



Radial Cement Bond  
Gamma Ray  
Casing Collar Log

Company Kerr McGee Oil & Gas Onshore LP  
Well Whip Snake 28N-22HZ  
Field Wattenberg  
County Weld State Colorado

Location: API #: 05-123-39438  
300' FSL 2368' FEL SWSE  
LAT: 40.117272 LONG: -104.875952  
SEC 22 TWP 2N RGE 67W  
Permanent Datum Ground Level Elevation 4987'  
Log Measured From Kelly Bushing 16 FT  
Drilling Measured From Kelly Bushing  
Other Services  
Gauge ring  
MIT  
Elevation  
K.B. 5003'  
D.F. 5002'  
G.L. 4987'

Company Kerr McGee Oil & Gas Onshore LP  
Well Whip Snake 28N-22HZ  
Field Wattenberg  
County Weld  
State Colorado

Date	04-Sept-2014						
Run Number	Two						
Depth Driller	12655 FT						
Depth Logger	7630 FT						
Bottom Logged Interval	7625 FT						
Top Log Interval	Surface						
Open Hole Size	9.625						
Type Fluid	Water						
Density / Viscosity	8.34 lb/gal						
Max. Recorded Temp.	225° F						
Estimated Cement Top	43 FT						
Time Well Ready	ROA						
Time Logger on Bottom	13:30						
Equipment Number	HD 0255						
Location	Ft. Lupton						
Recorded By	J. Raby						
Witnessed By	Kelly Weiser						
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		Surface	1357 FT		
Intermediate #1	7	26		Surface	7846 FT		
Intermediate #2							
Liner	4.5	11.6		6831 FT	12645 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  
Log ran from as deep as possible to surface.  
Log ran with 2800 PSI surface induced pressure.  
Adjusted -2 FT to correlate to liner top.

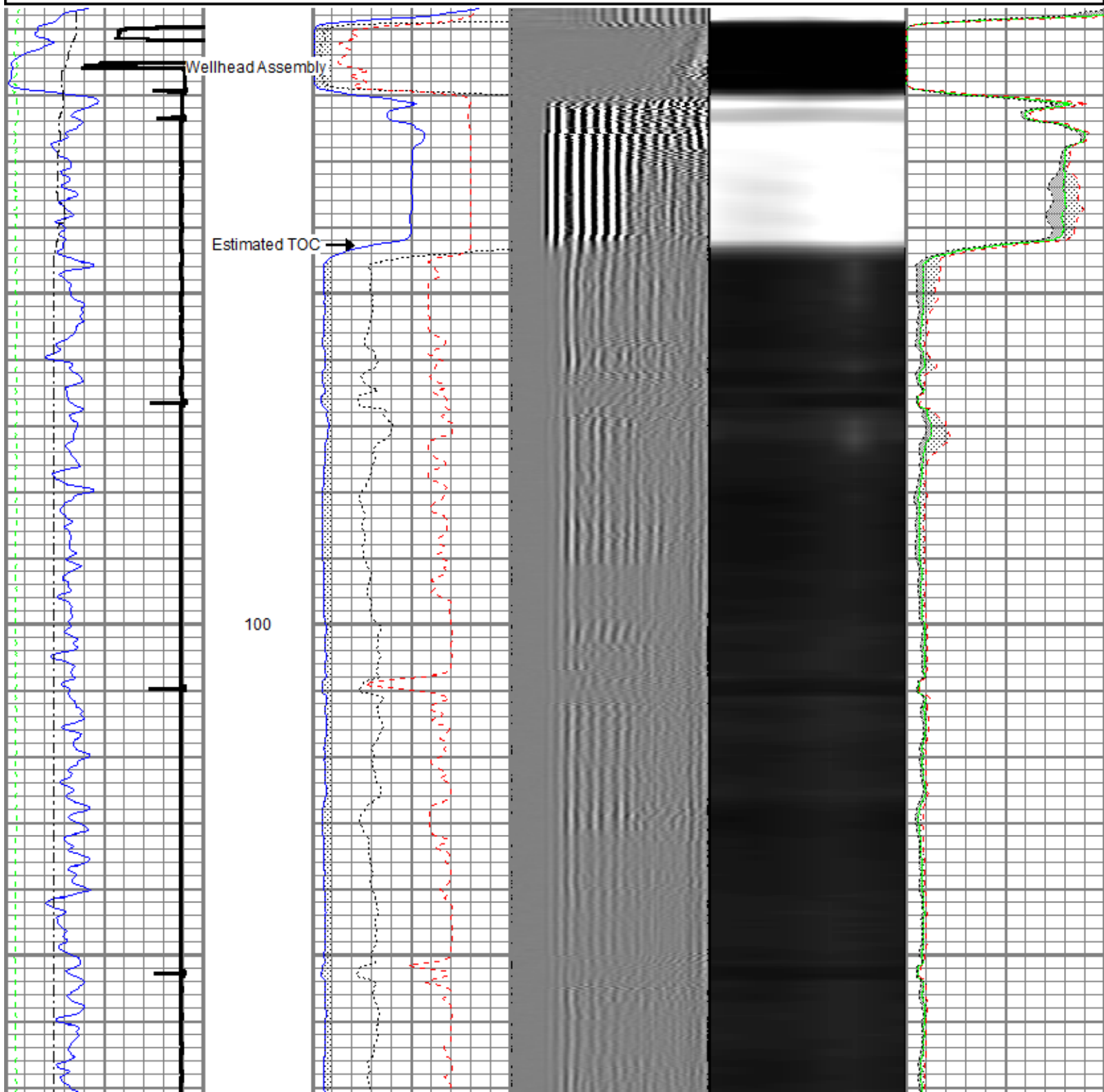
Thank you for choosing FMC Technologies Completion Services, Inc.!!

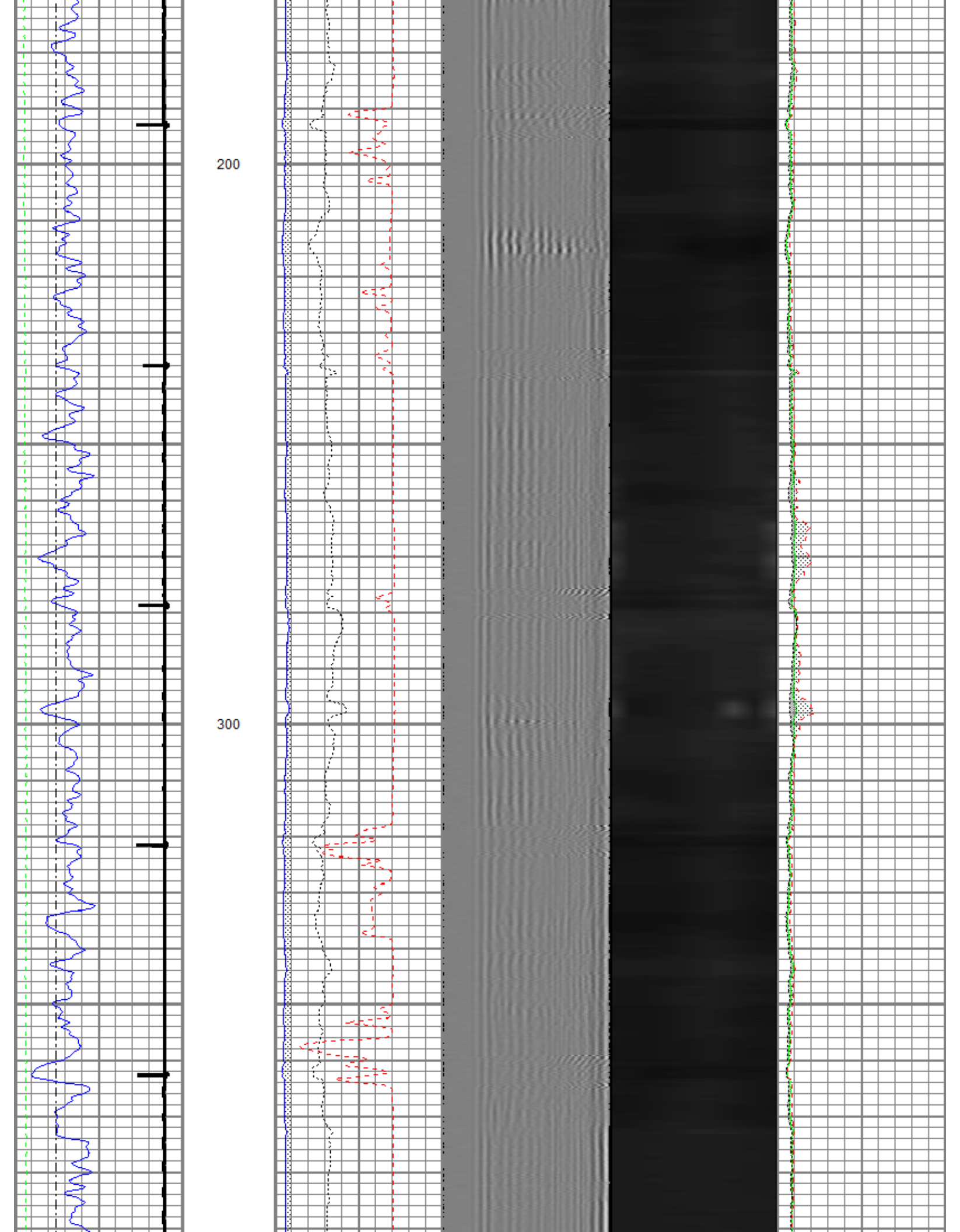
7.0" Main Pass

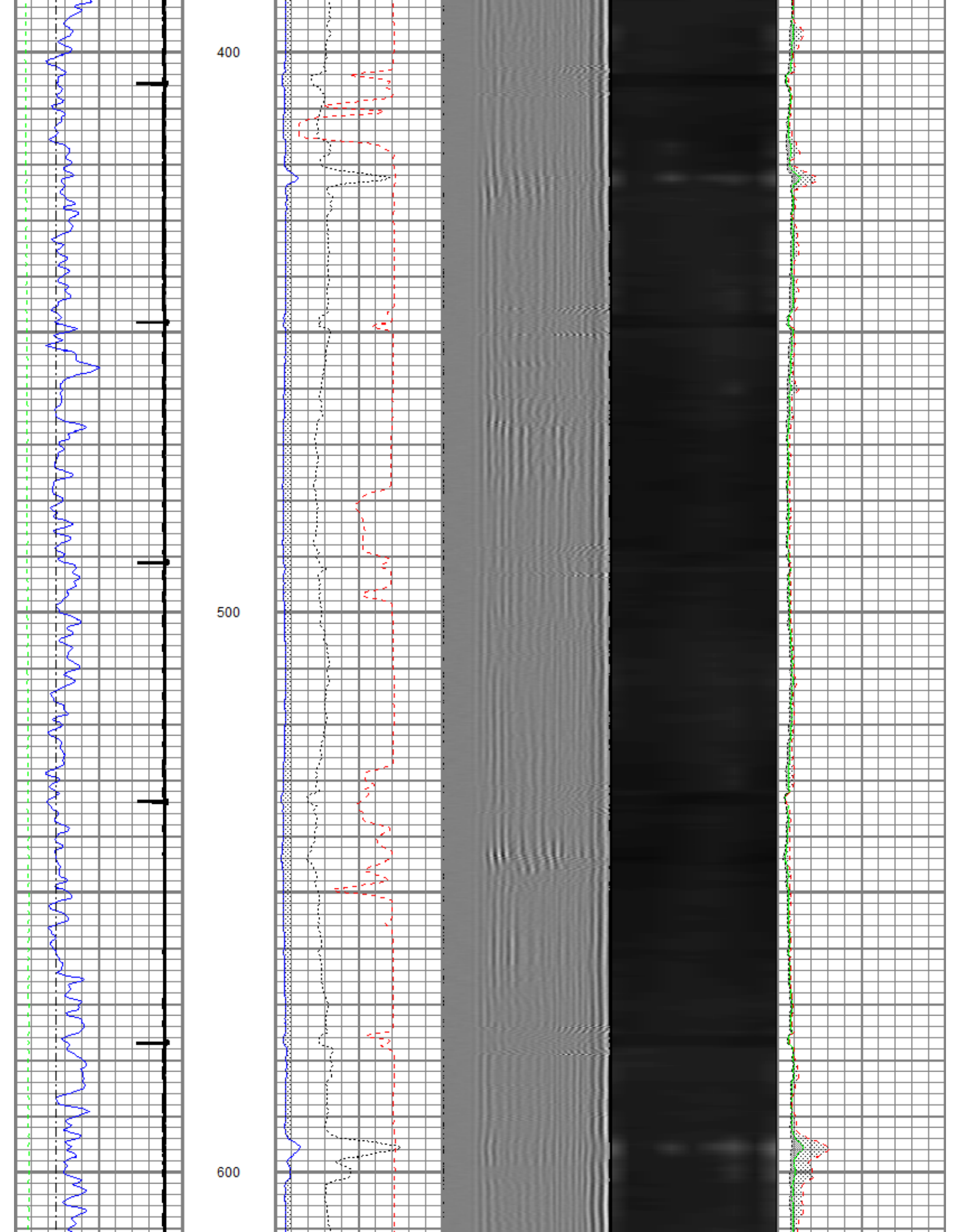


Database File: anadarko\_whip snake 28n-22hz\_rcbl mit\_04-sept-2014.db  
 Dataset Pathname: pass6  
 Presentation Format: rbt4\_mit  
 Dataset Creation: Thu Sep 04 14:54:57 2014 by Log SCH 111116  
 Charted by: Depth in Feet scaled 1:240

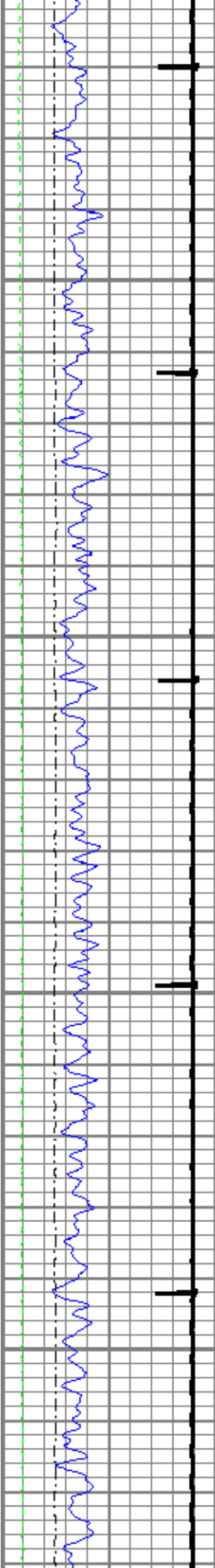
Gamma Ray (GAPI)	0 120	3' Amplitude (mV) 100 3' Amplitude x 5 (mV) 20	5' Variable Density Log 200 1200	Sector Map	Average Amplitude 100 Minimum Amplitude Maximum Amplitude
Casing Collar Locator		0 20			0 100
Line Speed (ft/min)	-100 100	3' Travel Time (usec) 150			0 100
Line Tension (lb)	0 2000				





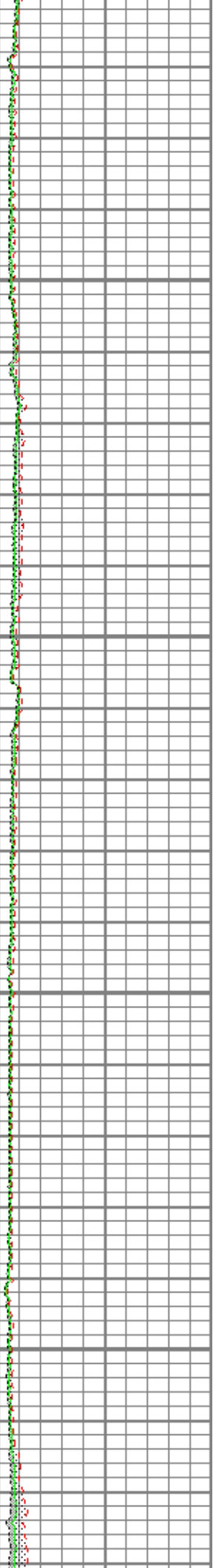
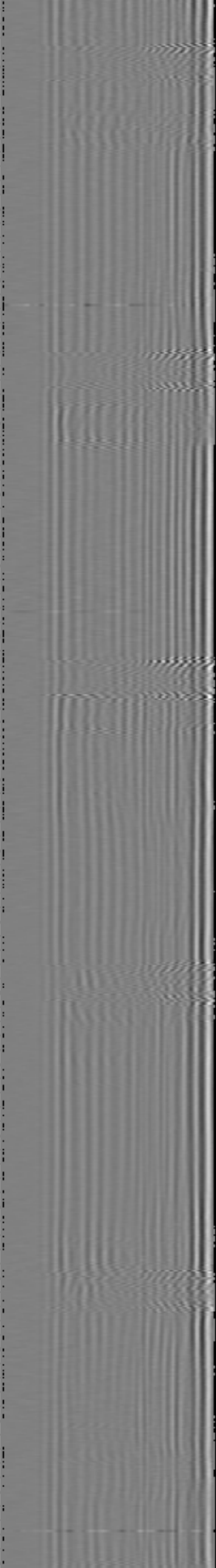
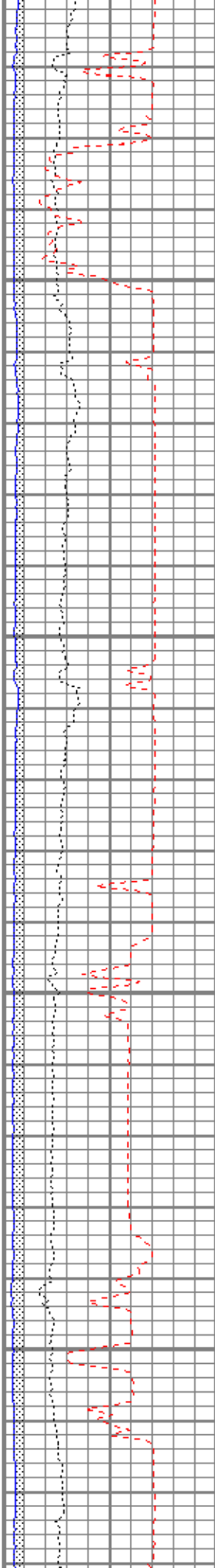


