

Radial Cement Bond Gamma Ray Casing Collar Log

Company	Whiting Oil & Gas Corporation	Company	Whiting Oil & Gas Corporation
Well	Horsetail 07E-0601	Well	Horsetail 07E-0601
Field	Wildcat	Field	Wildcat
County	Weld	County	Weld
State	Colorado	State	Colorado
Location:	API # : 05-123-41651	Other Services	MIT GR
Permanent Datum	SEC 7 TWP 10N RGE 57W	Elevation	
Log Measured From	Ground Level	Elevation	4925'
Drilling Measured From	Kelly Bushing	Elevation	21 FT
	Kelly Bushing	Elevation	K.B. 4946' D.F. 4945' G.L. 4925'

Date	14-Jan-2016
Run Number	Two
Depth Driller	13516 FT
Depth Logger	5929 FT
Bottom Logged Interval	5924 FT
Top Log Interval	Surface
Open Hole Size	7.875"
Type Fluid	Water
Density / Viscosity	8.34 lbm/gal
Max. Recorded Temp.	207°F
Estimated Cement Top	64 FT
Time Well Ready	ROA
Time Logger on Bottom	11:00
Equipment Number	HD-0361
Location	Fort Lupton, CO
Recorded By	Zach Fisher
Witnessed By	Kelly Lewis

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							
Intermediate #1	5 1/2	20	---	21 FT	13516 FT		
Intermediate #2							
Liner							

<<< Fold Here >>>

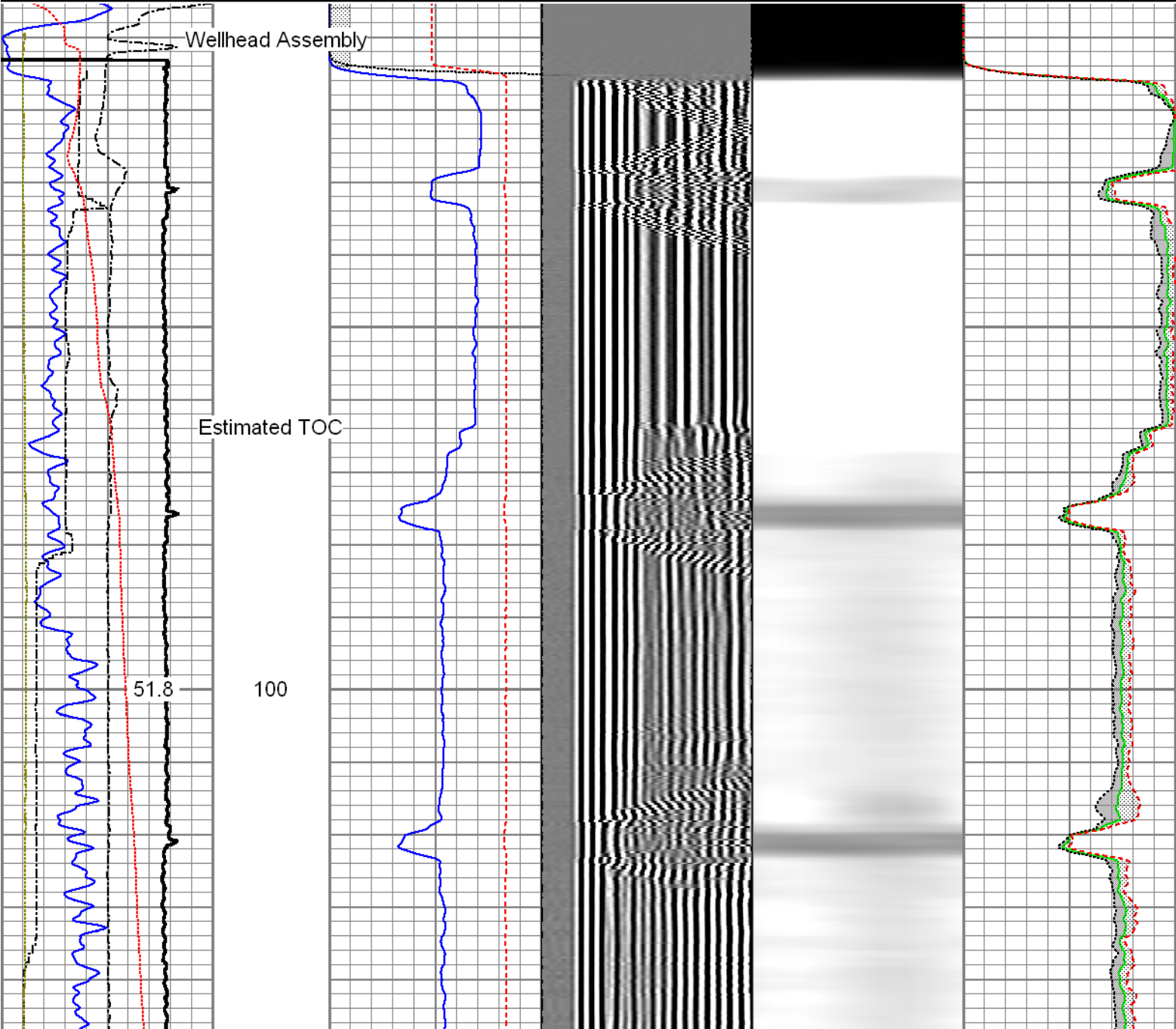
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, 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.

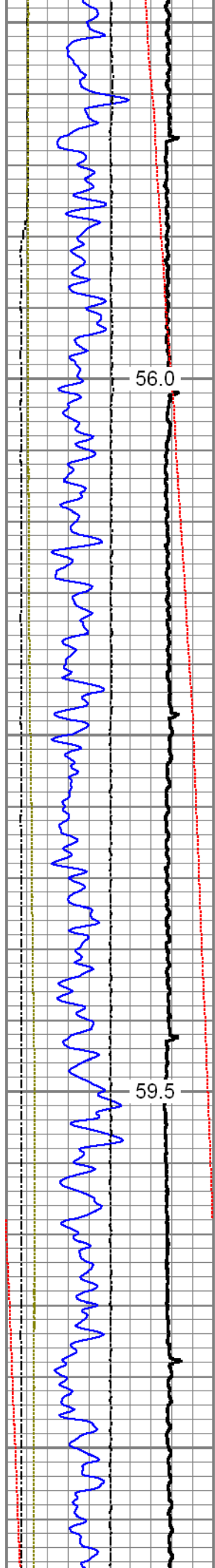
Comments

Log ran as per customer request
 Depth referenced to Casing Tally reported Marker Joint at 5190.4 FT
 Recorded Marker Joint at 5190.4 - 5213.1 FT
 Gauge Ring/Junk Basket ran to 5930 FT with no debris
 Log ran from as deep as possible to surface
 Recorded with 1000 PSI Surface Induced Pressure
 Logging Tools were clean and free of any debris upon completion of operations
 Thank you for choosing FMC Technologies Surface Integrated Service.

Database File: processed_01-14-16_whiting_horsetail 07e-0601_rbl.db
Dataset Pathname: Main.1
Presentation Format: rbt4_mit
Dataset Creation: Thu Jan 14 14:15:26 2016 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
Casing Collar Locator	3' Amplitude x 5			Mimimum Amplitude
Line Speed	0 (mV) 20			0 100
-100 (ft/min) 100	3' Travel Time			Maximum Amplitude
Differential Temperature	650 (usec) 150			0 100
-2 (degF) 2				
Temperature				
0 (degF) 20				
-10 Deviation (°) 90				



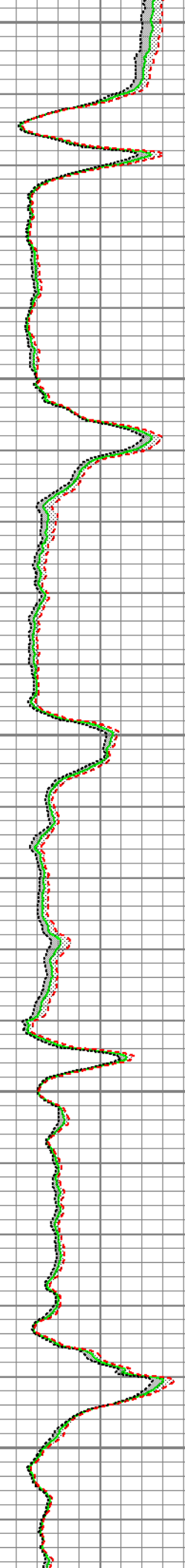
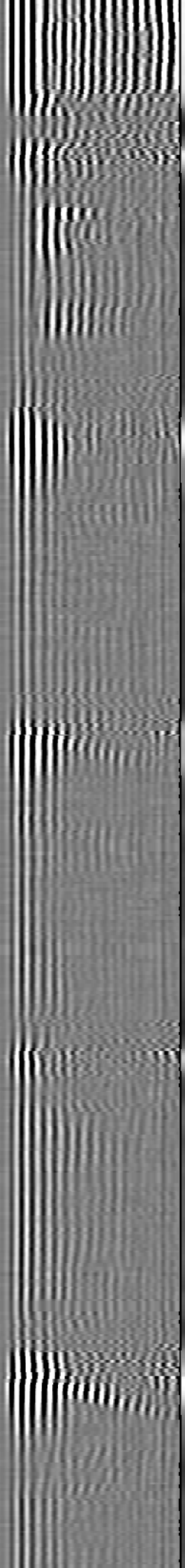
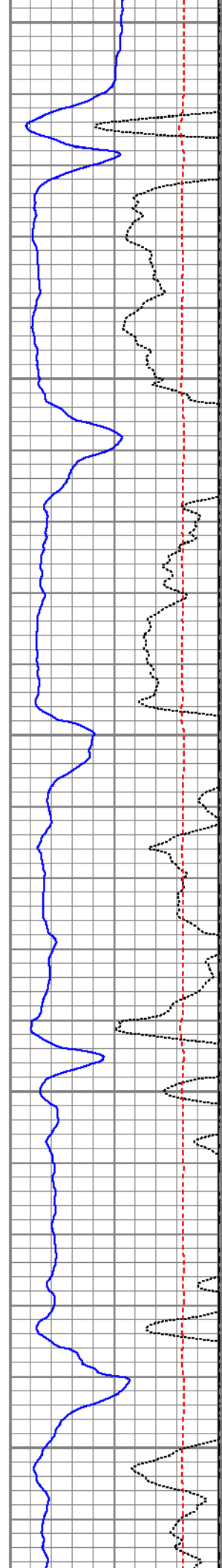


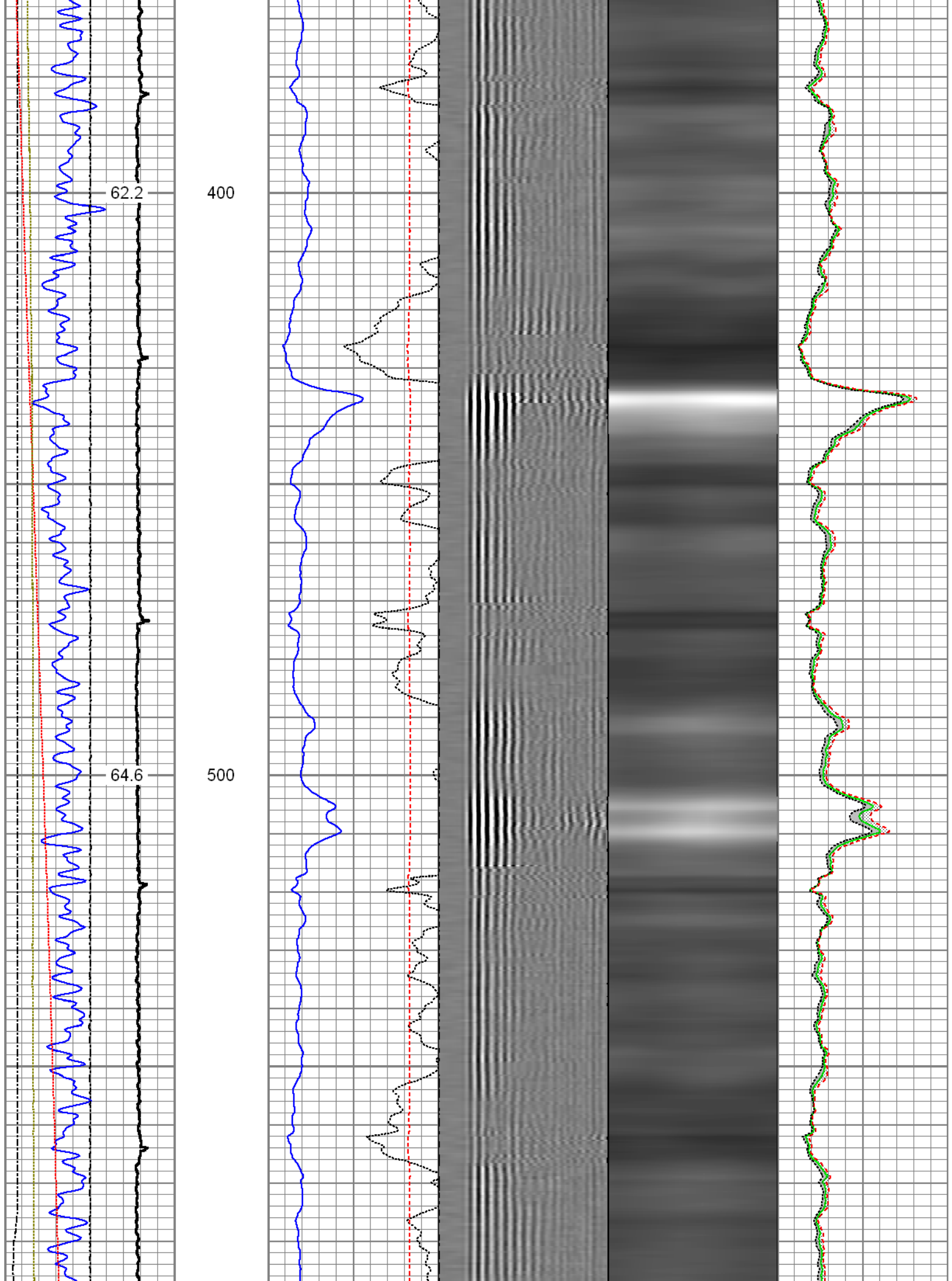
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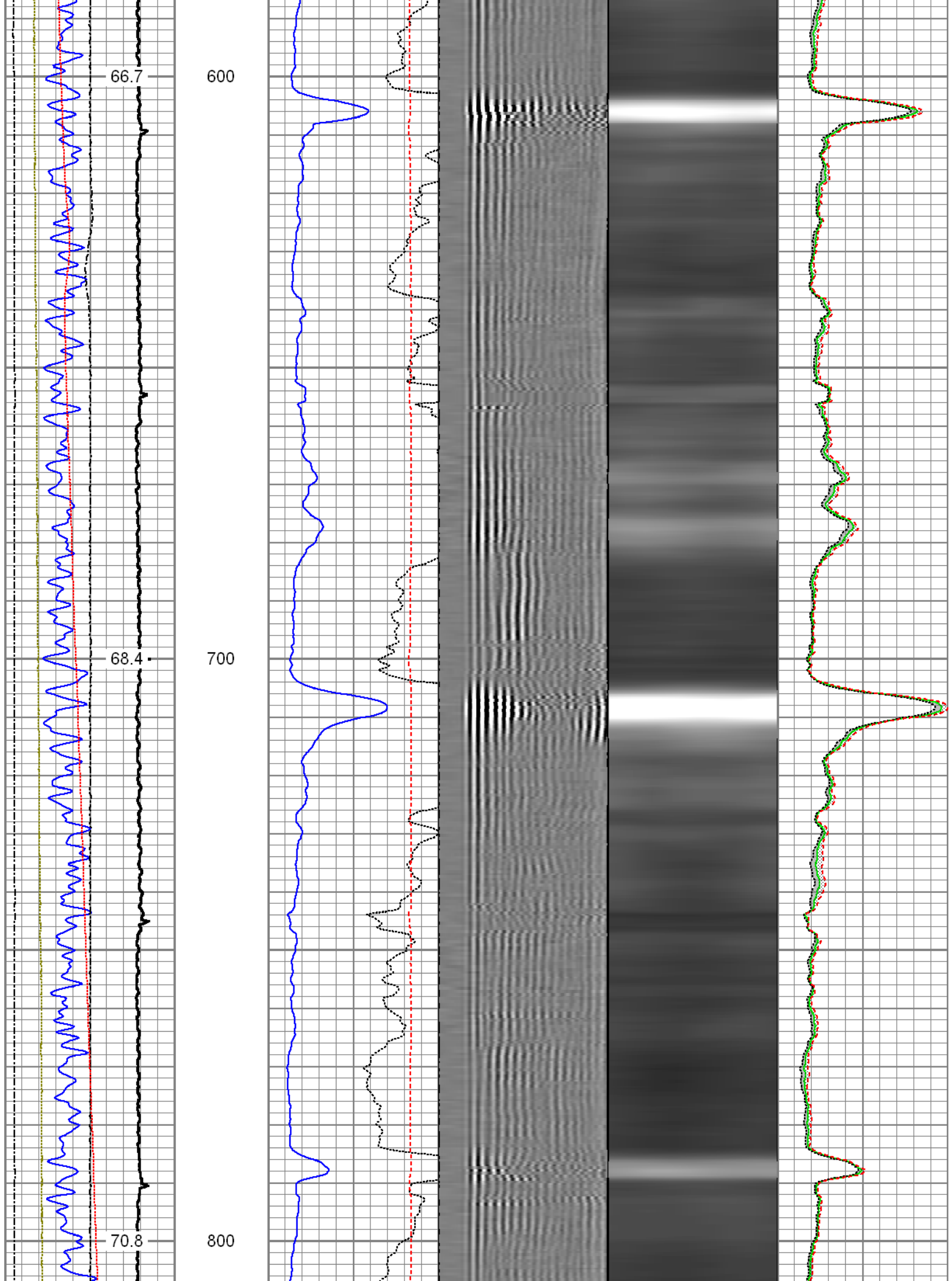
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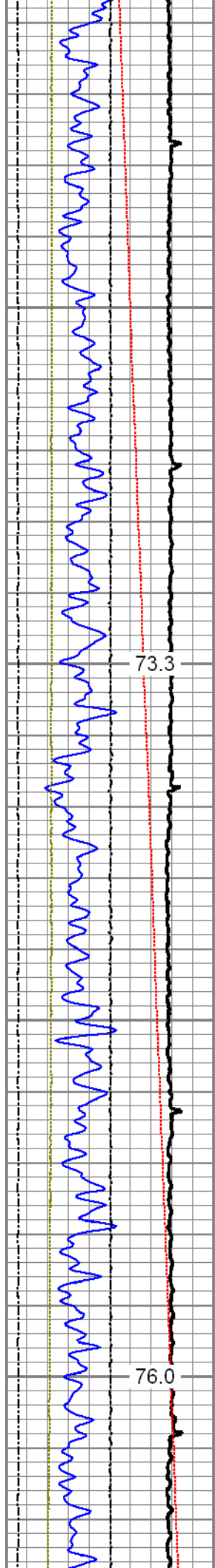
200

