

# Radial Cement Bond Gamma Ray Casing Collar Log

Company Kerr-McGee Oil and Gas Onshore LP  
Well Sickler 26C-34HZ  
Field Wattenberg  
County Weld  
State Colorado

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Location: API #: 05-123-39379  
SHL: 417' FSL, 1425' FEL, SWSE  
Lat/Long: 40.088654/-104.872765  
SEC 34 TWP 2N RGE 67W  
Permanent Datum Ground Level Elevation 4950'  
Log Measured From Kelly Bushing 16 FT  
Drilling Measured From Kelly Bushing  
Other Services  
Guage Ring  
Set RBP  
MIT  
Elevation  
K.B. 4966'  
D.F. 4965'  
G.L. 4950'

Date	17-August-2014
Run Number	Three
Depth Driller	17839 FT
Depth Logger	7252 FT
Bottom Logged Interval	7247 FT
Top Log Interval	Surface
Open Hole Size	8.625"
Type Fluid	Water
Density / Viscosity	8.34 lbm/gal
Max. Recorded Temp.	220°F
Estimated Cement Top	80 FT
Time Well Ready	ROA
Time Logger on Bottom	12:15
Equipment Number	HD-0255
Location	Fort Lupton, CO
Recorded By	H. Raby
Witnessed By	Trevor Daniels

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	9-875"	36	J-55	Surface	1282 FT		
Intermediate #1	7"	26	P-110	Surface	8235 FT		
Intermediate #2							
Liner	4.5"	11.6	P-110	7218 FT	13332 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.

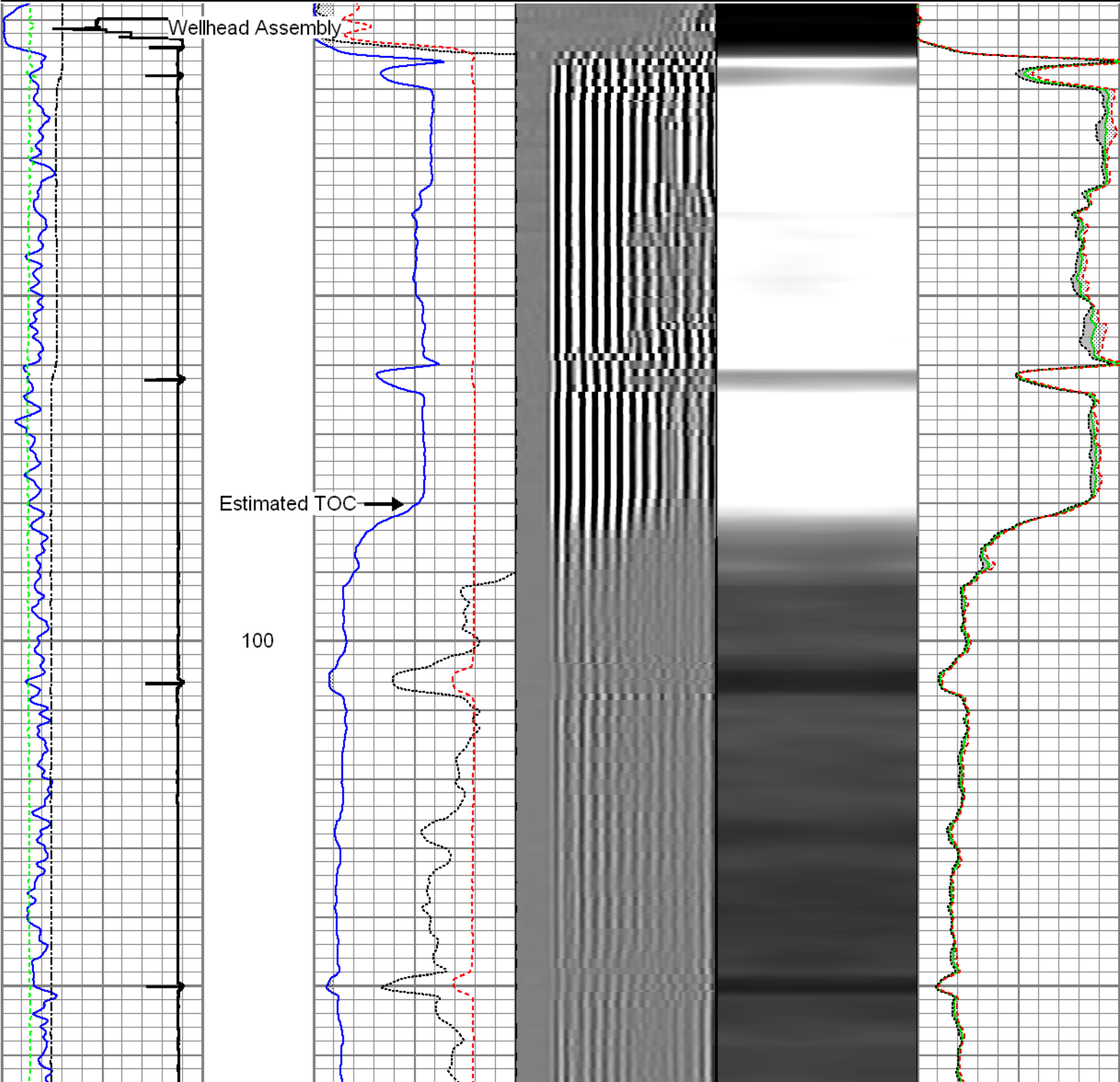
## Comments

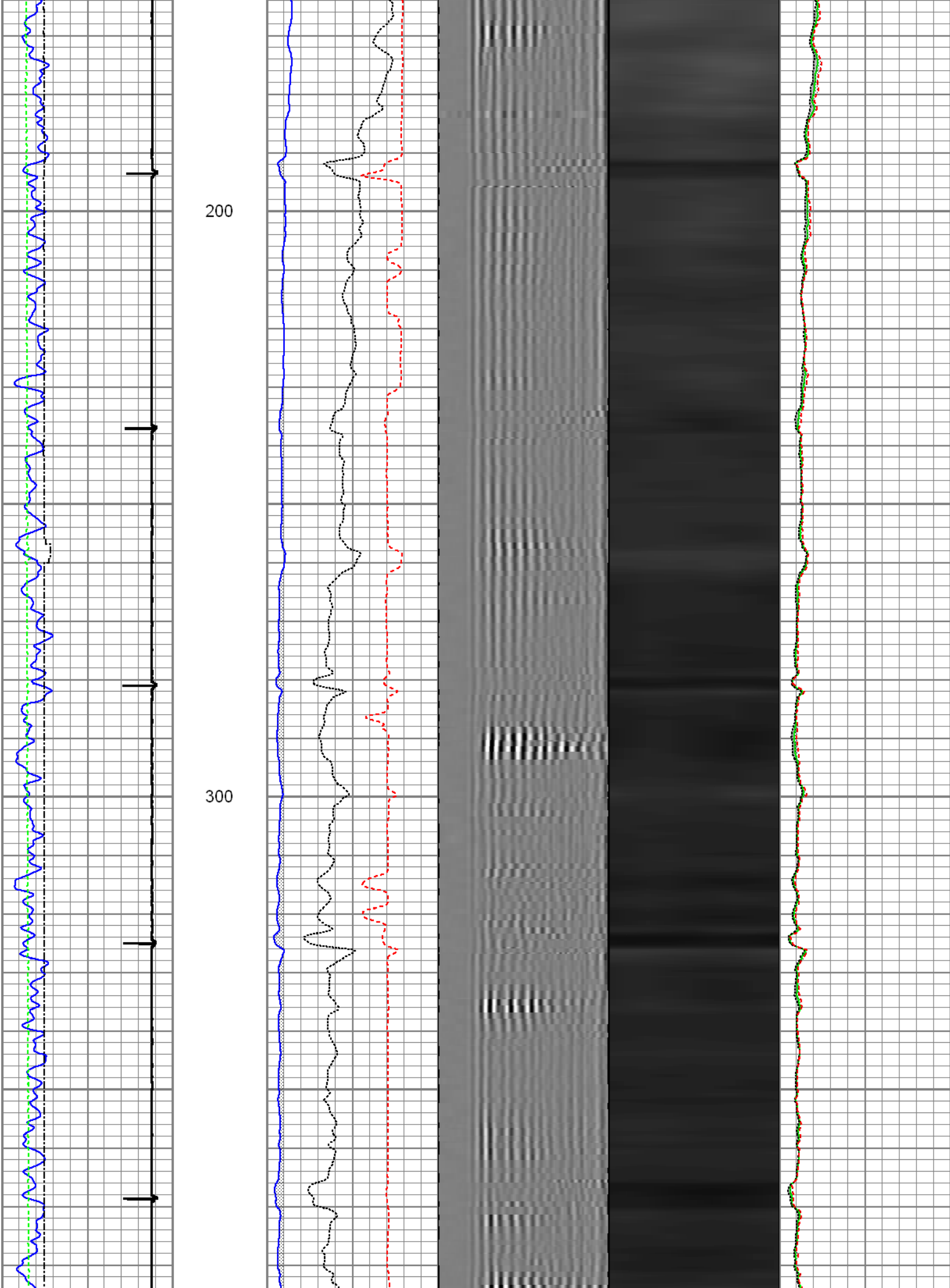
Log ran as per customer request.  
Depth Reference to Casing Tally reported liner top at 7218 FT.  
Adjusted log -7.5 FT to correlate with Liner Top.  
Log ran from below the liner top to surface.  
No debris found upon completion of logging.  
Log ran with 2800 PSI surface induced pressure.

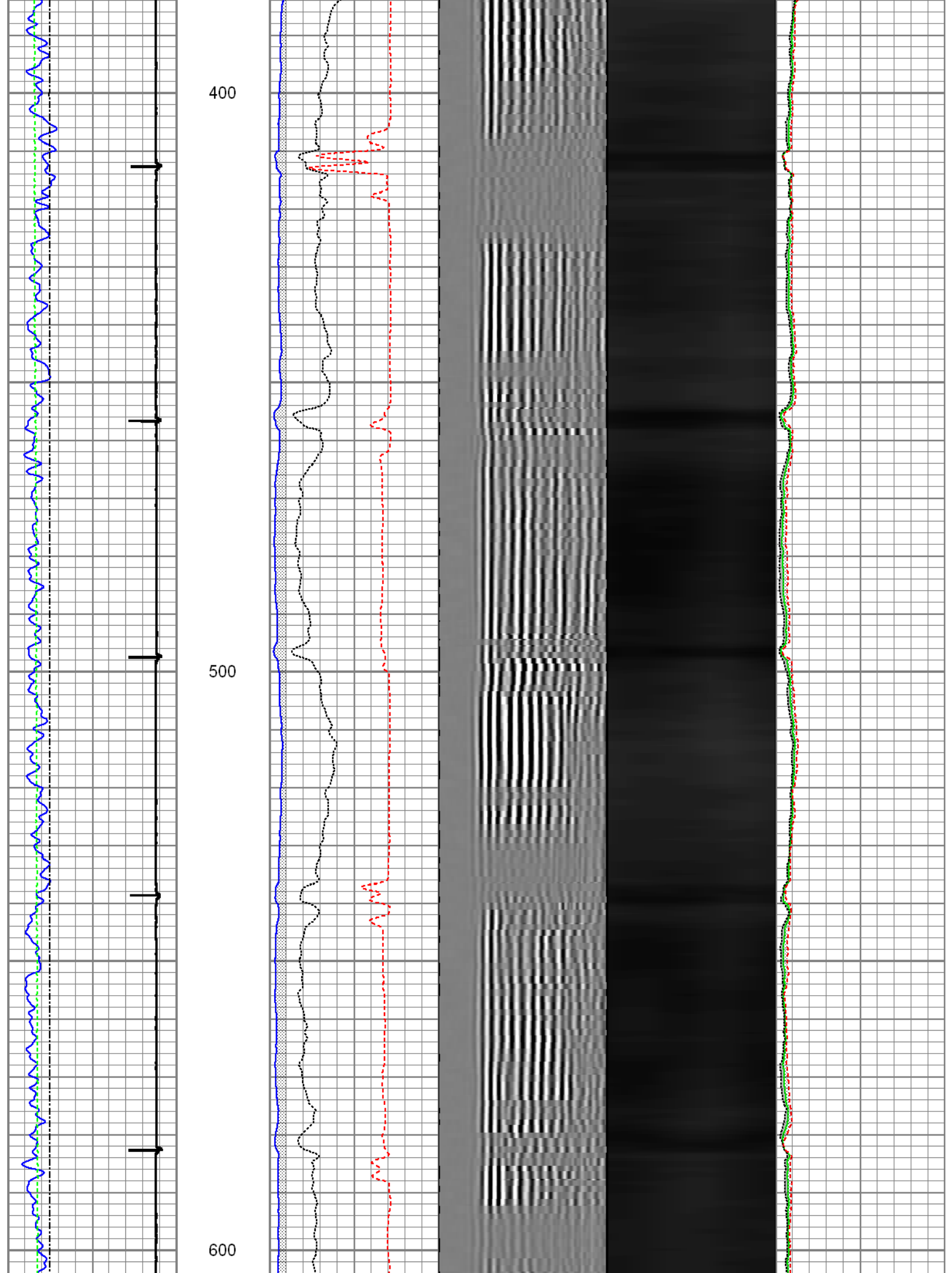
Thank you for choosing FMC Technologies Completion Services, Inc.!!

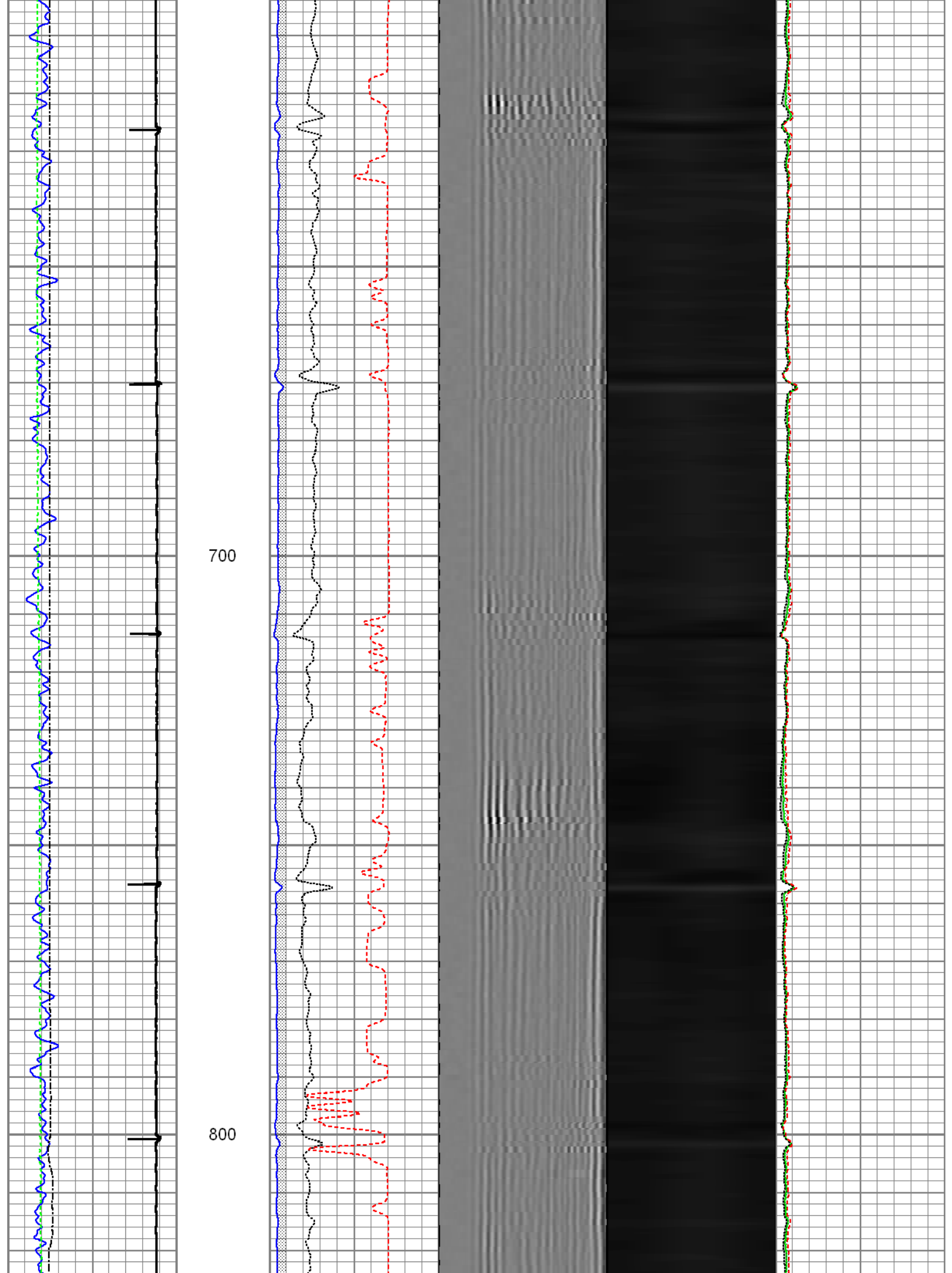
Database File: 0512339379\_anadarko\_sickler 26c-34hz\_08-17-14\_mit\_rbl.db  
Dataset Pathname: pass5  
Presentation Format: rbt4\_mit  
Dataset Creation: Sun Aug 17 12:14:25 2014 by Log SCH 111116  
Charted by: Depth in Feet scaled 1:240

