



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

**Company** Kerr-McGee Oil & Gas Onshore, L.P.  
**Well** Vogl 11-36  
**Field** Wattenberg  
**County** Weld **State** Colorado

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**Location:** SEC 36 TWP 3N RGE 68W  
 Permanent Datum Ground Level 4817'  
 Log Measured From Kelly Bushing Elevation 15 FT  
 Drilling Measured From Kelly Bushing  
 API #: 05-123-31107  
 Other Services CIBP  
 Elevation K.B: 4832'  
 D.F. ---  
 G.L. 4817'

Date	12-APR-2019						
Run Number	Two						
Depth Driller	8090 FT						
Depth Logger	4003 FT						
Bottom Logged Interval	3988 FT						
Top Log Interval	Surface						
Open Hole Size	---						
Type Fluid	Water						
Density / Viscosity	8.34 lb/gal						
Max. Recorded Temp.	139°F						
E. estimated Cement Top	See Log						
Time Well Ready	16:00						
Time Logger on Bottom	17:12						
E. equipment Number	HD-361						
Location	Platteville, CO						
Recorded By	Greg Lueck						
Witnessed By	Demesio Gomez						
<b>Borehole Record</b>							
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	729 FT		
Intermediate #1	4 1/2	11.6	1-80	Surface	8090 FT		
Intermediate #2							
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 J-W Bond Log dated 29-SEP-2010**  
**Adjusted -11 FT to correlate with J-W Top of Cement at 350 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!!**

**Main Pass**

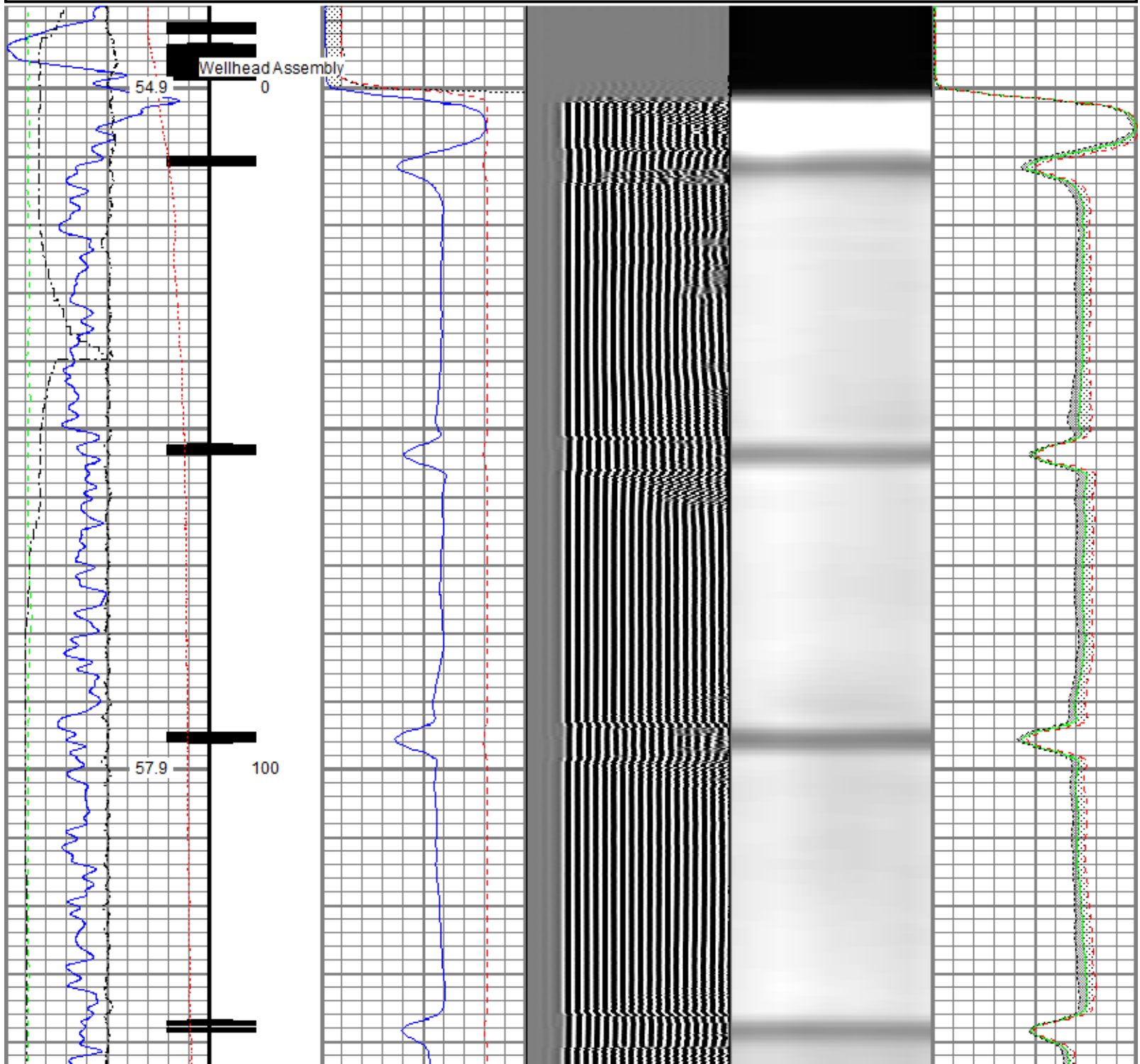


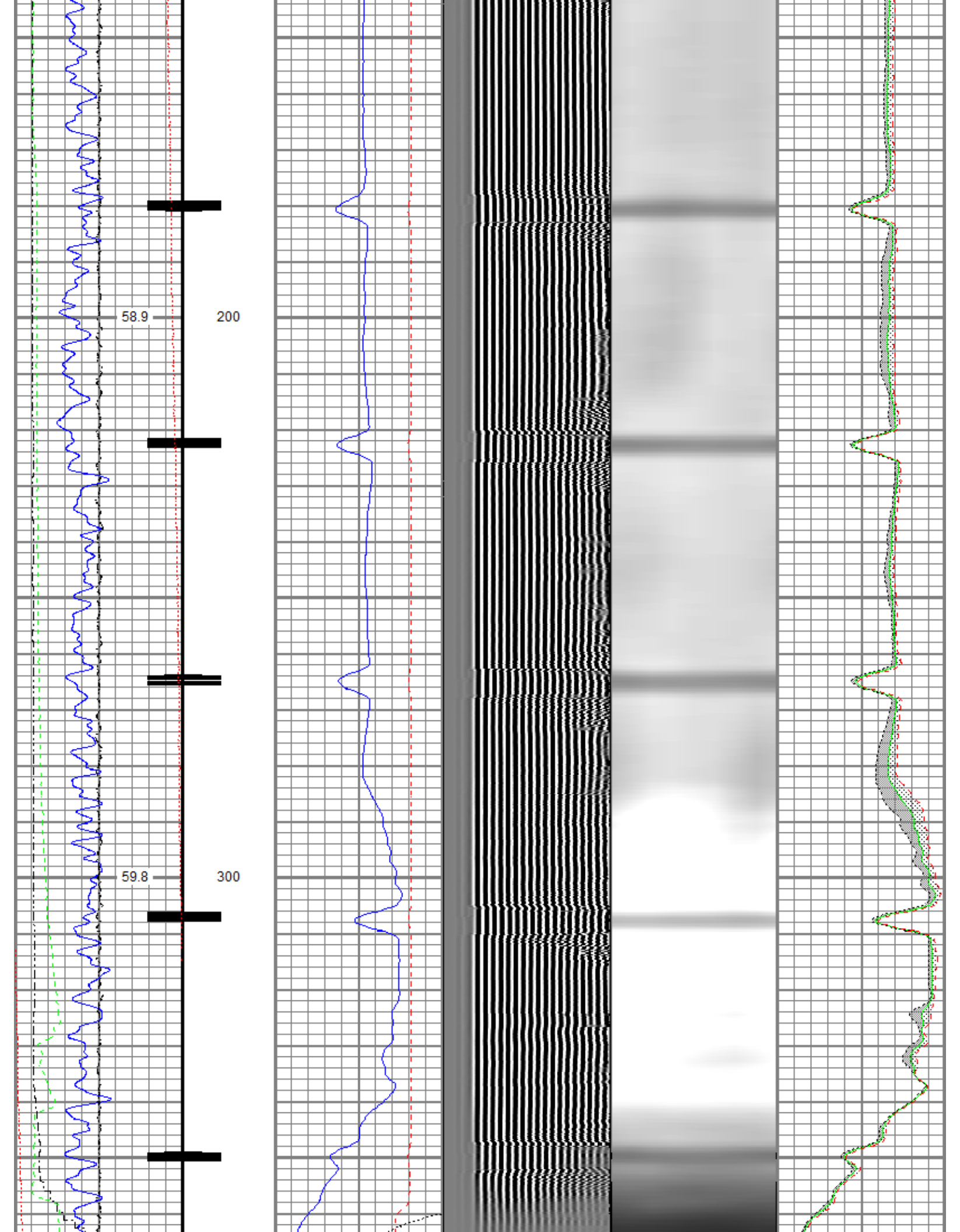
Recorded With 500 PSI Surface Induced Pressure