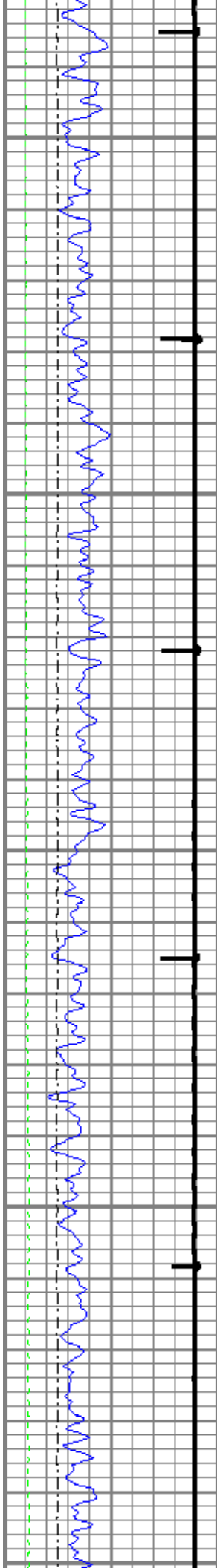




700

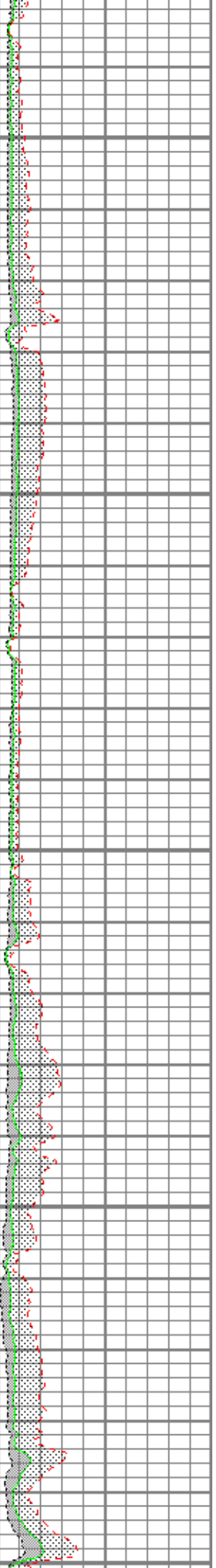
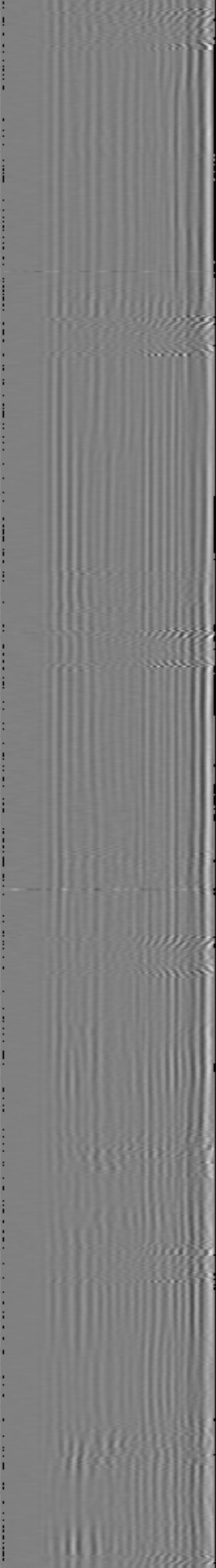
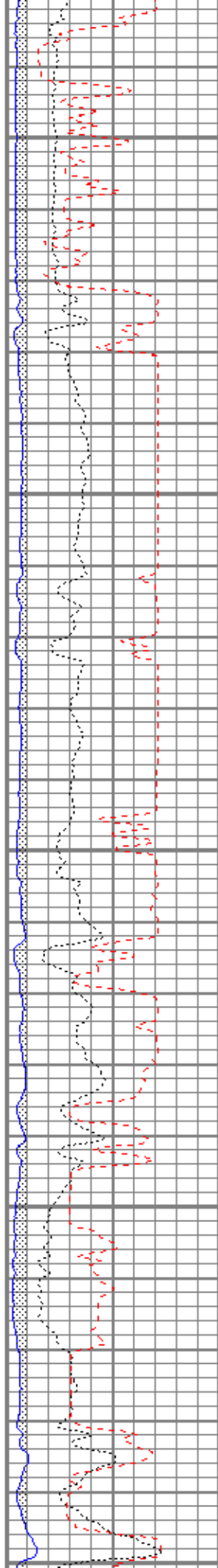
800

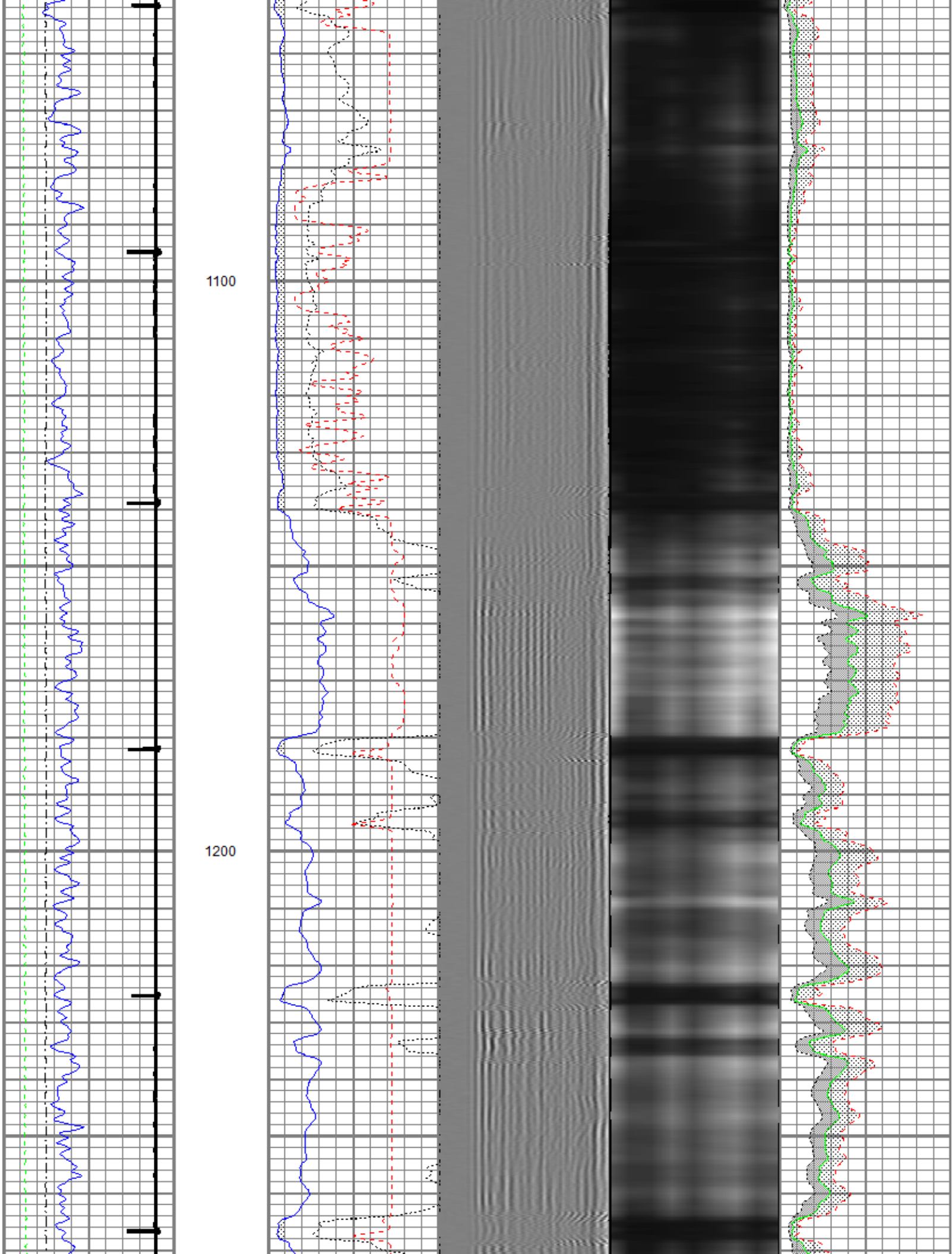


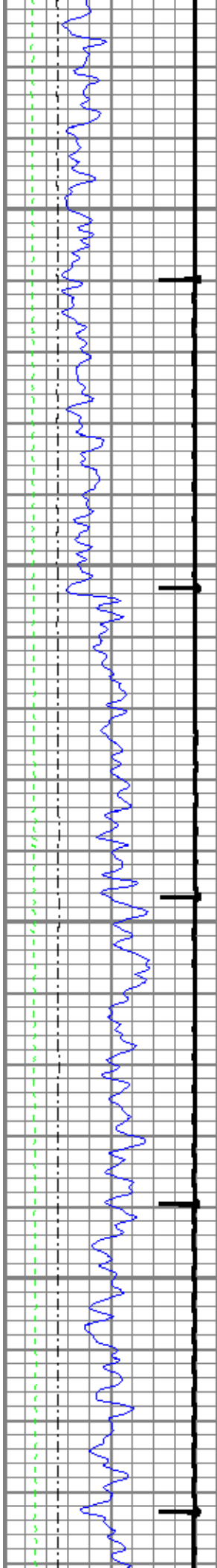


900

1000

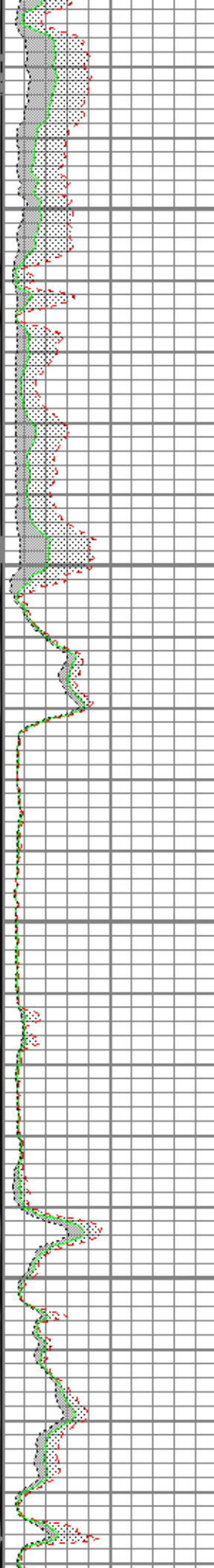
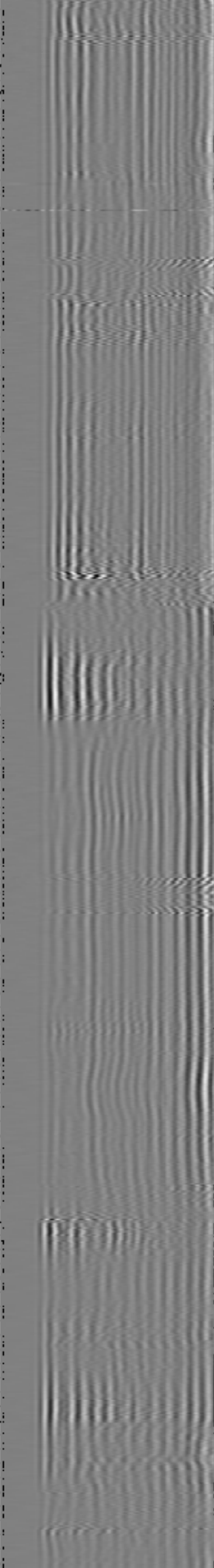
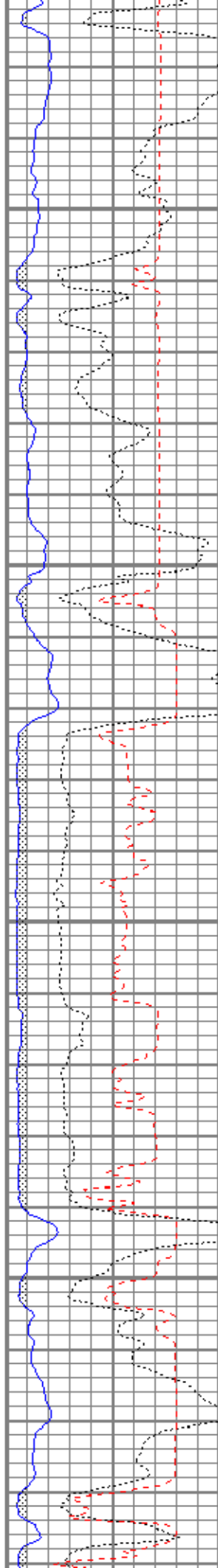




