



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company Kerr-McGee Oil & Gas Onshore, L.P.
Well NRC 30C-32HZ
Field Wattenberg
County Weld
State Colorado

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Location: API #: 05-123-39188
SHL: 667' FNL & 575' FWL NWNW
Lat/Long: 40.071058 / -104.921855
SEC 8 TWP 1N RGE 67W
Permanent Datum Ground Level Elevation 5063'
Log Measured From Kelly Bushing 16 FT
Drilling Measured From Kelly Bushing
Other Services
Gauge Ring
Set RBP
MIT
Elevation
K.B. 5079'
D.F. 5078'
G.L. 5063'

Date 02-Aug-2014
Run Number Three
Depth Driller 18796 FT
Depth Logger 7015 FT
Bottom Logged Interval 7010 FT
Top Log Interval Surface
Open Hole Size 8.765"
Type Fluid Water
Density / Viscosity 8.34 lbm/gal
Max. Recorded Temp. 217°F
Estimated Cement Top Surface
Time Well Ready ROA
Time Logger on Bottom 13:30
Equipment Number HD-0119
Location Fort Lupton, CO
Recorded By Erick Vaughn
Witnessed By Tom Herbison

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 LTC	Surface	1244 FT		
Intermediate #1	7"	26	HCP-110 LTC	Surface	8207 FT		
Intermediate #2							
Liner	4 1/2"	11.6	P-110 DQX/LTC	6959 FT	18796 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 reference to Casing Tally reported Liner Top at 6959 FT.
Adjusted log +8 FT from KB zero to correlate with Liner Top.
Gauge Ring ran to 7200 FT.
Retrievable Bridge Plug set at 7040 FT.
Log ran from below Liner Top to surface.
Log ran with 2800 PSI surface induced pressure.

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



Main Pass

Recorded with 2800 PSI Surface Induced Pressure

Database File:0512339188_anadarko_nrc 30c-32hz_08-02-14_mit_rbl.db

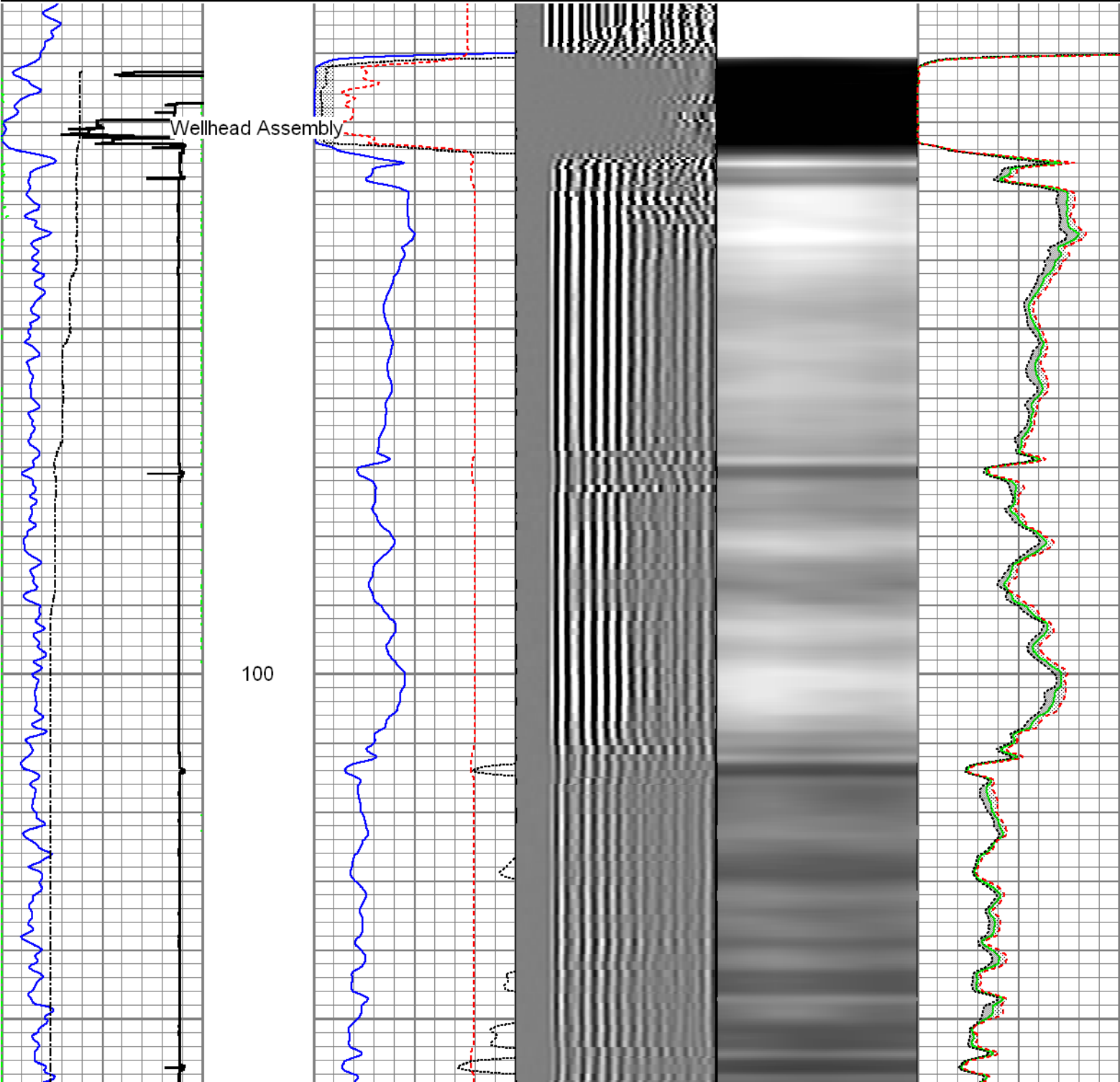
Dataset Pathname:mainp1

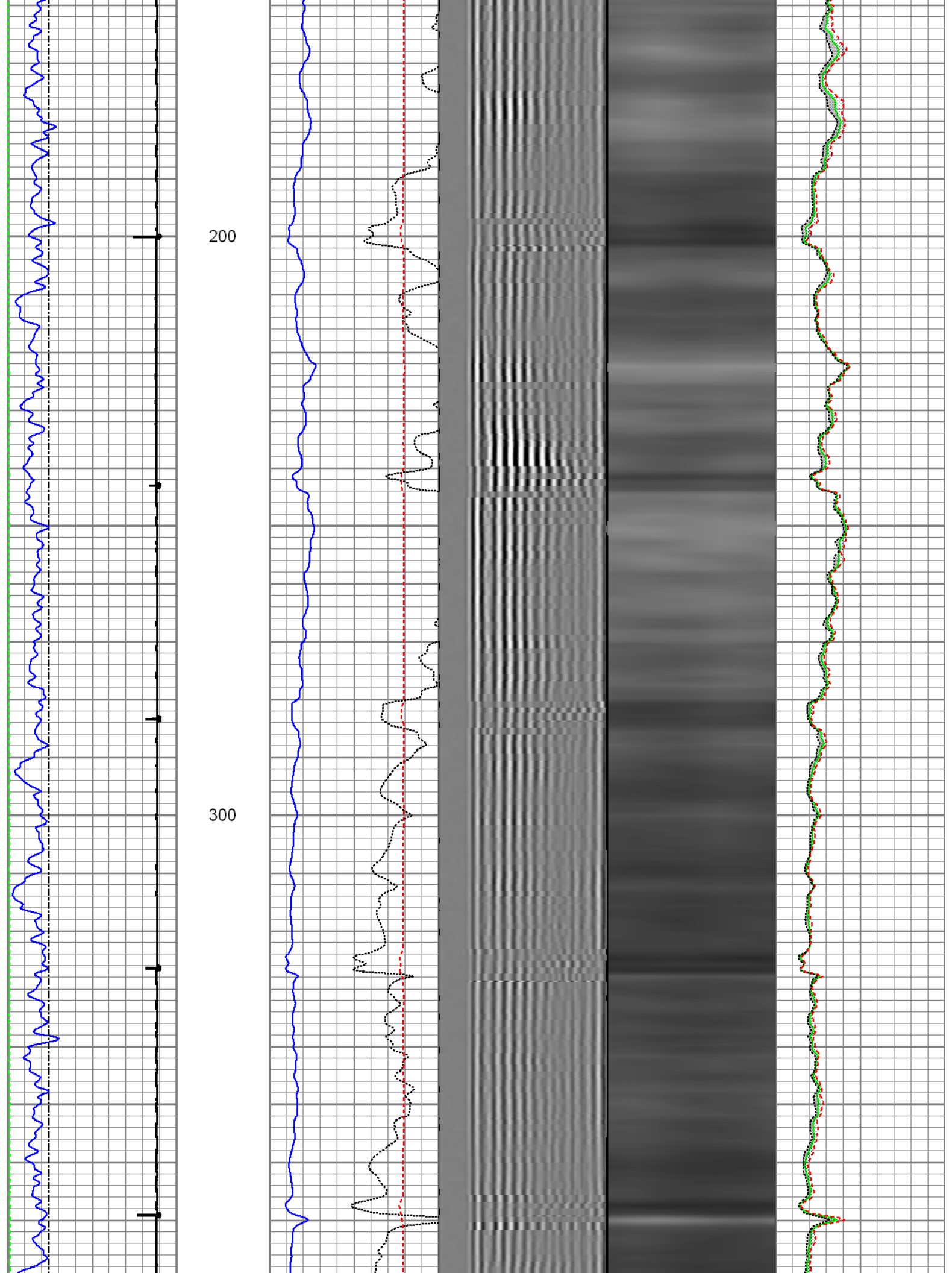
Presentation Format:rbt4_mit

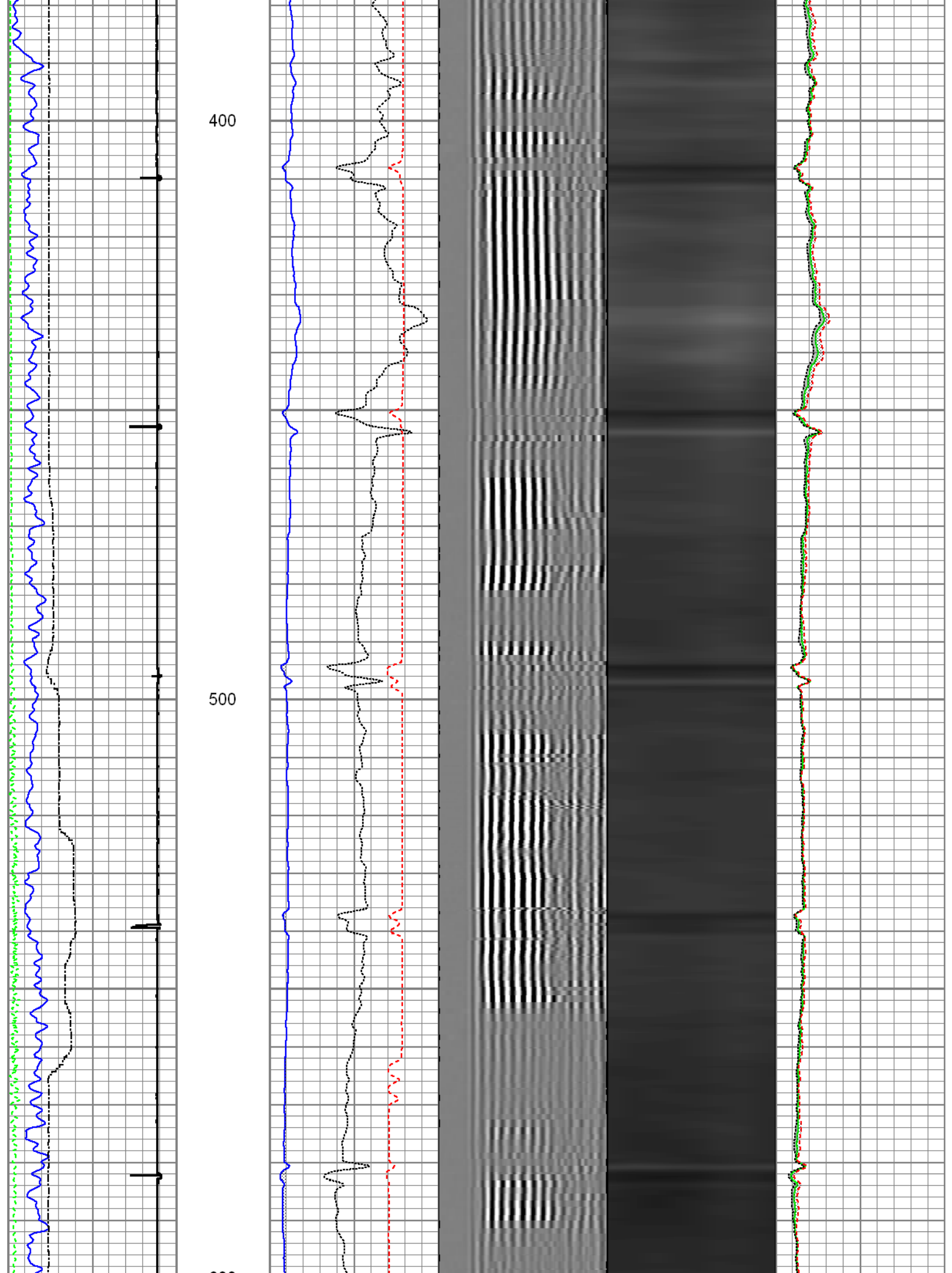
Dataset Creation:Sat Aug 02 14:10:31 2014 by Log SCH 111116

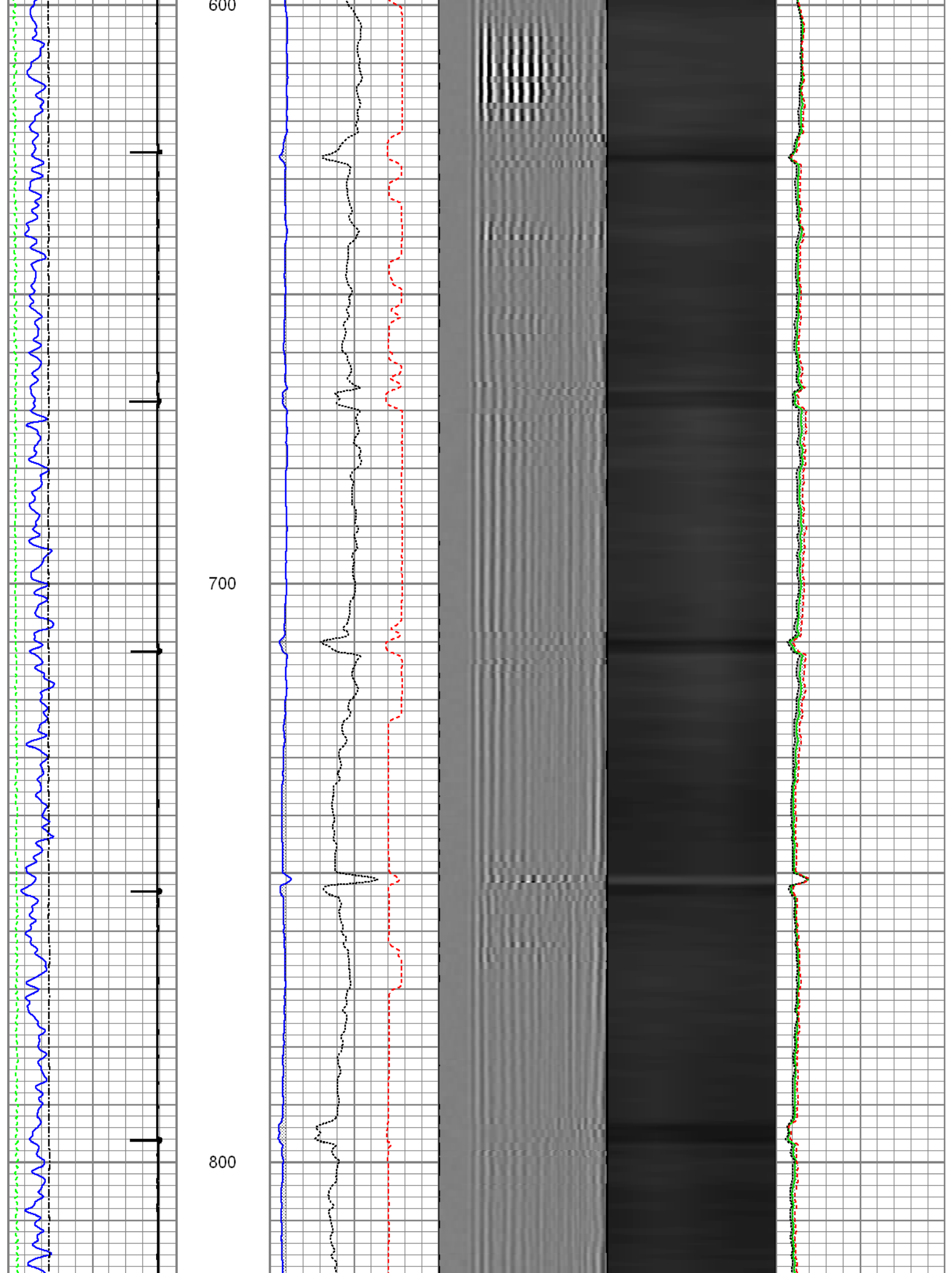
Charted by:Depth in Feet scaled 1:240

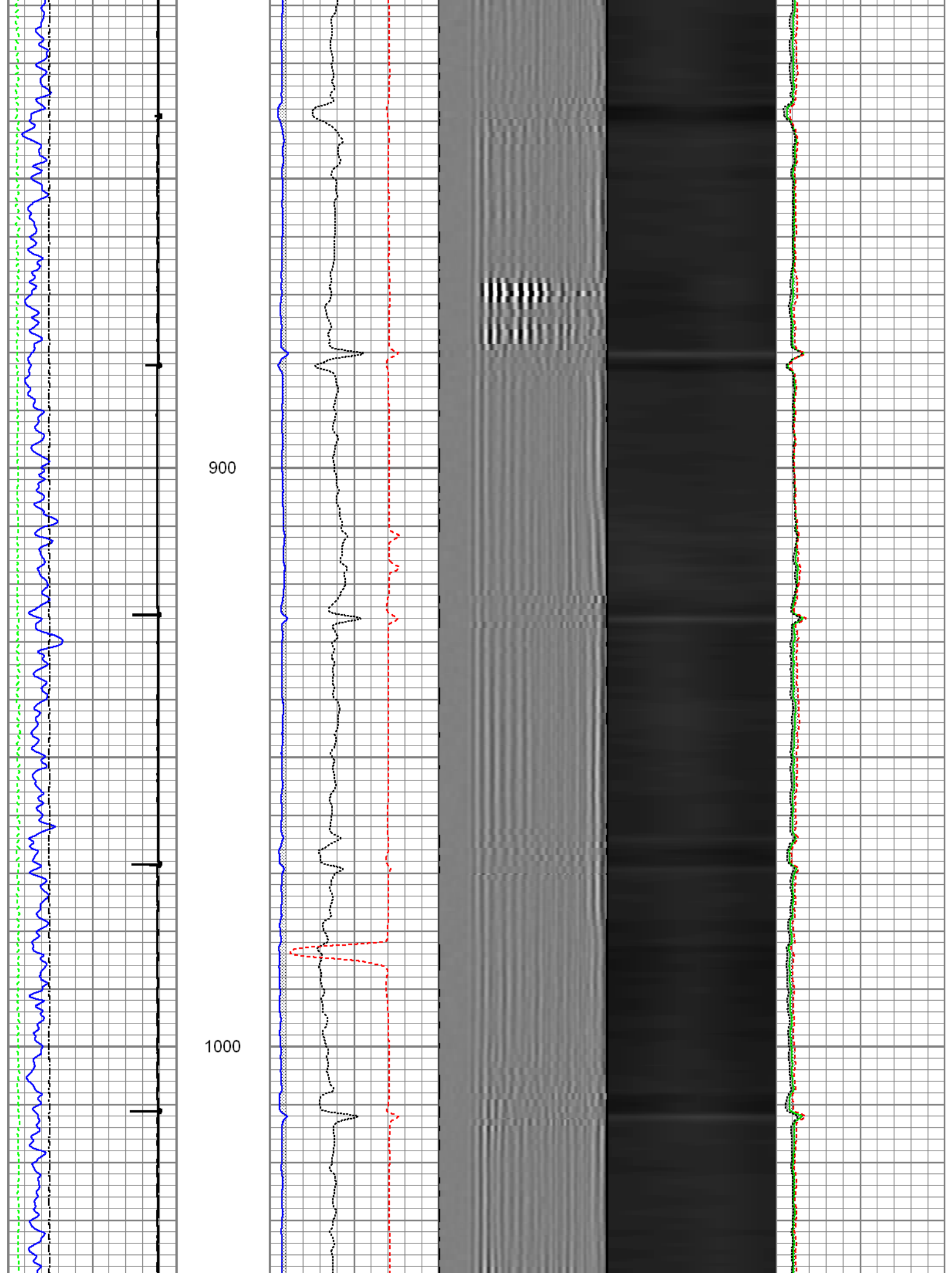
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Mimimum Amplitude
Line Speed	0 (mV) 20			0 100
-100 (ft/min) 100	3' Travel Time			Maximum Amplitude
Line Tension	650 (usec) 150			0 100
0 (lb) 2000				

