



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

**Company** Kerr-McGee Oil & Gas Onshore, L.P.  
**Well** RW 1N-5HZ  
**Field** Wattenberg  
**County** Weld **State** Colorado

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**Location:** SEC 29 TWP 3N RGE 65W  
 API #: 05-123-44751  
 Other Services: GR  
 Permanent Datum: Ground Level Elevation: 4869'  
 Log Measured From: Kelly Bushing Elevation: 21 FT  
 Drilling Measured From: Kelly Bushing

Date	19-Nov-17						
Run Number	TWO						
Depth Driller	13666 FT						
Depth Logger	7280 FT						
Bottom Logged Interval	7275 FT						
Top Log Interval	Surface						
Open Hole Size	7.875"						
Type Fluid	Water						
Density / Viscosity	8.34 lb/gal						
Max. Recorded Temp.	247°F						
E. estimated Cement Top	See Log						
Time Well Ready	ROA						
Time Logger on Bottom	0820						
E. equipment Number	HD-325						
Location	Fort Lupton, CO						
Recorded By	J. Amidel						
Witnessed By	Justin Mcmillan						
<b>Borehole Record</b>							
Run Number	Bit	From	To	Size	Weight	From	To
<b>Tubing Record</b>							
Casing Record	Size (in)	Wgt (lbs/ft)	Grade	Top	Bottom		
Surface Casing	9.5/8	36	J-55	Surface	1853 FT		
Intermediate #1	5.1/2	20	P-110	Surface	13656 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**

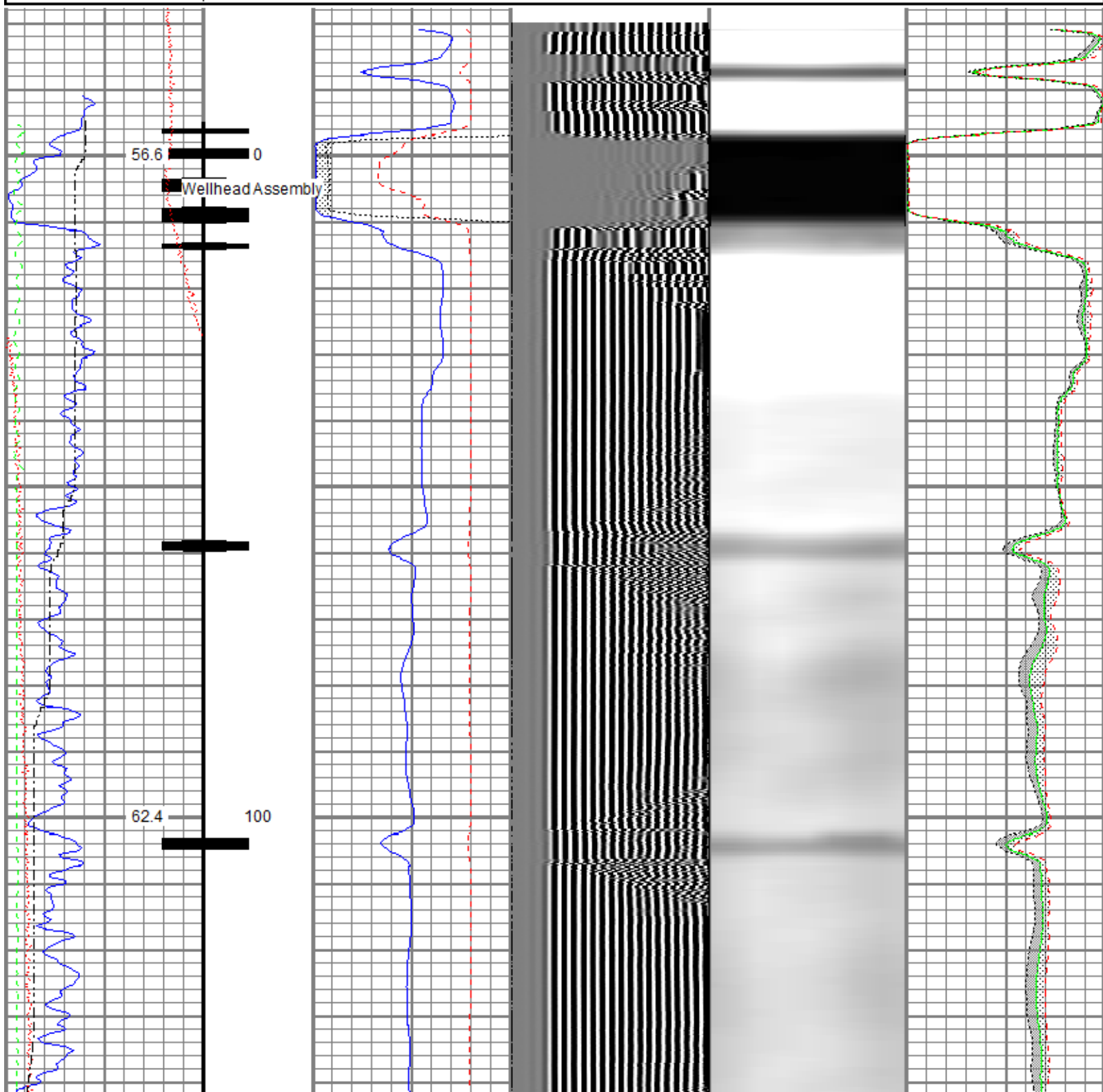
**Log ran as per customer request**  
**Depth referenced to Casing Tally reported Marker Joint at 6395 FT**  
**Adjusted -9 FT to correlate with Marker Joint**  
**Gauge Ring/Junk Basket ran to 7280 FT with no debris**  
**Log ran from as deep as possible in heel to Surface**  
**Recorded with 2800 PSI Surface Induced Pressure**  
**Logging tools were clean and free of debris upon completion of operations**

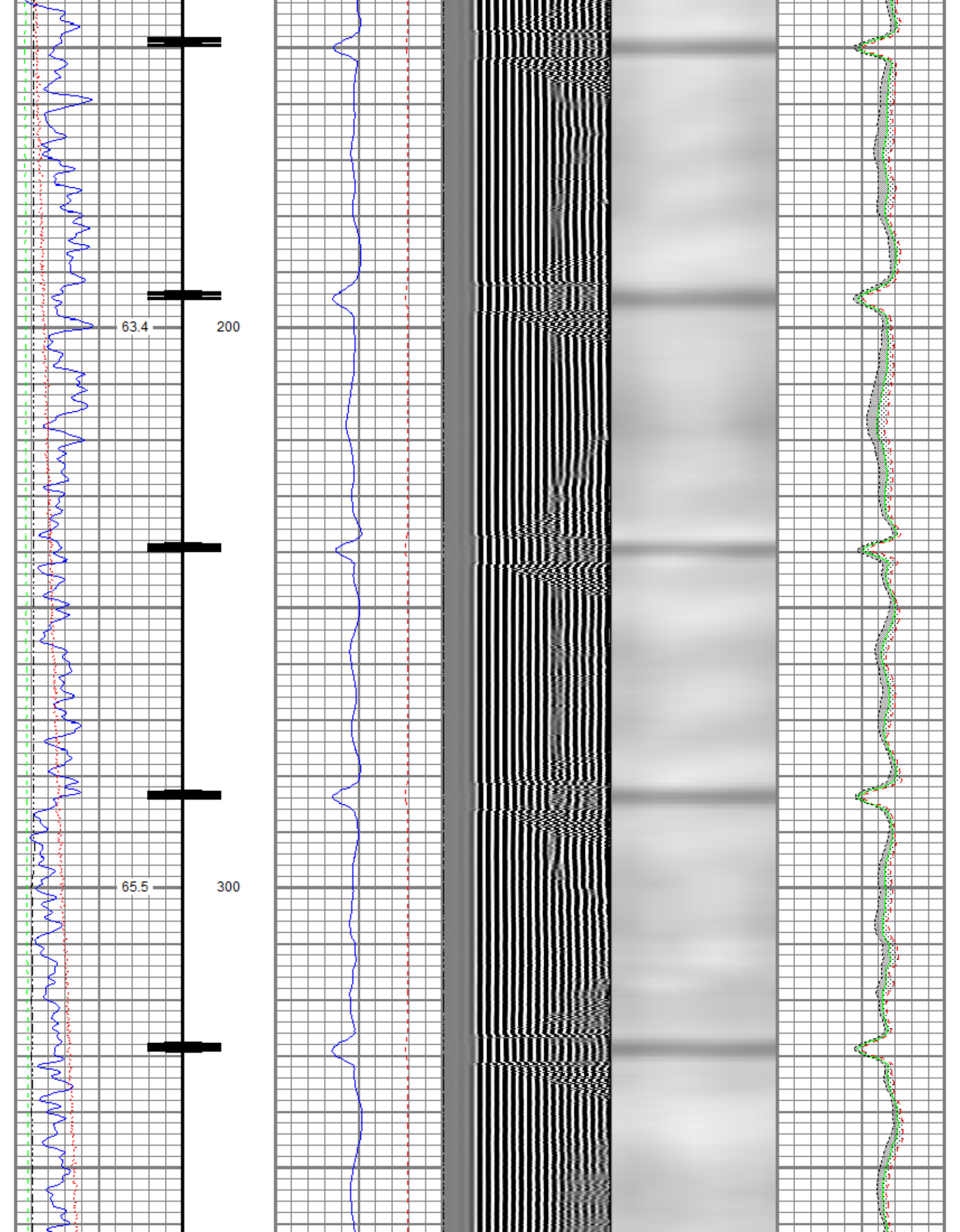
**Thank you for choosing Reliance Oilfield Services, LLC!!**

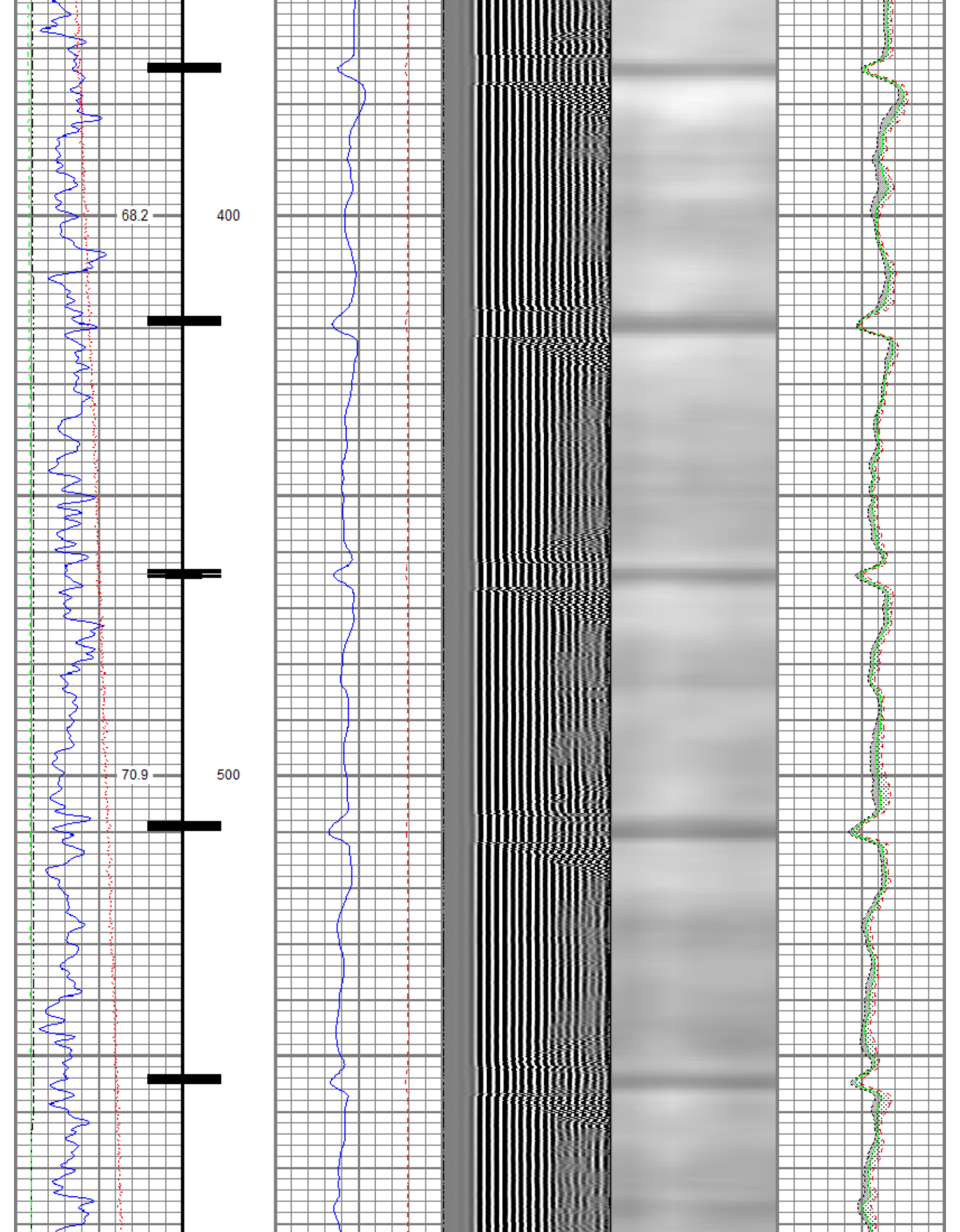
# Recorded With 2800 PSI Surface Induced Pressure

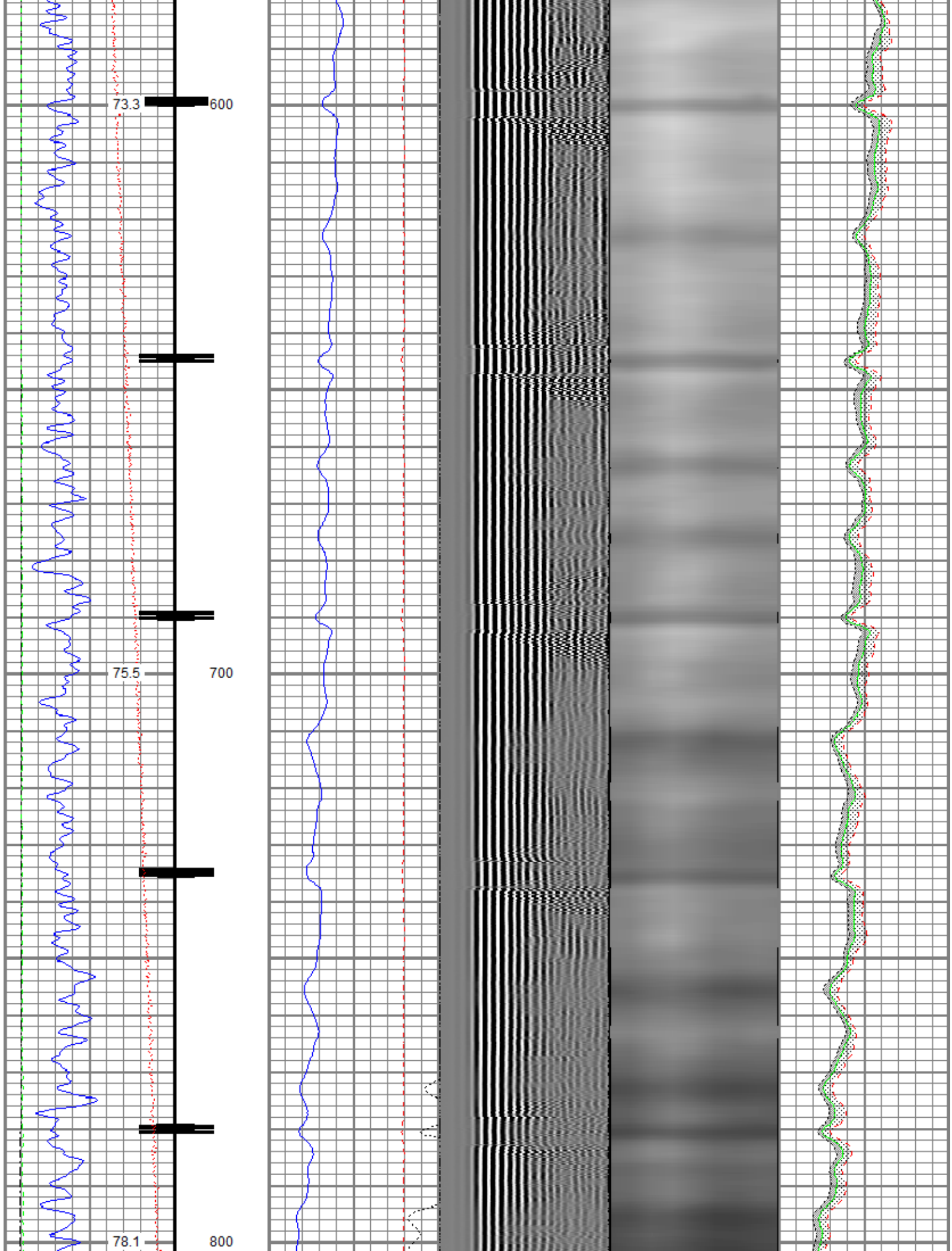
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 Dataset Pathname pass6.3  
 Presentation Format ros\_radrii  
 Dataset Creation Mon Nov 20 10:57:12 2017  
 Charted by Depth in Feet scaled 1:240