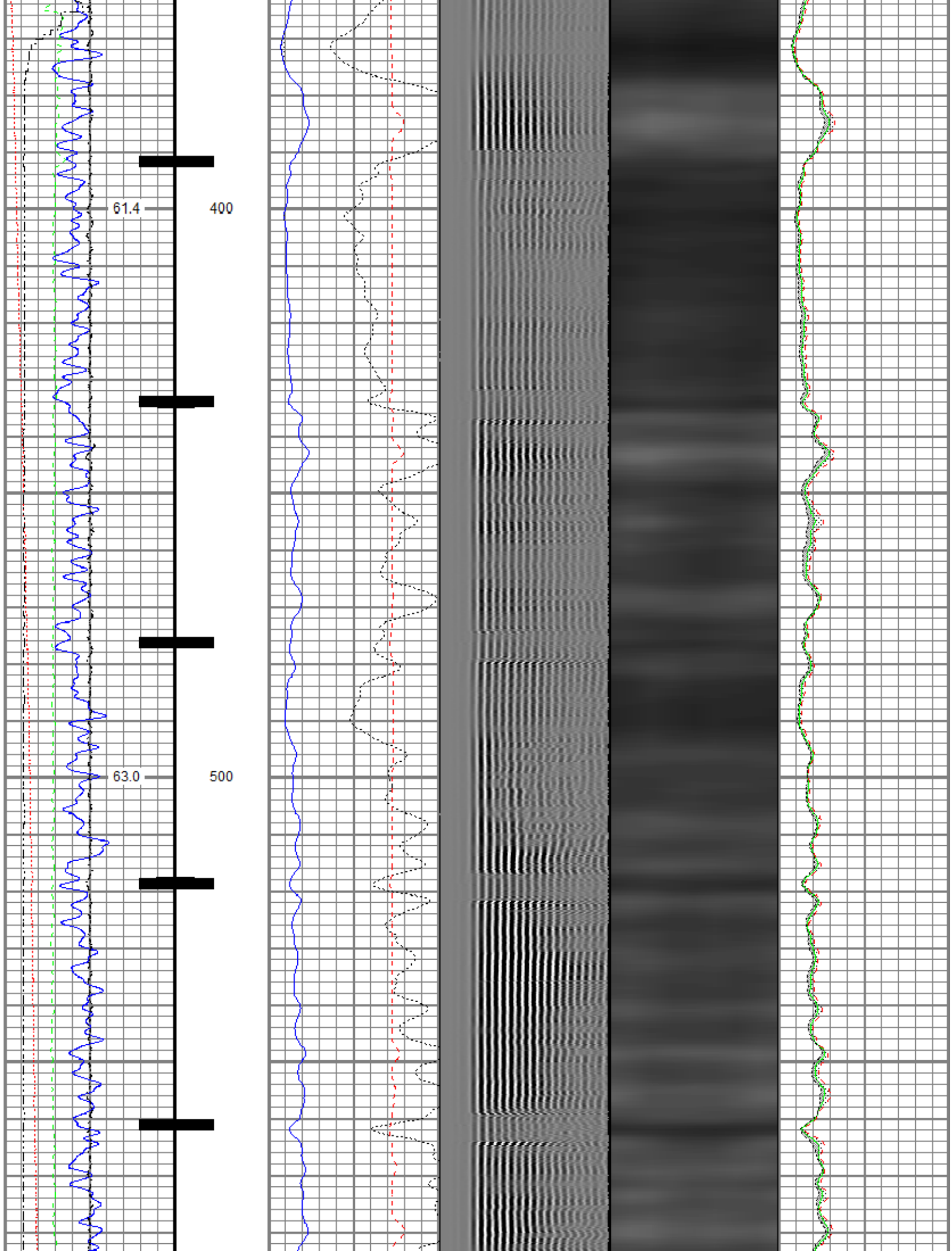
# Recorded With 500 PSI Surface Induced Pressure

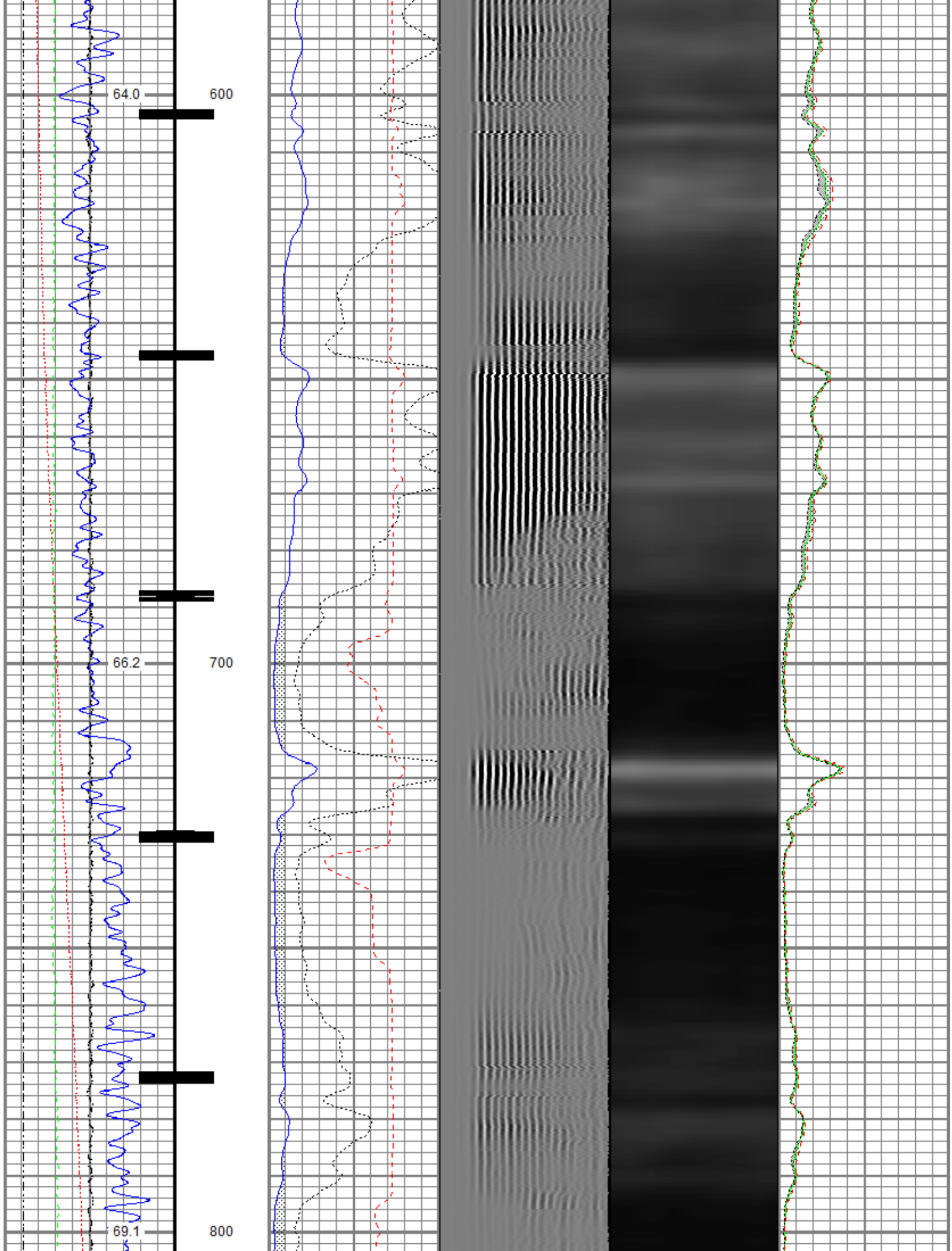
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 Dataset Pathname    pass15.2  
 Presentation Format    ros\_radrii  
 Dataset Creation      Fri Apr 12 17:56:35 2019  
 Charted by            Depth in Feet scaled 1:240

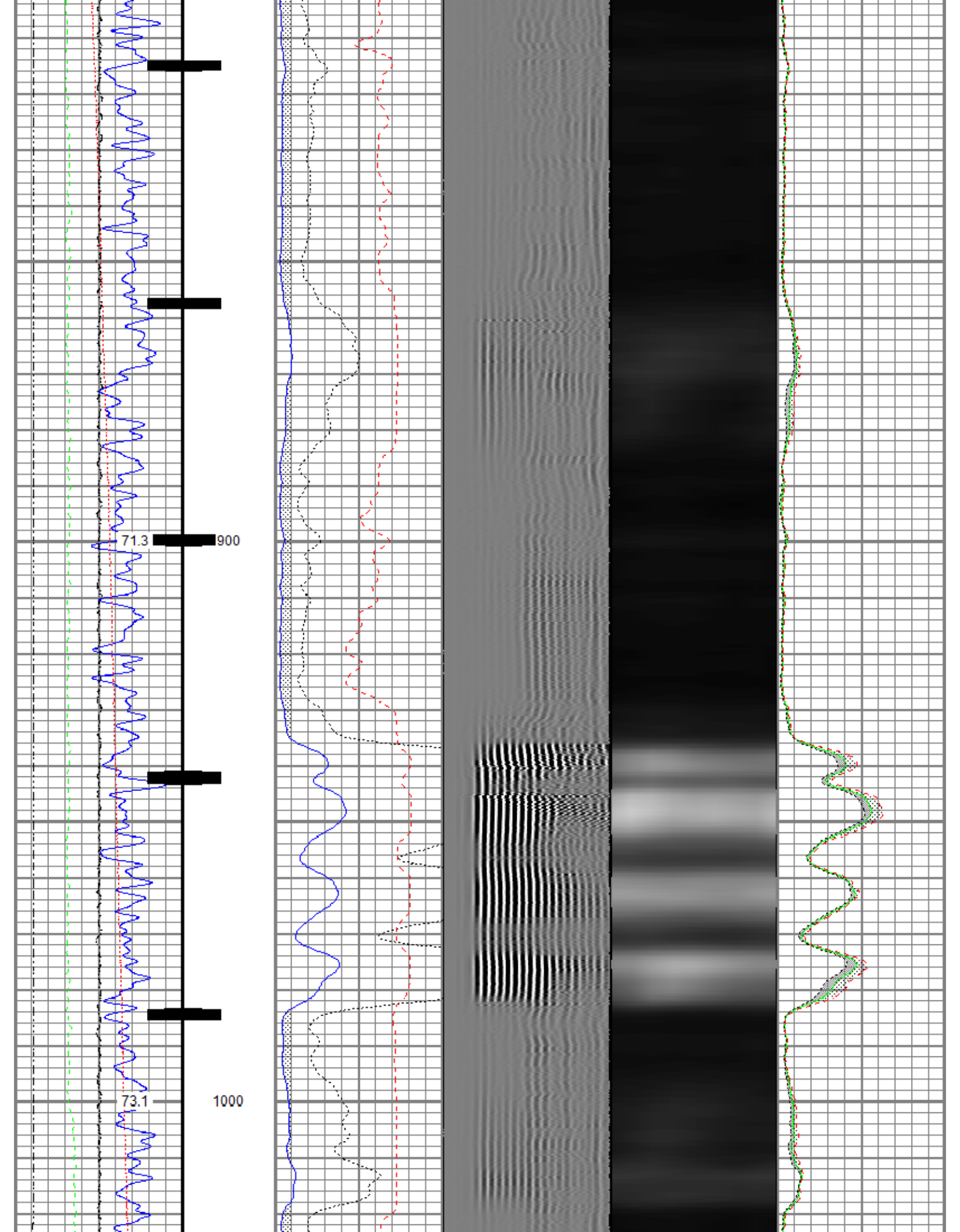
Gamma Ray (GAPI)      120	0    3' Amplitude (mV) 100	5' Variable Density Log	Sector Map	0    Average Amplitude 100
<i>Casing Collar Locator</i>	3' Amplitude x 5      200      1200			Minimum Amplitude
0    Temperature (degF) 20	0      (mV)      20			0      100
Line Speed	3' Travel Time			Maximum Amplitude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

