

Radial Cement Bond Gamma Ray Casing Collar Log

Company	Whiting Oil & Gas Corporation	Company	Whiting Oil & Gas Corporation
Well	Horsetail 07E-0634	Well	Horsetail 07E-0634
Field	Wildcat	Field	Wildcat
County	Weld	County	Weld
State	Colorado	State	Colorado
Location:	API # : 05-123-41650	Other Services	---
Permanent Datum	SEC 7 TWP 10N RGE 57W	Elevation	---
Log Measured From	Ground Level	Elevation	4925'
Drilling Measured From	Kelly Bushing	Elevation	21 FT
	Kelly Bushing	Elevation	4925'

Date	30-Dec-2015
Run Number	One
Depth Driller	13703 FT
Depth Logger	6011 FT
Bottom Logged Interval	6006 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Water
Density / Viscosity	8.34 lbs/gal
Max. Recorded Temp.	208°F
Estimated Cement Top	138 FT
Time Well Ready	ROA
Time Logger on Bottom	8:47 AM
Equipment Number	HD-0343
Location	Fort Lupton, CO
Recorded By	Andrew Olmsted
Witnessed By	E.Moore

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	21 FT	2008 FT		
Intermediate #1	5 1/2	20	P-110	21 FT	13683 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 per customer request
Depth referenced to Kelly Bushing at 21 FT
Log ran from as deep as possible to Surface
Marker Joint found at 5362 FT
Recorded with 1500 PSI Surface Induced Pressure
Logging tools were clean and free of any debris upon completion of operations

Thank you for choosing FMC Technologies Surface Integrated Services.

Database File: c:\warrior\data\12-30-15_whiting_horsetail 07e-0634_rbl\12-30-15_whiting_horsetail 07e-0634_rbl.db

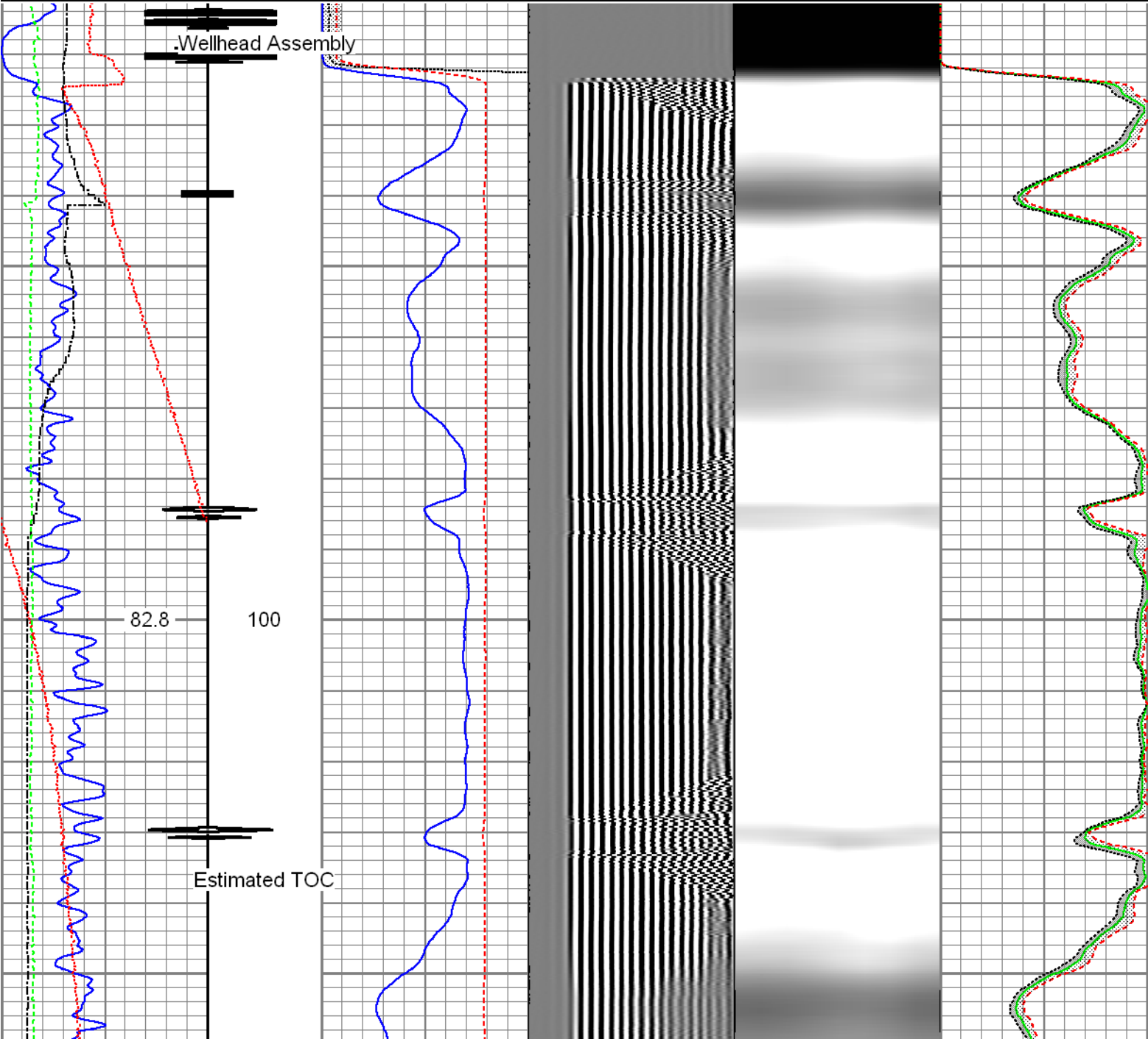
Dataset Pathname: pass6.1

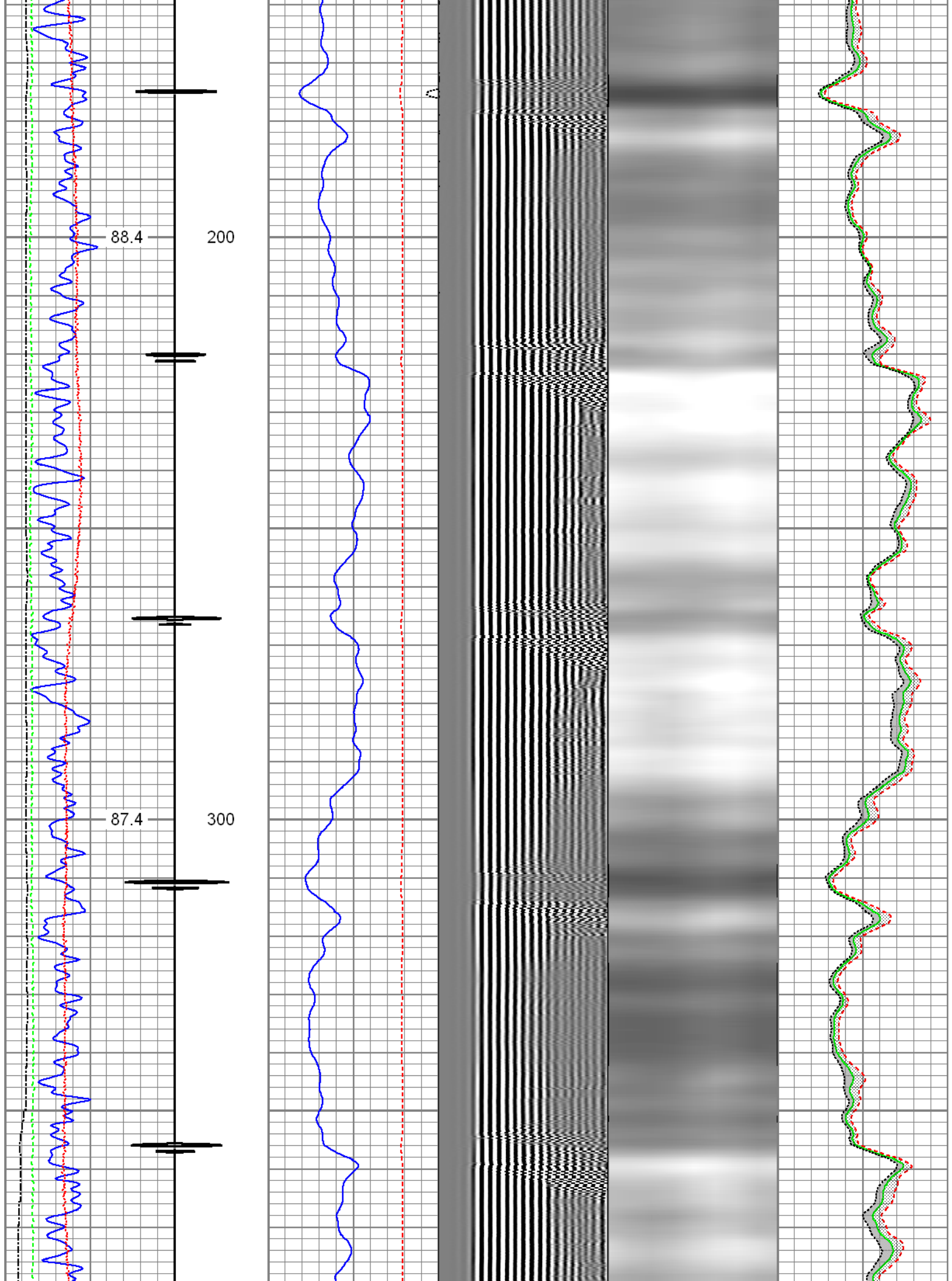
Presentation Format: radii

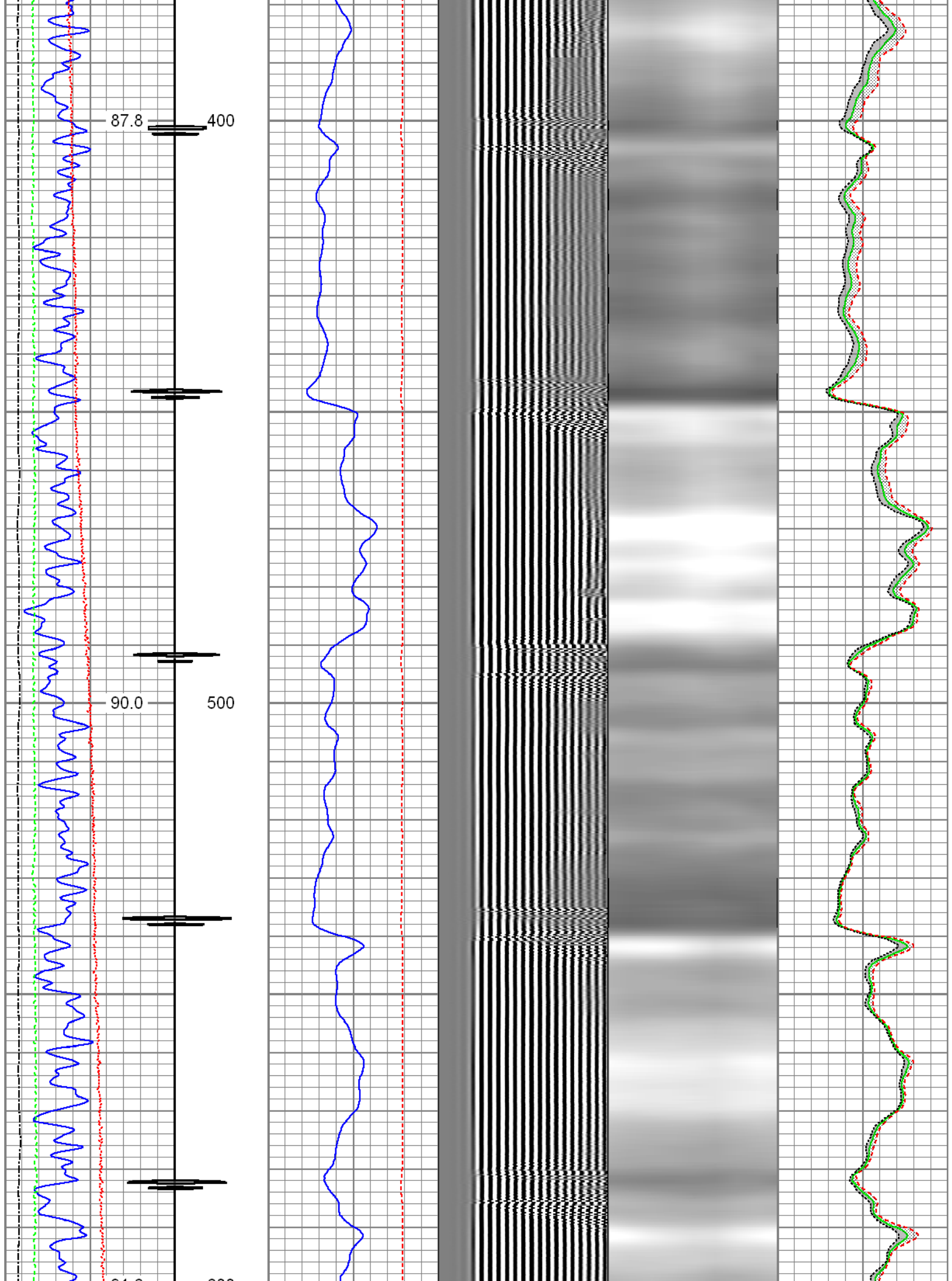
Dataset Creation: Wed Dec 30 09:45:11 2015 by Calc 7.0 B1

