

# Radial Cement Bond Gamma Ray Casing Collar Log

Company	Kerr-McGee Oil & Gas OnShore, L.P.		
Well	Alvin 1N-29HZ		
Field	Wattenberg		
County	Weld		
State	Colorado		
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Well	Alvin 1N-29HZ		
Field	Wattenberg		
County	Weld	State	Colorado
Location:	API # : 05-123-42208		
SEC 29 TWP 2N RGE 65W	Other Services		
	Gauge Ring		
	Elevation		
	Permanent Datum	Ground Level	Elevation
Log Measured From	Kelly Bushing	16 FT	
Drilling Measured From	Kelly Bushing		
		Elevation	K.B. 4924' D.F. 4923' G.L. 4908'

Date	24-Feb-2016
Run Number	Two
Depth Driller	12795 FT
Depth Logger	7490 FT
Bottom Logged Interval	7487 FT
Top Log Interval	Surface
Open Hole Size	7.875"
Type Fluid	Water
Density / Viscosity	8.34 lbm/gal
Max. Recorded Temp.	241°F
Estimated Cement Top	602 FT
Time Well Ready	ROA
Time Logger on Bottom	18:15
Equipment Number	HD-0361
Location	Fort Lupton, CO
Recorded By	Sam Hopper
Witnessed By	Levi McArthur

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	1895 FT		
Intermediate #1	5 1/2	17	---	Surface	12786 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 Top at 6444 FT  
 Adjusted log +4 FT to correlate with Marker Joint Top  
 Gauge Ring/Junk Basket ran to 7475 FT with no debris found  
 Log ran from as deep as possible to surface  
 Recorded 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 Surface Integrated Services.

Database File: c:\warrior\data\0512342208\_anadarko\_alvin 1n-29hz\_02-24-16\_rb\0512342208\_anadarko\_alvin 1n-2

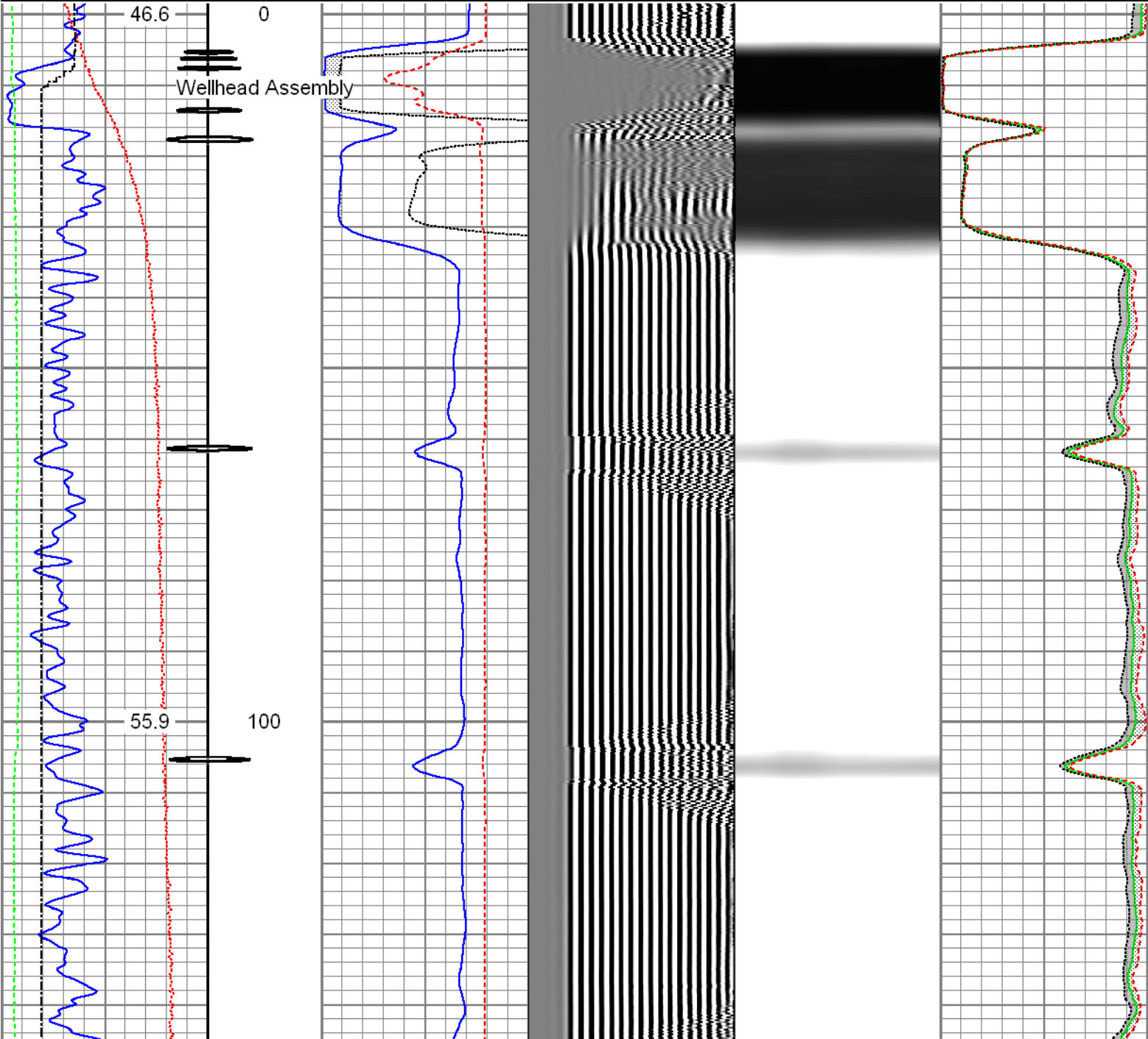
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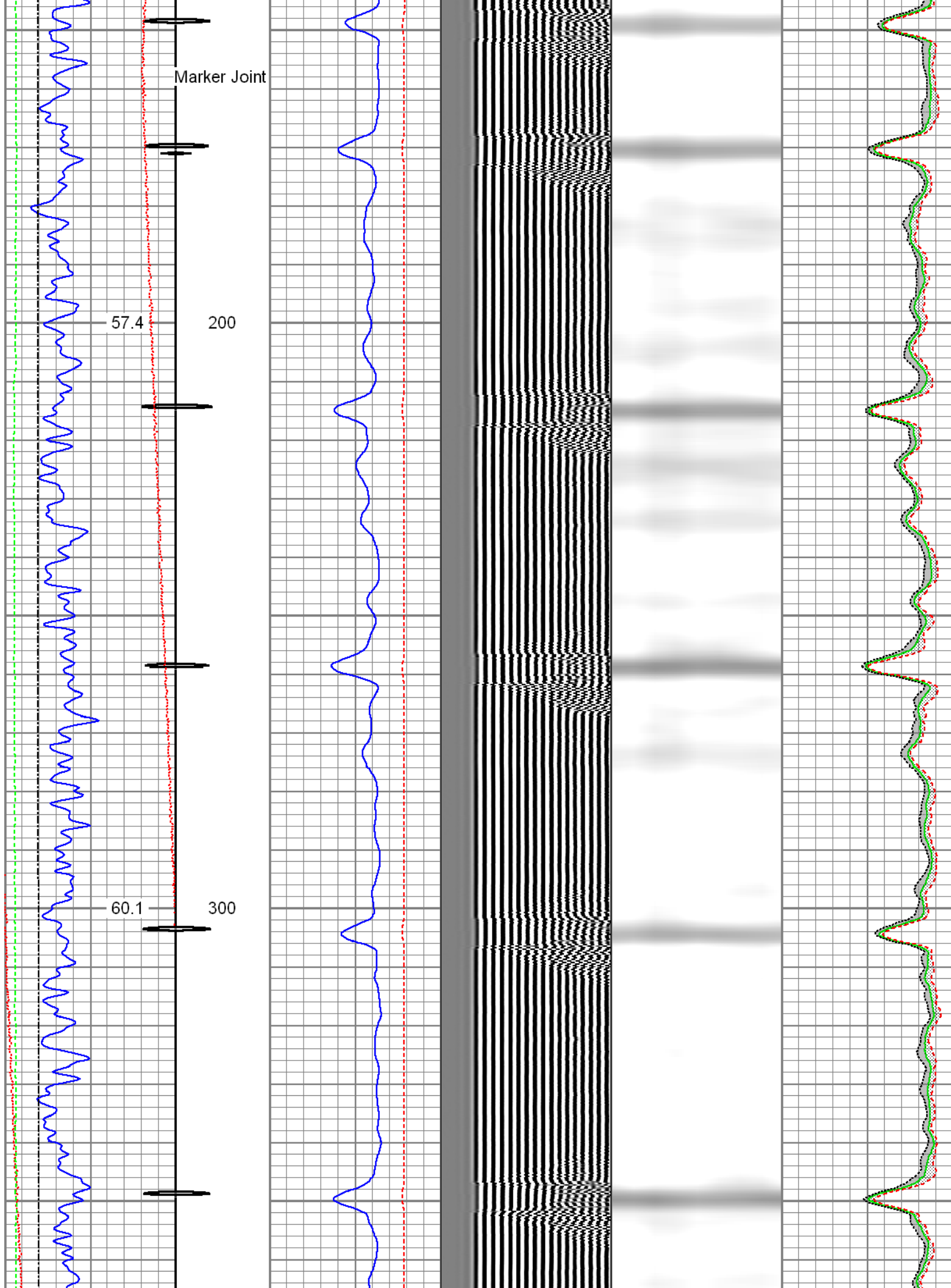
Presentation Format: radii

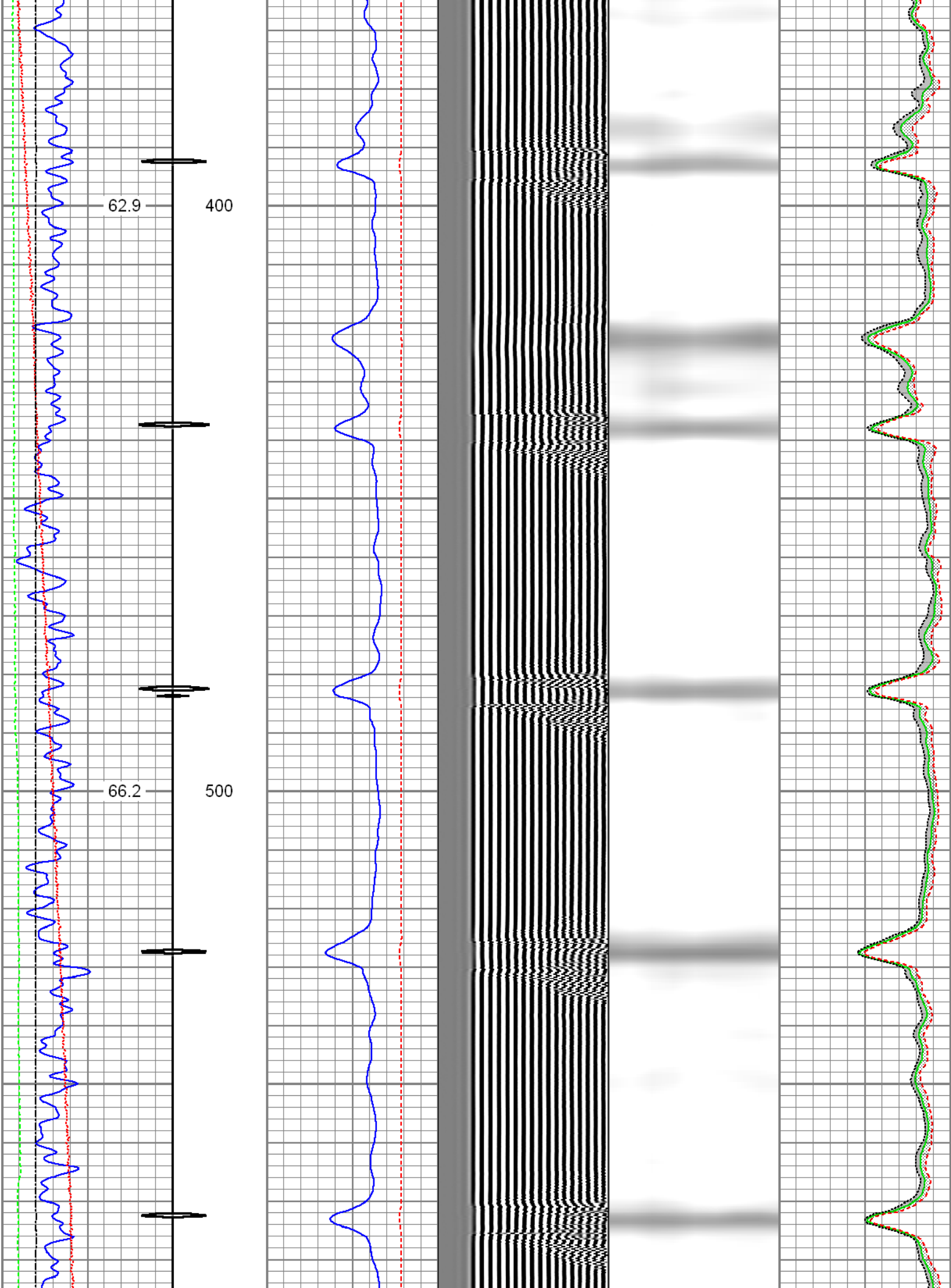
Dataset Creation: Wed Feb 24 19:42:36 2016 by Calc 7.0 B1

Charted by: Depth in Feet scaled 1:240

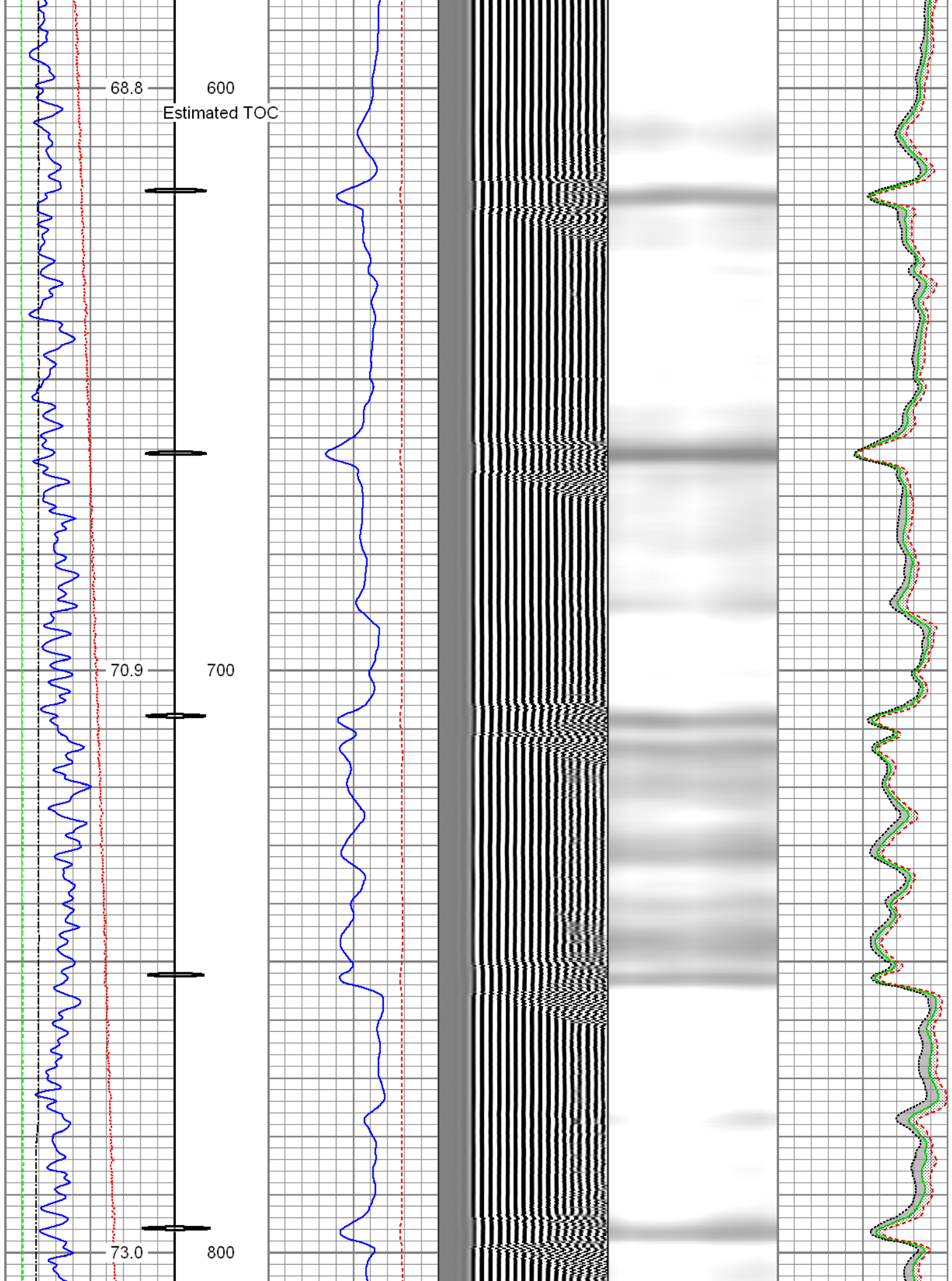
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Mimimum Amplitude
Temperature	0 (mV) 20			0 100
0 (degF) 20	3' Travel Time			Maximum Amplitude
Line Speed	650 (usec) 150			0 100
-150 (ft/min) 150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

