

# Radial Cement Bond Gamma Ray Casing Collar Log

Company	Kerr McGee Oil & Gas Onshore LP				
Well	Kerr 14N-25HZ				
Field	Wattenberg				
County	Weld				
State	Colorado				
Company	Kerr McGee Oil & Gas Onshore LP	County	Weld	State	Colorado
Well	Kerr 14N-25HZ				
Field	Wattenberg				
Location:	API # : 05-123-38979				
SEC 13	TWP 2N	RGE 67W	Other Services Gauge Ring MIT		
Permanent Datum	Ground Level	Elevation	4884'		
Log Measured From	Kelly Bushing	16 FT			
Drilling Measured From	Kelly Bushing				
			Elevation K.B. 4900' D.F. 4899' G.L. 4884'		

Date	06-Feb-2015
Run Number	Two
Depth Driller	17,651 FT
Depth Logger	6750 FT
Bottom Logged Interval	6746 FT
Top Log Interval	Surface
Open Hole Size	9.625"
Type Fluid	Water
Density / Viscosity	8.34 lbm/gal
Max. Recorded Temp.	213° F
Estimated Cement Top	92 FT
Time Well Ready	R.O.A.
Time Logger on Bottom	12:00
Equipment Number	HD-0119
Location	Ft. Lupton, CO
Recorded By	E. Vaughn
Witnessed By	Randy Anderson

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	1070 FT		
Intermediate #1	7	26	HCP-110	Surface	7713 FT		
Intermediate #2							
Liner	4.5	11.6	HCP-110	6440 FT	17,641 FT		

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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.

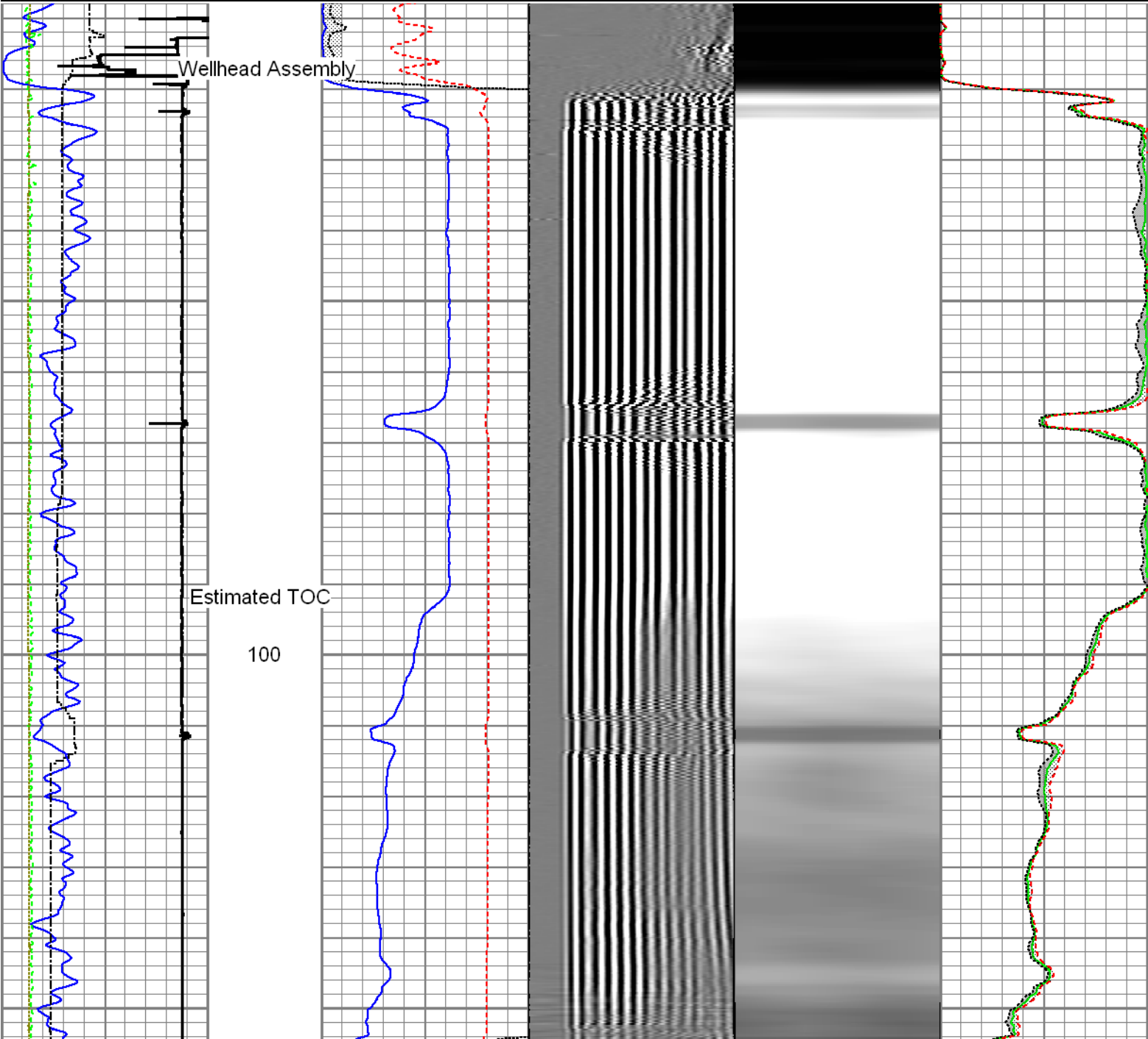
## Comments

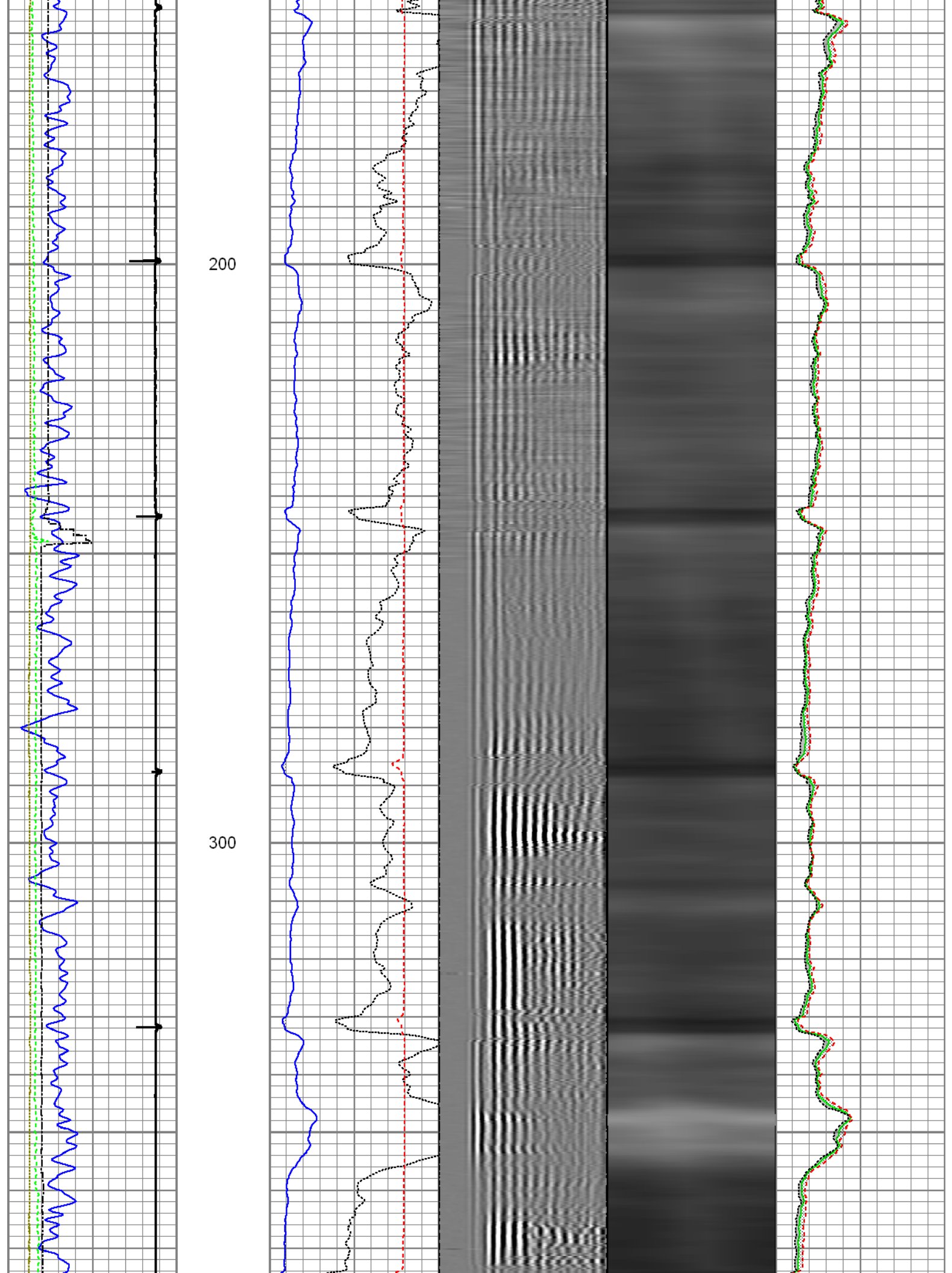
Log ran as per customer request.  
Depth referenced to Casing Tally reported liner top at 6440 FT.  
Adjusted +13 FT to correlate to liner top.  
Log ran as deep as possible to surface.  
Log ran with 2800 PSI surface induced pressure.

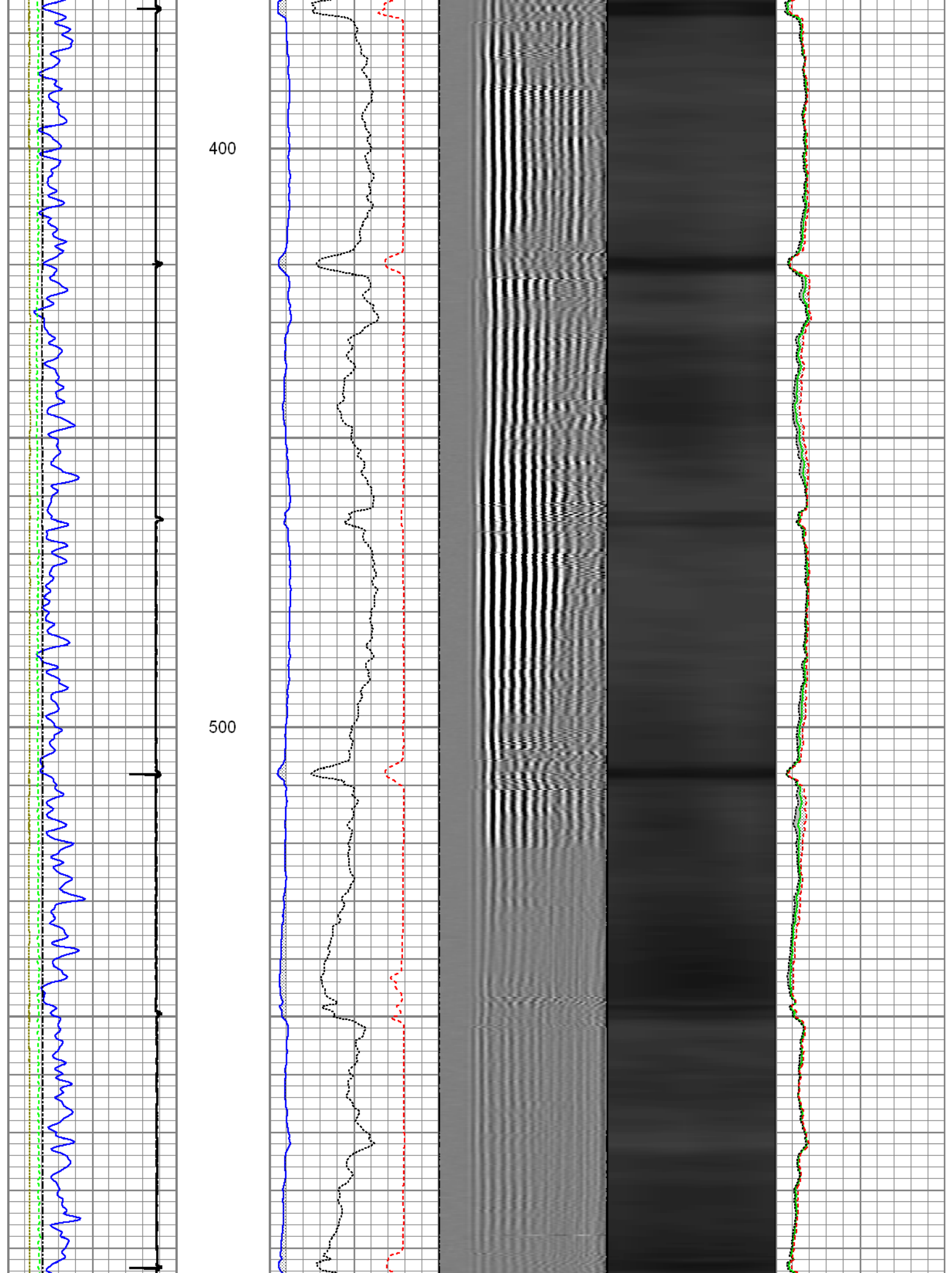
Thank you for choosing FMC Technologies Completion Services, Inc.!!

Database File: 0512338979\_anadarko\_kerr 14n-25hz\_02-06-15\_mit\_rbl.db  
Dataset Pathname: 7main.2  
Presentation Format: rbt4\_mit  
Dataset Creation: Sat Feb 07 07:44:53 2015 by Calc SCH 120430  
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
Line Speed	0 (mV) 20			0 100
-100 (ft/min) 100	3' Travel Time			Maximum Amplitude
Line Tension	650 (usec) 150			0 100
0 (lb) 2000				
Wellbore Deviation				
-10 (°) 90				





