



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company		Noble Energy Inc.		Company		Noble Energy Inc.	
Well		Remora LC34-725		Well		Remora LC34-725	
Field		Wildcat		Field		Wildcat	
County		Weld		County		Weld	
State		Colorado		State		Colorado	
Location:				API #: 05-123-40602			
SEC 34 TWP 9N RGE 59W				Other Services			
Permanent Datum				Ground Level			
Log Measured From				Kelly Bushing			
Drilling Measured From				Kelly Bushing			
Elevation 4814'				Elevation			
				K.B. 4838'			
				D.F. 4837'			
				G.L. 4814'			
Date		28-Jan-2016					
Run Number		One					
Depth Driller		10288 FT					
Depth Logger		6259 FT					
Bottom Logged Interval		6254 FT					
Top Log Interval		Surface					
Open Hole Size		8.750"					
Type Fluid		Water					
Density / Viscosity		8.34 lbm/gal					
Max. Recorded Temp.		217°F					
Estimated Cement Top		590 FT					
Time Well Ready		ROA					
Time Logger on Bottom		8:54 AM					
Equipment Number		HD-0325					
Location		Fort Lupton, CO					
Recorded By		J. Morrison					
Witnessed By		Bill Mansfield					
Borehole Record				Tubing Record			
Run Number		Bit		From		To	
Casing Record		Size (in)		Wgt (lbs/Ft)		Grade	
Surface Casing		9 5/8		36		J55	
Intermediate #1		7		26		P-110	
Intermediate #2							
Liner		4 1/2		11.6		P-110	
Marker Joint						6268 FT	
						10278 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
Marker Joints Recorded at 5160-5174 FT and 5342-5361 FT
Log ran from just above Liner Top to surface
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.

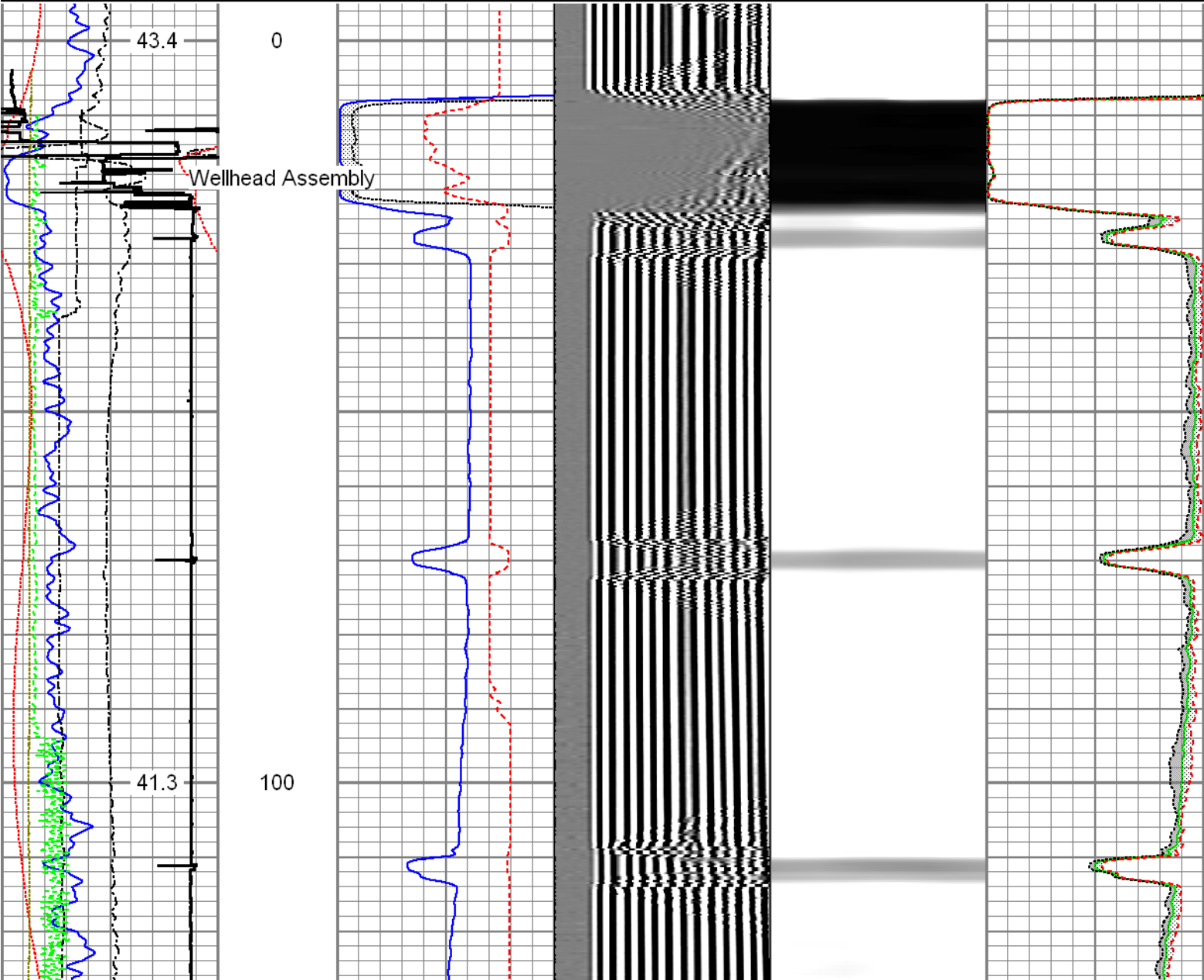


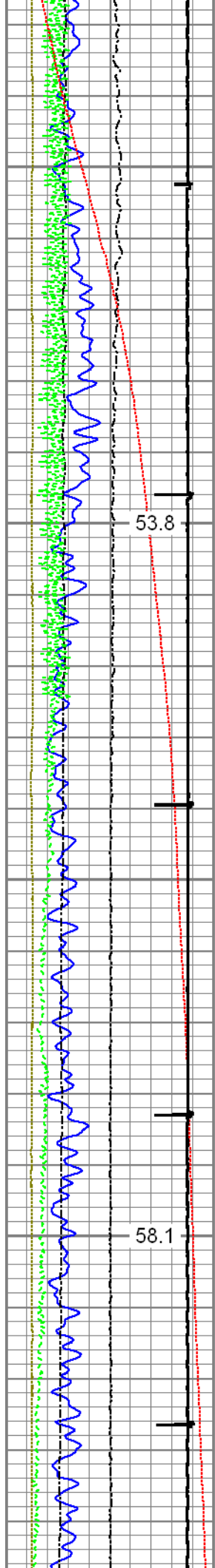
Main Pass

Recorded with 2500 PSI Surface Induced Pressure

Database File: c:\warrior\data\01-28-16_noble energy_remora lc34-725_mit_rbl\processed_01-28-16_noble energy_
Dataset Pathname: Main.2
Presentation Format: rbt4_mit
Dataset Creation: Thu Jan 28 11:51:38 2016 by Calc 7.0 B1
Charted by: Depth in Feet scaled 1:240

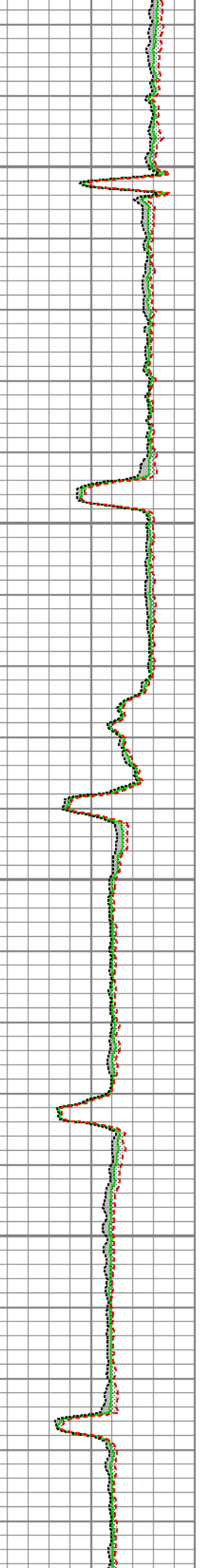
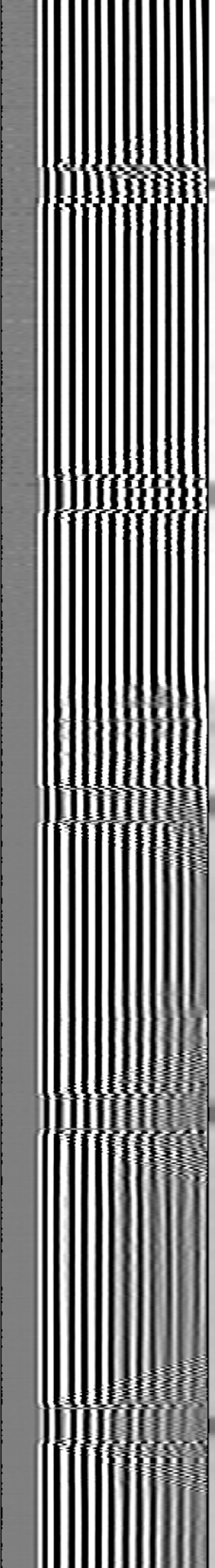
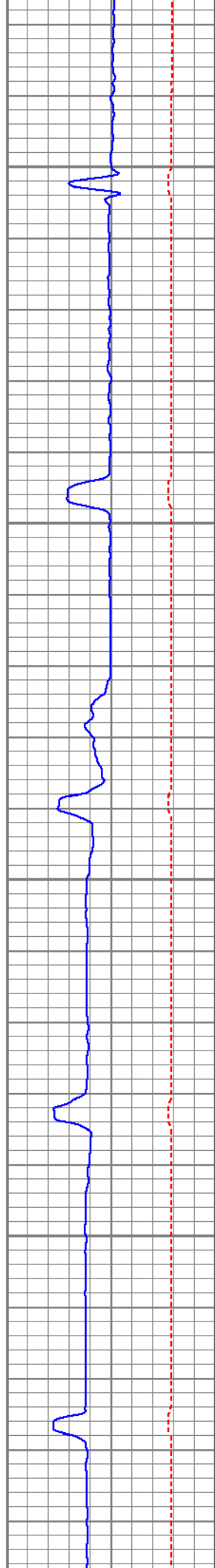
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Line Speed	3' Amplitude x 5			Mimimum Amplitude
-100 (ft/min) 100	0 (mV) 20			0 100
Line Tension	3' Travel Time			Maximum Amplitude
0 (lb) 2000	650 (usec) 150			0 100
Differential Temperature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

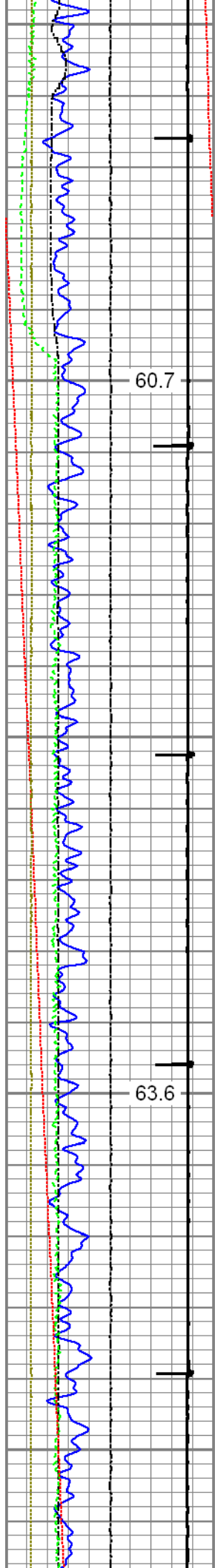




200

300



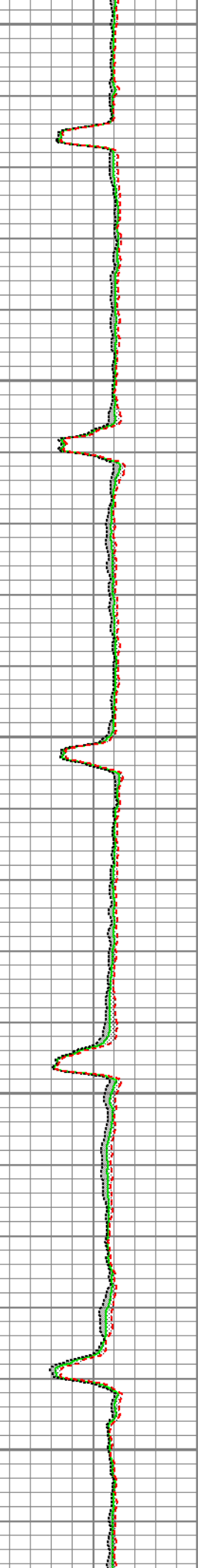
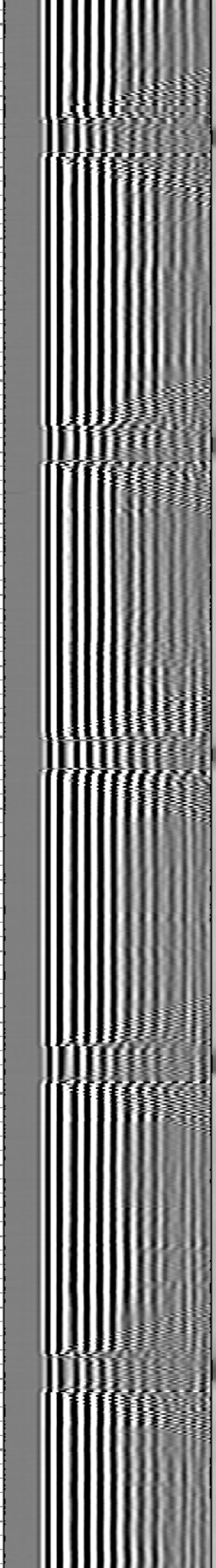
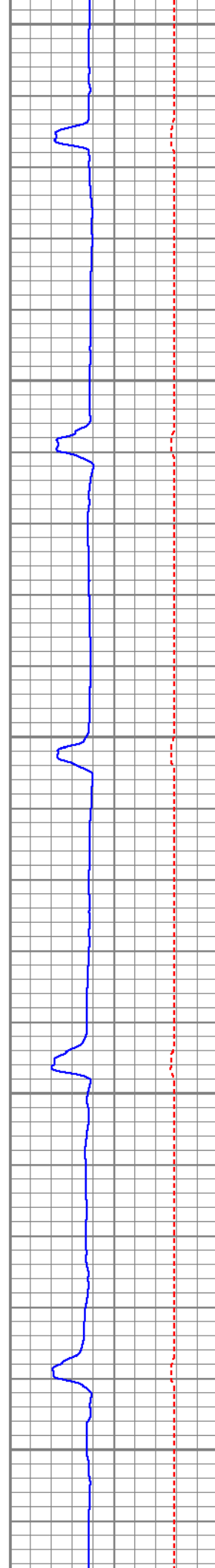