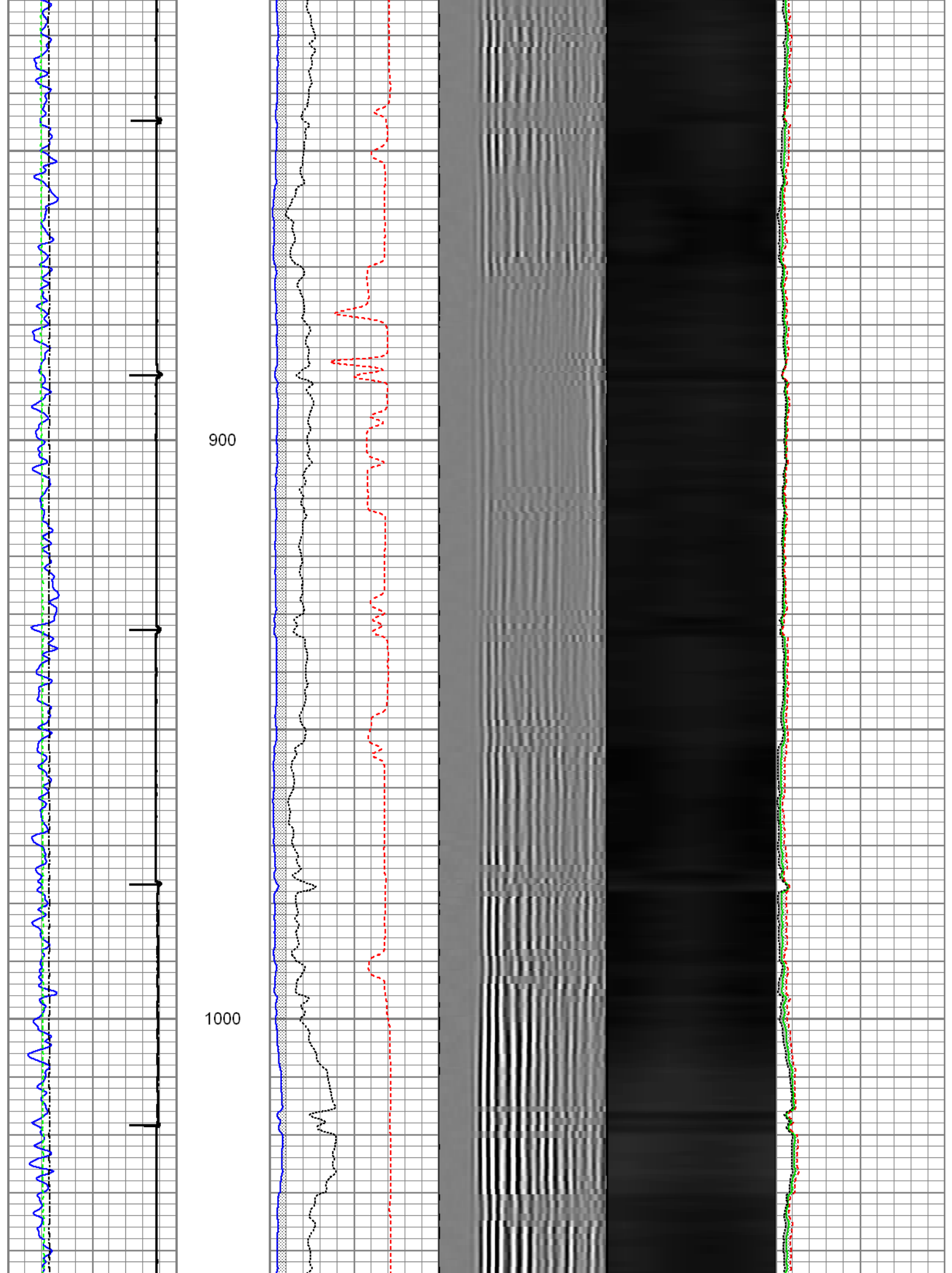
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Minimum Amplitude
Line Speed	0 (mV) 20			0 100
-100 (ft/min) 100	3' Travel Time			Maximum Amplitude
Line Tension	650 (usec) 150			0 100
0 (lb) 2000				