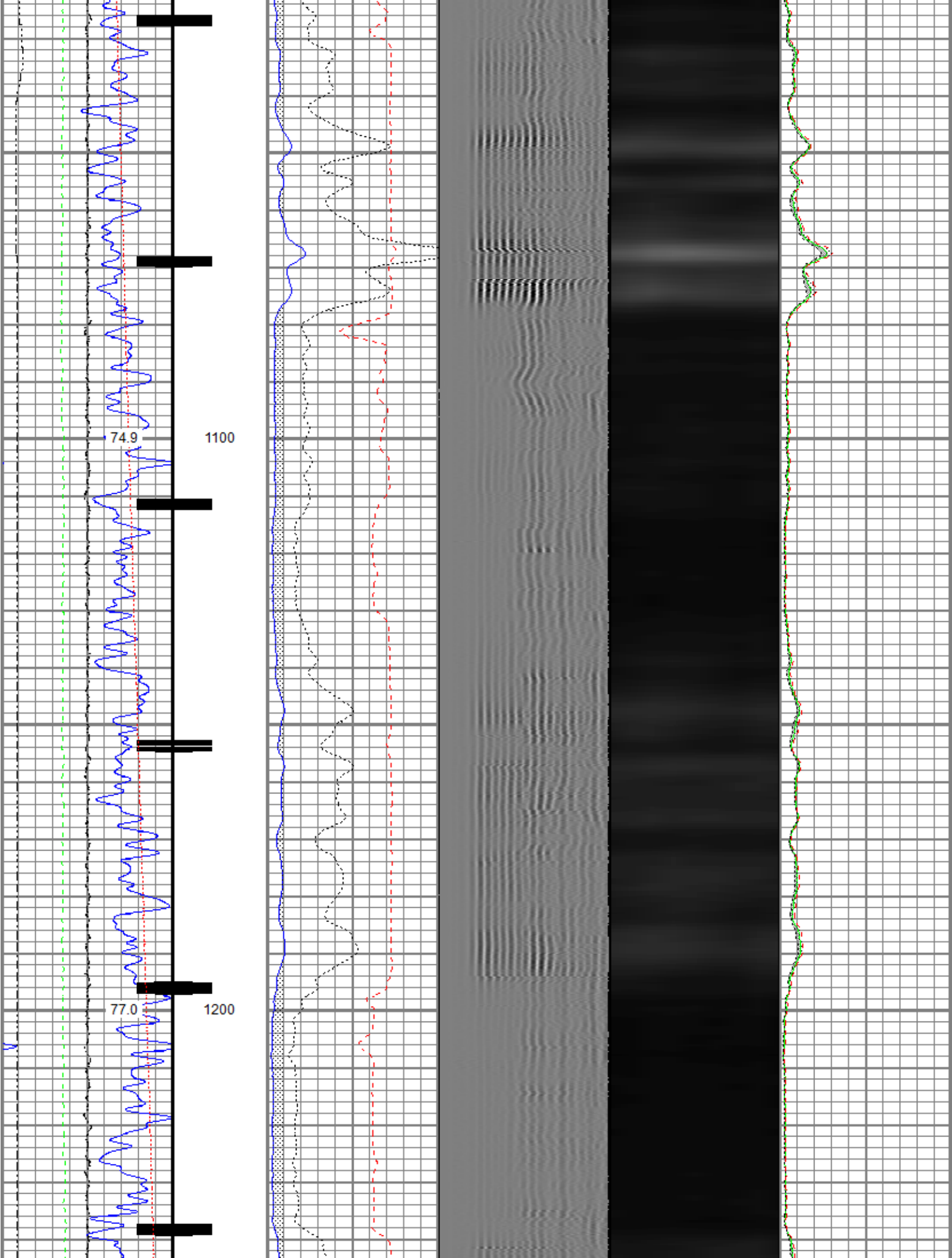


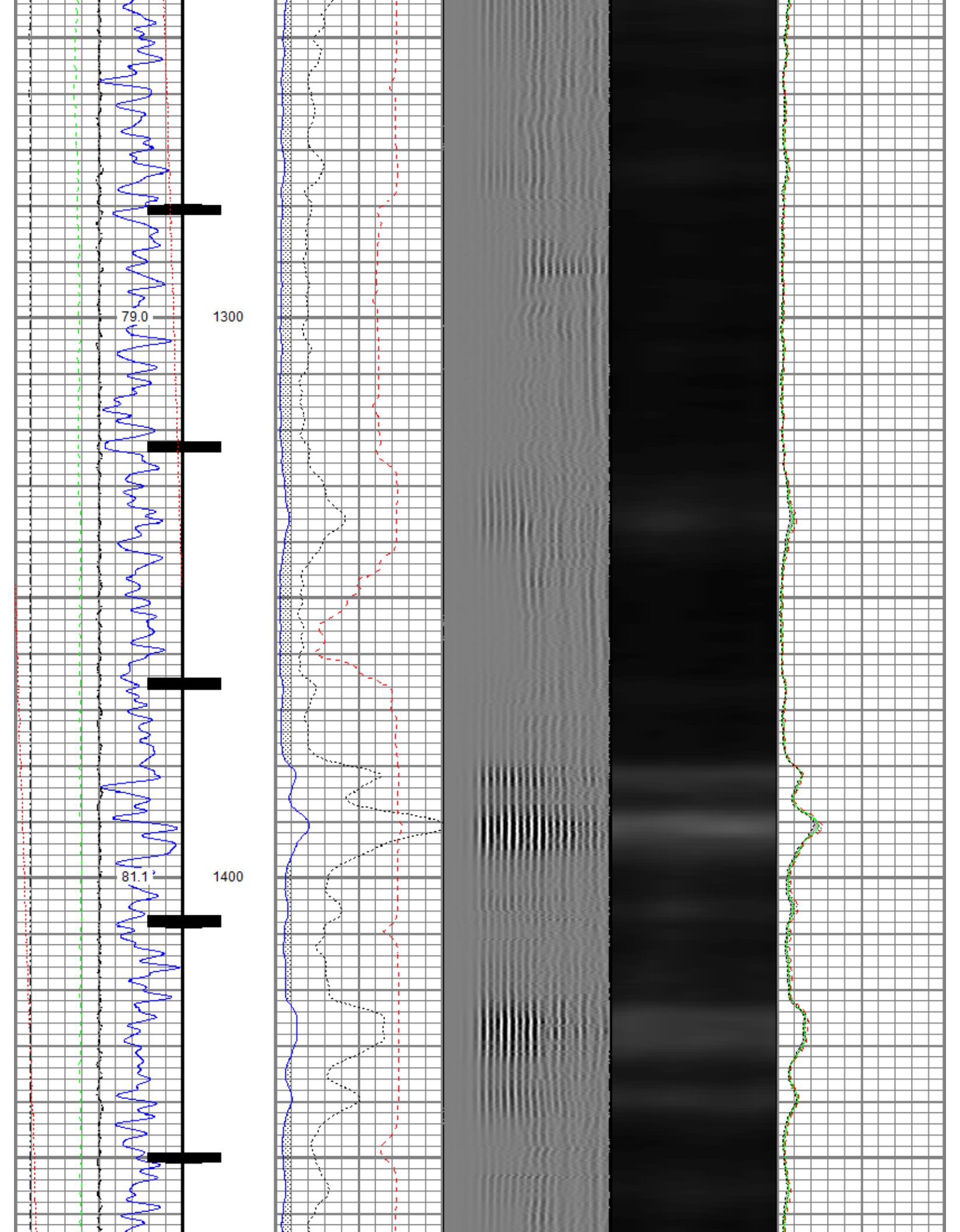


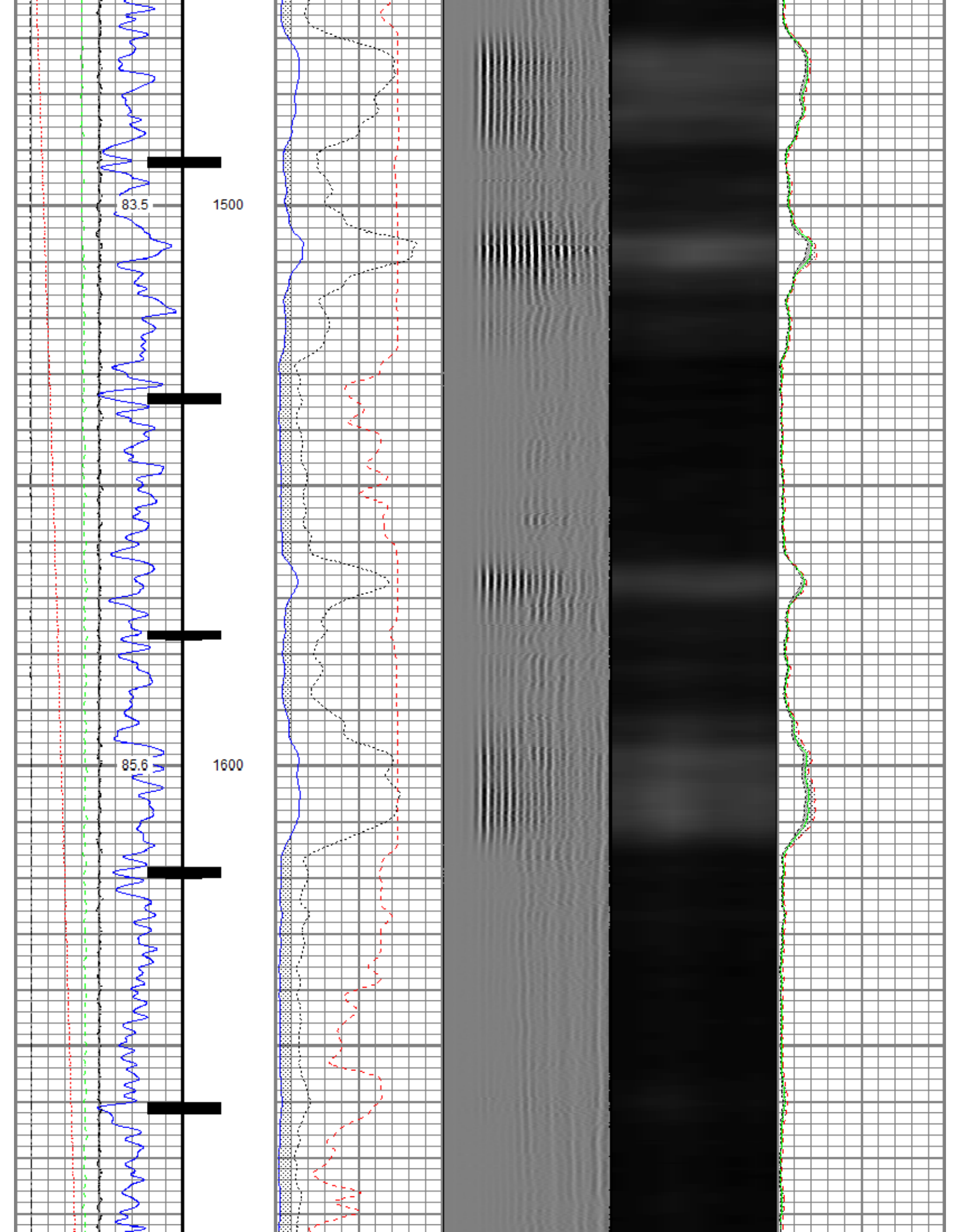


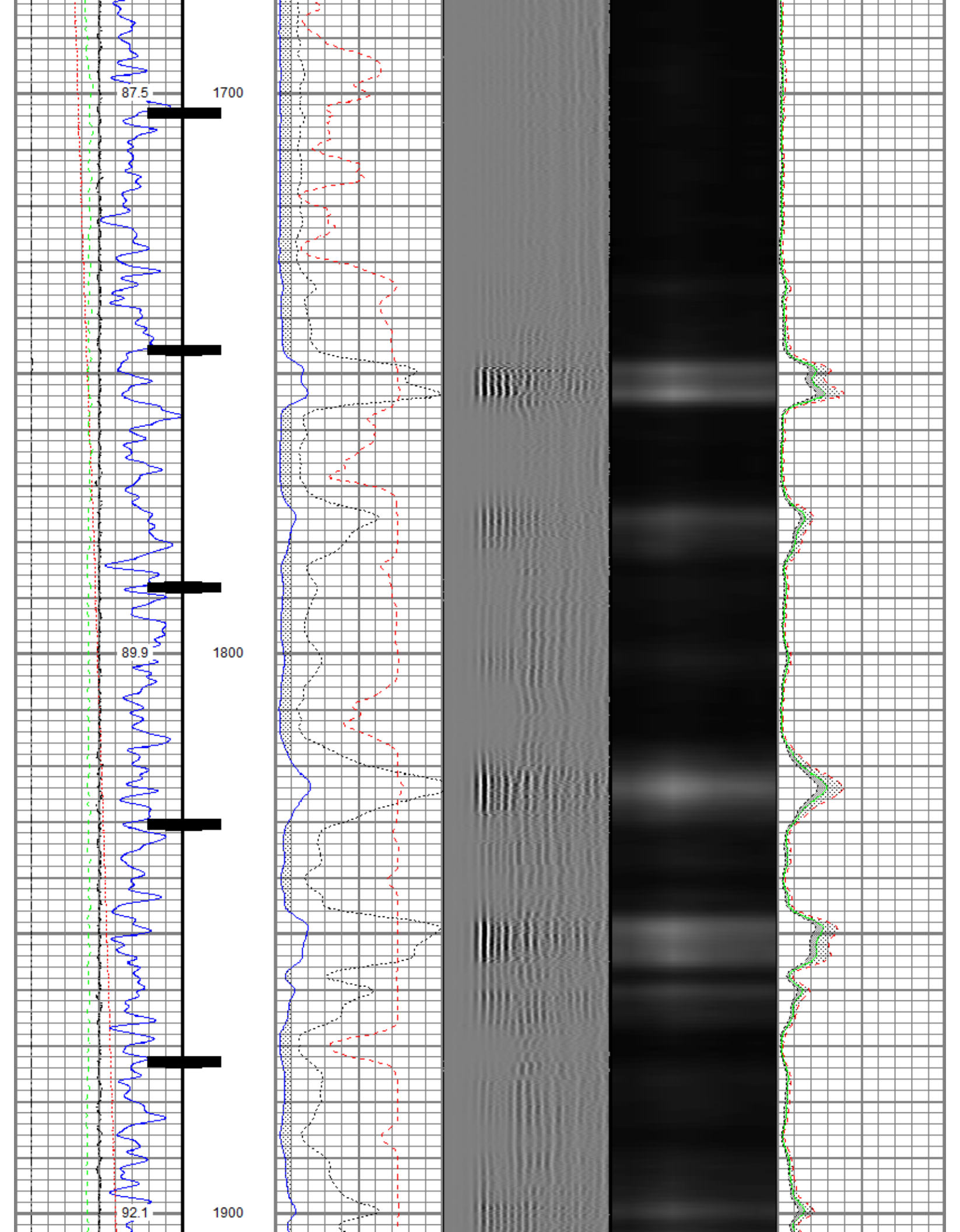


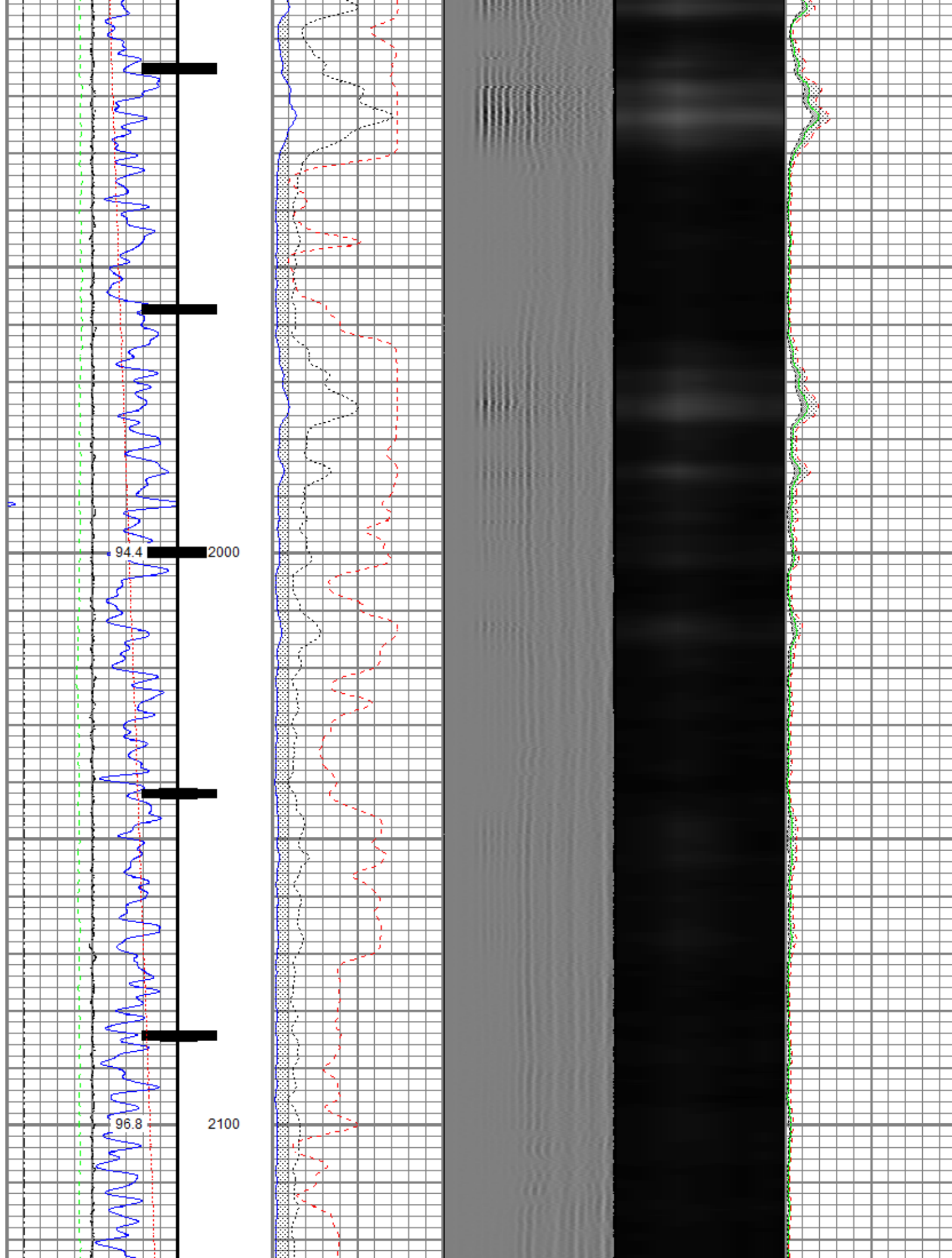


