

Radial Cement Bond Gamma Ray Casing Collar Log

Company	Kerr-McGee Oil & Gas Onshore, L.P.
Well	Houston 12C-8HZ
Field	Wattenberg
County	Weld
State	Colorado
Company	Kerr-McGee Oil & Gas Onshore, L.P.
Well	Houston 12C-8HZ
Field	Wattenberg
County	Weld
State	Colorado
Location:	API # : 05-123-38946
Permanent Datum	SHL: 1765' FSL, 620' FEL, NESE
Log Measured From	Lat / Long: 40.237928 / -104.906995
Drilling Measured From	SEC 8 TWP 3N RGE 67W
Ground Level	Elevation 4808'
Kelly Bushing	17 FT
Other Services	Gauge Ring Set RBP MIT
Elevation	K.B. 4825' D.F. 4824' G.L. 4808'

Date	20-June-2014
Run Number	Three
Depth Driller	11894 FT
Depth Logger	6613 FT
Bottom Logged Interval	6609 FT
Top Log Interval	Surface
Open Hole Size	8.765"
Type Fluid	Water
Density / Viscosity	8.34 lbm/gal
Max. Recorded Temp.	209°F
Estimated Cement Top	460 FT
Time Well Ready	ROA
Time Logger on Bottom	15:00
Equipment Number	HD-0119
Location	Fort Lupton, CO
Recorded By	J. Raby
Witnessed By	Jim Adams

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	J-55 LTC	Surface	821 FT		
Intermediate #1	7"	26	HCP-110 LTC	Surface	7551 FT		
Intermediate #2							
Liner	4 1/2"	11.6	P-110 DQX/LTC	6586 FT	11884 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 reference to Casing Tally reported Liner Top at 6586 FT.
Adjusted log +4 FT from KB zero to correlate with Liner Top.
Retrievable Bridge Plug set at 6650 FT.
Log ran from below Liner Top to surface.
Log ran with 2800 PSI surface induced pressure.

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

Database File:0512338946_anadarko_houston 12c-8hz_06-20-14_mit_rbl.db

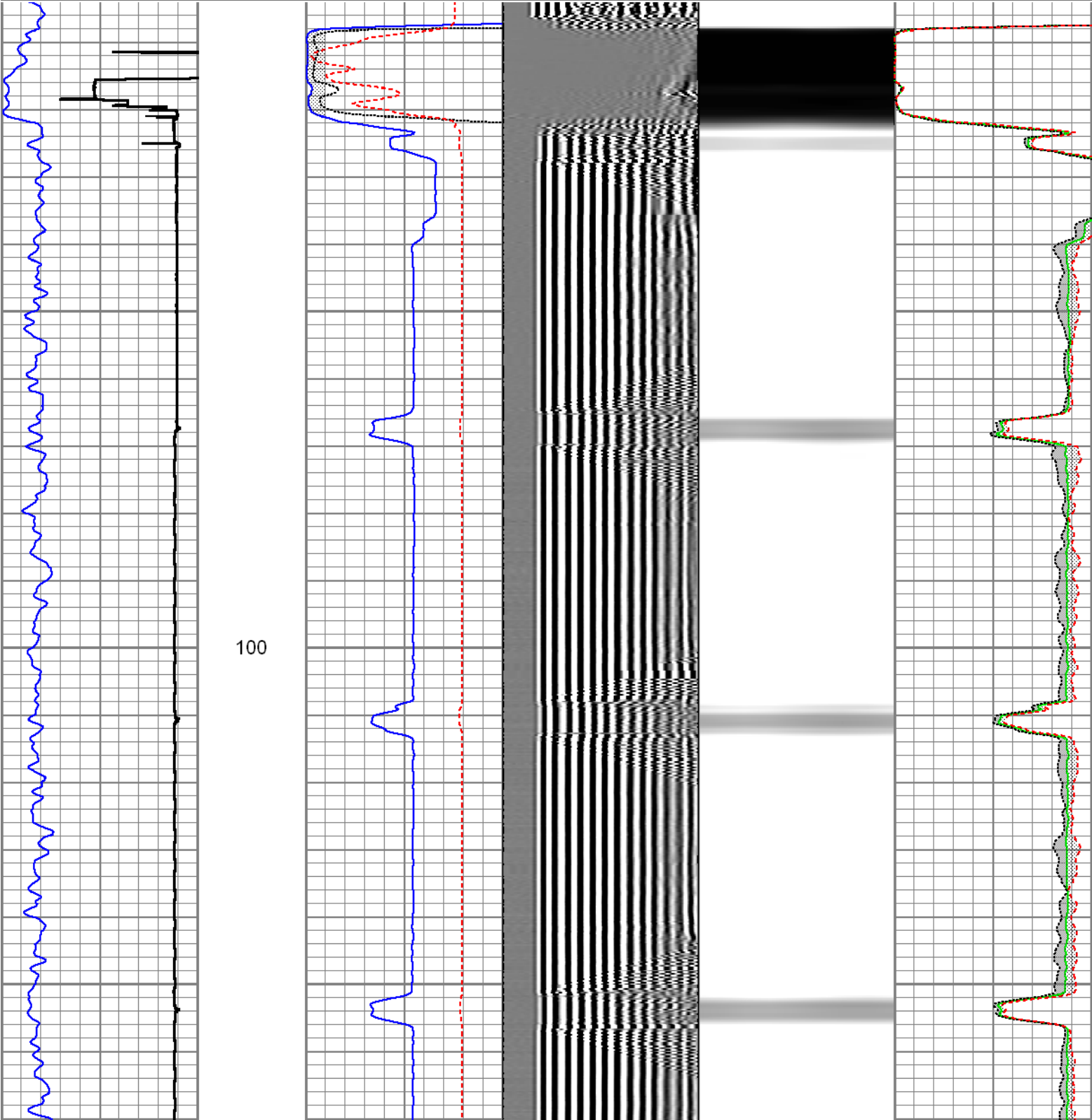
Dataset Pathname:pass3

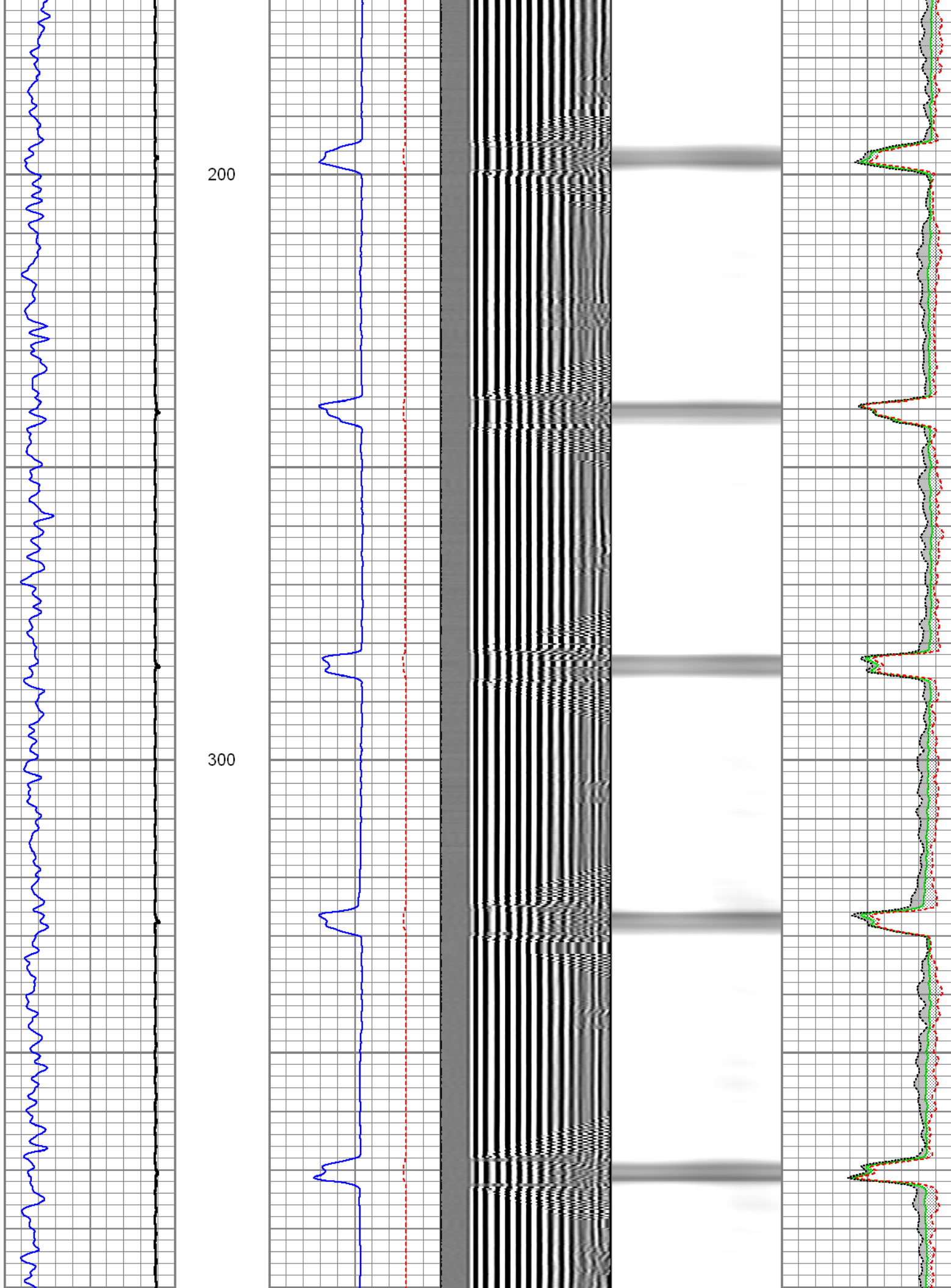
Presentation Format:rbt4_mit

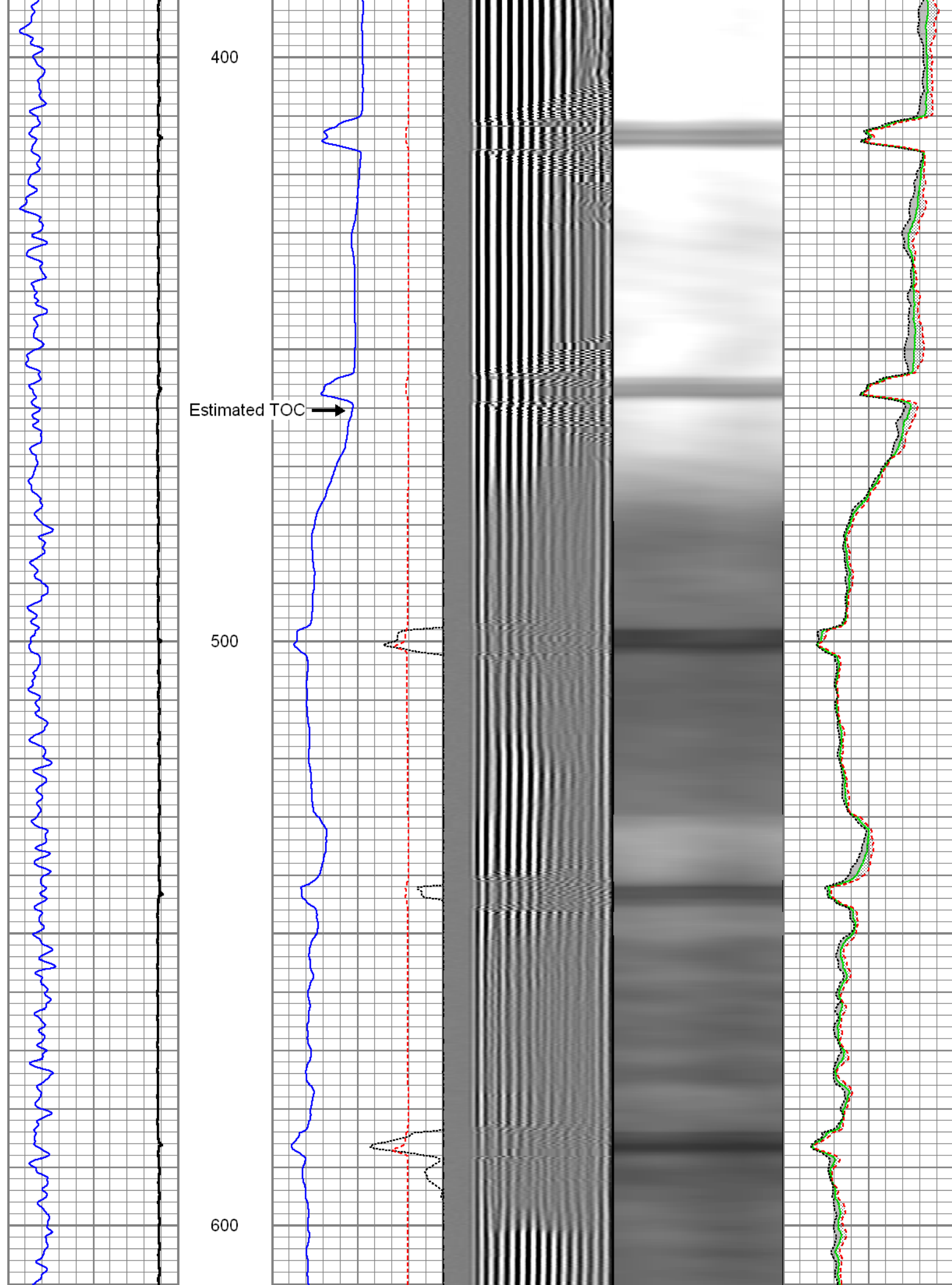
Dataset Creation:Fri Jun 20 15:07:30 2014 by Log SCH 111116

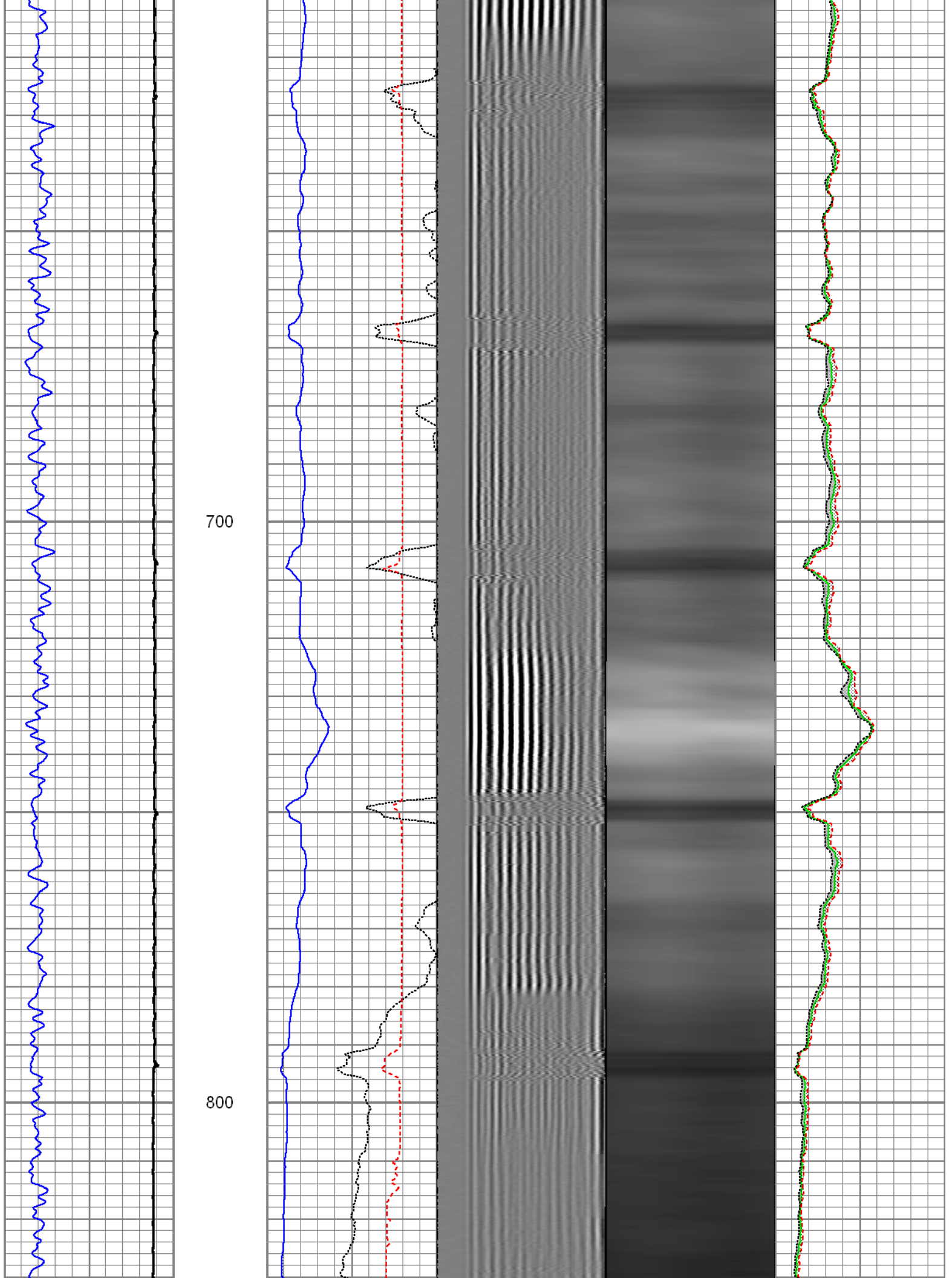
Charted by:Depth in Feet scaled 1:240

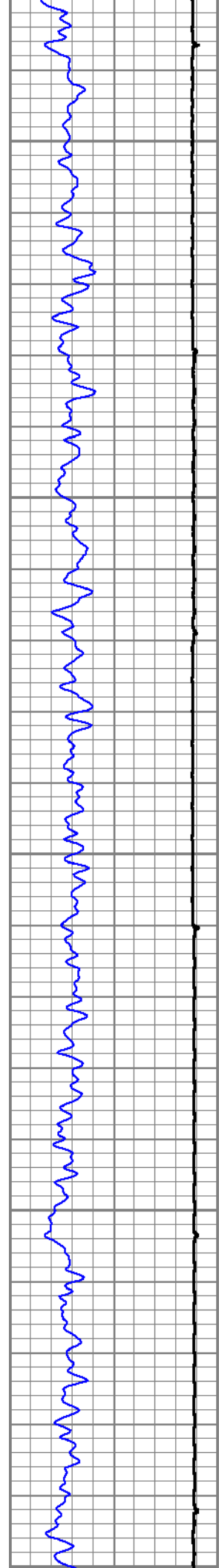
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Mimimum Amplitude
	0 (mV) 20			0 100
	3' Travel Time			Maximum Amplitude
	650 (usec) 150			0 100





