

Radial Cement Bond Gamma Ray Casing Collar Log

Company Kerr-McGee Oil & Gas Onshore, L.P.
Well Cream 36N-28HZ
Field Wattenberg
County Weld
State Colorado

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Location: API #: 05-123-40960
SEC 28 TWP 3N RGE 65W
Permanent Datum Ground Level Elevation 4828'
Log Measured From Kelly Bushing 20 FT
Drilling Measured From Kelly Bushing
Other Services
Gauge Ring
MIT
Elevation
K.B. 4848'
D.F. 4847'
G.L. 4828'

Date	21-JUL-2015
Run Number	One
Depth Driller	12510.03 FT
Depth Logger	7160 FT
Bottom Logged Interval	7155 FT
Top Log Interval	Surface
Open Hole Size	8.765"
Type Fluid	Water
Density / Viscosity	8.34 lbm/gal
Max. Recorded Temp.	247.7°F
Estimated Cement Top	Surface
Time Well Ready	ROA
Time Logger on Bottom	2:19 PM
Equipment Number	HD-0324
Location	Fort Lupton, CO
Recorded By	R. Cameron
Witnessed By	Josh Gustafson
Recorded By	S. Hopper

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 5/8	36	---	Surface	1202.48 FT		
Intermediate #1	7	26	---	Surface	7551.88 FT		
Intermediate #2							
Liner	4 1/2	11.6	---	6480 FT	12510.03 FT		

>>> 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 liner top at 6480 FT
Adjusted log -5 FT from KB zero to correlate with liner top
Log ran with 2800 PSI surface induced pressure

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

Database File:0512340960_anadarko_cream 36n-28hz_07-21-15_mit_rbl.db

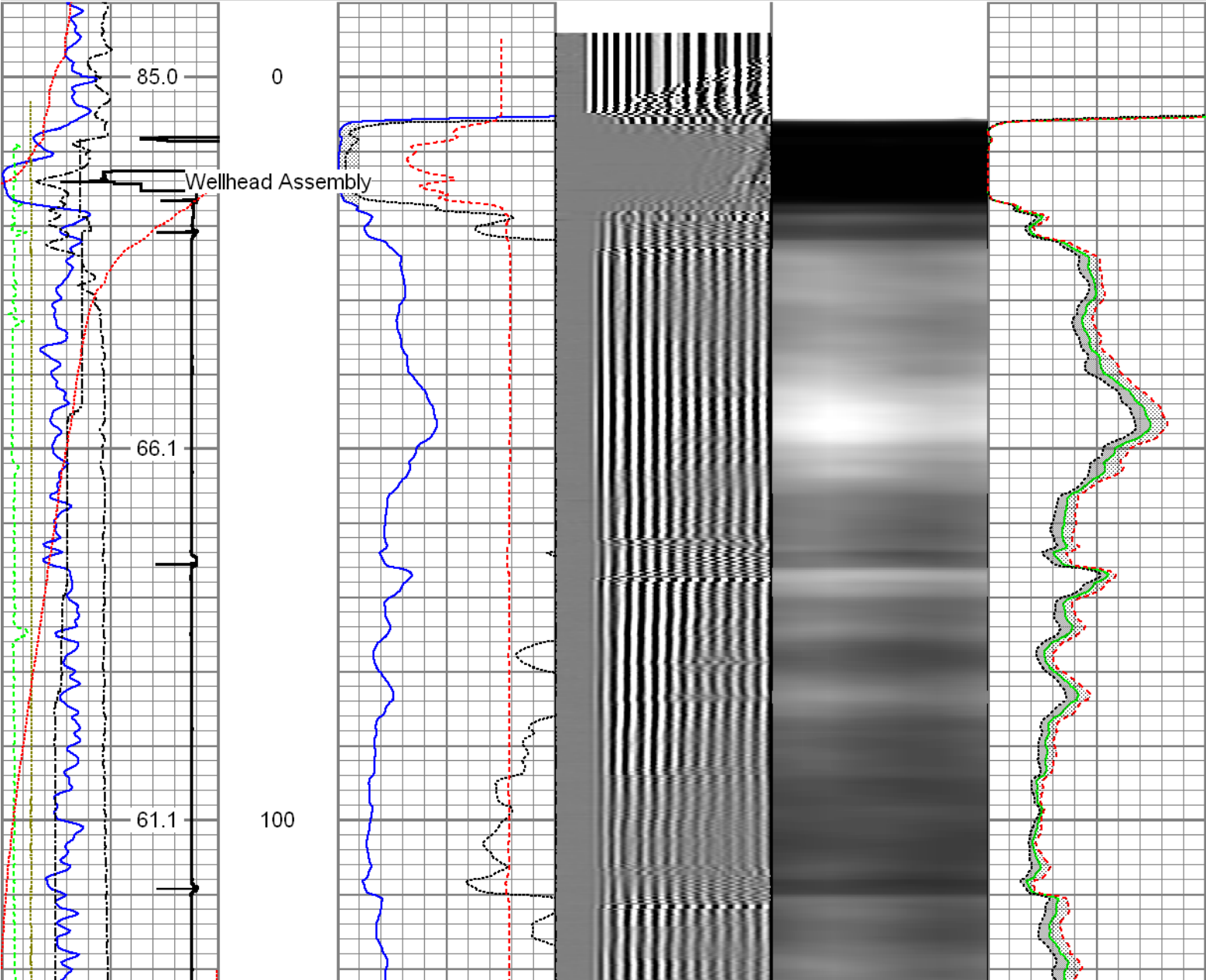
Dataset Pathname:pass8

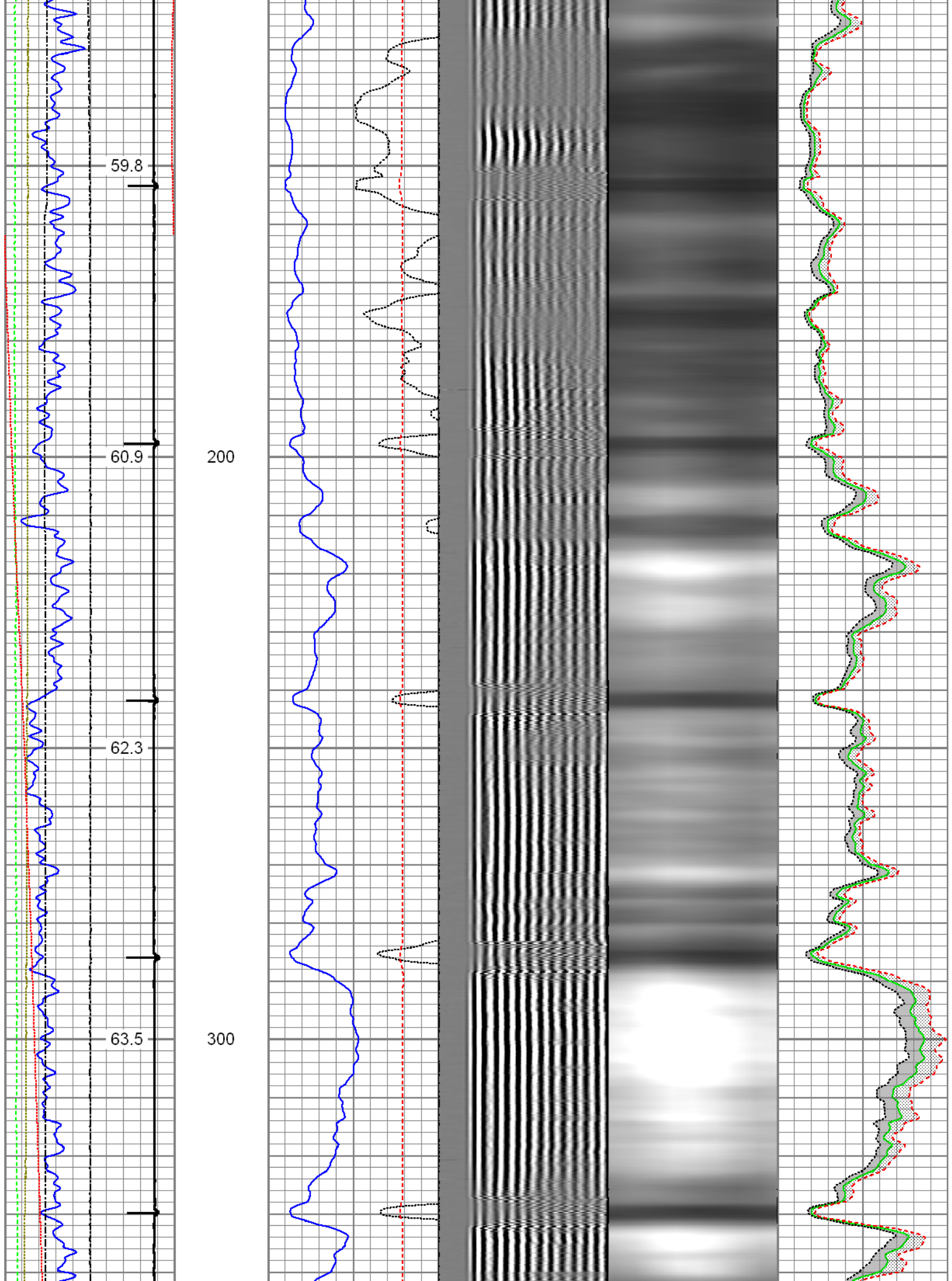
Presentation Format:rbt4_mit

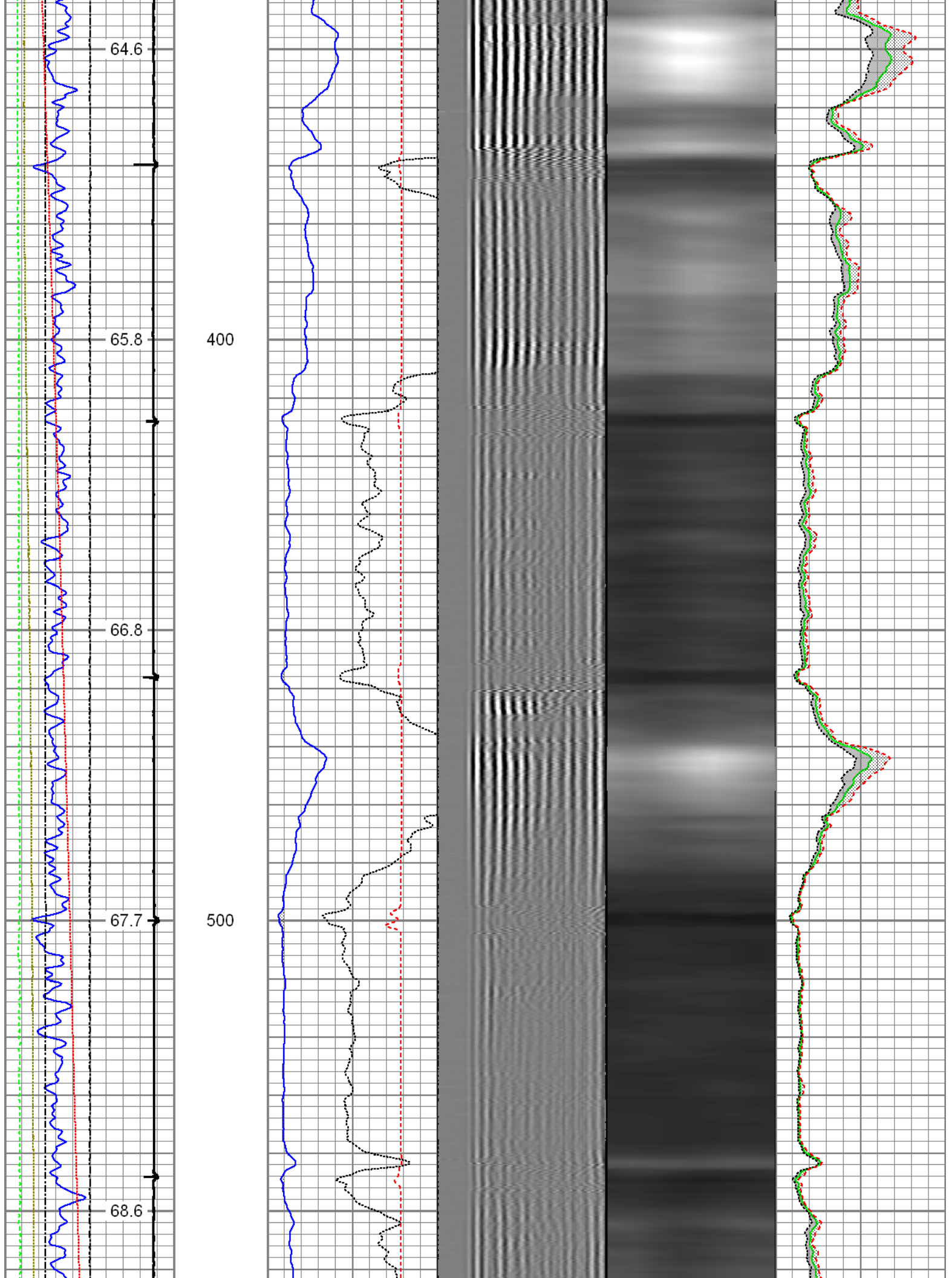
Dataset Creation:Tue Jul 21 14:18:25 2015 by Log 7.0 B1