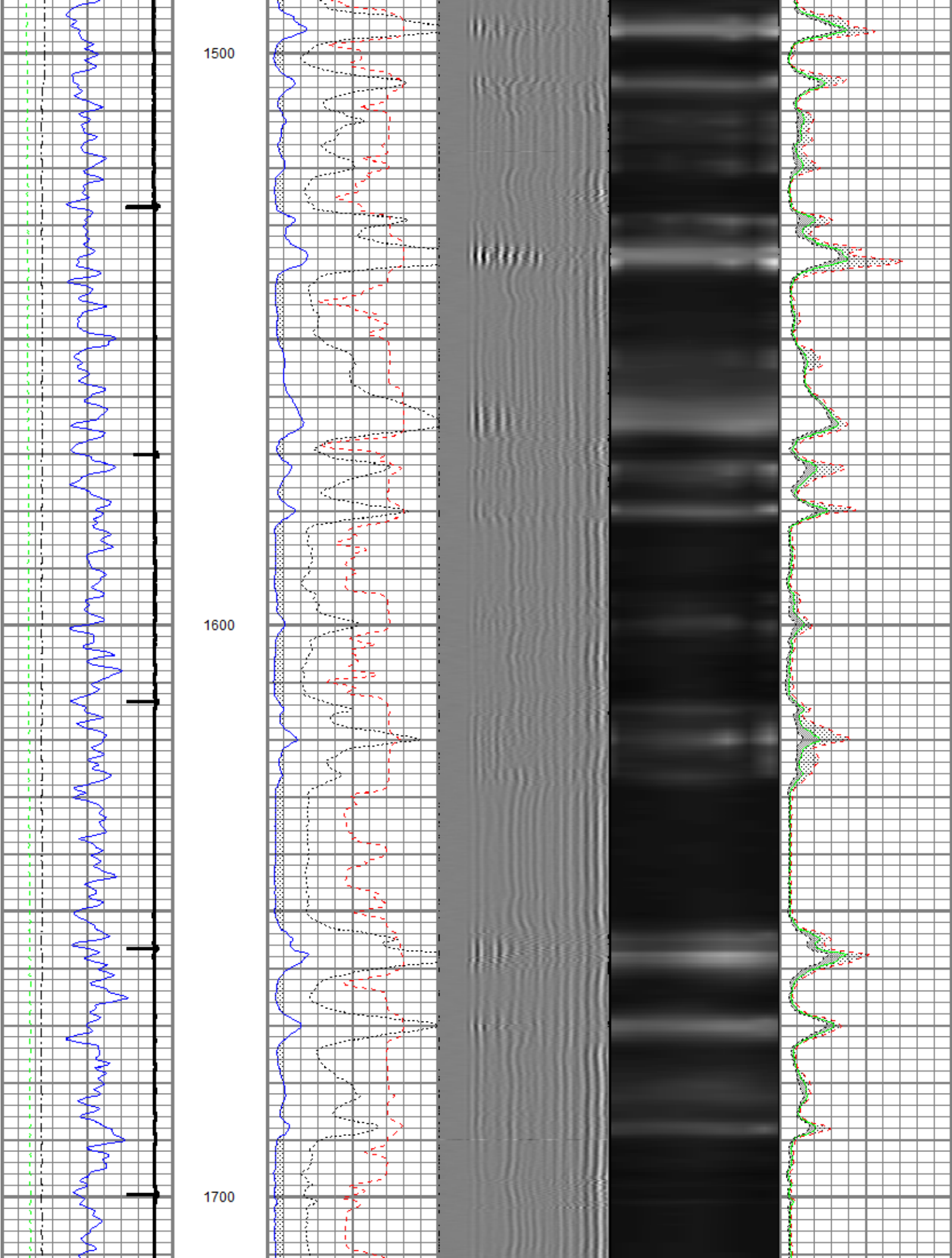


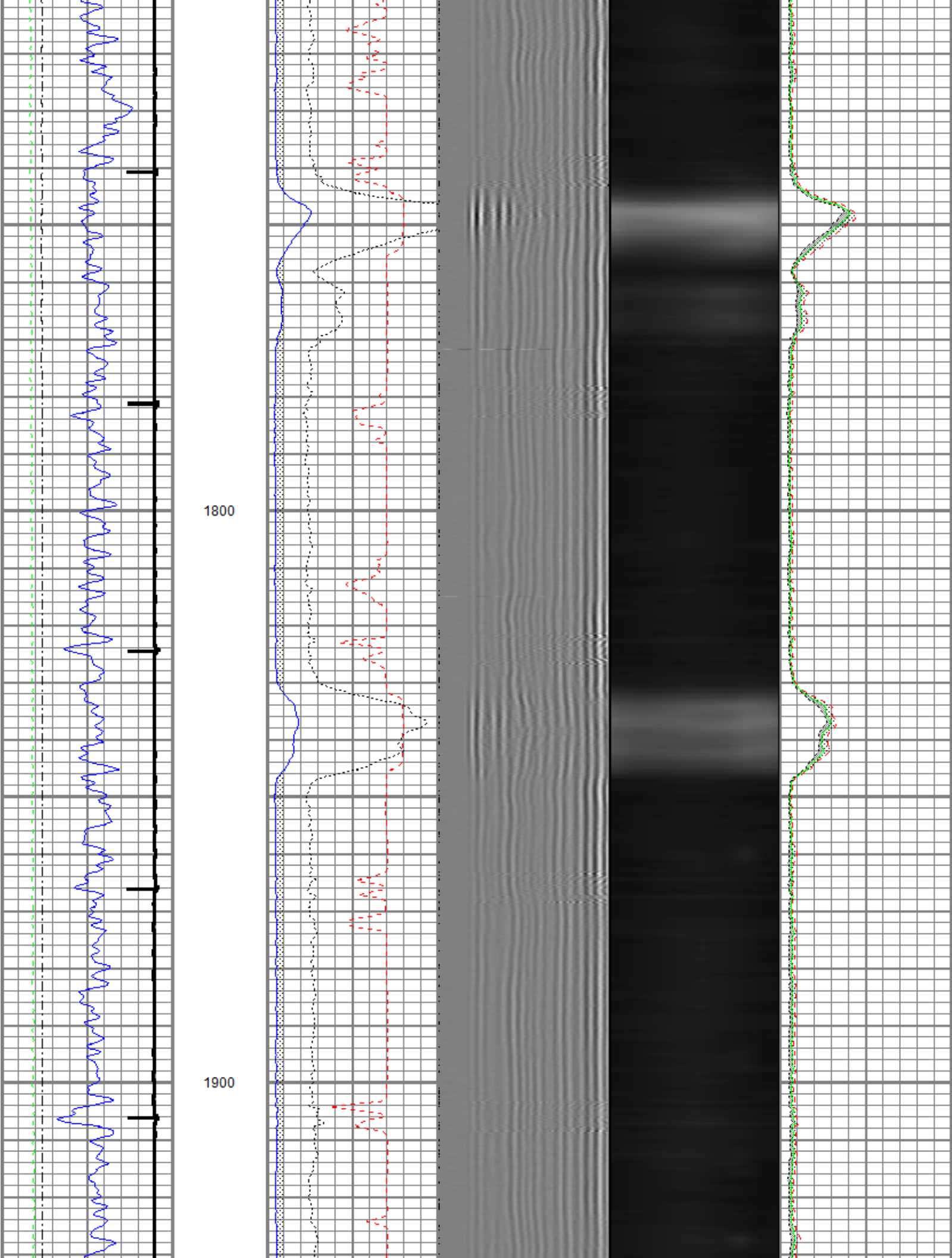
1300

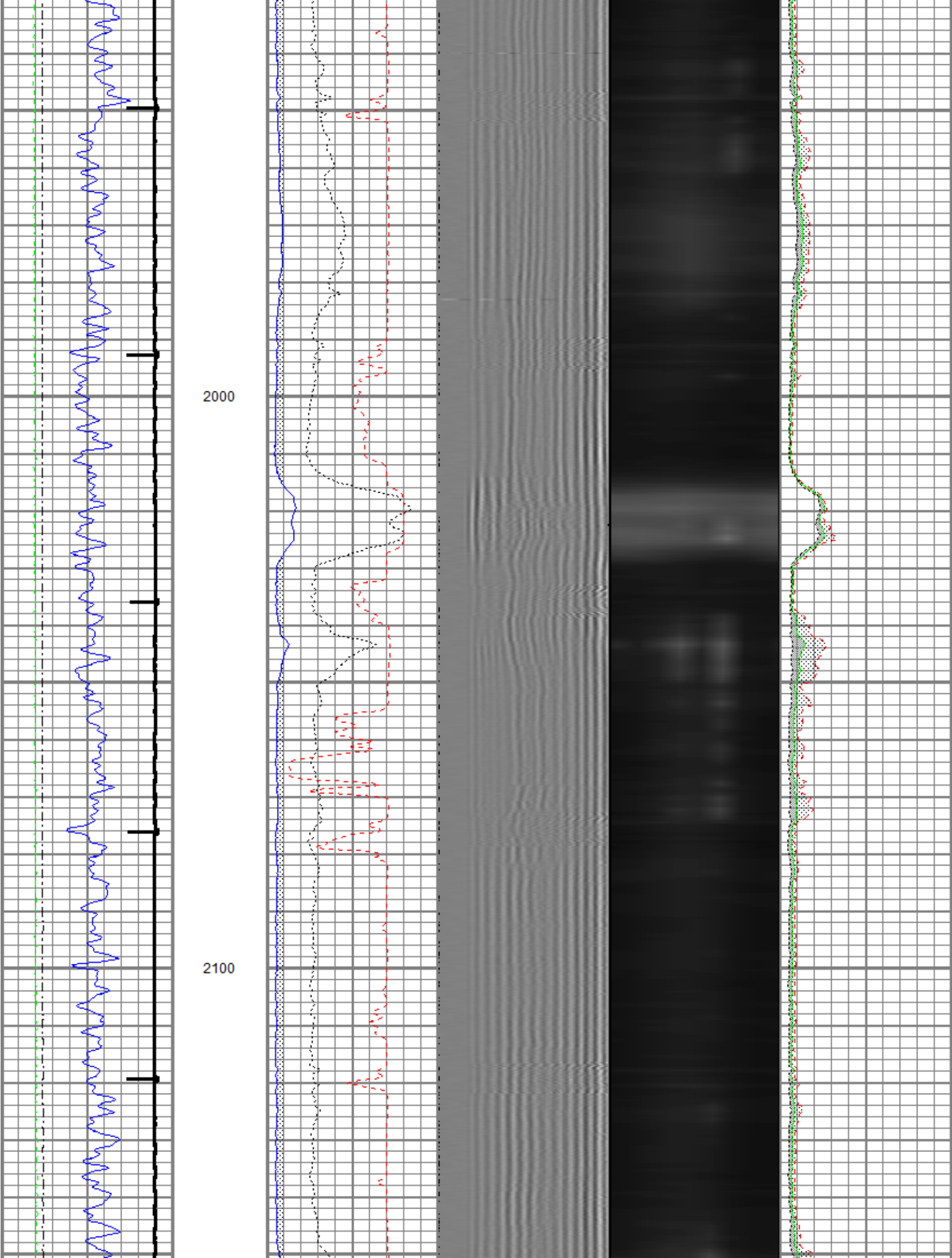
1400

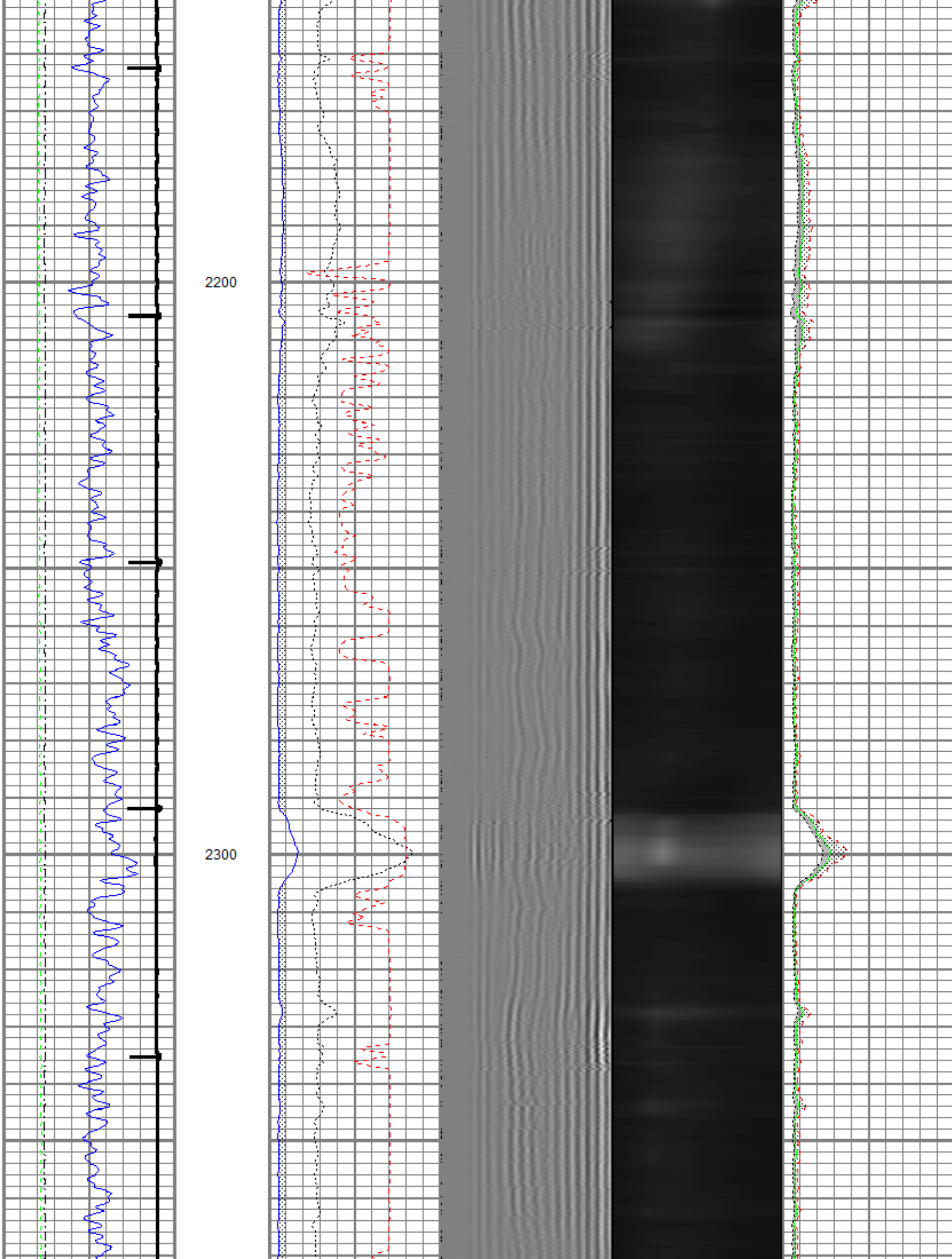




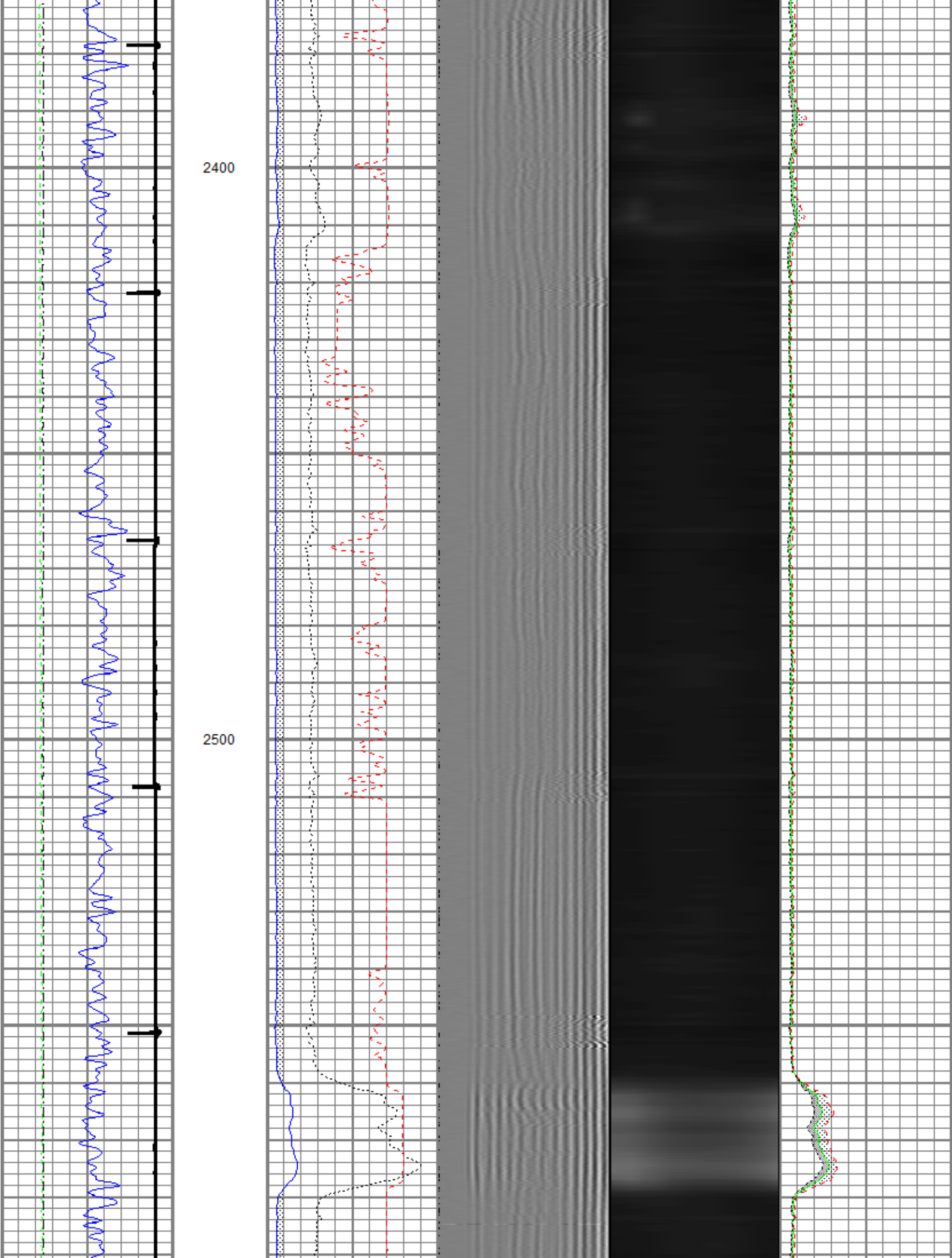


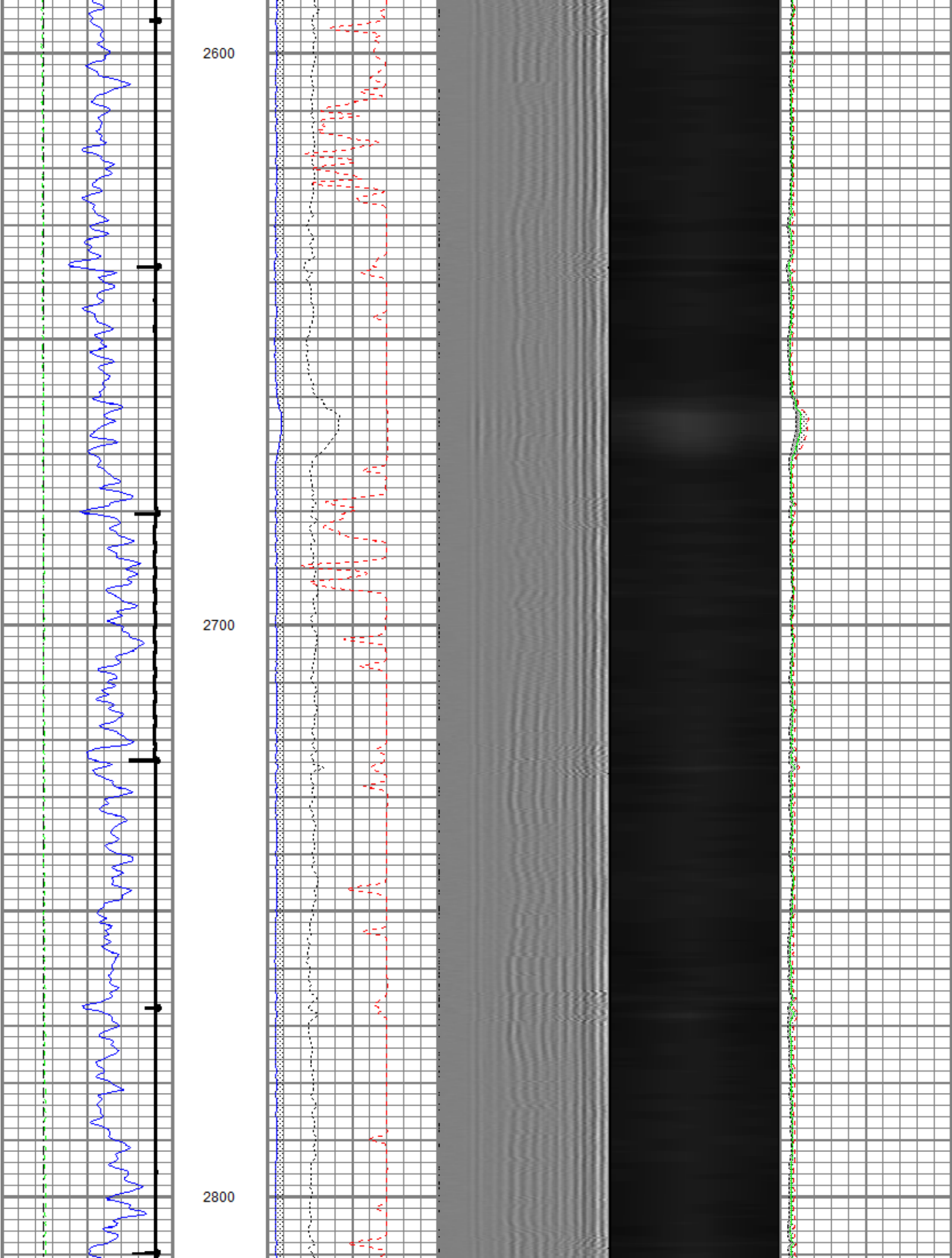


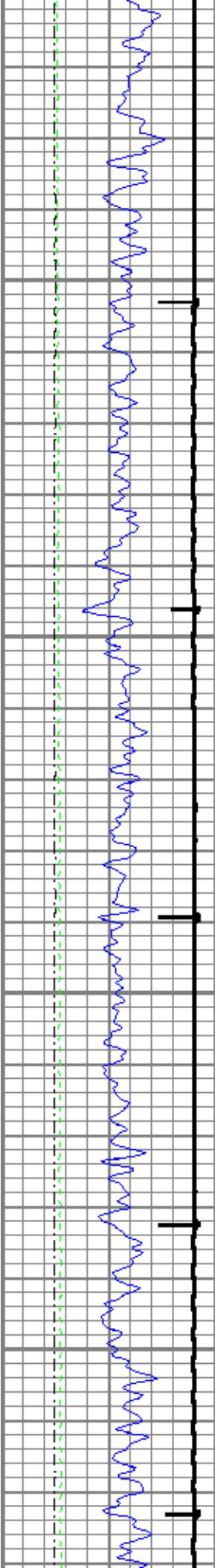






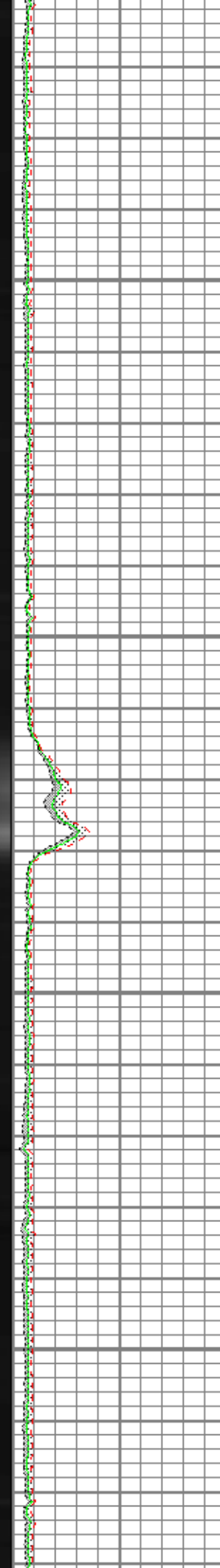
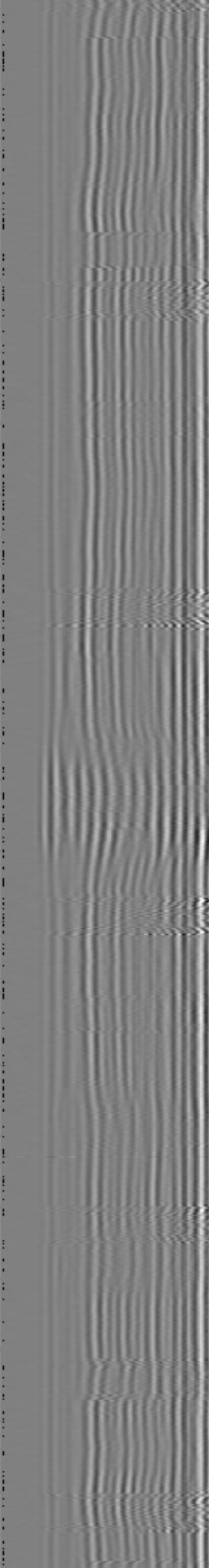
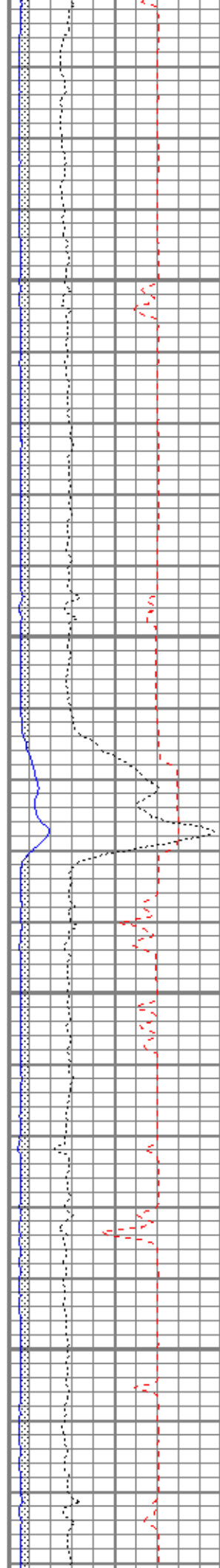