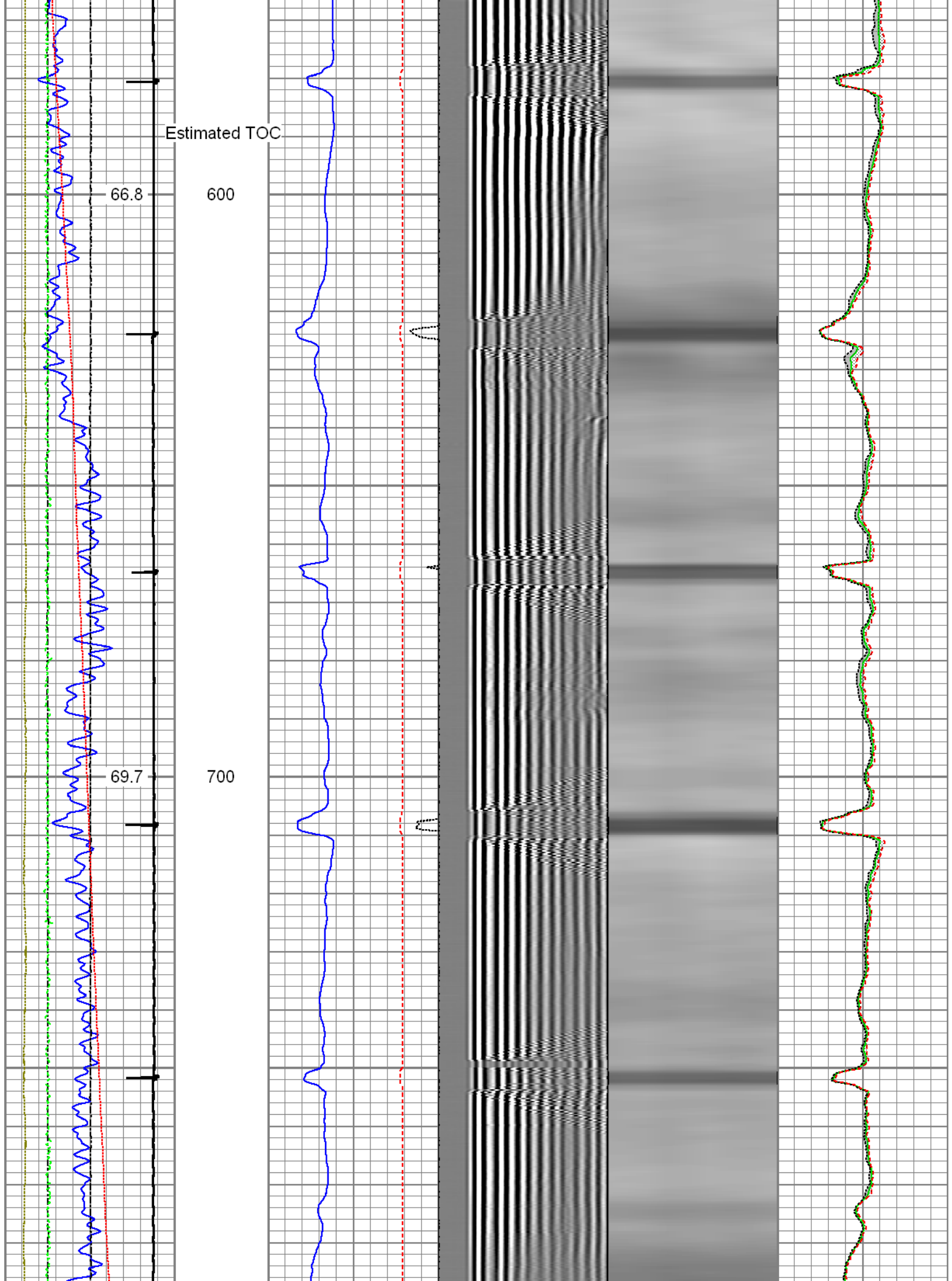
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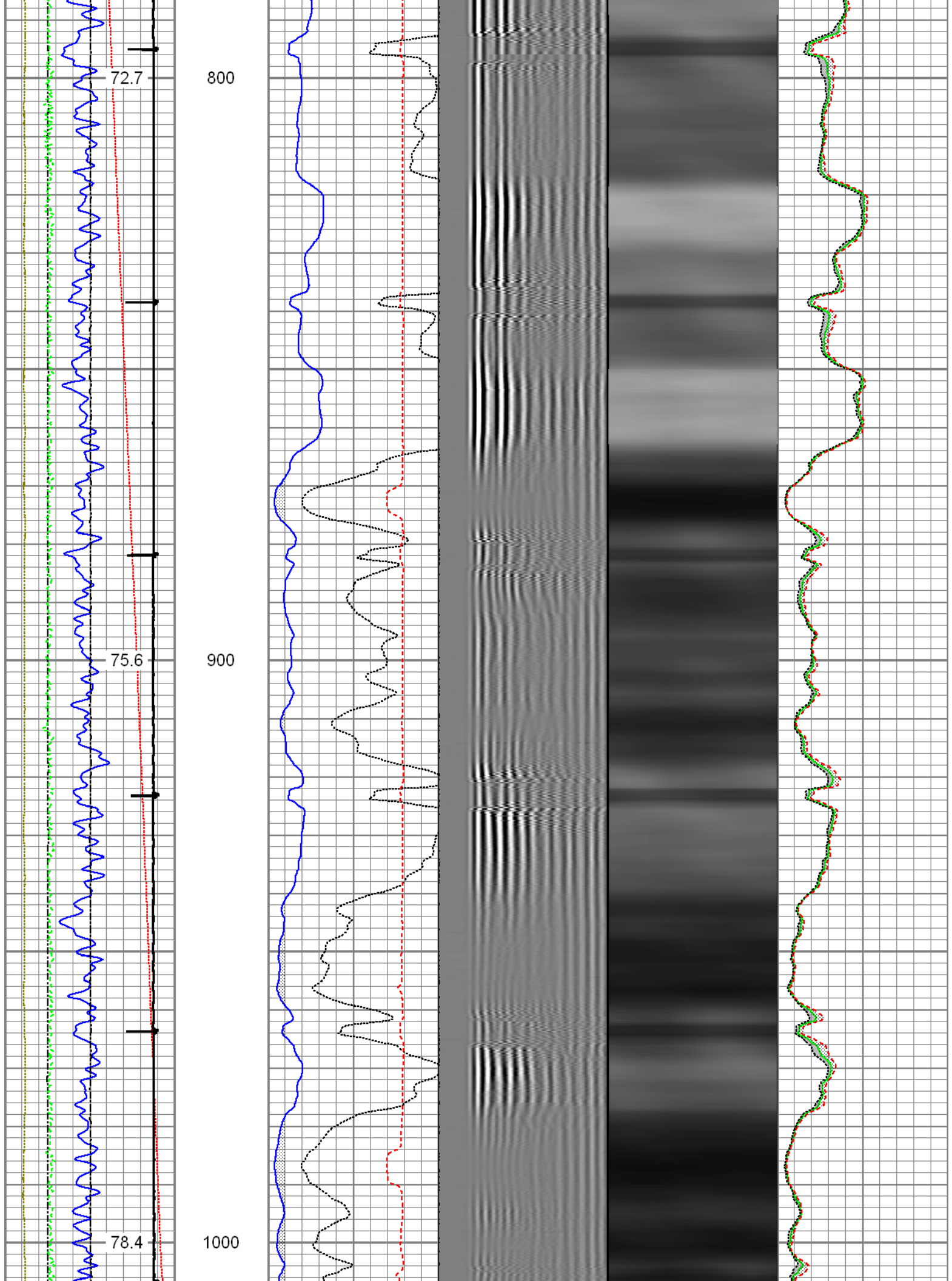
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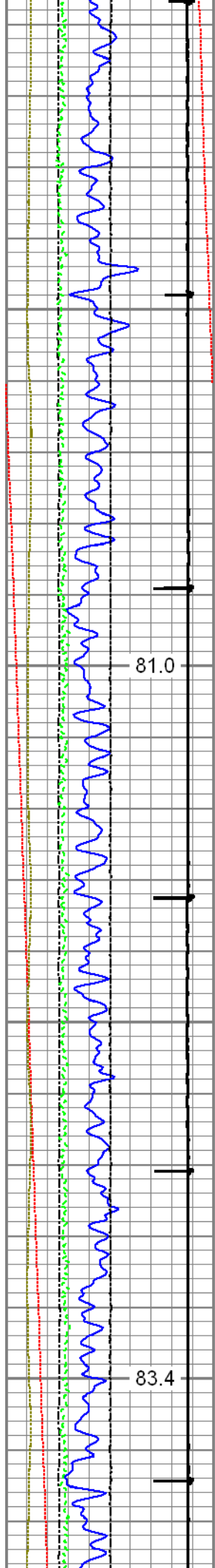
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500



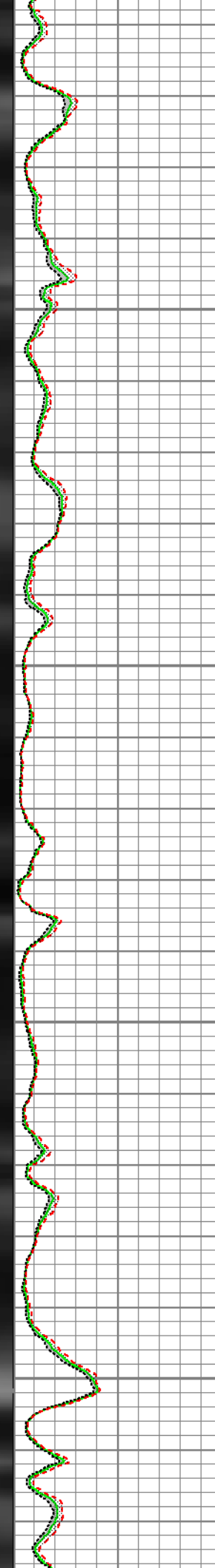
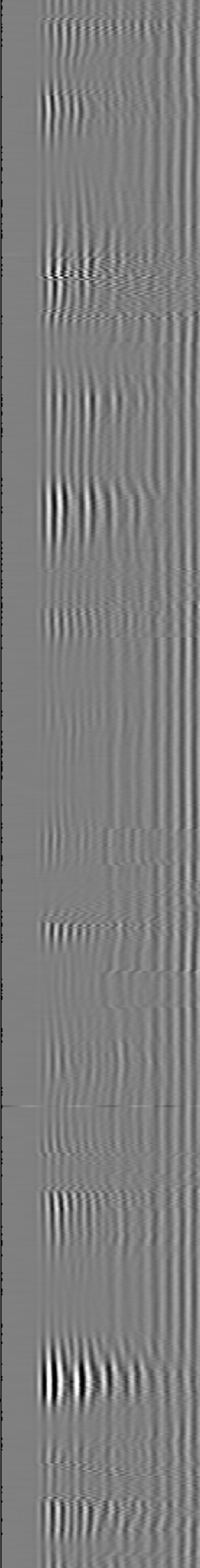
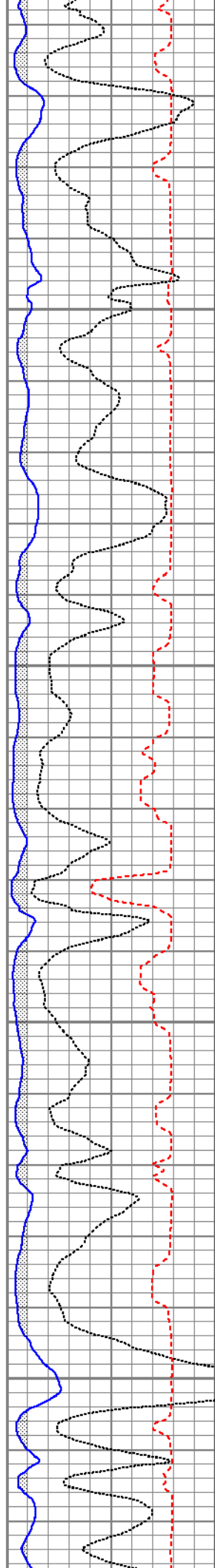


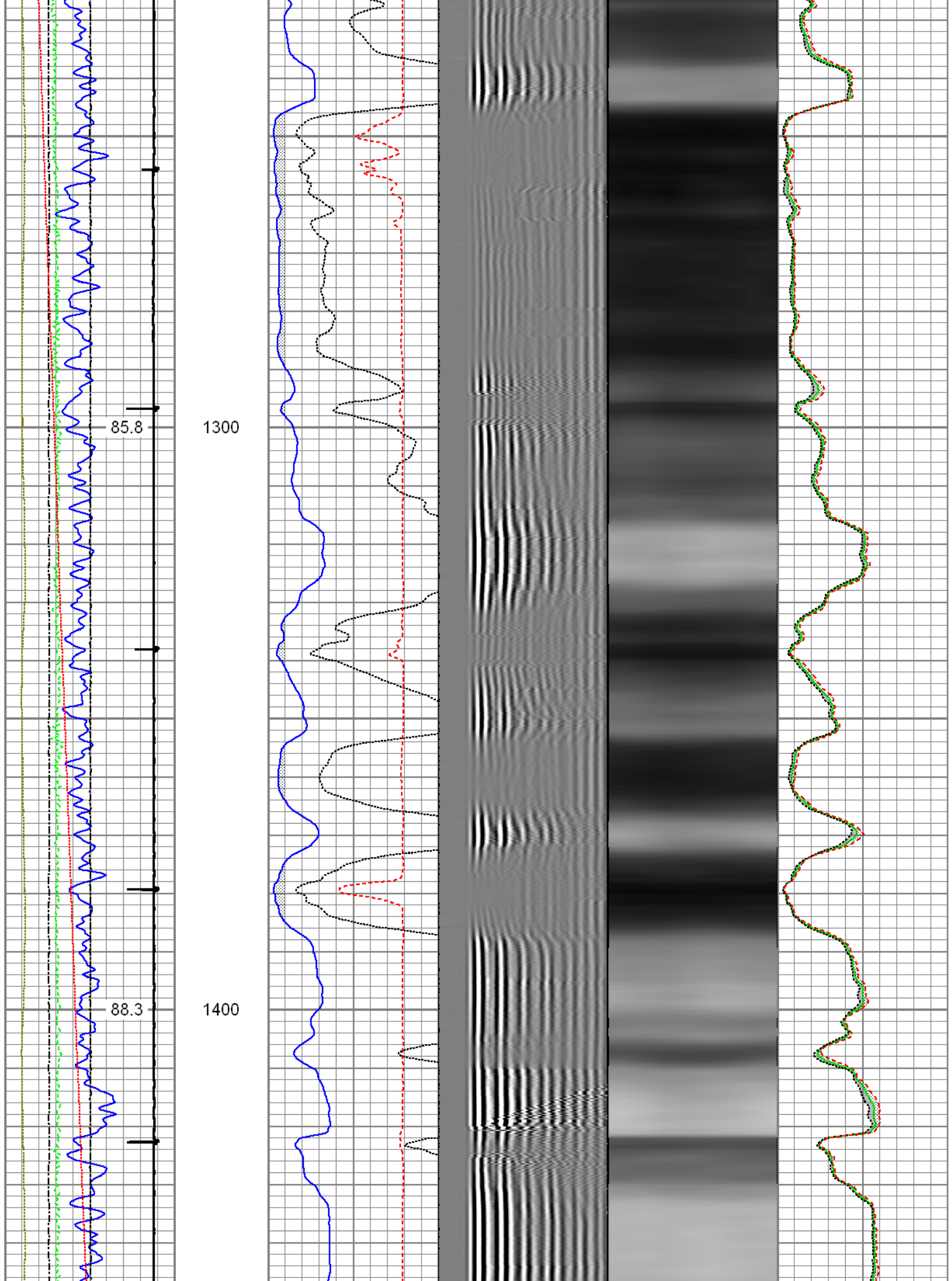


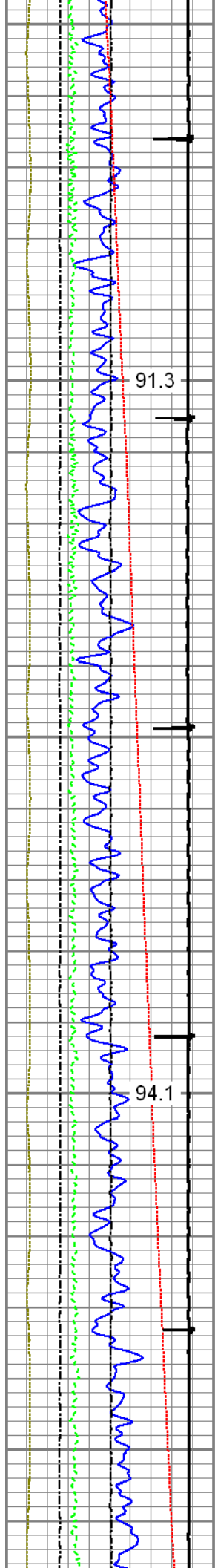


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1200

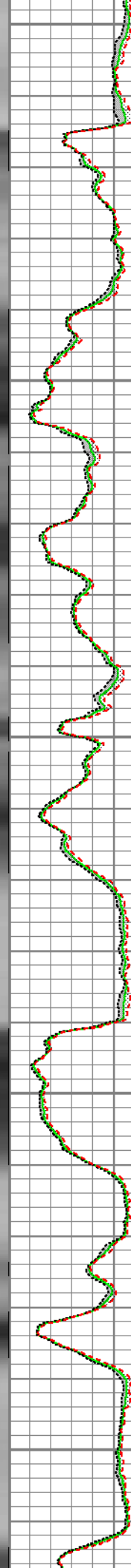
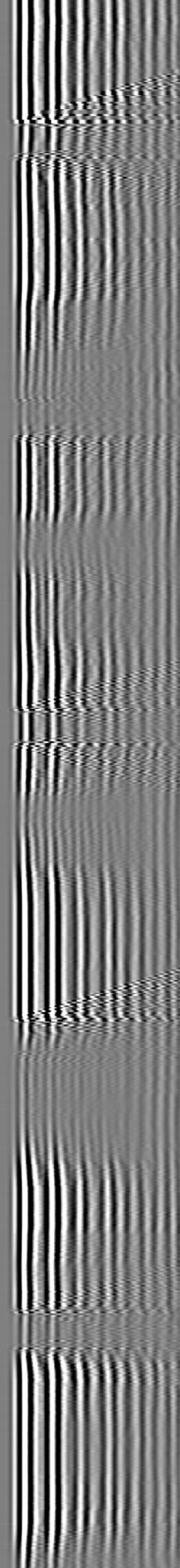
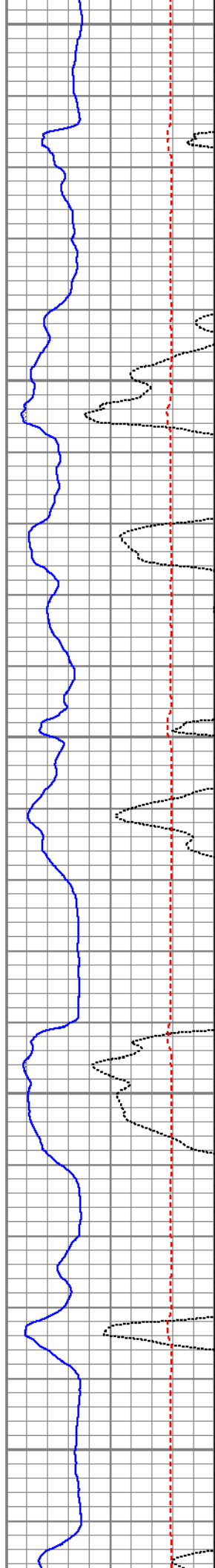