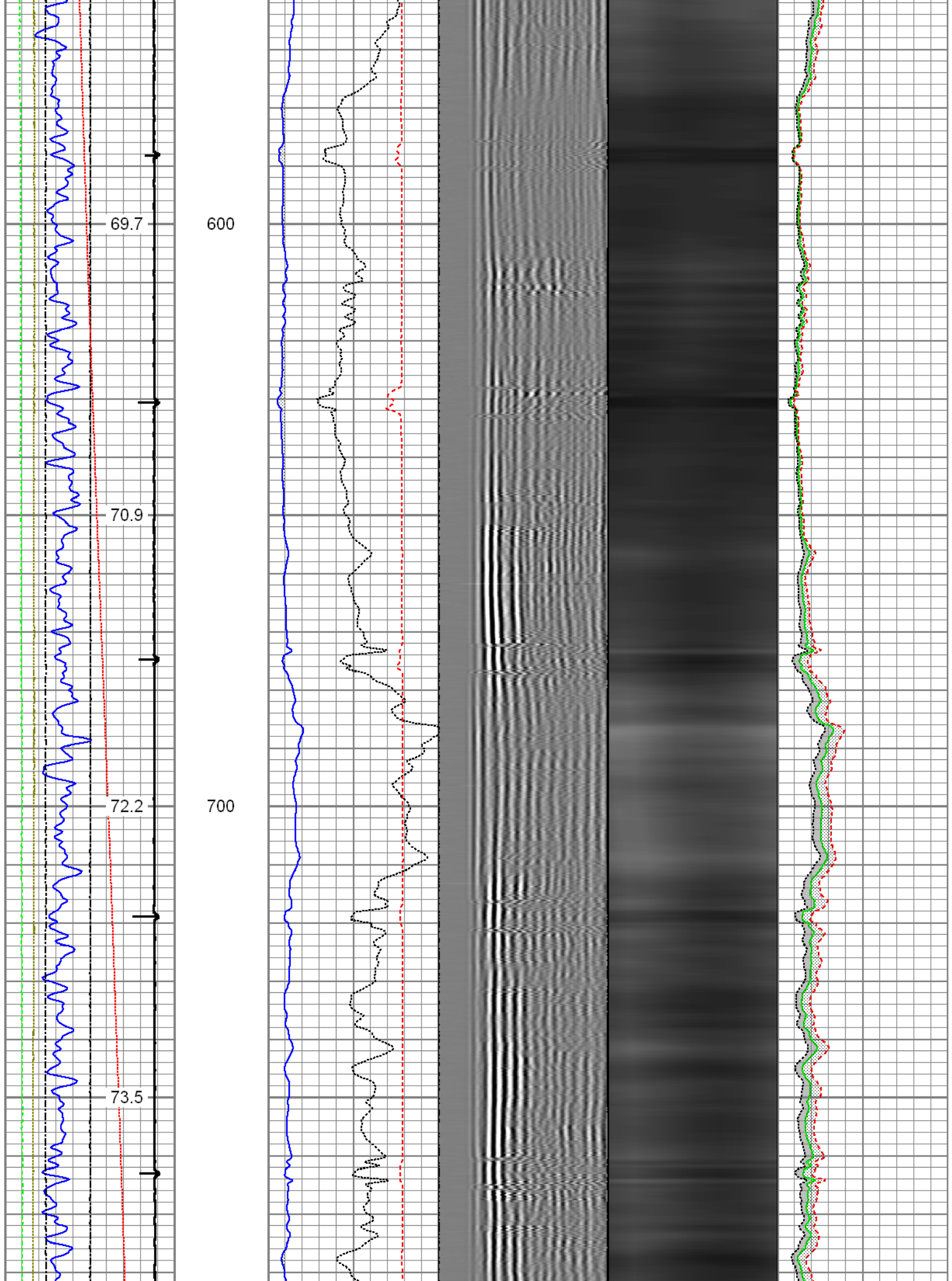
Charted by:Depth in Feet scaled 1:240

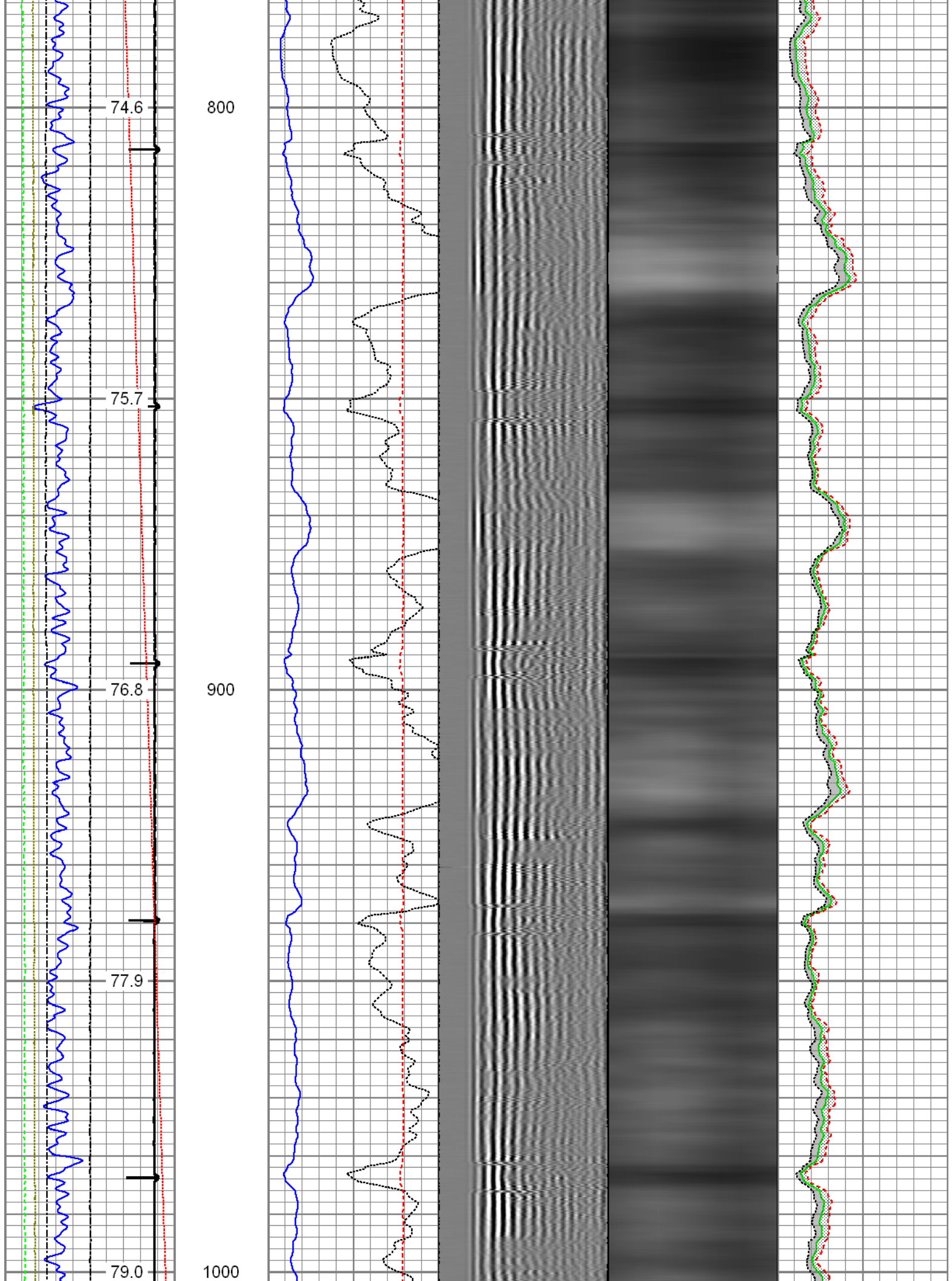
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Minimum Amplitude
Line Speed	0 (mV) 20			0 100
-100 (ft/min) 100	3' Travel Time			Maximum Amplitude
Line Tension	650 (usec) 150			0 100
0 (lb) 2000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

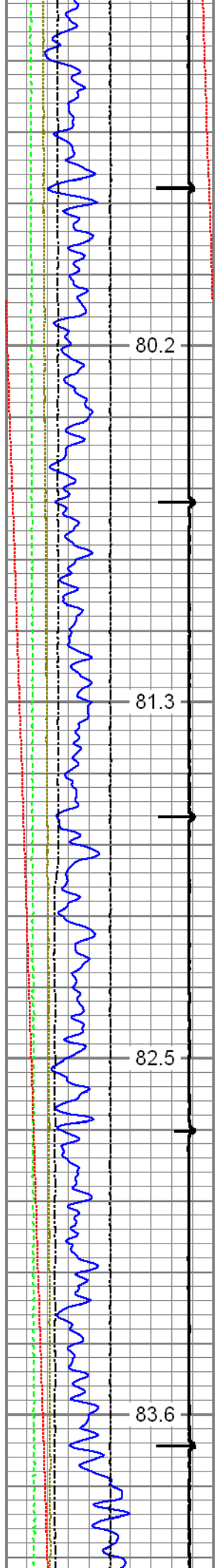






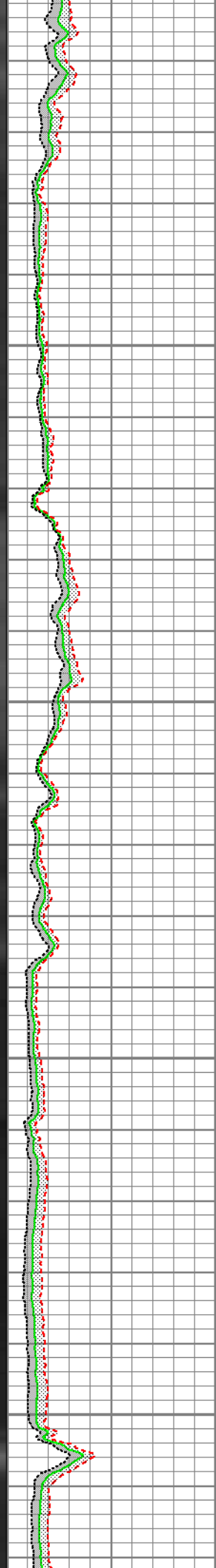
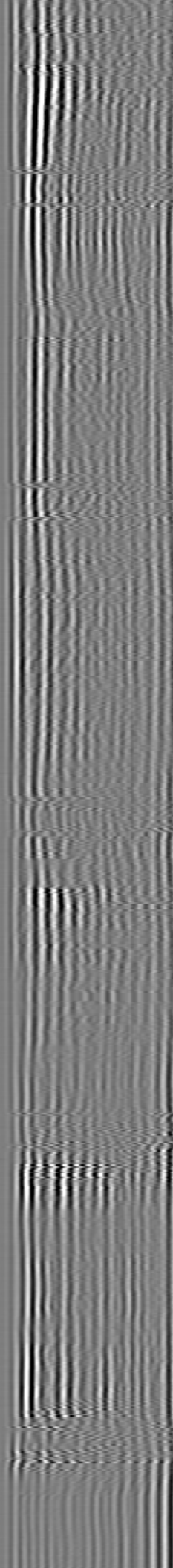
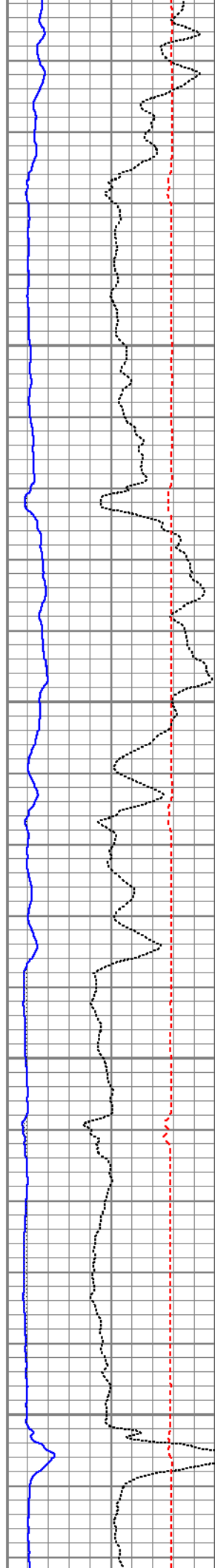


