



Compensated Neutron  
Gamma Ray  
Casing Collar Log

Company	Kerr-McGee Oil & Gas Onshore, L.P.				
Well	Bat 4C-9HZ				
Field	Wattenberg				
County	Weld				
State	Colorado				
Location:	API # : 05-123-41290				
SEC 9	TWP 1N	RGE 65W	Other Services		
			RBL		
			Elevation		
			K.B. 4955'		
Permanent Datum	Ground Level	Elevation	4930'		
Log Measured From	Kelly Bushing	25 FT	D.F. 4954'		
Drilling Measured From	Kelly Bushing		G.L. 4930'		

Date	04-AUG-2015		
Run Number	One		
Depth Driller	---		
Depth Logger	7935 FT		
Bottom Logged Interval	7930 FT		
Top Log Interval	Surface		
Open Hole Size	7.875"		
Type Fluid	Water		
Density / Viscosity	8.34 lbm/gal		
Max. Recorded Temp.	240°F		
Estimated Cement Top	Surface		
Time Well Ready	ROA		
Time Logger on Bottom	9:05		
Equipment Number	HD-0343		
Location	Fort Lupton, CO		
Recorded By	Zach Fisher		
Witnessed By	Josh Gustafson		

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	1603 FT		
Intermediate #1	5 1/2	17	HC-P110	Surface	12219 FT		
Intermediate #2							
Liner							

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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  
Recorded Marker Joint at 6754 FT  
Log ran from 7935 FT to surface  
Log ran with 2800 PSI surface induced pressure

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



Main Pass

Recorded with 2800 PSI Surface Induced Pressure

Database File: c:\warrior\data\anadarko\_bat 4c-9hz\0512341290\_anadarko\_bat 4c-9hz\_08-04-15\_rbl\_cnl.db

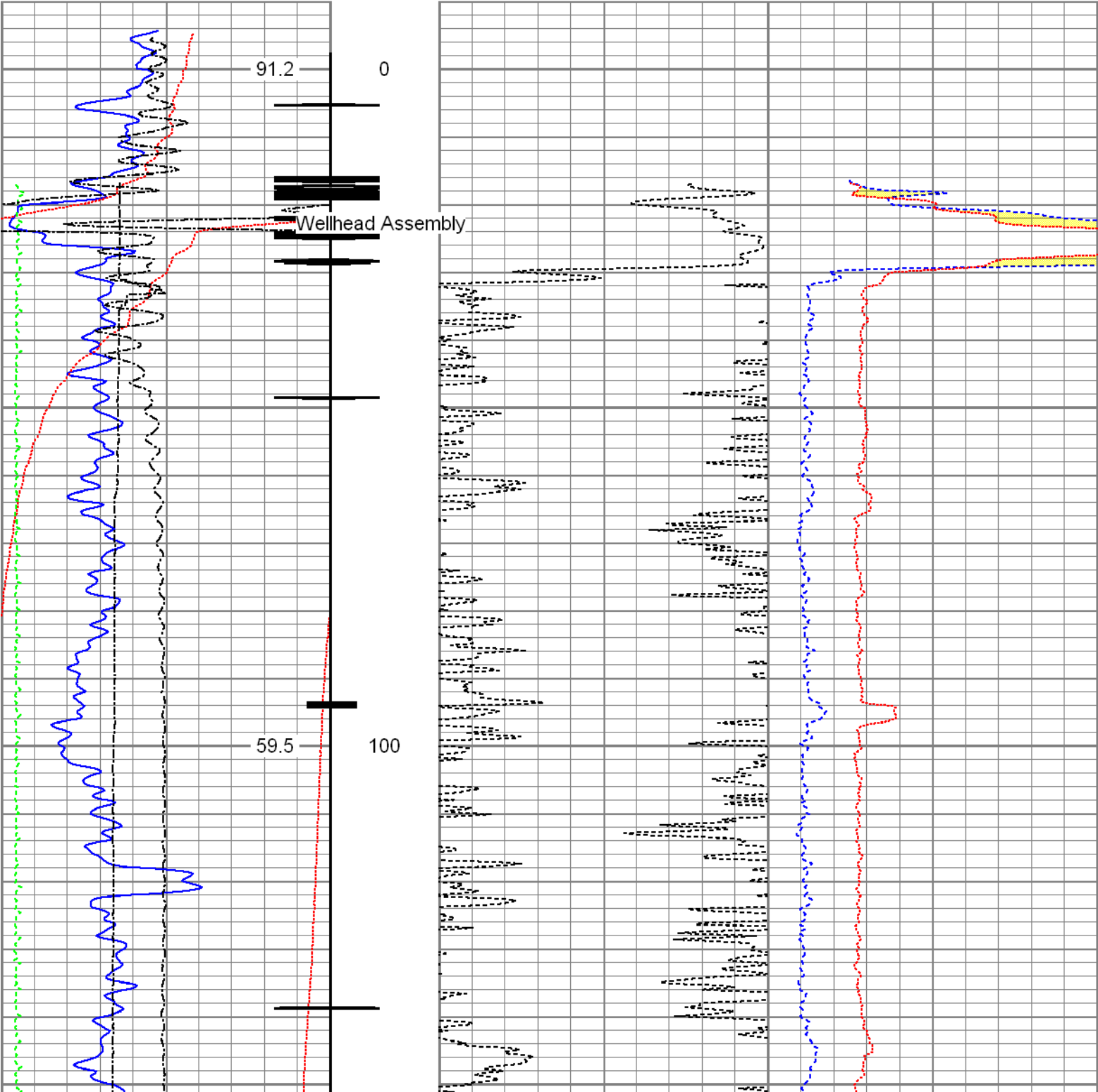
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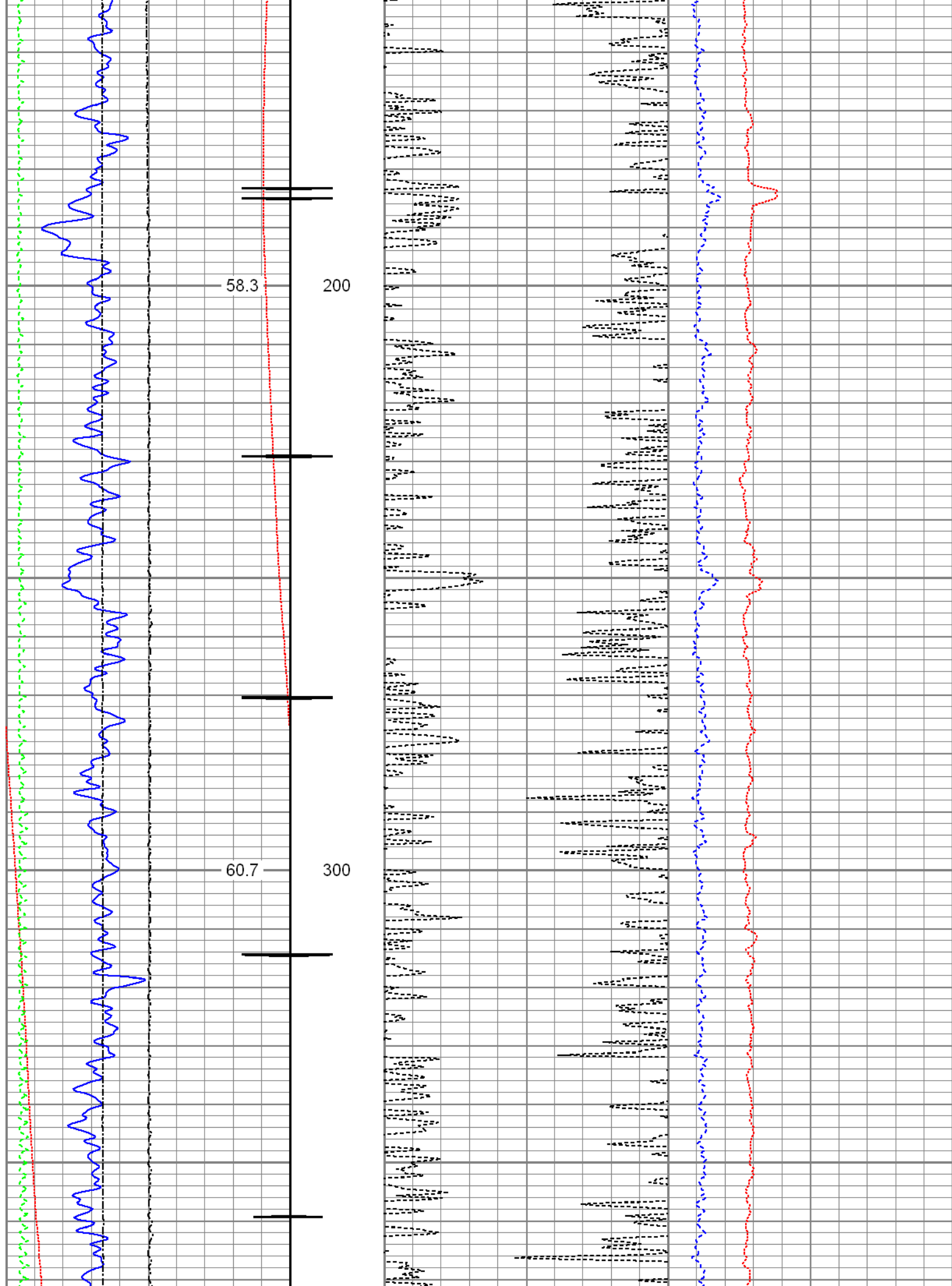
Presentation Format: cnl

