RELIANCE OILFIELD SERVICES

Radial Cement Bond Gamma Ray Casing Collar Log

Company Kerr-McGee Oil & Gas Onshore, L.P.
Well Whiston 40N-33HZ
Field Wattenberg
County Weld
State Colorado

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County Weld State Colorado

Location: API # : 05-123-44032

SEC 4 TWP 2N RGE 67W

Other Services
Gauge Ring

Permanent Datum	Ground Level	Elevation	4905'
Log Measured From	Kelly Bushing	20 FT	
Drilling Measured From	Kelly Bushing		

Elevation
K.B. 4925'
D.F. ---
G.L. 4905'

Date	17-MAY-2017
Run Number	Two
Depth Driller	13359 FT
Depth Logger	7617 FT
Bottom Logged Interval	7613 FT
Top Log Interval	Surface
Open Hole Size	8.50"
Type Fluid	Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	231.8°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	16:55 PM
Equipment Number	HD-0343
Location	Fort Lupton, CO
Recorded By	J. Fresquez
Witnessed By	B. Jolly

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	1879 FT
Intermediate #1	5 1/2	17	HC P110	Surface	13349 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 6893 FT
Adjusted -3 FT to correlate with Marker Joint
Gauge Ring/Junk Basket ran to 7674 FT with no debris
Log ran from as deep as possible in heel to surface
Log ran with 2800 PSI surface induced pressure
Logging tools were clean and free of any debris upon completion of operations

Thank you for choosing Reliance Oilfield Services, LLC!!

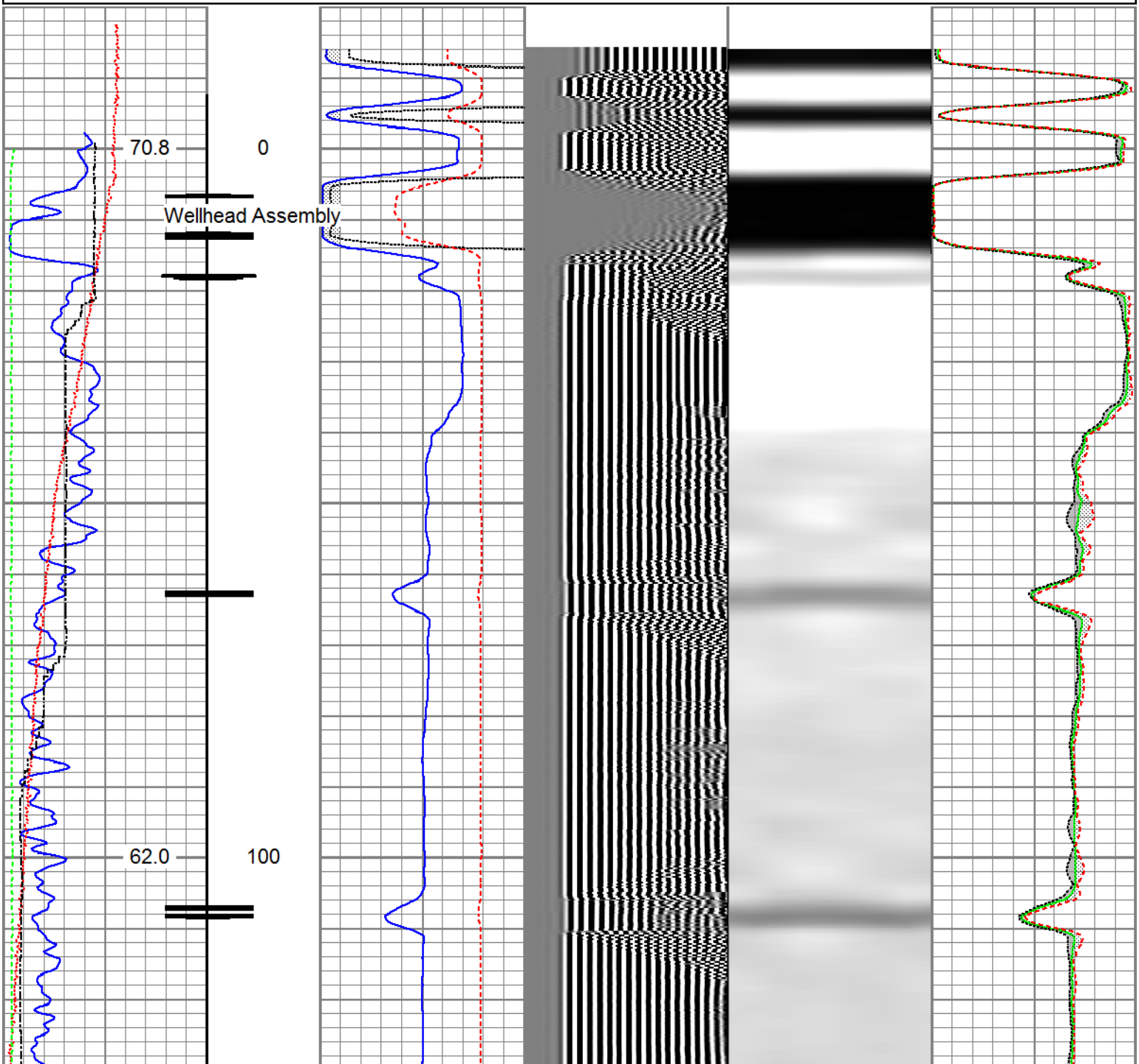
Main Pass

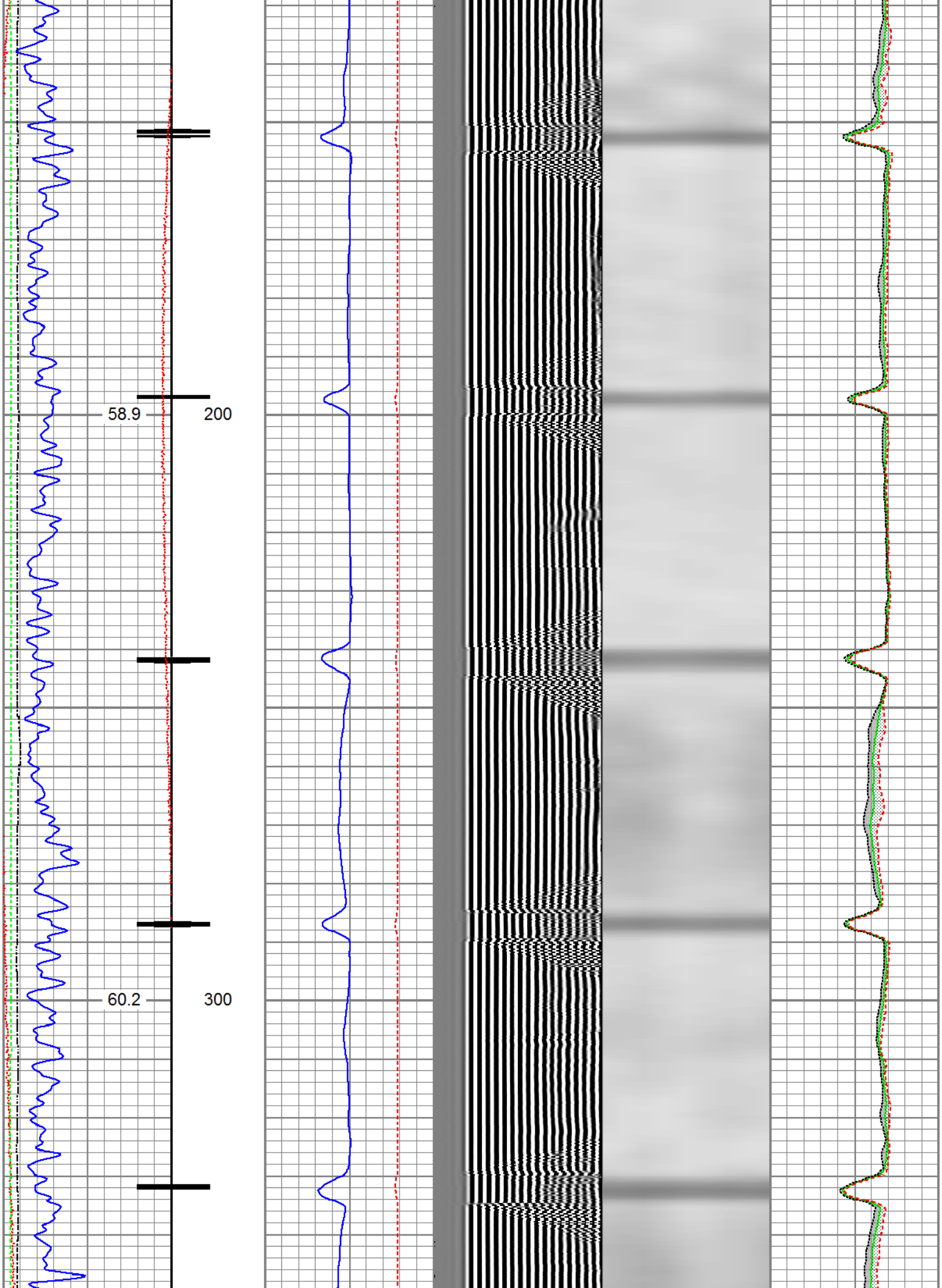
Recorded With 2800 PSI Surface Induced Pressure

RELIANCE OILFIELD SERVICES

Database File	anadarko_whiston_40n_33hz_17_may_2017_rbl\processed_0512344032_anadarko_whiston 40n-33
Dataset Pathname	pass10
Presentation Format	ros_radii
Dataset Creation	Wed May 17 16:54:43 2017
Charted by	Depth in Feet scaled 1:240

