

Radial Cement Bond Gamma Ray Casing Collar Log

Company	Kerr-McGee Oil & Gas OnShore L.P.
Well	Milk State 29C-21HZ
Field	Wattenberg
County	Weld
State	Colorado
Company	Kerr-McGee Oil & Gas OnShore L.P.
Well	Milk State 29C-21HZ
Field	Wattenberg
County	Weld
State	Colorado
Location:	API # : 05-123-40979
Permanent Datum	SEC 21 TWP 3N RGE 65W
Log Measured From	Ground Level
Drilling Measured From	Kelly Bushing
	Elevation 4838'
	Other Services
	RCBL
	GR
	Elevation
	K.B. 4851'
	D.F. 4850'
	G.L. 4838'

Date	28-JUL-2015
Run Number	Two
Depth Driller	12,750 FT
Depth Logger	6812 FT
Bottom Logged Interval	6809 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Water
Density / Viscosity	8.34 lbm/gal
Max. Recorded Temp.	249.5°F
Estimated Cement Top	34 FT
Time Well Ready	ROA
Time Logger on Bottom	1200
Equipment Number	HD-0340
Location	Fort Lupton, CO
Recorded By	Chad Bryan
Witnessed By	Van Franke

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To
Casing Record	Size (in)	Wgt (lbs/ft)	Grade	Top	Bottom		
Surface Casing	9.625	36	J-55	Surface	1220 FT		
Intermediate #1	7.000	26	C-100HC LT&C	Surface	7588 FT		
Intermediate #2							
Liner							

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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 recorded casing tally liner top 6663 FT
 Adjusted log 0 FT from KB zero to correlate with liner top
 Log ran from 6812 FT to surface
 Recorded with 2800 PSI surface induced pressure
 No debris found on logging tools after run

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

Database File:0512340979_anadarko_milk state 29c-21hz_07-28-15_mit_rbl.db

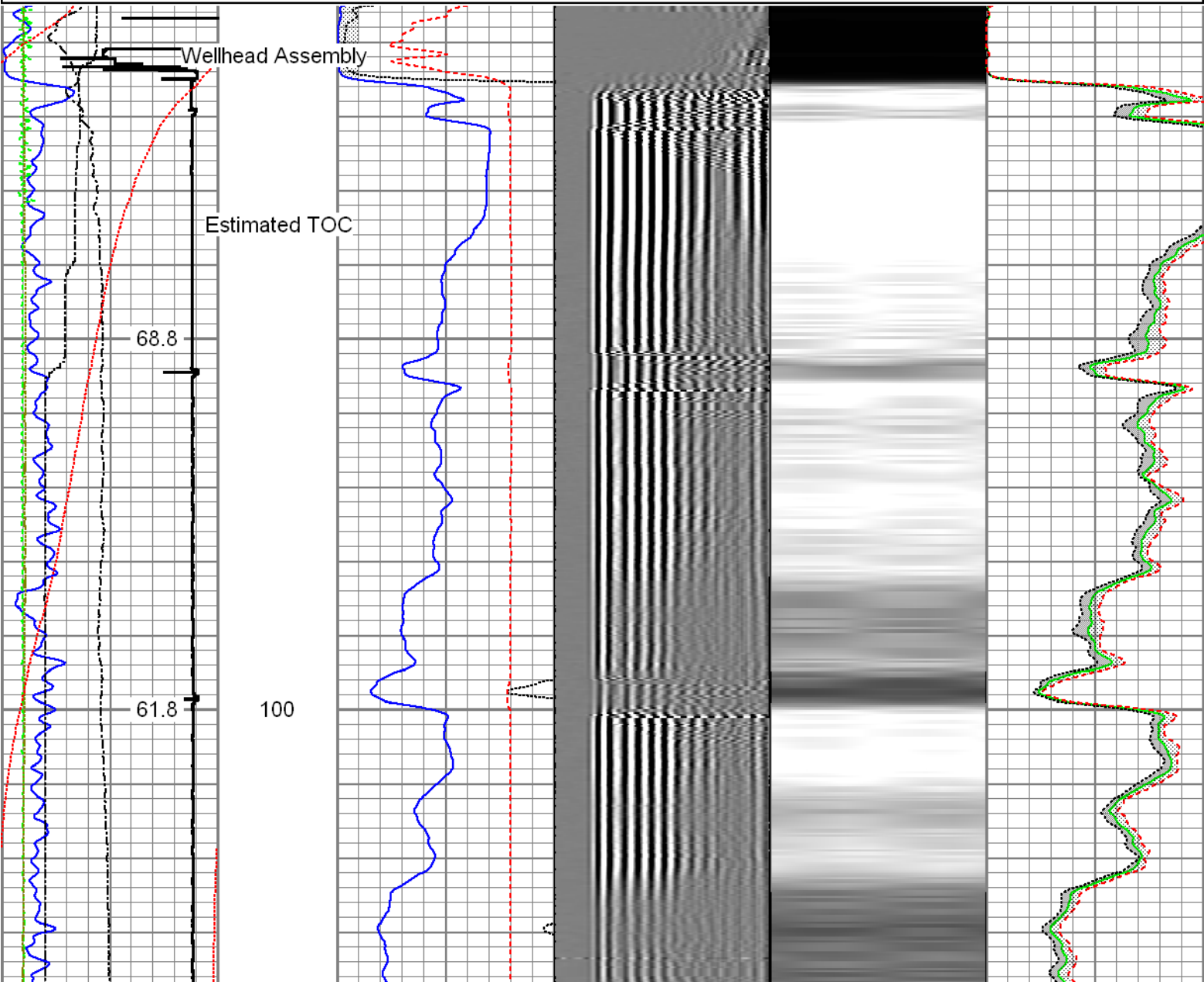
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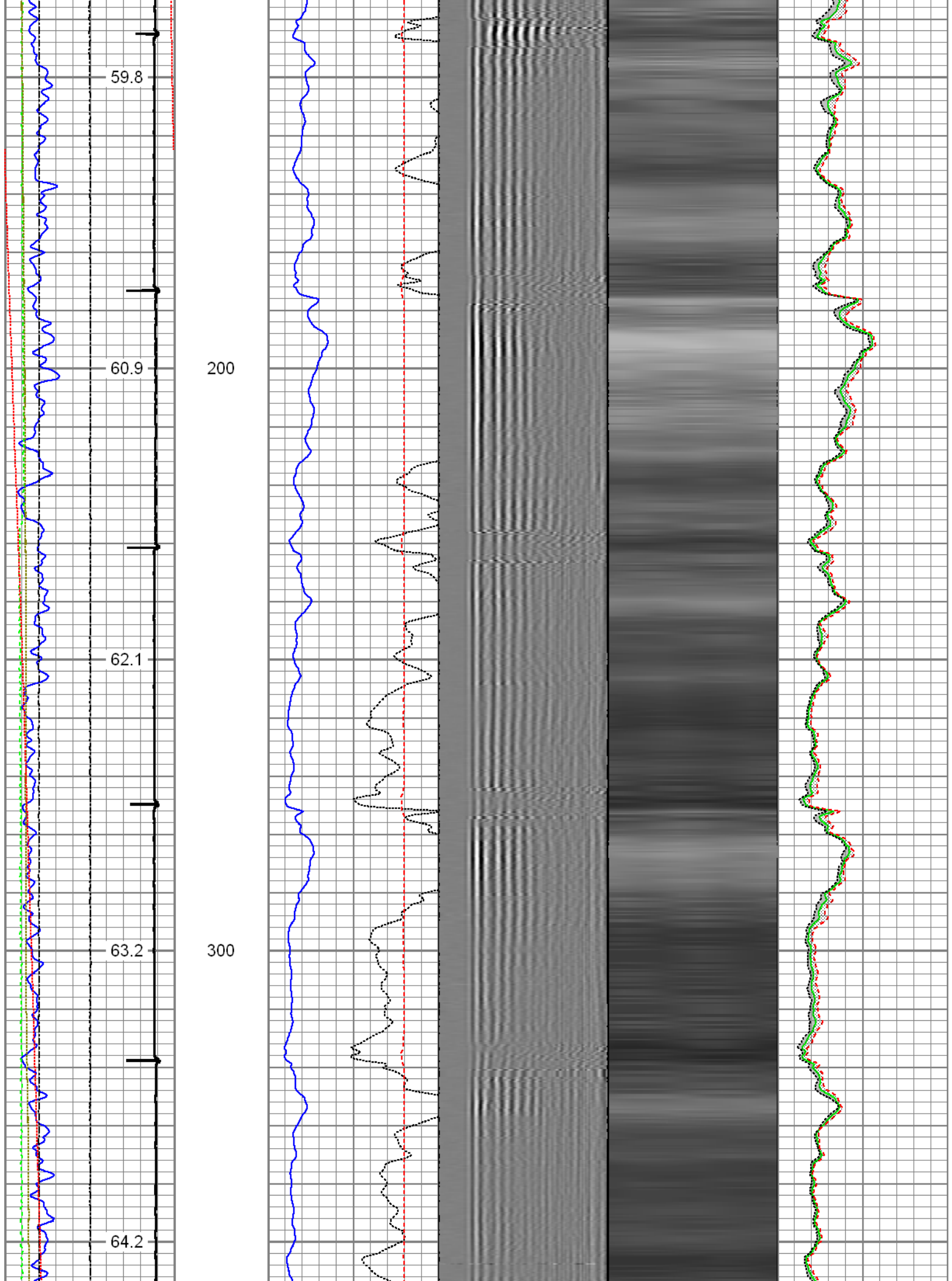
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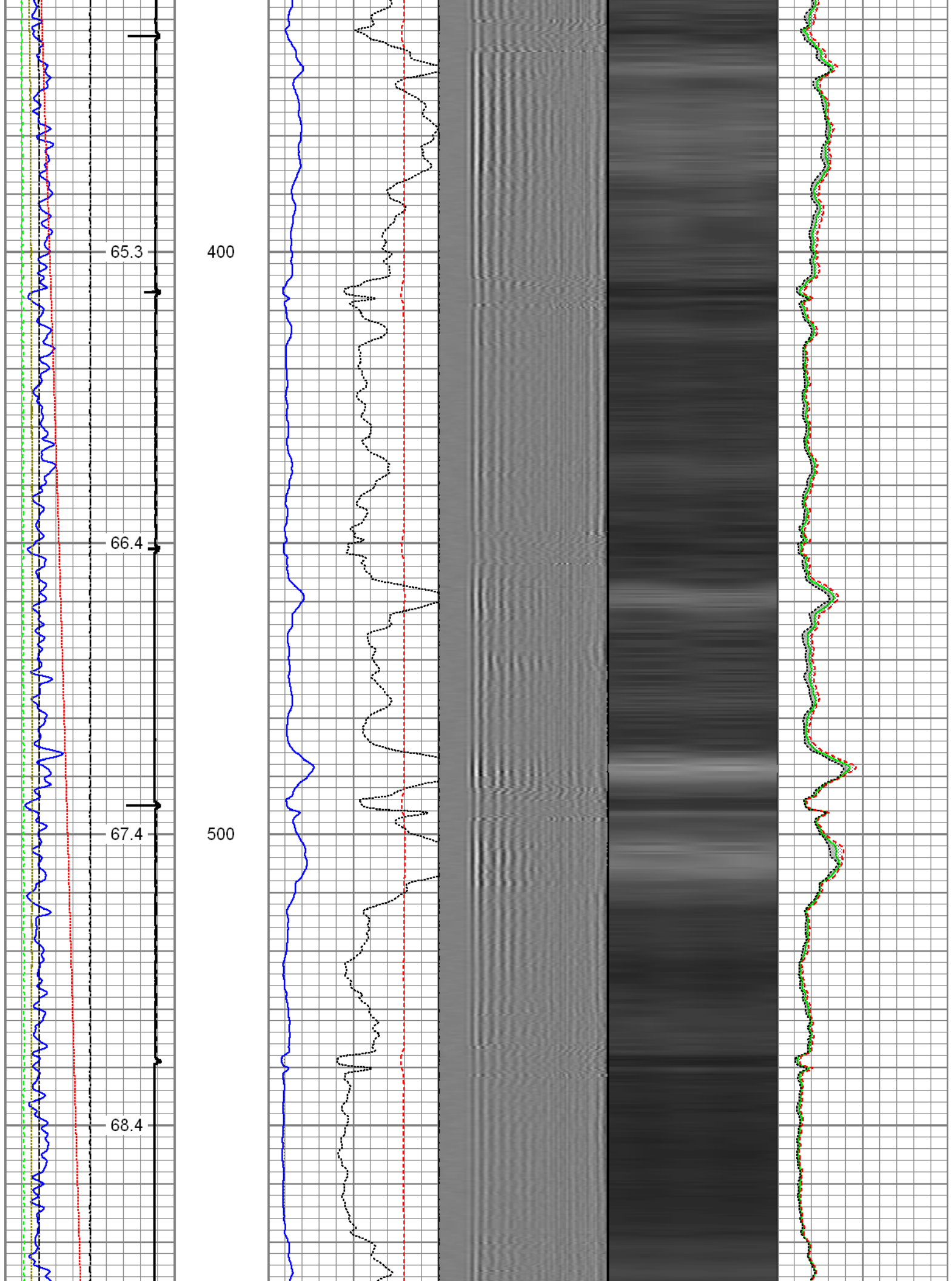
Dataset Creation:Tue Jul 28 12:46:07 2015 by Log 7.0 B1