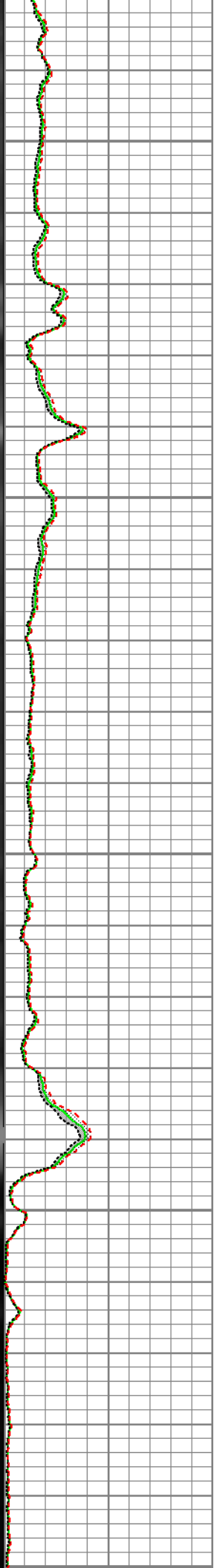
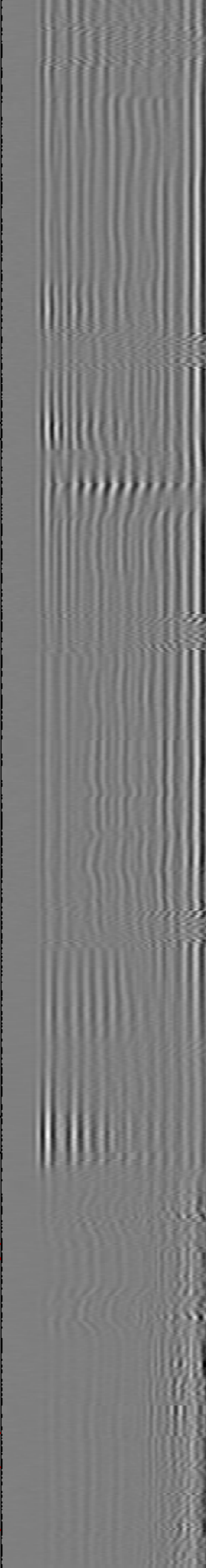
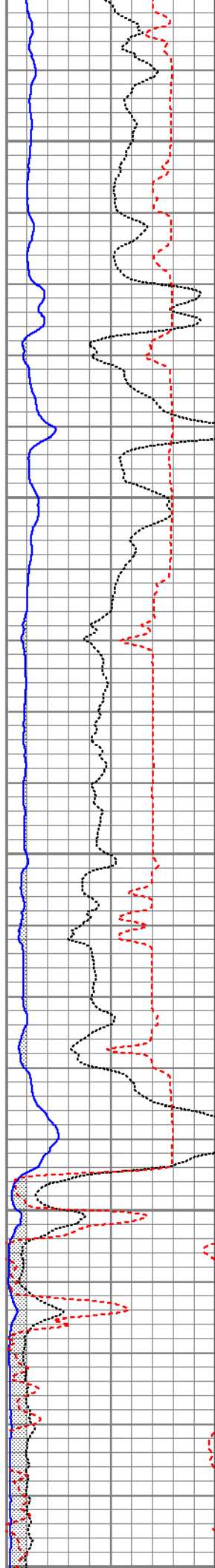


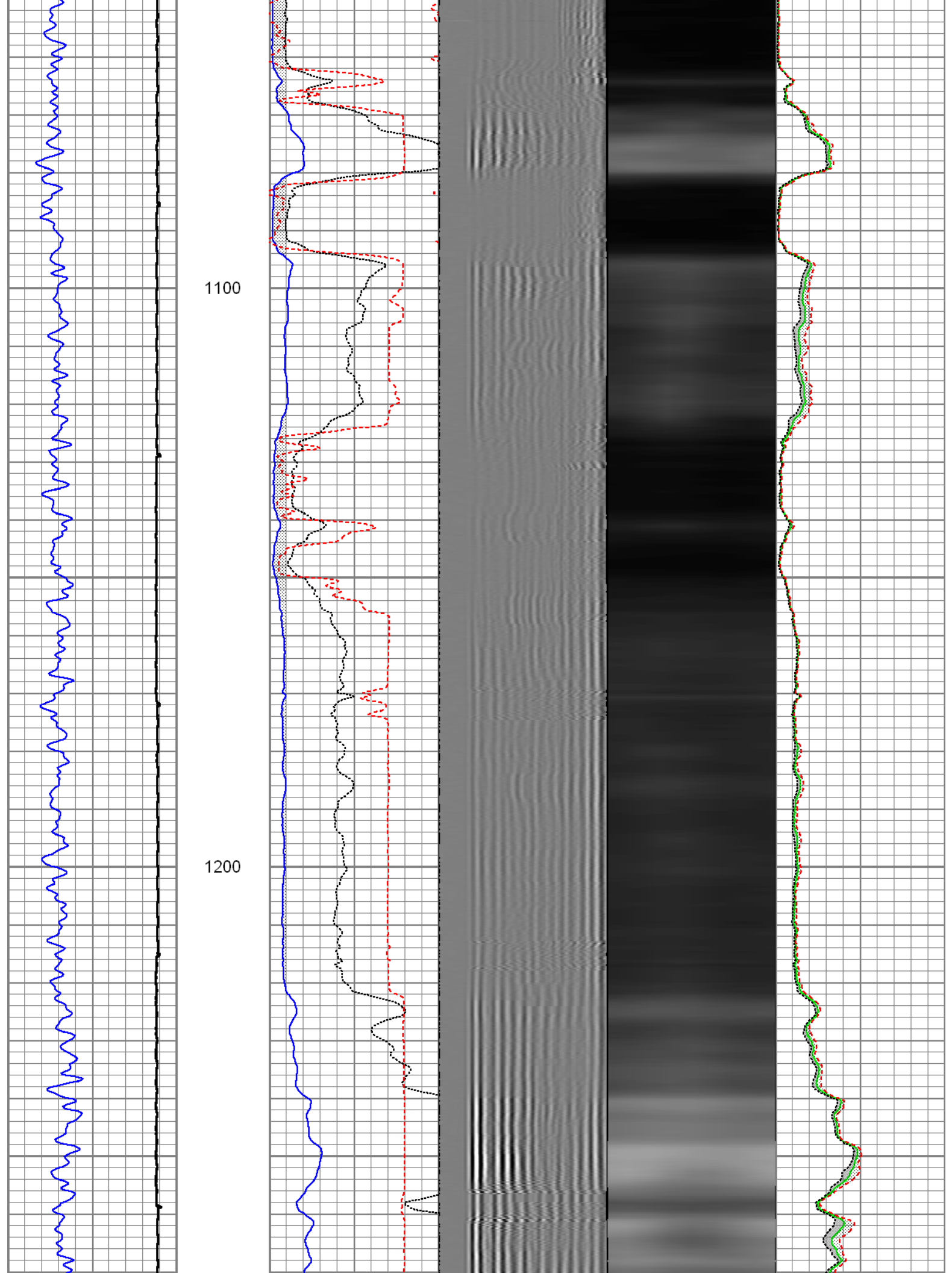


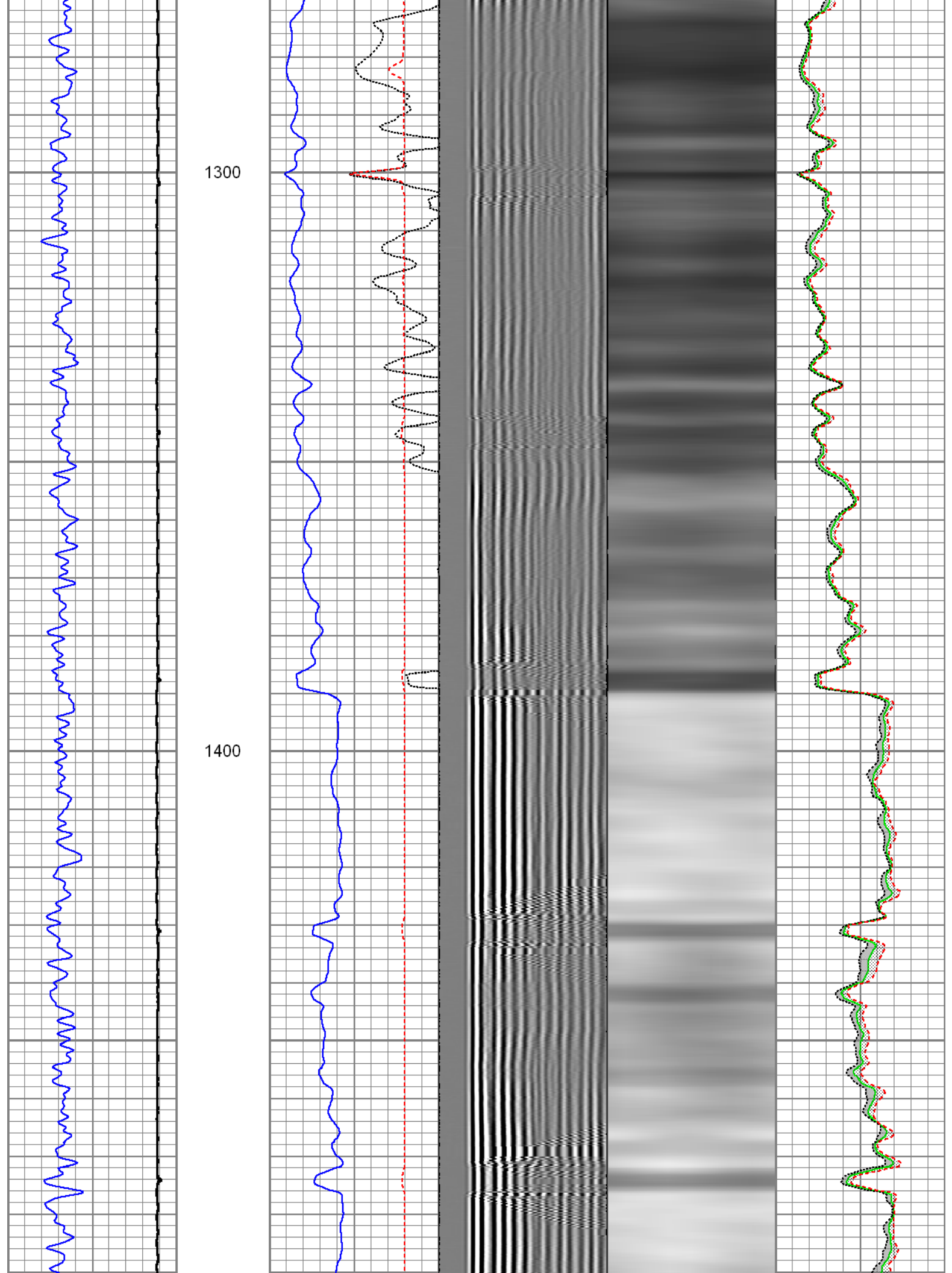


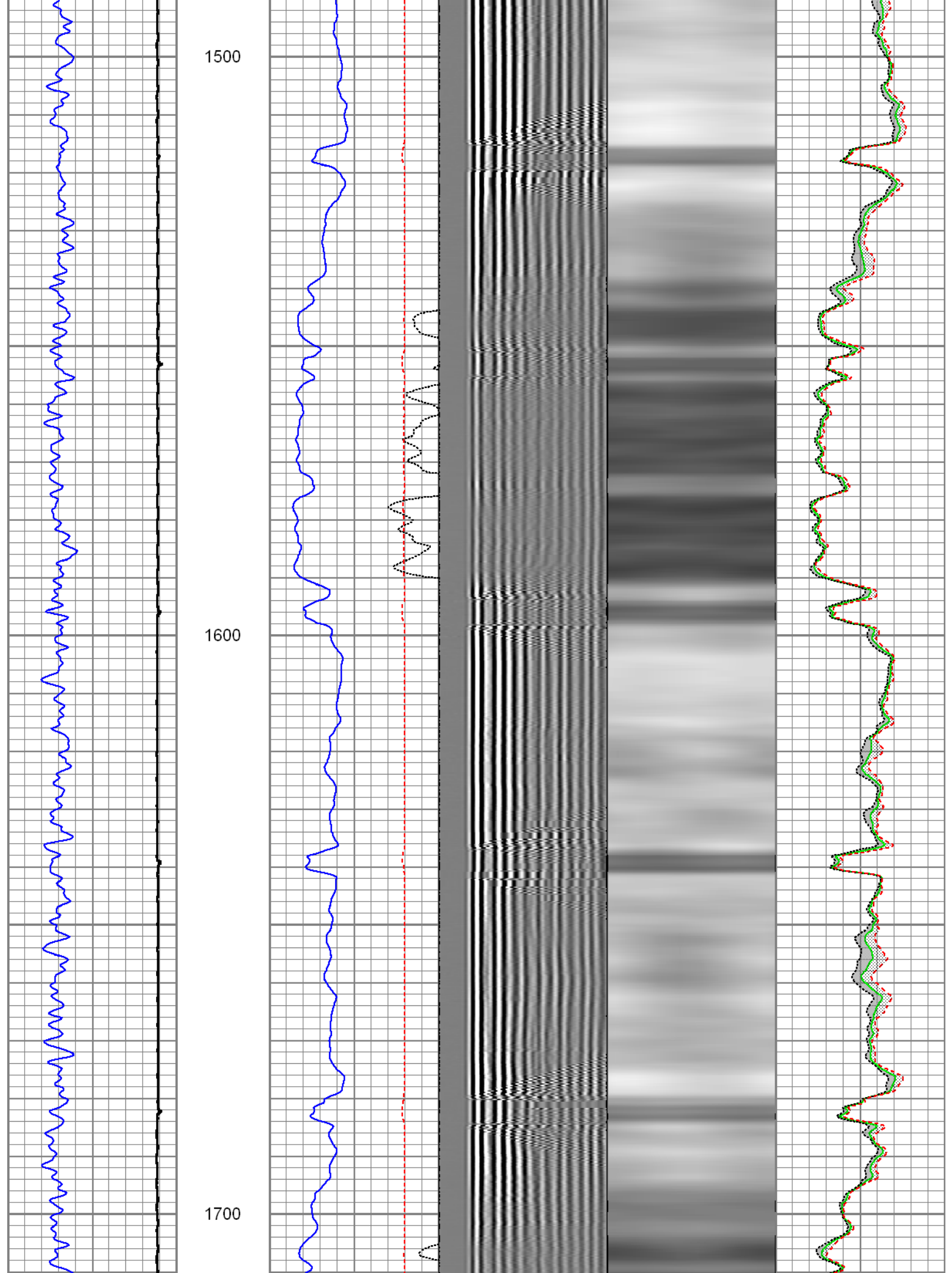
900

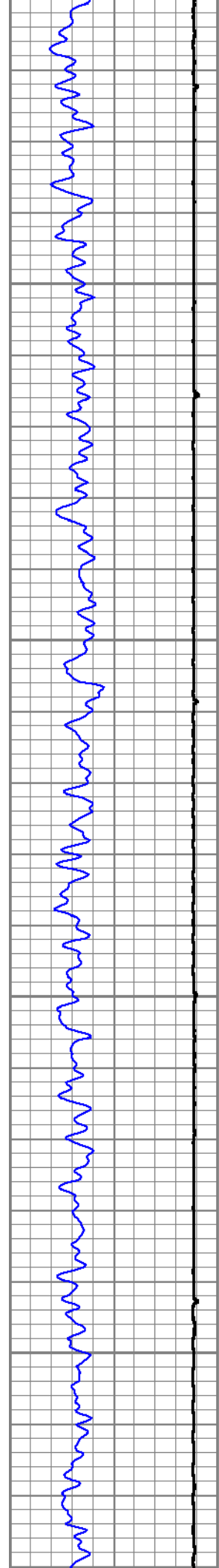
1000





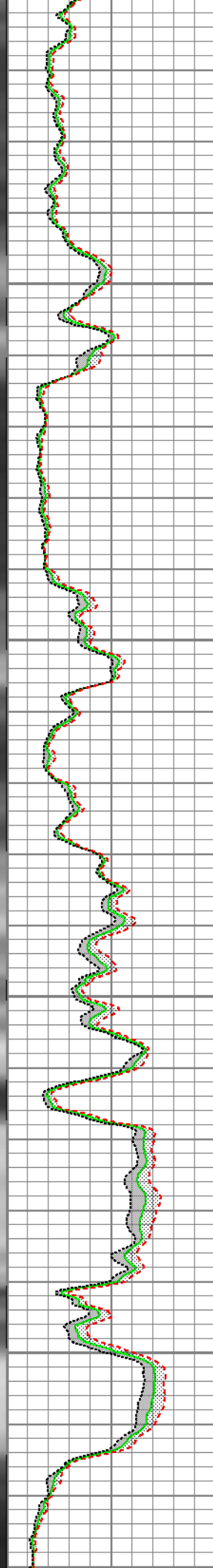
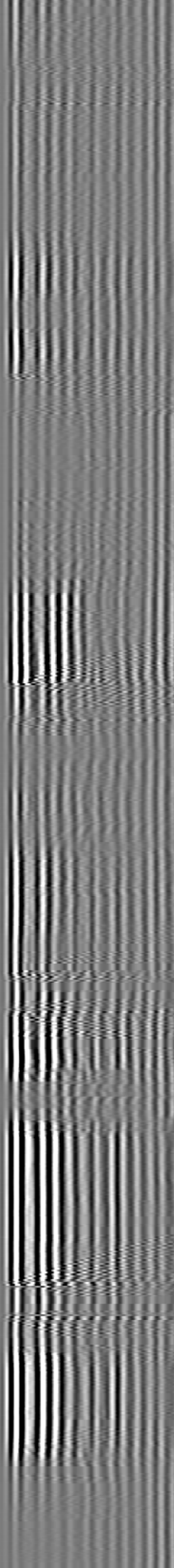
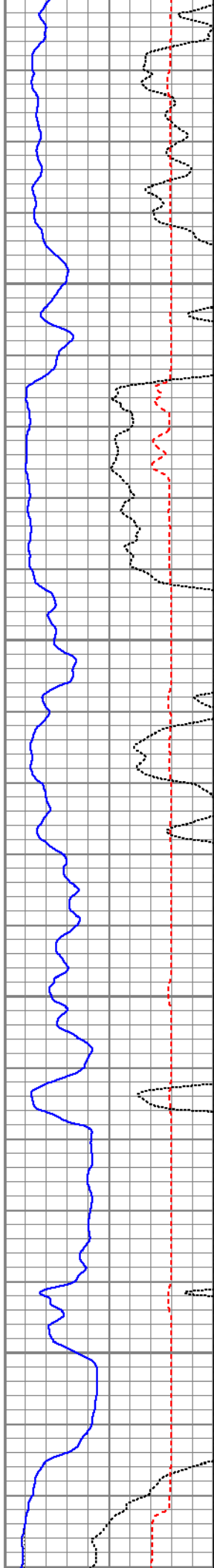