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

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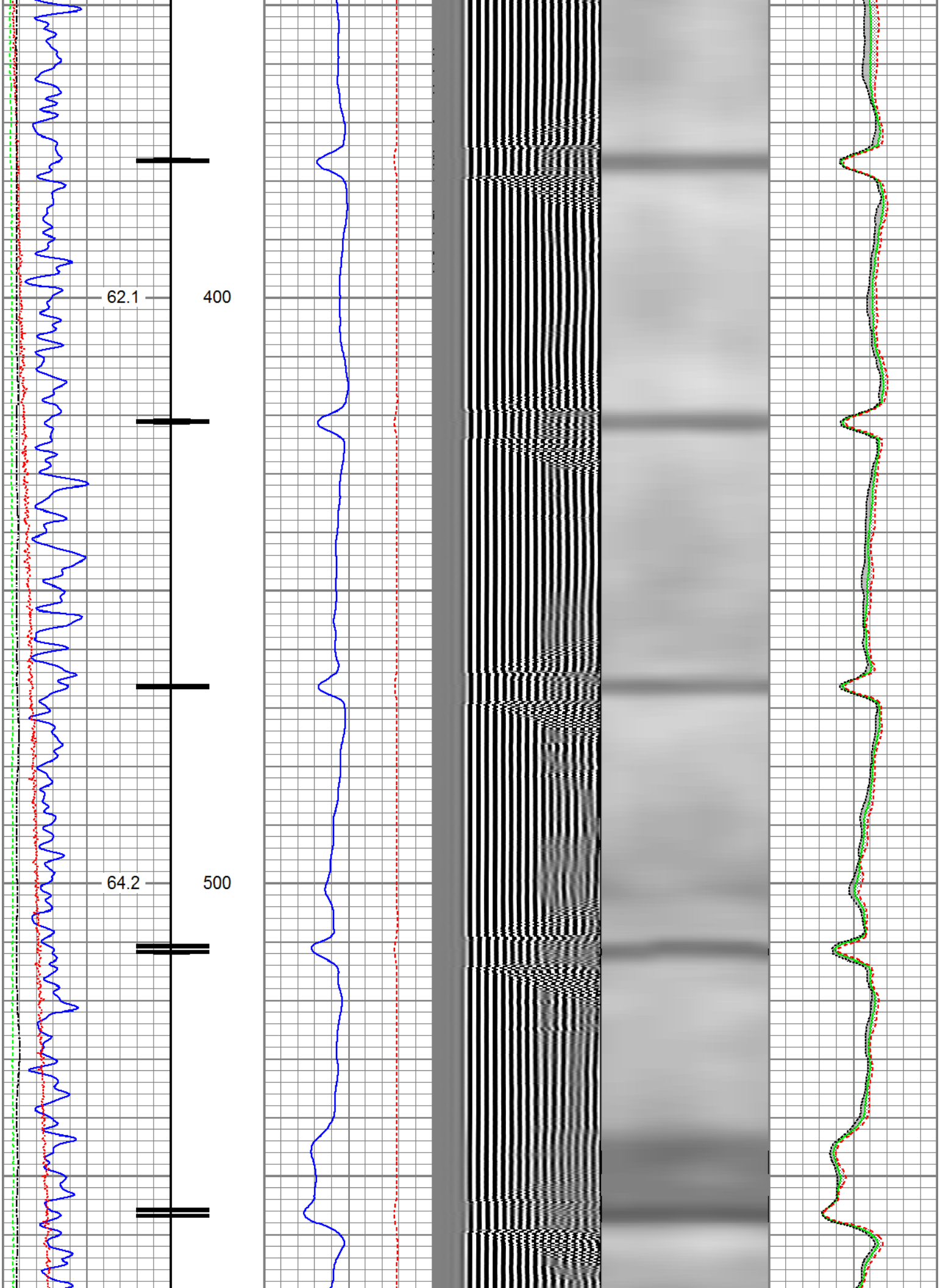
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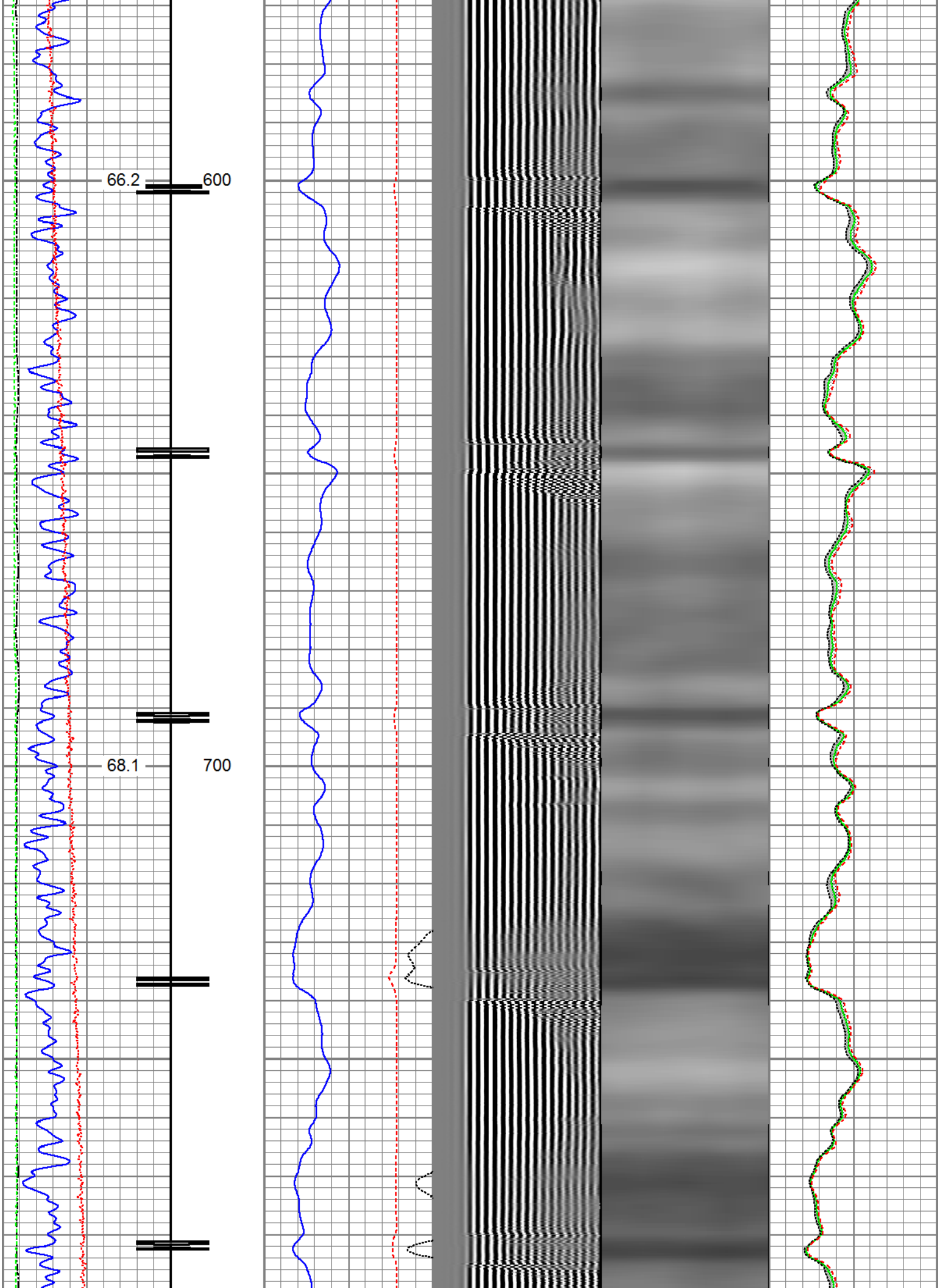
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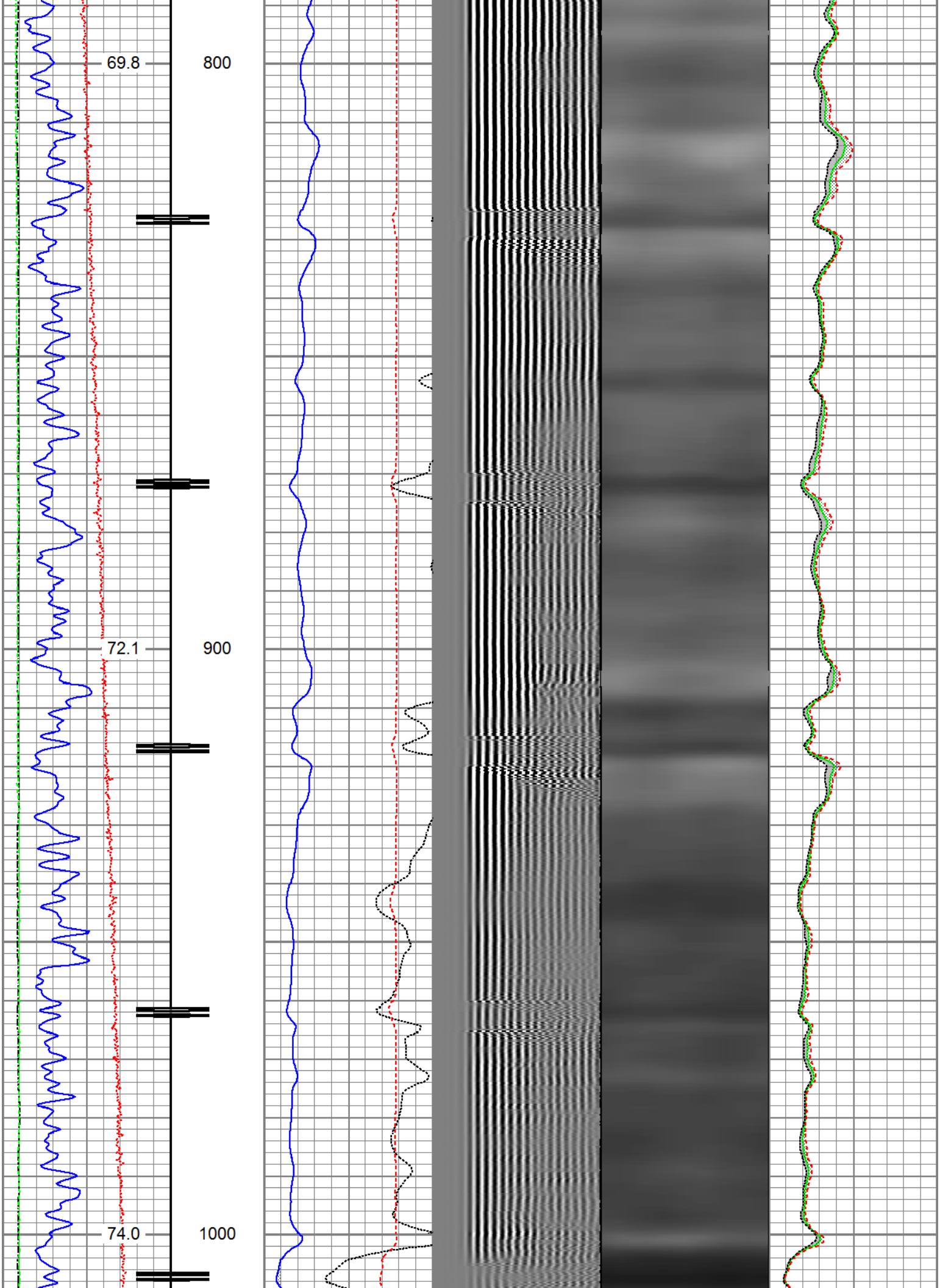
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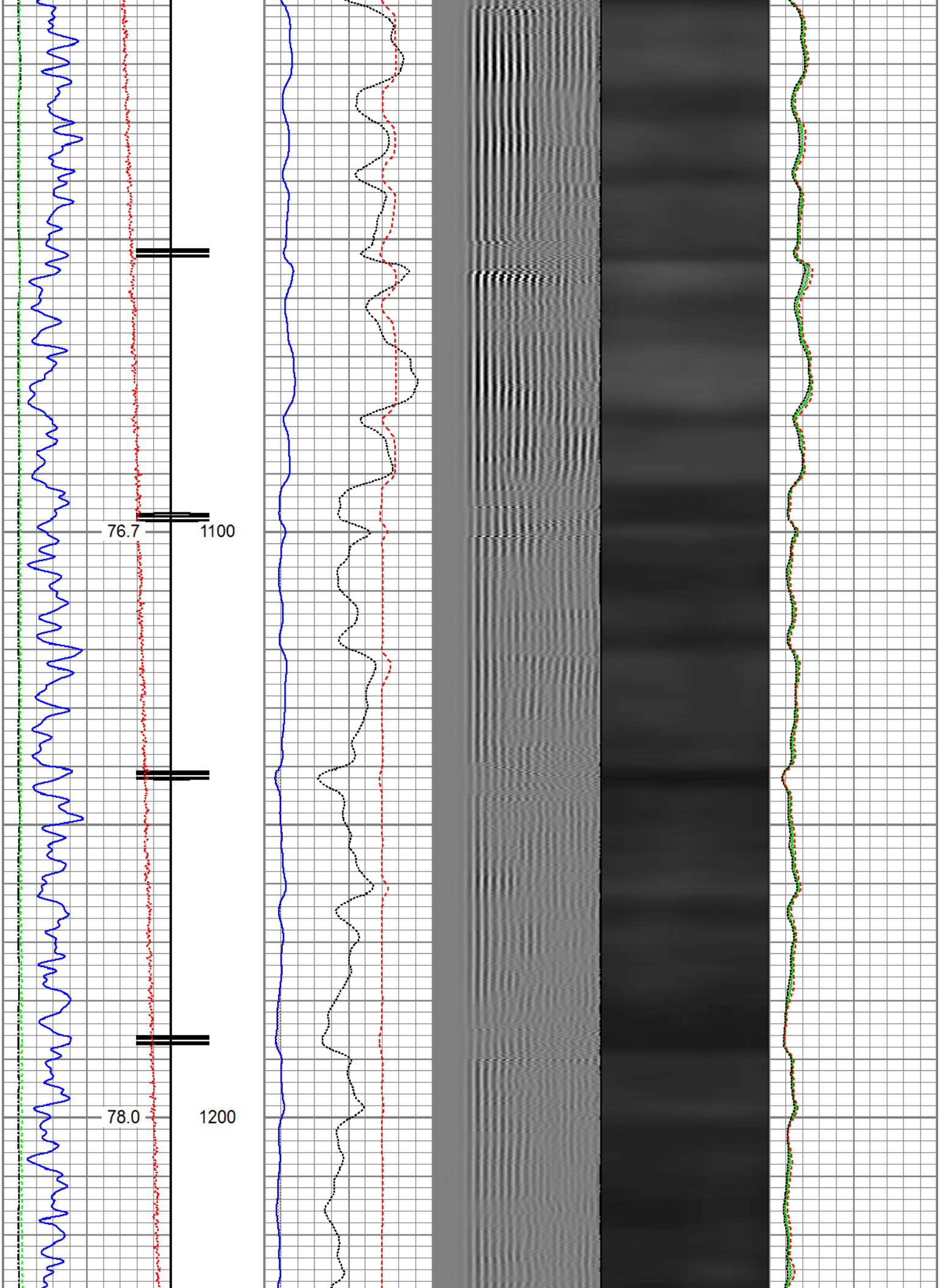
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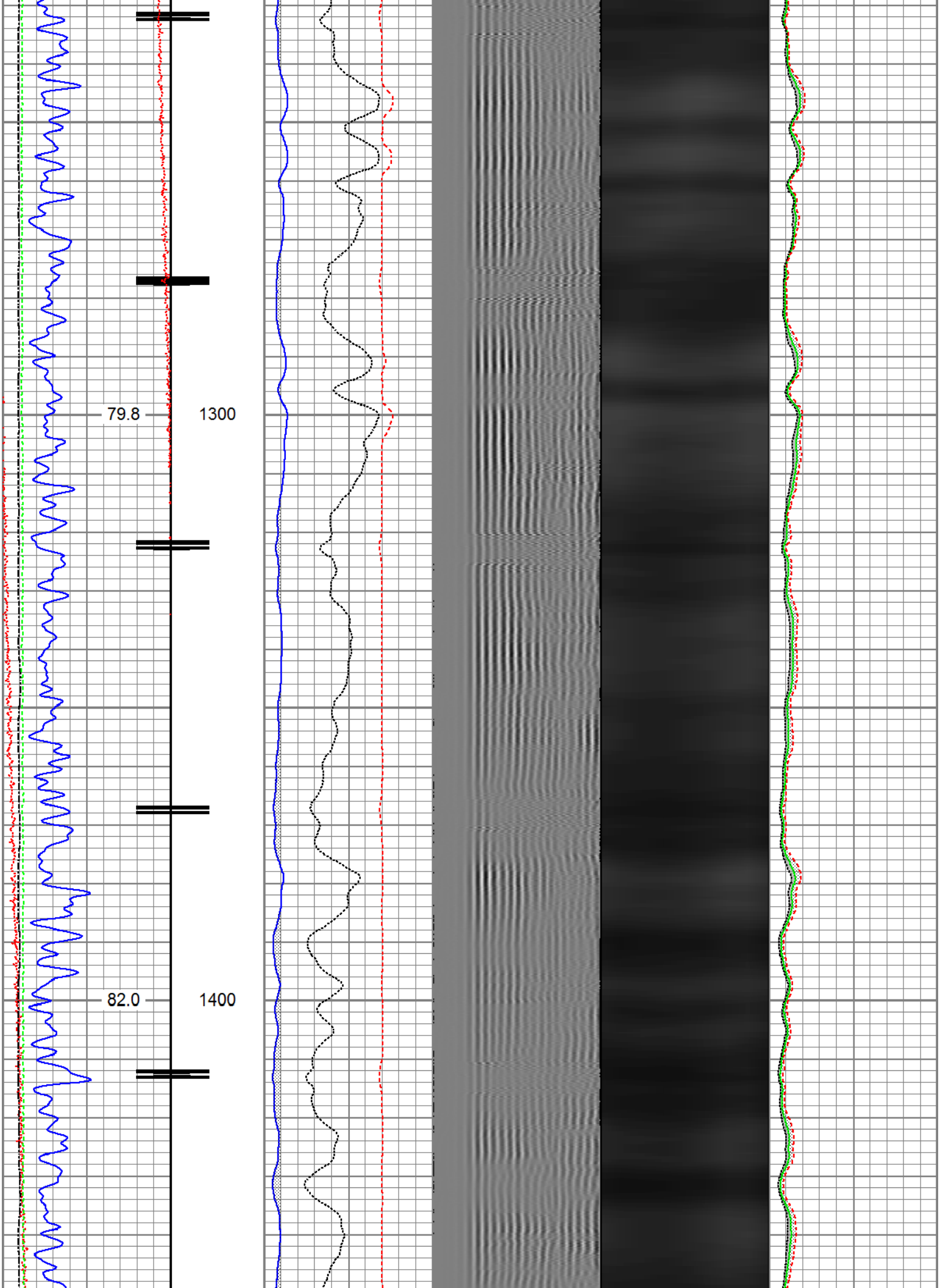
