



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

Company Caerus Piceance LLC
Well FED 11D-24-496
Field Grand Valley
County Garfield
State Colorado

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Location: SEC 24 TWP 4S RGE 96W
 API #: 05-045-24176
 Other Services: ---

Date	21-JAN-2020		Run Number	One	Elevation	
Depth Driller	12556 FT		Depth Logger	12472 FT	K.B. 8158'	
Bottom Logged Interval	12460 FT		Top Log Interval	Surface	D.F. 8157'	
Open Hole Size	8.75"		Type Fluid	Water	G.L. 8128'	
Density / Viscosity	8.34 lb/gal		Estimated Cement Top	See Log		
Max. Recorded Temp.	291°F		Time Well Ready	ROA		
E. Estimated Cement Top			Time Logger on Bottom	16:15		
Location	Grand Junction, CO		E. Equipment Number	HD-0331		
Recorded By	A. Ellsworth		Witnessed By	J. Rundberg		
Borehole Record						
Run Number	Bit	From	To	Size	Tubing Record	
					Weight	From
						To
Casing Record	Size (in)	Wgt (lbs/ft)	Grade	Top	Bottom	
Surface Casing	9.5/8	36	J-55	Surface	3155 FT	
Intermediate #1	4.1/2	11.6	P-110	Surface	12536 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 Kelly Bushing at 30 FT
Marker Joint logged at 8009 - 8018 FT
Recorded with 0 PSI Surface Induced Pressure
No Wellheads were installed at time of logging

Thank you for choosing Reliance Oilfield Services, LLC!!

Main Pass

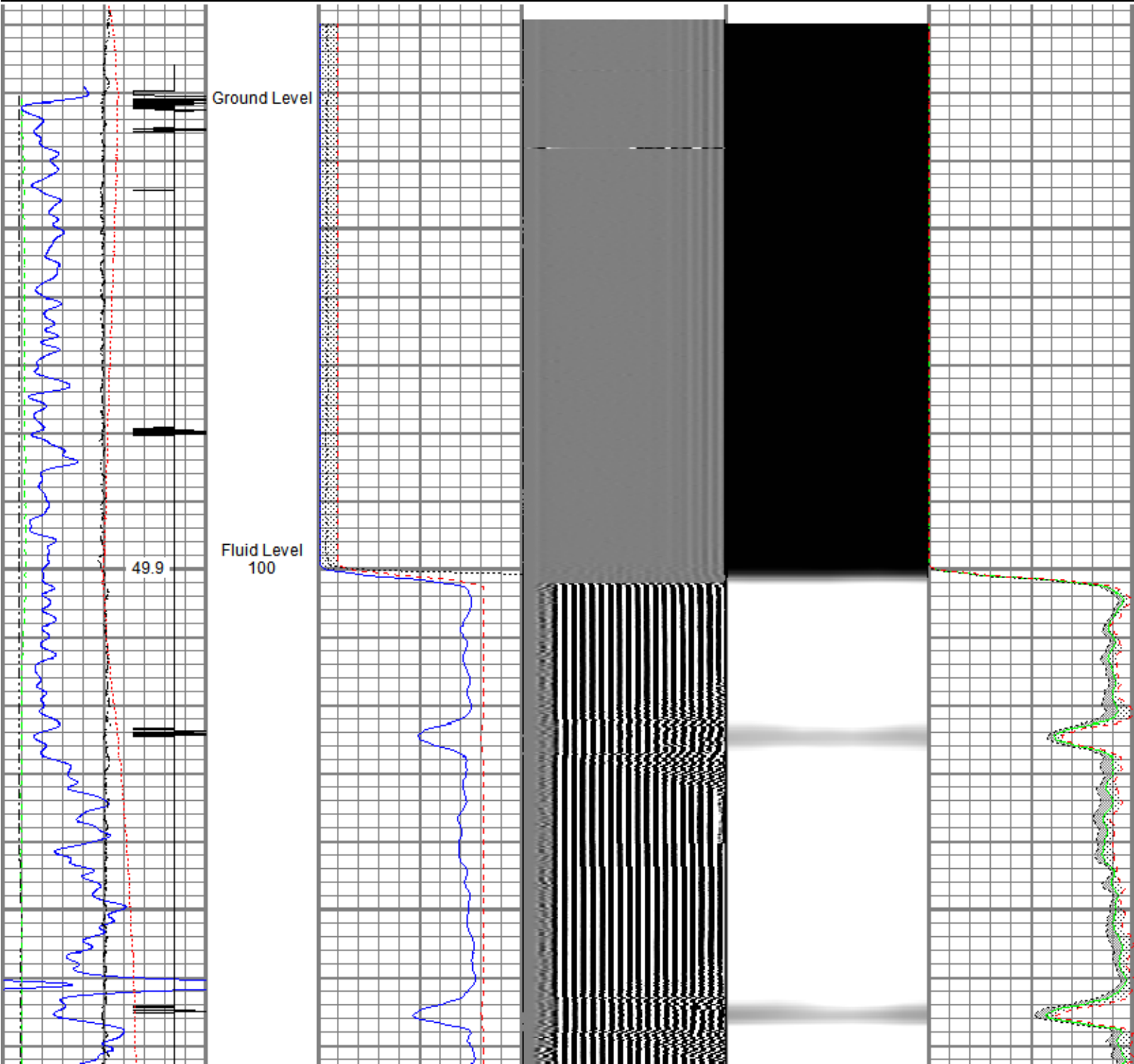


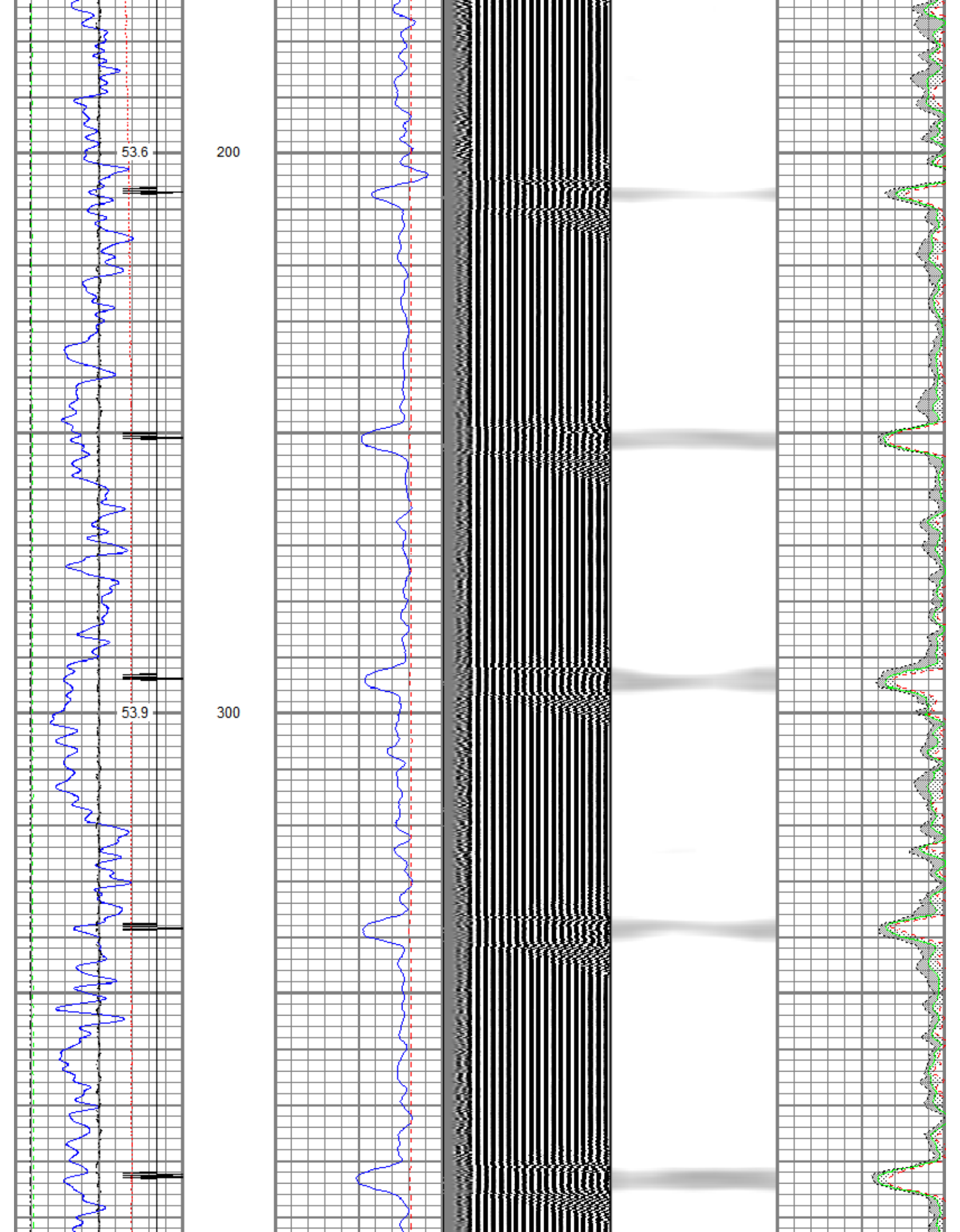
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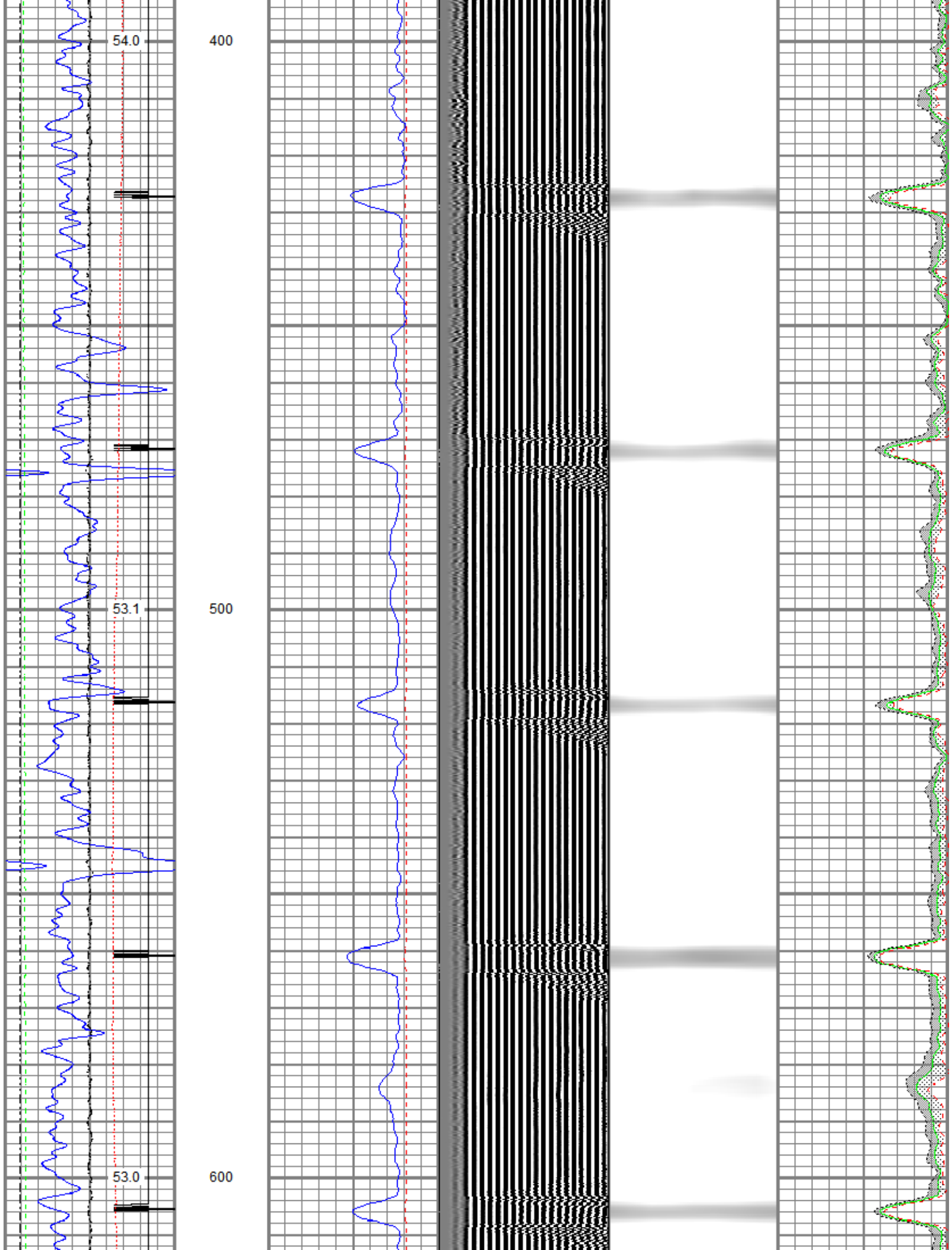
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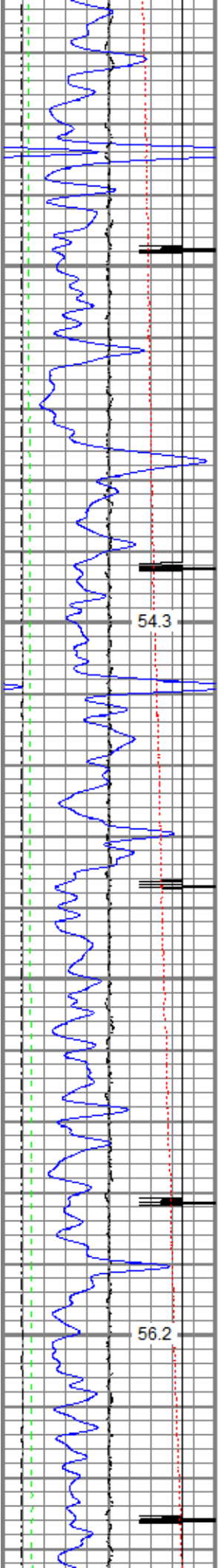
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Dataset Pathname	main.1
Presentation Format	ros_radrii_caerus
Dataset Creation	Wed Jan 22 14:29:24 2020
Charted by	Depth in Feet scaled 1:240

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



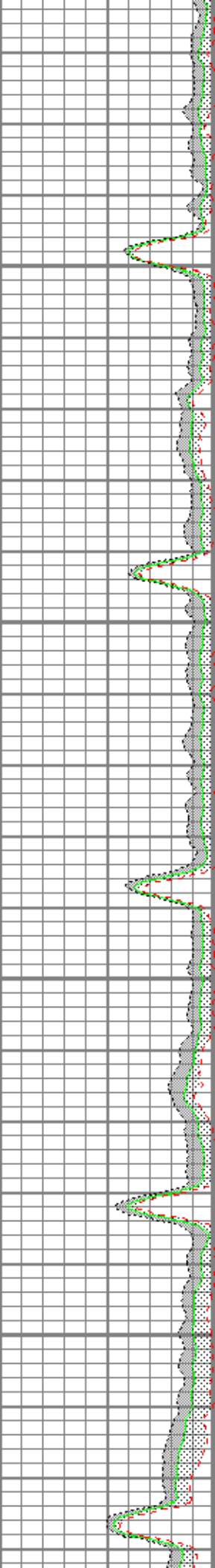
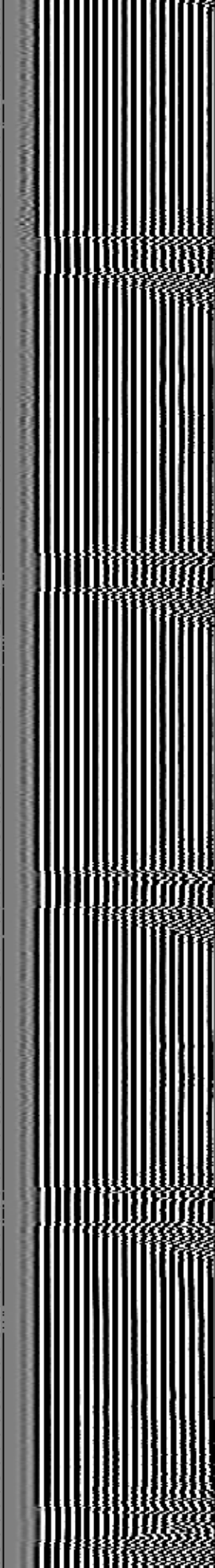
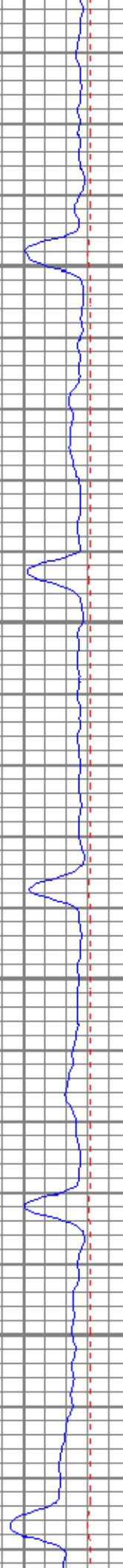