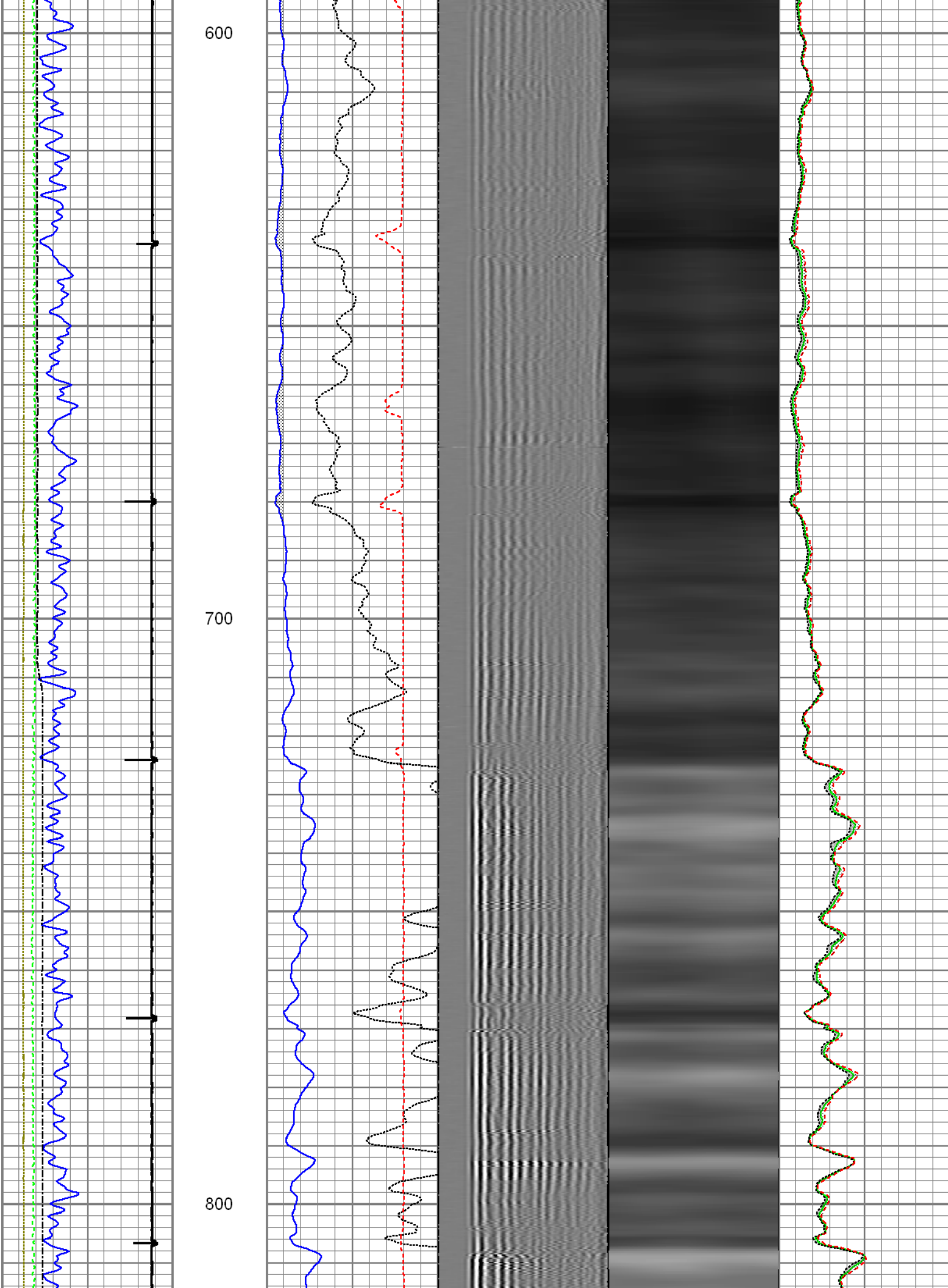


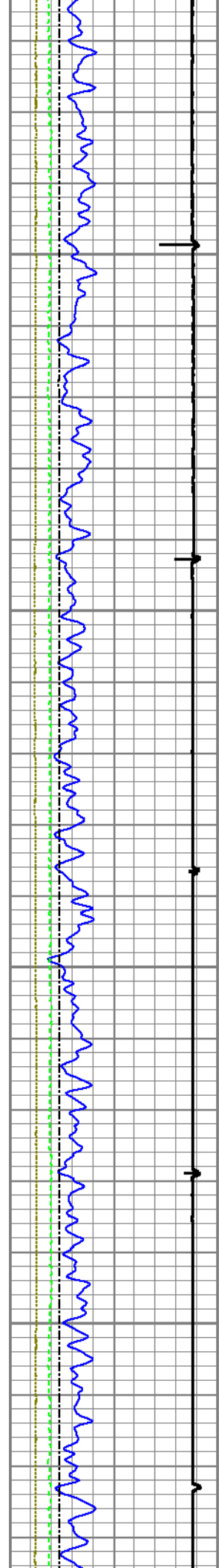


600

700

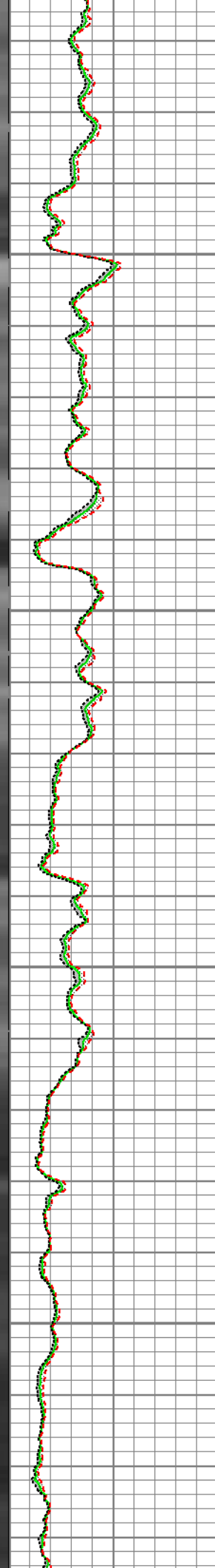
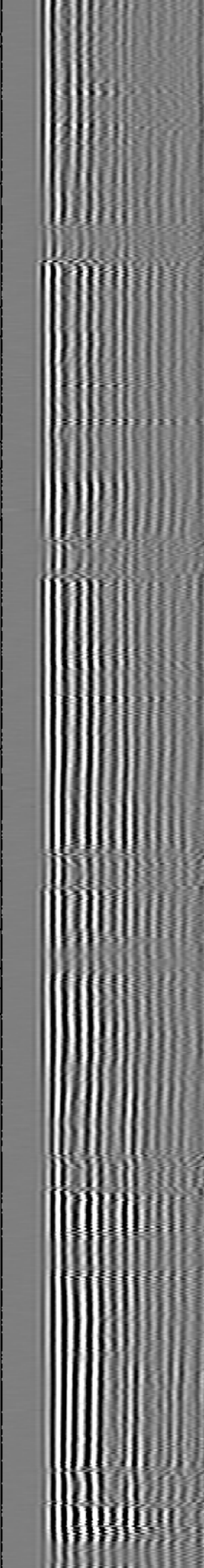
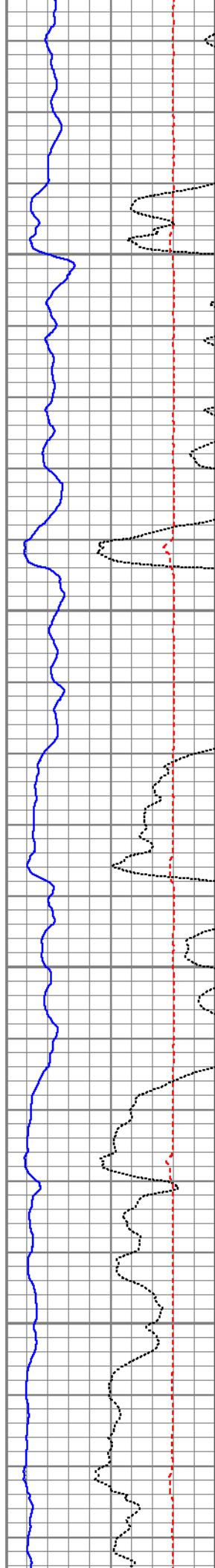
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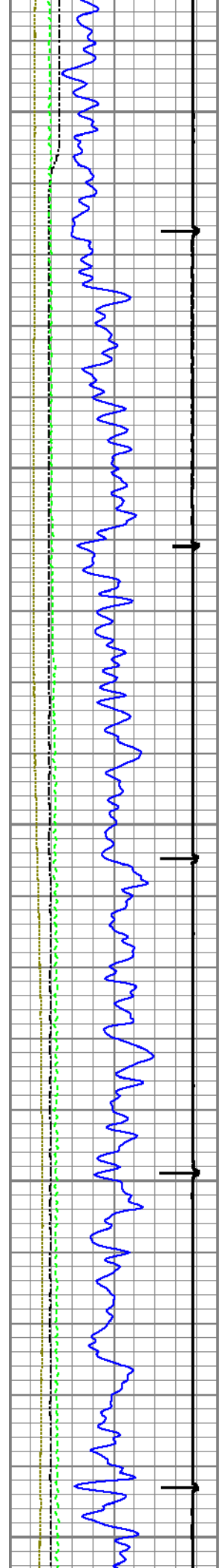




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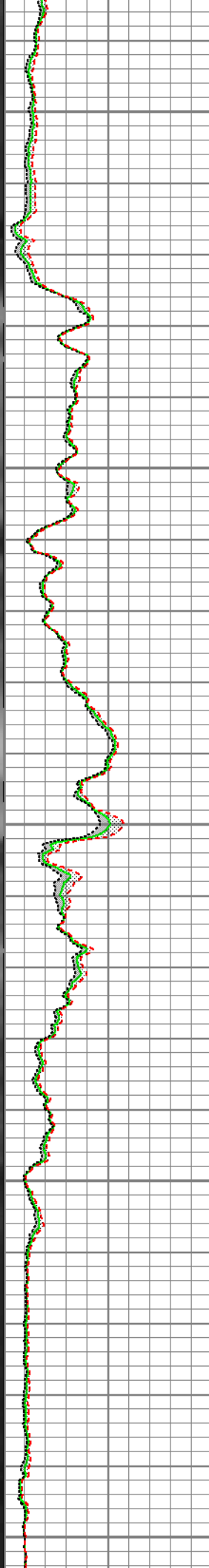
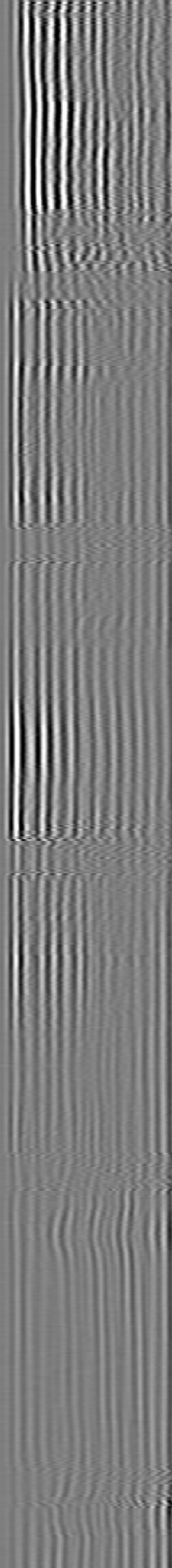
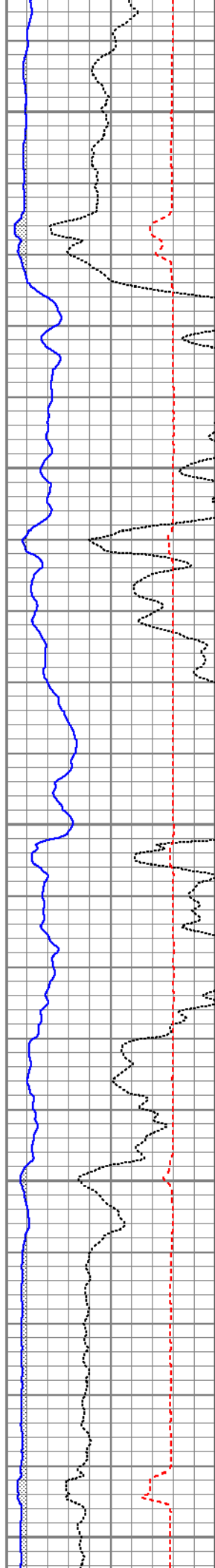
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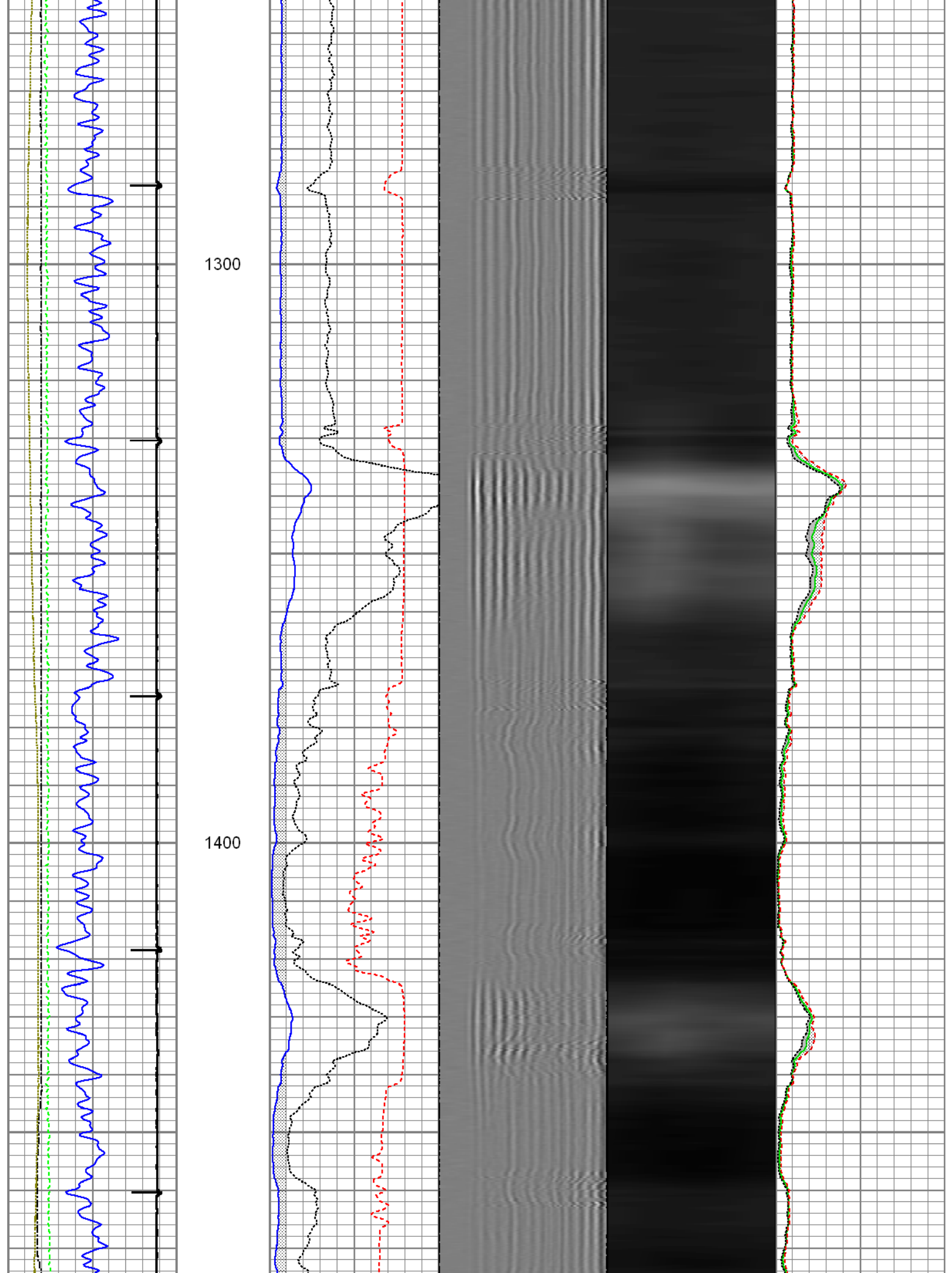


