



Radial Cement Bond  
Gamma Ray  
Casing Collar Log

Company				Kerr-McGee Oil & Gas Onshore, L.P.			
Well				Lansdown State 29N-21HZ			
Field				Wattenberg			
County				Weld			
State				Colorado			
Location:				API # : 05-123-39044			
Permanent Datum				SHL: 917' FSL, 652' FWL, SWSW			
Log Measured From				Lat / Long: 40.11886 / -104.78937			
Drilling Measured From				SEC 21 TWP 2N RGE 66W			
Ground Level				Elevation 4,935'			
Kelly Bushing				16 FT			
Kelly Bushing				K.B. 4,951'			
				D.F. 4,950'			
				G.L. 4,935'			
Date				31-MAY-14			
Run Number				Three			
Depth Driller				12,641 FT			
Depth Logger				6,797 FT			
Bottom Logged Interval				6,797 FT			
Top Log Interval				Surface			
Open Hole Size				8.750"			
Type Fluid				Water			
Density / Viscosity				8.34 lbm/gal			
Max. Recorded Temp.				212°F			
Estimated Cement Top				320 FT			
Time Well Ready				ROA			
Time Logger on Bottom				11:30			
Equipment Number				HD-0119			
Location				Fort Lupton, CO			
Recorded By				H. Raby			
Witnessed By				Kent Evers			
Borehole Record				Tubing Record			
Run Number				Bit			
From				To			
Size				Weight			
From				To			
Casing Record				Size (in)			
Surface Casing				Wgt (lbs/ft)			
Intermediate #1				Grade			
Intermediate #2				Top			
Liner				Bottom			
4 1/2"				26			
11.6				P-110			
HCP-110				Surface			
6,763 FT				7,806 FT			
12,314 FT				1,233 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 Talley reported Liner top @ 6,763 FT.  
Adjusted log 1.75 FT to correlate with Liner Top.  
Log ran to surface.  
Log ran with 2800 PSI surface induced pressure.  
No debris found on logging tools upon completion of operations.  
  
Thank you for choosing FMC Technologies Completion Services, Inc.!!



Main Pass

Recorded with 2800 PSI surface induced pressure.

Database File: 0512339044\_anadarko\_lansdown state 29n-21hz\_05-31-14\_mit\_rbl.db

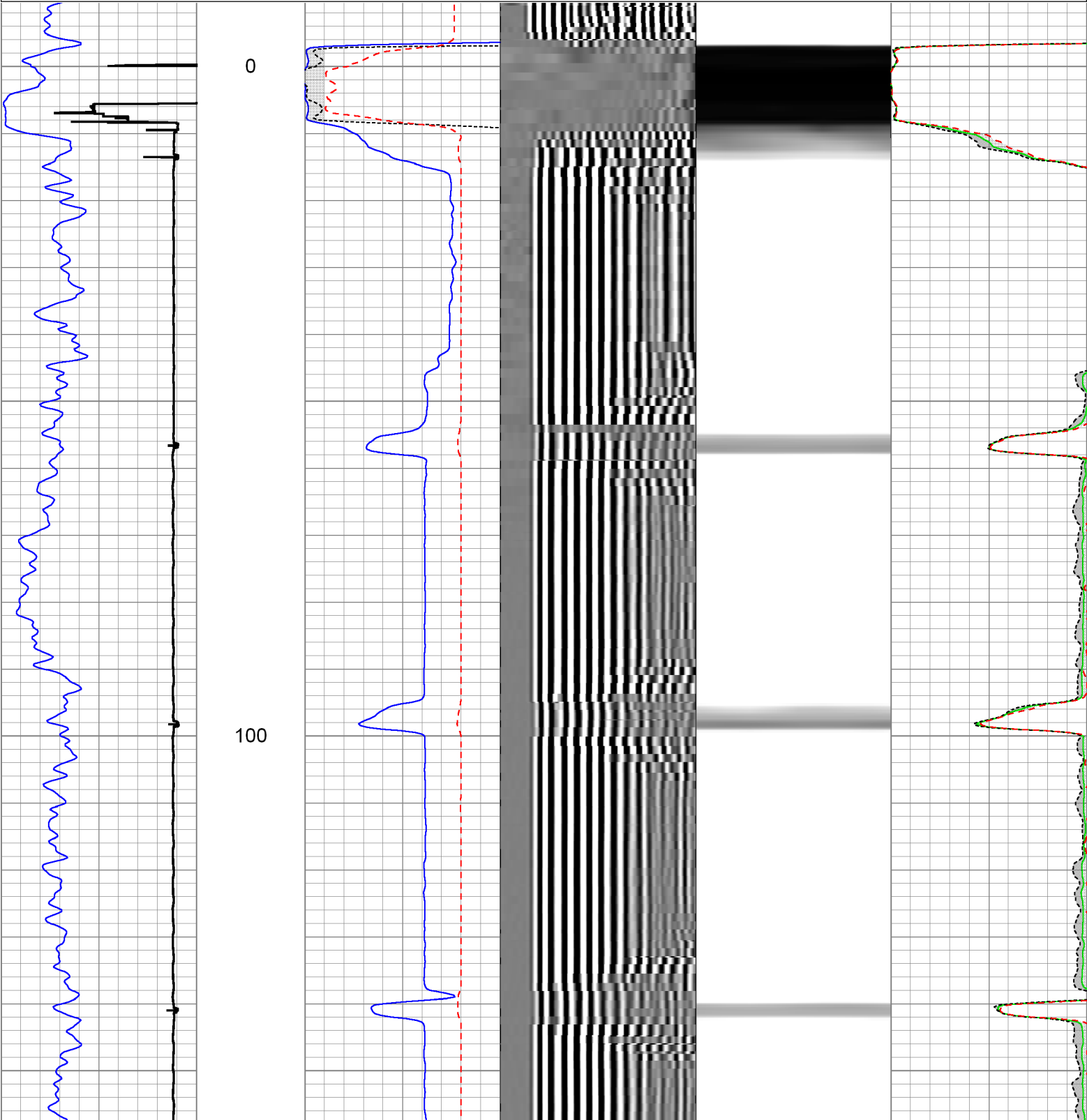
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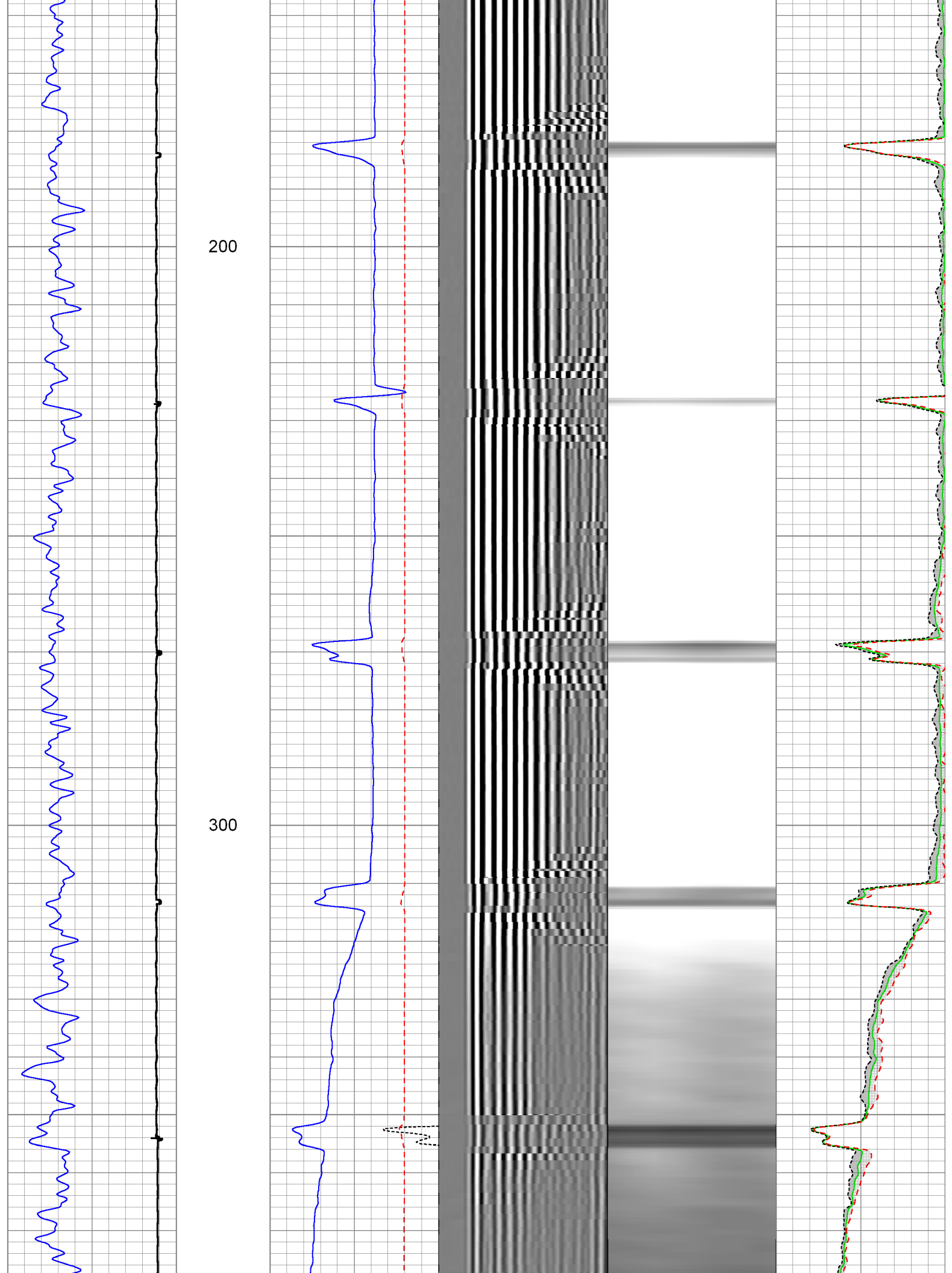
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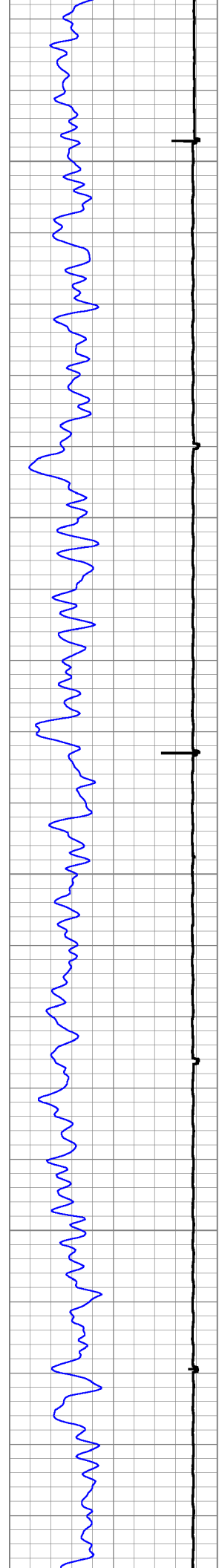
Dataset Creation: Sat May 31 11:24:51 2014 by Log SCH 111116

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

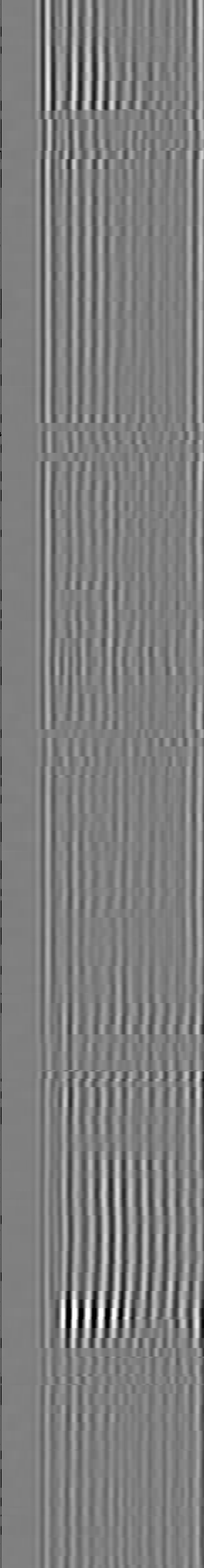
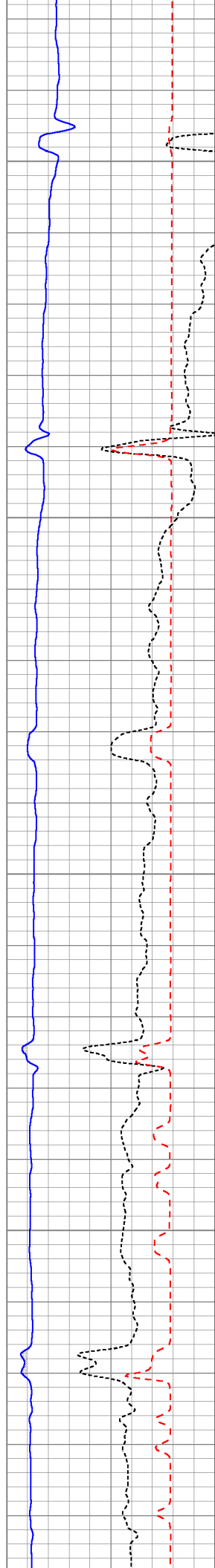




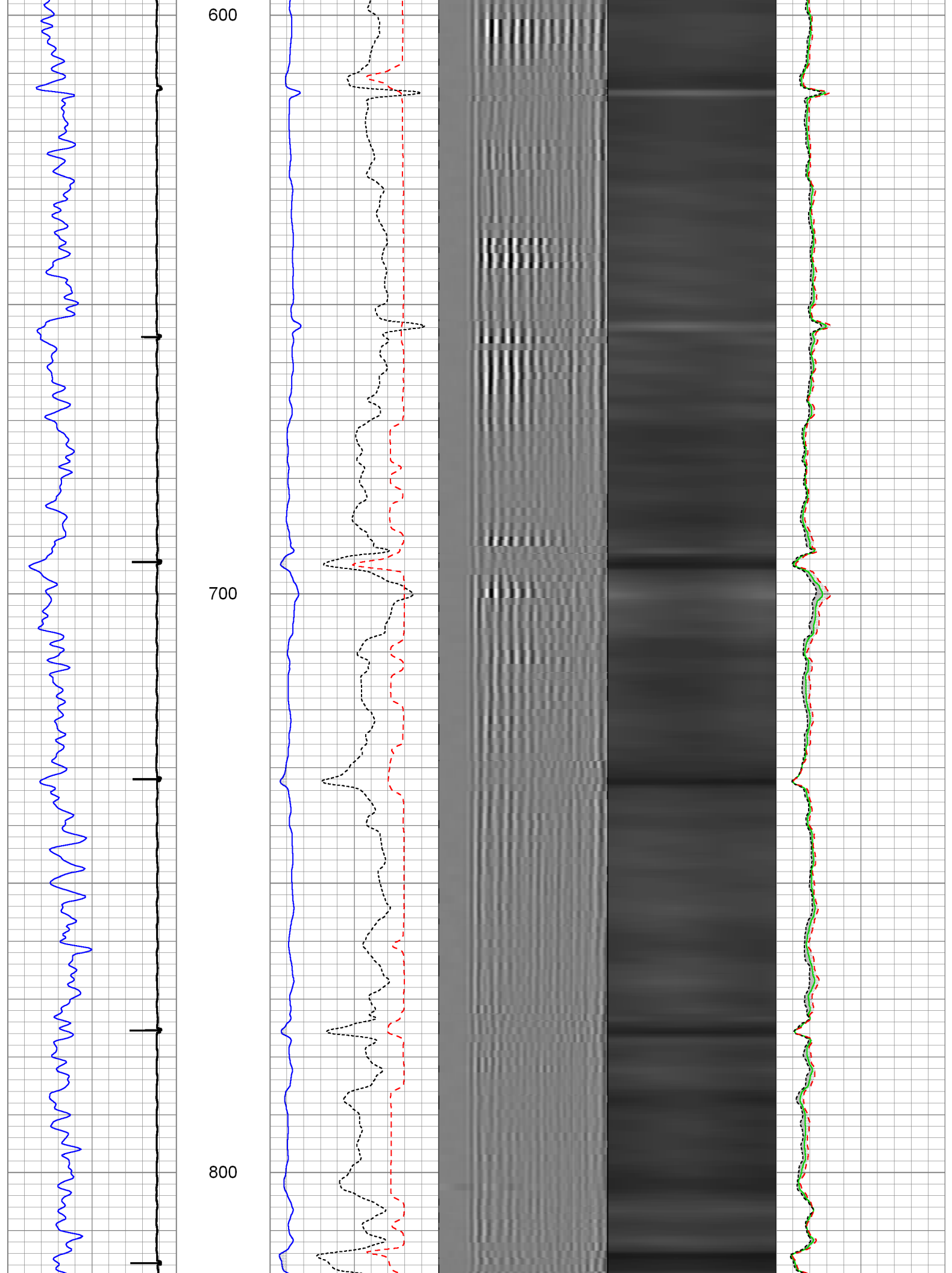


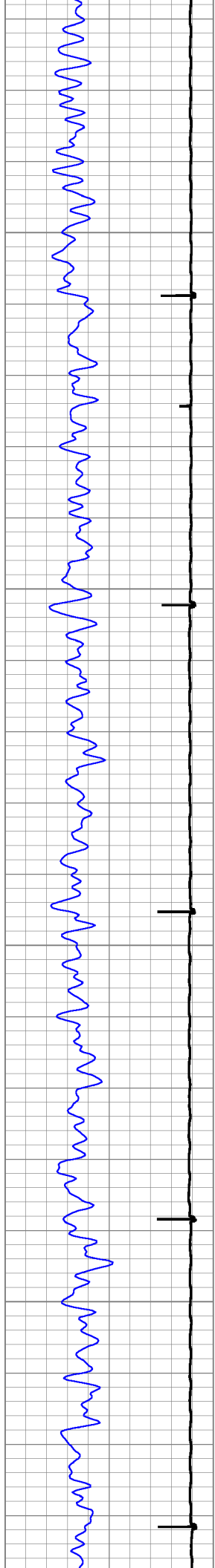
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500