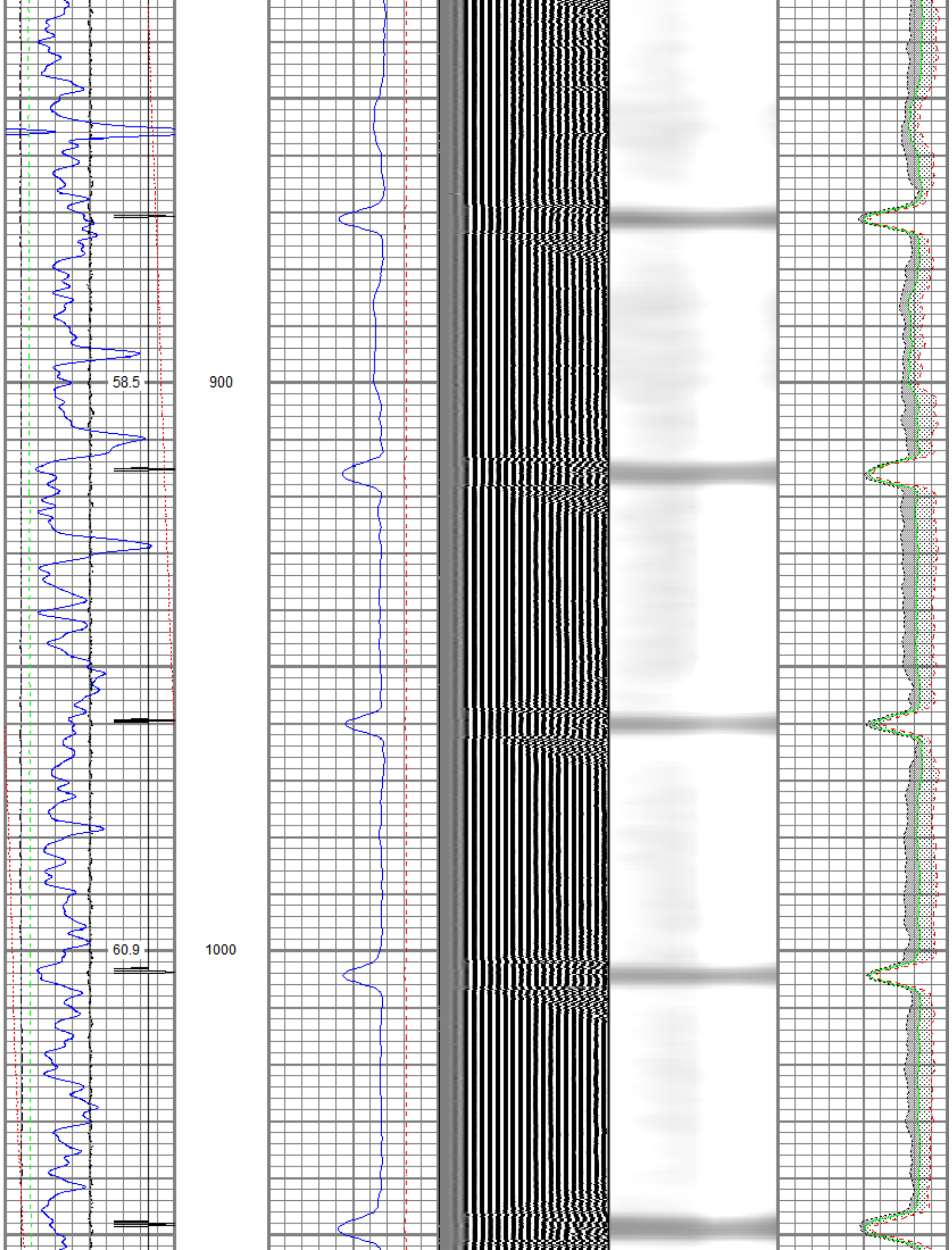


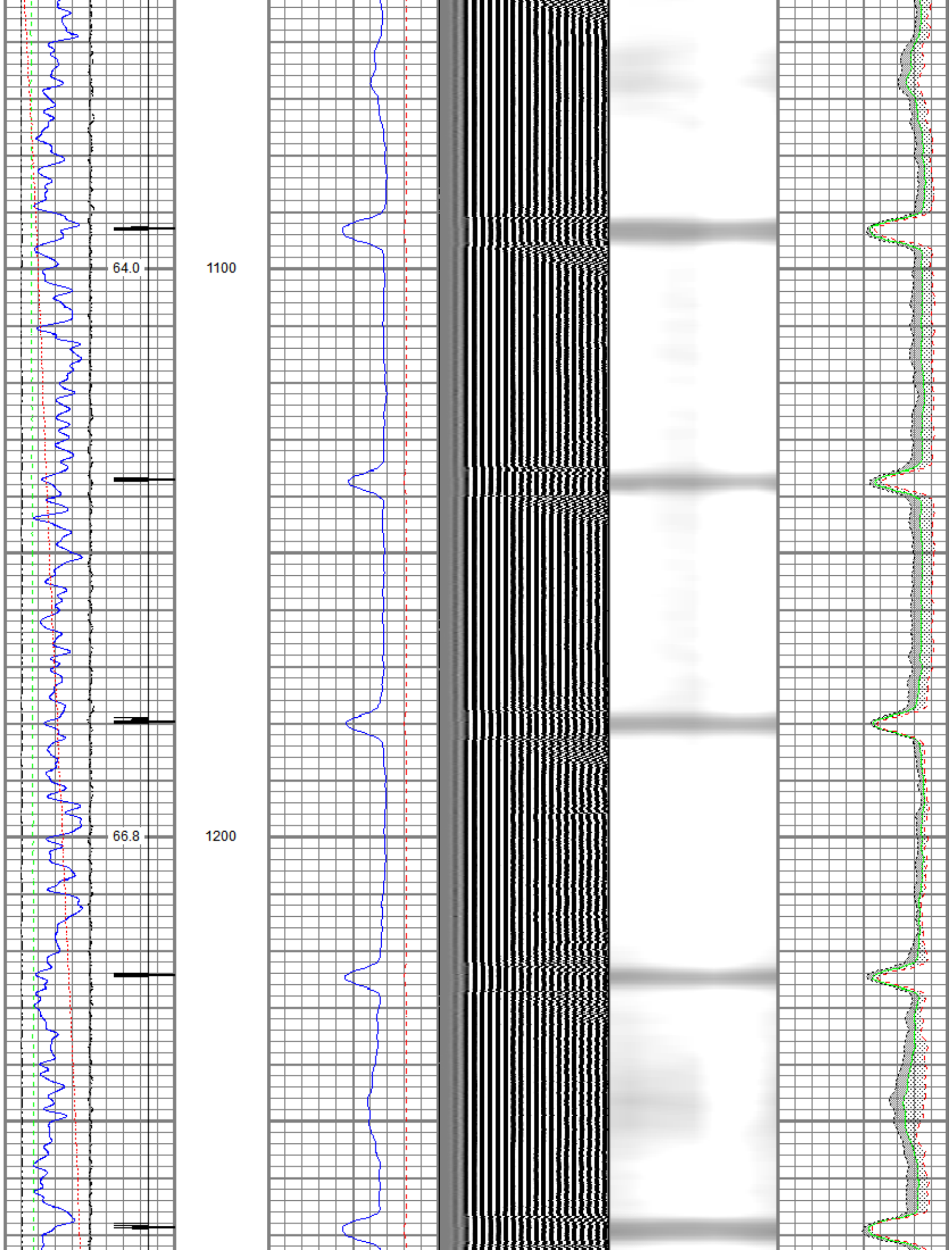


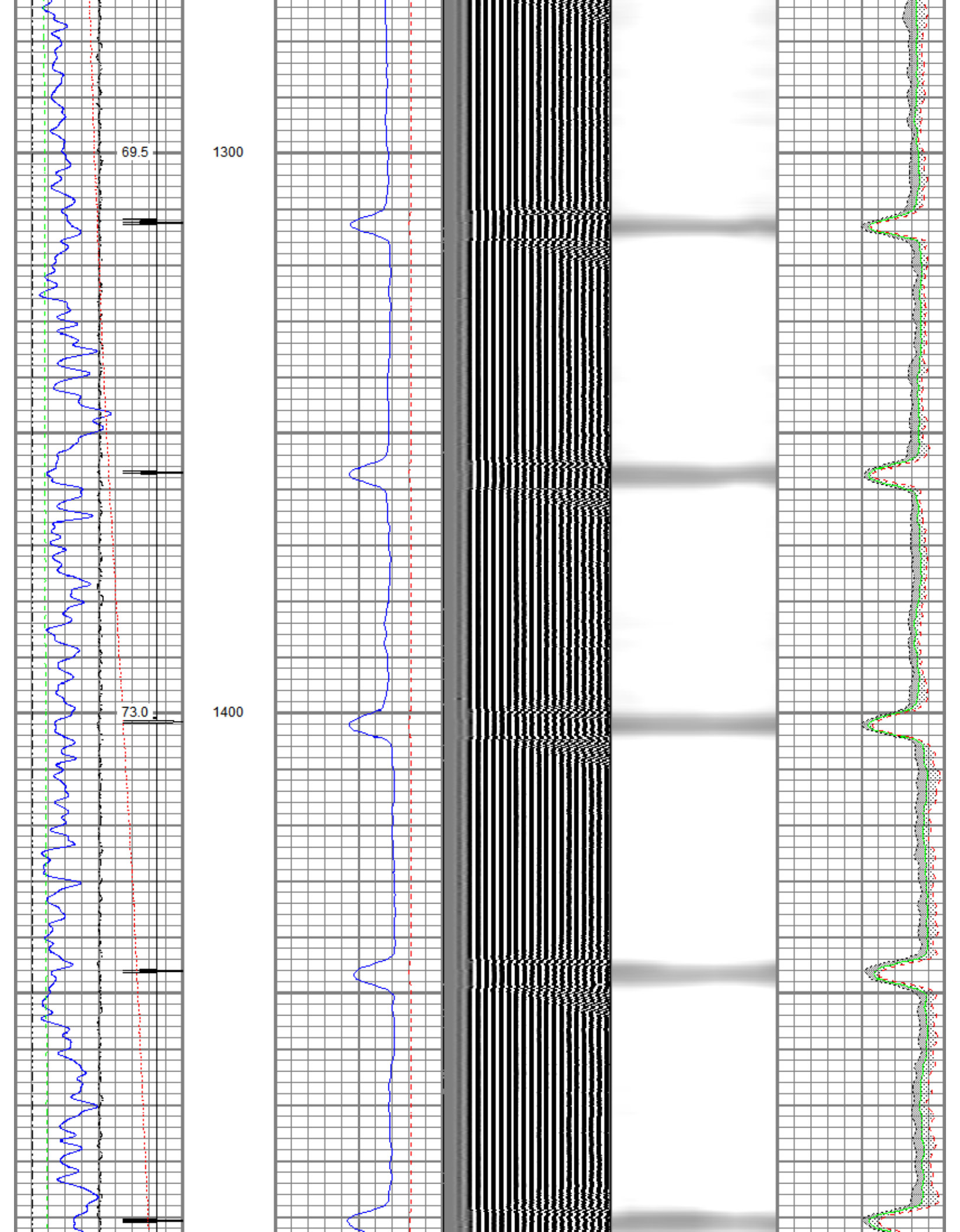
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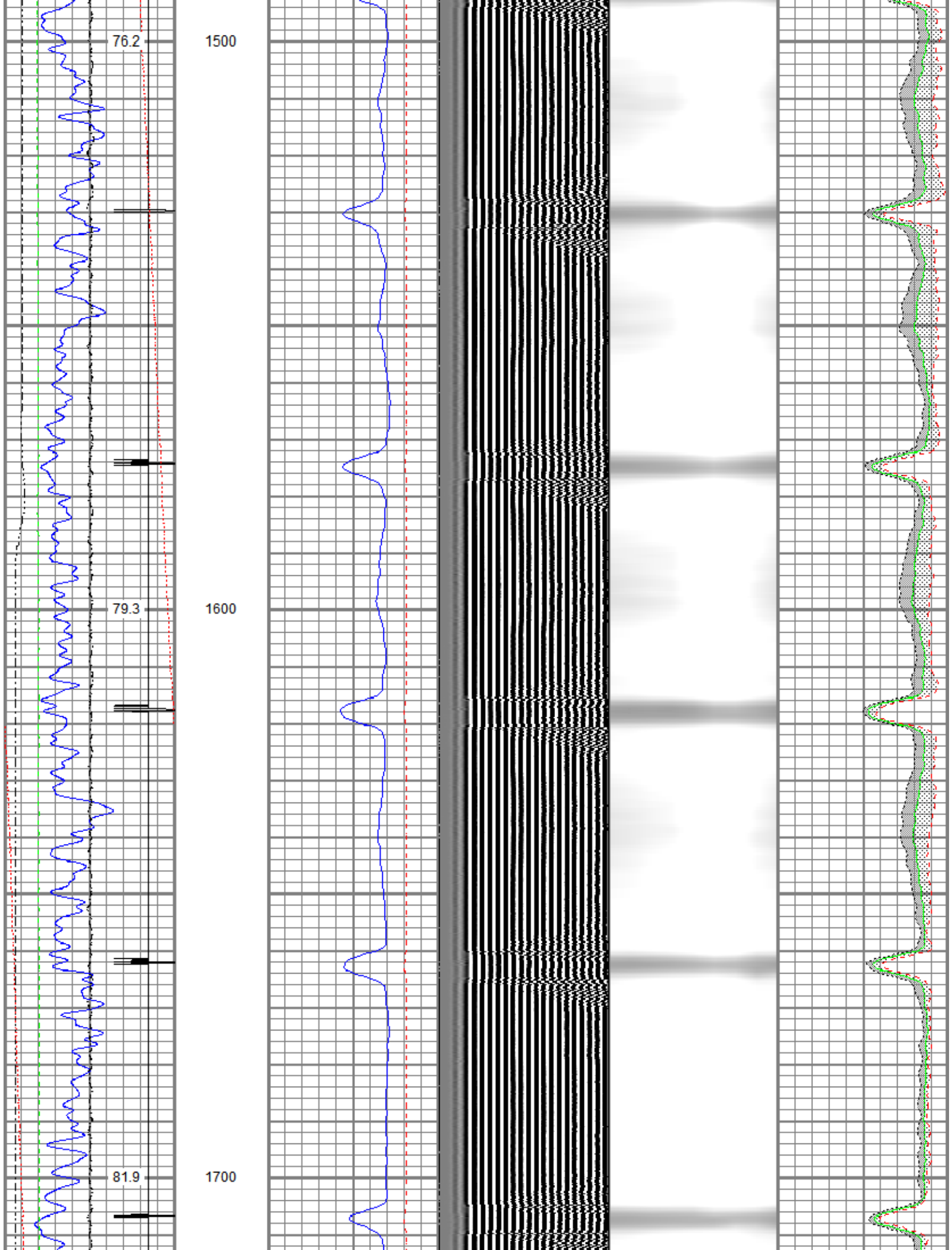
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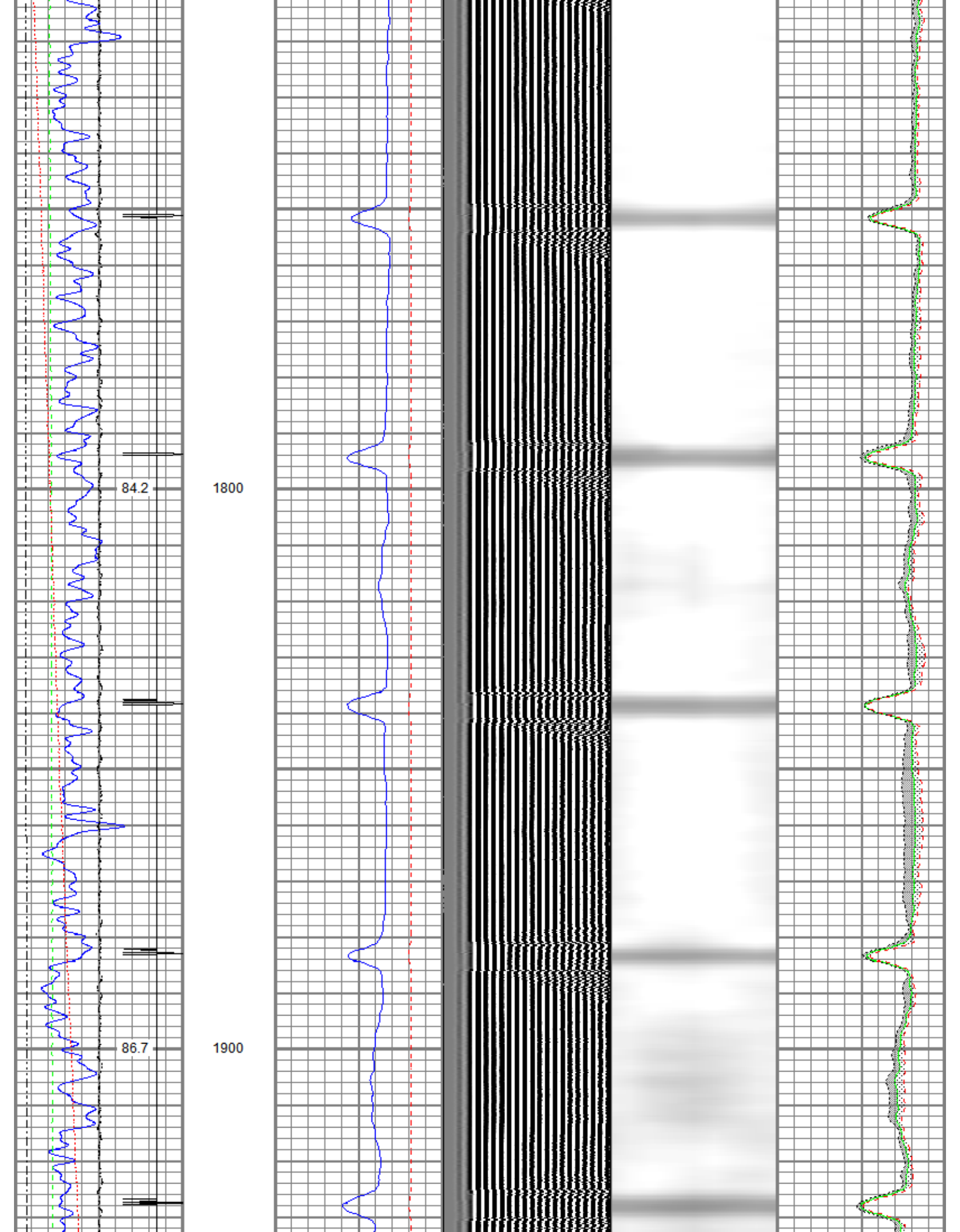


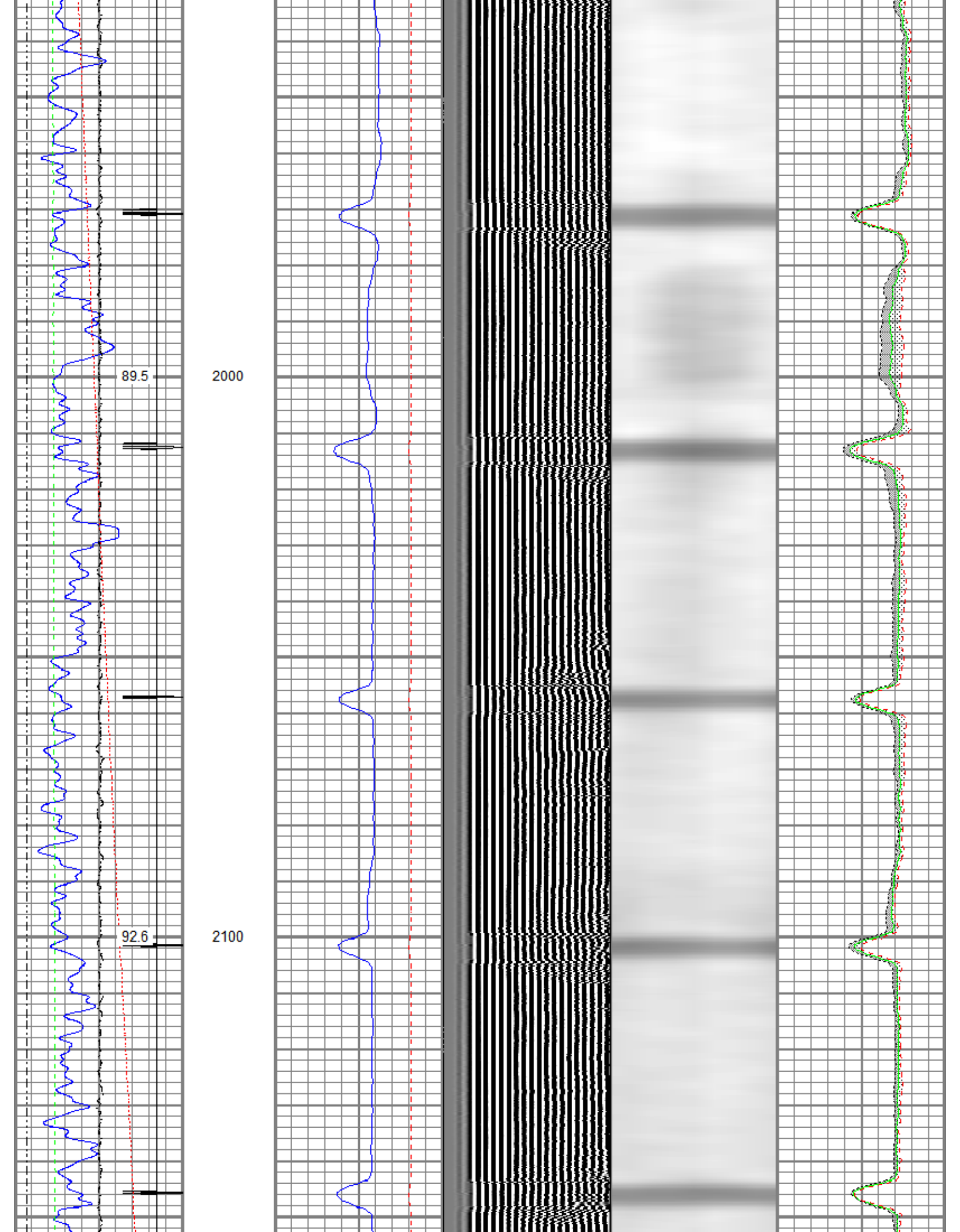


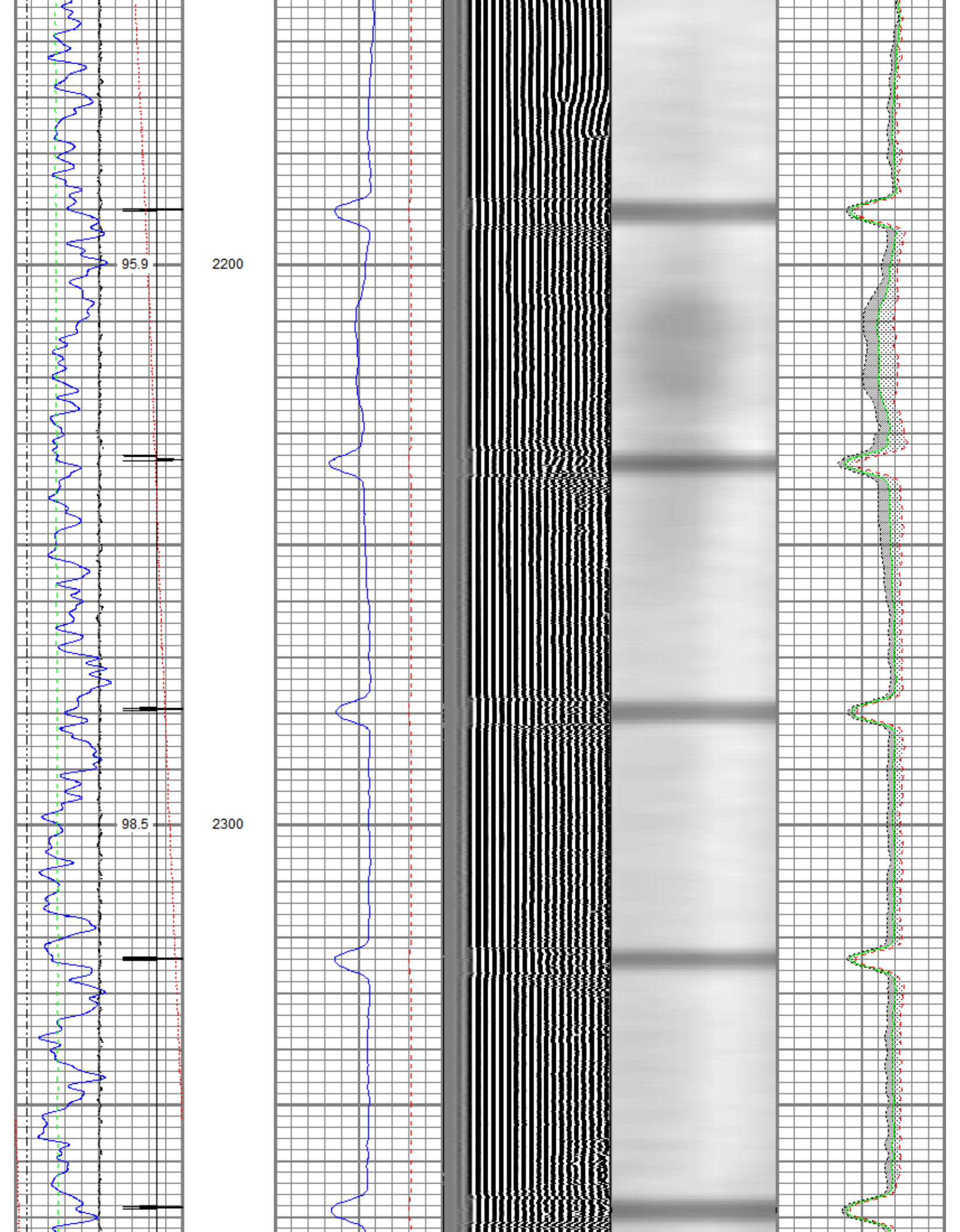


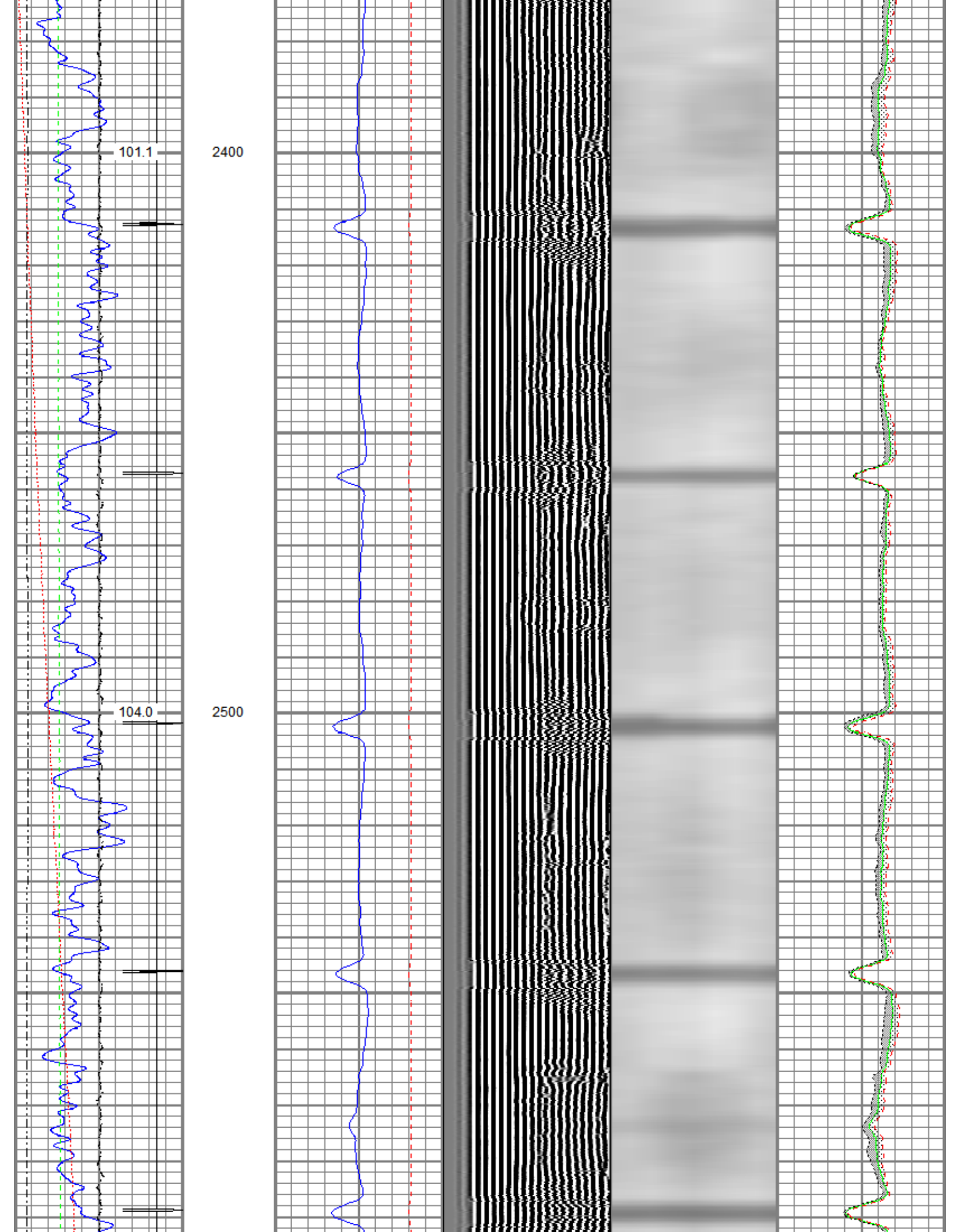












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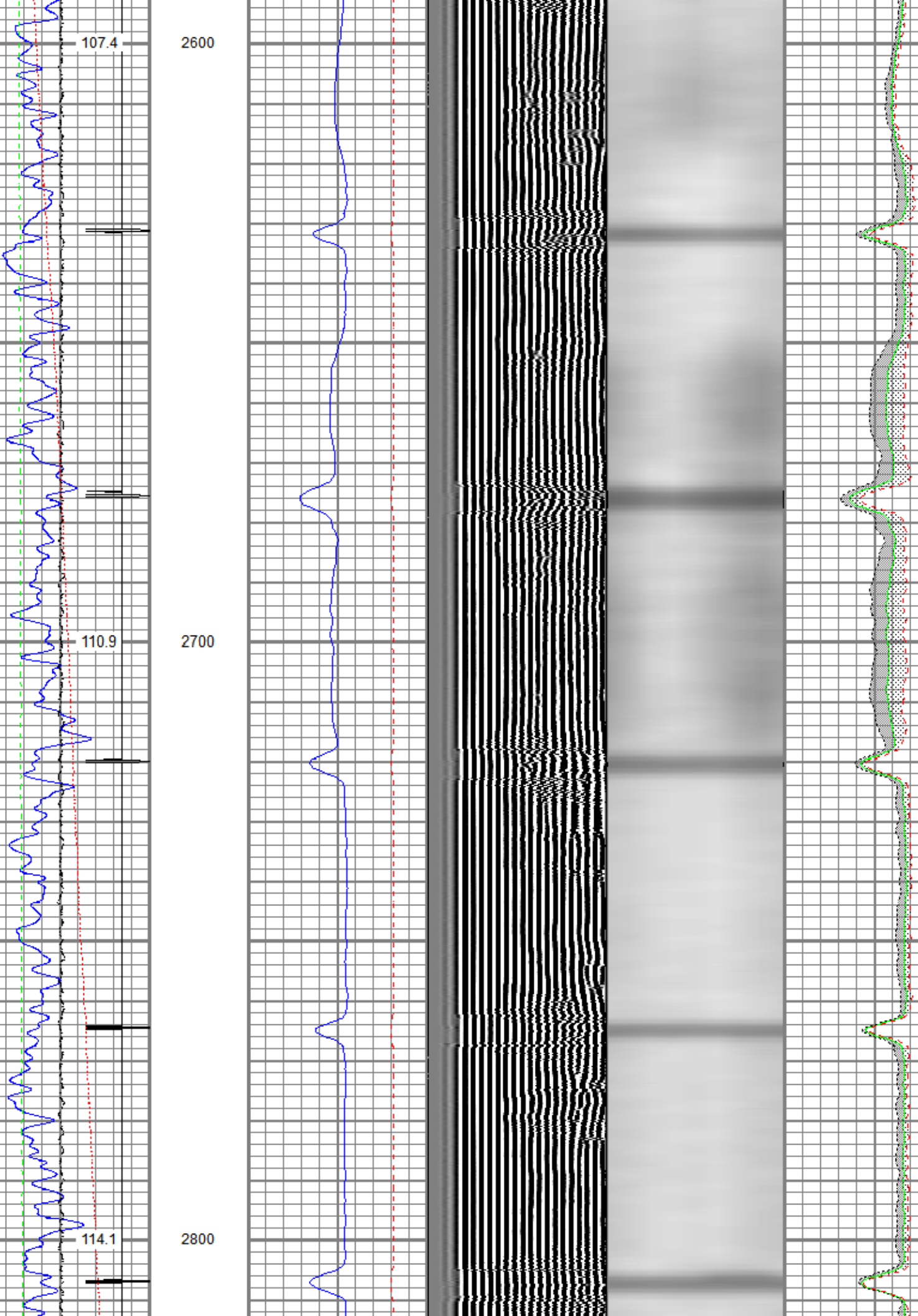
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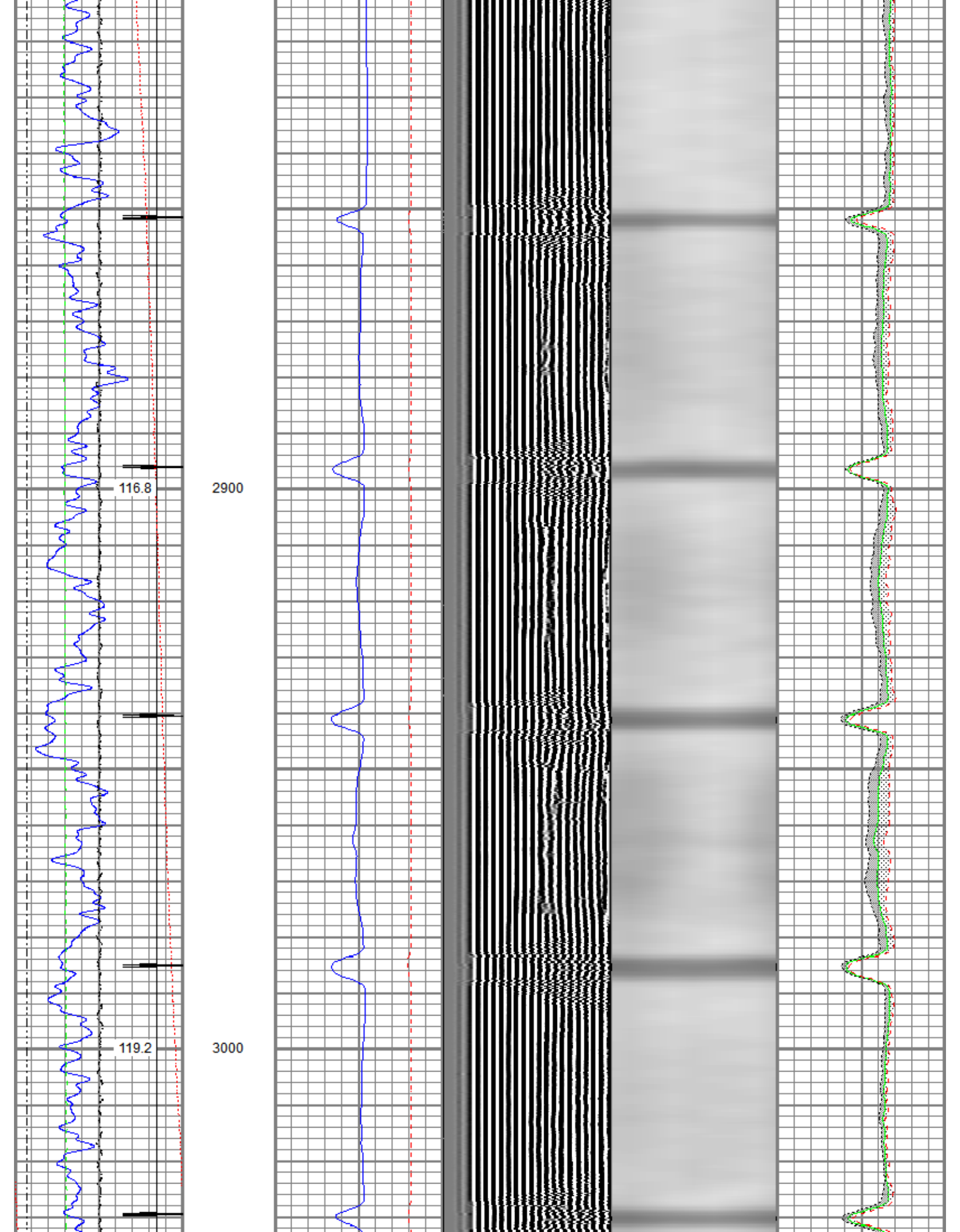
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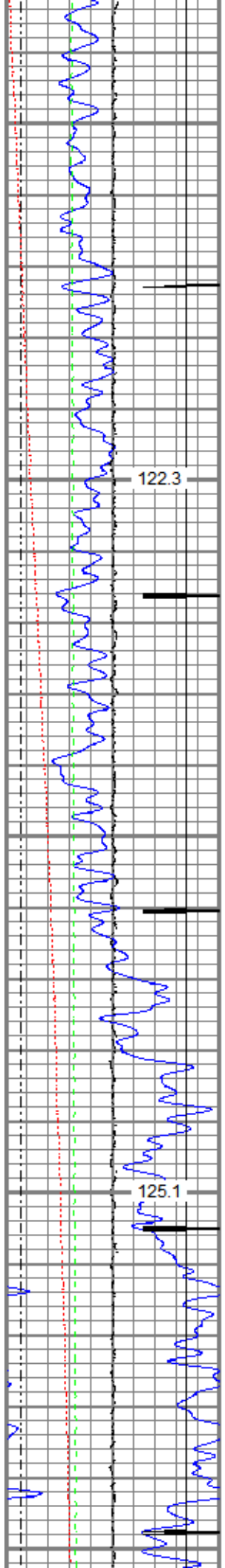
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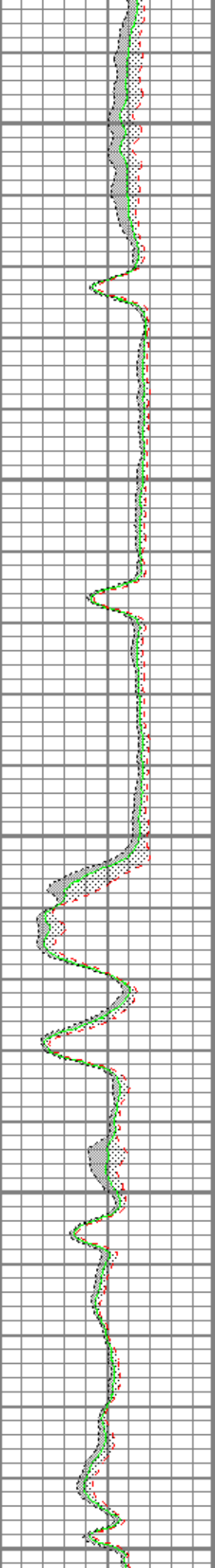
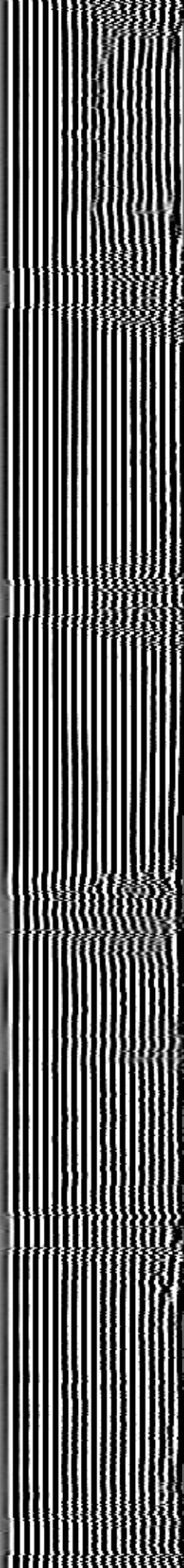
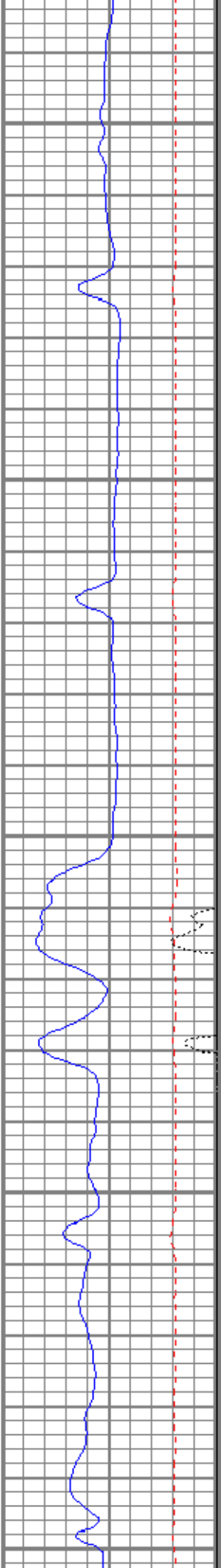