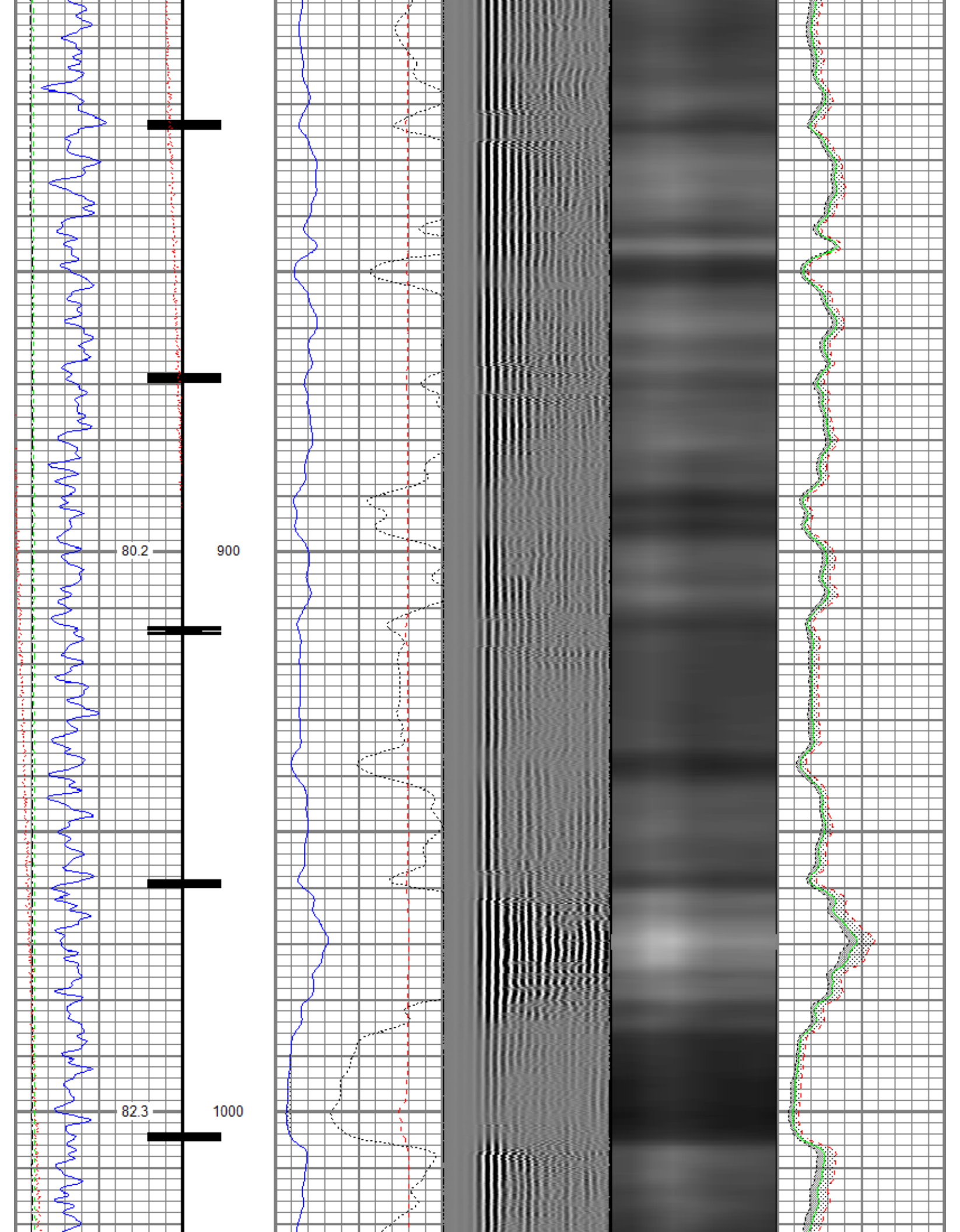
Gamma Ray		0 3' Amplitude (mV) 100	5' Variable Density Log	Sector Map	0 Average Amplitude 100
0 (GAPI) 120		3' Amplitude x 5	200 1200		Minimum Amplitude
<i>Casing Collar Locator</i>		0 (mV) 20			0 100
0 Temperature (degF) 20		3' Travel Time			Maximum Amplitude
Line Speed		650 (usec) 150			0 100
-150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