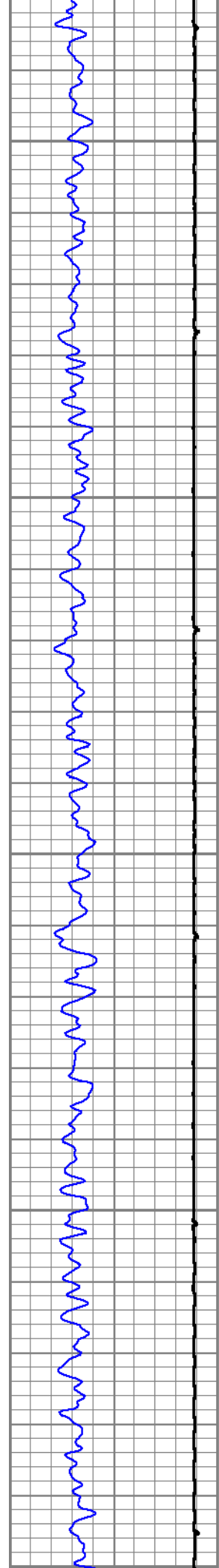




1800

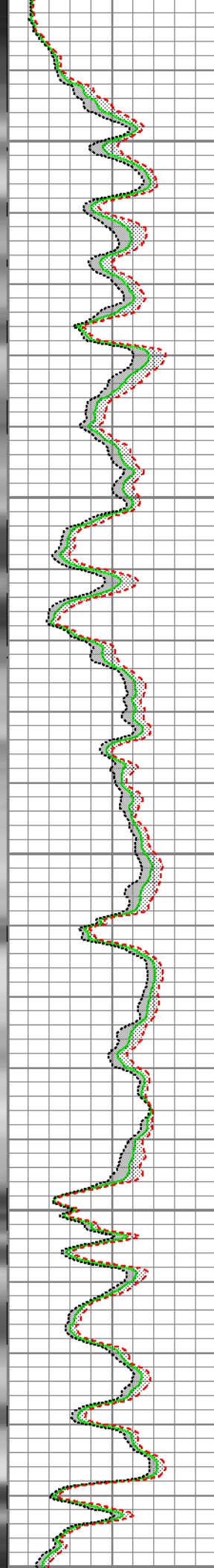
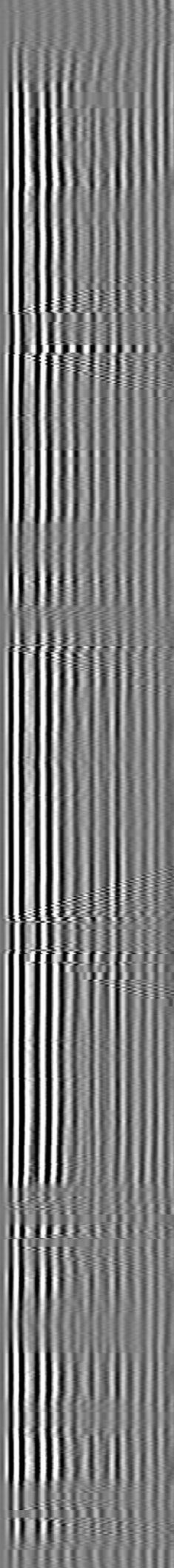
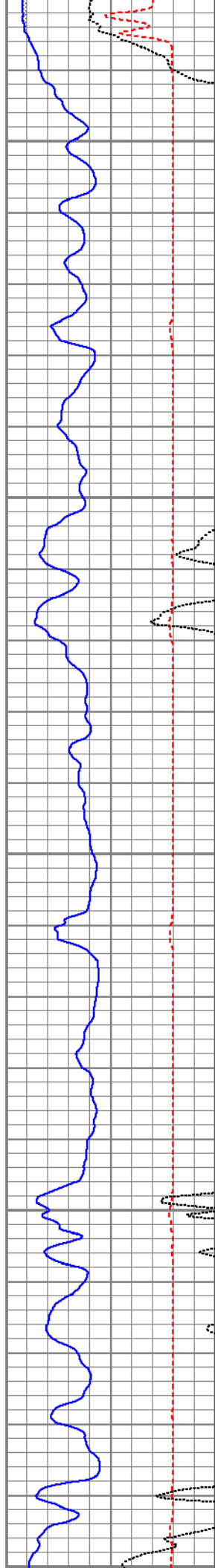
1900