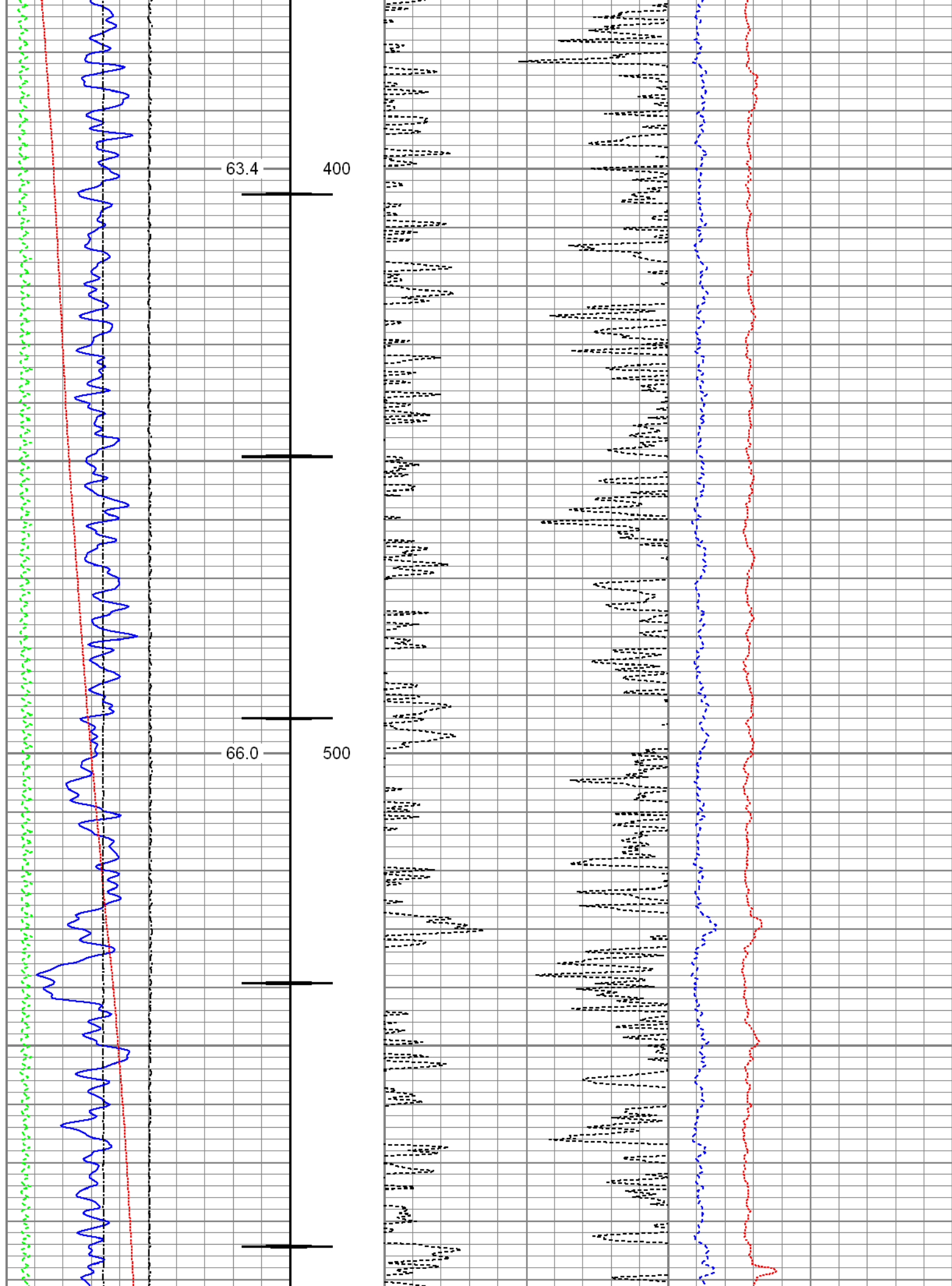
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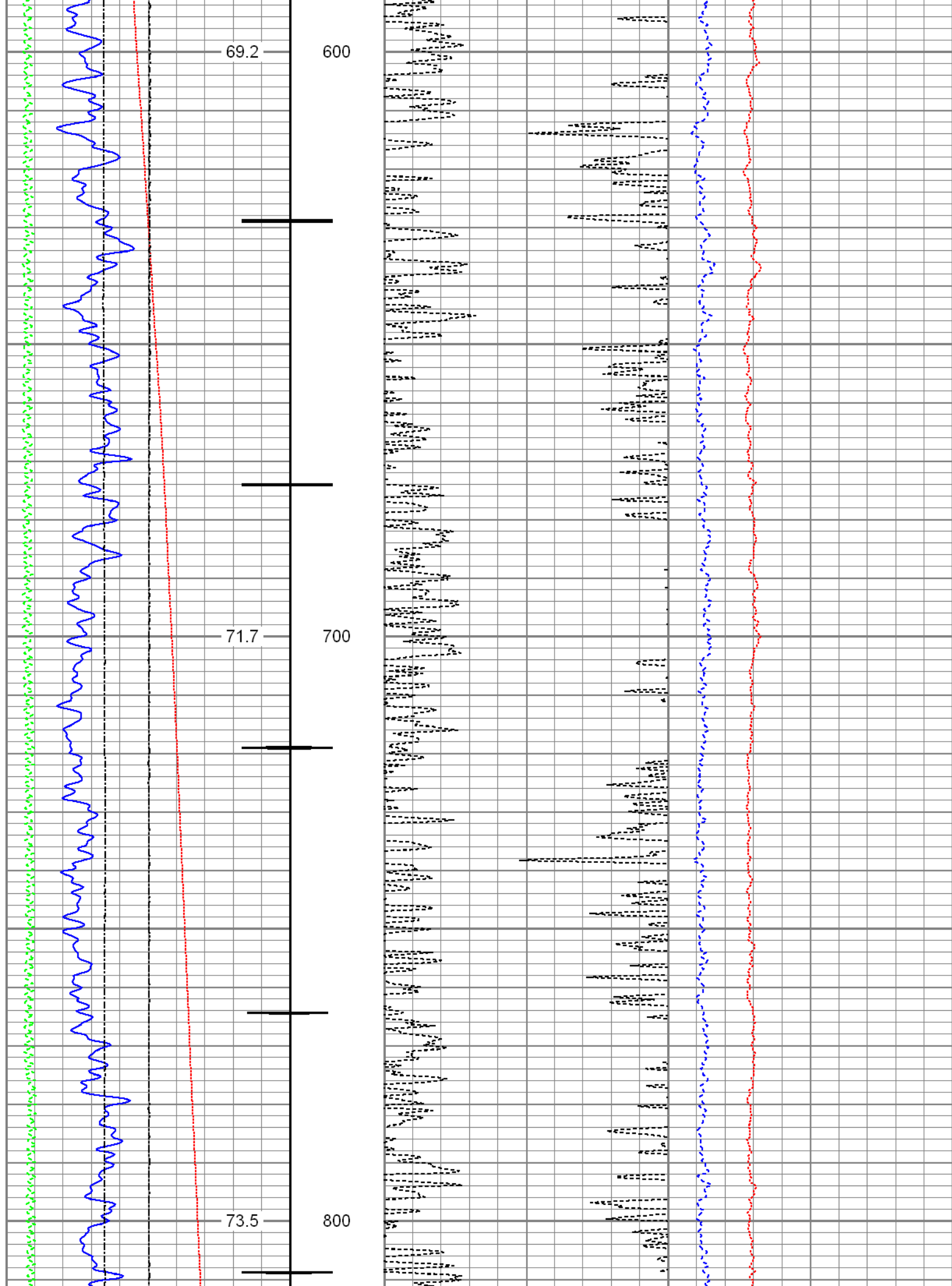
Charted by: Depth in Feet scaled 1:240