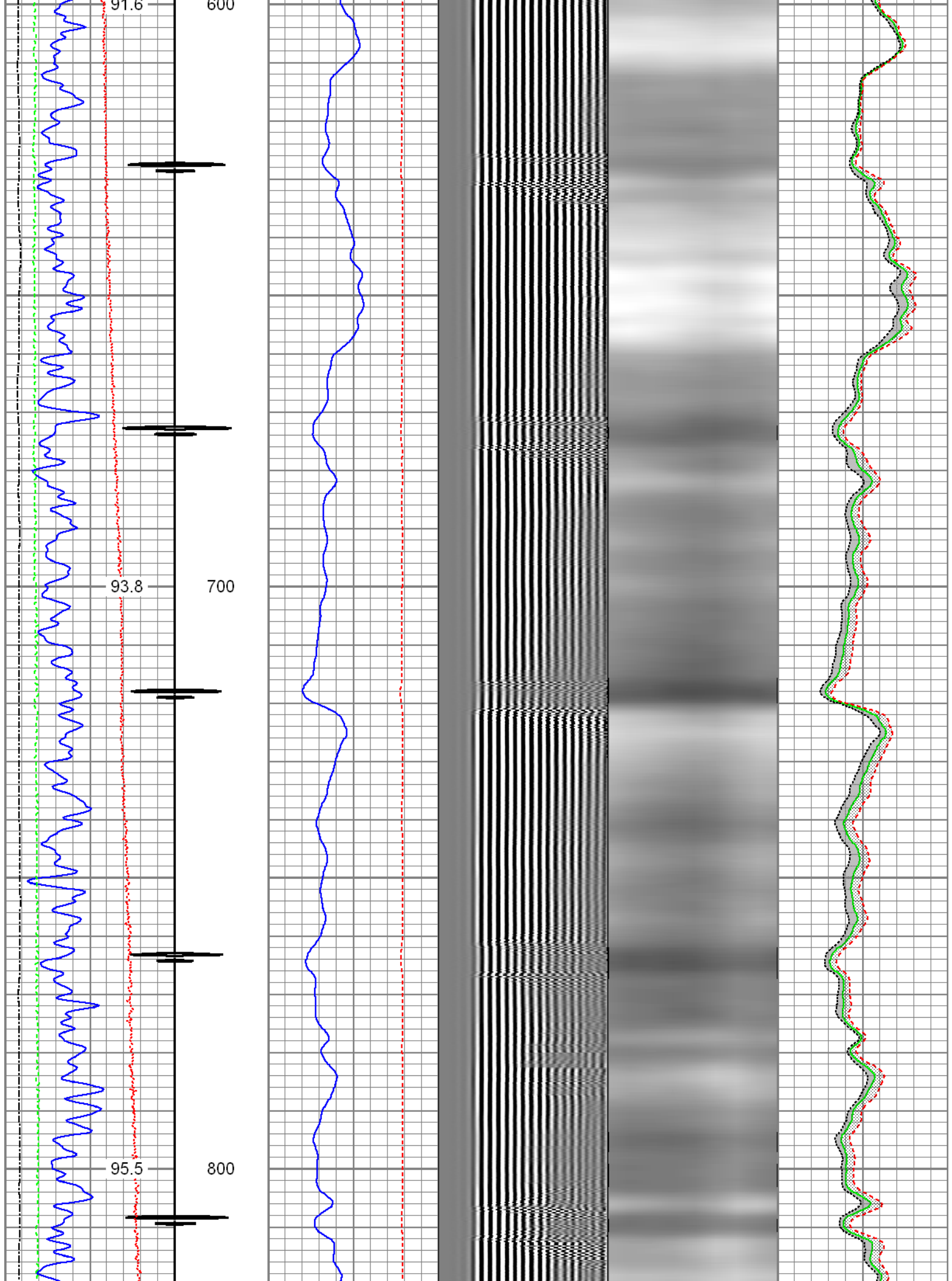
Charted by: Depth in Feet scaled 1:240

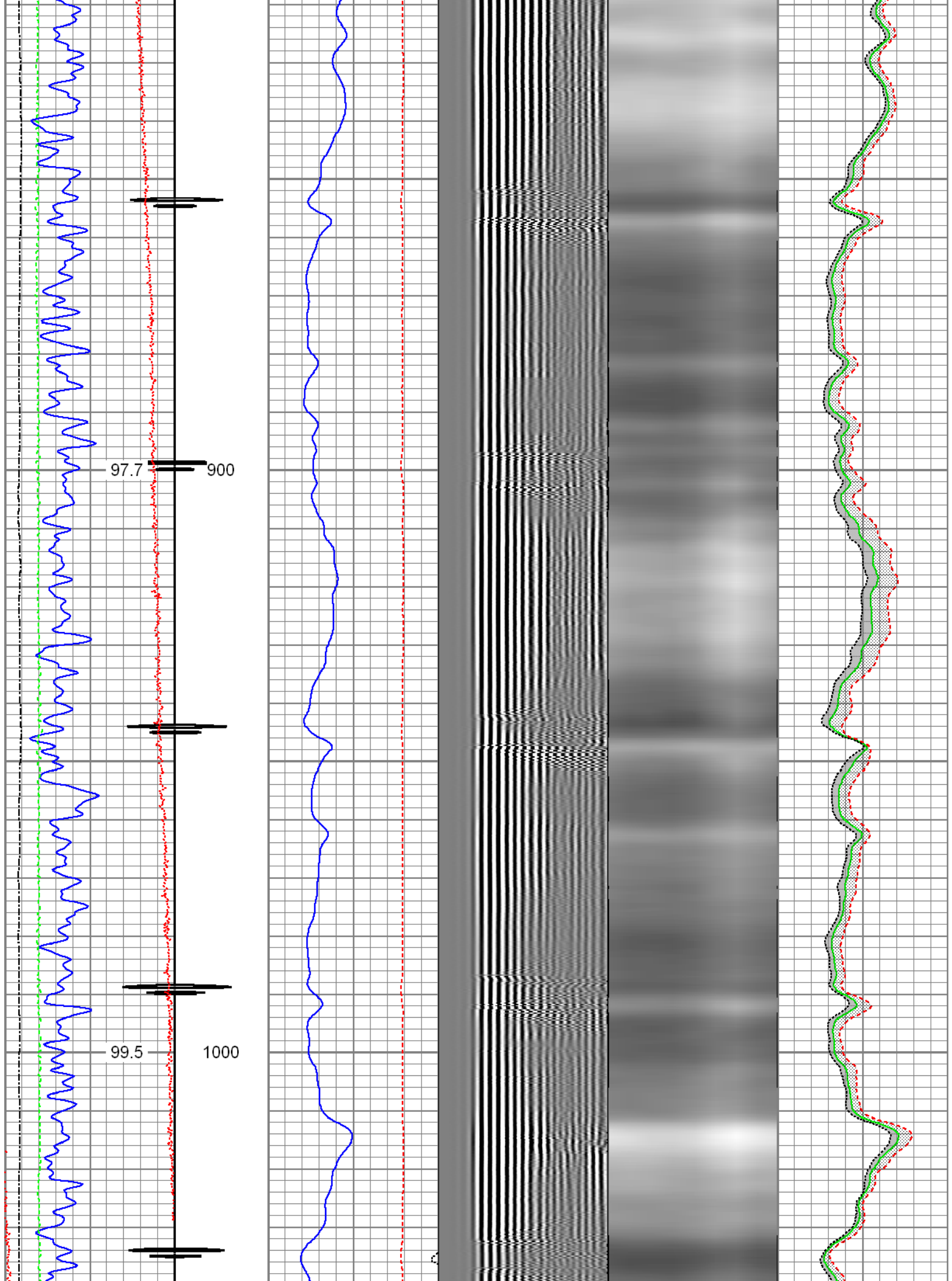
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Mimimum Amplitude
Temperature	0 (mV) 20			0 100
0 (degF) 20	3' Travel Time			Maximum Amplitude
Line Speed	650 (usec) 150			0 100
-150 (ft/min) 150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