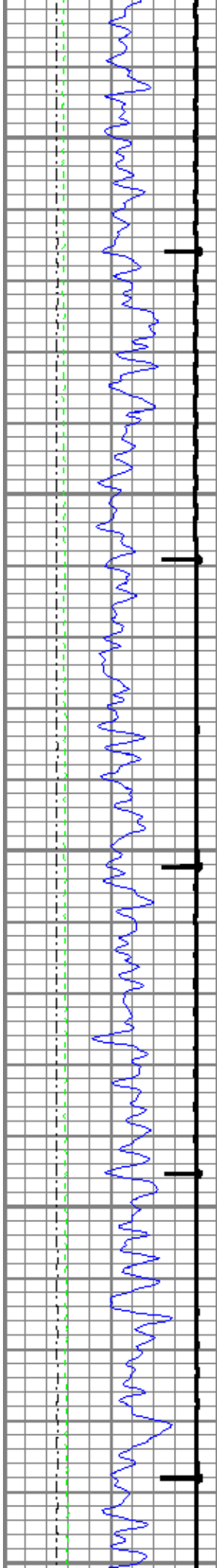




2900

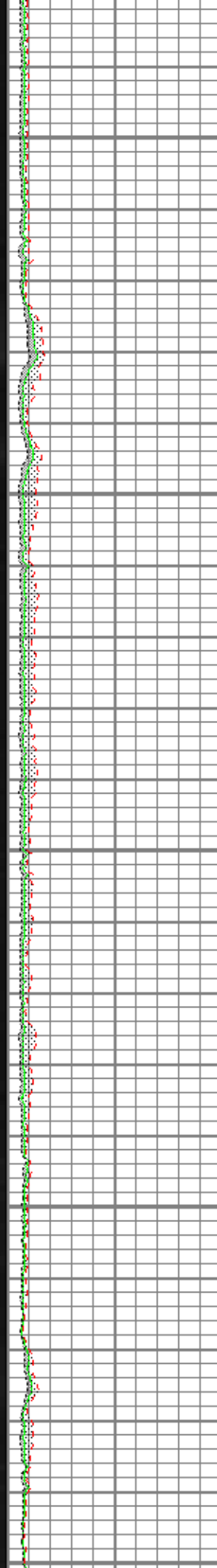
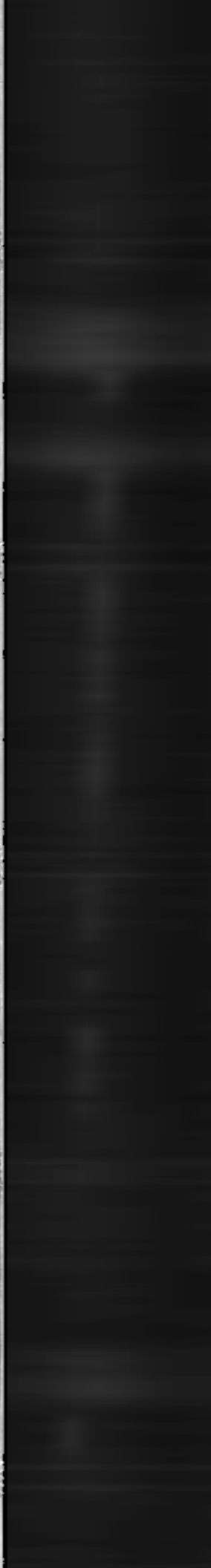
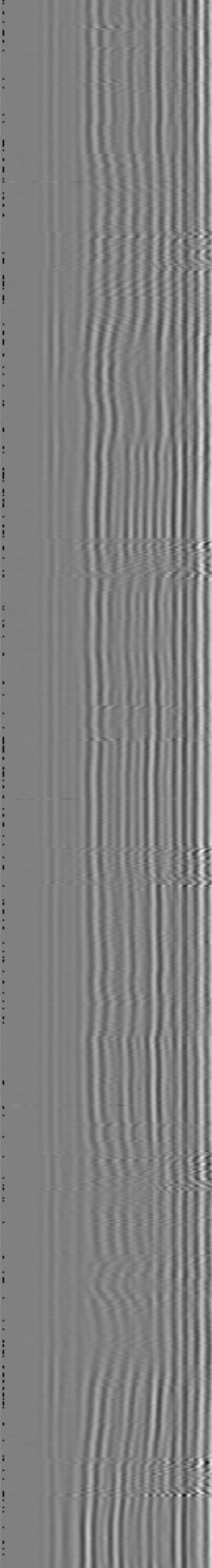
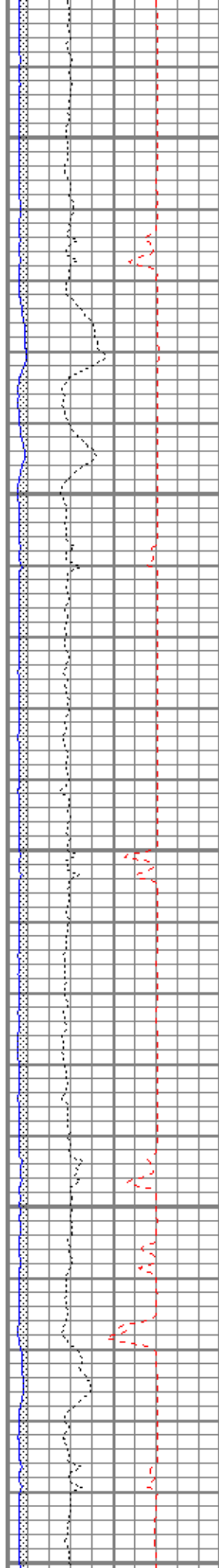
3000



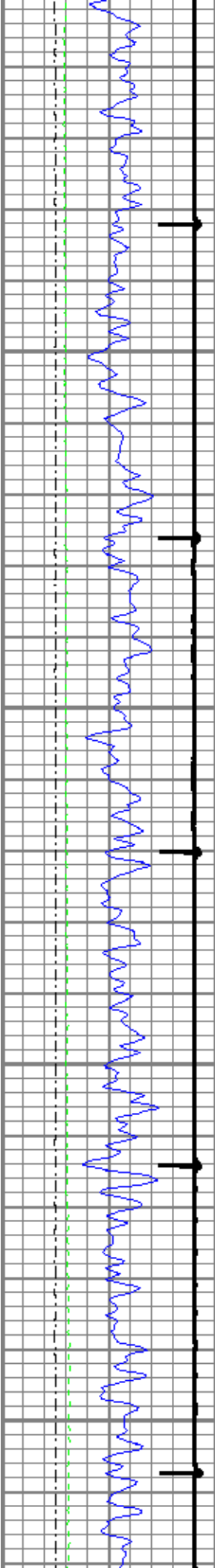


3100

3200

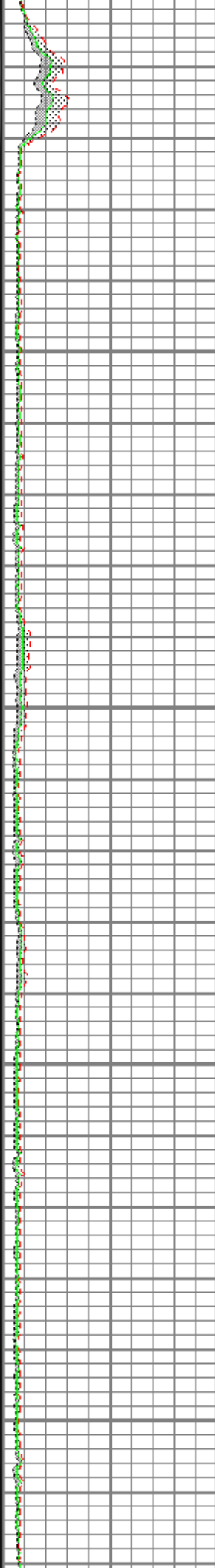
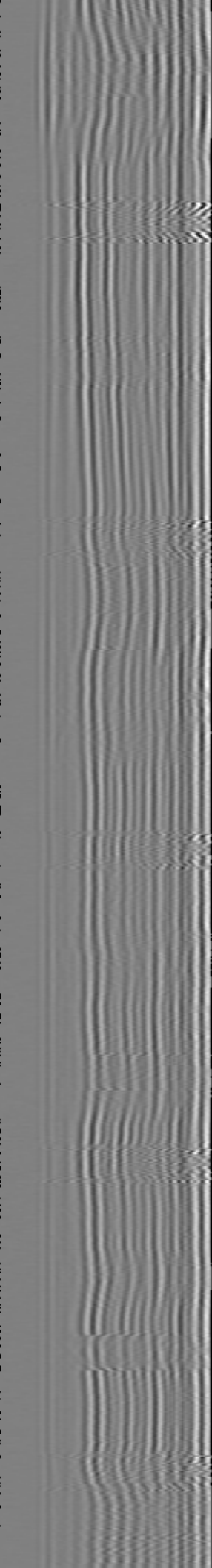
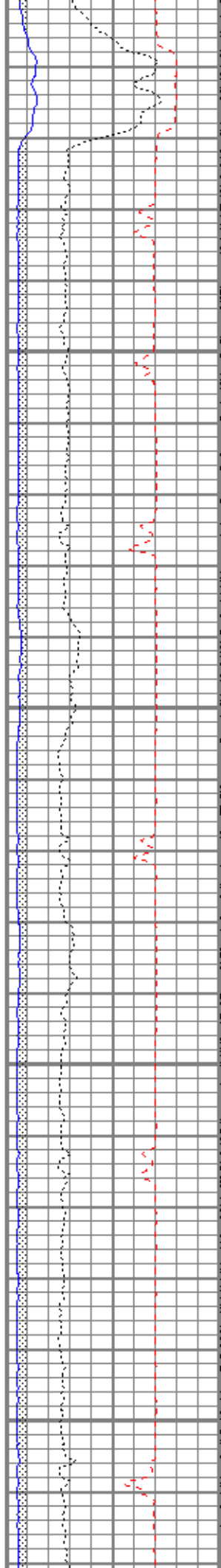


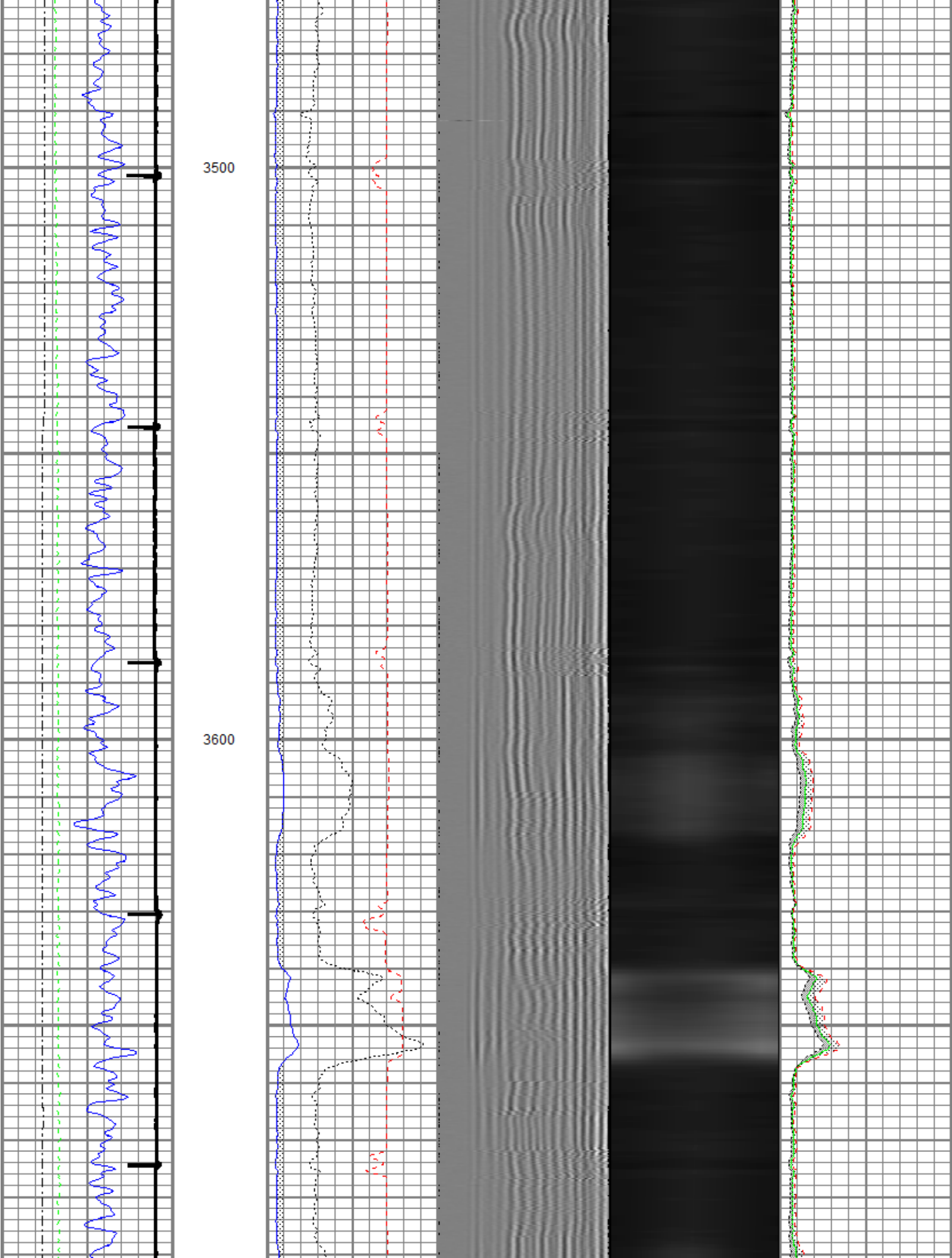


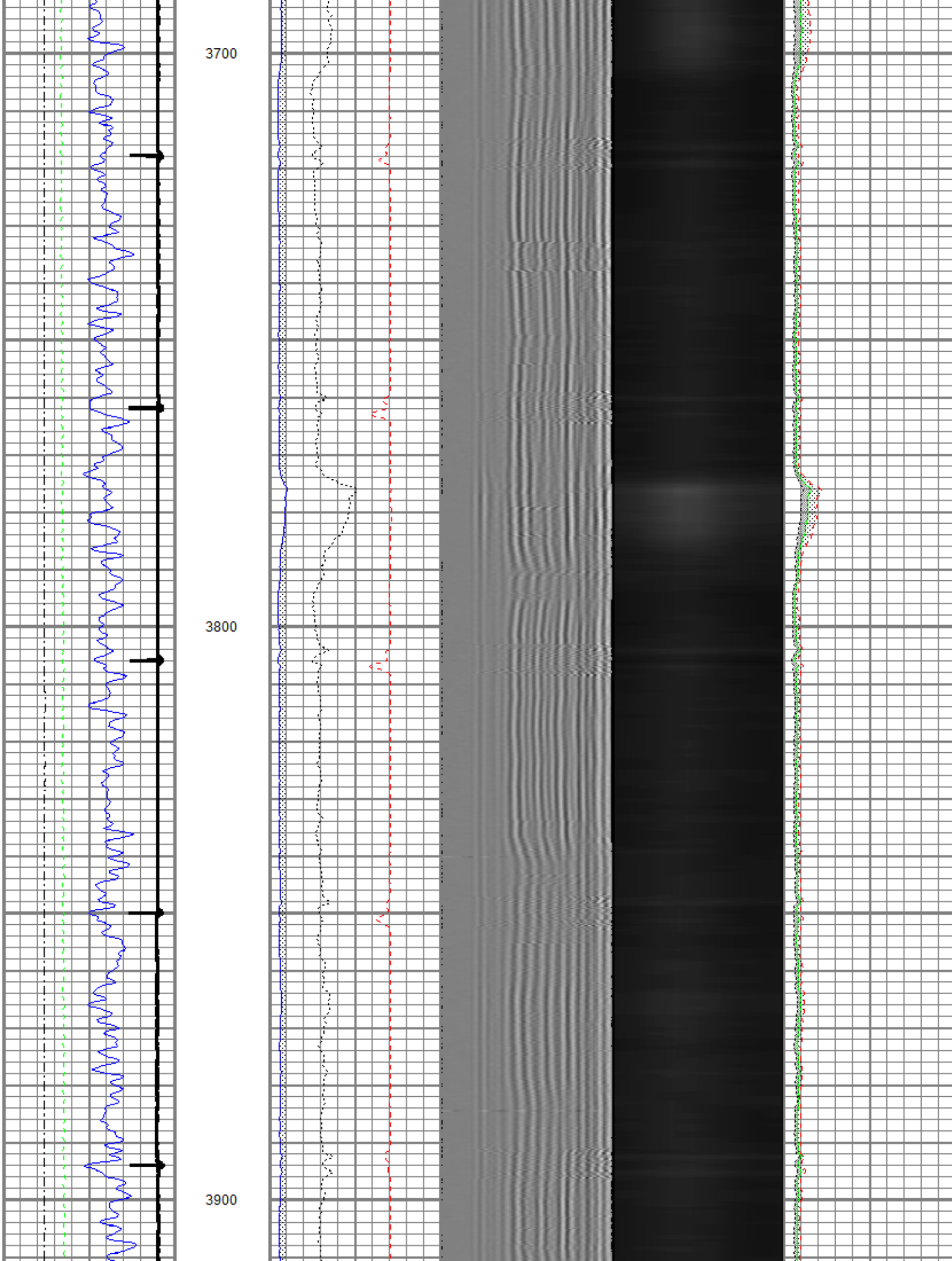


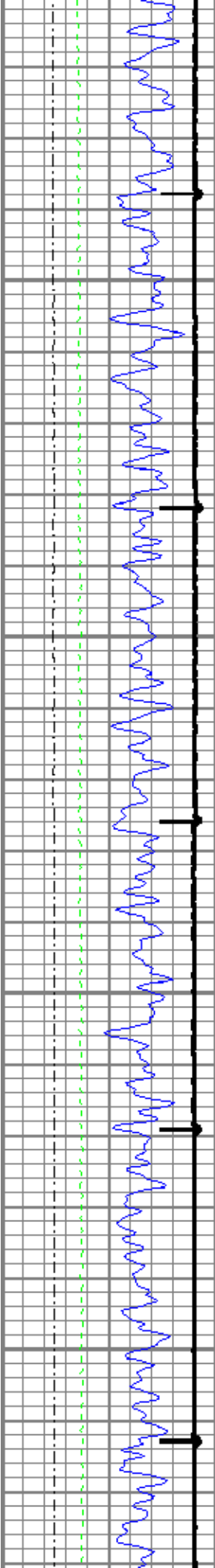
3300

3400



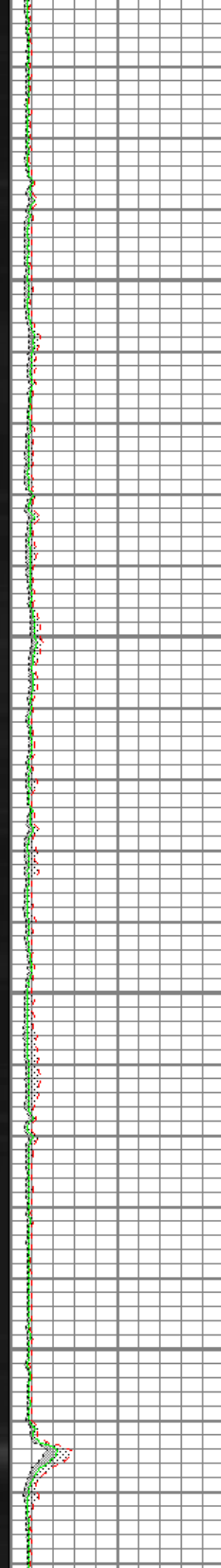
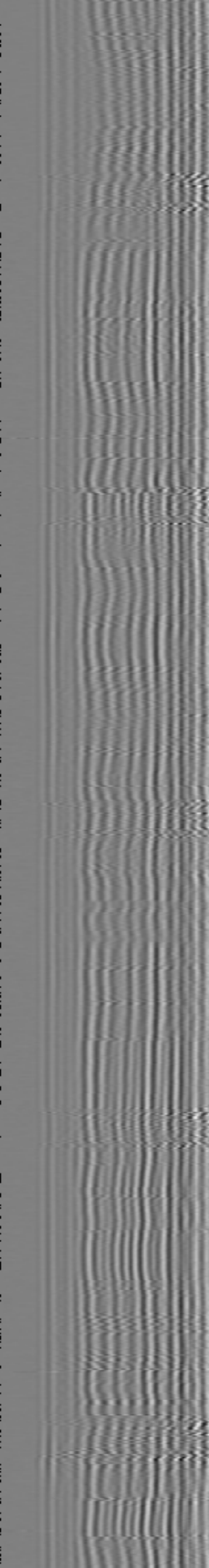
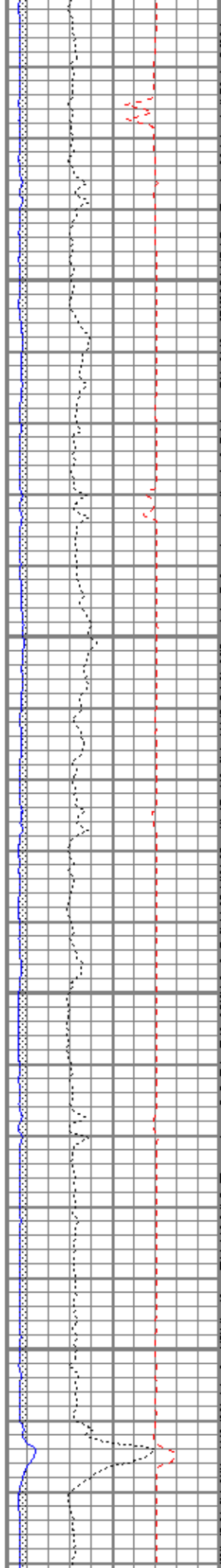