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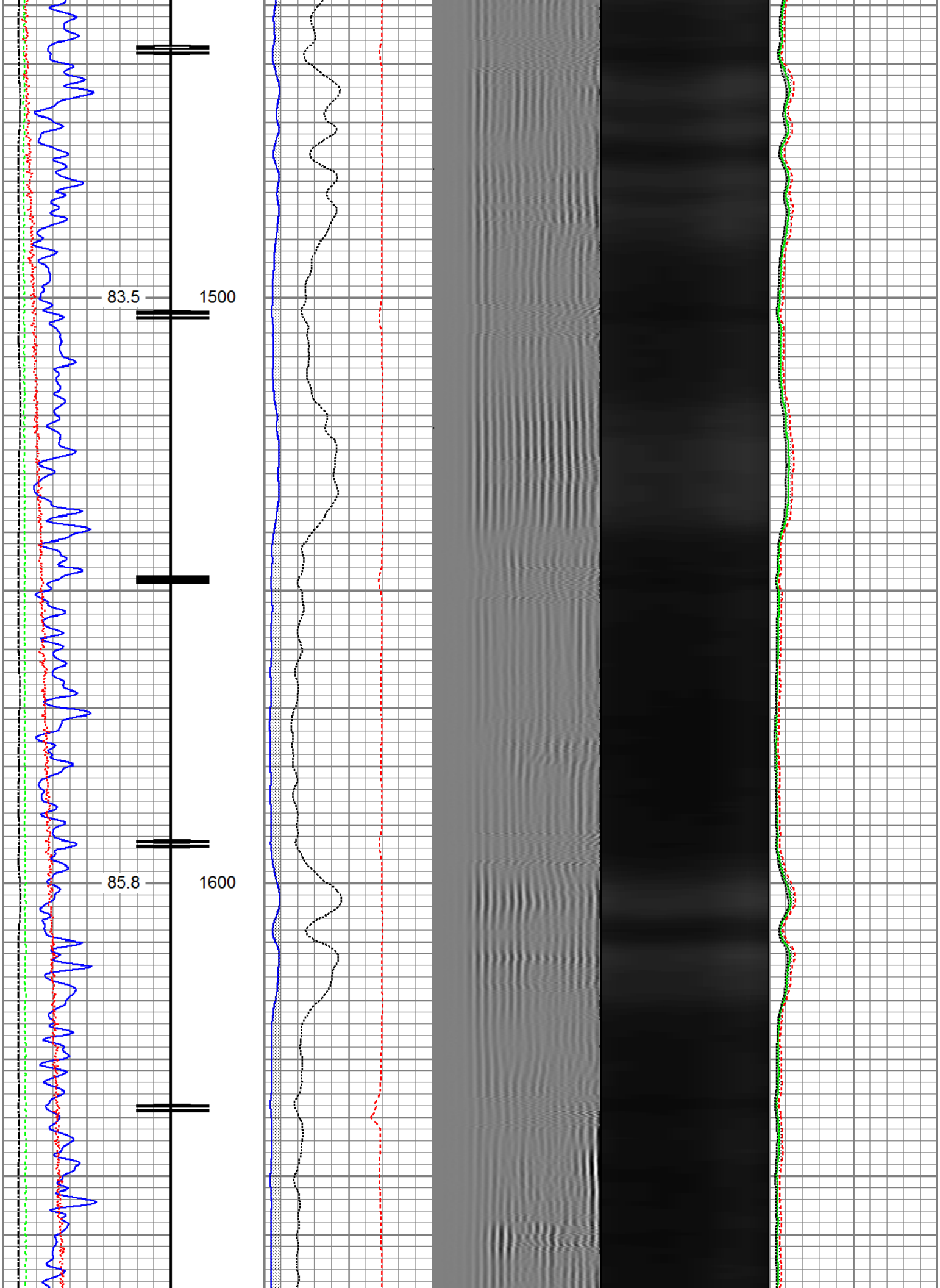
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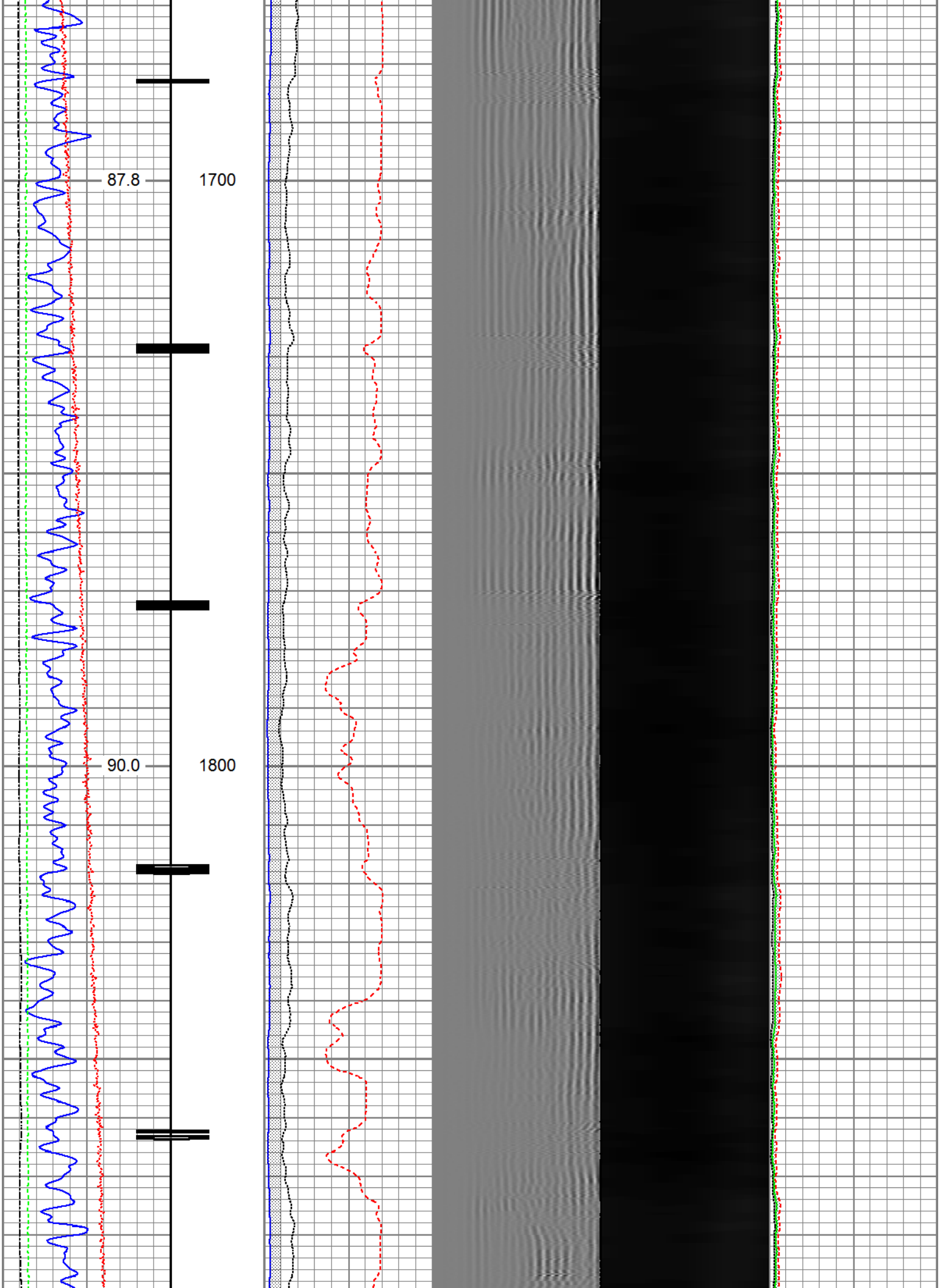
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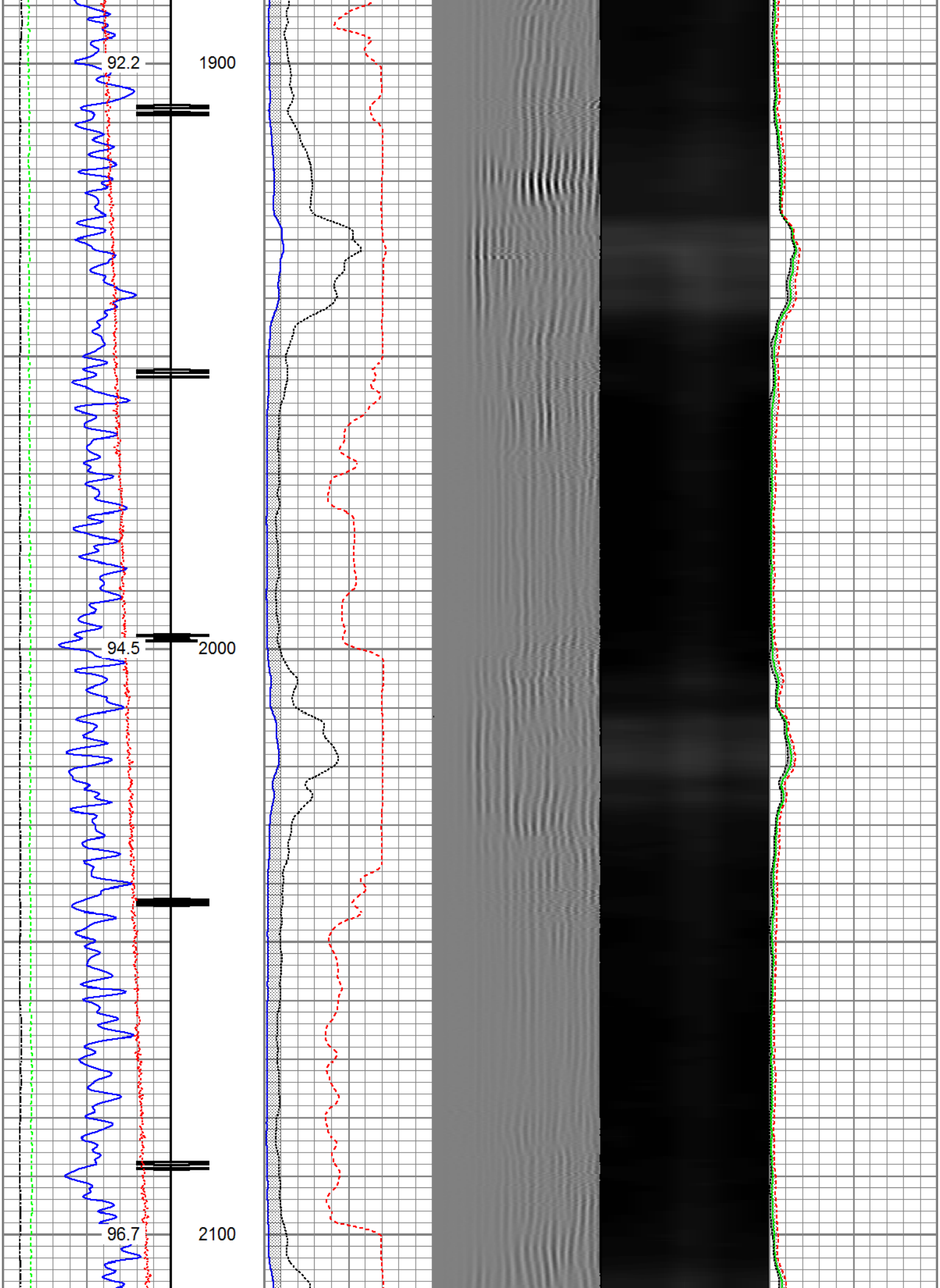
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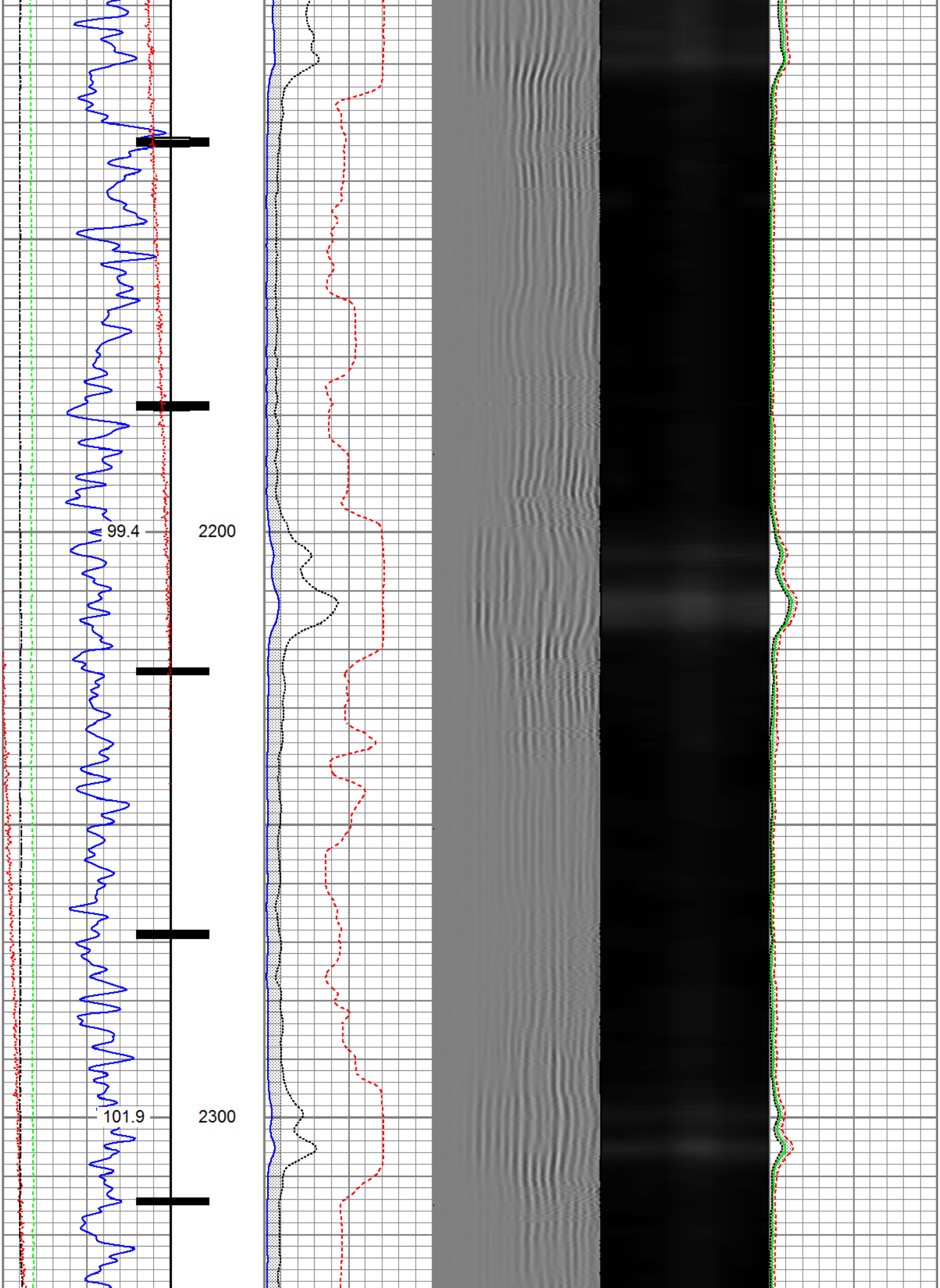
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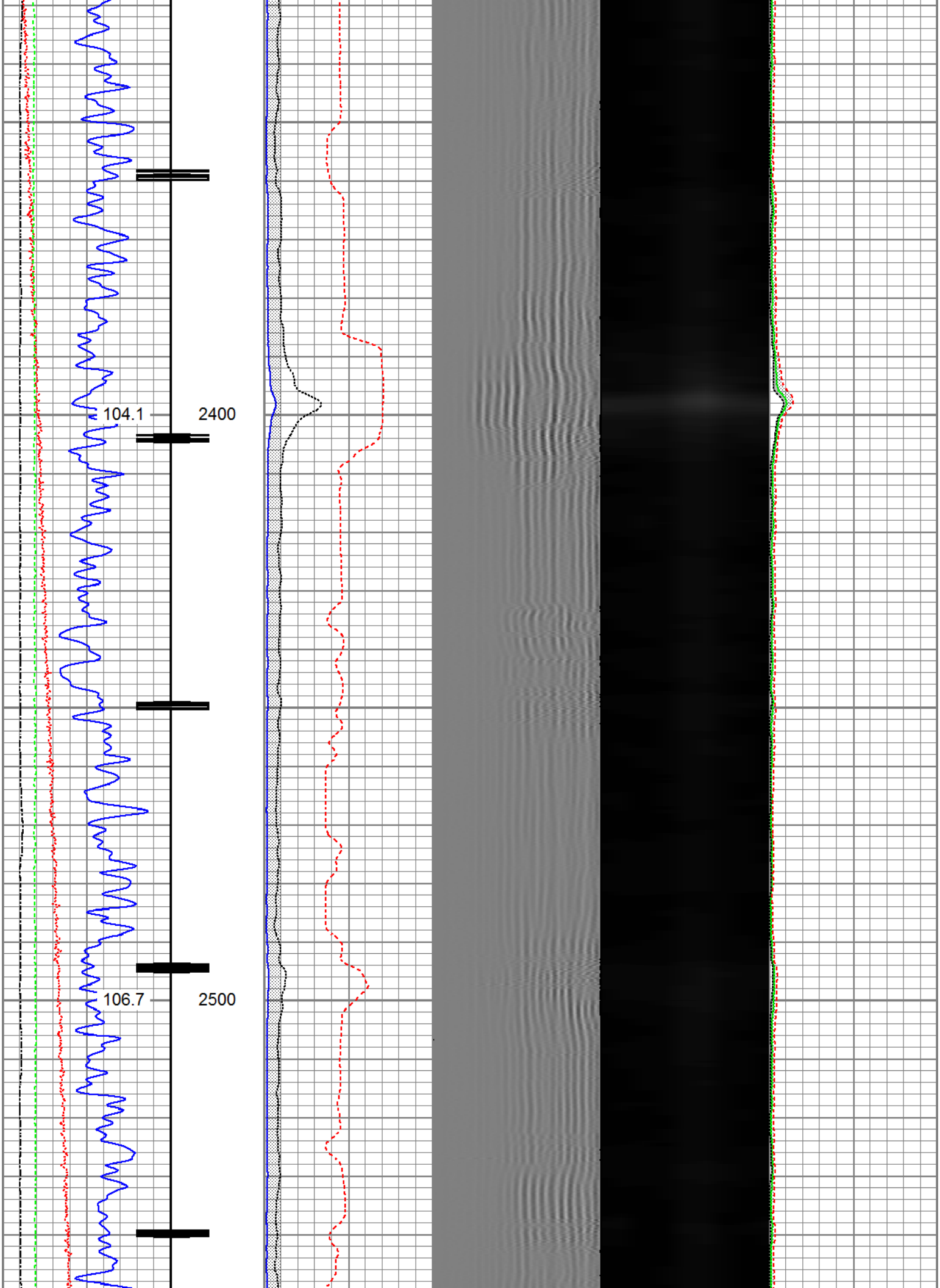
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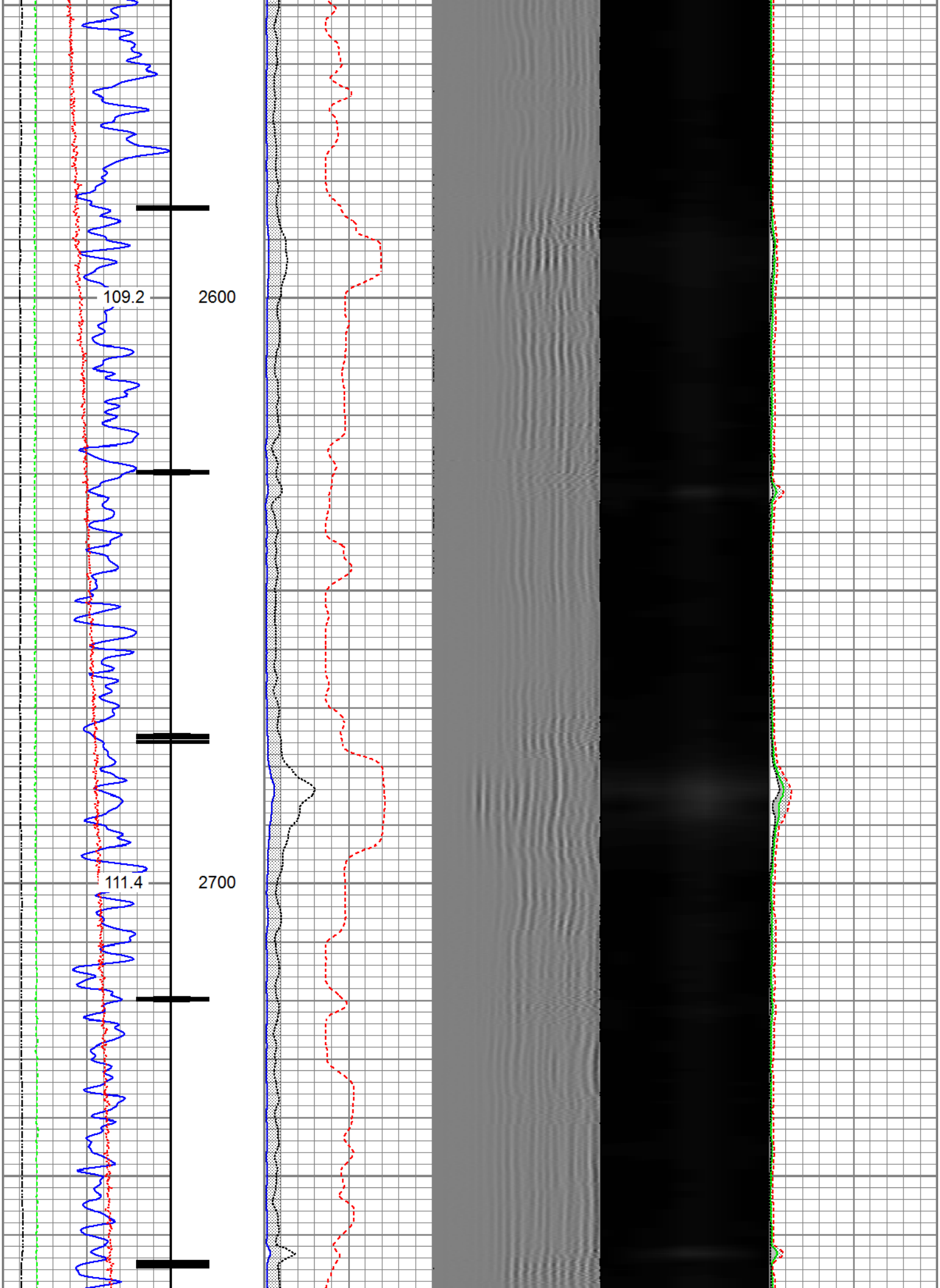
