



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	Kerr-McGee Oil & Gas Onshore, L.P.		
Well	Thermo 15C-33HZ		
Field	Wattenberg		
County	Weld		
State	Colorado		
Location:	Company	Kerr-McGee Oil & Gas Onshore, L.P.	
	Well	Thermo 15C-33HZ	
	Field	Wattenberg	
	County	Weld	
Other Services	State	Colorado	
	API # :	05-123-42058	
	SEC	33	TWP 2N RGE 66W
	Permanent Datum	Ground Level	
Elevation	Log Measured From	Kelly Bushing	
	Drilling Measured From	Kelly Bushing	
		Elevation 4984'	

Date	07-Jan-2016
Run Number	One
Depth Driller	12957 FT
Depth Logger	8061 FT
Bottom Logged Interval	8060 FT
Top Log Interval	Surface
Open Hole Size	7.875"
Type Fluid	Water
Density / Viscosity	8.34 lbm/gal
Max. Recorded Temp.	235°F
Estimated Cement Top	696 FT
Time Well Ready	ROA
Time Logger on Bottom	11:50 A.M.
Equipment Number	HD-0325
Location	Fort Lupton, CO
Recorded By	R. Cameron
Witnessed By	Steve Vigil

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	J55	Surface	1930 FT		
Intermediate #1							
Intermediate #2							
Liner	5 1/2	17	HCP 110	Surface	12957 FT		
Marker Joint				7178 FT-8321 FT			

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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 7155 FT
Adjusted log -5 FT to correlate with Marker Joint
Marker Joints at 7155 FT and 8321 FT
Log ran from 8060 Ft to Surface
Recorded with 2800 PSI Surface Induced Pressure

Thank you for choosing FMC Technologies Surface Integrated Services.



Main Pass

Recorded with 2800 PSI Surface Induced Pressure

Database File:0512342058_anadarko_thermo 15c-33hz_01-06-16_rbl_cnl.db

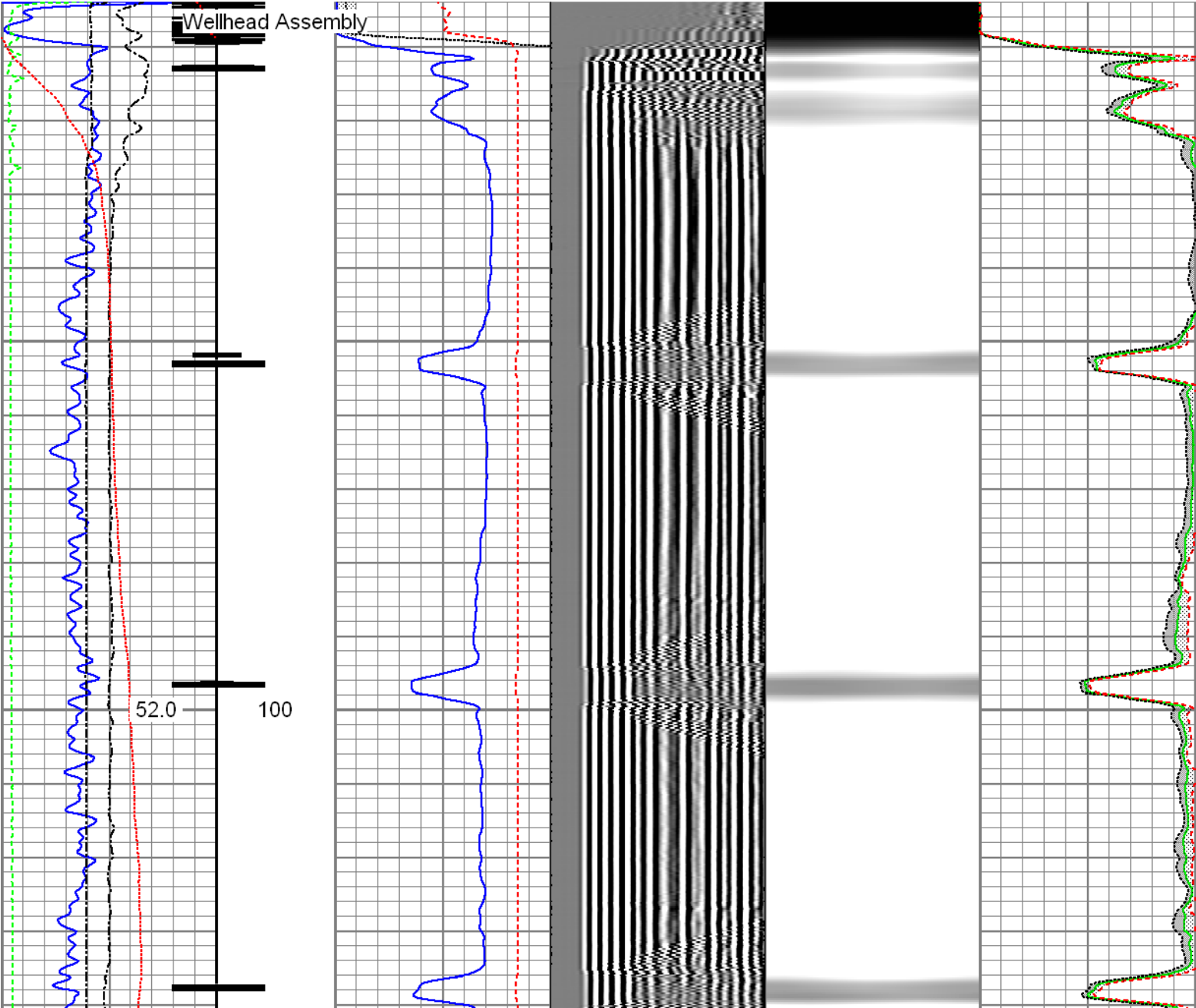
Dataset Pathname:pass9

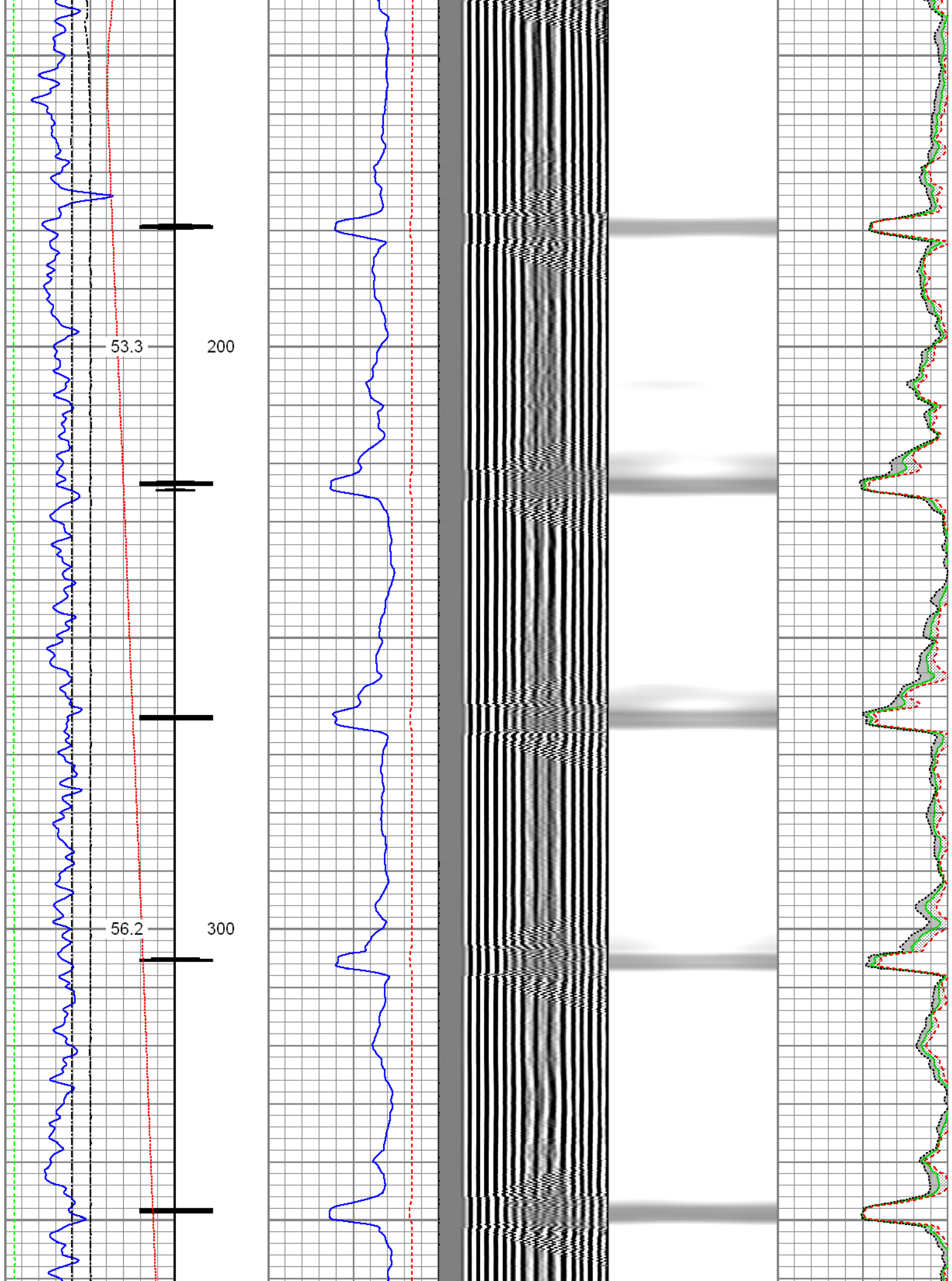
Presentation Format:rbt004

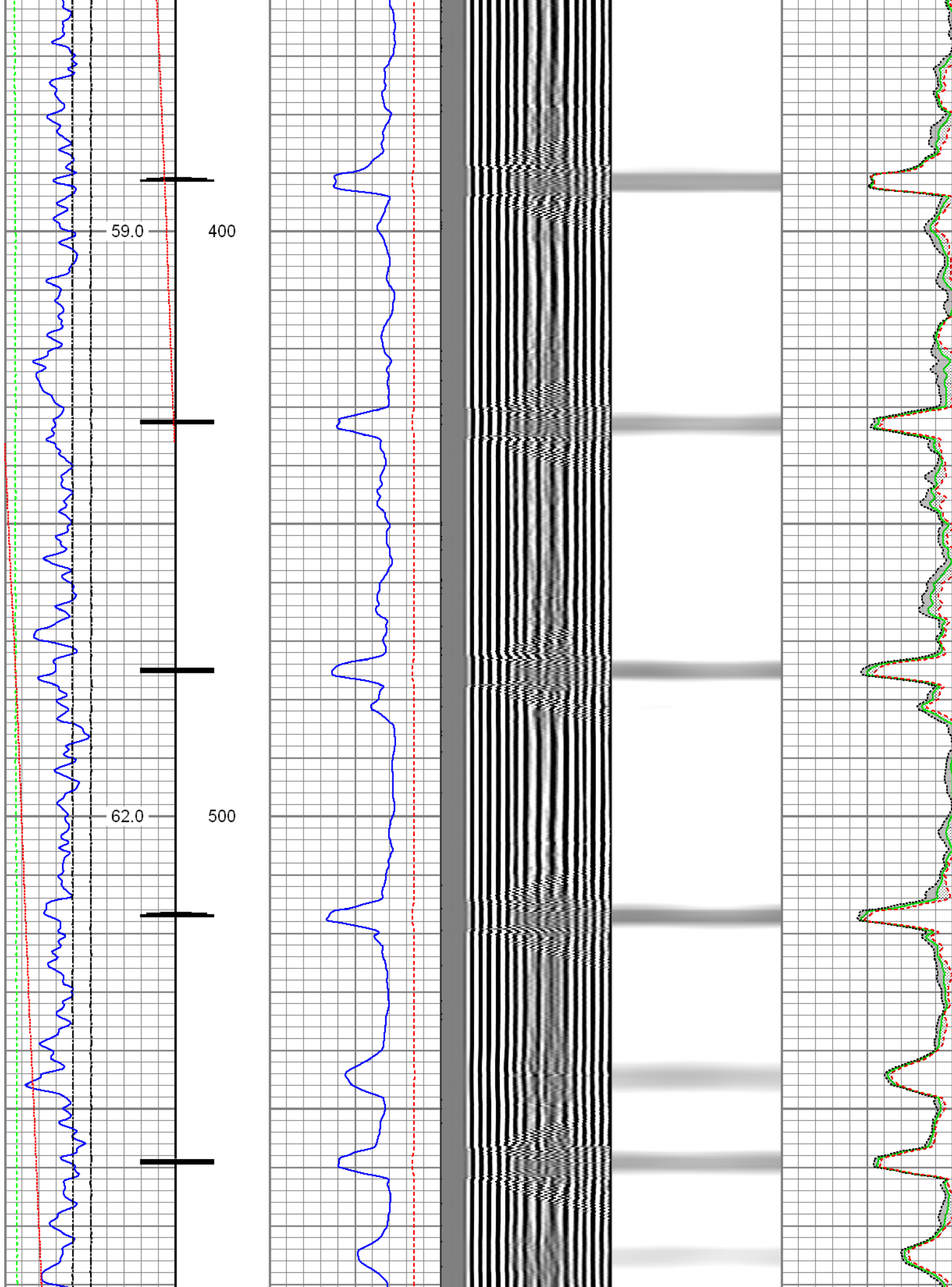
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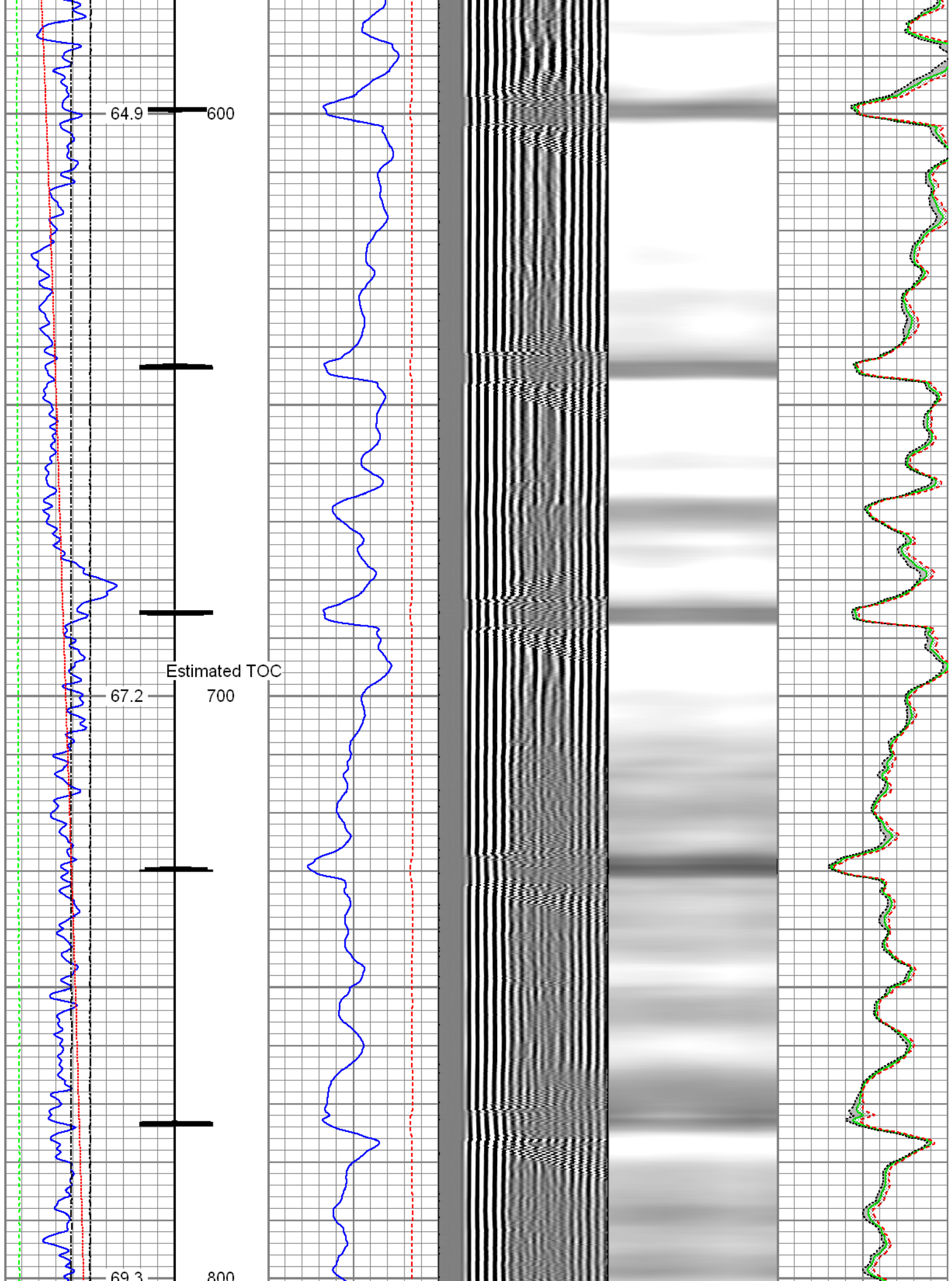
Charted by:Depth in Feet scaled 1:240

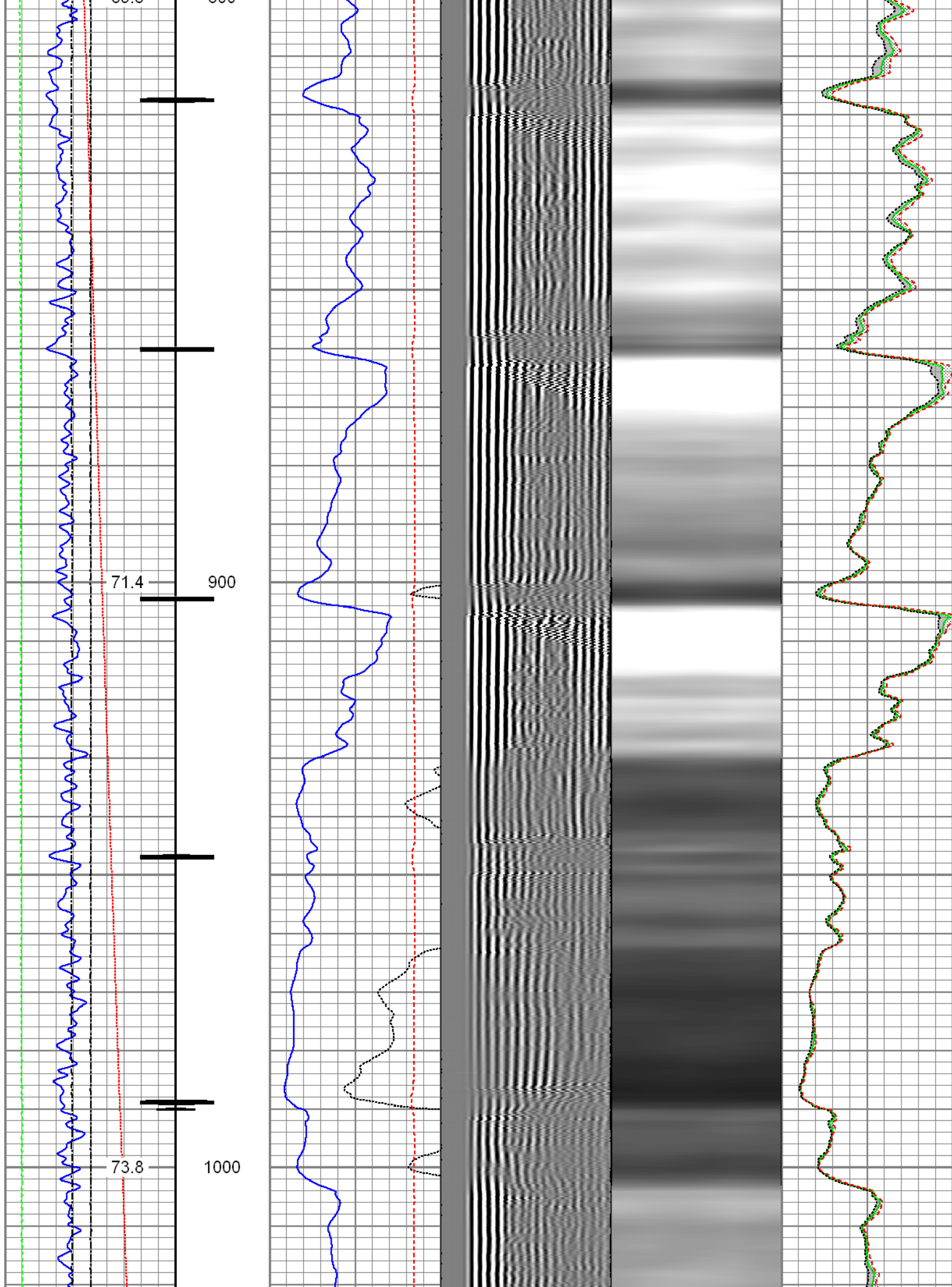
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Mimimum Amplitude
Line Speed	0 (mV) 20			0 100
-150 (ft/min) 150	3' Travel Time			Maximum Amplitude
Line Tension	650 (usec) 150			0 100
0 (lb) 2000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