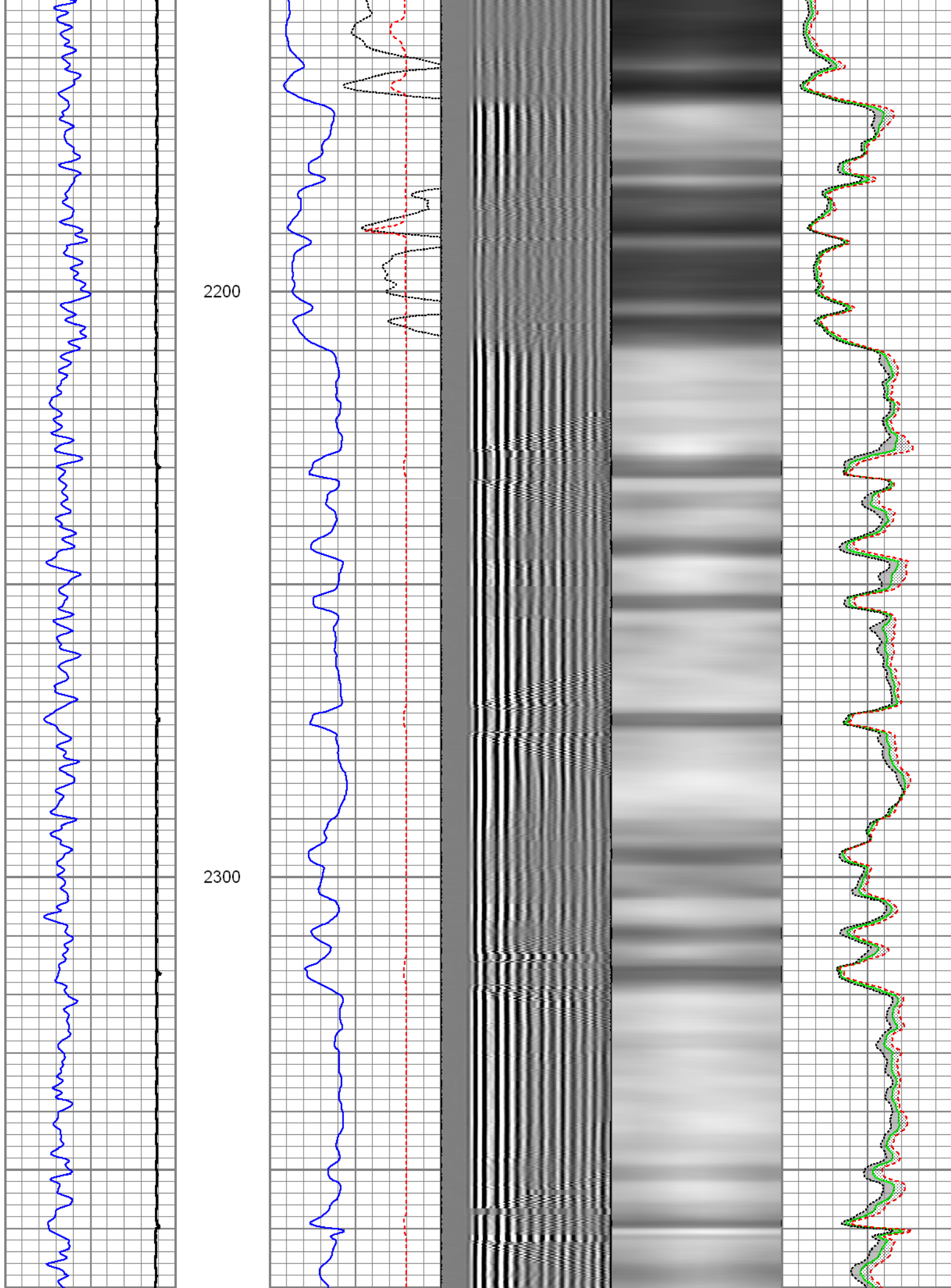
2000

2100



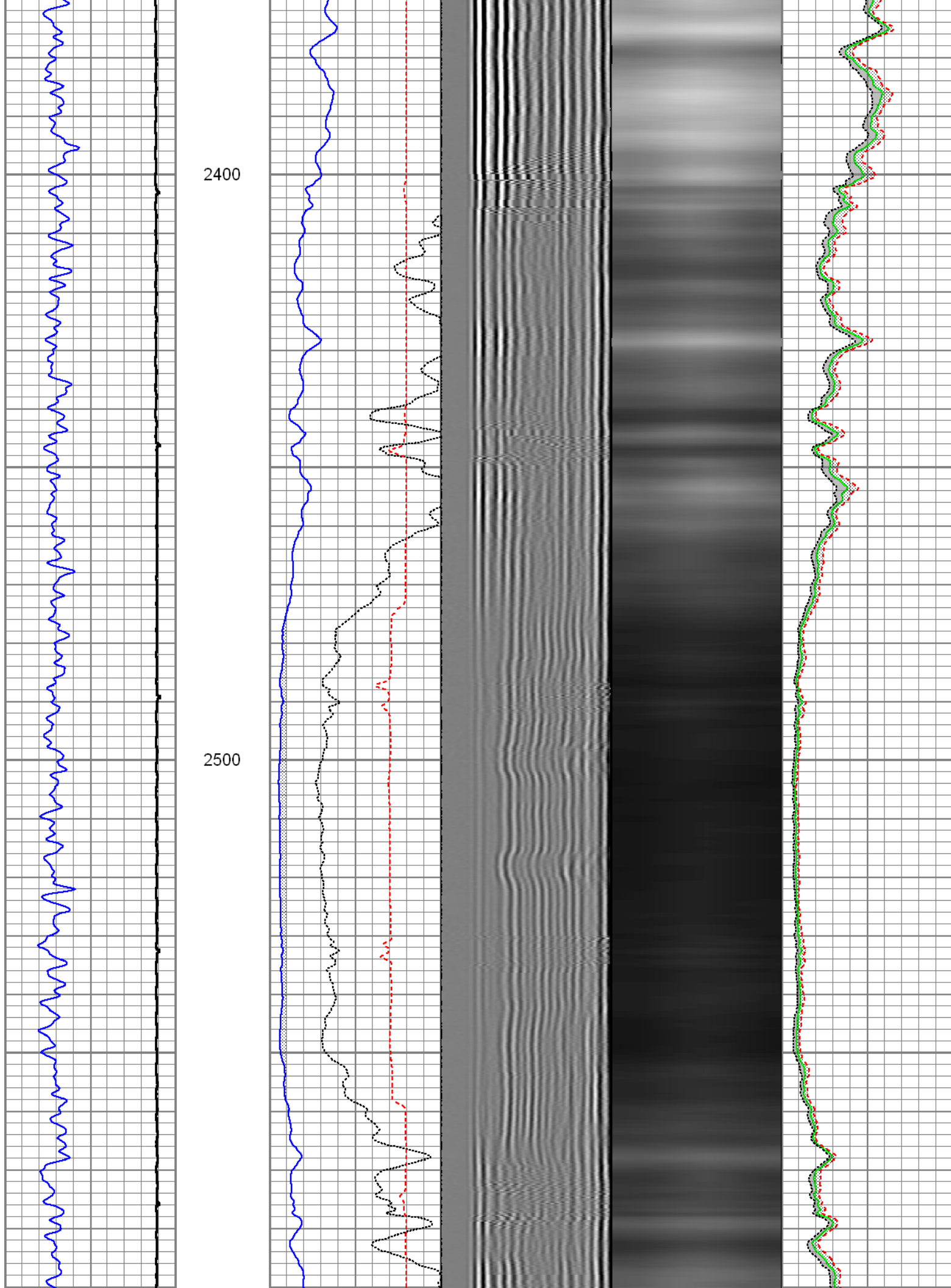
2200

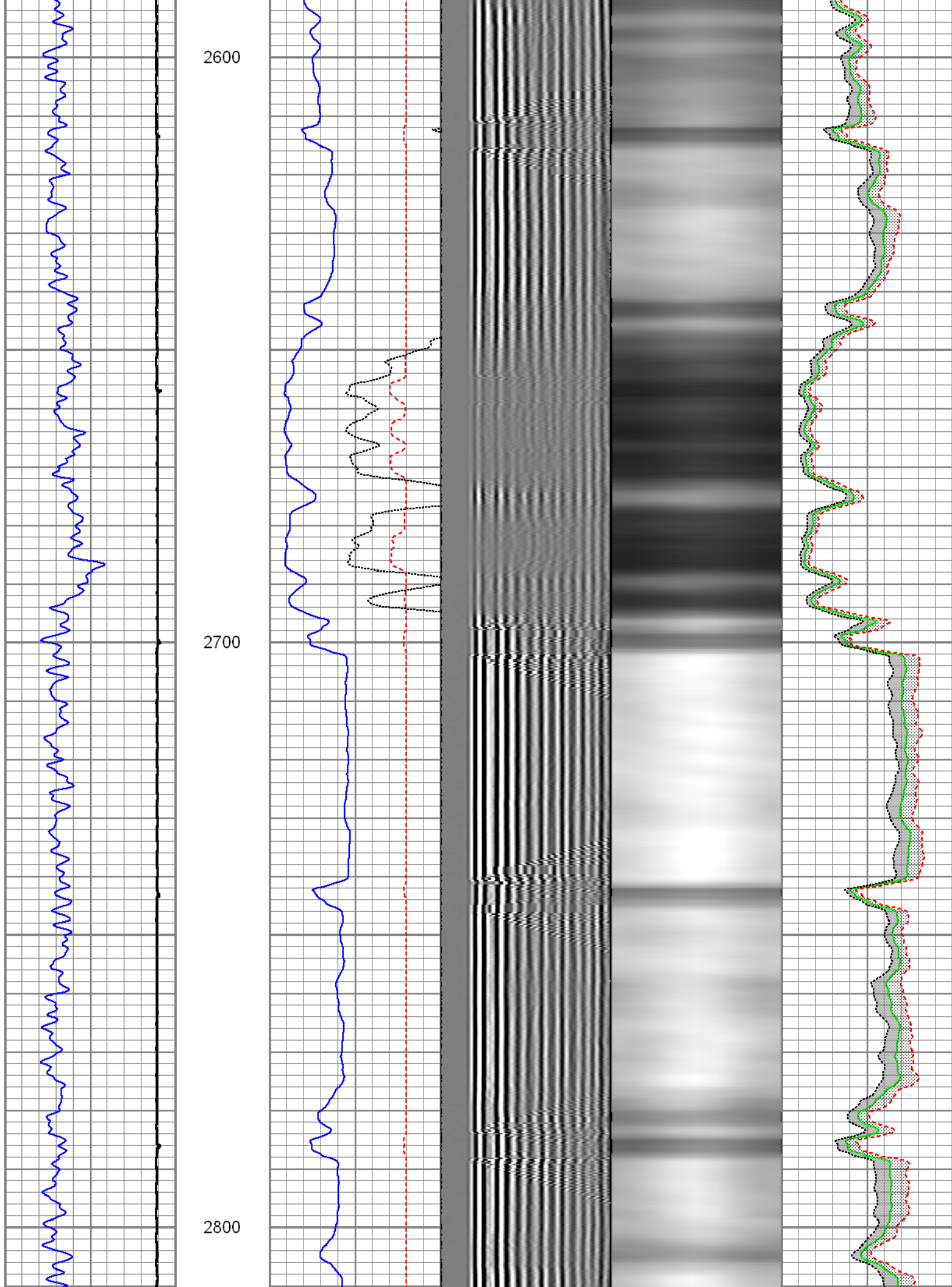
2300

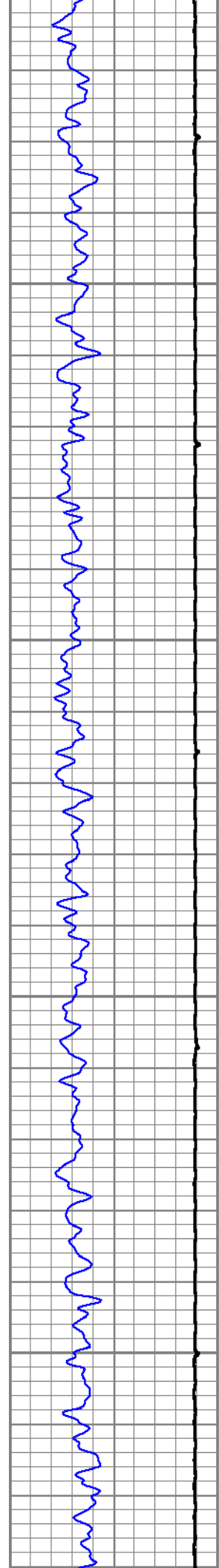


2400

2500

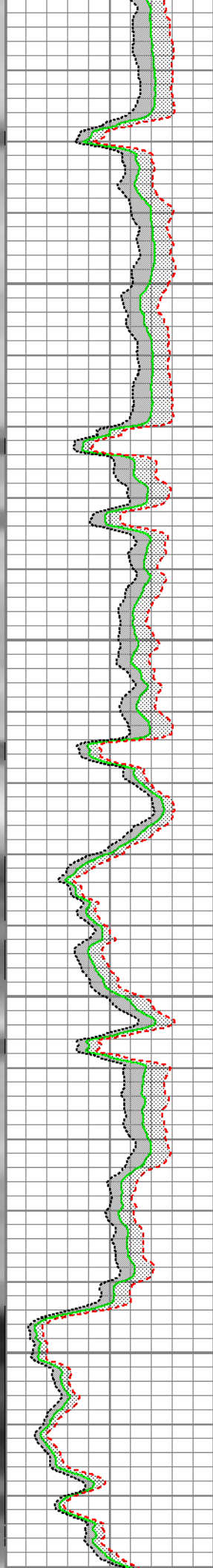
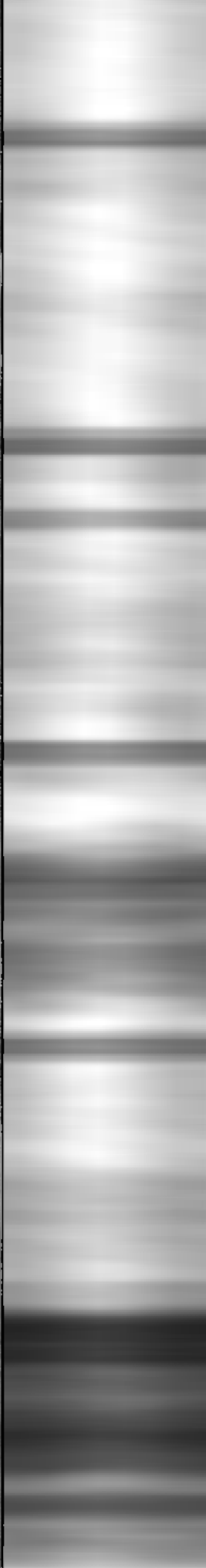
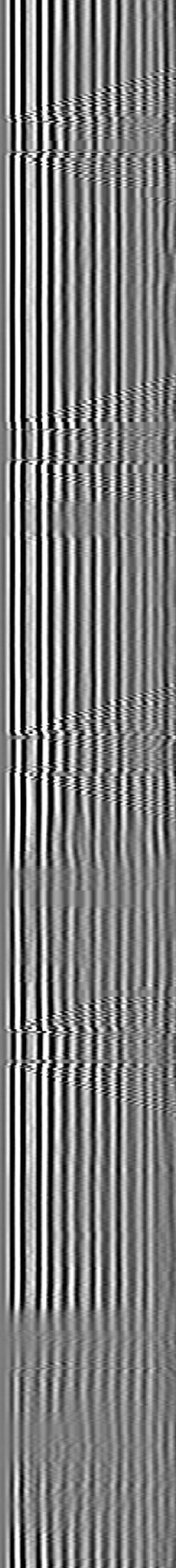
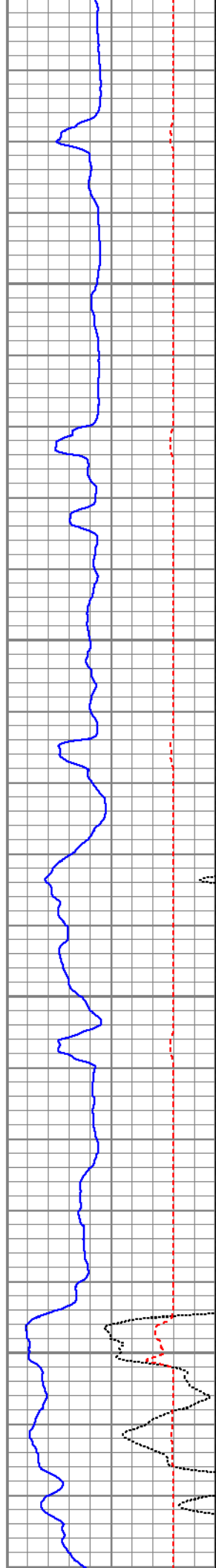