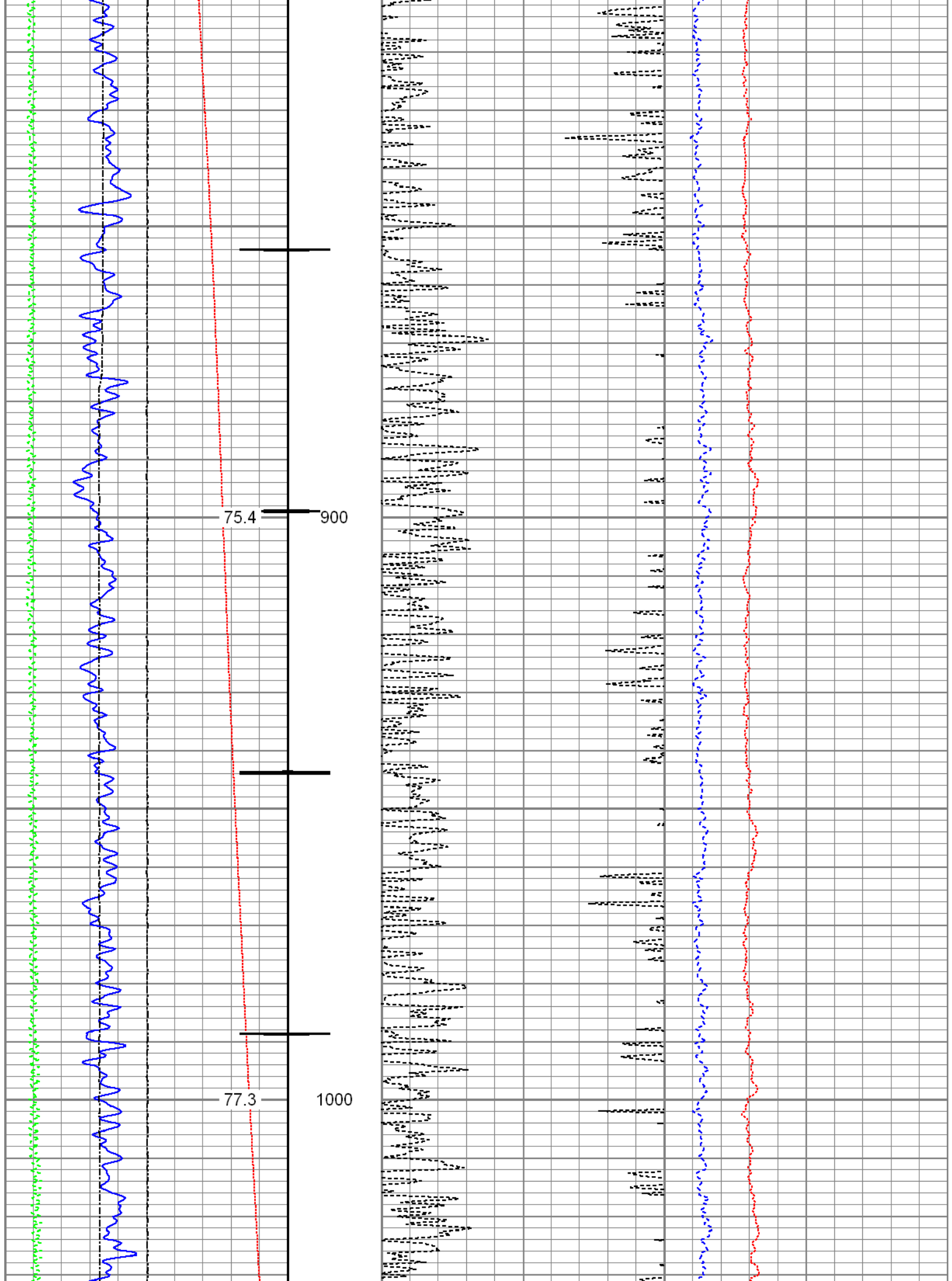
0	Gamma Ray (GAPI)	120	60	Neutron Porosity (pu)	0	0	Far Neutron (cps)	1000
0	Temperature (degF)	20				0	Near Neutron (cps)	10000
-100	Line Speed (ft/min)	100						
0	Line Tension (lb)	2000						
-2	Differential Temperature (degF)	2						
	Casing Collar Locator							