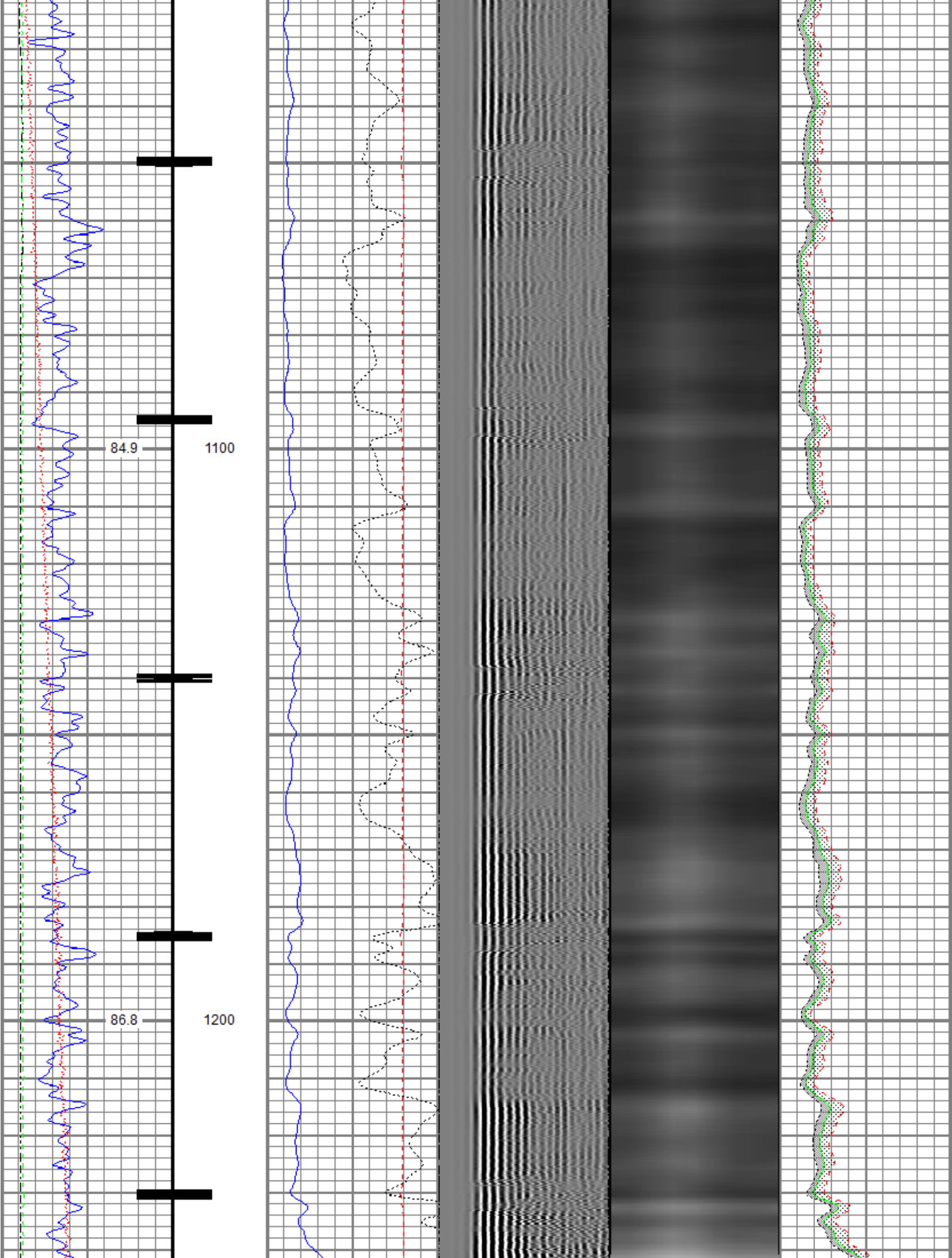




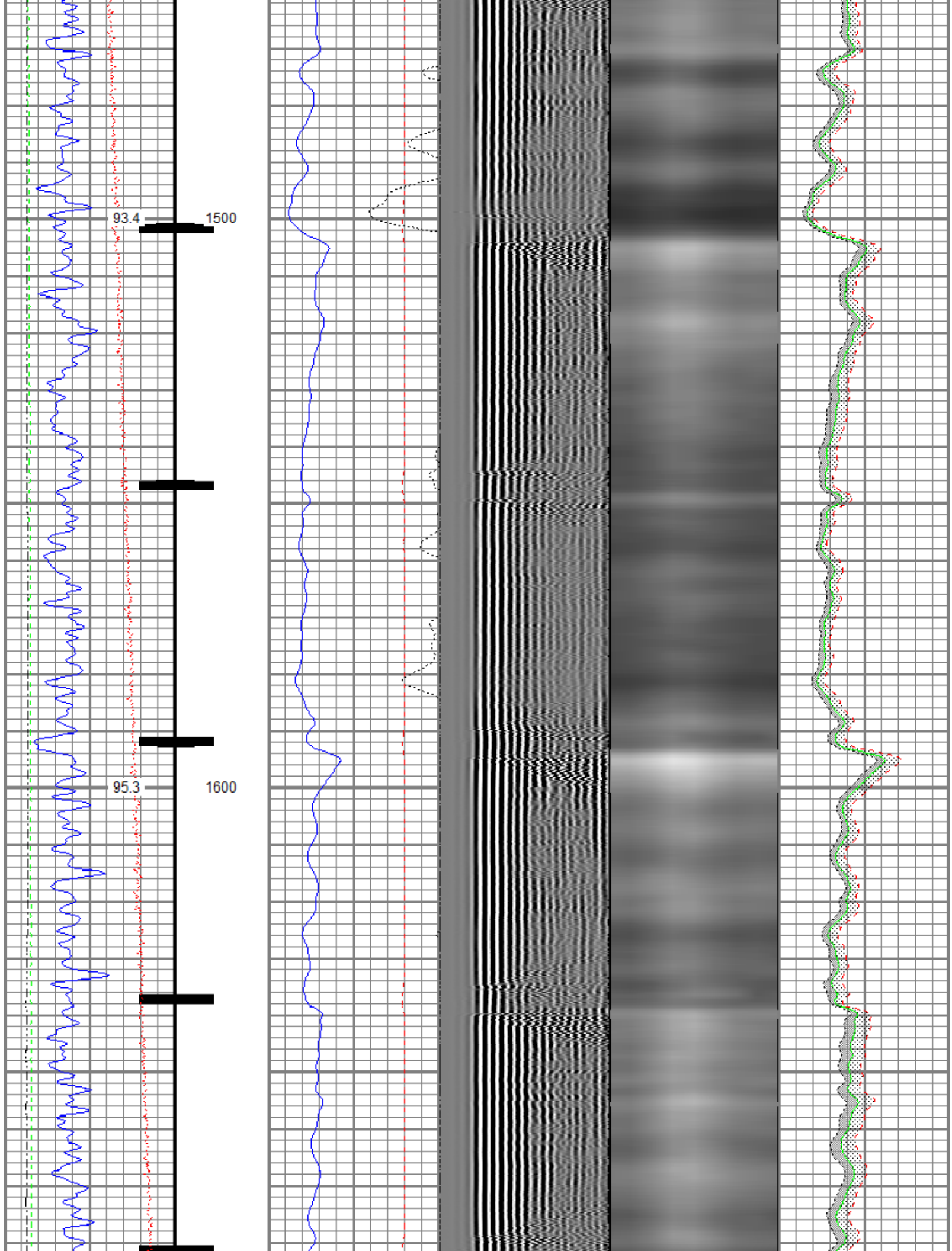


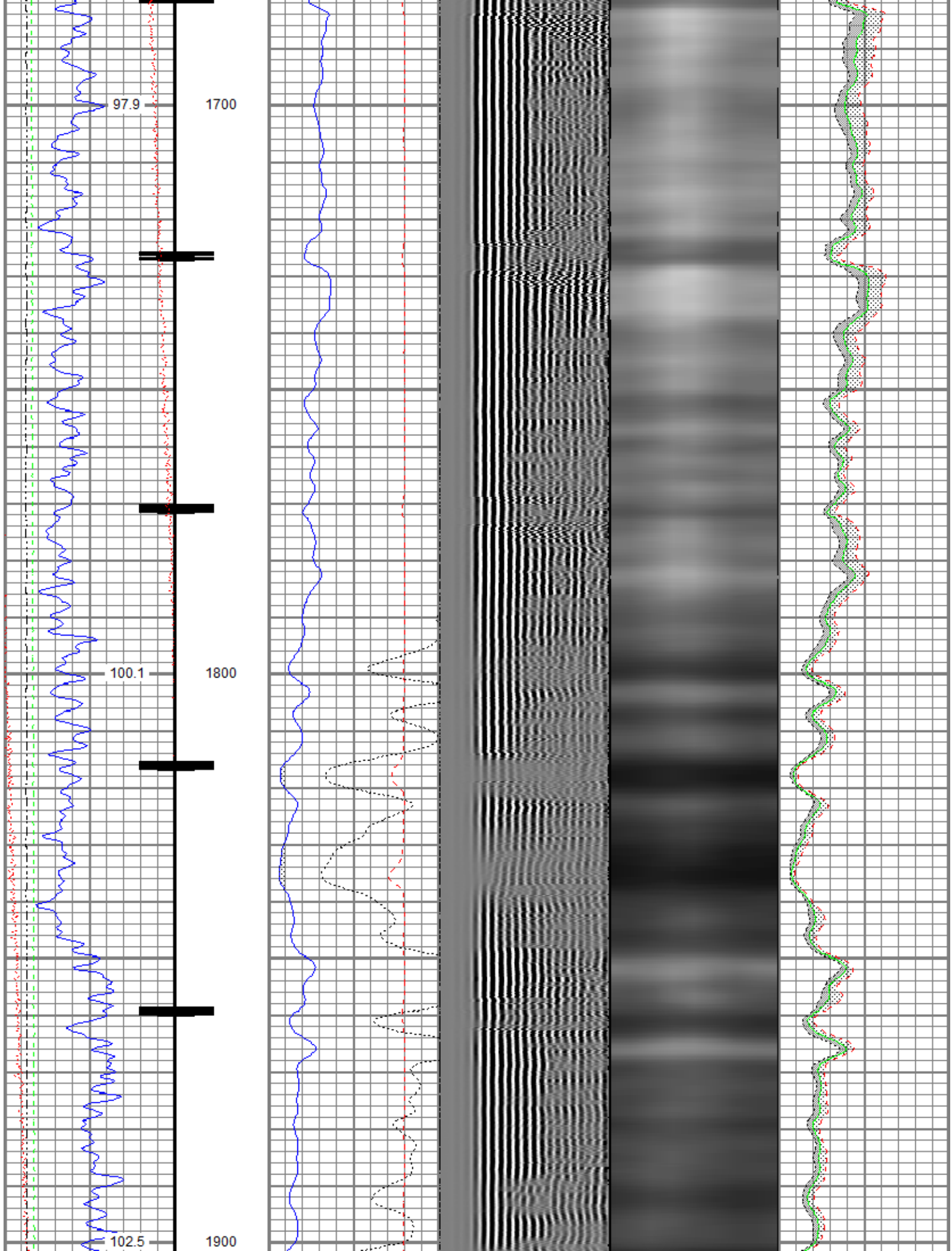


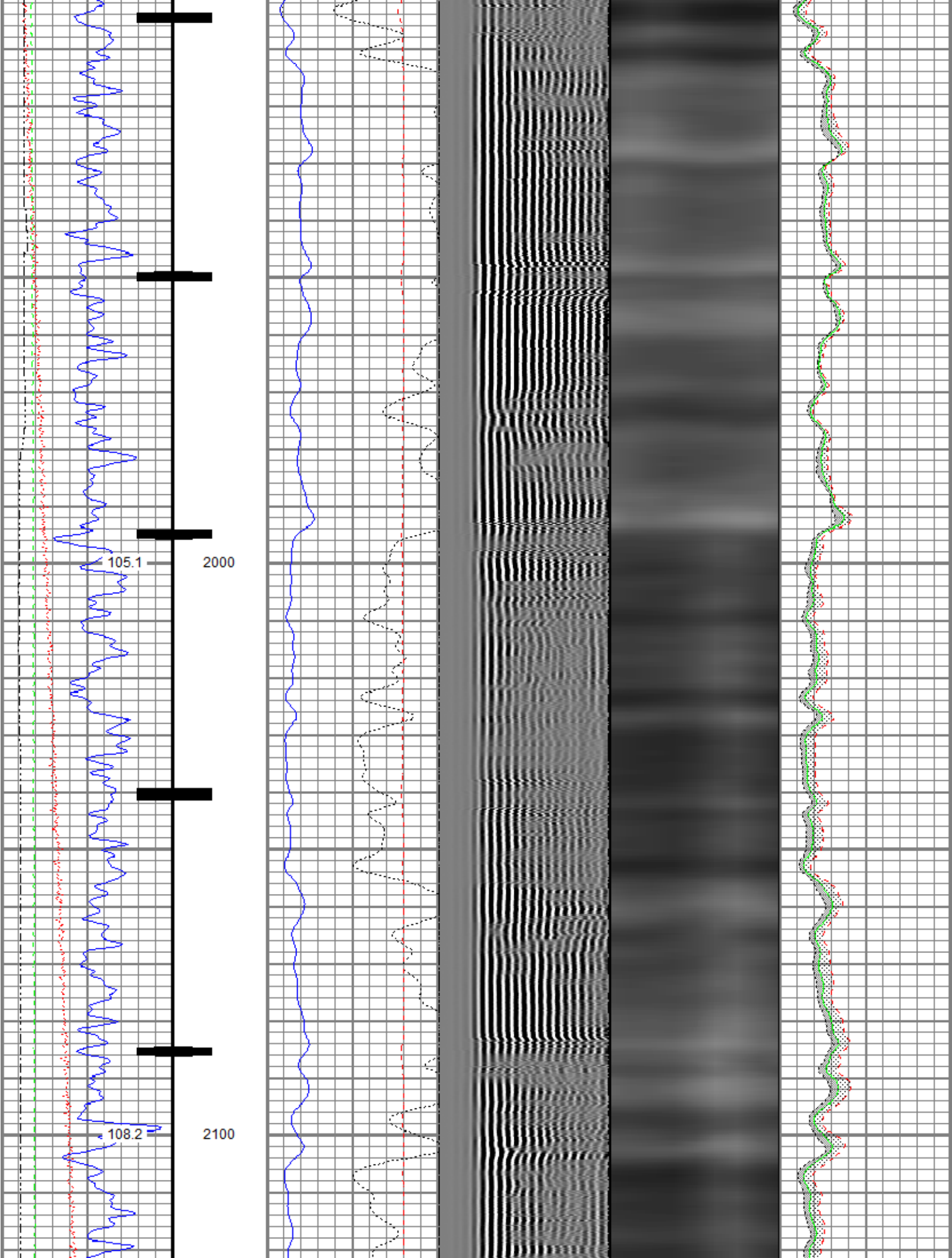


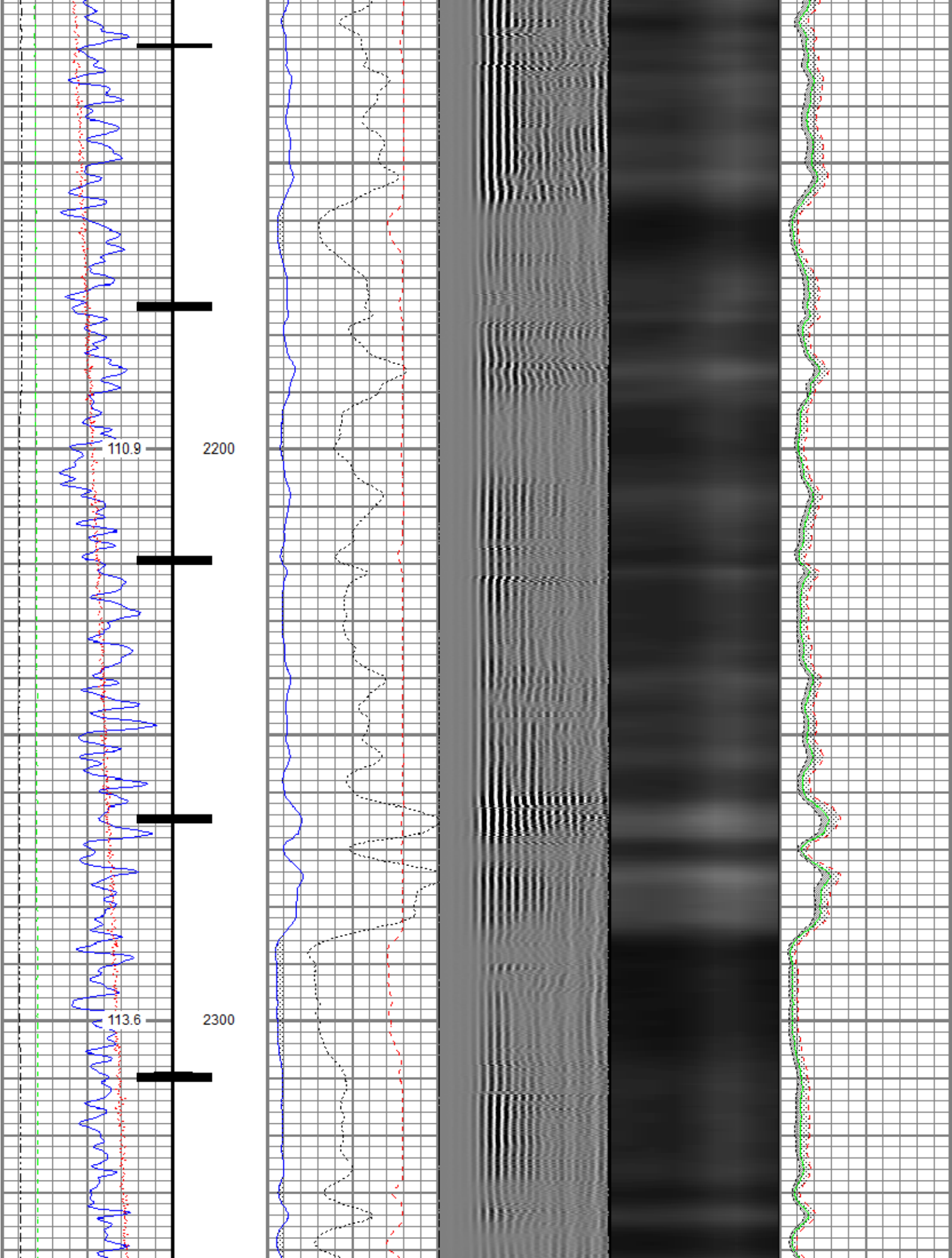


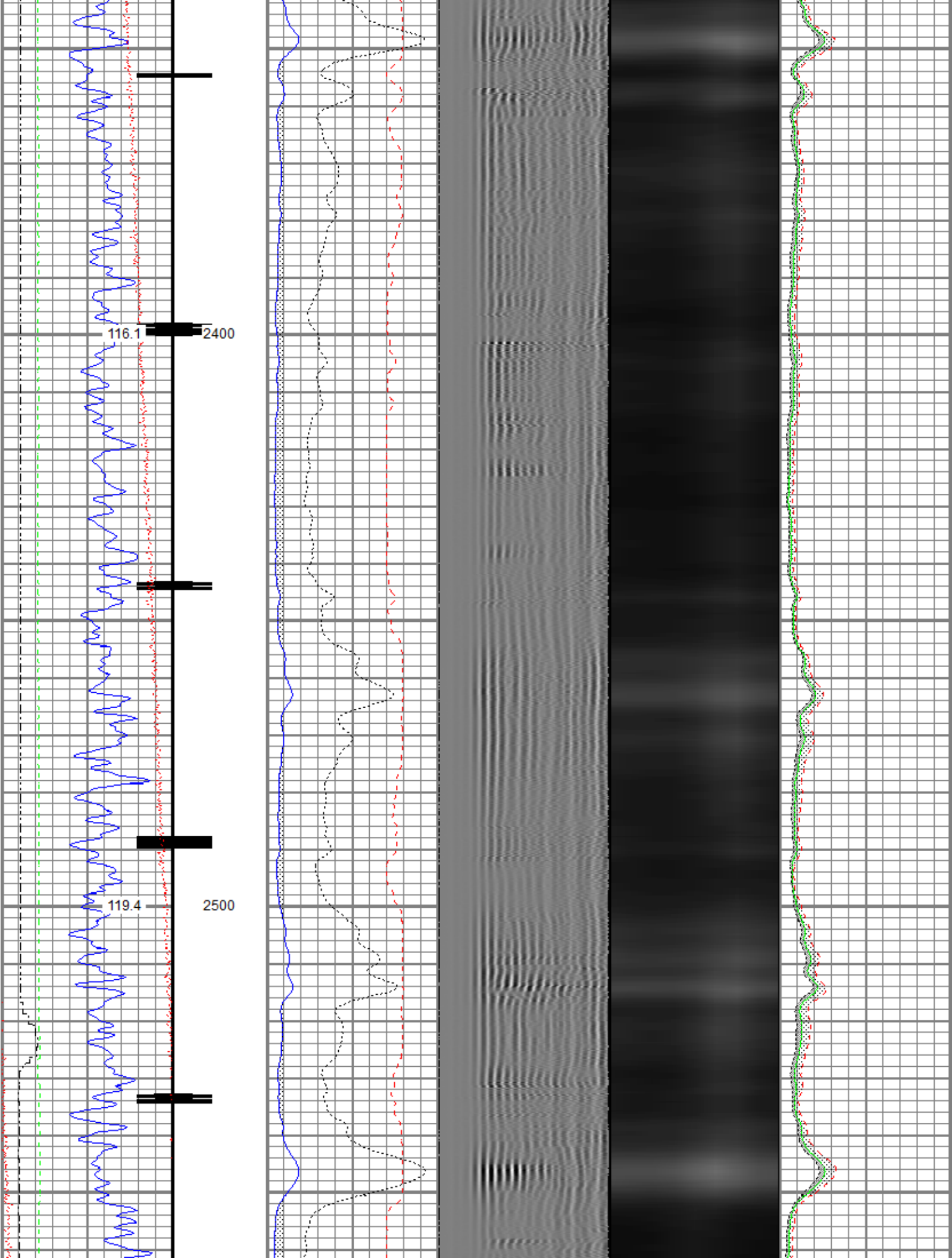


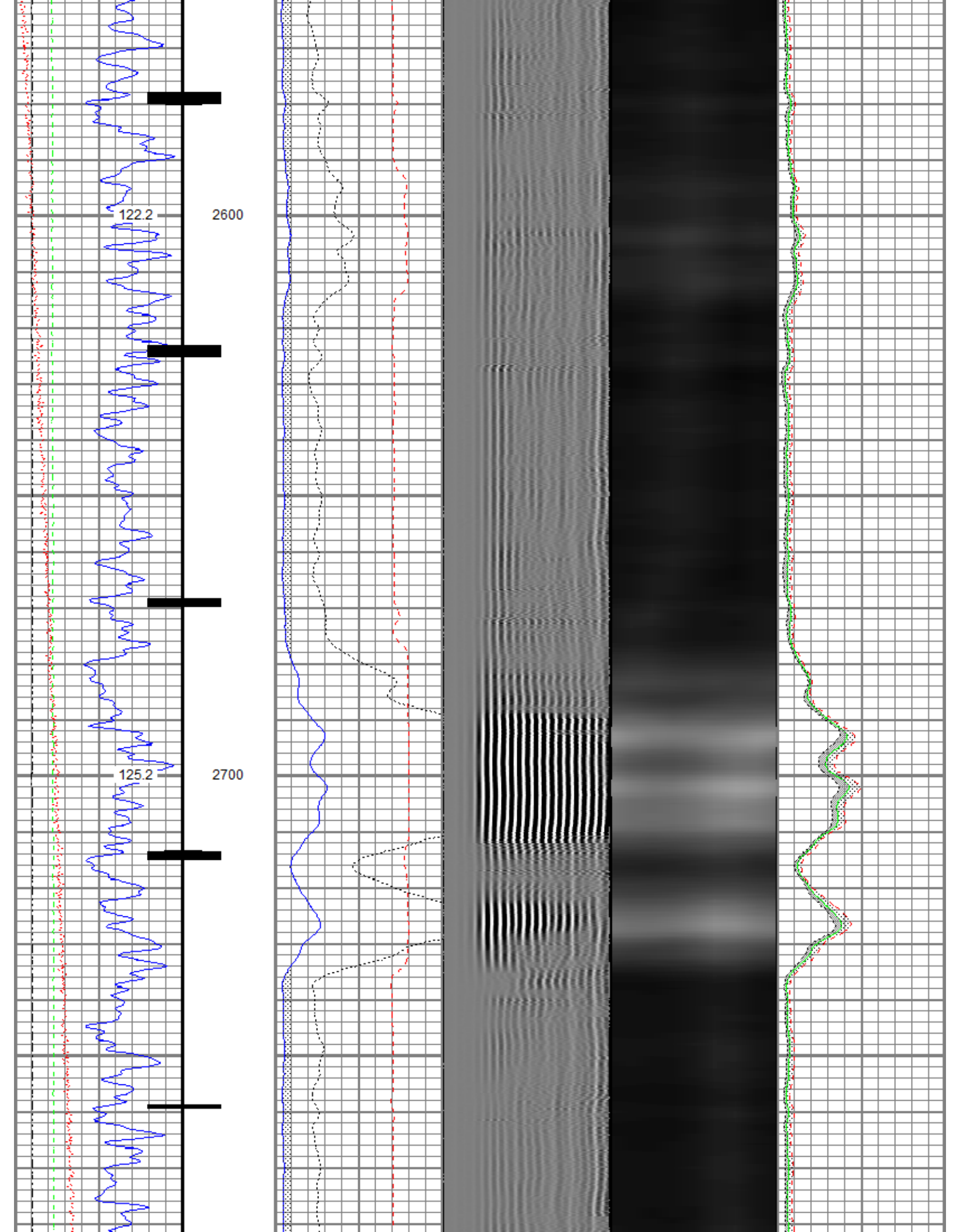












127.5

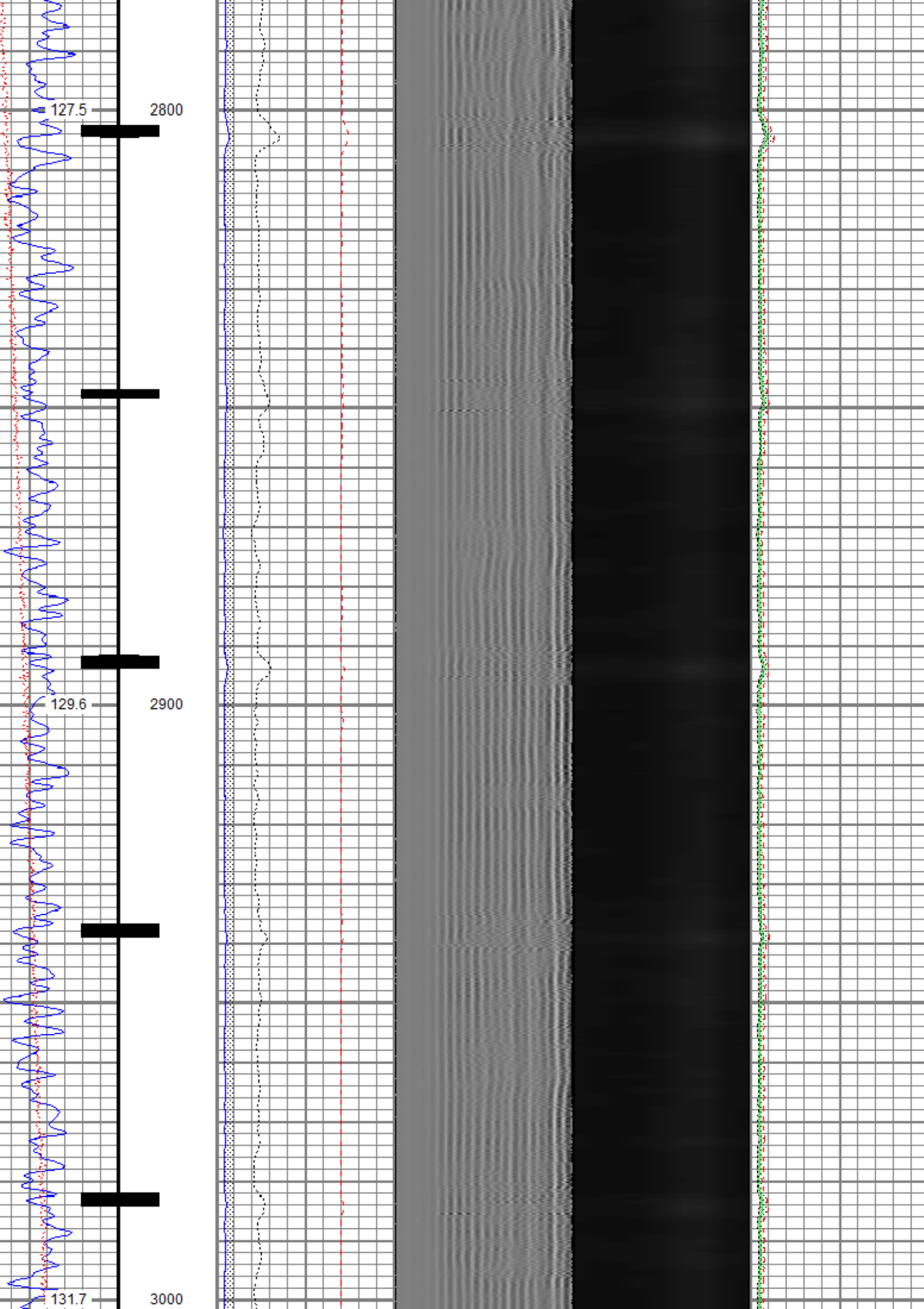
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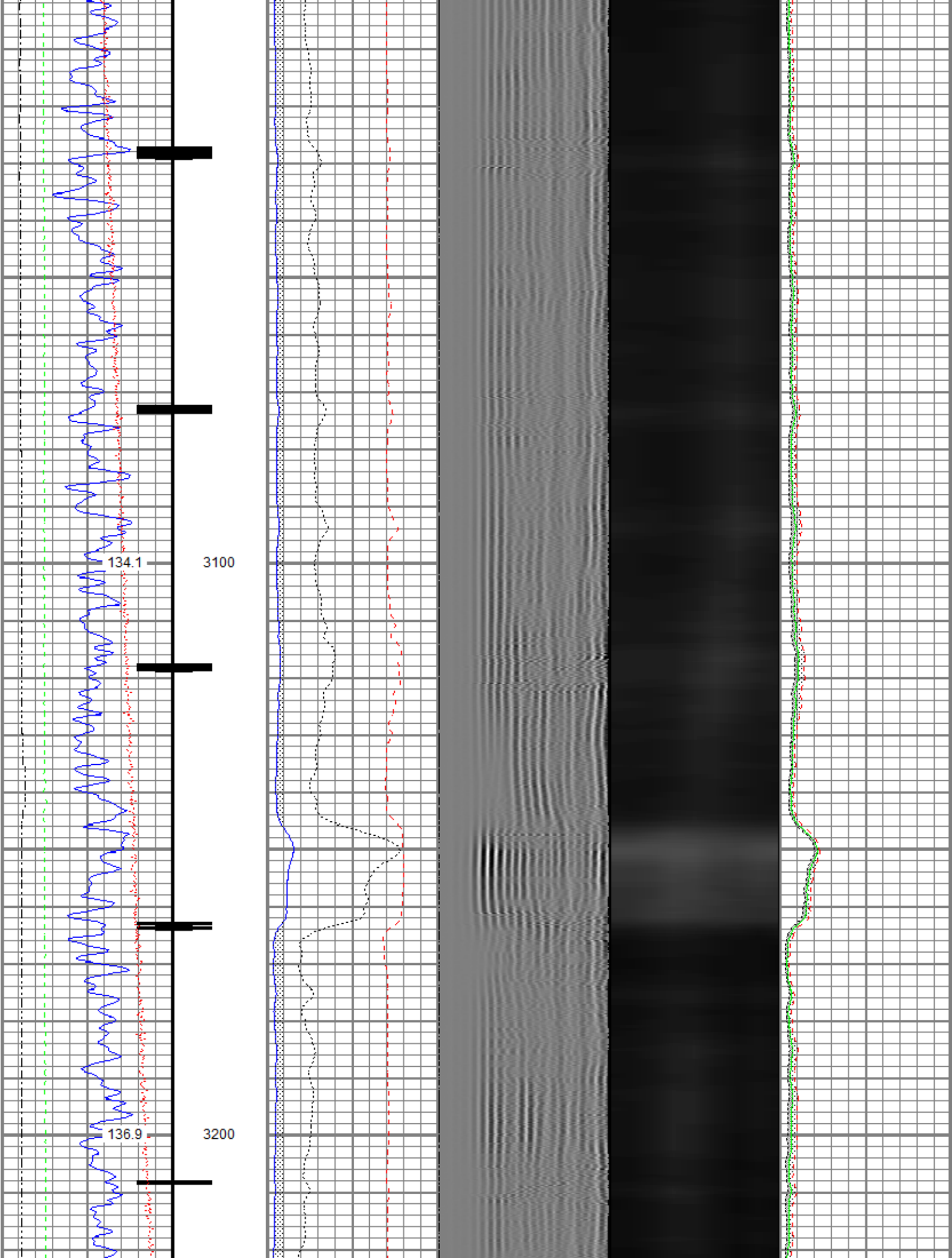
