



**Radial Cement Bond  
Gamma Ray  
Casing Collar Log**

Company Kerr-McGee Oil & Gas Onshore, L.P.  
Well Lambrecht August GU 2  
Field Wattenberg  
County Weld  
State Colorado

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Location: API #: 05-123-09943  
SEC 12 TWP 1N RGE 67W  
Permanent Datum Ground Level Elevation 4912'  
Log Measured From Kelly Bushing 10 FT  
Drilling Measured From Kelly Bushing  
Other Services ---  
Elevation  
K.B. 4922'  
D.F. 4921'  
G.L. 4912'

Date	18-MAY-17
Run Number	Two
Depth Driller	8120 FT
Depth Logger	5200 FT
Bottom Logged Interval	5200 FT
Top Log Interval	Surface
Open Hole Size	7.850"
Type Fluid	Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	177 °F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	16:22
Equipment Number	HD-311
Location	Fort Lupton, CO
Recorded By	R. Cameron
Witnessed By	Desi Nava

Run Number	Borehole Record		Tubing Record				
	Bit	From	To	Size	Weight	From	To
Casing Record	Size (in)	Wgt (lbs/Ft)	Grade	Top	Bottom		
Surface Casing	8 5/8	24		Surface	282 FT		
Intermediate #1	4 1/2	10.5	K-55	Surface	8120 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 Reliance RBL dated 28-APR-2017  
Log ran from 5200 FT to surface  
Data passes merged at 100 FT  
Shift in data at 100 FT is possibly due to introduction of more fluid into the well  
Log ran with 0 PSI surface induced pressure  
Logging tools were clean and free of any debris upon completion of operations  
  
Thank you for choosing Reliance Oilfield Services, LLC!!

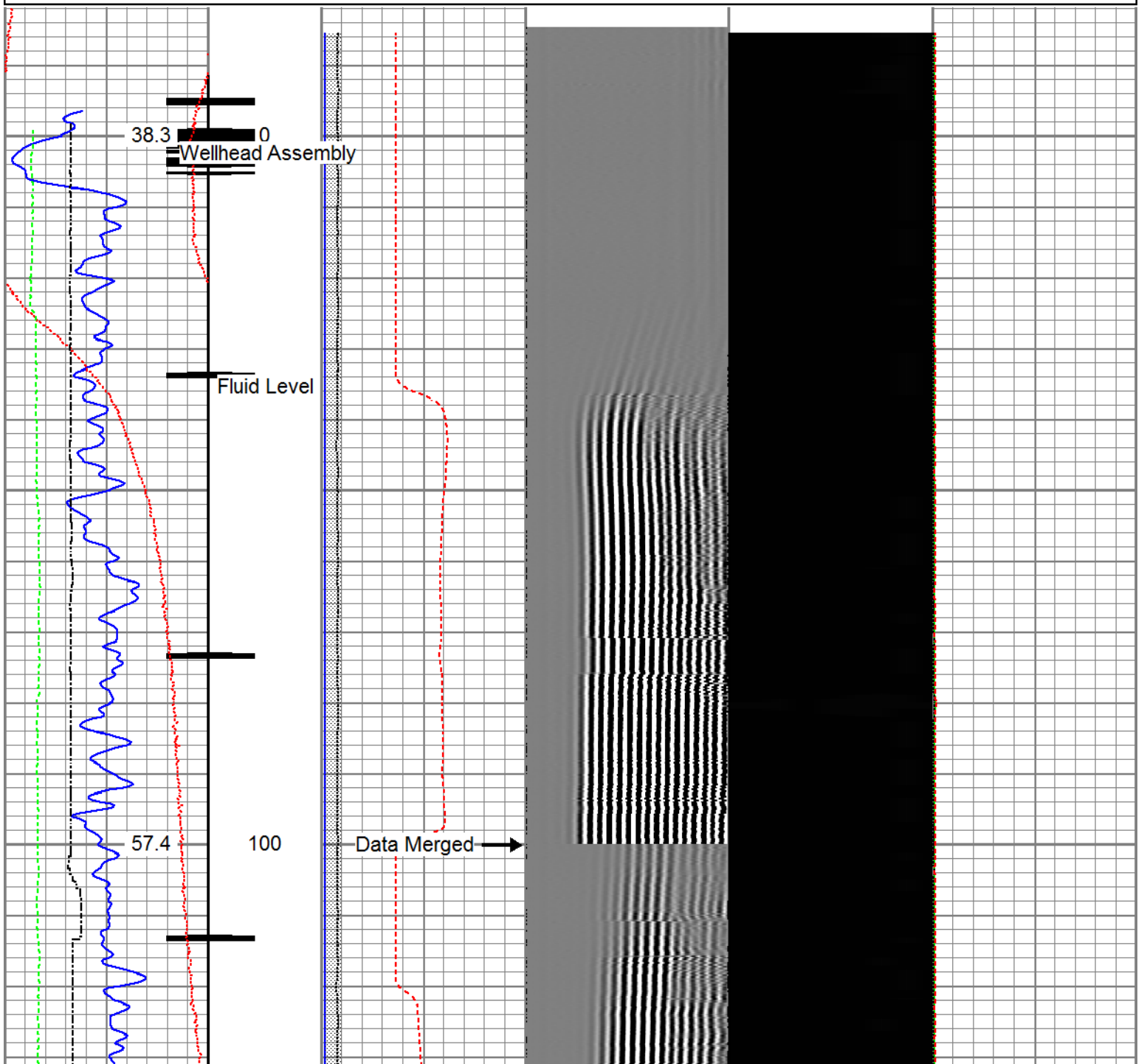


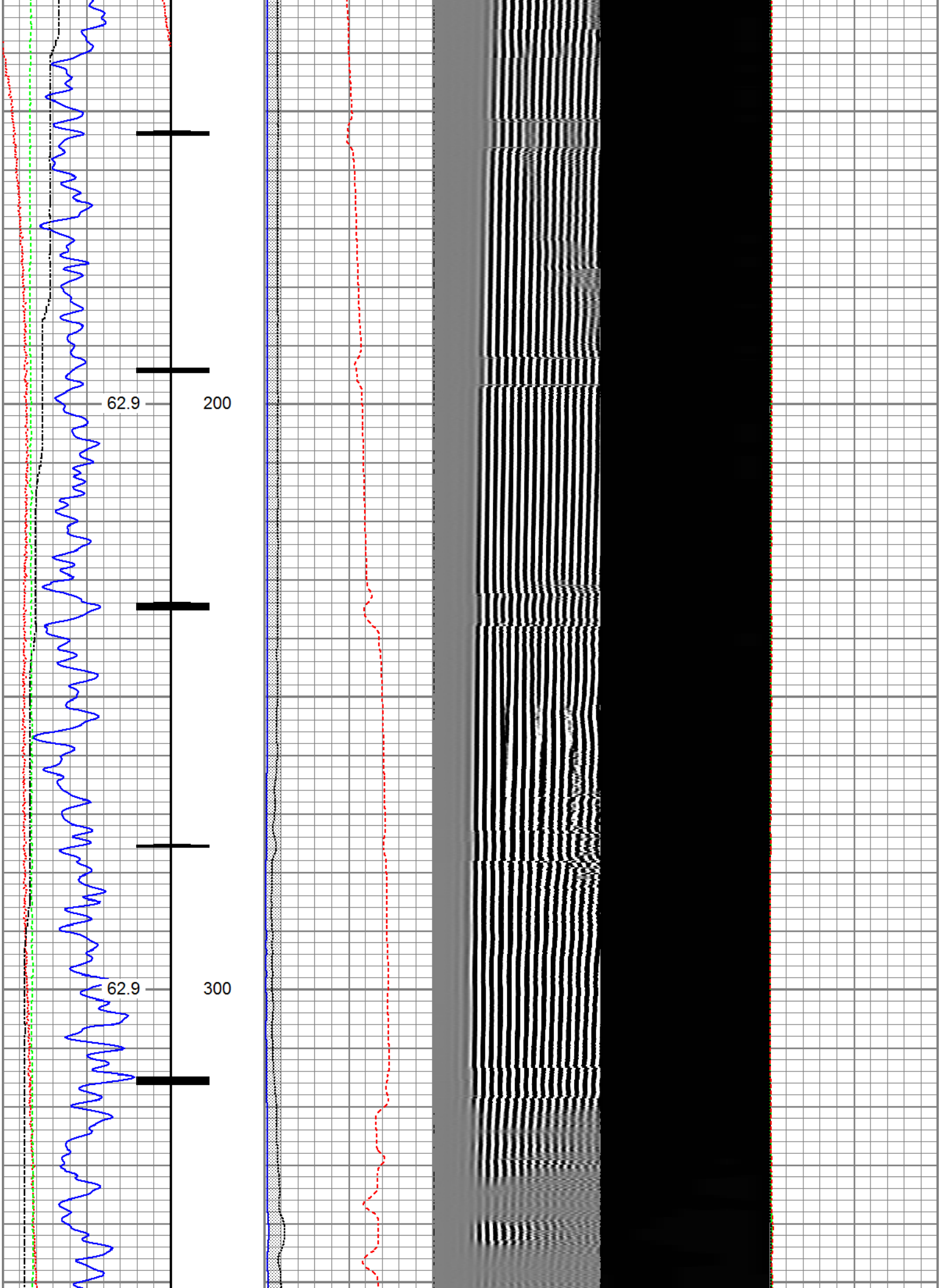
**Main Pass**

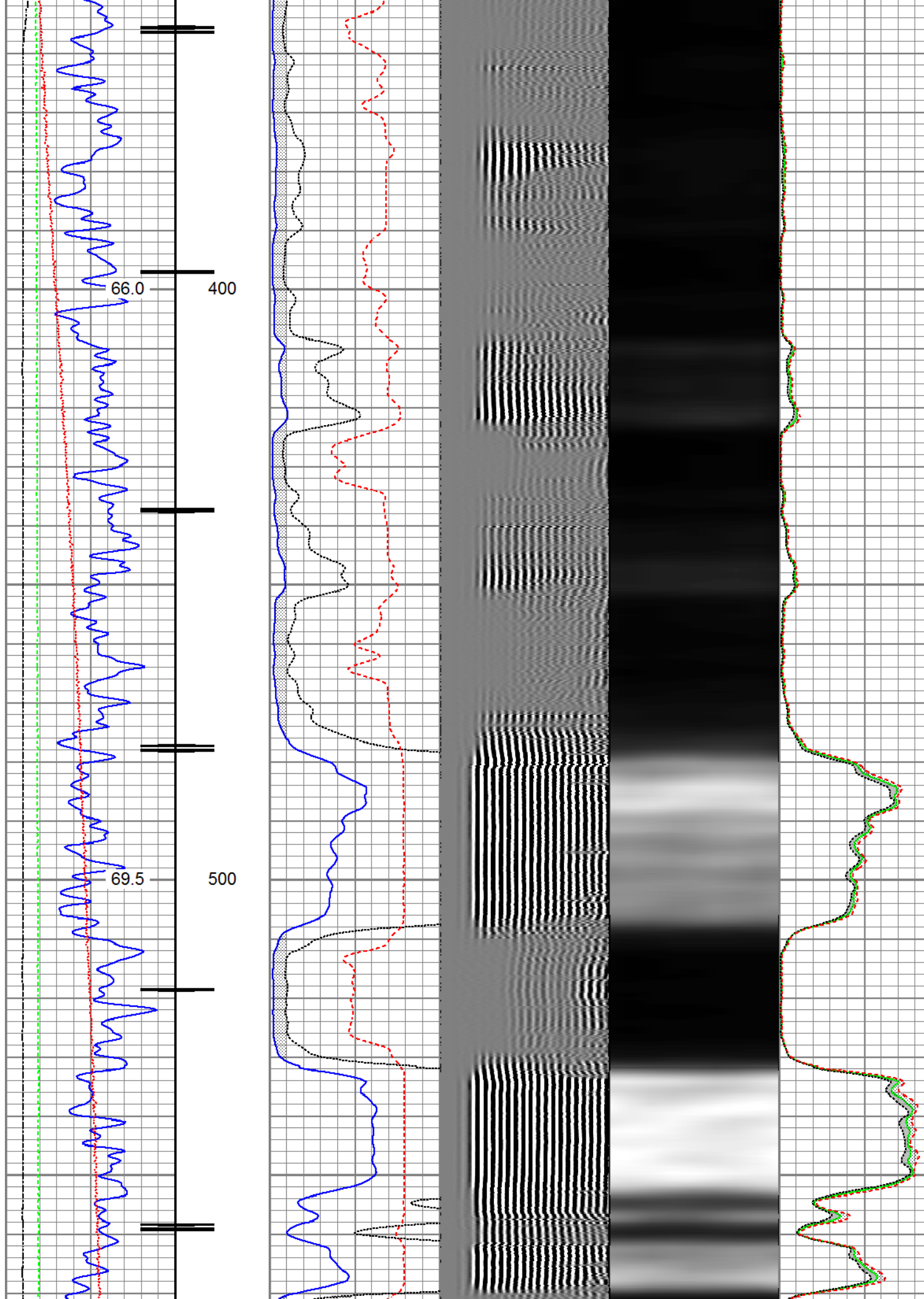
Recorded With 0 PSI Surface Induced Pressure