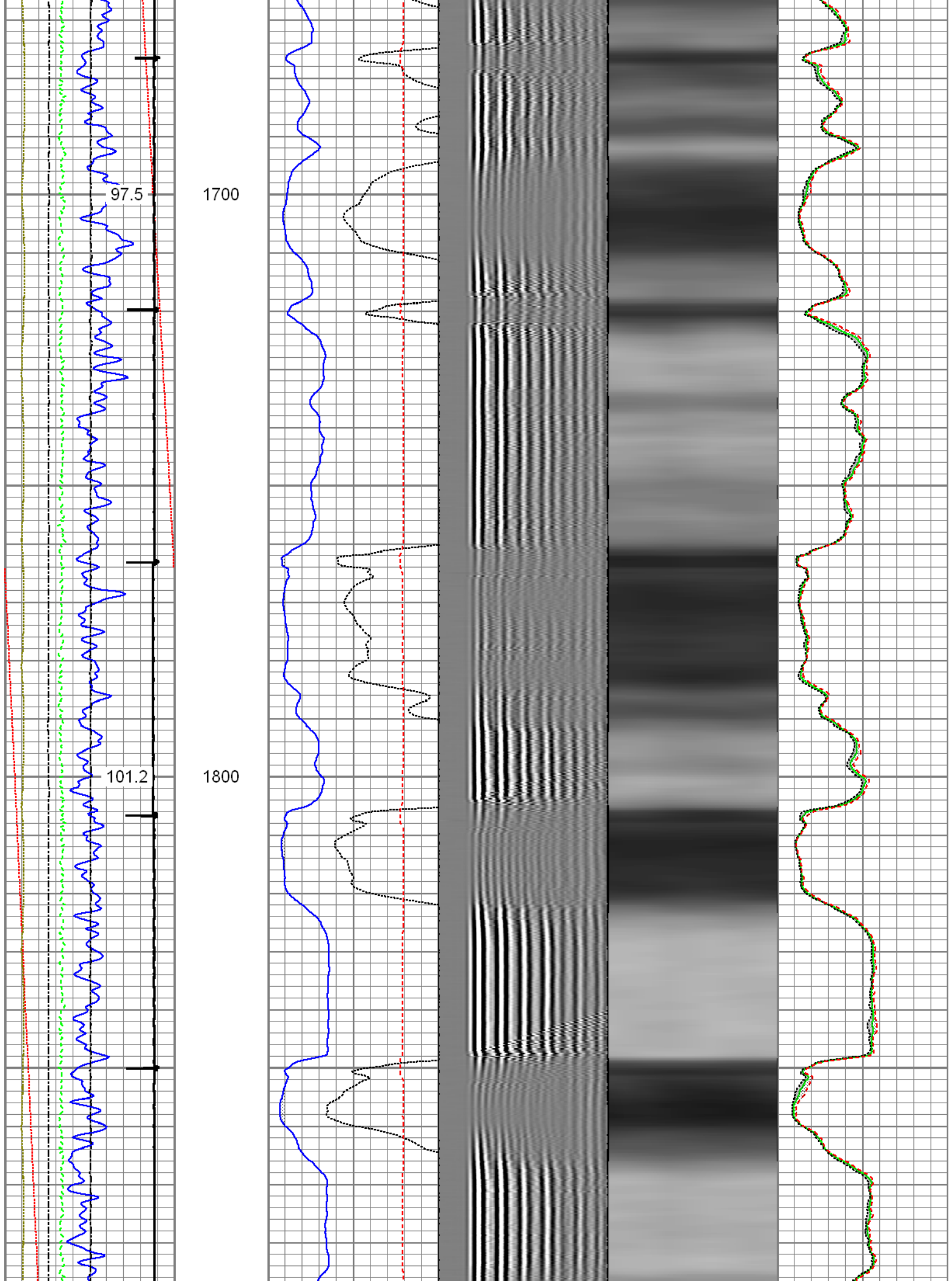


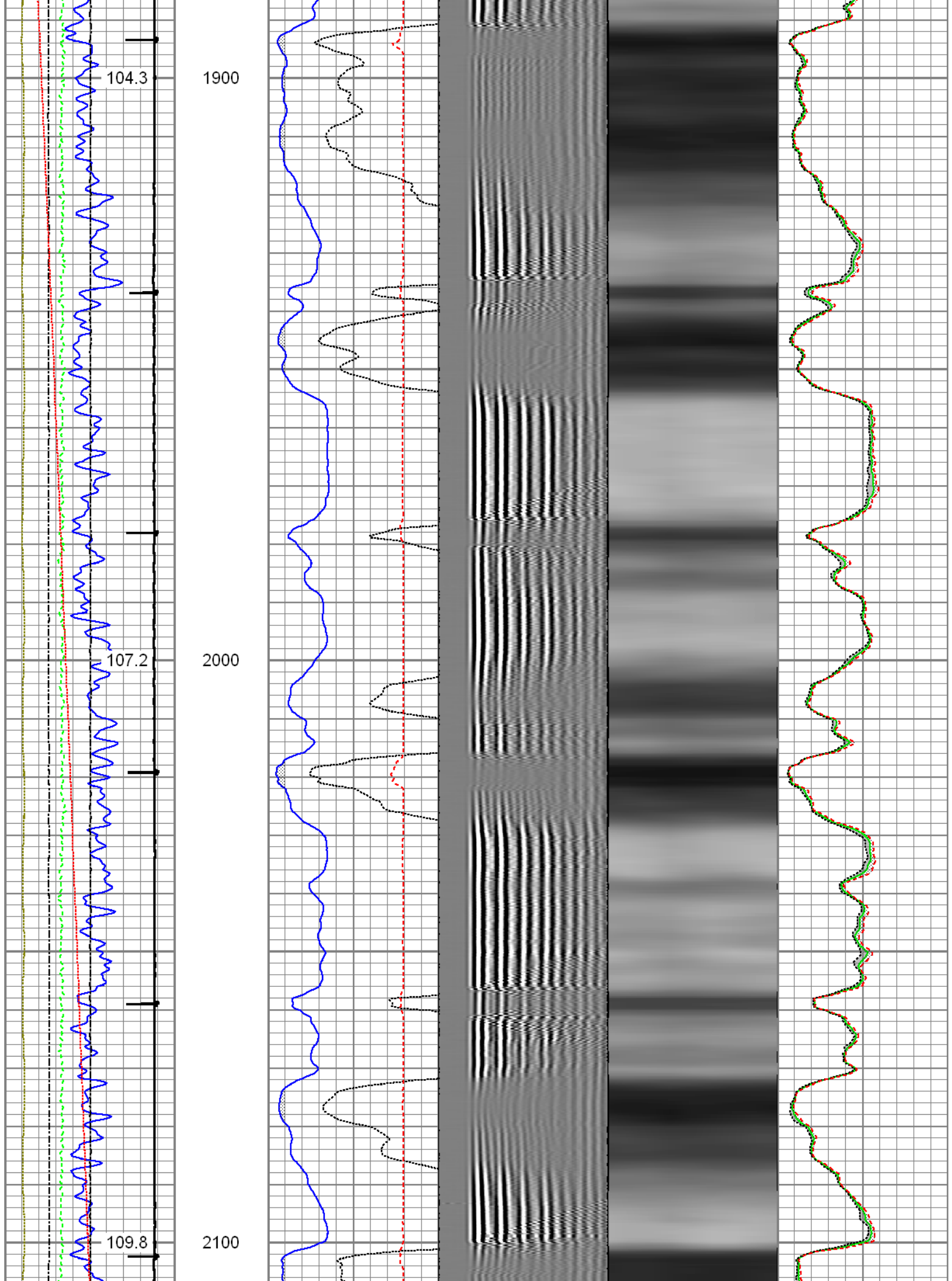


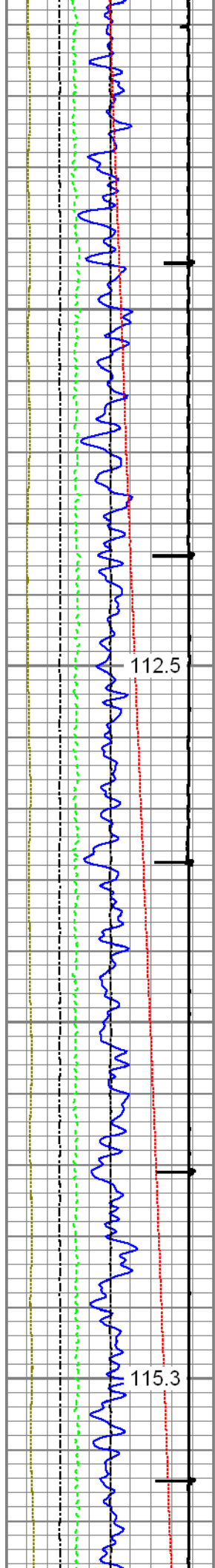
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1600







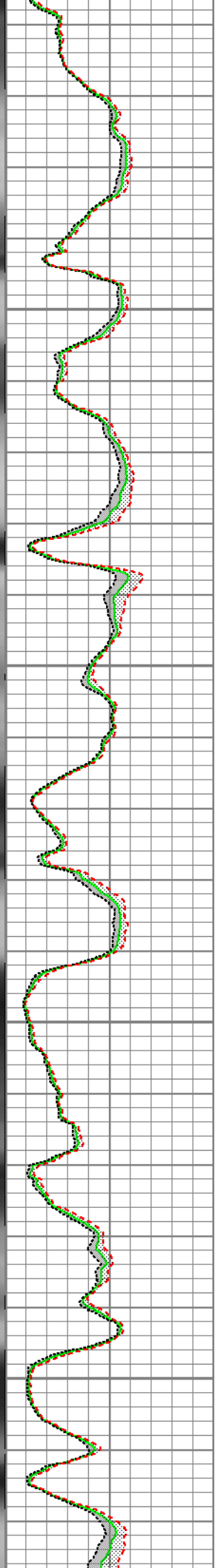
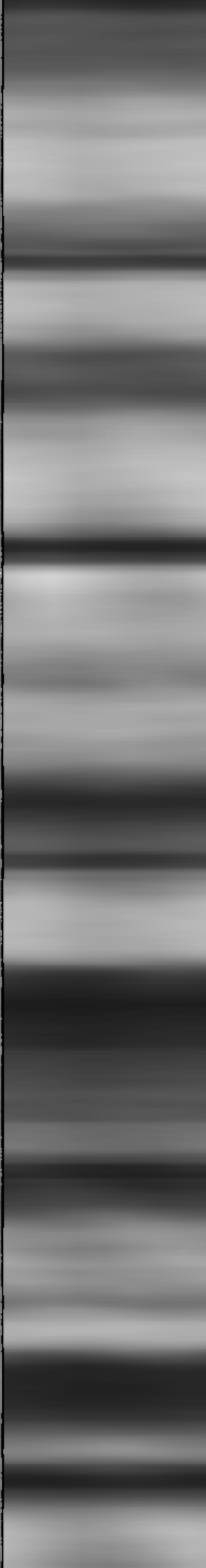
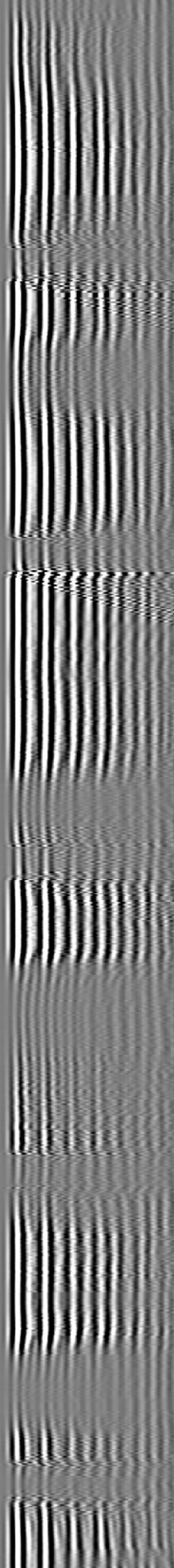
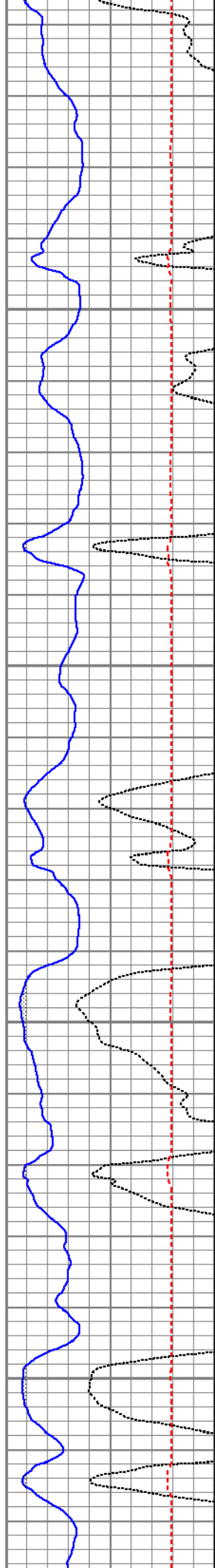