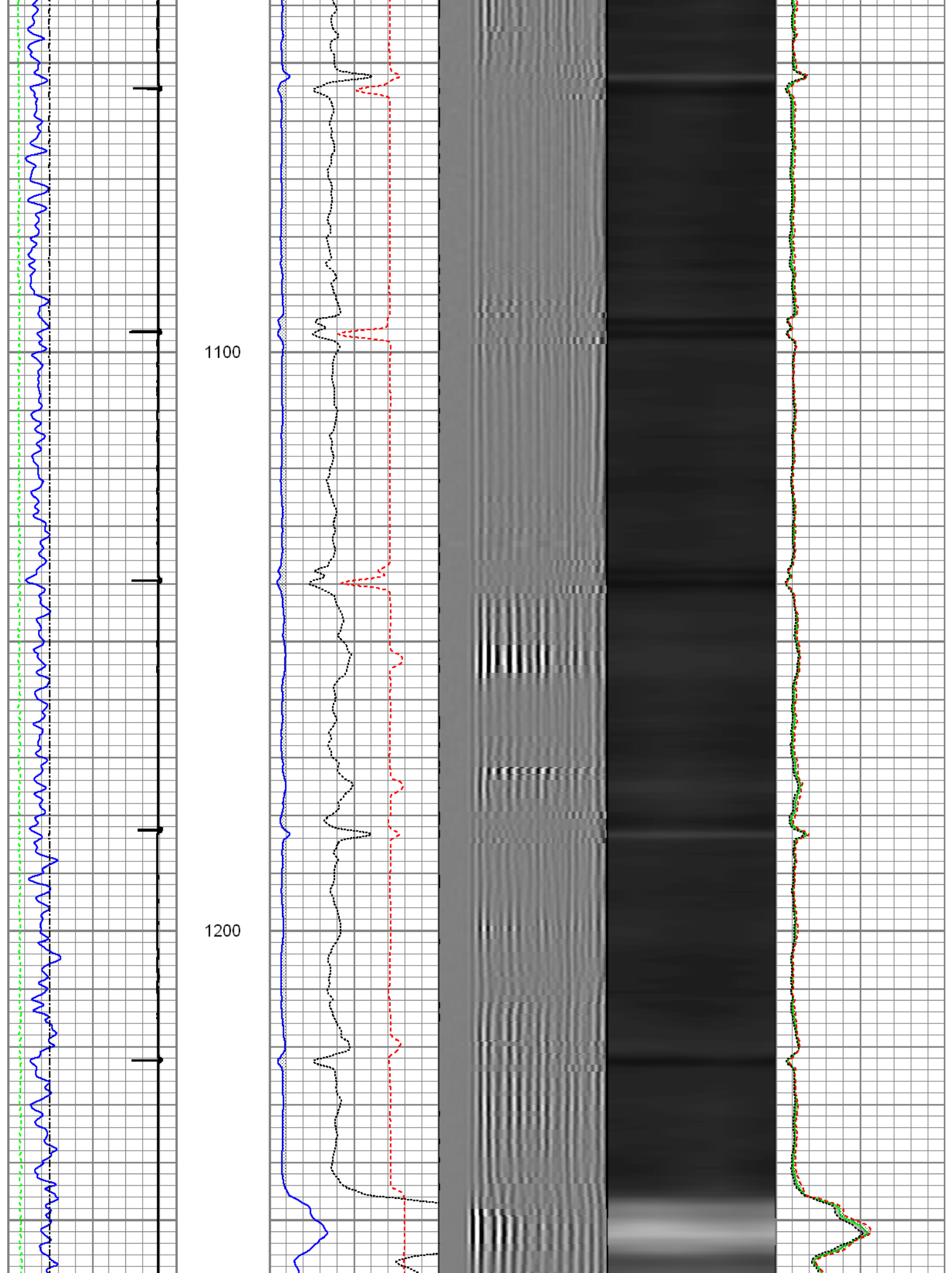


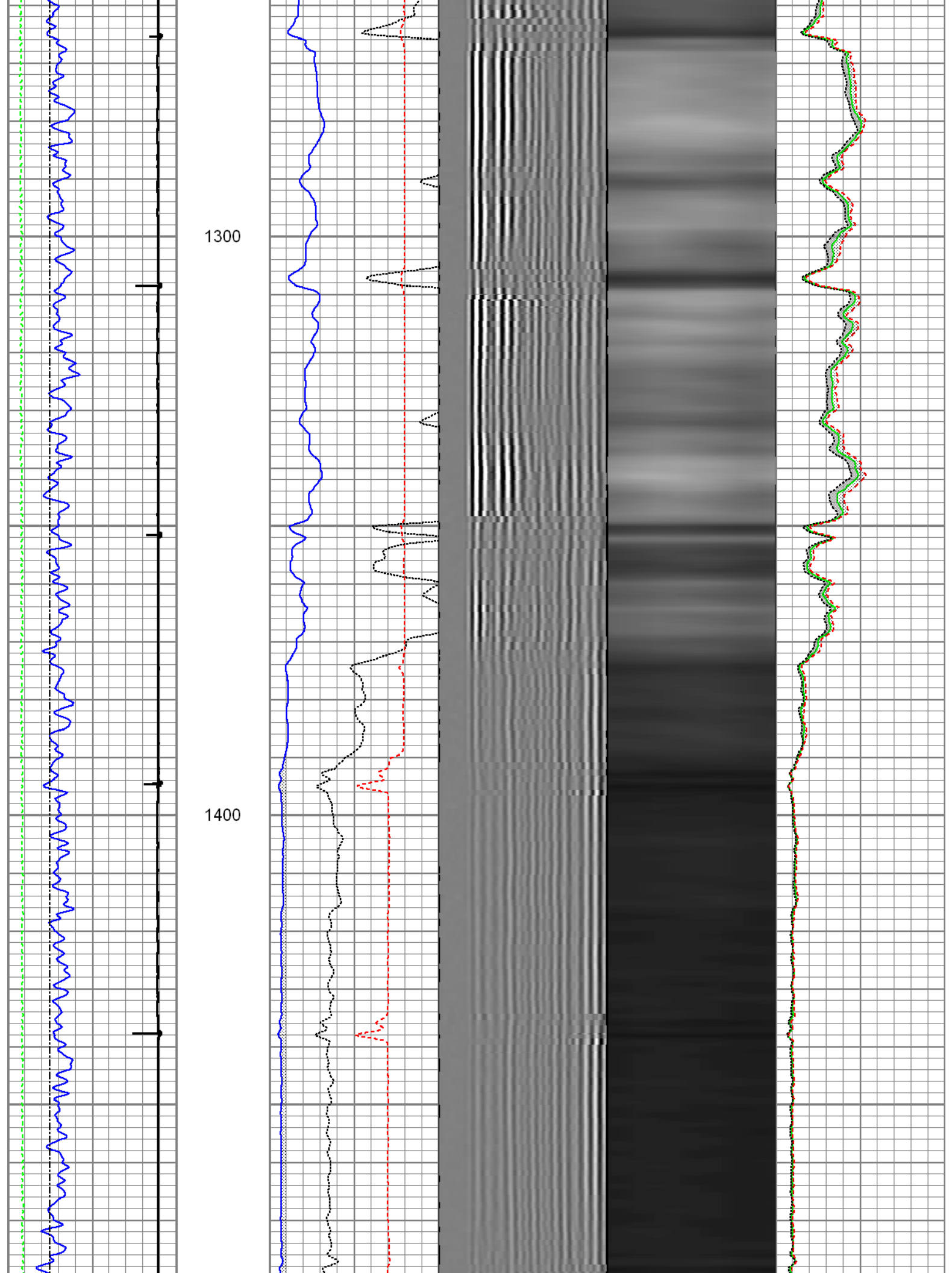


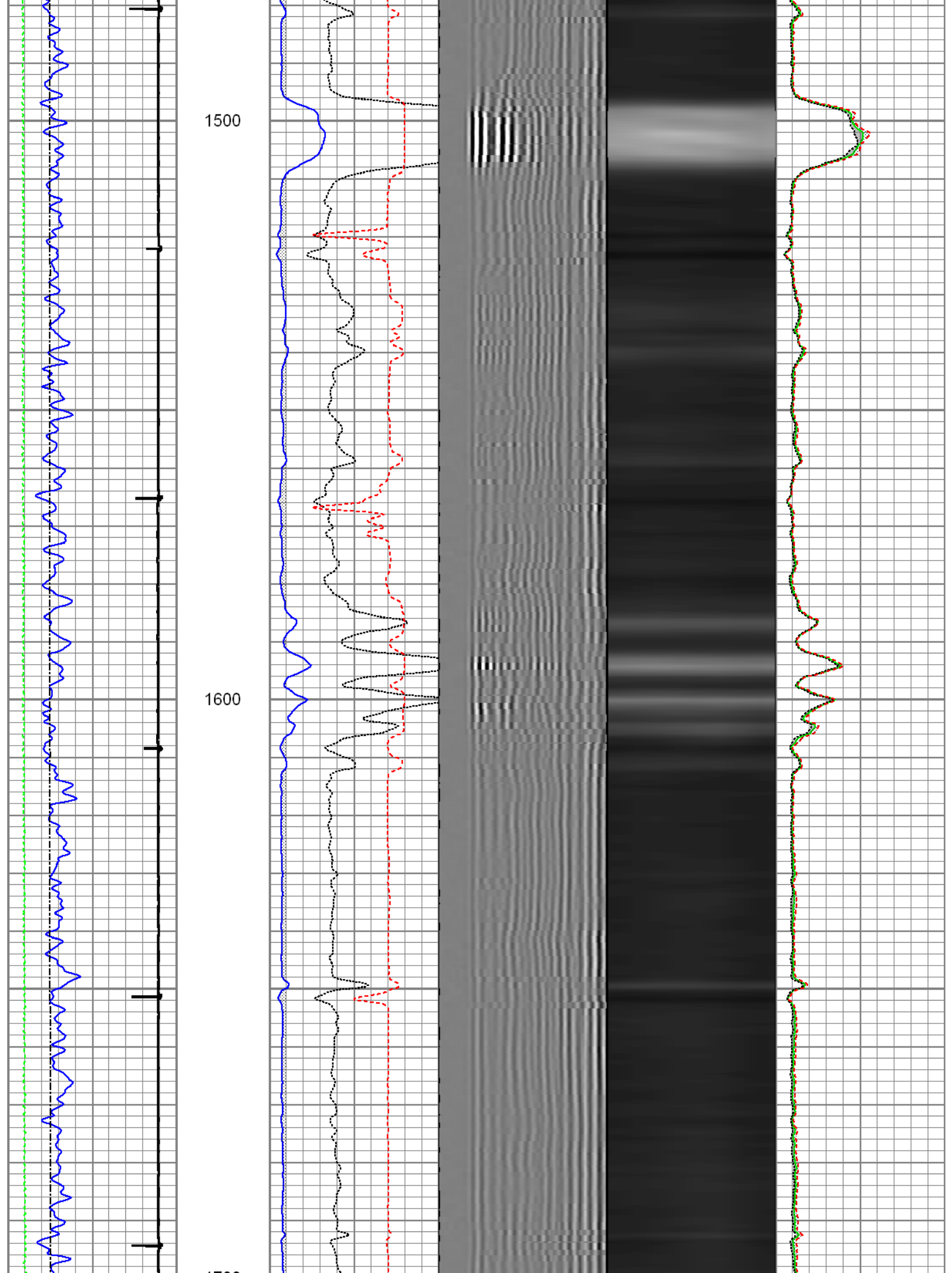


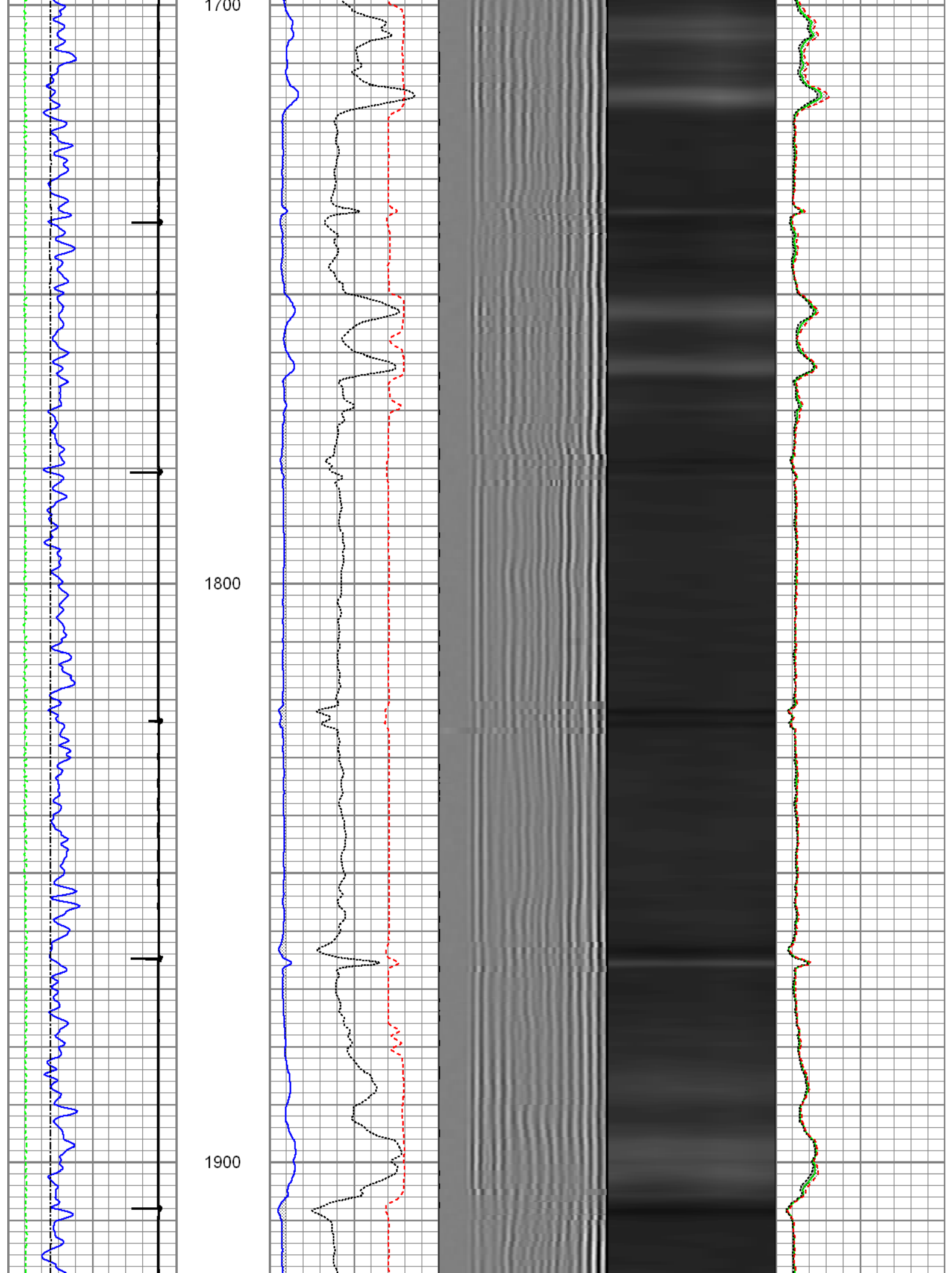






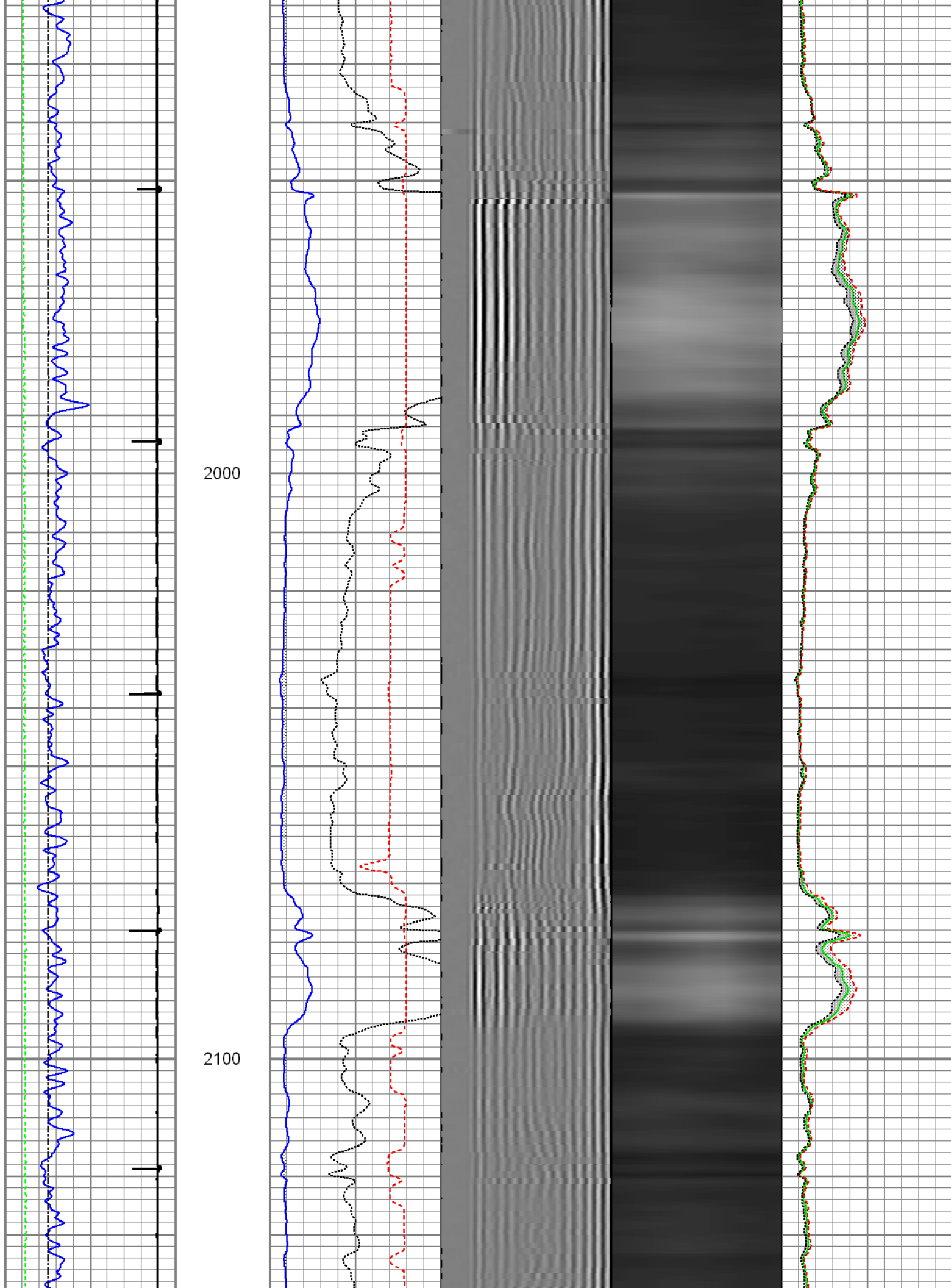


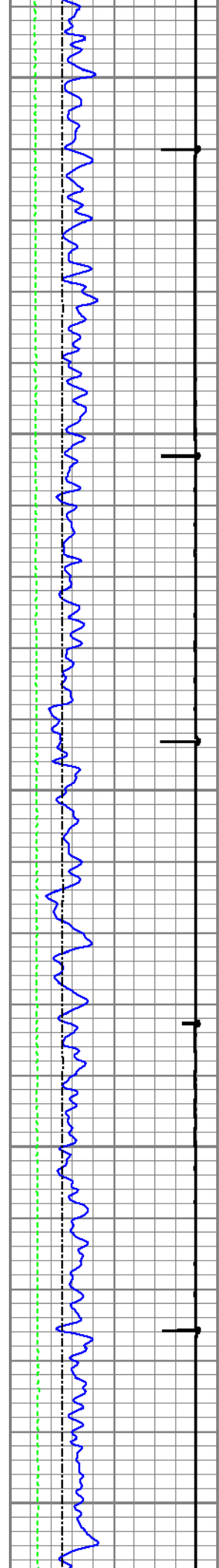




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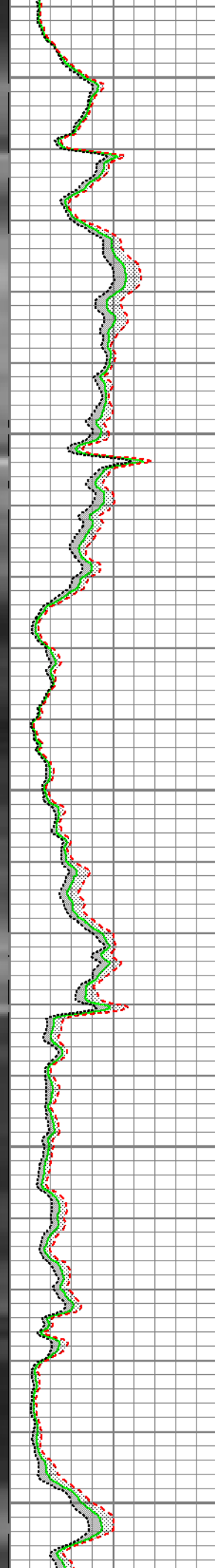
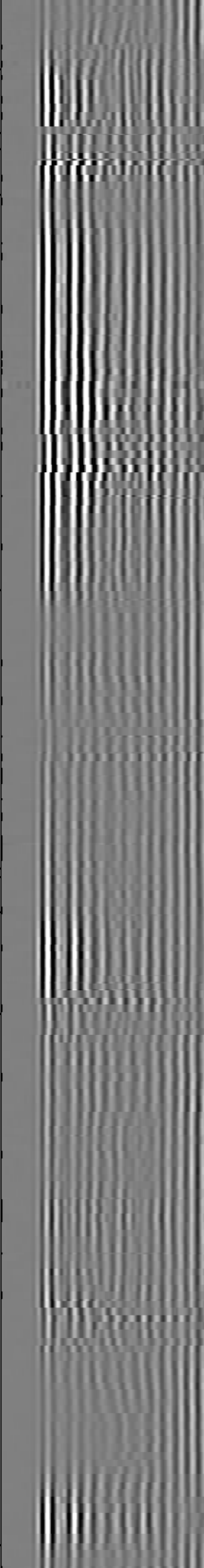