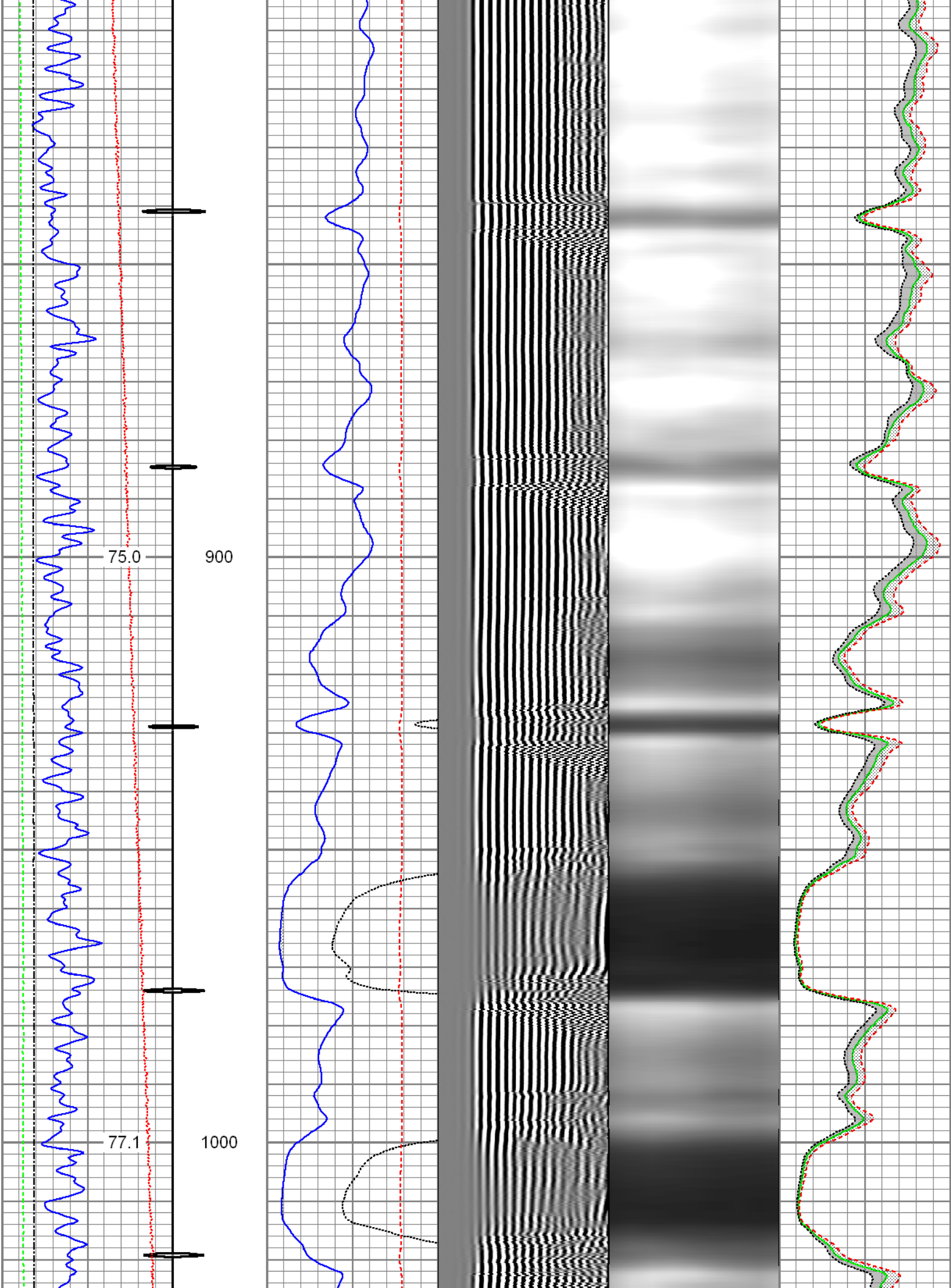


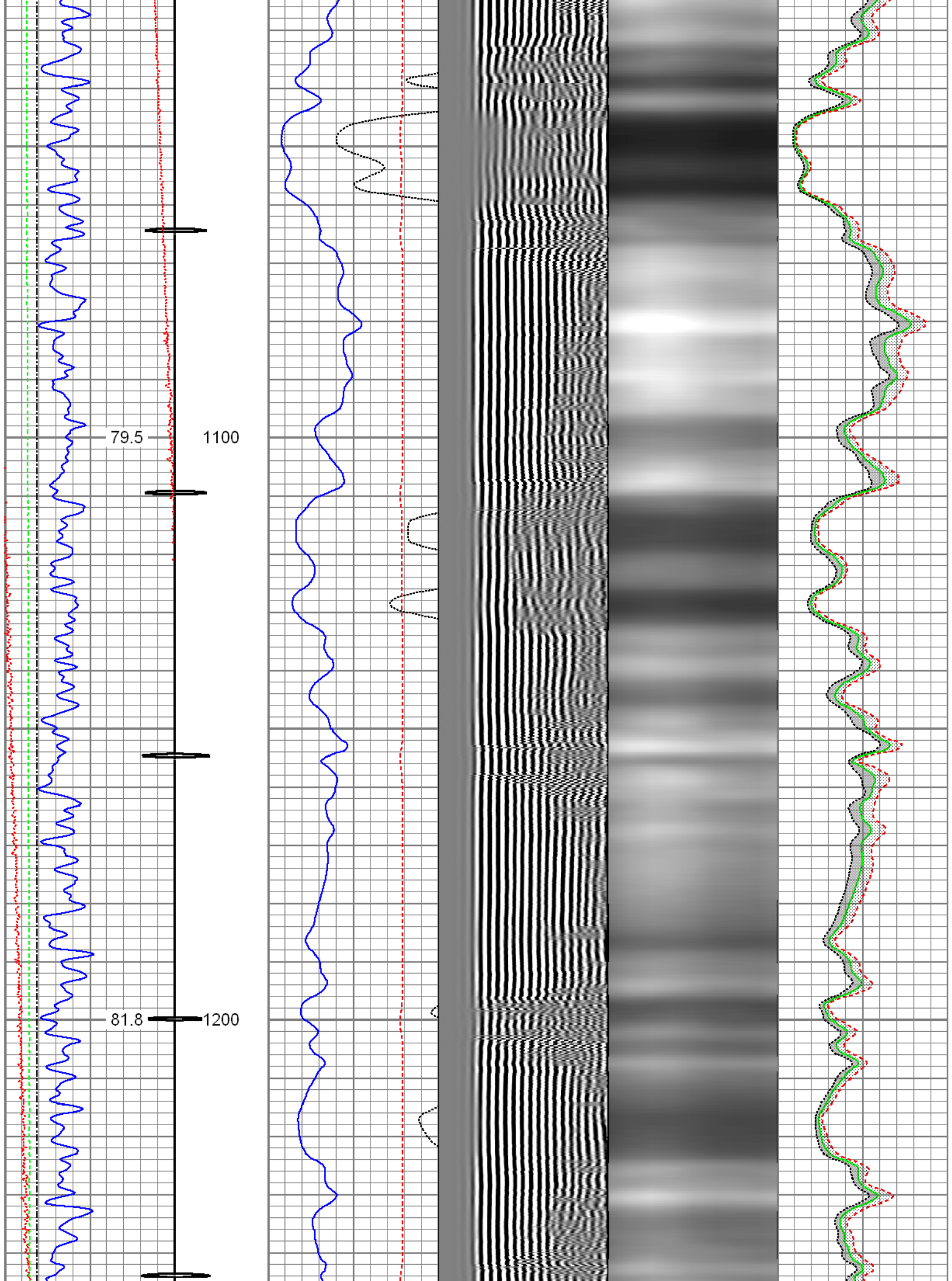




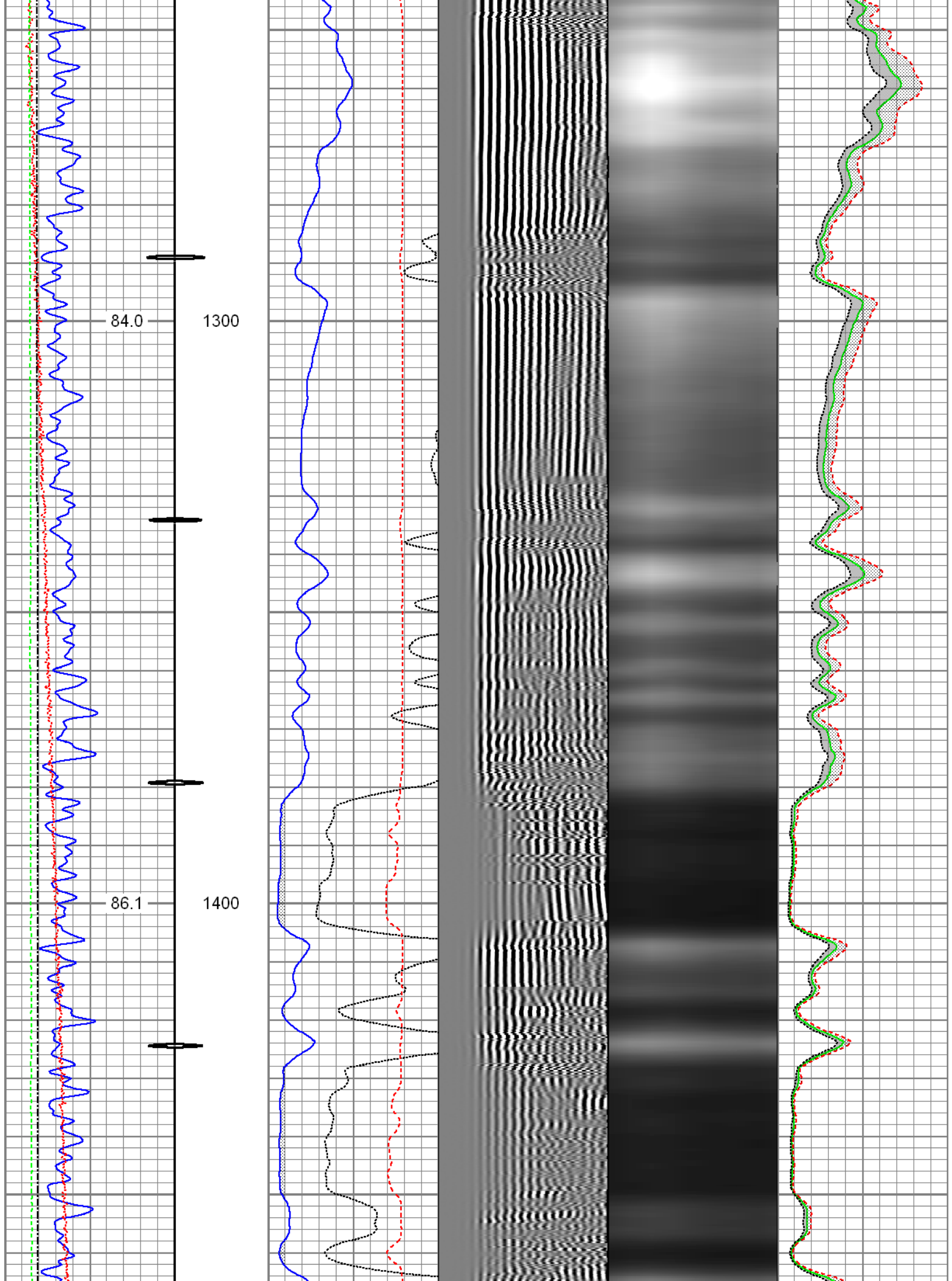




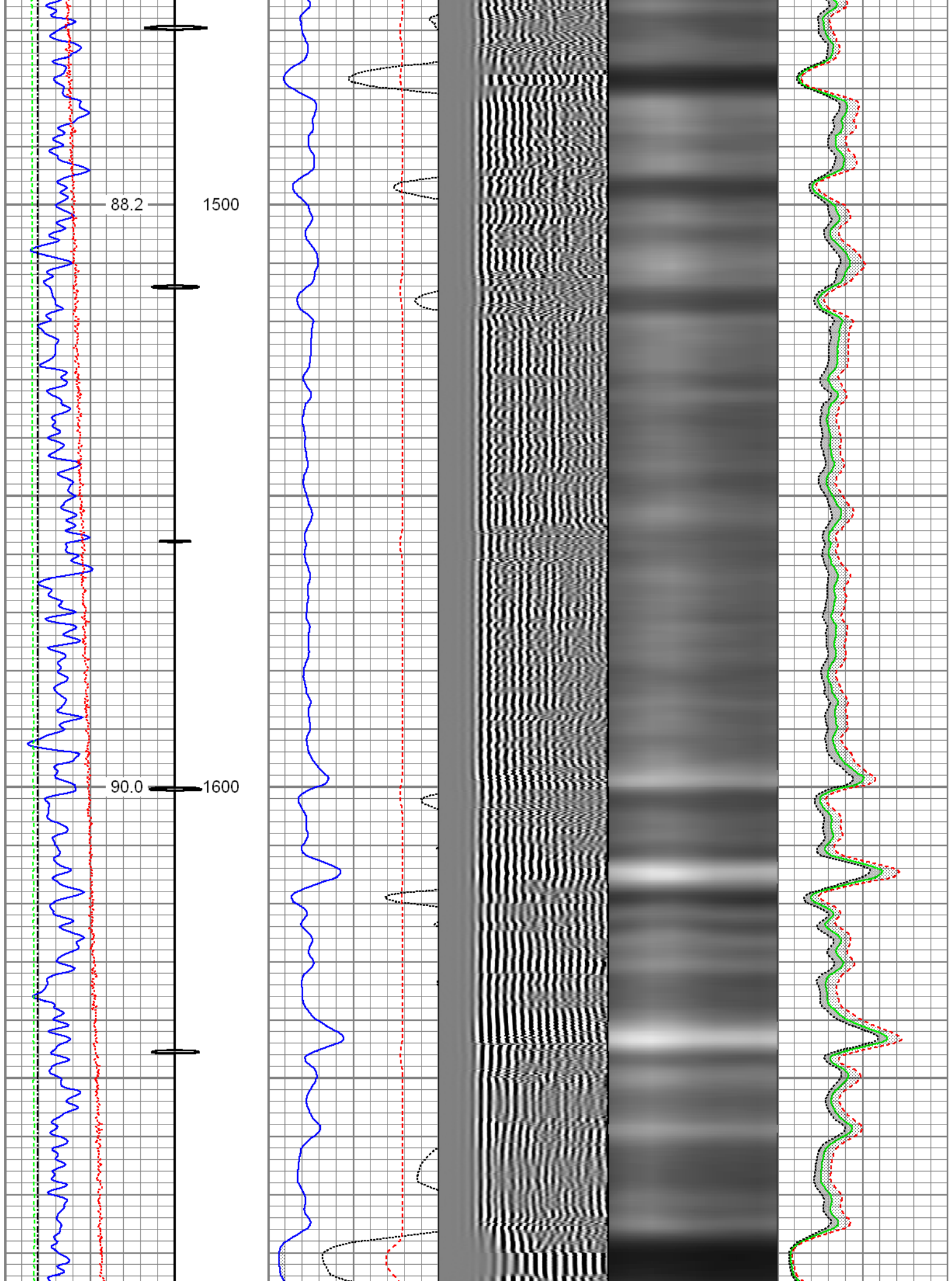


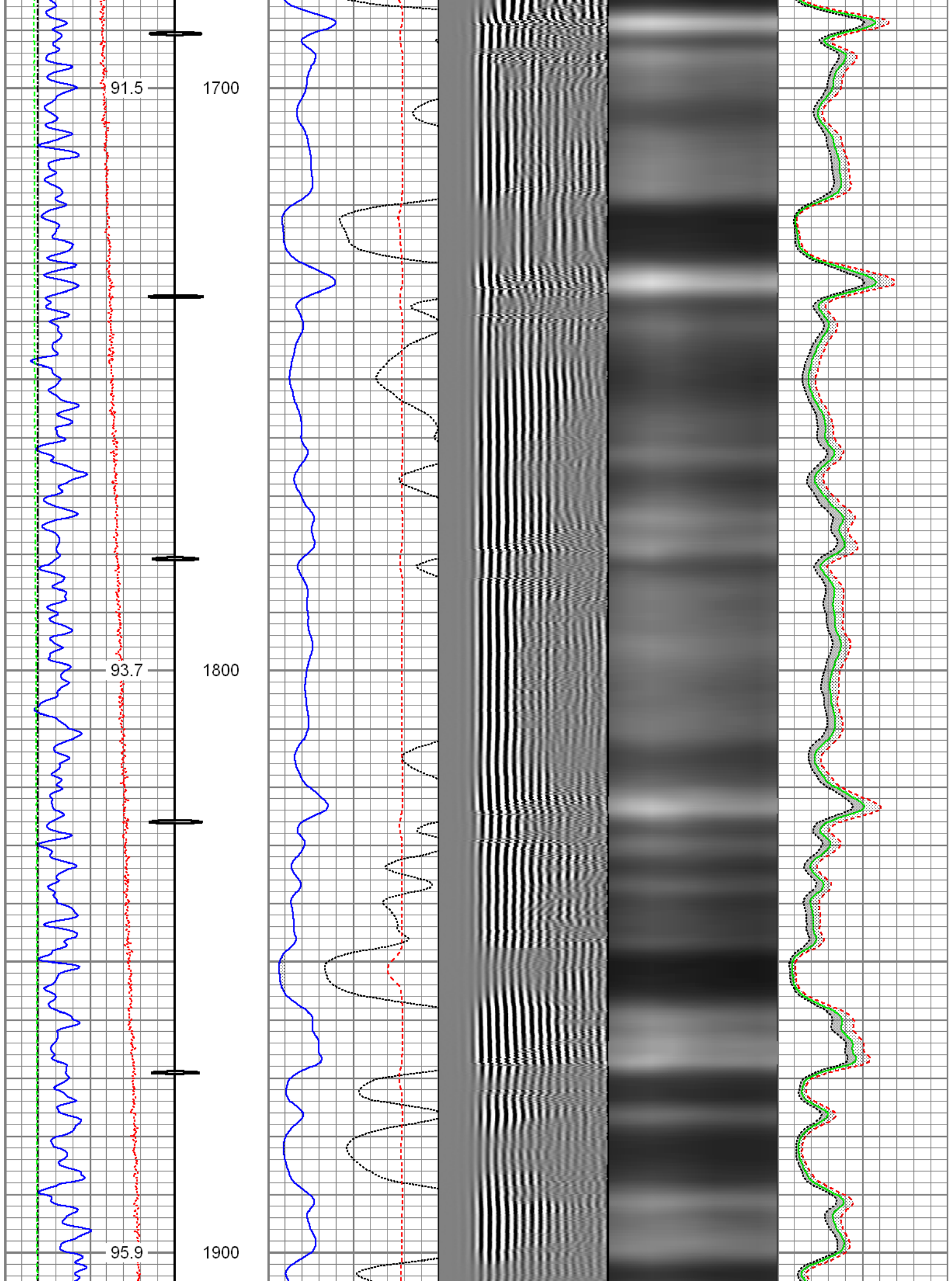


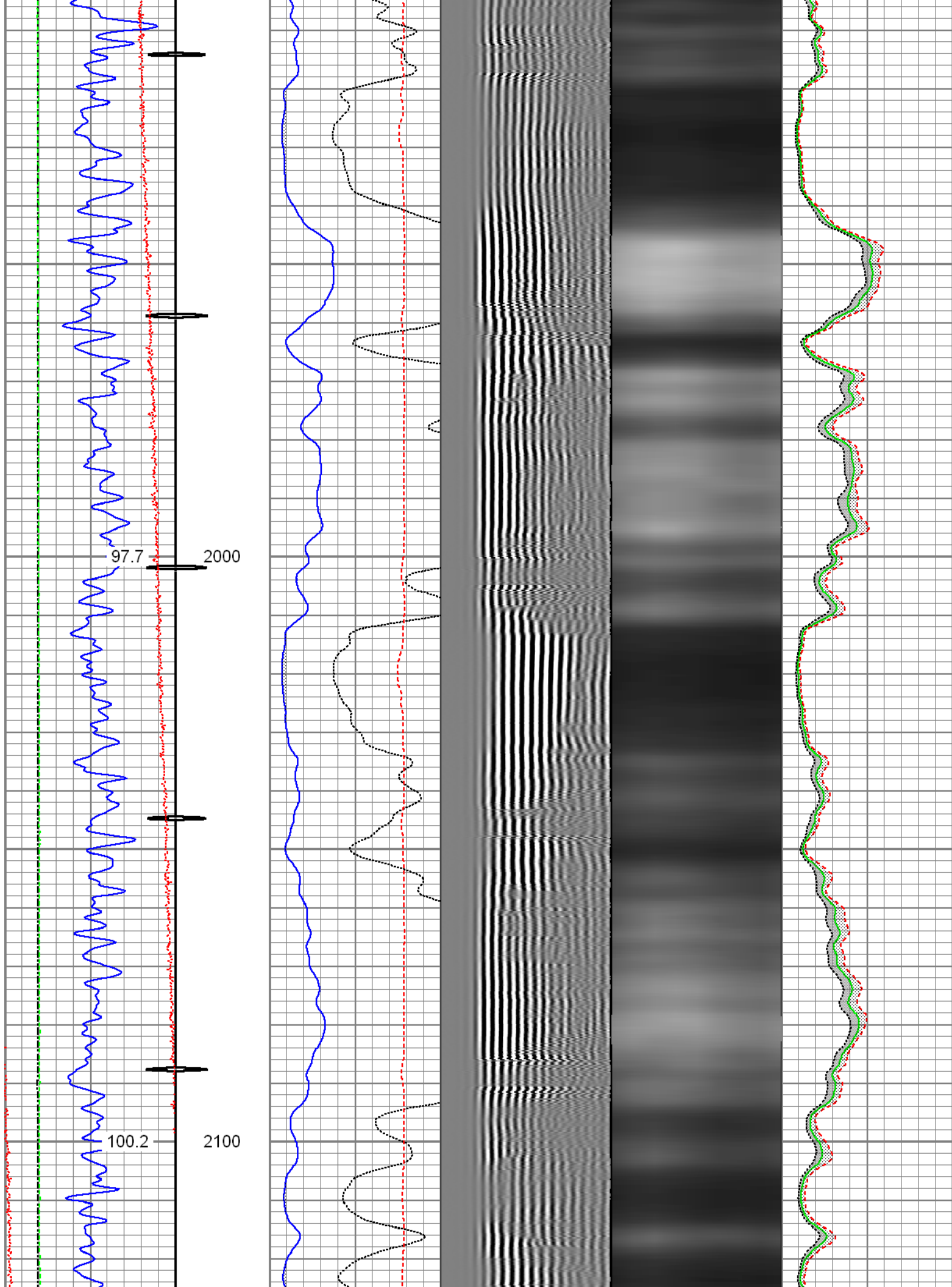




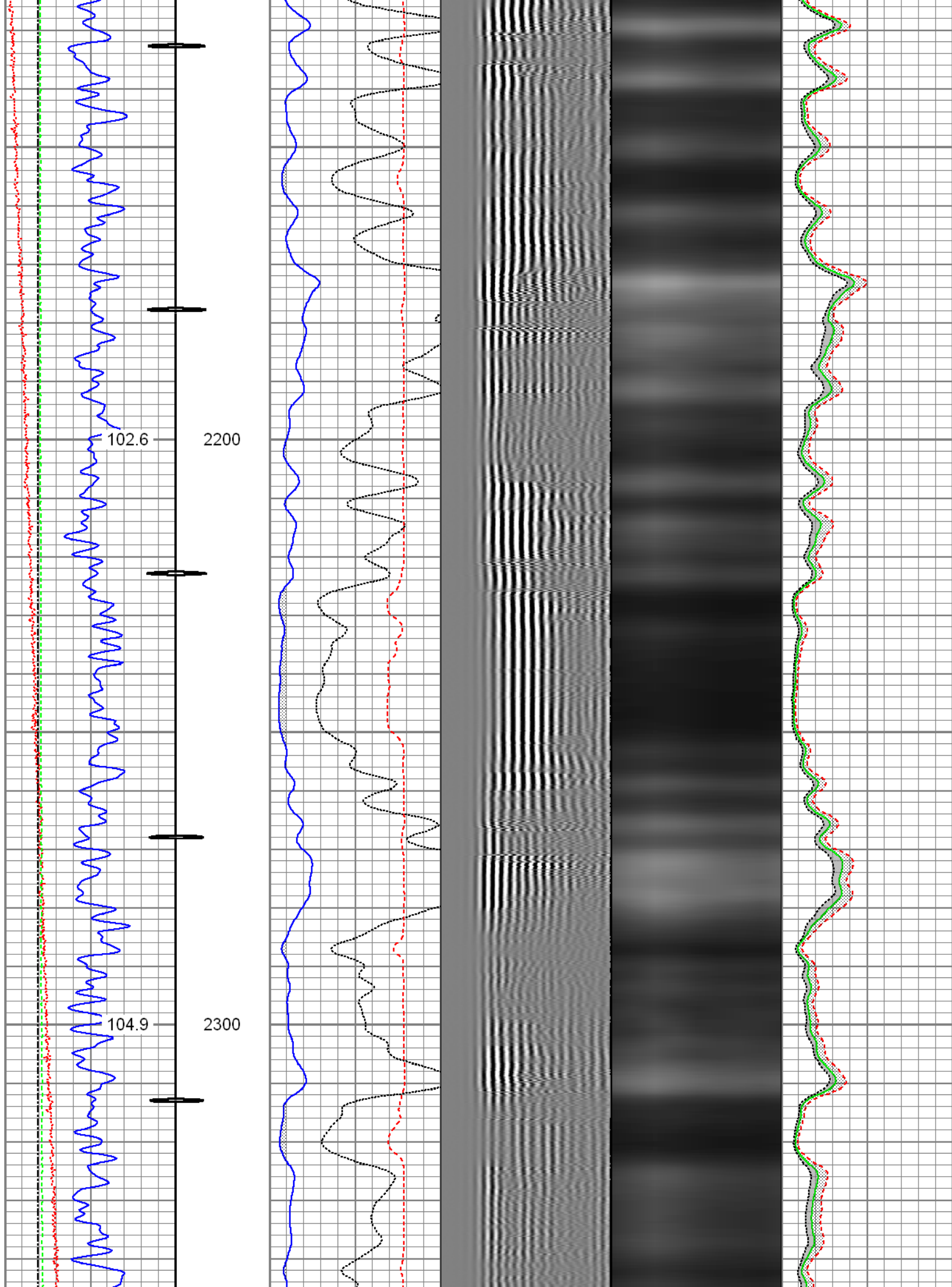




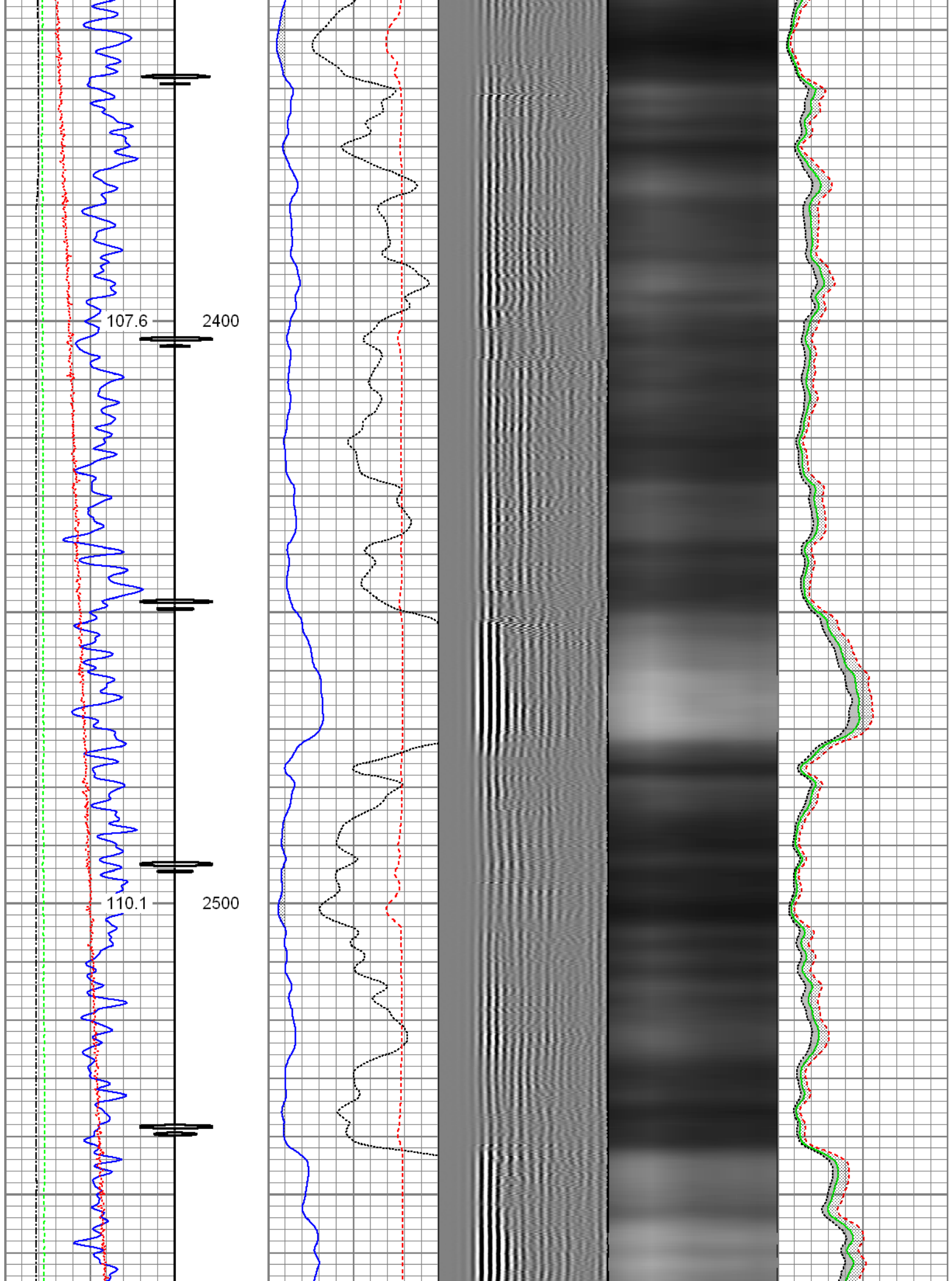


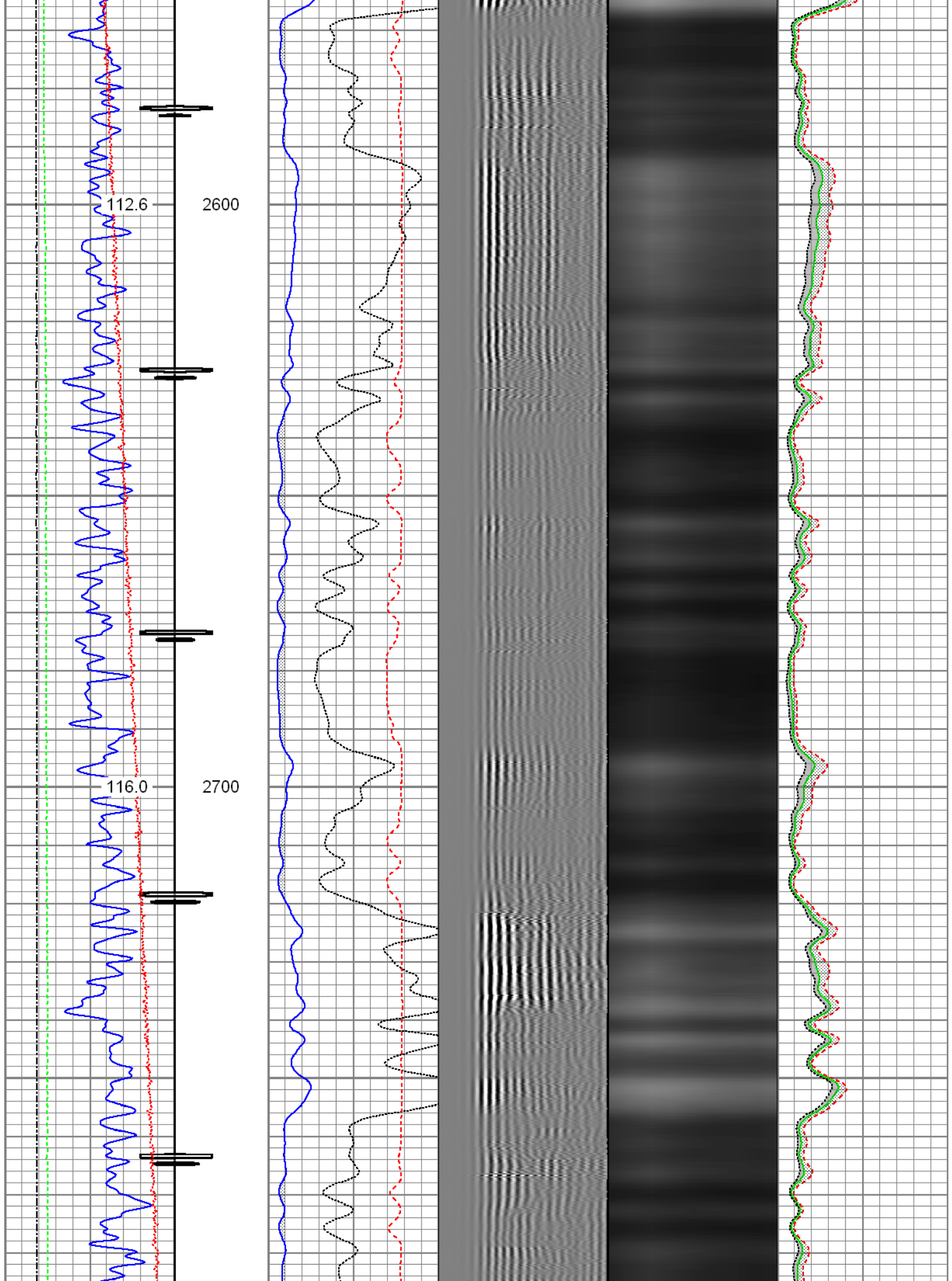


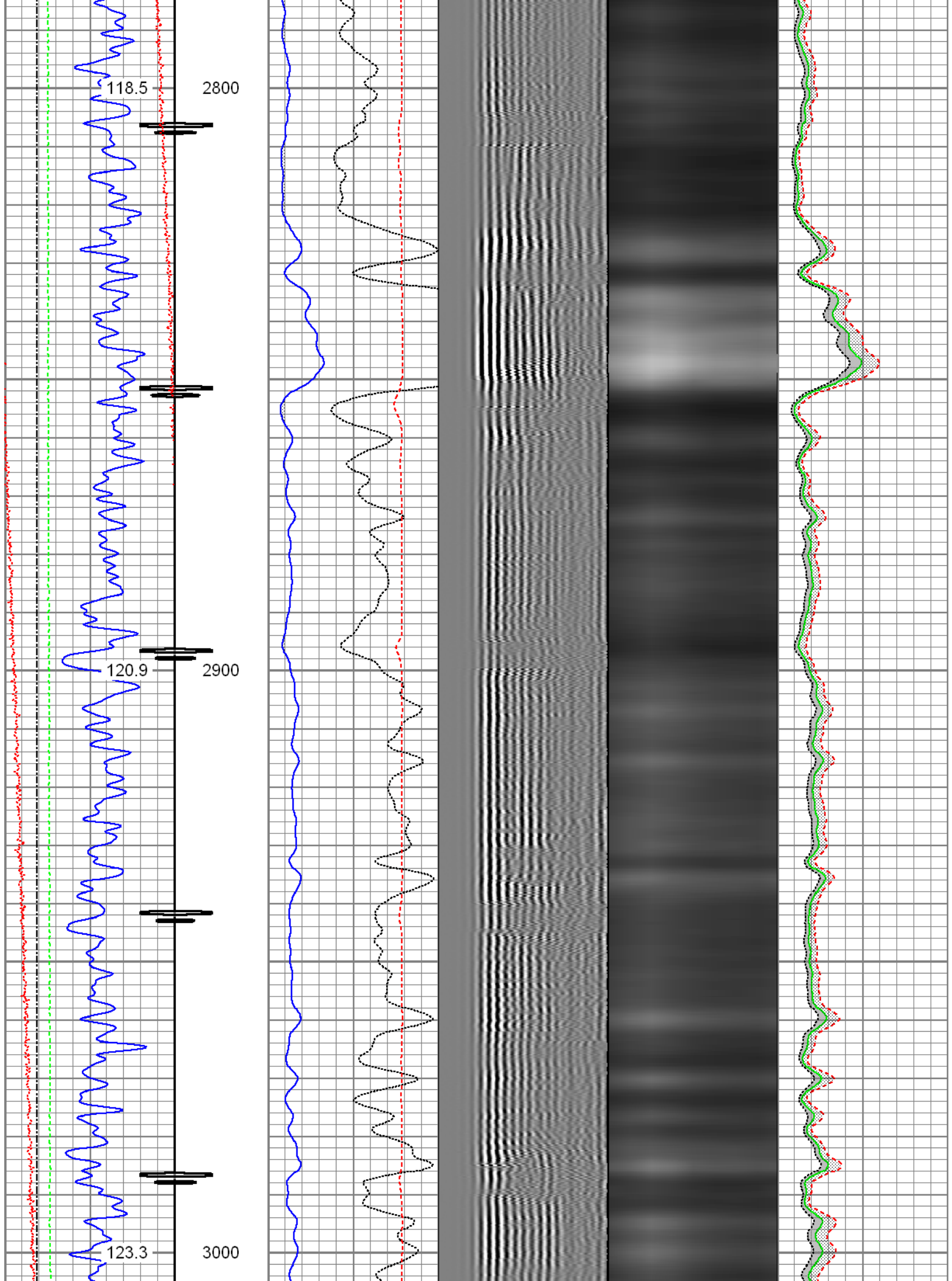




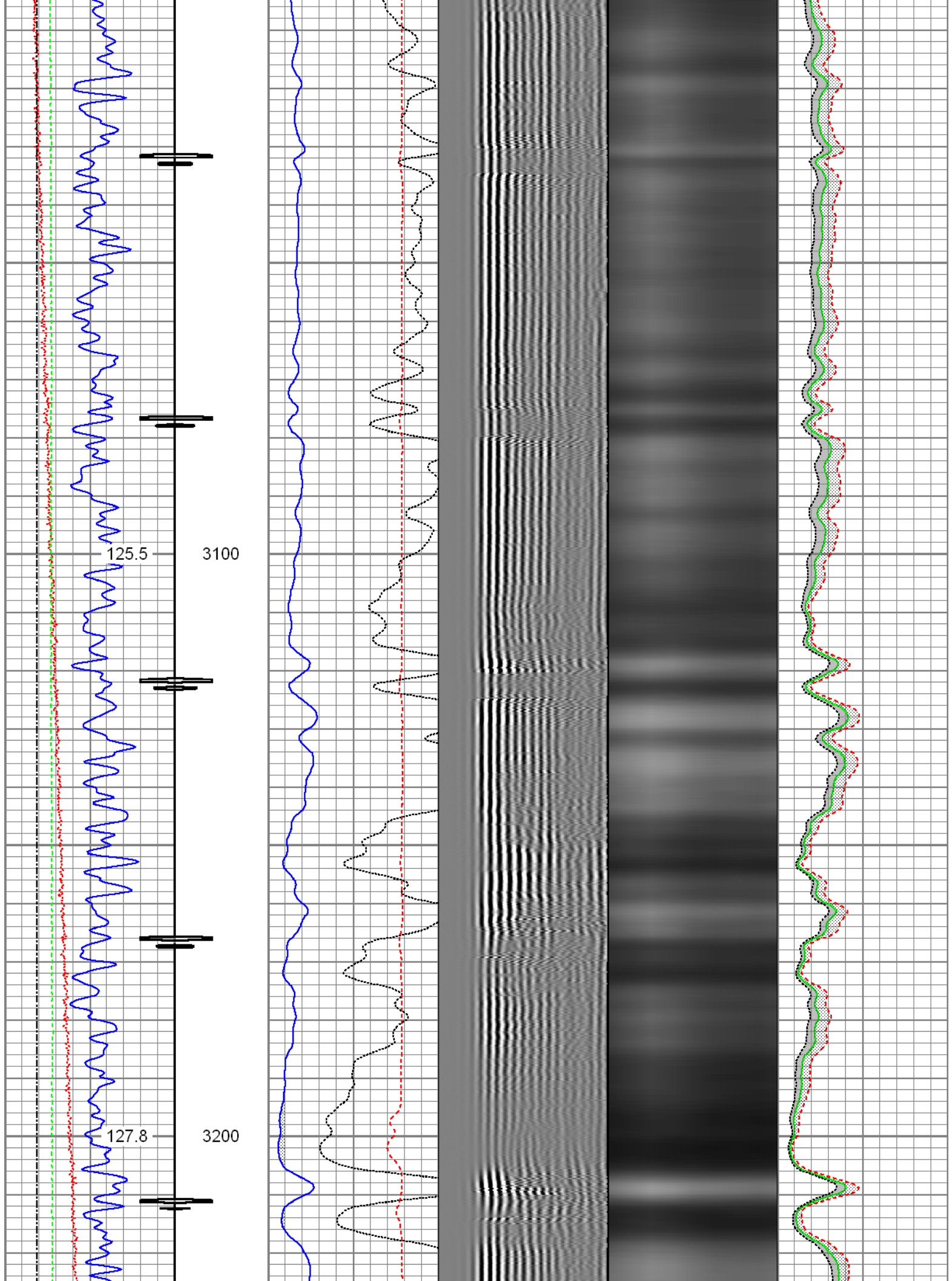




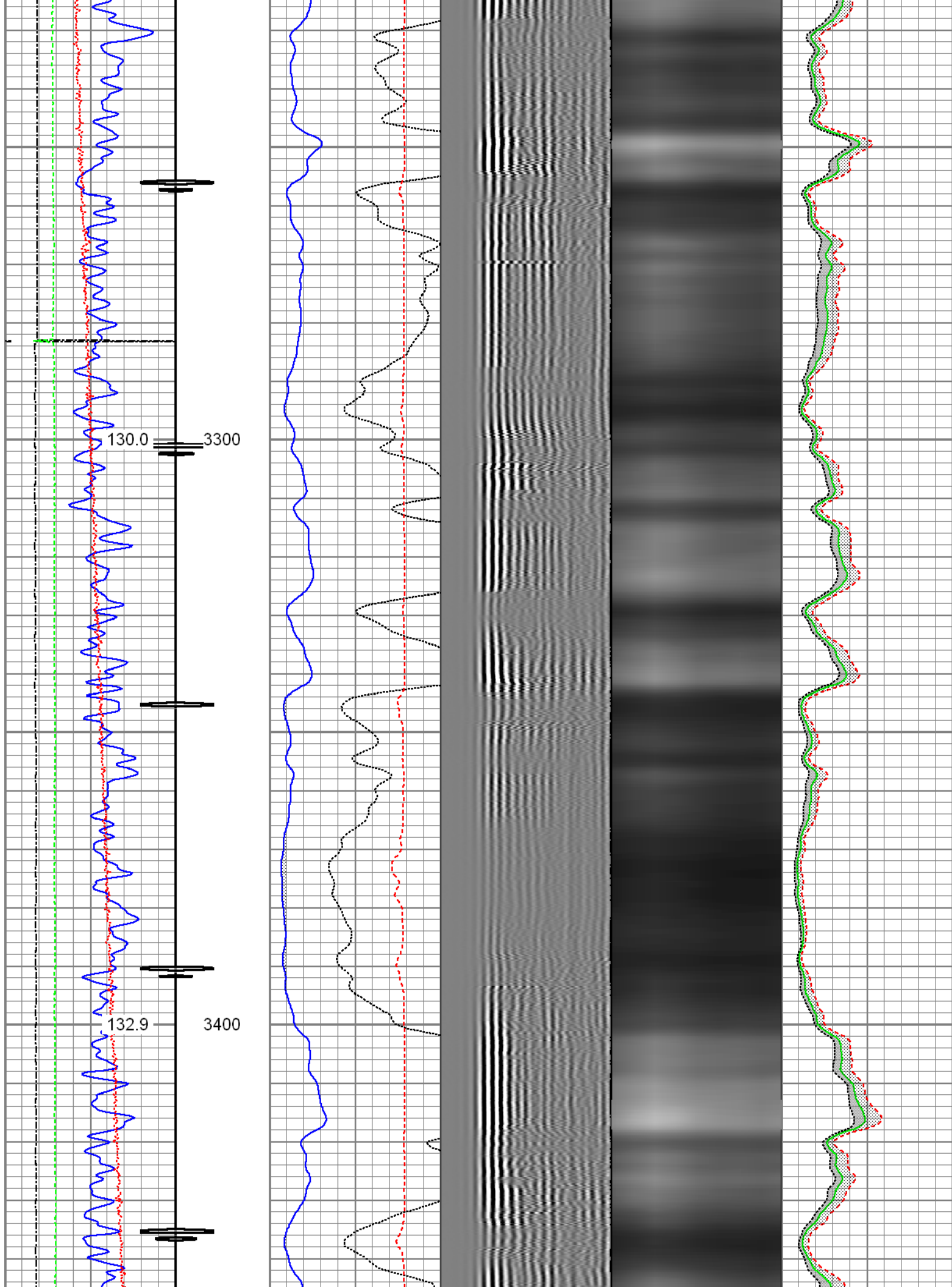


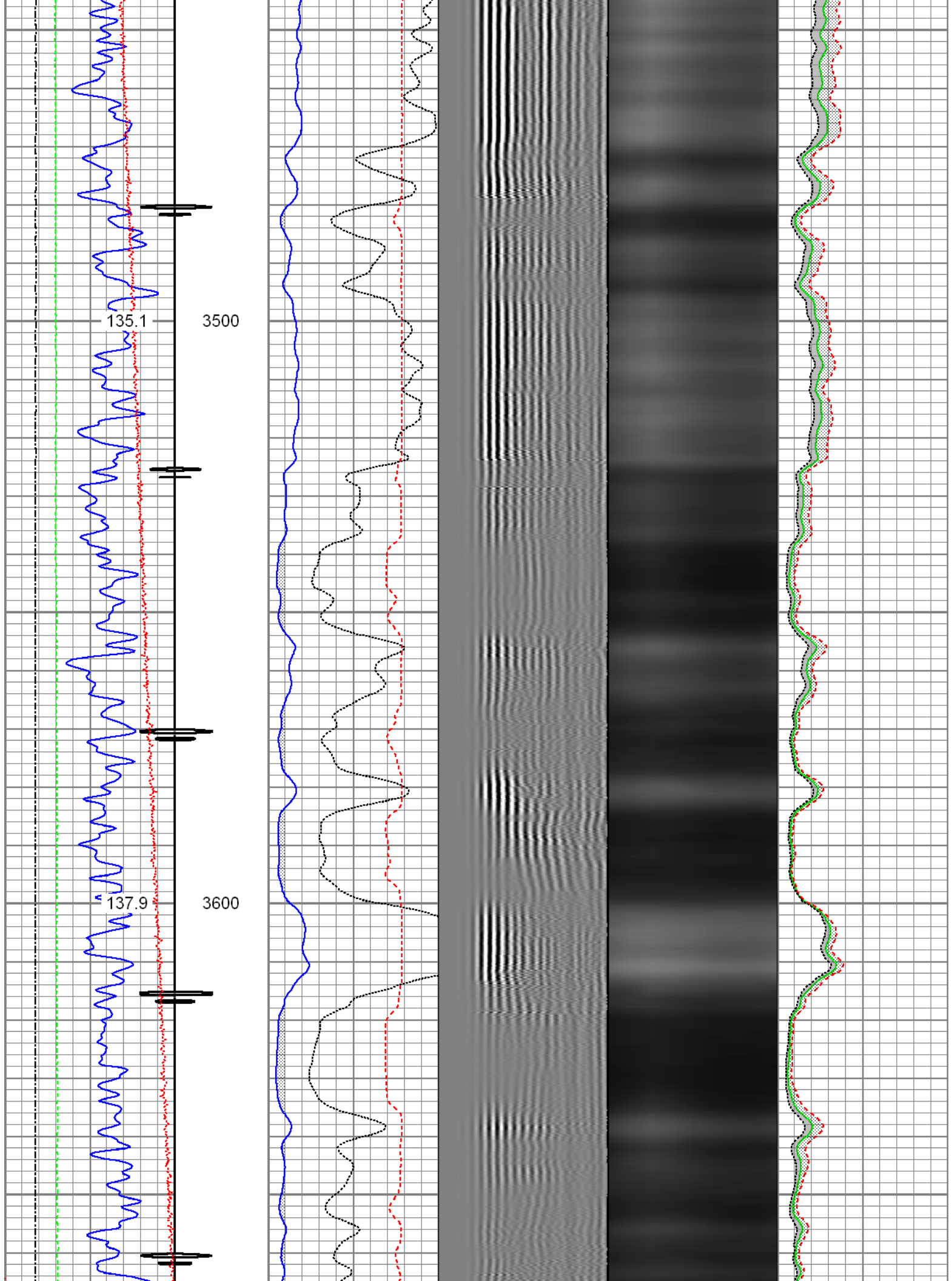


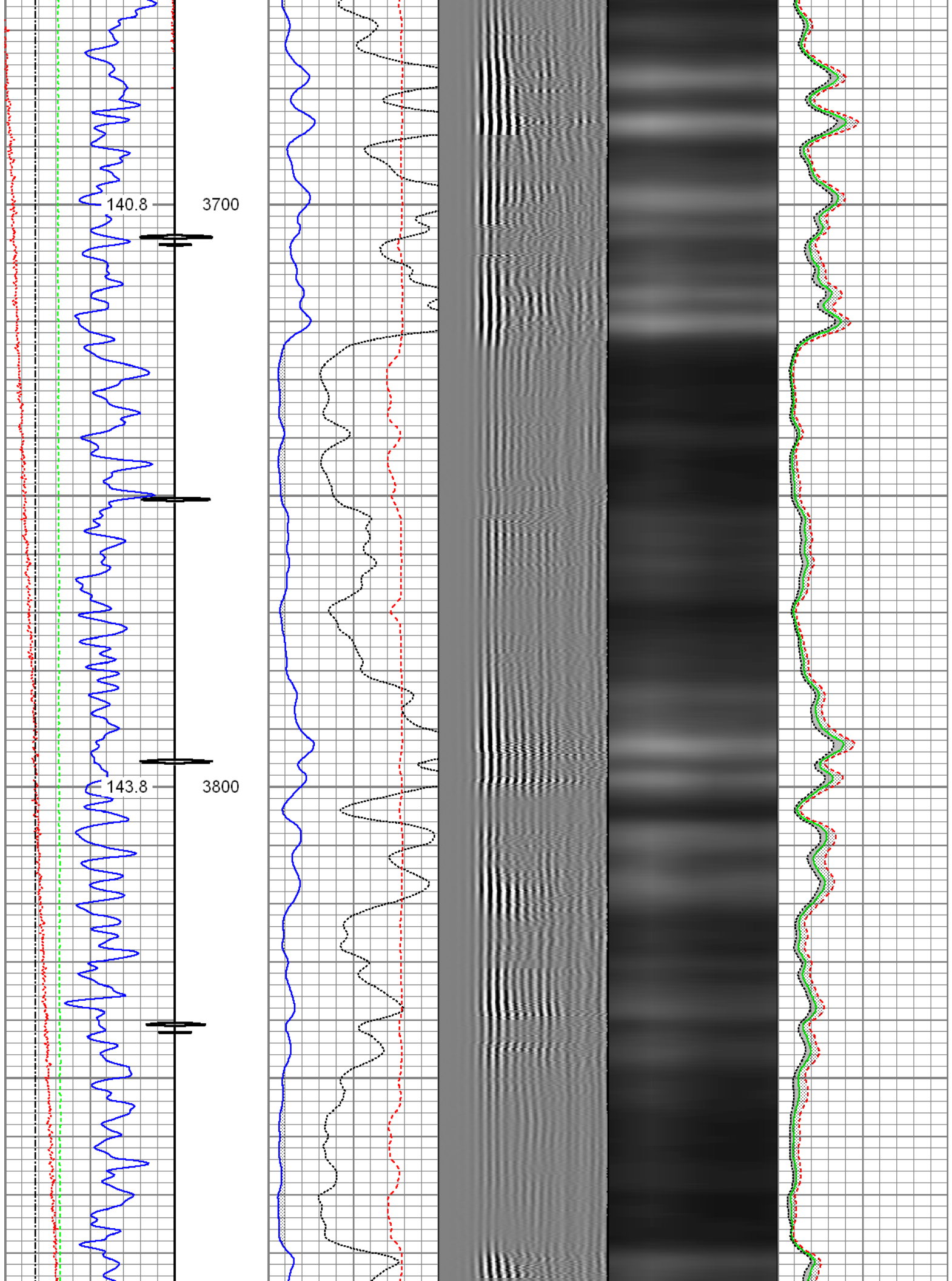


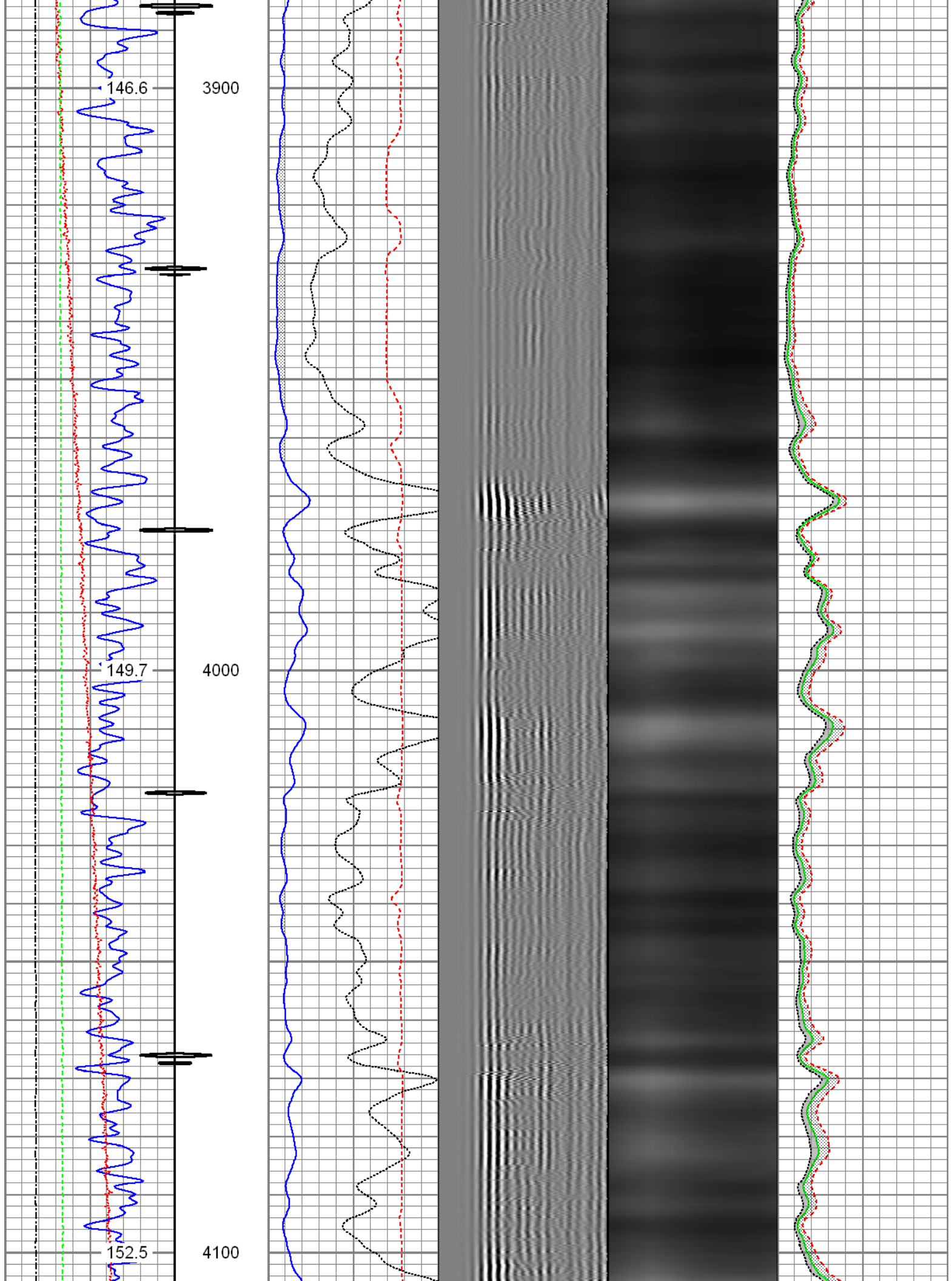