300



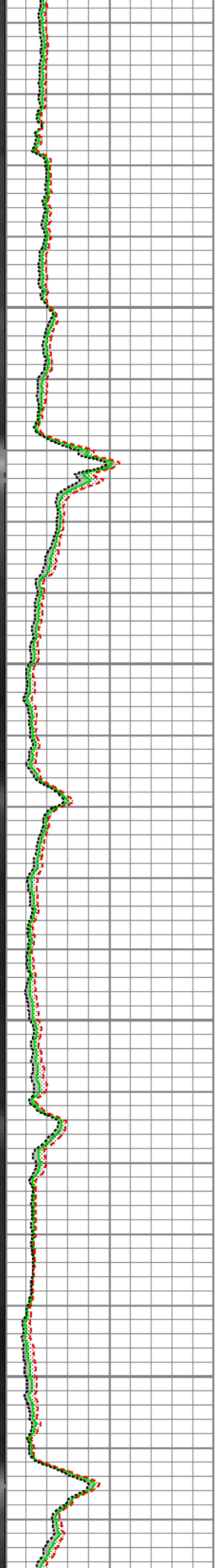
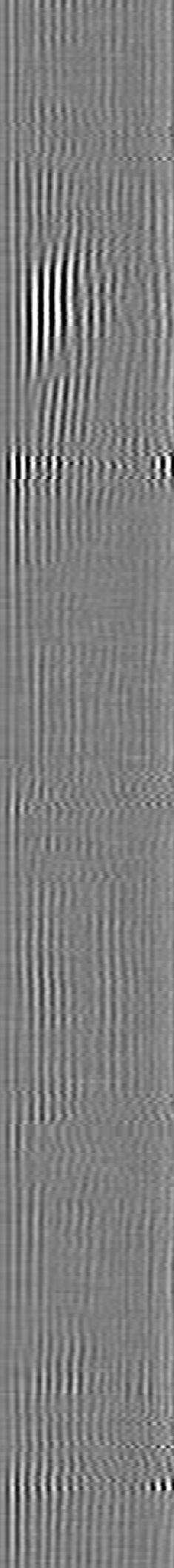
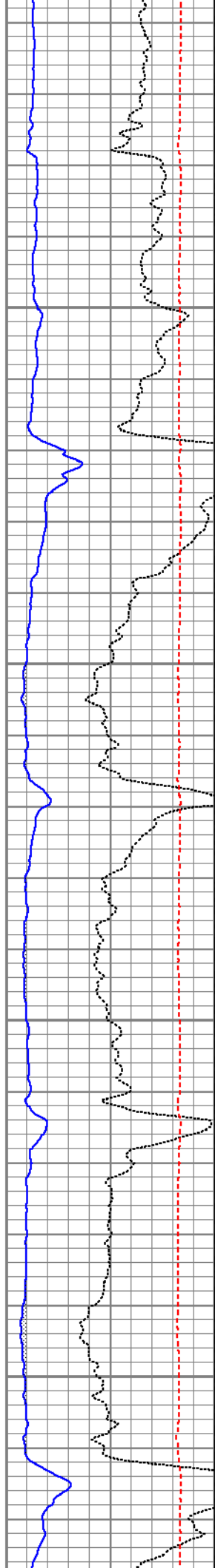


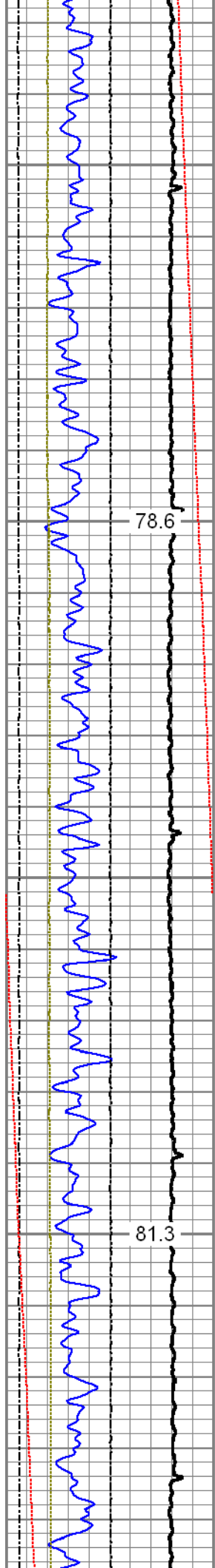




900

1000



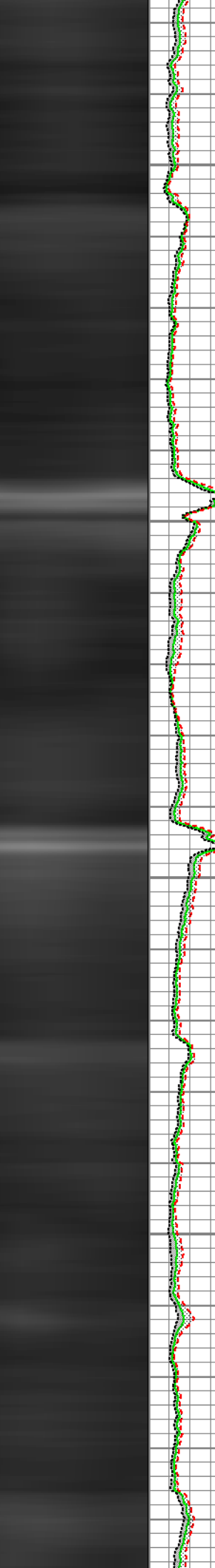
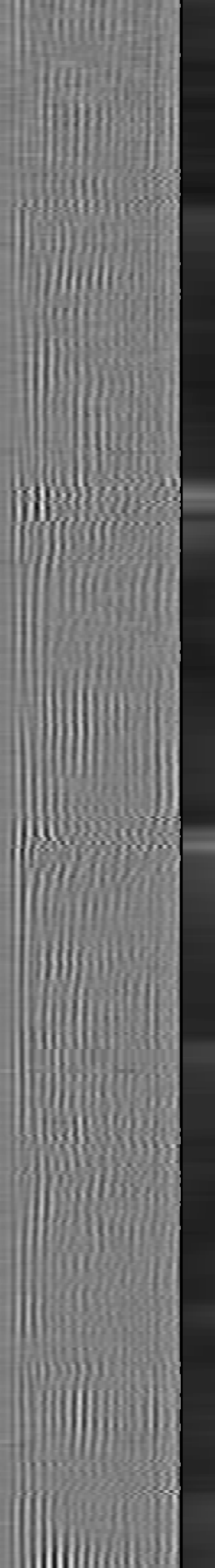
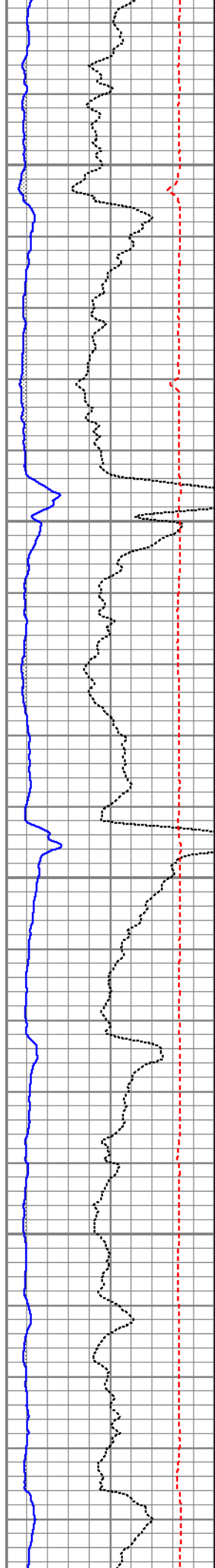


