



Radial Cement Bond  
Gamma Ray  
Casing Collar Log

Company Kerr-McGee Oil & Gas Onshore, L.P.

Well Cummings 19-5HZ

Field Wattenberg

County Weld State Colorado

Location: API #: 05-123-50817

SEC 19 TWP 5N RGE 67W

Permanent Datum Ground Level Elevation 4856'

Log Measured From Kelly Bushing

20 FT

Drilling Measured From

Kelly Bushing

Other Services  
JBGR  
RBP  
Elevation  
K.B. 4876'  
D.F. ---  
G.L. 4856'

Company Kerr-McGee Oil & Gas Onshore, L.P.  
Well Cummings 19-5HZ  
Field Wattenberg  
County Weld  
State Colorado

Date	09-FEB-2021									
Run Number	Two									
Depth Driller	17440 FT									
Depth Logger	6494 FT									
Bottom Logged Interval	6482 FT									
Top Log Interval	Surface									
Open Hole Size	7.875"									
Type Fluid	Water									
Density / Viscosity	8.34 lb/gal									
Max. Recorded Temp.	201°F									
Estimated Cement Top	See Log									
Time Well Ready	ROA									
Time Logger on Bottom	16:41									
Equipment Number	HD-324									
Location	Platteville, CO									
Recorded By	Jason Morrison									
Witnessed By	Chris Hayes									
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	Surface	1884 FT					
Intermediate #1	5 1/2	17	HCP-110	Surface	17427 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 6420 FT  
Adjusted +1 FT to correlate with Marker Joint  
Gauge Ring/Junk Basket ran to 7358 FT  
Retrievable Bridge Plug set at 6500 FT  
Log ran 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!!

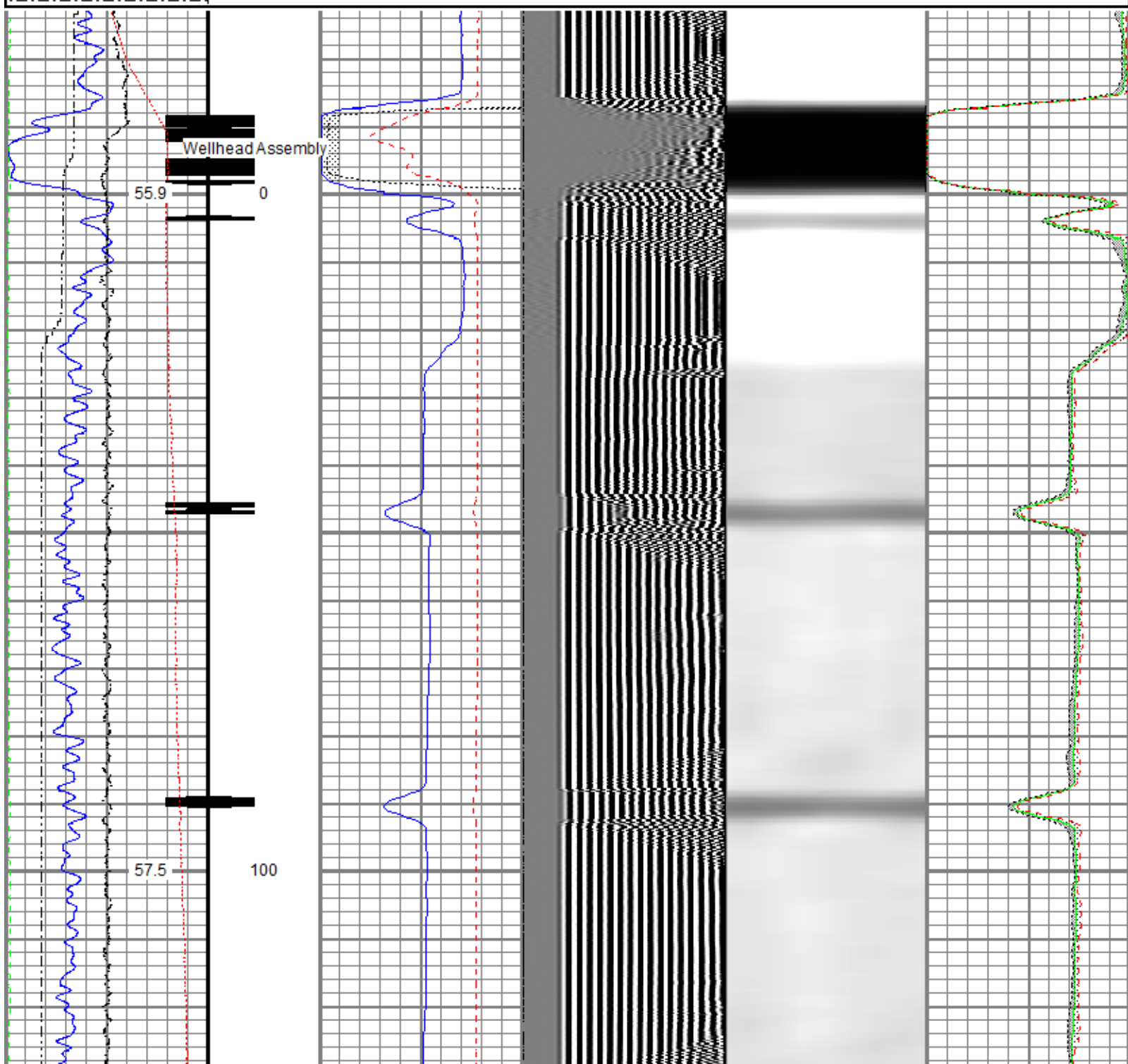
Main Pass

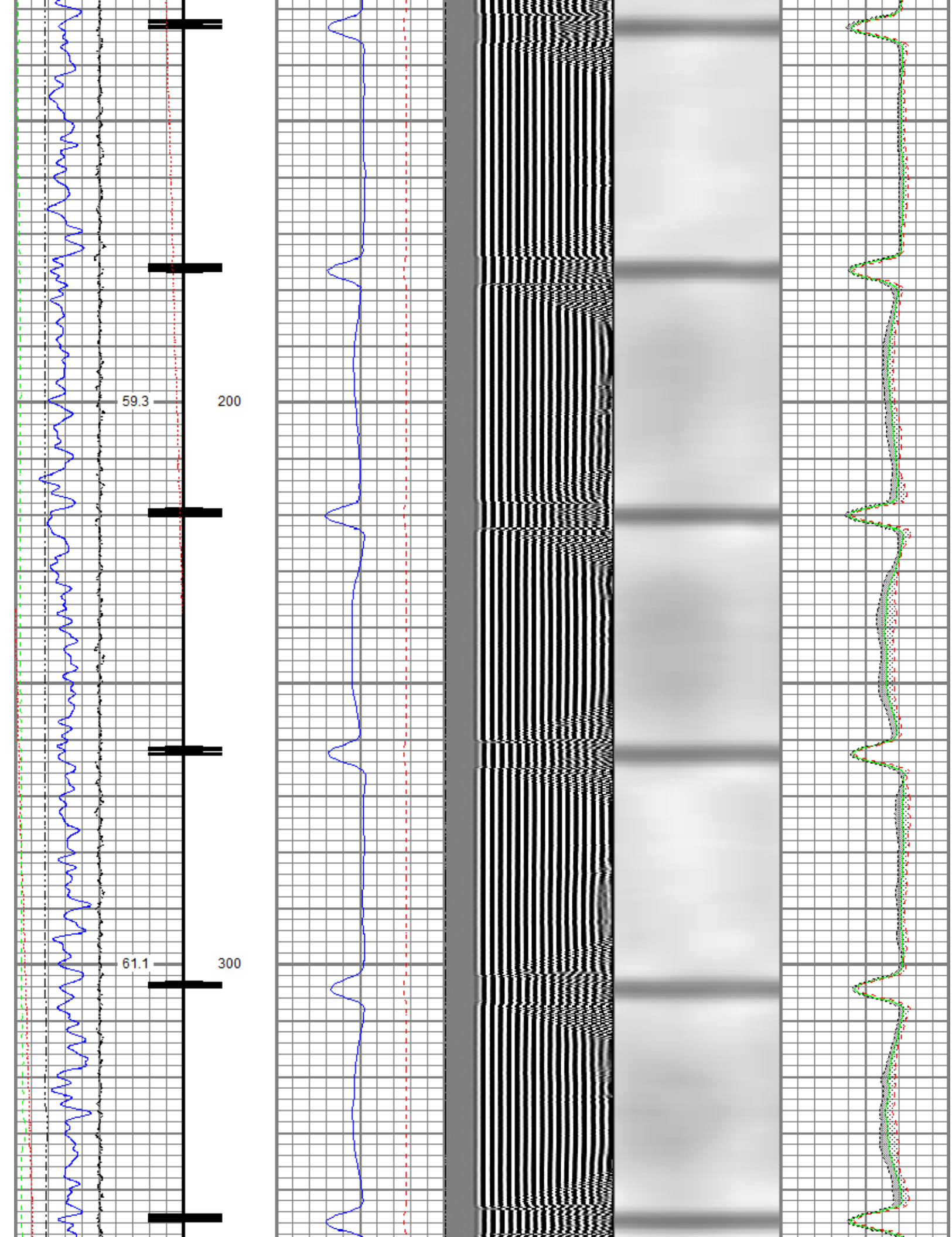


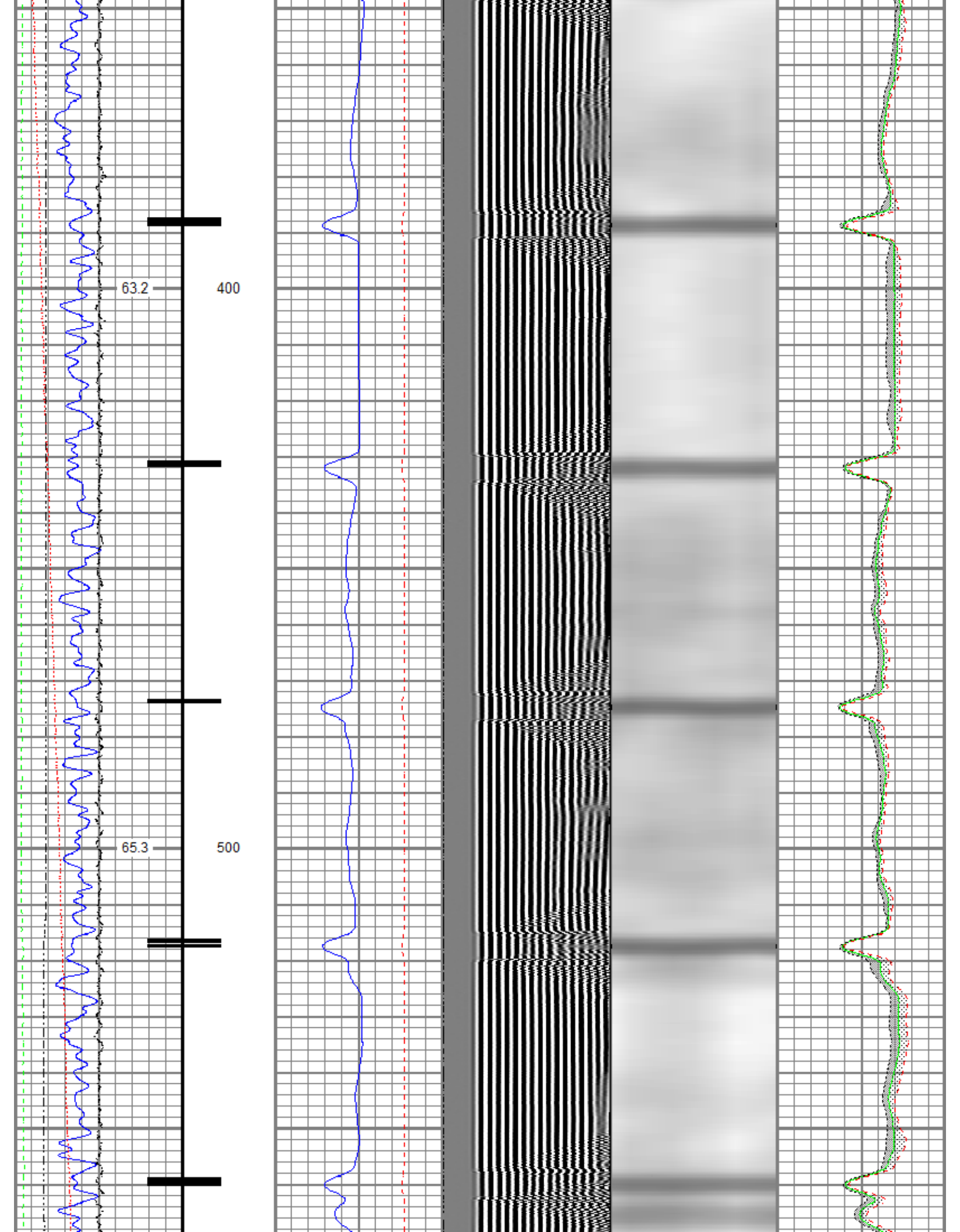
Recorded With 2800 PSI Surface Induced Pressure

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 Presentation Format ros\_radri  
 Dataset Creation Wed Feb 10 15:17:19 2021  
 Charted by Depth in Feet scaled 1:240

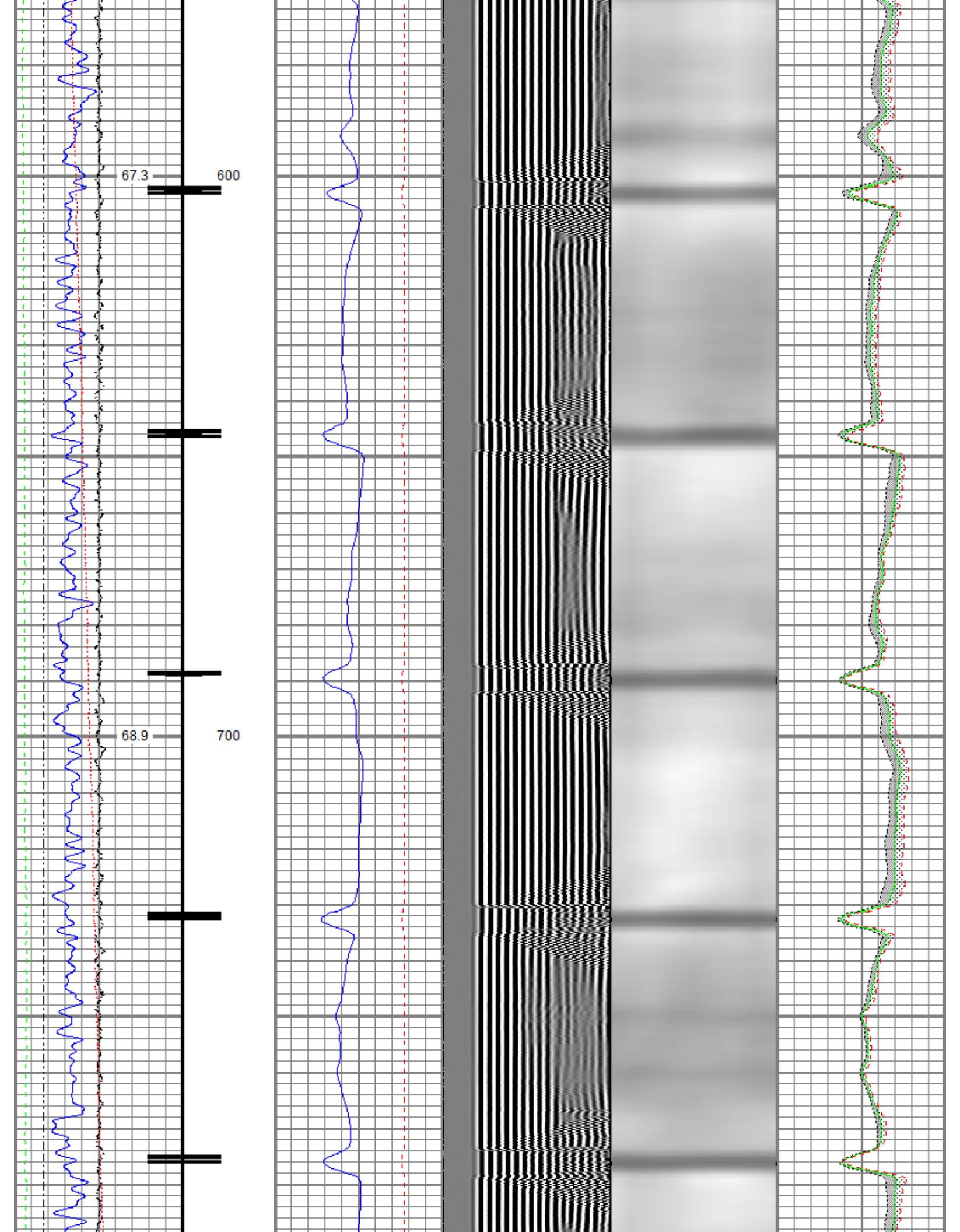
Gamma Ray	0	3' Amplitude (mV)	100	5' Variable Density Log	Sector Map	0	Average Amplitude	100
(GAPI)	120	3' Amplitude x 5	200	(u sec)	1200		Minimum Amplitude	
Casing Collar Locator		0	(mV)	20		0	100	
0 Temperature (degF)	20	3' Travel Time					Maximum Amplitude	
Line Speed		650	(u sec)	150		0	100	
-150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