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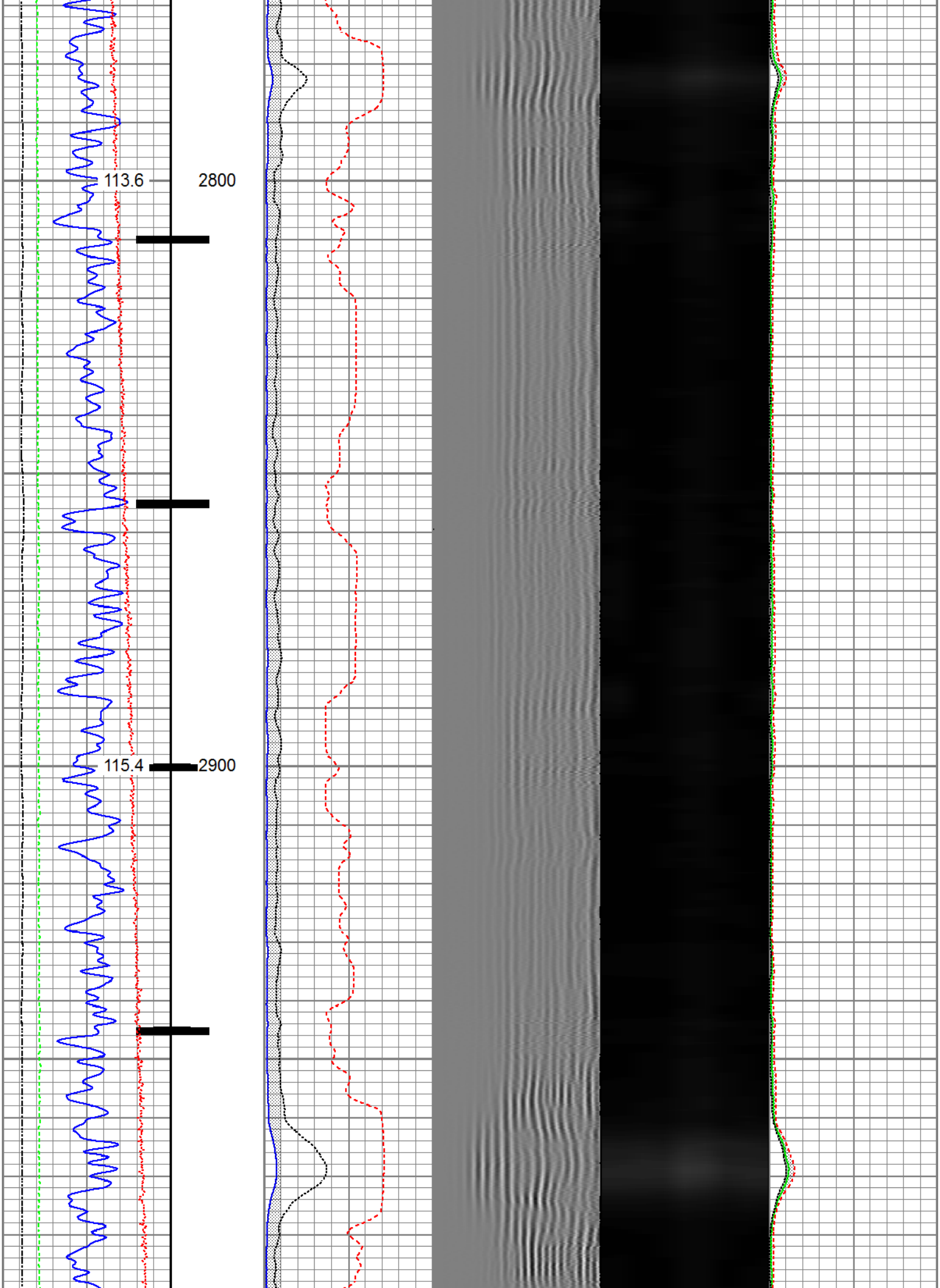
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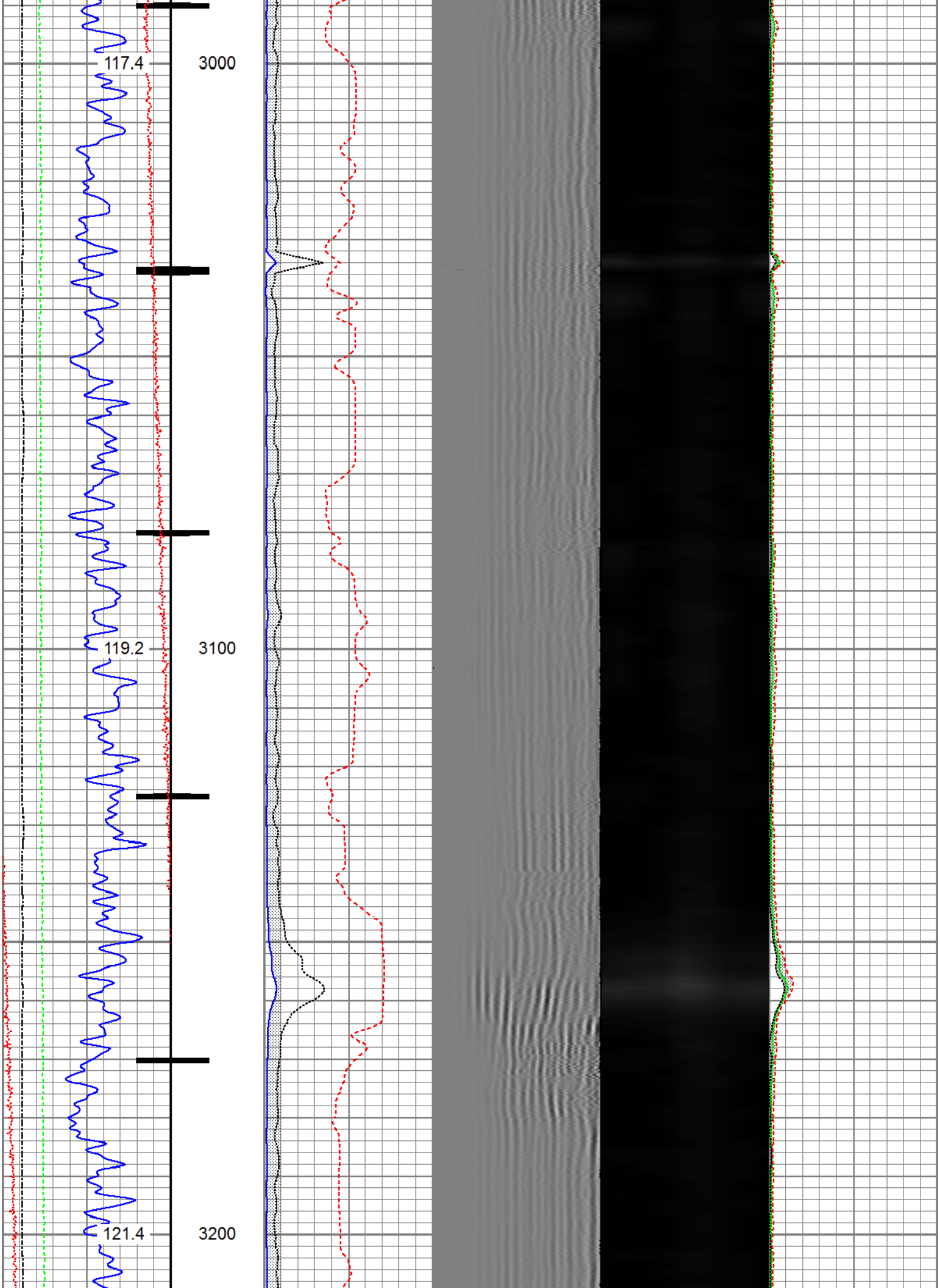
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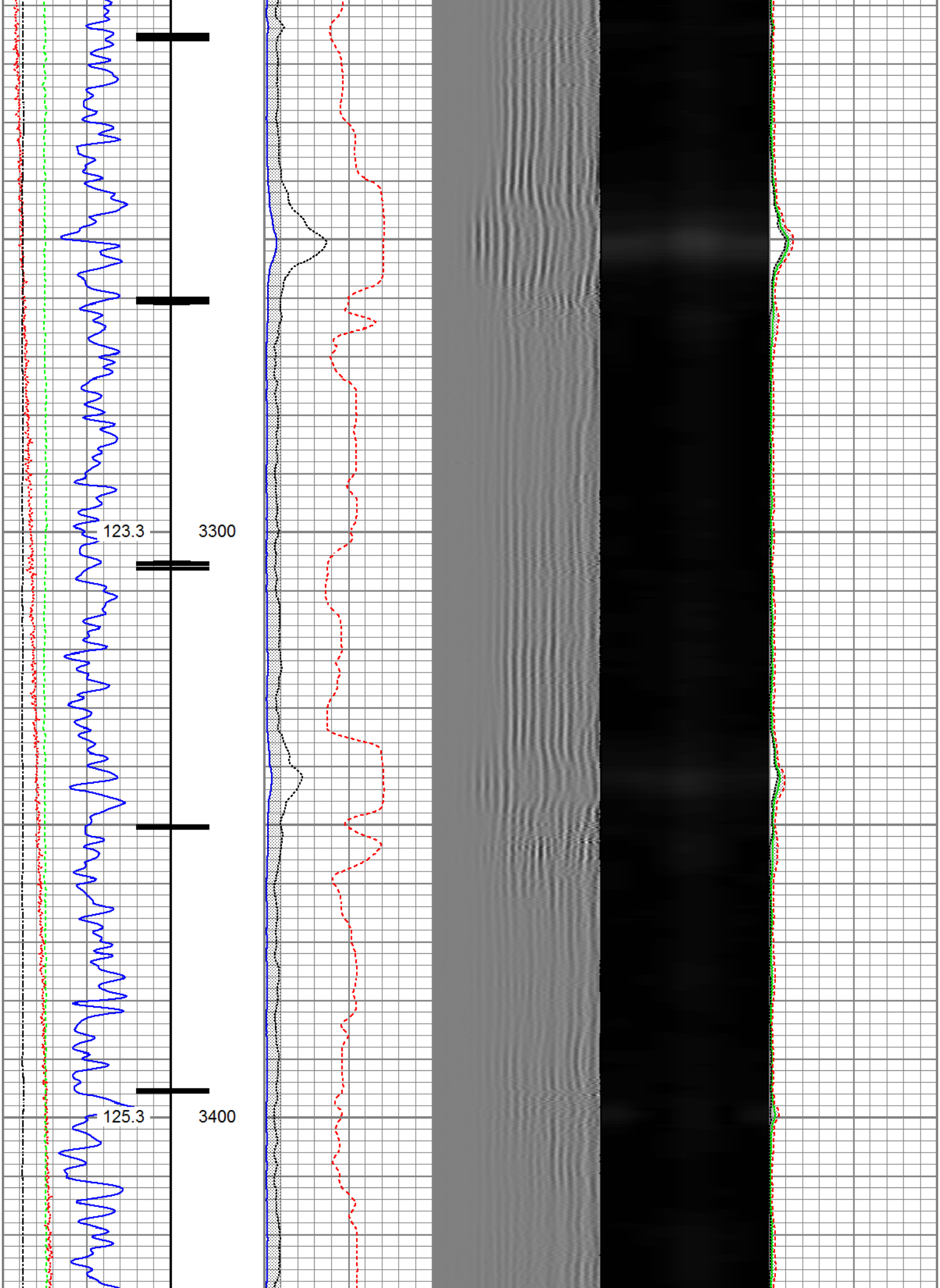
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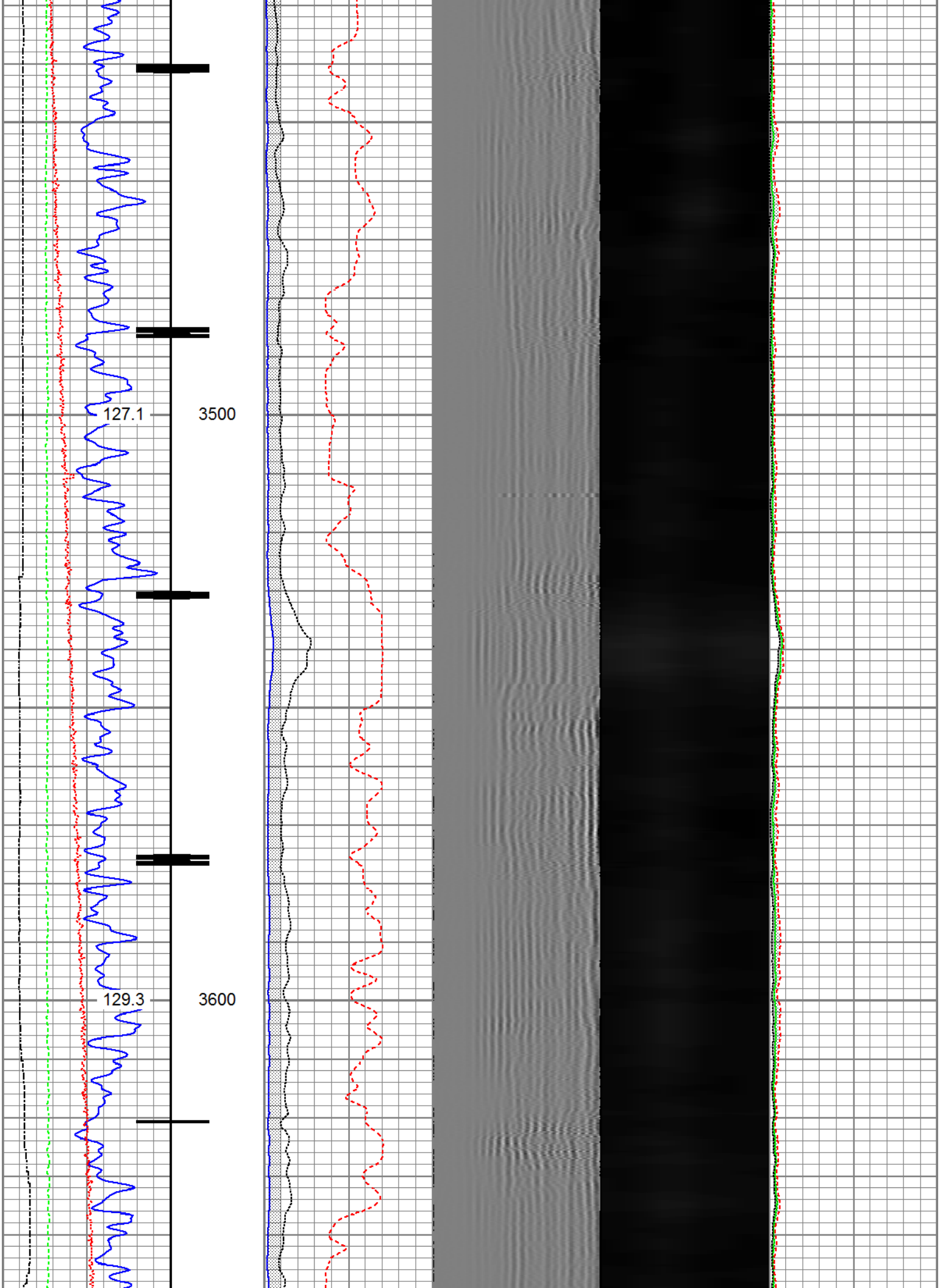
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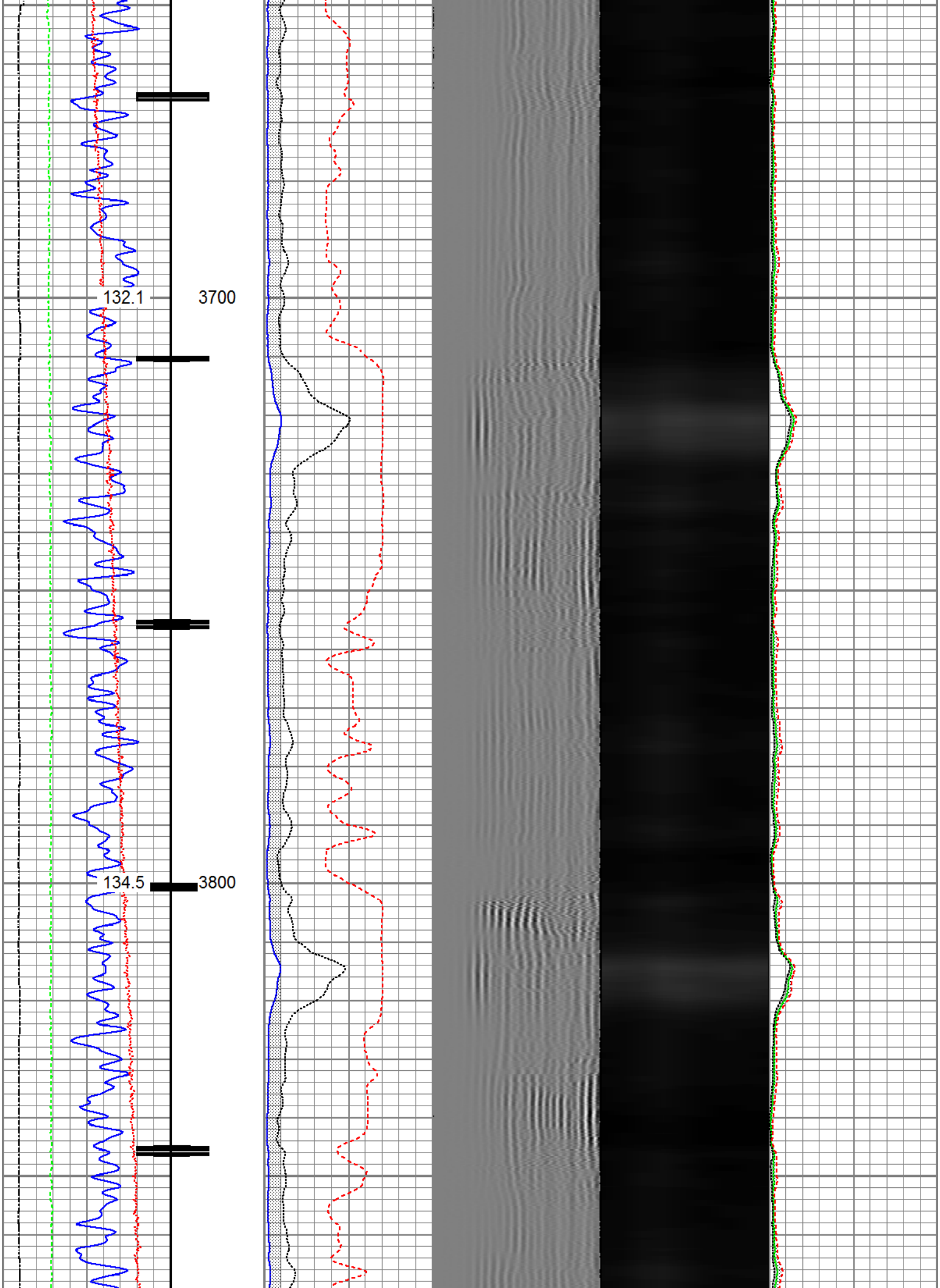
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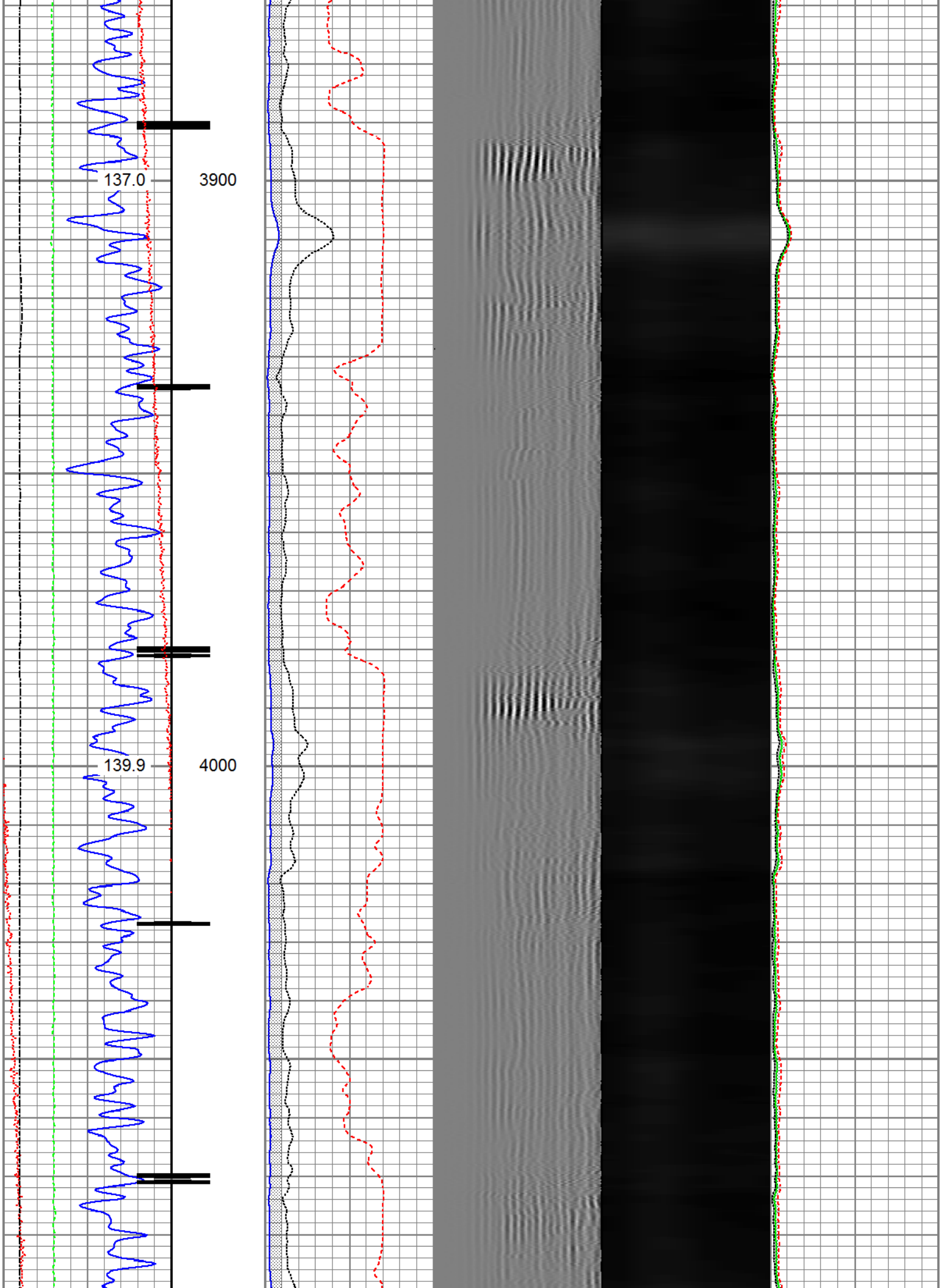