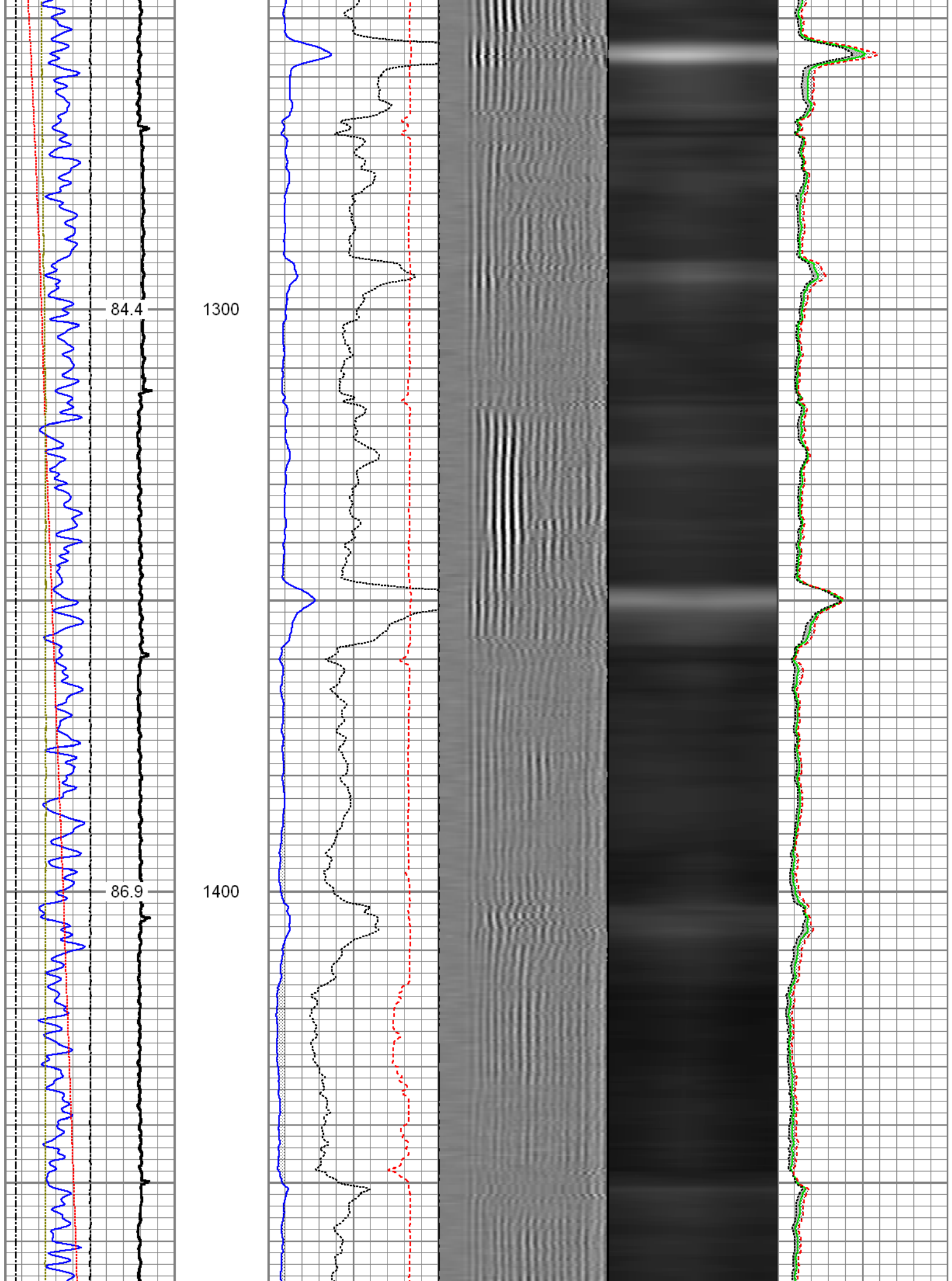
78.6

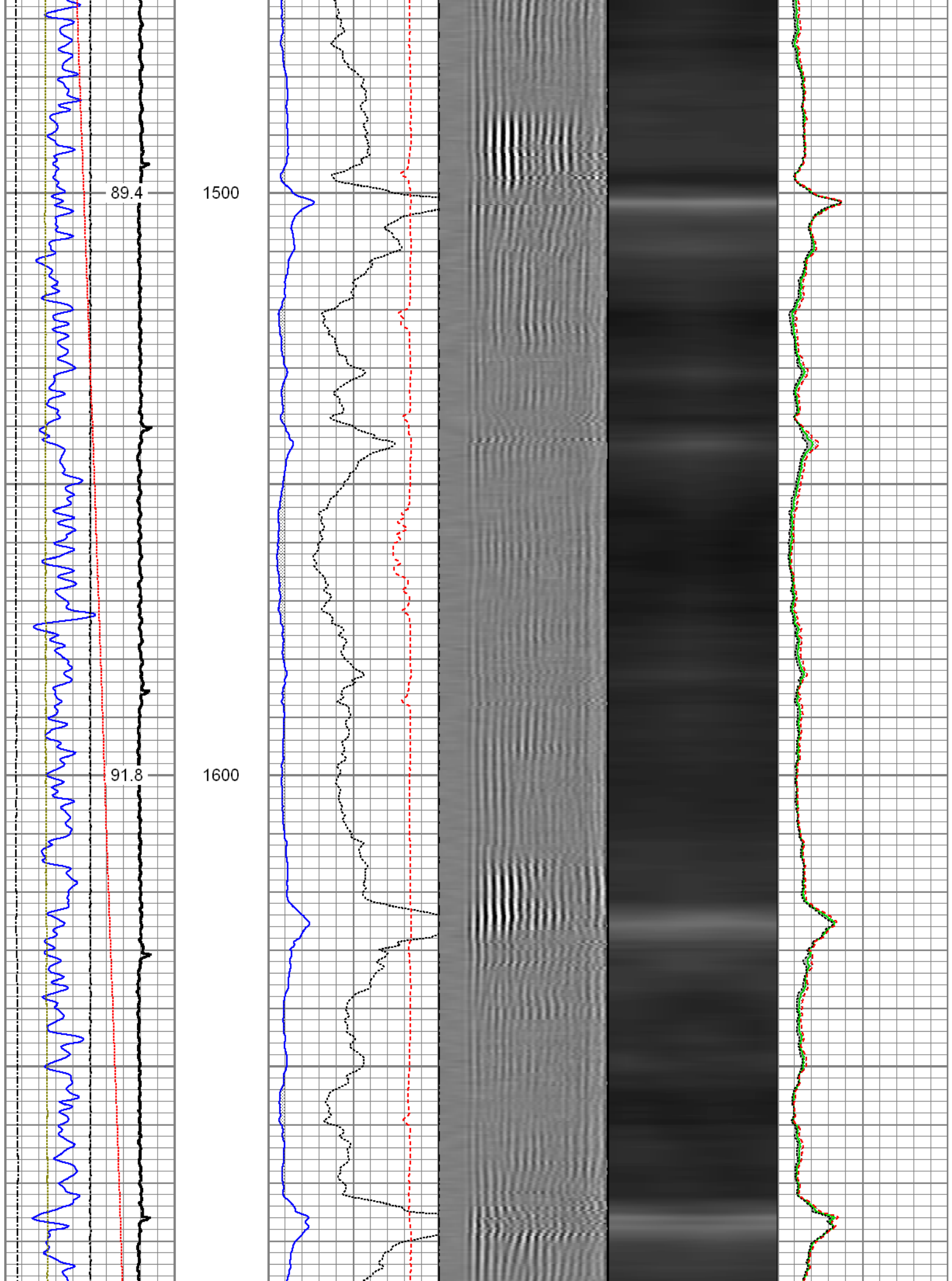
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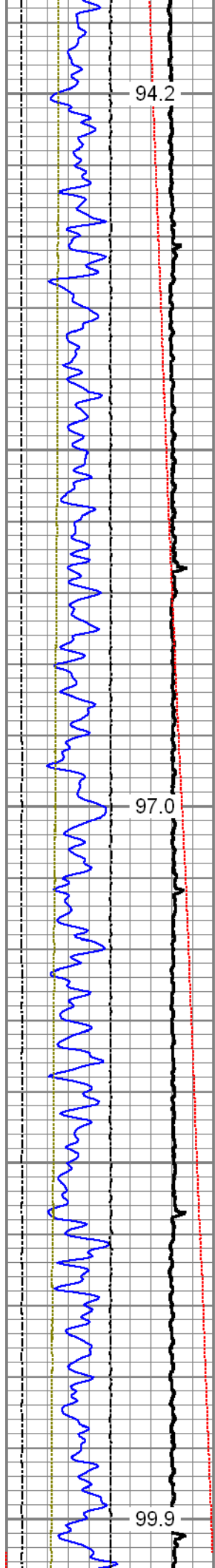
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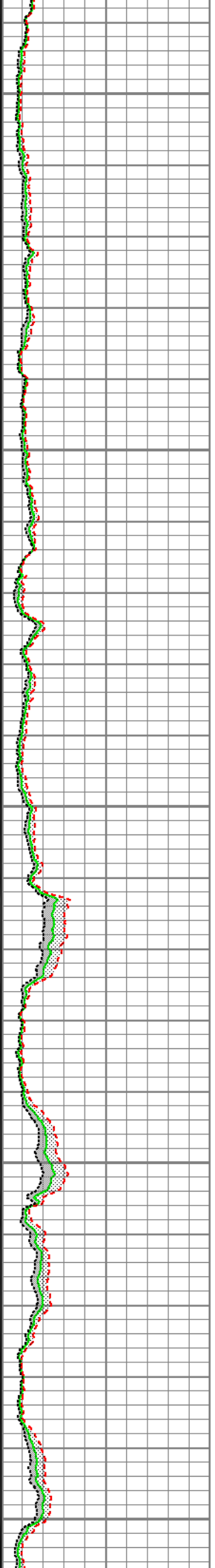
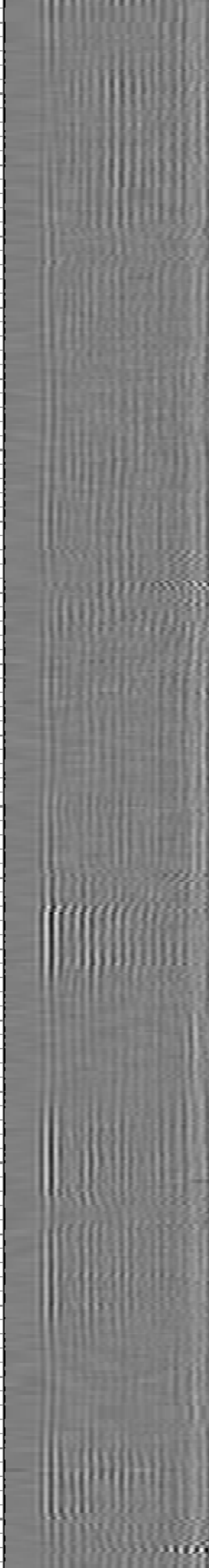
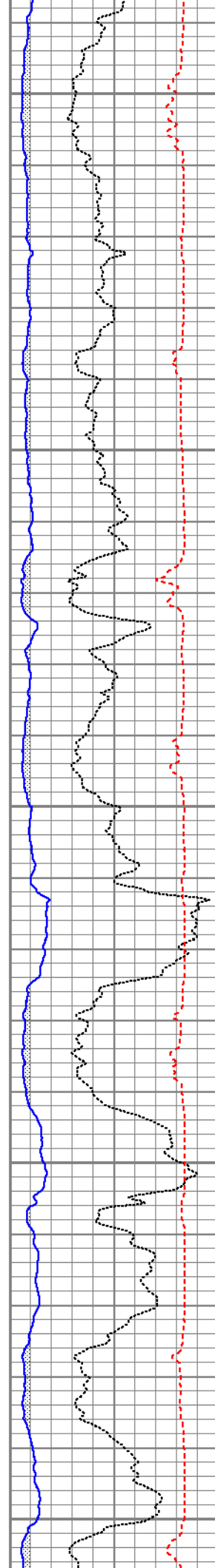


