



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	Noble Energy Inc.	Company	Noble Energy Inc.
Well	Douglas LC35-780	Well	Douglas LC35-780
Field	Wildcat	Field	Wildcat
County	Weld	County	Weld
State	Colorado	State	Colorado
Location:		API # : 05-123-40667	Other Services
SEC 26 TWP 9N RGE 59W		MIT	
Permanent Datum	Ground Level	Elevation	4812'
Log Measured From	Kelly Bushing	24 FT	
Drilling Measured From	Kelly Bushing		K.B. 4836' D.F. 4835' G.L. 4812'

Date	15-Jan-2016
Run Number	One
Depth Driller	10283 FT
Depth Logger	6136 FT
Bottom Logged Interval	6136 FT
Top Log Interval	Surface
Open Hole Size	8.750"
Type Fluid	Water
Density / Viscosity	8.34 lbm/gal
Max. Recorded Temp.	226°F
Estimated Cement Top	300 FT
Time Well Ready	ROA
Time Logger on Bottom	14:00
Equipment Number	HD-0343
Location	Fort Lupton, CO
Recorded By	R. Fogarty
Witnessed By	Bill Mansfield

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	24 FT	619.3 FT		
Intermediate #1	7	26	P-110 IC	24 FT	6357.3 FT		
Intermediate #2							
Liner	4 1/2	11.6	P-110 IC	6216.3 FT	10278 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 Kelly Bushing at 24 FT
Log ran from 10 FT above Liner Top to surface
Short Joints recorded at 4564 FT - 4586 FT and 5094 FT - 5114 FT
Recorded with 2500 PSI surface induced pressure
Logging tools were clean and free of any debris upon completion of operations

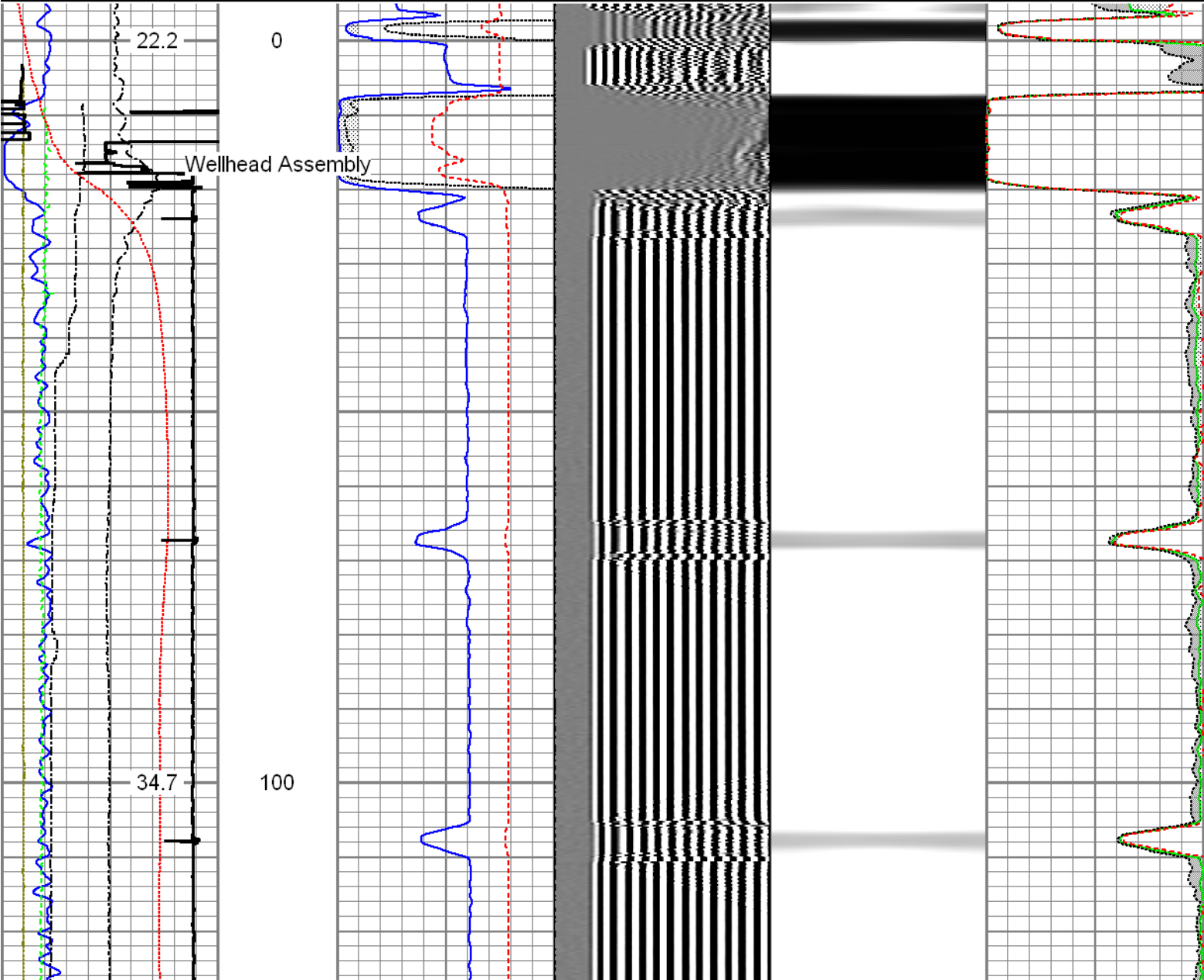
Thank you for choosing FMC Technologies Surface Integrated Services.

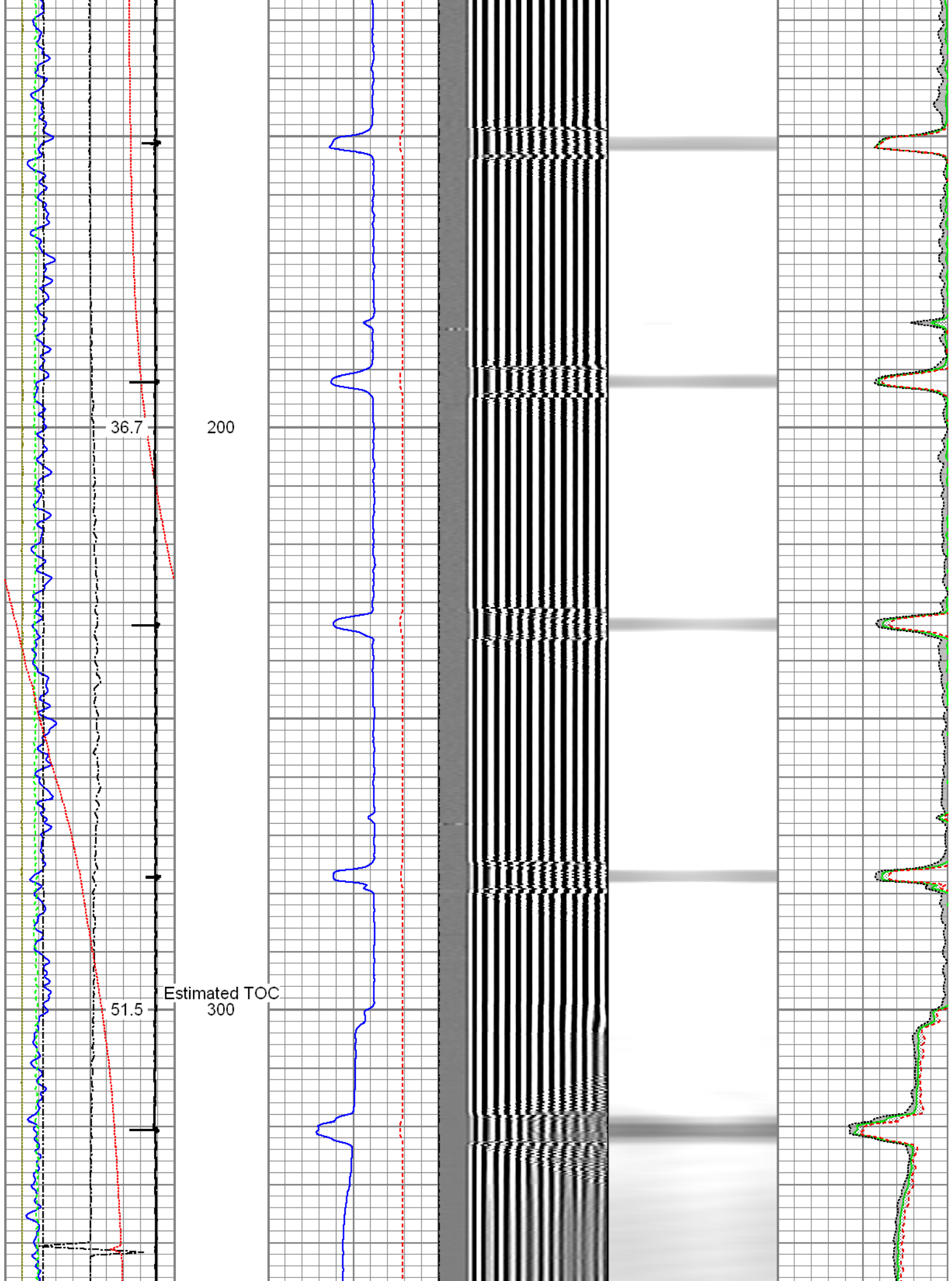


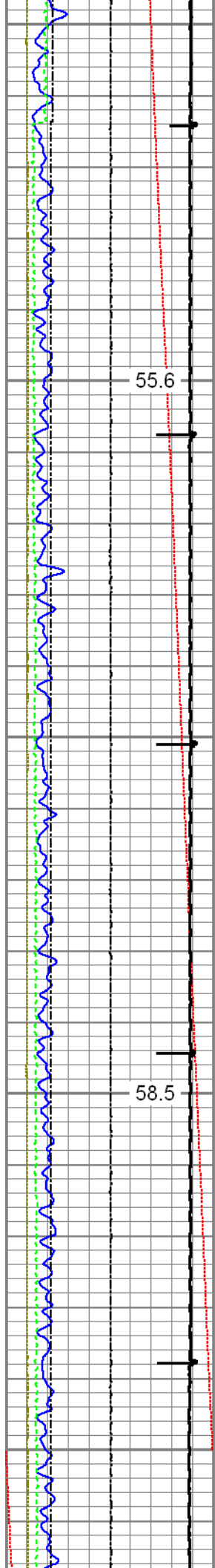
Main Pass

Recorded with 2500 PSI Surface Induced Pressure

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				

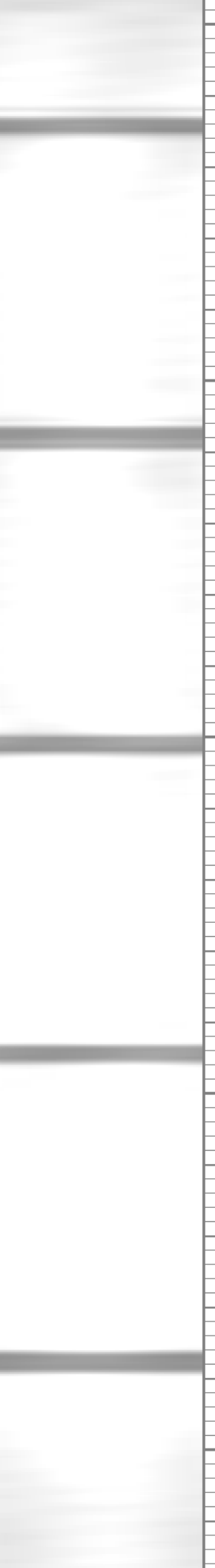
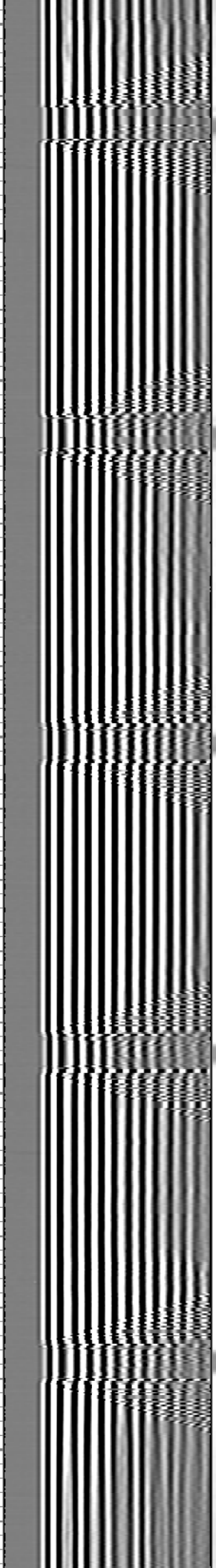
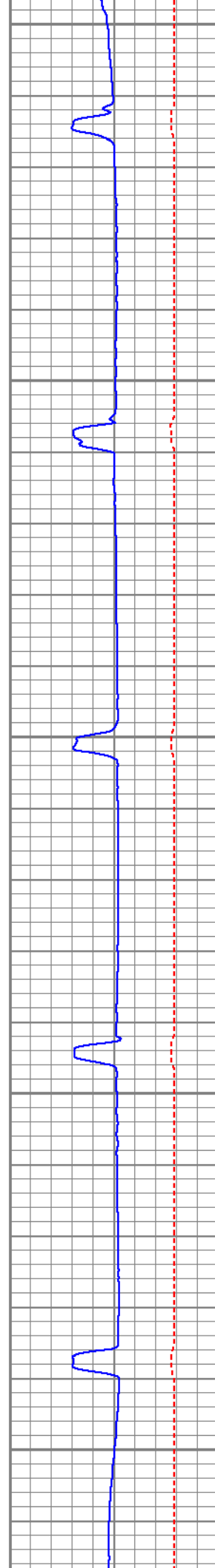