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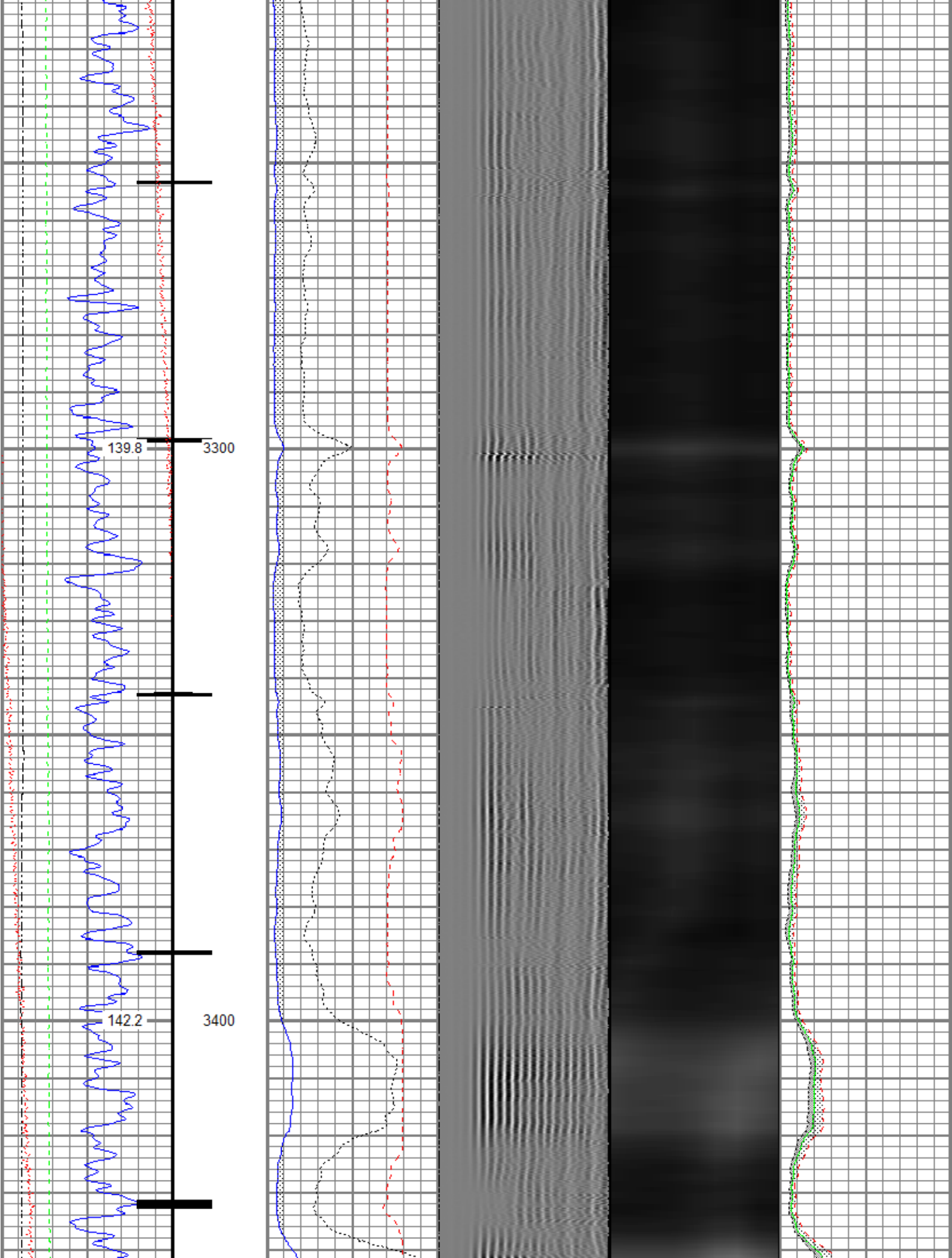
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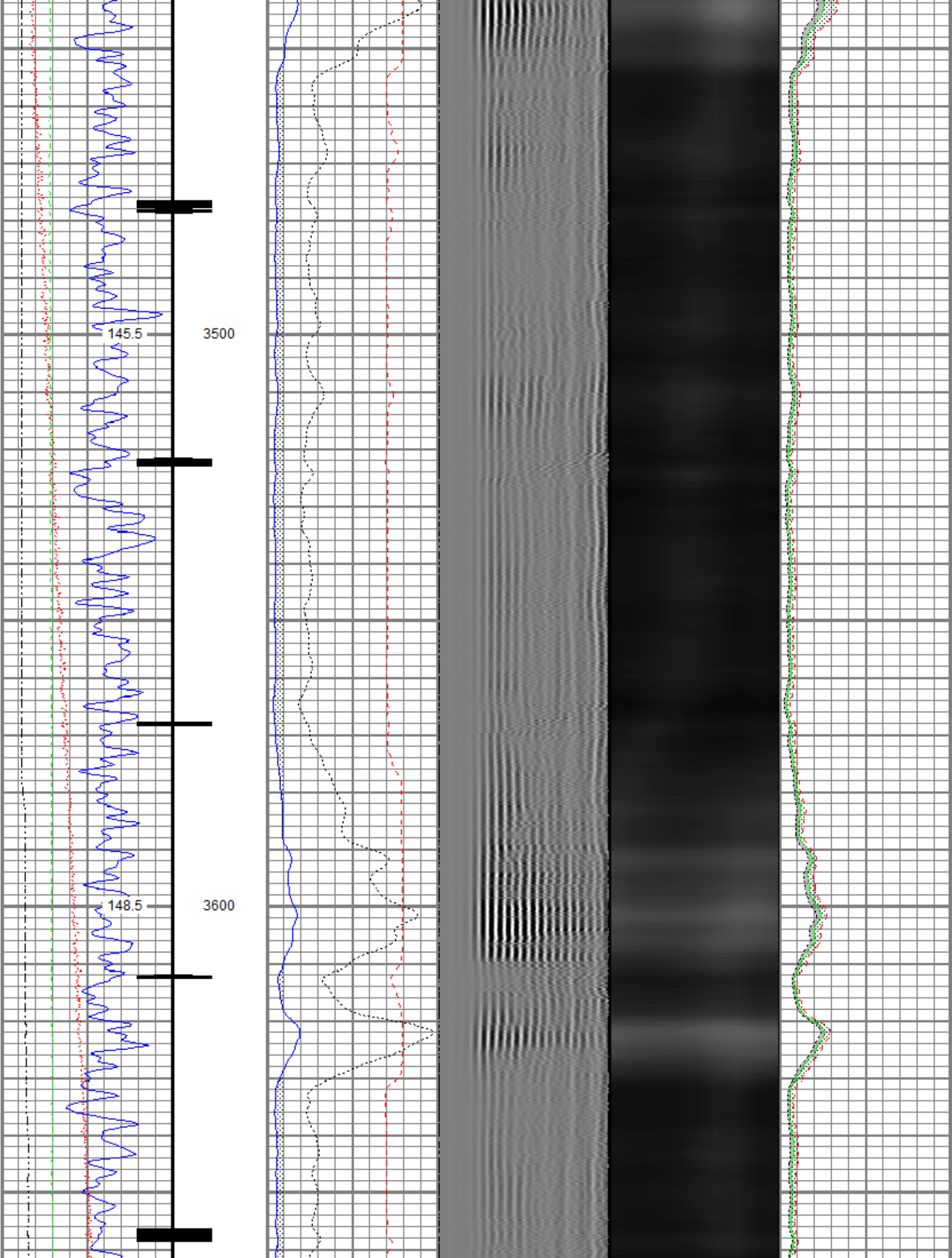
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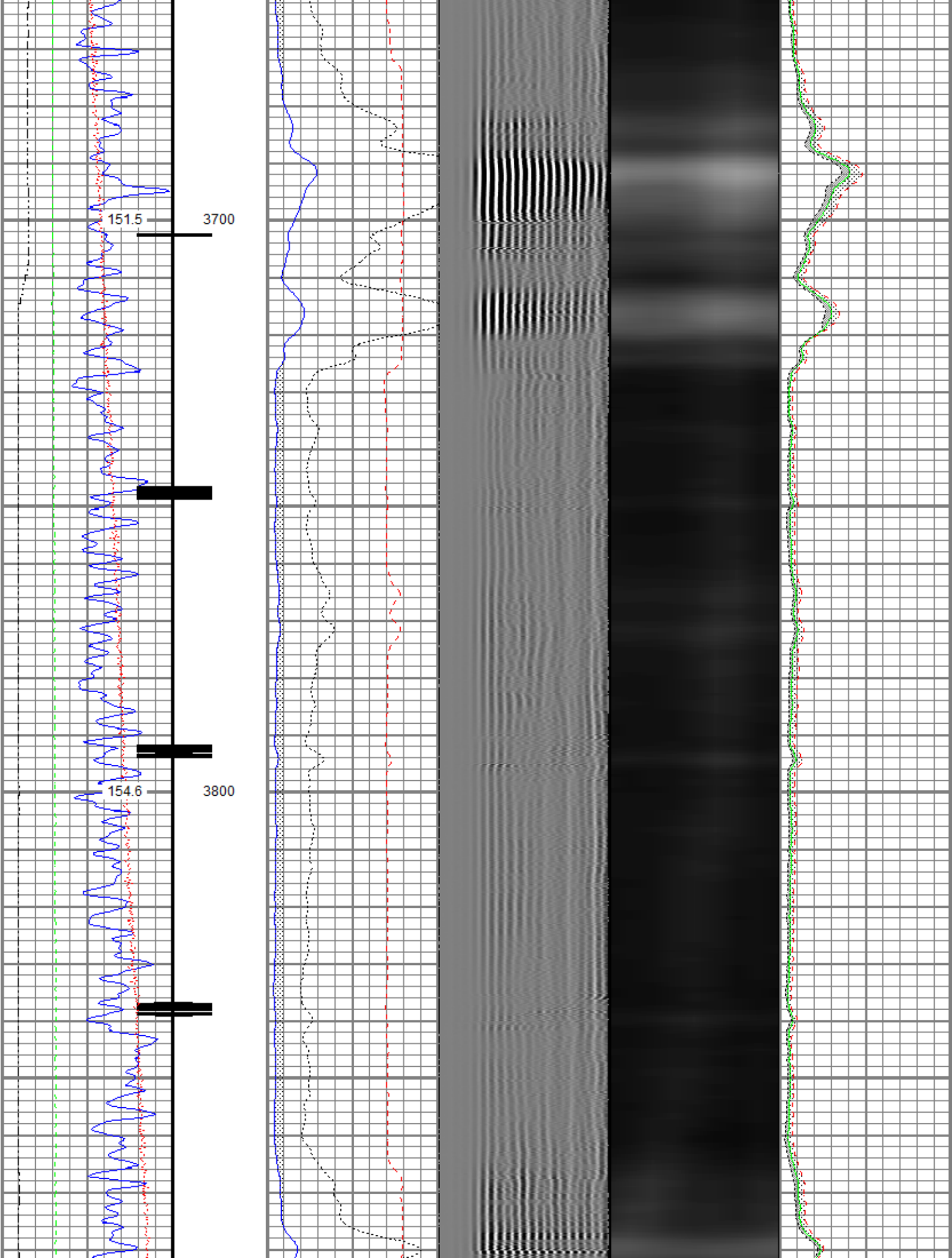
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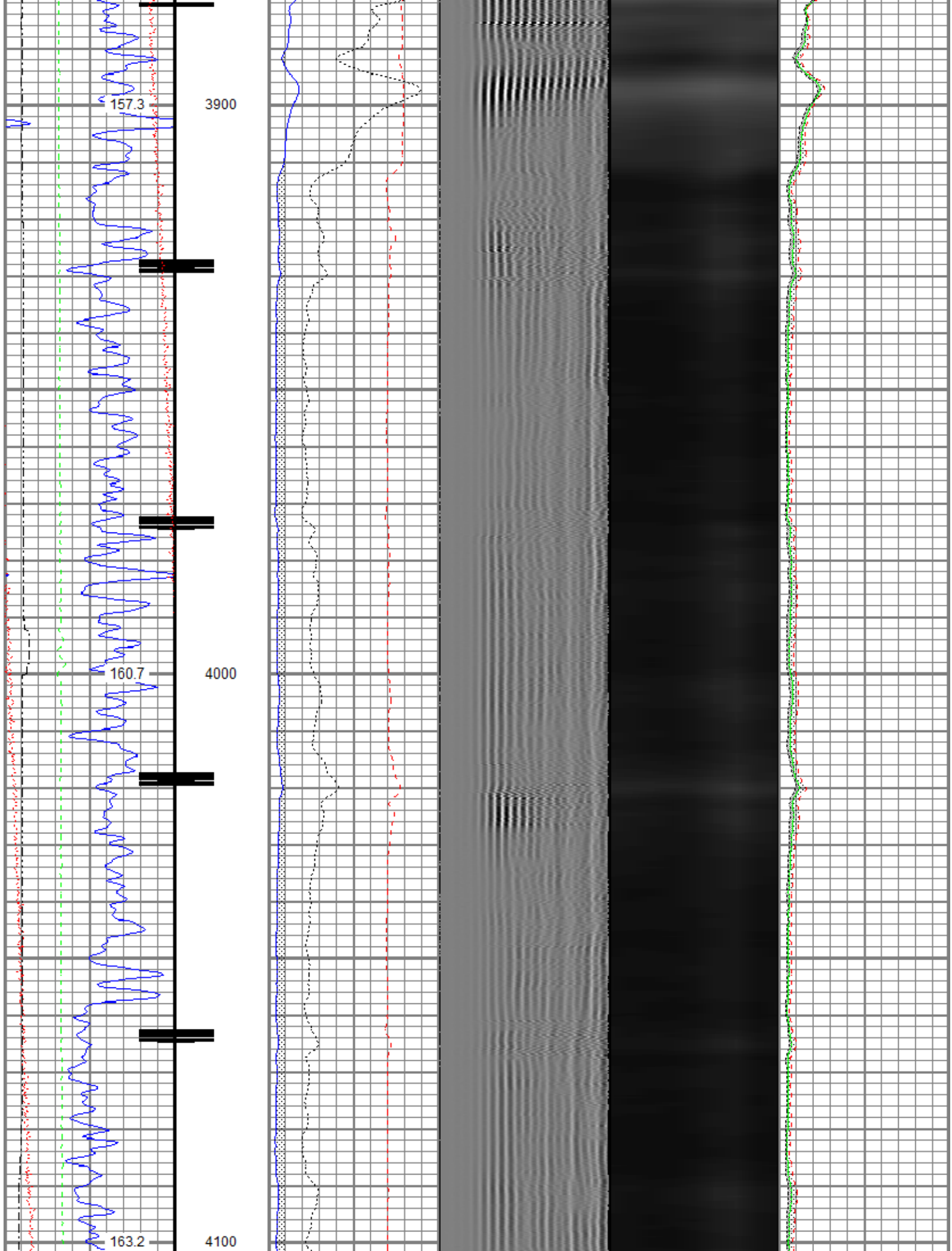


