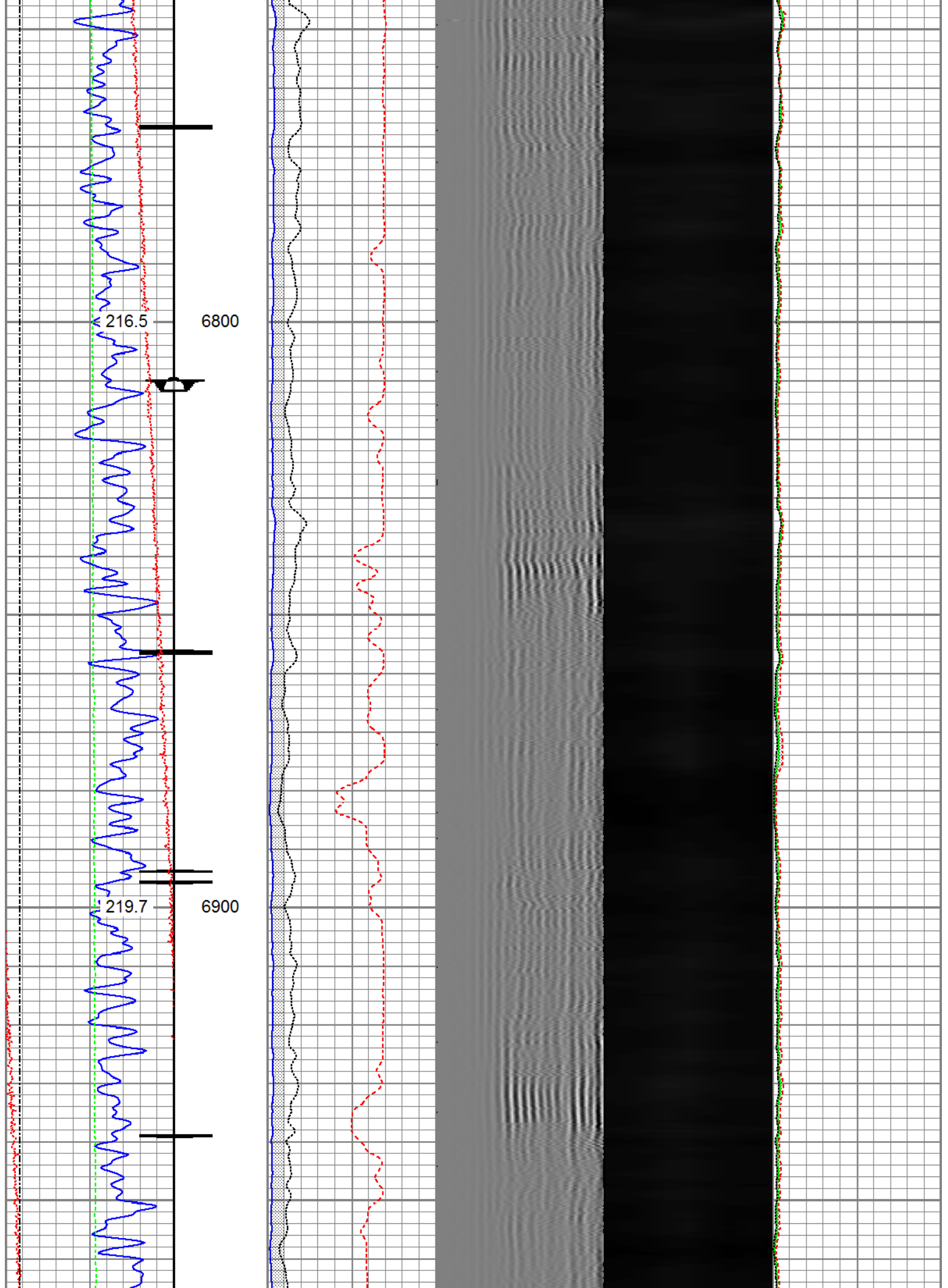


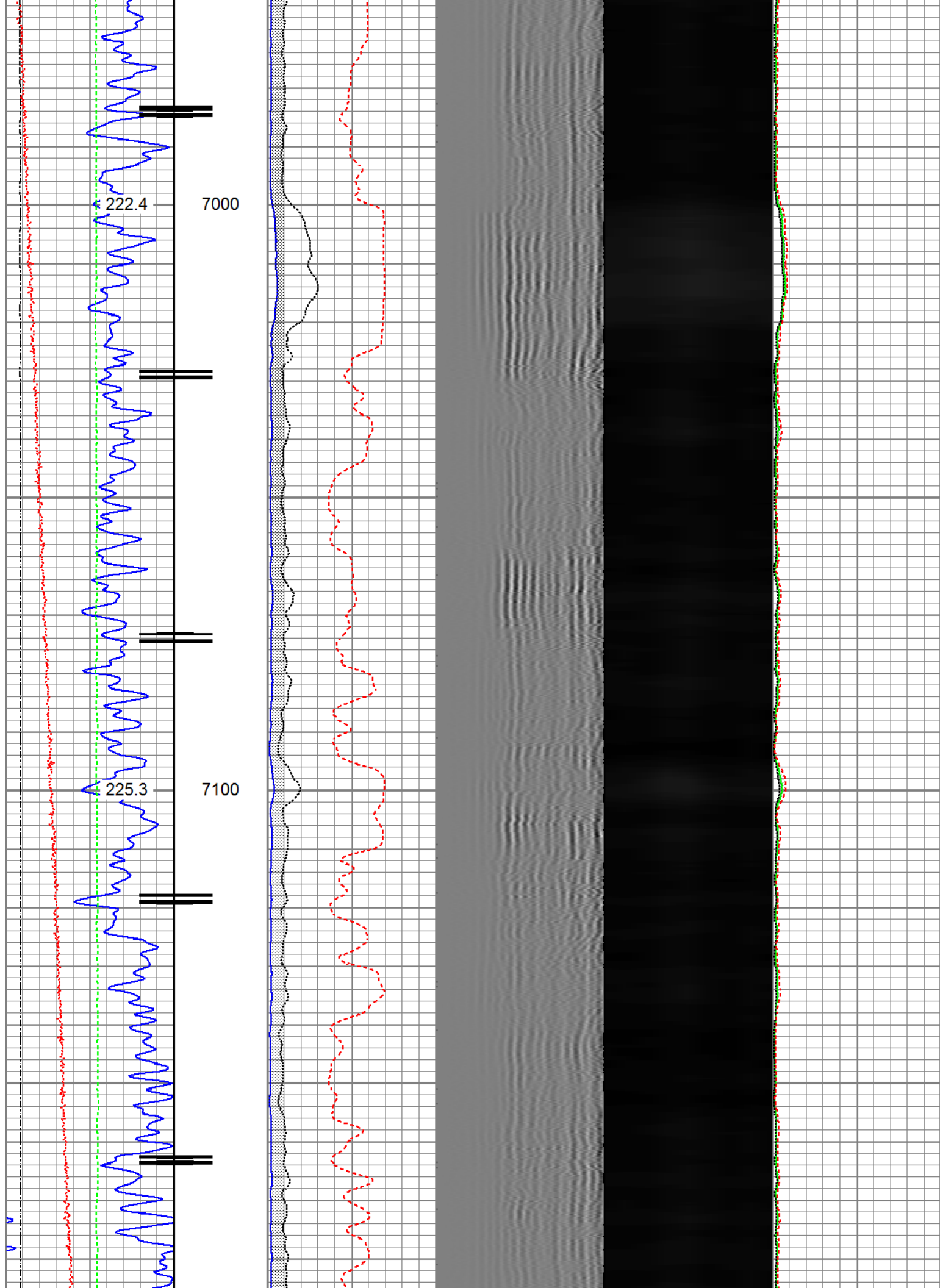


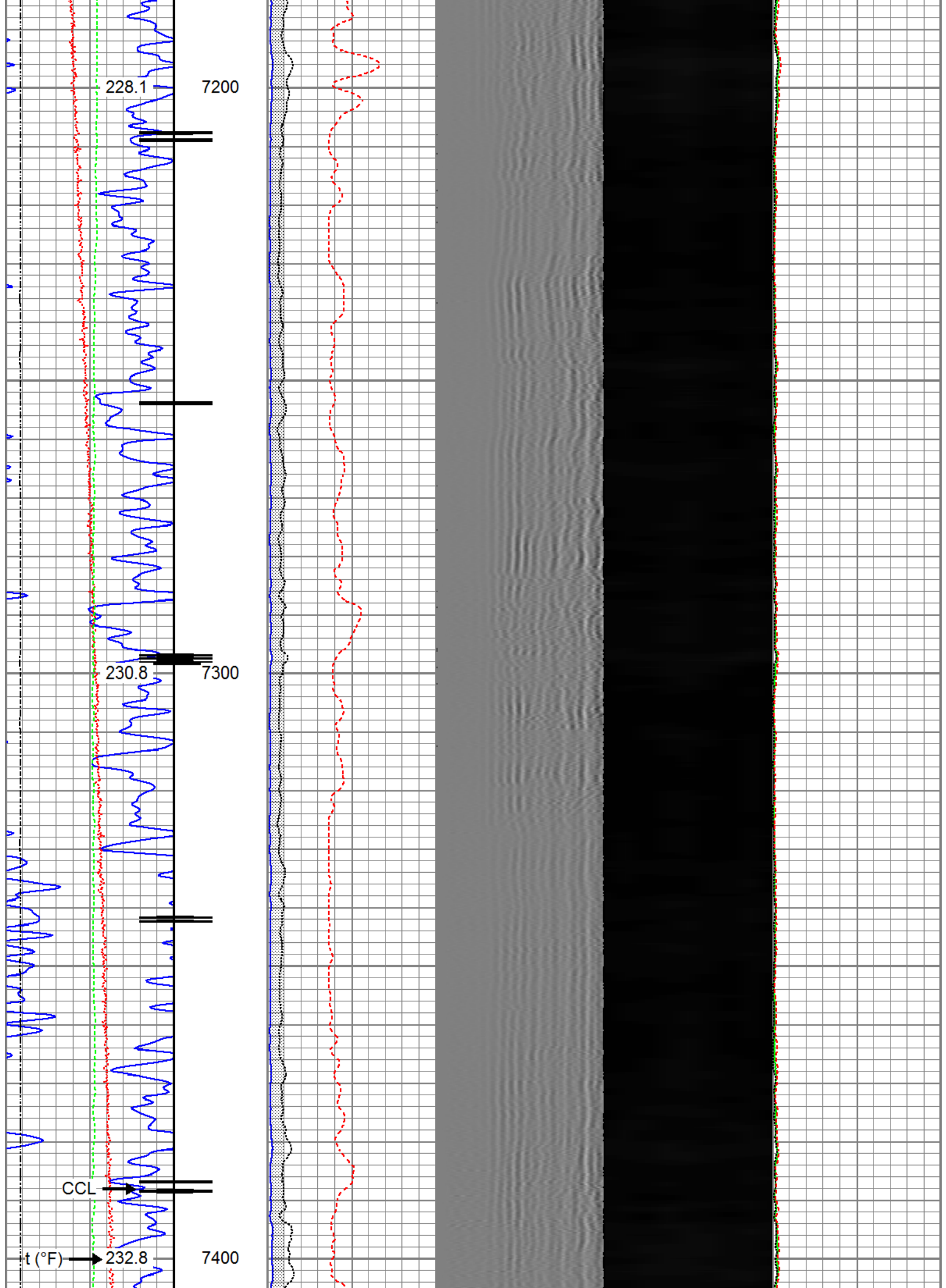