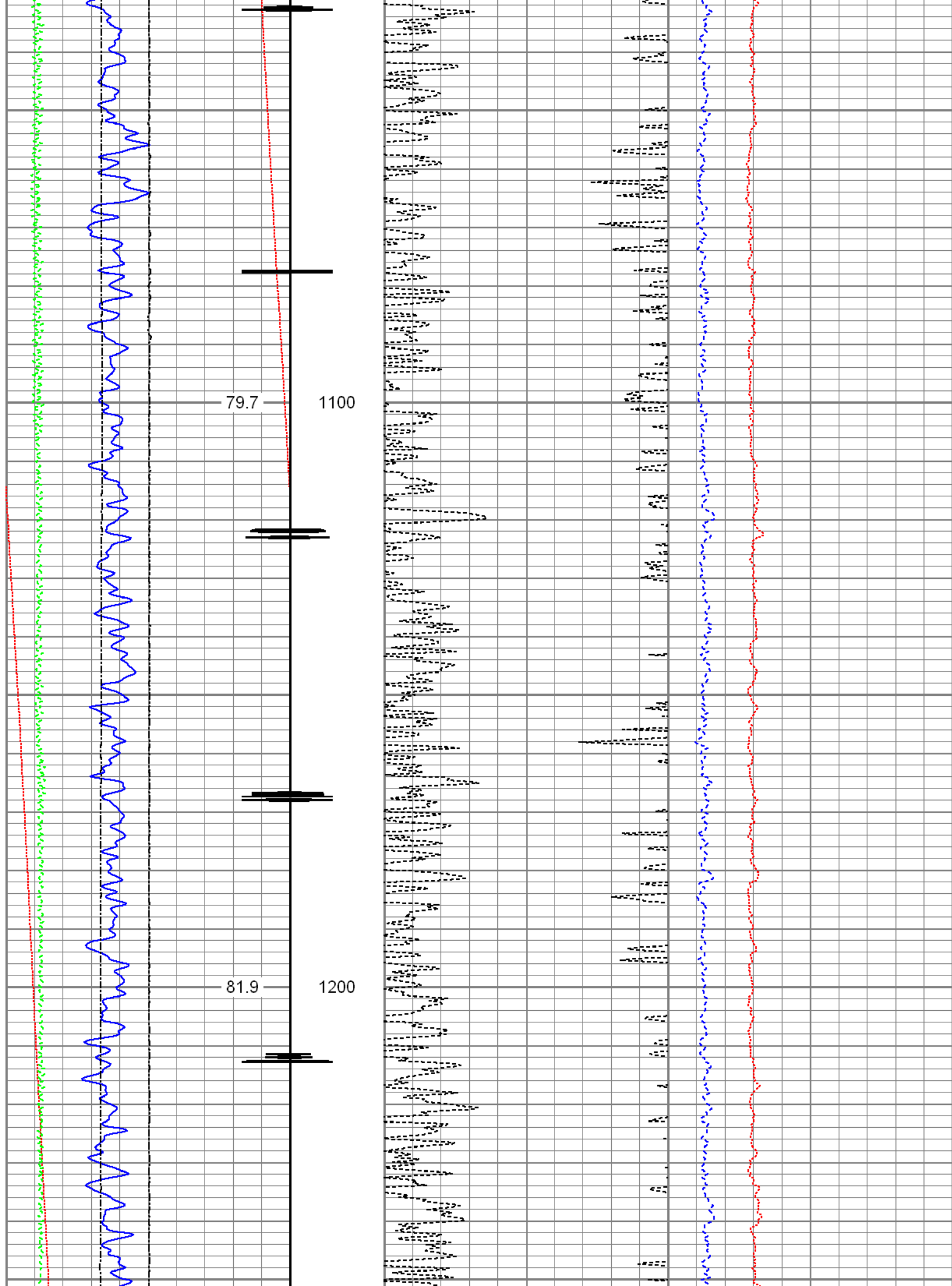




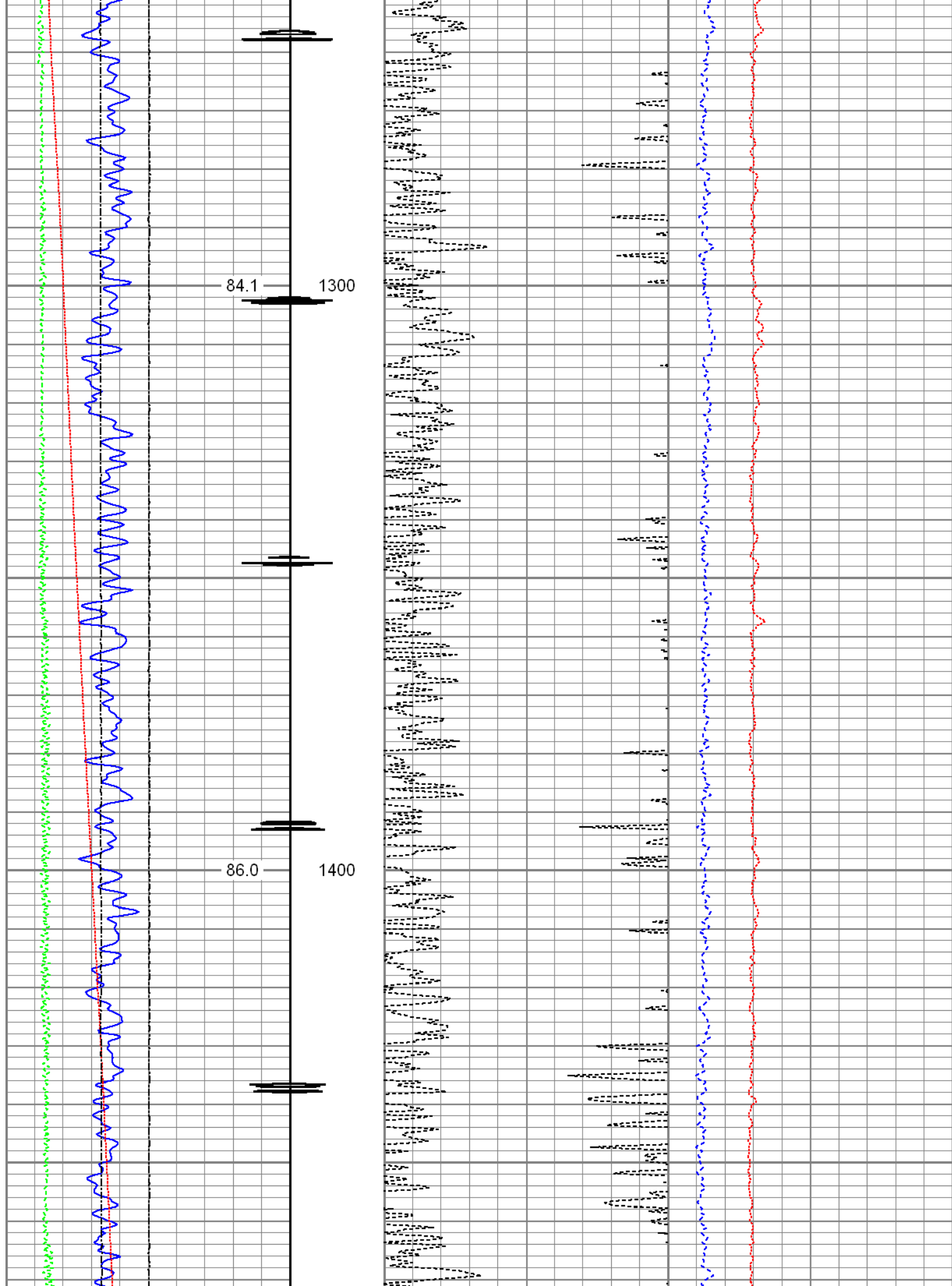




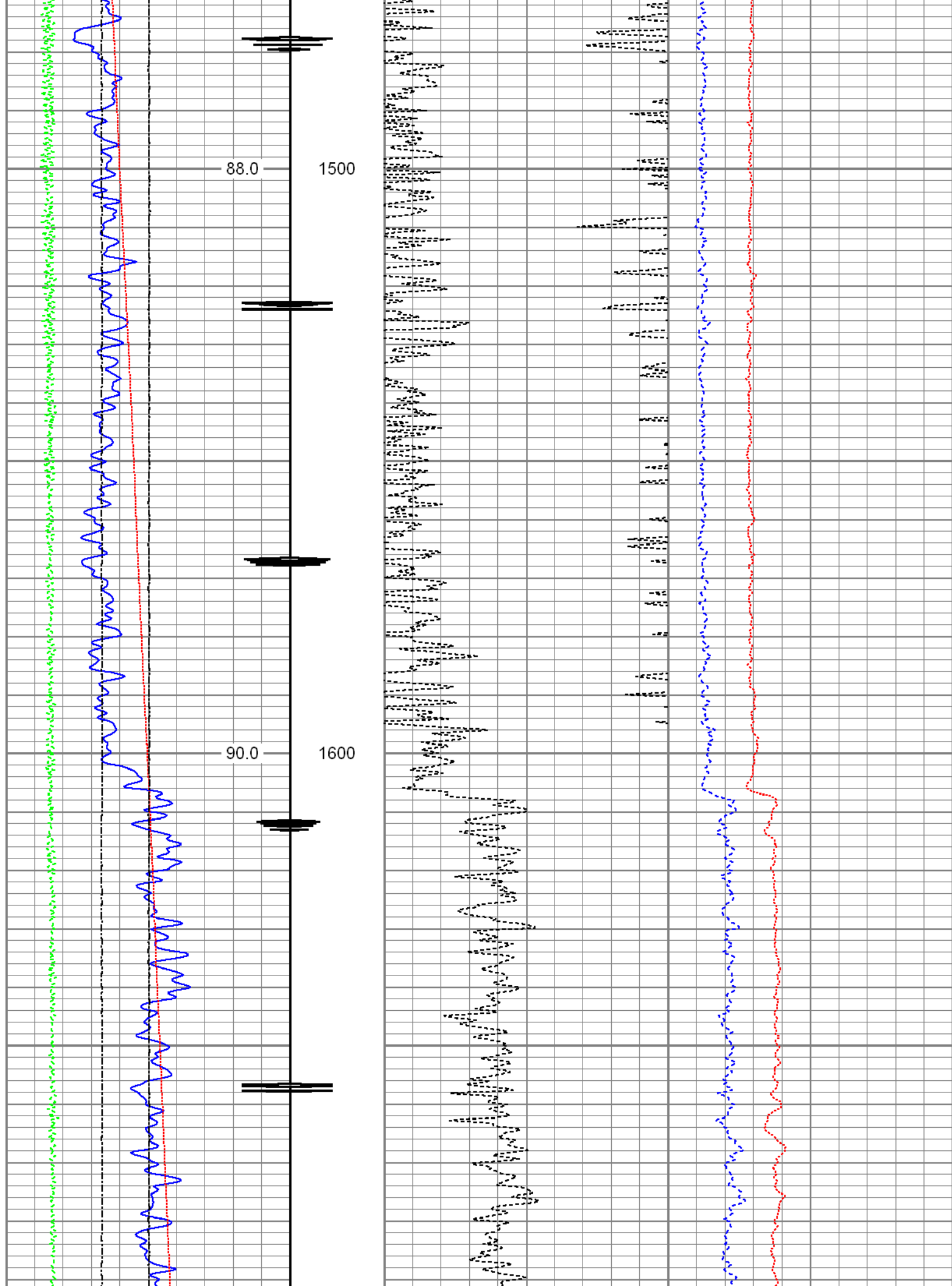


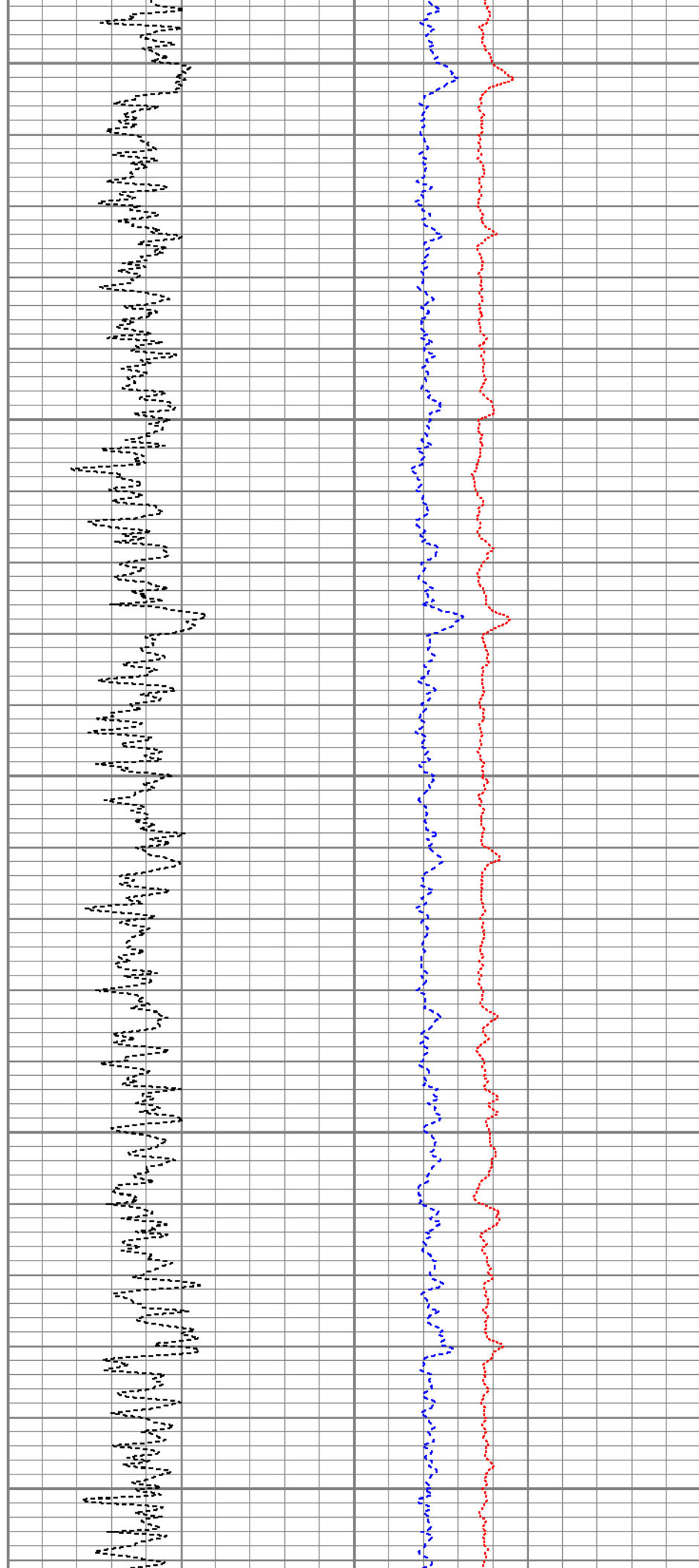
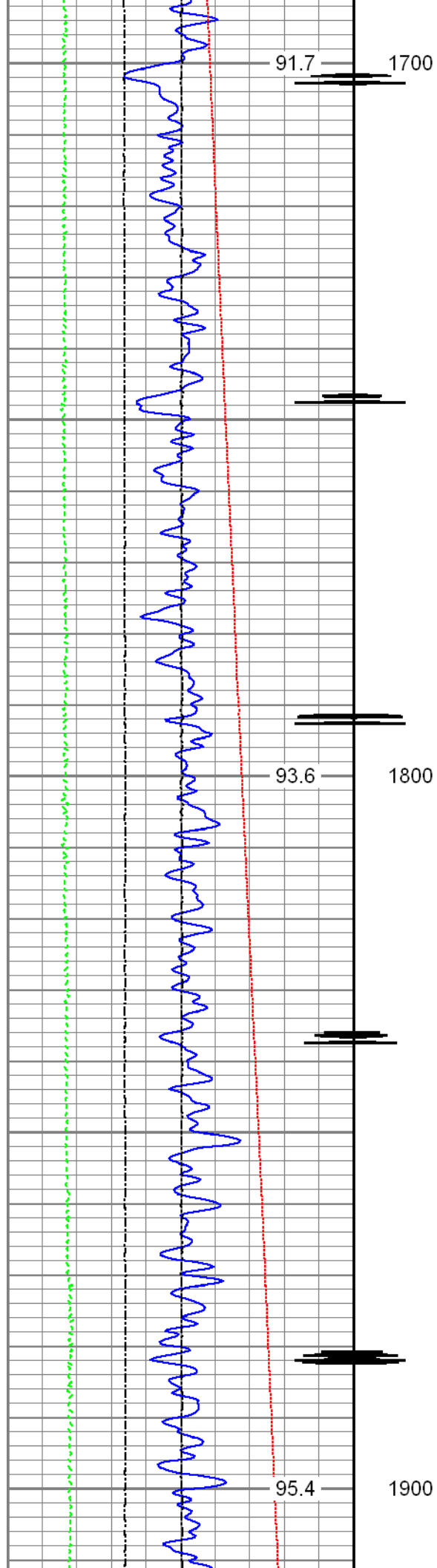


