



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

**Company** Kerr-McGee Oil & Gas Onshore, L.P.  
**Well** Varra 20-32  
**Field** Wattenberg  
**County** Weld **State** Colorado

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**Location:** SEC 32 TWP 3N RGE 67W  
 API #: 05-123-30928  
 Permanent Datum Ground Level Elevation 4835'  
 Log Measured From Ground Level 0 FT  
 Drilling Measured From Kelly Bushing  
 Other Services  
 CIBP  
 CEMENT  
 RBL 0 PSI  
 Elevation  
 K.B. 4850'  
 D.F. ---  
 G.L. 4835'

Date	23-OCT-2018						
Run Number	Three						
Depth Driller	8062 FT						
Depth Logger	4029 FT						
Bottom Logged Interval	4013 FT						
Top Log Interval	Surface						
Open Hole Size	---						
Type Fluid	Water						
Density / Viscosity	8.34 lb/gal						
Max. Recorded Temp.	140°F						
E. estimated Cement Top	See Log						
Time Well Ready	ROA						
Time Logger on Bottom	15:30						
E. equipment Number	HD-0343						
Location	Platteville, CO						
Recorded By	Miguel Chaparro						
Witnessed By	Nate Windholz						
Borehole Record							
Run Number	Bit	From	To	Size	Weight	From	To
Casing Record	Size (in)	Wgt (lbs/ft)	Grade	Top	Bottom		
Surface Casing	8 5/8	24	J-55	Surface	Surface		
Intermediate #1	4 1/2	11.6	1-80	Surface	Surface	1167 FT	
Intermediate #2						8053 FT	
Inner							

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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.

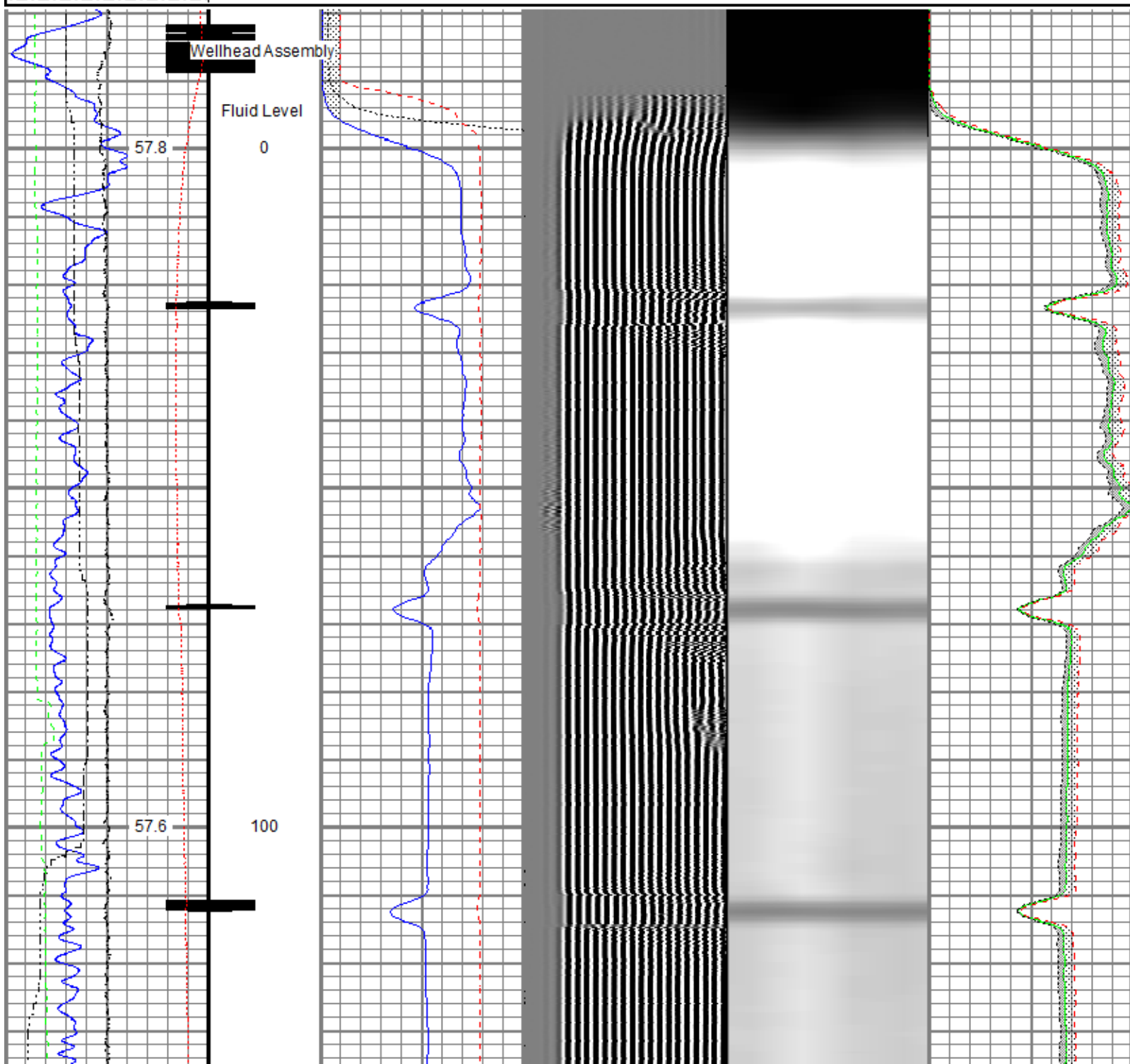
**Comments**

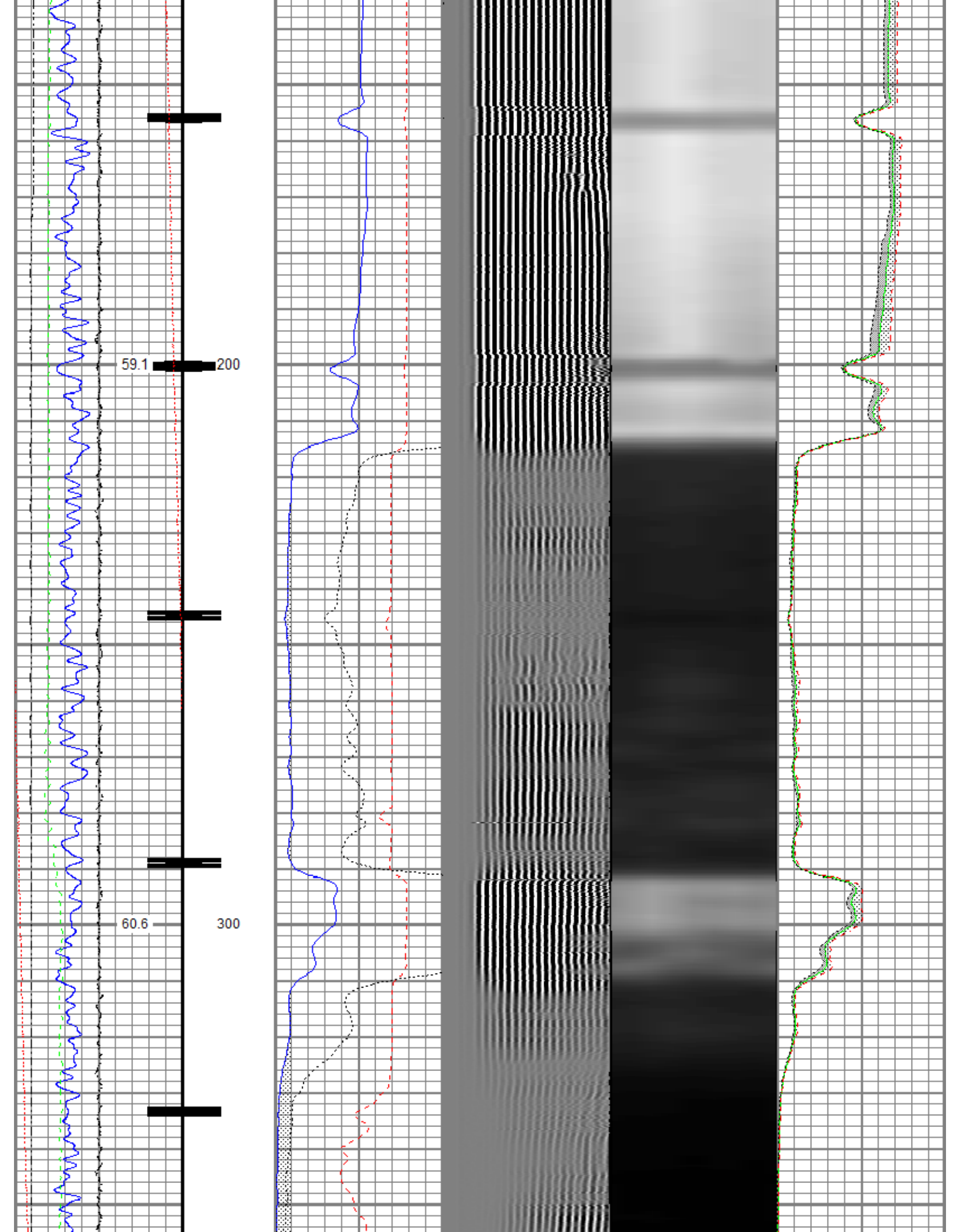
Log ran as per customer request  
 Depth referenced to Collar at 3998 FT  
 Adjusted -8 FT to correlate with Collar  
 Cast Iron Bridge Plug set at 4030 FT  
 Log ran with 500 PSI Surface Induced Pressure  
 Logging tools were clean and free of debris upon completion of operations  
 Thank you for choosing Reliance Oilfield Services, LLC!!