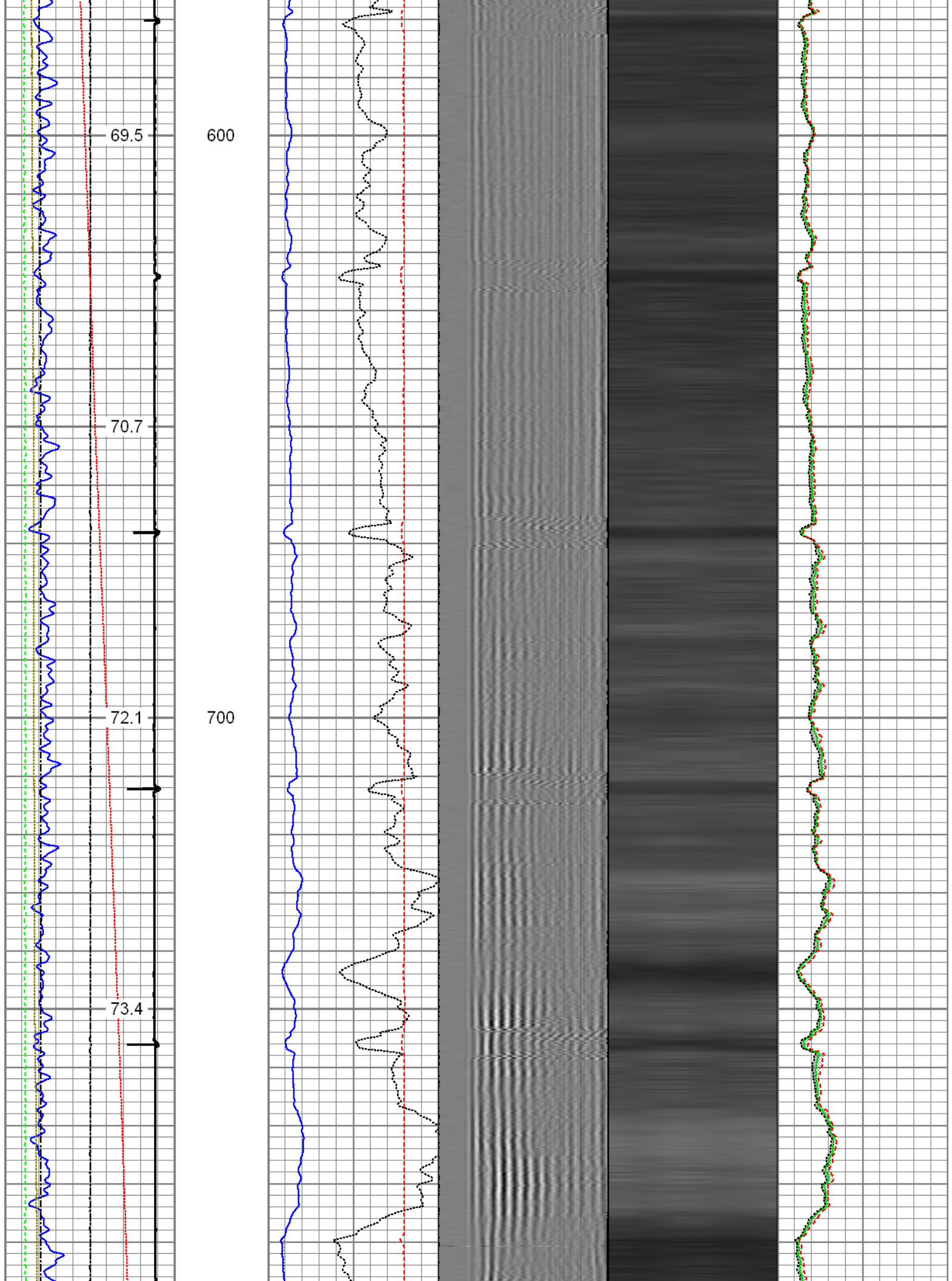
Charted by:Depth in Feet scaled 1:240

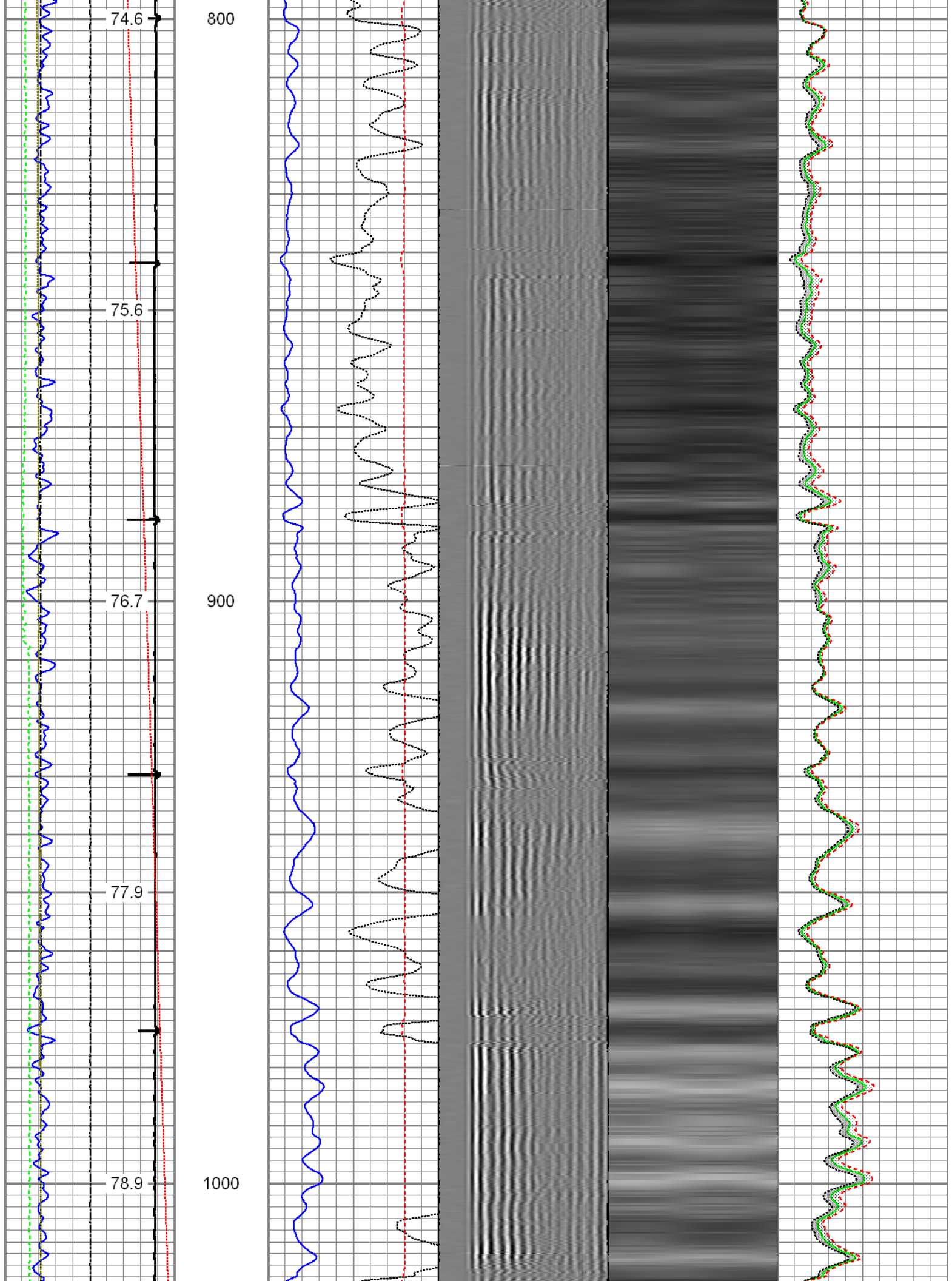
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Mimimum Amplitude
Line Speed	0 (mV) 20			0 100
-100 (ft/min) 100	3' Travel Time			Maximum Amplitude
Line Tension	650 (usec) 150			0 100
0 (lb) 2000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

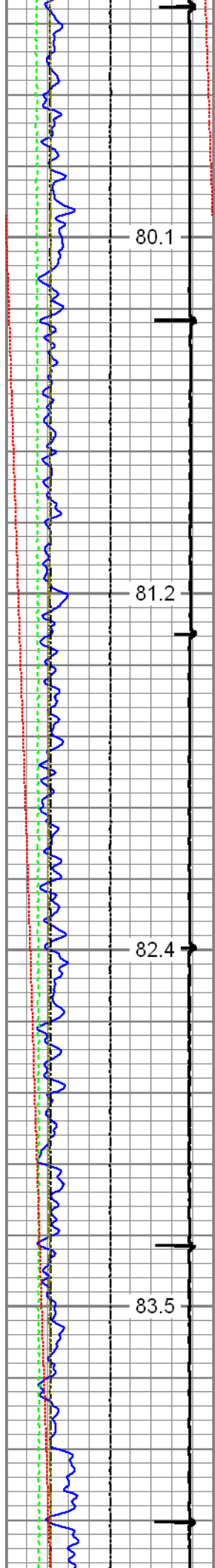






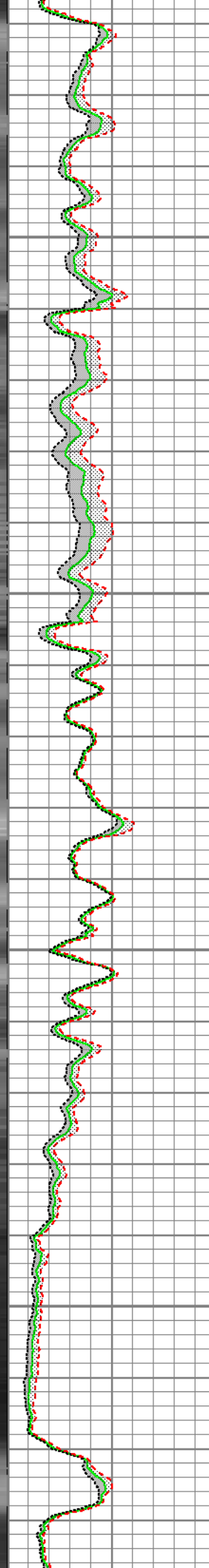
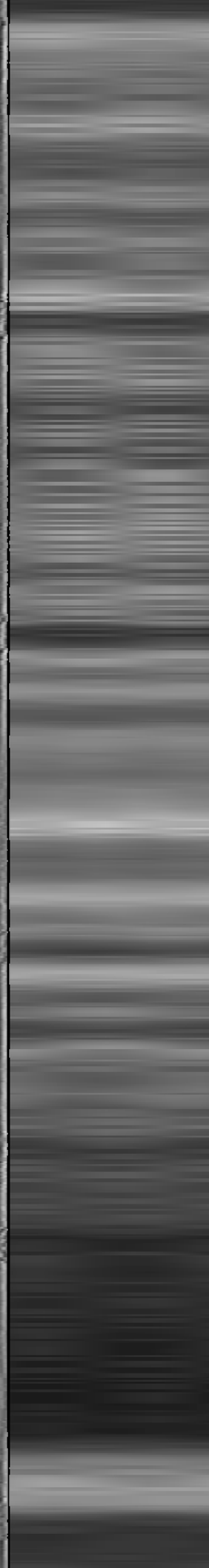
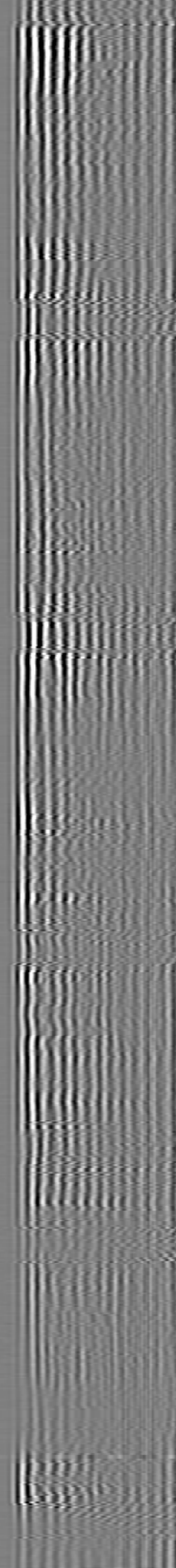
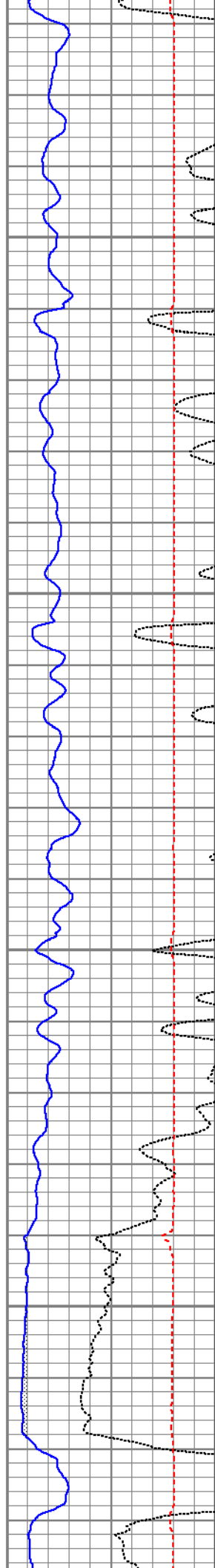