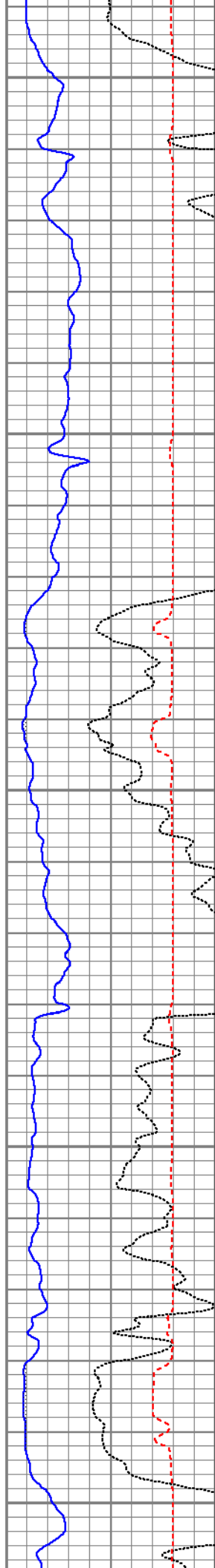
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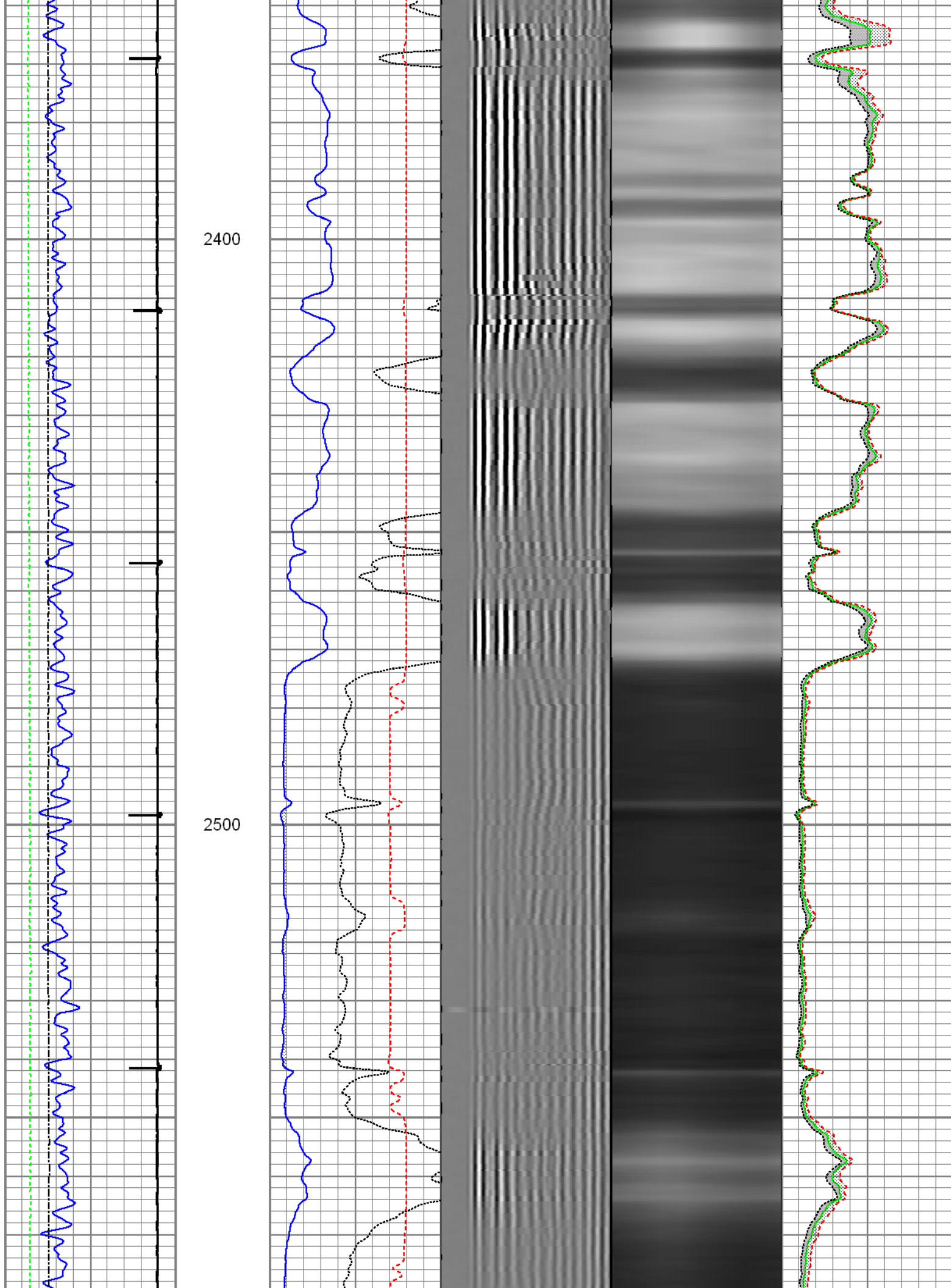
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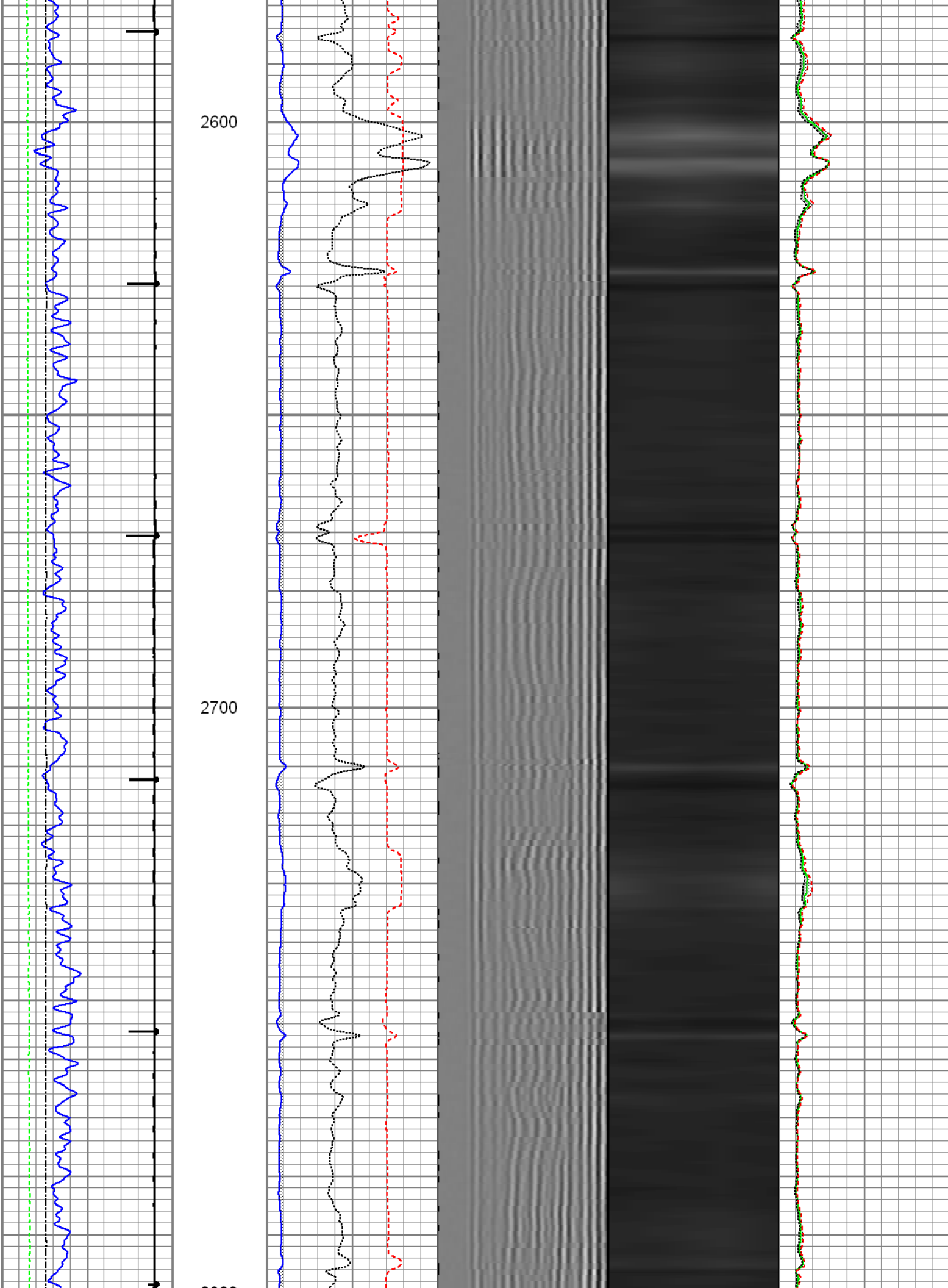
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2600

2700

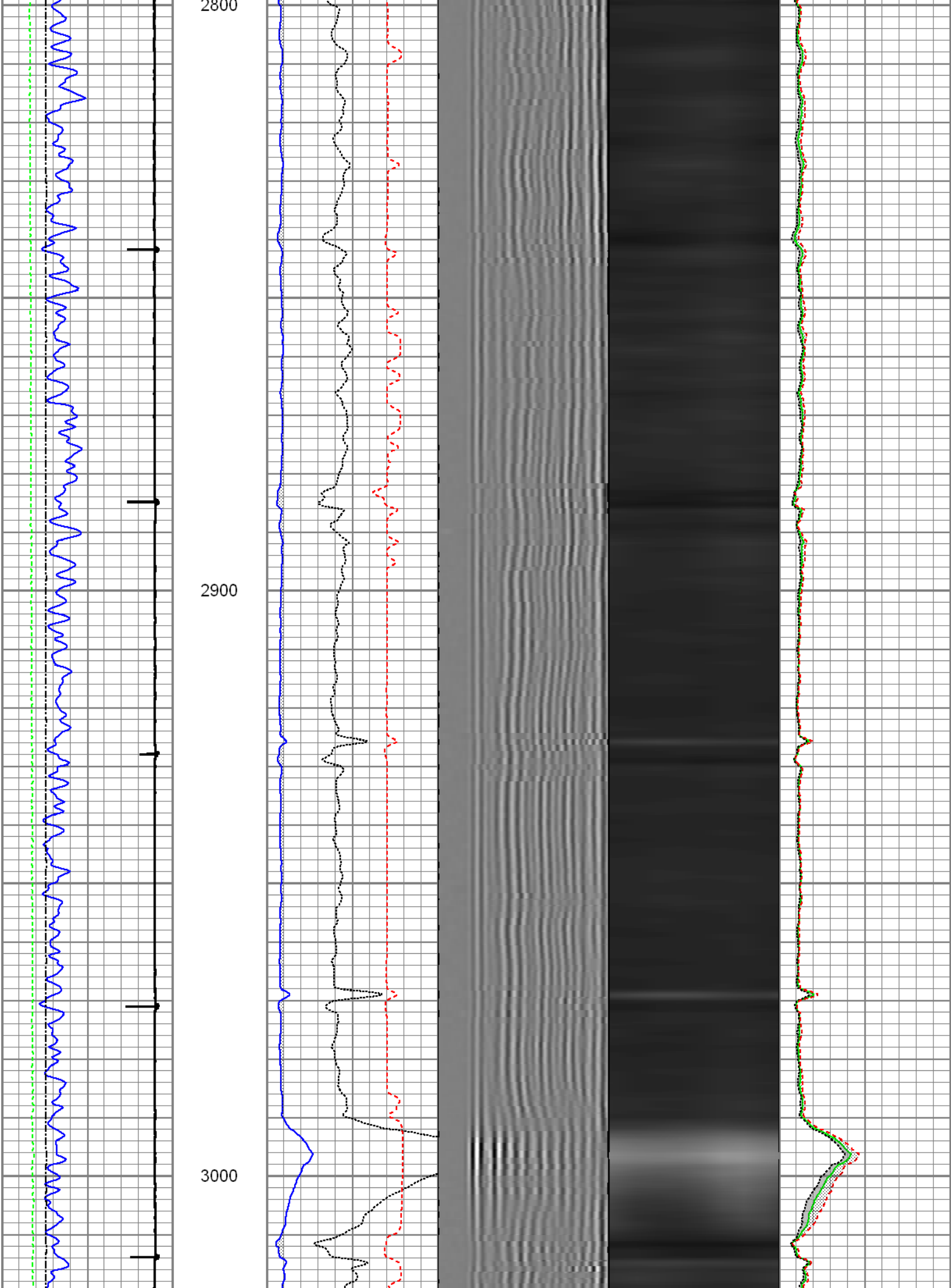
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2800

