



Radial Cement Bond  
Gamma Ray  
Casing Collar Log

Company				Kerr-McGee Oil & Gas Onshore, L.P.			
Well				NRC 2C-4HZ			
Field				Wattenberg			
County				Weld			
State				Colorado			
Location:				API # : 05-123-38995			
Permanent Datum				SHL: 350' FSL & 2010' FEL			
Log Measured From				LAT / LONG: 40.059229 / -104.8935			
Drilling Measured From				SEC 9 TWP 1N RGE 67W			
Ground Level				Elevation 5031'			
Kelly Bushing				25 FT			
Kelly Bushing				G.L. 5031'			
Date				18-May-2014			
Run Number				Two			
Depth Driller				17279 FT			
Depth Logger				7964 FT			
Bottom Logged Interval				7959 FT			
Top Log Interval				Surface			
Open Hole Size				8.750"			
Type Fluid				Water			
Density / Viscosity				8.34 lbm/gal			
Max. Recorded Temp.				210°F			
Estimated Cement Top				Surface			
Time Well Ready				ROA			
Time Logger on Bottom				11:15			
Equipment Number				HD-0311			
Location				Fort Lupton, CO			
Recorded By				Erick Vaughn			
Witnessed By				Mike Aspa			
Borehole Record				Tubing Record			
Run Number				Bit			
From				To			
Size				Weight			
From				To			
Casing Record				Size (in)			
Surface Casing				9 5/8"			
Intermediate #1				7"			
Intermediate #2				4 1/2"			
Liner				11.6			
P-110				7019 FT			
17269 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 7019 FT.  
Adjusted log +14.8 FT to correlate with Liner Top.  
Gauge Ring/Junk Basket ran to 7915 FT with a small amount of cement on tool, prior to log run.  
Log ran from 7964 FT to surface.  
Log ran with 2800 PSI surface induced pressure.  
Between 7700-7800 FT, Amplitude/VDL/Sectors had repeatable signal readings.  
Upon completion of logging operations, tool was coated in thick mud and grease.

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



7" Main Pass

Database File:0512338995\_anadarko\_nrc 2c-4hz\_05-18-14\_mit\_rbl.db

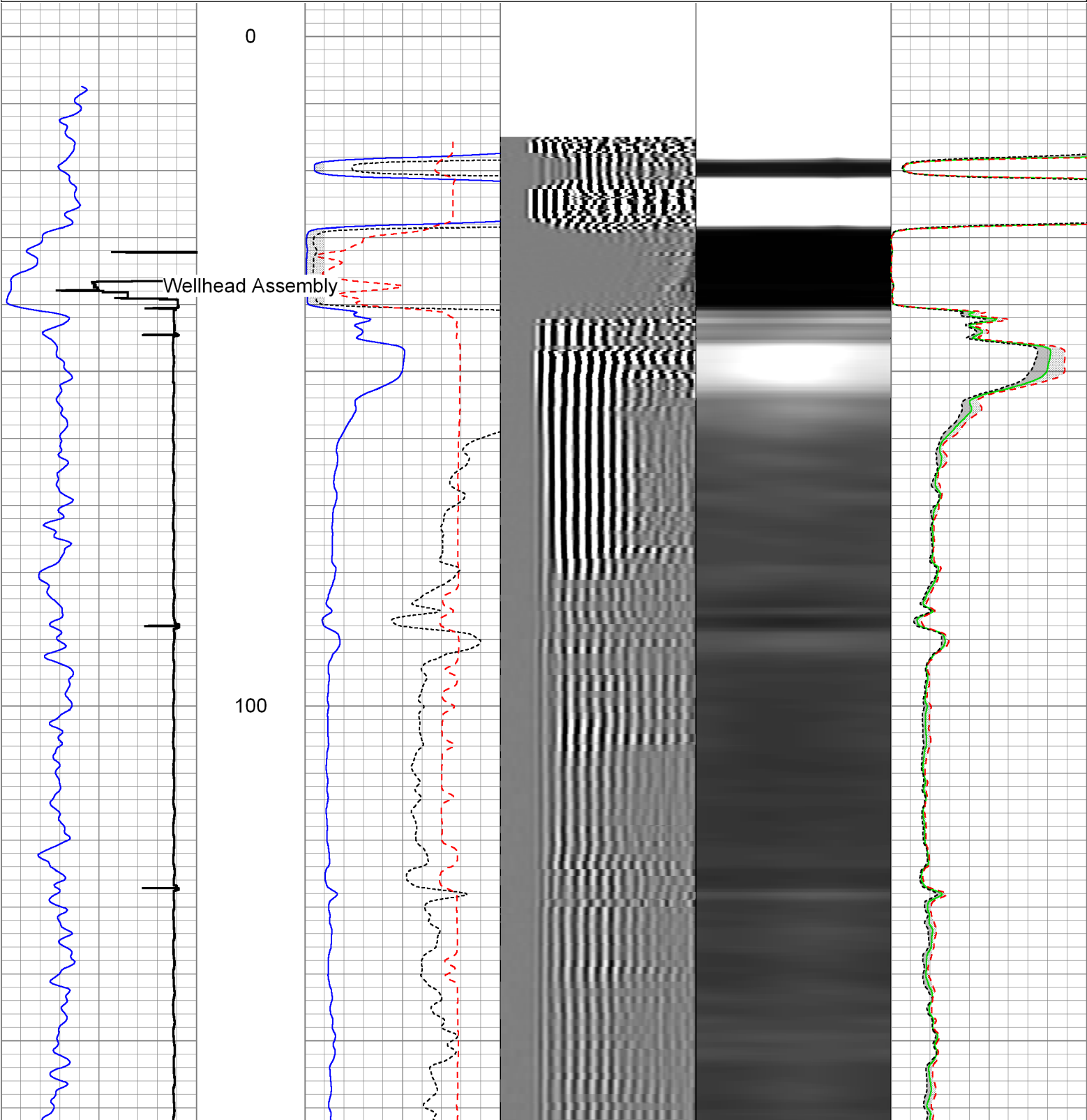
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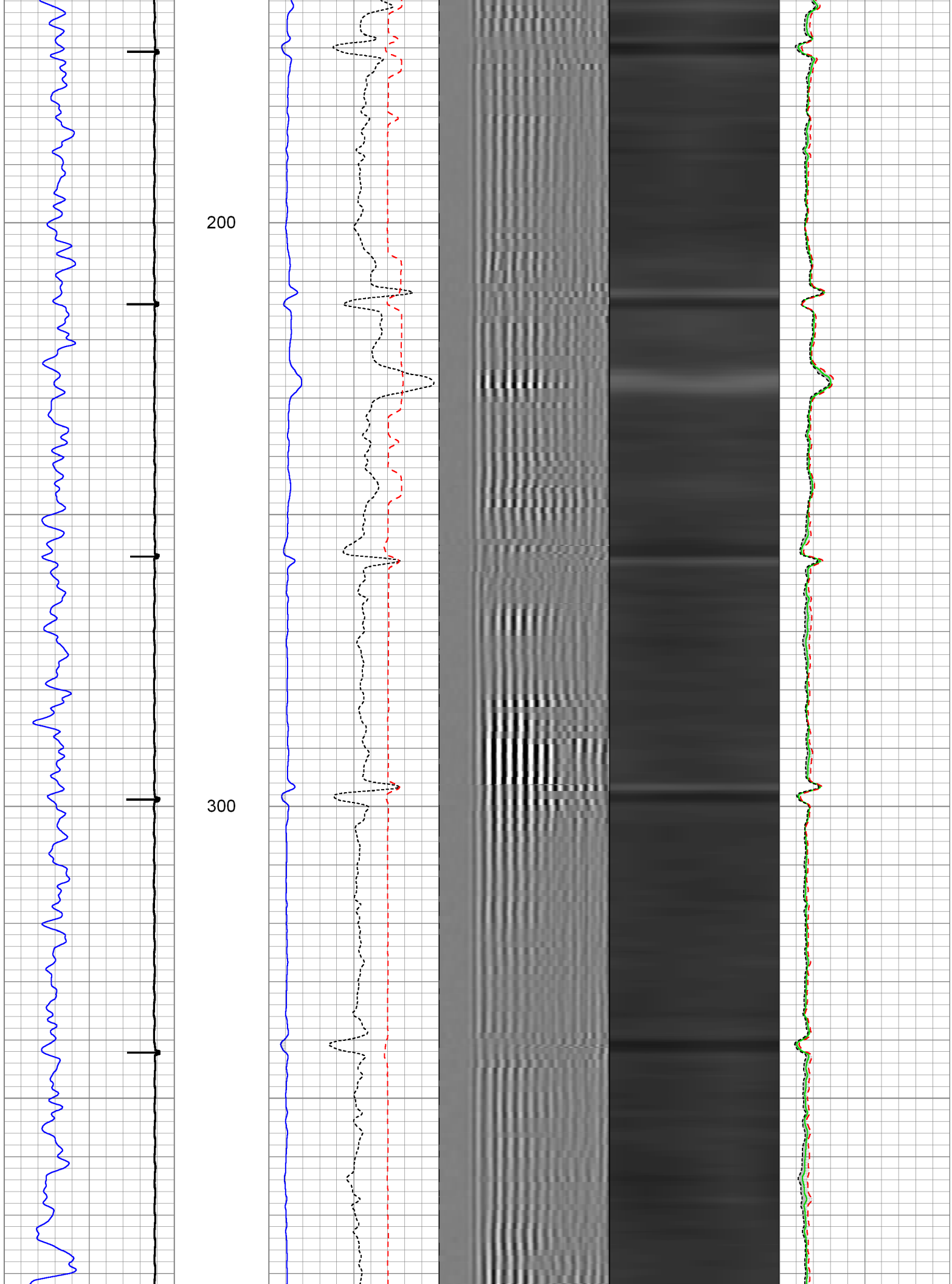
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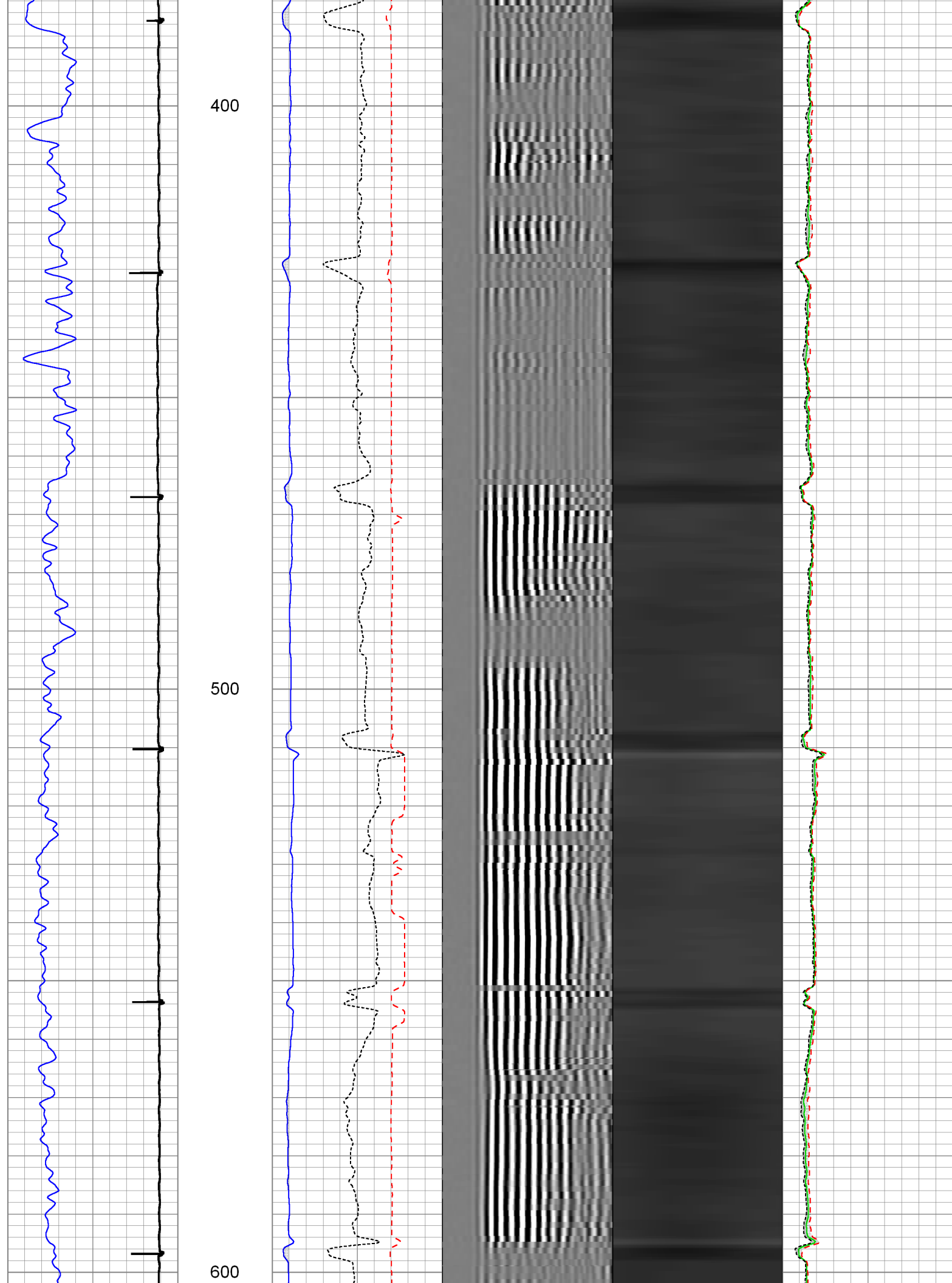
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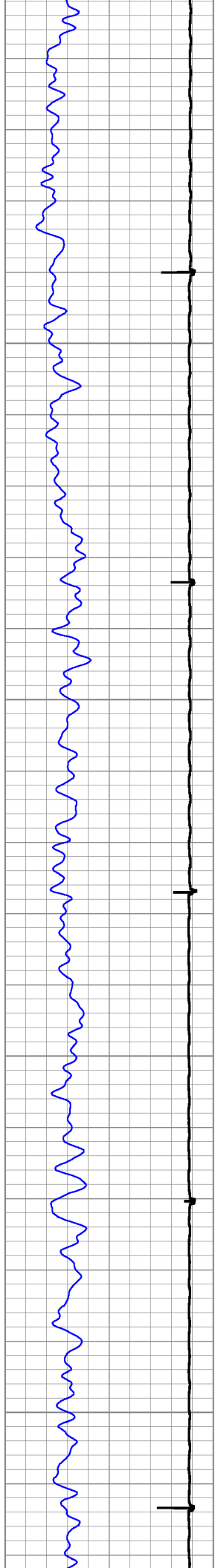
Charted by:Depth in Feet scaled 1:240

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



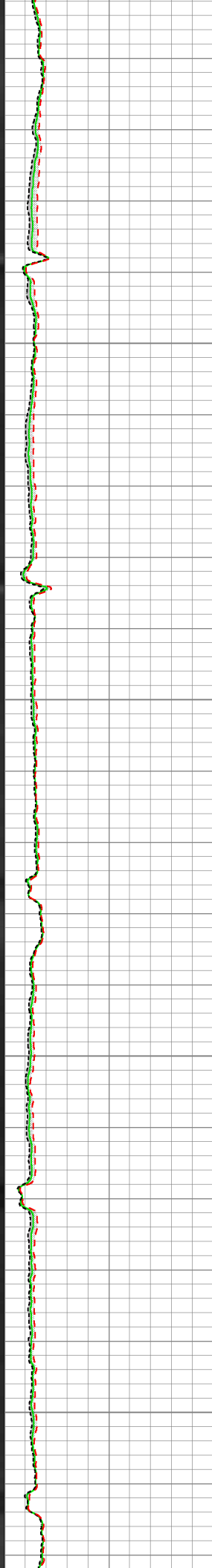
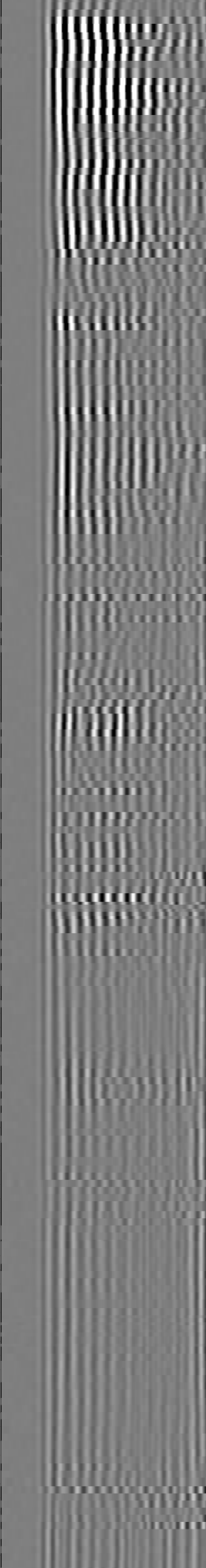
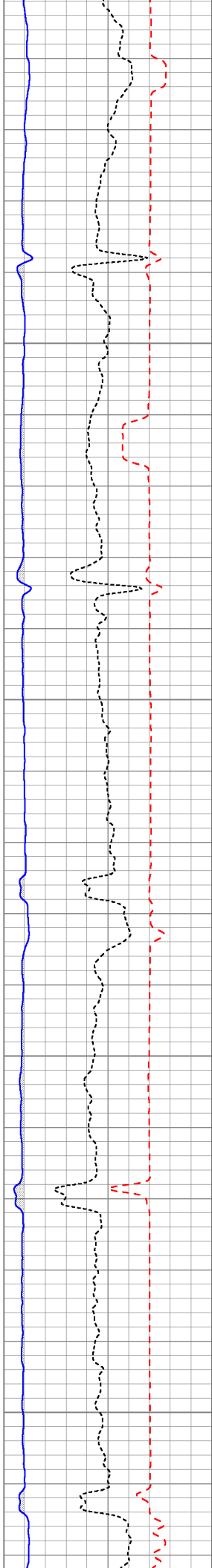