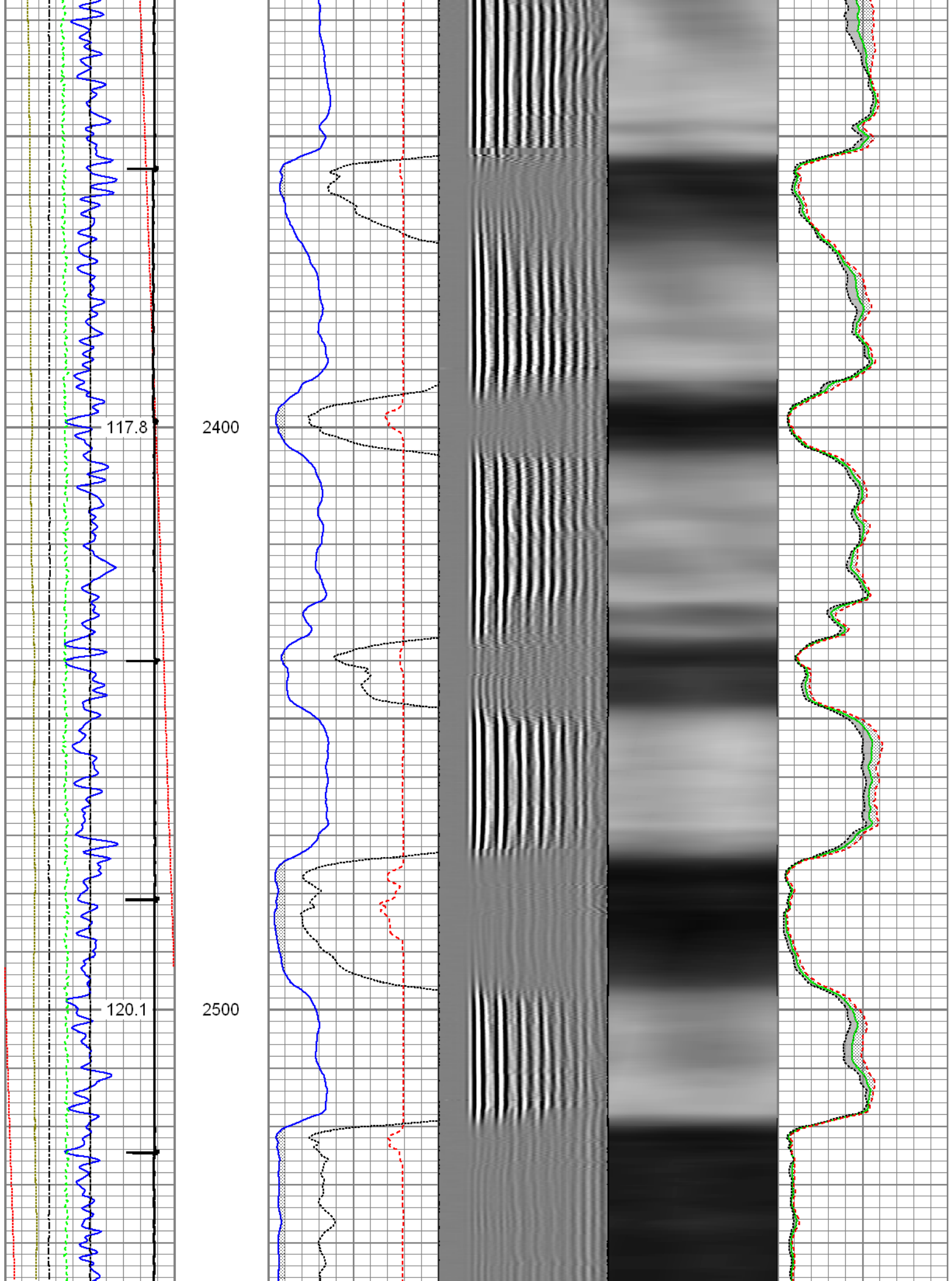
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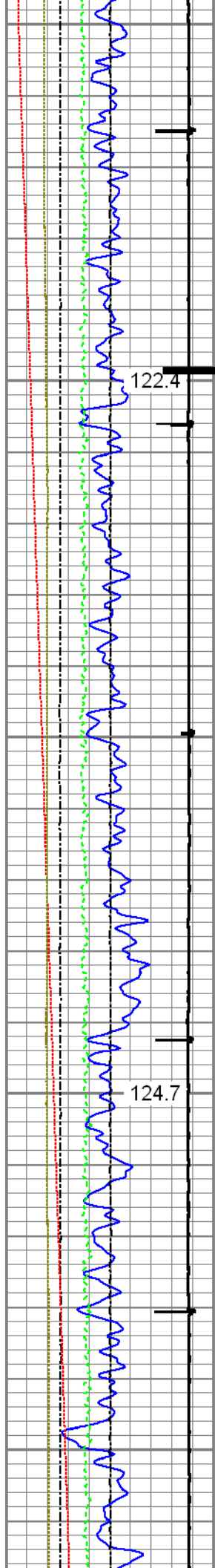
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2200

2300





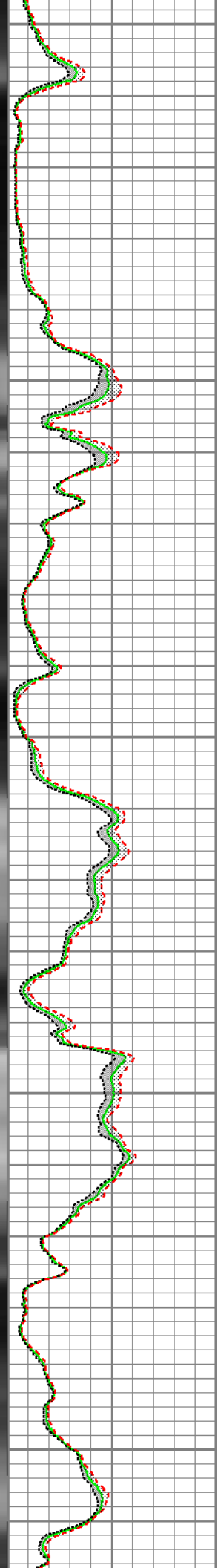
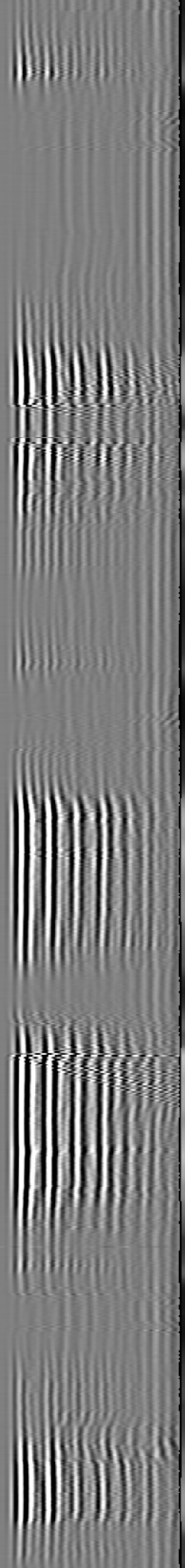
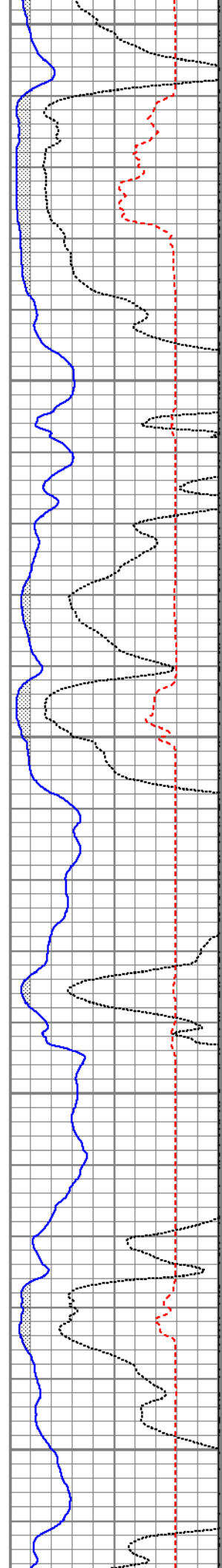


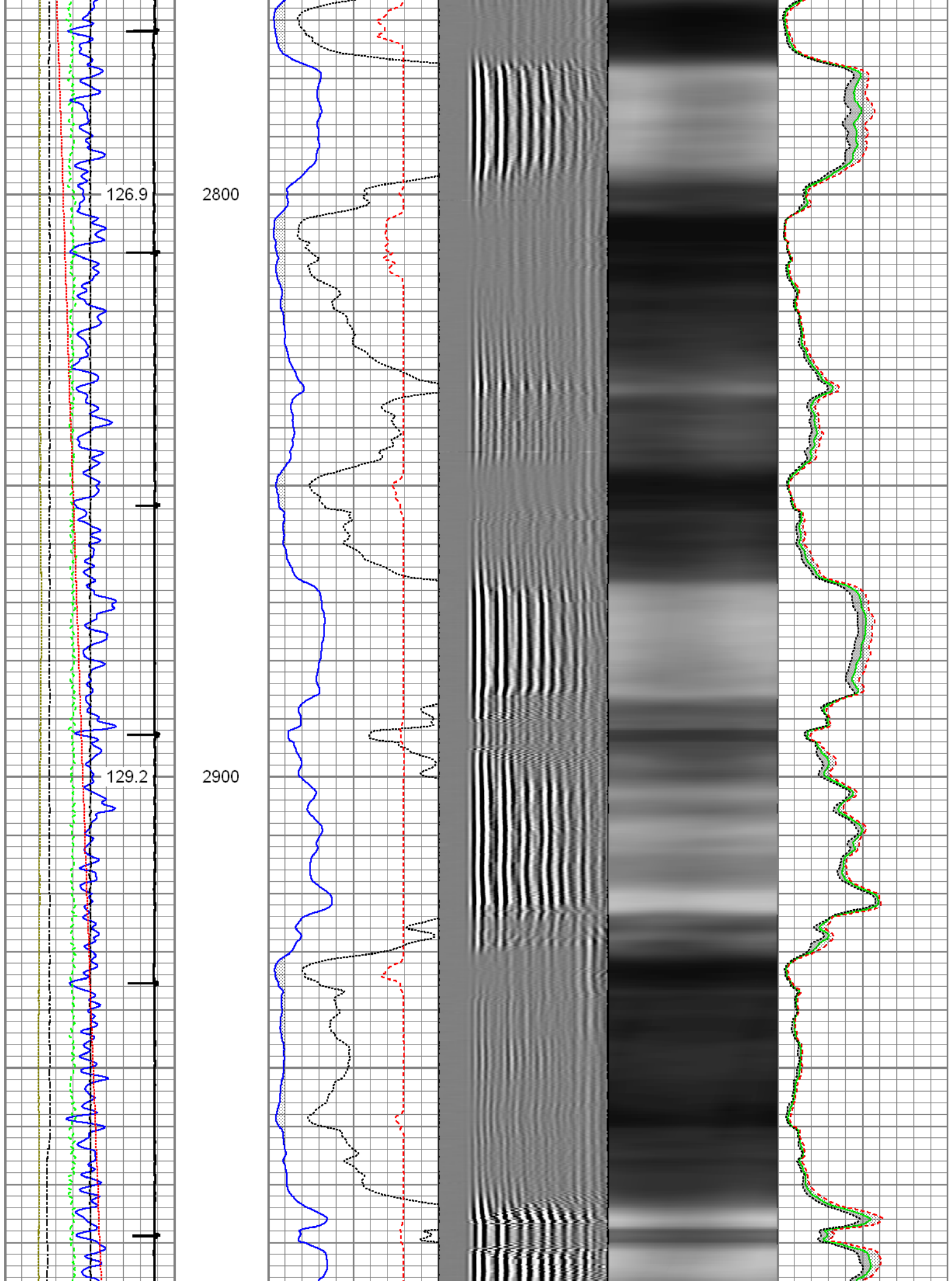
