

Radial Cement Bond Gamma Ray Casing Collar Log

Company	Kerr-McGee Oil & Gas Onshore, L.P.	Company	Kerr-McGee Oil & Gas Onshore, L.P.
Well	Roberts 13N-22HZ	Well	Roberts 13N-22HZ
Field	Wattenberg	Field	Wattenberg
County	Weld	County	Weld
State	Colorado	State	Colorado
Location:	APL # : 05-123-36313	Other Services	MIT Gauge ring
Permanent Datum	SHL: 511' FNL, 485' FWL, NWNW Lat / Long: 40.216385 / -104.771304 SEC 22 TWP 3N RGE 66W	Elevation	K.B. 4898' D.F. 4897' G.L. 4885'
Log Measured From	Ground Level	Elevation	4885'
Drilling Measured From	Kelly Bushing	Elevation	13 FT

Date	28-July-2014
Run Number	Two
Depth Driller	12125 FT
Depth Logger	6580 FT
Bottom Logged Interval	6575 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	546 FT
Time Well Ready	ROA
Time Logger on Bottom	9:30
Equipment Number	HD-0324
Location	Fort Lupton, CO
Recorded By	J. Raby
Witnessed By	Treavor Daniels

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	1230 FT		
Intermediate #1	7"	26	HCP-110 LTC	Surface	7558 FT		
Intermediate #2							
Liner	4 1/2"	11.6	P-110 DOX/LTC	6554 FT	12115 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 6554 FT.
Adjusted log -15 FT from KB zero to correlate with Liner Top.
Log ran from just below liner top to surface.
Log ran with 2800 PSI surface induced pressure.

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

Database File:processed_0512336313_anadarko_roberts 13n-22hz_07-28-14_mit_rbl.db

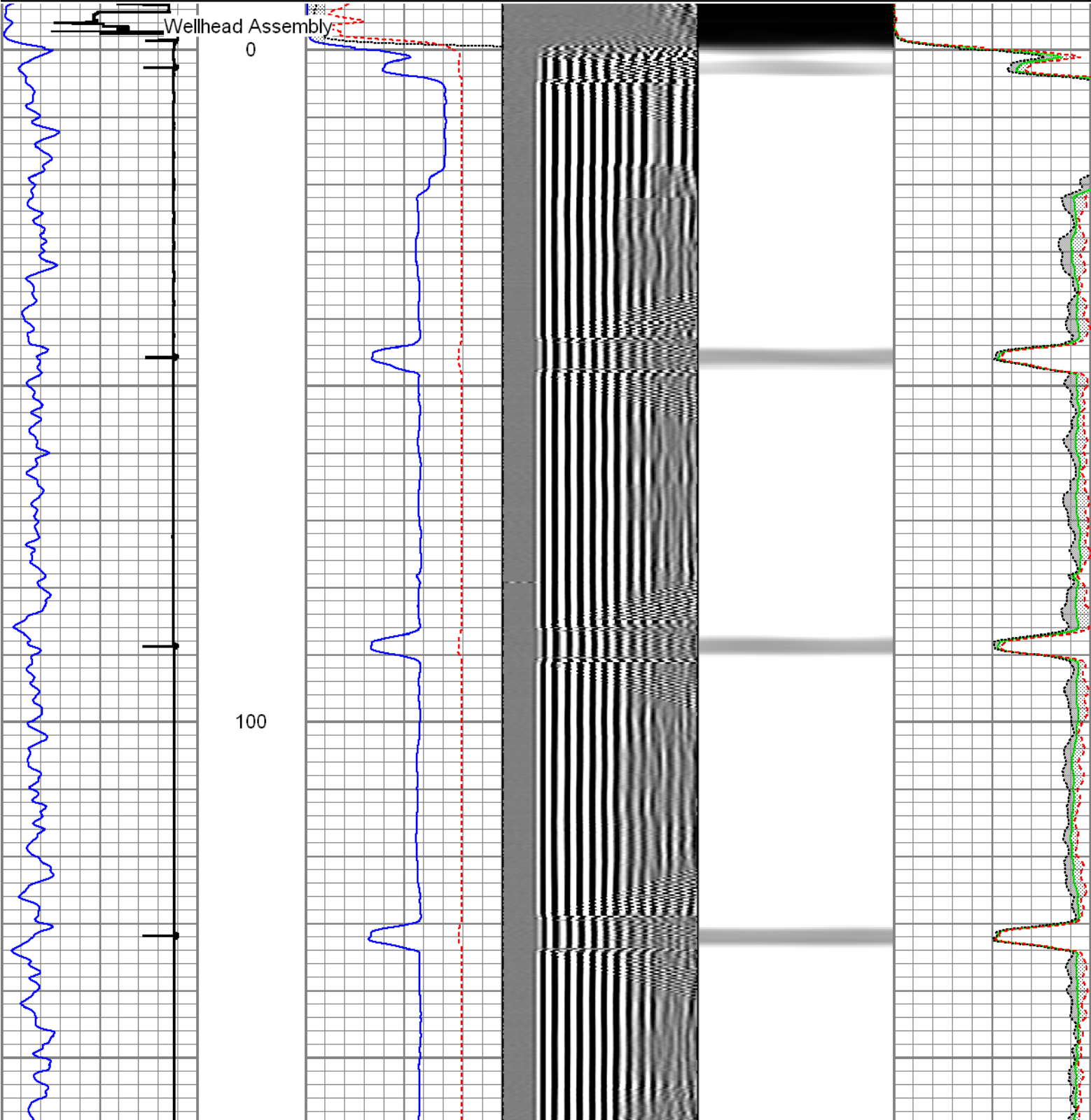
Dataset Pathname:pass5

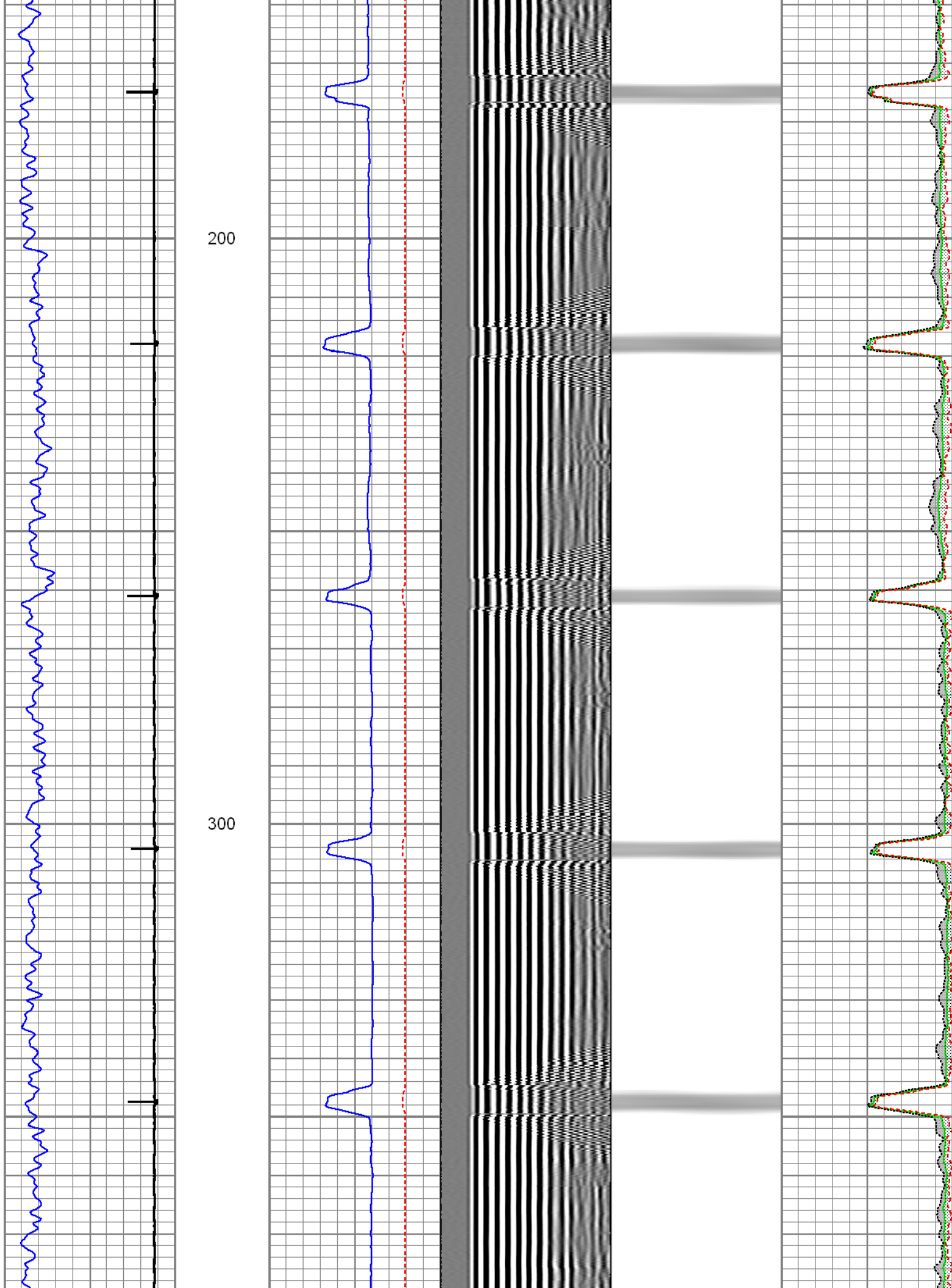
Presentation Format:rbt4_mit

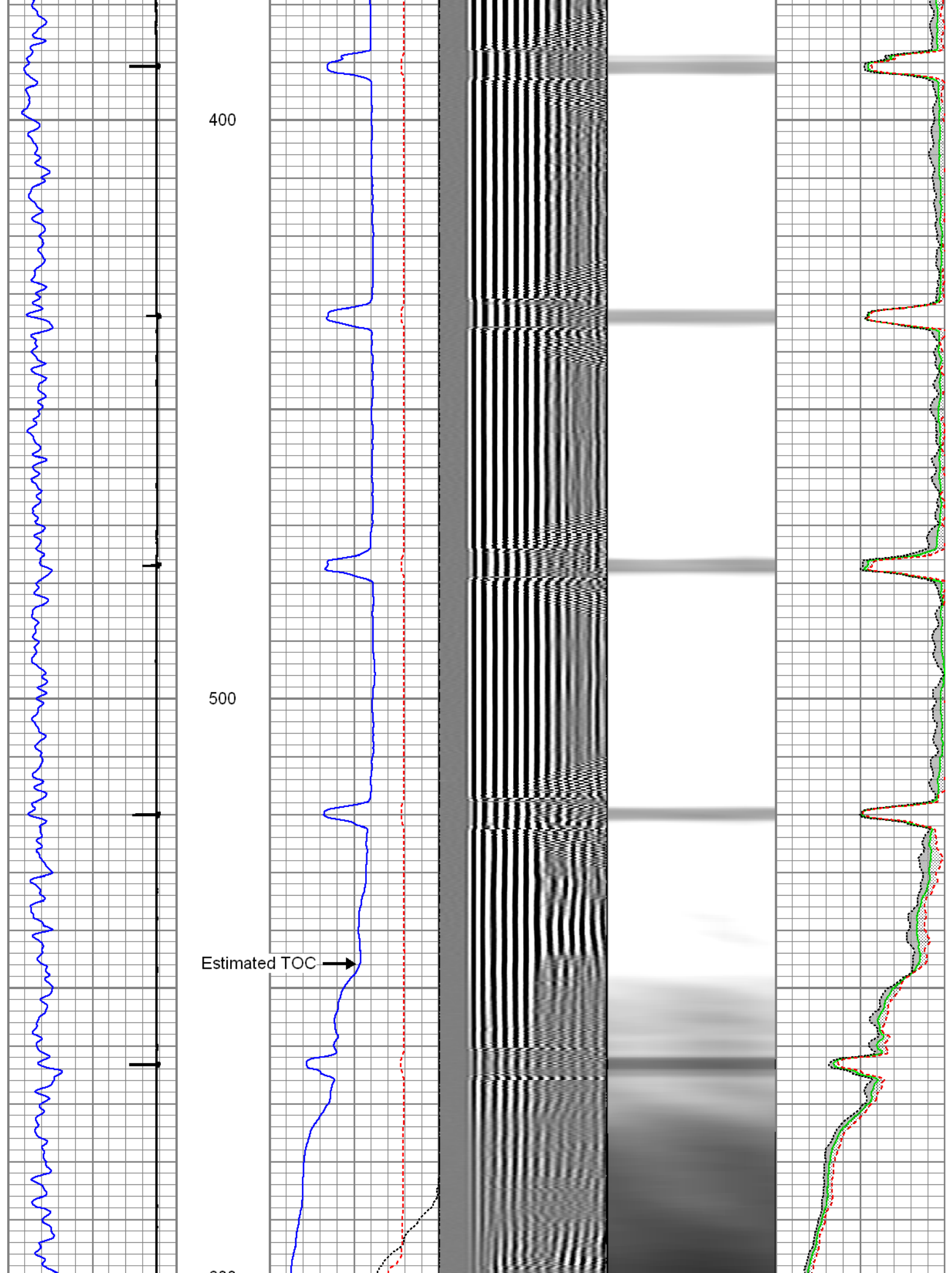
Dataset Creation:Mon Jul 28 09:44:08 2014 by Log 7.0 B1