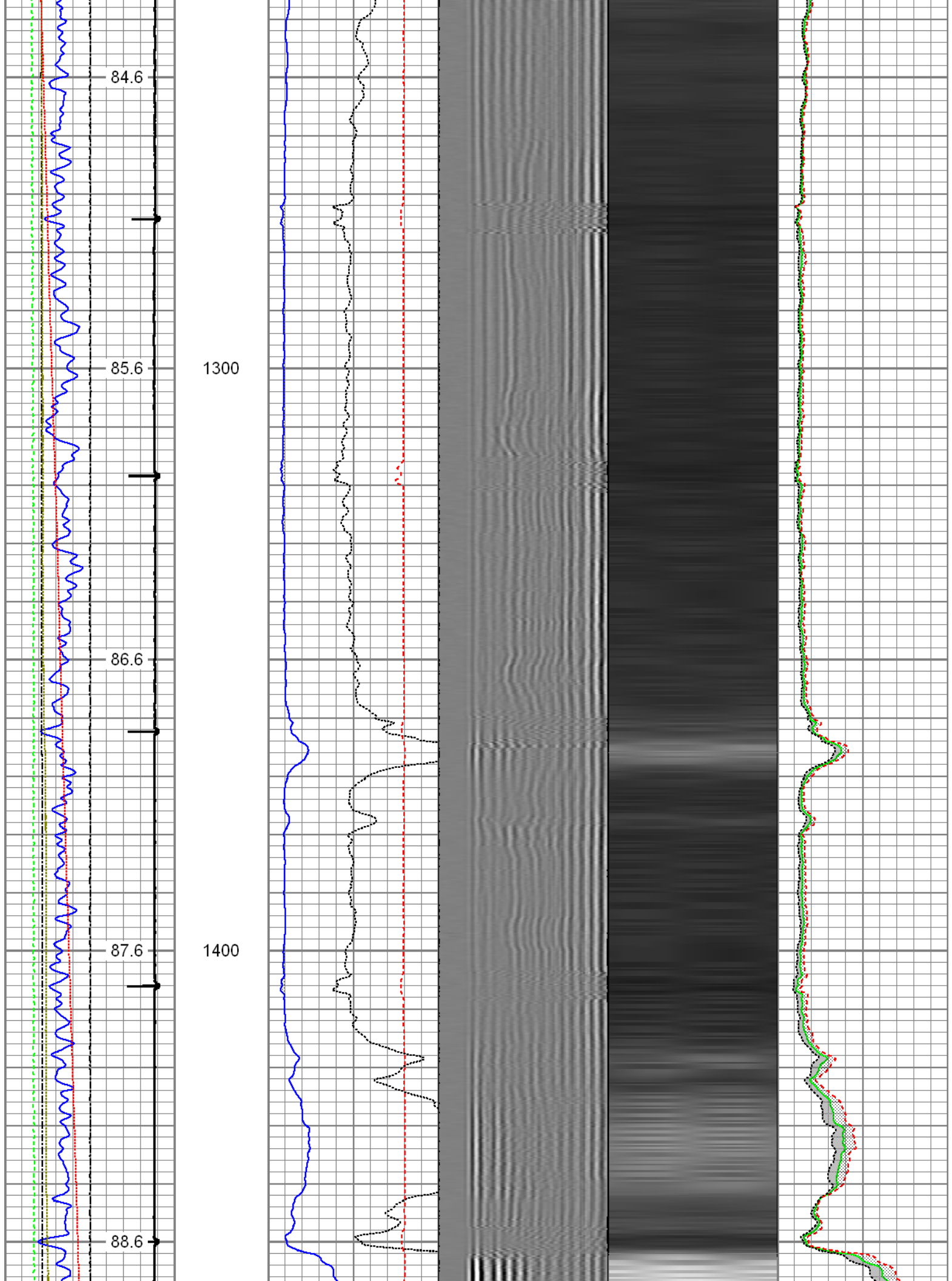


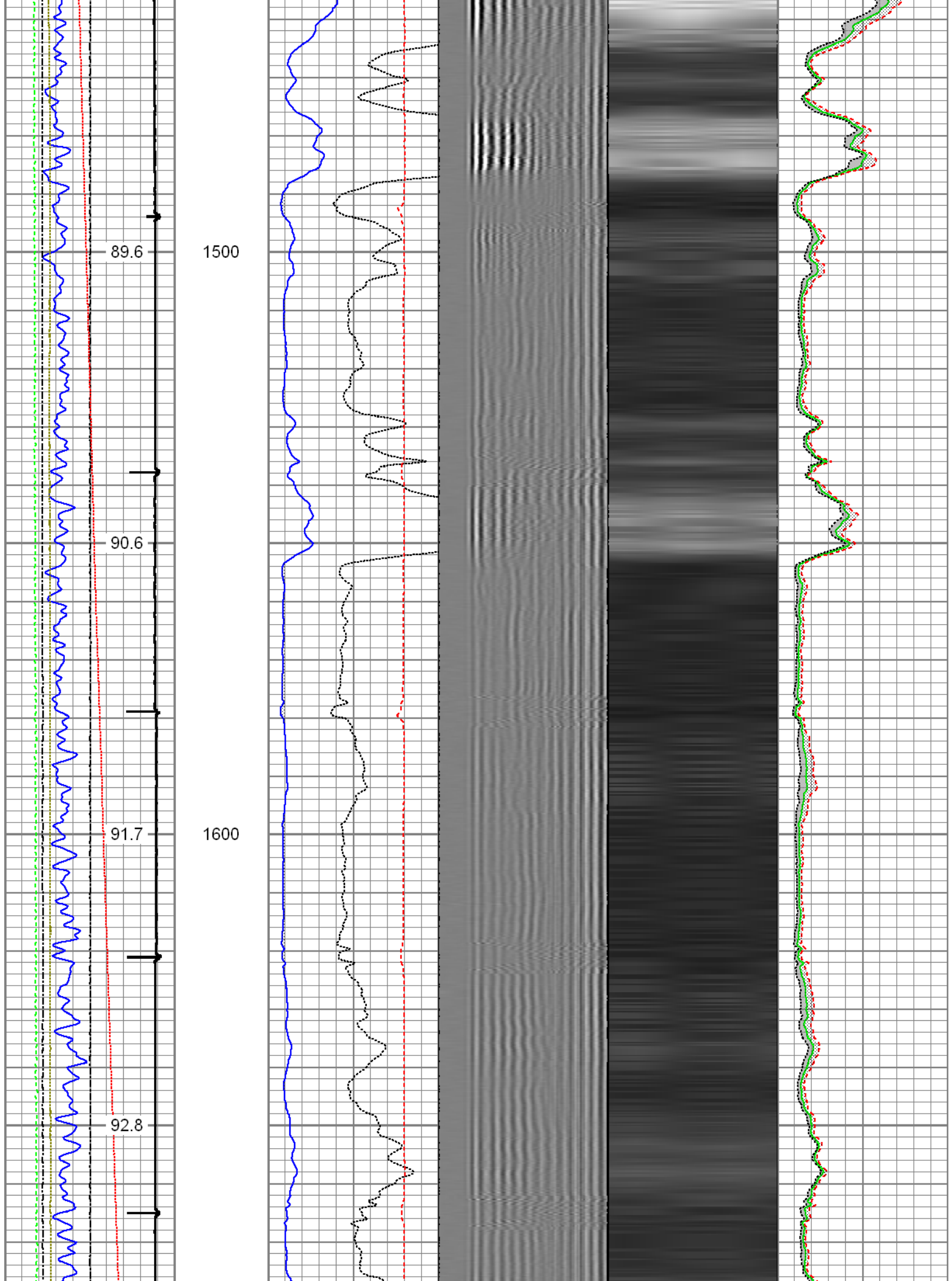


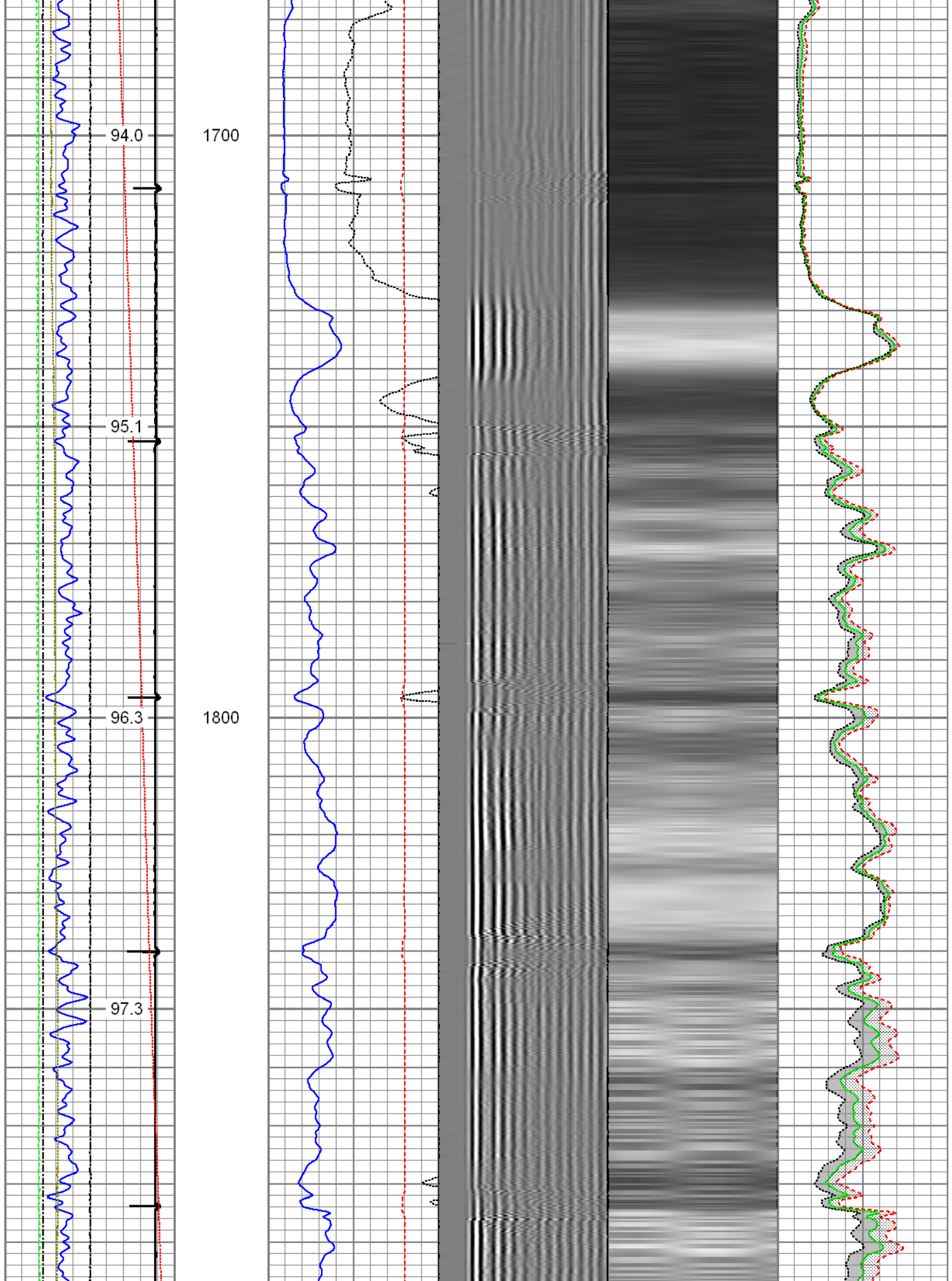
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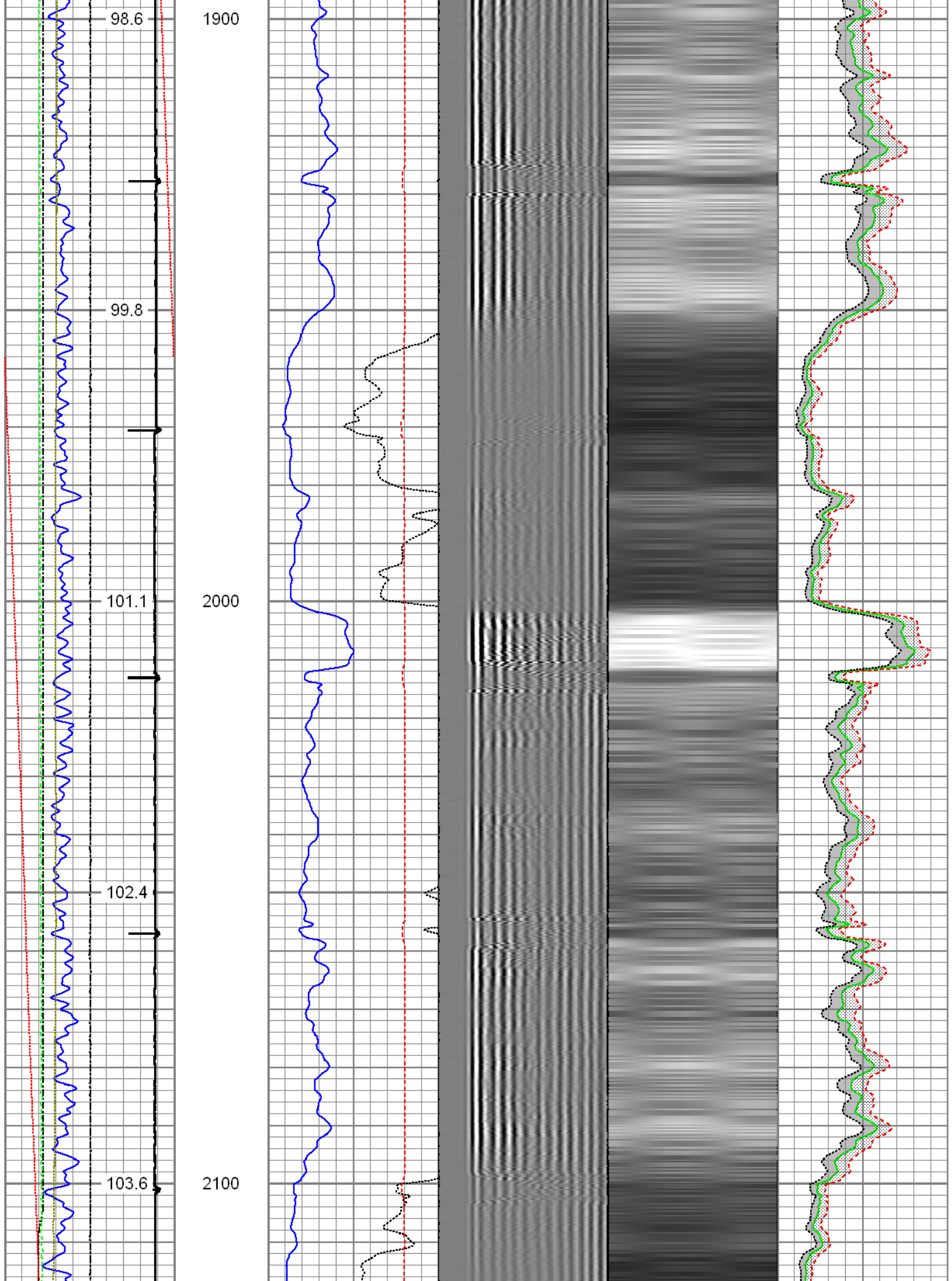
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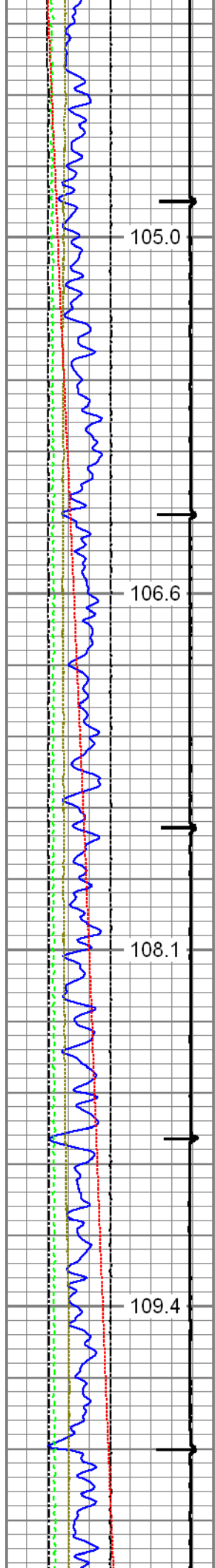






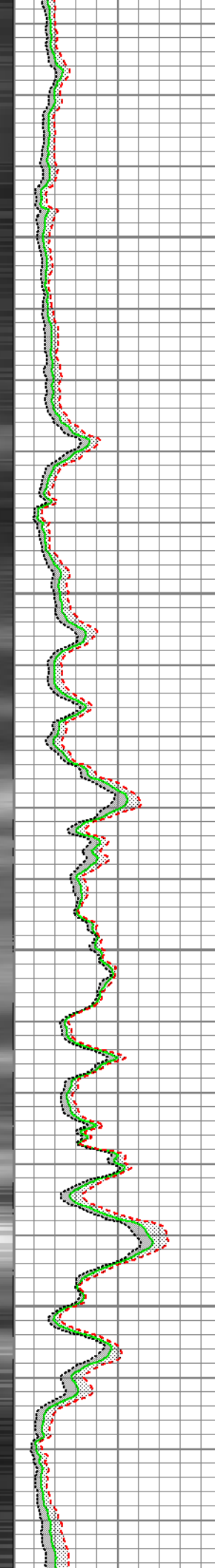
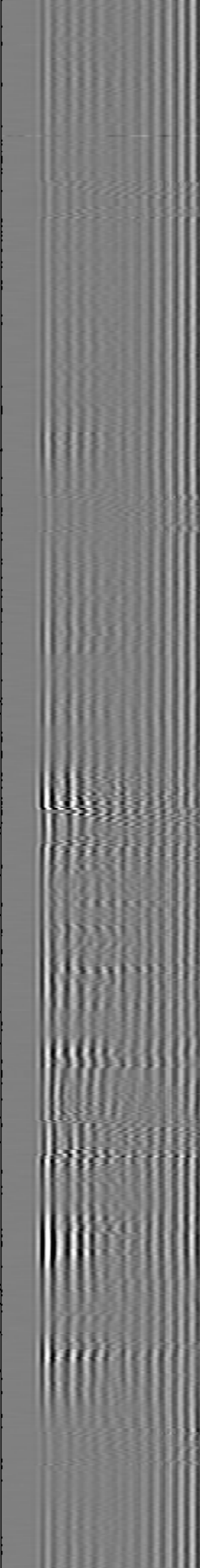
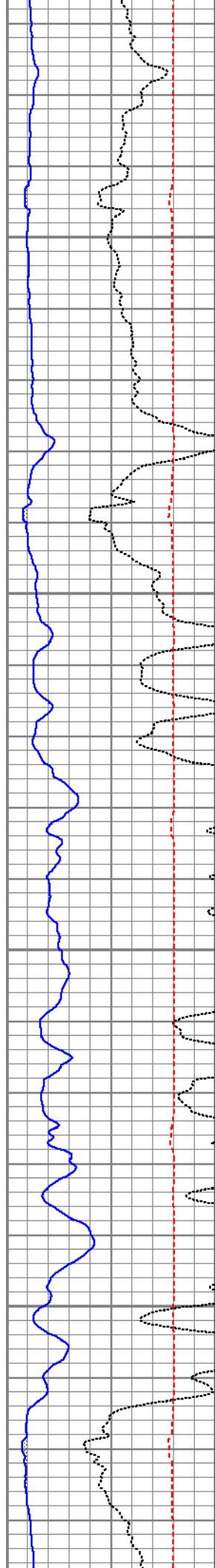


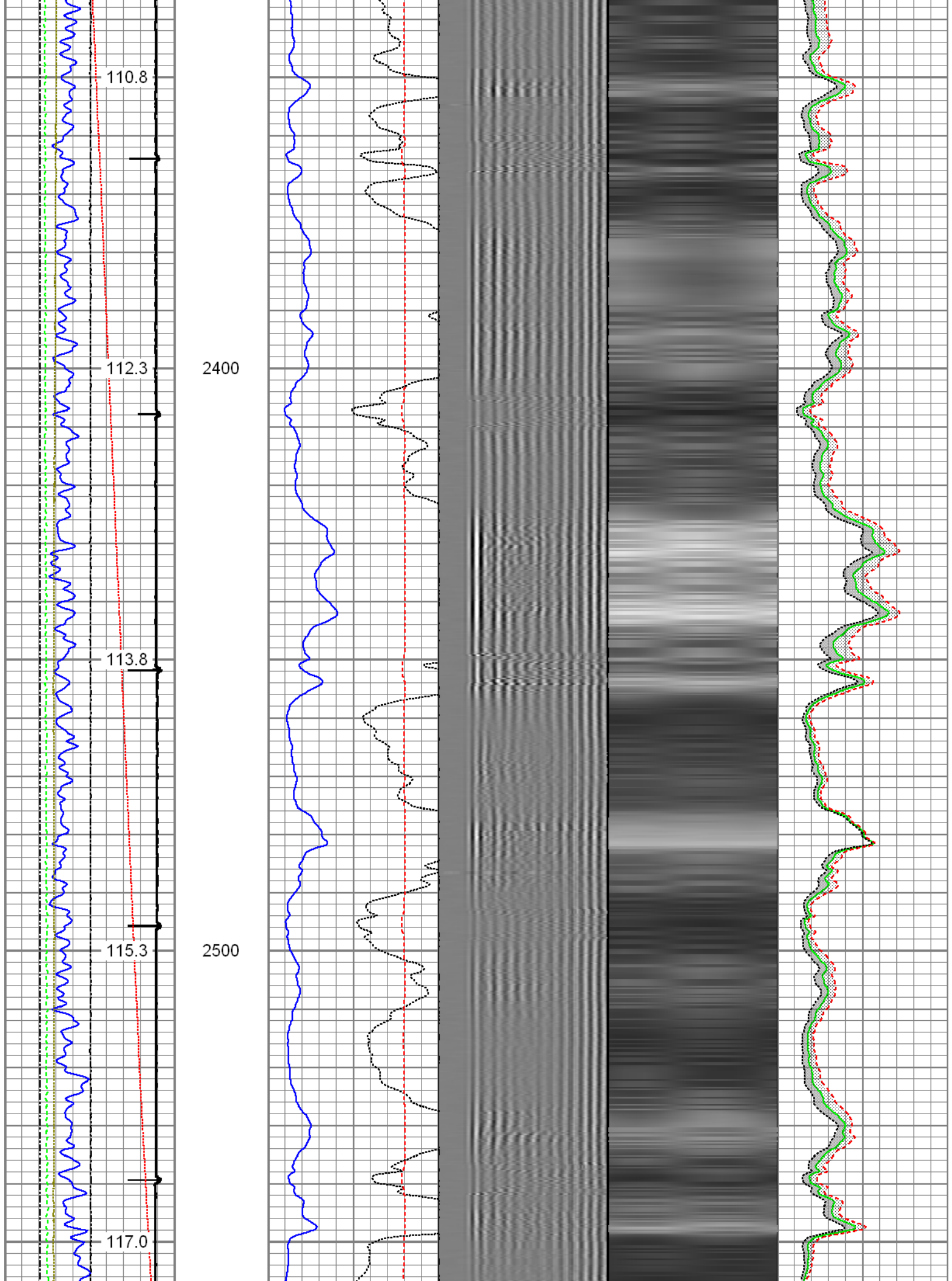


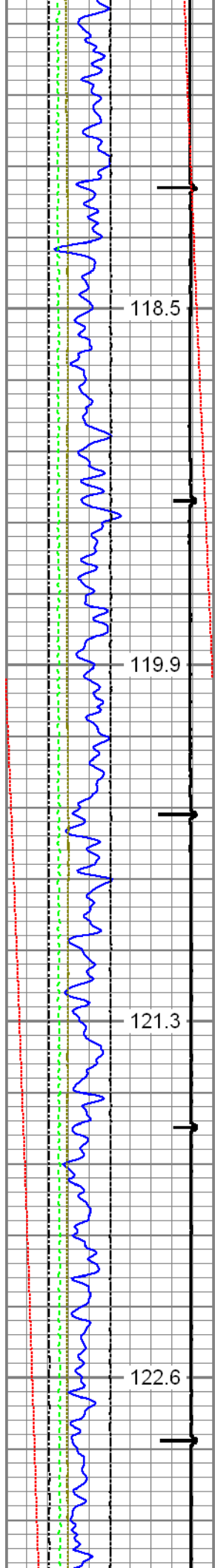


2200

2300

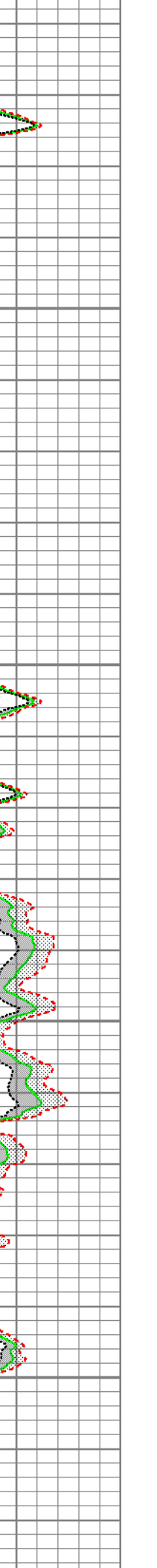
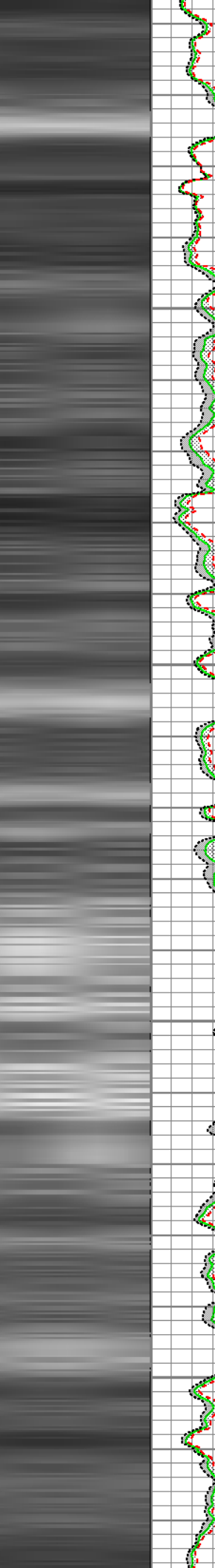
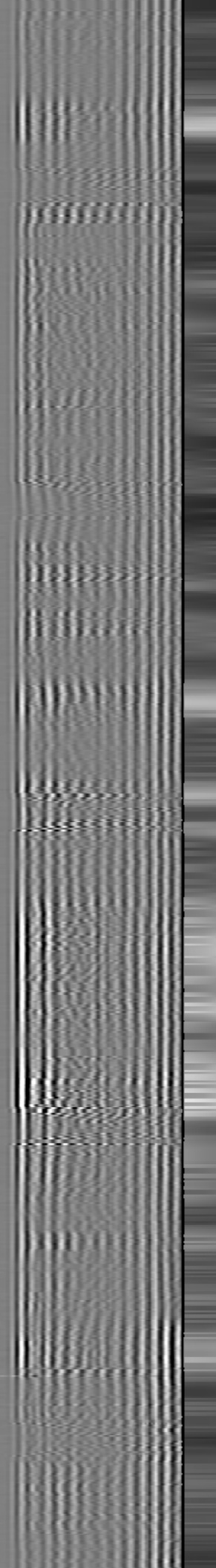
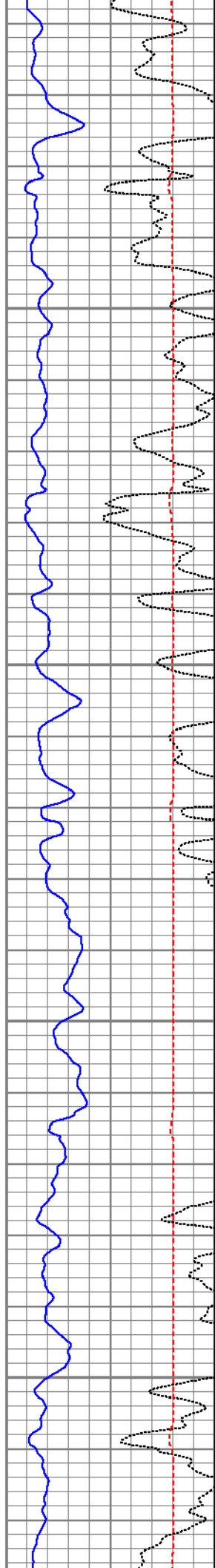