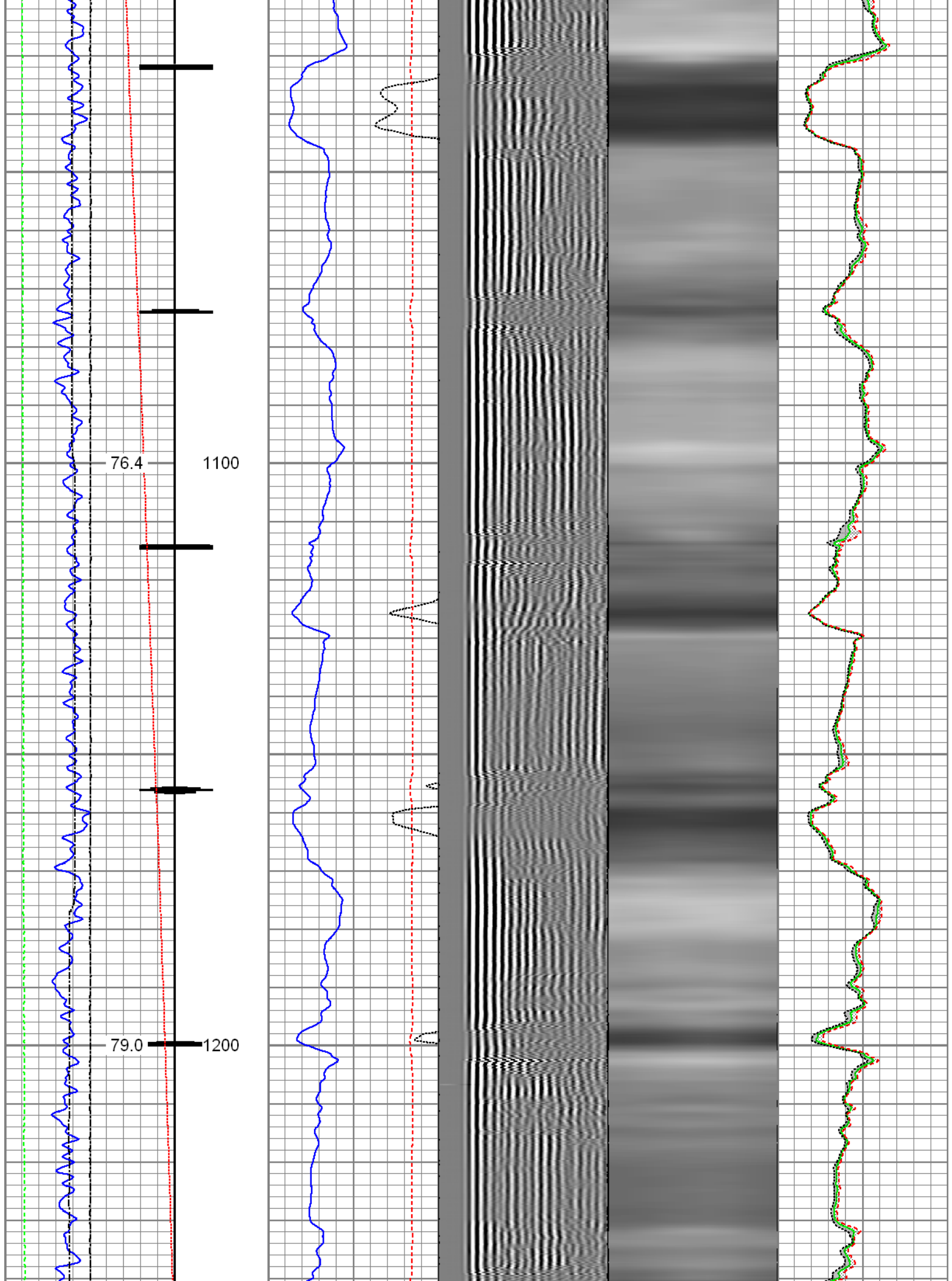


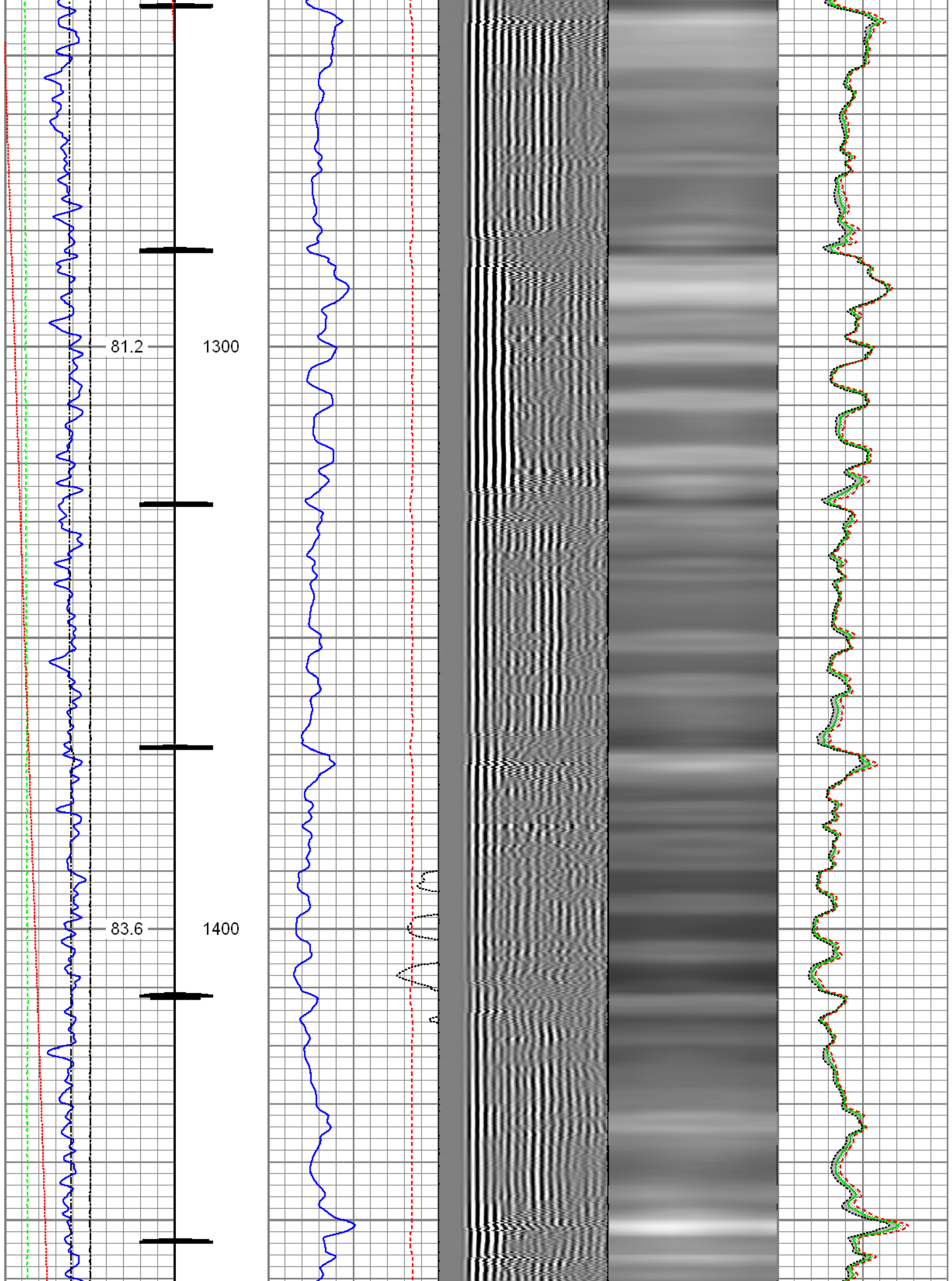


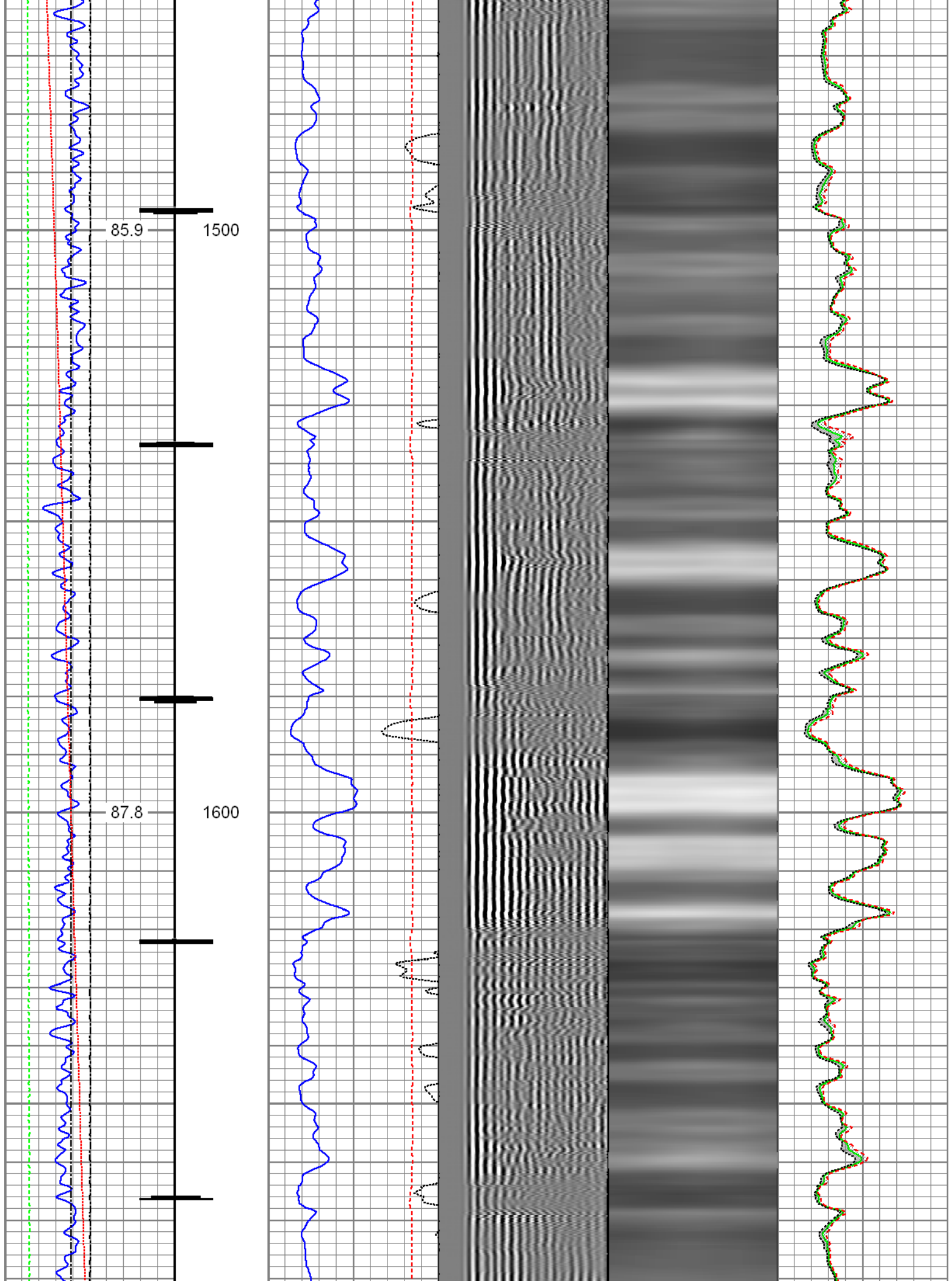


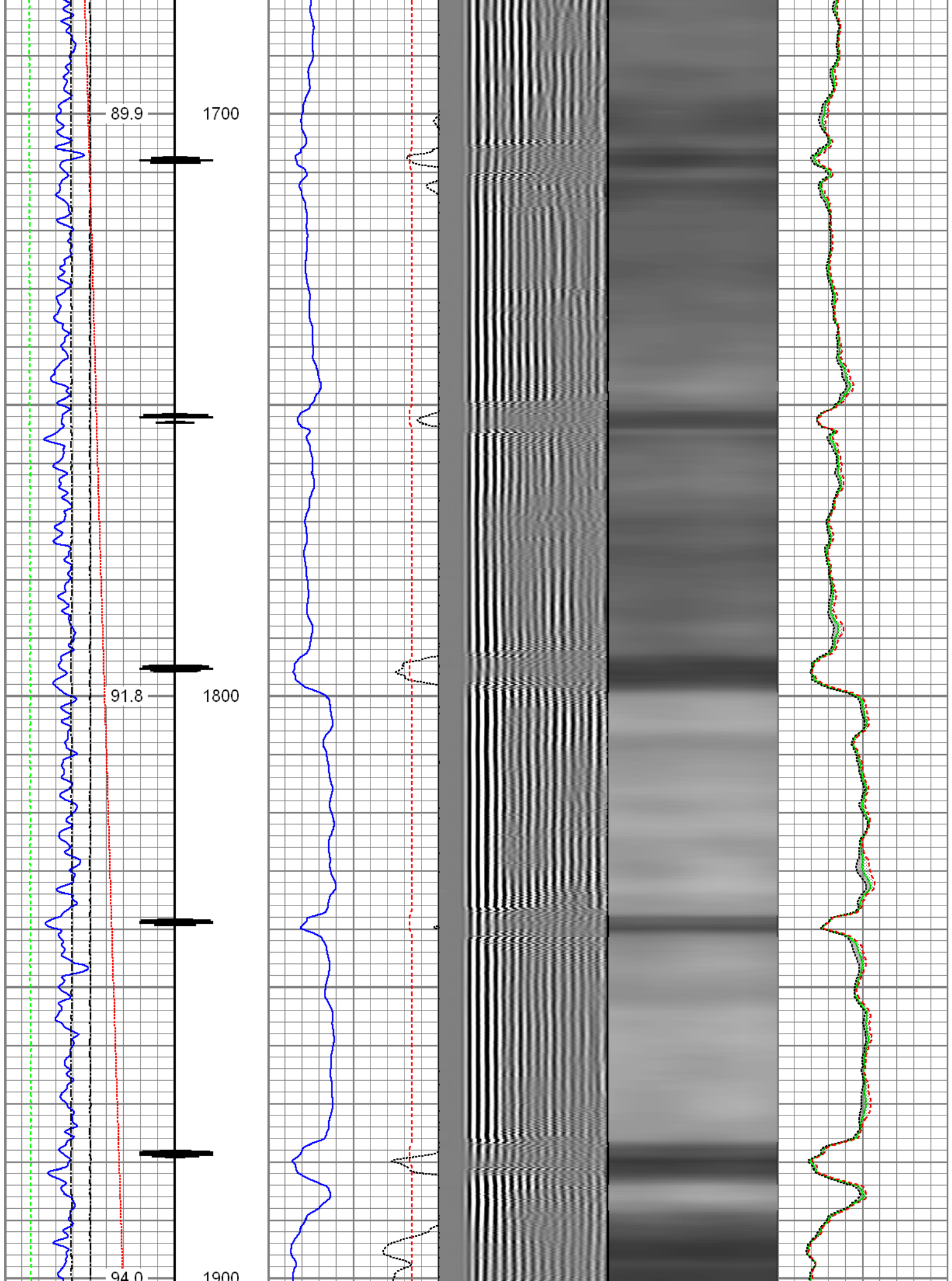


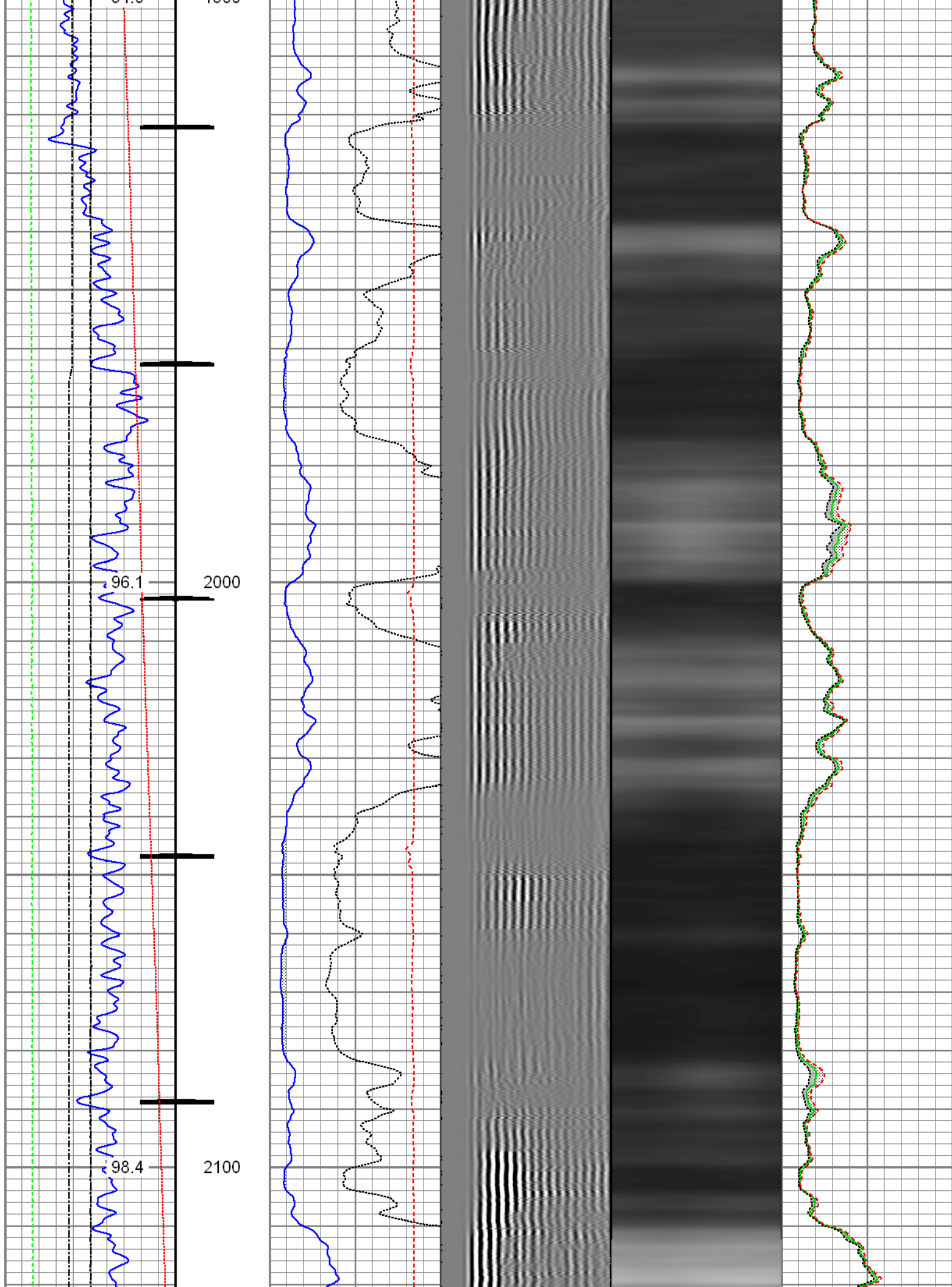


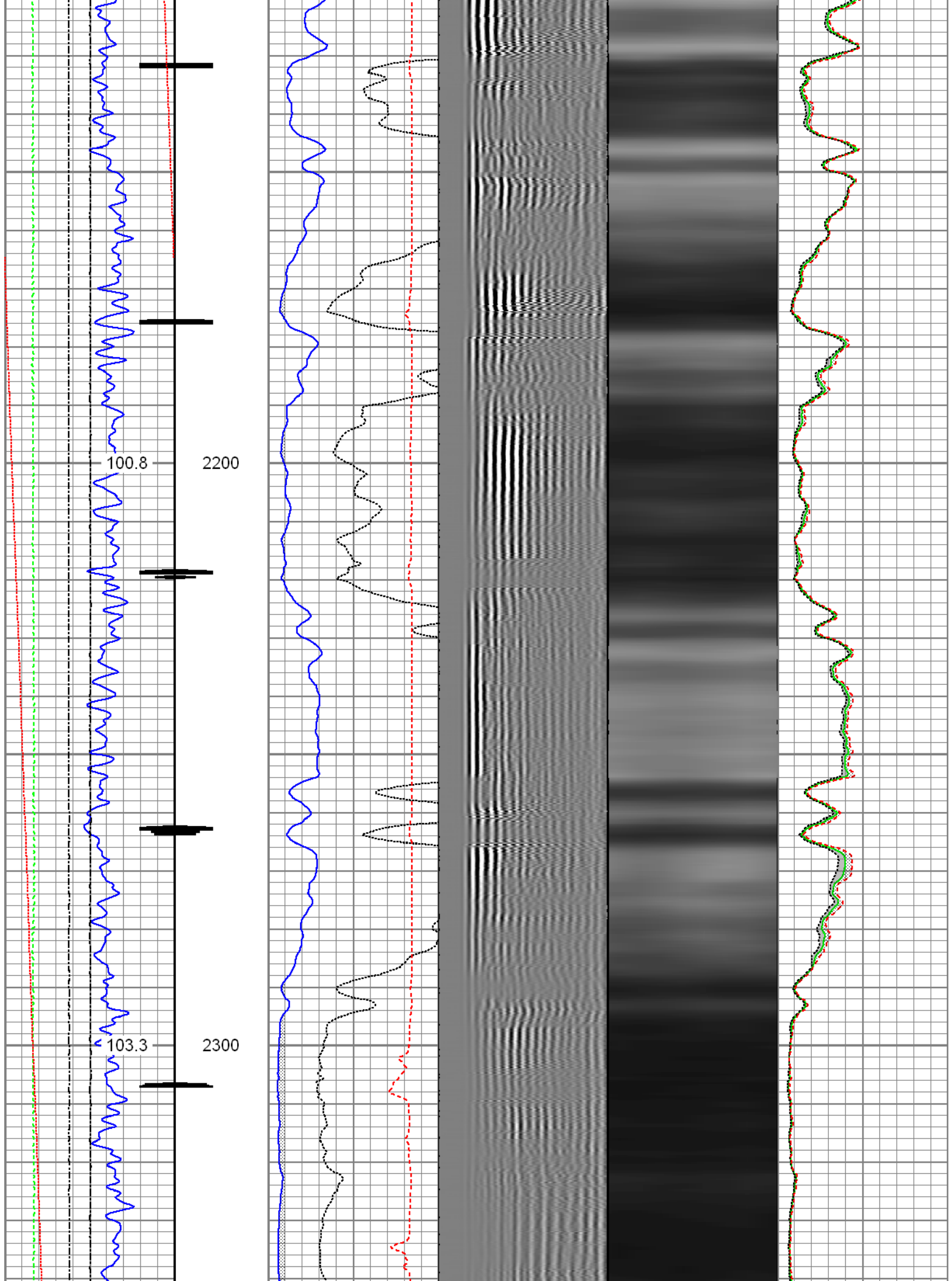


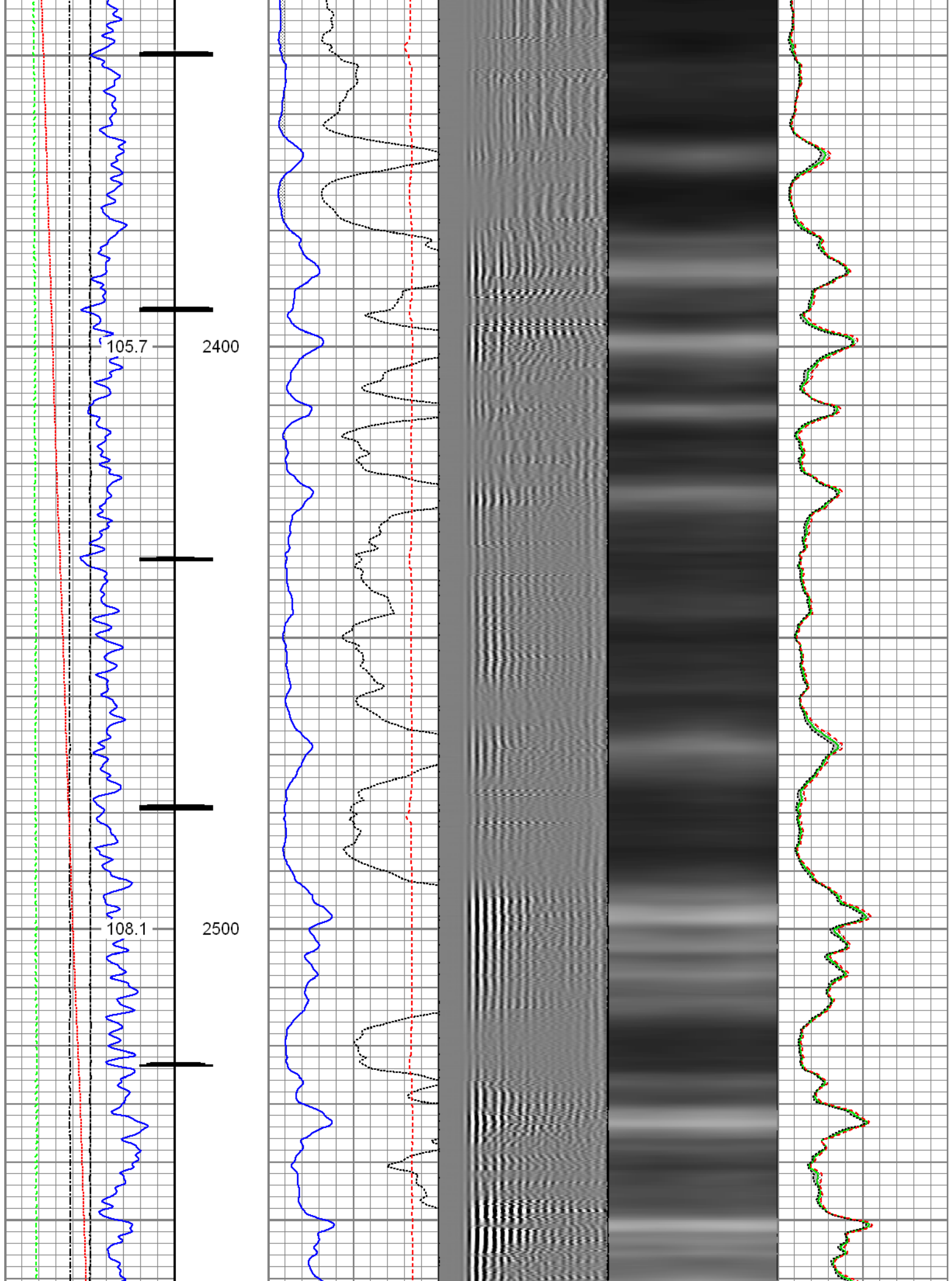


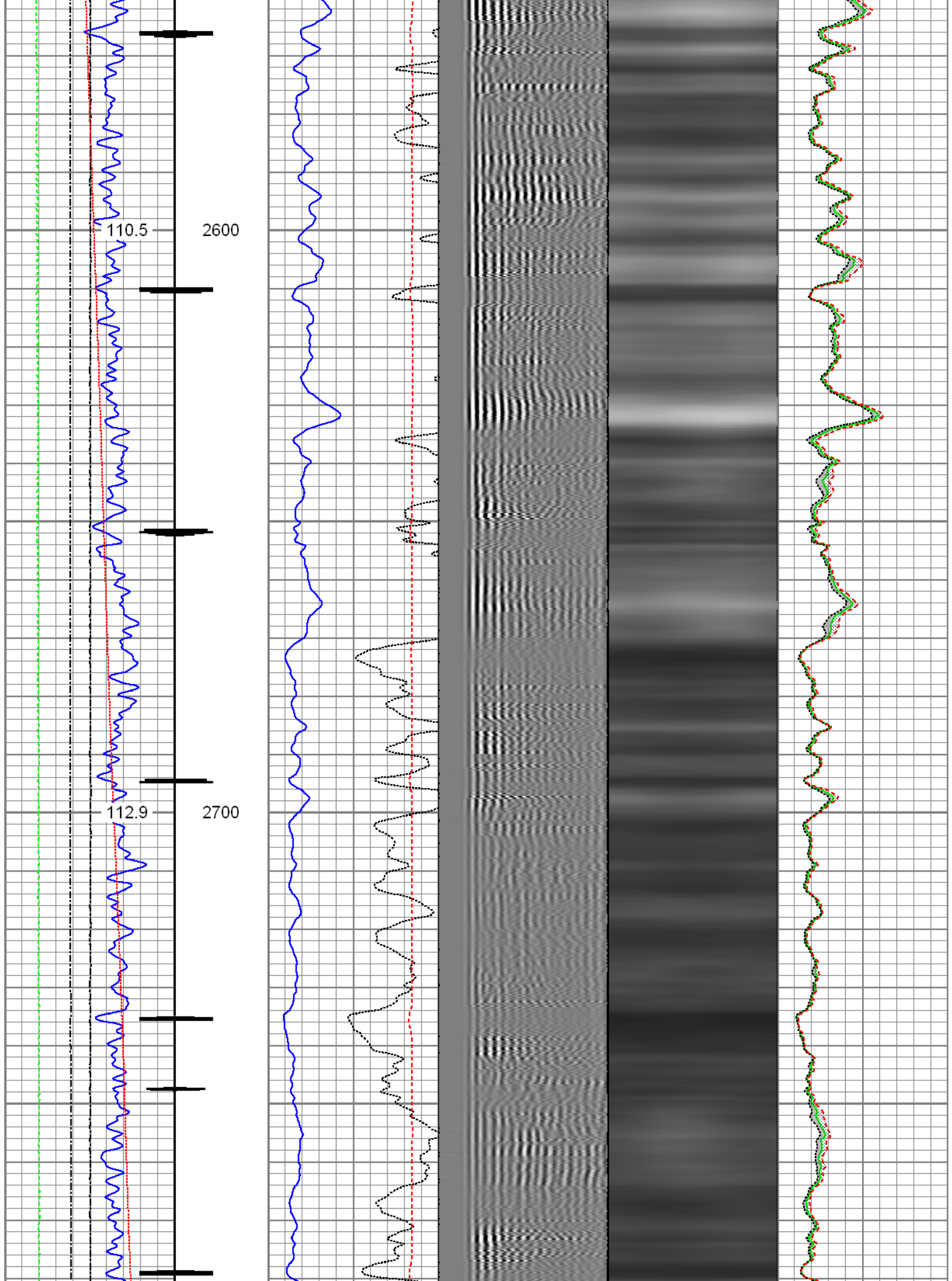


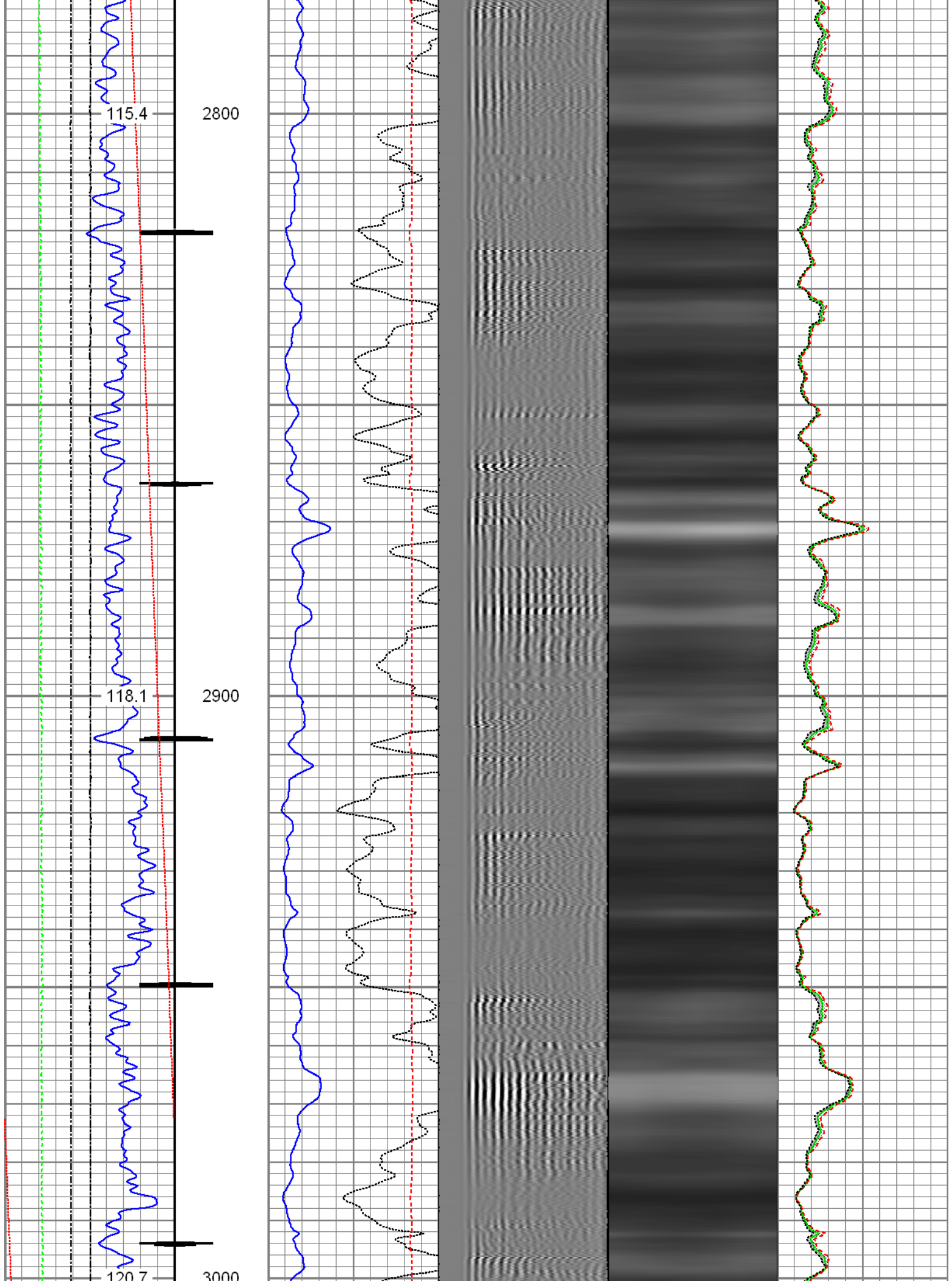


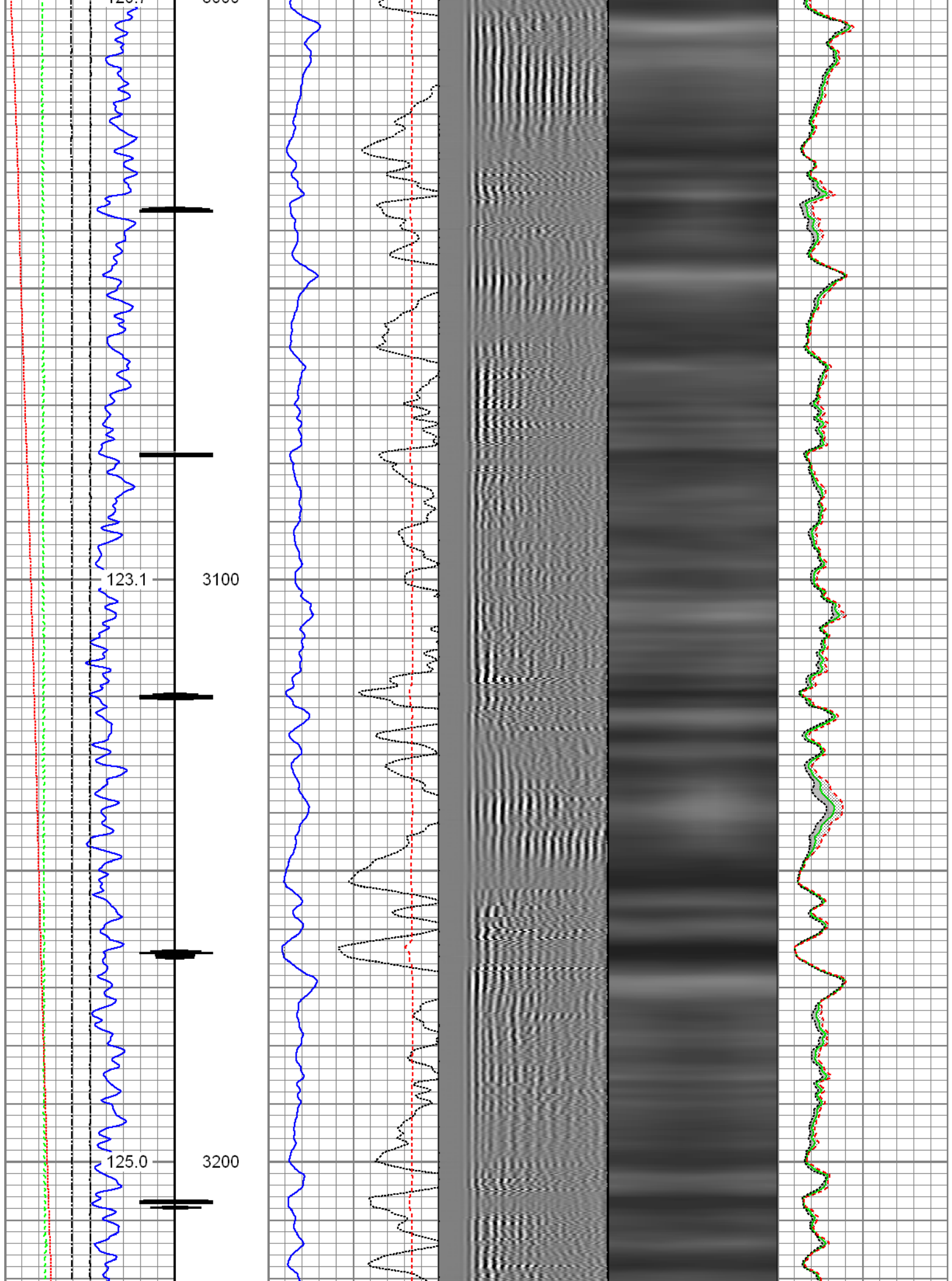


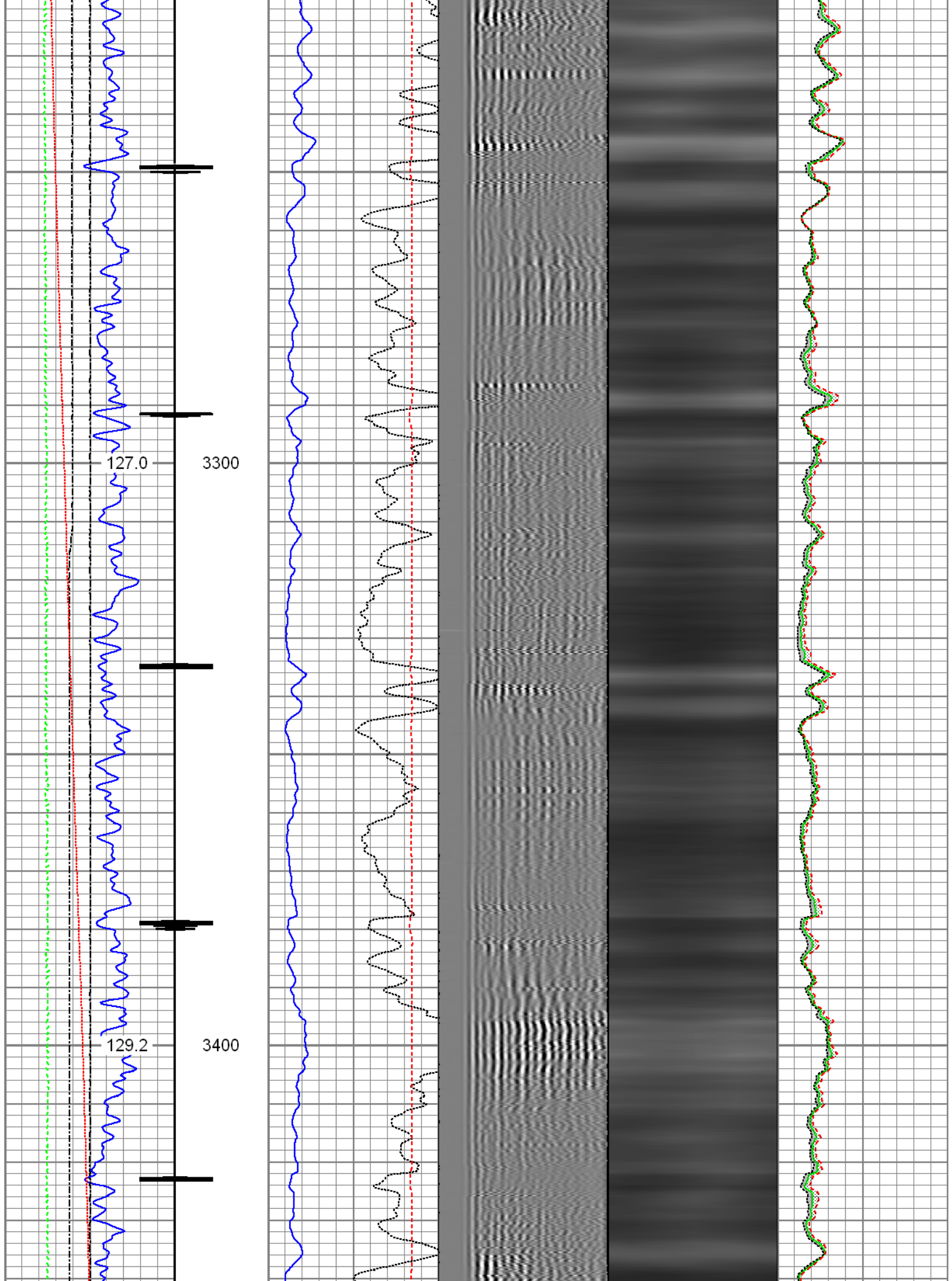


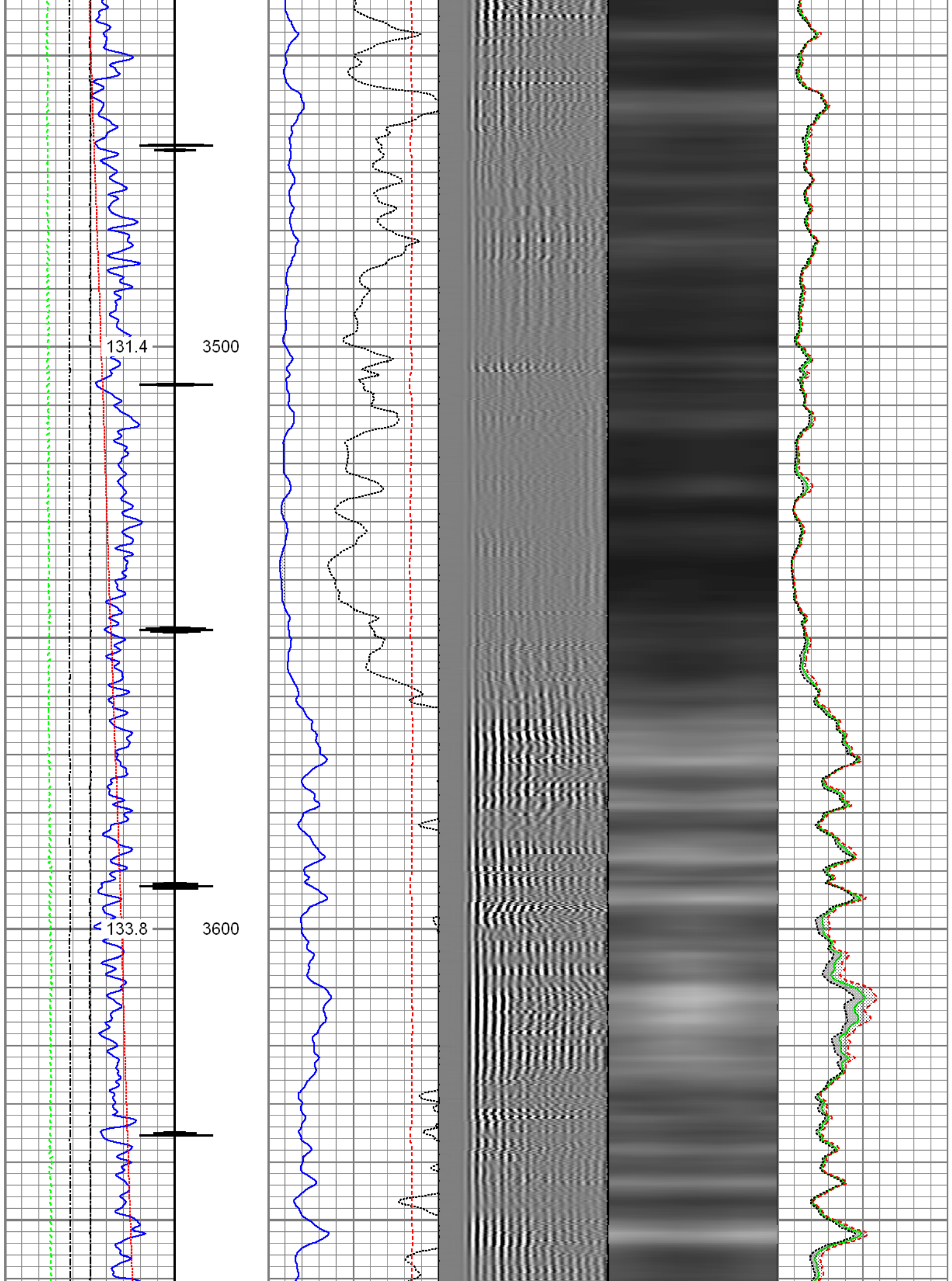


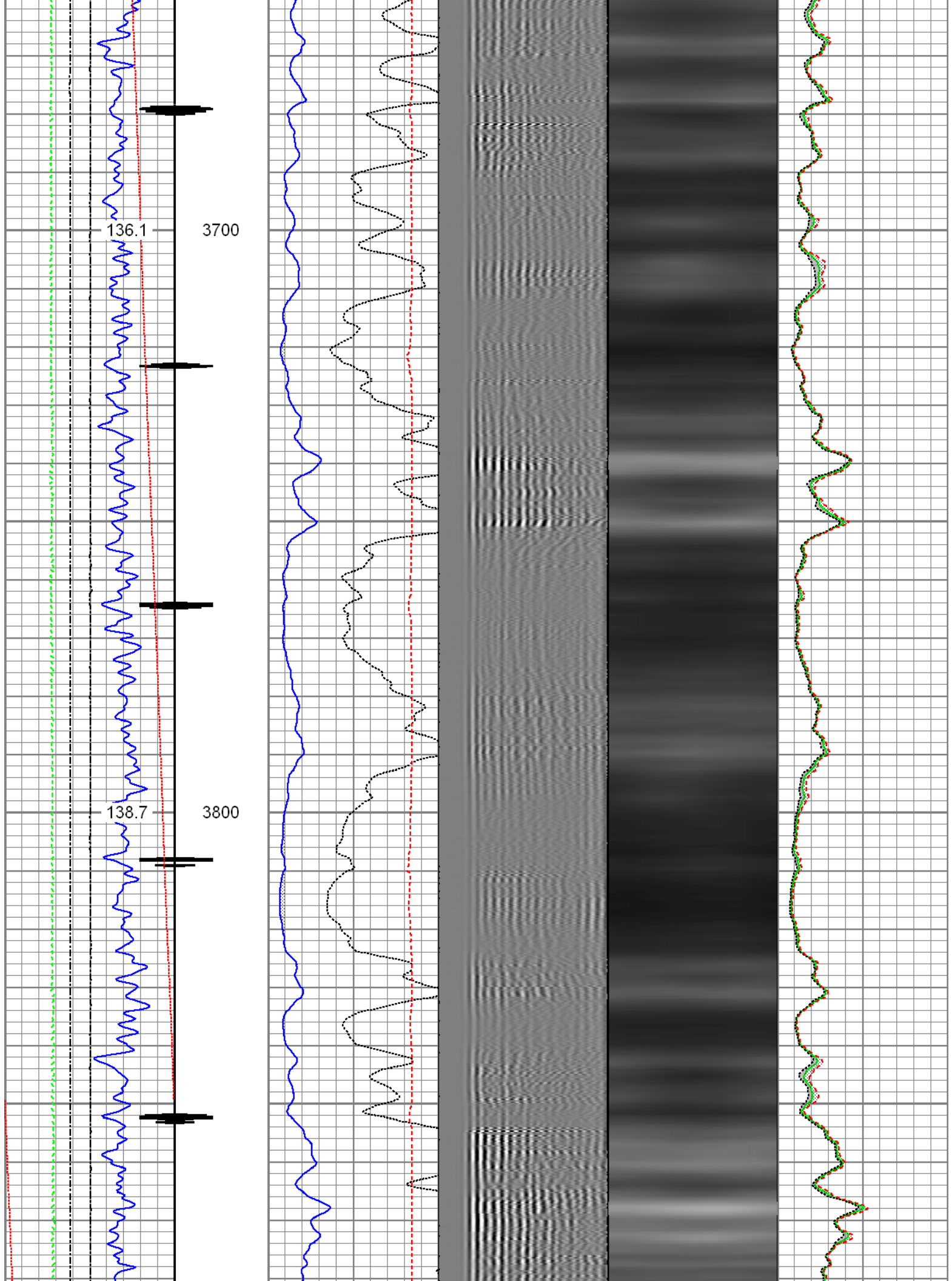


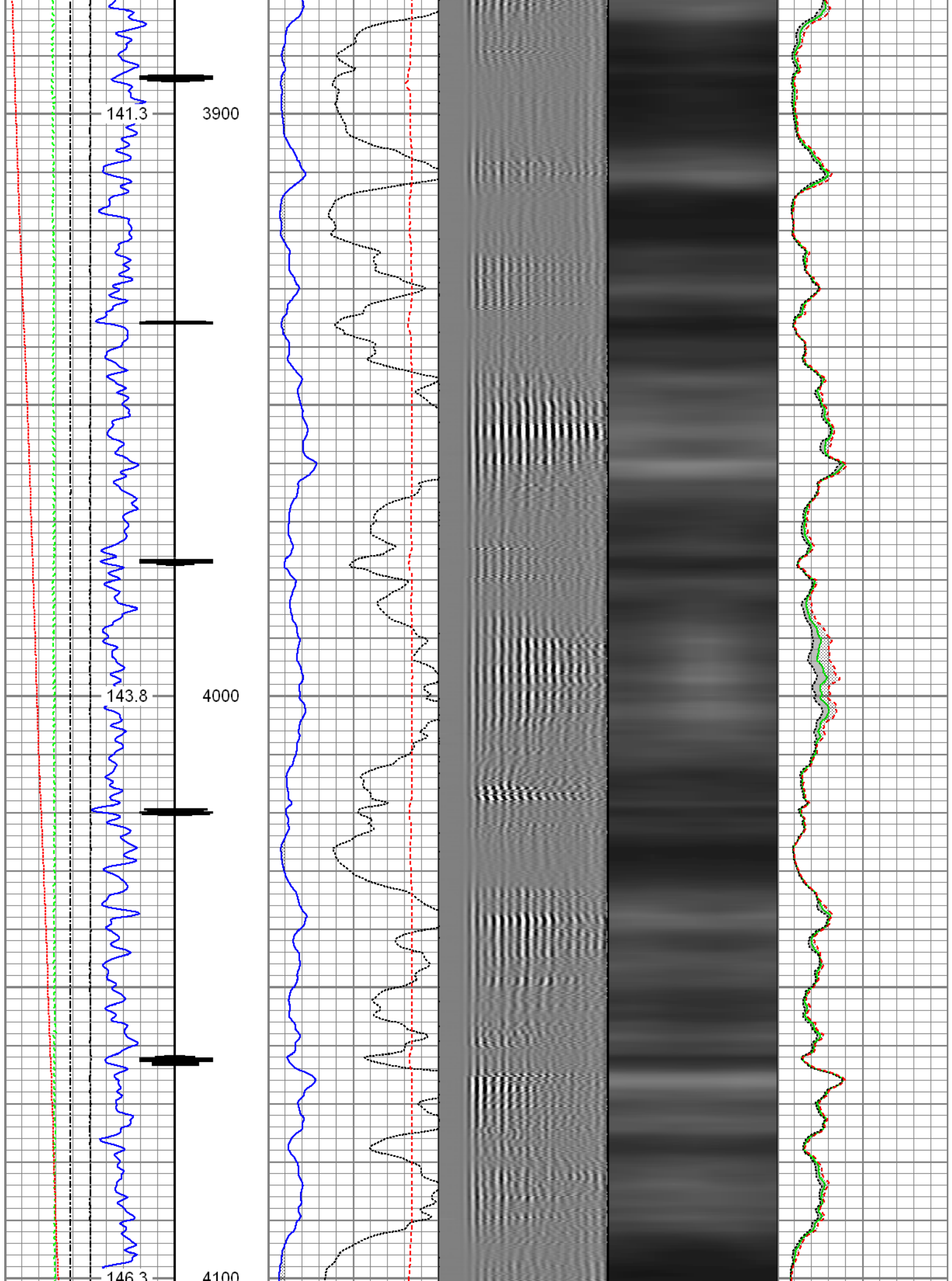


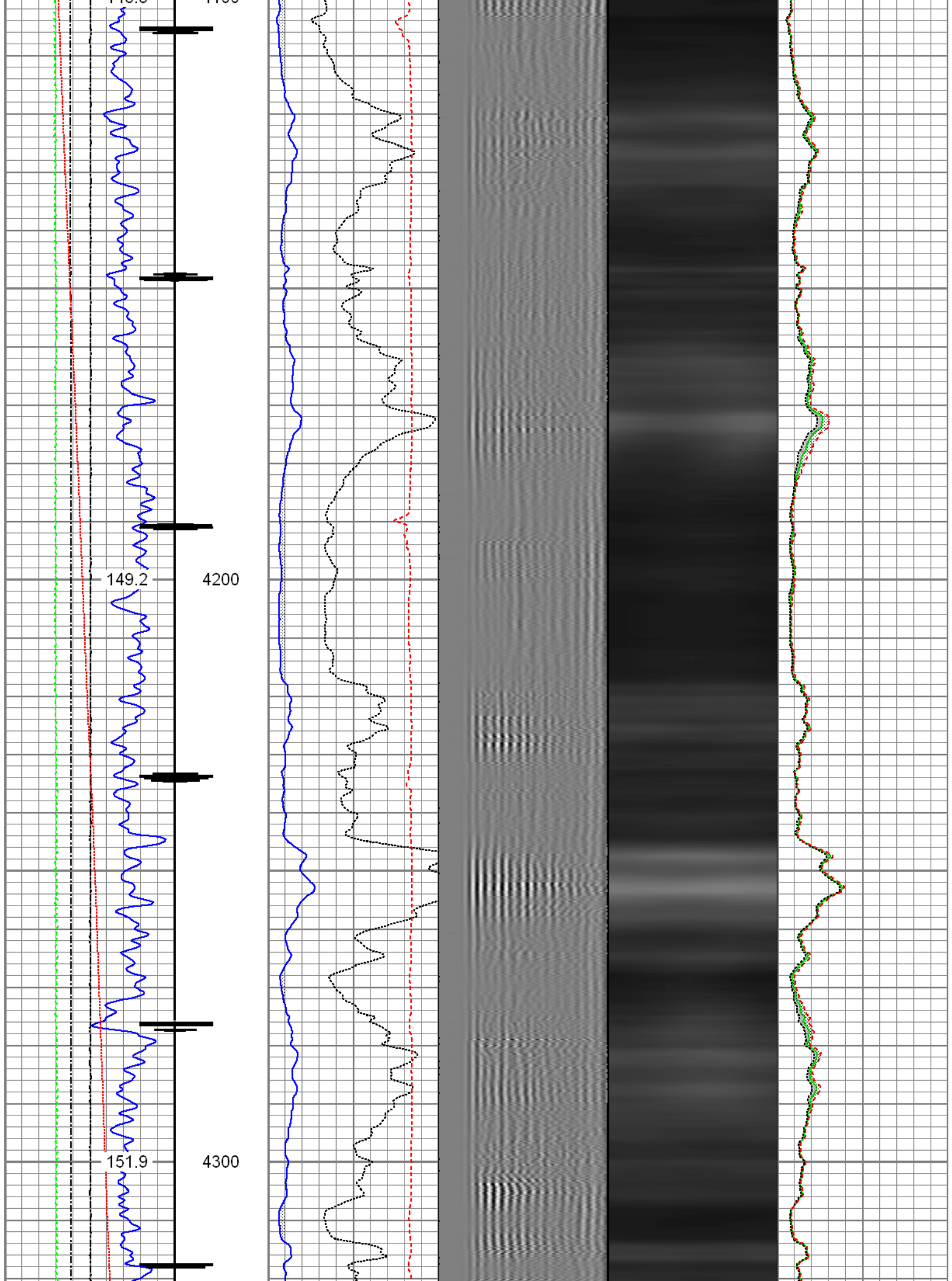


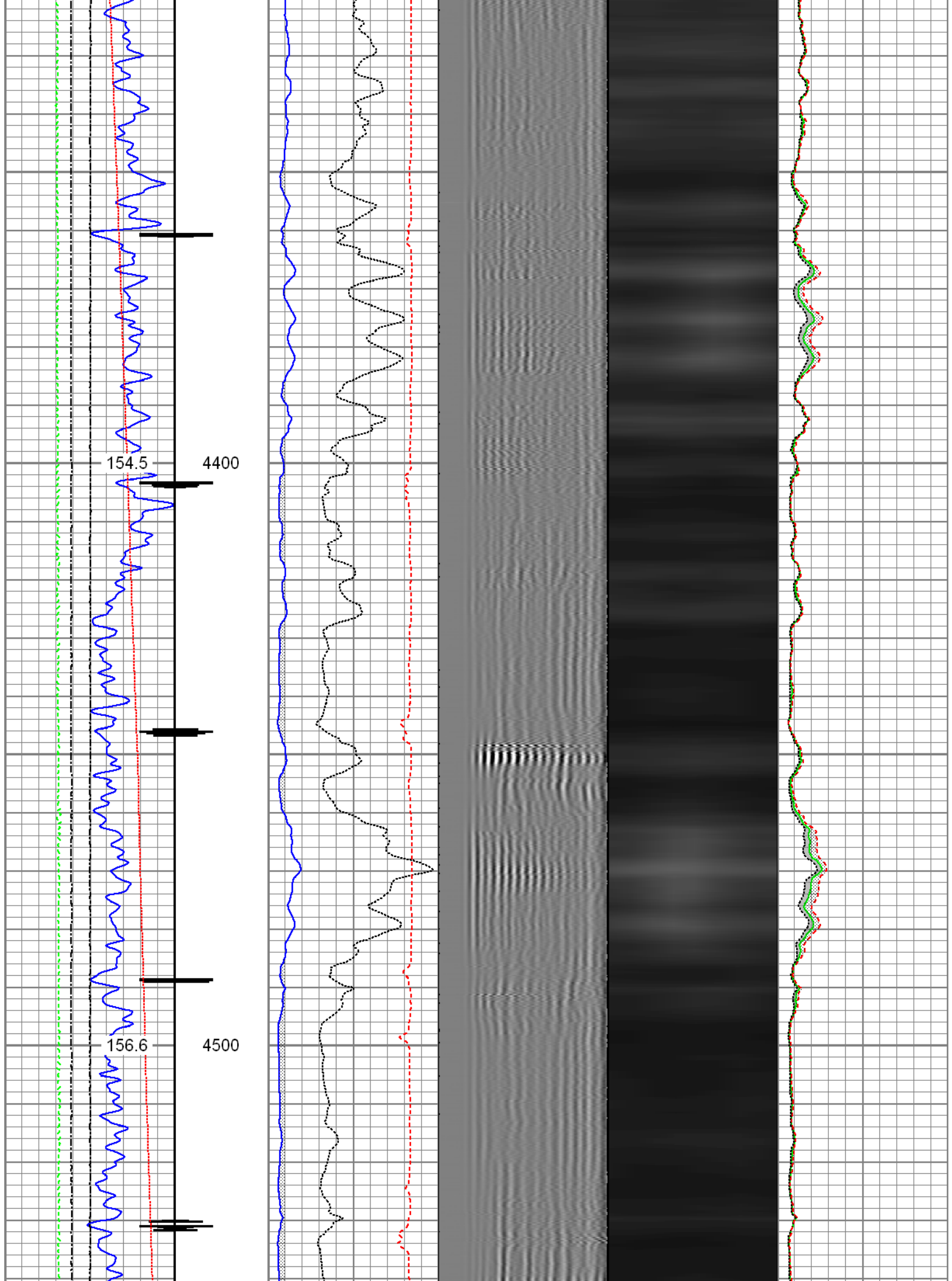


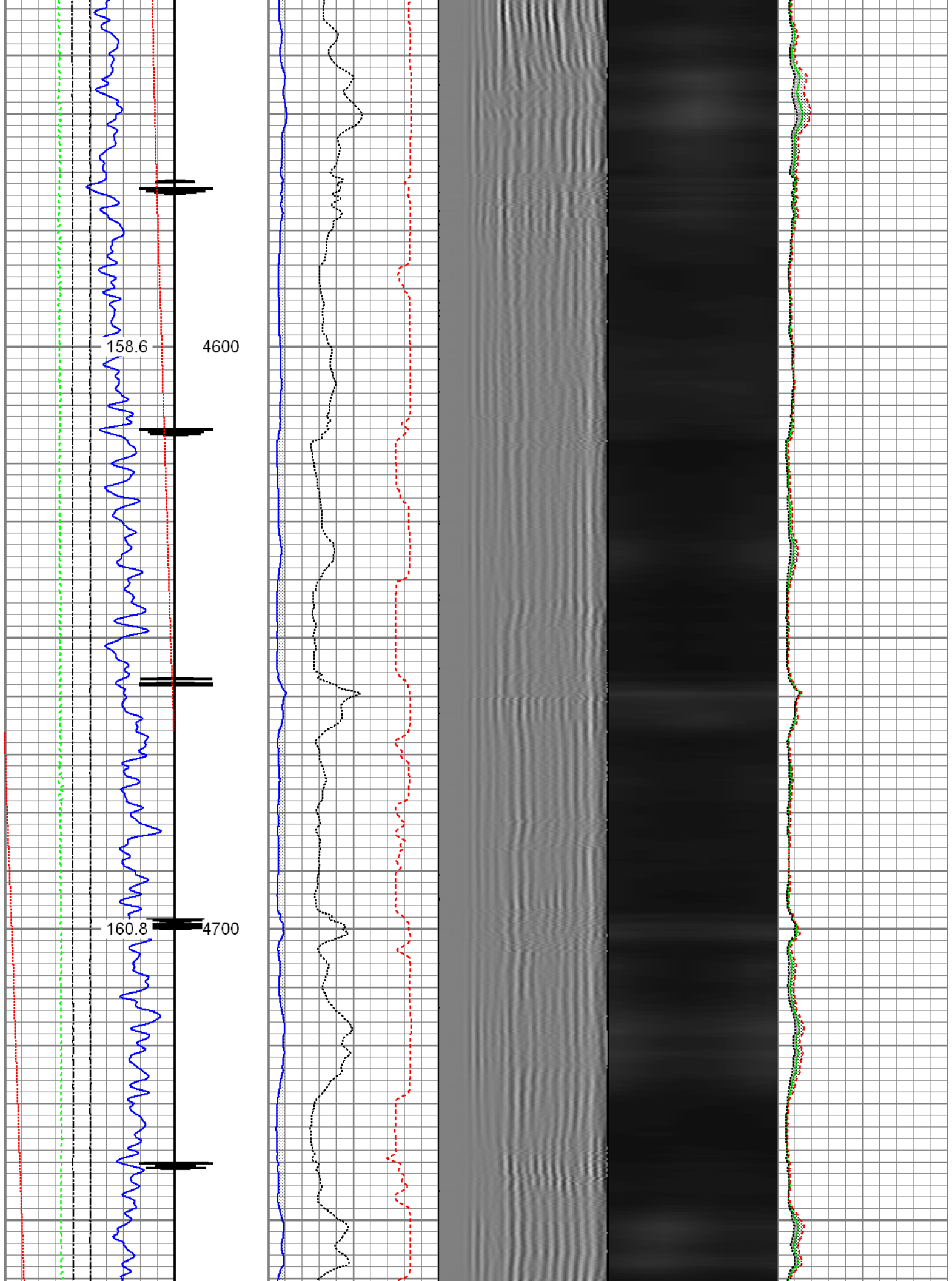


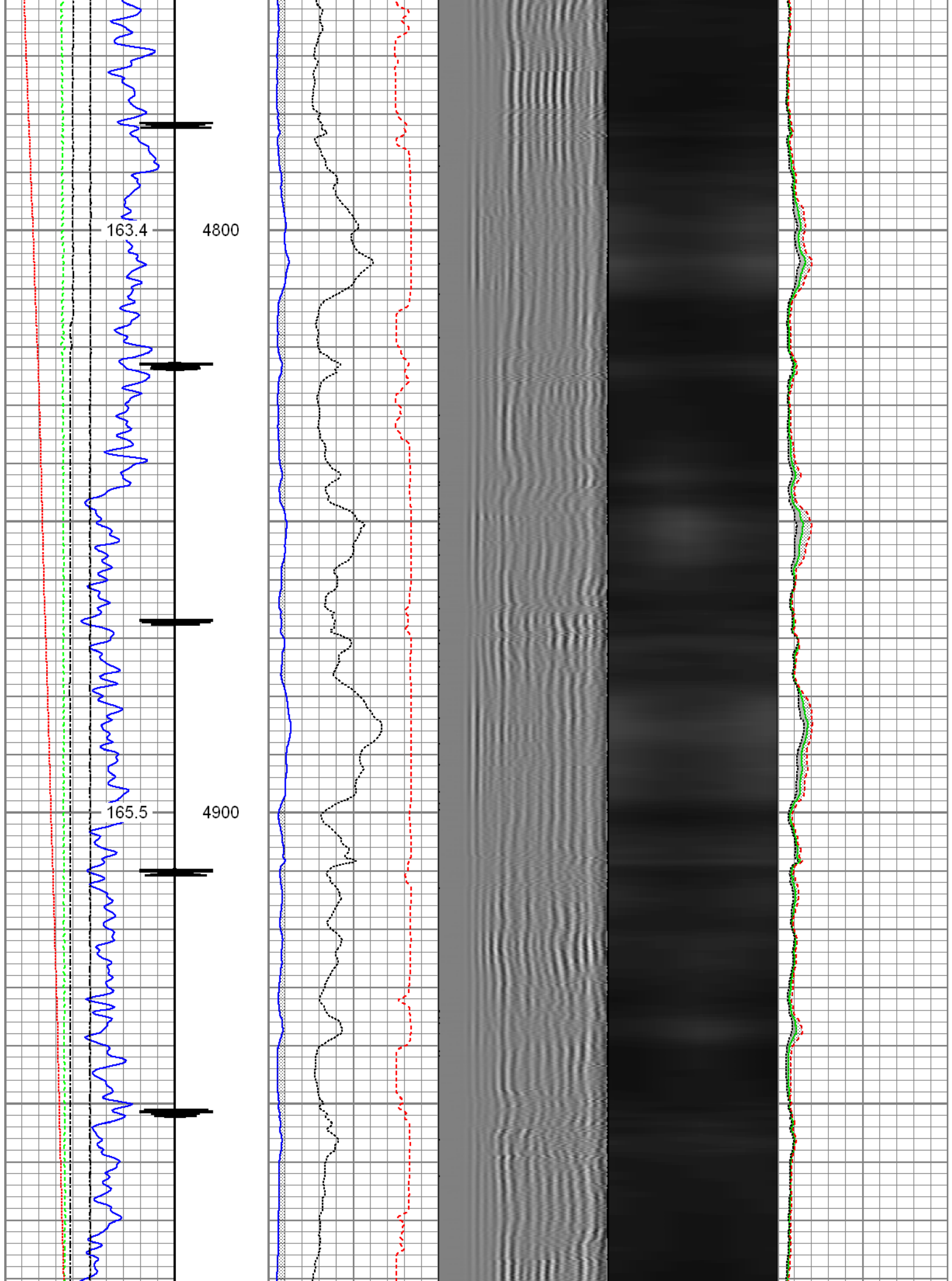