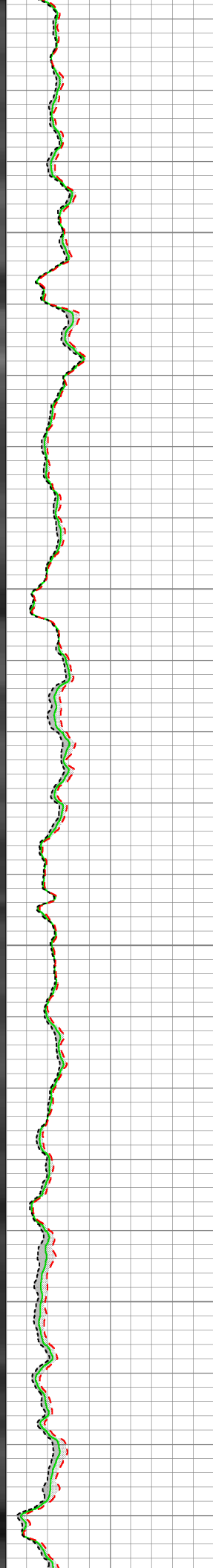
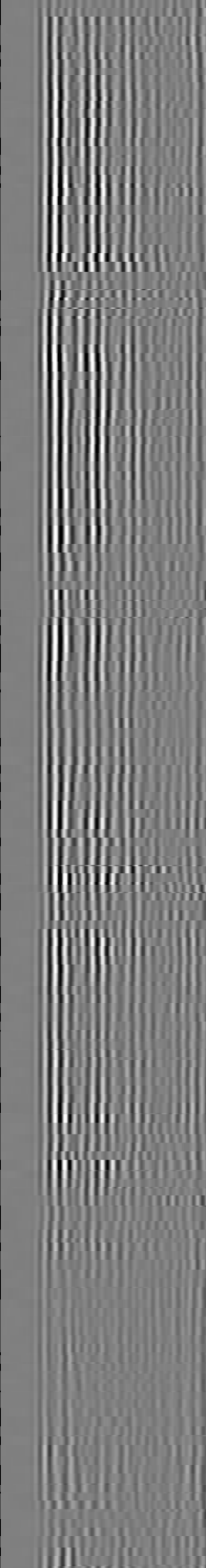
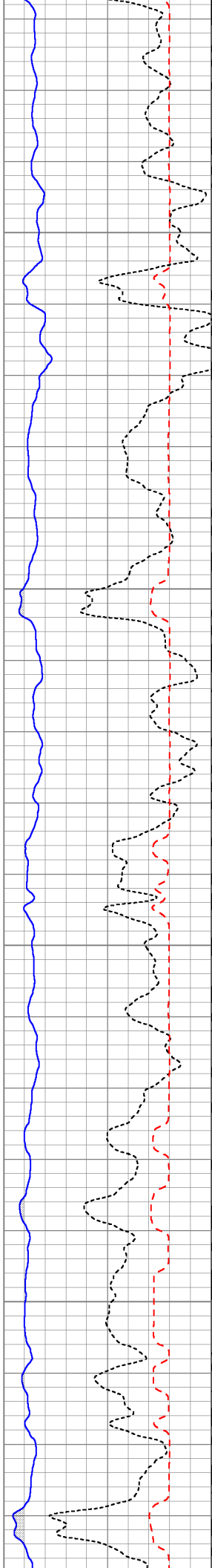


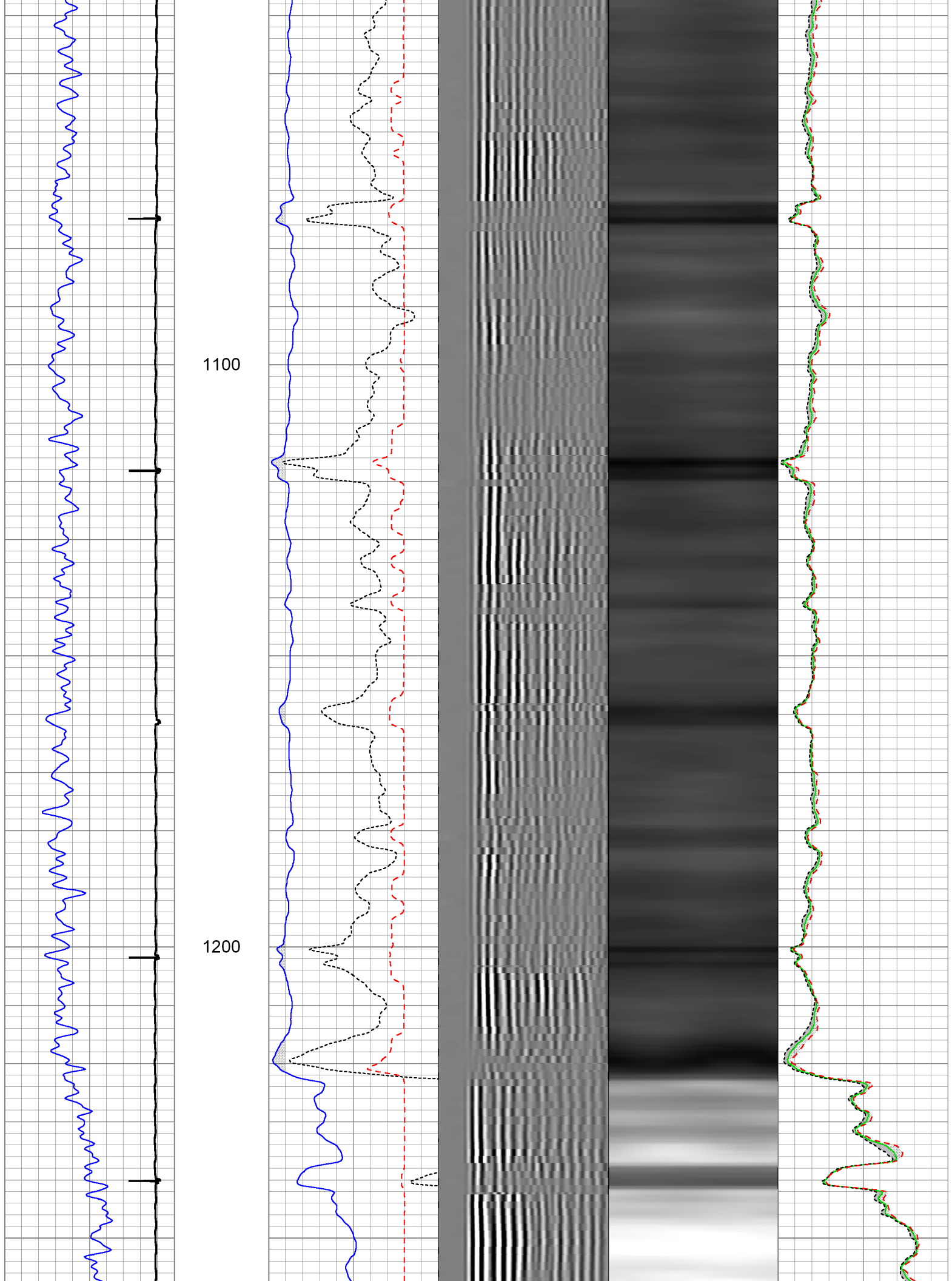


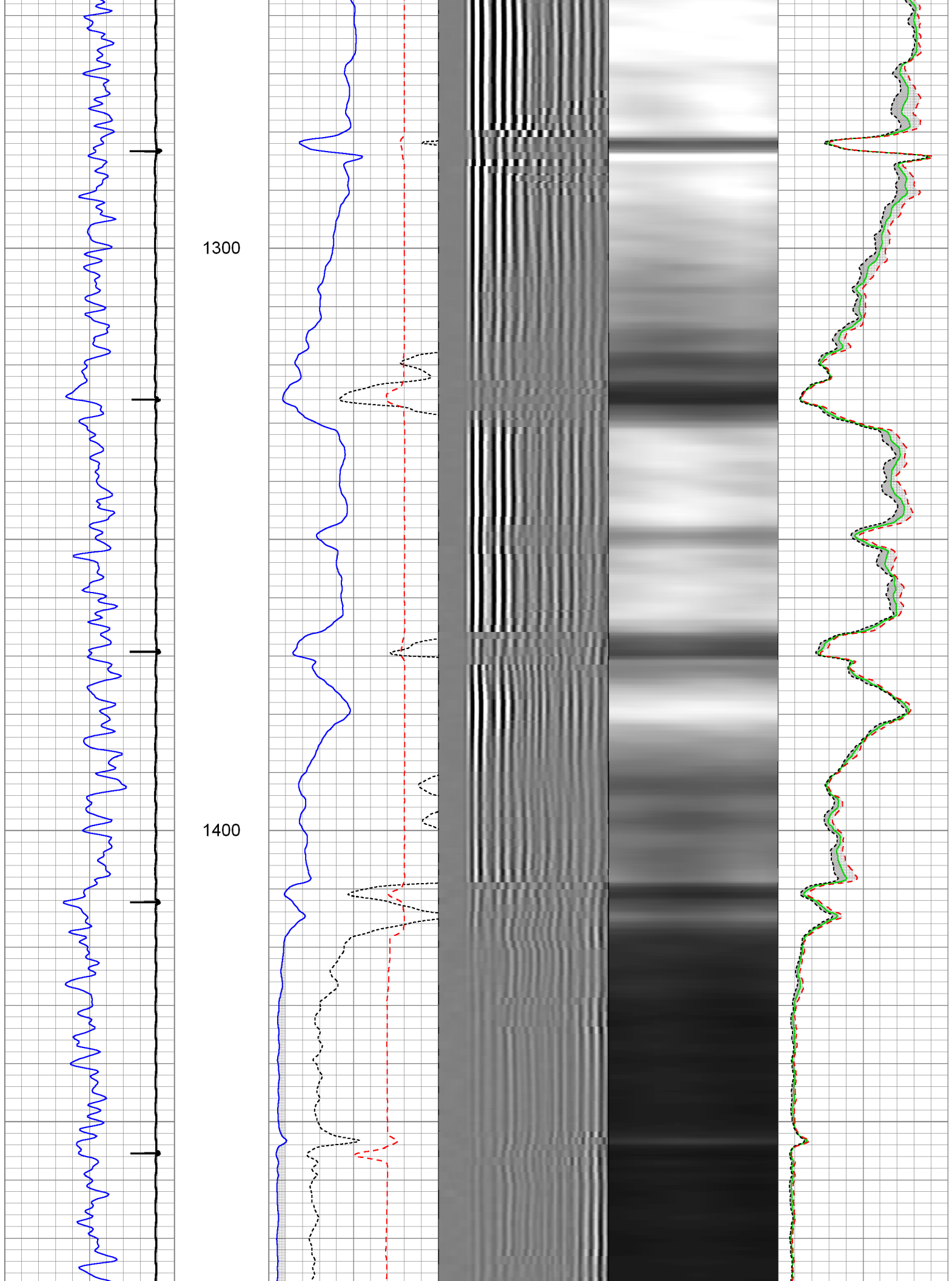


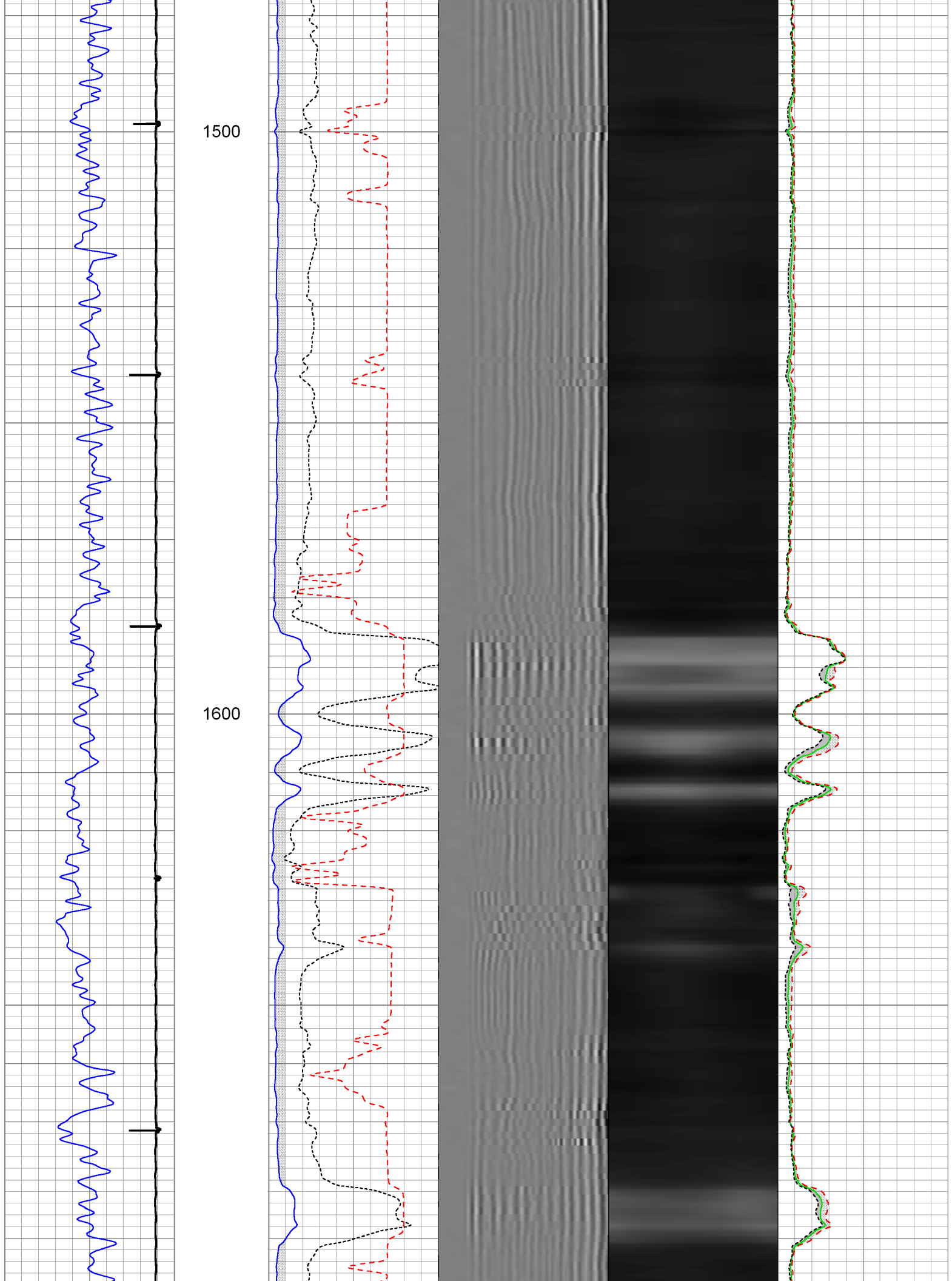
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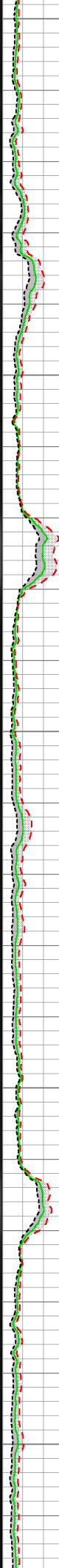
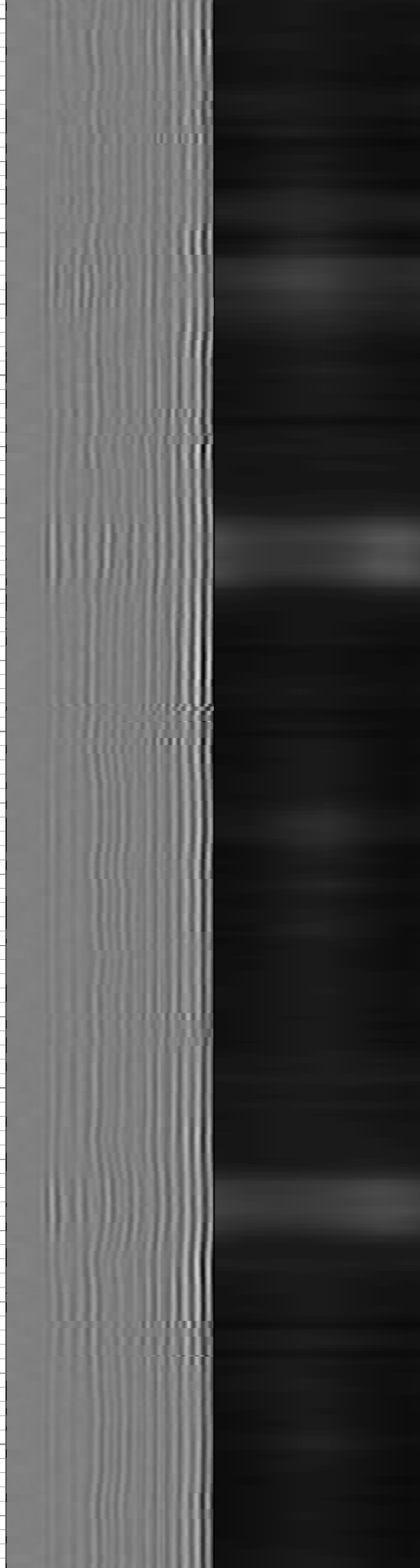
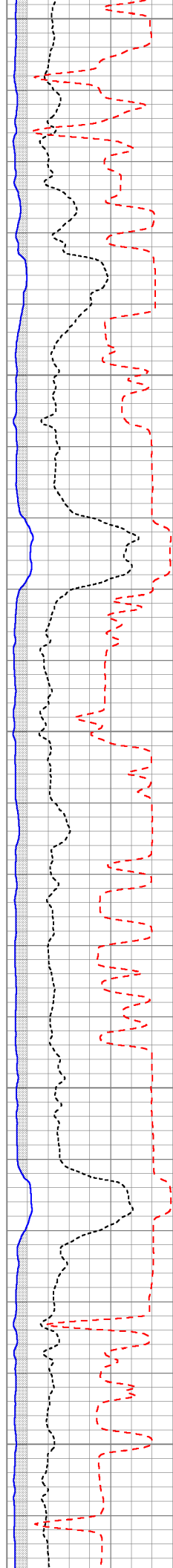