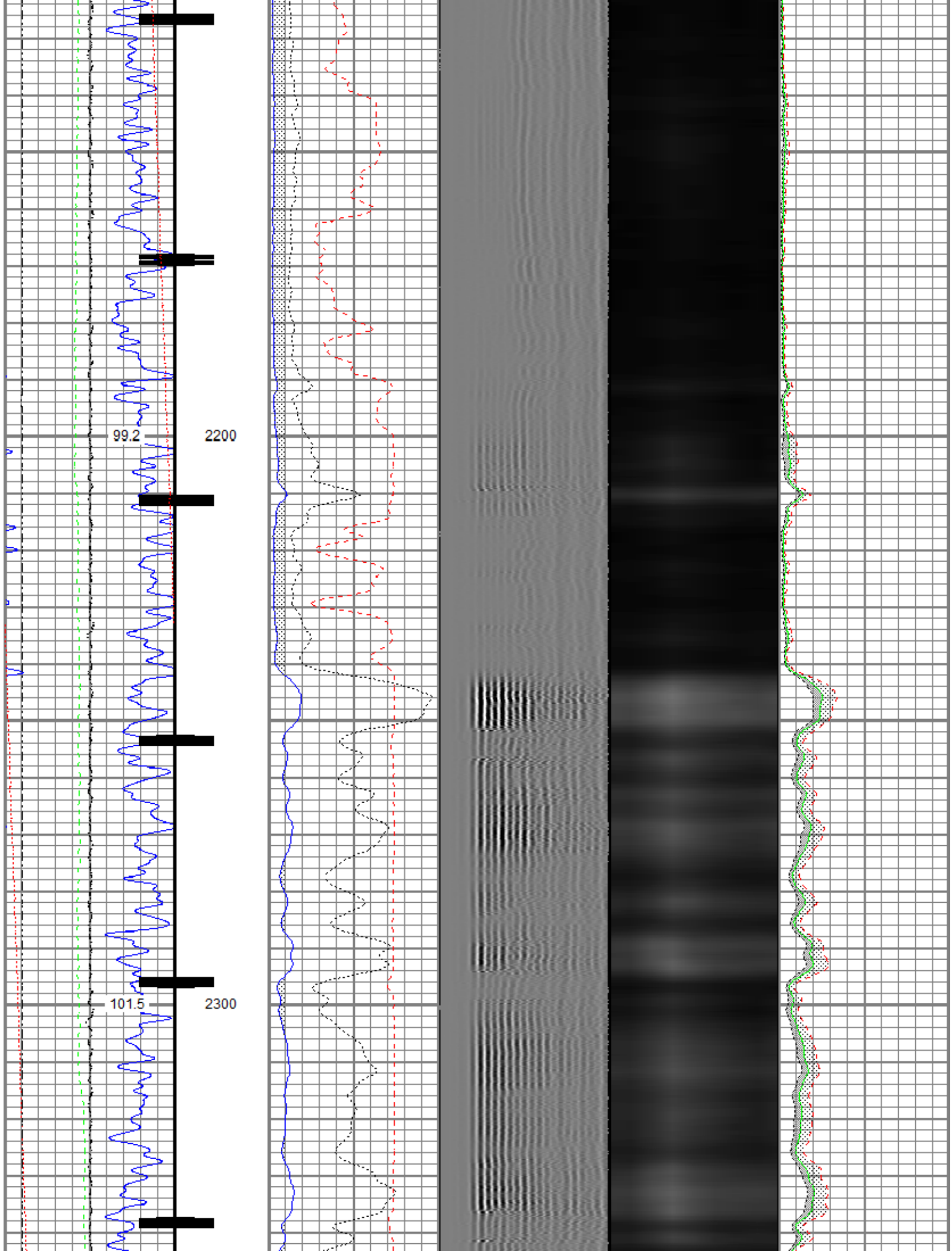


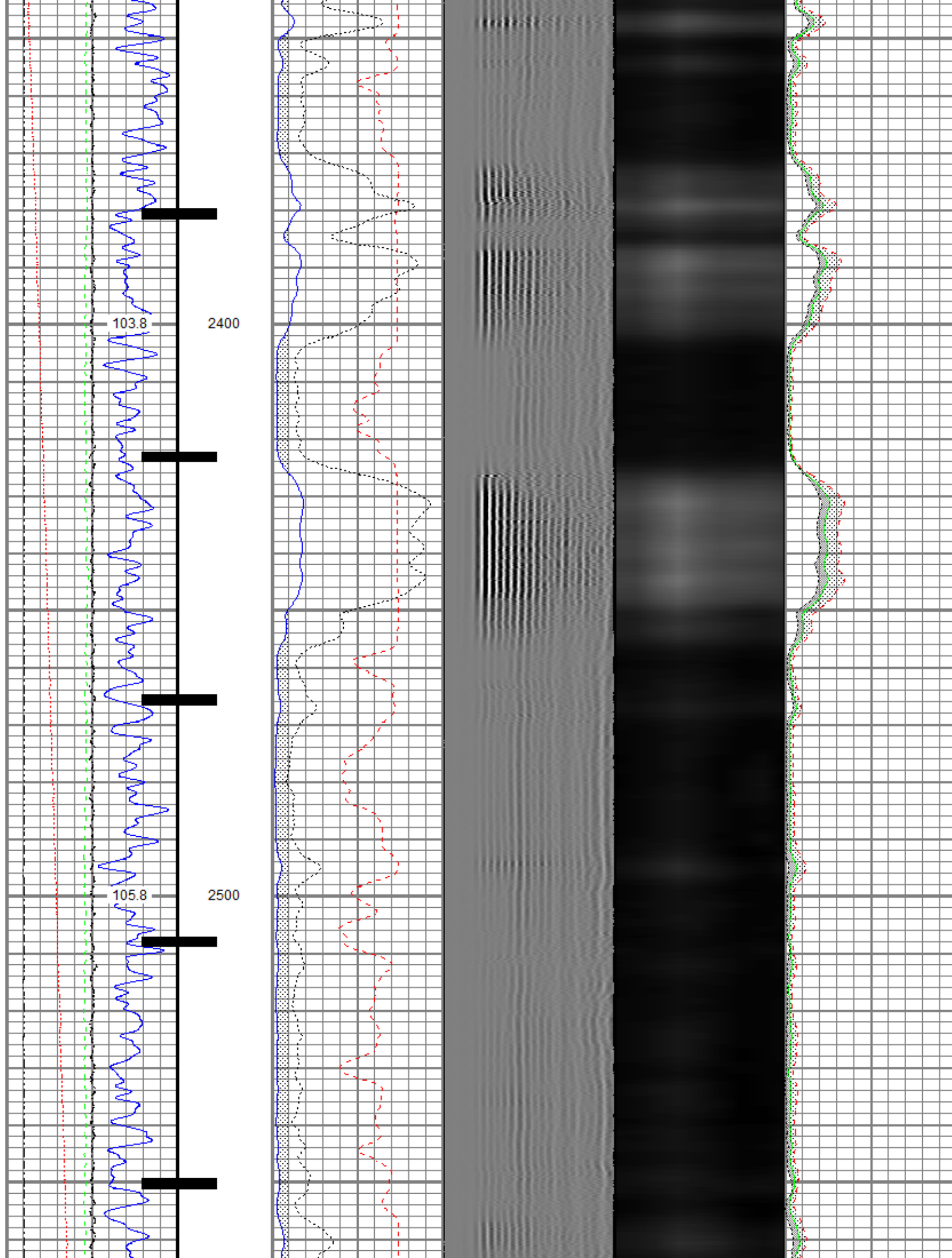


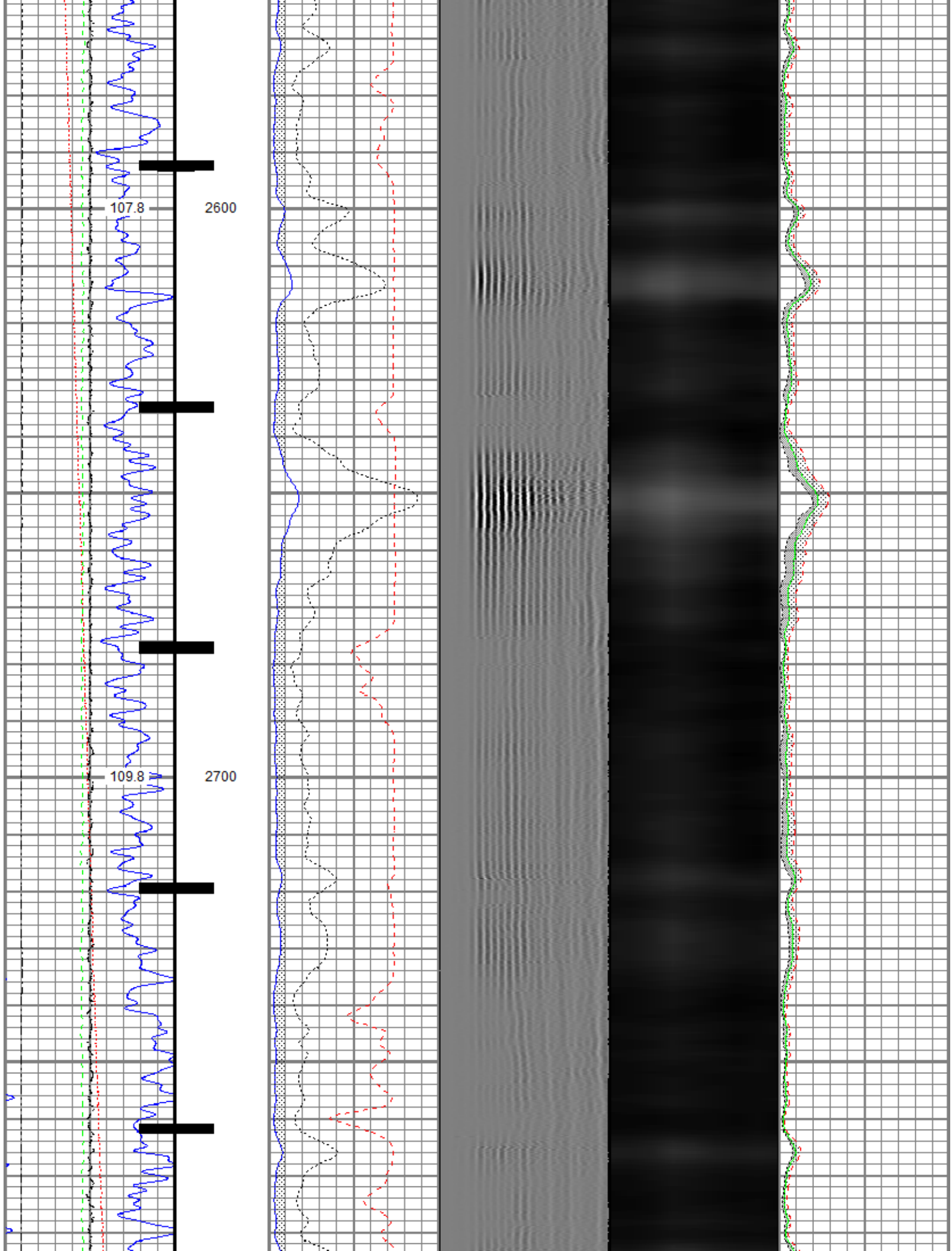


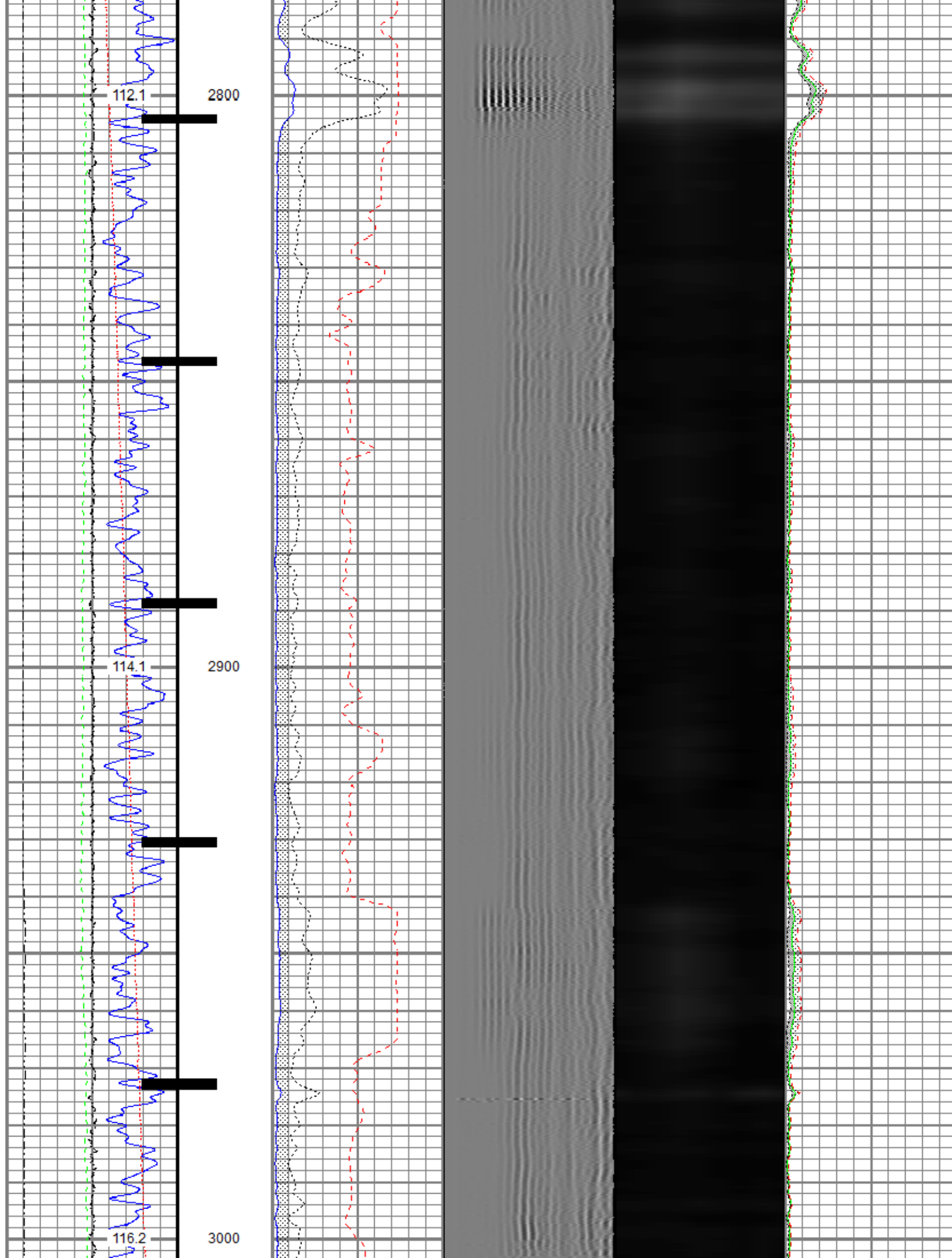