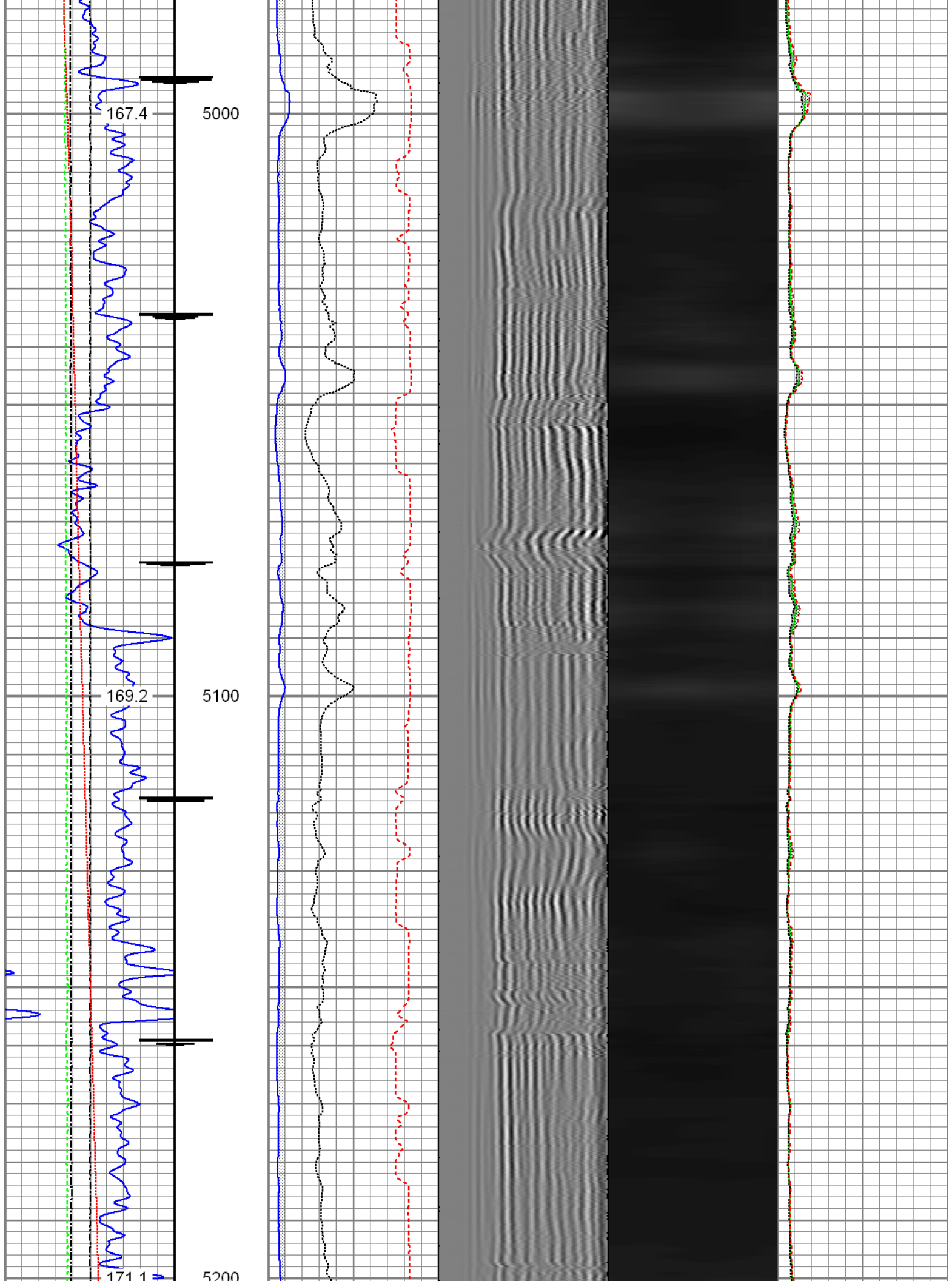


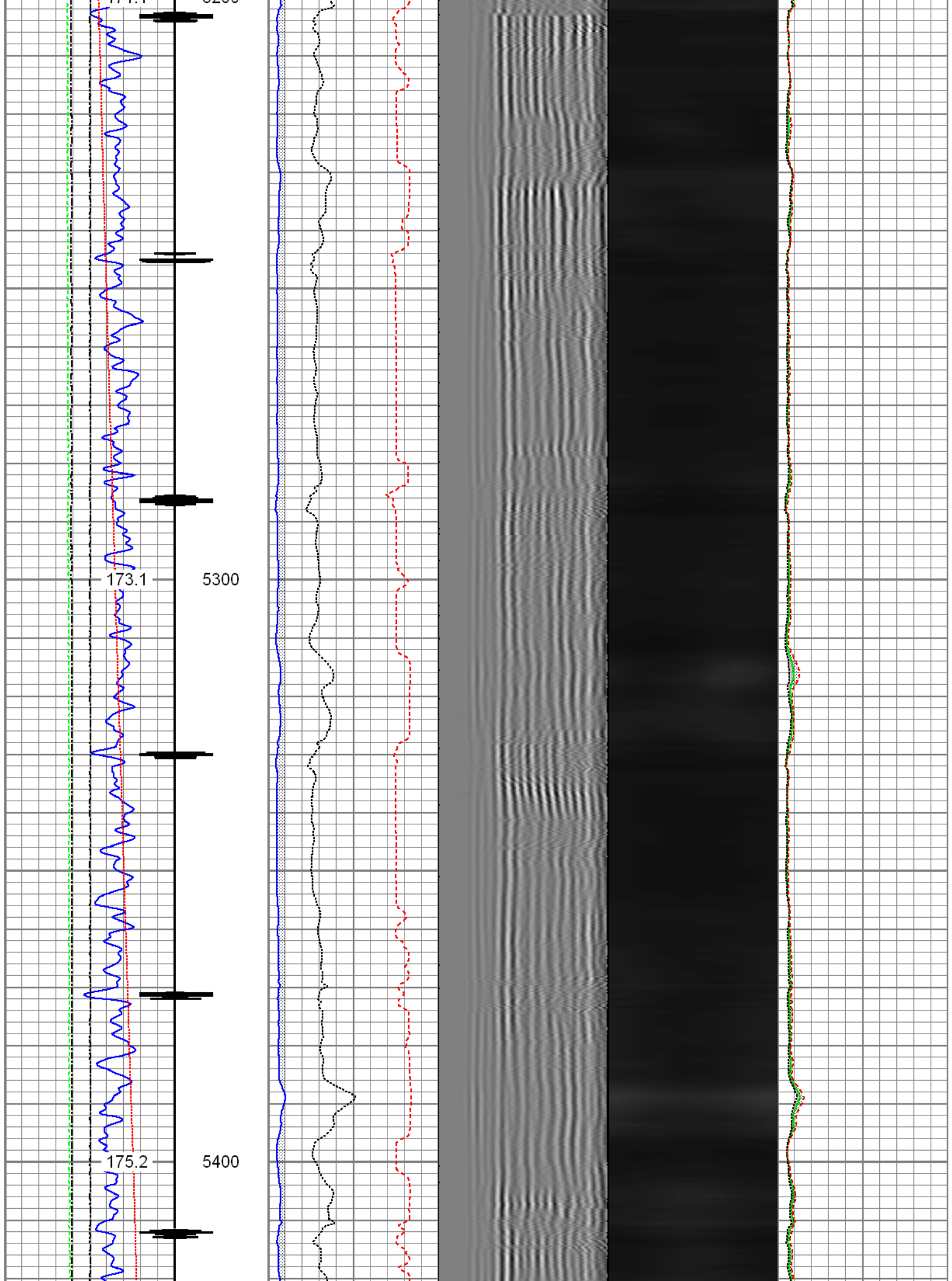


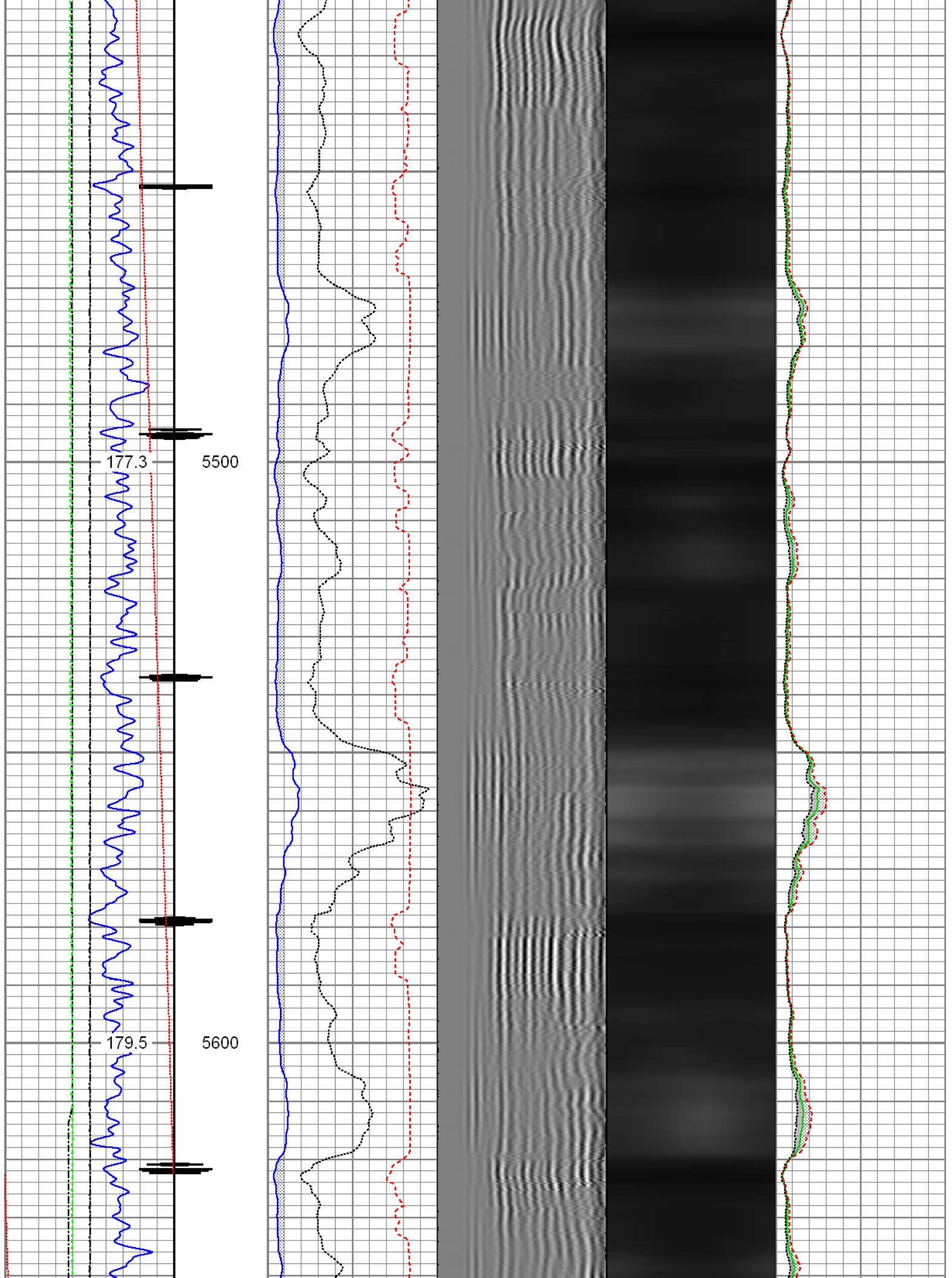


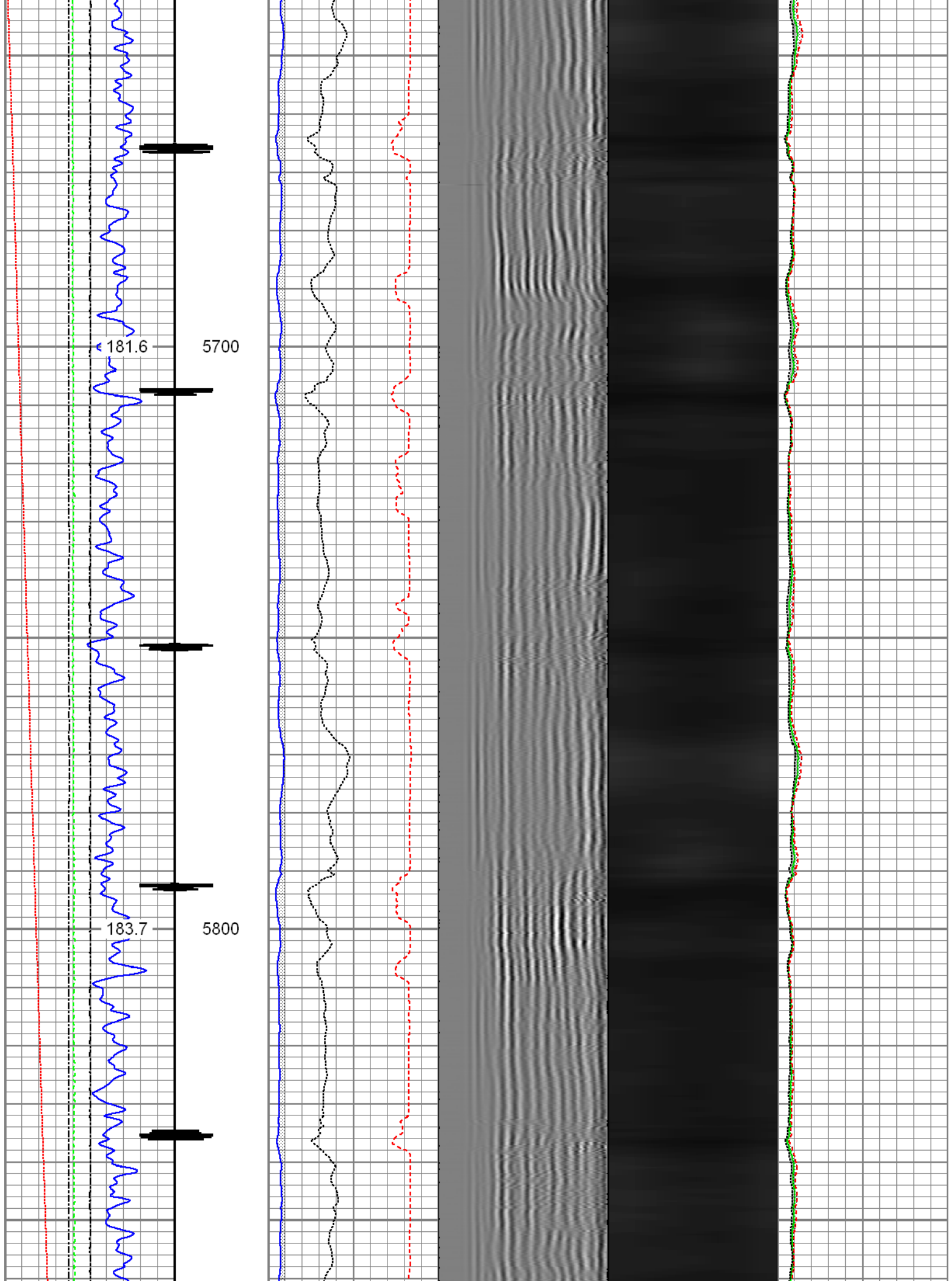


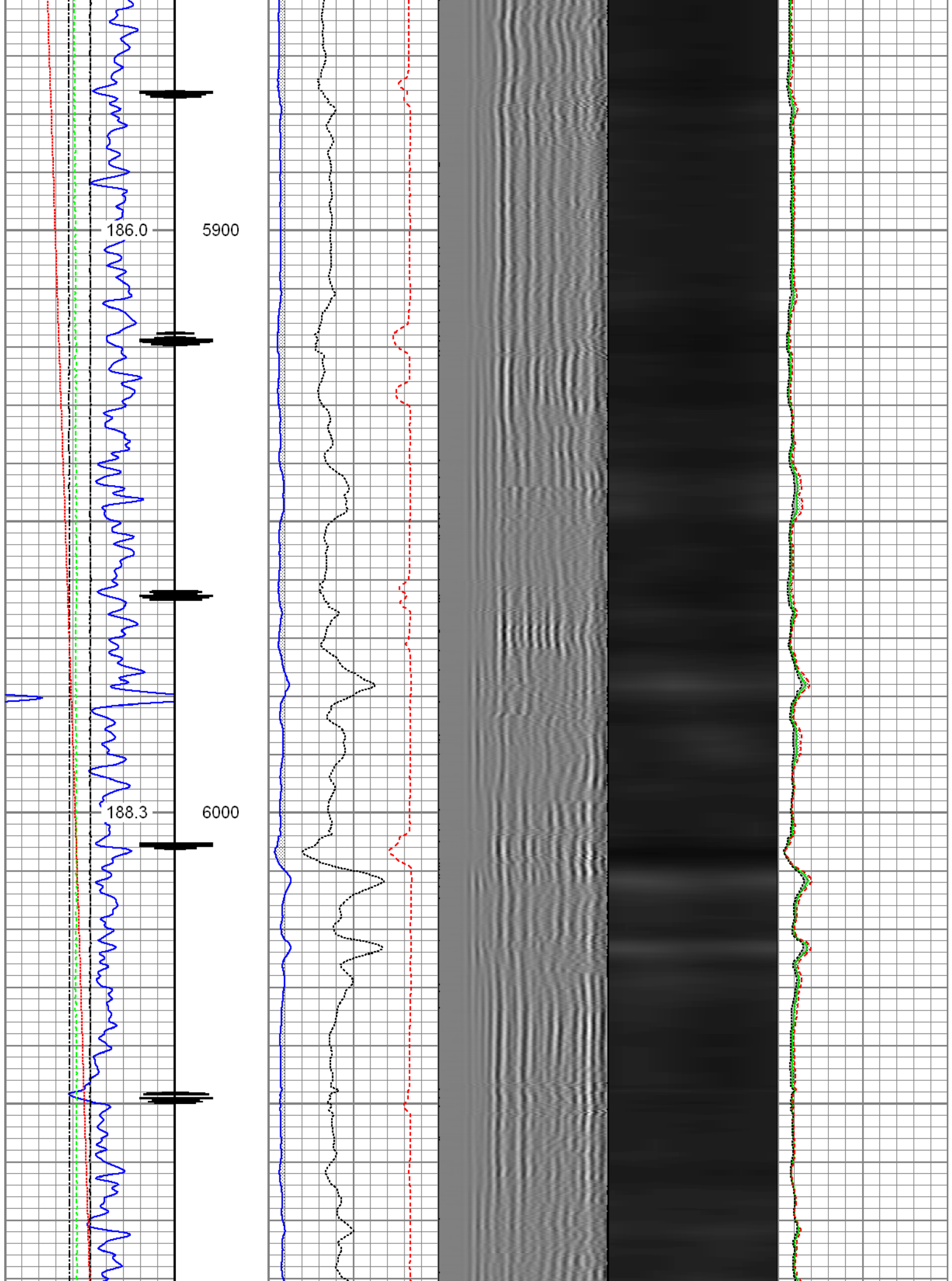


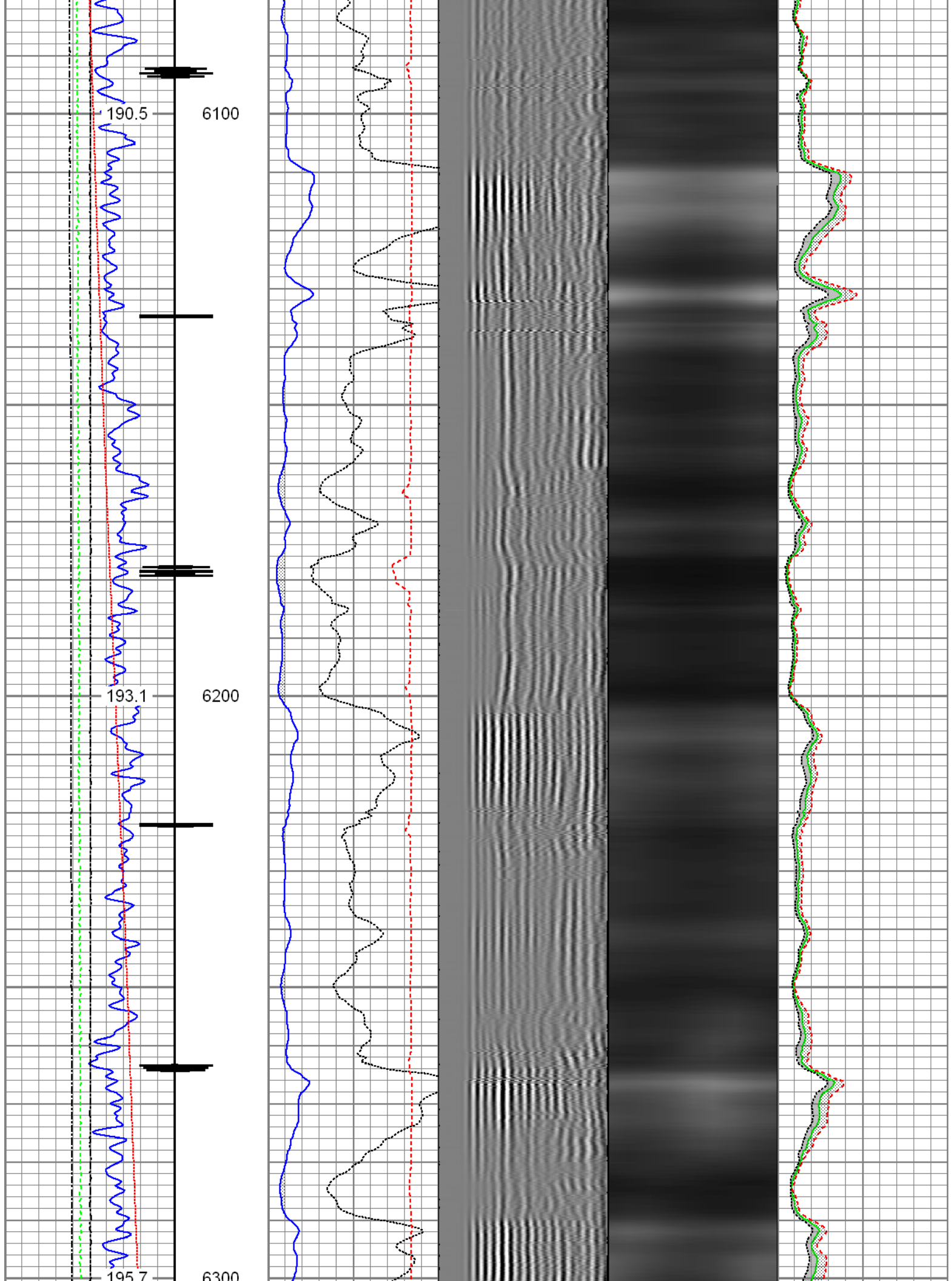


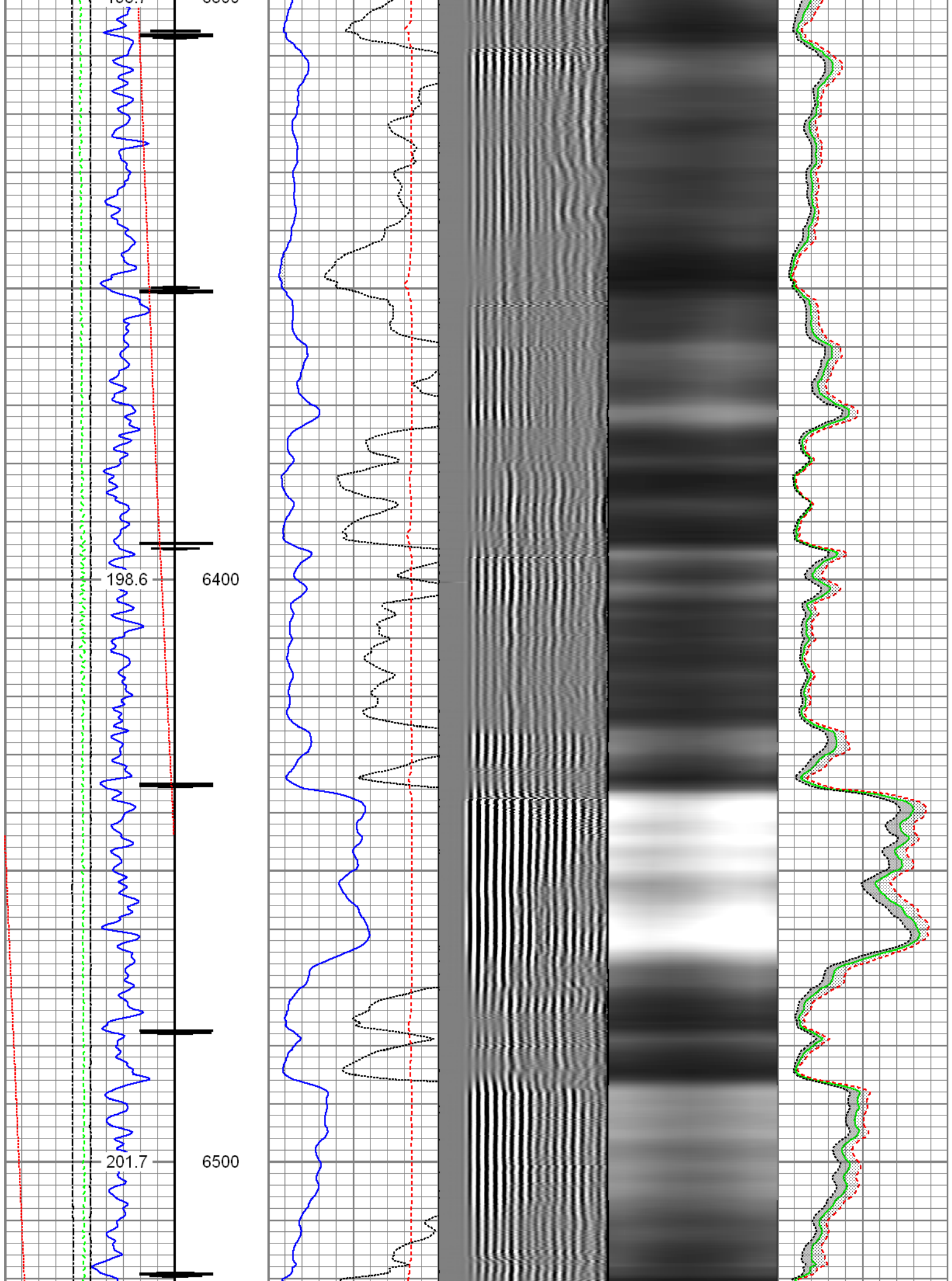


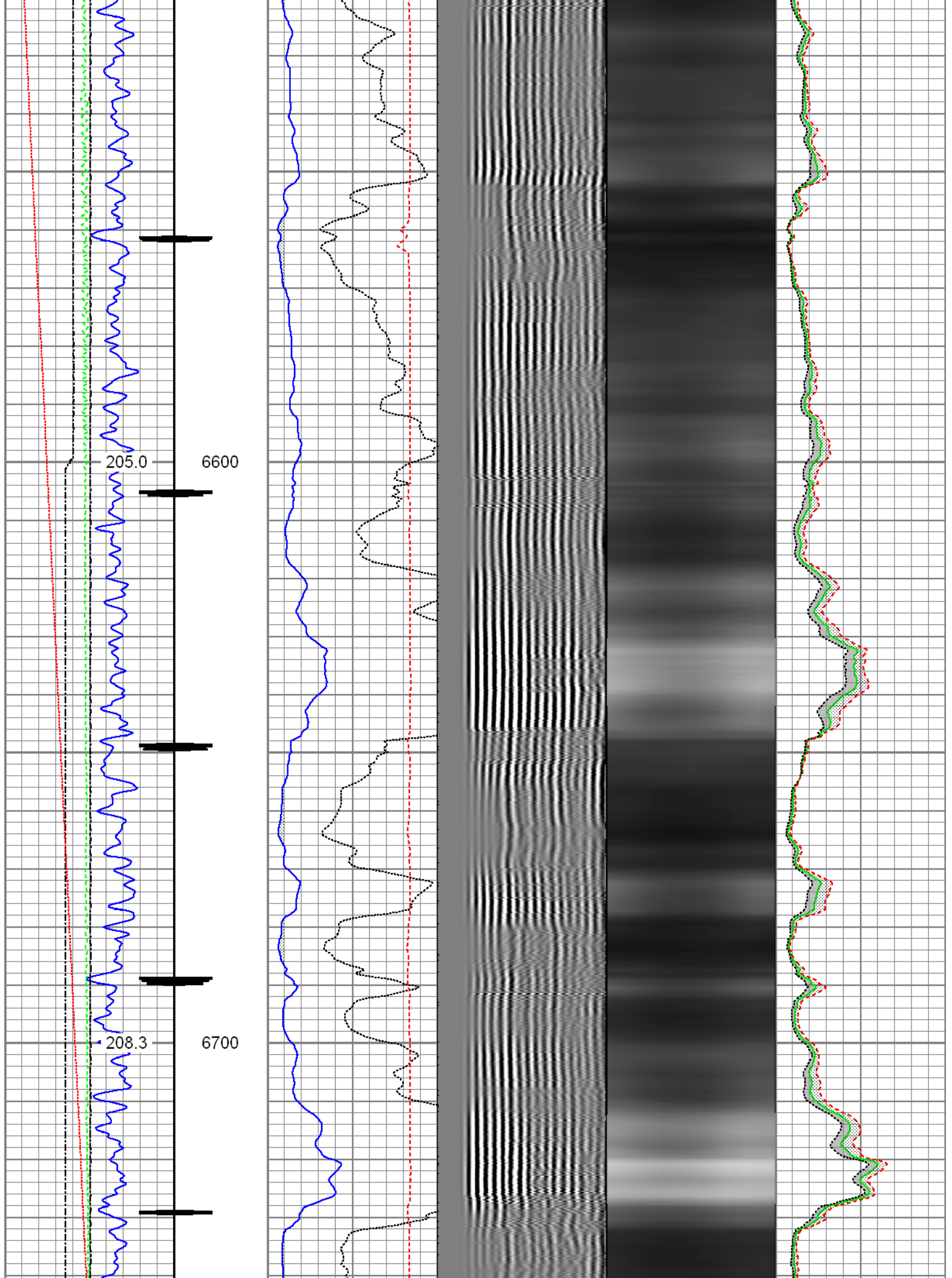


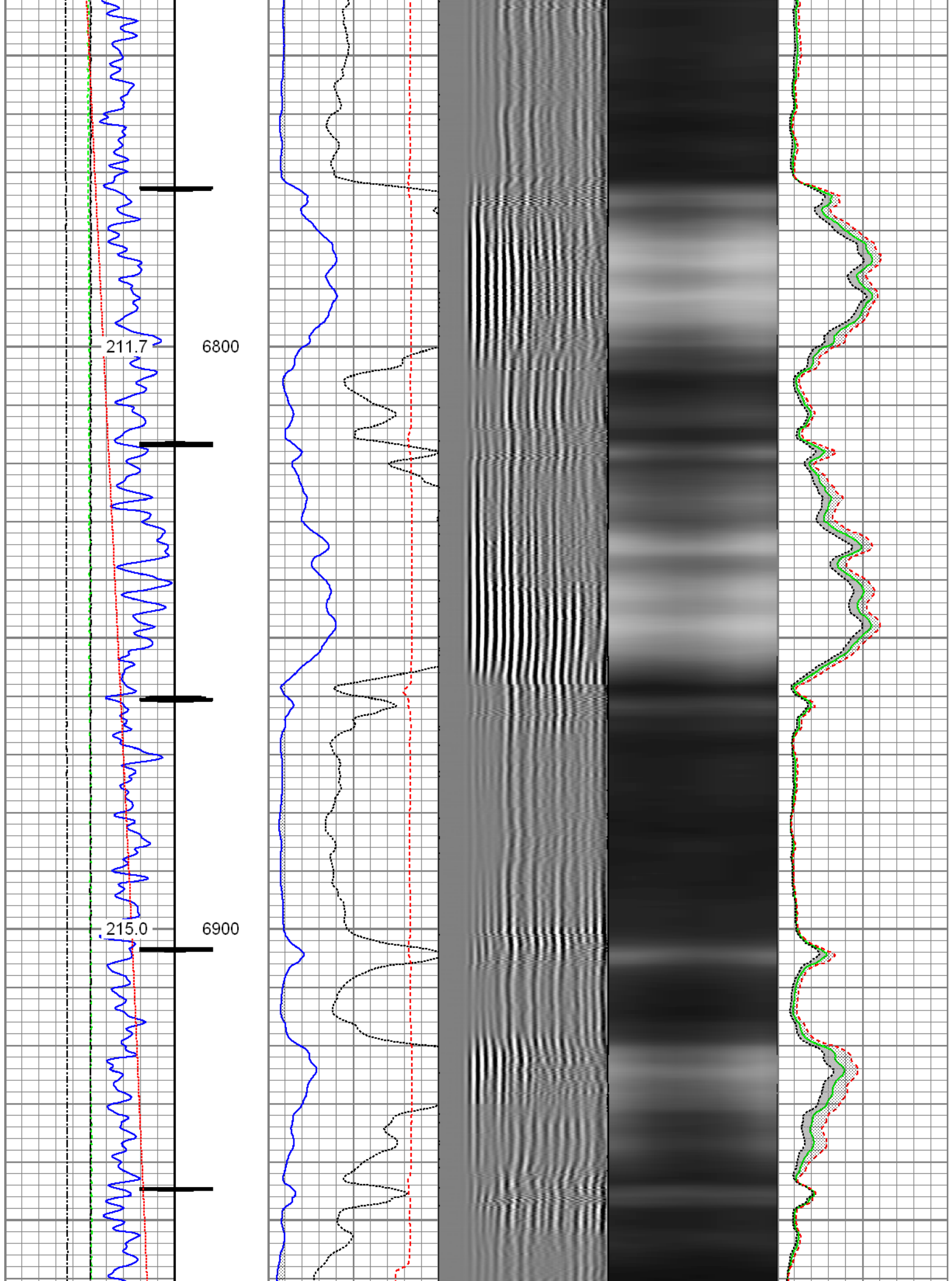


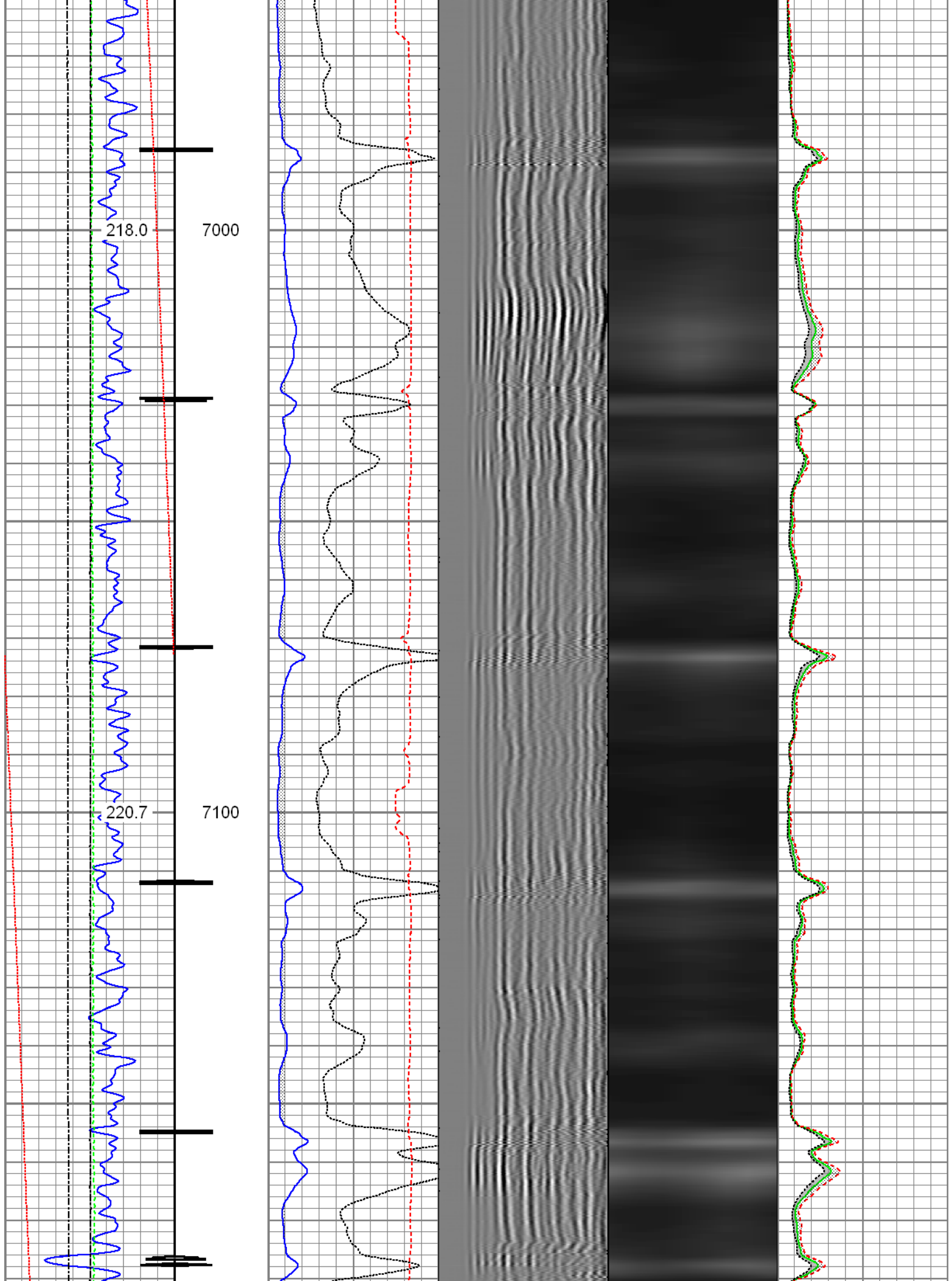


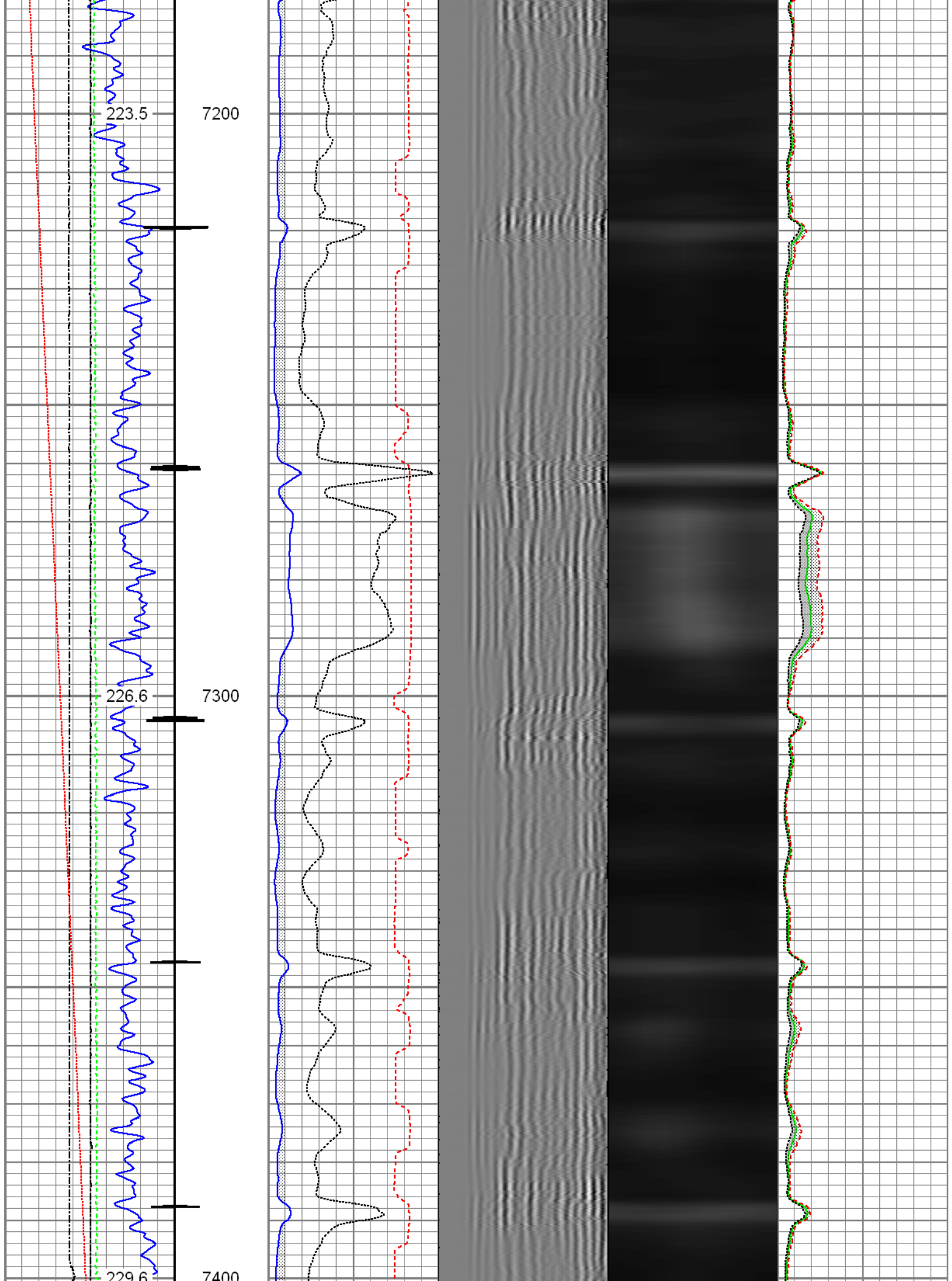


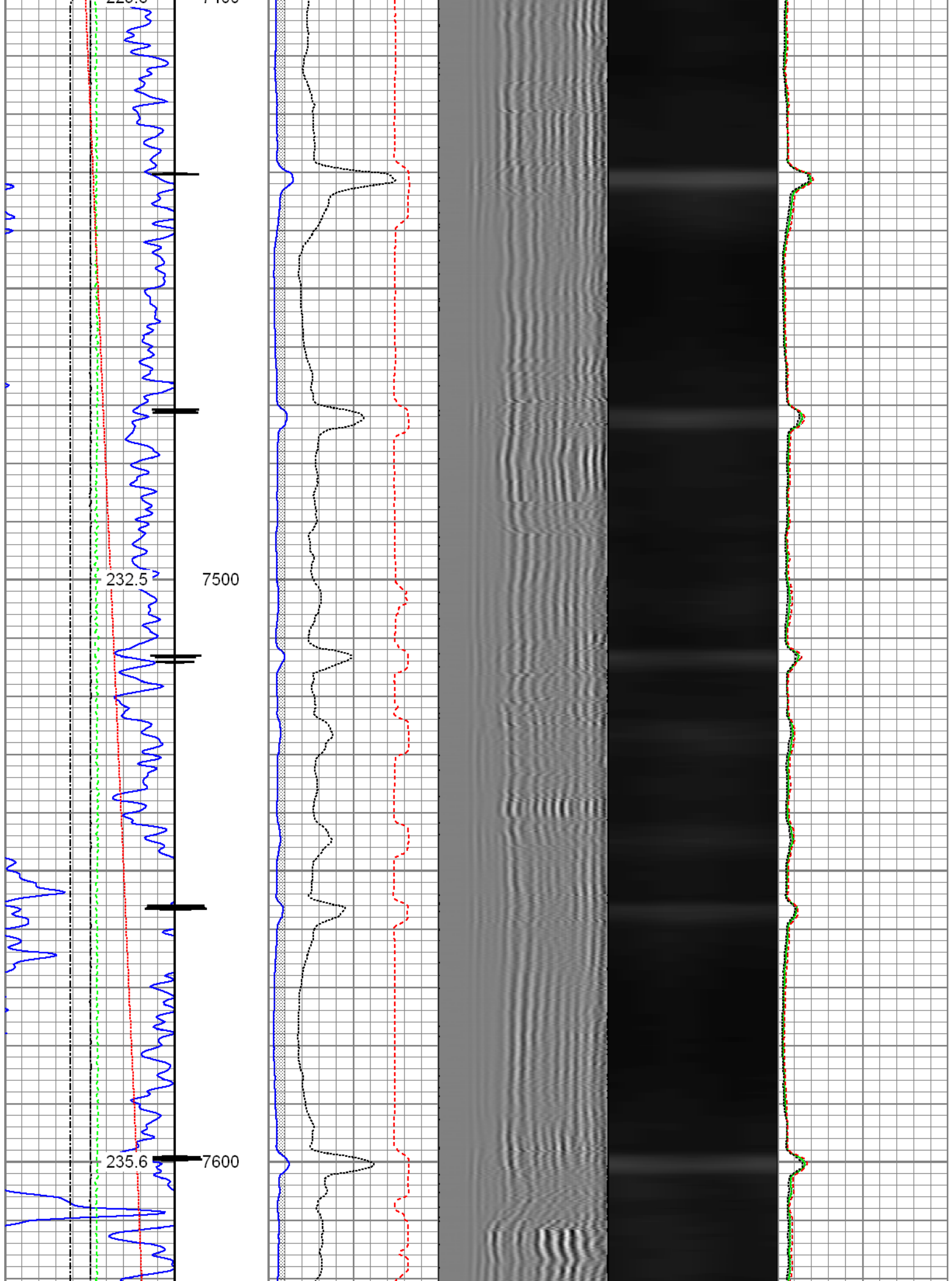


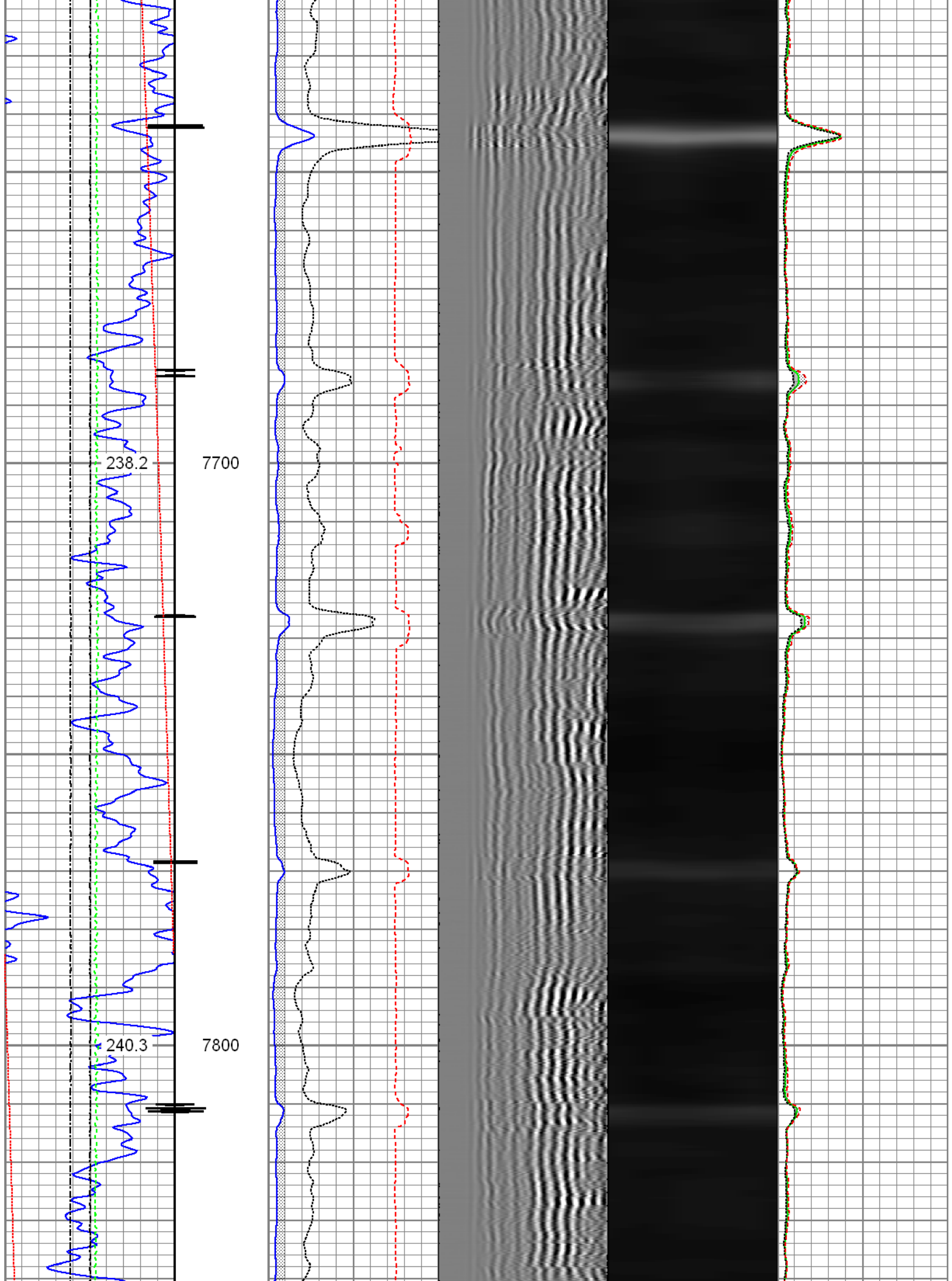


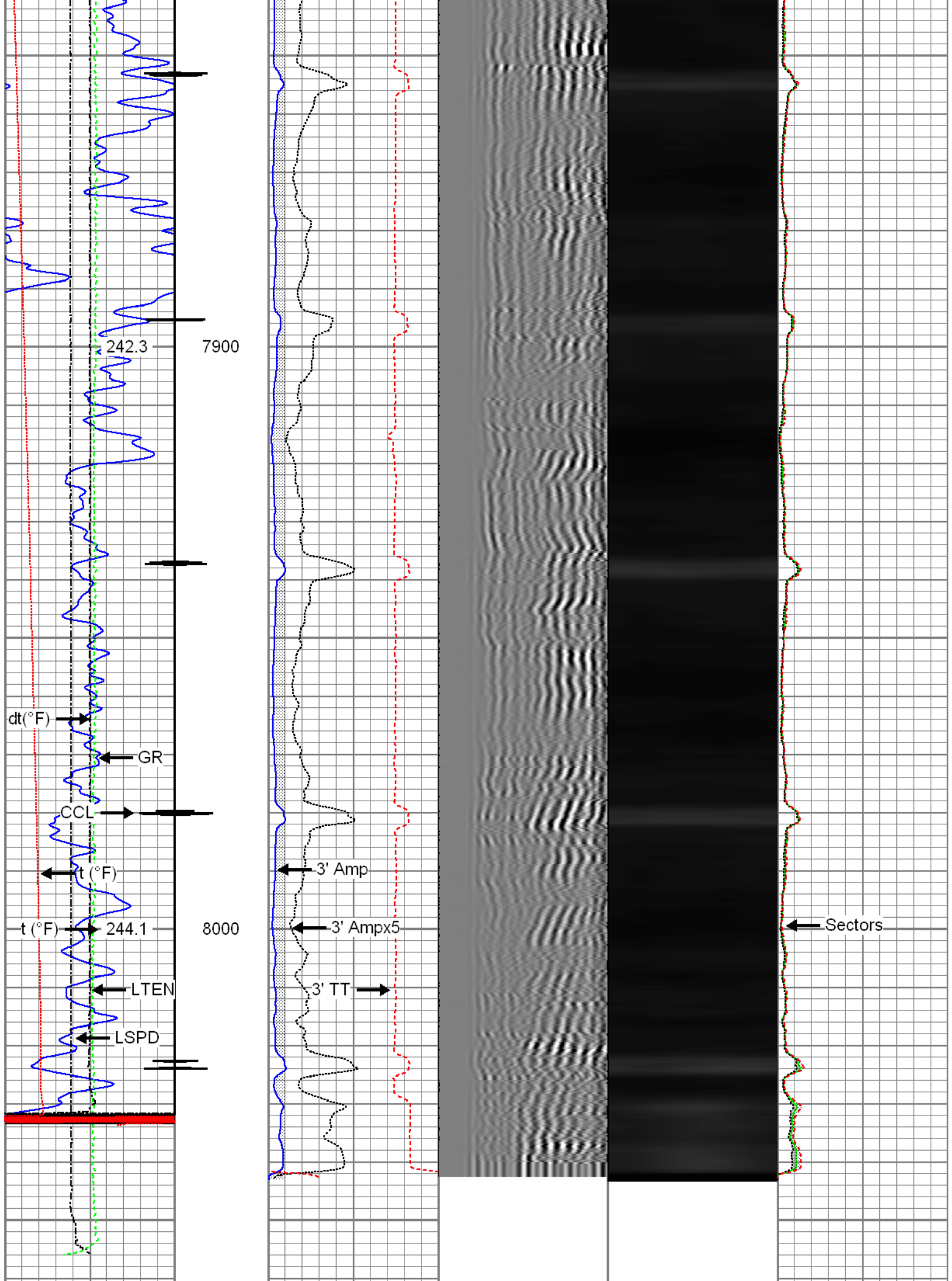






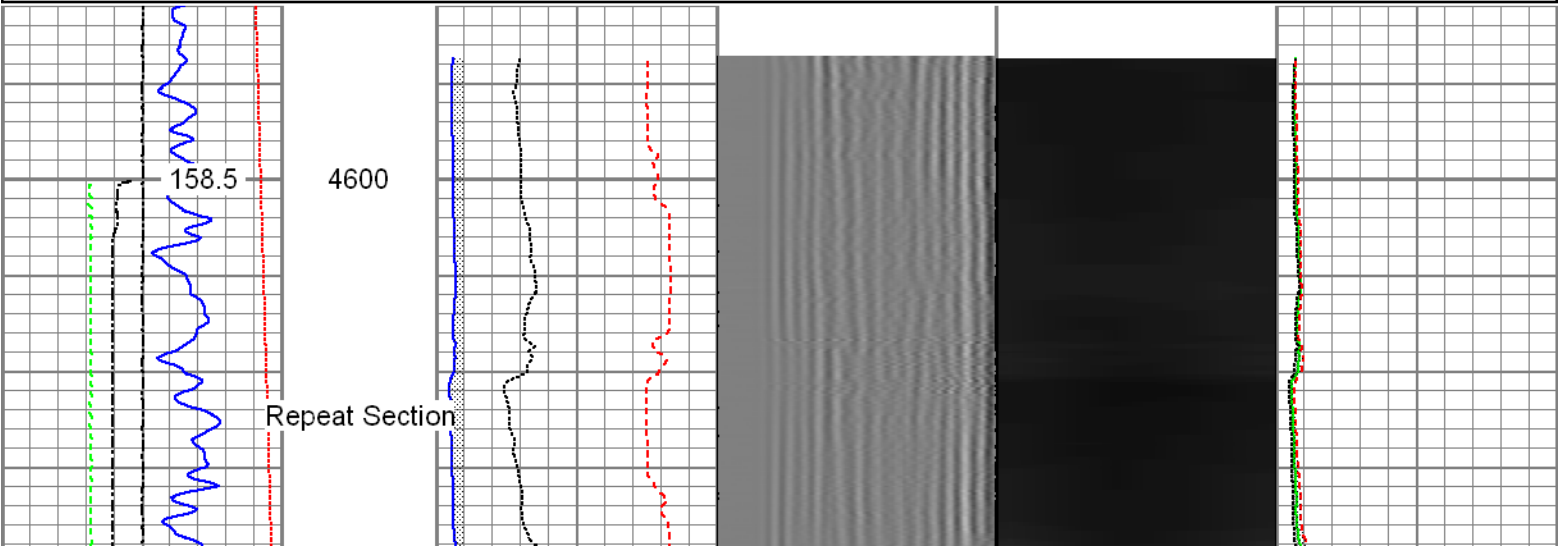


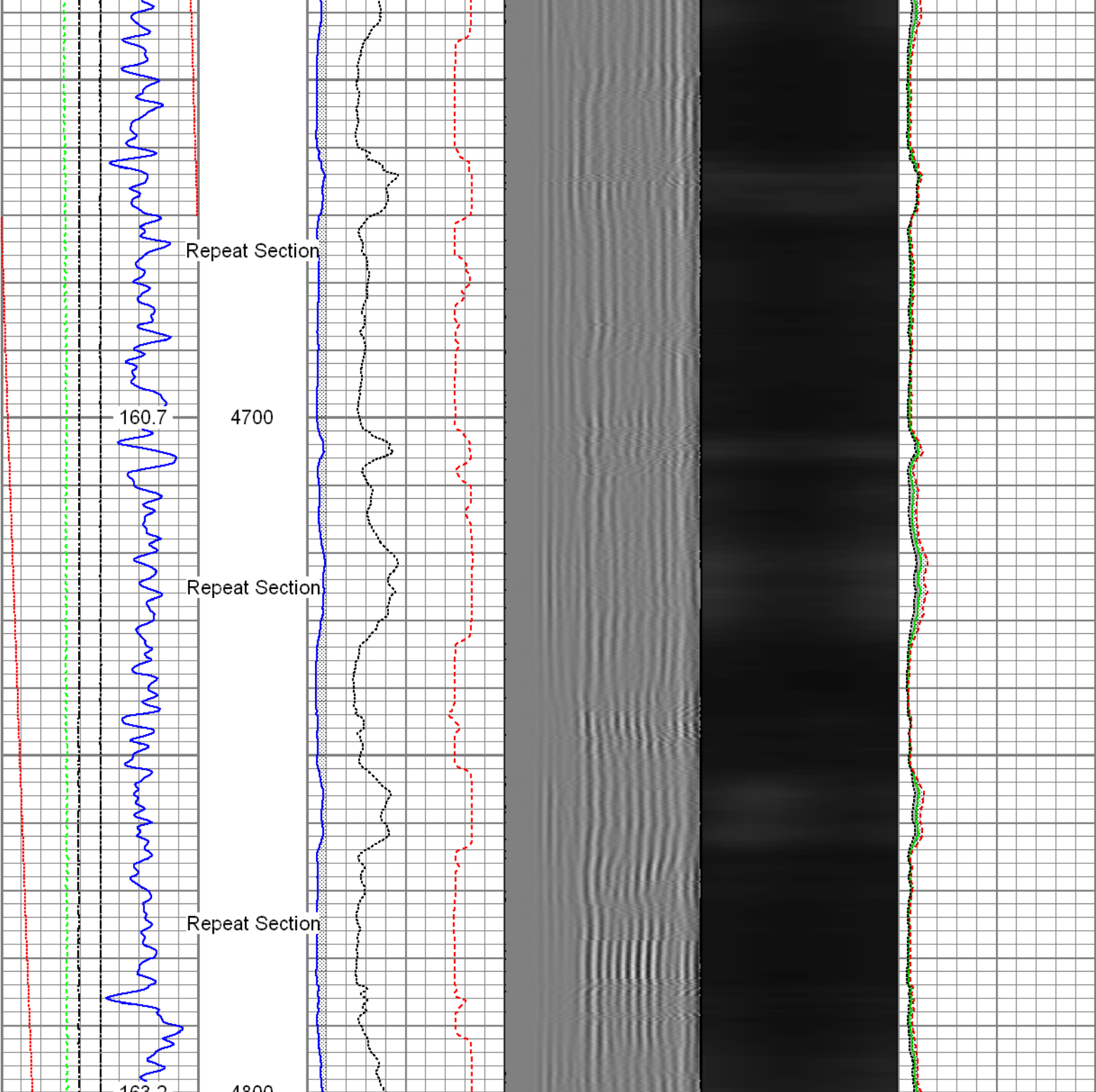





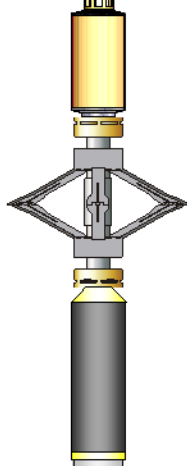