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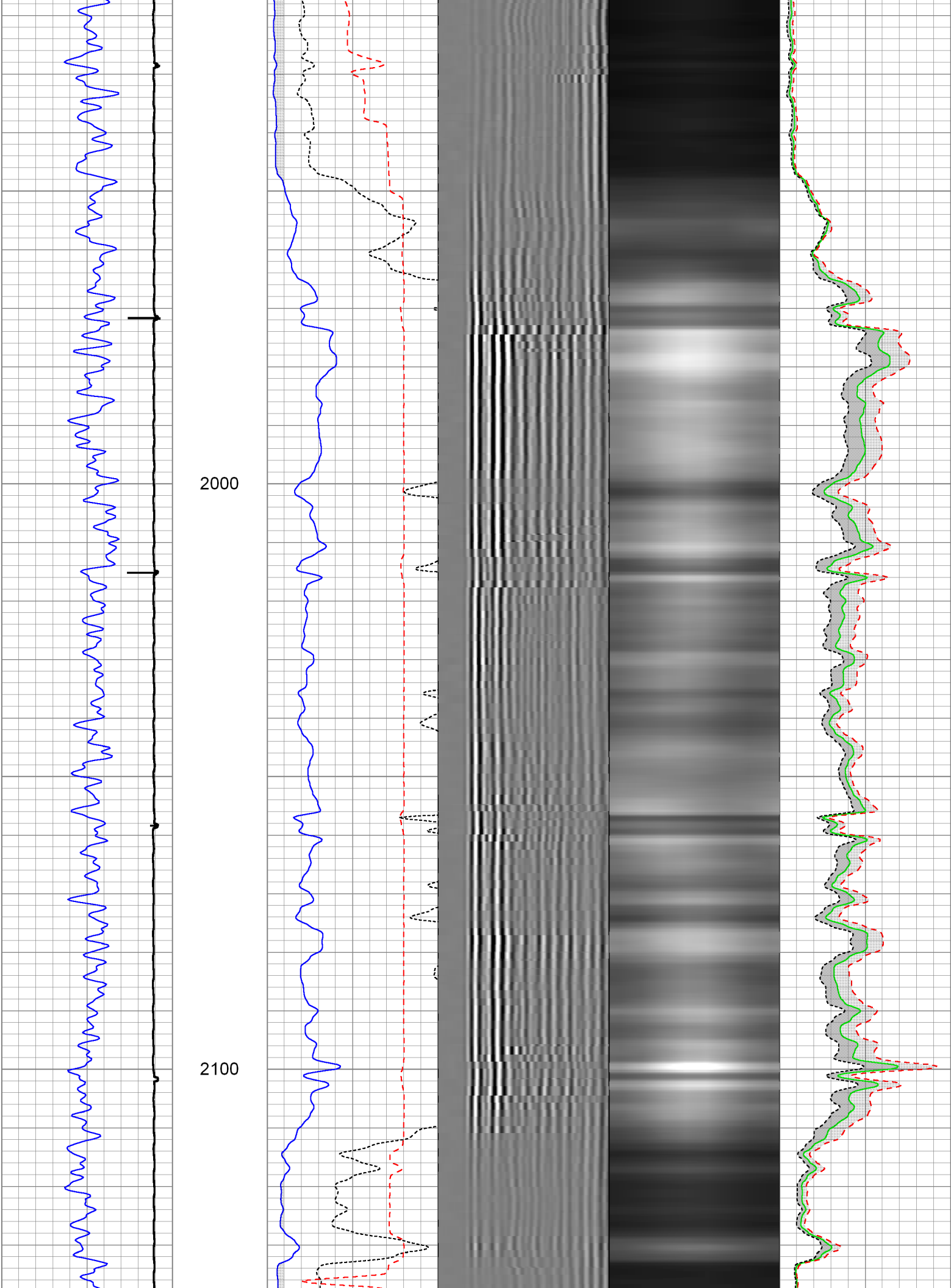
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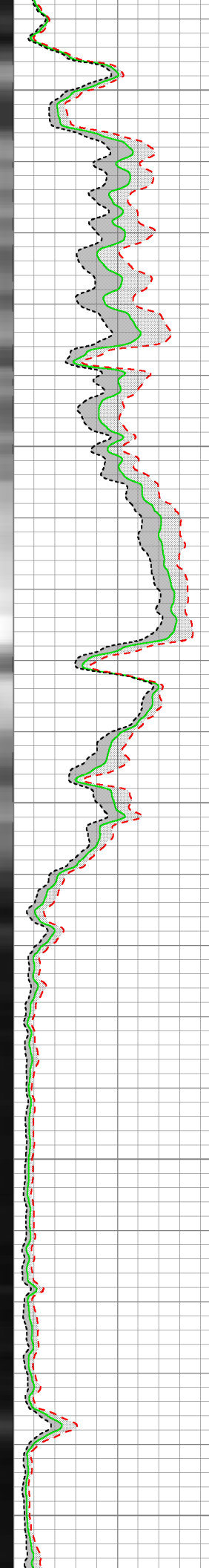
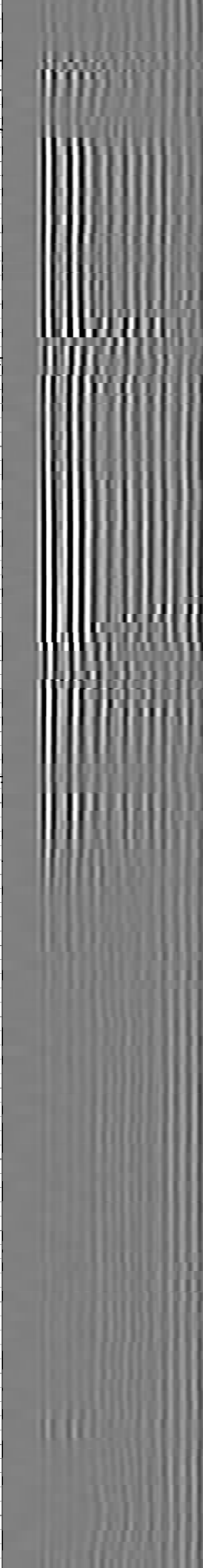
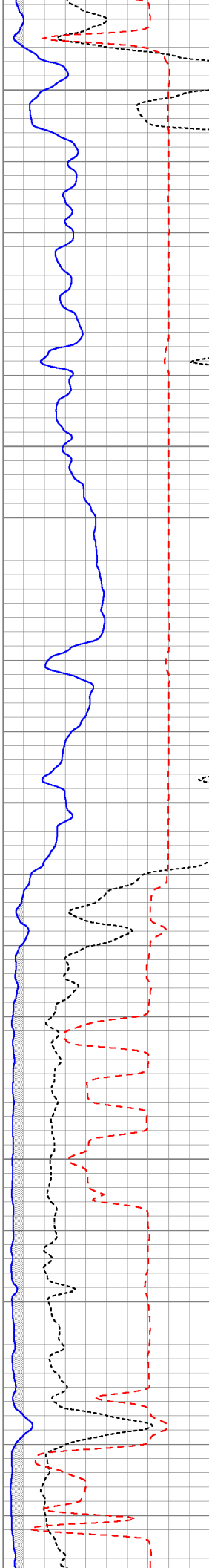
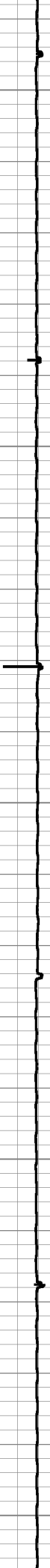
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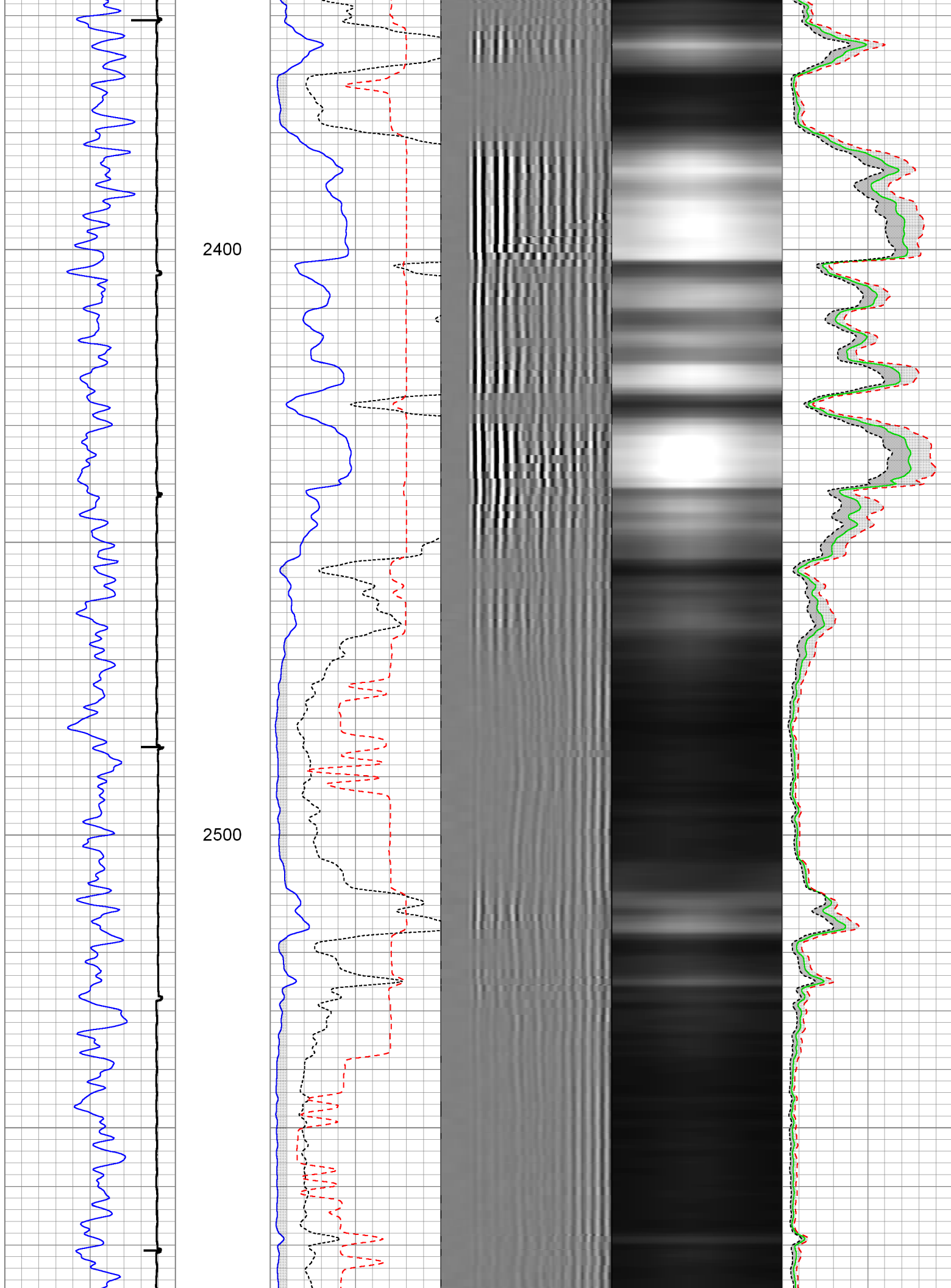
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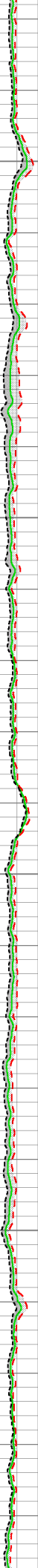
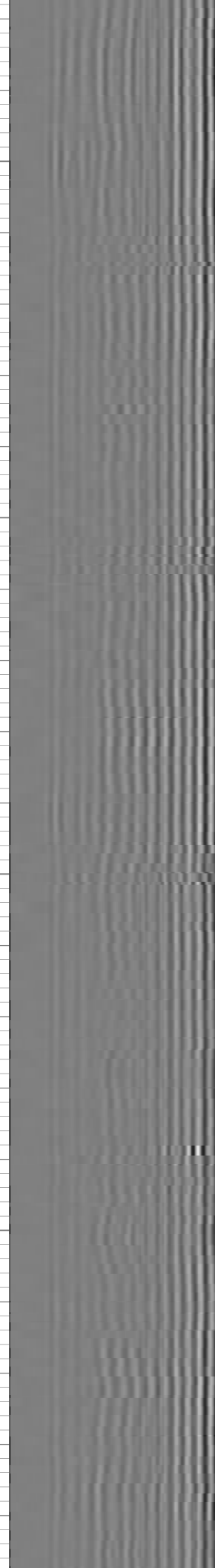
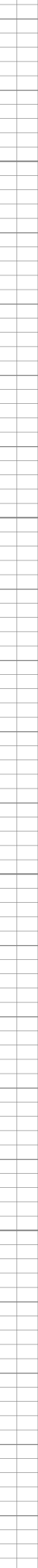
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2600

