



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company Noble Energy Inc.				Company Noble Energy Inc.			
Well Moser H22-776				Well Moser H22-776			
Field Wattenberg				Field Wattenberg			
County Weld				County Weld			
State Colorado				State Colorado			
Location:				API # : 05-123-40733			
SEC 22 TWP 3N RGE 65W				Other Services			
Permanent Datum				Ground Level			
Log Measured From				Kelly Bushing			
Drilling Measured From				Kelly Bushing			
Elevation 4812'				Elevation			
K.B. 4836'				D.F. 4835'			
G.L. 4812'				G.L. 4812'			
Date				22-Dec-2015			
Run Number				One			
Depth Driller				11547 FT			
Depth Logger				7183 FT			
Bottom Logged Interval				7178 FT			
Top Log Interval				Surface			
Open Hole Size				8.750"			
Type Fluid				Water			
Density / Viscosity				8.34 lbm/gal			
Max. Recorded Temp.				250°F			
Estimated Cement Top				52 FT			
Time Well Ready				ROA			
Time Logger on Bottom				15:15			
Equipment Number				HD-0343			
Location				Fort Lupton, CO			
Recorded By				Sam Hopper			
Witnessed By				Bill Mansfield			
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 IC				7190.2 FT			
11447 FT							

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

Log ran as per customer request
Depth referenced to Kelly Bushing at 24 FT
Log ran from 10 FT above Liner Top to surface
Short Joints recorded at 6059.38 FT and 6200 FT
Recorded with 2500 PSI surface induced pressure
Logging tools were clean and free of debris upon completion of operations

Thank you for choosing FMC Technologies Surface Integrated Services.



Main Pass

Recorded With 2500 PSI Surface Induced Pressure

Database File: c:\warrior\data\12-22-15_noble_moser h22-776_mit_rbl\12-22-15_noble_moser h22-776_mit_rbl.db

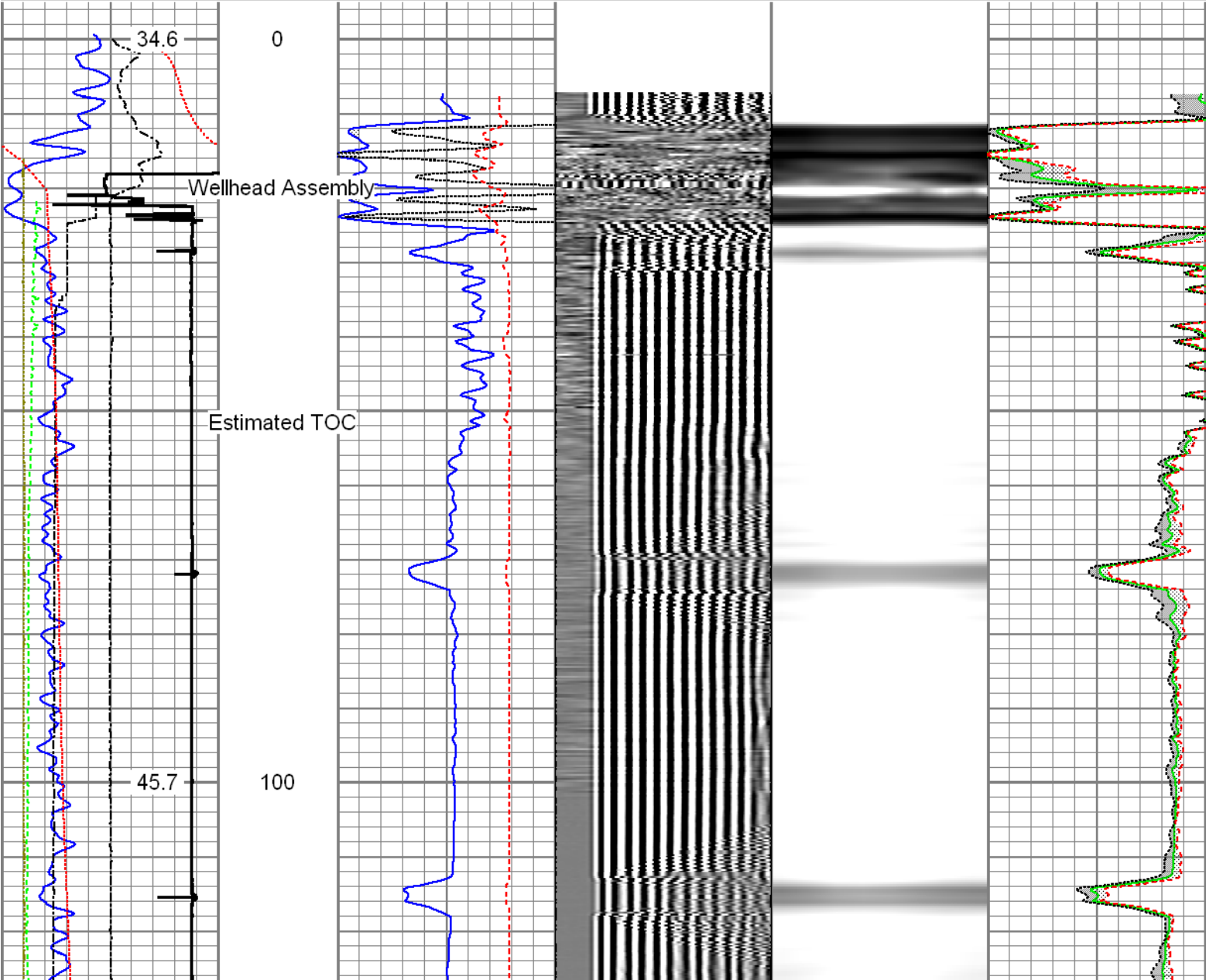
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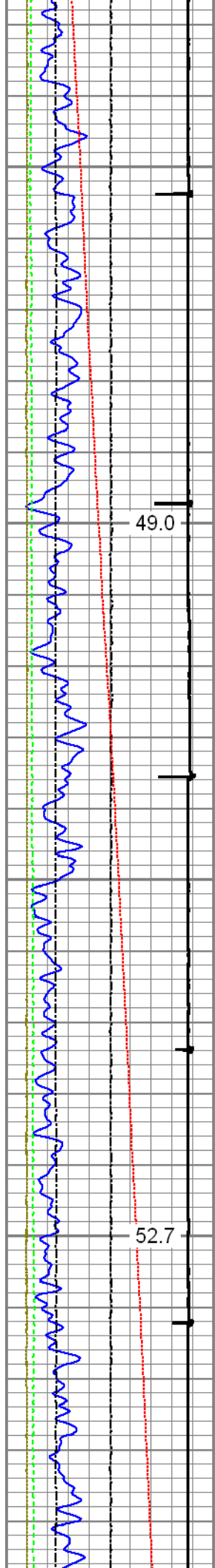
Presentation Format: rbt4_mit

Dataset Creation: Tue Dec 22 21:36:12 2015 by Calc 7.0 B1

Charted by: Depth in Feet scaled 1:240

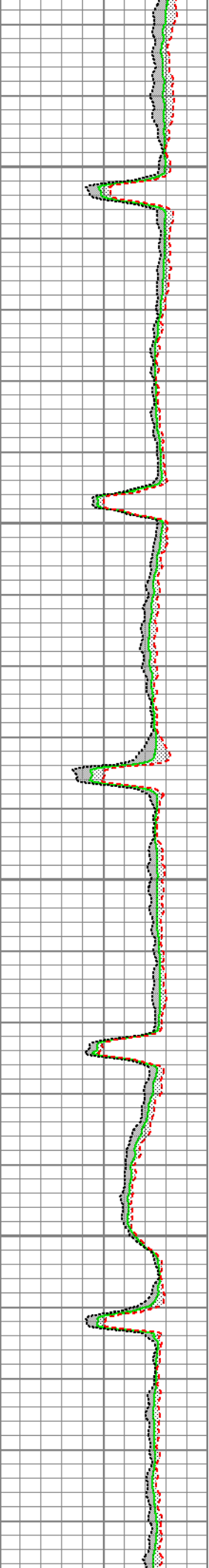
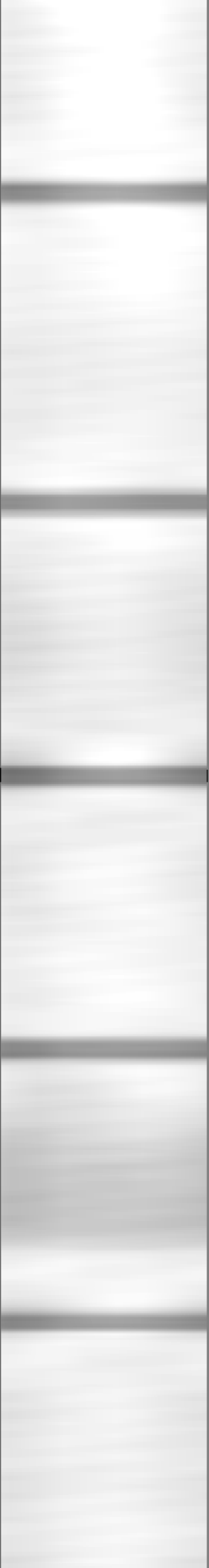
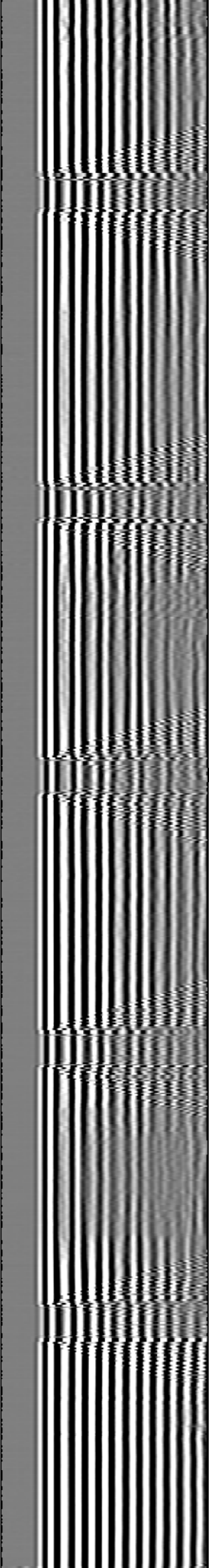
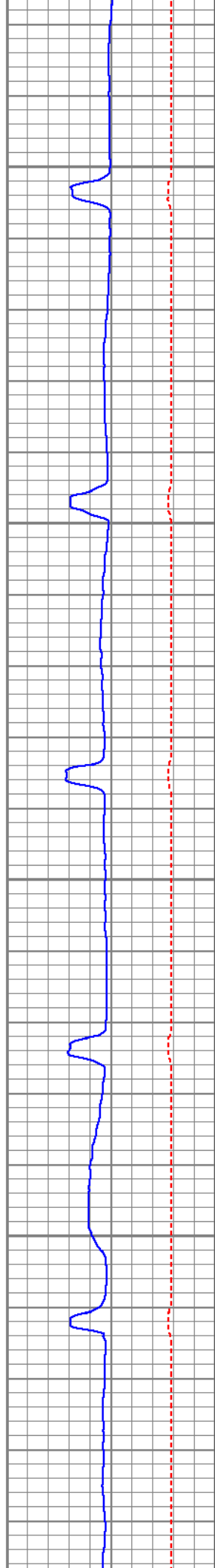
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Line Speed	3' Amplitude x 5			Mimimum Amplitude
-100 (ft/min) 100	0 (mV) 20			0 100
Line Tension	3' Travel Time			Maximum Amplitude
0 (lb) 2000	650 (usec) 150			0 100
Differential Temperature				
-2 (degF) 2				
Temperature				
0 (degF) 20				
-10 Deviation (°) 90				
Casing Collar Locator				

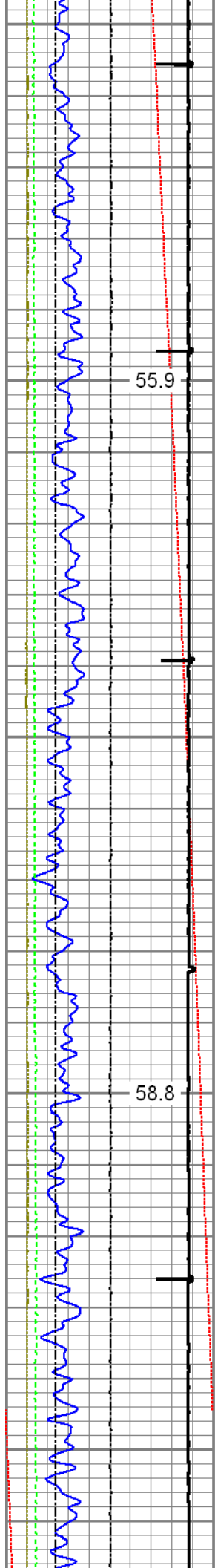




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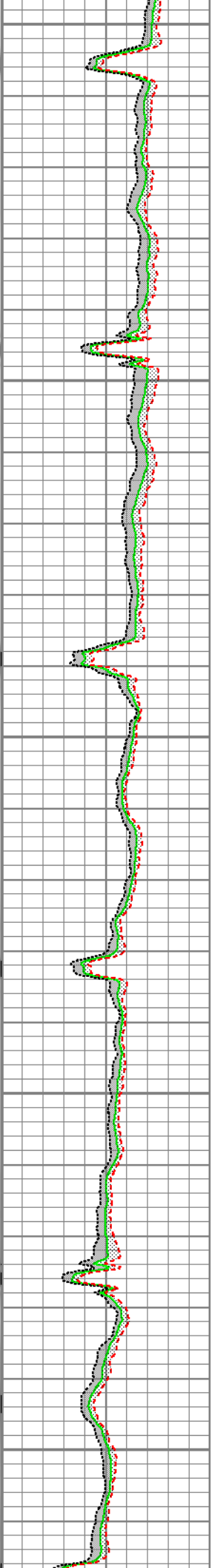
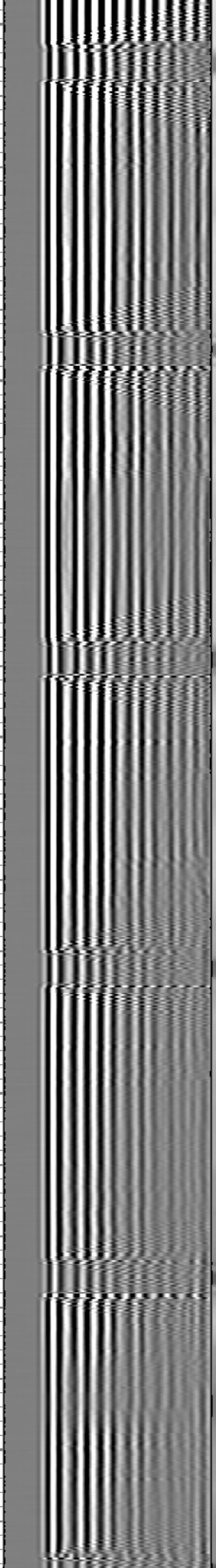
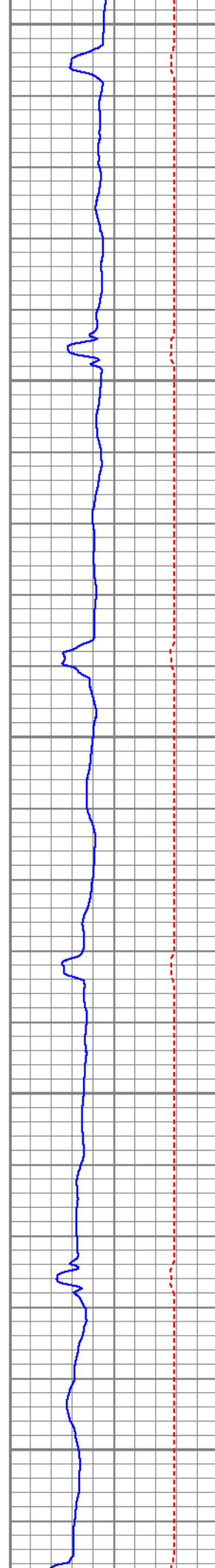
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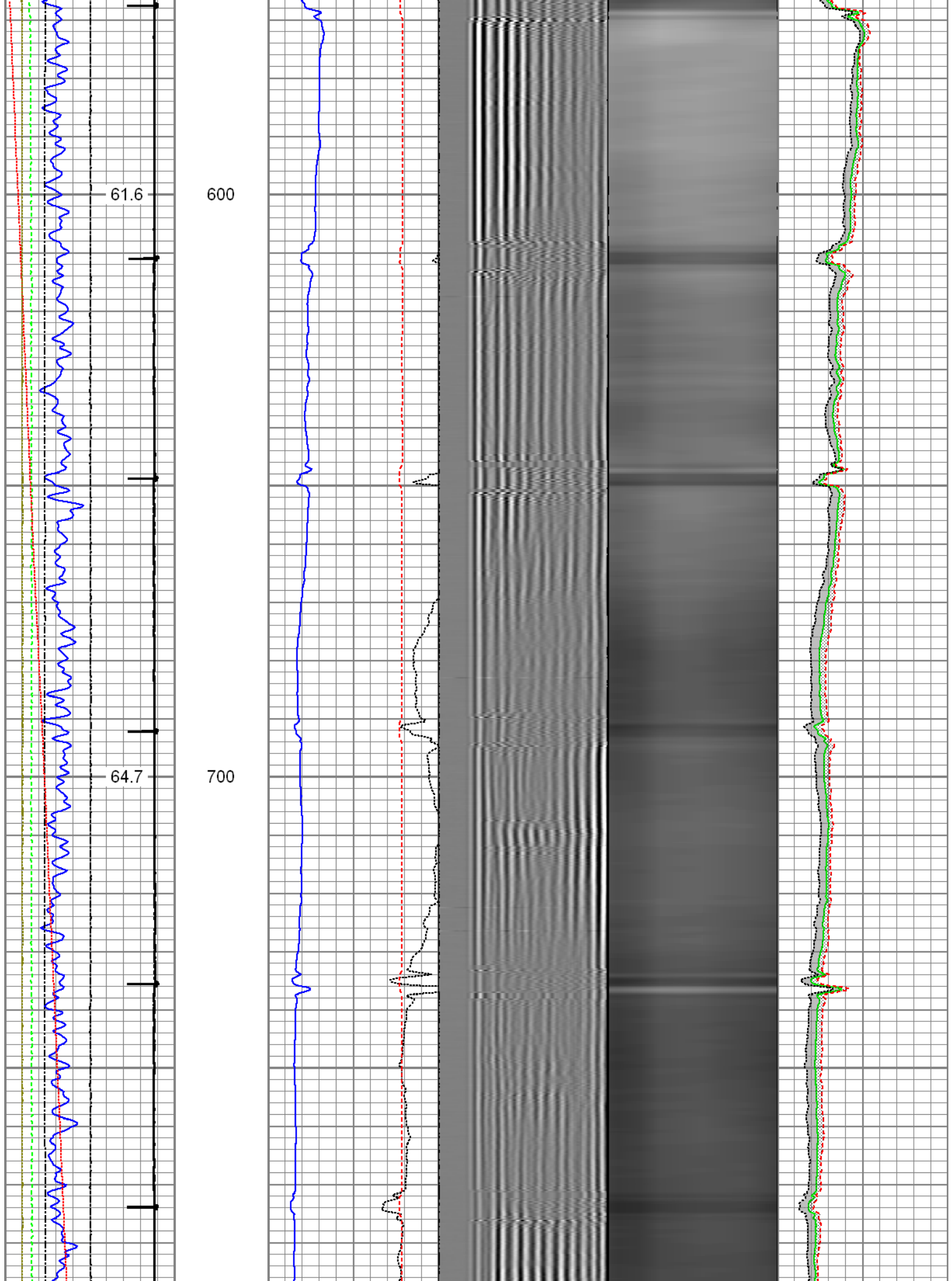