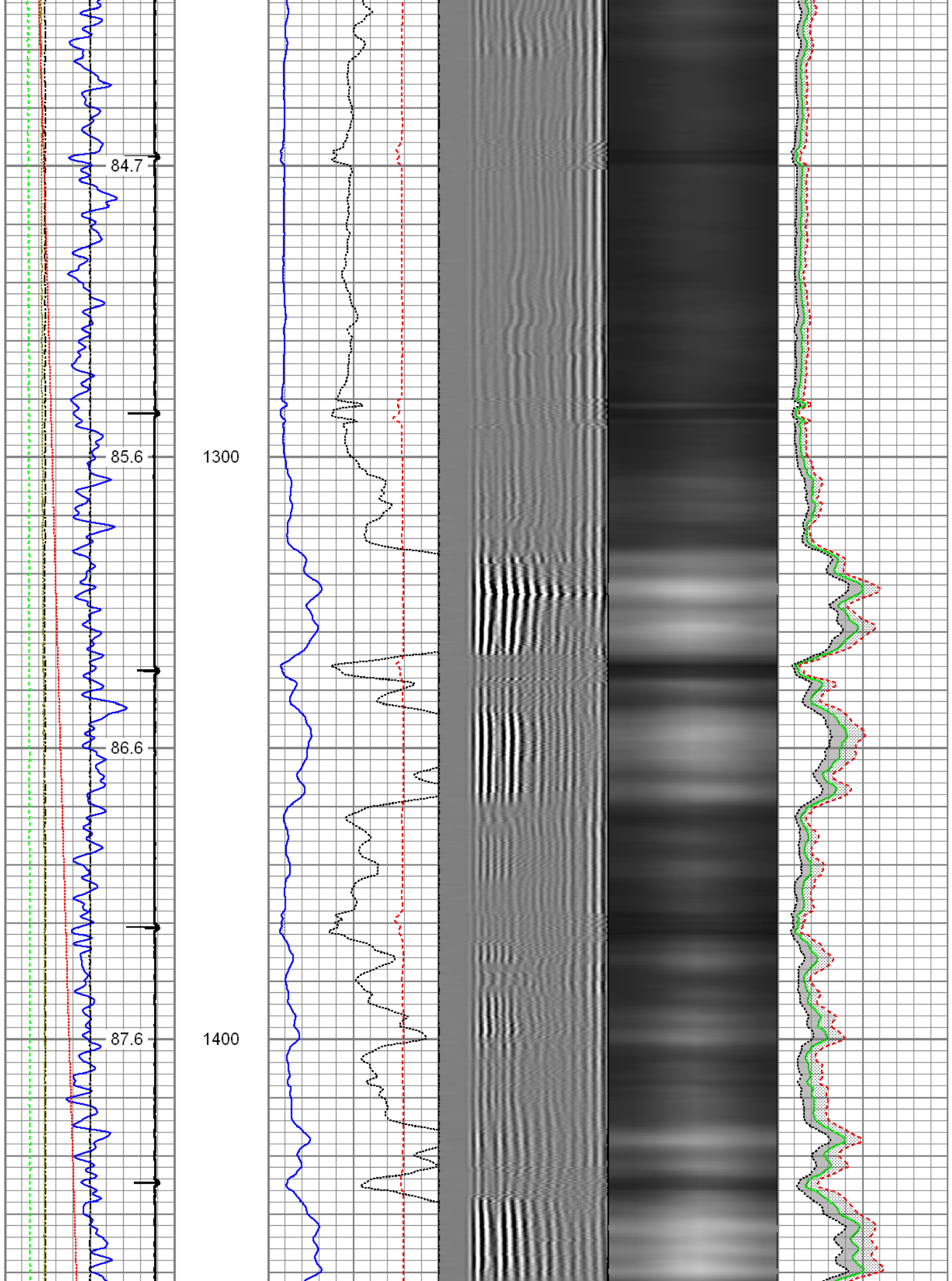


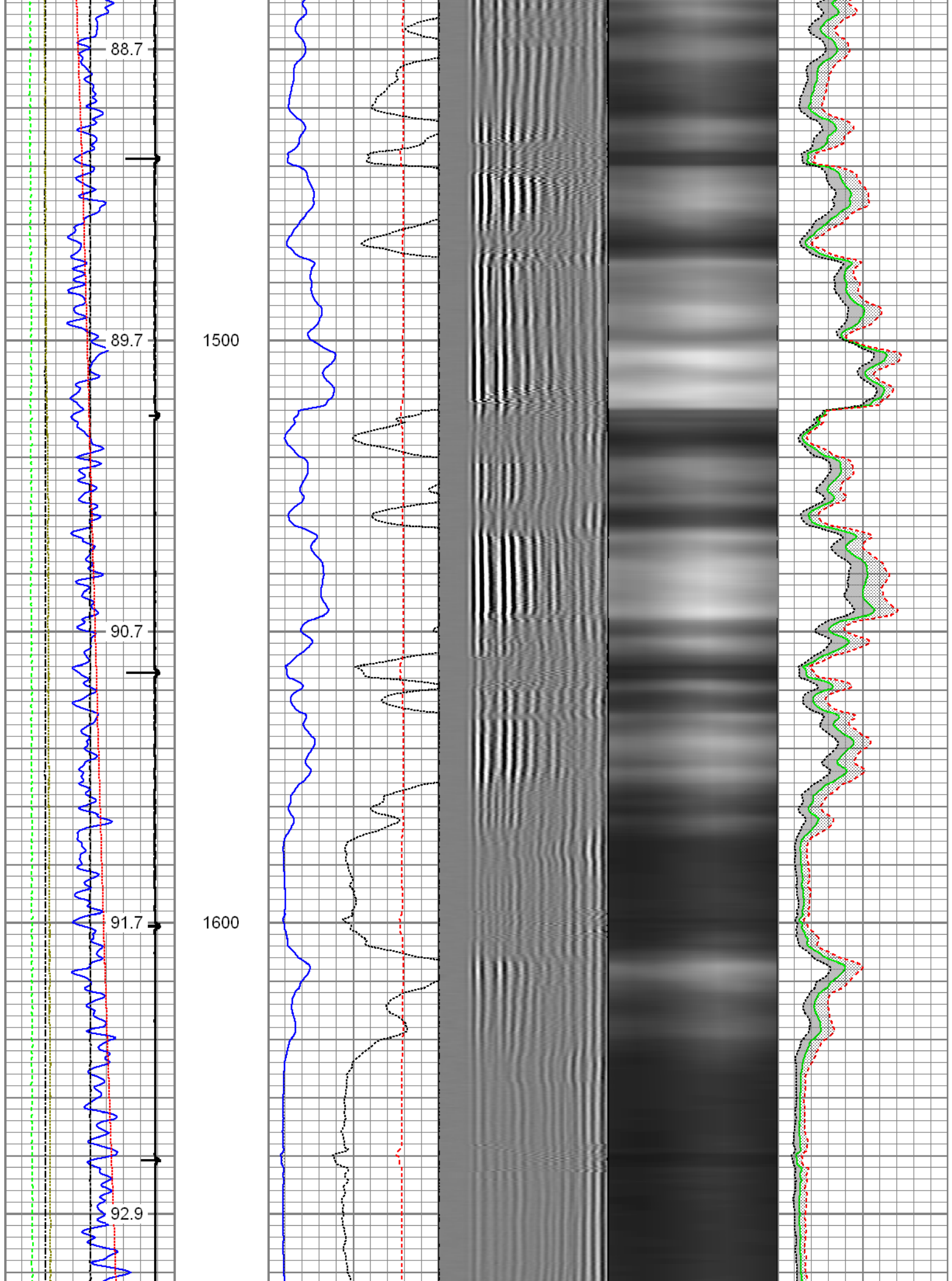


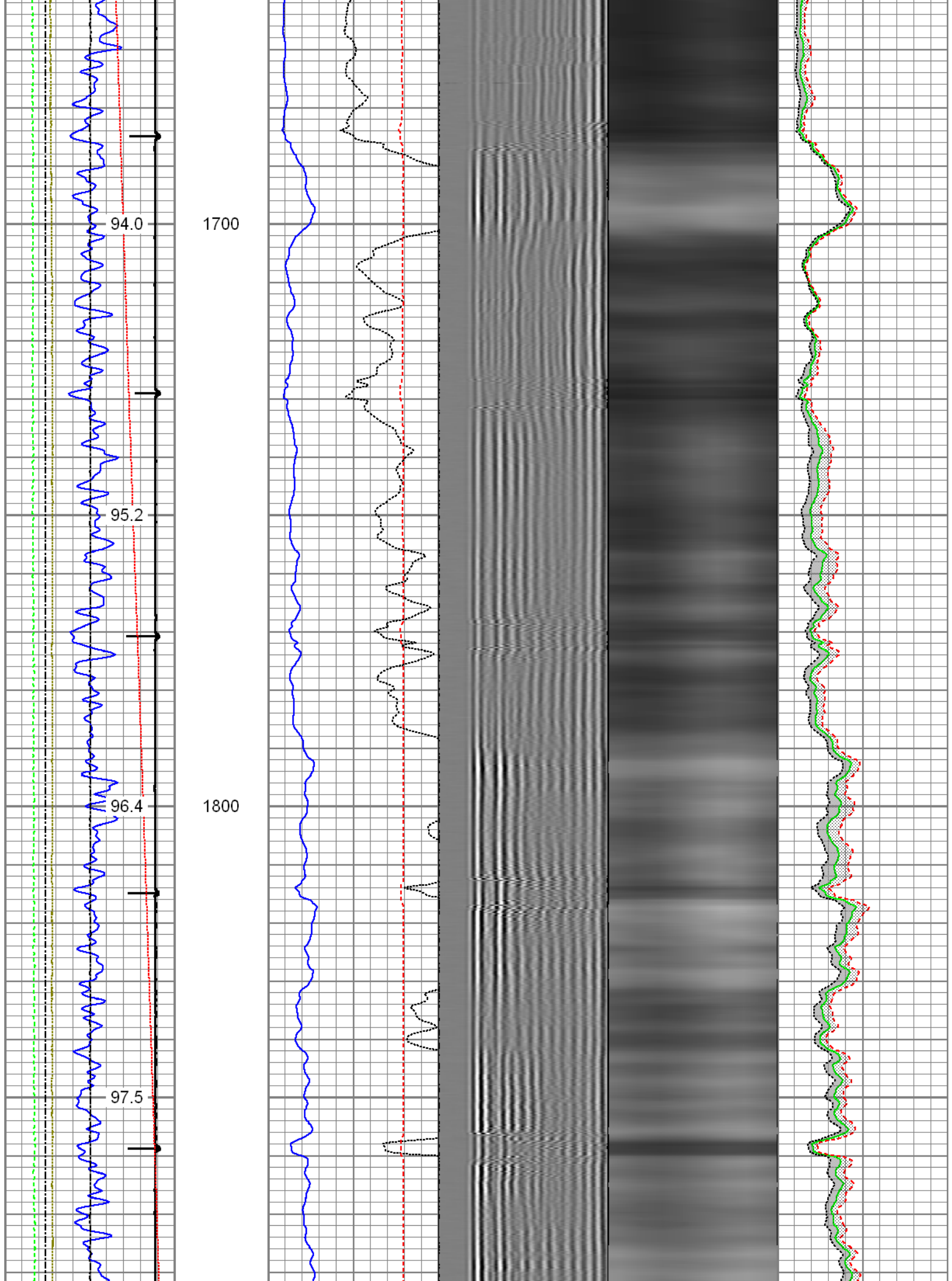
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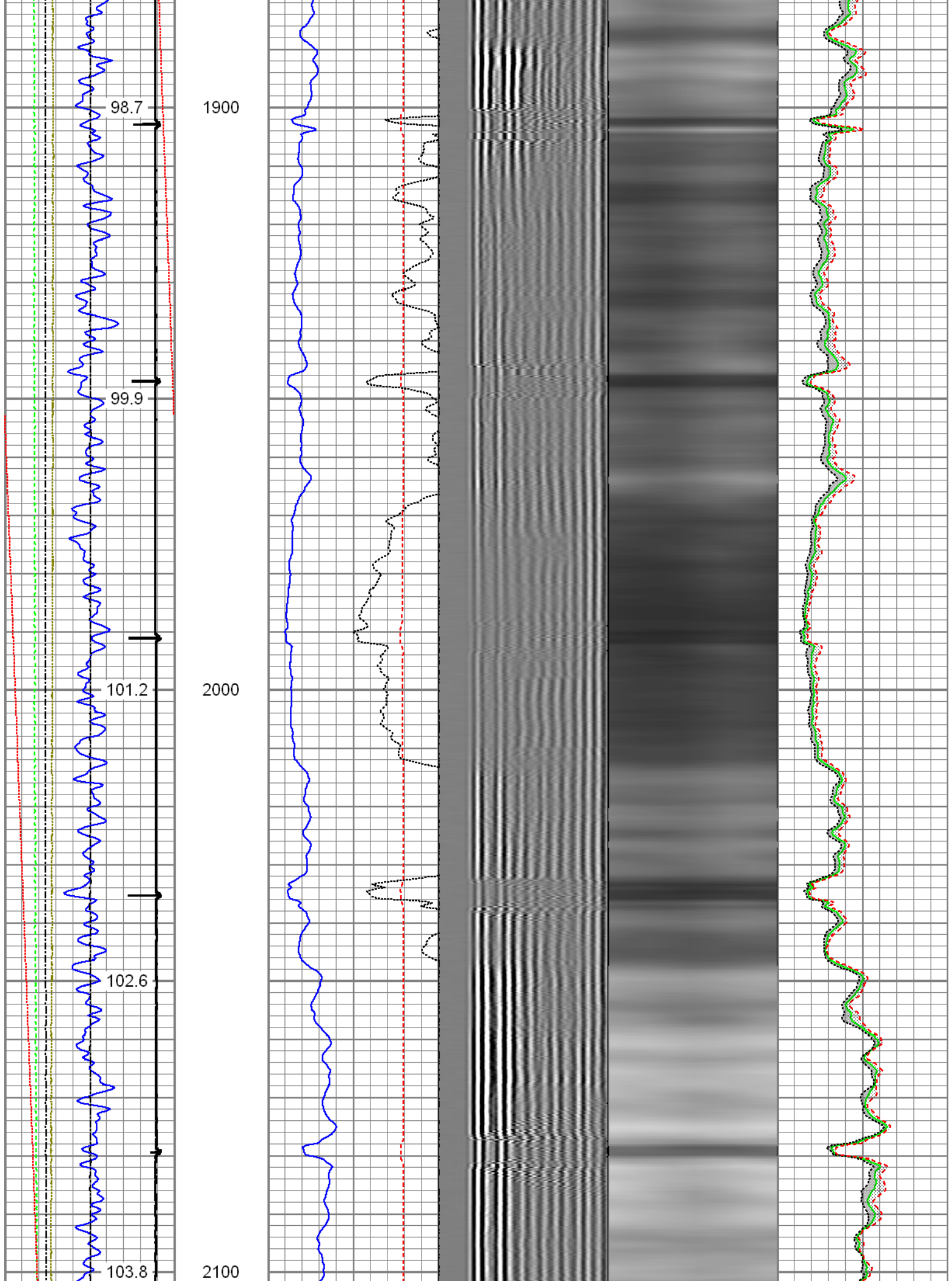
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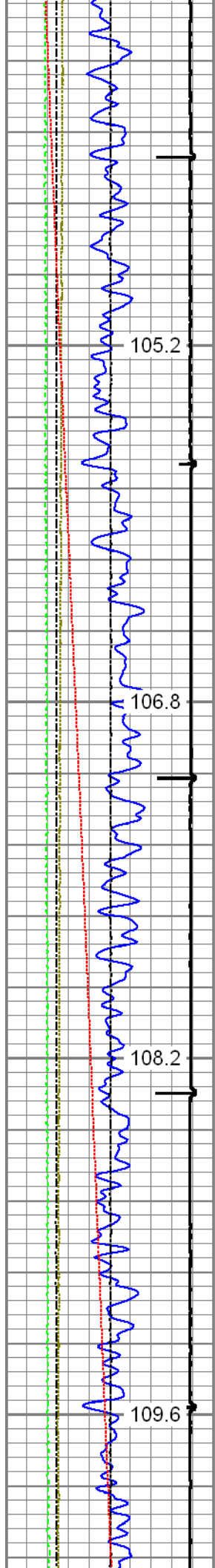






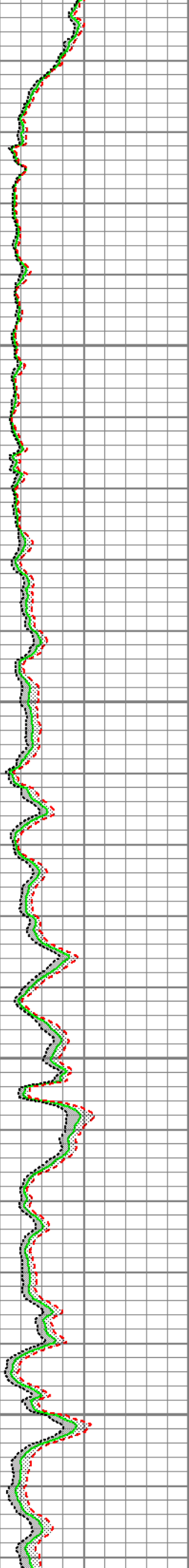
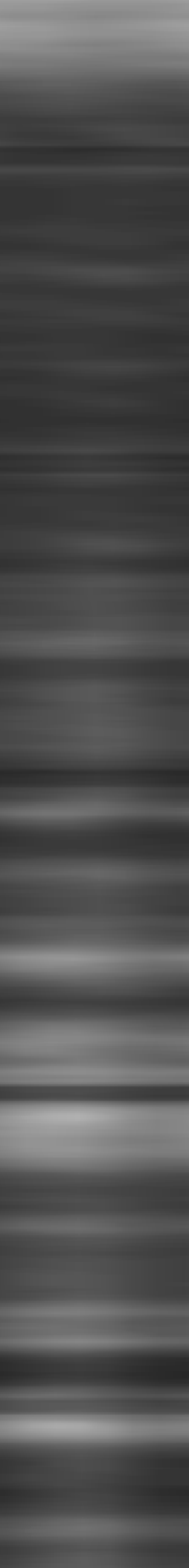
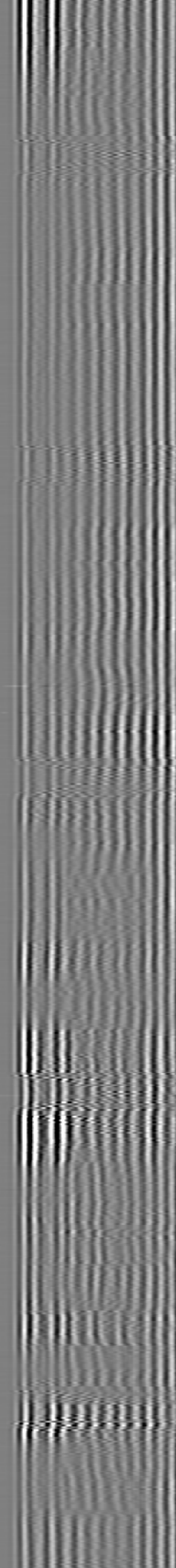
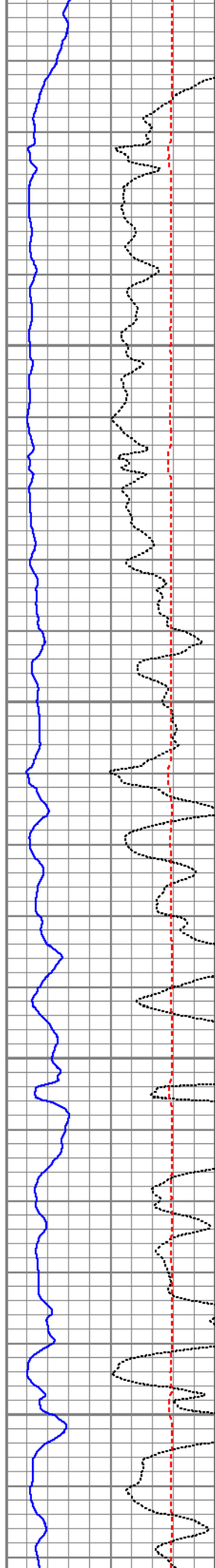