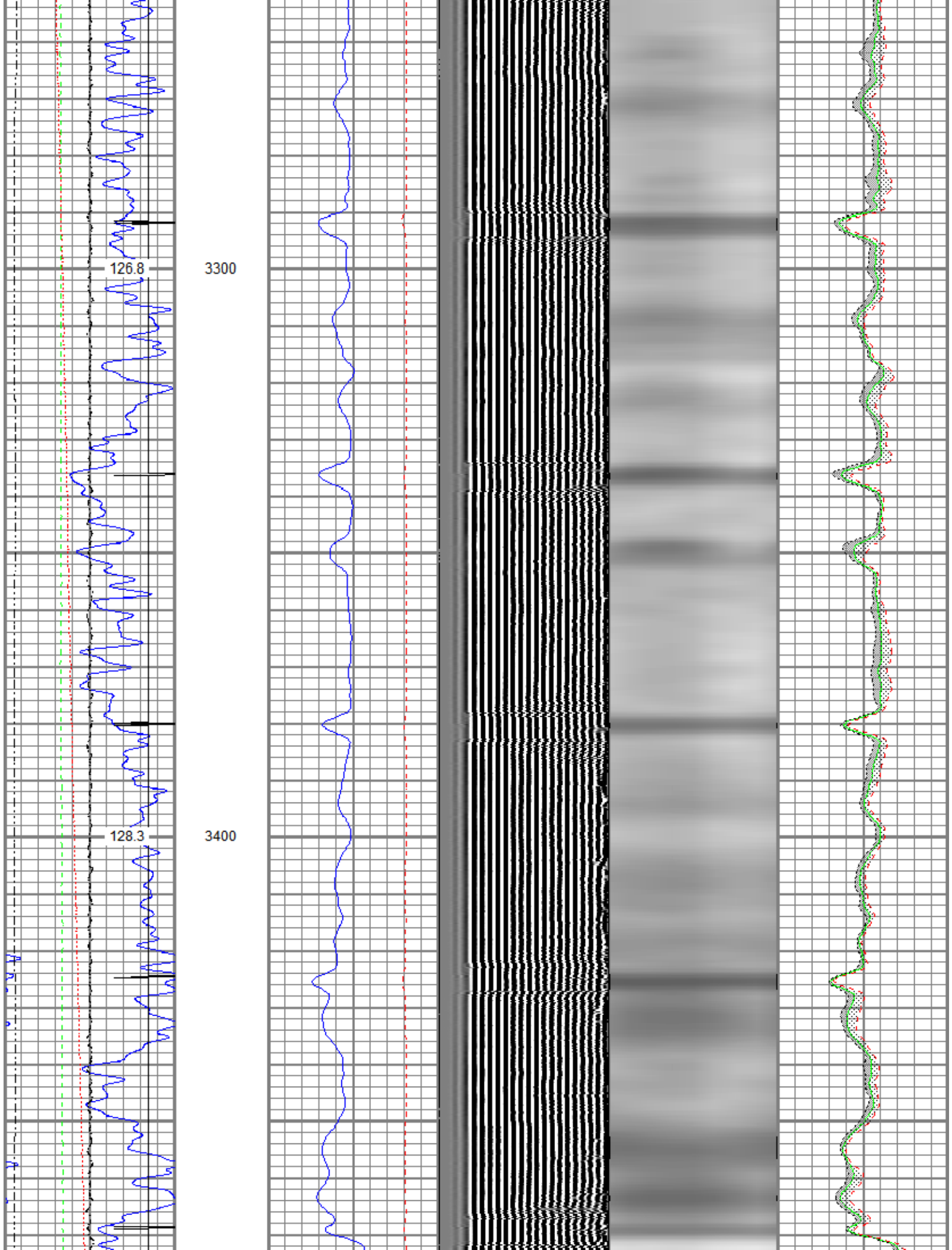


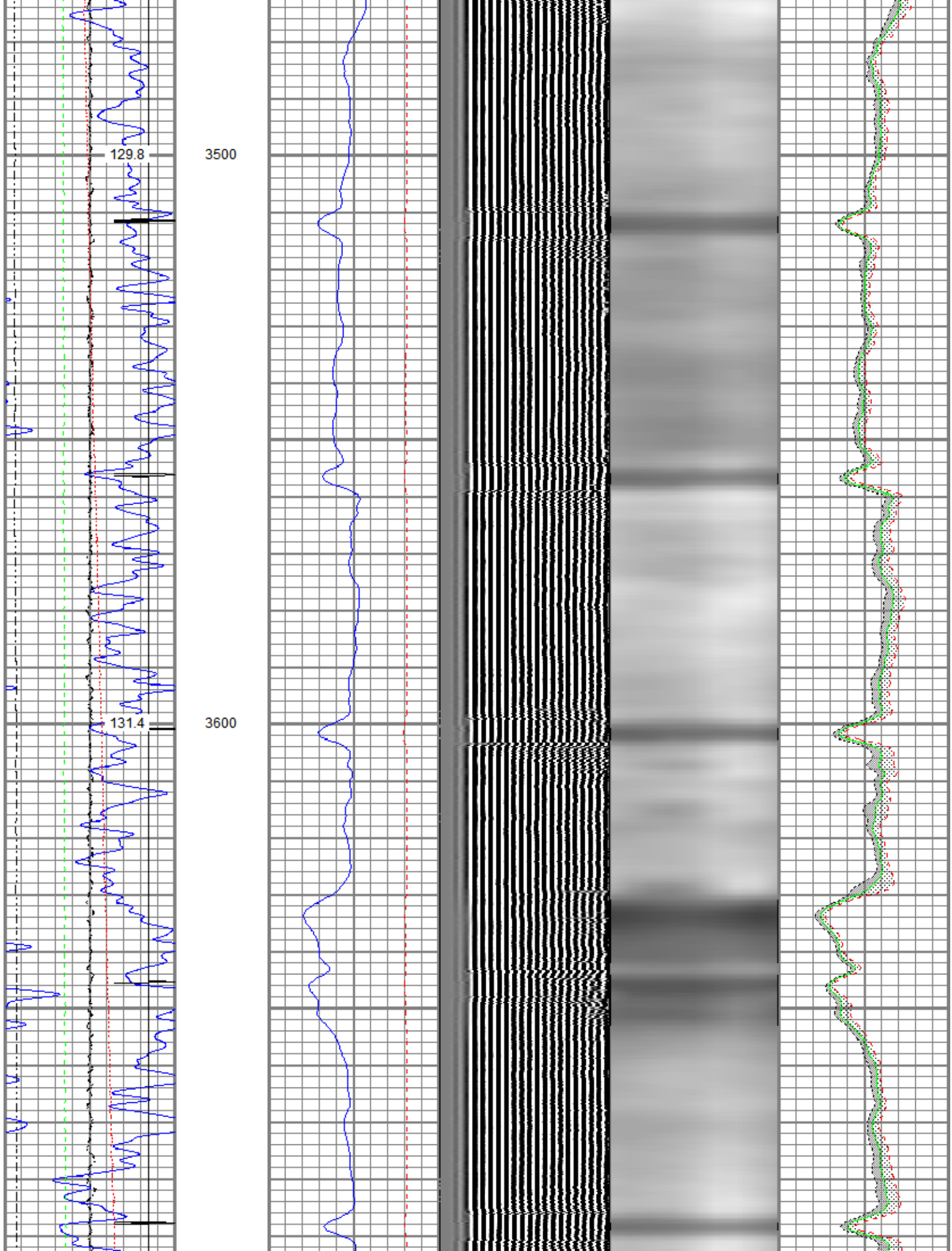


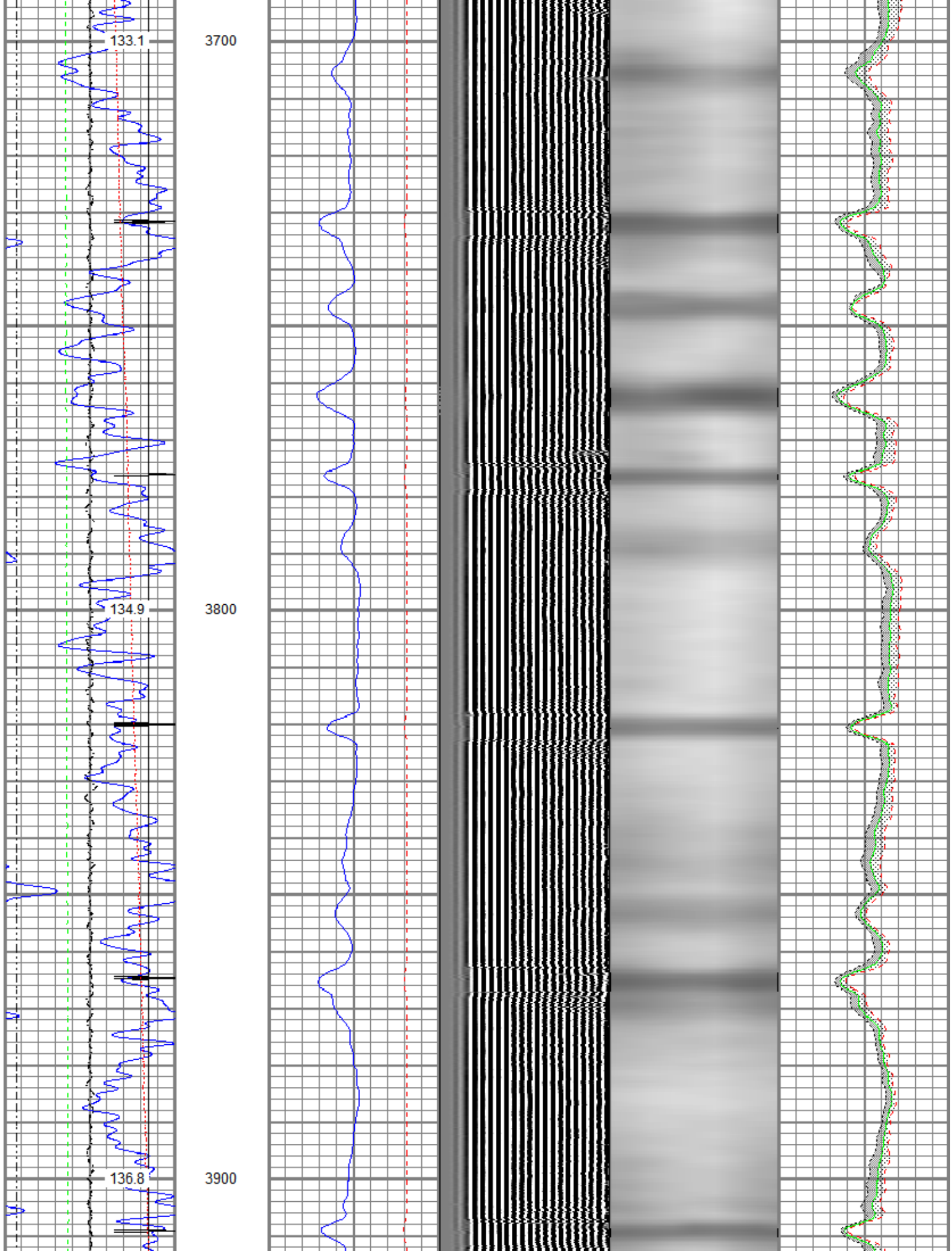
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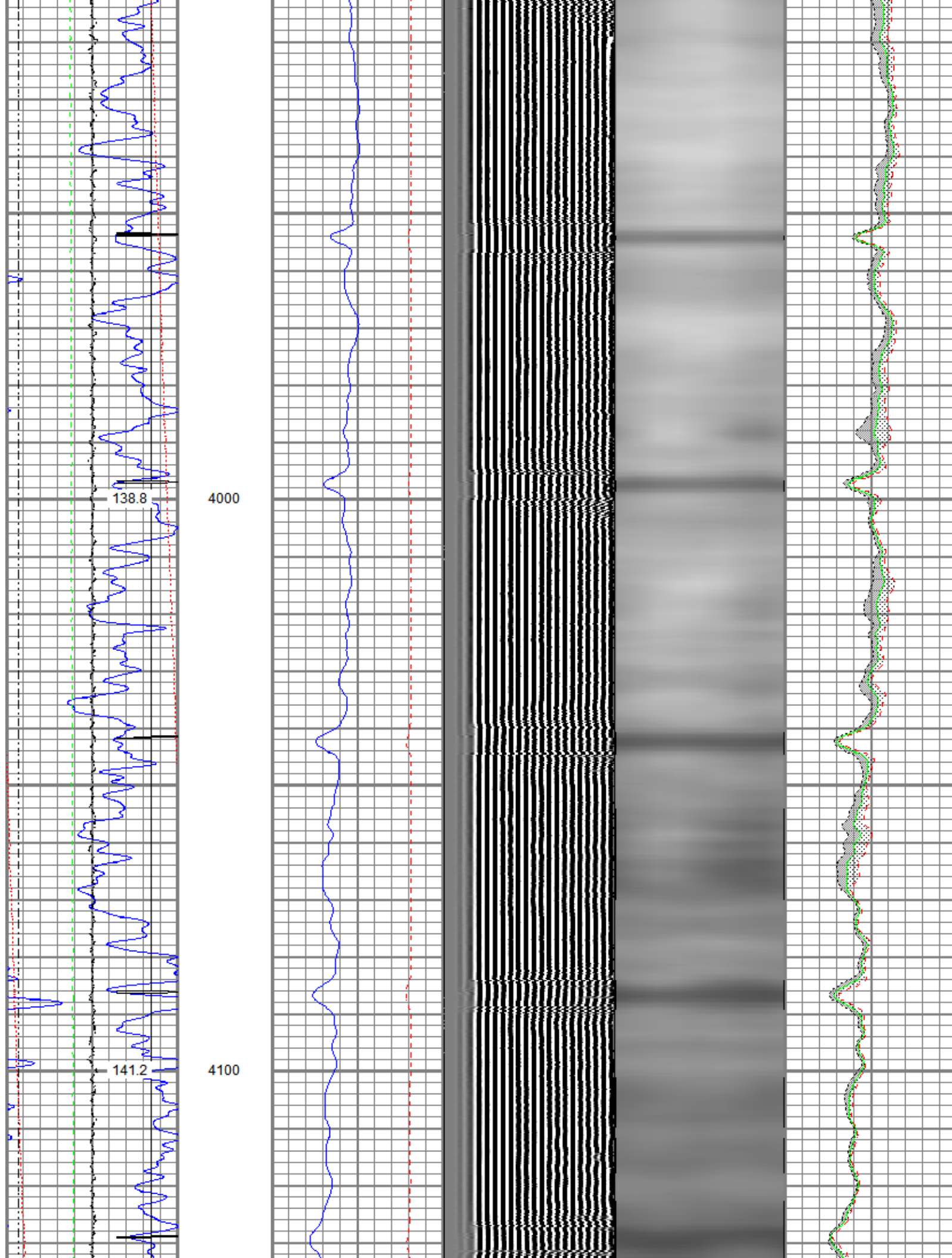
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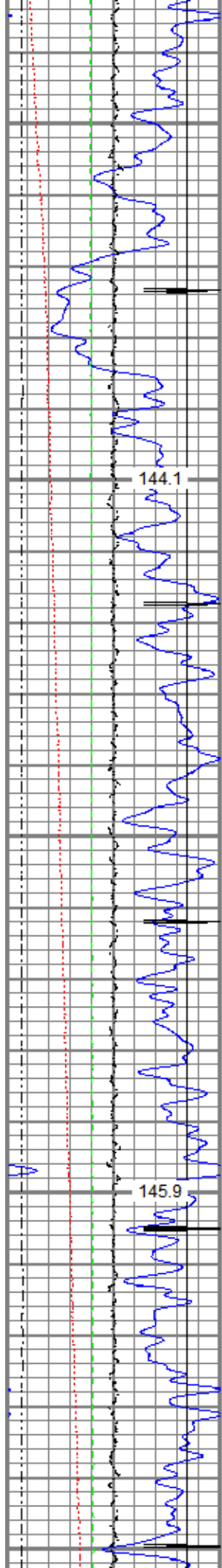






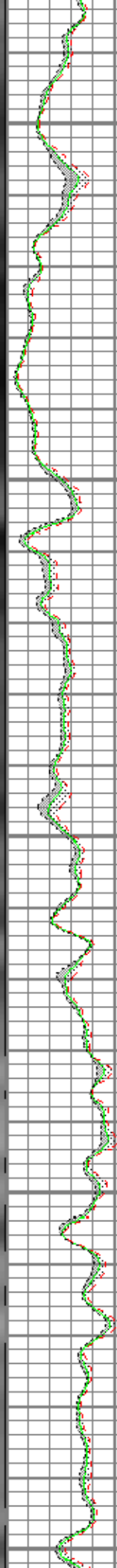
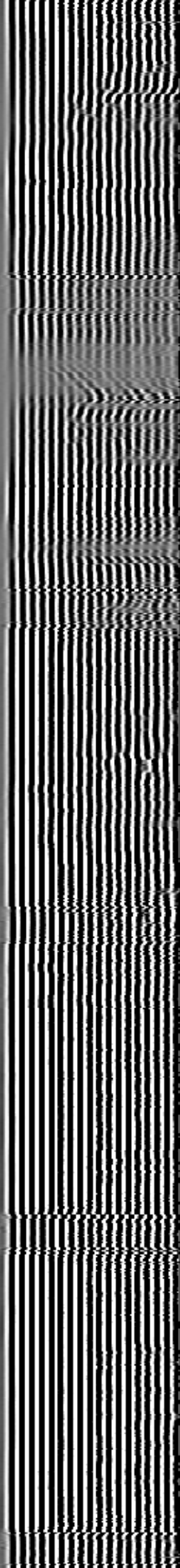
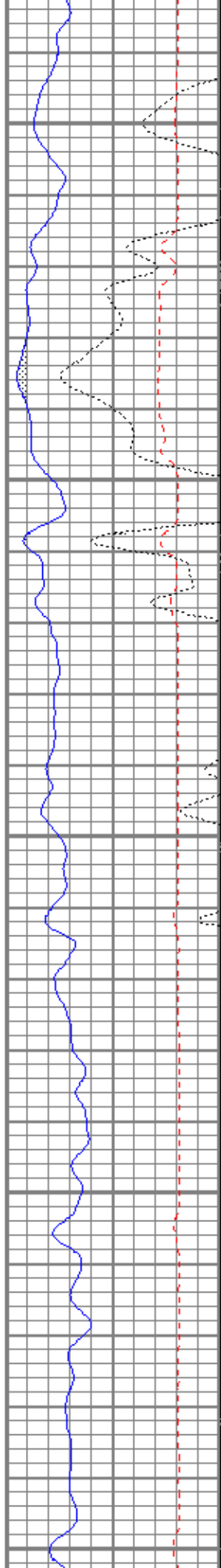