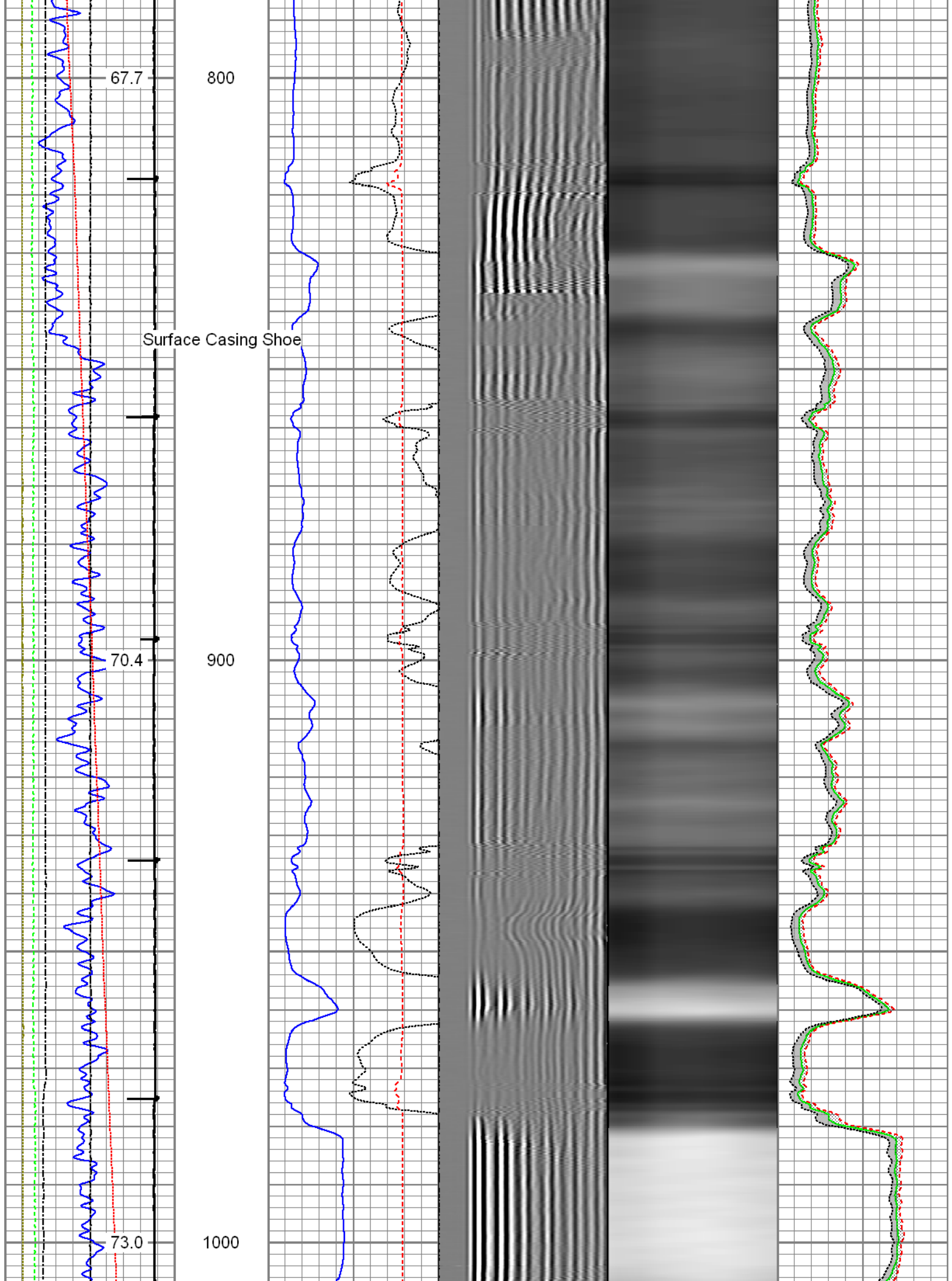


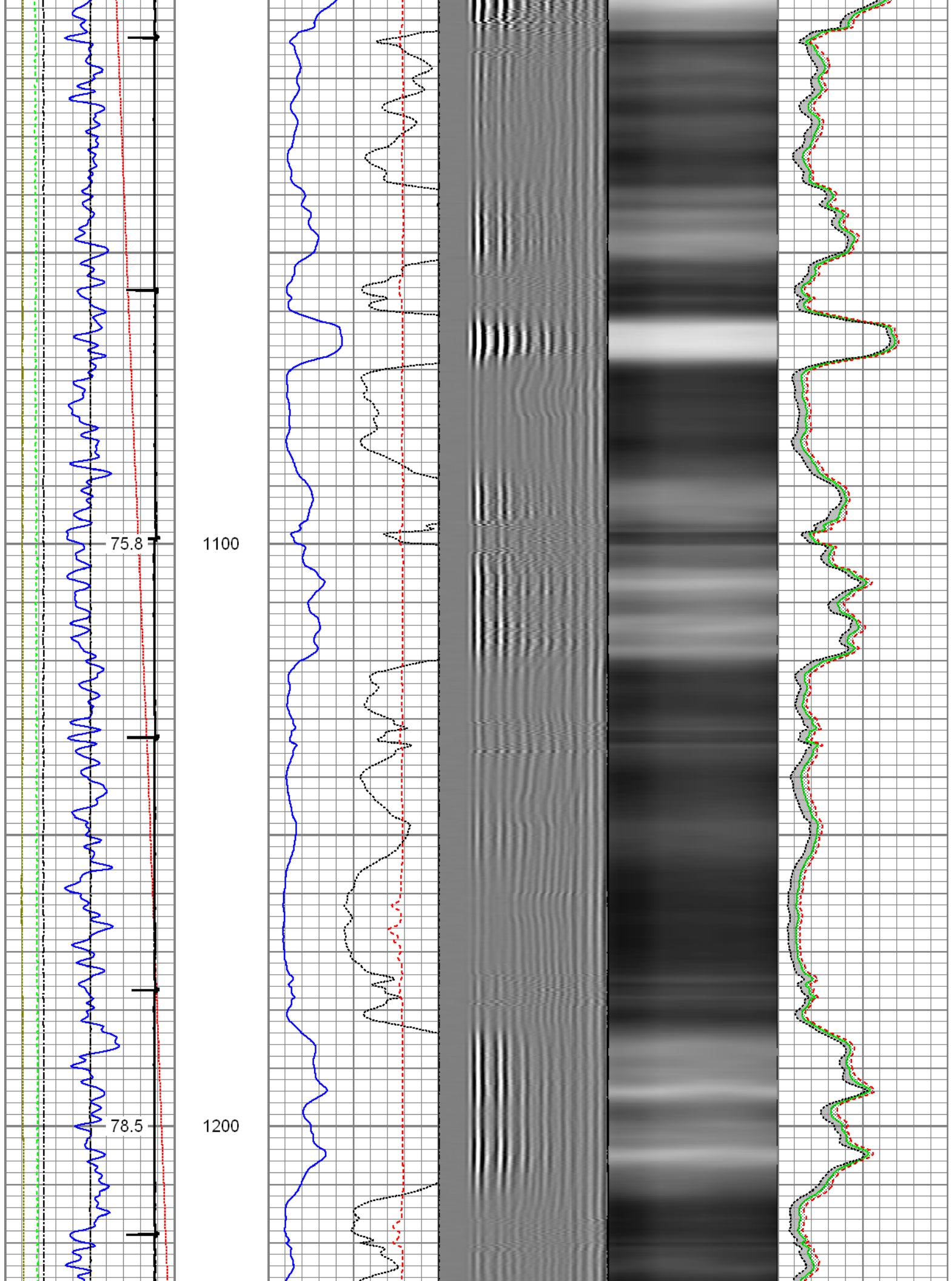
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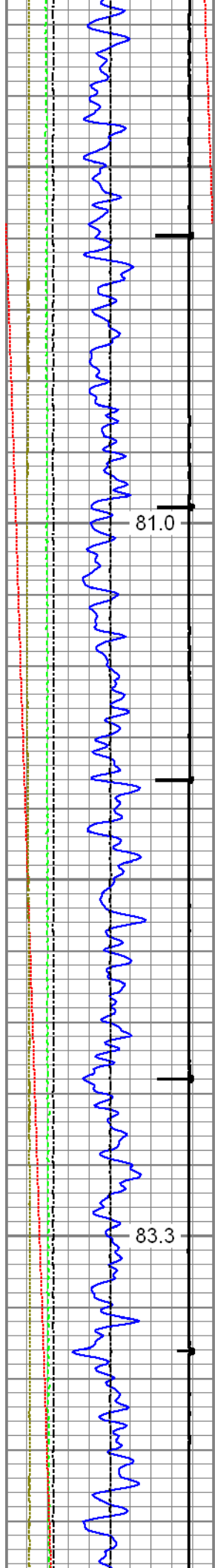
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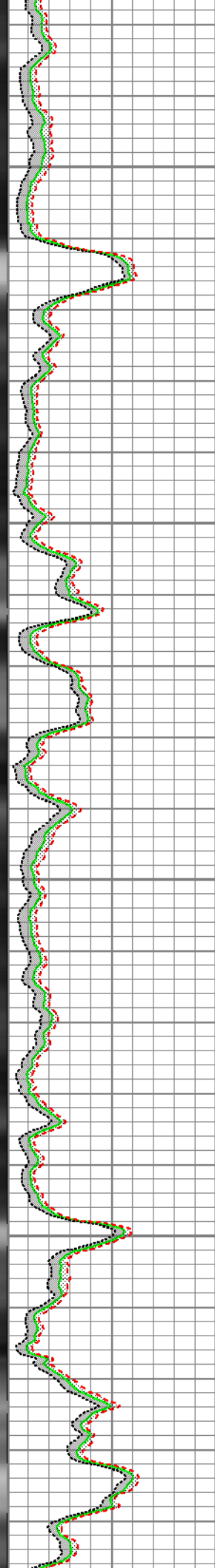
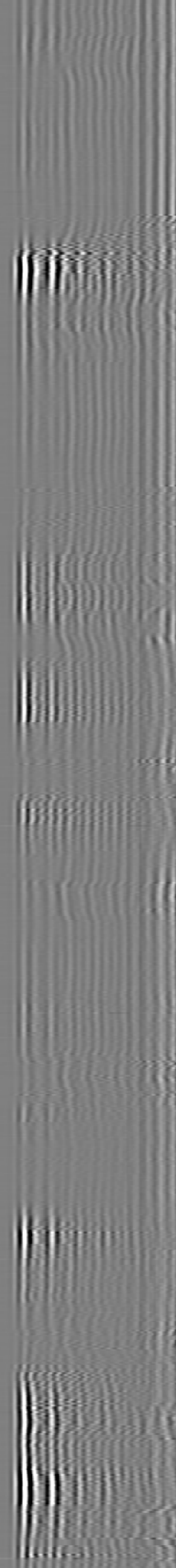
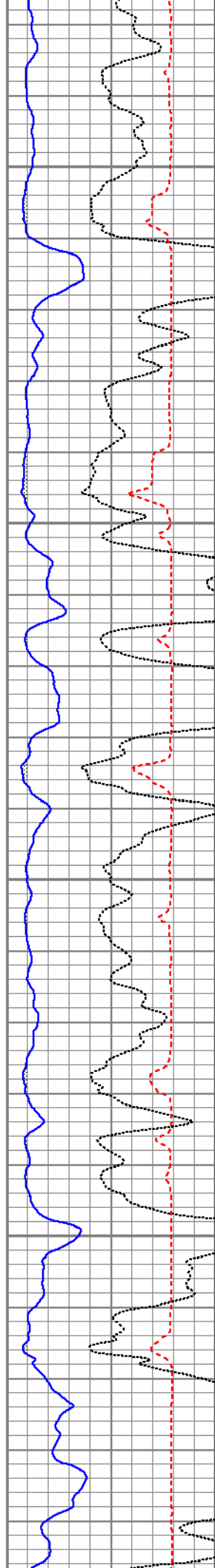