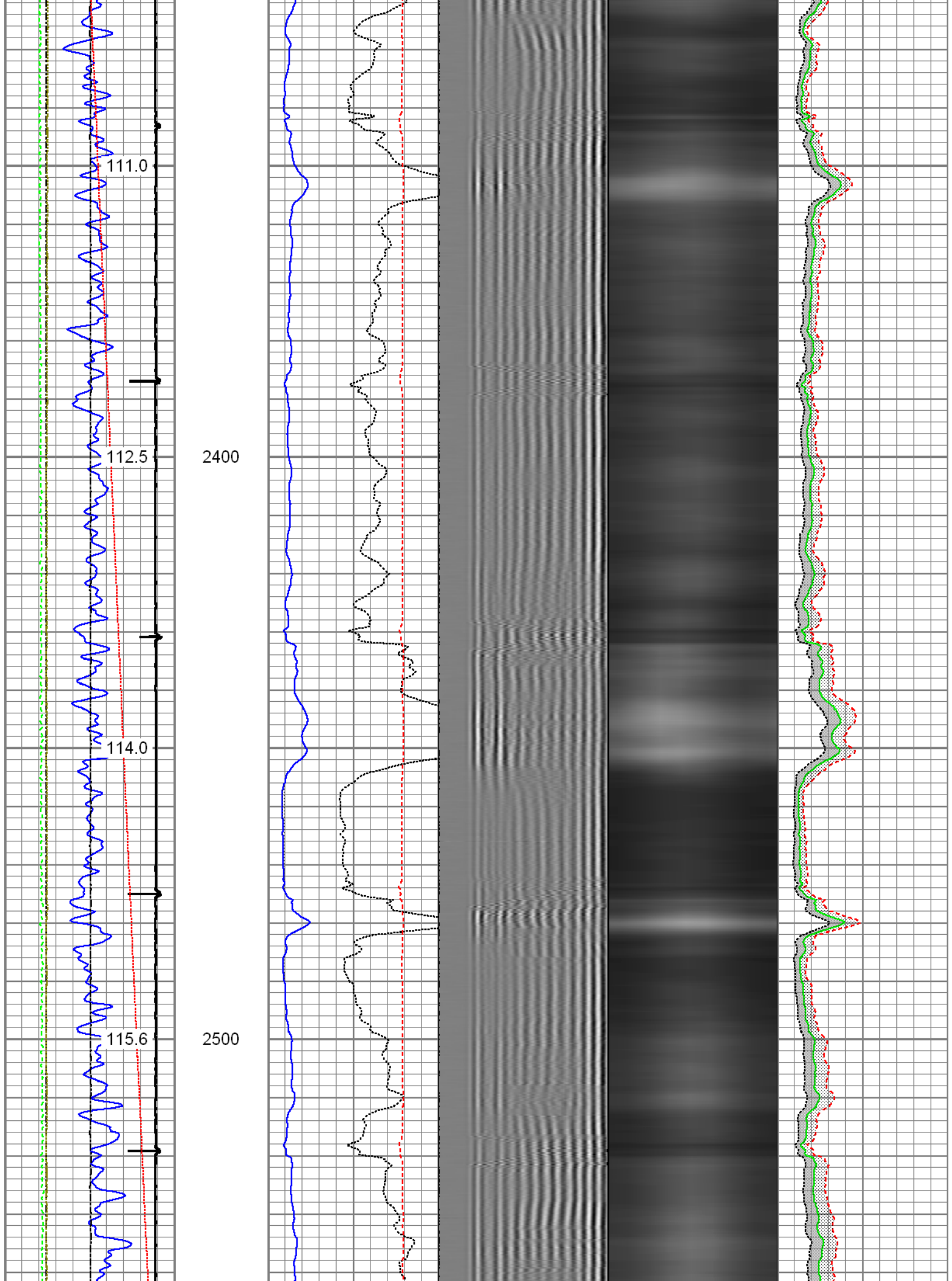


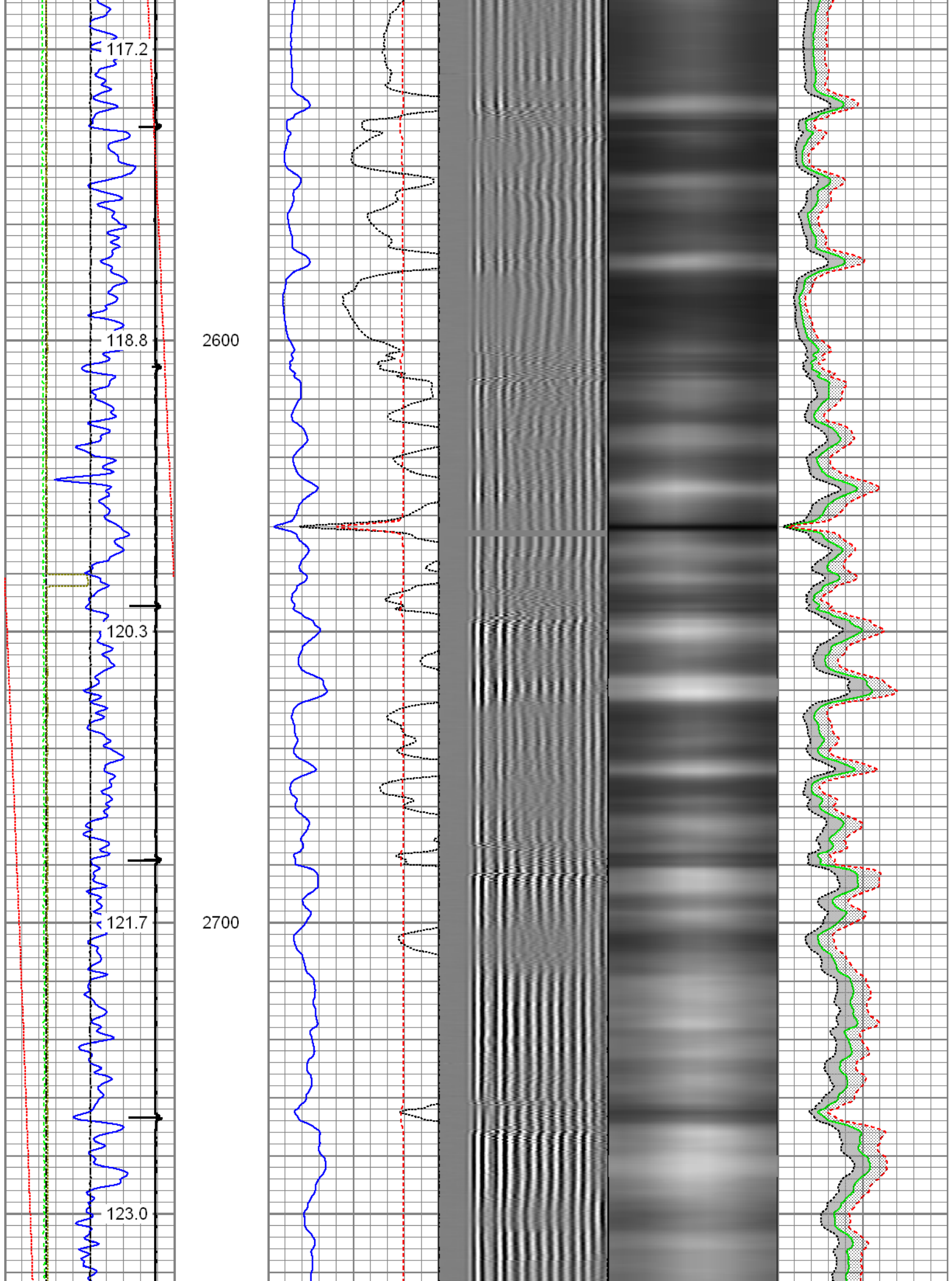


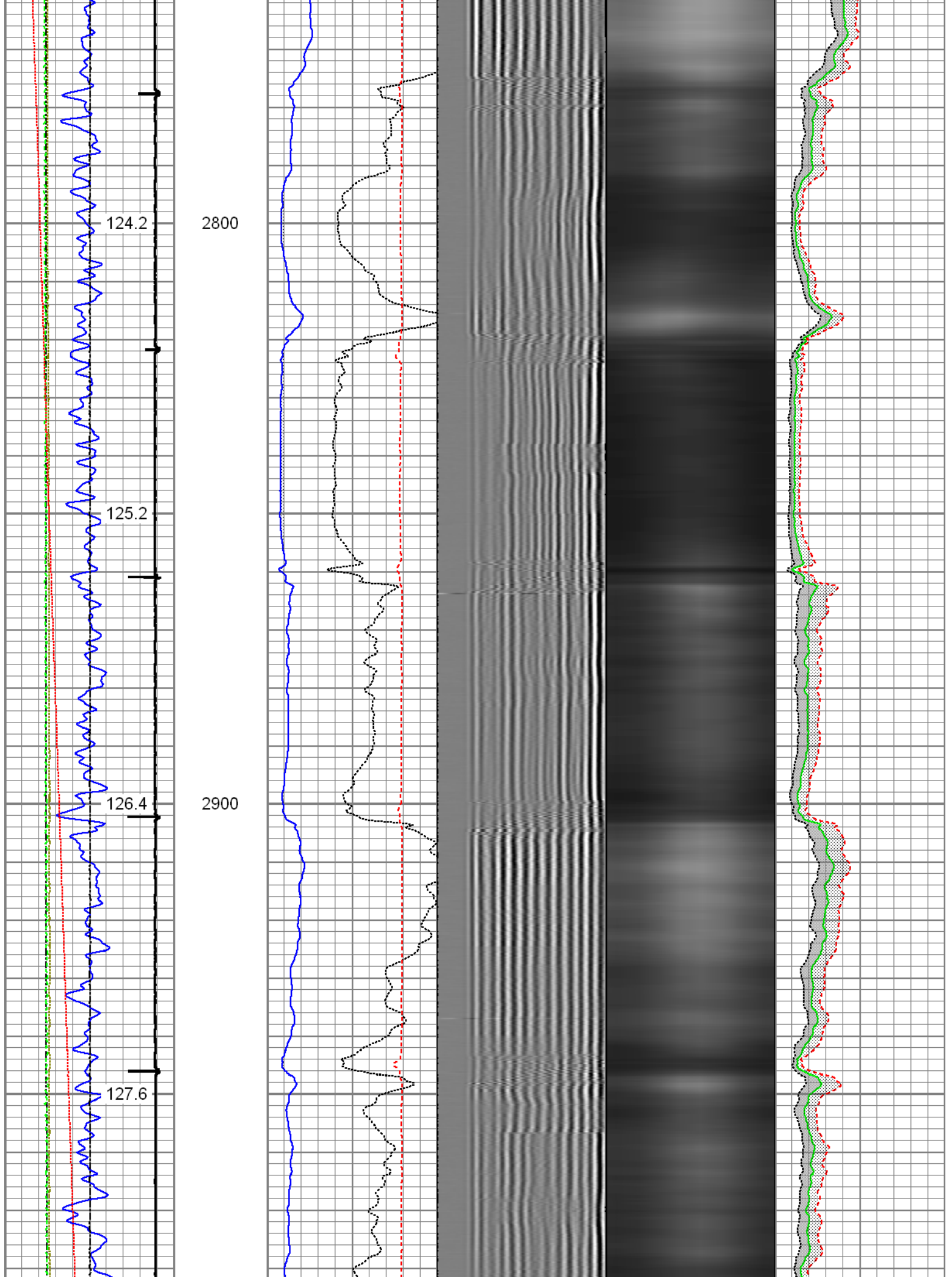
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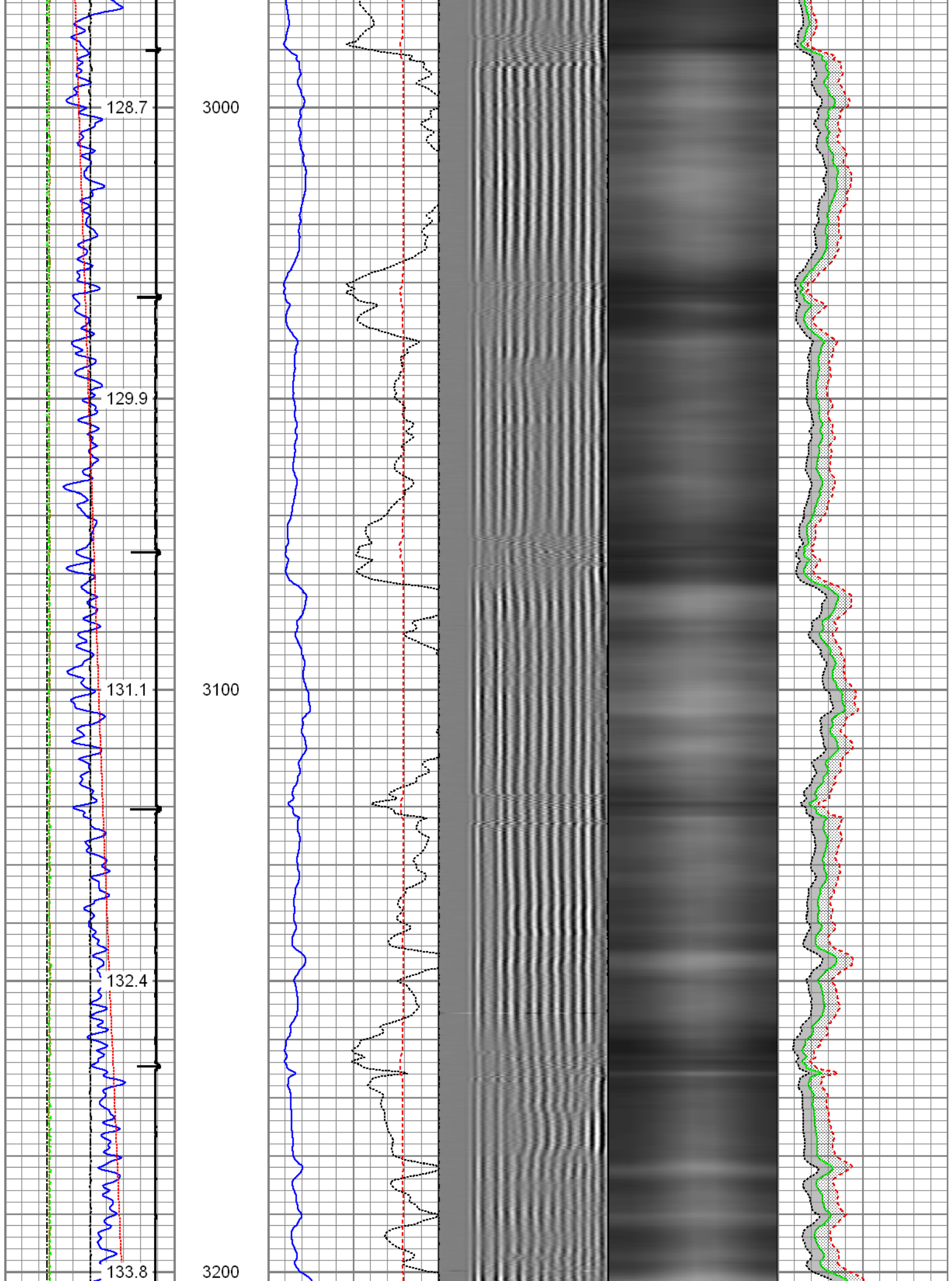
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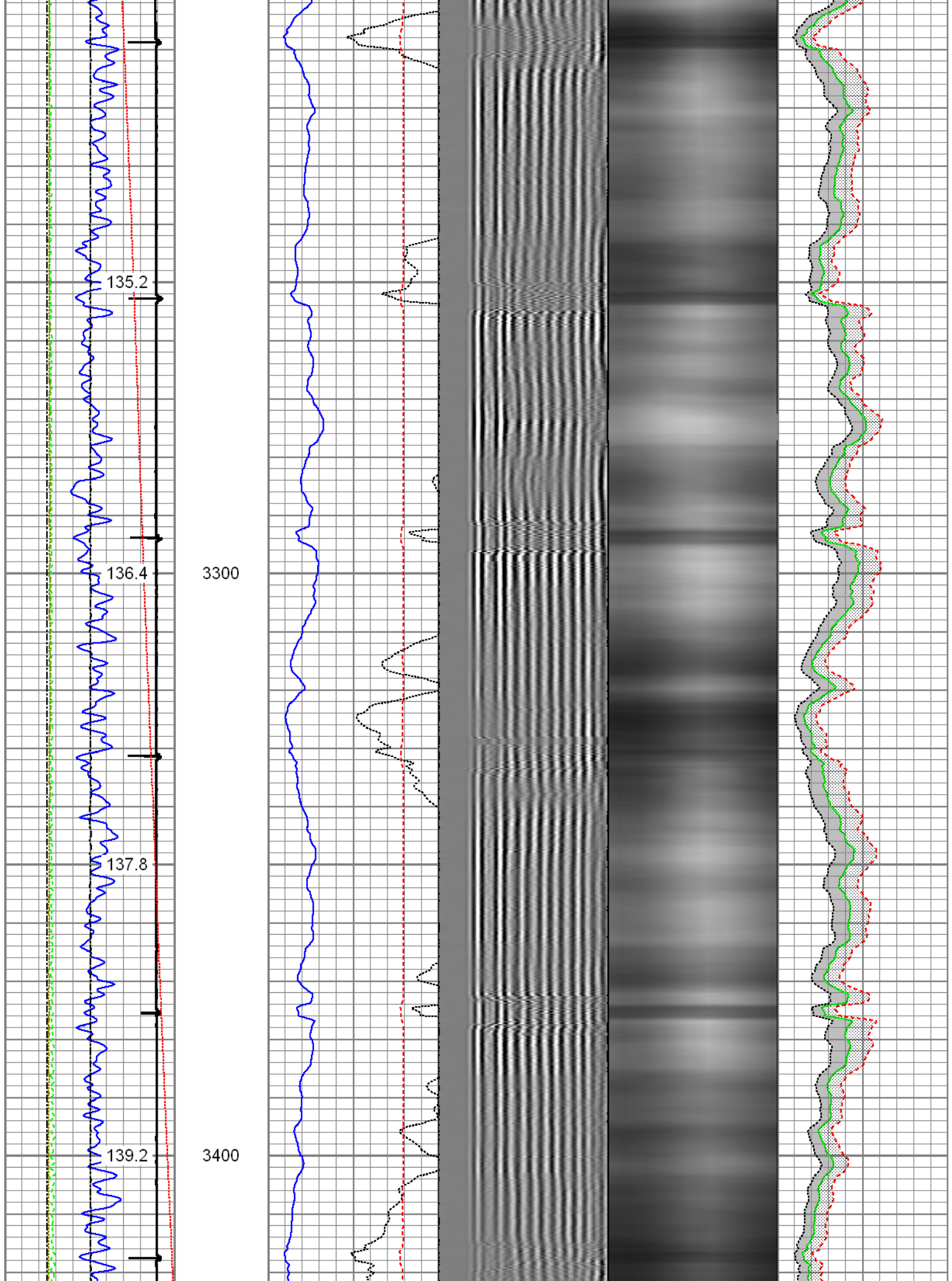