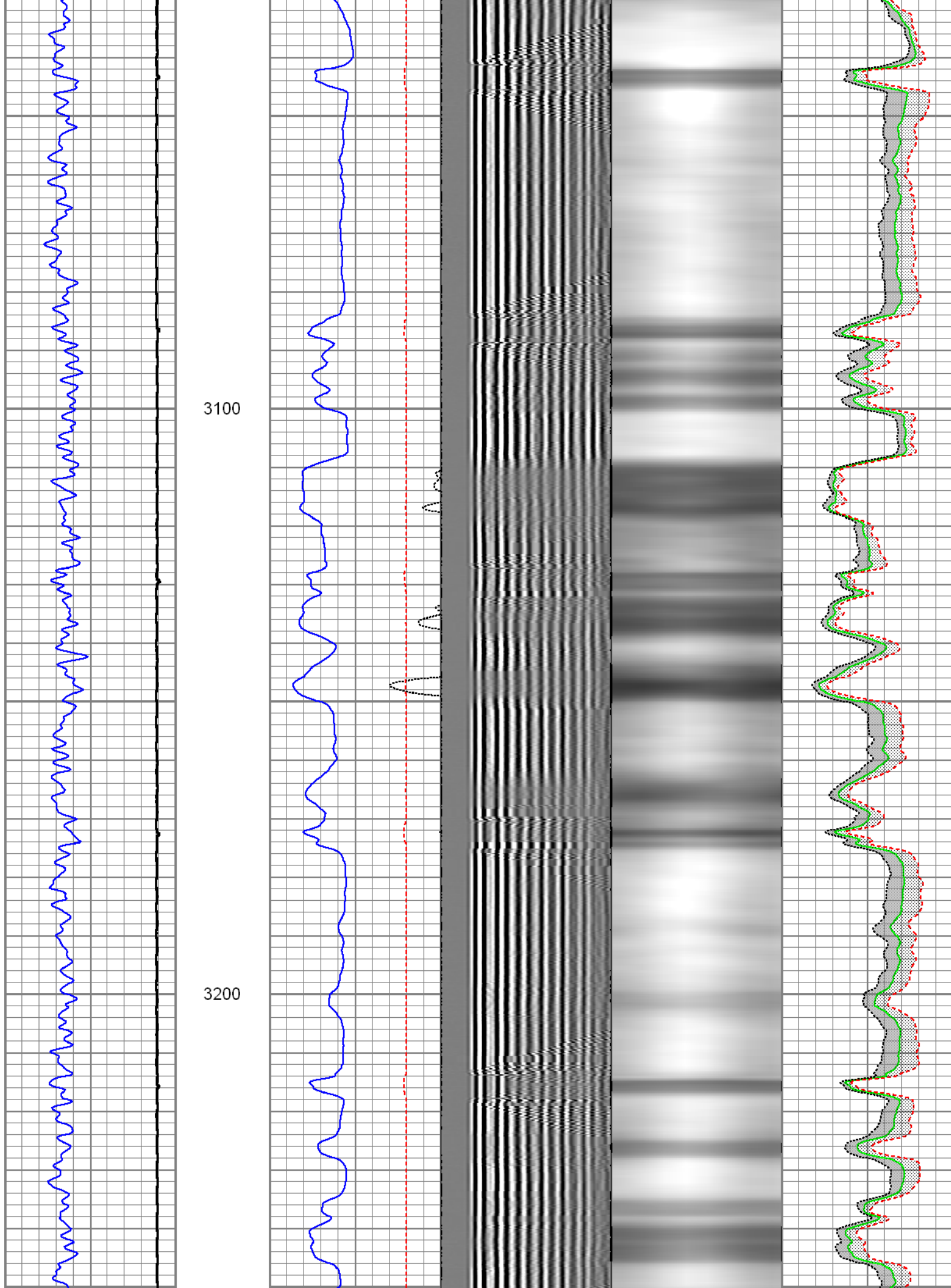
2900

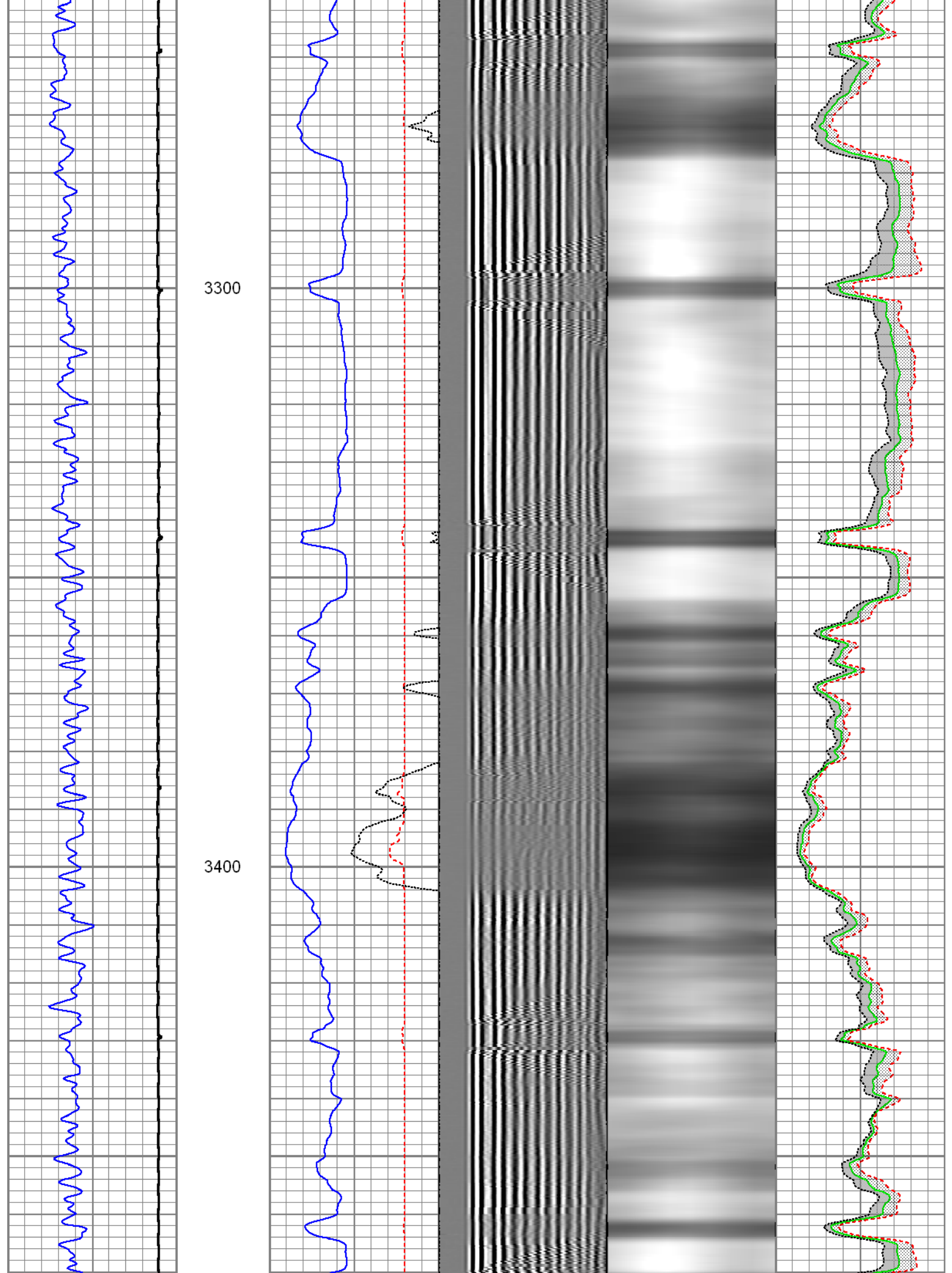
3000

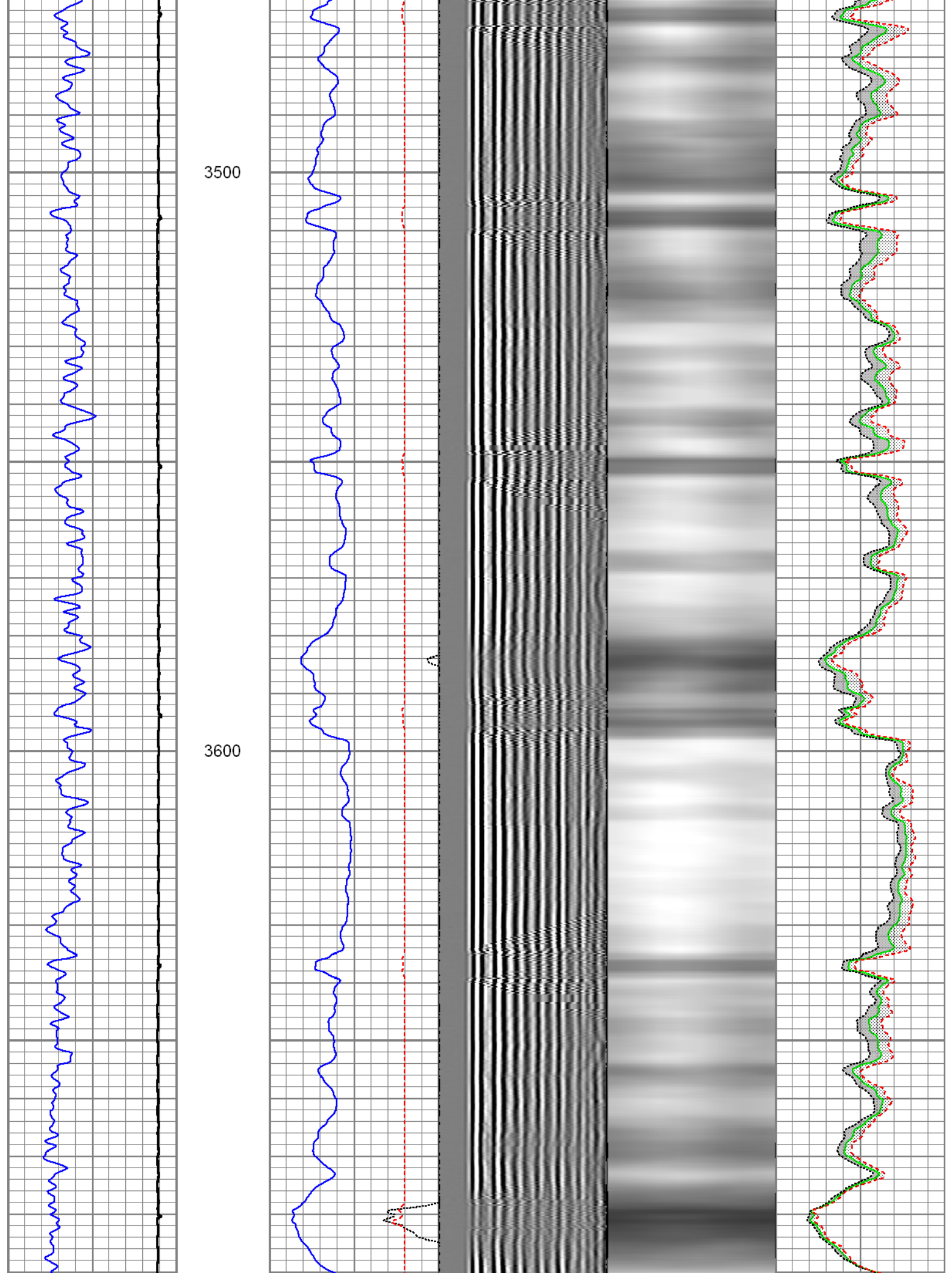


3100

3200



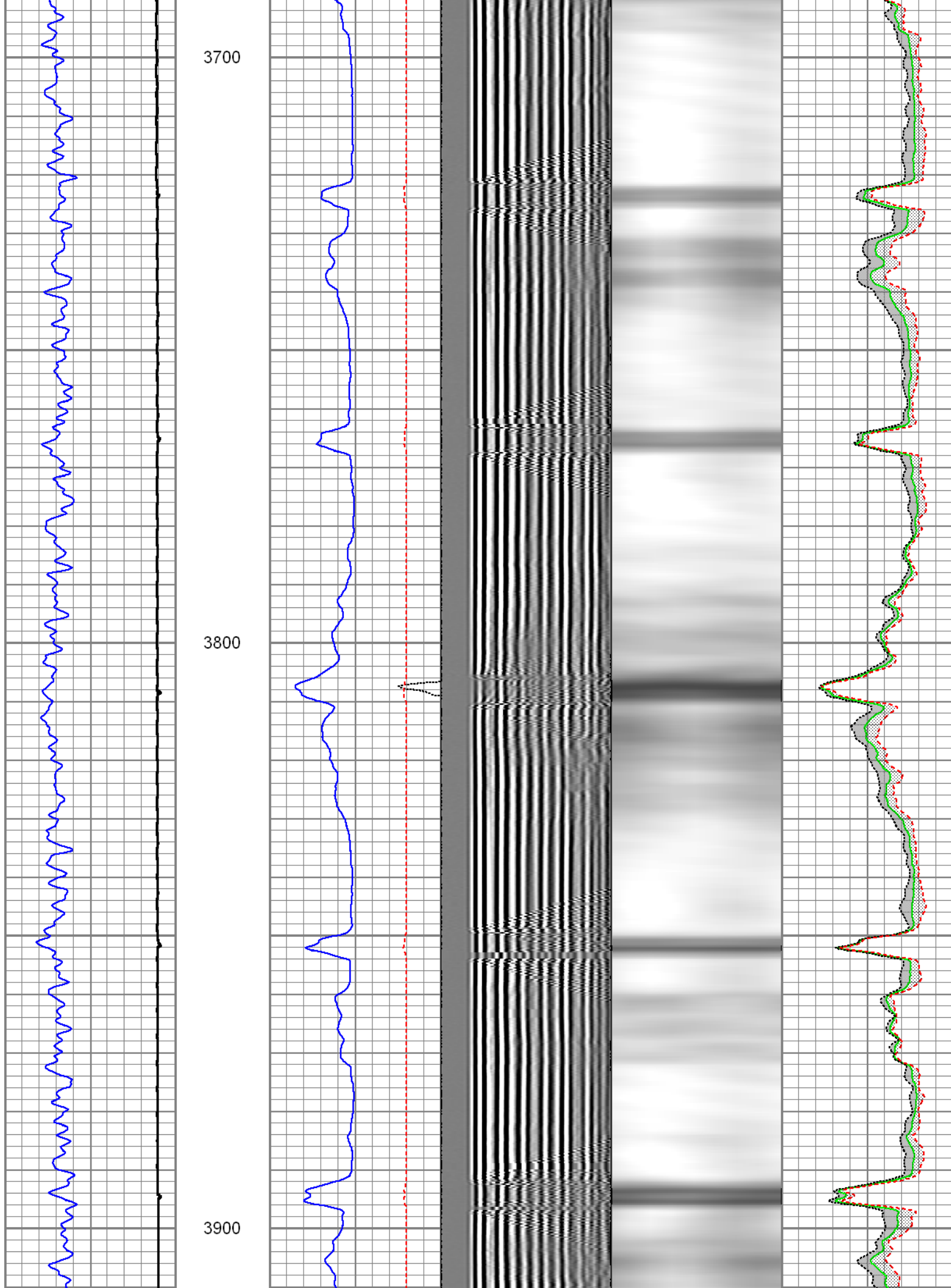


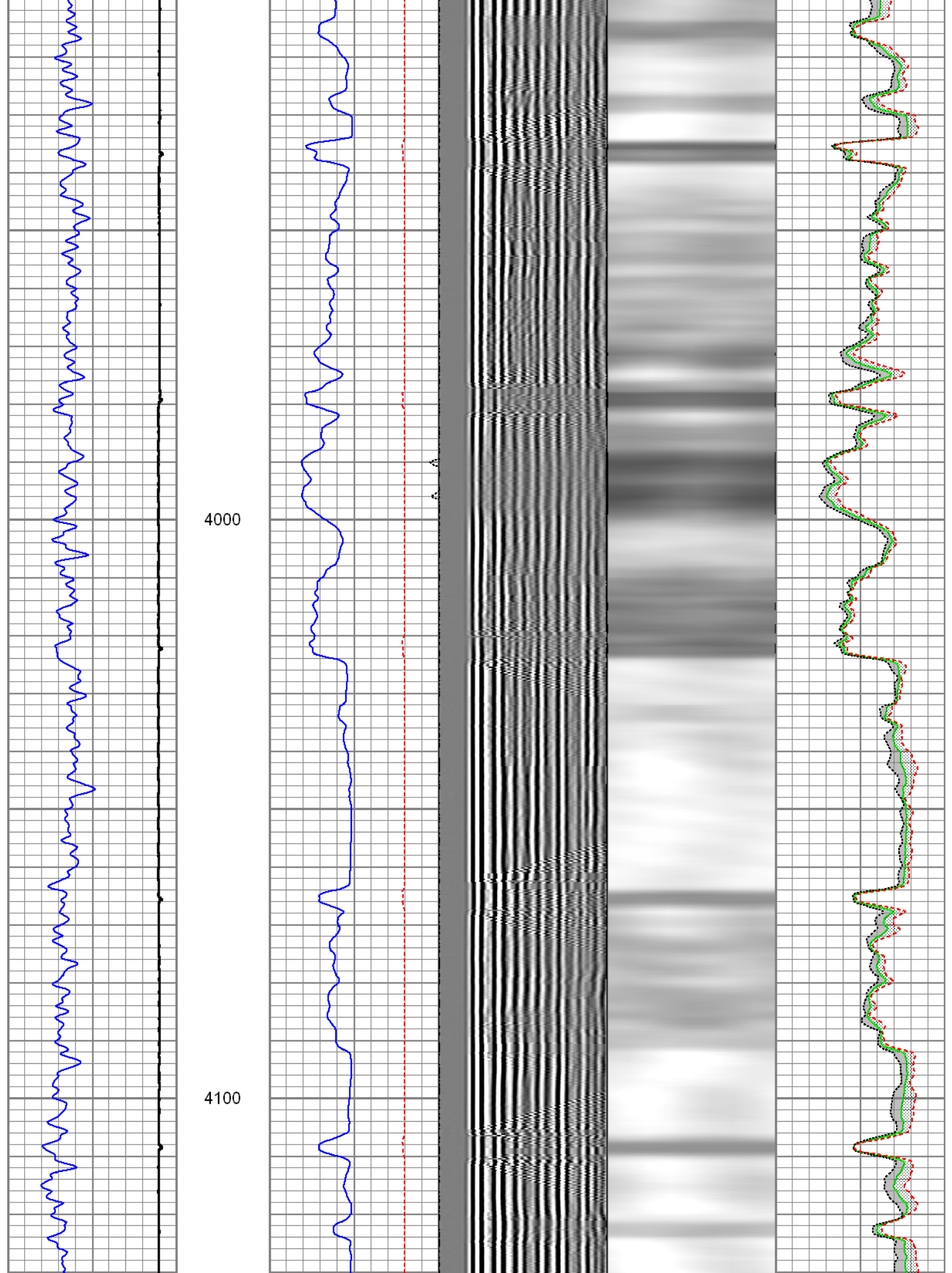


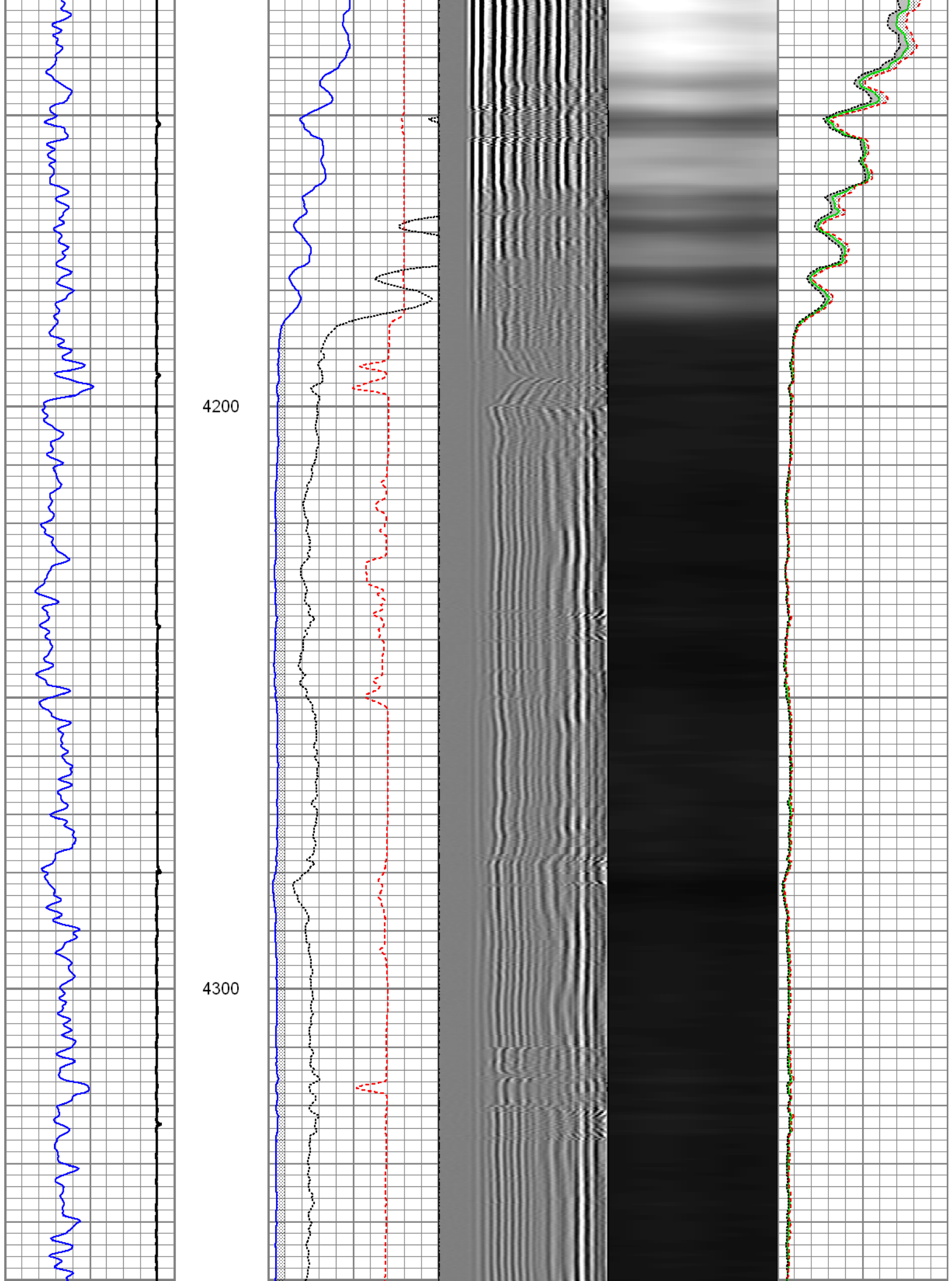
3700

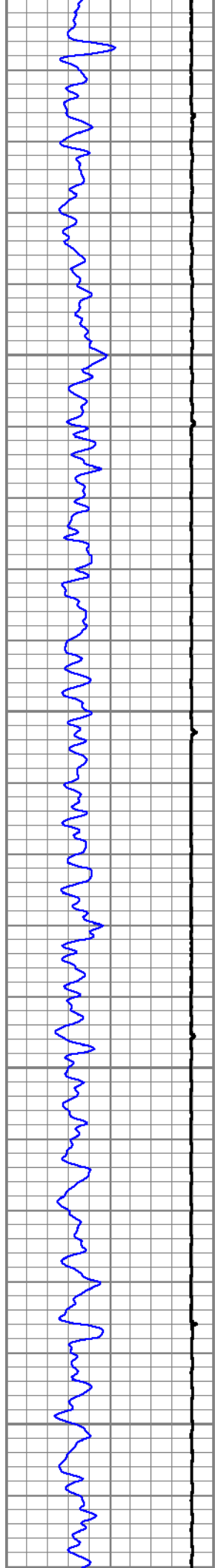
3800

3900



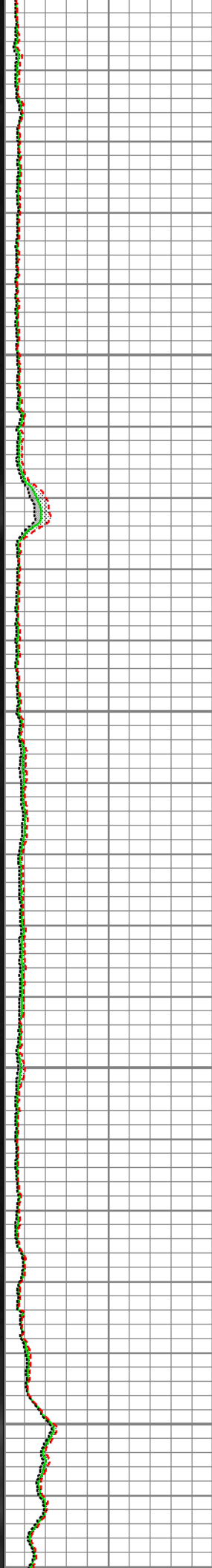
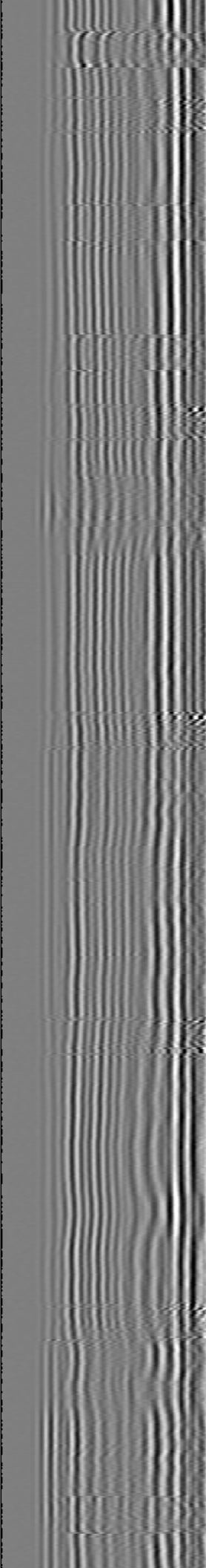
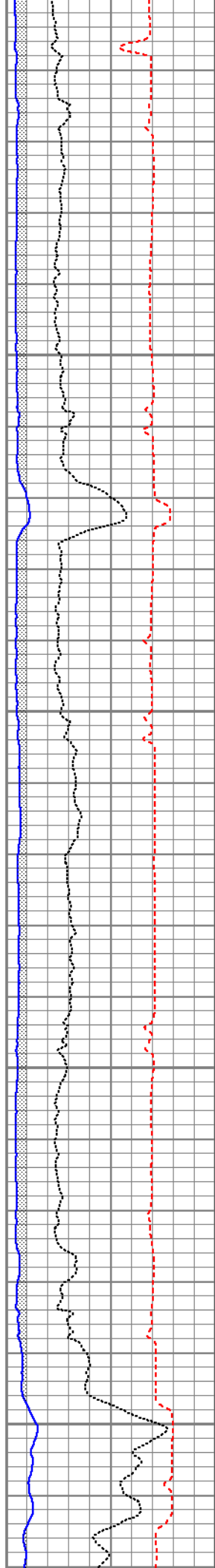