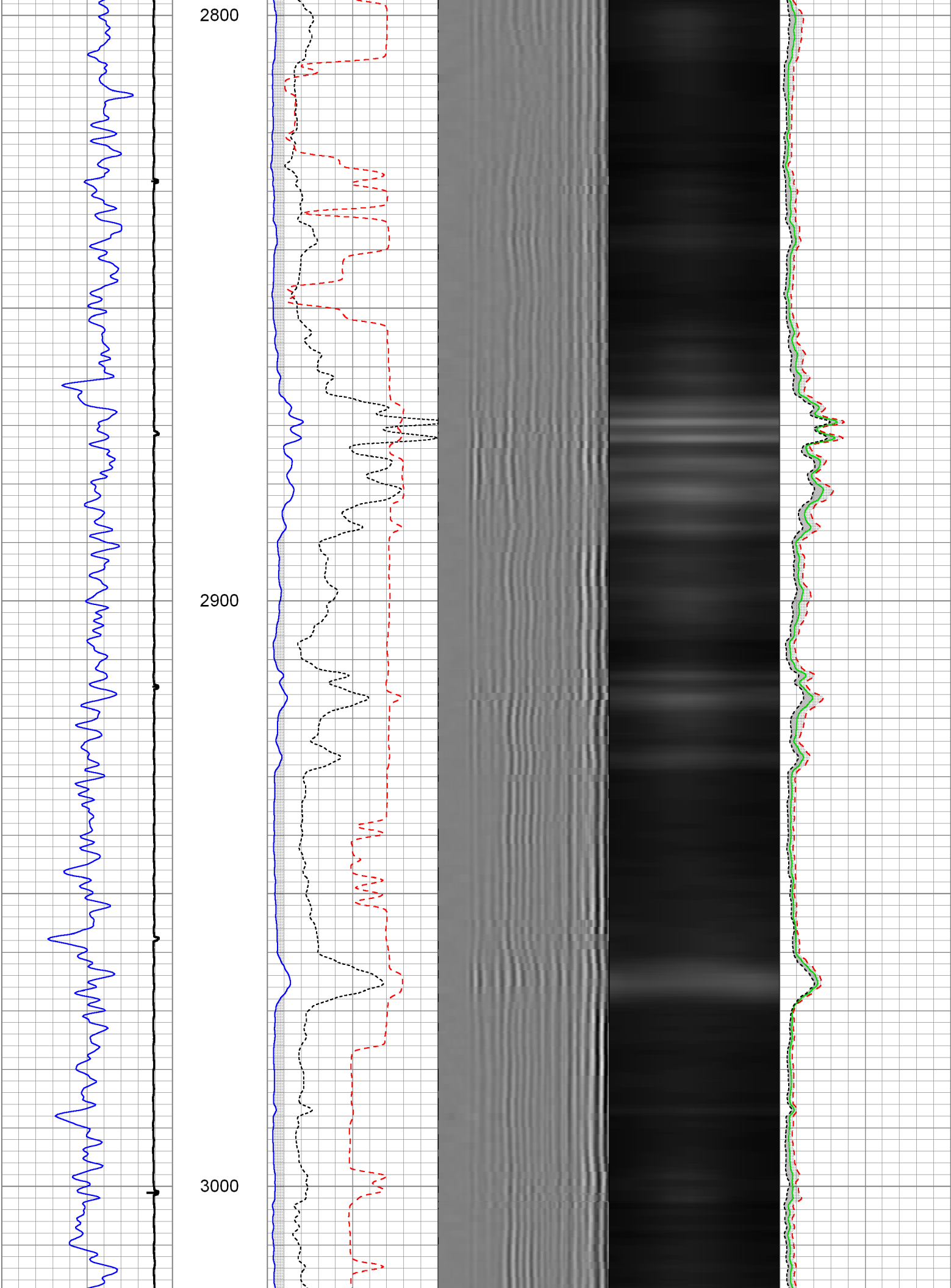
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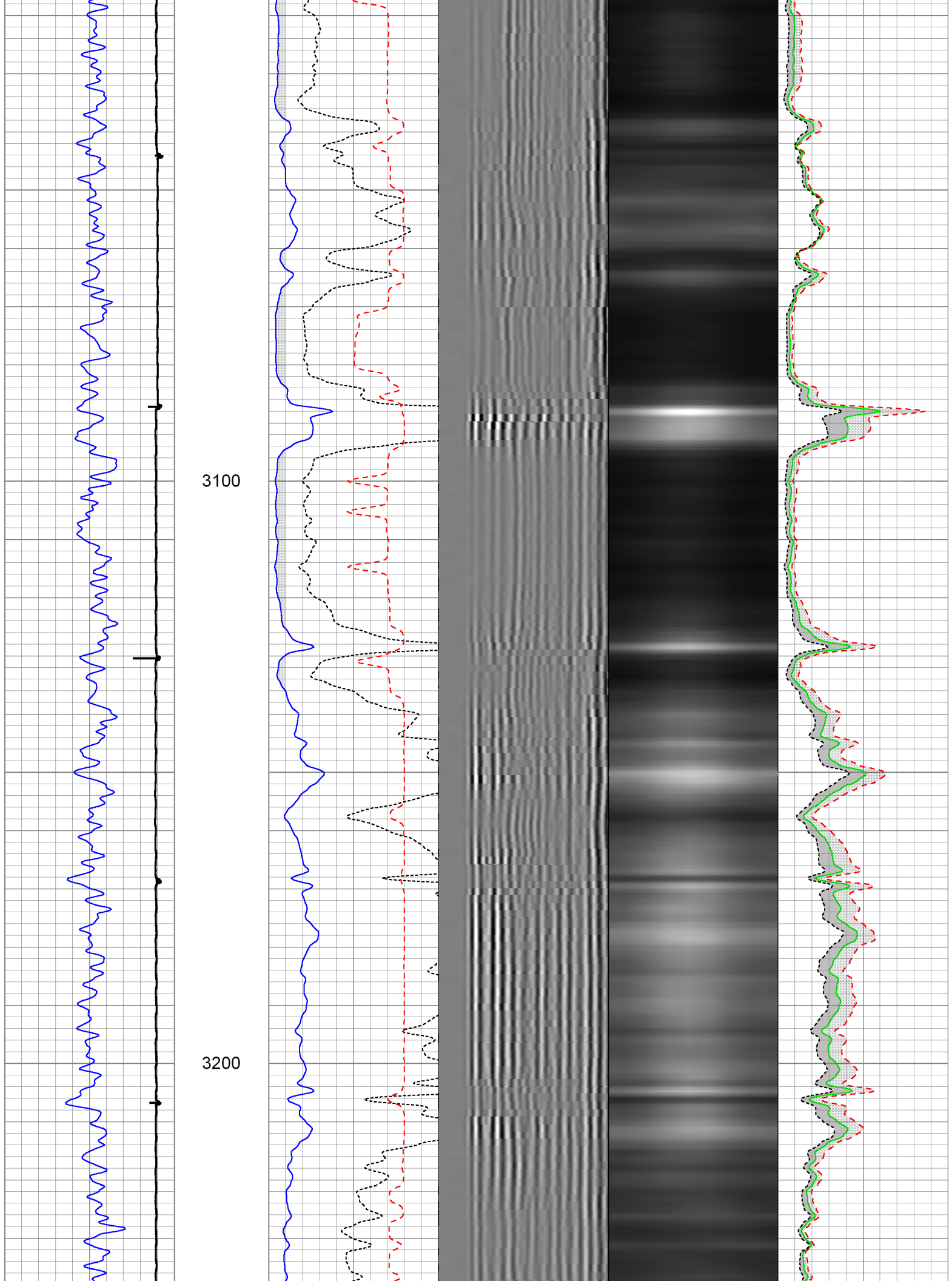


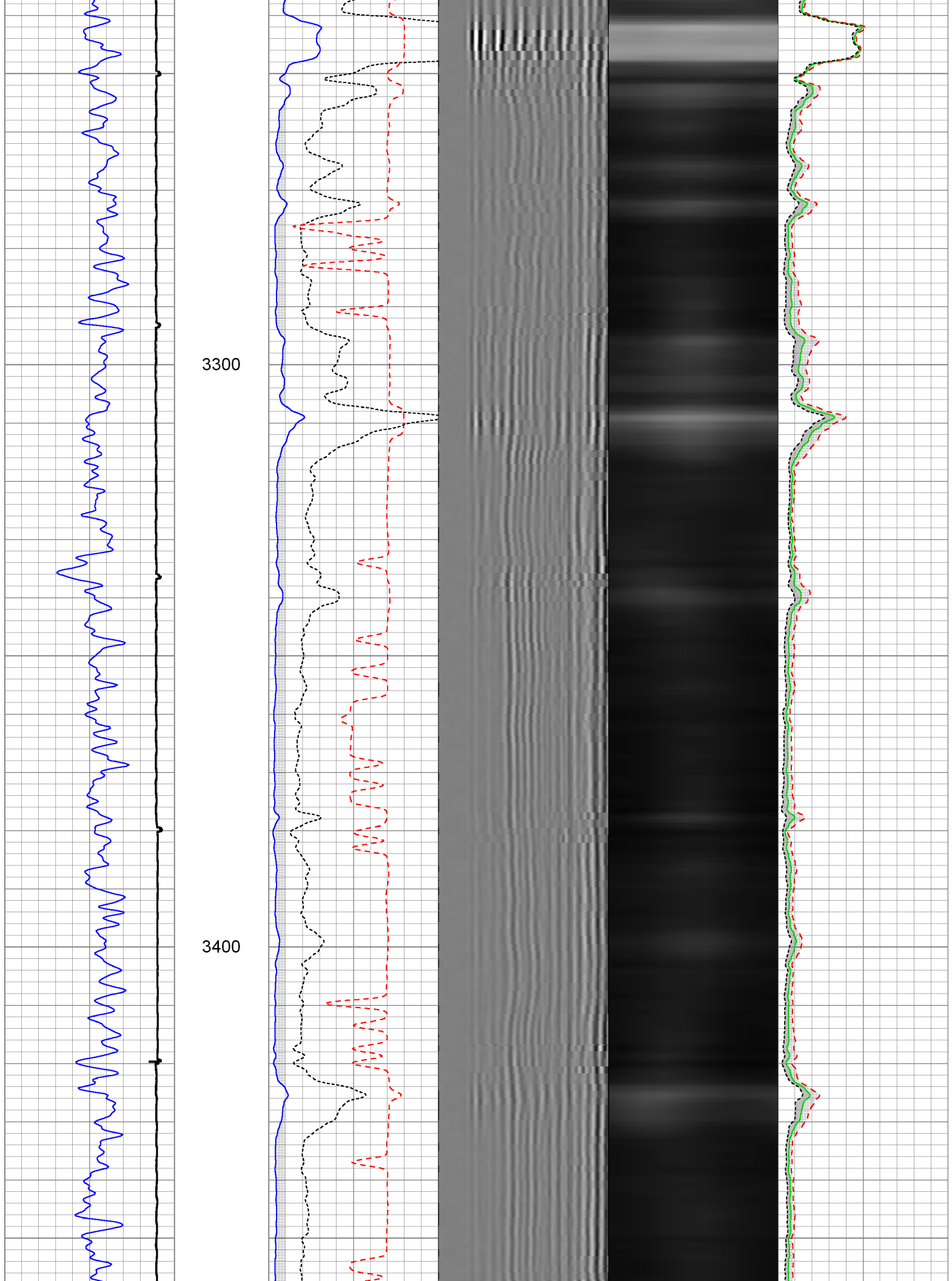
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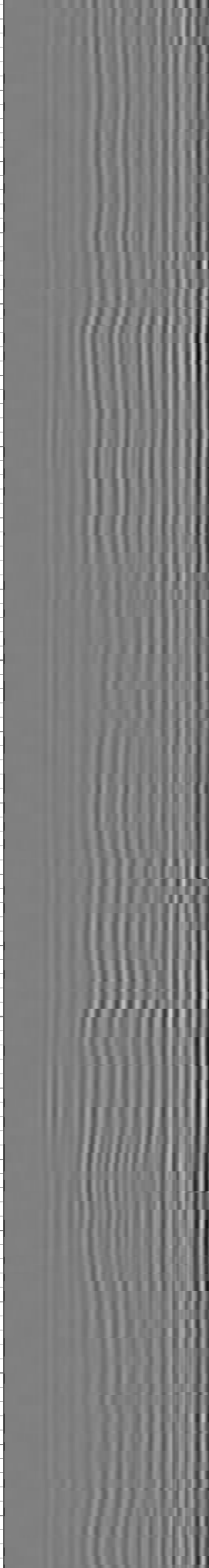
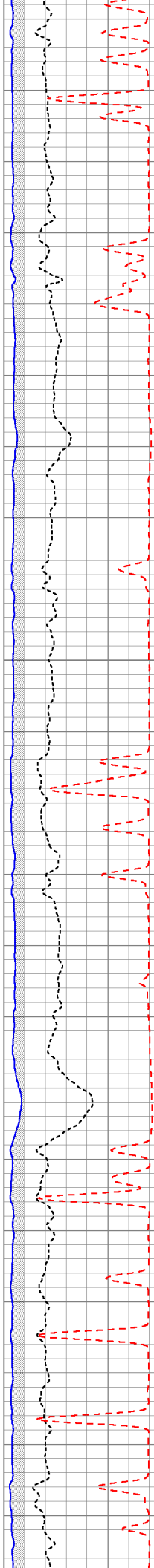






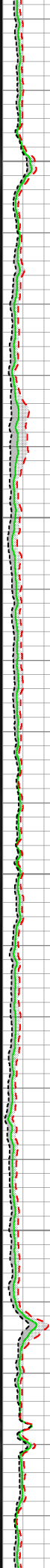
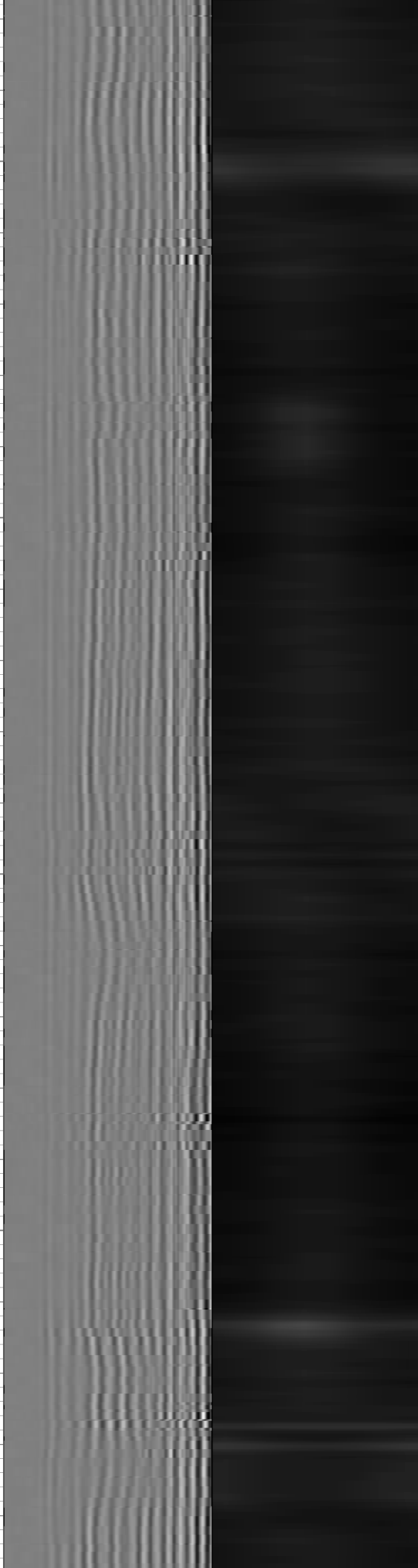
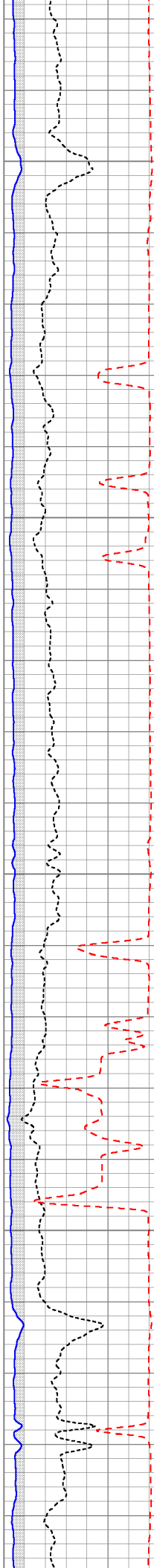
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3700

3800

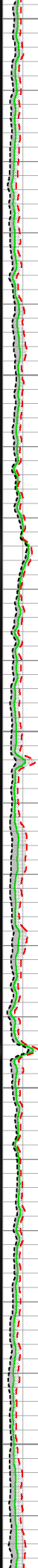
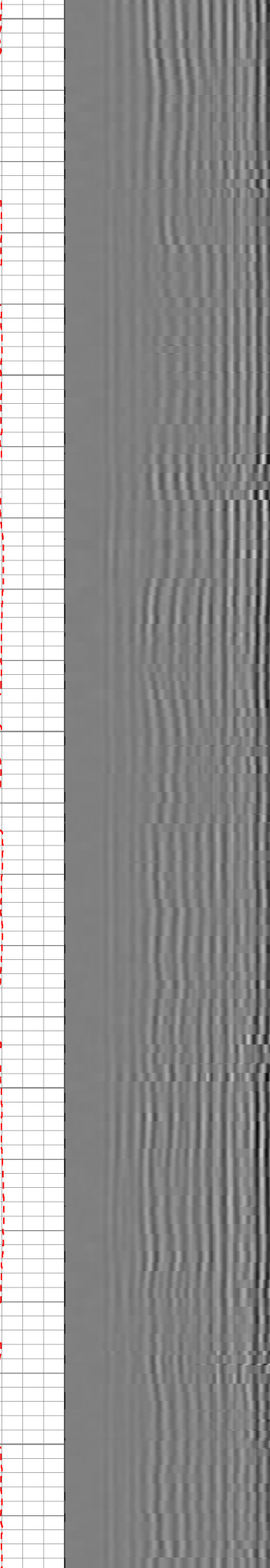
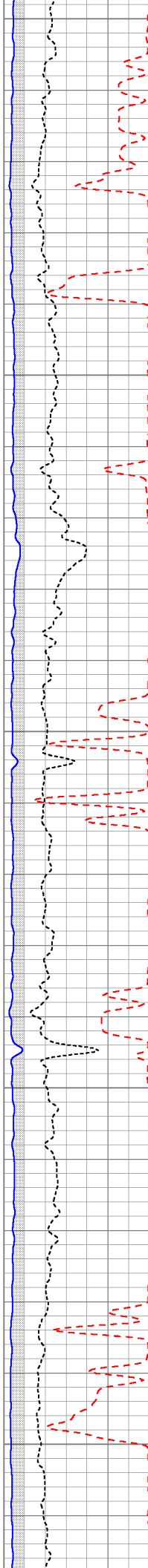
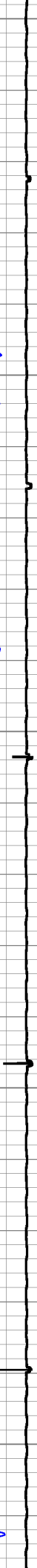