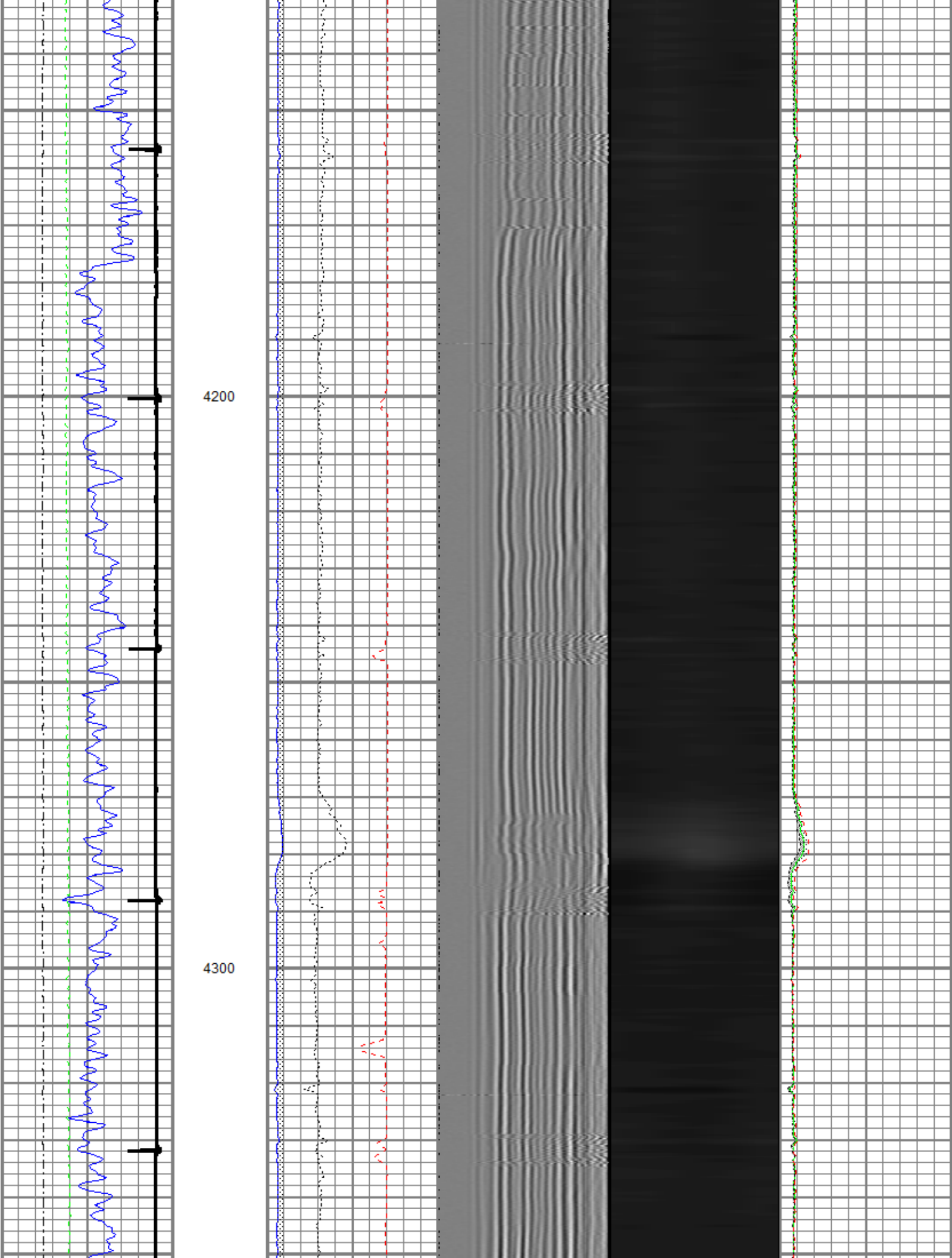


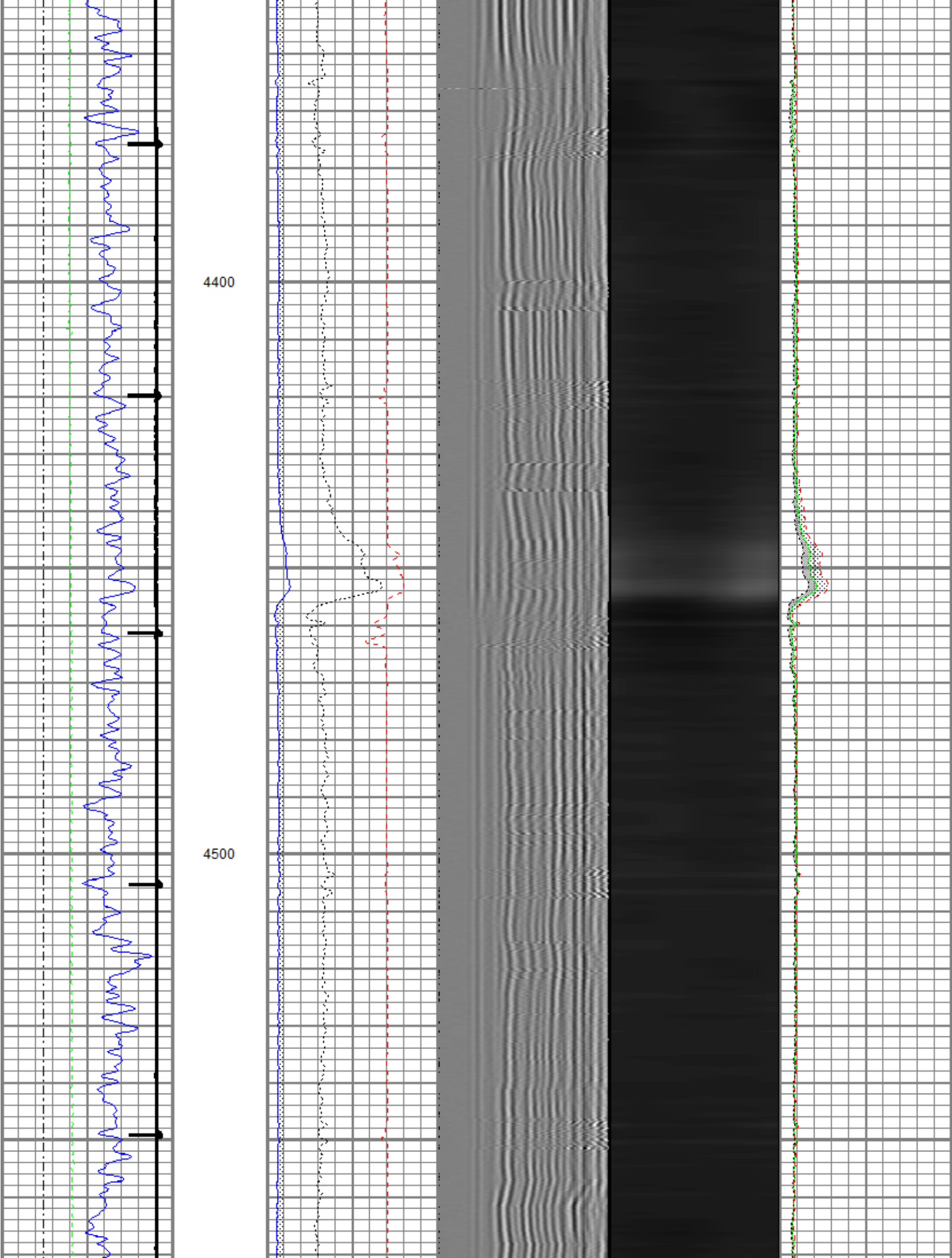
4000

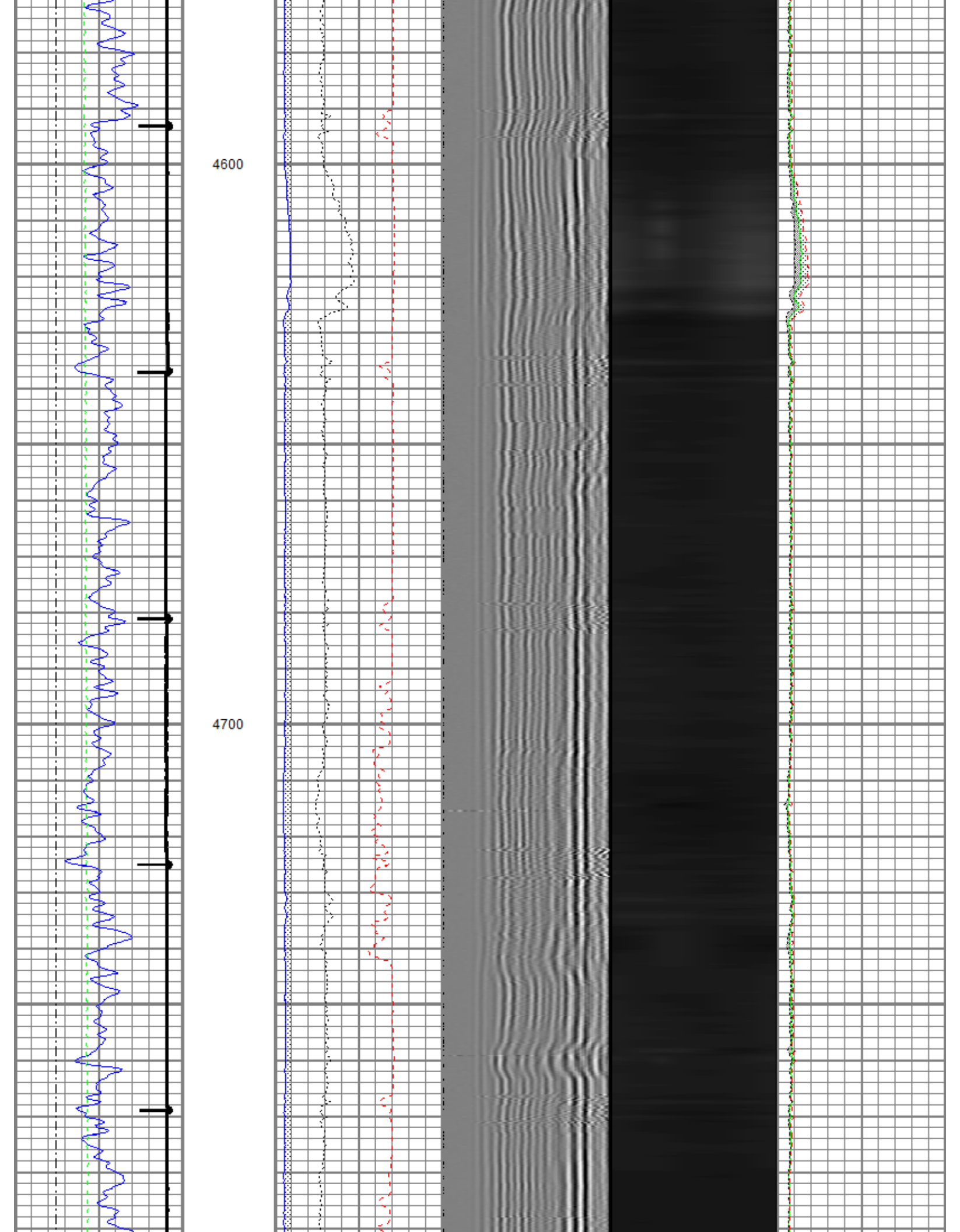
4100

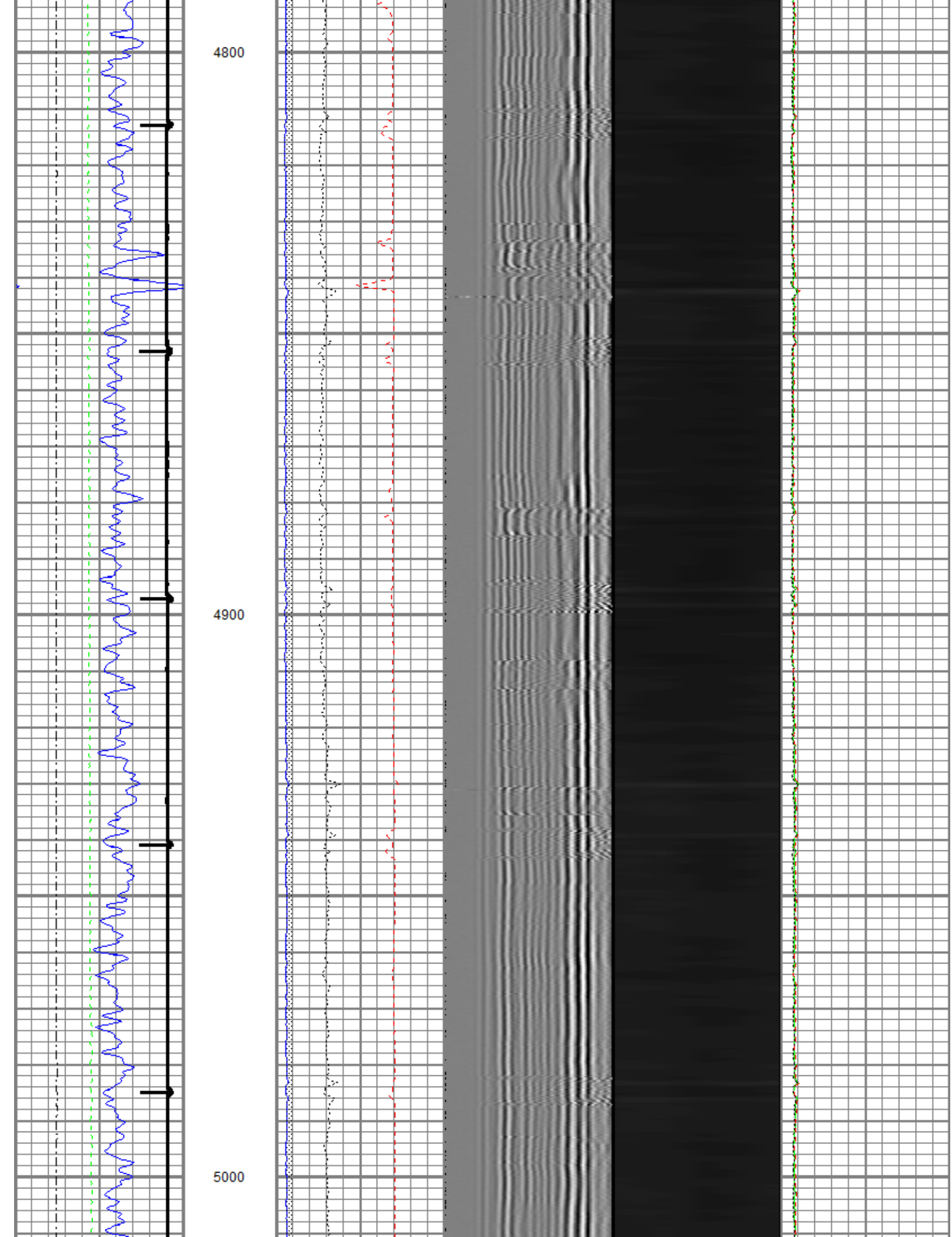




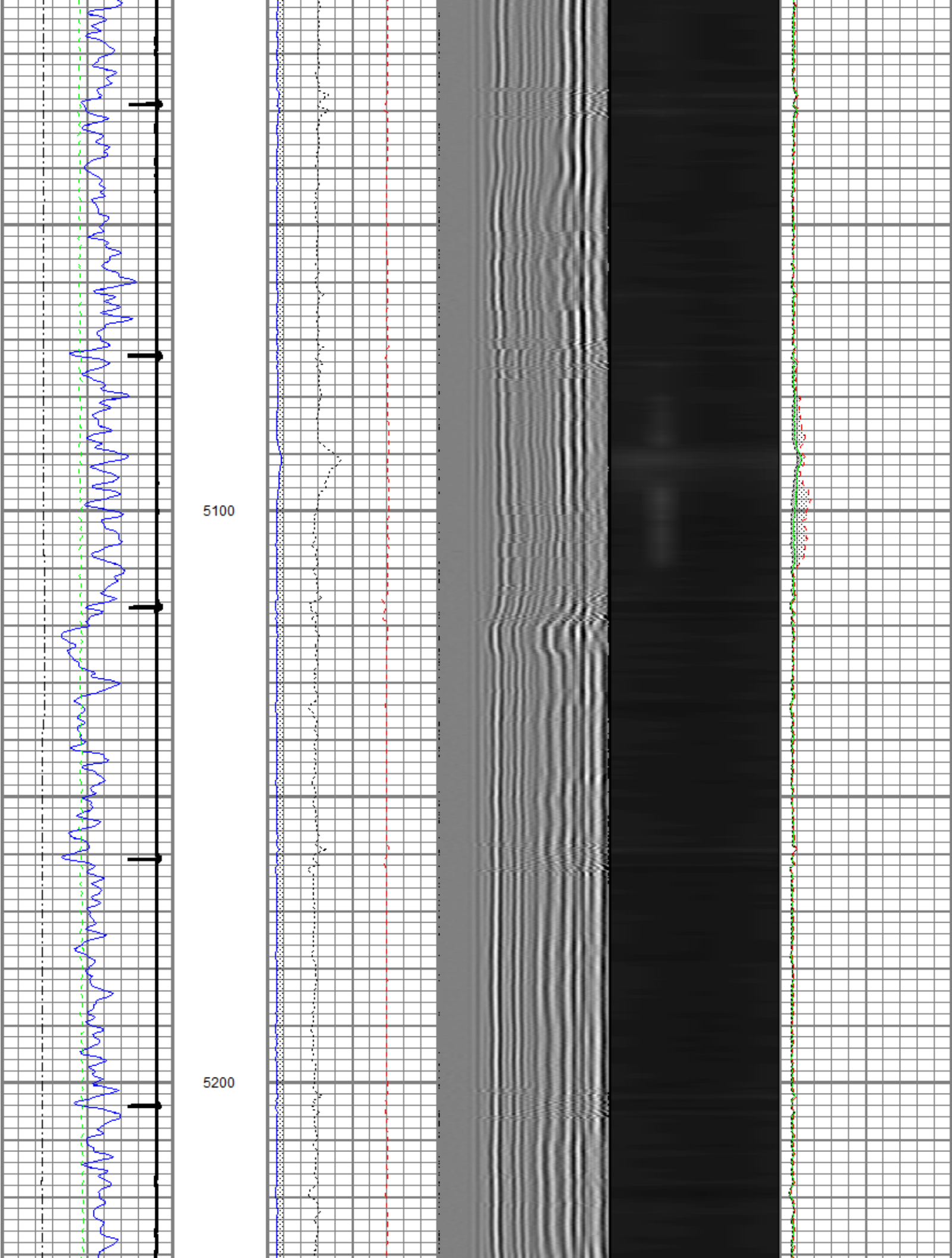


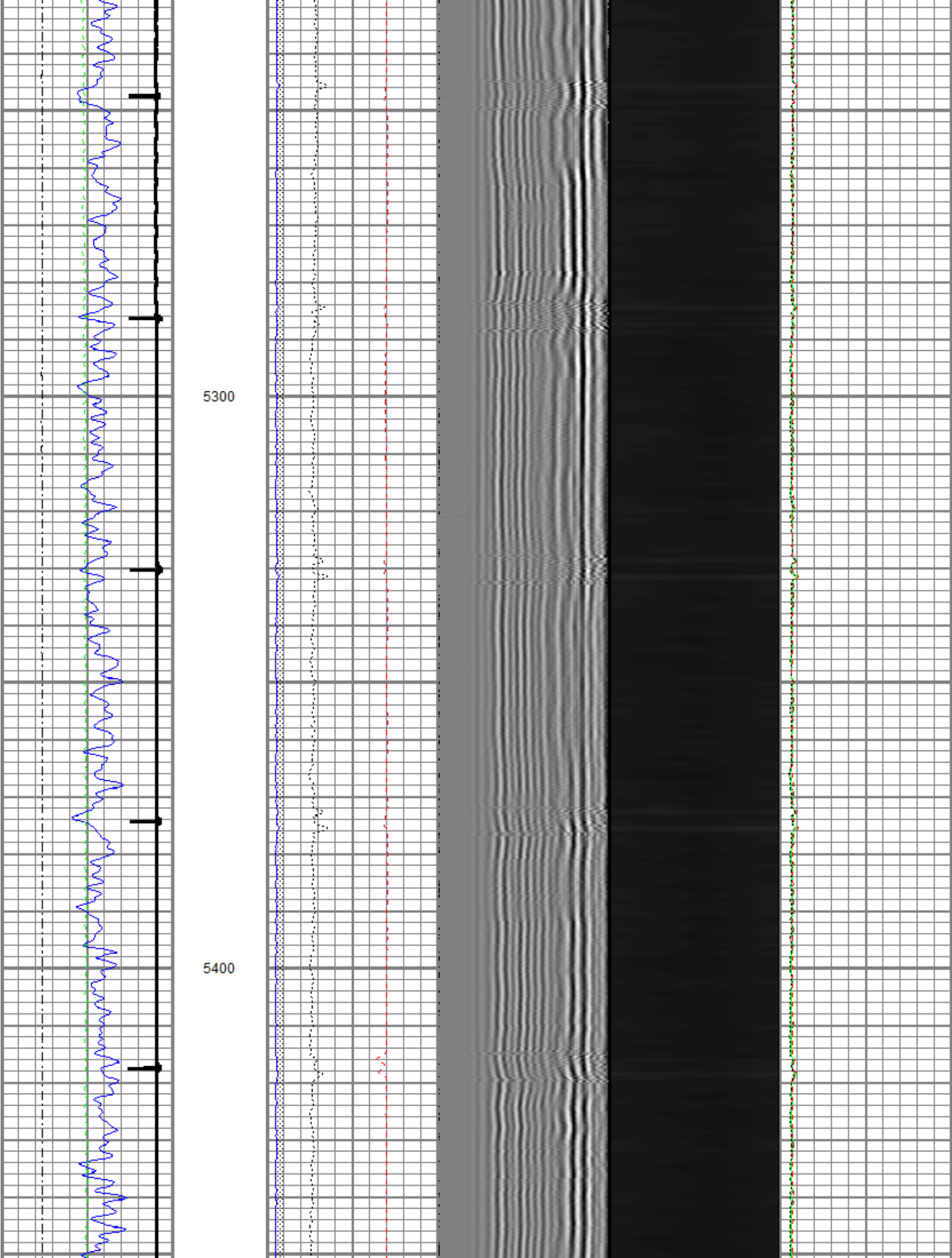


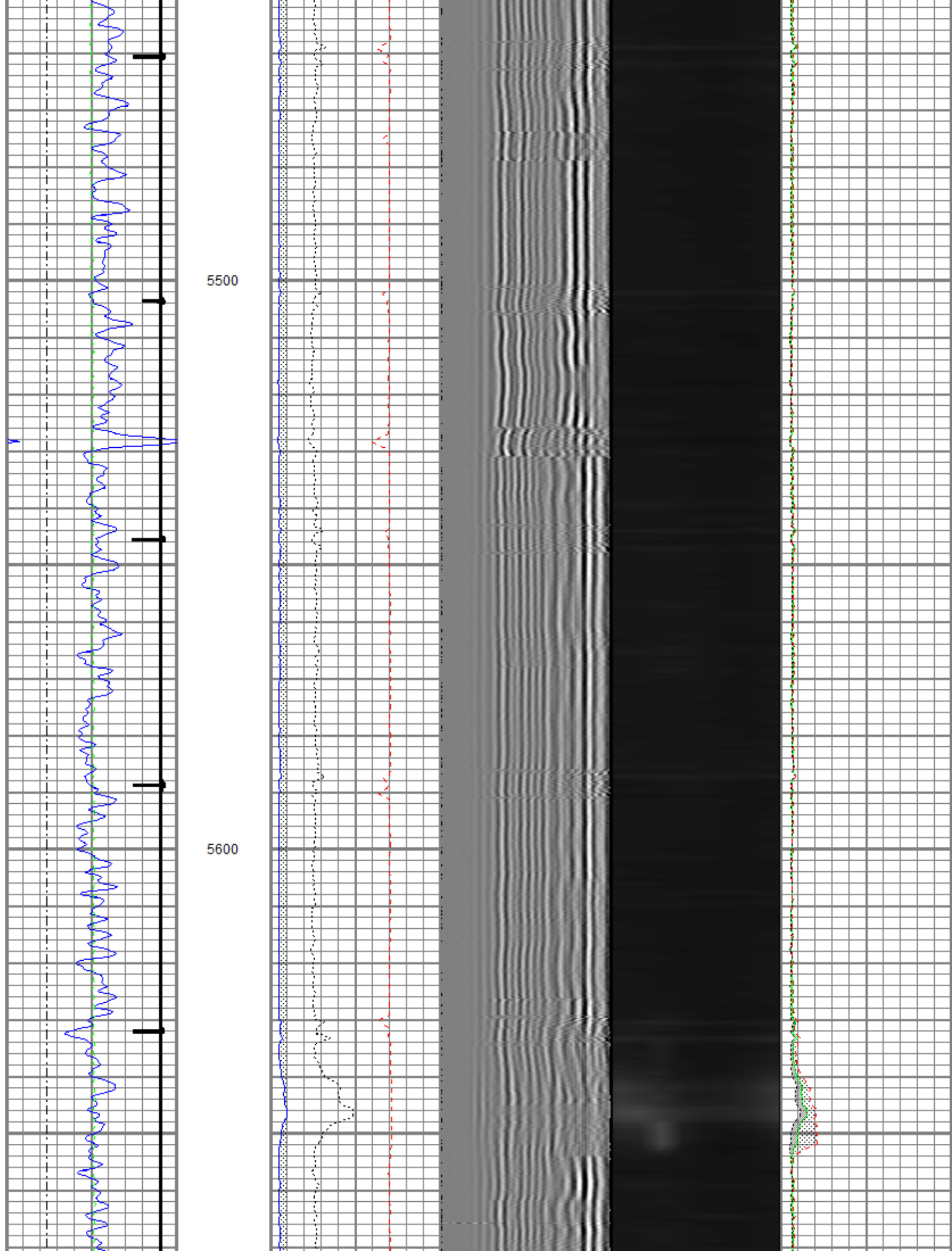


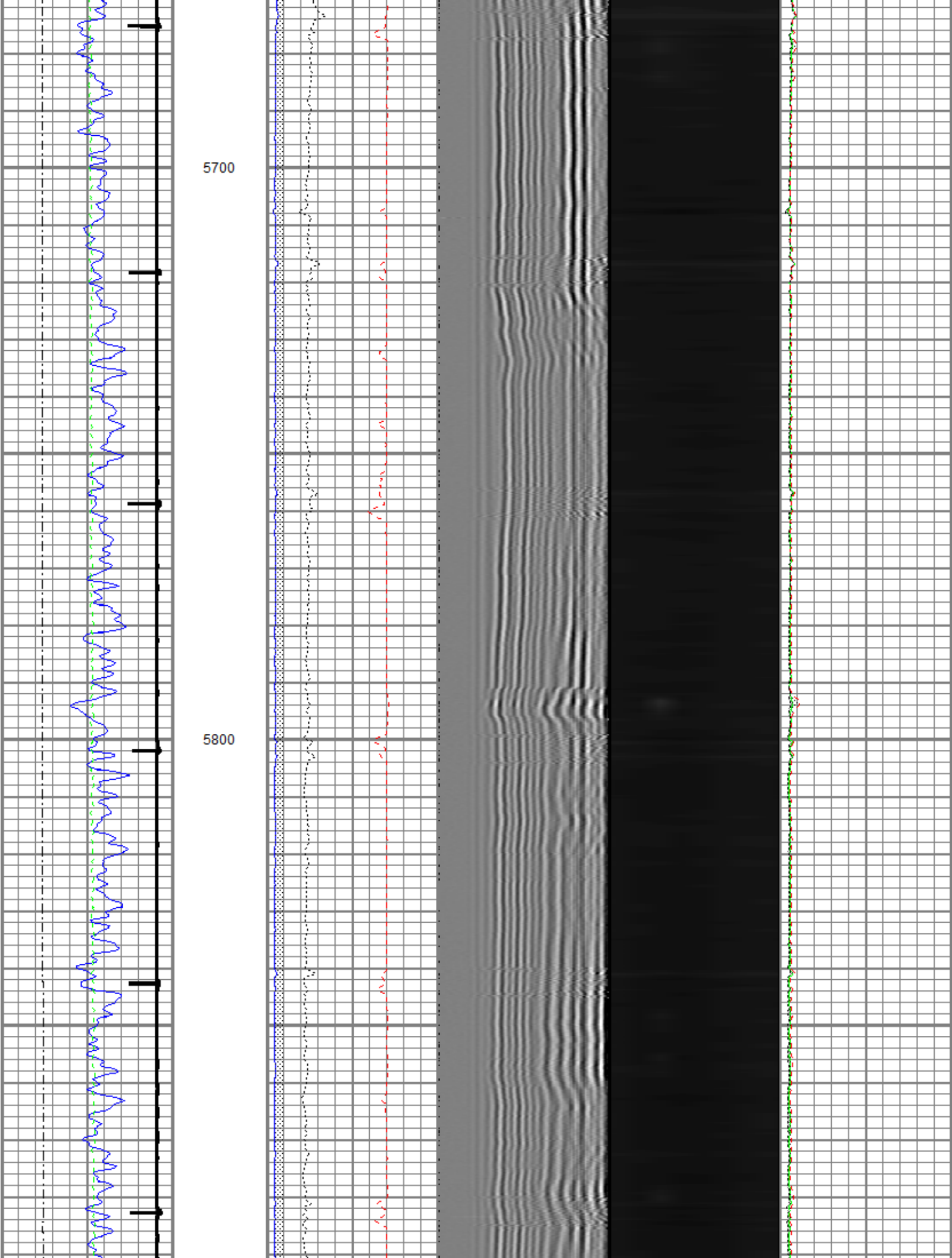