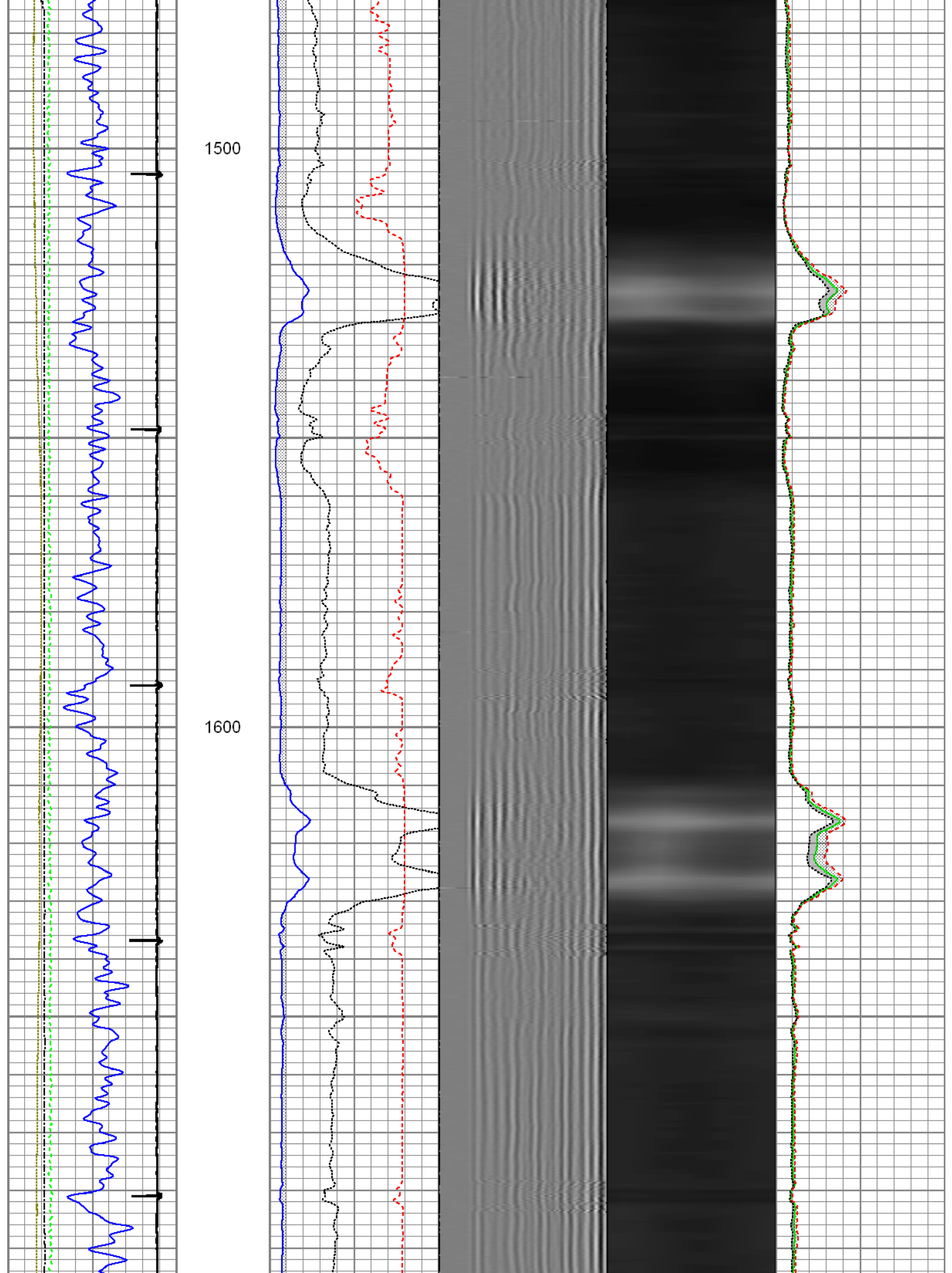


1100

1200





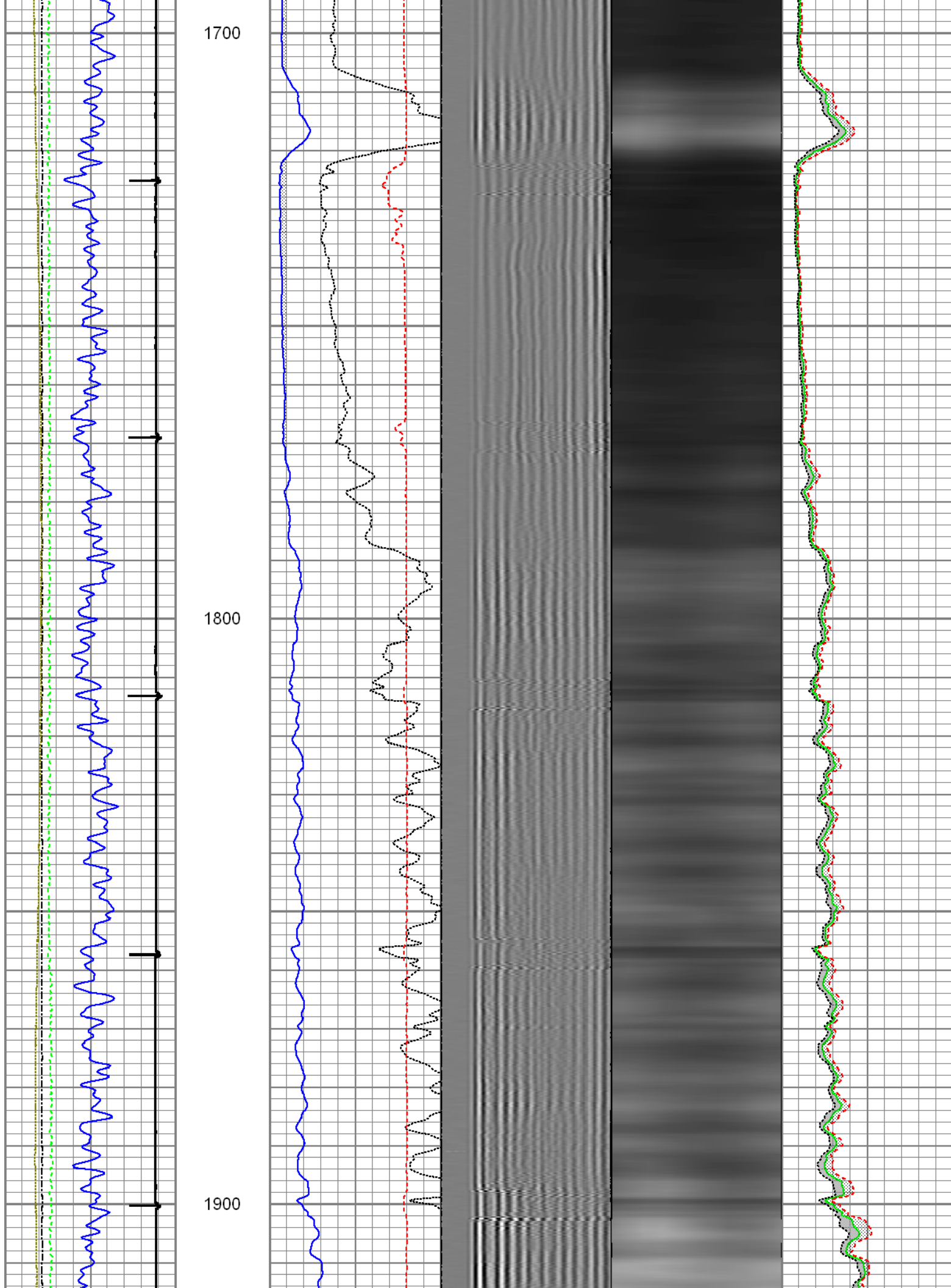




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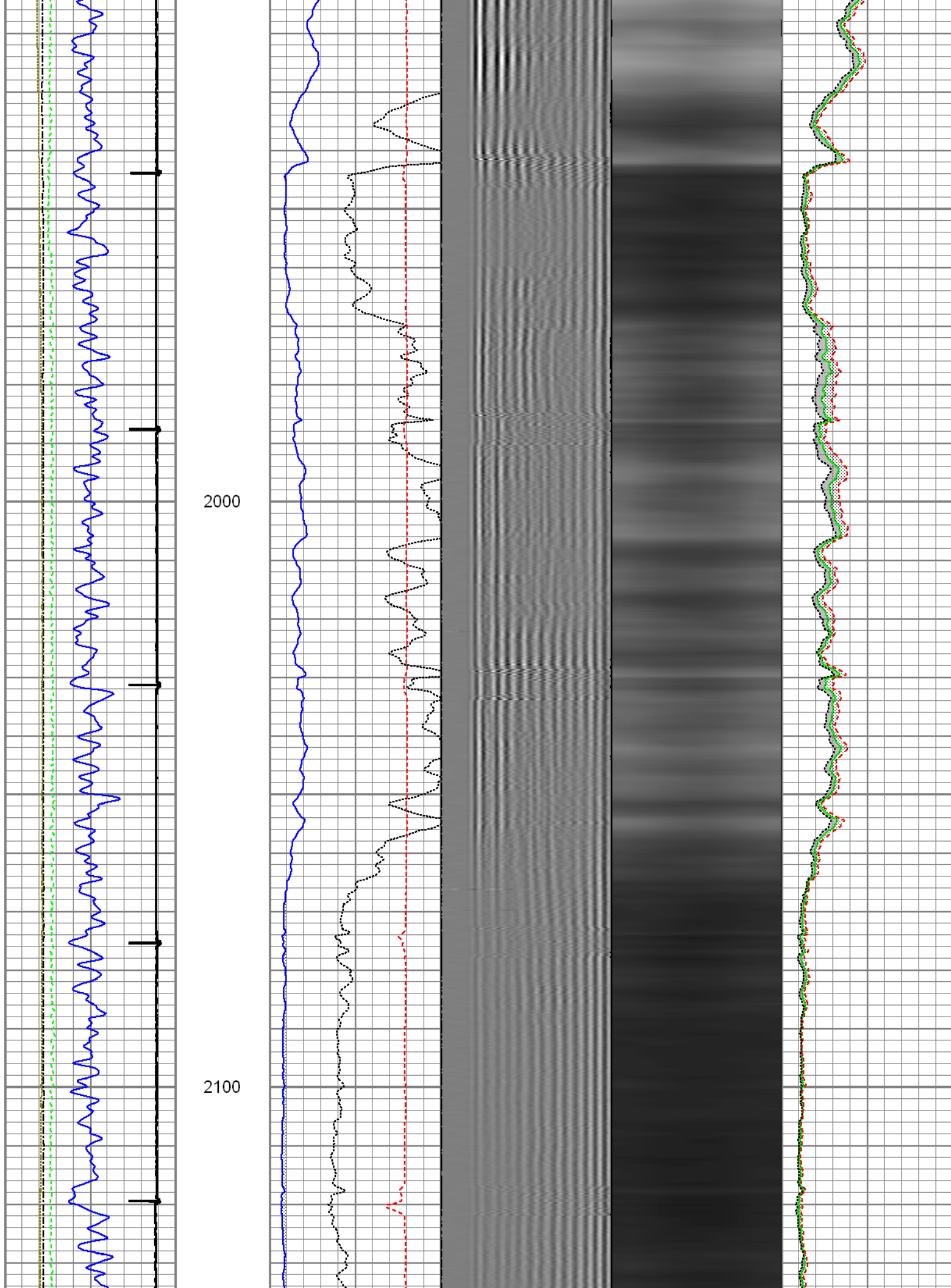
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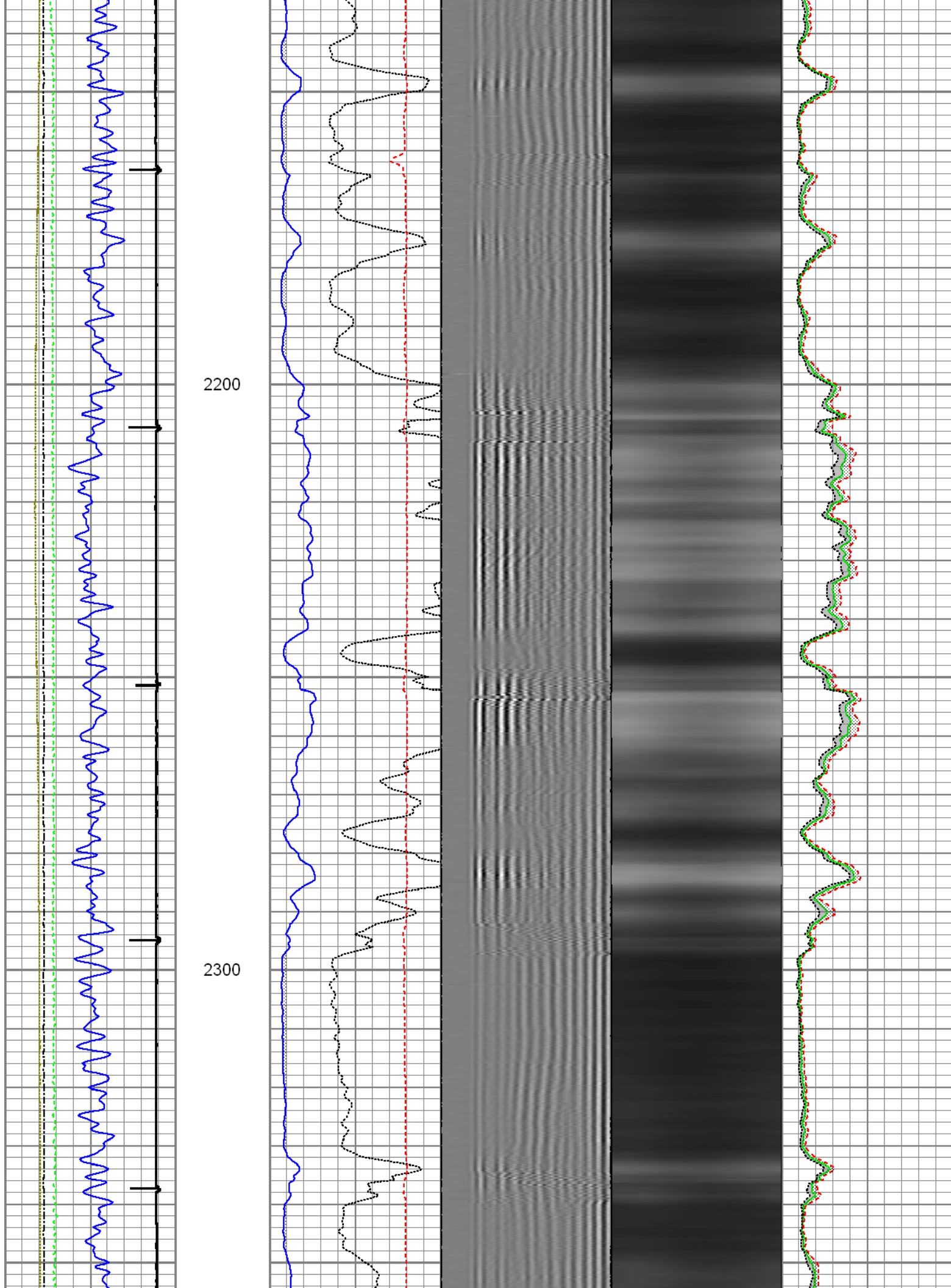
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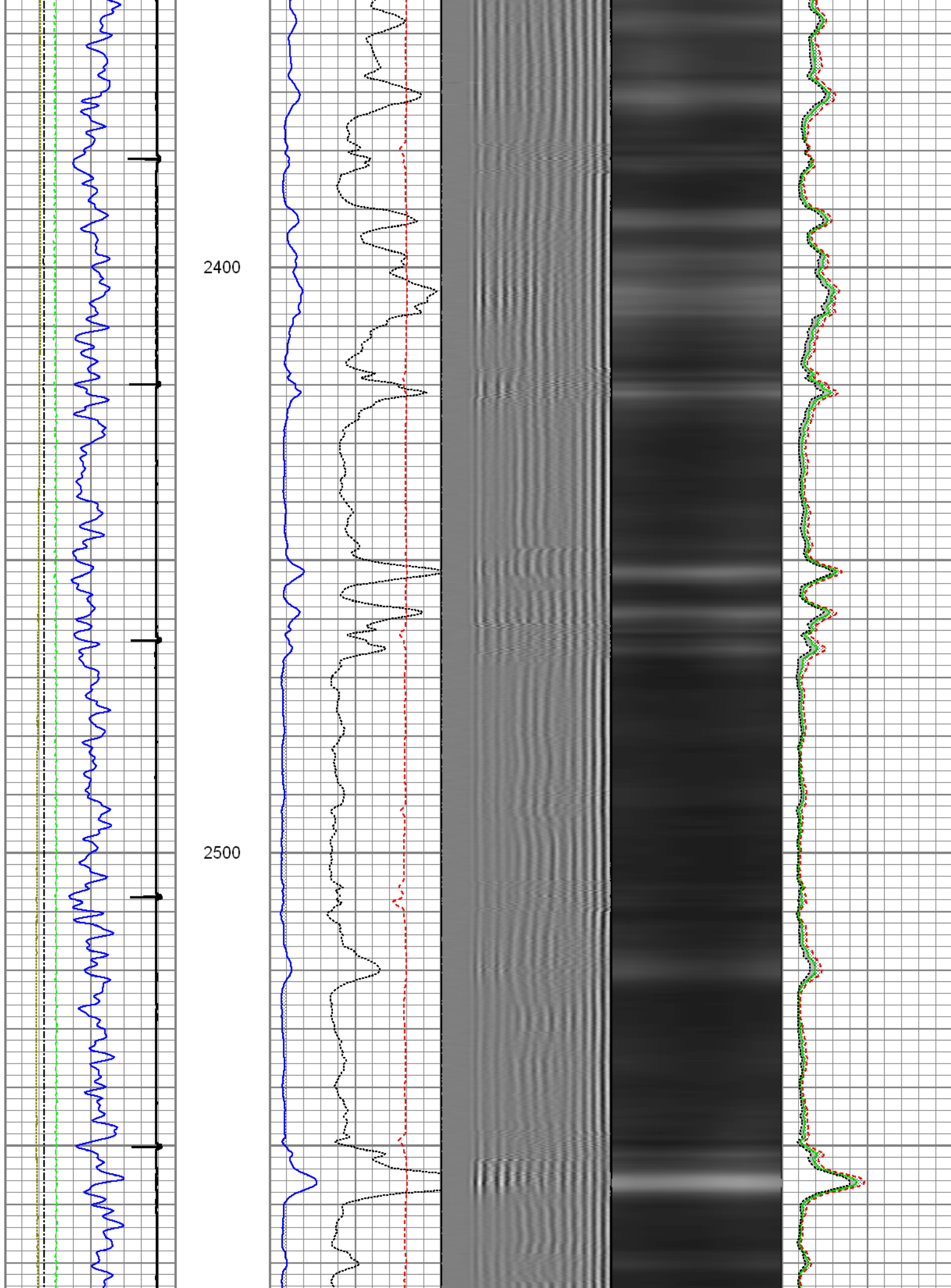
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2400

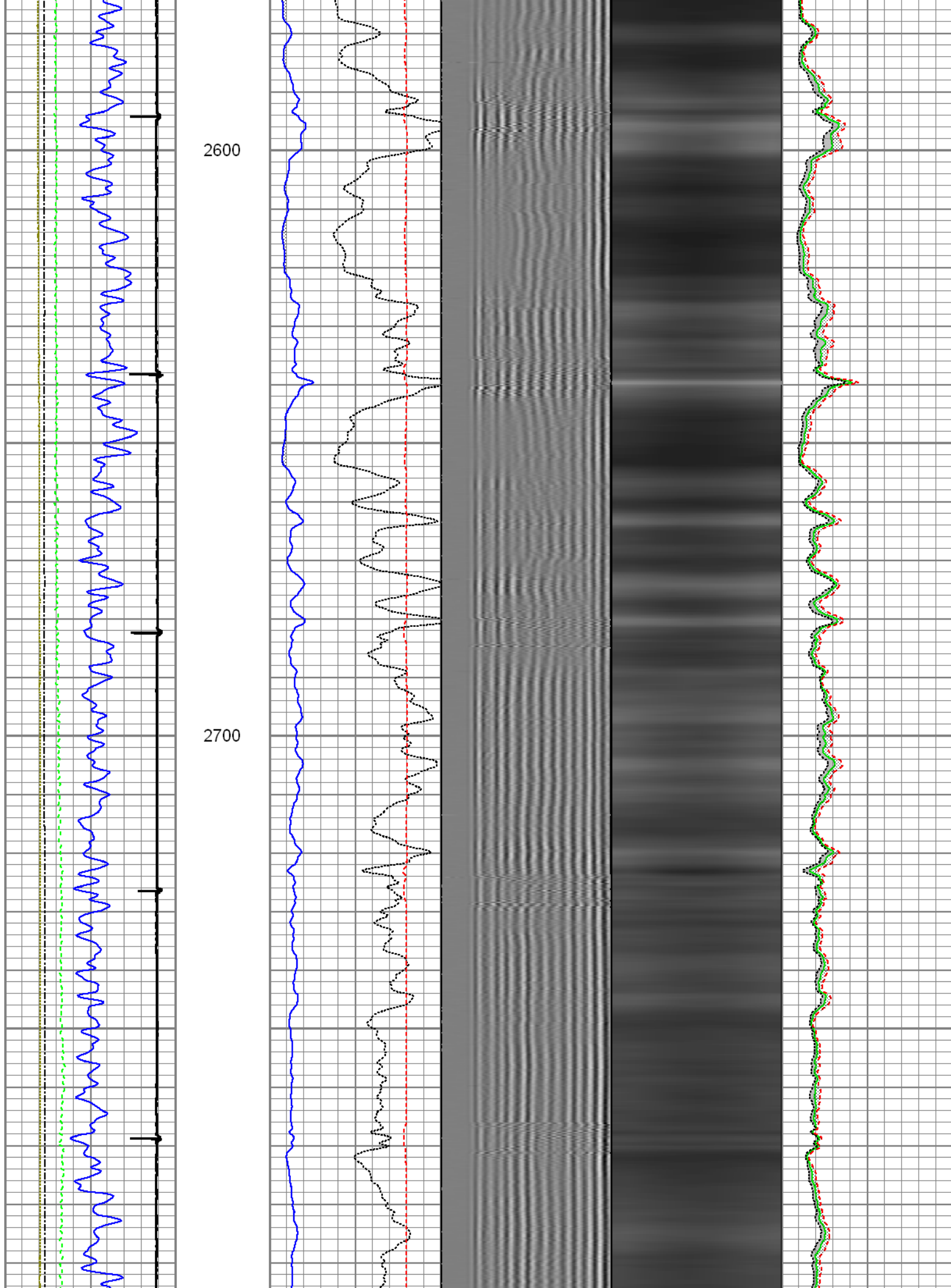
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2700