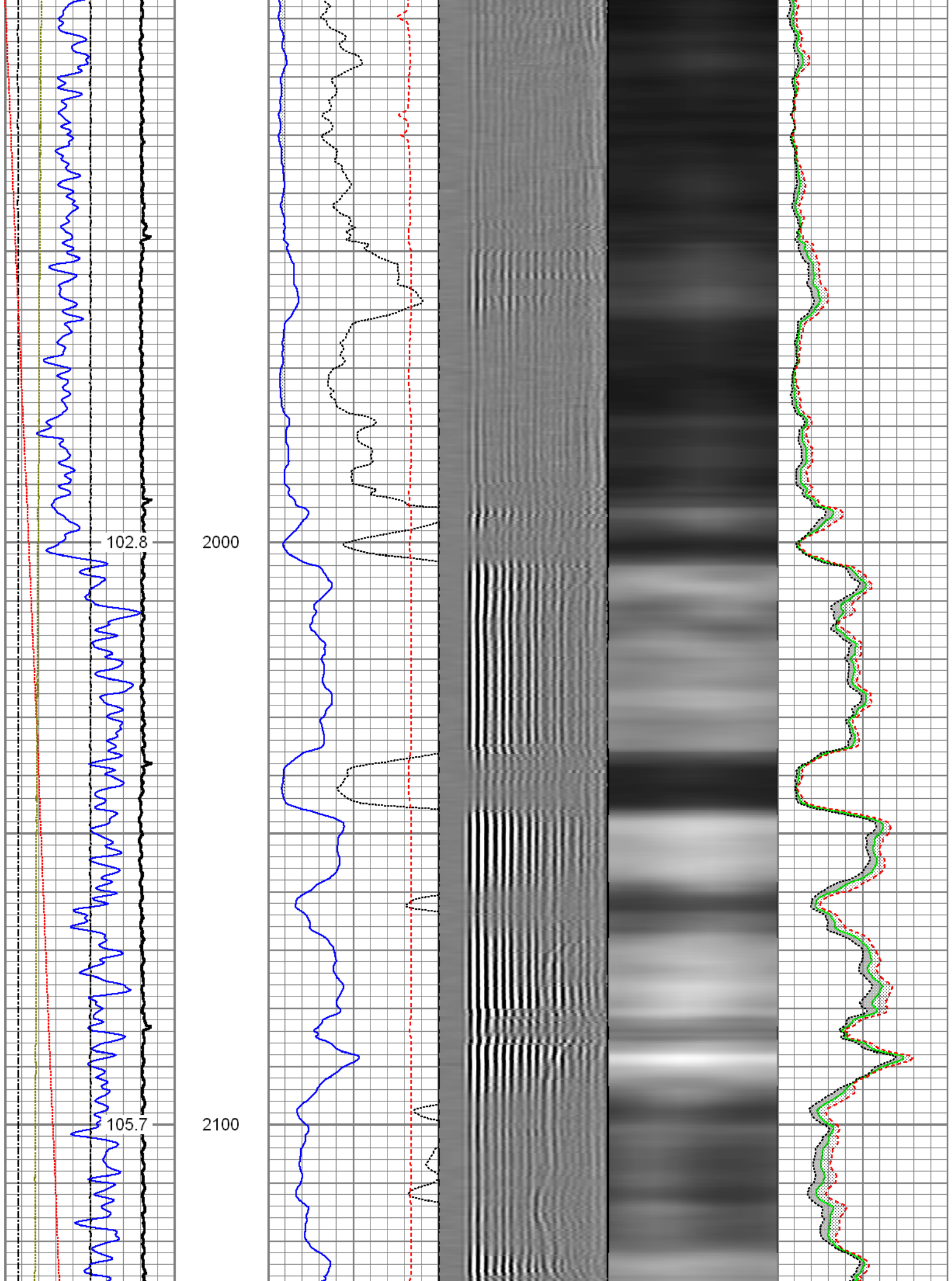


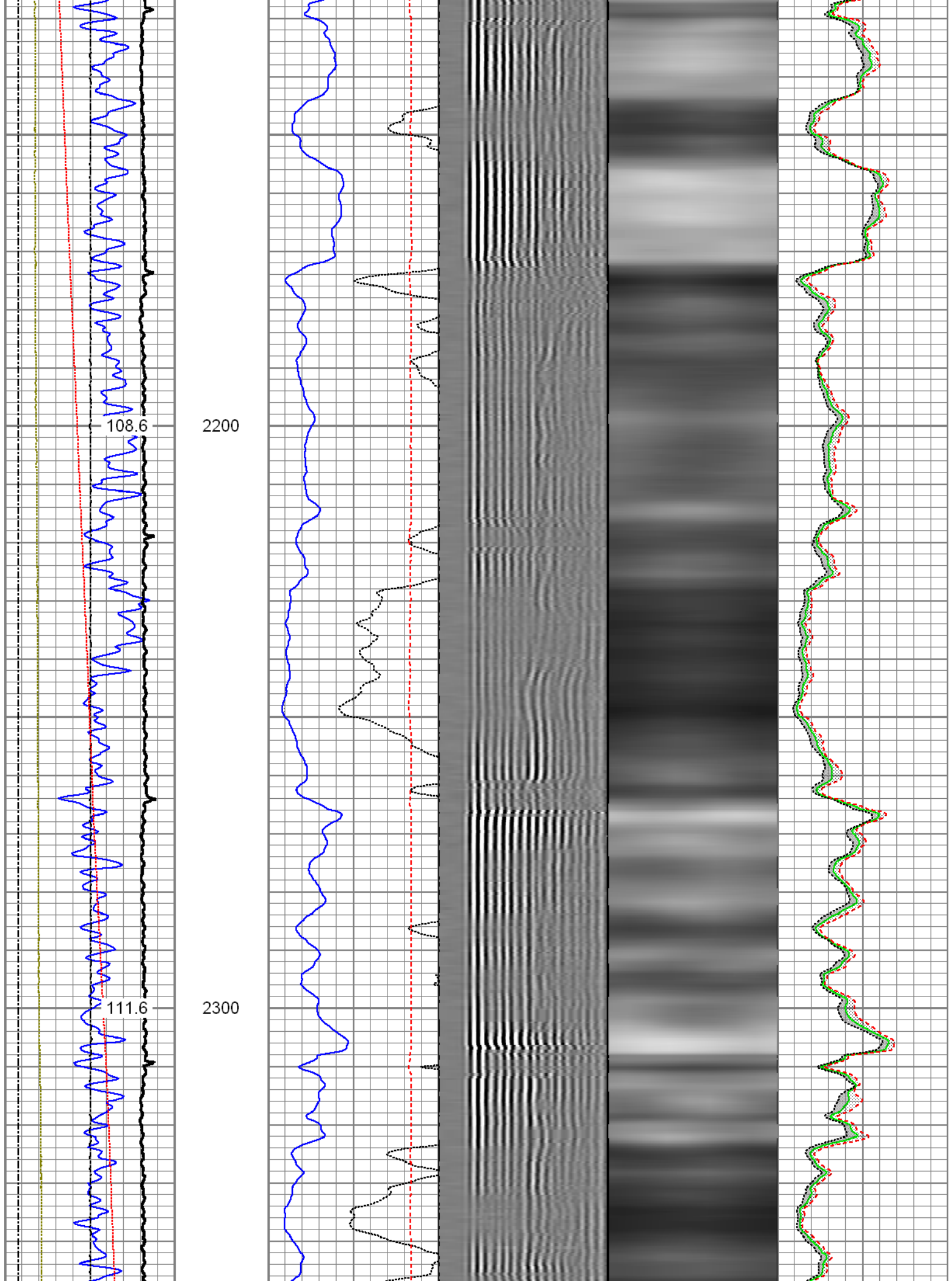
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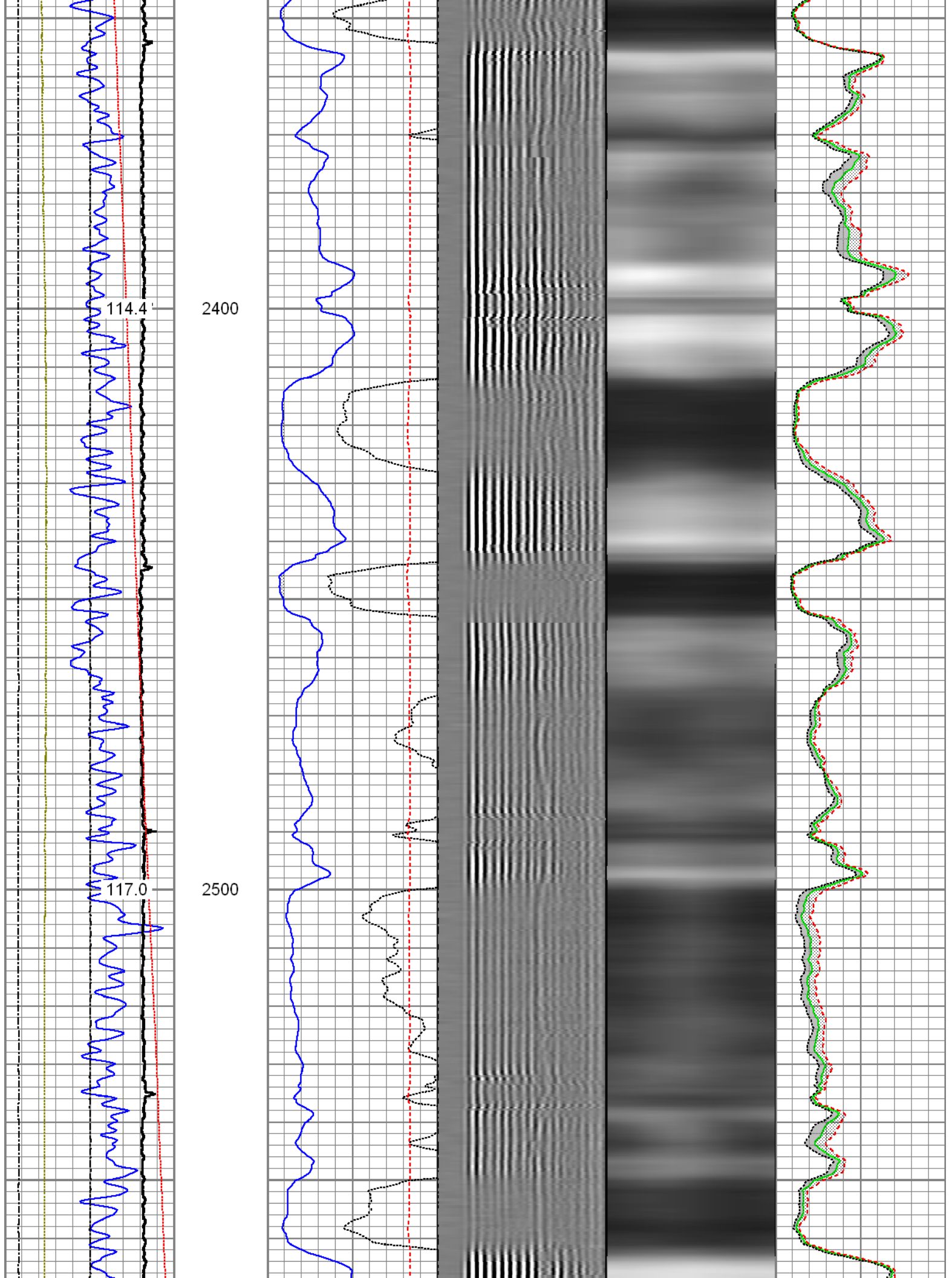
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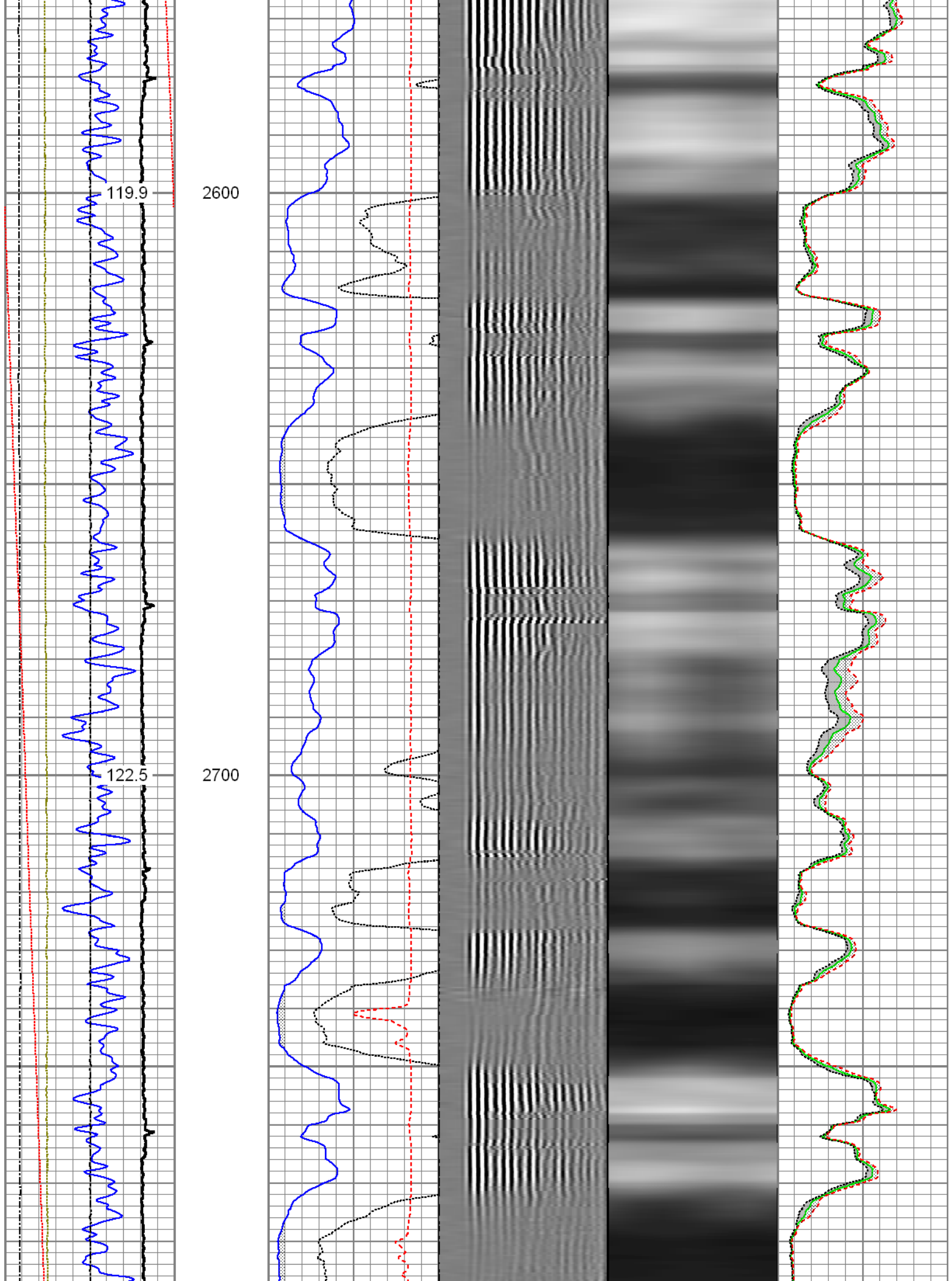
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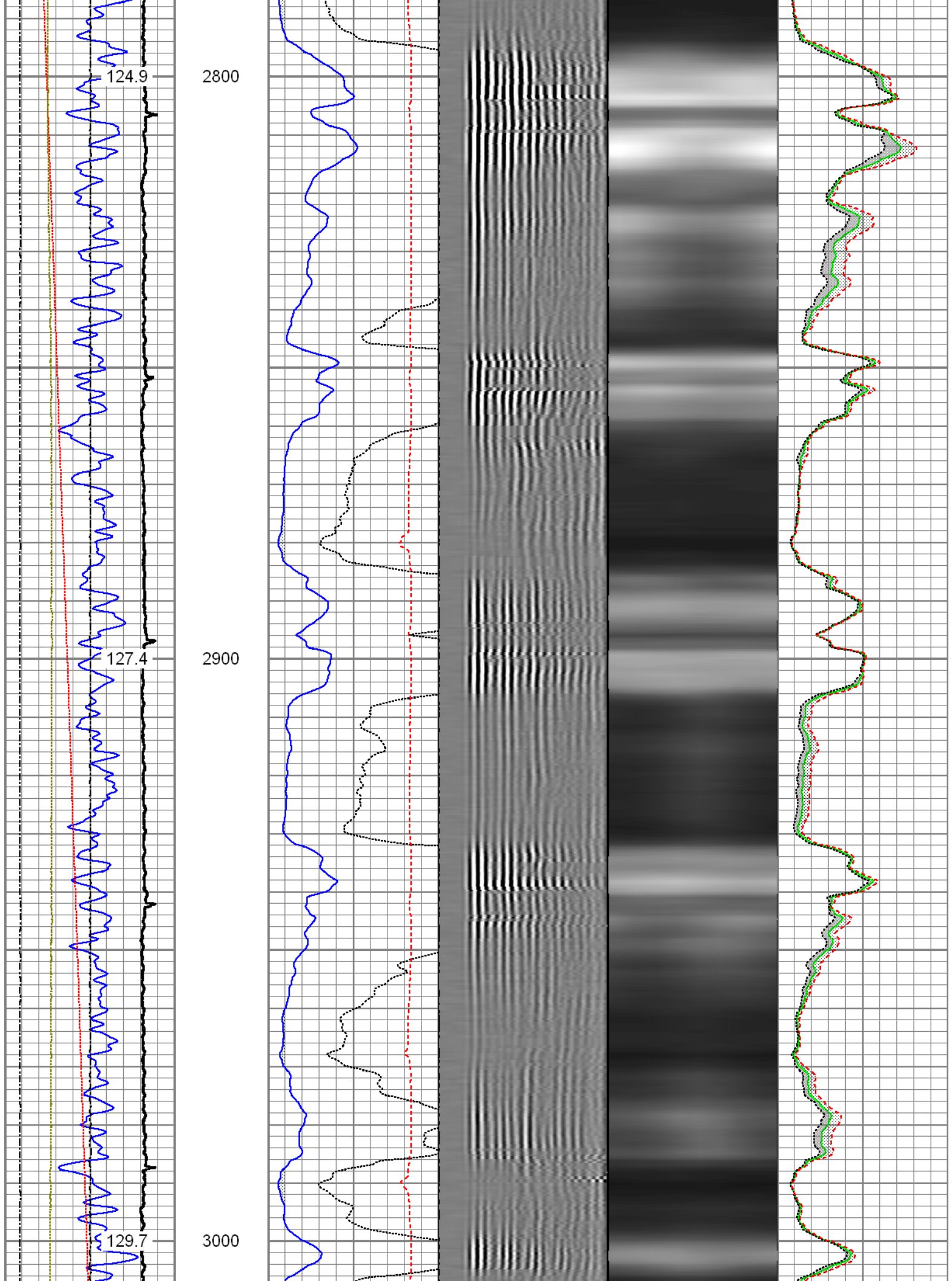