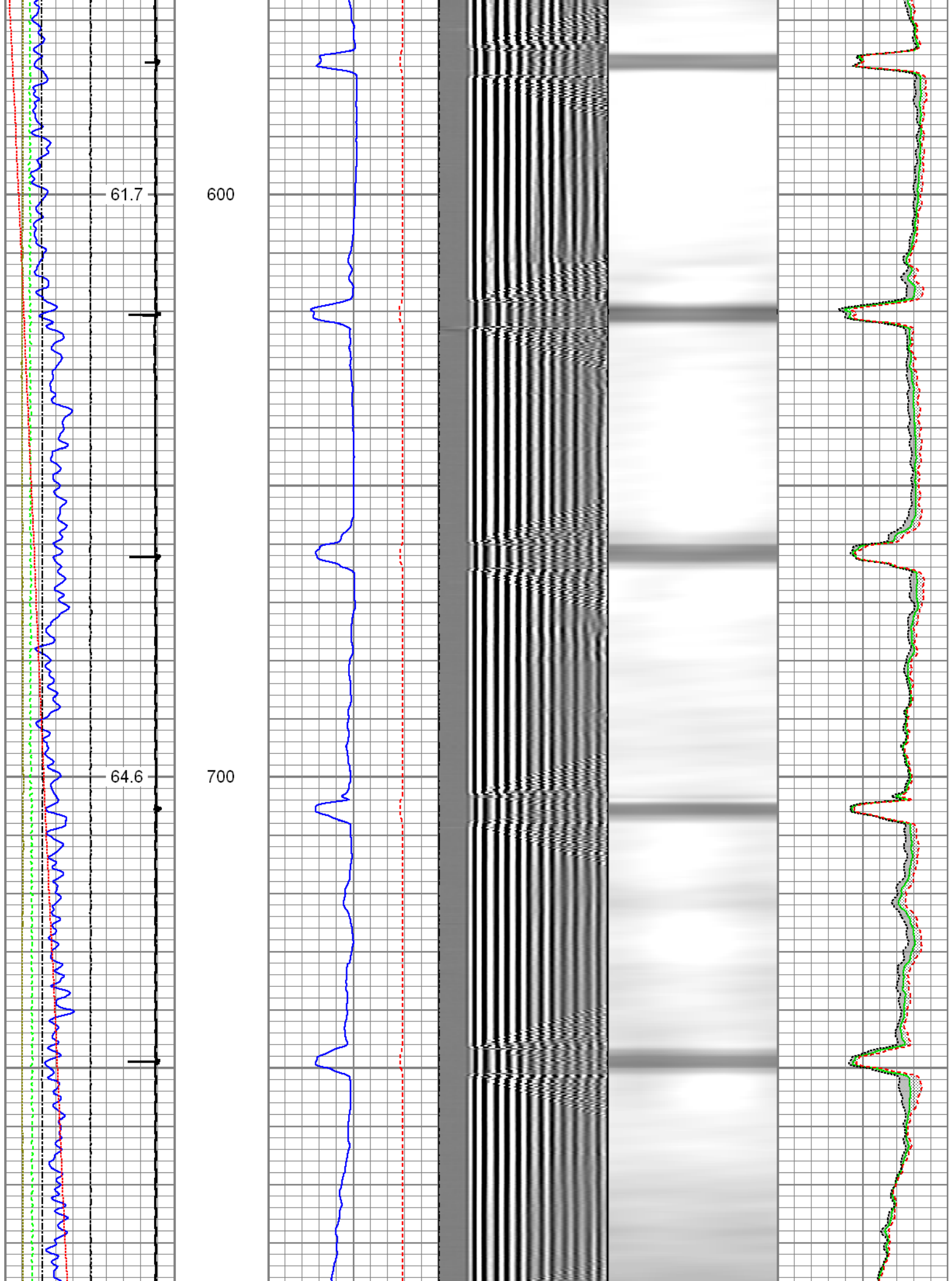


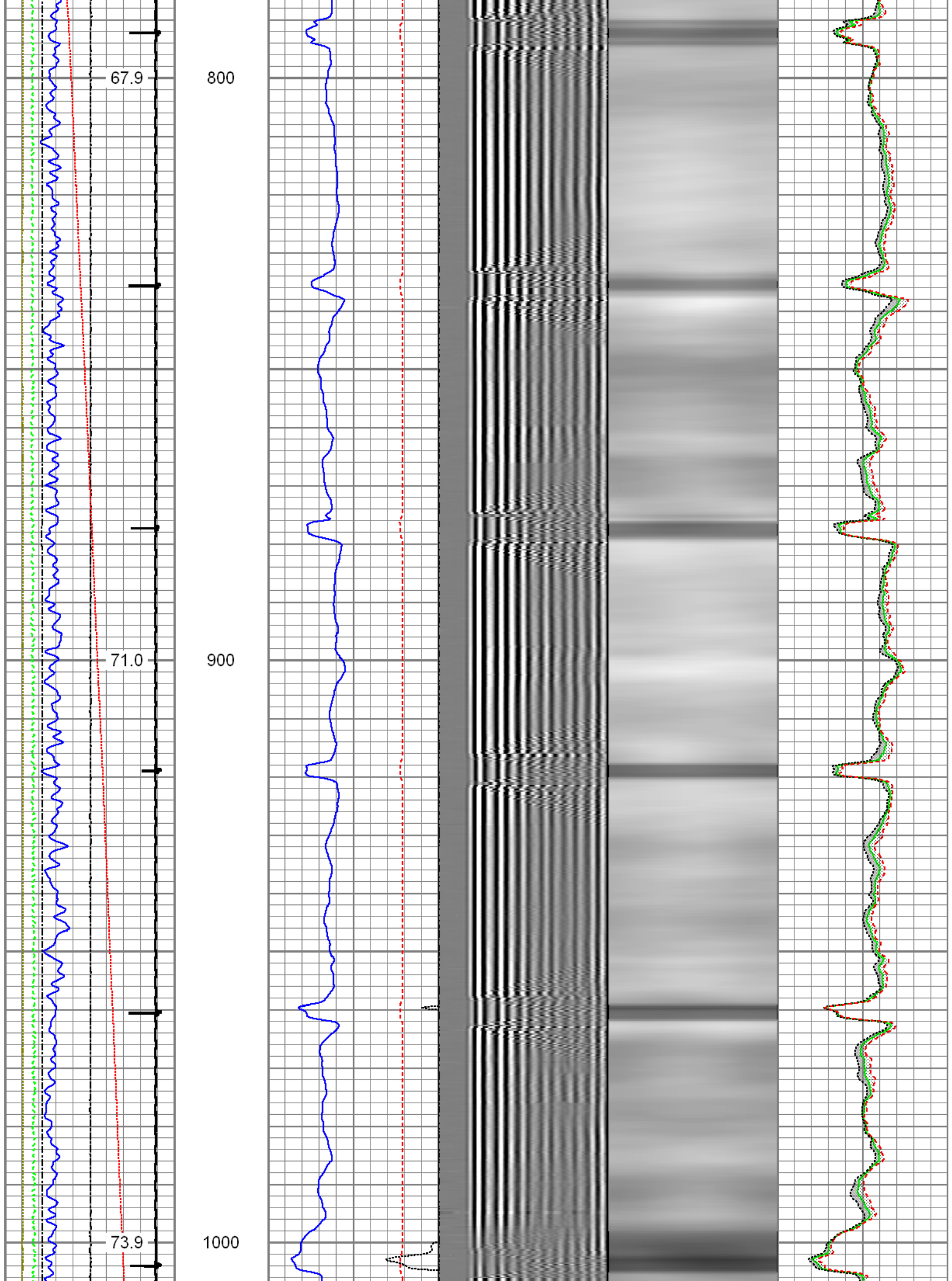


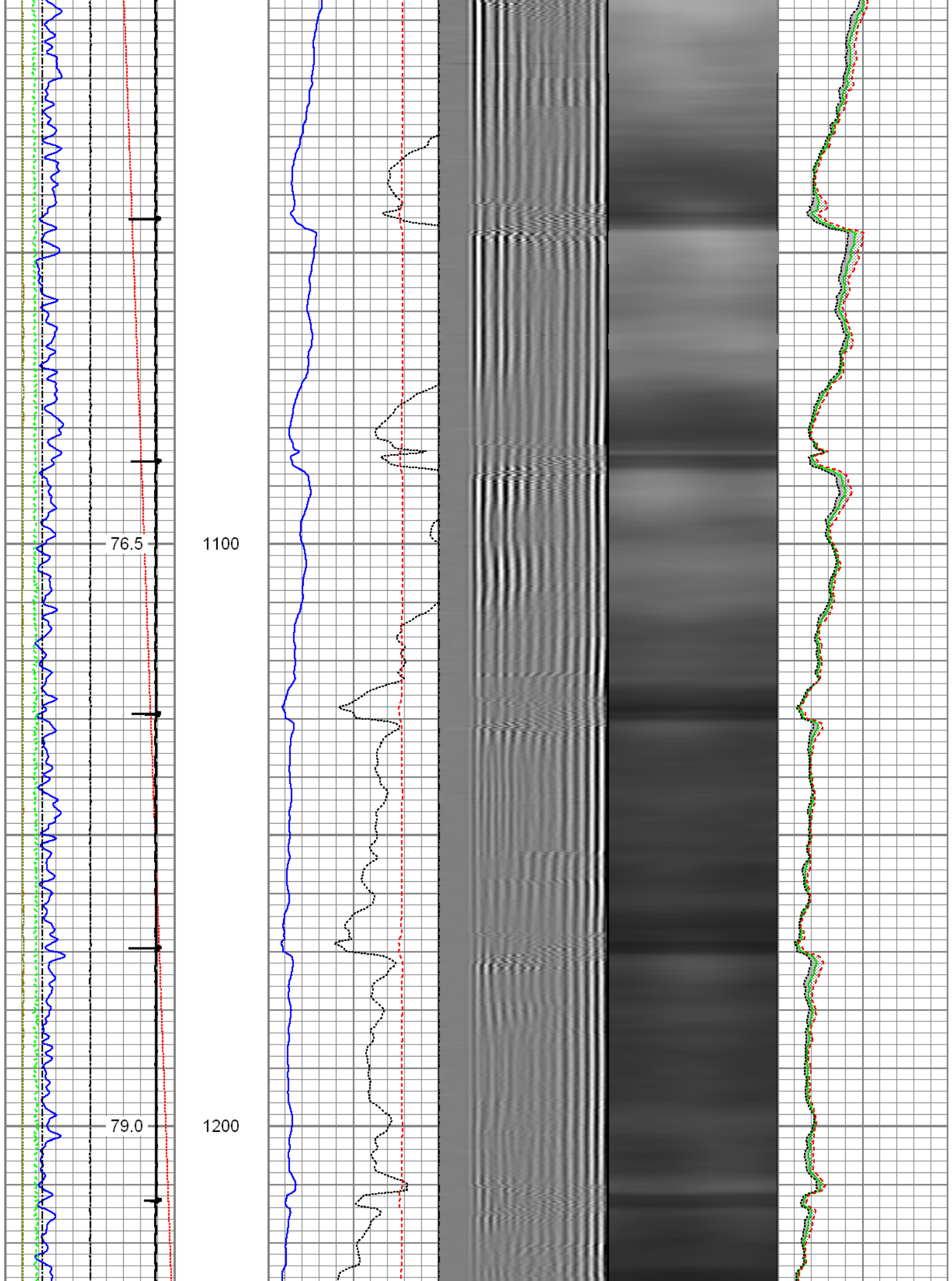
400

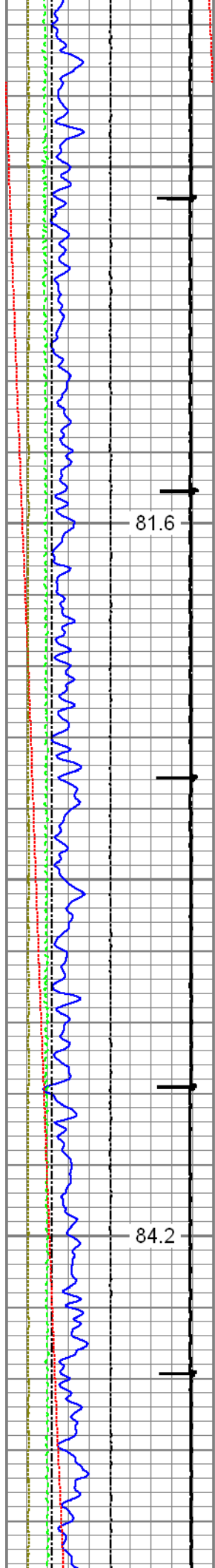
500





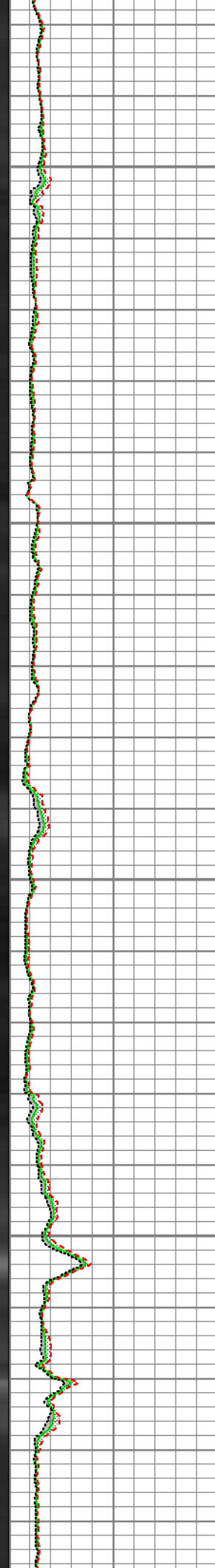
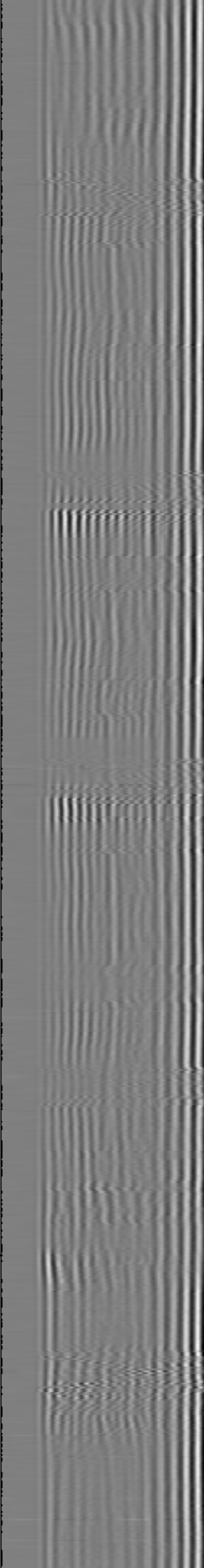
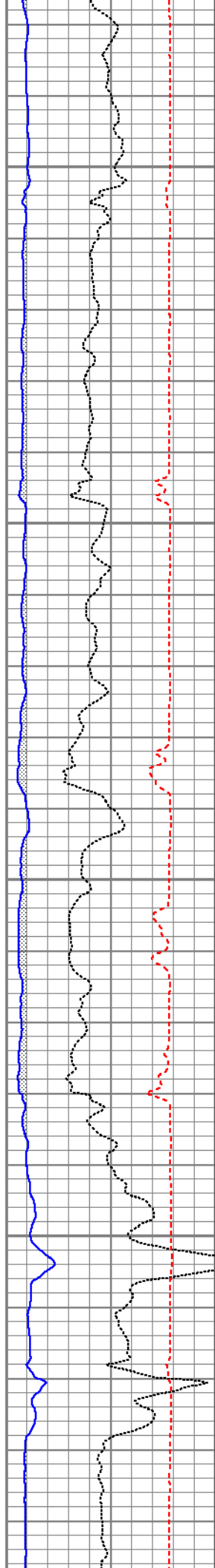


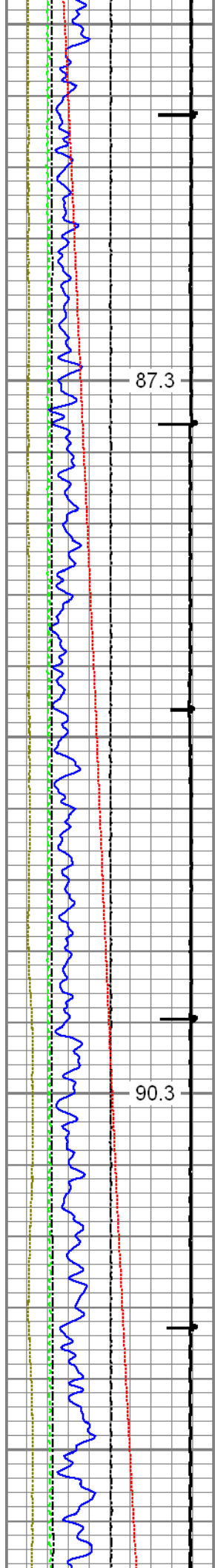




1300

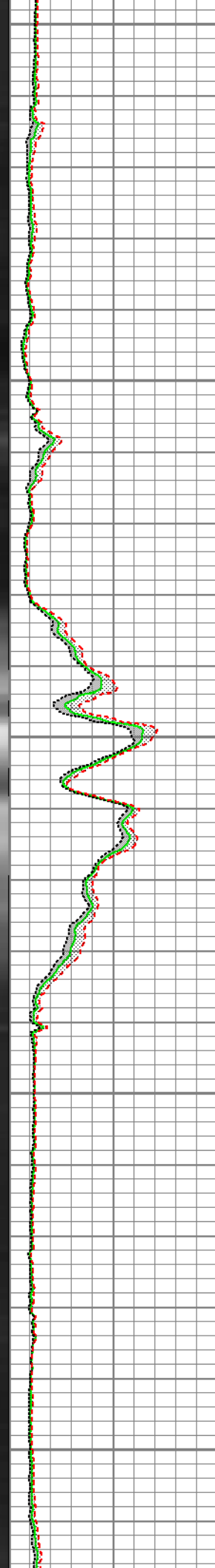
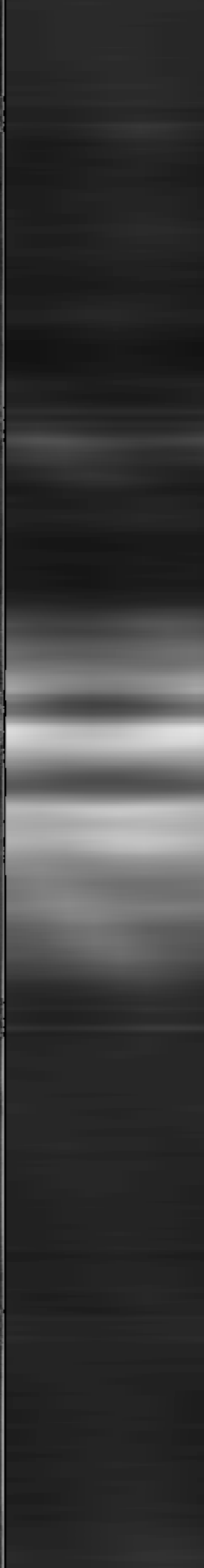
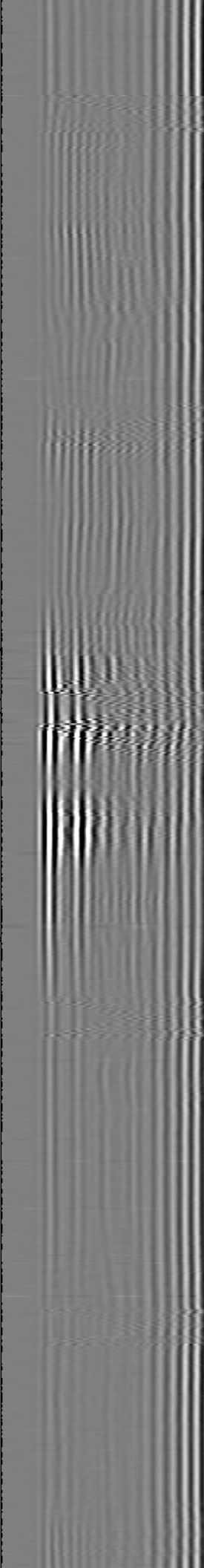
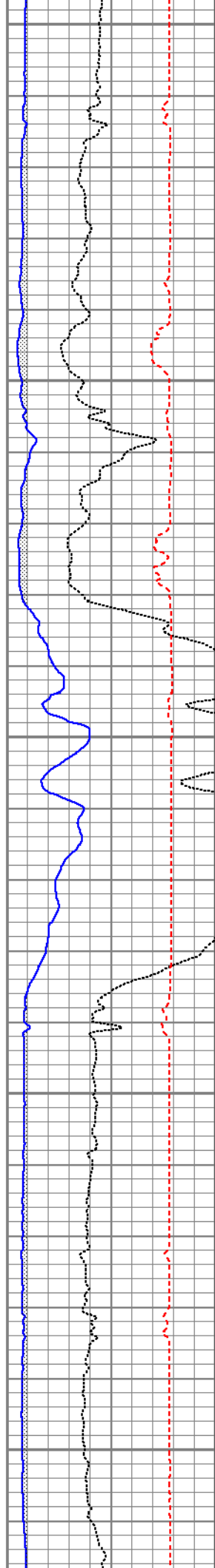
1400