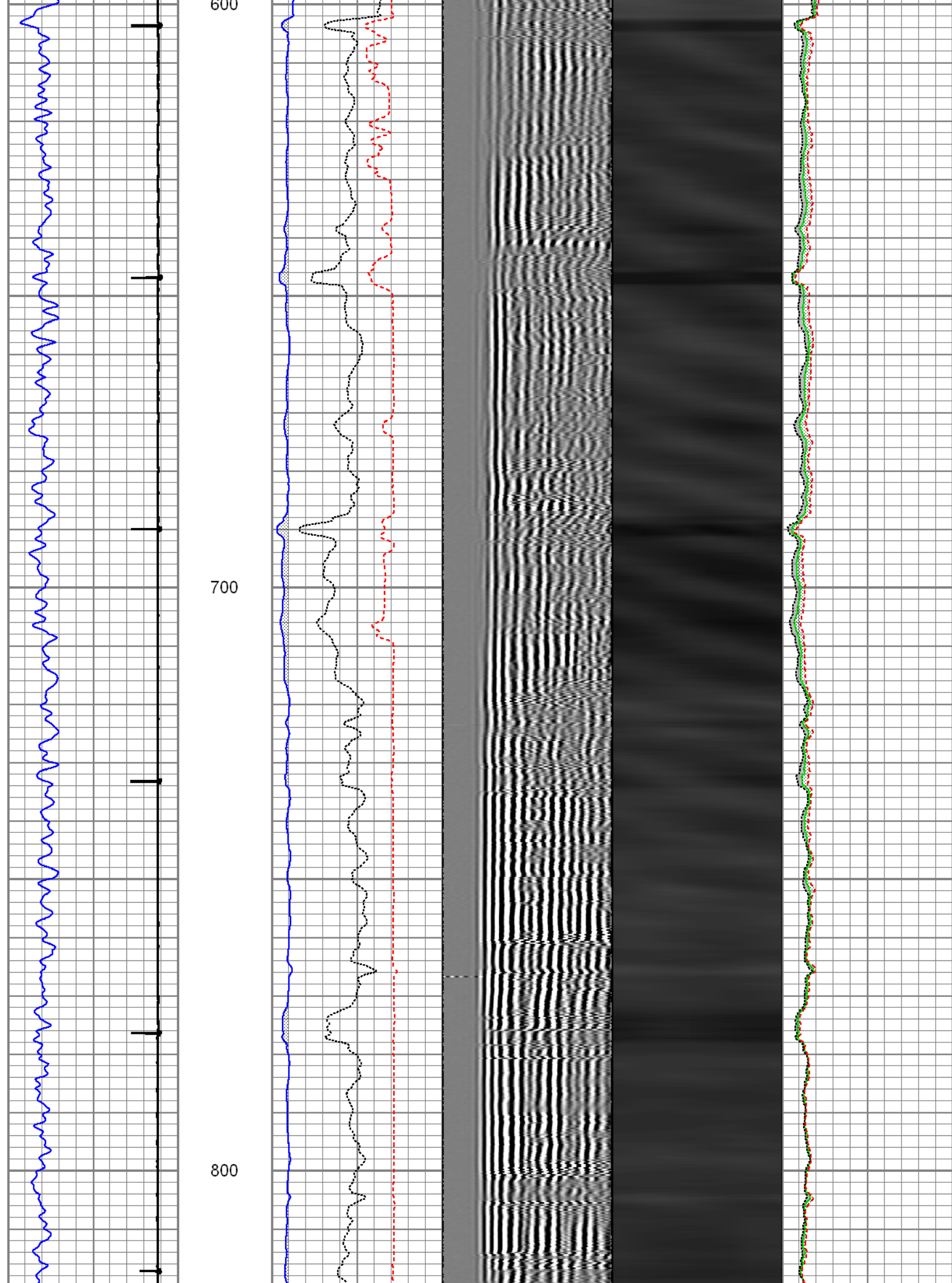
Charted by:Depth in Feet scaled 1:240

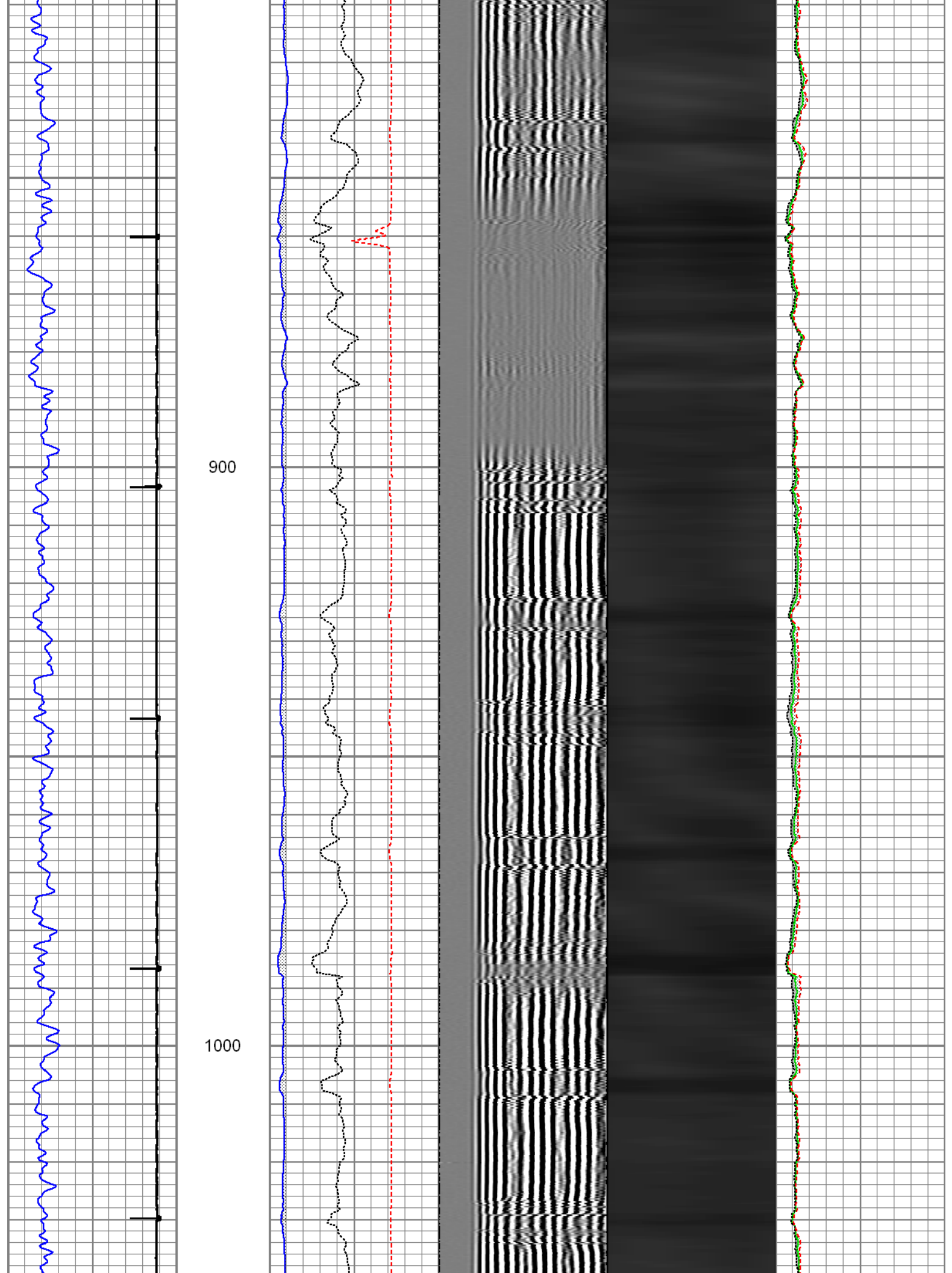
Gamma Ray	3' Amplitude	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 (mV) 100	200 1200		0 100
Casing Collar Locator	3' Amplitude x 5			Minimum Amplitude
	0 (mV) 20			0 100
	3' Travel Time			Maximum Amplitude
	650 (usec) 150			0 100