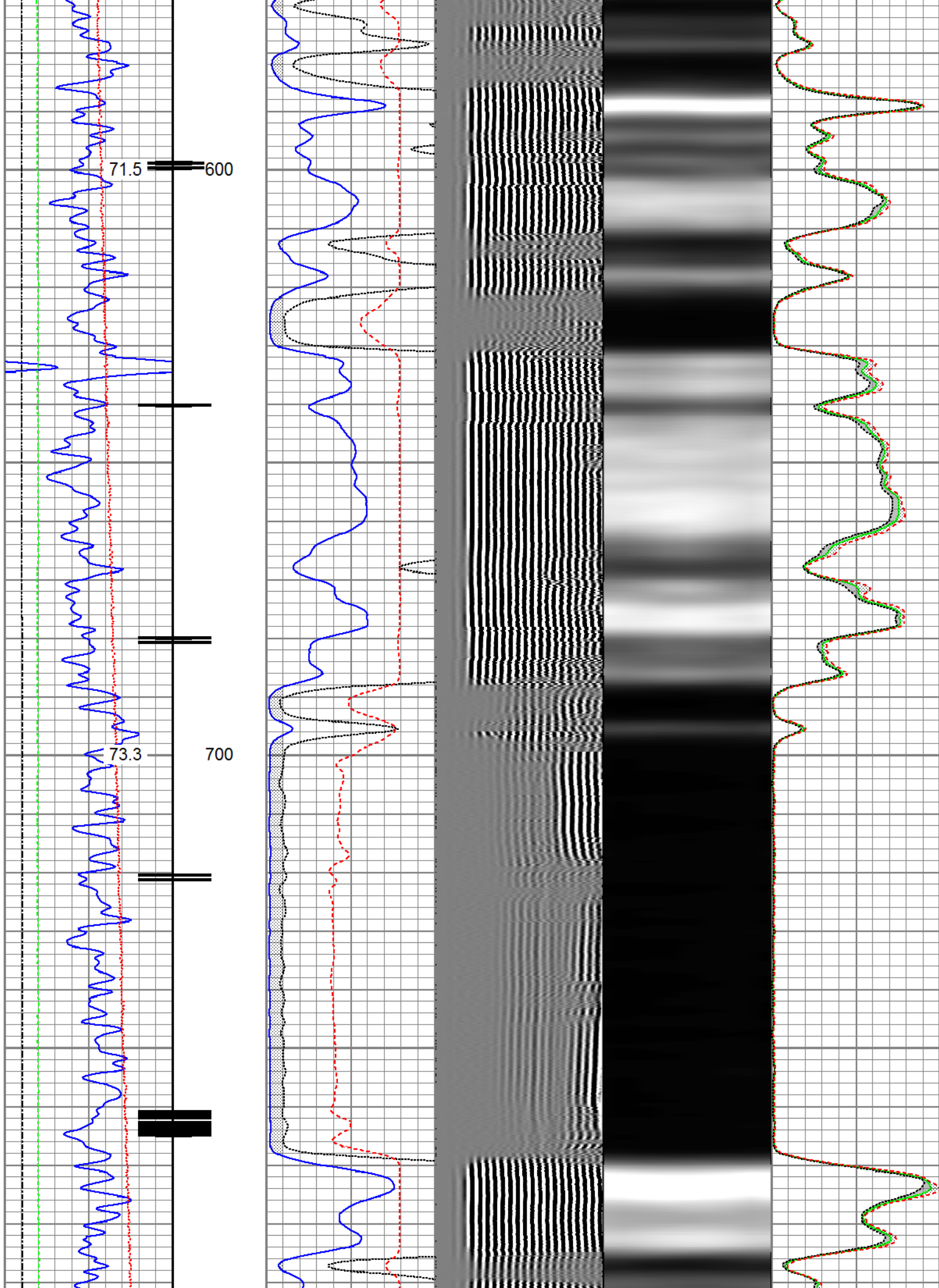
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 Dataset Pathname merge2.1  
 Presentation Format ros\_radrii  
 Dataset Creation Tue May 23 15:57:53 2017  
 Charted by Depth in Feet scaled 1:240

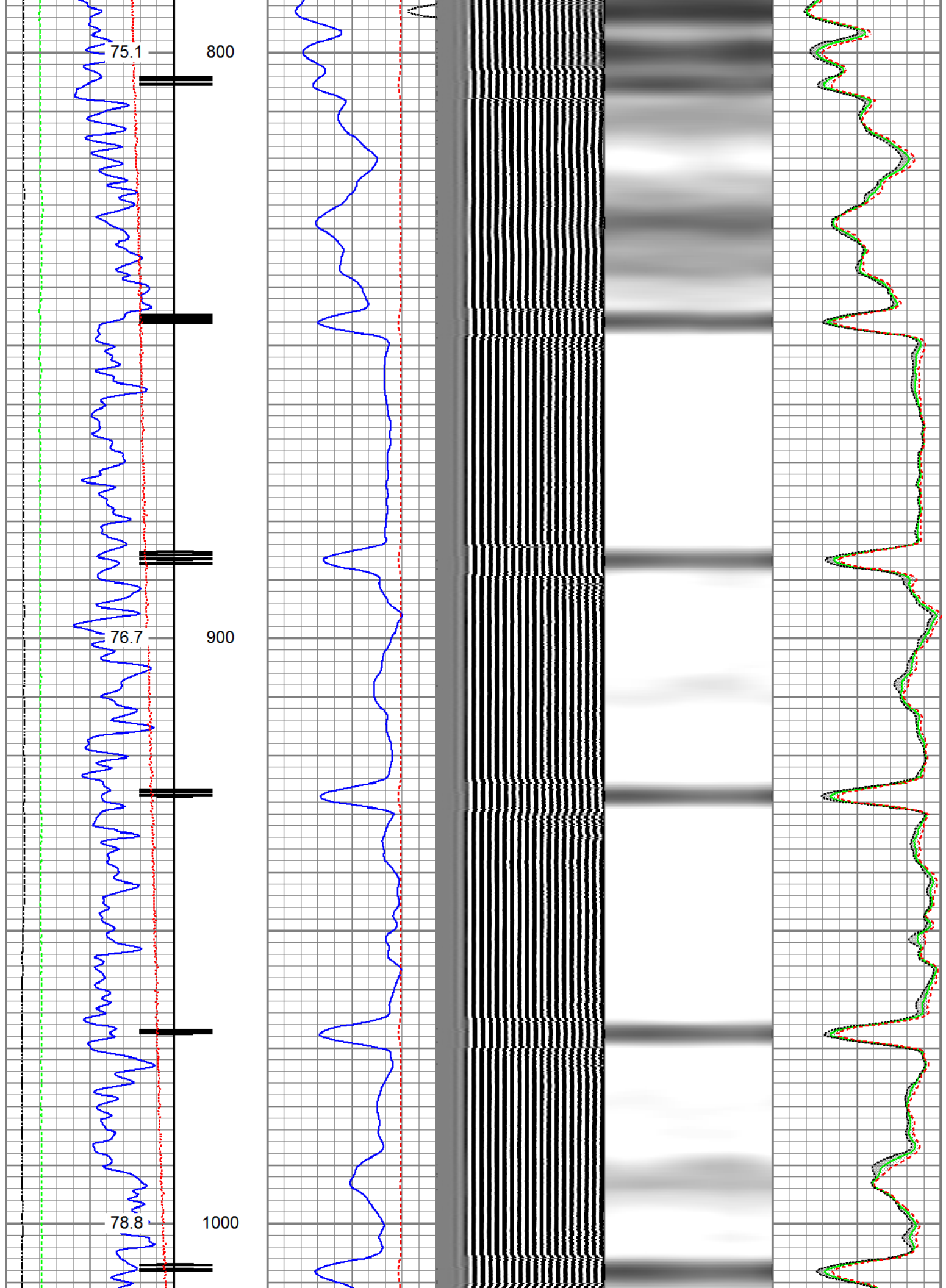
Gamma Ray (GAPI) 120	3' Amplitude (mV) 100	5' Variable Density Log 200 1200	Sector Map	Average Amplitude 0 100
Casing Collar Locator	3' Amplitude x 5 (mV) 20			Minimum Amplitude 0 100
Temperature (degF) 20	3' Travel Time (usec) 150			Maximum Amplitude 0 100
Line Speed (ft/min) 150				
Line Tension (lb)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