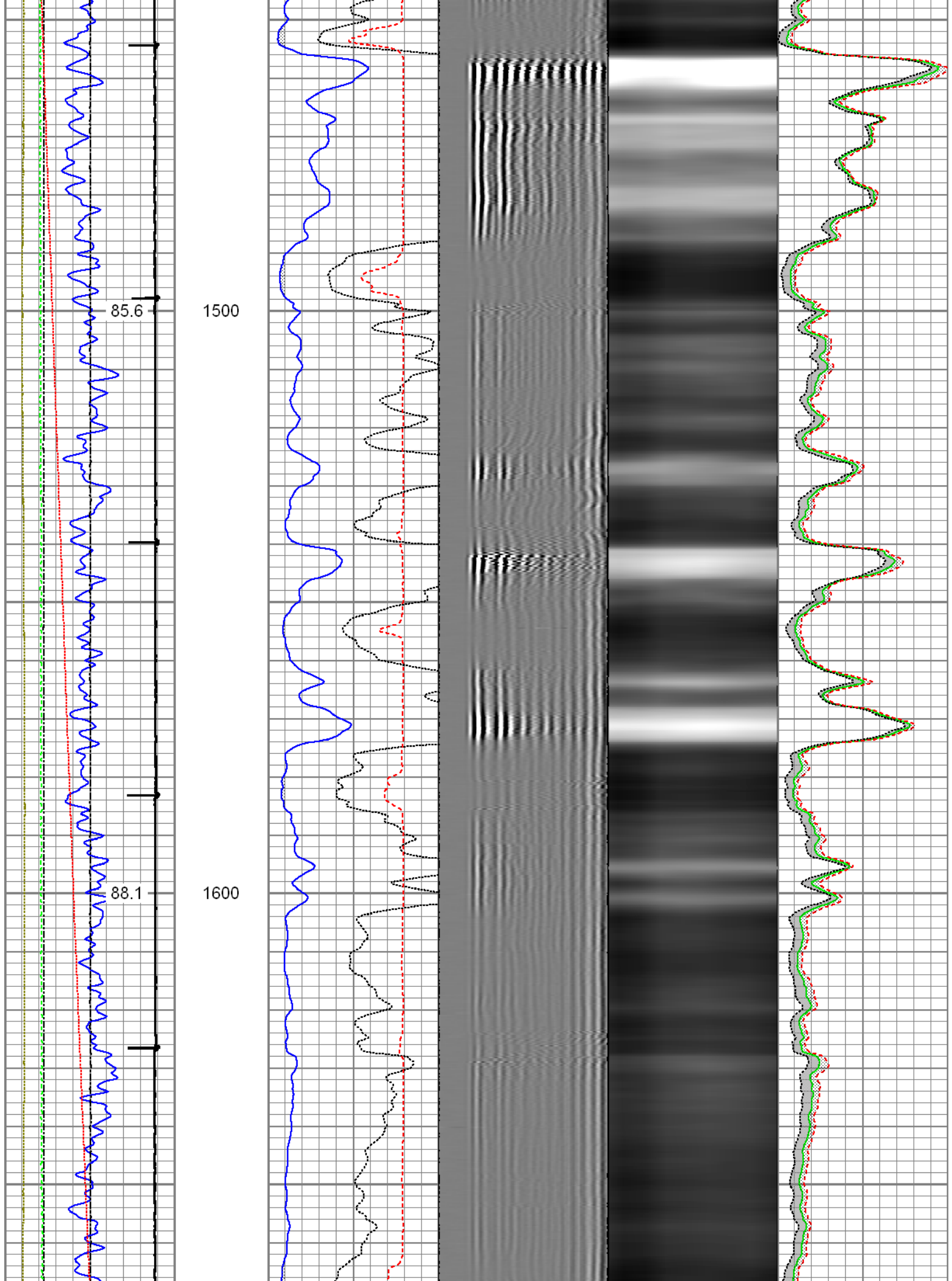


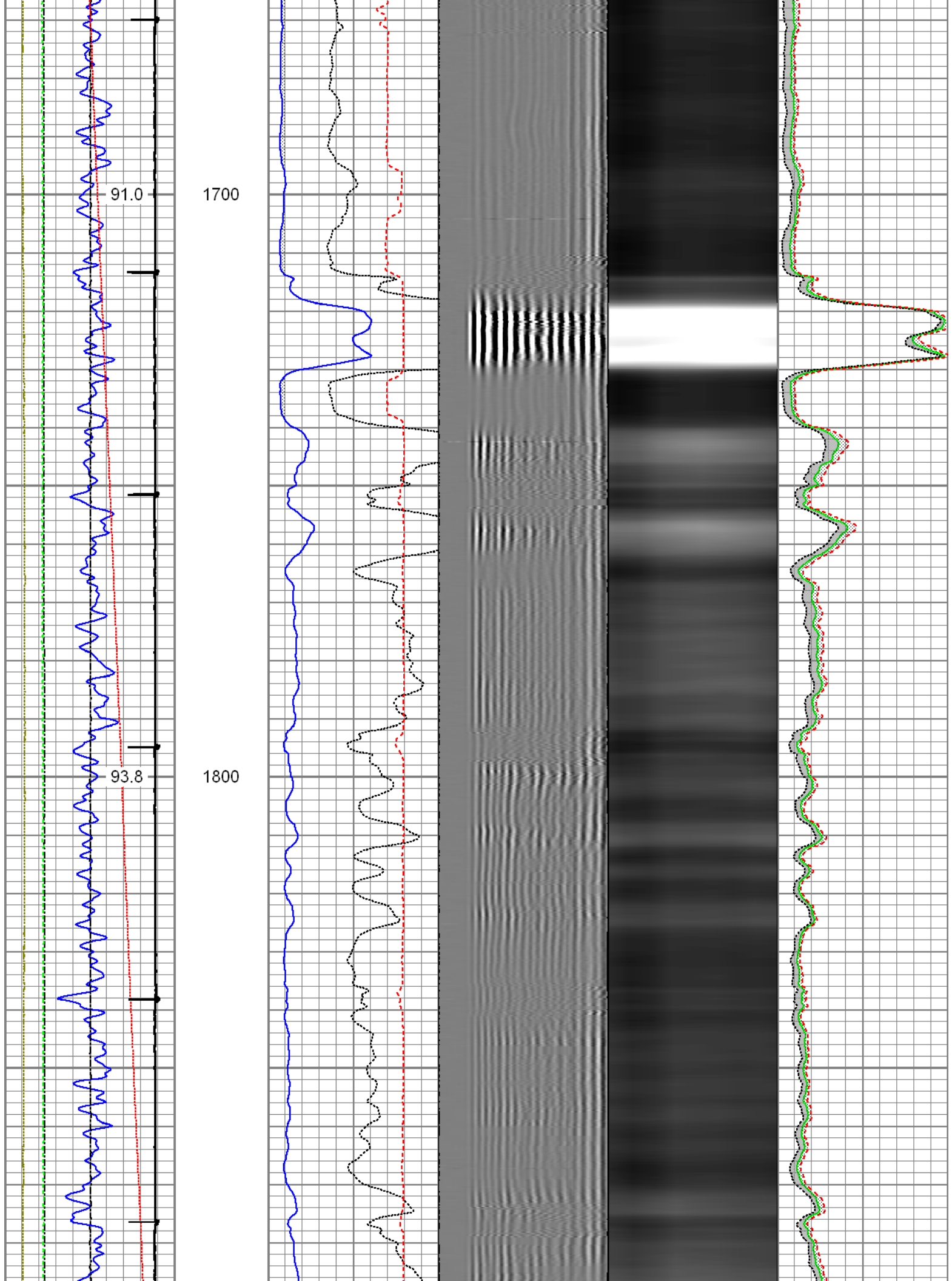


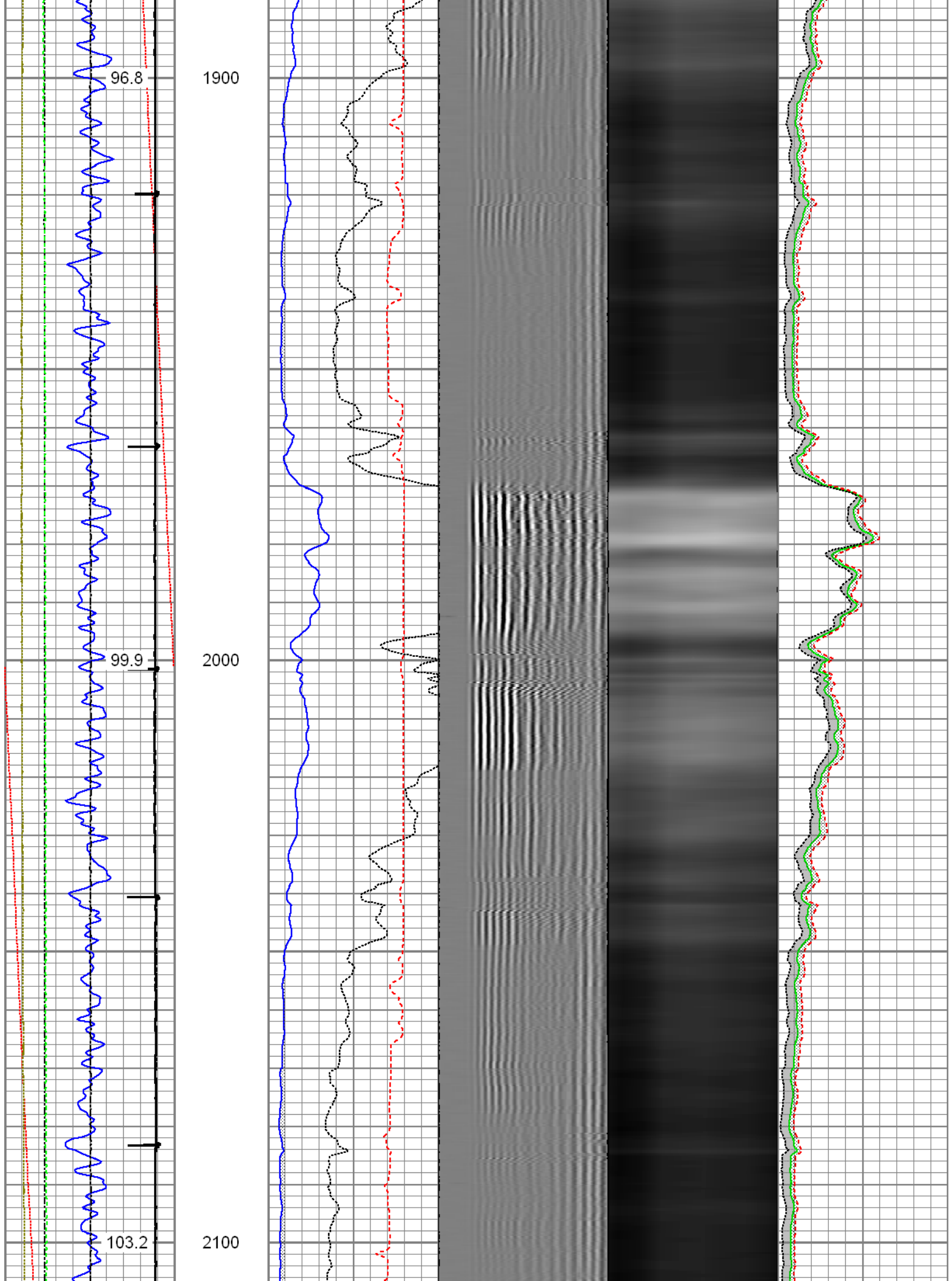
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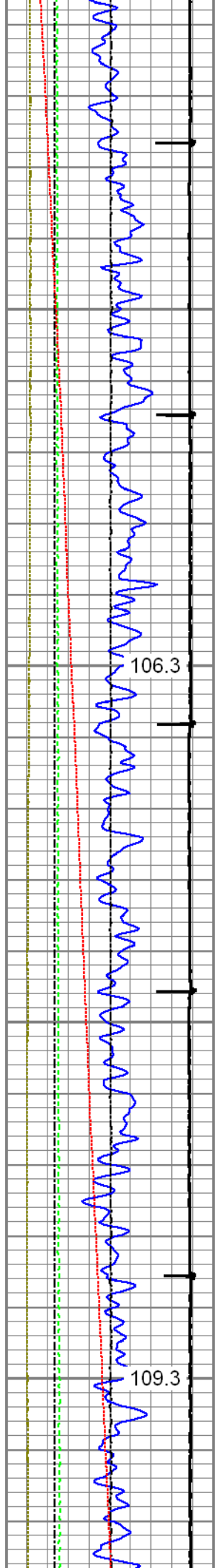
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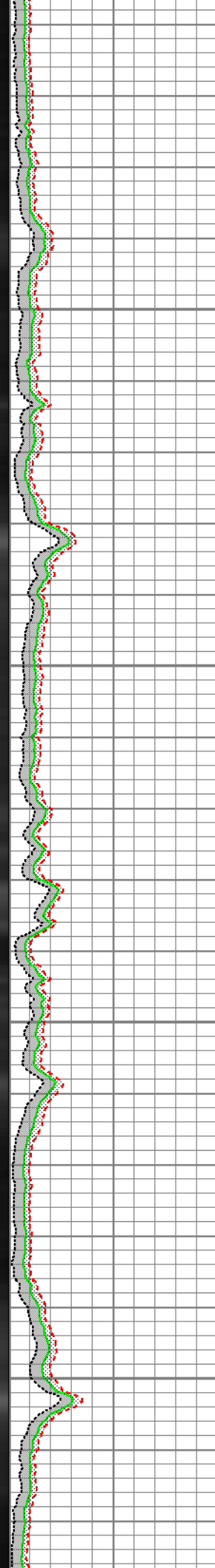
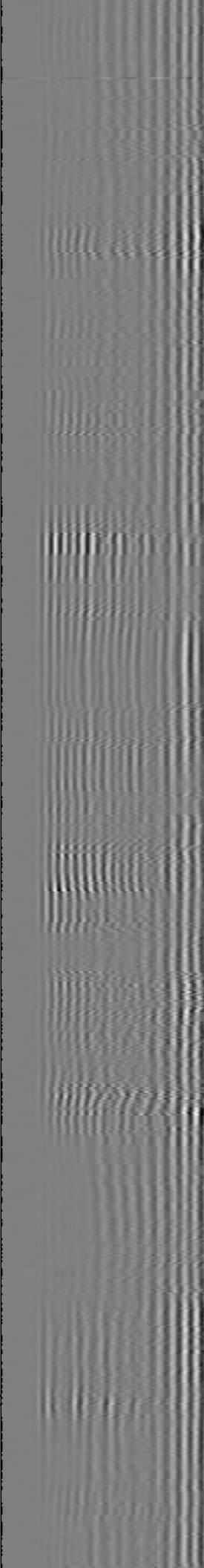
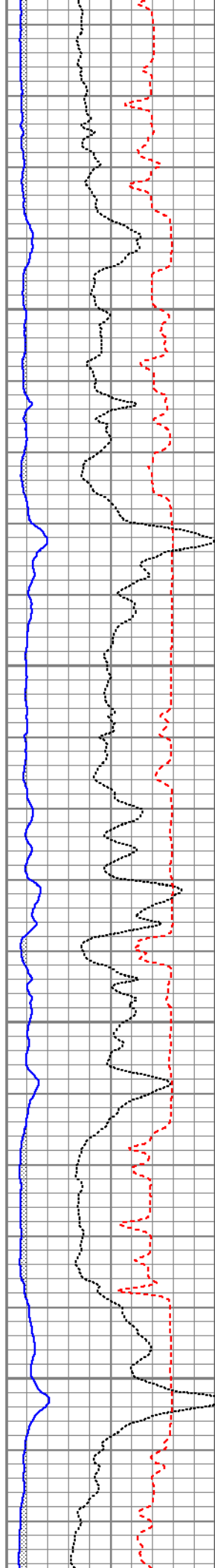


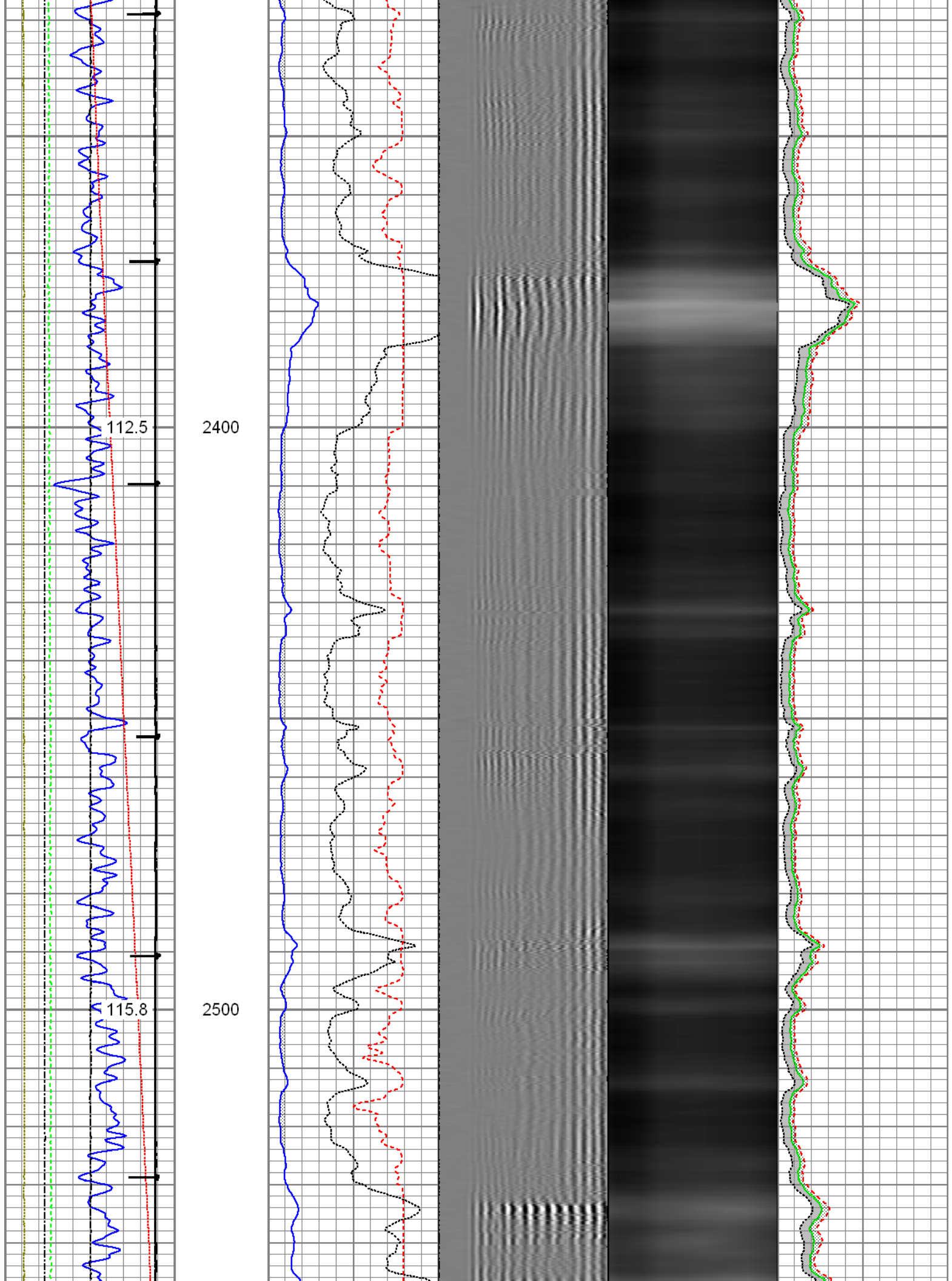


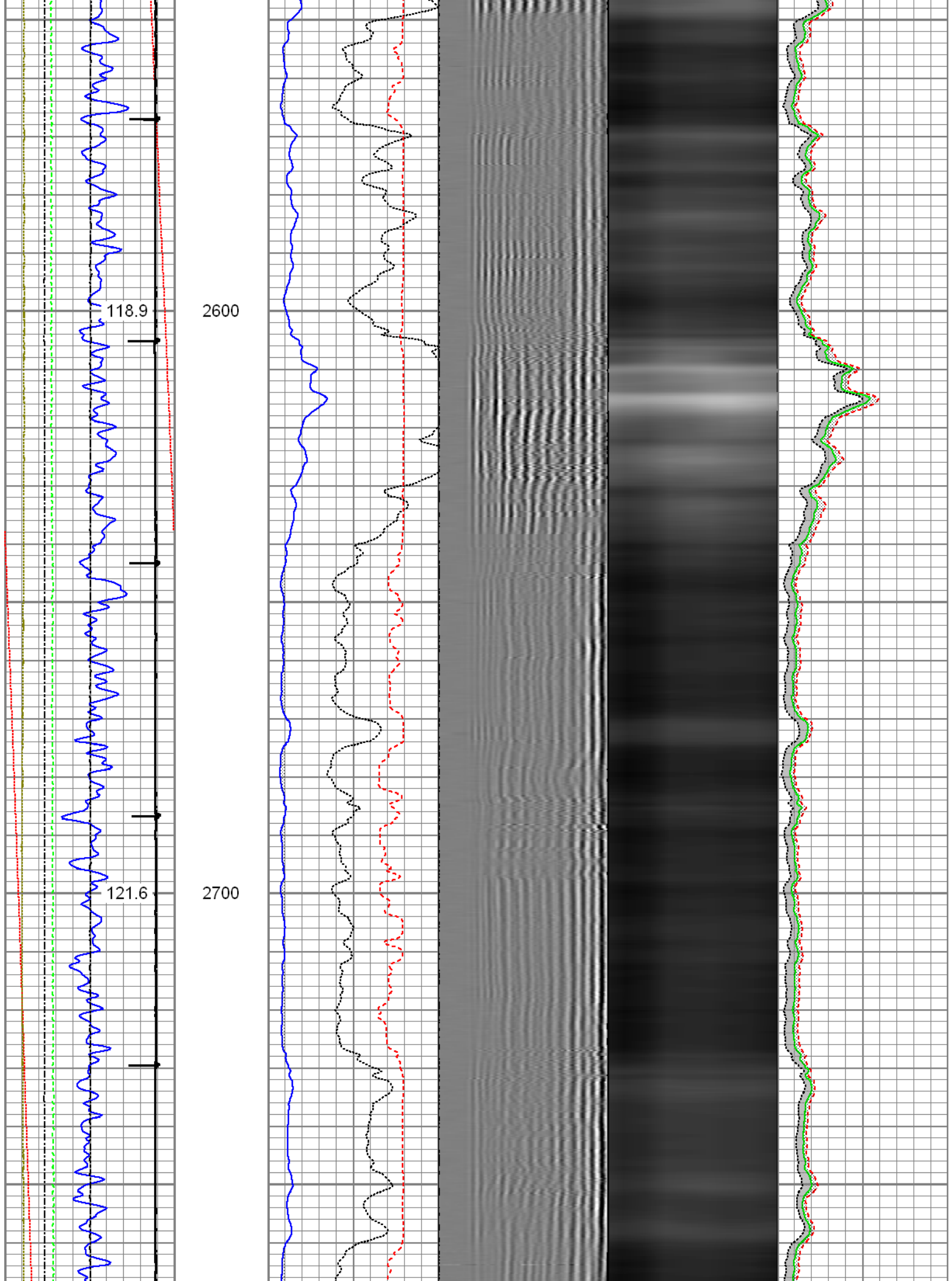


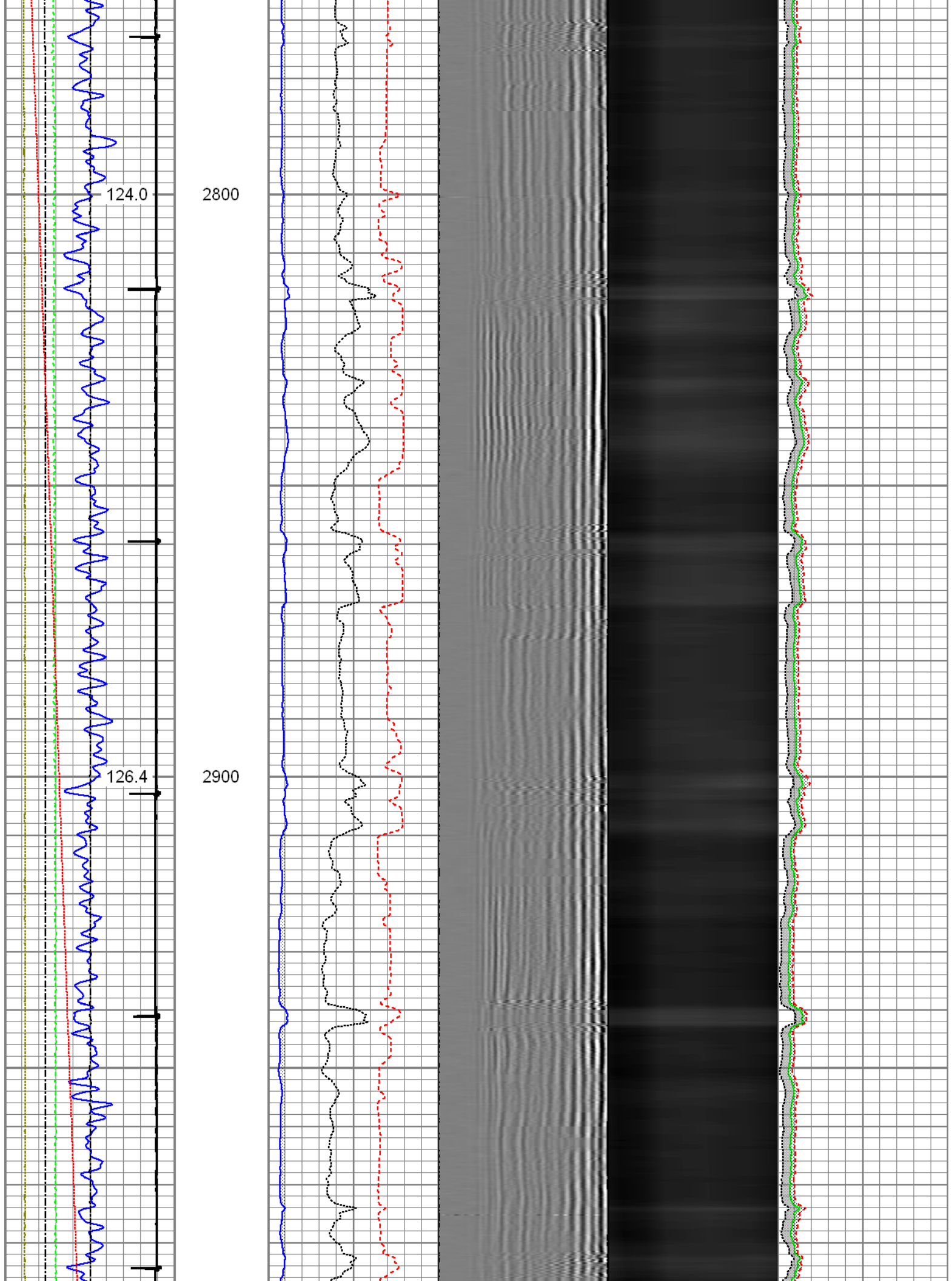
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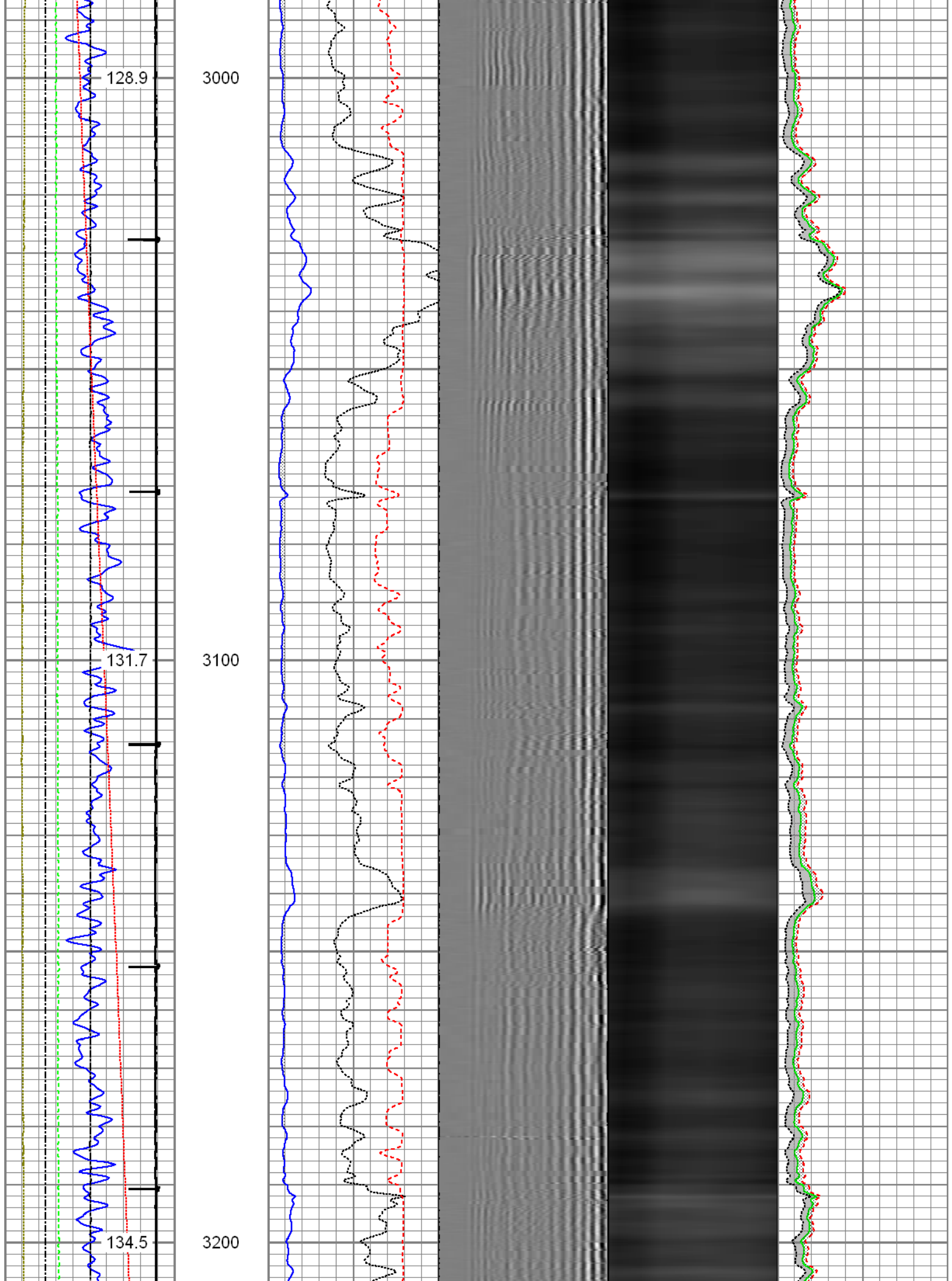
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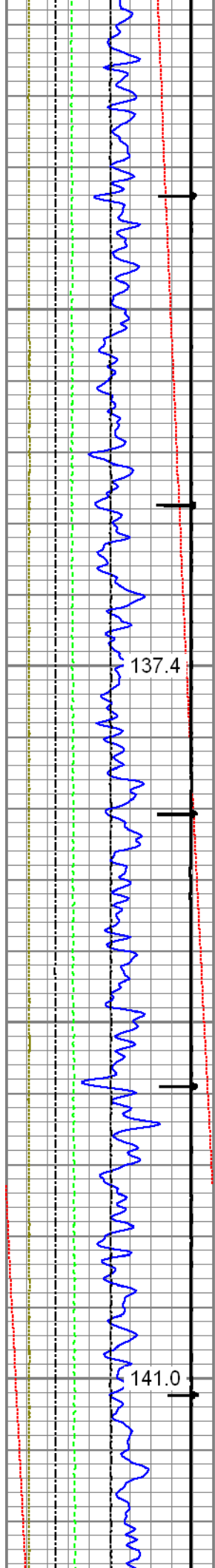