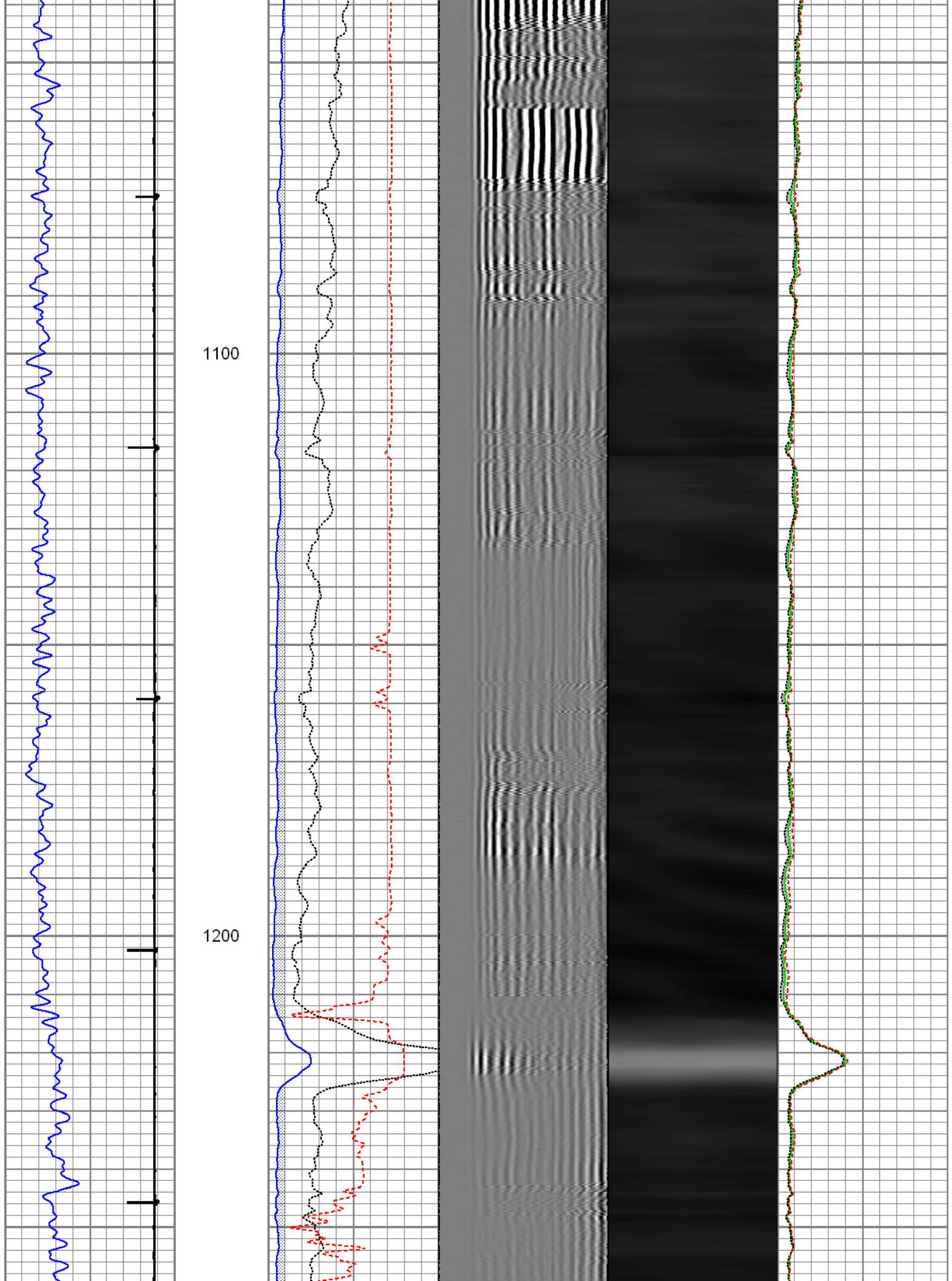


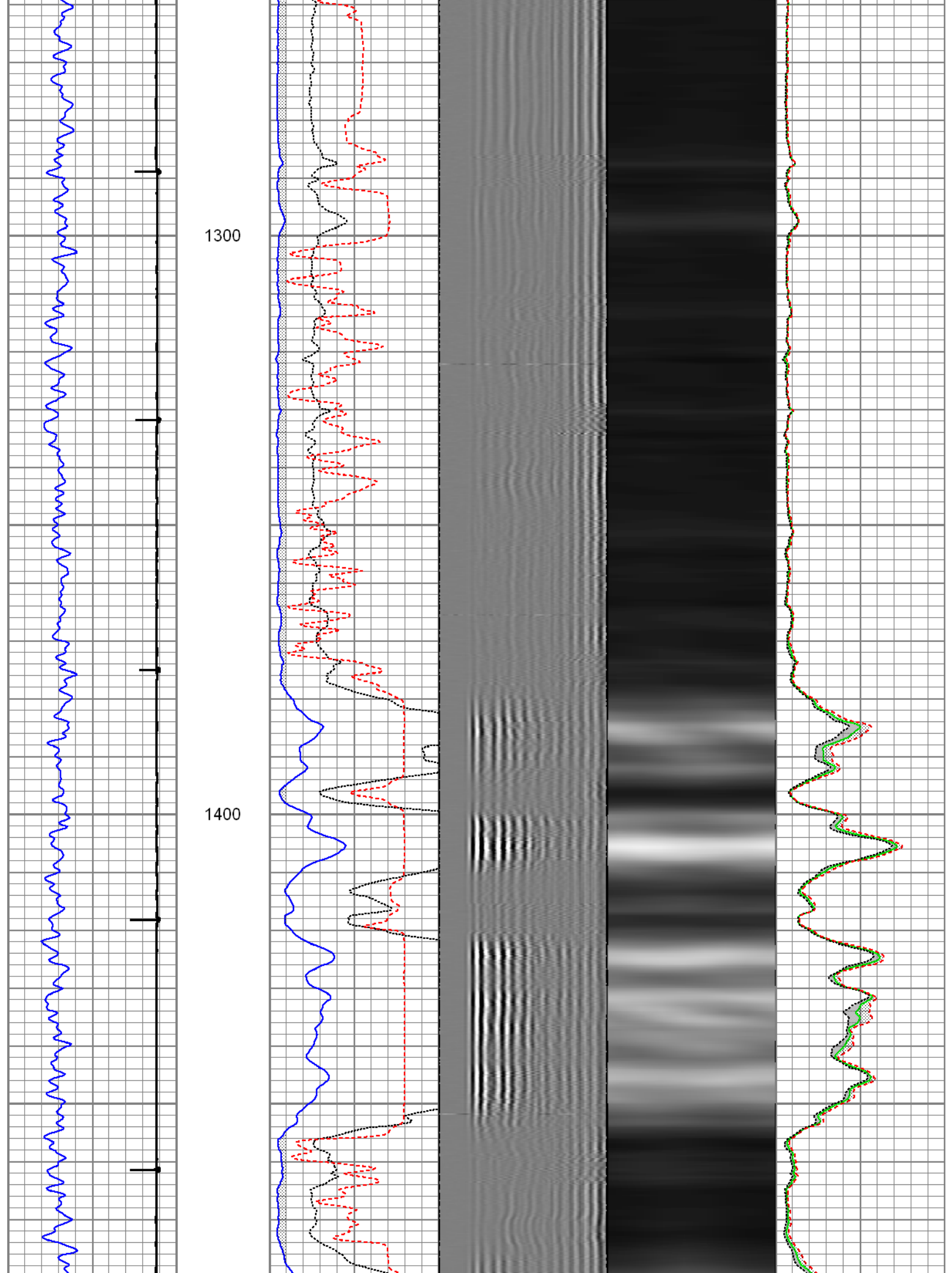


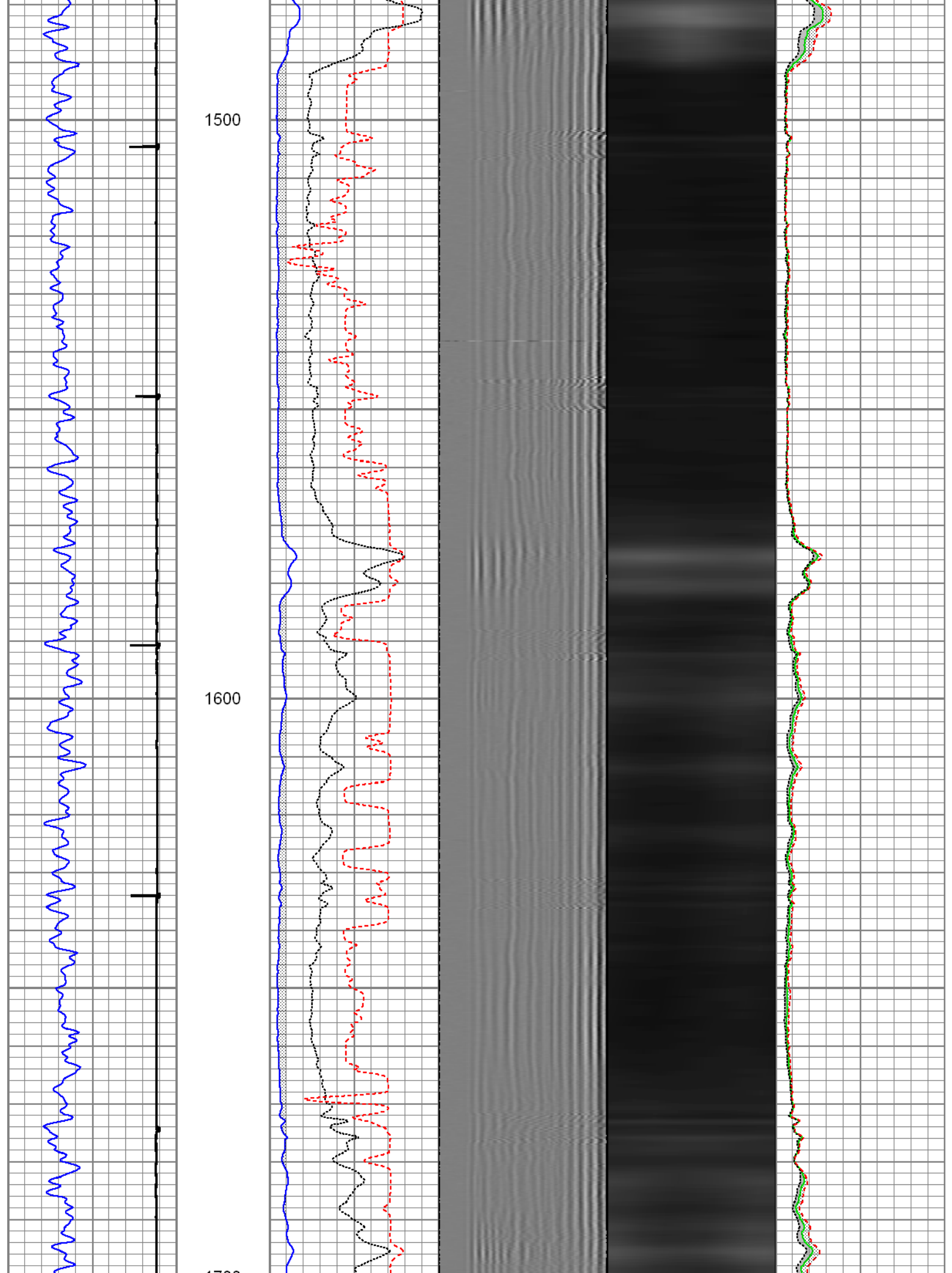


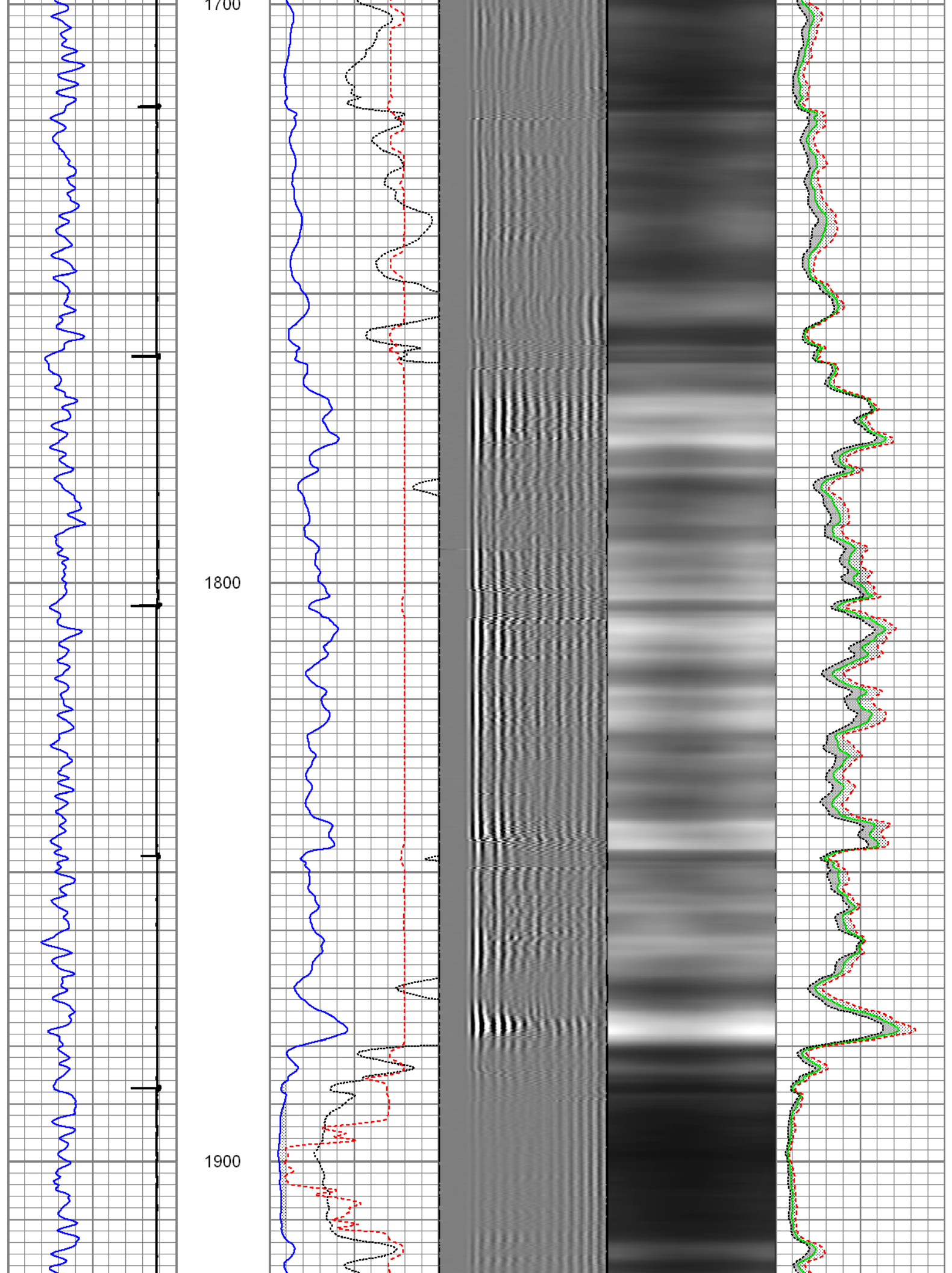






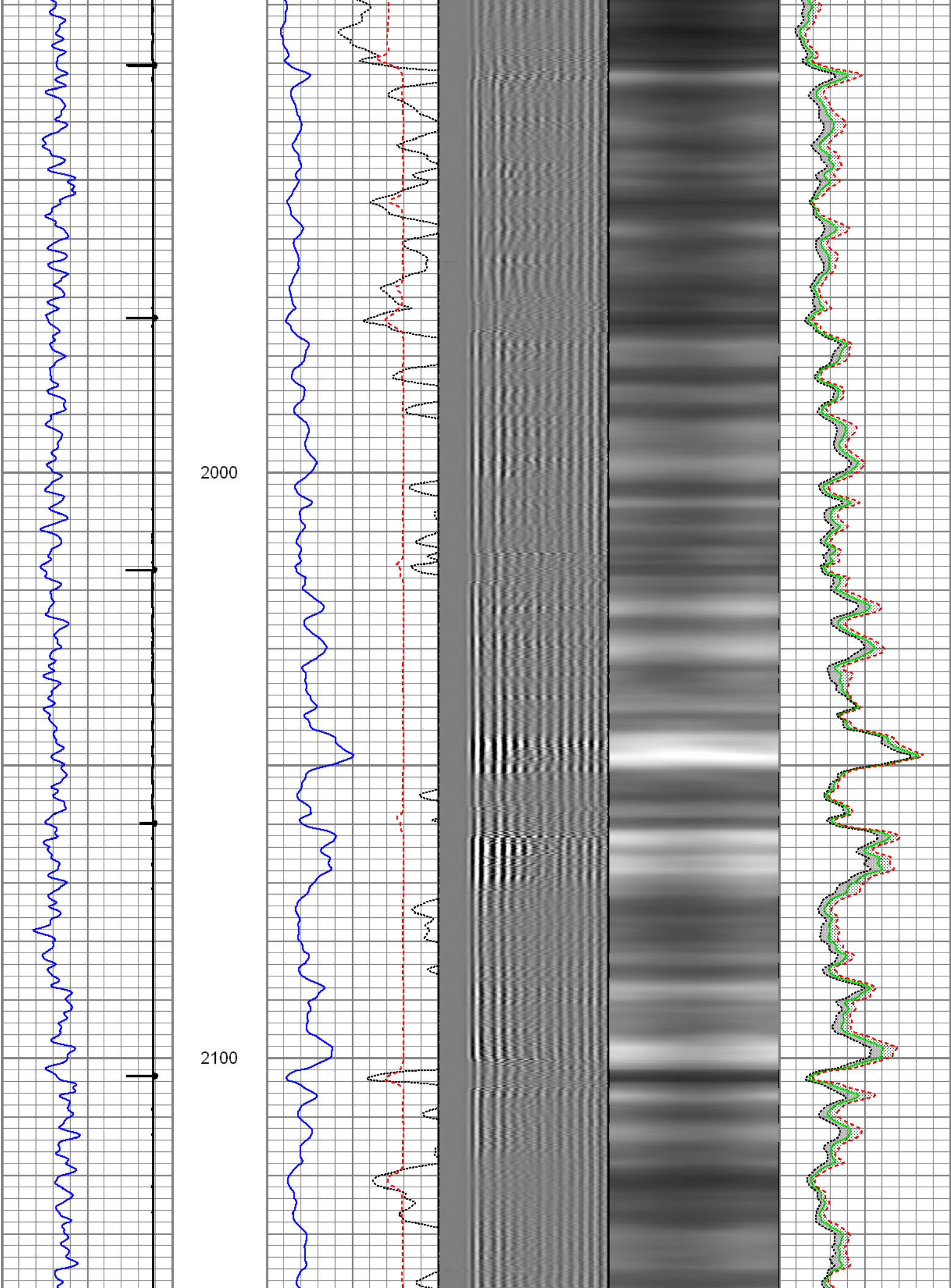


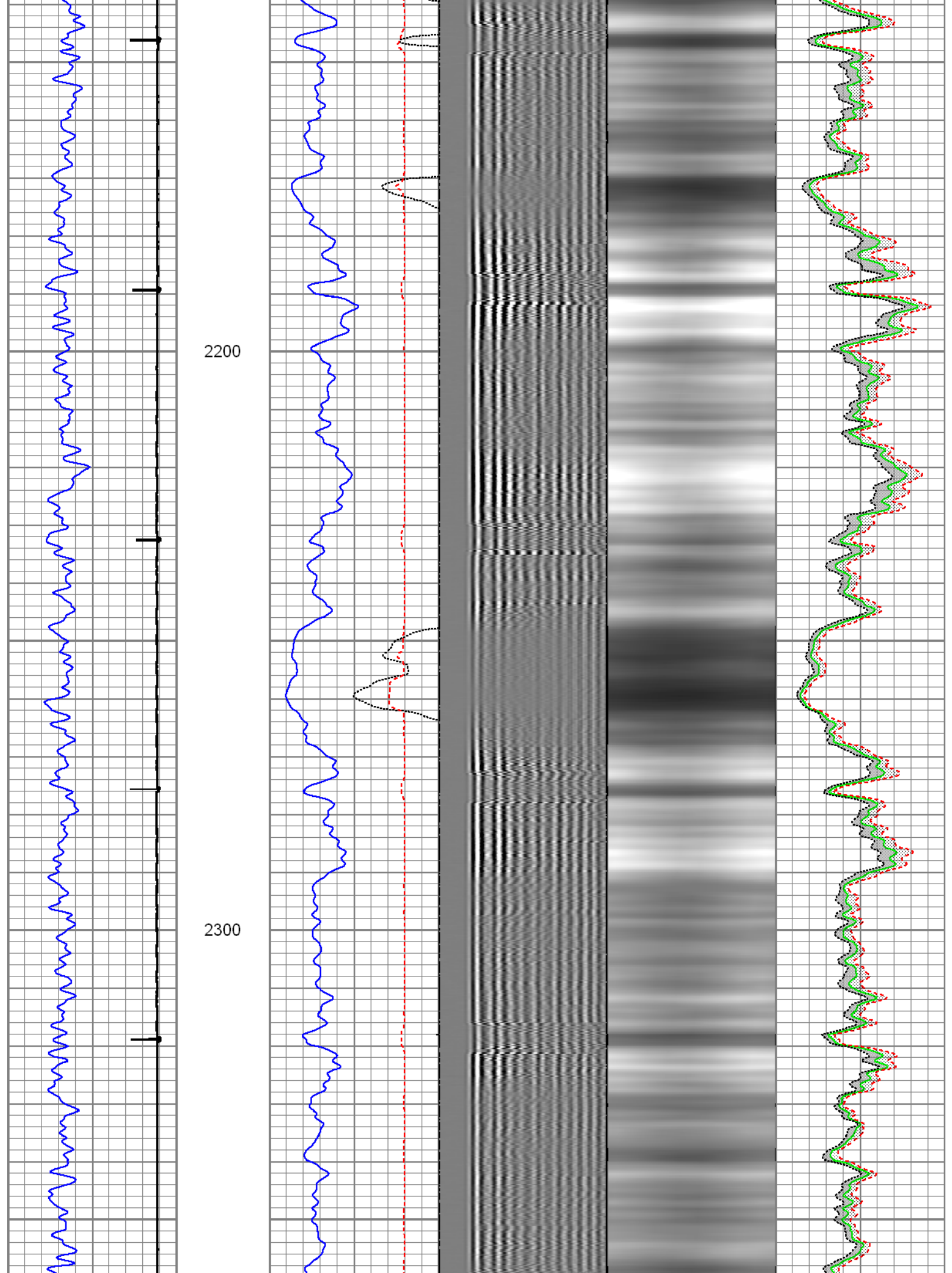




2000