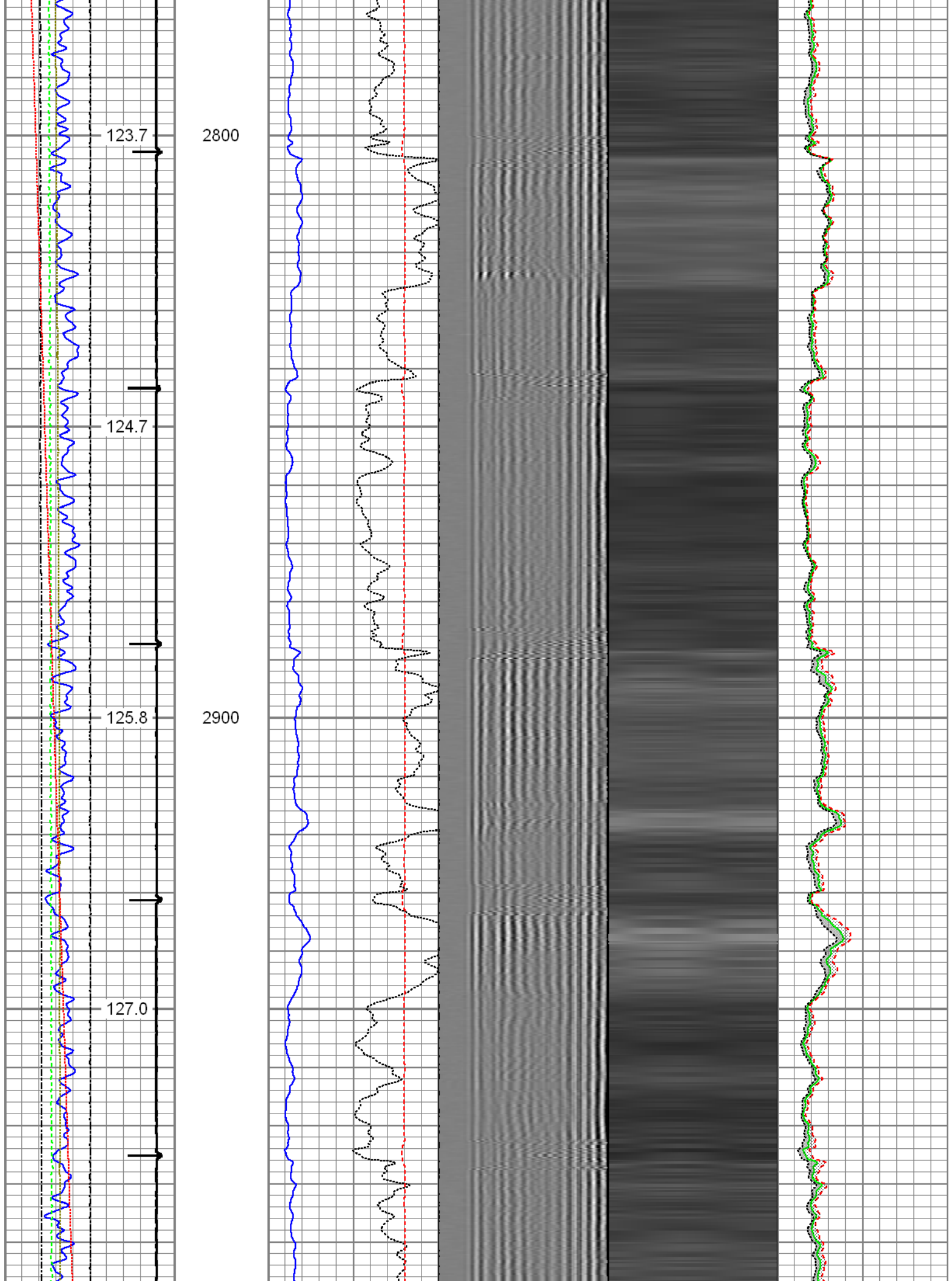


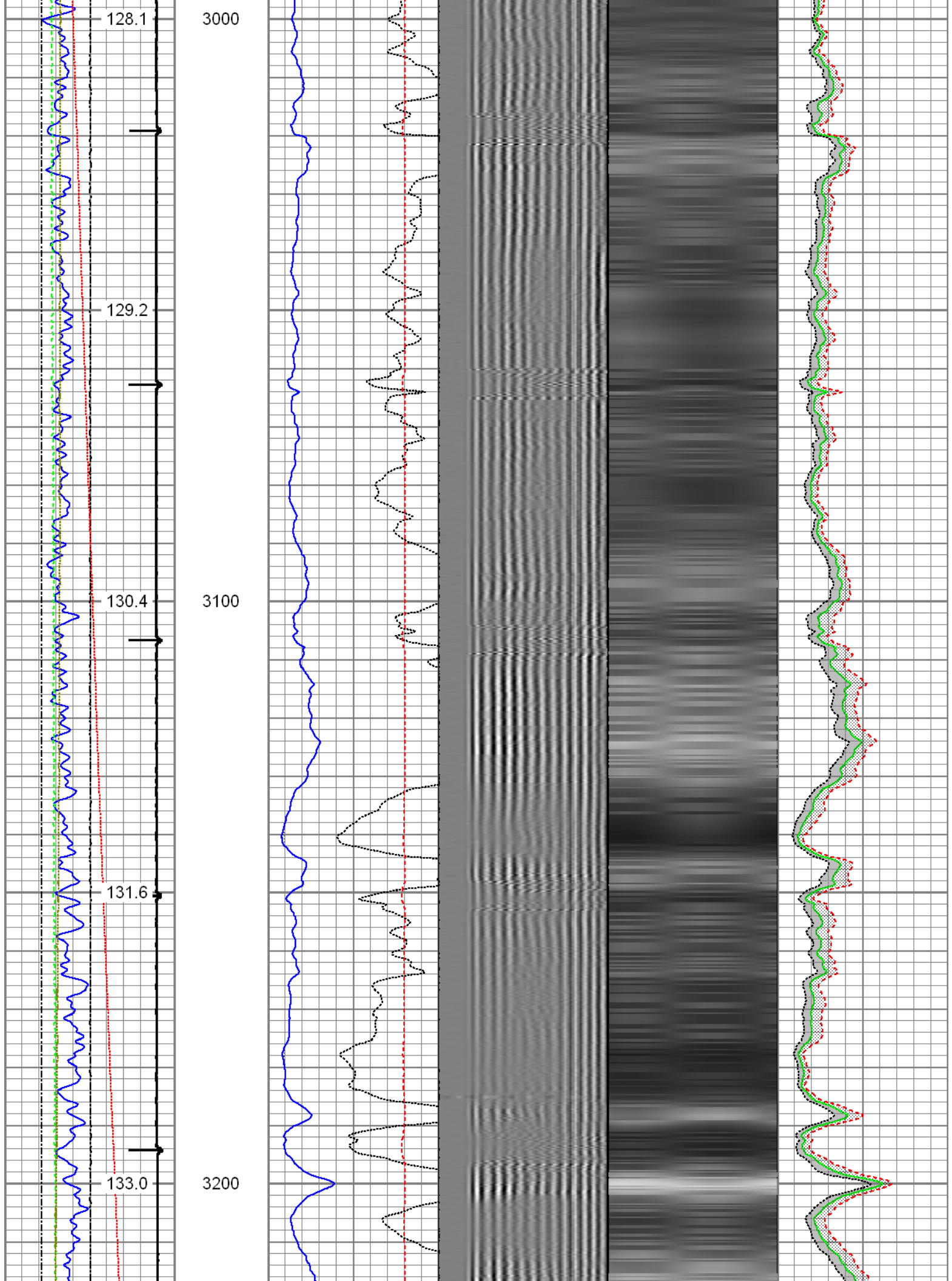


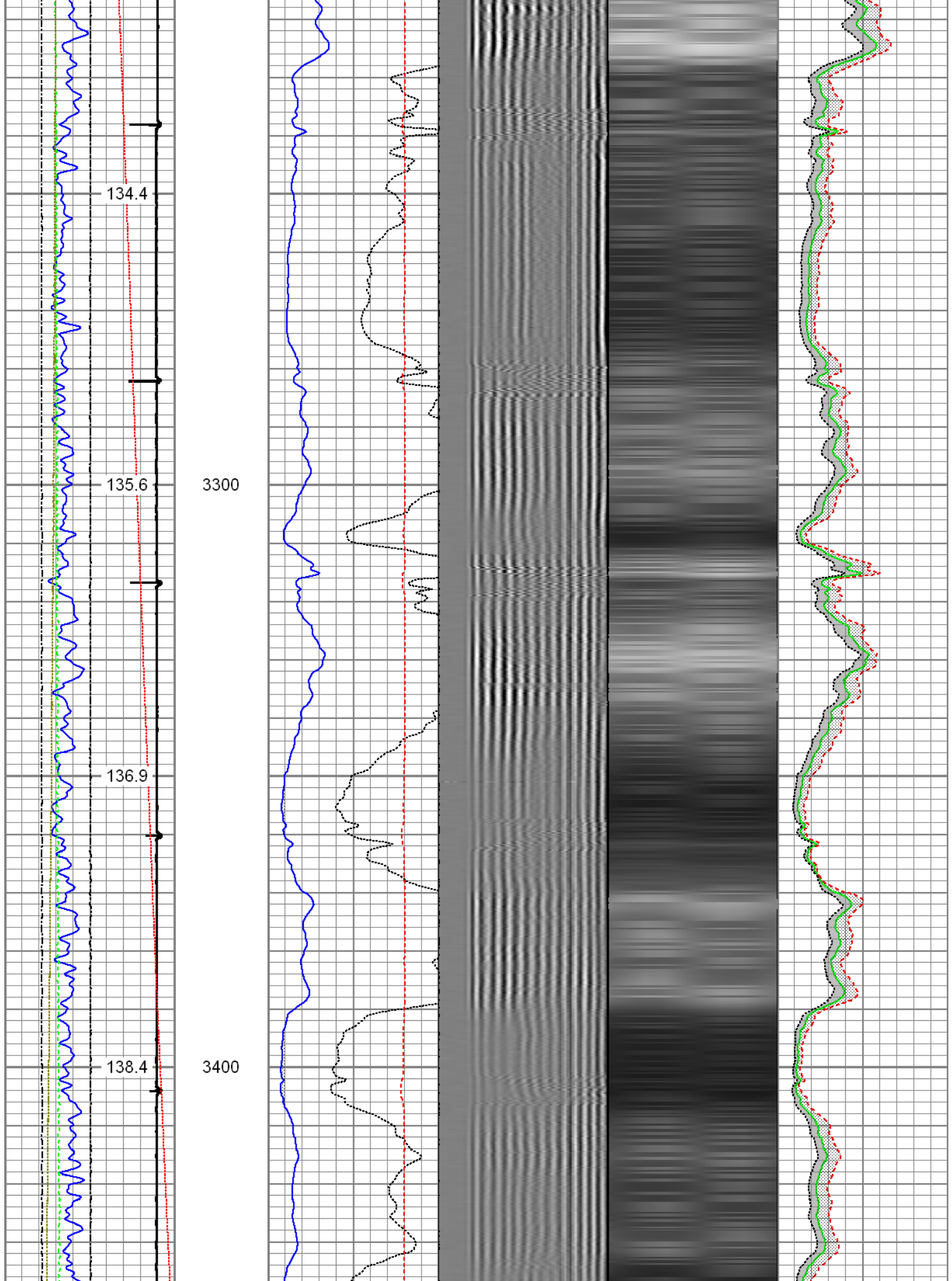
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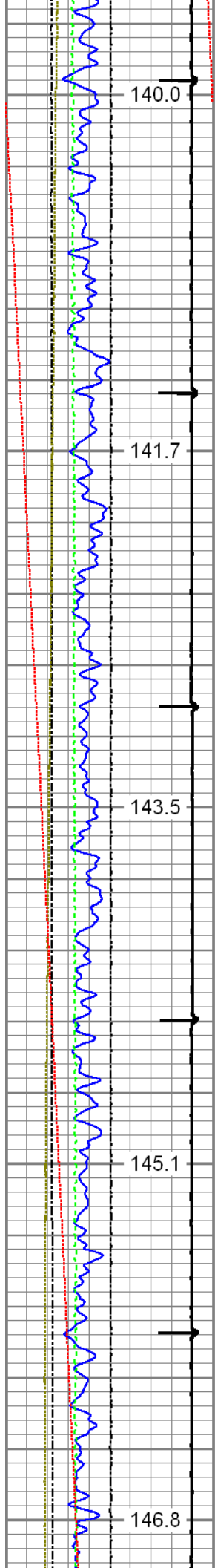
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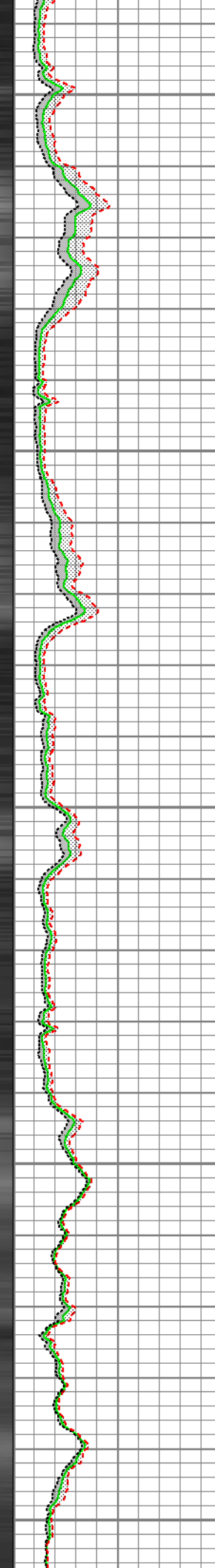
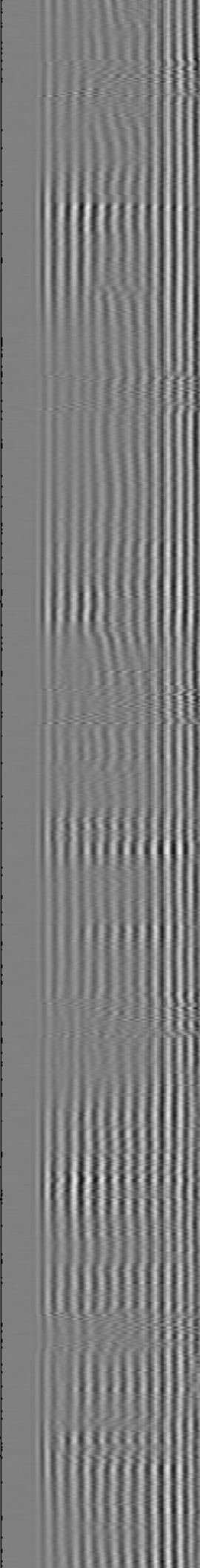
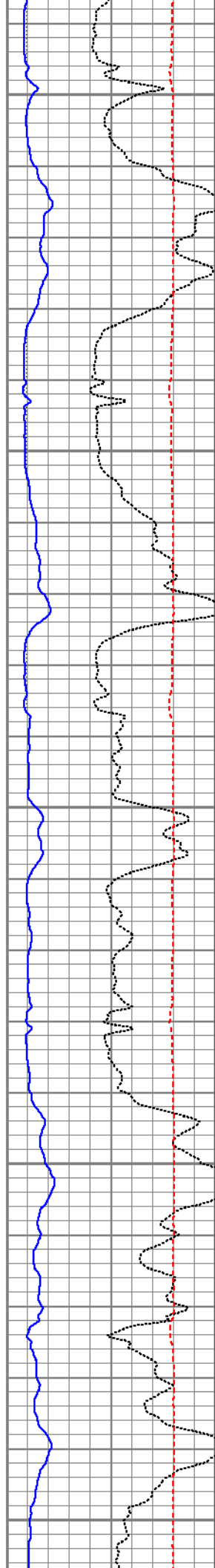