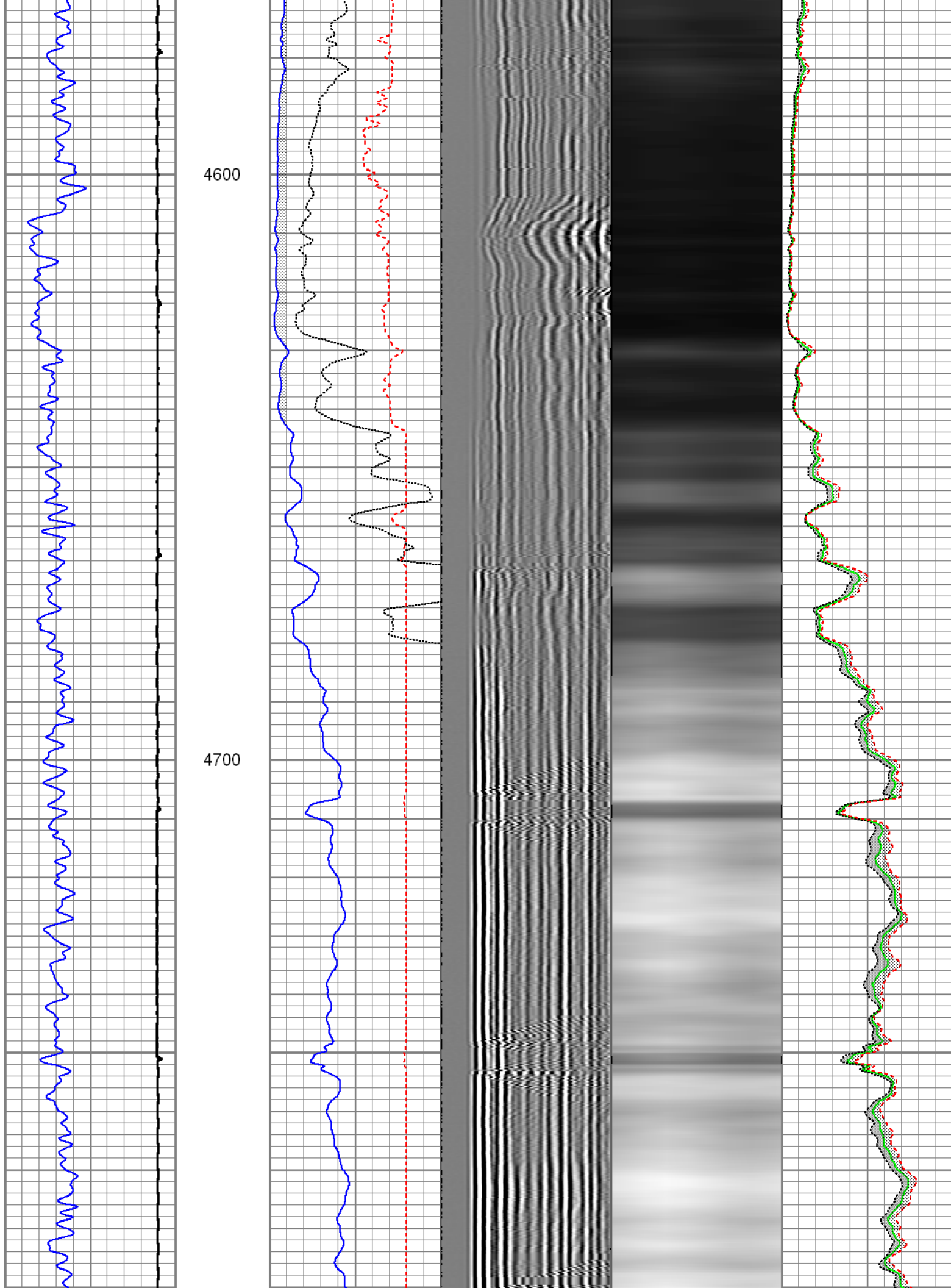
4400

4500



4600

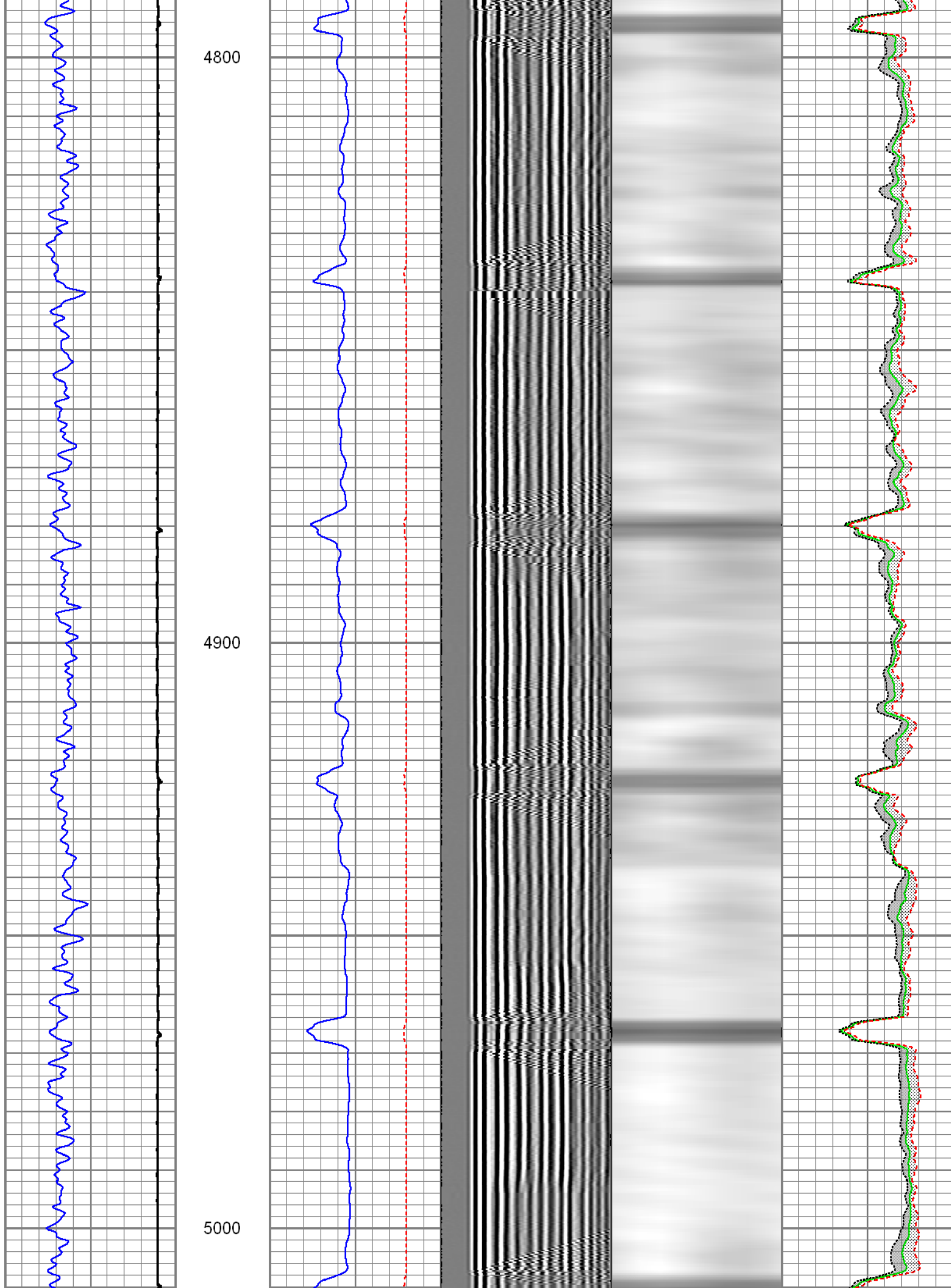
4700

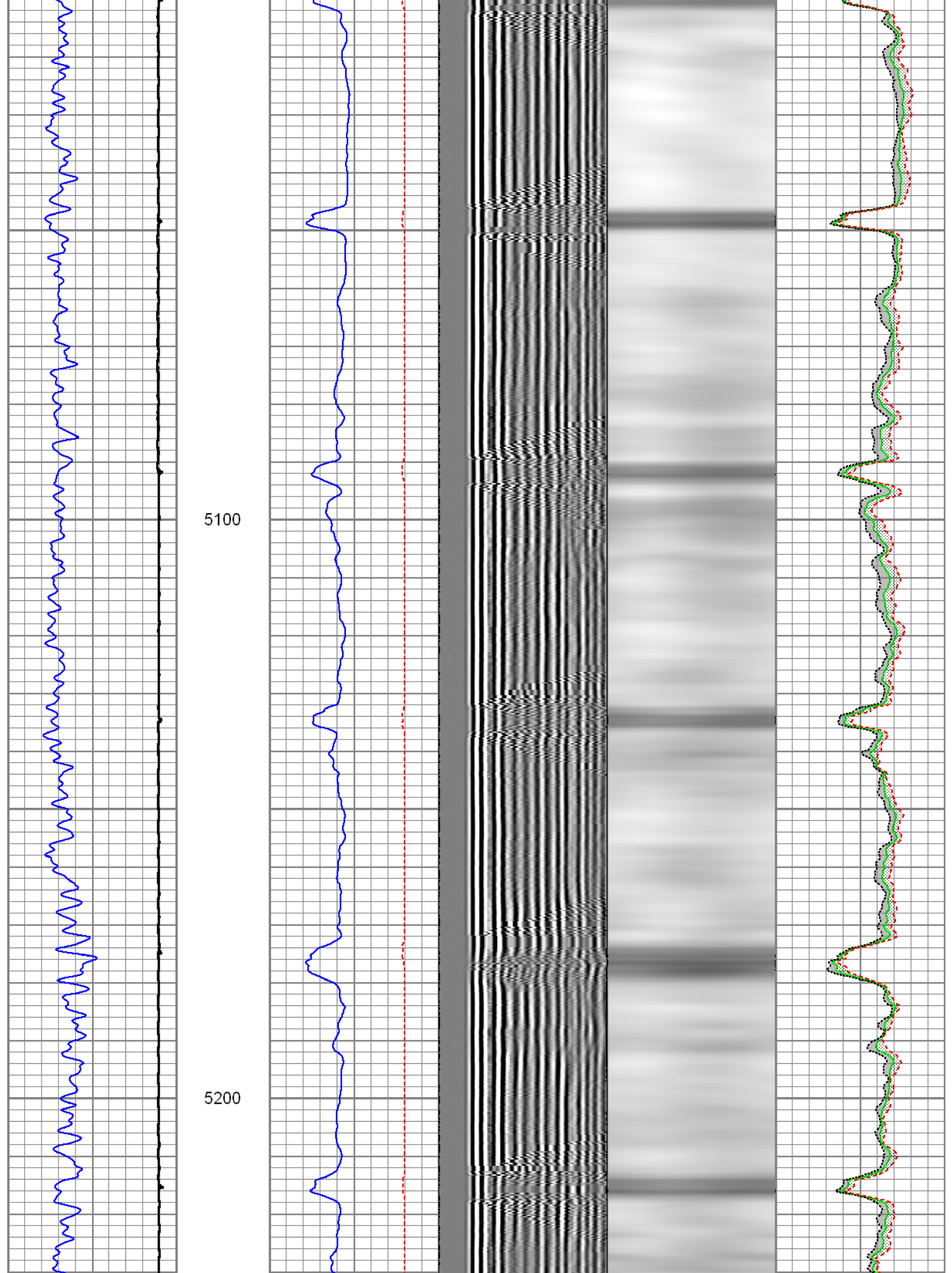


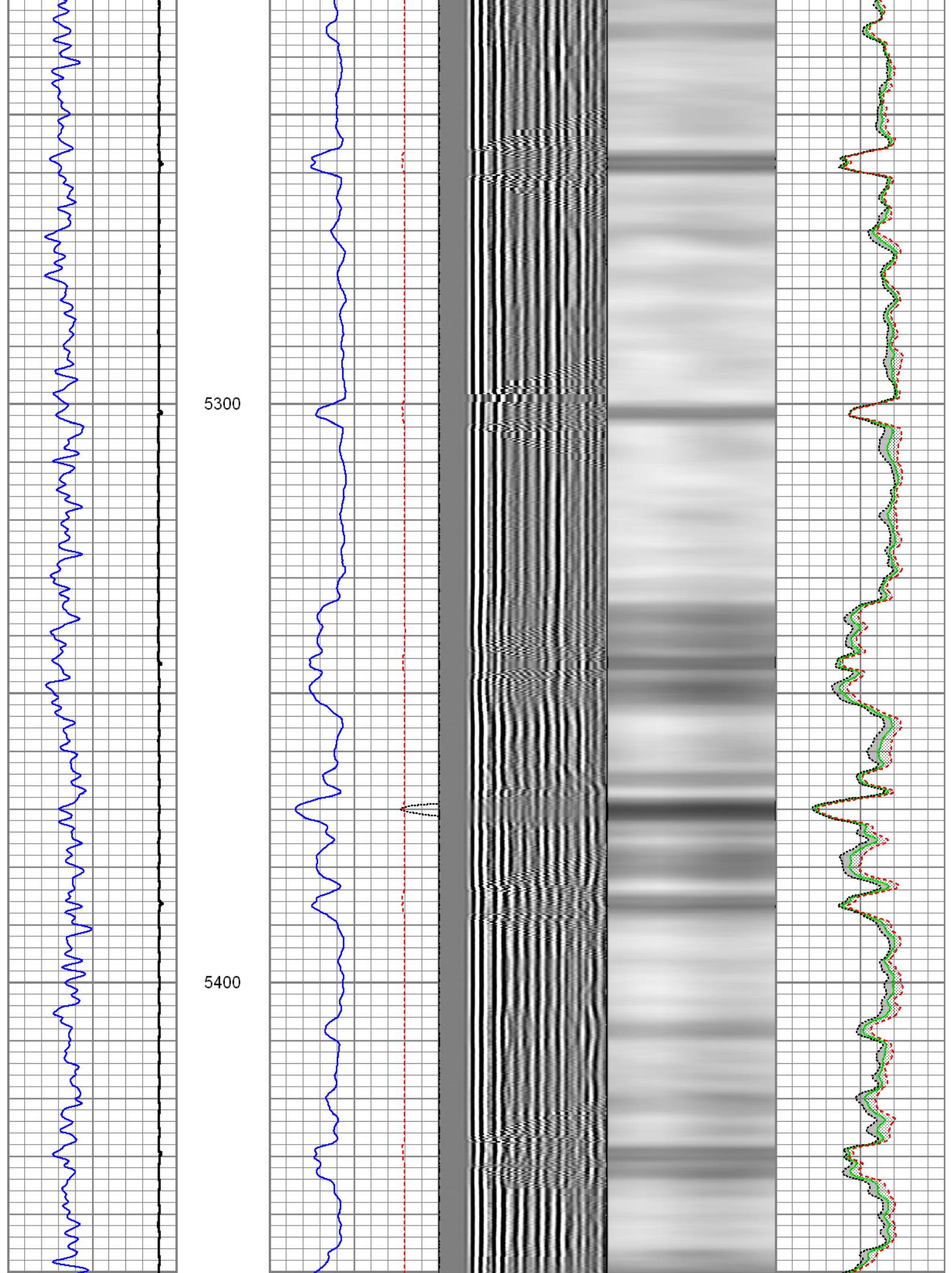
4800

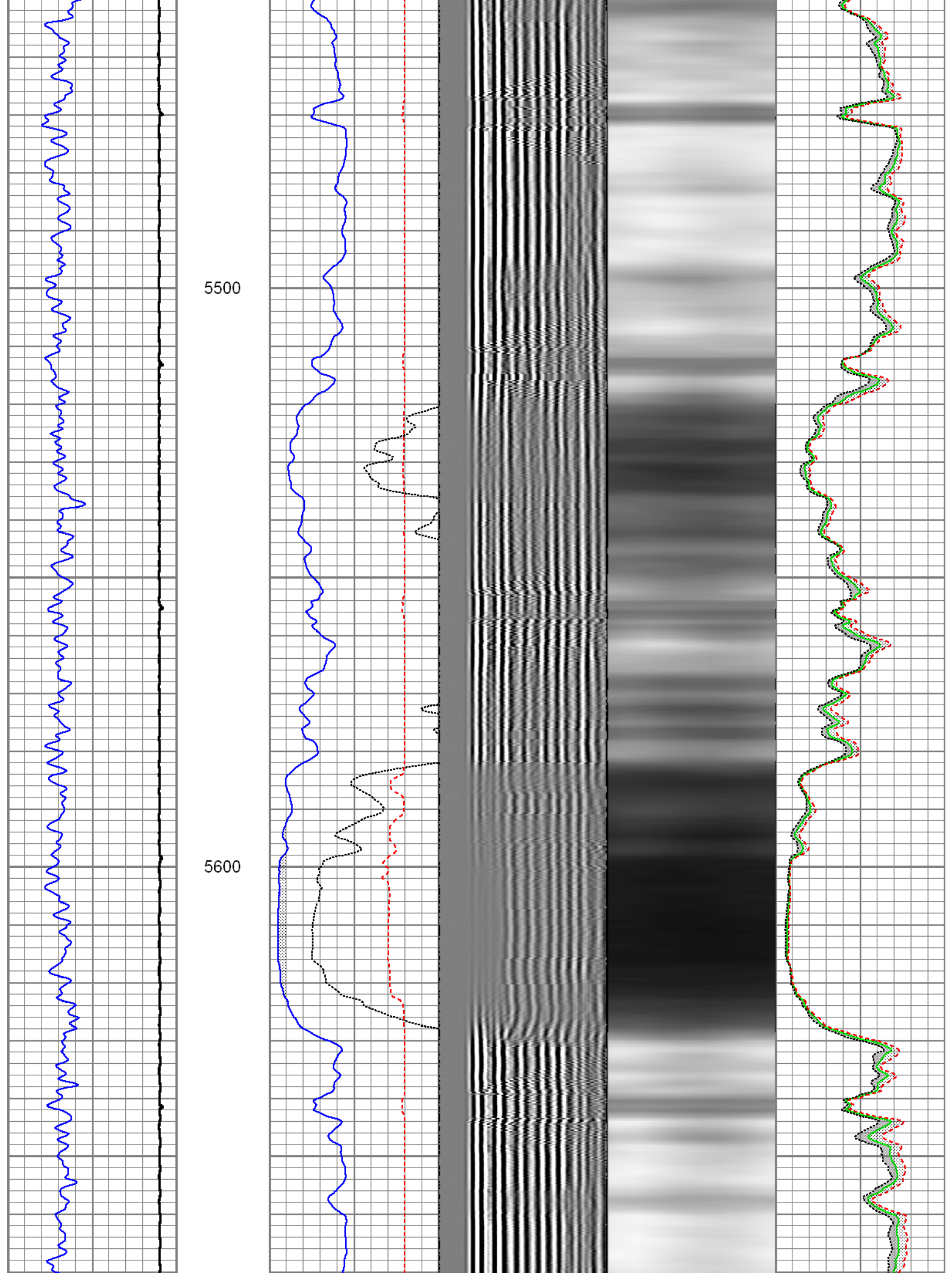
4900

5000



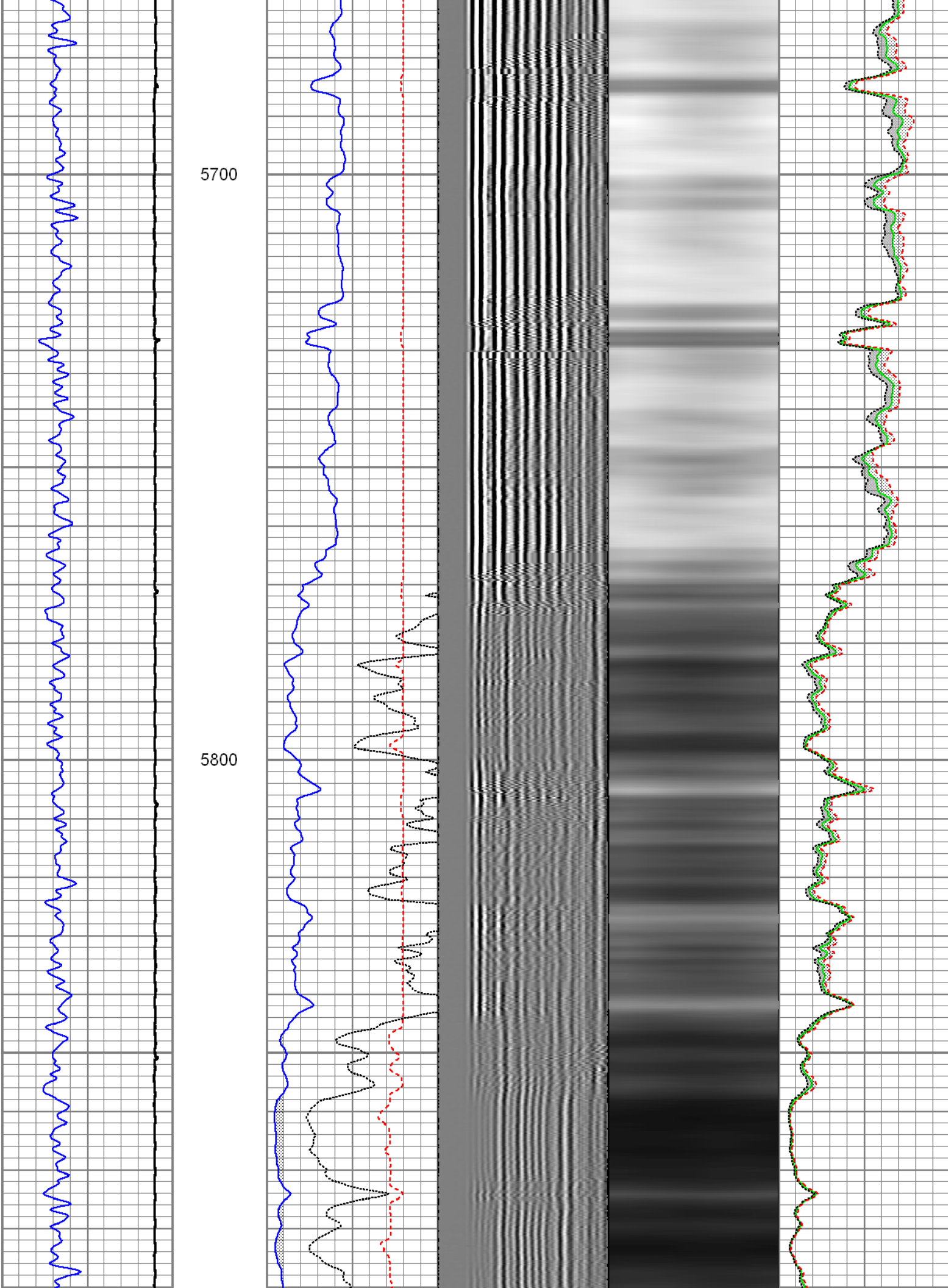


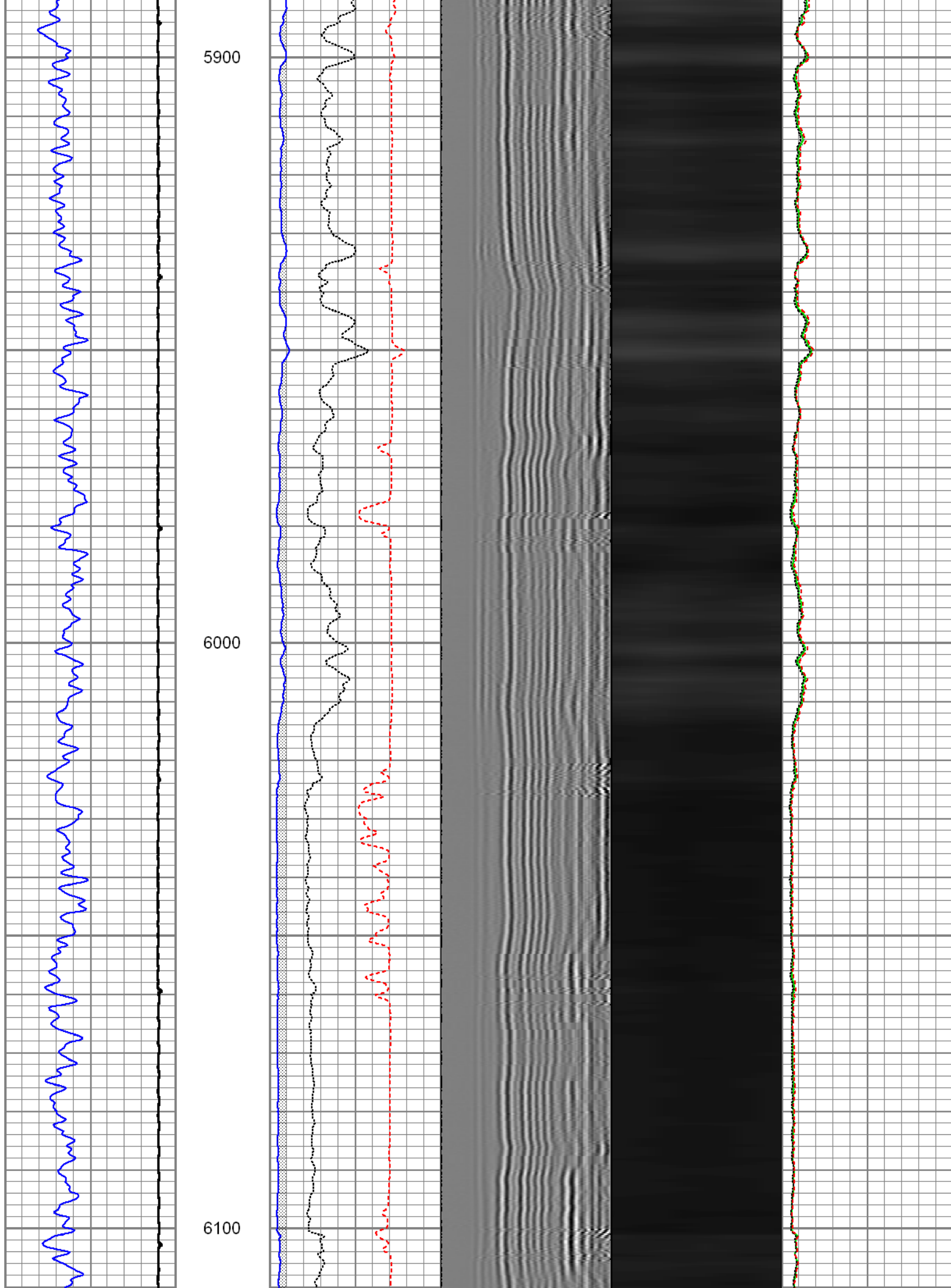


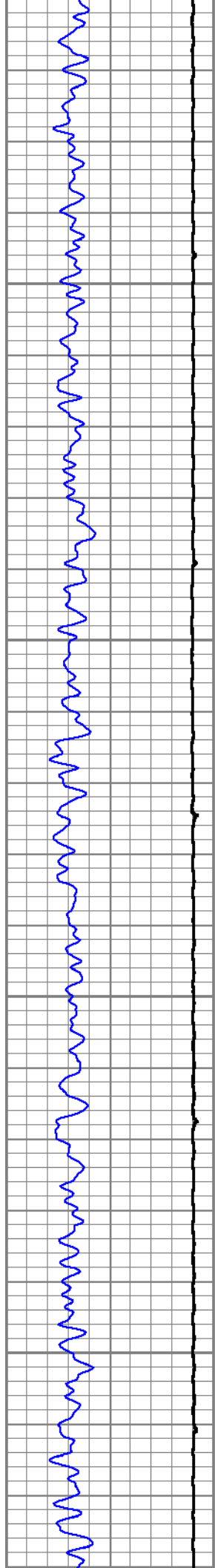