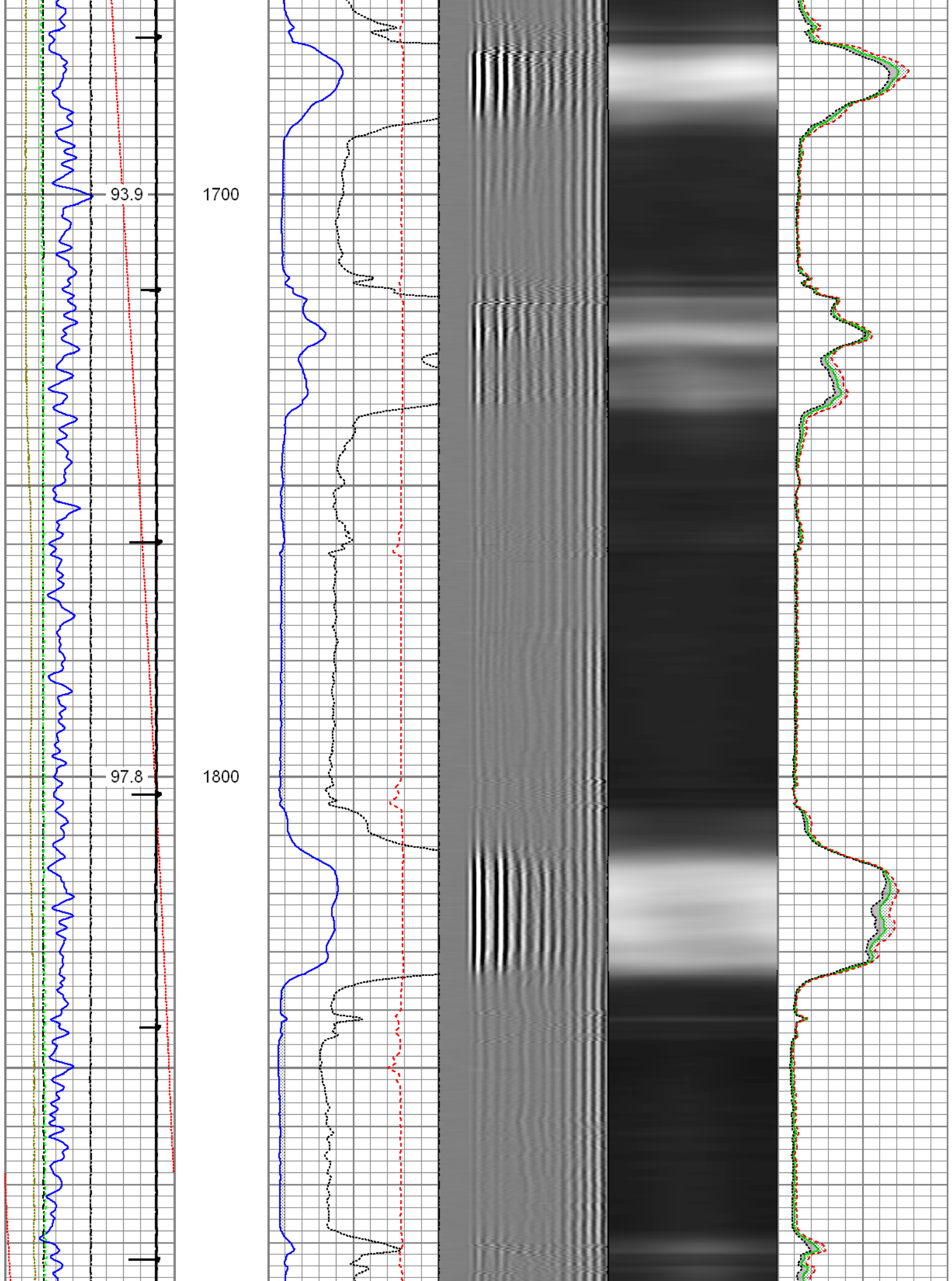


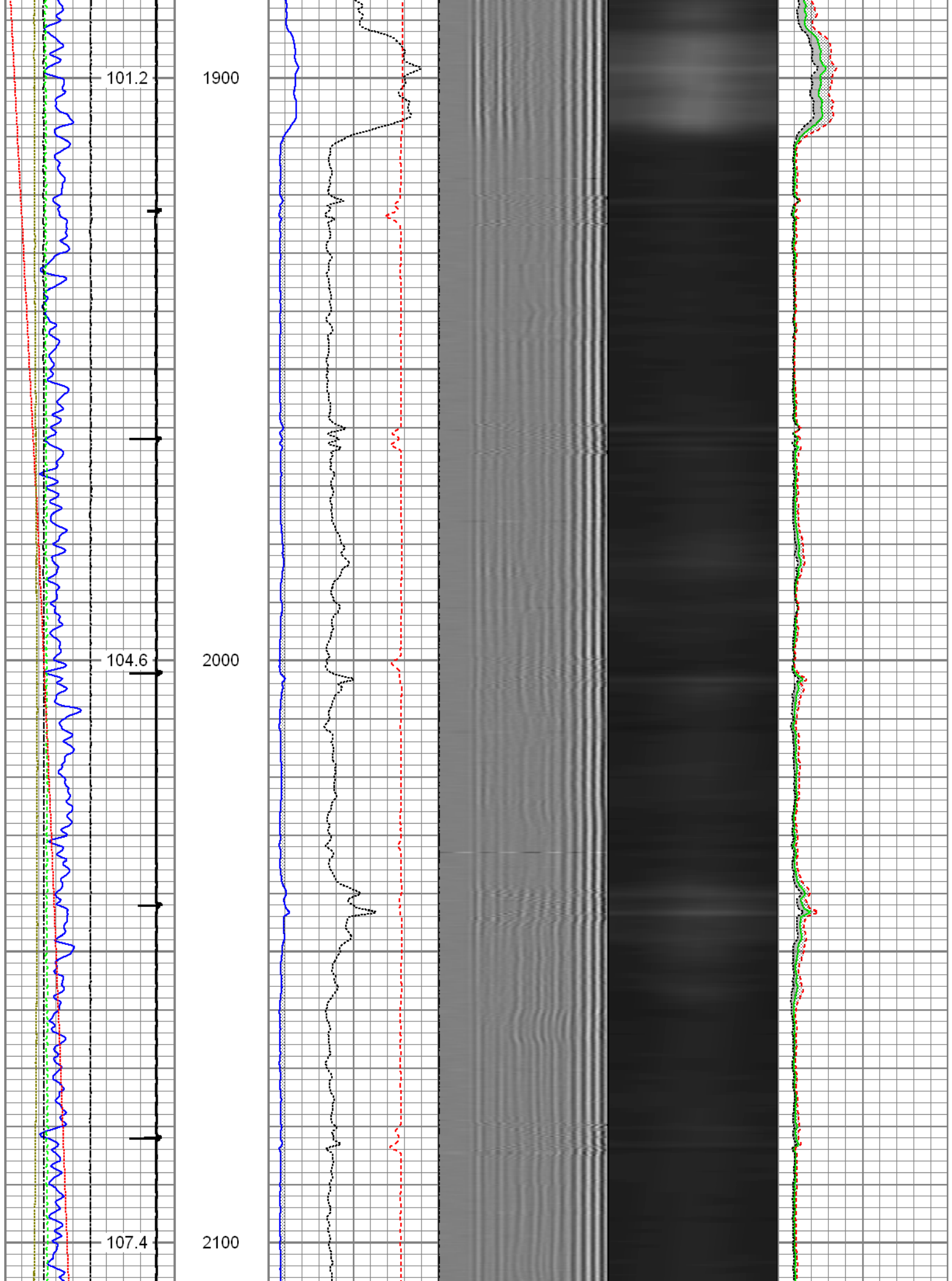


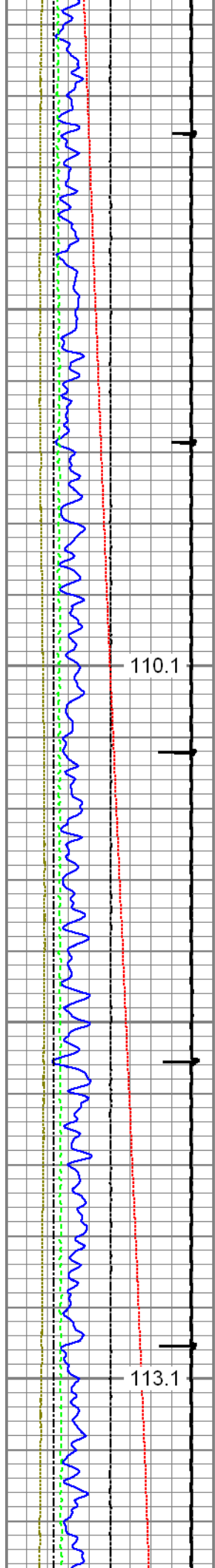
1500

1600



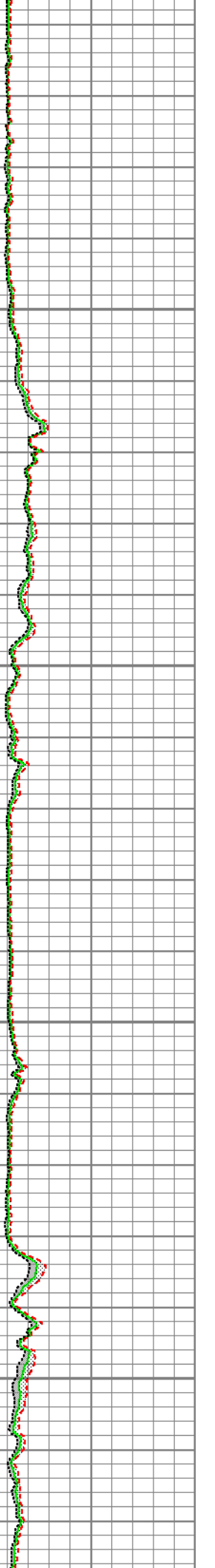
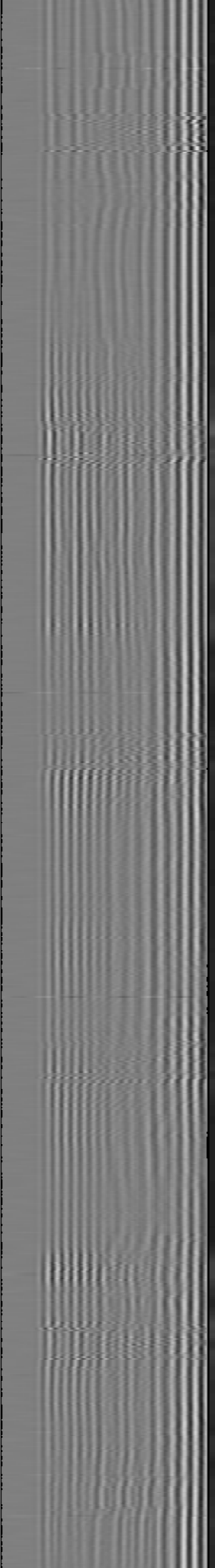
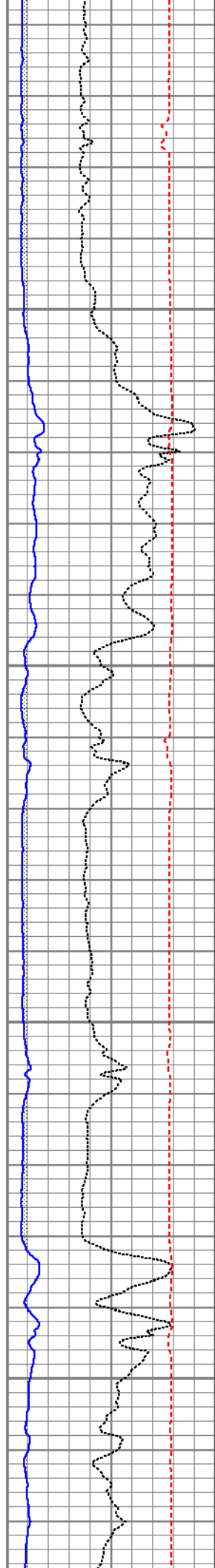