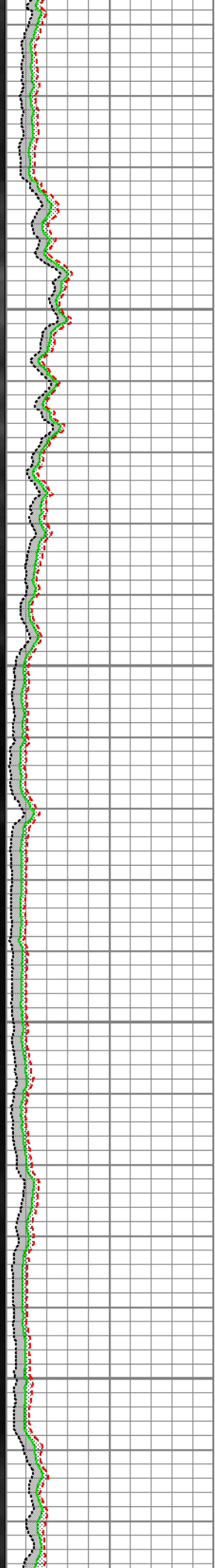
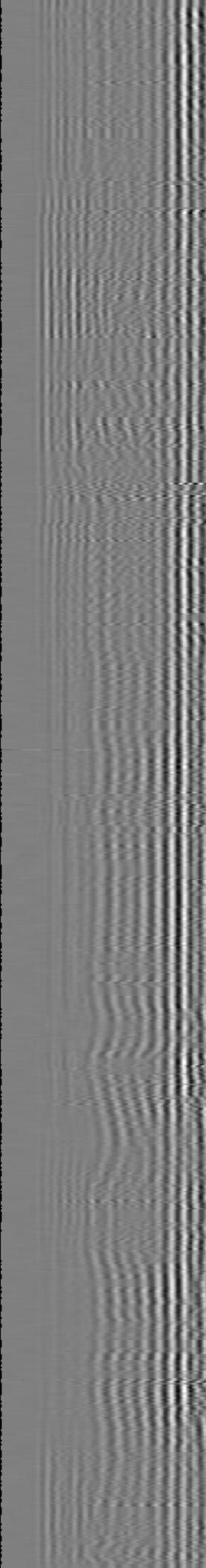
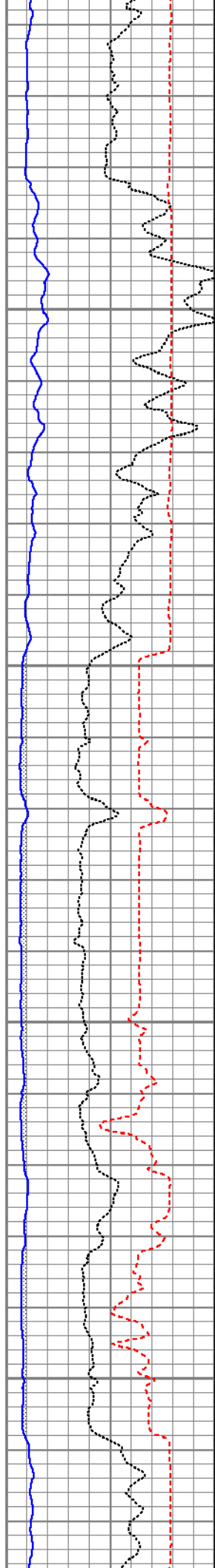


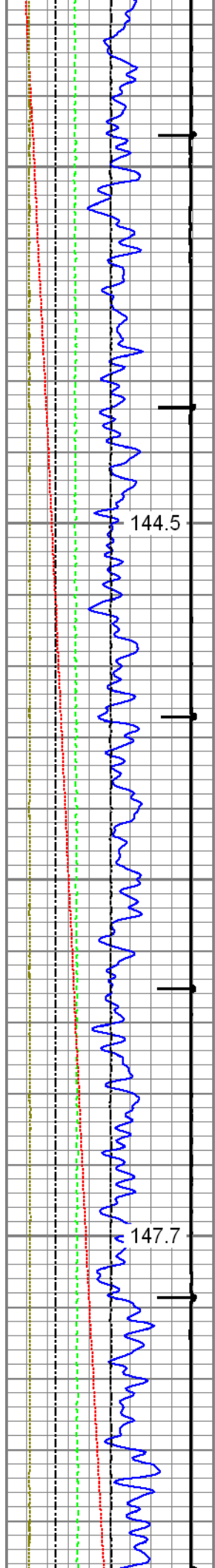




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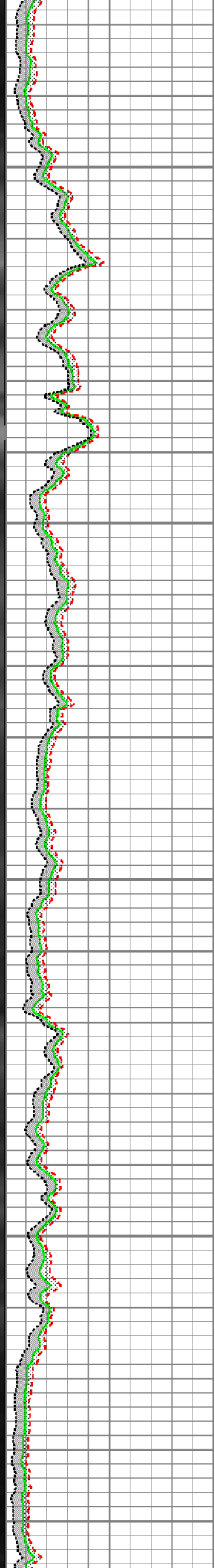
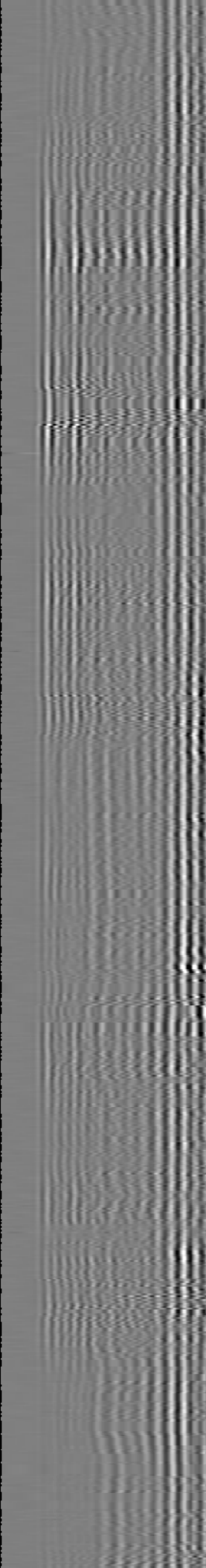
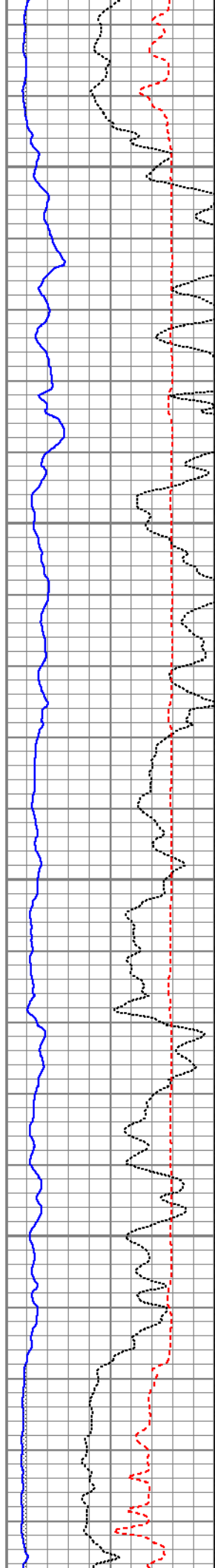
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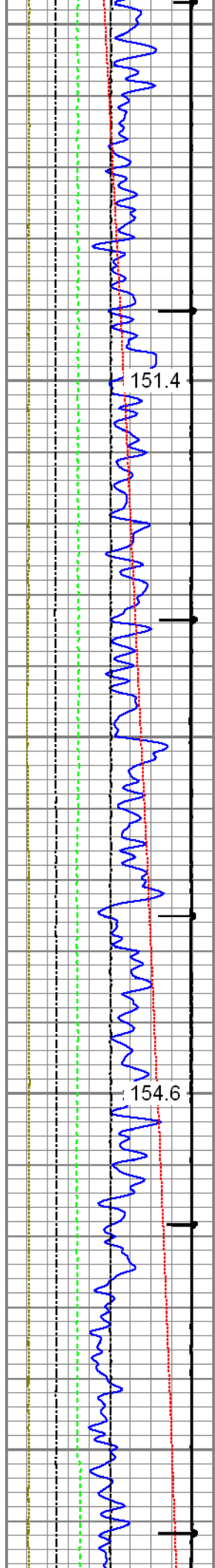




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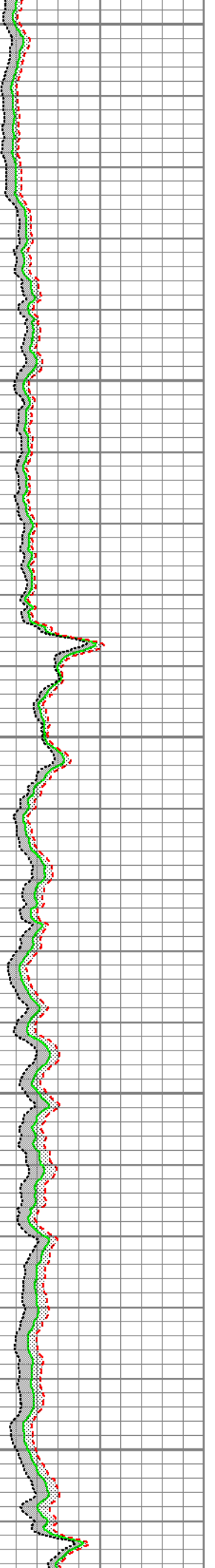
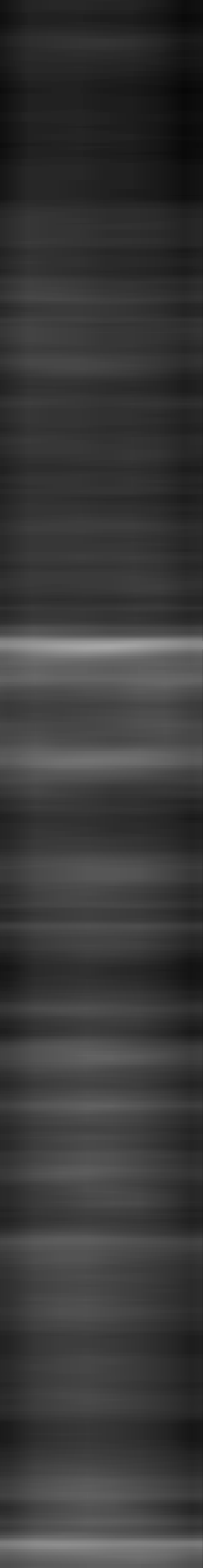
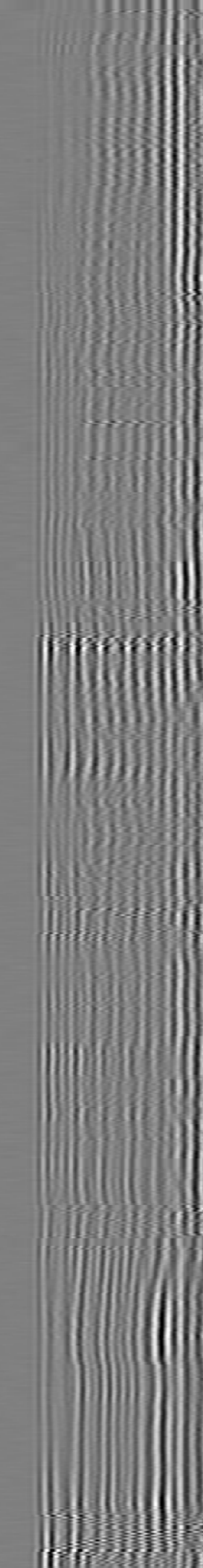
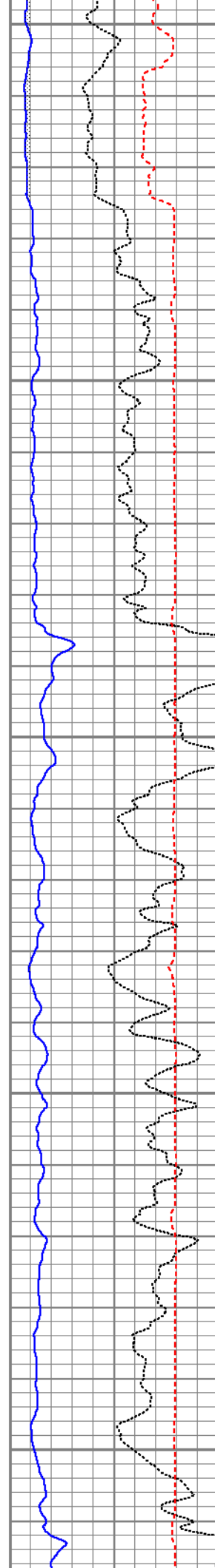