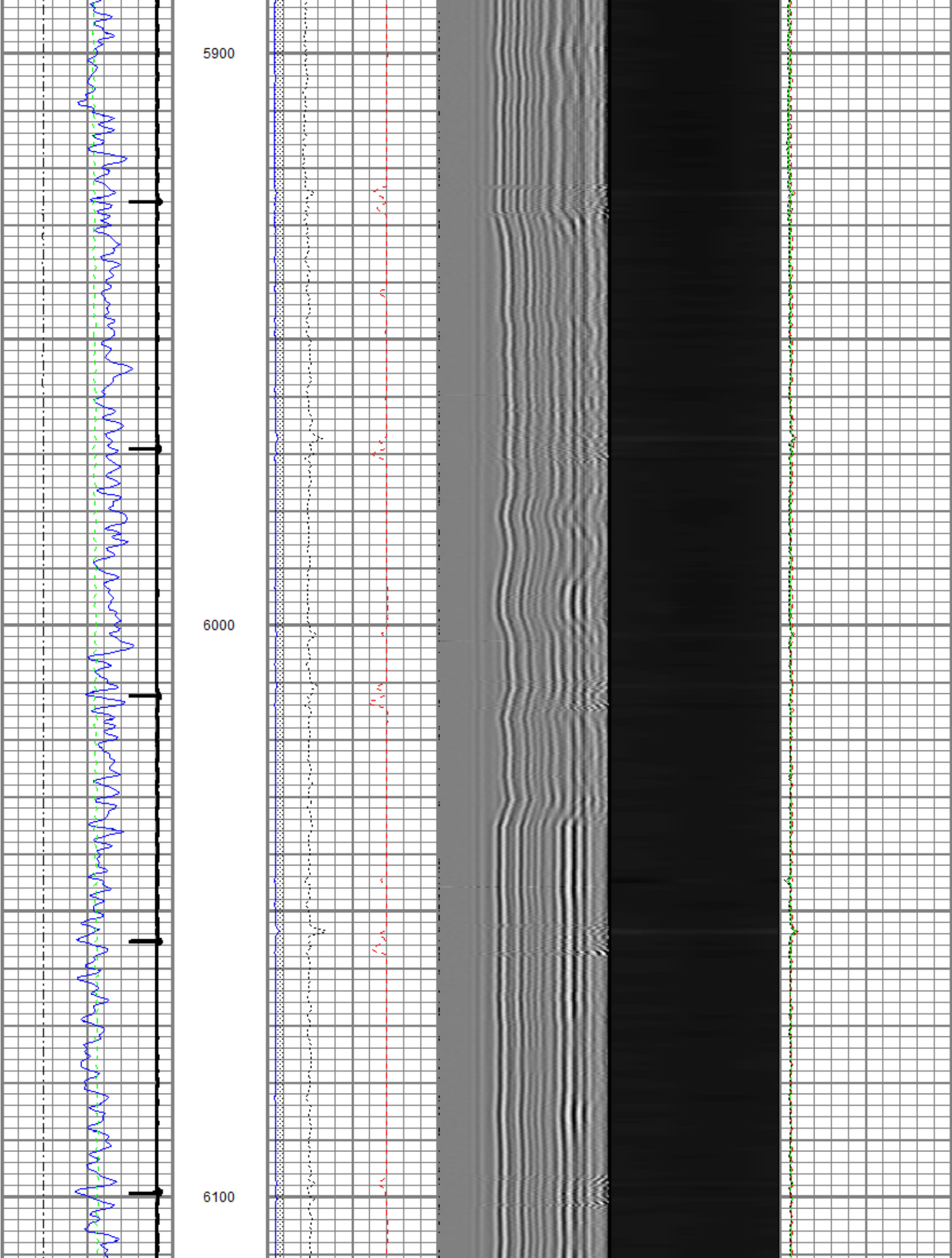


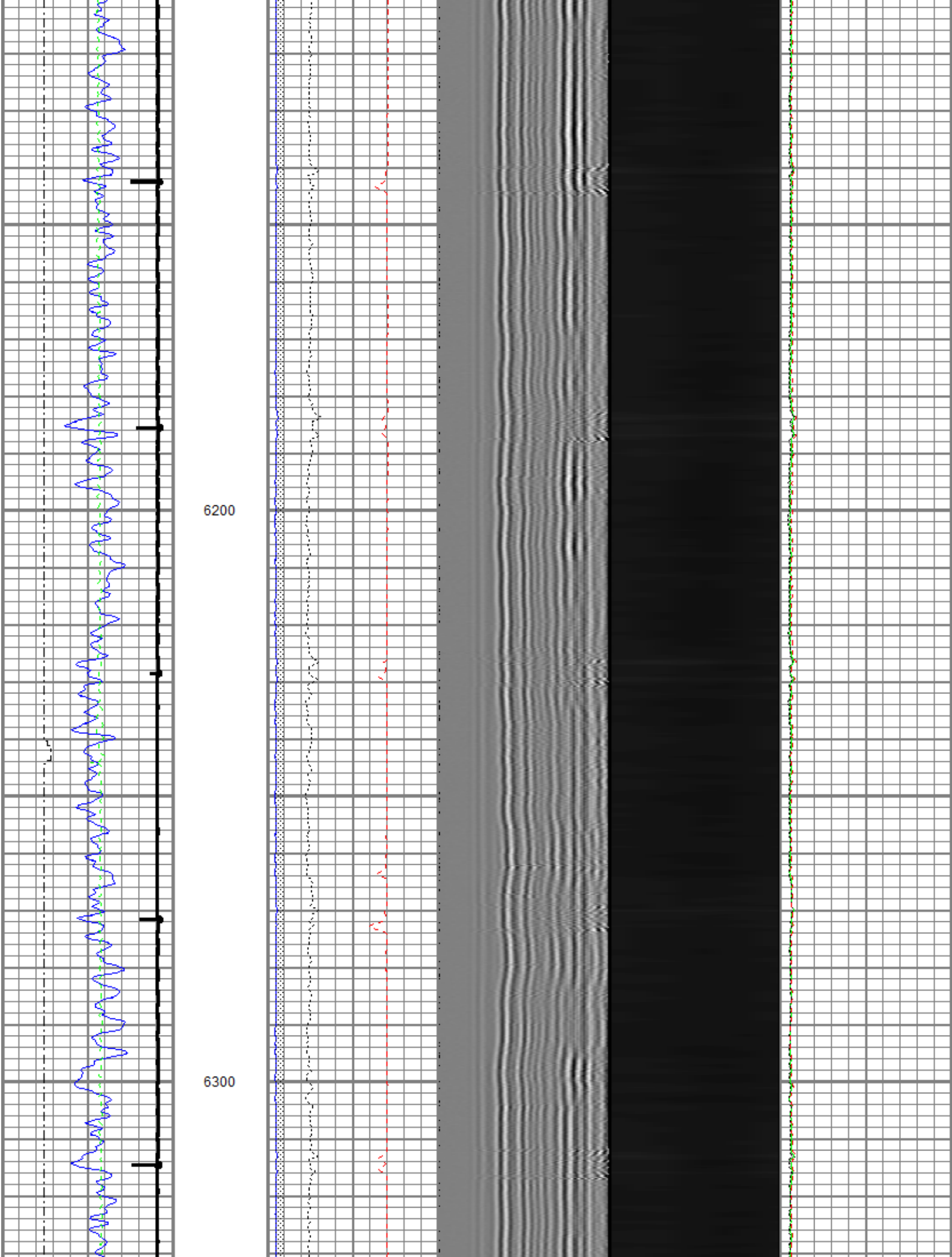


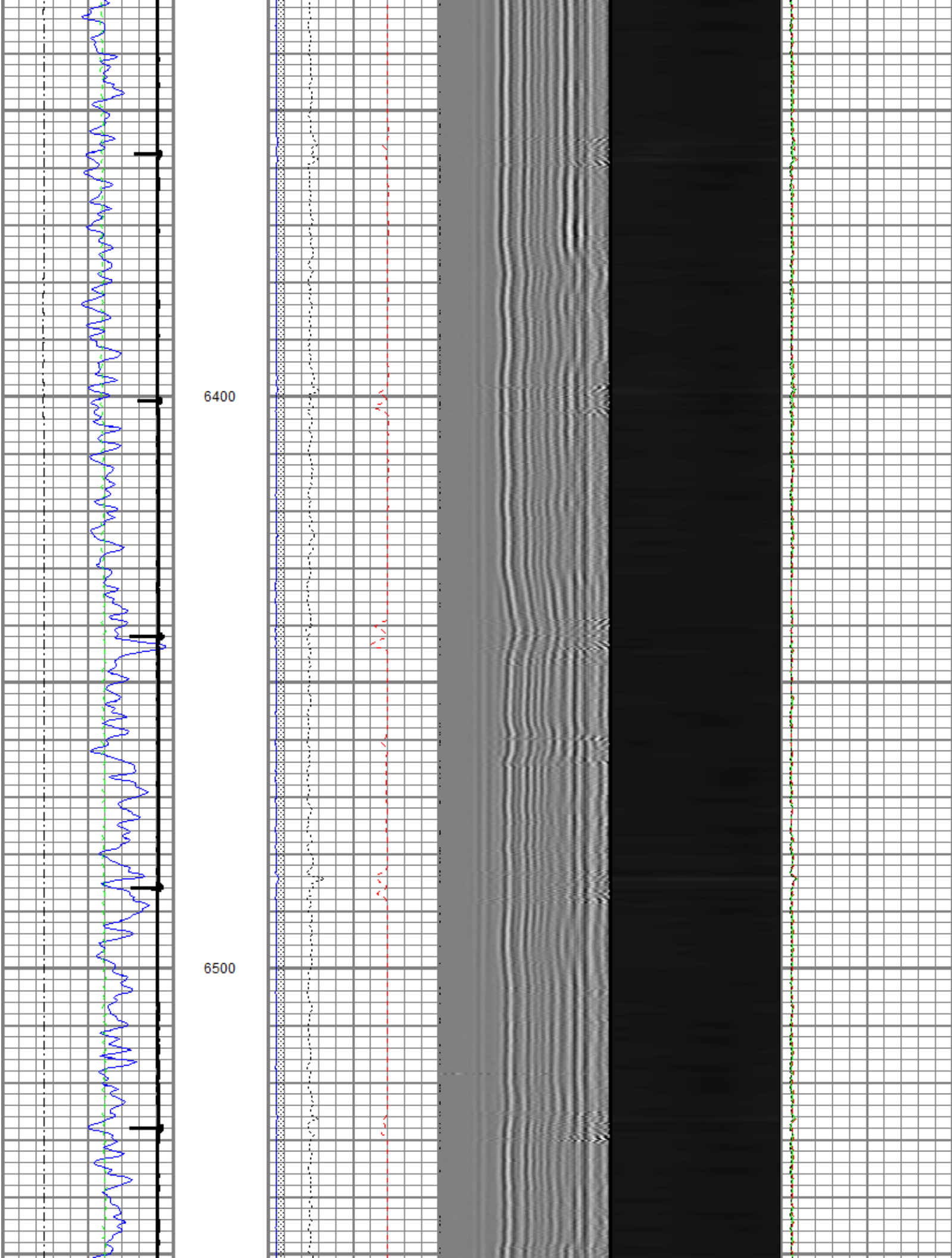


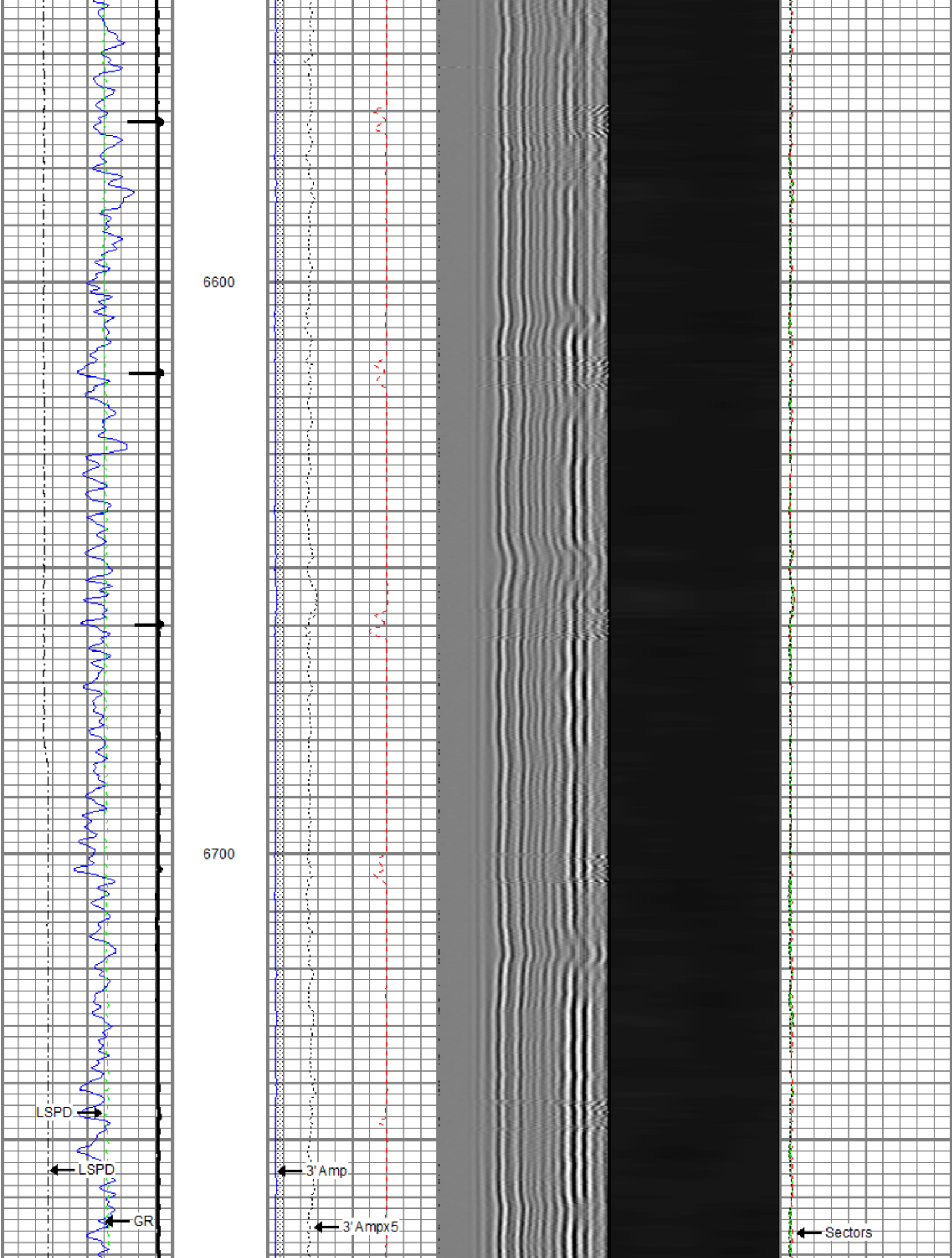




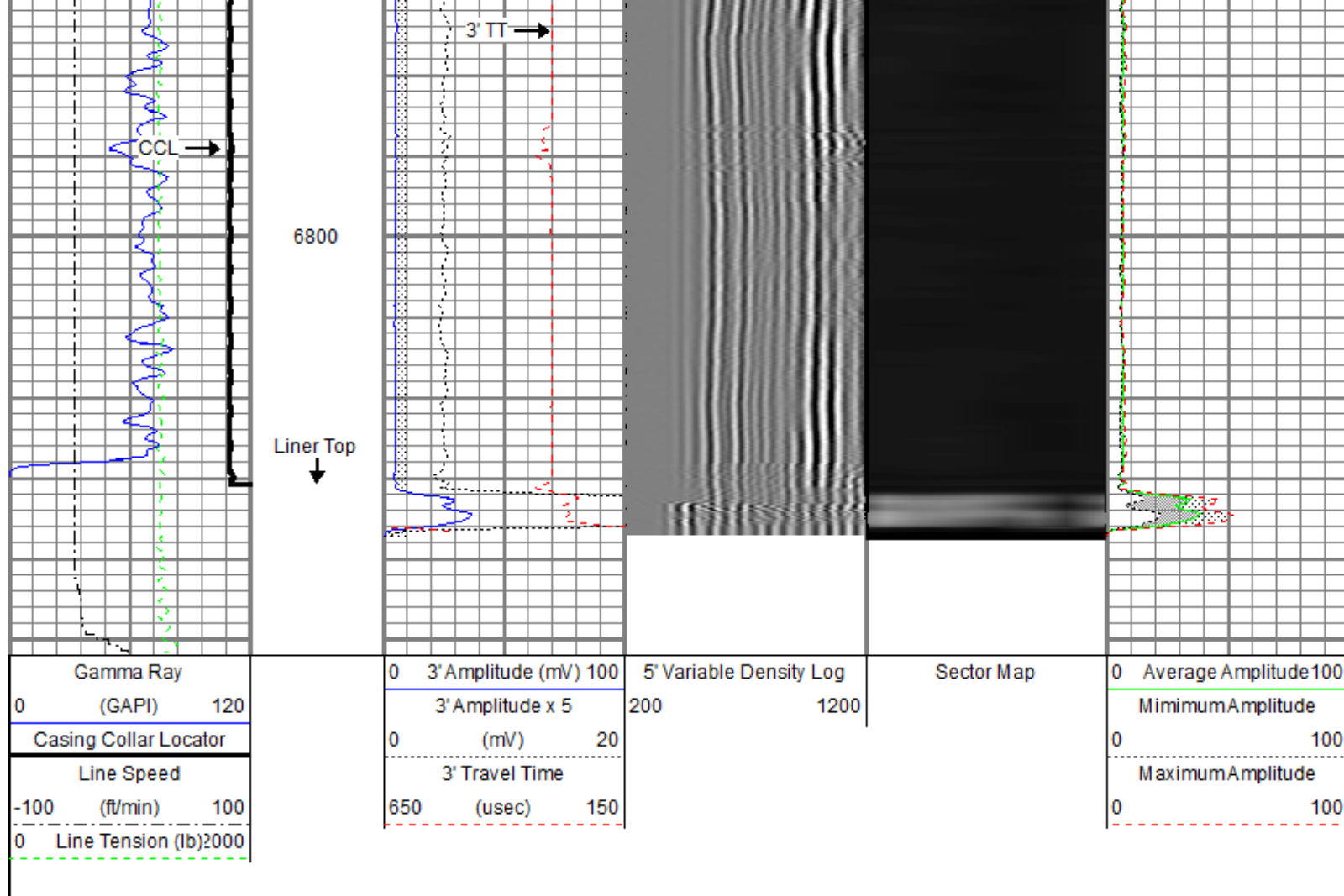










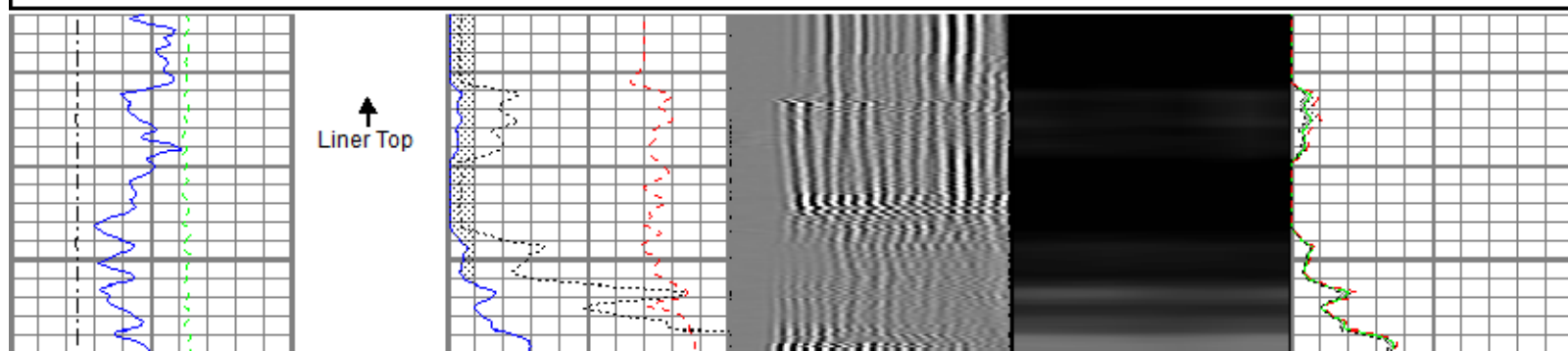
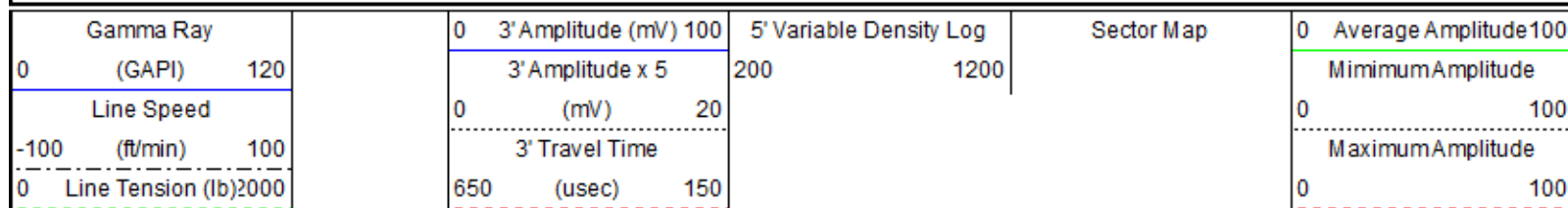


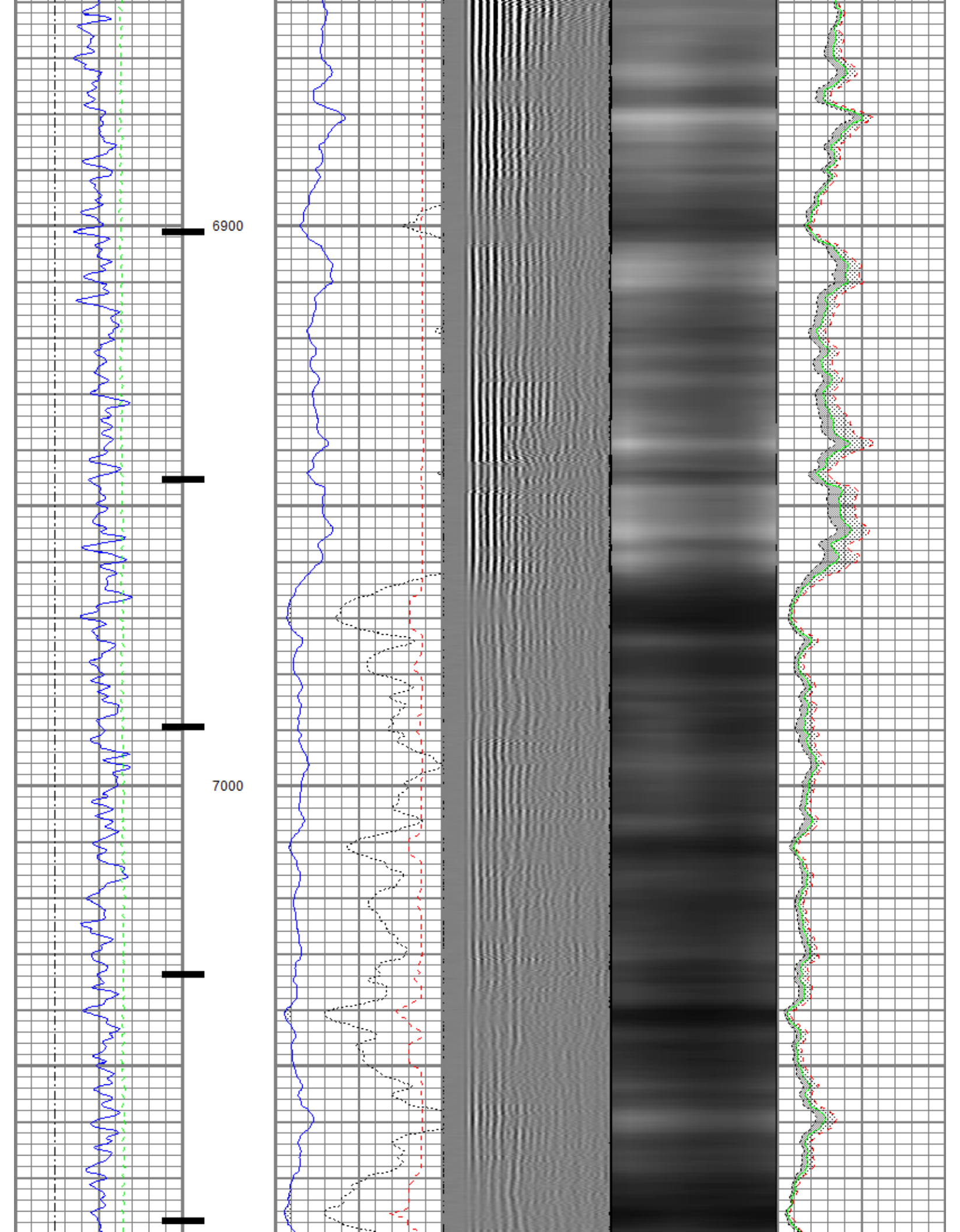
**FMC Technologies**

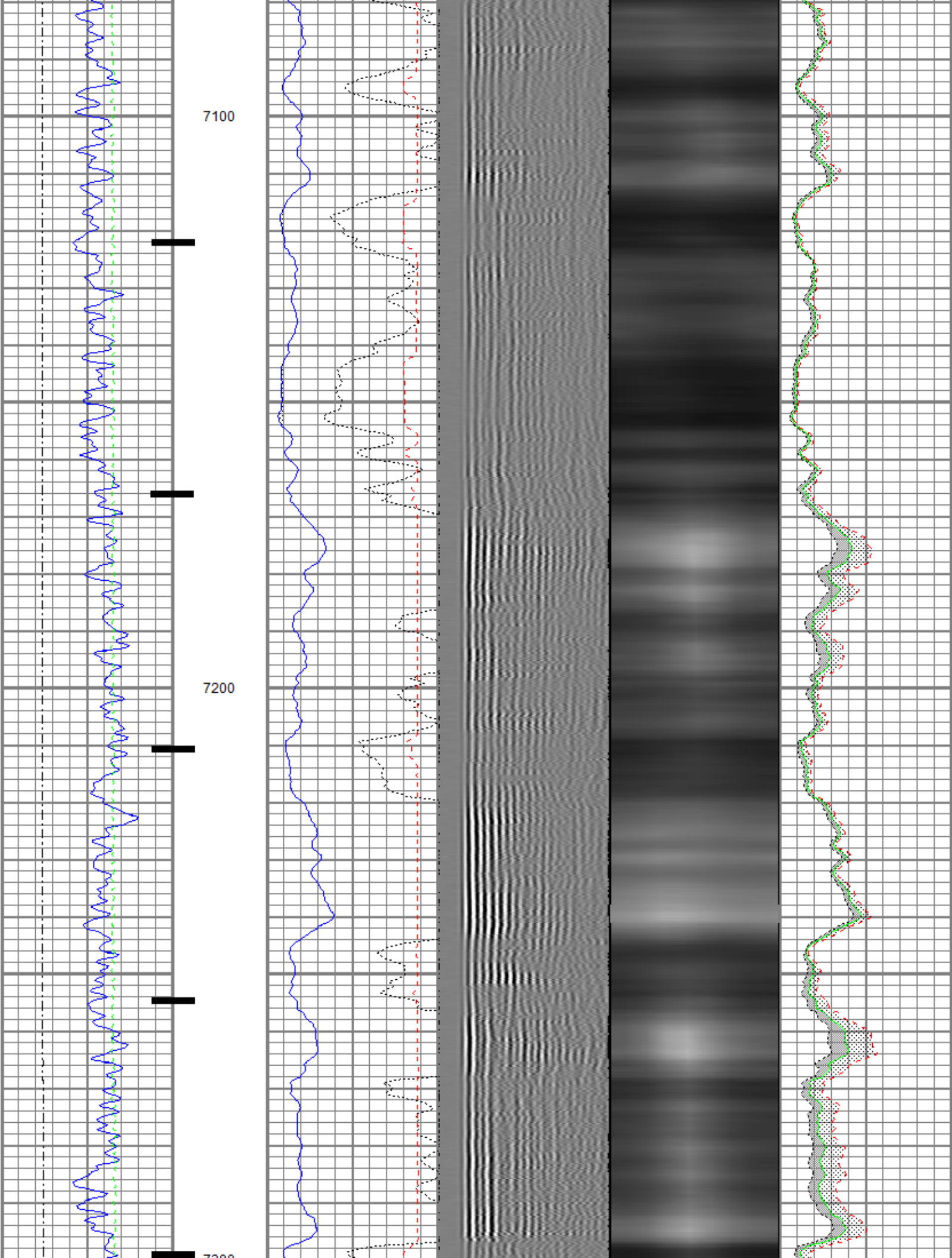