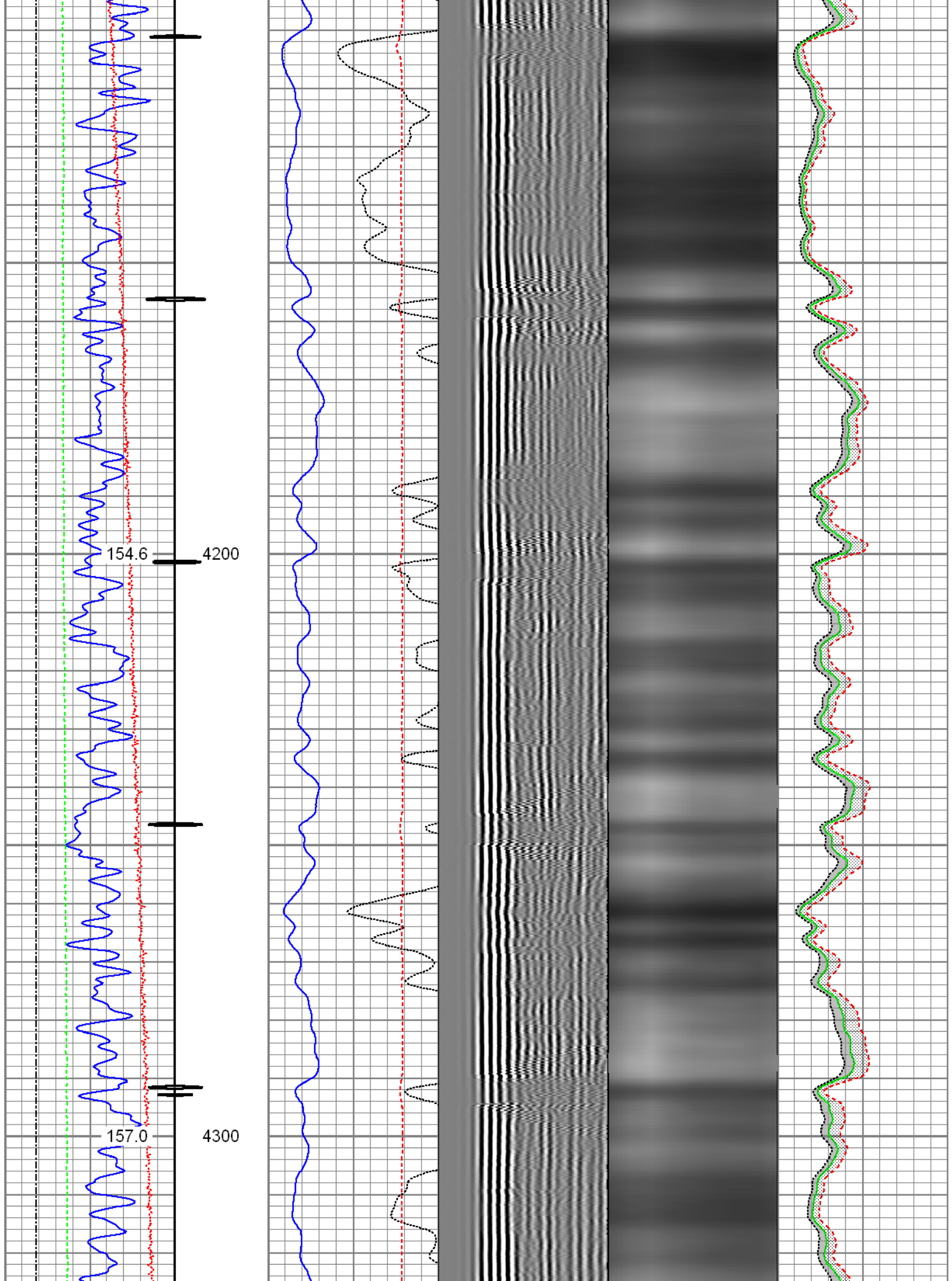


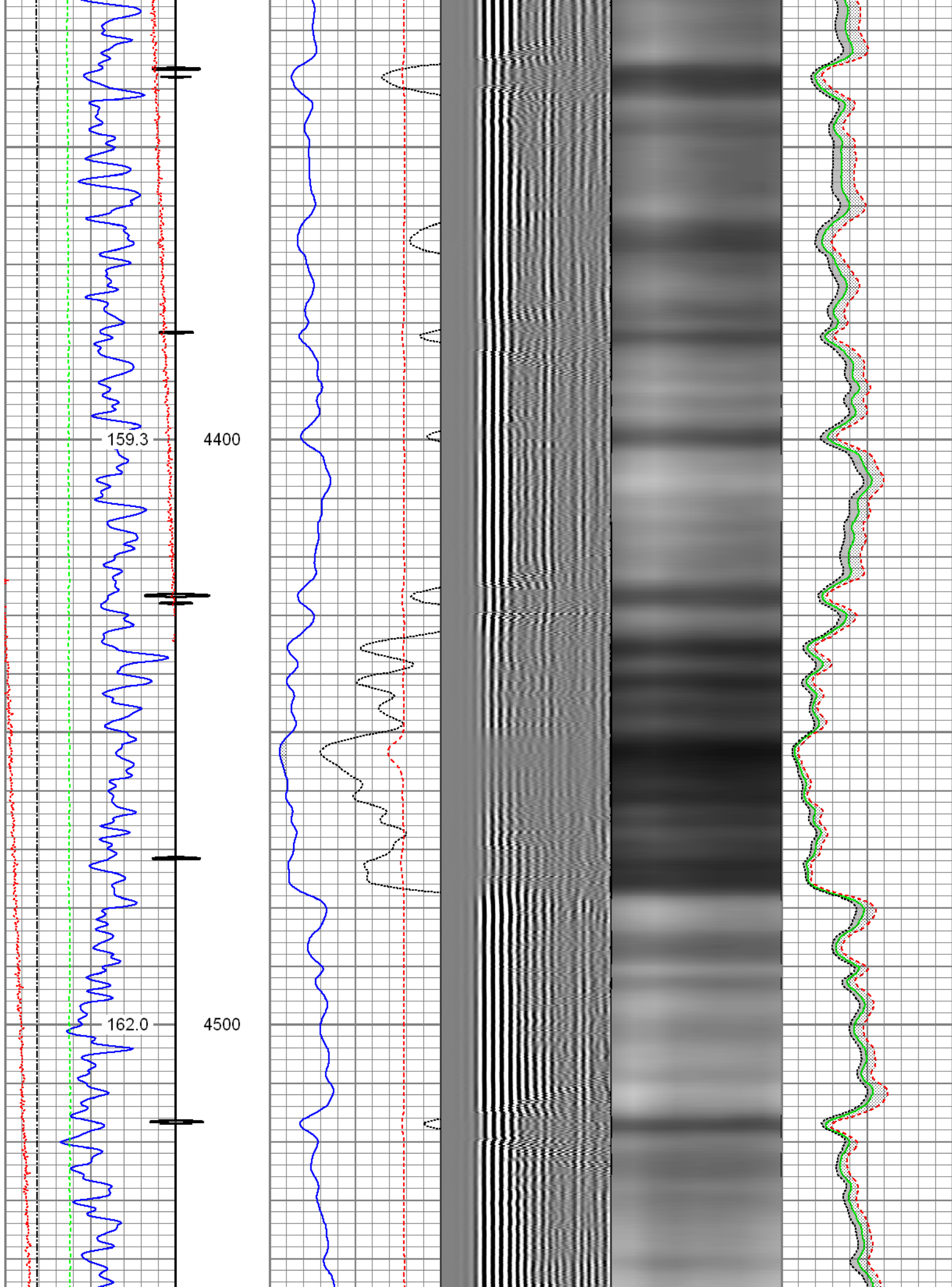


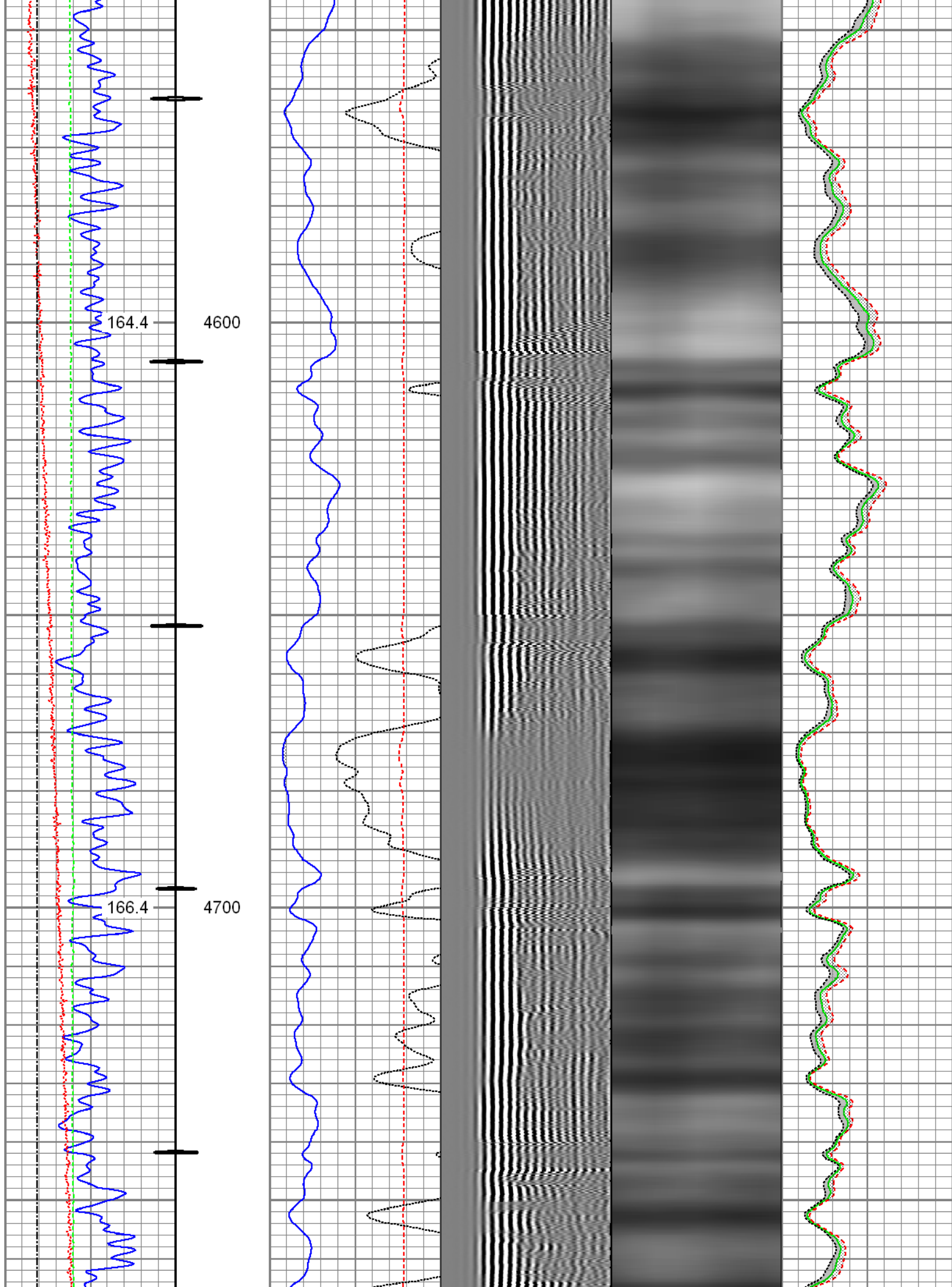




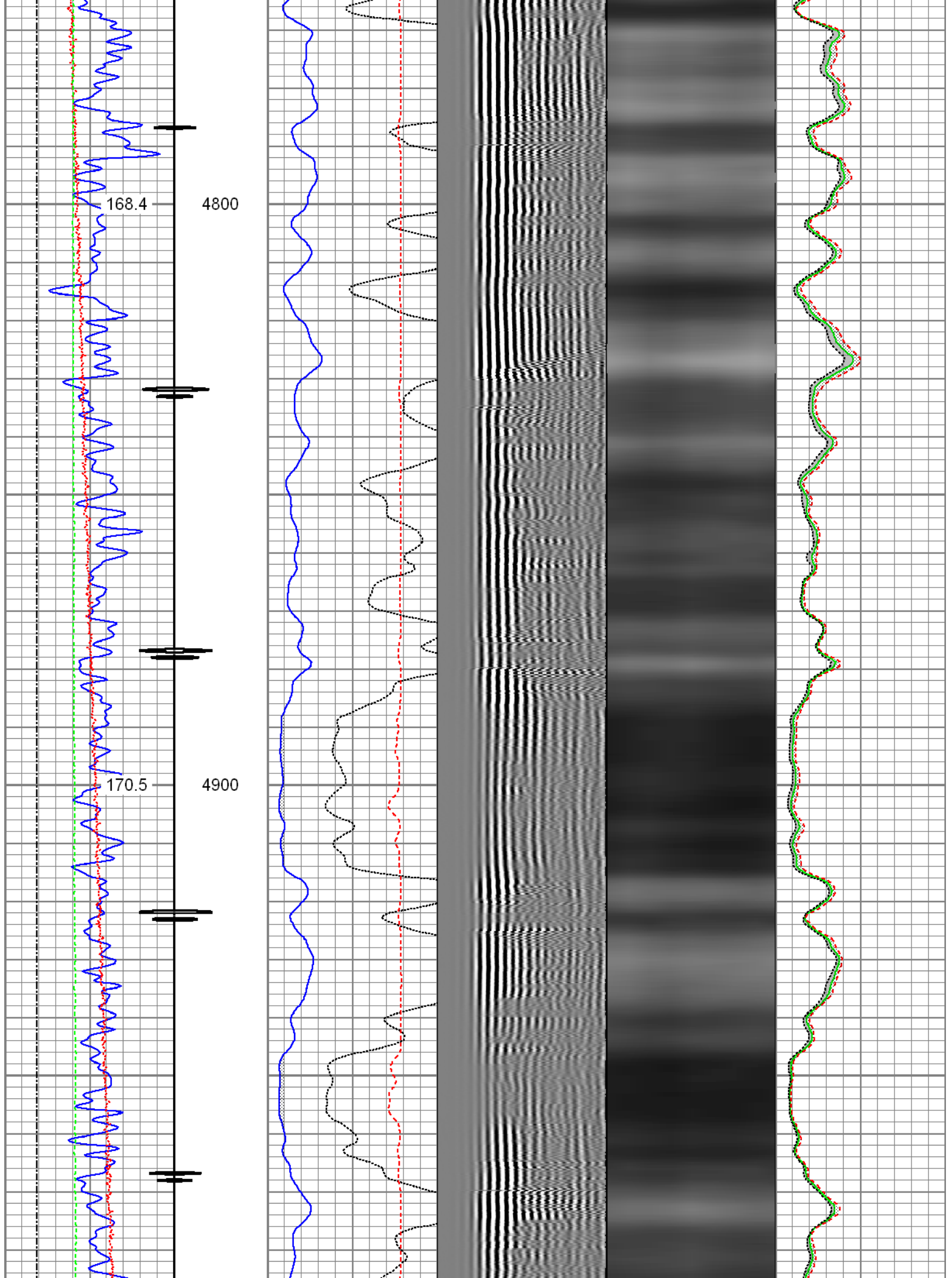




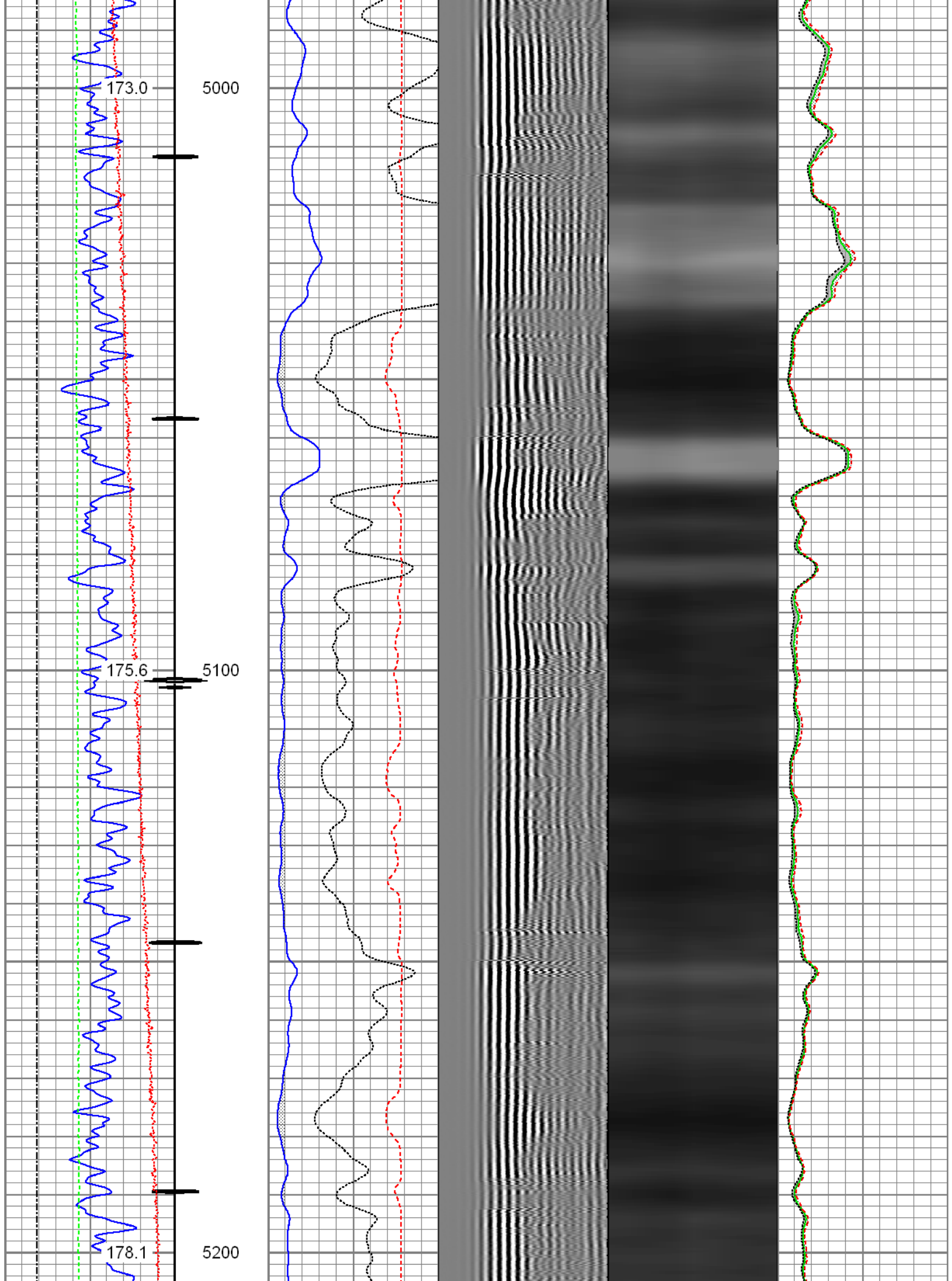


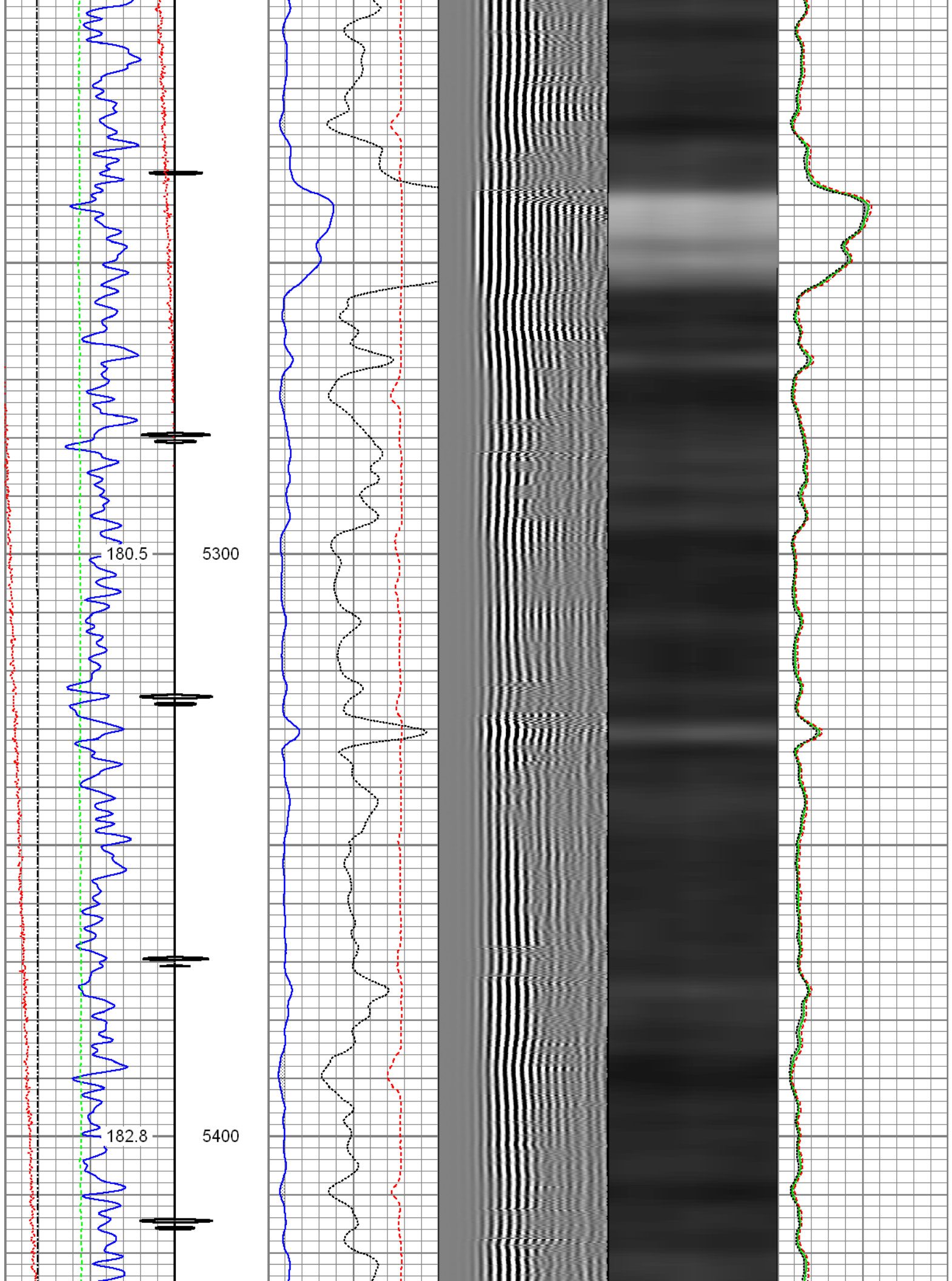


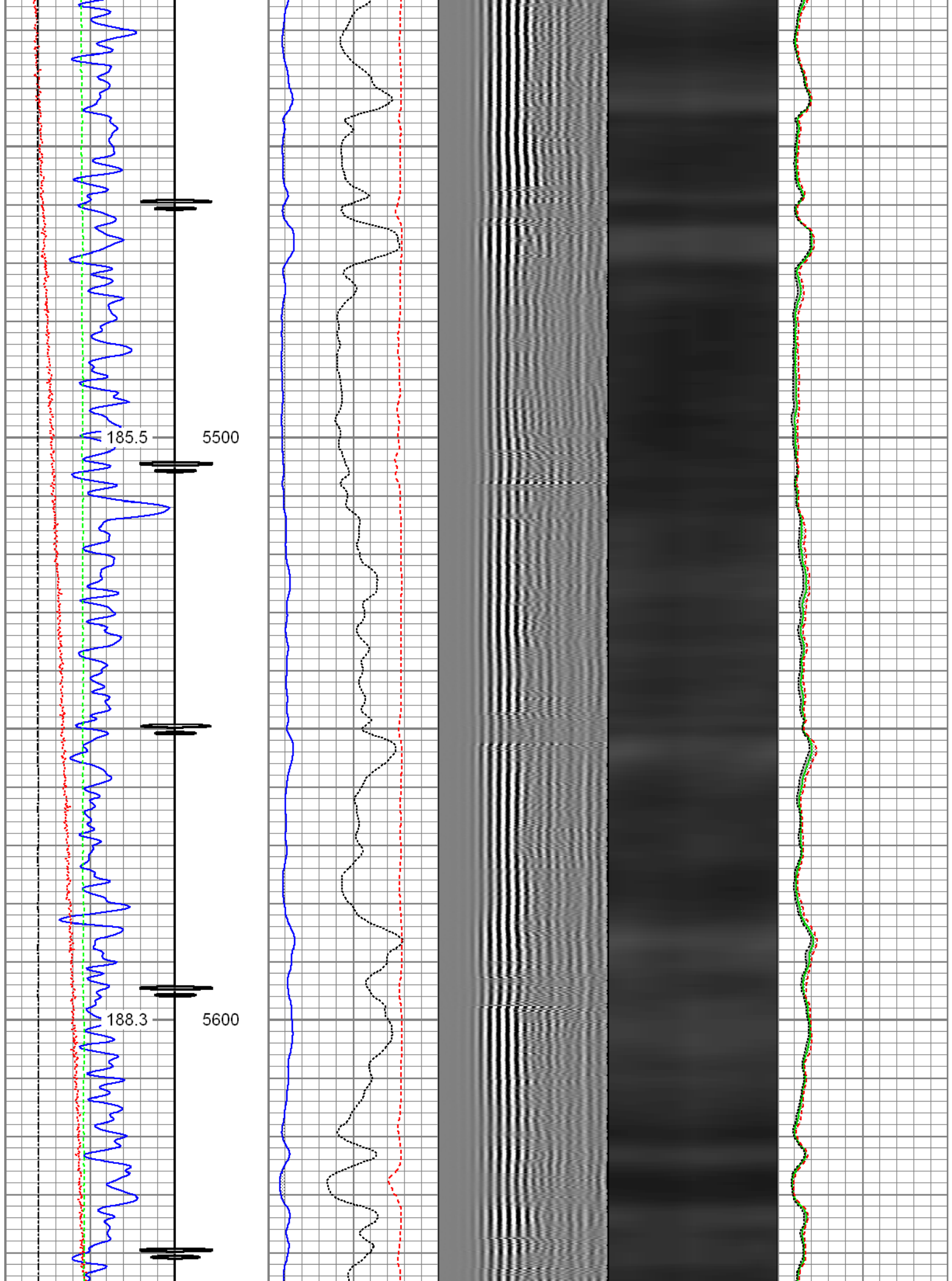


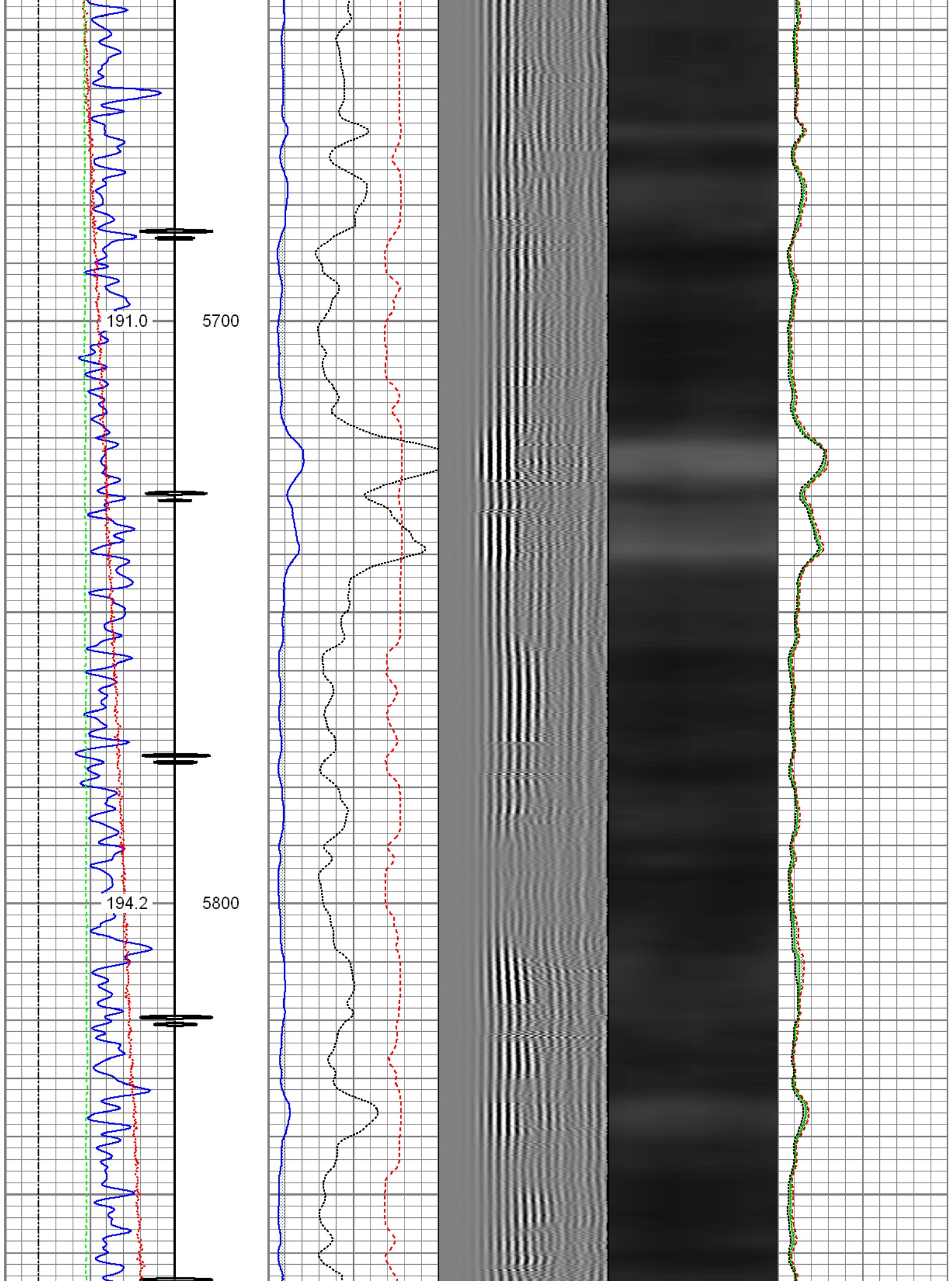




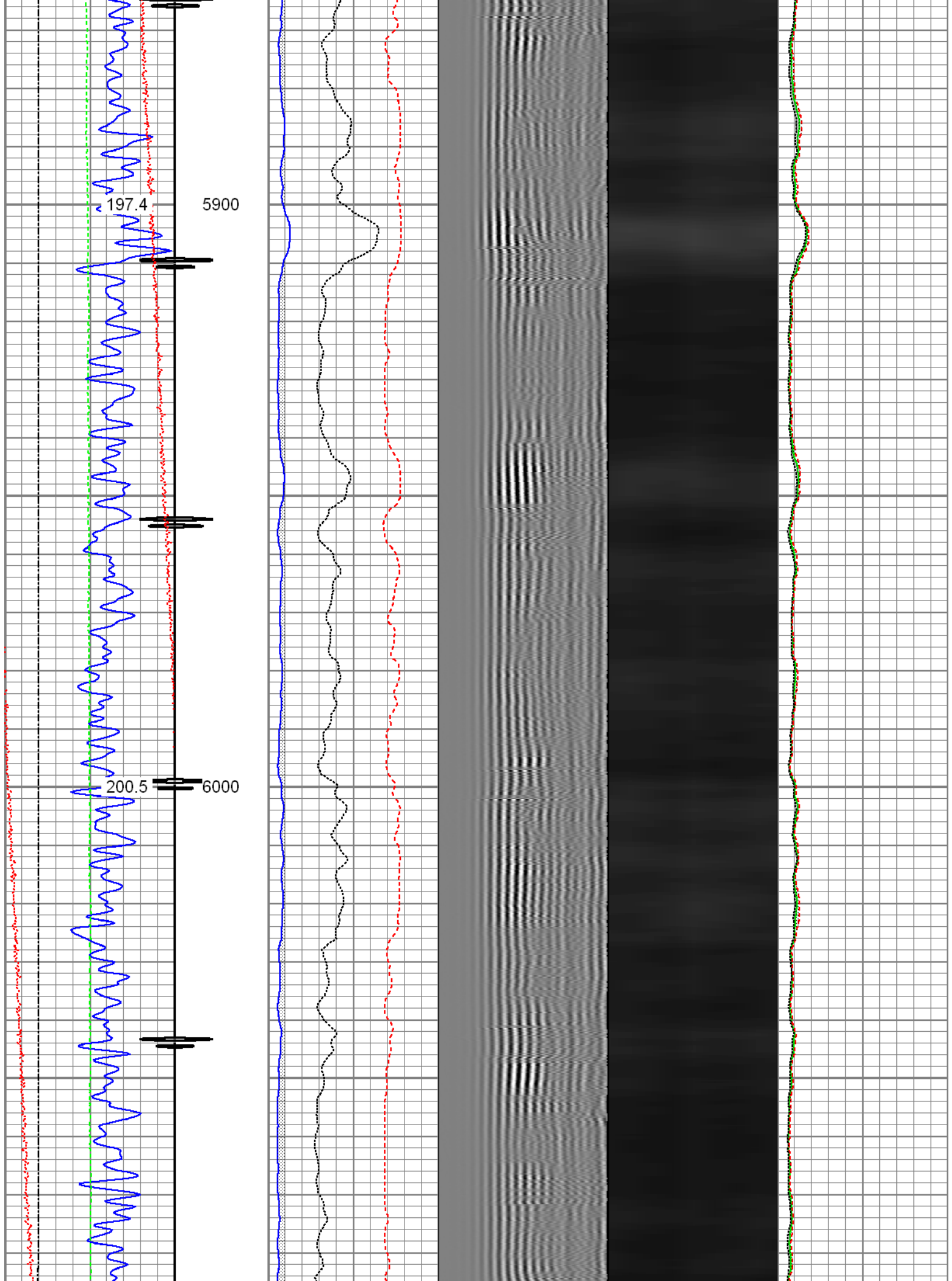


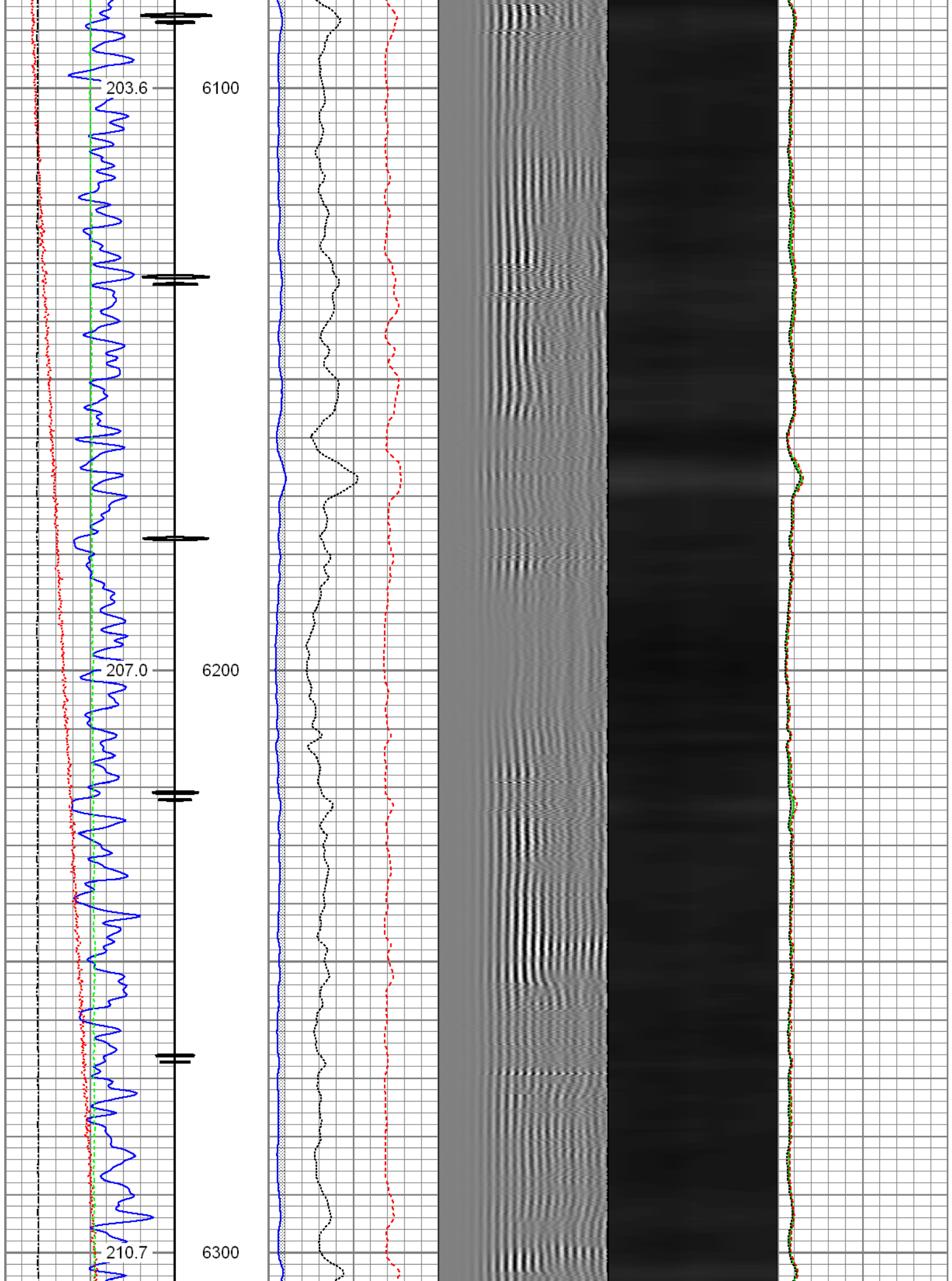


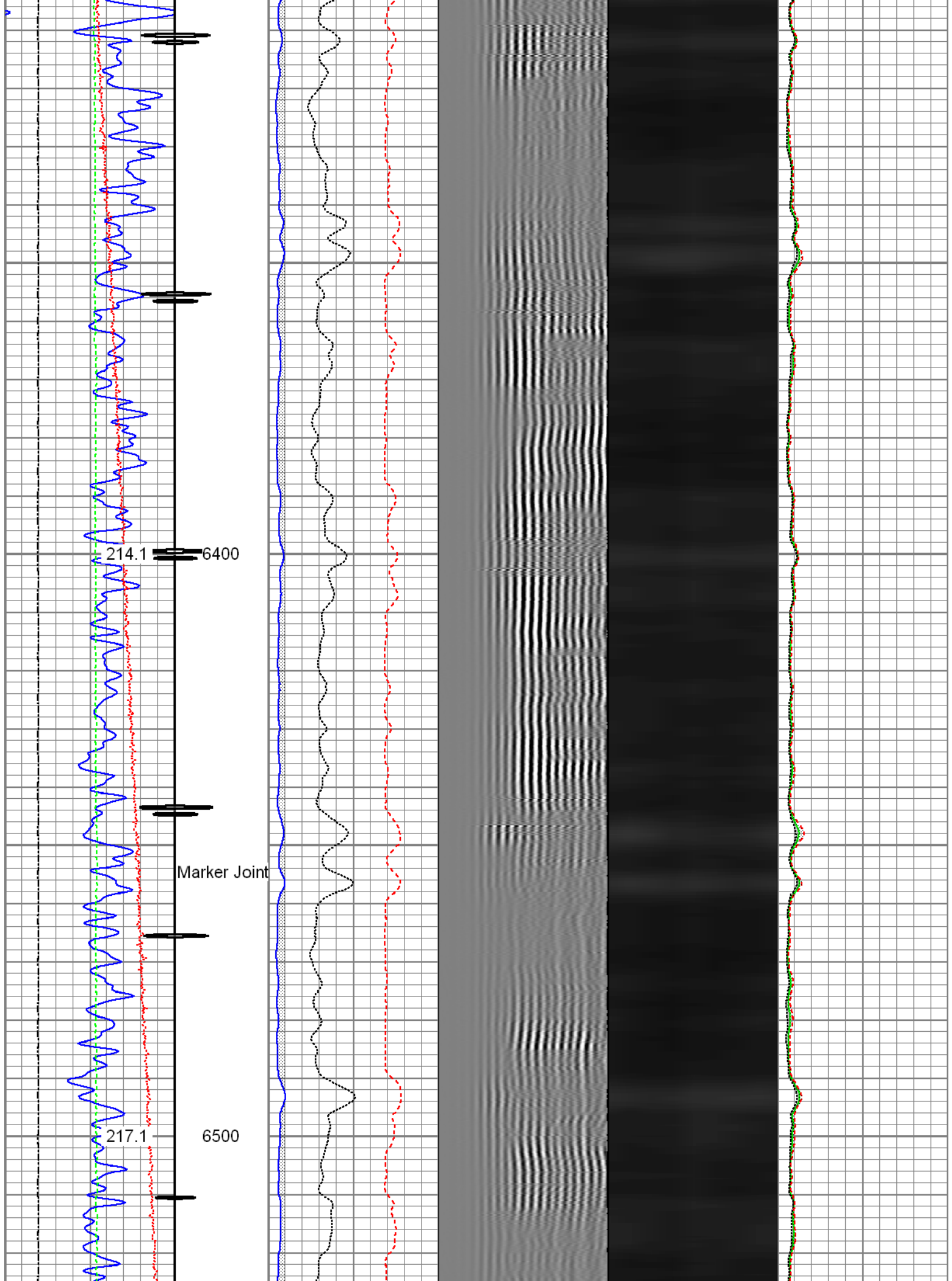


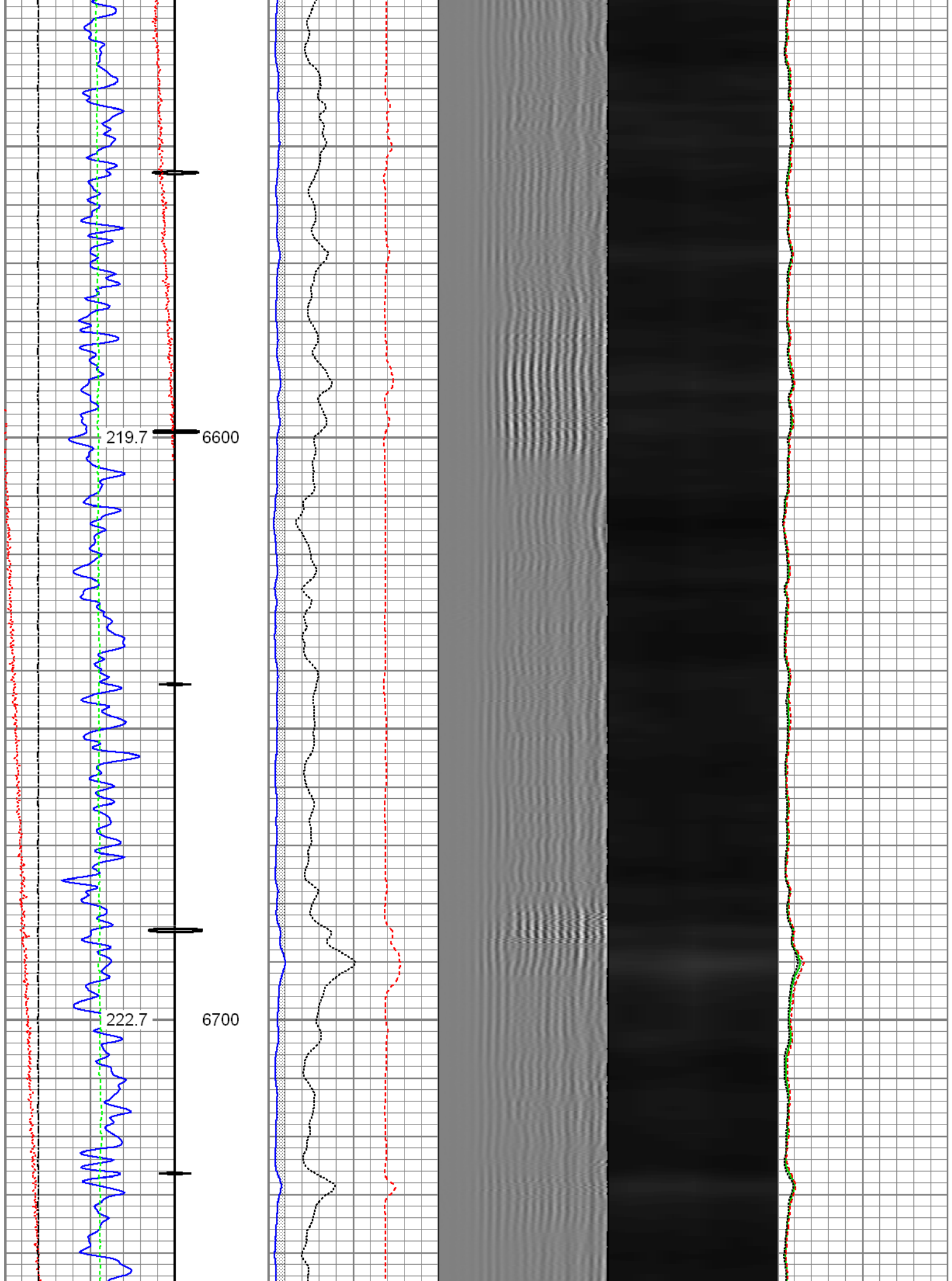




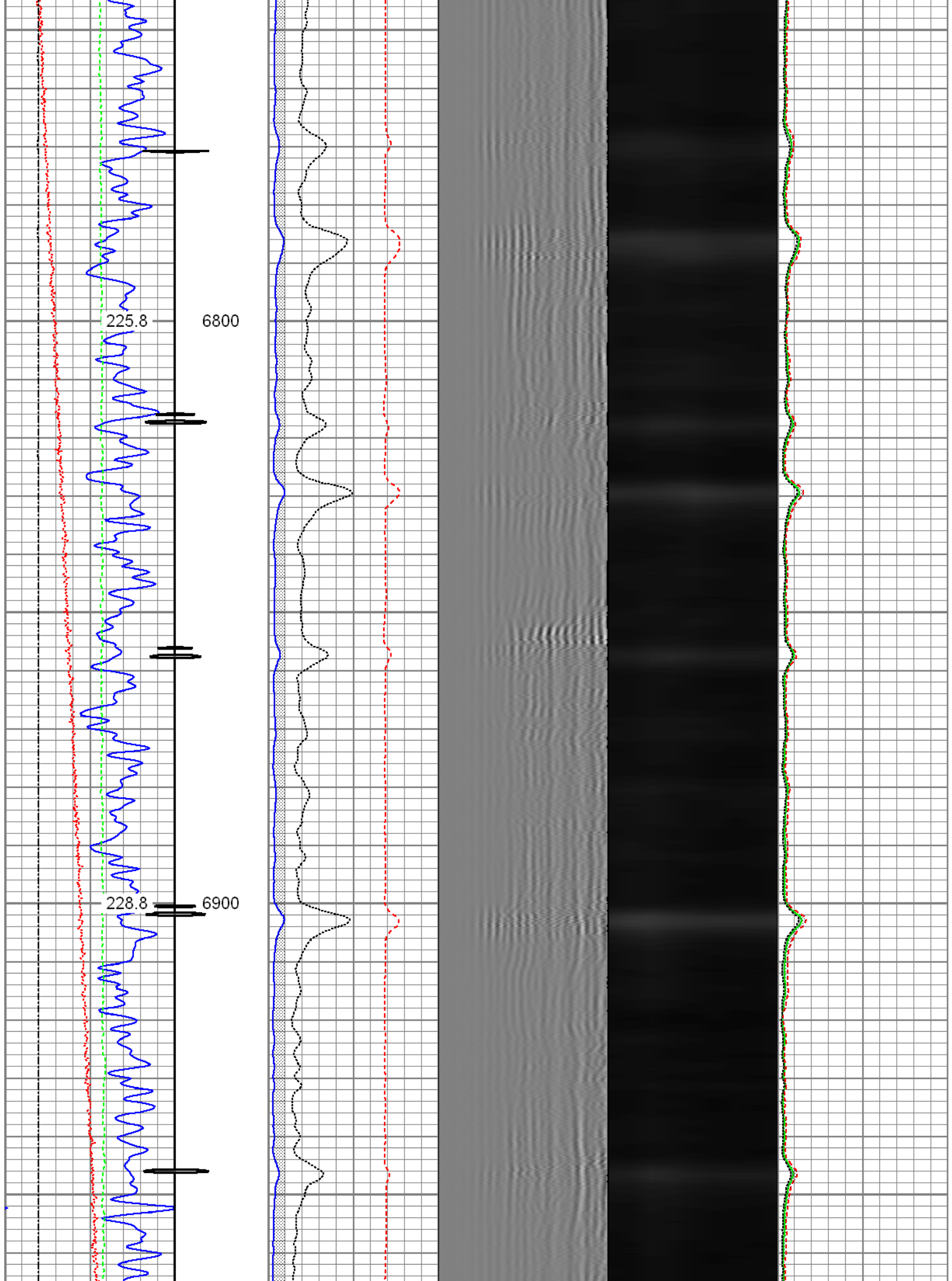


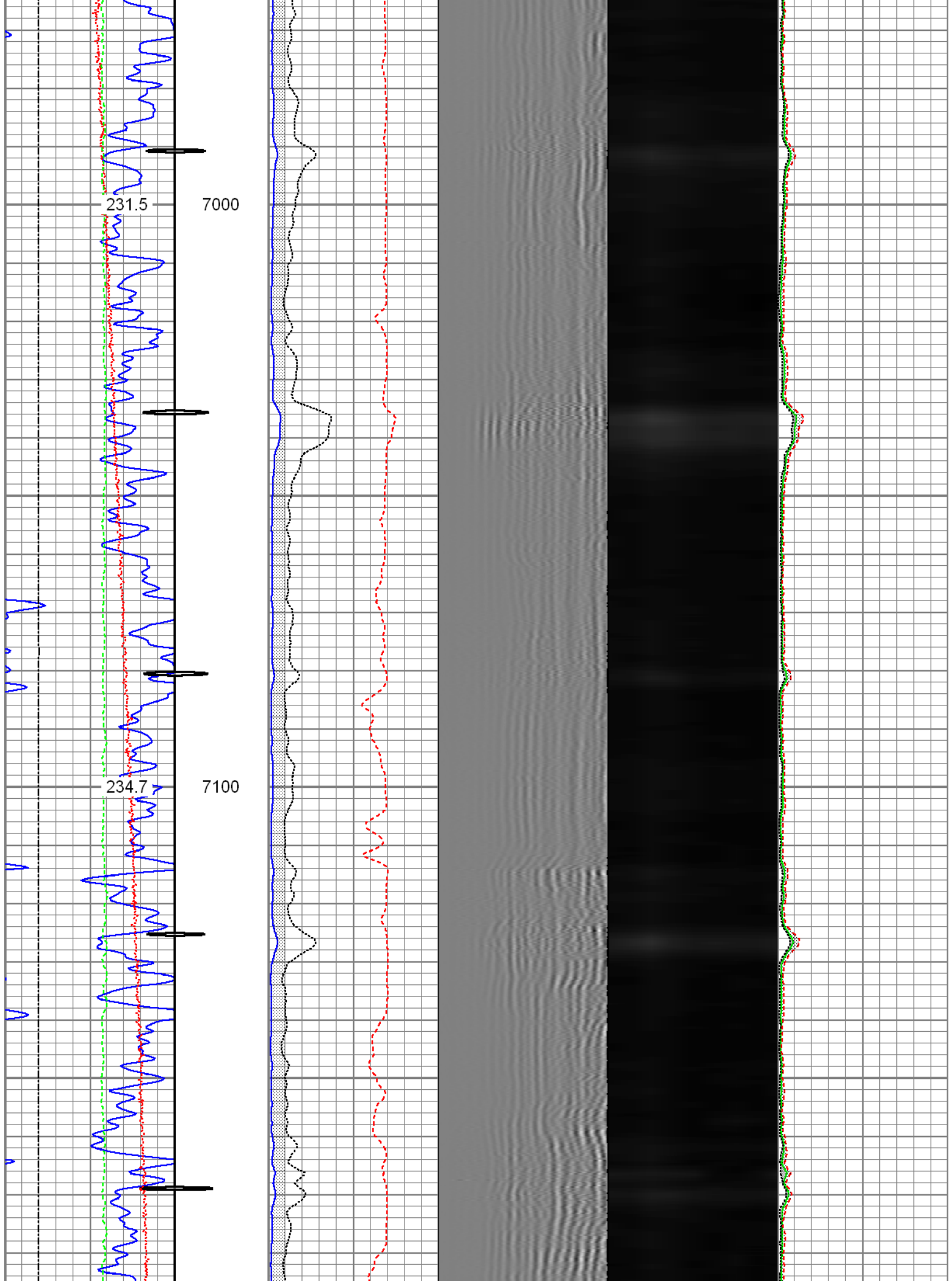


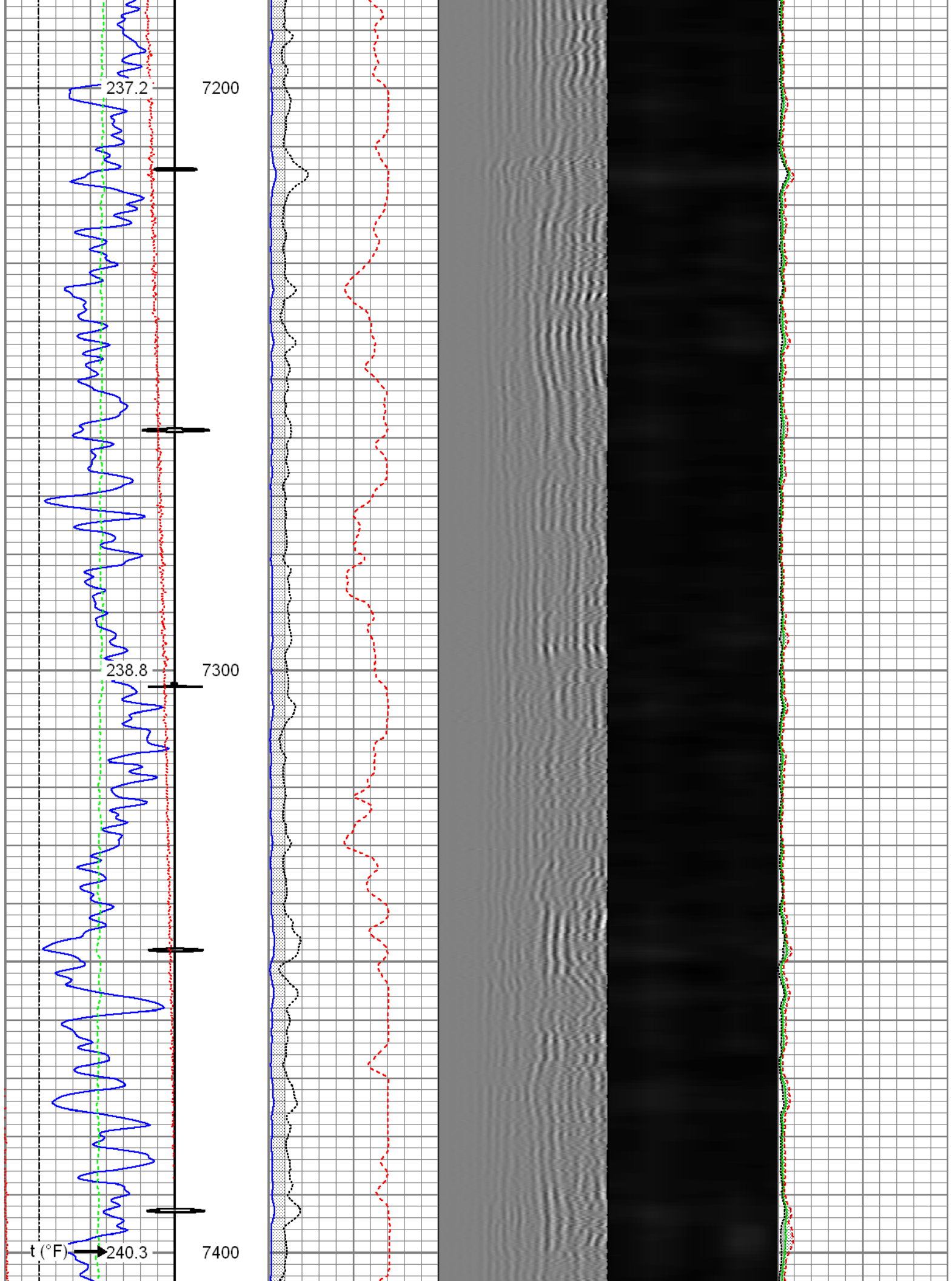