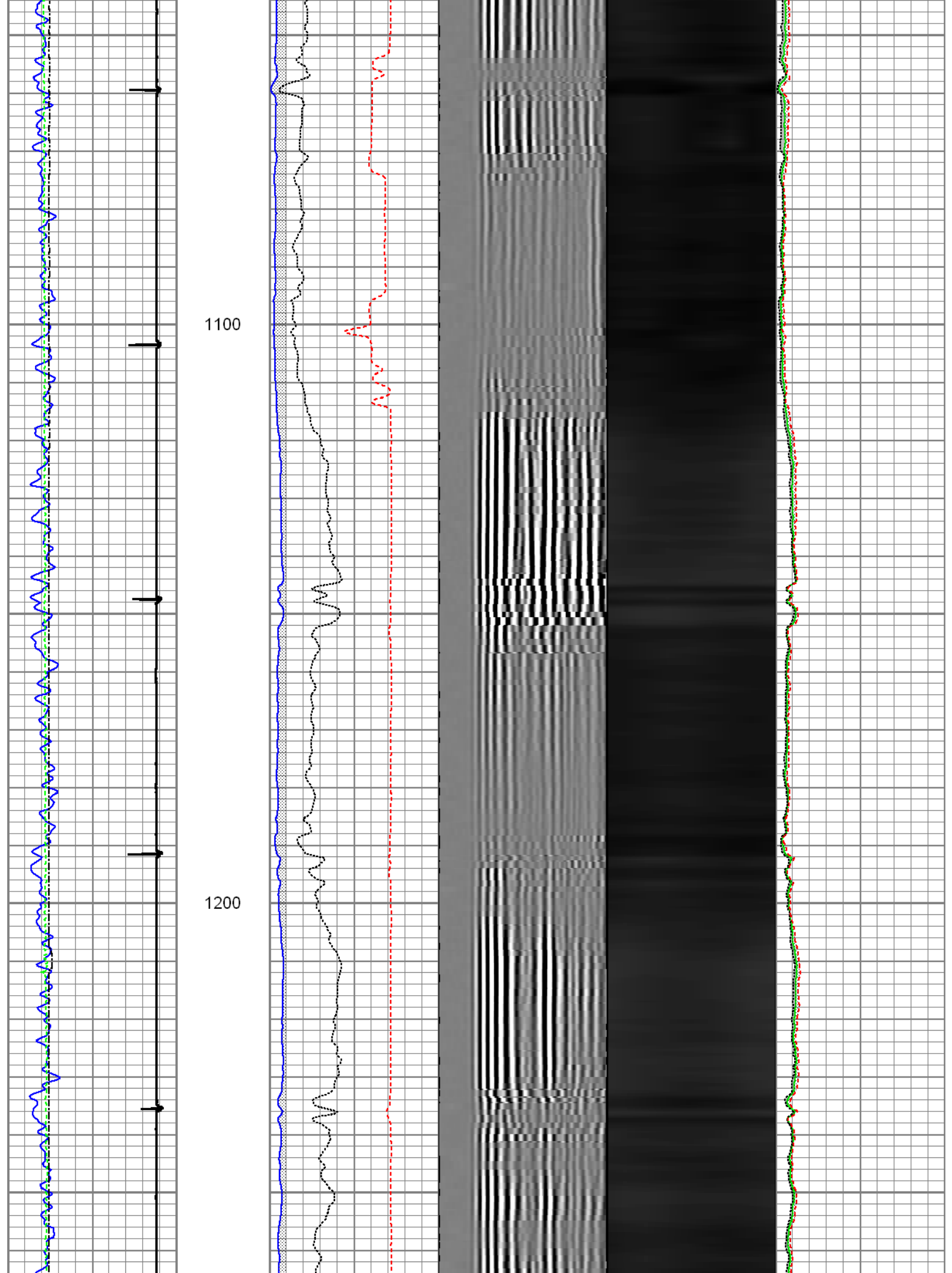


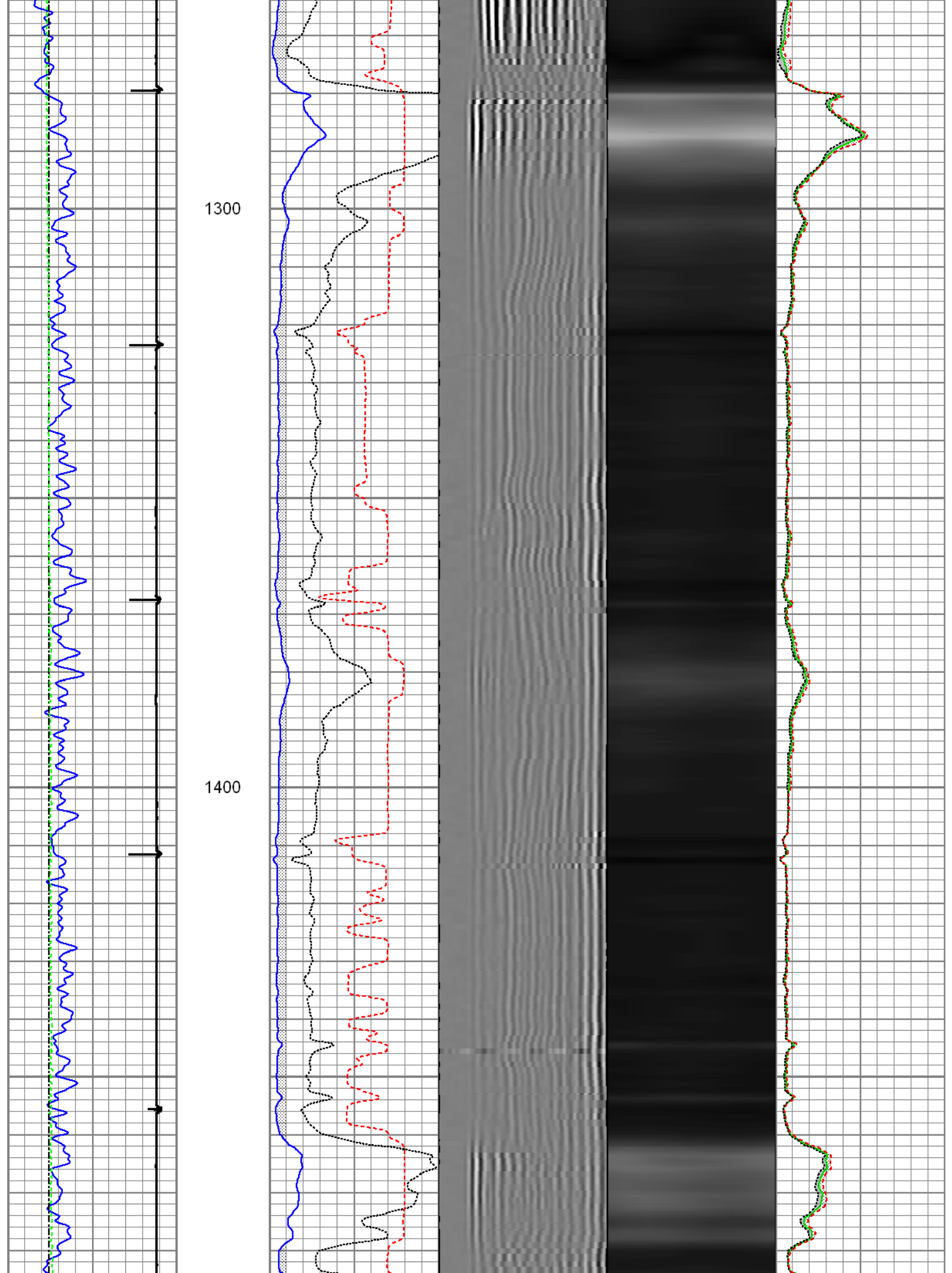




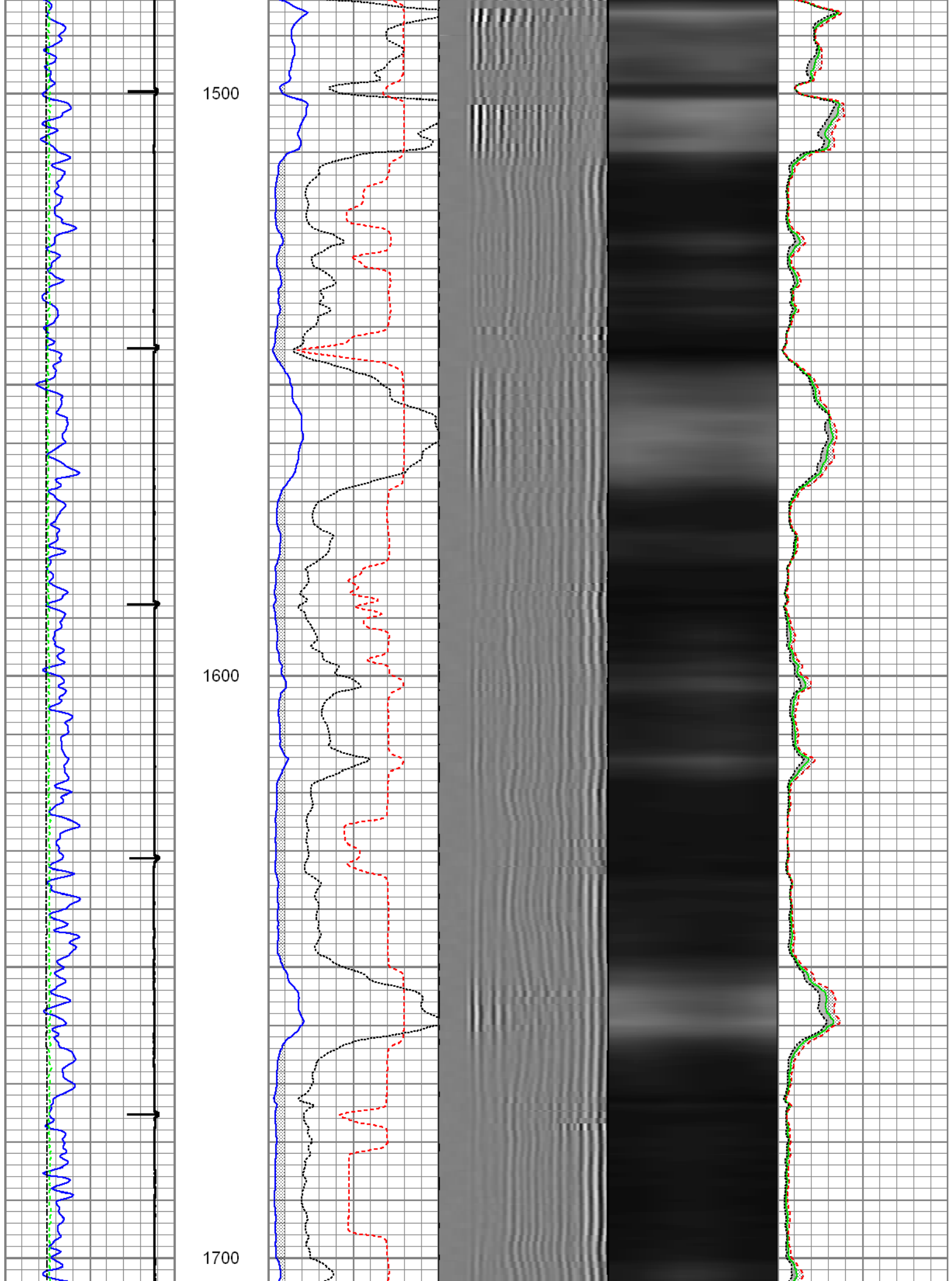


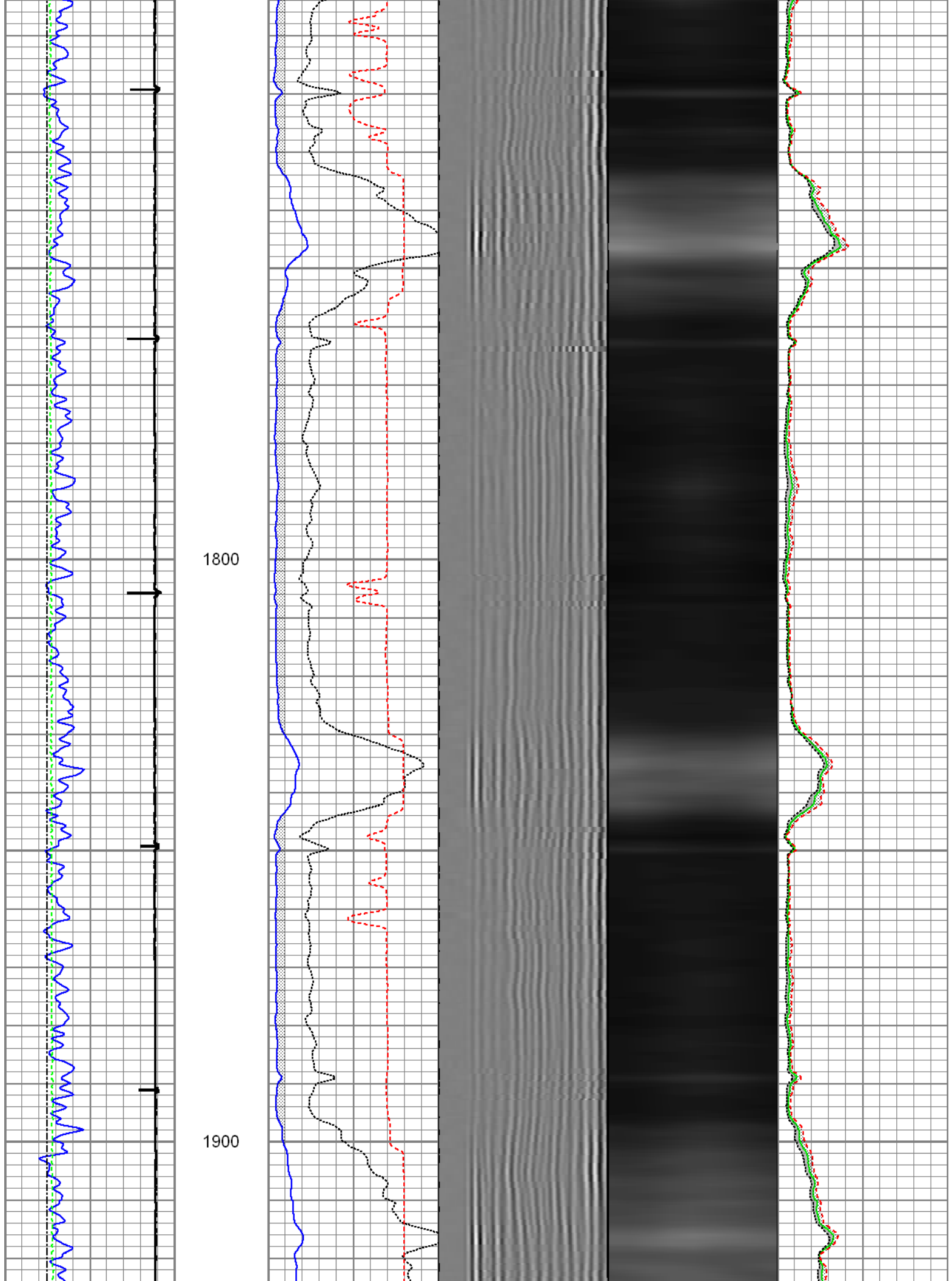


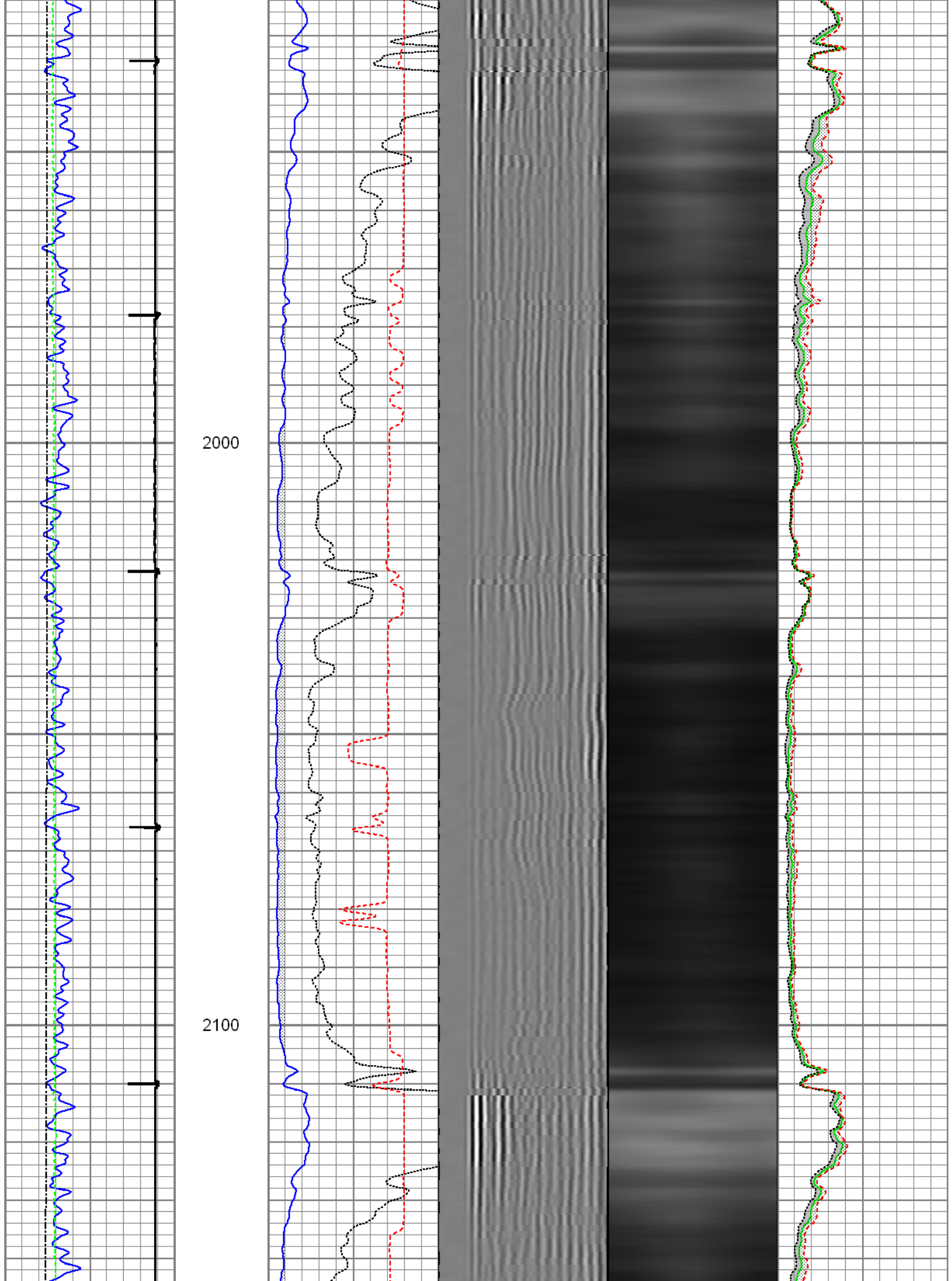






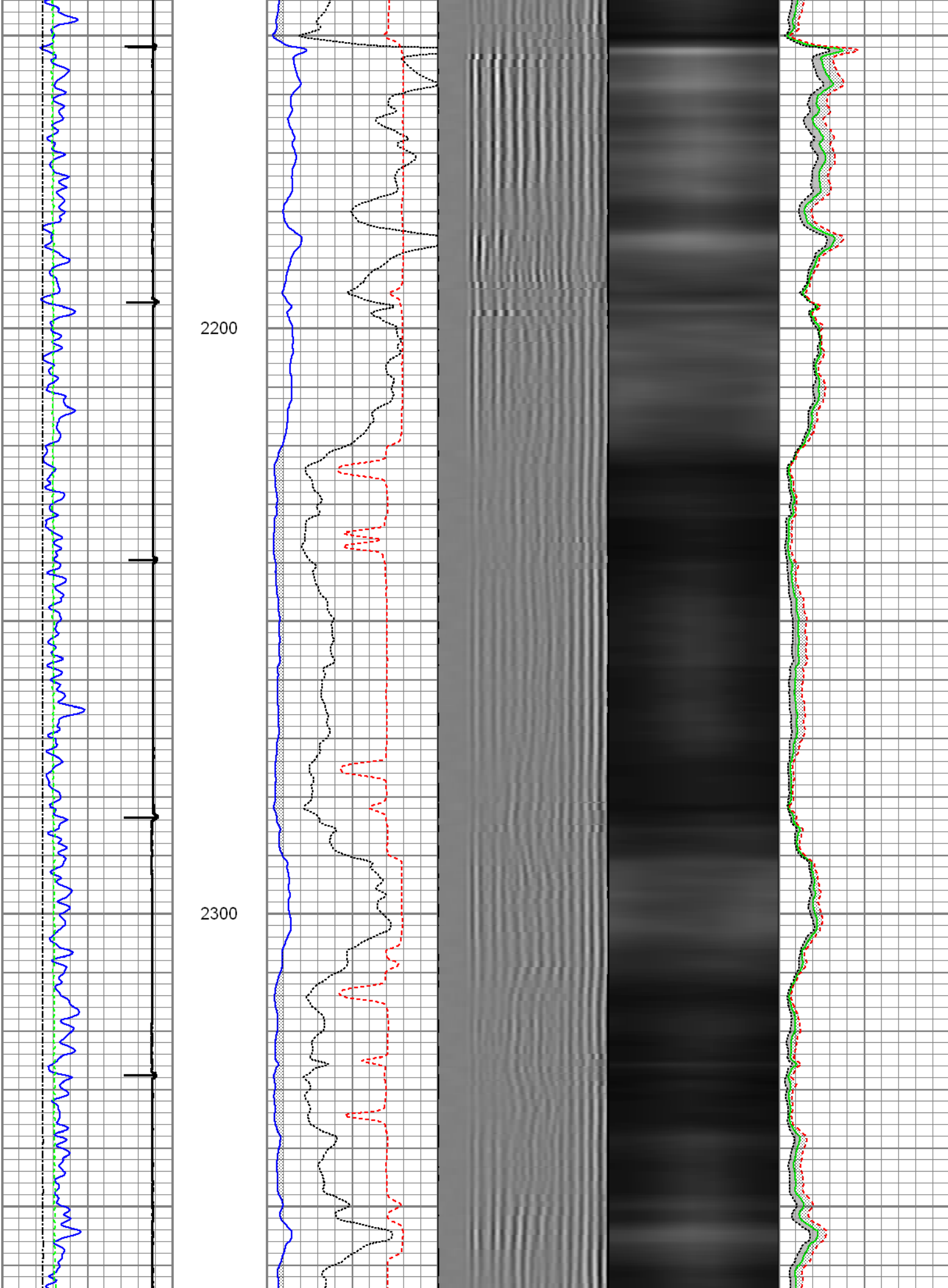






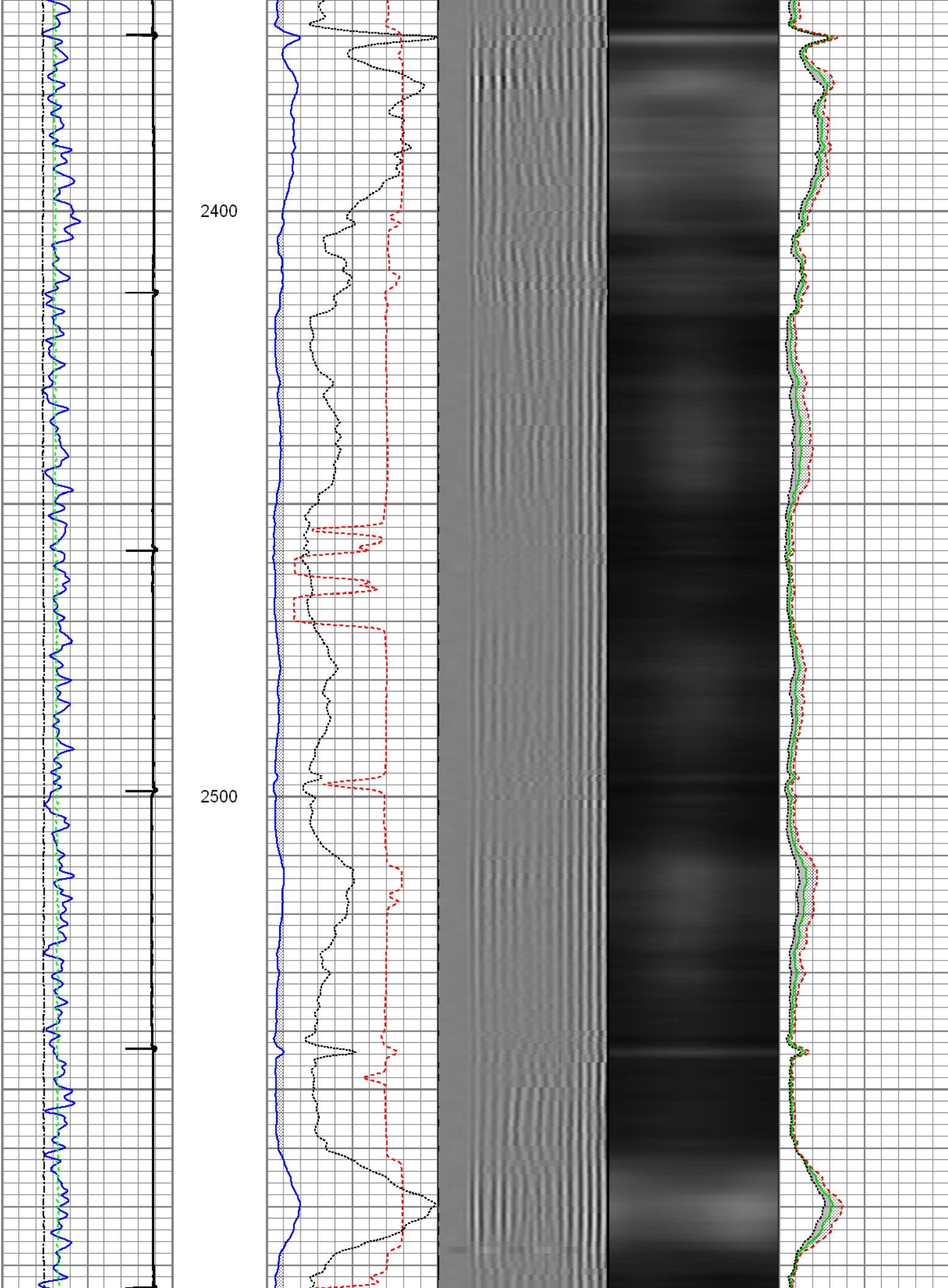
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2300



2400

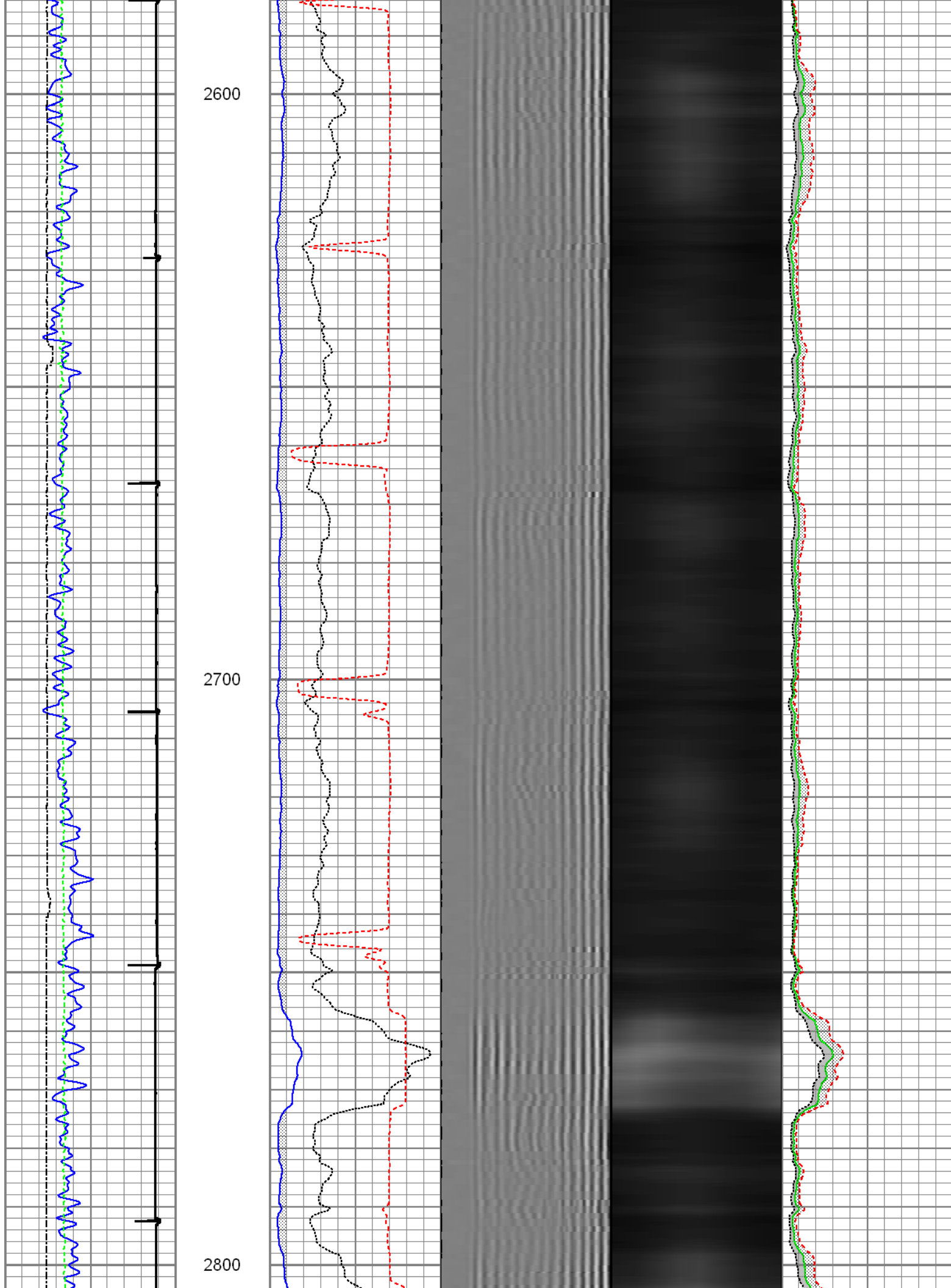