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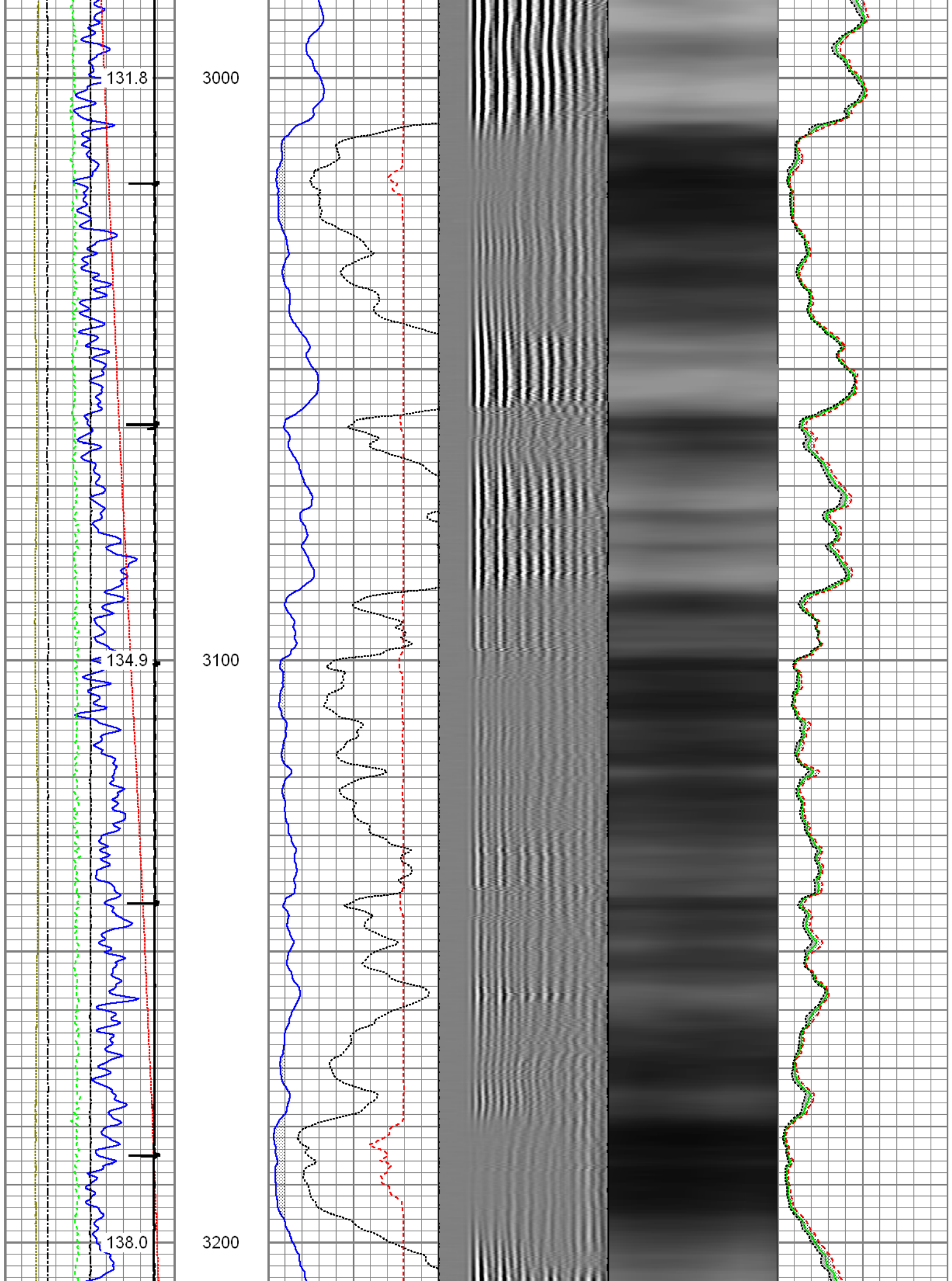
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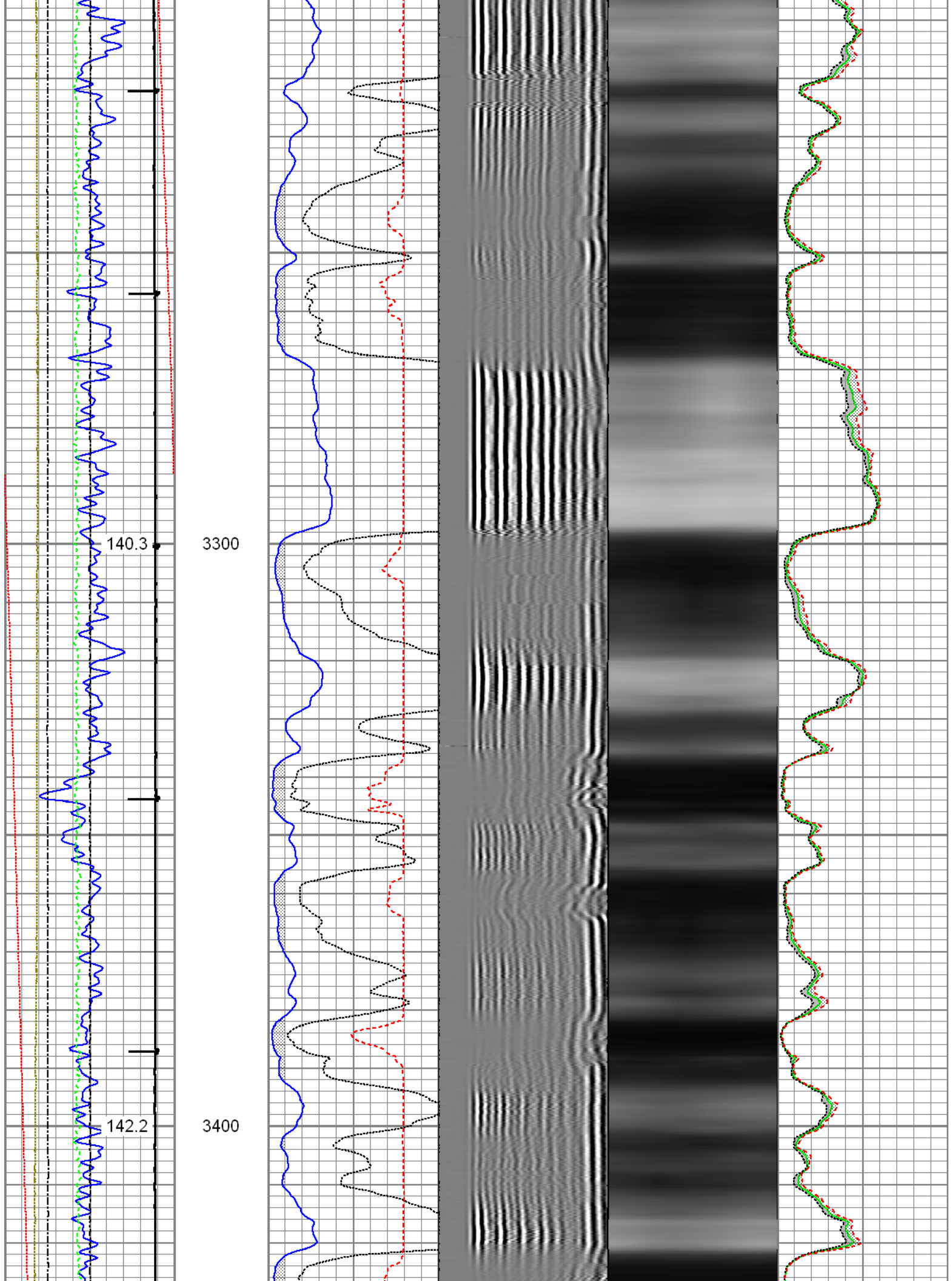
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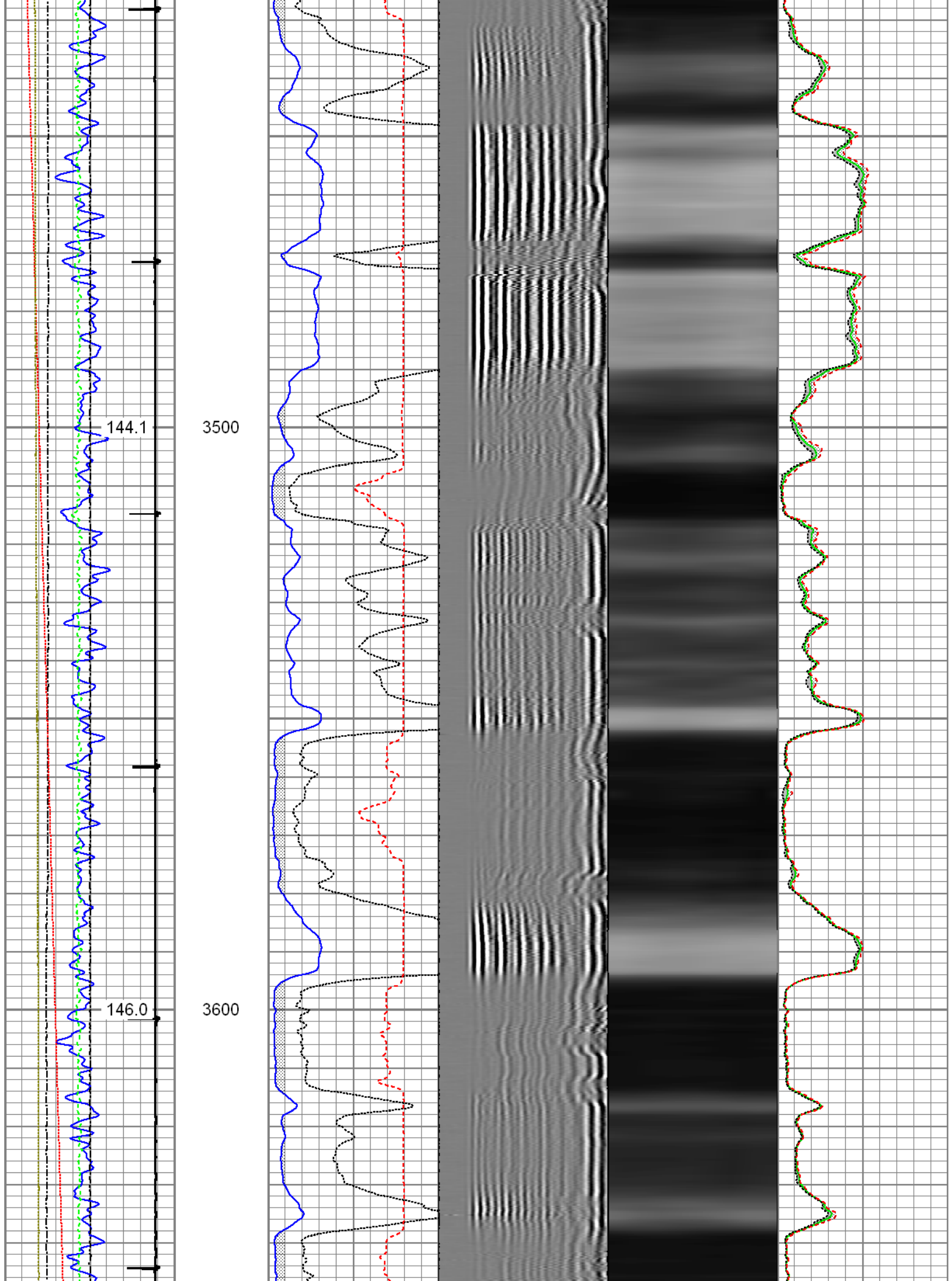
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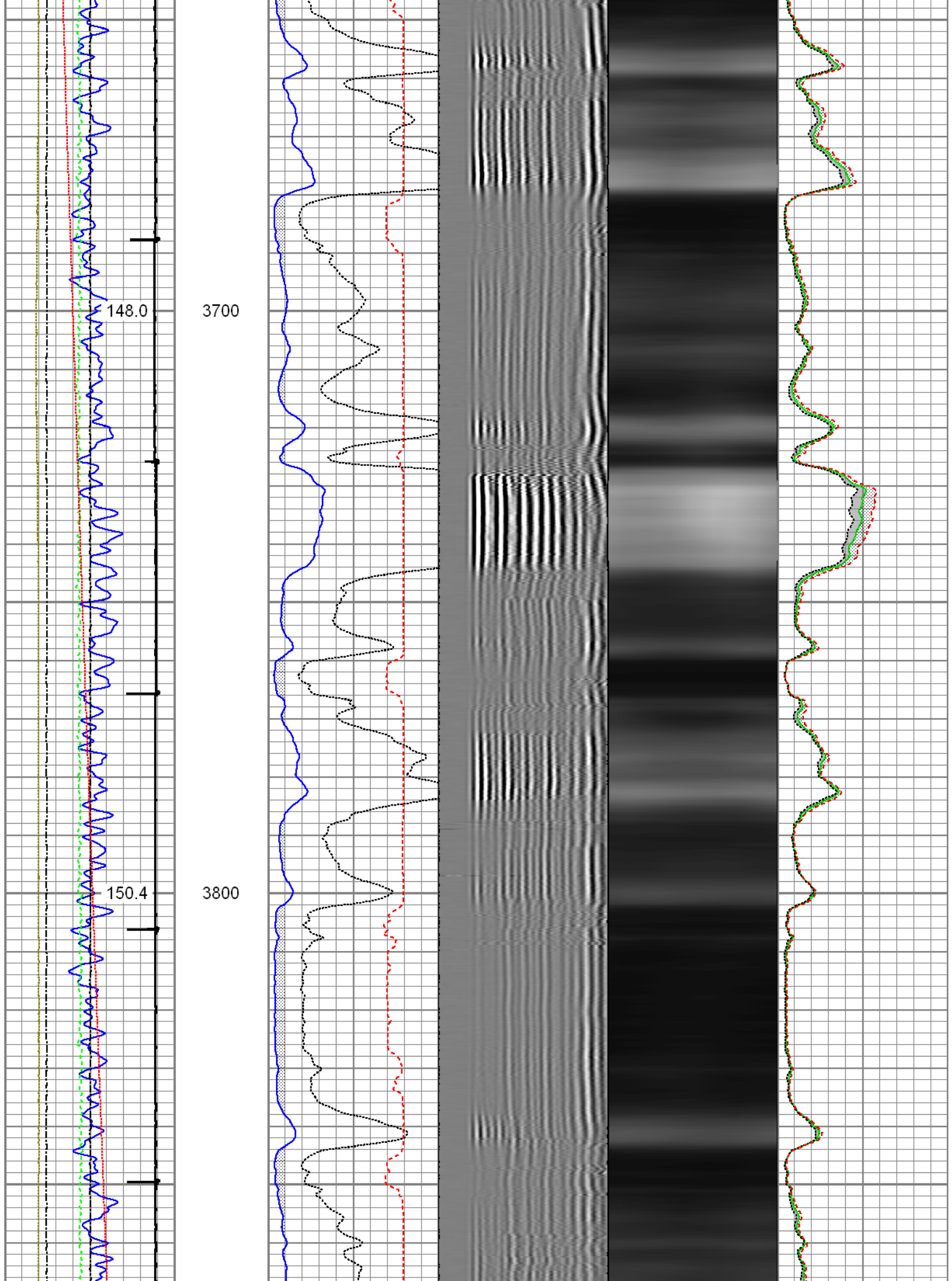