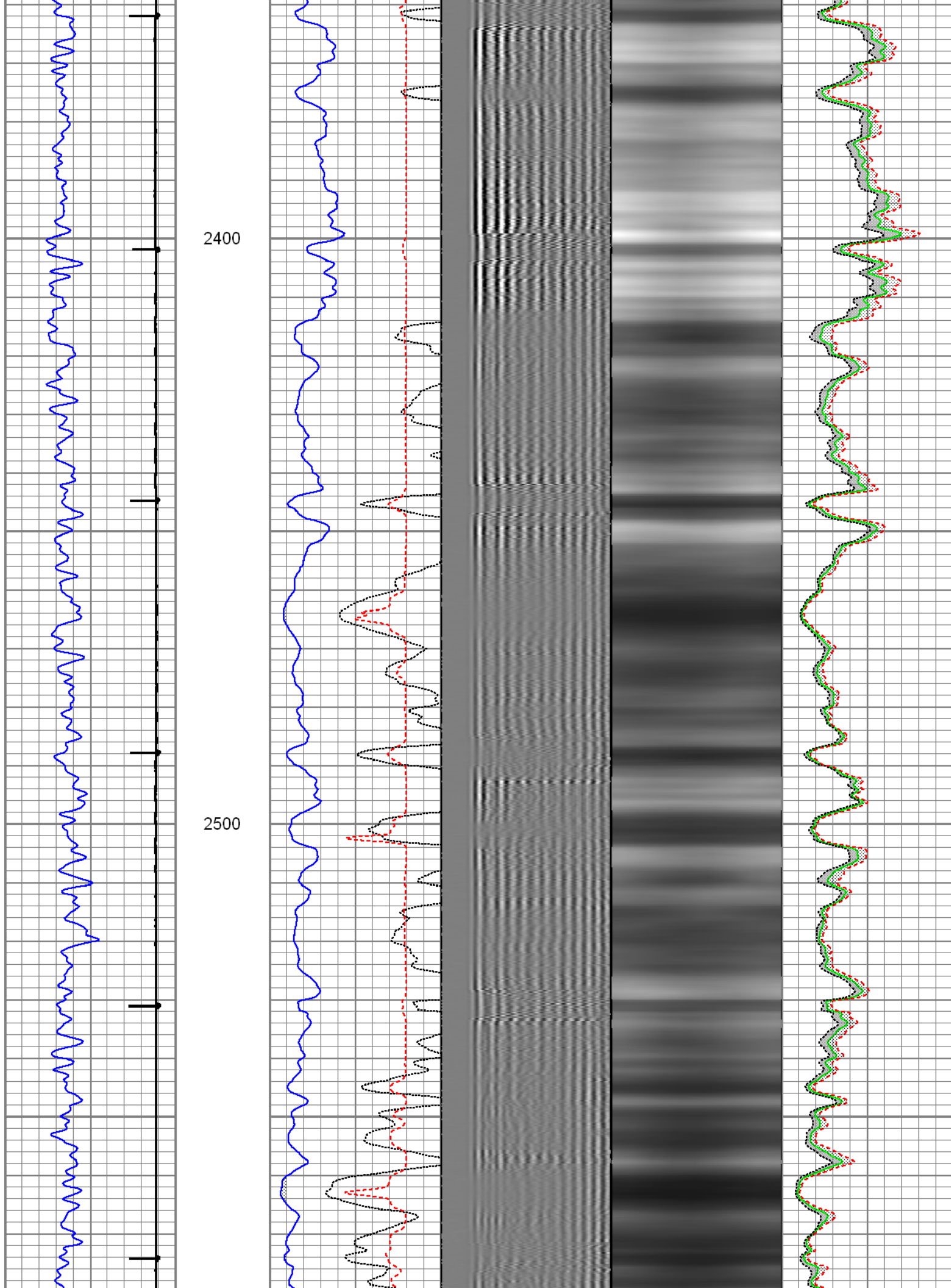
2100





2400

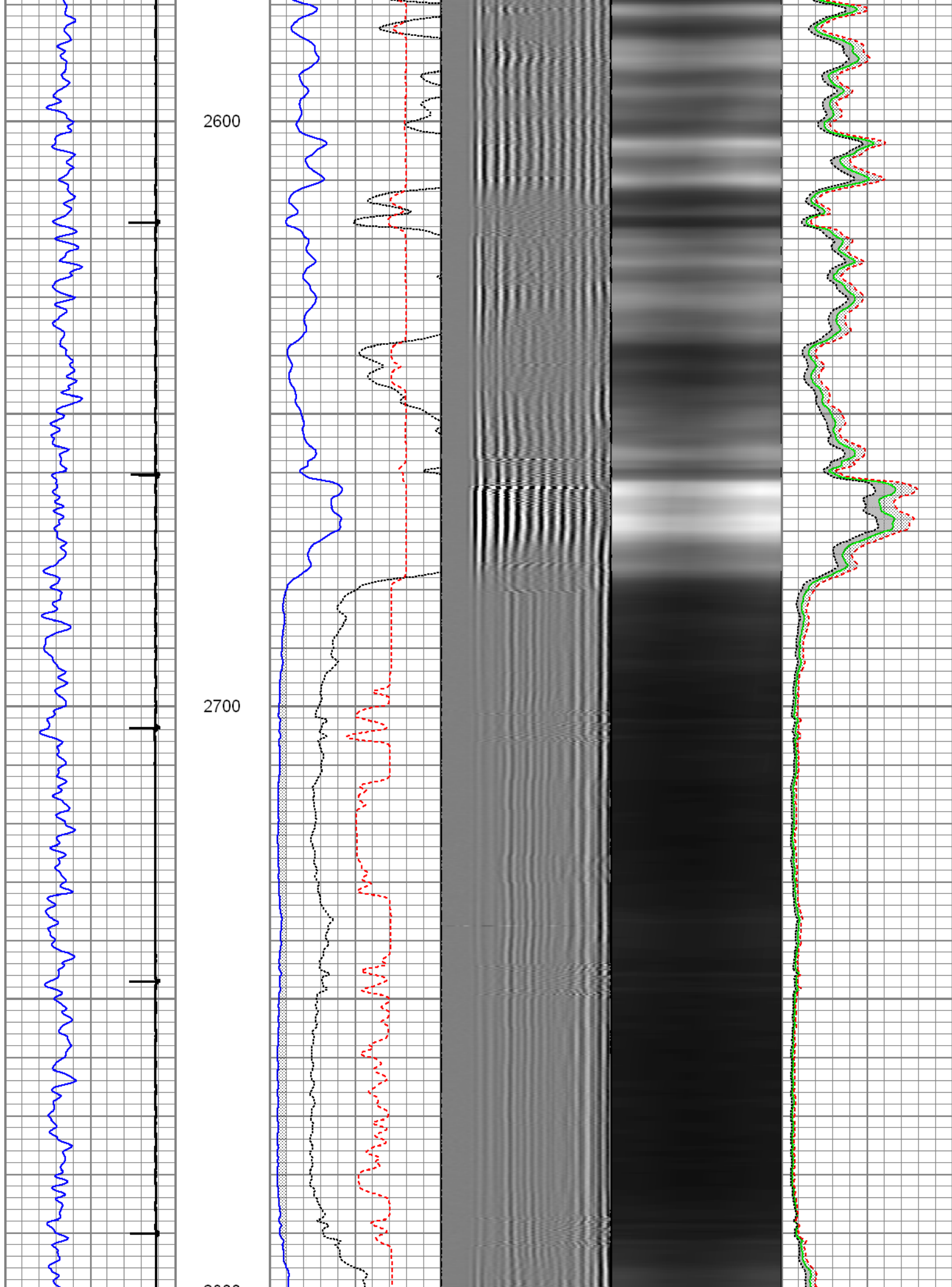
2500

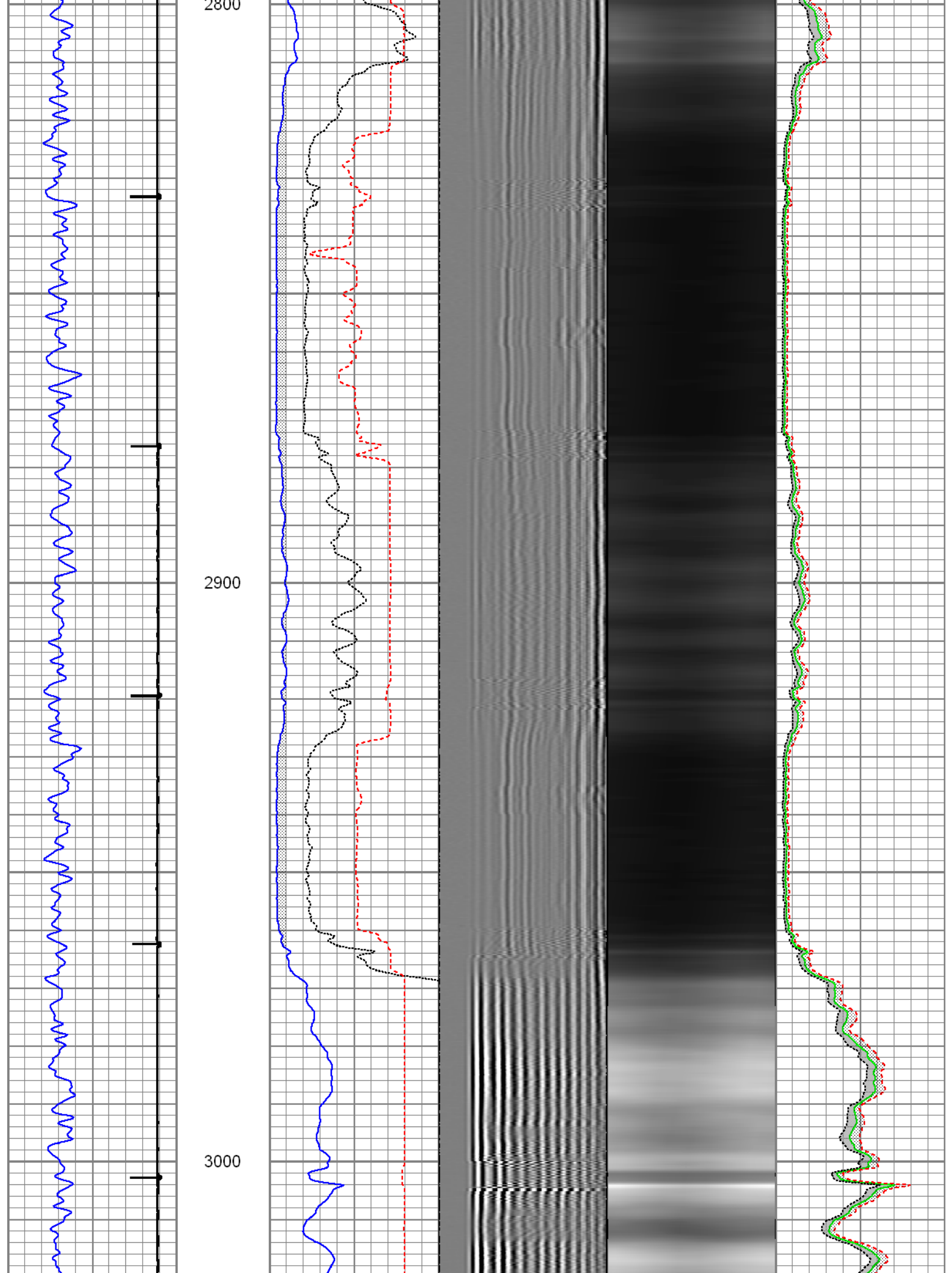


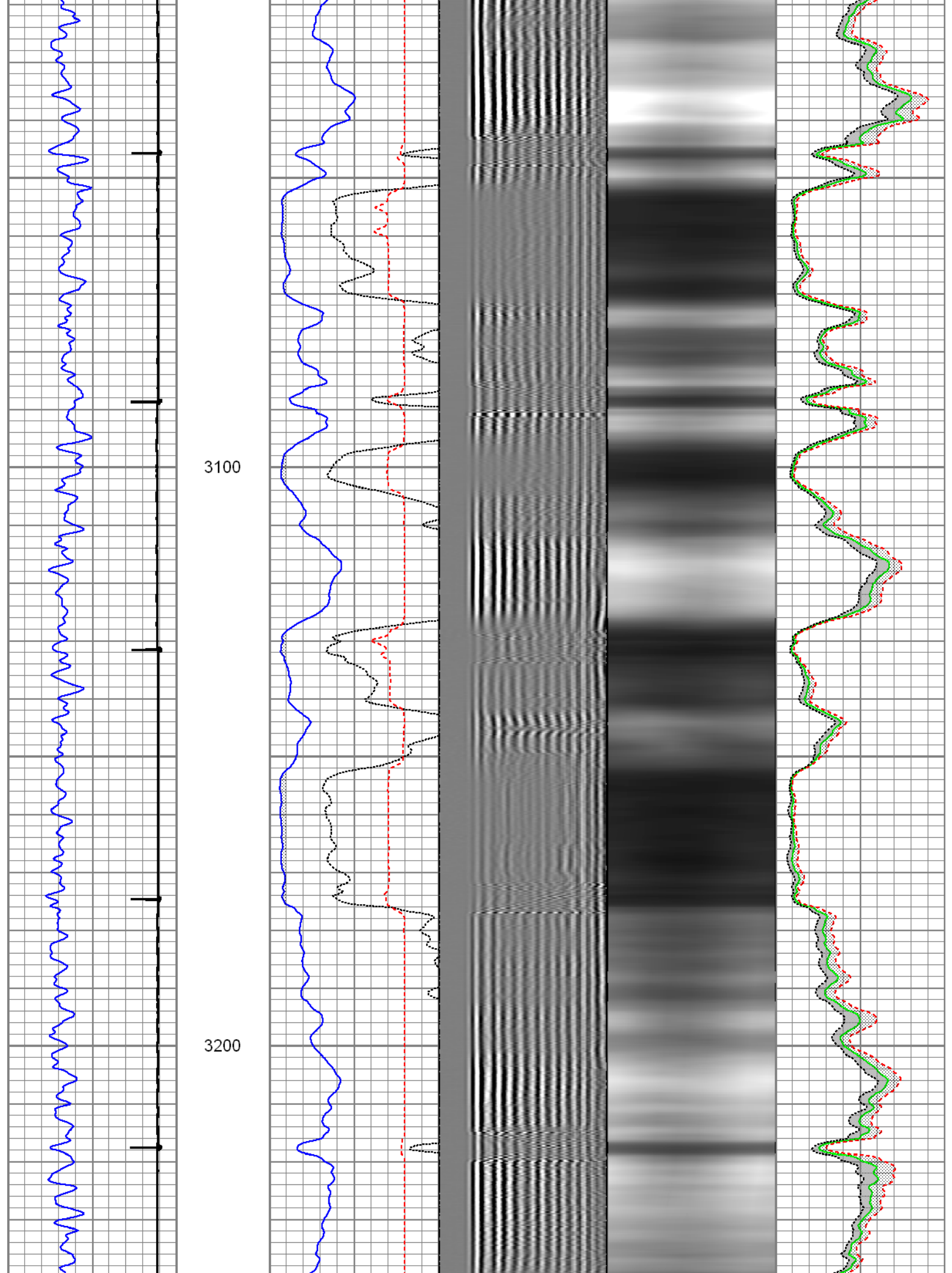
2600

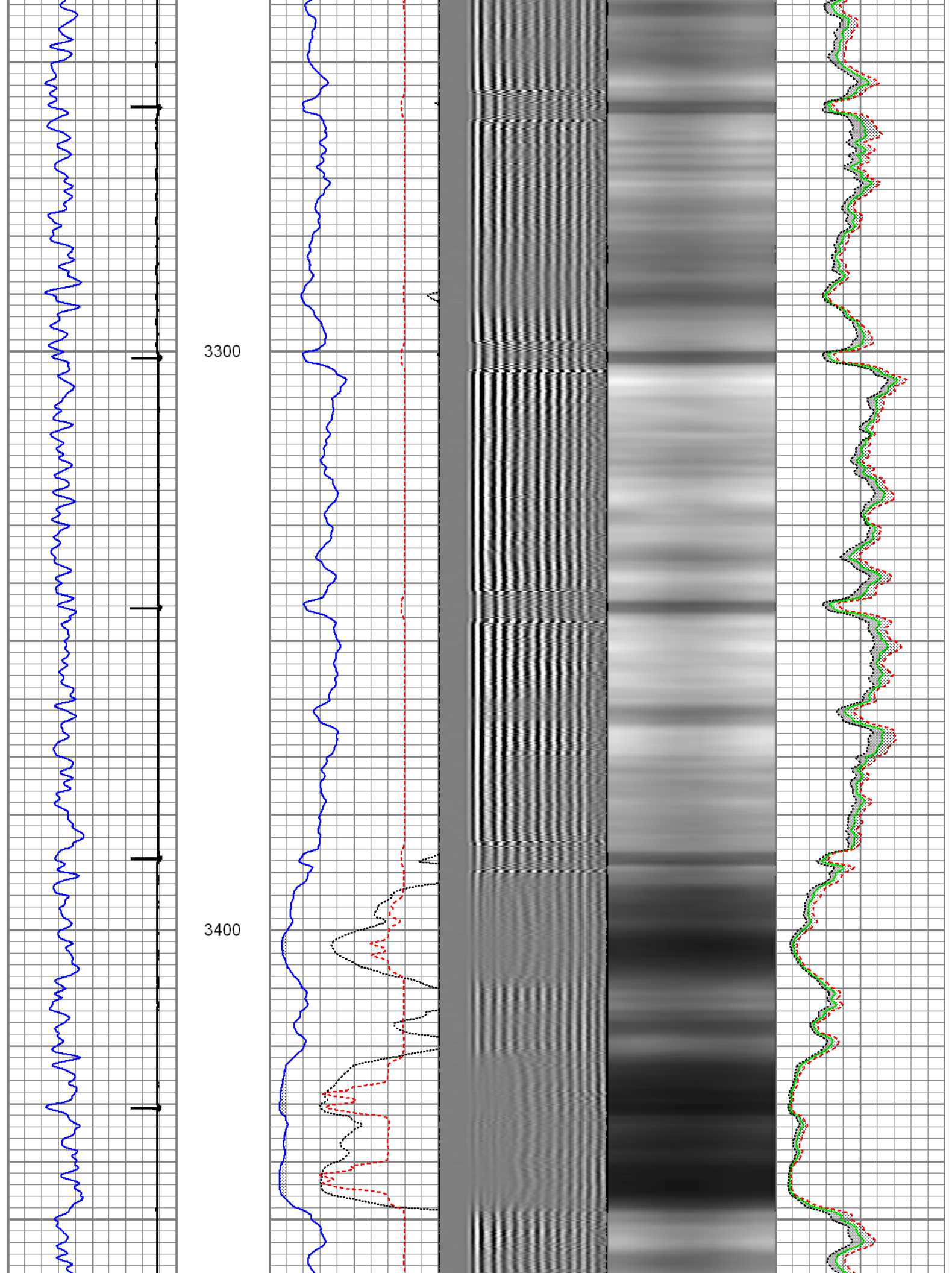
2700

2800



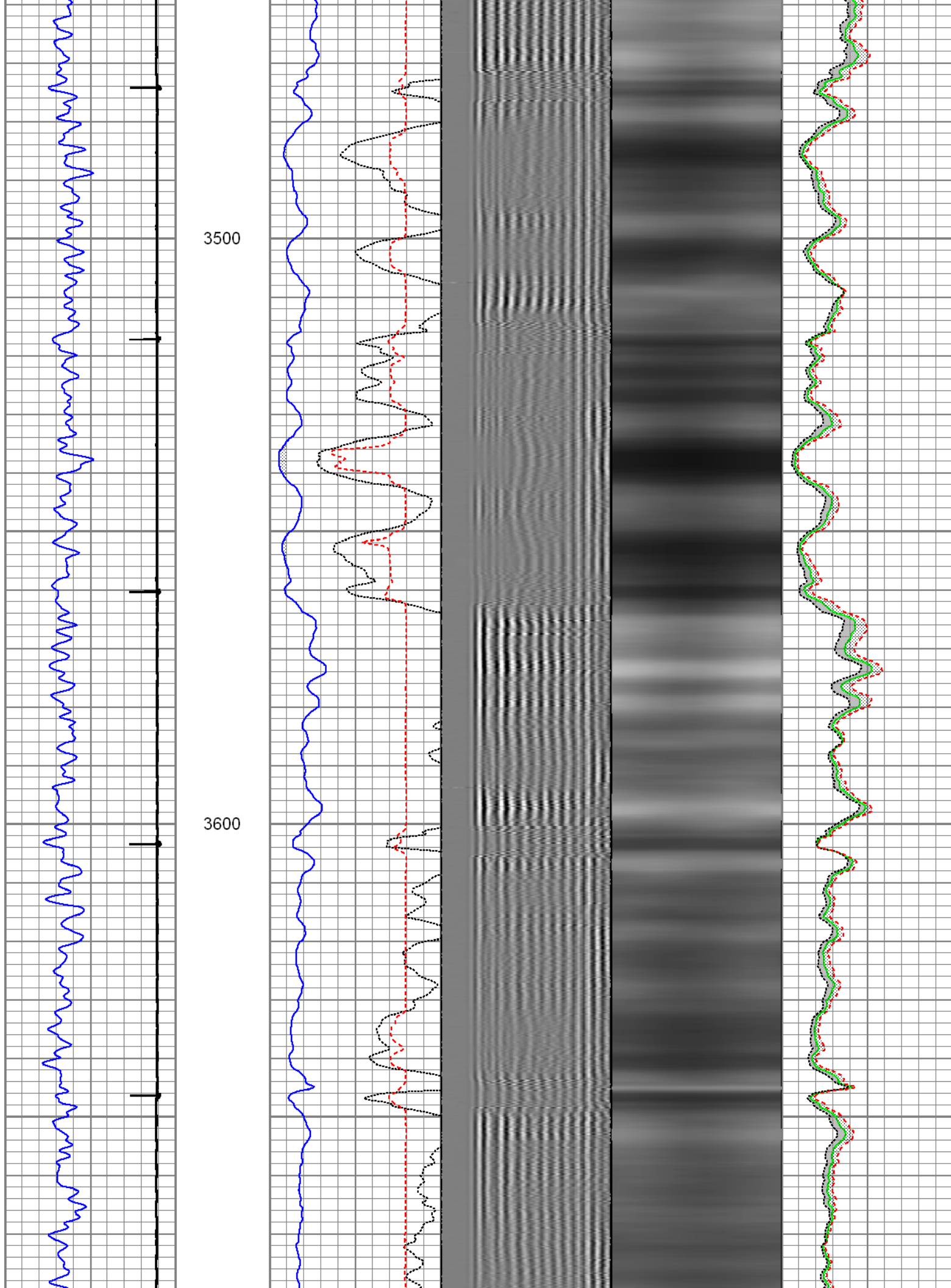