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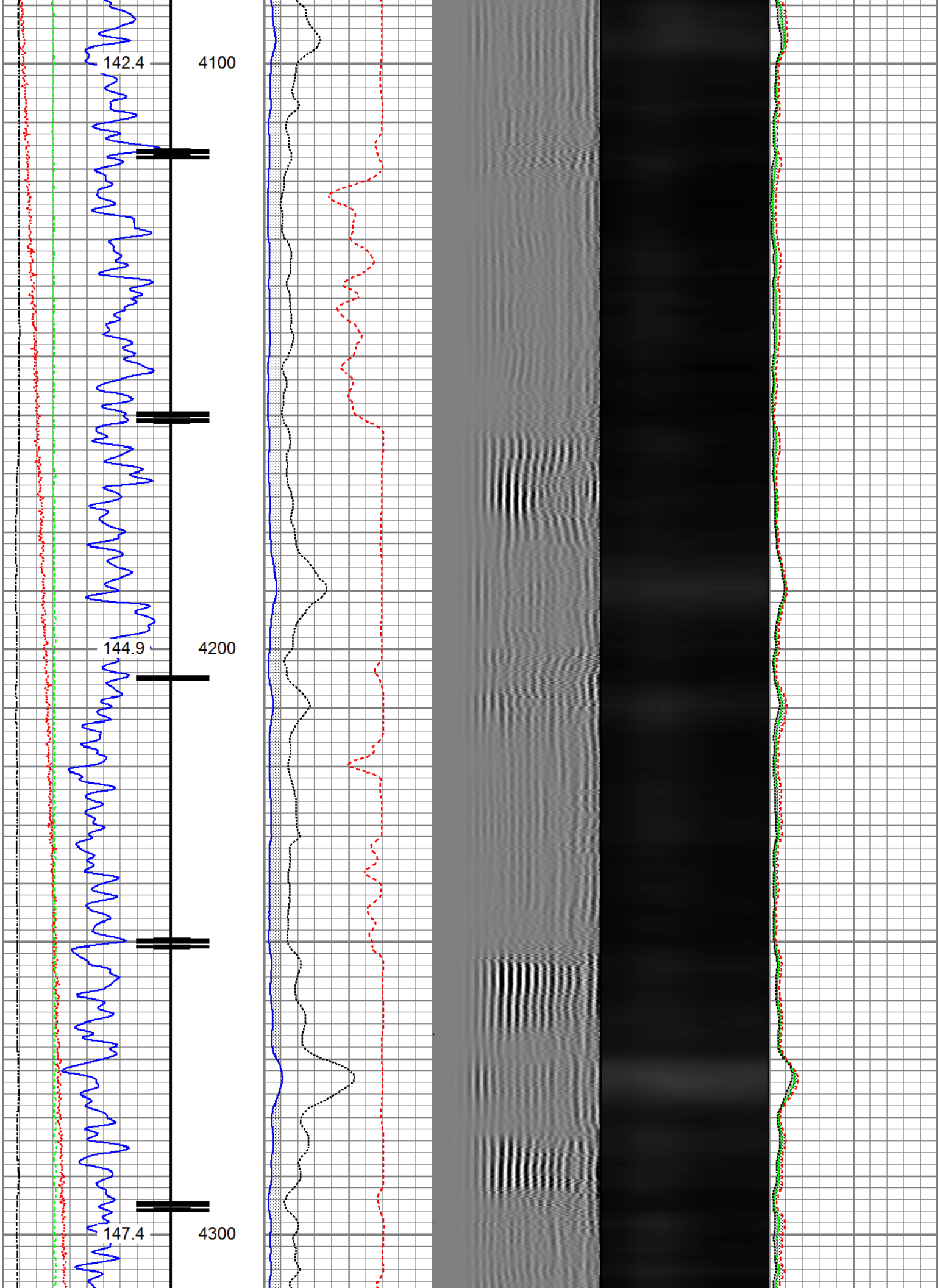
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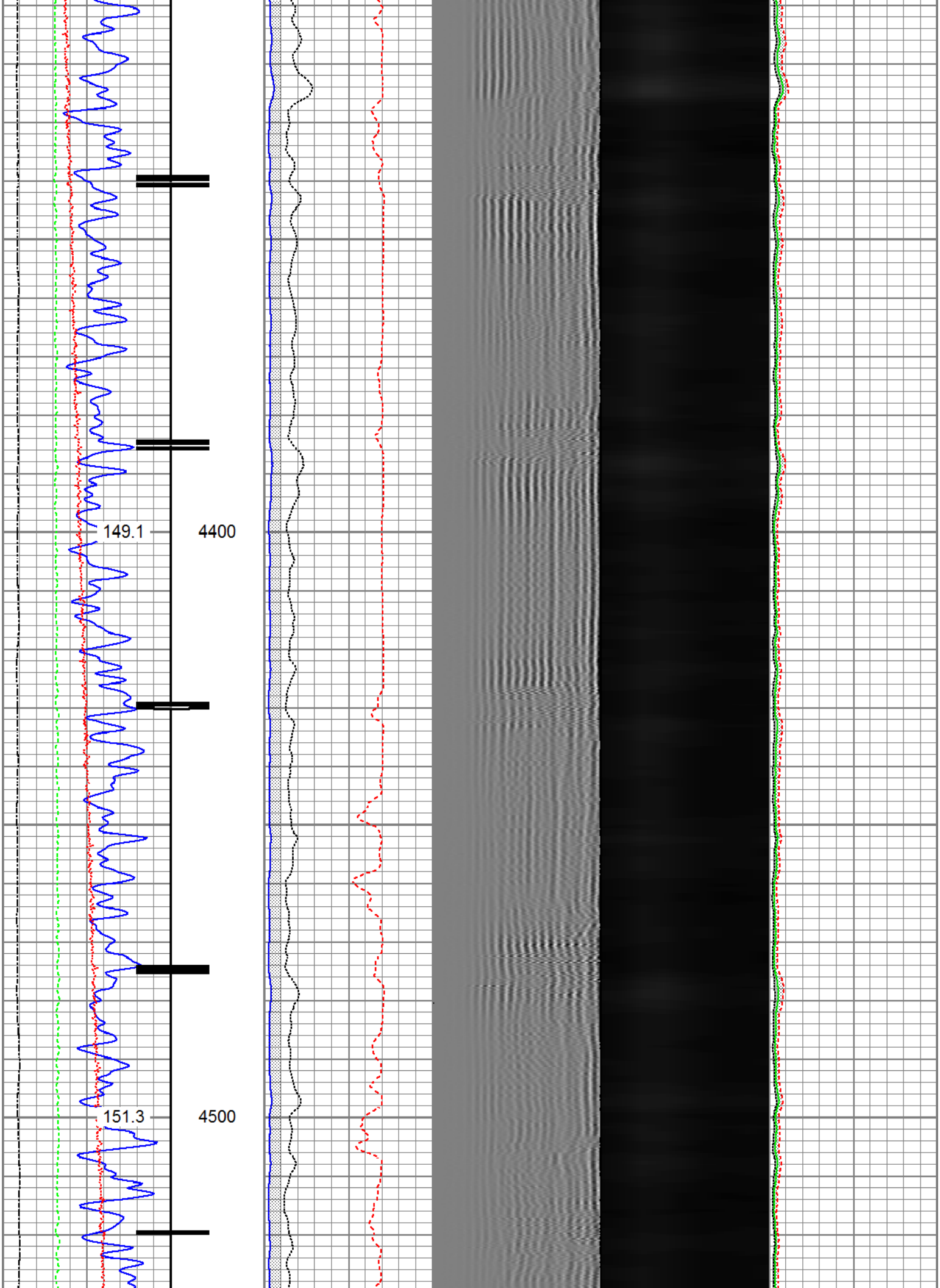
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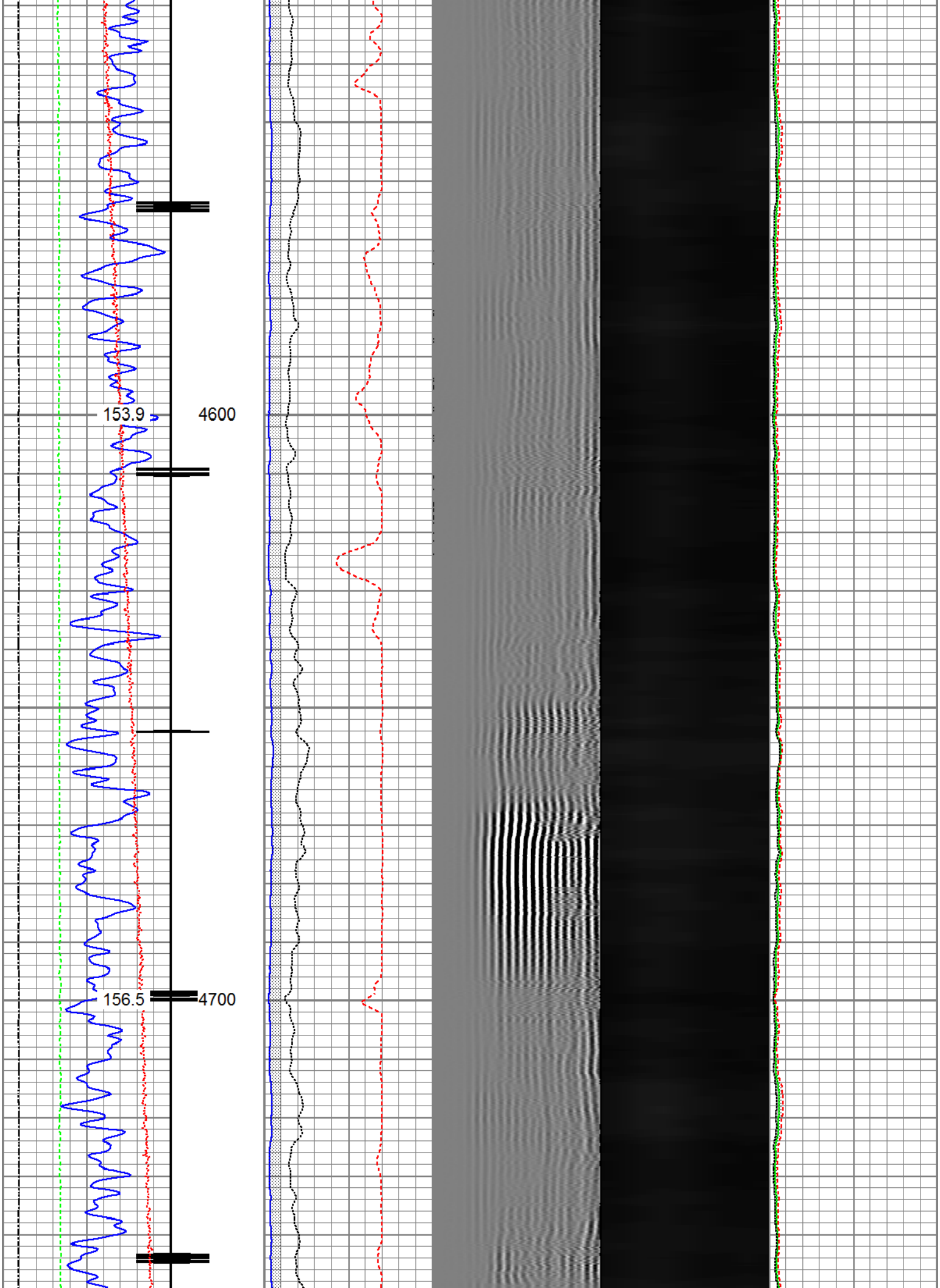
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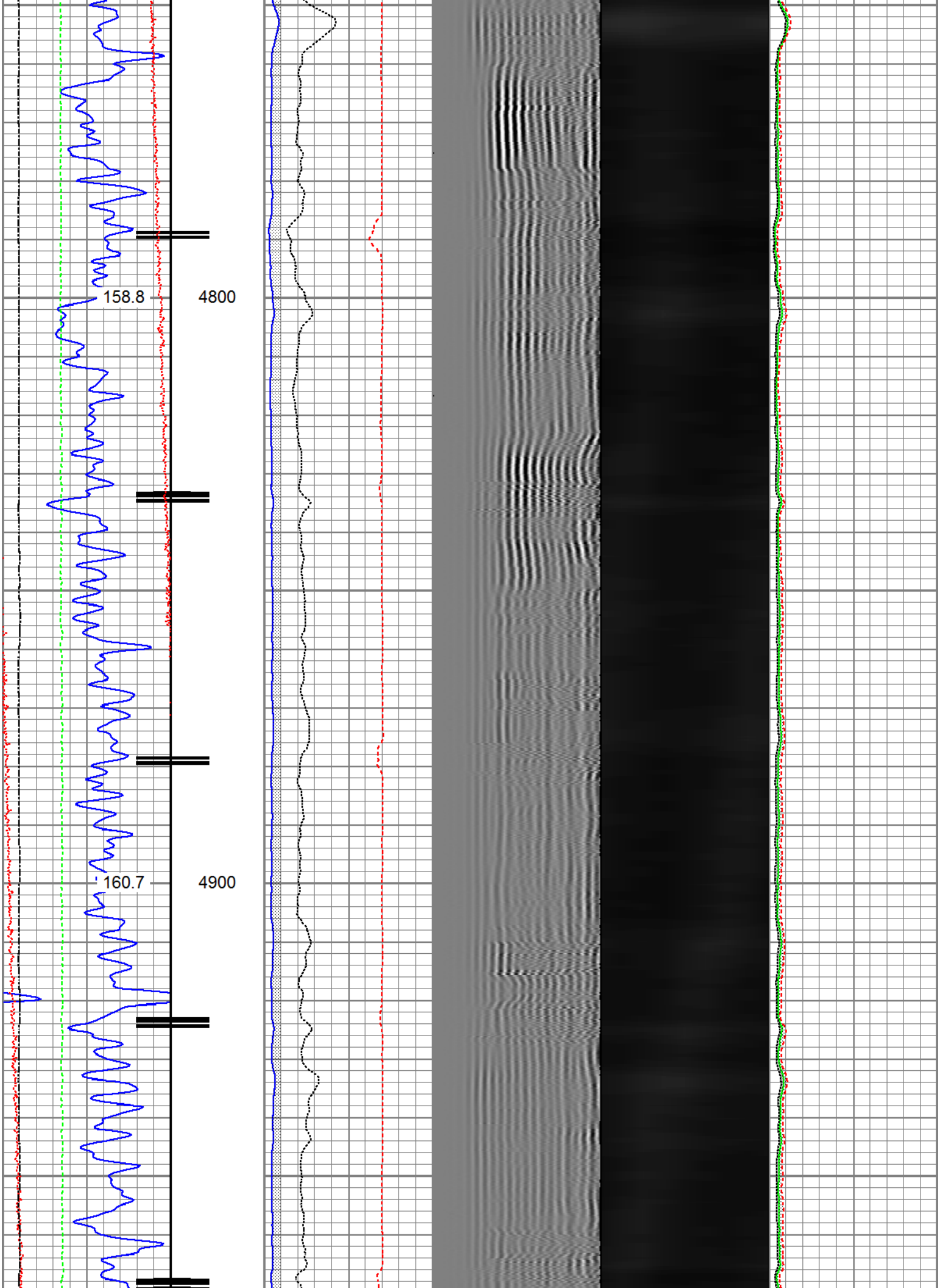
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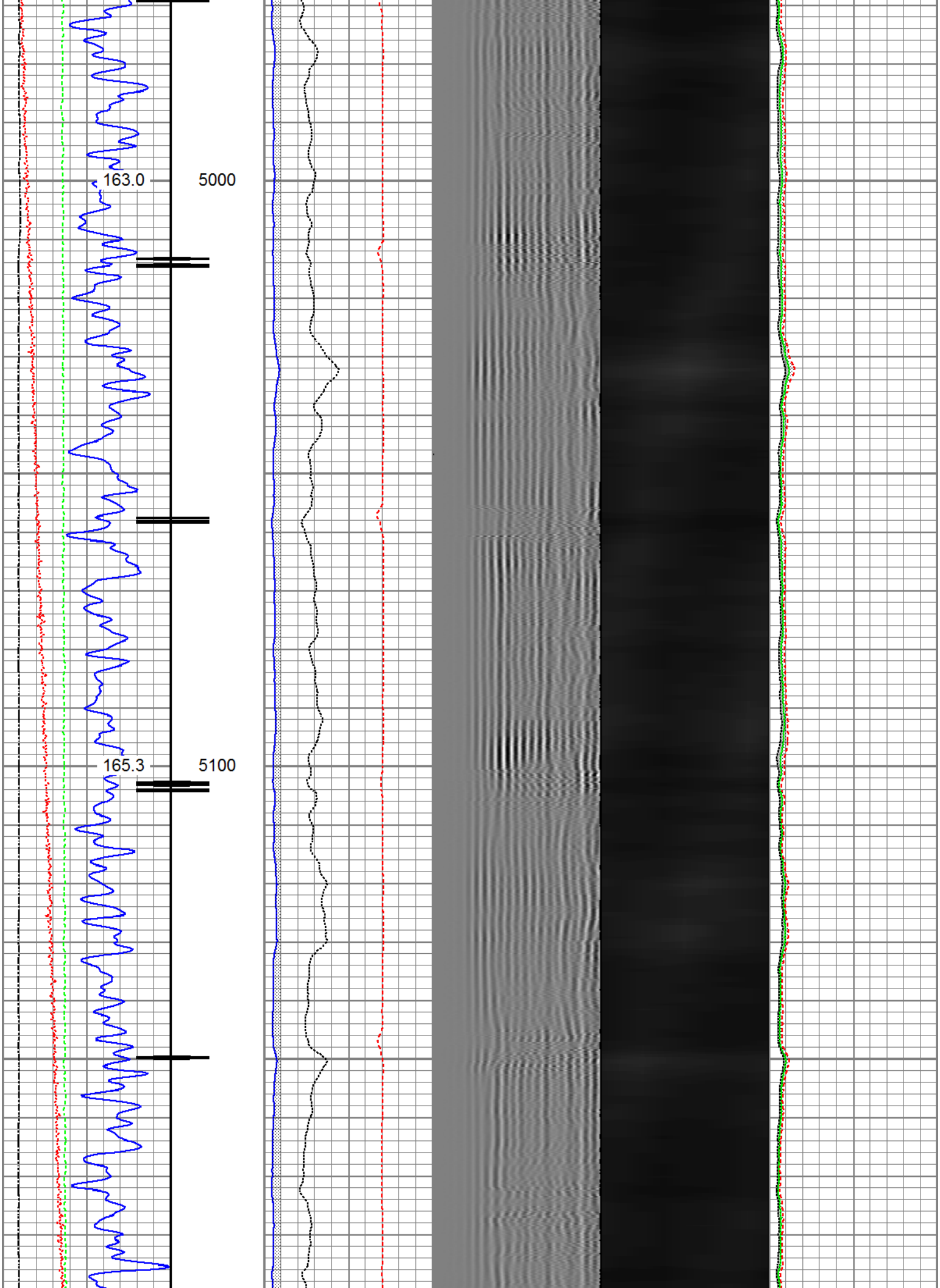
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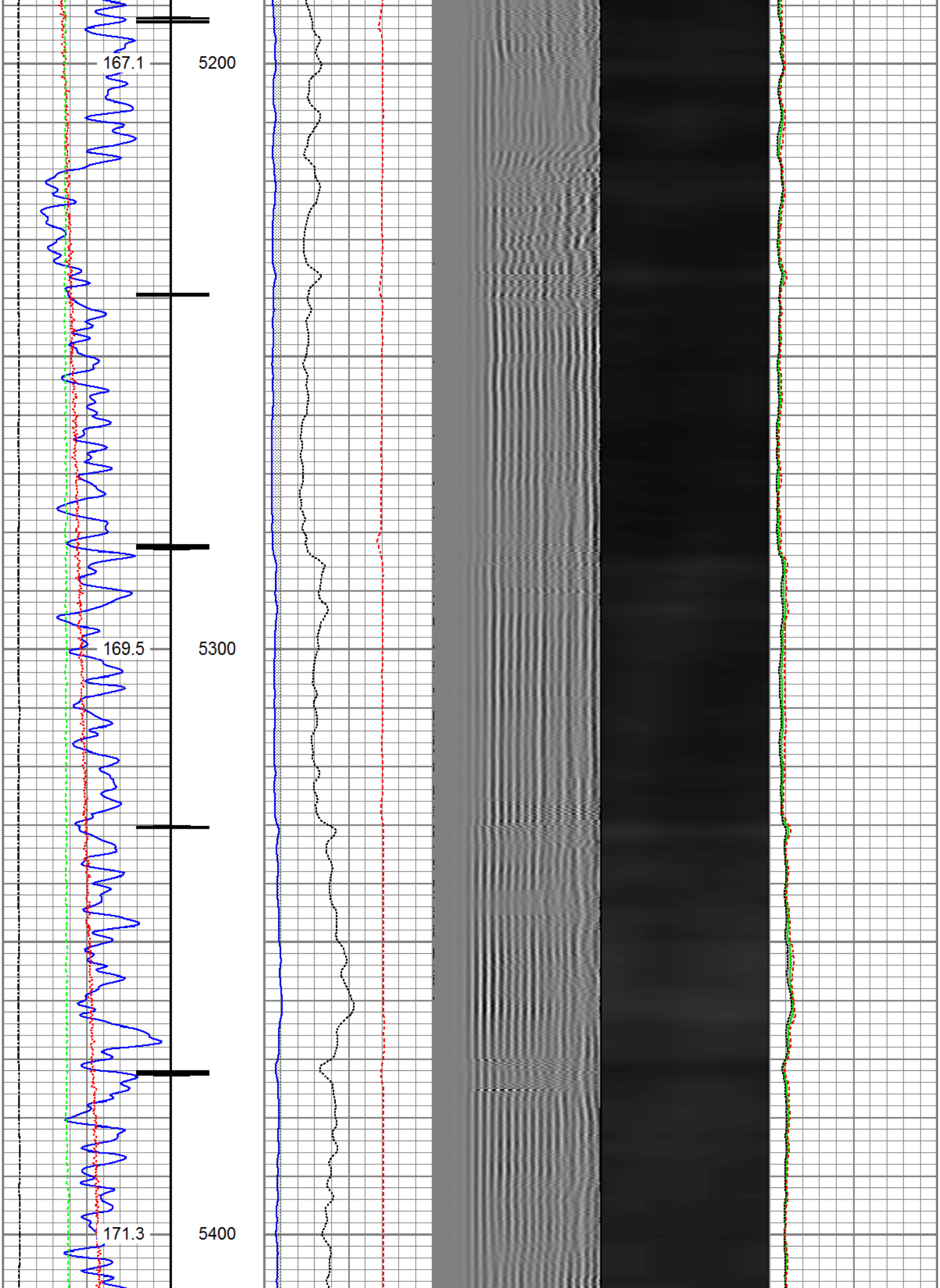
