



# Radial Cement Bond Gamma Ray Casing Collar Log

Company	Kerr-McGee Oil & Gas Onshore, L.P.		
Well	Carter 13N-33HZ		
Field	Wattenberg		
County	Weld		
State	Colorado		
Location:		API # : 05-123-41557	Other Services
SEC 33 TWP 2N RGE 66W		Gauge Ring	
Permanent Datum	Ground Level	Elevation	4960'
Log Measured From	Kelly Bushing	16 FT	K.B. 4976' D.F. 4975' G.L. 4960'
Drilling Measured From	Kelly Bushing		

Date	3-NOV-2015		
Run Number	Two		
Depth Driller	12726 FT		
Depth Logger	7426 FT		
Bottom Logged Interval	7410 FT		
Top Log Interval	Surface		
Open Hole Size	7.875"		
Type Fluid	Water		
Density / Viscosity	8.34 lbm/gal		
Max. Recorded Temp.	232°F		
Estimated Cement Top	Surface		
Time Well Ready	ROA		
Time Logger on Bottom	13.43		
Equipment Number	HD-0119		
Location	Ft. Lupton, CO		
Recorded By	R. Fogarty		
Witnessed By	S. 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	J-55	Surface	1866 FT		
Intermediate #1	5 1/2	17	HCP 110 LTC	Surface	12716 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 6703 FT  
Adjusted log -25.3 FT to correlate to Marker Joint  
Gauge ring ran to 7426 FT  
Log ran as deep as possible to surface  
Log ran with 2800 PSI surface induced pressure  
Logging tools were clean and free of any debris upon completions of operations  
  
Thank you for choosing FMC Technologies Completion Services, Inc.!!

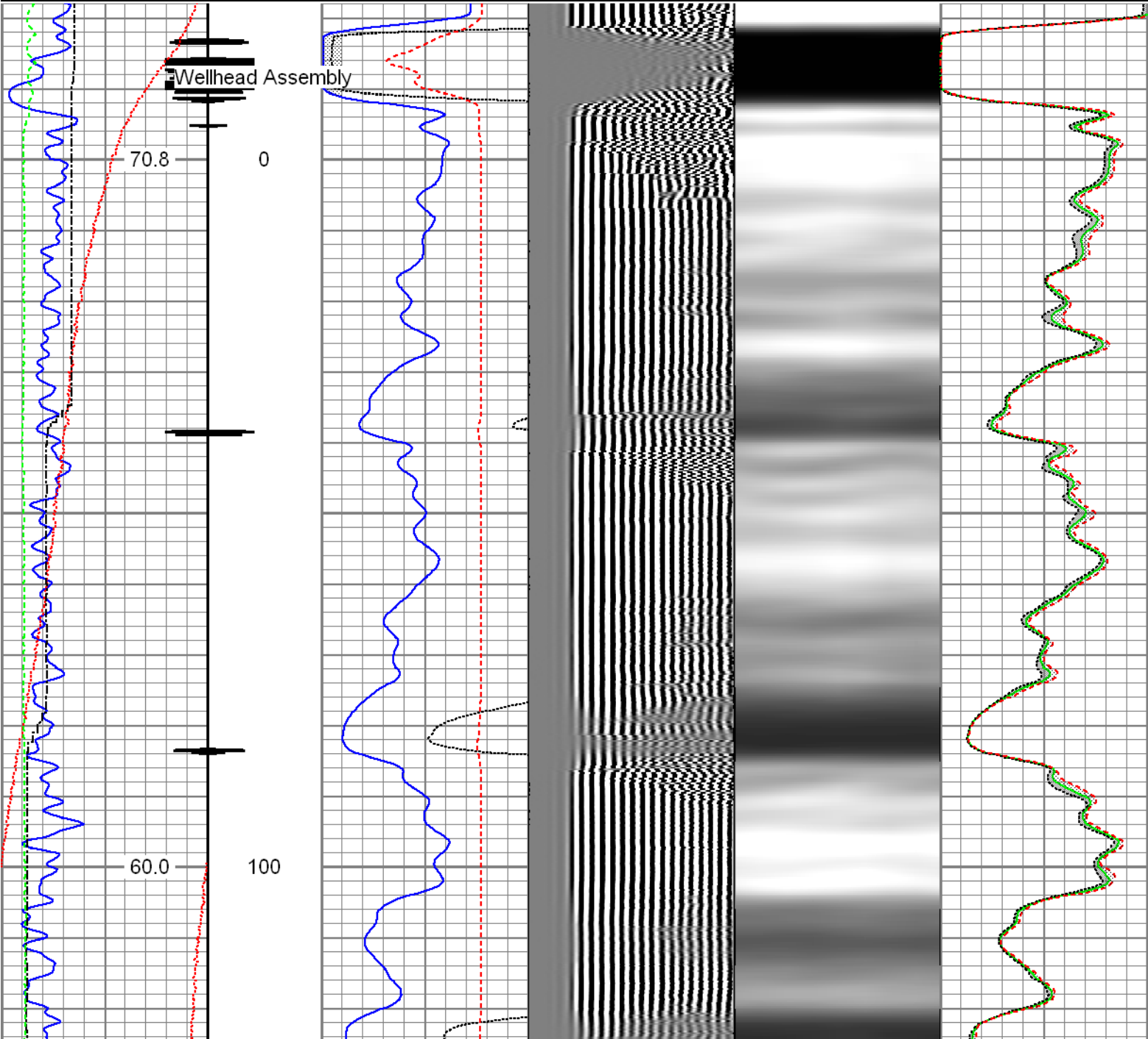


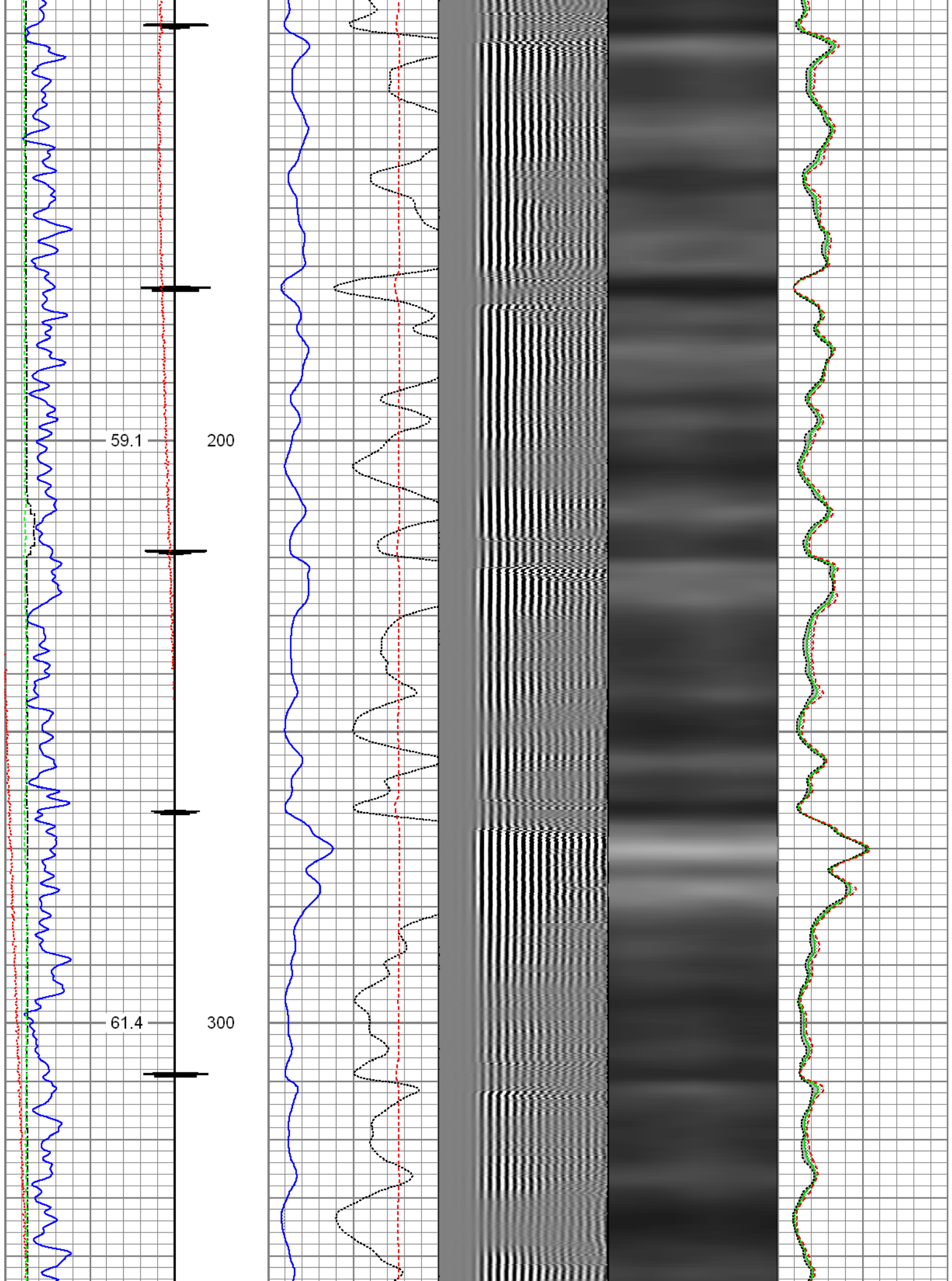
## Main Pass

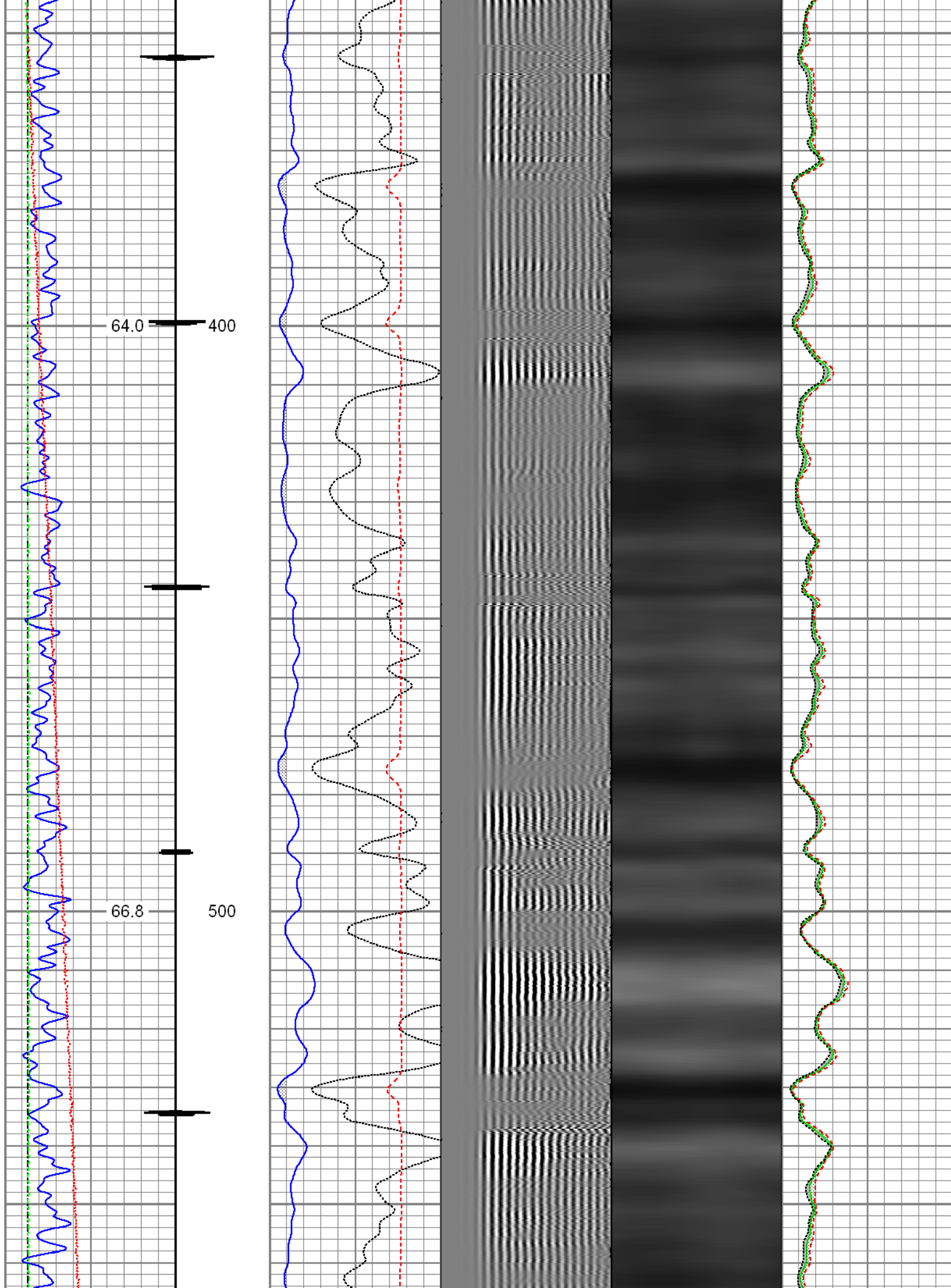
Recorded with 2800 PSI Surface Induced Pressure

Database File: 0512341557\_anadarko\_carter 13n-33hz\_11-03-15\_rbl.db  
Dataset Pathname: pass16  
Presentation Format: radii  
Dataset Creation: Tue Nov 03 13:43:10 2015 by Log 7.0 B1  
Charted by: Depth in Feet scaled 1:240

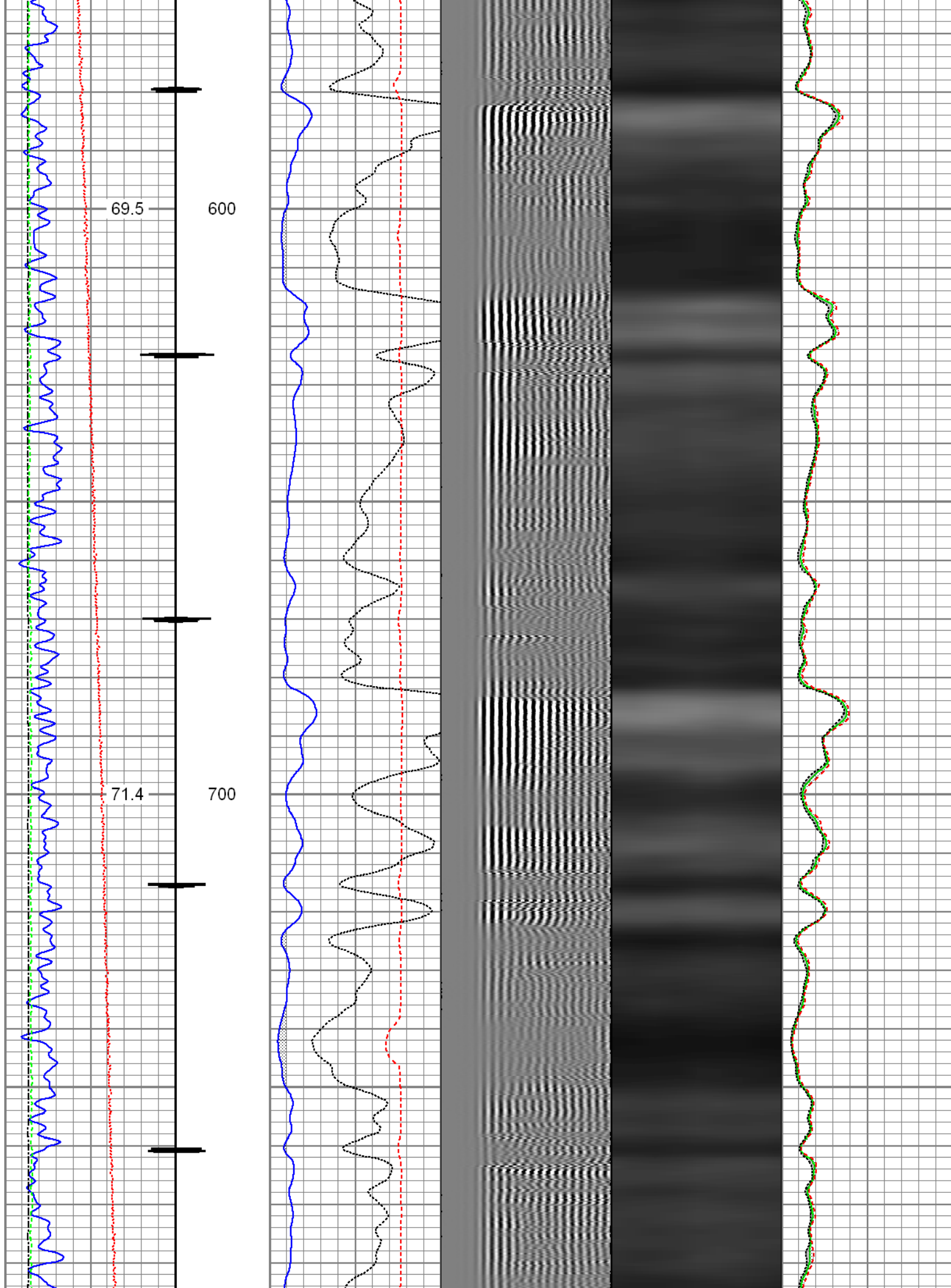
Gamma Ray 0 (GAPI) 150	3' Amplitude 0 (mV) 100	5' Variable Density Log 200 1200	Sector Map	Average Amplitude 0 100
Casing Collar Locator	3' Amplitude x 5 0 (mV) 20			Minimum Amplitude 0 100
Temperature 0 (degF) 20	3' Travel Time 650 (usec) 150			Maximum Amplitude 0 100
Line Speed -150 (ft/min) 150		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