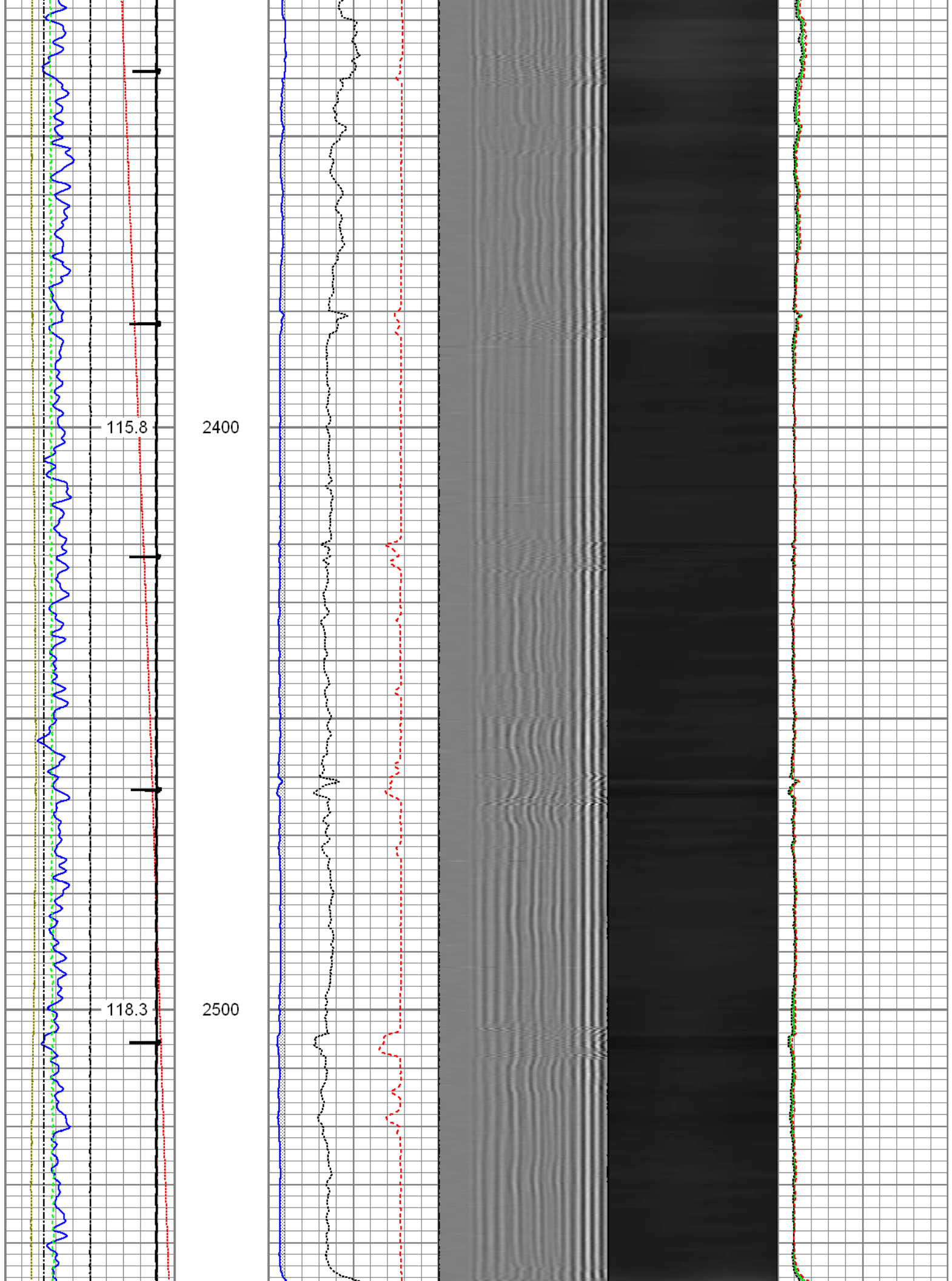


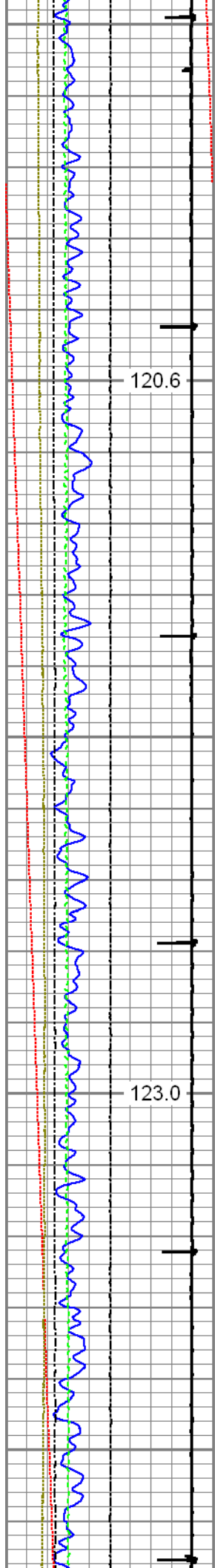


2200

2300

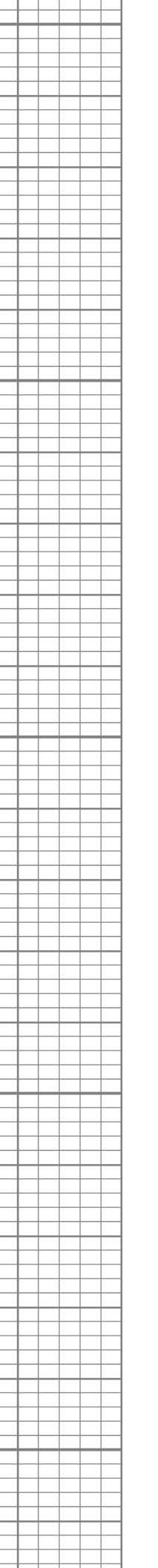
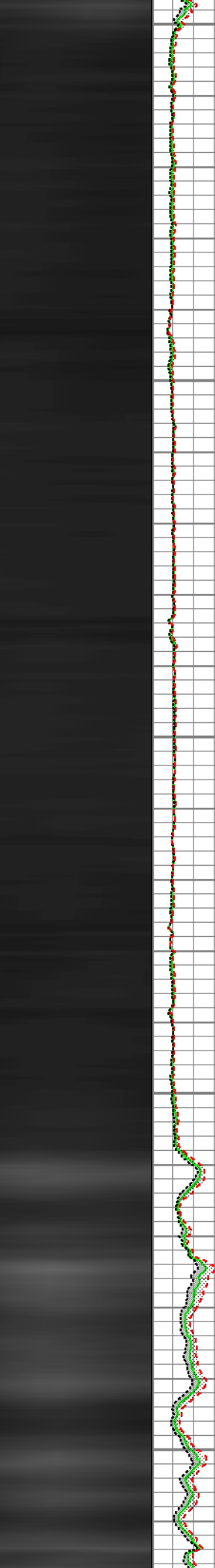
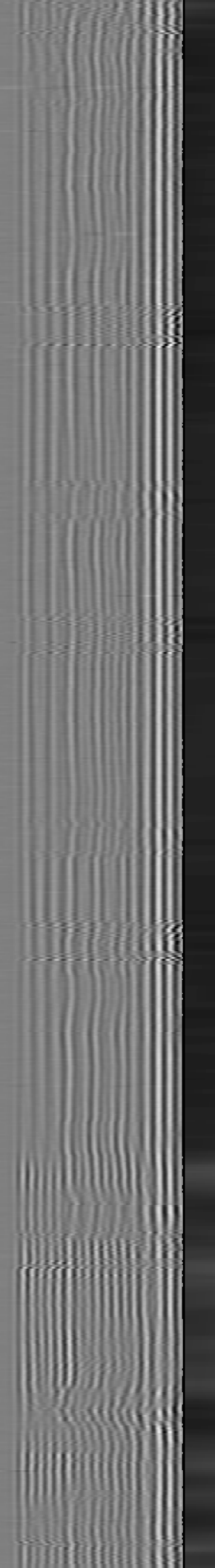
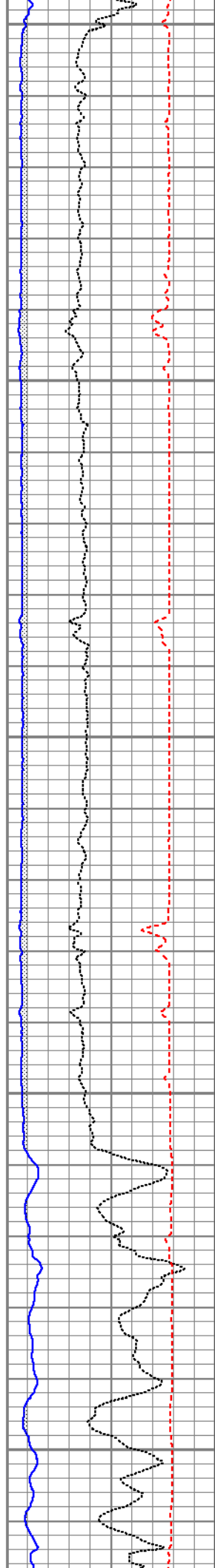


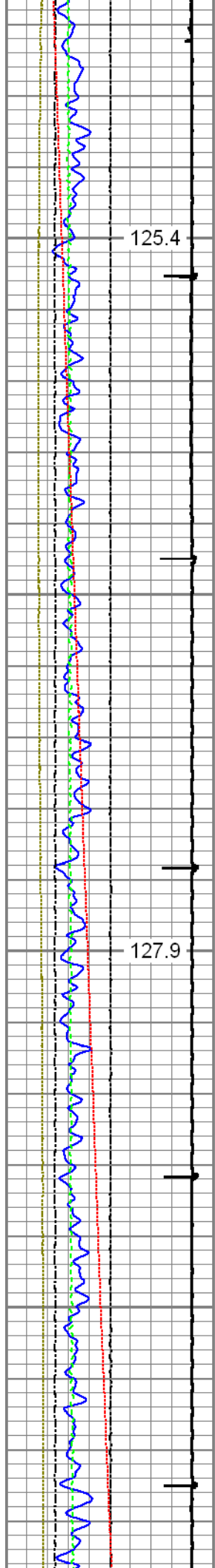




2600

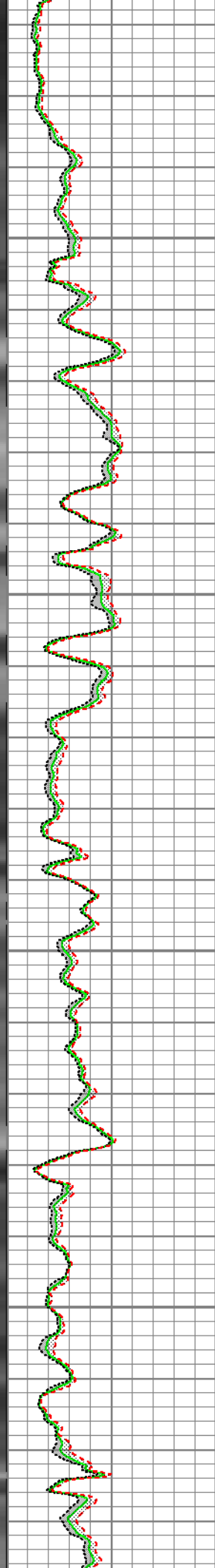
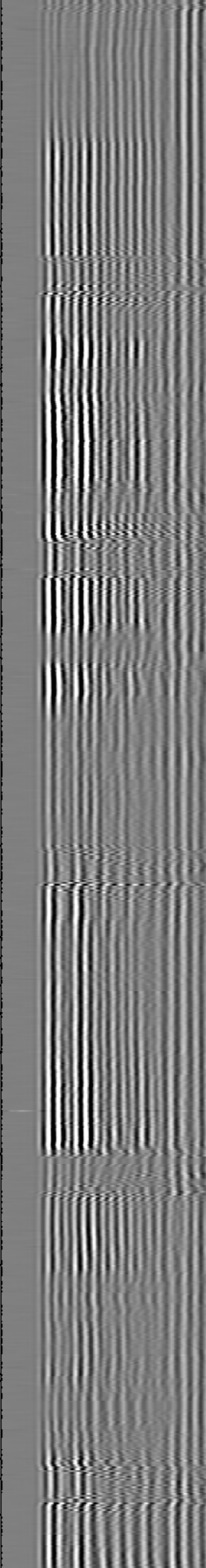
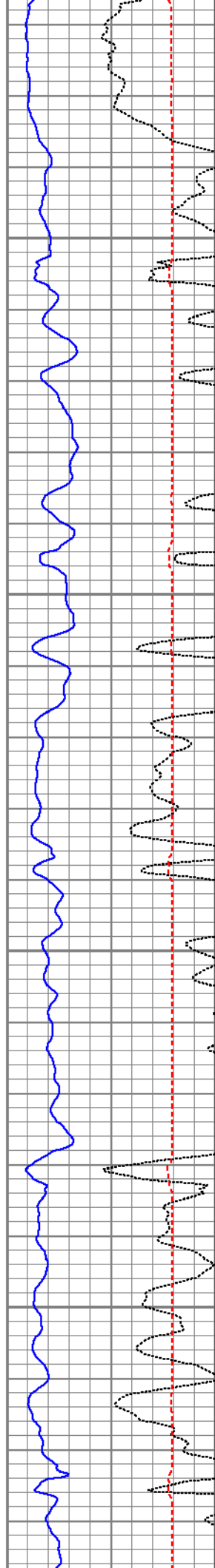
2700

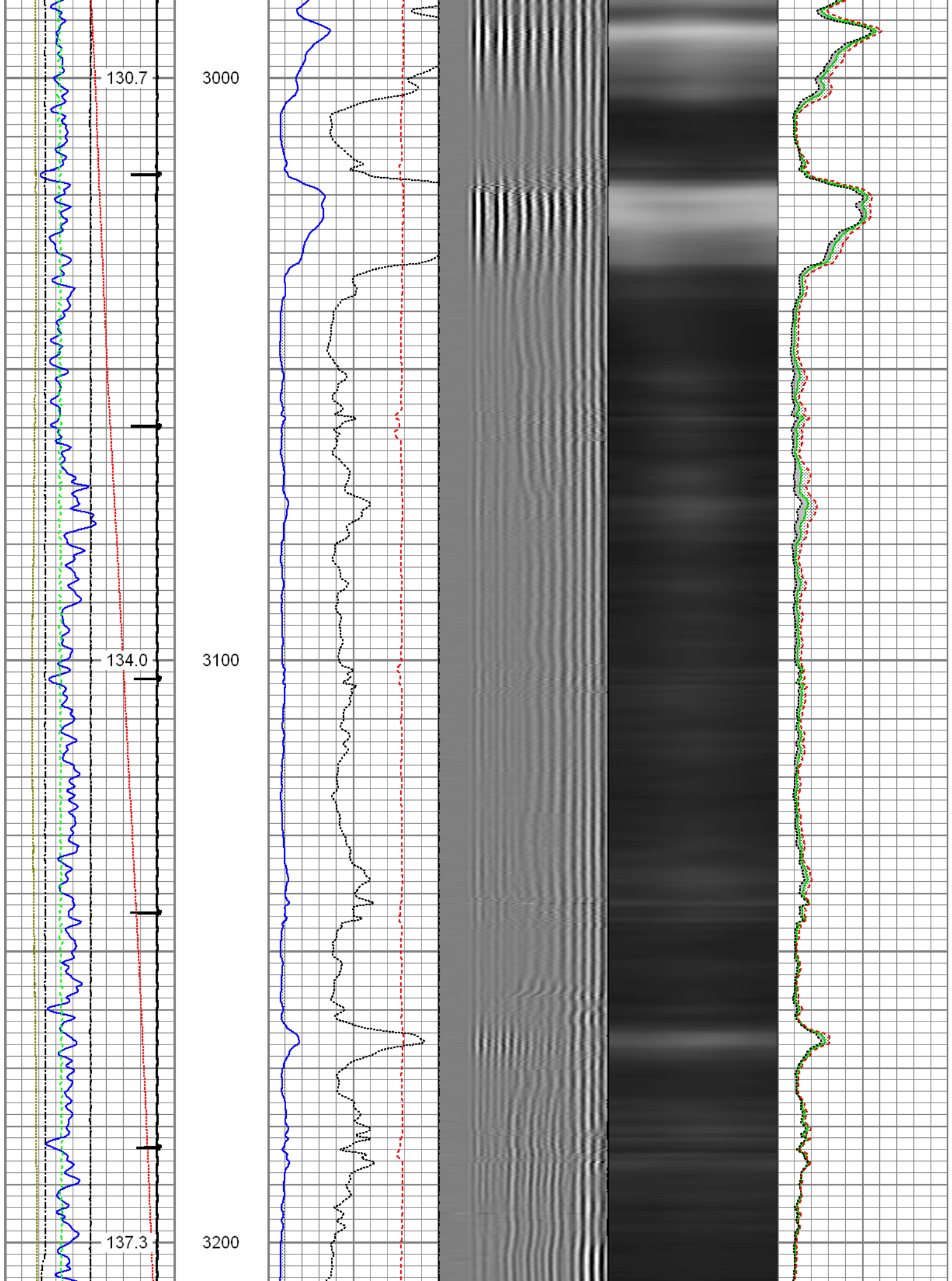


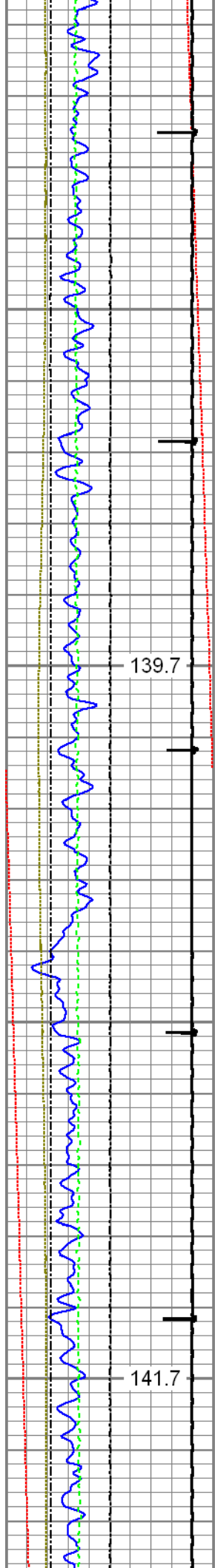


2800

2900

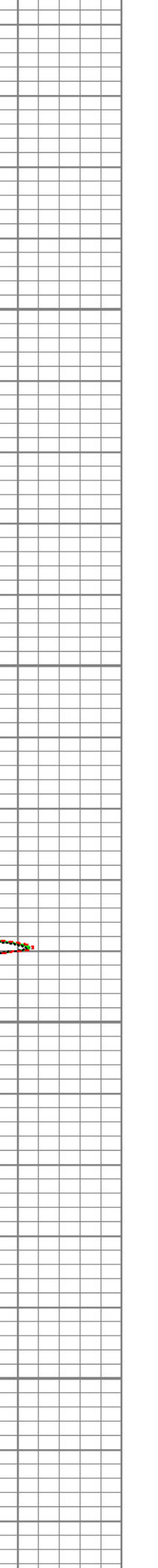
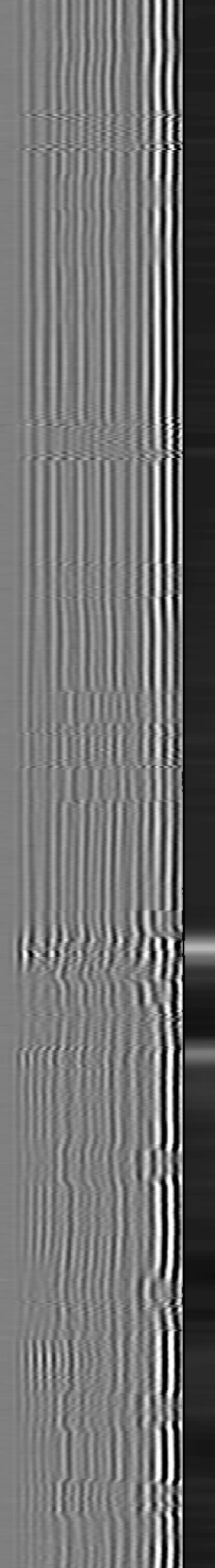
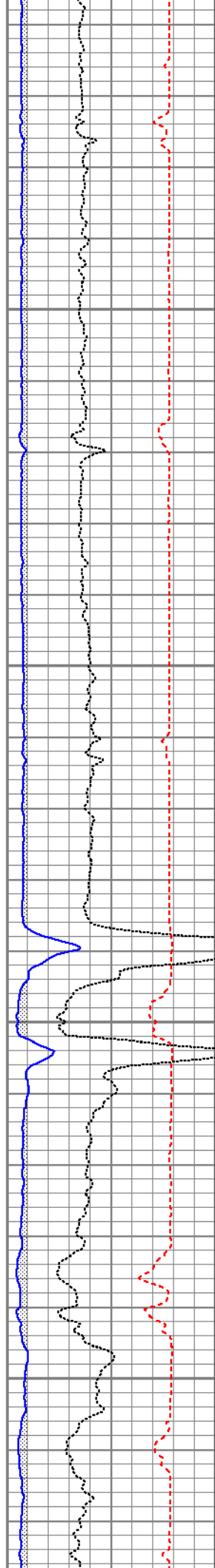