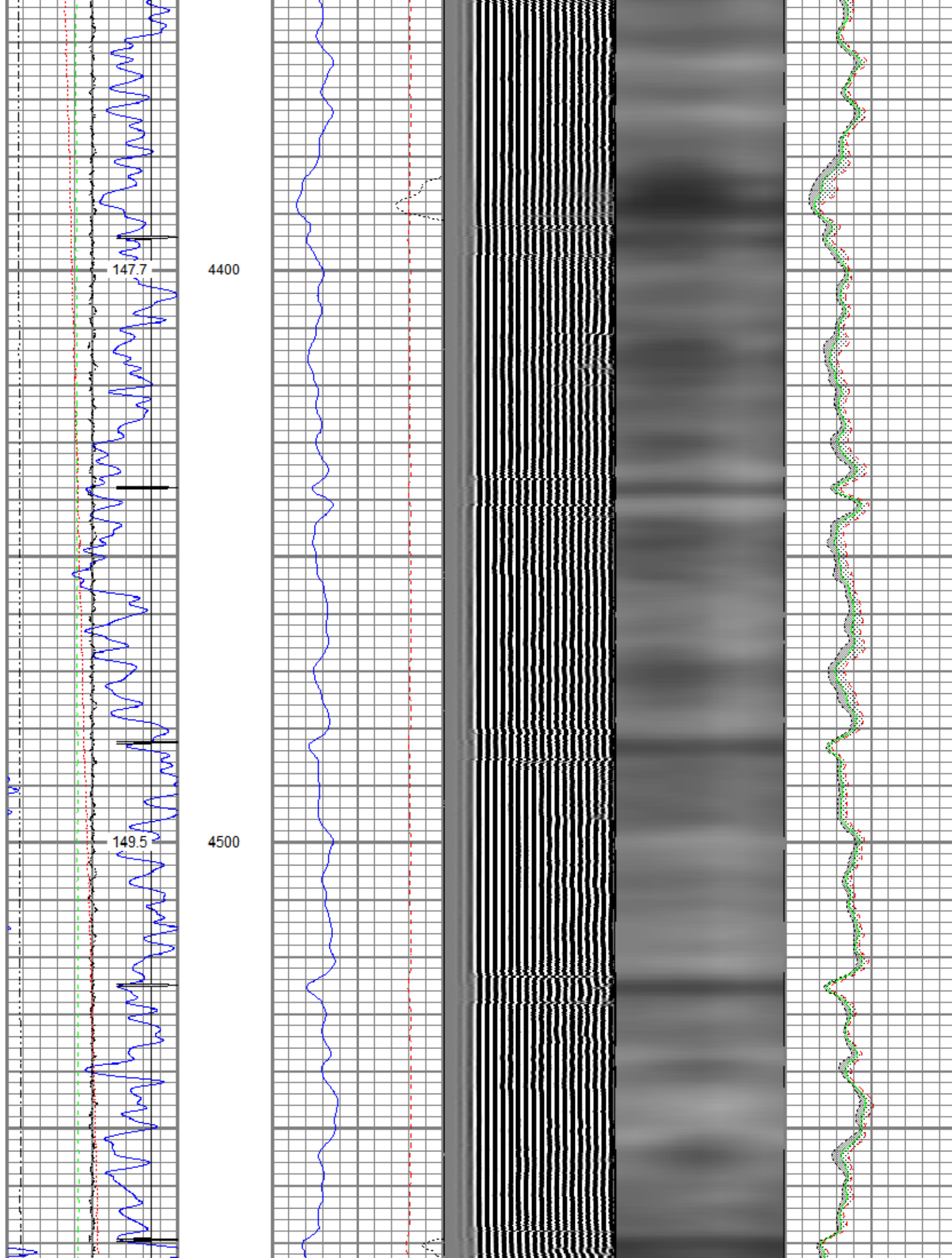


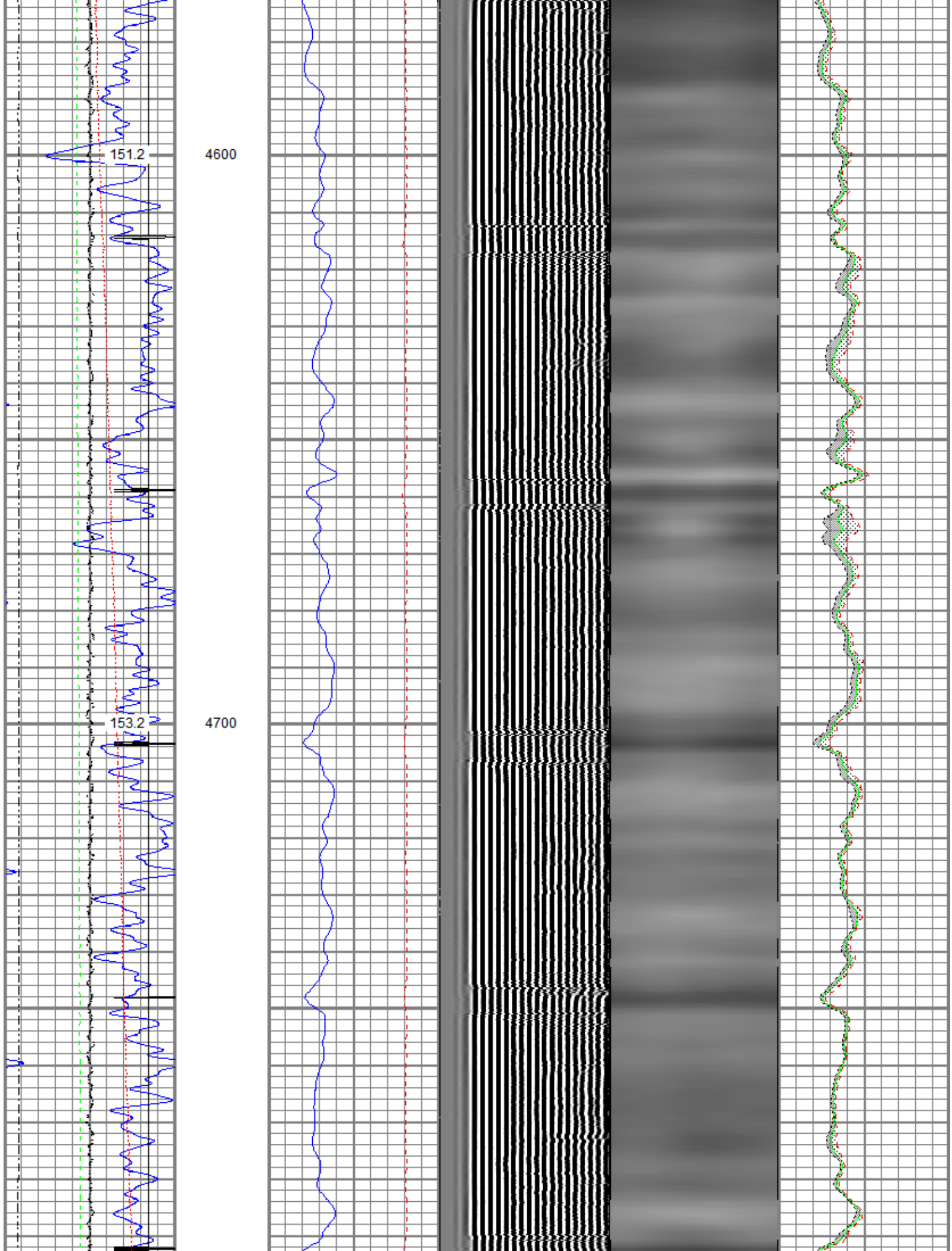


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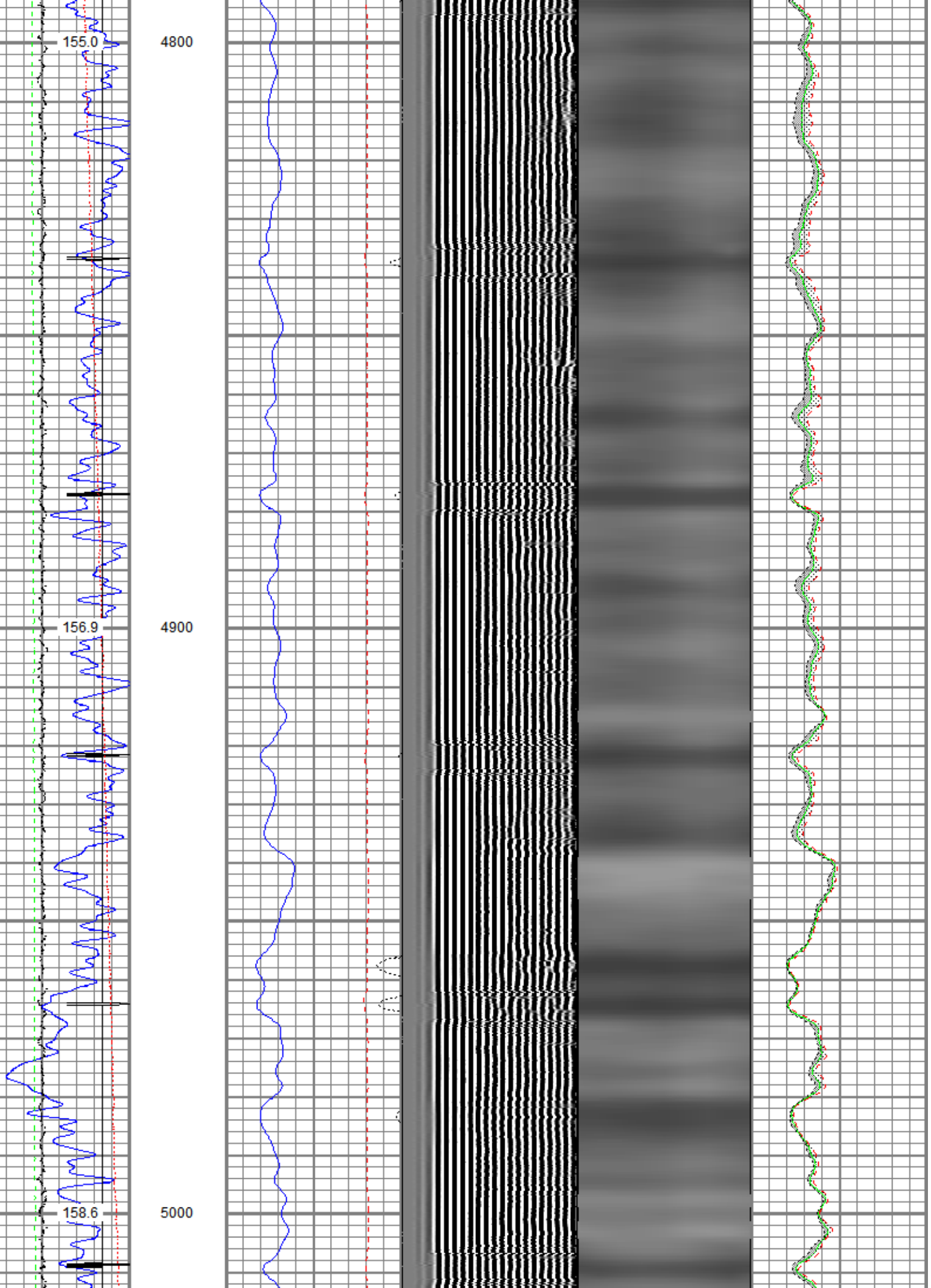
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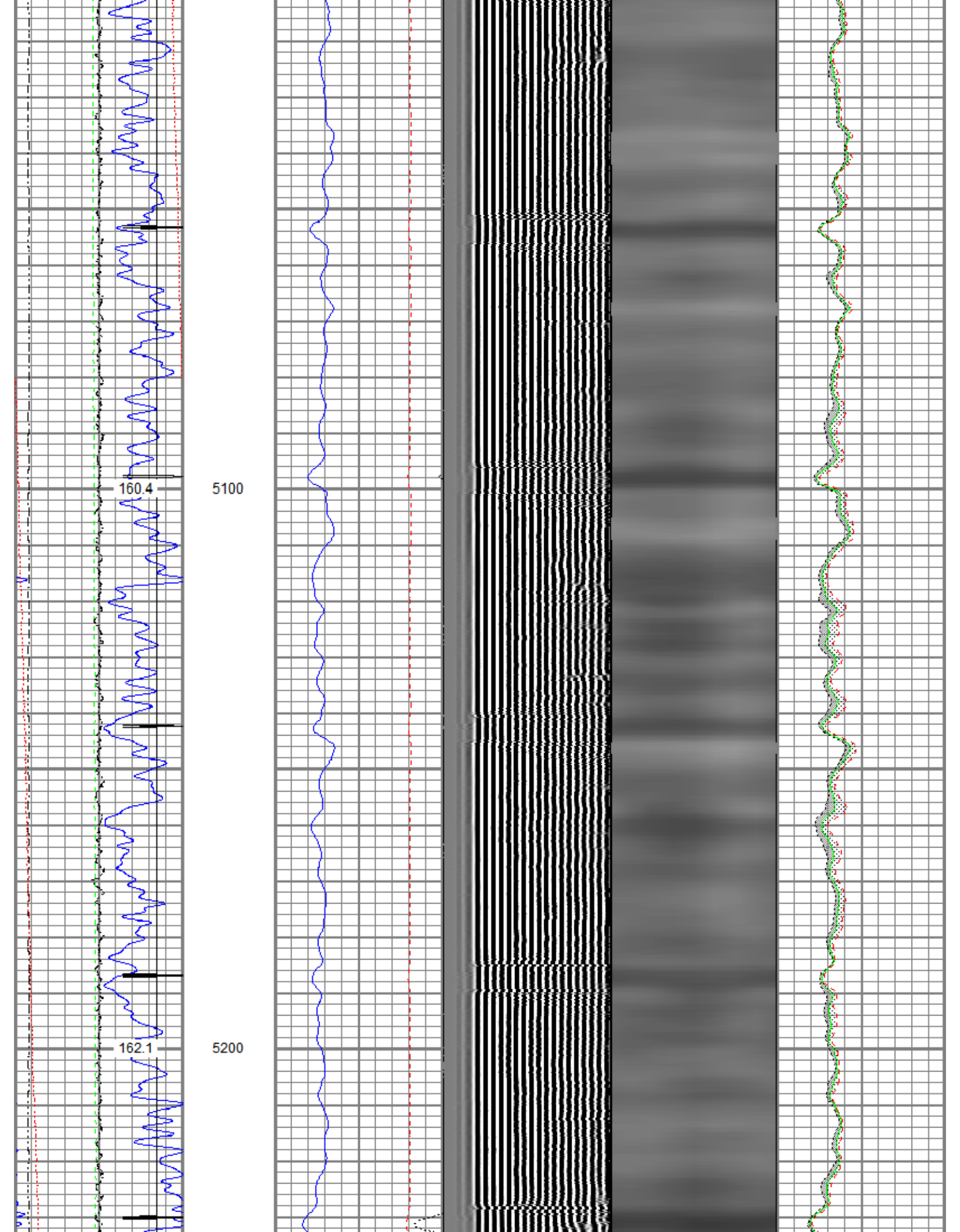
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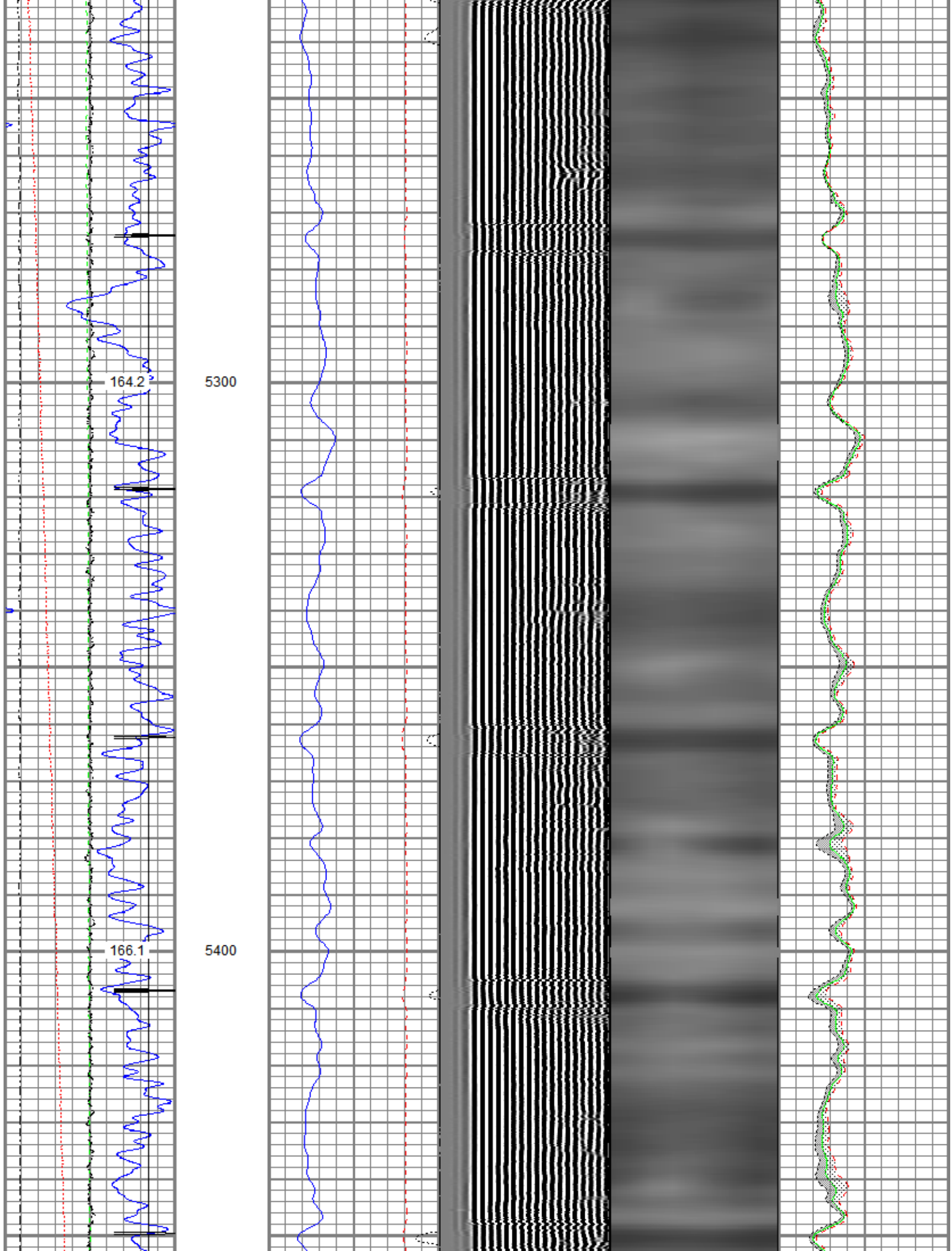
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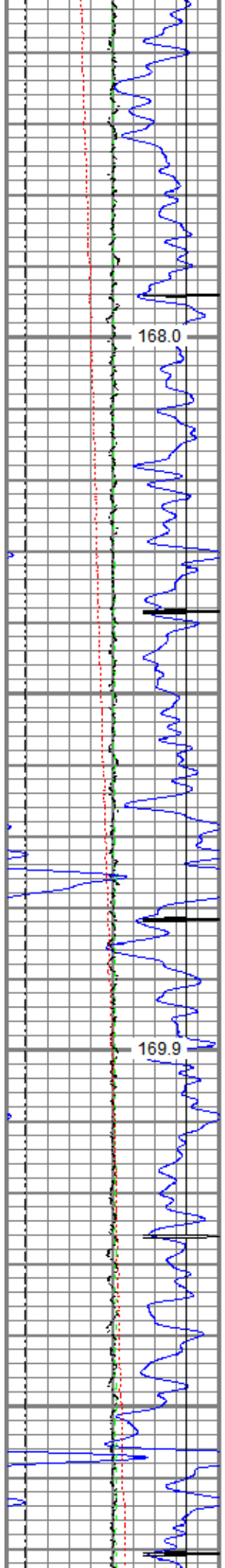
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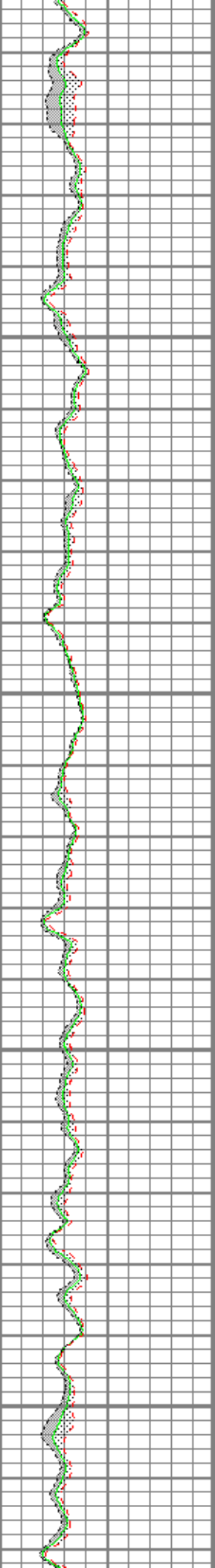
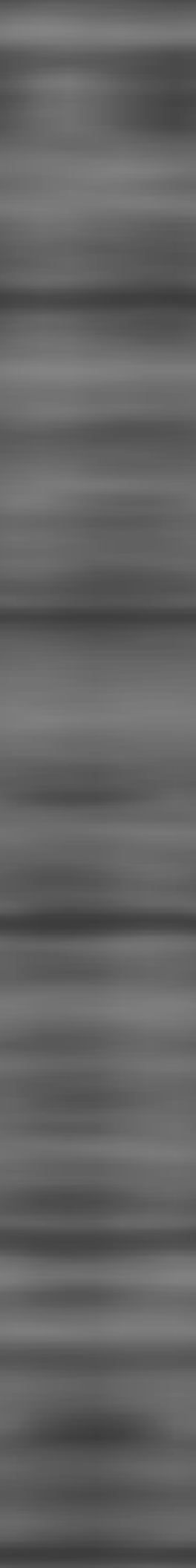
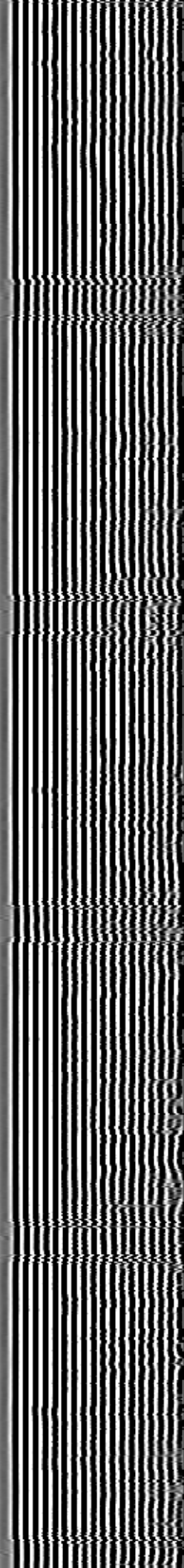
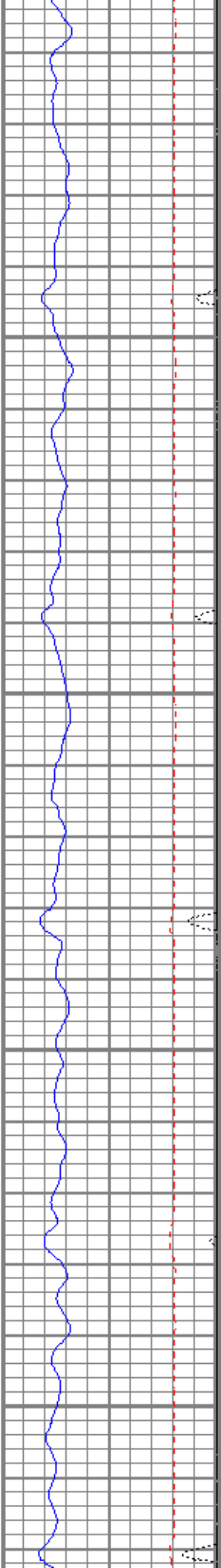


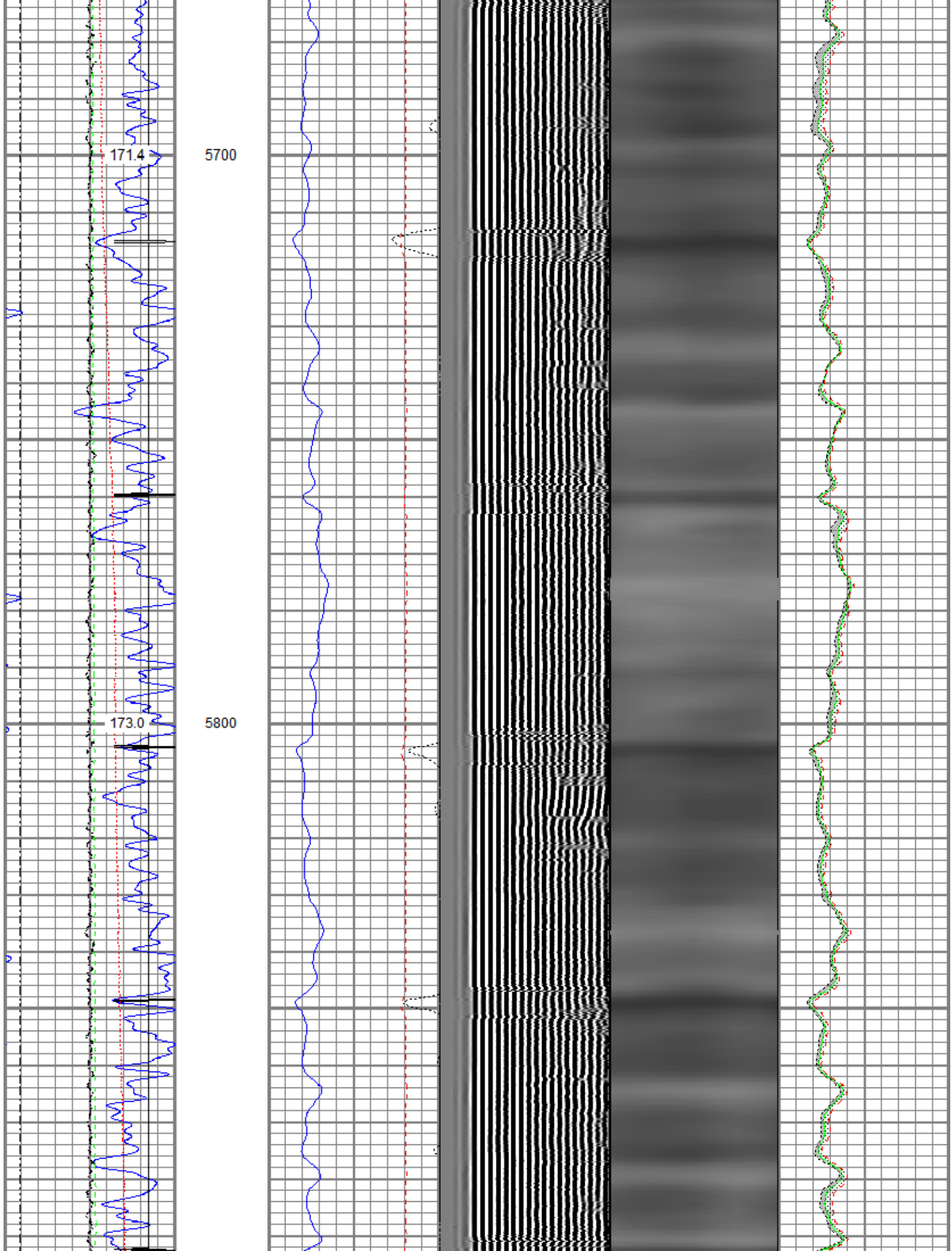


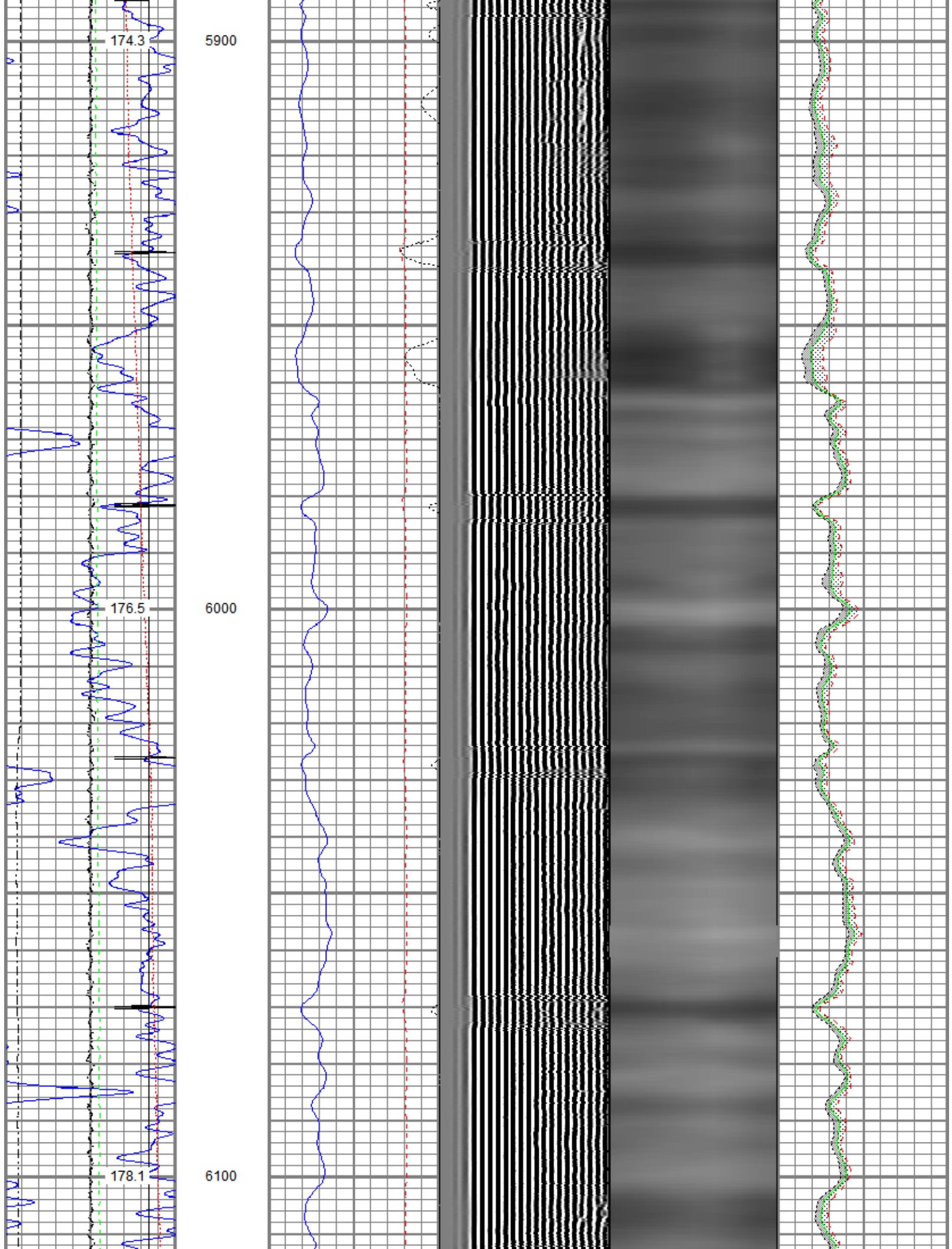


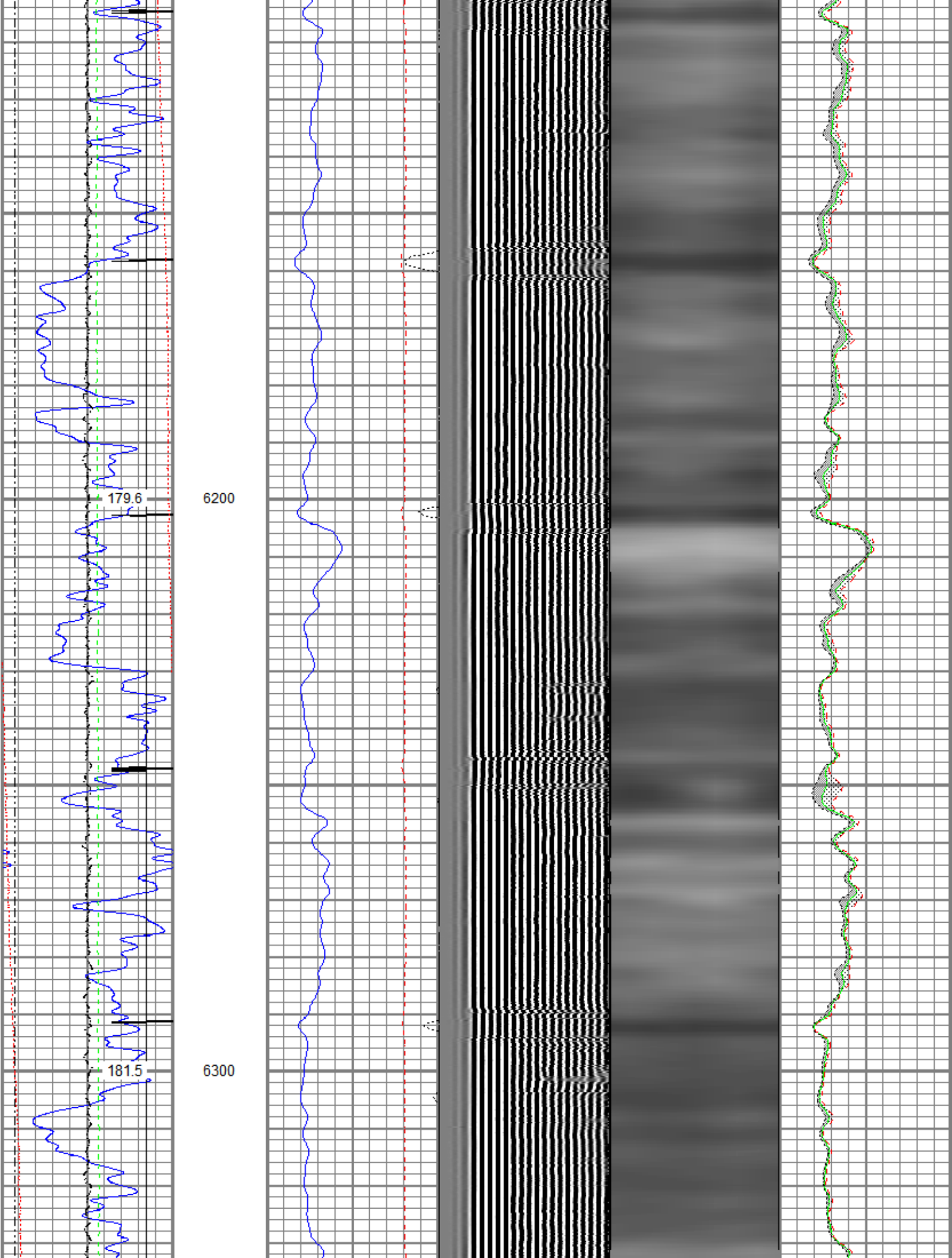
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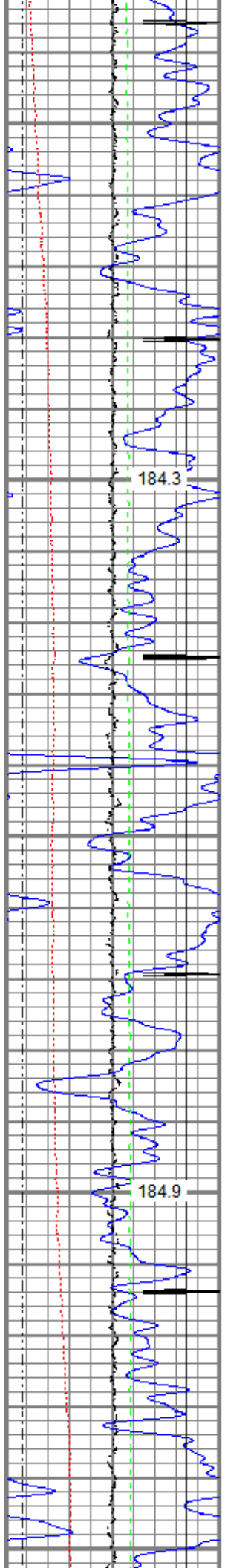
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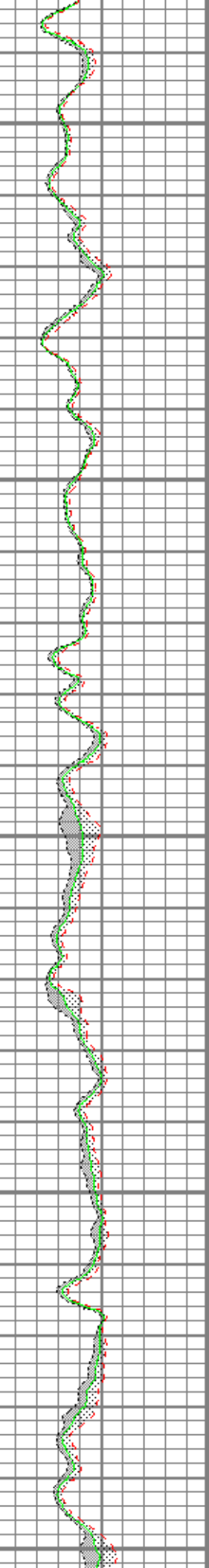
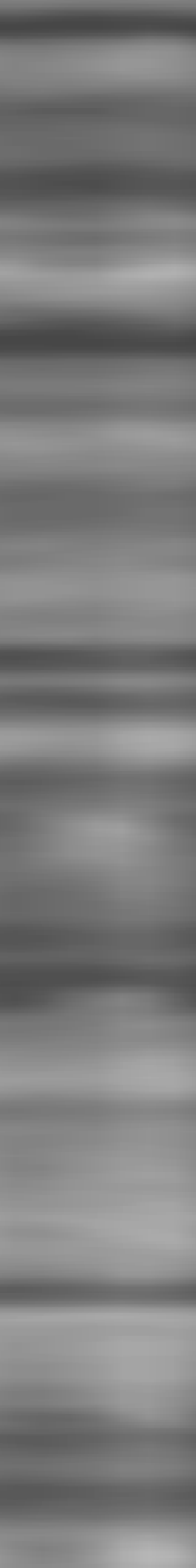
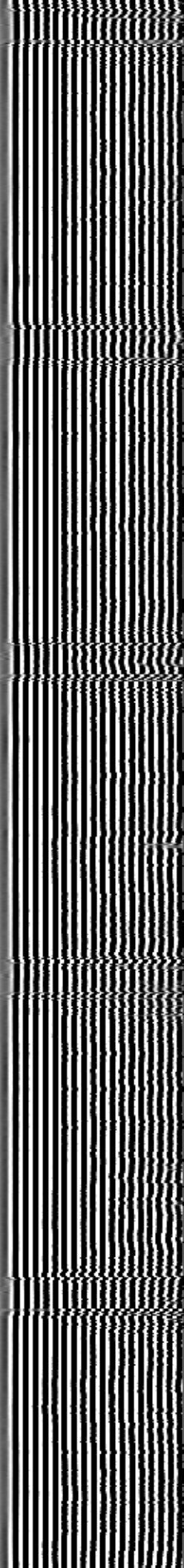
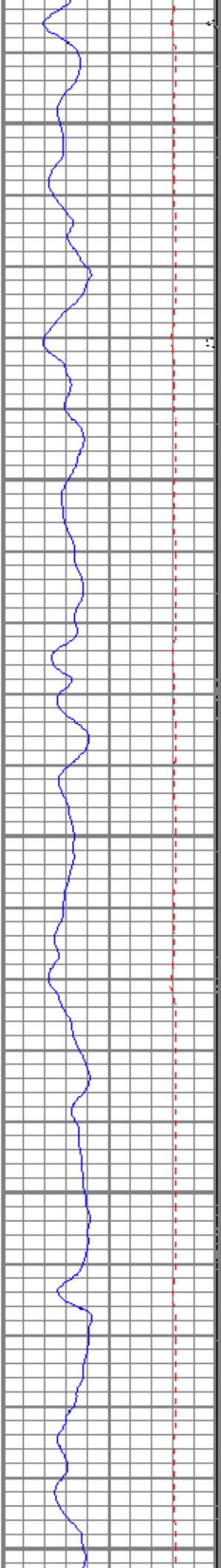