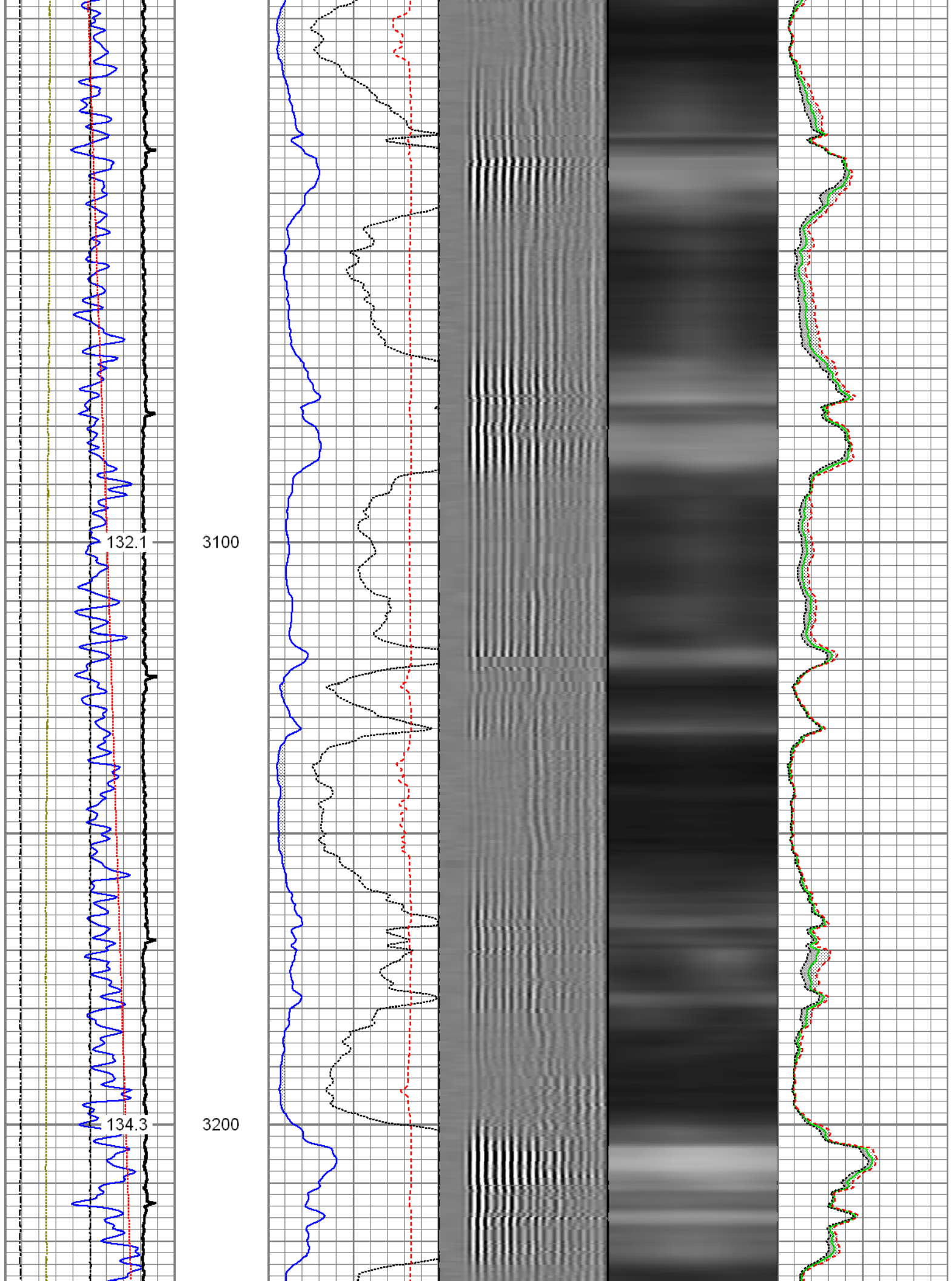


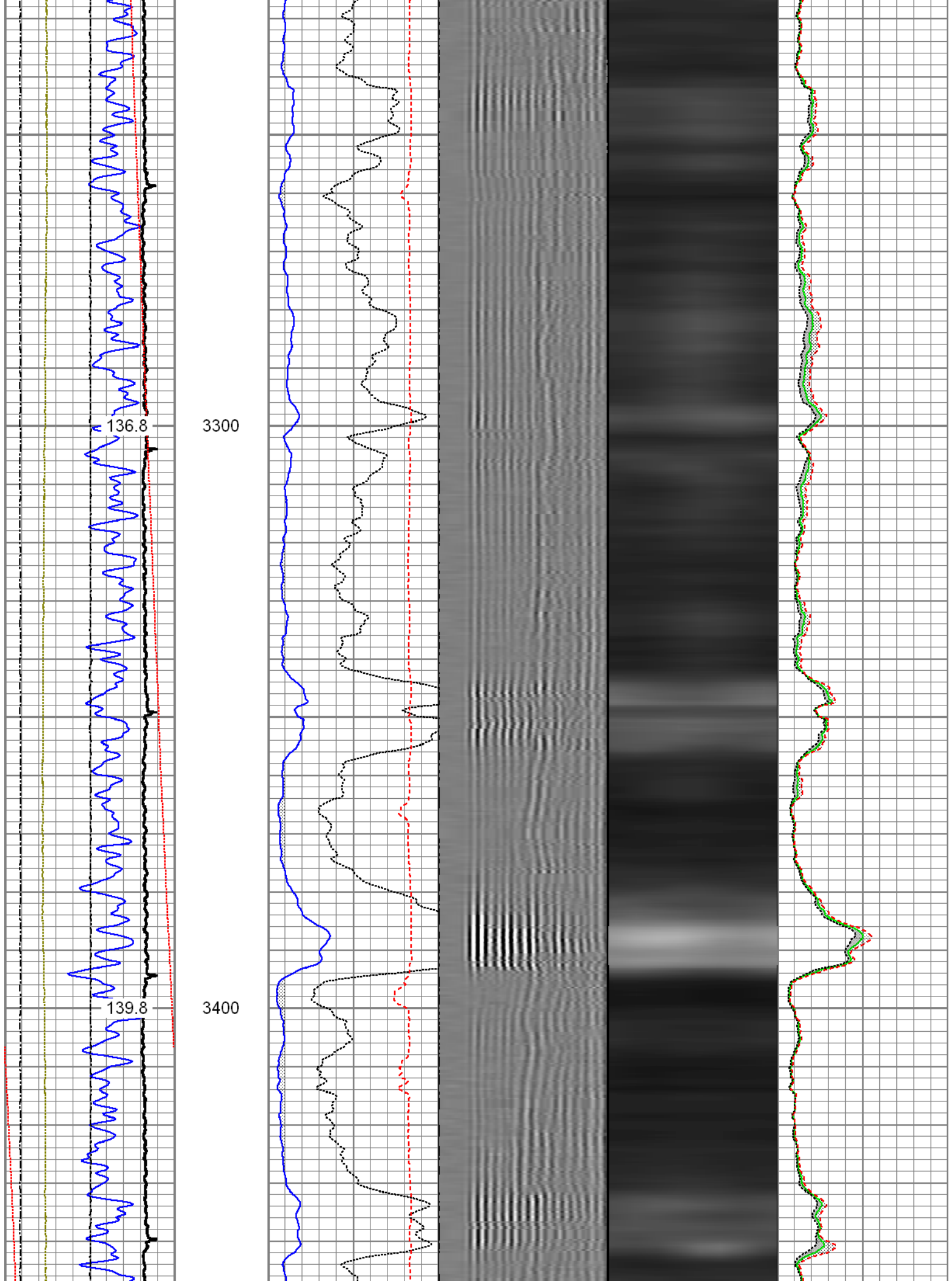


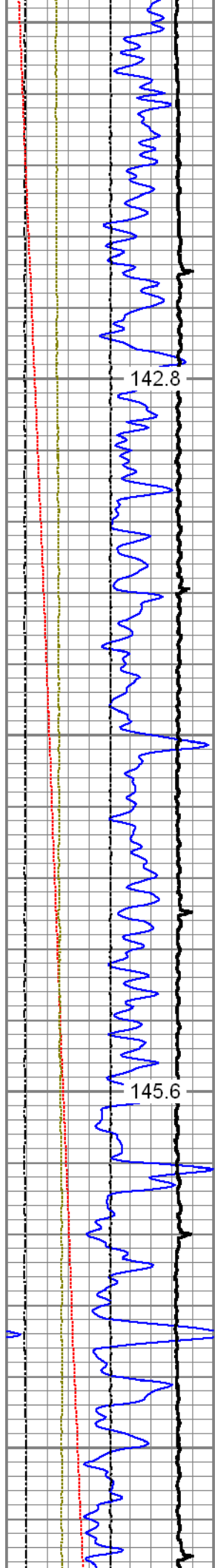










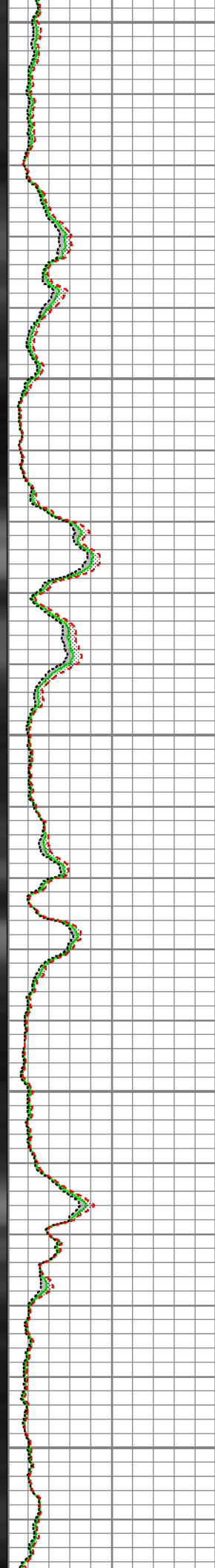
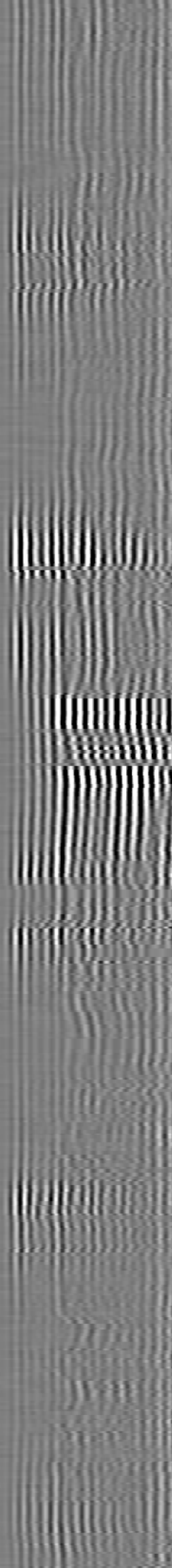
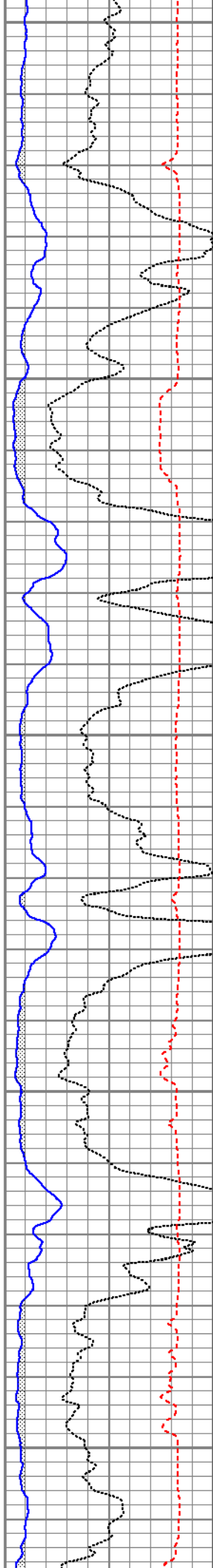