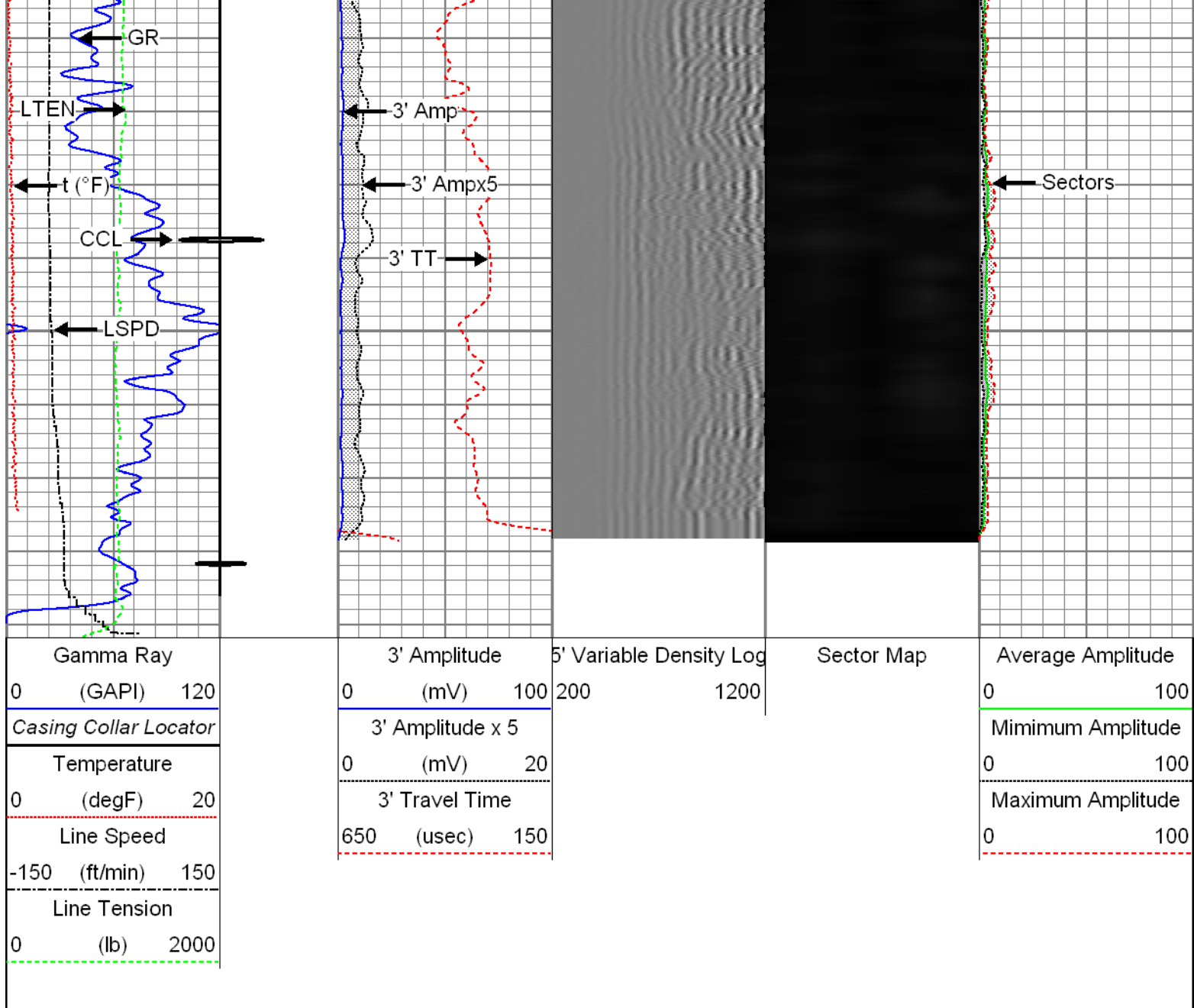






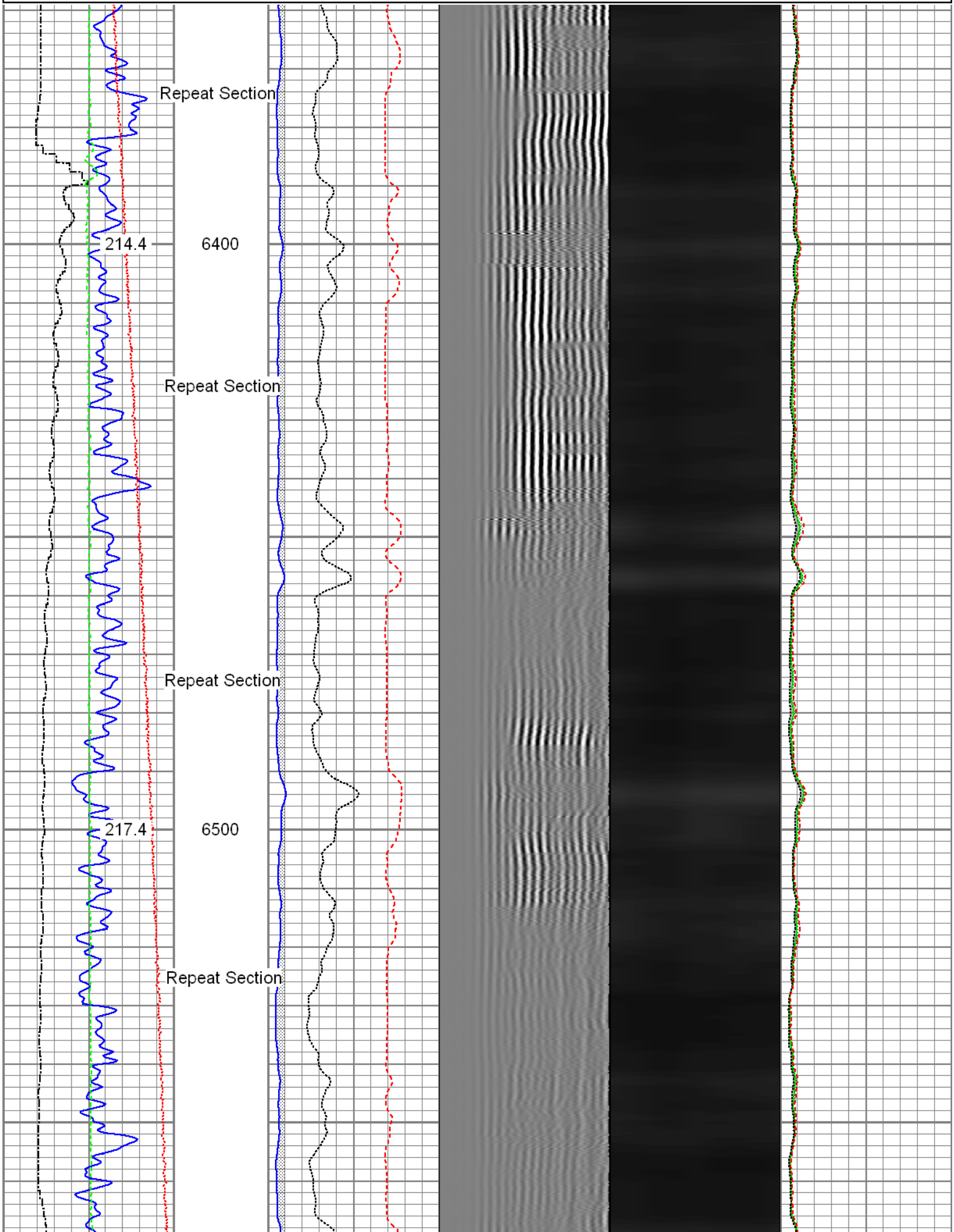


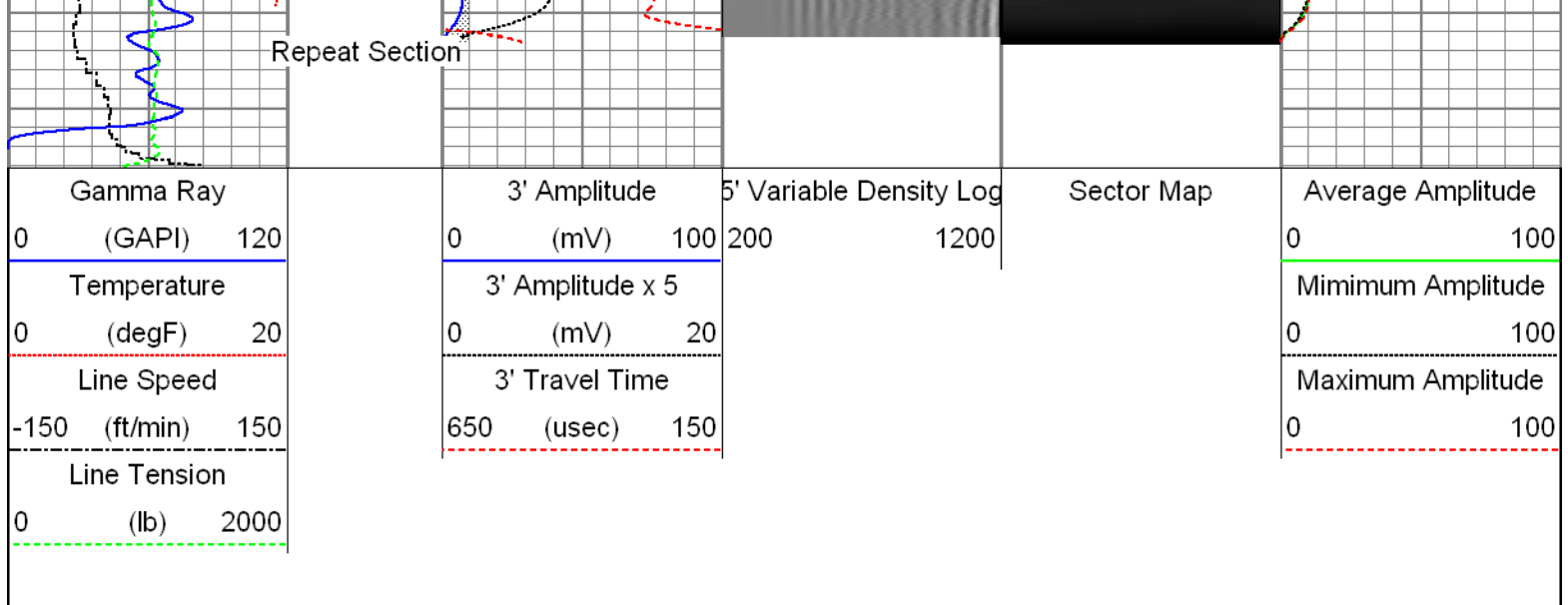


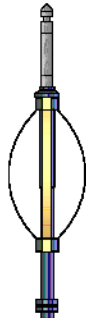



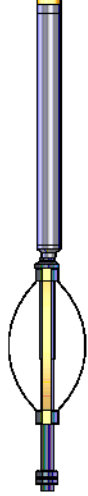
<b>FMC Technologies</b>		Repeat Pass		
		Recorded with 2800 PSI Surface Induced Pressure		
Database File: c:\warrior\data\0512342208_anadarko_alvin 1n-29hz_02-24-16_rb\0512342208_anadarko_alvin 1n-2 Dataset Pathname: run2/pass3.1 Presentation Format: radii Dataset Creation: Wed Feb 24 19:47:50 2016 by Calc 7.0 B1 Charted by: Depth in Feet scaled 1:240				
Gamma Ray 0 (GAPI) 120	3' Amplitude 0 (mV) 100	5' Variable Density Log 200 1200	Sector Map	Average Amplitude 0 100