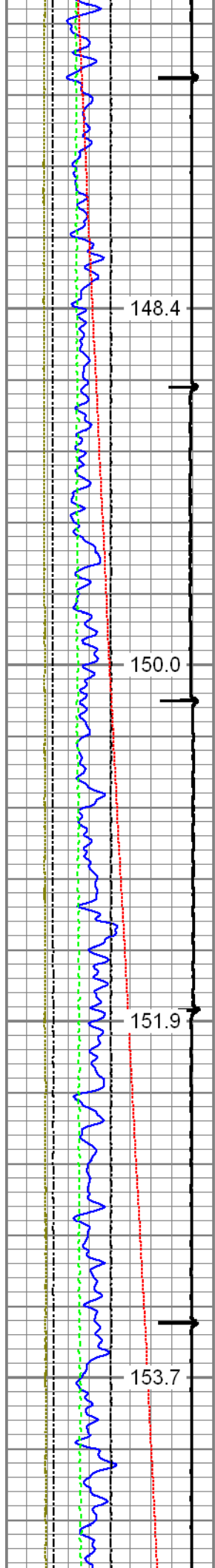




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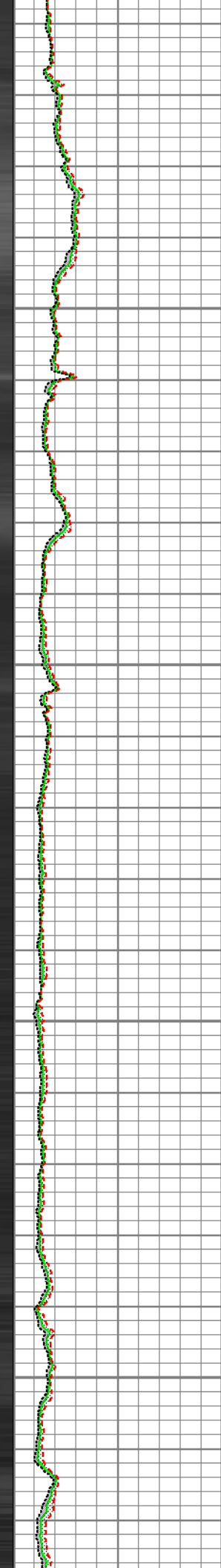
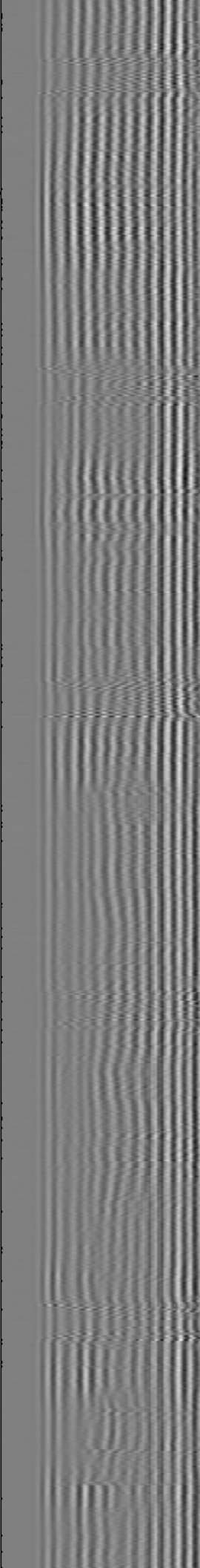
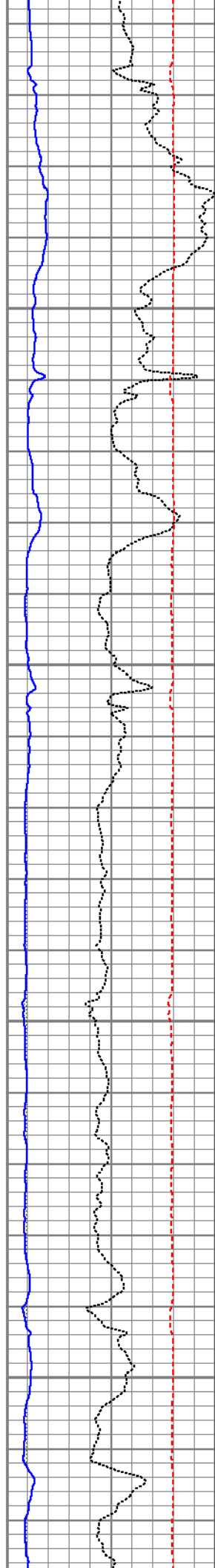
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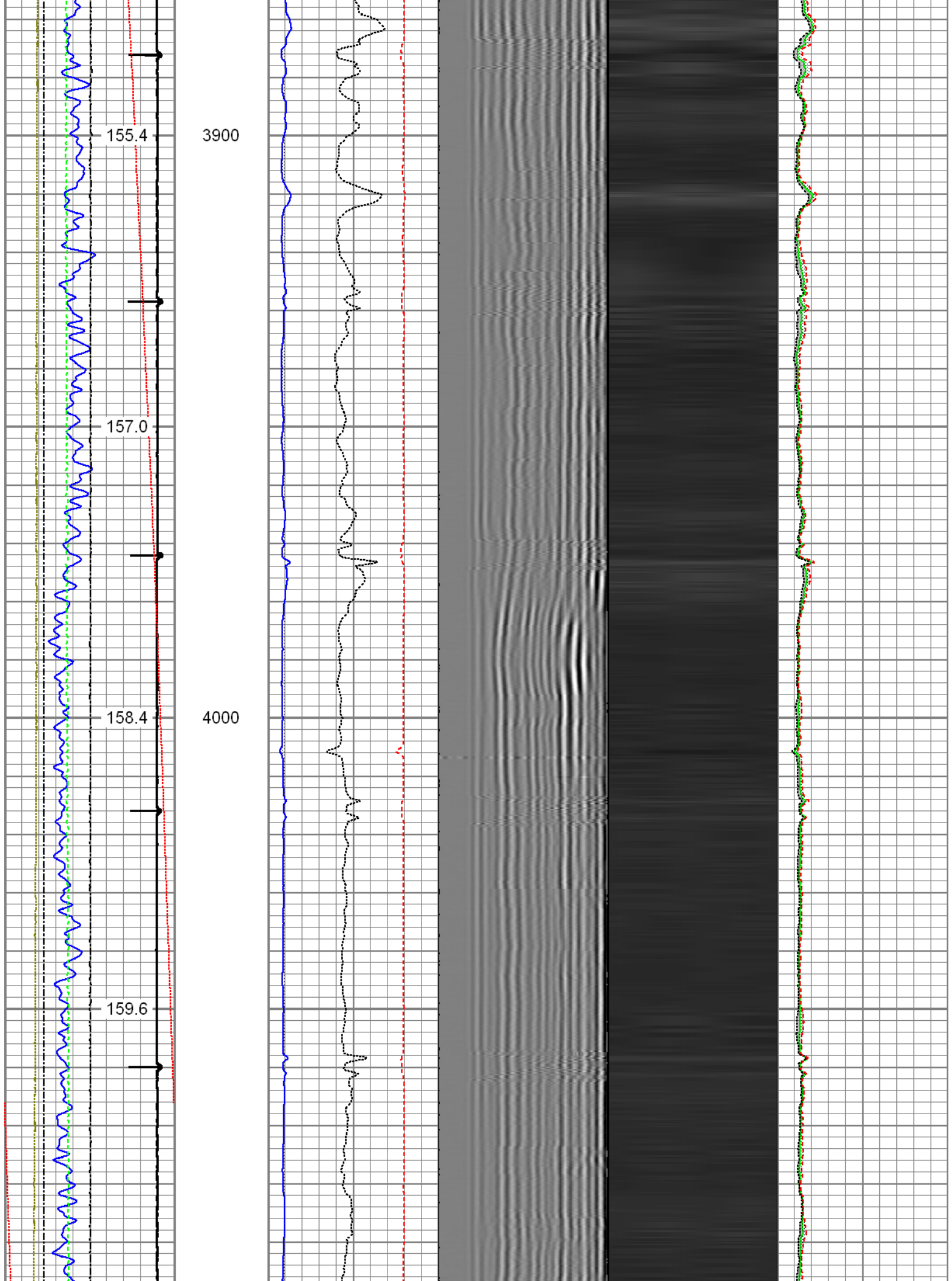


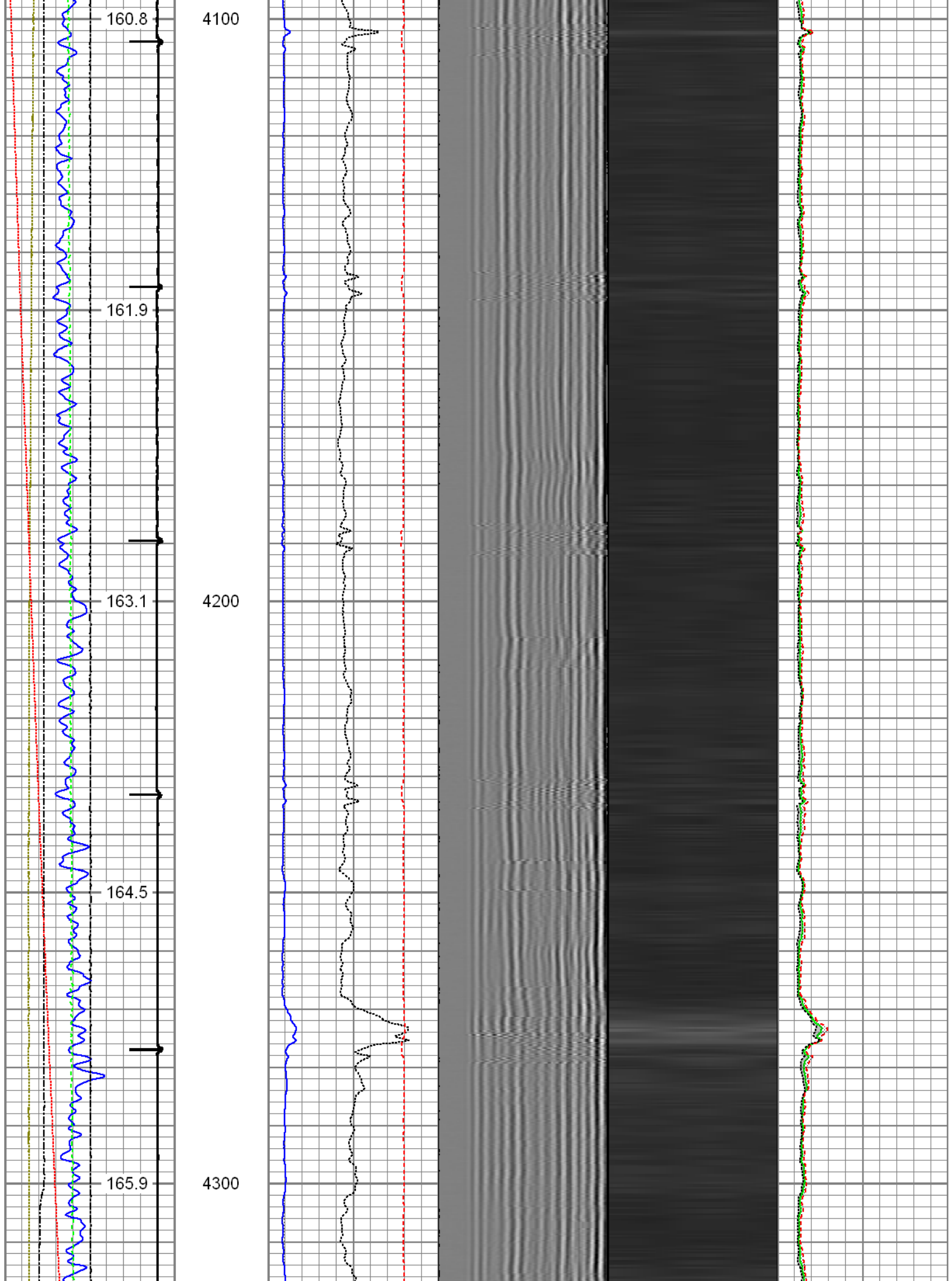


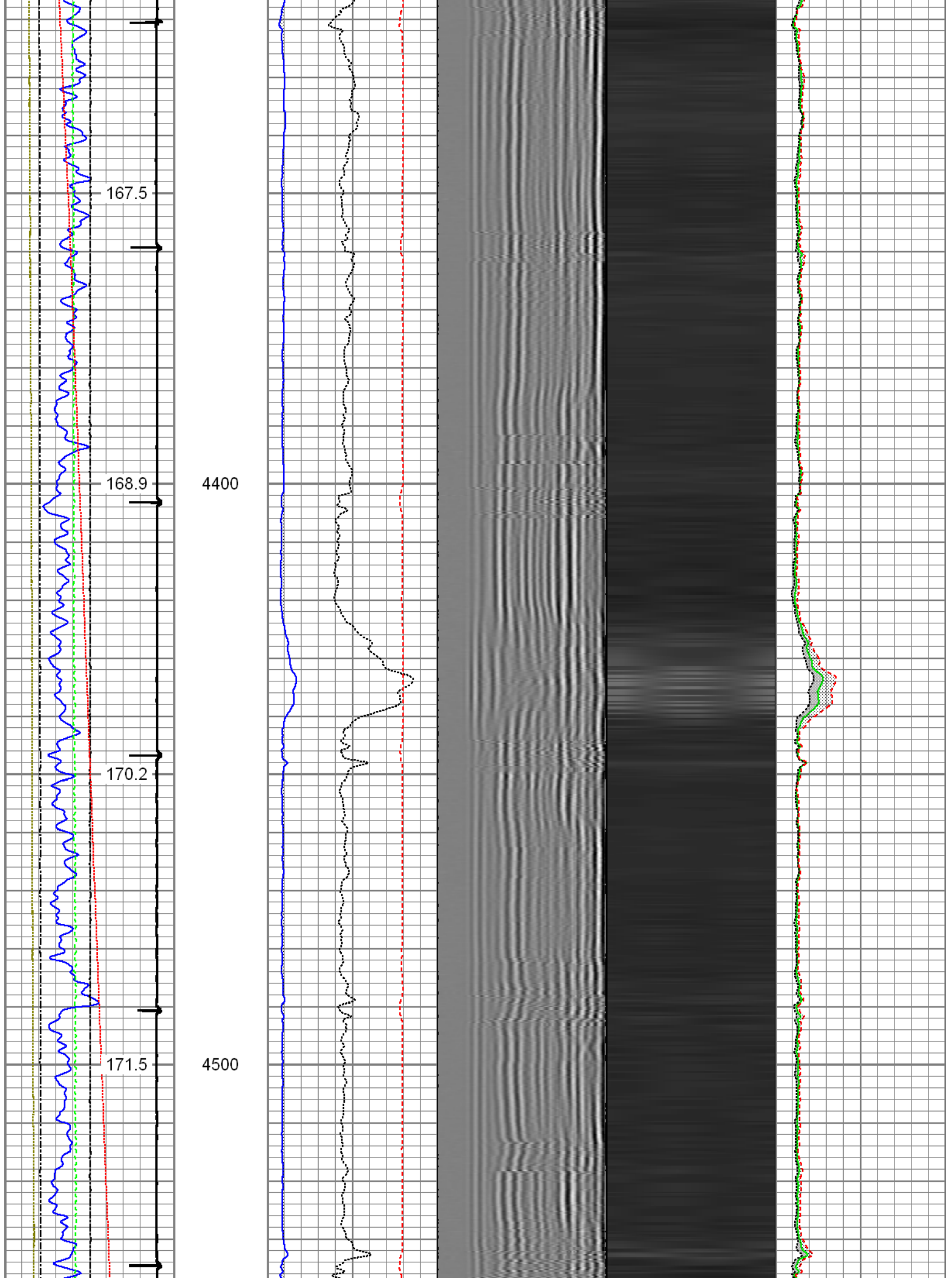
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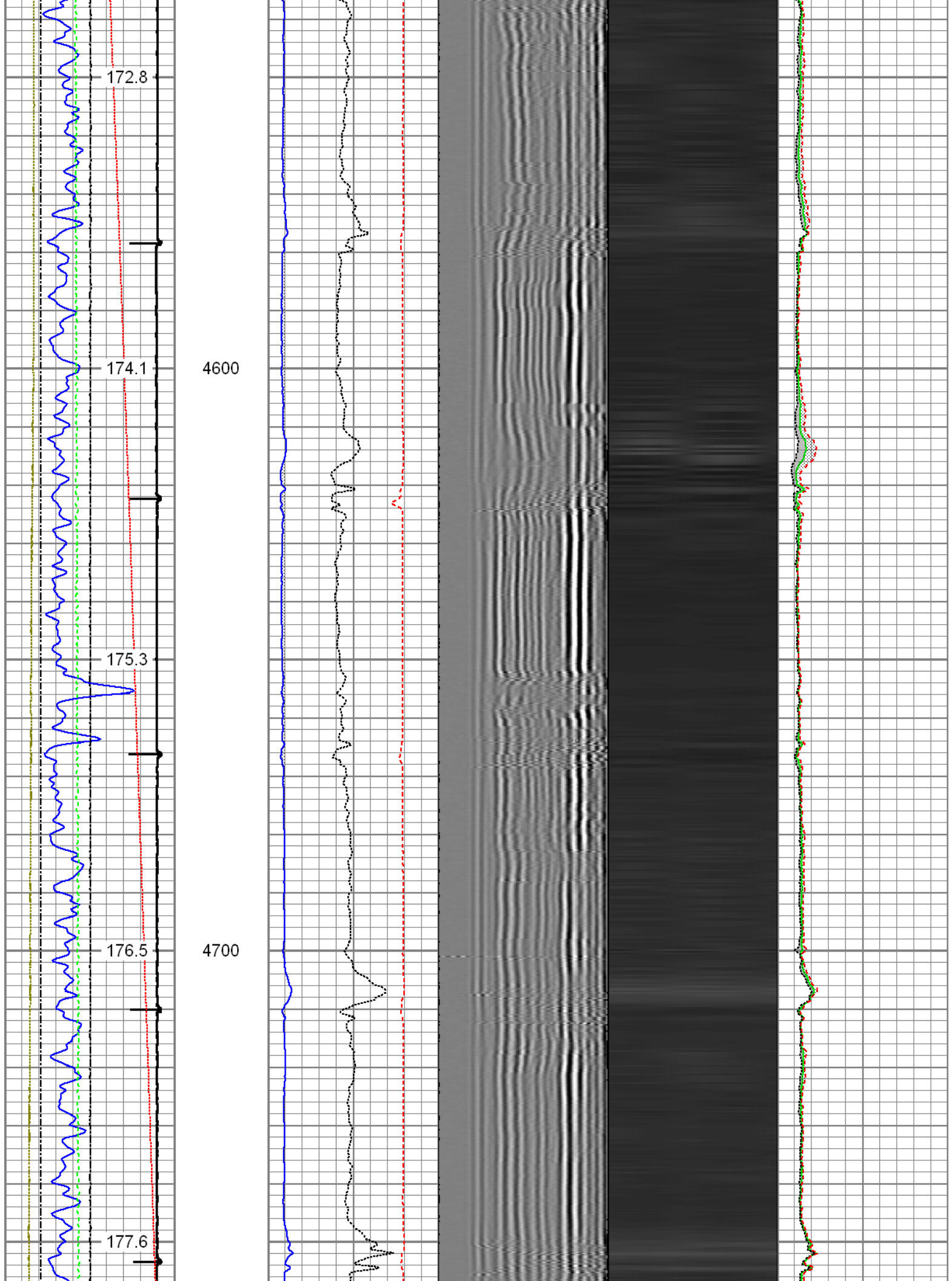
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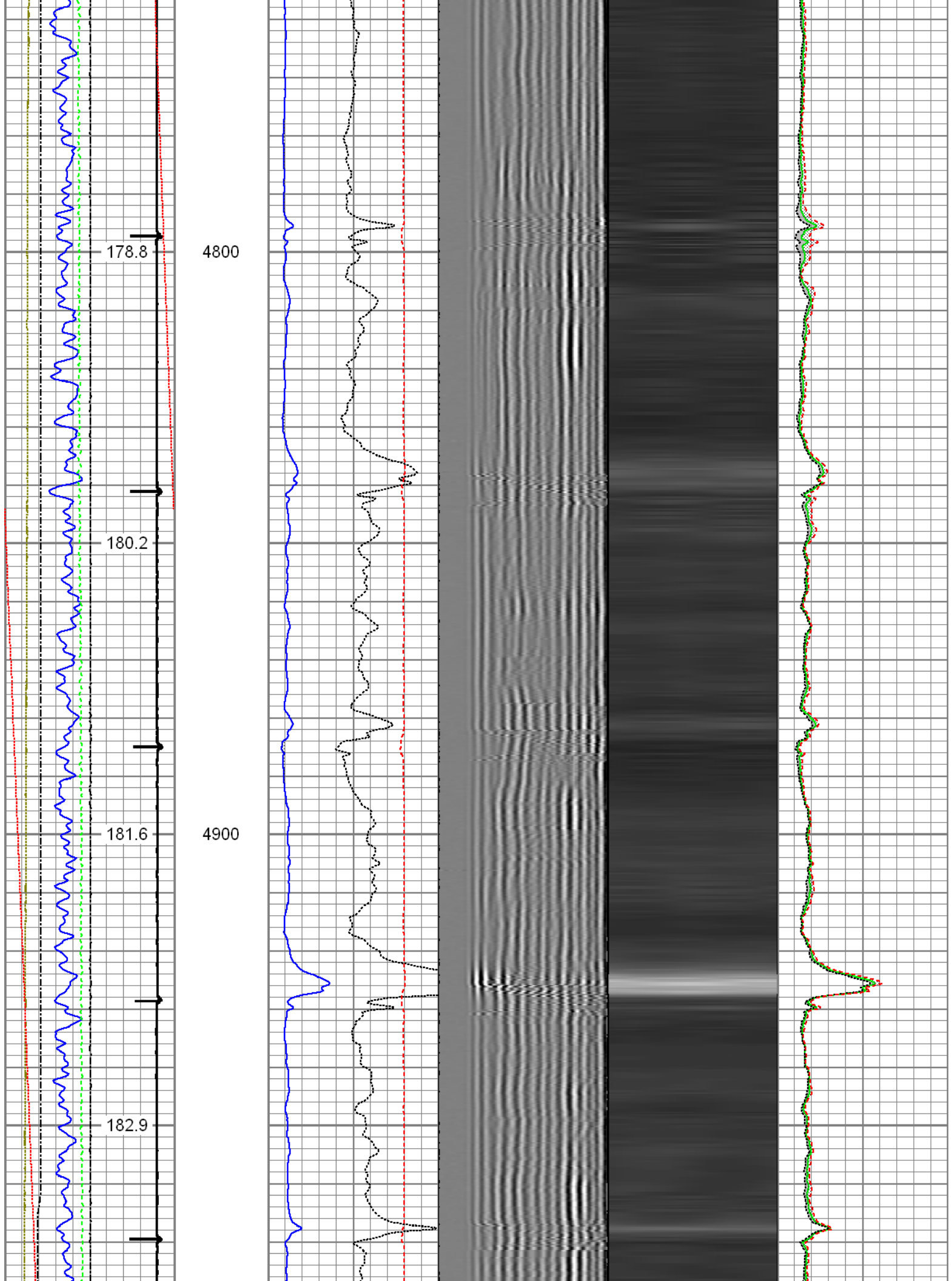