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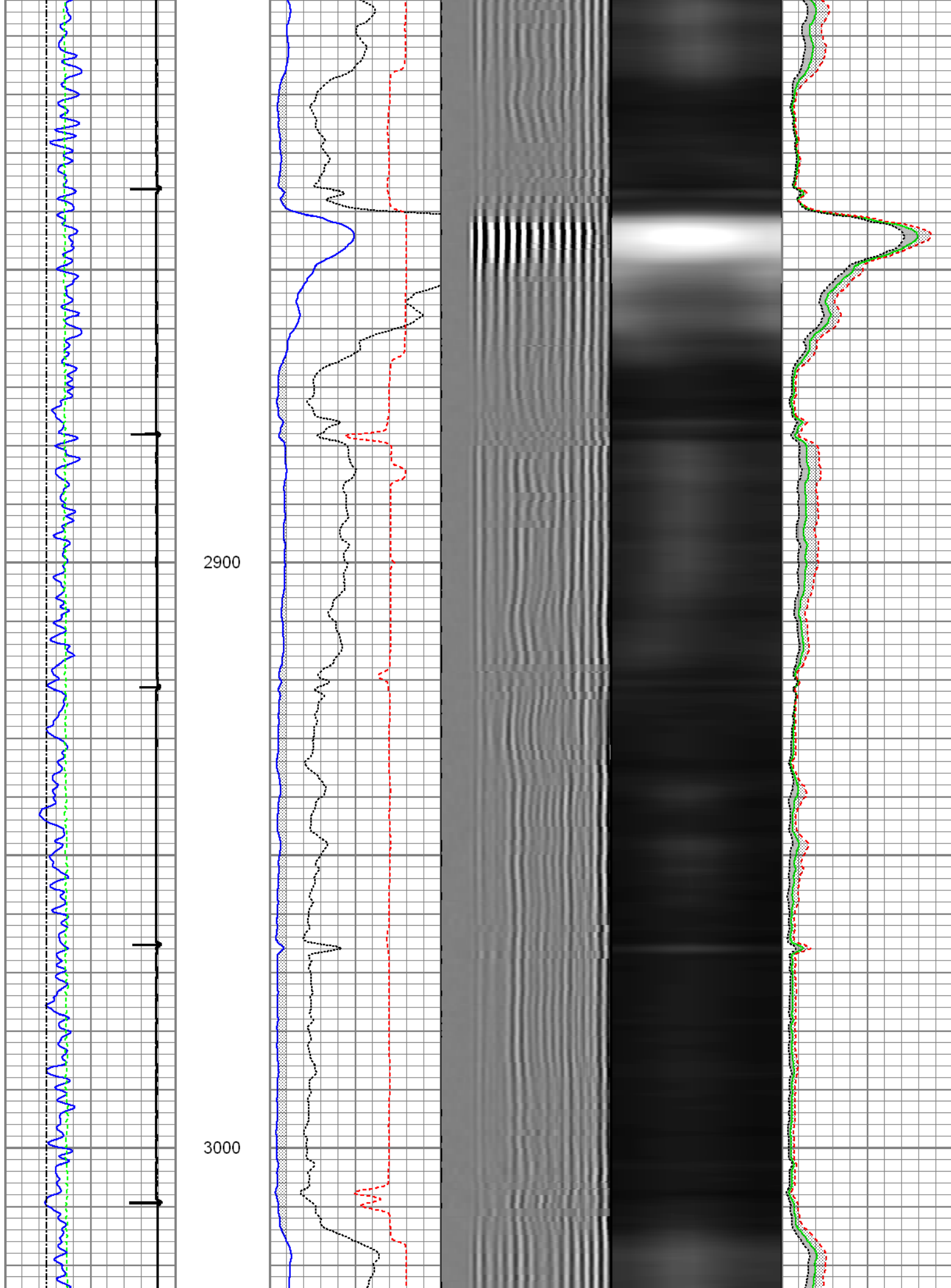
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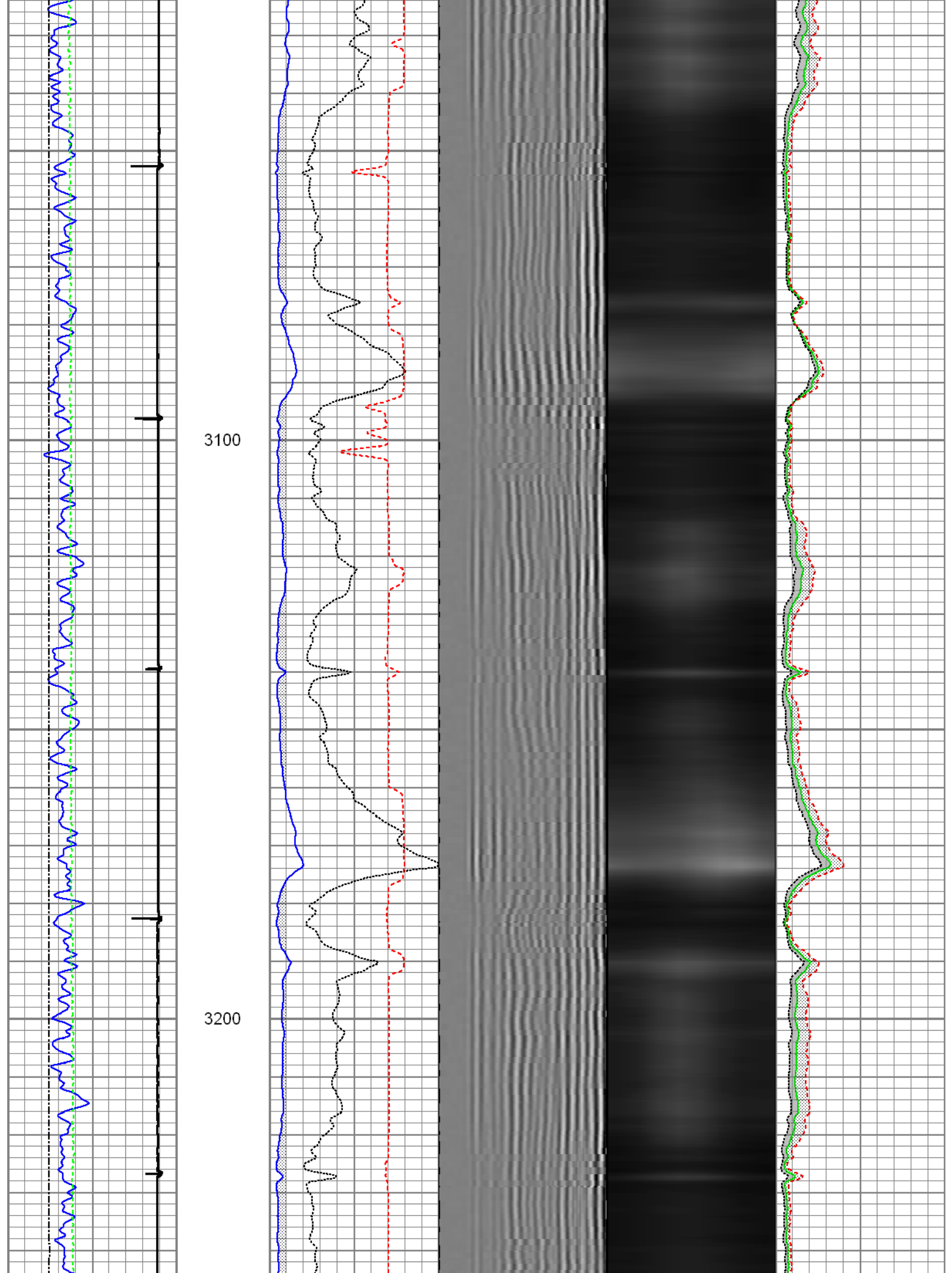
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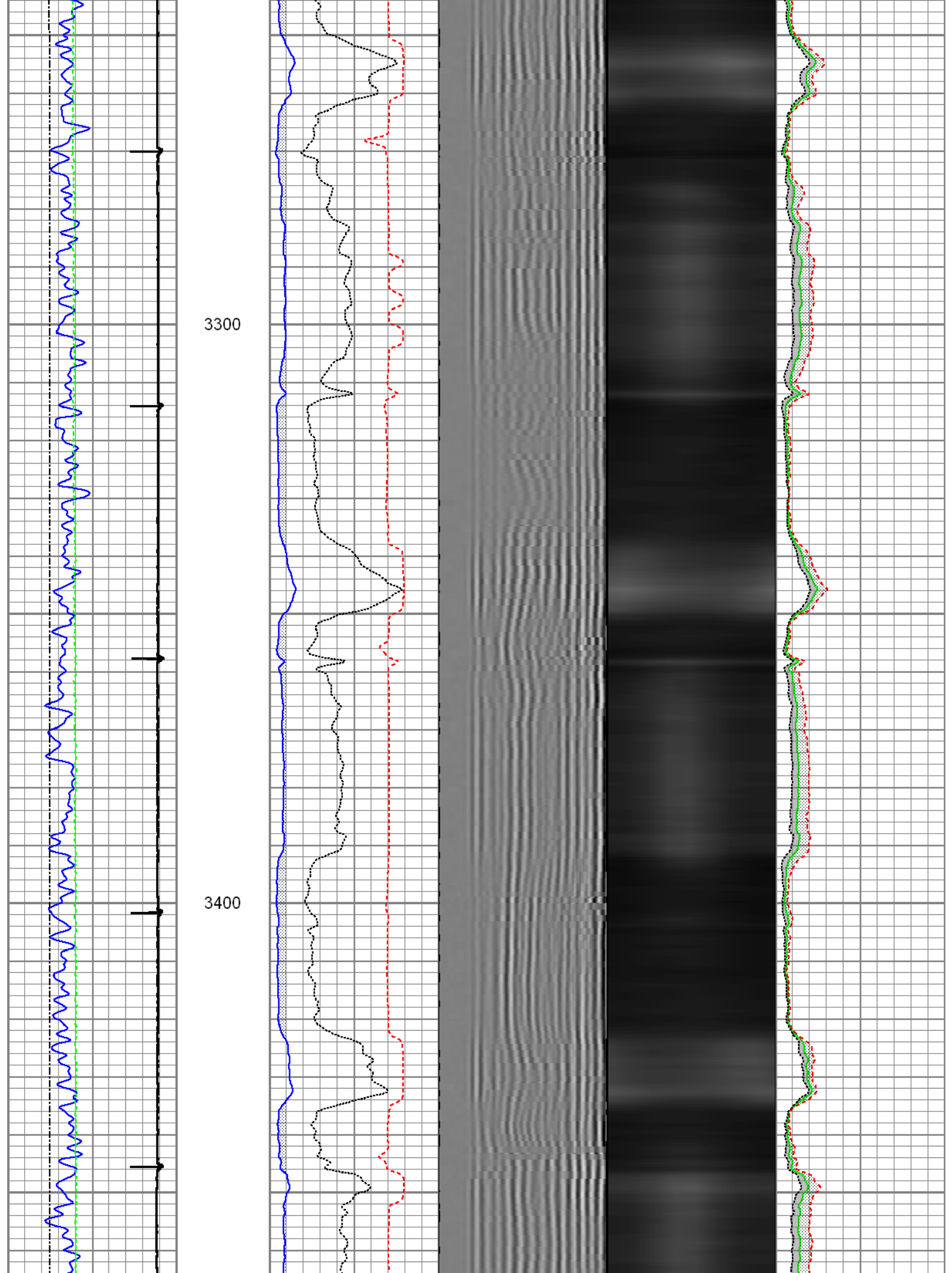
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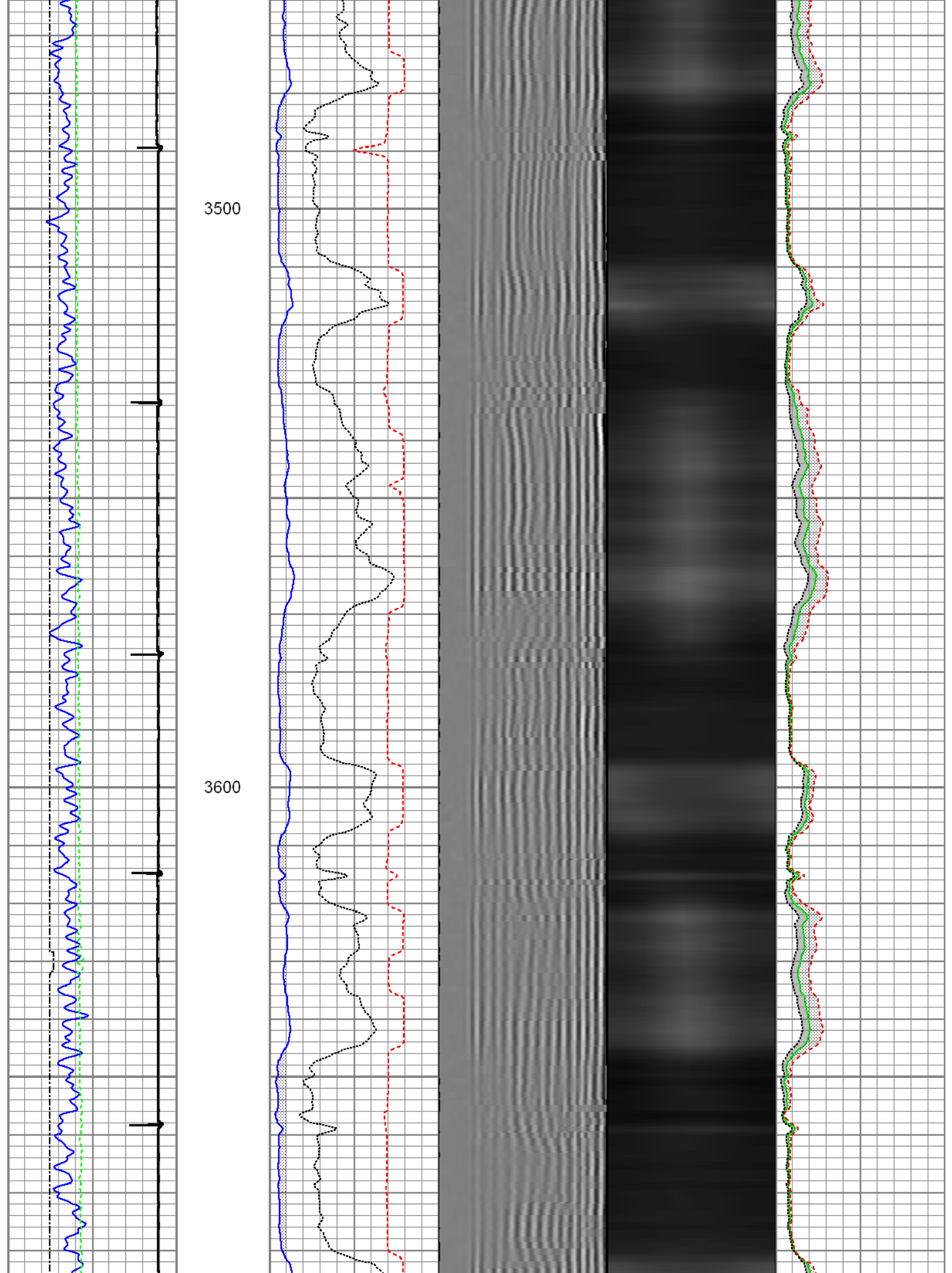