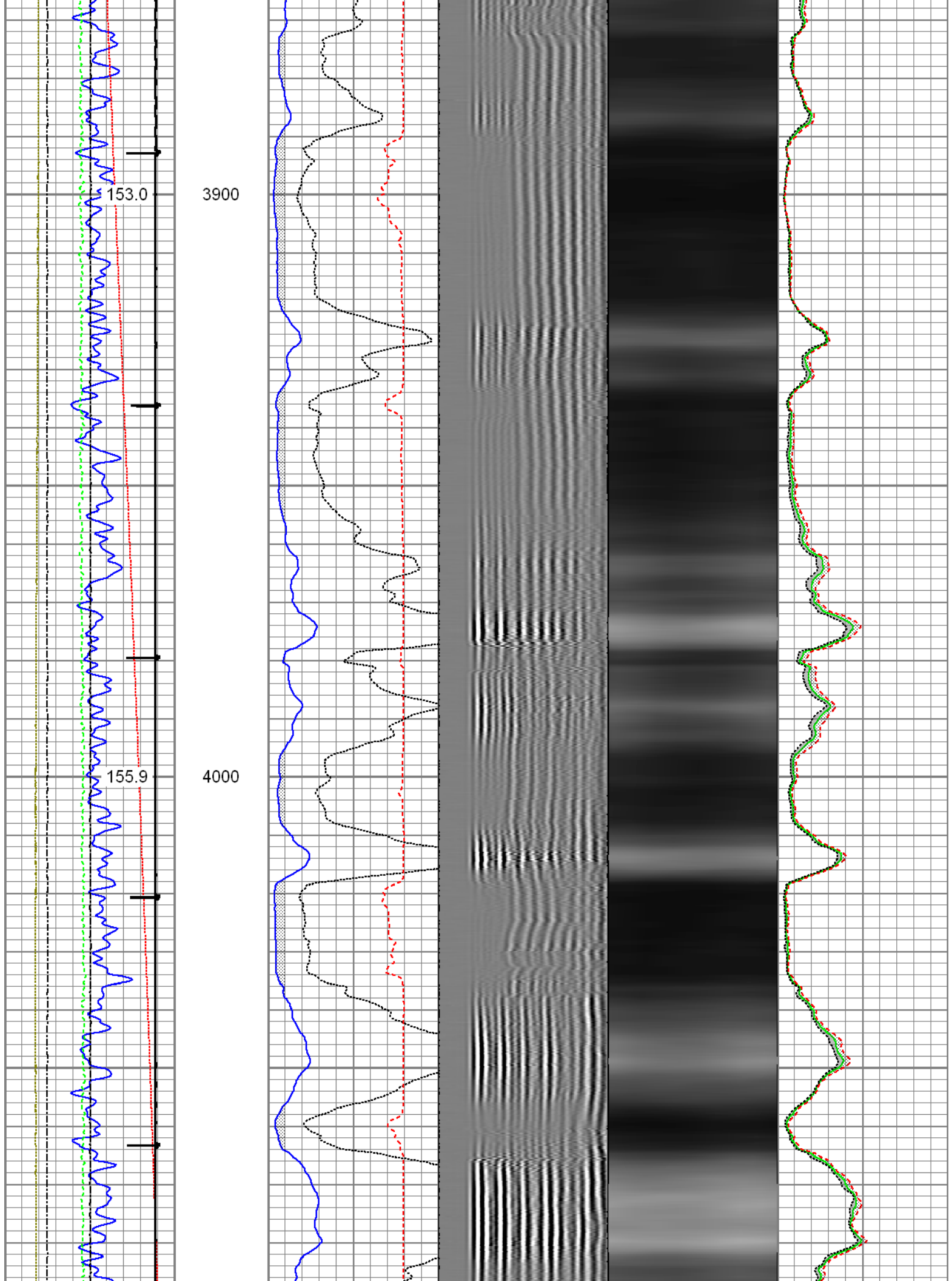


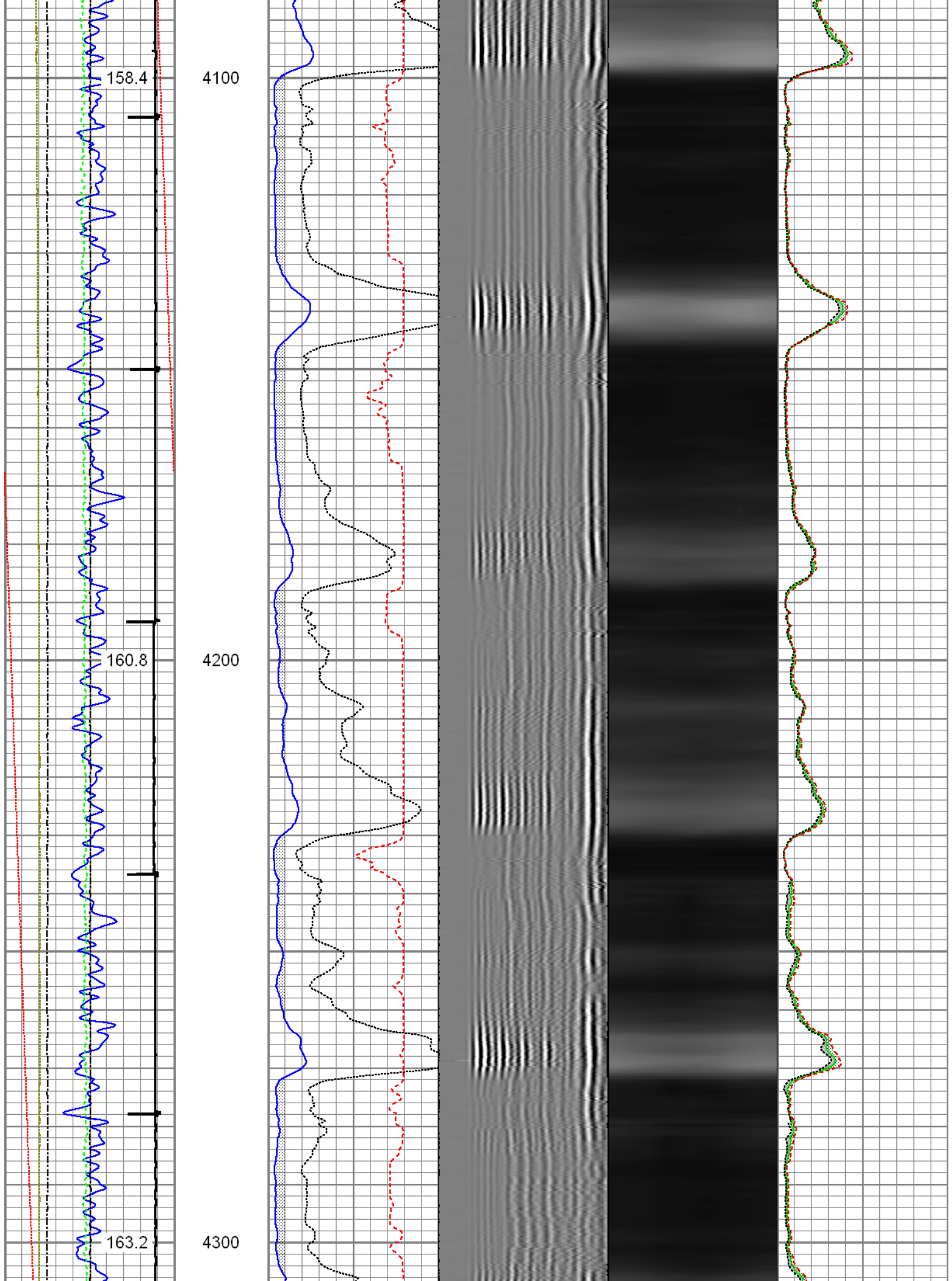


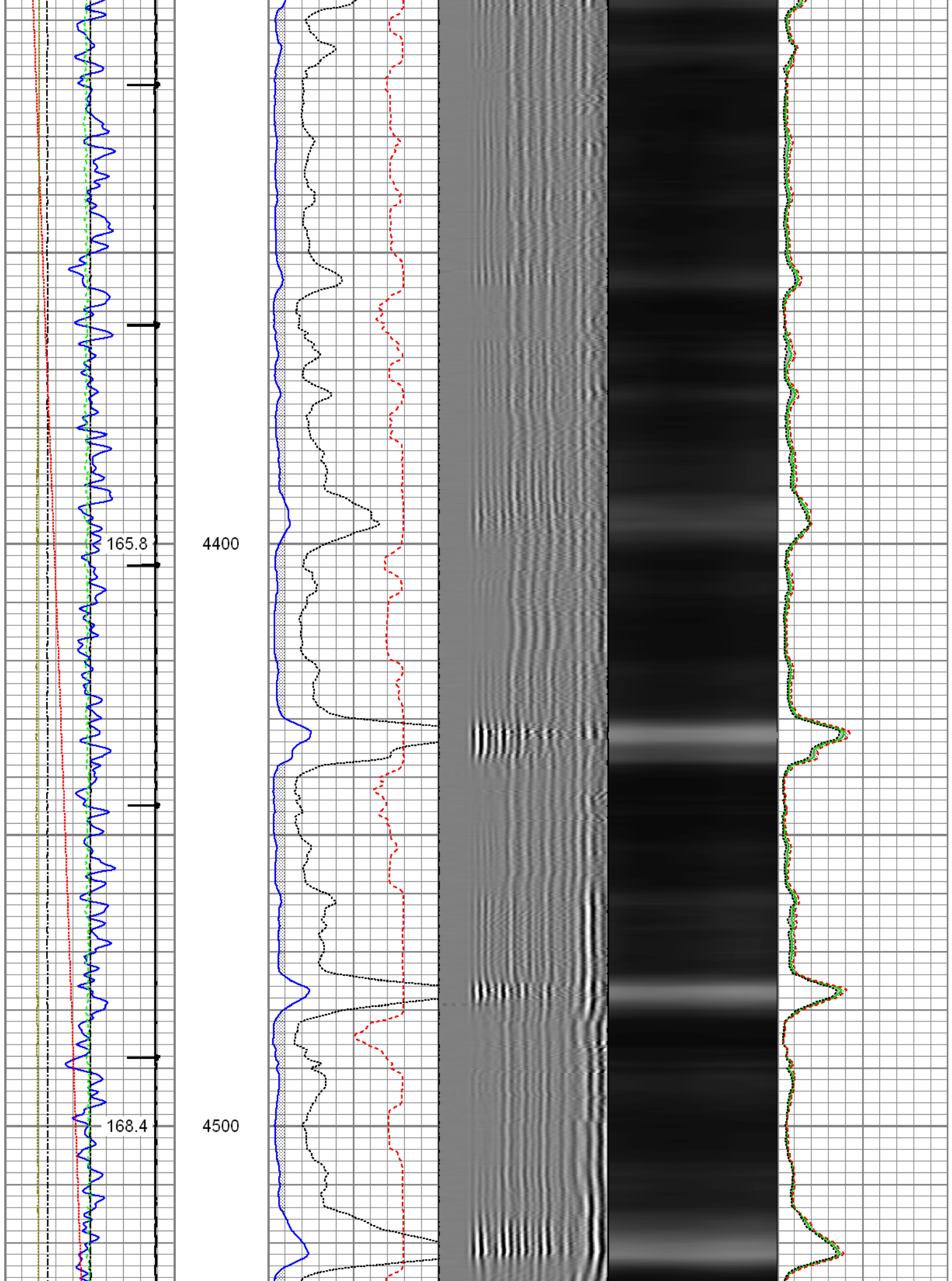


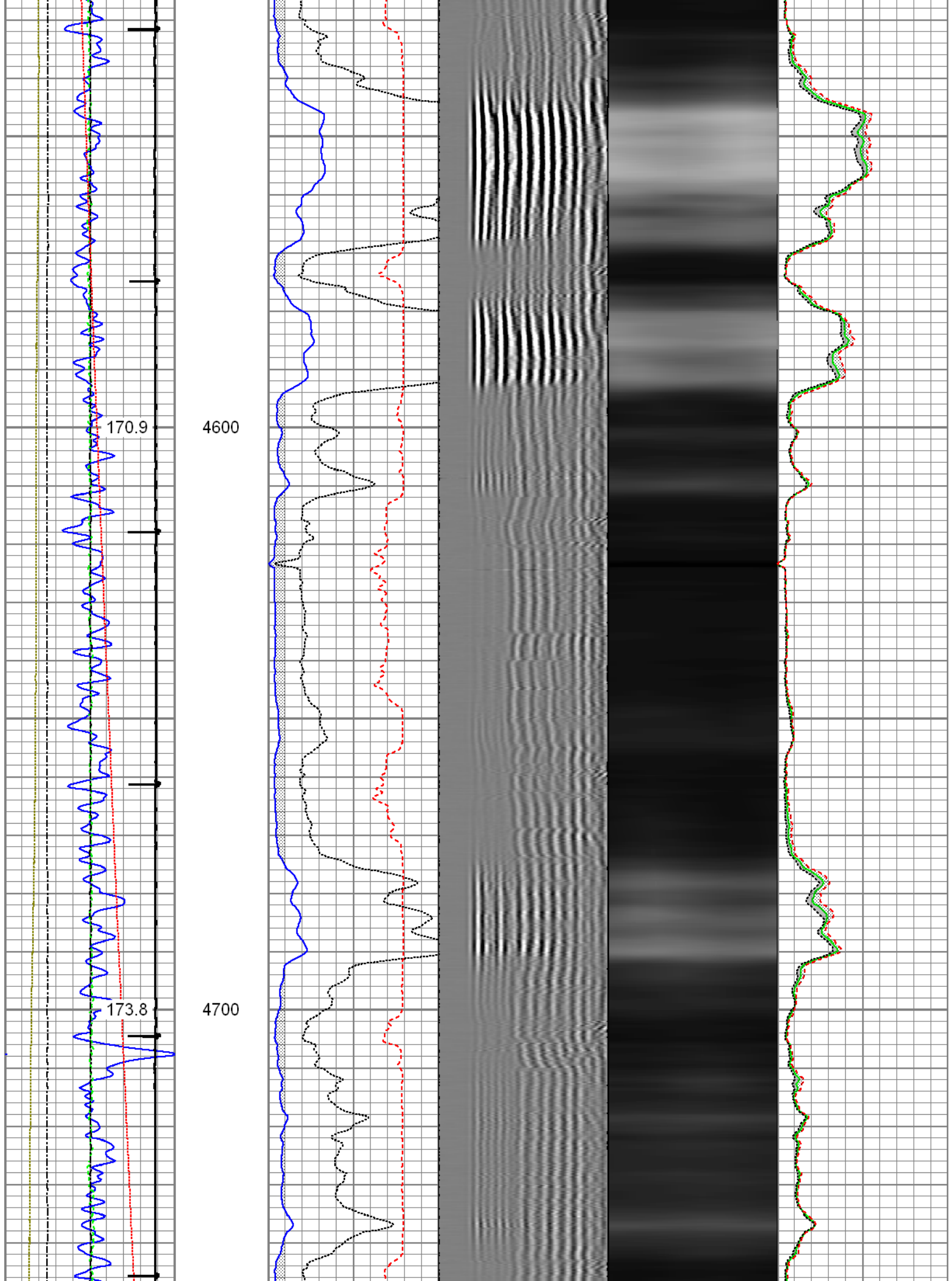


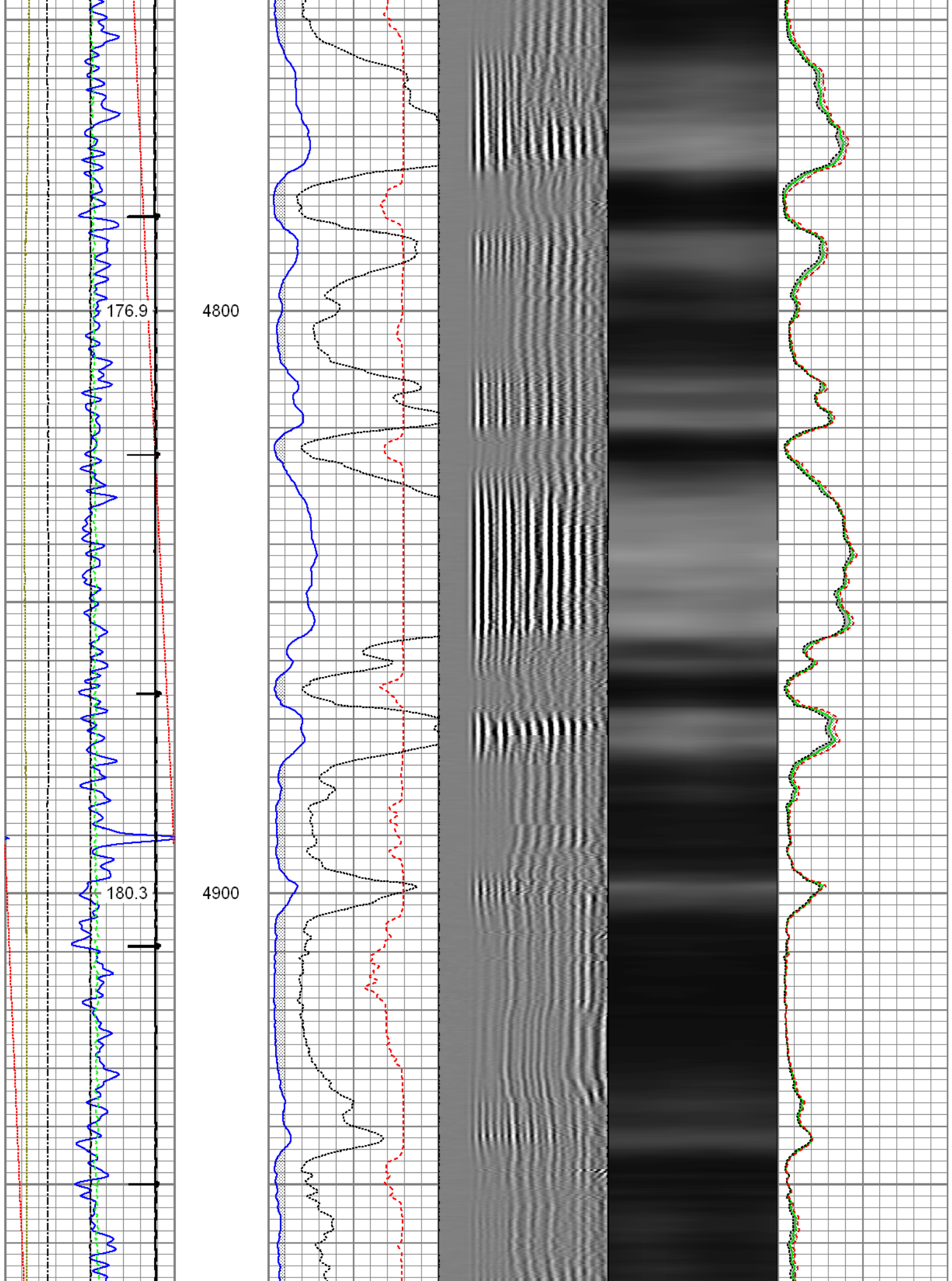


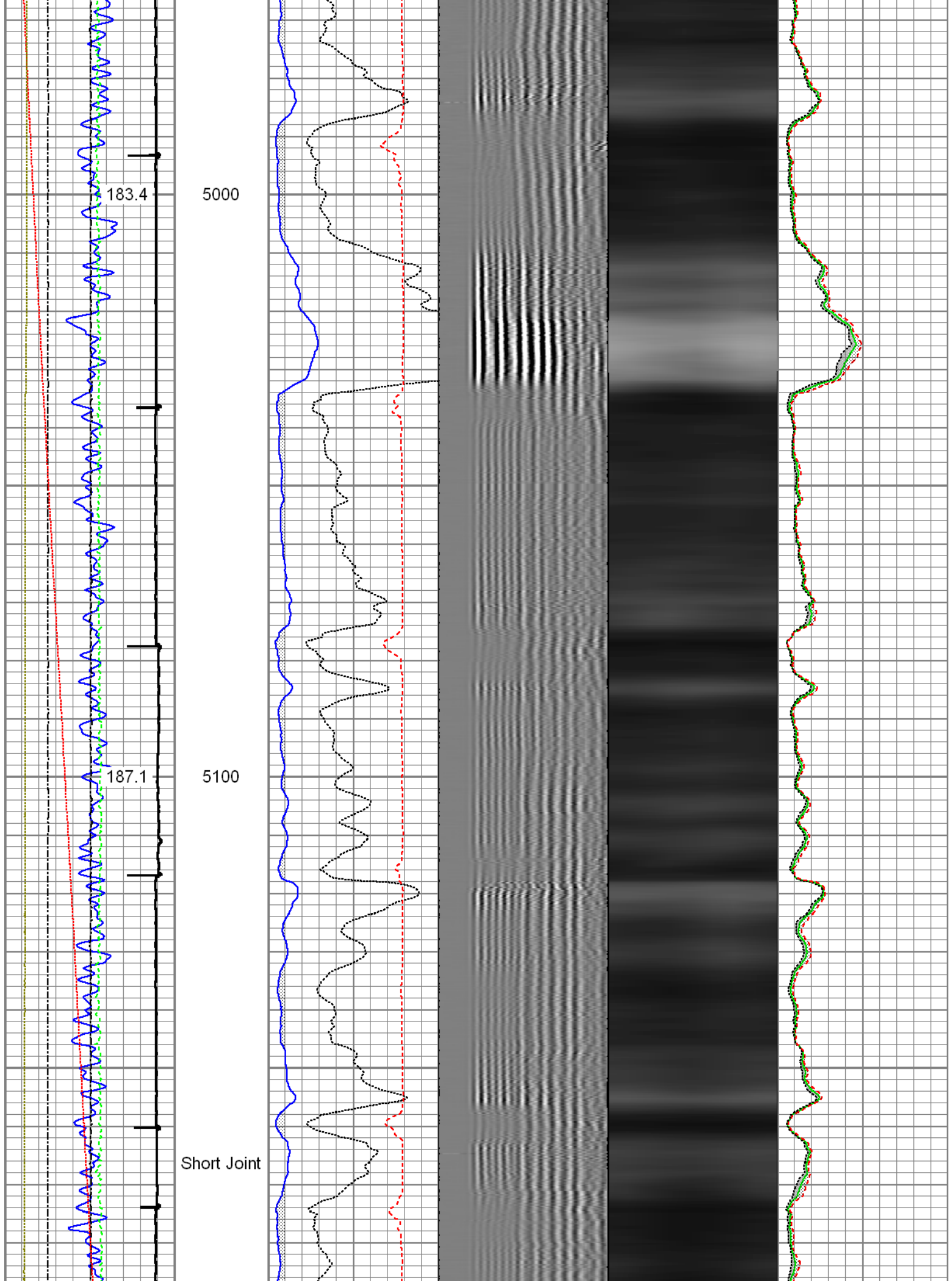