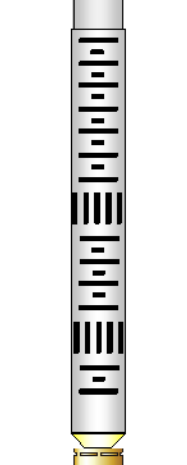
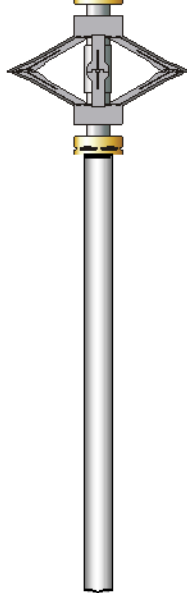

Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Mimimum Amplitude
Line Speed	0 (mV) 20			0 100
-150 (ft/min) 150	3' Travel Time			Maximum Amplitude
Line Tension	650 (usec) 150			0 100
0 (lb) 2000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

<div>FMC Technologies</div>		<div>Repeat Pass</div> <div>Recorded with 2800 PSI Surface Induced Pressure</div>		
<div>Database File: 0512342058_anadarko_thermo 15c-33hz_01-06-16_rbl_cnl.db</div> <div>Dataset Pathname: pass7</div> <div>Presentation Format: rbt004</div> <div>Dataset Creation: Thu Jan 07 11:22:11 2016 by Log 7.0 B1</div> <div>Charted by: Depth in Feet scaled 1:240</div>				