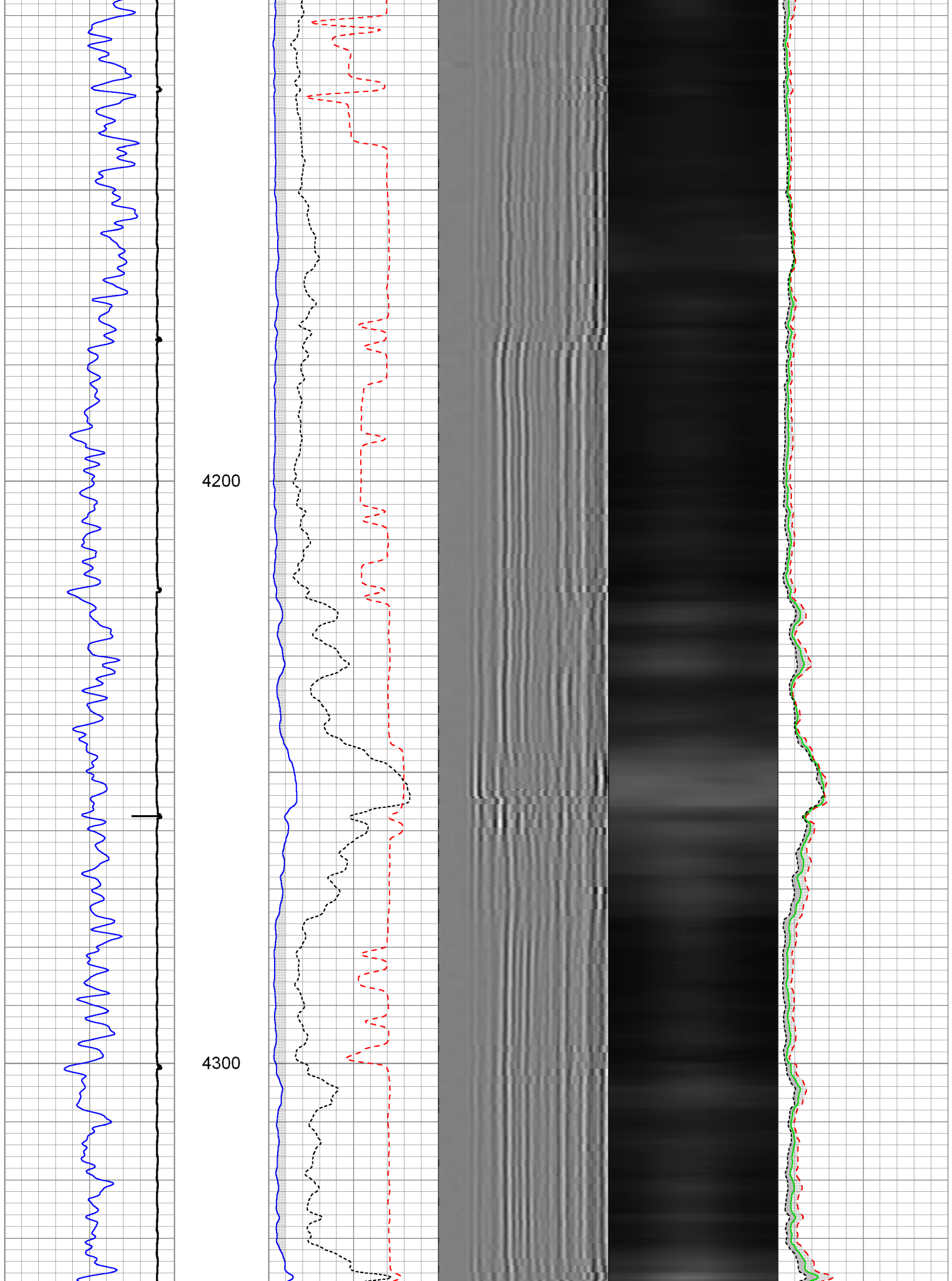
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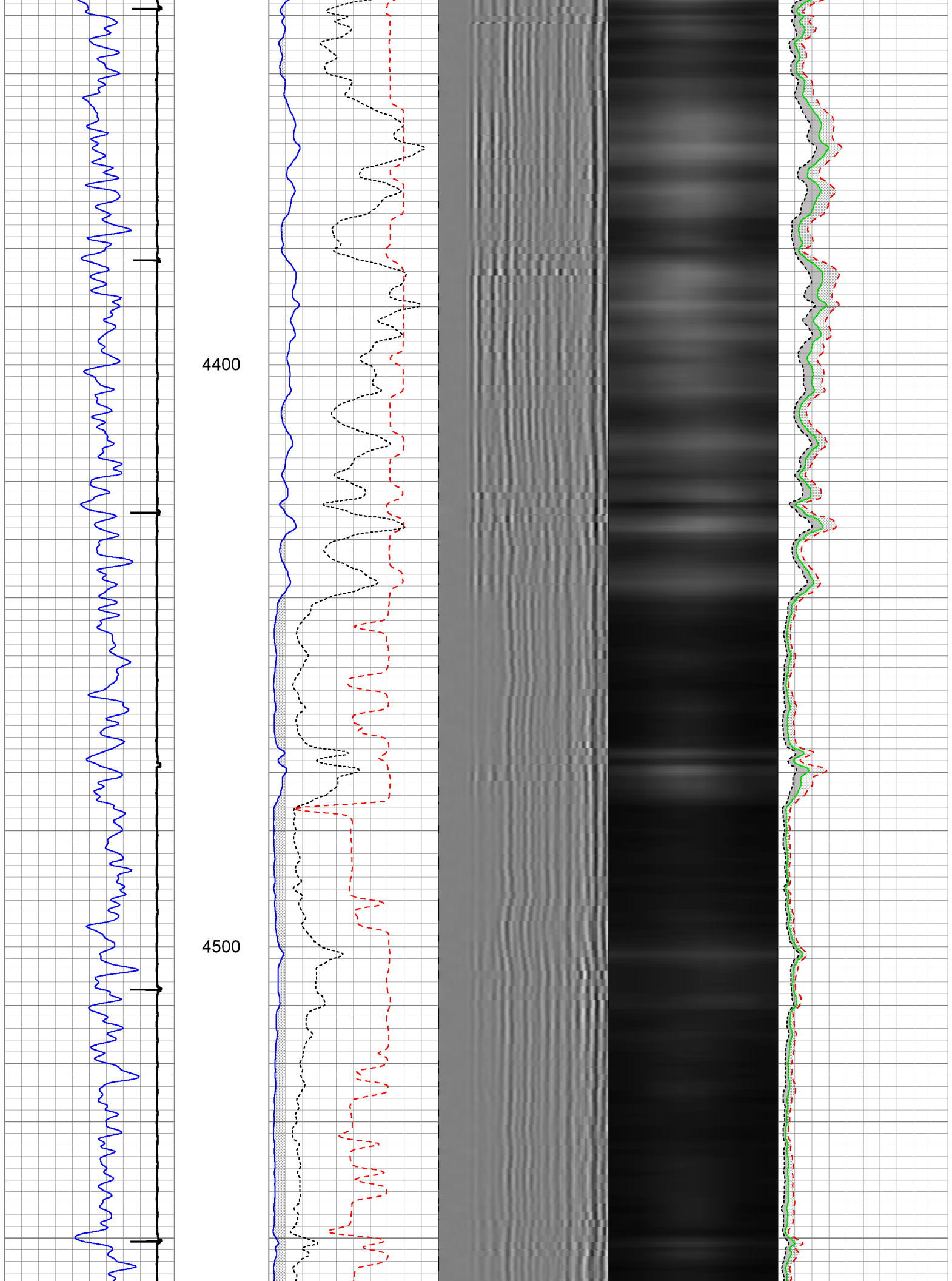
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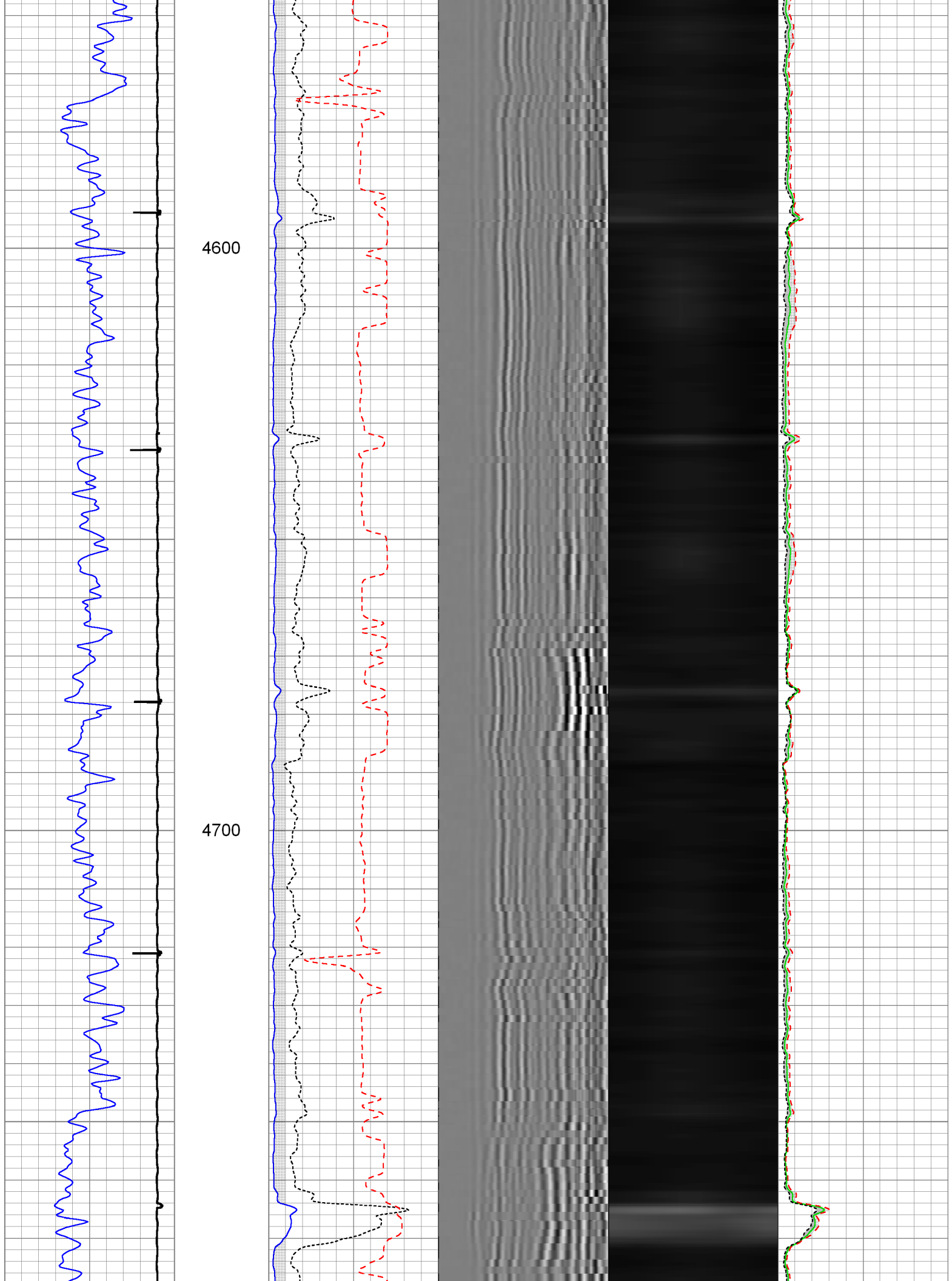
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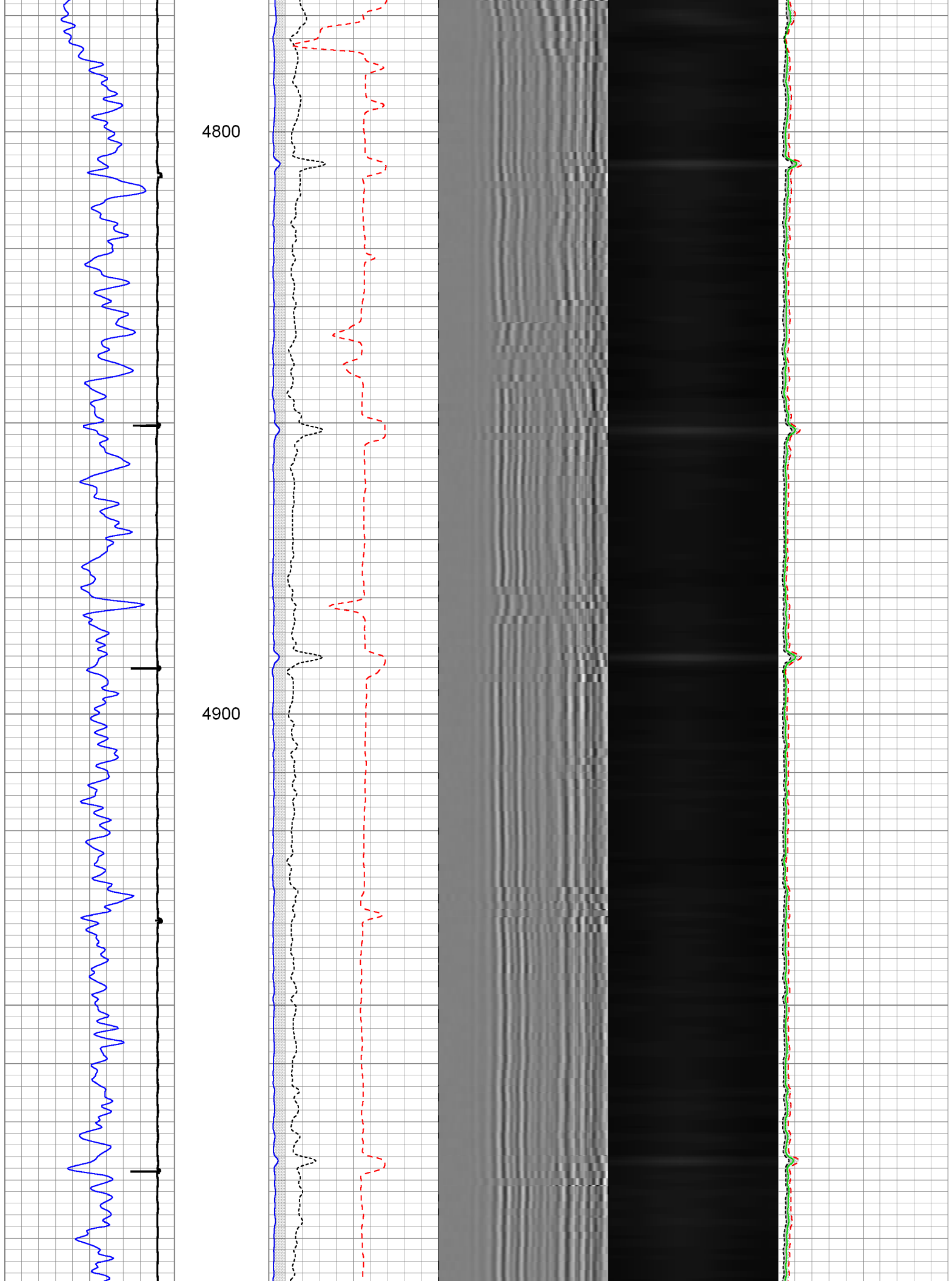