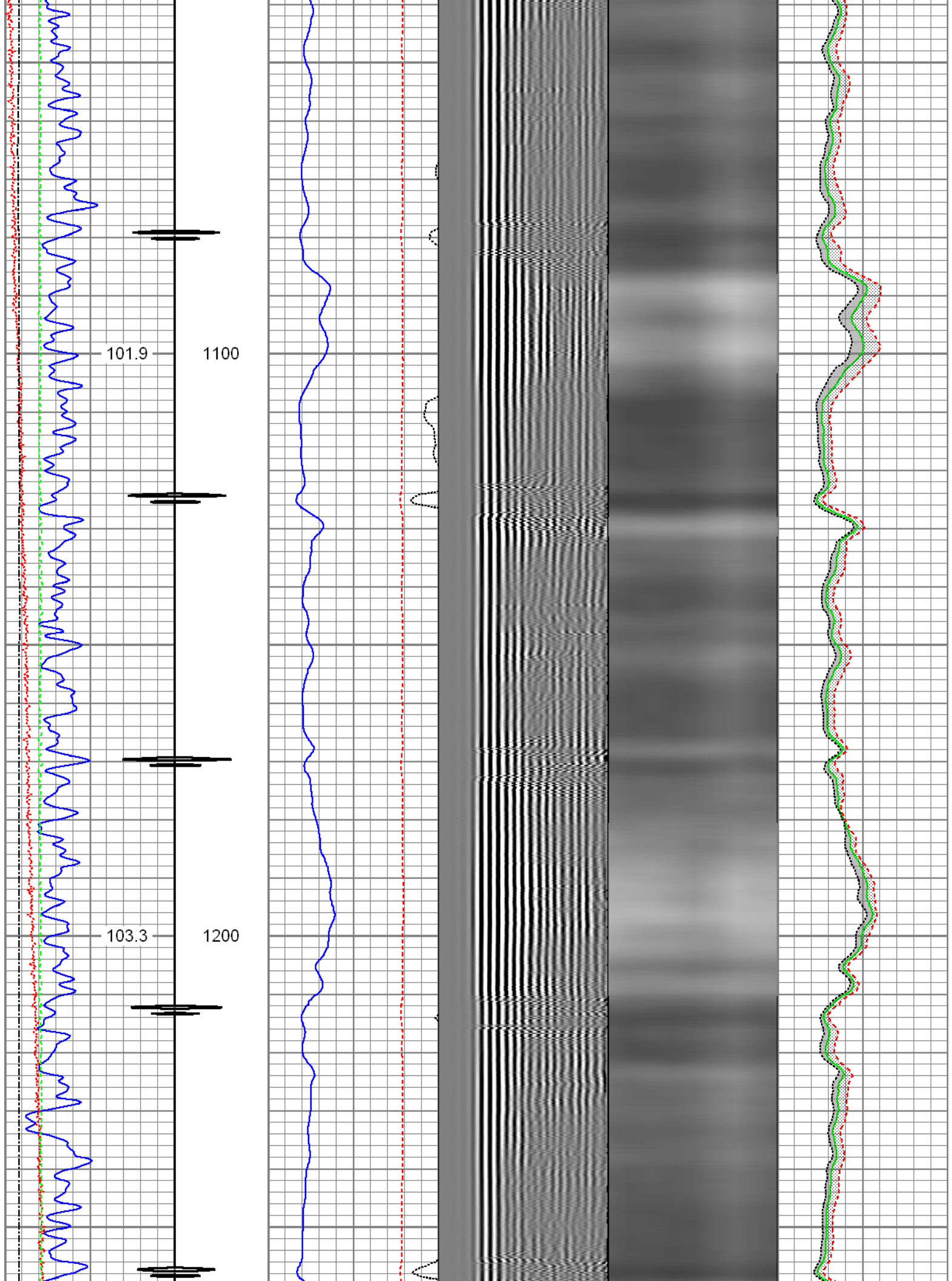


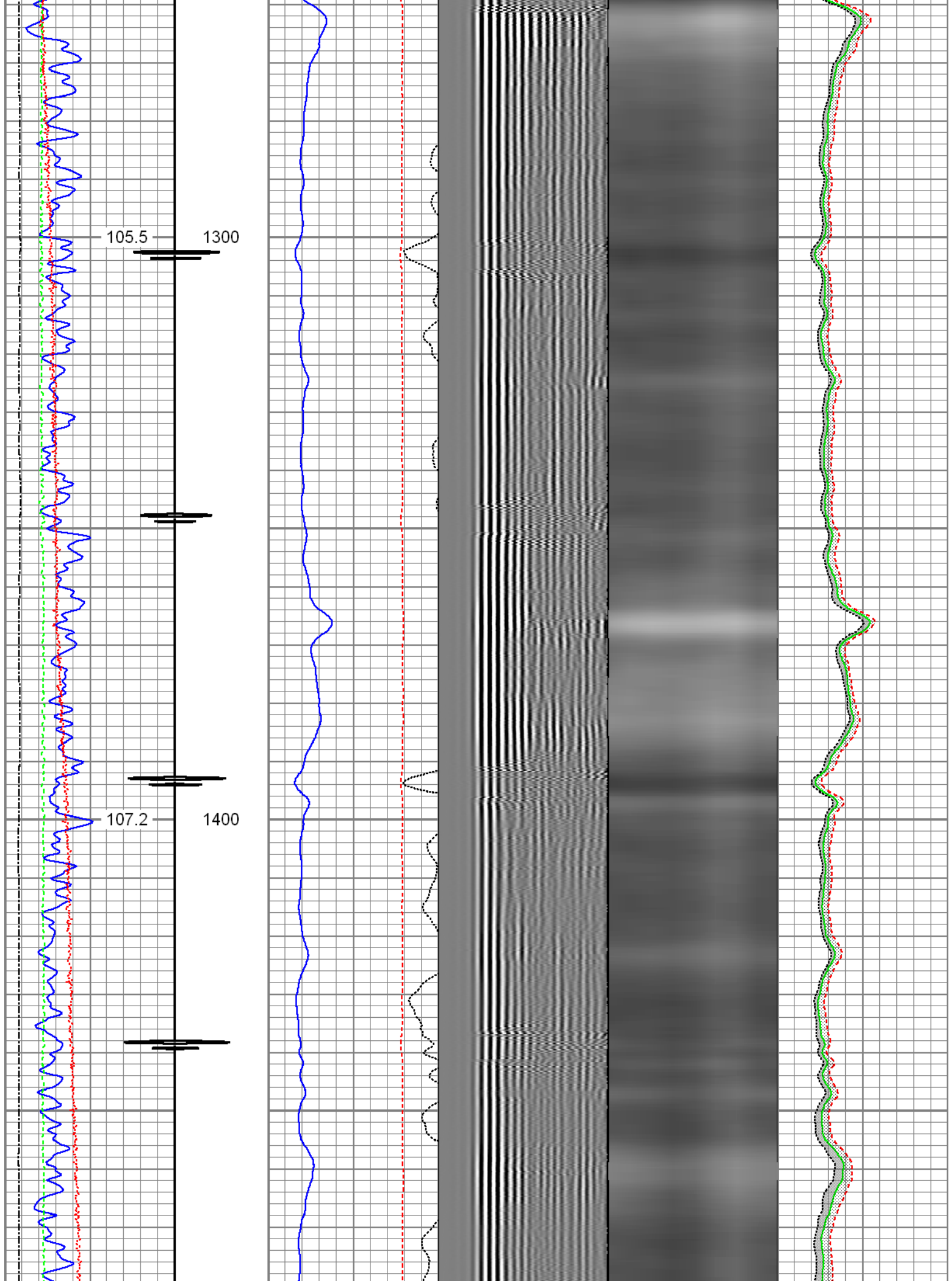


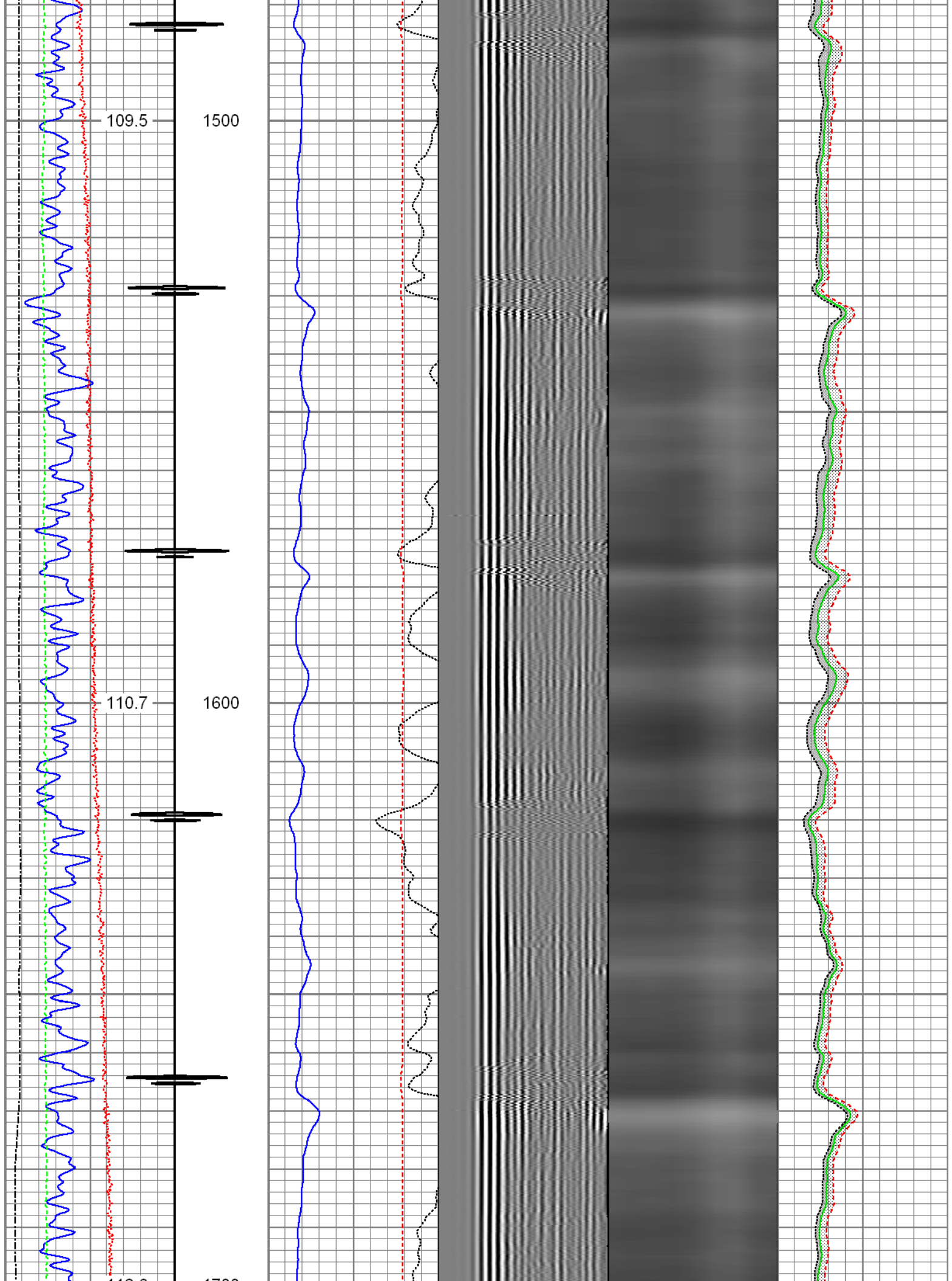


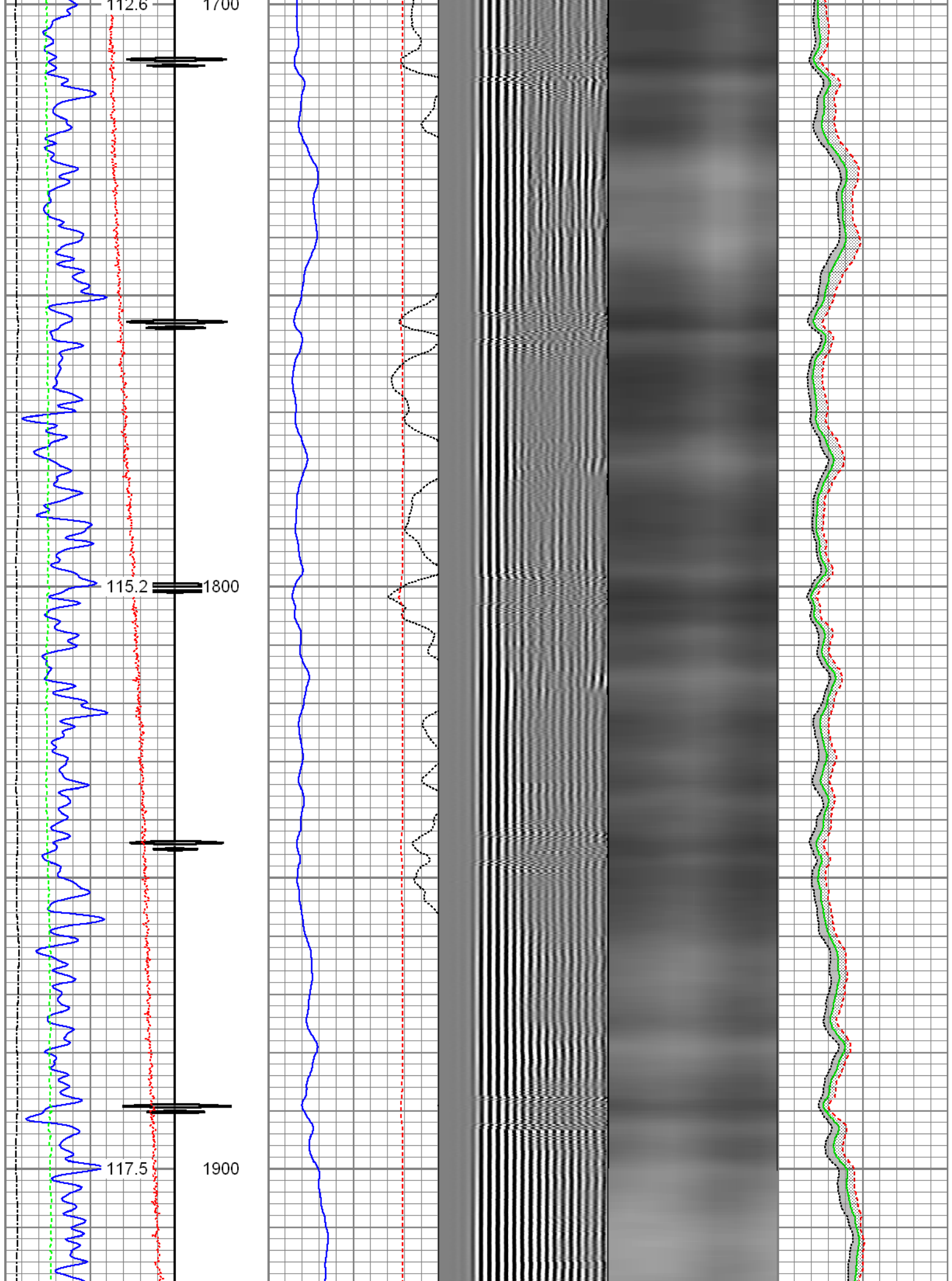


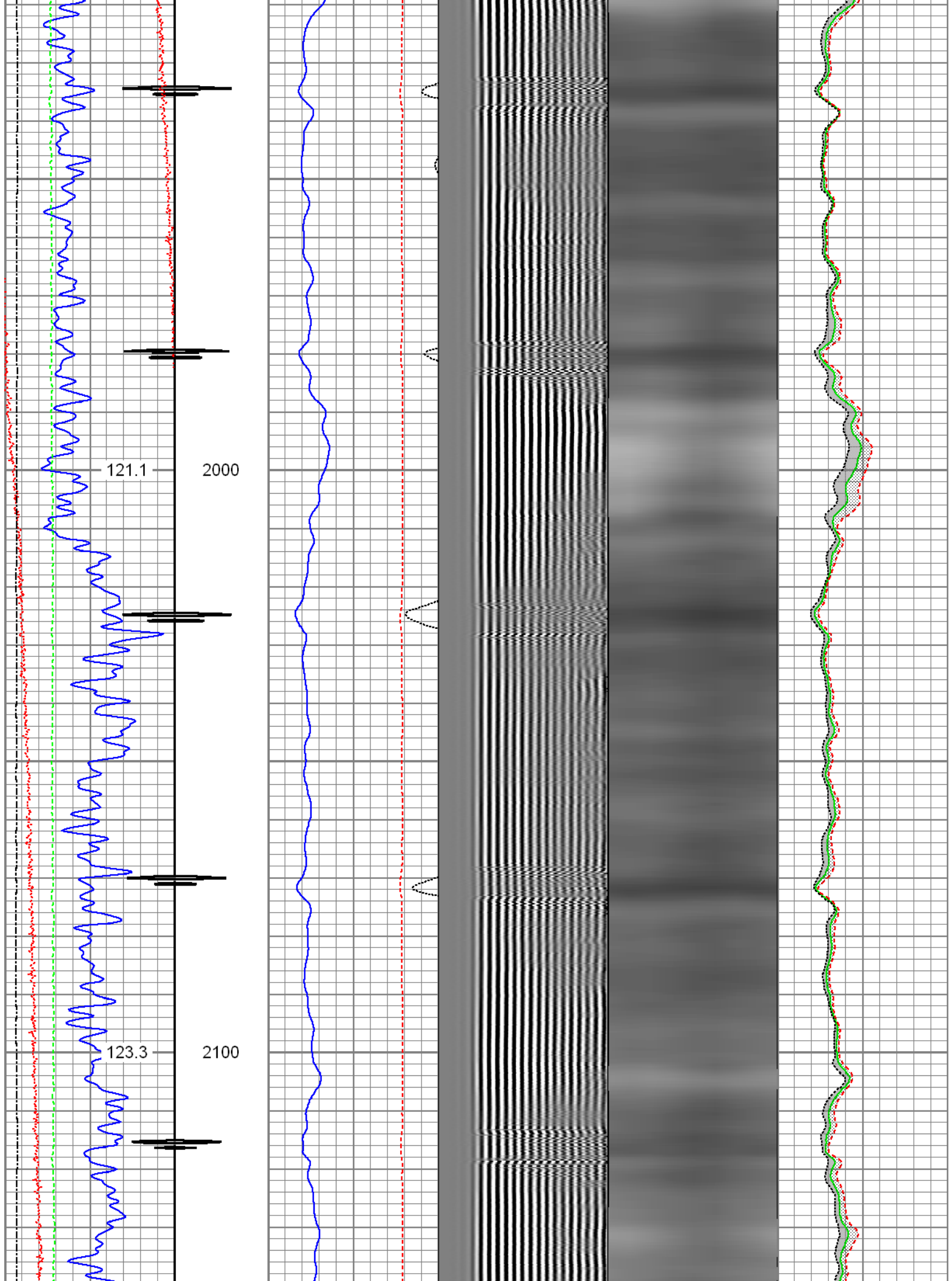


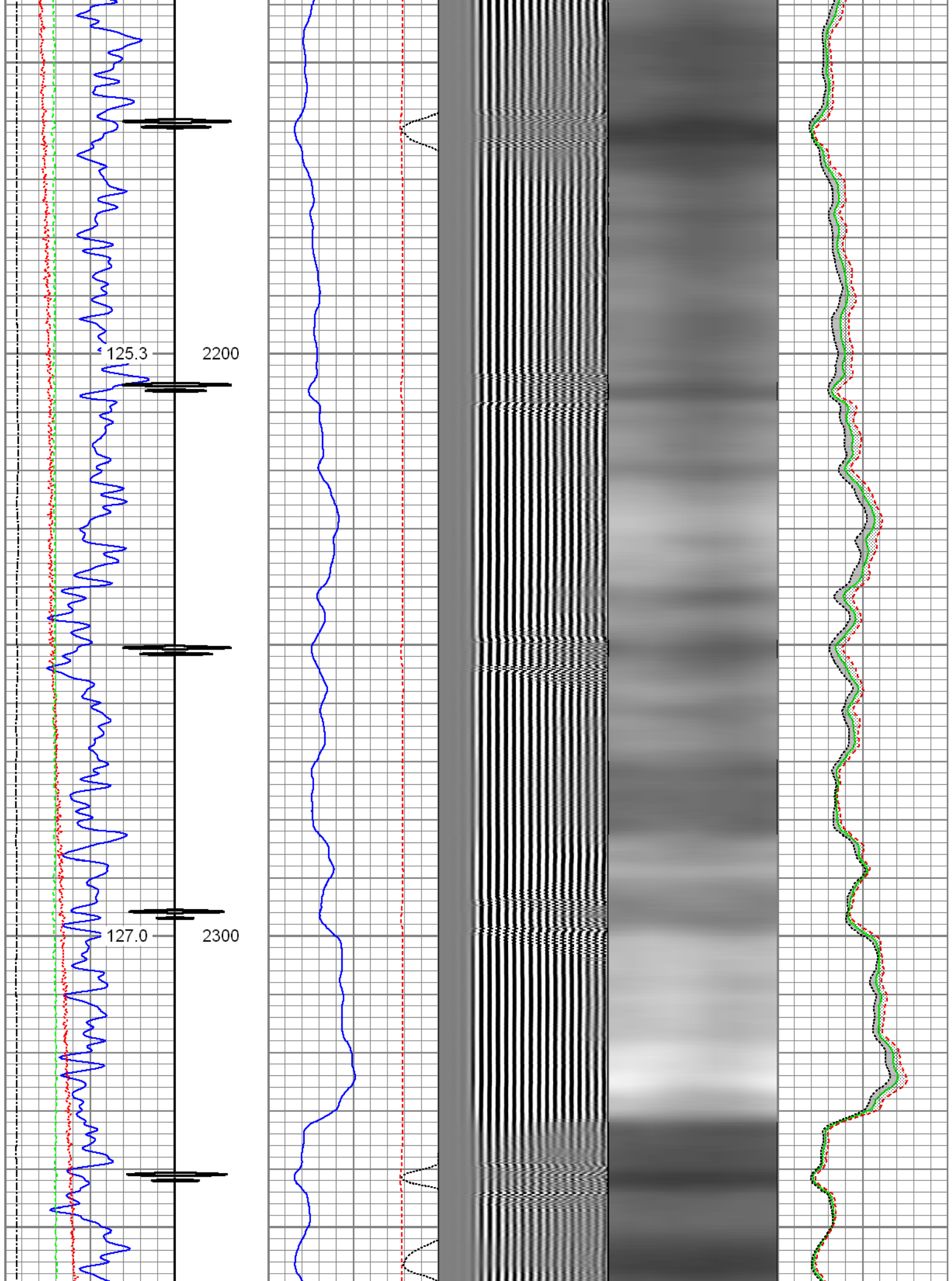