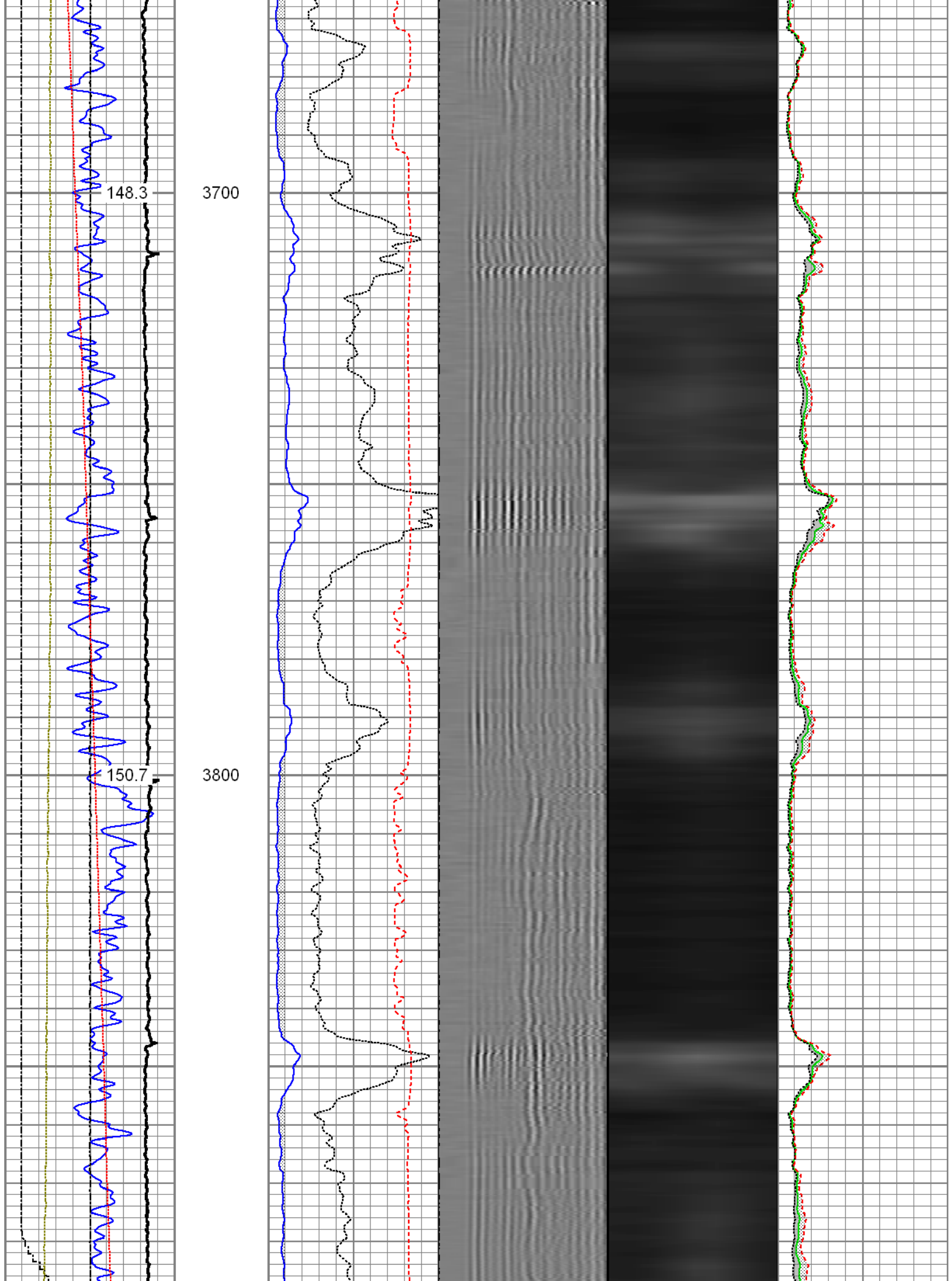
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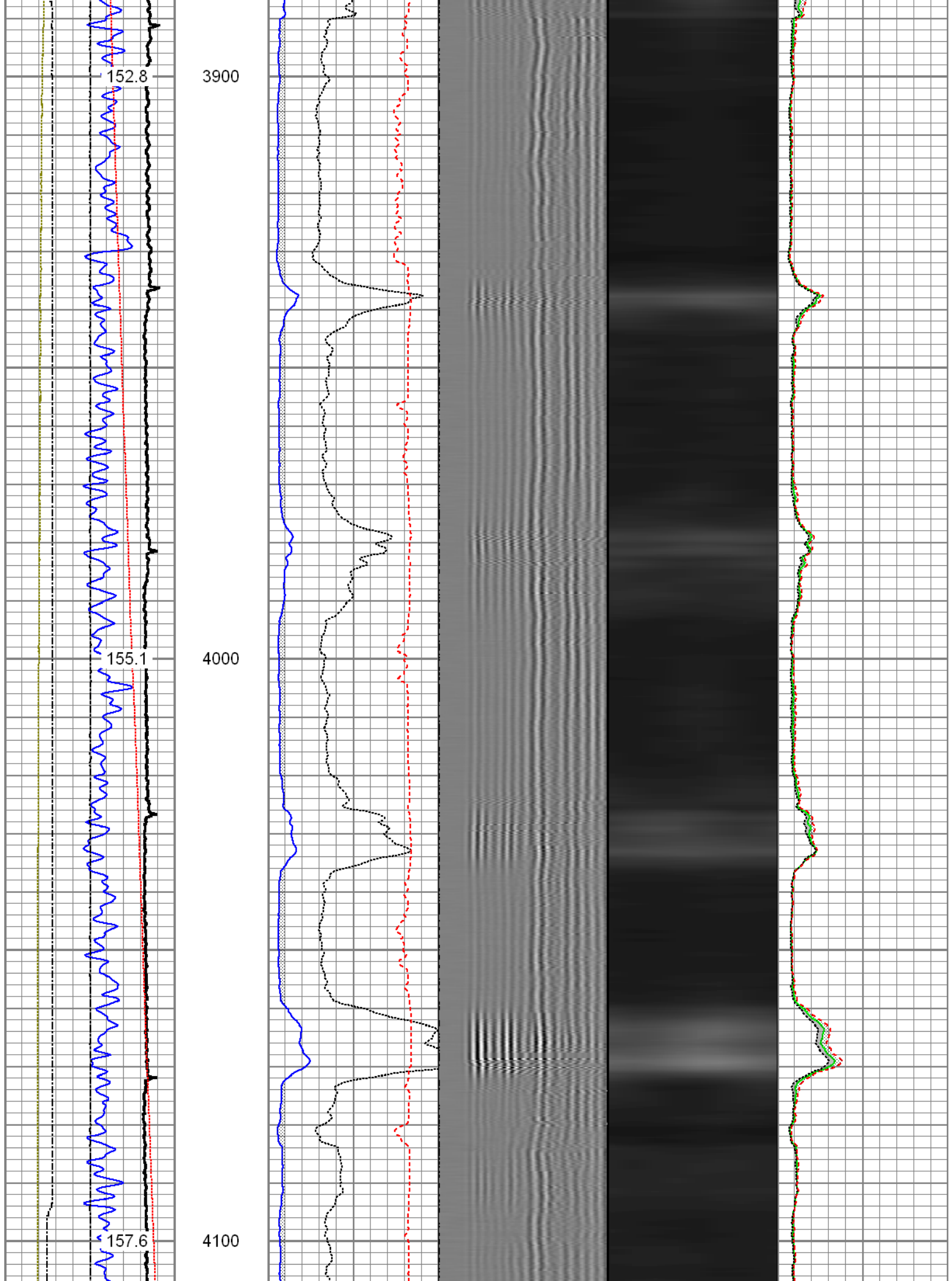
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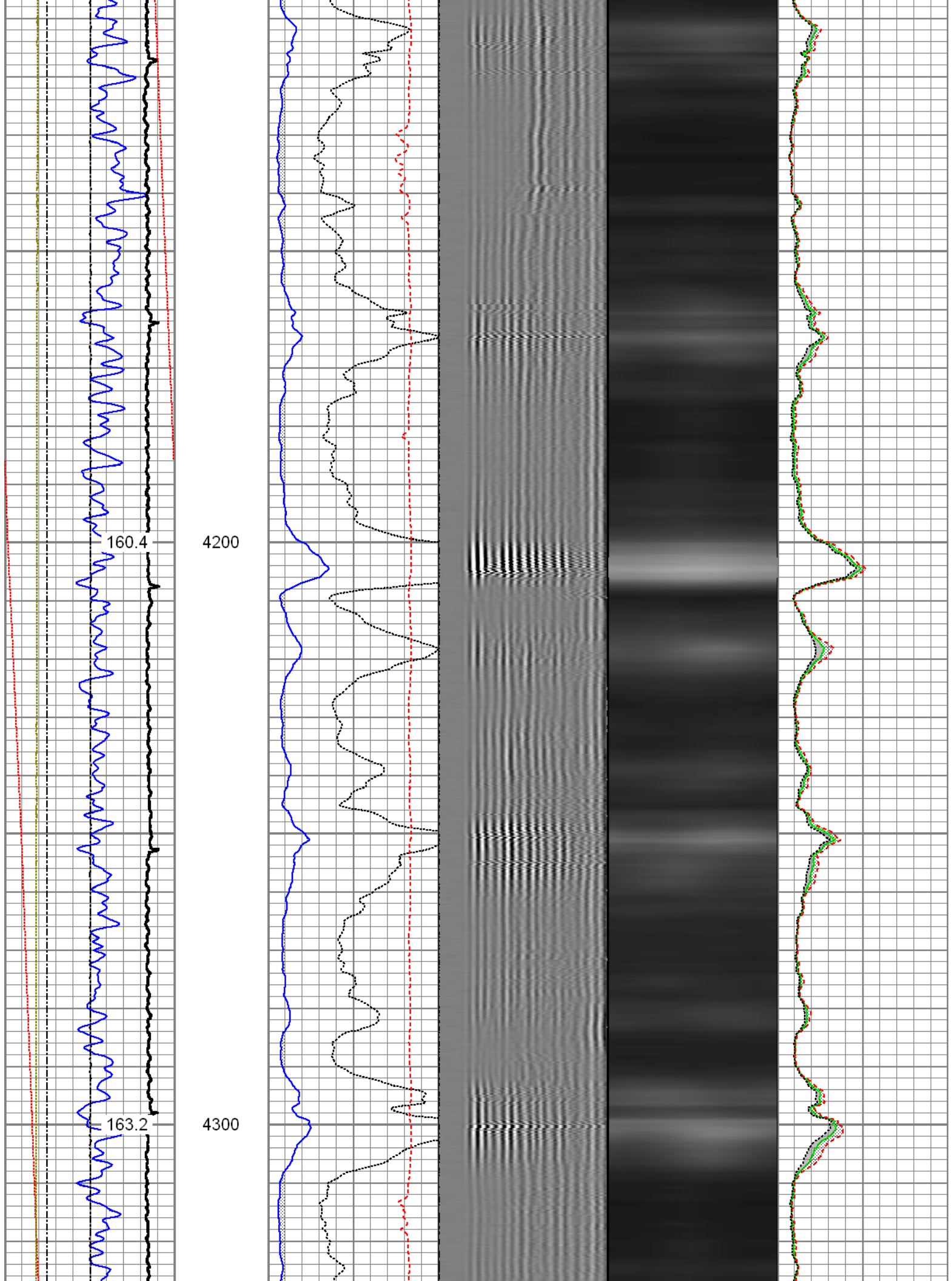
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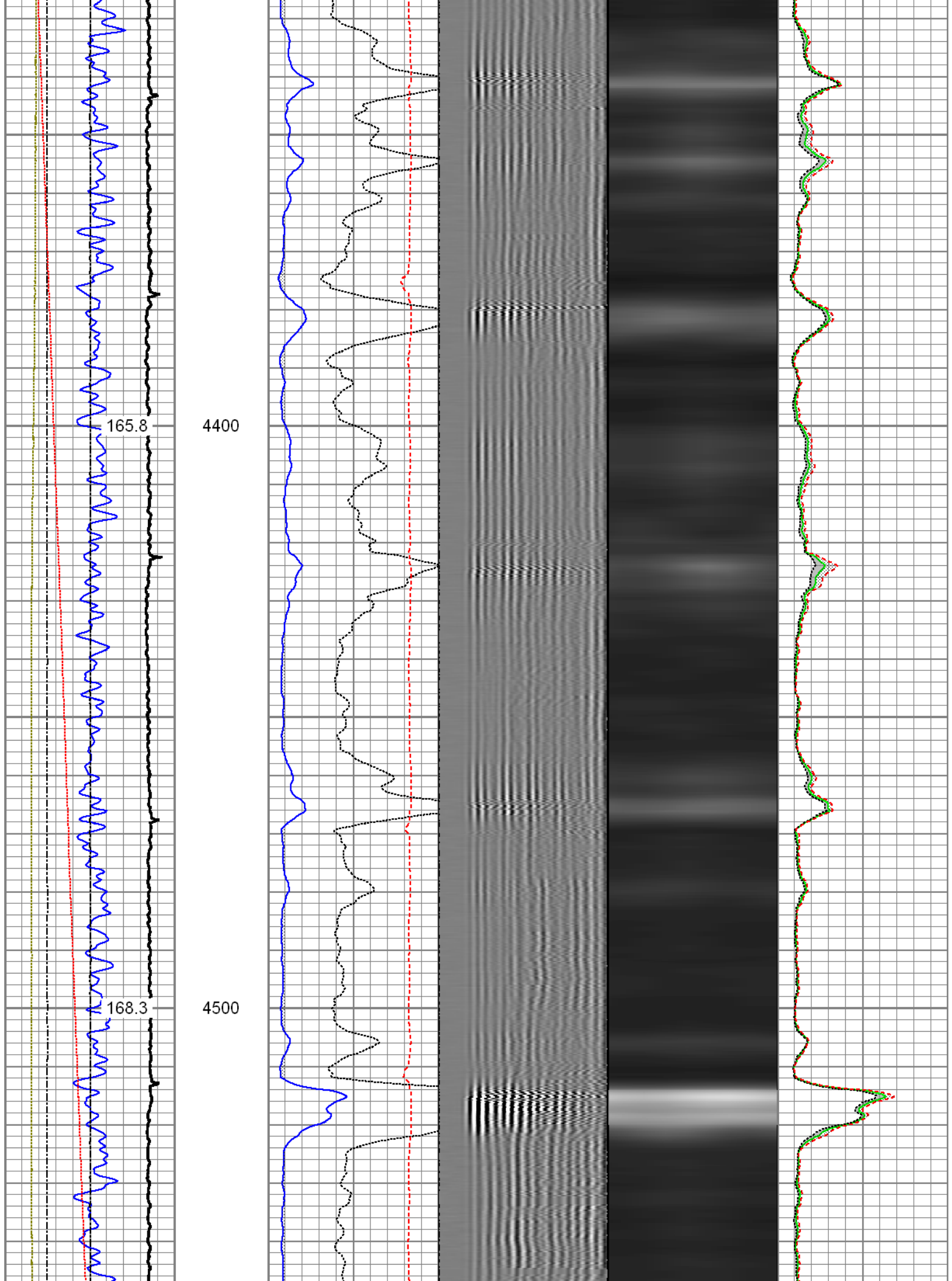
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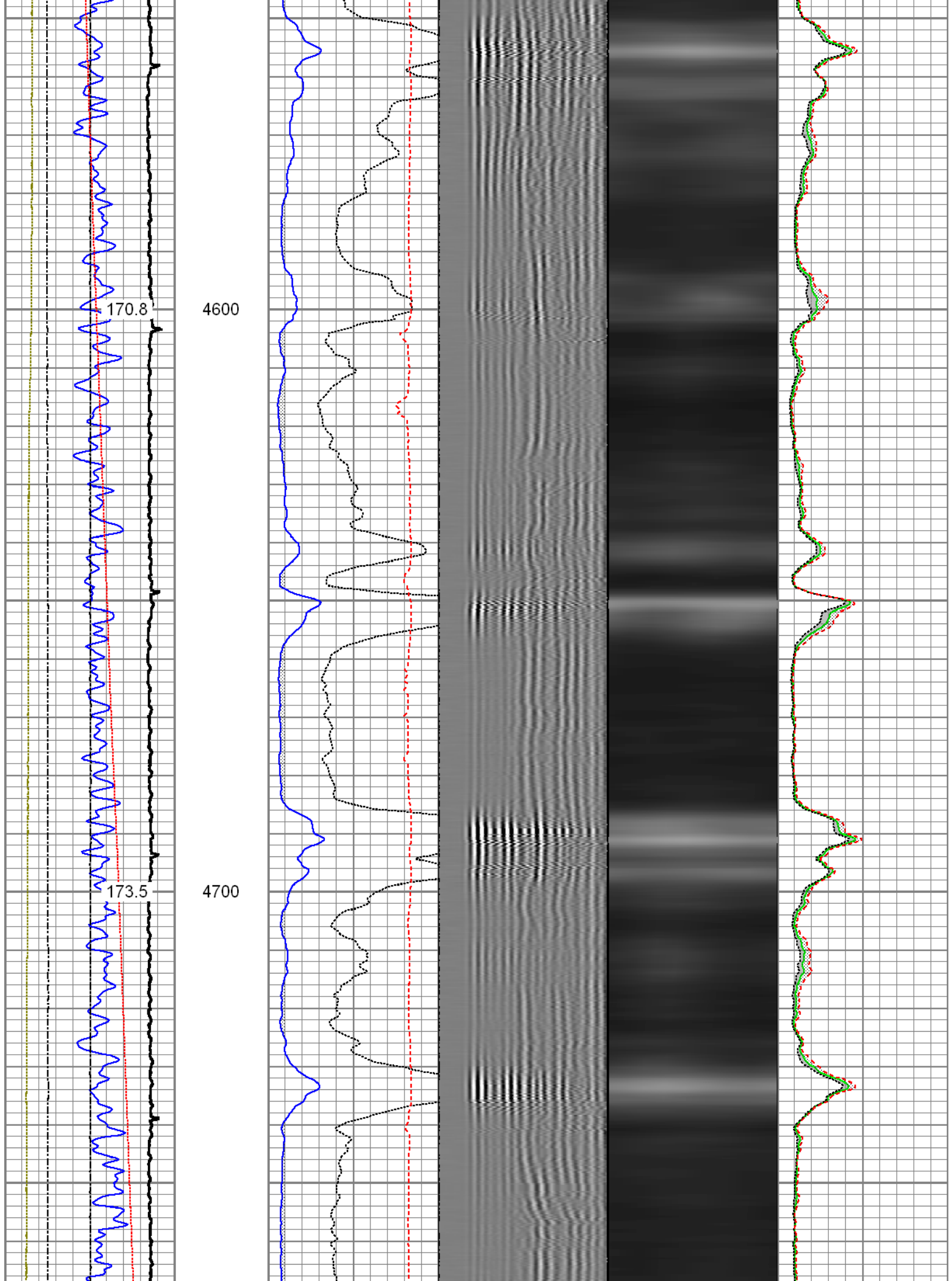