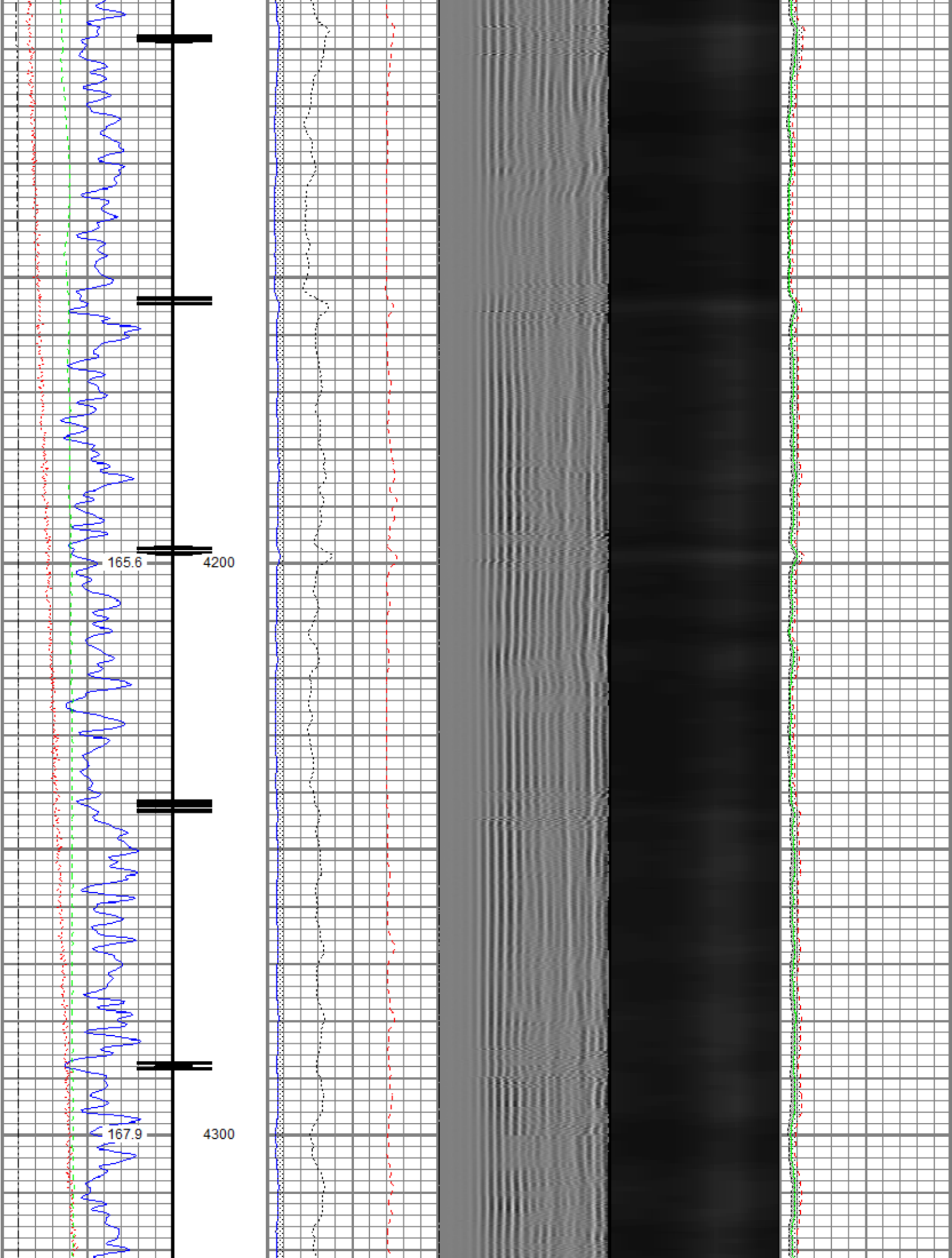


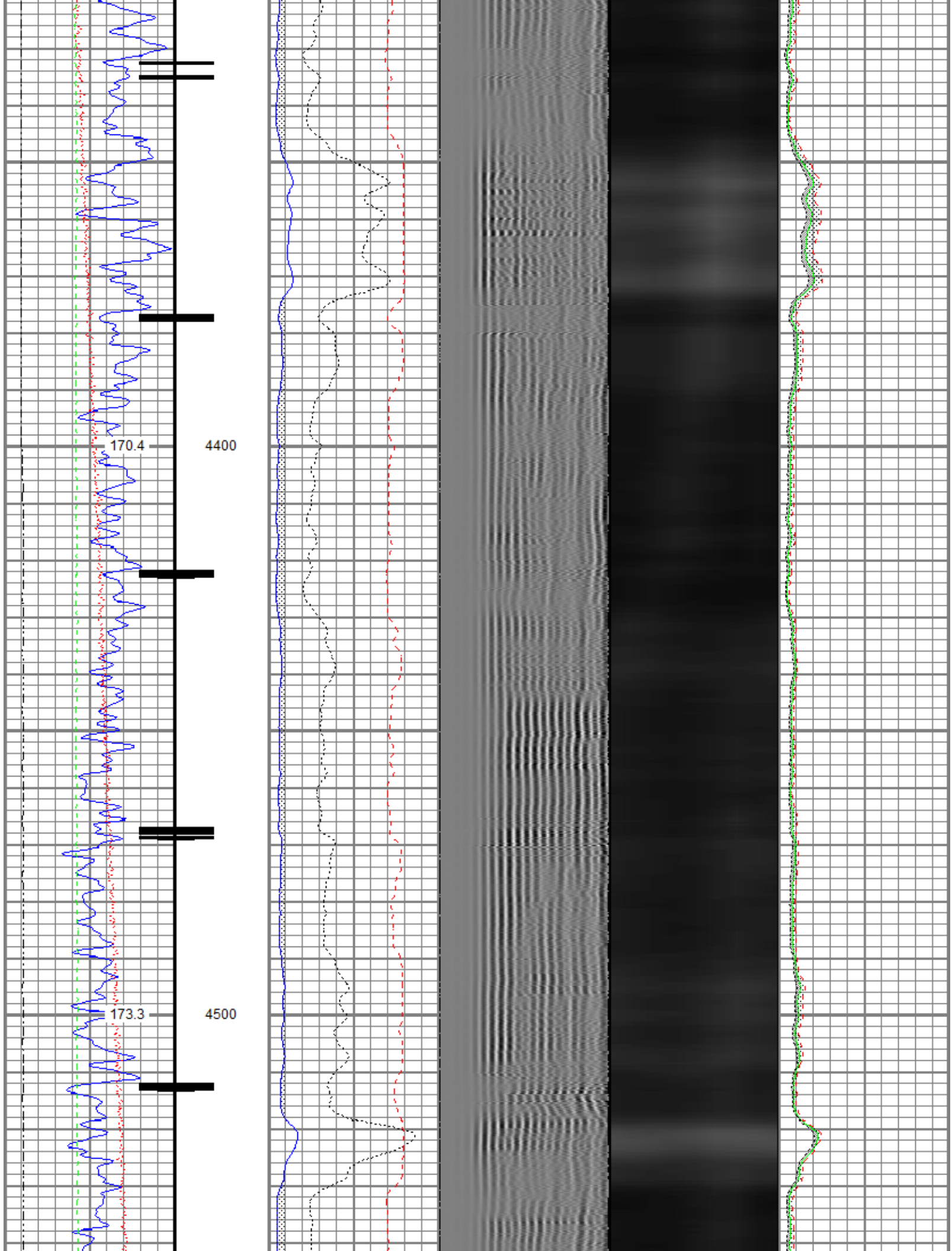


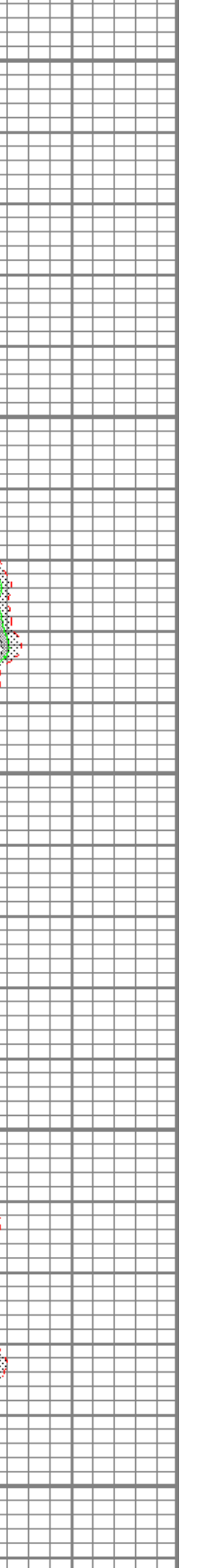
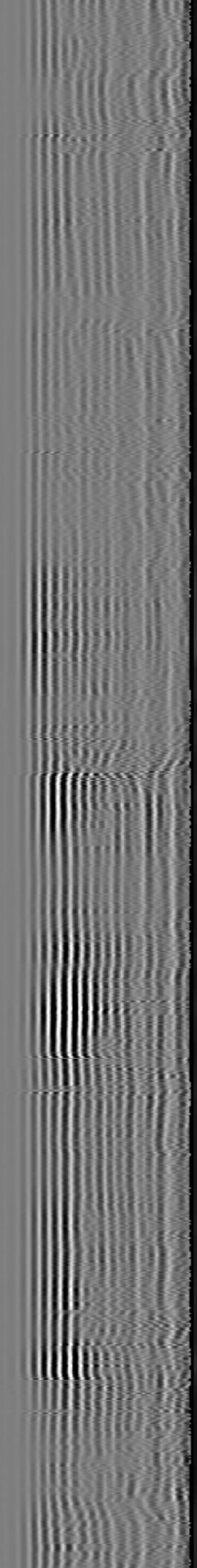
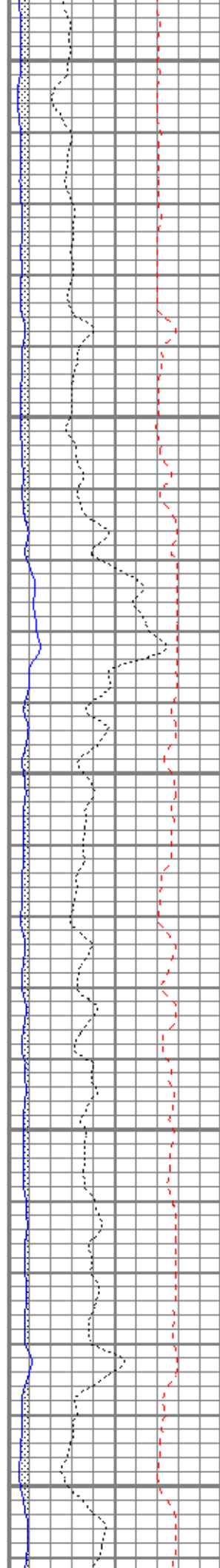
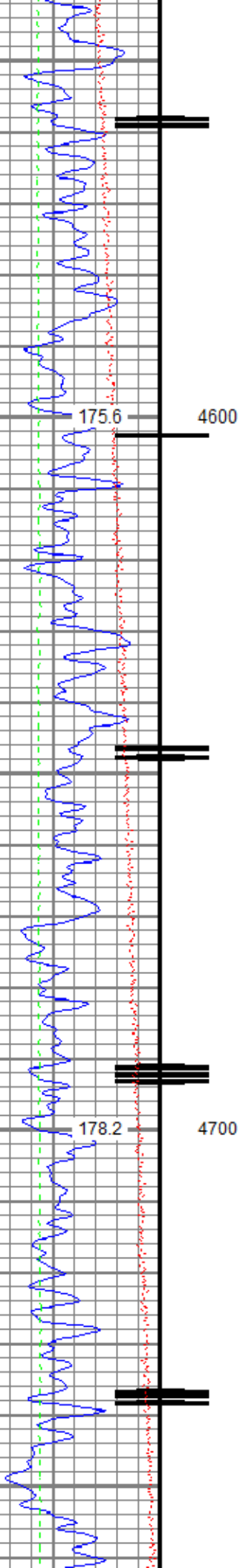