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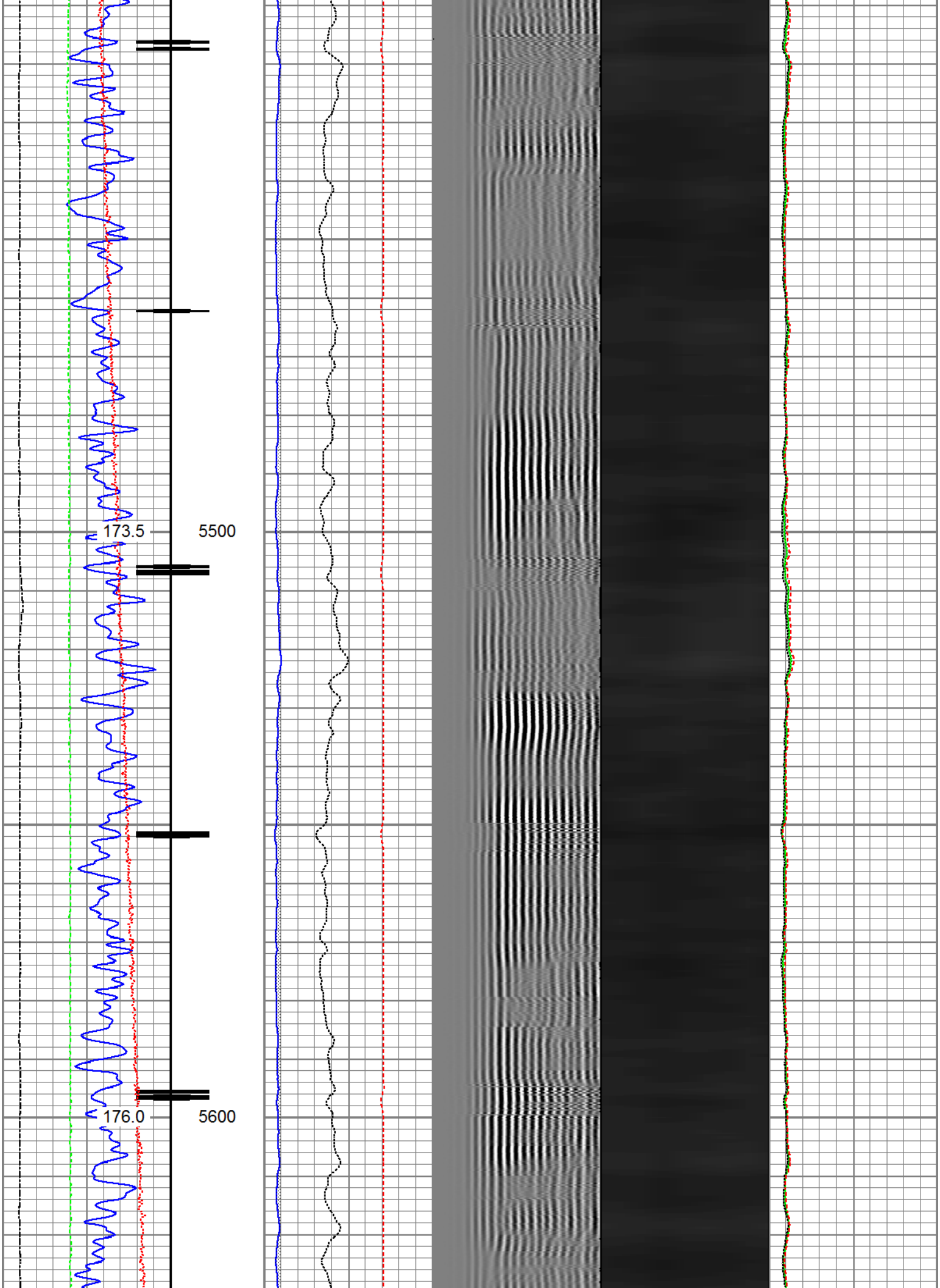
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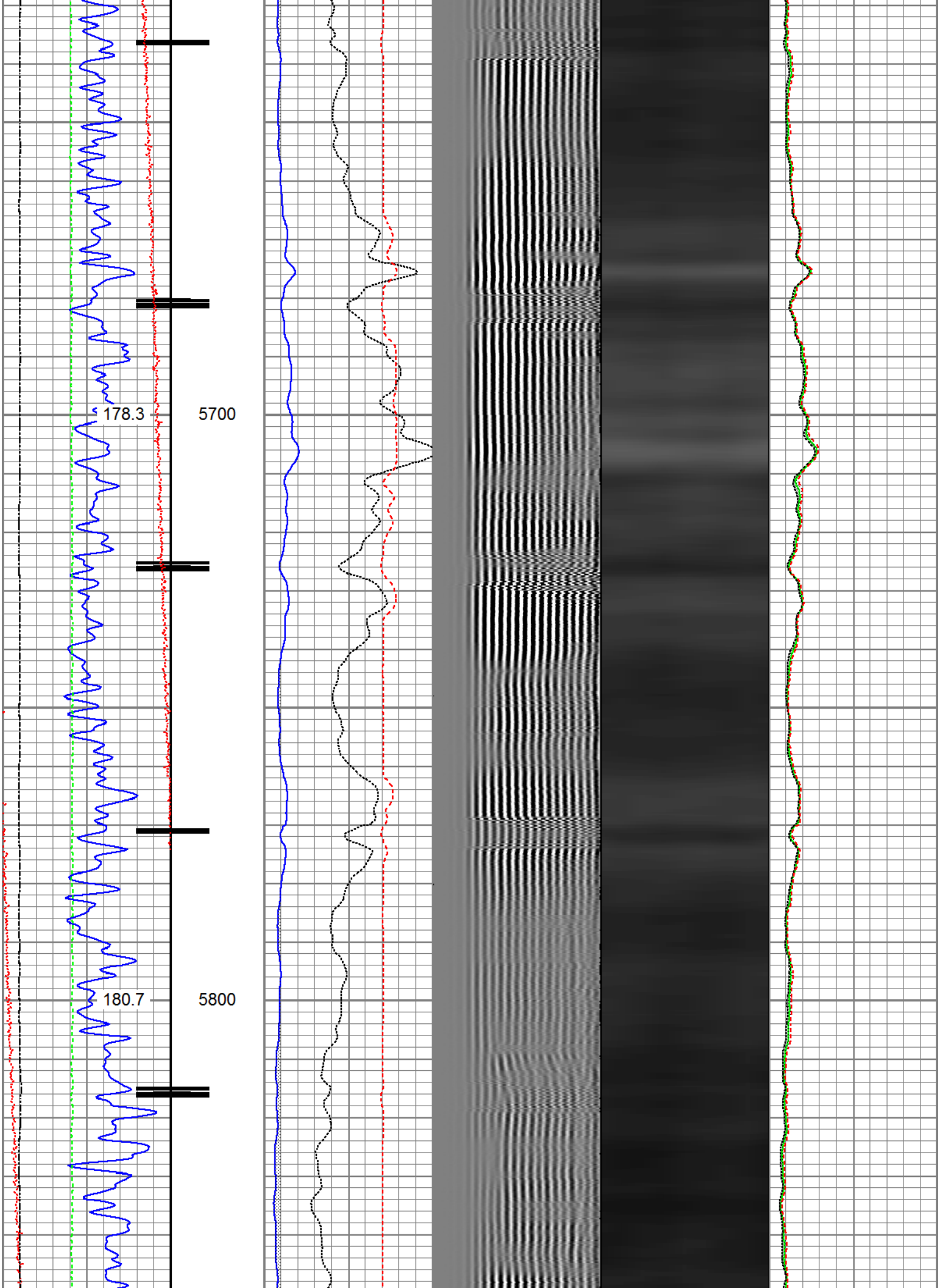
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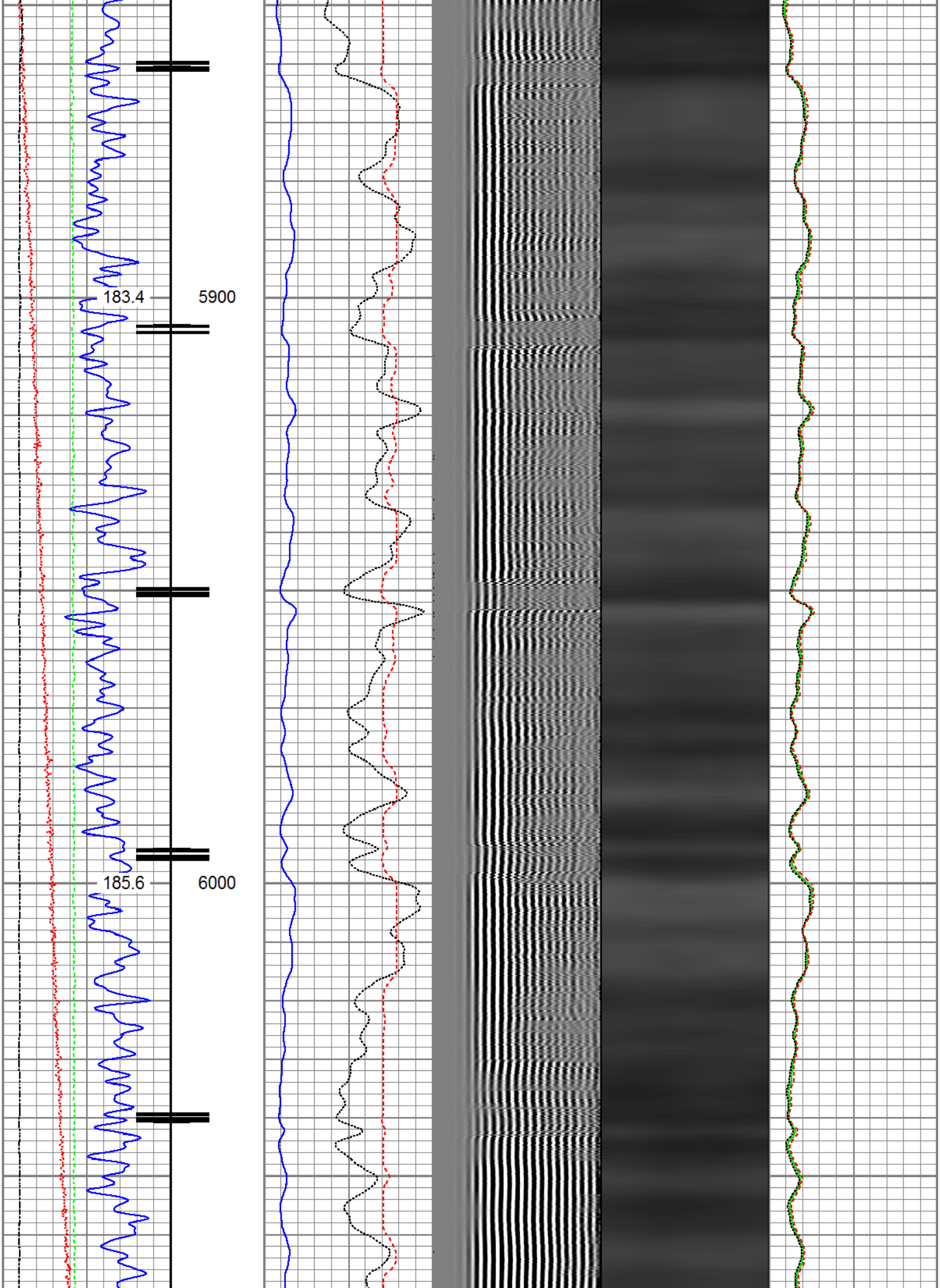
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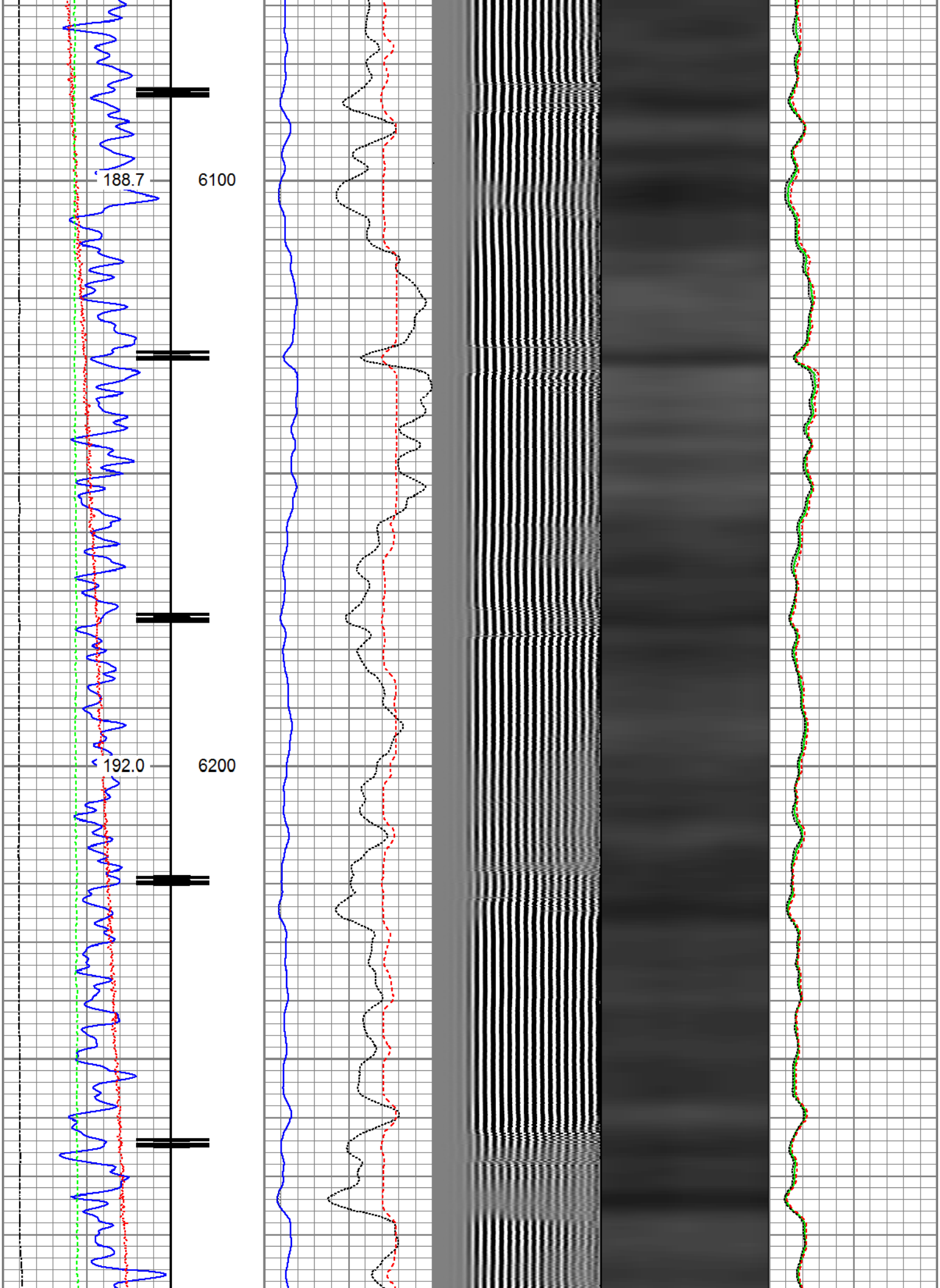
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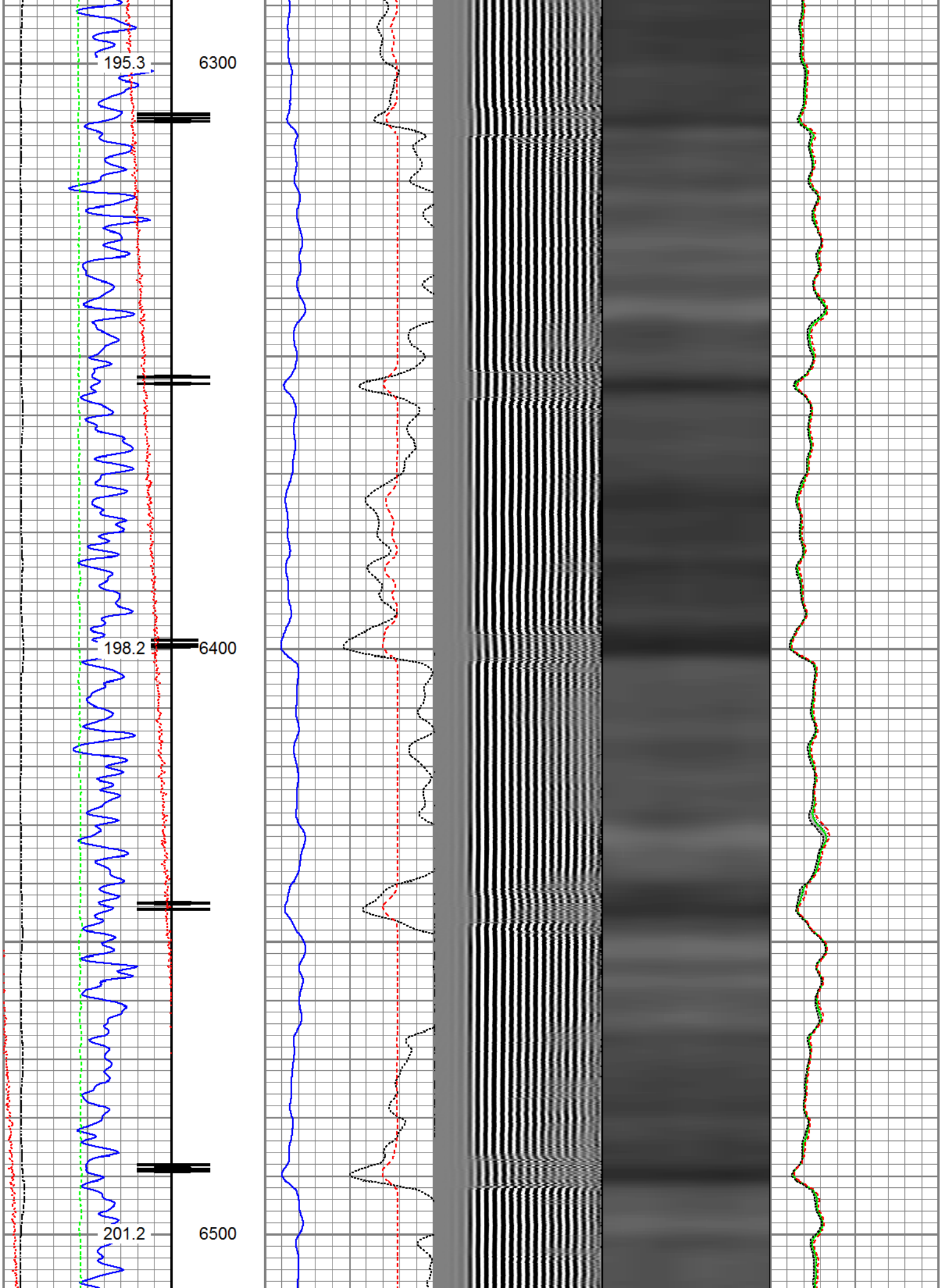
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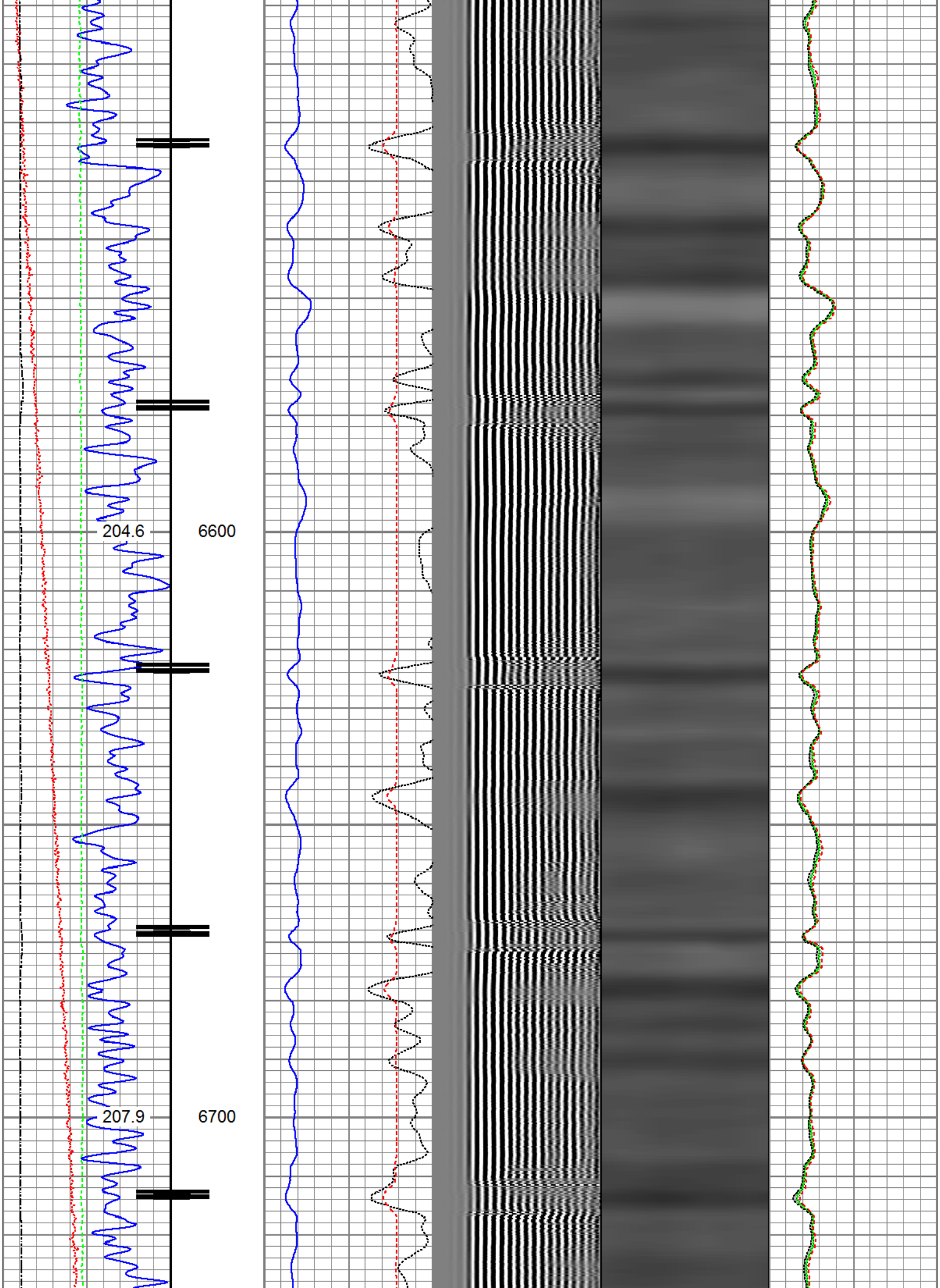