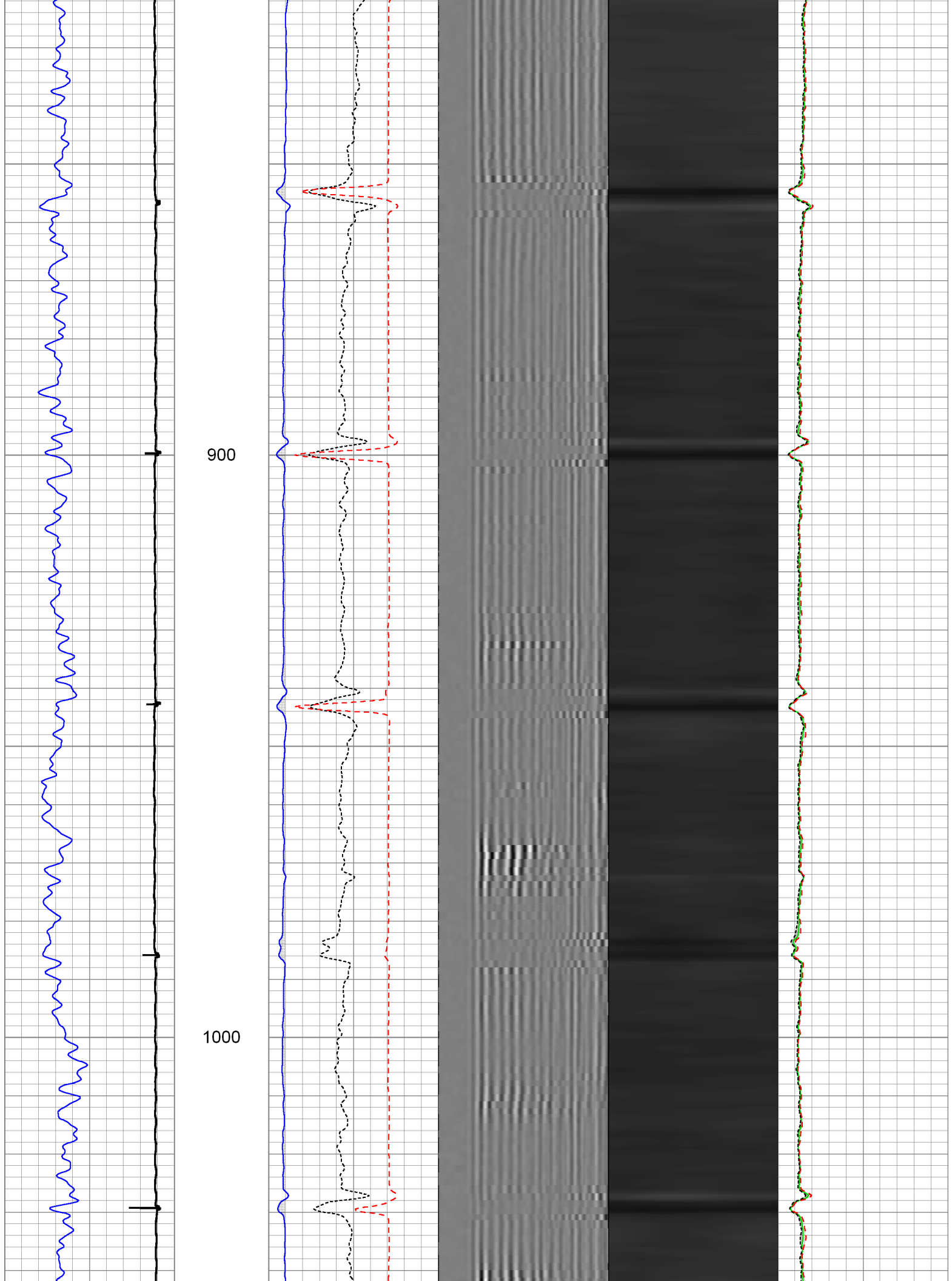


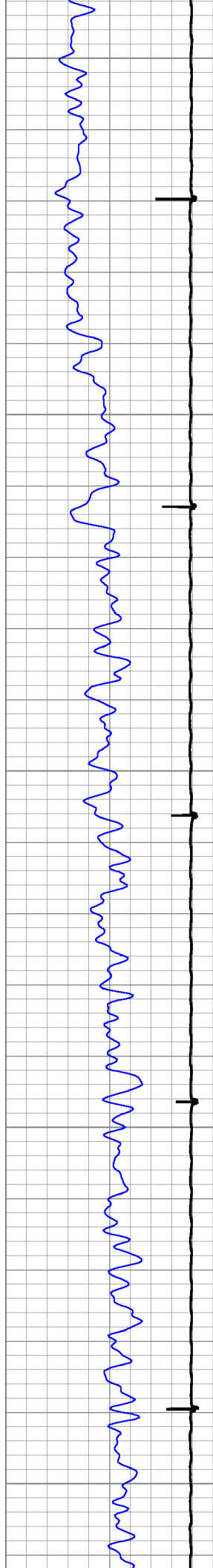


700

800

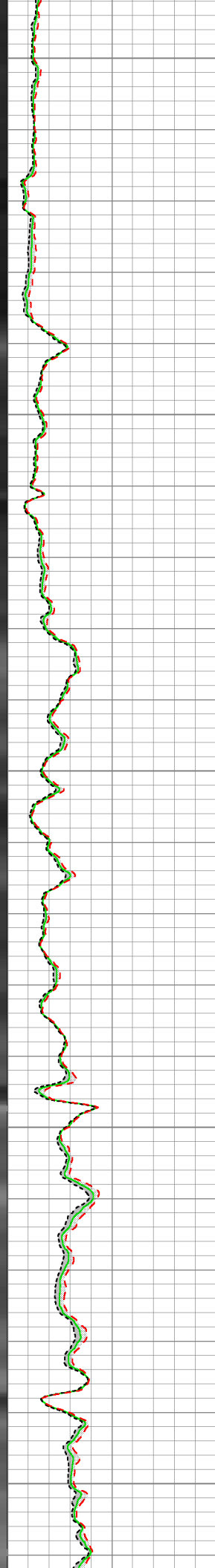
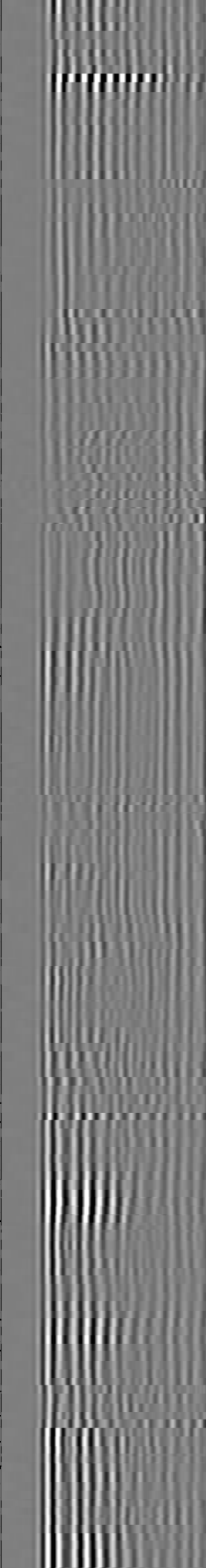
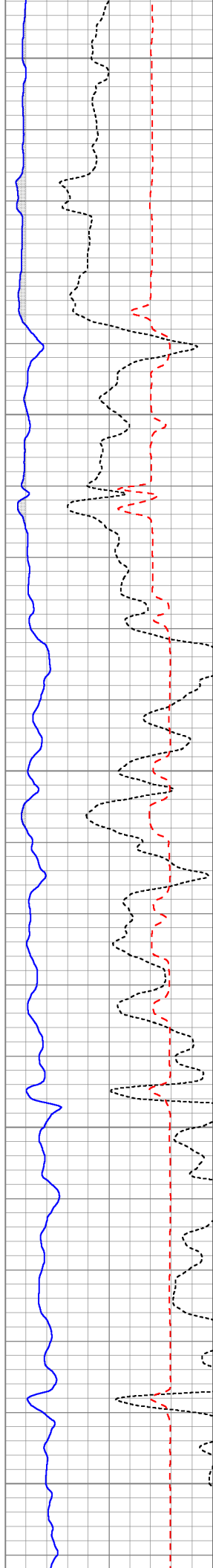


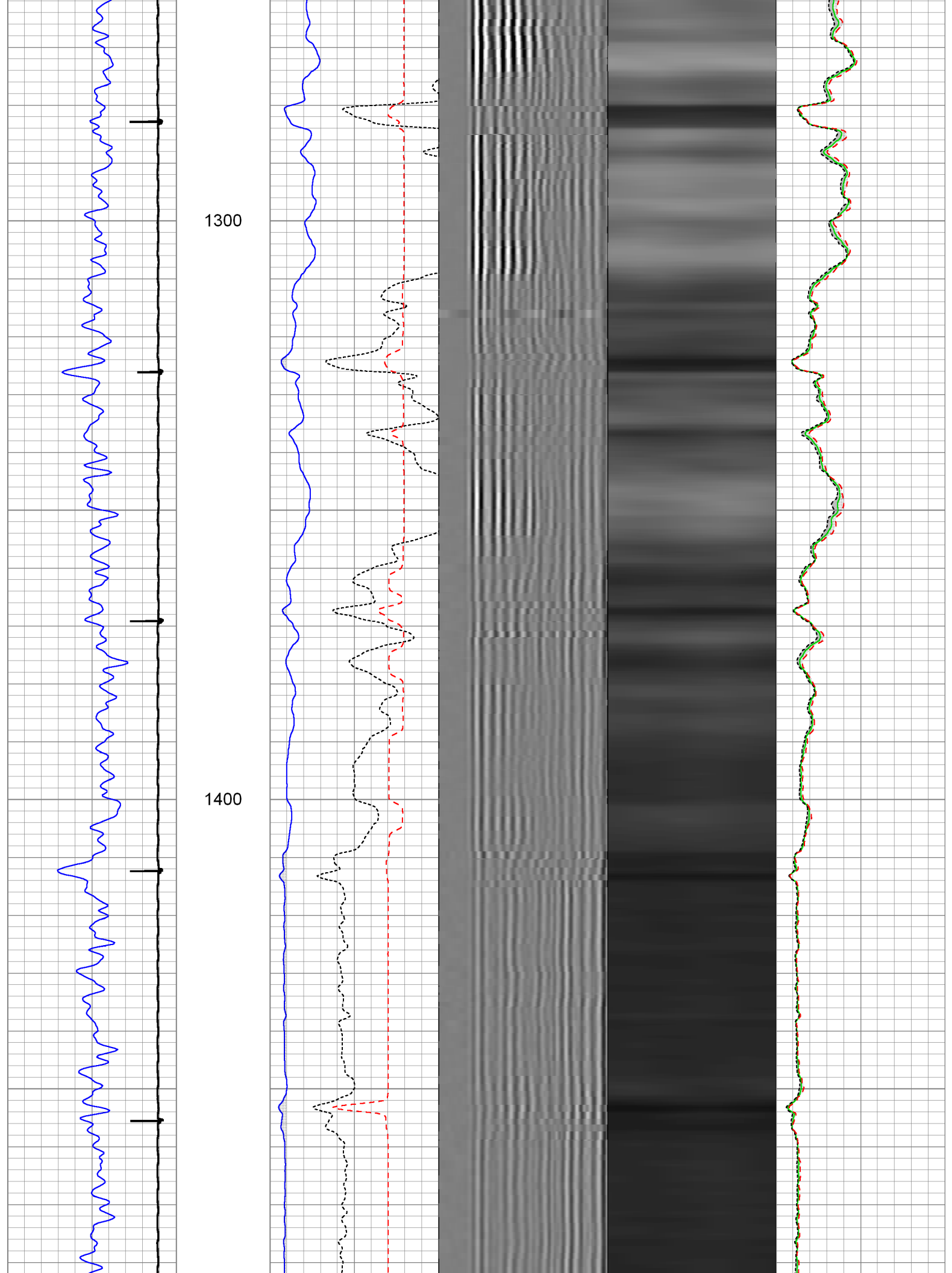


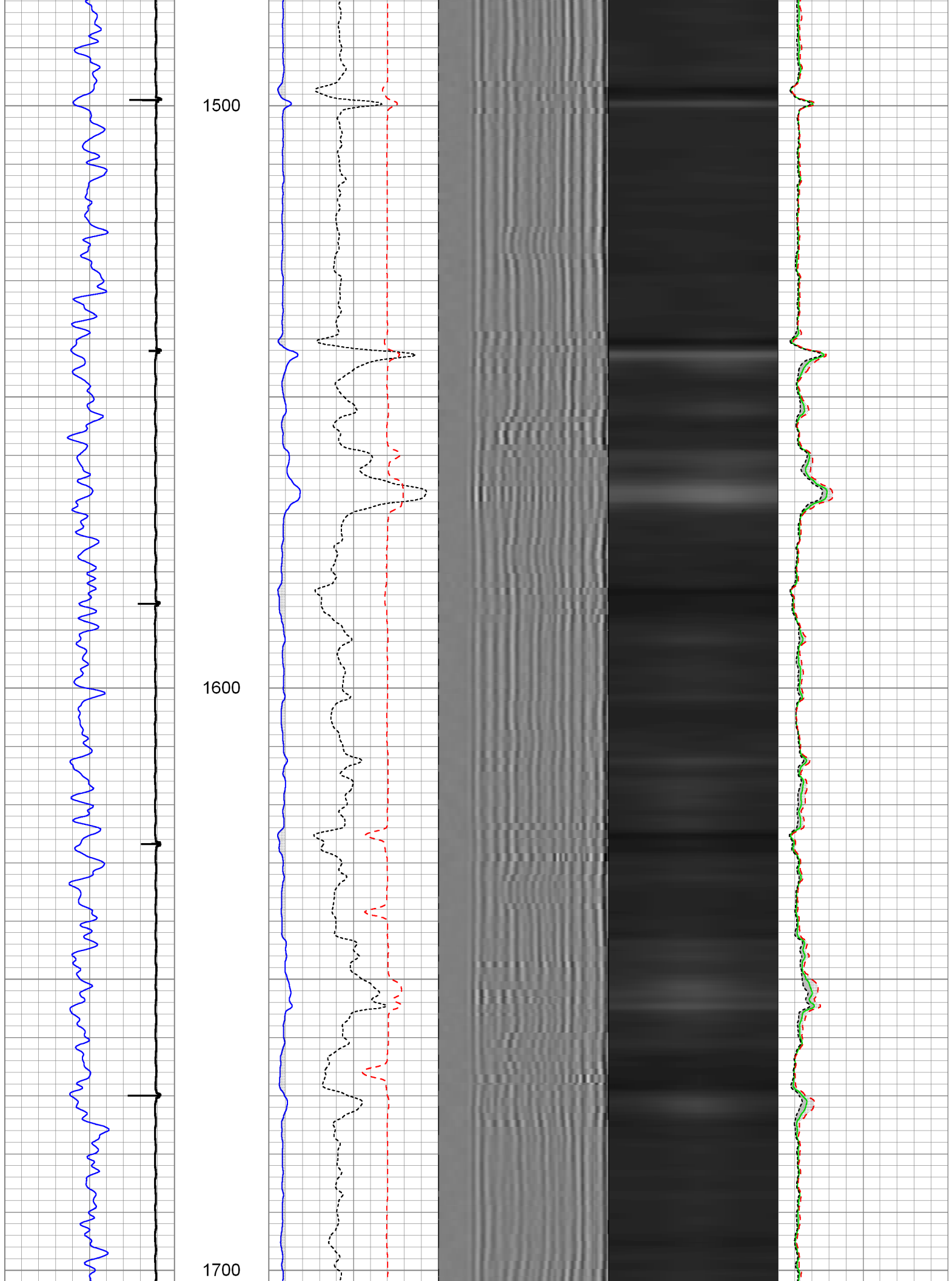


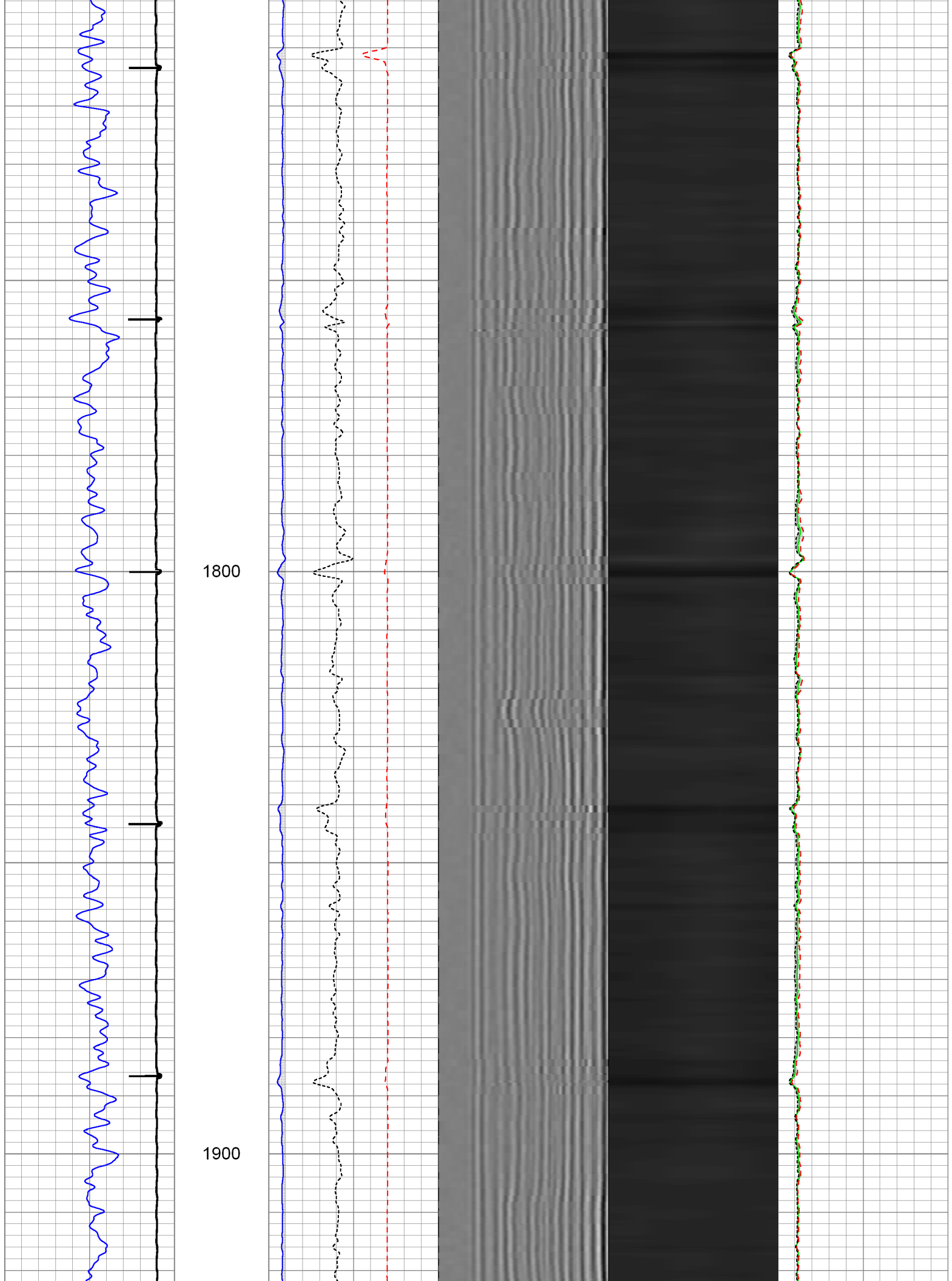
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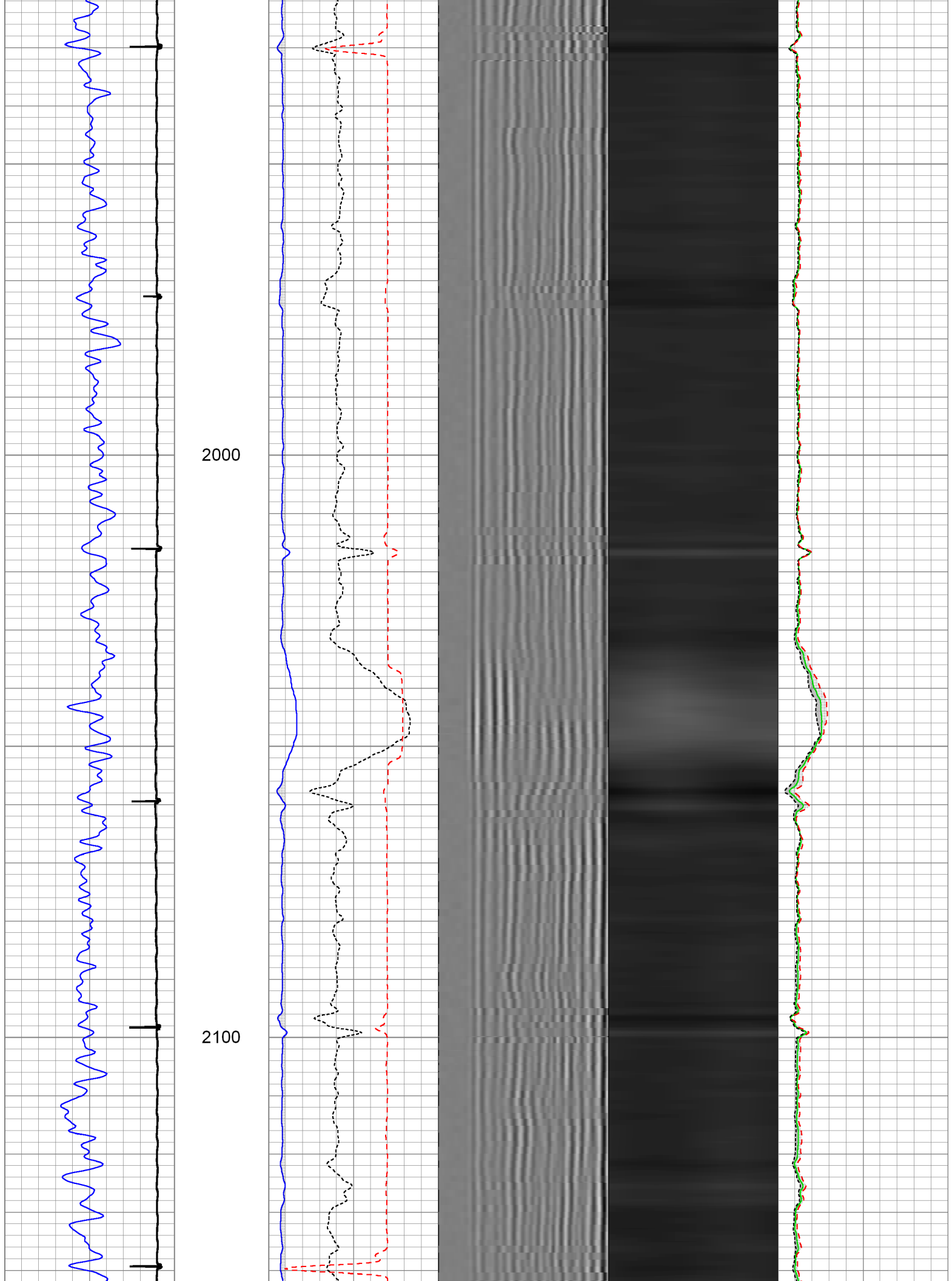
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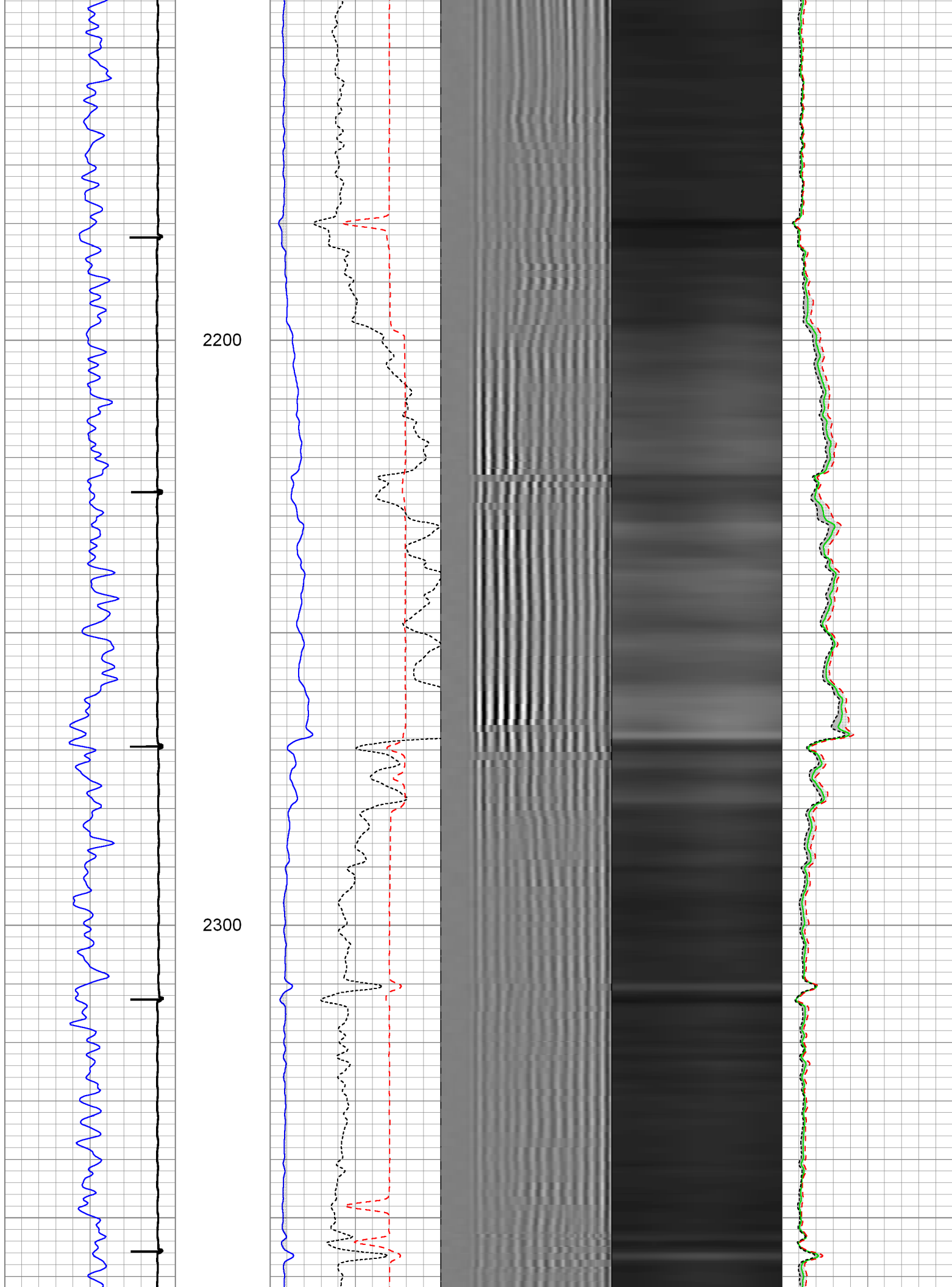