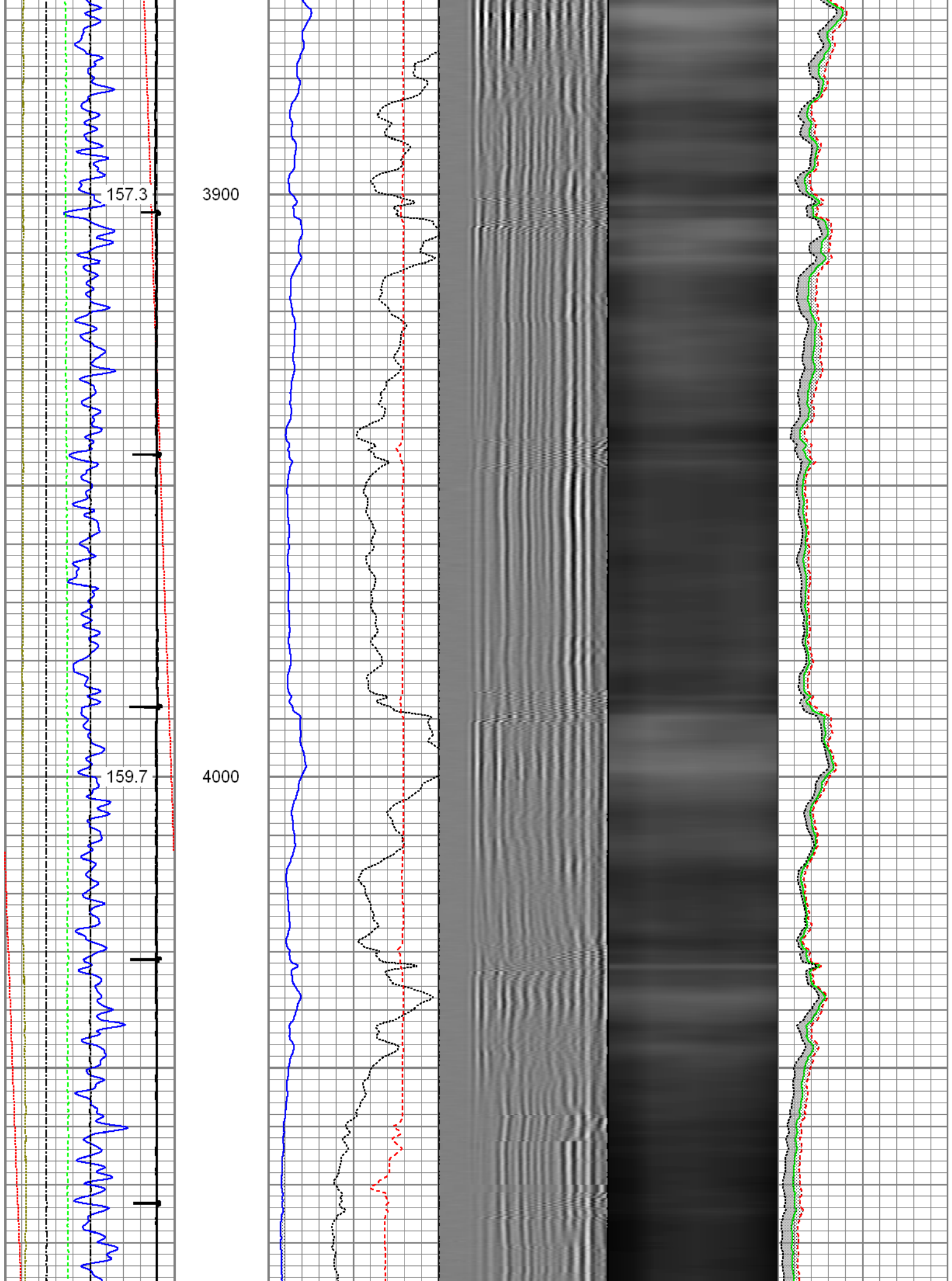
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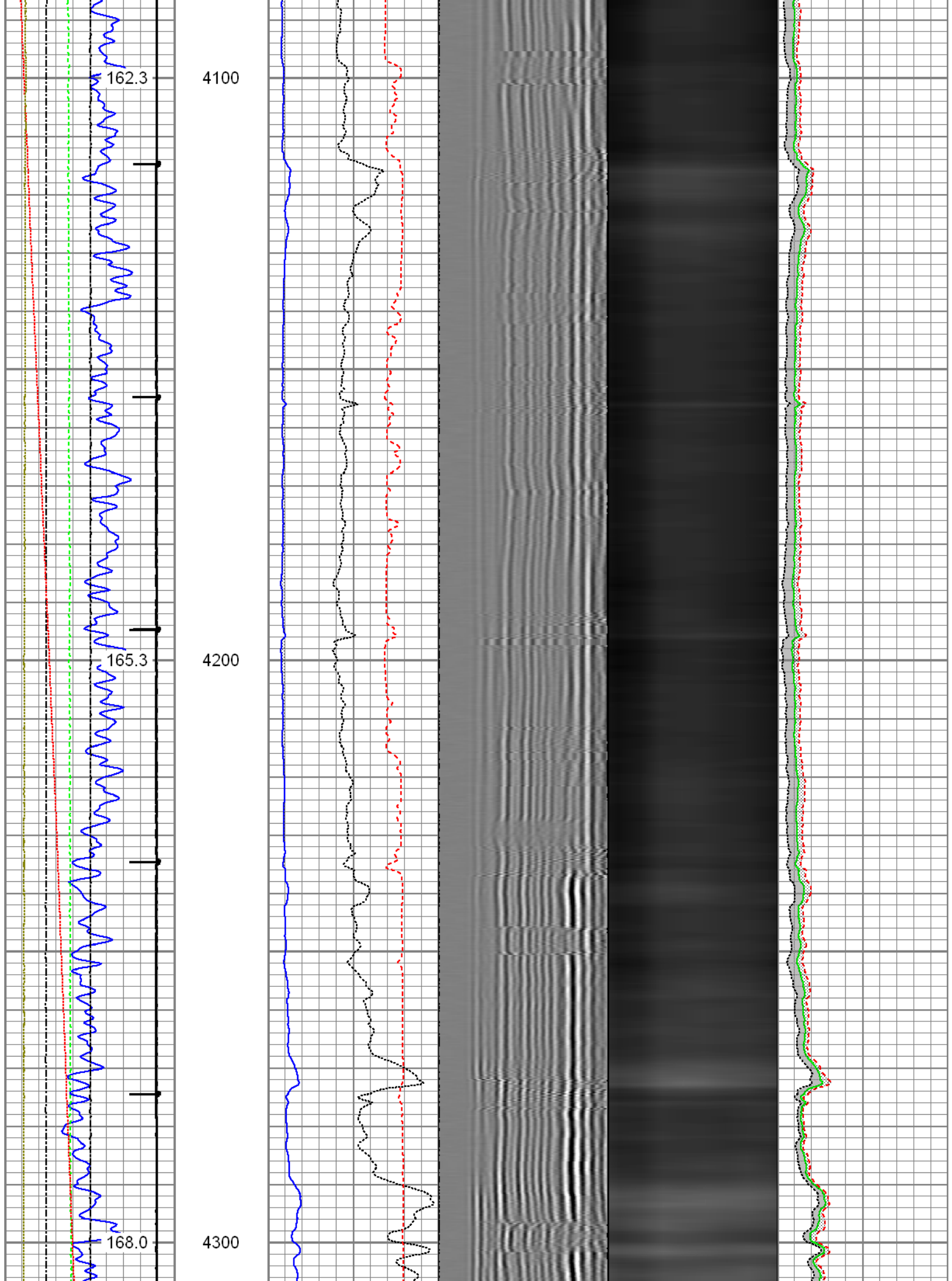
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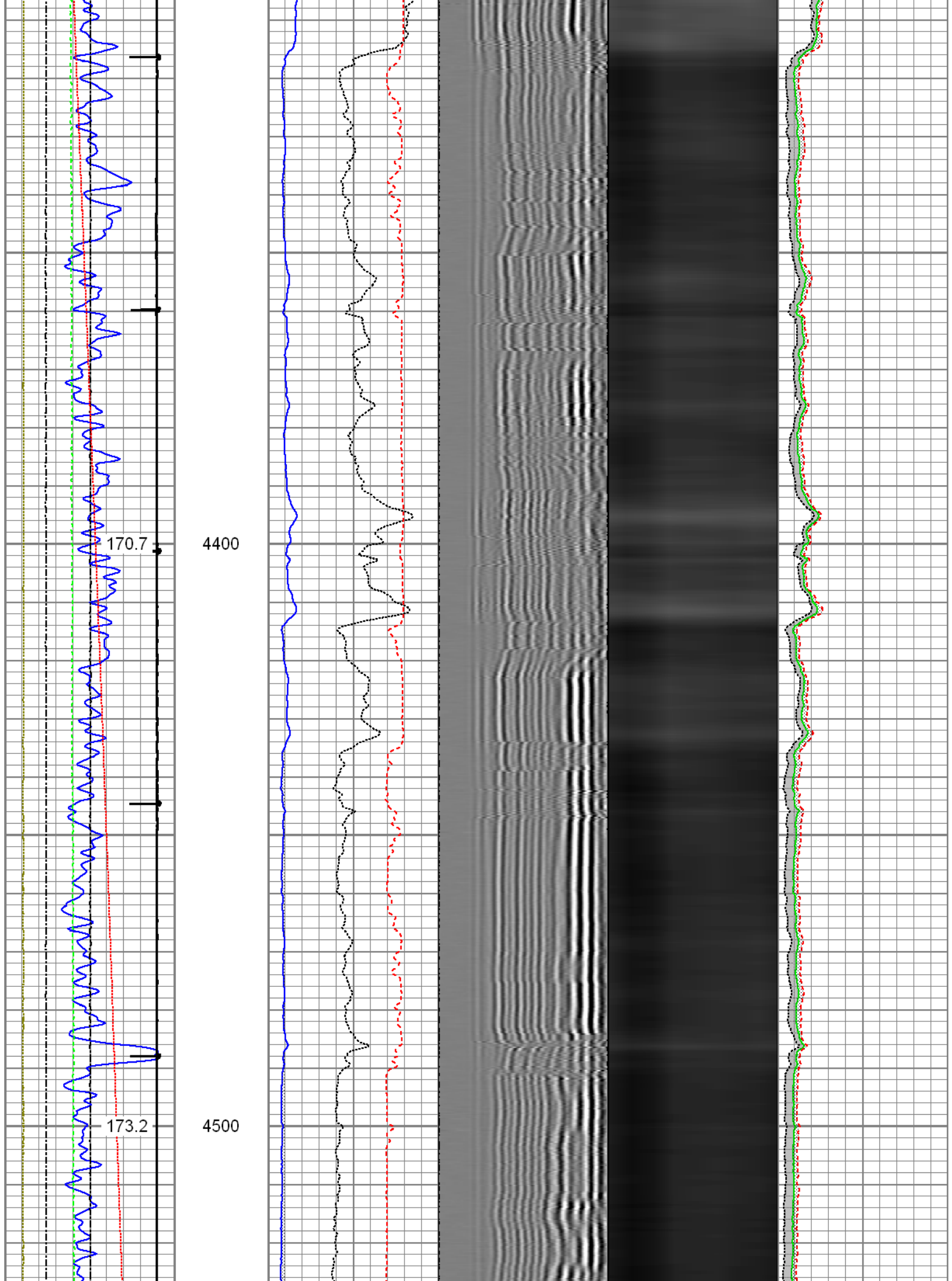
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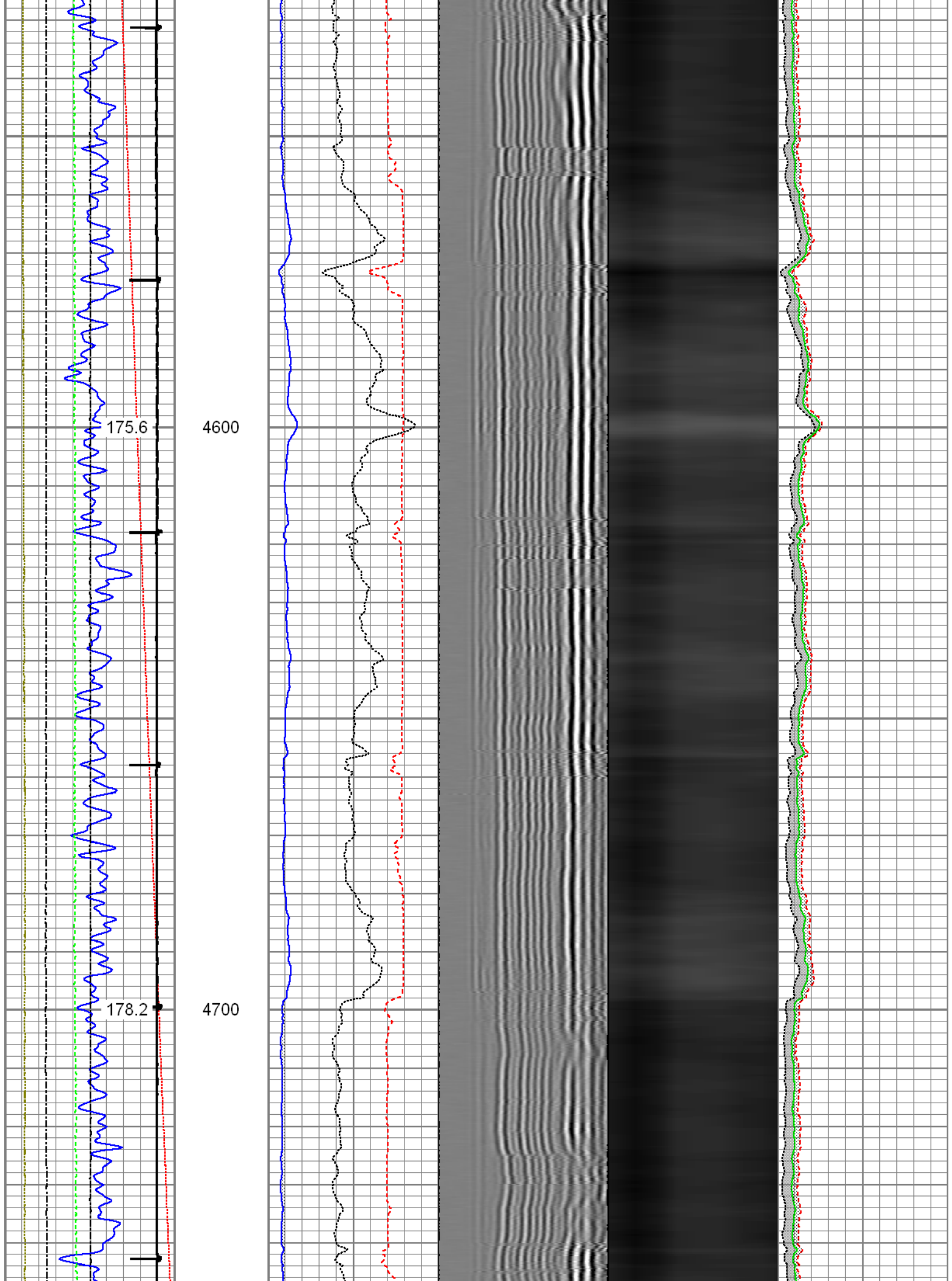
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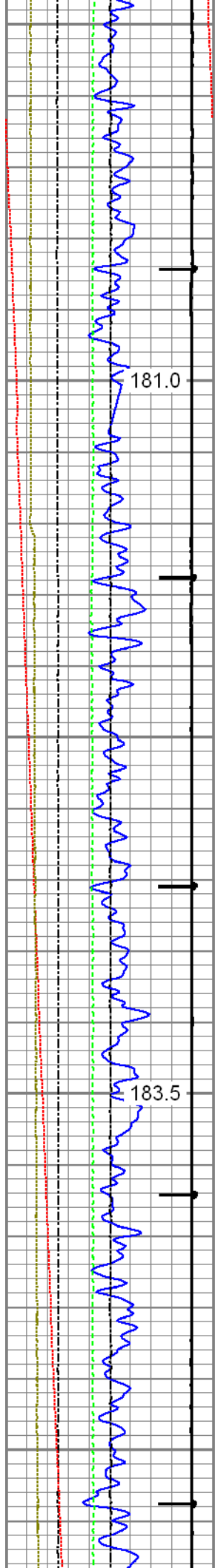






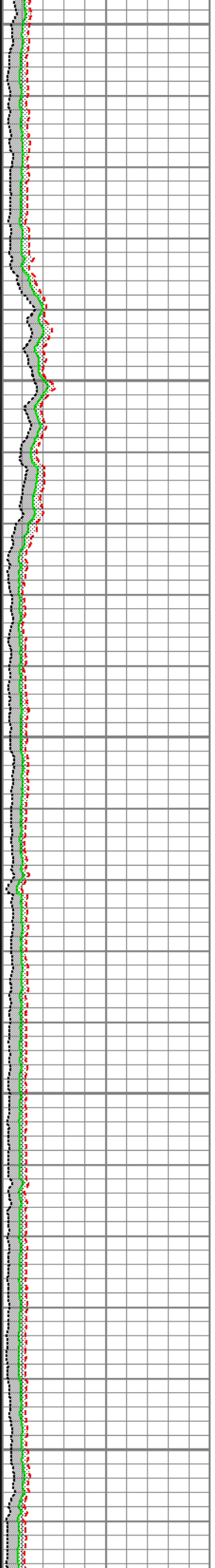
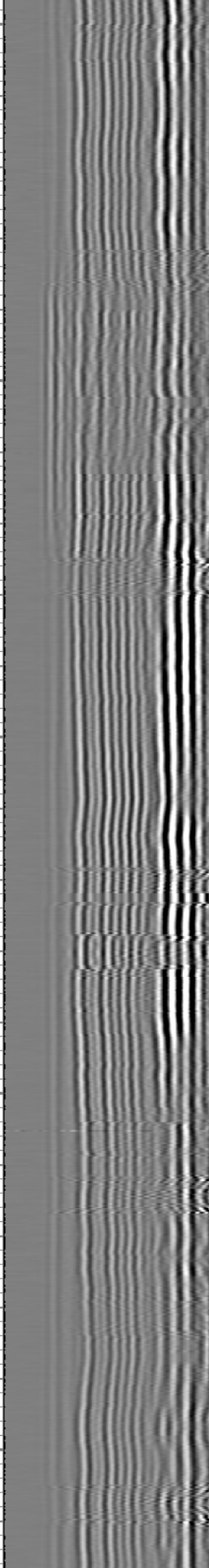
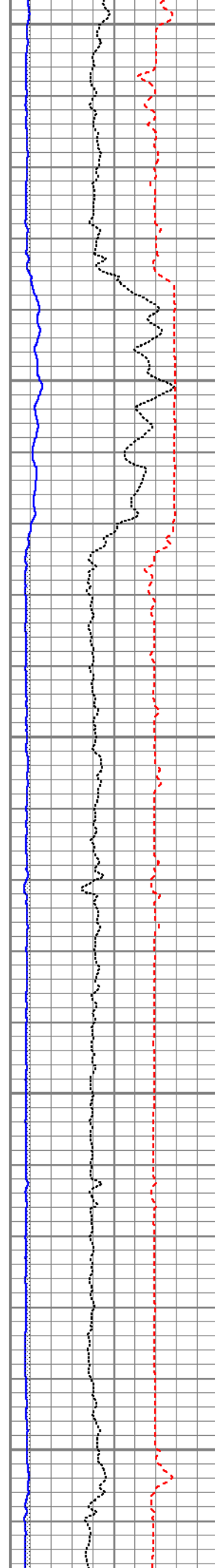