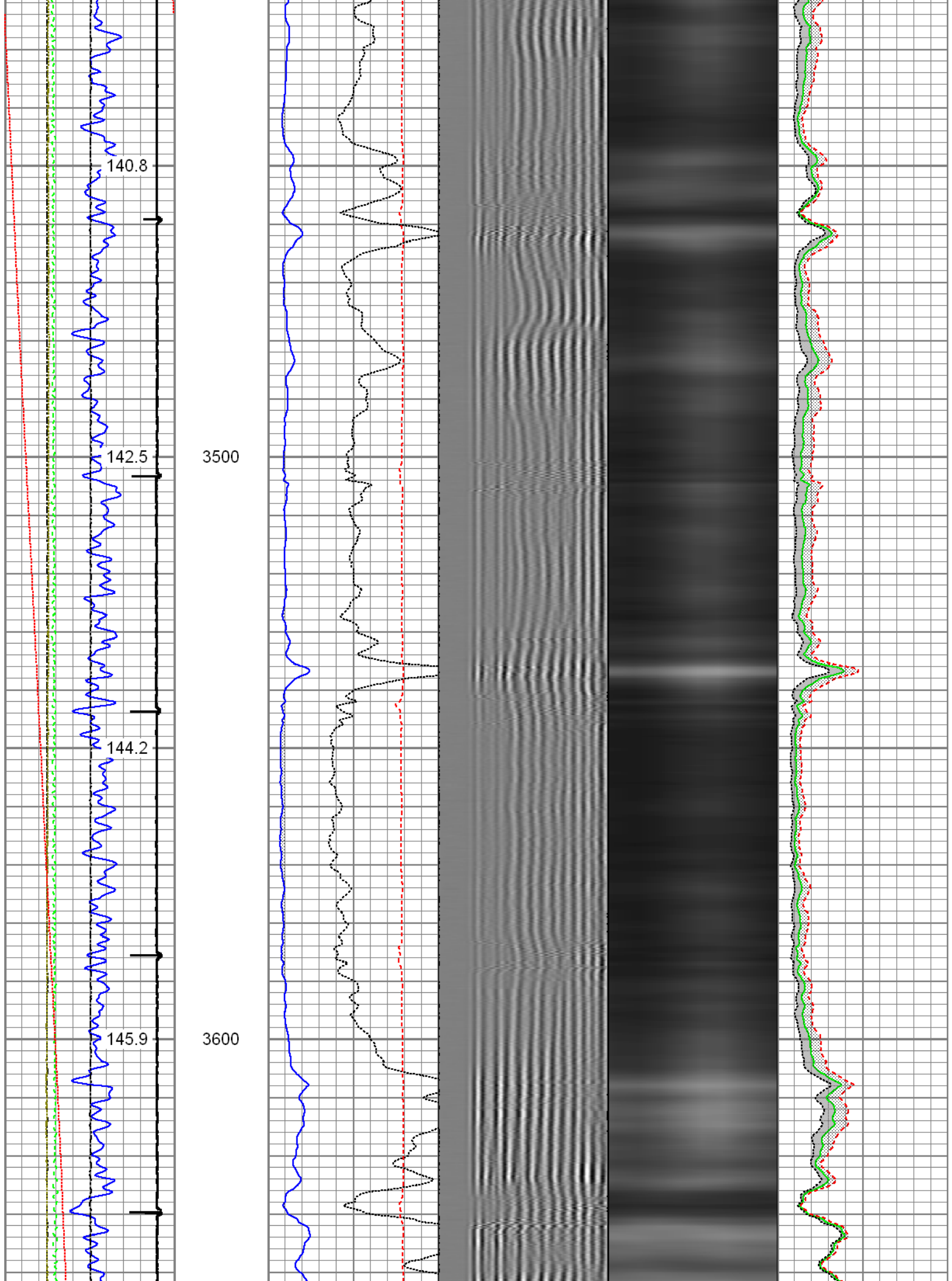


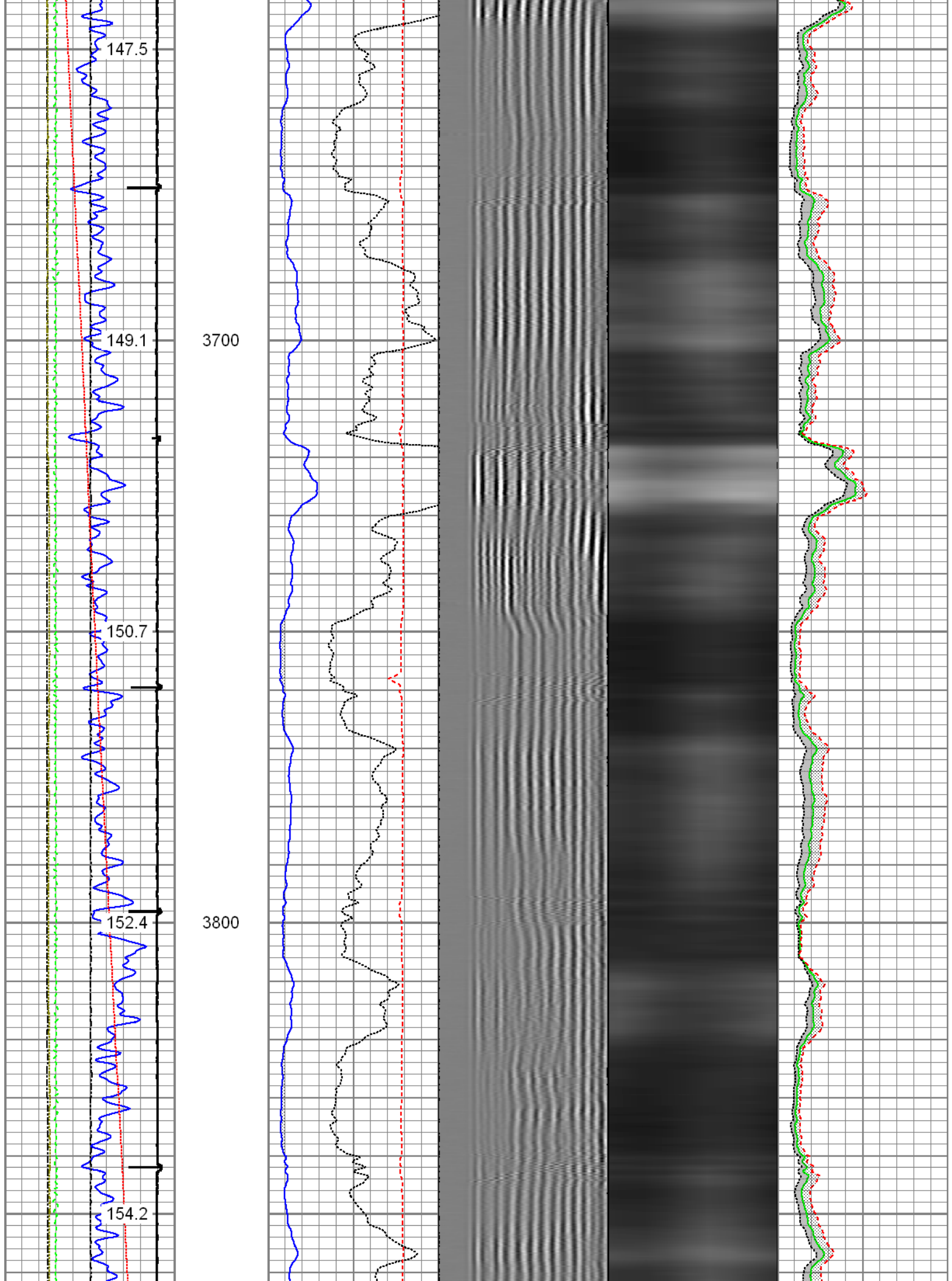


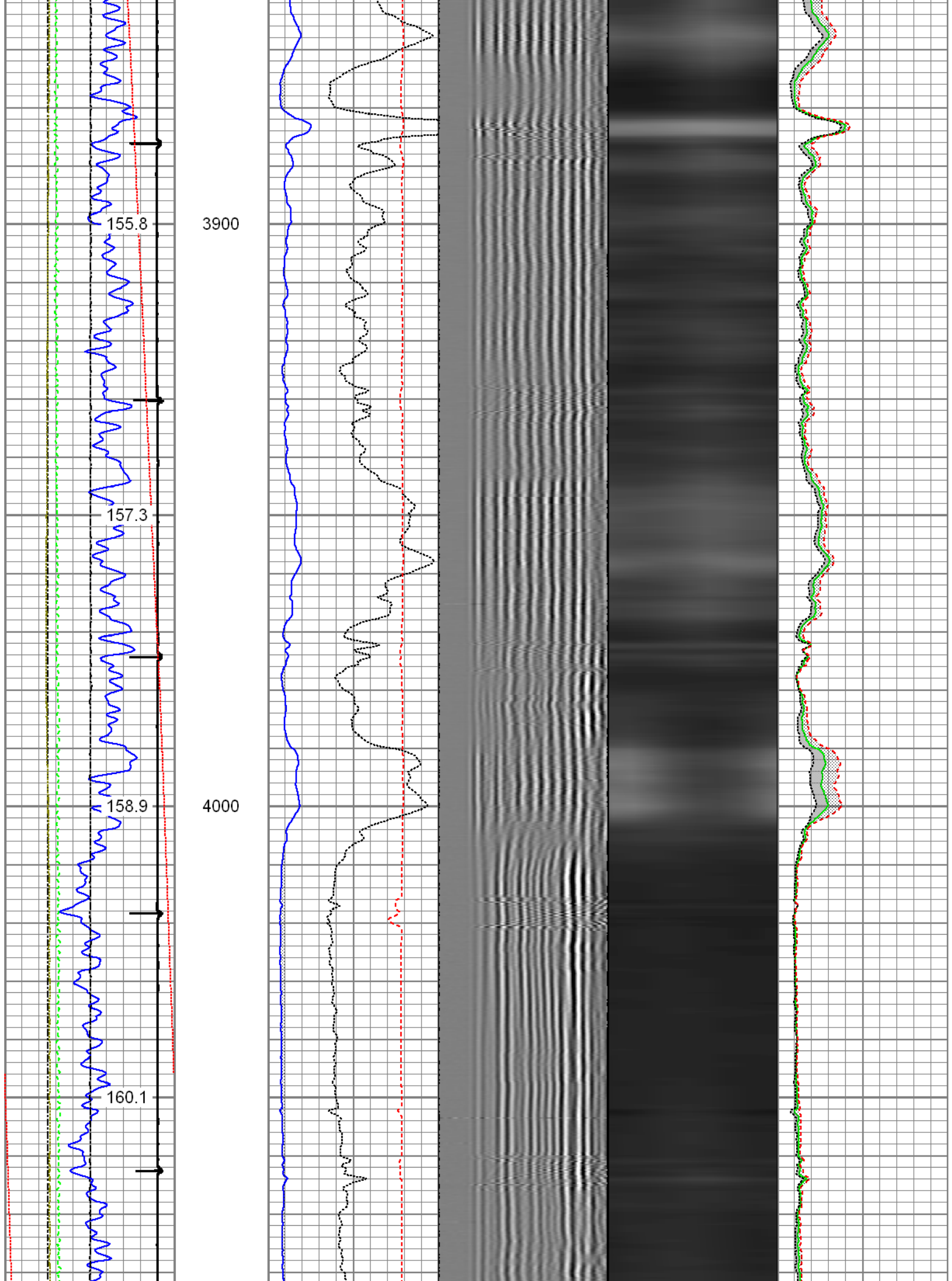


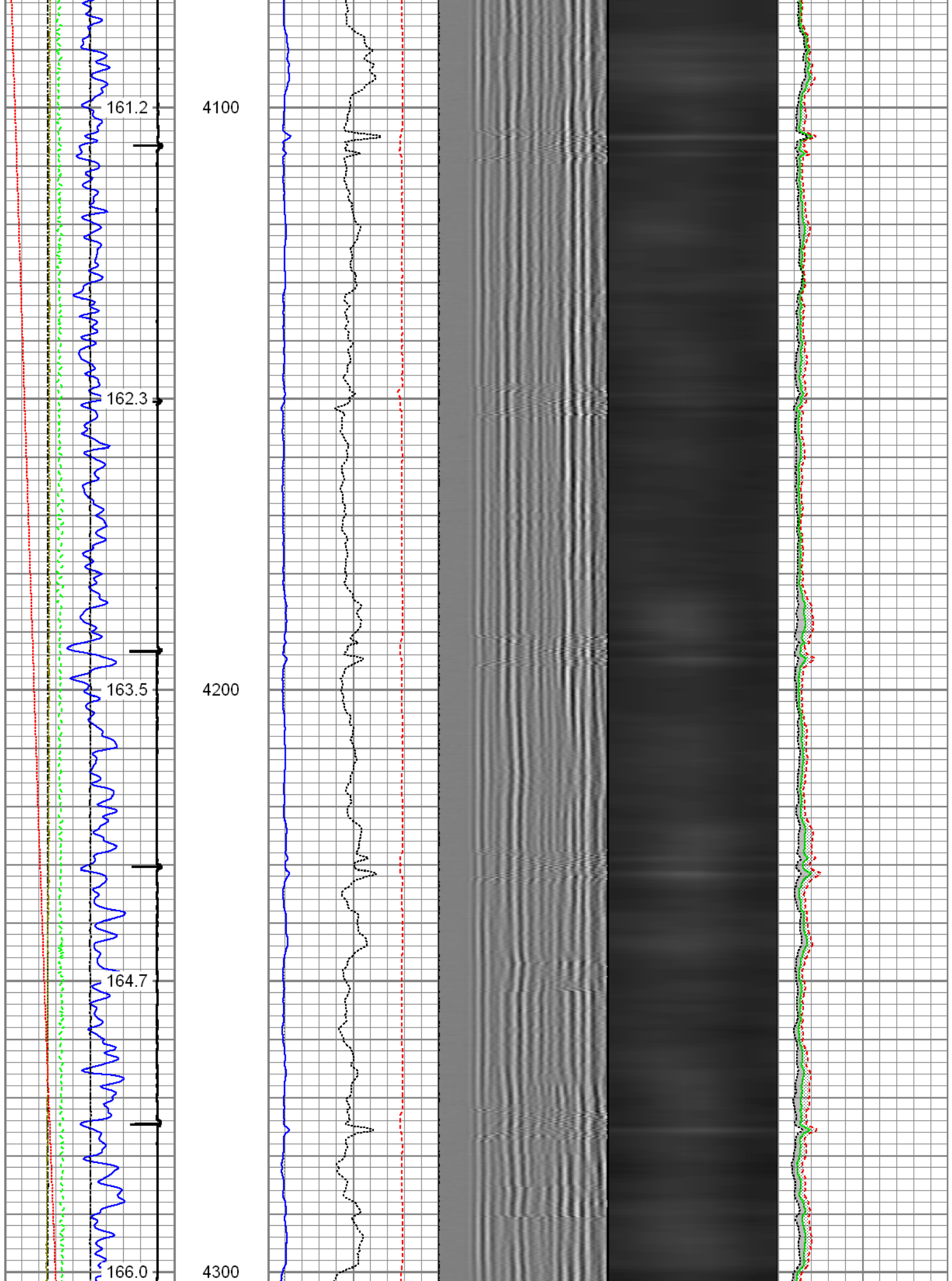


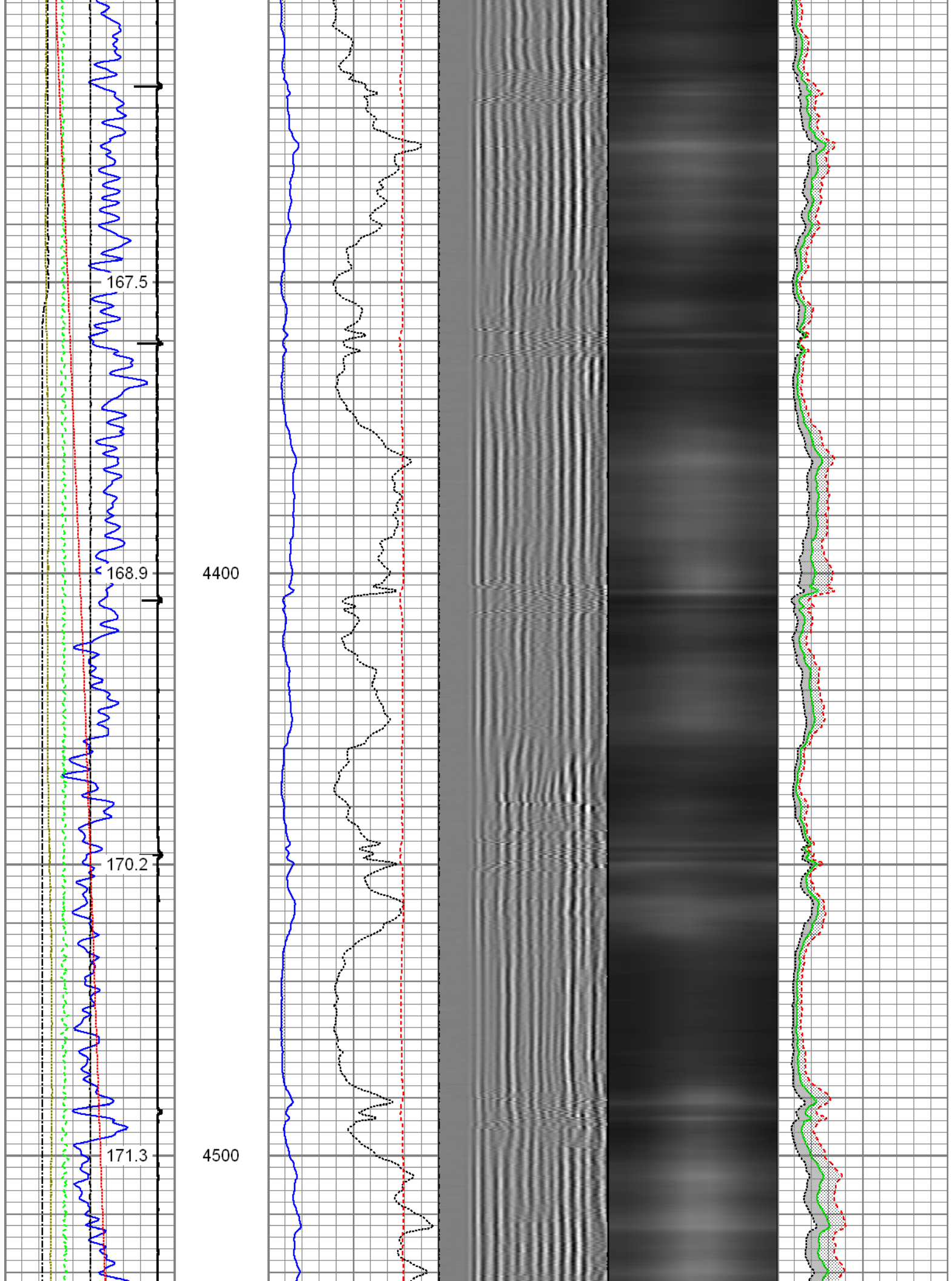


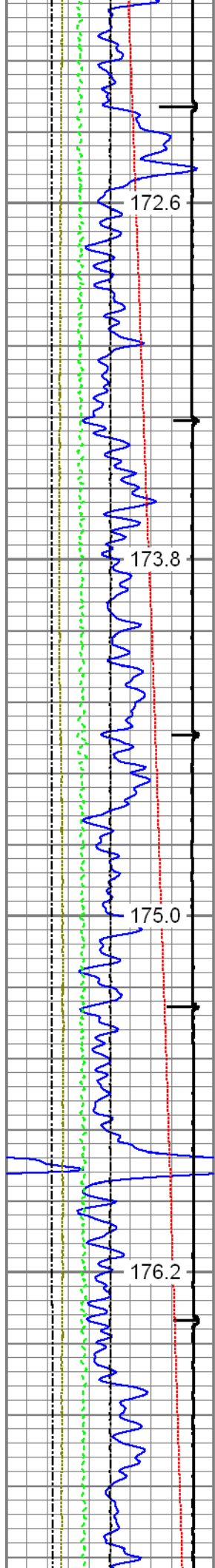






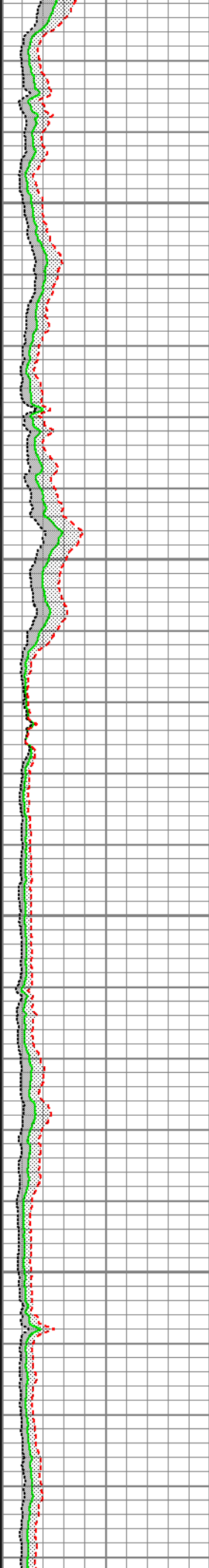
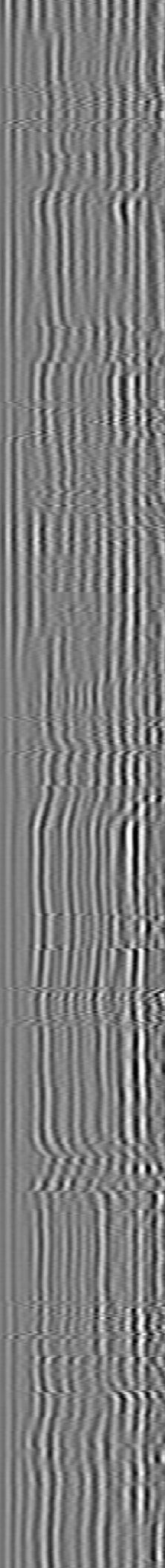
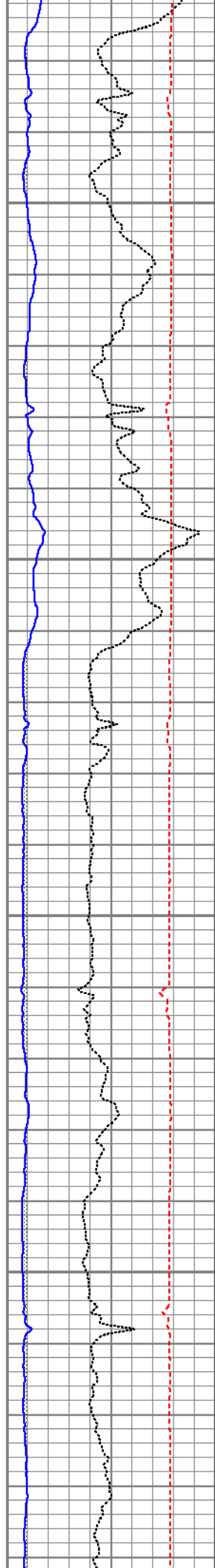