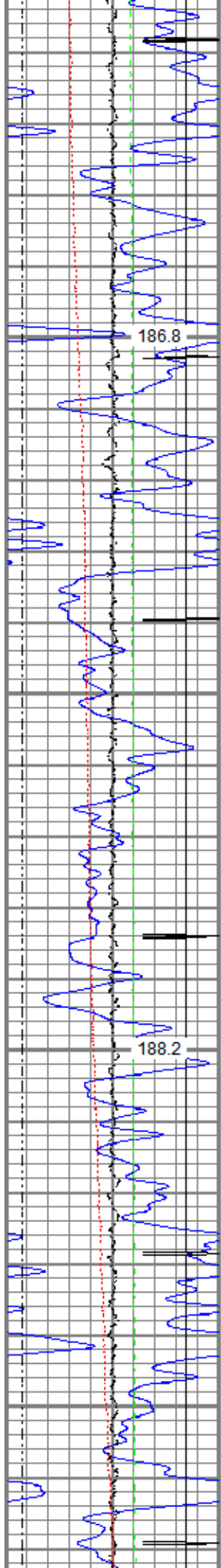




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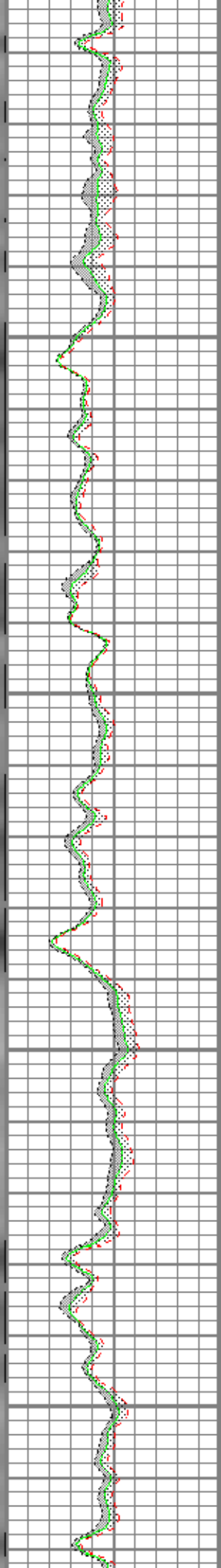
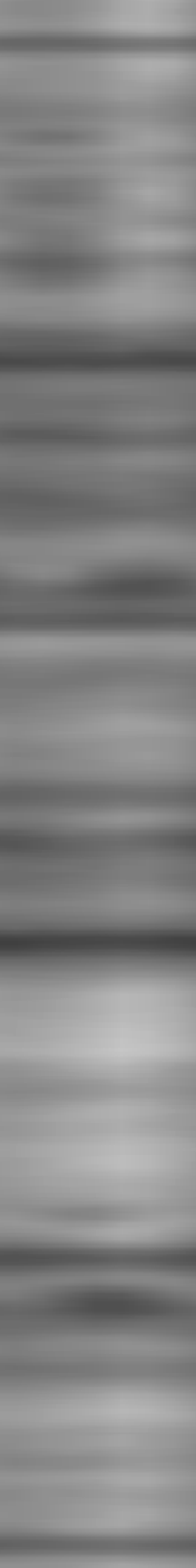
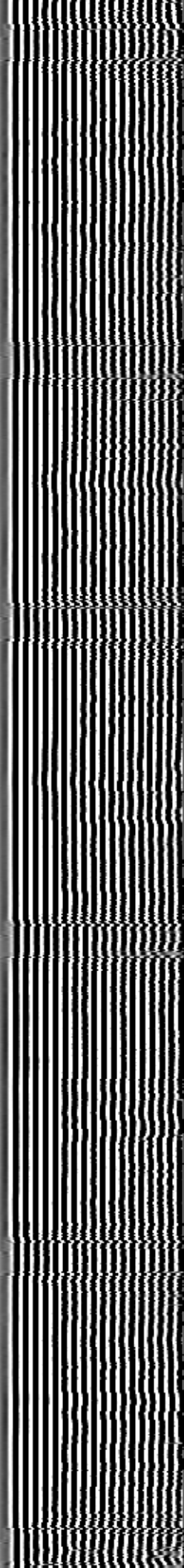
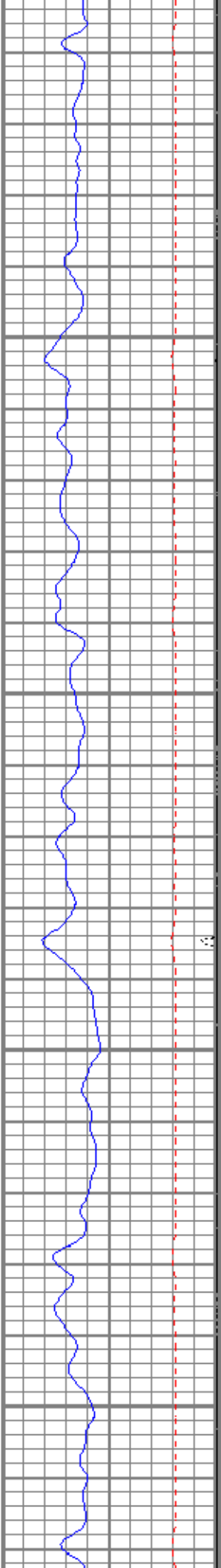
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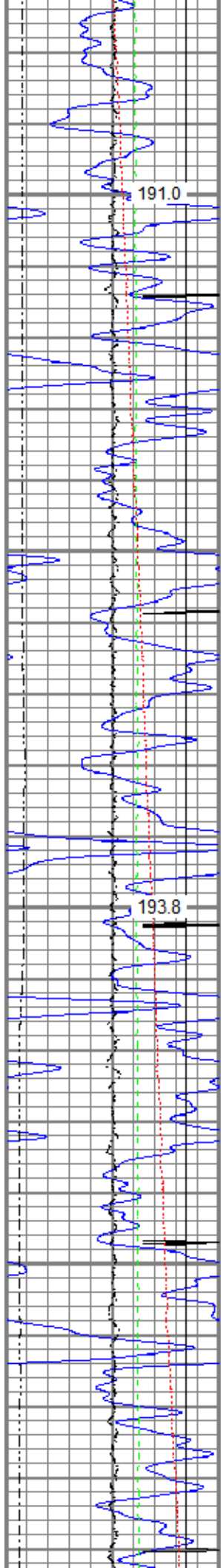




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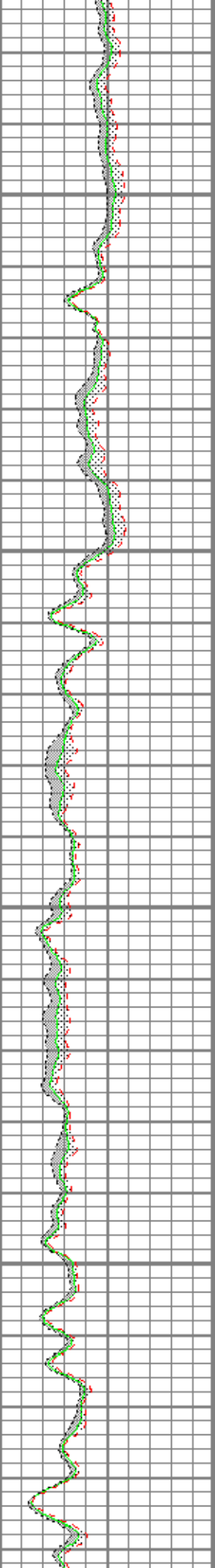
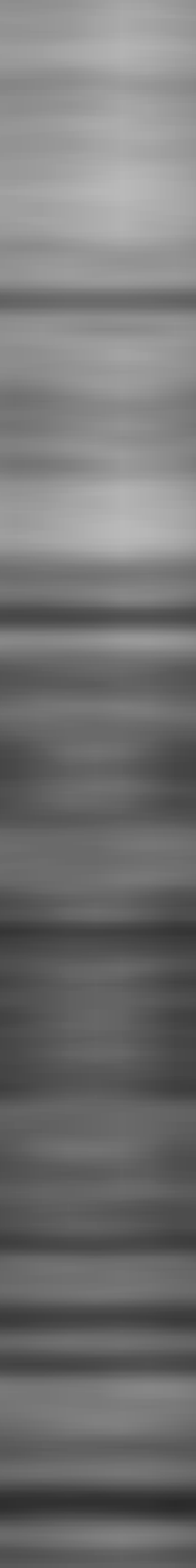
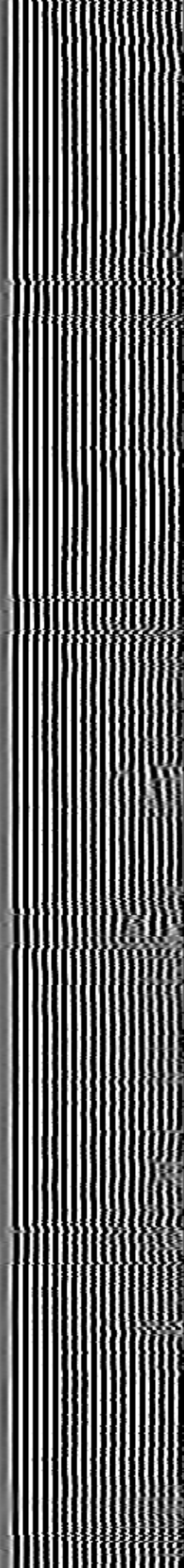
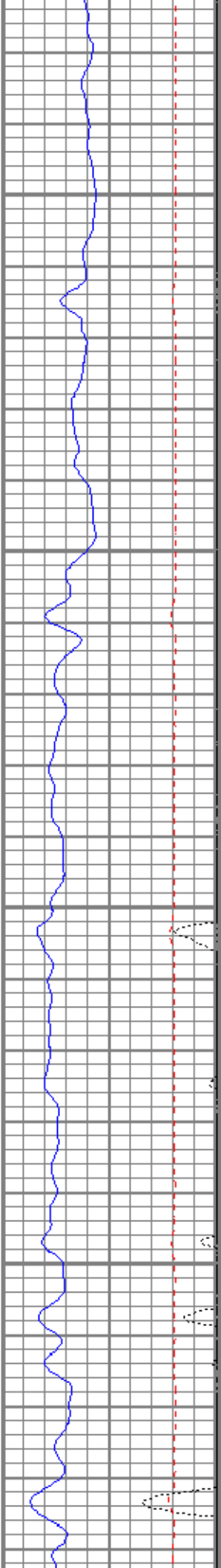
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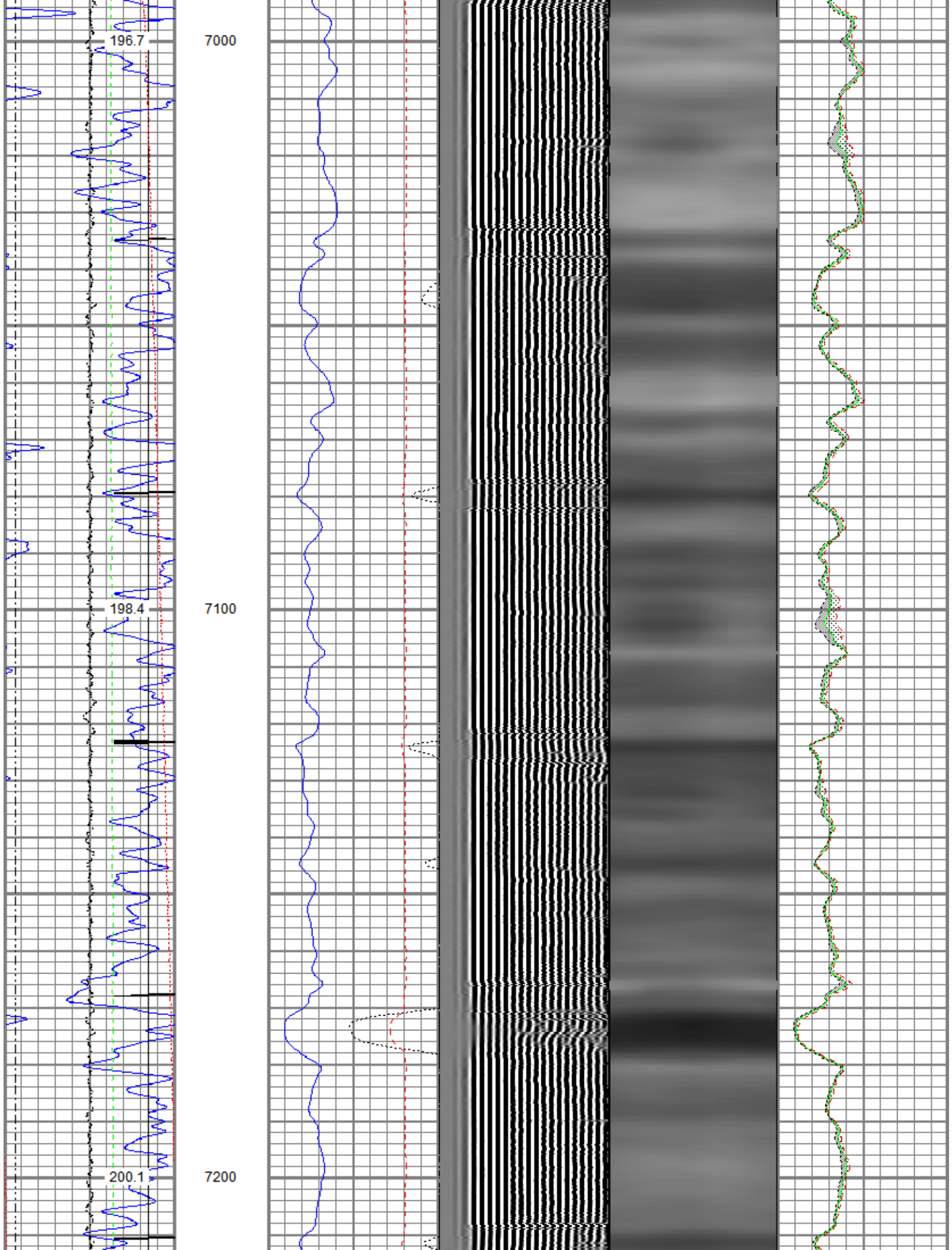


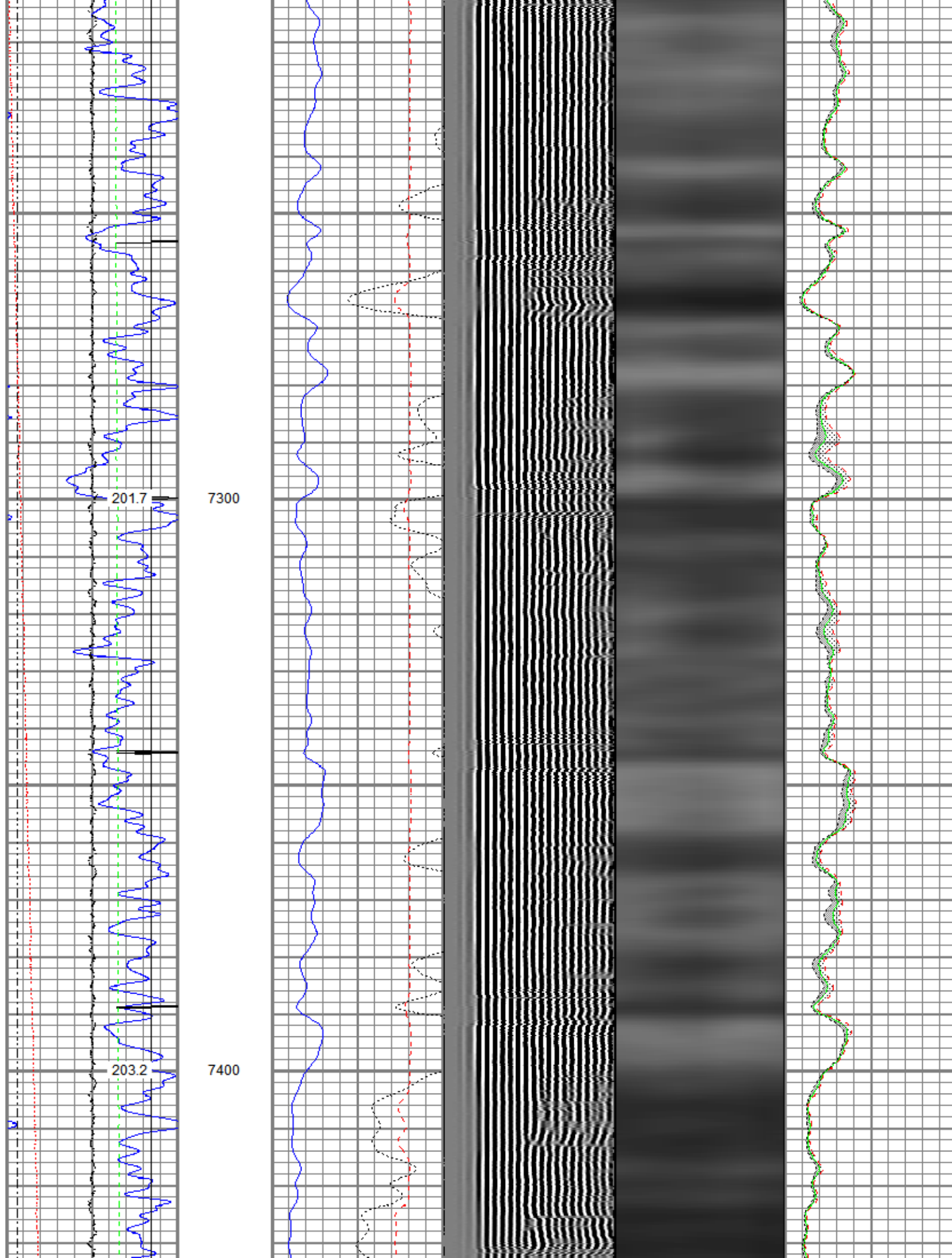


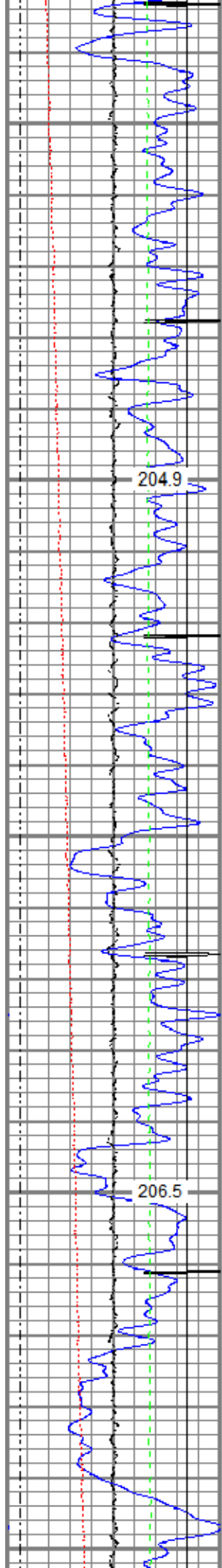
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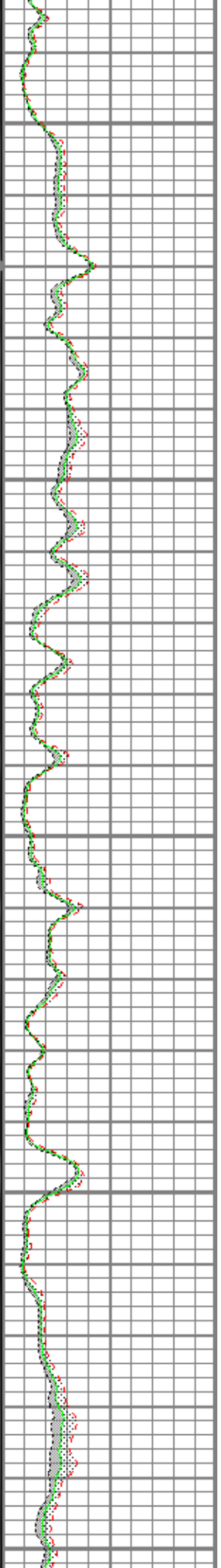
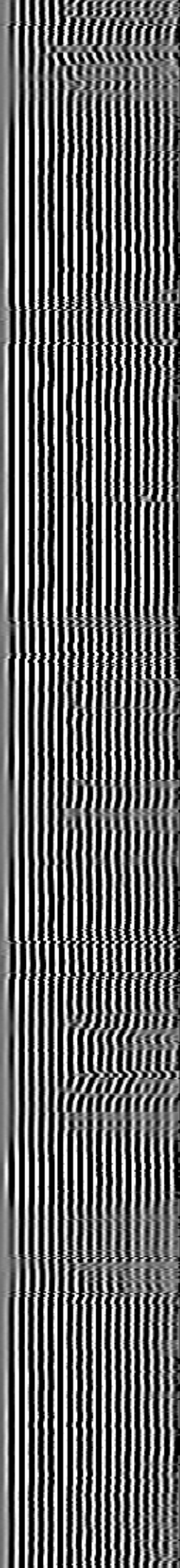
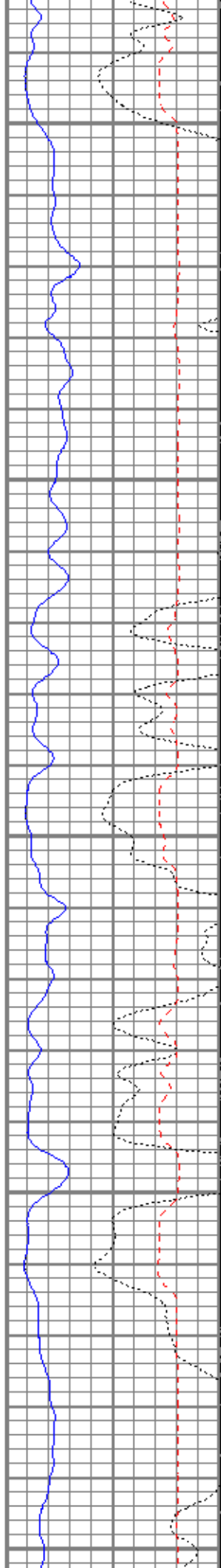


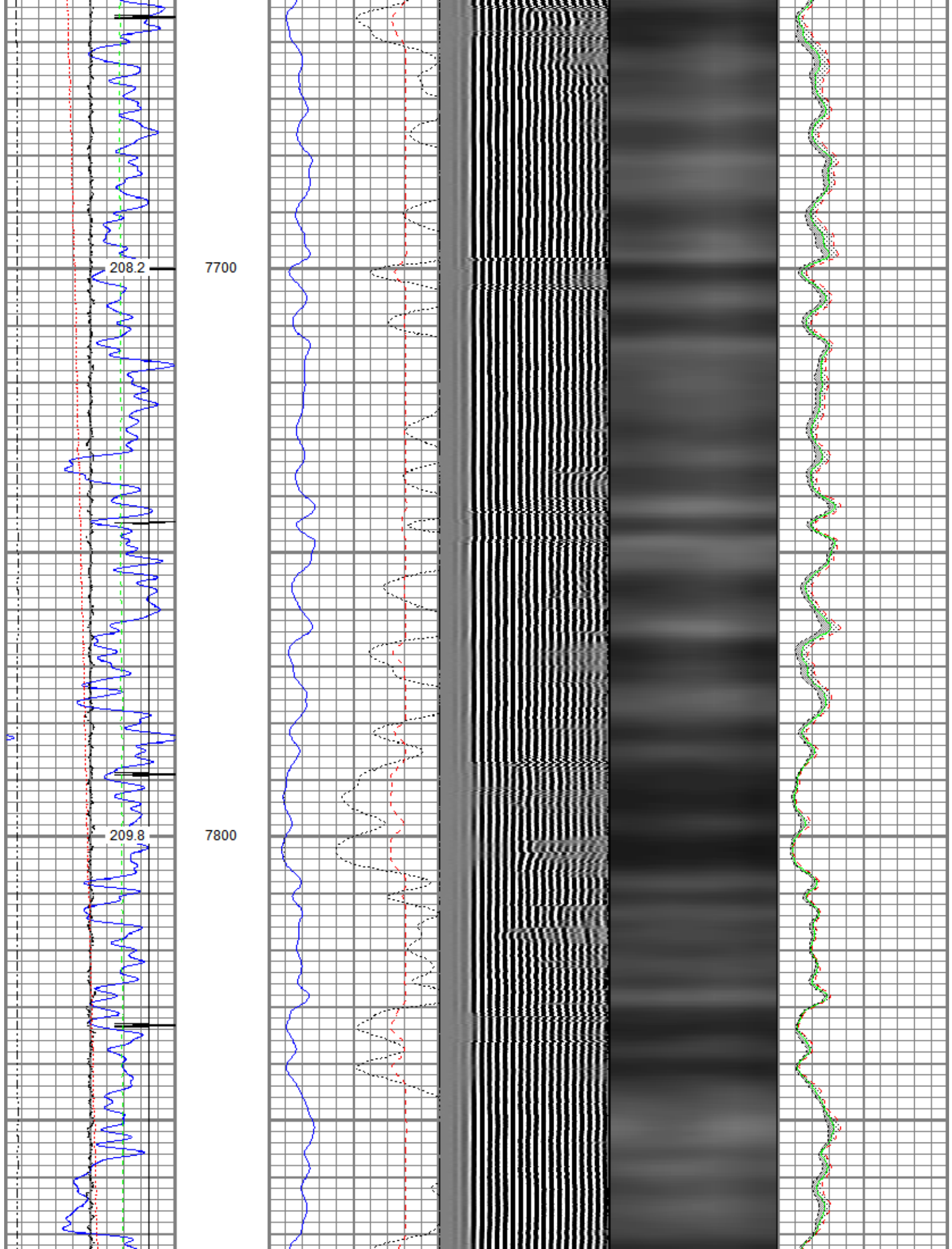




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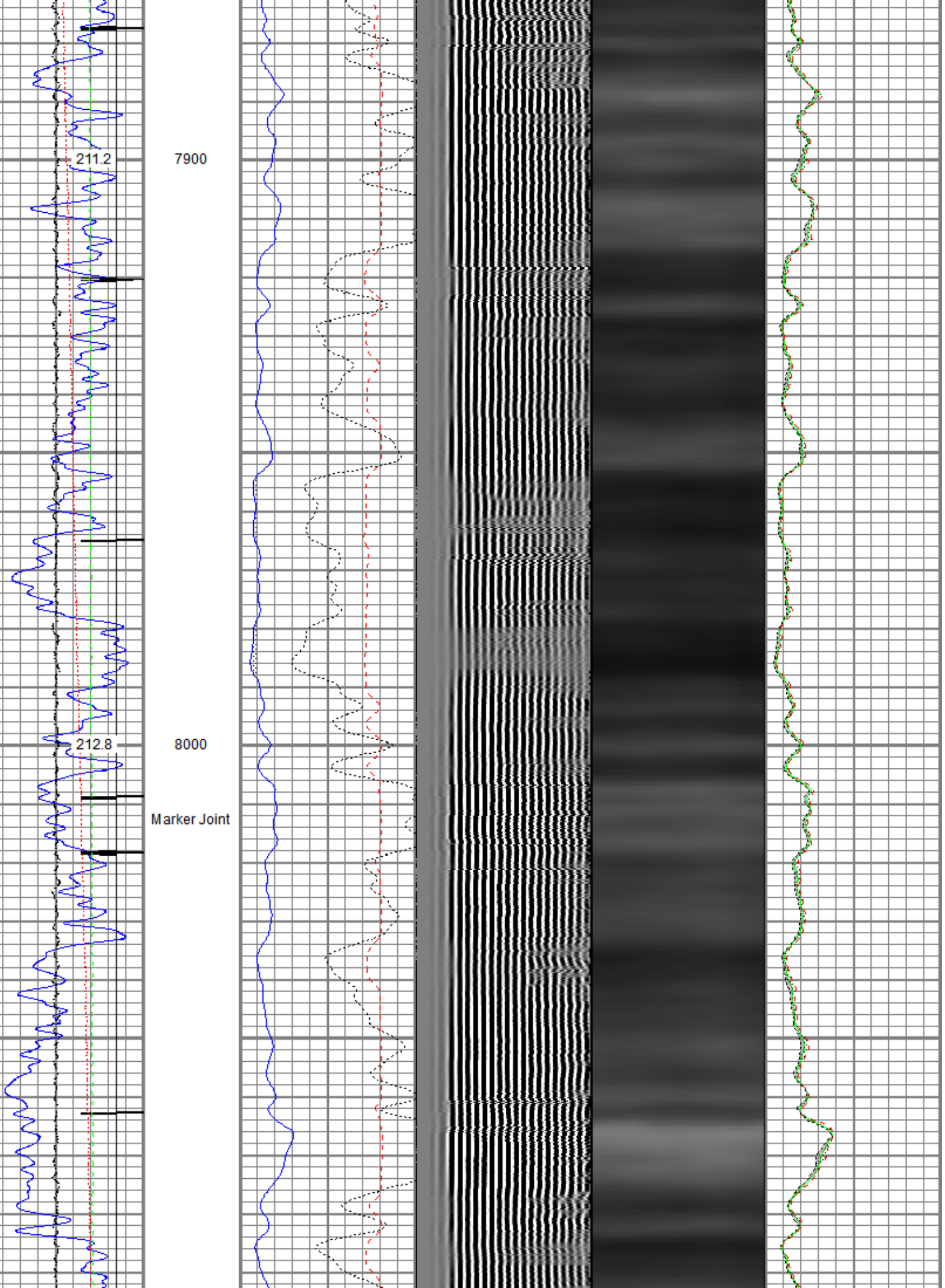
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Marker Joint