## 4.5" Main Pass

Recorded with 2800 PSI surface induced pressure

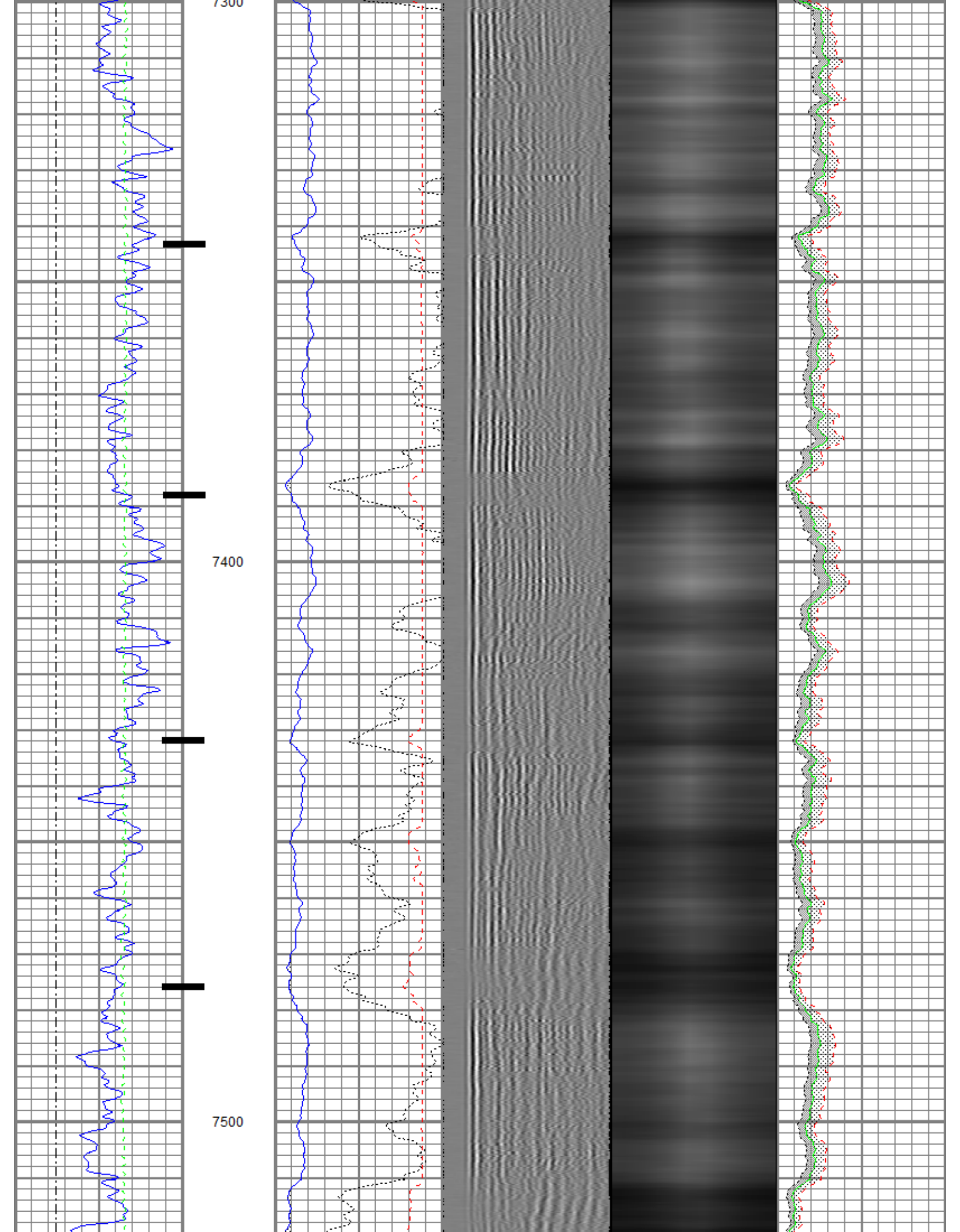
Database File: anadarko\_whip snake 28n-22hz\_rcbl mit\_04-sept-2014.db  
 Dataset Pathname: pass5  
 Presentation Format: rbt4\_mit  
 Dataset Creation: Thu Sep 04 14:35:52 2014 by Log SCH 111116  
 Charted by: Depth in Feet scaled 1:240