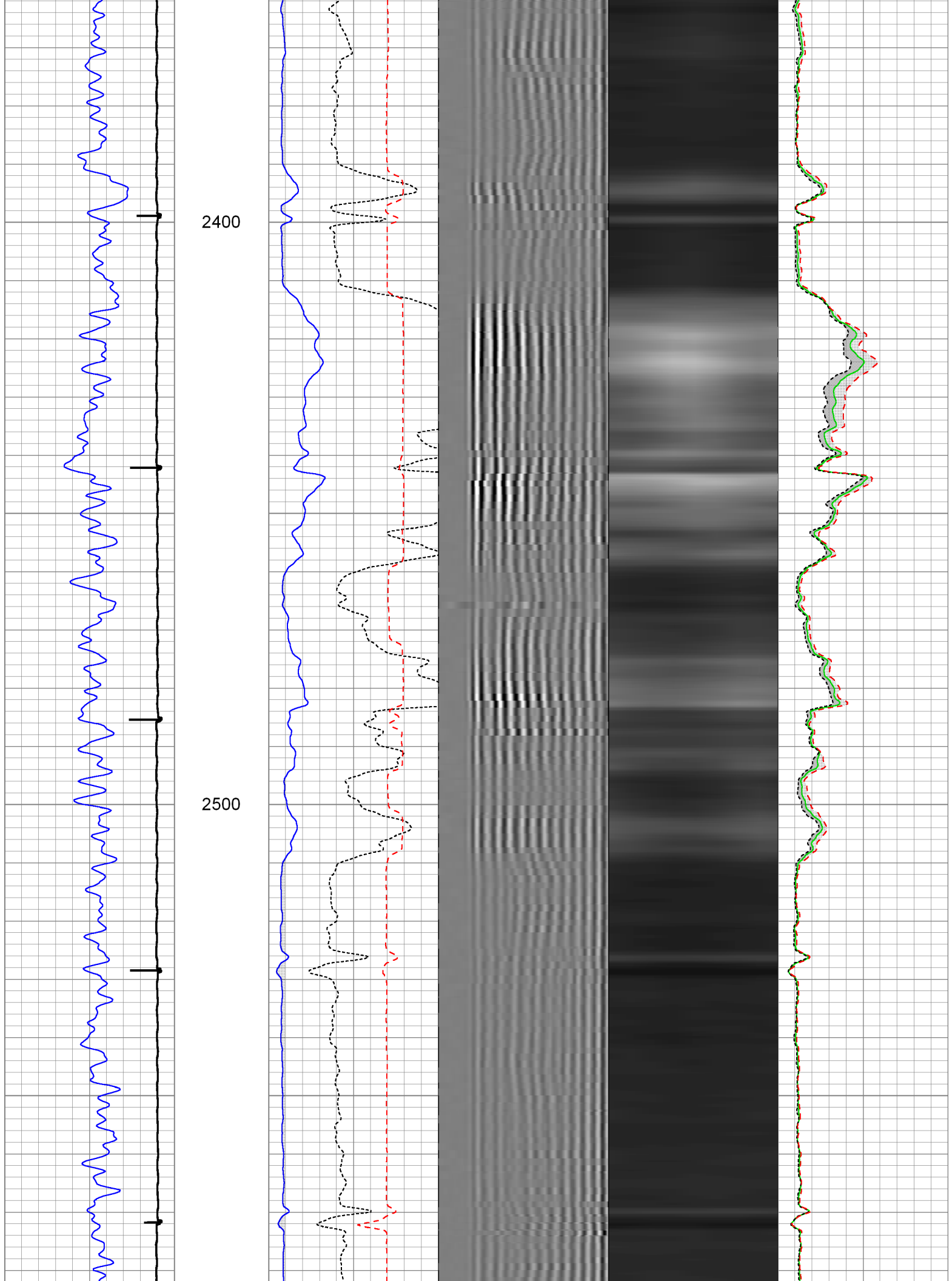




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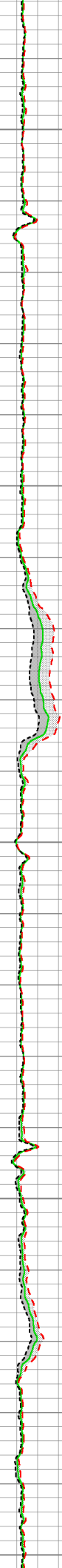
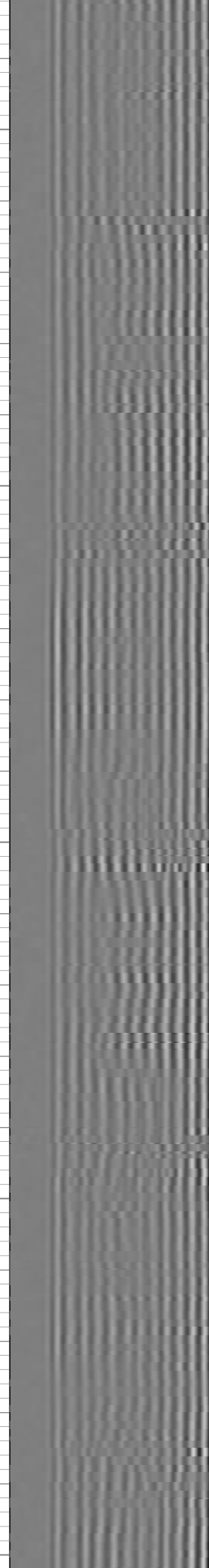
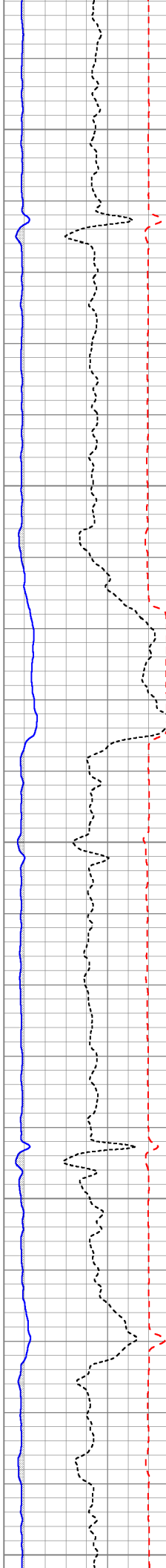
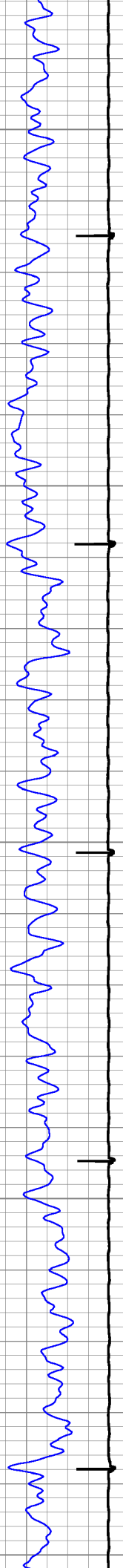


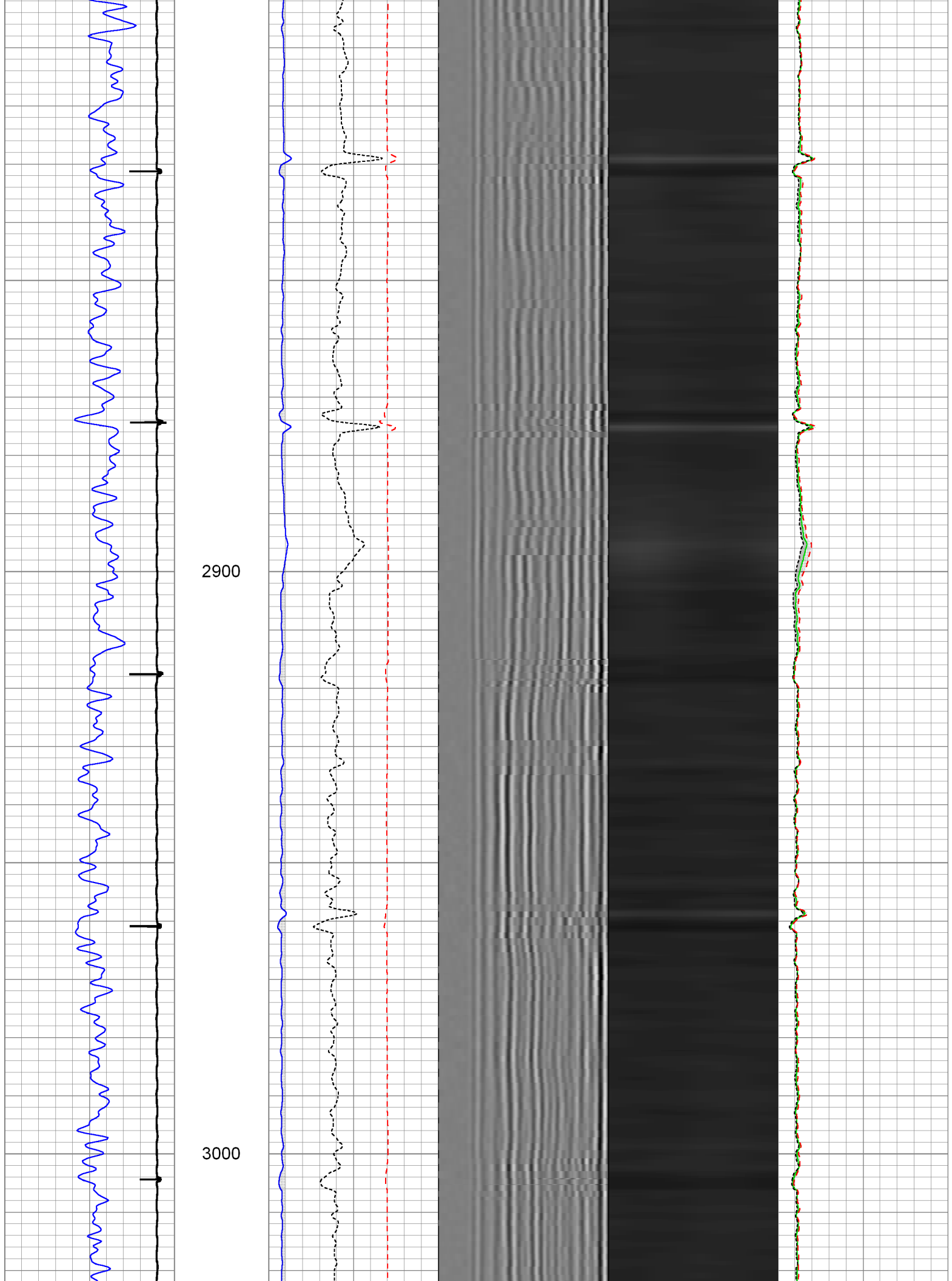


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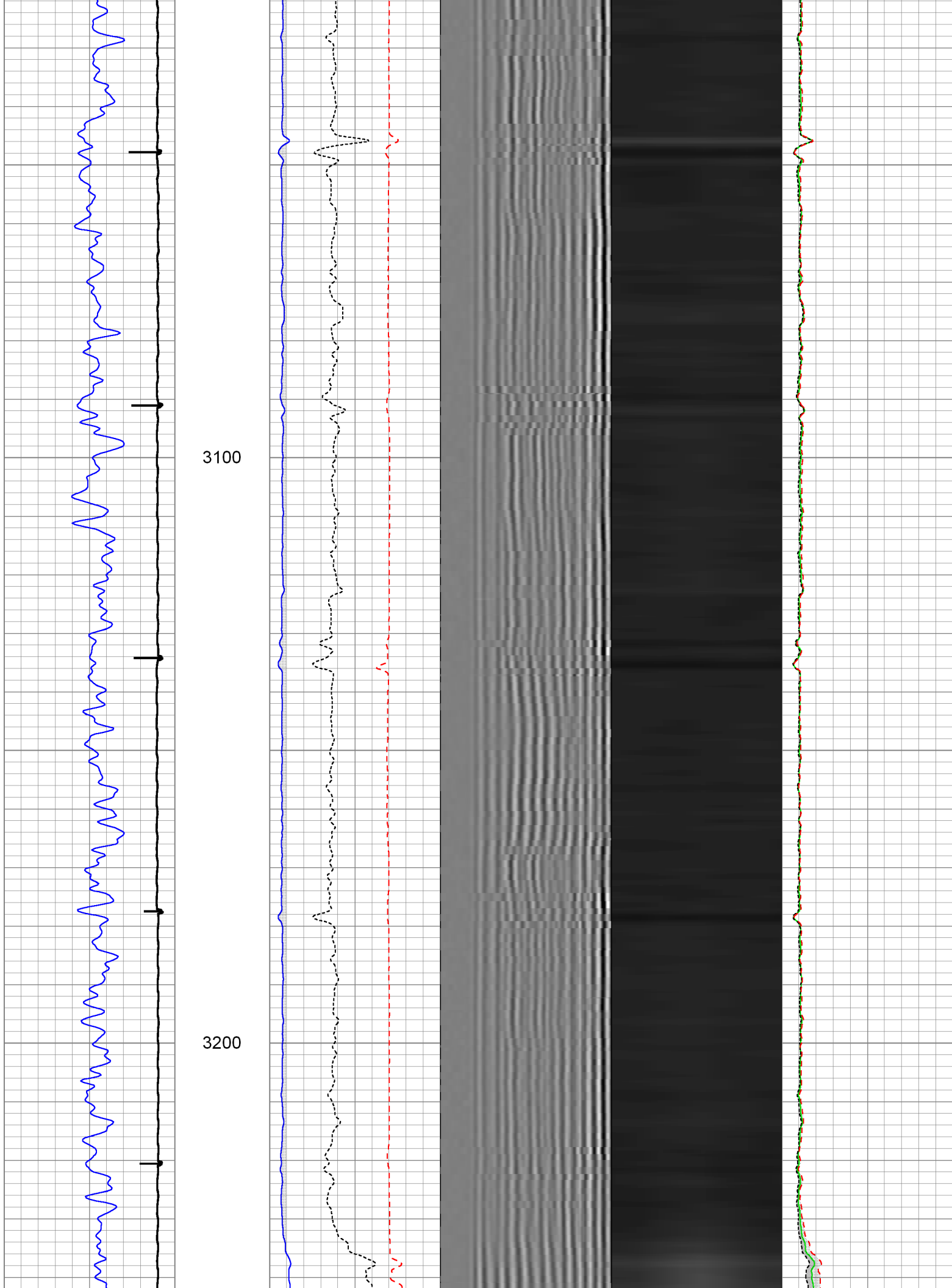
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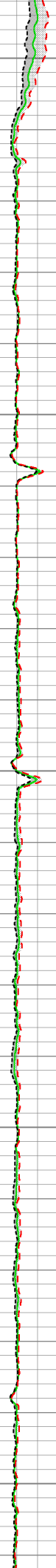
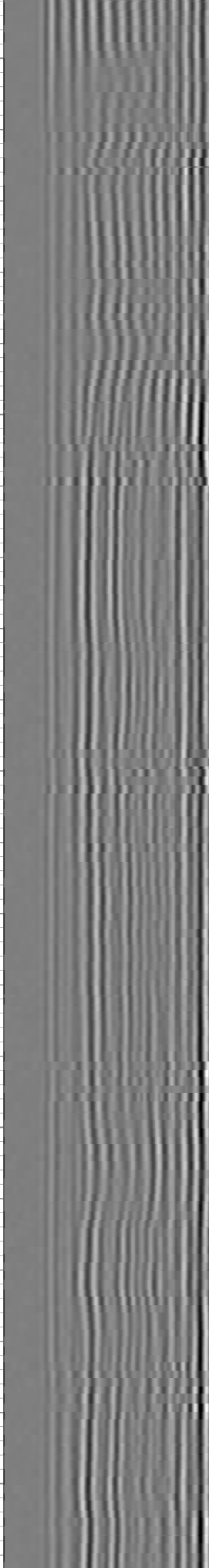
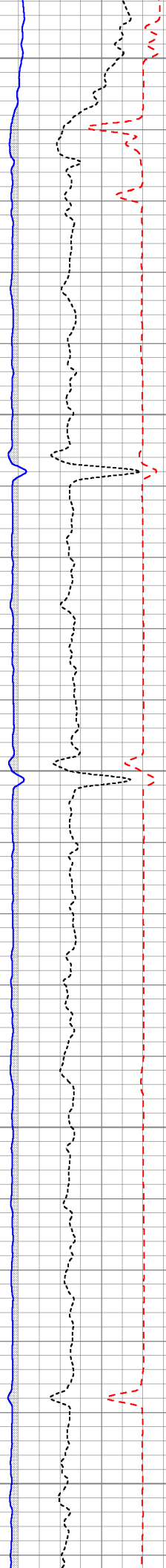
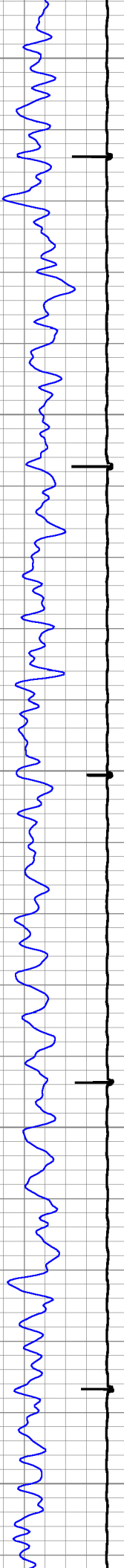
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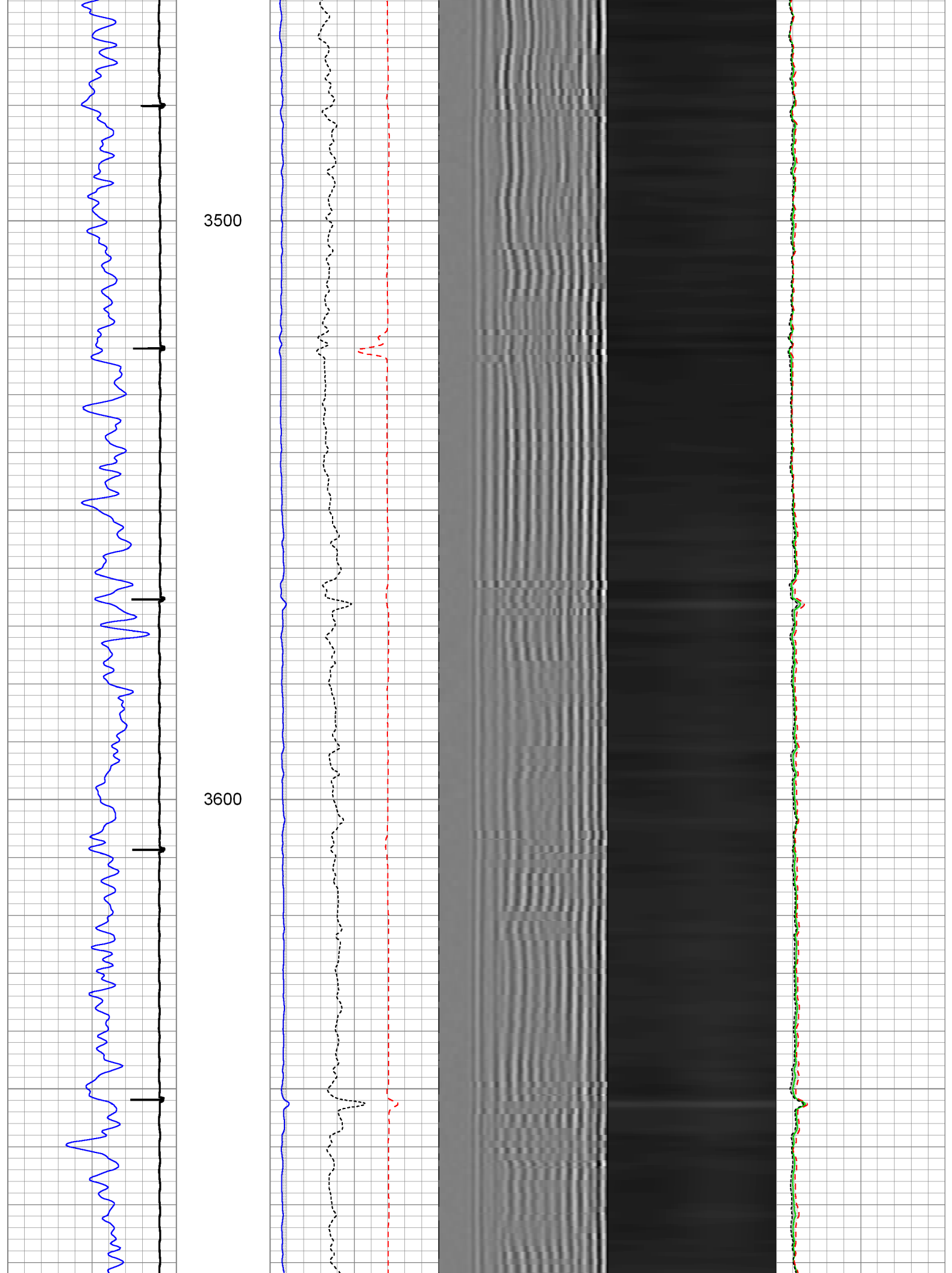
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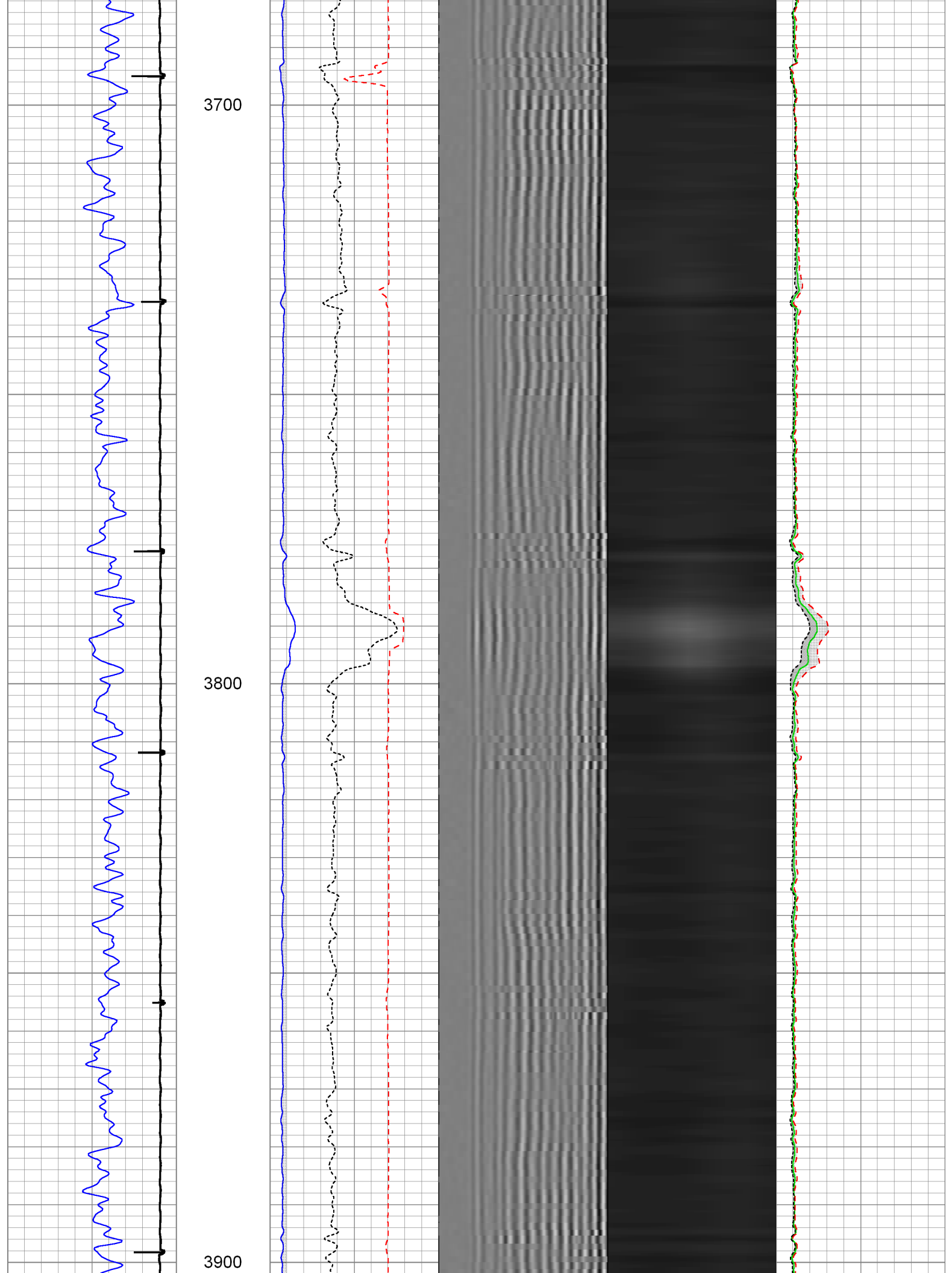