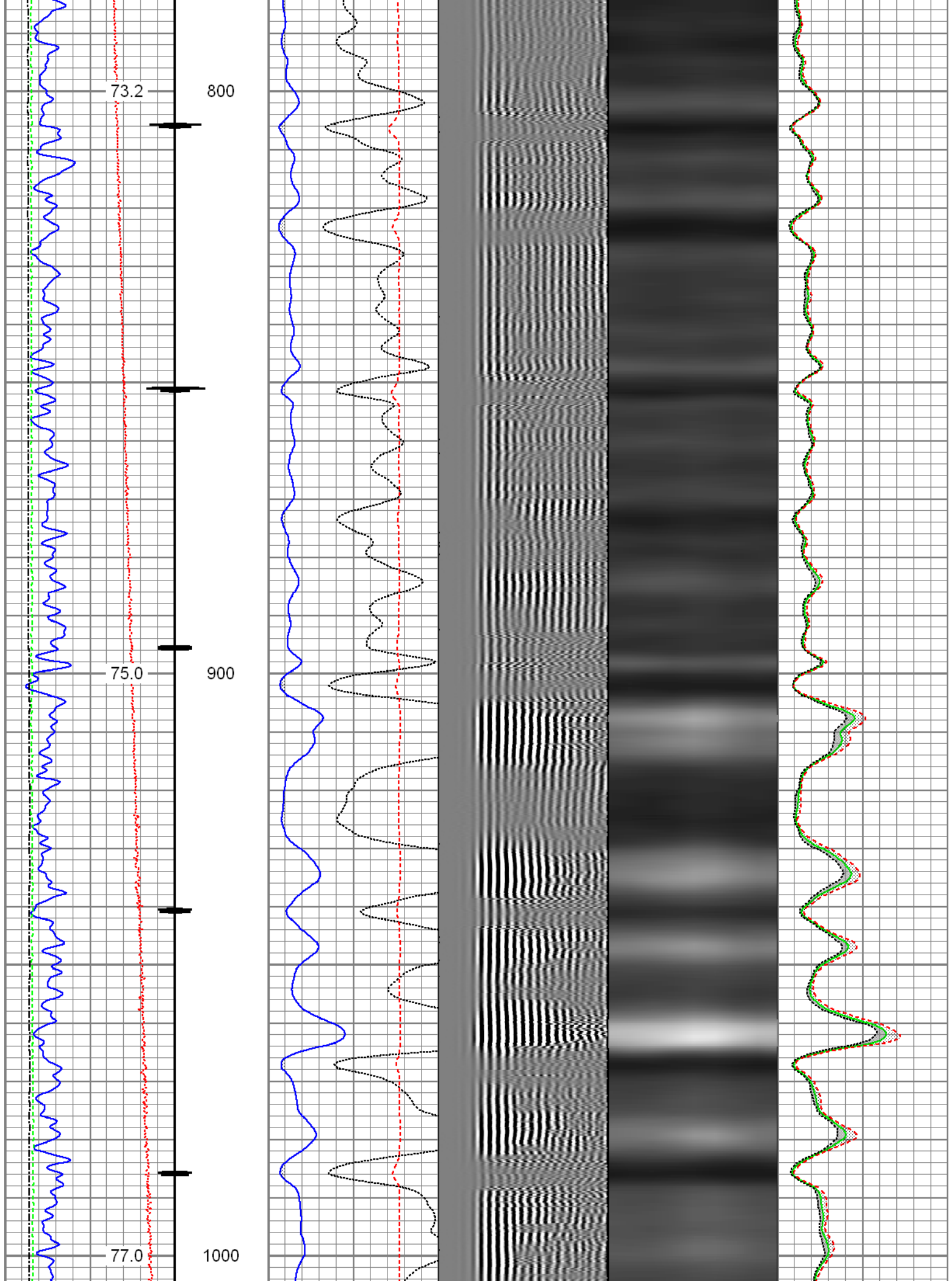


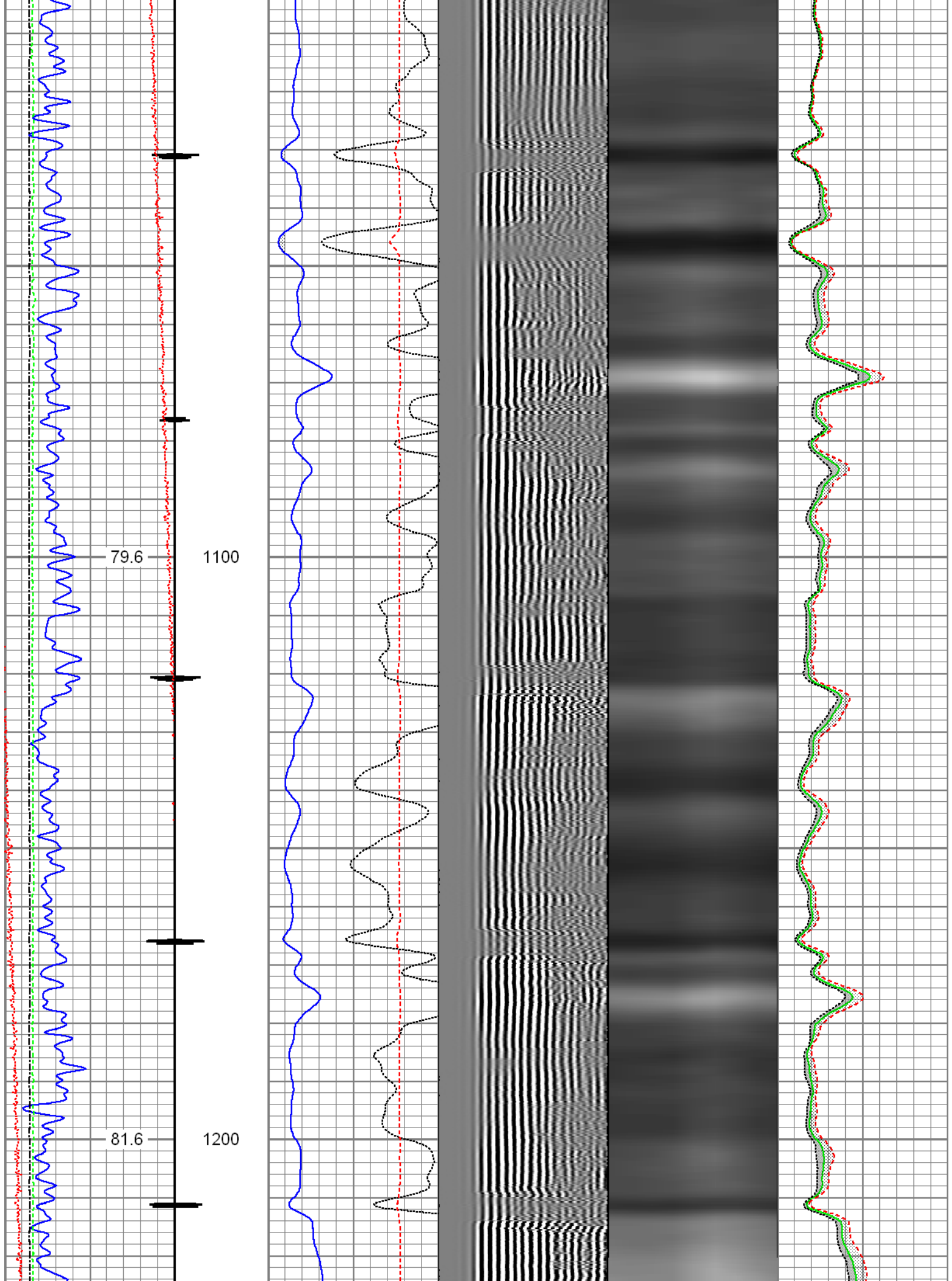




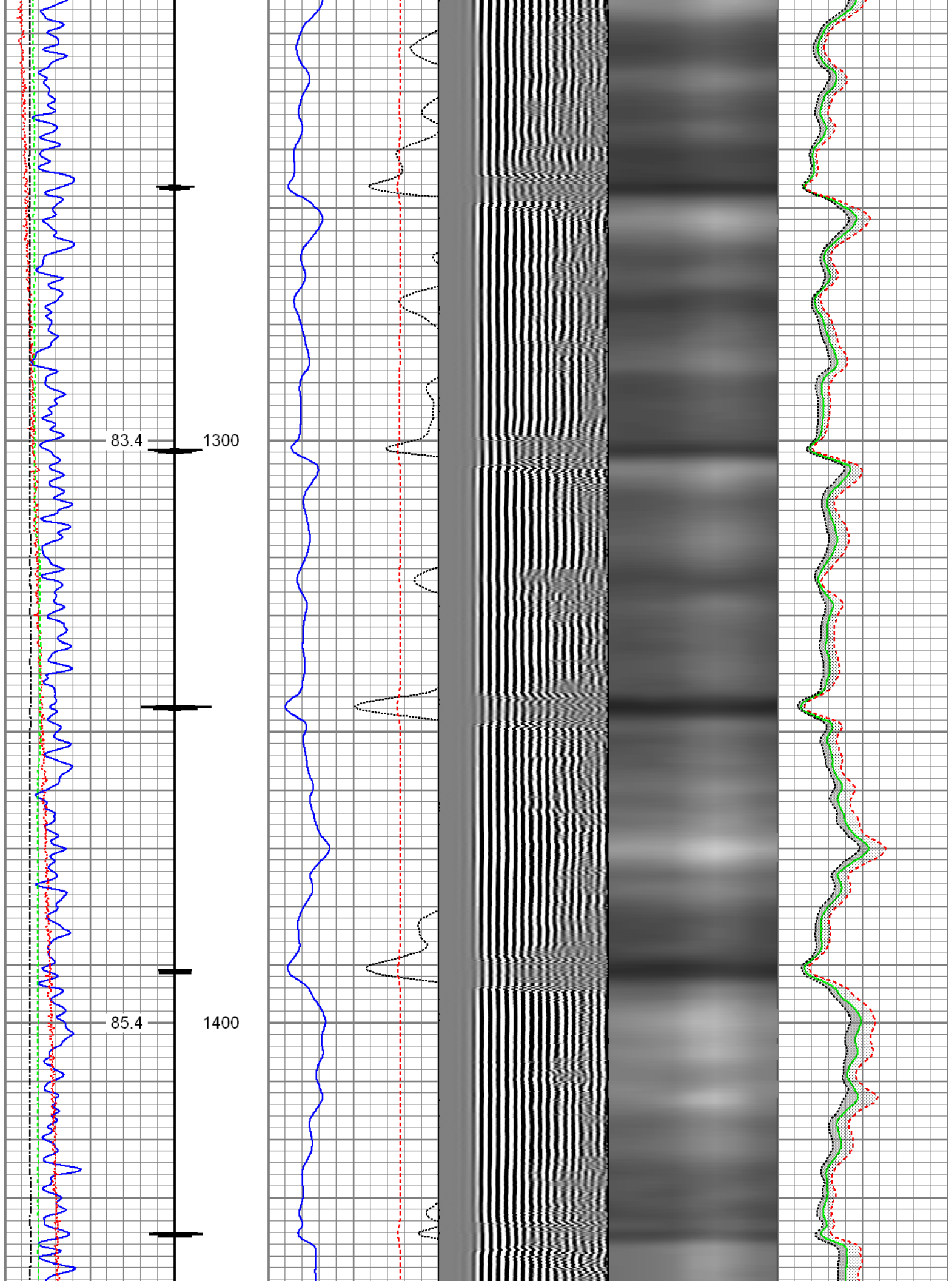




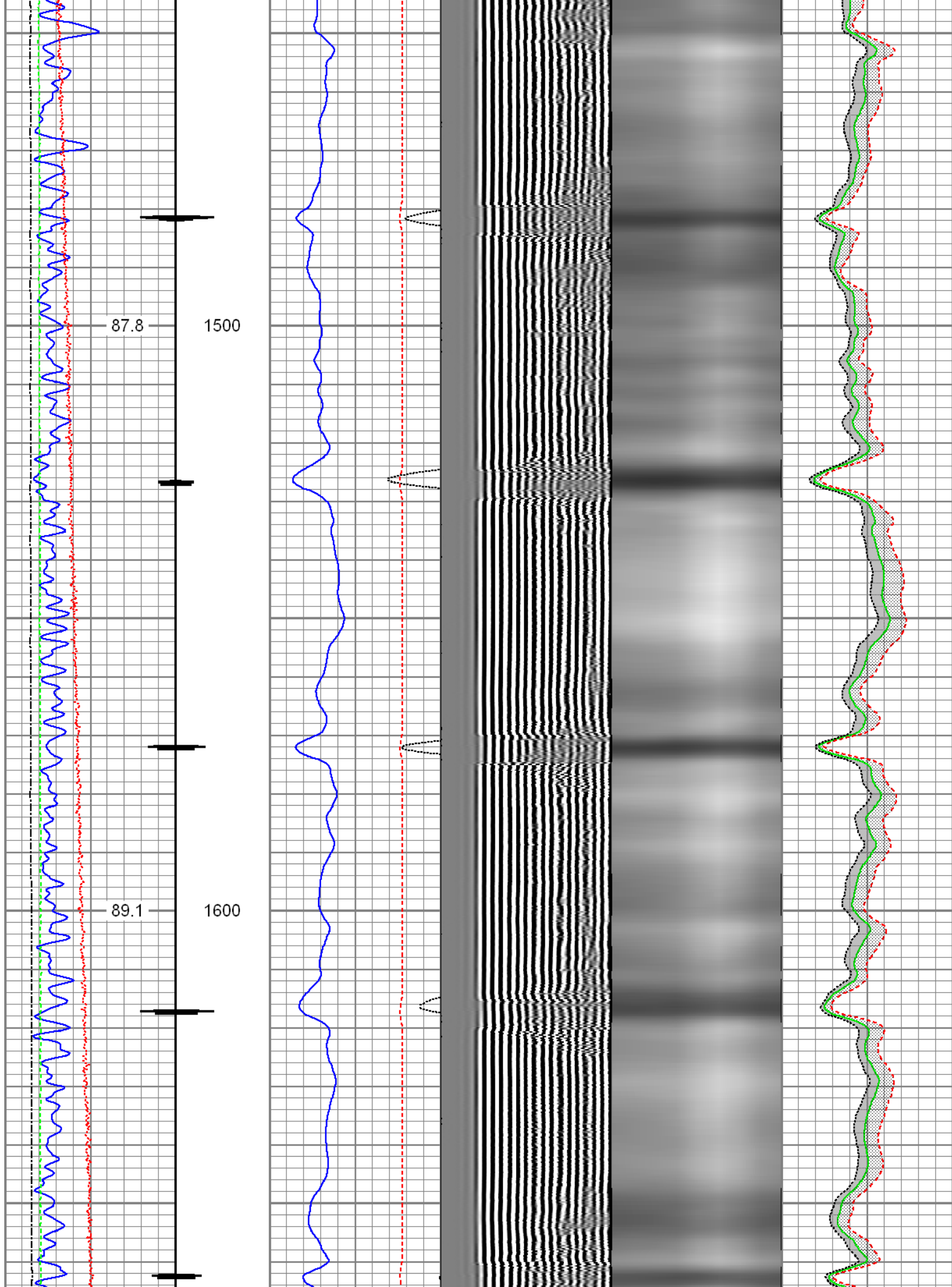


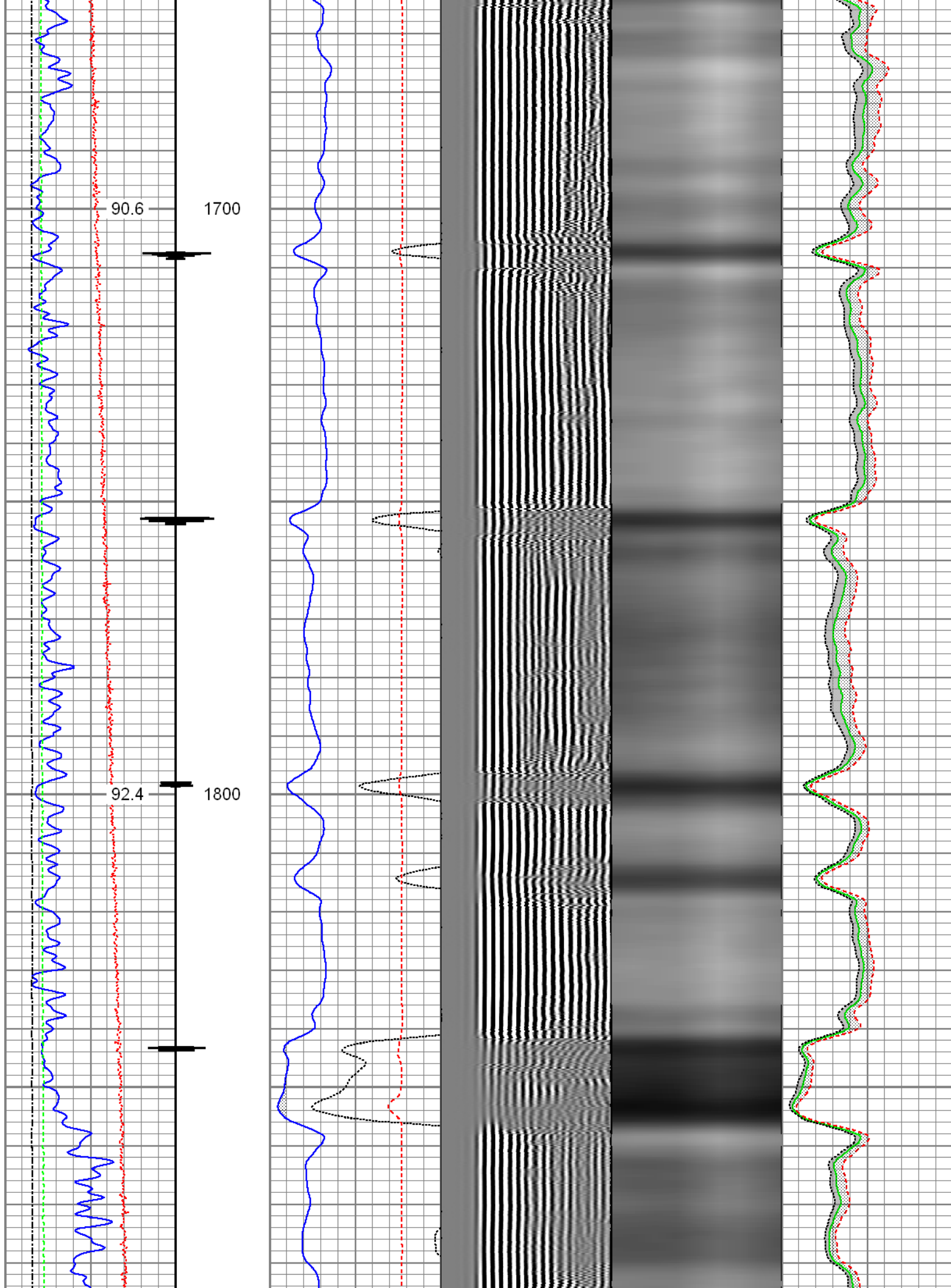


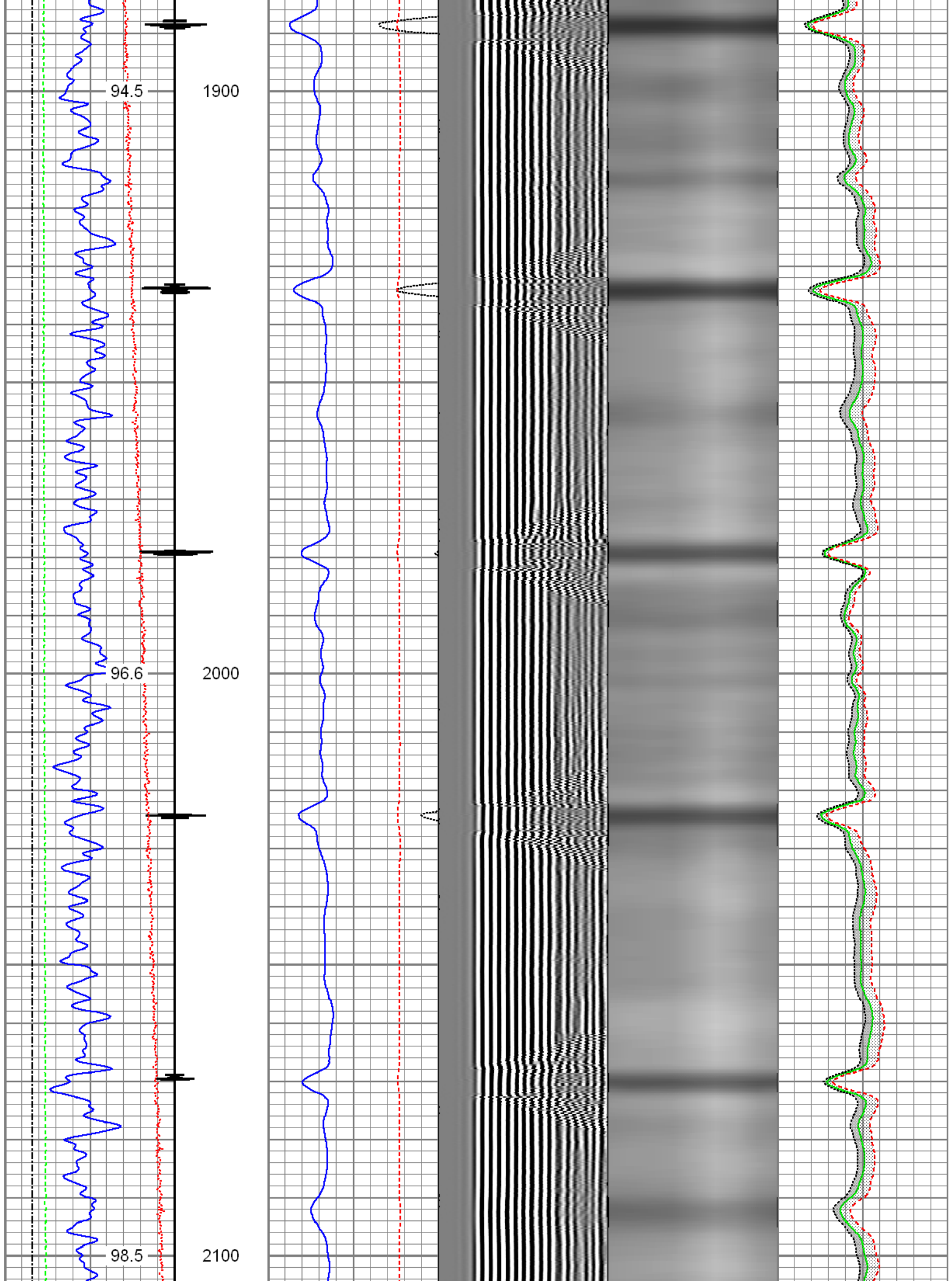




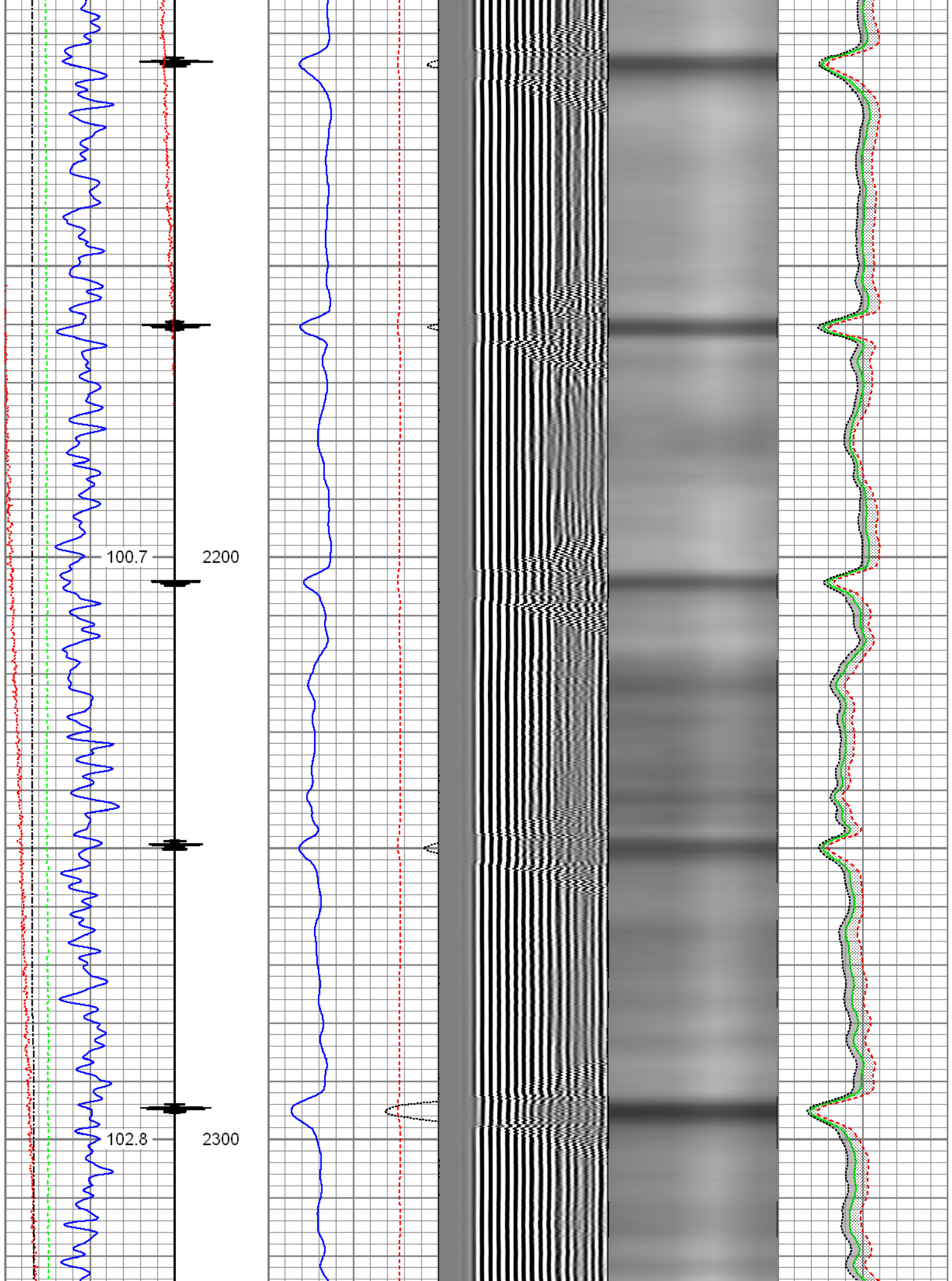




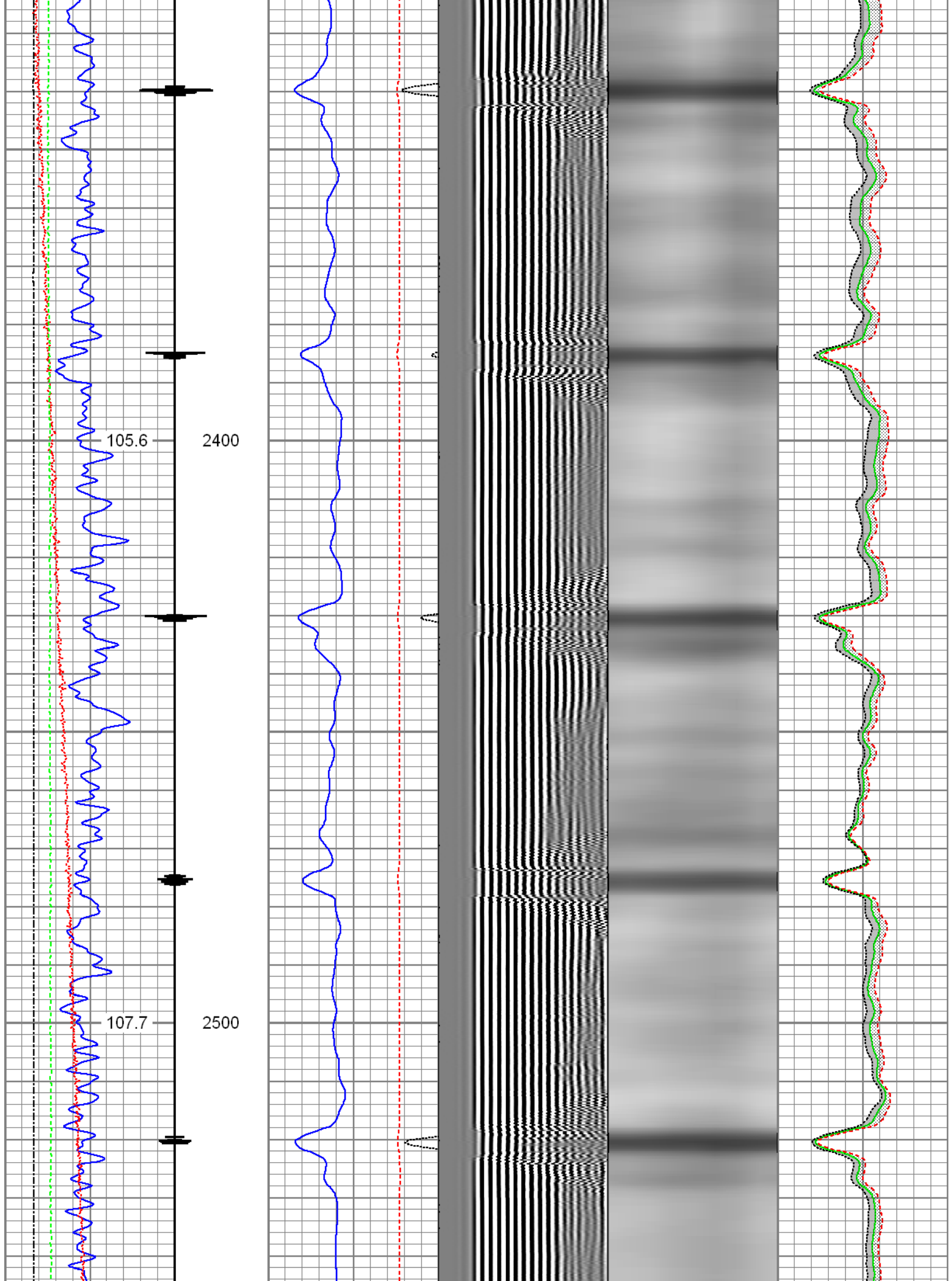


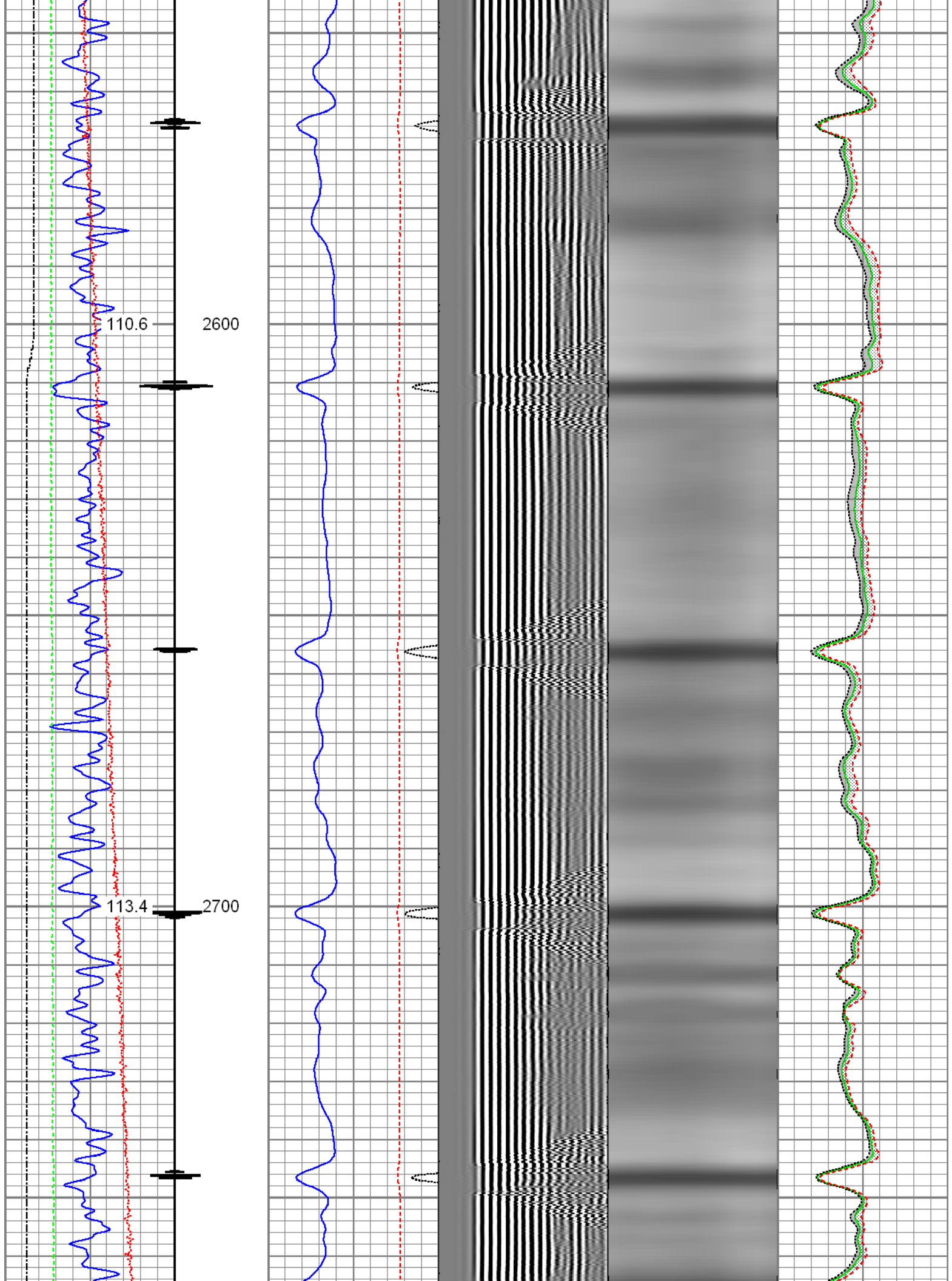


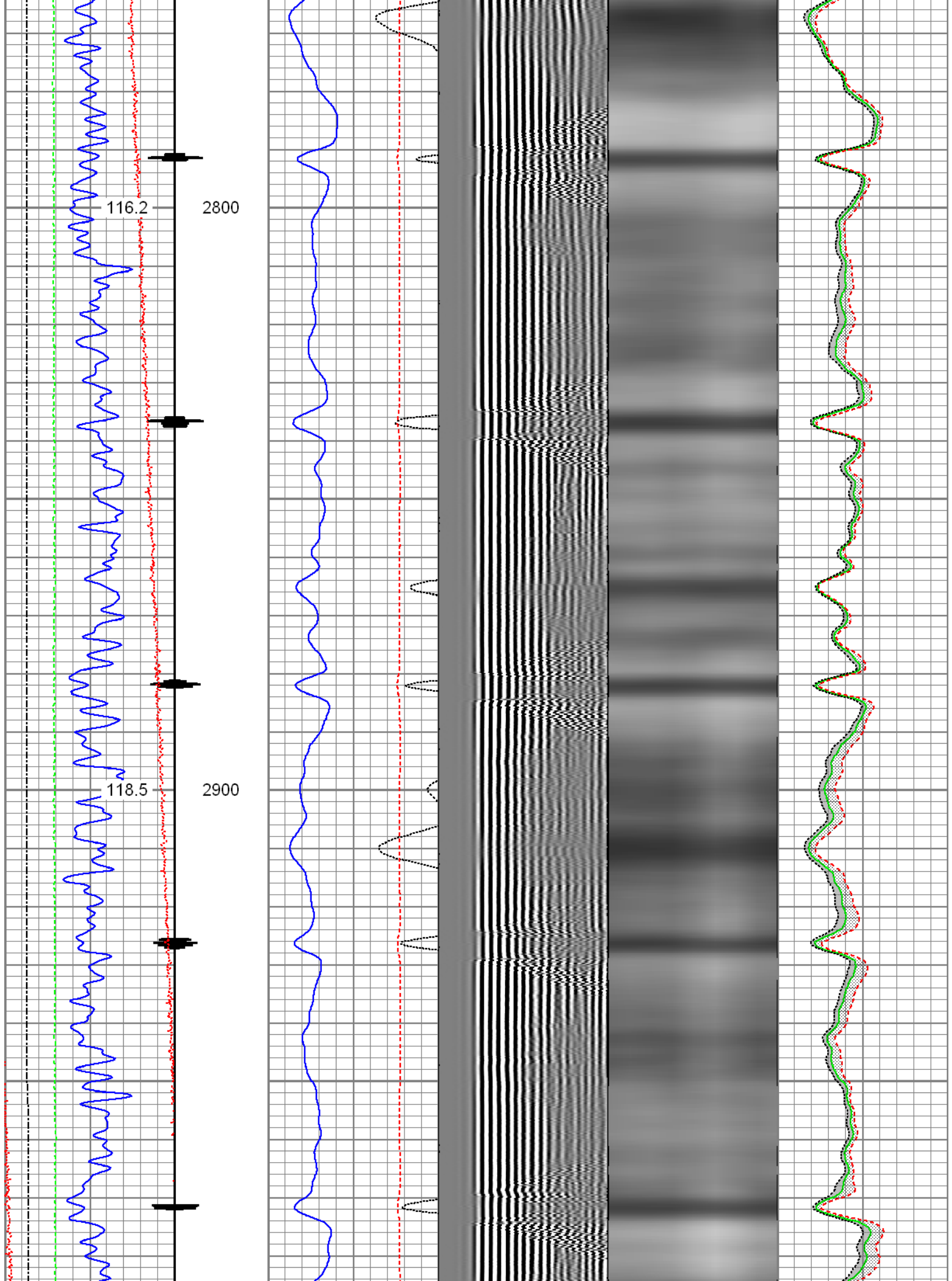




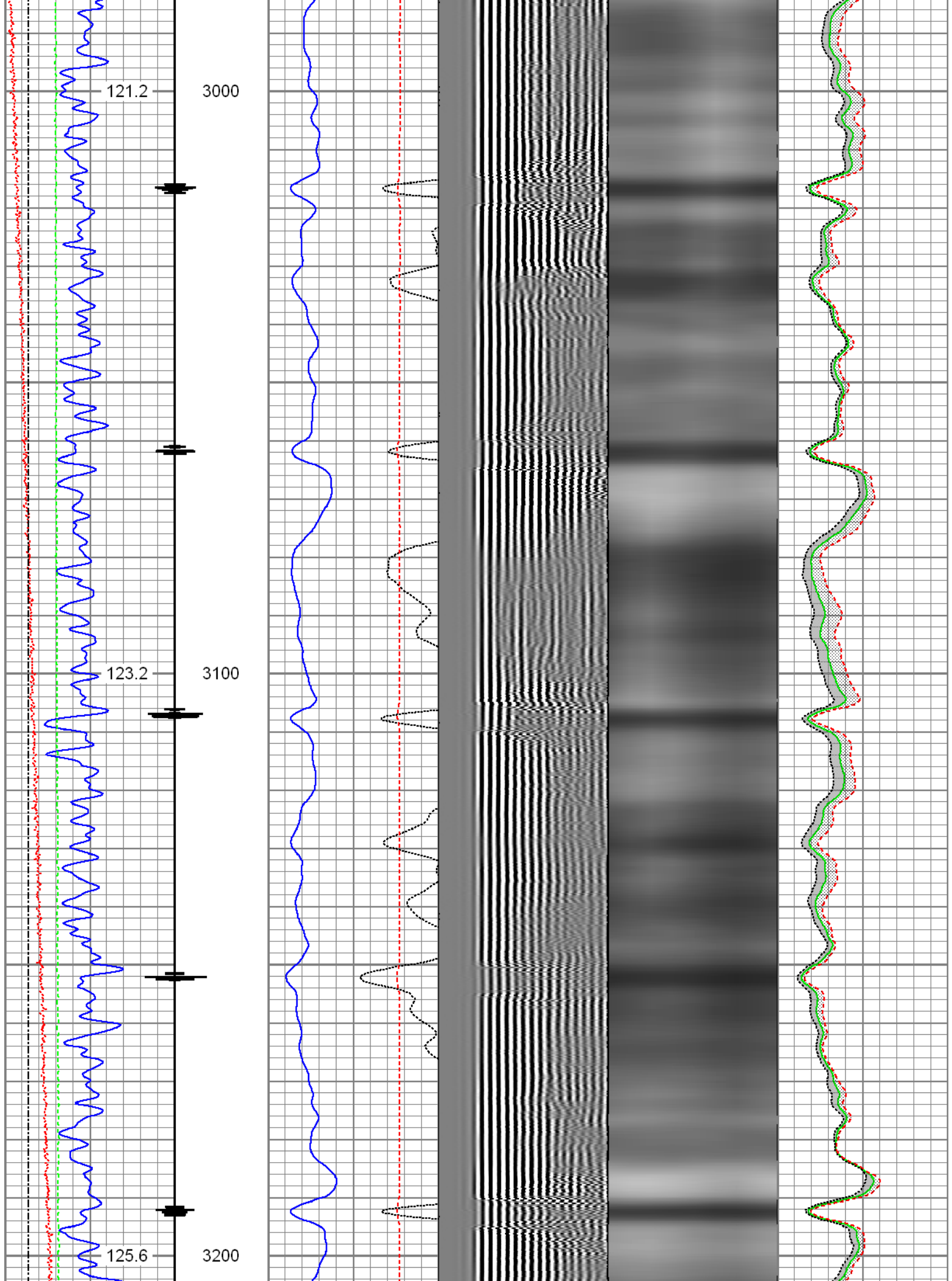




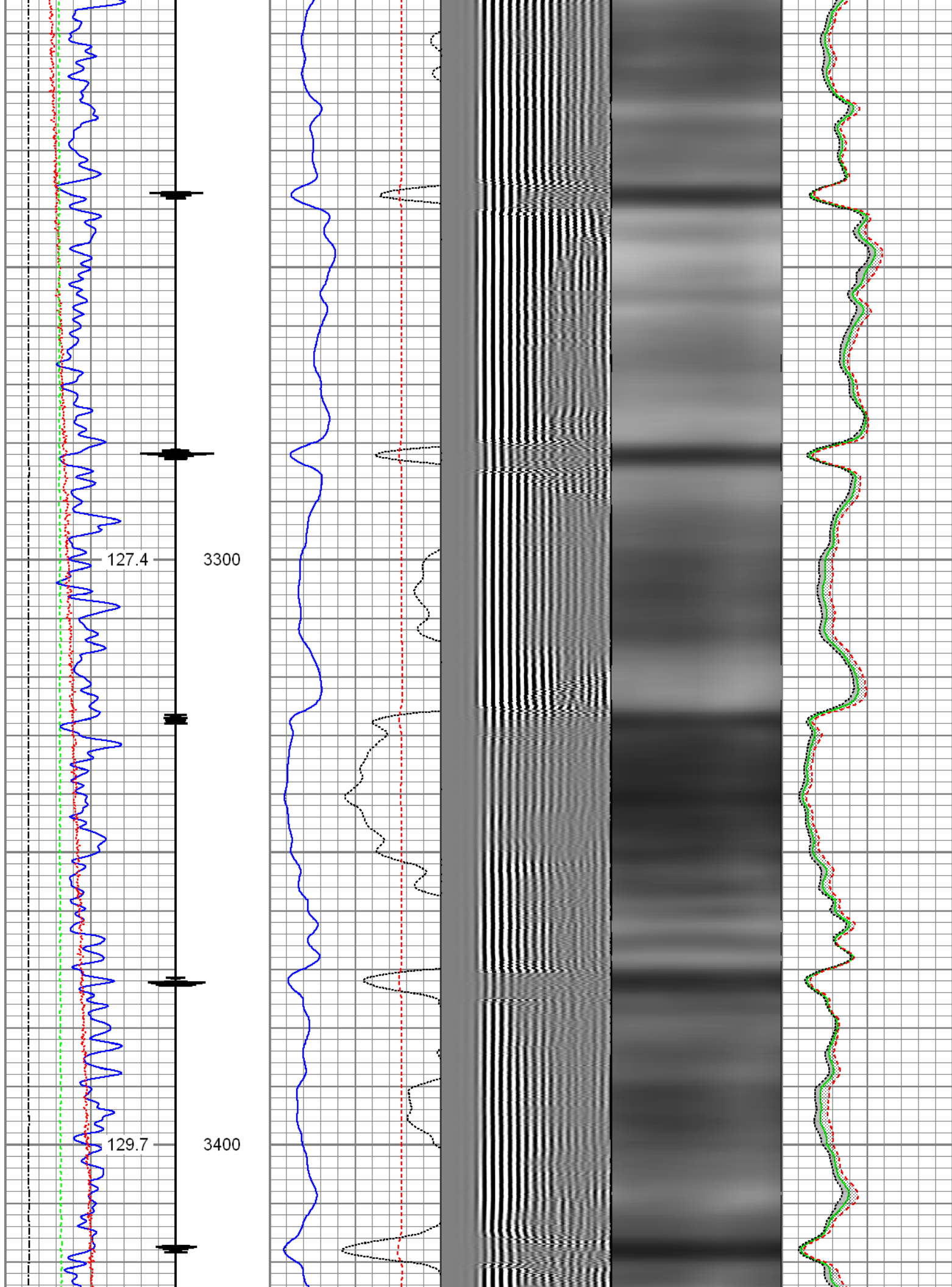


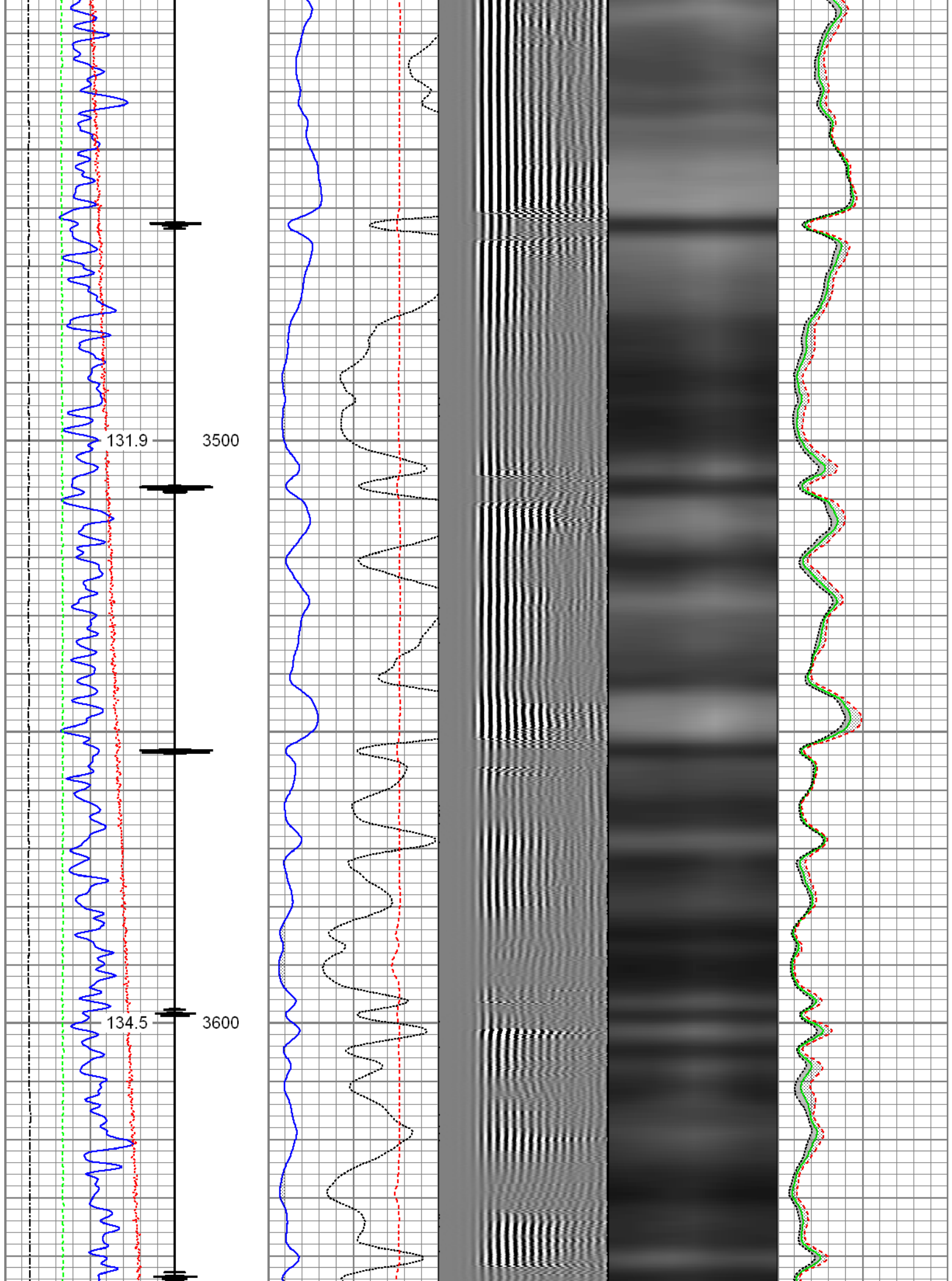


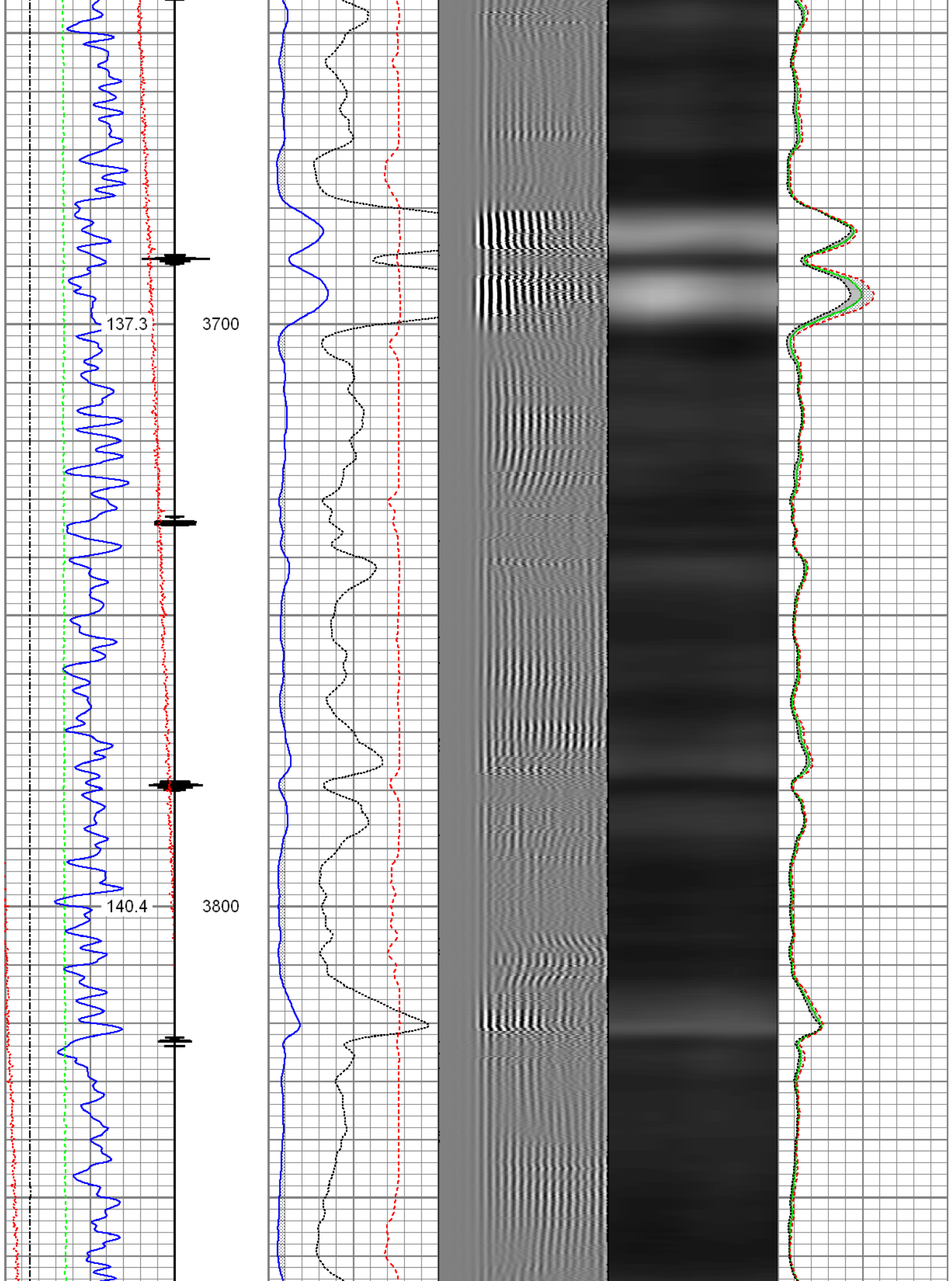