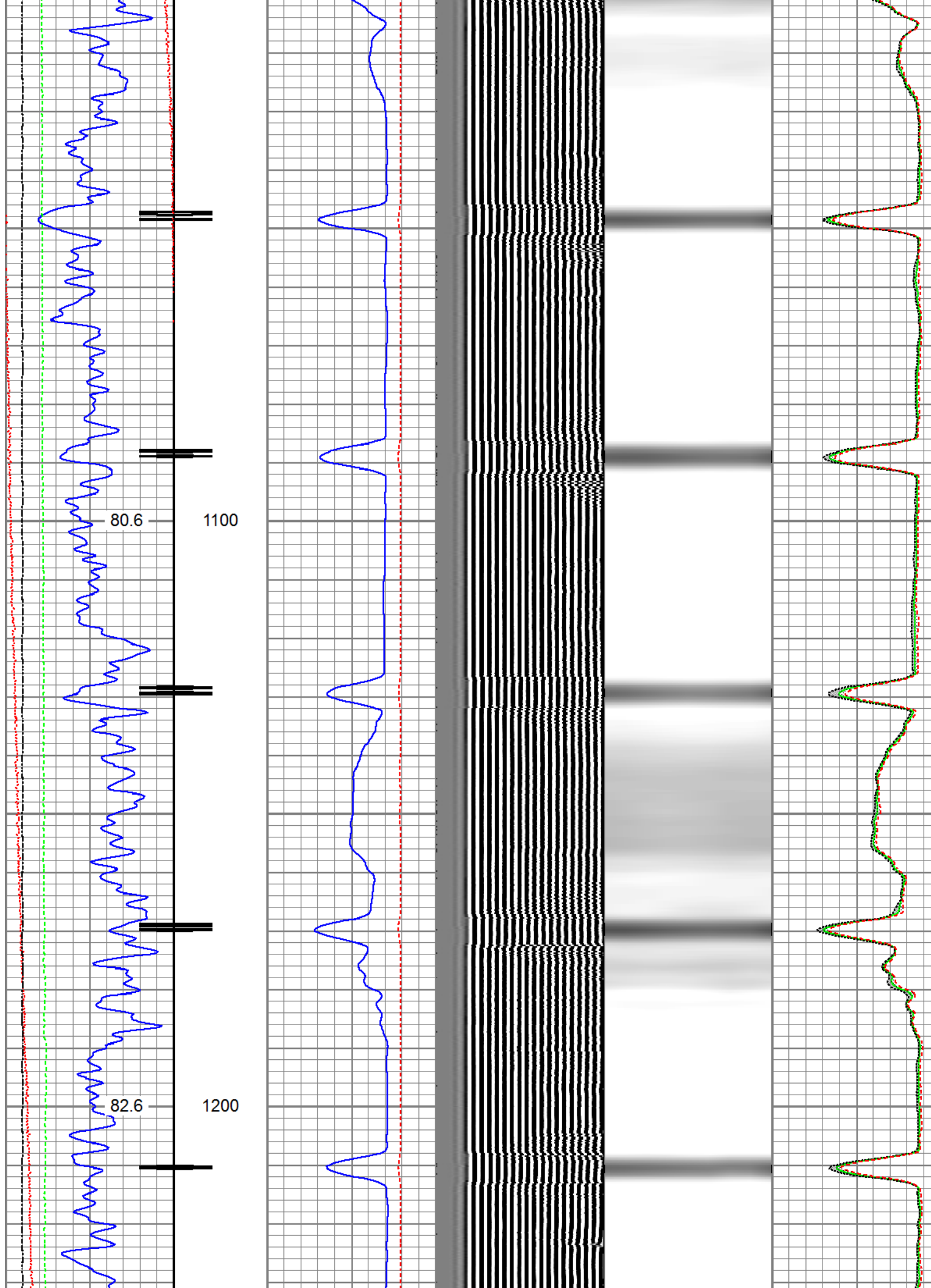


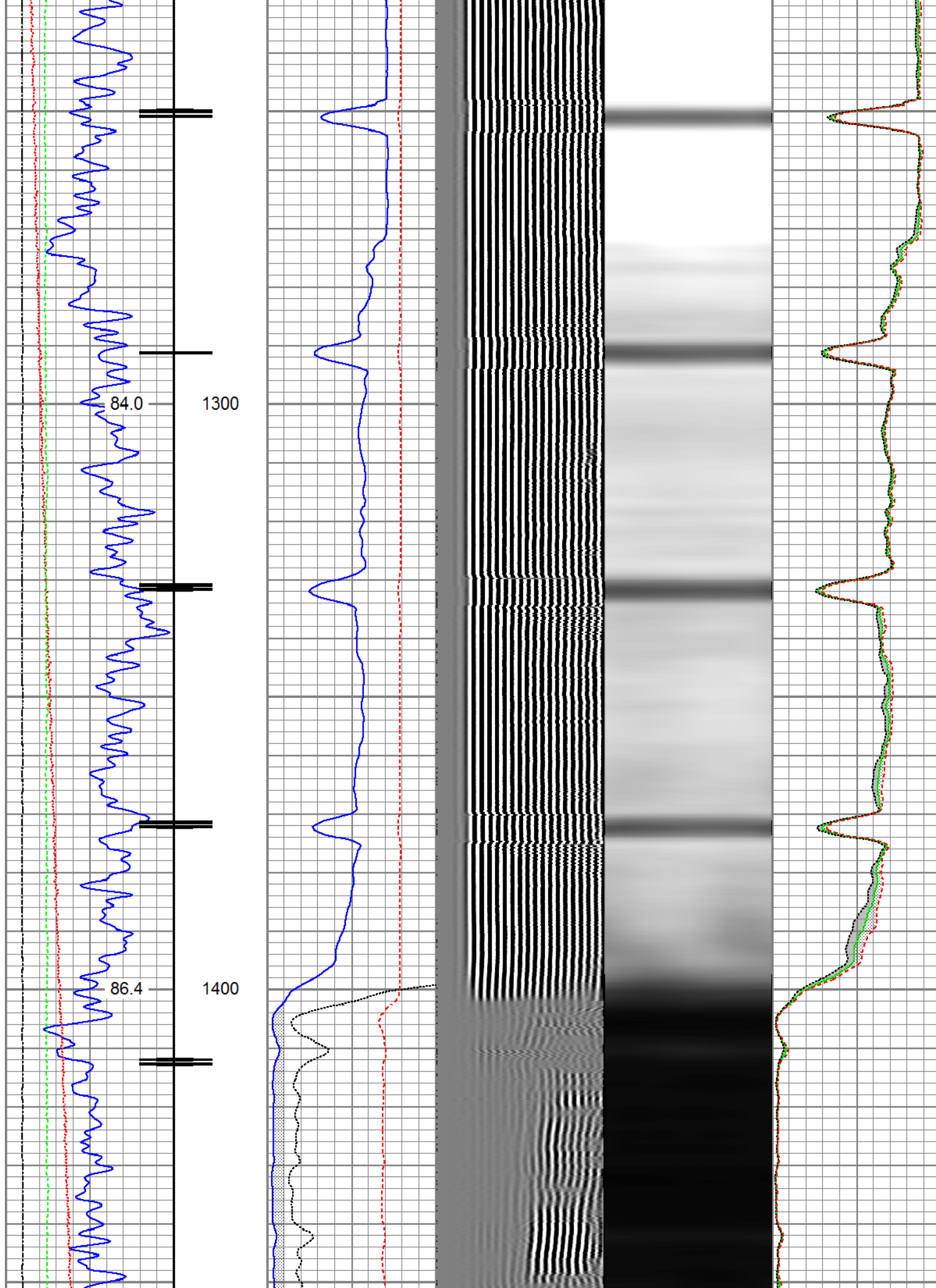


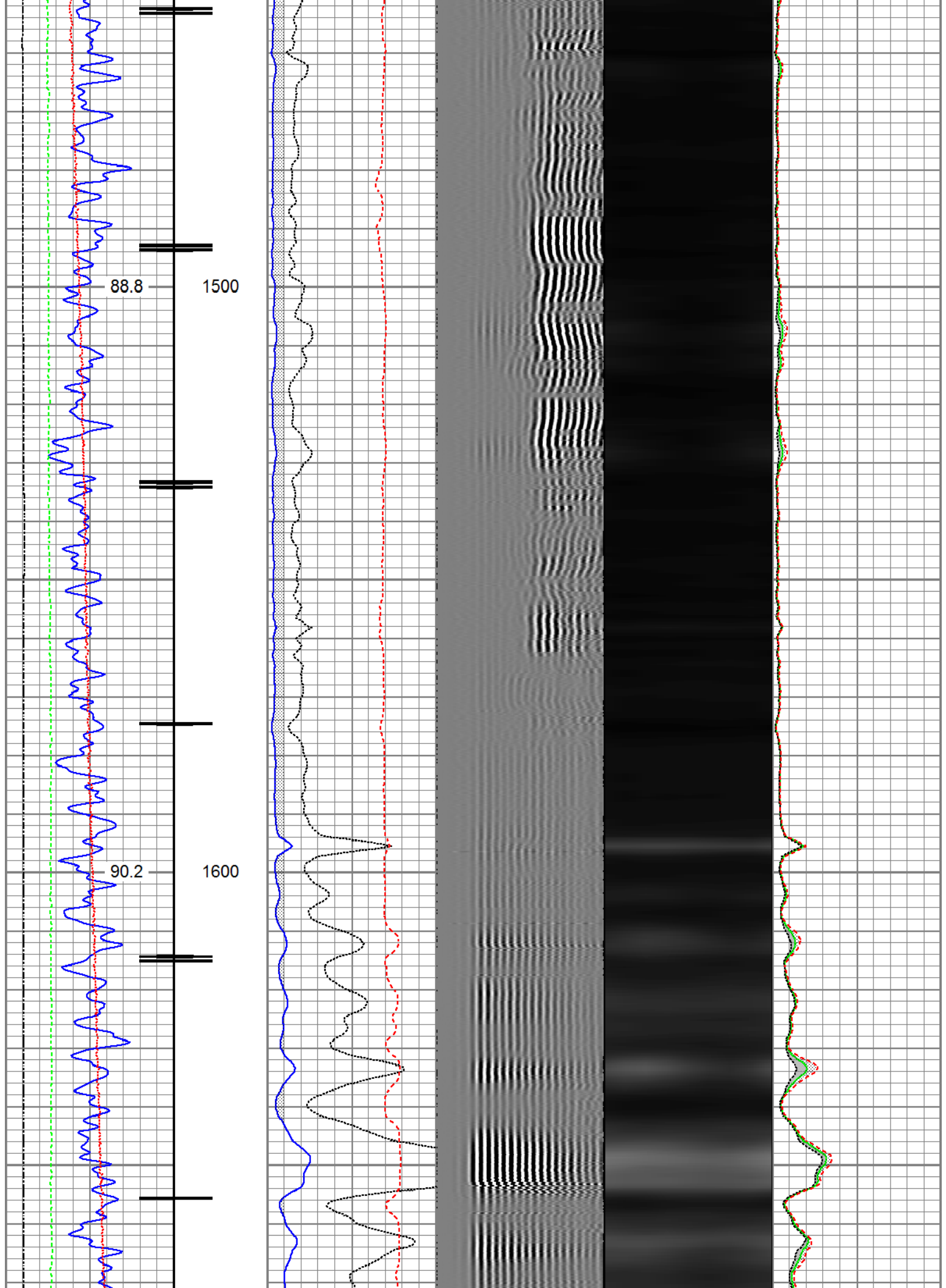


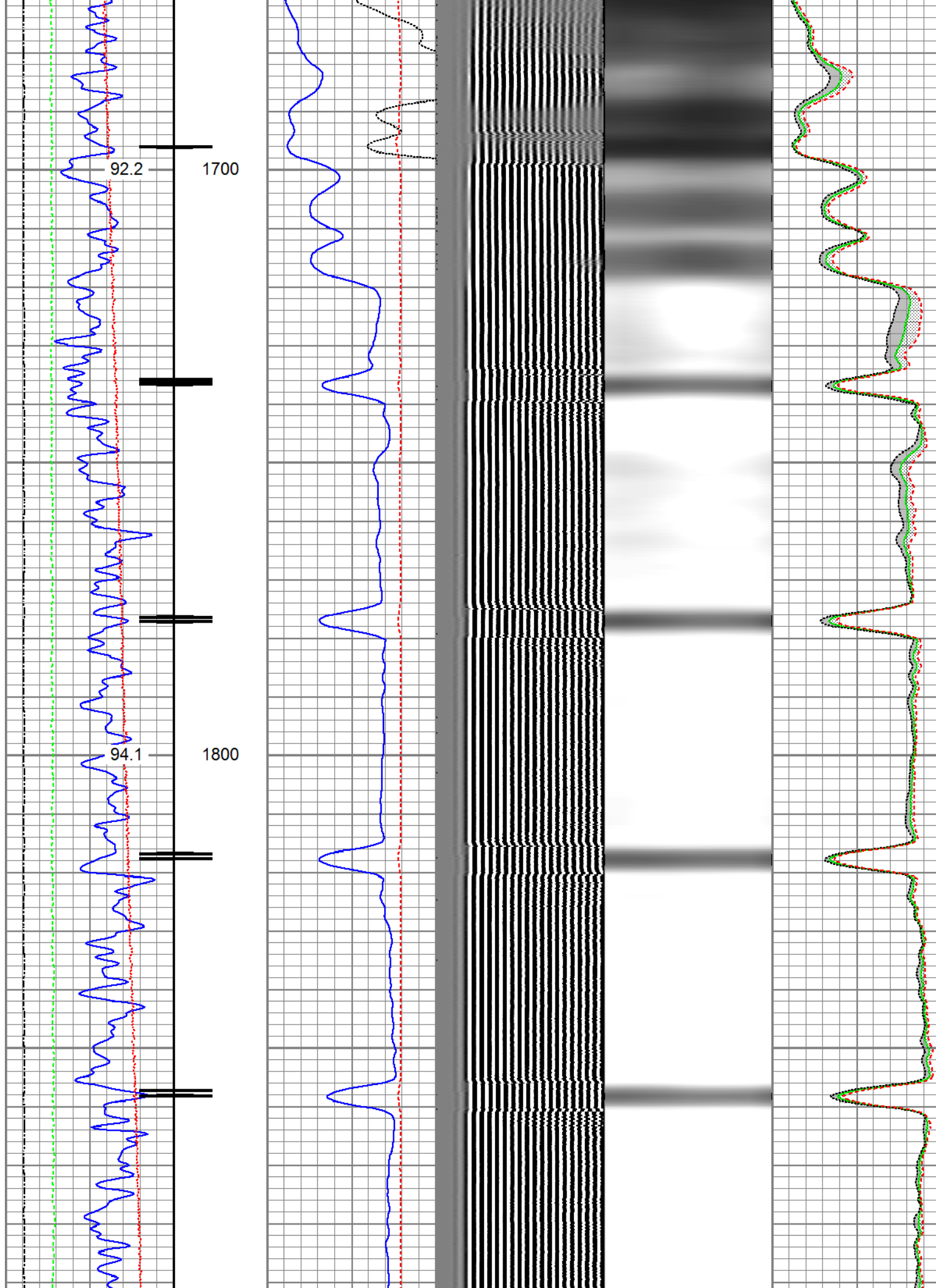


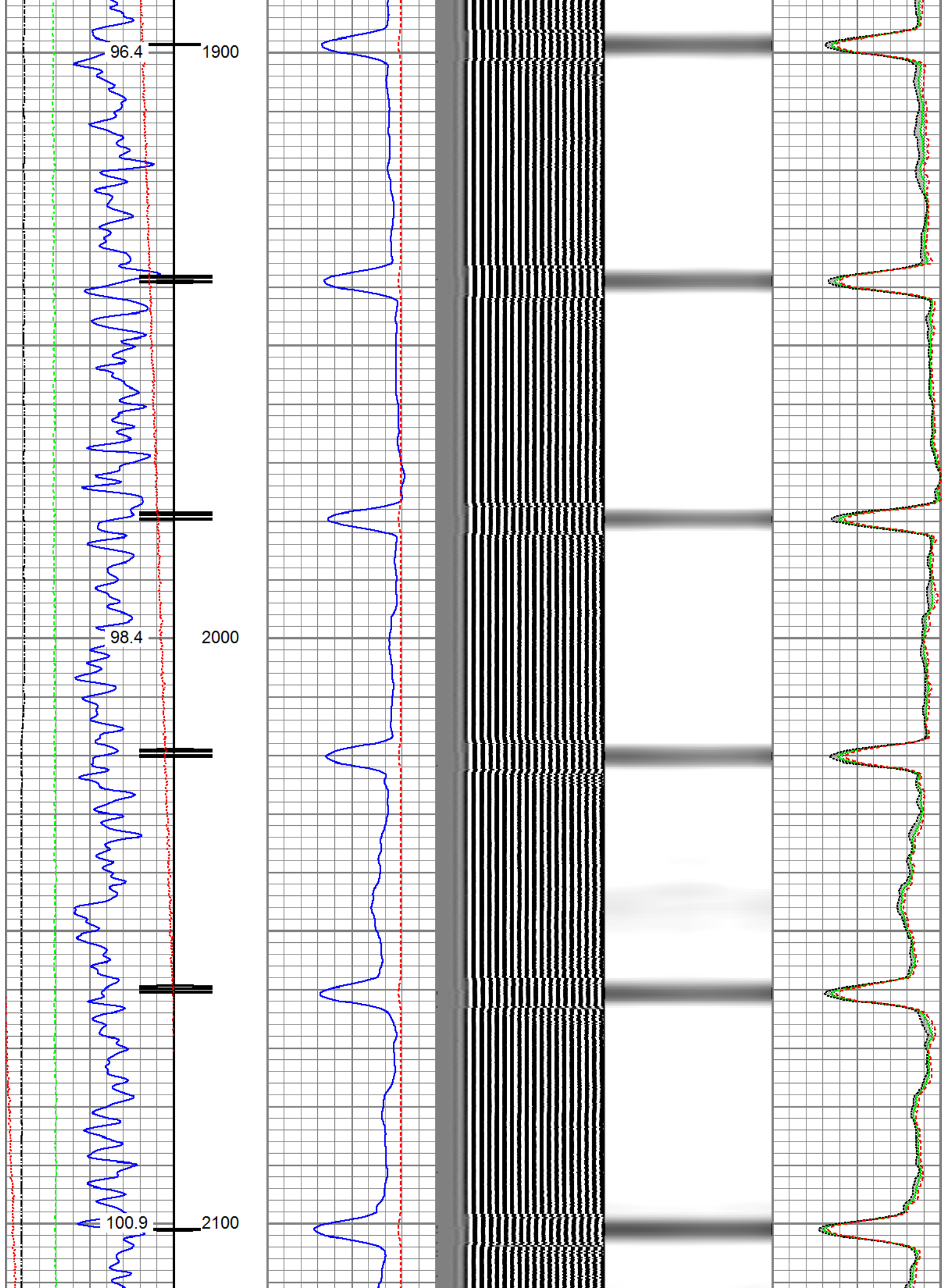


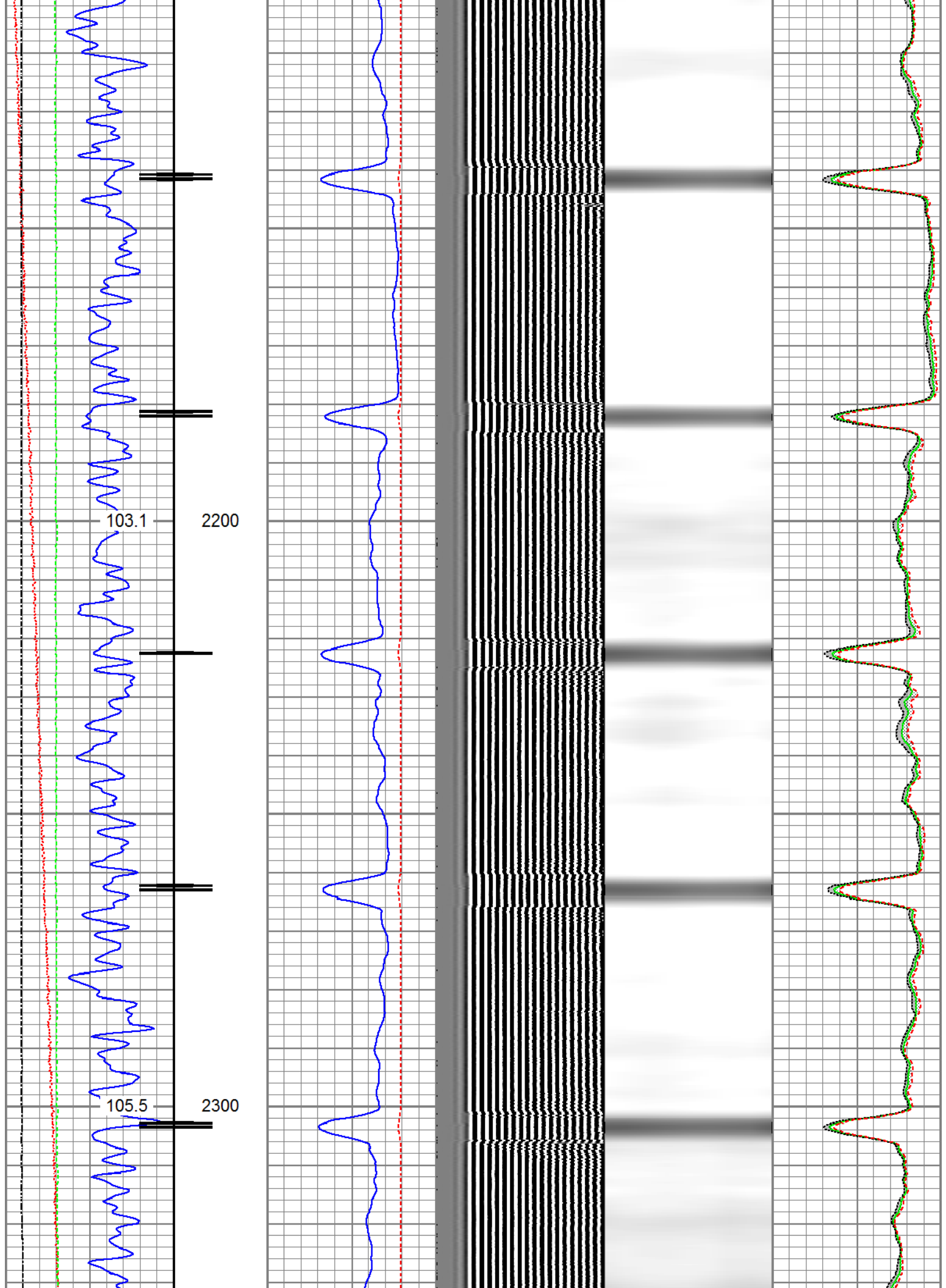


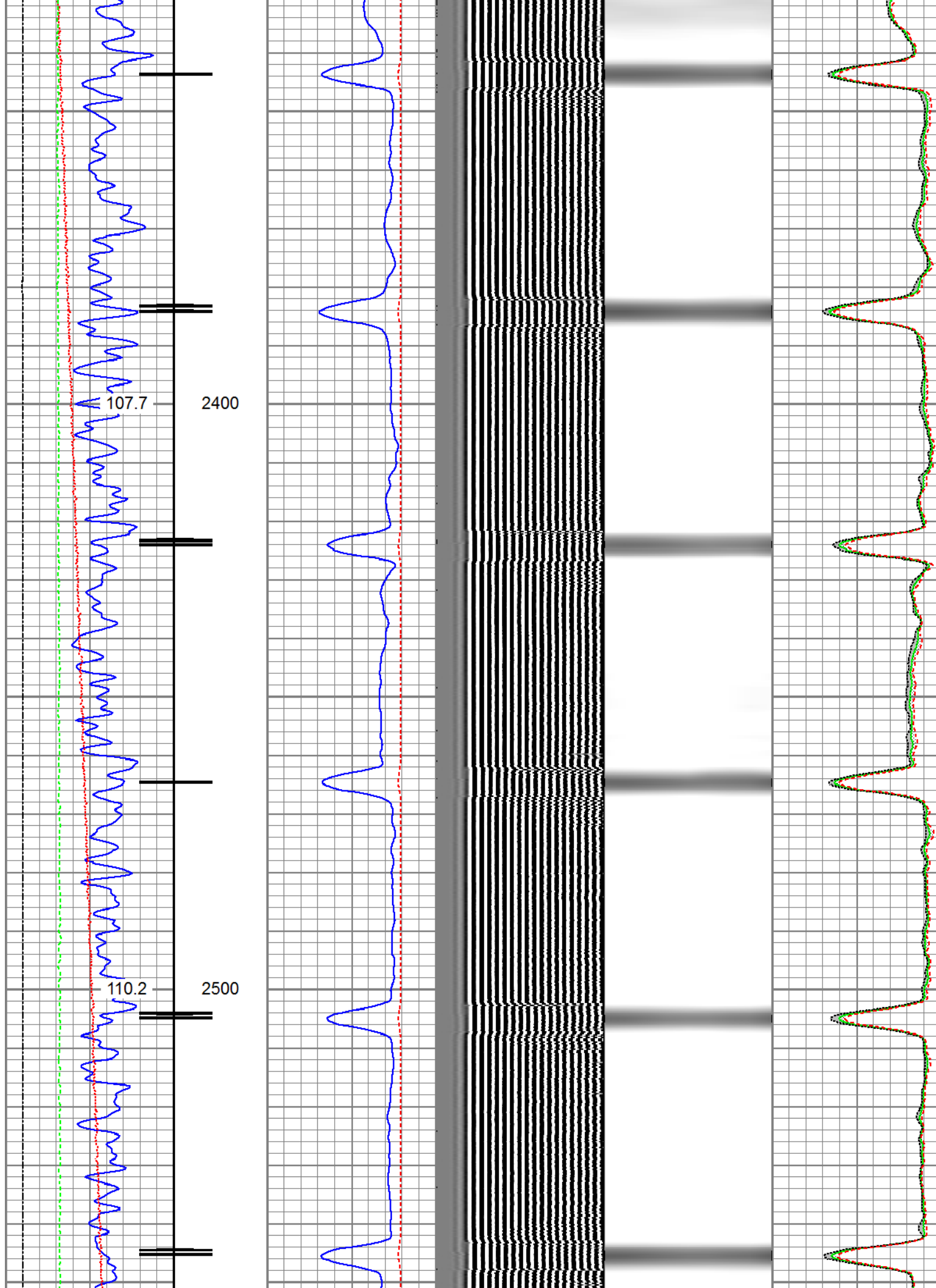


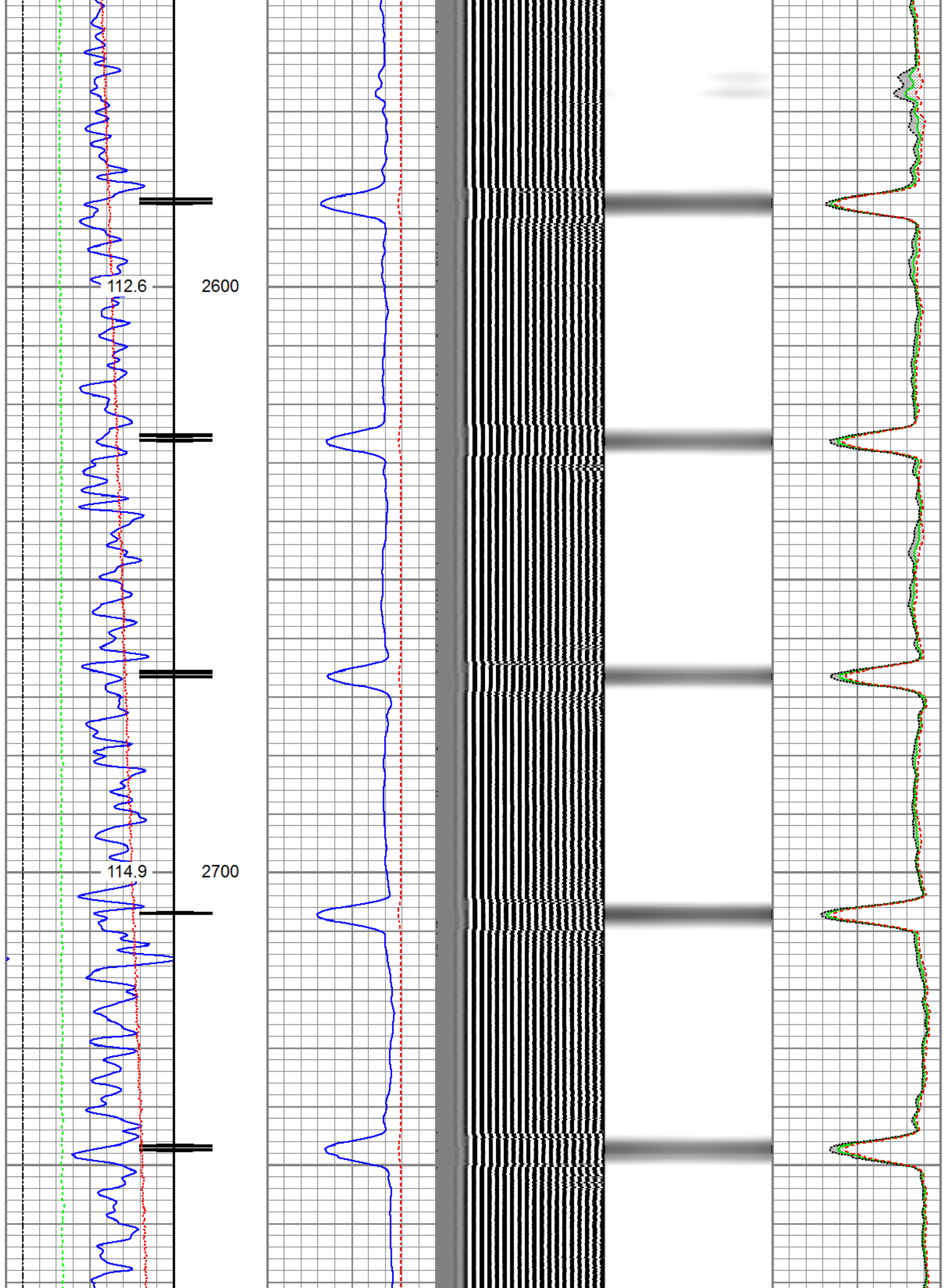


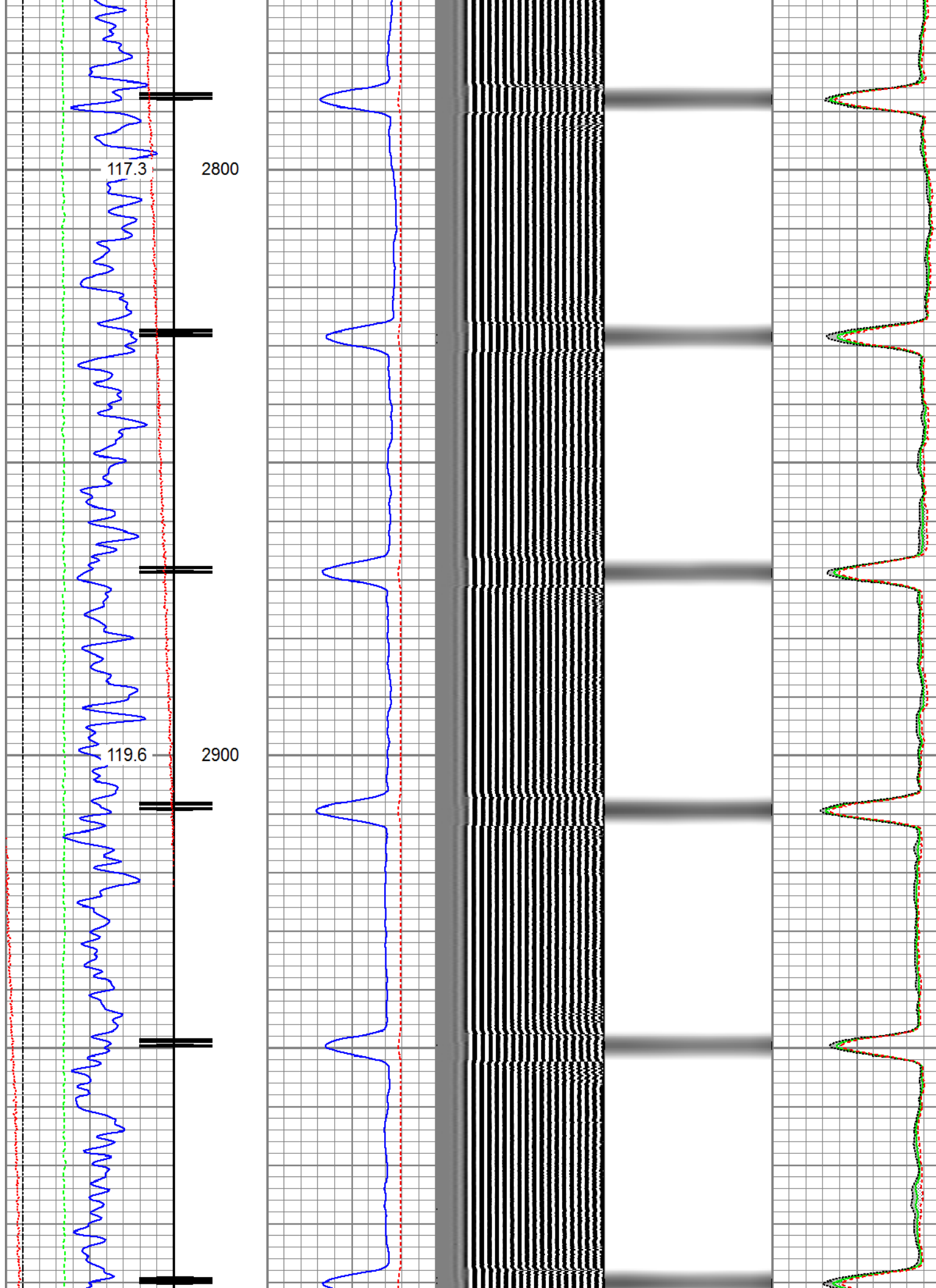


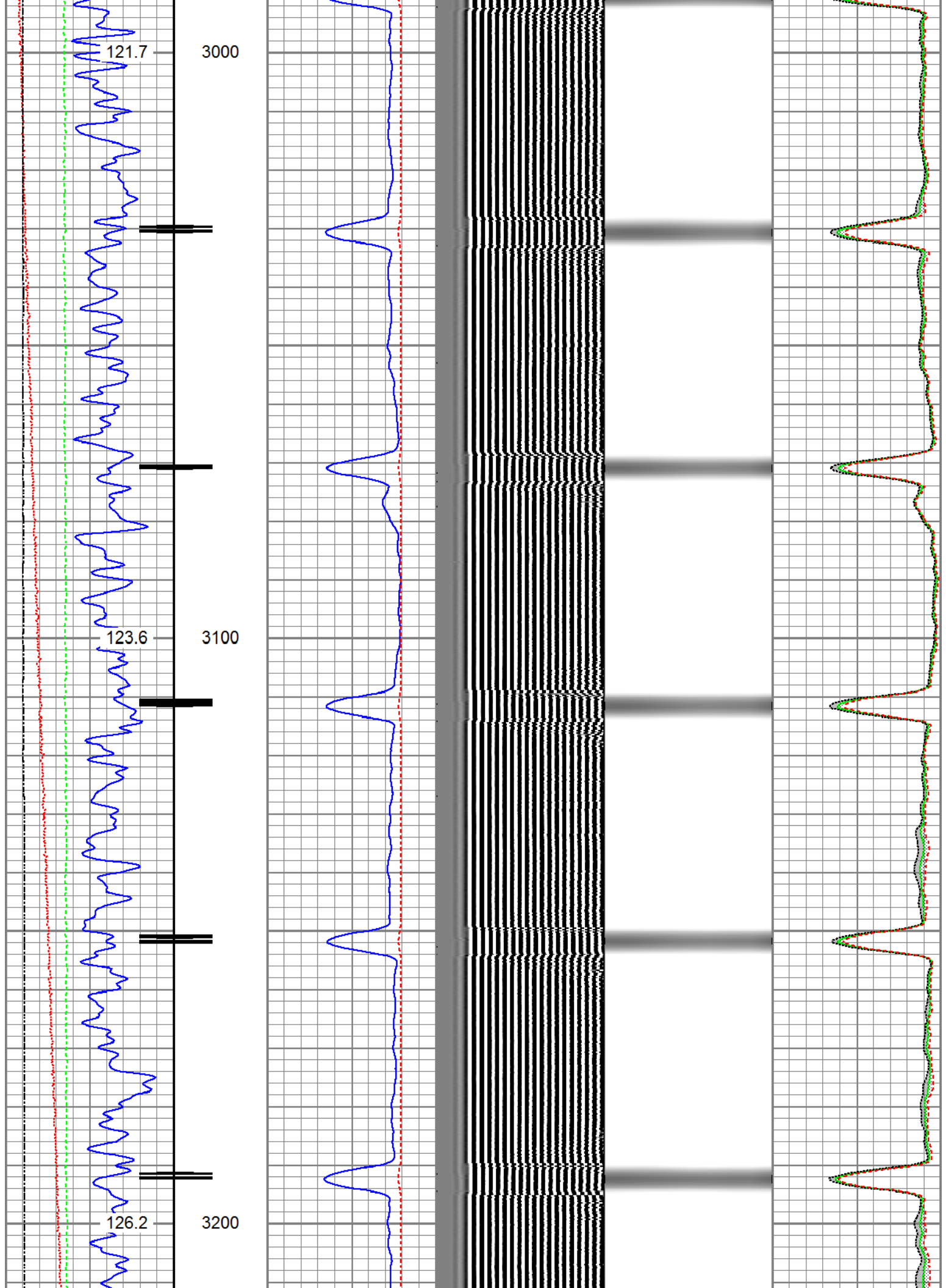


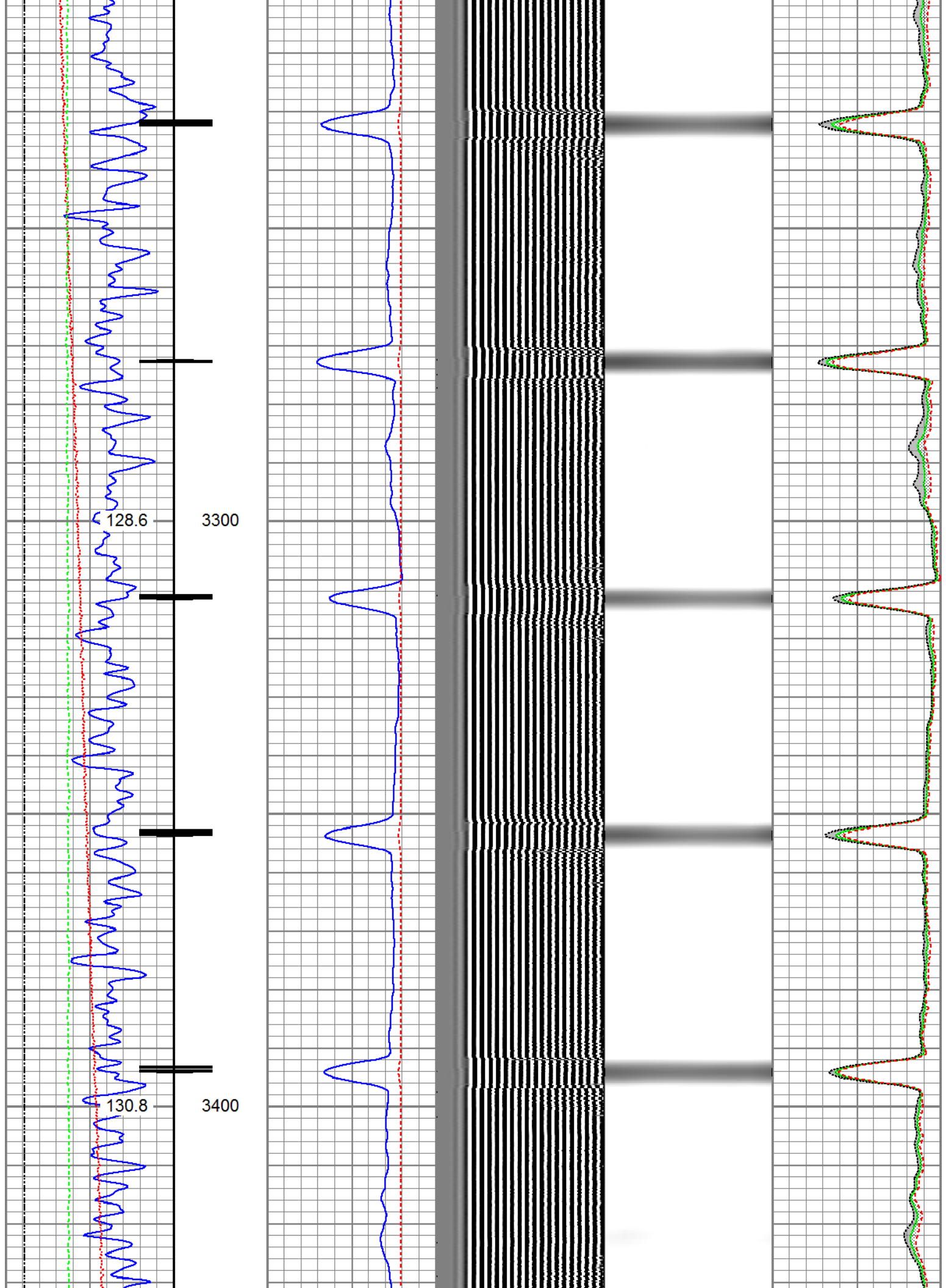


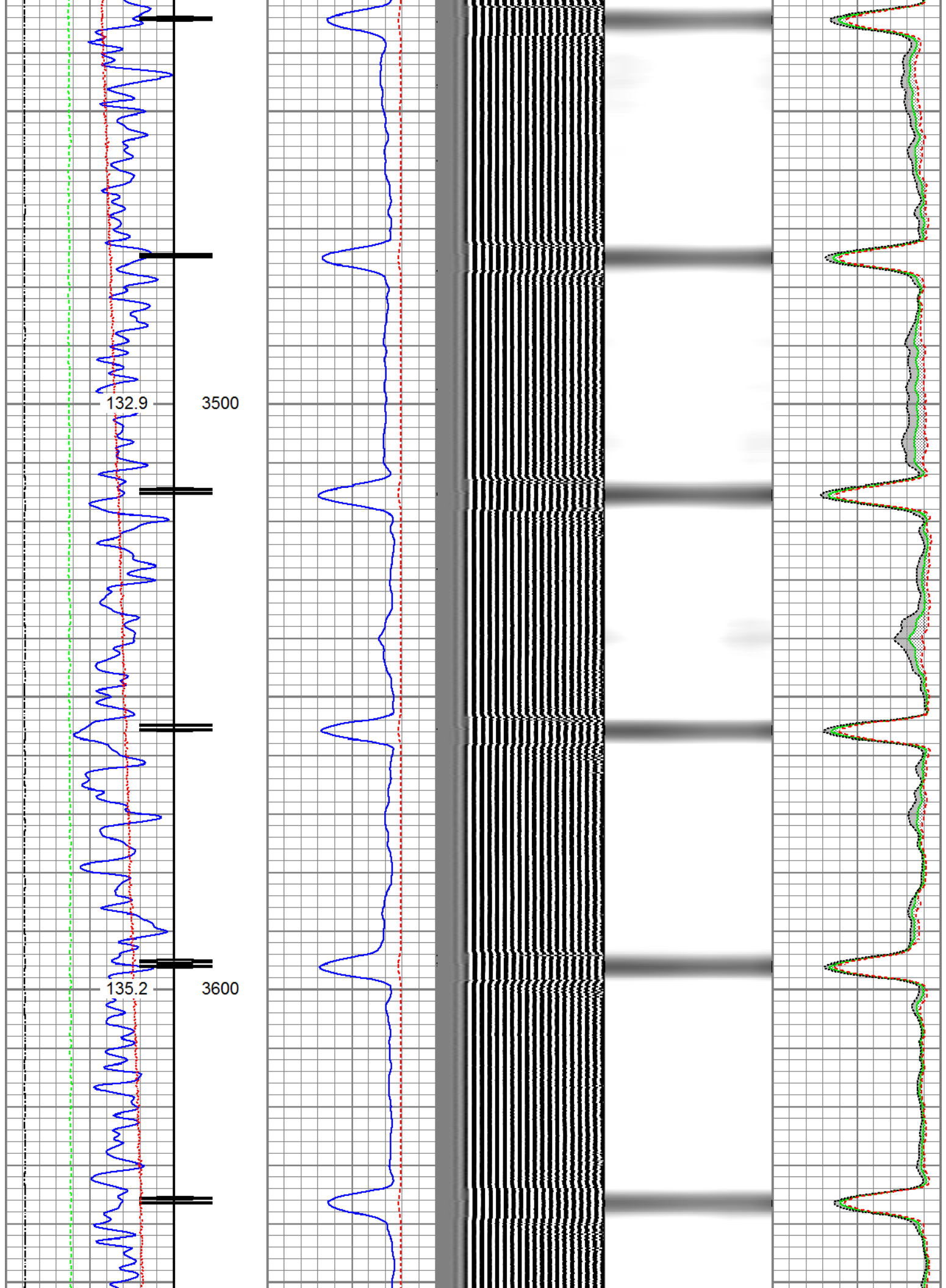


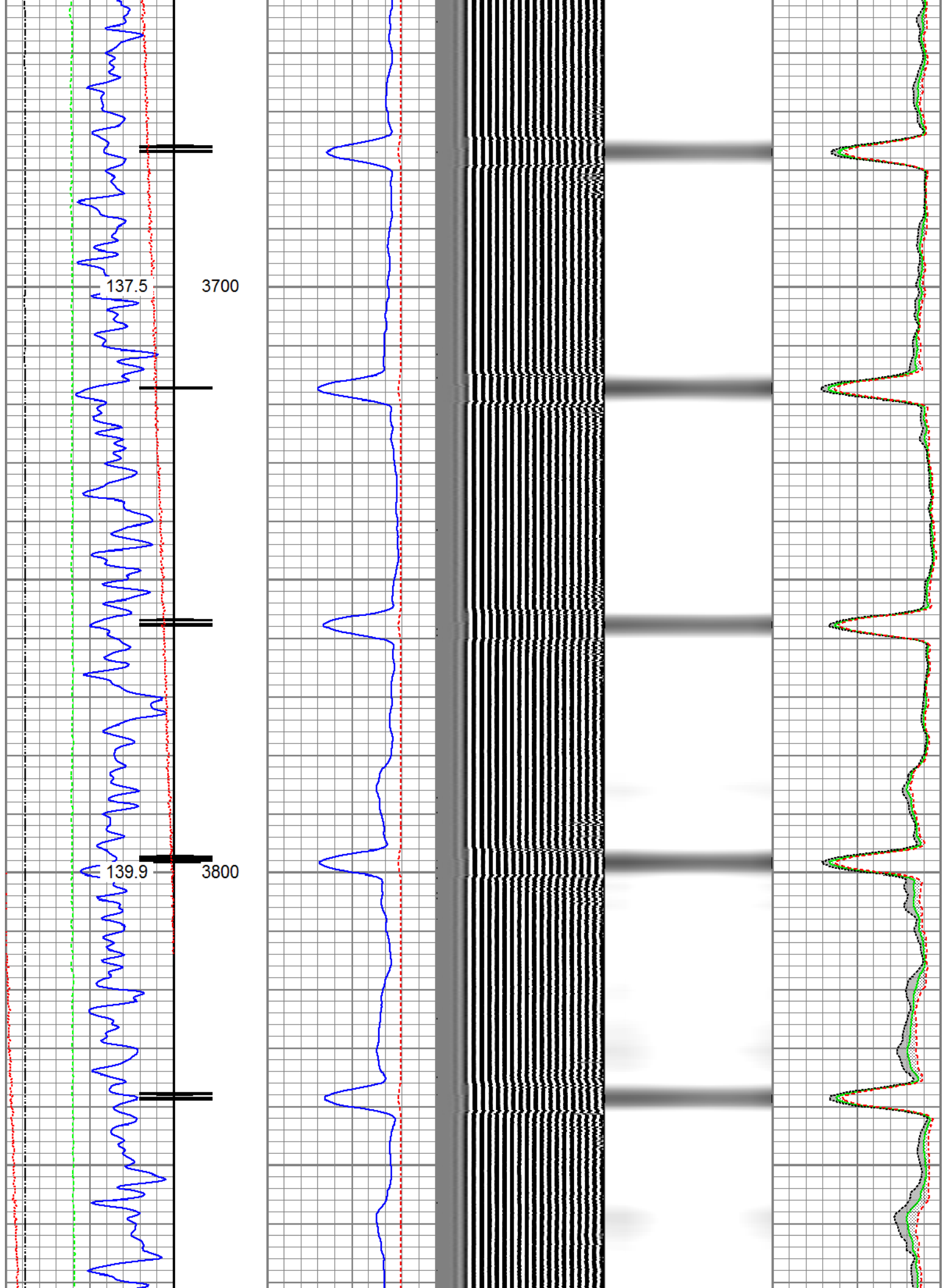


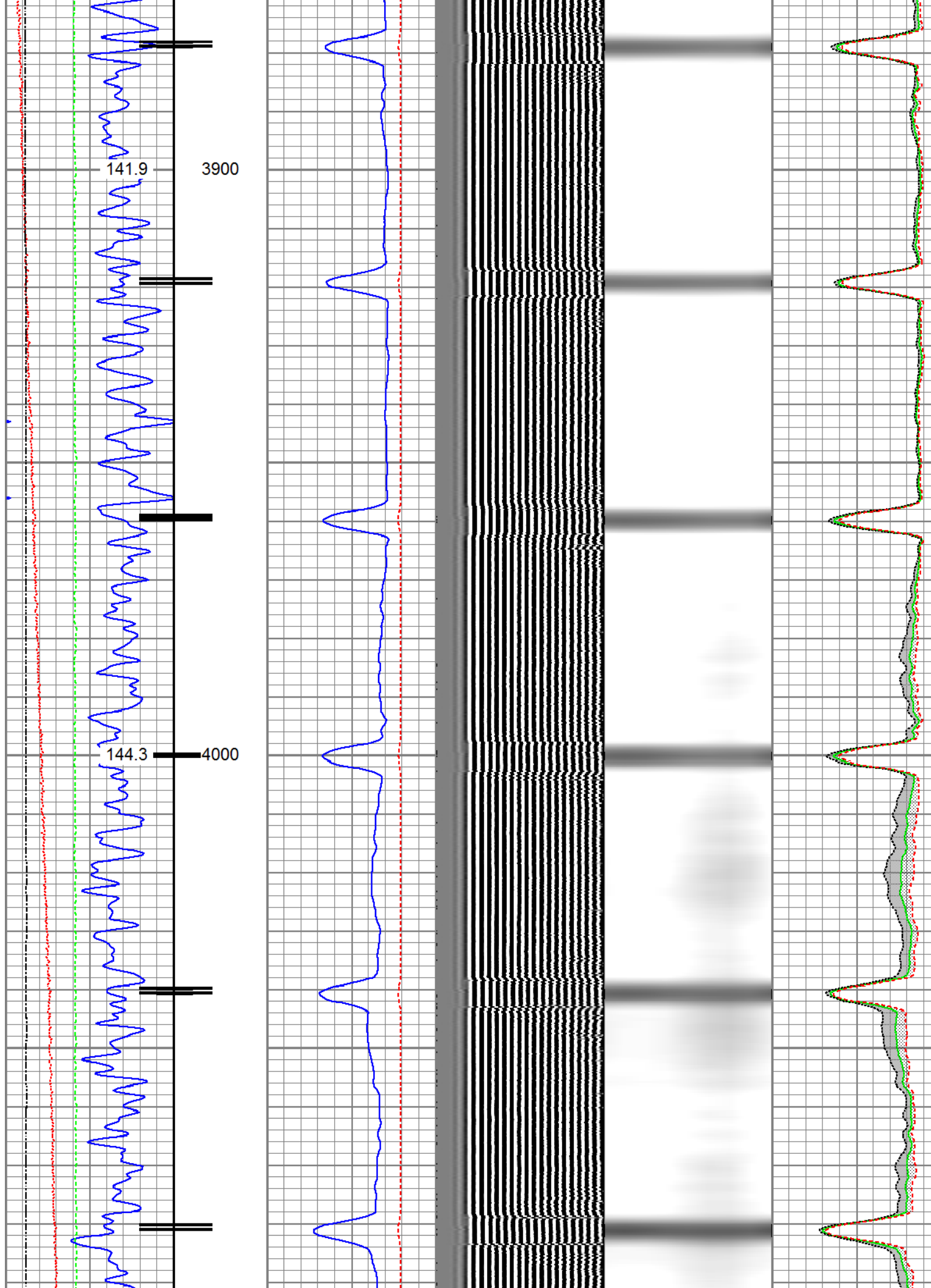




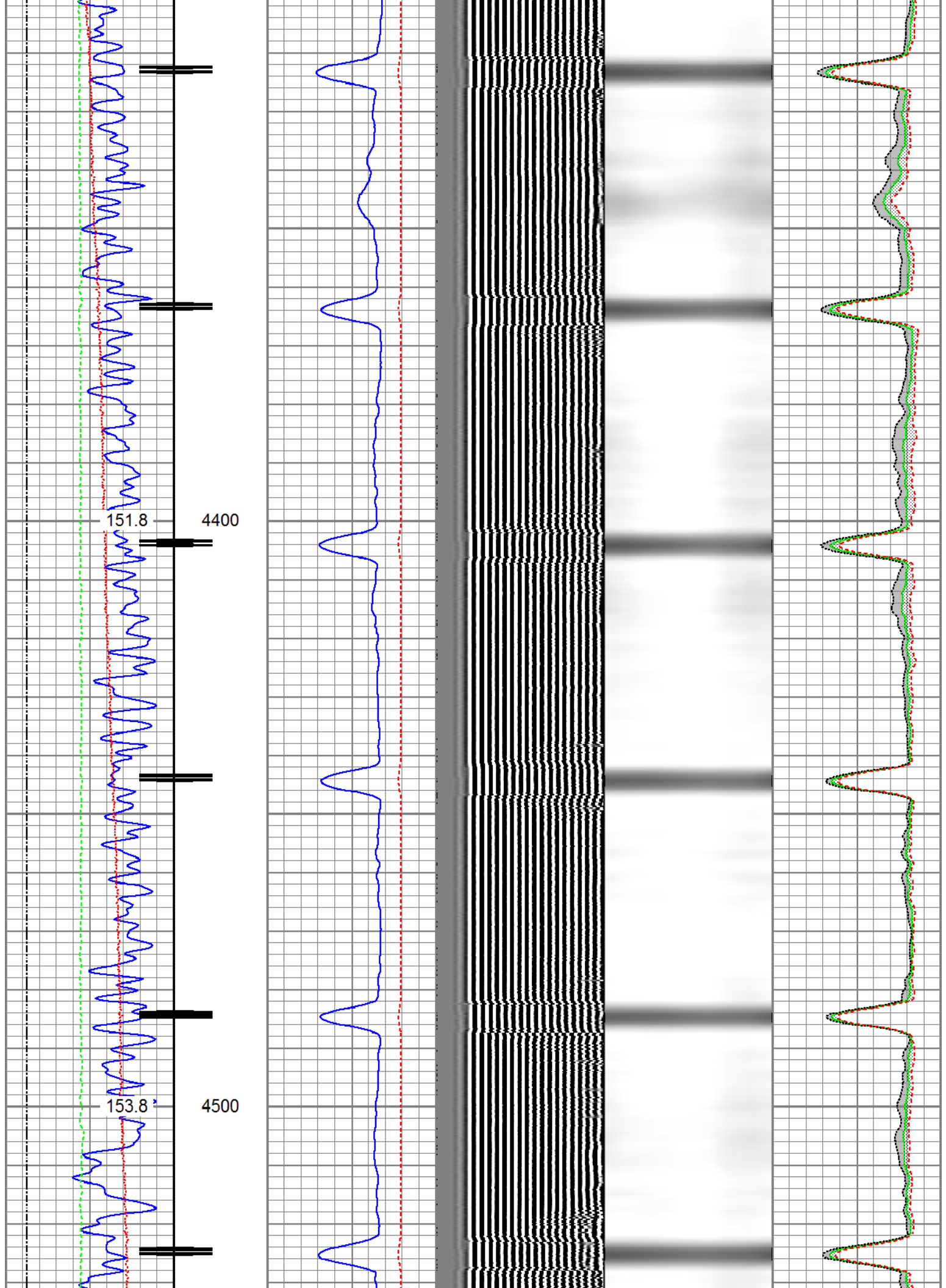


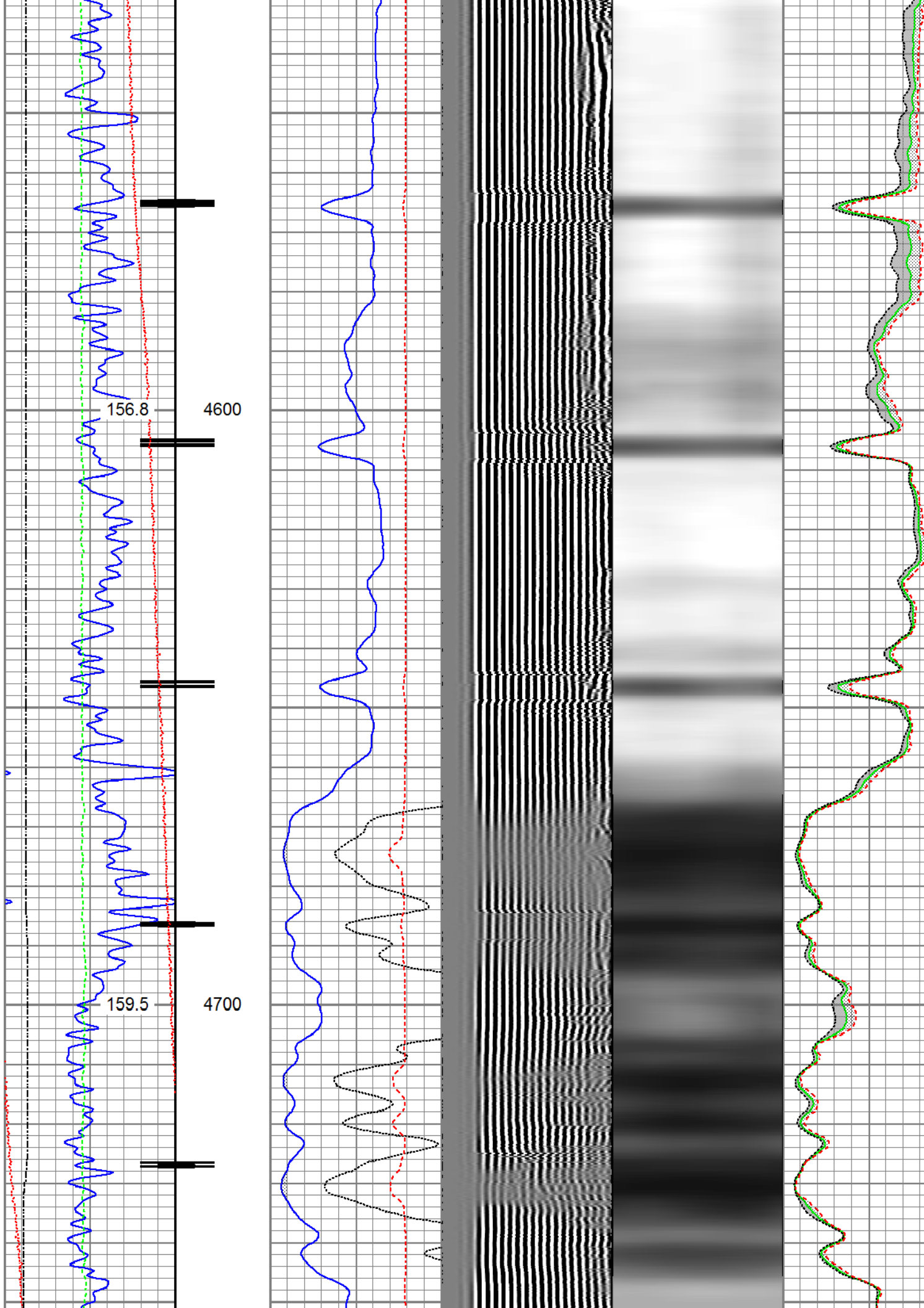