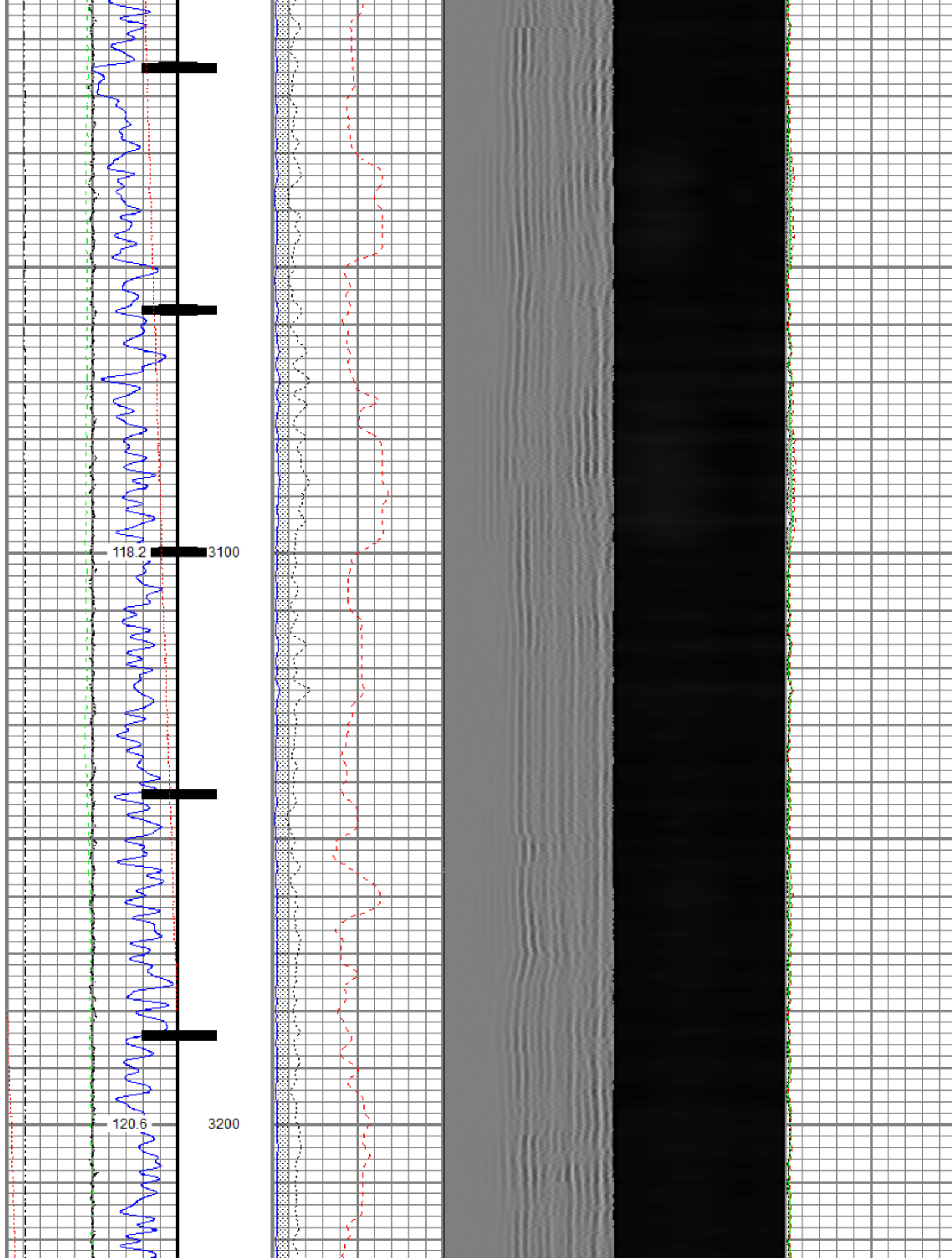


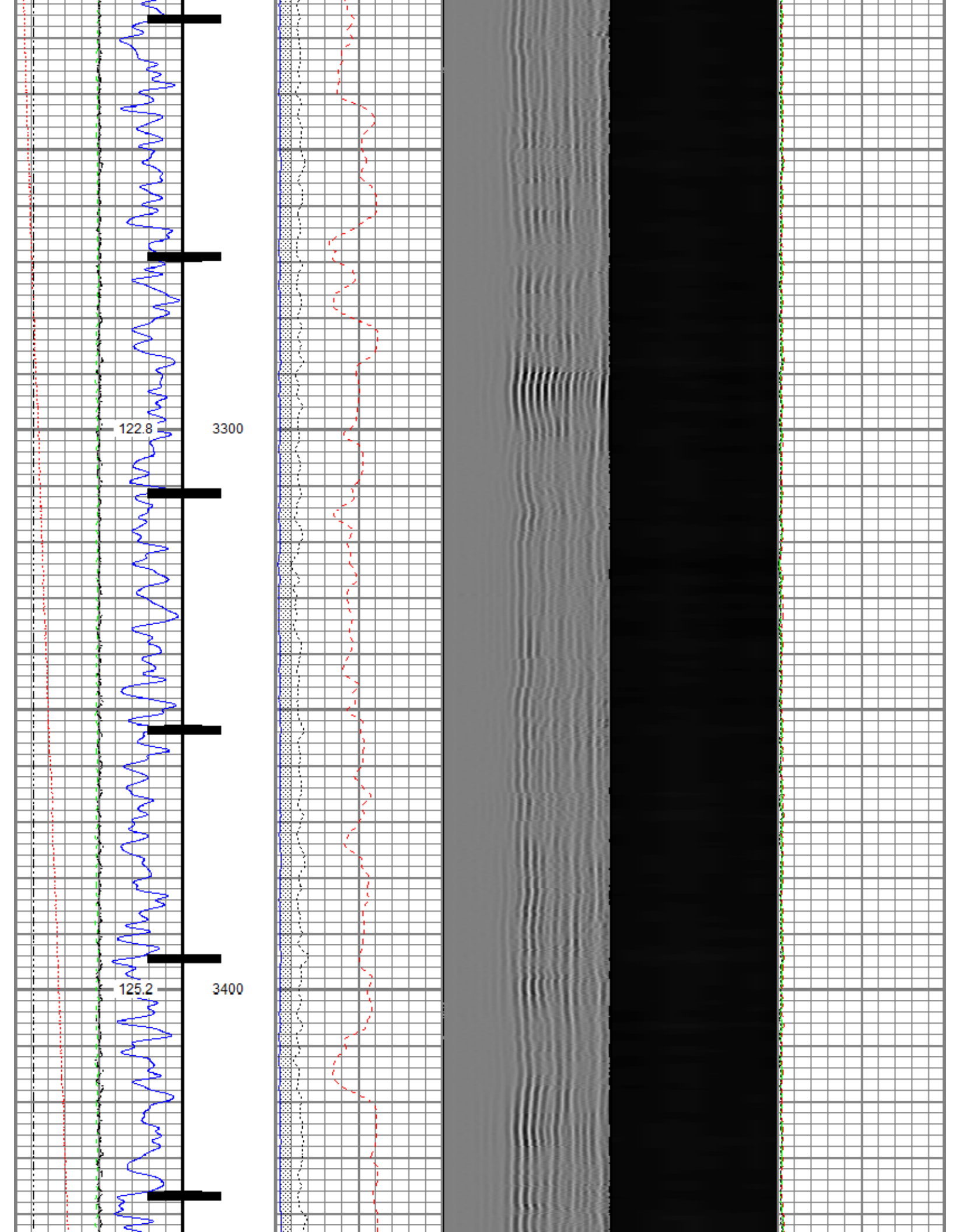


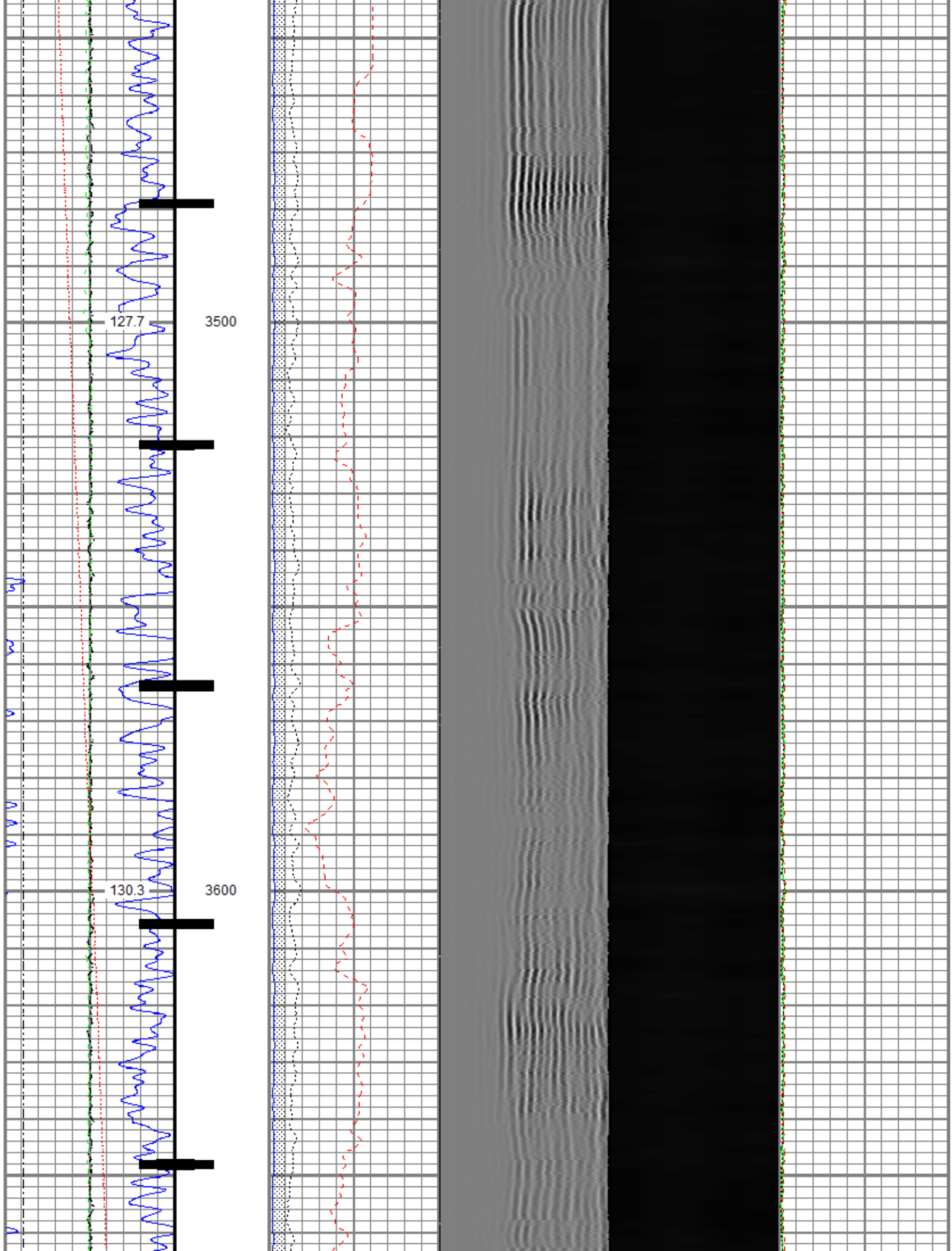


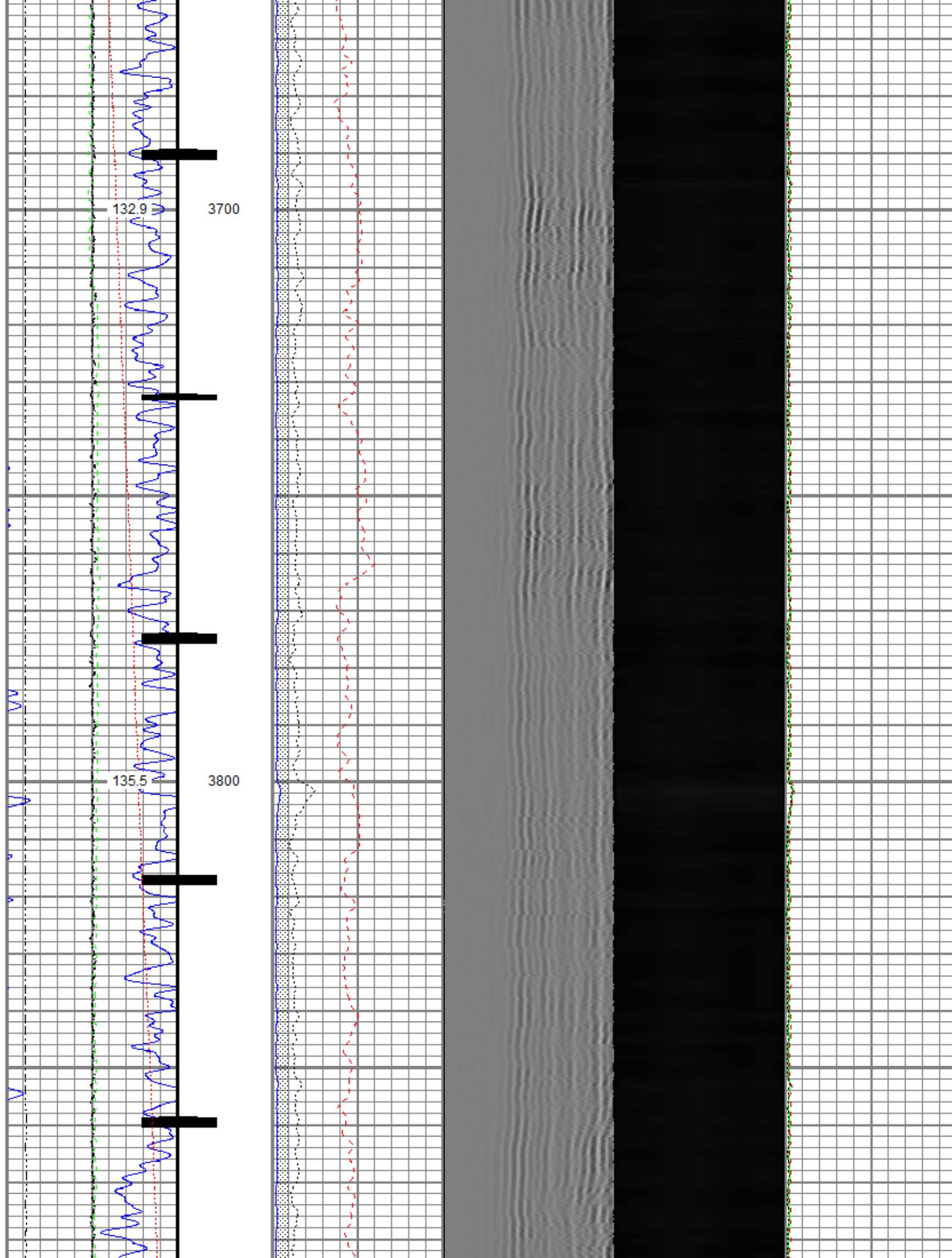