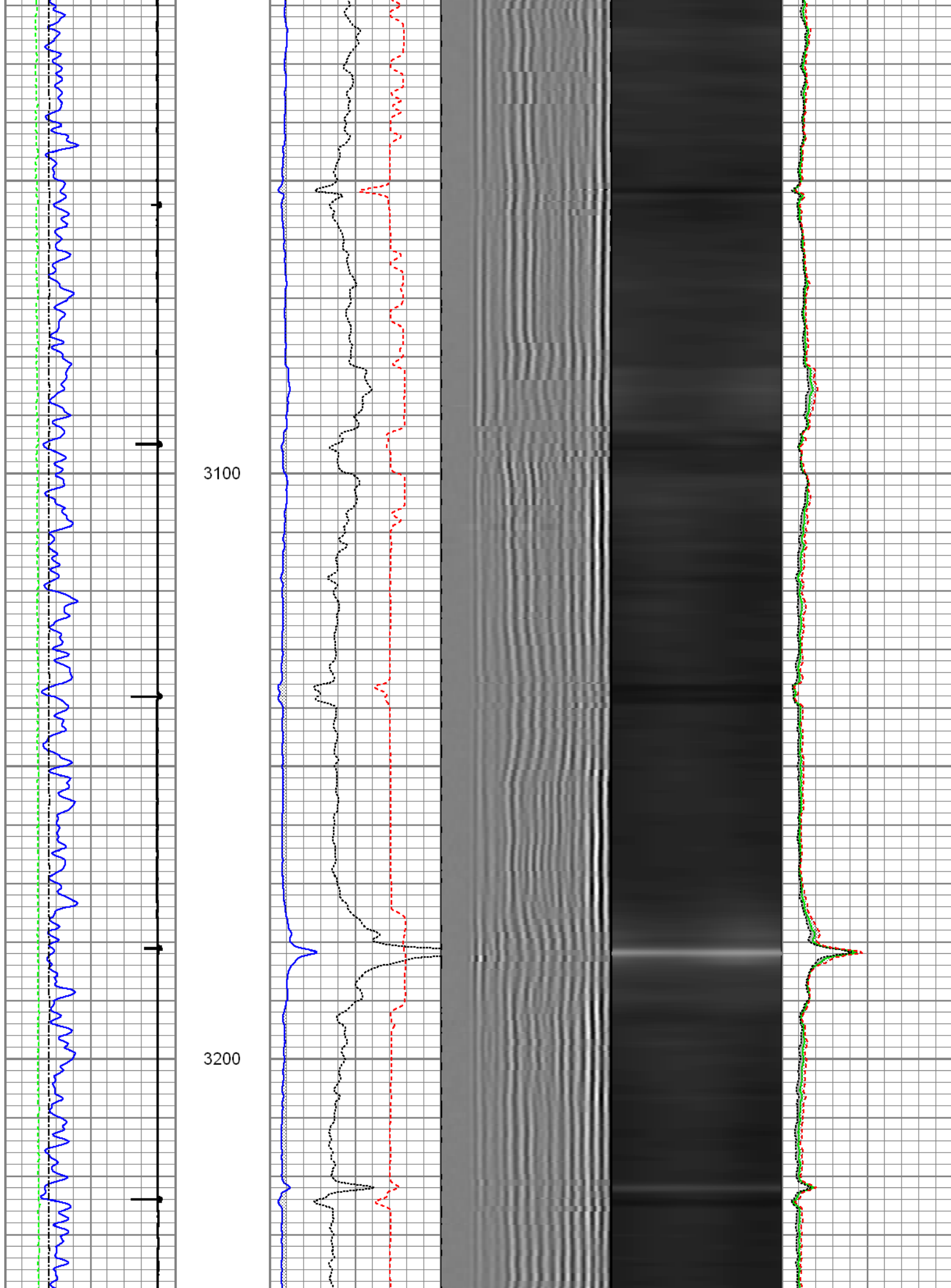
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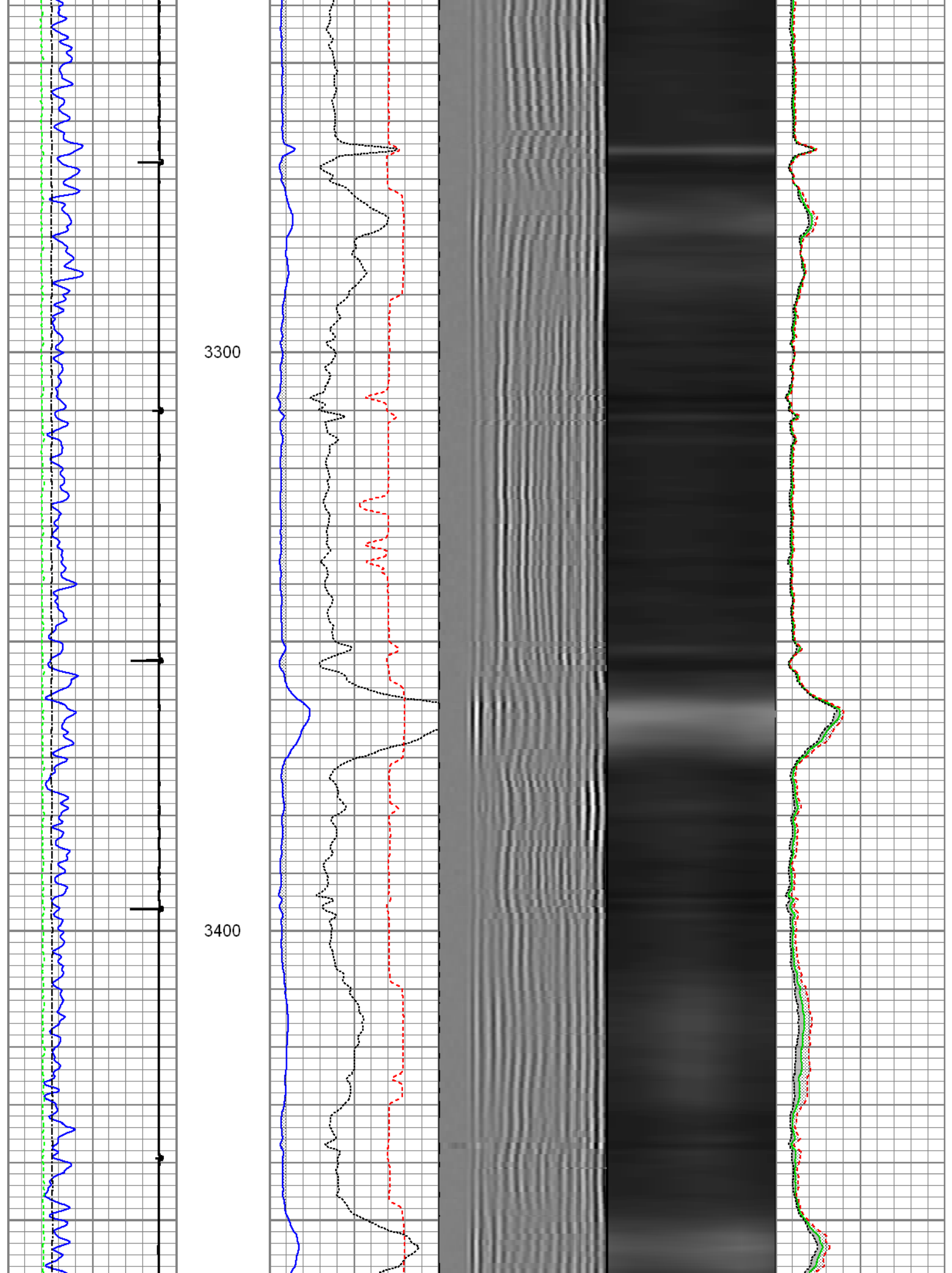
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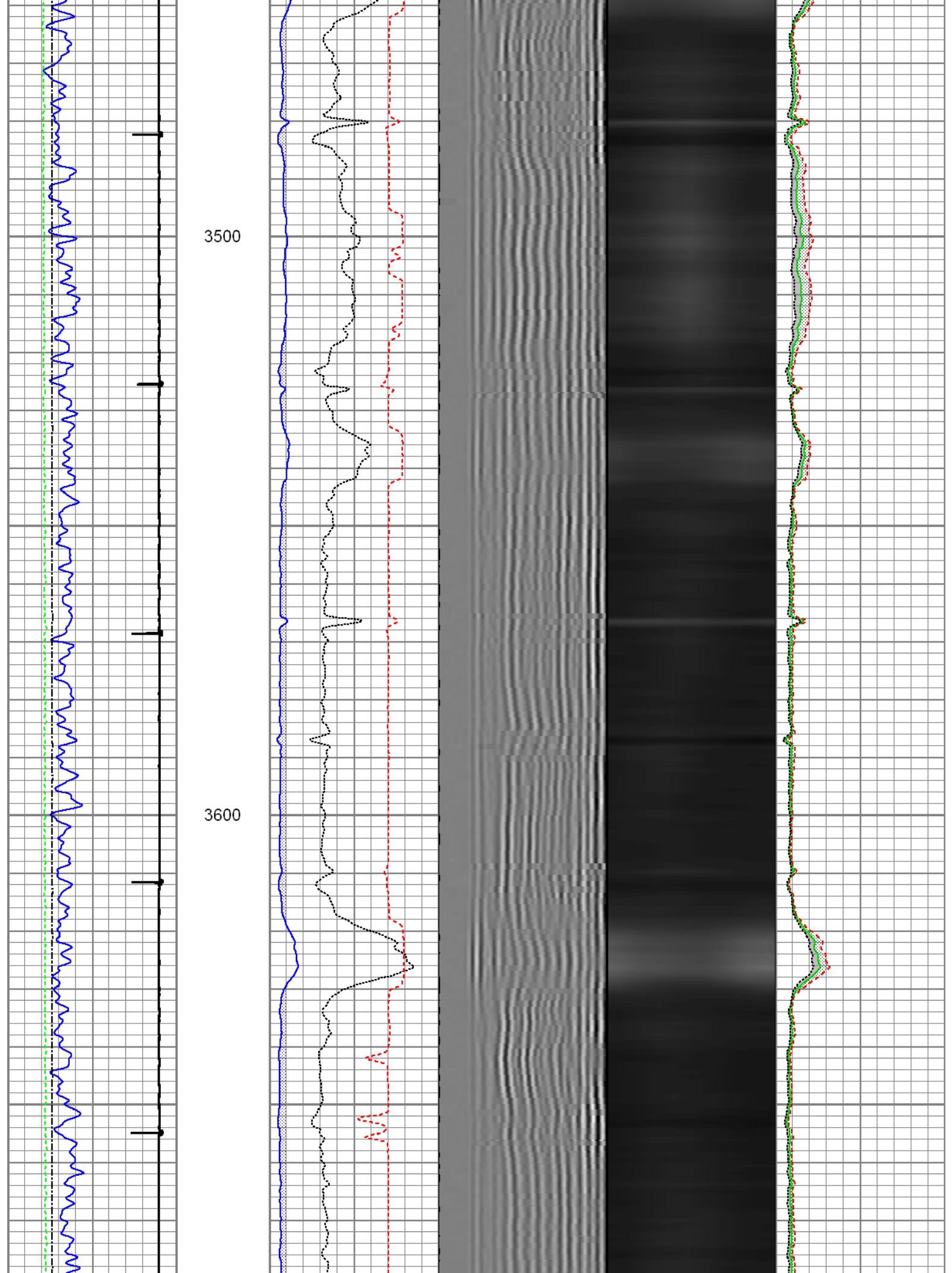