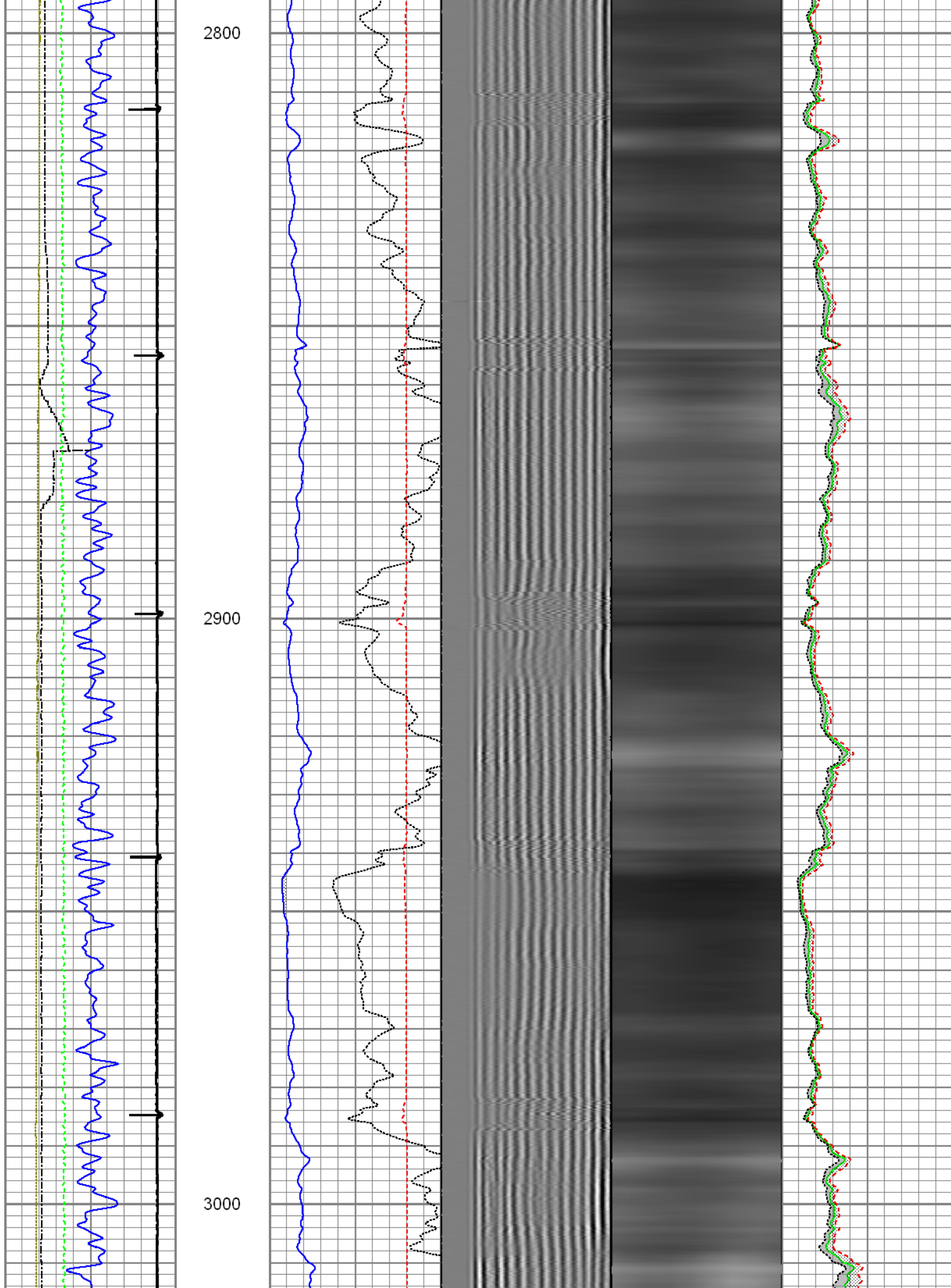


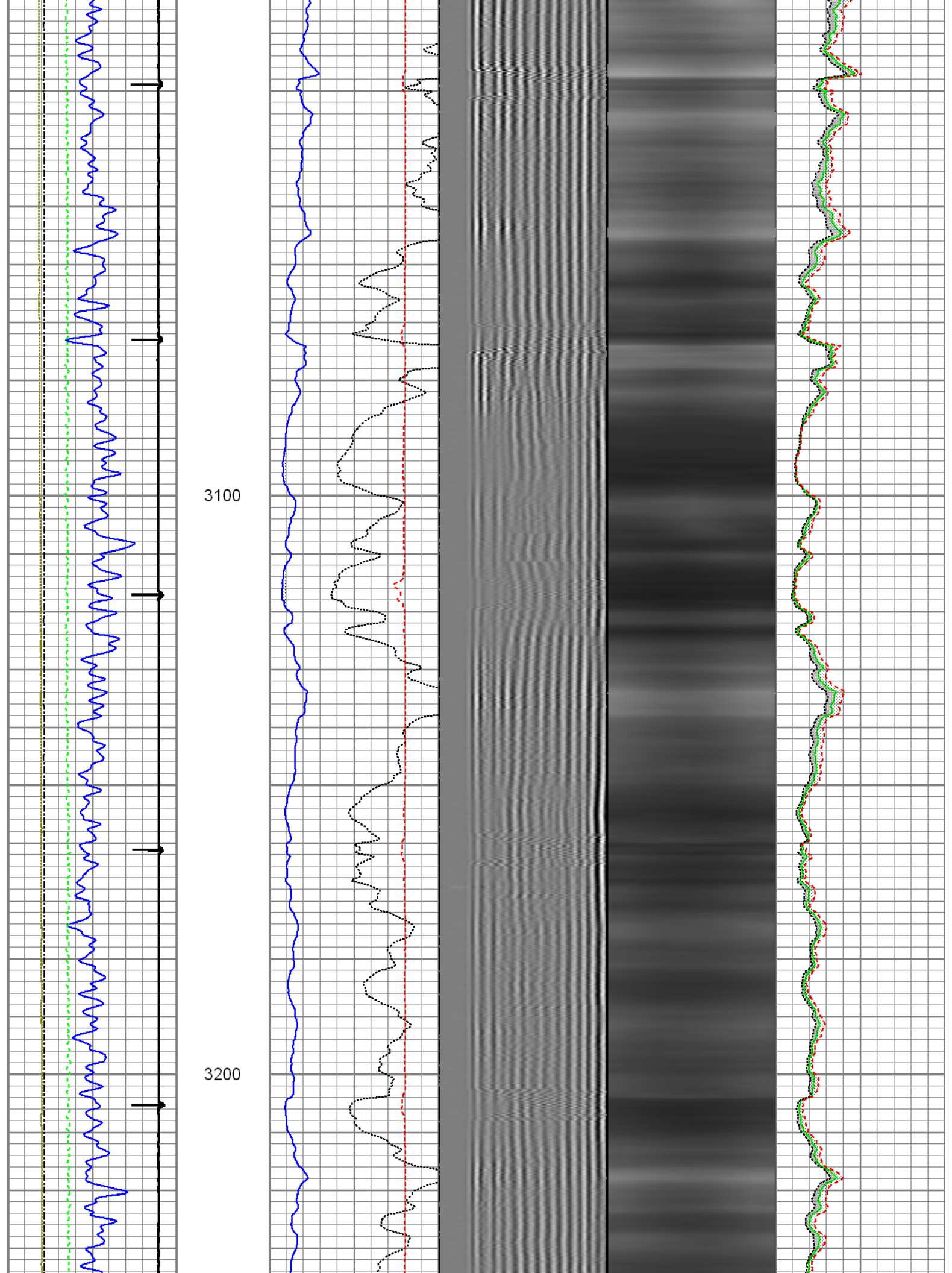


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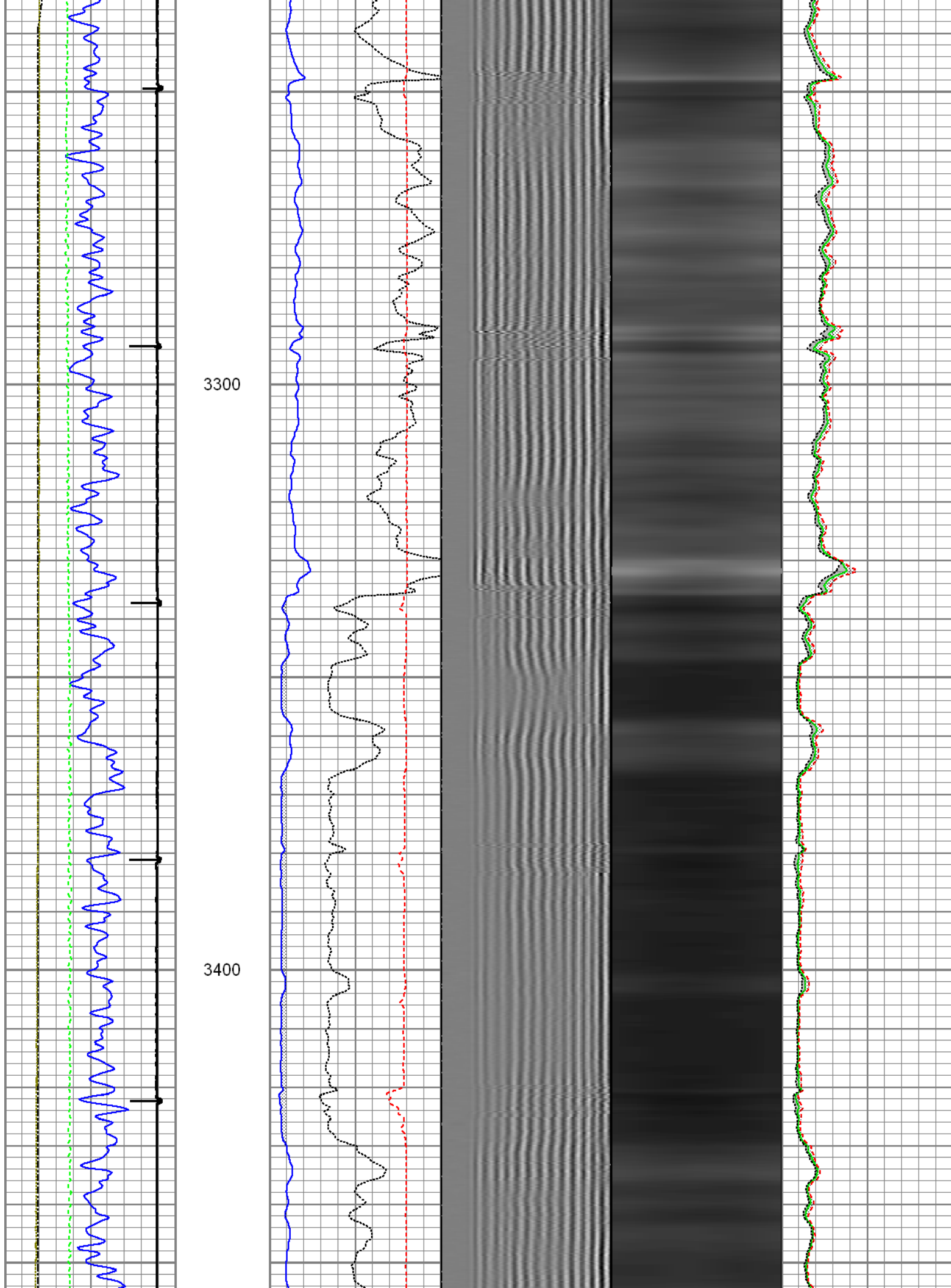
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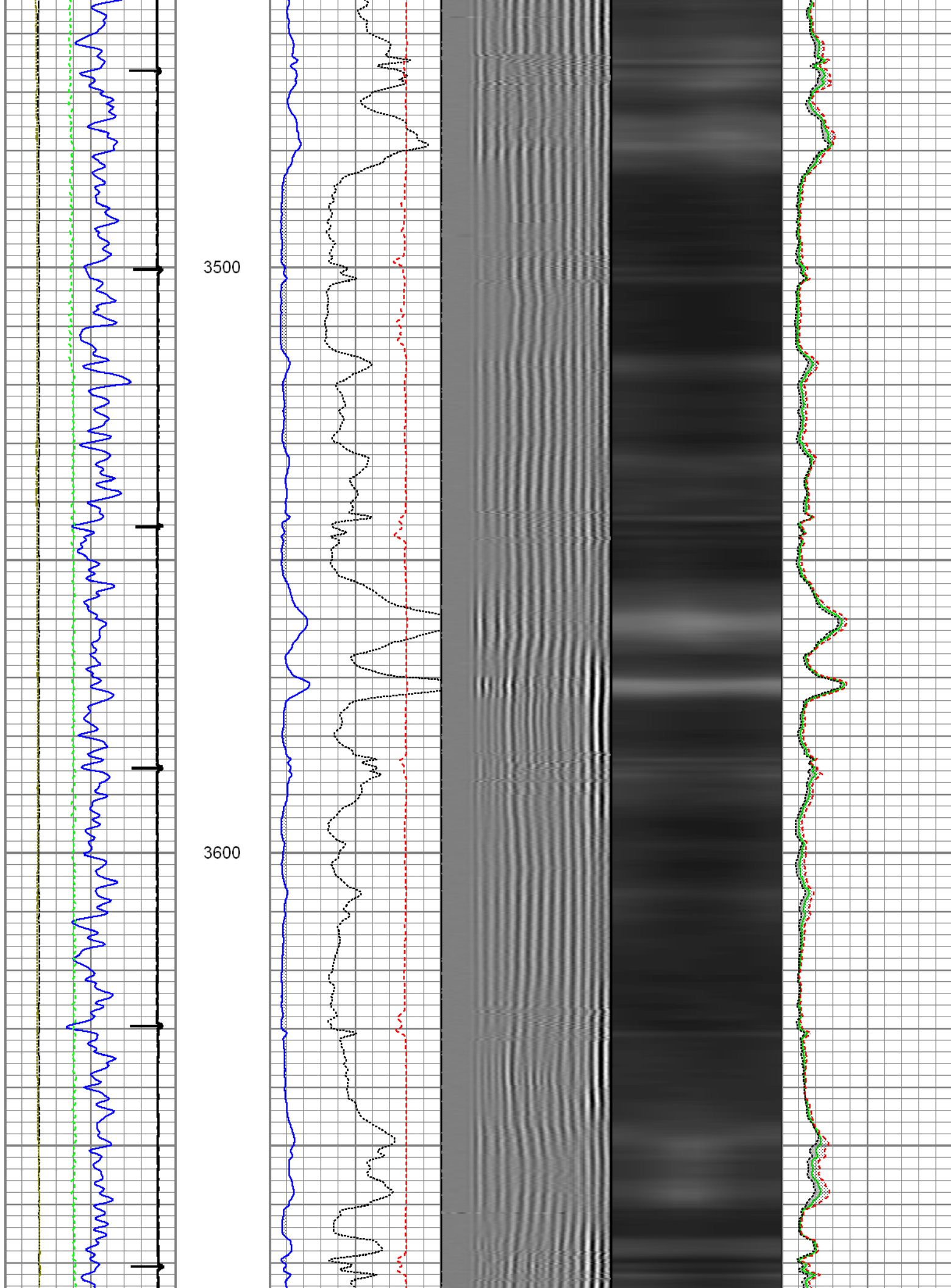
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3400



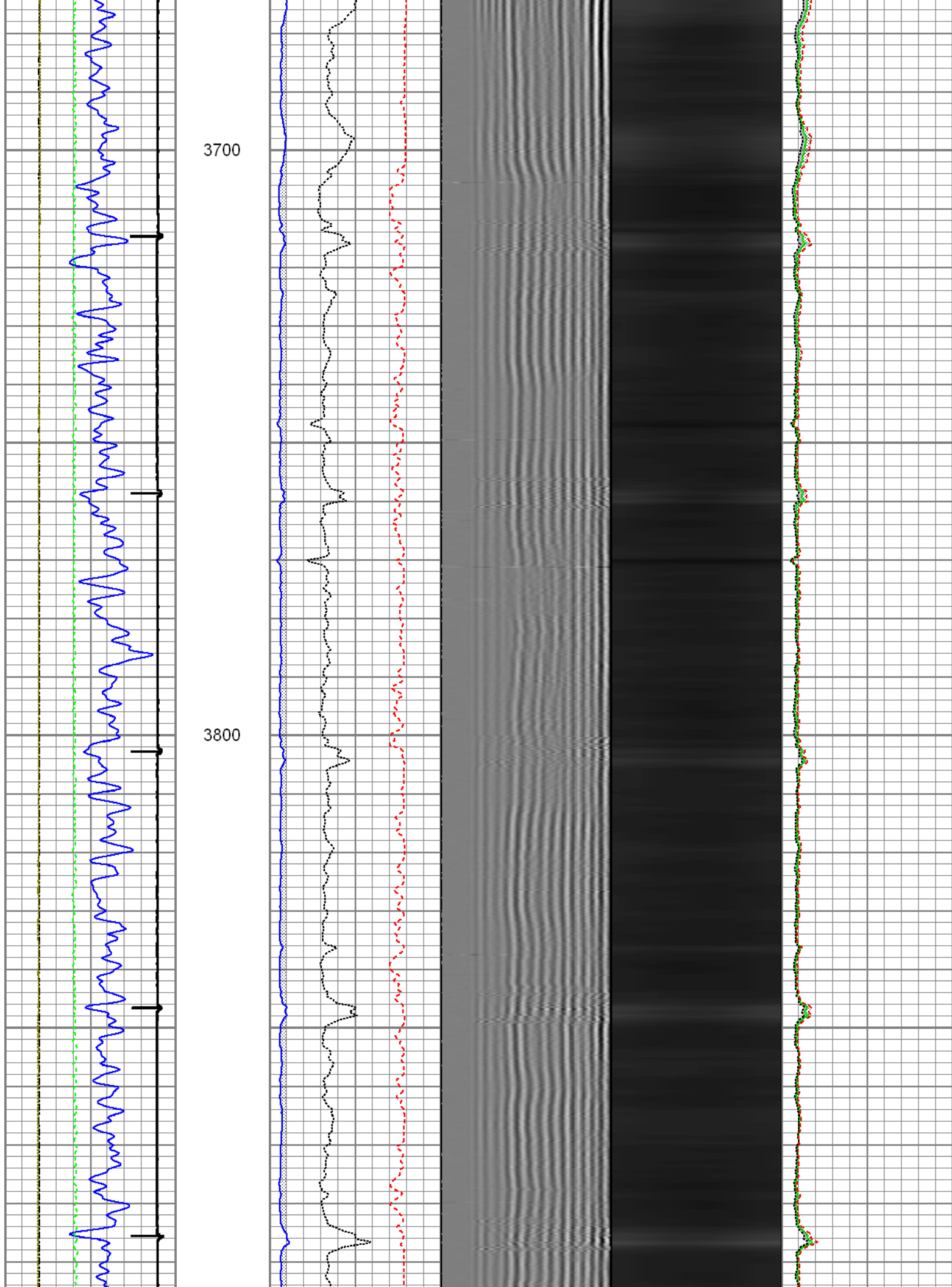
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3600