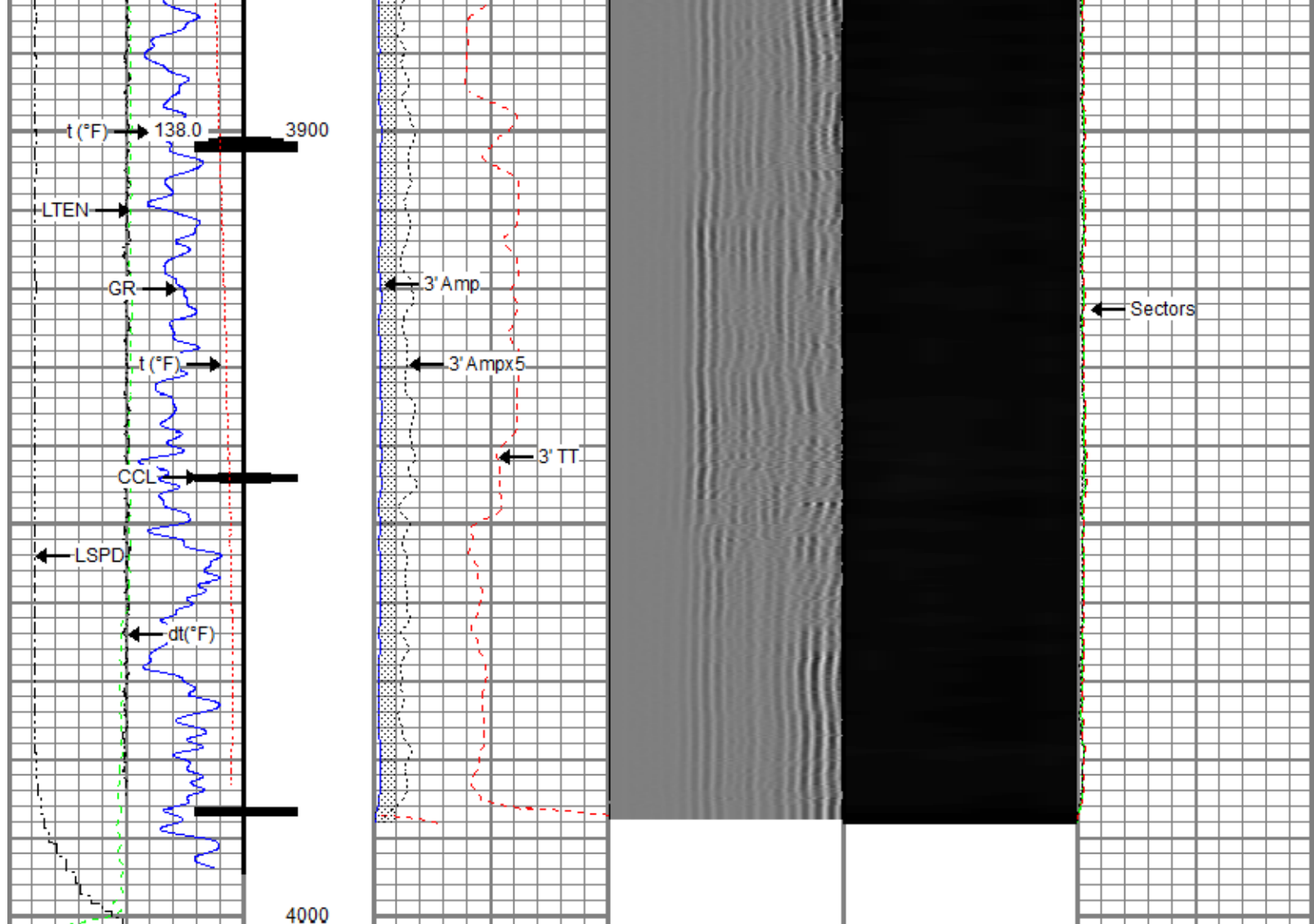












Gamma Ray (GAPI) 120	0 3' Amplitude (mV) 100	5' Variable Density Log 200 1200	Sector Map	0 Average Amplitude 100
Casing Collar Locator	0 3' Amplitude x 5 (mV) 20			Minimum Amplitude 100
0 Temperature (degF) 20	0 3' Travel Time (usec) 150			Maximum Amplitude 100
Line Speed (ft/min) 150				0 100
0 Line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