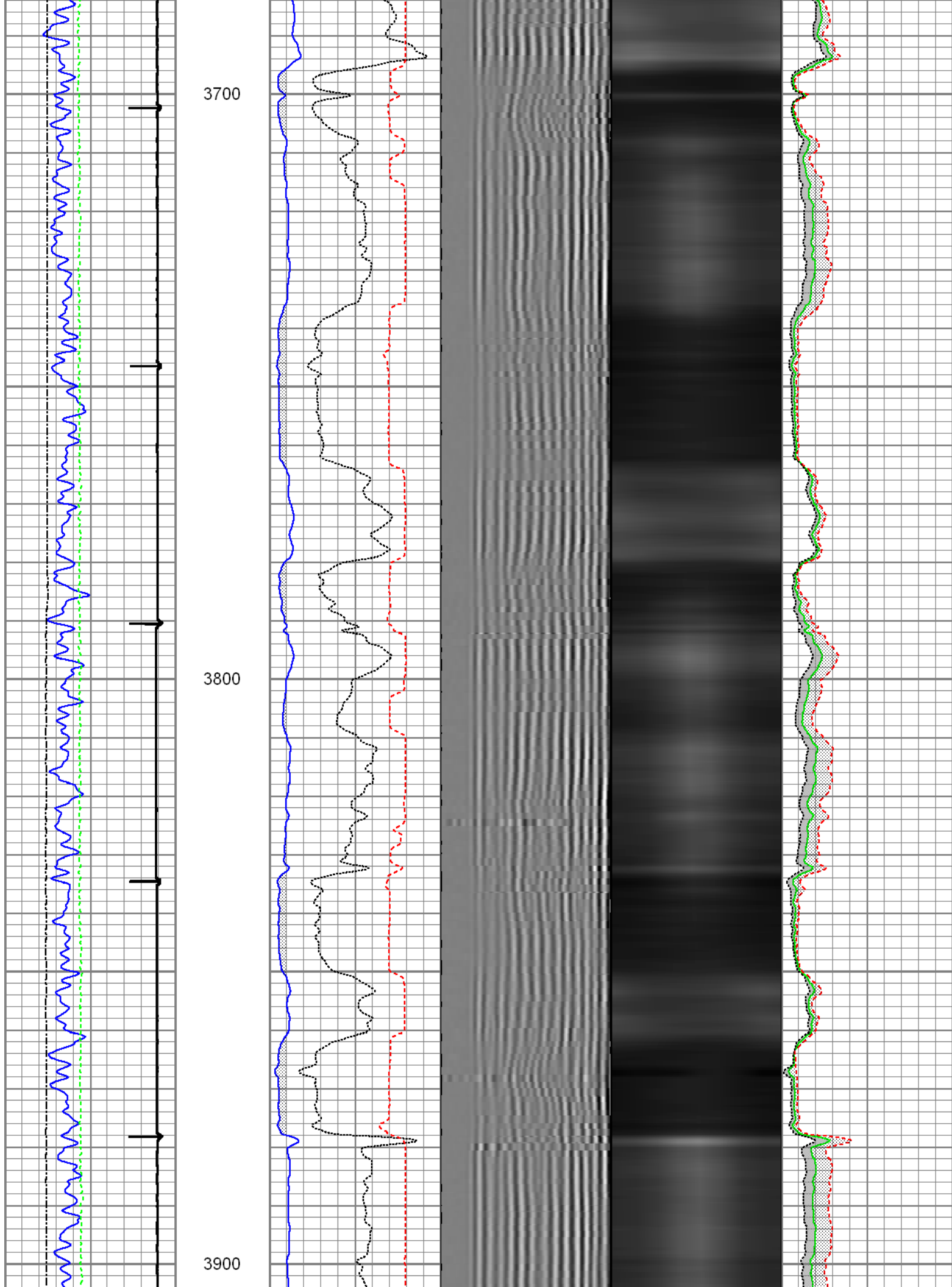


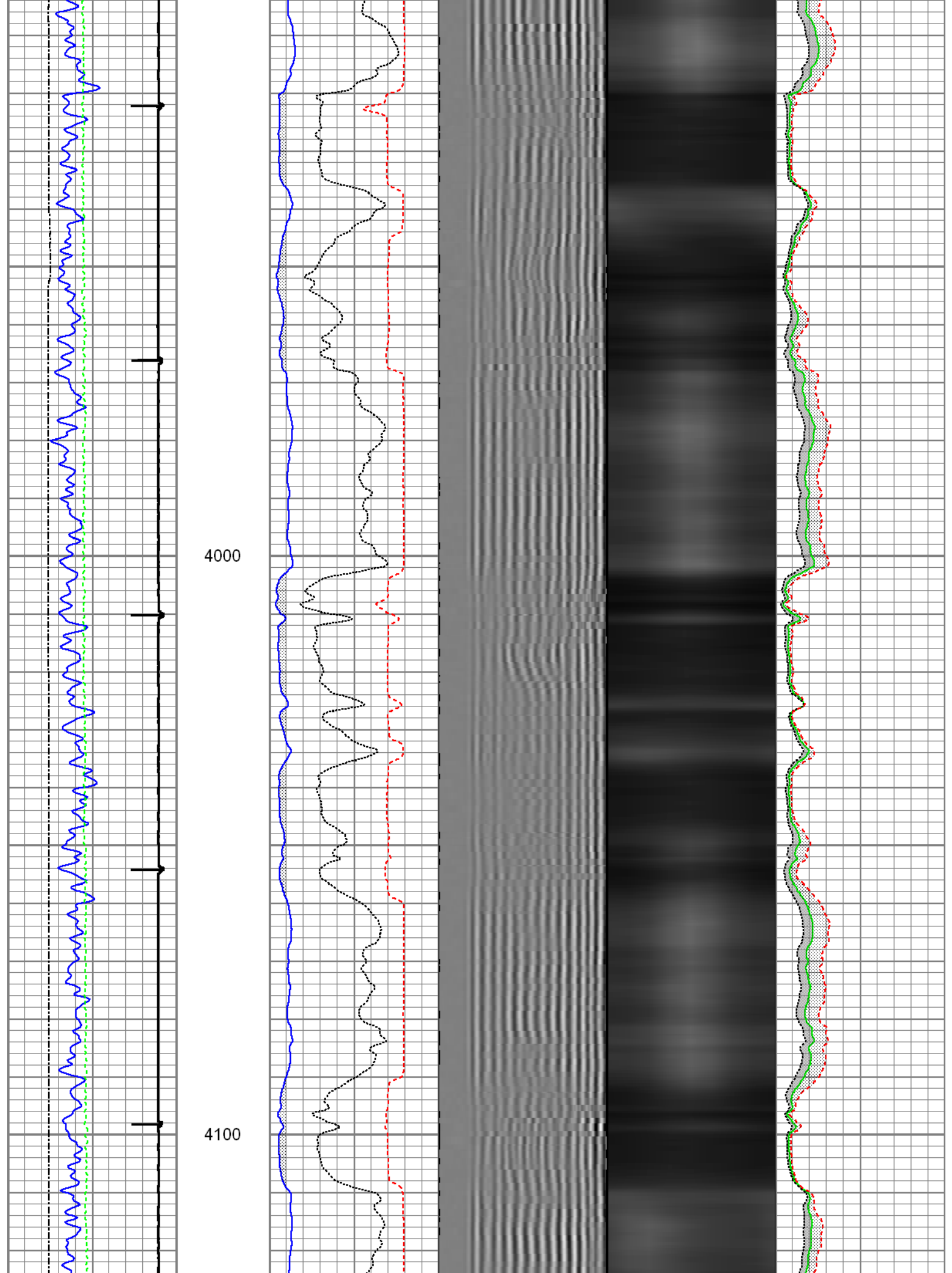


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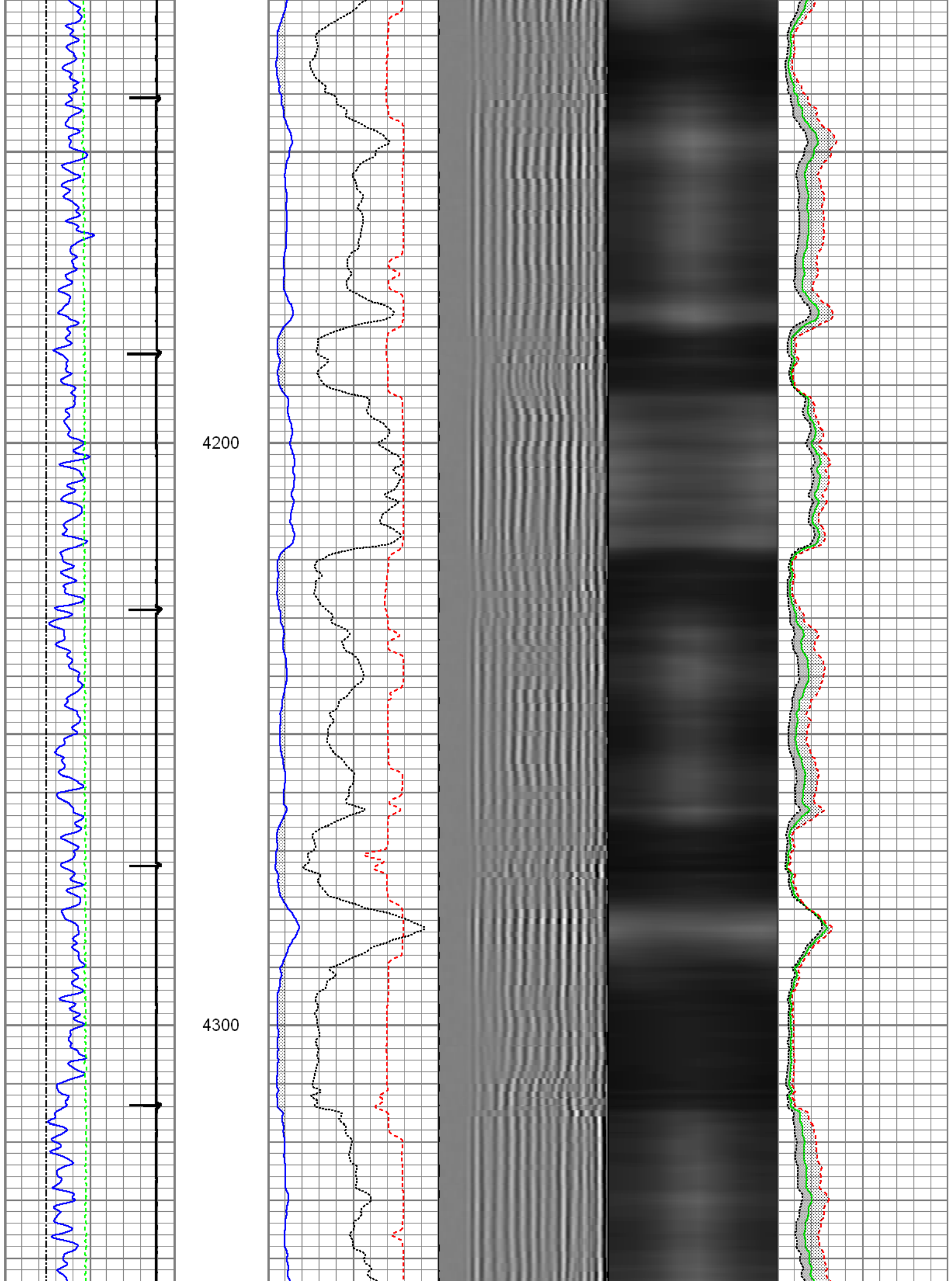
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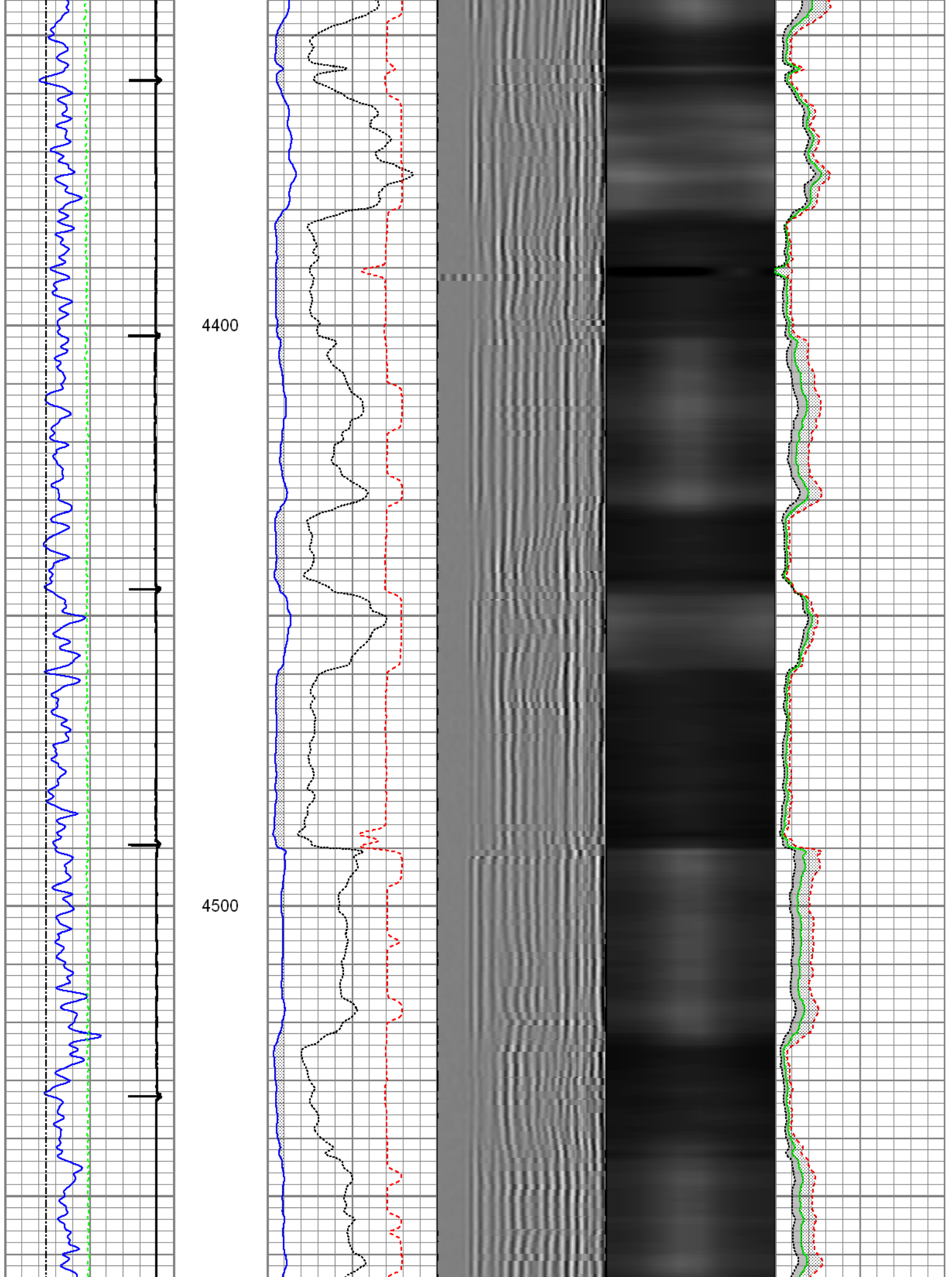
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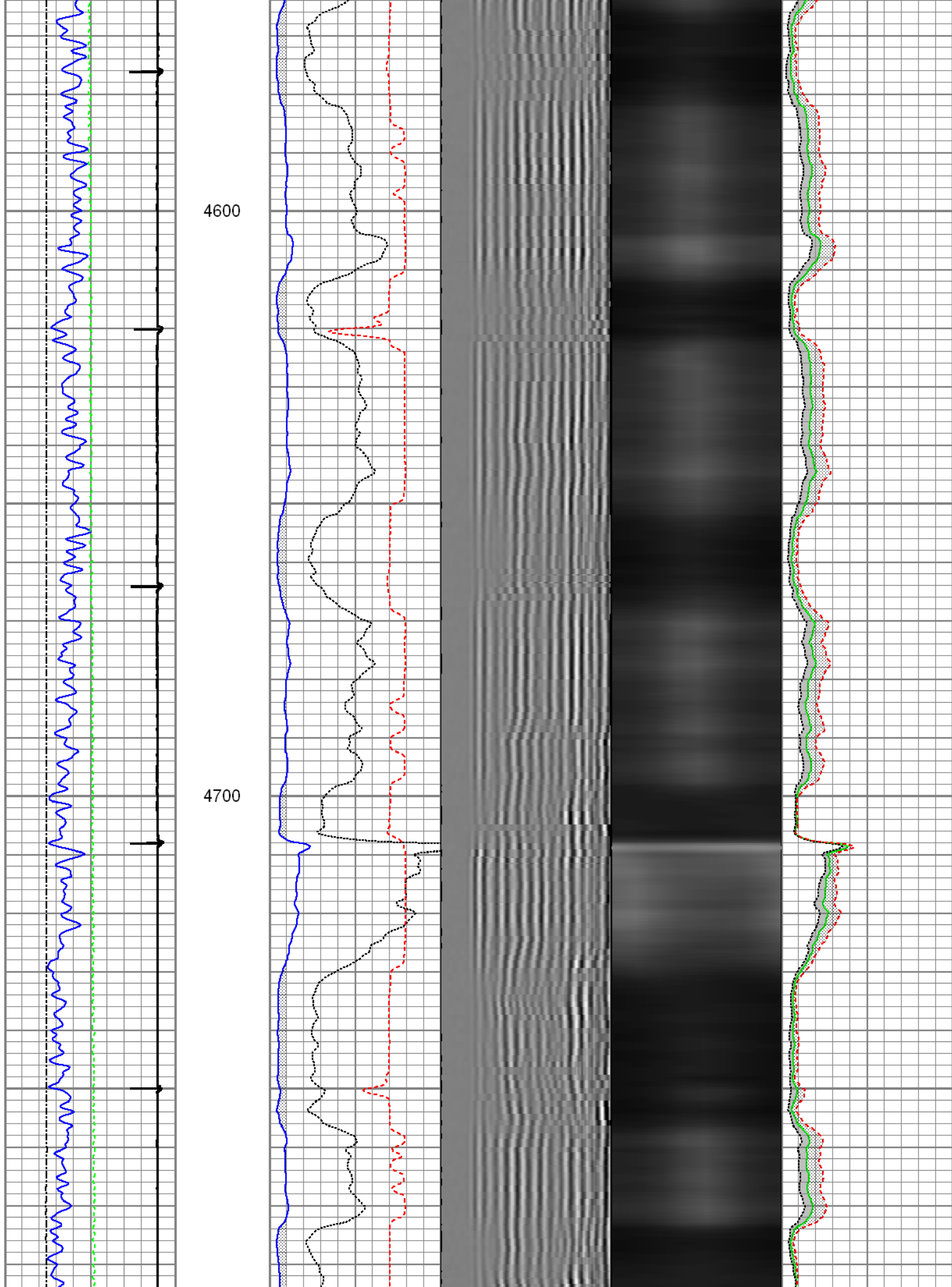


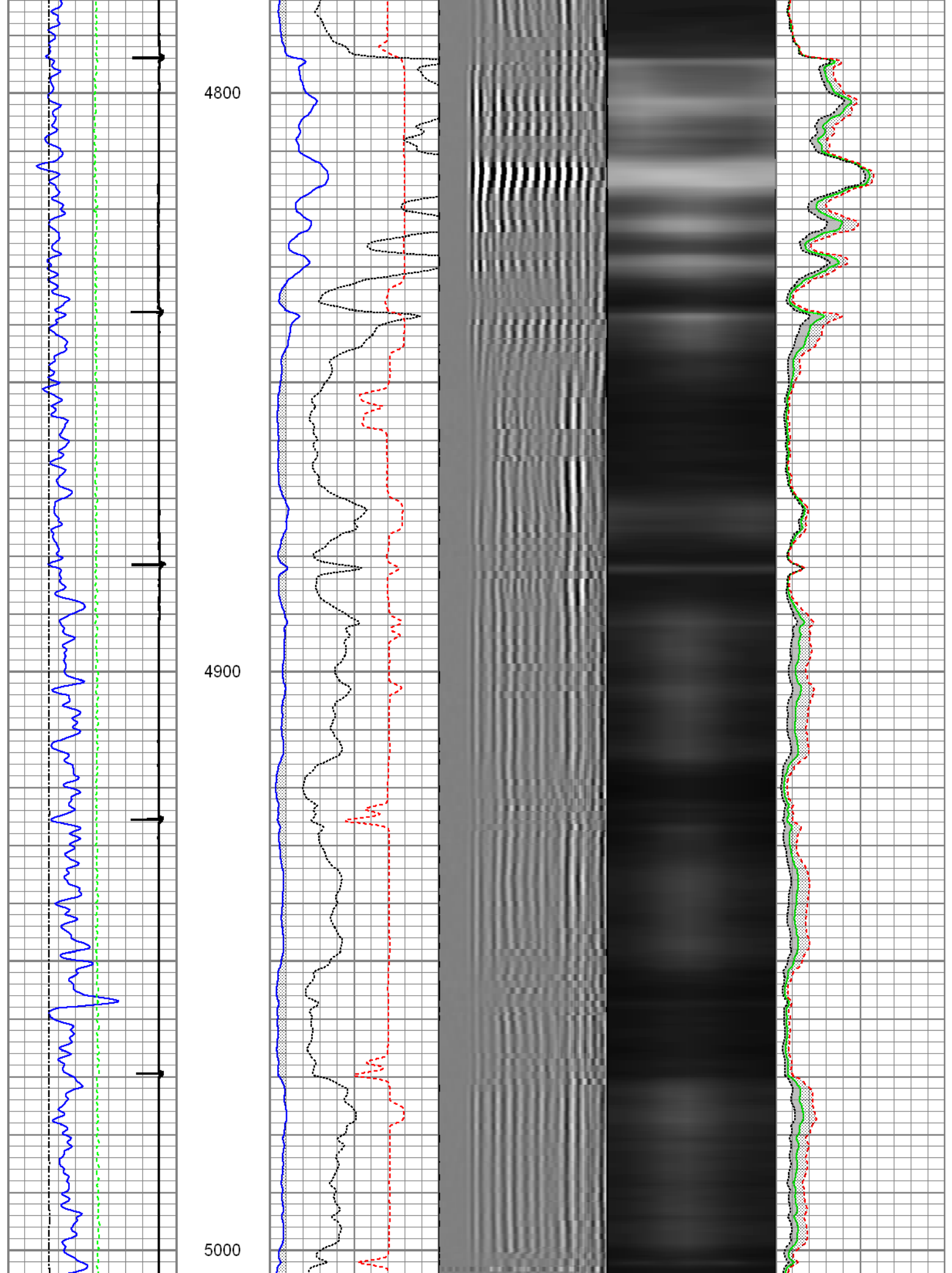


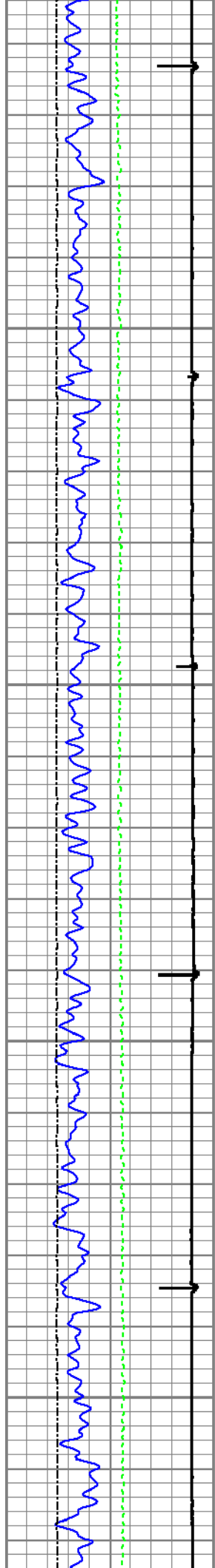


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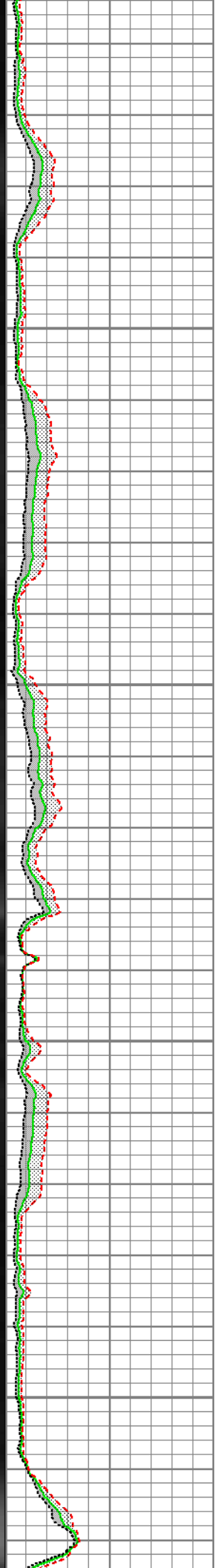
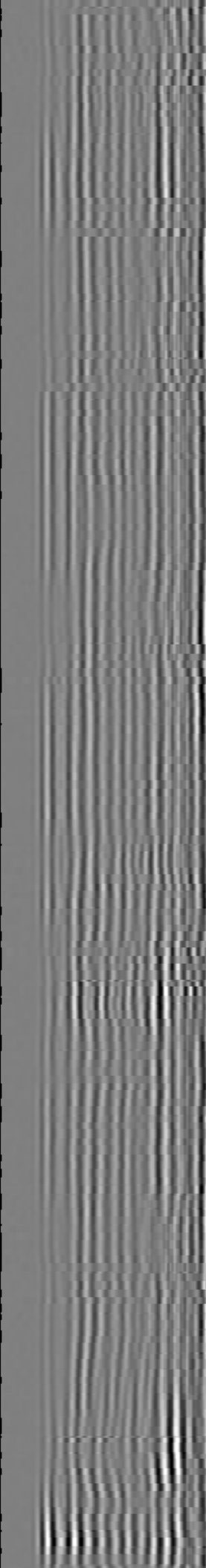
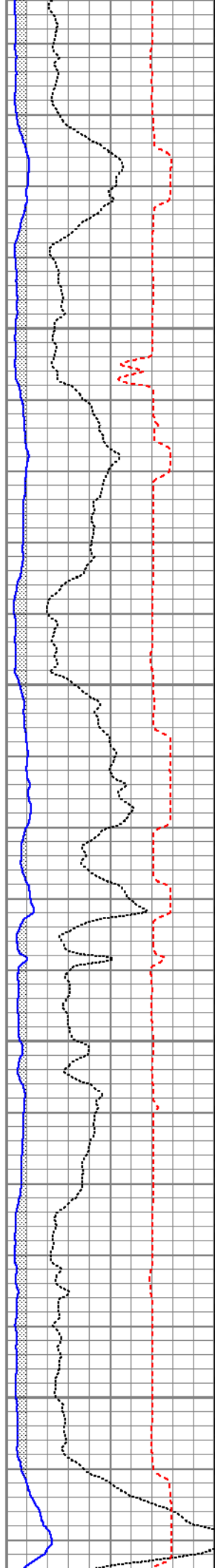