3700

3800

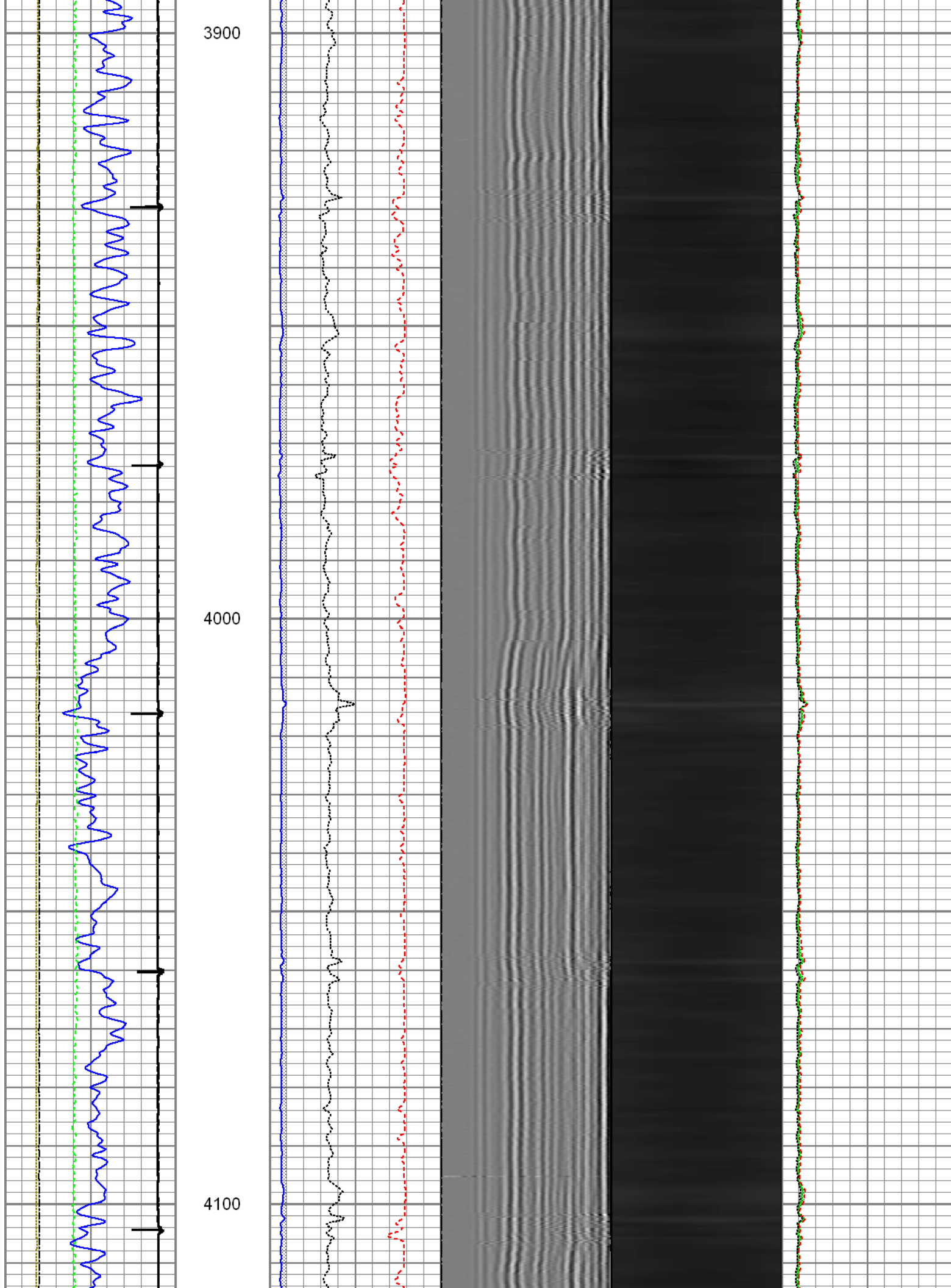


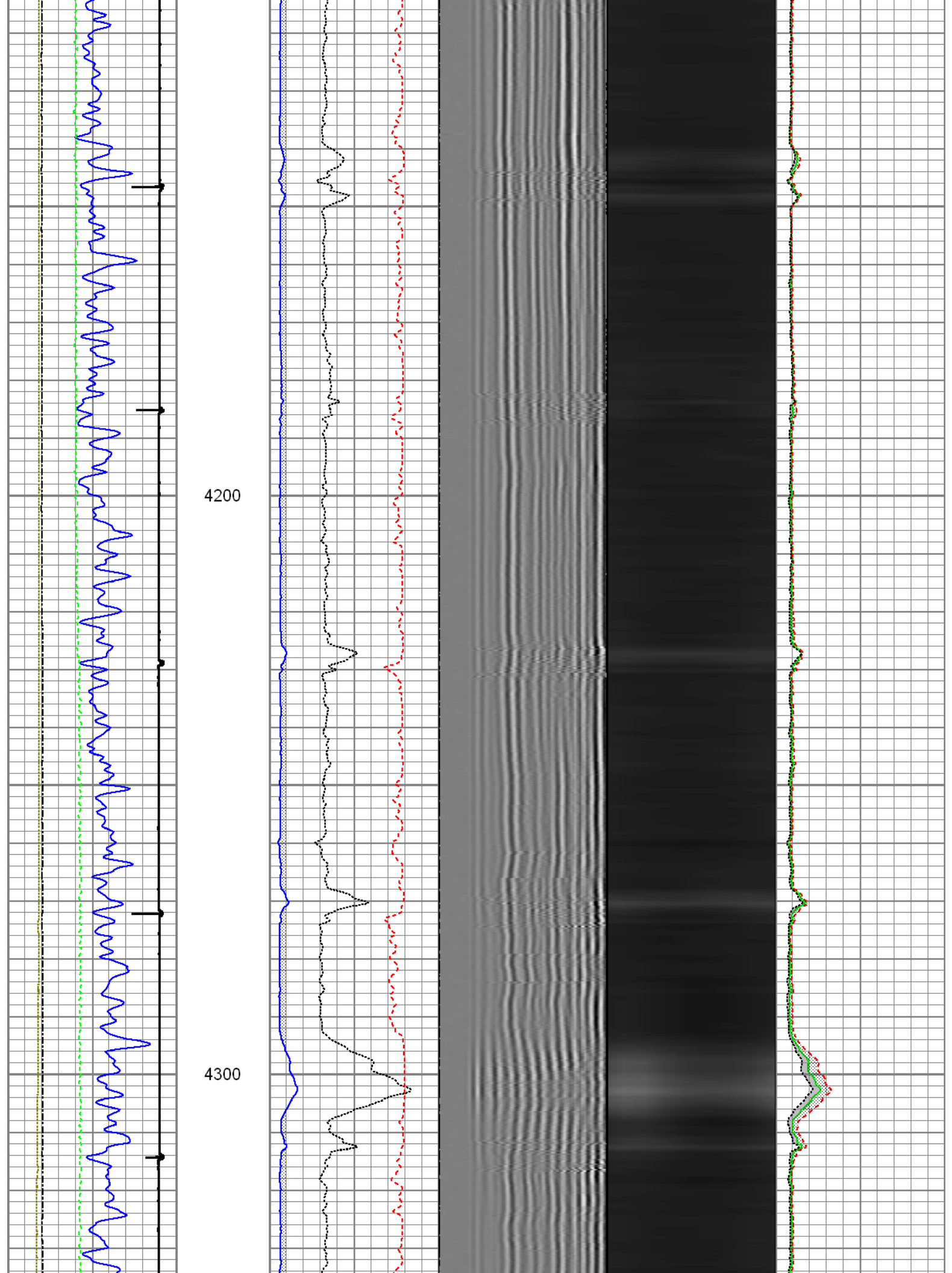


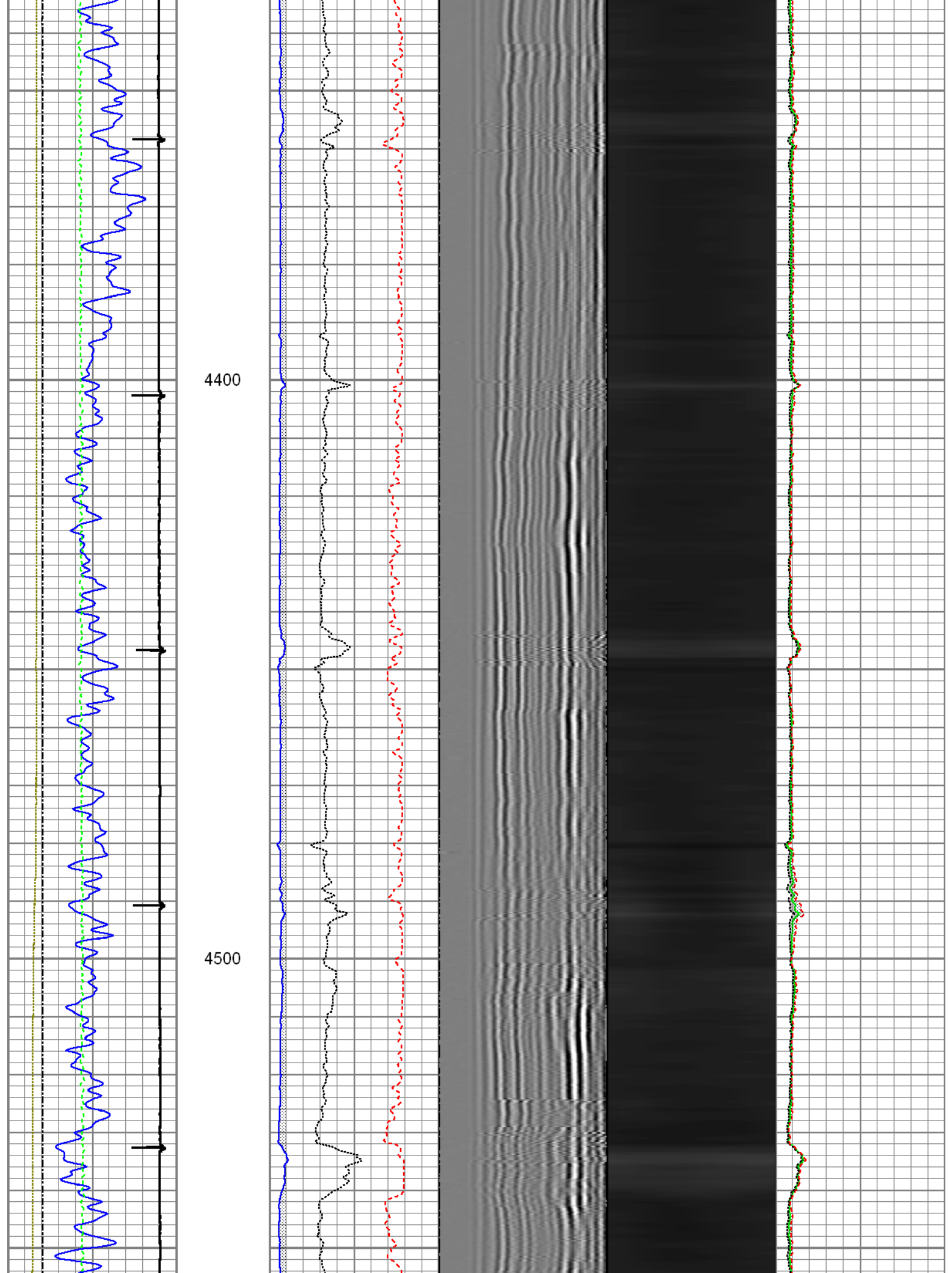
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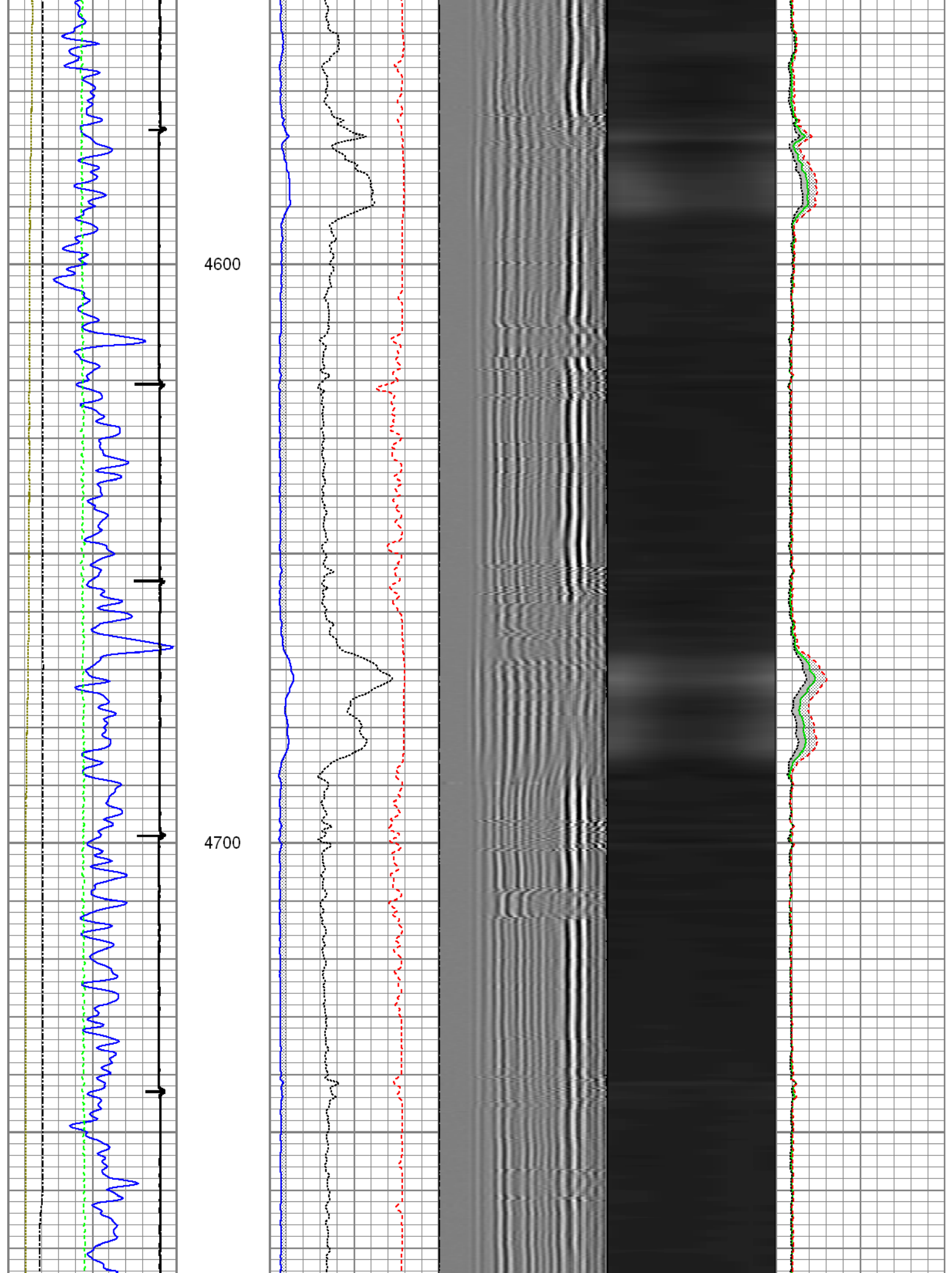
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4100