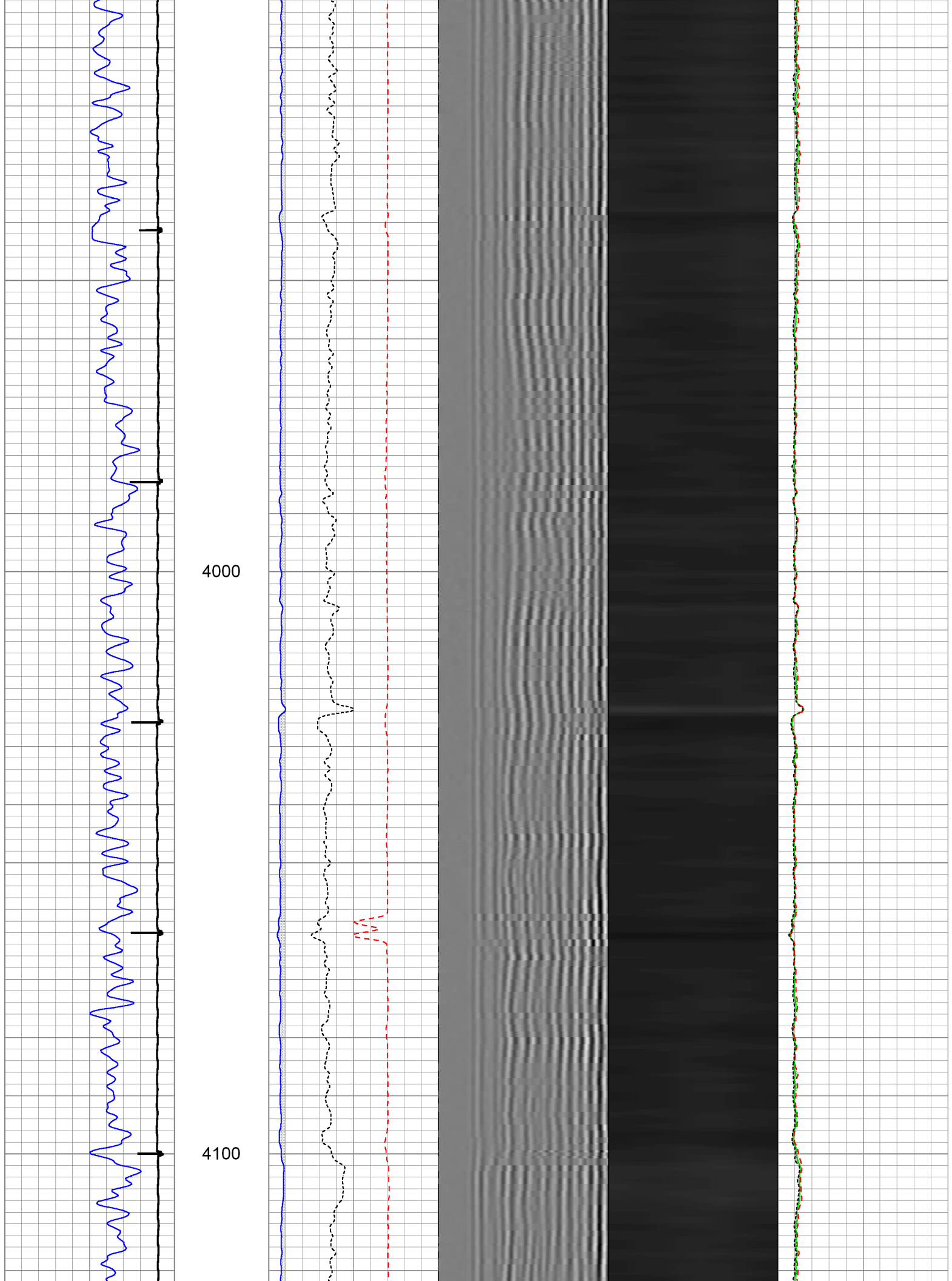
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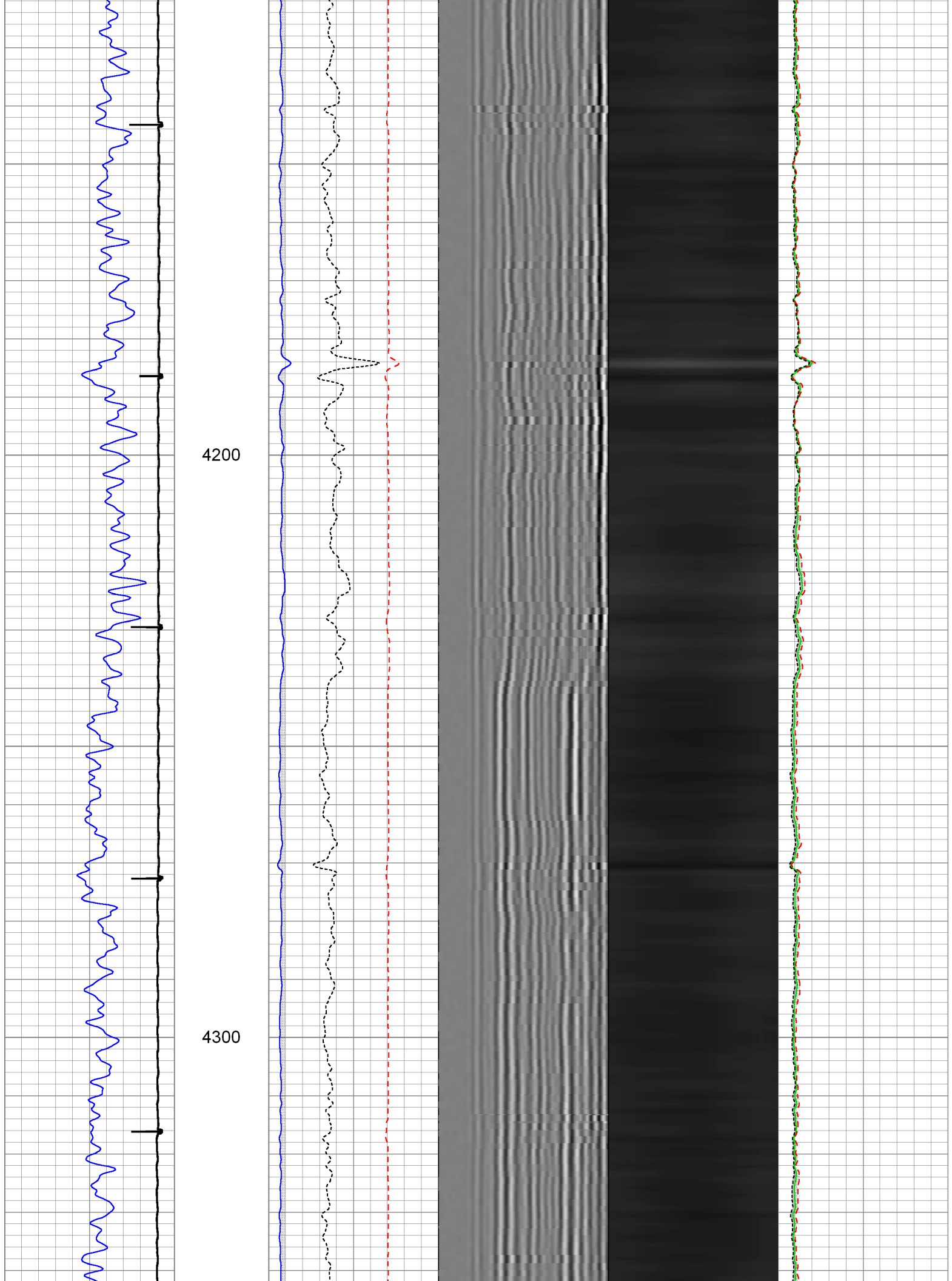
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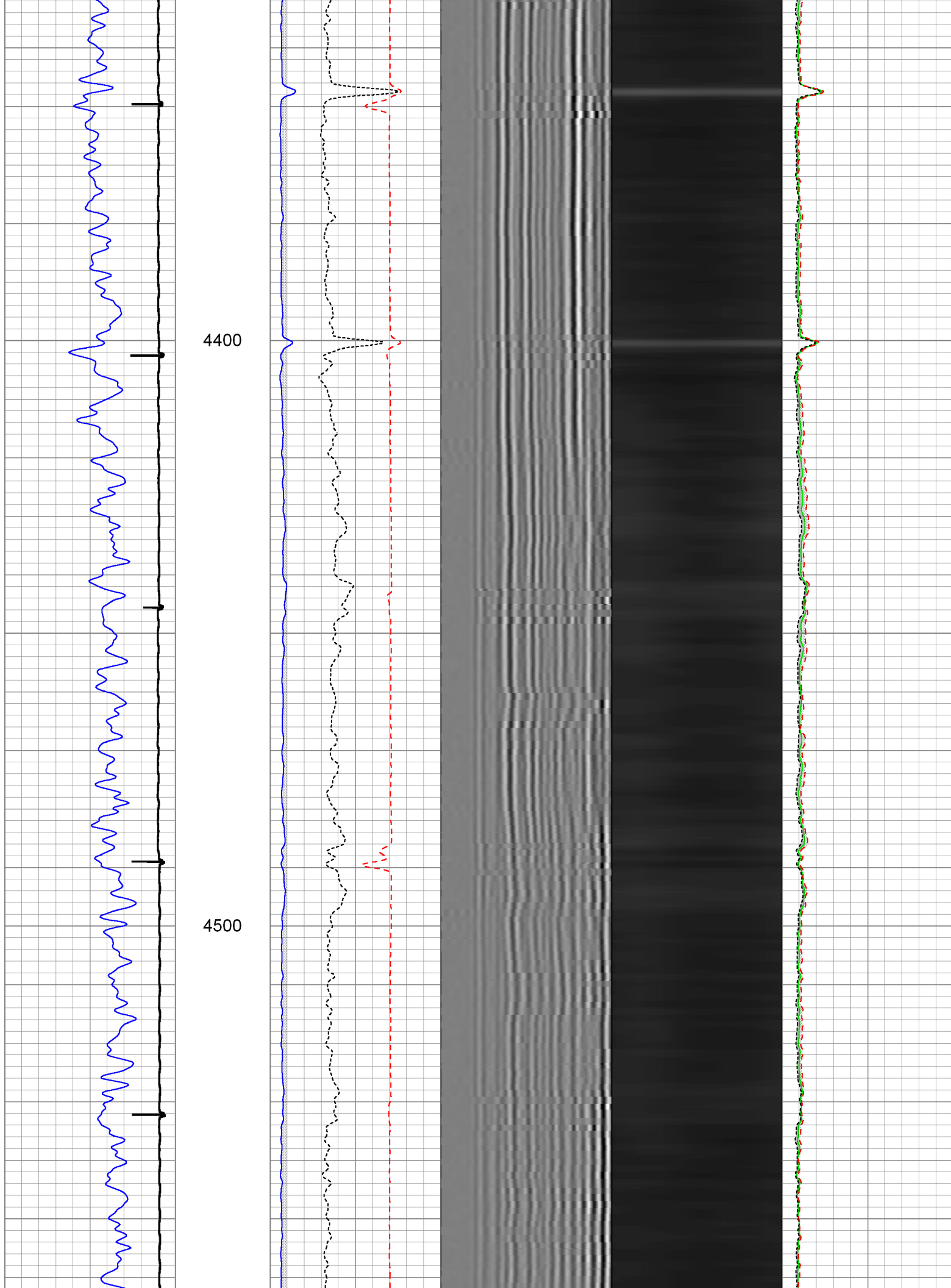