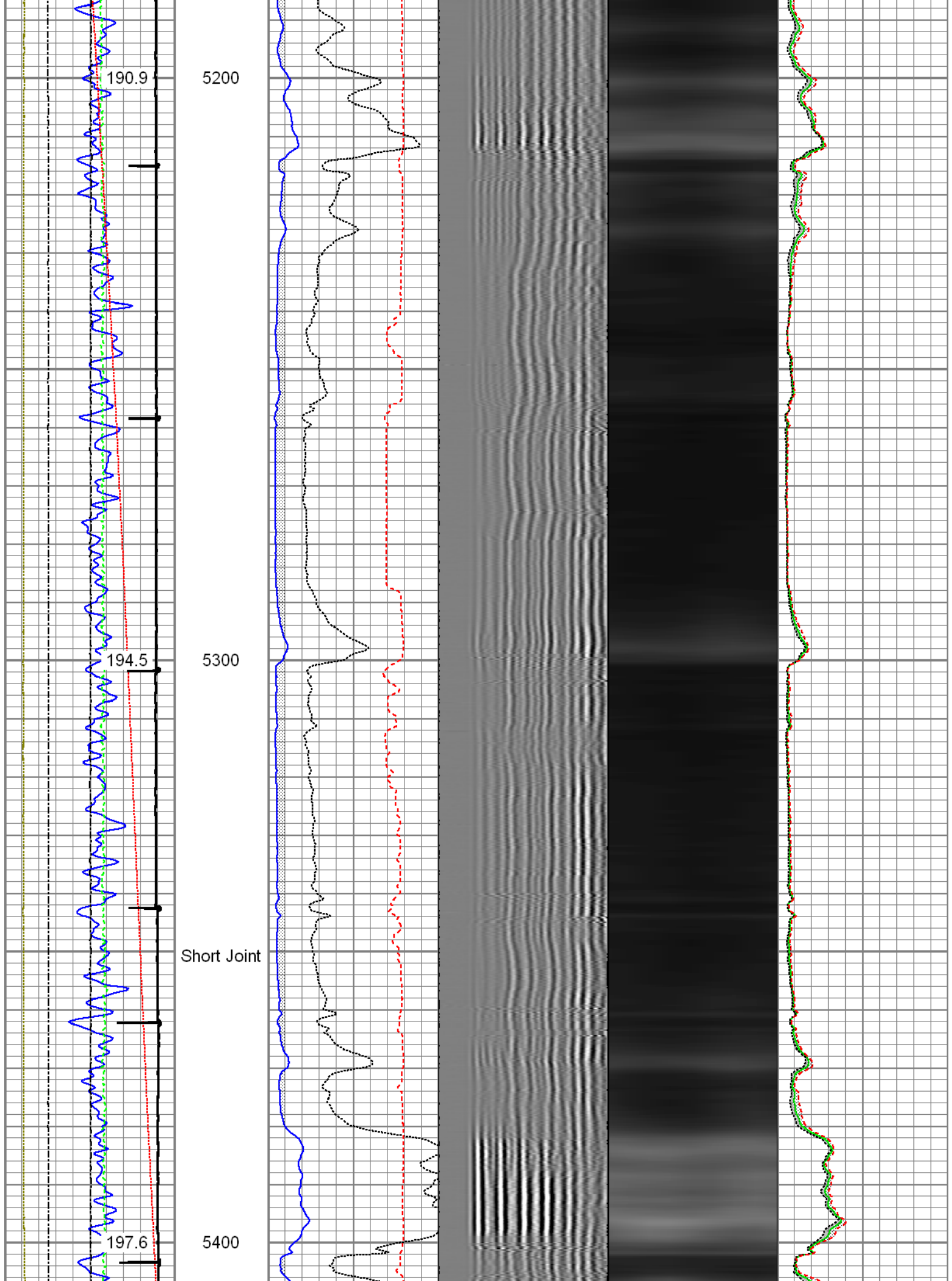


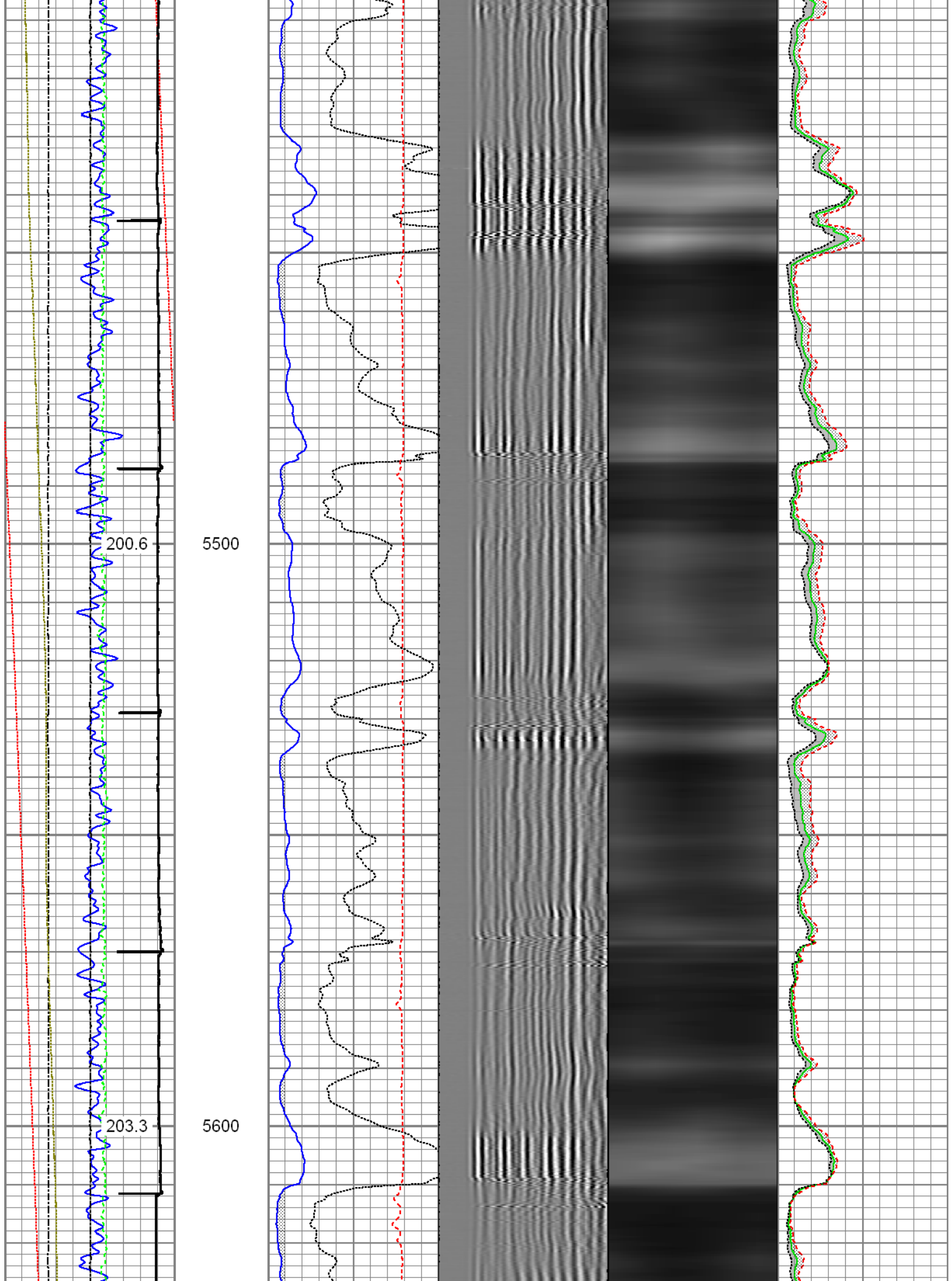


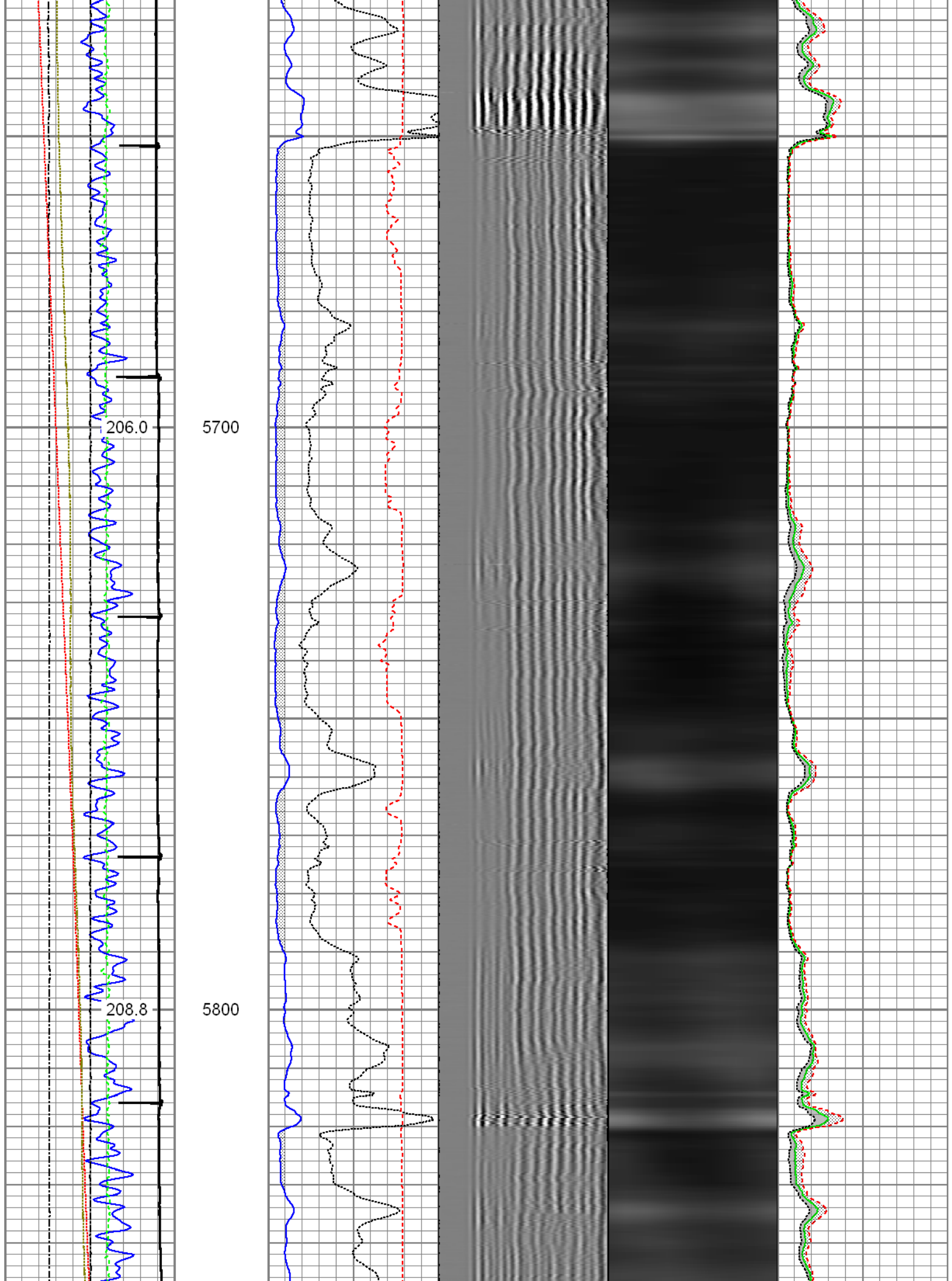


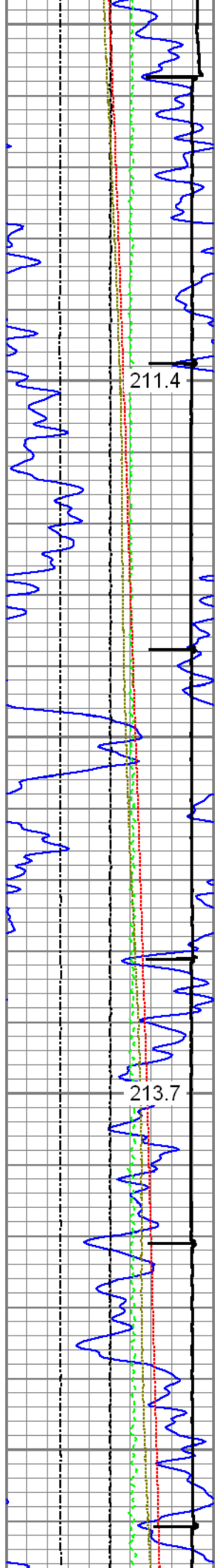






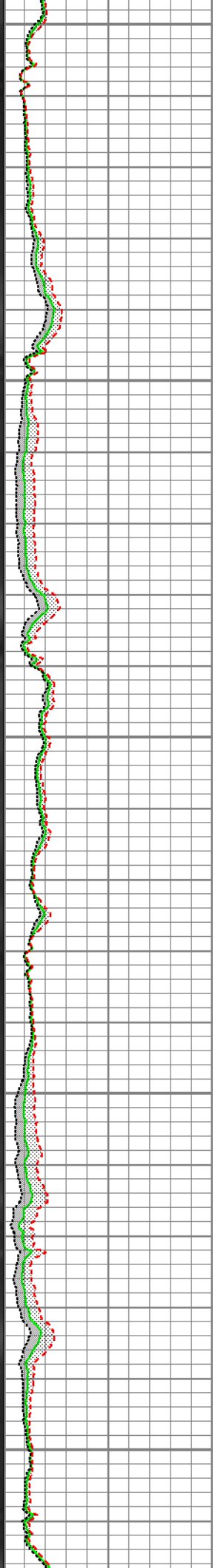
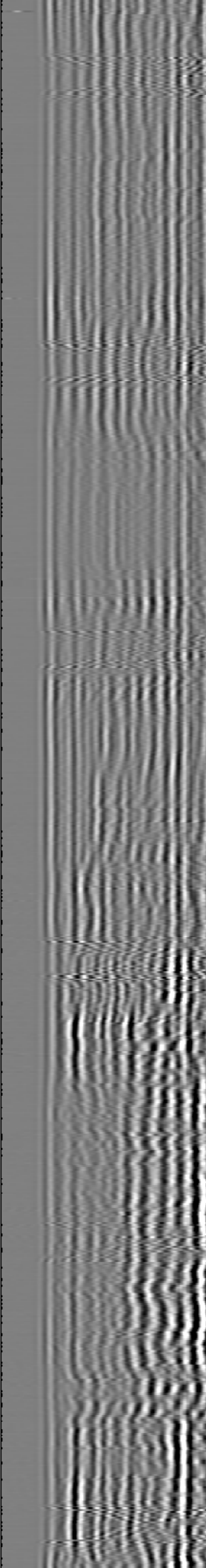
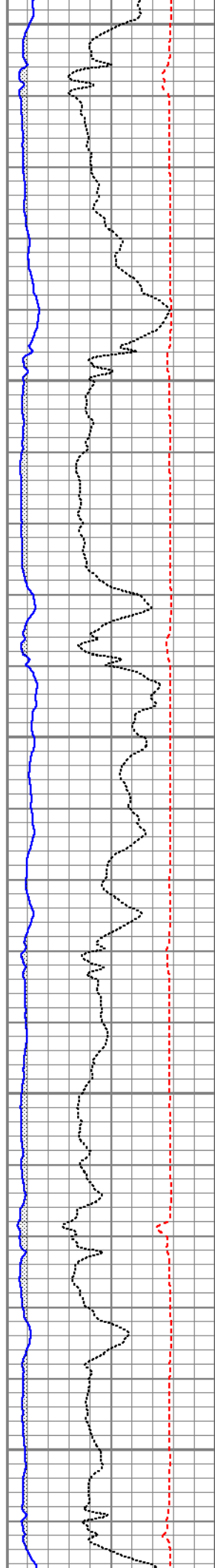