5700

5800

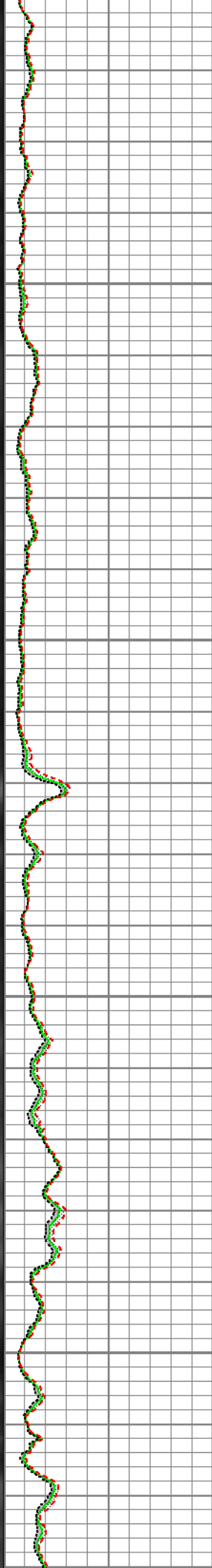
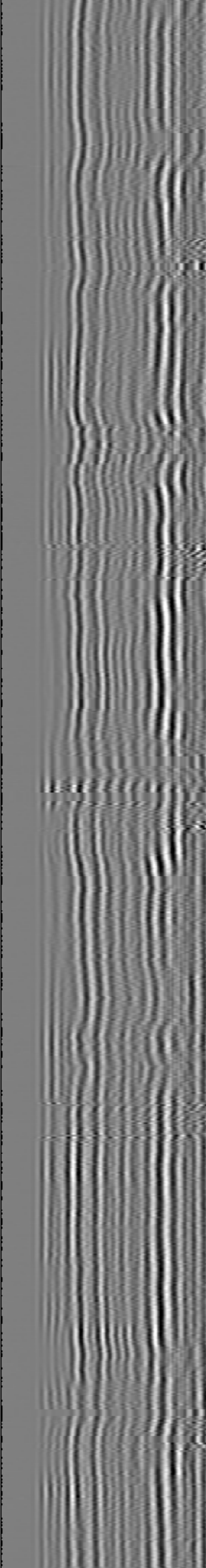
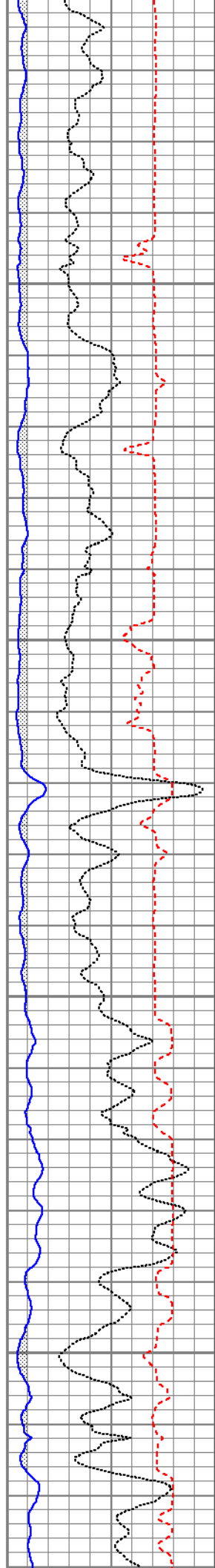






6200

6300



6400

6500

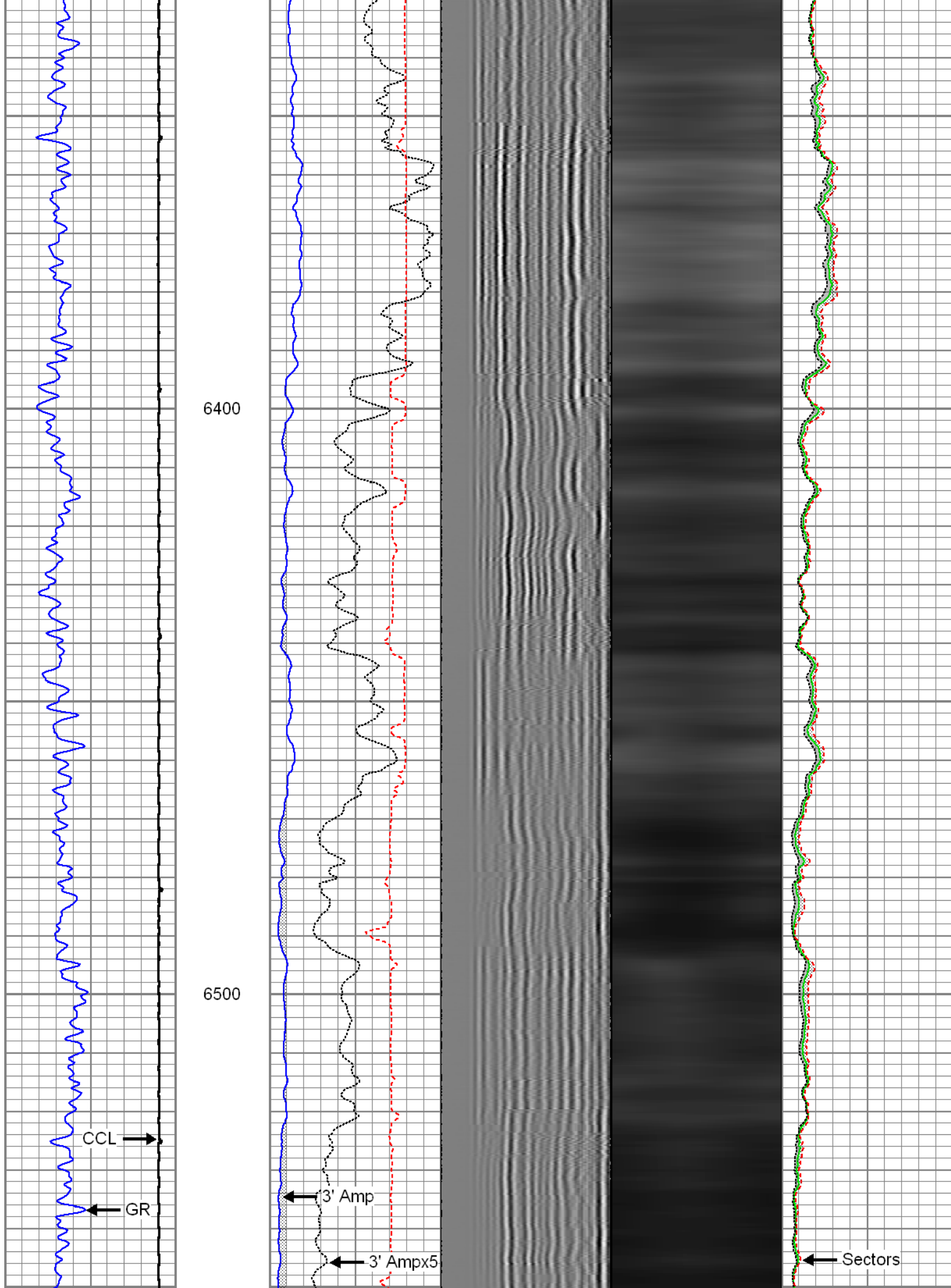
CCL →

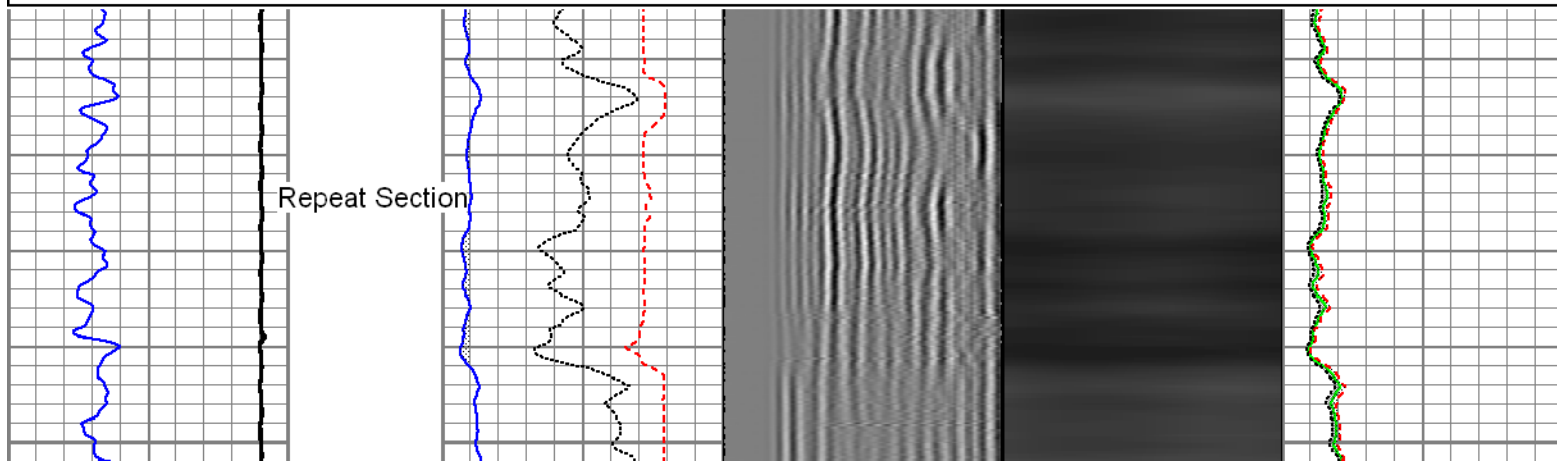
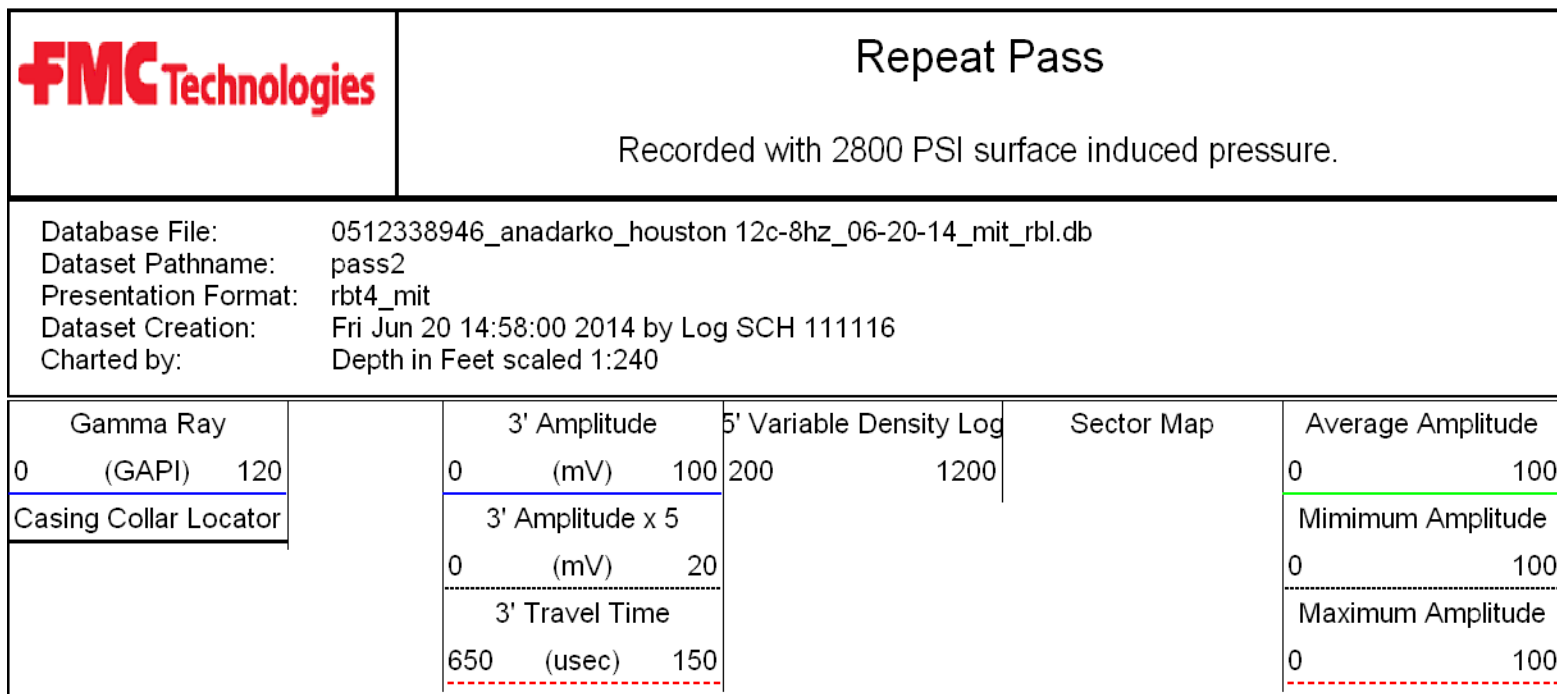
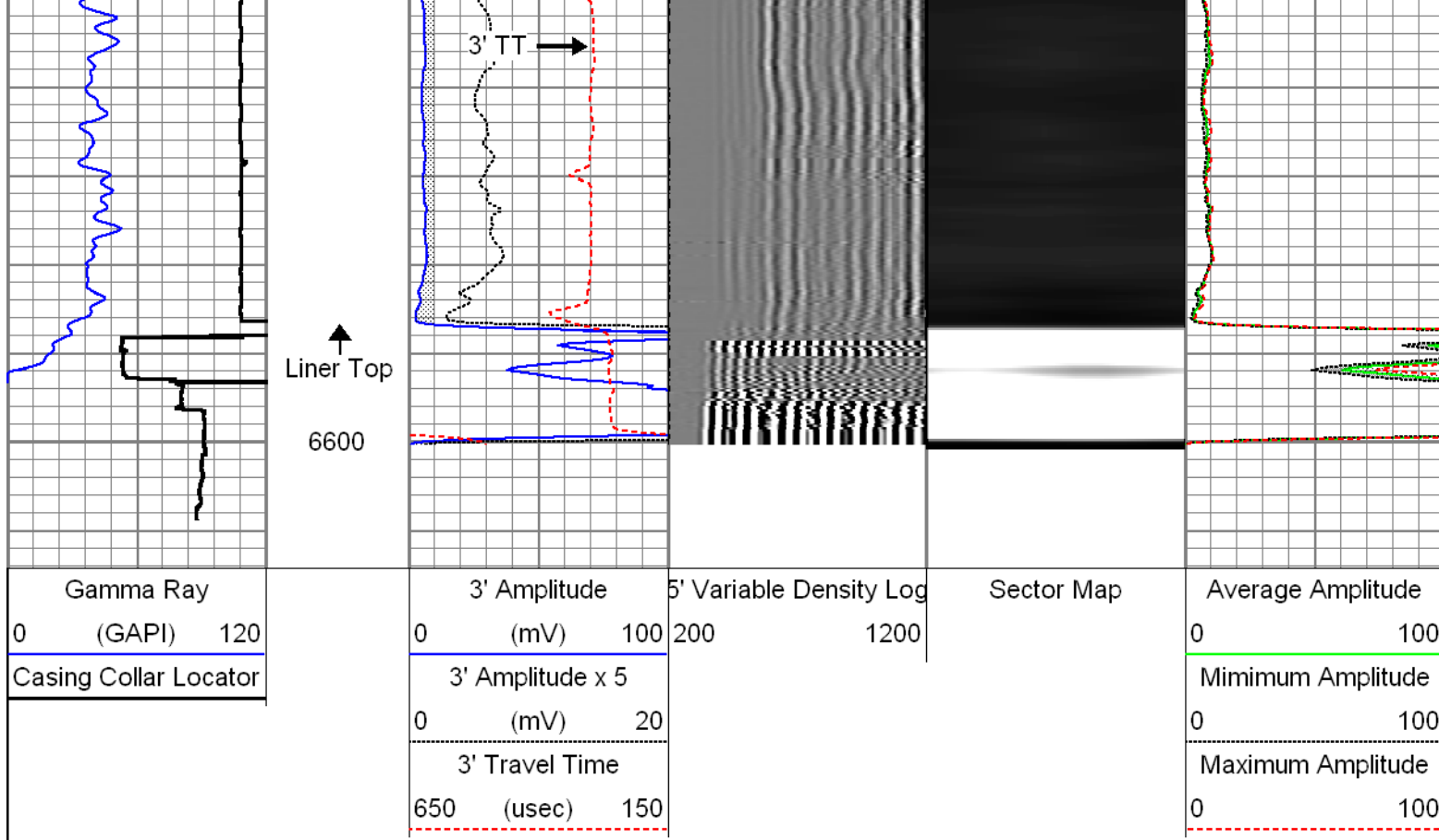
← GR