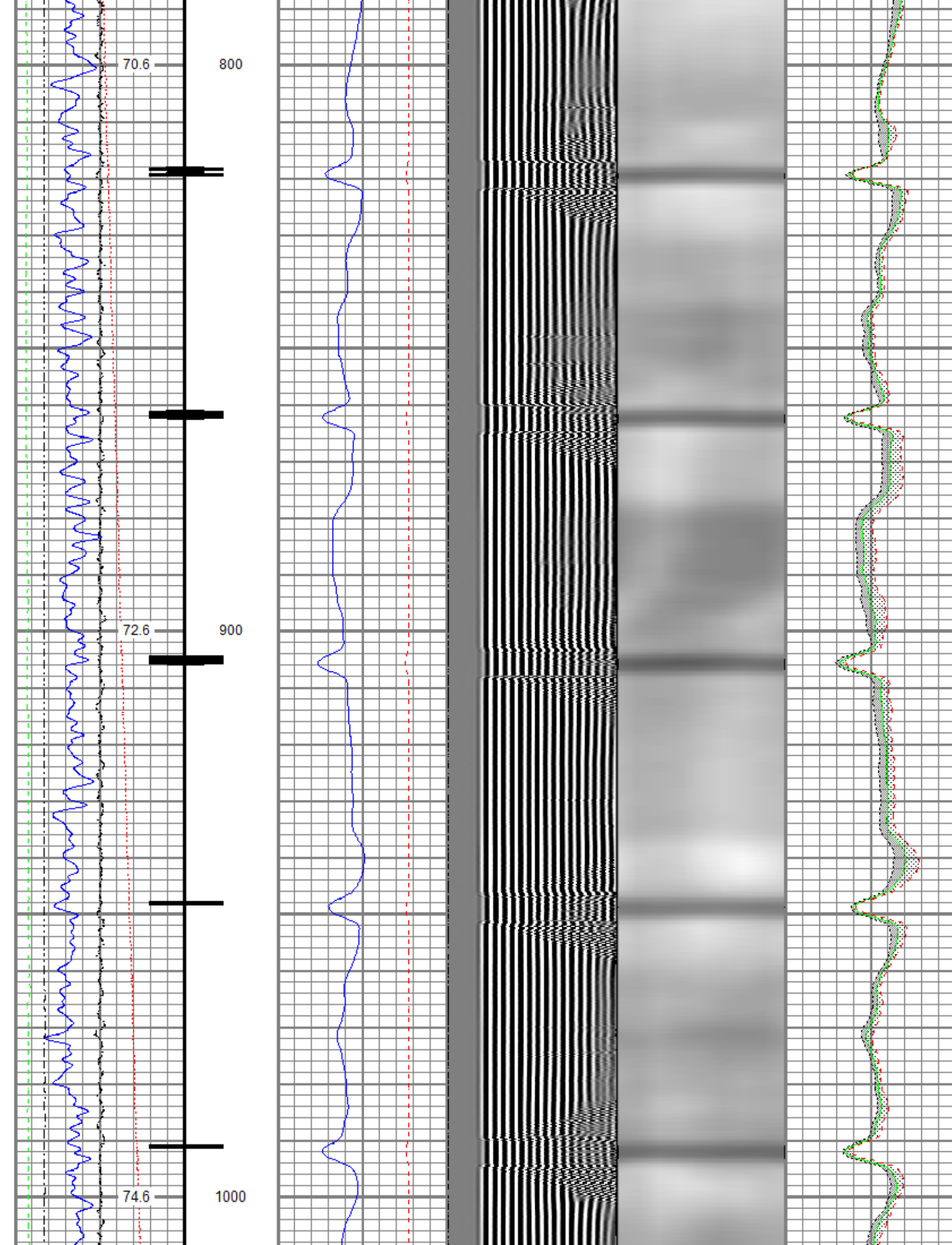


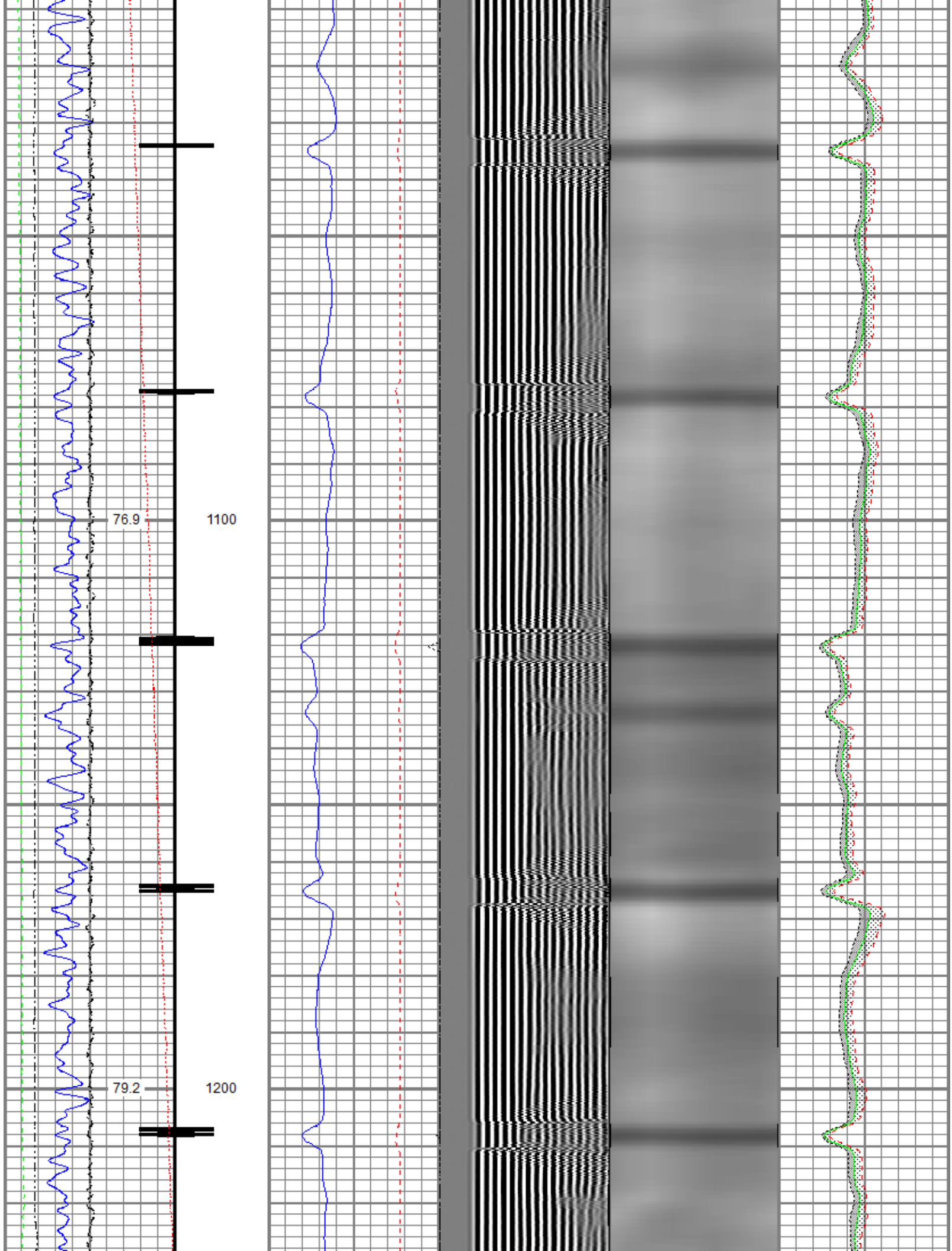


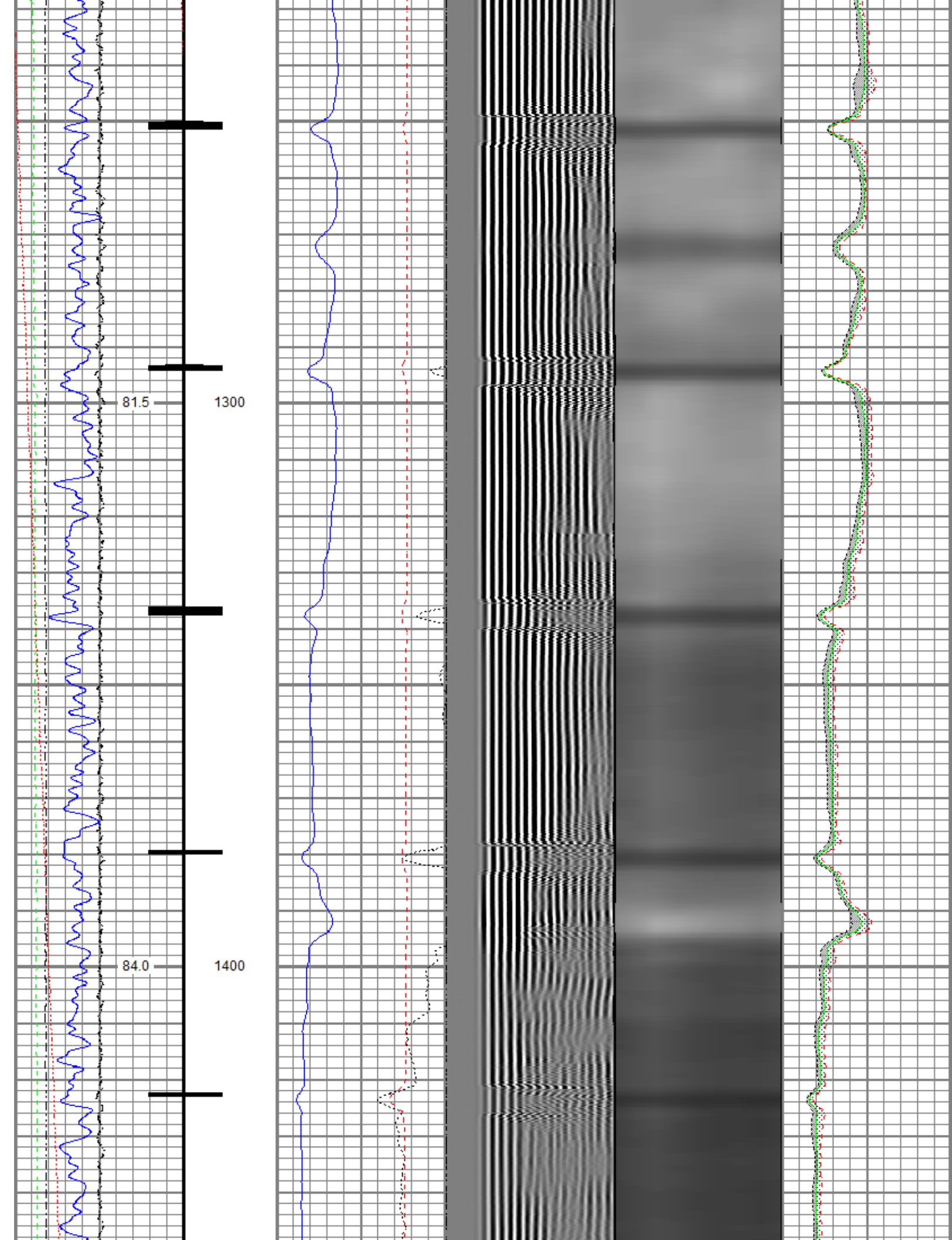




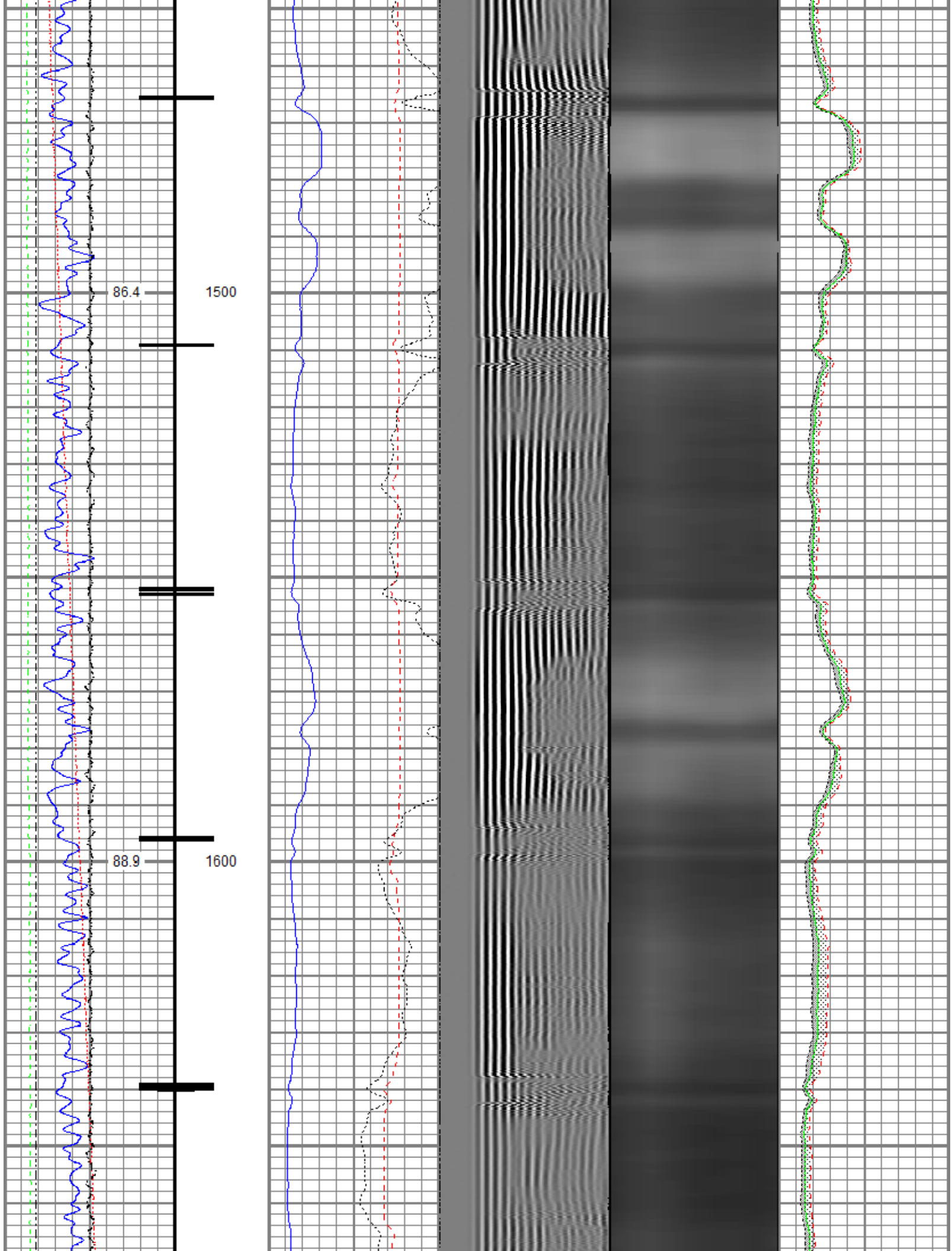


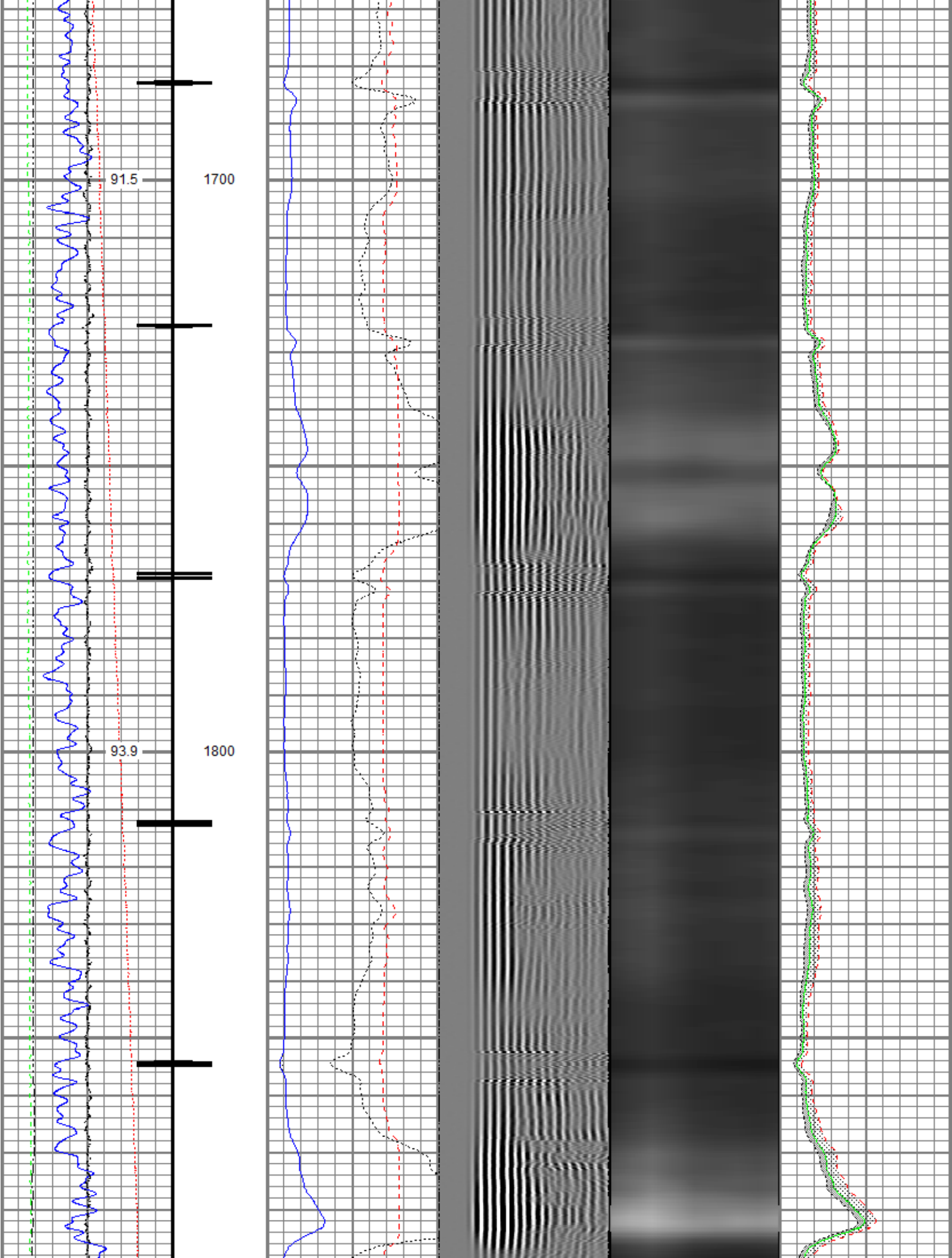


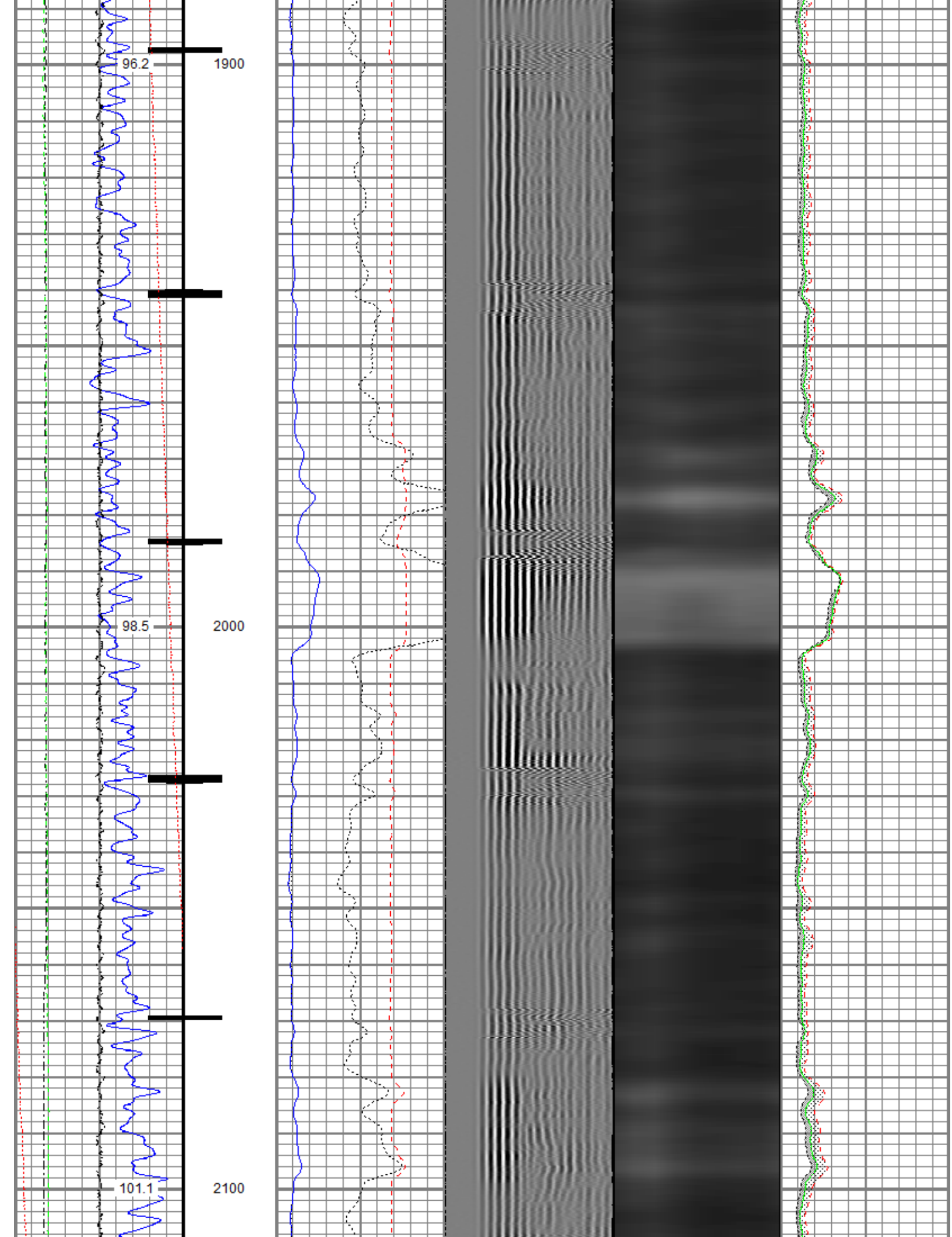


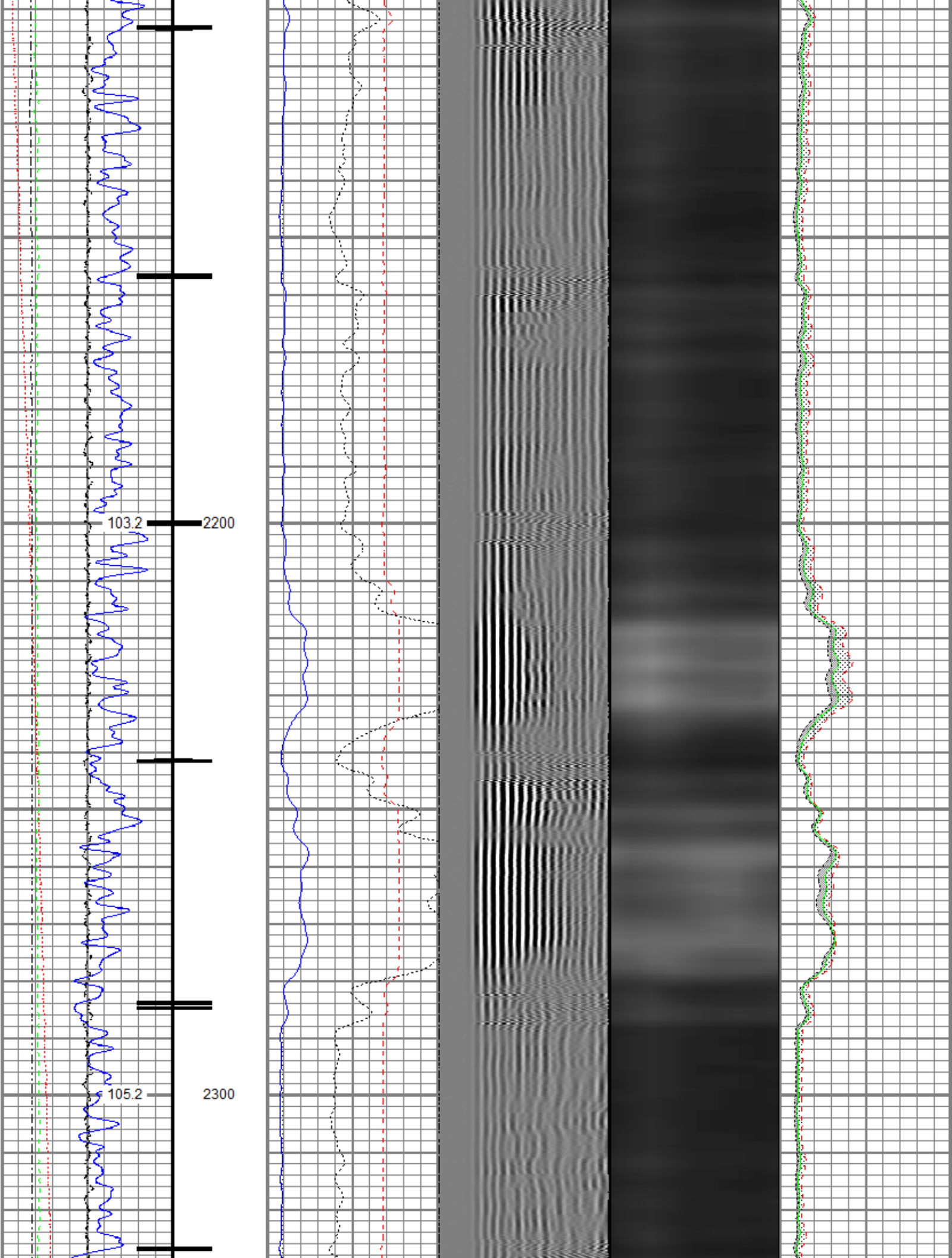




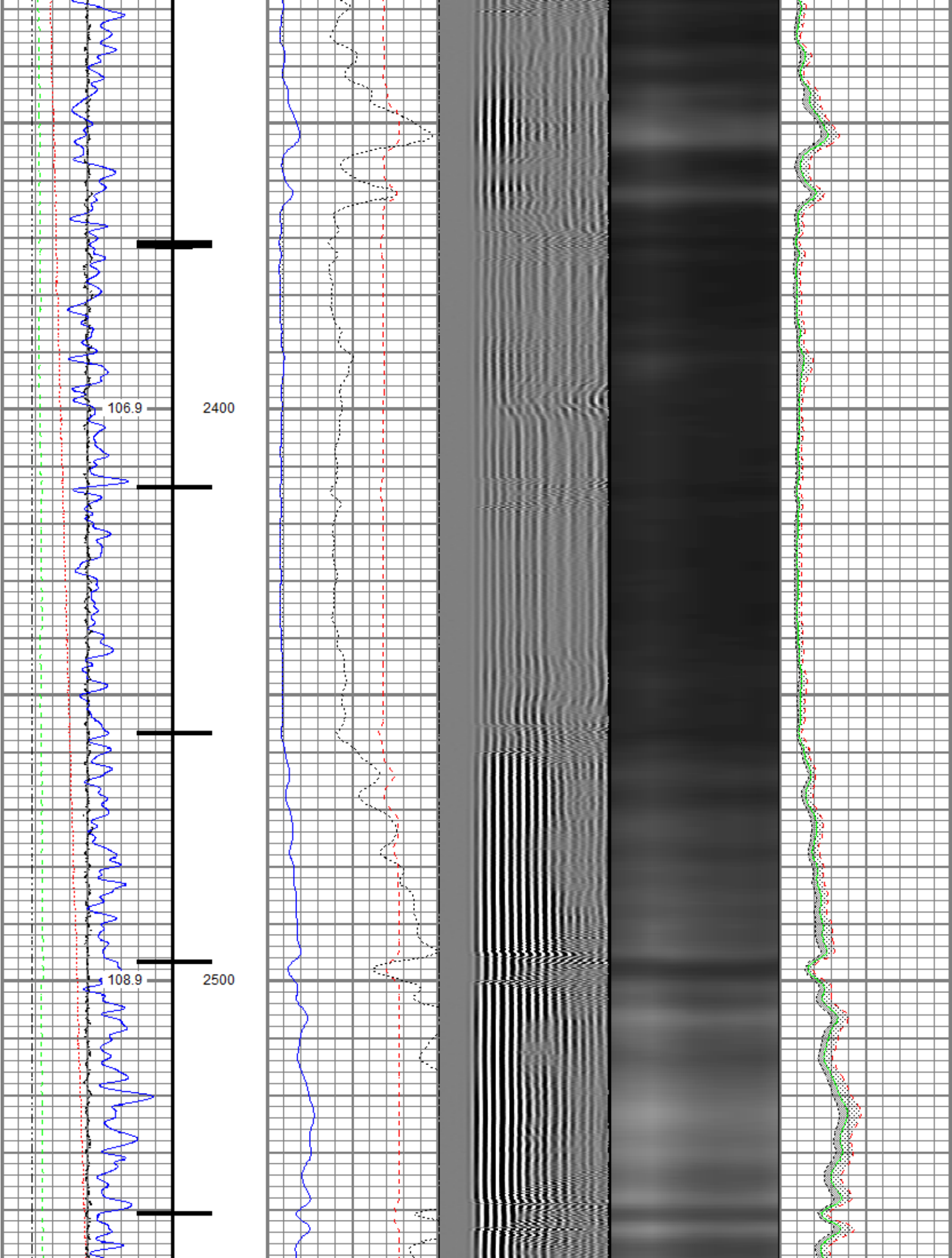


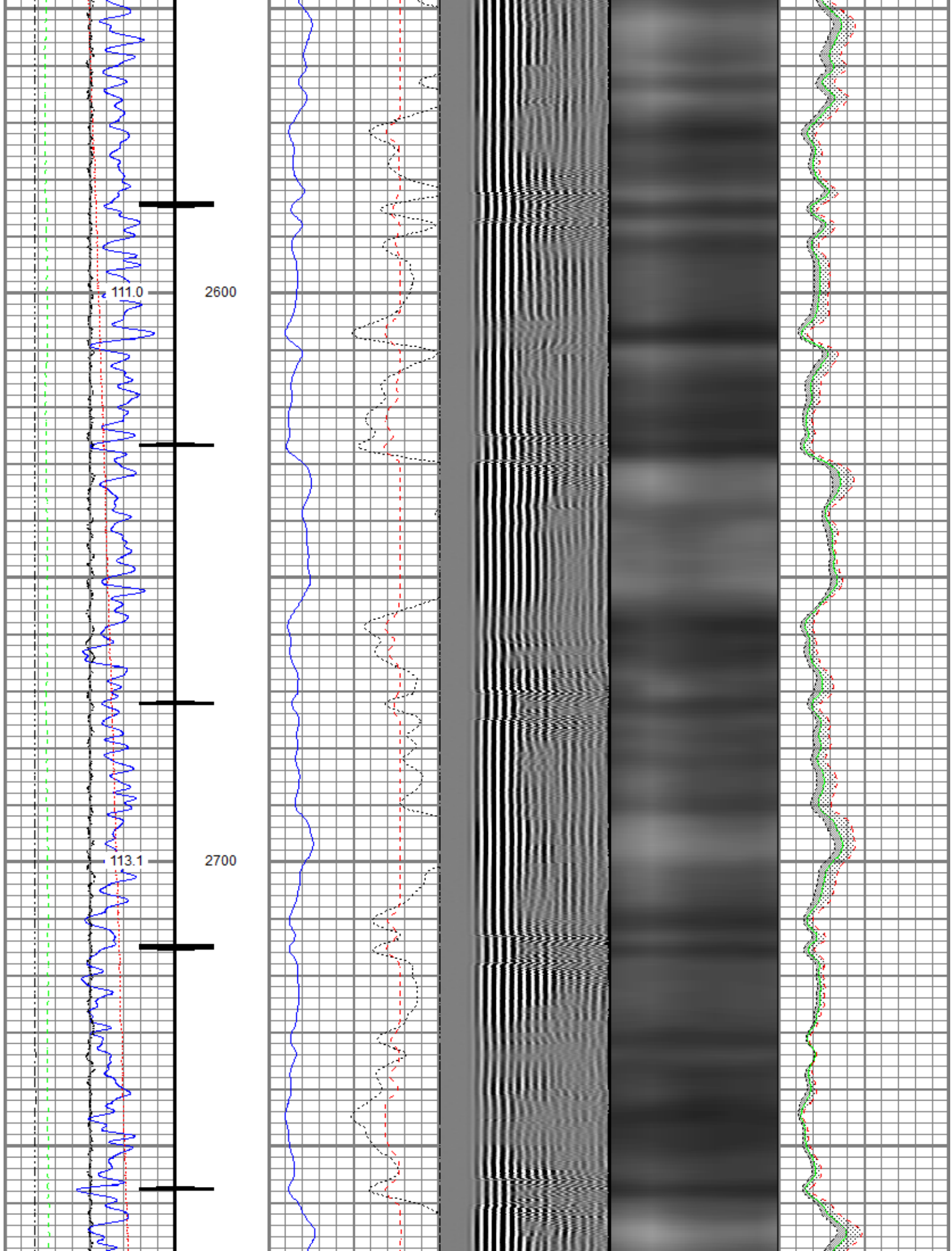


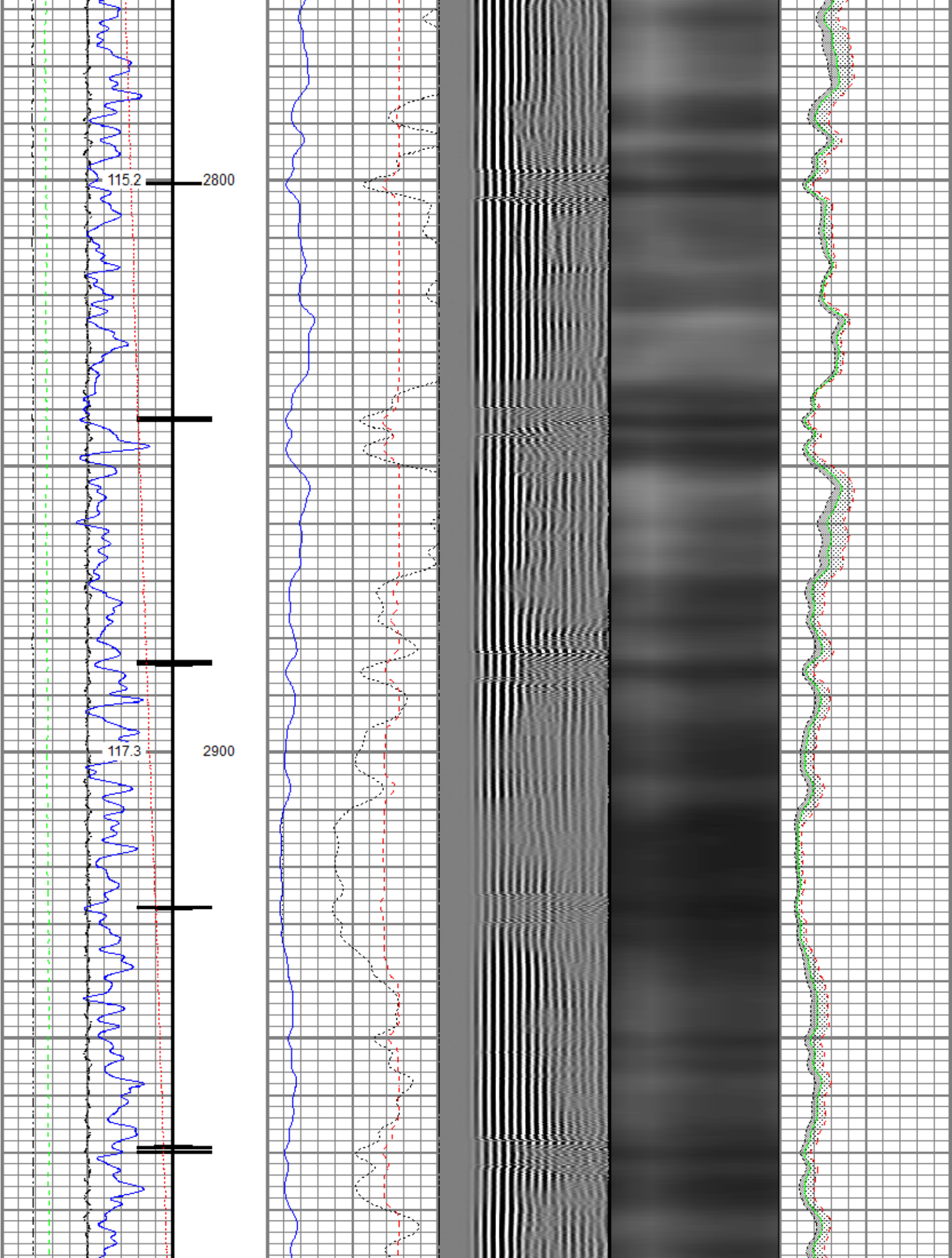




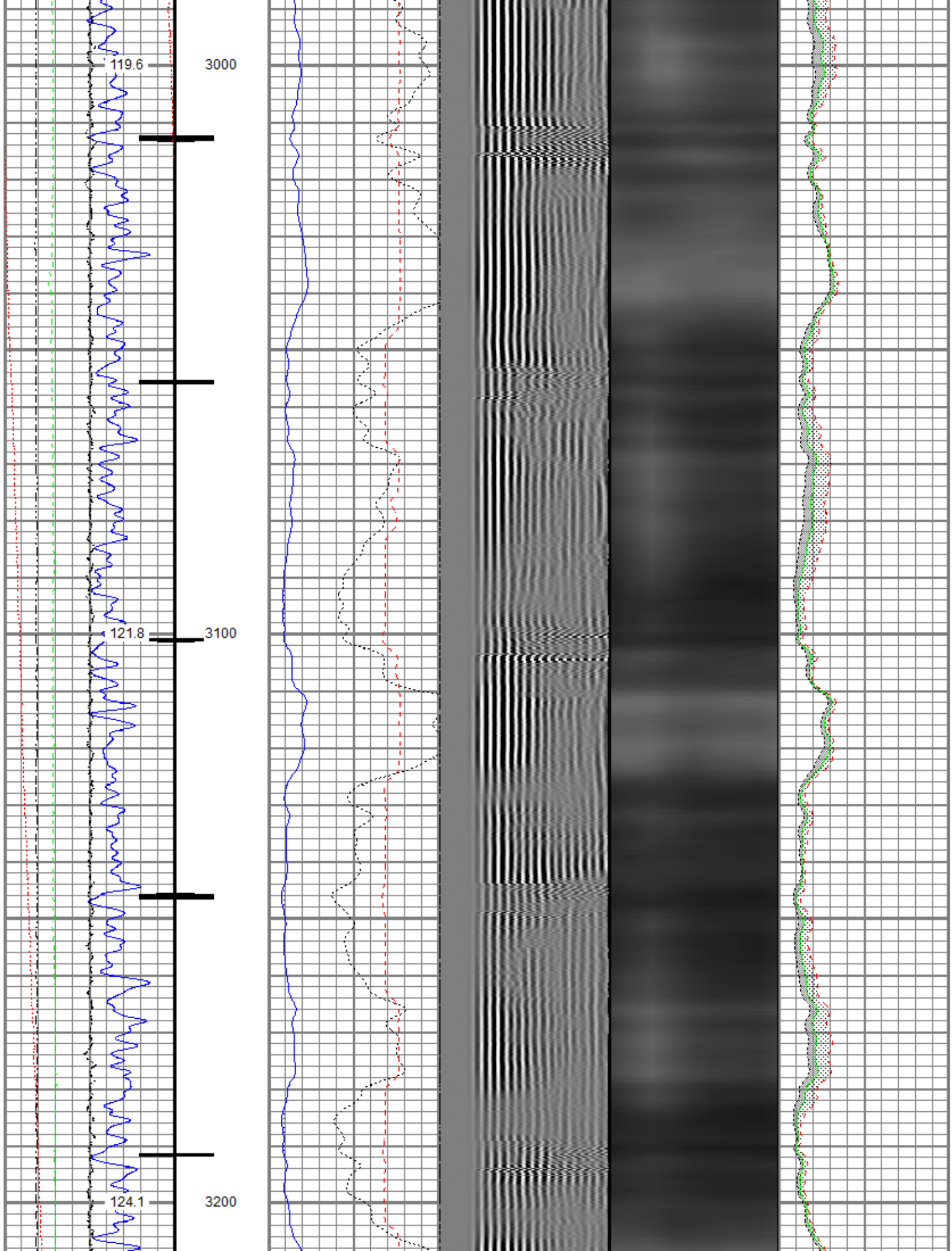




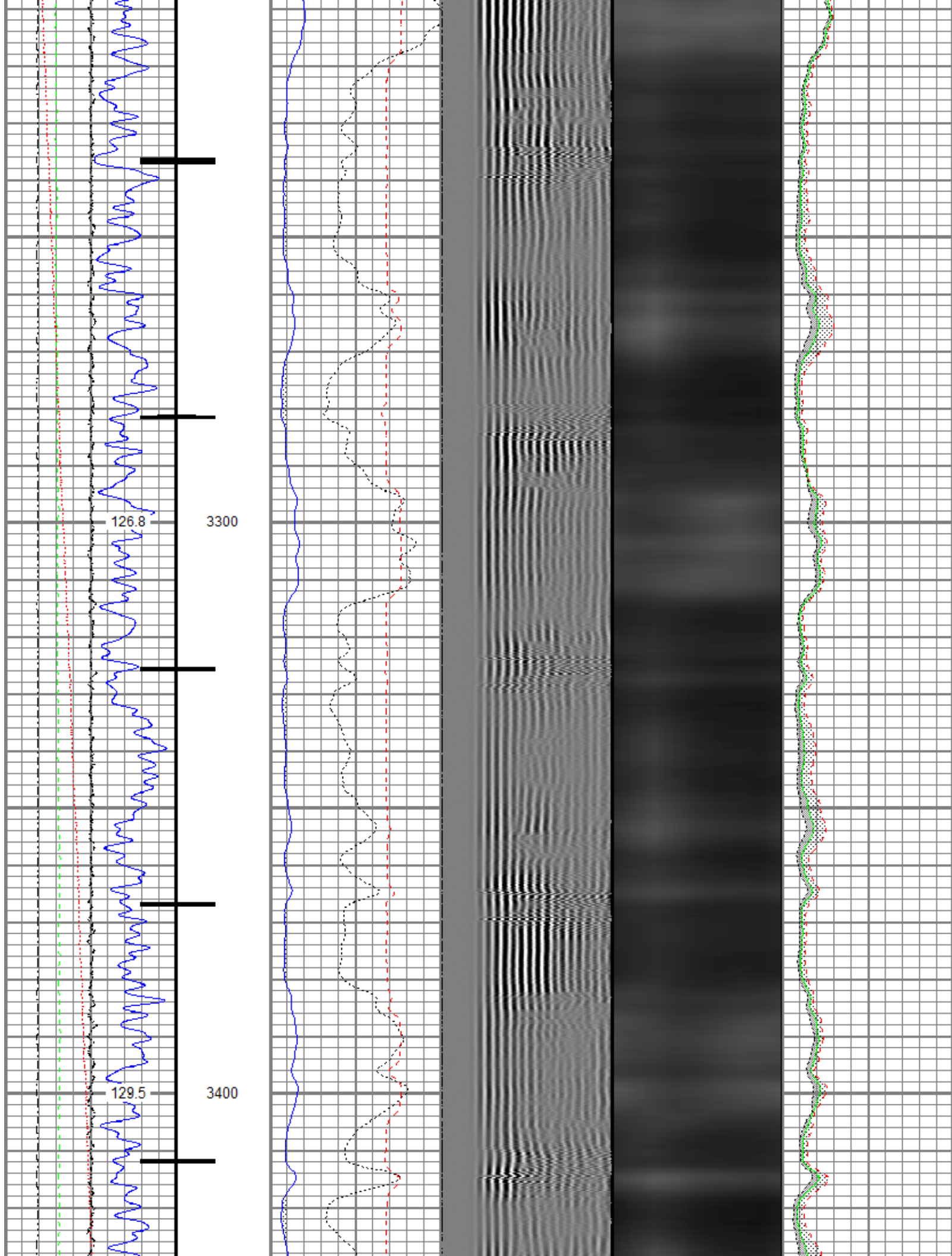


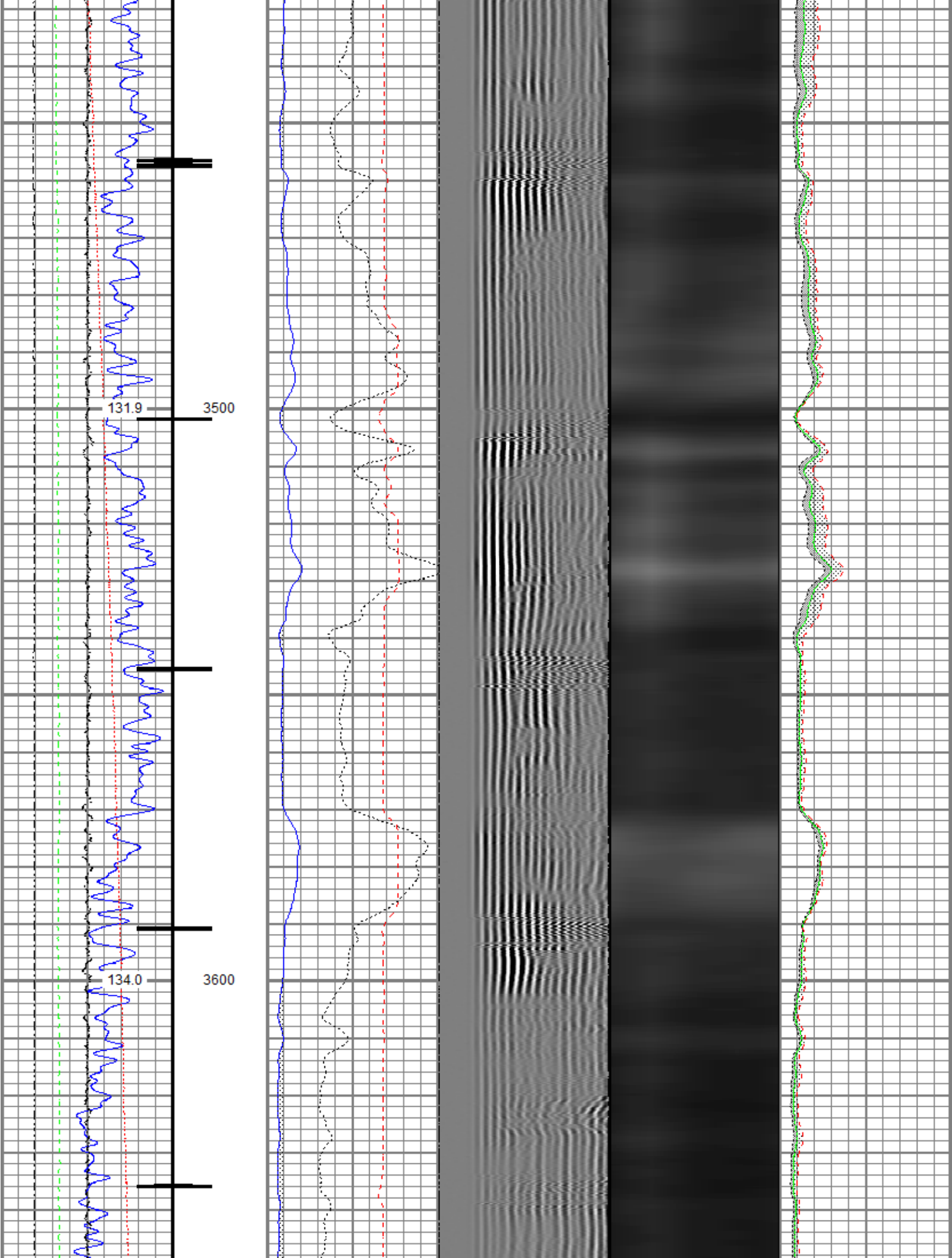