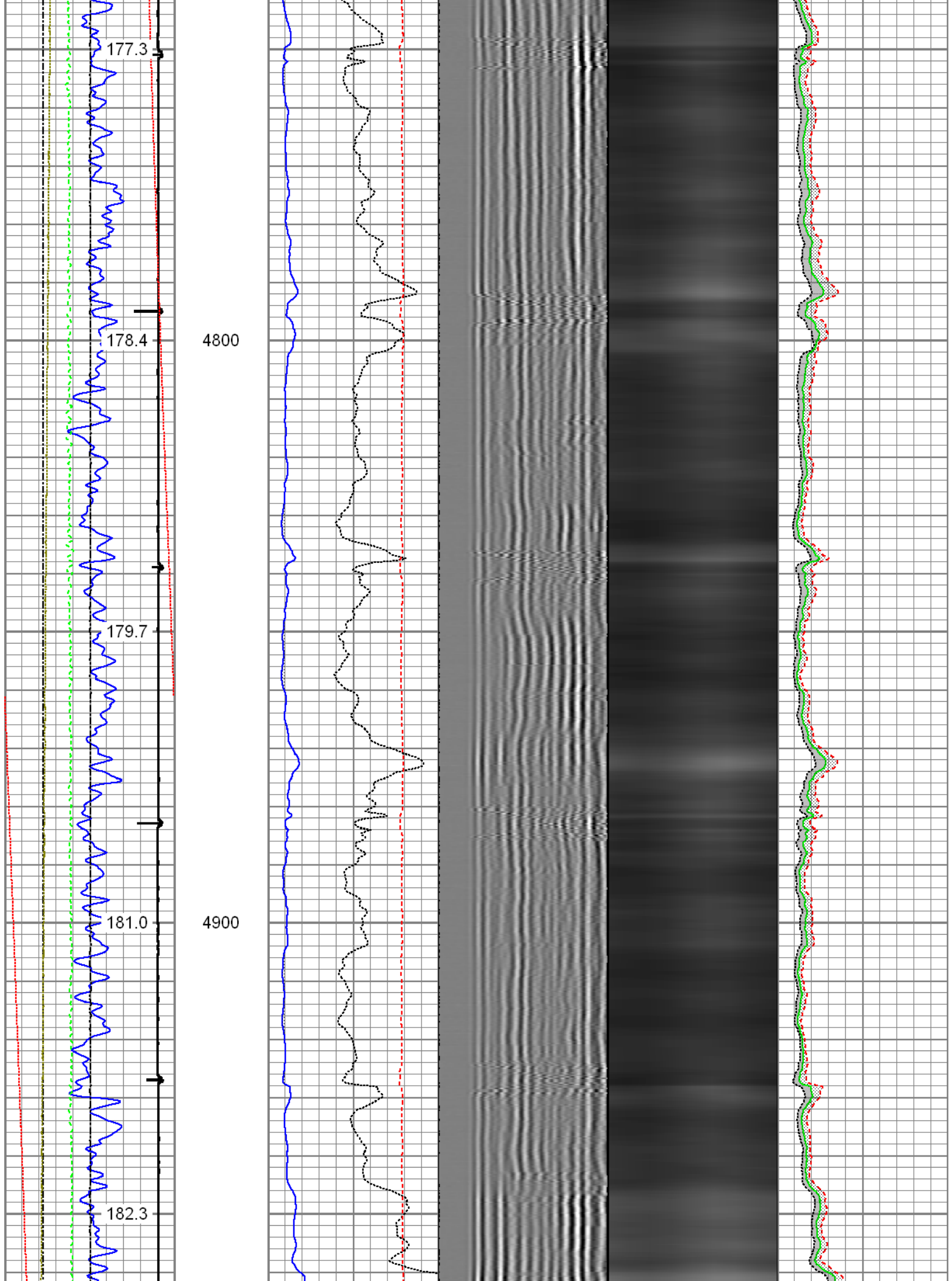


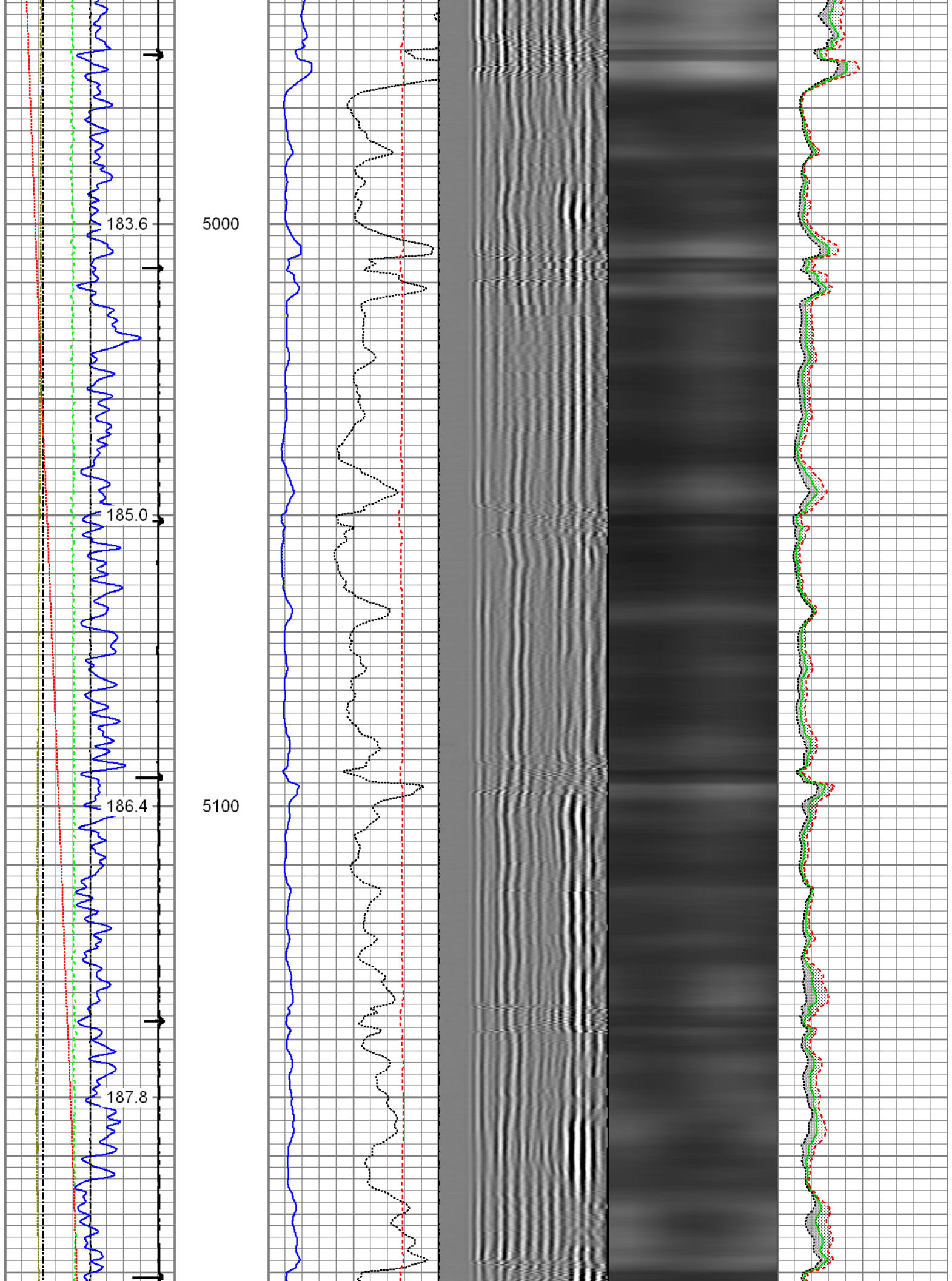


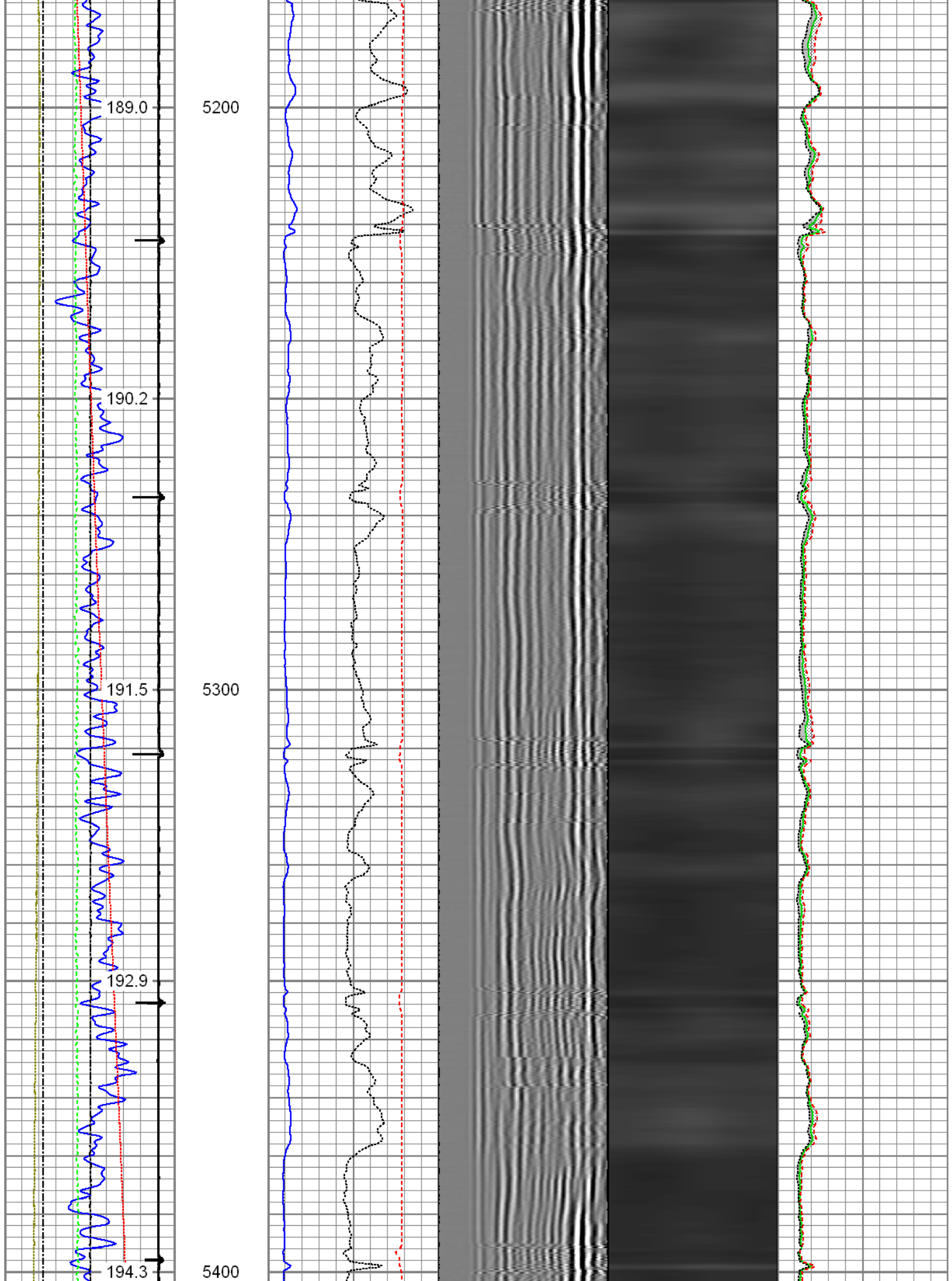
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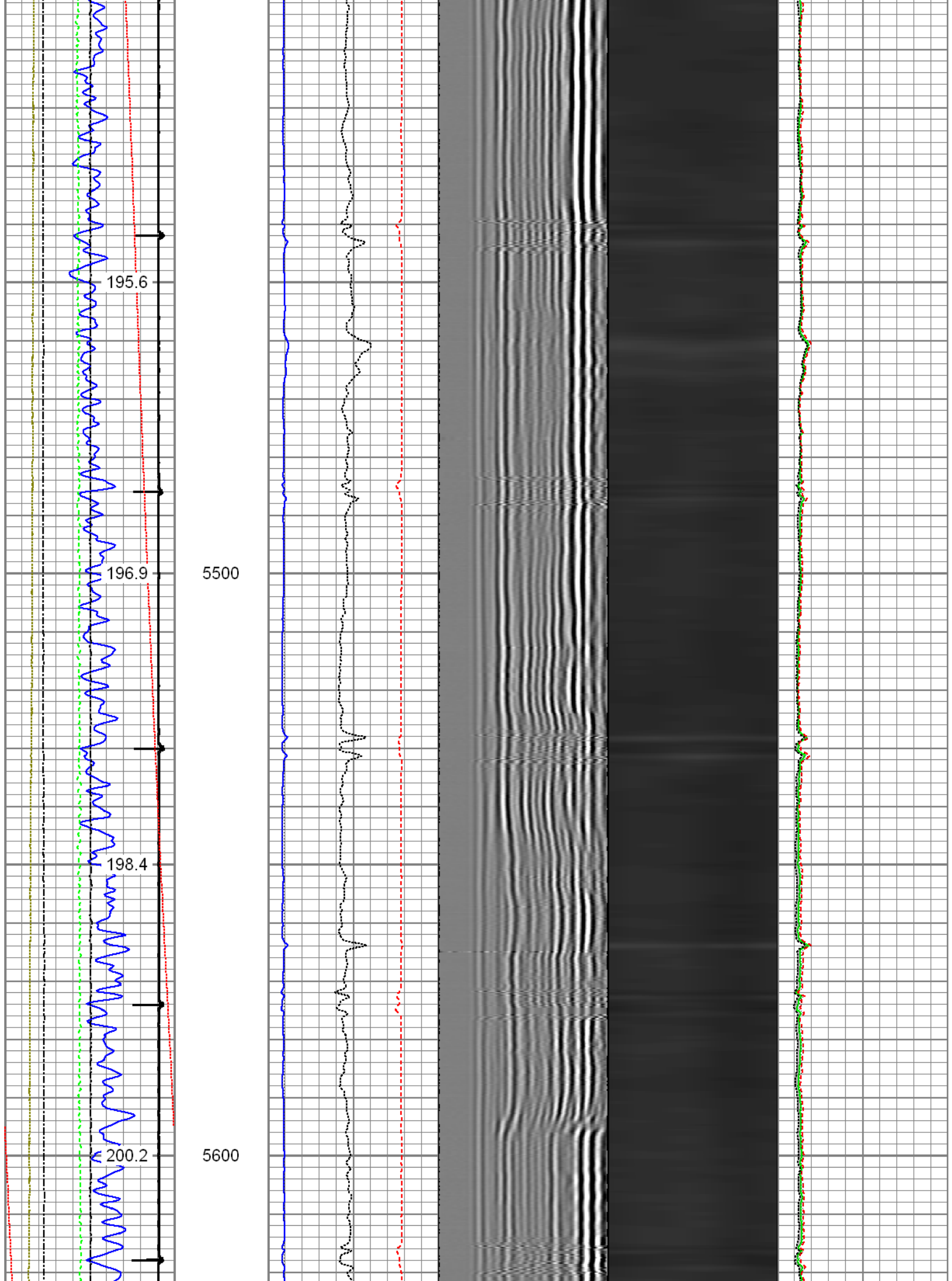
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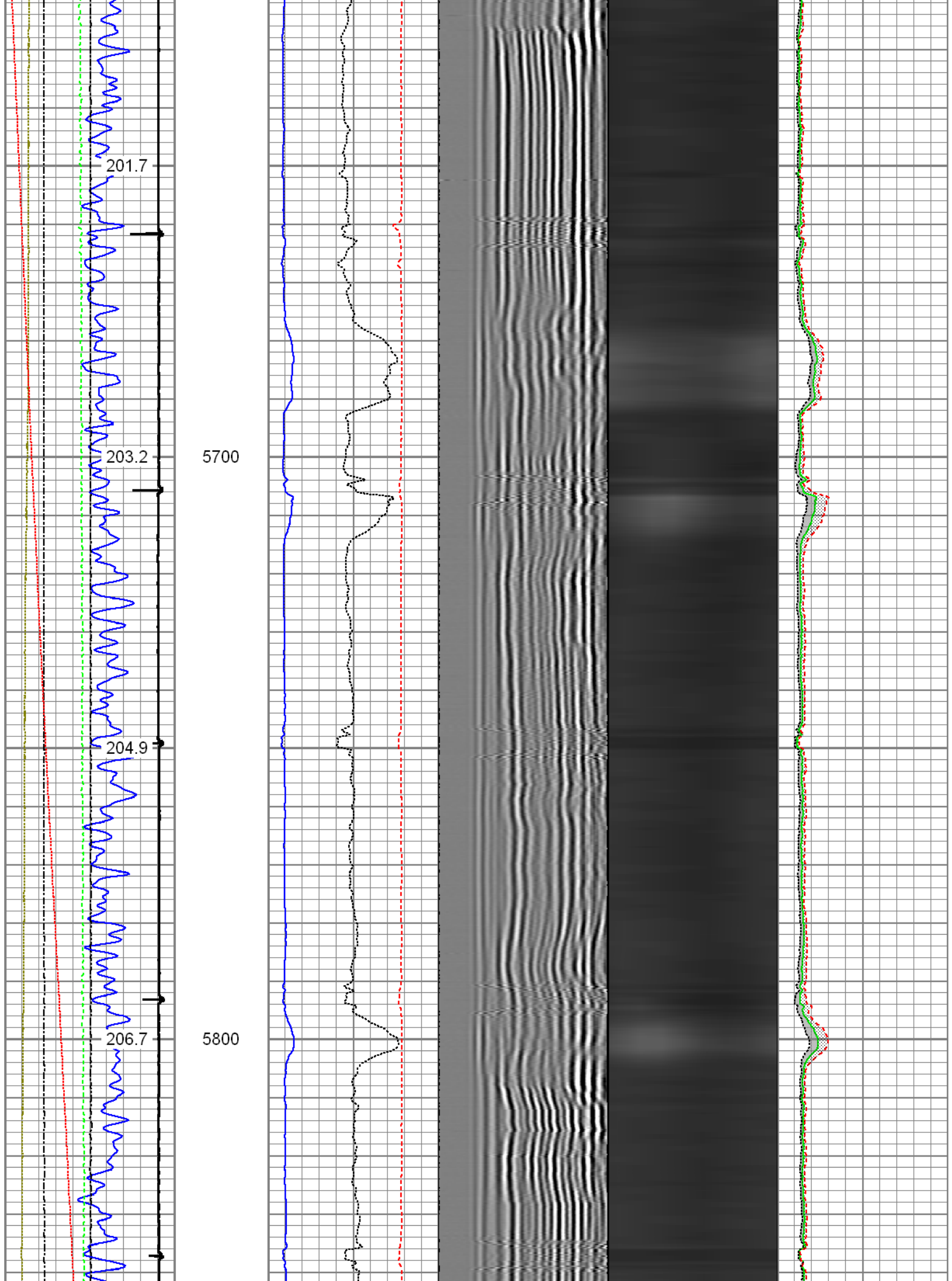