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3200



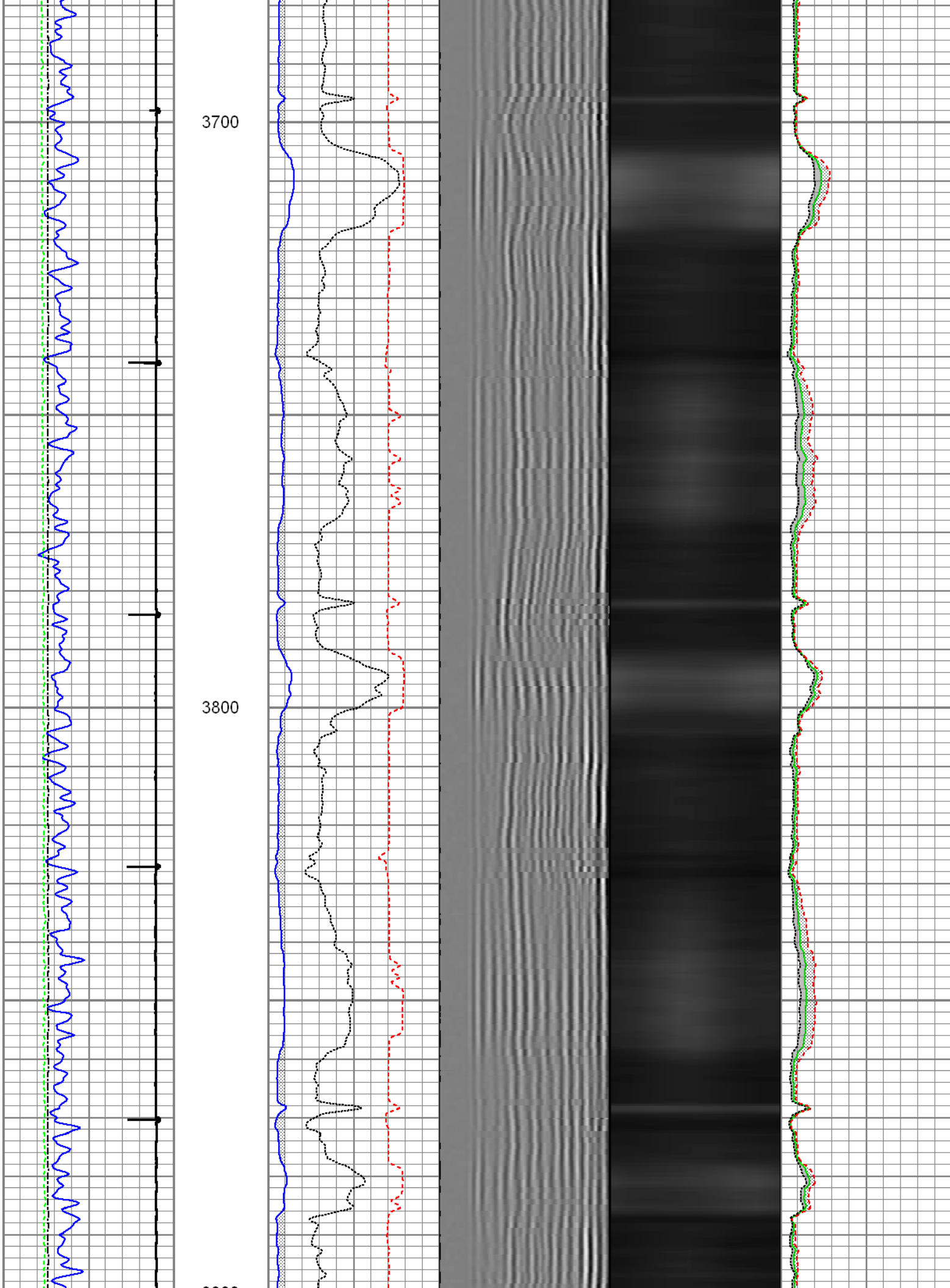




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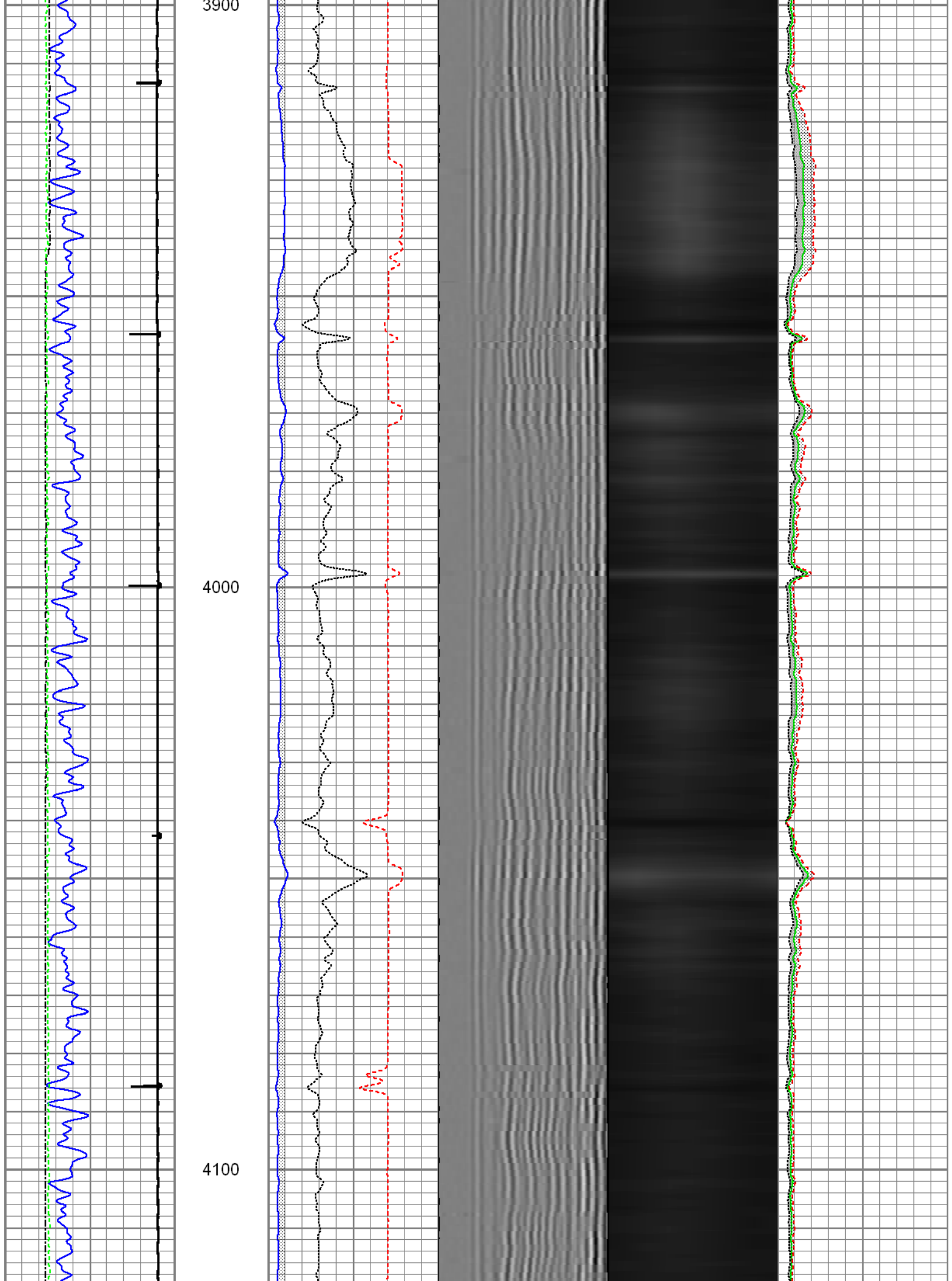
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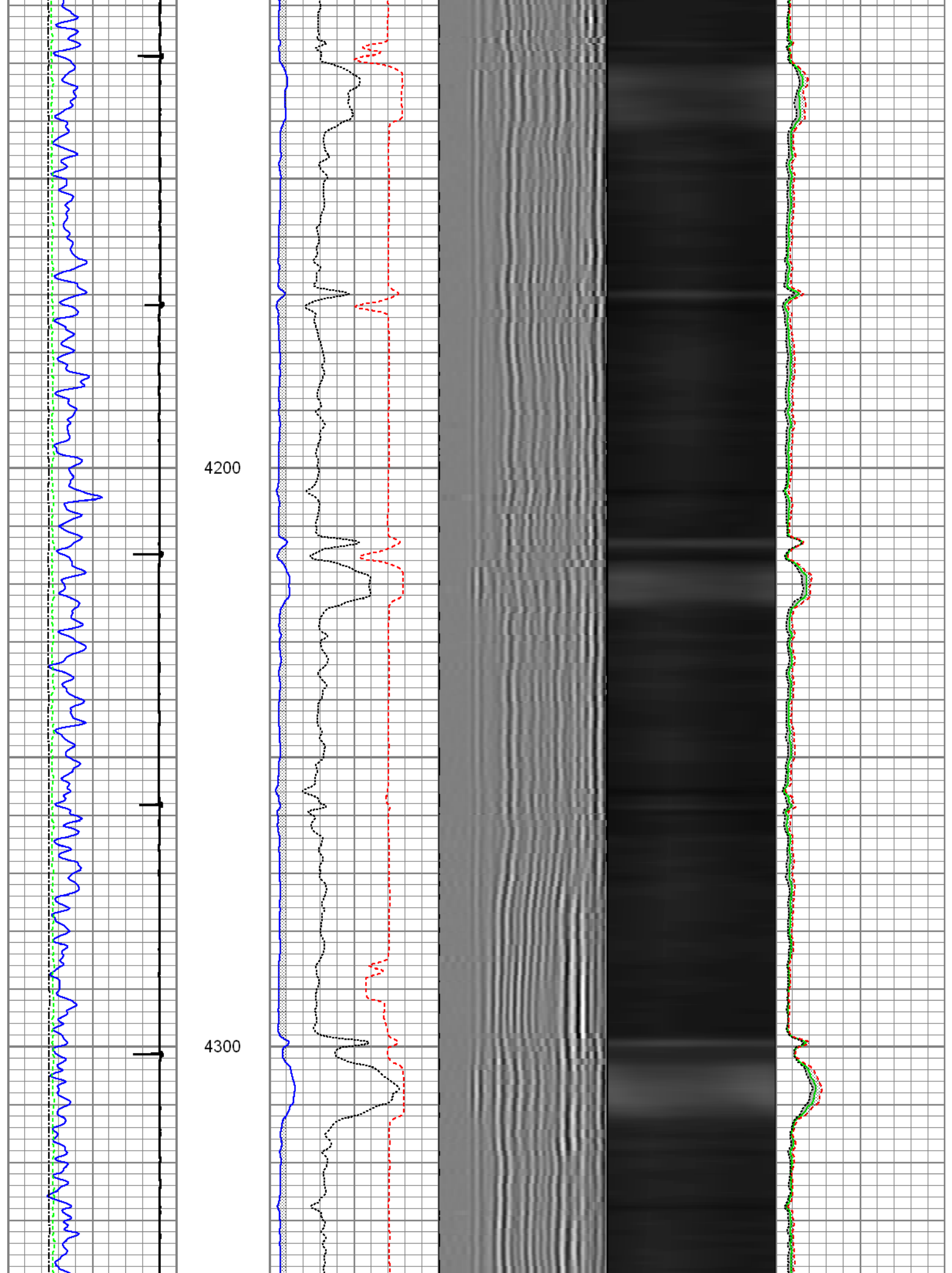


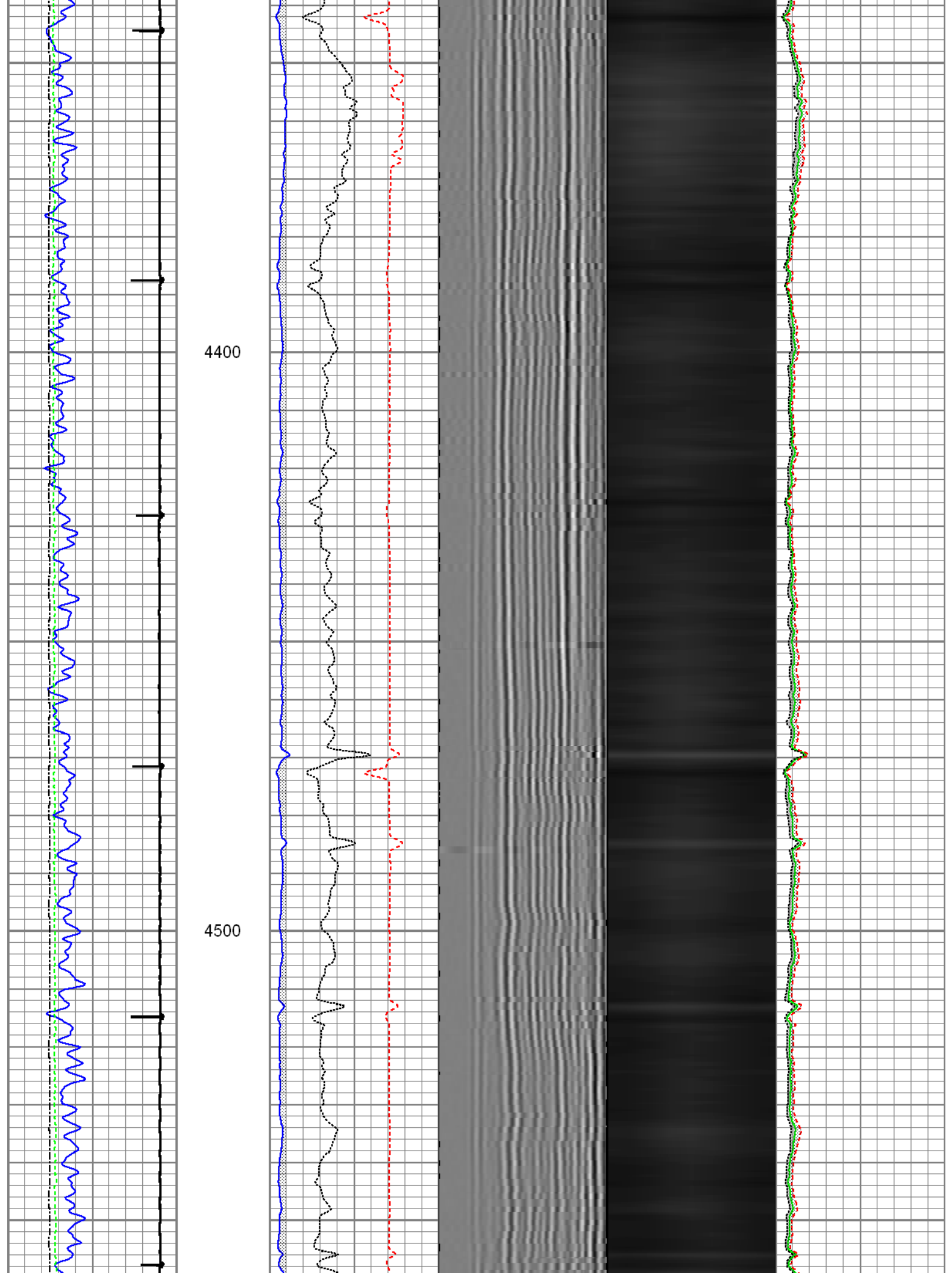
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4000

4100

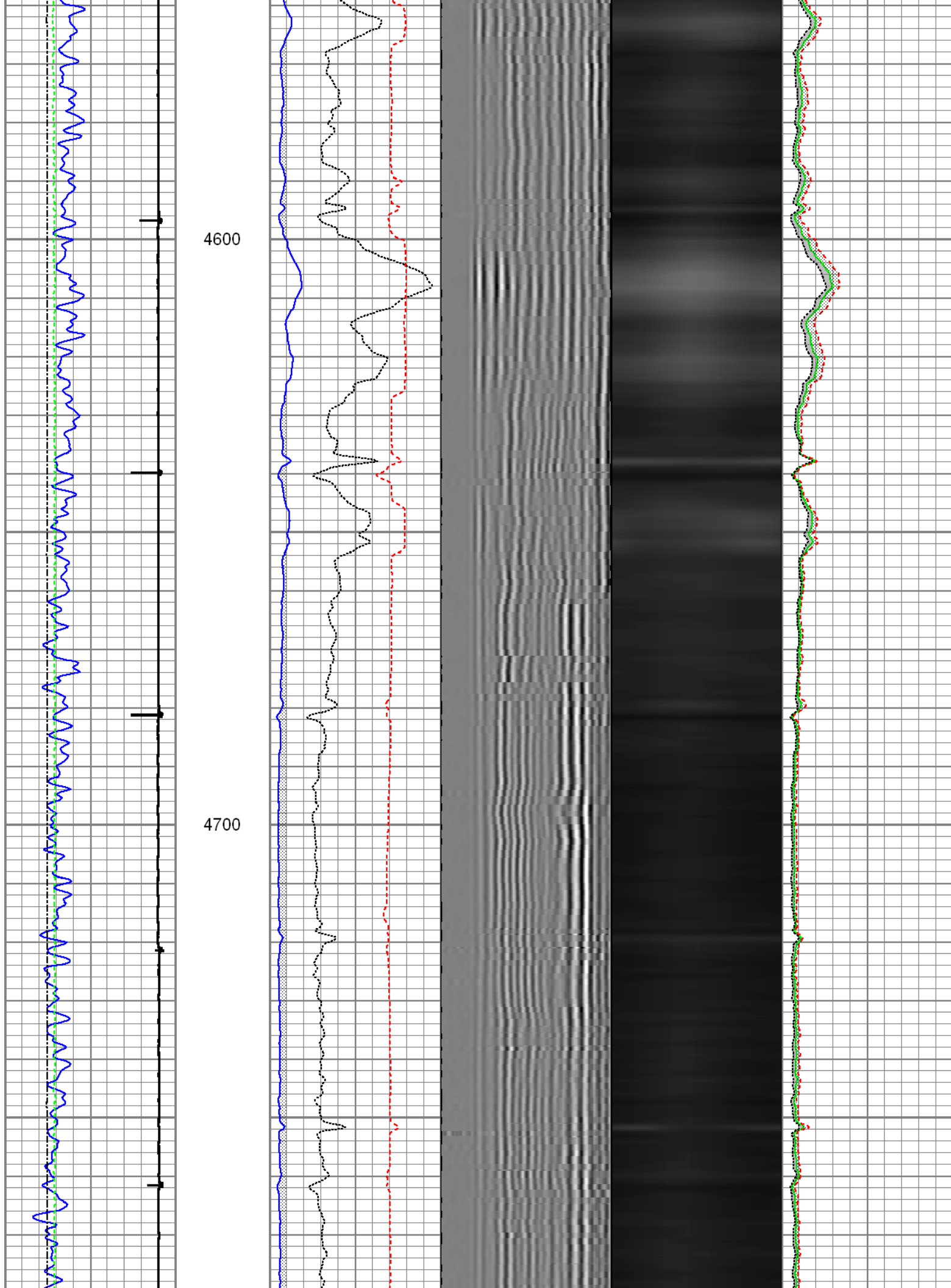


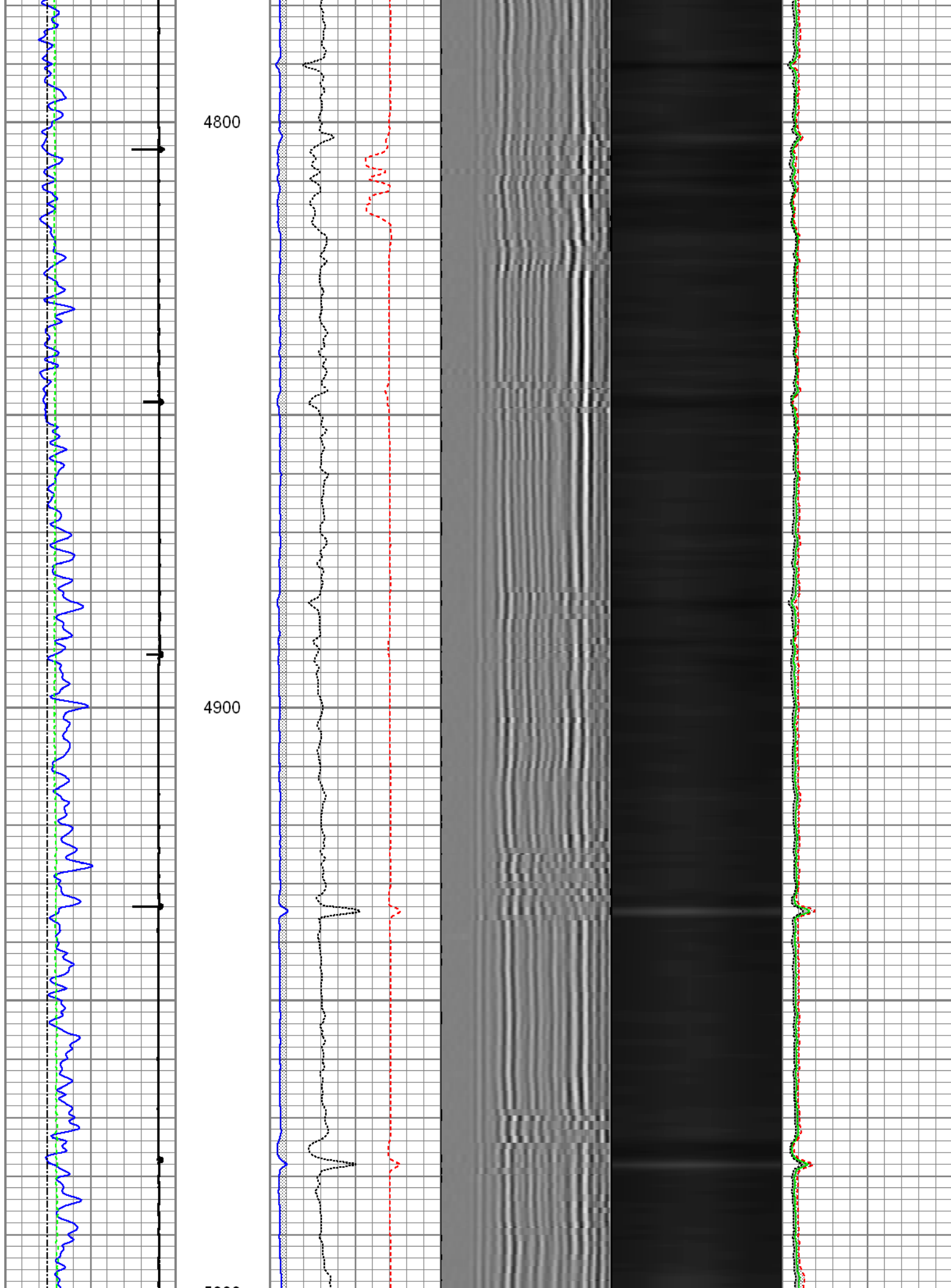




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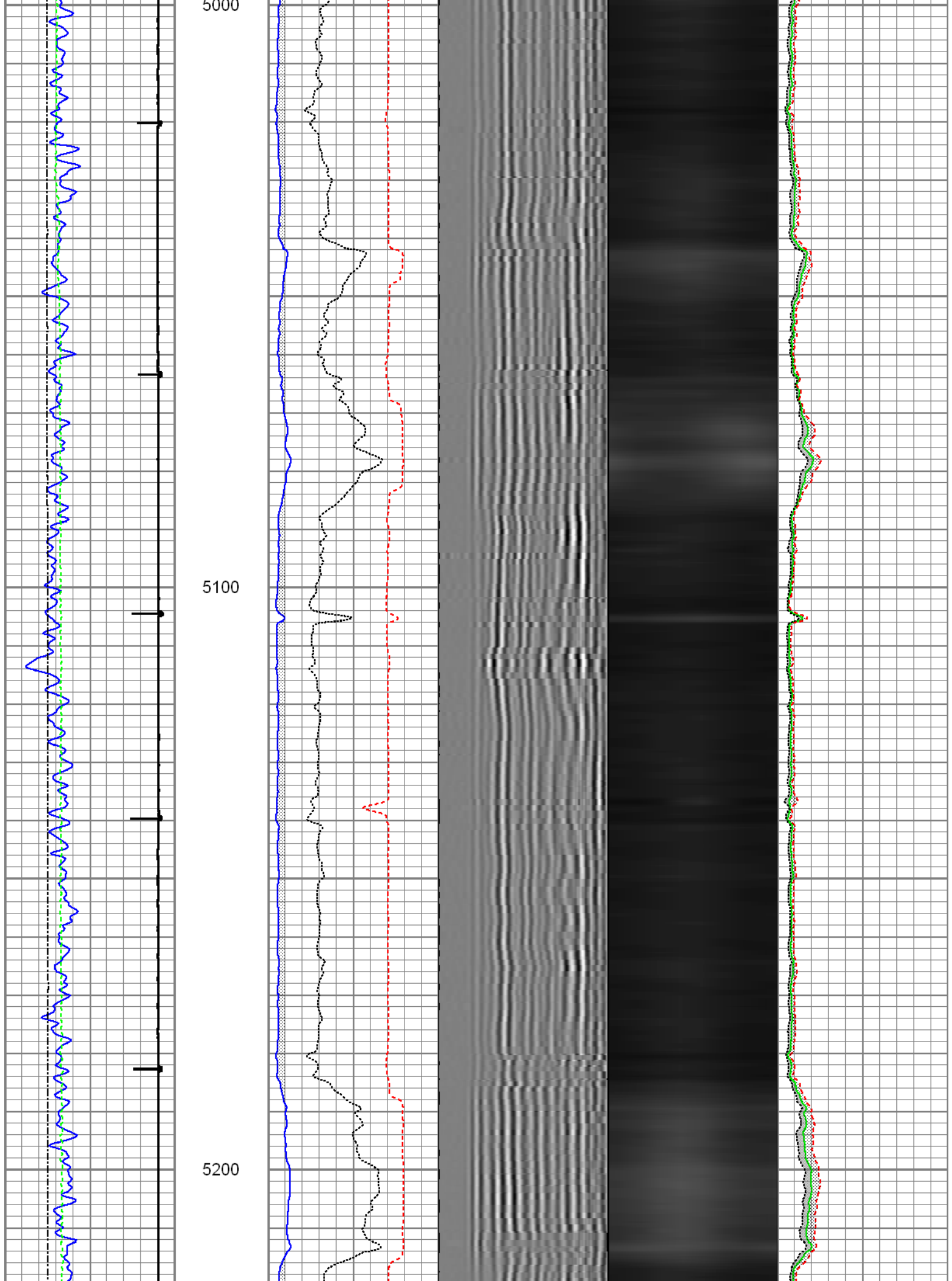