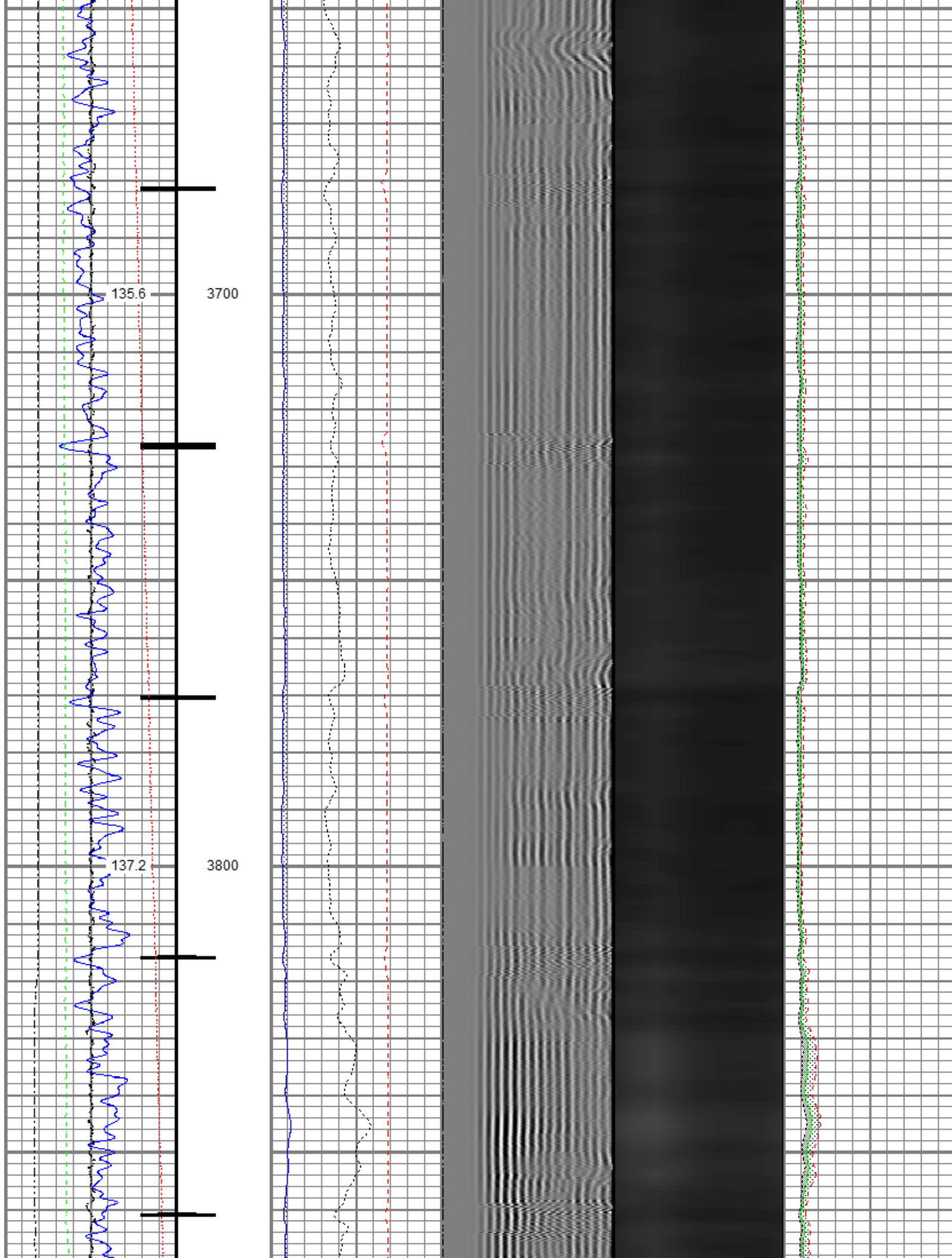


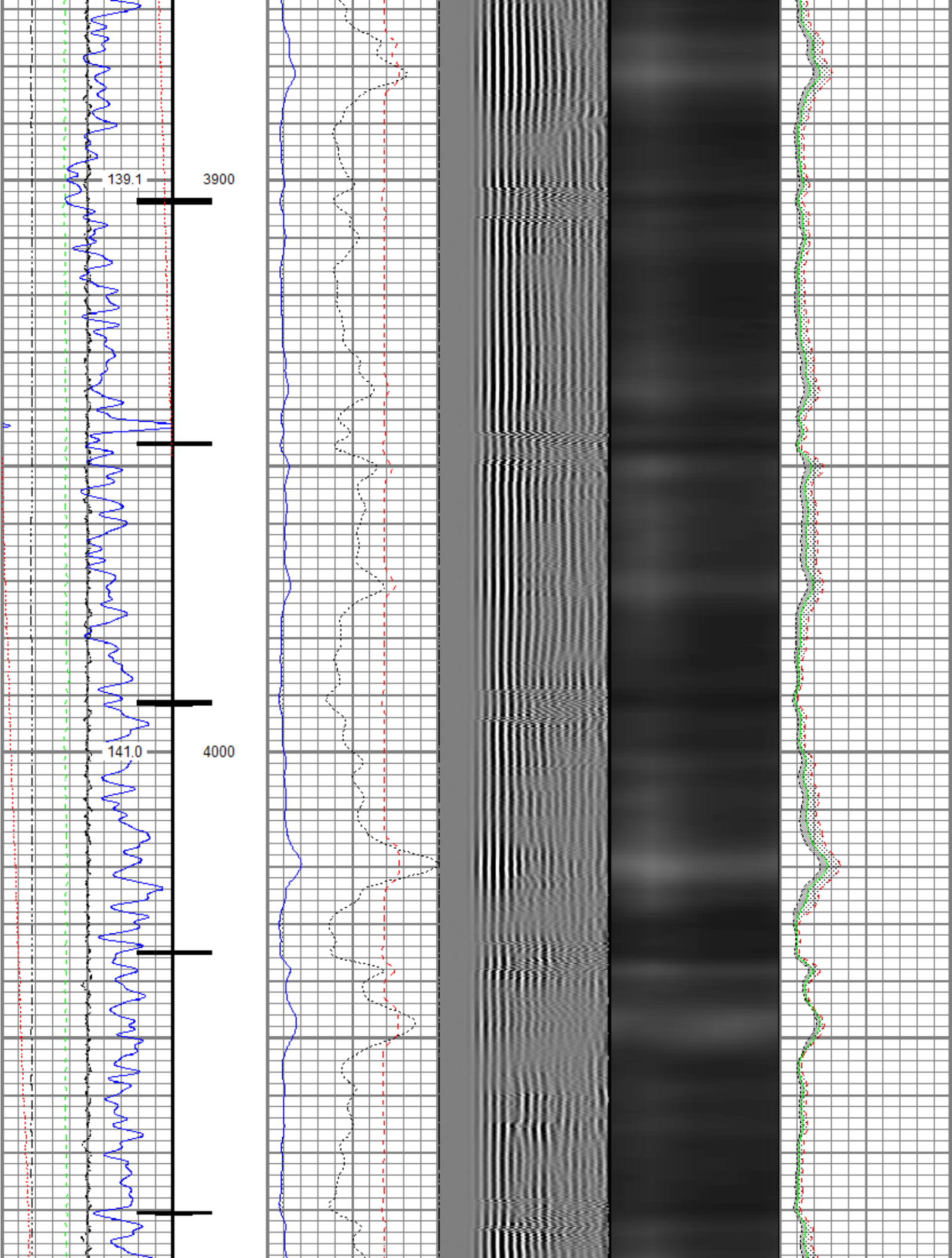




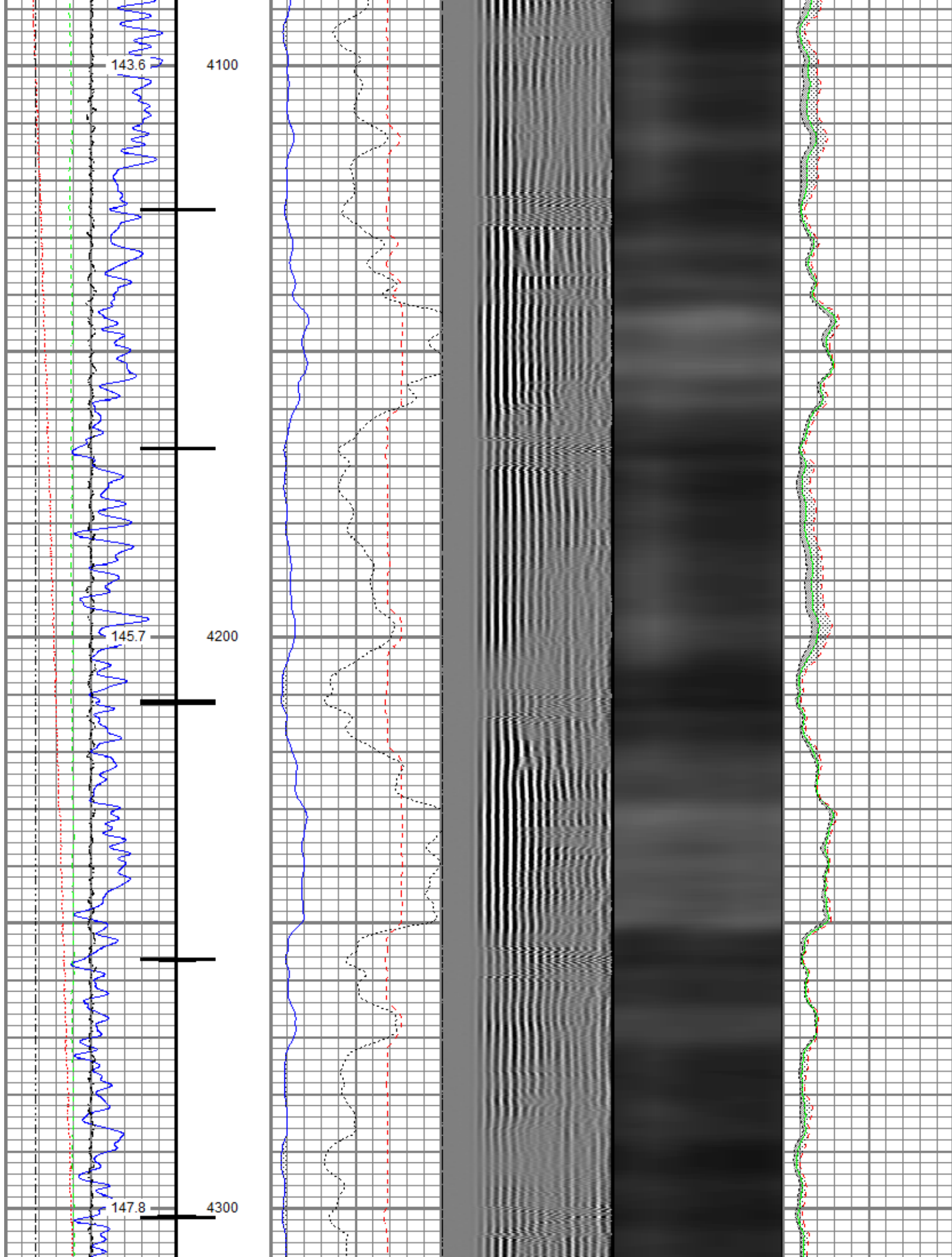


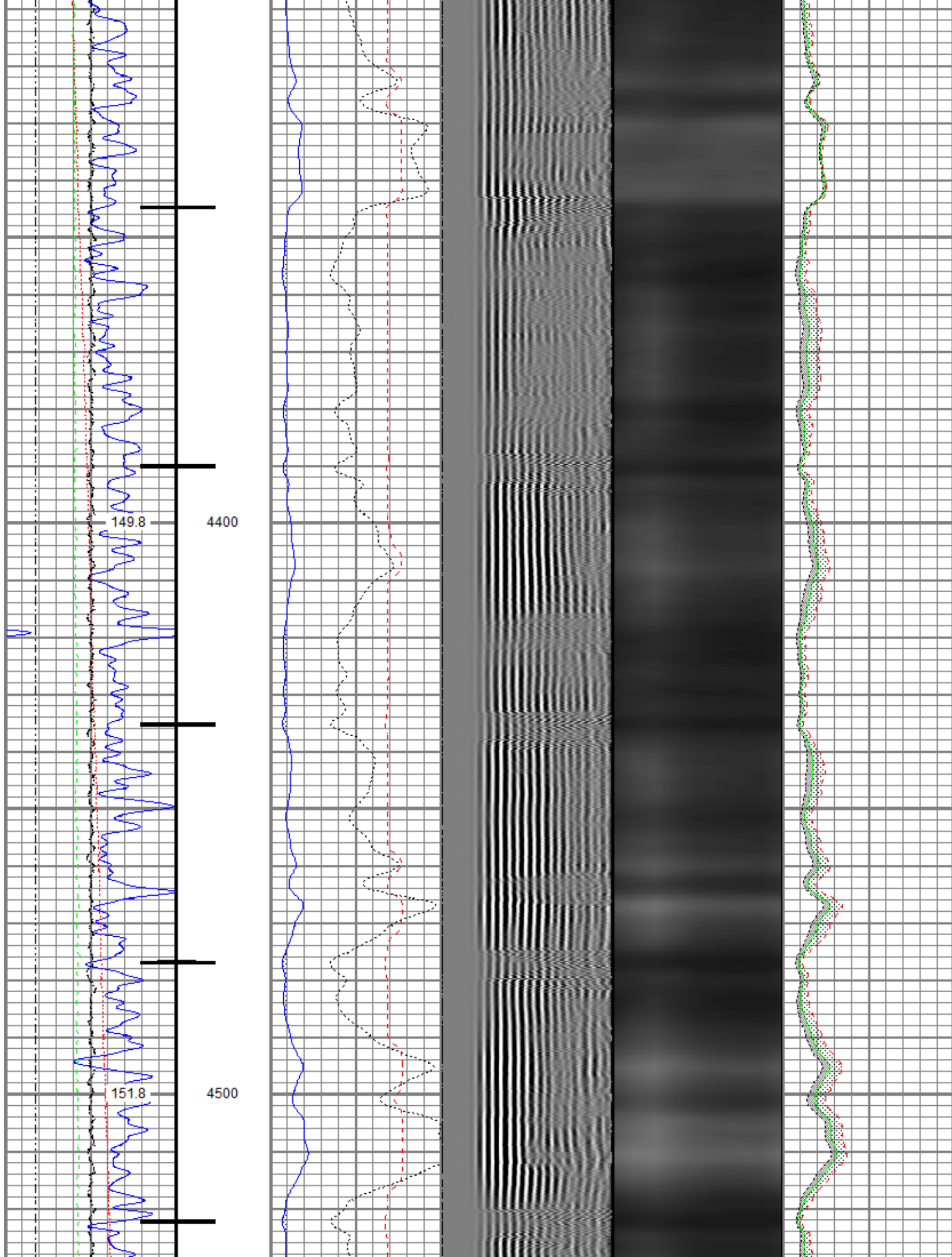


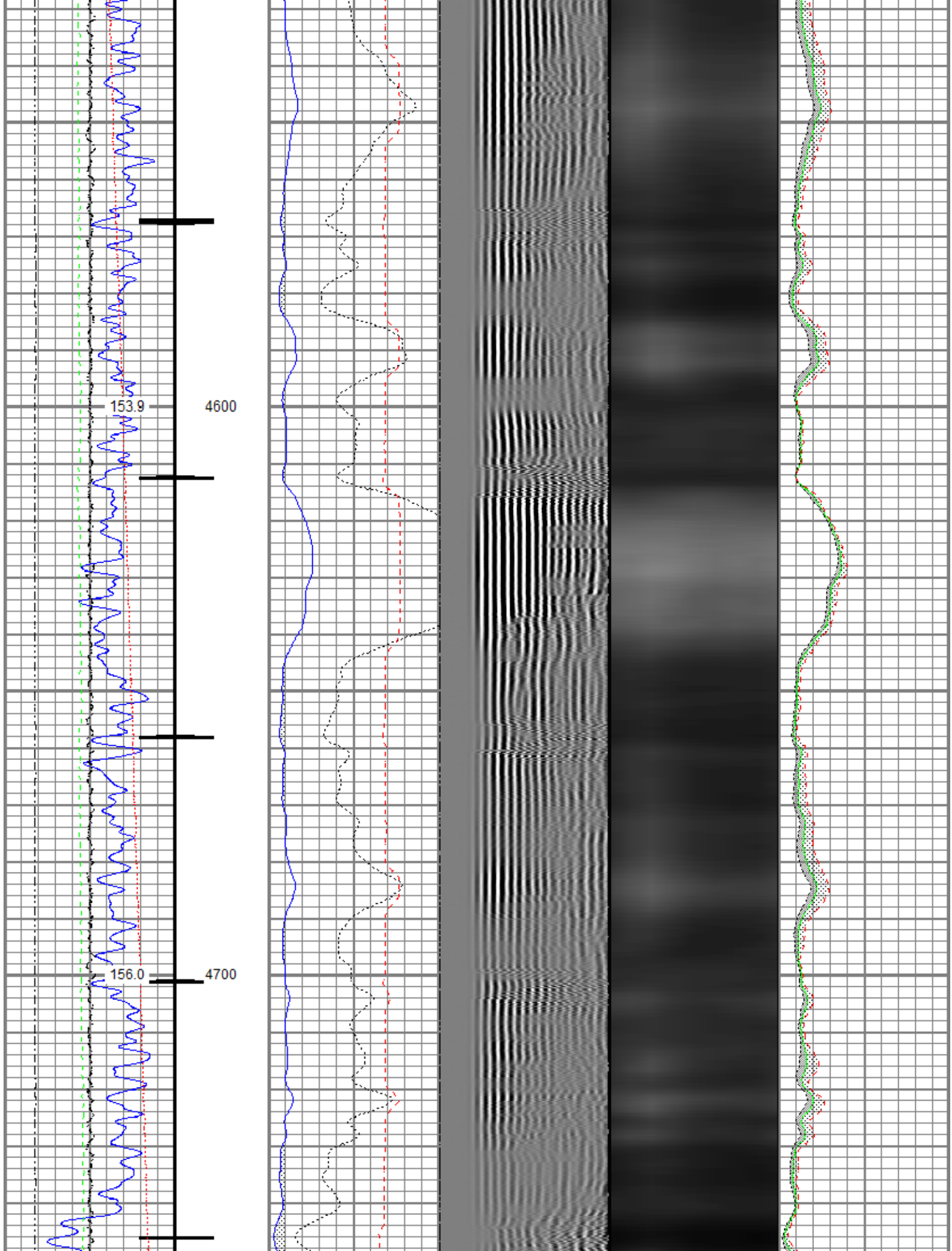


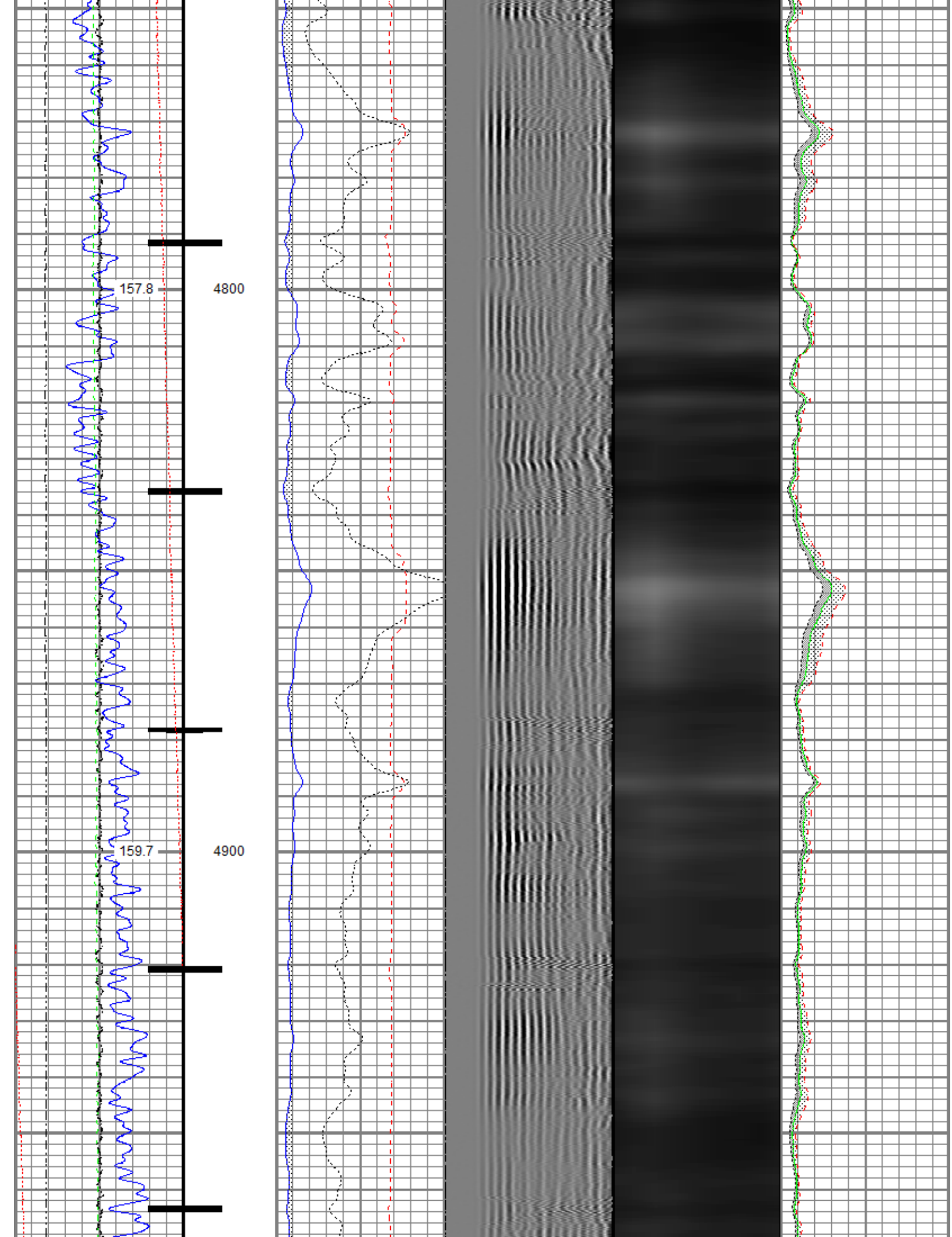




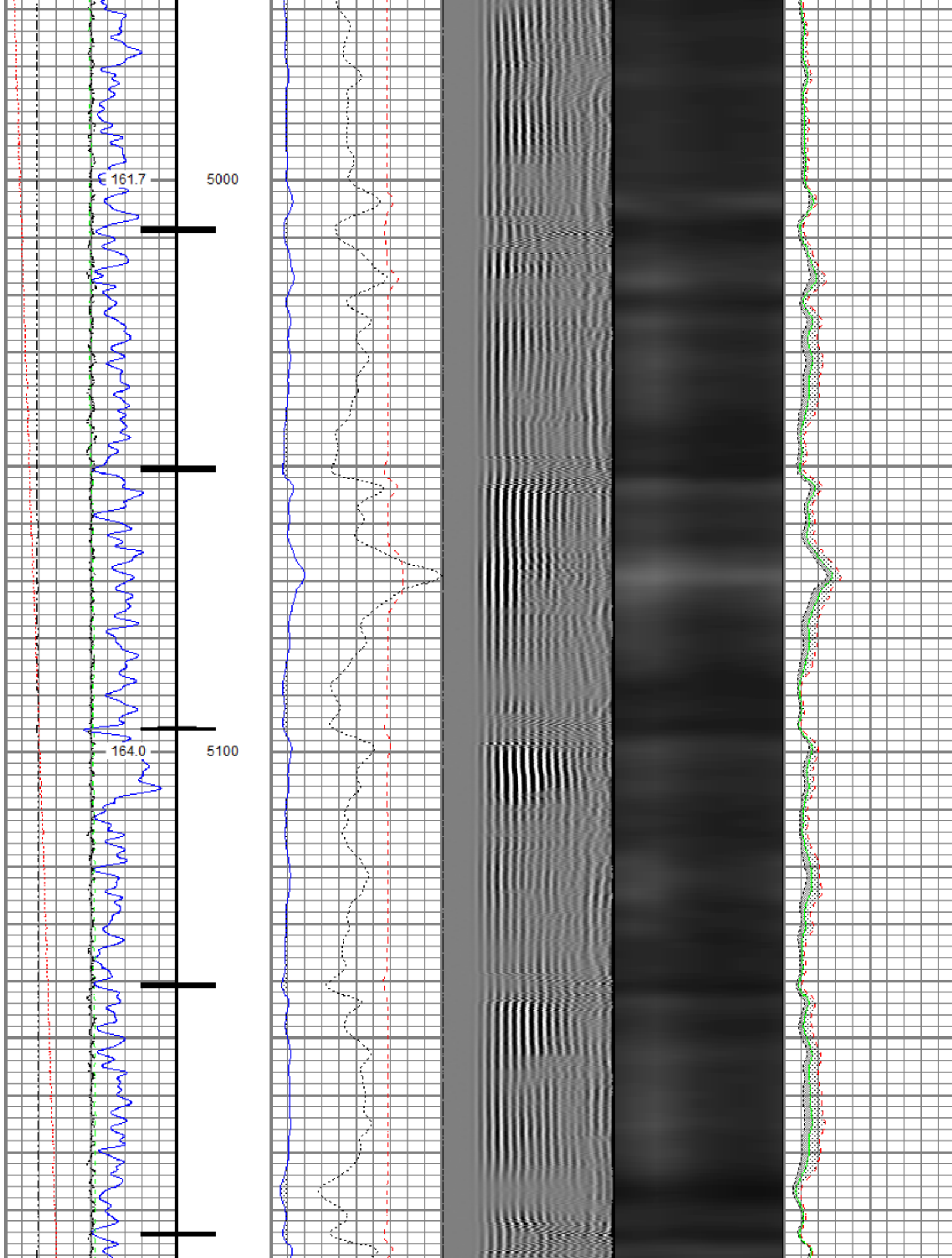


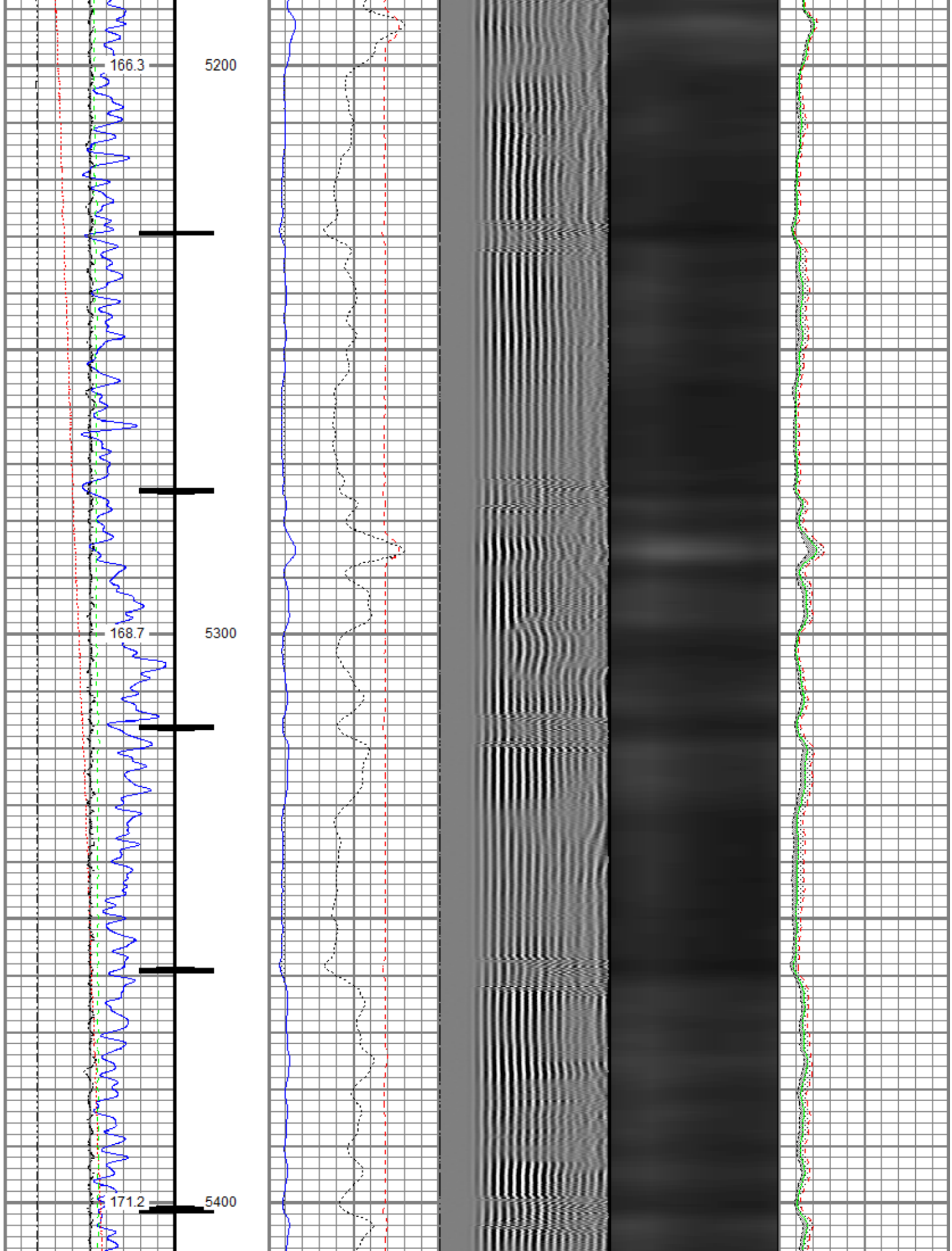


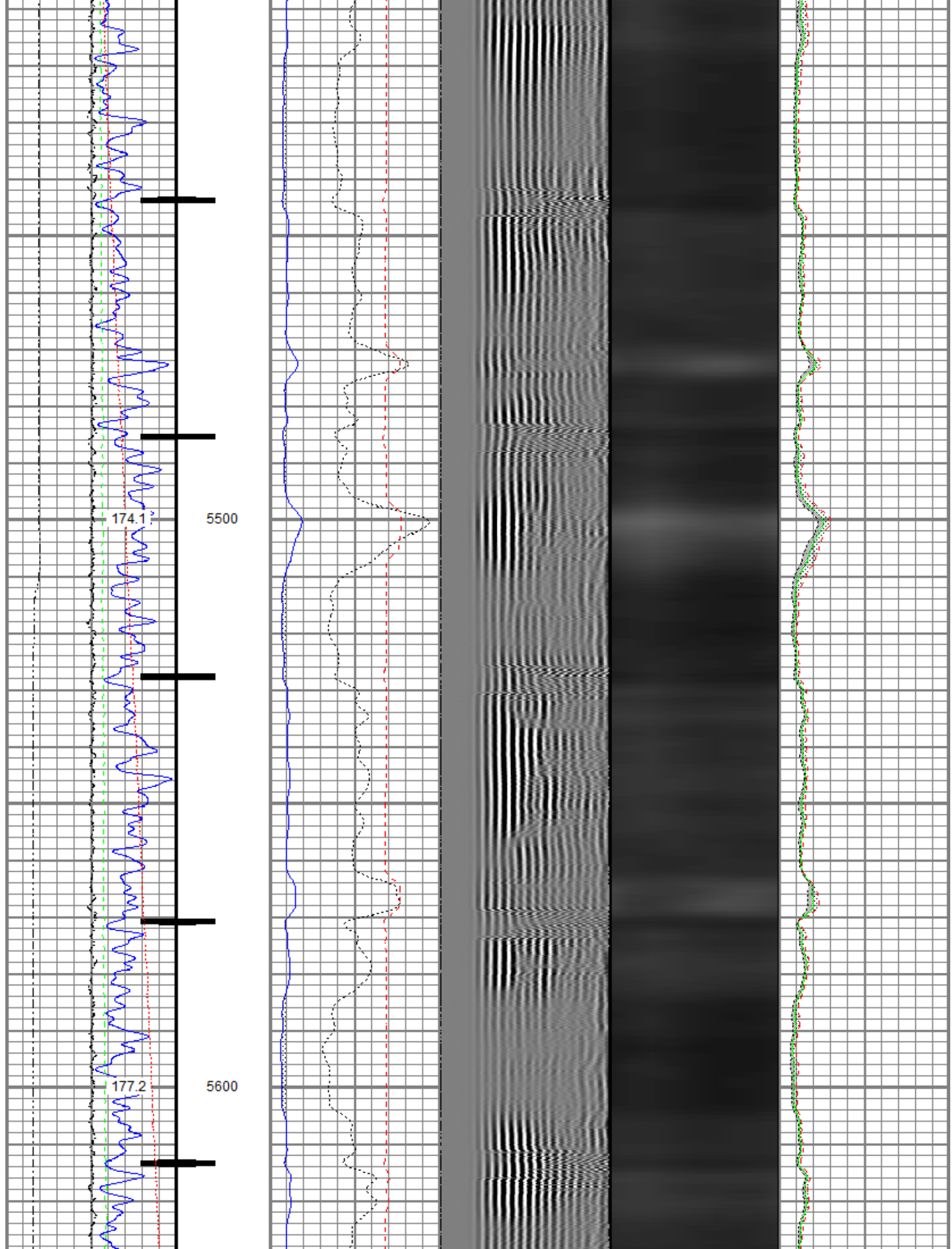


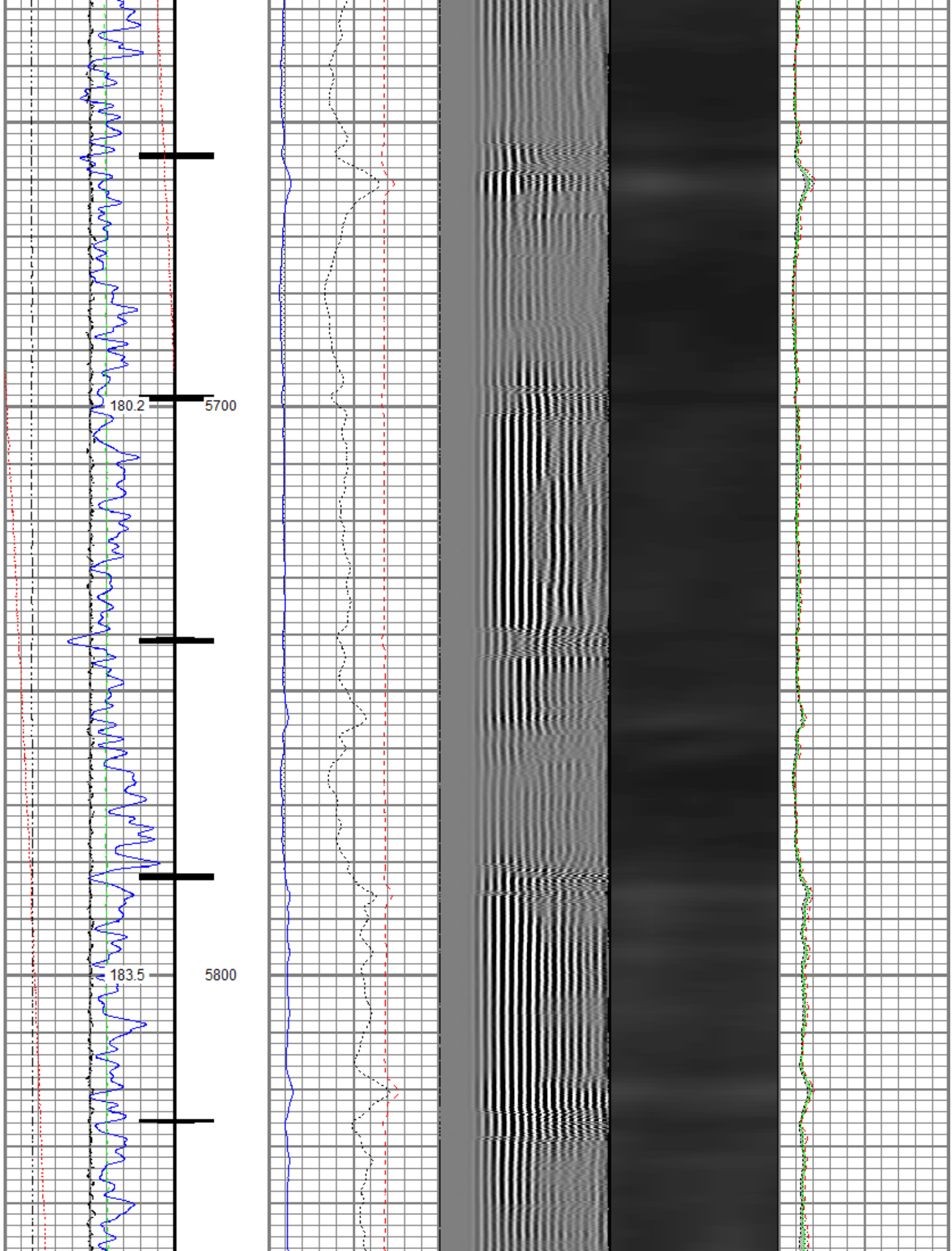




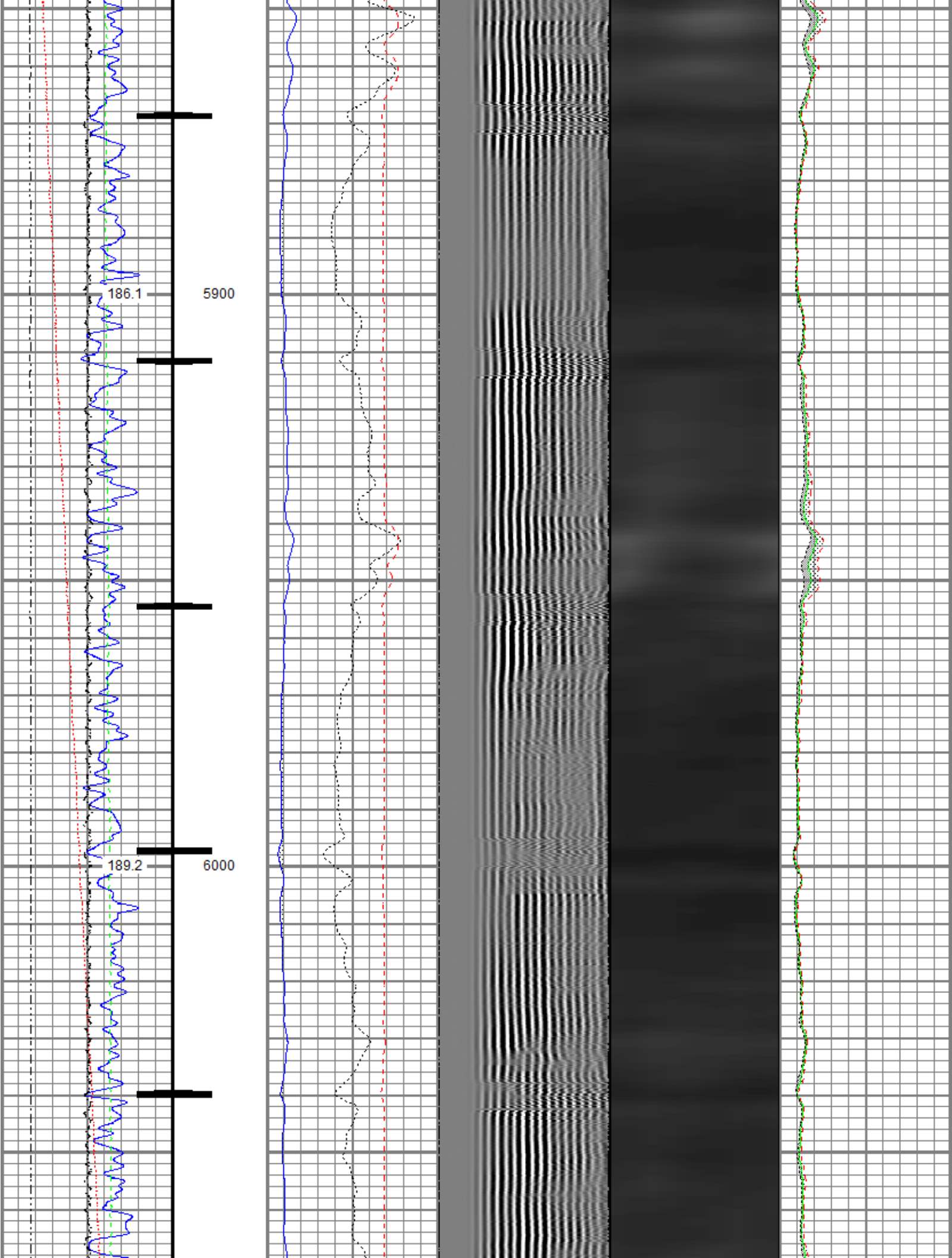


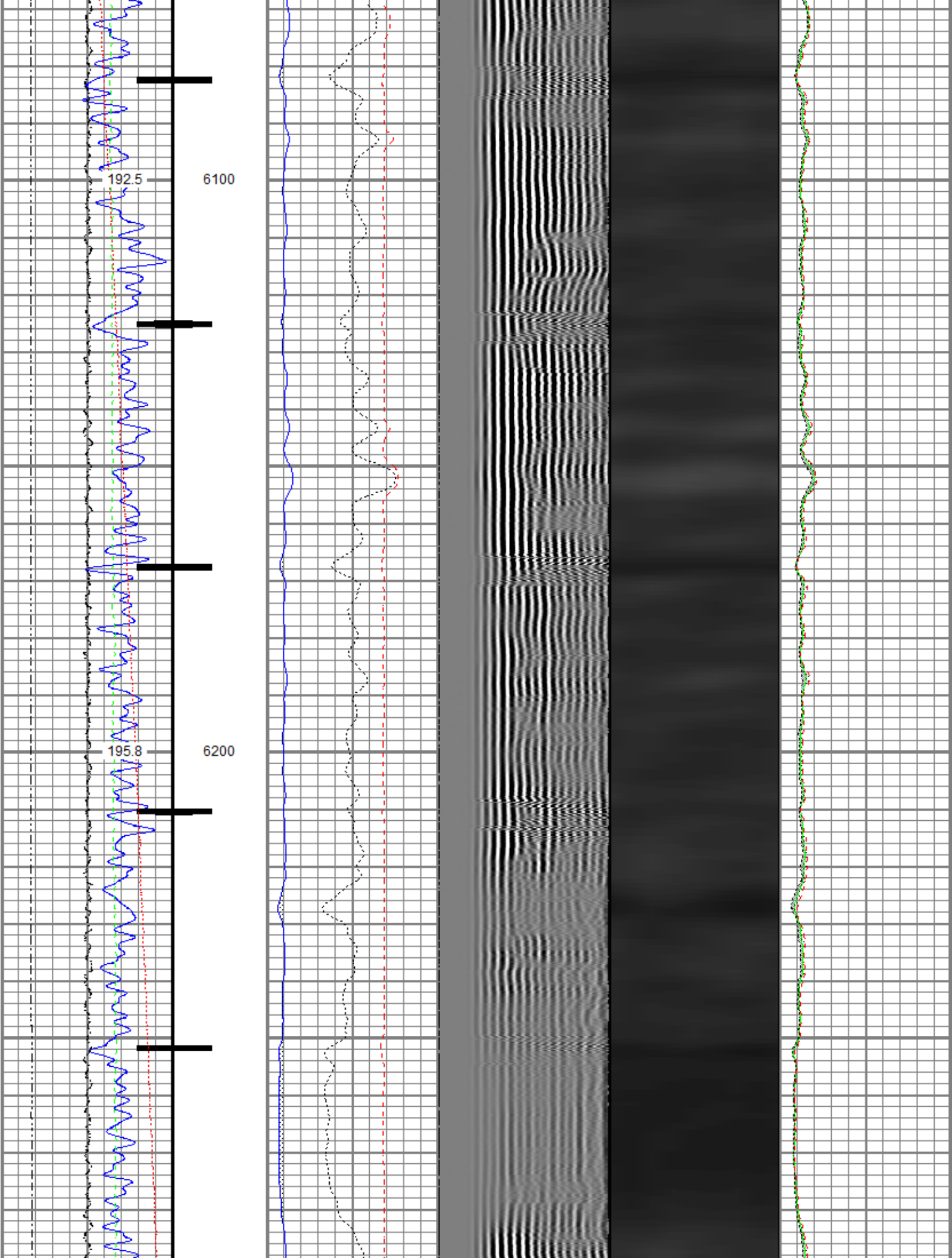


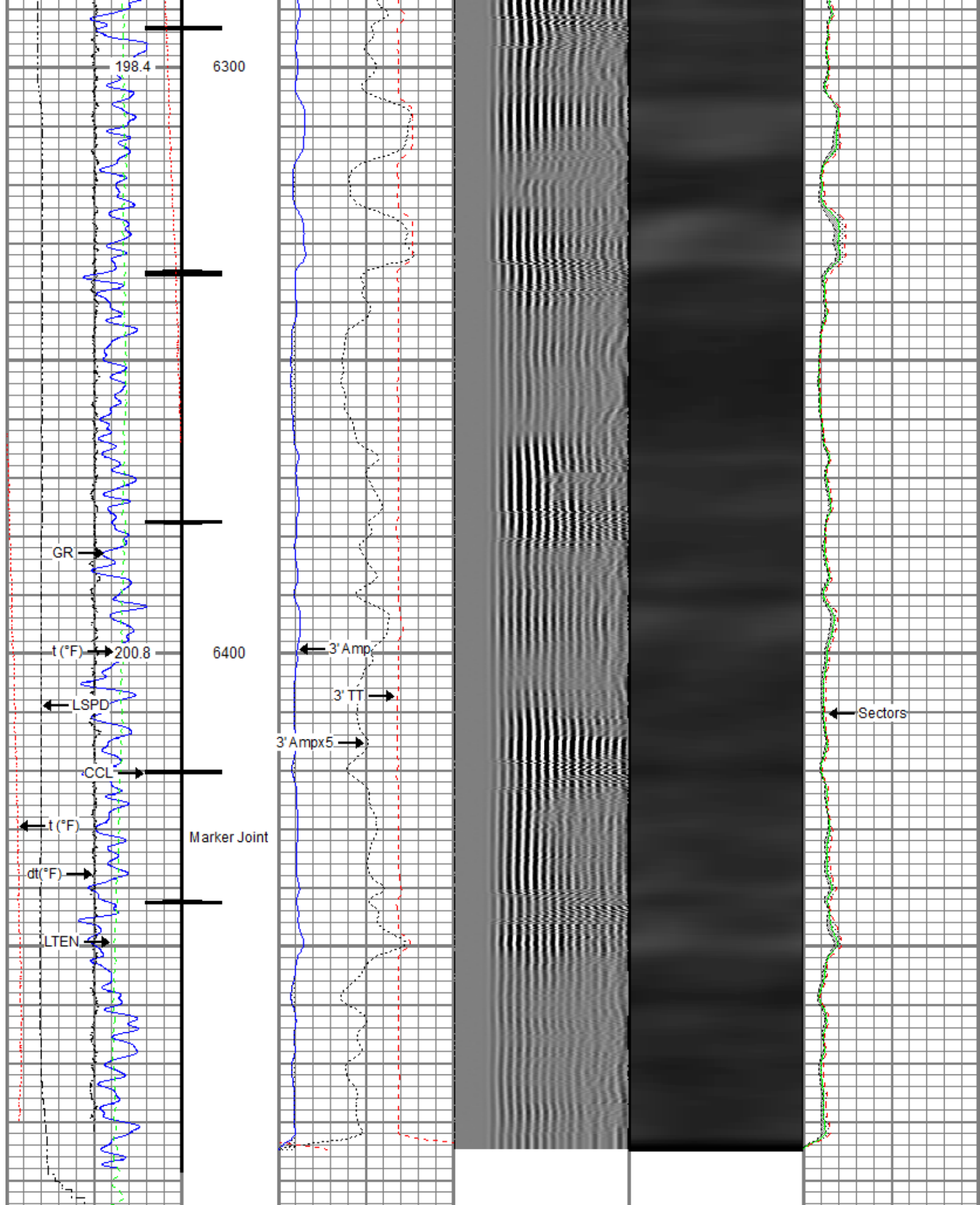