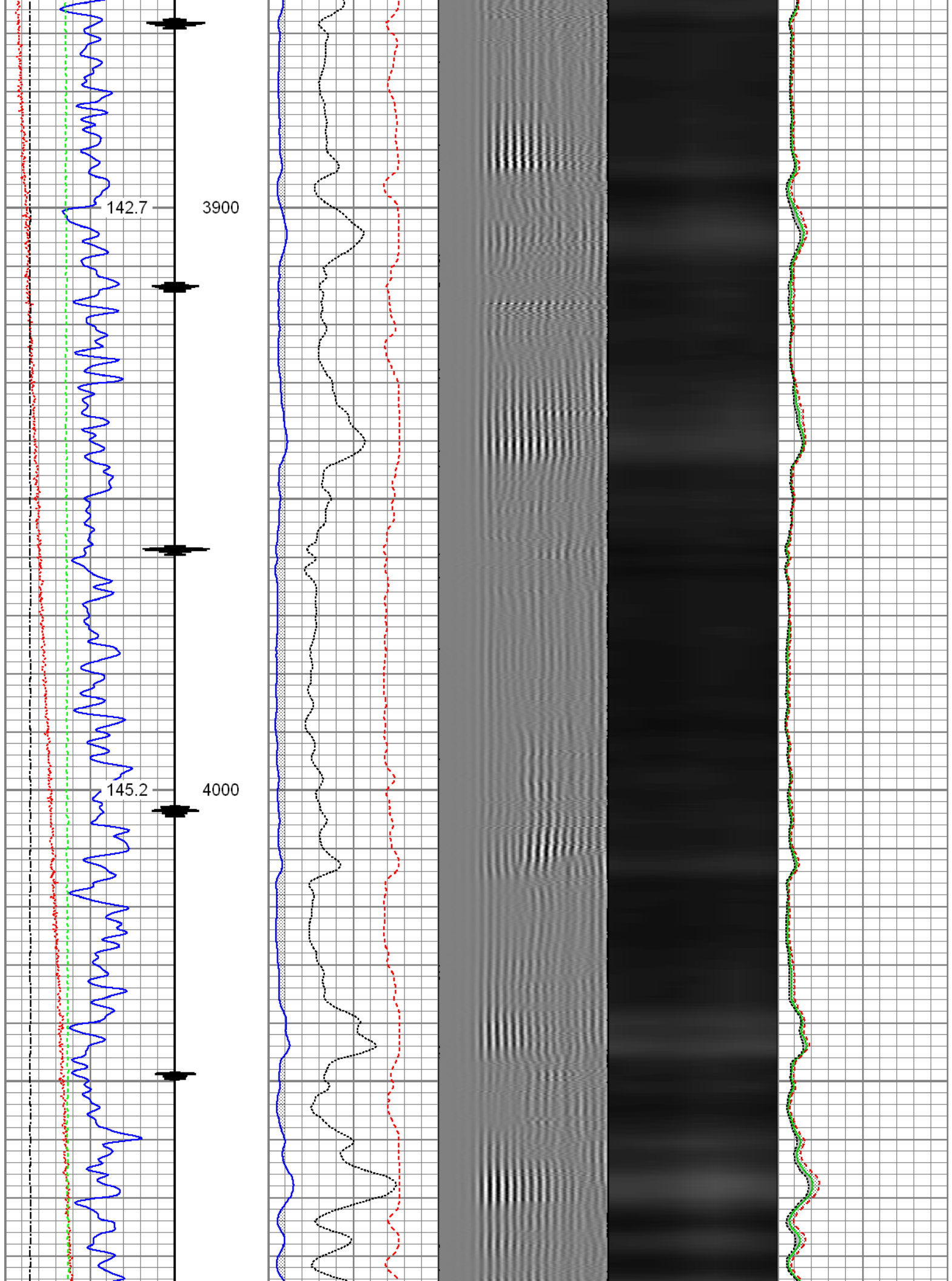




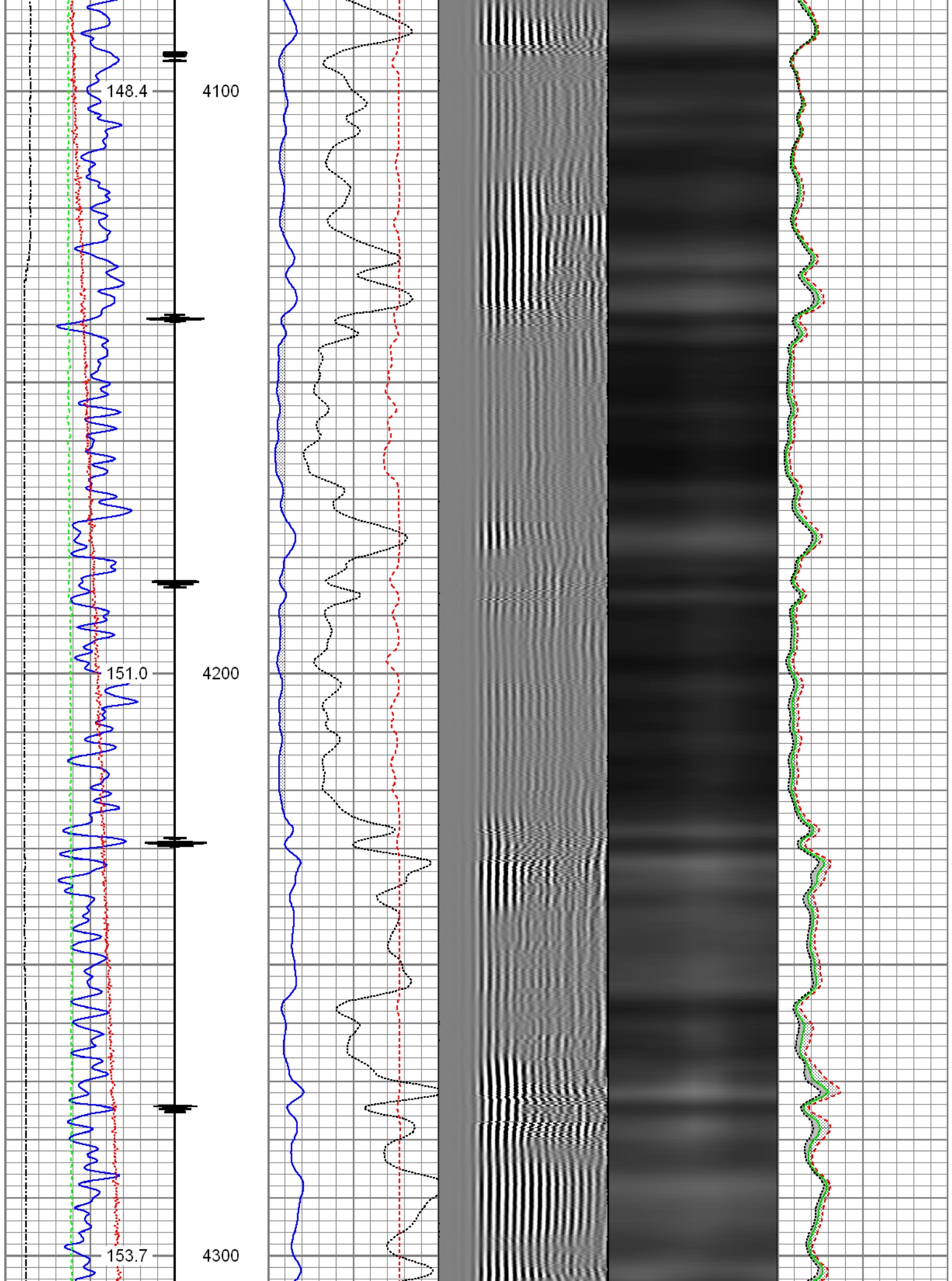


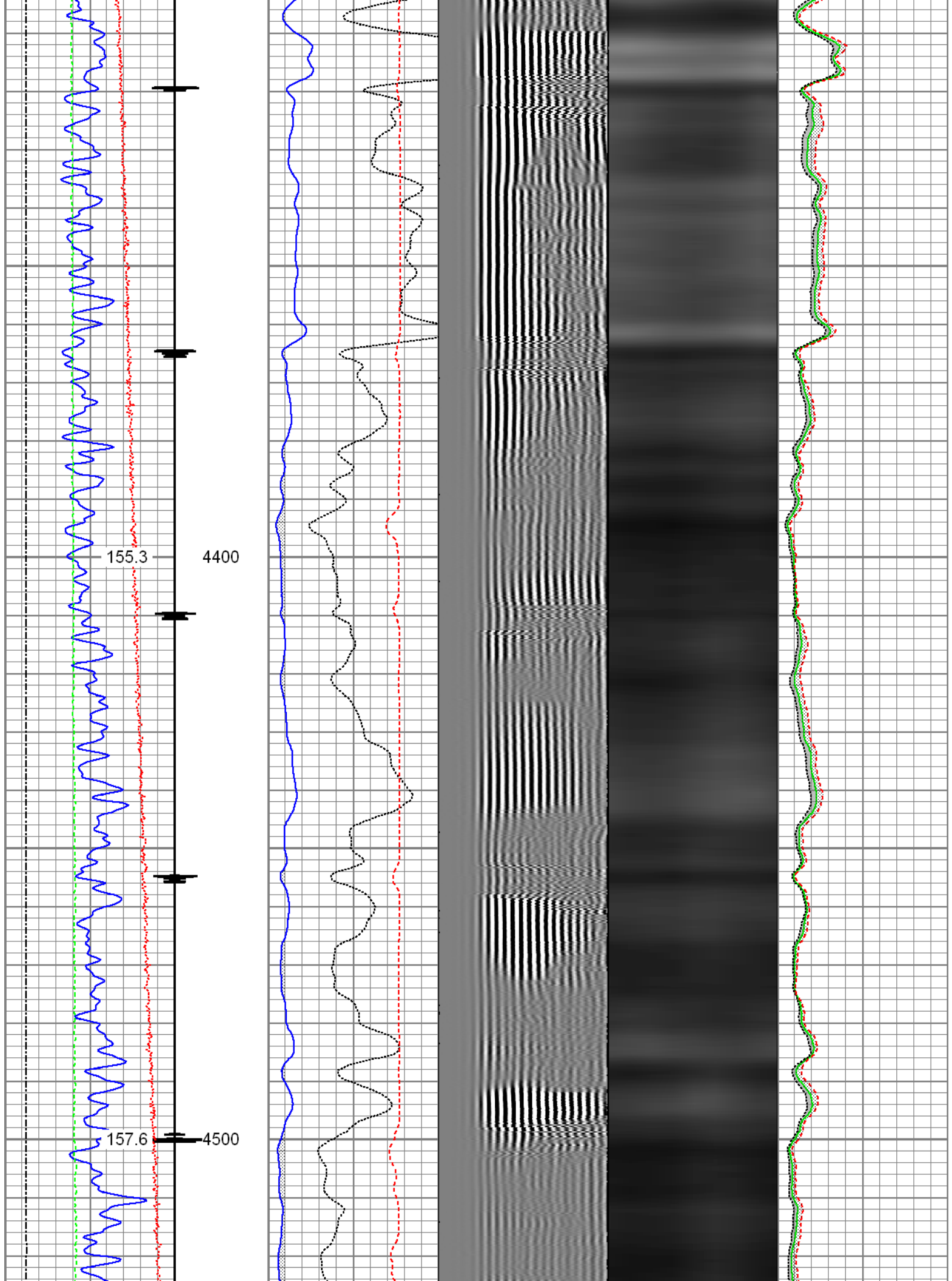


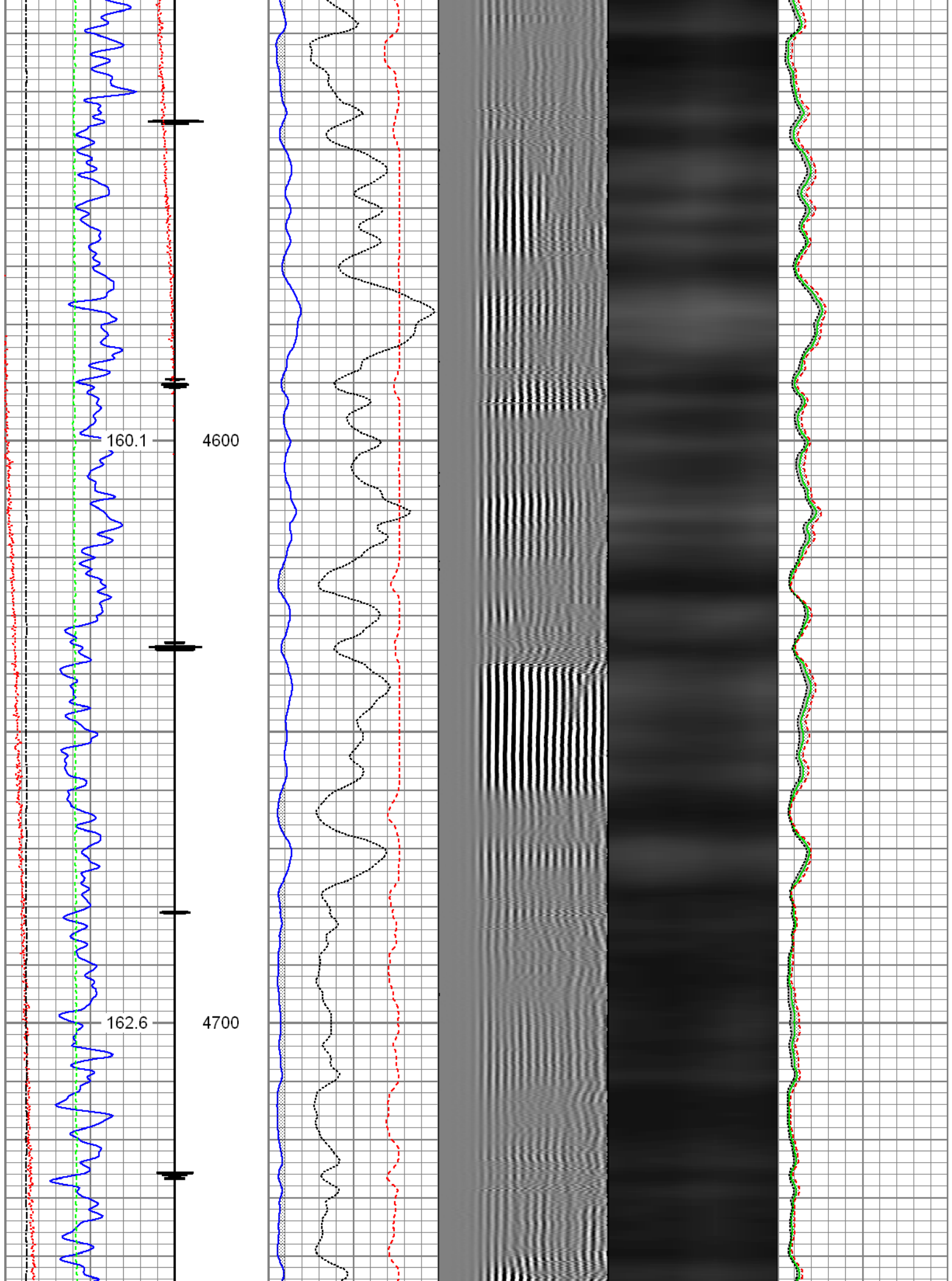


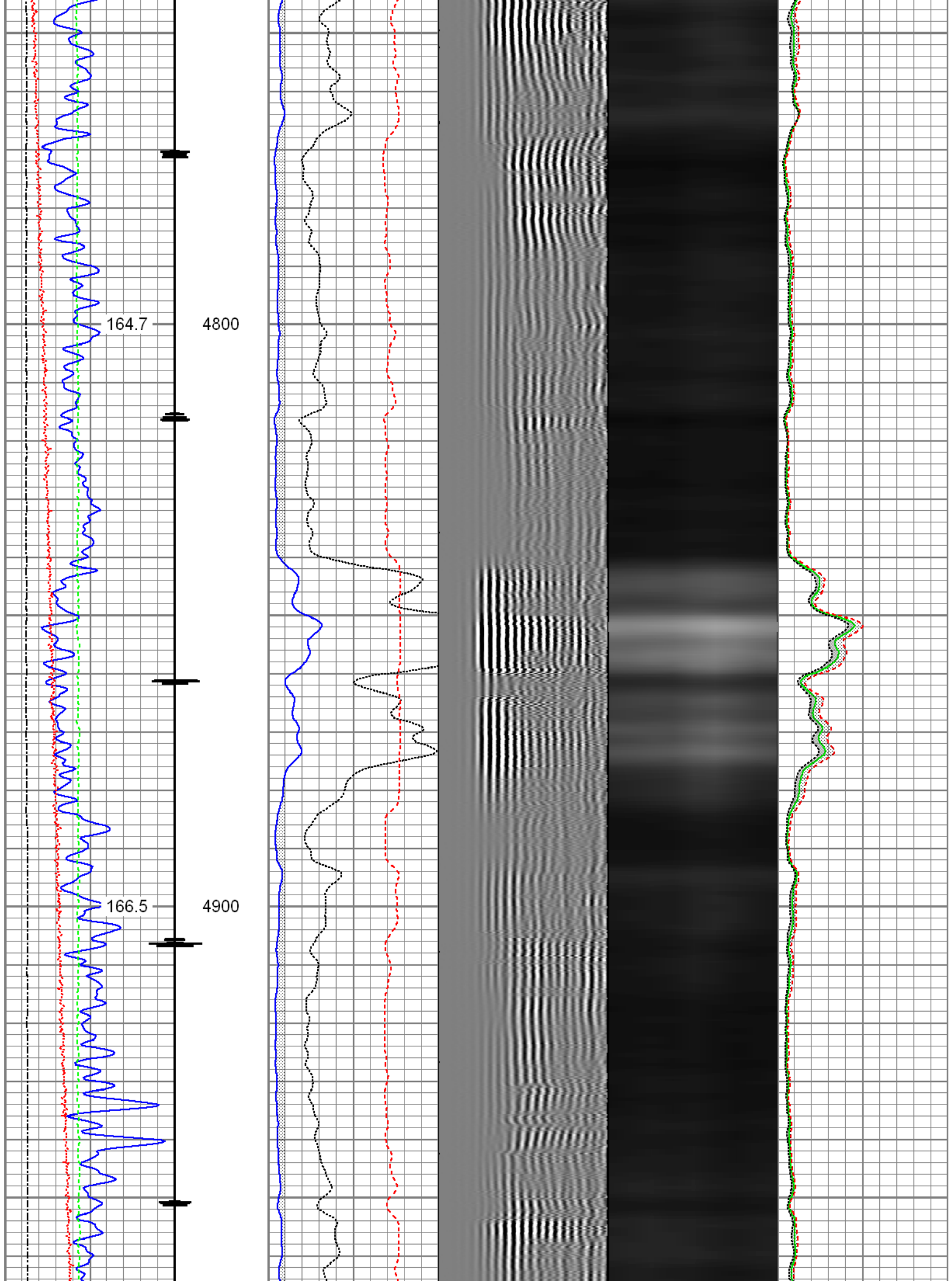




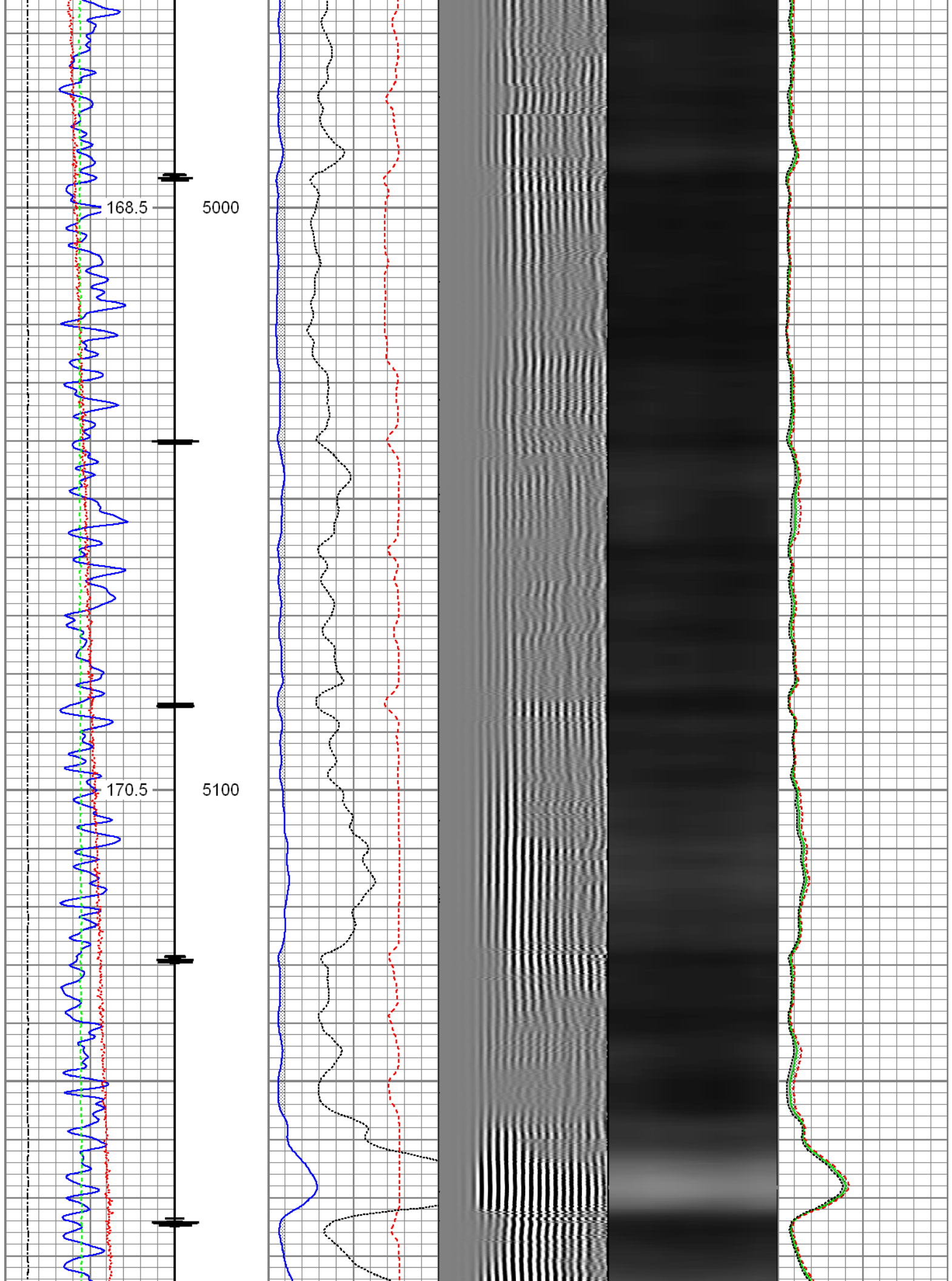


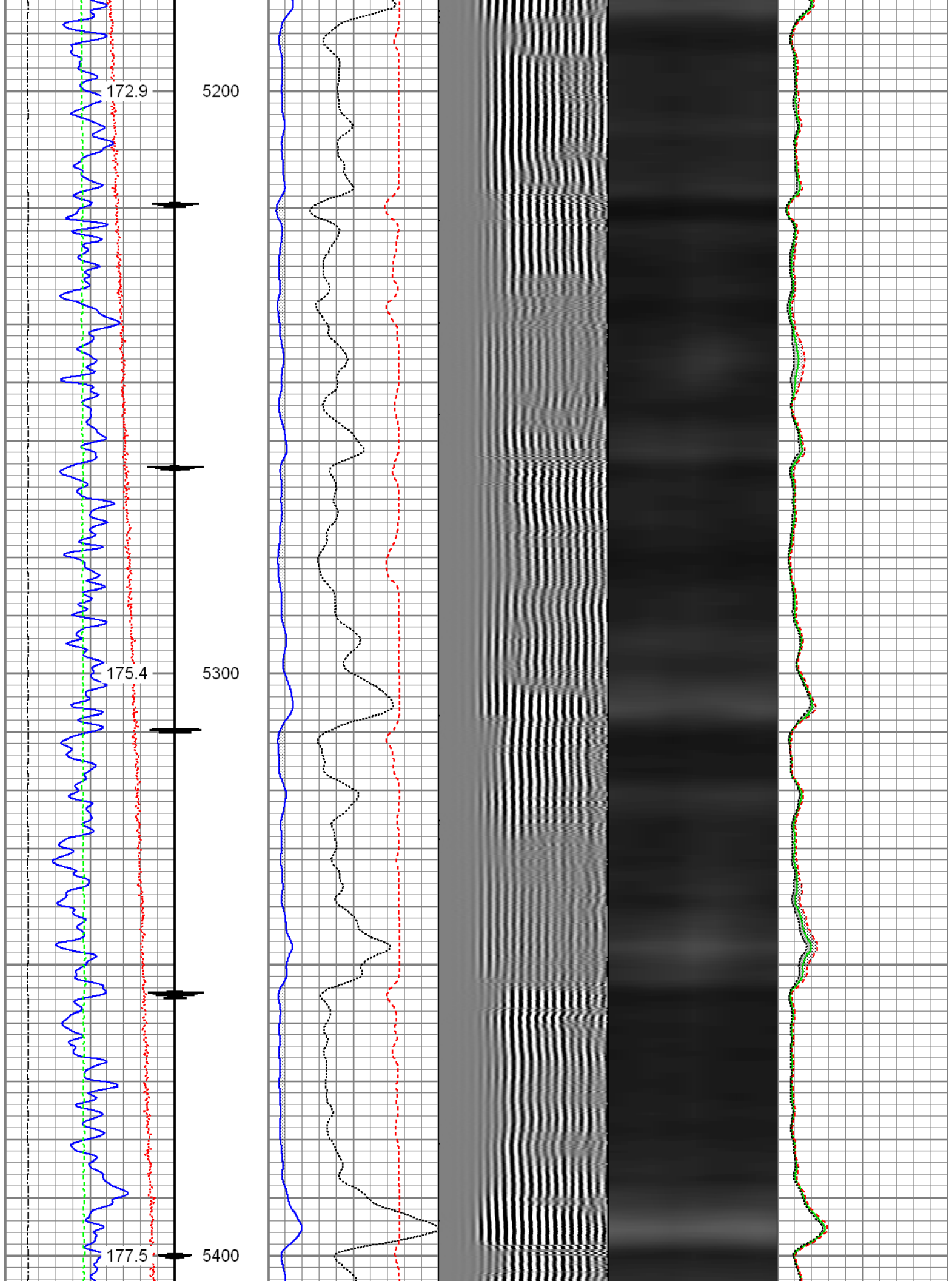


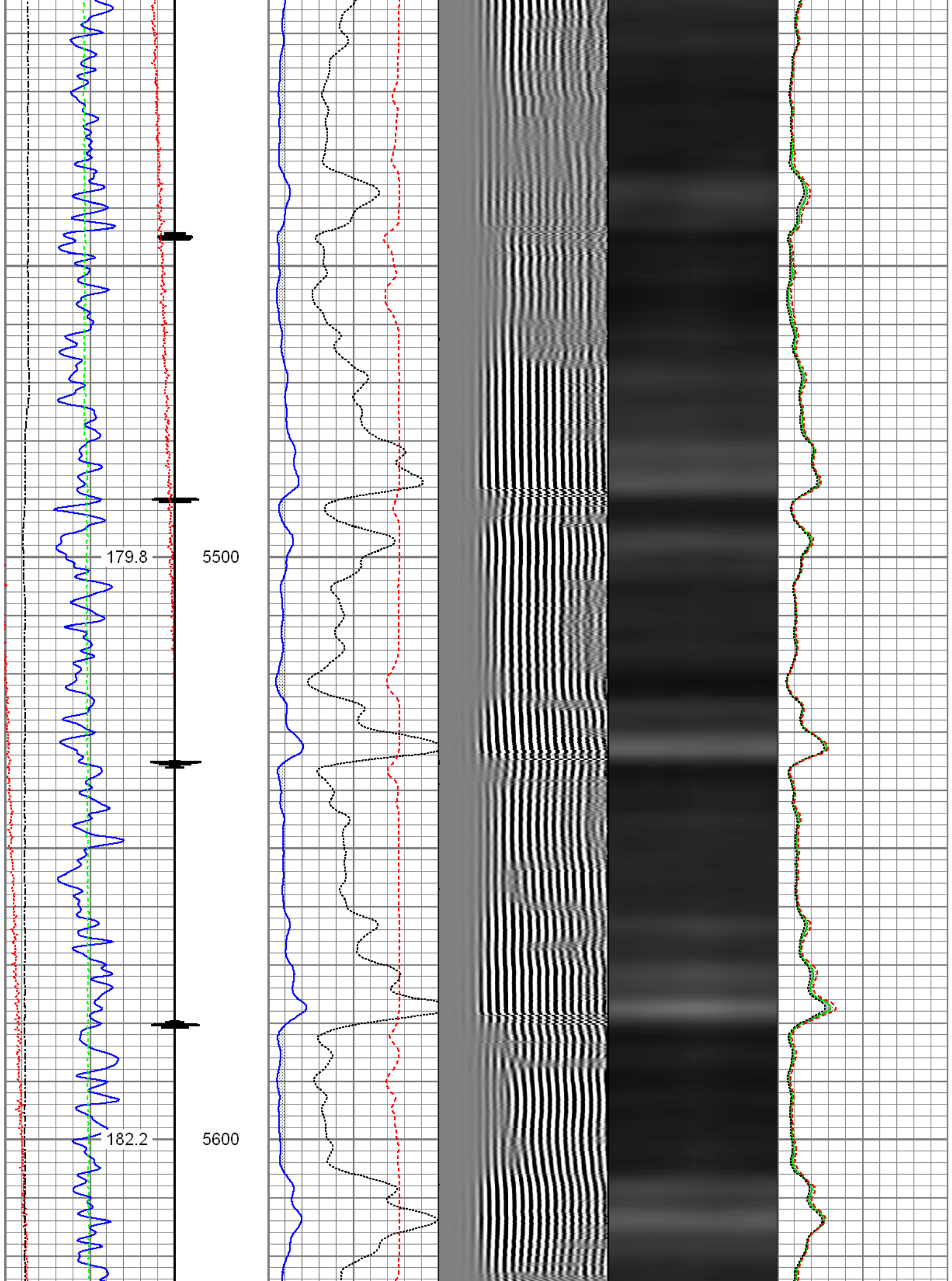


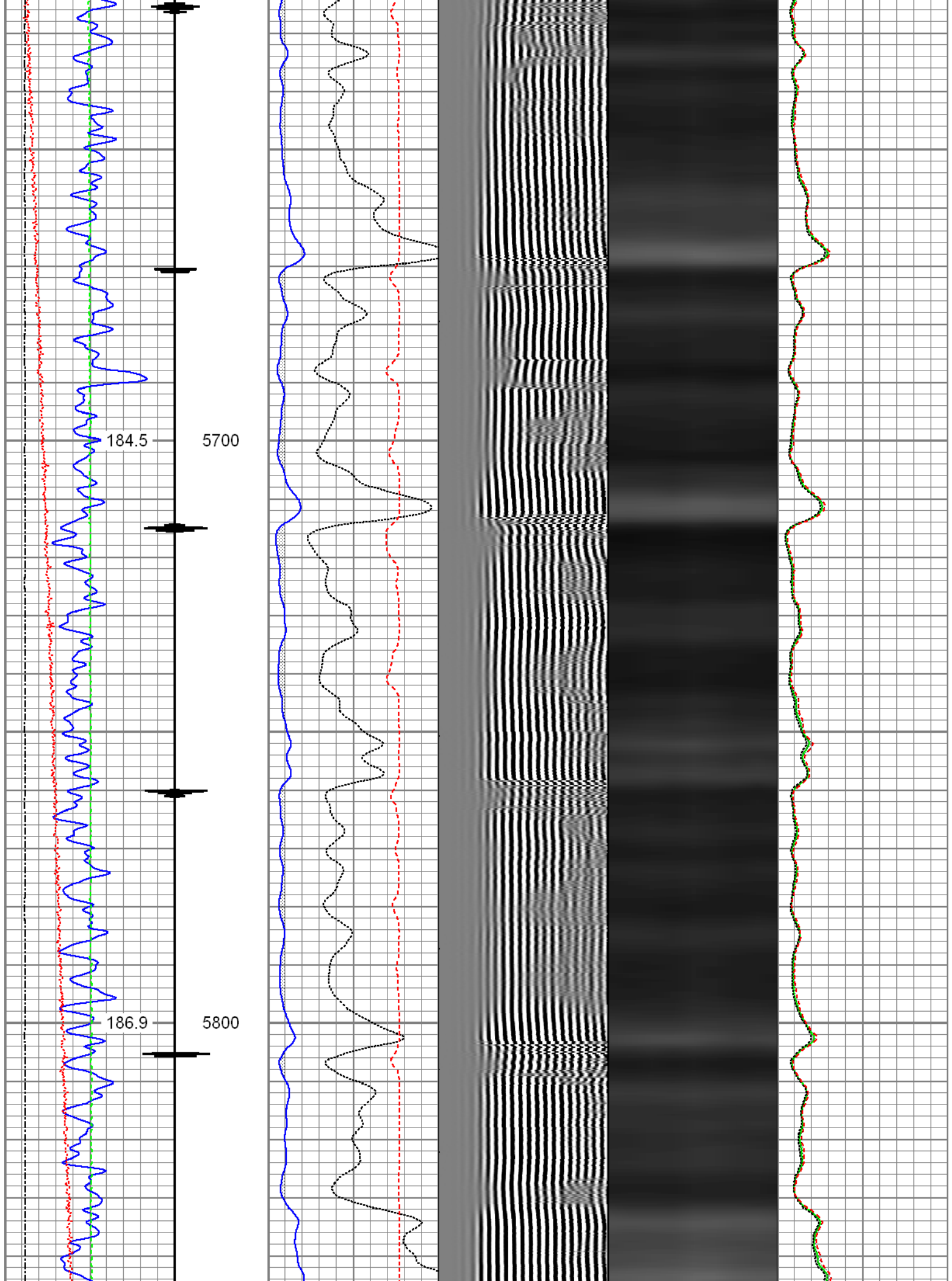




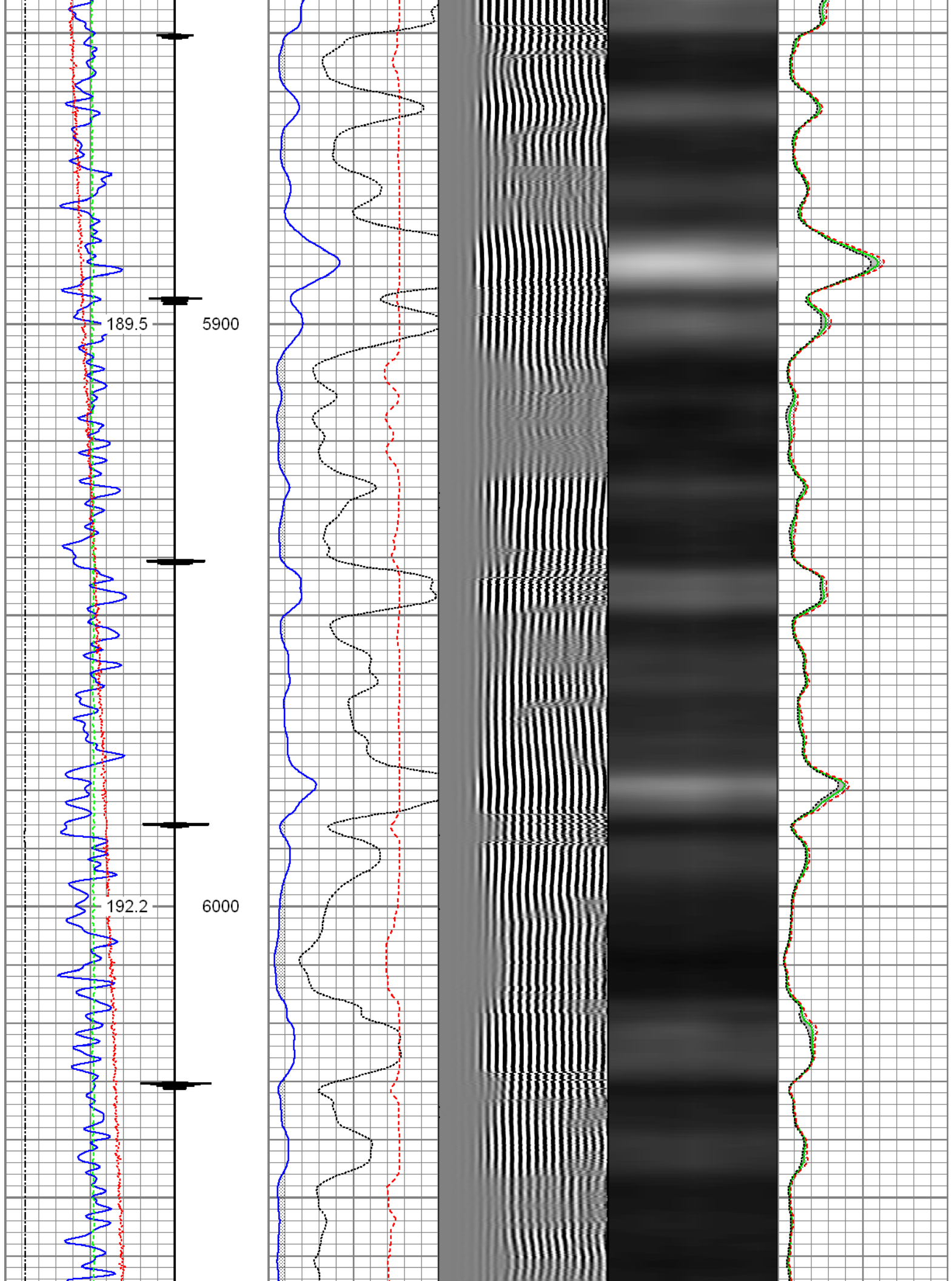


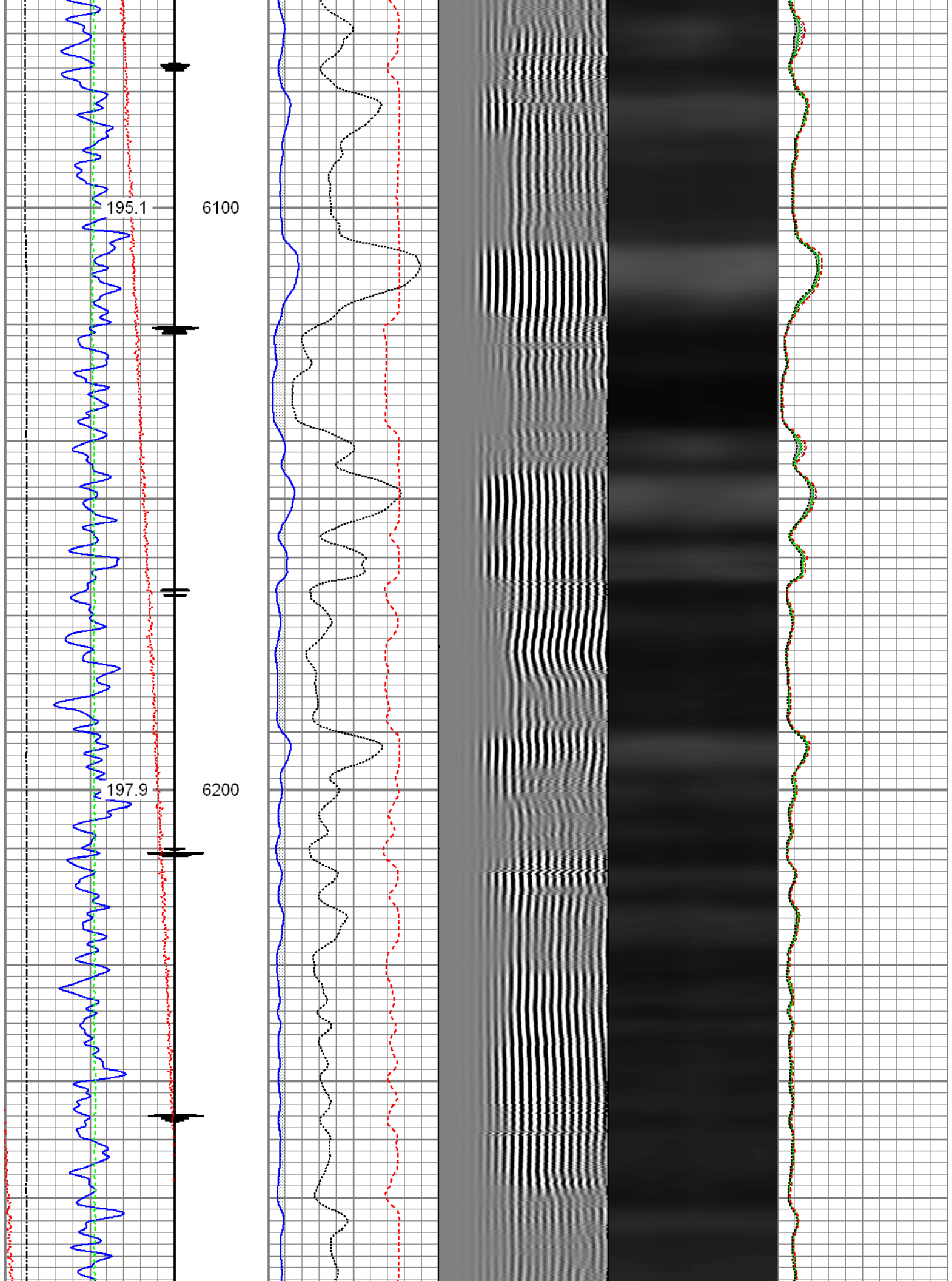


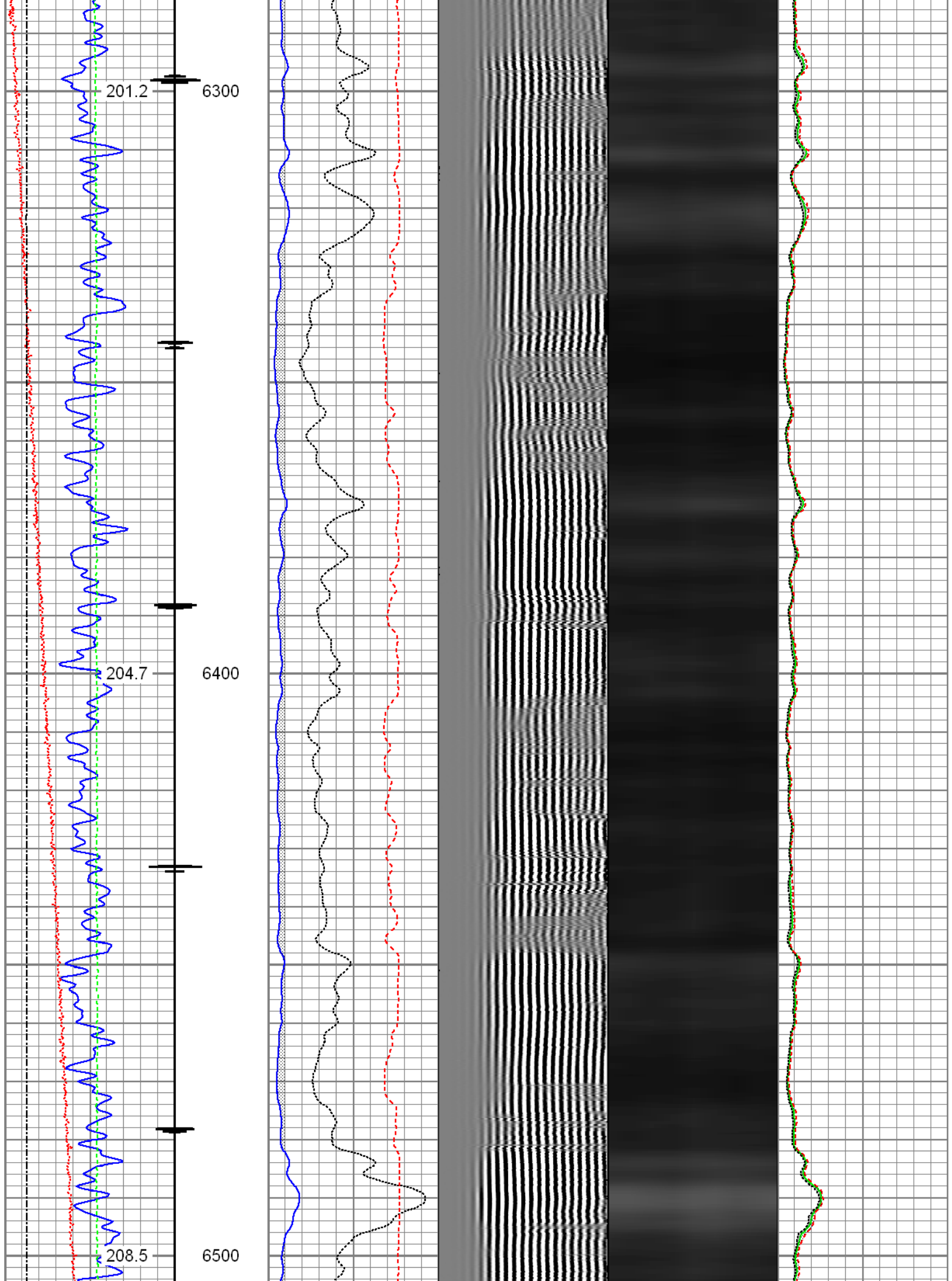


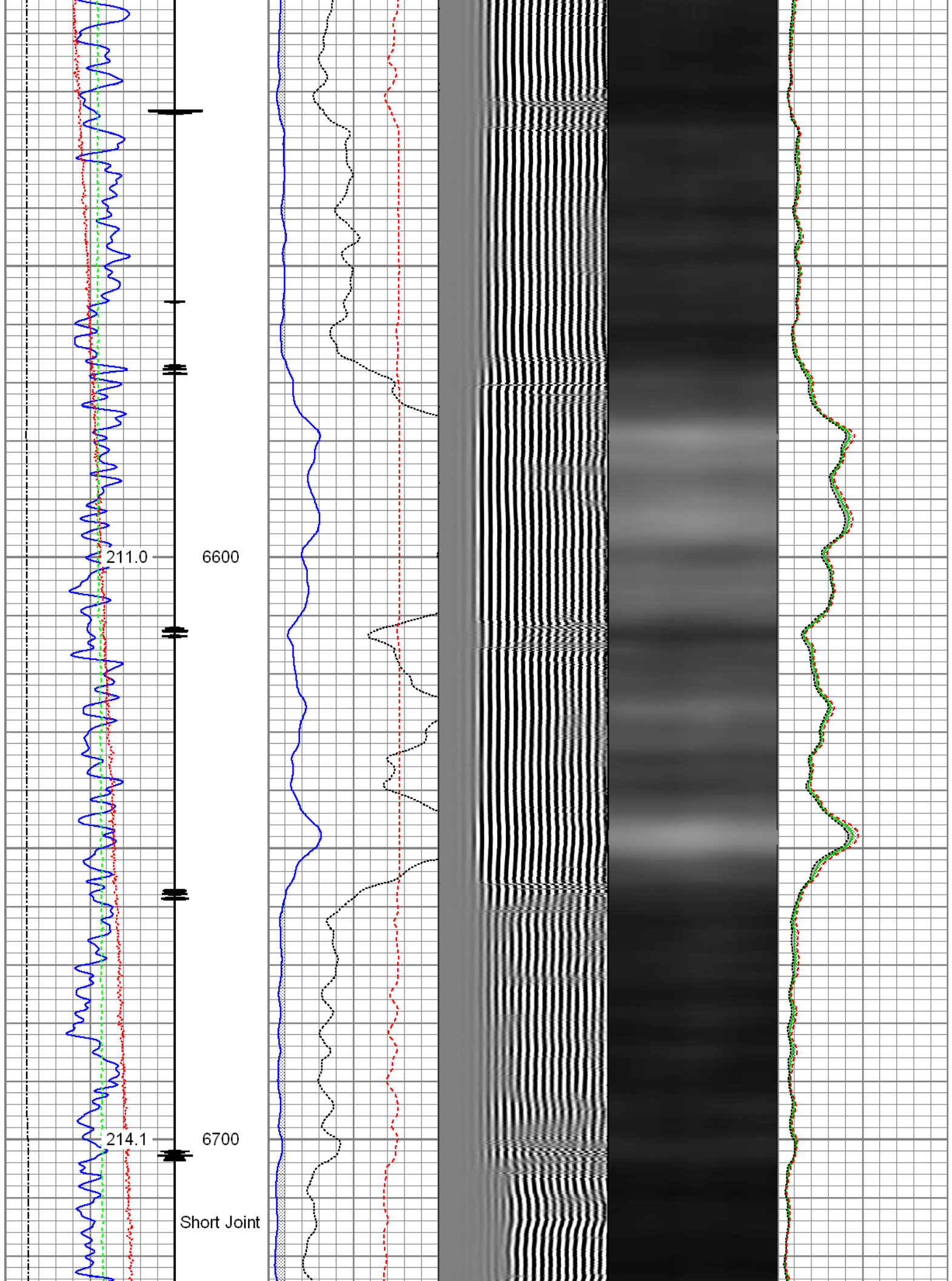




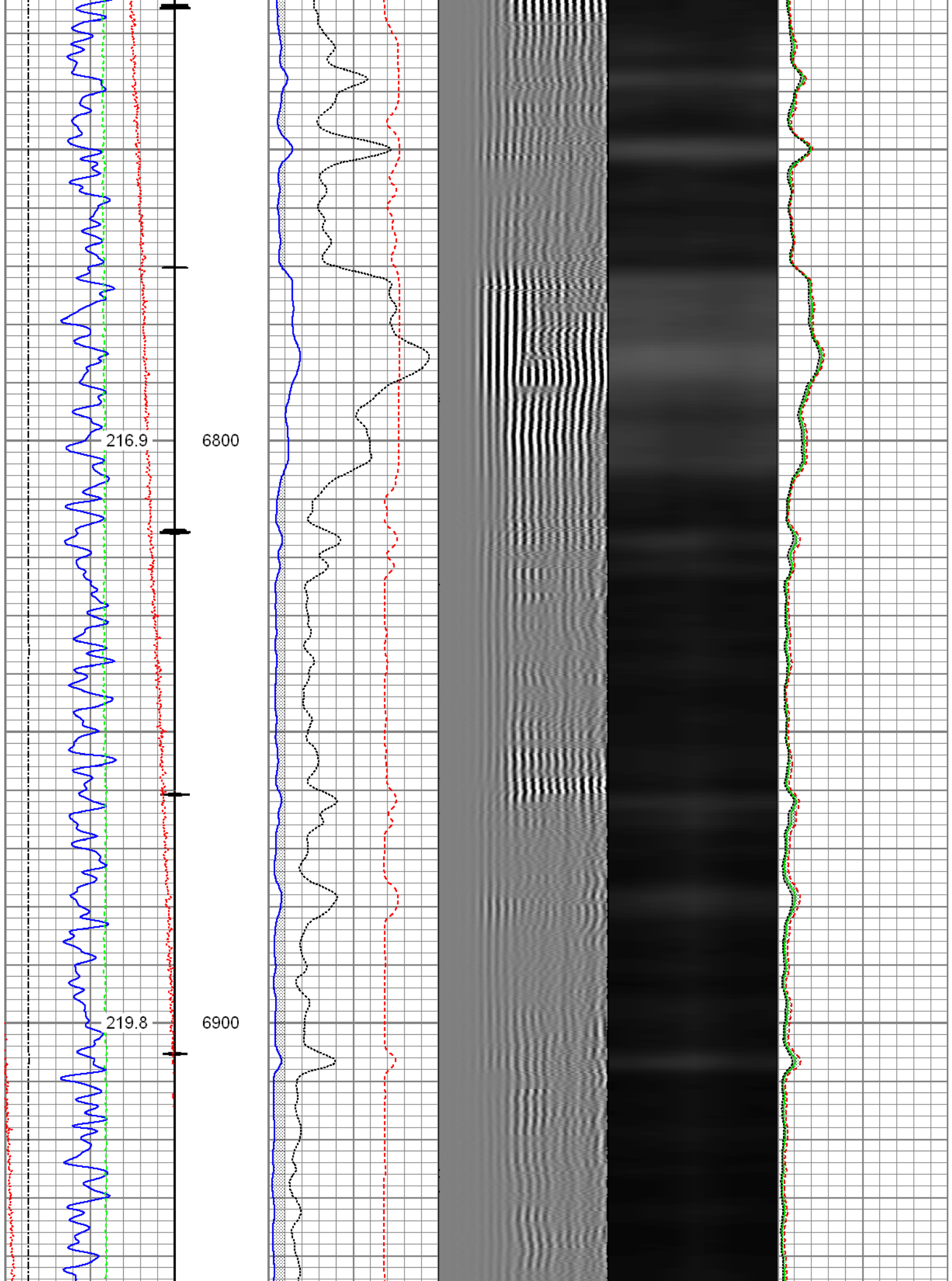


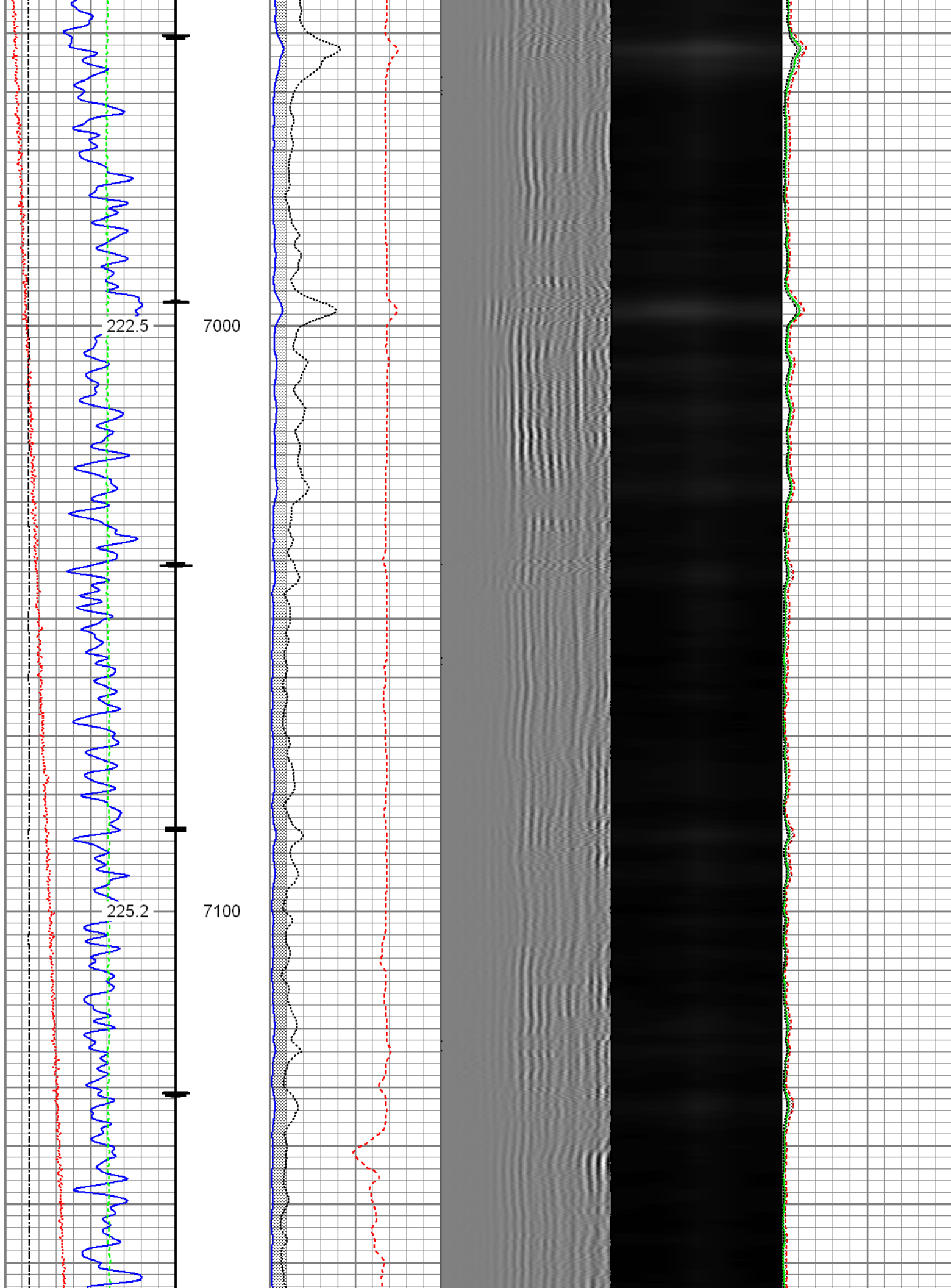