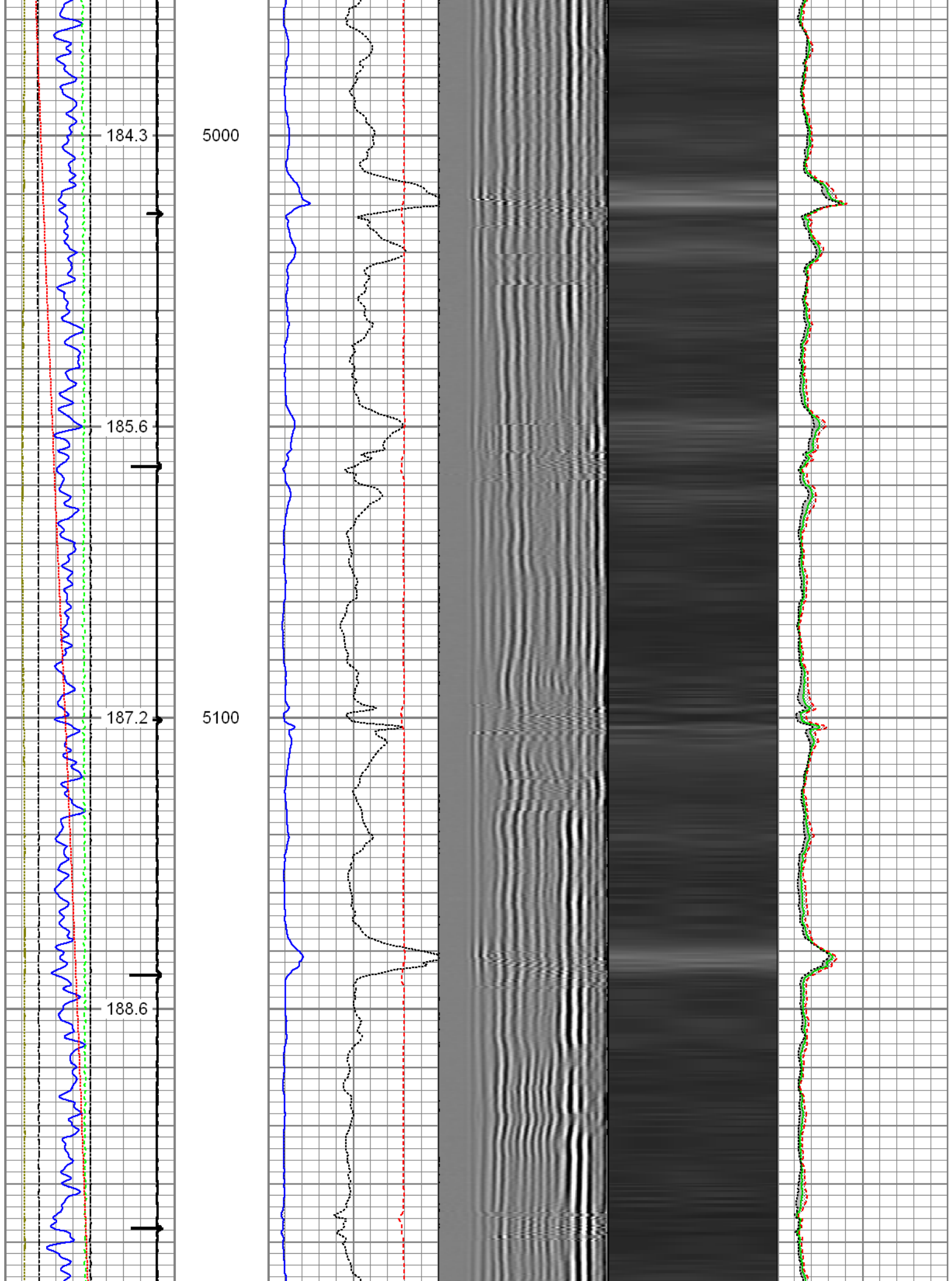


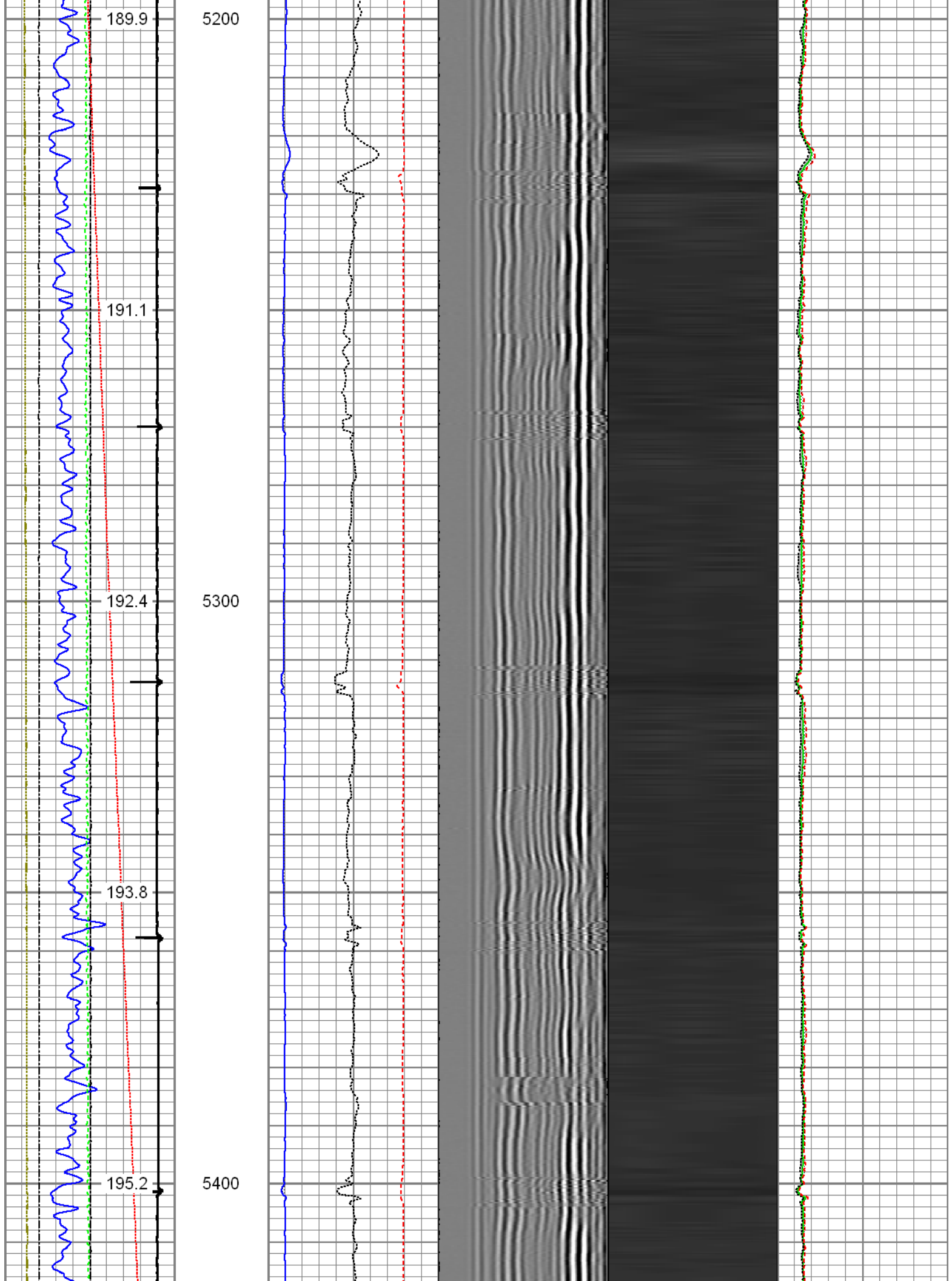


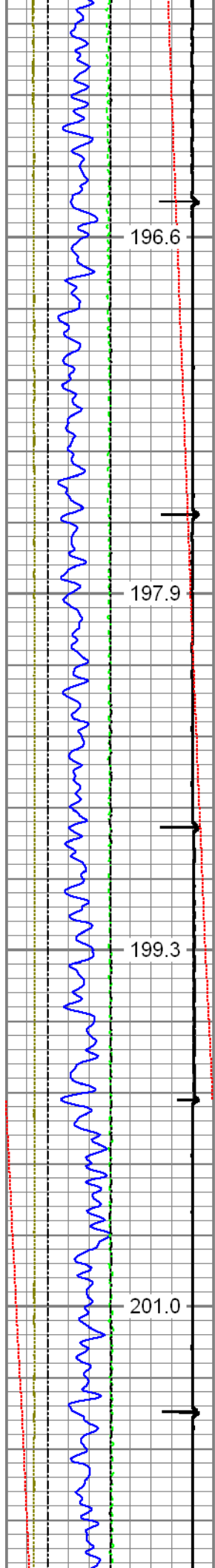












196.6

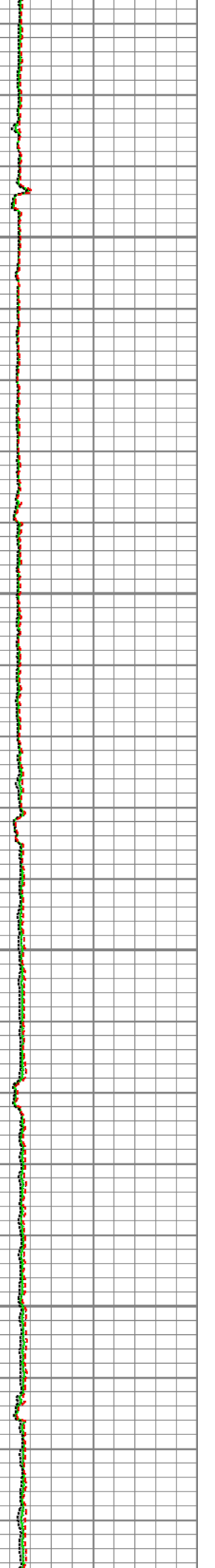
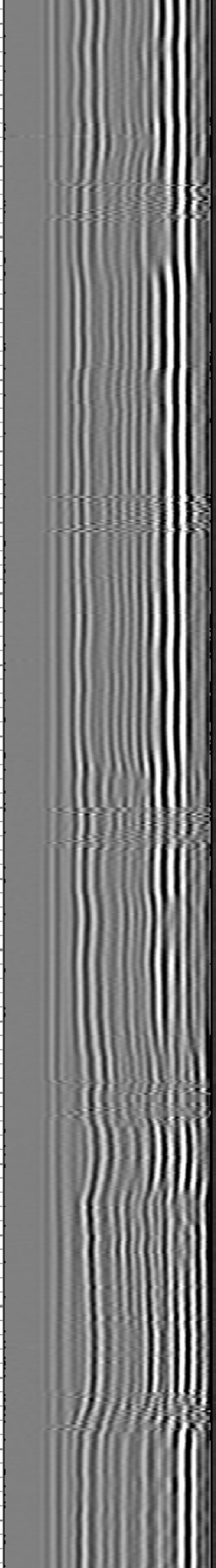
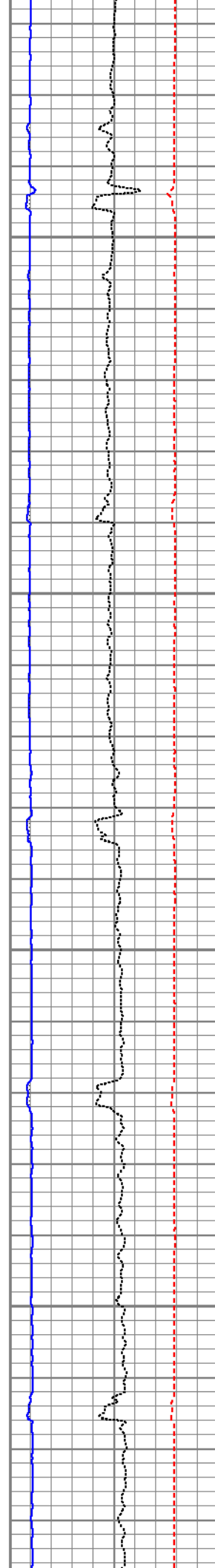
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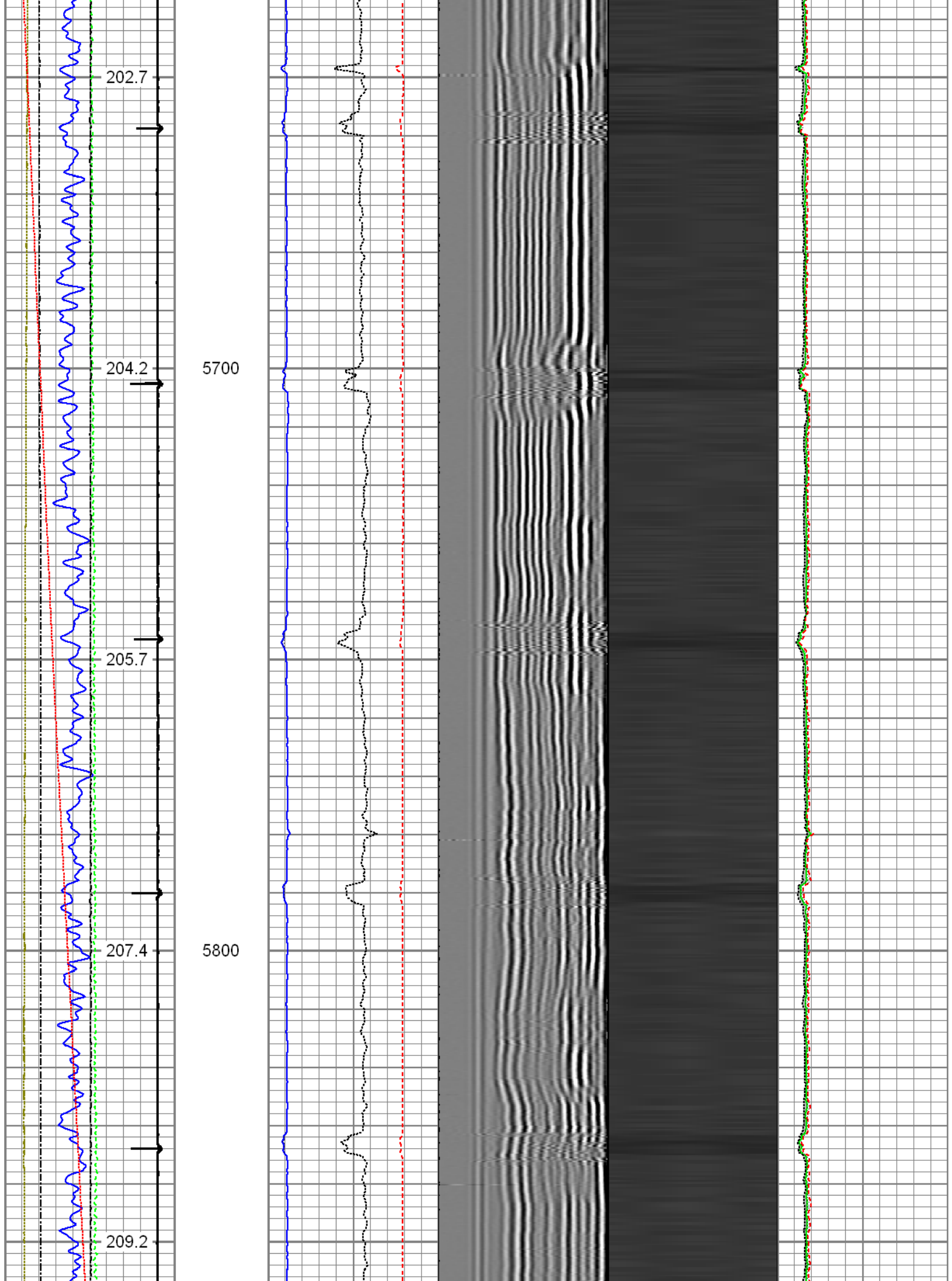