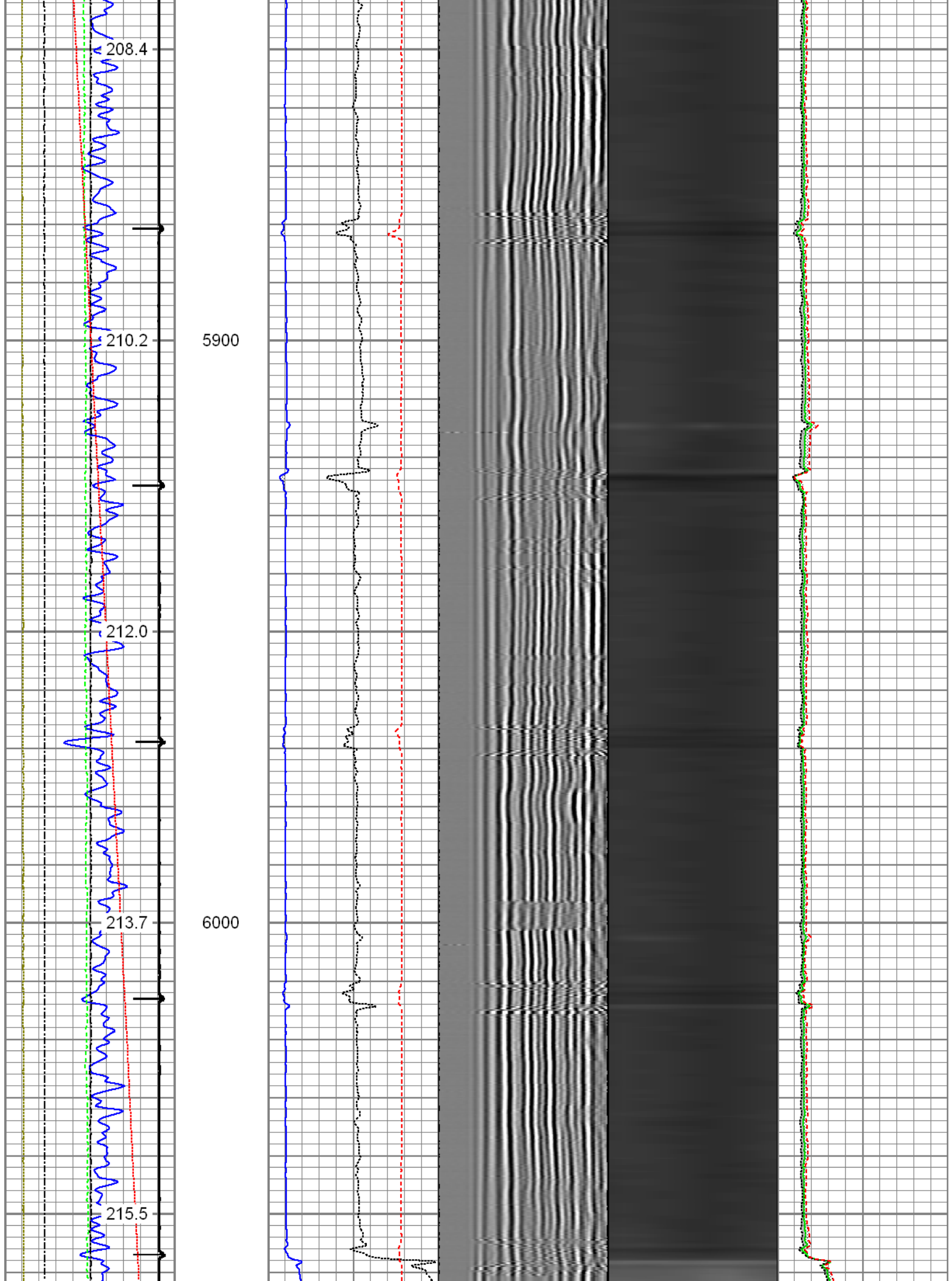


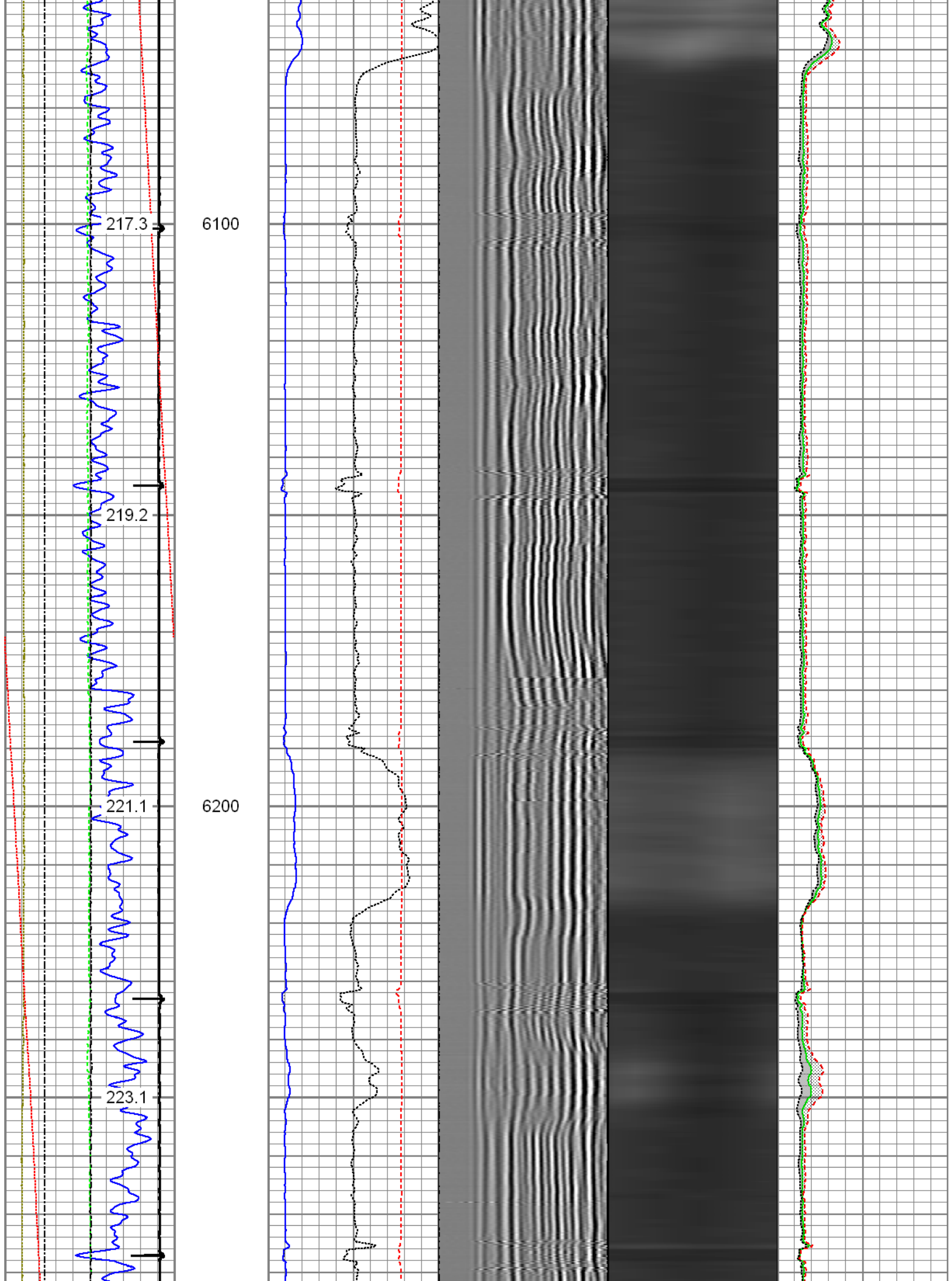


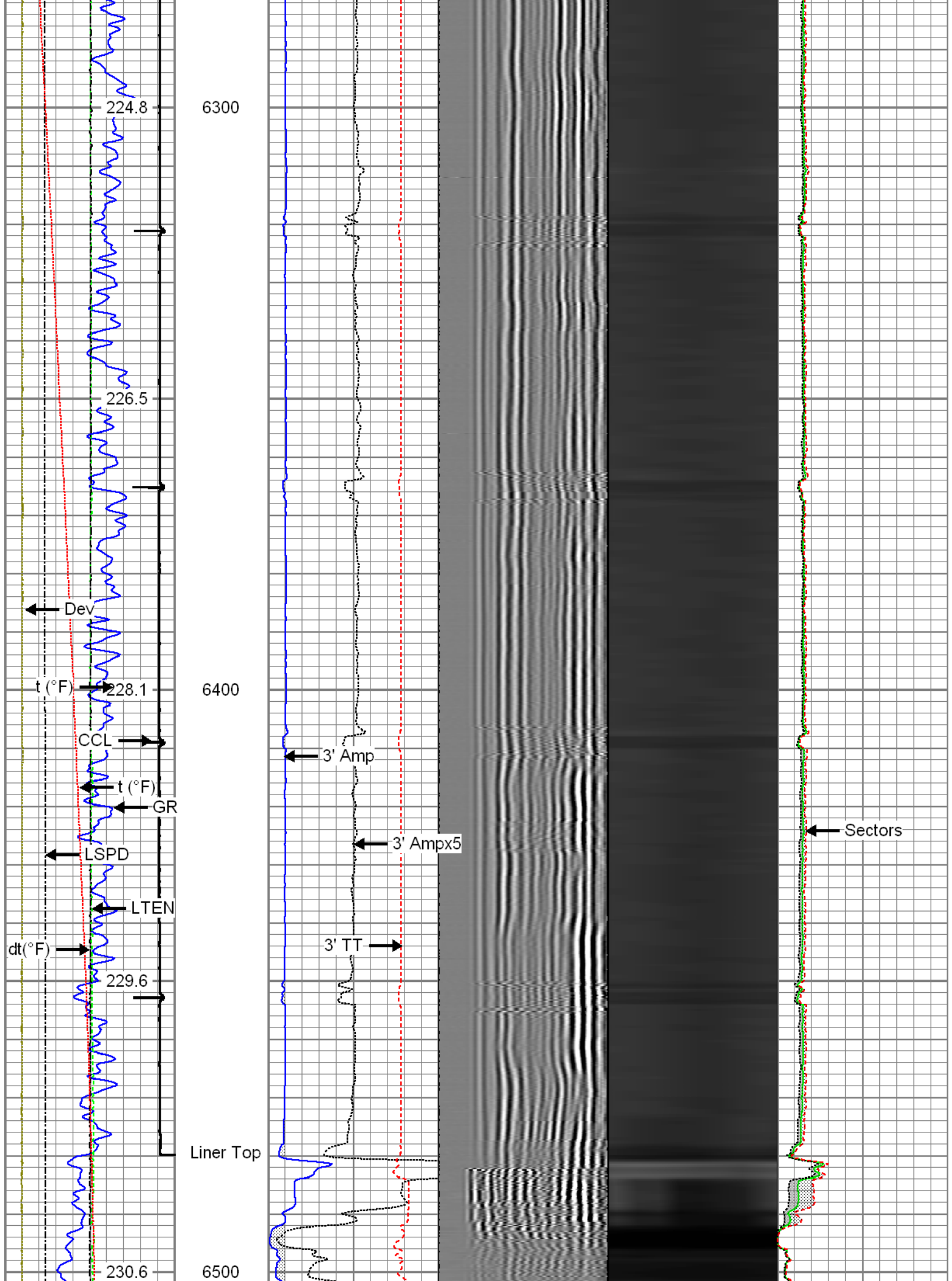


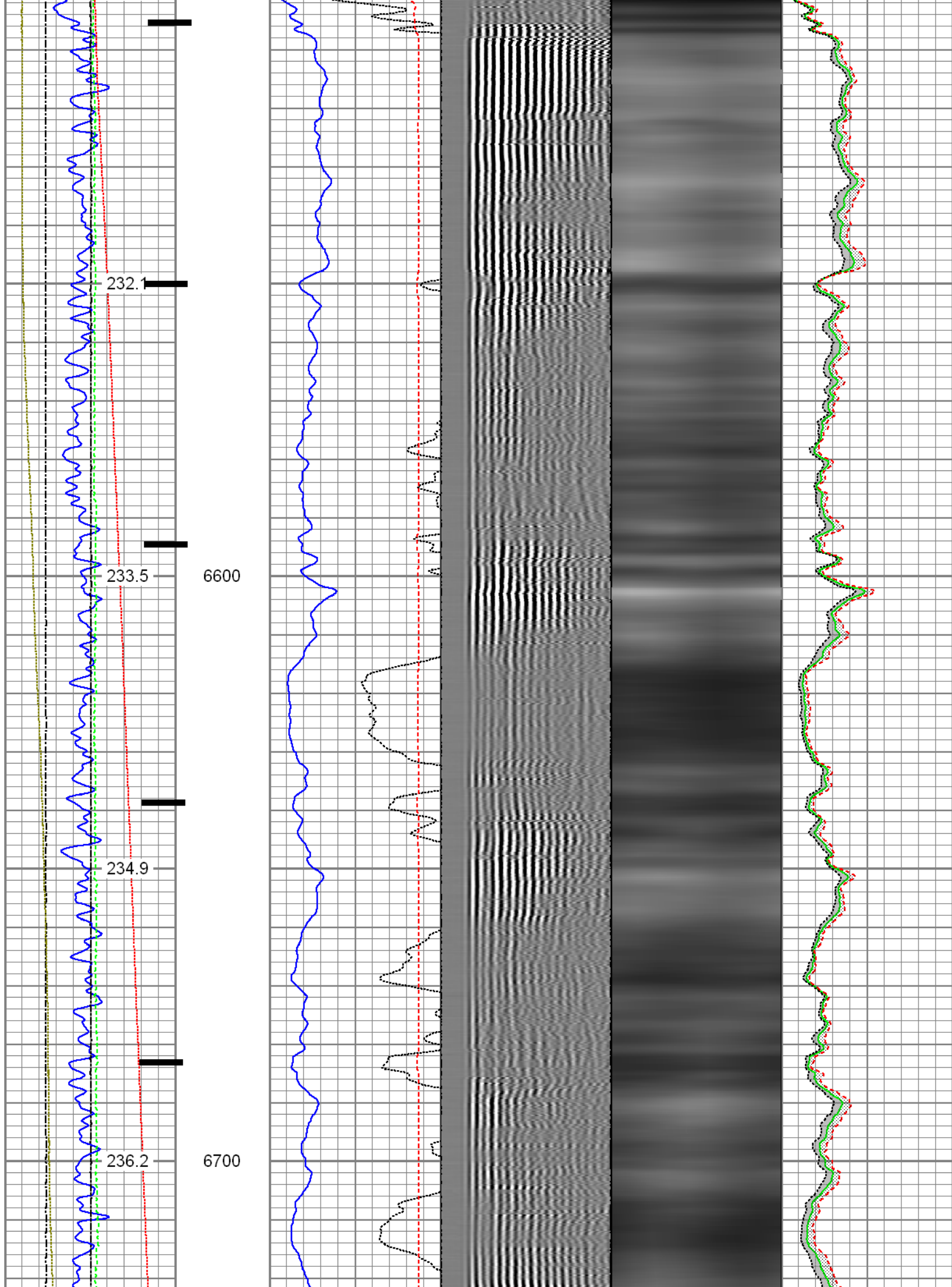


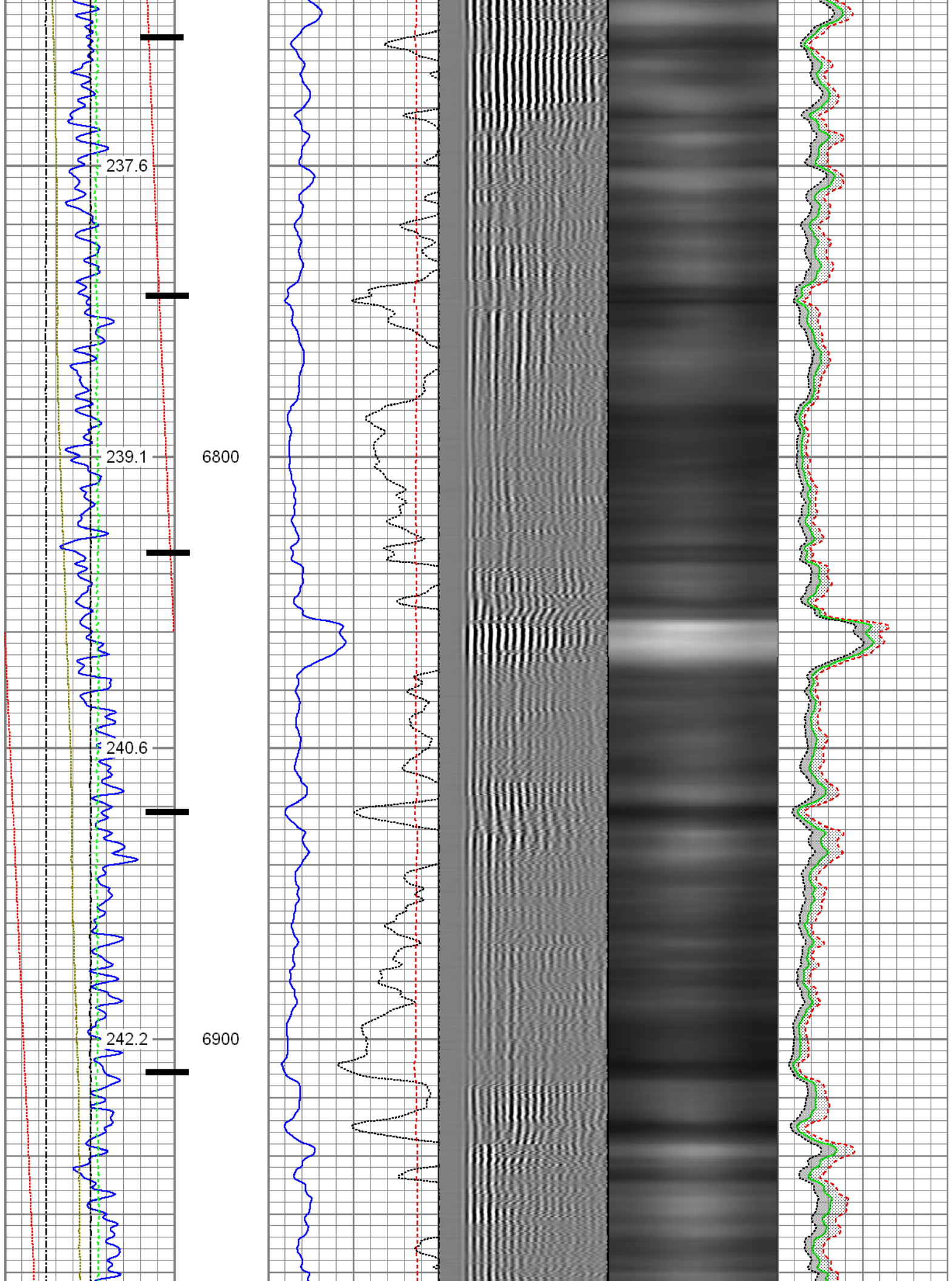


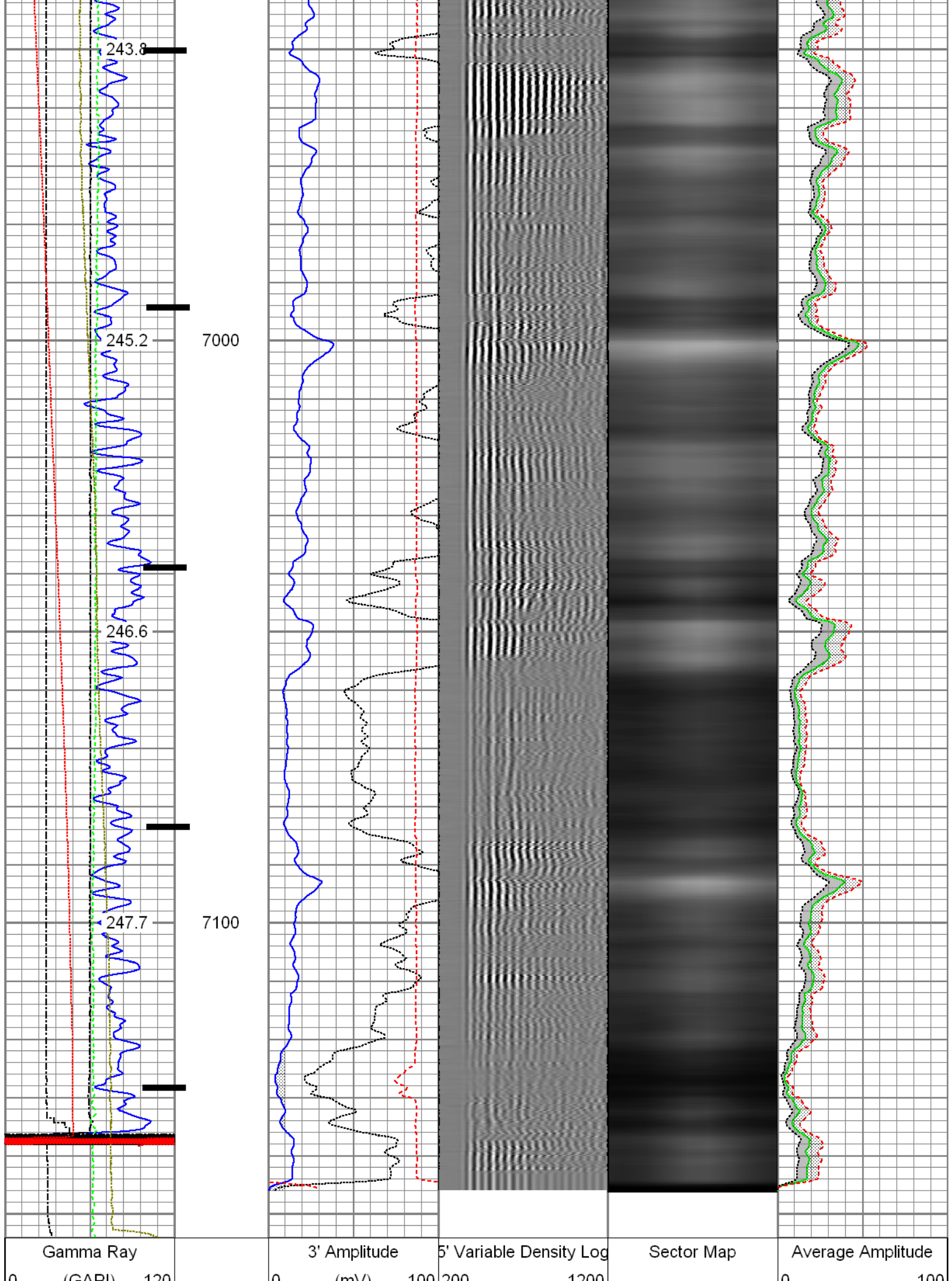







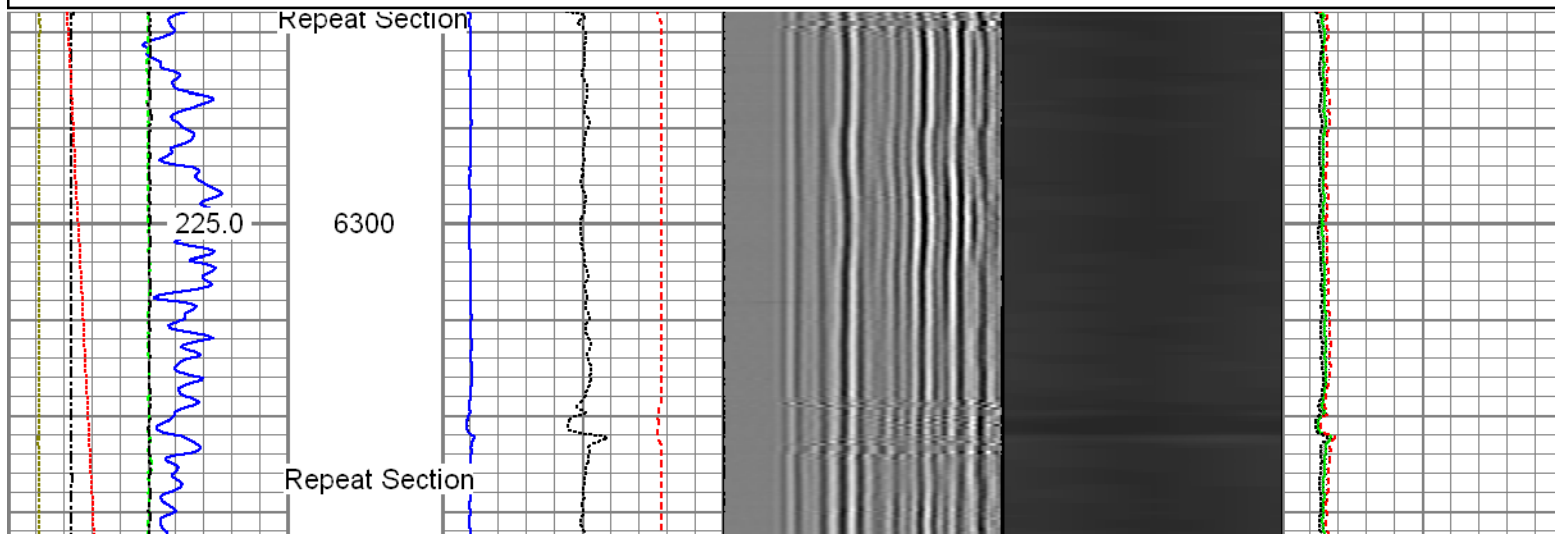


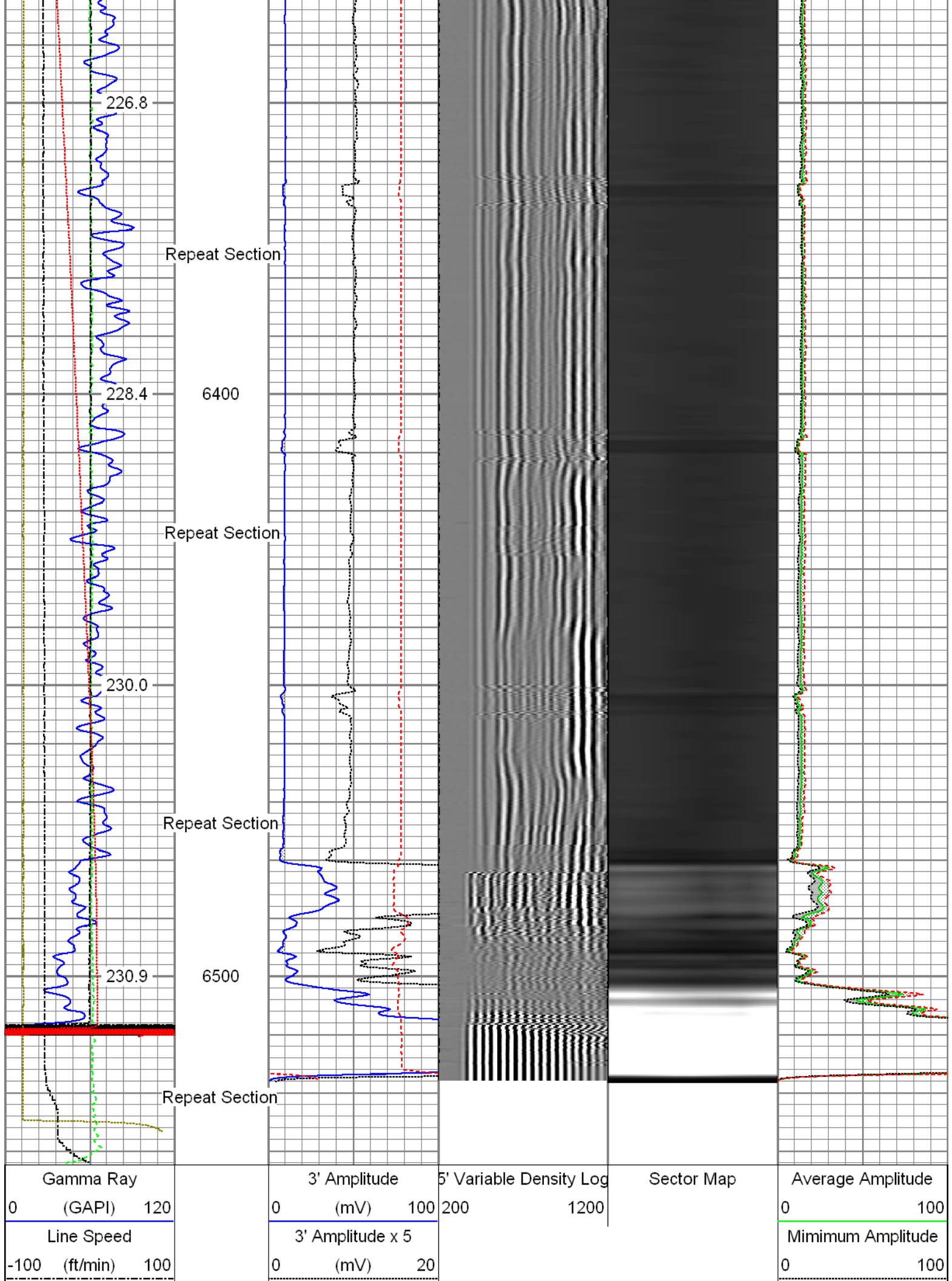





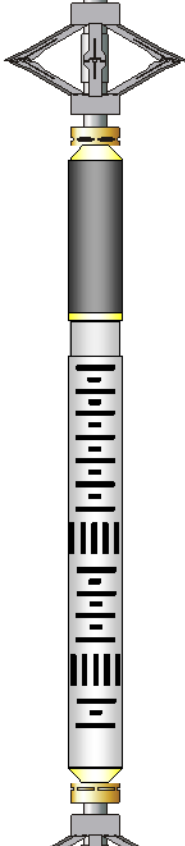
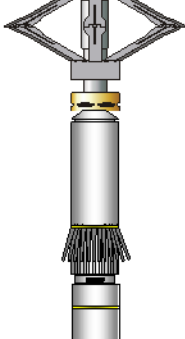
Casing Collar Locator	3' Amplitude x 5	Minimum Amplitude
Line Speed	0 (mV) 20	0 100
-100 (ft/min) 100	3' Travel Time	Maximum Amplitude
Line Tension	650 (usec) 150	0 100
0 (lb) 2000		
Differential Temperature		
-2 (degF) 2		
-10 Deviation (°) 90		
Temperature		
0 (degF) 20		

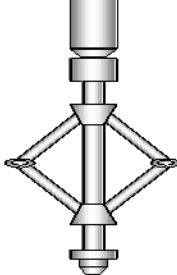
		Repeat Pass			
		Recorded with 2800 PSI Surface Induced Pressure			
Database File: 0512340960_anadarko_cream 36n-28hz_07-21-15_mit_rbl.db Dataset Pathname: pass6 Presentation Format: rbt4_mit Dataset Creation: Tue Jul 21 14:03:40 2015 by Log 7.0 B1 Charted by: Depth in Feet scaled 1:240					
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude	
0 (GAPI) 120	0 (mV) 100	200 1200		0 100	
Line Speed	3' Amplitude x 5			Minimum 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					
-10 Deviation (°) 90					
Temperature					
0 (degF) 20					





Line Tension	3' Travel Time	Maximum Amplitude
0 (lb) 2000	650 (usec) 150	0 100
Differential Temperature		
-2 (degF) 2		
-10 Deviation (°) 90		
Temperature		
0 (degF) 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 (218874) 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
			UW_PRT-UW_PRT_016 (10024052) Platinum Resistance Thermometer	1.04	1.69	5.20
TEMP	22.45		UW_PRC #3 -DSSRAC (081) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
WVFS3FT	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					
CBLROT	15.42					
WVF5FT	14.42					
MIT	5.41		UW_PRC-DSSRAC (080) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
			UW_MIT-UW_MIT40_042 (10012912) 40 Multifinger Imaging Tool	4.54	2.75	61.10

TSTAMP	0.00		UW_PRC #4 -UW_PRC_057 (1101) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
			UW_BUL-UW_BUL_006 (218707) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20
Dataset: 0512340960_anadarko_cream 36n-28hz_07-21-15_mit_rbl.db: field/well/run1/pass8 Total Length: 28.09 ft Total Weight: 324.50 lb O.D. 3.13 in						

Calibration Report			
Database File:	0512340960_anadarko_cream 36n-28hz_07-21-15_mit_rbl.db		
Dataset Pathname:	pass8		
Dataset Creation:	Tue Jul 21 14:18:25 2015 by Log 7.0 B1		
Multi-finger Imaging Tool Calibration Report			
Serial Number:	10012912		
Number of Fingers:	40		
Tool Model:	UW_MIT40_042		
Inclinometer Calibration Report			
Performed:	Mon Jul 15 09:39:36 2013		
Calibration Angle:	45		
	Inc X	Inc Y	
Vertical:	1968	1974	
Finger 1 up:	1740	1744	
Finger 31 up:	2215	1741	
Finger 21 up:	2205	2224	
Finger 11 up:	1731	2217	
Sensitivity ratio:	0.992868		
X-axis angle:	134.307		
Deviation const.:	335.589		

Finger Calibration Report							