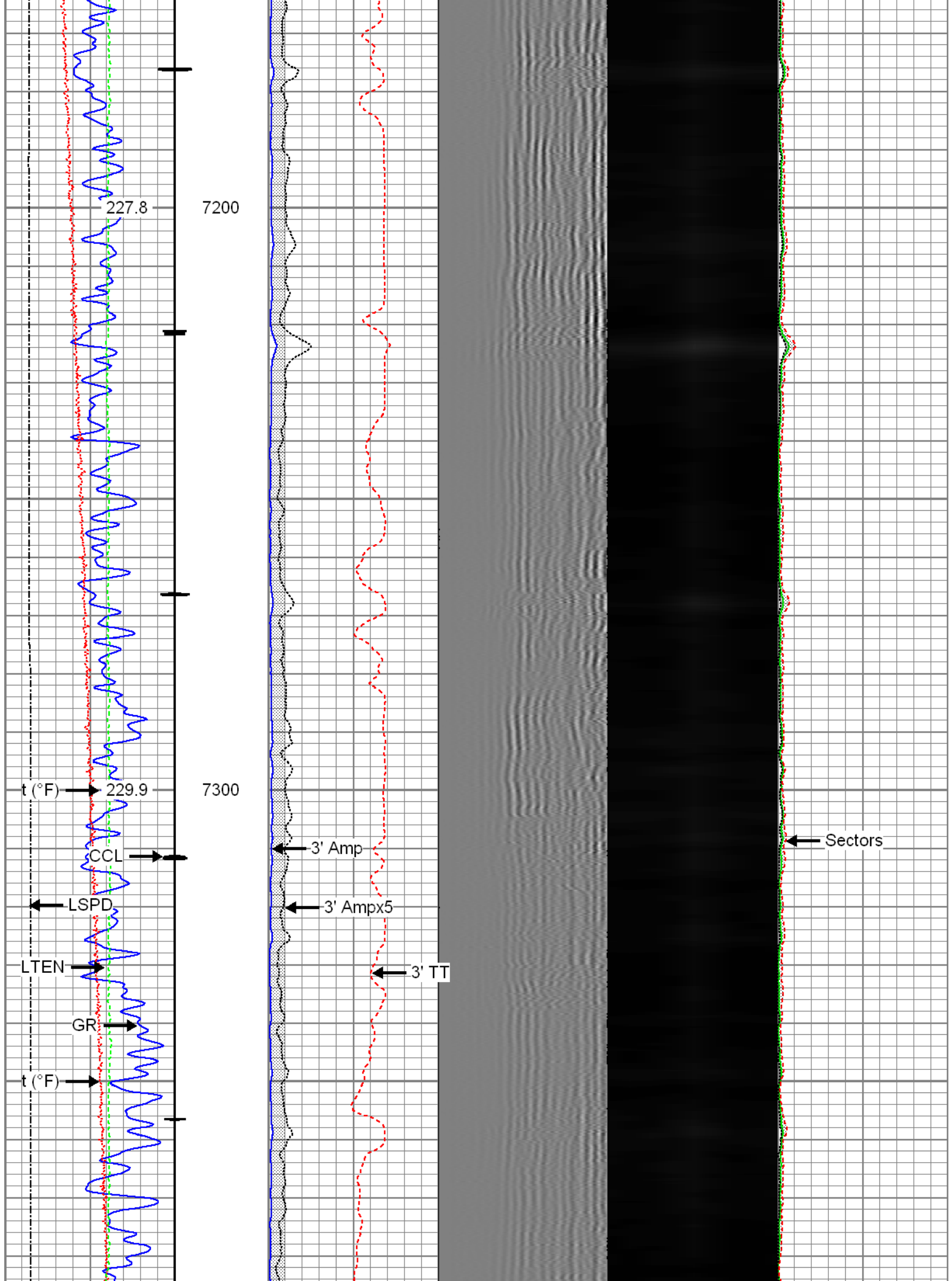


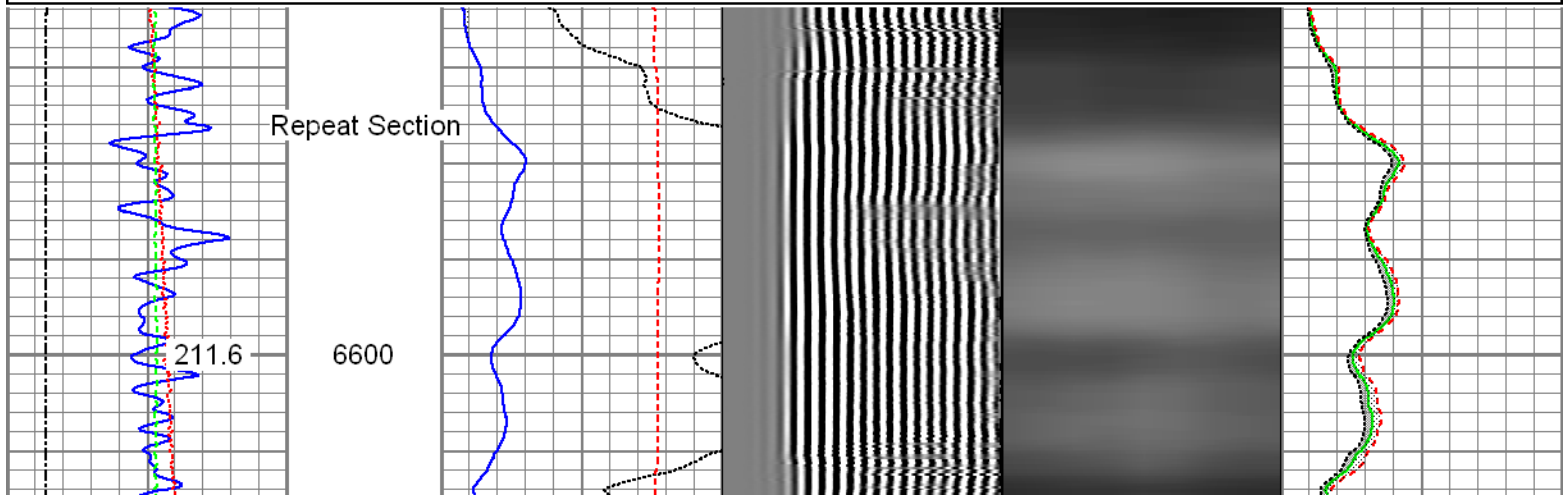
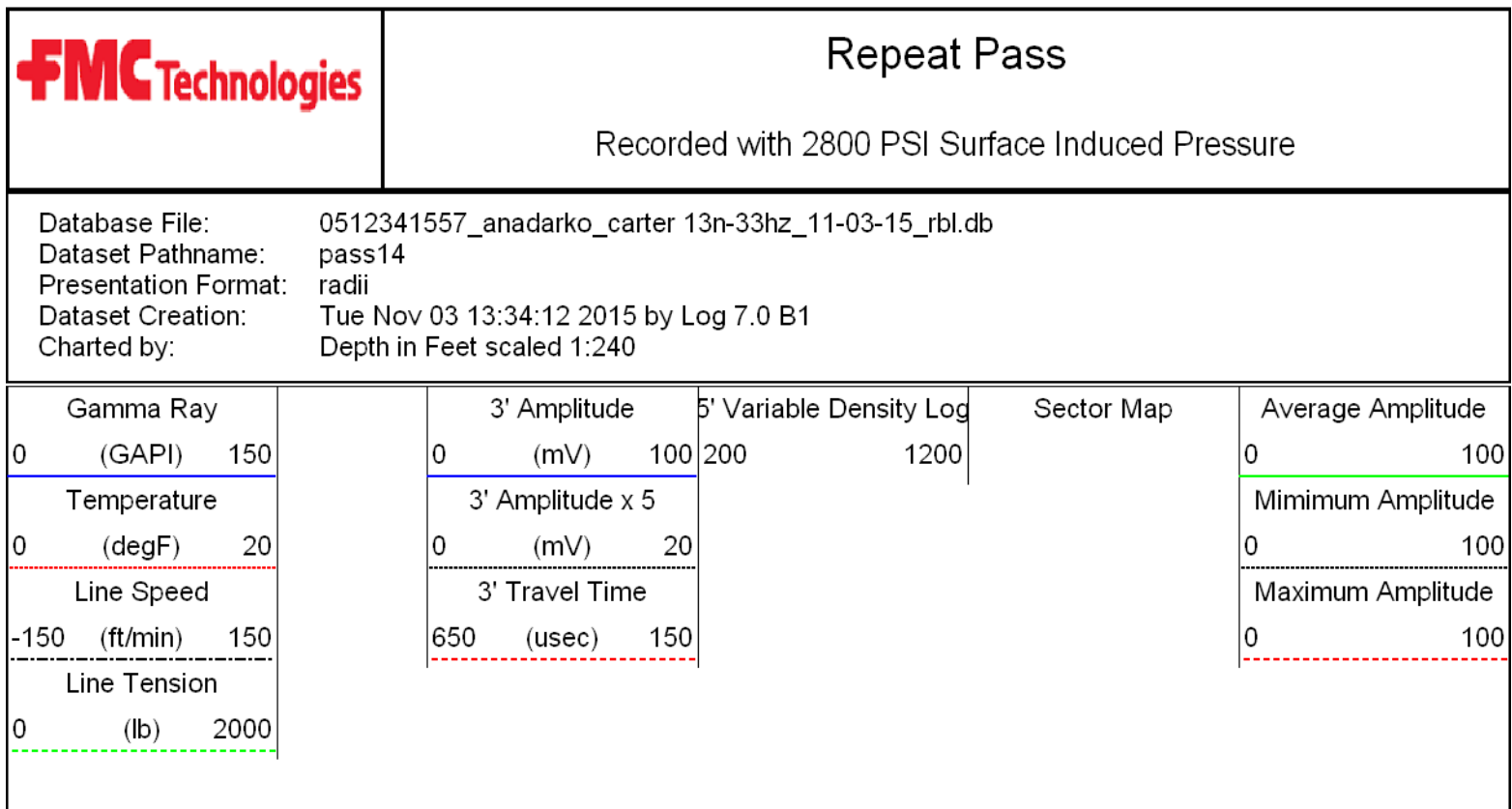
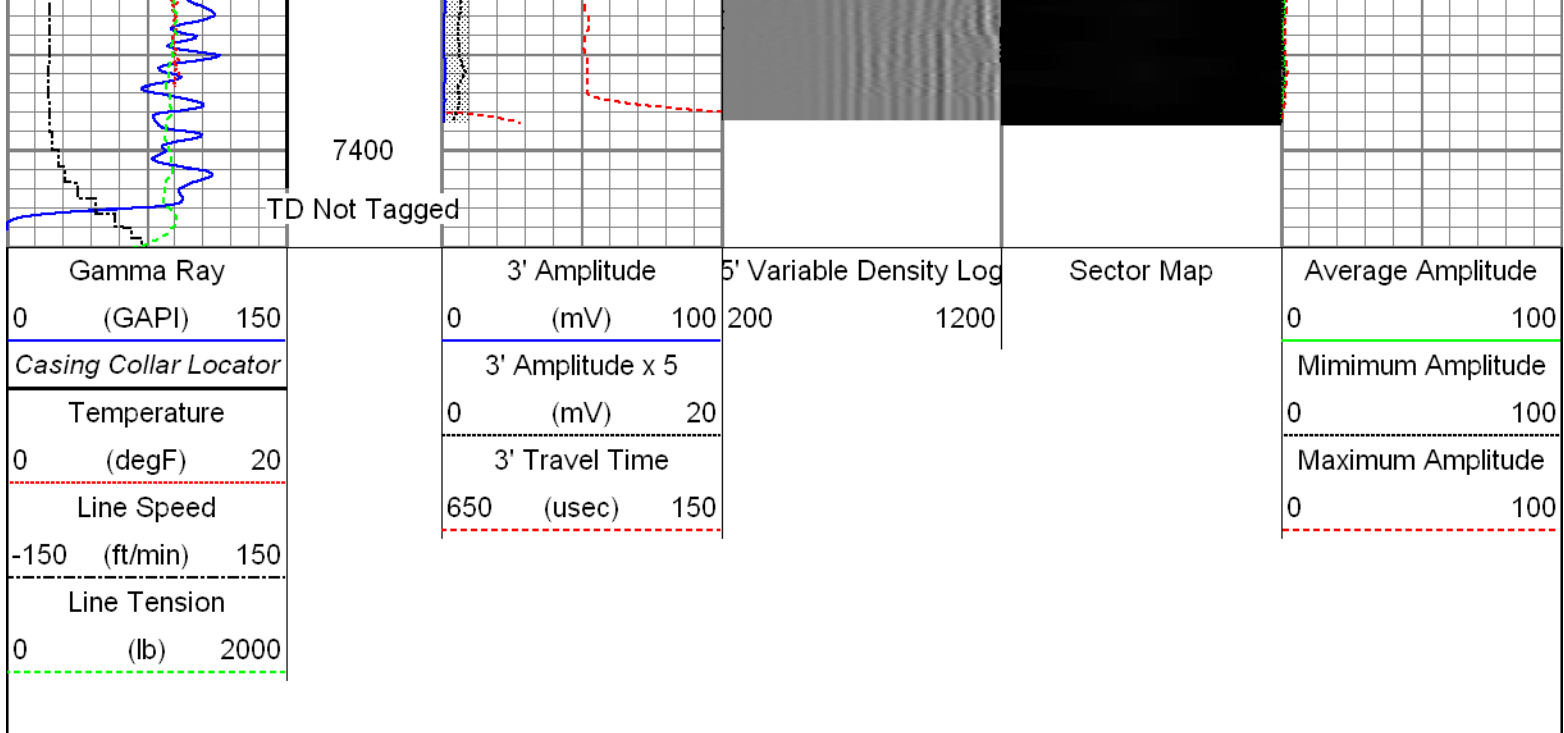




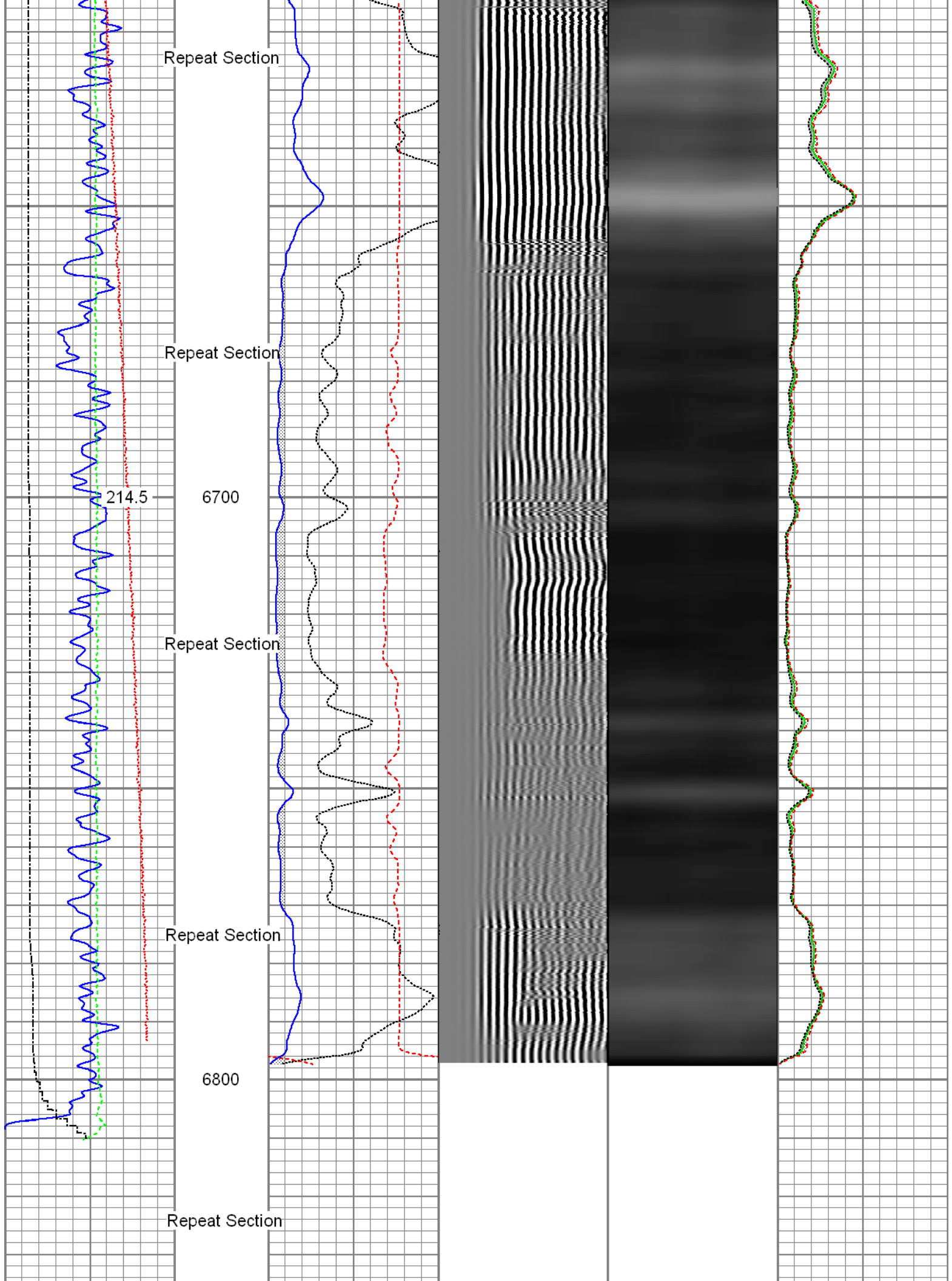






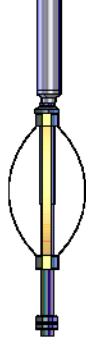






Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 150	0 (mV) 100	200 1200		0 100
Temperature	3' Amplitude x 5			Mimimum Amplitude
0 (degF) 20	0 (mV) 20			0 100
Line Speed	3' Travel Time			Maximum Amplitude
-150 (ft/min) 150	650 (usec) 150			0 100
Line Tension				
0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

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