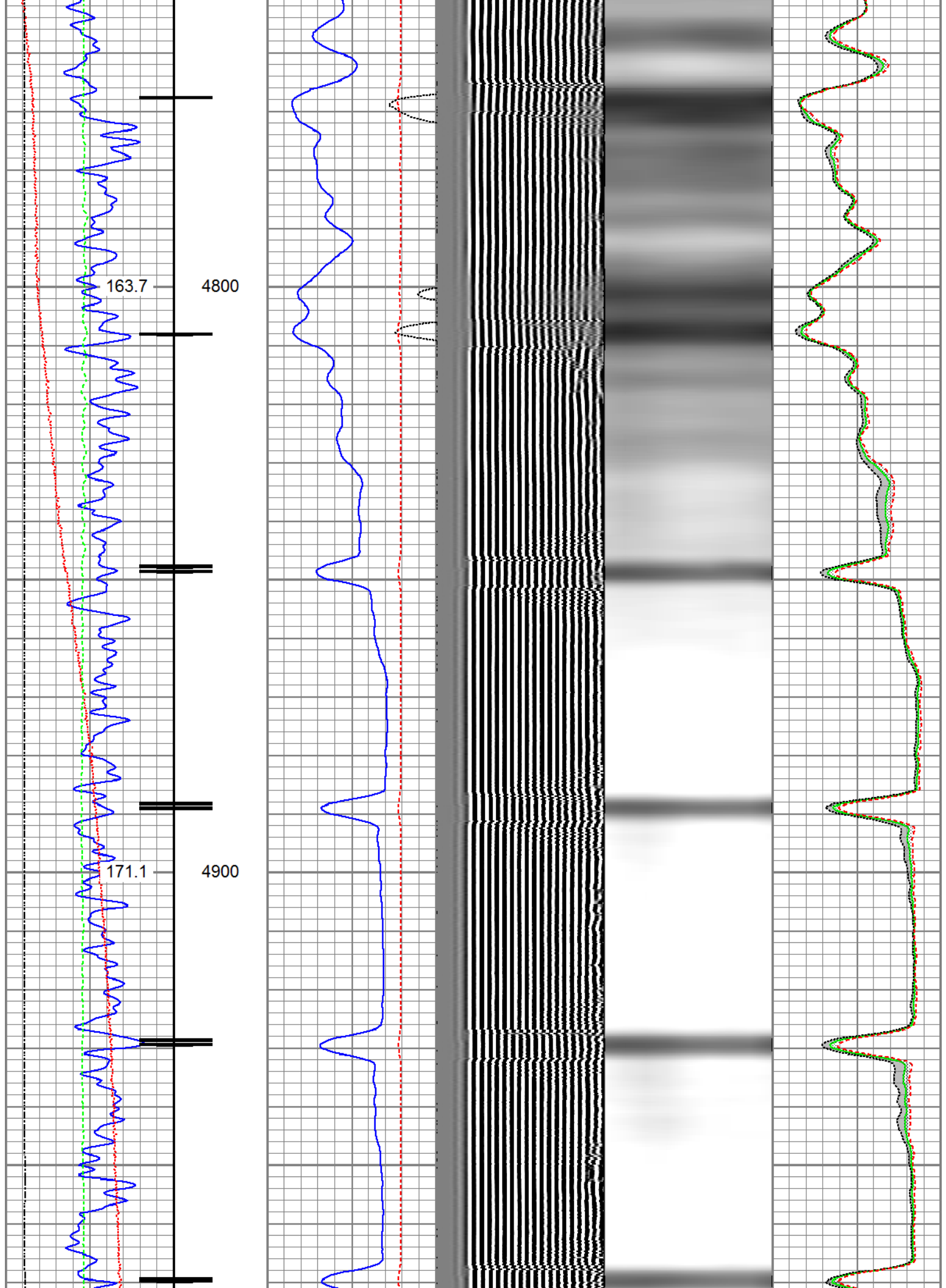


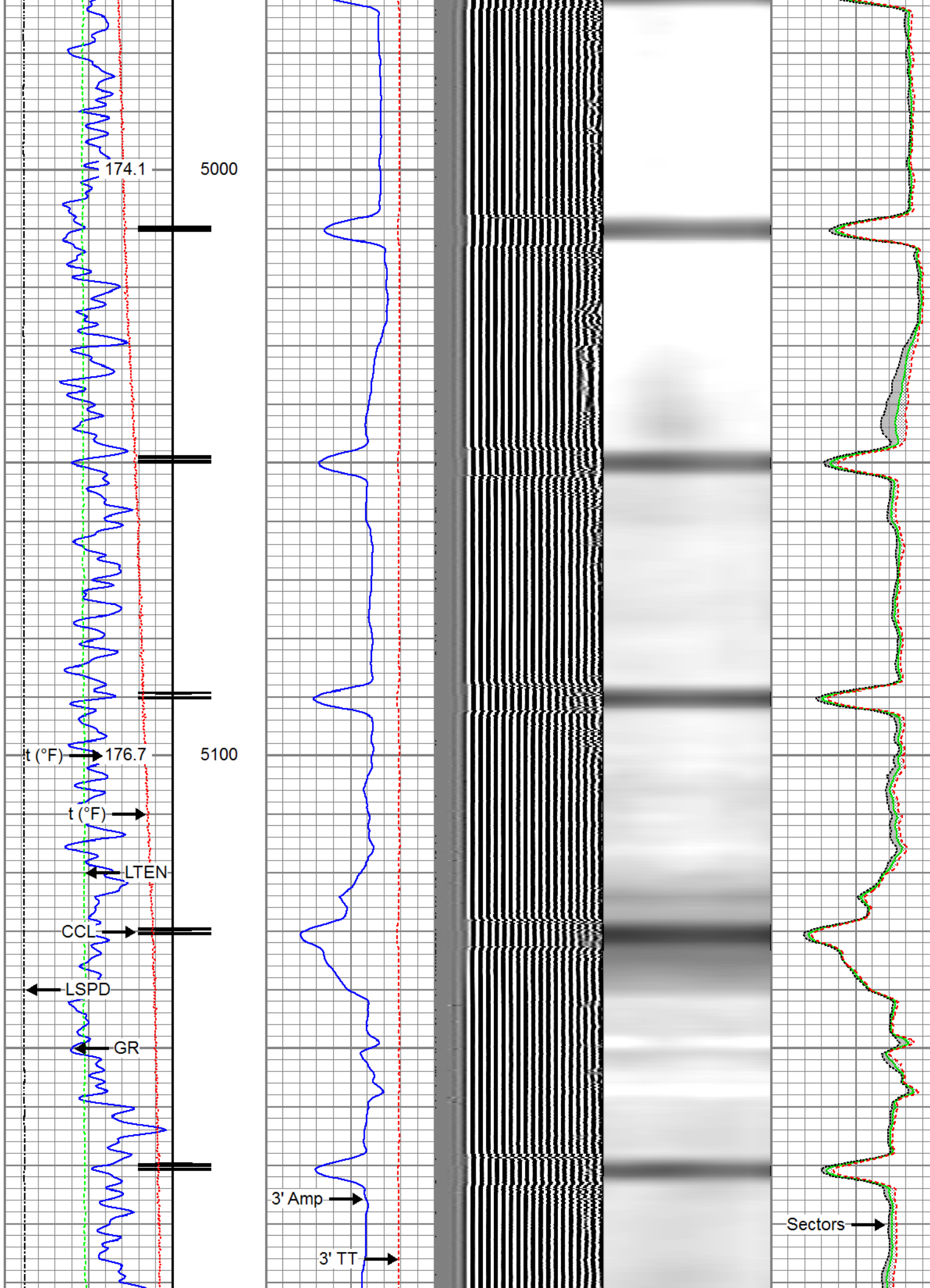


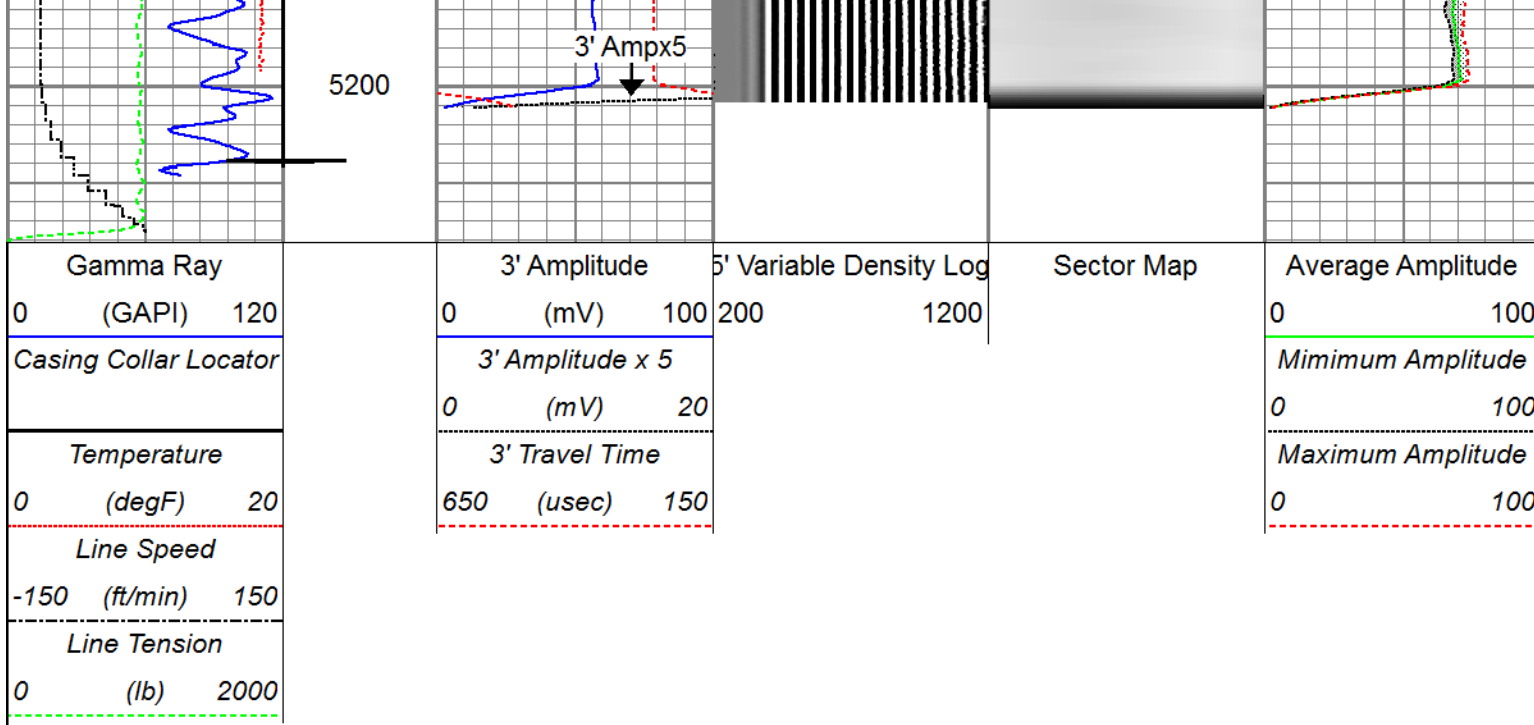








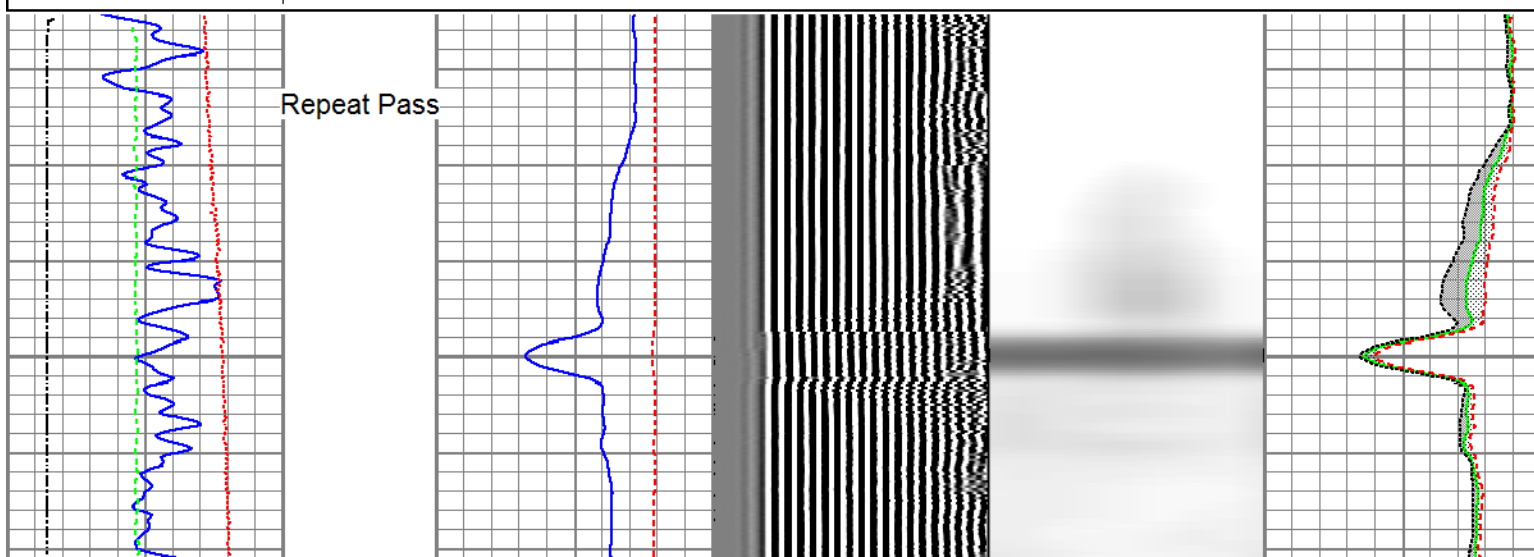
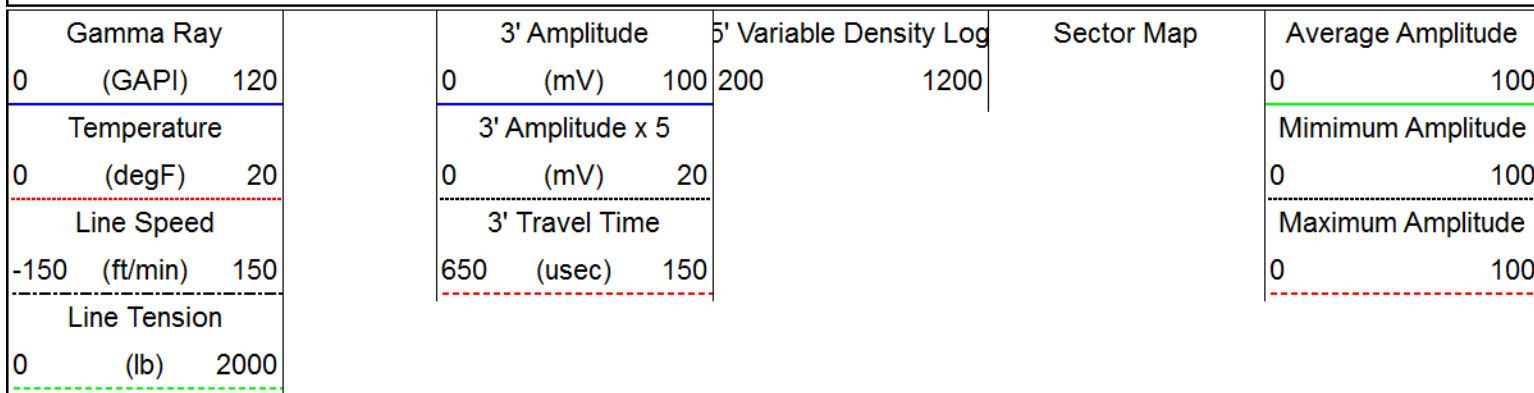


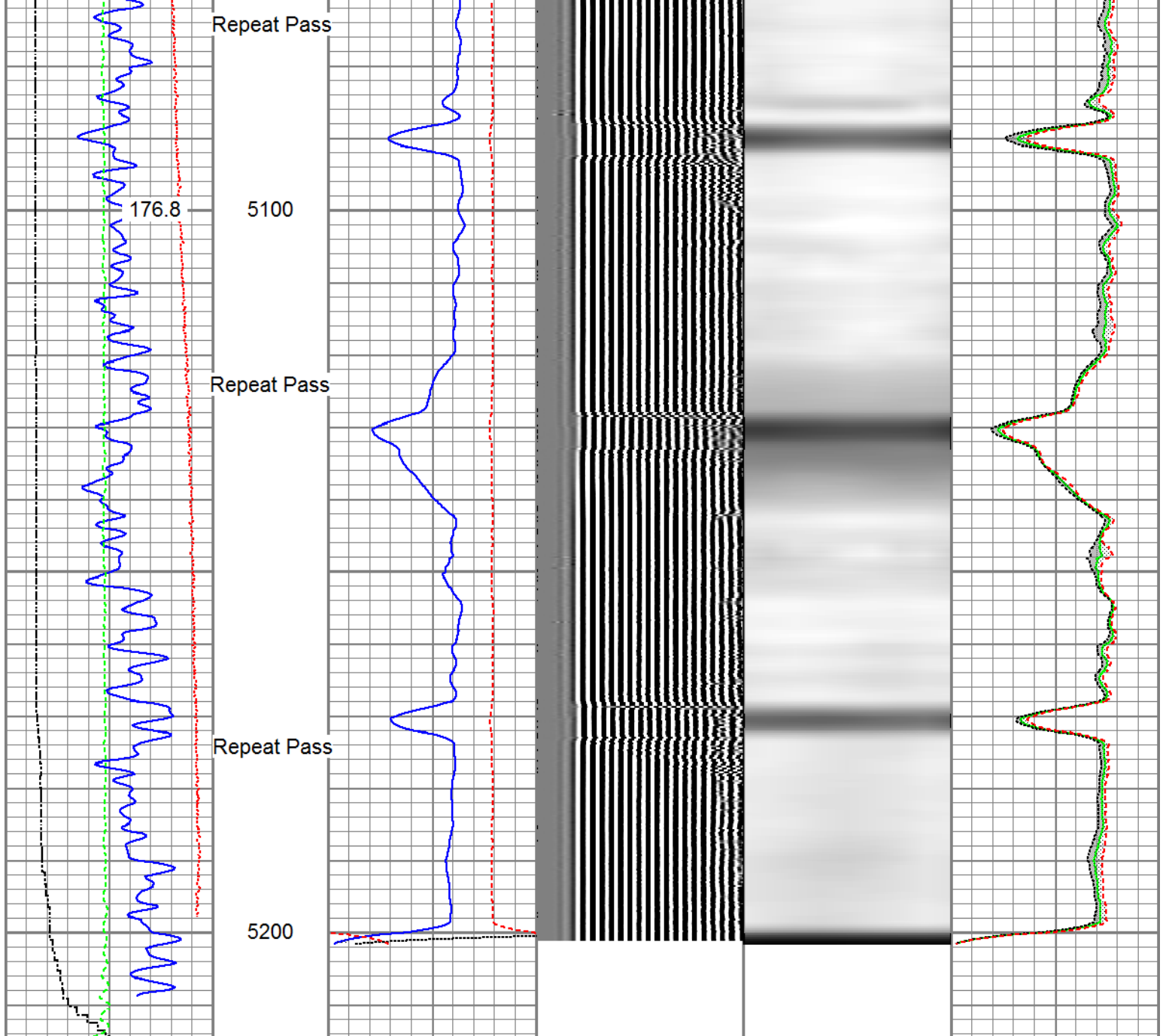


## Repeat Pass

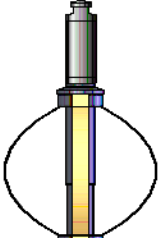

Recorded with 0 PSI Surface Induced Pressure

Database File: anadarko\_lambercht\_august\_gu\_2\_18\_may\_2017\_rbbl\_vert\_w8\processed\_0512309943\_anadarko\_lan  
 Dataset Pathname: pass5.1  
 Presentation Format: ros\_radrii  
 Dataset Creation: Tue May 23 11:16:18 2017  
 Charted by: Depth in Feet scaled 1:240





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