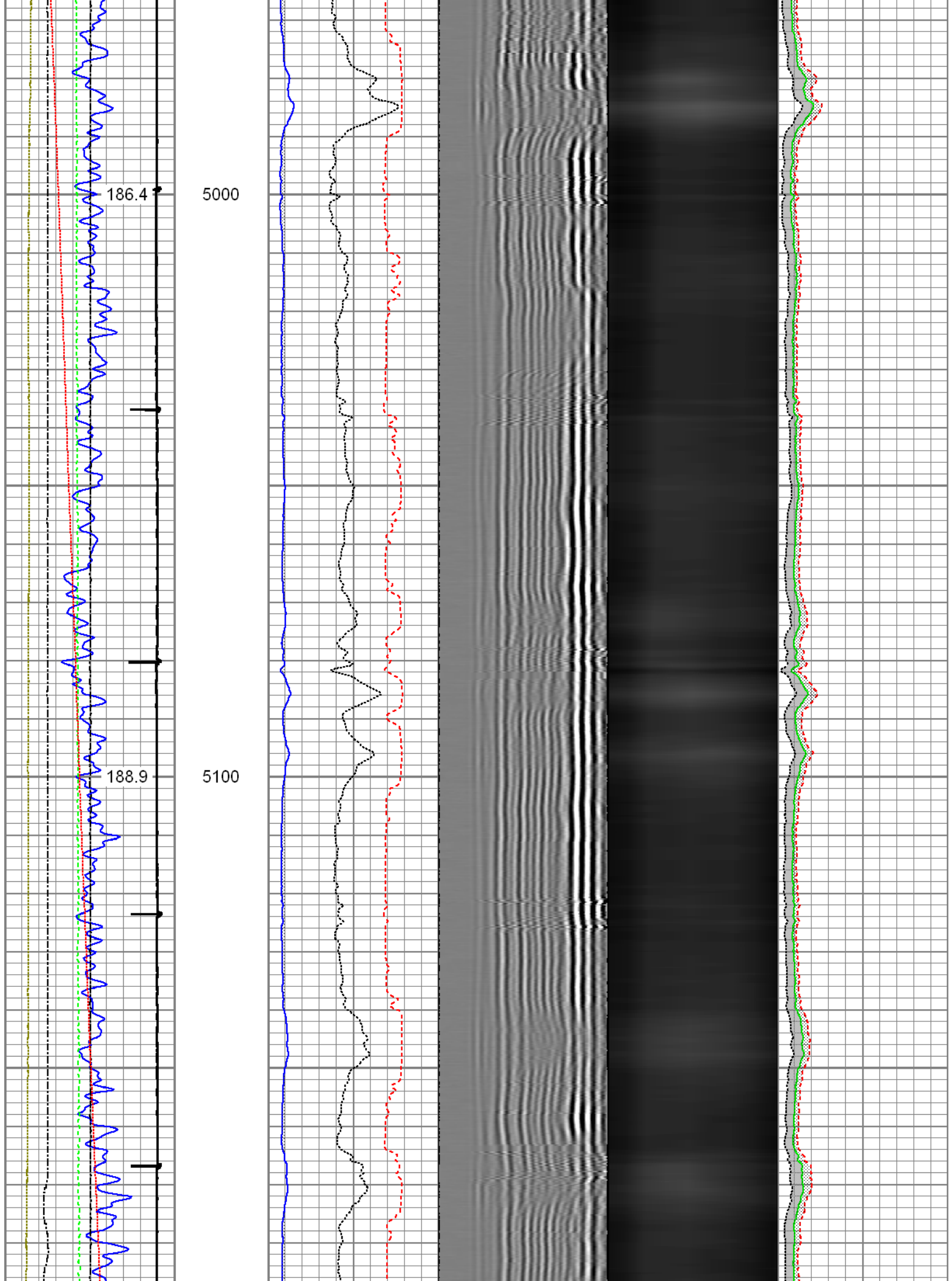


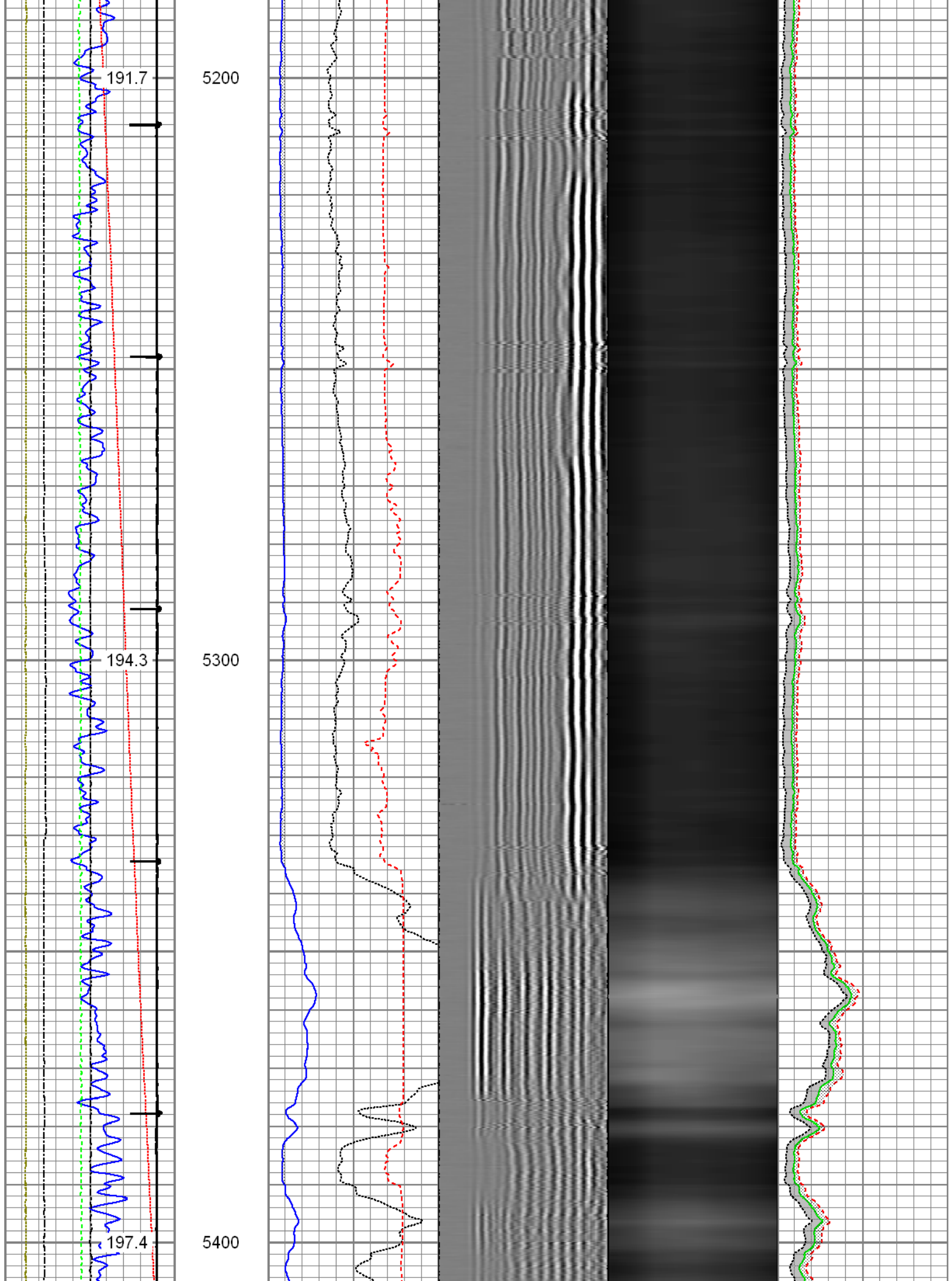


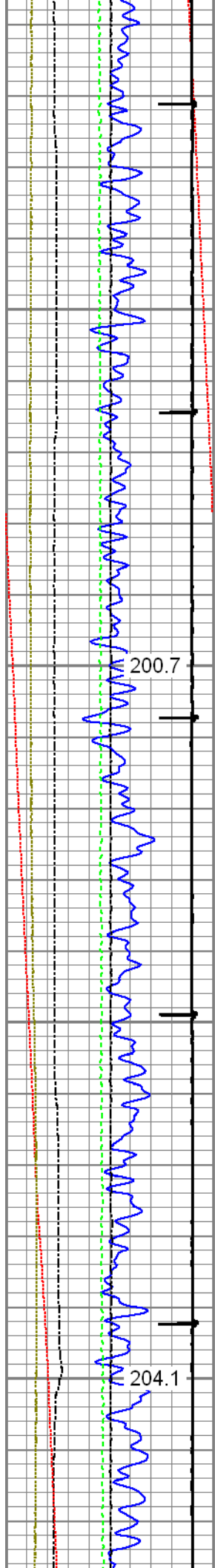
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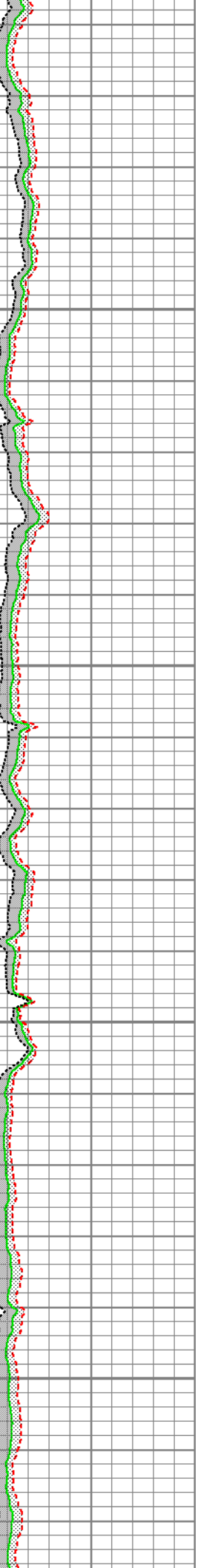
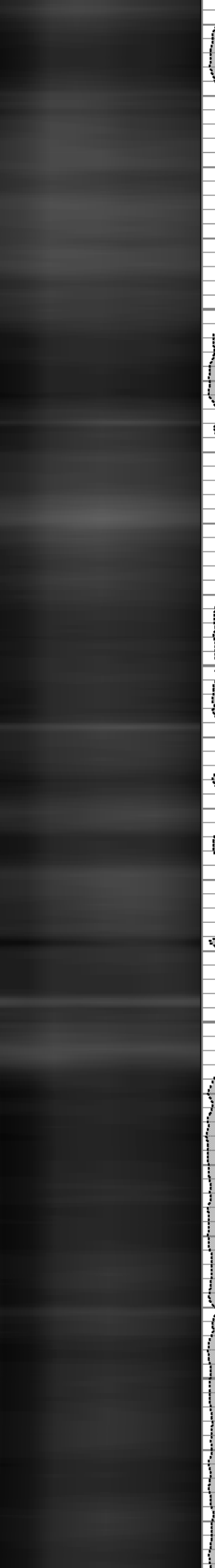
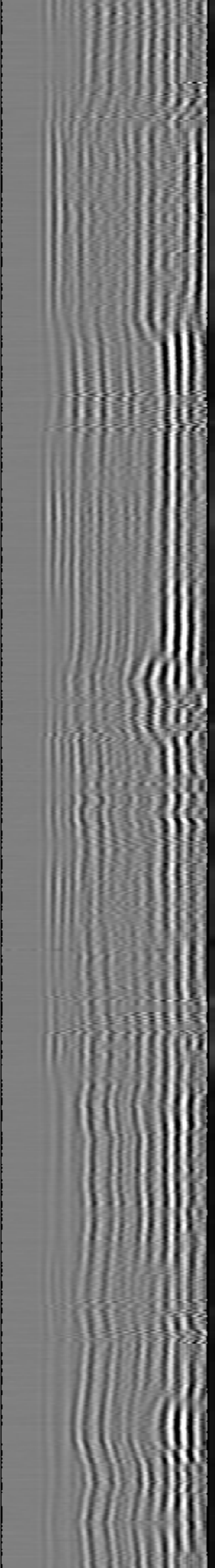
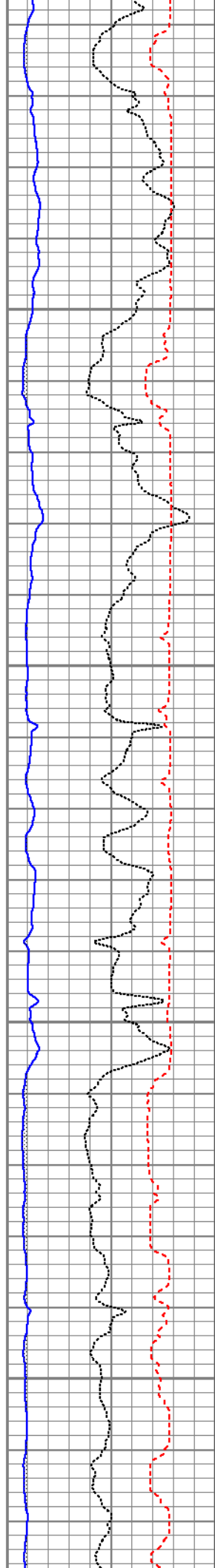