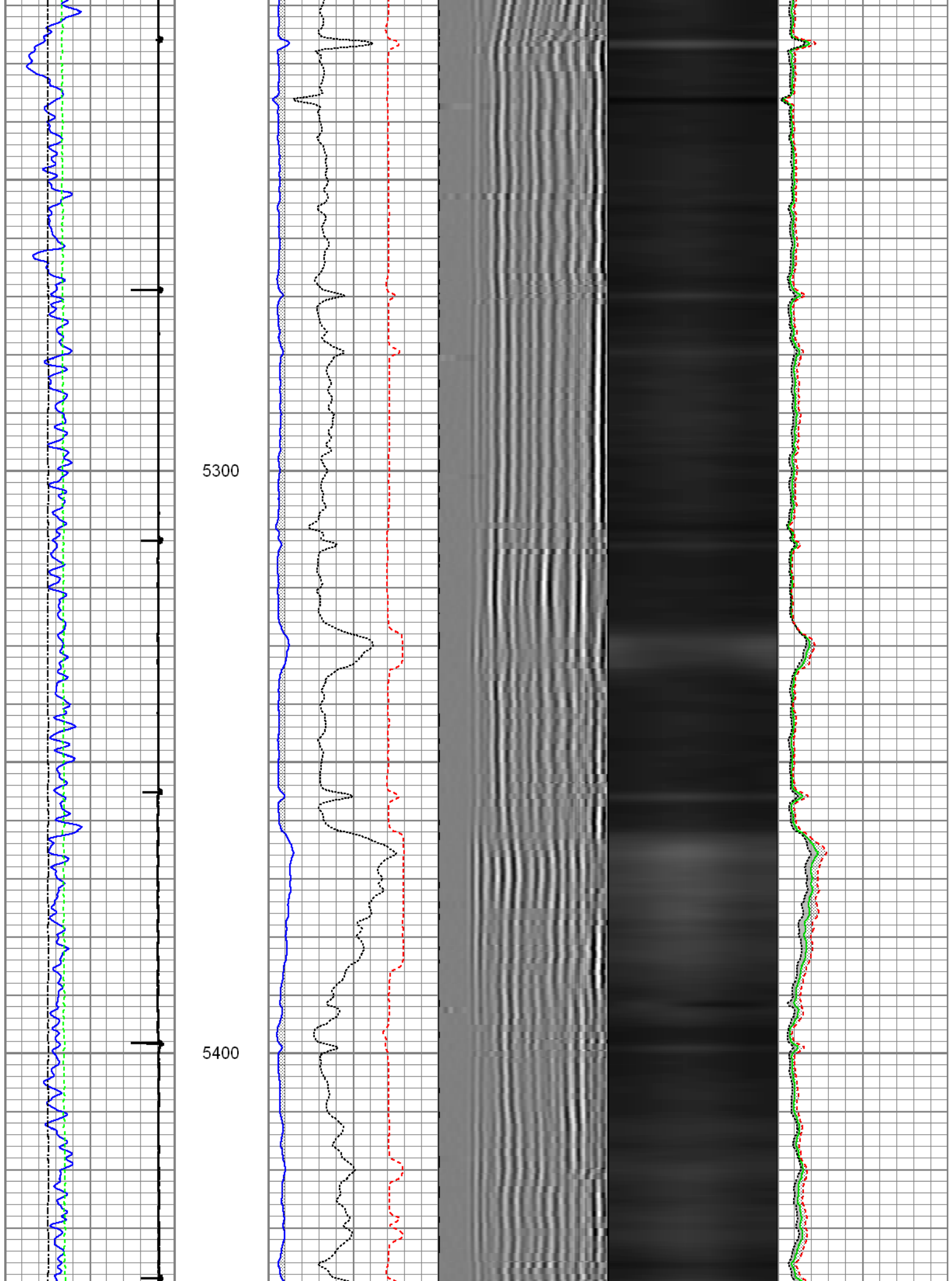


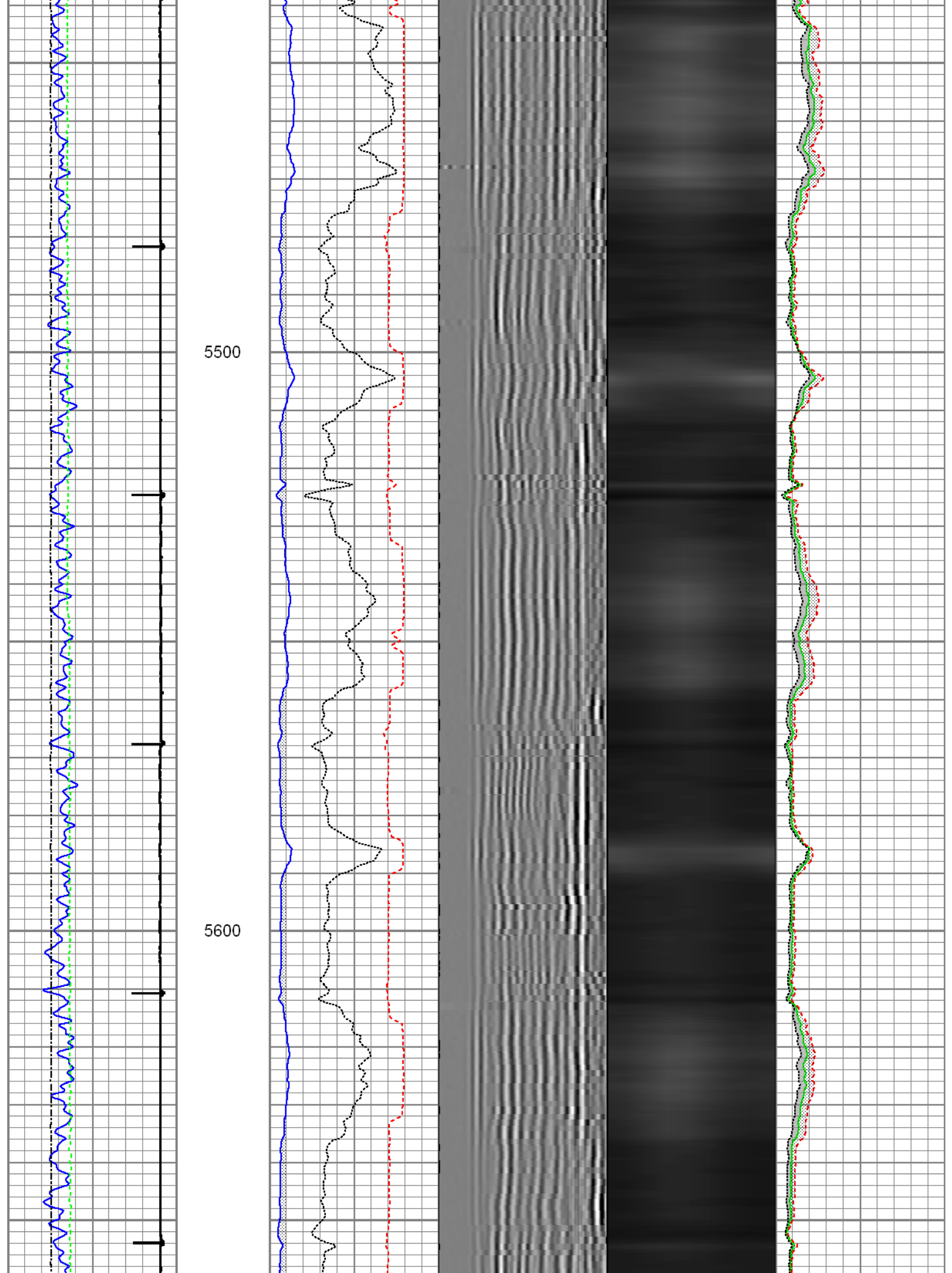
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5100

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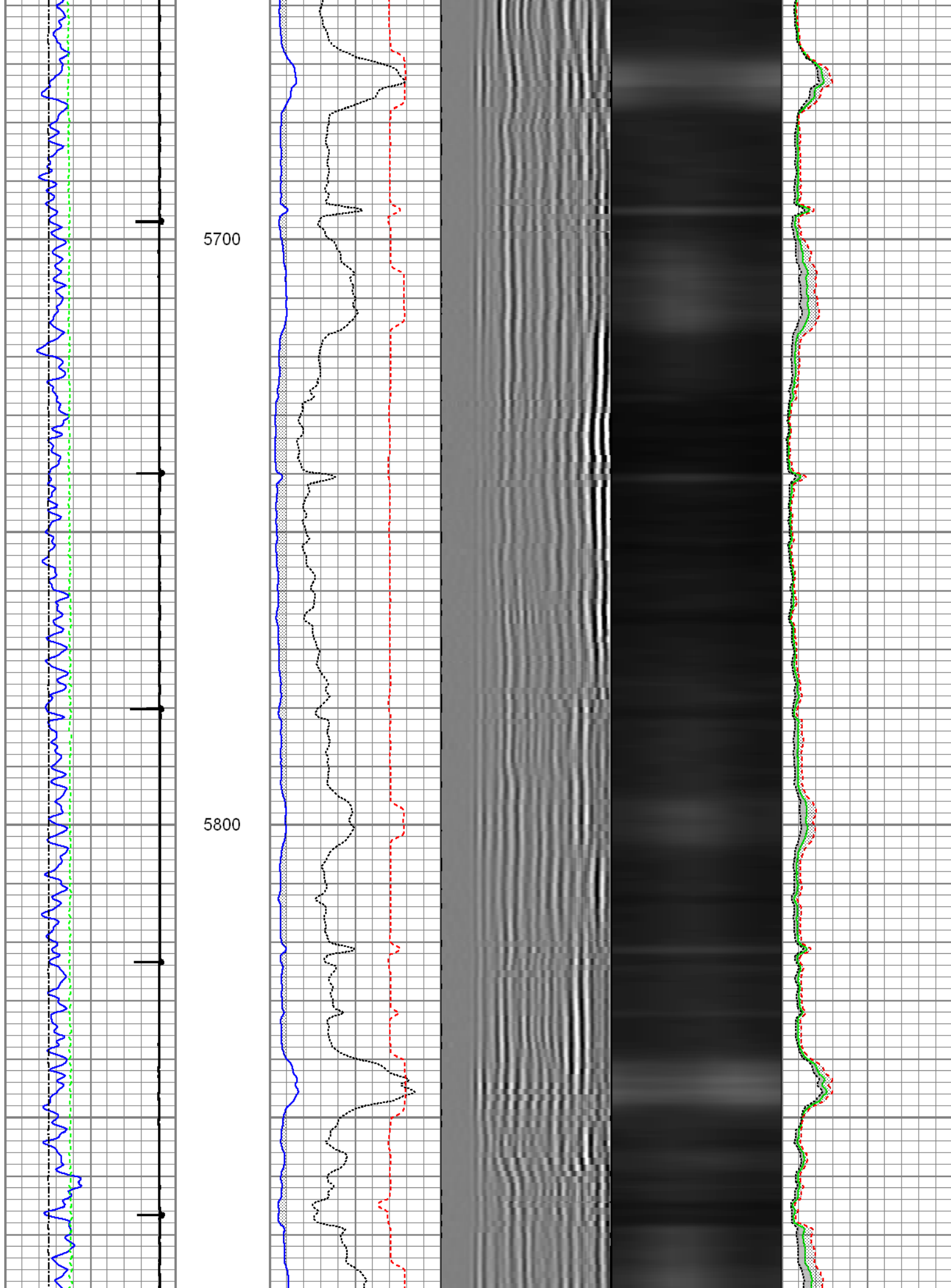






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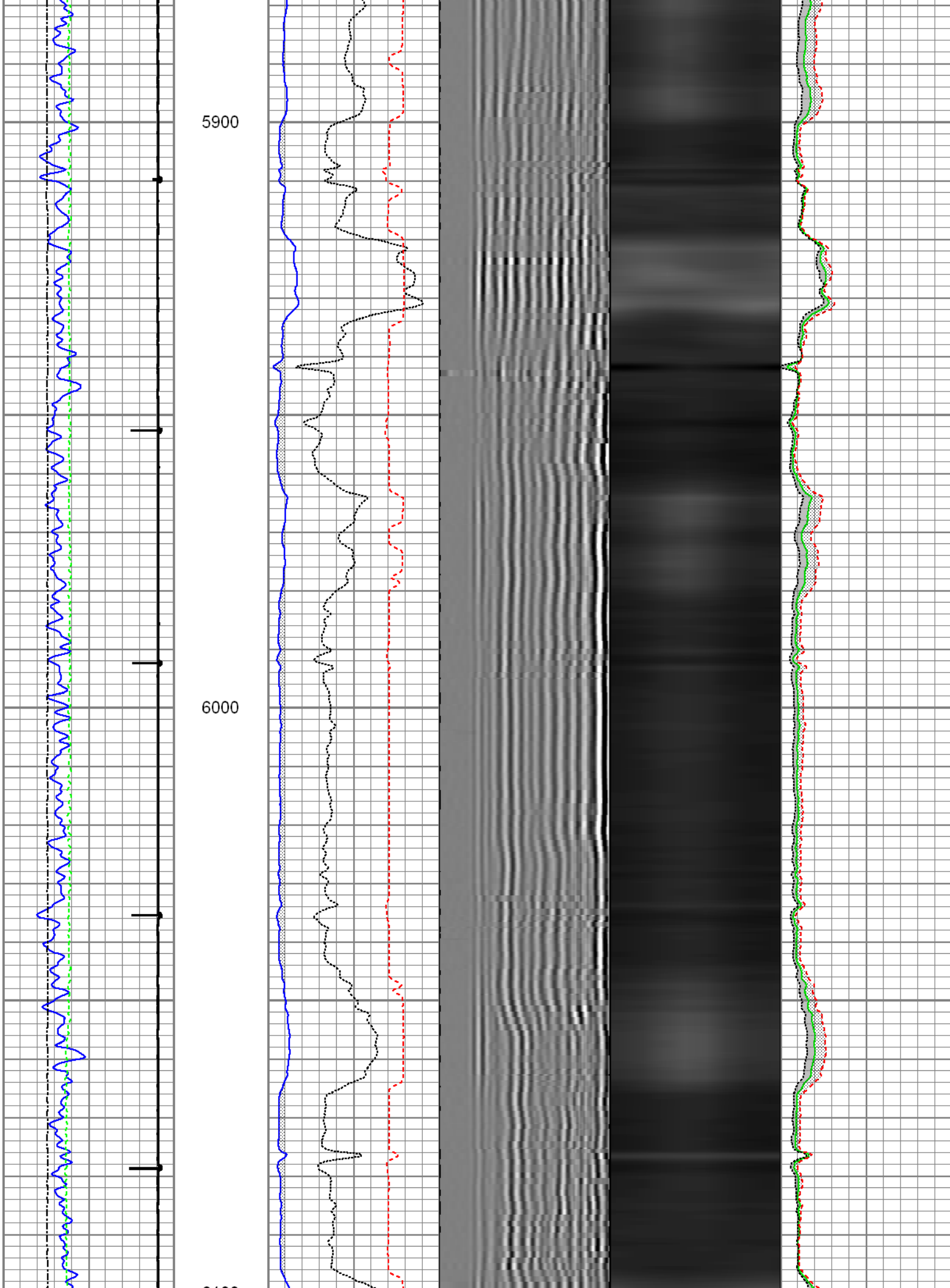
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5900