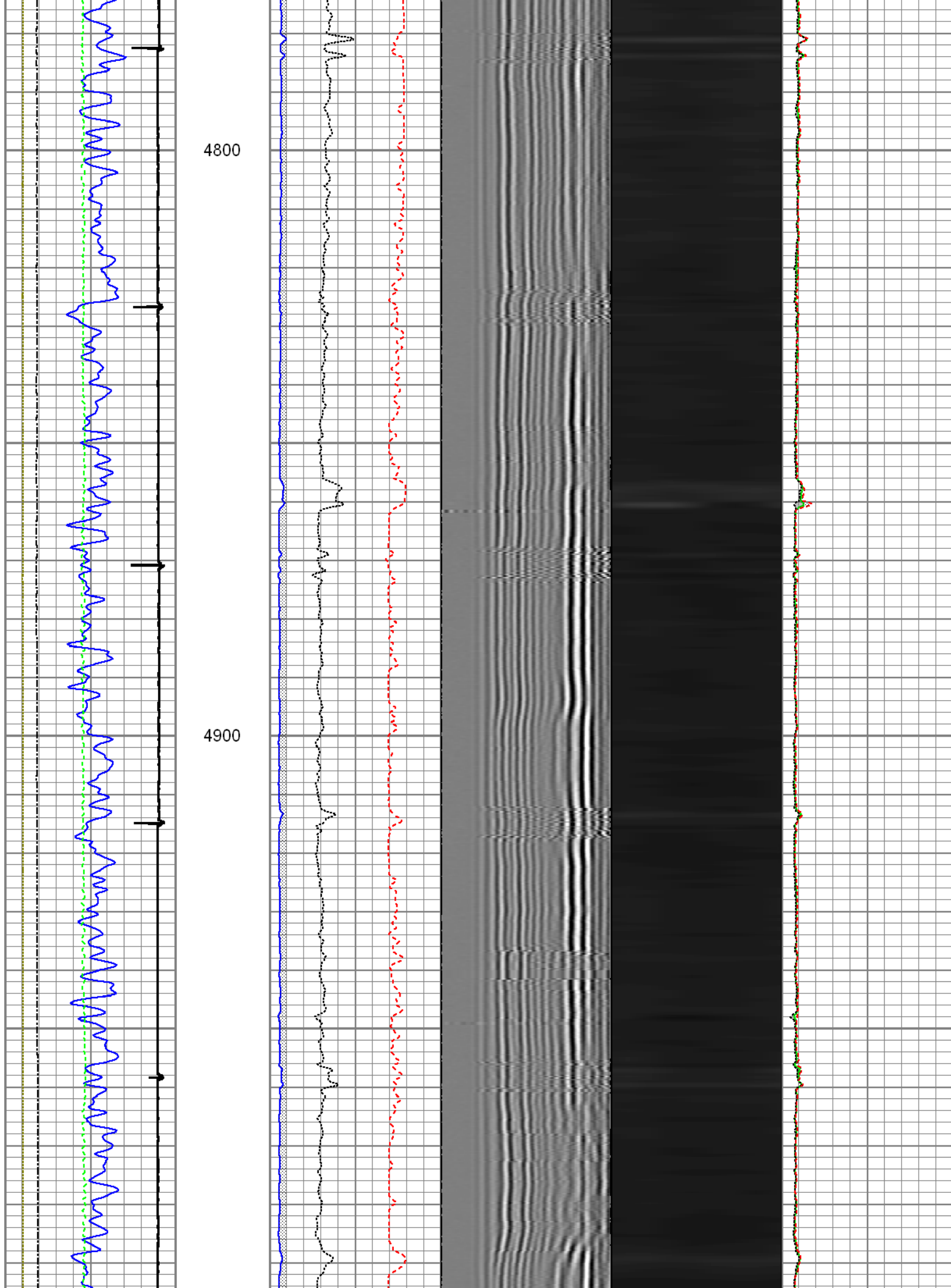




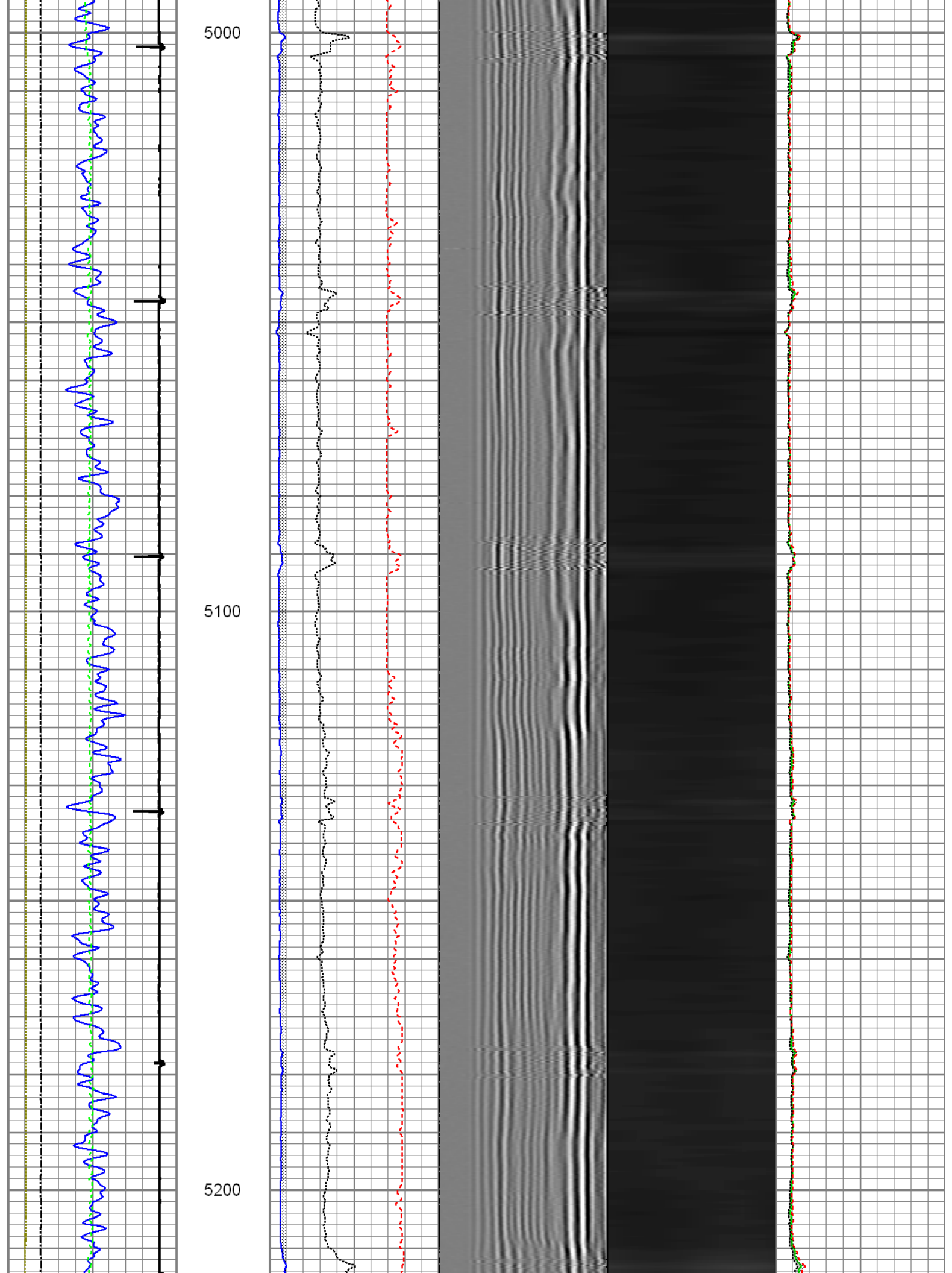


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4900

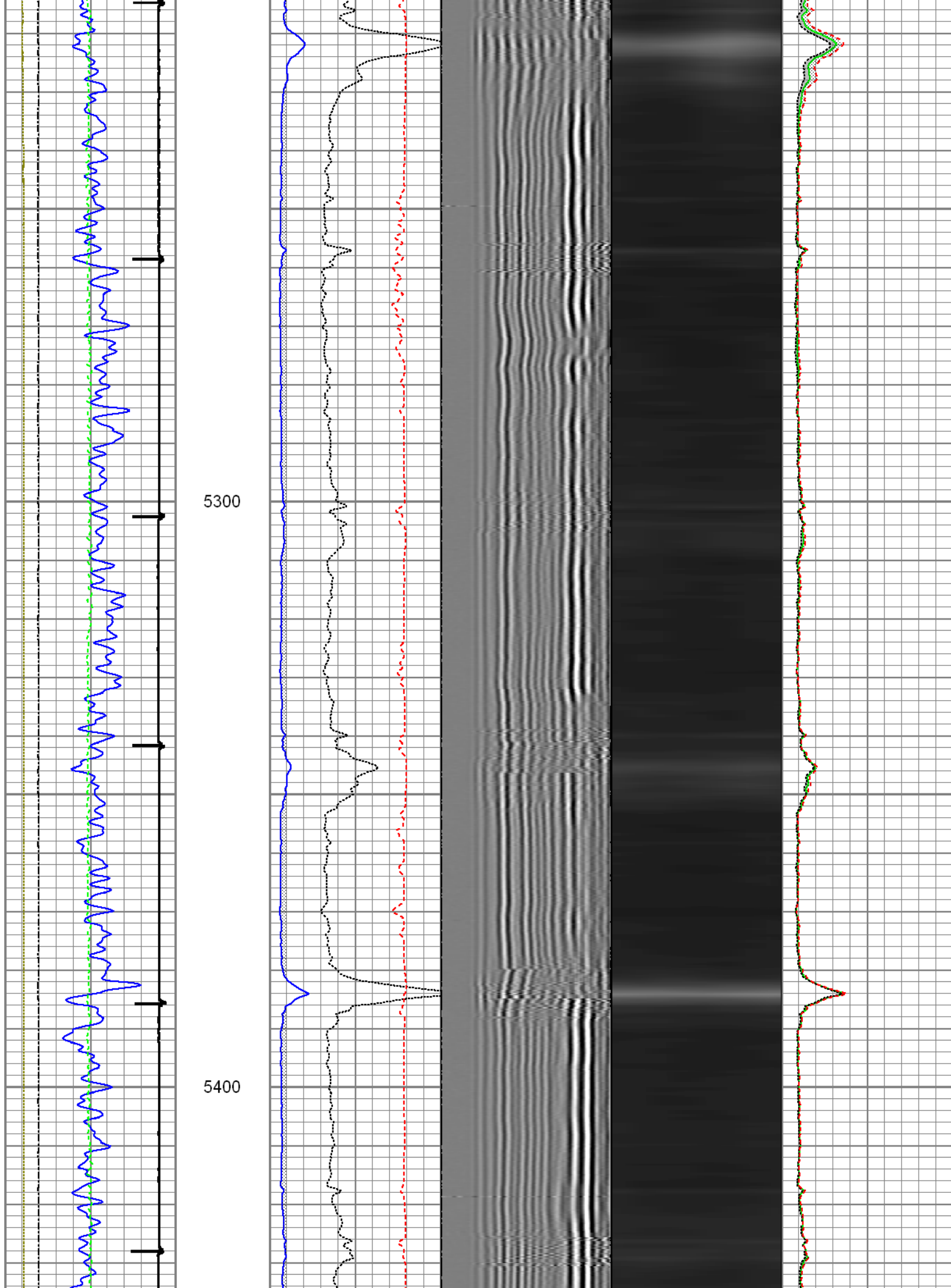


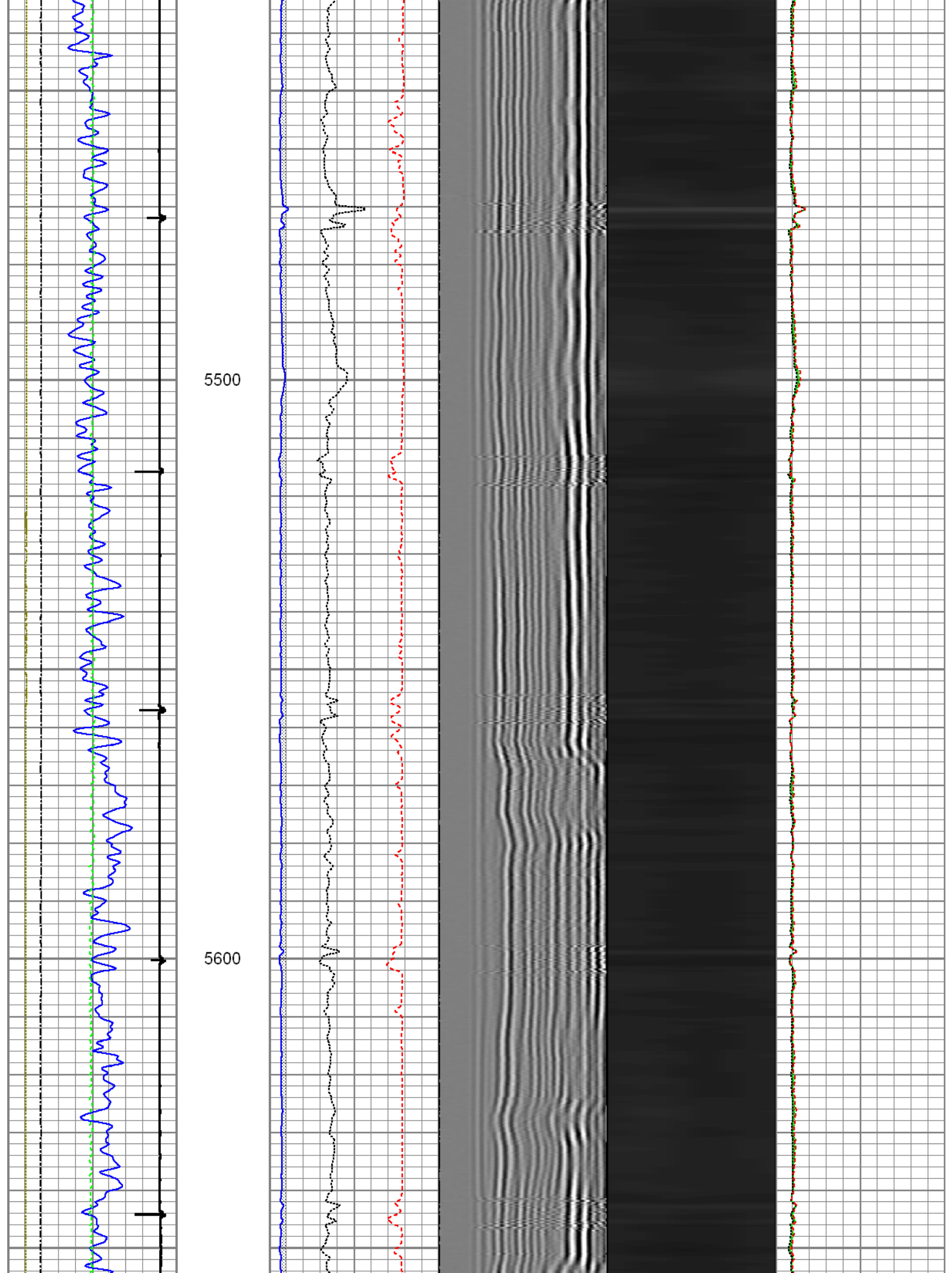


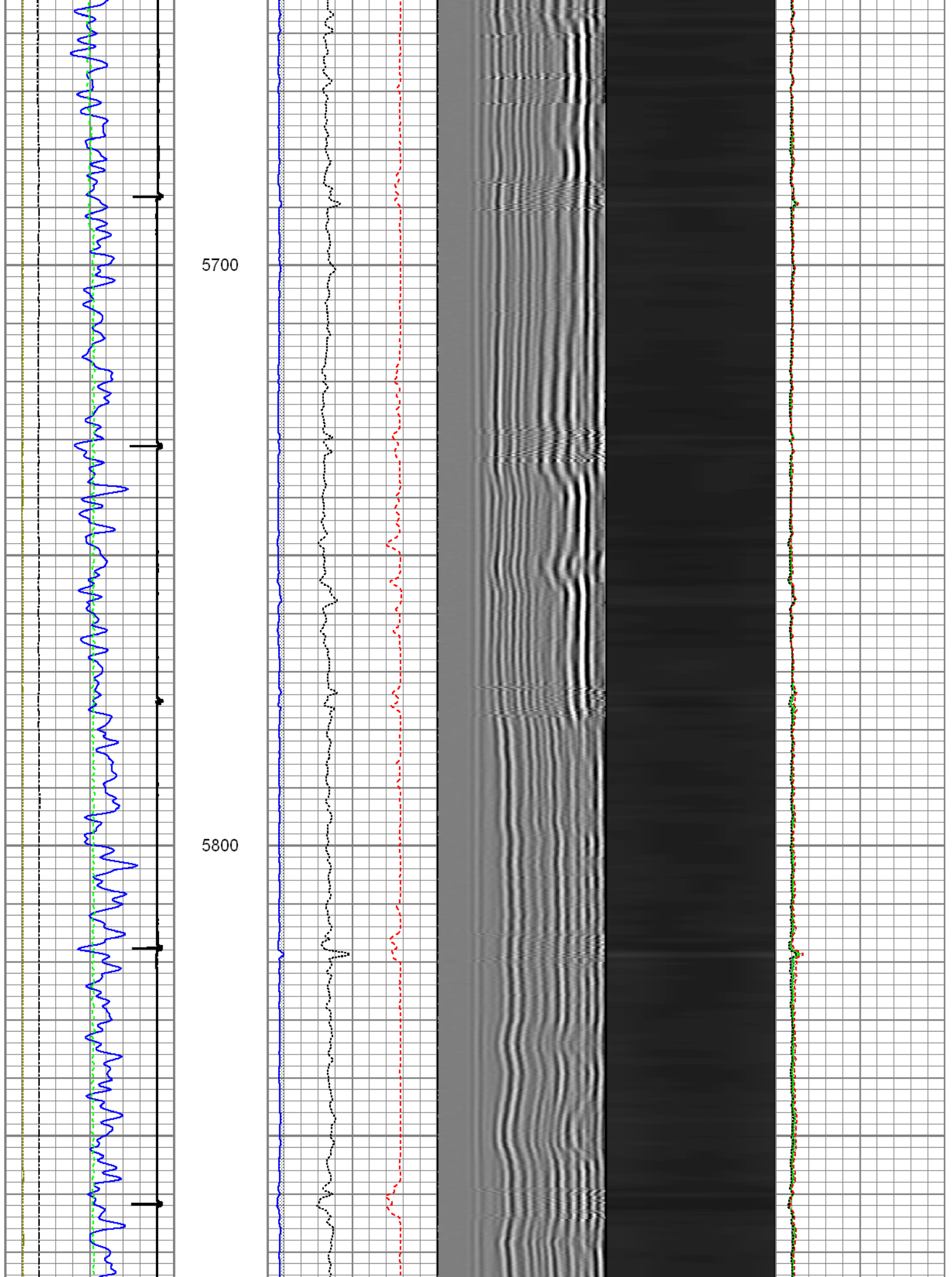


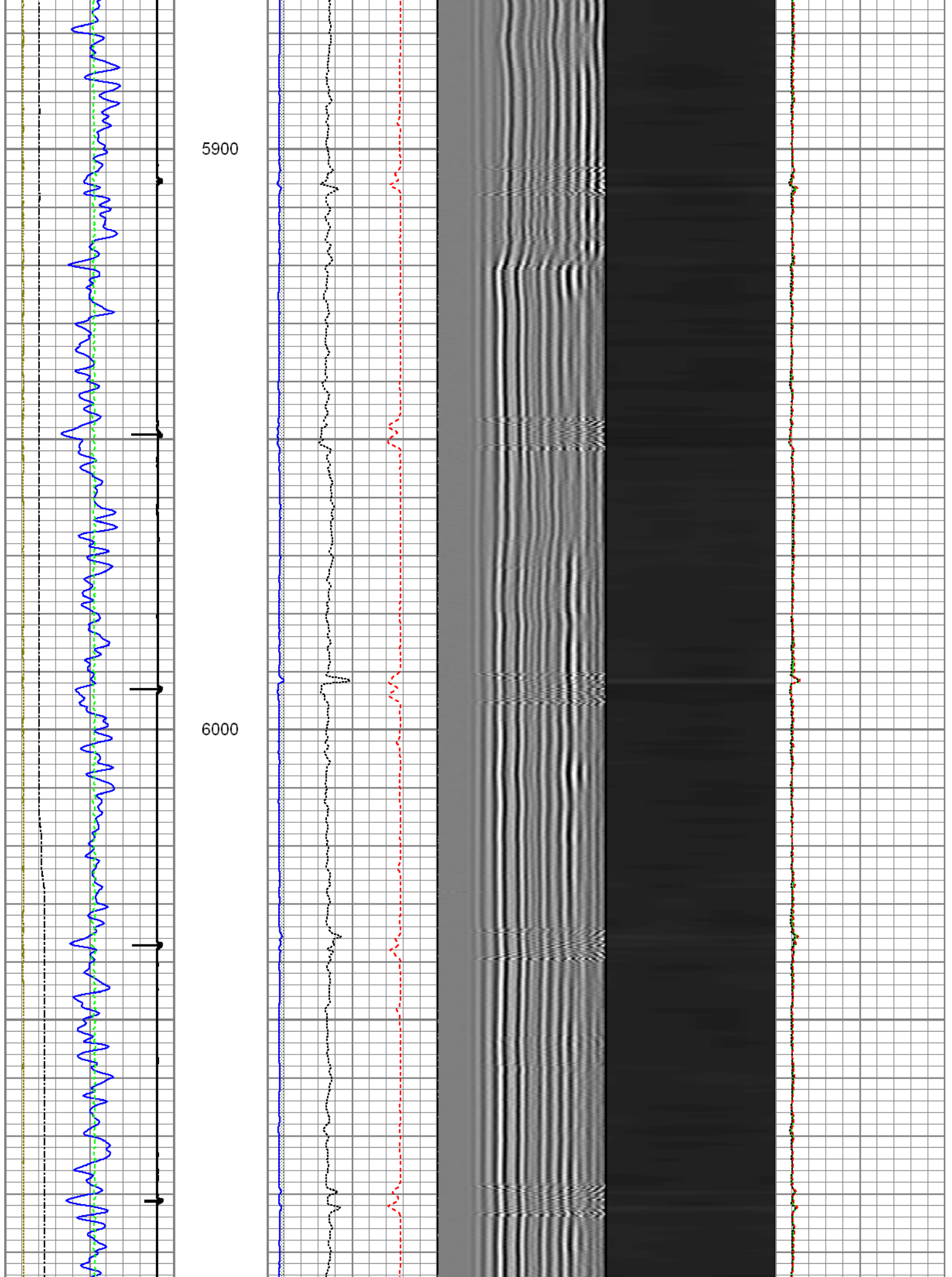
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5400