HeadVolt	19.49		T_CH14375_1_GO Titan 1-7/16" Assembled Electric Cable Head with 1" Fishing Neck	1.03	1.44	4.00
			Probe_IL_BS_Cent Probe 2-3/4" Inline Electrical Inline Bowspring Centralizer	2.88	2.75	10.00
Temp	16.72					
WVF3FT	14.55		Probe_RADII-C-2-3/4" (FW1302-002) Probe 2-3/4" Sector Cement Bond Tool with Temperature Probe	9.19	2.75	105.00
WVFCAL	14.55					
WVFS1	14.55					
WVFS2	14.55					
WVFS3	14.55					
WVFS4	14.55					
WVFS5	14.55					
WVFS6	14.55					
WVFS7	14.55					
WVFS8	14.55					
WVF5FT	13.55					
CCL DCCL	6.51		Probe_IL_BS_Cent Probe 2-3/4" Inline Electrical Inline Bowspring Centralizer	2.88	2.75	10.00
	6.51		Probe_CCL_GR-2.75"Digital (FW1211-081) Probe 2-3/4" Digital CCL / Gamma Ray Combined	4.54	2.75	55.00

GR	3.77		Probe_IL_BS_Cent Probe 2-3/4" Inline Electrical Inline Bowspring Centralizer	2.88	2.75	10.00
Dataset: 0512341557_Anadarko_Carter 13N-33HZ_11-03-15_RBL.db: field/well/run1/pass16 Total Length: 23.40 ft Total Weight: 194.00 lb O.D. 2.75 in						

Calibration Report	
Database File:	0512341557_Anadarko_Carter 13N-33HZ_11-03-15_RBL.db
Dataset Pathname:	pass16
Dataset Creation:	Tue Nov 03 13:43:10 2015 by Log 7.0 B1

Gamma Ray Calibration Report		
Serial Number:	FW1211-081	
Tool Model:	2.75"Digital	