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
			Titan_Electric_Cable_Heads-Titan_1-11/16" Electric Cable Head with 1" Fishing Neck	1.03	1.69	5.40
			Probe_ELine_BowSpring_Centralizer-P_EBS Probe 2-3/4" Electric Inline Bowspring Centralizer	2.8875	2.75	20.00

Temp	16.72				
WVFS8	14.55		Probe_RADII-C-P_RBT_2750 (FW1302-0029.19)	2.75	105.00
WVFS7	14.55		Probe 2-3/4" Sector Cement Bond Tool with Temperature Probe		
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				
			Probe_ELine_BowSpring_Centralizer-P_EB	2.8875	20.00
			Probe 2-3/4" Electric Inline Bowspring Centralizer		
DCCL	6.51				
CCL	6.51				
			Probe_GR_CCL-P_CGR_2750_S (FW12124.54)	2.75	55.00
			Probe 2-3/4" Digital CCL / Gamma Ray Combined		
GR	3.77				
			Probe_ELine_BowSpring_Centralizer-P_EB	2.8875	20.00
			Probe 2-3/4" Electric Inline Bowspring Centralizer		

Dataset: PROCESSED\_0512309943\_Anadarko\_Lambrecht August GU 2\_05-18-17\_RBL\_vert\_w8.db: field/well/run1/merge1.1  
 Total length: 23.40 ft  
 Total weight: 225.40 lb  
 O.D.: 2.75 in

**Calibration Report**

Database File c:\programdata\warrior\data\anadarko lambercht august gu 2\_18 may 2017\_rbb\vert\_w8\processed\_  
 Dataset Pathname merge2.1  
 Dataset Creation Tue May 23 15:57:53 2017

**Gamma Ray Calibration Report**

Serial Number: FW1212-026  
 Tool Model: P\_CGR\_2750\_S  
 Performed: Sat Feb 18 07:43:44 2017