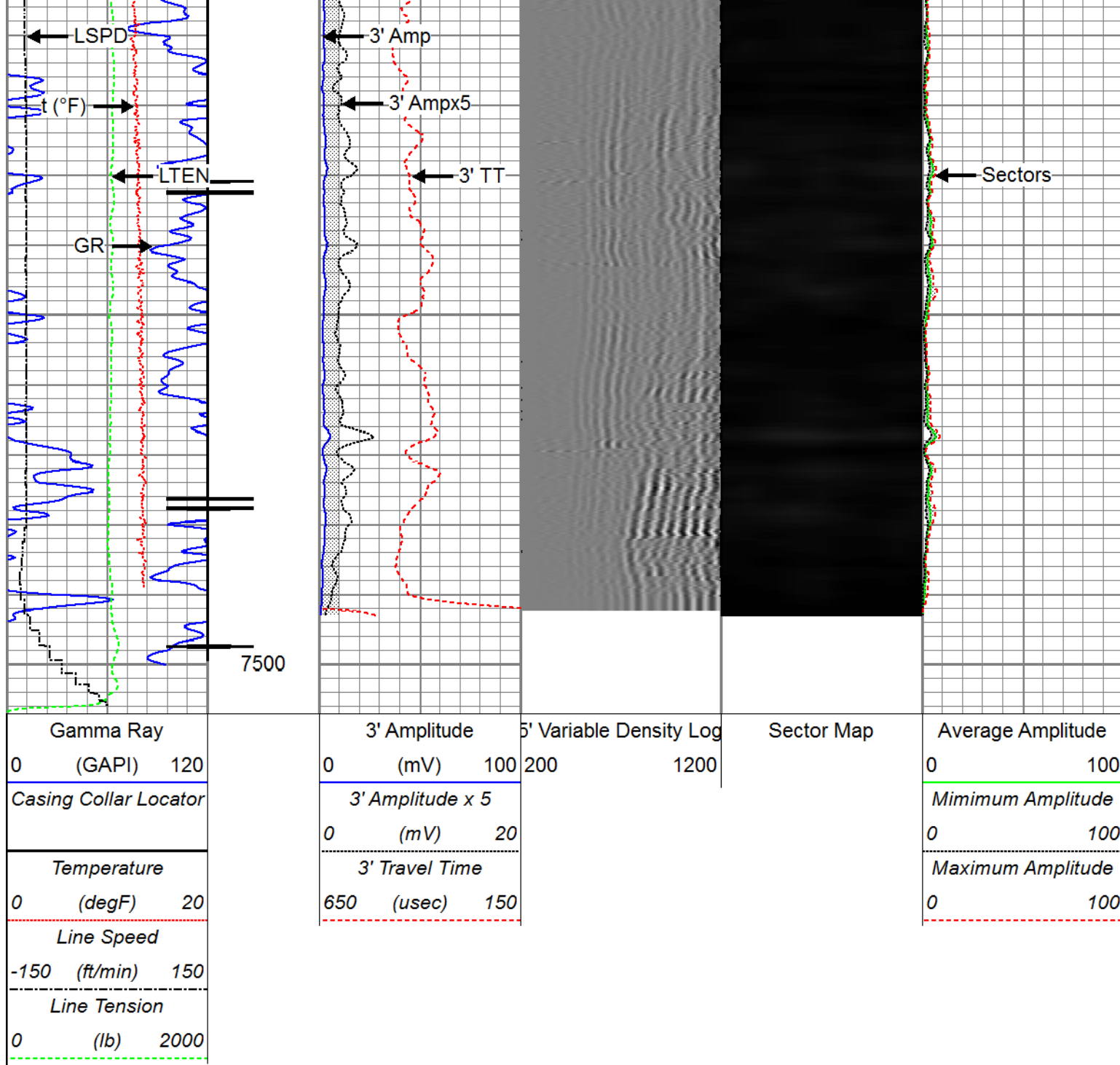








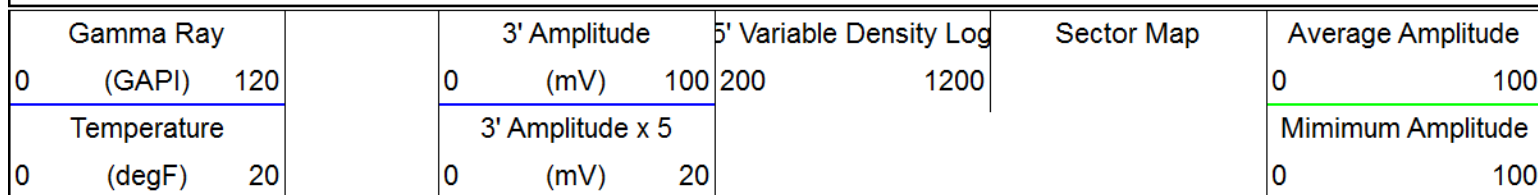