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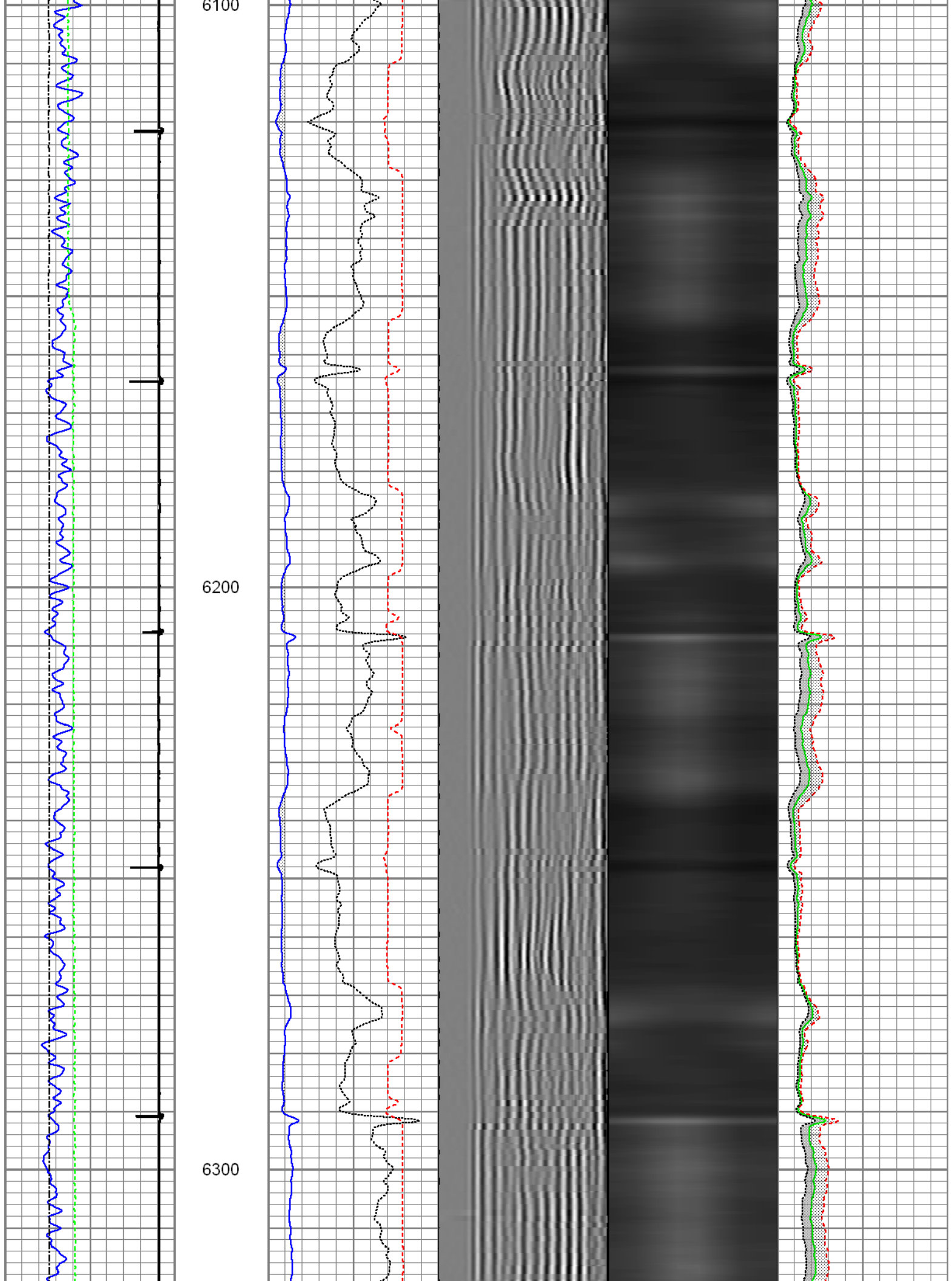
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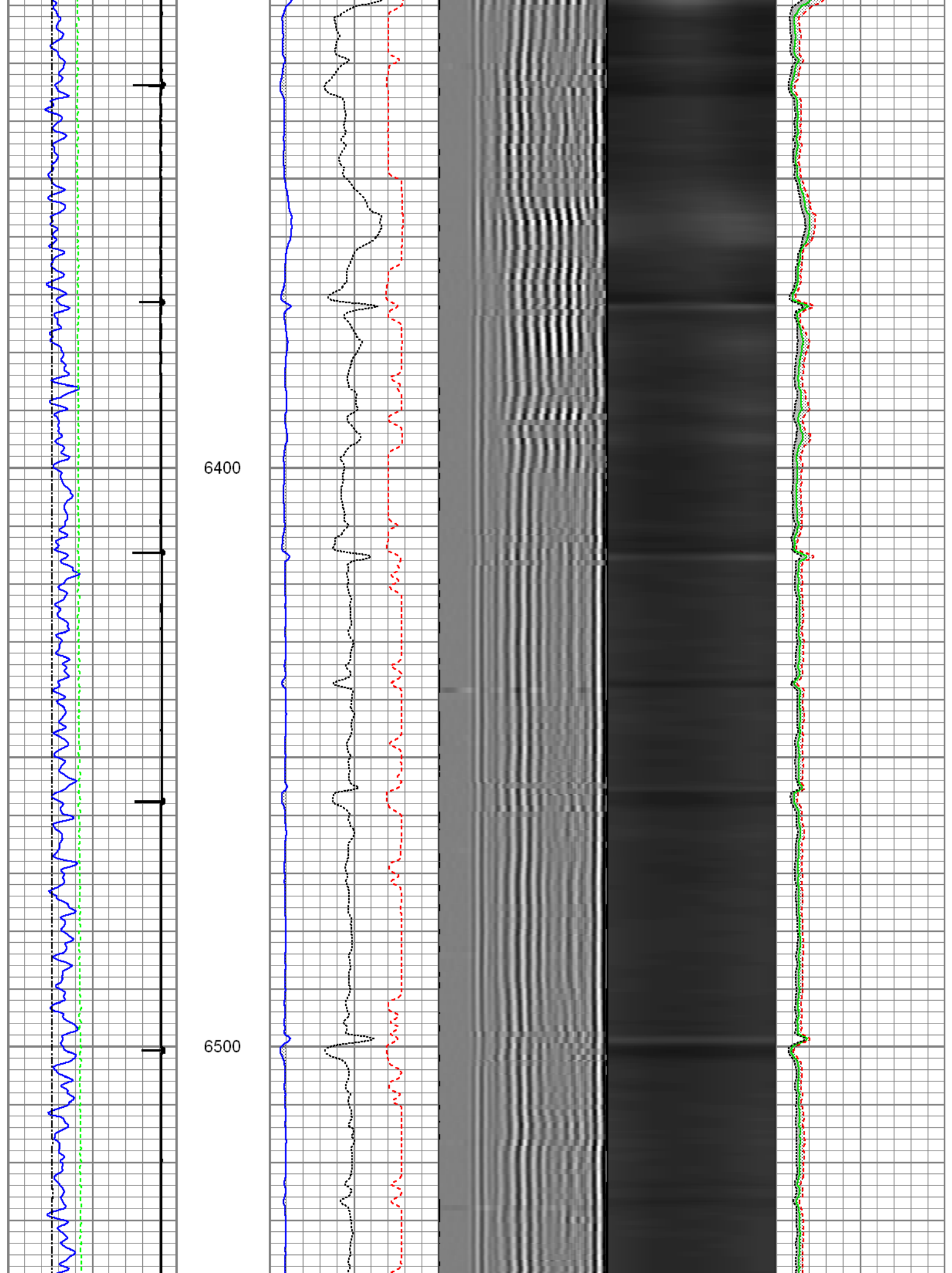


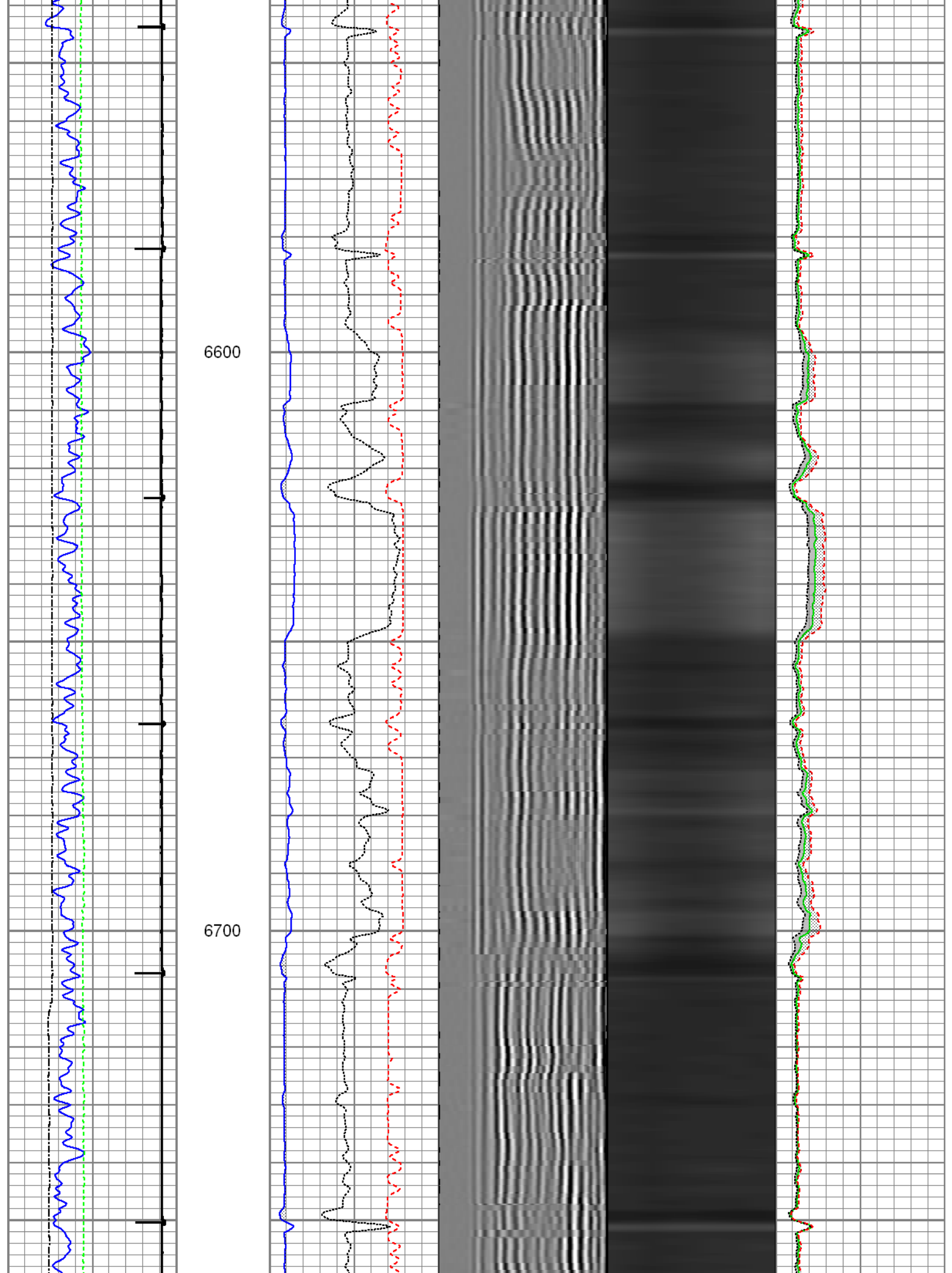
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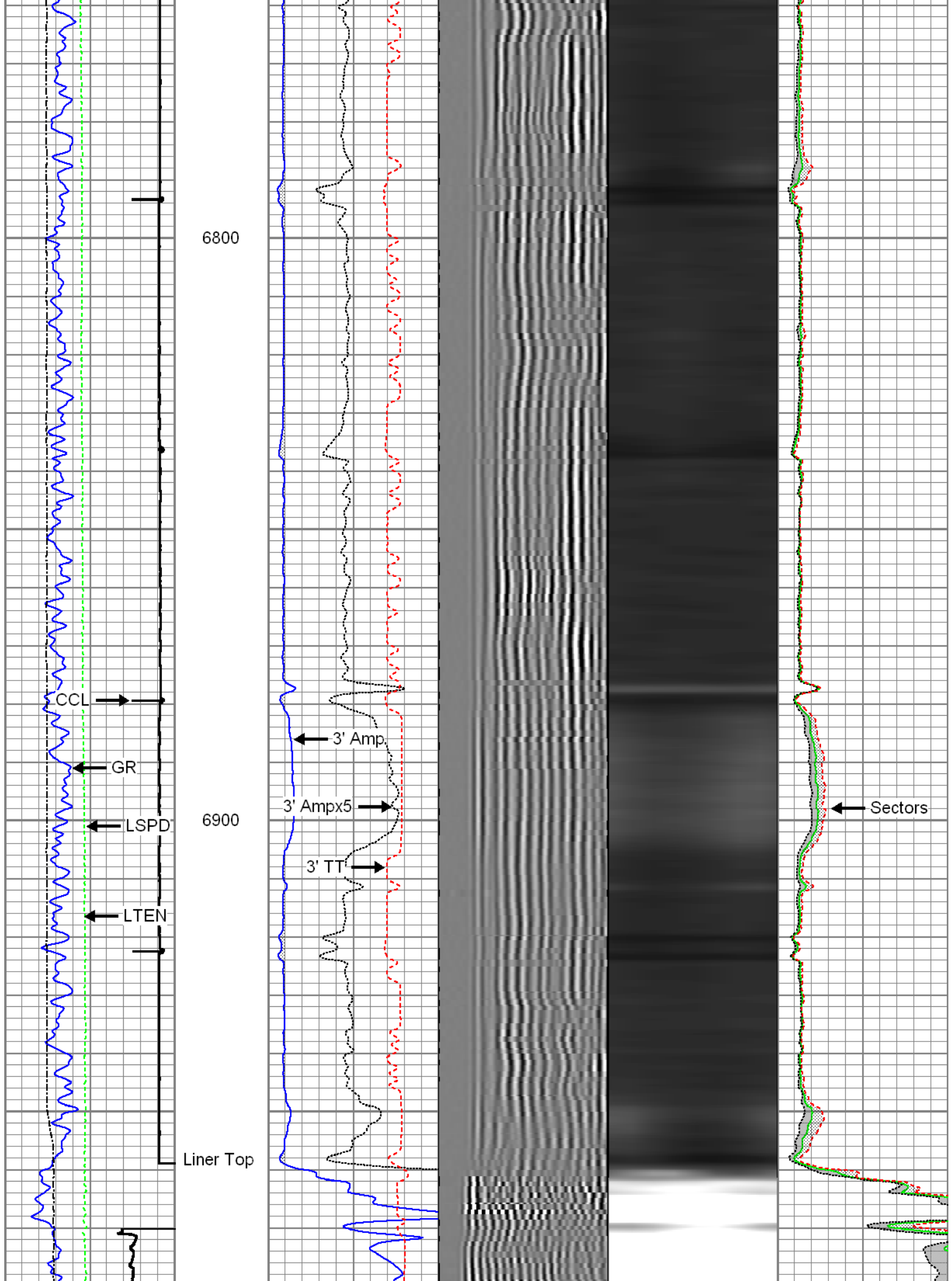
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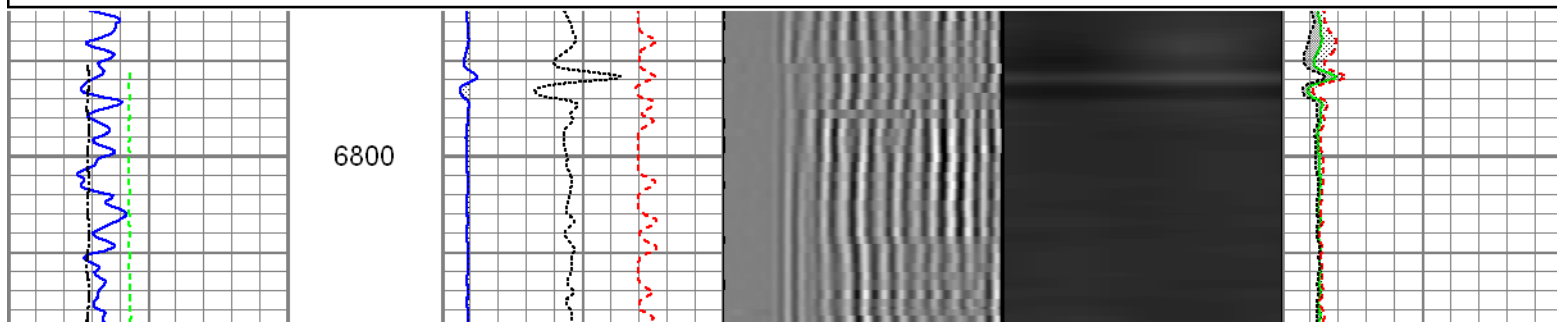
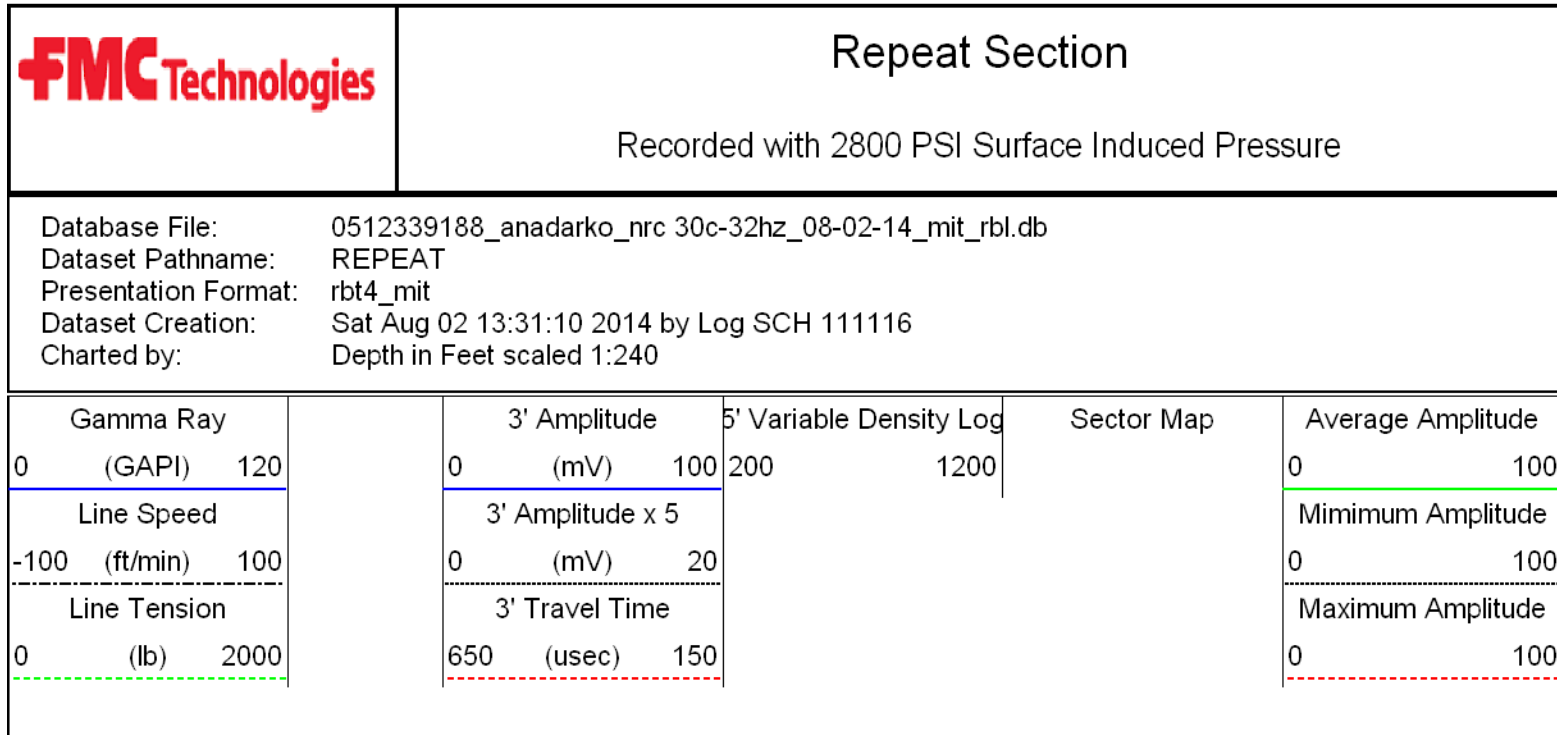
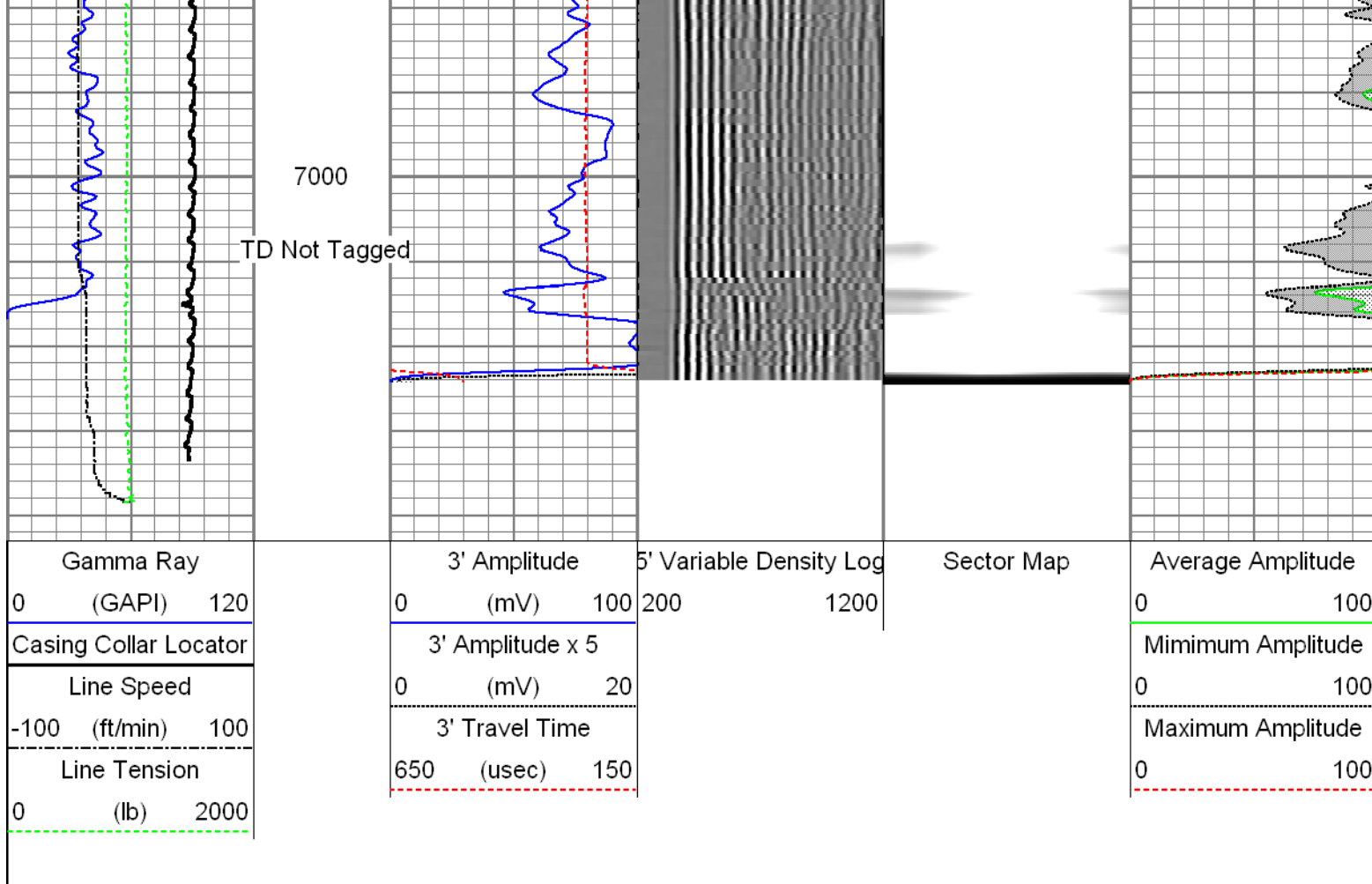
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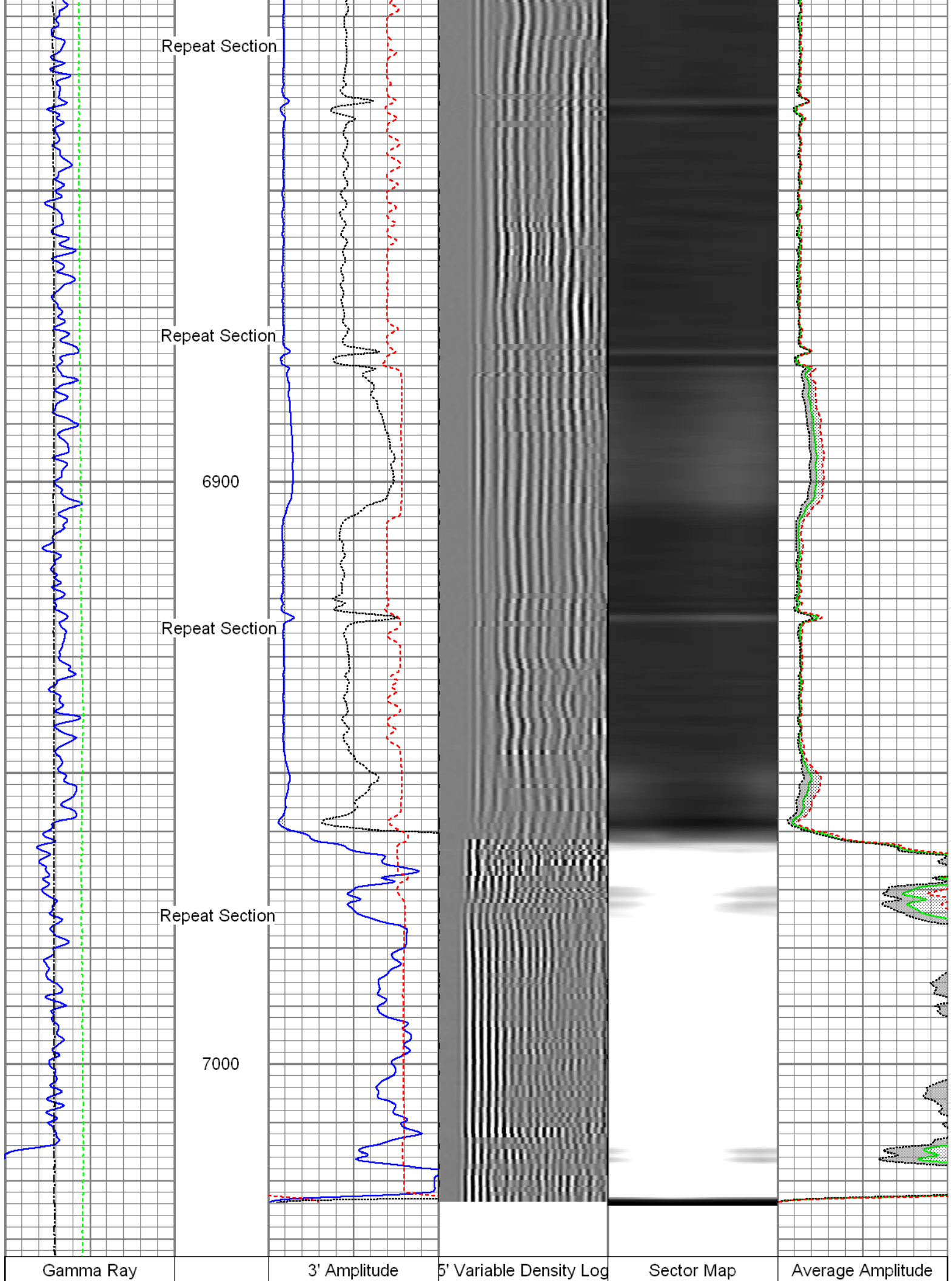