3500

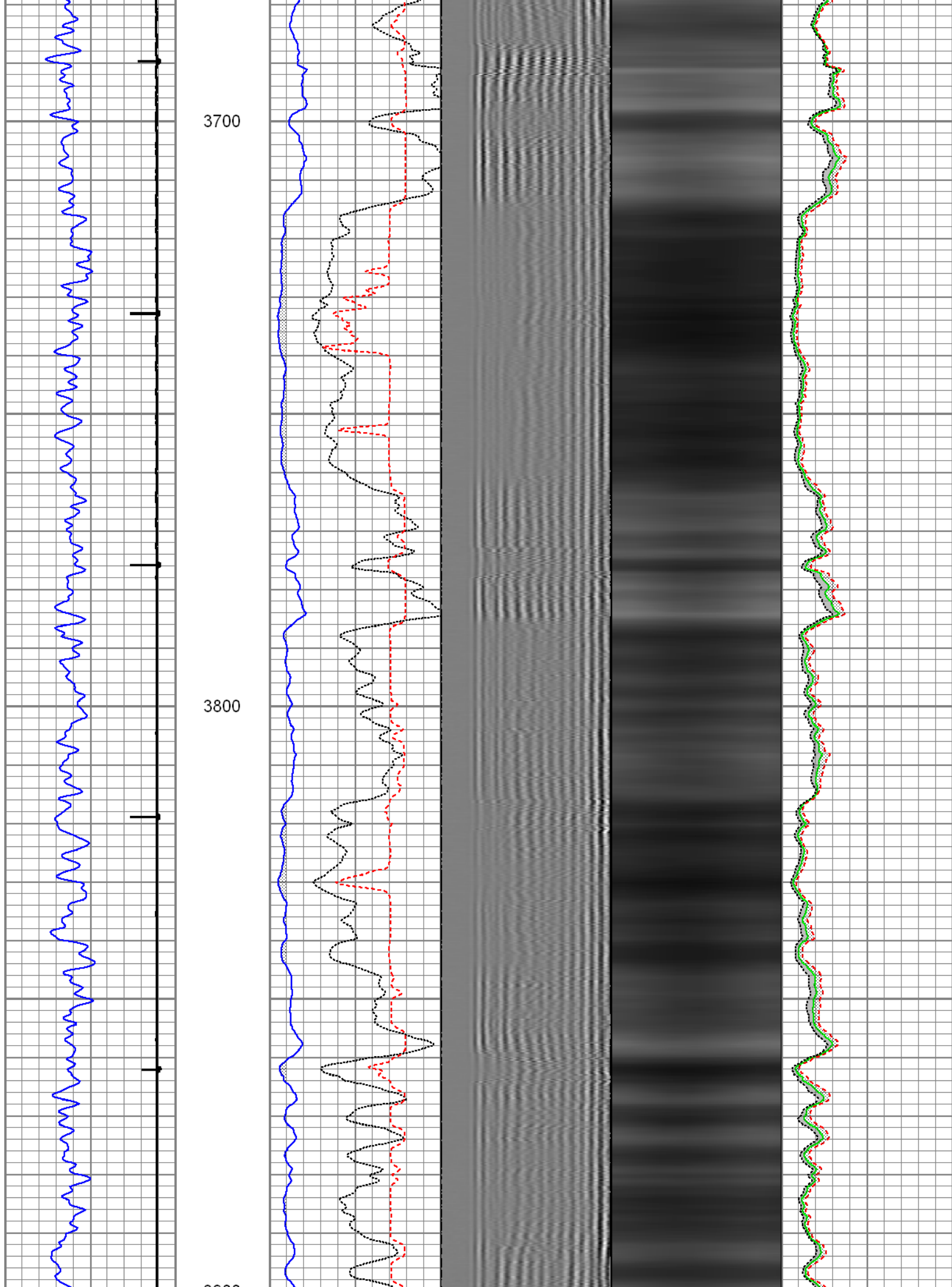
3600

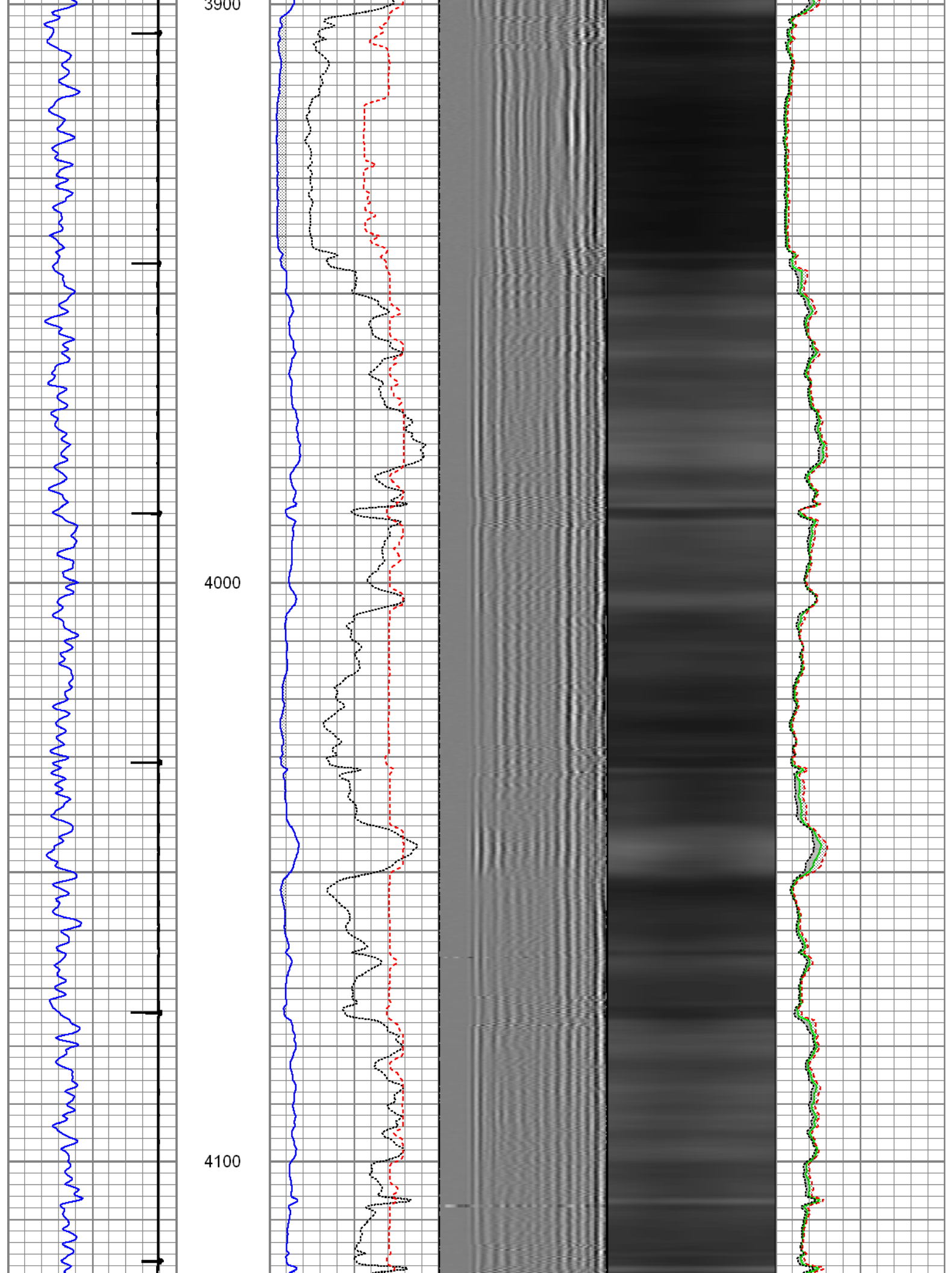


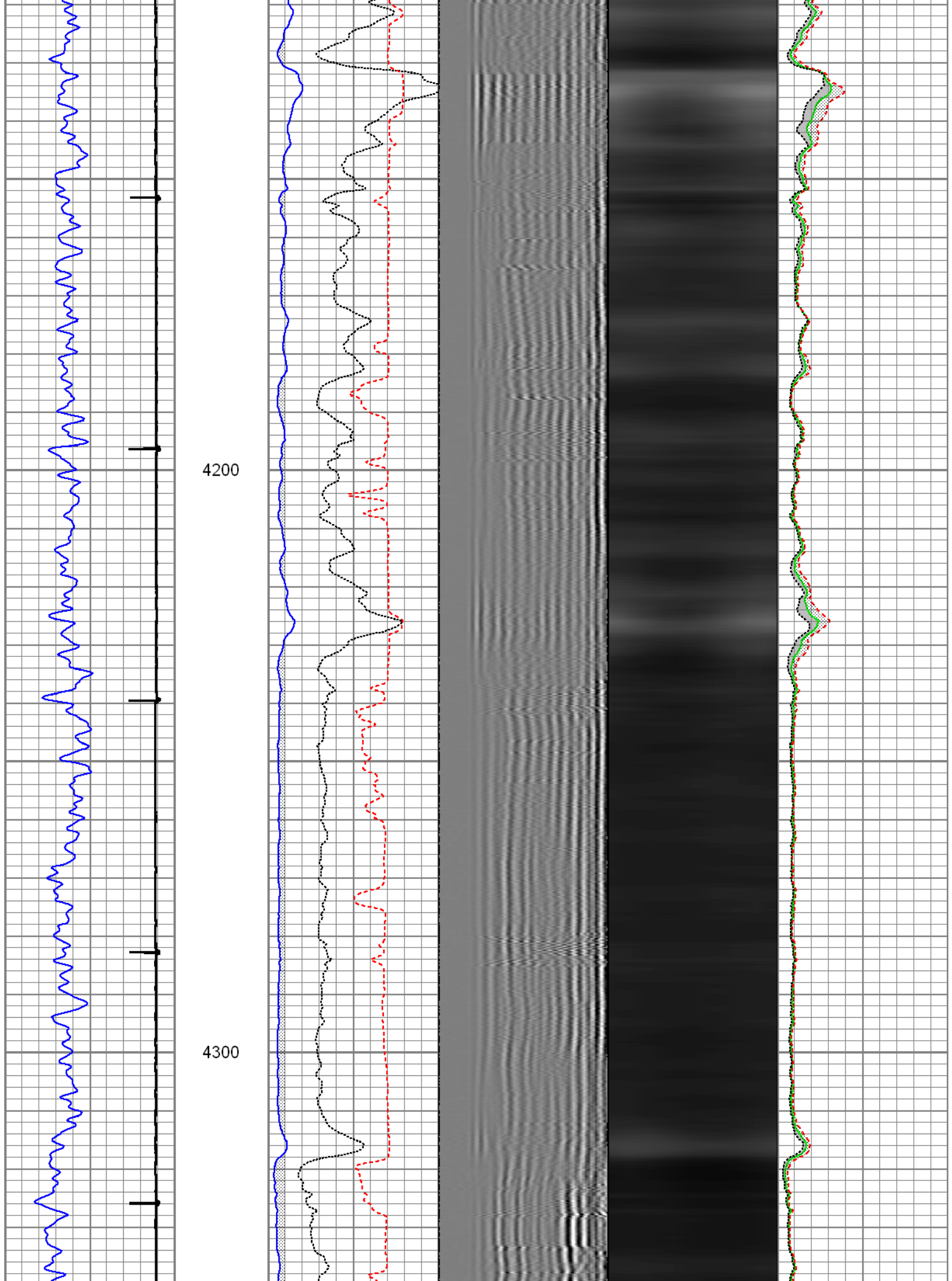
3700

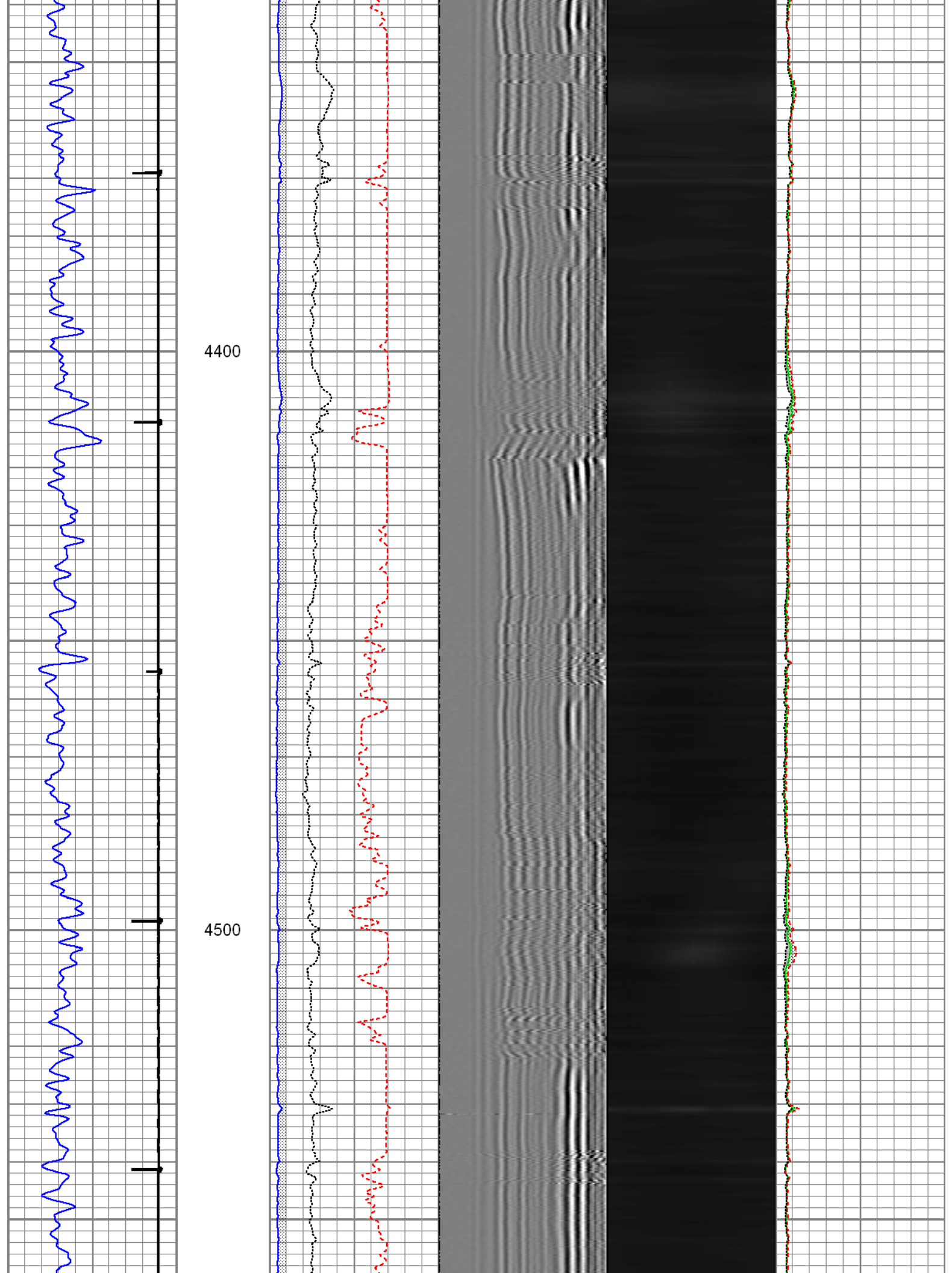
3800

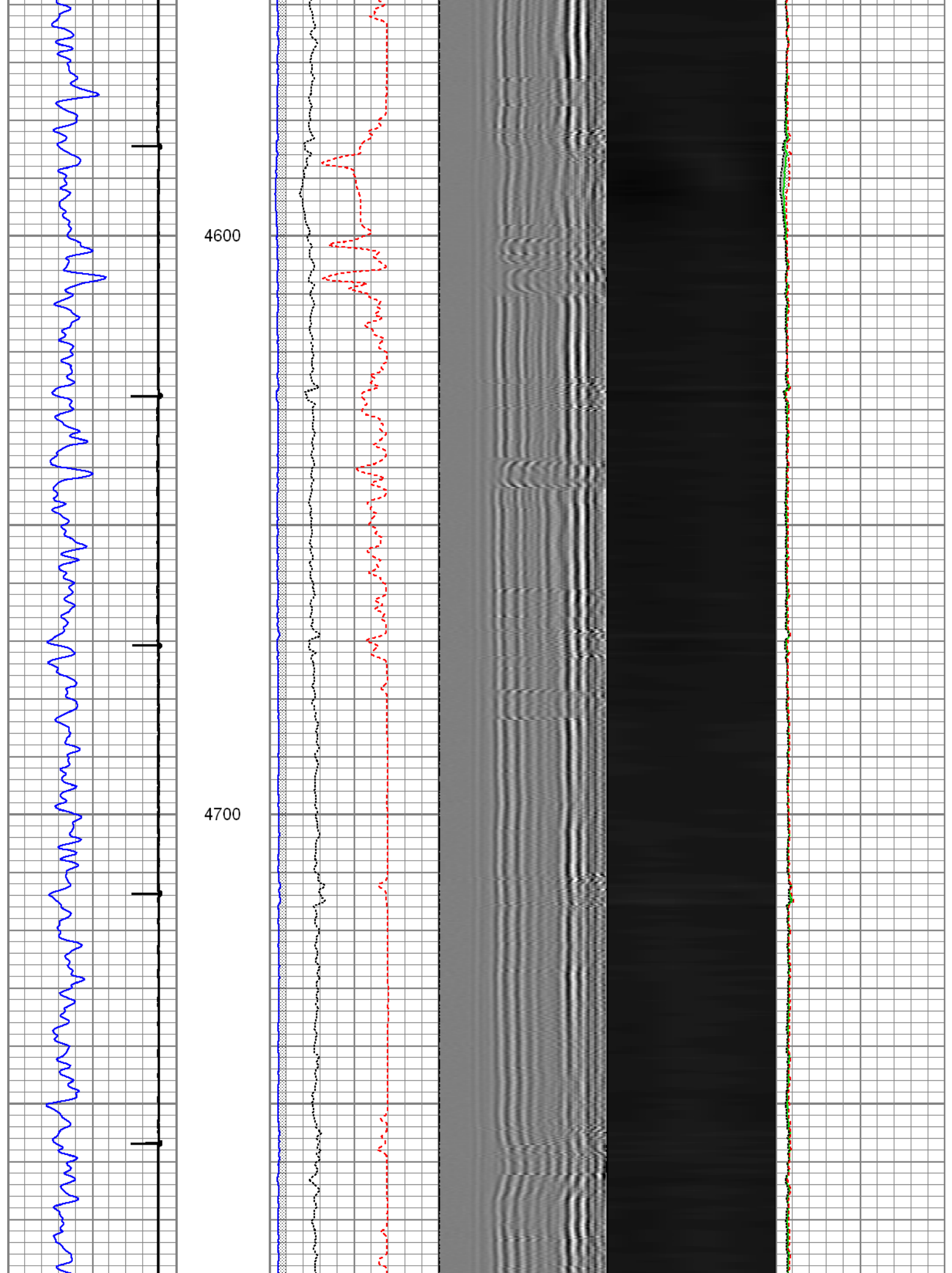
3900