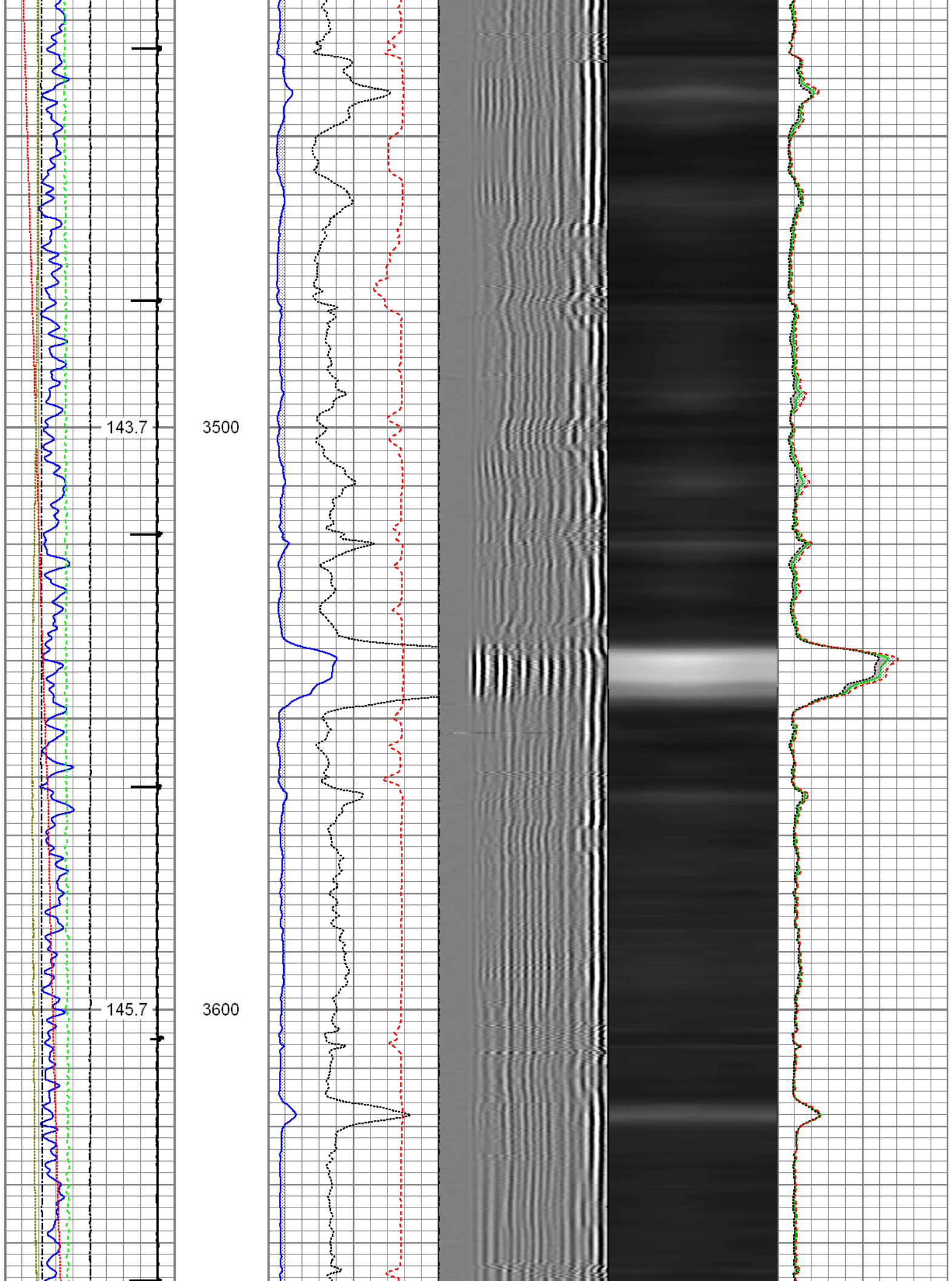


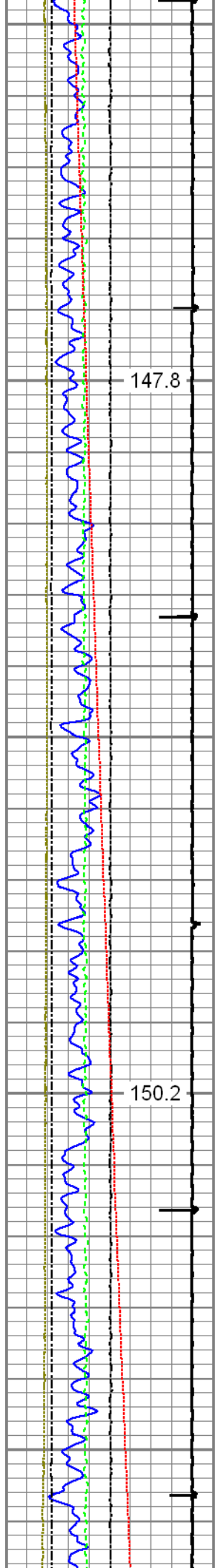


3300

3400

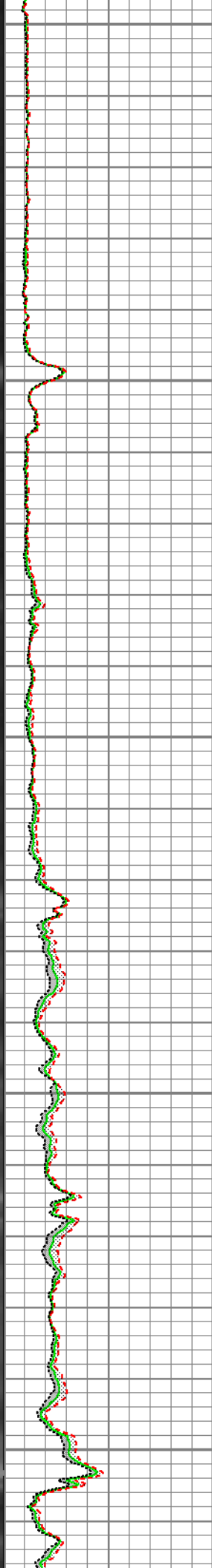
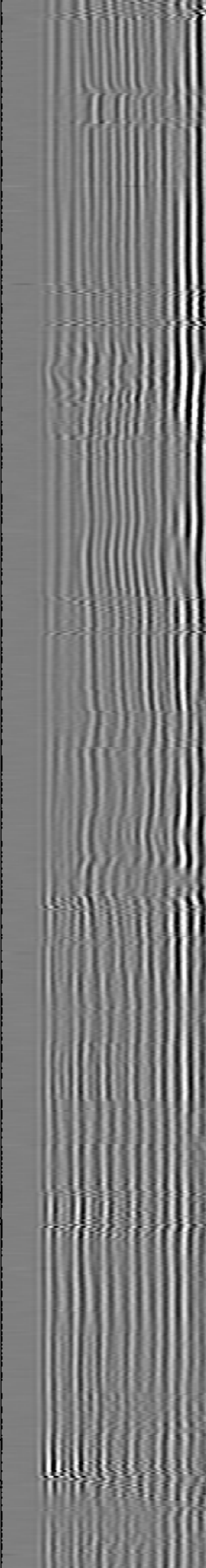
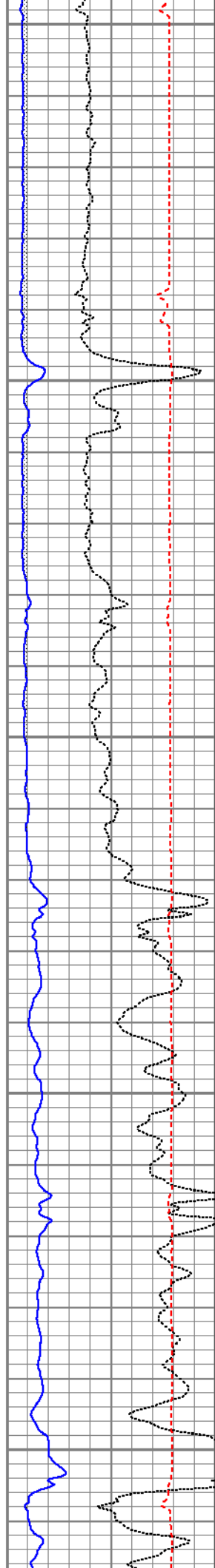