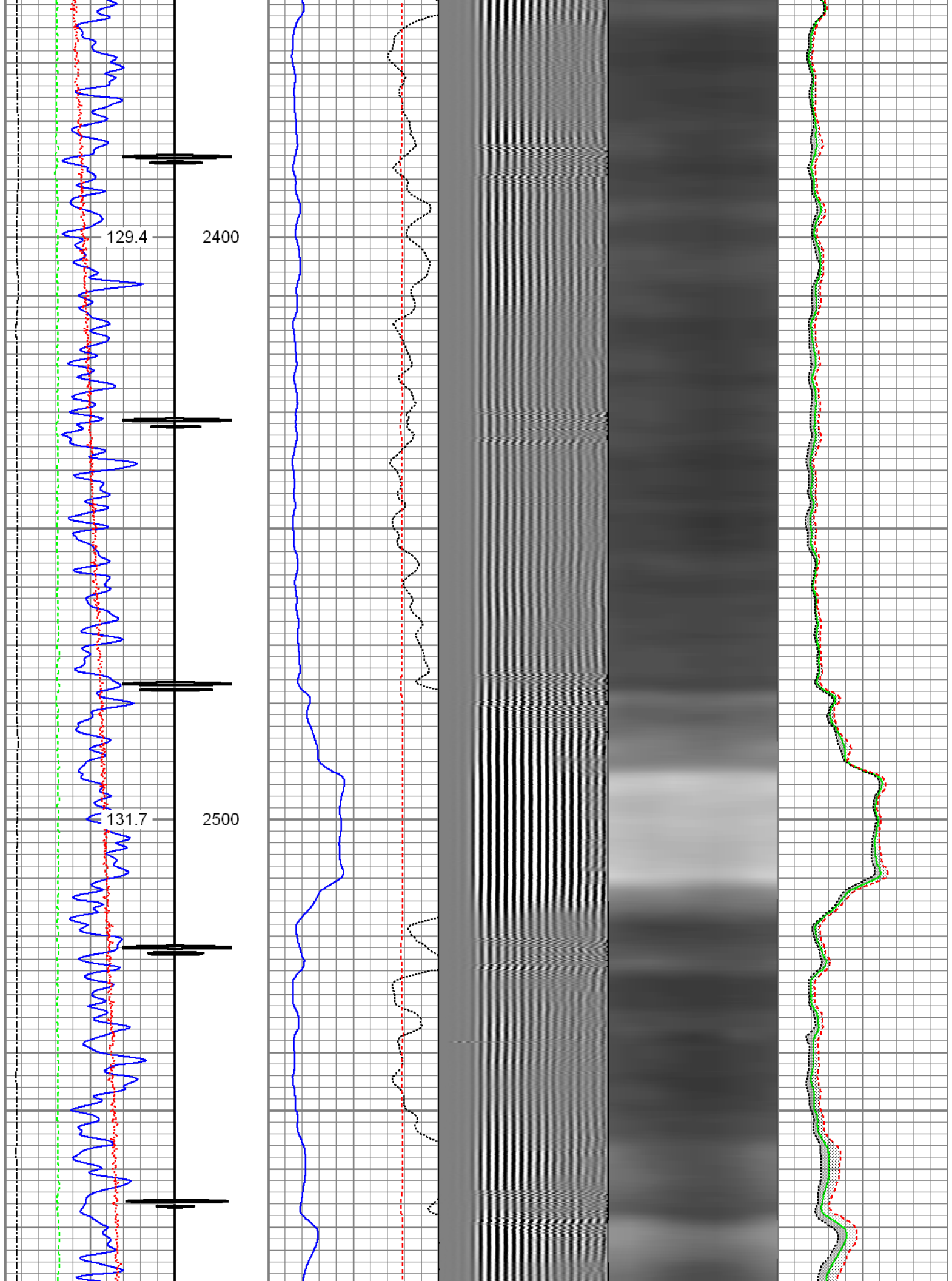


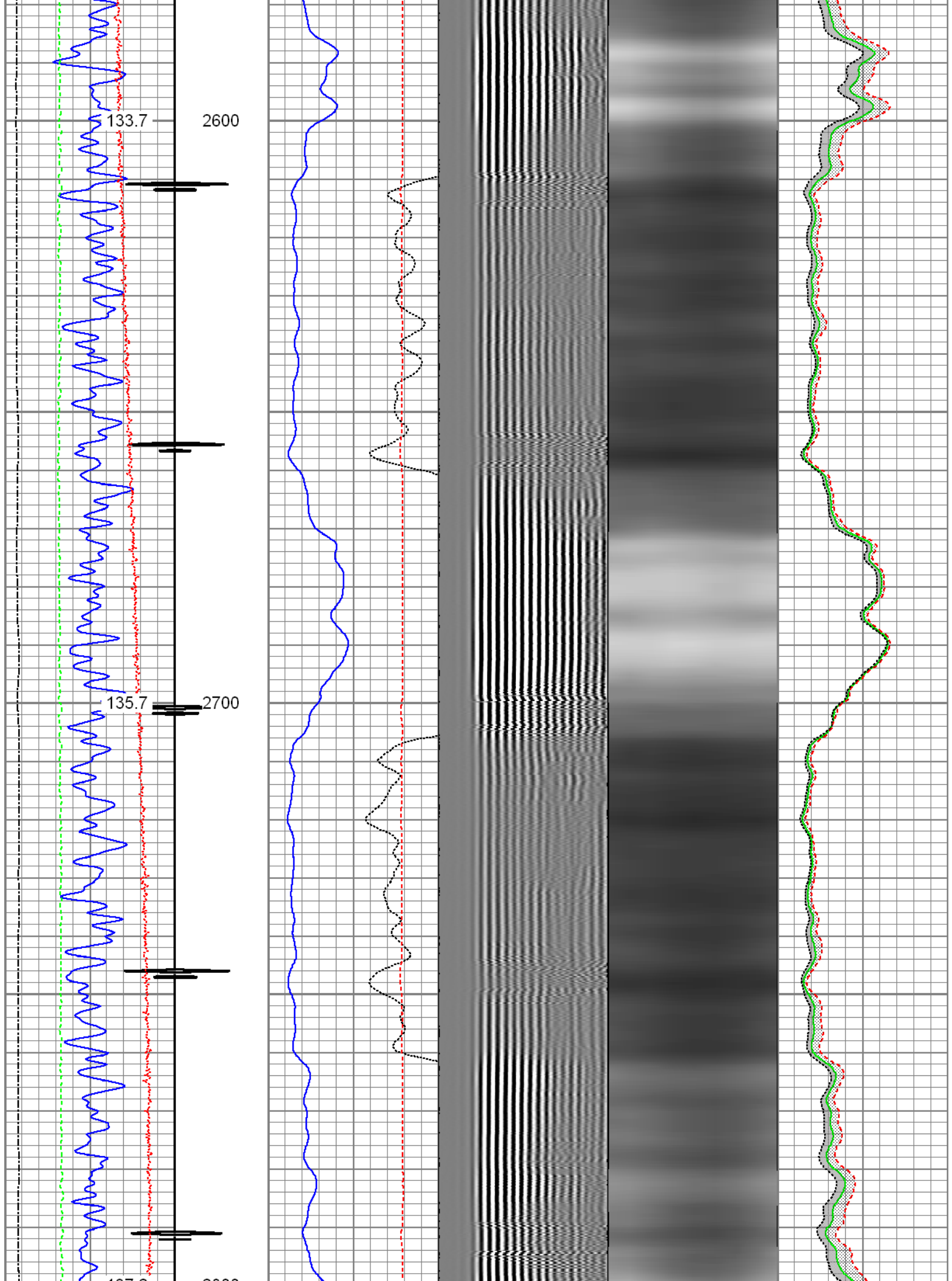


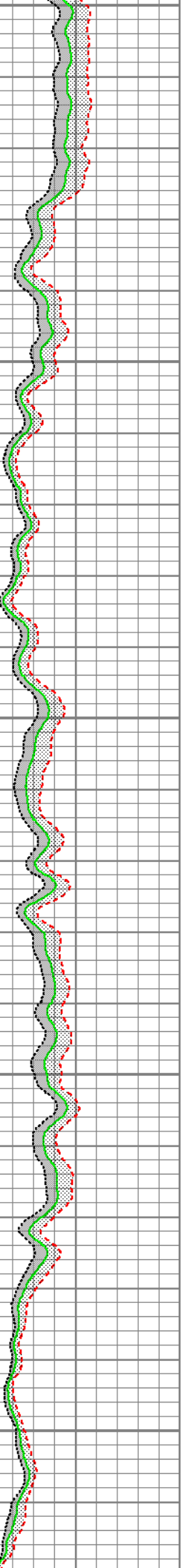
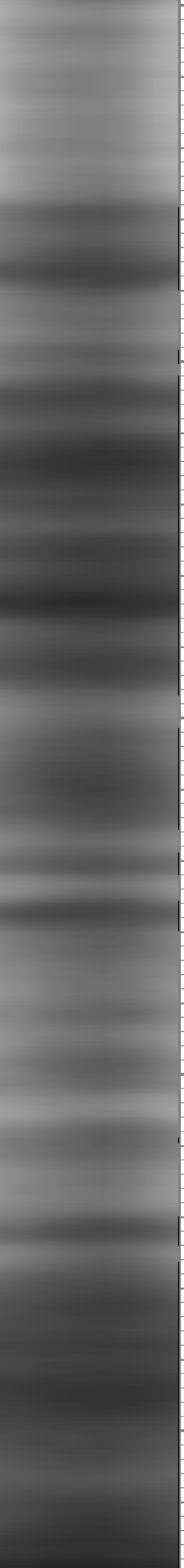
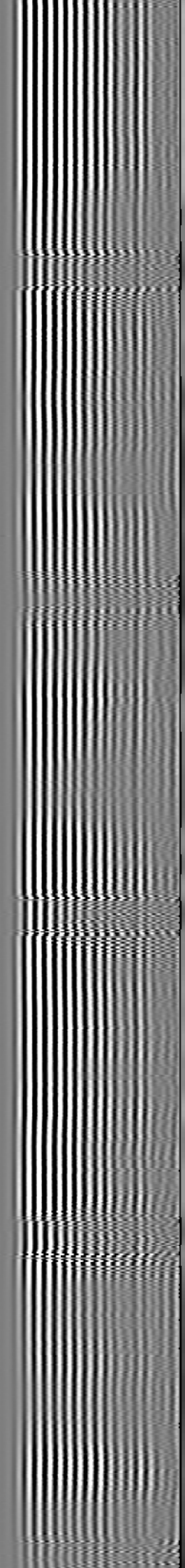
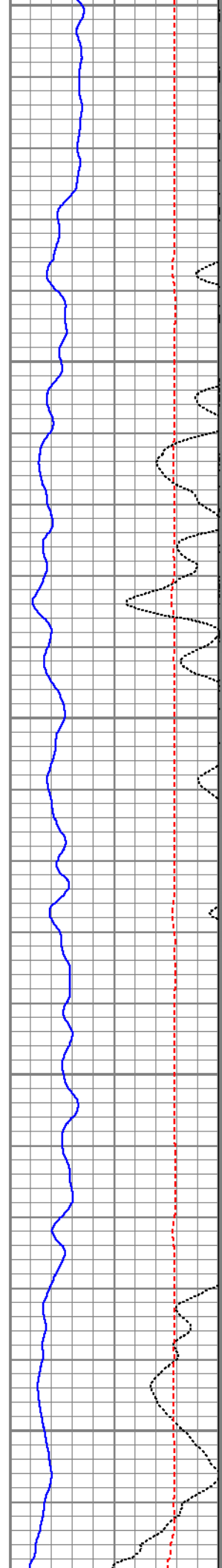
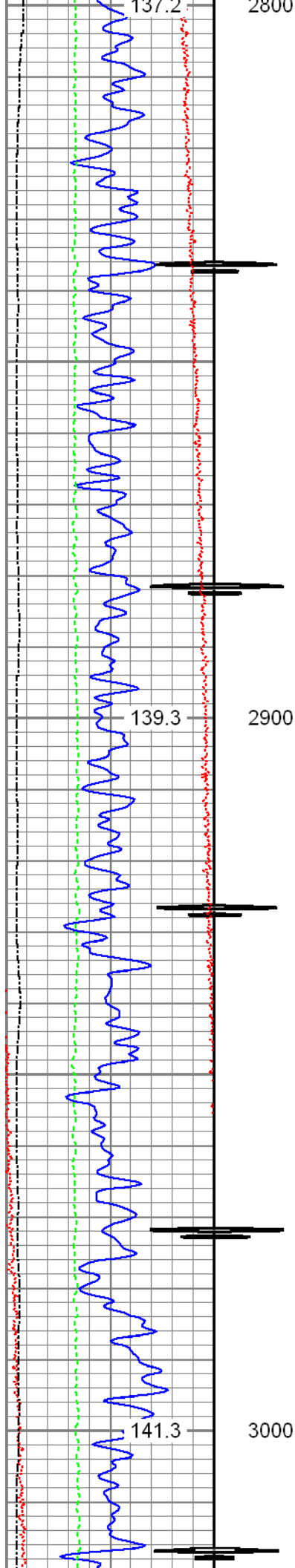