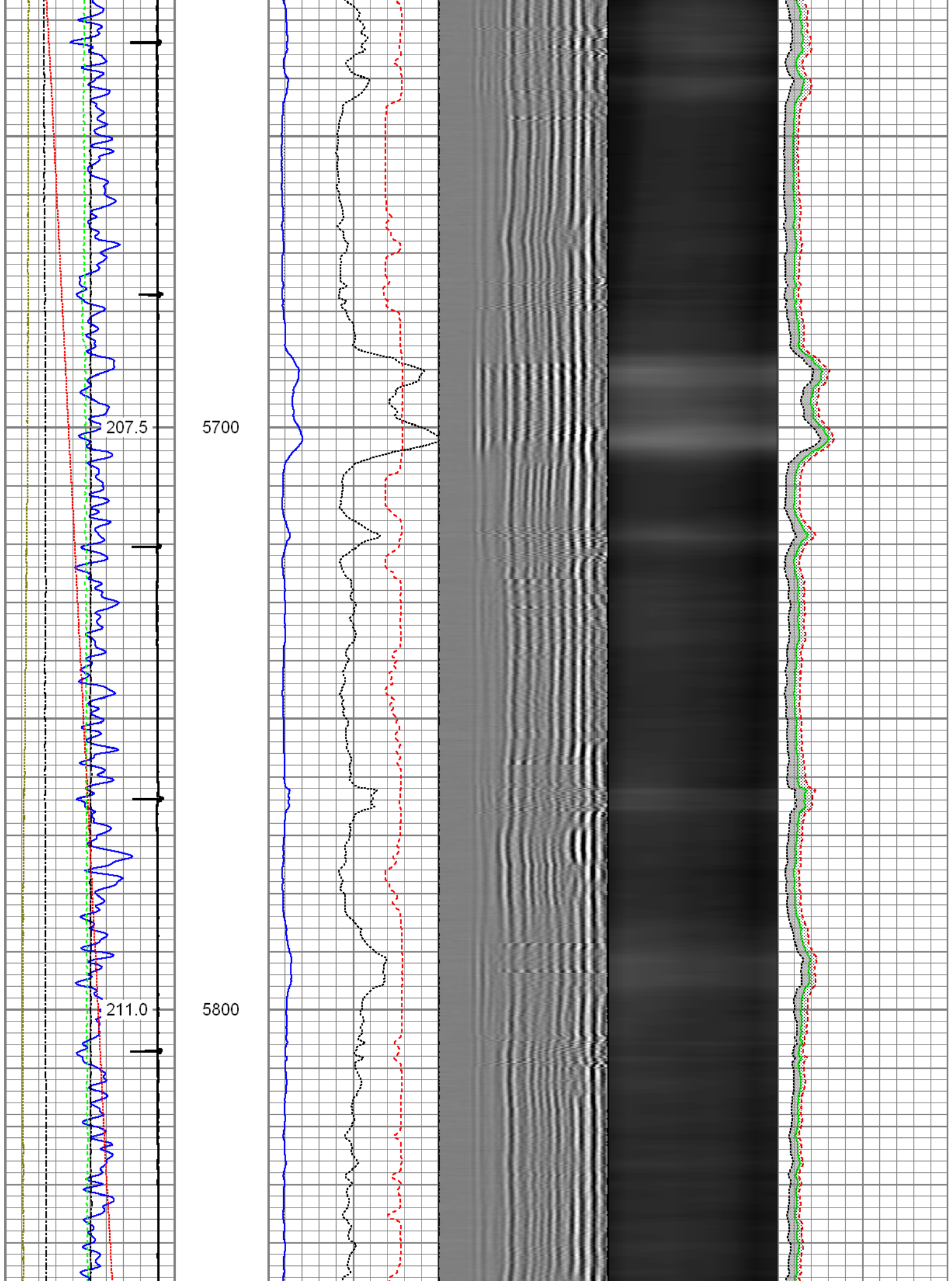


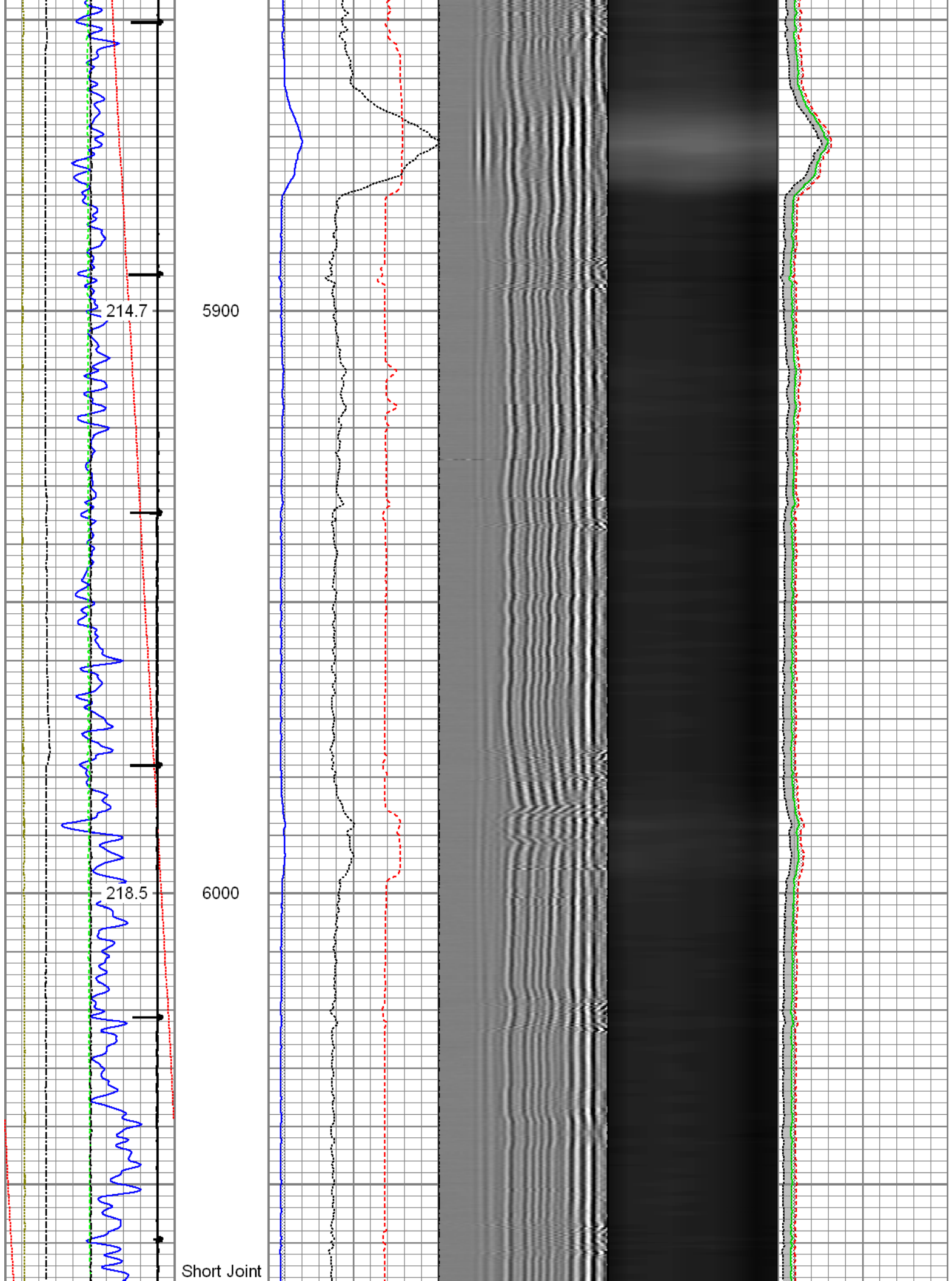


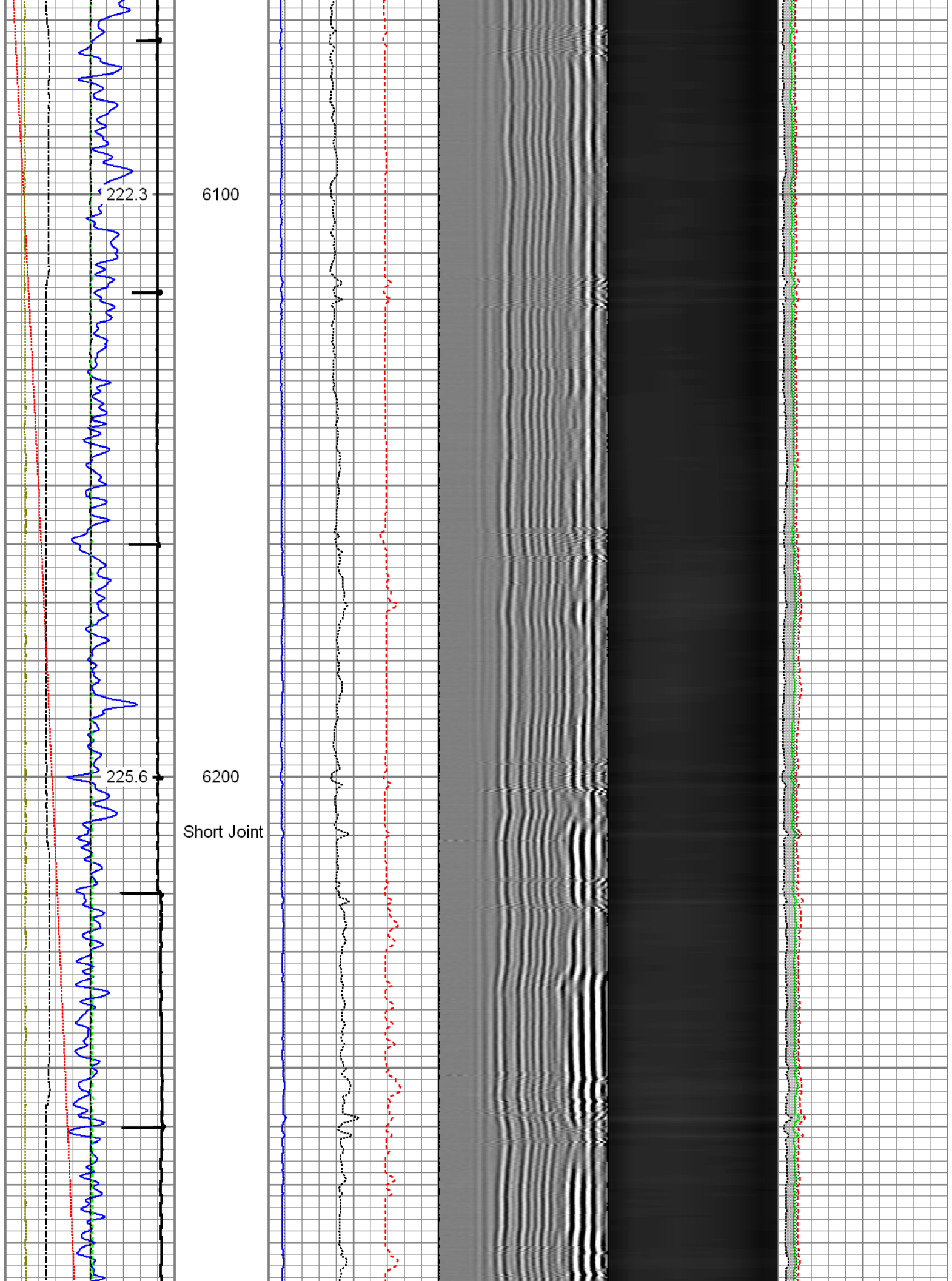
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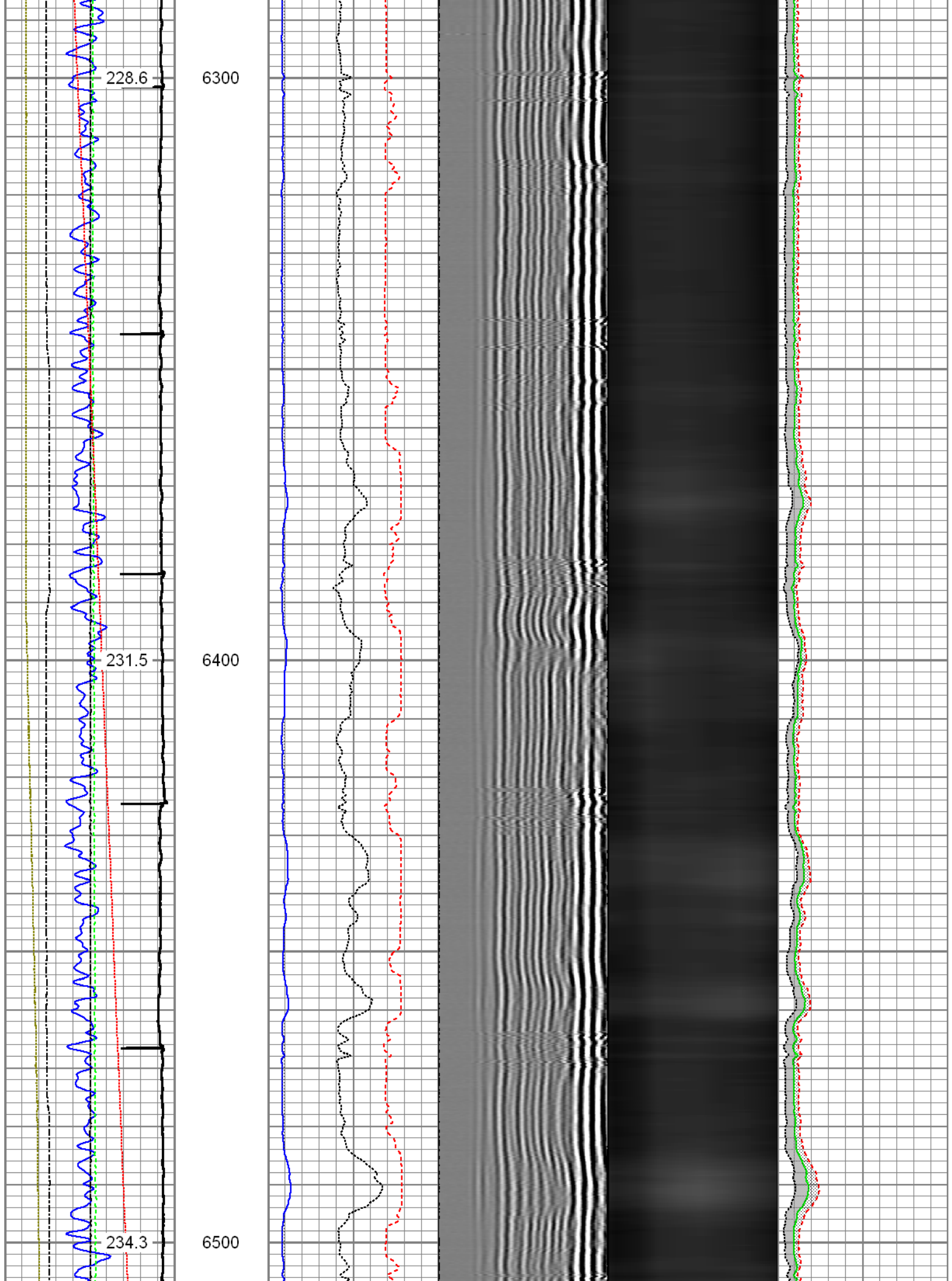
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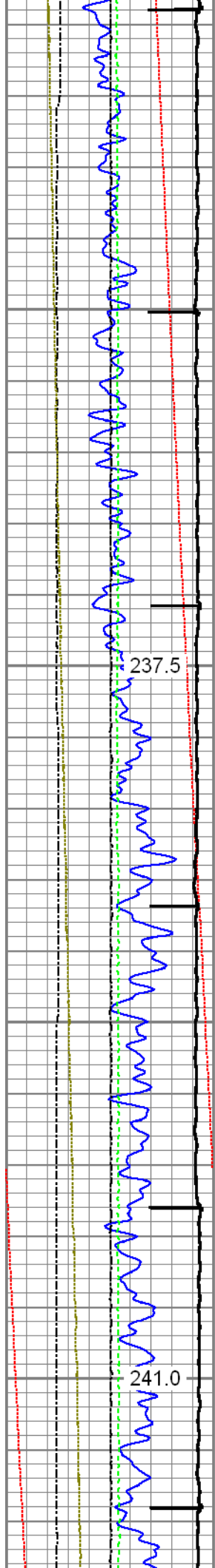






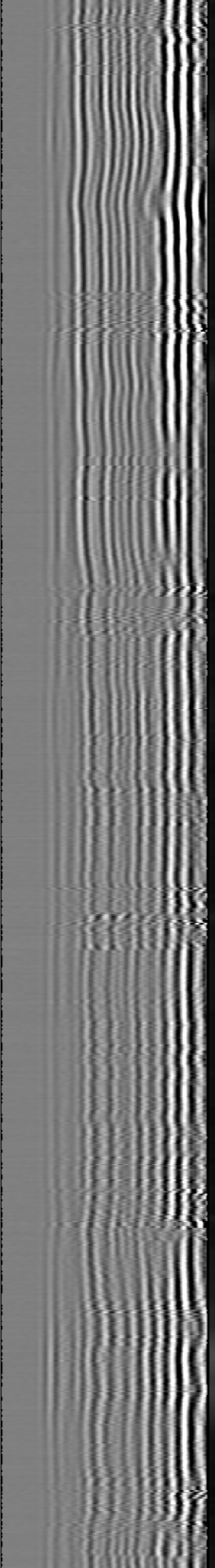
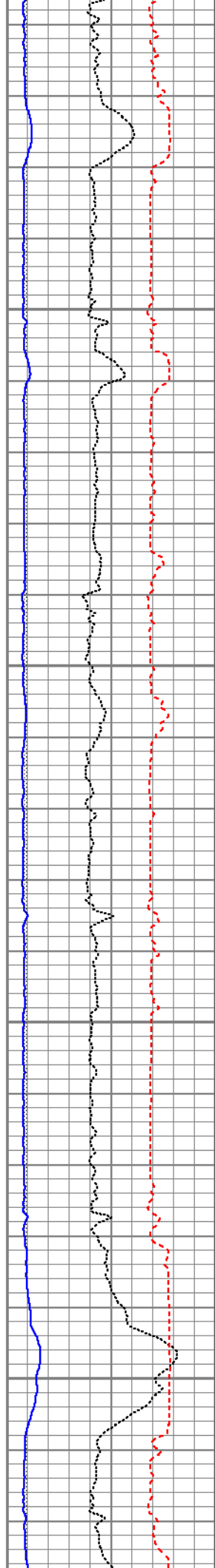


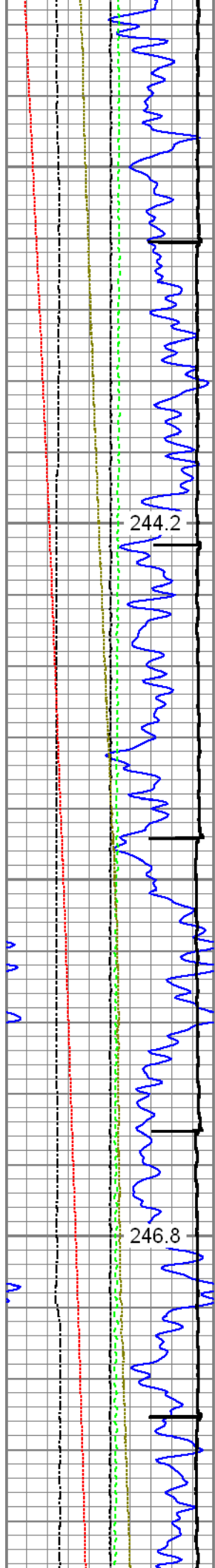




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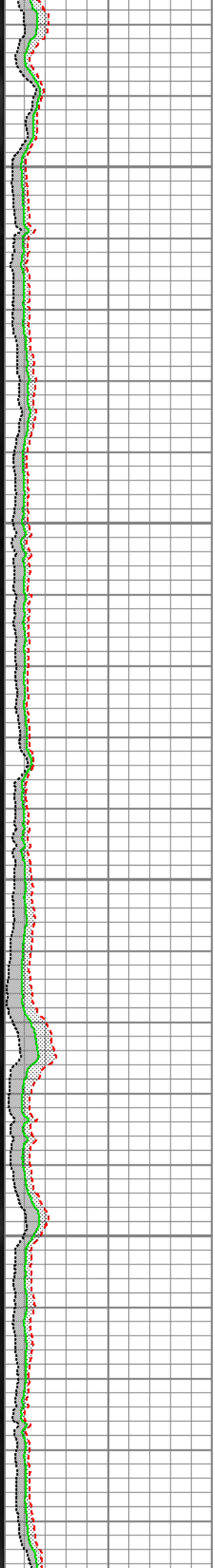
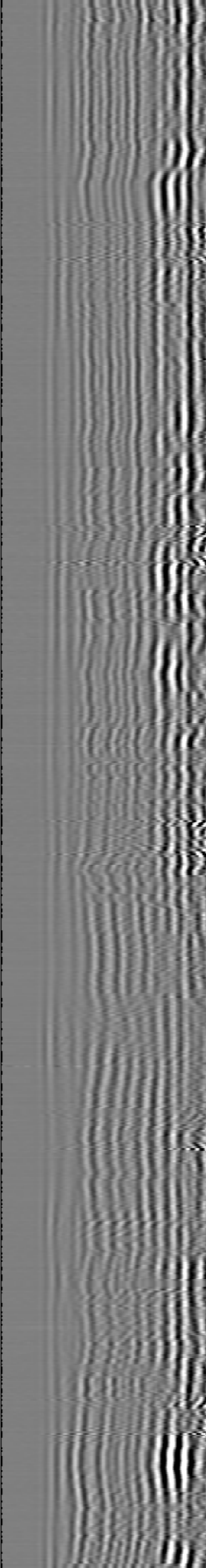
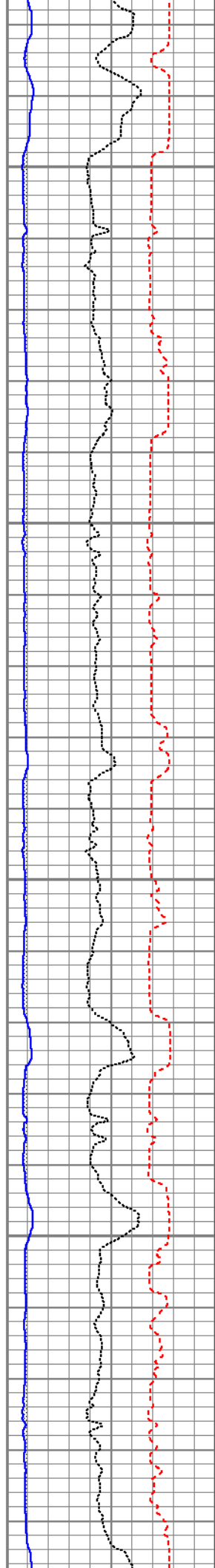
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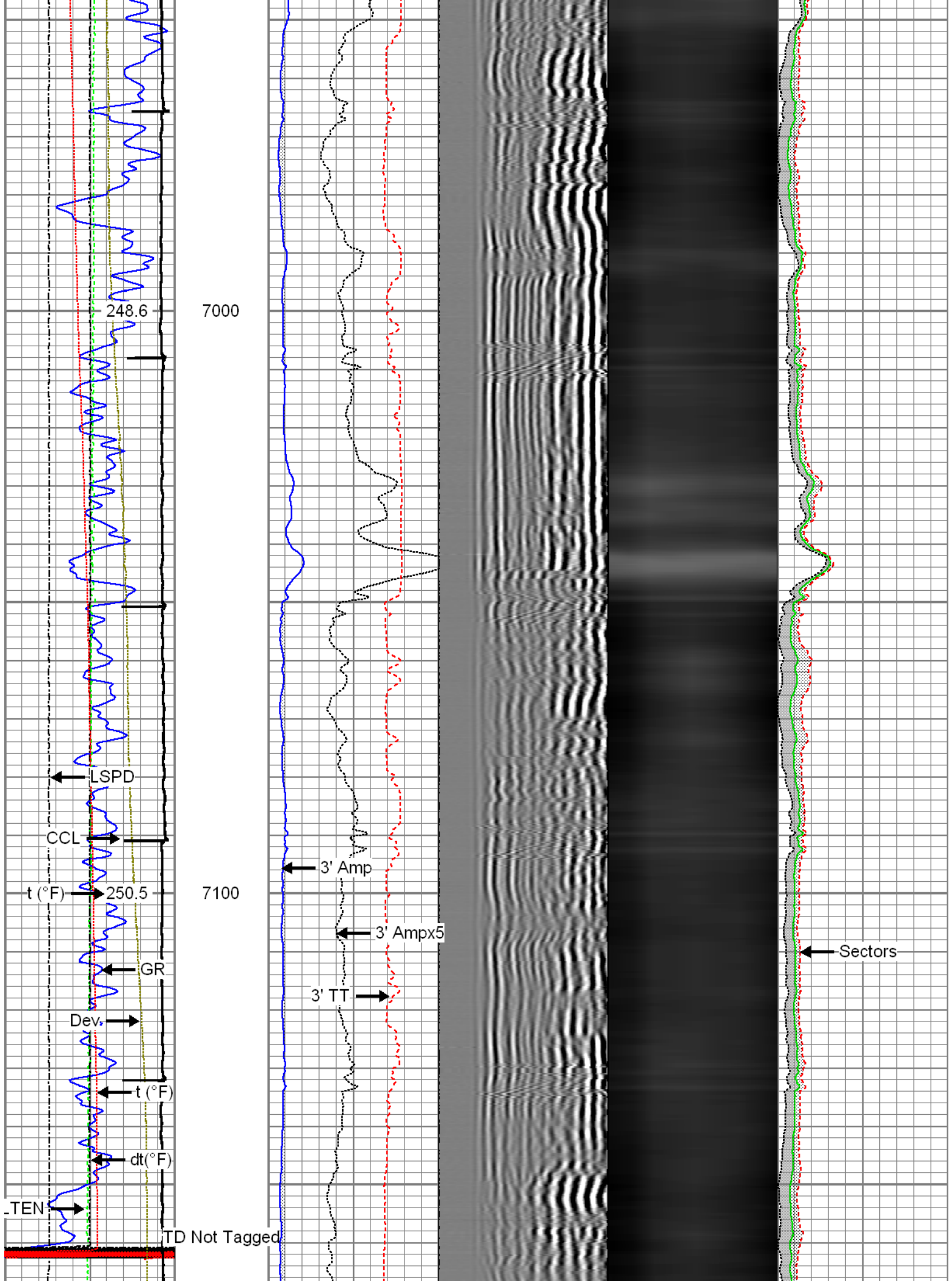


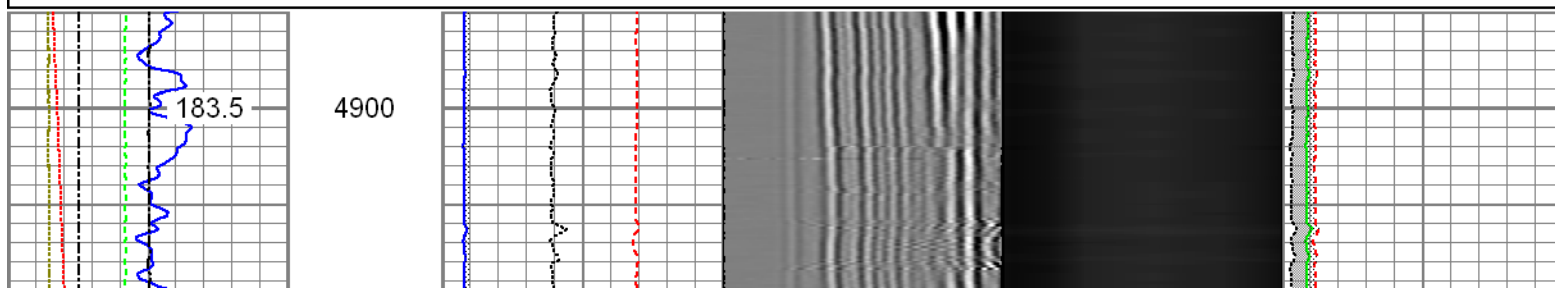
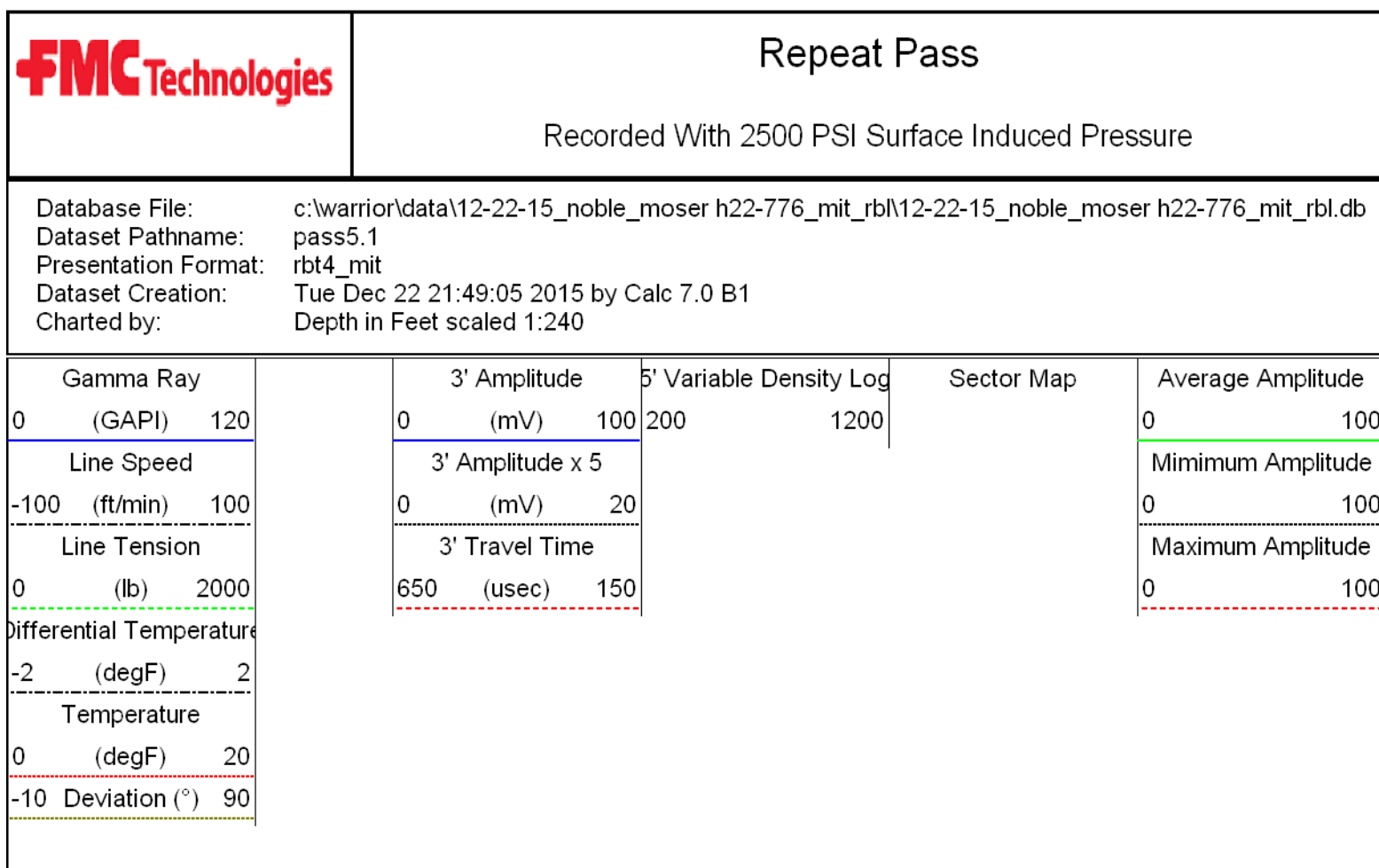
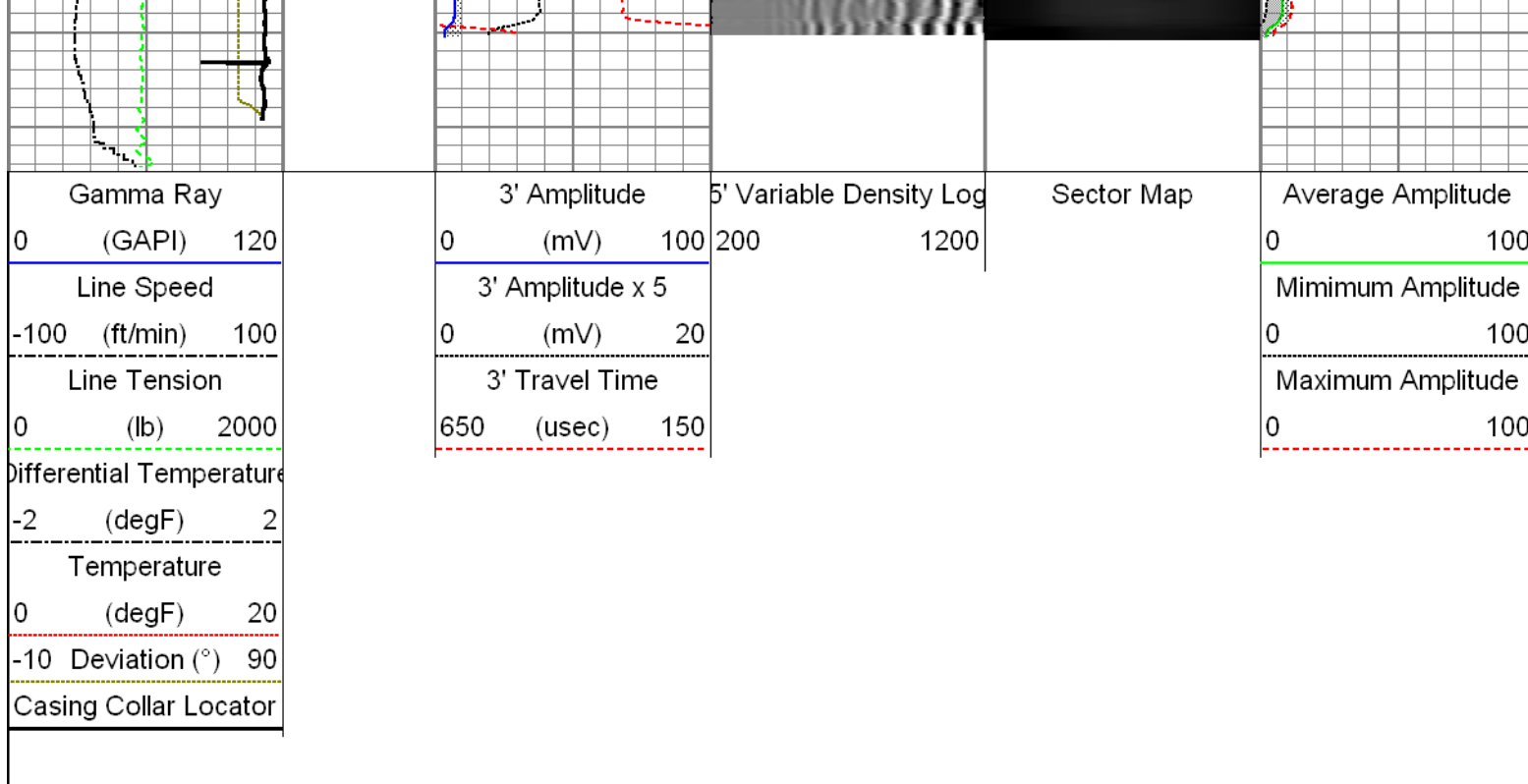