# Recorded With 500 PSI Surface Induced Pressure

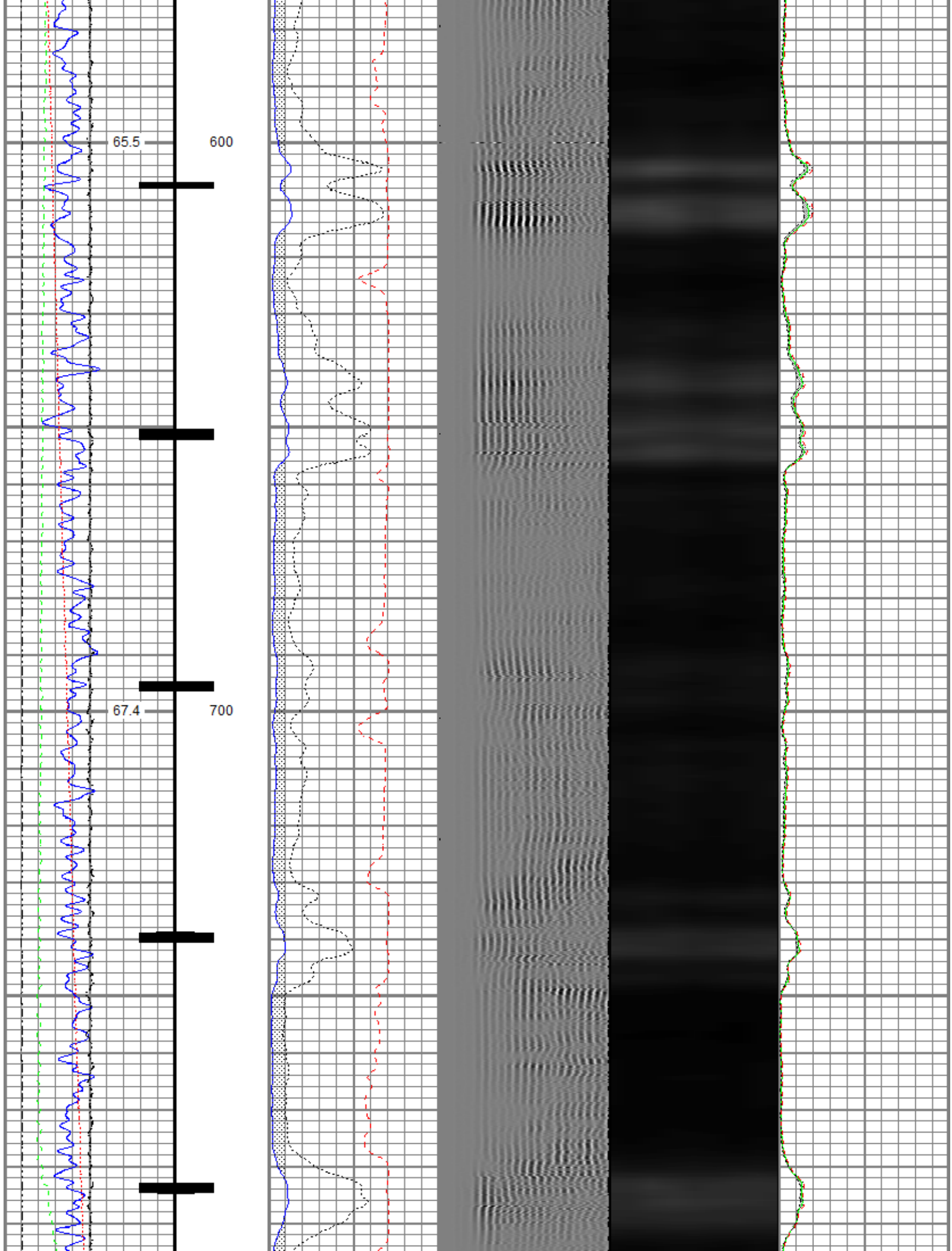
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 Dataset Pathname    pass4.2  
 Presentation Format    ros\_radrii  
 Dataset Creation      Wed Oct 24 09:49:43 2018  
 Charted by            Depth in Feet scaled 1:240