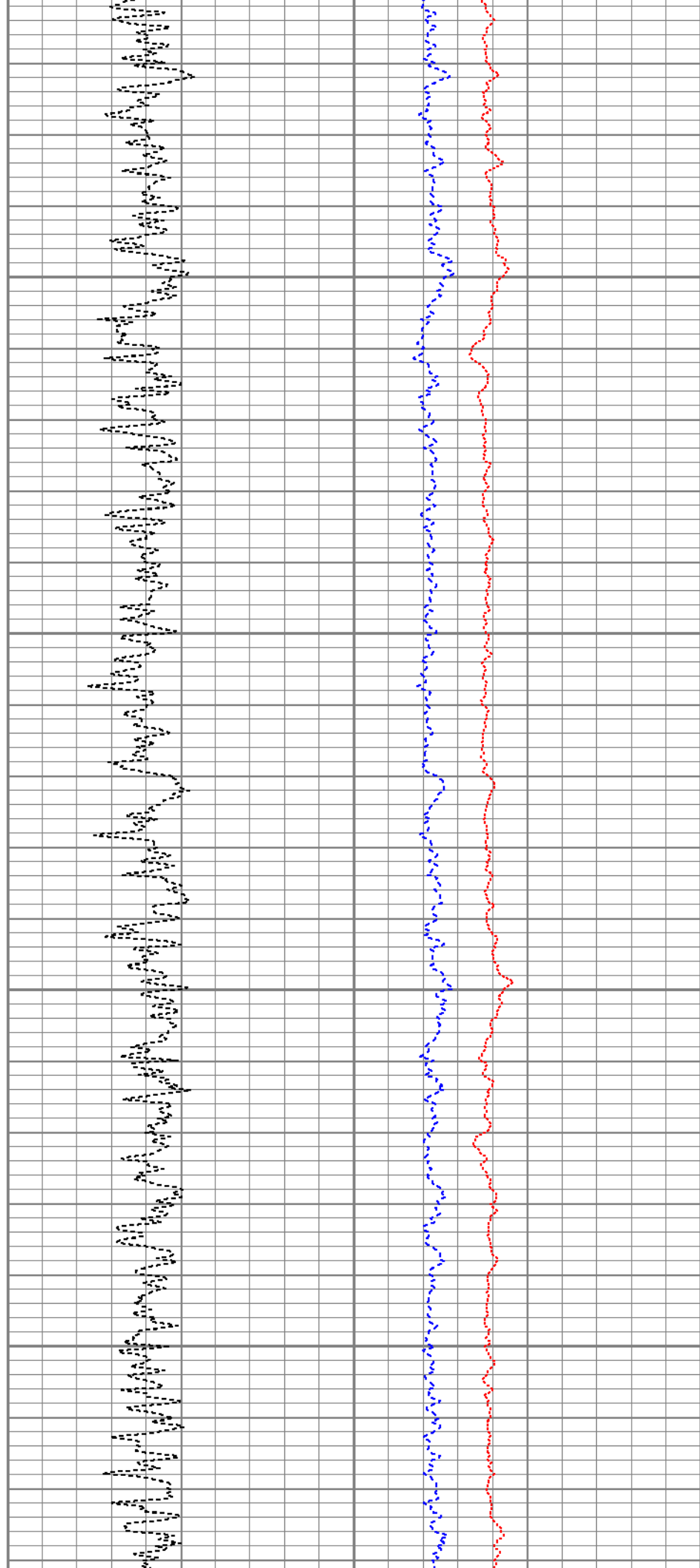
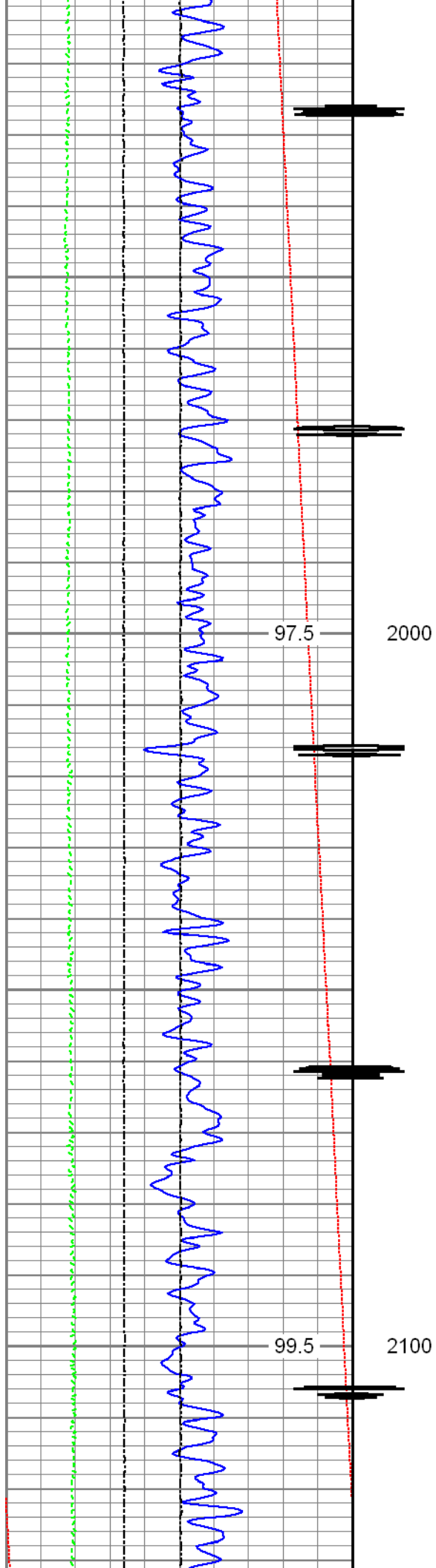