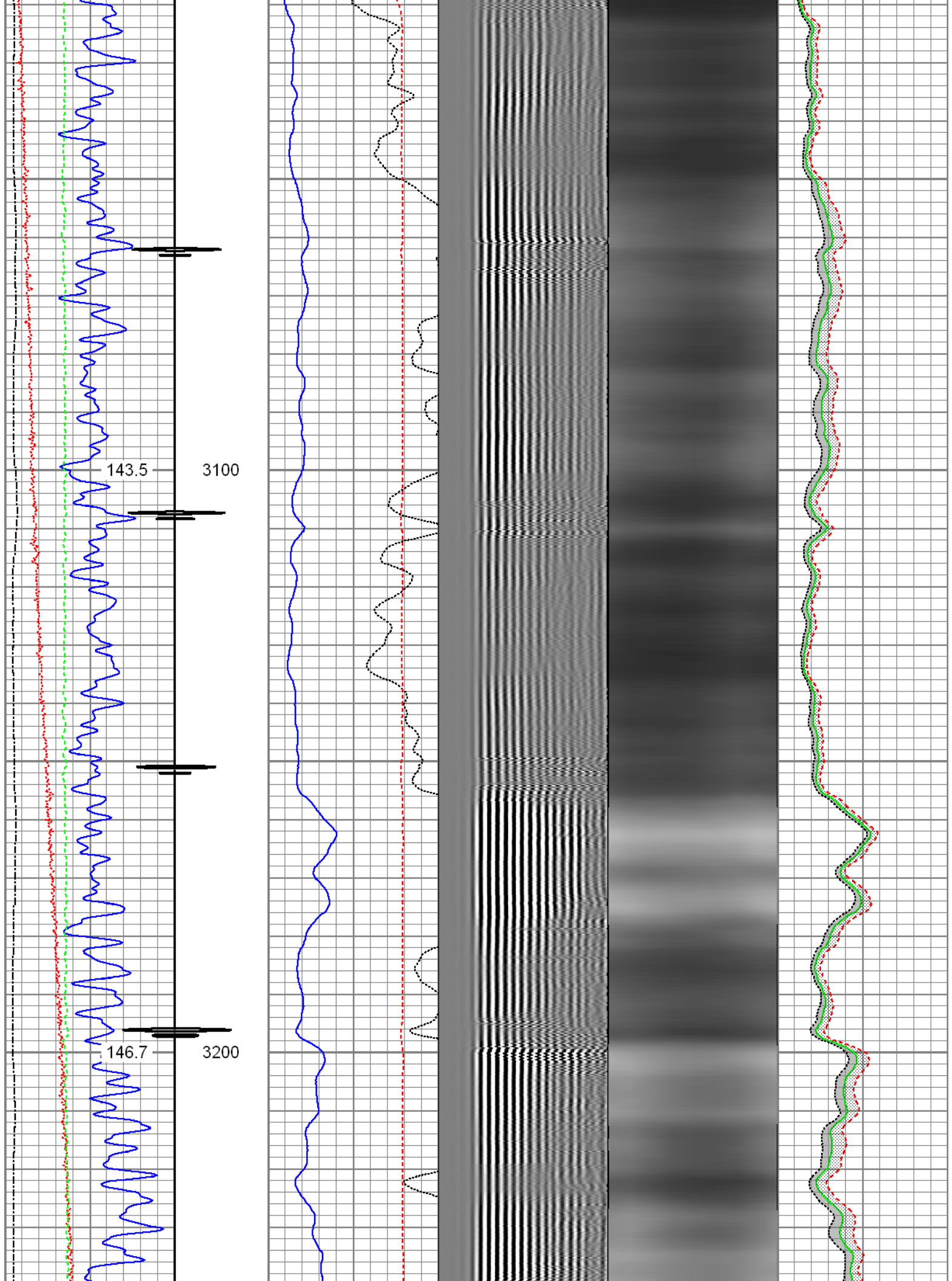


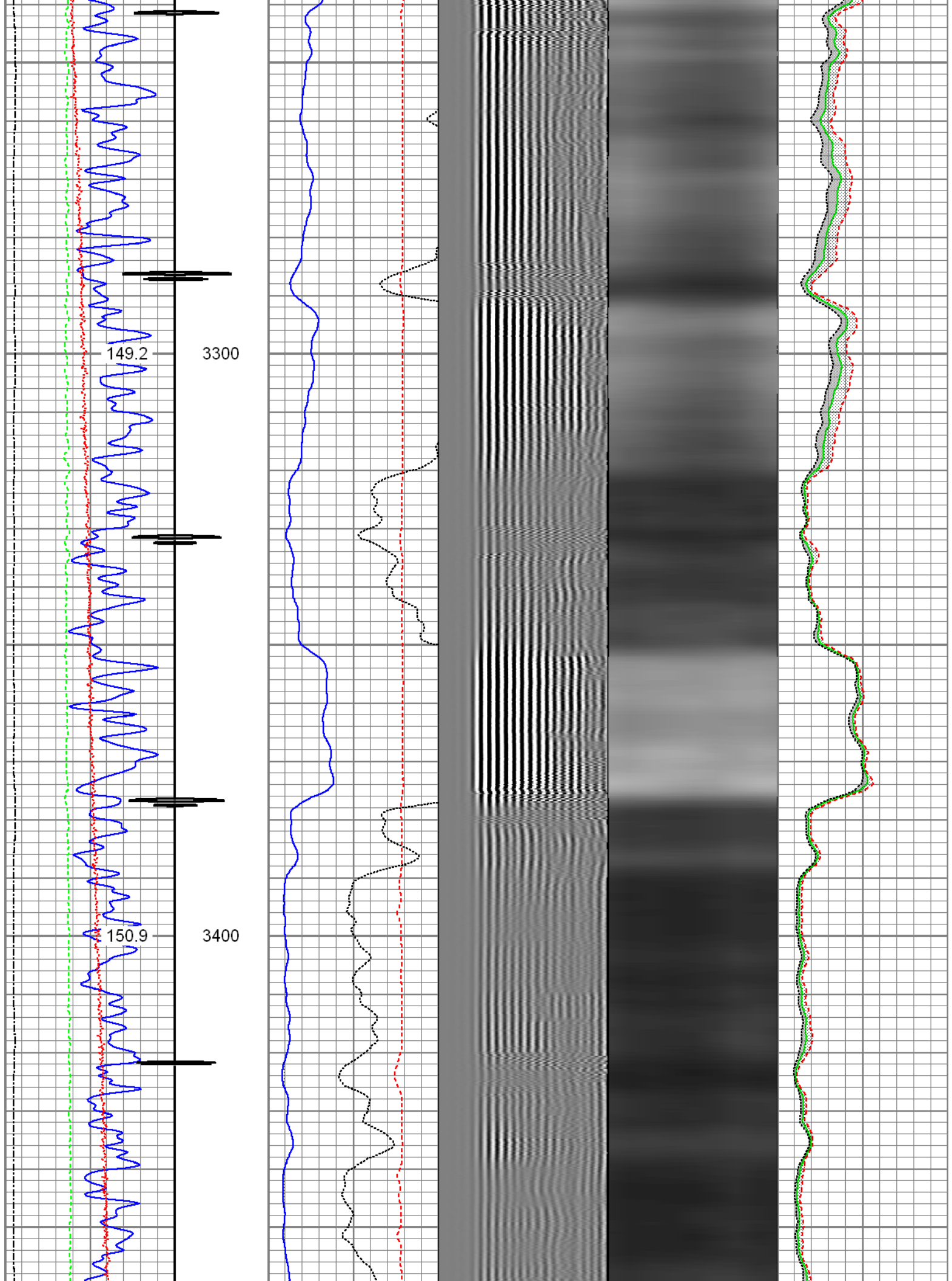


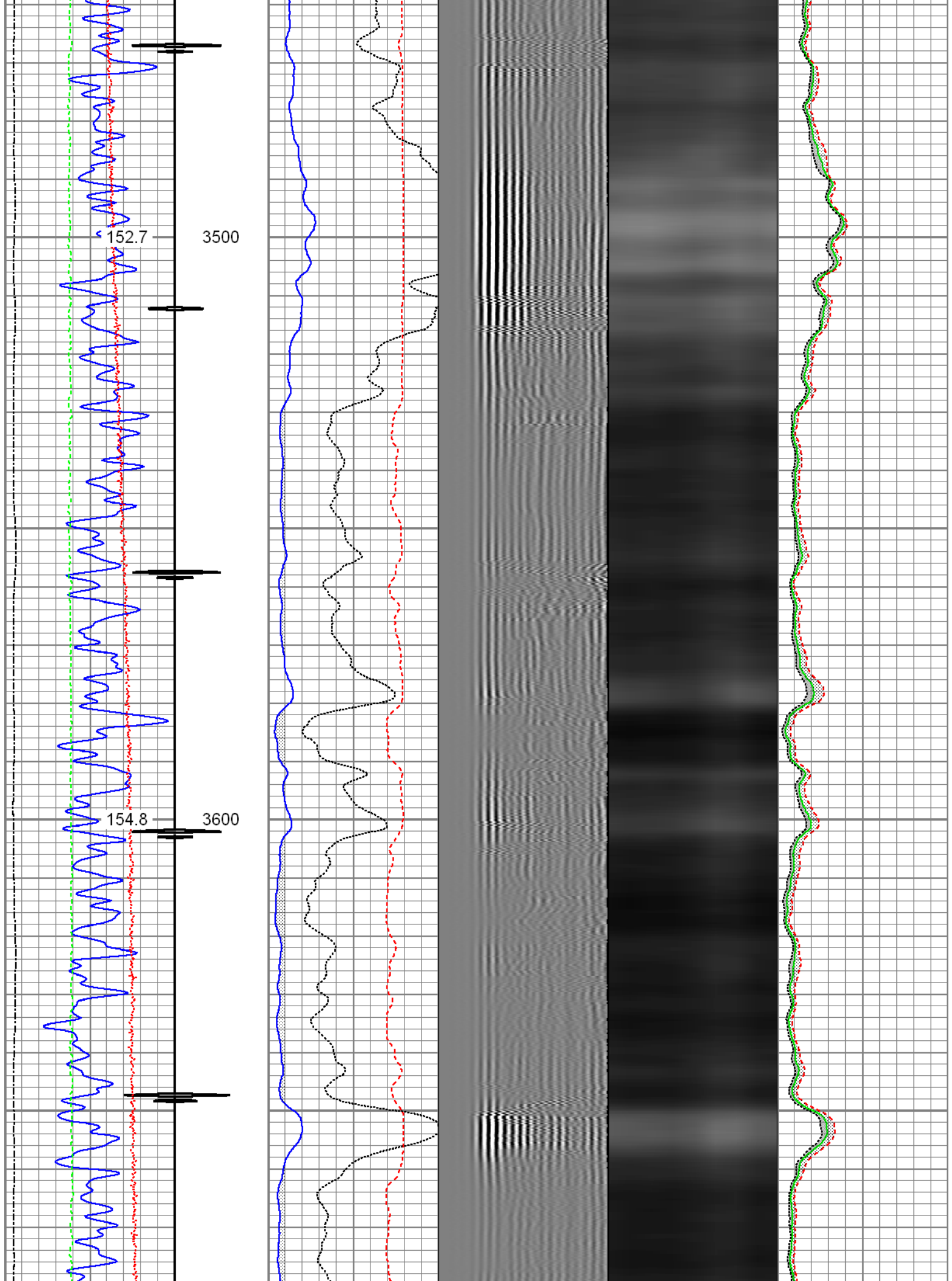


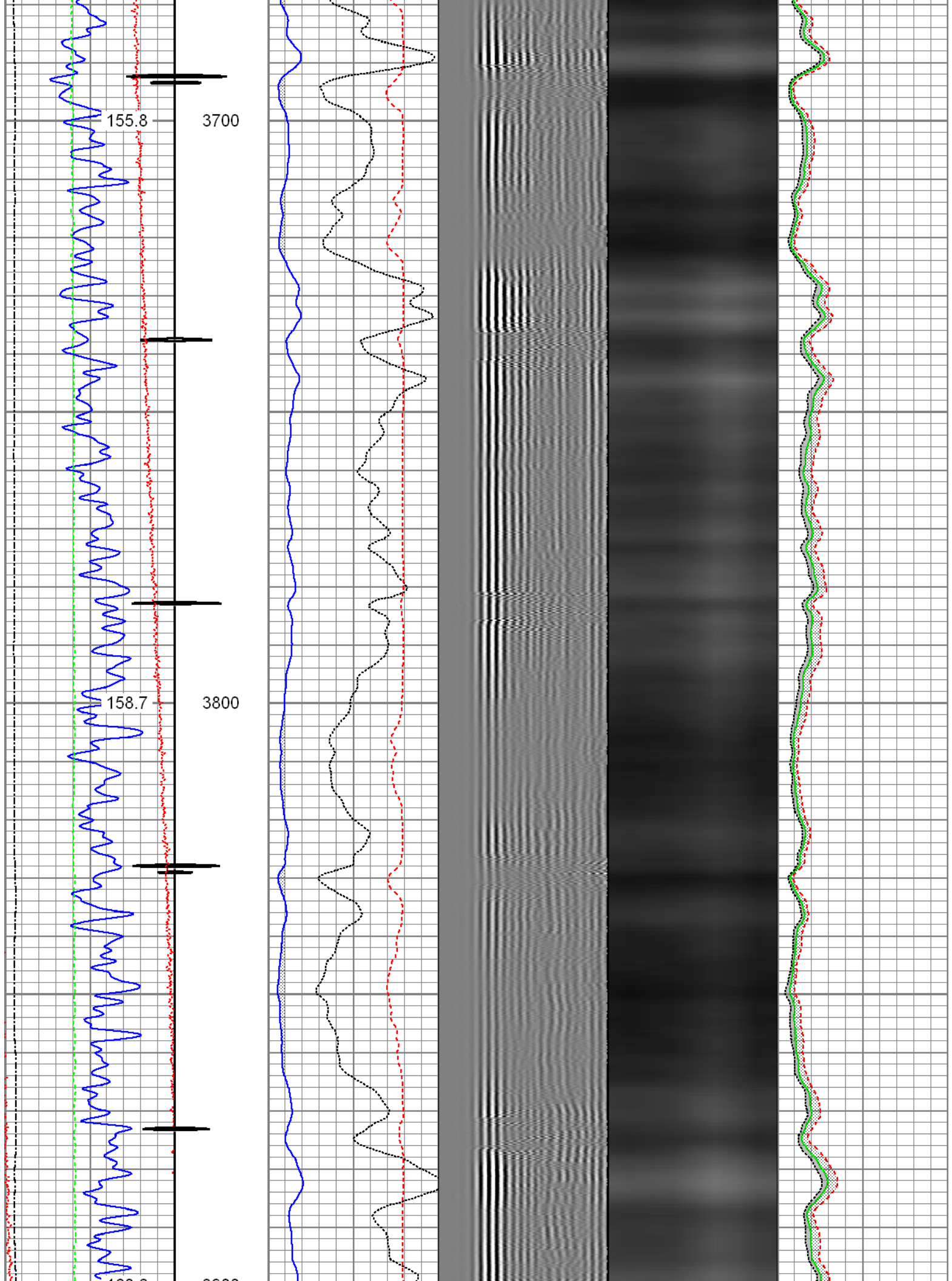


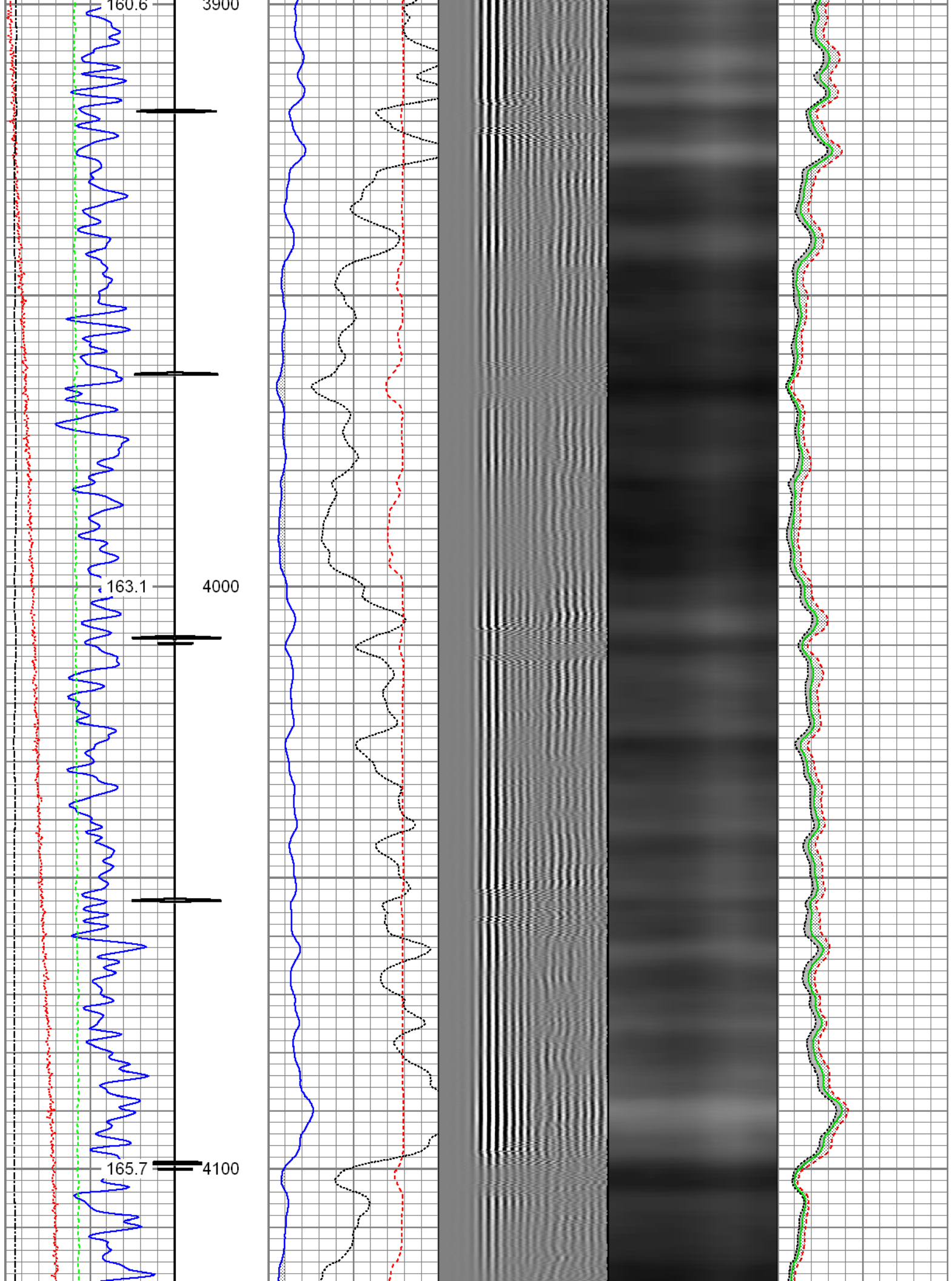


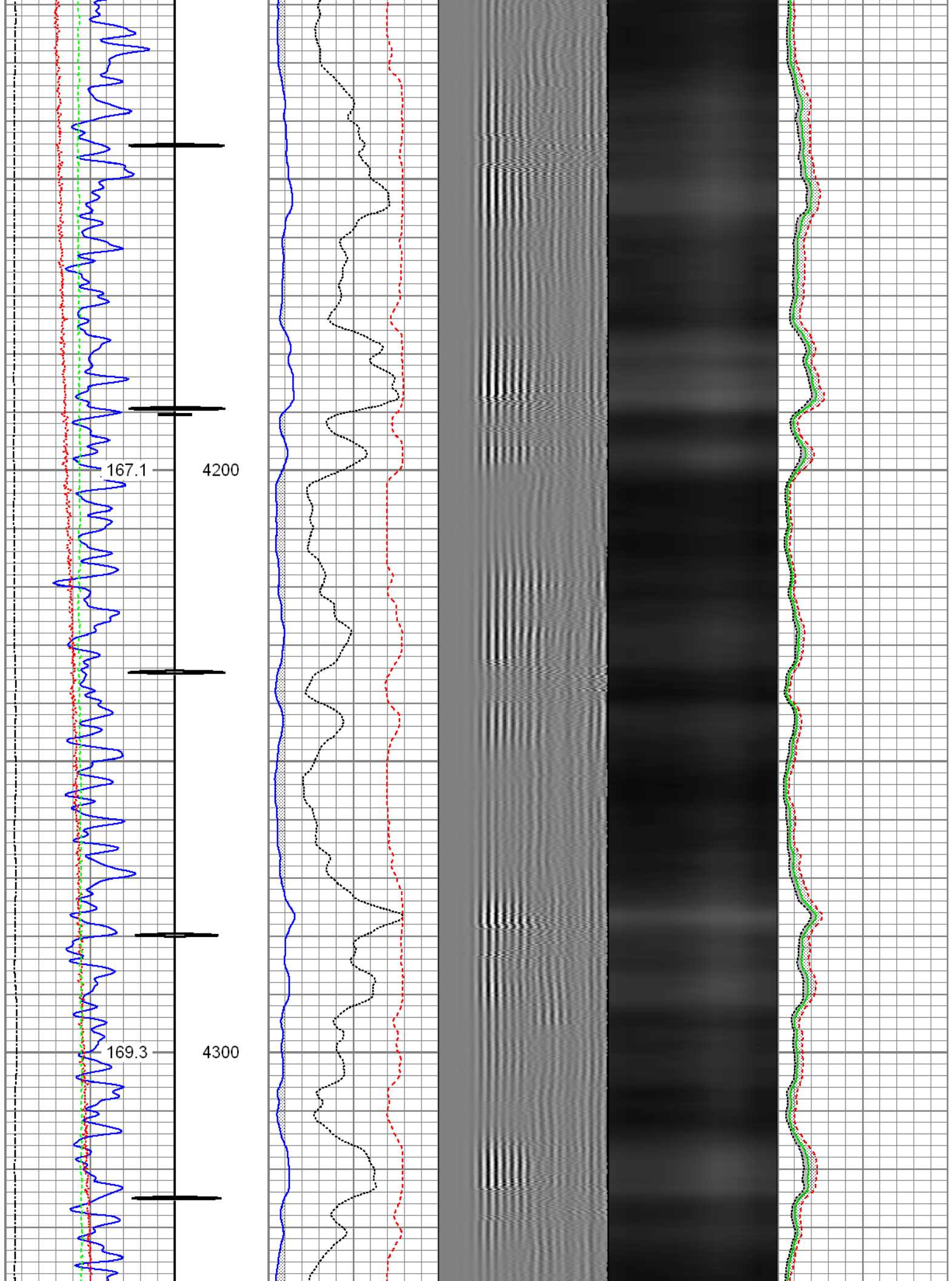


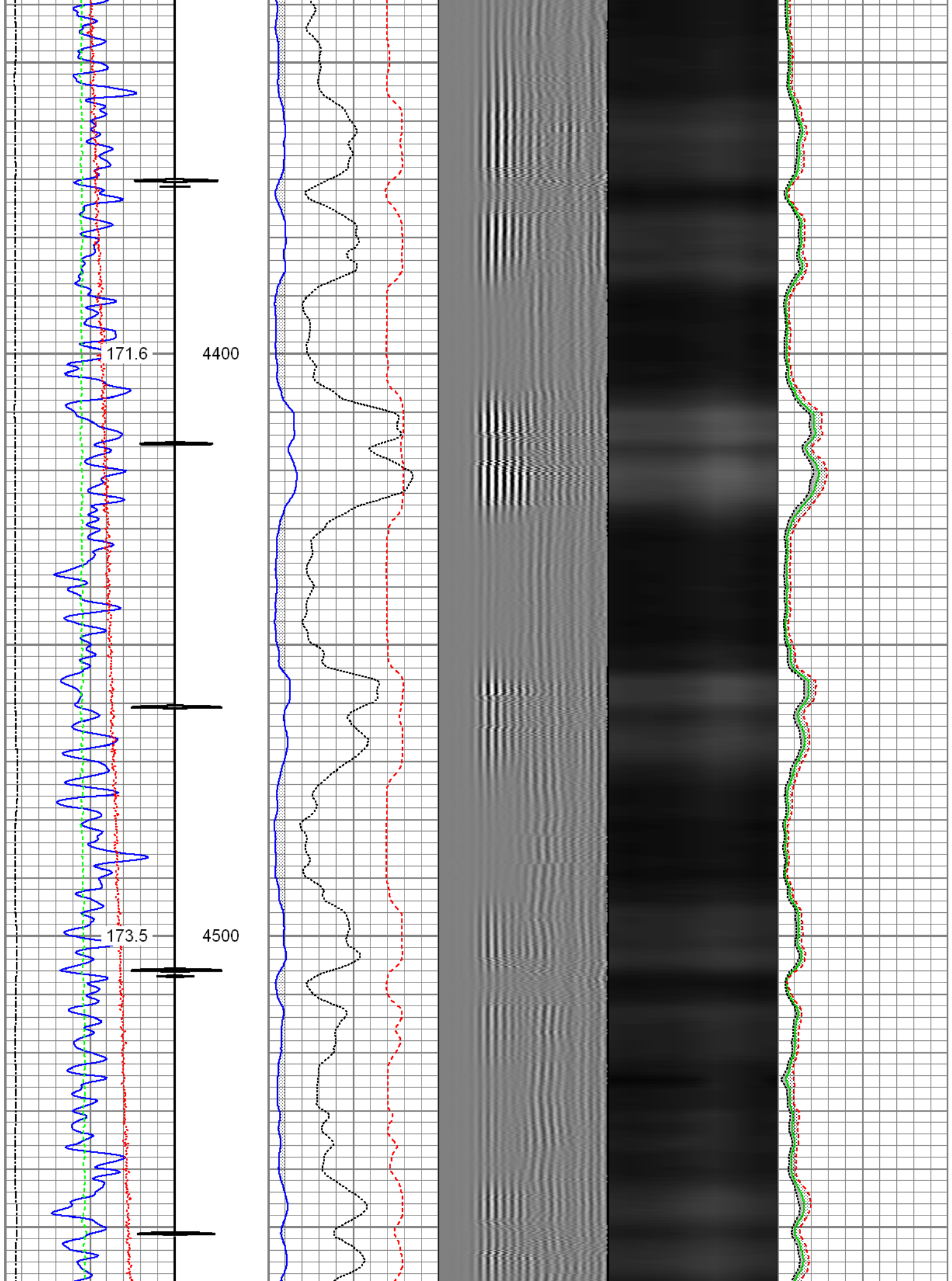


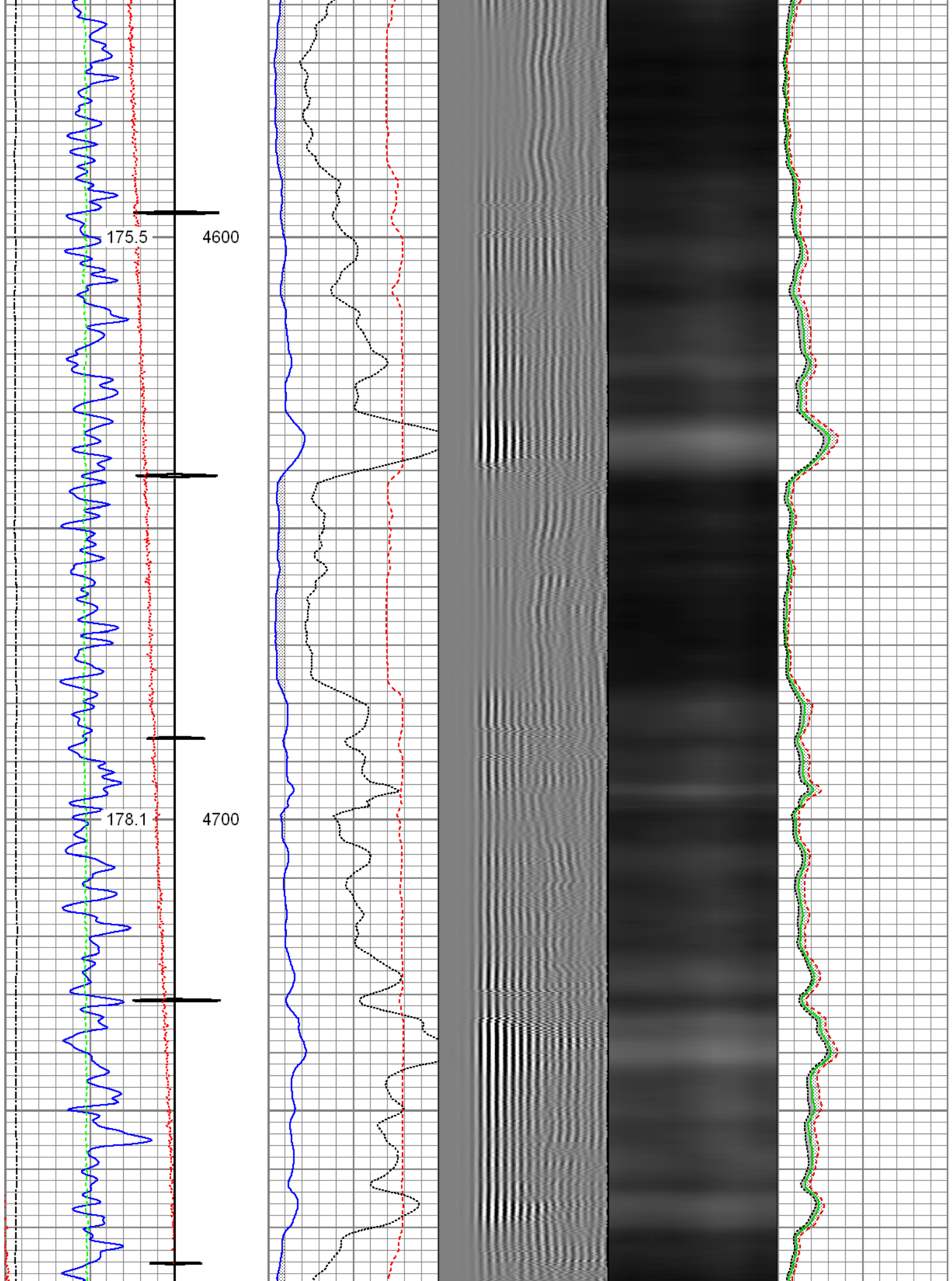


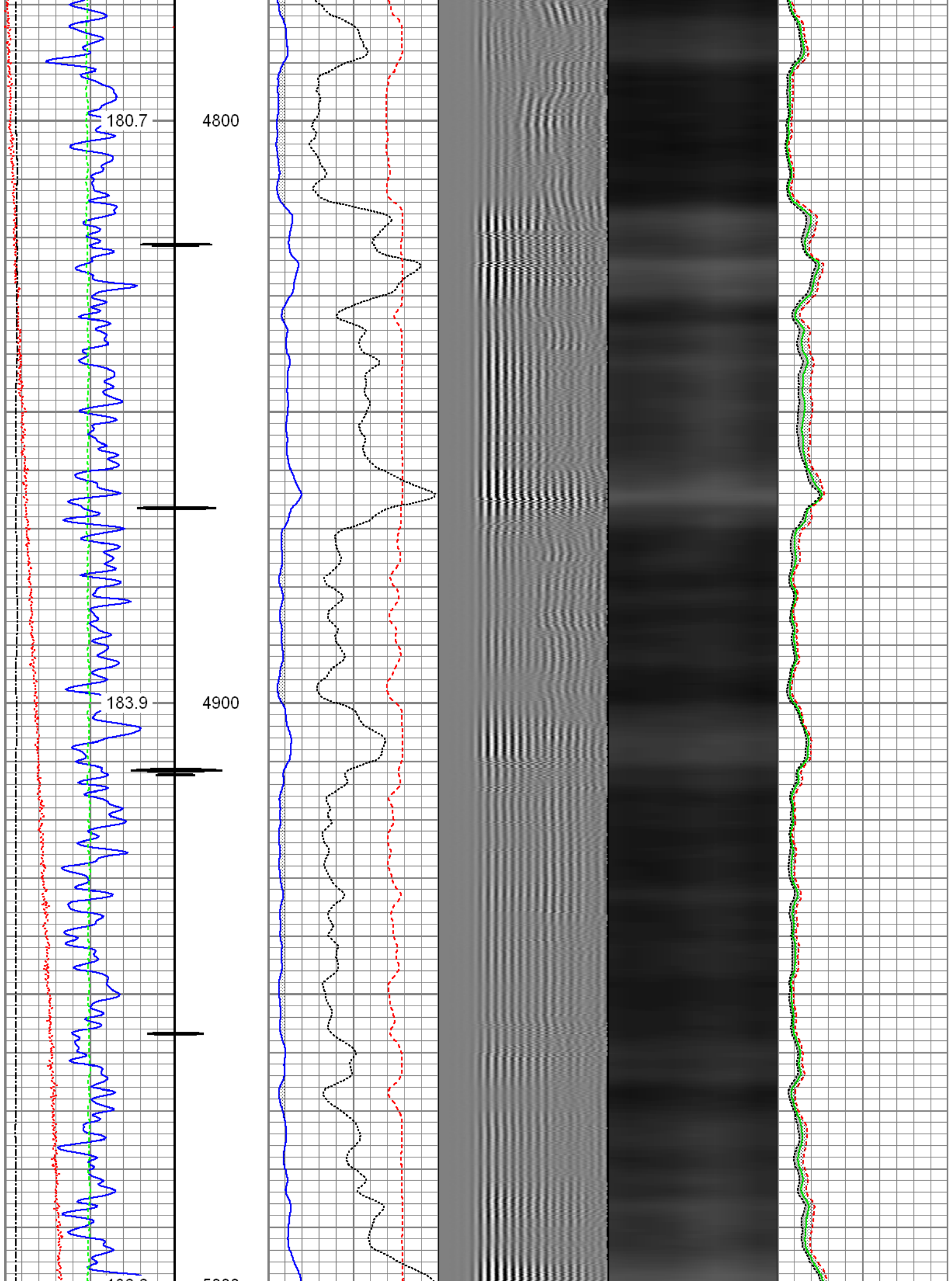


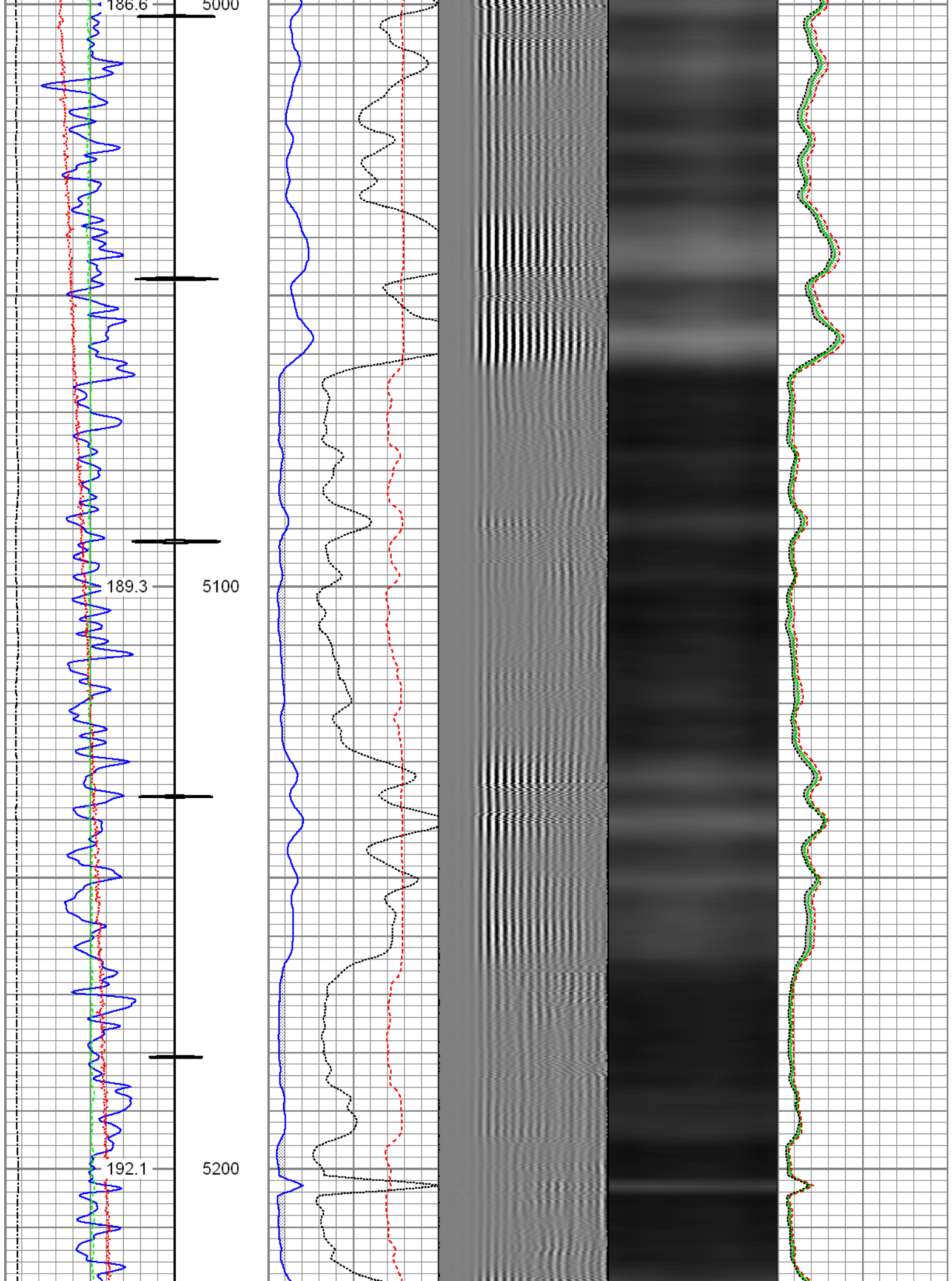


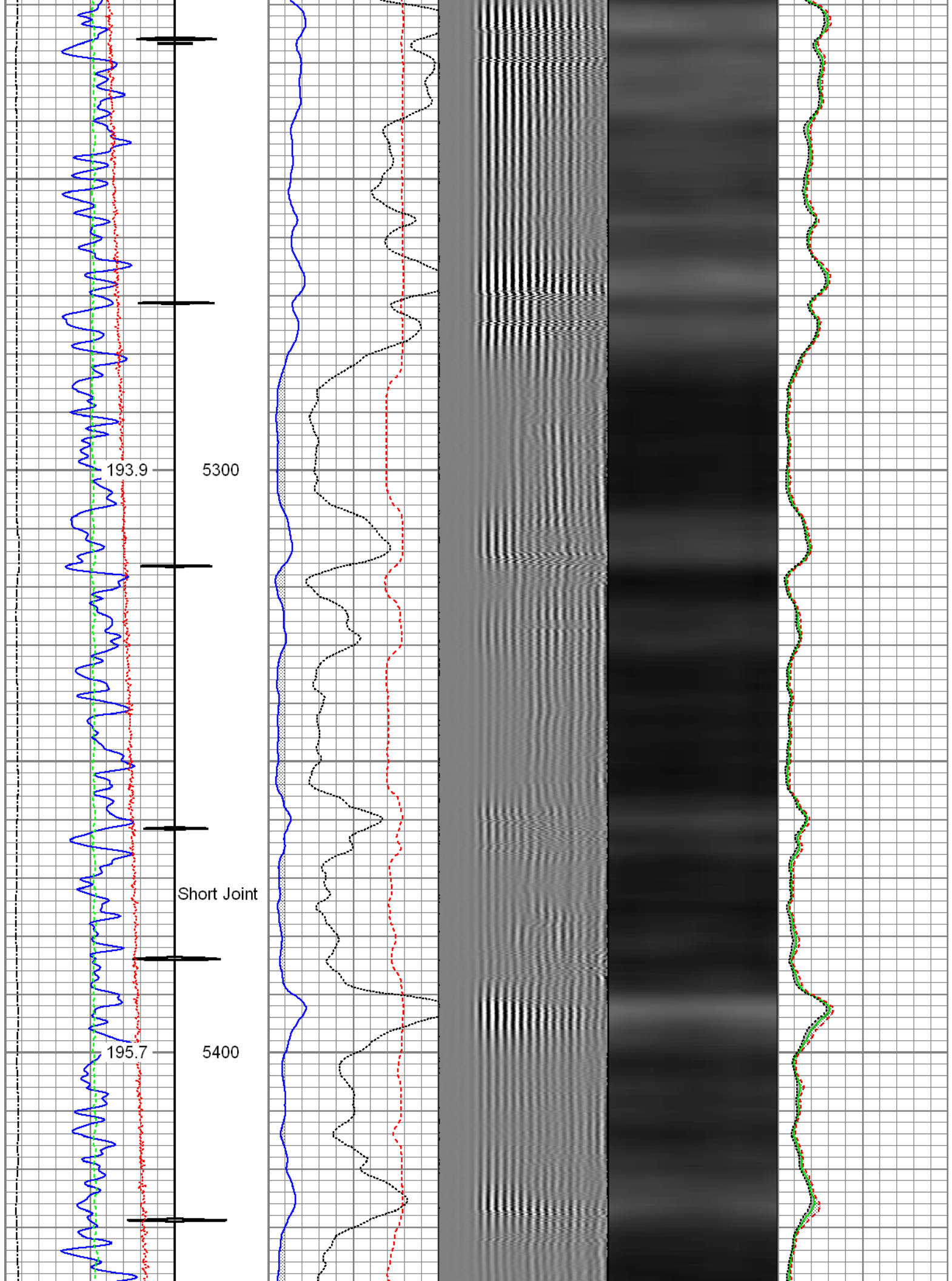


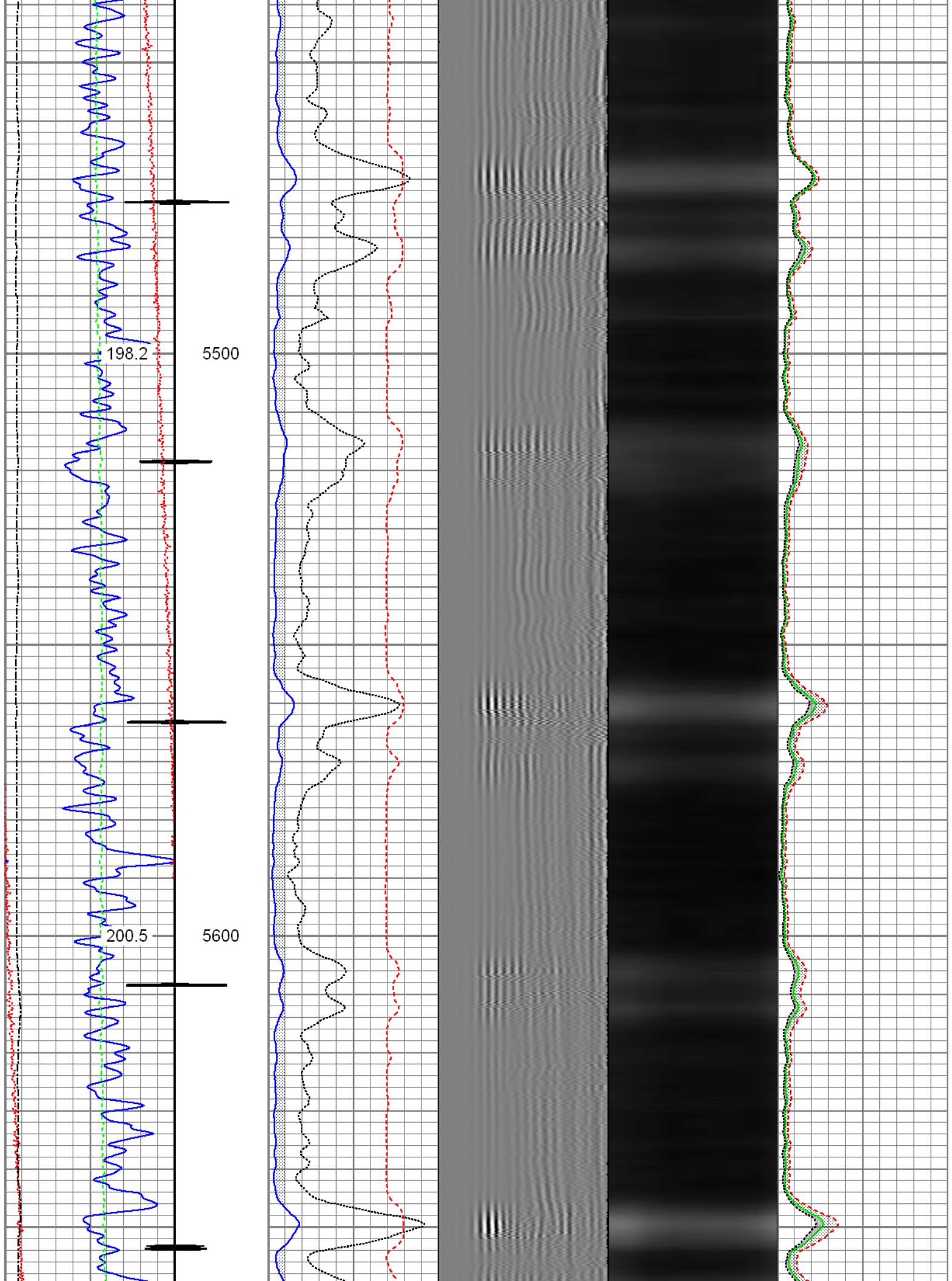


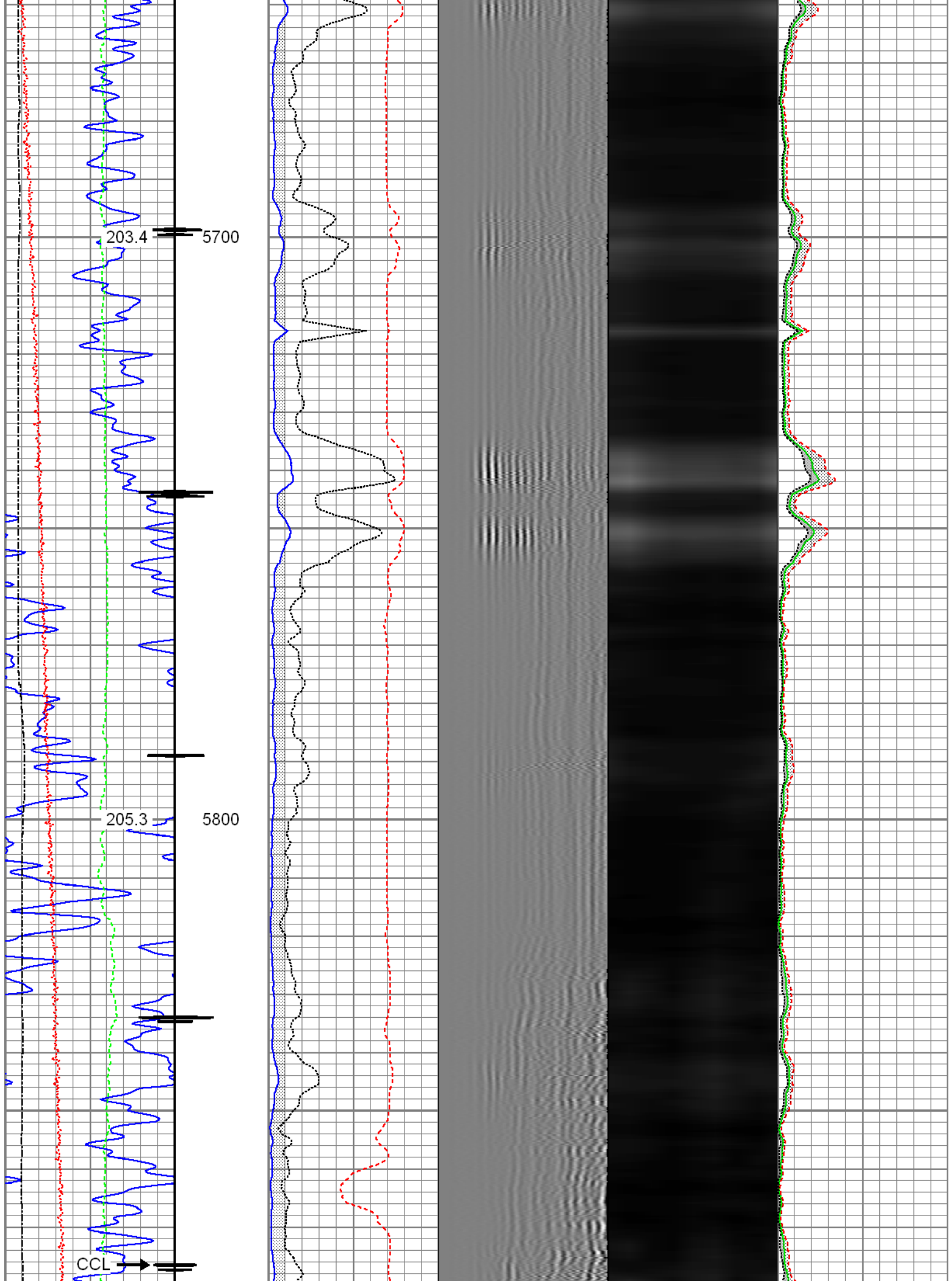


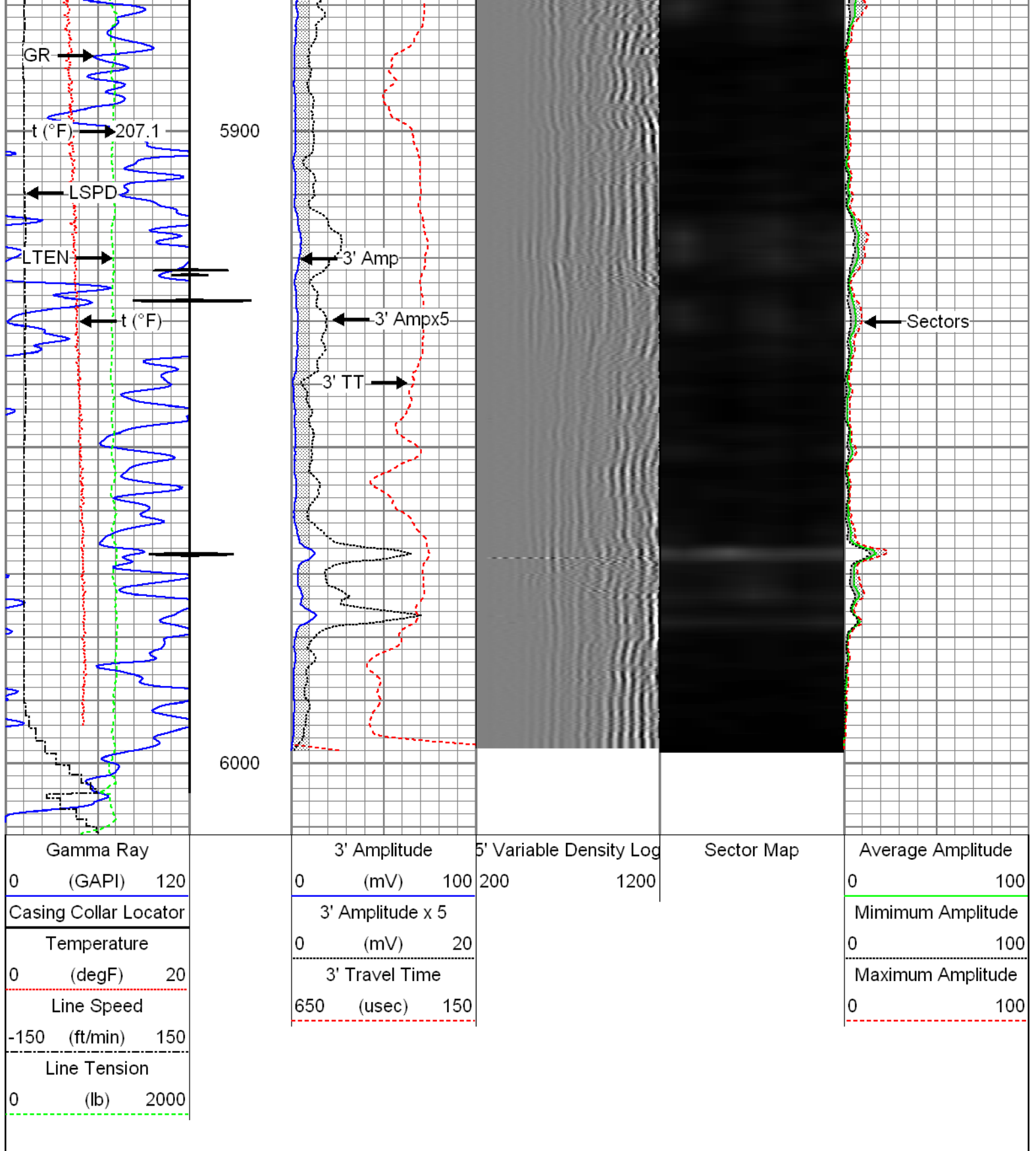










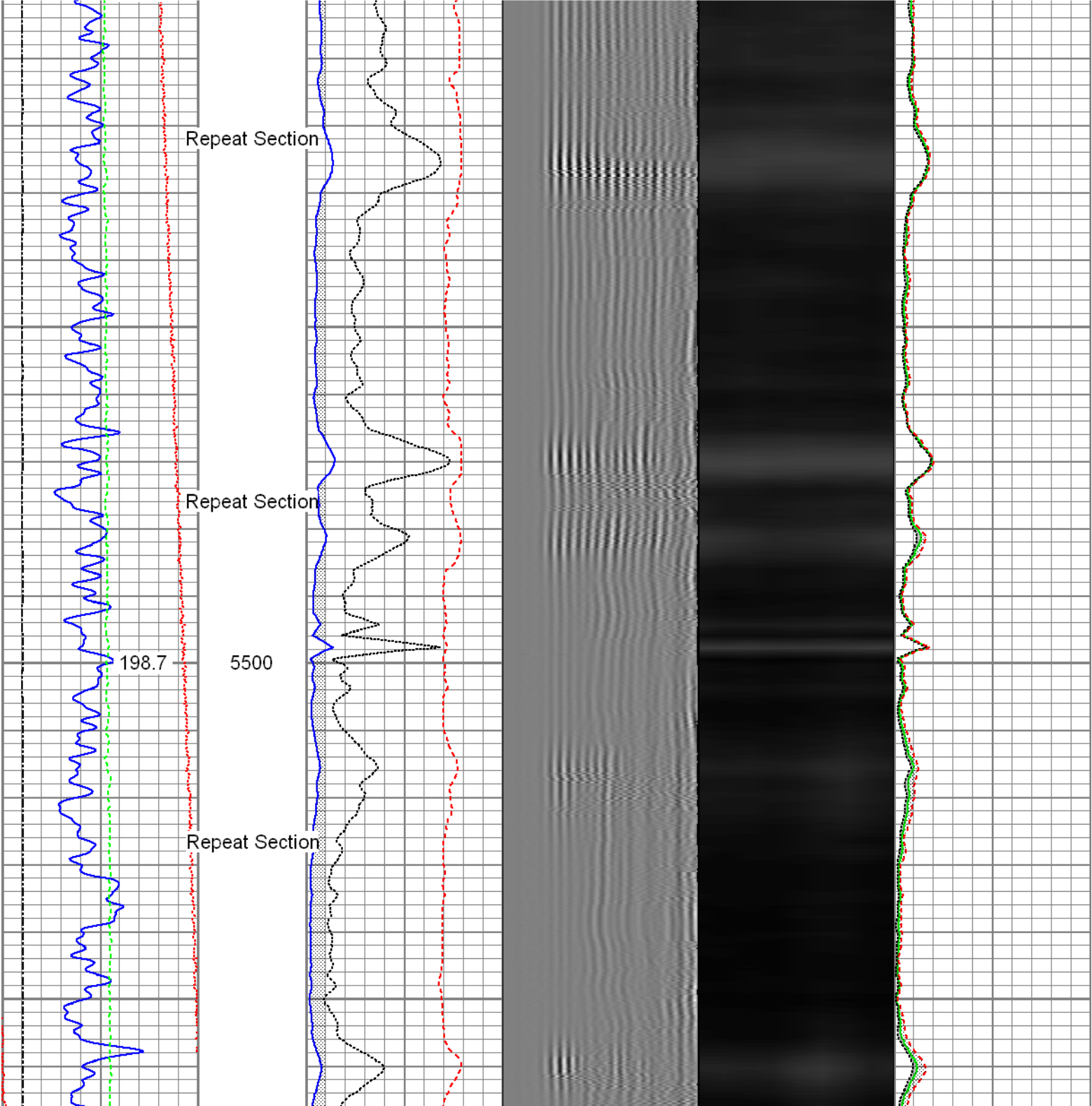


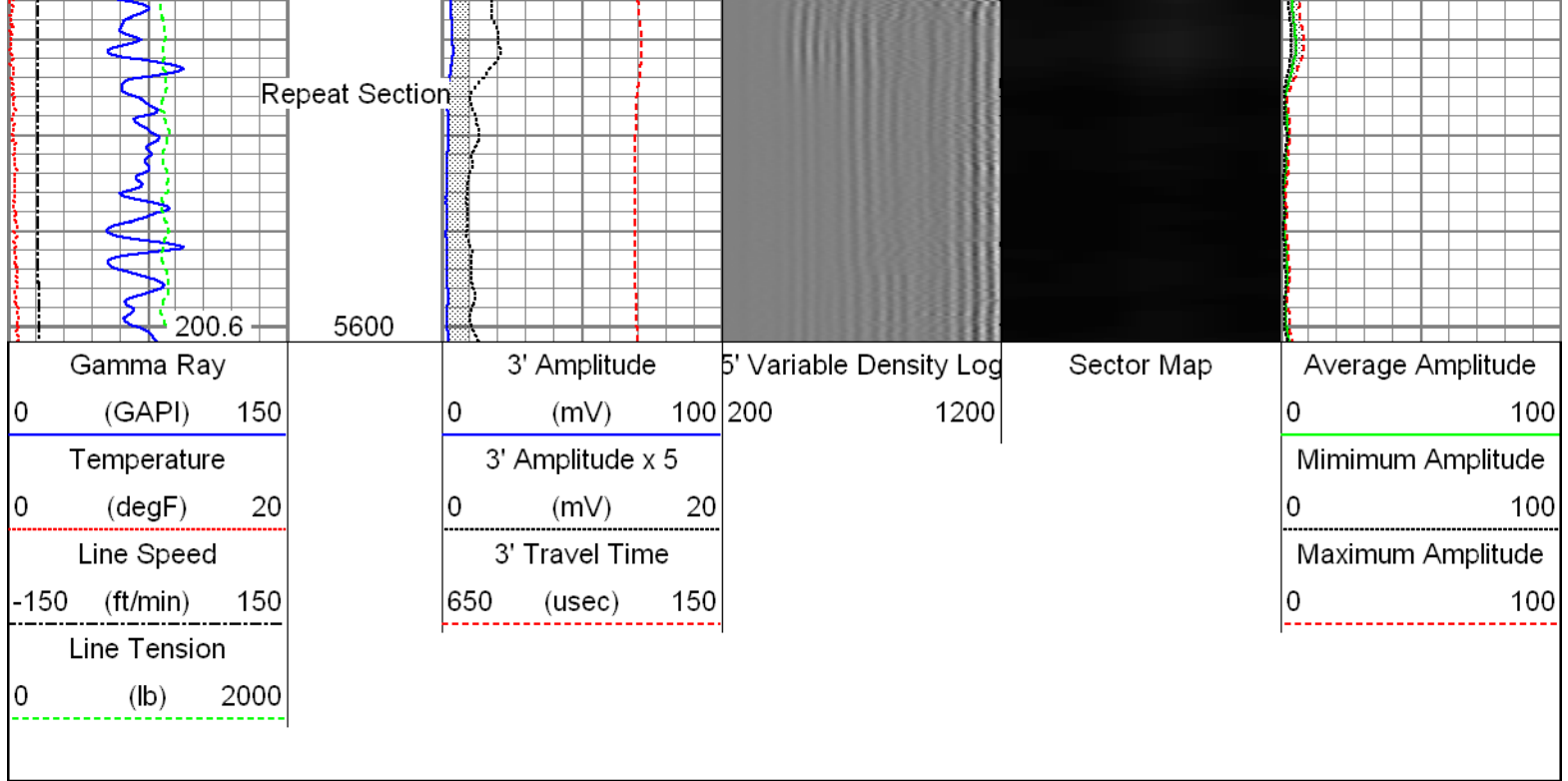
Repeat Pass

Recorded with 1500 PSI Surface Induced Pressure

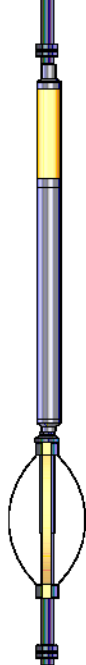