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









69.3

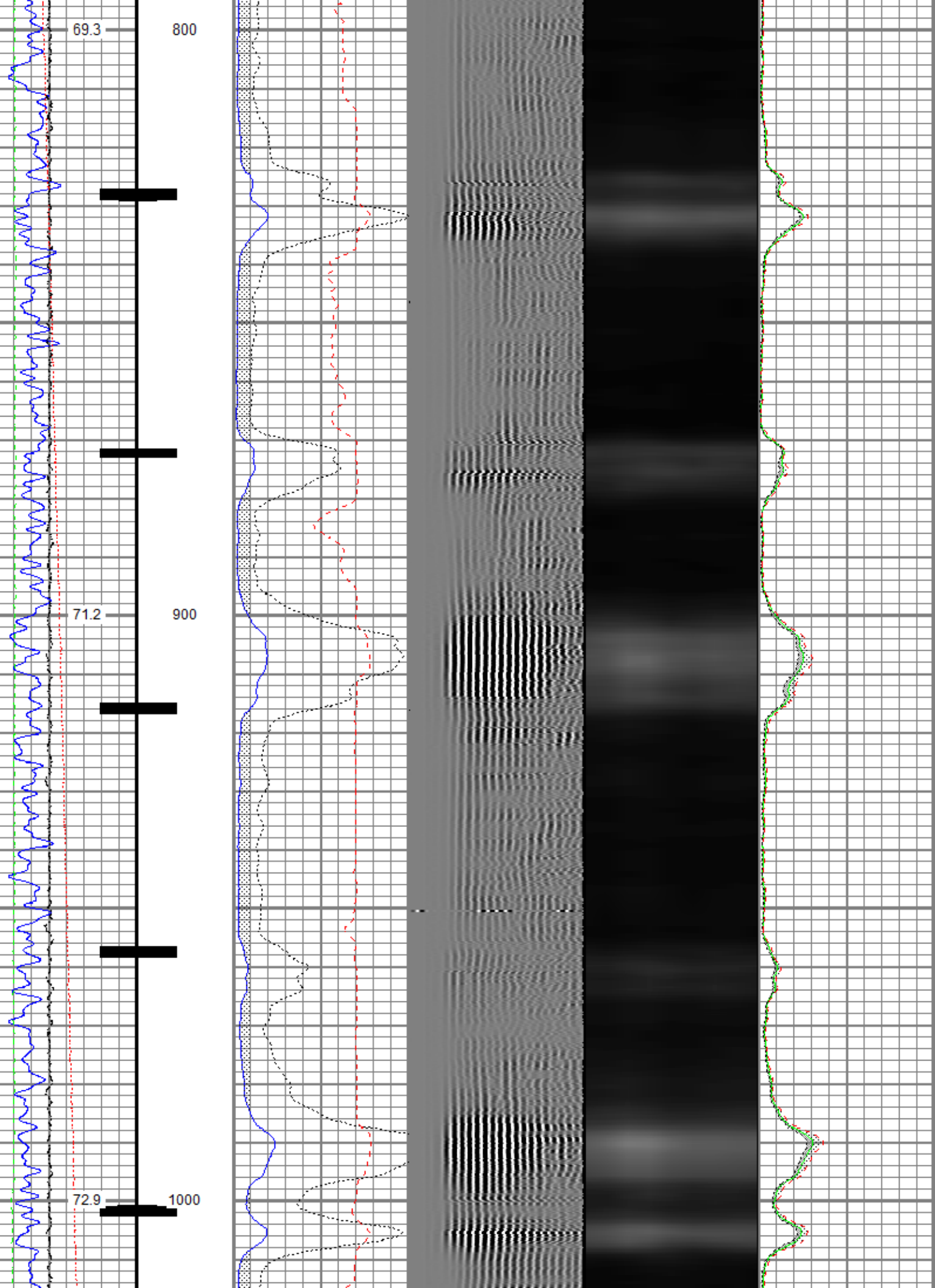
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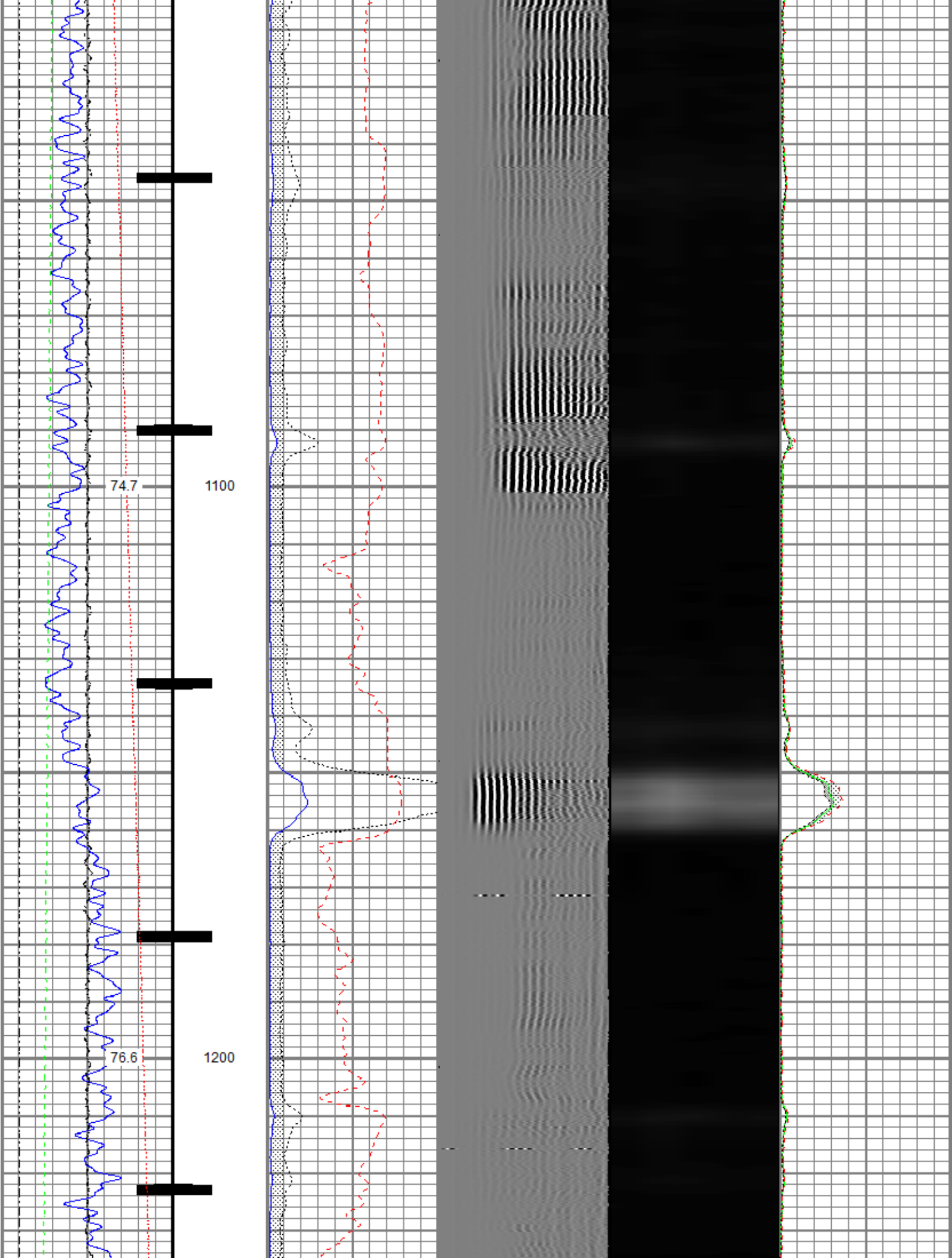
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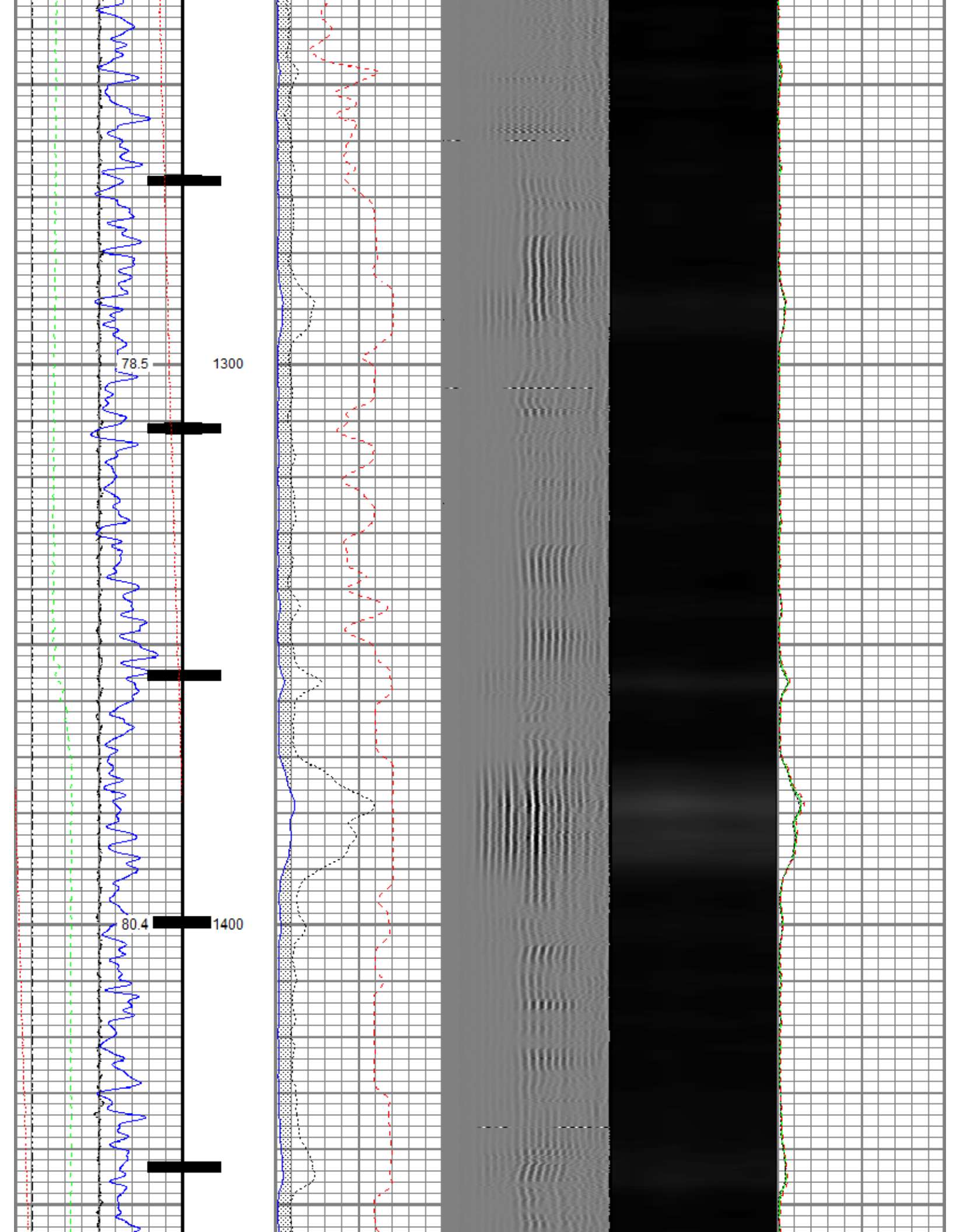
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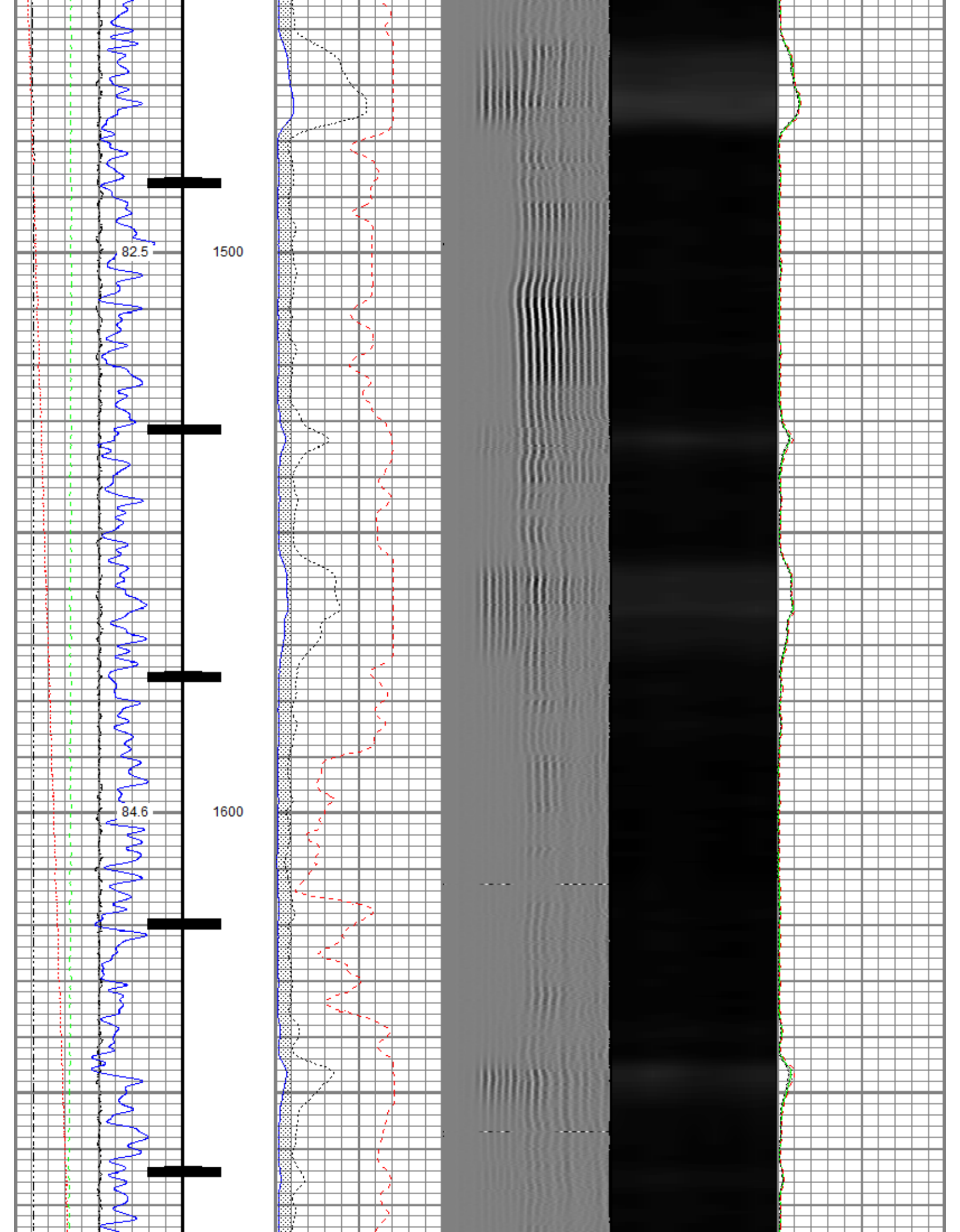
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1000