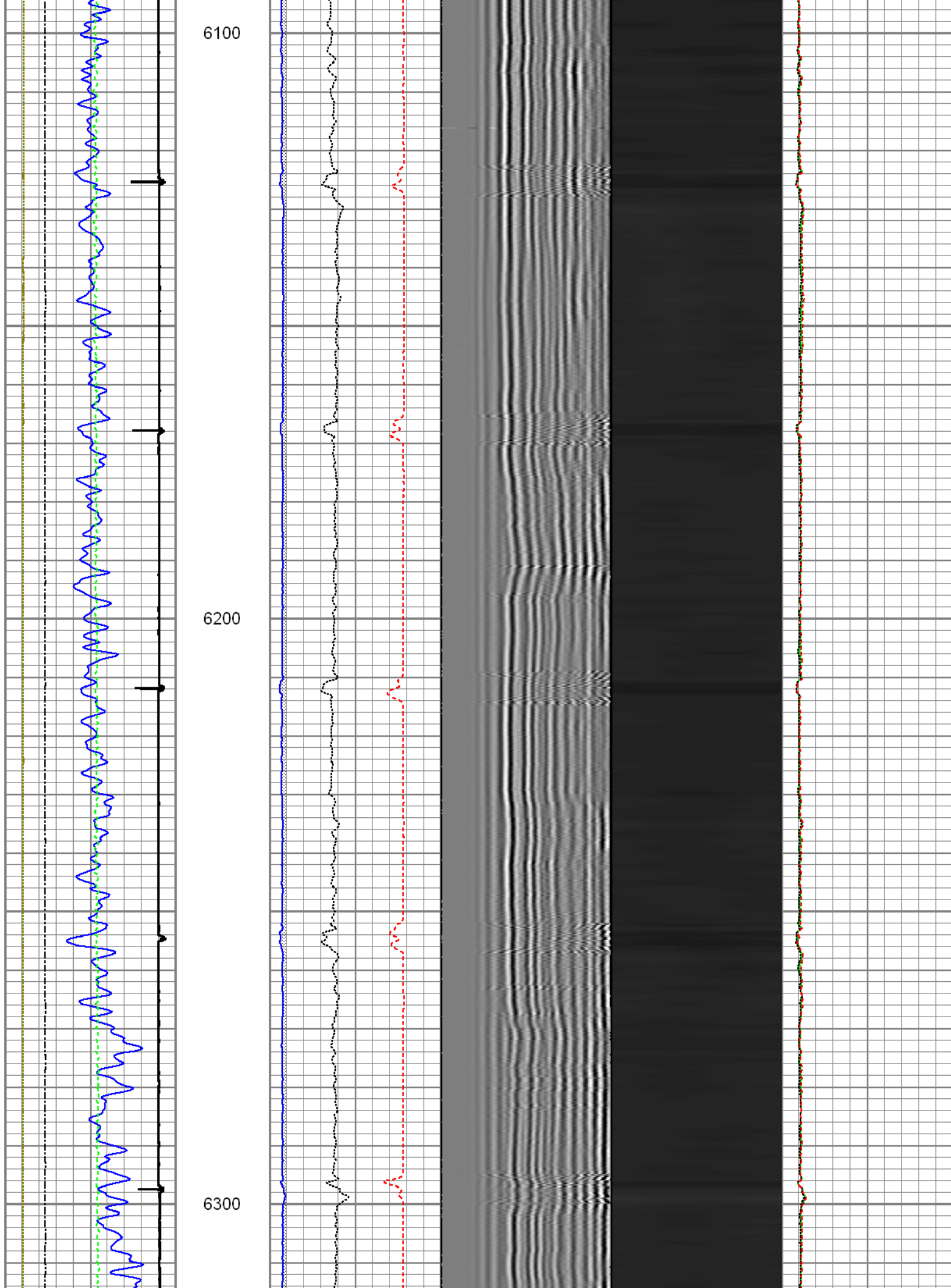


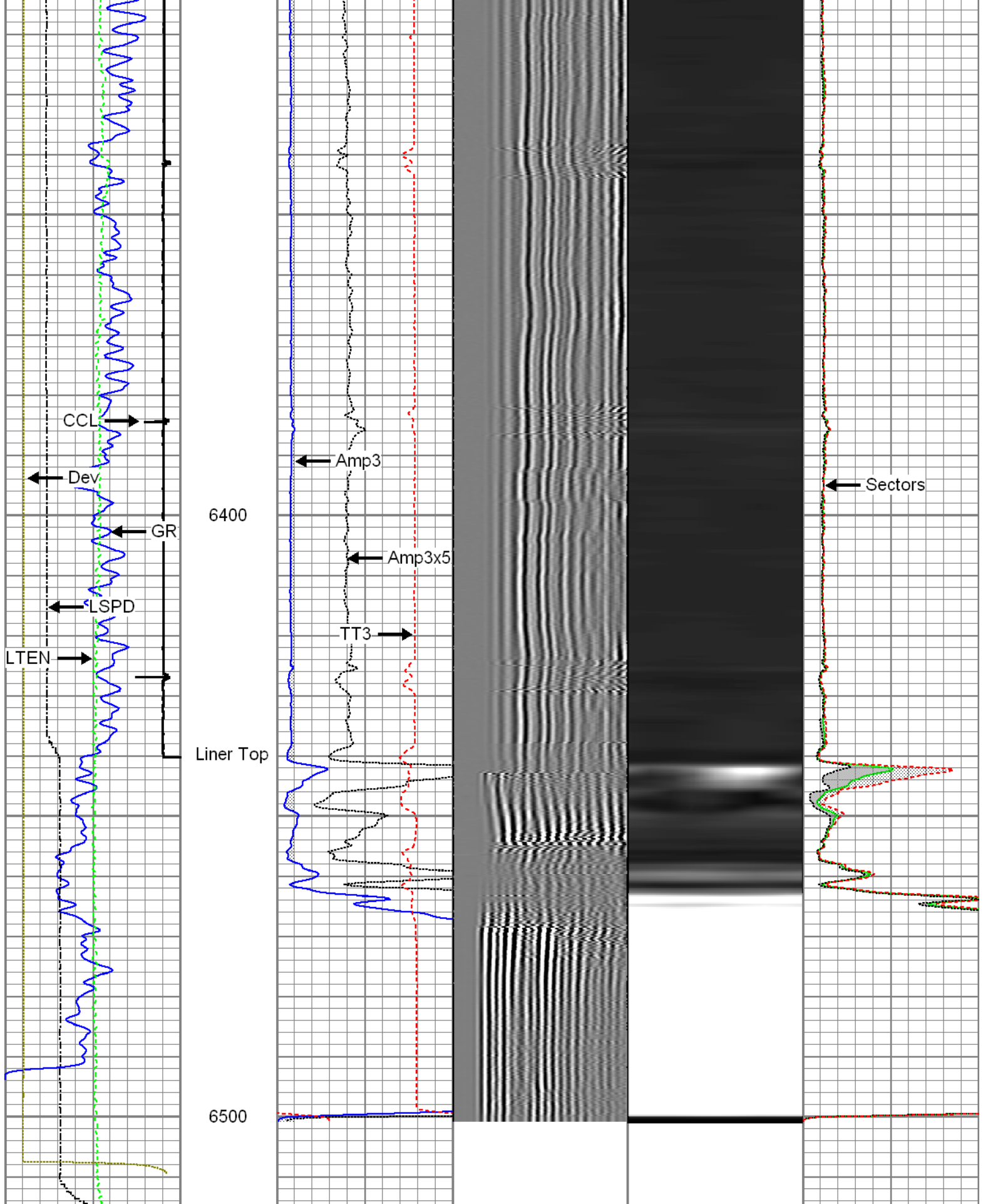


6100

6200


6300





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

-100 (ft/min) 100	3' Travel Time	Maximum Amplitude
Line Tension	650 (usec) 150	0 100
0 (lb) 2000		
Wellbore Deviation		
-10 (°) 90		

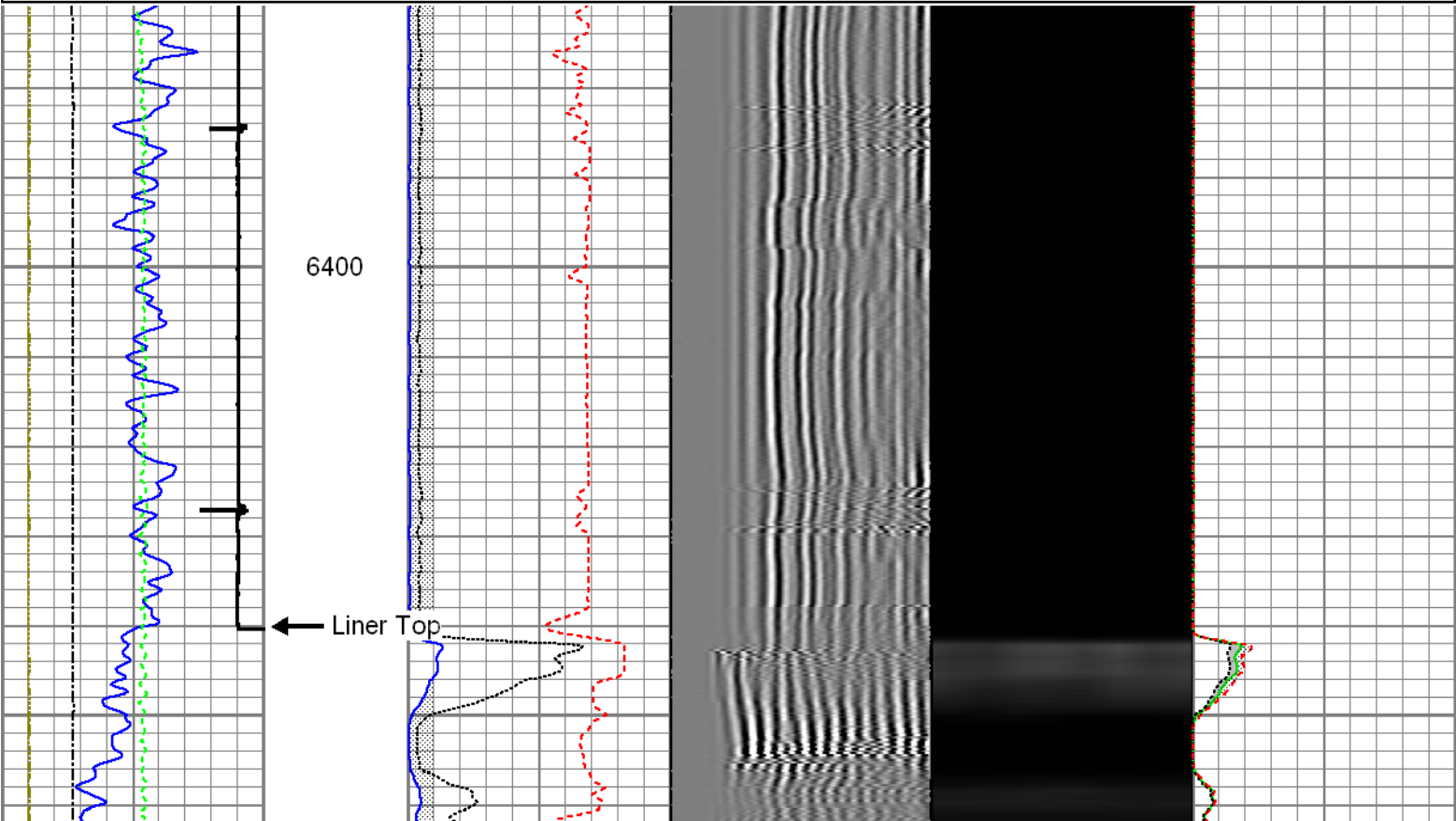


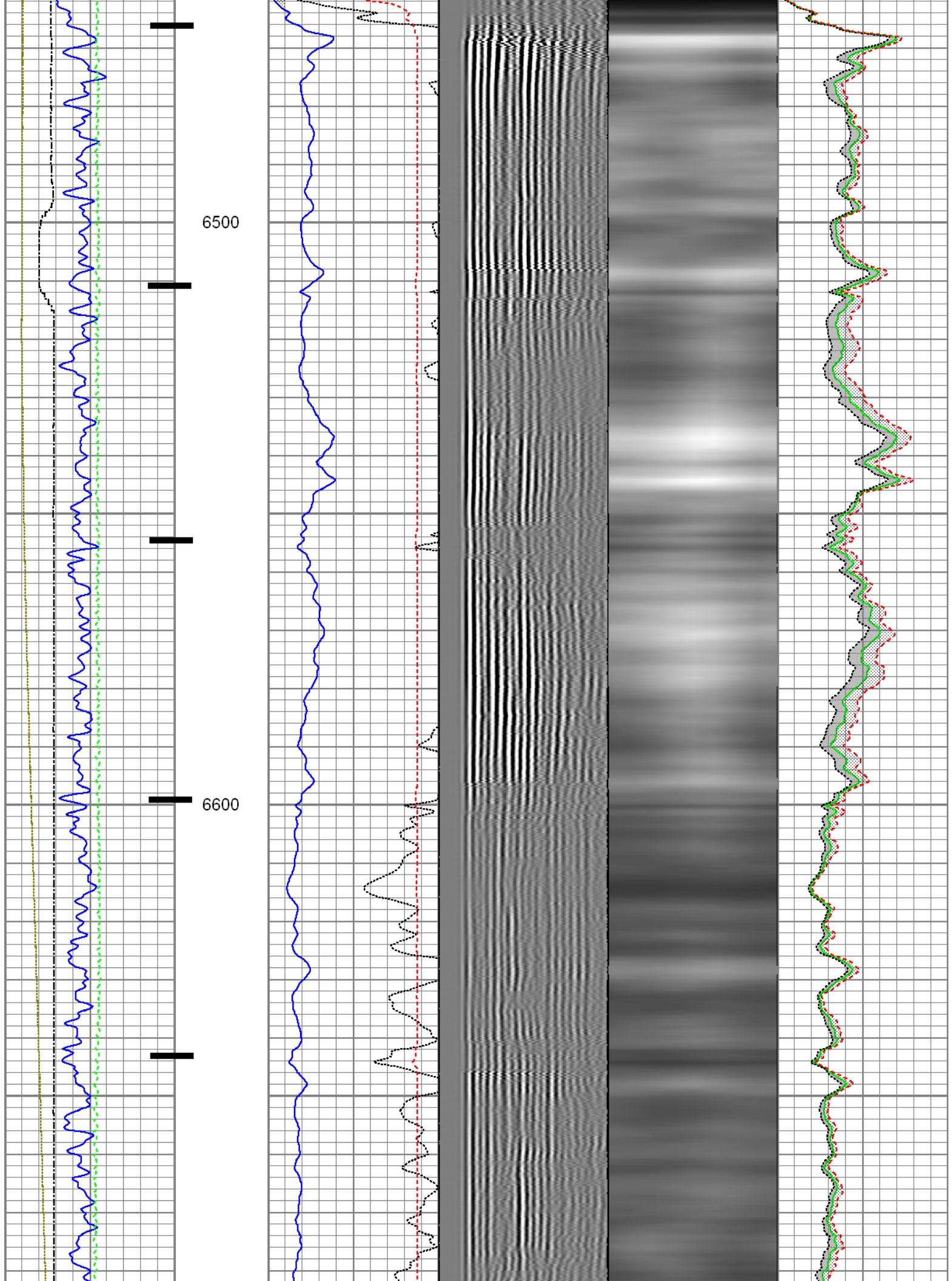
4.5" Main Pass

Recorded with 2800 PSI Surface Induced Pressure

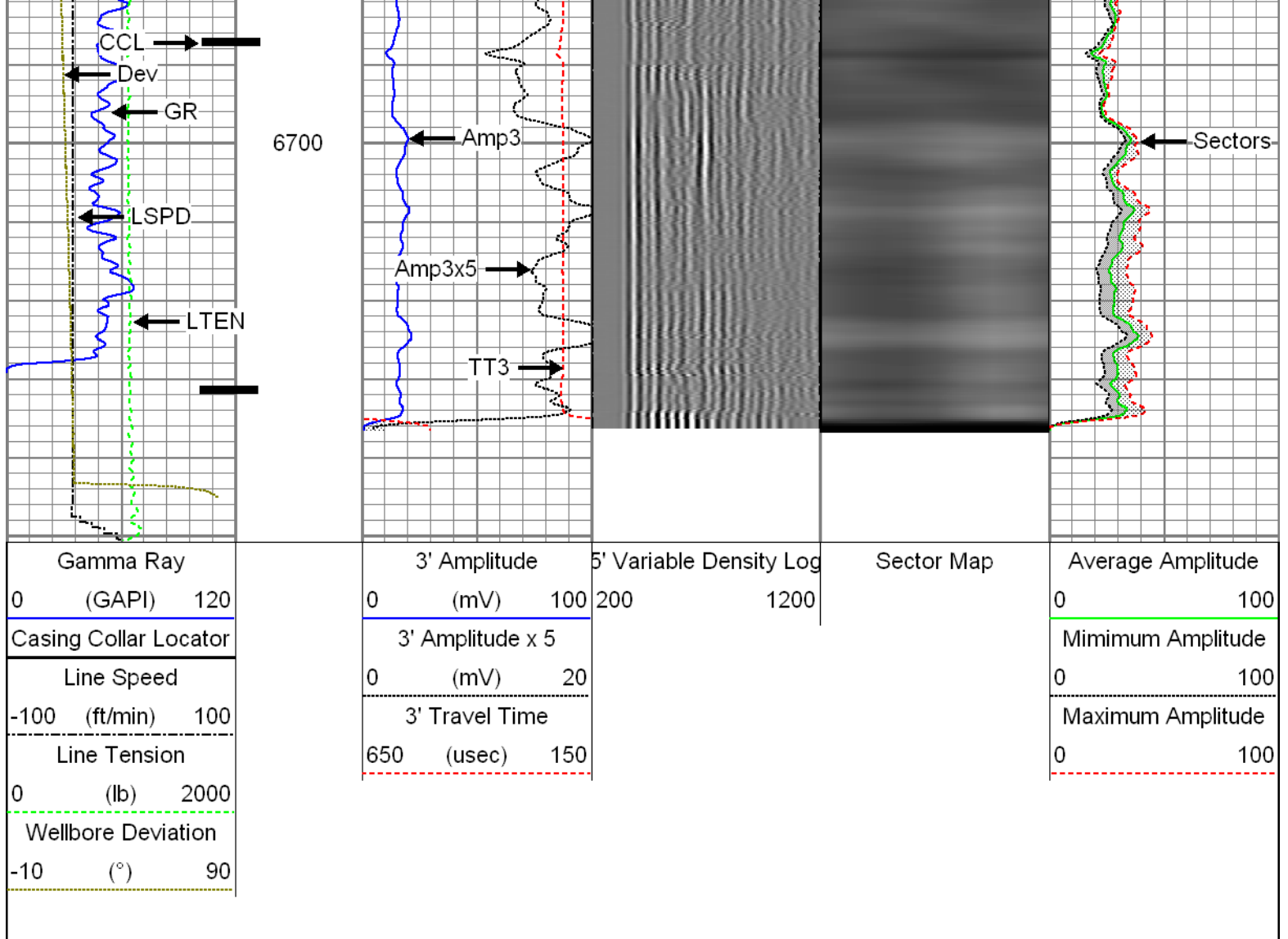
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Dataset Pathname: 45main  
Presentation Format: rbt4\_mit  
Dataset Creation: Fri Feb 06 12:13:40 2015 by Log 7.0 B1  
Charted by: Depth in Feet scaled 1:240