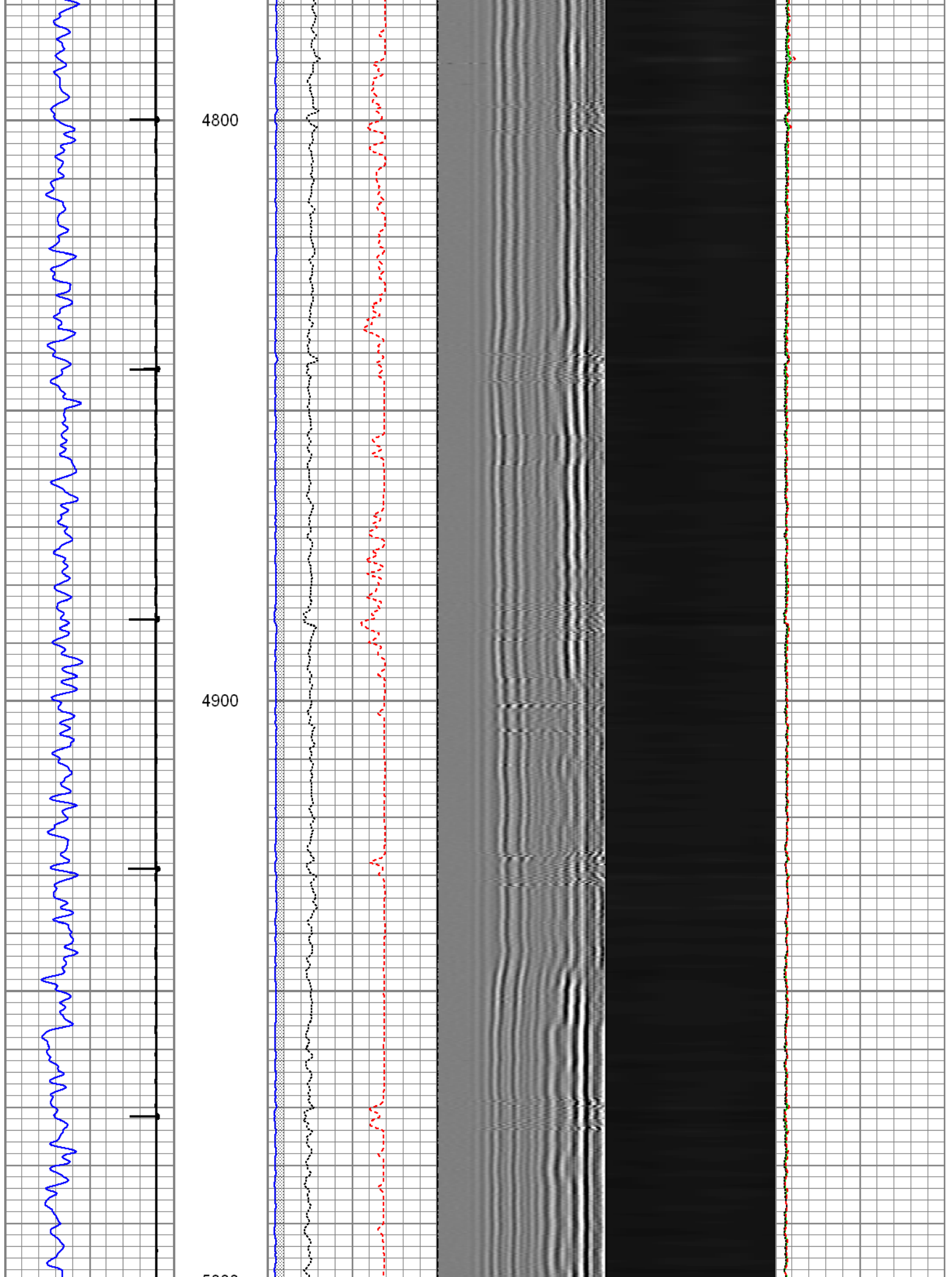








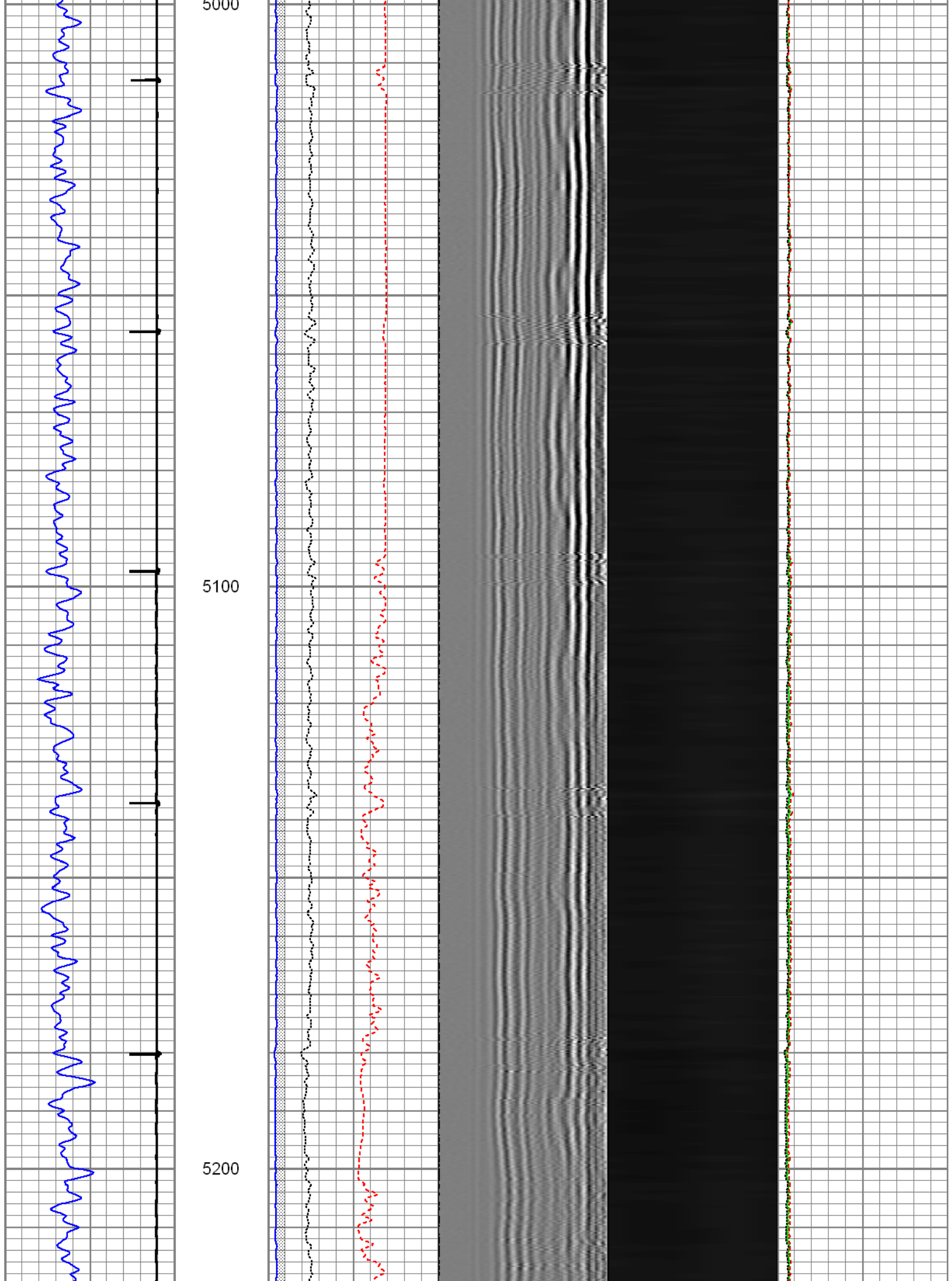




5000

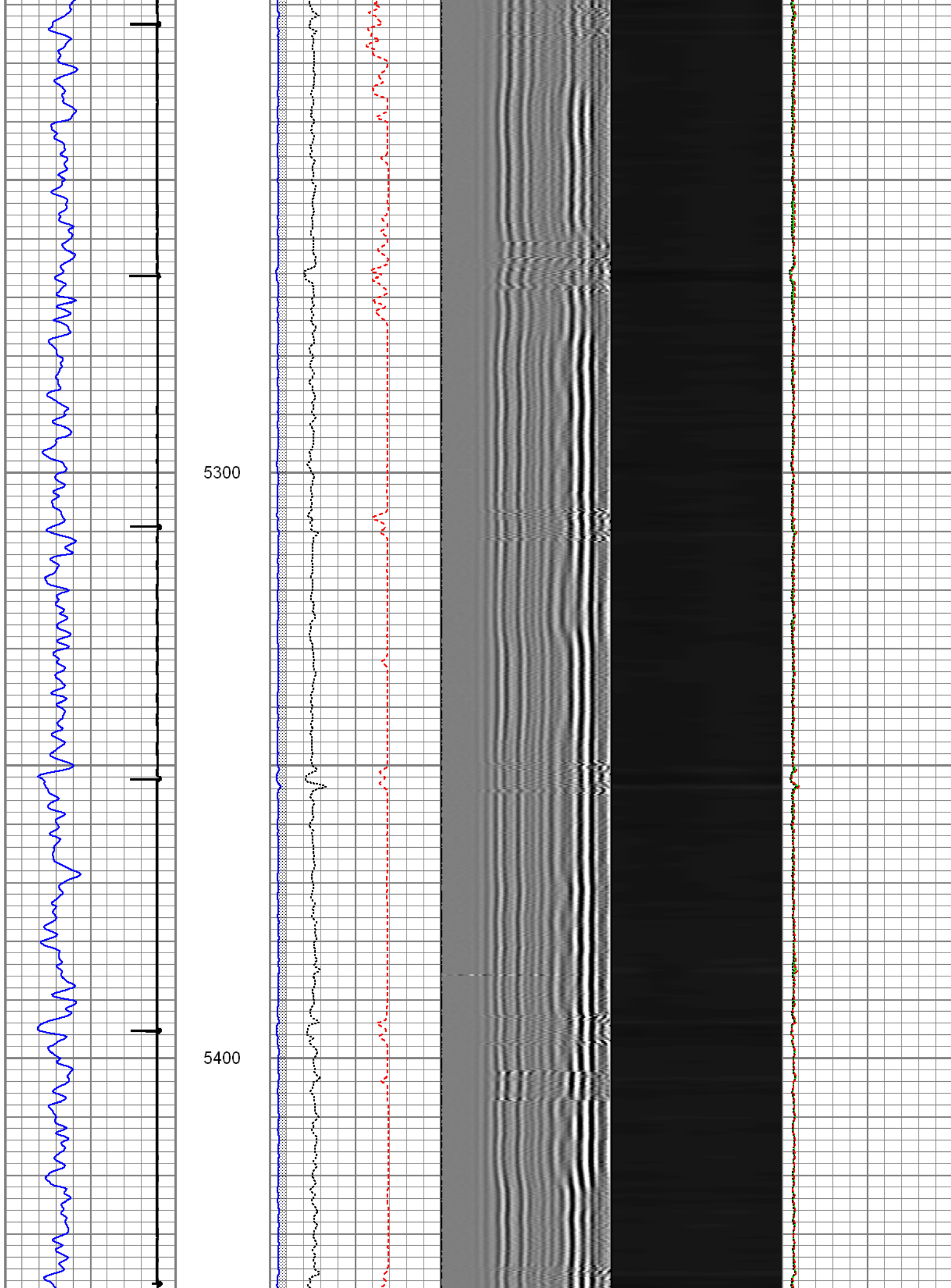
5100

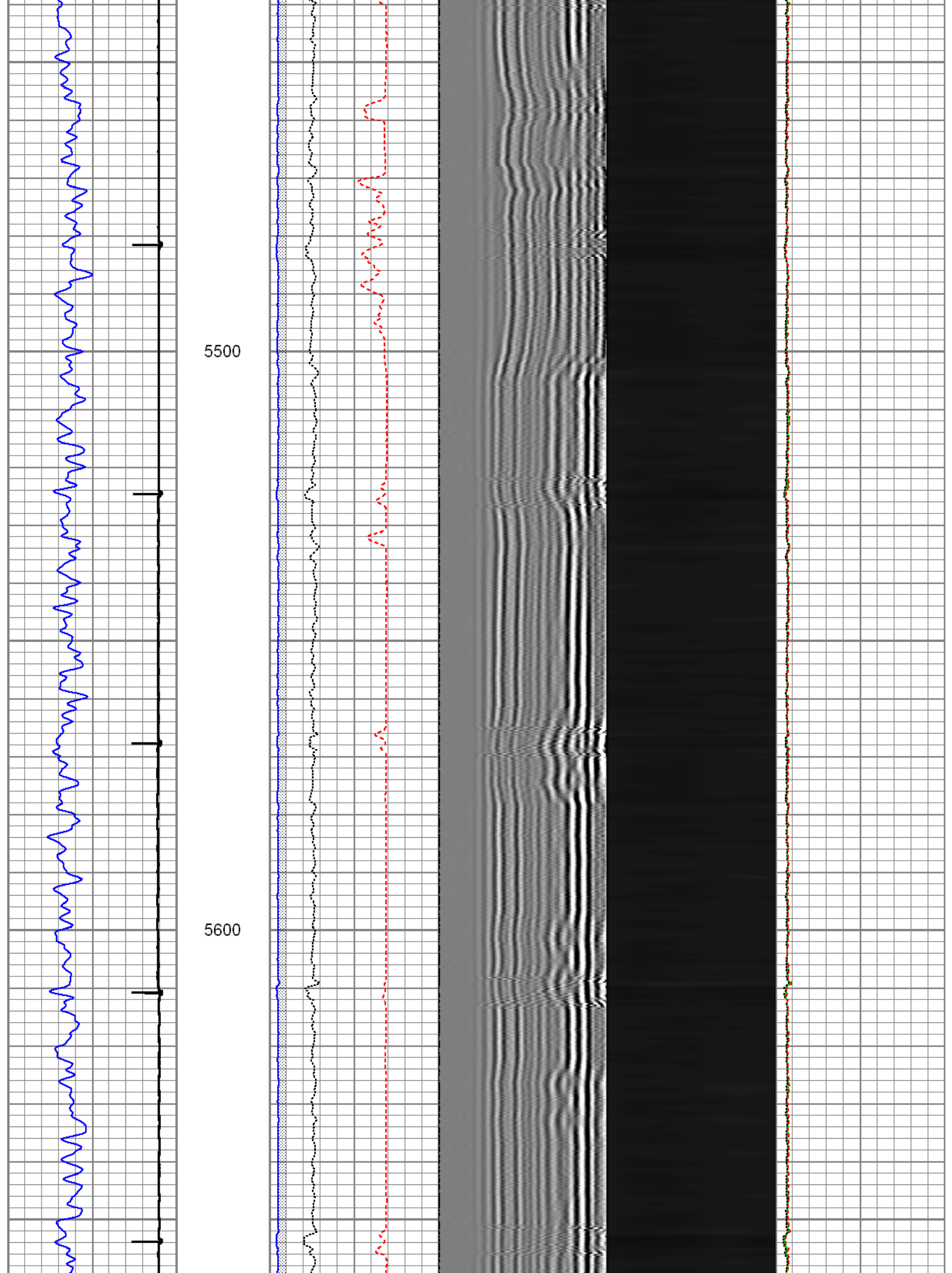
5200

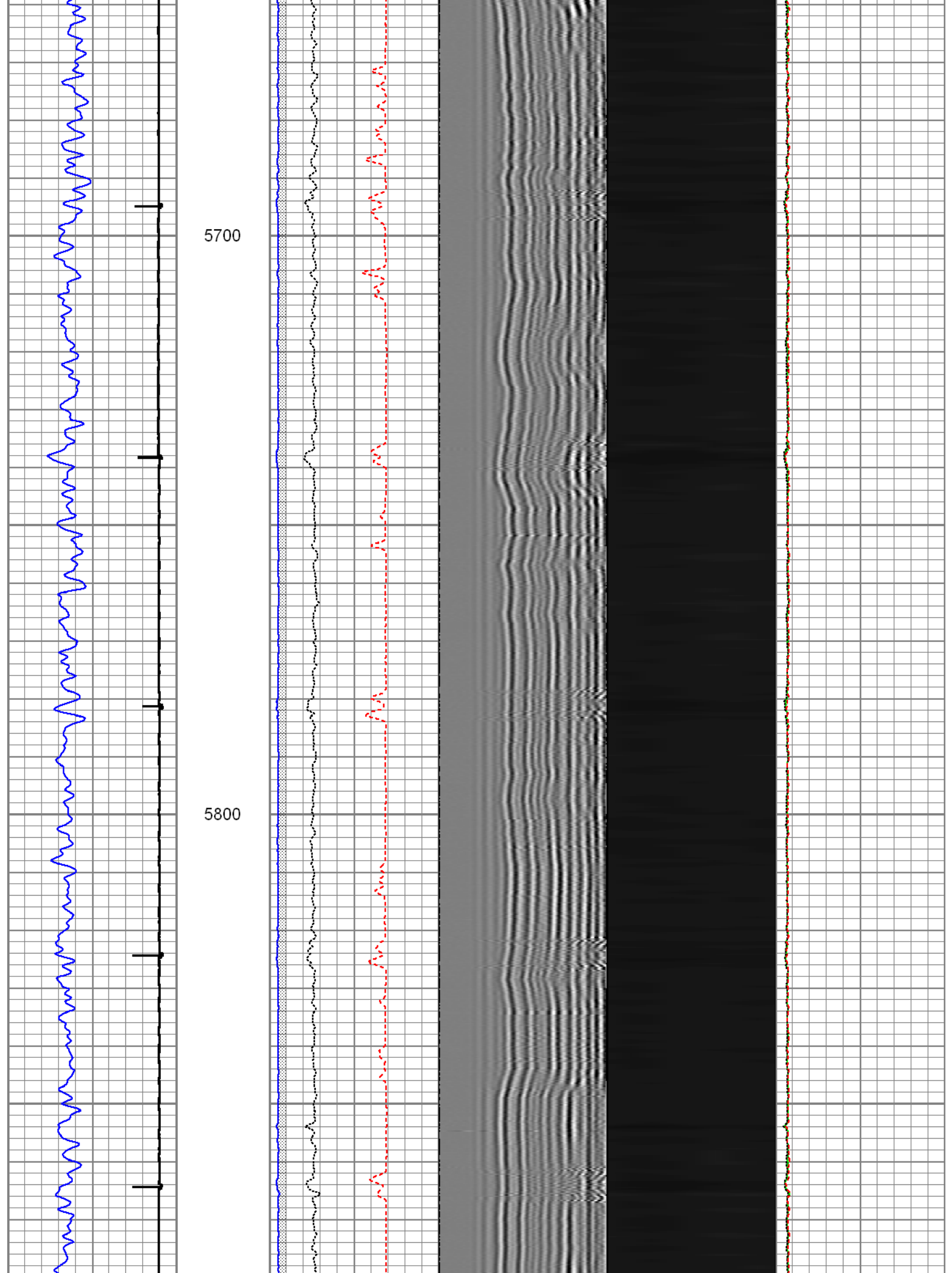


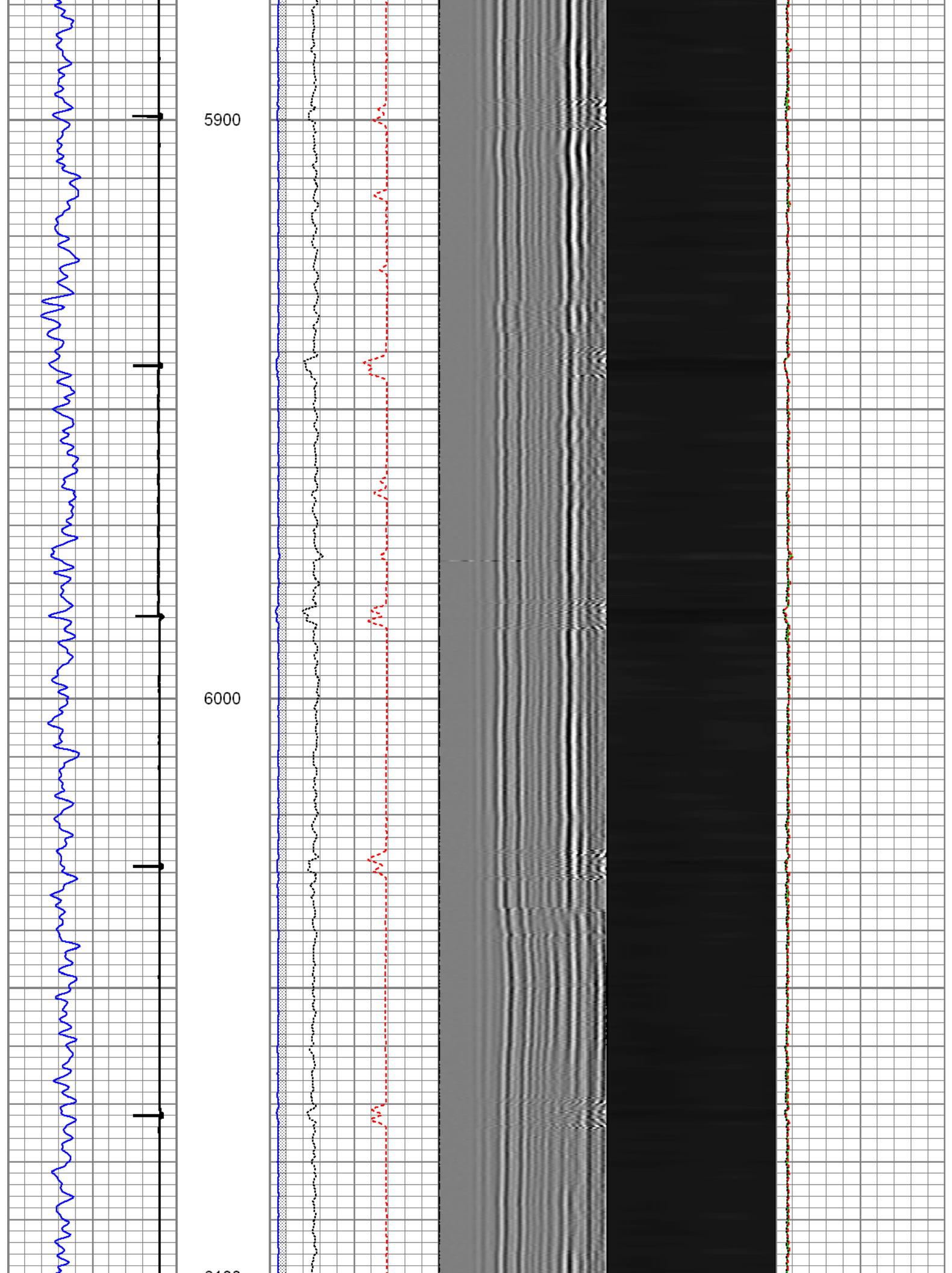
5300

5400