214.2

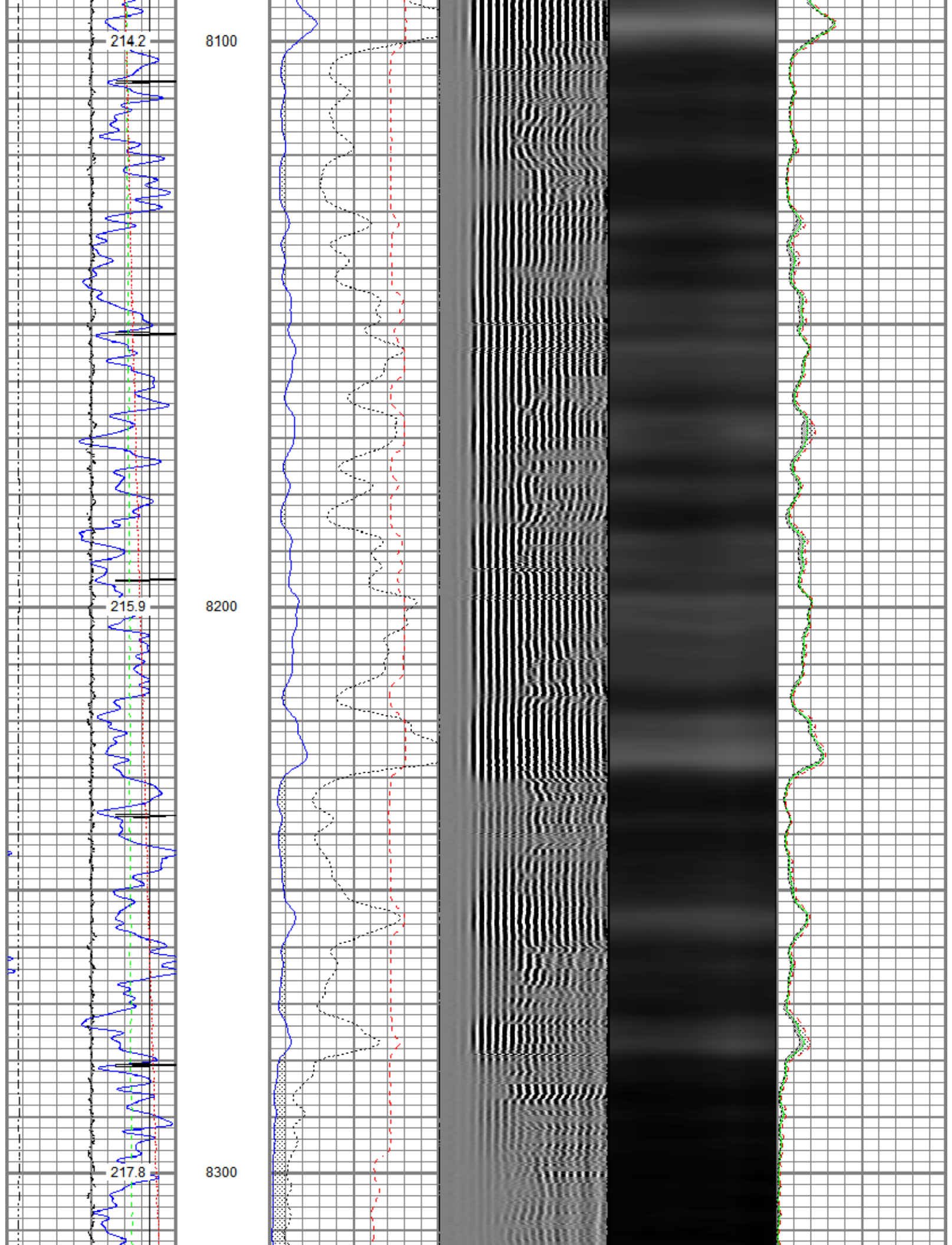
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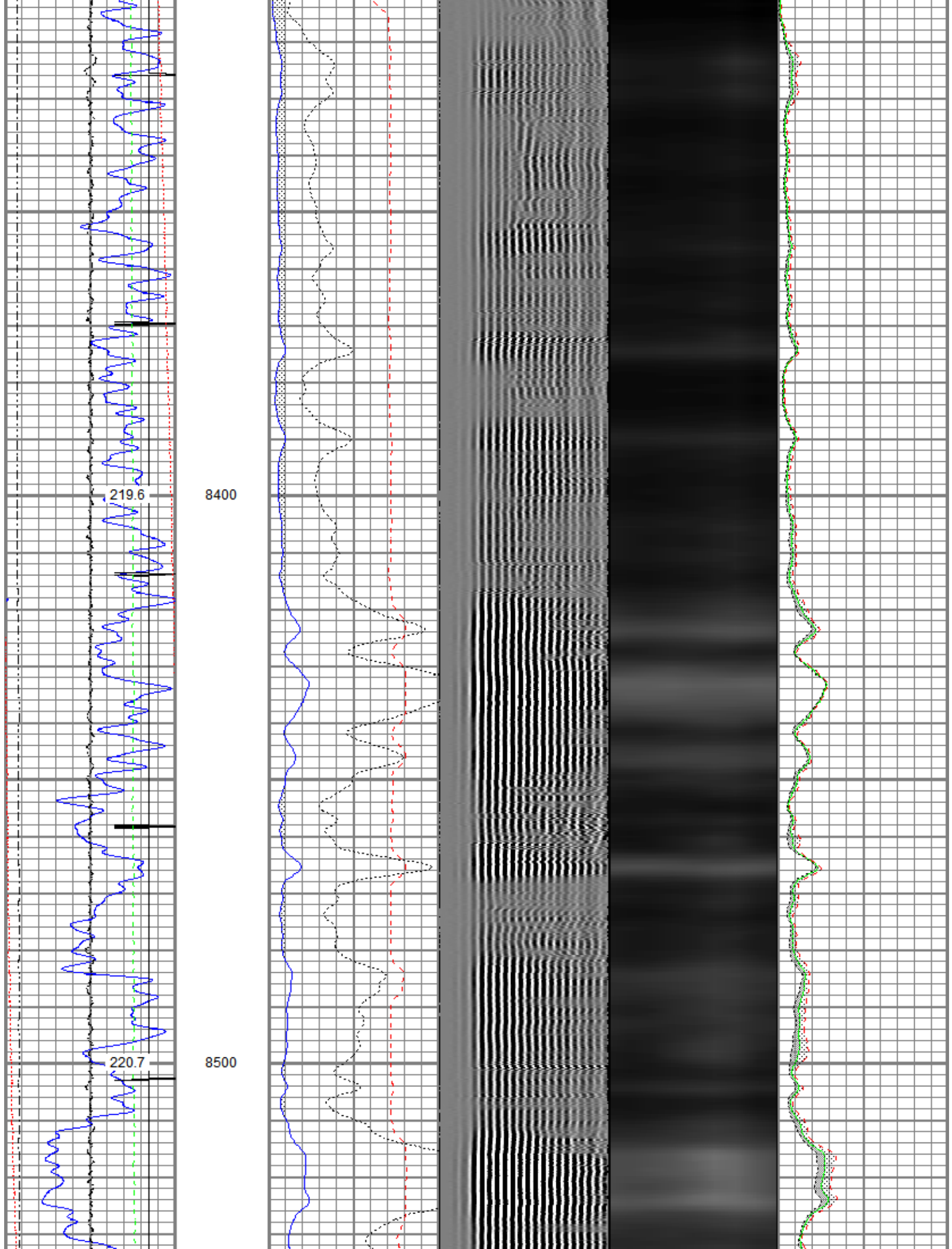
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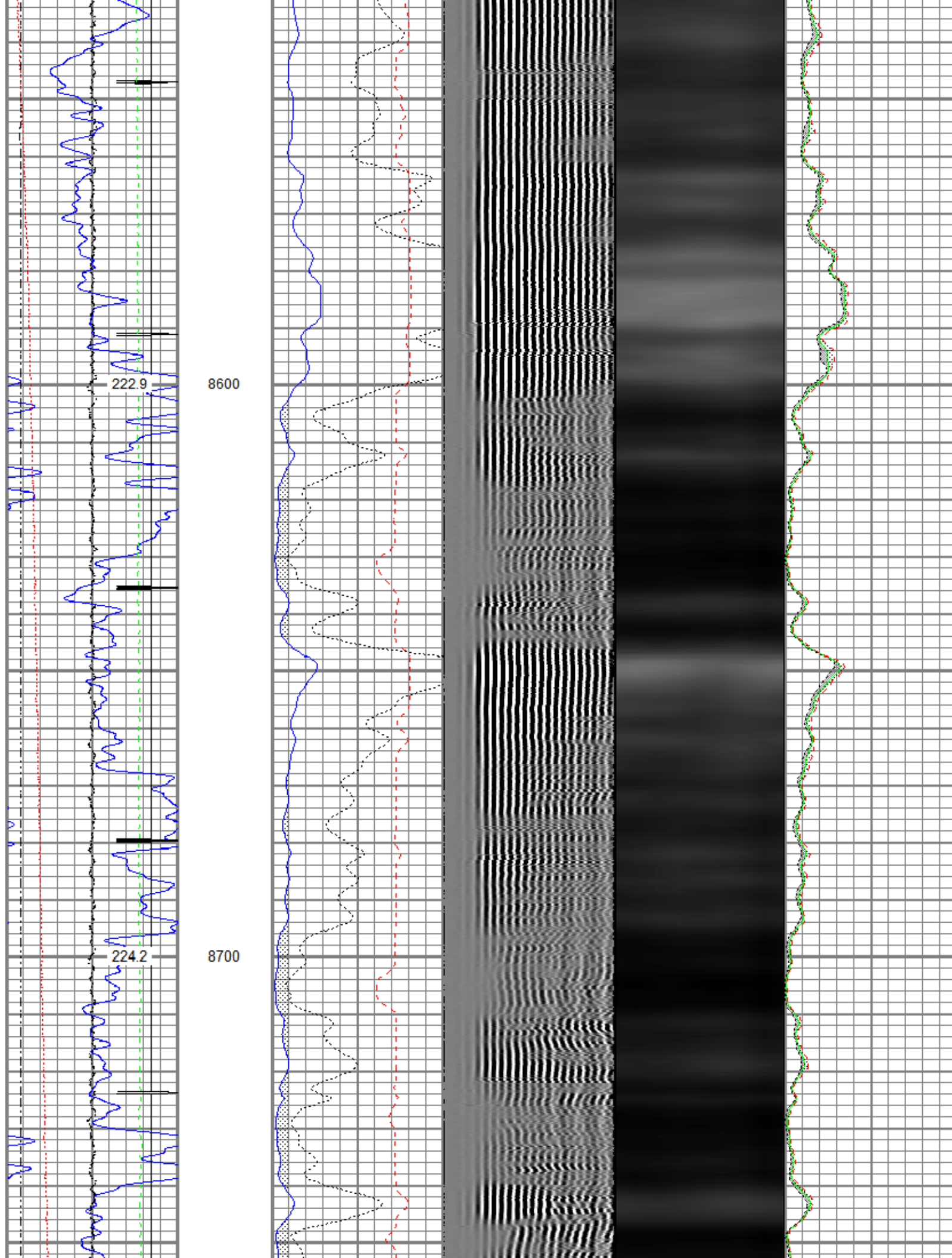
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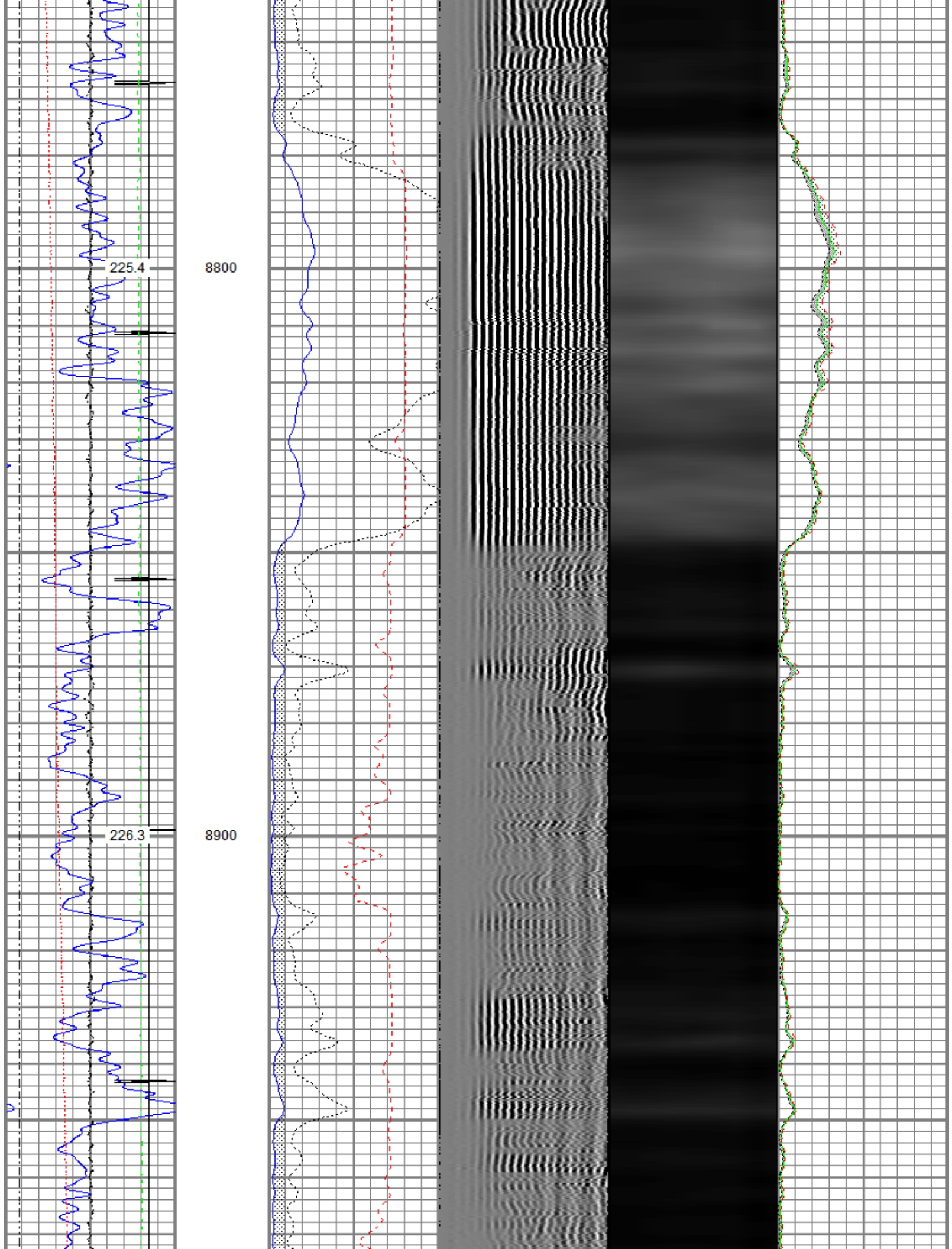
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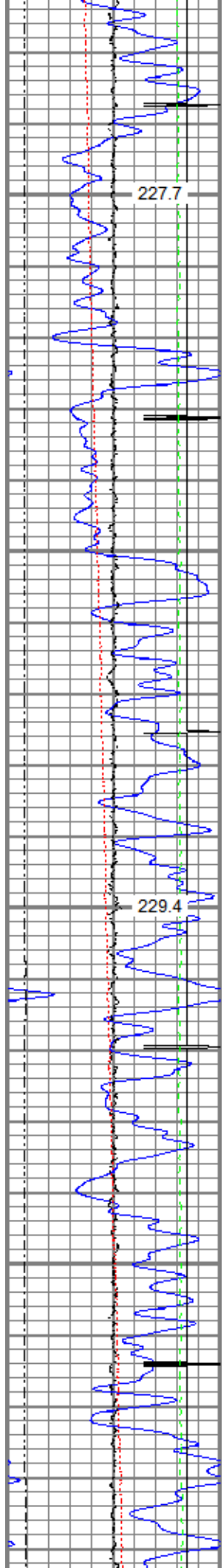
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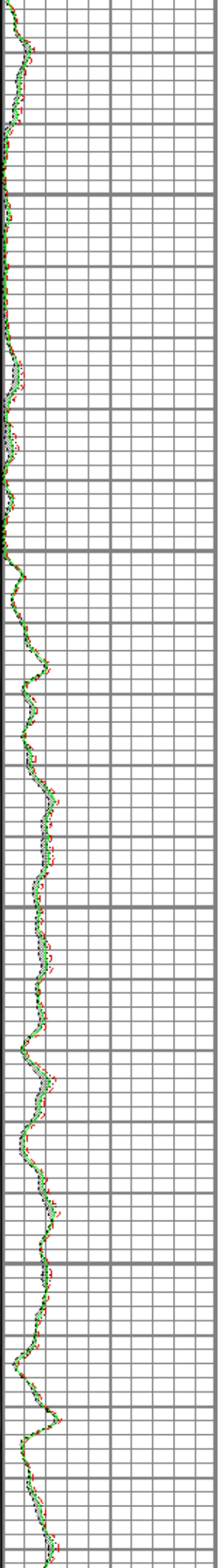
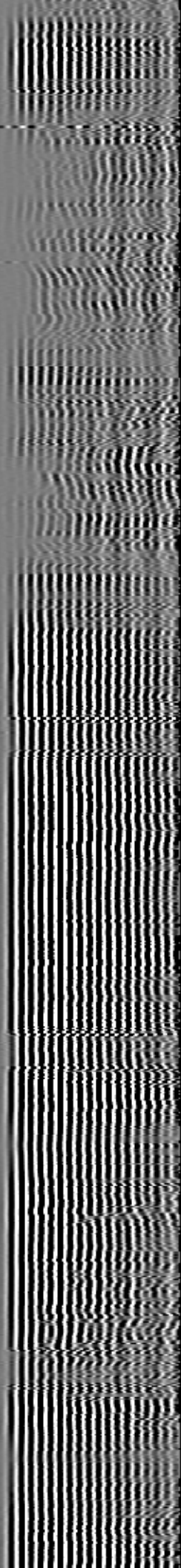
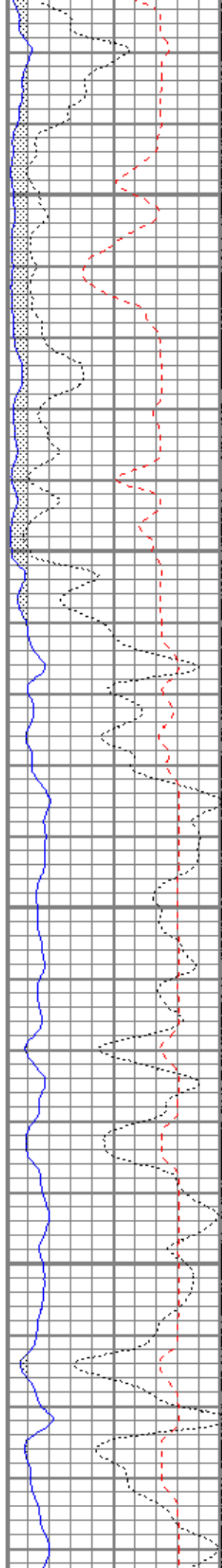


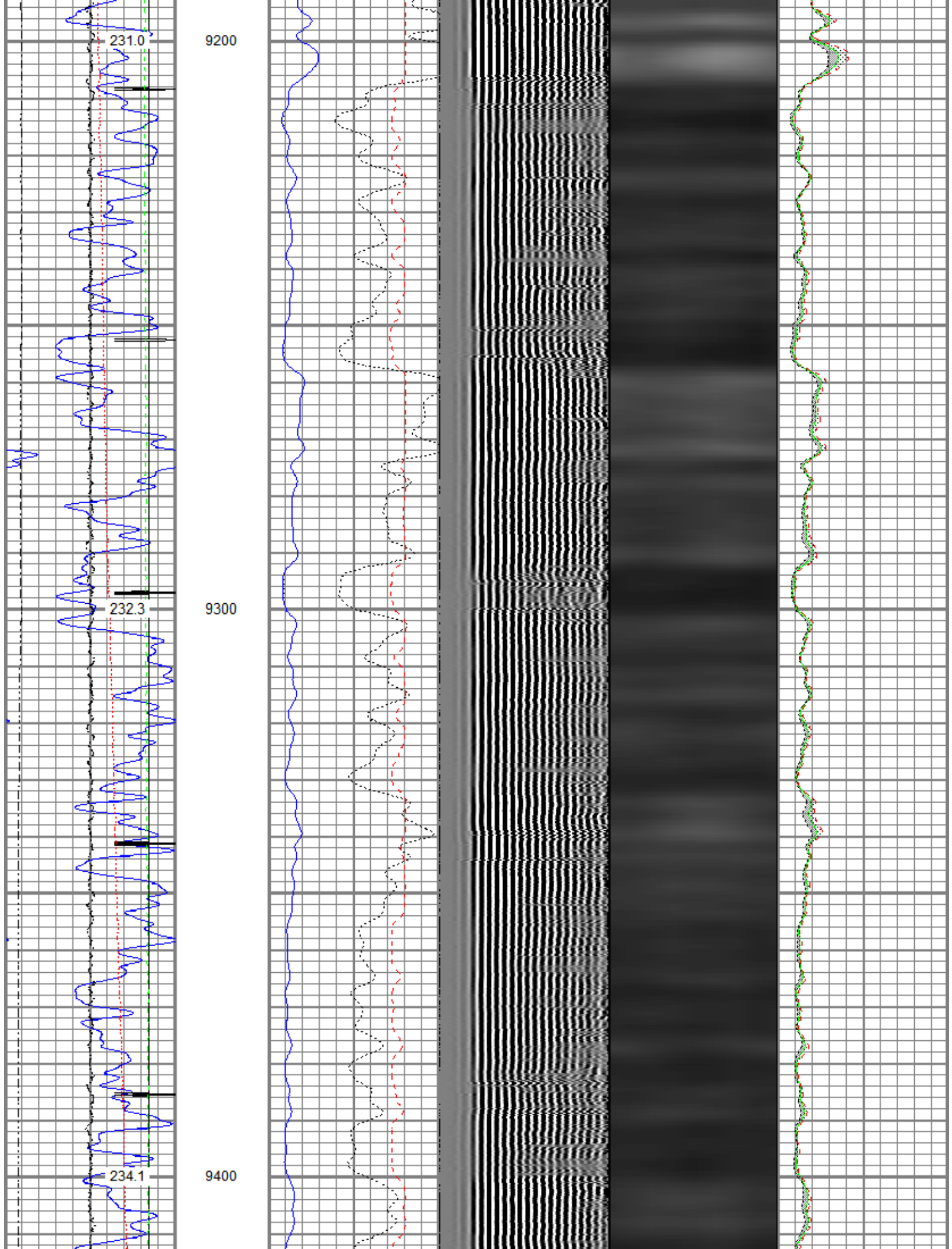


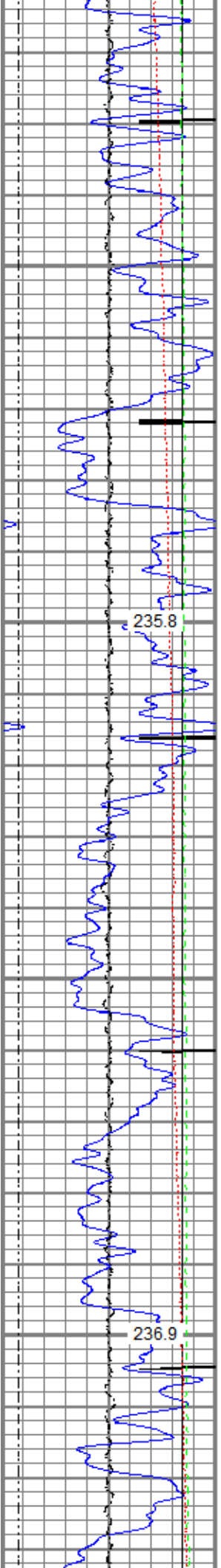


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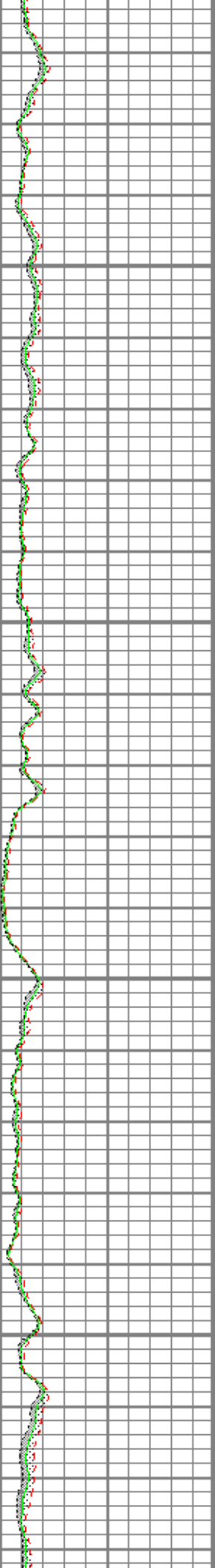
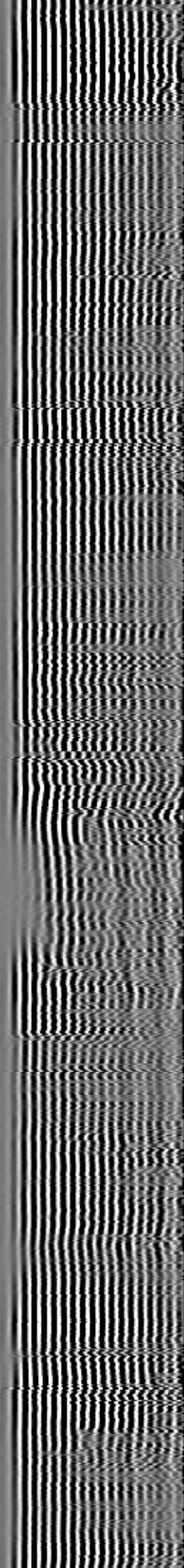
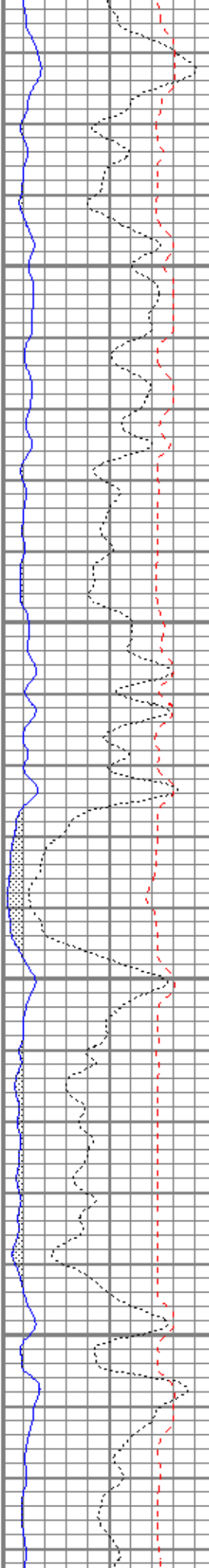