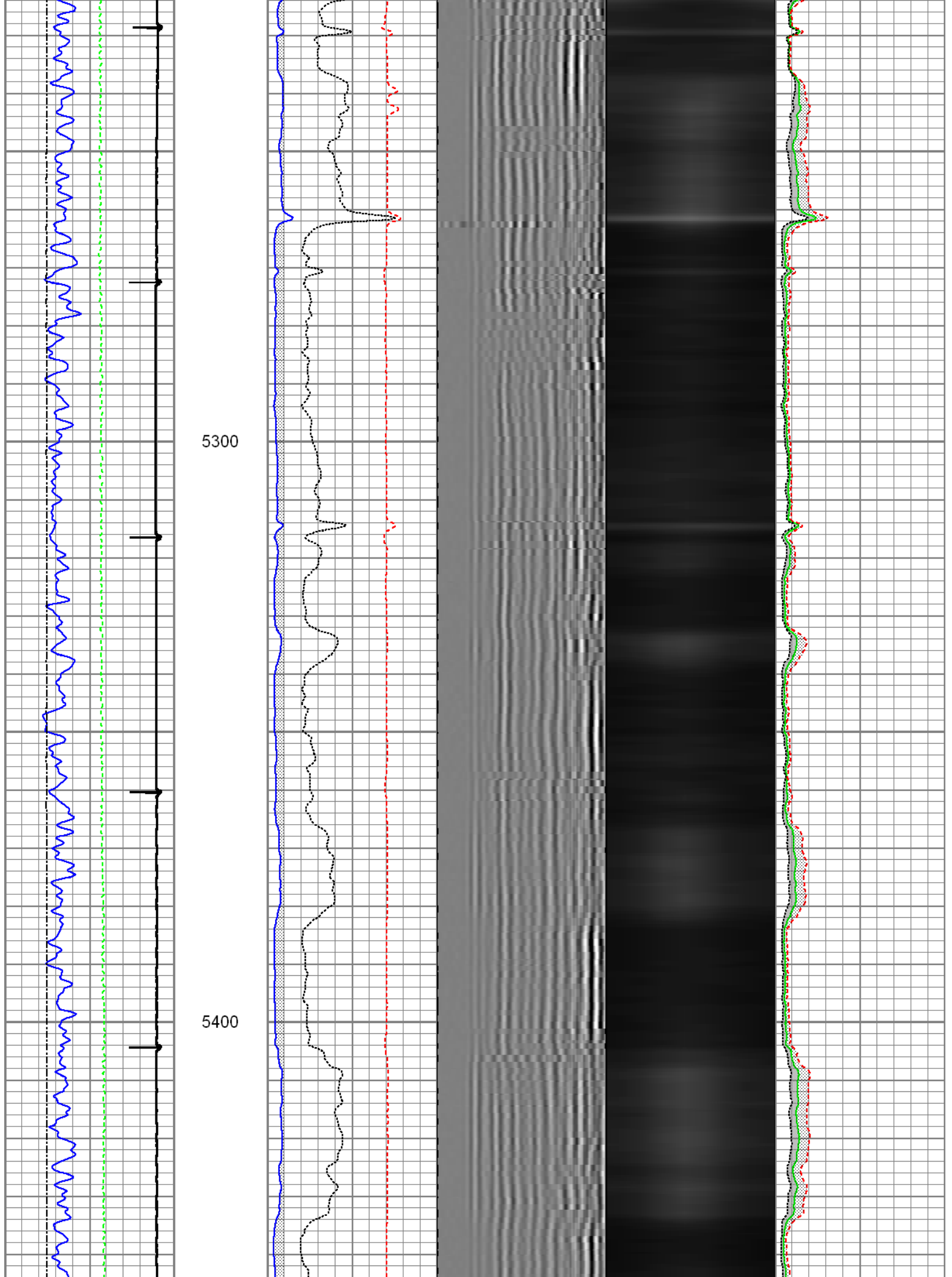




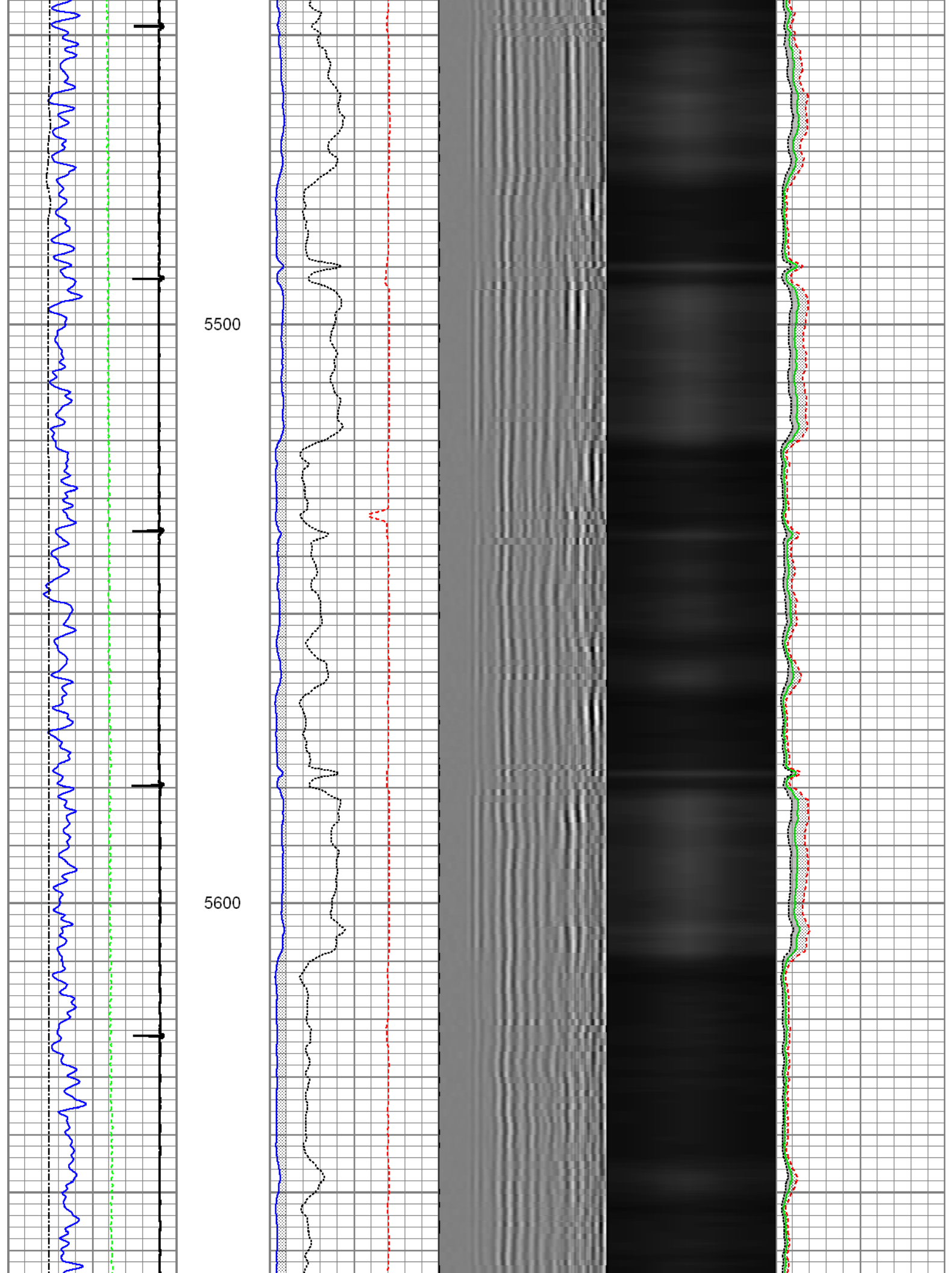
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5200