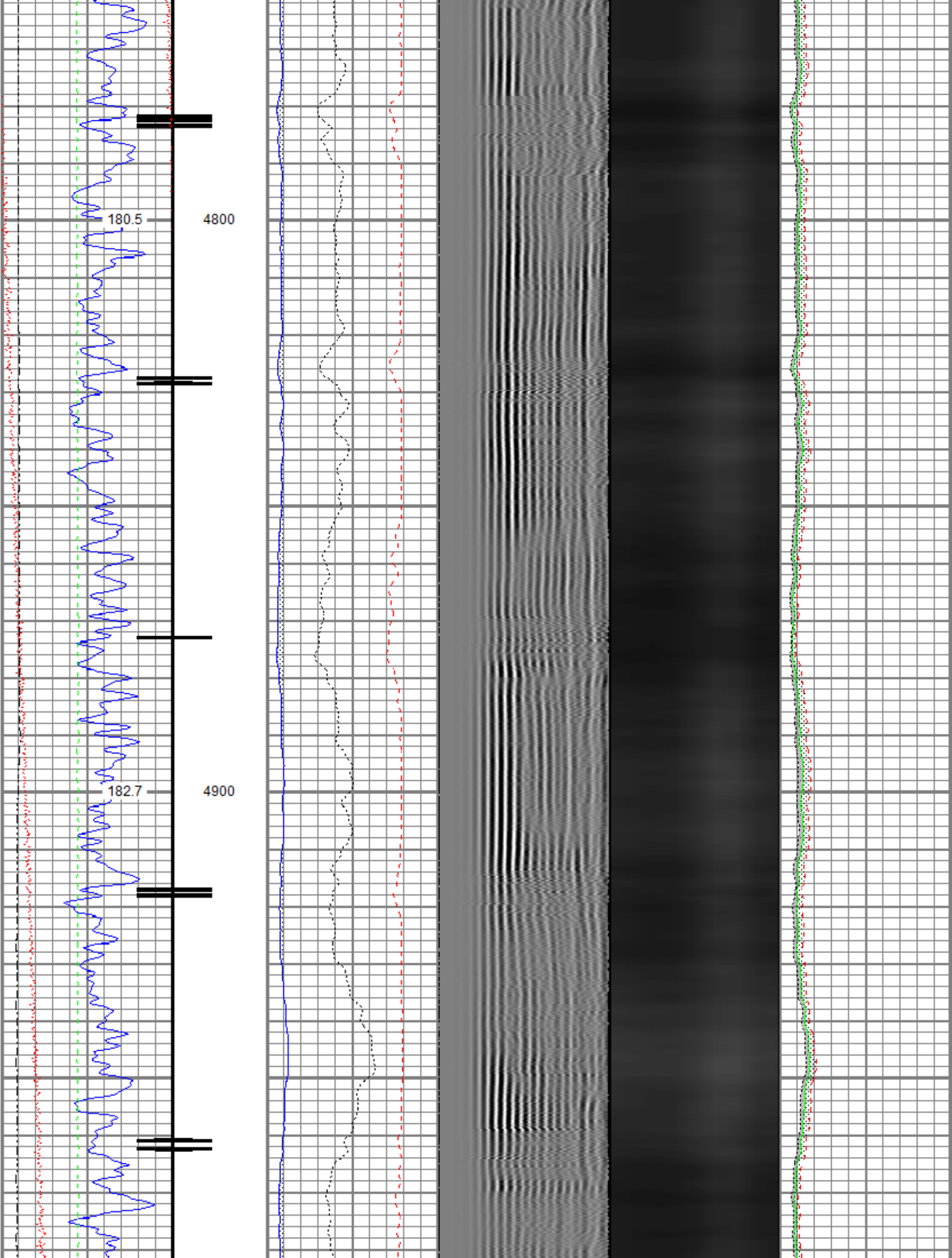


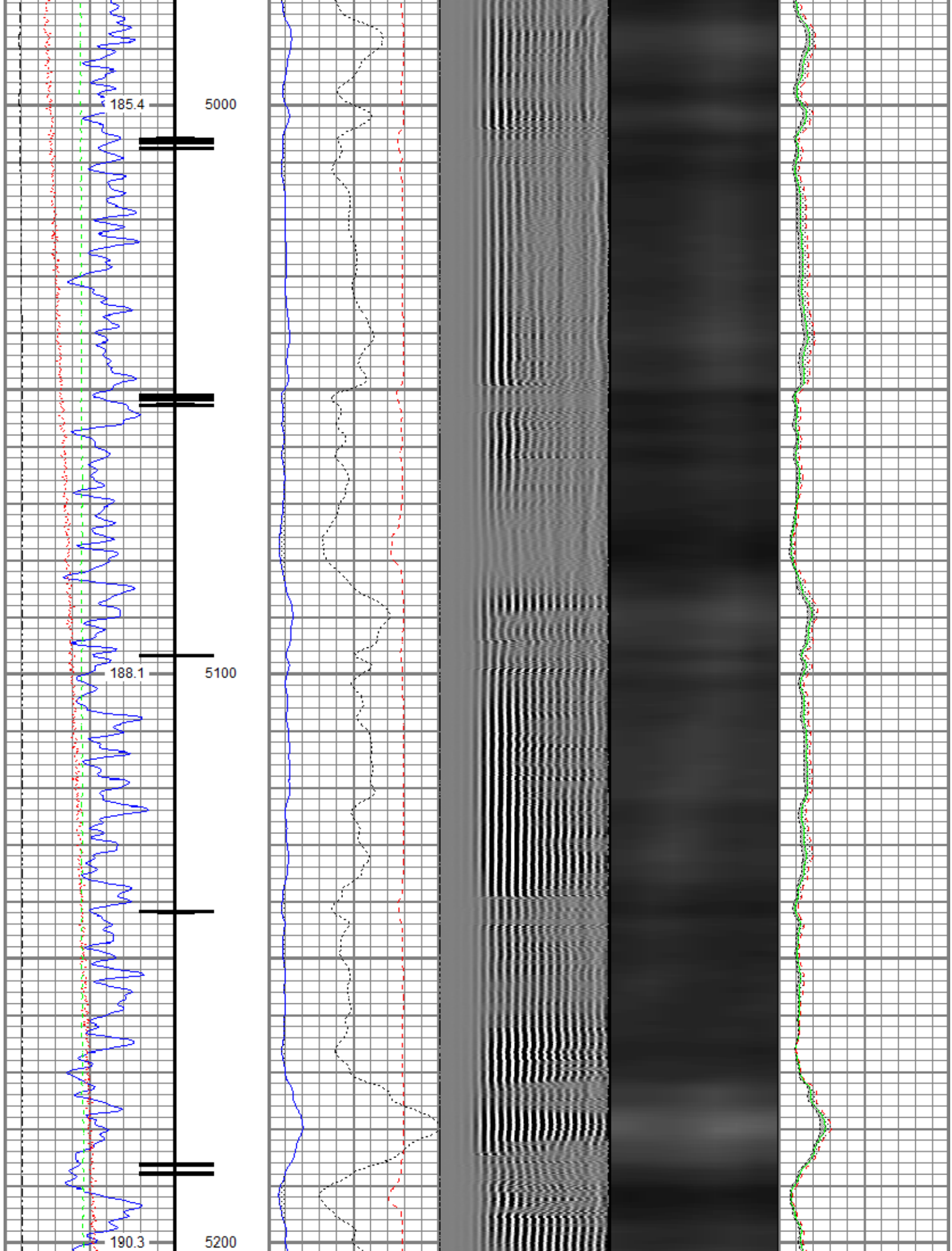


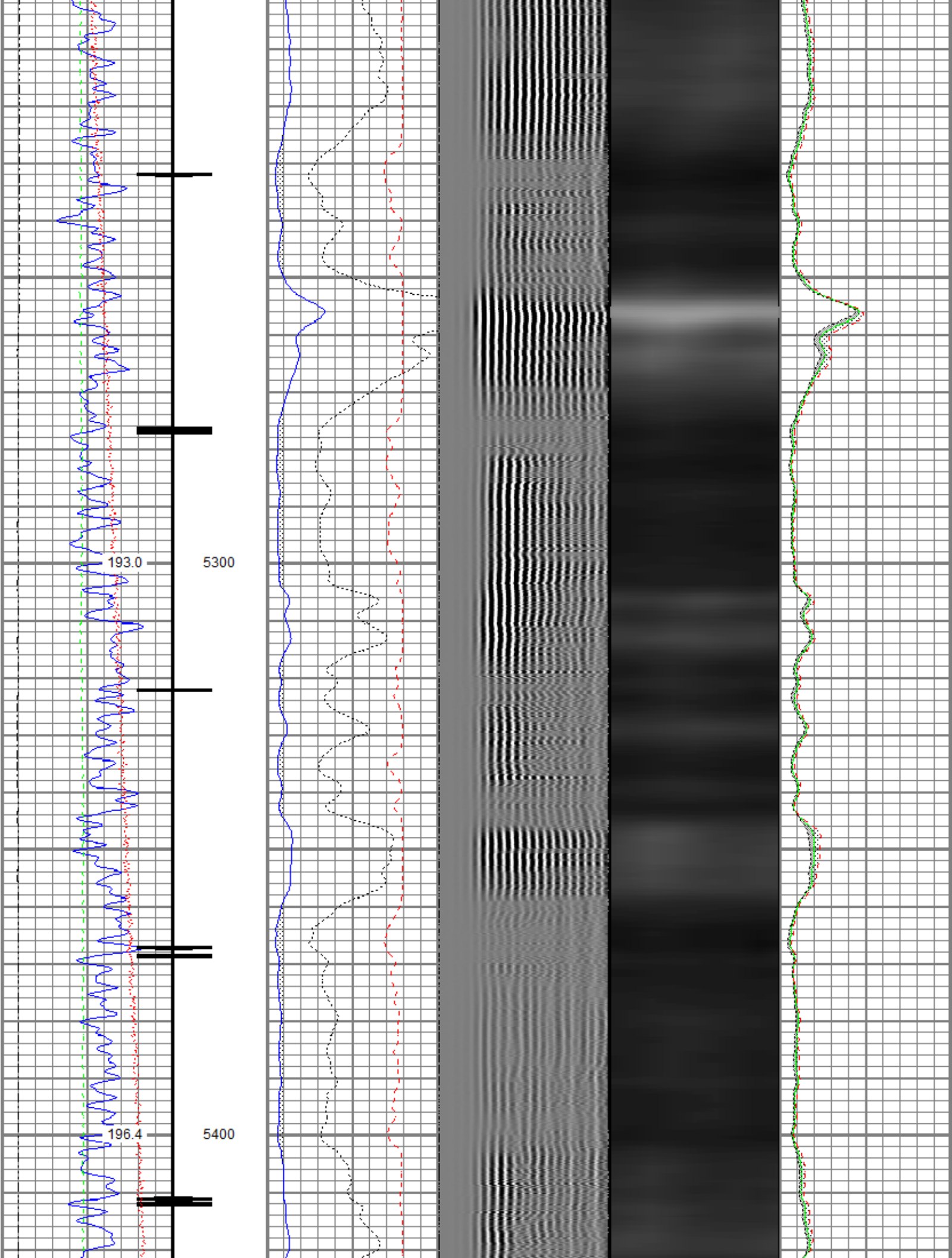


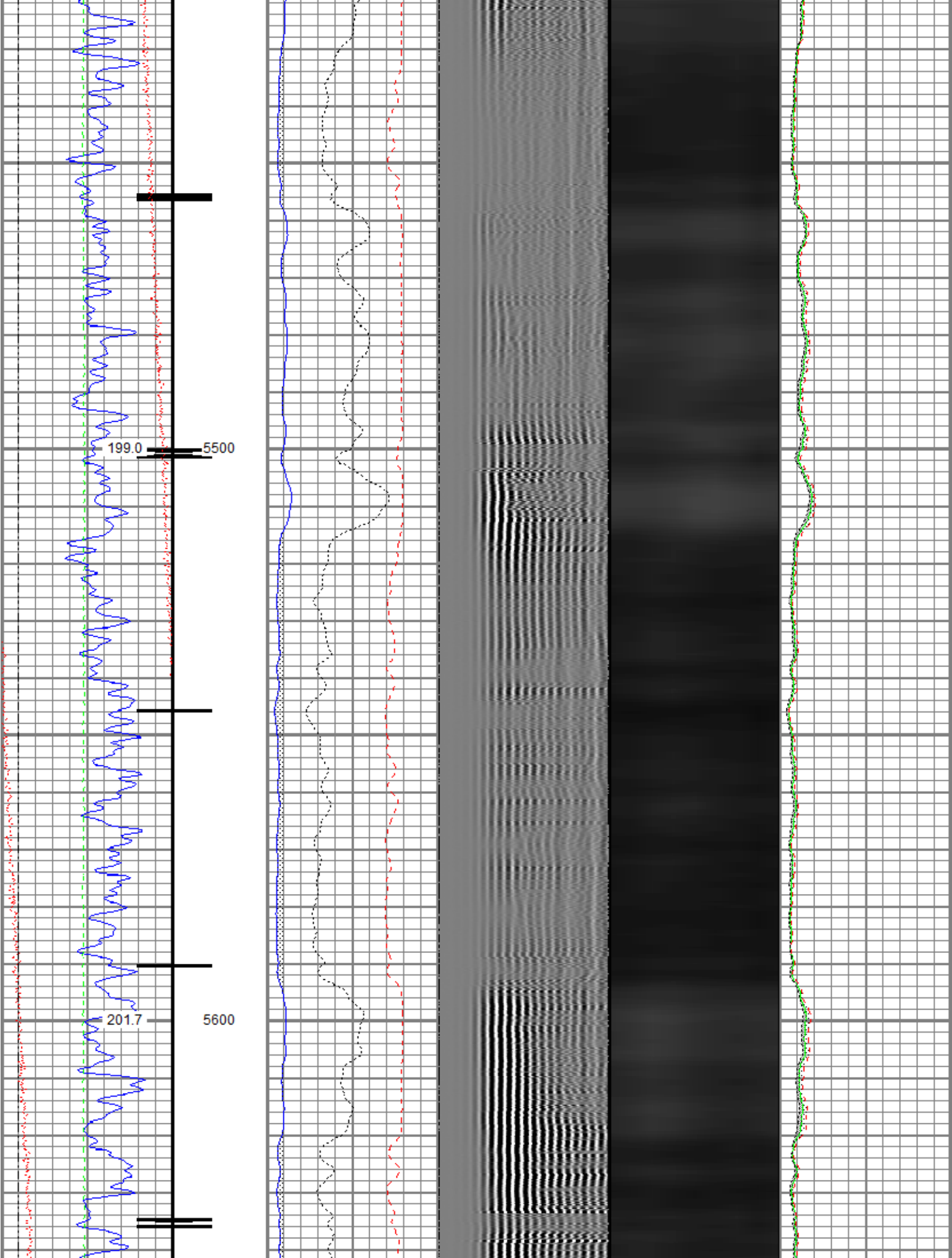


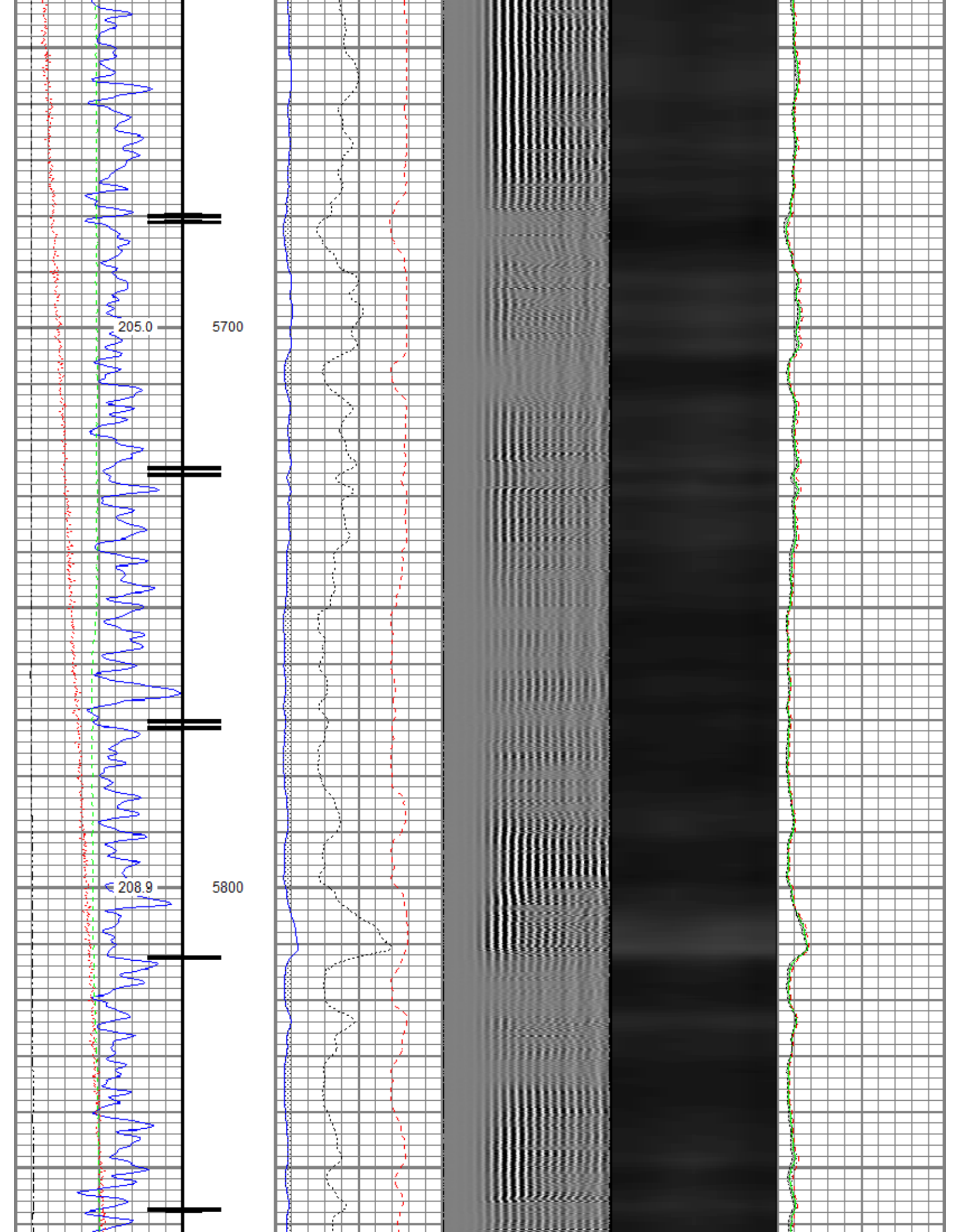


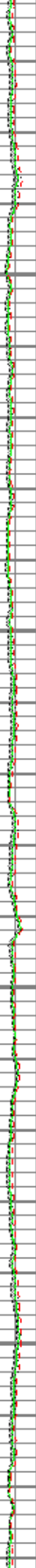
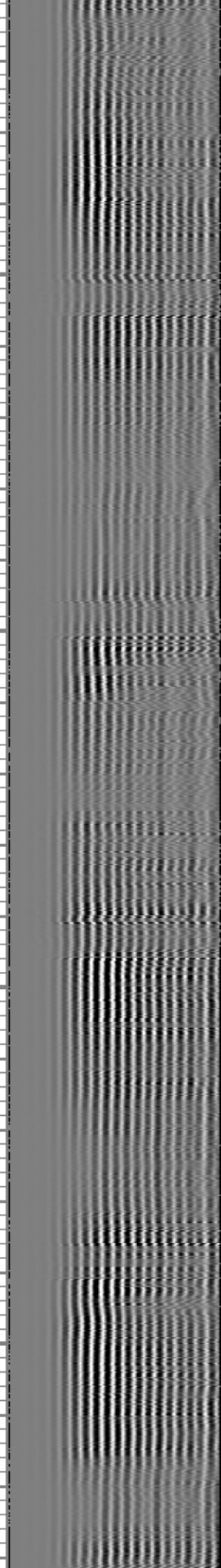
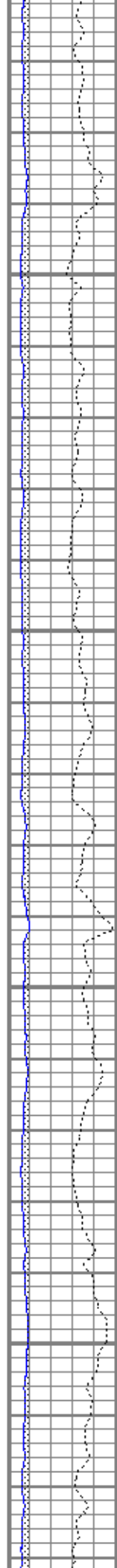
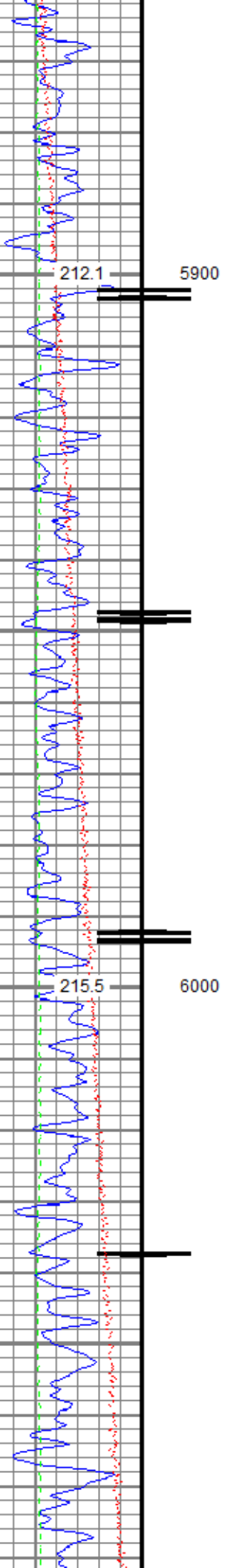