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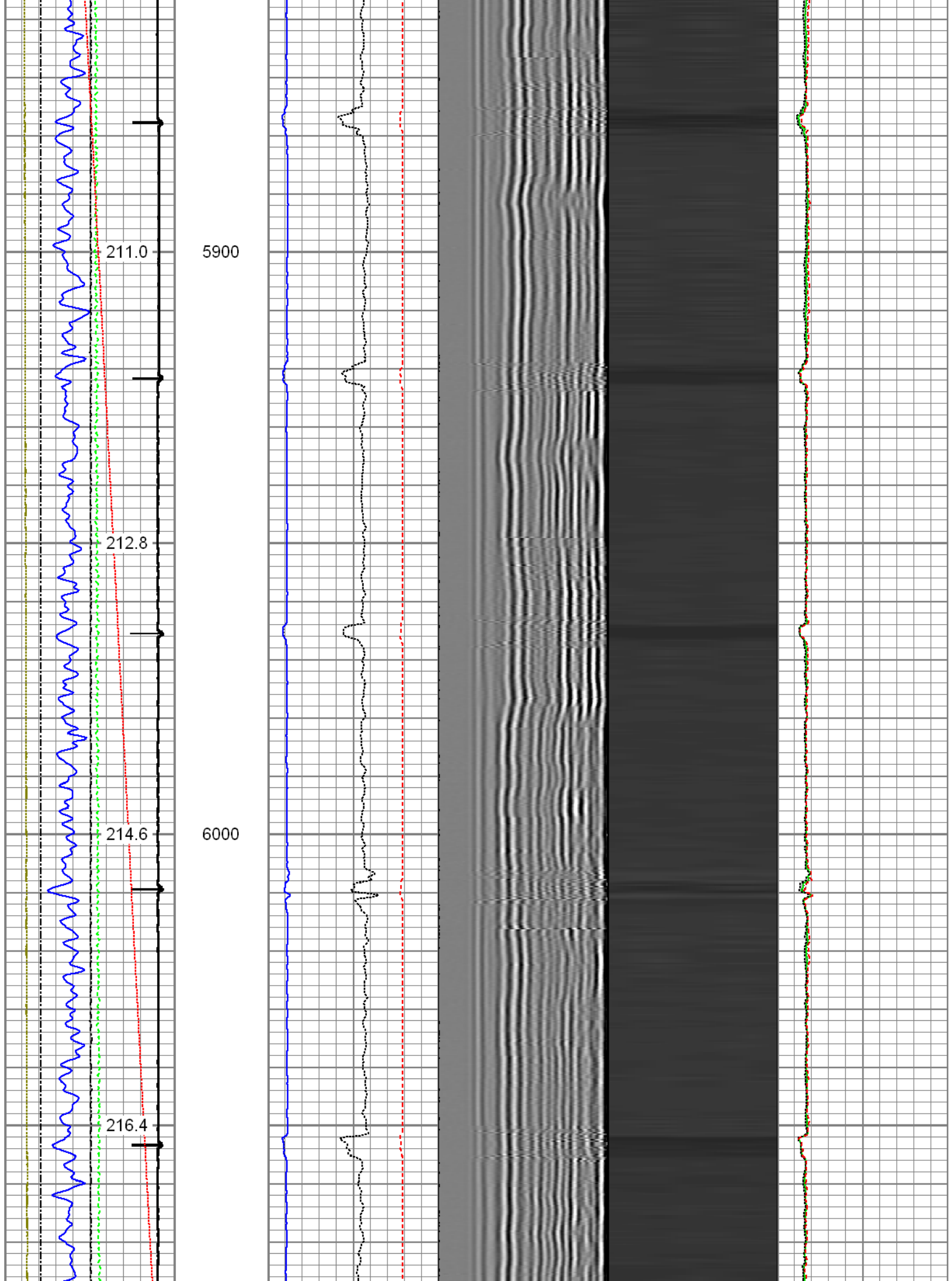
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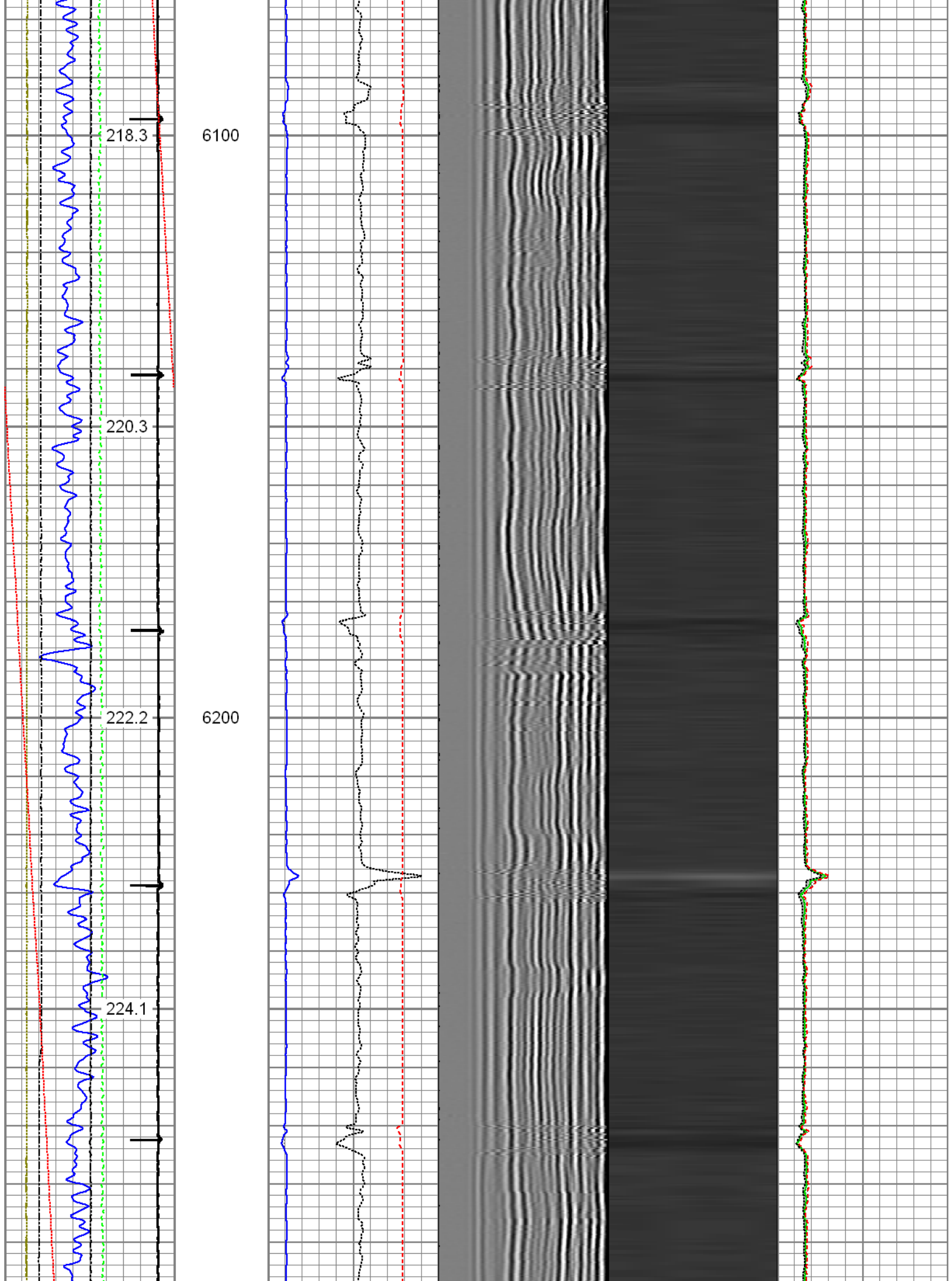
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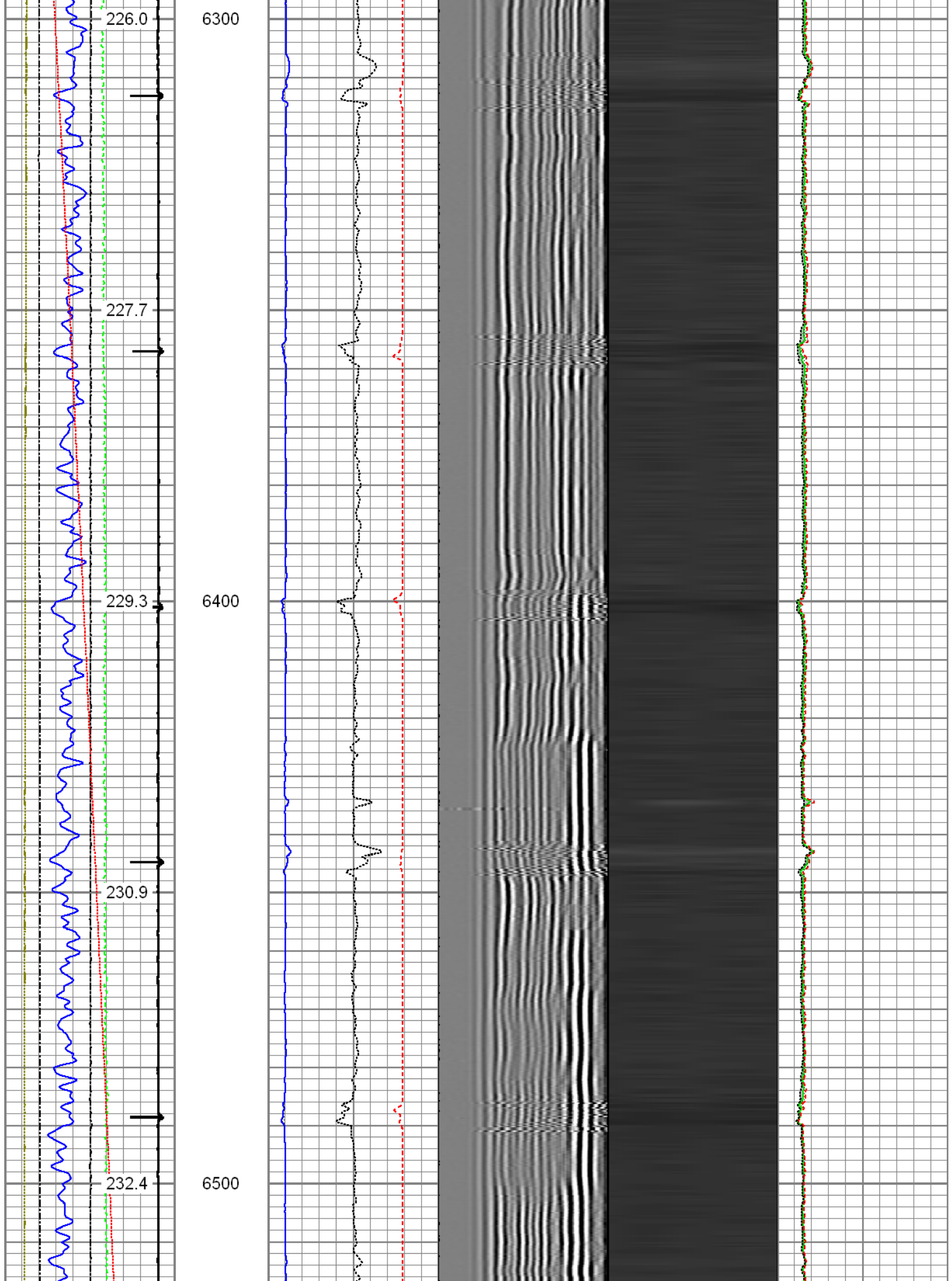
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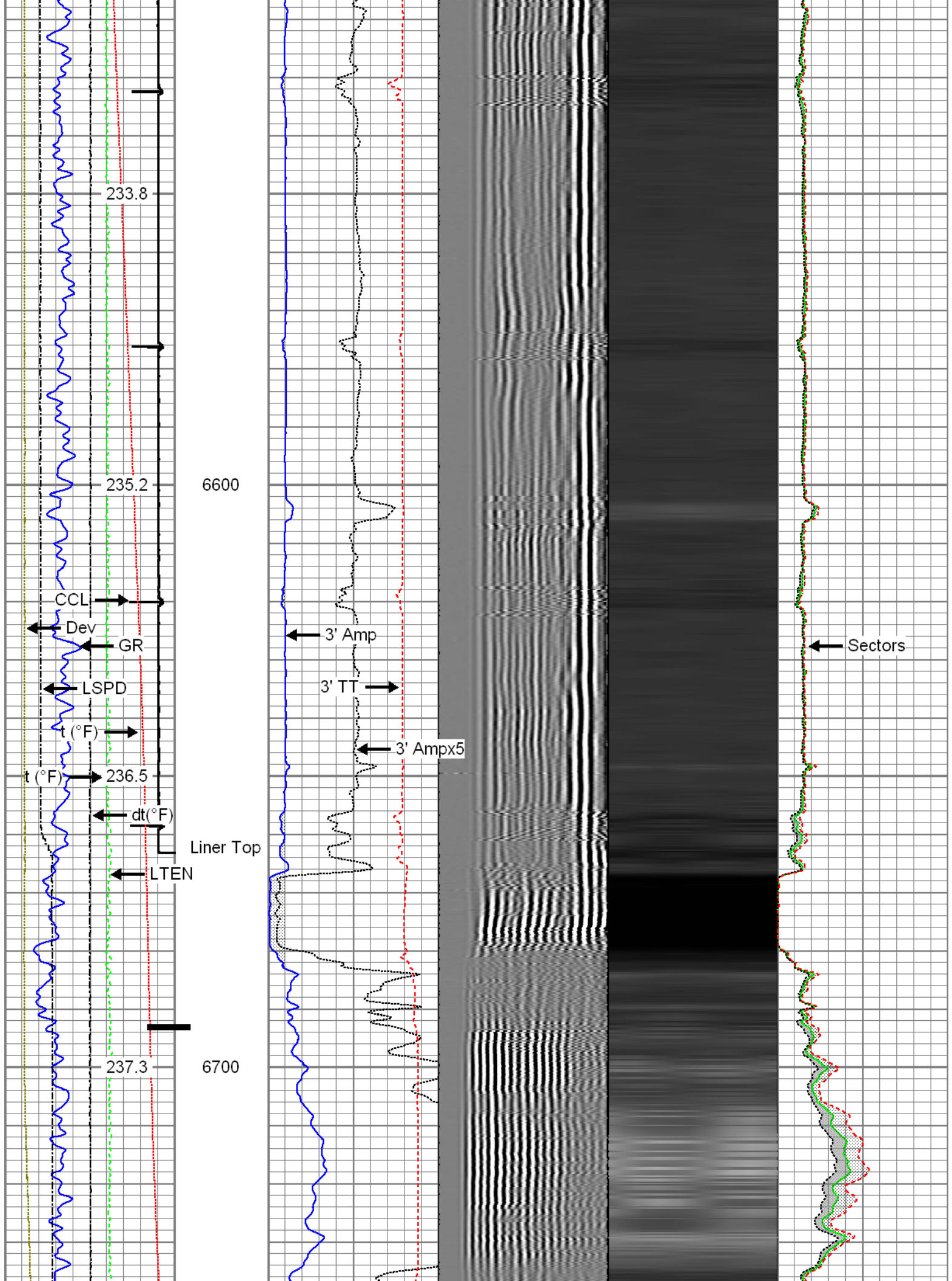