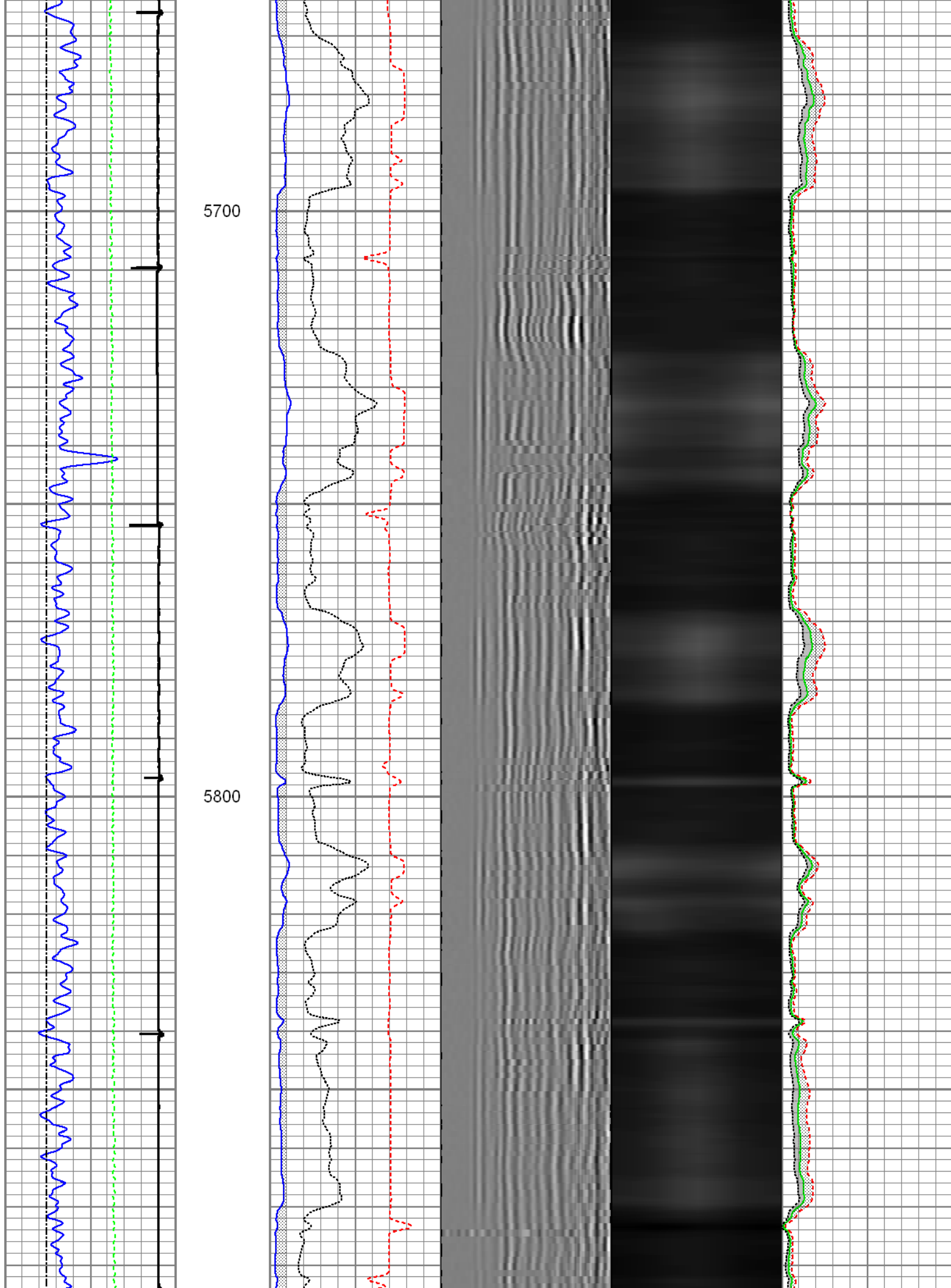


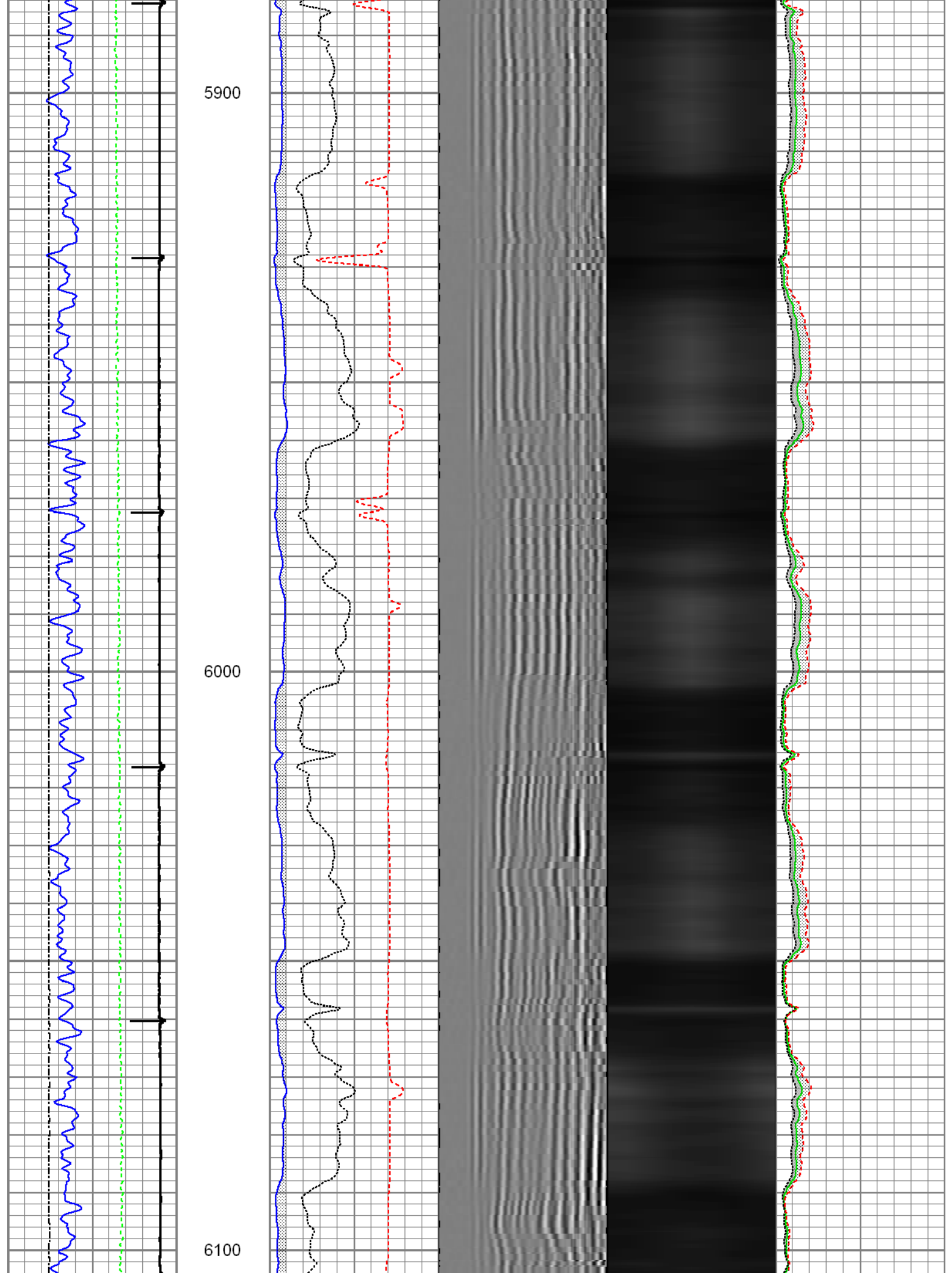


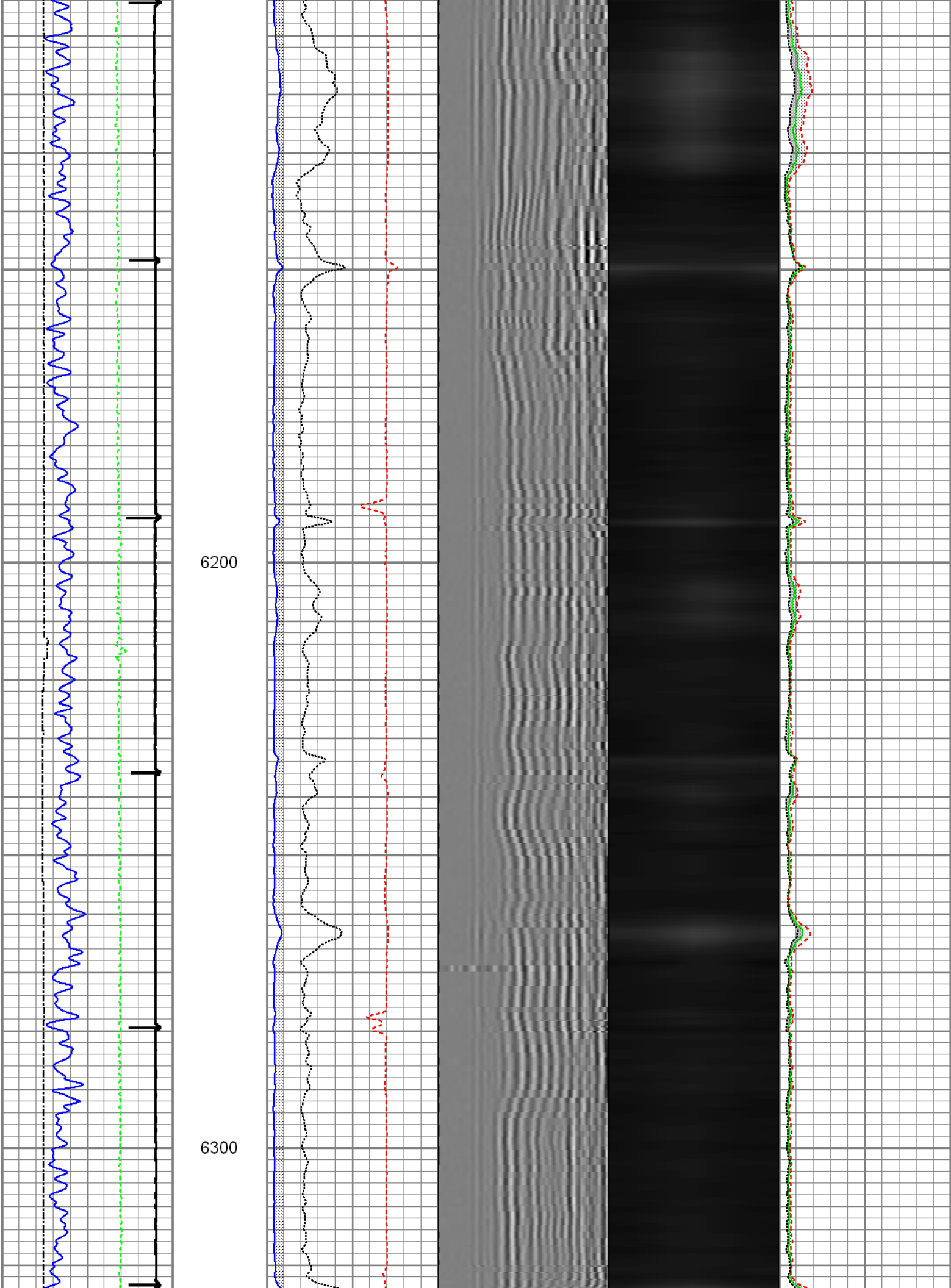


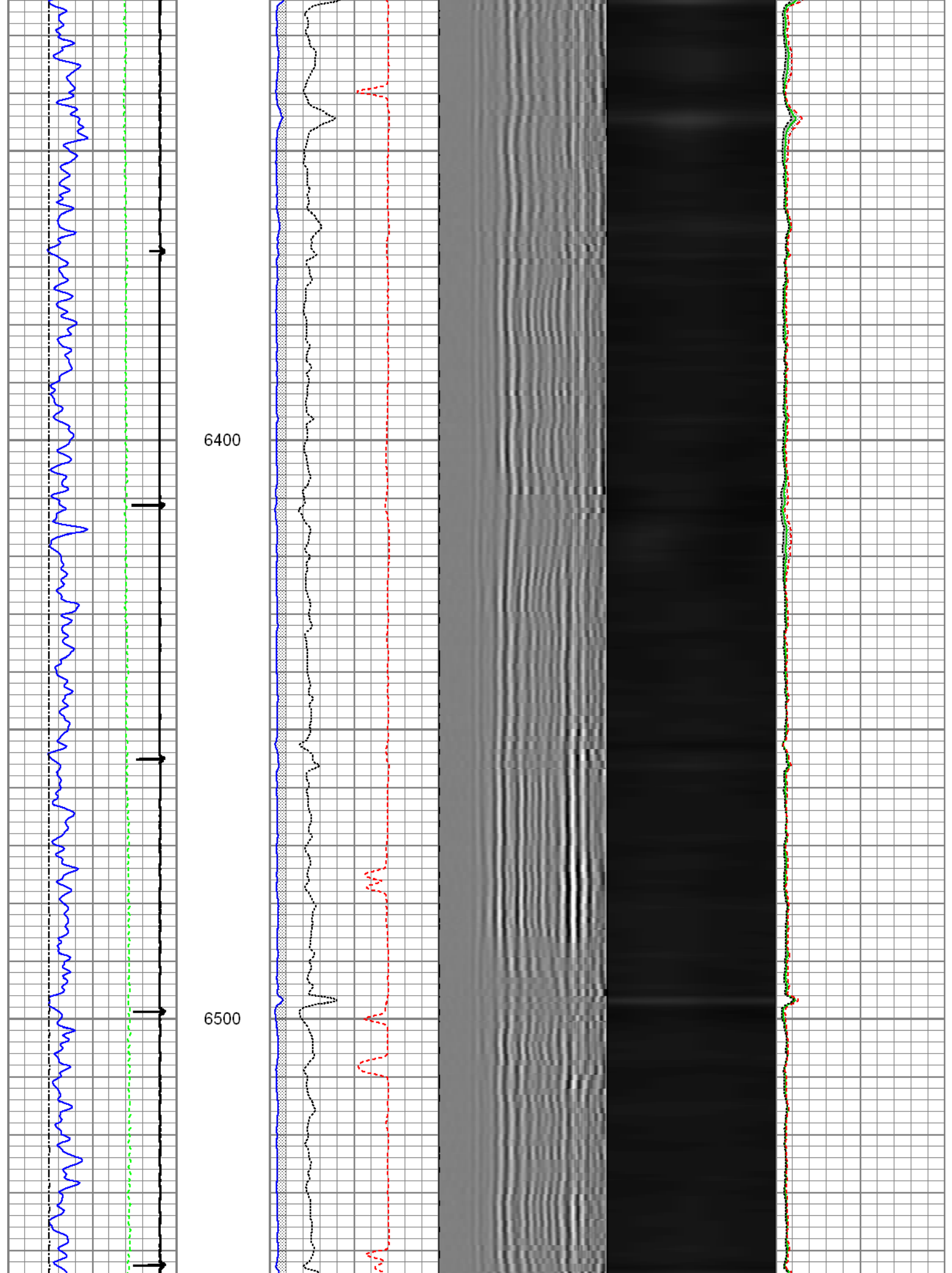
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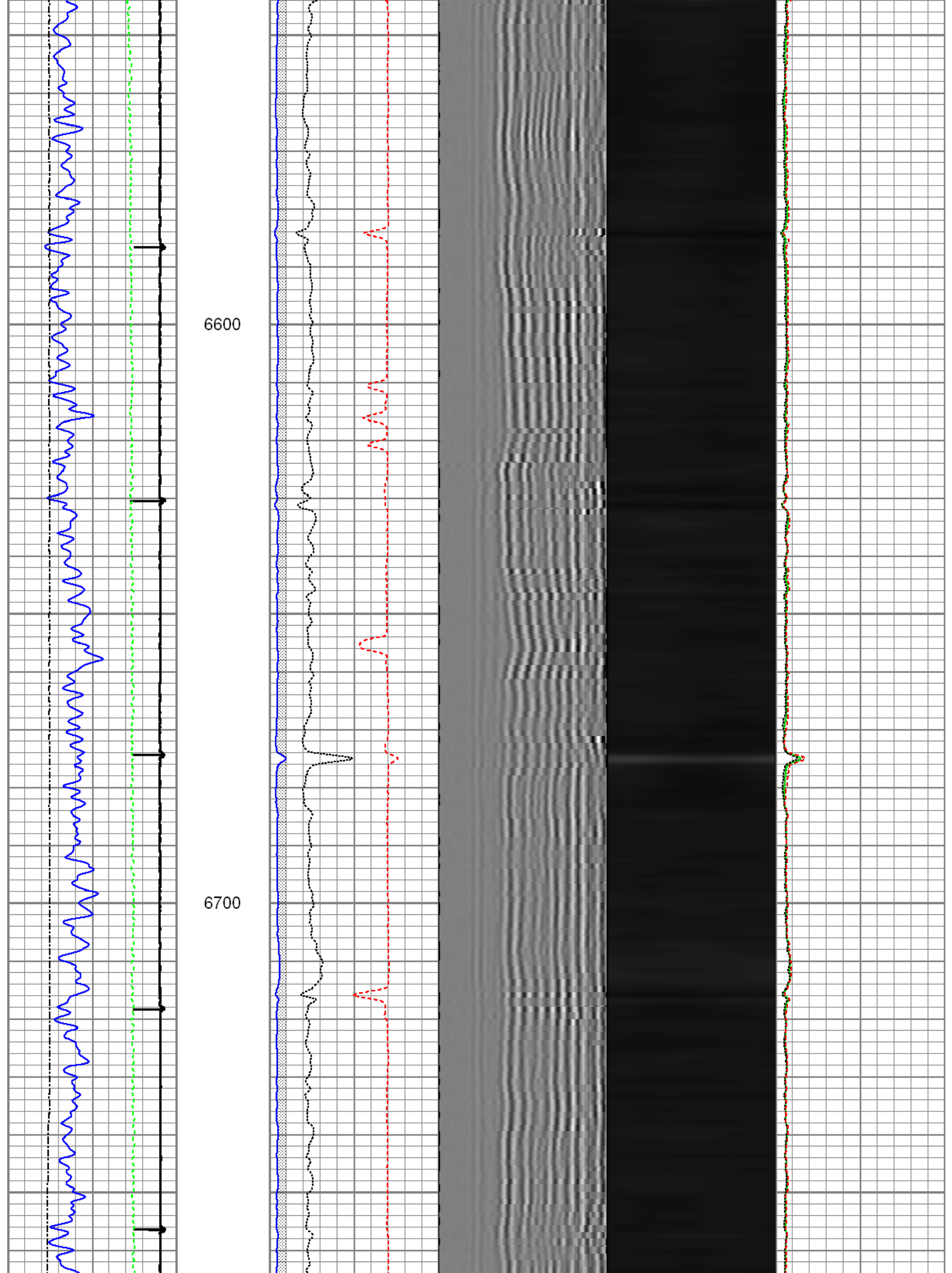
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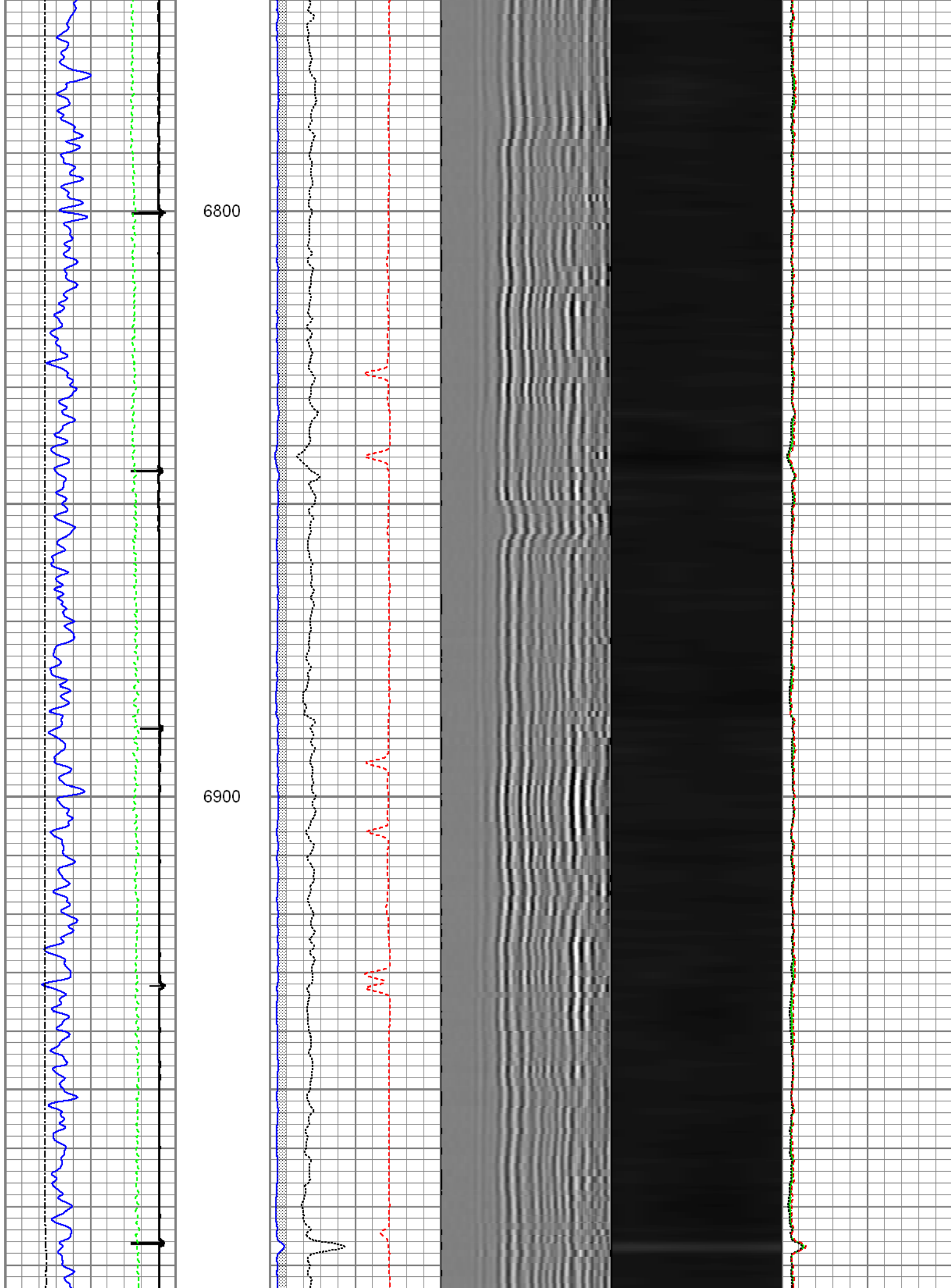






6800

6900



7000

7100

7200

CCL



GR



LSPD



LTEN



3' Amp



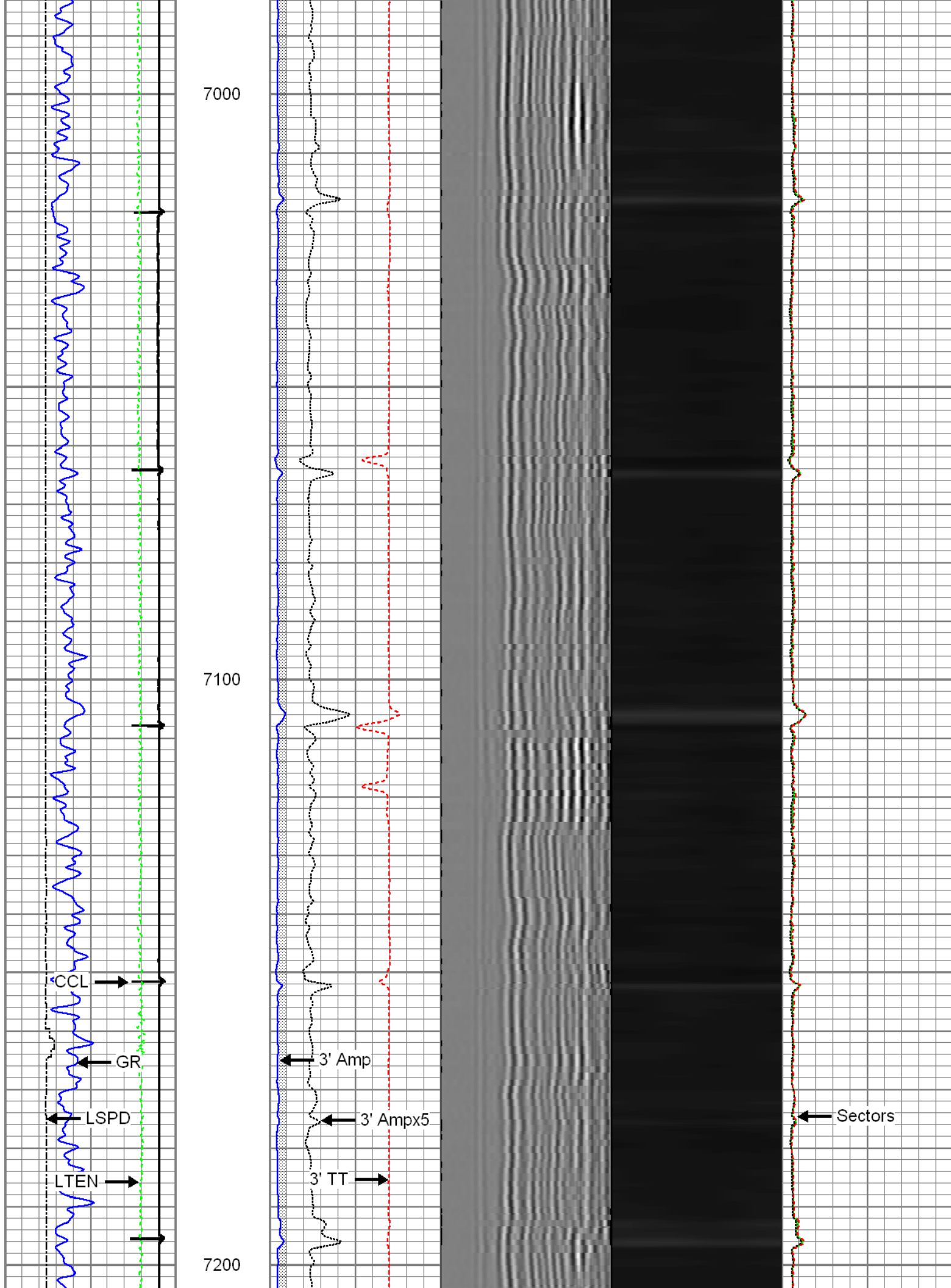
3' Ampx5

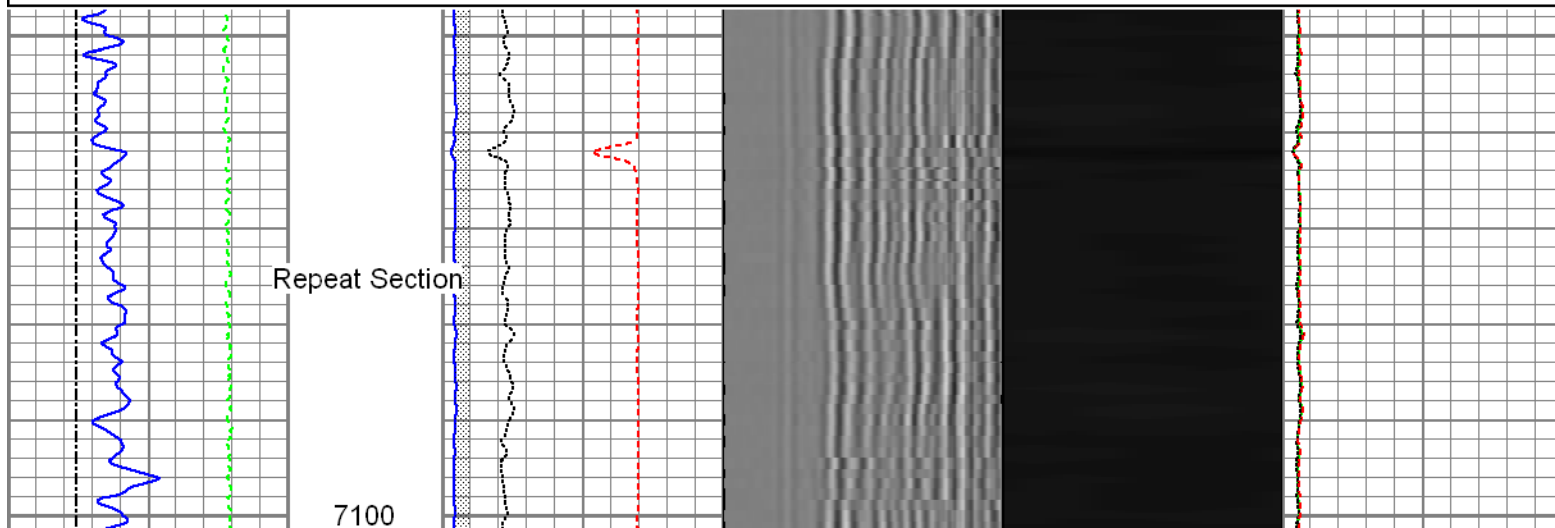
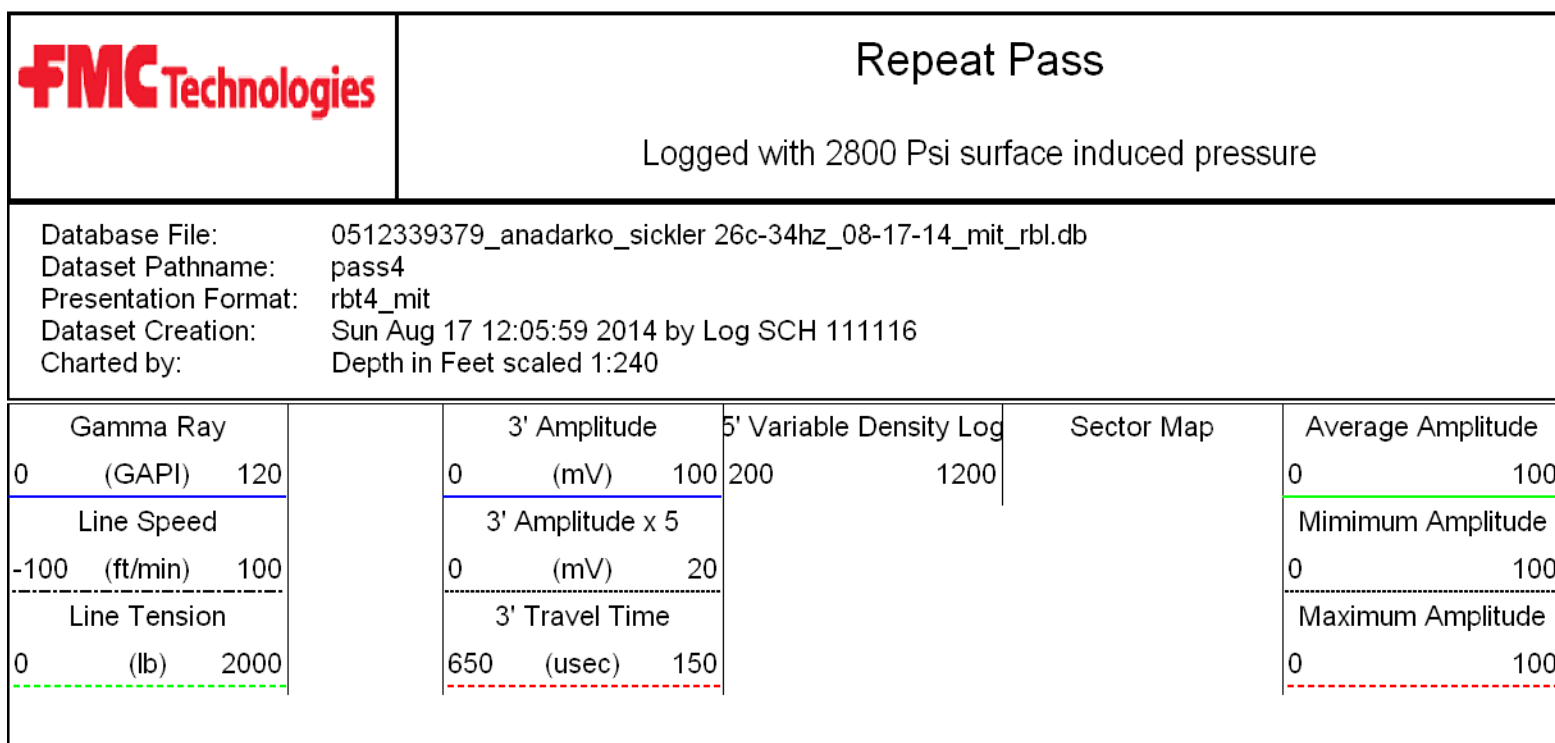
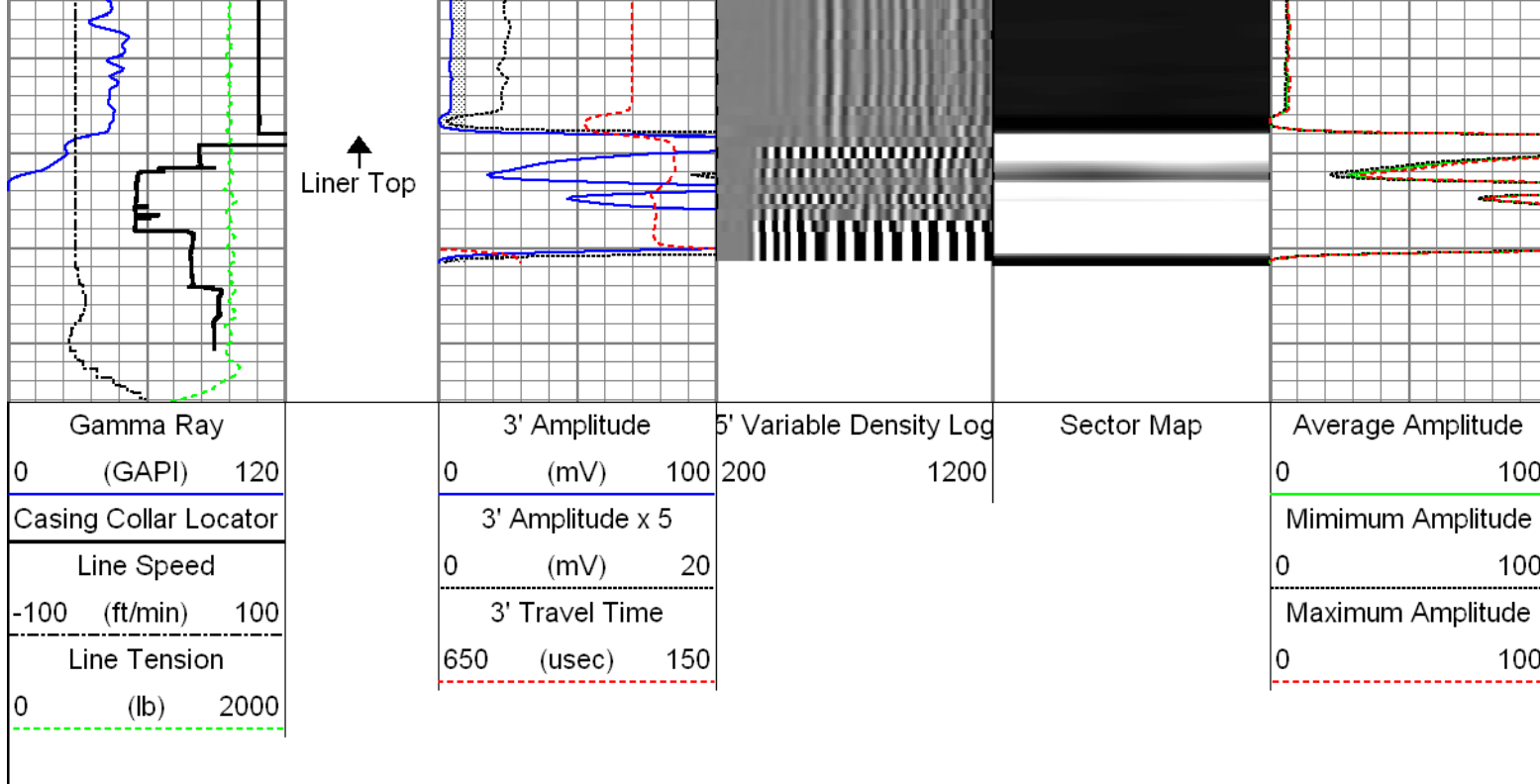