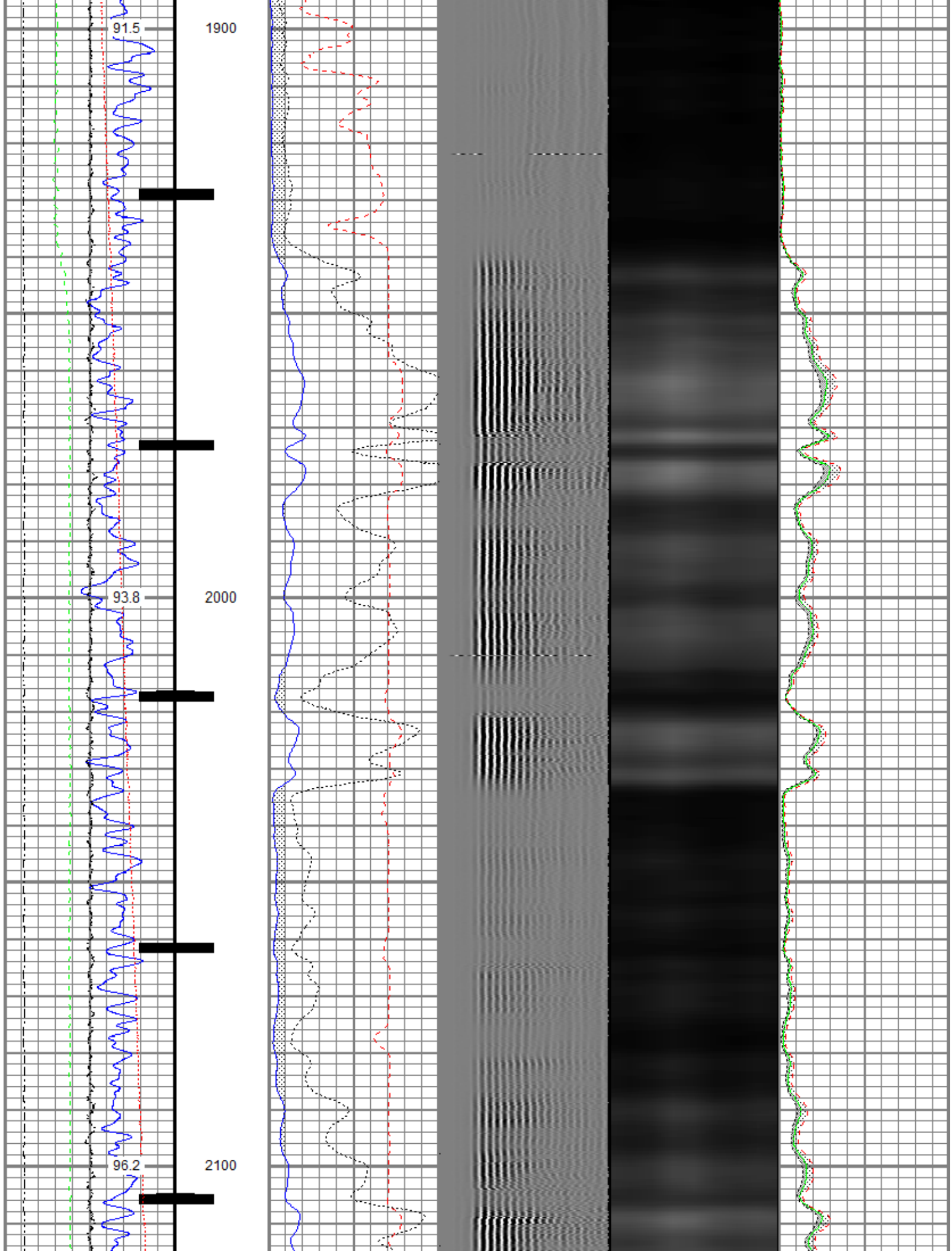


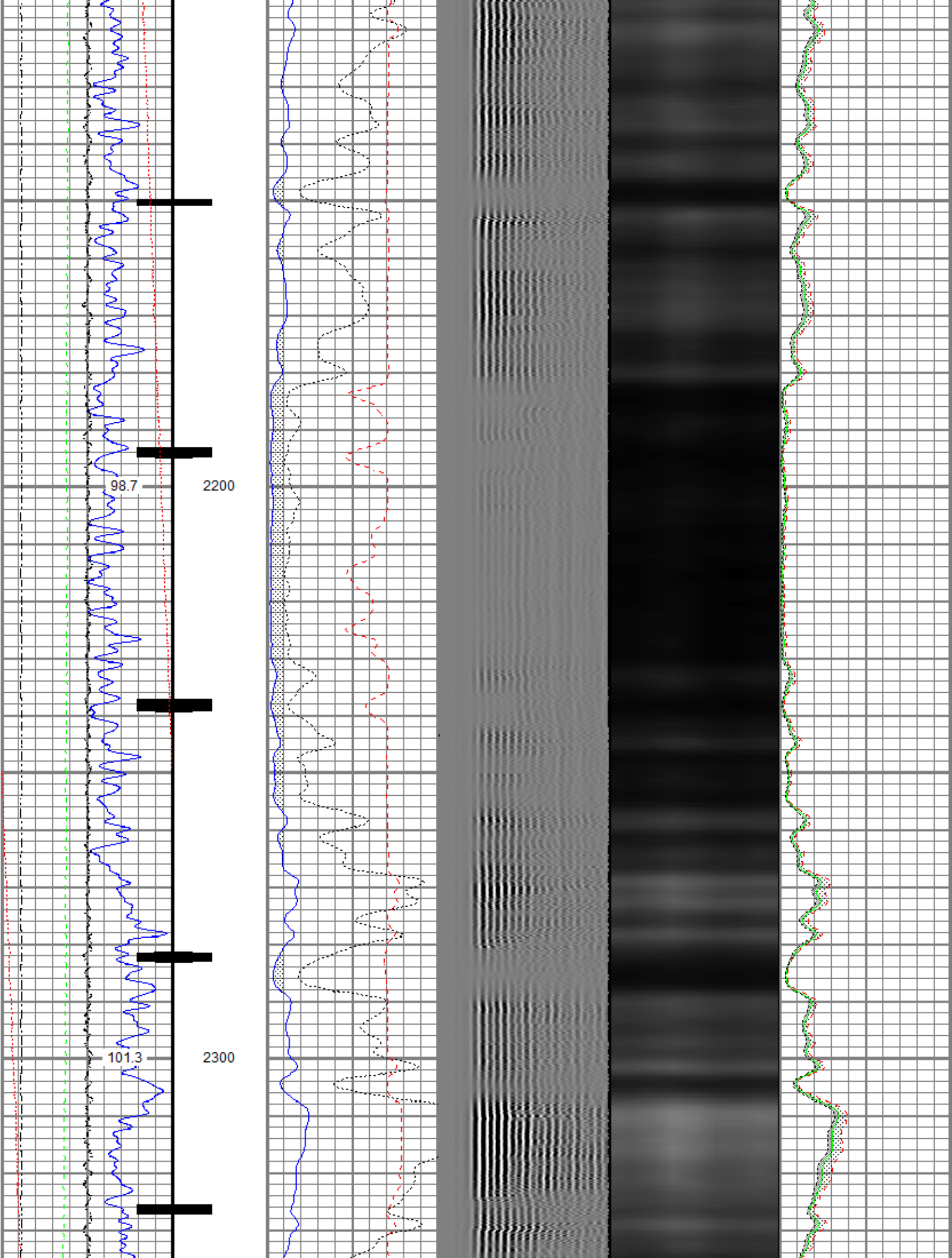


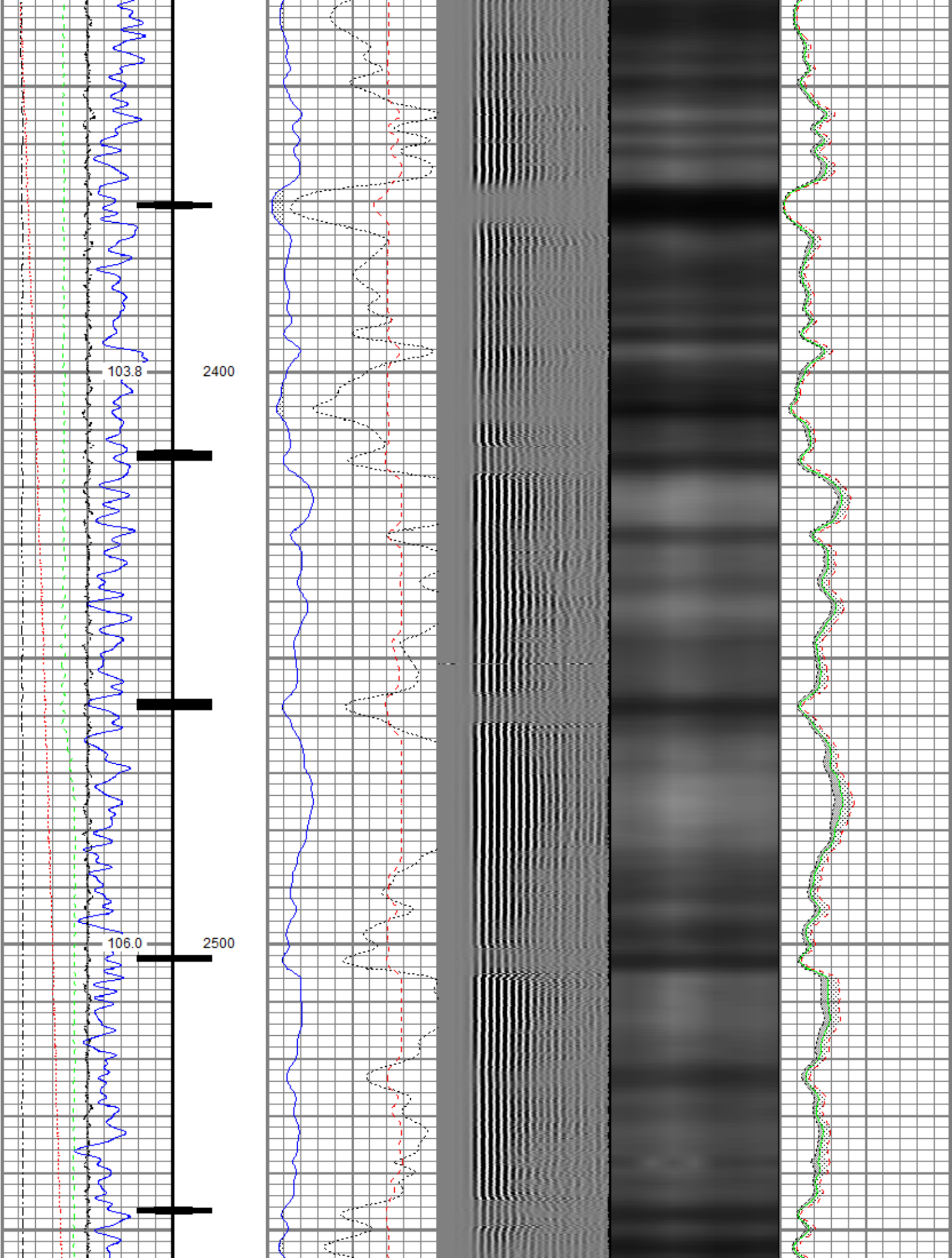


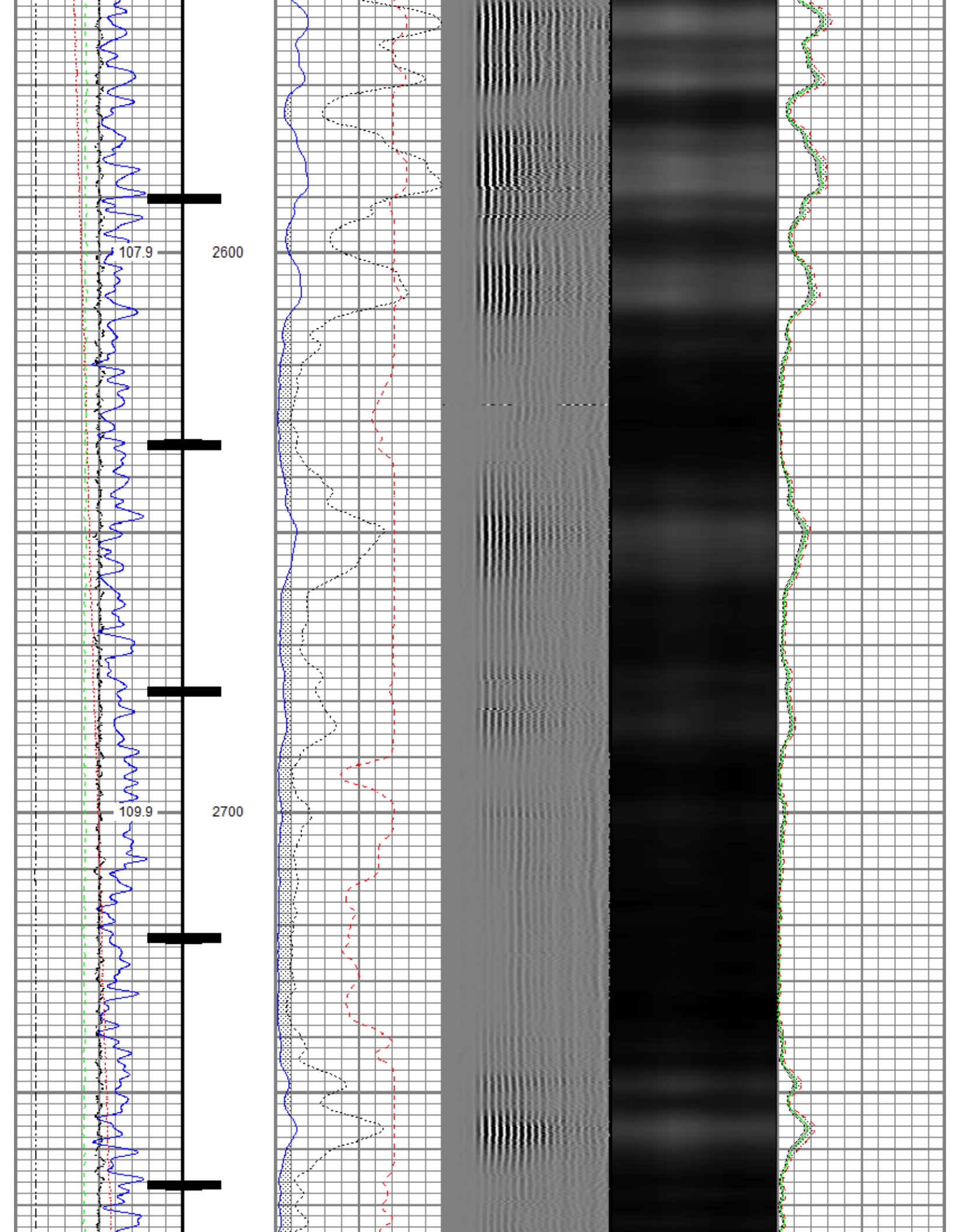


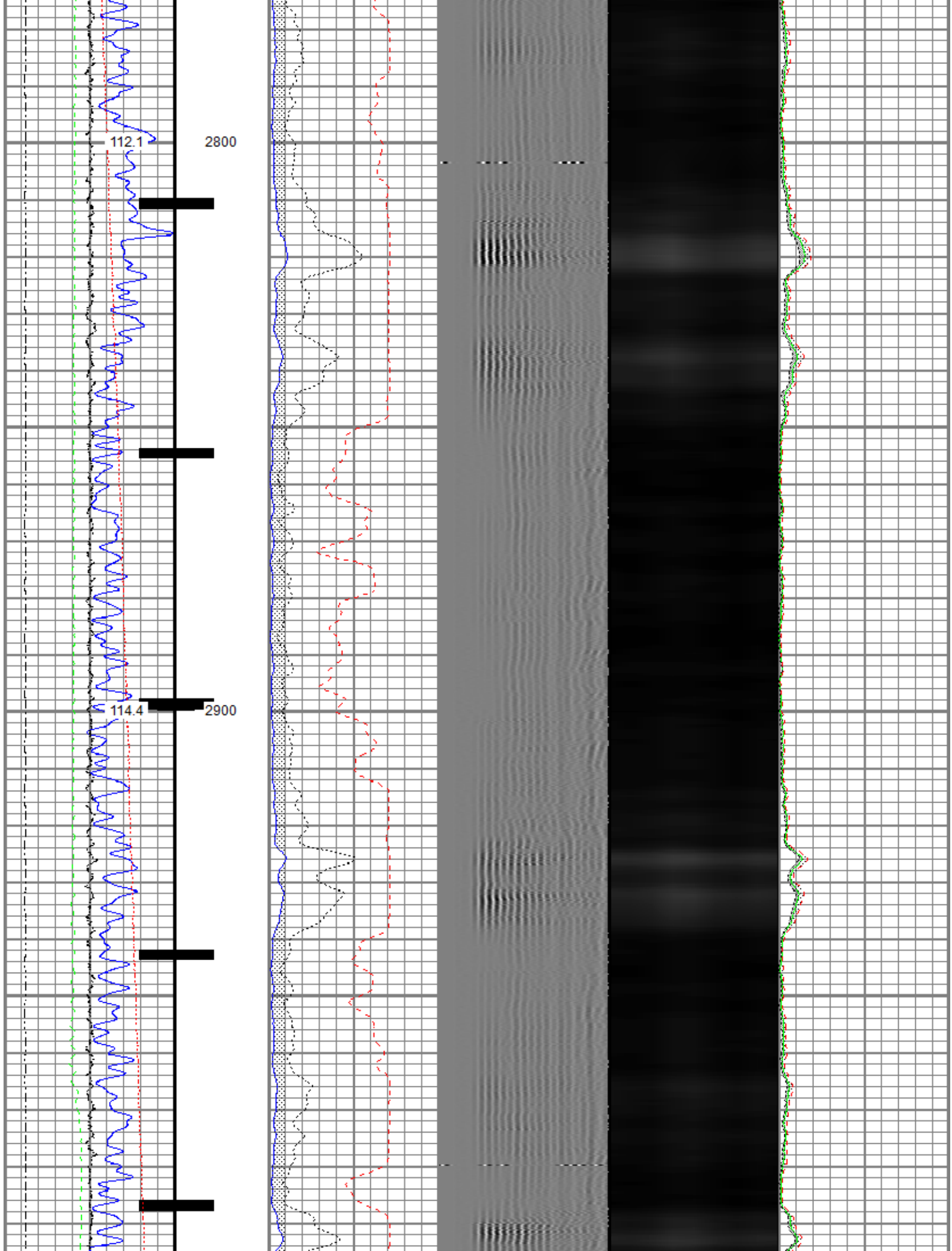


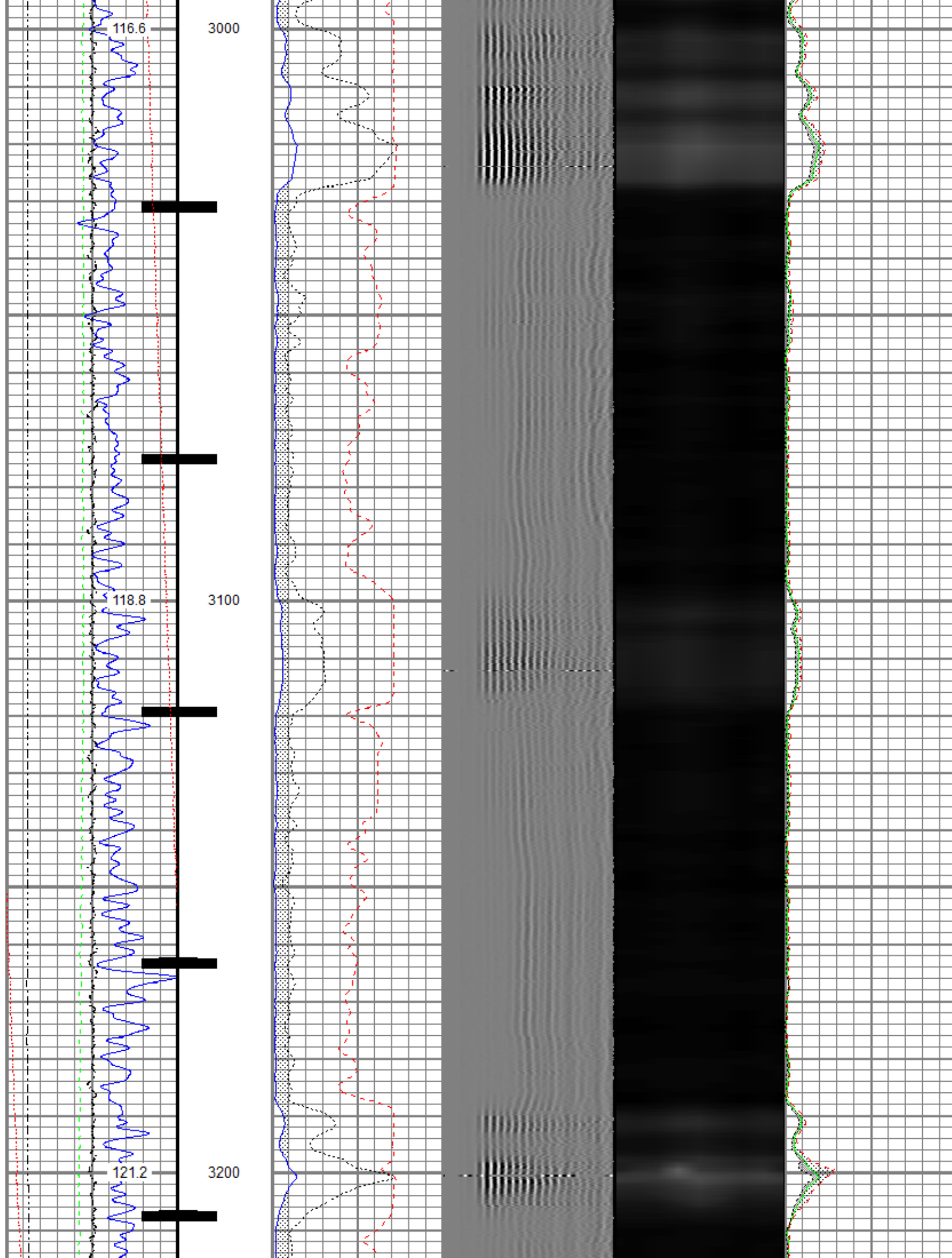


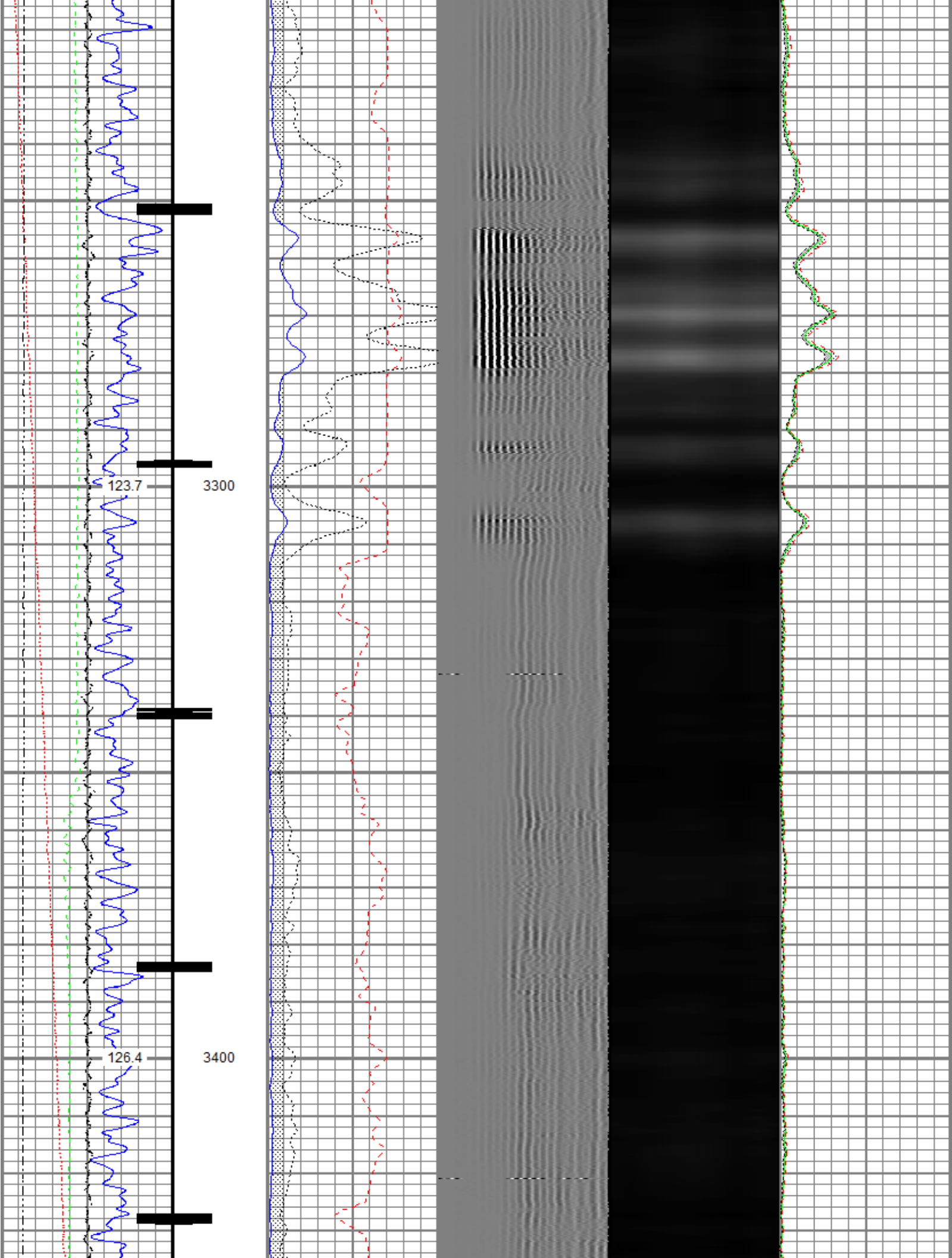


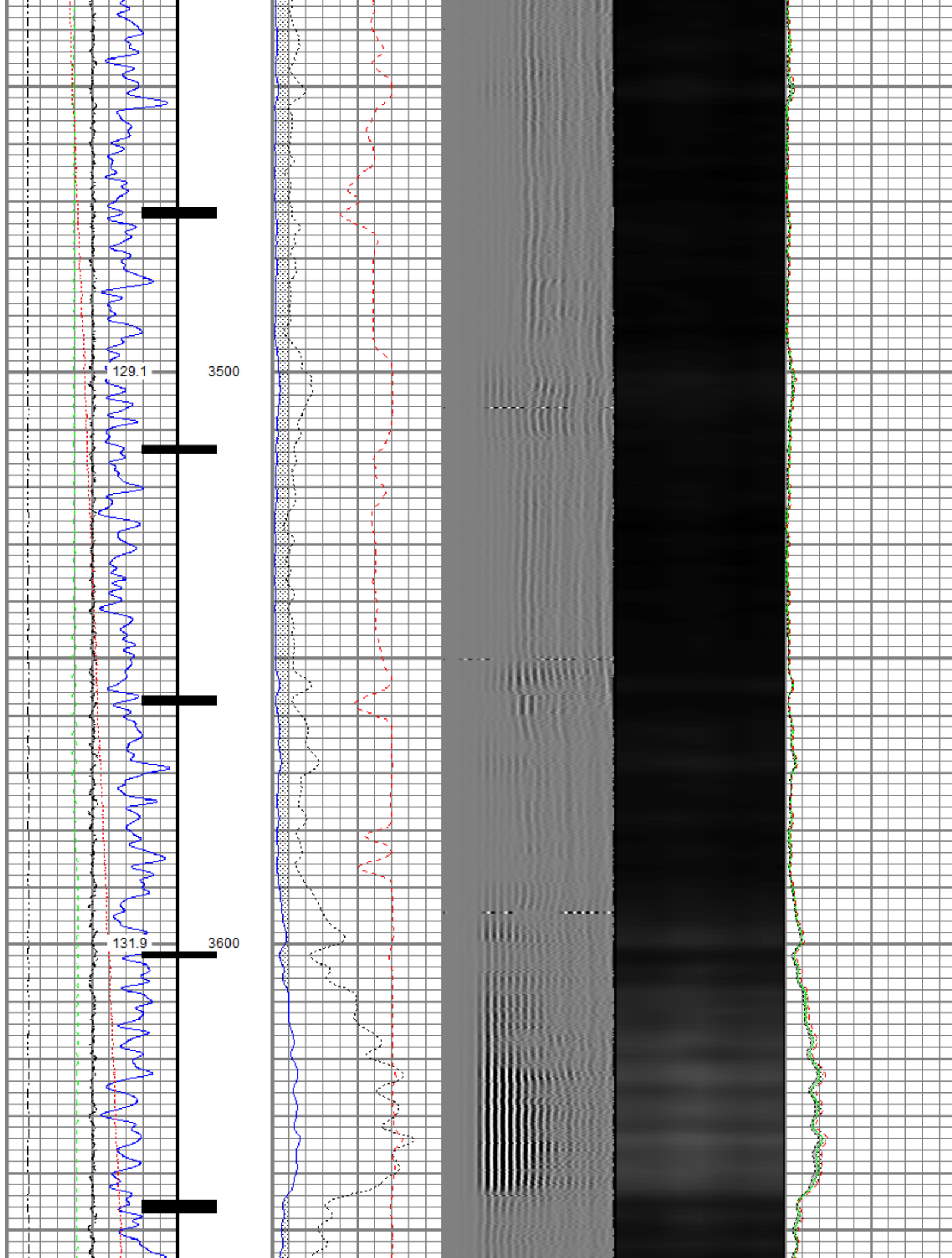


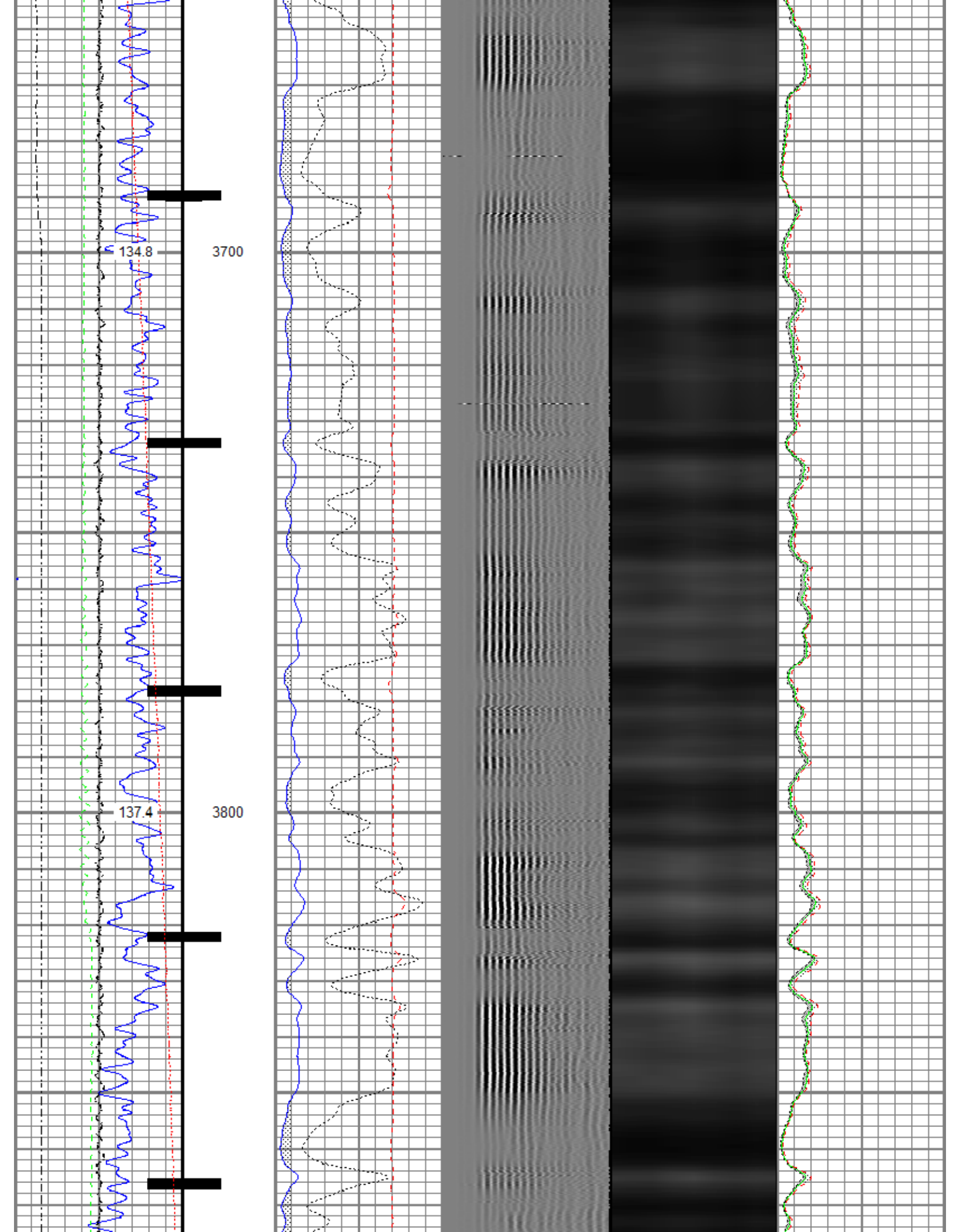


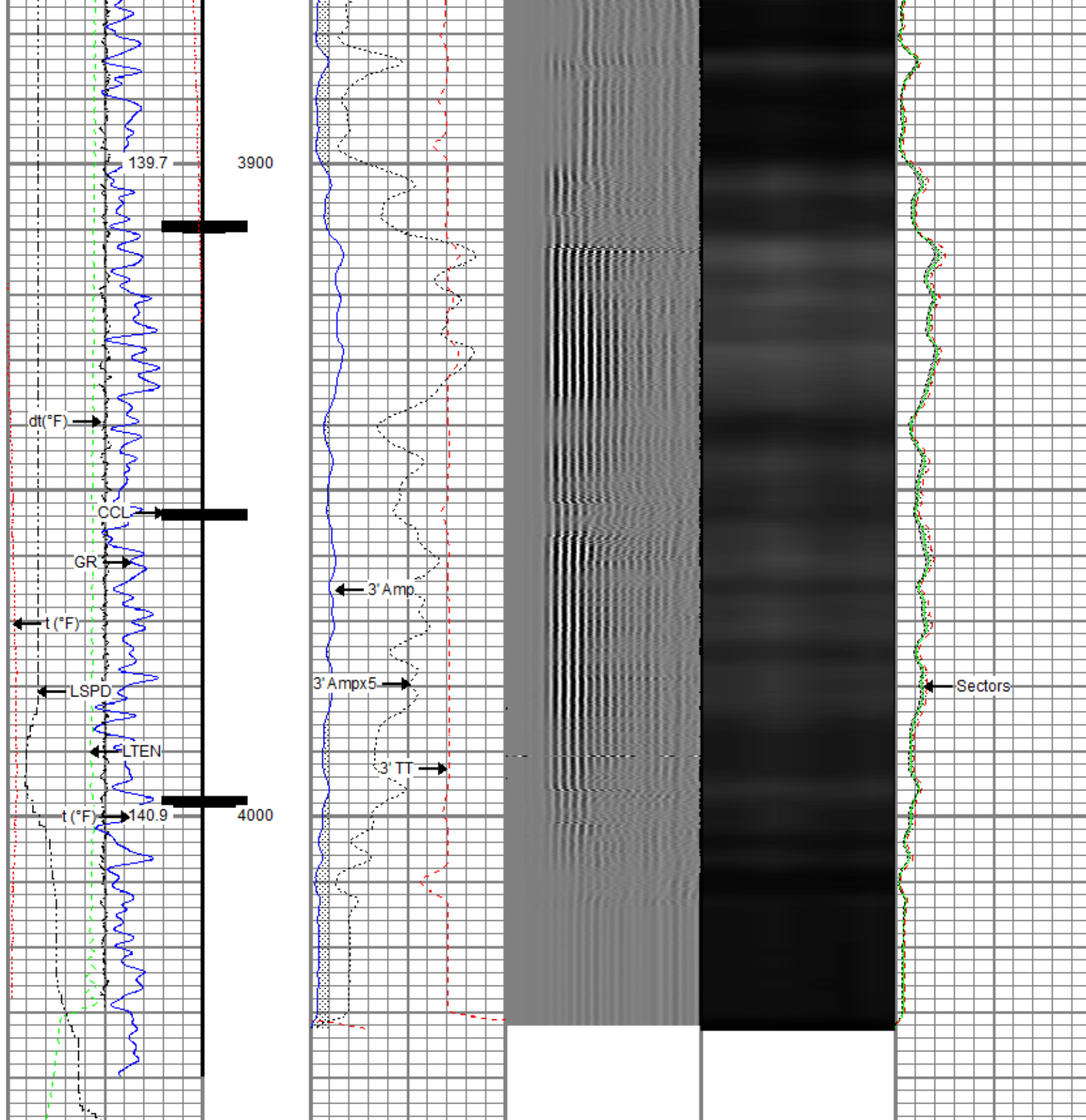








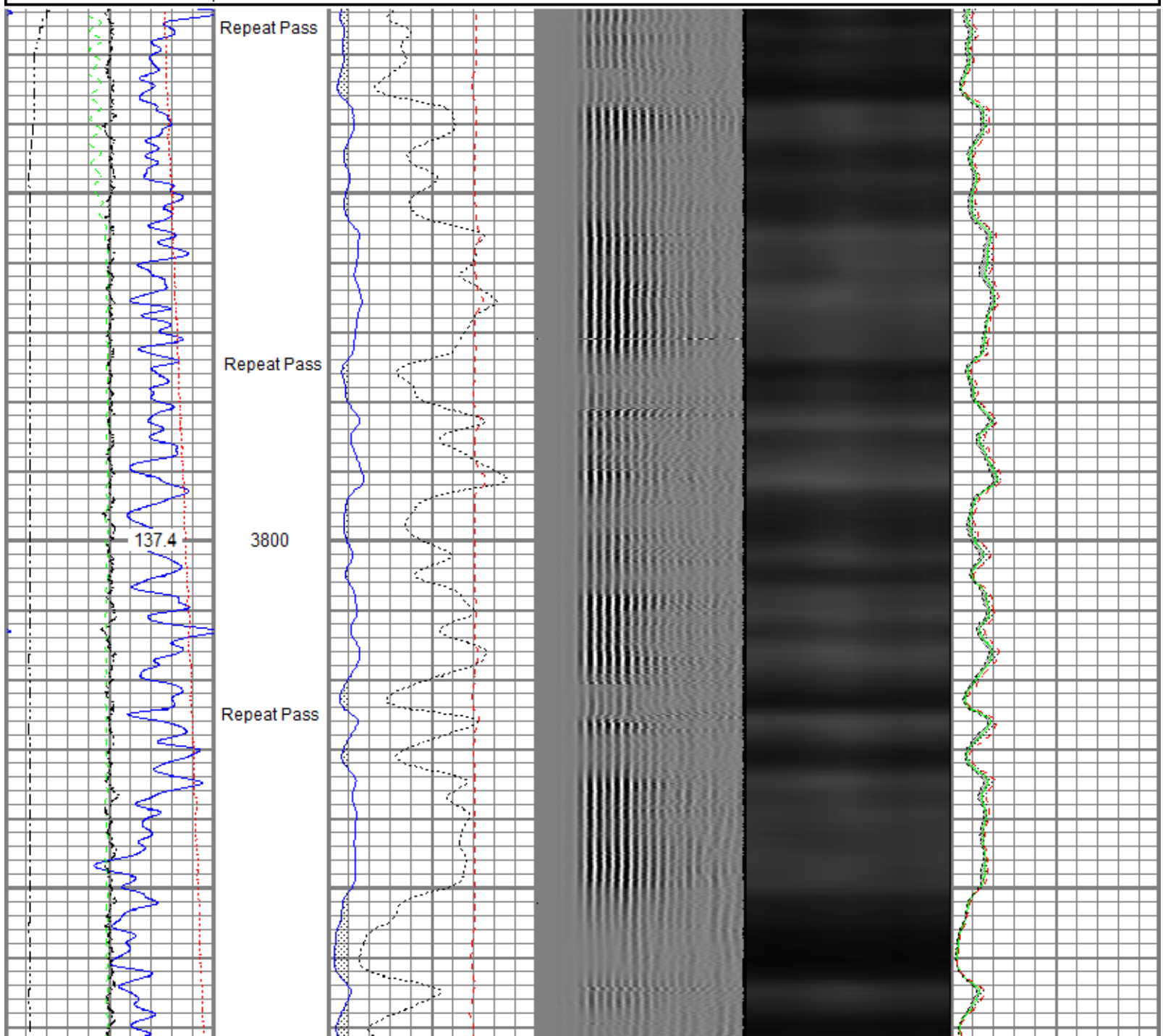


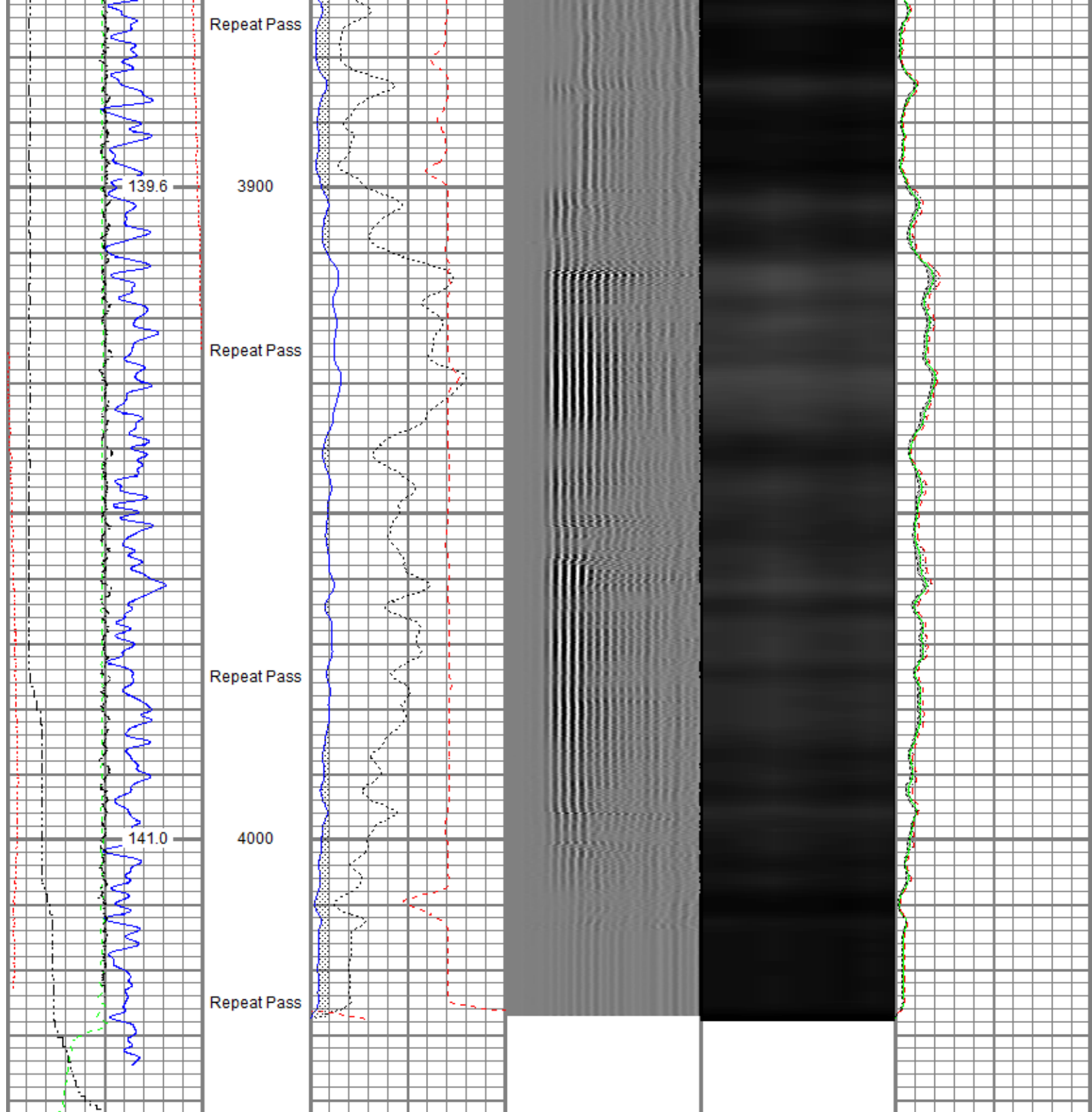


Gamma Ray (GAPI)	0 120	0 3' Amplitude (mV) 100	5' Variable Density Log	Sector Map	0 Average Amplitude 100
Casing Collar Locator		3' Amplitude x 5	200 1200		Minimum Amplitude
Temperature (degF)	0 20	0 (mV) 20			0 100
Line Speed	-150 150	3' Travel Time			Maximum Amplitude