<div>Gamma Ray</div> <div>0 (GAPI) 120</div> <div>Casing Collar Locator</div> <div>Line Speed</div> <div>-100 (ft/min) 100</div> <div>Line Tension</div> <div>0 (lb) 2000</div> <div>Wellbore Deviation</div> <div>-10 (°) 90</div>	<div>3' Amplitude</div> <div>0 (mV) 100</div> <div>3' Amplitude x 5</div> <div>0 (mV) 20</div> <div>3' Travel Time</div> <div>650 (usec) 150</div>	<div>5' Variable Density Log</div> <div>200 1200</div>	<div>Sector Map</div>	<div>Average Amplitude</div> <div>0 100</div> <div>Mimimum Amplitude</div> <div>0 100</div> <div>Maximum Amplitude</div> <div>0 100</div>
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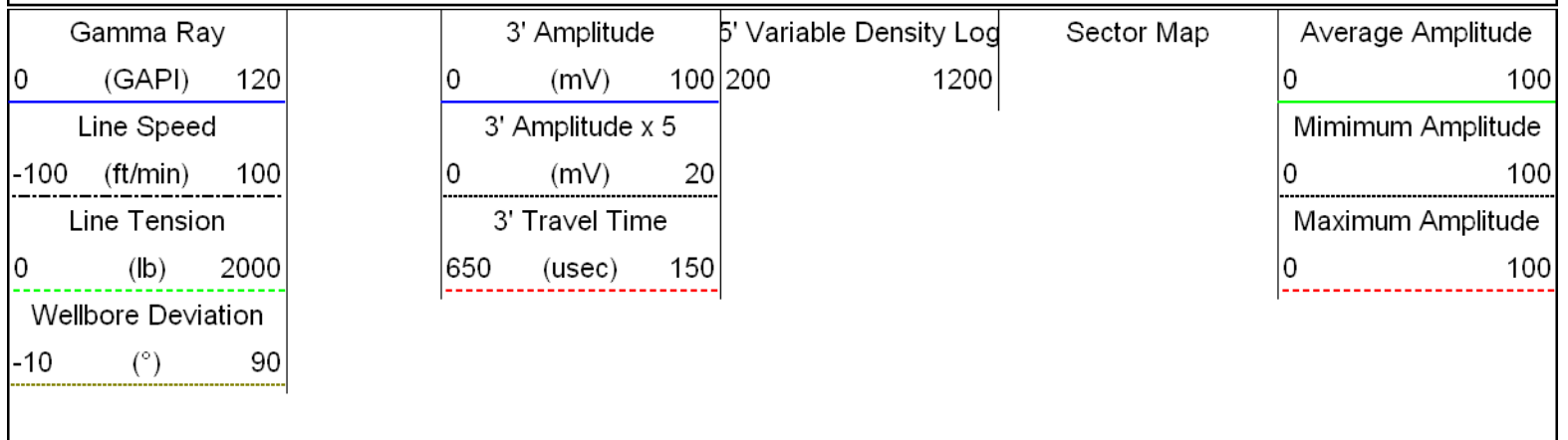




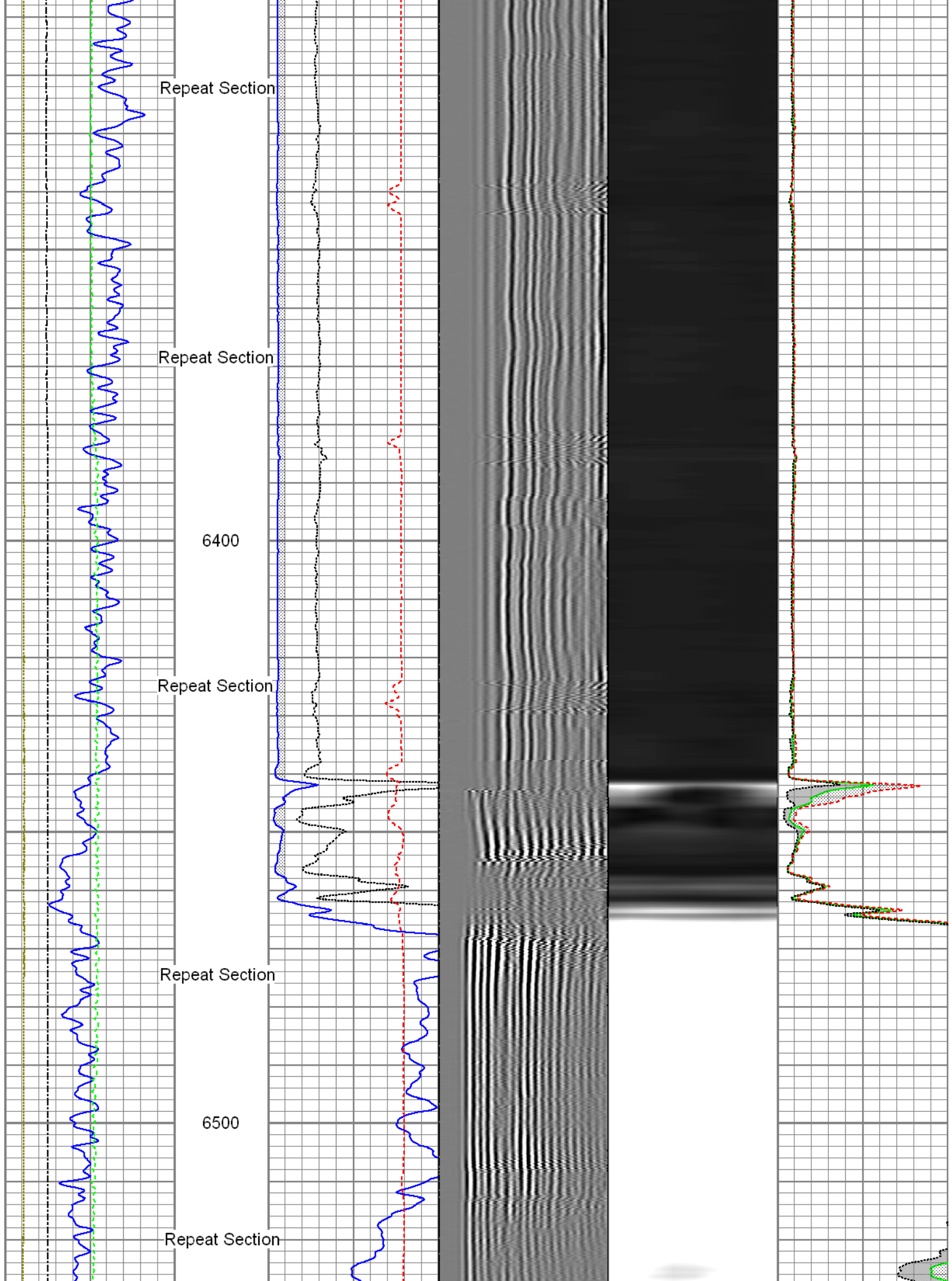
## Repeat Pass

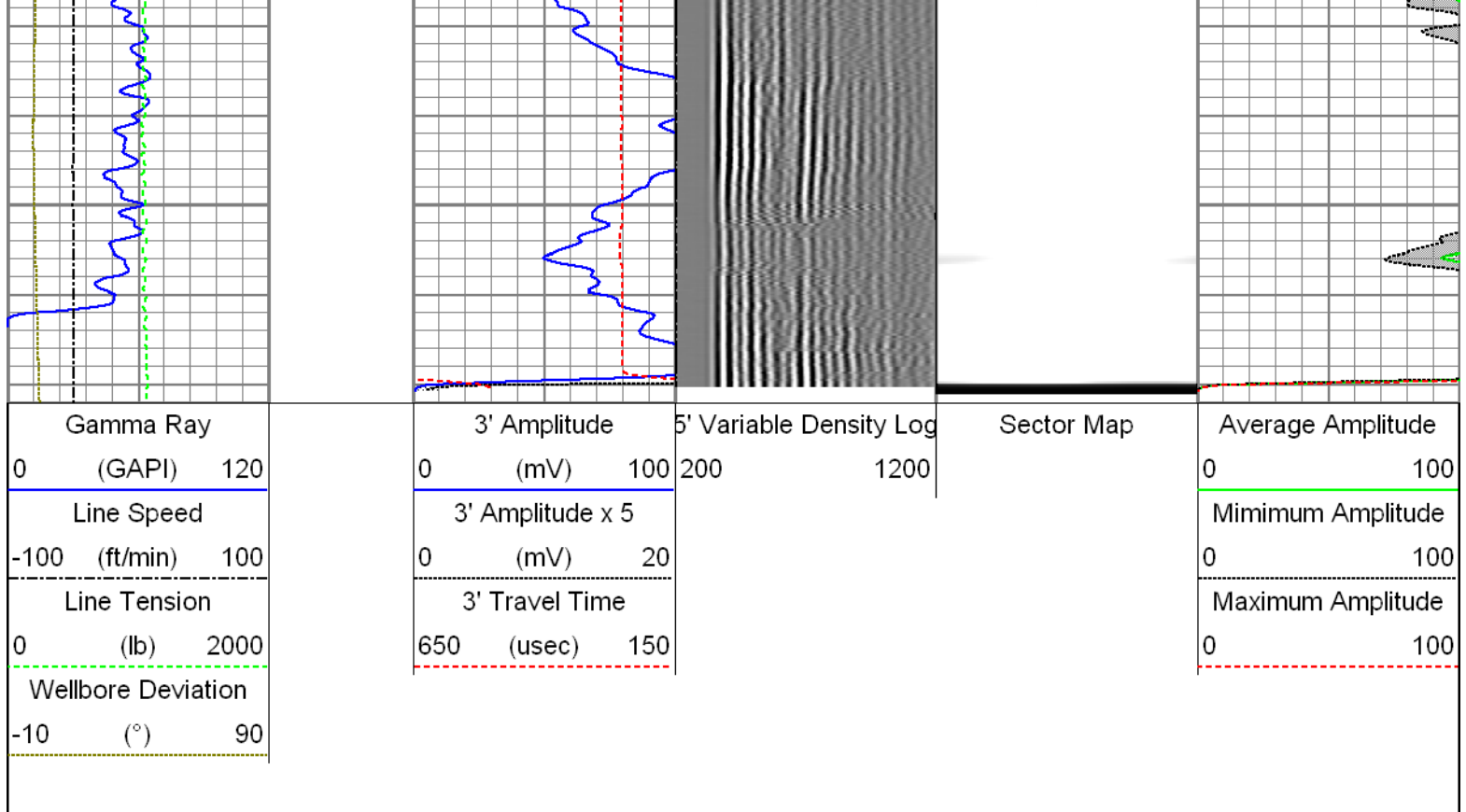
Recorded with 2800 PSI Surface Induced Pressure

Database File: 0512338979\_anadarko\_kerr 14n-25hz\_02-06-15\_mit\_rbl.db  
Dataset Pathname: REPEAT  
Presentation Format: rbt4\_mit  
Dataset Creation: Fri Feb 06 11:57:18 2015 by Log 7.0 B1  
Charted by: Depth in Feet scaled 1:240

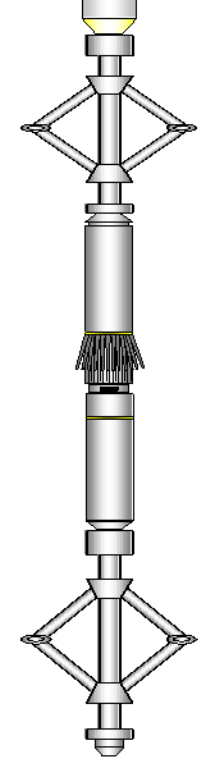








Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
GR	22.81		T_CH14375_1_GO Titan 1-7/16" Assembled Electric Cable Head with 1" Fishing Neck	1.03	1.44	4.00
			UW_AGS-UW_AGS_001 (10024281) Sondex Adapter - GO Box to Sondex Pin	0.21	1.69	1.00
			UW_XTU-UW_XTU_002 (218874) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50
			UW_PGR-UW_PGR_020 (10019072) Production Gamma Ray	1.93	1.69	9.50
			UW_PRC #4 -DSSRAC (080) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
WVFS3FT	15.42		UW_RBT-UW_RBT_004 (1063) Sondex Ultrawire 3- 1/8" Radial Bond Tool	9.47	3.13	140.00
WVFS1	15.42					
WVFS2	15.42					
WVFS3	15.42					
WVFS4	15.42					
WVFS5	15.42					
WVFS6	15.42					
WVFS7	15.42					
WVFS8	15.42					
CRTTEMP	15.42					

CBLTOT	15.42		UW_PRC-DSSRAC (082) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
WVF5FT	14.42					
MIT	5.41		UW_MIT-UW_MIT40_042 (10012912) 40 Multifinger Imaging Tool	4.54	2.75	61.10
TSTAMP	0.00		UW_PRC #3 -UW_PRC_057 (1102) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
			UW_BUL-UW_BUL_006 (10022928) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20
Dataset: 0512338979_Anadarko_Kerr 14N-25HZ_02-06-15_MIT_RBL.db: field/well/run1/7main Total Length: 27.05 ft Total Weight: 319.30 lb O.D. 3.13 in						

Calibration Report			
Database File:	0512338979_anadarko_kerr 14n-25hz_02-06-15_mit_rbl.db		
Dataset Pathname:	7main.2		
Dataset Creation:	Sat Feb 07 07:44:53 2015 by Calc SCH 120430		
Multi-finger Imaging Tool Calibration Report			
Serial Number:		10012912	
Number of Fingers:		40	
Tool Model:		UW_MIT40_042	
Inclinometer Calibration Report			
Performed:		Mon Jul 15 09:39:36 2013	
Calibration Angle:		45	
		Inc X	Inc Y
Vertical:		1968	1974
Finger 1 up:		1740	1744
Finger 31 up:		2215	1741
Finger 21 up:		2205	2224
Finger 11 up:		1731	2217
Sensitivity ratio:	0.992868		
X-axis angle:	134.307		
Deviation const.:	335.589		

Finger Calibration Report							
	Performed: Fri Feb 06 11:17:50 2015						
Ring size:	4	5	6	7			
(in)	Sens	Sens	Sens				
Finger 01:	1115 373.0	1488 387.0	1875 400.0	2275			
Finger 02:	1284 390.0	1674 392.0	2066 396.0	2462			
Finger 03:	1125 390.0	1515 411.0	1926 427.0	2353			
Finger 04:	1134 379.0	1513 401.0	1914 421.0	2335			
Finger 05:	1135 384.0	1519 407.0	1926 421.0	2347			

Finger 06:	1151	386.0	1537	410.0	1947	422.0	2369
Finger 07:	1111	385.0	1496	411.0	1907	426.0	2333
Finger 08:	1184	384.0	1568	411.0	1979	428.0	2407
Finger 09:	1137	380.0	1517	406.0	1923	426.0	2349
Finger 10:	1114	379.0	1493	410.0	1903	428.0	2331
Finger 11:	1150	377.0	1527	405.0	1932	418.0	2350
Finger 12:	1108	370.0	1478	403.0	1881	428.0	2309
Finger 13:	1127	370.0	1497	398.0	1895	415.0	2310
Finger 14:	1072	368.0	1440	404.0	1844	429.0	2273
Finger 15:	1057	375.0	1432	419.0	1851	441.0	2292
Finger 16:	1097	378.0	1475	417.0	1892	438.0	2330
Finger 17:	1005	365.0	1370	405.0	1775	445.0	2220
Finger 18:	1155	371.0	1526	399.0	1925	421.0	2346
Finger 19:	1140	381.0	1521	407.0	1928	424.0	2352
Finger 20:	1052	361.0	1413	403.0	1816	431.0	2247
Finger 21:	1061	370.0	1431	402.0	1833	415.0	2248
Finger 22:	1056	366.0	1422	403.0	1825	430.0	2255
Finger 23:	1083	373.0	1456	410.0	1866	433.0	2299
Finger 24:	1119	375.0	1494	387.0	1881	398.0	2279
Finger 25:	1036	365.0	1401	399.0	1800	425.0	2225
Finger 26:	1190	361.0	1551	374.0	1925	392.0	2317
Finger 27:	1122	366.0	1488	385.0	1873	406.0	2279
Finger 28:	1133	358.0	1491	375.0	1866	396.0	2262
Finger 29:	1067	370.0	1437	394.0	1831	418.0	2249
Finger 30:	1091	362.0	1453	381.0	1834	405.0	2239
Finger 31:	1147	363.0	1510	377.0	1887	395.0	2282
Finger 32:	1100	374.0	1474	393.0	1867	412.0	2279
Finger 33:	1193	365.0	1558	365.0	1923	372.0	2295
Finger 34:	1154	360.0	1514	373.0	1887	392.0	2279
Finger 35:	1105	385.0	1490	405.0	1895	422.0	2317
Finger 36:	1138	378.0	1516	391.0	1907	411.0	2318
Finger 37:	1235	378.0	1613	382.0	1995	394.0	2389
Finger 38:	1190	373.0	1563	379.0	1942	387.0	2329
Finger 39:	1191	370.0	1561	381.0	1942	391.0	2333
Finger 40:	1234	389.0	1623	396.0	2019	403.0	2422

Segmented Cement Bond Log Calibration Report						
Serial Number:		1063				
Tool Model:		UW_RBT_004				
Calibration Casing Diameter:		8.750	in			
Calibration Depth:		0.652	ft			
Master Calibration, performed Sat Feb 07 07:44:38 2015:						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	-0.003	0.658	0.800	62.000	92.667	1.056
5FT	-0.005	0.695	0.800	62.000	87.348	1.253
S1	-0.004	0.647	0.000	100.000	153.727	0.557
S2	-0.004	0.667	0.000	100.000	148.965	0.576
S3	-0.003	0.672	0.000	100.000	148.064	0.450
S4	-0.004	0.686	0.000	100.000	145.080	0.523
S5	-0.003	0.668	0.000	100.000	149.105	0.377
S6	-0.003	0.649	0.000	100.000	153.340	0.526
S7	-0.003	0.642	0.000	100.000	154.971	0.464
S8	-0.003	0.635	0.000	100.000	156.789	0.473

Gamma Ray Calibration Report	
Serial Number:	10019072
Tool Model:	UW_PGR_020

Performed:	Sun Jun 13 13:33:21 1993	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	1.0000	GAPI/cps

	Company	Kerr McGee Oil & Gas Onshore LP
	Well	Kerr 14N-25HZ
	Field	Wattenberg
	County	Weld
	State	Colorado