Database File: c:\warrior\data\12-30-15_whiting_horsetail 07e-0634_rbl\12-30-15_whiting_horsetail 07e-0634_rbl.db
 Dataset Pathname: pass3
 Presentation Format: radii

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





Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
			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
HeadVolt	19.49					
Temp	16.72					
WVF3FT	14.55		Probe_RADII-C-2-3/4" (FW1305-096) 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		Centralizer			
DCCL	6.51					
			Probe_CCL_GR-2.75"Digital (FW1212-026) 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: 12-30-15_Whiting_Horsetail 07E-0634_RBL.db: field/well/run1/pass6.1 Total Length: 23.40 ft Total Weight: 194.00 lb O.D. 2.75 in						

Calibration Report	
Database File:	C:\Warrior\Data\12-30-15_Whiting_Horsetail 07E-0634_RBL\12-30-15_Whiting_Horsetail 07E-0634_R
Dataset Pathname:	pass6.1
Dataset Creation:	Wed Dec 30 09:45:11 2015 by Calc 7.0 B1

Gamma Ray Calibration Report		
Serial Number:	FW1212-026	
Tool Model:	2.75"Digital	
Performed:	Wed Nov 18 10:56:24 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:	FW1305-096	
Tool Model:	2-3/4"	
Calibration Casing Diameter:	5.500	in
Calibration Depth:	25.112	ft

Master Calibration, performed Wed Dec 30 09:45:00 2015:						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.005	0.533	0.800	71.921	134.898	0.075
CAL	0.713	0.783				
5'	0.010	0.463	0.800	71.921	156.704	-0.706
SUM						
S1	0.004	0.505	0.000	100.000	199.497	-0.739

S2	0.006	0.507	0.000	100.000	199.775	-1.231
S3	0.006	0.526	0.000	100.000	192.383	-1.107
S4	0.005	0.536	0.000	100.000	188.268	-0.975
S5	0.005	0.561	0.000	100.000	179.939	-0.974
S6	0.003	0.575	0.000	100.000	174.723	-0.526
S7	0.005	0.555	0.000	100.000	181.723	-0.878
S8	0.006	0.532	0.000	100.000	189.997	-1.064

Internal Reference Calibration, performed Wed Dec 31 17:00:00 1969:

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.713	0.783	1.000	0.000

Air Zero Calibration, performed Wed Dec 30 08:19:31 2015:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.004		0.000		0.001	
5'	0.011		0.000		-0.000	
SUM						
S1	0.003		0.000		0.001	
S2	0.006		0.000		-0.002	
S3	0.005		0.000		0.001	
S4	0.006		0.000		-0.000	
S5	0.004		0.000		0.000	
S6	0.004		0.000		-0.000	
S7	0.004		0.000		0.001	
S8	0.004		0.000		0.000	



Company Whiting Oil & Gas Corporation
Well Horsetail 07E-0634
Field Wildcat
County Weld
State Colorado