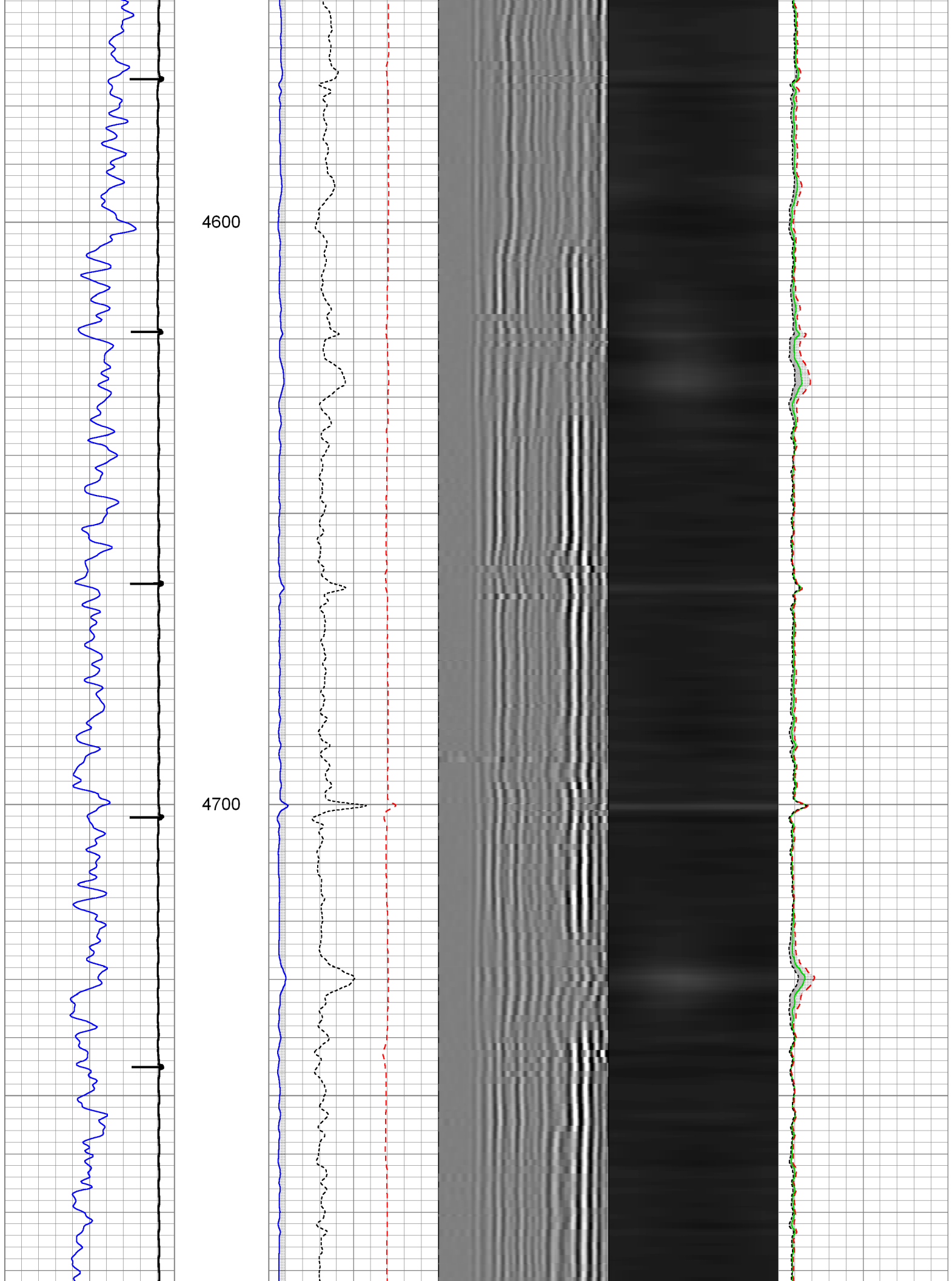


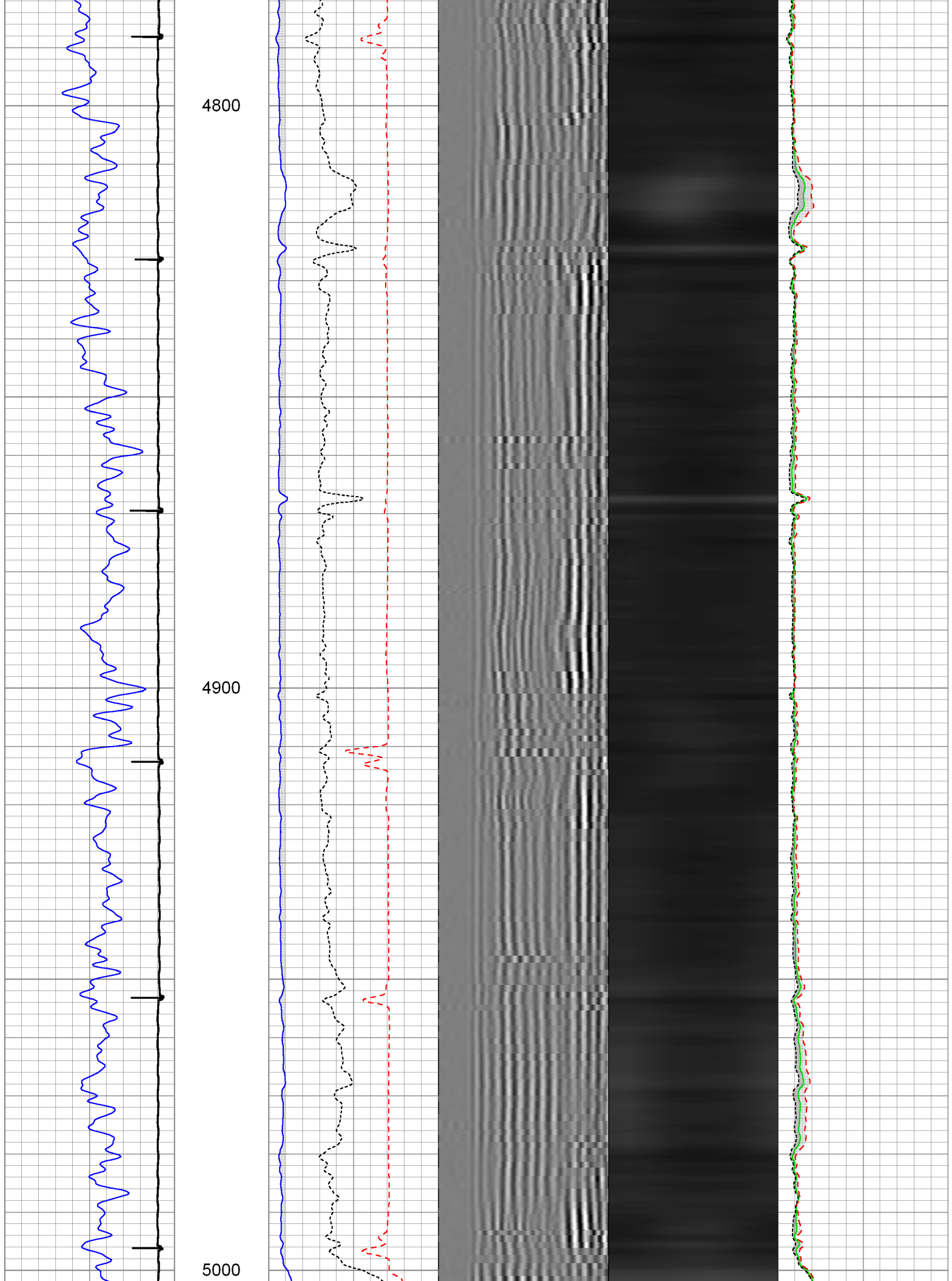


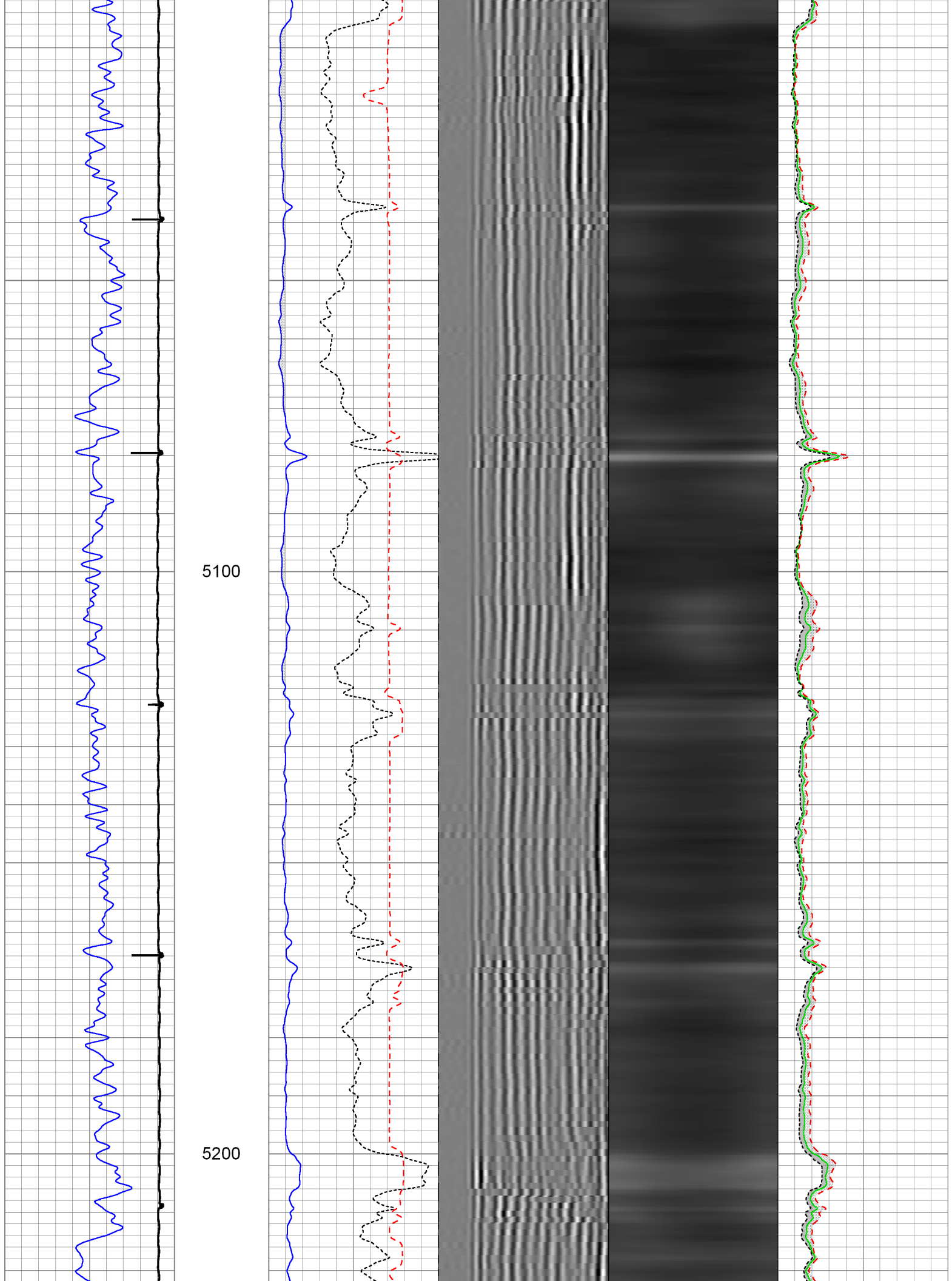






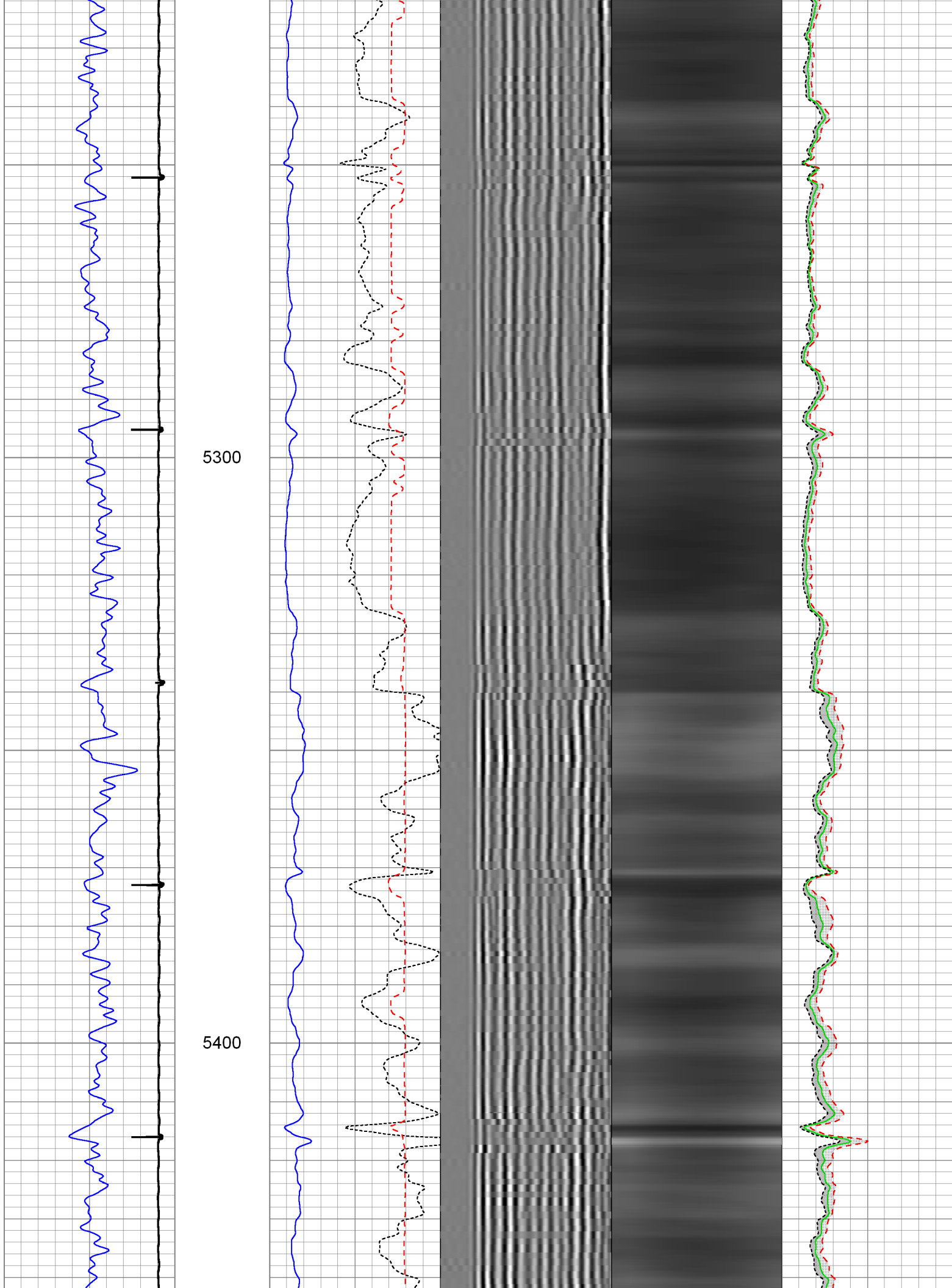


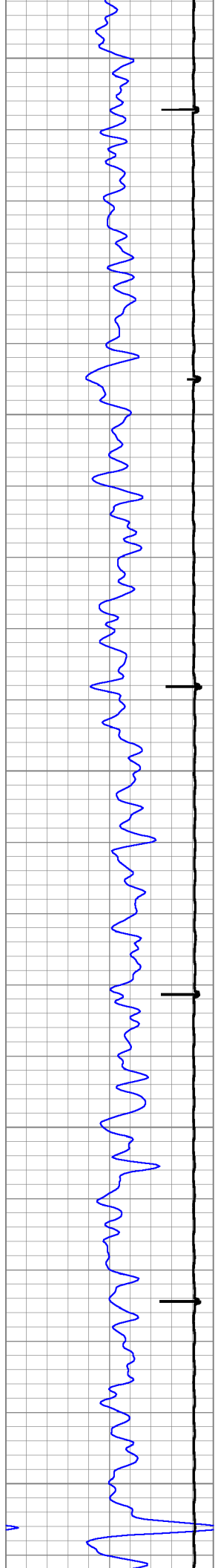




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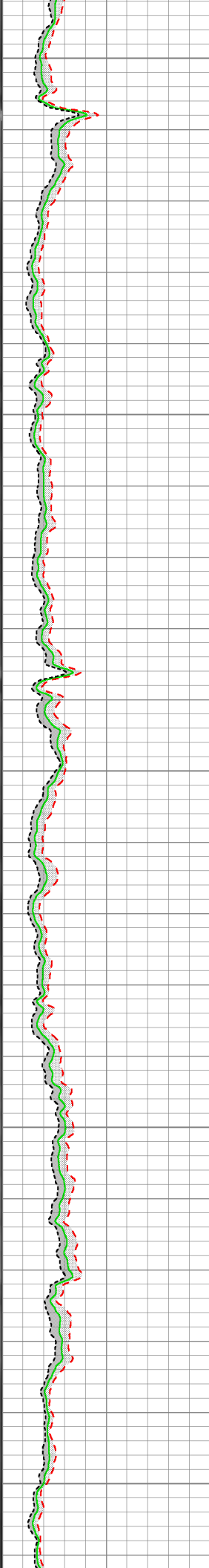
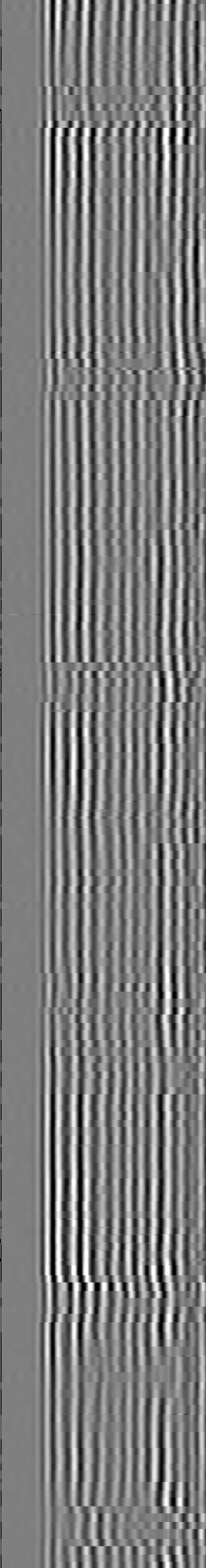
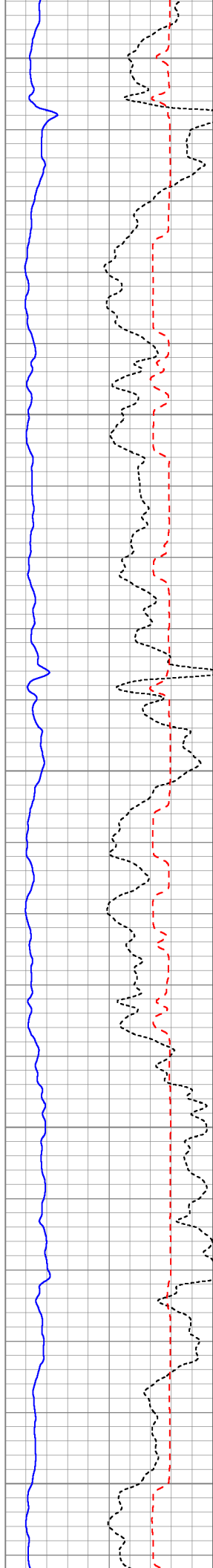
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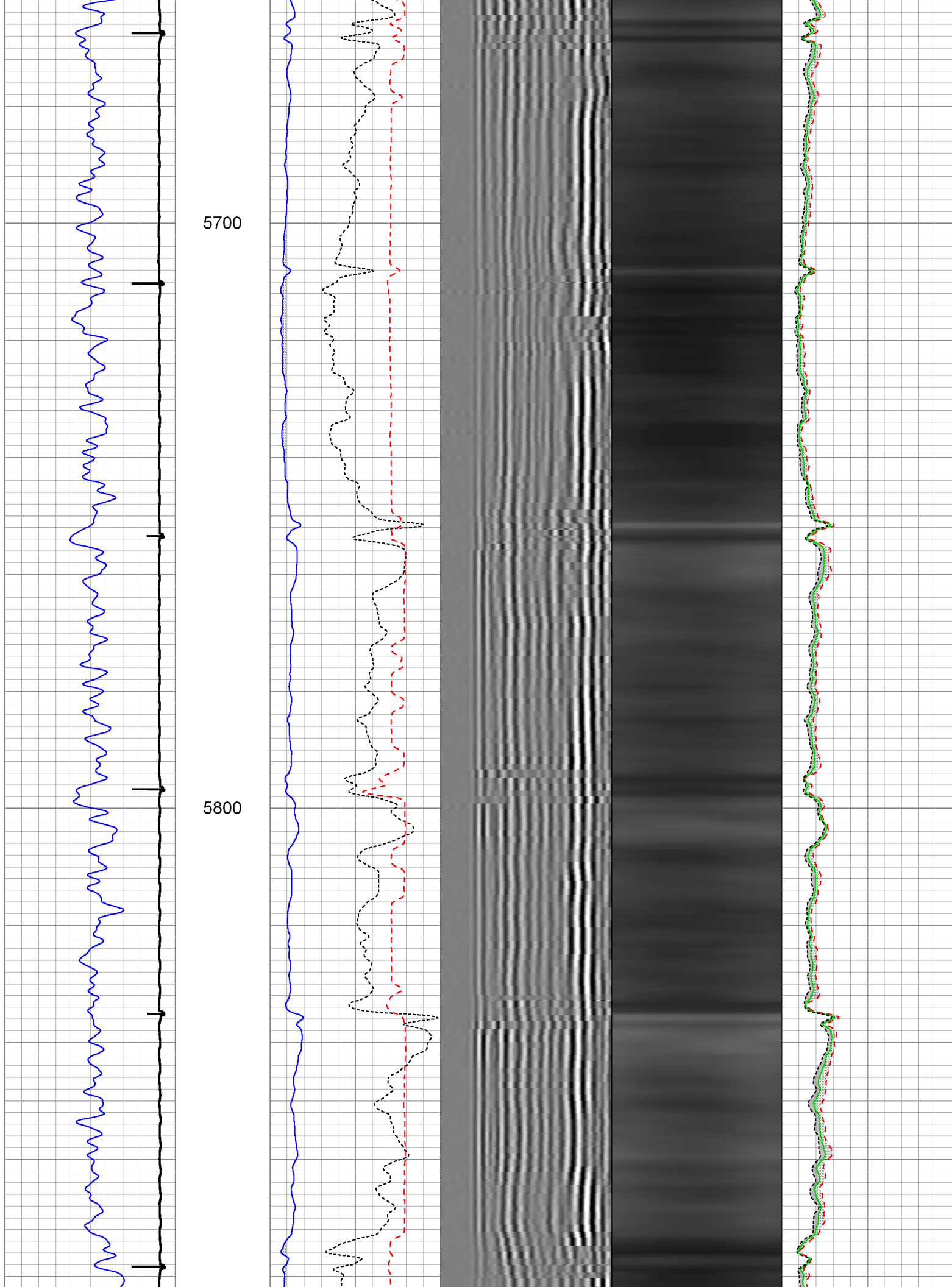
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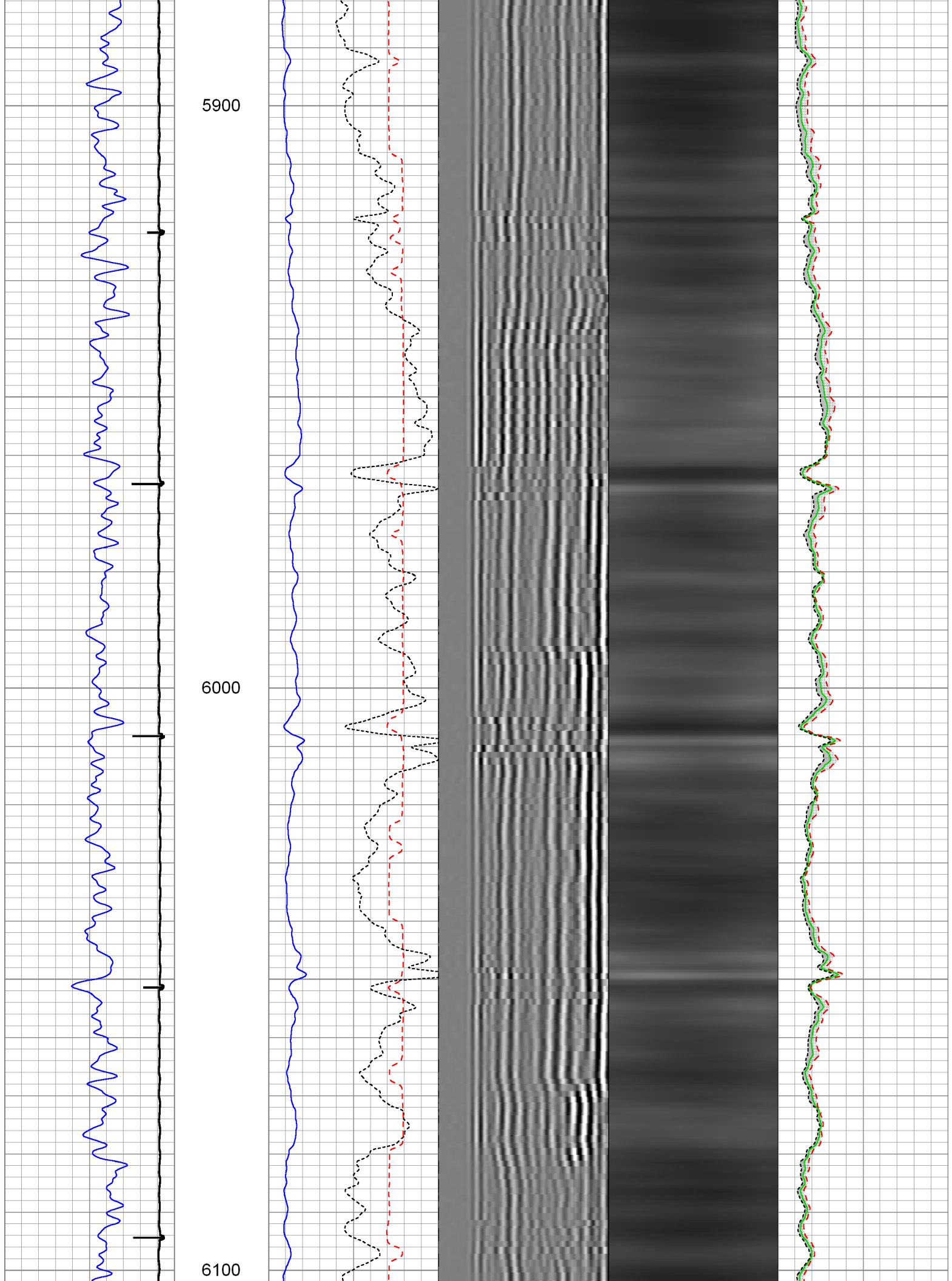
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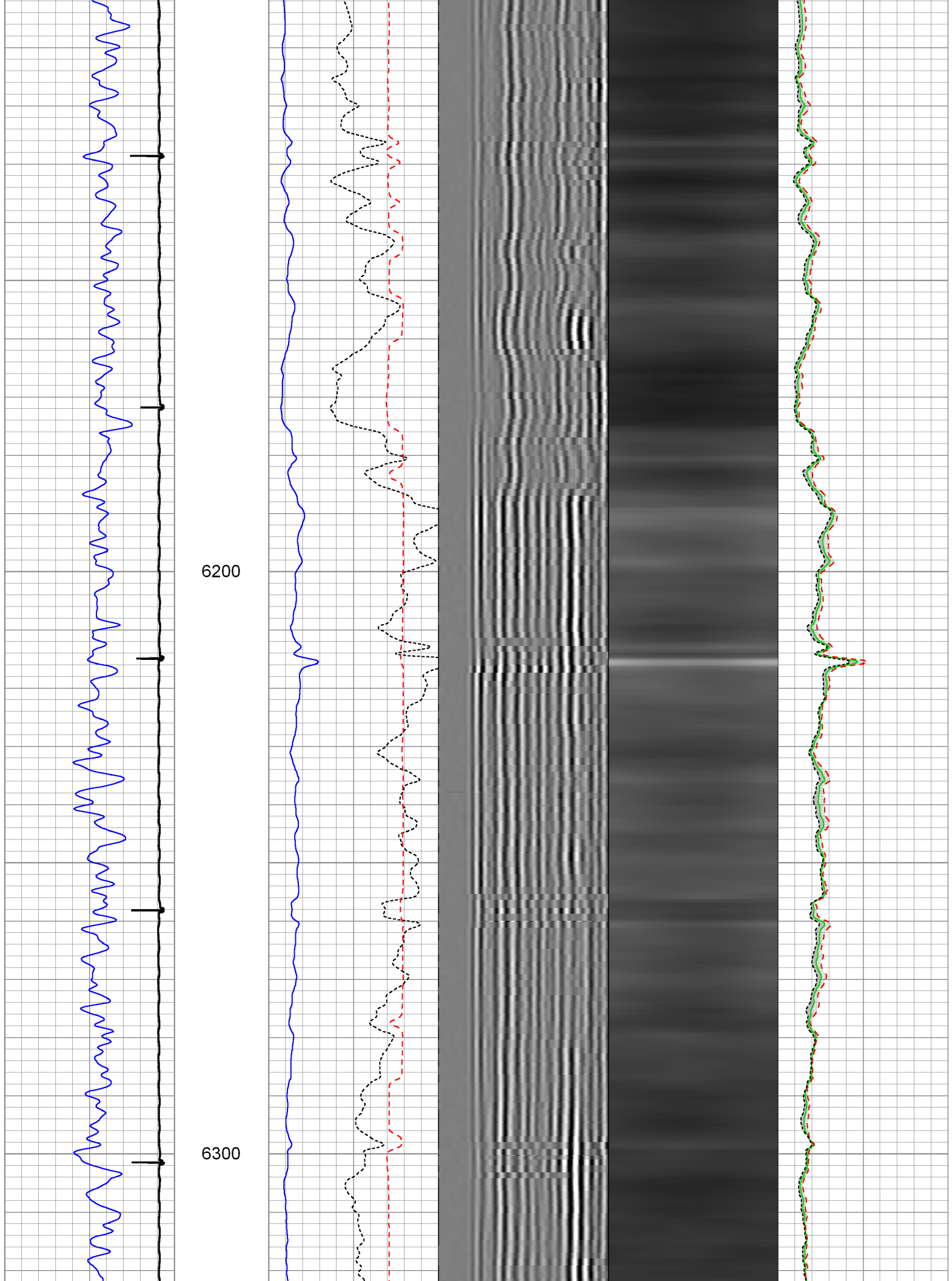