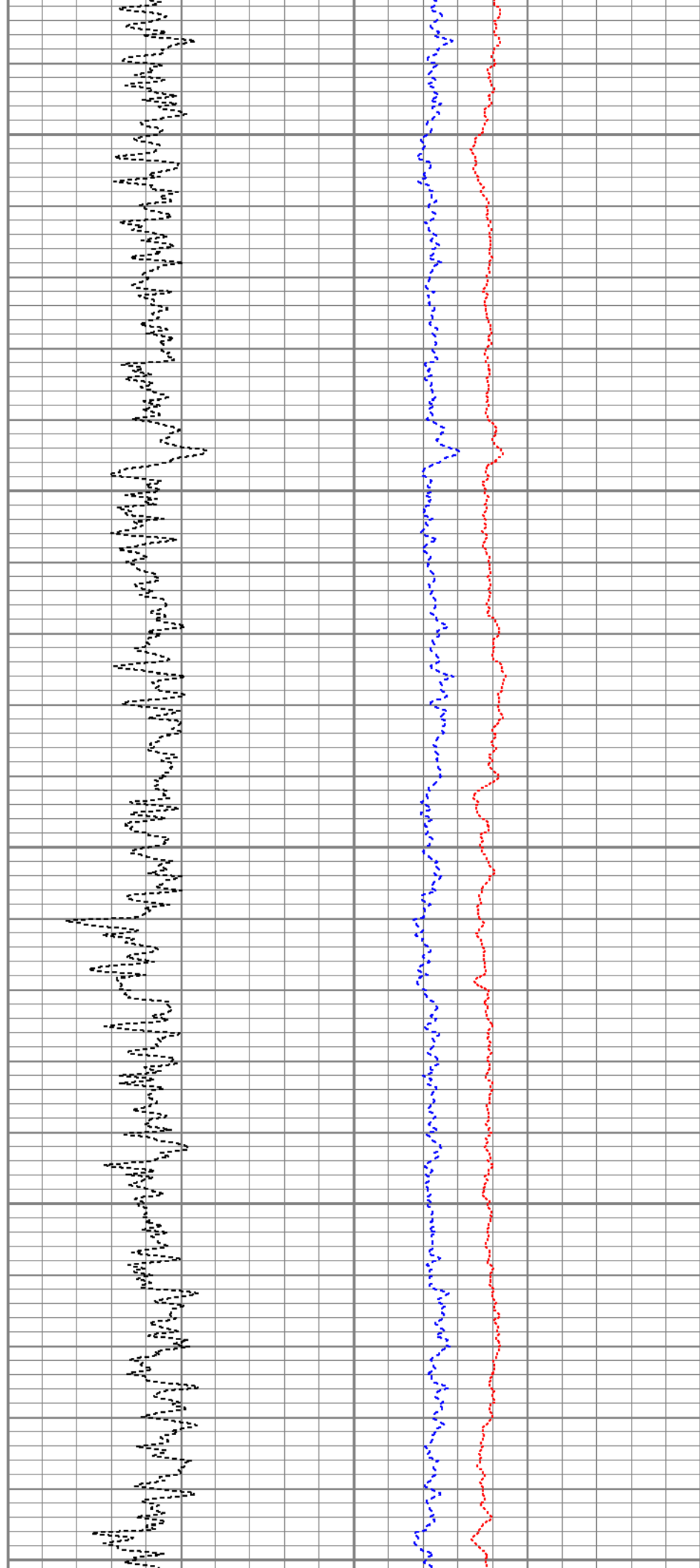
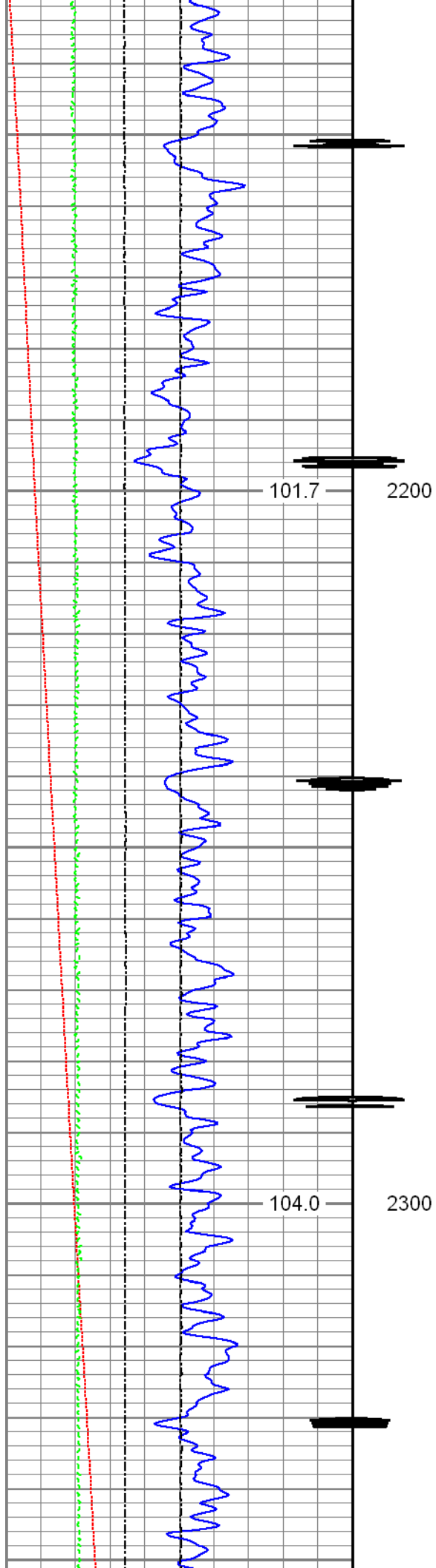


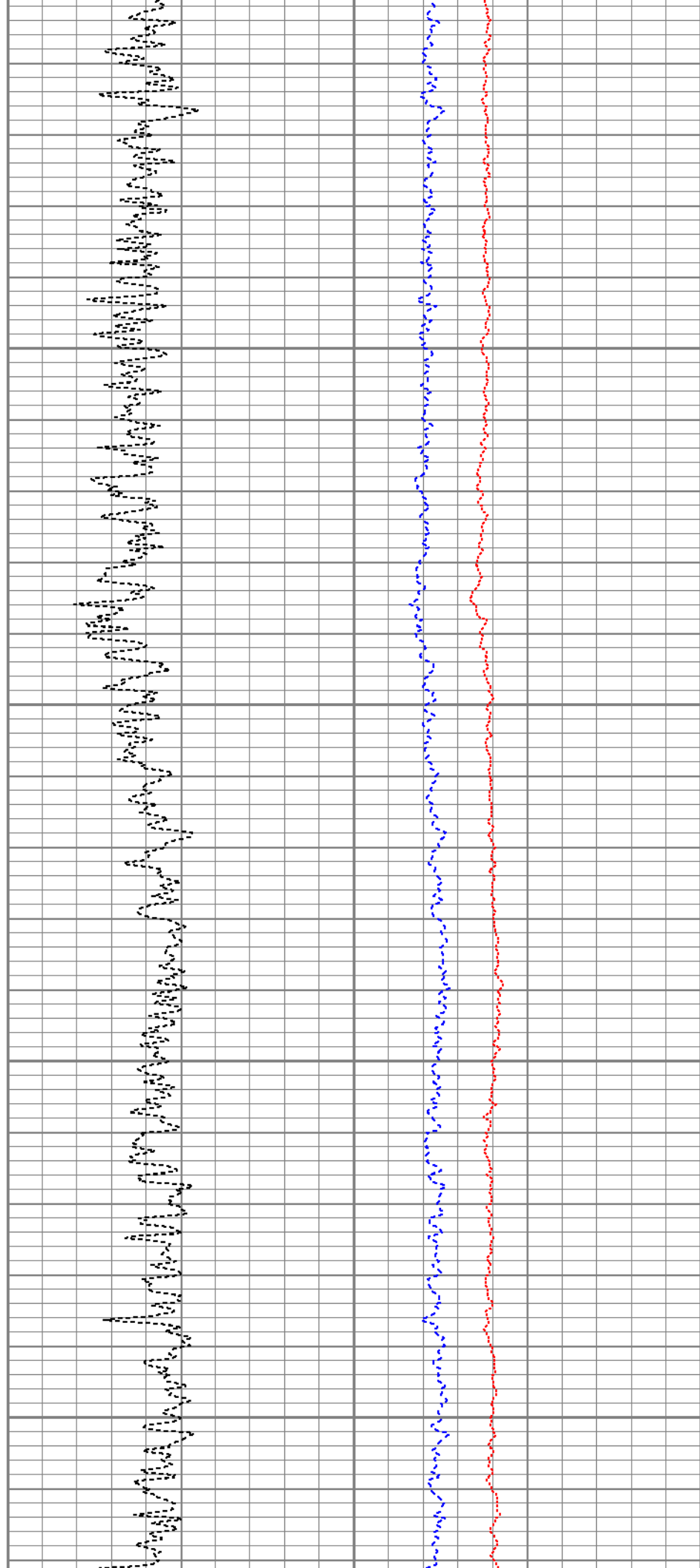
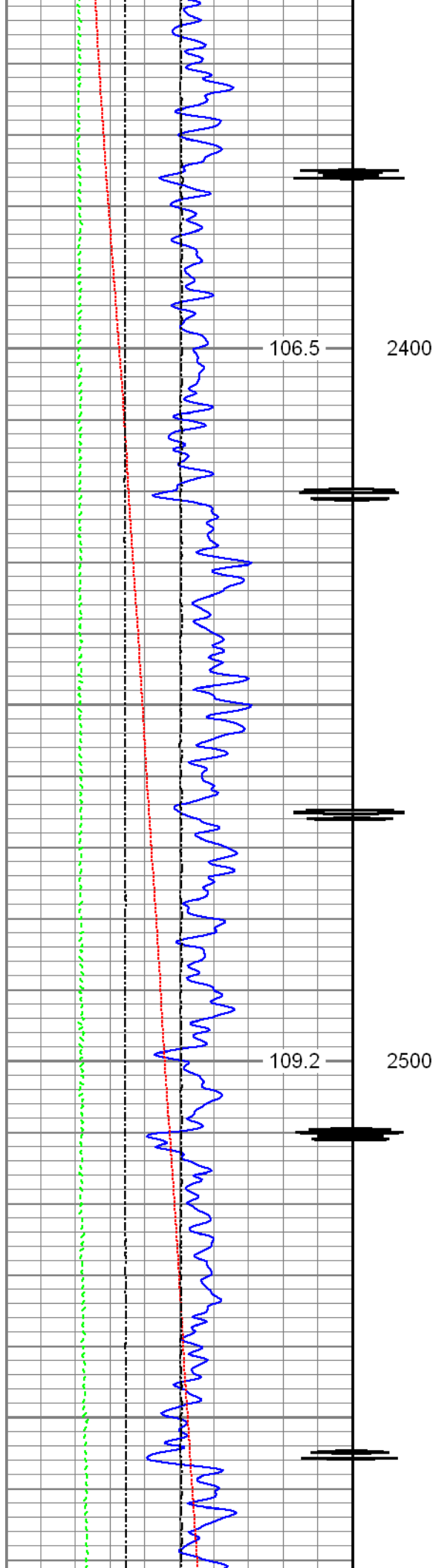