Temperature 0 (degF) 20	3' Amplitude x 5 0 (mV) 20			Minimum Amplitude 0 100
Line Speed -150 (ft/min) 150	3' Travel Time 650 (usec) 150			Maximum Amplitude 0 100
Line Tension				







Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
Head/Volt	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					
			Probe_IL_BS_Cent Probe 2-3/4" Inline Electrical Inline Bowspring Centralizer	2.88	2.75	10.00
CCL	6.51					
DCCL	6.51					

DCC	0.51					
GR	3.77		Probe_CCL_GR-2.75"Digital (FW1211-026) 4.54 Probe 2-3/4" Digital CCL / Gamma Ray Combined	2.75	55.00	
			Probe_IL_BS_Cent Probe 2-3/4" Inline Electrical Inline Bowspring Centralizer	2.88	2.75	10.00
Dataset: 0512342208_Anadarko_Alvin 1N-29HZ_02-24-16_RBL.db: field/well/run2/pass5.1 Total Length: 23.40 ft Total Weight: 194.00 lb O.D. 2.75 in						

Calibration Report	
Database File:	C:\Warrior\Data\0512342208_Anadarko_Alvin 1N-29HZ_02-24-16_RBL\0512342208_Anadarko_Alvin
Dataset Pathname:	run2/pass5.1
Dataset Creation:	Wed Feb 24 19:42:36 2016 by Calc 7.0 B1

Gamma Ray Calibration Report		
Serial Number:	FW1211-026	
Tool Model:	2.75"Digital	
Performed:	Wed Feb 24 10:35:47 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:	FW1302-002	
Tool Model:	2-3/4"	
Calibration Casing Diameter:	5.500	in