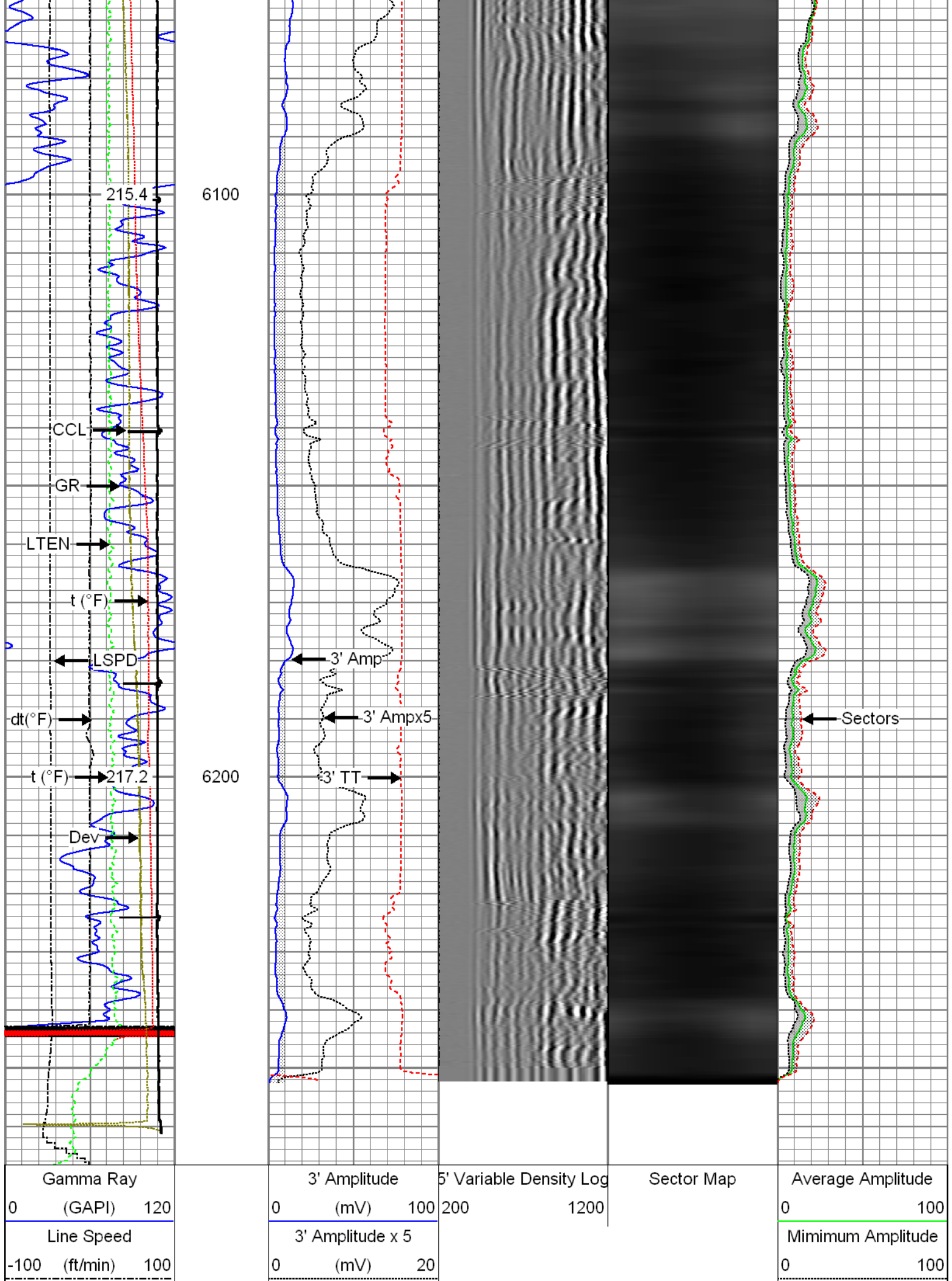





5900

6000





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		

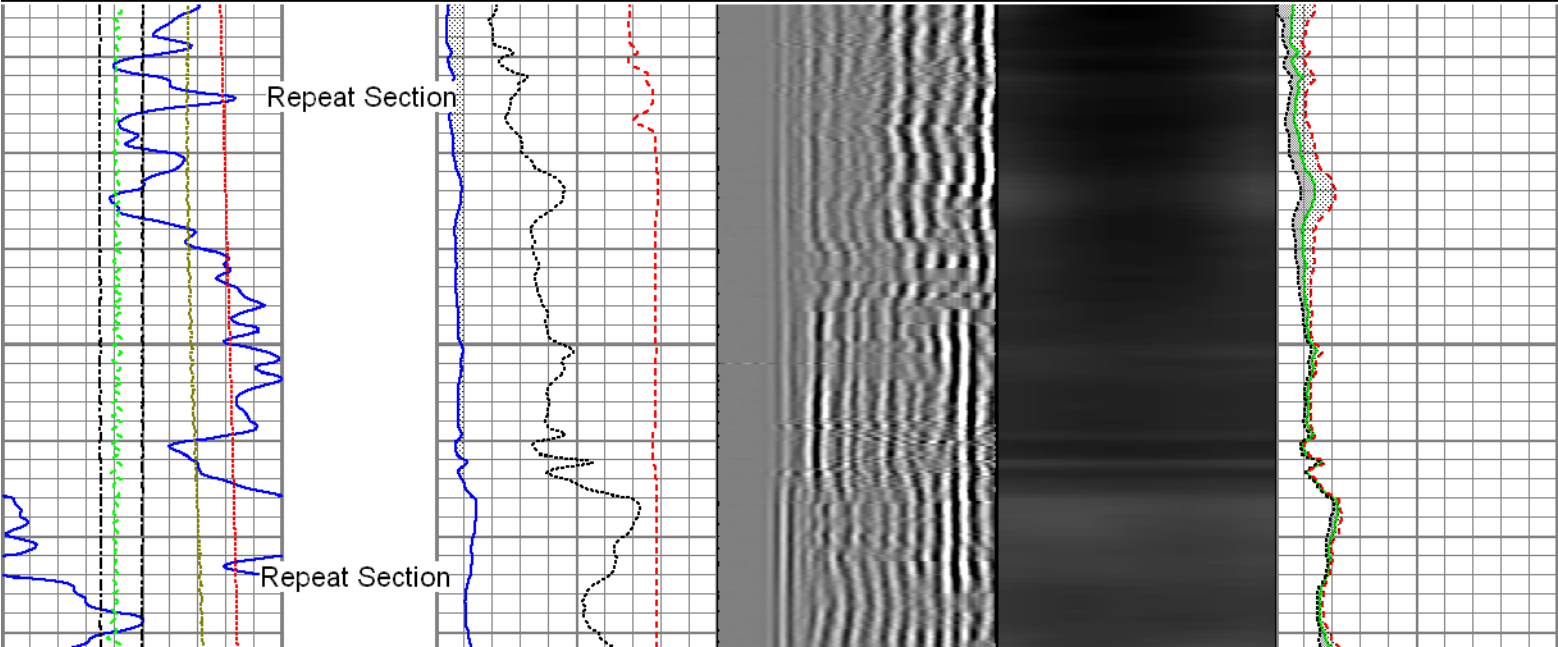


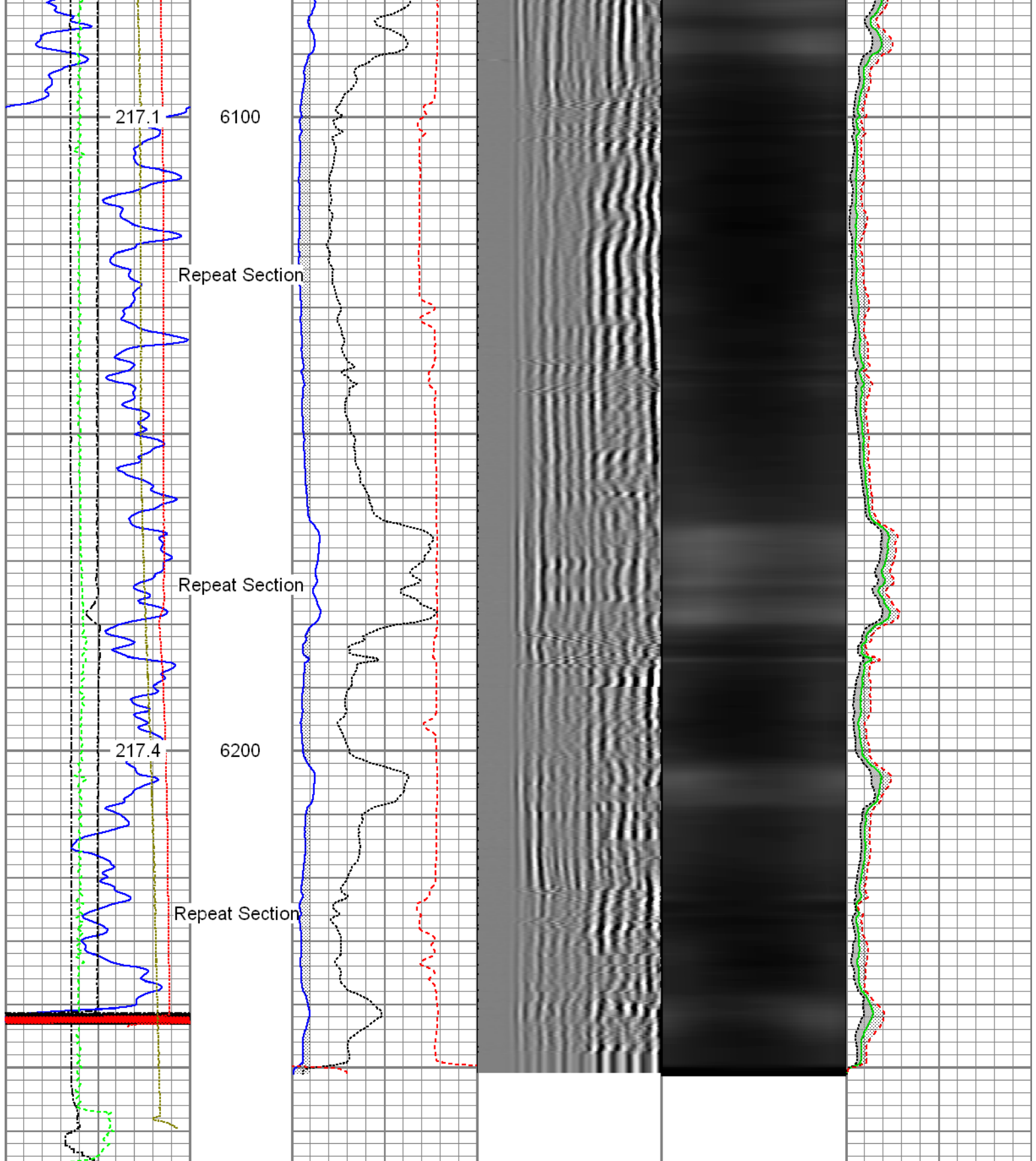
Repeat Pass

Recorded with 2500 PSI Surface Induced Pressure

Database File: c:\warrior\data\01-28-16_noble energy_remora lc34-725_mit_rbl\processed_01-28-16_noble energy_
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 Presentation Format: rbt4_mit
 Dataset Creation: Fri Jan 29 14:07:21 2016 by Calc SCH 120430
 Charted by: Depth in Feet scaled 1:240

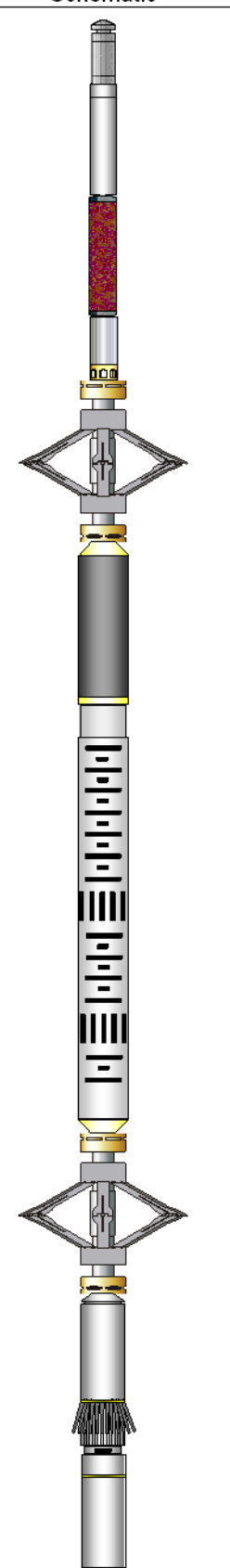
Gamma Ray 0 (GAPI) 120 <hr/> Line Speed -100 (ft/min) 100 <hr/> Line Tension 0 (lb) 2000 <hr/> Differential Temperature -2 (degF) 2 <hr/> Temperature 0 (degF) 20 <hr/> -10 Deviation (°) 90 <hr/>	3' Amplitude 0 (mV) 100 <hr/> 3' Amplitude x 5 0 (mV) 20 <hr/> 3' Travel Time 650 (usec) 150 <hr/>	5' Variable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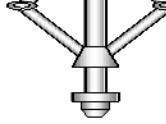




Gamma Ray (GAPI)	3' Amplitude (mV)	5' Variable Density Log	Sector Map	Average Amplitude
0 120	0 100	200 1200		0 100
Line Speed (ft/min)	3' Amplitude x 5 (mV)			Minimum Amplitude
-100 100	0 20			0 100
Line Tension (lb)	3' Travel Time (usec)			Maximum Amplitude
0 2000	650 150			0 100
Differential Temperature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

-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 (10024655) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50
			UW_PGR-UW_PGR_020 (10013899) 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 (10022773) 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 (081) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
CBLROT	15.42					
WV5FT	14.42		UW_MIT-UW_MIT40_042 (10014703) 40 Multifinger Imaging Tool	4.54	2.75	61.10
MIT	5.41					
		UW_PRC #1 UW_PRC_057 (1101)	2.08	2.75	32.00	

TSTAMP	0.00		UW_PRC #4 -UW_PRC_037 (1101) 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: PROCESSED_01-28-16_Noble Energy_Remora LC34-725_MIT_RBL.db: field/well/run1/Main.2 Total Length: 28.09 ft Total Weight: 324.50 lb O.D. 3.13 in						

Calibration Report			
Database File:	C:\Warrior\Data\01-28-16_Noble Energy_Remora LC34-725_MIT_RBL\PROCESSED_01-28-16_Nob		
Dataset Pathname:	Main.2		
Dataset Creation:	Thu Jan 28 11:51:38 2016 by Calc 7.0 B1		
Multi-finger Imaging Tool Calibration Report			
Serial Number:		10014703	
Number of Fingers:		40	
Tool Model:		UW_MIT40_042	
Inclinometer Calibration Report			
Performed:		Fri Sep 20 11:47:48 2013	
Calibration Angle:		45	
		Inc X	Inc Y
Vertical:		1963	1960
Finger 1 up:		1748	1727
Finger 31 up:		2195	1742
Finger 21 up:		2178	2188
Finger 11 up:		1727	2173
Sensitivity ratio:	1.00706		
X-axis angle:	132.825		
Deviation const.:	317.775		

Finger Calibration Report							
Performed:				Thu Jan 28 07:54:44 2016			
Ring size:	4	5	6	7			
(in)							
	Sens	Sens	Sens				
Finger 01:	1093	378.0	1471	371.0	1842	398.0	2240
Finger 02:	1046	387.0	1433	386.0	1819	420.0	2239
Finger 03:	1033	372.0	1405	372.0	1777	408.0	2185
Finger 04:	998	387.0	1385	397.0	1782	434.0	2216
Finger 05:	1013	366.0	1379	371.0	1750	398.0	2148
Finger 06:	1018	382.0	1400	387.0	1787	419.0	2206
Finger 07:	1023	378.0	1401	380.0	1781	408.0	2189
Finger 08:	994	382.0	1376	397.0	1773	426.0	2199
Finger 09:	1054	386.0	1440	385.0	1825	401.0	2226
Finger 10:	1025	382.0	1407	390.0	1797	407.0	2204
Finger 11:	994	376.0	1370	393.0	1763	416.0	2179
Finger 12:	1092	375.0	1467	373.0	1840	380.0	2220
Finger 13:	1024	368.0	1392	391.0	1783	414.0	2197
Finger 14:	1006	385.0	1391	411.0	1802	429.0	2231
Finger 15:	970	377.0	1347	411.0	1758	432.0	2190
Finger 16:	1027	375.0	1402	402.0	1804	419.0	2223
Finger 17:	1056	368.0	1424	389.0	1813	401.0	2214
Finger 18:	1092	372.0	1464	391.0	1855	402.0	2257
Finger 19:	1048	371.0	1419	401.0	1820	413.0	2233
Finger 20:	971	370.0	1341	410.0	1751	429.0	2180
Finger 21:	1051	362.0	1413	394.0	1807	412.0	2219
Finger 22:	1054	368.0	1422	402.0	1824	415.0	2239
Finger 23:	1076	367.0	1443	398.0	1841	418.0	2259
Finger 24:	1063	341.0	1404	370.0	1774	387.0	2161
Finger 25:	1077	370.0	1447	405.0	1852	417.0	2269

Finger 26:	1028	361.0	1389	385.0	1774	412.0	2186
Finger 27:	1195	380.0	1575	396.0	1971	406.0	2377
Finger 28:	1059	347.0	1406	375.0	1781	407.0	2188
Finger 29:	1032	363.0	1395	390.0	1785	417.0	2202
Finger 30:	1015	363.0	1378	392.0	1770	424.0	2194
Finger 31:	1241	392.0	1633	401.0	2034	421.0	2455
Finger 32:	1003	364.0	1367	371.0	1738	400.0	2138
Finger 33:	1101	387.0	1488	400.0	1888	429.0	2317
Finger 34:	981	358.0	1339	379.0	1718	415.0	2133
Finger 35:	1134	389.0	1523	400.0	1923	428.0	2351
Finger 36:	1054	351.0	1405	362.0	1767	400.0	2167
Finger 37:	1138	390.0	1528	394.0	1922	420.0	2342
Finger 38:	1096	367.0	1463	370.0	1833	400.0	2233
Finger 39:	1085	359.0	1444	358.0	1802	388.0	2190
Finger 40:	986	387.0	1373	400.0	1773	438.0	2211

Segmented Cement Bond Log Calibration Report							
Serial Number:				10022773			
Tool Model:				UW_RBT_004			
Calibration Casing Diameter:				7.000	in		
Calibration Depth:				190.115	ft		

Master Calibration, performed Thu Jan 28 11:51:28 2016:							
		Raw (v)		Calibrated (mv)		Results	
		Zero	Cal	Zero	Cal	Gain	Offset
3FT		-0.006	0.960	0.800	62.200	63.526	1.197
5FT		-0.004	0.957	0.800	62.200	63.847	1.085
S1		-0.005	0.956	0.000	100.000	104.042	0.513
S2		-0.007	0.975	0.000	100.000	101.872	0.715
S3		-0.004	0.950	0.000	100.000	104.776	0.468
S4		-0.006	0.945	0.000	100.000	105.081	0.648
S5		-0.008	0.968	0.000	100.000	102.487	0.832
S6		-0.009	0.954	0.000	100.000	103.907	0.899
S7		-0.008	0.950	0.000	100.000	104.422	0.851
S8		-0.007	0.948	0.000	100.000	104.642	0.748

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:				10013899			
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	Remora LC34-725
Field	Wildcat
County	Weld
State	Colorado