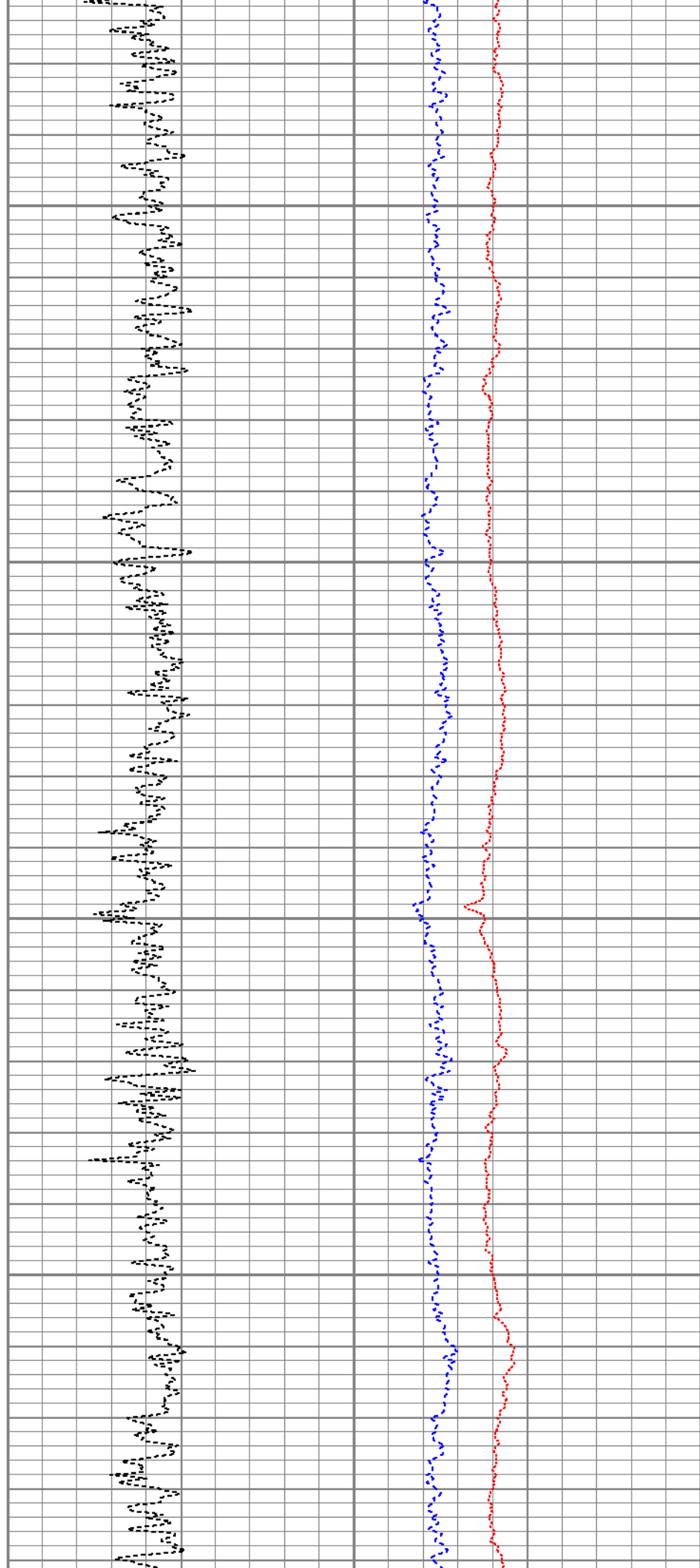
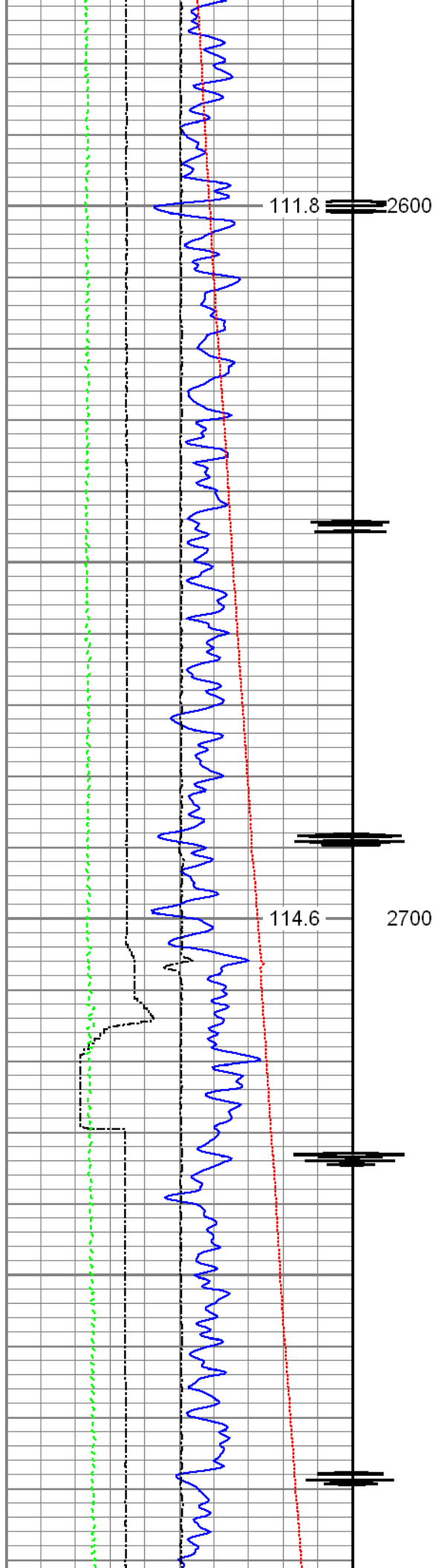