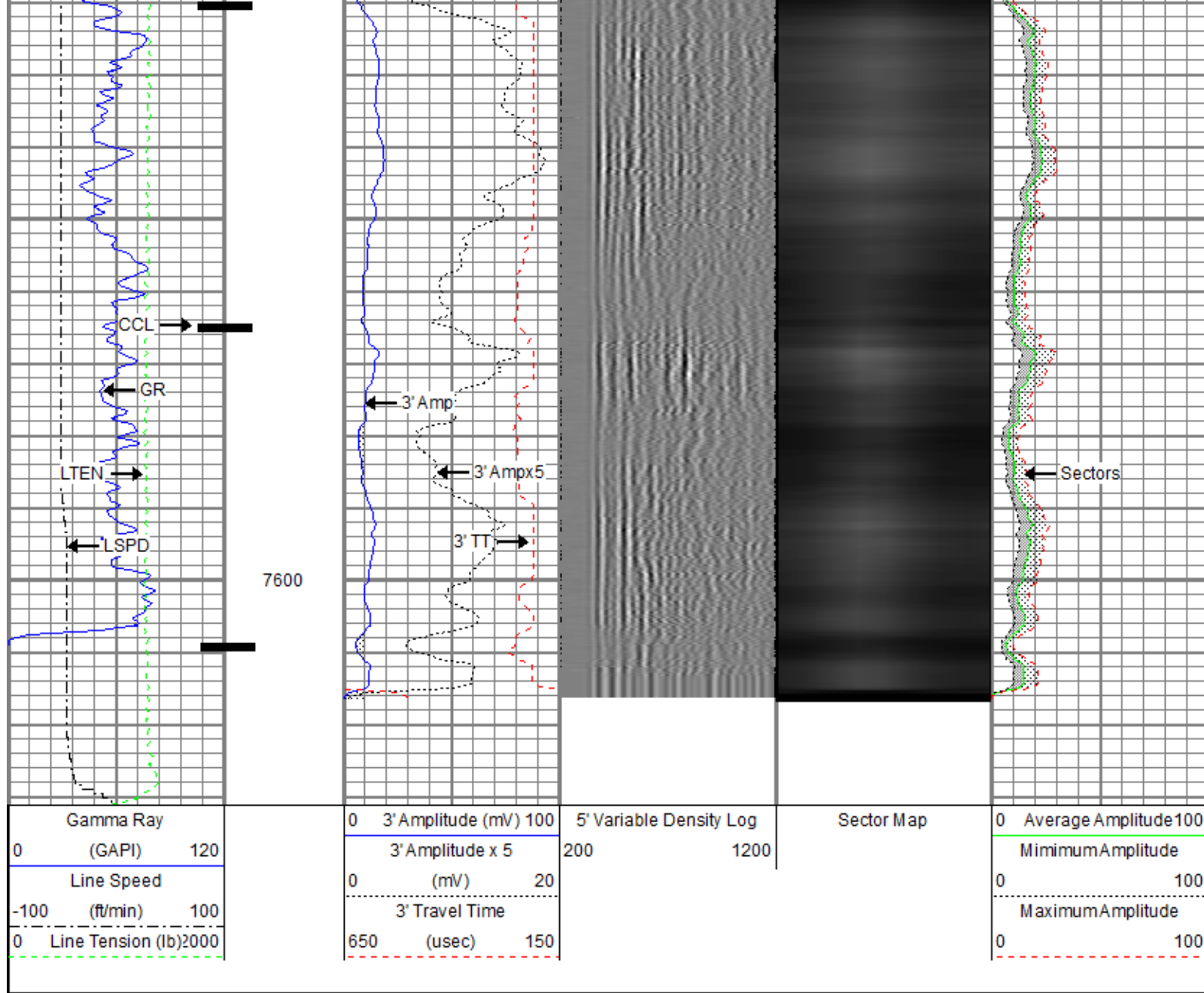






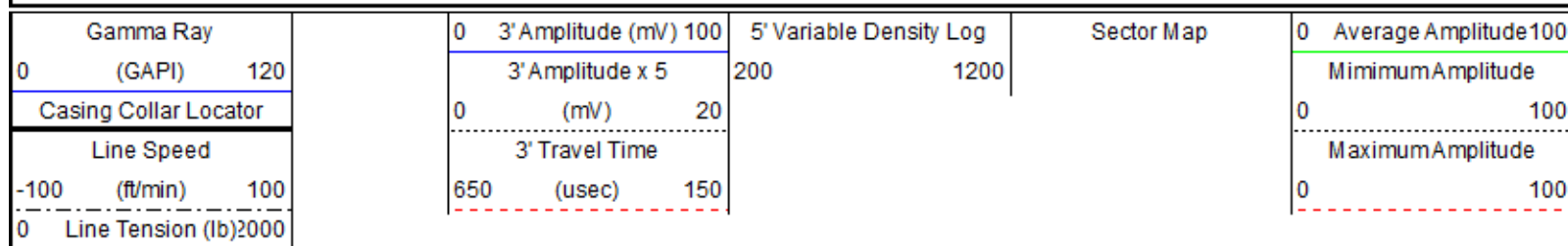






# Repeat Pass

Database File: anadarko\_whip snake 28n-22hz\_rcbl mit\_04-sept-2014.db  
 Dataset Pathname: pass3  
 Presentation Format: rbt4\_mit  
 Dataset Creation: Thu Sep 04 14:20:25 2014 by Log SCH 111116  
 Charted by: Depth in Feet scaled 1:240



Repeat Section

Repeat Section

6700

Repeat Section

Repeat Section

6800

Repeat Section

Repeat Section

Gamma Ray

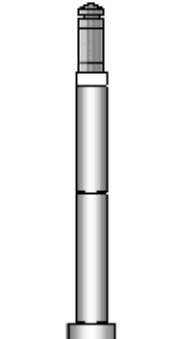
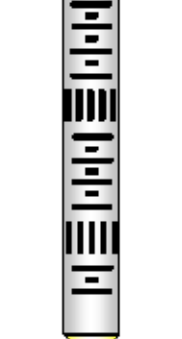
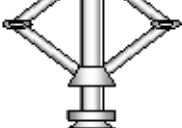
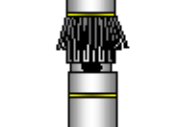
0 3' Amplitude (mV) 100

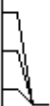

5' Variable Density Log

Sector Map

0 Average Amplitude 100

0	(GAPI)	120	0	3' Amplitude x 5	200	1200	0	Minimum Amplitude	100
Casing Collar Locator			0	(mV)	20		0		100
Line Speed			3' Travel Time				Maximum Amplitude		
-100	(ft/min)	100	650	(usec)	150		0		100
0	Line Tension (lb)	2000							

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 (051219) 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_PRC-UW_PRC_057 (1037) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
WVFS3FT	15.85		UW_RBT-UW_RBT_004 (1066) 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 #3 -UW_PRC_057 (1038) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
CBLROT	15.85					
WVFS5FT	14.85		UW_MIT-UW_MIT40_027 (211111) 40 Multifinger Imaging Tool	4.54	2.75	61.10
MIT	5.41					

TSTAMP	0.00			UW_PRC-UW_PRC_057 (1101) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
ITEMPX	0.00			UW_BUL-UW_BUL_006 (218707) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20
HVOLTX	0.00						
Dataset: anadarko_whip snake 28n-22hz_rcbl mit_04-sept-2014.db: field/well/run1/pass6 Total Length: 27.92 ft Total Weight: 319.30 lb O.D. 3.13 in							

Calibration Report			
Database File:	anadarko_whip snake 28n-22hz_rcbl mit_04-sept-2014.db		
Dataset Pathname:	pass7		
Dataset Creation:	Thu Sep 04 17:35:27 2014 by Log SCH 111116		
Multi-finger Imaging Tool Calibration Report			
Serial Number:	211111		
Number of Fingers:	40		
Tool Model:	UW_MIT40_027		
Inclinometer Calibration Report			
Performed:	Mon Nov 18 15:31:59 2013		
Calibration Angle:	46		
	Inc X	Inc Y	
Vertical:	1931	1952	
Finger 1 up:	1959	2266	
Finger 31 up:	1608	1962	
Finger 21 up:	1927	1623	
Finger 11 up:	2253	1930	
Sensitivity ratio:	1.0031		
X-axis angle:	272.845		
Deviation const.:	311.818		

Finger Calibration Report							
Performed:				Thu Sep 04 13:41:11 2014			
Ring size:	4	5	6	7			
(in)							
	Sens	Sens	Sens				
Finger 01:	1006 366.0	1372 403.0	1775 431.0	2206			
Finger 02:	1043 362.0	1405 399.0	1804 423.0	2227			
Finger 03:	1037 358.0	1395 401.0	1796 424.0	2220			
Finger 04:	998 356.0	1354 404.0	1758 425.0	2183			
Finger 05:	1021 352.0	1373 397.0	1770 419.0	2189			
Finger 06:	1011 361.0	1372 405.0	1777 424.0	2201			
Finger 07:	1130 328.0	1458 367.0	1825 388.0	2213			
Finger 08:	1042 344.0	1386 401.0	1787 417.0	2204			
Finger 09:	1029 357.0	1386 400.0	1786 418.0	2204			
Finger 10:	1064 313.0	1377 351.0	1728 361.0	2089			
Finger 11:	1031 357.0	1388 395.0	1783 418.0	2201			
Finger 12:	1182 370.0	1552 410.0	1962 424.0	2386			
Finger 13:	1118 345.0	1463 393.0	1856 403.0	2259			
Finger 14:	1212 330.0	1542 360.0	1902 369.0	2271			
Finger 15:	1032 368.0	1400 410.0	1810 432.0	2242			
Finger 16:	1064 338.0	1402 385.0	1787 419.0	2206			
Finger 17:	1055 364.0	1419 405.0	1824 422.0	2246			
Finger 18:	1027 370.0	1397 408.0	1805 426.0	2231			
Finger 19:	1027 369.0	1396 413.0	1809 437.0	2246			
Finger 20:	1091 360.0	1451 393.0	1844 413.0	2257			
Finger 21:	1073 368.0	1441 406.0	1847 427.0	2274			
Finger 22:	1082 371.0	1453 401.0	1854 427.0	2281			
Finger 23:	1056 368.0	1424 412.0	1836 442.0	2278			
Finger 24:	1220 347.0	1567 366.0	1933 397.0	2330			
Finger 25:	1191 362.0	1553 386.0	1939 402.0	2341			
Finger 26:	1202 344.0	1546 362.0	1908 383.0	2291			
Finger 27:	1171 347.0	1518 371.0	1889 395.0	2284			
Finger 28:	1213 356.0	1569 367.0	1936 388.0	2324			
Finger 29:	1197 351.0	1548 364.0	1912 385.0	2297			
Finger 30:	1181 348.0	1529 372.0	1901 399.0	2300			
Finger 31:	1198 351.0	1549 374.0	1922 392.0	2316			



Finger 31:	1190	331.0	1549	374.0	1923	393.0	2310
Finger 32:	1213	344.0	1557	358.0	1915	380.0	2295
Finger 33:	1053	363.0	1416	417.0	1833	449.0	2282
Finger 34:	1088	361.0	1449	394.0	1843	428.0	2271
Finger 35:	1193	338.0	1531	366.0	1897	398.0	2295
Finger 36:	1135	344.0	1479	372.0	1851	392.0	2243
Finger 37:	1070	365.0	1435	400.0	1835	438.0	2273
Finger 38:	1075	357.0	1432	383.0	1815	409.0	2224
Finger 39:	1060	372.0	1432	414.0	1846	454.0	2300
Finger 40:	997	363.0	1360	397.0	1757	426.0	2183


Post Survey Calibration Check								
Performed: Thu Sep 04 17:35:18 2014								
Ring size: (in)	4	Nom. wear	5	Nom. wear	6	Nom. wear	7	Nom. wear
Finger 01:	4.014	0.007	5.004	0.002	6.007	0.003	7.003	0.001
Finger 02:	4.007	0.003	5.003	0.002	6.008	0.004	7.006	0.003
Finger 03:	4.019	0.009	5.008	0.004	6.002	0.001	7.000	-0.000
Finger 04:	4.011	0.006	5.008	0.004	5.999	-0.000	7.008	0.004
Finger 05:	4.016	0.008	5.009	0.005	6.006	0.003	7.000	-0.000
Finger 06:	4.011	0.006	5.010	0.005	6.004	0.002	7.004	0.002
Finger 07:	4.014	0.007	5.006	0.003	6.008	0.004	6.999	-0.001
Finger 08:	4.023	0.012	5.019	0.009	6.005	0.002	7.005	0.002
Finger 09:	4.007	0.004	4.998	-0.001	6.005	0.003	7.007	0.003
Finger 10:	4.014	0.007	5.008	0.004	5.999	-0.001	6.998	-0.001
Finger 11:	4.012	0.006	5.001	0.001	6.002	0.001	7.004	0.002
Finger 12:	4.012	0.006	5.008	0.004	5.993	-0.003	6.972	-0.014
Finger 13:	4.012	0.006	5.009	0.004	5.985	-0.007	6.986	-0.007
Finger 14:	4.013	0.007	5.003	0.002	5.991	-0.005	6.984	-0.008
Finger 15:	4.008	0.004	5.003	0.002	6.005	0.003	6.995	-0.002
Finger 16:	4.018	0.009	5.077	0.038	6.052	0.026	6.968	-0.016
Finger 17:	4.008	0.004	4.999	-0.000	5.996	-0.002	6.996	-0.002
Finger 18:	4.011	0.005	5.000	0.000	6.002	0.001	7.011	0.006
Finger 19:	4.009	0.005	5.006	0.003	6.001	0.000	6.999	-0.001
Finger 20:	4.013	0.006	5.007	0.003	6.000	-0.000	7.003	0.001
Finger 21:	4.010	0.005	5.006	0.003	6.009	0.005	7.009	0.004
Finger 22:	4.013	0.006	5.004	0.002	6.006	0.003	7.006	0.003
Finger 23:	4.012	0.006	5.003	0.001	6.005	0.003	7.009	0.005
Finger 24:	4.011	0.006	4.997	-0.001	5.997	-0.001	6.963	-0.018
Finger 25:	4.010	0.005	5.003	0.001	6.003	0.001	7.005	0.002
Finger 26:	4.029	0.014	5.031	0.016	6.021	0.010	7.011	0.005
Finger 27:	4.007	0.004	5.005	0.003	6.005	0.003	7.009	0.005
Finger 28:	4.008	0.004	5.004	0.002	6.005	0.002	6.999	-0.000
Finger 29:	4.019	0.009	5.011	0.005	6.007	0.003	6.997	-0.002
Finger 30:	4.012	0.006	5.003	0.002	5.984	-0.008	6.990	-0.005
Finger 31:	4.008	0.004	5.007	0.004	5.996	-0.002	6.997	-0.001
Finger 32:	4.026	0.013	5.012	0.006	6.001	0.000	6.983	-0.008
Finger 33:	4.004	0.002	5.010	0.005	5.992	-0.004	6.991	-0.005
Finger 34:	4.022	0.011	5.021	0.010	6.013	0.007	7.003	0.002
Finger 35:	4.006	0.003	5.013	0.007	6.006	0.003	6.992	-0.004
Finger 36:	4.010	0.005	5.010	0.005	6.004	0.002	7.013	0.007
Finger 37:	4.005	0.003	5.011	0.006	6.005	0.003	6.961	-0.020
Finger 38:	4.010	0.005	5.009	0.005	6.011	0.005	7.005	0.003
Finger 39:	4.009	0.005	5.014	0.007	6.003	0.001	6.970	-0.015
Finger 40:	4.015	0.007	5.008	0.004	6.009	0.005	7.004	0.002
Average:	4.013	0.006	5.009	0.005	6.004	0.002	6.997	-0.002

Segmented Cement Bond Log Calibration Report		
Serial Number:	1066	
Tool Model:	UW_RBT_004	
Calibration Casing Diameter:	7.000	in
Calibration Depth:	193.259	ft

Master Calibration, performed Thu Sep 04 13:58:45 2014:					
Raw (v)		Calibrated (mv)		Results	
Zero	Cal	Zero	Cal	Gain	Offset

3FT	0.004	0.734	0.800	62.165	84.067	0.498
5FT	-0.002	0.658	0.800	62.165	92.906	1.027
S1	0.005	0.653	0.000	100.000	154.185	-0.742
S2	0.003	0.713	0.000	100.000	140.885	-0.397
S3	0.003	0.782	0.000	100.000	128.474	-0.423
S4	0.002	0.829	0.000	100.000	120.962	-0.298
S5	0.004	0.817	0.000	100.000	122.891	-0.450
S6	0.002	0.763	0.000	100.000	131.447	-0.321
S7	0.004	0.709	0.000	100.000	141.861	-0.520
S8	0.004	0.666	0.000	100.000	150.980	-0.562

Gamma Ray Calibration Report						
Serial Number:	211727					
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 LP				
	Well	Whip Snake 28N-22HZ				
	Field	Wattenberg				
	County	Weld				
	State	Colorado				Country