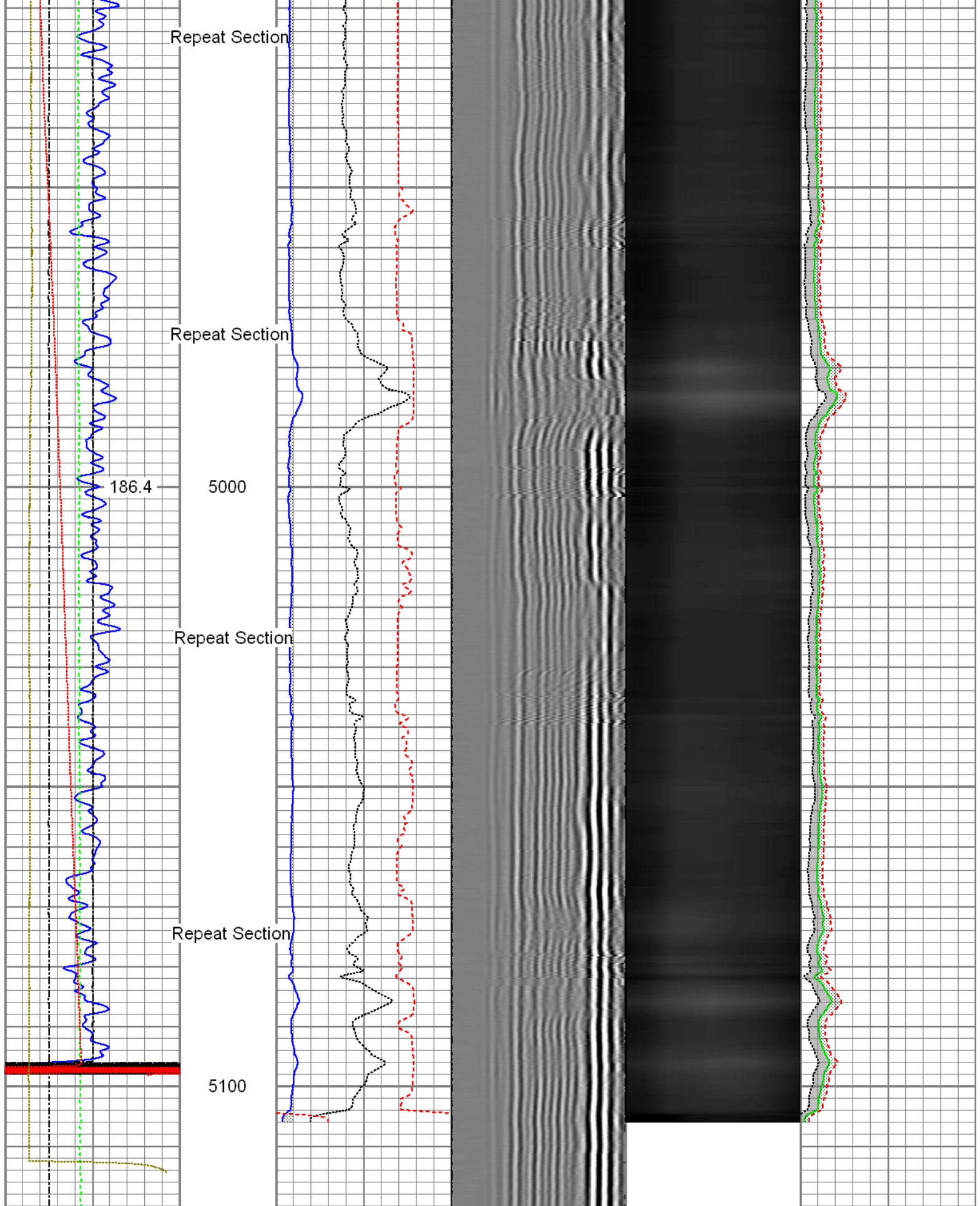
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6900





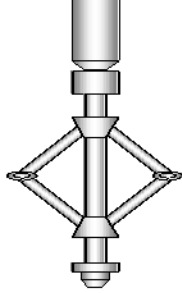




Gamma Ray (GAPI)	3' Amplitude (mV)	5' Variable Density Log	Sector Map	Average Amplitude
0 120	0 100	200 1200		0 100
Line Speed (ft/min)	3' Amplitude x 5 (mV)			Minimum Amplitude
-100 100	0 20			0 100

Line Tension			3' Travel Time			Maximum Amplitude		
0	(lb)	2000	650	(usec)	150	0		100
Differential Temperature								
-2	(degF)	2						
Temperature								
0	(degF)	20						
-10	Deviation (°)	90						

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 (10010522) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50
			UW_PGR-UW_PGR_020 (211727) Production Gamma Ray	1.93	1.69	9.50
TEMP	22.45		UW_PRT-UW_PRT_016 (10025100) Platinum Resistance Thermometer	1.04	1.69	5.20
			UW_PRC #4 -DSSRAC (081) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
WVF3FT	15.42		UW_RBT-UW_RBT_004 (10013454) Sondex Ultrawire 3-1/8" Radial Bond Tool	9.47	3.13	140.00
WVFS1	15.42					
WVFS2	15.42					
WVFS3	15.42					
WVFS4	15.42					
WVFS5	15.42					
WVFS6	15.42					
WVFS7	15.42					
WVFS8	15.42					
CBLTEMP	15.42		UW_PRC-DSSRAC (082) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
CBLROT	15.42					
WVF5FT	14.42		UW_MIT-UW_MIT40_027 (218950) 40 Multifinger Imaging Tool	4.54	2.75	61.10
MIT	5.41					

TSTAMP	0.00		UW_PRC-UW_PRC_057 (1102) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
			UW_BUL-UW_BUL_006 (031422) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20
Dataset: 12-22-15_Noble_Moser H22-776_MIT_RBL.db: field/well/run1/merge1.1 Total Length: 28.09 ft Total Weight: 324.50 lb O.D. 3.13 in						

Database File:		C:\Warrior\Data\12-22-15_Noble_Moser H22-776_MIT_RBL\12-22-15_Noble_Moser H22-776_MIT_R				
Dataset Pathname:		calreport				
Dataset Creation:		Tue Dec 22 19:22:53 2015 by Log 7.0 B1				

Multi-finger Imaging Tool Calibration Report
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Serial Number:	218950
Number of Fingers:	40
Tool Model:	UW_MIT40_027

Inclinometer Calibration Report		
Performed:	Fri, Oct, 10 10:41:51 2008	
Calibration Angle:	45	
	Inc X	Inc Y
Vertical:	1996	1975
Finger 1 up:	2238	2226
Finger 31 up:	1760	2216
Finger 21 up:	1769	1745
Finger 11 up:	2250	1738
Sensitivity ratio:	1.00023	
X-axis angle:	314.283	
Deviation const.:	339.139	

Finger Calibration Report
Performed: Tue Dec 22 14:22:39 2015

Ring size:	4		5		6		7
(in)		Sens		Sens		Sens	
Finger 01:	1471	269.0	1740	297.0	2037	287.0	2324
Finger 02:	1524	250.0	1774	263.0	2037	258.0	2295
Finger 03:	1445	274.0	1719	298.0	2017	294.0	2311
Finger 04:	1476	276.0	1752	292.0	2044	288.0	2332
Finger 05:	1505	270.0	1775	280.0	2055	280.0	2335
Finger 06:	1425	284.0	1709	298.0	2007	307.0	2314
Finger 07:	1436	284.0	1720	292.0	2012	309.0	2321
Finger 08:	1430	281.0	1711	287.0	1998	302.0	2300
Finger 09:	1436	287.0	1723	290.0	2013	313.0	2326
Finger 10:	1438	275.0	1713	278.0	1991	306.0	2297
Finger 11:	1433	289.0	1722	288.0	2010	316.0	2326
Finger 12:	1379	293.0	1672	288.0	1960	328.0	2288
Finger 13:	1473	267.0	1740	262.0	2002	292.0	2294
Finger 14:	1419	275.0	1694	275.0	1969	311.0	2280
Finger 15:	1413	292.0	1705	281.0	1986	324.0	2310
Finger 16:	1428	280.0	1708	278.0	1986	316.0	2302
Finger 17:	1423	289.0	1712	286.0	1998	325.0	2323
Finger 18:	1385	275.0	1660	275.0	1935	318.0	2253
Finger 19:	1424	281.0	1705	278.0	1983	316.0	2299
Finger 20:	1423	276.0	1699	277.0	1976	316.0	2292

Finger 20:	1420	277.0	1693	291.0	1984	310.0	2202
Finger 21:	1405	288.0	1693	291.0	1984	327.0	2311
Finger 22:	1440	264.0	1704	271.0	1975	301.0	2276
Finger 23:	1408	269.0	1677	275.0	1952	305.0	2257
Finger 24:	1458	269.0	1727	270.0	1997	296.0	2293
Finger 25:	1397	266.0	1663	275.0	1938	298.0	2236
Finger 26:	1419	272.0	1691	284.0	1975	306.0	2281
Finger 27:	1472	262.0	1734	277.0	2011	287.0	2298
Finger 28:	1464	274.0	1738	289.0	2027	298.0	2325
Finger 29:	1519	254.0	1773	268.0	2041	275.0	2316
Finger 30:	1421	268.0	1689	291.0	1980	296.0	2276
Finger 31:	1446	272.0	1718	295.0	2013	294.0	2307
Finger 32:	1492	252.0	1744	274.0	2018	267.0	2285
Finger 33:	1457	271.0	1728	304.0	2032	290.0	2322
Finger 34:	1464	266.0	1730	299.0	2029	289.0	2318
Finger 35:	1510	246.0	1756	273.0	2029	260.0	2289
Finger 36:	1528	257.0	1785	284.0	2069	272.0	2341
Finger 37:	1491	268.0	1759	296.0	2055	282.0	2337
Finger 38:	1570	242.0	1812	264.0	2076	257.0	2333
Finger 39:	1482	263.0	1745	287.0	2032	275.0	2307
Finger 40:	1442	278.0	1720	306.0	2026	299.0	2325

Post Survey Calibration Check
Performed: Tue Dec 22 19:22:38 2015

Ring size: (in)	4	Nom. wear	5	Nom. wear	6	Nom. wear	7	Nom. wear
Finger 01:	3.997	-0.002	4.988	-0.006	5.990	-0.005	6.994	-0.003
Finger 02:	4.012	0.006	5.002	0.001	6.015	0.007	7.012	0.006
Finger 03:	3.995	-0.002	4.995	-0.002	5.995	-0.003	6.998	-0.001
Finger 04:	4.013	0.006	5.014	0.007	6.023	0.011	7.019	0.009
Finger 05:	3.995	-0.002	4.988	-0.006	5.992	-0.004	6.994	-0.003
Finger 06:	3.994	-0.003	4.990	-0.005	5.997	-0.002	6.993	-0.003
Finger 07:	4.007	0.003	4.996	-0.002	6.007	0.003	6.993	-0.003
Finger 08:	4.000	0.000	4.993	-0.003	6.005	0.002	7.003	0.002
Finger 09:	4.032	0.016	5.025	0.012	6.037	0.018	7.026	0.013
Finger 10:	3.988	-0.006	4.983	-0.009	5.998	-0.001	6.985	-0.008
Finger 11:	3.997	-0.001	4.985	-0.008	5.990	-0.005	6.992	-0.004
Finger 12:	3.979	-0.010	4.971	-0.014	5.989	-0.005	6.999	-0.000
Finger 13:	3.990	-0.005	4.985	-0.007	5.997	-0.001	7.015	0.008
Finger 14:	3.988	-0.006	4.986	-0.007	5.988	-0.006	6.996	-0.002
Finger 15:	3.997	-0.002	4.985	-0.007	6.001	0.000	7.000	0.000
Finger 16:	3.988	-0.006	4.982	-0.009	5.993	-0.004	6.999	-0.001
Finger 17:	4.009	0.005	5.004	0.002	6.003	0.001	7.004	0.002
Finger 18:	4.007	0.004	5.014	0.007	6.007	0.004	7.002	0.001
Finger 19:	3.999	-0.000	4.991	-0.005	5.993	-0.003	7.000	0.000
Finger 20:	4.000	-0.000	5.000	0.000	6.006	0.003	7.005	0.002
Finger 21:	4.001	0.000	4.996	-0.002	6.005	0.002	7.006	0.003
Finger 22:	3.994	-0.003	4.994	-0.003	6.000	-0.000	6.997	-0.001
Finger 23:	4.010	0.005	5.004	0.002	6.005	0.003	6.999	-0.001
Finger 24:	3.988	-0.006	4.980	-0.010	6.005	0.002	6.992	-0.004
Finger 25:	4.002	0.001	4.993	-0.003	6.004	0.002	6.996	-0.002
Finger 26:	3.994	-0.003	4.992	-0.004	6.007	0.004	6.997	-0.002
Finger 27:	3.992	-0.004	4.988	-0.006	5.996	-0.002	6.996	-0.002
Finger 28:	4.024	0.012	5.004	0.002	6.009	0.004	7.027	0.013
Finger 29:	3.983	-0.008	4.981	-0.009	6.005	0.002	6.998	-0.001
Finger 30:	3.999	-0.001	4.998	-0.001	6.008	0.004	6.999	-0.001
Finger 31:	4.024	0.012	4.995	-0.002	6.000	0.000	7.001	0.000
Finger 32:	3.992	-0.004	4.992	-0.004	6.001	0.000	7.003	0.001
Finger 33:	4.000	0.000	4.998	-0.001	5.999	-0.001	7.009	0.004
Finger 34:	3.995	-0.002	4.995	-0.002	5.994	-0.003	7.001	0.000
Finger 35:	3.992	-0.004	4.992	-0.004	5.992	-0.004	6.995	-0.003
Finger 36:	3.992	-0.004	4.983	-0.009	5.998	-0.001	7.001	0.001
Finger 37:	3.991	-0.005	4.987	-0.007	5.995	-0.002	7.000	-0.000
Finger 38:	3.987	-0.006	4.985	-0.008	5.997	-0.001	6.994	-0.003
Finger 39:	3.989	-0.006	4.989	-0.006	5.997	-0.002	6.993	-0.004
Finger 40:	4.005	0.003	5.001	0.000	6.012	0.006	7.008	0.004

Finger 40: 4.003 0.003 5.001 0.000 6.012 0.000 7.000 0.004
Average: 3.999 -0.001 4.993 -0.003 6.001 0.001 7.001 0.001

Segmented Cement Bond Log Calibration Report

Serial Number: 10013454
Tool Model: UW_RBT_004

Calibration Casing Diameter: 7.000 in
Calibration Depth: 150.746 ft

Master Calibration, performed Tue Dec 22 16:18:46 2015:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	-0.003	0.498	0.800	62.165	122.614	1.128
5FT	-0.004	0.575	0.800	62.165	106.049	1.188
S1	-0.003	0.482	0.000	100.000	206.099	0.561
S2	-0.004	0.500	0.000	100.000	198.691	0.735
S3	-0.004	0.513	0.000	100.000	193.679	0.716
S4	-0.004	0.522	0.000	100.000	190.000	0.796
S5	-0.003	0.510	0.000	100.000	194.802	0.568
S6	-0.005	0.497	0.000	100.000	199.159	0.963
S7	-0.004	0.481	0.000	100.000	206.535	0.756
S8	-0.004	0.475	0.000	100.000	209.001	0.765

Temperature Calibration Report

Serial Number: 10025100
Tool Model: UW_PRT_016
Performed: Wed Feb 11 13:47:59 2015

Point #	Reading	Reference
1	13249.00 cps	68.00 degF
2	18454.00 cps	104.00 degF
3	29735.00 cps	176.00 degF
4	41457.00 cps	248.00 degF
5	52851.00 cps	320.00 degF
6	59128.00 cps	356.00 degF
7	cps	degF
8	cps	degF
9	cps	degF
10	cps	degF

Gamma Ray Calibration Report

Serial Number: 211727
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 Noble Energy Inc.
Well Moser H22-776