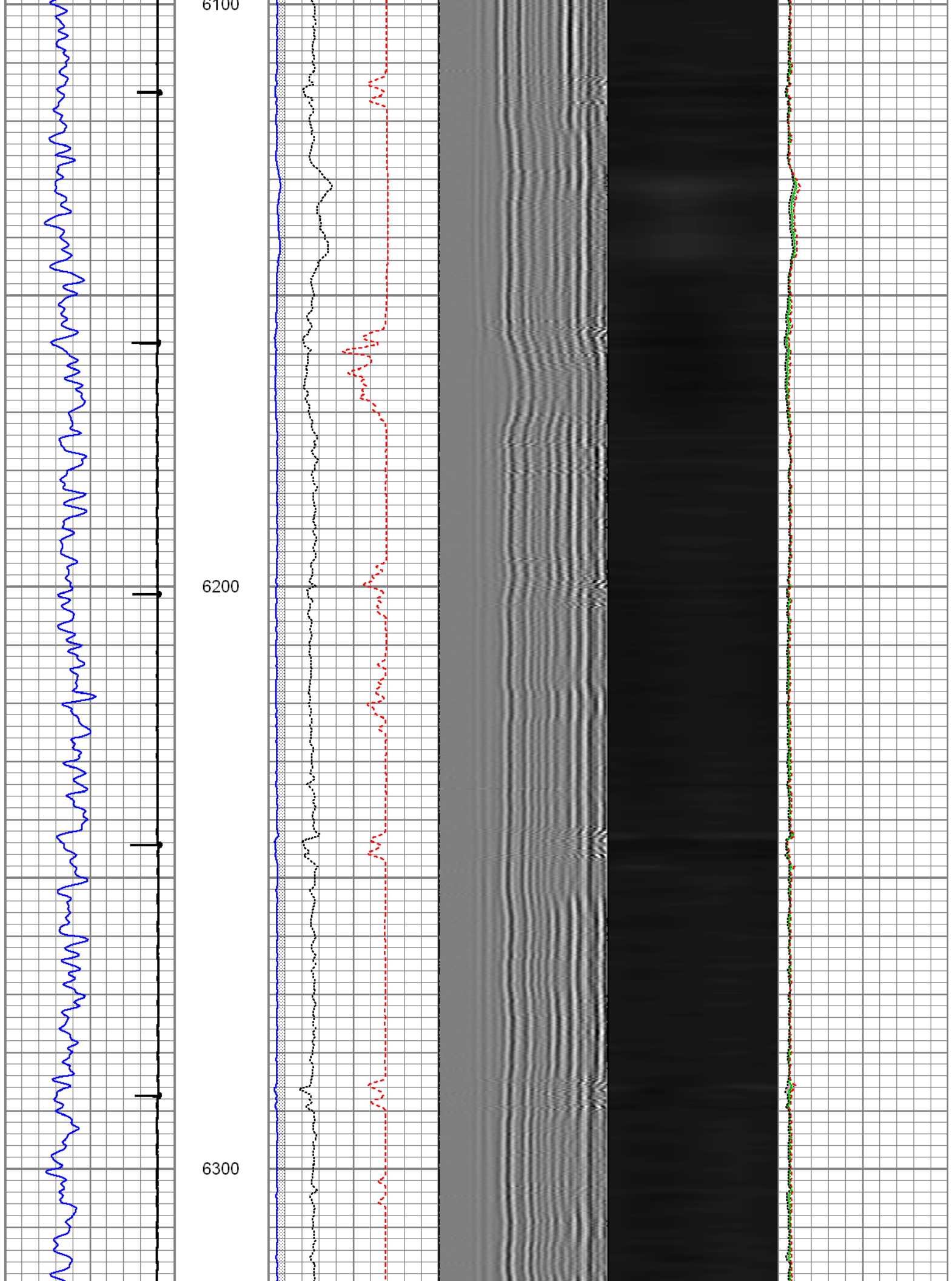




6100

6200

6300



6400

6500

CCL



GR



3' Amp



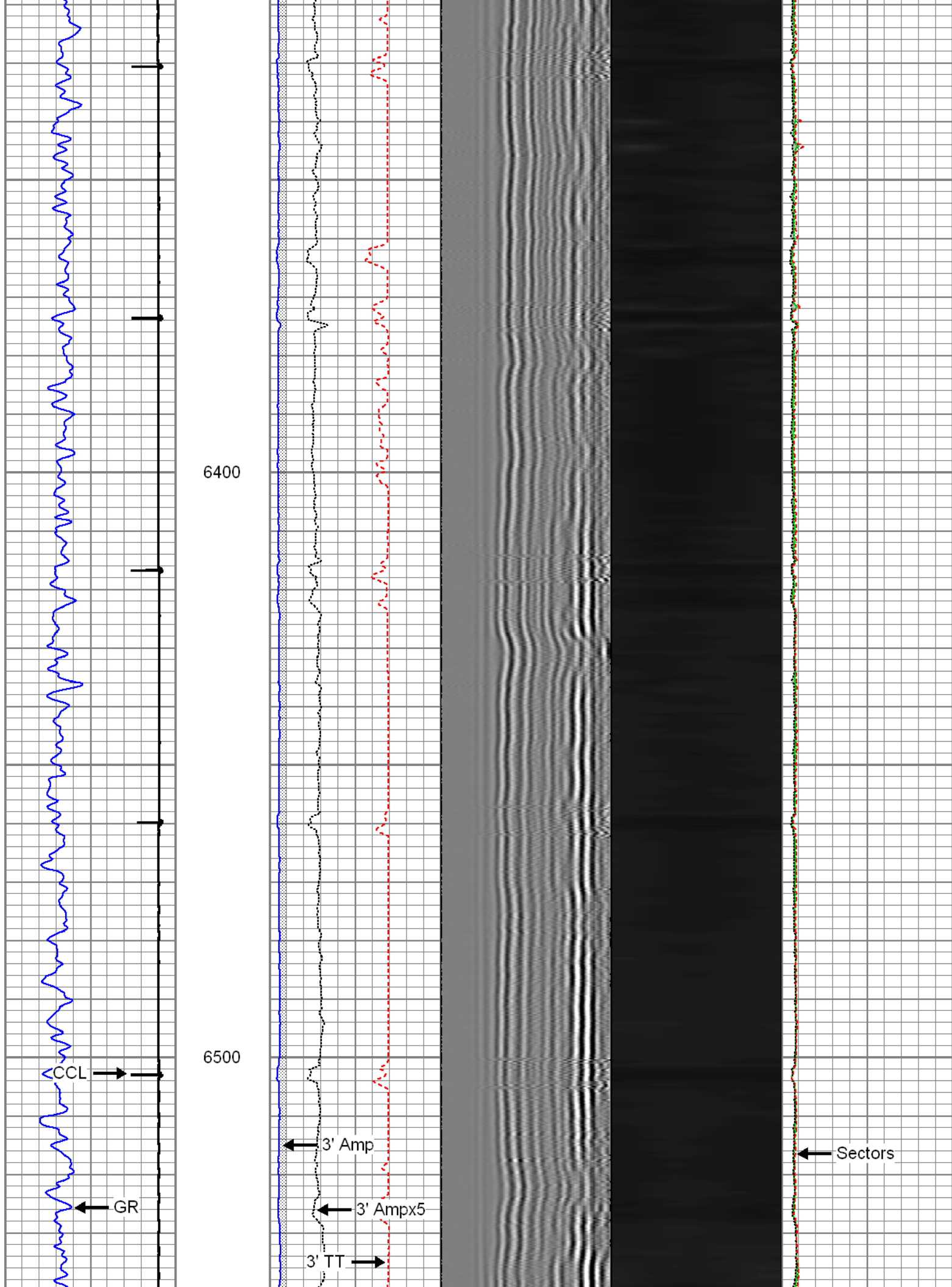
3' Ampx5

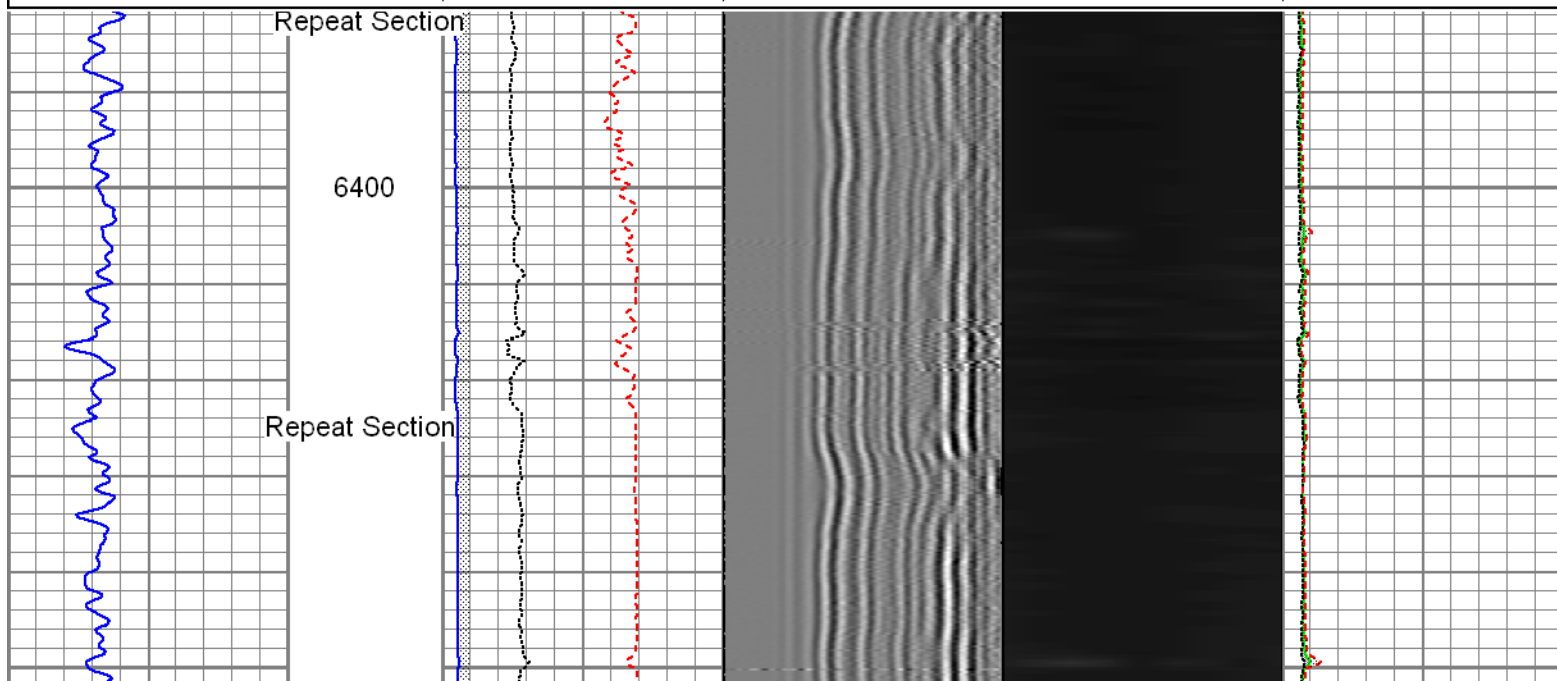
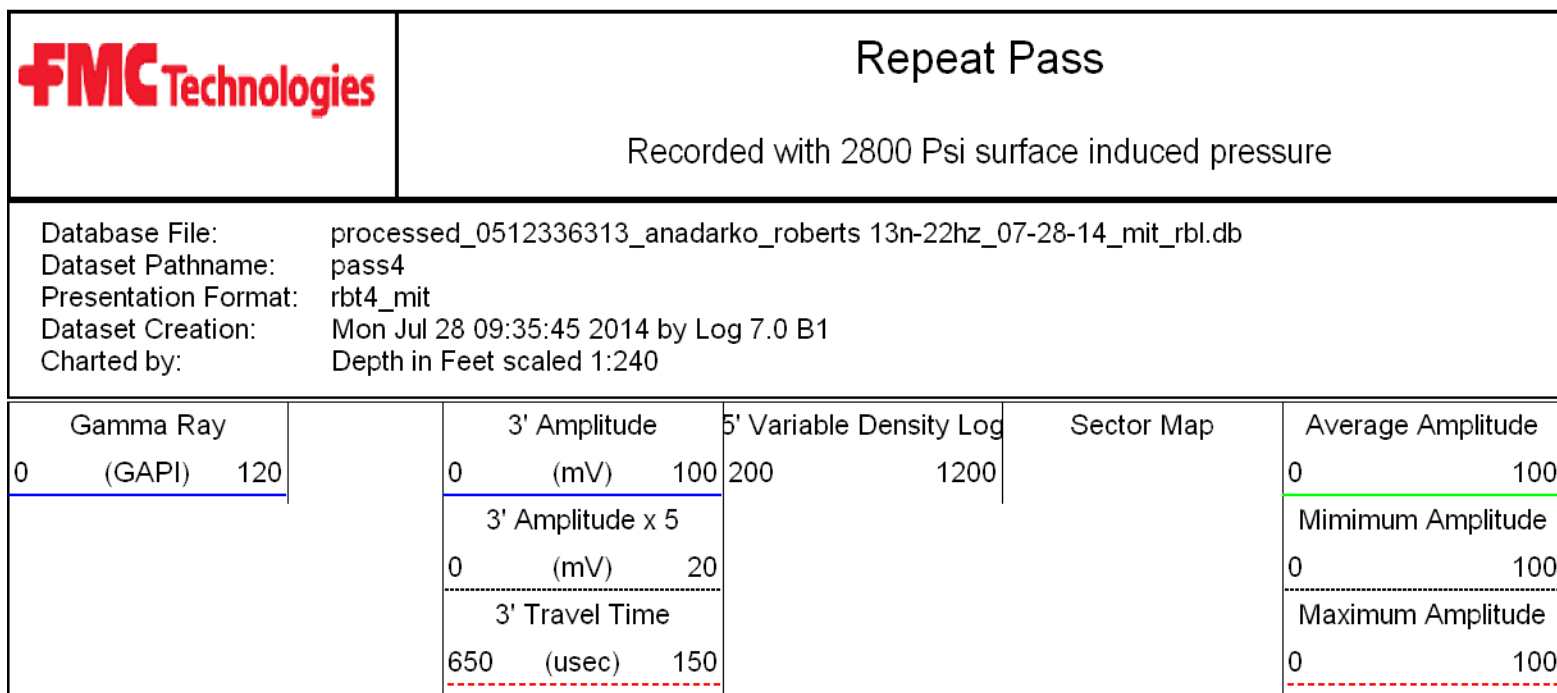
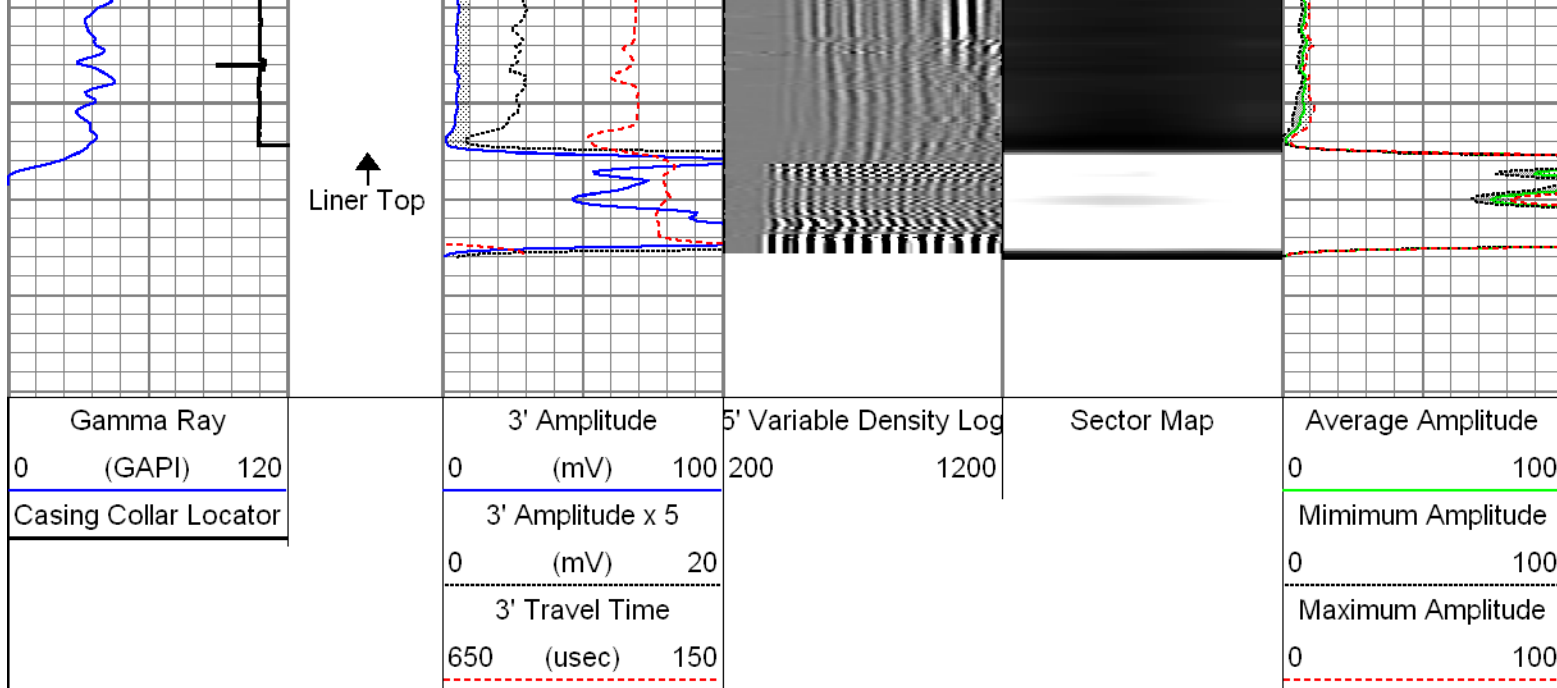