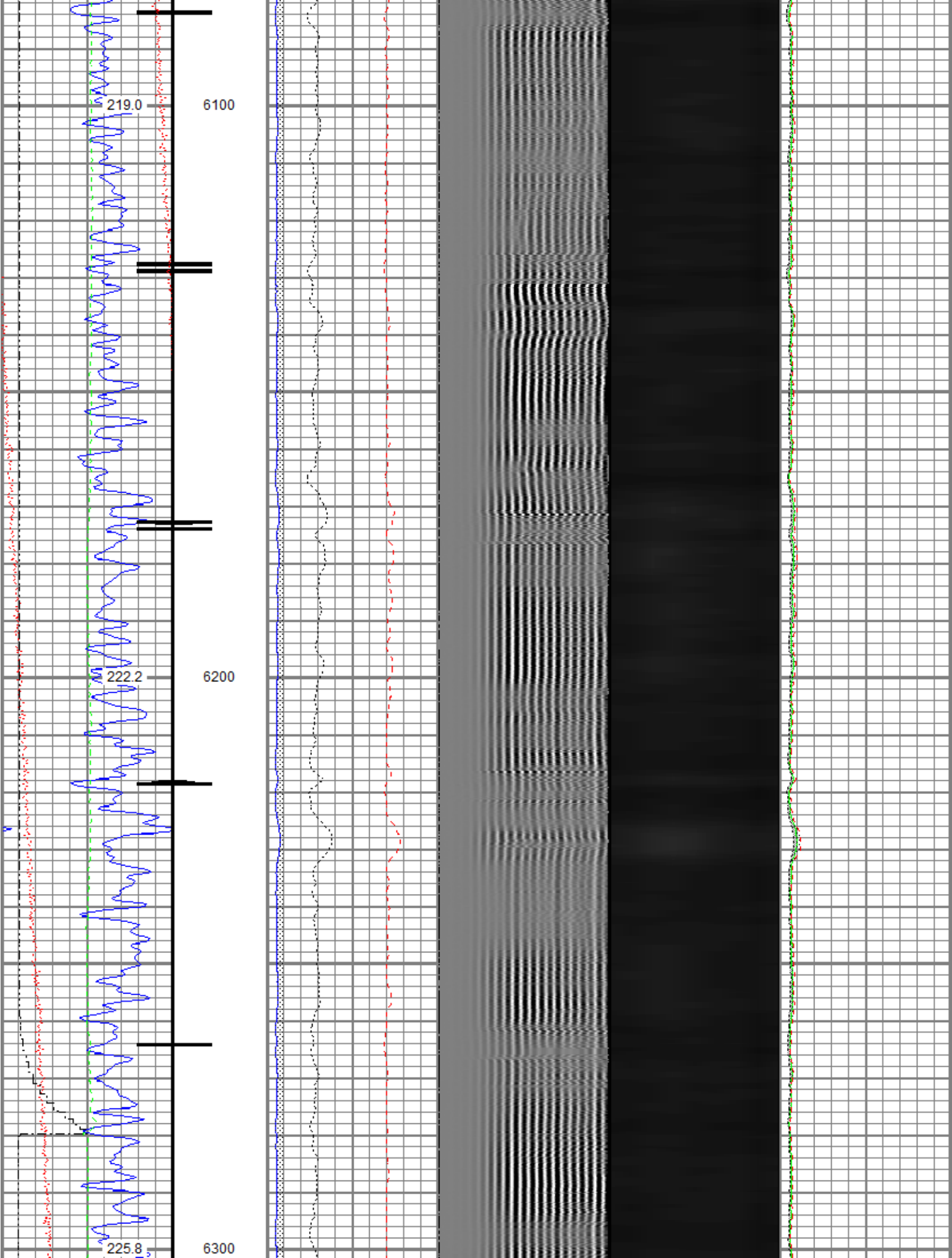


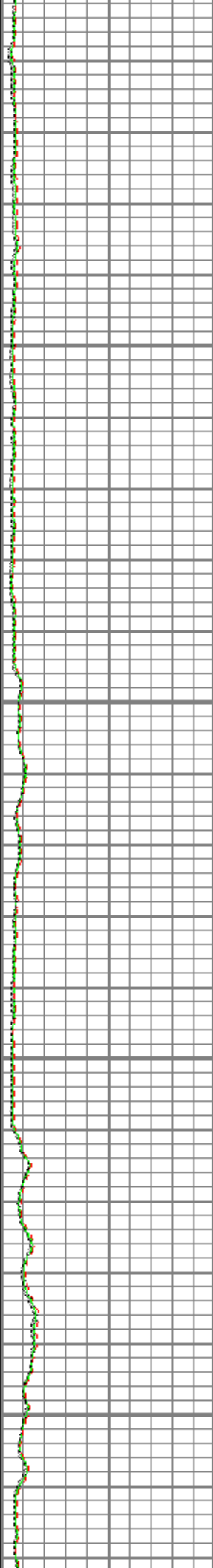
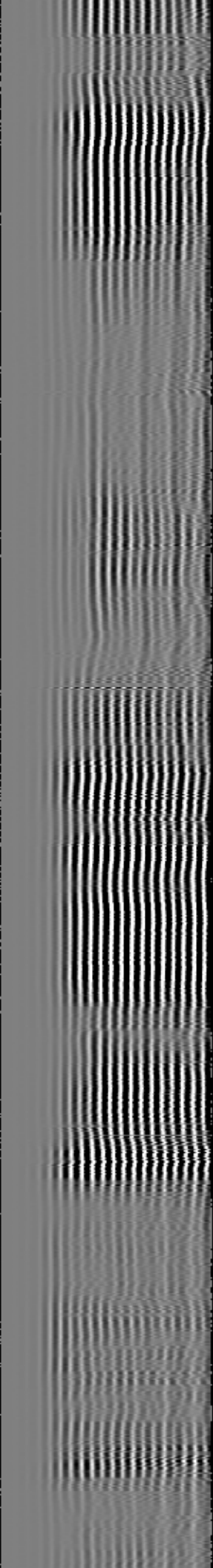
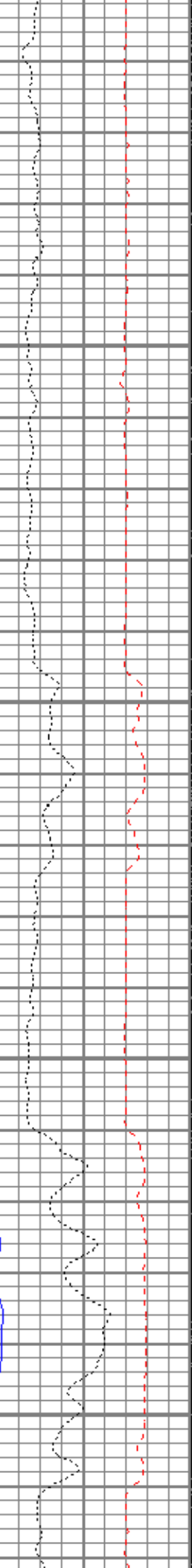
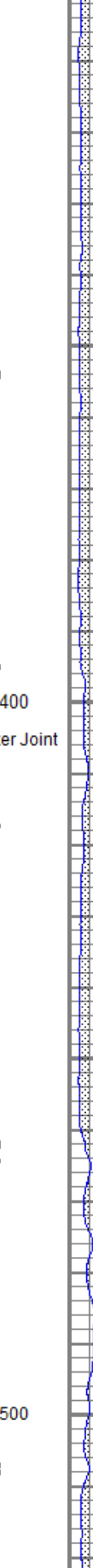
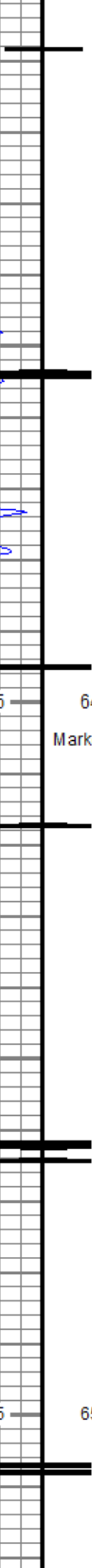
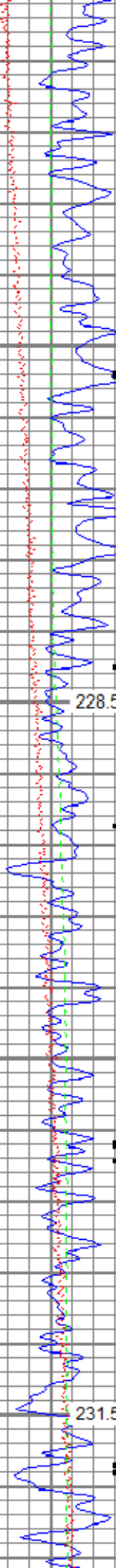
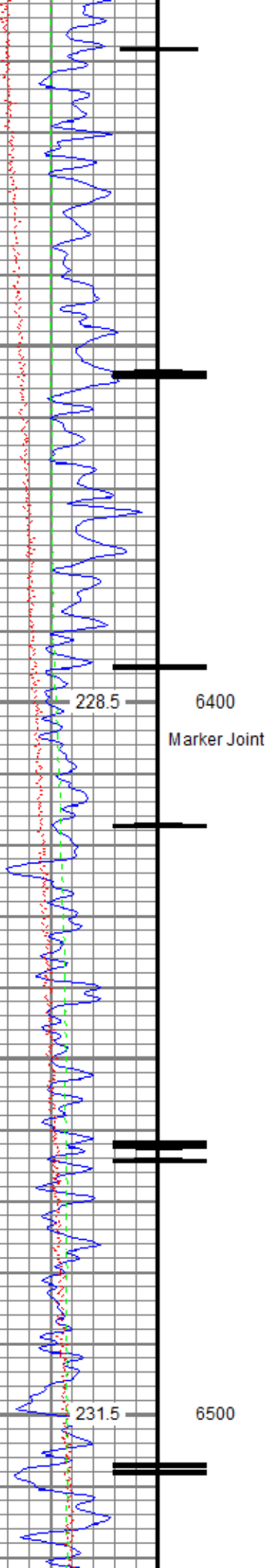


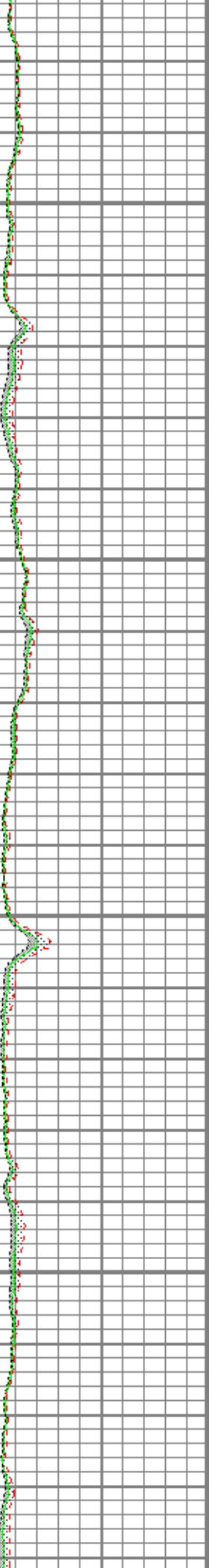
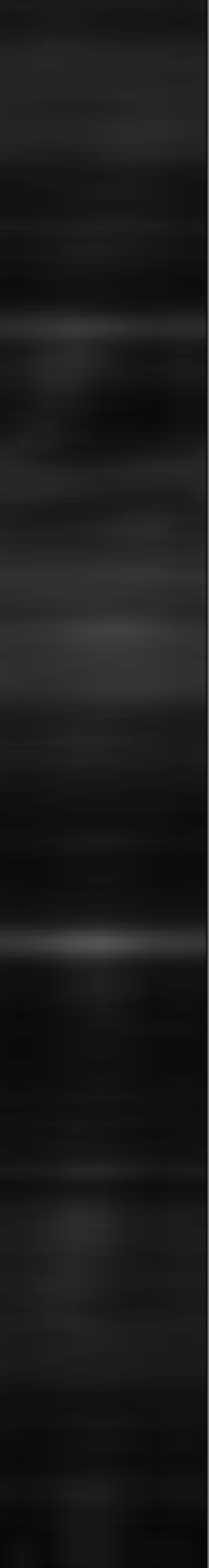
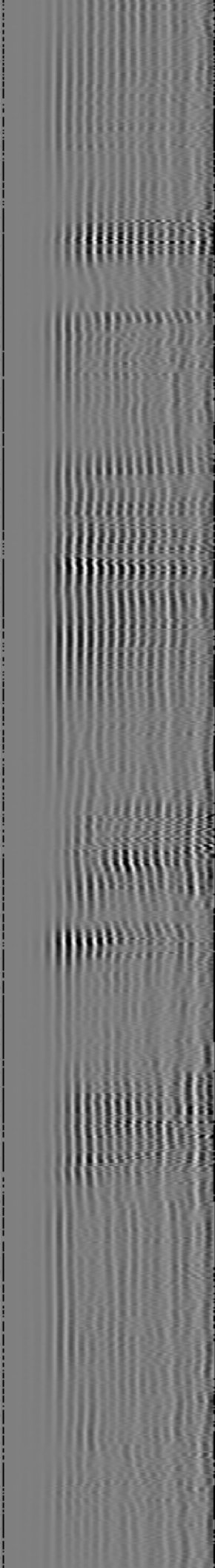
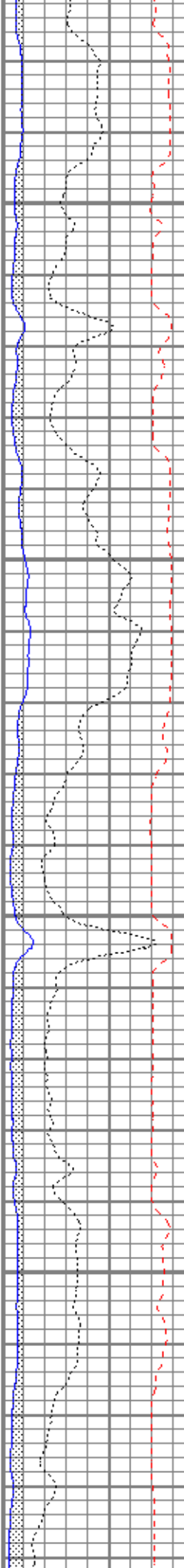
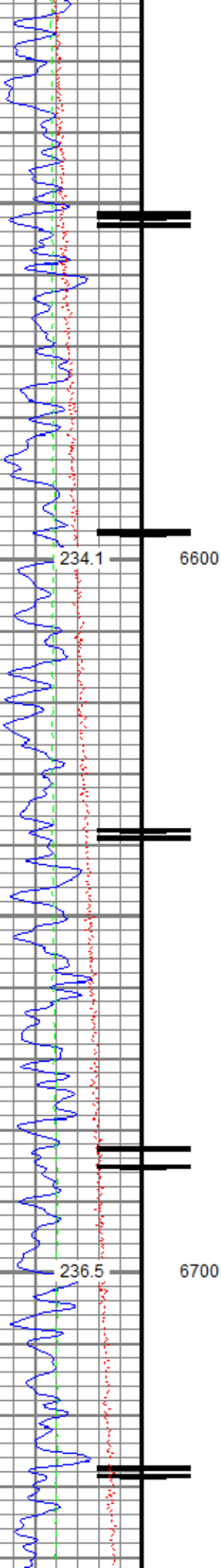