Calibration Depth:	185.923	ft

Master Calibration, performed Wed Feb 24 19:42:23 2016:						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.000	0.595	0.800	71.921	119.592	0.783
CAL	0.007	0.627				
5'	0.000	0.509	0.800	71.921	139.981	0.738
SUM						
S1	0.000	0.602	0.000	100.000	166.308	-0.060
S2	0.000	0.596	0.000	100.000	168.034	-0.077
S3	0.001	0.625	0.000	100.000	160.255	-0.084
S4	0.000	0.614	0.000	100.000	162.993	-0.057
S5	0.000	0.593	0.000	100.000	168.762	-0.026
S6	0.000	0.599	0.000	100.000	167.076	-0.061
S7	0.000	0.600	0.000	100.000	168.034	-0.077

S7	0.000	0.600	0.000	100.000	166.813	-0.027
S8	0.000	0.612	0.000	100.000	163.438	-0.021

Internal Reference Calibration, performed Wed Feb 24 17:45:14 2016:

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.007	0.628	0.007	0.627	1.000	-0.000

Air Zero Calibration, performed Wed Feb 24 17:44:39 2016:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.007		0.000		-0.000	
5'	0.006		0.000		0.000	
SUM						
S1	0.007		0.000		0.000	
S2	0.007		0.000		-0.000	
S3	0.007		0.000		-0.000	
S4	0.007		0.000		0.000	
S5	0.006		0.000		-0.000	
S6	0.007		0.000		-0.000	
S7	0.006		0.000		-0.000	
S8	0.007		0.000		-0.000	



Company	Kerr-McGee Oil & Gas OnShore, L.P.
Well	Alvin 1N-29HZ
Field	Wattenberg
County	Weld
State	Colorado