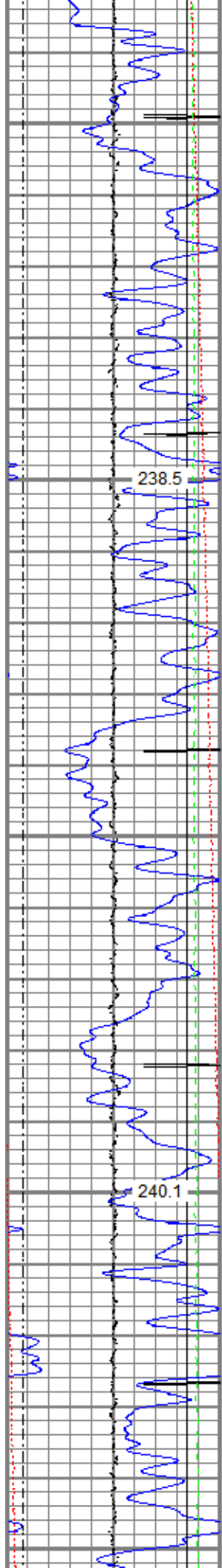




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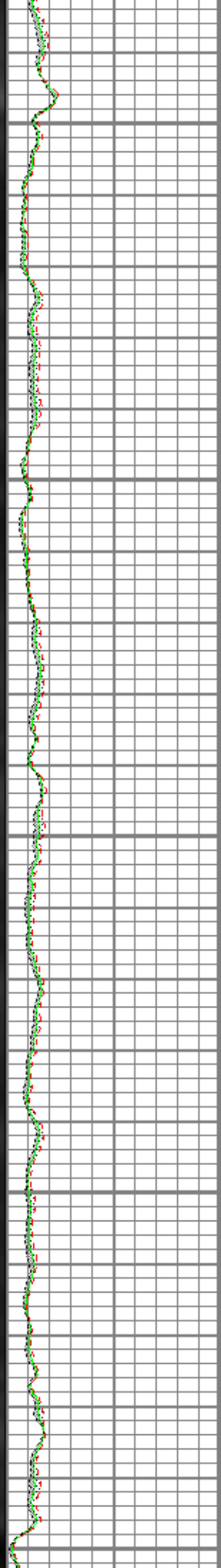
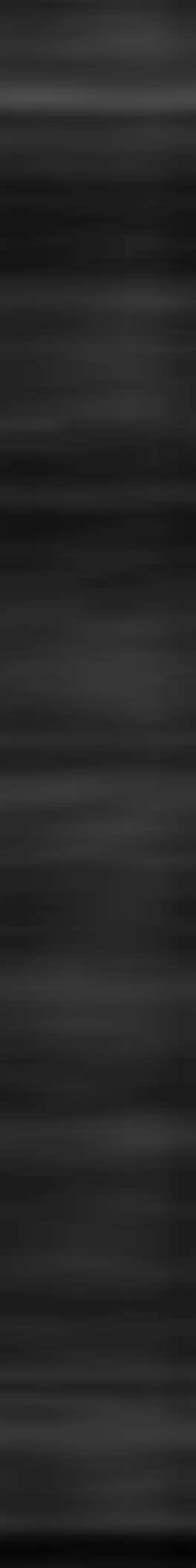
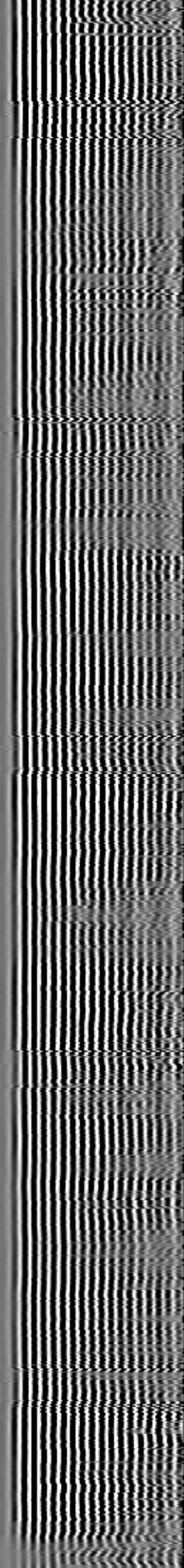
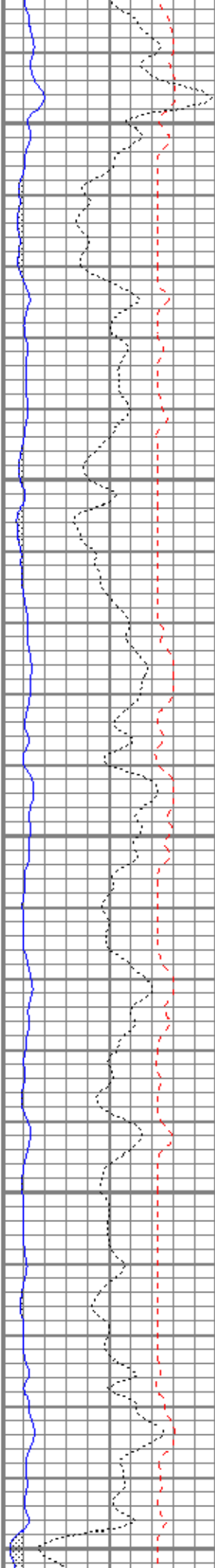
9600