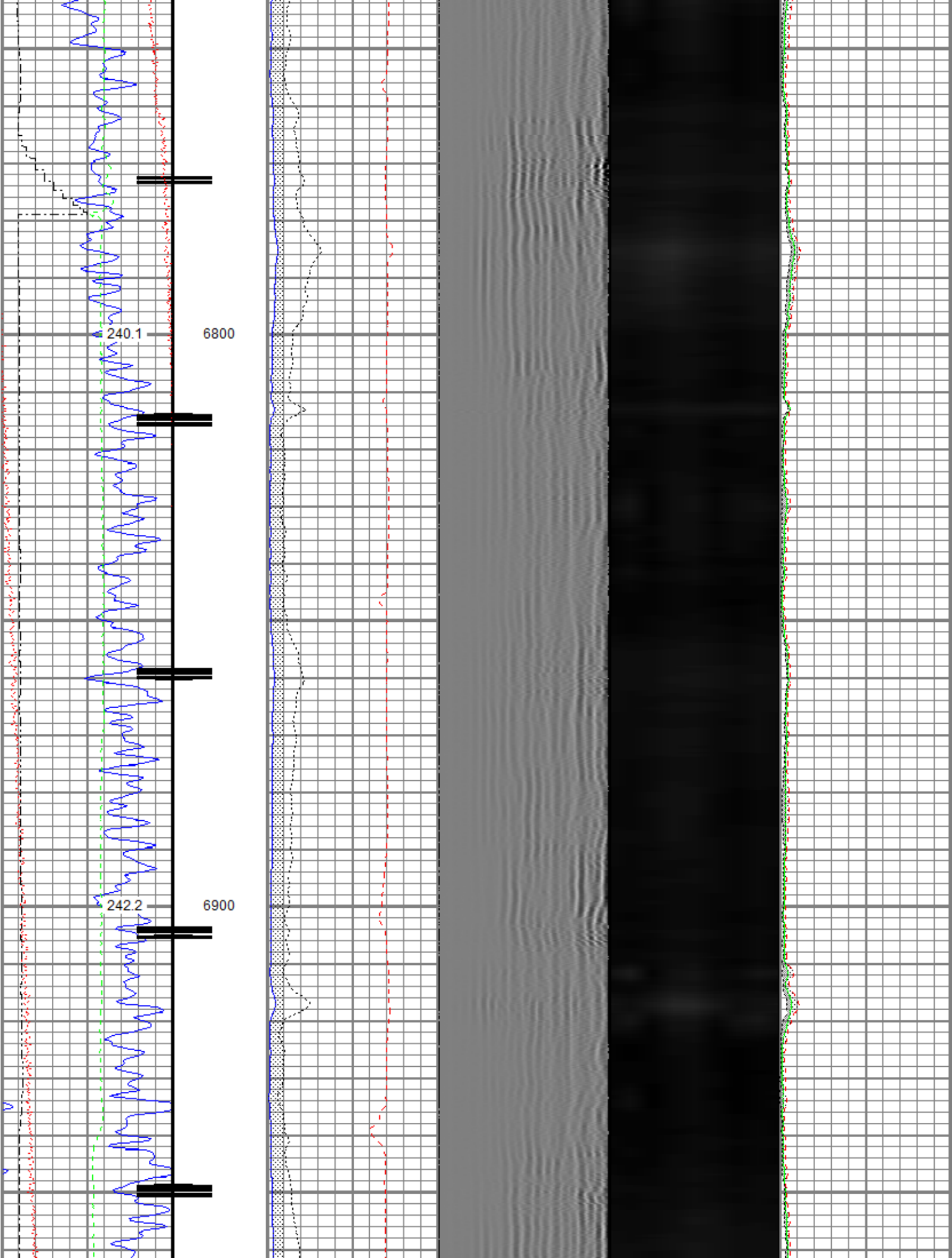


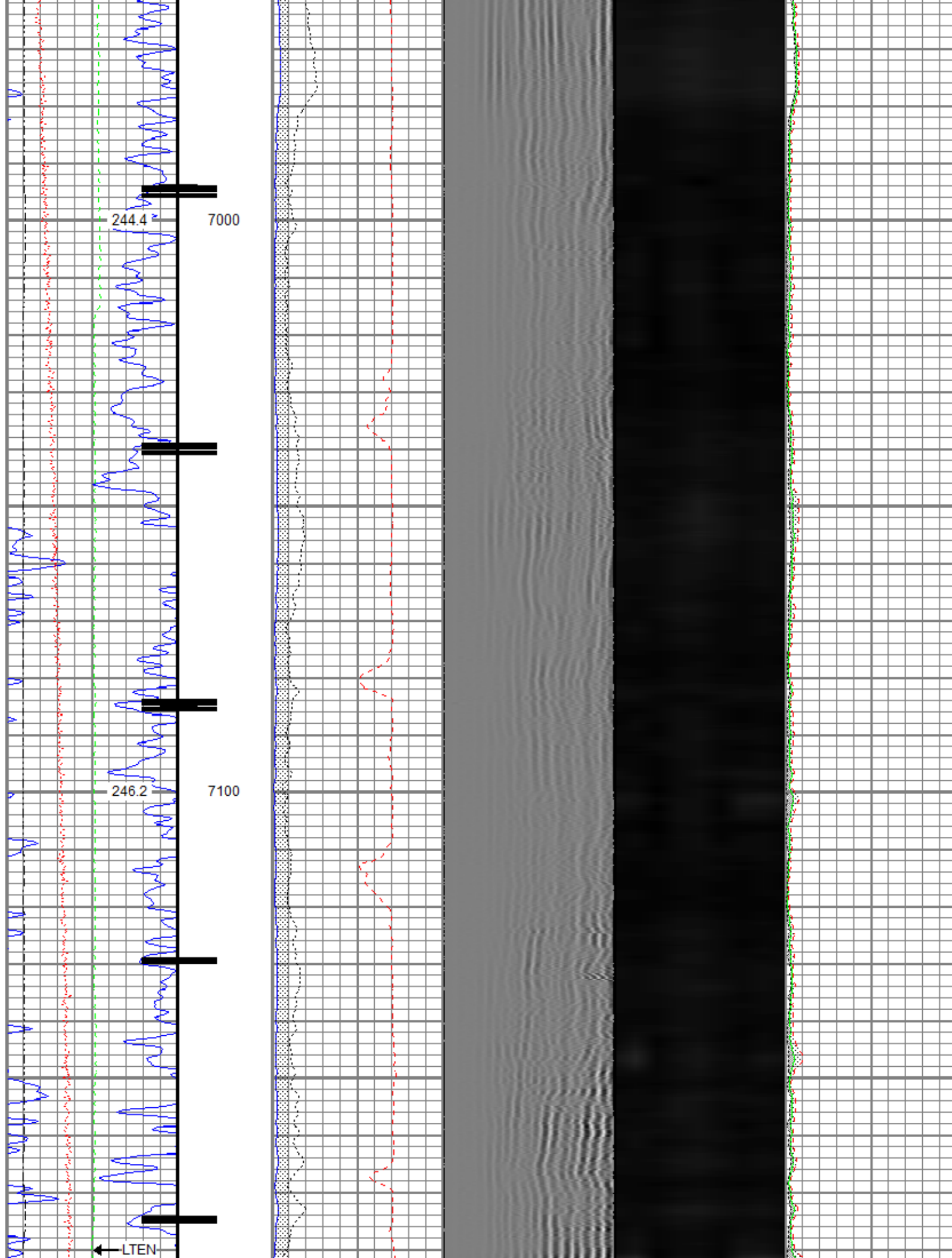


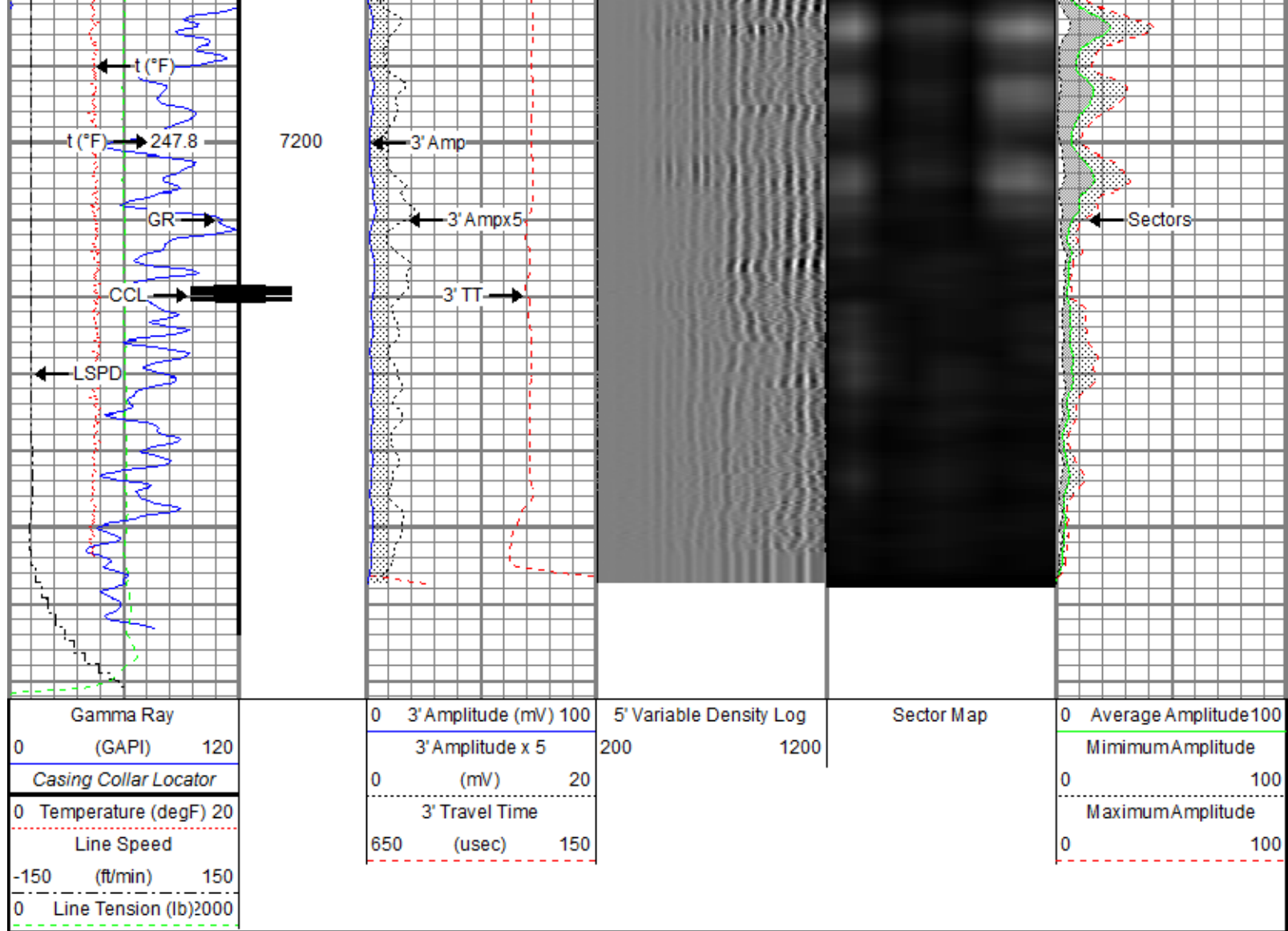








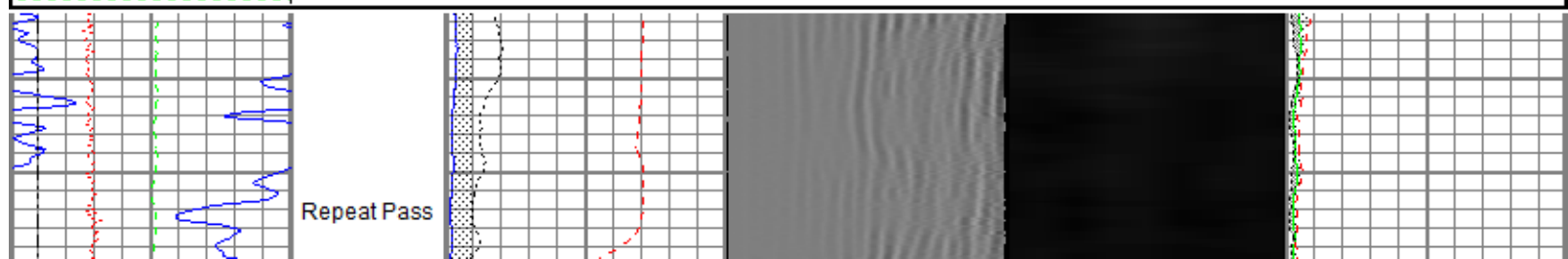
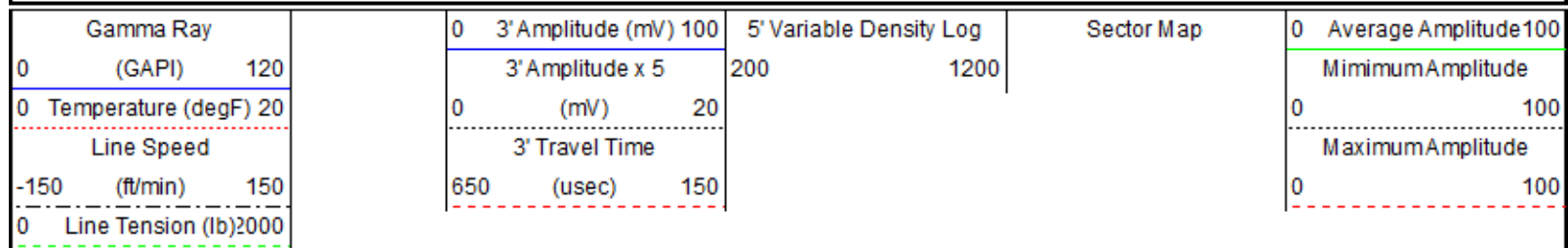


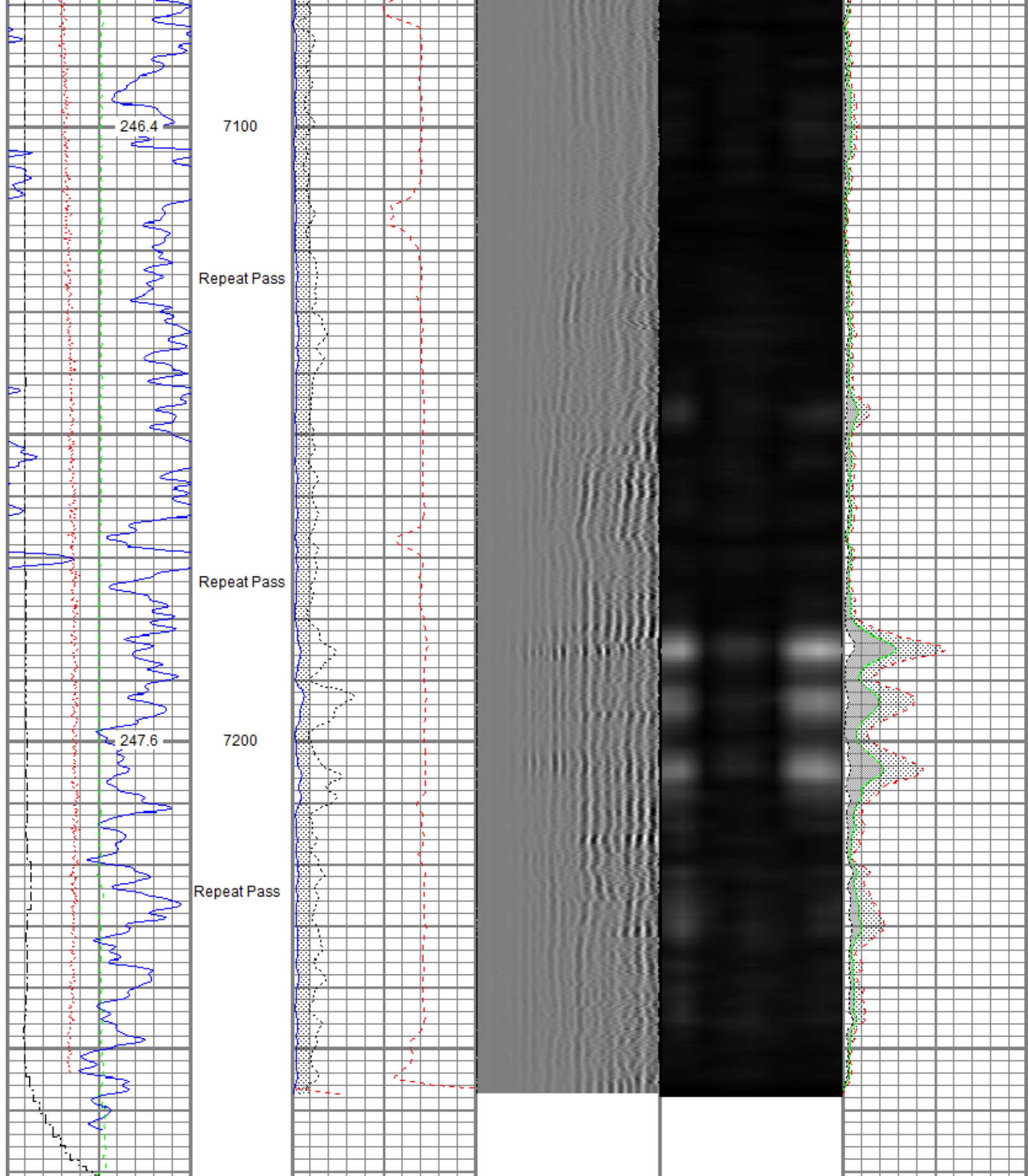


## Repeat Pass

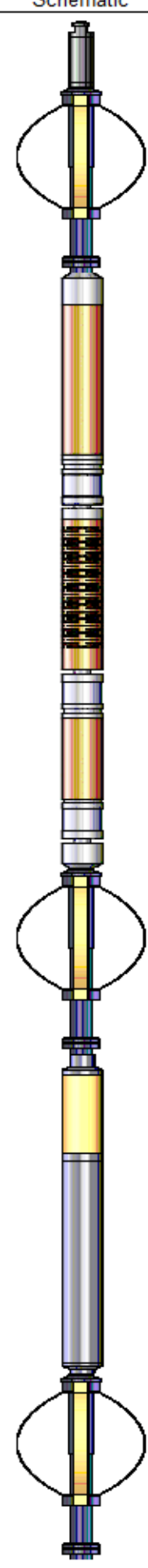
Recorded With 2800 PSI Surface Induced Pressure

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 Dataset Pathname: pass4.3  
 Presentation Format: ros\_radrii  
 Dataset Creation: Mon Nov 20 11:03:06 2017  
 Charted by: Depth in Feet scaled 1:240





Gamma Ray (GAPI)	0 120	3' Amplitude (mV)	0 100	5' Variable Density Log	Sector Map	Average Amplitude	0 100
Temperature (degF)	0 20	3' Amplitude x 5 (mV)	0 20	200 1200		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_EBSC.2.88 Probe 2-3/4" Electric Inline Bowspring Centralizer		2.75	20.00	
Temp	17.11						
WVFS8	14.95			Probe_RADII-C-P_RBT_2750 (FW1302-001) Probe 2-3/4" Sector Cement Bond Tool with Temperature Probe	9.19	2.75	105.00
WVFS7	14.95						
WVFS6	14.95						
WVFS5	14.95						
WVFS4	14.95						
WVFS3	14.95						
WVFS2	14.95						
WVFS1	14.95						
WVFCAL	14.95						
WVF3FT	14.95						
WVF5FT	13.95						
HeadVolt	10.70		Probe_ELine_BowSpring_Centralizer-P_EBSC.2.88 Probe 2-3/4" Electric Inline Bowspring Centralizer		2.75	20.00	
DCCL	6.79						
CCL	6.79						
GR	5.54		Probe_GR_CCL-P_CGR_2750_S6PB (FW13024.94) Probe 2-3/4" Digital CCL / Gamma Ray Combined with 6pin bottom for CNs		2.75	57.00	
			Probe_ELine_BowSpring_Centralizer-P_EBSC.2.88 Probe 2-3/4" Electric Inline Bowspring Centralizer		2.75	20.00	

Dataset: processed\_0512344751\_anadarko\_rw 1n-5hz\_rbl\_11-19-17.db: field/well/run1/pass6.3  
 Total length: 23.80 ft  
 Total weight: 227.40 lb

Calibration Report

Database File c:\programdata\warrior\data\0512344751\_anadarko\_rw 1n-5hz\_rbl\_11-19-17\processed\_0512344751\_anadarko\_rw 1n-5hz\_rbl  
 Dataset Pathname pass6.3  
 Dataset Creation Mon Nov 20 10:57:12 2017

Gamma Ray Calibration Report

Serial Number: FW1302-010  
 Tool Model: P\_CGR\_2750\_S6PB  
 Performed: Sat Feb 06 11:35:27 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: FW1302-001  
 Tool Model: P\_RBT\_2750  
 Calibration Casing Diameter: 5.500 in  
 Calibration Depth: 39.264 ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.000	0.647	0.800	71.921	110.047	0.770
CAL	0.006	0.734				
5'	0.000	0.612	0.800	71.921	116.193	0.777
SUM						
S1	0.000	0.662	0.000	100.000	151.223	-0.041
S2	0.000	0.659	0.000	100.000	151.813	-0.064
S3	0.000	0.648	0.000	100.000	154.280	-0.031
S4	0.000	0.654	0.000	100.000	153.069	-0.061
S5	0.001	0.664	0.000	100.000	150.695	-0.086
S6	0.000	0.655	0.000	100.000	152.725	-0.057
S7	0.000	0.662	0.000	100.000	151.104	-0.038
S8	0.000	0.664	0.000	100.000	150.639	-0.049

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.006	0.734	1.000	0.000

Air Zero Calibration, performed Sun Nov 19 08:04:15 2017:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
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	

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



<b>Company</b>	Kerr-McGee Oil & Gas Onshore, L.P.
<b>Well</b>	RW 1N-5HZ
<b>Field</b>	Wattenberg
<b>County</b>	Weld
<b>State</b>	Colorado