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			Mimimum 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)	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				
Temperature (degF)				
0 20				

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)				
GR	24.33		T_CH14375_1_GO Titan 1-7/16" Assembled Electric Cable Head with 1" Fishing Neck	1.03	1.44	4.00				
			UW_AGS-UW_AGS_001 (215017) Sondex Adapter - GO Box to Sondex Pin	0.21	1.69	1.00				
			UW_XTU-UW_XTU_002 (10024655) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50				
			UW_PGR-UW_PGR_020 (10013899) Production Gamma Ray	1.93	1.69	9.50				
TEMP	22.94		UW_PRT-UW_PRT_016 (10025097) Platinum Resistance Thermometer	1.04	1.69	5.20				
CCL	21.69		UW_CCL-UW_CCL_028 (10009470) Ultrawire 3-1/8" CCL	1.61	3.13	36.00				
			UW_PRC-DSSRAC (080) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00				
			UW_RBT-UW_RBT_004 (10022773) Sondex Ultrawire 3-1/8" Radial Bond Tool	9.47	3.13	140.00				
WVF3FT	14.29									
WVFS1	14.29									
WVFS2	14.29									
WVFS3	14.29									
WVFS4	14.29									
WVFS5	14.29									
WVFS6	14.29									
WVFS7	14.29									
WVFS8	14.29									
CBLTEMP	14.29		UW_PRC-DSSRAC (081) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00				
CBLROT	14.29									
WVF5FT	13.29		CNL-007 (1007) Compensated Neutron Logging Tool	6.61	1.69	30.00				
CNLSC	1.53									
CNSSC	1.12									
TSTAMP	0.00									

Calibration Report

Database File: 0512342058_Anadarko_Thermo 15C-33HZ_01-06-16_RBL_CNL.db
 Dataset Pathname: pass9
 Dataset Creation: Thu Jan 07 11:48:51 2016 by Log 7.0 B1