3' TT



Sectors

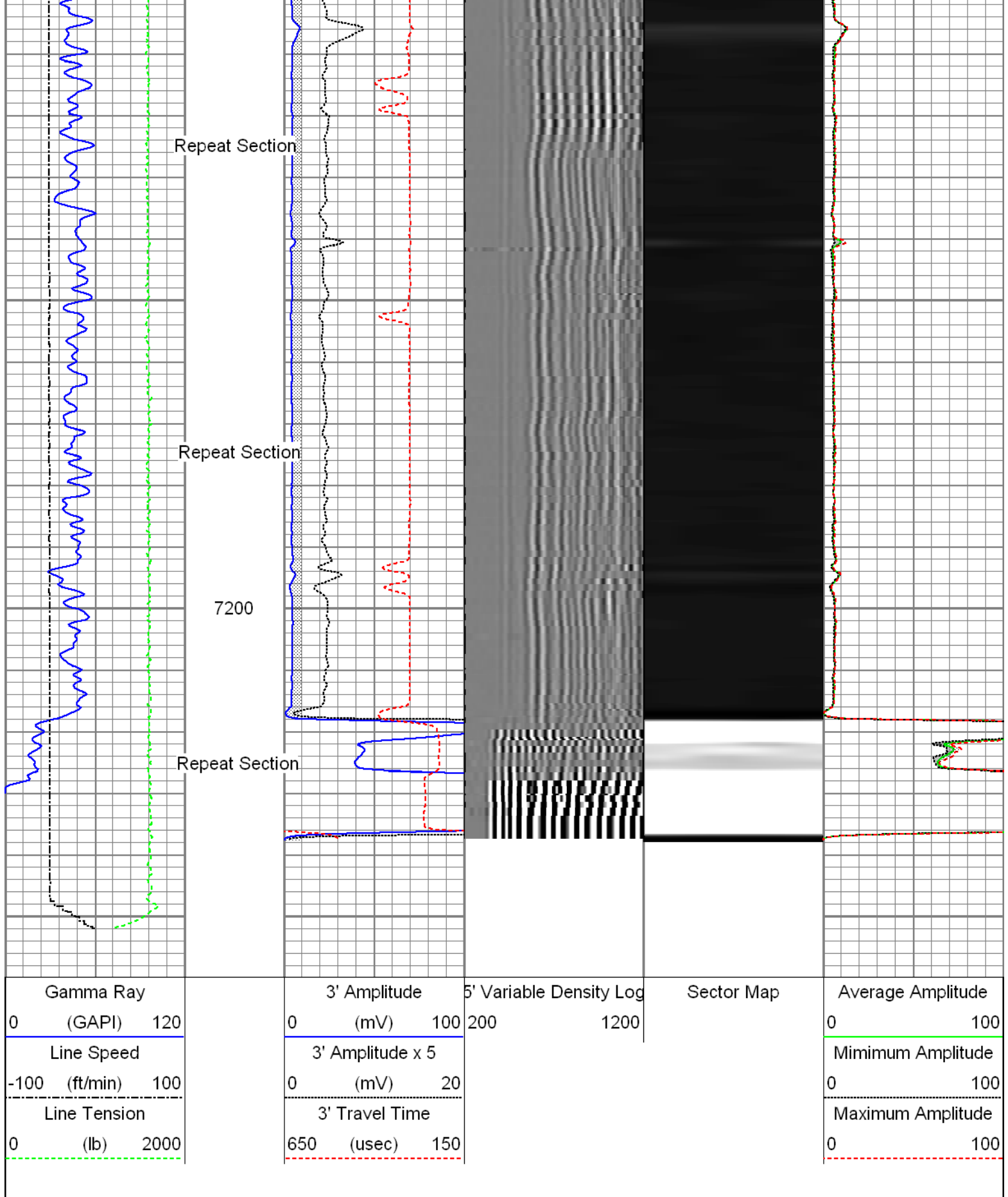





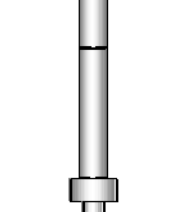
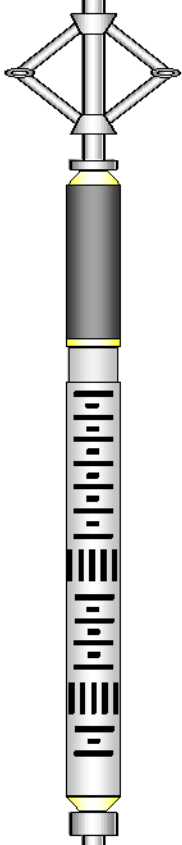
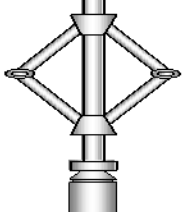
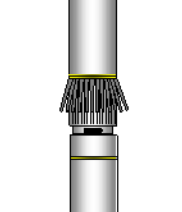
## Repeat Pass

Logged with 2800 Psi surface induced pressure

Database File: 0512339379\_anadarko\_sickler 26c-34hz\_08-17-14\_mit\_rbl.db  
 Dataset Pathname: pass4  
 Presentation Format: rbt4\_mit  
 Dataset Creation: Sun Aug 17 12:05:59 2014 by Log SCH 111116  
 Charted by: Depth in Feet scaled 1:240



Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
			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)	0.21	1.69	1.00

GR	23.67		Sondex Adapter - GO Box to Sondex Pin			
			UW_XTU-UW_XTU_002 (211461) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50
			UW_PGR-UW_PGR_020 (050836) Production Gamma Ray	1.93	1.69	9.50
WV3FT WVFS1 WVFS2 WVFS3 WVFS4 WVFS5 WVFS6 WVFS7 WVFS8 CBLTEMP CBLROT WV5FT	15.85 15.85 15.85 15.85 15.85 15.85 15.85 15.85 15.85 15.85 14.85		UW_PRC-UW_PRC_057 (1037) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
			UW_RBT-UW_RBT_004 (1066) Sondex Ultrawire 3-1/8" Radial Bond Tool	9.47	3.13	140.00
			UW_PRC-UW_PRC_057 (1038) 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
			UW_PRC #3 -UW_PRC_057 (1101) 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
MIT	5.41					
TSTAMP	0.00					
Dataset: 0512339379_Anadarko_Sickler 26C-34HZ_08-17-14_MIT_RBL.db: field/well/run1/pass5 Total Length: 27.92 ft Total Weight: 319.30 lb O.D. 3.13 in						

#### Calibration Report

Database File: 0512339379\_Anadarko\_Sickler 26C-34HZ\_08-17-14\_MIT\_RBL.db  
 Dataset Pathname: pass6  
 Dataset Creation: Sun Aug 17 15:04:41 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: Sun Aug 17 11:32:24 2014

Ring size:	4		5		6		7
(in)		Sens		Sens		Sens	
Finger 01:	1067	347.0	1414	390.0	1804	402.0	2206
Finger 02:	1195	354.0	1549	389.0	1938	399.0	2337
Finger 03:	1085	358.0	1443	405.0	1848	426.0	2274
Finger 04:	1103	345.0	1448	391.0	1839	417.0	2256
Finger 05:	1107	355.0	1462	398.0	1860	422.0	2282
Finger 06:	1103	352.0	1455	396.0	1851	422.0	2273
Finger 07:	1095	358.0	1453	397.0	1850	425.0	2275
Finger 08:	1107	347.0	1454	395.0	1849	419.0	2268
Finger 09:	1106	356.0	1462	390.0	1852	424.0	2276
Finger 10:	1100	356.0	1456	389.0	1845	423.0	2268
Finger 11:	1113	358.0	1471	386.0	1857	420.0	2277
Finger 12:	1104	356.0	1460	387.0	1847	423.0	2270
Finger 13:	1113	360.0	1473	381.0	1854	414.0	2268
Finger 14:	1087	367.0	1454	391.0	1845	426.0	2271
Finger 15:	1052	372.0	1424	402.0	1826	438.0	2264
Finger 16:	1062	374.0	1436	401.0	1837	436.0	2273
Finger 17:	1028	371.0	1399	401.0	1800	442.0	2242
Finger 18:	1111	368.0	1479	387.0	1866	415.0	2281
Finger 19:	1066	373.0	1439	392.0	1831	423.0	2254
Finger 20:	1035	379.0	1414	401.0	1815	434.0	2249
Finger 21:	1055	385.0	1440	401.0	1841	418.0	2259
Finger 22:	1015	387.0	1402	403.0	1805	429.0	2234
Finger 23:	990	387.0	1377	413.0	1790	438.0	2228
Finger 24:	1043	382.0	1425	393.0	1818	401.0	2219
Finger 25:	1004	385.0	1389	412.0	1801	427.0	2228
Finger 26:	1129	374.0	1503	386.0	1889	391.0	2280
Finger 27:	1074	381.0	1455	405.0	1860	411.0	2271
Finger 28:	1100	375.0	1475	391.0	1866	397.0	2263
Finger 29:	1055	383.0	1438	411.0	1849	420.0	2269
Finger 30:	1068	380.0	1448	403.0	1851	407.0	2258
Finger 31:	1096	376.0	1472	397.0	1869	401.0	2270
Finger 32:	1086	380.0	1466	411.0	1877	412.0	2289
Finger 33:	1141	371.0	1512	384.0	1896	380.0	2276
Finger 34:	1123	363.0	1486	394.0	1880	398.0	2278
Finger 35:	1056	380.0	1436	419.0	1855	428.0	2283
Finger 36:	1083	367.0	1450	405.0	1855	412.0	2267
Finger 37:	1119	366.0	1485	398.0	1883	402.0	2285
Finger 38:	1143	359.0	1502	390.0	1892	391.0	2283
Finger 39:	1141	353.0	1494	387.0	1881	392.0	2273
Finger 40:	1104	359.0	1463	401.0	1864	410.0	2274



Post Survey Calibration Check  
Performed: Sun Aug 17 15:04:34 2014

Ring size: (in)	4	Nom. wear	5	Nom. wear	6	Nom. wear	7	Nom. wear
Finger 01:	3.992	-0.004	4.994	-0.003	5.995	-0.003	7.010	0.005
Finger 02:	3.993	-0.003	4.997	-0.001	5.993	-0.004	6.991	-0.004
Finger 03:	3.994	-0.003	4.995	-0.003	5.992	-0.004	6.991	-0.005
Finger 04:	3.995	-0.002	5.001	0.001	5.995	-0.002	6.996	-0.002
Finger 05:	3.986	-0.007	4.997	-0.001	5.993	-0.004	6.995	-0.002
Finger 06:	3.990	-0.005	5.002	0.001	5.994	-0.003	6.992	-0.004
Finger 07:	3.994	-0.003	4.994	-0.003	5.994	-0.003	6.993	-0.004
Finger 08:	3.987	-0.006	4.994	-0.003	5.973	-0.013	6.986	-0.007
Finger 09:	3.993	-0.004	4.999	-0.000	5.995	-0.002	6.985	-0.007
Finger 10:	3.989	-0.006	4.999	-0.000	5.995	-0.003	6.986	-0.007
Finger 11:	3.987	-0.007	4.992	-0.004	5.992	-0.004	6.992	-0.004
Finger 12:	3.989	-0.005	5.000	0.000	5.995	-0.003	6.997	-0.002
Finger 13:	3.995	-0.003	4.995	-0.002	5.998	-0.001	6.996	-0.002
Finger 14:	3.986	-0.007	4.990	-0.005	5.989	-0.006	6.991	-0.004
Finger 15:	3.988	-0.006	4.996	-0.002	5.992	-0.004	6.996	-0.002
Finger 16:	3.989	-0.005	5.000	0.000	5.995	-0.003	6.998	-0.001
Finger 17:	3.982	-0.009	4.992	-0.004	5.991	-0.005	6.990	-0.005
Finger 18:	4.000	-0.000	5.011	0.006	5.994	-0.003	6.998	-0.001
Finger 19:	3.995	-0.002	4.995	-0.003	5.991	-0.004	6.990	-0.005
Finger 20:	3.996	-0.002	4.996	-0.002	5.998	-0.001	7.001	0.000
Finger 21:	3.987	-0.006	4.991	-0.004	5.990	-0.005	6.990	-0.005
Finger 22:	3.994	-0.003	4.994	-0.003	5.988	-0.006	6.991	-0.005
Finger 23:	3.994	-0.003	4.993	-0.003	5.995	-0.003	6.997	-0.002
Finger 24:	3.989	-0.005	4.991	-0.004	5.991	-0.004	6.992	-0.004
Finger 25:	3.982	-0.009	4.991	-0.005	5.984	-0.008	6.984	-0.008
Finger 26:	3.992	-0.004	5.000	0.000	5.991	-0.004	6.991	-0.004
Finger 27:	3.986	-0.007	4.999	-0.001	5.991	-0.005	6.995	-0.002
Finger 28:	3.994	-0.003	5.001	0.000	5.997	-0.002	6.992	-0.004
Finger 29:	3.989	-0.005	5.001	0.001	5.995	-0.003	6.994	-0.003
Finger 30:	4.001	0.001	5.001	0.000	5.995	-0.003	6.998	-0.001
Finger 31:	4.001	0.001	5.003	0.001	5.995	-0.002	6.990	-0.005
Finger 32:	3.982	-0.009	4.995	-0.003	5.986	-0.007	6.987	-0.006
Finger 33:	3.991	-0.004	4.995	-0.003	5.994	-0.003	6.994	-0.003
Finger 34:	3.984	-0.008	4.994	-0.003	5.990	-0.005	6.994	-0.003
Finger 35:	3.983	-0.009	4.992	-0.004	5.997	-0.002	6.994	-0.003
Finger 36:	3.986	-0.007	4.999	-0.000	5.994	-0.003	6.993	-0.003
Finger 37:	3.996	-0.002	4.998	-0.001	5.994	-0.003	6.991	-0.005
Finger 38:	3.987	-0.007	4.989	-0.006	5.985	-0.008	6.993	-0.004
Finger 39:	3.991	-0.005	4.990	-0.005	5.986	-0.007	6.987	-0.007
Finger 40:	3.998	-0.001	5.002	0.001	5.997	-0.002	6.993	-0.004
Average:	3.991	-0.005	4.996	-0.002	5.992	-0.004	6.993	-0.004

Segmented Cement Bond Log Calibration Report

Serial Number: 1066  
Tool Model: UW\_RBT\_004


Calibration Casing Diameter: 7.000 in  
Calibration Depth: 669.530 ft

Master Calibration, performed Sun Aug 17 11:45:57 2014:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	0.004	0.854	0.800	62.165	72.233	0.501
5FT	-0.001	0.831	0.800	62.165	73.714	0.905

S1	0.005	0.790	0.000	100.000	127.496	-0.693
S2	0.003	0.833	0.000	100.000	120.497	-0.319
S3	0.004	0.875	0.000	100.000	114.778	-0.446
S4	0.003	0.902	0.000	100.000	111.253	-0.349
S5	0.004	0.895	0.000	100.000	112.199	-0.425
S6	0.003	0.874	0.000	100.000	114.816	-0.339
S7	0.004	0.849	0.000	100.000	118.342	-0.433
S8	0.004	0.805	0.000	100.000	124.857	-0.463

Gamma Ray Calibration Report						
Serial Number:	050836					
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 and Gas Onshore LP
	Well	Sickler 26C-34HZ
	Field	Wattenberg
	County	Weld
	State	Colorado