Gamma Ray (GAPI)	0	120	3' Amplitude (mV)	0	100	5' Variable Density Log (usec)	200	1200	Sector Map	Average Amplitude	0	100
Casing Collar Locator	0	20	3' Amplitude x 5 (mV)	0	20					Minimum Amplitude	0	100

0	Temperature (degF)	20	3' Travel Time	650	(usec)	150	Maximum Amplitude	0	100
-150	Line Speed	150							
0	Line Tension (lb)	2000							
-2	Differential Temperature	2							
	(degF)								

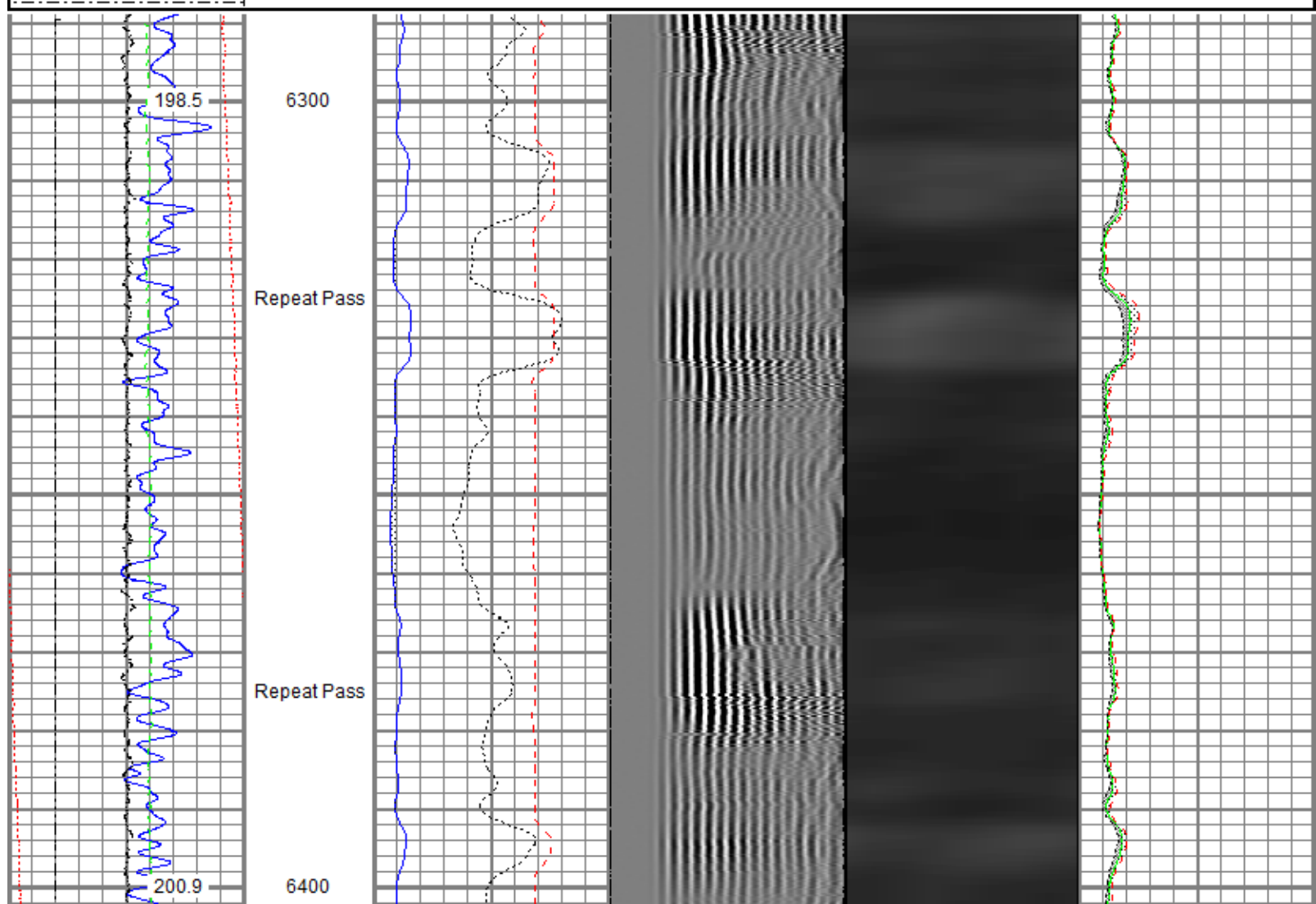


## Repeat Pass

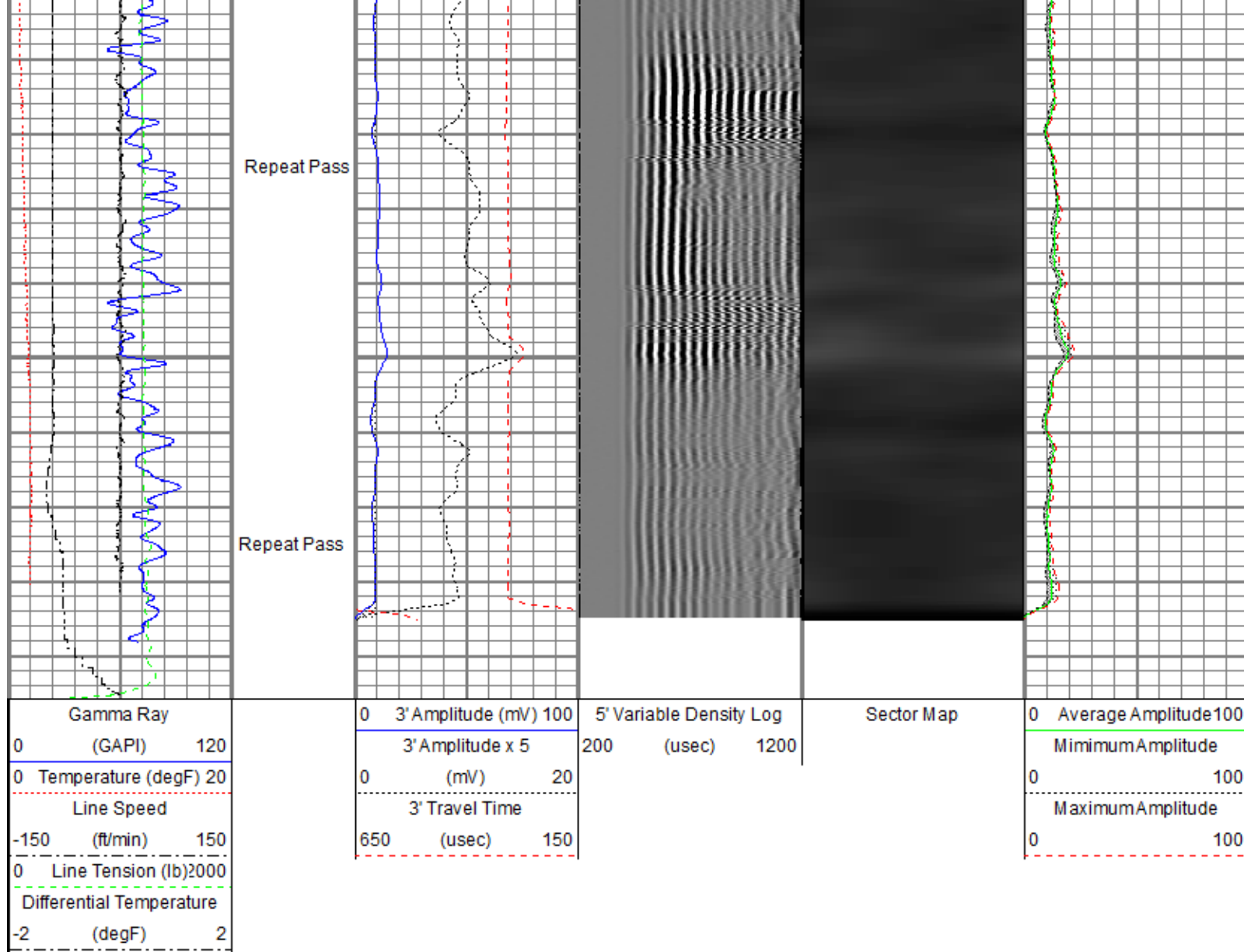
Recorded With 2800 PSI Surface Induced Pressure

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Presentation Format ros\_radrii  