Line Tension (lb)	0 2000	650 (usec)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

Database File: anadarko\0512330928\_anadarko\_varra 20-32\_rbl\_10-23-18\0512330928\_anadarko\_varra 20-32\_rbl\_10-23-18\_500 psi.db  
 Dataset Pathname: pass2.2  
 Presentation Format: ros\_radrii  
 Dataset Creation: Wed Oct 24 09:50:05 2018  
 Charted by: Depth in Feet scaled 1:240

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





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

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)

			Titan CHD-14375 GO	1.03	1.44	3.60
			Titan 1-7/16" Assembled Electric Cable Head w/ 1" Fishing Neck			
			Probe CENT-2750 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.88	2.75	20.00
TEMP	18.23					
WVFS8	16.00		Probe Radii-2750 RBT (FW1302-001) Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub	9.39	2.75	105.00
WVFS7	16.00					
WVFS6	16.00					
WVFS5	16.00					
WVFS4	16.00					
WVFS3	16.00					
WVFS2	16.00					
WVFS1	16.00					
WVFCAL	16.00					
WVF3FT	16.00					
WVF5FT	15.00					
			Probe CENT-2750 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.88	2.75	20.00
CCL\$2	7.38		Probe CCL-2750 SA (FW1307-076) Probe 2-3/4" Digital Stand Alone Six Magnet Logging CCL	2.66	2.75	35.00
CCL\$1	7.38					
GR	5.24		Probe GR-2750 SA (FW1307-078) Probe 2-3/4" Digital Stand Alone Gamma Ray	3.33	2.75	55.00
			Probe CENT-2750 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.88	2.75	20.00

Dataset: 0512330928\_anadarko\_varra 20-32\_rbl\_10-23-18\_500 psi.db: field/well/run1/pass4.2  
 Total length: 25.06 ft  