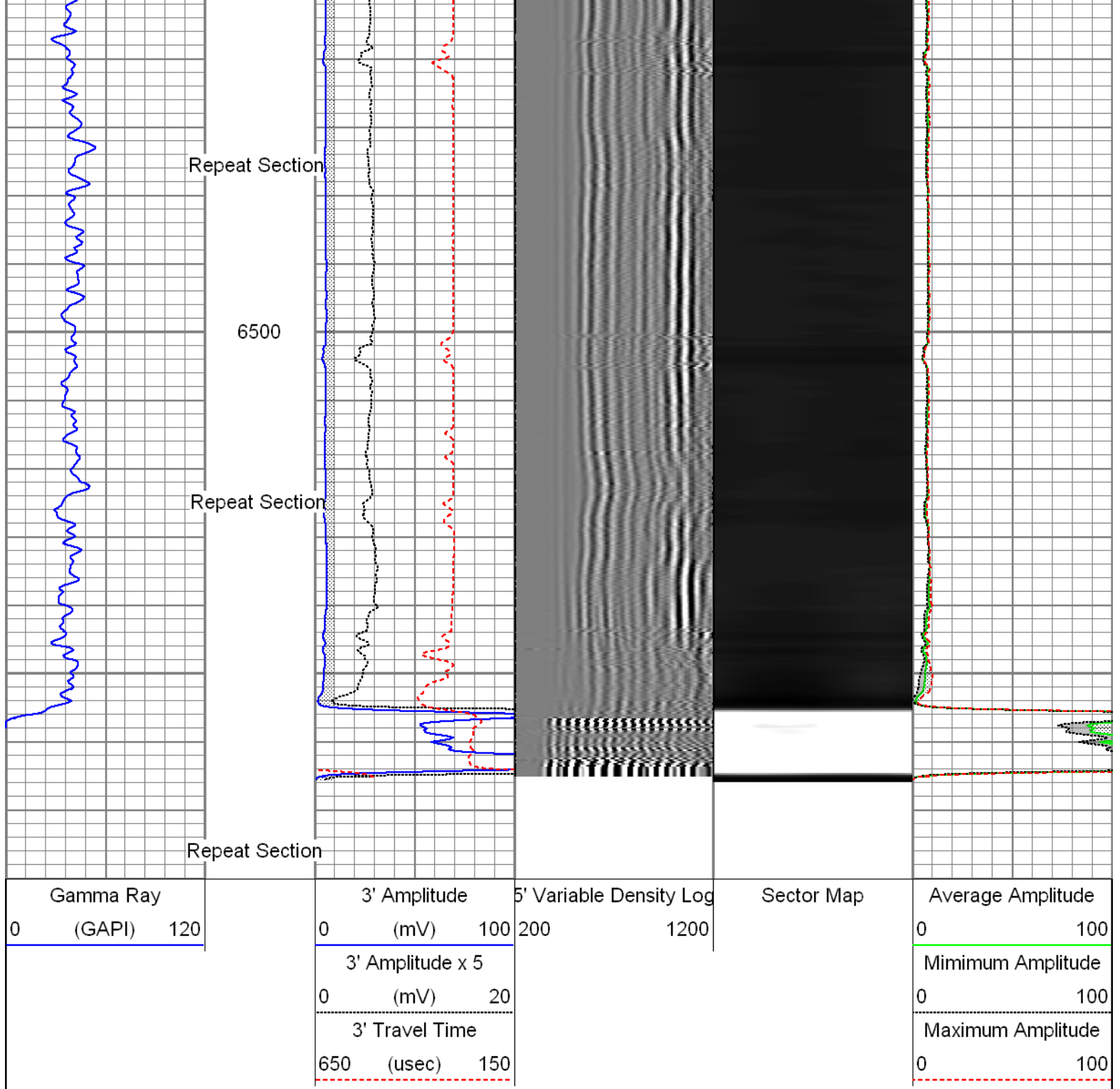
3' TT



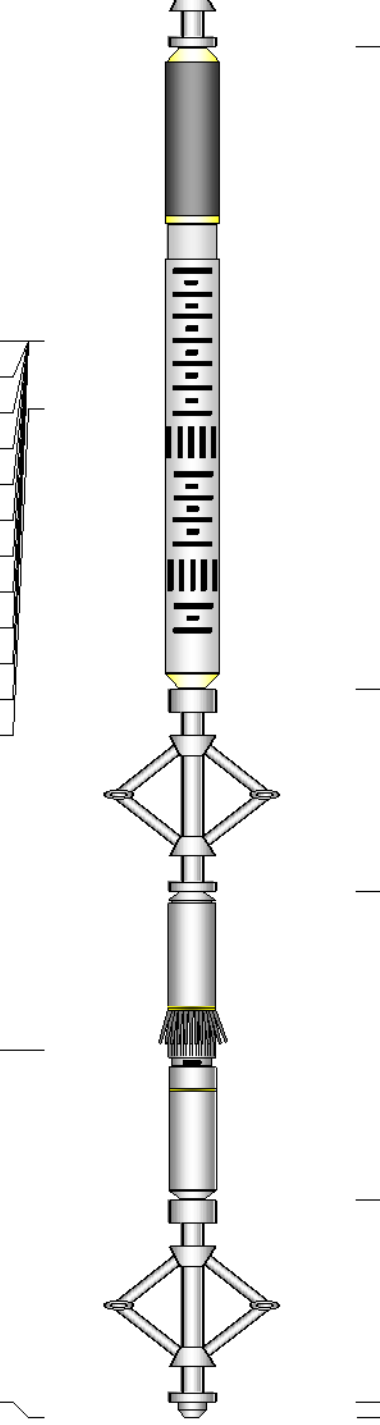
Sectors







Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
GR	23.67		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 (10010519) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50
			UW_PGR-UW_PGR_020 (050836) Production Gamma Ray	1.93	1.69	9.50
			UW_PRC #3 -UW_PRC_057 (1102) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00

WVF3FT	15.85		UW_RBT-UW_RBT_004 (1063) Sondex Ultrawire 3-1/8" Radial Bond Tool	9.47	3.13	140.00
WVFS1	15.85					
WVFS2	15.85					
WVFS3	15.85					
WVFS4	15.85					
WVFS5	15.85					
WVFS6	15.85					
WVFS7	15.85					
WVFS8	15.85					
CBLTEMP	15.85		UW_PRC #4 -UW_PRC_057 (1038) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
CBLROT	15.85					
WVF5FT	14.85					
MIT	5.41		UW_MIT-UW_MIT40_042 (10014703) 40 Multifinger Imaging Tool	4.54	2.75	61.10
			UW_PRC-UW_PRC_057 (1037) 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
TSTAMP	0.00					
Dataset: PROCESSED_0512336313_Anadarko_Roberts 13N-22HZ_07-28-14_MIT_RBL.db: field/well/run1/pass5 Total Length: 27.92 ft Total Weight: 319.30 lb O.D. 3.13 in						

Calibration Report	
Database File:	PROCESSED_0512336313_Anadarko_Roberts 13N-22HZ_07-28-14_MIT_RBL.db
Dataset Pathname:	pass6
Dataset Creation:	Mon Jul 28 12:21:51 2014 by Log 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

Vertical:		Inc X	Inc Y
Finger 1 up:		1963	1960
Finger 31 up:		1748	1727
Finger 21 up:		2195	1742
Finger 11 up:		2178	2188
		1727	2173
Sensitivity ratio:	1.00706		
X-axis angle:	132.825		
Deviation const.:	317.775		

Finger Calibration Report
Performed: Mon Jul 28 08:54:12 2014

Ring size: (in)	4		5		6		7
		Sens		Sens		Sens	
Finger 01:	1202	350.0	1552	381.0	1933	383.0	2316
Finger 02:	1144	362.0	1506	406.0	1912	412.0	2324
Finger 03:	1146	350.0	1496	391.0	1887	398.0	2285
Finger 04:	1090	365.0	1455	418.0	1873	427.0	2300
Finger 05:	1105	346.0	1451	388.0	1839	396.0	2235
Finger 06:	1106	359.0	1465	409.0	1874	413.0	2287
Finger 07:	1127	353.0	1480	396.0	1876	399.0	2275
Finger 08:	1084	358.0	1442	410.0	1852	420.0	2272
Finger 09:	1158	364.0	1522	397.0	1919	398.0	2317
Finger 10:	1098	356.0	1454	395.0	1849	404.0	2253
Finger 11:	1098	360.0	1458	402.0	1860	415.0	2275
Finger 12:	1172	357.0	1529	381.0	1910	382.0	2292
Finger 13:	1122	356.0	1478	396.0	1874	414.0	2288
Finger 14:	1095	368.0	1463	409.0	1872	426.0	2298
Finger 15:	1060	367.0	1427	413.0	1840	434.0	2274
Finger 16:	1136	362.0	1498	394.0	1892	415.0	2307
Finger 17:	1147	359.0	1506	385.0	1891	394.0	2285
Finger 18:	1195	356.0	1551	382.0	1933	404.0	2337
Finger 19:	1149	361.0	1510	389.0	1899	411.0	2310
Finger 20:	1065	369.0	1434	407.0	1841	438.0	2279
Finger 21:	1149	352.0	1501	381.0	1882	412.0	2294
Finger 22:	1147	356.0	1503	384.0	1887	414.0	2301
Finger 23:	1242	337.0	1579	359.0	1938	384.0	2322
Finger 24:X	1162	362.0	1524	390.0	1914	415.0	2329
Finger 25:X	1162	355.0	1517	385.0	1902	417.0	2319
Finger 26:	1198	355.0	1553	378.0	1931	402.0	2333
Finger 27:	1207	343.0	1550	369.0	1919	401.0	2320
Finger 28:	1175	358.0	1533	385.0	1918	411.0	2329
Finger 29:	1151	360.0	1511	393.0	1904	421.0	2325
Finger 30:	1156	353.0	1509	384.0	1893	420.0	2313
Finger 31:	1207	348.0	1555	371.0	1926	391.0	2317
Finger 32:	1155	356.0	1511	390.0	1901	414.0	2315
Finger 33:	1161	355.0	1516	385.0	1901	411.0	2312
Finger 34:	1141	359.0	1500	396.0	1896	417.0	2313
Finger 35:	1198	345.0	1543	375.0	1918	390.0	2308
Finger 36:	1137	357.0	1494	394.0	1888	411.0	2299
Finger 37:	1201	341.0	1542	373.0	1915	387.0	2302
Finger 38:	1227	345.0	1572	375.0	1947	385.0	2332
Finger 39:	1128	351.0	1479	391.0	1870	406.0	2276
Finger 40:	1077	367.0	1444	417.0	1861	429.0	2290

Post Survey Calibration Check
Performed: Mon Jul 28 12:21:35 2014

Ring size: (in)	4	Nom. wear	5	Nom. wear	6	Nom. wear	7	Nom. wear
Finger 01:	4.011	0.005	5.005	0.003	6.005	0.003	7.001	0.000
Finger 02:	4.004	0.002	5.003	0.002	6.006	0.003	7.002	0.001
Finger 03:	4.006	0.003	5.005	0.003	6.008	0.004	7.003	0.001
Finger 04:	3.892	-0.054	4.956	-0.022	5.996	-0.002	7.030	0.015

Finger 05:	4.004	0.002	5.004	0.002	6.009	0.005	7.001	0.000
Finger 06:	4.000	0.000	5.003	0.001	6.003	0.002	7.002	0.001
Finger 07:	4.001	0.001	5.005	0.003	6.004	0.002	7.003	0.002
Finger 08:	4.002	0.001	5.003	0.002	6.005	0.002	7.002	0.001
Finger 09:	4.001	0.001	5.003	0.001	6.007	0.004	7.005	0.003
Finger 10:	3.999	-0.001	5.005	0.002	6.008	0.004	7.007	0.003
Finger 11:	4.004	0.002	5.004	0.002	6.000	0.000	6.999	-0.001
Finger 12:	4.007	0.004	5.008	0.004	6.009	0.005	7.014	0.007
Finger 13:	4.006	0.003	5.011	0.005	6.013	0.006	7.013	0.007
Finger 14:	3.915	-0.042	4.970	-0.015	6.005	0.002	7.032	0.016
Finger 15:	4.005	0.002	5.010	0.005	6.008	0.004	7.010	0.005
Finger 16:	3.762	-0.119	4.743	-0.129	5.723	-0.139	6.701	-0.149
Finger 17:	3.979	-0.011	4.979	-0.011	5.980	-0.010	6.987	-0.007
Finger 18:	4.008	0.004	5.007	0.004	6.009	0.005	7.009	0.004
Finger 19:	4.009	0.004	5.010	0.005	6.011	0.005	7.014	0.007
Finger 20:	4.007	0.004	4.993	-0.004	5.977	-0.012	6.953	-0.023
Finger 21:	4.006	0.003	5.008	0.004	6.014	0.007	7.016	0.008
Finger 22:	4.005	0.002	5.011	0.005	6.016	0.008	7.013	0.007
Finger 23:	4.010	0.005	5.010	0.005	6.013	0.006	7.013	0.007
Finger 24:	-----	-----	-----	-----	-----	-----	-----	-----
Finger 25:	-----	-----	-----	-----	-----	-----	-----	-----
Finger 26:	4.010	0.005	5.006	0.003	6.009	0.004	7.007	0.003
Finger 27:	4.008	0.004	5.007	0.003	6.009	0.005	7.005	0.002
Finger 28:	4.009	0.005	5.005	0.002	6.007	0.003	7.012	0.006
Finger 29:	4.009	0.004	5.002	0.001	6.004	0.002	7.004	0.002
Finger 30:	3.992	-0.004	5.000	0.000	6.007	0.004	7.004	0.002
Finger 31:	4.002	0.001	5.003	0.001	6.000	0.000	6.999	-0.000
Finger 32:	3.999	-0.001	5.014	0.007	6.001	0.001	7.004	0.002
Finger 33:	3.992	-0.004	4.995	-0.003	6.002	0.001	6.997	-0.001
Finger 34:	3.906	-0.047	4.967	-0.017	6.003	0.002	7.028	0.014
Finger 35:	4.012	0.006	5.011	0.005	6.003	0.001	7.000	0.000
Finger 36:	4.007	0.004	5.004	0.002	6.003	0.002	7.003	0.002
Finger 37:	4.003	0.002	5.005	0.003	6.008	0.004	7.004	0.002
Finger 38:	4.003	0.002	4.999	-0.000	6.001	0.000	7.007	0.003
Finger 39:	4.005	0.003	5.003	0.002	6.002	0.001	7.002	0.001
Finger 40:	4.009	0.004	5.003	0.002	5.999	-0.000	7.000	0.000
Average:	3.990	-0.005	4.994	-0.003	5.997	-0.001	6.998	-0.001

Segmented Cement Bond Log Calibration Report

Serial Number: 1063
Tool Model: UW RBT 004

Calibration Casing Diameter: 7.000 in
Calibration Depth: 460.437 ft

Master Calibration, performed Mon Jul 28 09:10:43 2014:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	-0.003	0.611	0.800	62.165	100.041	1.074
5FT	-0.006	0.647	0.800	62.165	93.967	1.341
S1	-0.004	0.622	0.000	100.000	159.916	0.586
S2	-0.005	0.628	0.000	100.000	158.138	0.757
S3	-0.003	0.619	0.000	100.000	160.789	0.463
S4	-0.005	0.620	0.000	100.000	160.104	0.752
S5	-0.002	0.607	0.000	100.000	164.314	0.333
S6	-0.003	0.596	0.000	100.000	166.830	0.509
S7	-0.002	0.603	0.000	100.000	165.218	0.403
S8	-0.002	0.607	0.000	100.000	164.110	0.389

Gamma Ray Calibration Report

Serial Number:	050836
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	Roberts 13N-22HZ
Field	Wattenberg
County	Weld
State	Colorado