Dataset Creation Wed Feb 10 15:19:12 2021  
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	(usec)	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							







Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
ErrCt	18.10		Titan CHD-16875 GO	1.03	1.69	5.40
RBT_HV	17.07		Titan 1-11/16" Assembled Electric Cable Head with 1" Fishing Neck			
TEMP	14.16		SO BS CENT-2750-5500 Slip Over 2-3/4" I.D. for 5-1/2" O.D. Casing Bow Spring Centralizer	1.50	3.25	11.00
RBT_ACCZ	11.93		Probe Radii ACC-2750 RBTa (FW1302-002)	9.39	2.75	105.00
RBT_ACCY	11.93		Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub and Accelerometer			
RBT_ACCX	11.93					
WVFSYNC	11.93					



## Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.011	0.711	0.800	71.921	101.521	-0.299
CAL	0.705	0.708				
5'	0.009	0.626	0.800	71.921	115.307	-0.259
SUM						
S1	0.006	0.689	0.000	100.000	146.464	-0.944
S2	0.008	0.751	0.000	100.000	134.744	-1.127
S3	0.009	0.781	0.000	100.000	129.501	-1.200
S4	0.008	0.765	0.000	100.000	132.141	-1.081
S5	0.007	0.743	0.000	100.000	135.929	-0.987
S6	0.008	0.719	0.000	100.000	140.543	-1.104