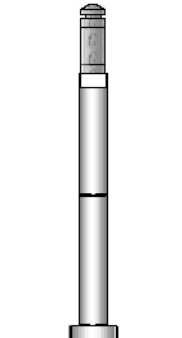
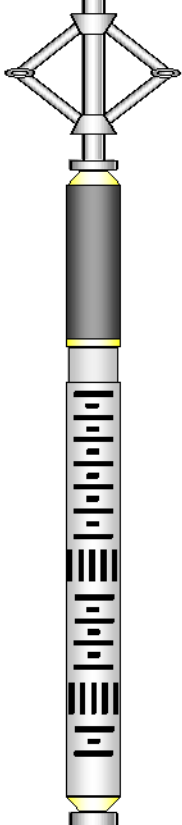
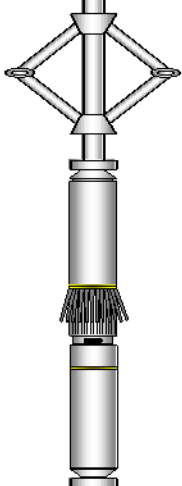


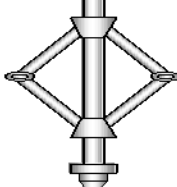






0 (GAPI) 120	0 (mV) 100	200	1200	0 100
Line Speed	3' Amplitude x 5			Mimimum Amplitude
-100 (ft/min) 100	0 (mV) 20			0 100
Line Tension	3' Travel Time			Maximum Amplitude
0 (lb) 2000	650 (usec) 150			0 100

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
GR	23.67		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 (215017) Sondex Adapter - GO Box to Sondex Pin	0.21	1.69	1.00
			UW_XTU-UW_XTU_002 (10010519) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50
			UW_PGR-UW_PGR_020 (10013899) Production Gamma Ray	1.93	1.69	9.50
			UW_PRC #4 -UW_PRC_057 (1038) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
WVFS1	15.85		UW_RBT-UW_RBT_004 (1063) Sondex Ultrawire 3-1/8" Radial Bond Tool	9.47	3.13	140.00
WVFS2	15.85					
WVFS3	15.85					
WVFS4	15.85					
WVFS5	15.85					
WVFS6	15.85					
WVFS7	15.85					
WVFS8	15.85					
CBLTEMP	15.85					
CBLROT	15.85					
WVFS5FT	14.85					
MIT	5.41		UW_PRC-UW_PRC_057 (1101) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
			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 (1037) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
			UW_BUL-UW_BUL_006 (218707) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20
Dataset: 0512339188_Anadarko_NRC 30C-32HZ_08-02-14_MIT_RBL.db: field/well/run1/cal1 Total Length: 27.92 ft Total Weight: 319.30 lb O.D. 3.13 in						

Database File: 0512339188_Anadarko_NRC 30C-32HZ_08-02-14_MIT_RBL.db		Calibration Report
Dataset Pathname: cal1		
Dataset Creation: Sat Aug 02 16:57:31 2014 by Log SCH 111116		

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:				Sat Aug 02 12:37:48 2014			
Ring size:	4	5	6	7			
(in)							
	Sens	Sens	Sens				
Finger 01:	1059	361.0	1420	387.0	1807	416.0	2223
Finger 02:	1189	369.0	1558	388.0	1946	411.0	2357
Finger 03:	1085	372.0	1457	406.0	1863	435.0	2298
Finger 04:	1103	365.0	1468	390.0	1858	427.0	2285
Finger 05:	1115	379.0	1494	391.0	1885	431.0	2316
Finger 06:	1107	374.0	1481	397.0	1878	426.0	2304
Finger 07:	1106	376.0	1482	397.0	1879	424.0	2303
Finger 08:	1120	379.0	1499	393.0	1892	420.0	2312
Finger 09:	1115	375.0	1490	392.0	1882	420.0	2302
Finger 10:	1116	371.0	1487	388.0	1875	414.0	2289
Finger 11:	1124	371.0	1495	390.0	1885	414.0	2299
Finger 12:	1122	367.0	1489	391.0	1880	411.0	2291
Finger 13:	1124	368.0	1492	384.0	1876	404.0	2280
Finger 14:	1097	372.0	1469	393.0	1862	415.0	2277
Finger 15:	1066	377.0	1443	403.0	1846	423.0	2269
Finger 16:	1073	373.0	1446	403.0	1849	426.0	2275
Finger 17:	1039	370.0	1409	399.0	1808	430.0	2238
Finger 18:	1124	363.0	1487	384.0	1871	401.0	2272
Finger 19:	1076	355.0	1431	393.0	1824	412.0	2236
Finger 20:	1042	366.0	1408	399.0	1807	430.0	2237
Finger 21:	1063	367.0	1430	402.0	1832	408.0	2240
Finger 22:	1021	362.0	1383	398.0	1781	428.0	2209
Finger 23:	993	361.0	1354	408.0	1762	435.0	2197

Finger 24:	1043	350.0	1393	393.0	1786	402.0	2188
Finger 25:	999	355.0	1354	413.0	1767	426.0	2193
Finger 26:	1124	346.0	1470	388.0	1858	391.0	2249
Finger 27:	1069	351.0	1420	407.0	1827	411.0	2238
Finger 28:	1097	344.0	1441	390.0	1831	402.0	2233
Finger 29:	1048	354.0	1402	415.0	1817	421.0	2238
Finger 30:	1063	349.0	1412	401.0	1813	415.0	2228
Finger 31:	1088	348.0	1436	397.0	1833	409.0	2242
Finger 32:	1073	361.0	1434	416.0	1850	418.0	2268
Finger 33:	1132	350.0	1482	387.0	1869	388.0	2257
Finger 34:	1110	351.0	1461	396.0	1857	408.0	2265
Finger 35:	1047	359.0	1406	422.0	1828	440.0	2268
Finger 36:	1072	361.0	1433	407.0	1840	423.0	2263
Finger 37:	1110	359.0	1469	395.0	1864	421.0	2285
Finger 38:	1136	358.0	1494	391.0	1885	400.0	2285
Finger 39:	1134	351.0	1485	387.0	1872	412.0	2284
Finger 40:	1100	362.0	1462	404.0	1866	423.0	2289

Post Survey Calibration Check								
Performed: Sat Aug 02 16:56:05 2014								
Ring size: (in)	4	Nom. wear	5	Nom. wear	6	Nom. wear	7	Nom. wear
Finger 01:	4.004	0.002	5.005	0.002	6.008	0.004	6.996	-0.002
Finger 02:	4.007	0.004	5.008	0.004	6.008	0.004	7.007	0.004
Finger 03:	3.990	-0.005	5.007	0.003	6.004	0.002	7.011	0.006
Finger 04:	3.998	-0.001	4.998	-0.001	6.009	0.005	7.008	0.004
Finger 05:	3.997	-0.002	4.989	-0.005	6.026	0.013	7.014	0.007
Finger 06:	4.015	0.007	5.013	0.006	6.015	0.007	7.011	0.006
Finger 07:	3.987	-0.007	4.997	-0.002	6.004	0.002	7.007	0.004
Finger 08:	4.012	0.006	4.996	-0.002	5.970	-0.015	6.979	-0.011
Finger 09:	4.006	0.003	5.010	0.005	6.008	0.004	7.011	0.006
Finger 10:	3.994	-0.003	4.998	-0.001	6.001	0.001	7.009	0.005
Finger 11:	4.002	0.001	5.014	0.007	6.010	0.005	6.999	-0.001
Finger 12:	3.987	-0.006	4.995	-0.003	5.989	-0.006	6.996	-0.002
Finger 13:	4.000	-0.000	5.011	0.006	6.009	0.005	7.008	0.004
Finger 14:	4.000	0.000	5.010	0.005	6.006	0.003	7.006	0.003
Finger 15:	3.971	-0.015	4.995	-0.002	5.994	-0.003	7.018	0.009
Finger 16:	3.995	-0.003	5.007	0.004	6.005	0.003	6.998	-0.001
Finger 17:	3.992	-0.004	4.996	-0.002	6.001	0.001	6.999	-0.001
Finger 18:	3.991	-0.004	4.992	-0.004	6.000	0.000	7.016	0.008
Finger 19:	3.996	-0.002	5.013	0.007	6.006	0.003	7.006	0.003
Finger 20:	4.006	0.003	4.997	-0.001	6.006	0.003	6.994	-0.003
Finger 21:	3.986	-0.007	5.006	0.003	6.001	0.000	7.006	0.003
Finger 22:	3.999	-0.001	5.003	0.001	6.016	0.008	7.006	0.003
Finger 23:	4.000	0.000	4.999	-0.001	6.010	0.005	7.005	0.003
Finger 24:	4.006	0.003	5.013	0.006	6.016	0.008	7.007	0.003
Finger 25:	4.006	0.003	5.009	0.004	6.007	0.004	7.009	0.004
Finger 26:	4.007	0.004	5.009	0.005	6.003	0.002	7.003	0.002
Finger 27:	3.997	-0.002	5.004	0.002	6.003	0.002	7.003	0.001
Finger 28:	3.997	-0.002	5.002	0.001	6.003	0.001	7.001	0.001
Finger 29:	3.999	-0.001	5.001	0.001	6.001	0.001	7.005	0.003
Finger 30:	3.998	-0.001	5.002	0.001	6.006	0.003	7.005	0.003
Finger 31:	3.995	-0.003	5.000	-0.000	6.003	0.001	6.997	-0.001
Finger 32:	3.991	-0.004	4.994	-0.003	5.989	-0.005	7.008	0.004
Finger 33:	3.994	-0.003	5.004	0.002	5.995	-0.002	7.000	0.000
Finger 34:	3.994	-0.003	4.995	-0.003	5.998	-0.001	7.008	0.004
Finger 35:	3.997	-0.002	5.010	0.005	6.010	0.005	7.011	0.006
Finger 36:	3.993	-0.004	4.998	-0.001	6.000	0.000	7.008	0.004
Finger 37:	3.995	-0.002	5.005	0.003	6.007	0.003	6.996	-0.002
Finger 38:	3.990	-0.005	5.003	0.001	6.001	0.000	7.013	0.006
Finger 39:	3.993	-0.003	5.011	0.006	6.012	0.006	7.000	0.000
Finger 40:	3.989	-0.006	5.009	0.004	6.001	0.000	6.998	-0.001
Average:	3.997	-0.002	5.003	0.002	6.004	0.002	7.005	0.002

Segmented Cement Bond Log Calibration Report

Serial Number: 1063
Tool Model: UW_RBT_004

Calibration Casing Diameter: 5.500 in
Calibration Depth: -12.655 ft

Master Calibration, performed Sat Aug 02 12:41:05 2014:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	0.004	1.000	0.800	71.921	71.384	0.537
5FT	-0.001	1.000	0.800	71.921	71.034	0.887
S1	0.005	1.000	0.000	100.000	100.491	-0.491
S2	0.004	1.000	0.000	100.000	100.358	-0.358
S3	0.004	1.000	0.000	100.000	100.371	-0.371
S4	0.004	1.000	0.000	100.000	100.364	-0.364
S5	0.004	1.000	0.000	100.000	100.408	-0.408
S6	0.004	1.000	0.000	100.000	100.364	-0.364
S7	0.004	1.000	0.000	100.000	100.375	-0.375
S8	0.004	1.000	0.000	100.000	100.402	-0.402

Gamma Ray Calibration Report

Serial Number: 10013899
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, L.P.
Well NRC 30C-32HZ
Field Wattenberg
County Weld
State Colorado