 Total weight: 258.60 lb  
 O.D.: 2.75 in

Gamma Ray Calibration Report

Serial Number: FW1307-078  
 Tool Model: 2750 SA  
 Performed: Mon Oct 01 11:32:38 2018  
  
 Calibrator Value: 637.0 GAPI  
  
 Background Reading: 108.2 cps  
 Calibrator Reading: 1134.5 cps  
  
 Sensitivity: 0.6207 GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number: FW1302-001  
 Tool Model: 2750 RBT  
  
 Calibration Casing Diameter: 4.500 in  
 Calibration Depth: 3.395 ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.004	0.637	0.800	81.196	126.919	0.343
CAL	0.003	0.603				
5'	0.005	0.581	0.800	81.196	139.432	0.147
SUM						
S1	-0.001	0.614	0.000	100.000	162.691	0.146
S2	0.003	0.605	0.000	100.000	165.947	-0.444
S3	0.002	0.629	0.000	100.000	159.624	-0.386
S4	0.002	0.670	0.000	100.000	149.668	-0.336
S5	0.004	0.706	0.000	100.000	142.363	-0.529
S6	0.002	0.719	0.000	100.000	139.489	-0.316
S7	0.002	0.684	0.000	100.000	146.644	-0.270
S8	0.004	0.648	0.000	100.000	155.086	-0.558

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.003	0.603	1.000	0.000

Air Zero Calibration, performed Tue Oct 23 13:40:23 2018:

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

Temperature Calibration Report

Serial Number: FW1302-001  
Tool Model: 2750 RBT  
Performed: Mon Oct 01 11:32:14 2018

	Reference	Reading
Low Reference:	100.00 degF	107.47 degF
High Reference:	350.00 degF	404.08 degF
Gain:	0.84	
Offset:	9.42	
Delta Spacing	1	



<b>Company</b>	Kerr-McGee Oil & Gas Onshore, L.P.
<b>Well</b>	Varra 20-32
<b>Field</b>	Wattenberg
<b>County</b>	Weld
<b>State</b>	Colorado