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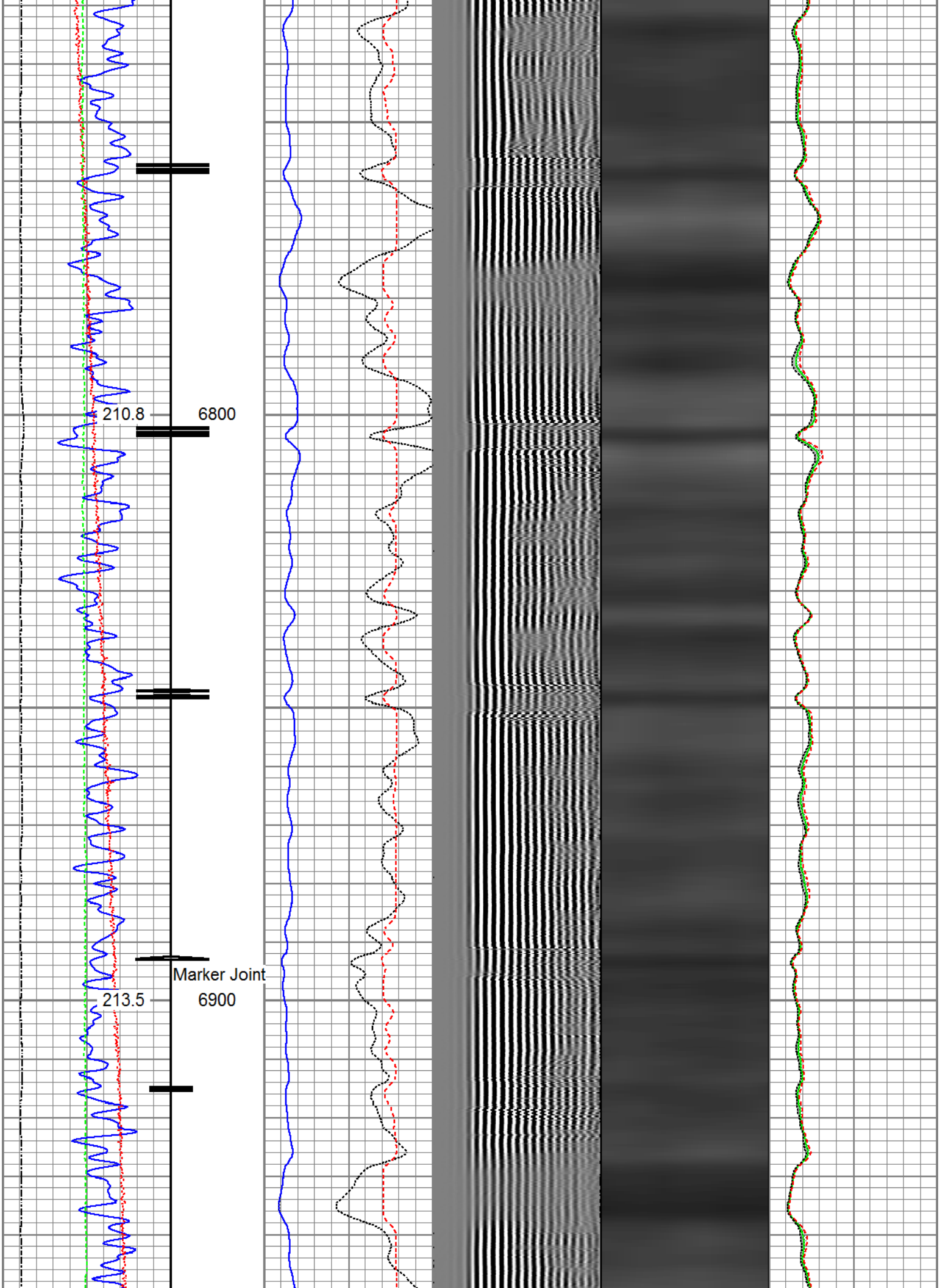
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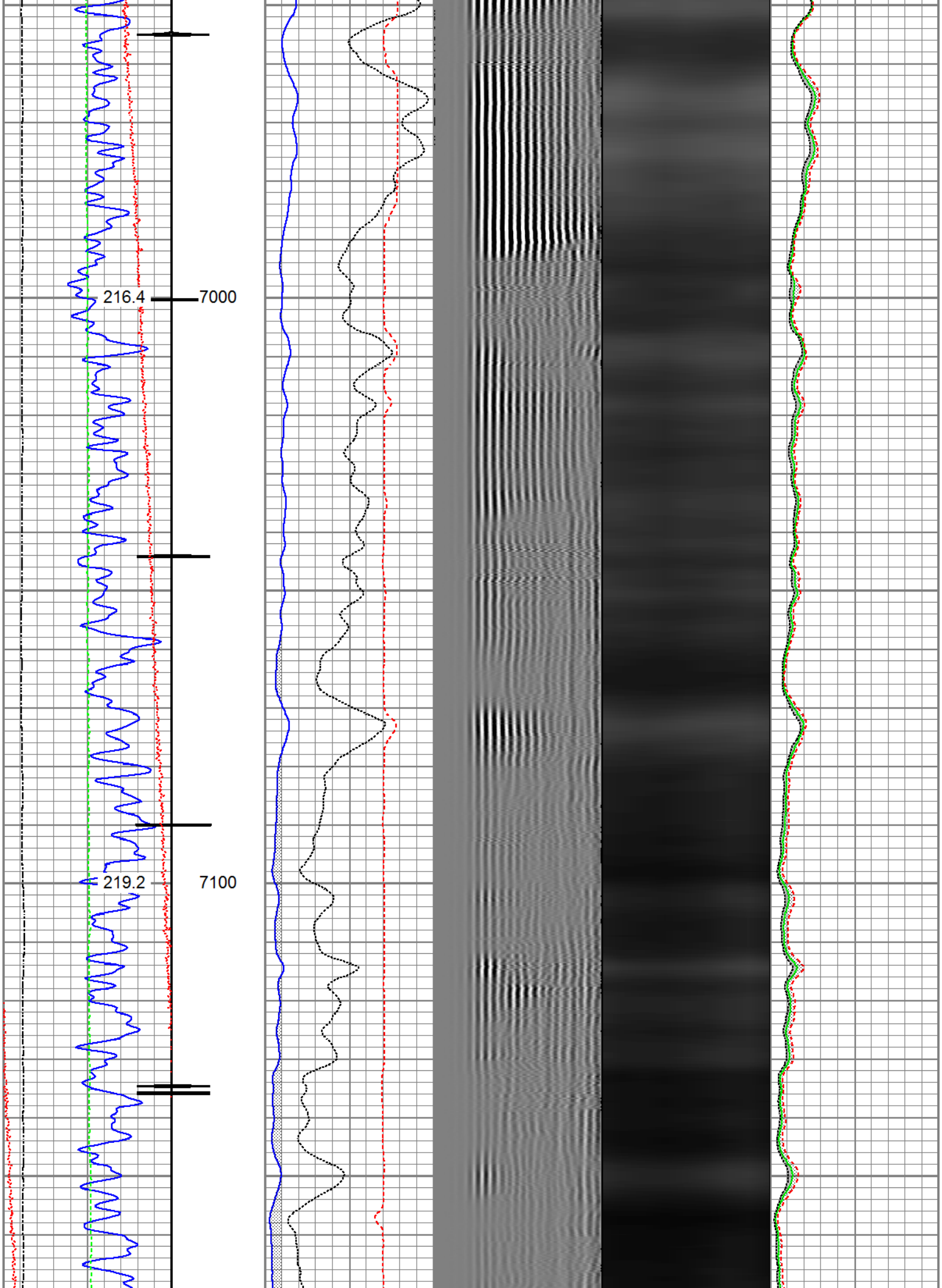
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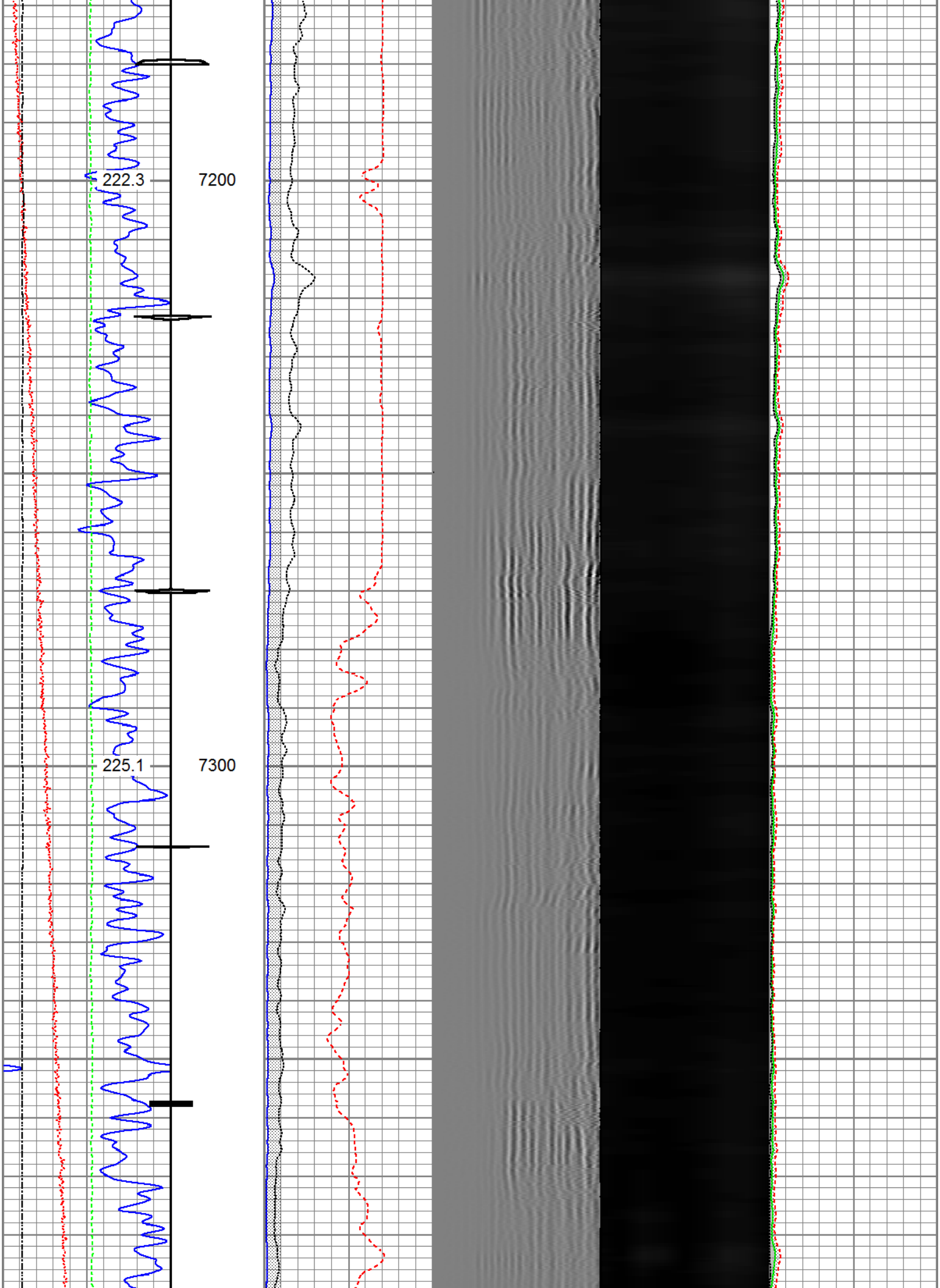
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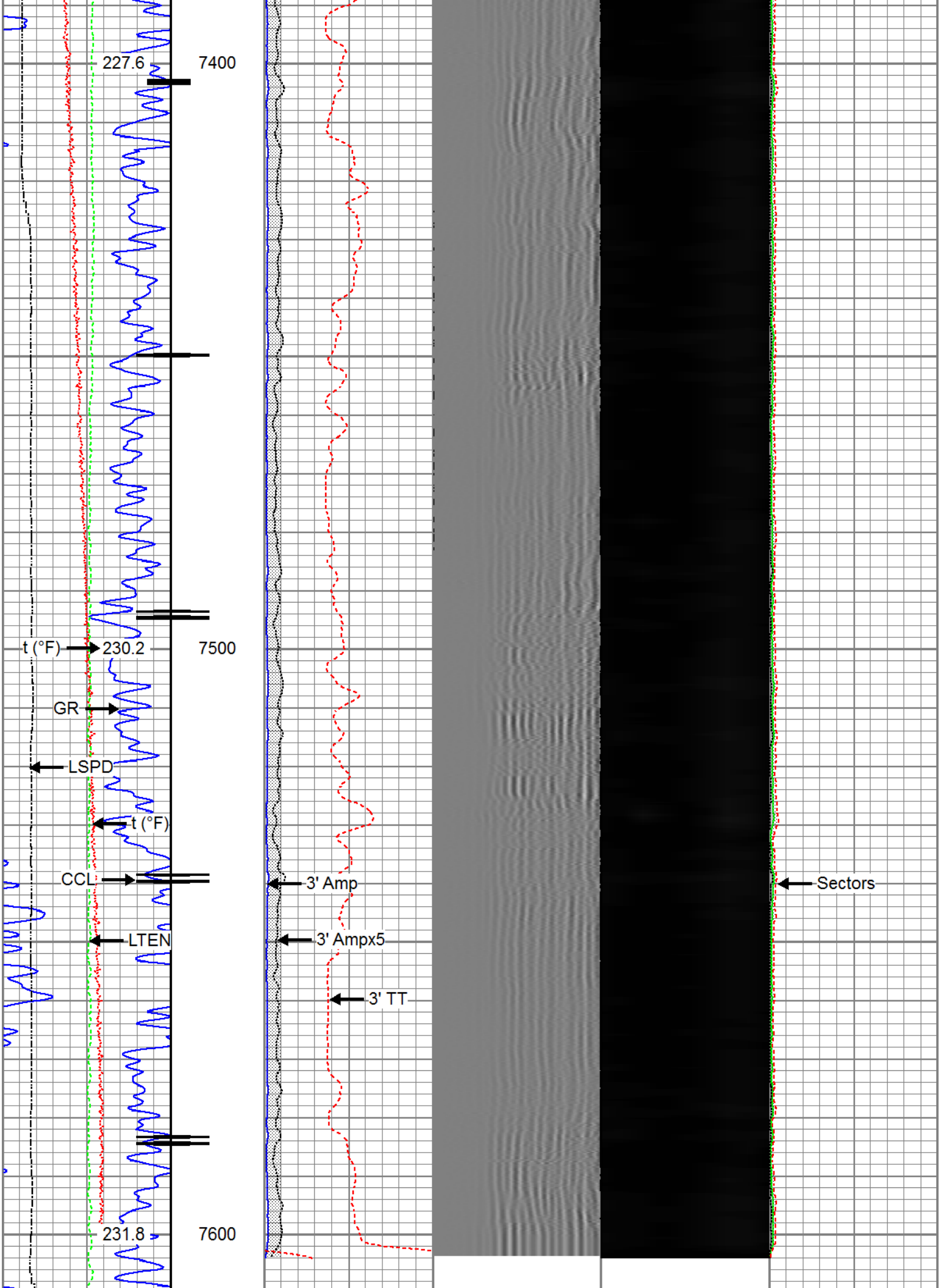
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230.2
7500
GR
LSPD
t (°F)
CCL
LTEN
231.8
7600
3' Amp
3' Ampx5
3' TT
Sectors