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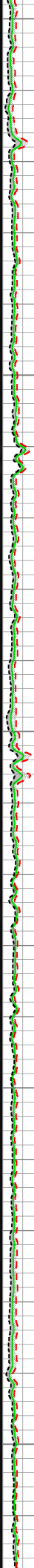
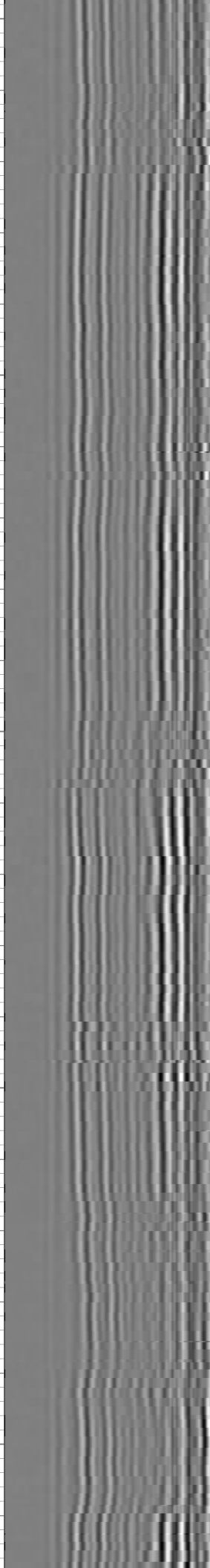
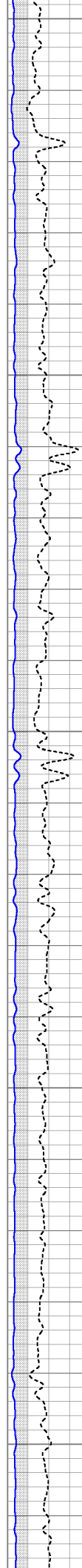
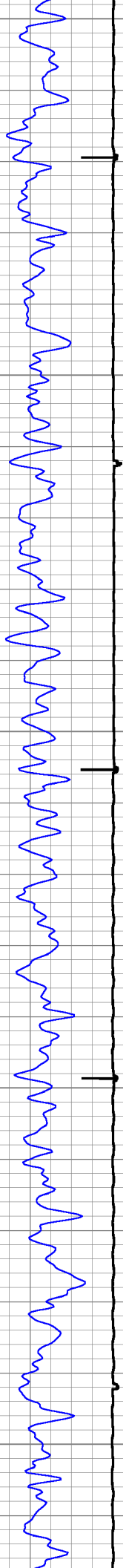
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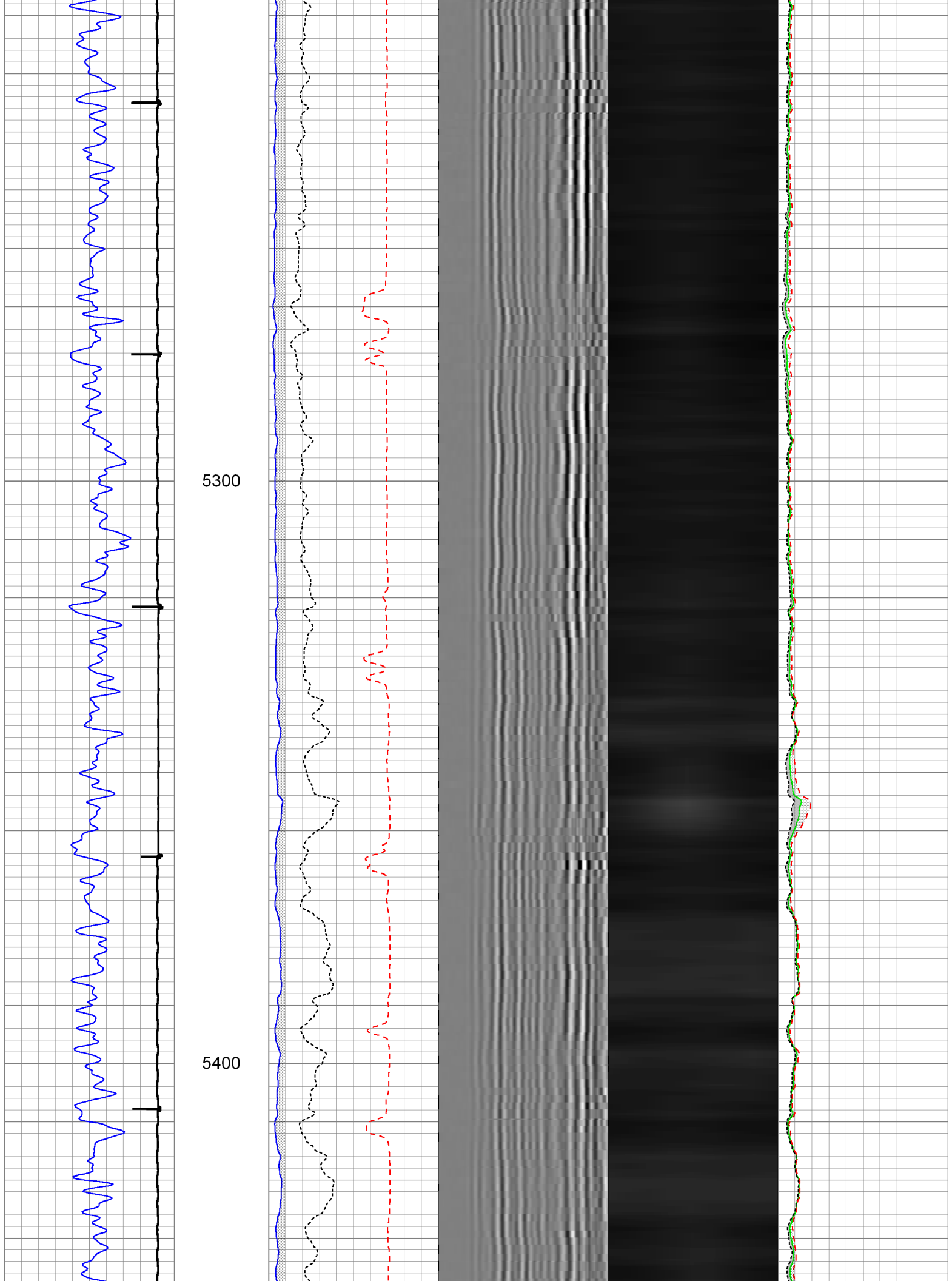


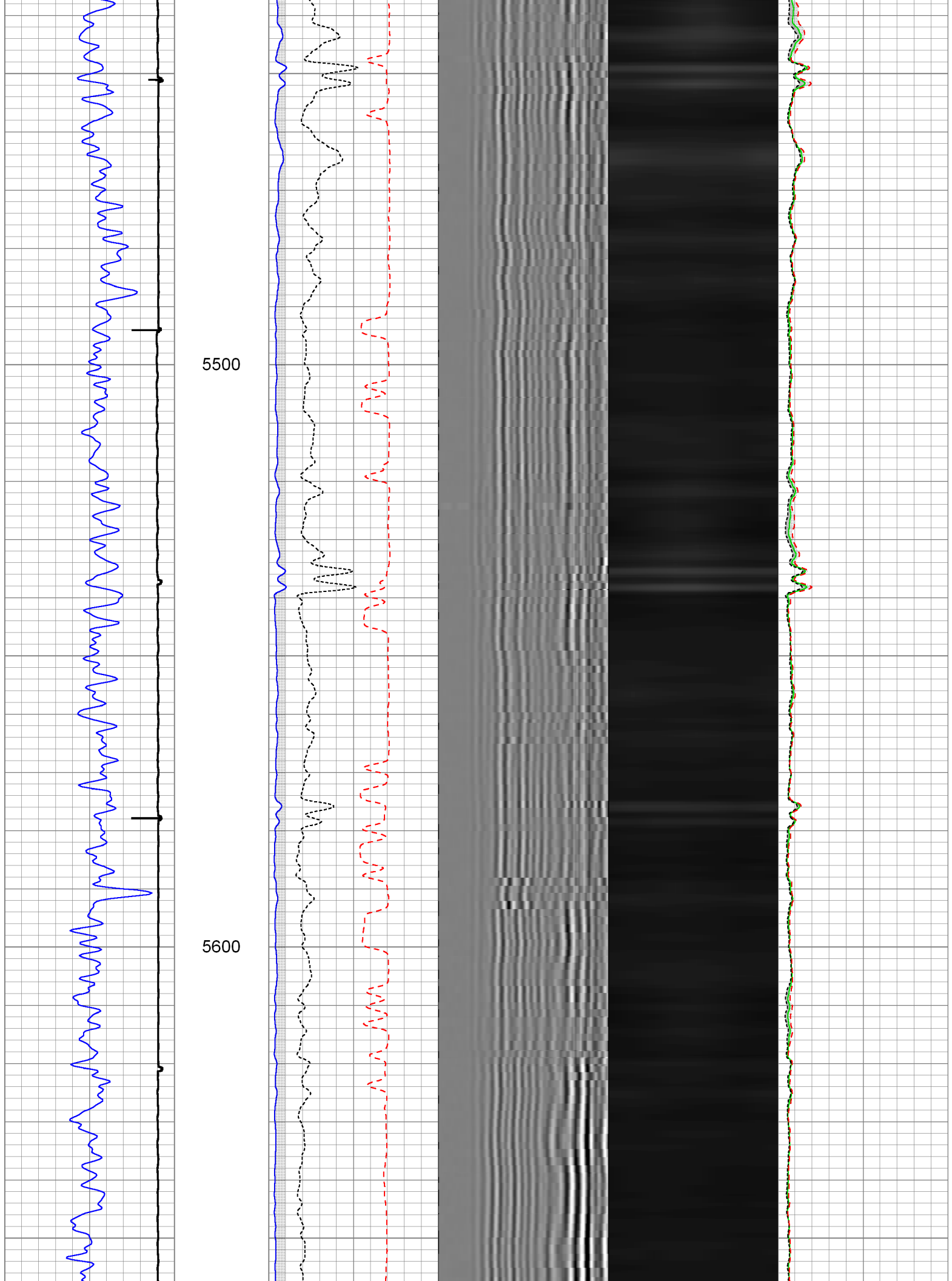
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5200



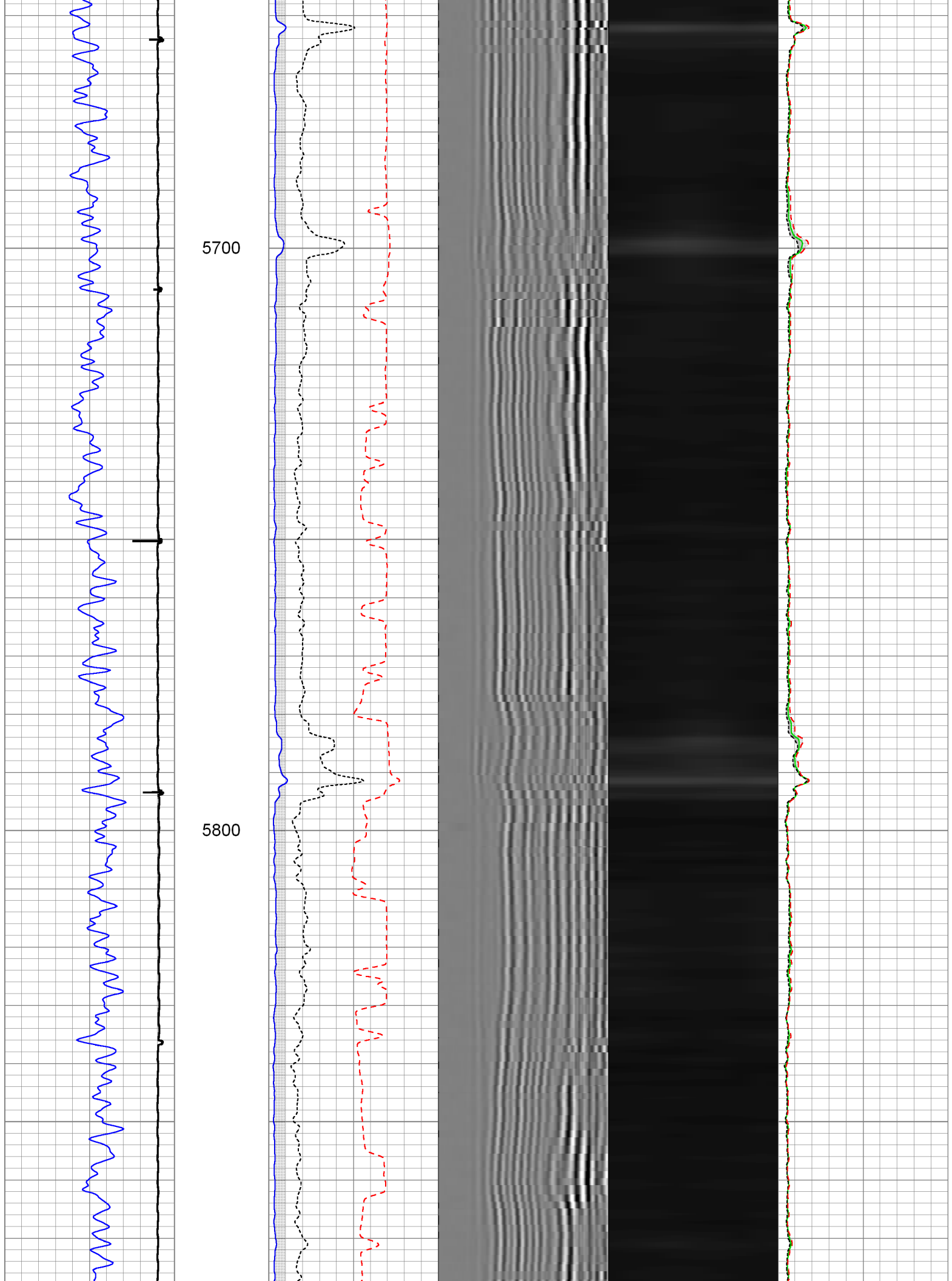






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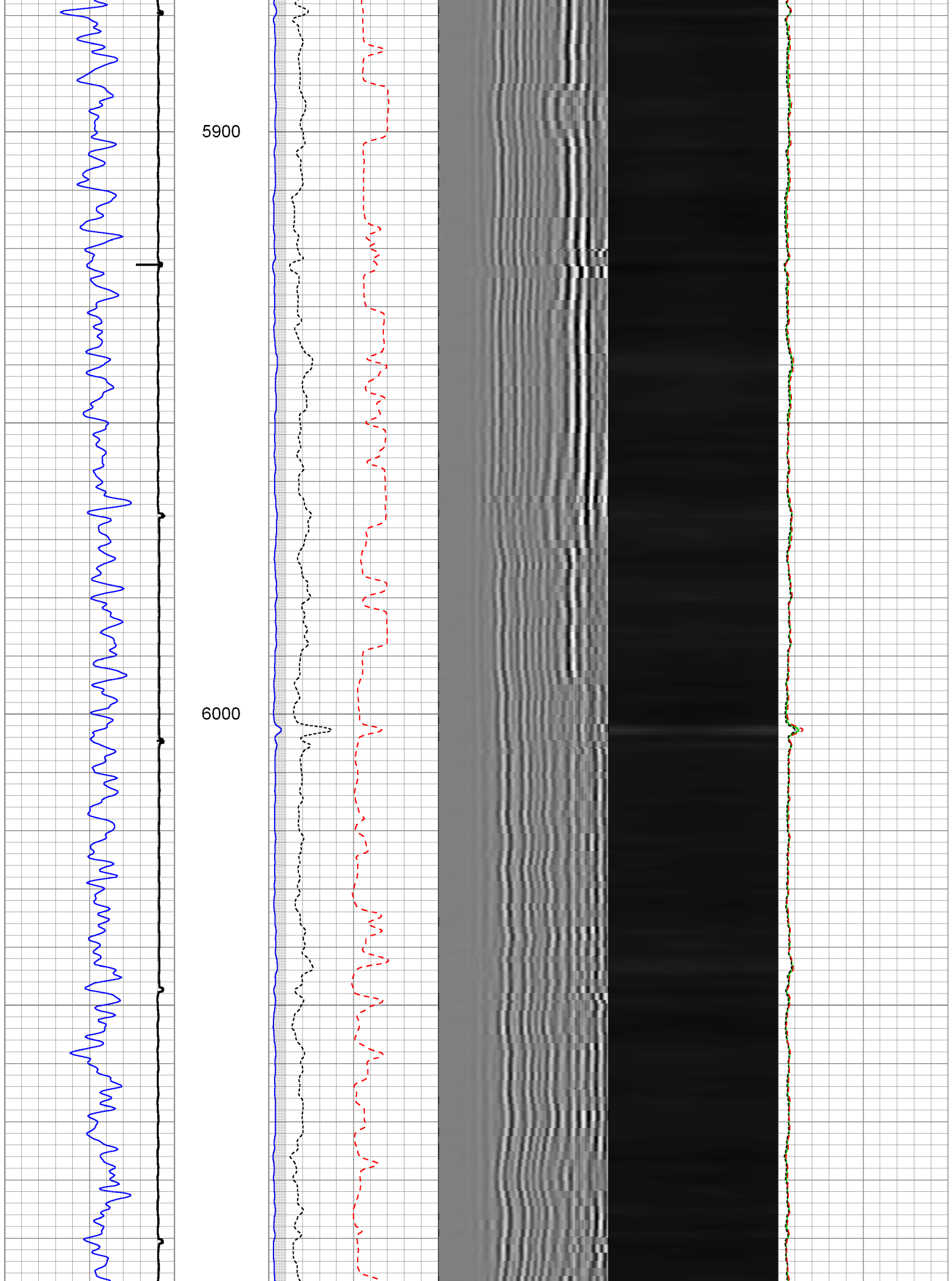
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5900