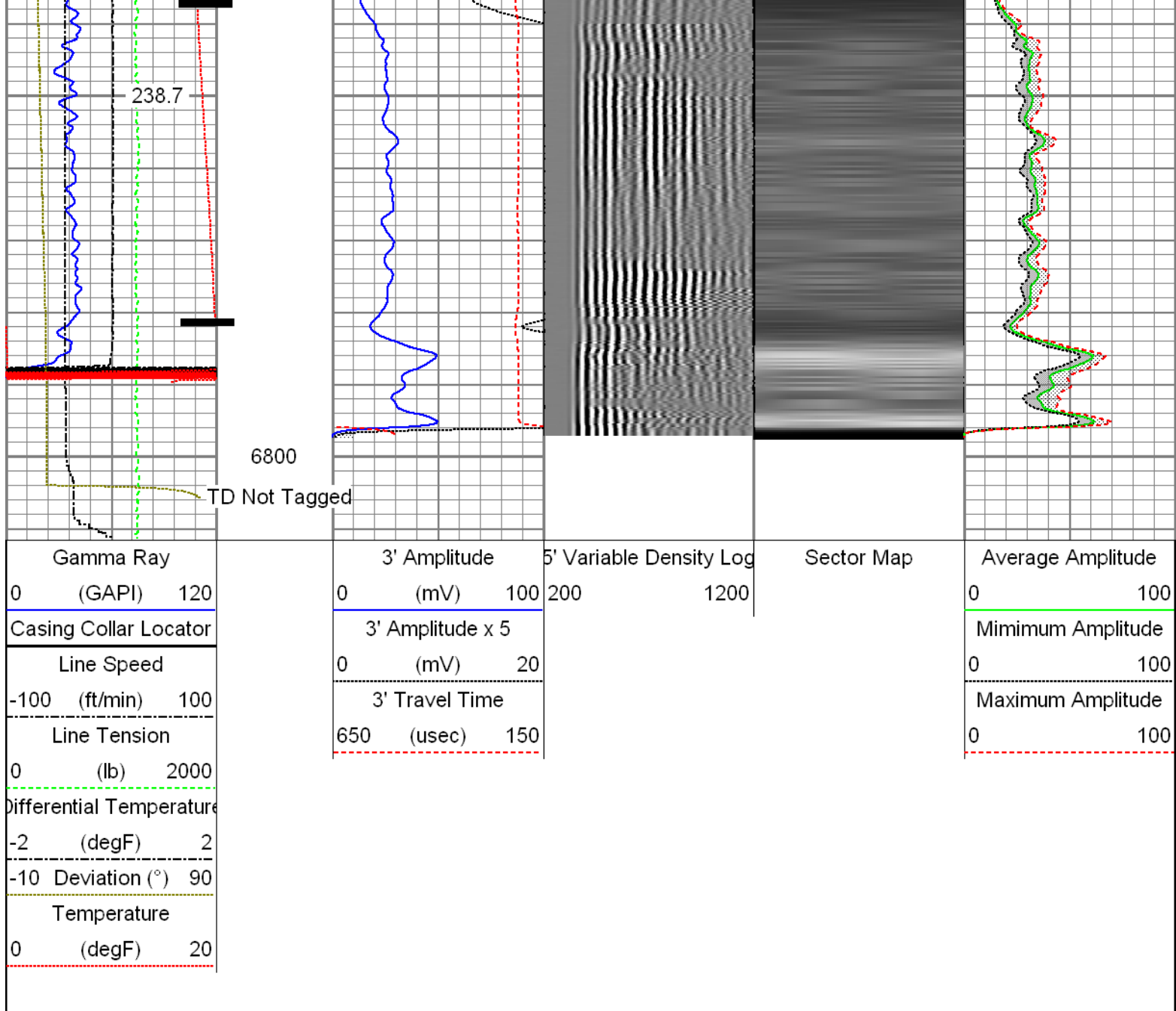








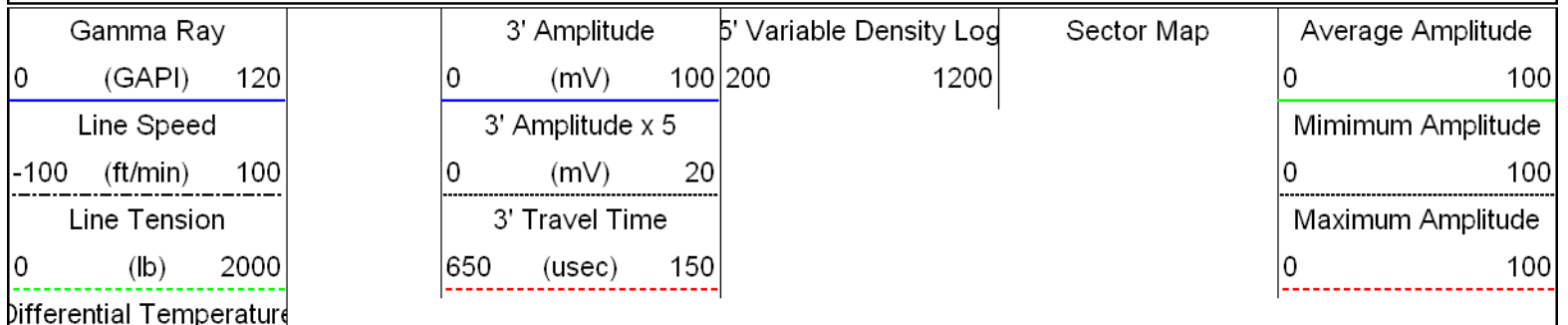




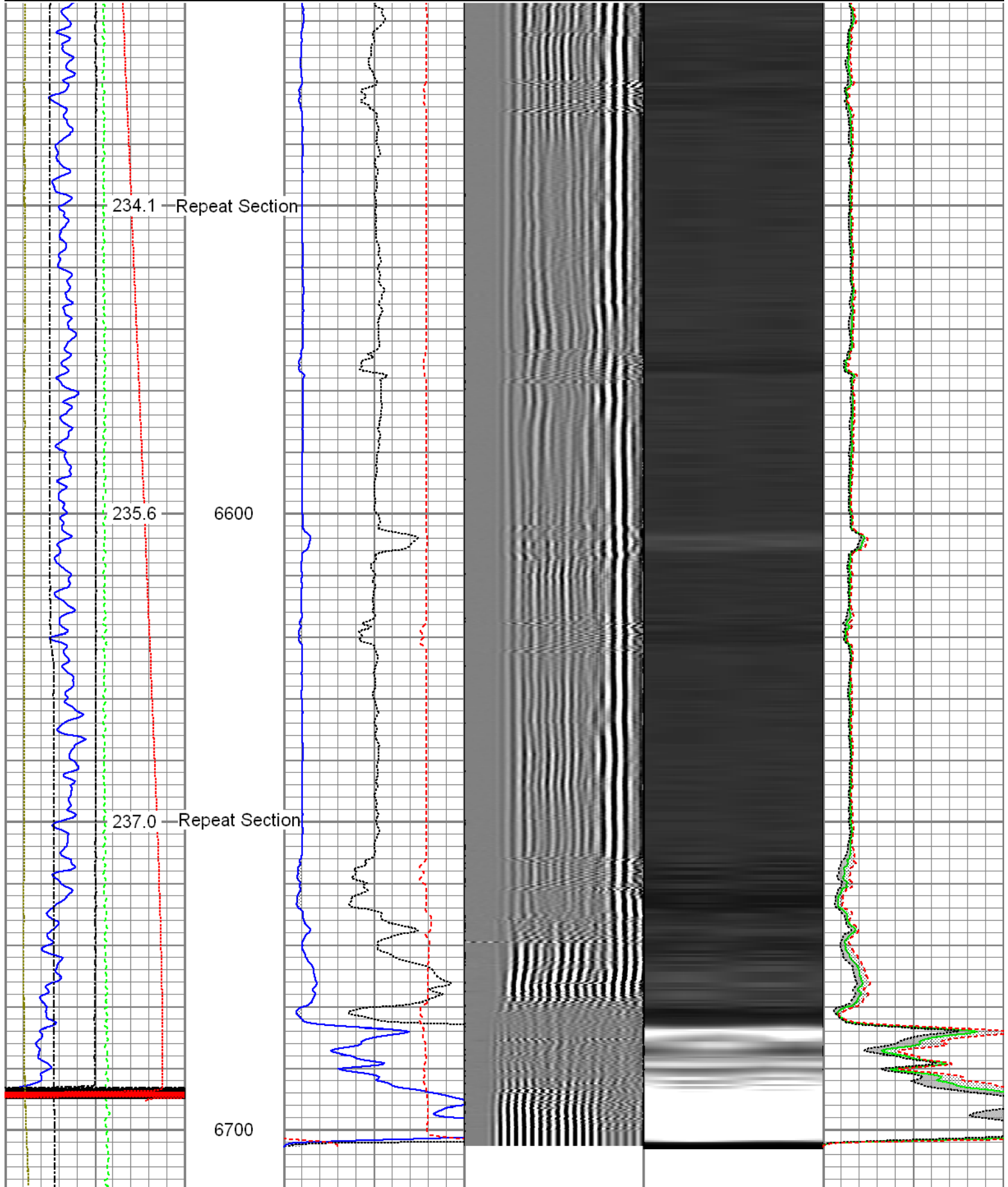
Repeat Pass

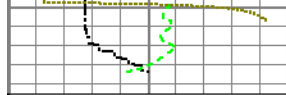
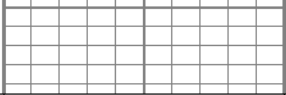


Recorded with 2800 PSI Surface Induced Pressure

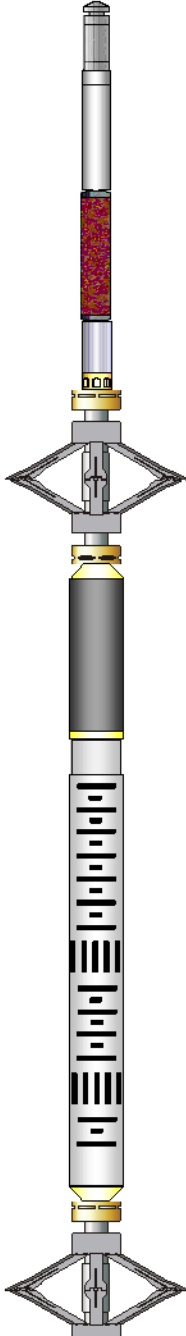

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 Presentation Format: rbt4_mit
 Dataset Creation: Tue Jul 28 12:20:59 2015 by Log 7.0 B1
 Charted by: Depth in Feet scaled 1:240

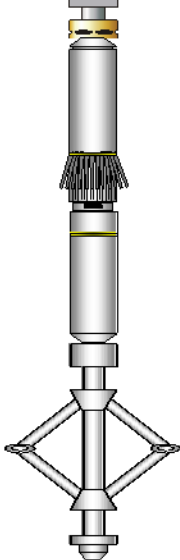


-2	(degF)	2
-10	Deviation (°)	90
Temperature		
0	(degF)	20



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

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 (211727) Production Gamma Ray	1.93	1.69	9.50
			UW_PRT-UW_PRT_016 (10024052) Platinum Resistance Thermometer	1.04	1.69	5.20
TEMP	22.45		UW_PRC #3 -DSSRAC (082) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
WVF3FT	15.42		UW_RBT-UW_RBT_004 (1066) 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					
CBLROT	15.42					
WVF5FT	14.42		UW_PRC-DSSRAC (080) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00

MIT	5.41		UW_MIT-UW_MIT40_027 (218950) 40 Multifinger Imaging Tool	4.54	2.75	61.10
			UW_PRC #4 -UW_PRC_057 (1037) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
TSTAMP	0.00		UW_BUL-UW_BUL_006 (10019616) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20
Dataset: 0512340979_Anadarko_Milk State 29C-21HZ_07-28-15_MIT_RBL.db: field/well/run1/main1 Total Length: 28.09 ft Total Weight: 324.50 lb O.D. 3.13 in						

Calibration Report			
Database File:	0512340979_anadarko_milk state 29c-21hz_07-28-15_mit_rbl.db		
Dataset Pathname:	main1		
Dataset Creation:	Tue Jul 28 12:46:07 2015 by Log 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: Tue Jul 28 11:23:57 2015						
Ring size:	4	5	6	7			
(in)							
	Sens	Sens	Sens				
Finger 01:	1442 274.0	1716 294.0	2010 299.0	2309			
Finger 02:	1510 254.0	1764 260.0	2024 263.0	2287			
Finger 03:	1429 279.0	1708 294.0	2002 297.0	2299			
Finger 04:	1449 281.0	1730 290.0	2020 291.0	2311			
Finger 05:	1487 273.0	1760 279.0	2039 279.0	2318			
Finger 06:	1418 283.0	1701 297.0	1998 301.0	2299			
Finger 07:	1439 283.0	1722 292.0	2014 297.0	2311			
Finger 08:	1436 279.0	1715 288.0	2003 292.0	2295			
Finger 09:	1427 284.0	1711 293.0	2004 300.0	2304			
Finger 10:	1444 273.0	1717 284.0	2001 289.0	2290			
Finger 11:	1428 283.0	1711 292.0	2003 299.0	2302			

Finger 12:	1381	287.0	1668	295.0	1963	305.0	2268
Finger 13:	1477	269.0	1746	270.0	2016	277.0	2293
Finger 14:	1415	273.0	1688	282.0	1970	295.0	2265
Finger 15:	1406	289.0	1695	290.0	1985	306.0	2291
Finger 16:	1411	280.0	1691	286.0	1977	300.0	2277
Finger 17:	1420	288.0	1708	294.0	2002	309.0	2311
Finger 18:	1359	279.0	1638	279.0	1917	297.0	2214
Finger 19:	1415	283.0	1698	285.0	1983	300.0	2283
Finger 20:	1425	281.0	1706	288.0	1994	302.0	2296
Finger 21:	1370	290.0	1660	301.0	1961	317.0	2278
Finger 22:	1392	272.0	1664	281.0	1945	293.0	2238
Finger 23:	1394	279.0	1673	285.0	1958	300.0	2258
Finger 24:	1426	280.0	1706	285.0	1991	295.0	2286
Finger 25:	1358	285.0	1643	274.0	1917	294.0	2211
Finger 26:	1342	284.0	1626	287.0	1913	305.0	2218
Finger 27:	1428	274.0	1702	283.0	1985	296.0	2281
Finger 28:	1414	282.0	1696	291.0	1987	305.0	2292
Finger 29:	1467	267.0	1734	273.0	2007	285.0	2292
Finger 30:	1378	280.0	1658	293.0	1951	305.0	2256
Finger 31:	1408	284.0	1692	299.0	1991	306.0	2297
Finger 32:	1470	268.0	1738	278.0	2016	284.0	2300
Finger 33:	1424	284.0	1708	301.0	2009	307.0	2316
Finger 34:	1432	278.0	1710	292.0	2002	305.0	2307
Finger 35:	1483	259.0	1742	266.0	2008	276.0	2284
Finger 36:	1469	266.0	1735	284.0	2019	291.0	2310
Finger 37:	1444	283.0	1727	294.0	2021	298.0	2319
Finger 38:	1515	255.0	1770	259.0	2029	268.0	2297
Finger 39:	1445	271.0	1716	285.0	2001	288.0	2289
Finger 40:	1412	286.0	1698	301.0	1999	306.0	2305

Segmented Cement Bond Log Calibration Report						
Serial Number:		1066				
Tool Model:		UW_RBT_004				
Calibration Casing Diameter:		7.000	in			
Calibration Depth:		-58.750	ft			
Master Calibration, performed Tue Jul 28 06:57:57 2015:						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	0.005	0.666	0.800	62.165	92.794	0.347
5FT	-0.001	0.663	0.800	62.165	92.343	0.913
S1	0.005	0.613	0.000	100.000	164.518	-0.791
S2	0.004	0.639	0.000	100.000	157.342	-0.576
S3	0.004	0.671	0.000	100.000	149.999	-0.654
S4	0.004	0.703	0.000	100.000	143.037	-0.529
S5	0.004	0.704	0.000	100.000	142.858	-0.623
S6	0.004	0.691	0.000	100.000	145.519	-0.538
S7	0.005	0.665	0.000	100.000	151.390	-0.693
S8	0.005	0.626	0.000	100.000	160.893	-0.768

Temperature Calibration Report					
		Serial Number:		10024052	
		Tool Model:		UW_PRT_016	
		Performed:		Wed Feb 11 16:41:28 2015	
Point #		Reading		Reference	
1		12242.00	cps	68.00	degF
2		18329.00	cps	104.00	degF

3	29563.00	cps	176.00	degF
4	41222.00	cps	248.00	degF
5	52988.00	cps	320.00	degF
6	58824.00	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:	Mon Jul 27 11:59:34 2015			
Calibrator Value:	1.0	GAPI		
Background Reading:	0.0	cps		
Calibrator Reading:	1.0	cps		
Sensitivity:	0.6500	GAPI/cps		

	Company	Kerr-McGee Oil & Gas OnShore L.P.
	Well	Milk State 29C-21HZ
	Field	Wattenberg
	County	Weld
	State	Colorado