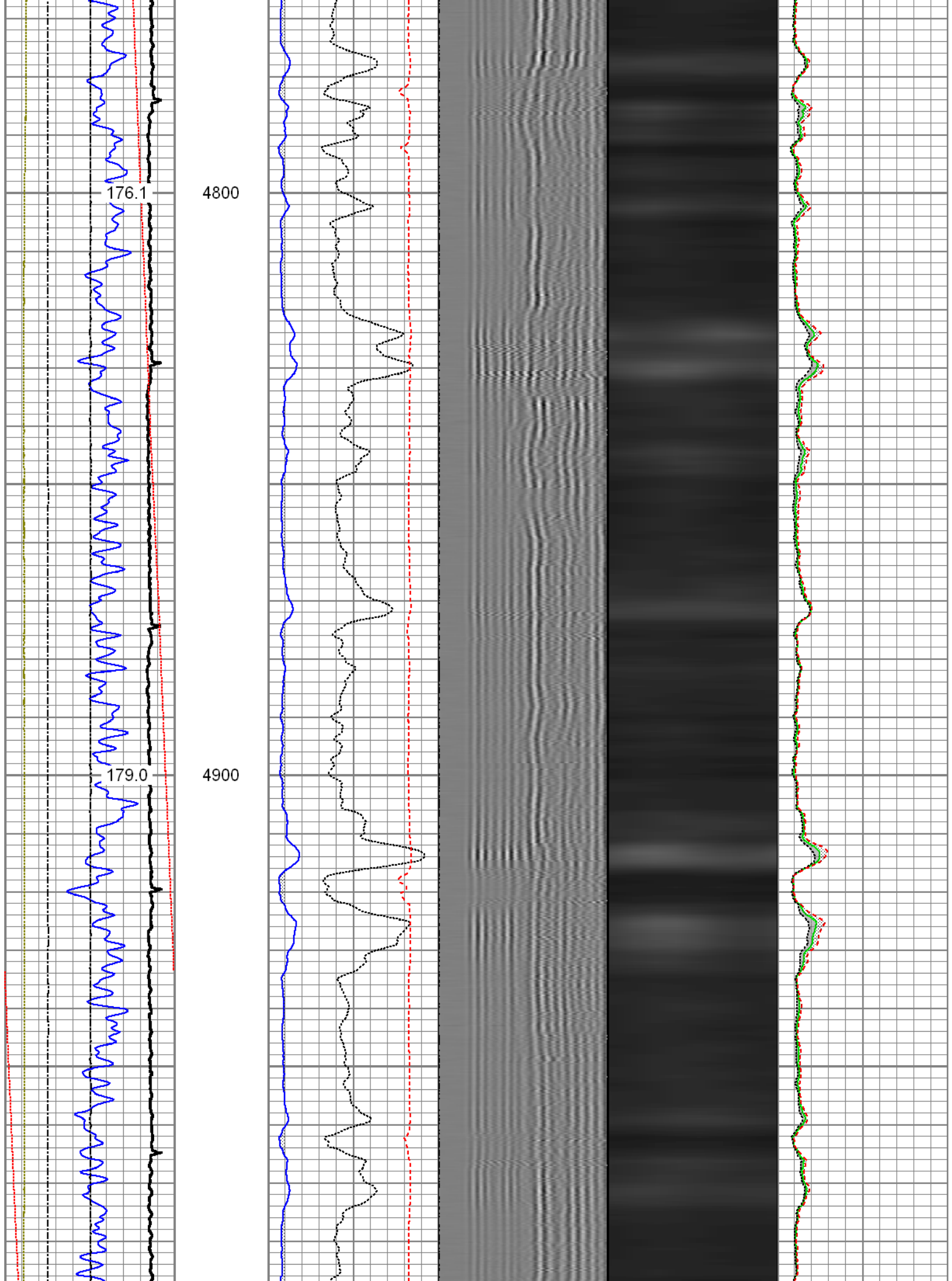


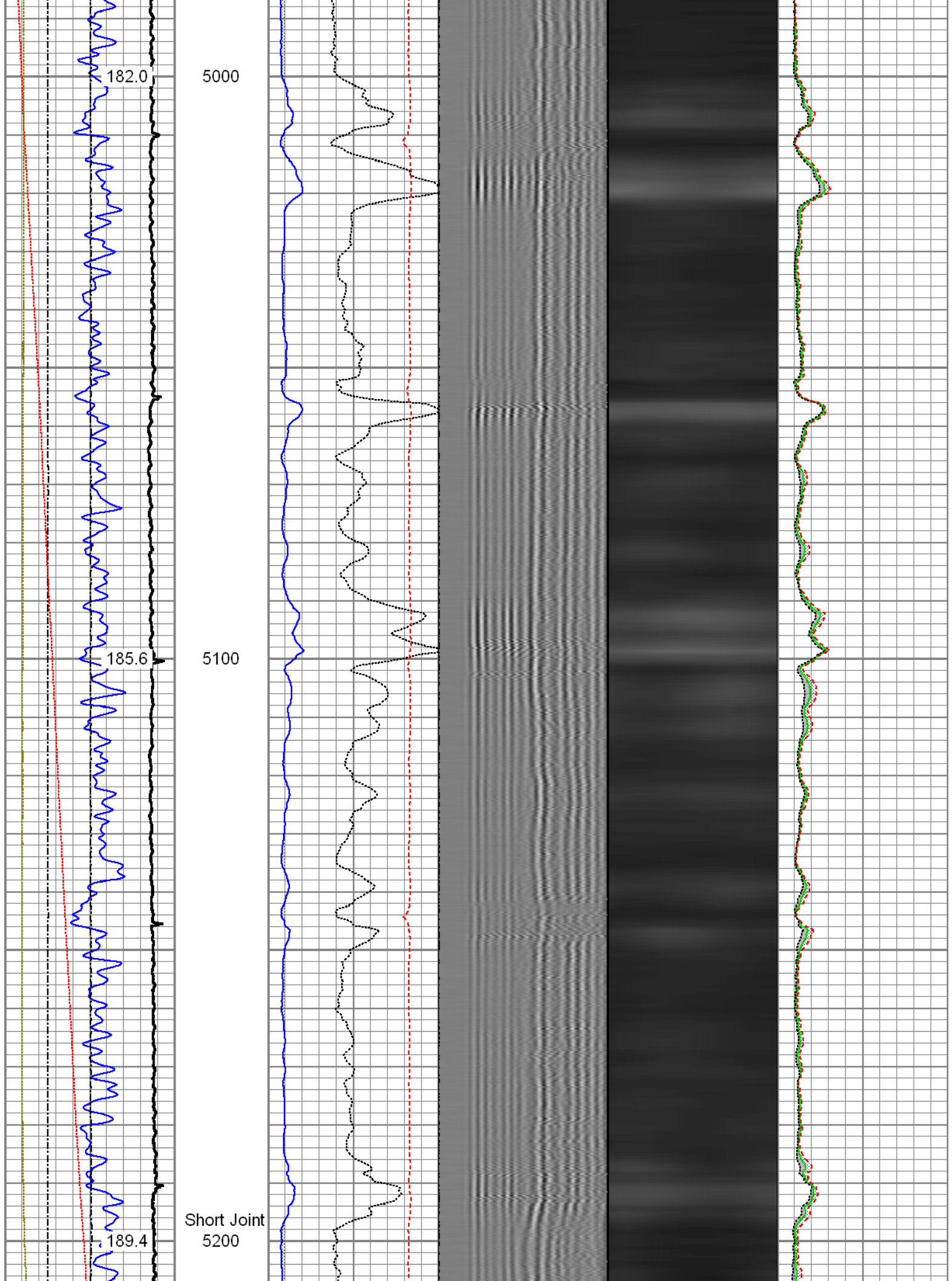


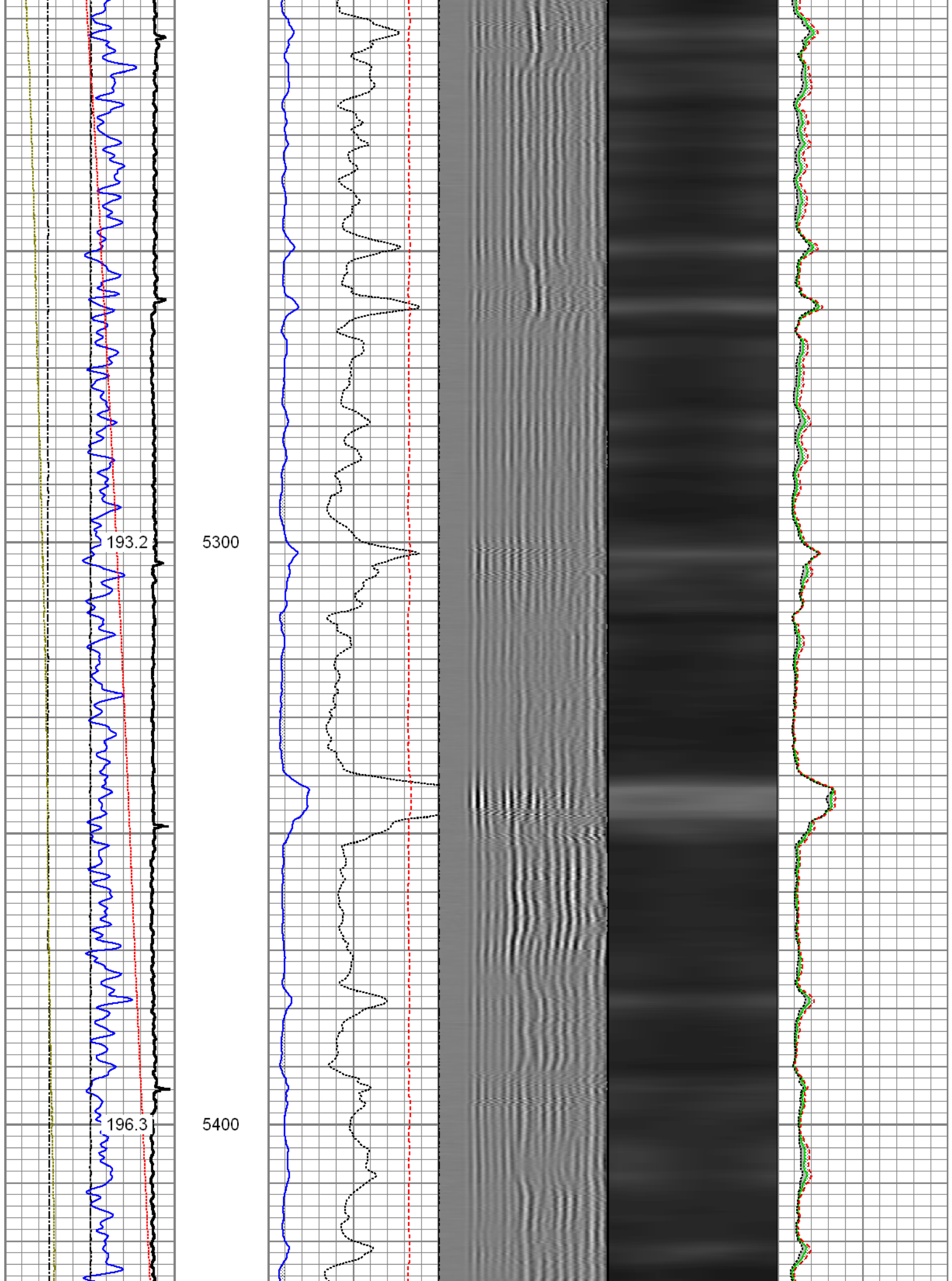


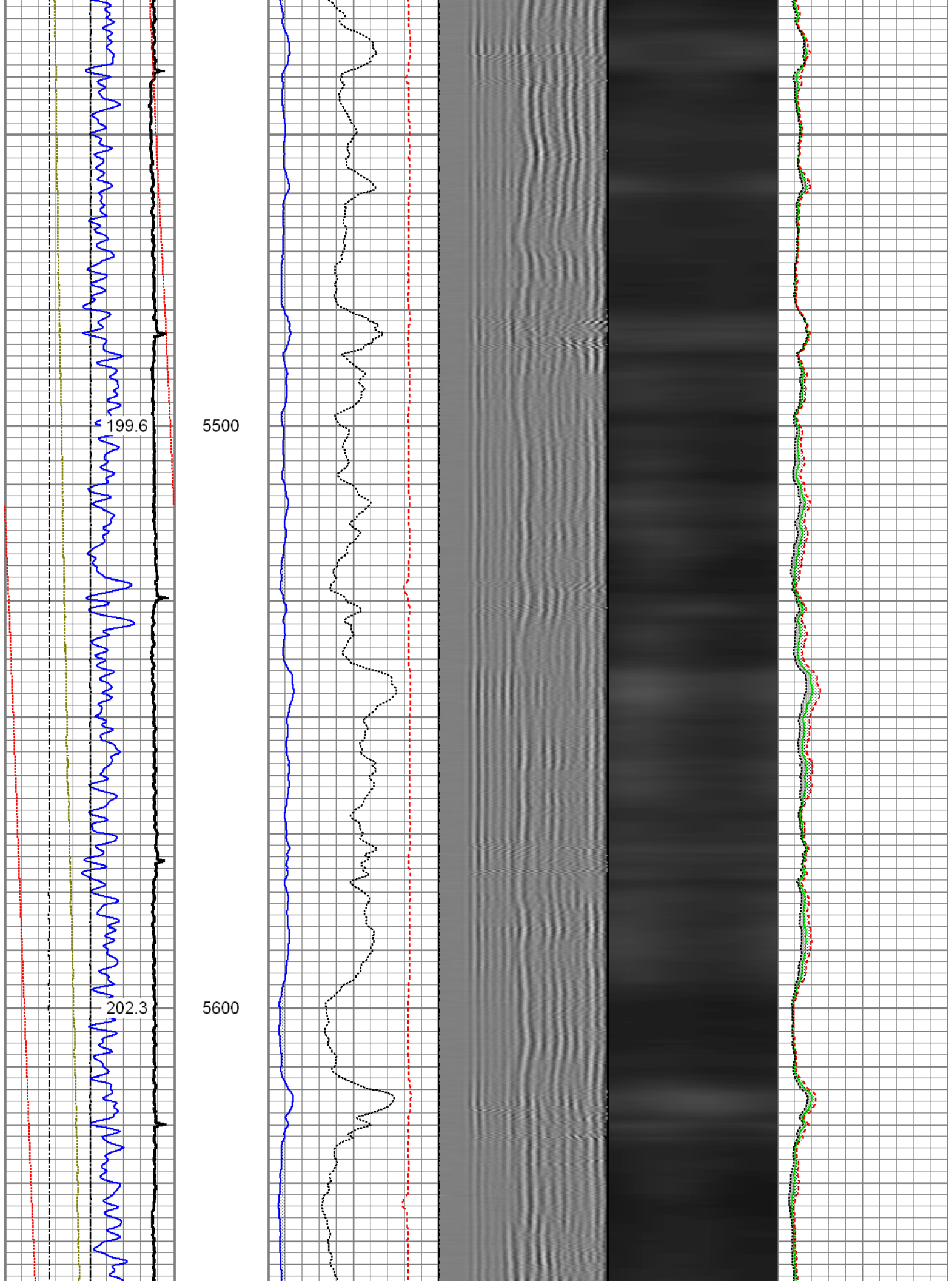


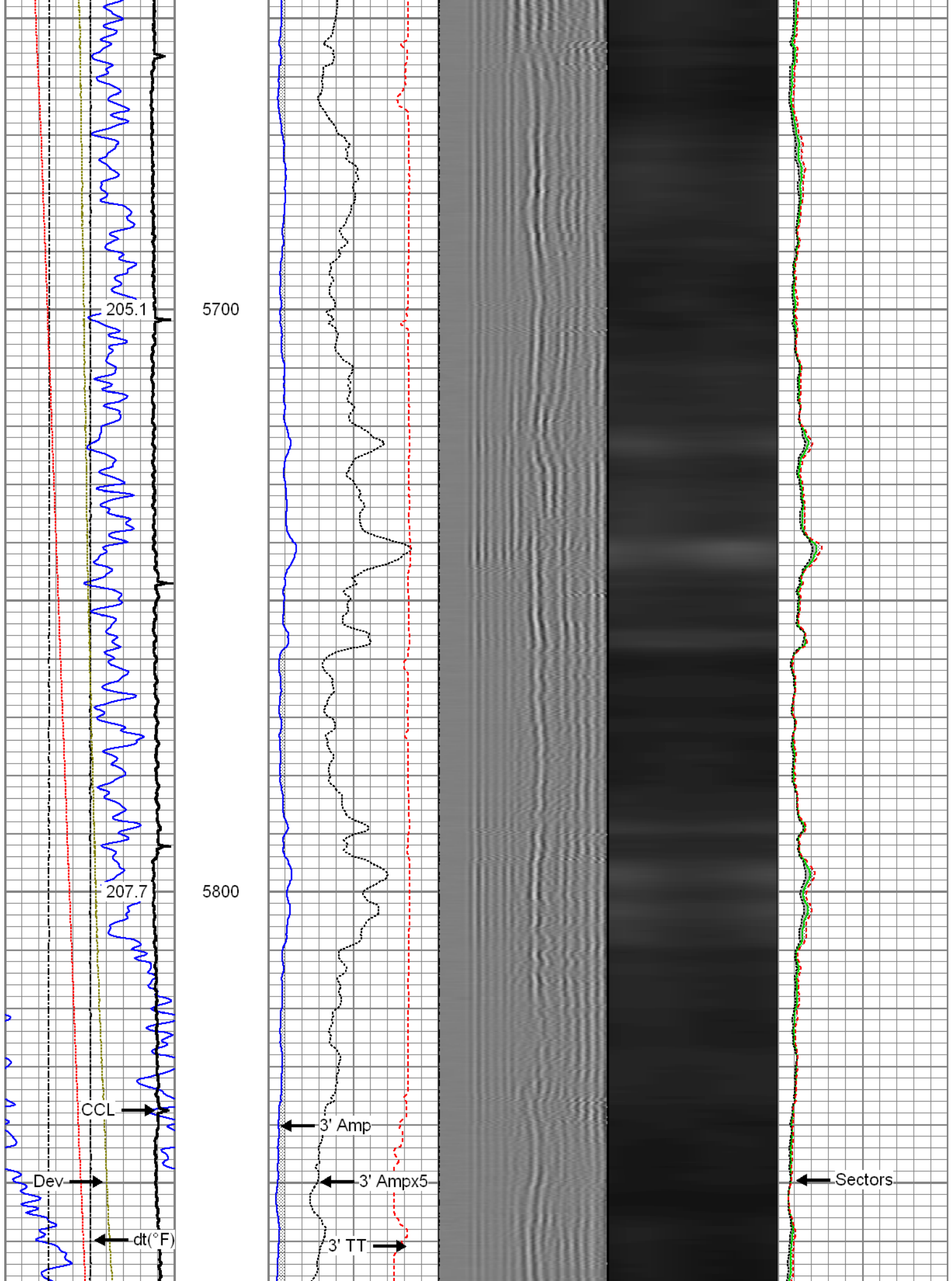


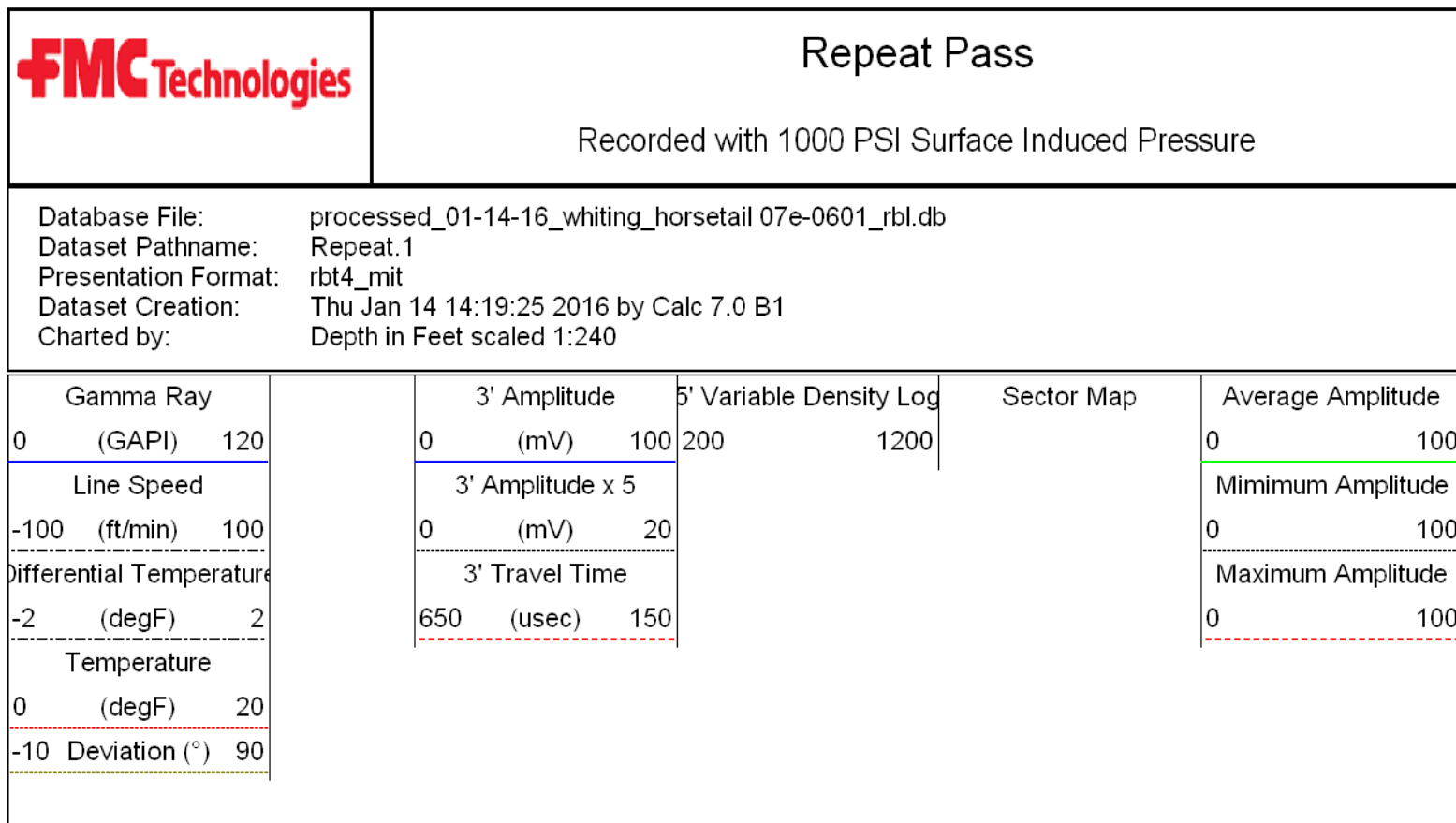
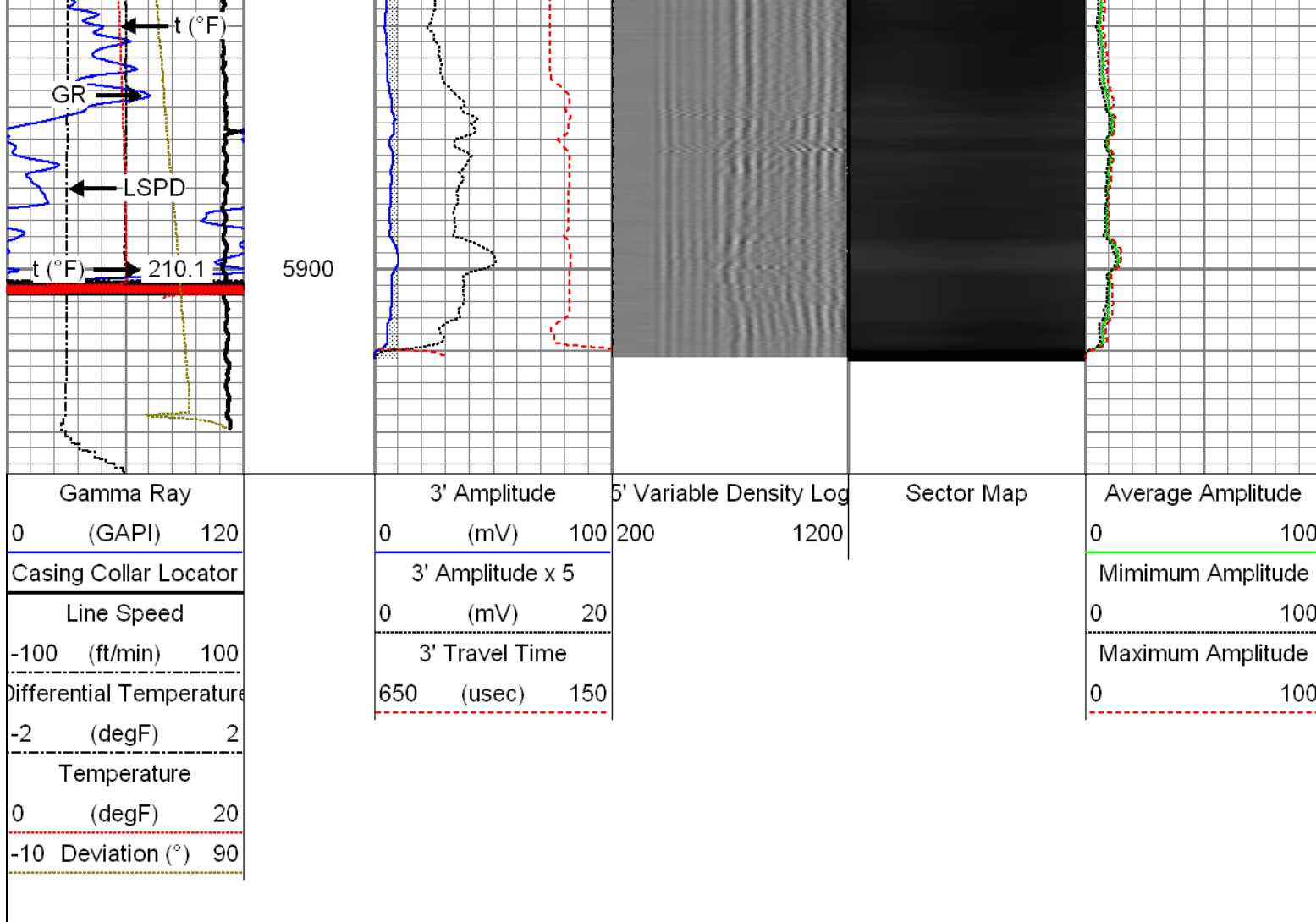


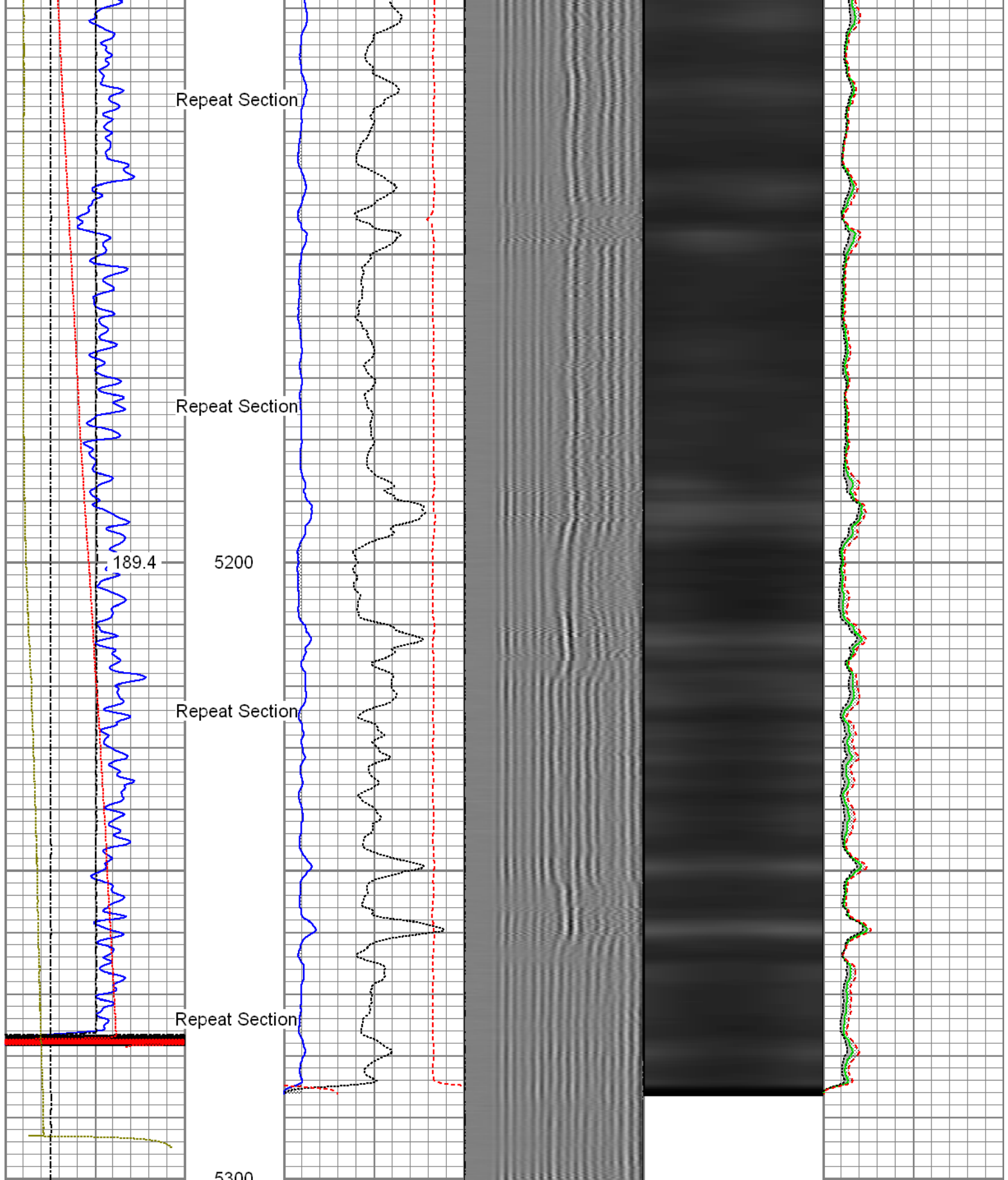








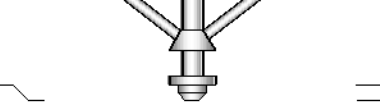




Gamma Ray (GAPI)	3' Amplitude (mV)	5' Variable Density Log	Sector Map	Average Amplitude
0 120	0 100	200 1200		0 100
Line Speed (ft/min)	3' Amplitude x 5 (mV)			Minimum Amplitude
-100 100	0 20			0 100
Differential Temperature (degF)	3' Travel Time (usec)			Maximum Amplitude
-2 2	650 150			0 100

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 (211461) 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 (10025097) Platinum Resistance Thermometer	1.04	1.69	5.20
			UW_PRC-DSSRAC (080) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
WV3FT	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					
WV5FT	14.42		UW_MIT-UW_MIT40_027 (218950) 40 Multifinger Imaging Tool	4.54	2.75	61.10
MIT	5.41					
			UW_PRC #4 -UW_PRC_057 (1037)	2.98	2.75	32.00

TSTAMP	0.00		UW_BUL-UW_BUL_006 (031422) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20
Dataset: PROCESSED_01-14-16_Whiting_Horsetail 07E-0601_RBL.db: field/well/run1/Main.1 Total Length: 28.09 ft Total Weight: 324.50 lb O.D. 3.13 in						

Calibration Report			
Database File:	PROCESSED_01-14-16_Whiting_Horsetail 07E-0601_RBL.db		
Dataset Pathname:	Main.1		
Dataset Creation:	Thu Jan 14 14:15:26 2016 by Calc 7.0 B1		
Multi-finger Imaging Tool Calibration Report			
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:			Thu Jan 14 10:10:33 2016			
Ring size:	4	5	6	7		
(in)						
	Sens	Sens	Sens			
Finger 01:	1481 275.0	1756 299.0	2055 298.0	2353		
Finger 02:	1579 255.0	1834 271.0	2105 264.0	2369		
Finger 03:	1460 279.0	1739 302.0	2041 303.0	2344		
Finger 04:	1476 275.0	1751 298.0	2049 292.0	2341		
Finger 05:	1513 267.0	1780 285.0	2065 284.0	2349		
Finger 06:	1448 279.0	1727 304.0	2031 307.0	2338		
Finger 07:	1470 275.0	1745 297.0	2042 304.0	2346		
Finger 08:	1463 271.0	1734 290.0	2024 296.0	2320		
Finger 09:	1445 273.0	1718 295.0	2013 305.0	2318		
Finger 10:	1461 260.0	1721 284.0	2005 291.0	2296		
Finger 11:	1456 272.0	1728 291.0	2019 305.0	2324		
Finger 12:	1399 273.0	1672 295.0	1967 312.0	2279		
Finger 13:	1489 251.0	1740 266.0	2006 278.0	2284		
Finger 14:	1437 256.0	1693 276.0	1969 296.0	2265		