Performed:	Tue Oct 27 08:03:11 2015	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.6300	GAPI/cps

Segmented Cement Bond Log Calibration Report		
Serial Number:	FW1302-002	
Tool Model:	2-3/4"	
Calibration Casing Diameter:	5.500	in
Calibration Depth:	60.791	ft


Master Calibration, performed Tue Nov 03 11:03:13 2015:						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.001	0.716	0.800	71.921	99.168	0.938
CAL	0.802	0.809				
5'	-0.001	0.630	0.800	71.921	112.776	0.866
SUM						
S1	-0.003	0.692	0.000	100.000	143.997	0.422
S2	-0.001	0.653	0.000	100.000	152.859	0.121
S3	-0.001	0.649	0.000	100.000	153.829	0.101
S4	-0.001	0.677	0.000	100.000	147.585	0.104
S5	-0.001	0.733	0.000	100.000	136.322	0.087
S6	-0.001	0.779	0.000	100.000	128.156	0.152
S7	-0.001	0.792	0.000	100.000	126.143	0.120
S8	-0.001	0.759	0.000	100.000	131.655	0.121

Internal Reference Calibration, performed Wed Dec 31 17:00:00 1969:
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	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.802	0.809	1.000	0.000

Air Zero Calibration, performed Tue Nov 03 08:57:48 2015:

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

	Company	Kerr-McGee Oil & Gas Onshore, L.P.
	Well	Carter 13N-33HZ
	Field	Wattenberg
	County	Weld
	State	Colorado