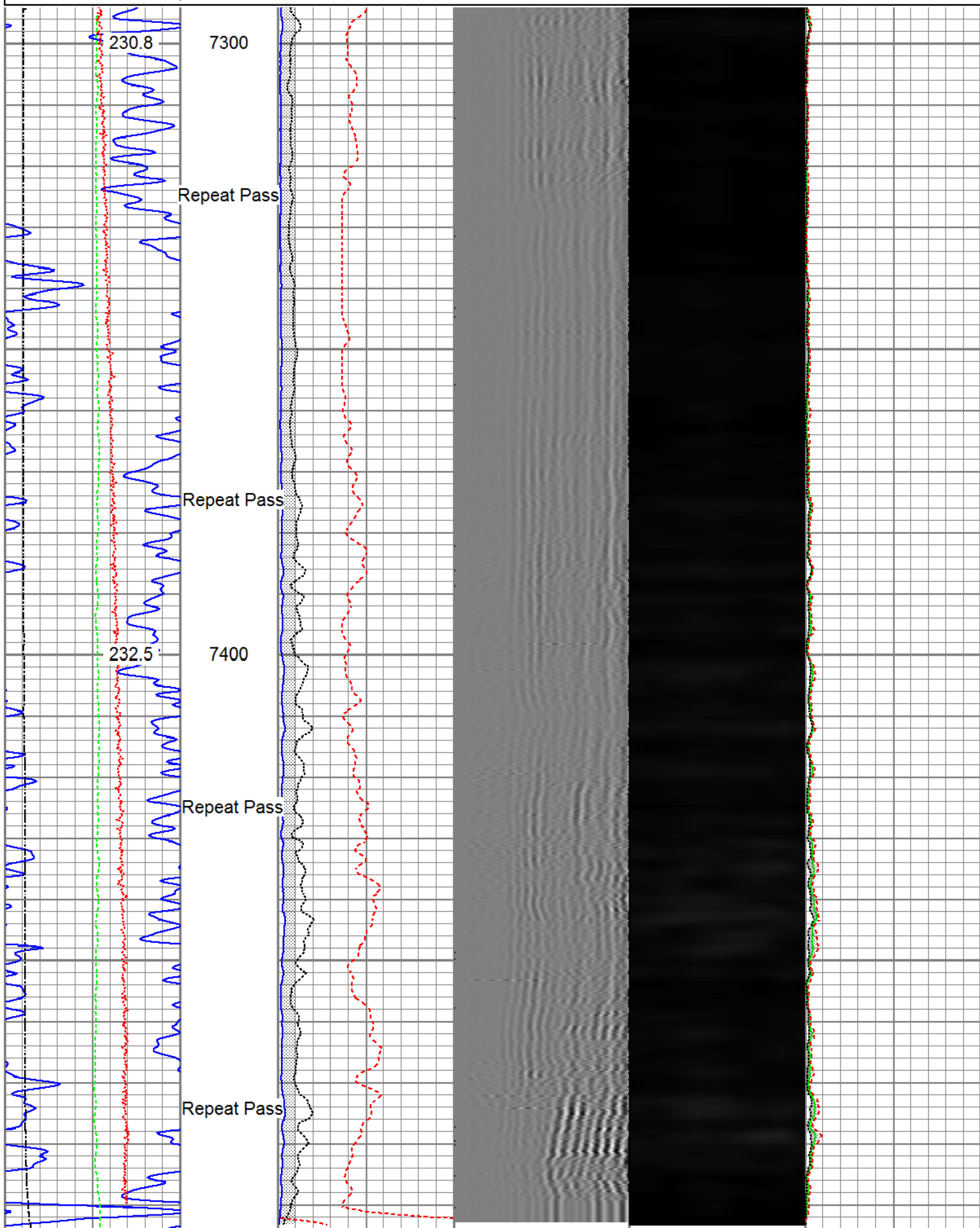
Repeat Pass

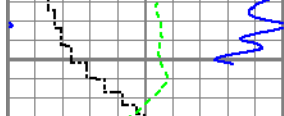
Recorded With 2800 PSI Surfaced Induced Pressure



Database File	anadarko babcock 19n-33hz_26july 2017_rblprocessed_0512343808_anadarko_babcock 19n-33hz
Dataset Pathname	pass3
Presentation Format	ros_radri
Dataset Creation	Wed Jul 26 12:20:49 2017
Charted by	Depth in Feet scaled 1:240