Compensated Neutron Calibration Report

Serial Number: 1007
 Tool Model: 007

Master Calibration Tue Jun 03 09:29:29 2014

Detector Readings

Short Space 240.87 cps
 Long Space 303.55 cps

Ratio Measured Reference
 0.8150 Sleeve: 1.0000
 CNRAT Gain K 1.0271

Before Survey

Detector Readings

Short Space cps
 Long Space cps

Ratio Measured Reference

After Survey

Detector Readings

Short Space cps
 Long Space cps

Ratio Measured Reference

Segmented Cement Bond Log Calibration Report

Serial Number: 10022773
 Tool Model: UW_RBT_004

Calibration Casing Diameter: 5.500 in
 Calibration Depth: 232.630 ft

Master Calibration, performed Thu Jan 07 11:02:51 2016:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	0.002	0.823	1.000	71.921	86.384	0.787
5FT	-0.001	0.706	1.000	71.921	100.291	1.121
S1	0.002	0.771	0.000	100.000	130.106	-0.324
S2	0.001	0.788	0.000	100.000	127.130	-0.137
S3	0.002	0.783	0.000	100.000	128.177	-0.304
S4	0.001	0.792	0.000	100.000	126.463	-0.179
S5	0.002	0.825	0.000	100.000	121.495	-0.248

S6	0.001	0.824	0.000	100.000	121.587	-0.151
S7	0.001	0.814	0.000	100.000	123.040	-0.162
S8	0.002	0.795	0.000	100.000	126.002	-0.189

Temperature Calibration Report

Serial Number: 10025097
 Tool Model: UW_PRT_016
 Performed: Wed Feb 11 13:44:44 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: 10013899
 Tool Model: UW_PGR_020
 Performed: Sun Jun 13 13:33:21 1993

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 Thermo 15C-33HZ
 Field Wattenberg
 County Weld
 State Colorado