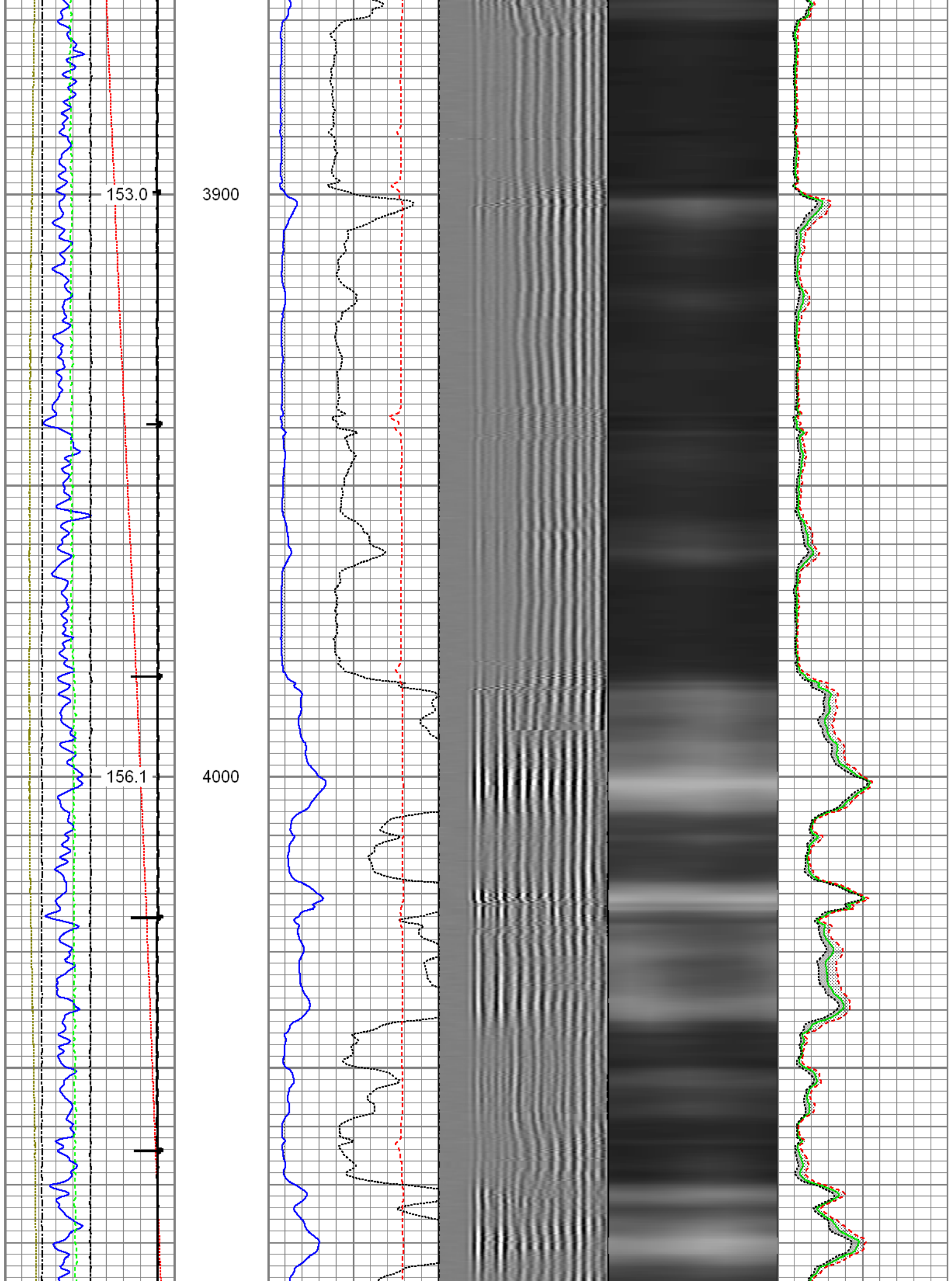


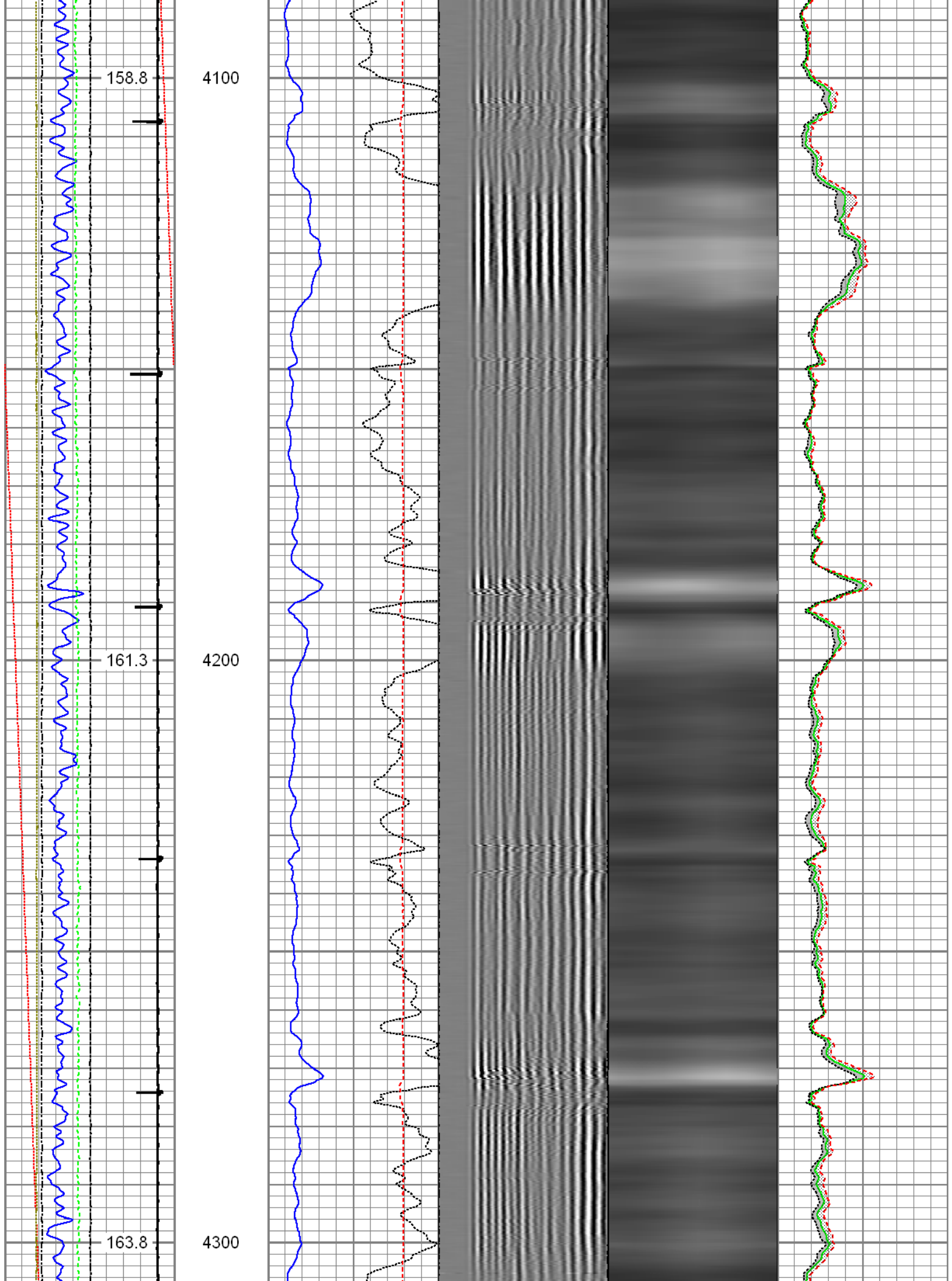


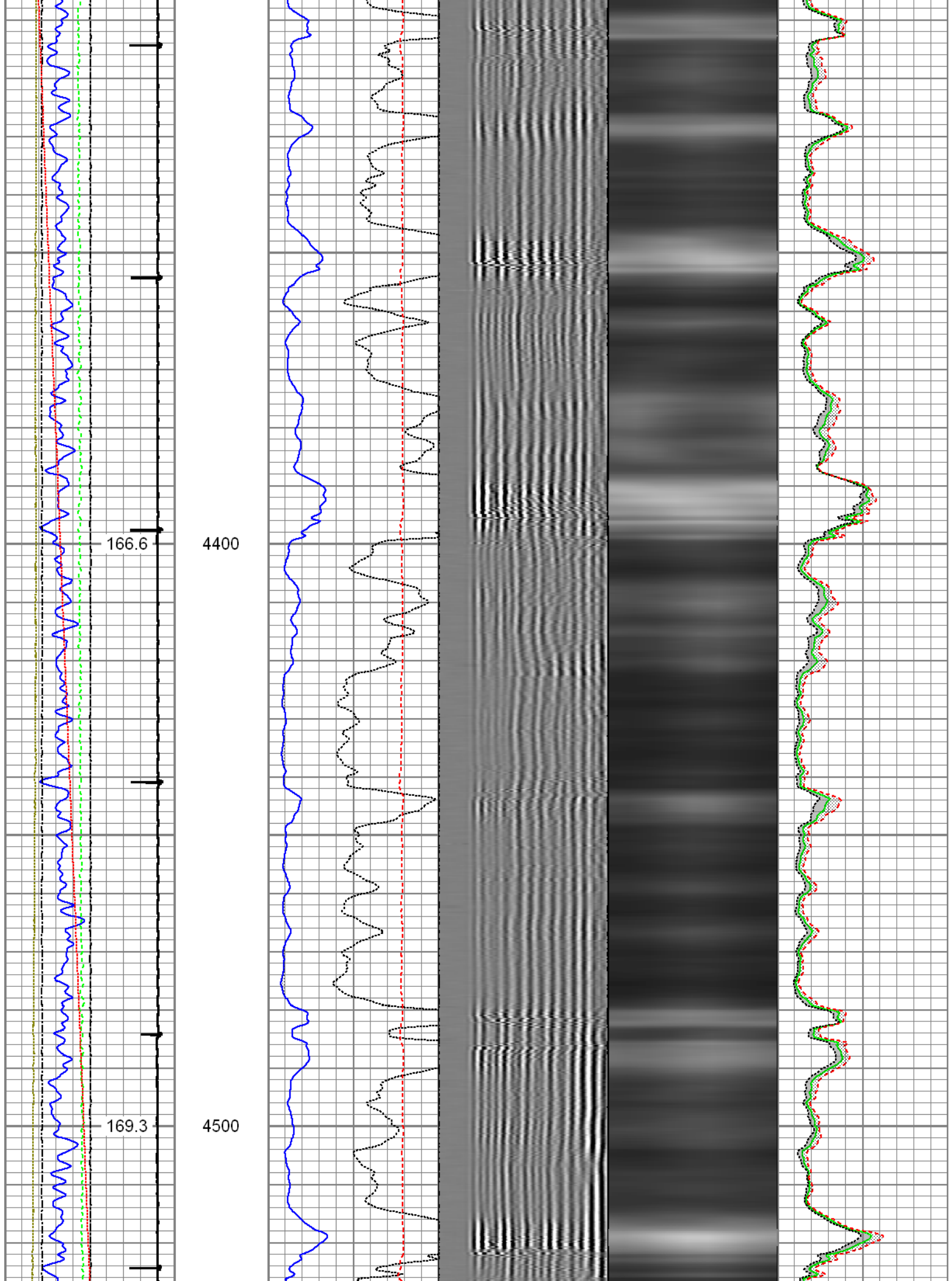
3700

3800









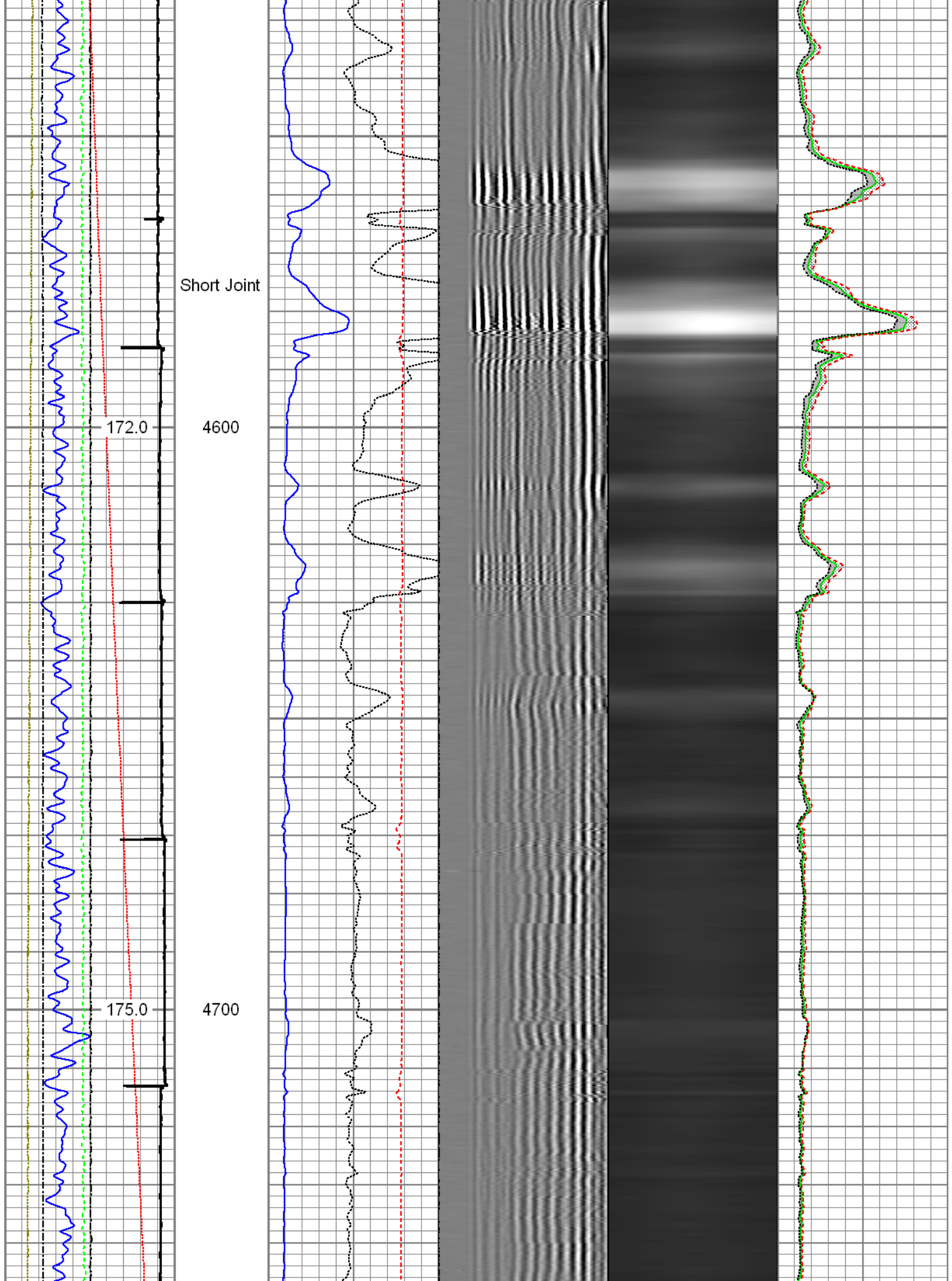
Short Joint

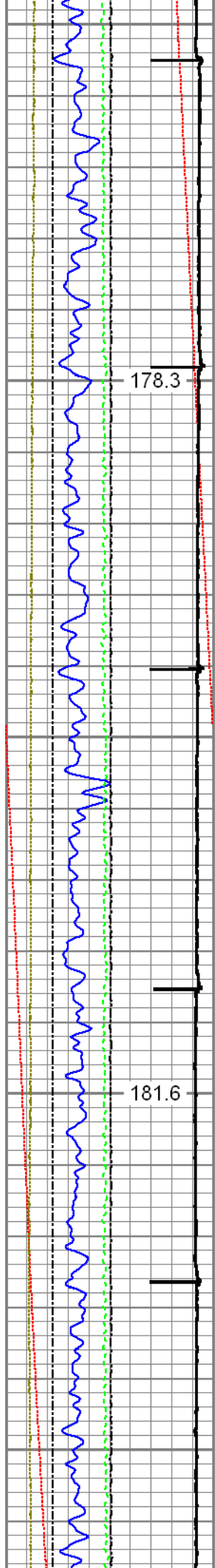
172.0

4600

175.0

4700



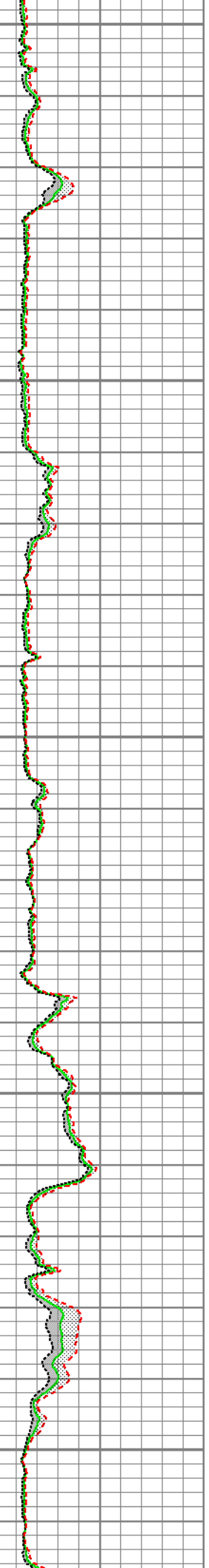
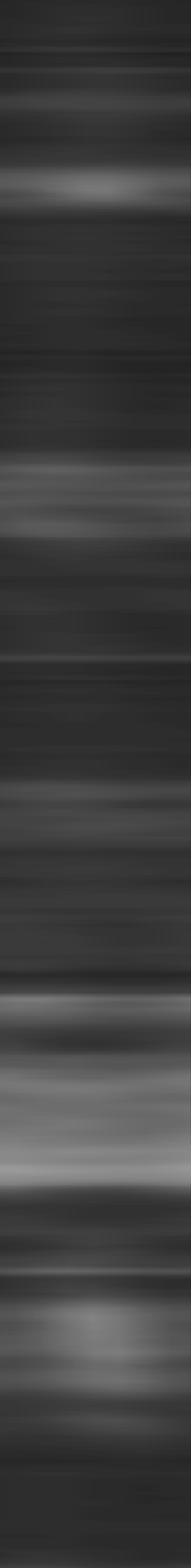
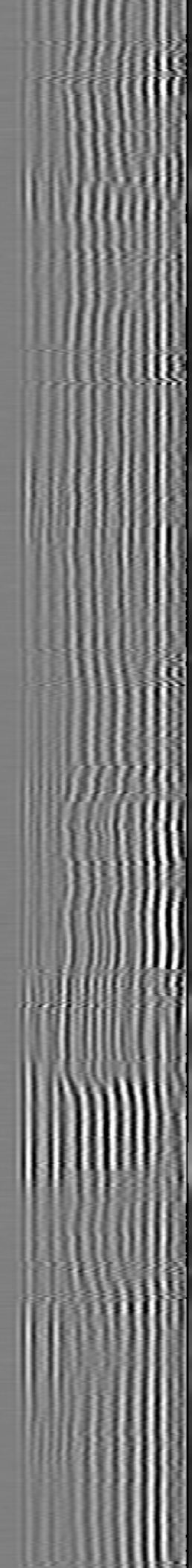
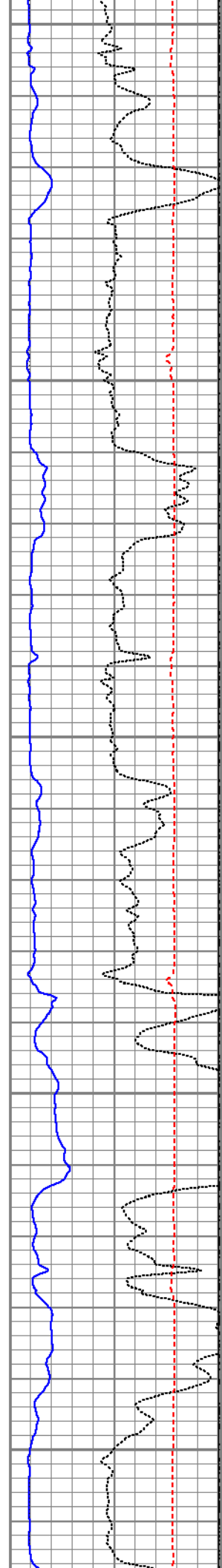