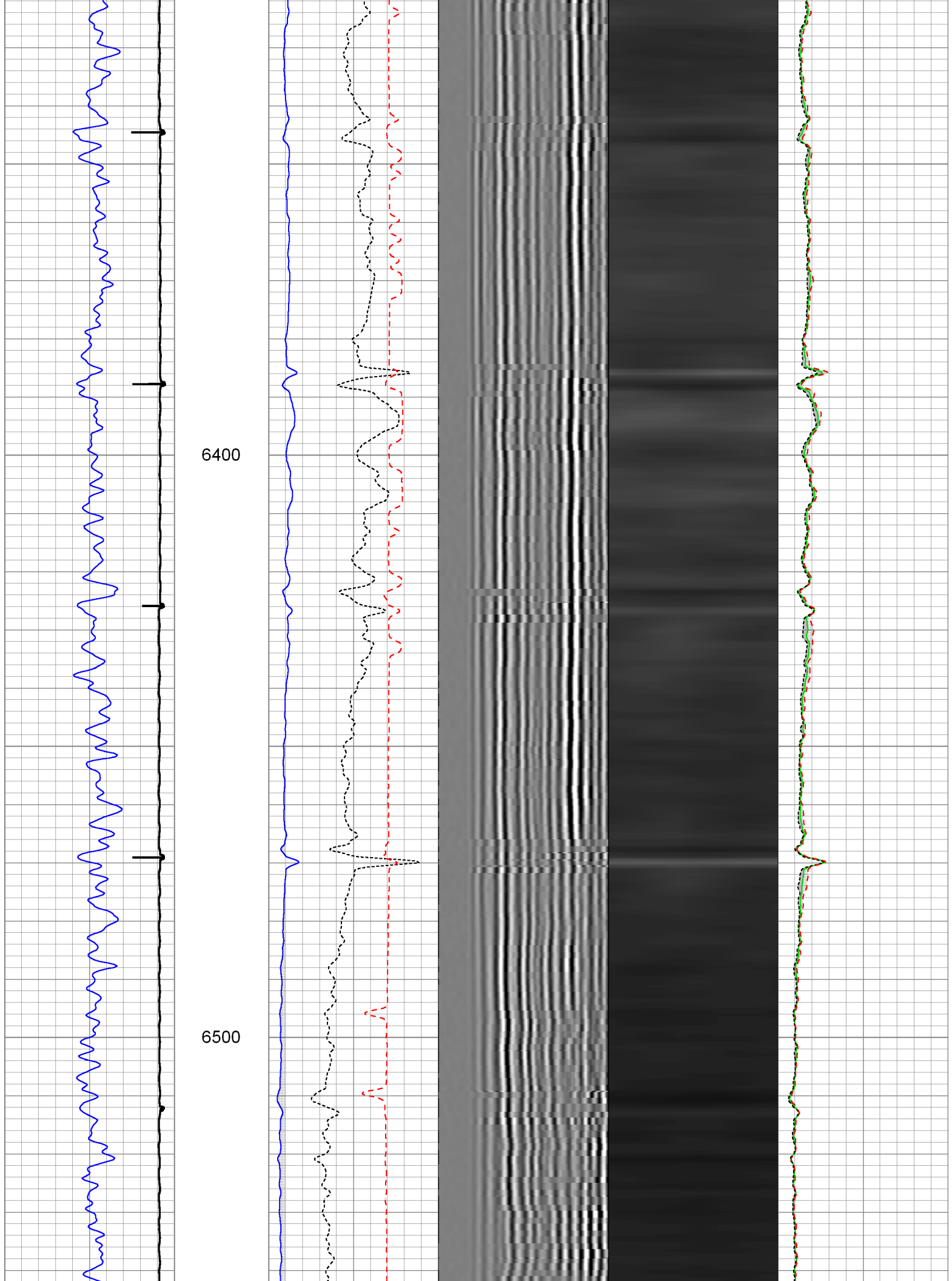
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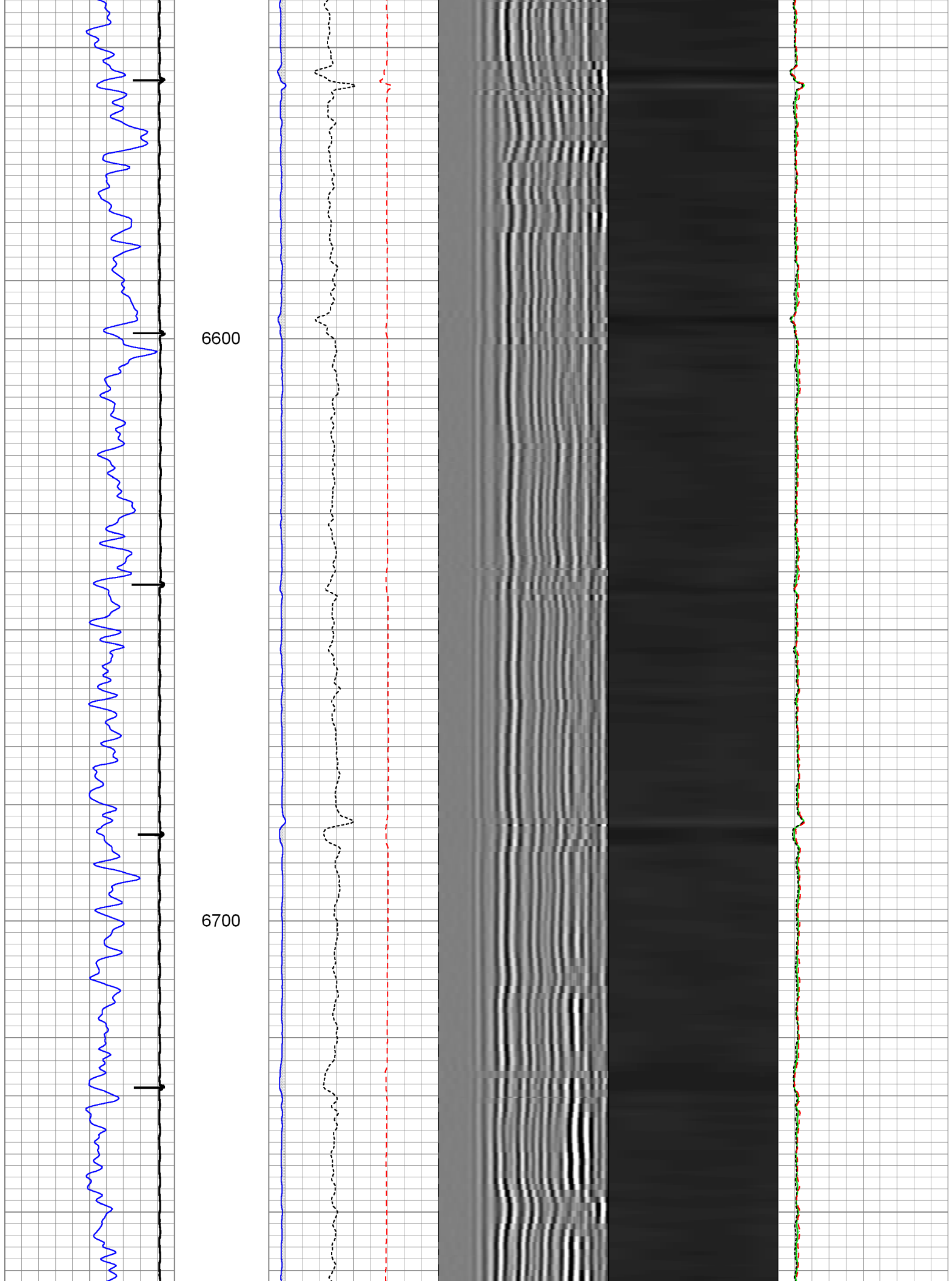
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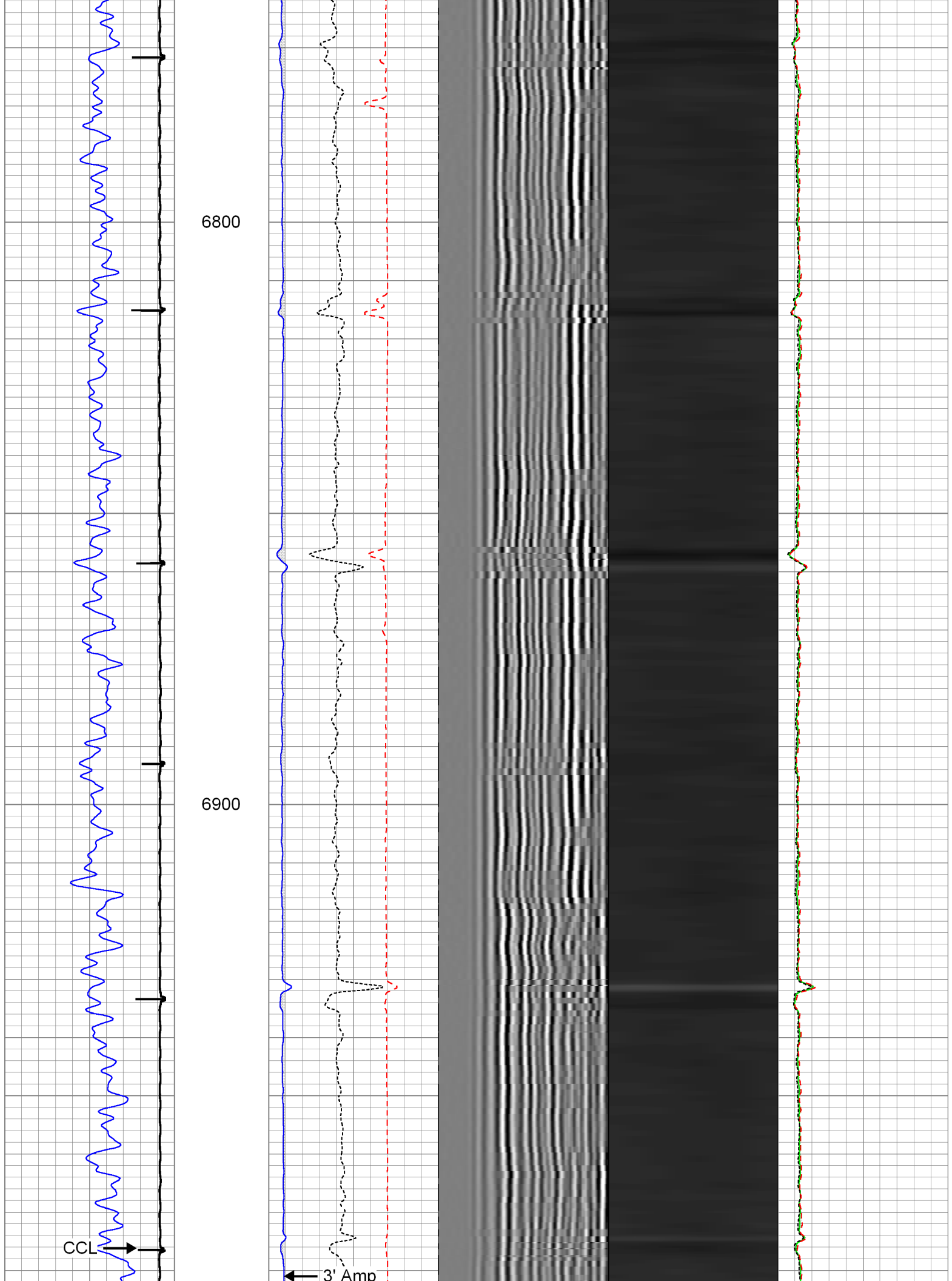


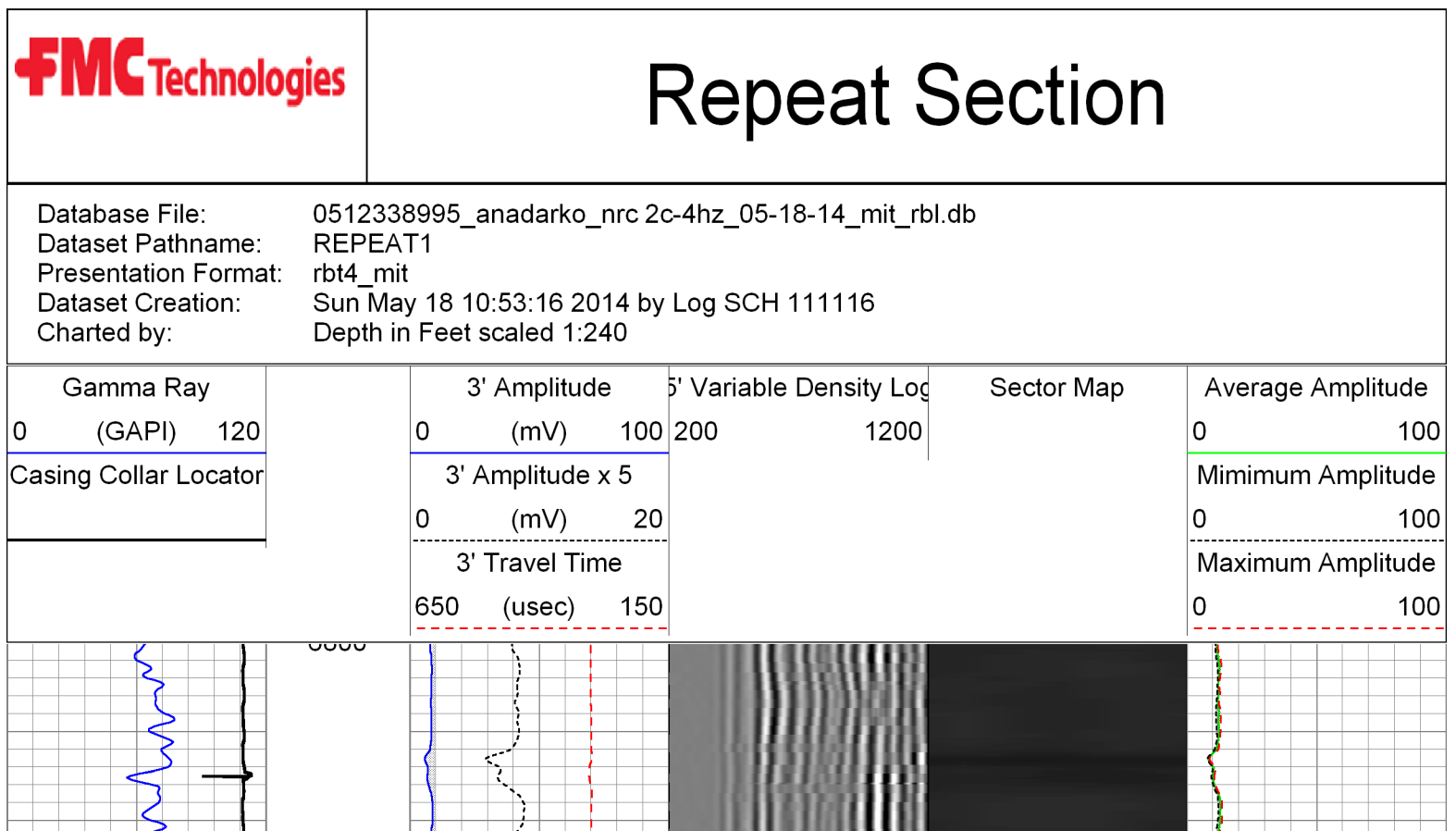
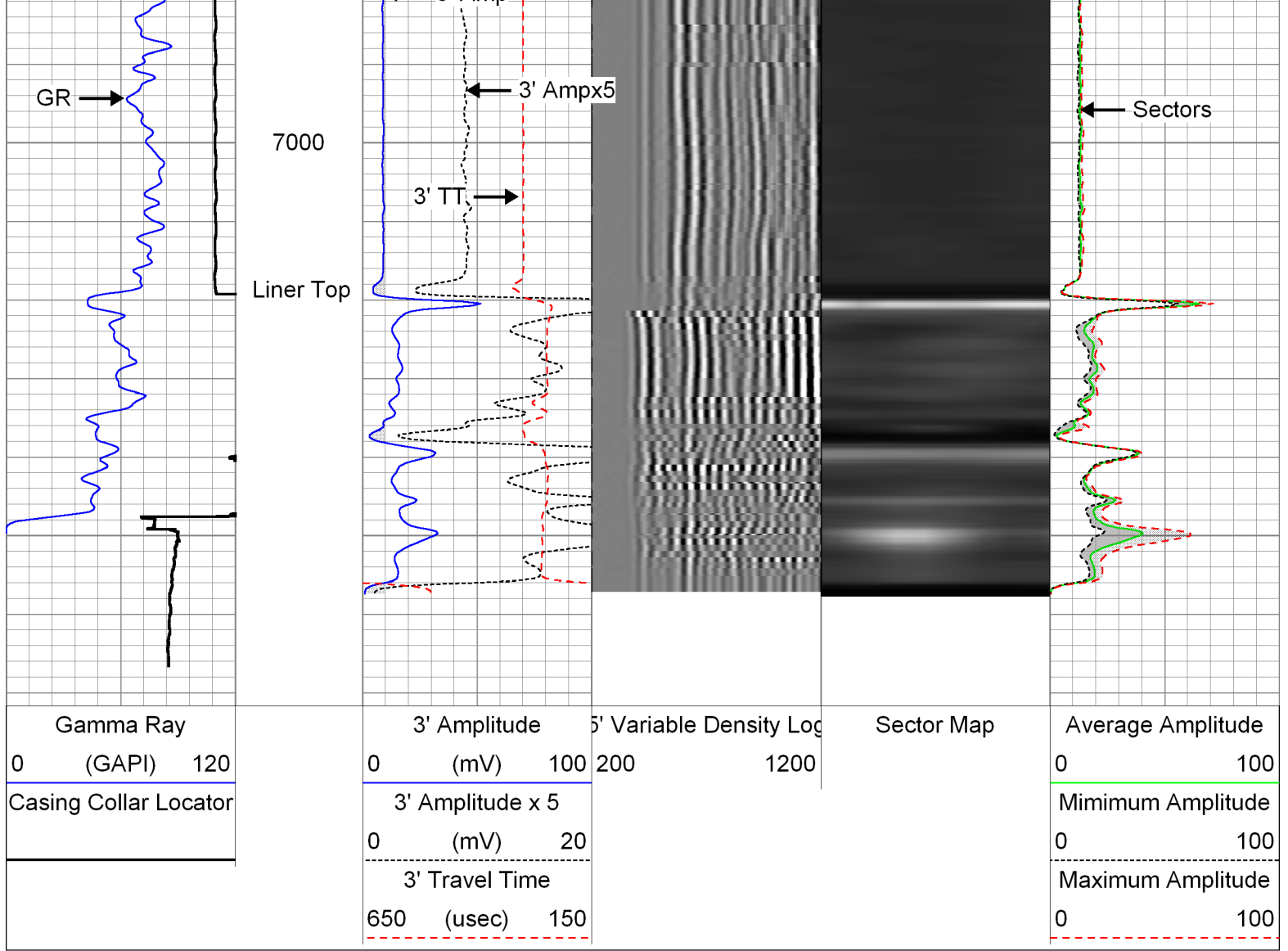