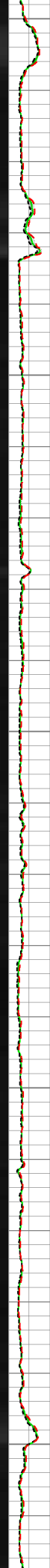
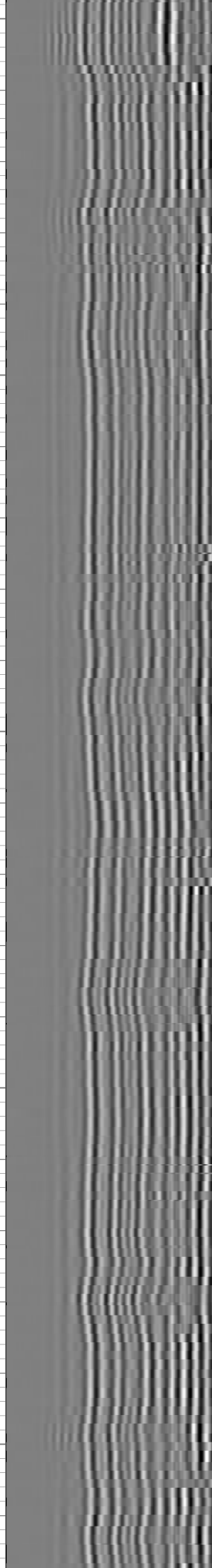
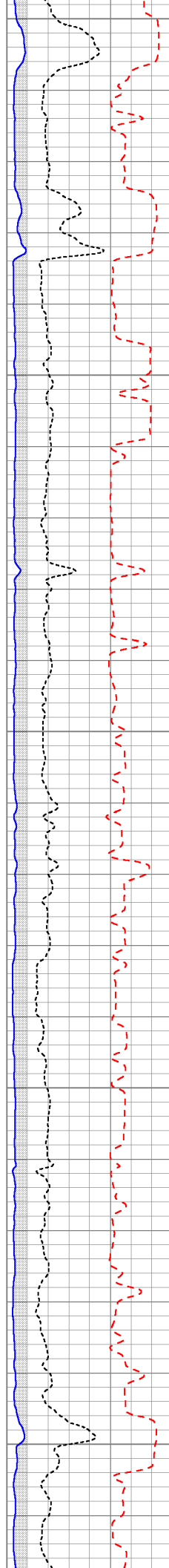
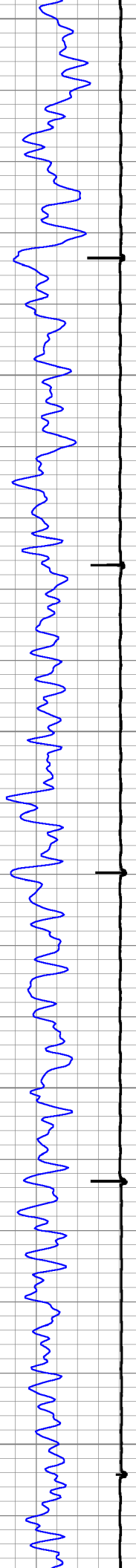
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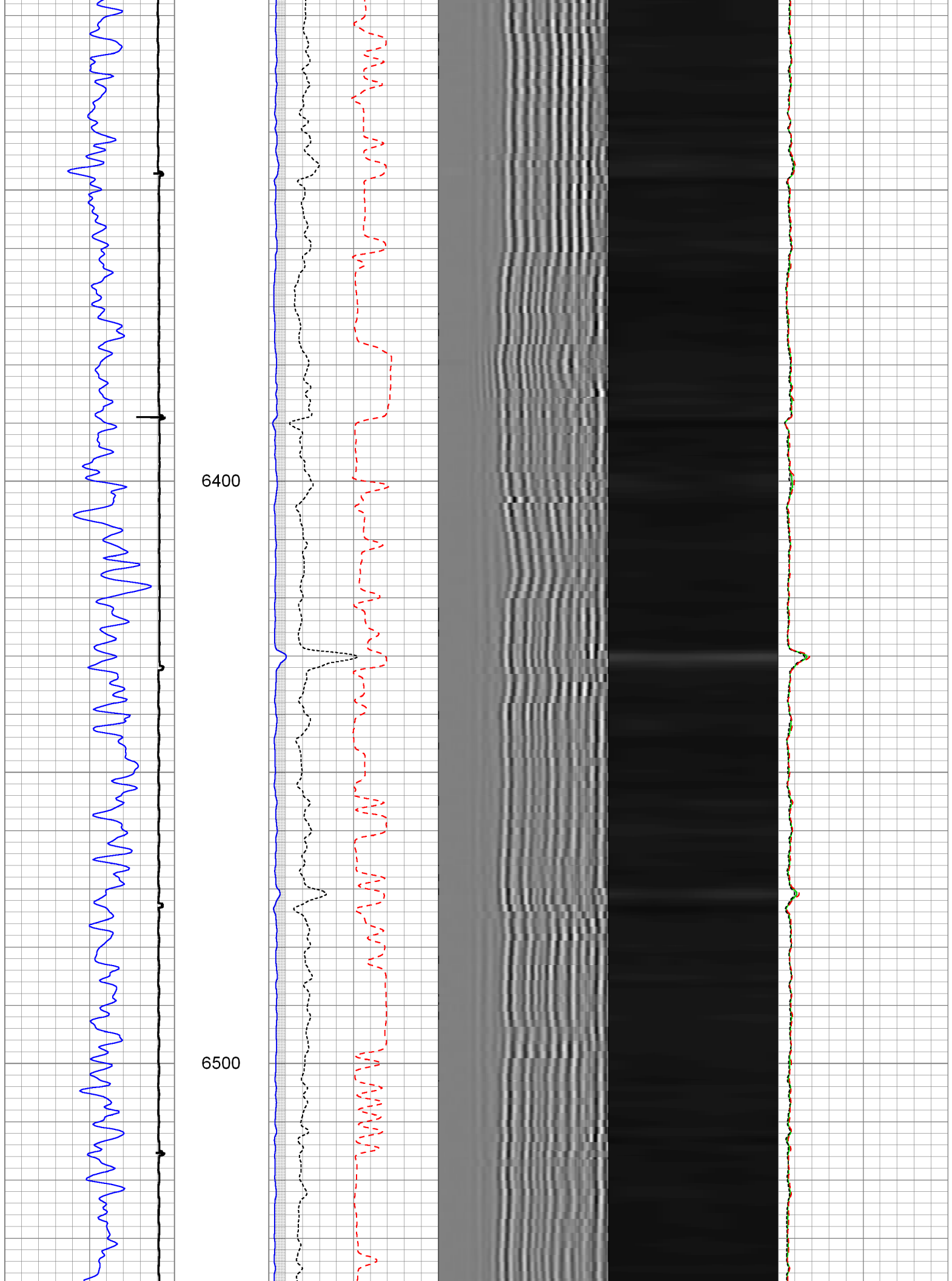


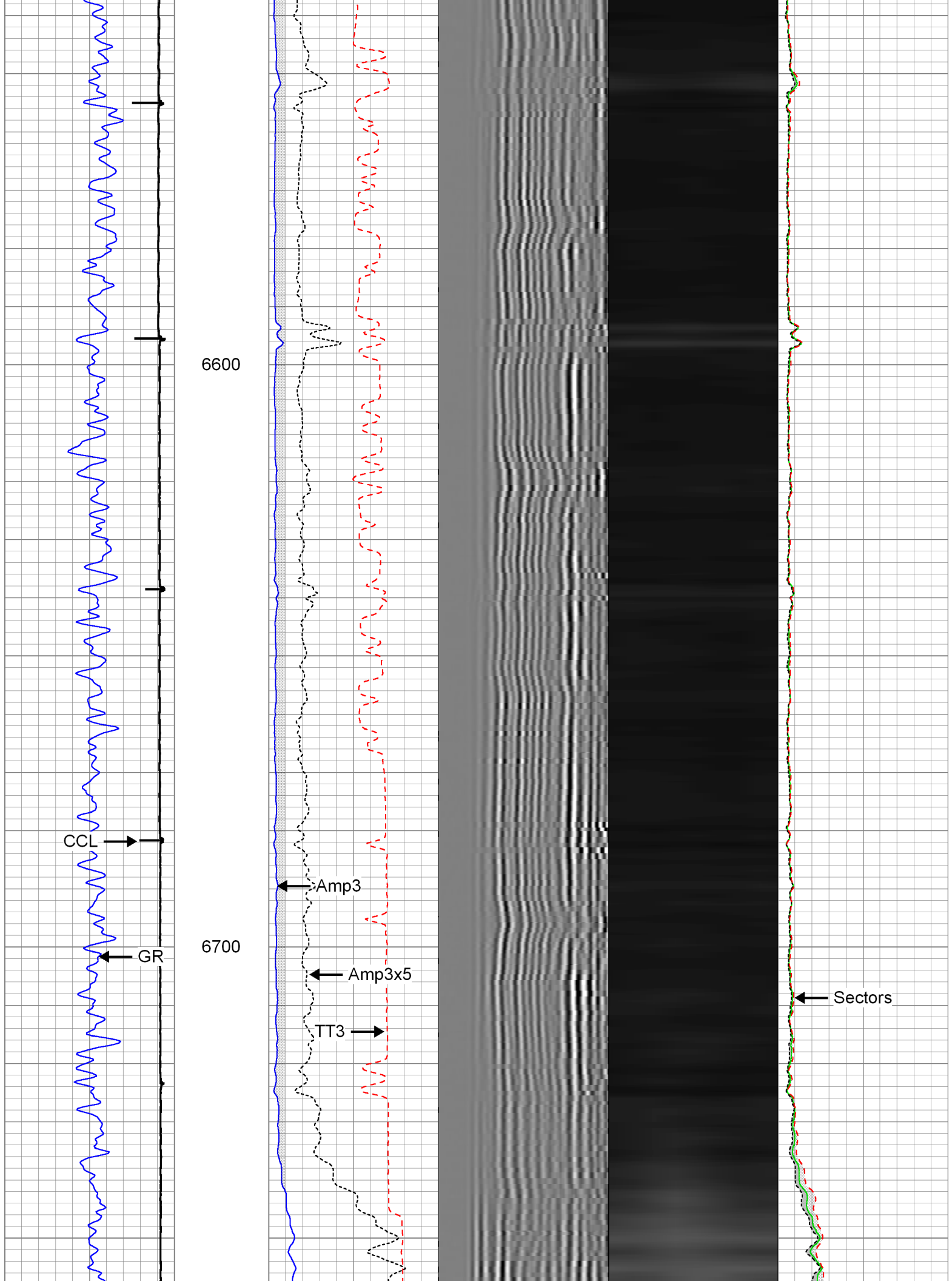
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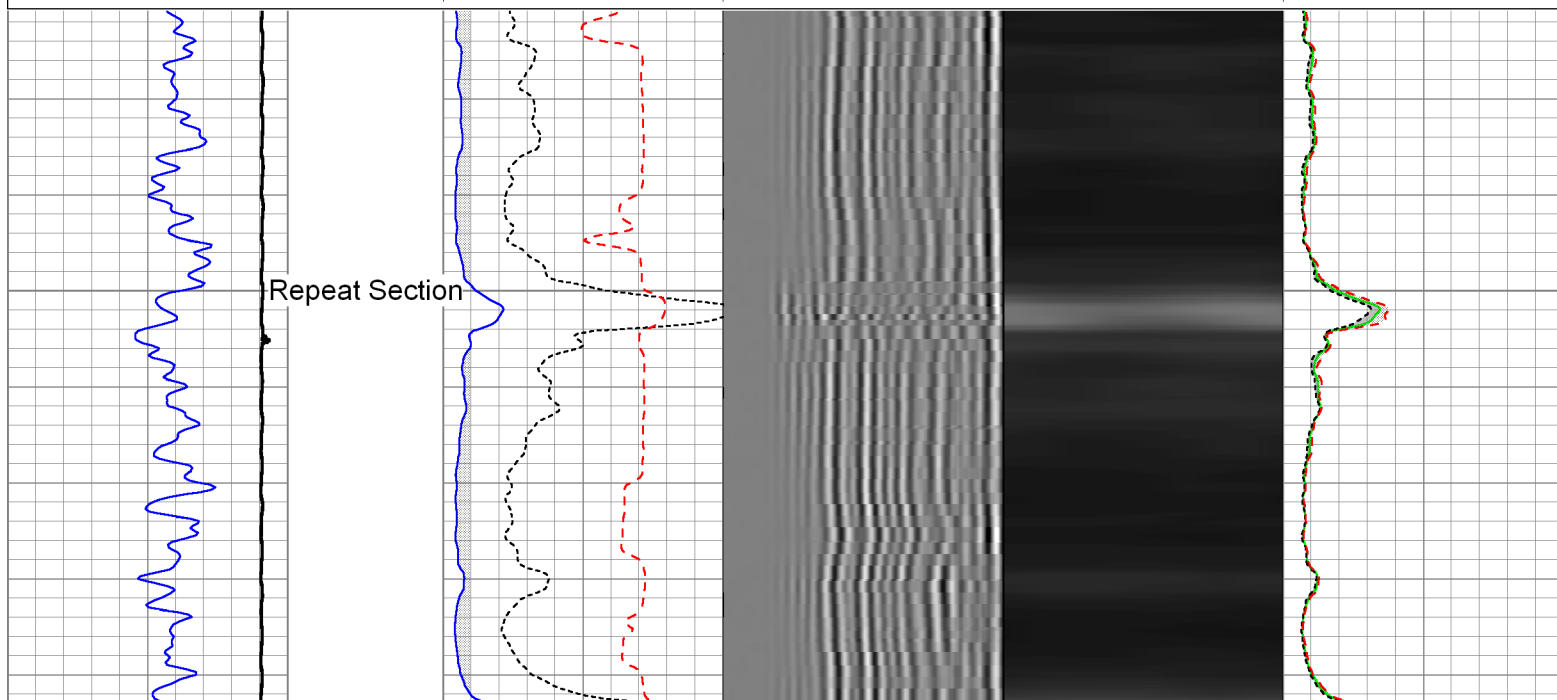
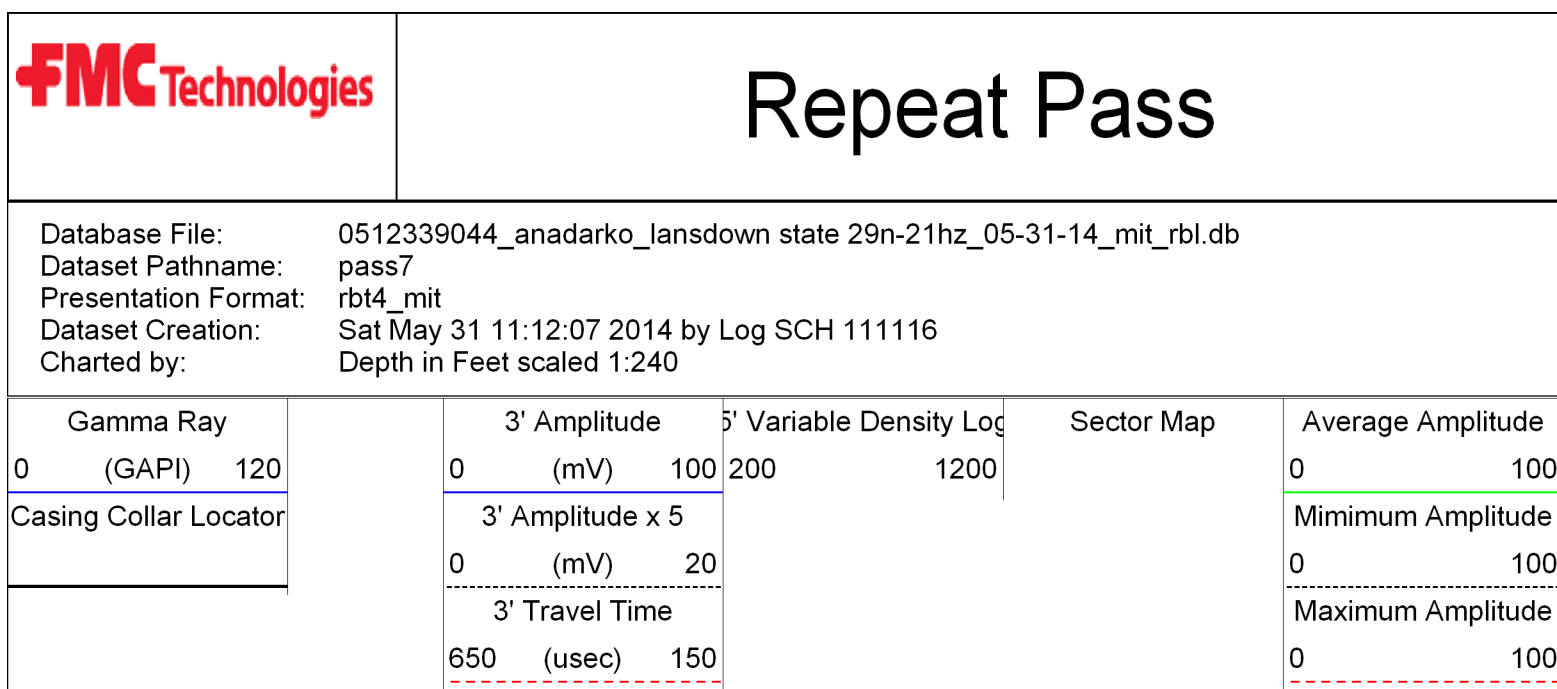
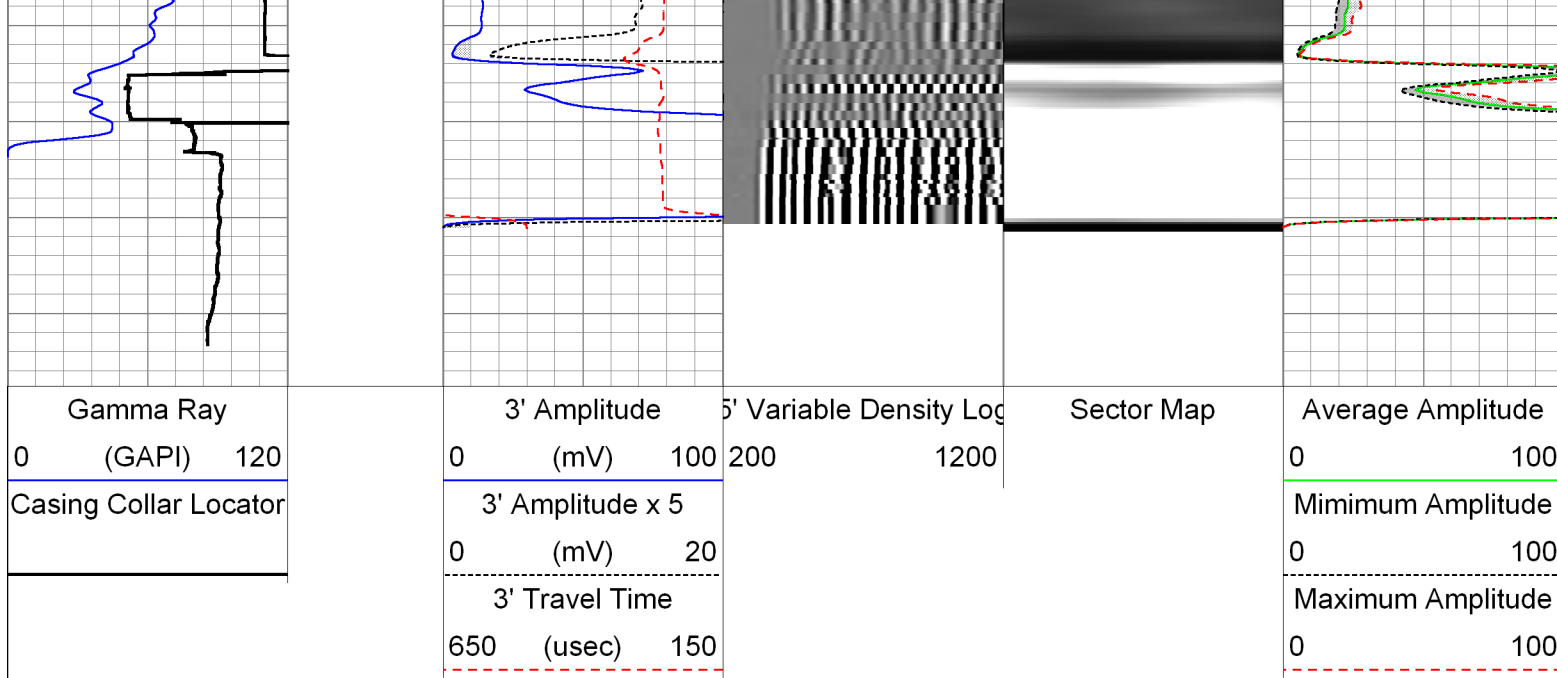
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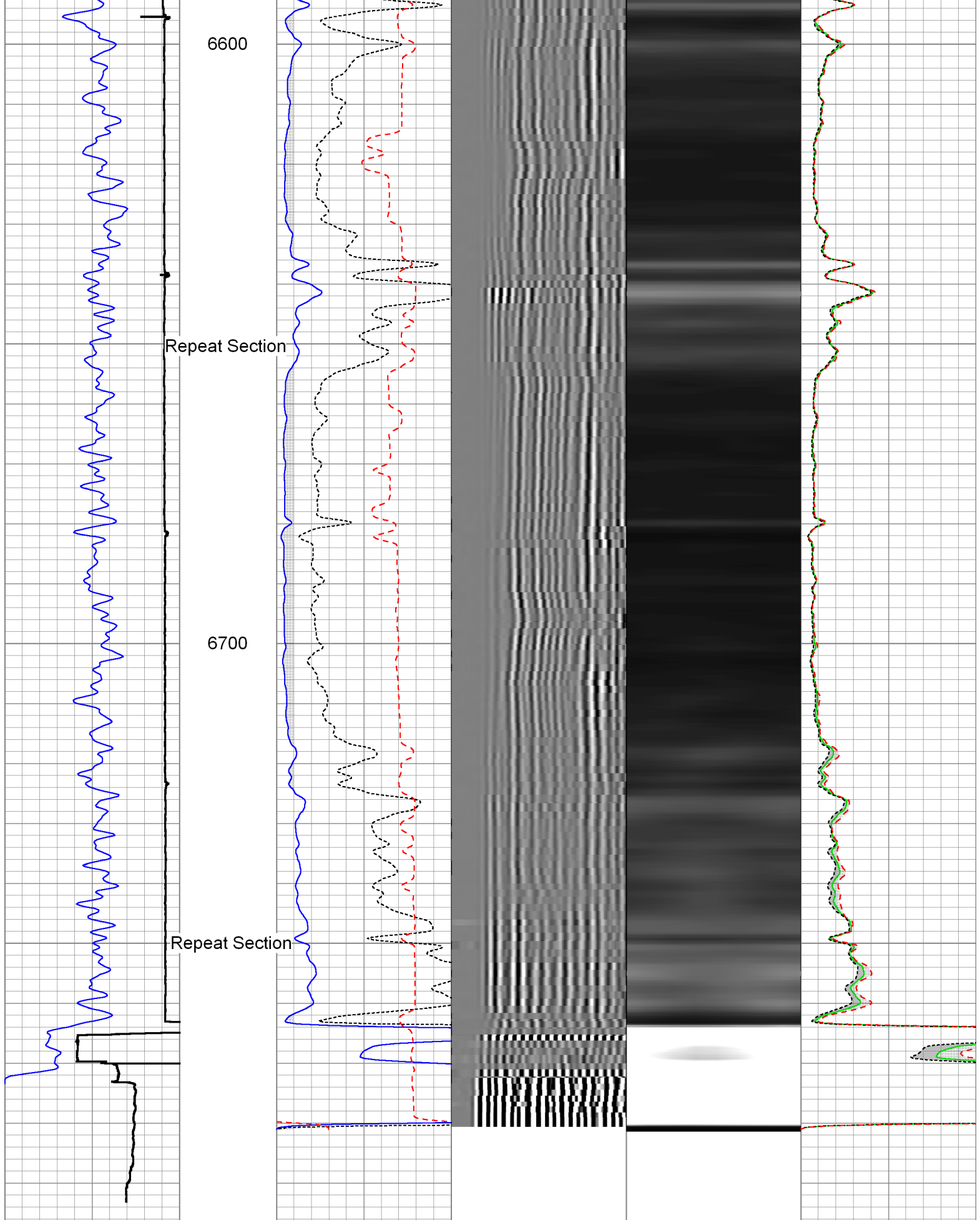
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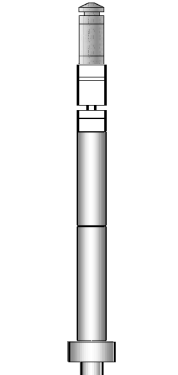
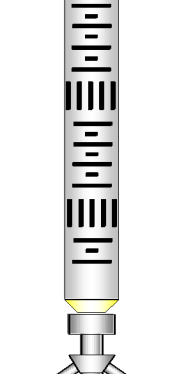
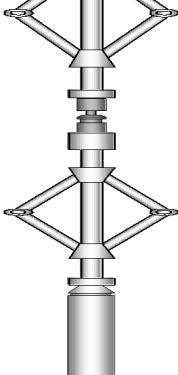
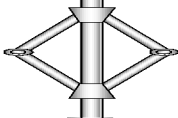