← 3' Amp

← 3' Ampx5

← Sectors

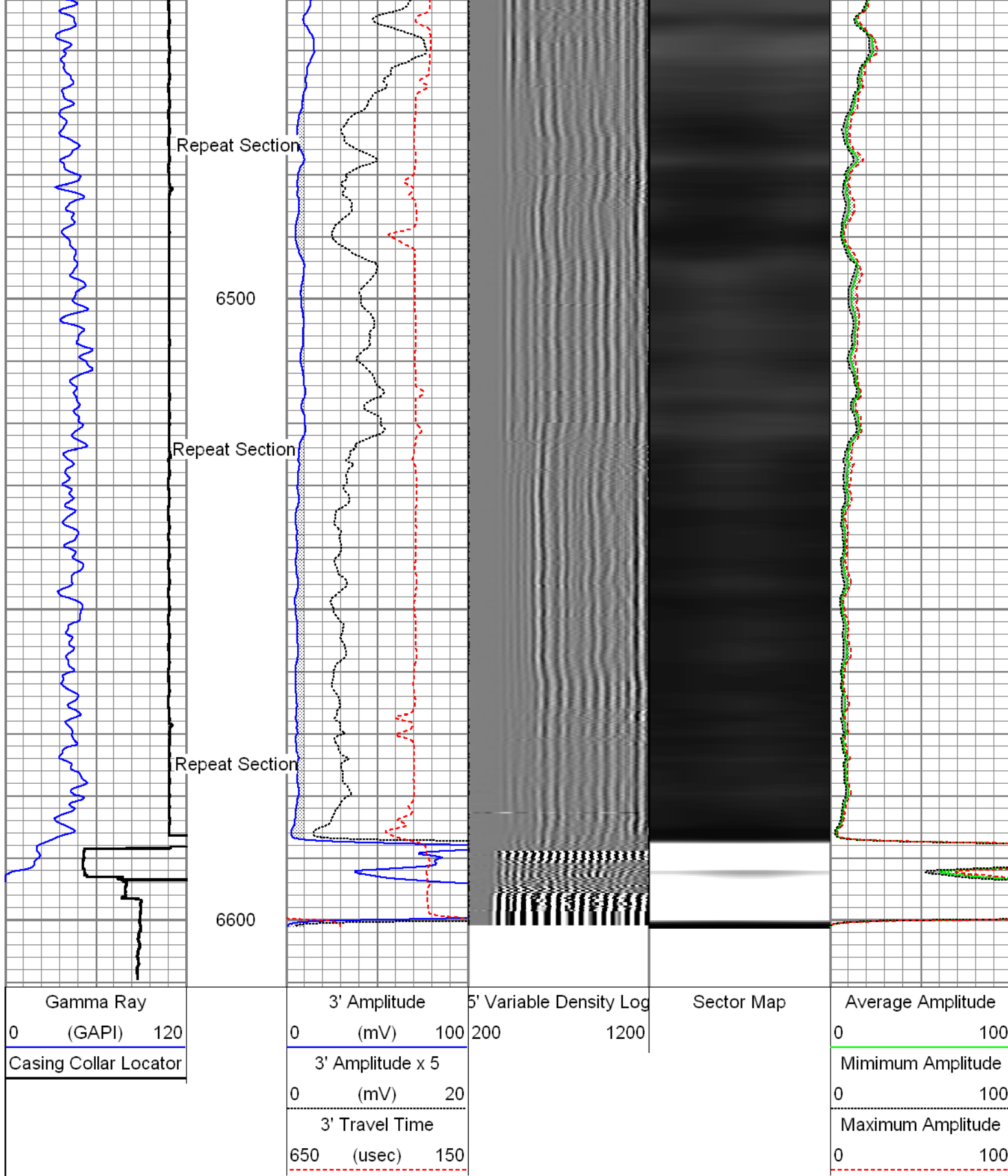





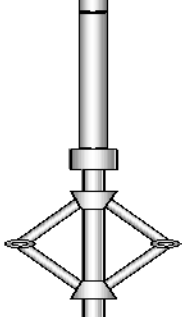

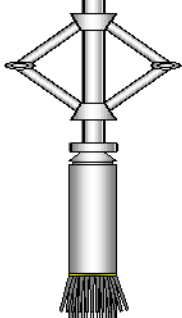
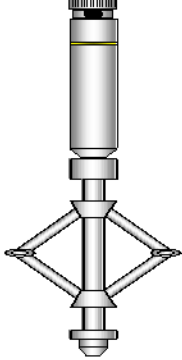
Repeat Pass

Recorded with 2800 PSI surface induced pressure.

Database File: 0512338946_anadarko_houston 12c-8hz_06-20-14_mit_rbl.db
Dataset Pathname: pass2
Presentation Format: rbt4_mit
Dataset Creation: Fri Jun 20 14:58:00 2014 by Log SCH 111116
Charted by: Depth in Feet scaled 1:240



Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
			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

GR	22.37		UW_XTU-UW_XTU_002 (211461) 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_PRC #4 -DSSRAC (081) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
WVFS3FT WVFS1 WVFS2 WVFS3 WVFS4 WVFS5 WVFS6 WVFS7 WVFS8 CBLTEMP CBLROT WVFS5FT	14.99		UW_RBT-UW_RBT_004 (1066) Sondex Ultrawire 3-1/8" Radial Bond Tool	9.47	3.13	140.00
	14.99					
	14.99					
	14.99					
	14.99					
	14.99					
	14.99					
	14.99					
	14.99					
	13.99					
MIT	4.97		UW_PRC-DSSRAC (080) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
			UW_MIT-UW_MIT40_042 (10014703) 40 Multifinger Imaging Tool	4.54	2.75	61.10
			UW_PRC #3 -DSSRAC (084) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
TSTAMP	0.00		UW_BUL-UW_BUL_006 (218707) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20
Dataset: 0512338946_Anadarko_Houston 12C-8HZ_06-20-14_MIT_RBL.db: field/well/run1/pass3 Total Length: 26.62 ft Total Weight: 319.30 lb O.D. 3.13 in						

Calibration Report	
Database File:	0512338946_Anadarko_Houston 12C-8HZ_06-20-14_MIT_RBL.db
Dataset Pathname:	pass4
Dataset Creation:	Fri Jun 20 17:29:32 2014 by Log SCH 111116

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: Fri Jun 20 14:29:03 2014

Ring size:	4		5		6		7
(in)		Sens		Sens		Sens	
Finger 01:	1200	361.0	1561	373.0	1934	389.0	2323
Finger 02:	1142	372.0	1514	400.0	1914	417.0	2331
Finger 03:	1147	364.0	1511	386.0	1897	408.0	2305
Finger 04:	1092	375.0	1467	412.0	1879	434.0	2313
Finger 05:	1109	352.0	1461	383.0	1844	400.0	2244
Finger 06:	1110	366.0	1476	400.0	1876	418.0	2294
Finger 07:	1144	357.0	1501	382.0	1883	403.0	2286
Finger 08:	1094	362.0	1456	404.0	1860	421.0	2281
Finger 09:	1167	367.0	1534	391.0	1925	398.0	2323
Finger 10:	1108	358.0	1466	391.0	1857	402.0	2259
Finger 11:	1110	360.0	1470	396.0	1866	410.0	2276
Finger 12:	1184	355.0	1539	377.0	1916	379.0	2295
Finger 13:	1133	355.0	1488	393.0	1881	409.0	2290
Finger 14:	1108	365.0	1473	407.0	1880	421.0	2301
Finger 15:	1073	361.0	1434	411.0	1845	428.0	2273
Finger 16:	1146	357.0	1503	393.0	1896	409.0	2305
Finger 17:	1155	352.0	1507	381.0	1888	397.0	2285
Finger 18:	1207	347.0	1554	383.0	1937	395.0	2332
Finger 19:	1158	353.0	1511	391.0	1902	404.0	2306
Finger 20:	1074	359.0	1433	406.0	1839	421.0	2260
Finger 21:	1155	344.0	1499	384.0	1883	402.0	2285
Finger 22:	1150	348.0	1498	388.0	1886	404.0	2290
Finger 23:	1242	329.0	1571	363.0	1934	378.0	2312
Finger 24:	1160	354.0	1514	395.0	1909	408.0	2317
Finger 25:	1159	347.0	1506	391.0	1897	411.0	2308
Finger 26:	1195	349.0	1544	382.0	1926	395.0	2321
Finger 27:	1201	340.0	1541	375.0	1916	398.0	2314
Finger 28:	1167	354.0	1521	390.0	1911	408.0	2319
Finger 29:	1144	355.0	1499	398.0	1897	420.0	2317
Finger 30:	1142	353.0	1495	391.0	1886	417.0	2303
Finger 31:	1198	346.0	1544	376.0	1920	392.0	2312
Finger 32:	1143	367.0	1510	391.0	1901	412.0	2313
Finger 33:	1148	364.0	1512	391.0	1903	413.0	2316
Finger 34:	1132	362.0	1494	398.0	1892	421.0	2313
Finger 35:	1190	349.0	1539	377.0	1916	396.0	2312
Finger 36:	1130	360.0	1490	394.0	1884	417.0	2301
Finger 37:	1192	351.0	1543	372.0	1915	396.0	2311
Finger 38:	1220	353.0	1573	372.0	1945	394.0	2339
Finger 39:	1123	359.0	1482	389.0	1871	413.0	2284
Finger 40:	1074	375.0	1449	412.0	1861	437.0	2298

Ring size: (in)	4	Nom. wear	5	Nom. wear	6	Nom. wear	7	Nom. wear
Finger 01:	3.992	-0.004	4.987	-0.007	5.998	-0.001	6.999	-0.000
Finger 02:	3.994	-0.003	4.998	-0.001	5.996	-0.002	6.998	-0.001
Finger 03:	3.995	-0.003	4.984	-0.008	5.982	-0.009	6.969	-0.016
Finger 04:	3.996	-0.002	4.998	-0.001	6.000	-0.000	6.999	-0.000
Finger 05:	3.996	-0.002	4.999	-0.000	5.998	-0.001	6.997	-0.002
Finger 06:	3.994	-0.003	4.998	-0.001	5.999	-0.001	7.002	0.001
Finger 07:	3.970	-0.015	4.979	-0.010	5.990	-0.005	6.988	-0.006
Finger 08:	3.988	-0.006	4.998	-0.001	5.996	-0.002	6.996	-0.002
Finger 09:	3.994	-0.003	4.996	-0.002	6.000	-0.000	7.004	0.002
Finger 10:	3.995	-0.002	4.997	-0.002	5.997	-0.001	6.996	-0.002
Finger 11:	3.994	-0.003	4.993	-0.004	5.993	-0.004	6.998	-0.001
Finger 12:	3.995	-0.002	4.997	-0.002	5.999	-0.001	7.003	0.001
Finger 13:	3.997	-0.001	4.996	-0.002	5.997	-0.002	6.997	-0.002
Finger 14:	3.996	-0.002	4.998	-0.001	6.001	0.001	7.002	0.001
Finger 15:	3.993	-0.003	5.001	0.000	5.997	-0.001	7.003	0.001
Finger 16:	3.999	-0.001	4.996	-0.002	6.000	0.000	6.996	-0.002
Finger 17:	3.999	-0.001	4.991	-0.004	5.993	-0.003	6.976	-0.012
Finger 18:	3.994	-0.003	4.994	-0.003	5.996	-0.002	6.997	-0.002
Finger 19:	3.995	-0.003	4.997	-0.001	5.999	-0.000	6.997	-0.001
Finger 20:	3.984	-0.008	4.976	-0.012	5.967	-0.017	6.963	-0.019
Finger 21:	3.991	-0.004	5.000	-0.000	6.002	0.001	7.002	0.001
Finger 22:	3.993	-0.004	4.997	-0.001	5.999	-0.000	6.998	-0.001
Finger 23:	3.991	-0.004	4.999	-0.001	6.001	0.000	6.998	-0.001
Finger 24:	3.991	-0.005	5.000	-0.000	6.000	0.000	6.999	-0.000
Finger 25:	3.995	-0.002	5.001	0.000	6.000	-0.000	6.999	-0.001
Finger 26:	3.992	-0.004	4.994	-0.003	6.001	0.000	7.003	0.001
Finger 27:	3.996	-0.002	4.997	-0.001	6.002	0.001	6.997	-0.001
Finger 28:	3.990	-0.005	4.993	-0.003	5.998	-0.001	7.006	0.003
Finger 29:	3.995	-0.003	4.999	-0.000	6.002	0.001	7.001	0.000
Finger 30:	3.993	-0.003	4.995	-0.002	5.999	-0.001	6.998	-0.001
Finger 31:	3.992	-0.004	4.998	-0.001	5.996	-0.002	6.995	-0.002
Finger 32:	3.991	-0.004	4.971	-0.014	5.974	-0.013	6.977	-0.012
Finger 33:	3.989	-0.005	4.981	-0.009	5.982	-0.009	6.984	-0.008
Finger 34:	3.996	-0.002	5.001	0.000	6.001	0.001	6.999	-0.001
Finger 35:	3.992	-0.004	5.004	0.002	5.998	-0.001	6.996	-0.002
Finger 36:	3.993	-0.003	5.004	0.002	6.003	0.001	7.003	0.001
Finger 37:	3.992	-0.004	4.992	-0.004	5.994	-0.003	6.991	-0.004
Finger 38:	3.998	-0.001	5.000	-0.000	6.001	0.001	6.996	-0.002
Finger 39:	3.997	-0.001	5.003	0.001	6.004	0.002	7.004	0.002
Finger 40:	3.997	-0.002	5.000	-0.000	6.000	0.000	6.998	-0.001
Average:	3.993	-0.003	4.995	-0.002	5.996	-0.002	6.996	-0.002

Segmented Cement Bond Log Calibration Report

Serial Number: 1066
Tool Model: UW_RBT_004


Calibration Casing Diameter: 7.000 in
Calibration Depth: 17.000 ft

Master Calibration, performed Fri Jun 20 14:31:35 2014:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	-0.002	0.767	0.800	62.165	79.858	0.929
5FT	-0.006	0.749	0.800	62.165	81.260	1.304
S1	-0.000	0.736	0.000	100.000	135.882	0.050

S2	-0.001	0.773	0.000	100.000	129.199	0.177
S3	-0.002	0.795	0.000	100.000	125.475	0.257
S4	-0.003	0.803	0.000	100.000	124.063	0.371
S5	-0.001	0.786	0.000	100.000	127.059	0.189
S6	-0.002	0.763	0.000	100.000	130.700	0.321
S7	-0.002	0.752	0.000	100.000	132.624	0.306
S8	-0.002	0.737	0.000	100.000	135.177	0.307

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	Houston 12C-8HZ
	Field	Wattenberg
	County	Weld
	State	Colorado