Finger 15:	1428 268.0	1696 285.0	1981 307.0	2288		
Finger 16:	1436 262.0	1698 279.0	1977 300.0	2277		
Finger 17:	1429 272.0	1701 286.0	1987 307.0	2294		
Finger 18:	1383 262.0	1645 275.0	1920 301.0	2221		
Finger 19:	1421 267.0	1688 281.0	1969 300.0	2269		
Finger 20:	1413 266.0	1679 277.0	1956 303.0	2259		
Finger 21:	1391 280.0	1671 291.0	1962 318.0	2280		
Finger 22:	1423 258.0	1681 269.0	1950 292.0	2242		
Finger 23:	1389 265.0	1654 275.0	1929 297.0	2226		
Finger 24:	1435 267.0	1702 272.0	1974 288.0	2262		
Finger 25:	1371 268.0	1639 274.0	1913 294.0	2207		
Finger 26:	1389 277.0	1666 286.0	1952 304.0	2256		

Finger 26:	1389	277.0	1688	288.0	1952	304.0	2238
Finger 27:	1442	269.0	1711	275.0	1986	289.0	2275
Finger 28:	1436	281.0	1717	288.0	2005	303.0	2308
Finger 29:	1491	264.0	1755	270.0	2025	279.0	2304
Finger 30:	1389	280.0	1669	291.0	1960	305.0	2265
Finger 31:	1415	285.0	1700	296.0	1996	303.0	2299
Finger 32:	1464	267.0	1731	273.0	2004	279.0	2283
Finger 33:	1429	285.0	1714	302.0	2016	306.0	2322
Finger 34:	1441	282.0	1723	300.0	2023	303.0	2326
Finger 35:	1495	259.0	1754	273.0	2027	273.0	2300
Finger 36:	1514	271.0	1785	288.0	2073	288.0	2361
Finger 37:	1480	283.0	1763	299.0	2062	297.0	2359
Finger 38:	1565	254.0	1819	268.0	2087	269.0	2356
Finger 39:	1481	275.0	1756	291.0	2047	285.0	2332
Finger 40:	1401	286.0	1687	311.0	1998	310.0	2308

Segmented Cement Bond Log Calibration Report

Serial Number: 10013454
Tool Model: UW_RBT_004

Calibration Casing Diameter: 5.500 in
Calibration Depth: 20.998 ft

Master Calibration, performed Thu Jan 14 14:15:17 2016:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	-0.002	0.730	0.000	71.921	98.263	0.173
5FT	-0.002	0.706	0.000	71.921	101.584	0.221
S1	-0.002	0.742	0.000	100.000	134.463	0.245
S2	-0.003	0.753	0.000	100.000	132.296	0.444
S3	-0.003	0.740	0.000	100.000	134.629	0.392
S4	-0.004	0.731	0.000	100.000	136.123	0.491
S5	-0.002	0.720	0.000	100.000	138.394	0.337
S6	-0.003	0.719	0.000	100.000	138.591	0.399
S7	-0.002	0.712	0.000	100.000	139.935	0.339
S8	-0.002	0.726	0.000	100.000	137.239	0.324

Temperature Calibration Report


Serial Number: 10025097
Tool Model: UW_PRT_016
Performed: Wed Feb 11 13:44:44 2015

Point #	Reading	Reference
1	13053.00 cps	68.00 degF
2	18014.00 cps	104.00 degF
3	29668.00 cps	176.00 degF
4	41181.00 cps	248.00 degF
5	52983.00 cps	320.00 degF
6	58931.00 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	Whiting Oil & Gas Corporation
	Well	Horsetail 07E-0601
	Field	Wildcat
	County	Weld
	State	Colorado