Calibrator Value: 1.0 GAPI  
 Background Reading: 0.0 cps  
 Calibrator Reading: 1.6 cps  
 Sensitivity: 0.6000 GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number: FW1302-002  
 Tool Model: P\_RBT\_2750  
 Calibration Casing Diameter: 4.500 in  
 Calibration Depth: 142.047 ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	-0.009	1.370	0.800	81.196	58.295	1.348
CAL	0.004	1.748				
5'	-0.034	1.147	0.800	81.196	68.082	3.089
SUM						
S1	-0.011	1.286	0.000	100.000	77.115	0.811
S2	-0.001	1.287	0.000	100.000	77.682	0.048
S3	-0.004	1.305	0.000	100.000	76.389	0.330
S4	-0.005	1.329	0.000	100.000	74.964	0.377
S5	-0.009	1.368	0.000	100.000	72.594	0.659
S6	-0.008	1.390	0.000	100.000	71.524	0.591
S7	-0.010	1.386	0.000	100.000	71.637	0.691
S8	-0.011	1.381	0.000	100.000	71.848	0.788

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.004	1.748	1.000	0.000

Air Zero Calibration, performed Thu May 18 15:18:43 2017:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.004		0.000			0.000
5'	0.004		0.000			-0.000
SUM						
S1	0.004		0.000			-0.000
S2	0.004		0.000			0.000
S3	0.004		0.000			0.000
S4	0.004		0.000			-0.000
S5	0.004		0.000			0.000
S6	0.004		0.000			-0.000
S7	0.004		0.000			-0.000
S8	0.004		0.000			-0.000



Company	Kerr-McGee Oil & Gas Onshore, L.P.
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County	Weld
State	Colorado