S7	0.008	0.690	0.000	100.000	146.619	-1.169
S8	0.009	0.693	0.000	100.000	146.280	-1.340

## Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.705	0.708	1.000	0.000

## Air Zero Calibration, performed Tue Feb 9 12:29:05 2021:

	Raw (v)		Calibrated (v)		Results	
	Zero		Zero		Offset	
3'	0.009		0.000		0.000	
5'	0.010		0.000		0.000	
SUM						
S1	0.006		0.000		-0.001	
S2	0.010		0.000		-0.001	
S3	0.010		0.000		-0.001	
S4	0.010		0.000		-0.001	
S5	0.010		0.000		-0.001	
S6	0.010		0.000		-0.000	
S7	0.010		0.000		-0.001	
S8	0.010		0.000		-0.000	

## Inclinometer Calibration Report

Performed:	Tue Dec 3 09:24:53 2019				
	Low Read.	High Read.	Low Ref.	High Ref.	
X Accelerometer	-891.00	891.00	-1.00	1.00	gee
Y Accelerometer	-899.00	877.00	-1.00	1.00	gee
Z Accelerometer	-7.47	873.36	0.00	1.00	gee

## Temperature Calibration Report

Serial Number:	FW1302-002			
Tool Model:	2750 RBTa			
Performed:	Tue Dec 3 09:24:53 2019			
	Reference		Reading	
Low Reference:	100.00 degF		110.72 degF	

High Reference:	350.00 degF	409.18 degF
Gain:	0.84	
Offset:	7.26	
Delta Spacing	1	



Company	Kerr-McGee Oil & Gas Onshore, L.P.
Well	Cummings 19-5HZ
Field	Wattenberg
County	Weld
State	Colorado