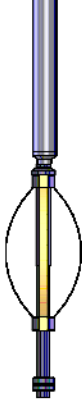


Line Speed			3' Travel Time			Maximum Amplitude		
-150	(ft/min)	150	650	(usec)	150	0		100
Line Tension								
0	(lb)	2000						



		7500			
Gamma Ray 0 (GAPI) 120		3' Amplitude 0 (mV) 100		5' Variable Density Log 200 1200	
Temperature 0 (degF) 20		3' Amplitude x 5 0 (mV) 20		Sector Map Average Amplitude 0 100	
Line Speed -150 (ft/min) 150		3' Travel Time 650 (usec) 150		Minimum Amplitude 0 100	
Line Tension 0 (lb) 2000				Maximum Amplitude 0 100	

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
HeadVolt	19.51		Titan_Electric_Cable_Heads-Titan_1-11/16" 1.03 Electric Cable Head with 1" Fishing Neck	1.03	1.69	5.40
			Probe_ELine_BowSpring_Centralizer-P_EB\$2.8875 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.8875	2.75	20.00
			Probe_RADII-C-P_RBT_2750 (FW1305-09)9.19 Probe 2-3/4" Sector Cement Bond Tool with Temperature Probe	9.19	2.75	105.00
Temp	16.72					
WVFS8	14.55					
WVFS7	14.55					
WVFS6	14.55					
WVFS5	14.55					
WVFS4	14.55					
WVFS3	14.55					
WVFS2	14.55					
WVFS1	14.55					
WVFCAL	14.55					
WVF3FT	14.55					
WVF5FT	13.55					
HEADVOLT	10.30					
DCCL	6.51					
CCL	6.51					
			Probe_ELine_BowSpring_Centralizer-P_EB\$2.8875 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.8875	2.75	20.00
			Probe_GR_CCL-P_CGR_2750_S (FW1307)4.54	4.54	2.75	55.00

GR	3.77		Probe 2-3/4" Digital CCL / Gamma Ray Combined			
			Probe_ELine_BowSpring_Centralizer-P_EB52.8875 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.8875	2.75	20.00
Dataset: PROCESSED_0512343808_Anadarko_Babcock 19N-33HZ_RBL_07-26-17.db: field/well/run1/pass5 Total length: 23.40 ft Total weight: 225.40 lb O.D.: 2.75 in						

Calibration Report	
Database File	C:\ProgramData\Warrior\Data\anadarko babcock 19n-33hz_26july 2017_rb\PROCESSED_05123438
Dataset Pathname	pass5
Dataset Creation	Wed Jul 26 12:24:10 2017

Gamma Ray Calibration Report		
Serial Number:	FW1307-038	
Tool Model:	P_CGR_2750_S	
Performed:	Sat Feb 06 11:43:09 2016	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.6	cps
Sensitivity:	0.6061	GAPI/cps

Segmented Cement Bond Log Calibration Report		
Serial Number:	FW1305-096	
Tool Model:	P_RBT_2750	
Calibration Casing Diameter:	5.500	in
Calibration Depth:	18.057	ft

Master Calibration, performed Tue Jul 25 08:08:19 2017:						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.002	0.702	0.800	71.921	101.624	0.577
CAL	0.002	0.735				
5'	0.002	0.682	0.800	71.921	104.674	0.569
SUM						
S1	0.001	0.698	0.000	100.000	143.510	-0.201
S2	0.001	0.697	0.000	100.000	143.724	-0.214
S3	0.002	0.694	0.000	100.000	144.403	-0.277
S4	0.002	0.691	0.000	100.000	145.012	-0.251
S5	0.002	0.694	0.000	100.000	144.391	-0.252
S6	0.002	0.699	0.000	100.000	143.355	-0.261
S7	0.002	0.703	0.000	100.000	142.703	-0.279
S8	0.002	0.702	0.000	100.000	142.797	-0.312

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.002	0.735	1.000	0.000

Air Zero Calibration, performed Tue Jul 25 08:08:38 2017:

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



Company	Kerr-McGee Oil & Gas Onshore, L.P.
Well	Babcock 19N-33HZ
Field	Wattenberg
County	Weld
State	Colorado