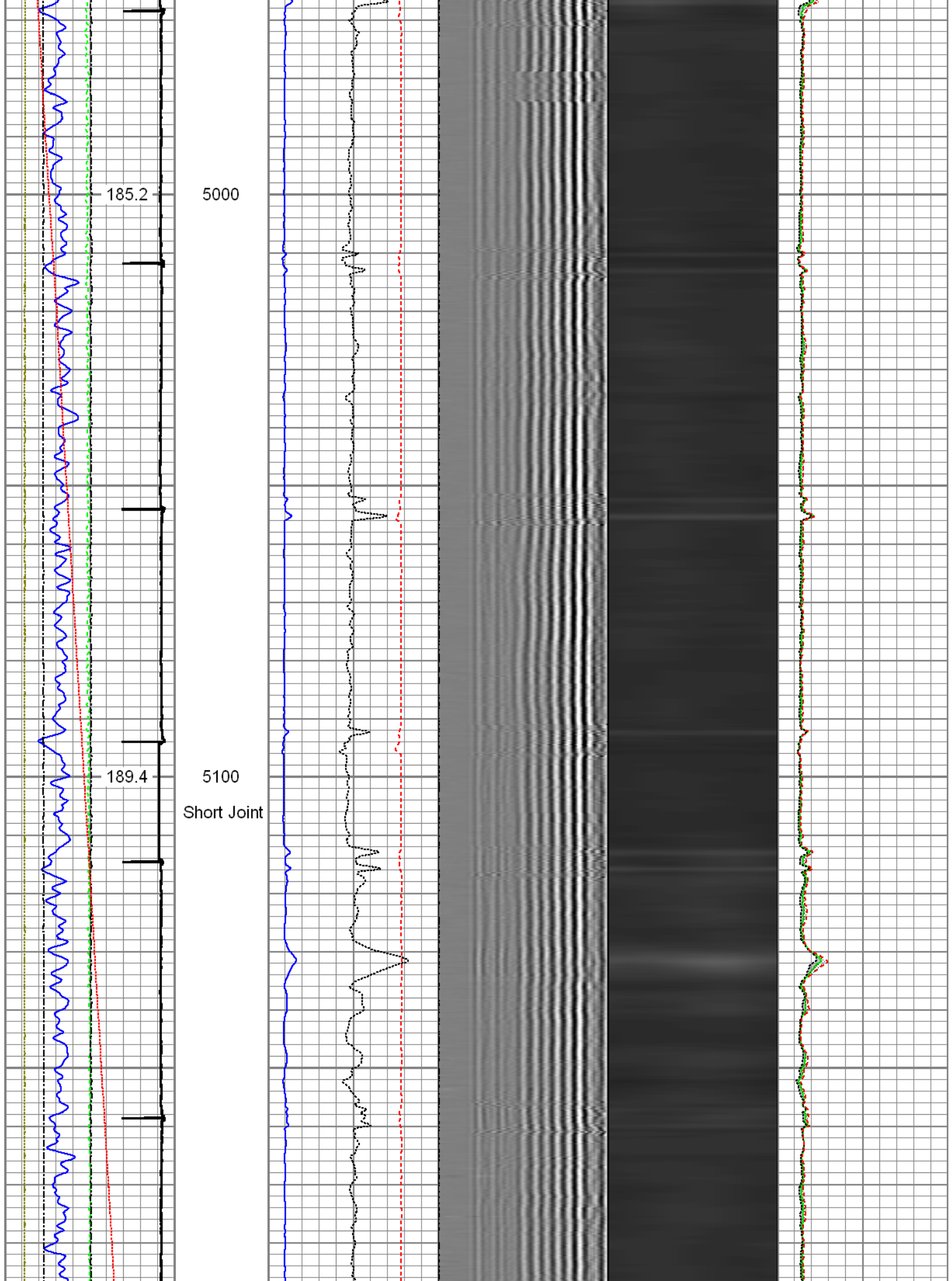
178.3

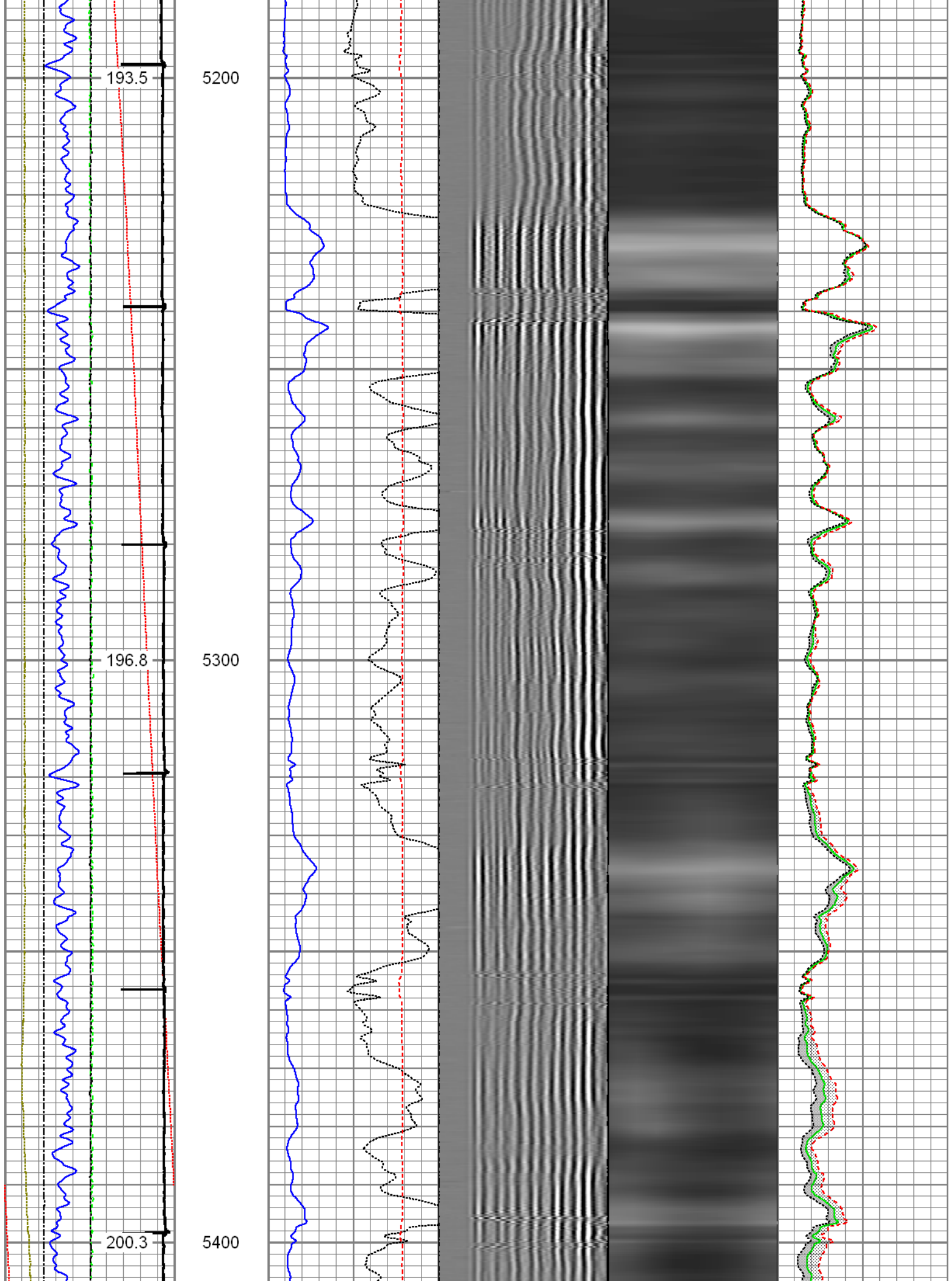
181.6

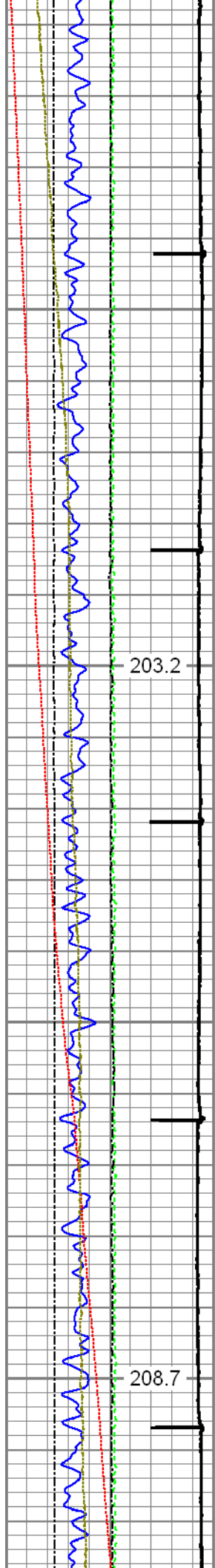
4800

4900







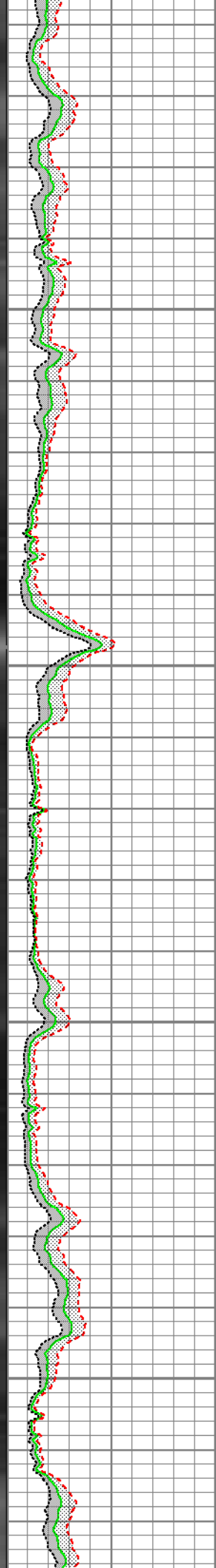
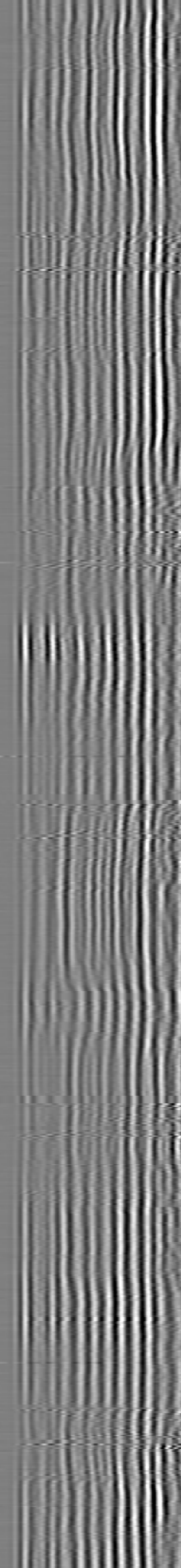
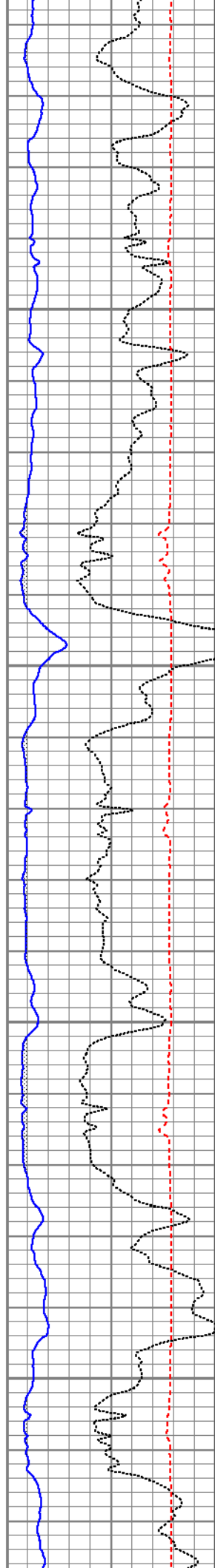


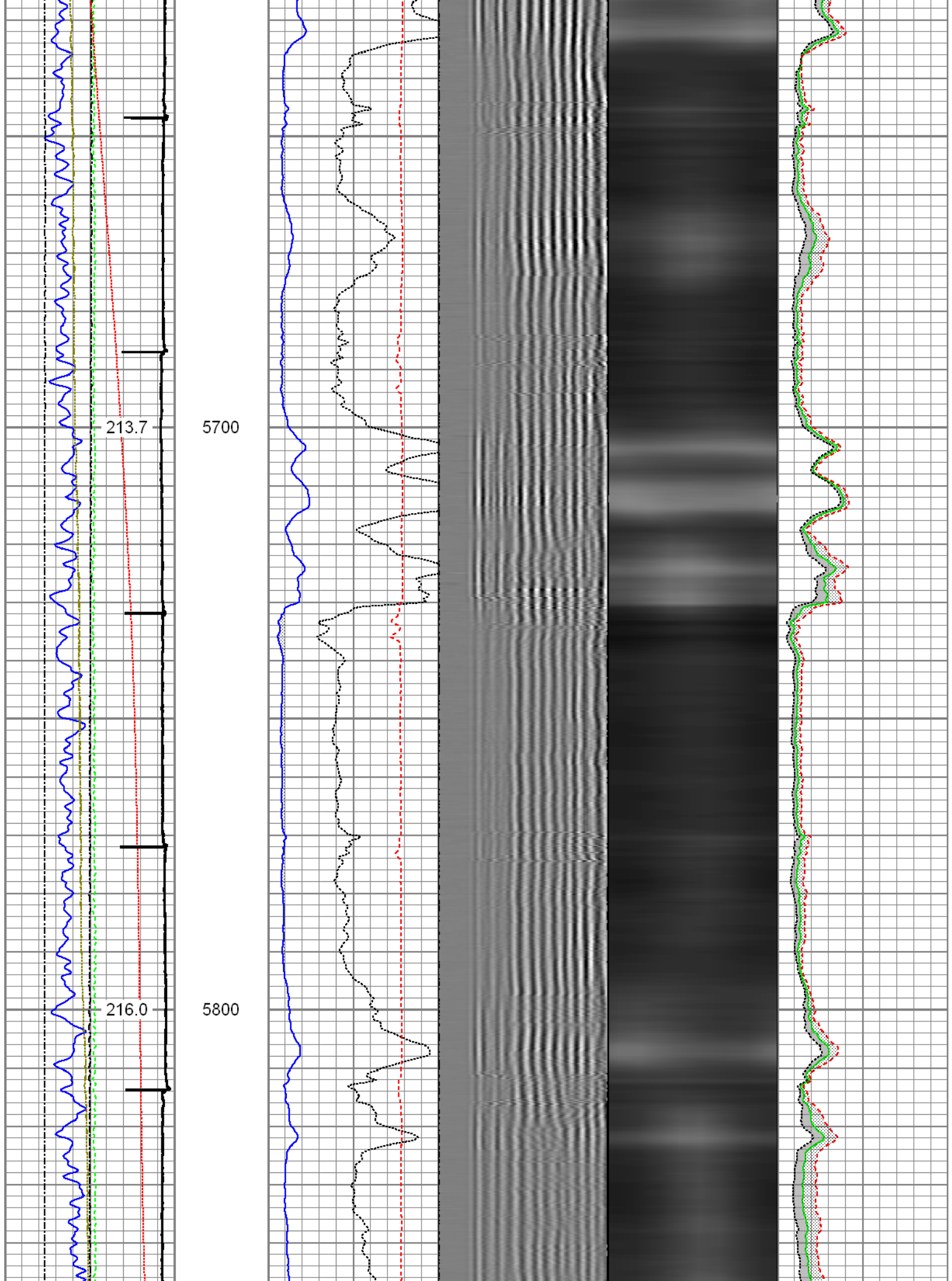
203.2

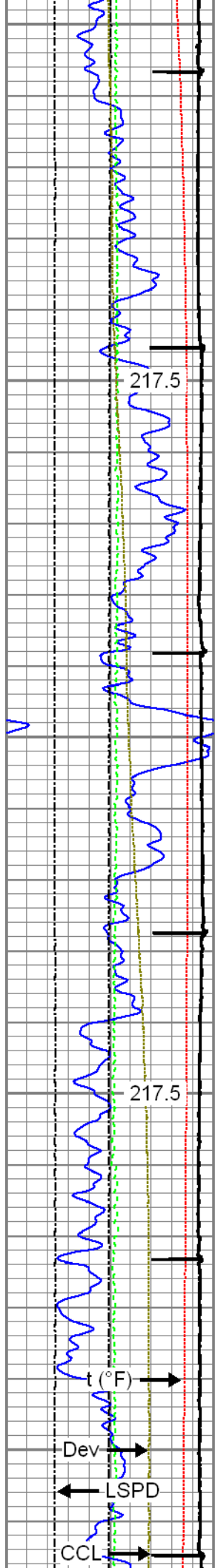
208.7

5500

5600





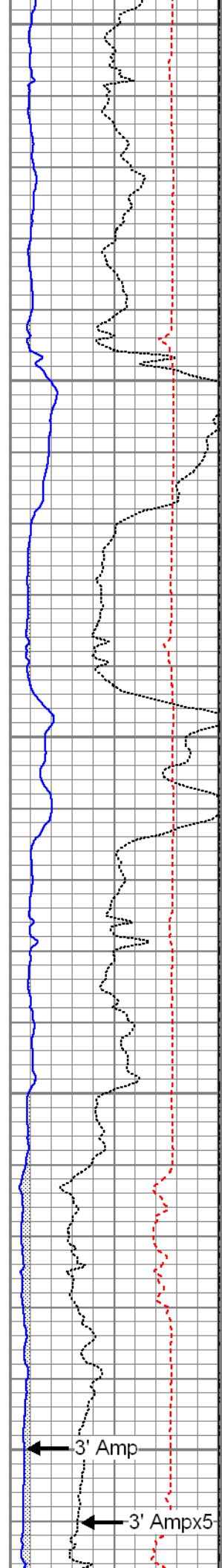


217.5

217.5

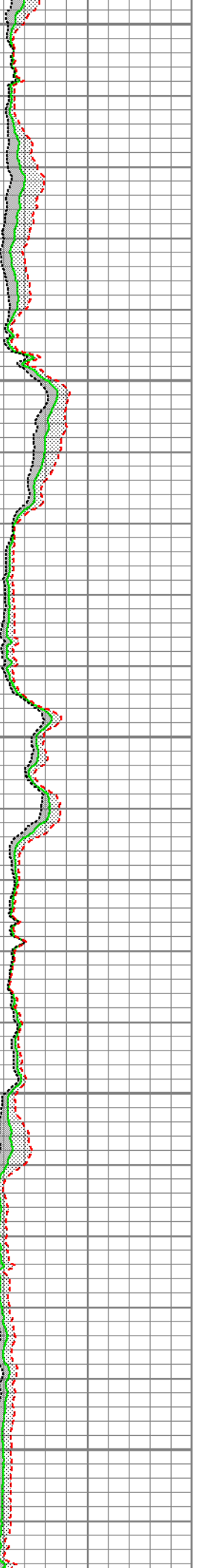
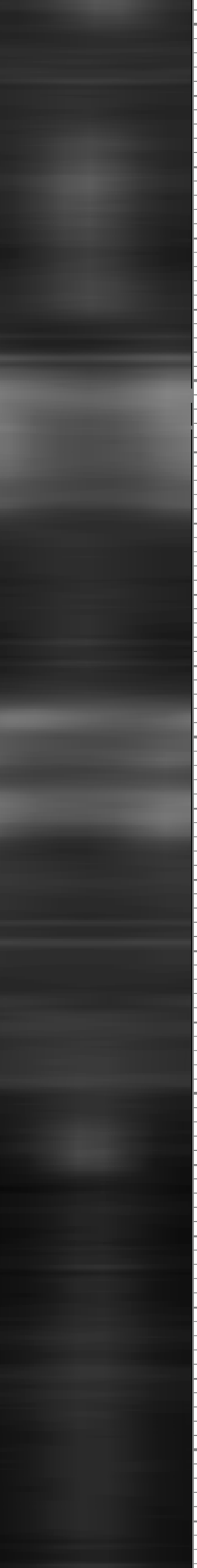
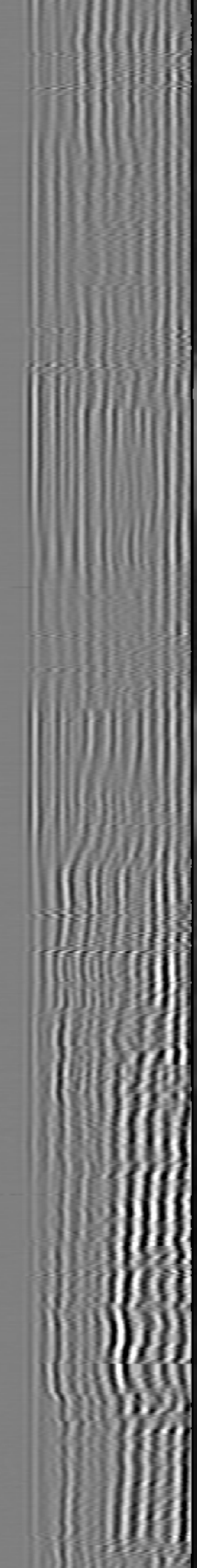
5900