## Repeat Pass

Recorded With 0 PSI Surface Induced Pressure

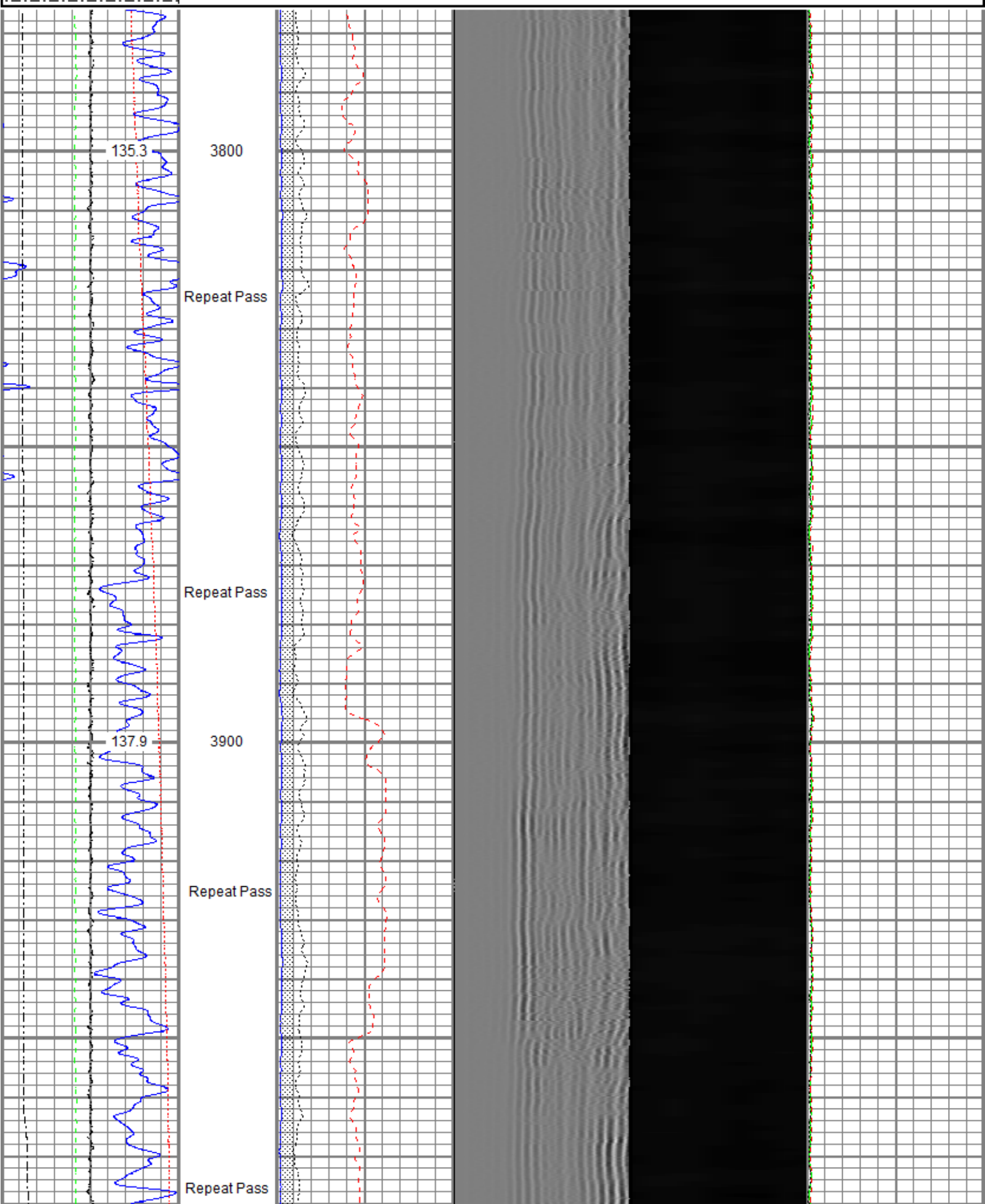
Database File	anadarko\0512331107_anadarko_vogl 11-36_rbl_04-12-19\processed_0512331107_anadarko_vogl 11-36_rbl_04-12-19.db			
Dataset Pathname	pass13.2			
Presentation Format	ros_radrii			
Dataset Creation	Sat Apr 13 11:44:53 2019			
Charted by	Depth in Feet scaled 1:240			

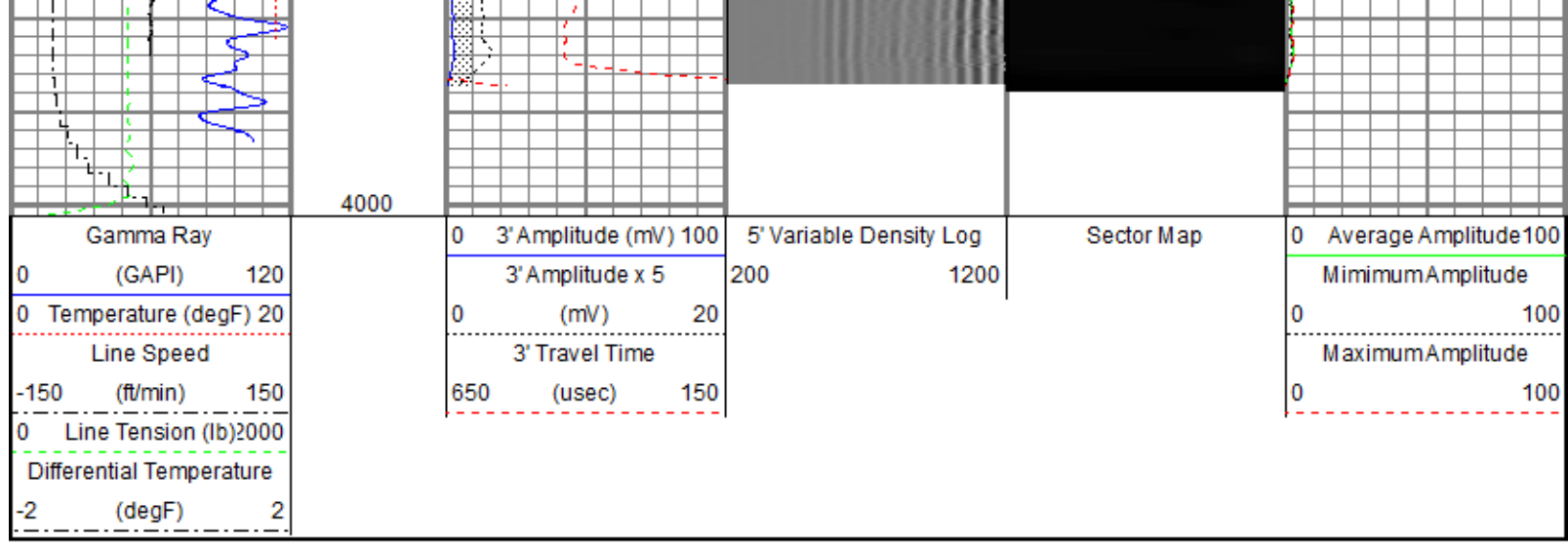
Gamma Ray (GAPI) 120	0 3' Amplitude (mV) 100	5' Variable Density Log 200 1200	Sector Map	0 Average Amplitude 100
0 Temperature (degF) 20	0 3' Amplitude x 5 (mV) 20			Minimum Amplitude 100
Line Speed	0 3' Travel Time			Maximum Amplitude 100

-150 (ft/min) 150  
0 Line Tension (lb) 2000  
Differential Temperature  
-2 (degF) 2

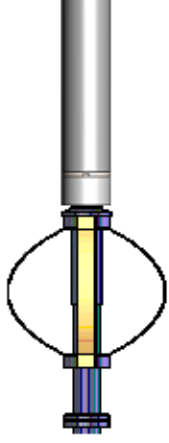
650 (usec) 150

0 100





Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)	
			Titan CHD-14375 GO Titan 1-7/16" Assembled Electric Cable Head w/ 1" Fishing Neck	1.03	1.44	3.60	
			Probe CENT-2750 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.88	2.75	20.00	
TEMP	17.04						
WVFS8	14.81			Probe Radii-2750 RBT (FW1308-091) Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub	9.39	2.75	105.00
WVFS7	14.81						
WVFS6	14.81						
WVFS5	14.81						
WVFS4	14.81						
WVFS3	14.81						
WVFS2	14.81						
WVFS1	14.81						
WVFCAL	14.81						
WVF3FT	14.81						
WVF5FT	13.81						
			Probe CENT-2750 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.88	2.75	20.00	
CCL\$2	6.80						
CCL\$1	6.80						
CP	5.46						

GR	3.40		Probe GR-CCL-2750 6PB (101001) Probe 2-3/4" rev.1 Digital Scintillation Gamma Ray/CCL Combined with 6 Pin Bottom for CNT	4.80	2.75	55.00
			Probe CENT-2750 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.88	2.75	20.00

Dataset: processed\_0512331107\_anadarko\_vogl 11-36\_rbl\_04-12-19.db: field/well/run1/pass15.2  
 Total length: 23.86 ft  
 Total weight: 223.60 lb  
 O.D.: 2.75 in

Calibration Report	
Database File	c:\programdata\warrior\data\anadarko\0512331107_anadarko_vogl 11-36_rbl_04-12-19\processed_0512331107_anadarko_vogl
Dataset Pathname	pass15.2
Dataset Creation	Fri Apr 12 17:56:35 2019

Gamma Ray Calibration Report		
Serial Number:	101001	
Tool Model:	2750 6PB	
Performed:	Mon Oct 01 11:32:32 2018	
Calibrator Value:	637.0	GAPI
Background Reading:	100.6	cps
Calibrator Reading:	981.1	cps
Sensitivity:	0.7235	GAPI/cps

Segmented Cement Bond Log Calibration Report		
Serial Number:	FW1308-091	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	333.700	ft

Master Calibration, performed (Derived):						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.000	0.472	0.800	81.196	170.425	0.775
CAL	0.006	0.614				
5'	-0.011	0.358	0.800	81.196	217.743	3.246
SUM						
S1	0.000	0.507	0.000	100.000	197.368	-0.039
S2	0.000	0.530	0.000	100.000	188.818	-0.047
S3	0.000	0.512	0.000	100.000	195.389	-0.049
S4	0.000	0.480	0.000	100.000	208.470	-0.052
S5	0.000	0.470	0.000	100.000	212.949	-0.032
S6	0.000	0.462	0.000	100.000	216.276	-0.027
S7	0.000	0.462	0.000	100.000	216.673	-0.027
S8	0.000	0.483	0.000	100.000	206.965	-0.041

Internal Reference Calibration, performed (Not Performed):			
	Raw (v)	Calibrated (v)	Results

	<u>Zero</u>	<u>Cal</u>	<u>Zero</u>	<u>Cal</u>	<u>Gain</u>	<u>Offset</u>
CAL	0.000	0.000	0.006	0.614	1.000	0.000

Air Zero Calibration, performed Fri Apr 12 16:50:22 2019:

	Raw (v)		Calibrated (v)		Results
	<u>Zero</u>		<u>Zero</u>		<u>Offset</u>
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

#### Temperature Calibration Report

Serial Number: FW1308-091  
 Tool Model: 2750 RBT  
 Performed: Mon Oct 01 11:32:16 2018

	Reference	Reading
Low Reference:	100.00 degF	104.72 degF
High Reference:	350.00 degF	392.24 degF

Gain: 0.87  
 Offset: 8.94  
 Delta Spacing: 1



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**Well** Vogl 11-36  
**Field** Wattenberg  
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**State** Colorado