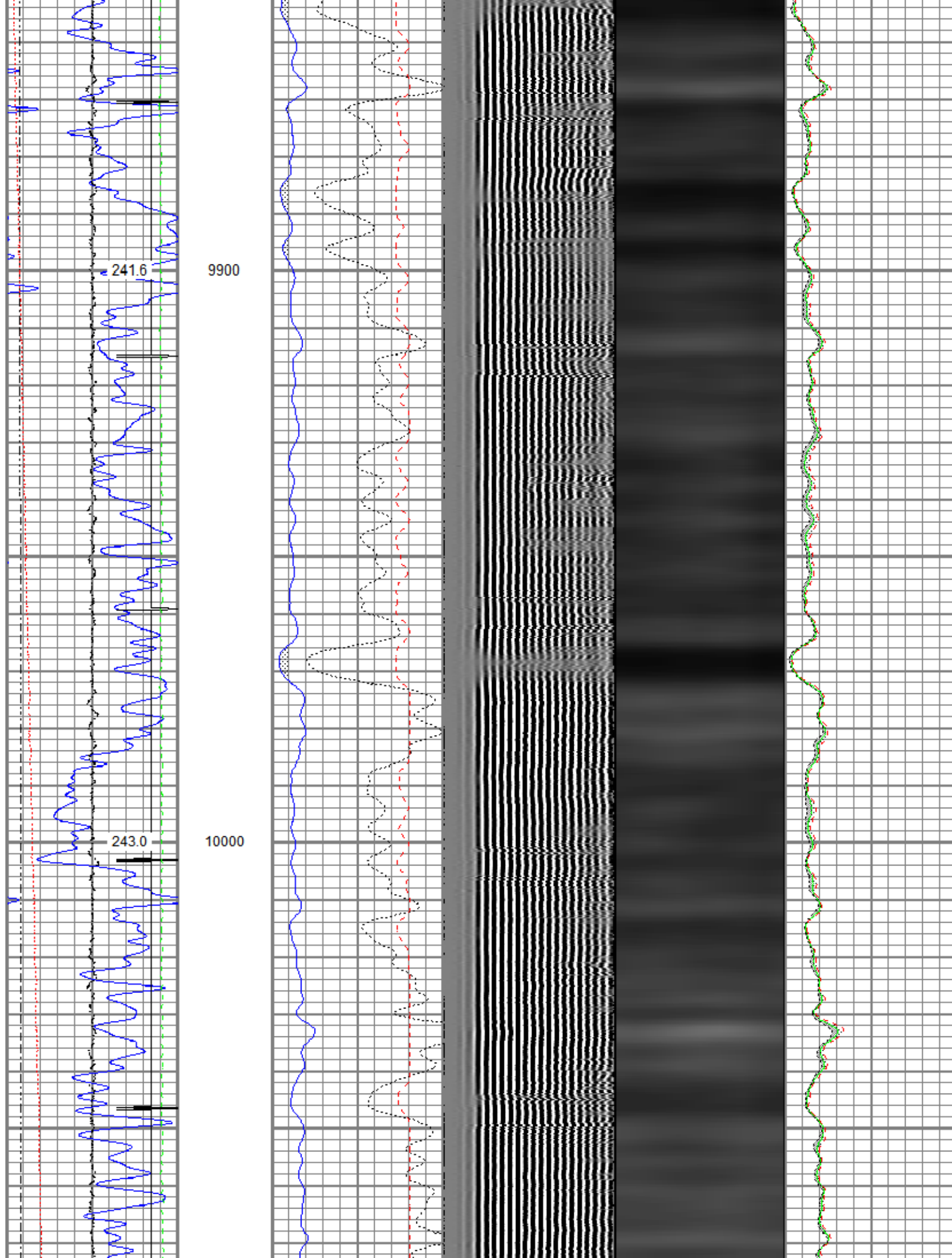




9700

9800



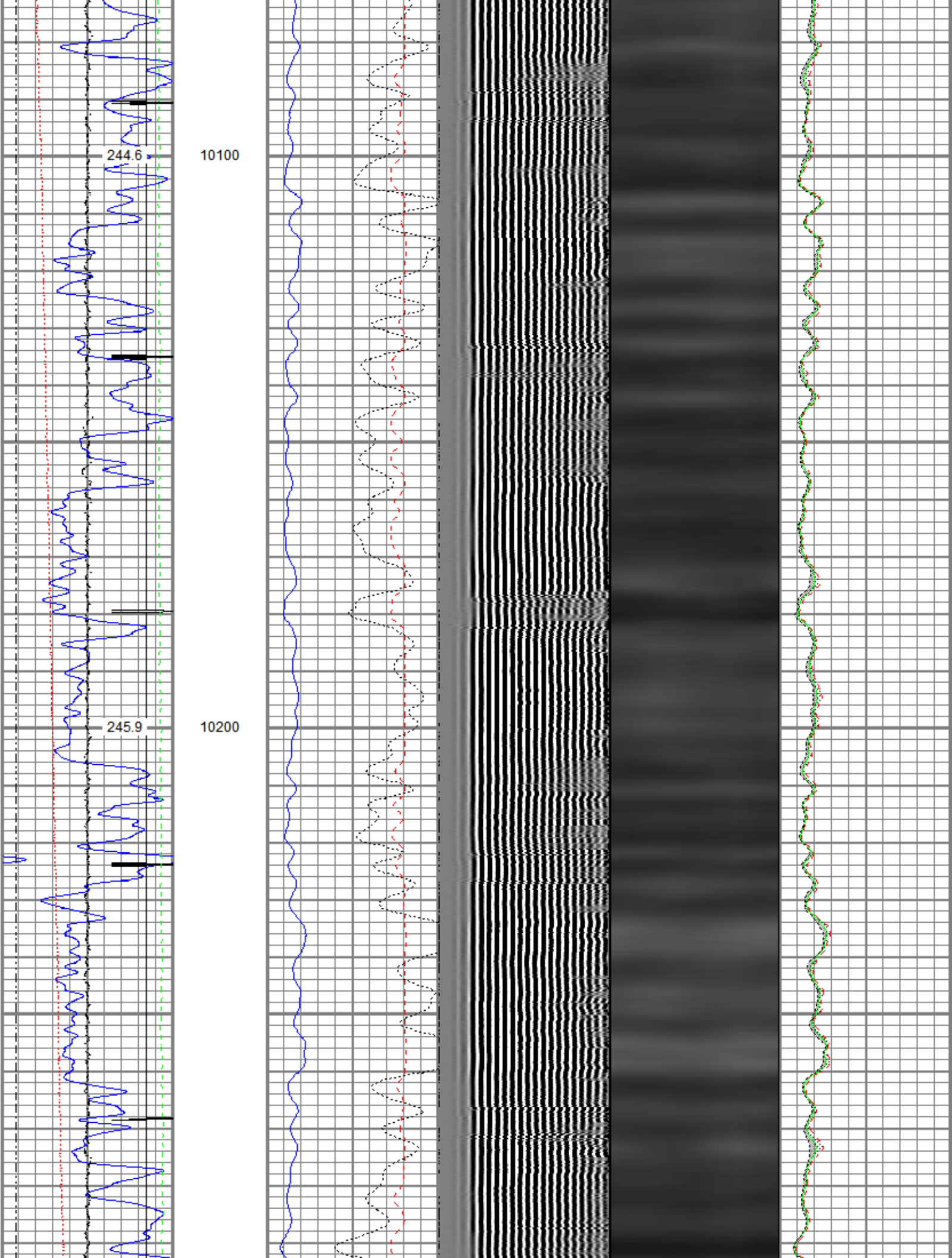


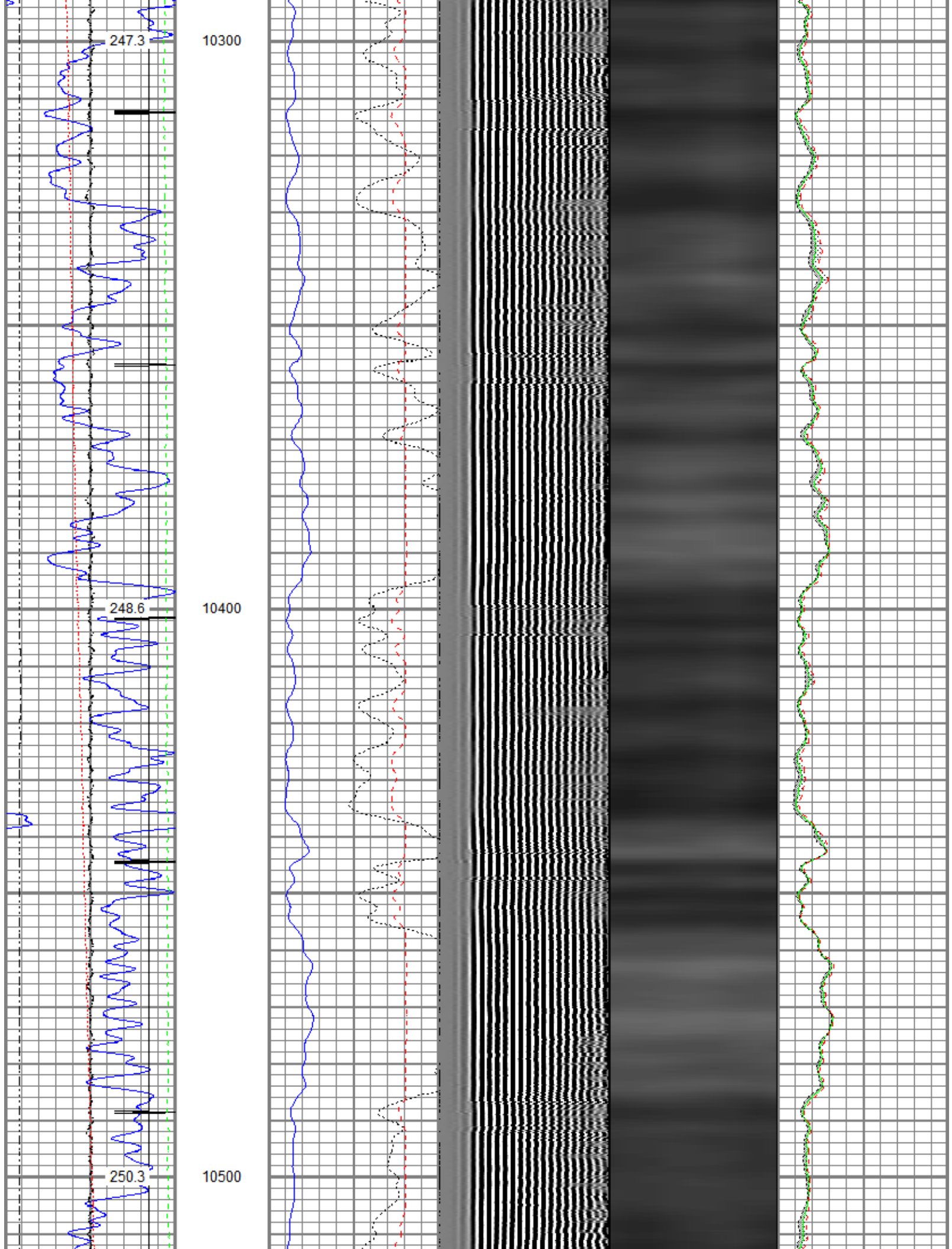
244.6

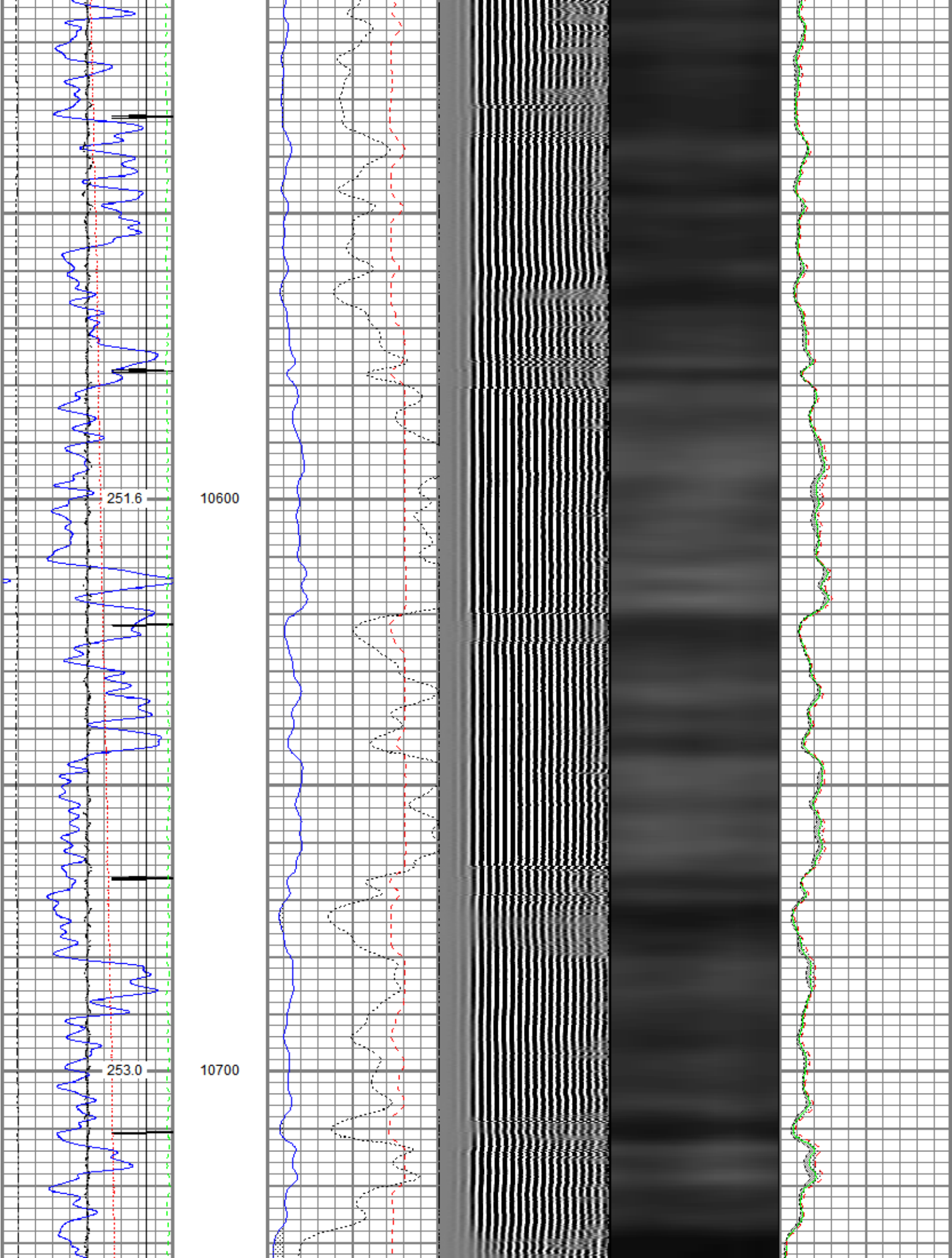
10100

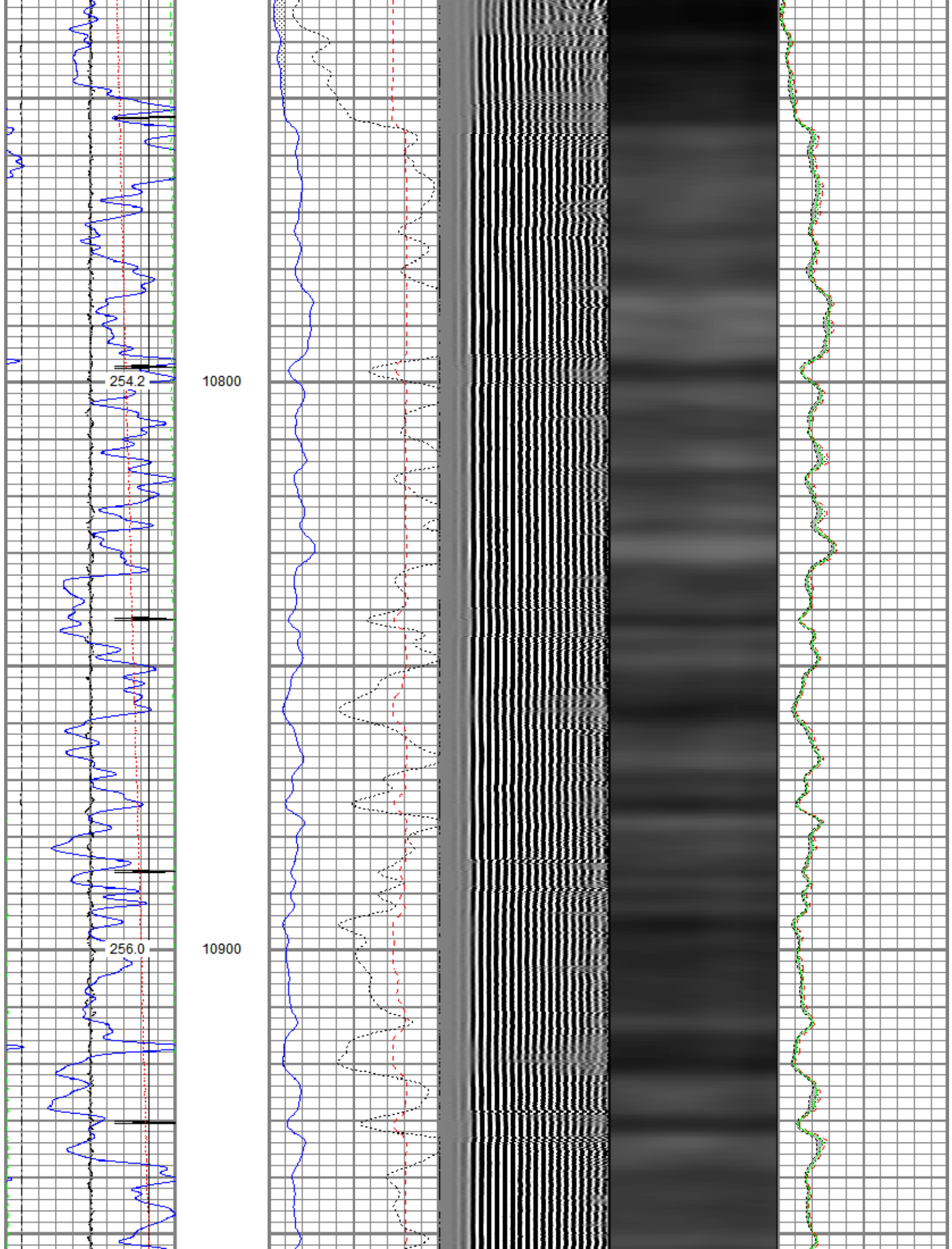
245.9

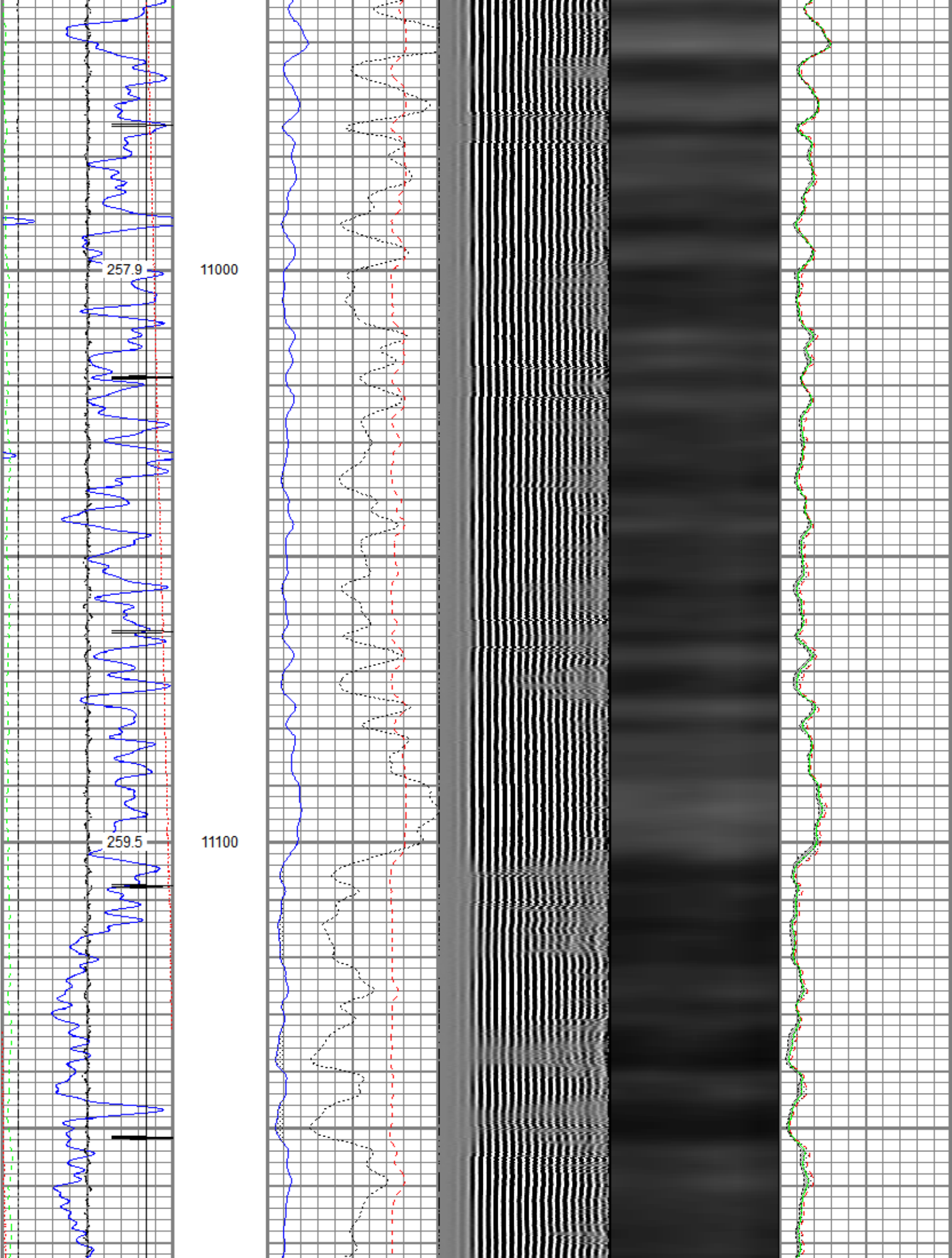
10200

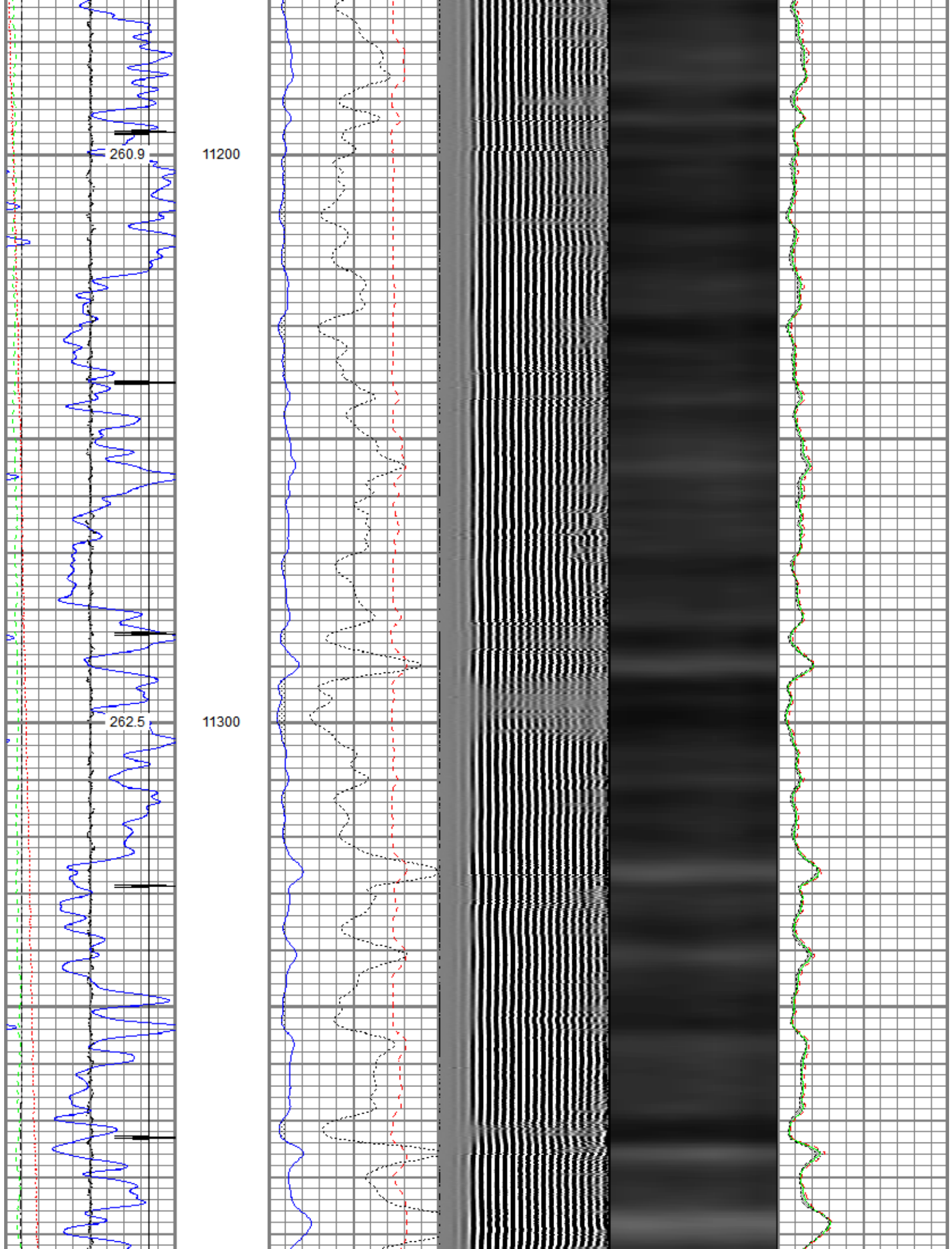












263.9

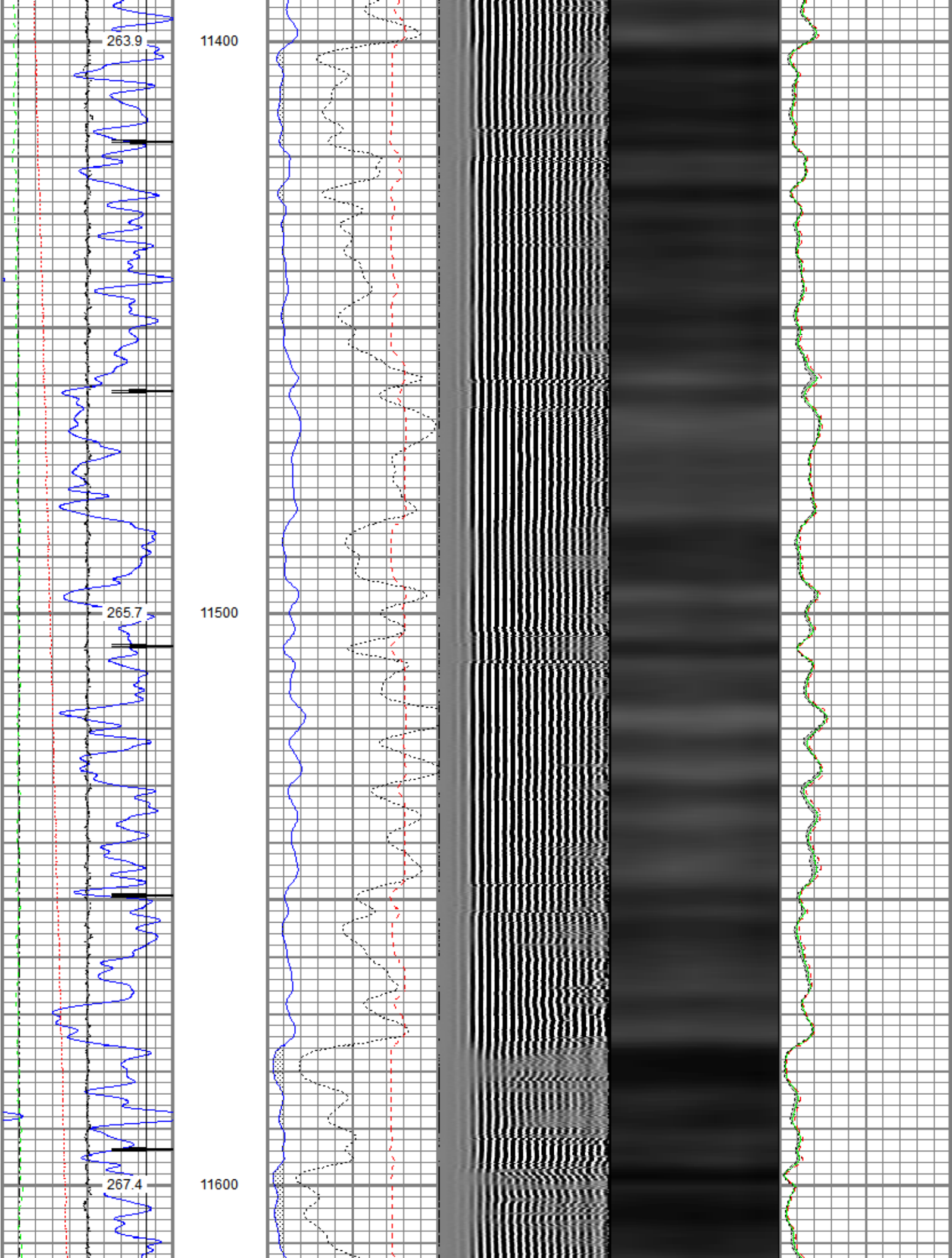
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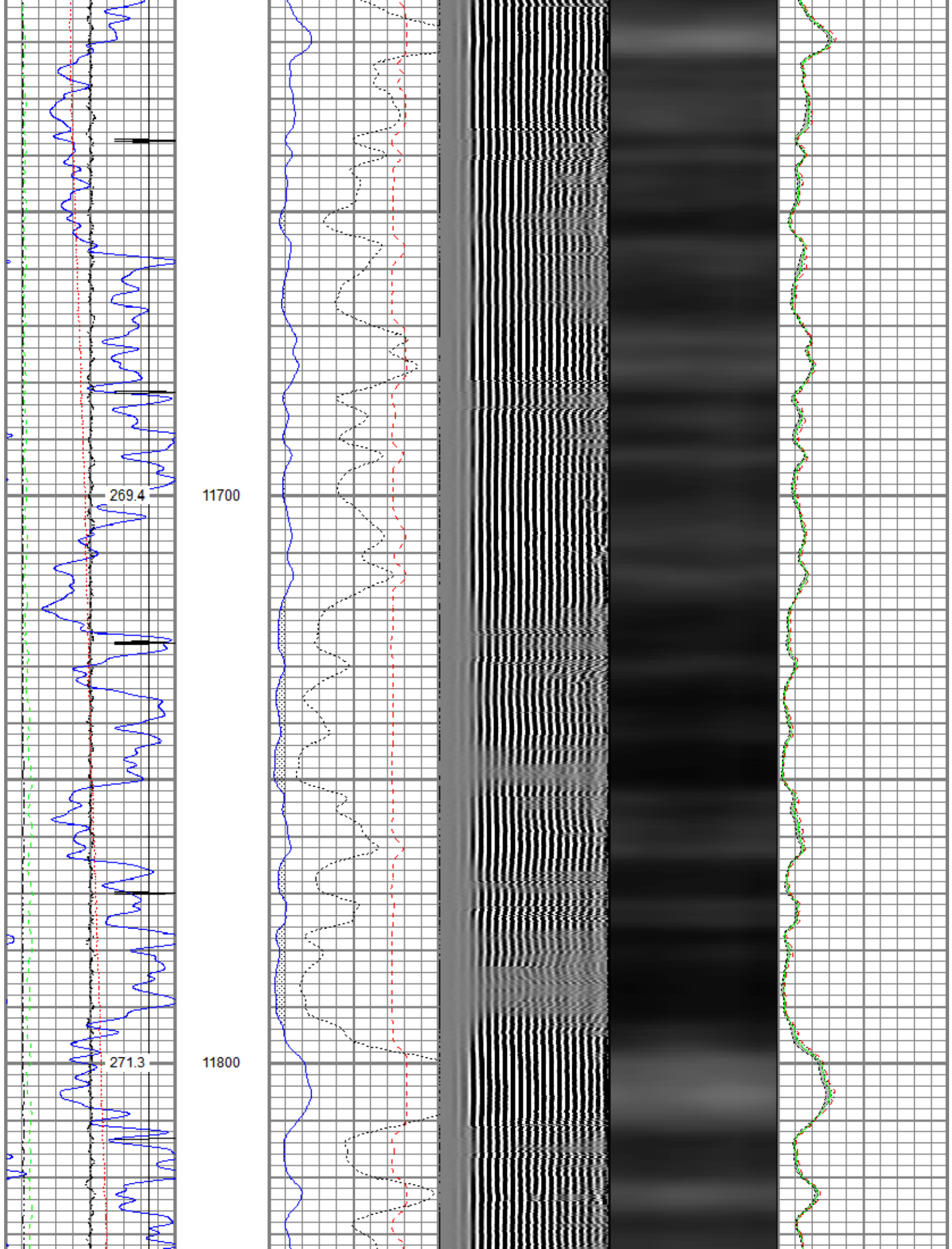
265.7

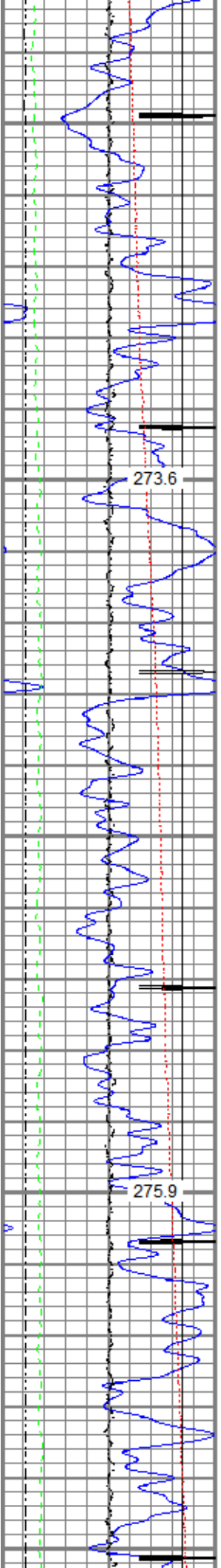
11500

267.4

11600

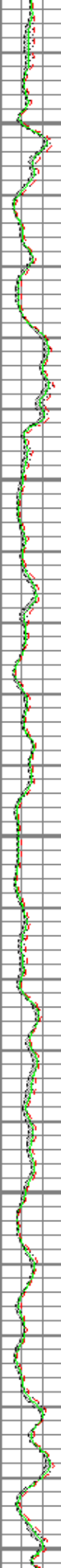
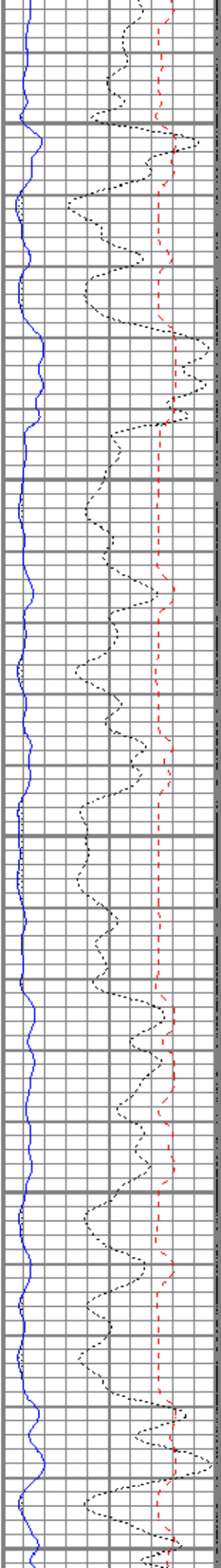


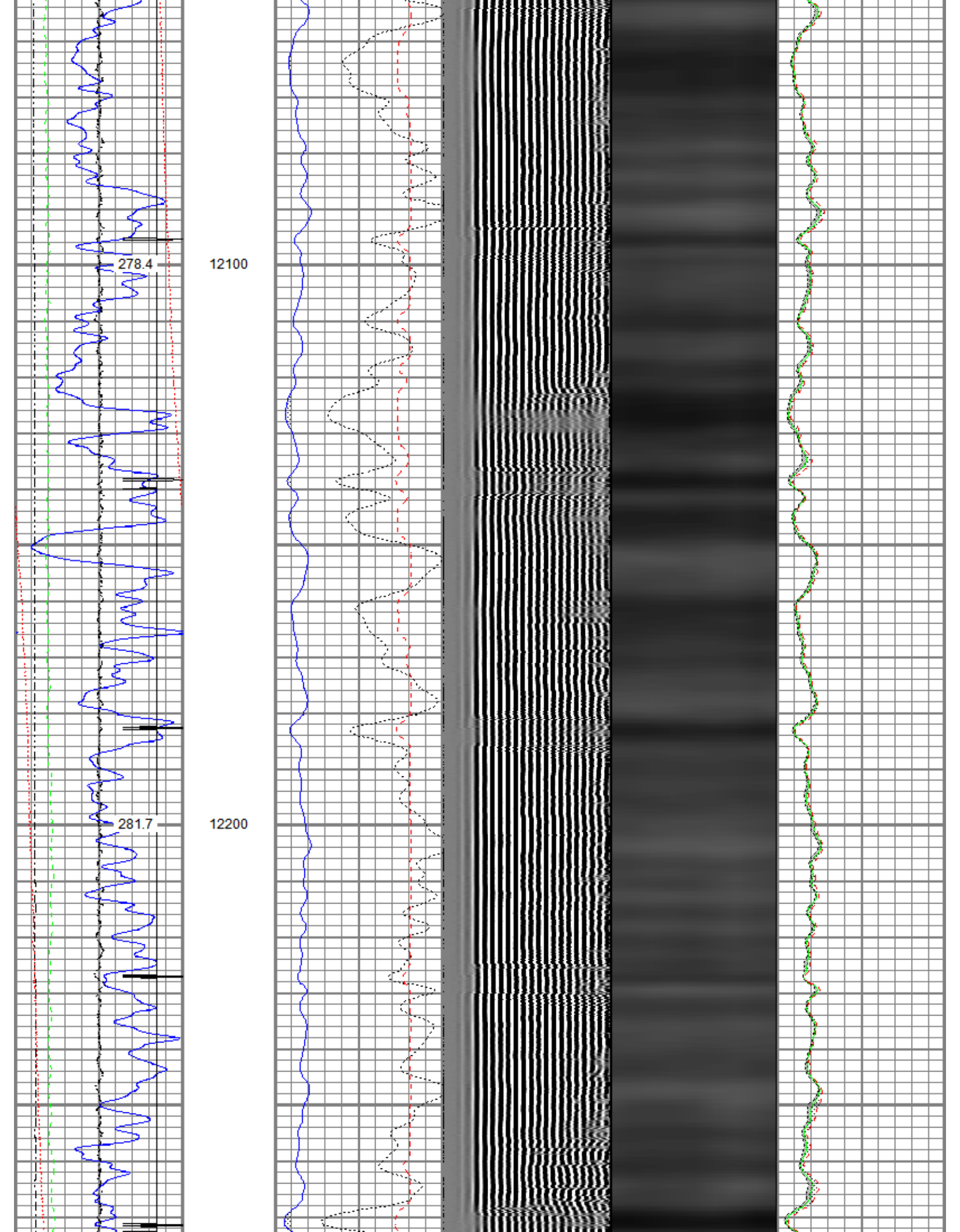


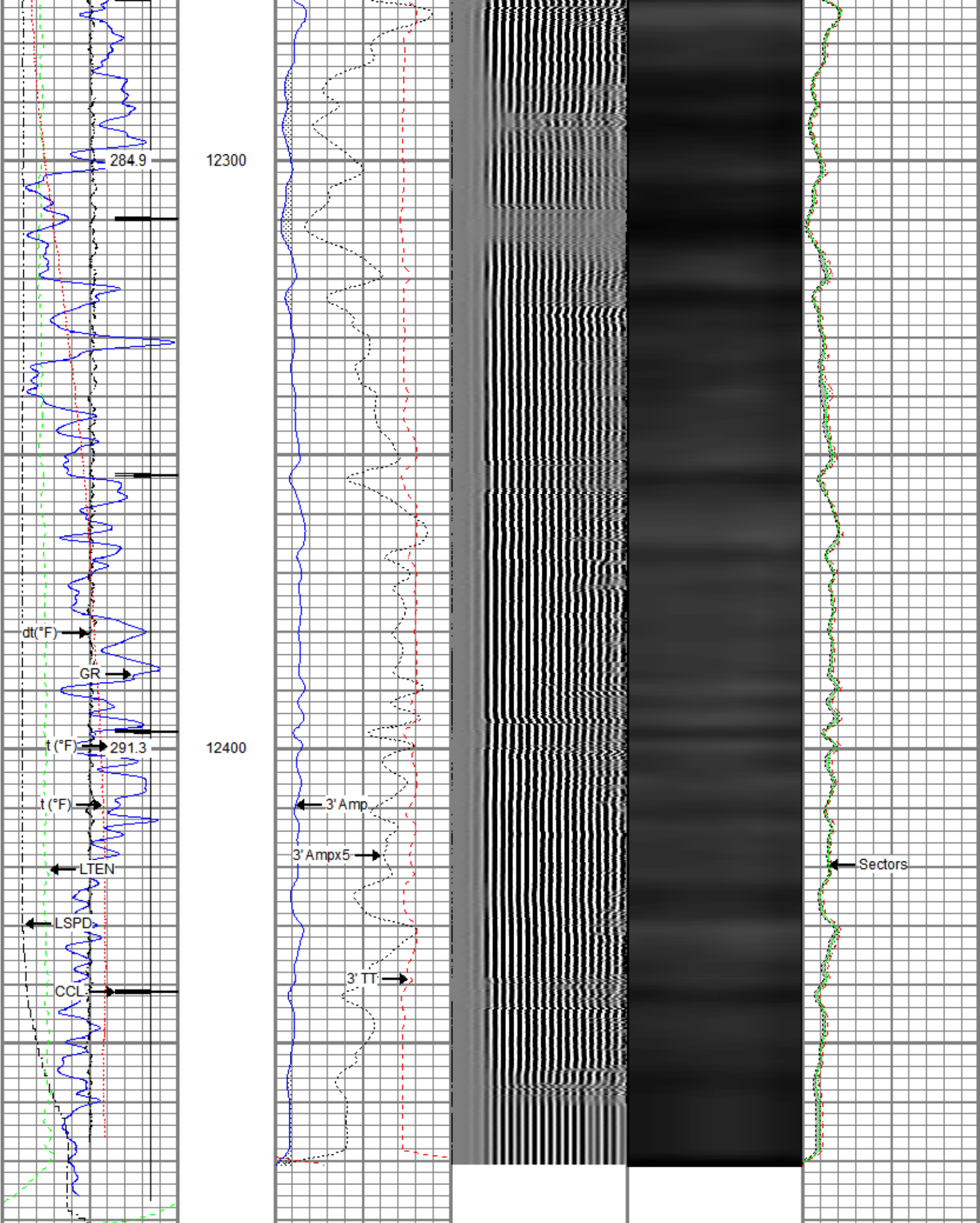


11900

12000







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

0 (mV) 20
3' Travel Time
650 (usec) 150

0 100
Maximum Amplitude
0 100



Repeat Pass

Recorded With 0 PSI Surface Induced Pressure

Database File caerus\caerus_fed 11d-24-496_rbl_01-21-20\processed_caerus_fed 11d-24-496_rbl_01-21-20.db
 Dataset Pathname repeat.2
 Presentation Format ros_radii_caerus
 Dataset Creation Wed Jan 22 14:45:57 2020
 Charted by Depth in Feet scaled 1:240

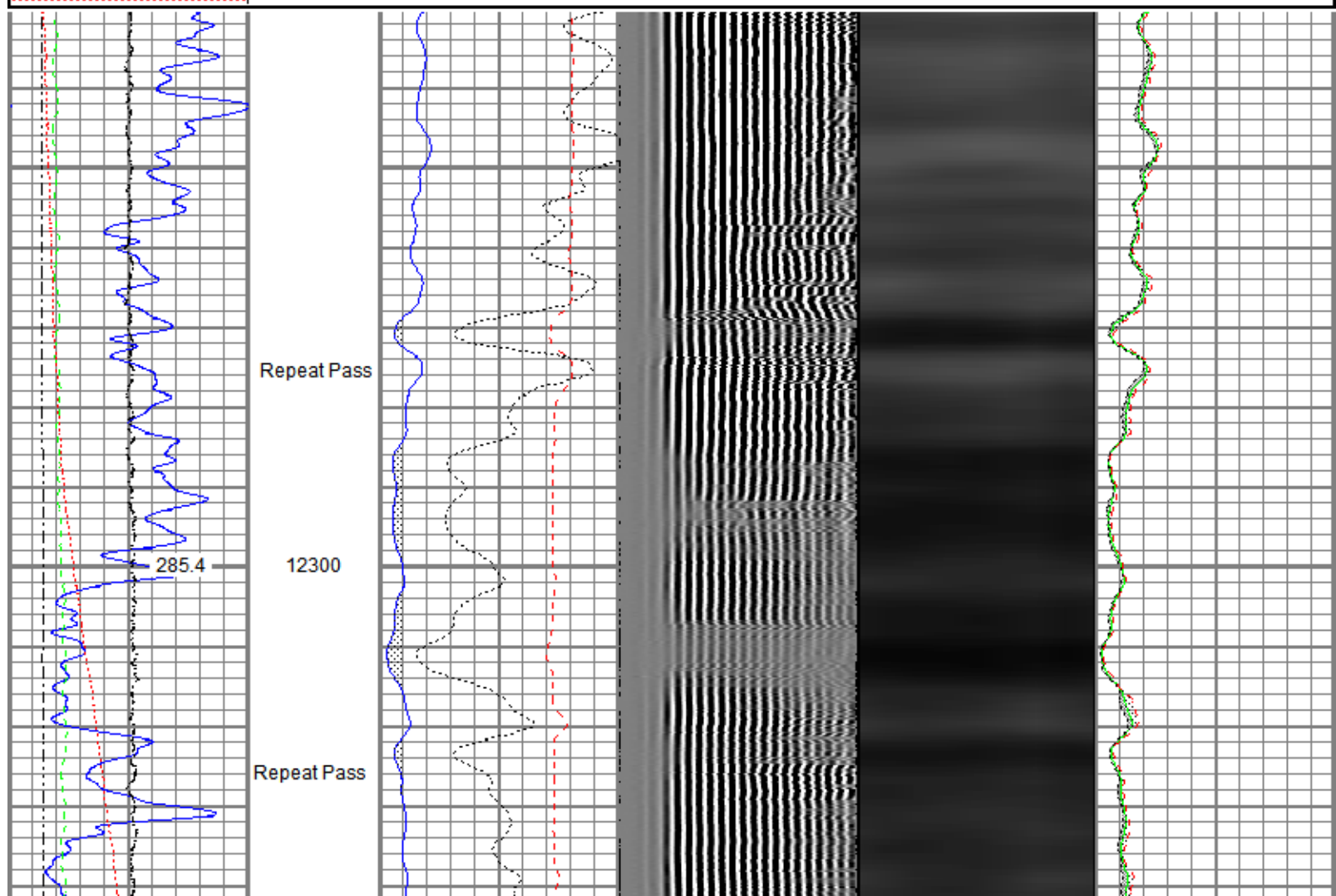
Gamma Ray
0 (GAPI) 120
Line Speed
-150 (ft/min) 150
0 Line Tension (lb) 2000
Differential Temperature
-2 (degF) 2
0 Temperature (degF) 20

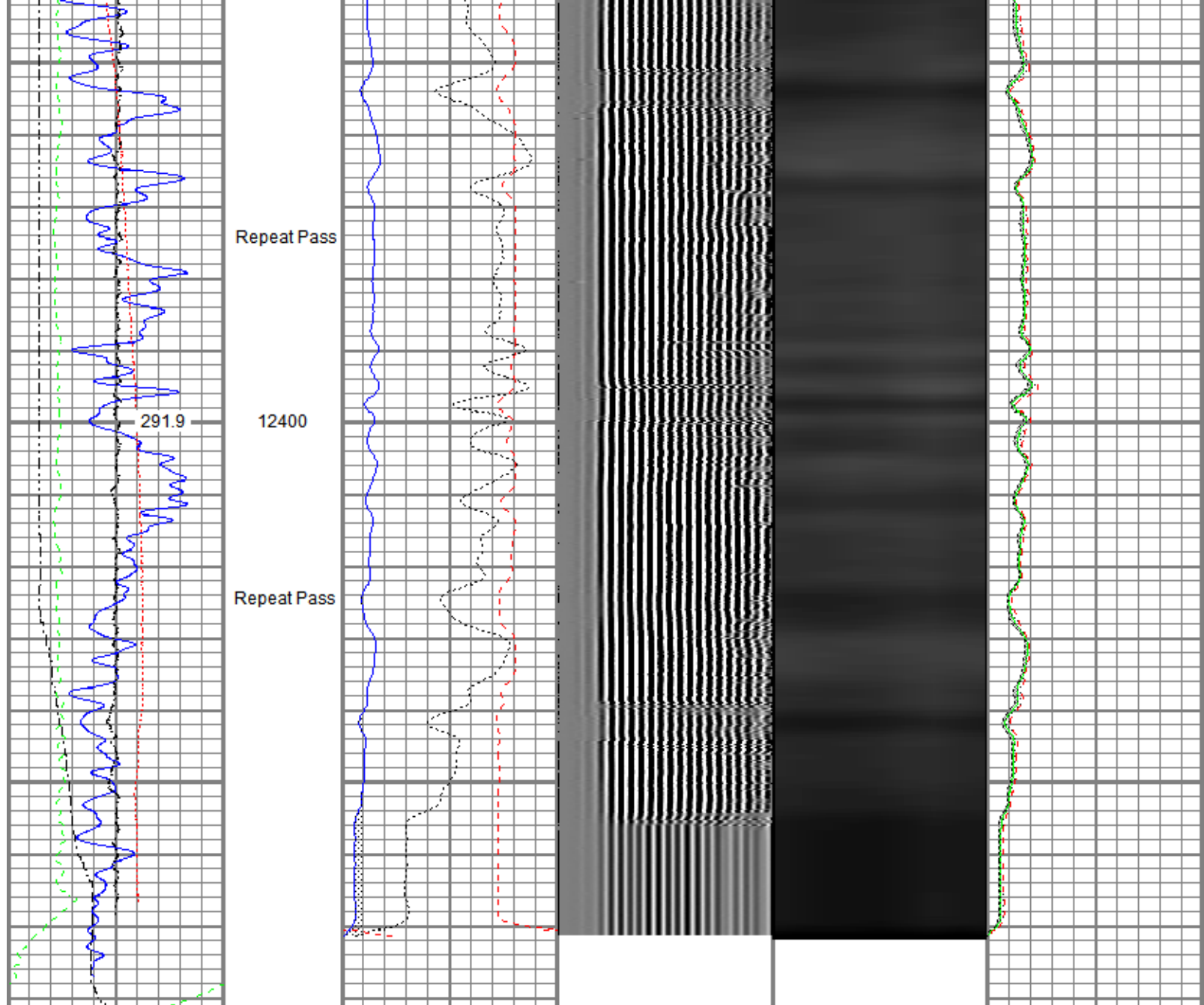
0 3' Amplitude (mV) 100
3' Amplitude x 5
0 (mV) 20
3' Travel Time
650 (usec) 150

5' Variable Density Log
200 (usec) 1200

Sector Map

0 Average Amplitude 100
Minimum Amplitude
0 100
Maximum Amplitude
0 100





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

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
			Titan CHD-14375 GO Titan 1-7/16" Assembled Electric Cable Head with 1" Fishing Neck	1.03	1.44	3.60
			DSS RAC-2750 5A GO DSS 2-3/4" Roller 5 Arm Centralizer with GO Ends	2.55	2.75	32.00

TEMP	13.79					
WVFS8	11.55		Probe Radii-2750 RBT (FW1311-021) Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub	9.39	2.75	105.00
WVFS7	11.55					
WVFS6	11.55					
WVFS5	11.55					
WVFS4	11.55					
WVFS3	11.55					
WVFS2	11.55					
WVFS1	11.55					
WVFCAL	11.55					
WVF3FT	11.55					
WVF5FT	10.55					
CCL\$2	3.88		DSS RAC-2750 5A GO DSS 2-3/4" Roller 5 Arm Centralizer with GO Ends	2.55	2.75	32.00
CCL\$1	3.88					
GR	2.63		Probe GR-CCL-2750 GOB (FW1307-038) Probe 2-3/4" rev.2 Digital Scintillation Gamma Ray/CCL Combined with GO Bottom	4.51	2.75	55.00
			GO BN-14375 GO 1-7/16" Bull Nose with Go Box Top	0.25	1.44	1.00
Dataset: processed_caerus_fed 11d-24-496_rbl_01-21-20.db: field/well/run1/main.1 Total length: 20.27 ft Total weight: 228.60 lb O.D.: 2.75 in						

Calibration Report	
Database File	c:\programdata\warrior\data\caerus\caerus_fed 11d-24-496_rbl_01-21-20\processed_caerus_fed 11d-24-496_rbl_01-21-20.db
Dataset Pathname	main.1
Dataset Creation	Wed Jan 22 14:29:24 2020

Gamma Ray Calibration Report	
Serial Number:	FW1307-038
Tool Model:	2750 GOB
Performed:	Mon Oct 01 11:32:32 2018

Calibrator Value:	637.0	GAPI
Background Reading:	113.2	cps
Calibrator Reading:	1022.4	cps
Sensitivity:	0.7007	GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number:	FW1311-021	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	4.500	in
Calibration Depth:	247.964	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.003	0.858	0.800	81.196	94.037	0.545
CAL	0.003	0.770				
5'	0.008	0.782	0.800	81.196	103.777	0.014
SUM						
S1	0.003	0.835	0.000	100.000	120.150	-0.371
S2	0.007	0.828	0.000	100.000	121.723	-0.798
S3	0.005	0.873	0.000	100.000	115.228	-0.594
S4	0.003	0.950	0.000	100.000	105.661	-0.353
S5	0.006	0.936	0.000	100.000	107.498	-0.637
S6	0.006	0.873	0.000	100.000	115.380	-0.719
S7	0.004	0.834	0.000	100.000	120.619	-0.541
S8	0.014	0.834	0.000	100.000	121.967	-1.756

Air Zero Calibration, performed Tue Jan 21 10:35:33 2020:

	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
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:	FW1311-021
Tool Model:	2750 RBT
Performed:	Mon Oct 01 11:32:11 2018

	Reference	Reading
Low Reference:	100.00 degF	112.12 degF
High Reference:	350.00 degF	415.62 degF

Gain:	0.82
Offset:	7.65
Delta Spacing:	1



Well

FED 11D-24-496

Field

Grand Valley

County

Garfield

State

Colorado