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

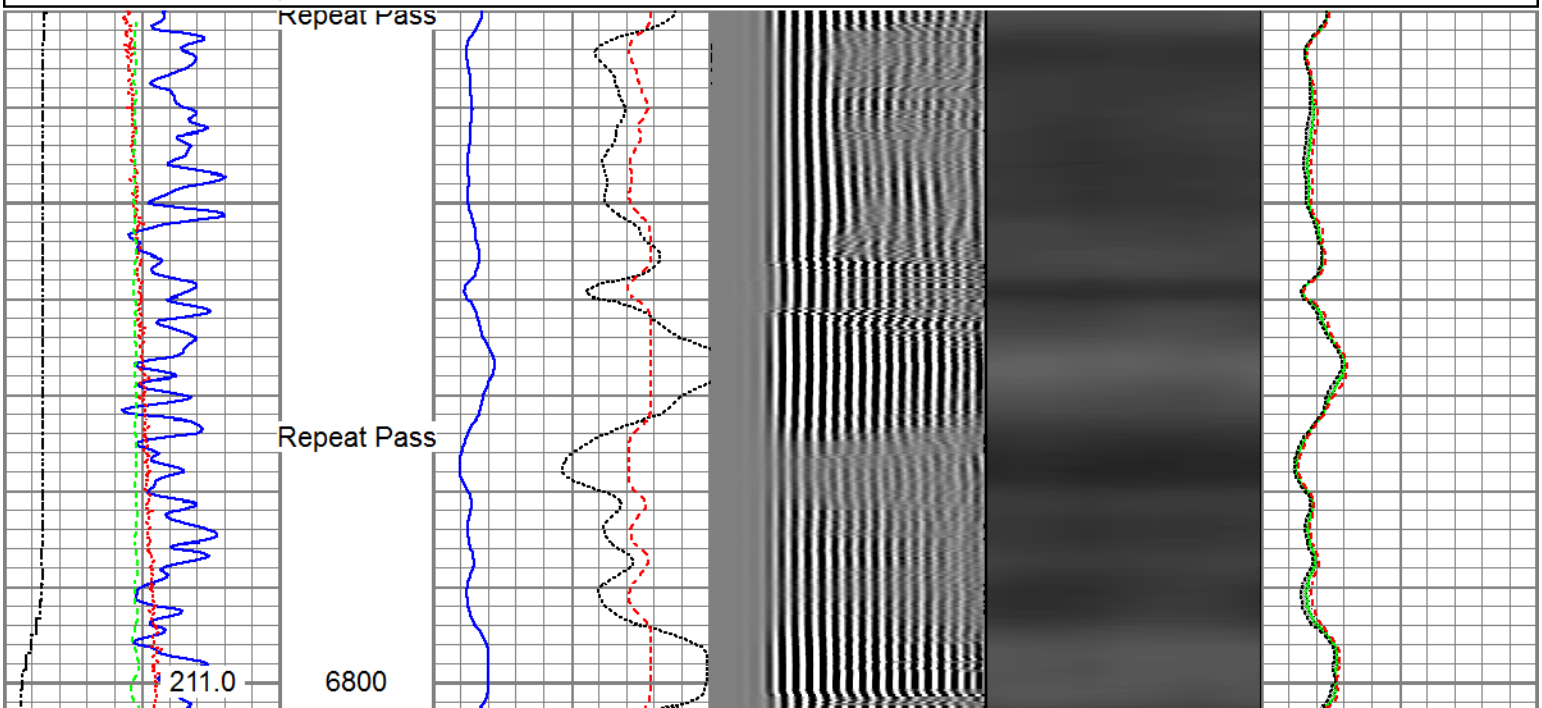
RELIANCE OILFIELD SERVICES

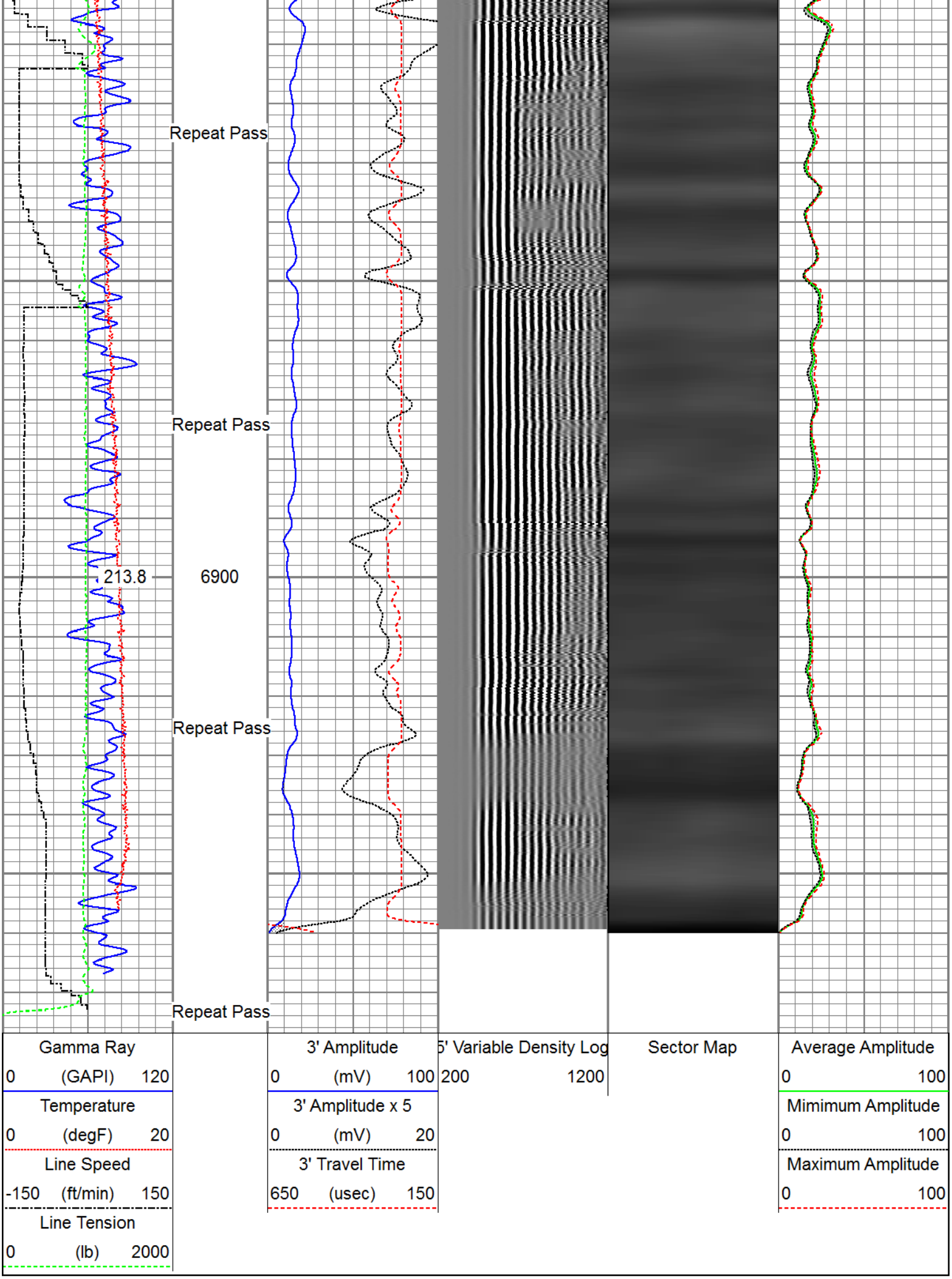
Repeat Pass

Recorded With 2800 PSI Surface Induced Pressure

Database File	anadarko_whiston_40n_33hz_17_may_2017_rbl\processed_0512344032_anadarko_whiston 40n-33
Dataset Pathname	pass8
Presentation Format	ros_radii
Dataset Creation	Wed May 17 16:46:47 2017
Charted by	Depth in Feet scaled 1:240

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




Repeat Pass
Repeat Pass
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6900
Repeat Pass
Repeat Pass
Gamma Ray
0 (GAPI) 120
Temperature
0 (degF) 20
Line Speed
-150 (ft/min) 150
Line Tension
0 (lb) 2000
3' Amplitude
0 (mV) 100
3' Amplitude x 5
0 (mV) 20
3' Travel Time
650 (usec) 150
5' Variable Density Log
200 1200
Sector Map
Average Amplitude
0 100
Mimimum Amplitude
0 100
Maximum Amplitude
0 100

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_EBS Probe 2-3/4" Electric Inline Bowspring Centralizer	2.8875	2.75	20.00
HeadVolt	19.54					
Temp	16.75					
			Probe_RADII-C-P_RBT_2750 (FW1302-0029 Probe 2-3/4" Sector Cement Bond Tool with Temperature Probe	9.19	2.75	105.00
WVFS8	14.58					
WVFS7	14.58					
WVFS6	14.58					
WVFS5	14.58					
WVFS4	14.58					
WVFS3	14.58					
WVFS2	14.58					
WVFS1	14.58					
WVFCAL	14.58					
WVF3FT	14.58					
WVF5FT	13.58					
HEADVOLT	10.33					
			Probe_ELine_BowSpring_Centralizer-P_EBS Probe 2-3/4" Electric Inline Bowspring Centralizer	2.8875	2.75	20.00
DCCL	6.51					
CCL	6.51					
			Probe_GR_CCL-P_CGR_2750_S (FW1212 Probe 2-3/4" Digital CCL / Gamma Ray Combined	4.57)	2.75	55.00
GR	3.77					
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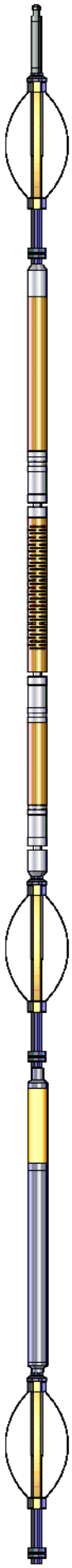

Dataset:	PROCESSED_0512344032_Anadarko_Whiston 40N-33HZ_05-17-17_RBL.db: field/well/run1/pass10
Total length:	23.43 ft
Total weight:	225.40 lb
O.D.:	2.75 in

Calibration Report

Database File	C:\ProgramData\Warrior\Data\anadarko_whiston_40n_33hz_17_may_2017_rbl\PROCESSED_05123
Dataset Pathname	pass10
Dataset Creation	Wed May 17 16:54:43 2017

Gamma Ray Calibration Report

Serial Number:	FW1212-026	
Tool Model:	P_CGR_2750_S	
Performed:	Mon Aug 15 10:19:05 2016	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.6	cps
Sensitivity:	0.6000	GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number:	FW1302-002	
Tool Model:	P_RBT_2750	
Calibration Casing Diameter:	5.500	in
Calibration Depth:	45.102	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.000	0.754	0.800	71.921	94.291	0.793
CAL	0.002	0.821				
5'	-0.002	0.640	0.800	71.921	110.692	1.033
SUM						
S1	-0.005	0.760	0.000	100.000	130.599	0.706
S2	-0.002	0.754	0.000	100.000	132.220	0.256
S3	-0.001	0.758	0.000	100.000	131.756	0.142
S4	-0.000	0.746	0.000	100.000	133.959	0.019
S5	0.000	0.751	0.000	100.000	133.212	-0.012
S6	-0.001	0.761	0.000	100.000	131.243	0.129
S7	-0.001	0.764	0.000	100.000	130.565	0.192
S8	-0.003	0.772	0.000	100.000	128.983	0.410

Internal Reference Calibration, performed Wed Aug 03 10:40:08 2016:

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.002	0.821	1.000	0.000

Air Zero Calibration, performed Sat May 13 09:53:02 2017:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	0.001	0.000	0.000
5'	0.001	0.000	-0.000

SUM			
S1	0.001	0.000	-0.001
S2	0.000	0.000	0.000
S3	0.001	0.000	0.001
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

RELIANCE
DILFIELD SERVICES

Company	Kerr-McGee Oil & Gas Onshore, L.P.
Well	Whiston 40N-33HZ
Field	Wattenberg
County	Weld
State	Colorado