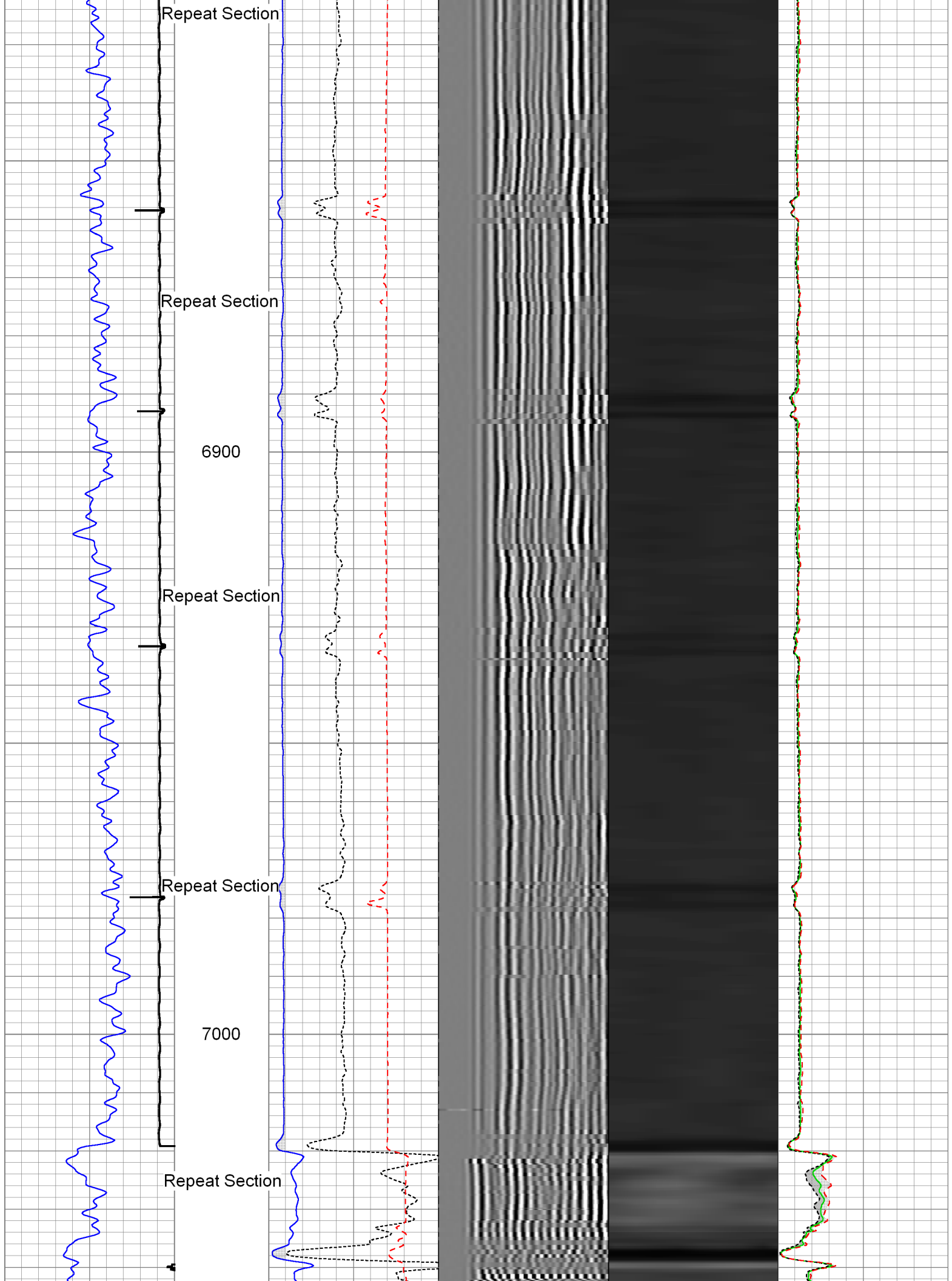


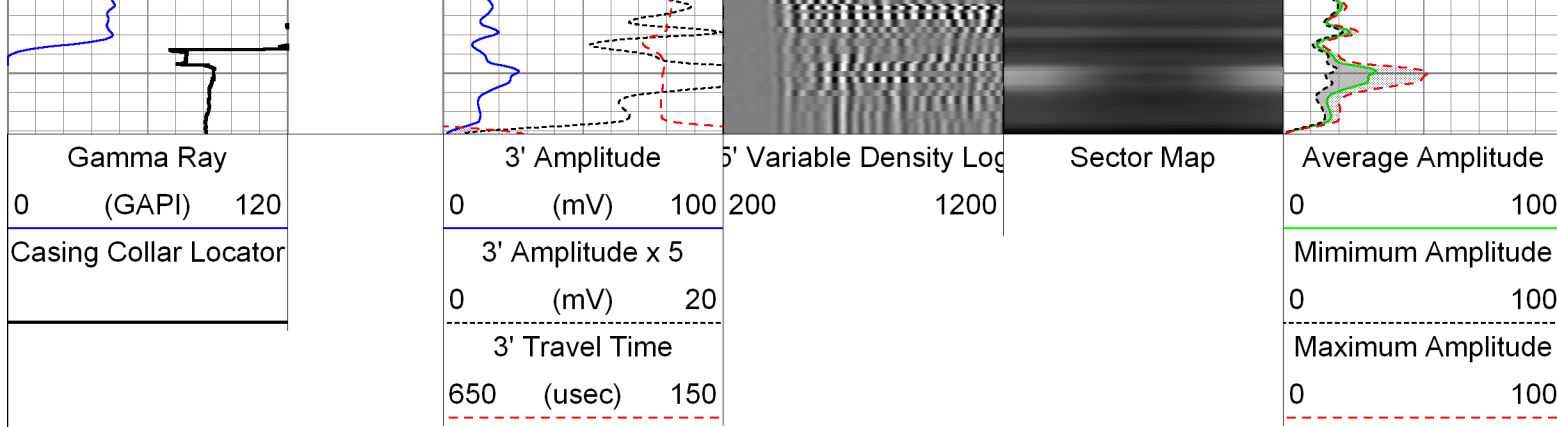







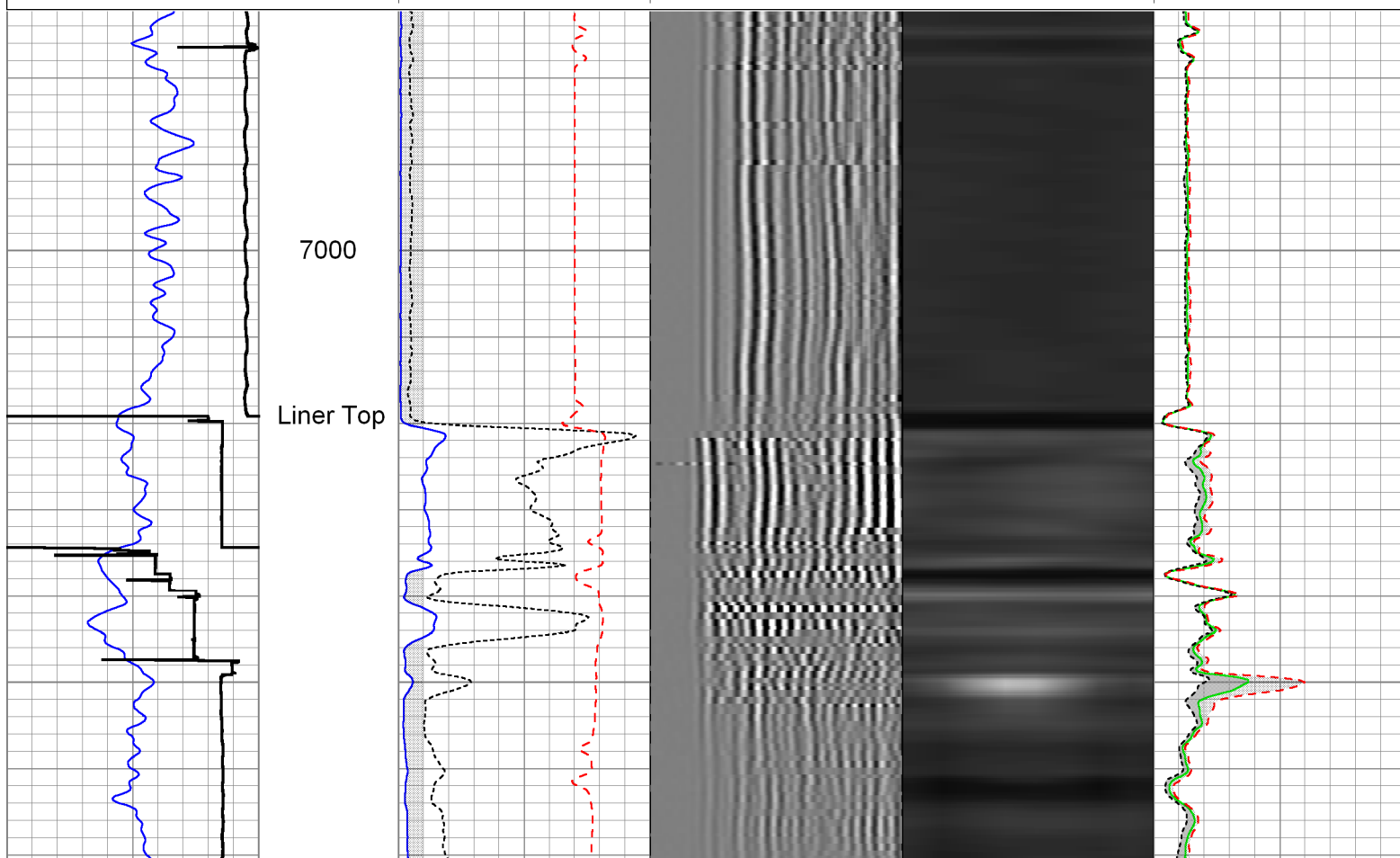
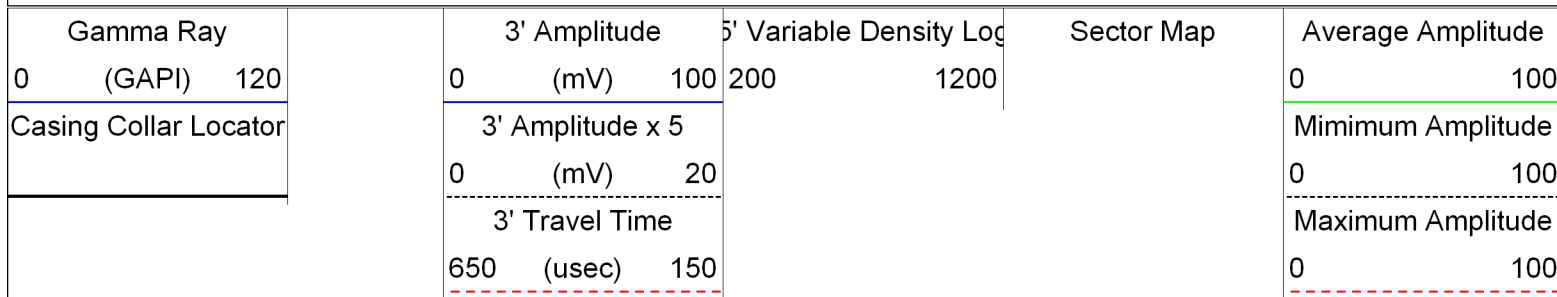






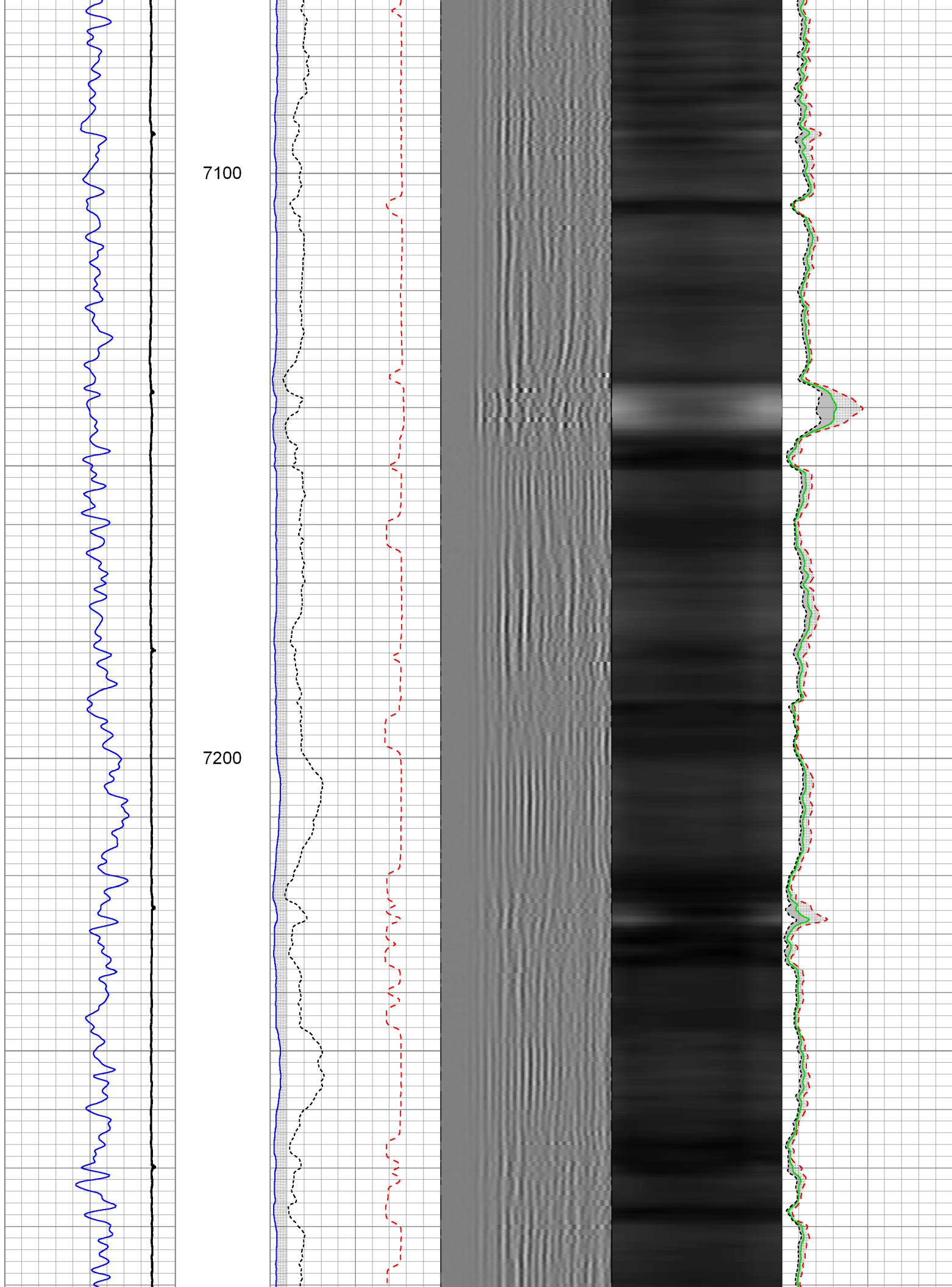
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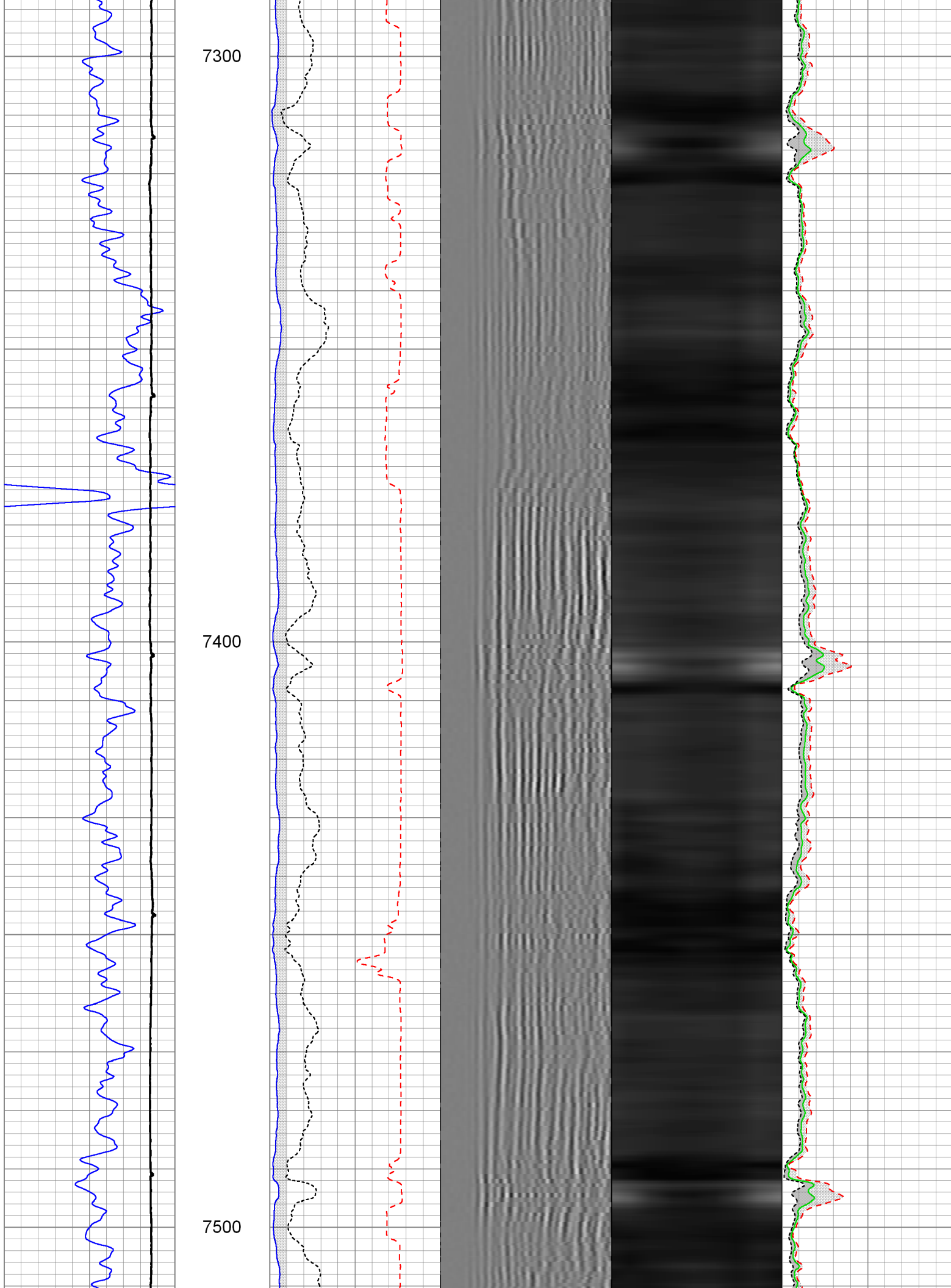
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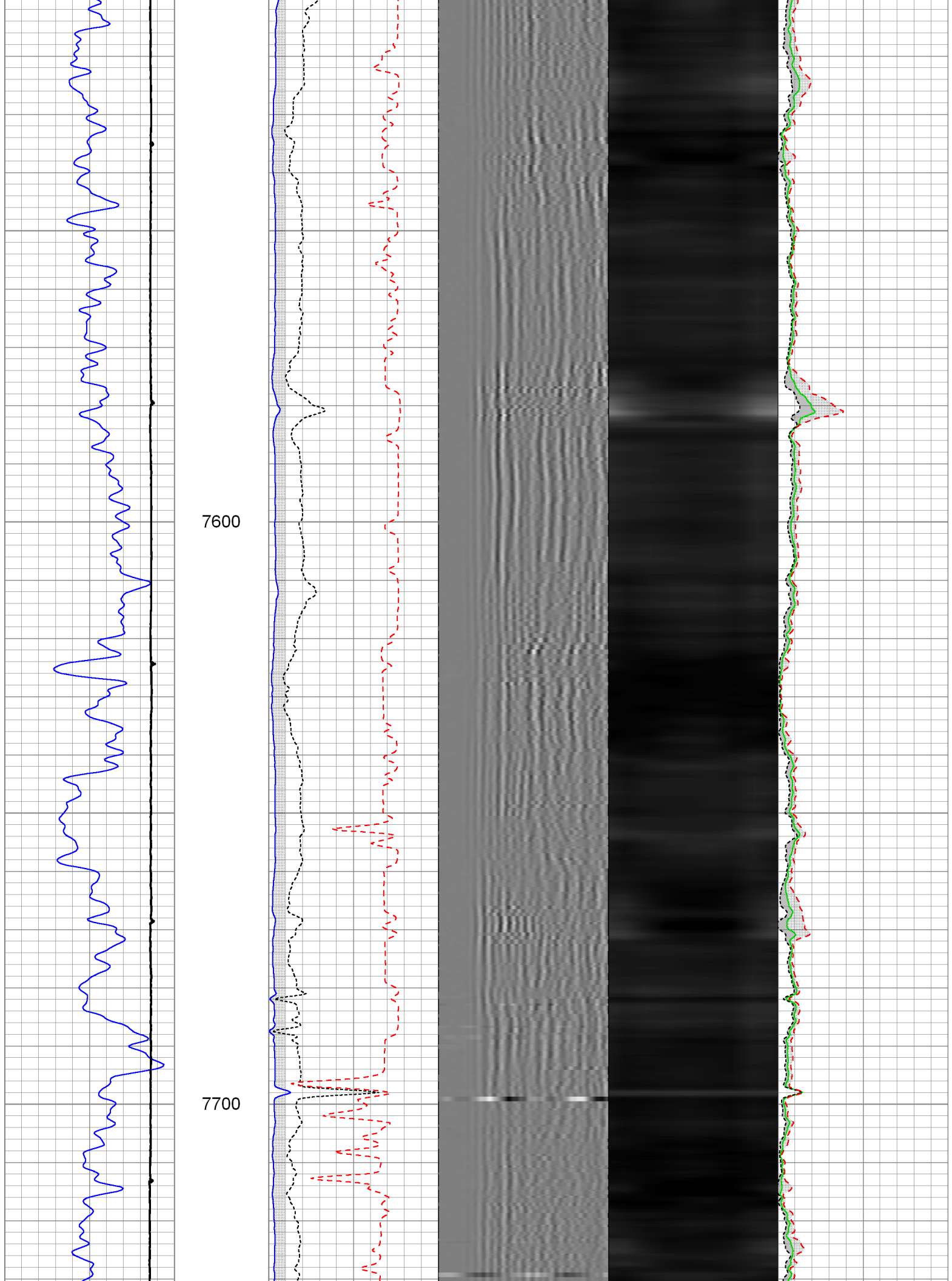