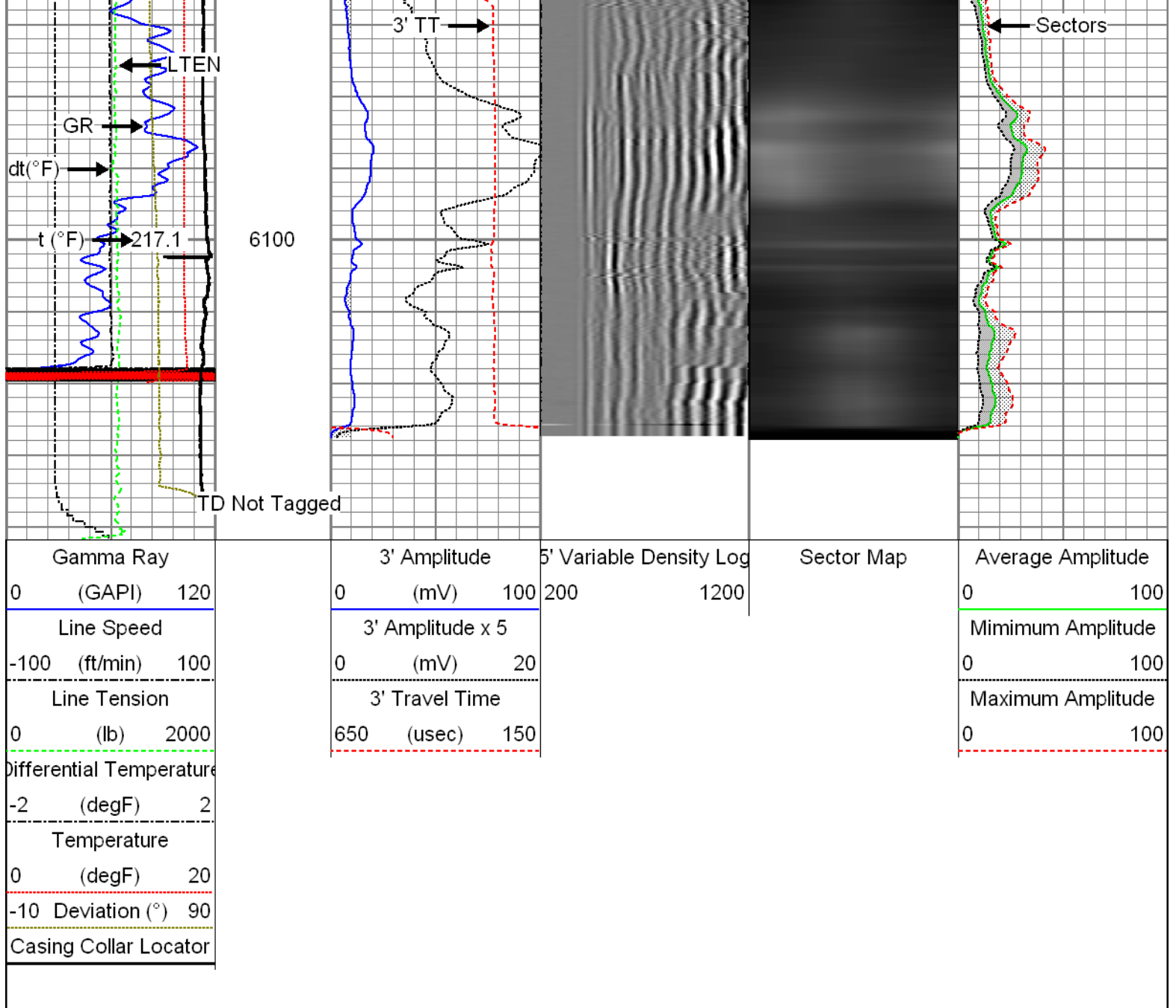
6000



3' Amp

3' Ampx5

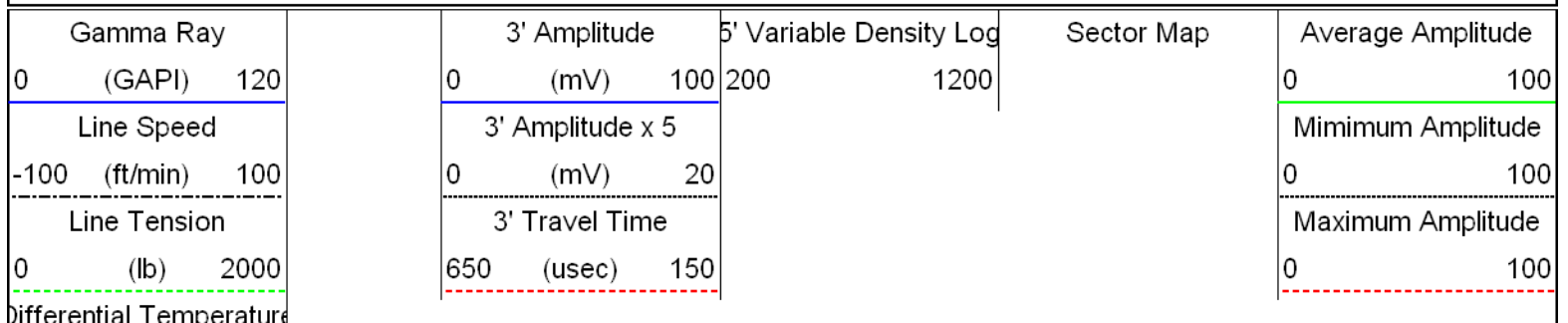




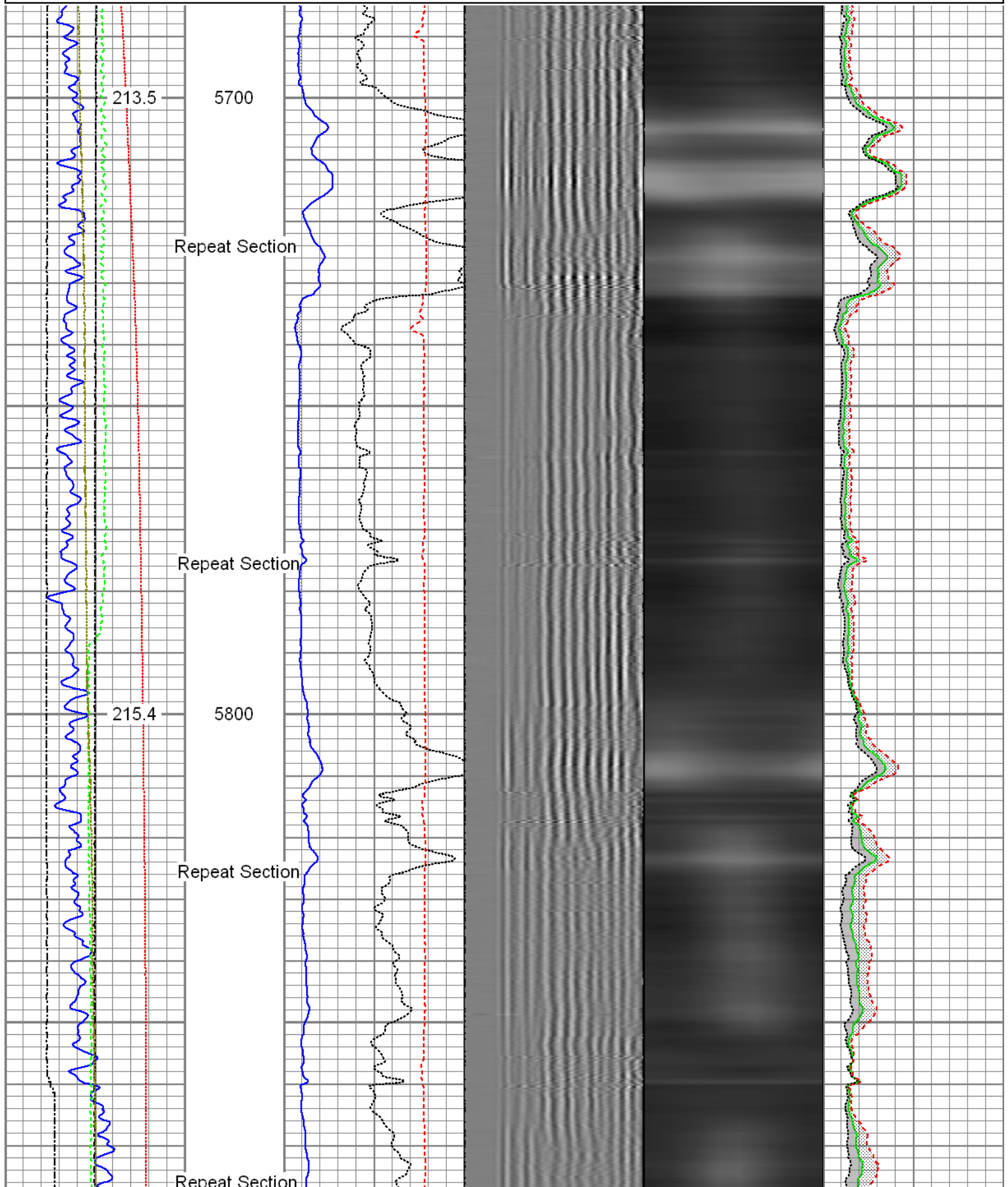
Repeat Pass

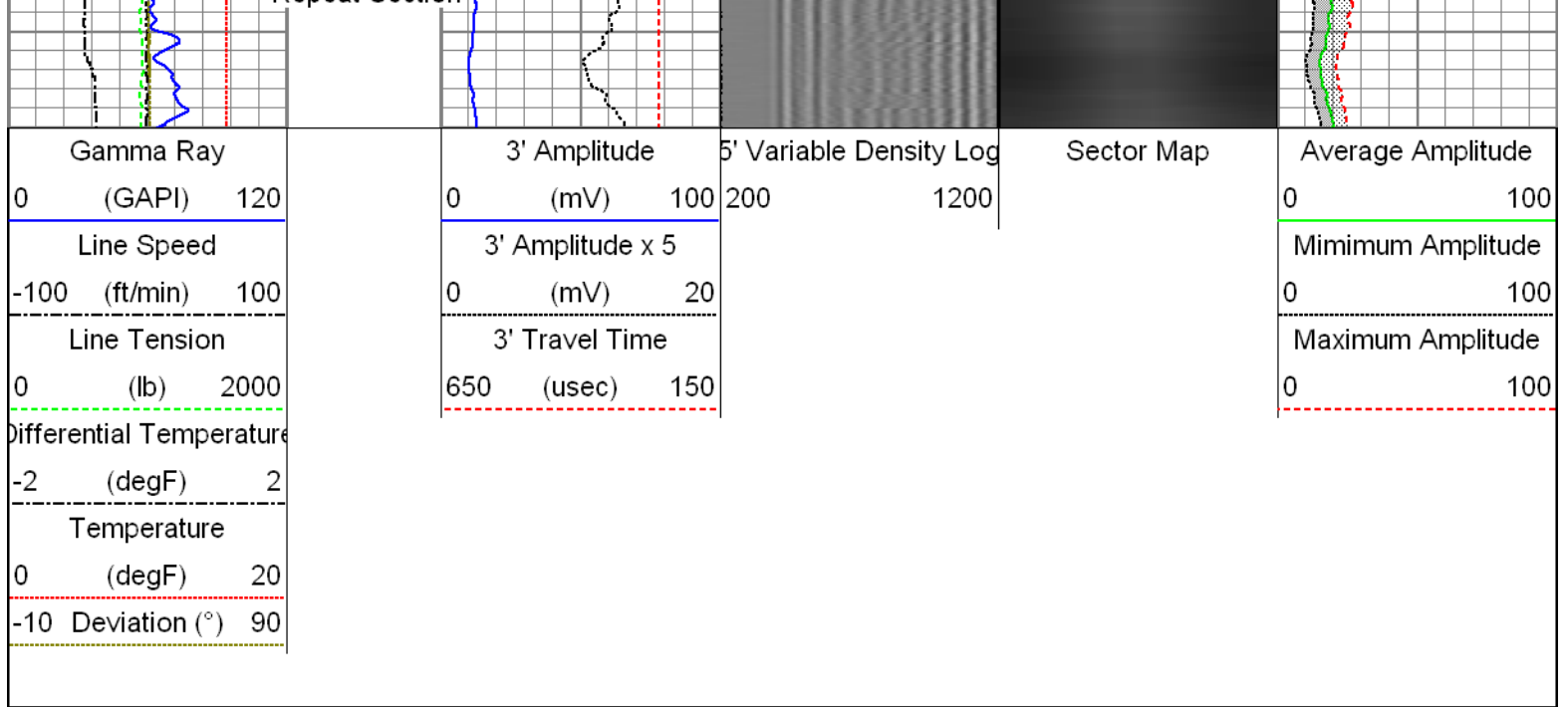
Recorded with 2500 PSI Surface Induced Pressure

Database File: c:\warrior\data\01-15-16_noble energy_douglas lc35-780_mit_rbl\01-15-16_noble energy_douglas lc3
 Dataset Pathname: pass3.7
 Presentation Format: rbt4_mit
 Dataset Creation: Fri Jan 15 13:48:06 2016 by Log 7.0 B1
 Charted by: Depth in Feet scaled 1:240

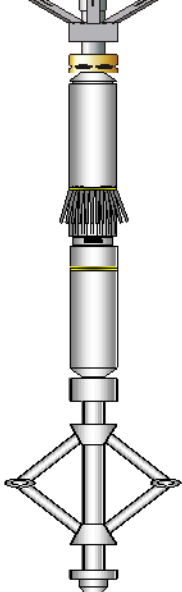


-2	(degF)	2
Temperature		
0	(degF)	20
-10	Deviation (°)	90





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 (10010522) 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_PRT-UW_PRT_016 (10025097) Platinum Resistance Thermometer	1.04	1.69	5.20
TEMP	22.45		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 (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		UW_PRC-DSSRAC (082)	2.55	2.75	32.00
CBLROT	15.42					
WV5FT	14.42					

MIT	5.41		2-3/4" DSS 5 Arm Roller Centralizer			
			UW_MIT-UW_MIT40_027 (218950) 40 Multifinger Imaging Tool	4.54	2.75	61.10
			UW_PRC #3 -UW_PRC_057 (1101) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
TSTAMP	0.00		UW_BUL-UW_BUL_006 (031422) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20
Dataset: 01-15-16_Noble Energy_Douglas LC35-780_MIT_RBL.db: field/well/run1/merge1.2 Total Length: 28.09 ft Total Weight: 324.50 lb O.D. 3.13 in						

Calibration Report	
Database File:	c:\warrior\data\01-15-16_noble energy_douglas lc35-780_mit_rbl\01-15-16_noble energy_douglas lc35-
Dataset Pathname:	merge1.2
Dataset Creation:	Fri Jan 15 16:43:58 2016 by Calc 7.0 B1

Multi-finger Imaging Tool Calibration Report
--

Serial Number:	218950
Number of Fingers:	40
Tool Model:	UW_MIT40_027

Inclinometer Calibration Report		
Performed:	Fri, Oct, 10 10:41:51 2008	
Calibration Angle:	45	
	Inc X	Inc Y
Vertical:	1996	1975
Finger 1 up:	2238	2226
Finger 31 up:	1760	2216
Finger 21 up:	1769	1745
Finger 11 up:	2250	1738
Sensitivity ratio:	1.00023	
X-axis angle:	314.283	
Deviation const.:	339.139	

Finger Calibration Report							
				Performed: Fri Jan 15 13:13:11 2016			
Ring size:	4	5	6	7			
(in)							
	Sens	Sens	Sens				
Finger 01:	1477 270.0	1747 287.0	2034 300.0	2334			
Finger 02:	1574 251.0	1825 259.0	2084 266.0	2350			
Finger 03:	1454 278.0	1732 291.0	2023 302.0	2325			
Finger 04:	1473 275.0	1748 285.0	2033 294.0	2327			
Finger 05:	1506 269.0	1775 275.0	2050 282.0	2332			
Finger 06:	1438 283.0	1721 294.0	2015 307.0	2322			
Finger 07:	1457 280.0	1737 289.0	2026 304.0	2330			
Finger 08:	1456 279.0	1735 285.0	2020 295.0	2315			
Finger 09:	1433 281.0	1714 290.0	2004 306.0	2310			
Finger 10:	1450 271.0	1721 280.0	2001 290.0	2291			

Finger 11:	1443	284.0	1727	291.0	2018	305.0	2323
Finger 12:	1388	288.0	1676	296.0	1972	311.0	2283
Finger 13:	1481	264.0	1745	267.0	2012	278.0	2290
Finger 14:	1428	272.0	1700	281.0	1981	294.0	2275
Finger 15:	1423	284.0	1707	292.0	1999	305.0	2304
Finger 16:	1433	281.0	1714	285.0	1999	299.0	2298
Finger 17:	1423	287.0	1710	295.0	2005	310.0	2315
Finger 18:	1382	276.0	1658	287.0	1945	300.0	2245
Finger 19:	1423	282.0	1705	289.0	1994	301.0	2295
Finger 20:	1423	279.0	1702	290.0	1992	301.0	2293
Finger 21:	1402	290.0	1692	303.0	1995	314.0	2309
Finger 22:	1435	267.0	1702	279.0	1981	291.0	2272
Finger 23:	1398	277.0	1675	285.0	1960	294.0	2254
Finger 24:	1449	272.0	1721	281.0	2002	286.0	2288
Finger 25:	1386	276.0	1662	280.0	1942	293.0	2235
Finger 26:	1404	279.0	1683	294.0	1977	303.0	2280
Finger 27:	1459	267.0	1726	282.0	2008	288.0	2296
Finger 28:	1451	282.0	1733	294.0	2027	306.0	2333
Finger 29:	1508	260.0	1768	273.0	2041	279.0	2320
Finger 30:	1406	275.0	1681	294.0	1975	303.0	2278
Finger 31:	1429	279.0	1708	298.0	2006	303.0	2309
Finger 32:	1477	259.0	1736	273.0	2009	279.0	2288
Finger 33:	1442	276.0	1718	299.0	2017	305.0	2322
Finger 34:	1451	273.0	1724	294.0	2018	304.0	2322
Finger 35:	1503	248.0	1751	270.0	2021	273.0	2294
Finger 36:	1524	258.0	1782	281.0	2063	288.0	2351
Finger 37:	1491	273.0	1764	294.0	2058	296.0	2354
Finger 38:	1568	244.0	1812	259.0	2071	269.0	2340
Finger 39:	1483	264.0	1747	281.0	2028	284.0	2312
Finger 40:	1399	276.0	1675	301.0	1976	310.0	2286

Segmented Cement Bond Log Calibration Report						
Serial Number:		10013454				
Tool Model:		UW_RBT_004				
Calibration Casing Diameter:		7.000	in			
Calibration Depth:		6102.809	ft			
Master Calibration, performed Fri Jan 15 16:43:53 2016:						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	0.001	0.700	0.800	62.165	87.783	0.709
5FT	-0.003	0.784	0.800	62.165	78.047	1.015
S1	0.002	0.709	0.000	100.000	141.356	-0.223
S2	0.000	0.721	0.000	100.000	138.653	-0.013
S3	0.001	0.715	0.000	100.000	140.049	-0.165
S4	0.000	0.708	0.000	100.000	141.313	-0.064
S5	0.001	0.695	0.000	100.000	143.997	-0.110
S6	0.001	0.689	0.000	100.000	145.287	-0.077
S7	0.001	0.683	0.000	100.000	146.626	-0.086
S8	0.001	0.695	0.000	100.000	144.083	-0.078

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:	211727			
Tool Model:	UW_PGR_020			
Performed:	Sat Jan 09 08:09:30 2016			
Calibrator Value:	1.0	GAPI		
Background Reading:	0.0	cps		
Calibrator Reading:	1.0	cps		
Sensitivity:	0.6000	GAPI/cps		

	Company	Noble Energy Inc.
	Well	Douglas LC35-780
	Field	Wildcat
	County	Weld
	State	Colorado