Gamma Ray 0 (GAPI) 120	3' Amplitude 0 (mV) 100	5' Variable Density Log 200 1200	Sector Map	Average Amplitude 0 100
Casing Collar Locator	3' Amplitude x 5			Minimum Amplitude

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

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
GR	26.35		T_CH14375_1_GO Titan 1-7/16" Assembled Electric Cable Head with 1" Fishing Neck	1.03	1.44	4.00
			UW_PSJ-PSJ_008 (10018474) Sondex 1-11/16" Ultrawire Swivel Joint	0.91	1.69	9.00
			UW_AGS-UW_AGS_001 (215017) Sondex Adapter - GO Box to Sondex Pin	0.21	1.69	1.00
			UW_XTU-UW_XTU_002 (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
			UW_PRC #4 -UW_PRC_057 (1101) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
WVFS3FT	18.53		UW_RBT-UW_RBT_004 (1066) Sondex Ultrawire 3-1/8" Radial Bond Tool	9.47	3.13	140.00
WVFS1	18.53					
WVFS2	18.53					
WVFS3	18.53					
WVFS4	18.53					
WVFS5	18.53					
WVFS6	18.53					
WVFS7	18.53					
WVFS8	18.53					
CBLTEMP	18.53					
CBLROT	18.53					
WVFS5FT	17.53					
MIT	4.97		UW_PRC-UW_PRC_057 (1037) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
			UW_PKJ-PKJ_013 (10018069) Sondex 1-11/16" Ultrawire Knuckle Joint	0.57	1.69	3.50
			UW_PRC-DSSRAC (082) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
			UW_MIT-UW_MIT40_042 (10012912) 40 Multifinger Imaging Tool	4.54	2.75	61.10
			UW_PRC #3 -DSSRAC (083) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
TOTAMP	0.00		UW_BUL-UW_BUL_006 (218707) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20

STAMP

0.00

Sondex Ultrawire Bullnose Terminator

Dataset: 0512339044\_Anadarko\_Lansdown State 29N-21HZ\_05-31-14\_MIT\_RBL.db: field/well/run1/pass8  
Total Length: 31.51 ft  
Total Weight: 363.80 lb  
O.D. 3.13 in

## Calibration Report

Database File: 0512339044\_Anadarko\_Lansdown State 29N-21HZ\_05-31-14\_MIT\_RBL.db  
Dataset Pathname: pass9  
Dataset Creation: Sat May 31 13:51:20 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 May 31 09:39:55 2014

Ring size:	4		5		6		7
(in)		Sens		Sens		Sens	
Finger 01:	1068	357.0	1425	387.0	1812	408.0	2220
Finger 02:	1198	366.0	1564	388.0	1952	400.0	2352
Finger 03:	1089	371.0	1460	405.0	1865	425.0	2290
Finger 04:	1101	358.0	1459	391.0	1850	417.0	2267
Finger 05:	1111	366.0	1477	399.0	1876	416.0	2292
Finger 06:	1102	366.0	1468	398.0	1866	414.0	2280
Finger 07:	1099	365.0	1464	402.0	1866	414.0	2280
Finger 08:	1121	358.0	1479	394.0	1873	414.0	2287
Finger 09:	1108	362.0	1470	392.0	1862	408.0	2270
Finger 10:	1104	359.0	1463	393.0	1856	408.0	2264
Finger 11:	1120	358.0	1478	390.0	1868	402.0	2270
Finger 12:	1112	355.0	1467	390.0	1857	405.0	2262
Finger 13:	1121	355.0	1476	384.0	1860	397.0	2257
Finger 14:	1098	358.0	1456	392.0	1848	409.0	2257
Finger 15:	1061	363.0	1424	403.0	1827	421.0	2248
Finger 16:	1074	360.0	1434	402.0	1836	422.0	2258
Finger 17:	1044	357.0	1401	401.0	1802	424.0	2226
Finger 18:	1125	352.0	1477	383.0	1860	401.0	2261
Finger 19:	1087	349.0	1436	389.0	1825	410.0	2235
Finger 20:	1053	352.0	1405	400.0	1805	423.0	2228
Finger 21:	1074	361.0	1435	396.0	1831	409.0	2240
Finger 22:	1036	357.0	1393	400.0	1793	426.0	2219
Finger 23:	1006	358.0	1364	408.0	1772	437.0	2209
Finger 24:	1064	354.0	1418	388.0	1806	401.0	2207
Finger 25:	1022	359.0	1381	407.0	1788	430.0	2218
Finger 26:	1146	350.0	1496	379.0	1875	394.0	2269
Finger 27:	1088	359.0	1447	398.0	1845	418.0	2263
Finger 28:	1117	352.0	1469	385.0	1854	406.0	2260



Finger 29:	1067	367.0	1434	405.0	1839	428.0	2267
Finger 30:	1079	364.0	1443	396.0	1839	421.0	2260
Finger 31:	1109	360.0	1469	390.0	1859	414.0	2273
Finger 32:	1093	372.0	1465	406.0	1871	426.0	2297
Finger 33:	1154	363.0	1517	378.0	1895	391.0	2286
Finger 34:	1129	357.0	1486	388.0	1874	410.0	2284
Finger 35:	1065	378.0	1443	415.0	1858	439.0	2297
Finger 36:	1087	370.0	1457	400.0	1857	426.0	2283
Finger 37:	1124	368.0	1492	393.0	1885	414.0	2299
Finger 38:	1154	363.0	1517	385.0	1902	398.0	2300
Finger 39:	1151	359.0	1510	385.0	1895	403.0	2298
Finger 40:	1107	368.0	1475	399.0	1874	416.0	2290

Post Survey Calibration Check

Performed: Sat May 31 13:51:10 2014

Ring size: (in)	4	Nom. wear	5	Nom. wear	6	Nom. wear	7	Nom. wear
Finger 01:	3.990	-0.005	4.999	-0.001	5.996	-0.002	6.992	-0.004
Finger 02:	3.990	-0.005	4.996	-0.002	5.999	-0.000	6.998	-0.001
Finger 03:	3.991	-0.004	4.996	-0.002	5.994	-0.003	6.994	-0.003
Finger 04:	3.998	-0.001	4.999	-0.000	5.999	-0.000	6.996	-0.002
Finger 05:	3.988	-0.006	4.998	-0.001	5.999	-0.000	7.002	0.001
Finger 06:	3.997	-0.001	5.000	0.000	5.999	-0.001	6.998	-0.001
Finger 07:	3.987	-0.007	4.997	-0.001	5.991	-0.005	6.996	-0.002
Finger 08:	3.989	-0.005	5.001	0.001	6.002	0.001	6.998	-0.001
Finger 09:	3.995	-0.002	5.002	0.001	6.000	-0.000	7.002	0.001
Finger 10:	3.998	-0.001	5.000	-0.000	5.995	-0.002	7.008	0.004
Finger 11:	3.989	-0.006	4.997	-0.001	5.993	-0.004	6.996	-0.002
Finger 12:	3.996	-0.002	5.002	0.001	6.008	0.004	7.004	0.002
Finger 13:	3.995	-0.003	4.994	-0.003	5.995	-0.002	6.999	-0.001
Finger 14:	3.988	-0.006	4.991	-0.005	5.995	-0.003	6.996	-0.002
Finger 15:	3.992	-0.004	4.993	-0.004	5.997	-0.002	6.996	-0.002
Finger 16:	3.991	-0.005	4.996	-0.002	5.992	-0.004	6.989	-0.005
Finger 17:	3.989	-0.006	4.990	-0.005	5.989	-0.006	6.992	-0.004
Finger 18:	3.990	-0.005	4.995	-0.003	5.998	-0.001	7.000	0.000
Finger 19:	3.993	-0.003	4.996	-0.002	5.993	-0.003	6.994	-0.003
Finger 20:	3.992	-0.004	4.998	-0.001	5.996	-0.002	7.004	0.002
Finger 21:	3.985	-0.008	4.991	-0.005	5.994	-0.003	6.993	-0.003
Finger 22:	3.991	-0.004	4.996	-0.002	5.997	-0.001	6.993	-0.004
Finger 23:	3.998	-0.001	5.004	0.002	6.003	0.001	7.001	0.000
Finger 24:	3.988	-0.006	4.993	-0.003	5.997	-0.002	6.996	-0.002
Finger 25:	3.990	-0.005	4.995	-0.003	5.991	-0.005	6.992	-0.004
Finger 26:	3.995	-0.003	5.004	0.002	5.997	-0.001	7.003	0.002
Finger 27:	3.983	-0.008	5.000	0.000	5.999	-0.000	6.999	-0.001
Finger 28:	3.988	-0.006	4.999	-0.000	5.996	-0.002	7.000	-0.000
Finger 29:	3.994	-0.003	5.000	-0.000	5.999	-0.000	7.000	-0.000
Finger 30:	4.005	0.003	5.000	-0.000	6.002	0.001	6.999	-0.000
Finger 31:	3.997	-0.001	5.000	0.000	5.999	-0.000	7.001	0.001
Finger 32:	3.993	-0.004	4.997	-0.001	5.995	-0.003	6.994	-0.003
Finger 33:	3.988	-0.006	4.991	-0.005	5.992	-0.004	6.996	-0.002
Finger 34:	3.992	-0.004	4.999	-0.000	5.998	-0.001	7.001	0.001
Finger 35:	3.991	-0.004	4.990	-0.005	5.994	-0.003	6.997	-0.001
Finger 36:	3.993	-0.004	4.999	-0.001	6.001	0.001	7.002	0.001
Finger 37:	3.992	-0.004	5.000	-0.000	5.999	-0.000	7.001	0.001
Finger 38:	3.985	-0.007	4.985	-0.008	5.991	-0.004	6.997	-0.001
Finger 39:	3.984	-0.008	4.988	-0.006	5.987	-0.007	6.989	-0.006
Finger 40:	3.994	-0.003	4.999	-0.000	5.994	-0.003	6.993	-0.004
Average:	3.992	-0.004	4.997	-0.002	5.996	-0.002	6.998	-0.001

Segmented Cement Bond Log Calibration Report

Serial Number:

1066

Tool Model:

UW\_RBT\_004

Calibration Casing Diameter: 7.000 in  
Calibration Depth: 208.063 ft

Master Calibration, performed Sat May 31 10:51:17 2014:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	0.004	0.664	0.000	62.165	94.279	-0.424
5FT	-0.001	0.677	0.000	62.165	91.651	0.112
S1	0.004	0.634	0.000	100.000	158.533	-0.581
S2	0.003	0.665	0.000	100.000	150.933	-0.387
S3	0.003	0.688	0.000	100.000	146.025	-0.439
S4	0.003	0.700	0.000	100.000	143.501	-0.380
S5	0.004	0.687	0.000	100.000	146.438	-0.540
S6	0.004	0.668	0.000	100.000	150.467	-0.540
S7	0.004	0.651	0.000	100.000	154.374	-0.560
S8	0.004	0.635	0.000	100.000	158.508	-0.580

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 & Gas Onshore, L.P.  
Well Lansdown State 29N-21HZ  
Field Wattenberg  
County Weld  
State Colorado