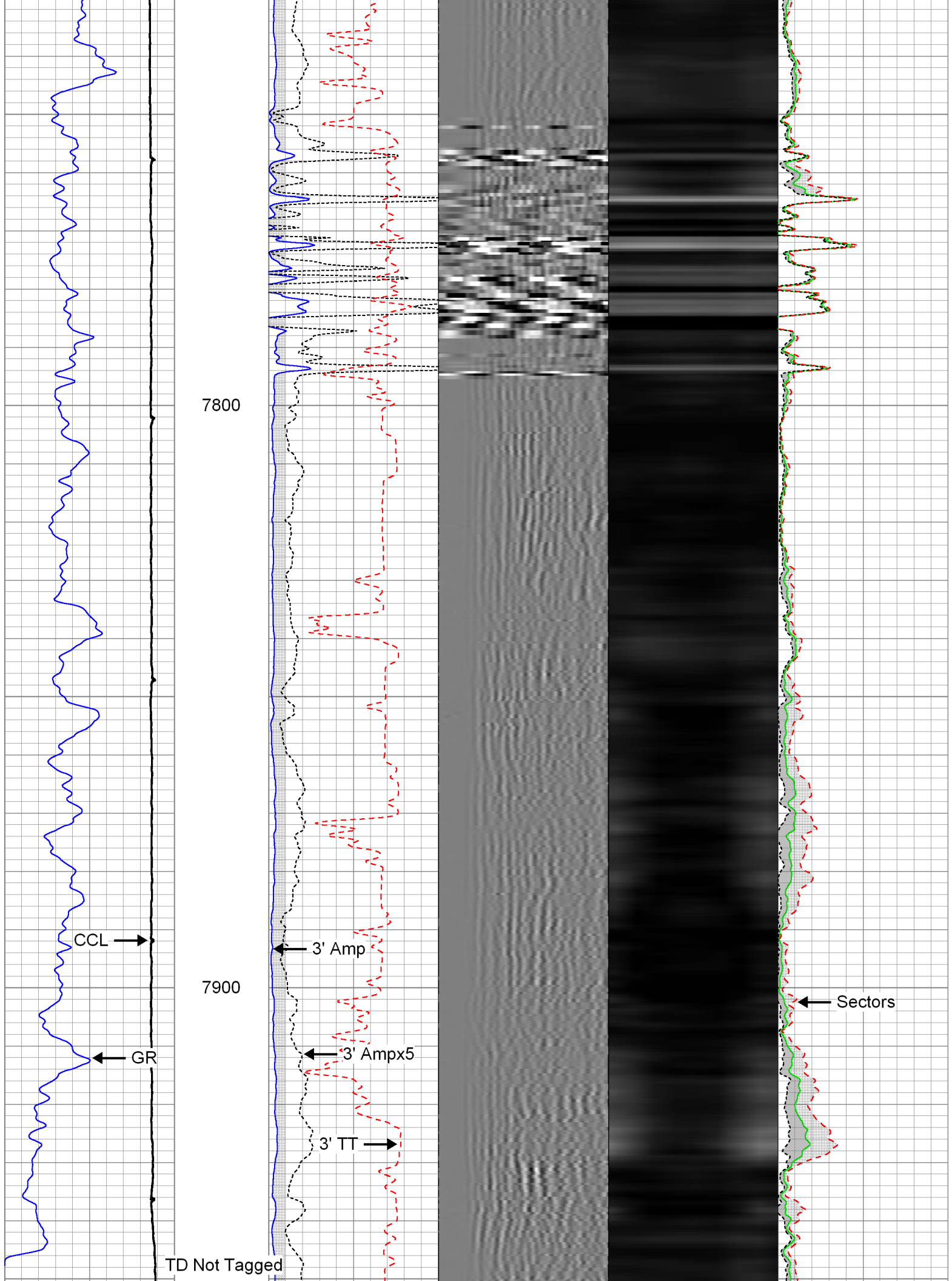
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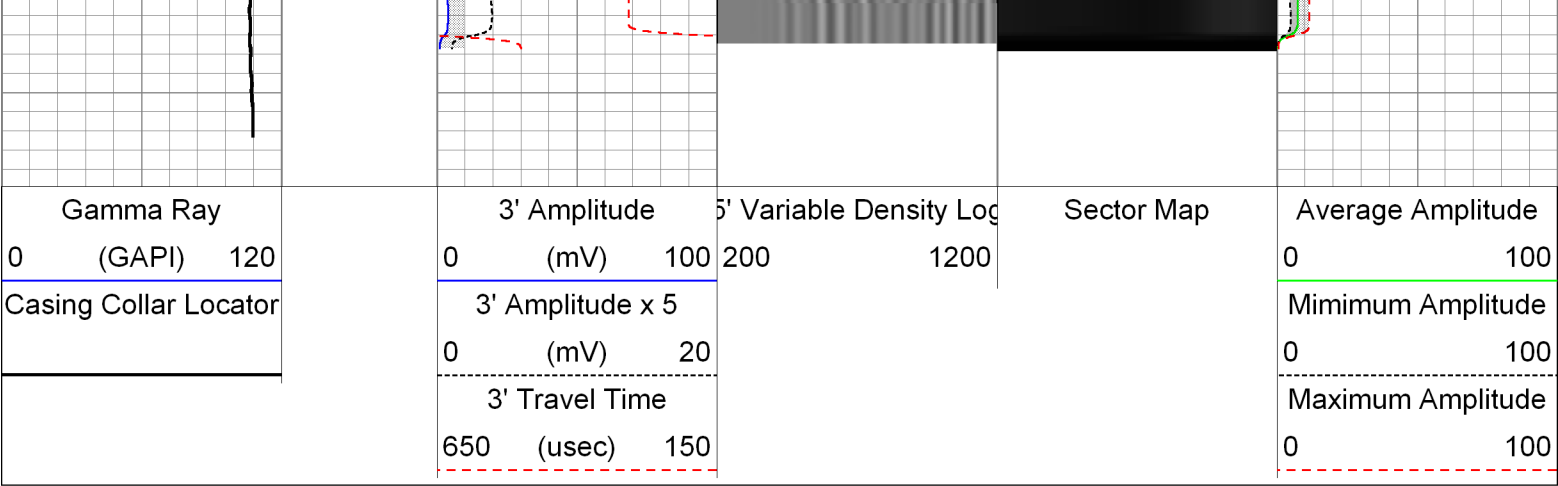
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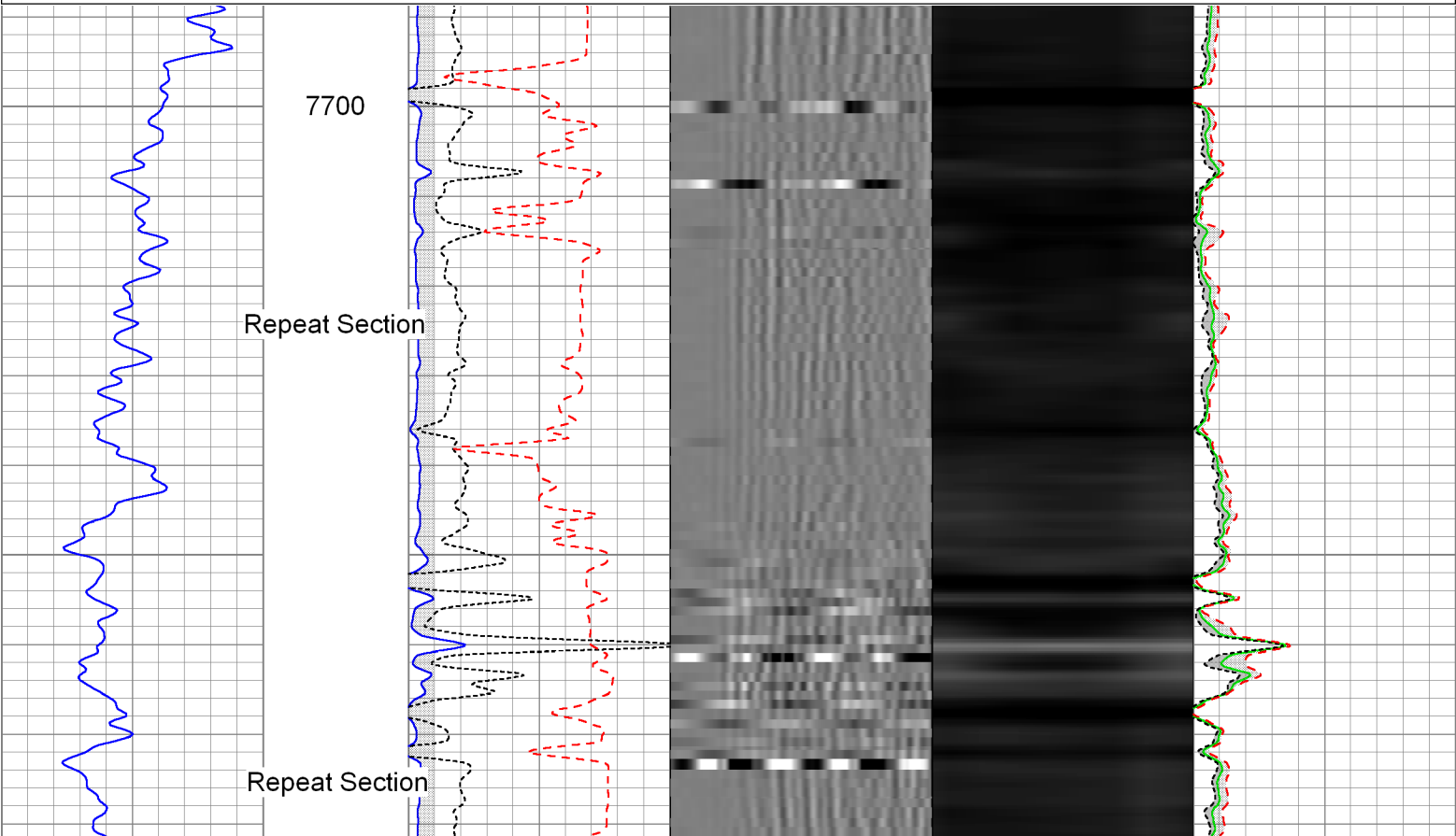
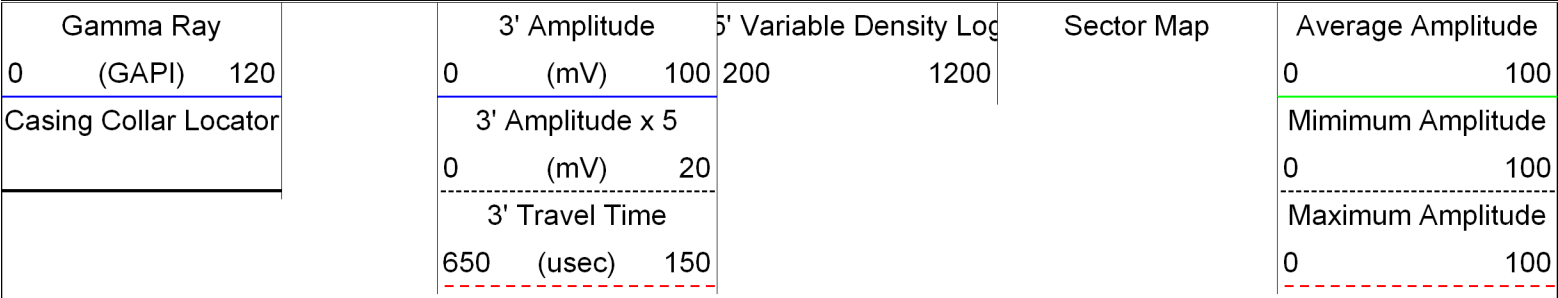


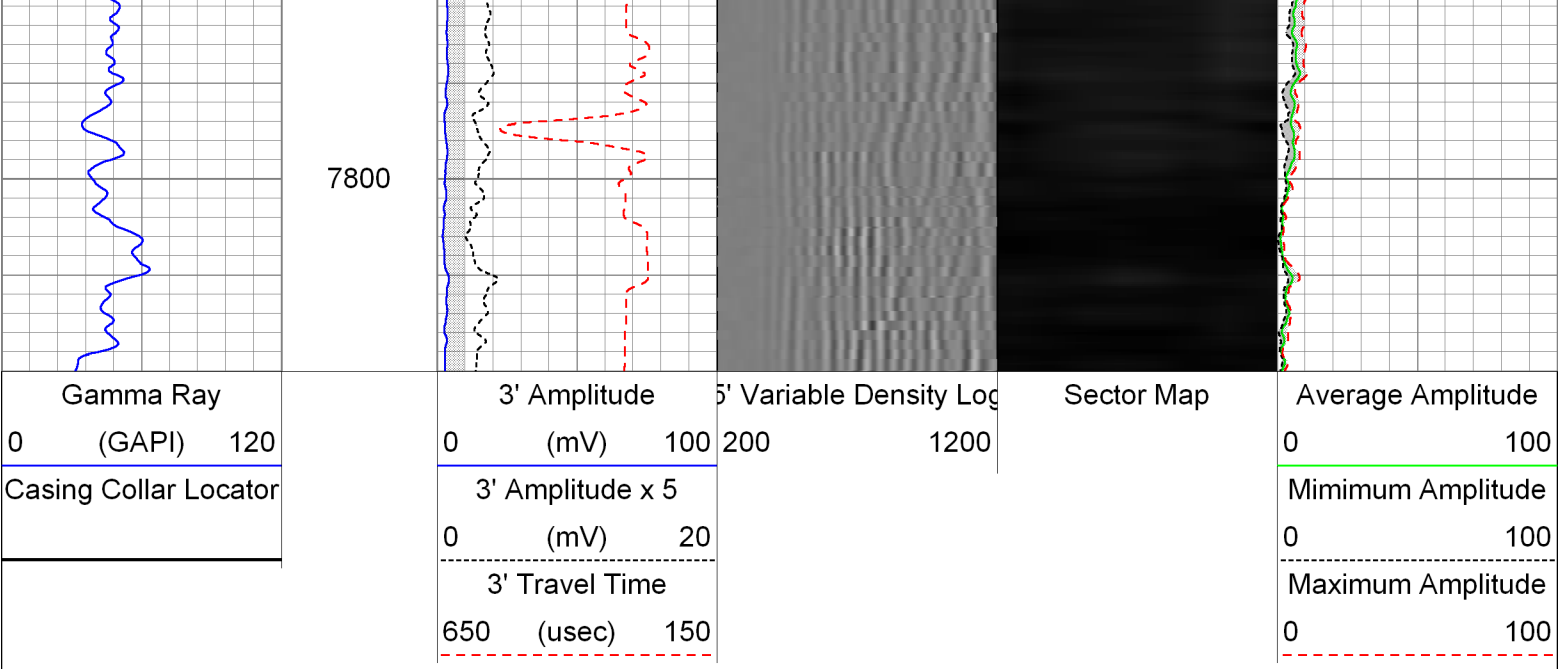


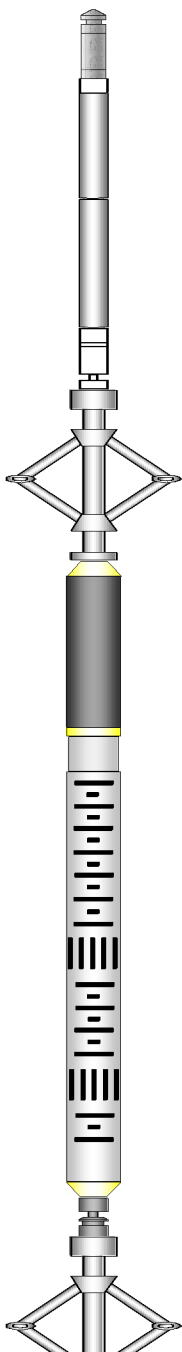
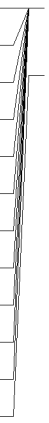


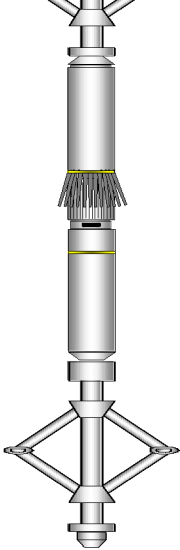
Verification Repeat

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Dataset Pathname: main4.5  
Presentation Format: rbt4\_mit  
Dataset Creation: Sun May 18 11:18:53 2014 by Log SCH 111116  
Charted by: Depth in Feet scaled 1:240





Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
GR	23.85		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 (219135) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50
			UW_PGR-UW_PGR_020 (10013902) Production Gamma Ray	1.93	1.69	9.50
			UW_PSJ-PSJ_008 (10018474) Sondex 1-11/16" Ultrawire Swivel Joint	0.91	1.69	9.00
			UW_PRC #4 -DSSRAC (083) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
WVF3FT	15.55		UW_RBT-UW_RBT_004 (1063) Sondex Ultrawire 3-1/8" Radial Bond Tool	9.47	3.13	140.00
WVFS1	15.55					
WVFS2	15.55					
WVFS3	15.55					
WVFS4	15.55					
WVFS5	15.55					
WVFS6	15.55					
WVFS7	15.55					
WVFS8	15.55					
CBLTEMP	15.55					
CBLROT	15.55		UW_PKJ-PKJ_013 (10018069) Sondex 1-11/16" Ultrawire Knuckle Joint	0.57	1.69	3.50
WVF5FT	14.55		UW_PRC-DSSRAC (080) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00

MIT	4.97		UW_MIT-UW_MIT40_042 (10012912) 40 Multifinger Imaging Tool	4.54	2.75	61.10
			UW_PRC #3 -DSSRAC (081) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
TSTAMP	0.00		UW_BUL-UW_BUL_006 (218707) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20
Dataset: 0512338995_anadarko_nrc 2c-4hz_05-18-14_mit_rbl.db: field/well/run1/main7in Total Length: 28.09 ft Total Weight: 331.80 lb O.D. 3.13 in						

Calibration Report	
Database File:	0512338995_Anadarko_NRC 2C-4HZ_05-18-14_MIT_RBL.db
Dataset Pathname:	postcal
Dataset Creation:	Sun May 18 14:43:56 2014 by Log SCH 111116

Multi-finger Imaging Tool Calibration Report
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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 May 18 09:34:55 2014			
Ring size:	4		5		6		7
(in)		Sens		Sens		Sens	
Finger 01:	1063	353.0	1416	376.0	1792	405.0	2197
Finger 02:	1191	363.0	1554	376.0	1930	399.0	2329
Finger 03:	1081	368.0	1449	393.0	1842	422.0	2264
Finger 04:	1092	355.0	1447	378.0	1825	412.0	2237
Finger 05:	1101	364.0	1465	385.0	1850	414.0	2264
Finger 06:	1092	365.0	1457	384.0	1841	410.0	2251
Finger 07:	1088	366.0	1454	387.0	1841	411.0	2252
Finger 08:	1111	358.0	1469	382.0	1851	410.0	2261
Finger 09:	1098	363.0	1461	380.0	1841	403.0	2244
Finger 10:	1096	360.0	1456	381.0	1837	404.0	2241
Finger 11:	1112	359.0	1471	380.0	1851	400.0	2251
Finger 12:	1105	356.0	1461	382.0	1841	401.0	2245

Finger 12:	1105	356.0	1461	383.0	1844	401.0	2245
Finger 13:	1116	355.0	1471	381.0	1852	394.0	2246
Finger 14:	1090	362.0	1452	391.0	1843	407.0	2250
Finger 15:	1057	363.0	1420	402.0	1822	420.0	2242
Finger 16:	1072	363.0	1435	403.0	1838	420.0	2258
Finger 17:	1042	359.0	1401	404.0	1805	425.0	2230
Finger 18:	1125	352.0	1477	390.0	1867	402.0	2269
Finger 19:	1089	350.0	1439	398.0	1837	411.0	2248
Finger 20:	1057	354.0	1411	409.0	1820	424.0	2244
Finger 21:	1083	358.0	1441	408.0	1849	408.0	2257
Finger 22:	1045	356.0	1401	414.0	1815	427.0	2242
Finger 23:	1017	358.0	1375	422.0	1797	438.0	2235
Finger 24:	1075	352.0	1427	401.0	1828	403.0	2231
Finger 25:	1036	354.0	1390	420.0	1810	433.0	2243
Finger 26:	1162	344.0	1506	392.0	1898	396.0	2294
Finger 27:	1100	357.0	1457	411.0	1868	420.0	2288
Finger 28:	1129	348.0	1477	398.0	1875	410.0	2285
Finger 29:	1080	359.0	1439	419.0	1858	433.0	2291
Finger 30:	1096	355.0	1451	407.0	1858	423.0	2281
Finger 31:	1121	353.0	1474	399.0	1873	418.0	2291
Finger 32:	1107	362.0	1469	413.0	1882	430.0	2312
Finger 33:	1164	354.0	1518	383.0	1901	396.0	2297
Finger 34:	1138	349.0	1487	390.0	1877	415.0	2292
Finger 35:	1072	369.0	1441	415.0	1856	445.0	2301
Finger 36:	1092	362.0	1454	400.0	1854	429.0	2283
Finger 37:	1126	362.0	1488	390.0	1878	416.0	2294
Finger 38:	1156	354.0	1510	382.0	1892	399.0	2291
Finger 39:	1149	353.0	1502	379.0	1881	402.0	2283
Finger 40:	1103	364.0	1467	389.0	1856	414.0	2270

Post Survey Calibration Check								
Performed:					Sun May 18 14:43:47 2014			
Ring size: (in)	4	Nom. wear	5	Nom. wear	6	Nom. wear	7	Nom. wear
Finger 01:	3.983	-0.009	4.990	-0.005	5.990	-0.005	7.002	0.001
Finger 02:	3.991	-0.005	4.997	-0.001	5.995	-0.002	7.004	0.002
Finger 03:	3.983	-0.008	4.993	-0.003	5.986	-0.007	6.994	-0.003
Finger 04:	3.996	-0.002	5.006	0.003	6.003	0.002	7.006	0.003
Finger 05:	3.986	-0.007	5.001	0.000	6.001	0.000	7.001	0.001
Finger 06:	3.997	-0.002	4.998	-0.001	5.995	-0.002	6.999	-0.001
Finger 07:	3.986	-0.007	4.996	-0.002	5.996	-0.002	6.997	-0.001
Finger 08:	3.990	-0.005	5.000	-0.000	6.000	-0.000	7.005	0.003
Finger 09:	3.981	-0.010	4.993	-0.003	5.996	-0.002	6.999	-0.001
Finger 10:	3.994	-0.003	5.000	0.000	6.010	0.005	7.017	0.008
Finger 11:	3.989	-0.006	4.999	-0.000	6.000	0.000	7.005	0.003
Finger 12:	3.998	-0.001	4.999	-0.001	5.999	-0.001	7.007	0.003
Finger 13:	3.985	-0.008	4.991	-0.005	5.993	-0.003	6.998	-0.001
Finger 14:	3.986	-0.007	4.993	-0.004	5.995	-0.003	7.001	0.000
Finger 15:	3.993	-0.003	5.000	0.000	6.000	-0.000	7.005	0.002
Finger 16:	3.989	-0.005	4.990	-0.005	5.993	-0.003	6.996	-0.002
Finger 17:	3.980	-0.010	4.990	-0.005	5.990	-0.005	6.990	-0.005
Finger 18:	4.009	0.005	5.005	0.002	6.002	0.001	6.998	-0.001
Finger 19:	3.985	-0.008	4.989	-0.005	5.990	-0.005	6.991	-0.004
Finger 20:	3.986	-0.007	5.001	0.001	5.998	-0.001	7.000	0.000
Finger 21:	3.989	-0.005	5.003	0.001	6.000	0.000	7.008	0.004
Finger 22:	3.984	-0.008	4.997	-0.002	5.991	-0.005	6.995	-0.003
Finger 23:	3.992	-0.004	4.993	-0.003	5.999	-0.001	7.001	0.000
Finger 24:	3.981	-0.009	4.983	-0.009	5.988	-0.006	6.995	-0.003
Finger 25:	3.974	-0.013	4.991	-0.004	5.990	-0.005	7.002	0.001
Finger 26:	3.981	-0.009	5.005	0.002	5.998	-0.001	7.009	0.004
Finger 27:	4.000	-0.000	5.000	-0.000	6.003	0.001	7.011	0.006
Finger 28:	3.992	-0.004	4.998	-0.001	5.998	-0.001	6.997	-0.001
Finger 29:	4.002	0.001	5.007	0.004	5.995	-0.002	7.008	0.004
Finger 30:	3.997	-0.001	4.998	-0.001	6.002	0.001	7.003	0.002
Finger 31:	3.991	-0.004	4.996	-0.002	6.002	0.001	7.002	0.001
Finger 32:	3.986	-0.007	4.987	-0.008	5.987	-0.008	6.987	-0.008

Finger 32:	3.986	-0.007	4.997	-0.002	5.997	-0.002	7.007	0.003
Finger 33:	3.987	-0.007	4.994	-0.003	5.995	-0.003	6.993	-0.004
Finger 34:	3.991	-0.004	4.999	-0.000	6.006	0.003	7.010	0.005
Finger 35:	3.985	-0.007	4.992	-0.004	5.997	-0.002	6.986	-0.007
Finger 36:	3.991	-0.004	4.997	-0.001	5.998	-0.001	7.005	0.002
Finger 37:	3.995	-0.002	5.000	0.000	6.001	0.001	6.999	-0.001
Finger 38:	3.985	-0.007	4.990	-0.005	5.994	-0.003	7.005	0.003
Finger 39:	3.973	-0.014	4.986	-0.007	5.981	-0.009	6.982	-0.009
Finger 40:	3.997	-0.001	4.999	-0.000	5.996	-0.002	7.001	0.001
Average:	3.989	-0.005	4.996	-0.002	5.997	-0.002	7.001	0.000

### Segmented Cement Bond Log Calibration Report

Serial Number:	1063
Tool Model:	UW_RBT_004
Calibration Casing Diameter:	7.000 in
Calibration Depth:	3645.666 ft

Master Calibration, performed Sun May 18 10:18:40 2014:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	-0.003	0.715	0.800	62.165	85.498	1.068
5FT	-0.006	0.677	0.800	62.165	89.844	1.347
S1	-0.004	0.690	0.000	100.000	144.183	0.521
S2	-0.004	0.686	0.000	100.000	144.920	0.646
S3	-0.004	0.690	0.000	100.000	144.089	0.526
S4	-0.004	0.727	0.000	100.000	136.846	0.561
S5	-0.004	0.748	0.000	100.000	133.069	0.476
S6	-0.004	0.746	0.000	100.000	133.371	0.495
S7	-0.004	0.736	0.000	100.000	135.215	0.495
S8	-0.004	0.708	0.000	100.000	140.450	0.521

### Gamma Ray Calibration Report

Serial Number:	10013902	
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 2C-4HZ
Field	Wattenberg
County	Weld
State	Colorado