Performed: Tue Jul 21 13:14:38 2015							
Ring size:	4		5		6		7
(in)		Sens		Sens		Sens	
Finger 01:	1034	363.0	1397	391.0	1788	395.0	2183
Finger 02:	1173	376.0	1549	393.0	1942	391.0	2333
Finger 03:	1077	391.0	1468	414.0	1882	418.0	2300
Finger 04:	1075	371.0	1446	401.0	1847	413.0	2260
Finger 05:	1069	380.0	1449	406.0	1855	417.0	2272
Finger 06:	1075	383.0	1458	406.0	1864	416.0	2280
Finger 07:	1056	387.0	1443	408.0	1851	420.0	2271
Finger 08:	1081	382.0	1463	400.0	1863	420.0	2283
Finger 09:	1062	394.0	1456	399.0	1855	420.0	2275
Finger 10:	1071	388.0	1459	397.0	1856	423.0	2279
Finger 11:	1071	388.0	1459	395.0	1854	420.0	2274
Finger 12:	1072	389.0	1461	397.0	1858	425.0	2283
Finger 13:	1074	387.0	1461	388.0	1849	416.0	2265
Finger 14:	1061	397.0	1458	397.0	1855	429.0	2284
Finger 15:	1008	398.0	1406	410.0	1816	441.0	2257
Finger 16:	1023	399.0	1422	407.0	1829	441.0	2270
Finger 17:	935	378.0	1313	391.0	1704	436.0	2140
Finger 18:	1078	389.0	1467	388.0	1855	422.0	2277
Finger 19:	1038	389.0	1427	393.0	1820	427.0	2247
Finger 20:	1026	396.0	1422	402.0	1824	440.0	2264

Finger 21:	1041	406.0	1447	398.0	1845	421.0	2266
Finger 22:	1008	395.0	1403	401.0	1804	437.0	2241
Finger 23:	972	393.0	1365	409.0	1774	445.0	2219
Finger 24:	1042	388.0	1430	388.0	1818	408.0	2226
Finger 25:	985	388.0	1373	405.0	1778	433.0	2211
Finger 26:	1122	385.0	1507	376.0	1883	395.0	2278
Finger 27:	1058	383.0	1441	396.0	1837	414.0	2251
Finger 28:	1080	376.0	1456	384.0	1840	399.0	2239
Finger 29:	1015	380.0	1395	403.0	1798	420.0	2218
Finger 30:	1070	385.0	1455	397.0	1852	407.0	2259
Finger 31:	1078	373.0	1451	389.0	1840	398.0	2238
Finger 32:	1051	378.0	1429	403.0	1832	412.0	2244
Finger 33:	1139	374.0	1513	381.0	1894	373.0	2267
Finger 34:	1102	365.0	1467	390.0	1857	391.0	2248
Finger 35:	1037	379.0	1416	417.0	1833	418.0	2251
Finger 36:	1054	373.0	1427	405.0	1832	406.0	2238
Finger 37:	1107	375.0	1482	396.0	1878	393.0	2271
Finger 38:	1133	372.0	1505	391.0	1896	382.0	2278
Finger 39:	1130	360.0	1490	390.0	1880	386.0	2266
Finger 40:	1076	372.0	1448	404.0	1852	403.0	2255

Segmented Cement Bond Log Calibration Report							
Serial Number:				10013454			
Tool Model:				UW_RBT_004			
Calibration Casing Diameter:				7.000	in		
Calibration Depth:				128.868	ft		

Master Calibration, performed Tue Jul 21 13:24:43 2015:							
		Raw (v)		Calibrated (mv)		Results	
		Zero	Cal	Zero	Cal	Gain	Offset
3FT		-0.001	0.689	0.800	62.165	88.990	0.892
5FT		-0.002	0.429	0.800	62.165	142.385	1.148
S1		0.000	0.744	0.000	100.000	134.370	0.000
S2		-0.002	0.718	0.000	100.000	138.808	0.339
S3		-0.001	0.666	0.000	100.000	149.782	0.188
S4		-0.003	0.634	0.000	100.000	157.161	0.395
S5		-0.001	0.640	0.000	100.000	156.140	0.143
S6		-0.002	0.663	0.000	100.000	150.329	0.360
S7		-0.001	0.699	0.000	100.000	142.778	0.174
S8		-0.001	0.740	0.000	100.000	134.944	0.180

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:	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	Kerr-McGee Oil & Gas Onshore, L.P.
Well	Cream 36N-28HZ
Field	Wattenberg
County	Weld
State	Colorado