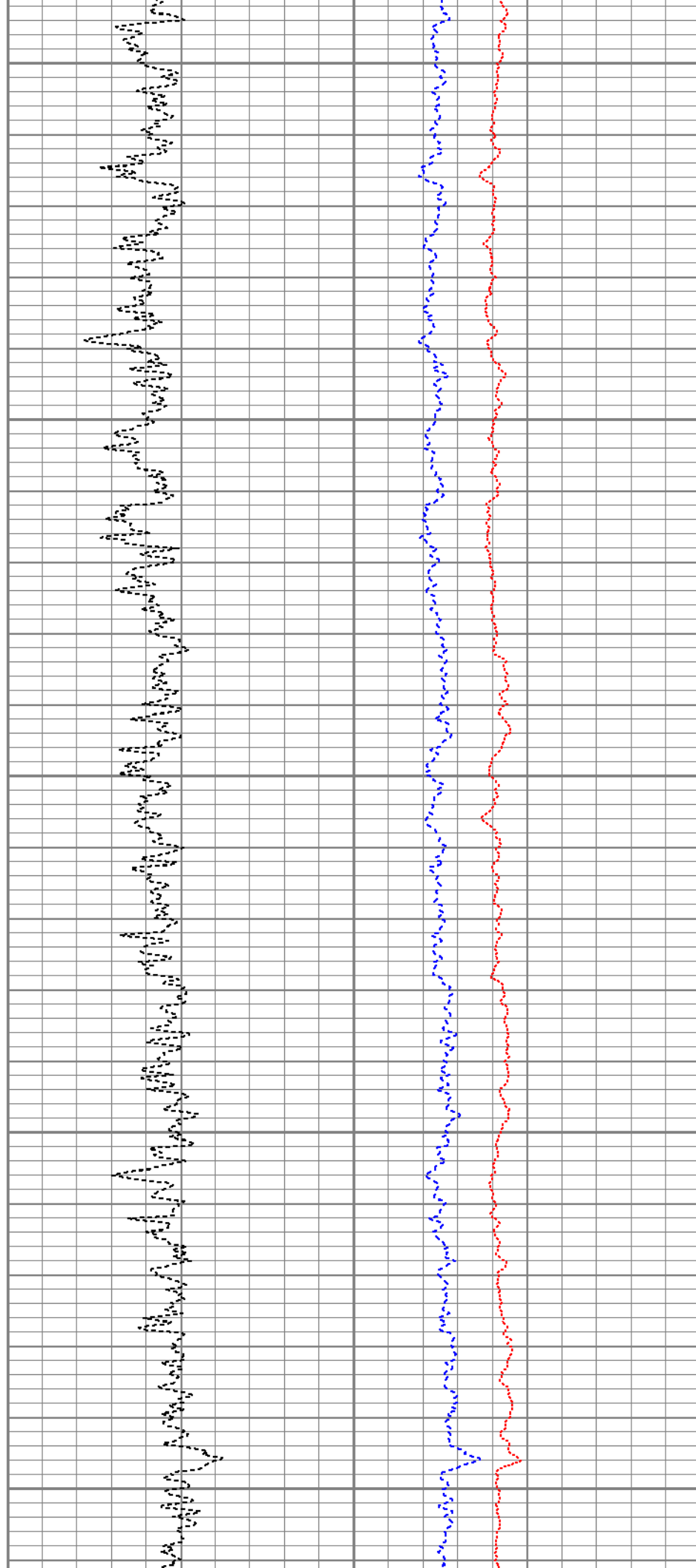
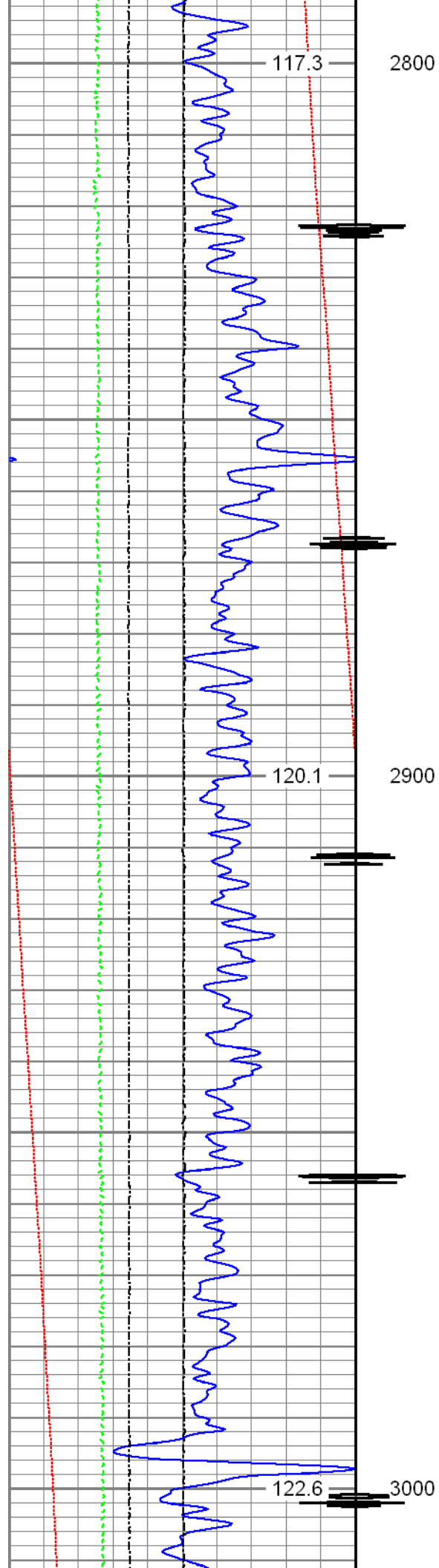




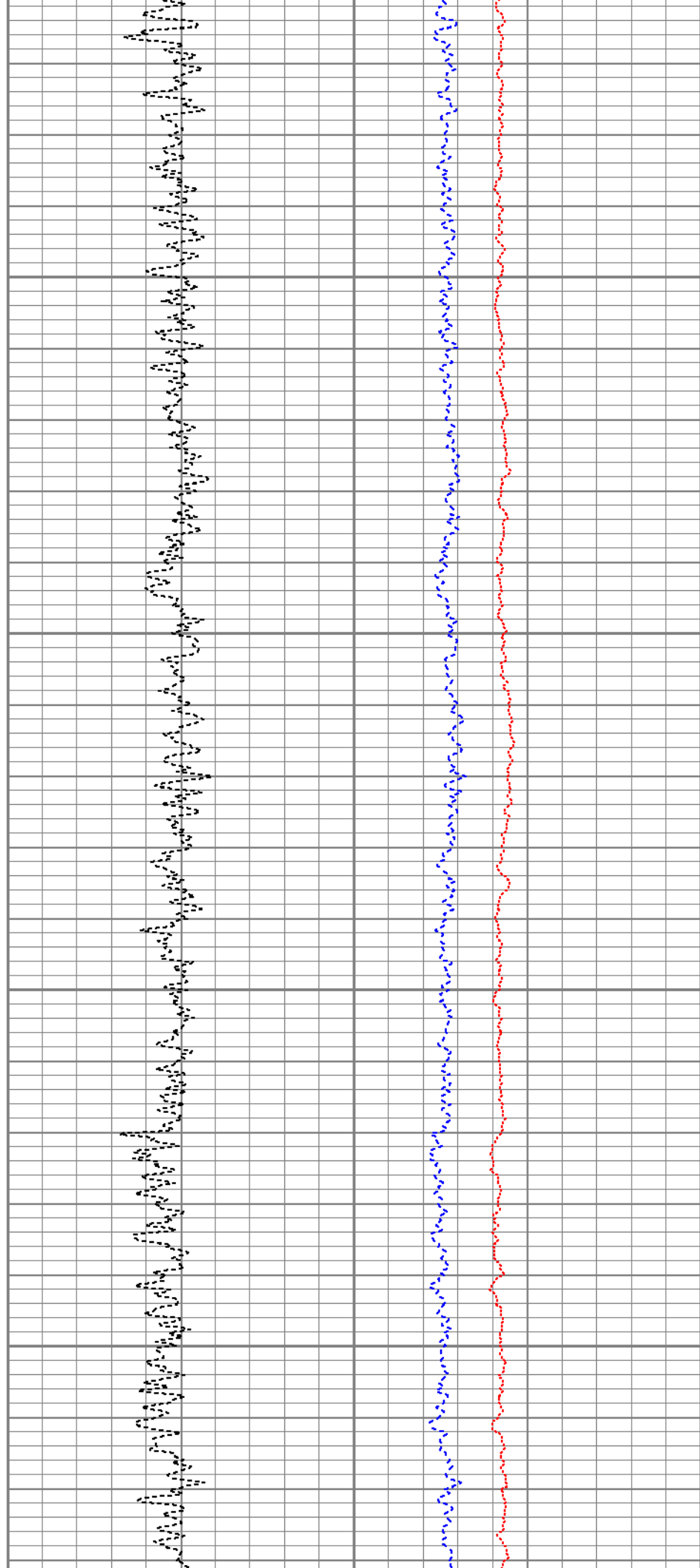
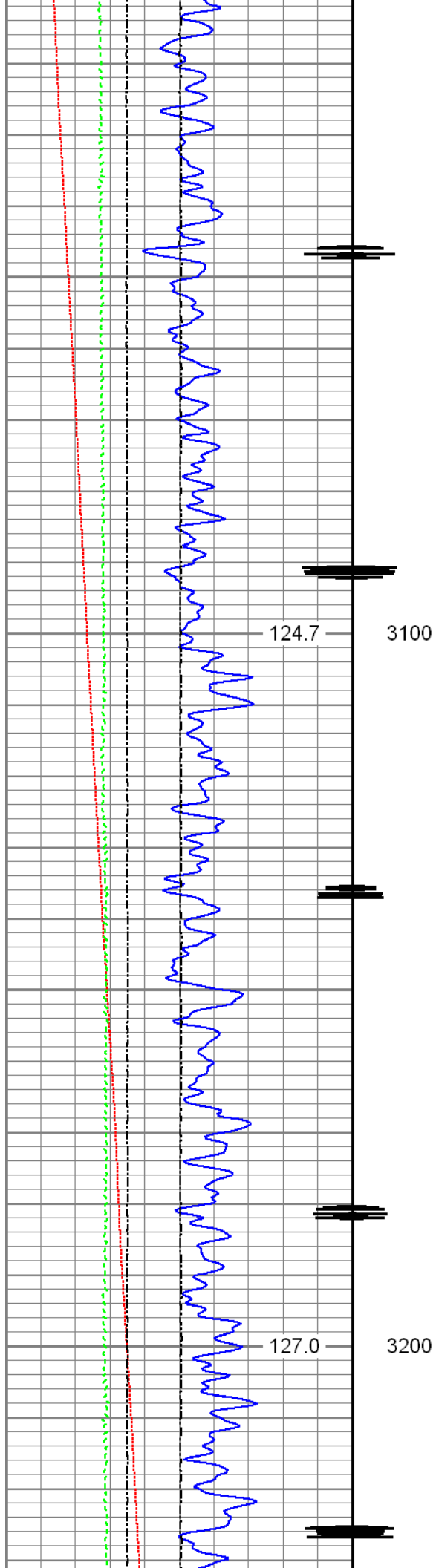


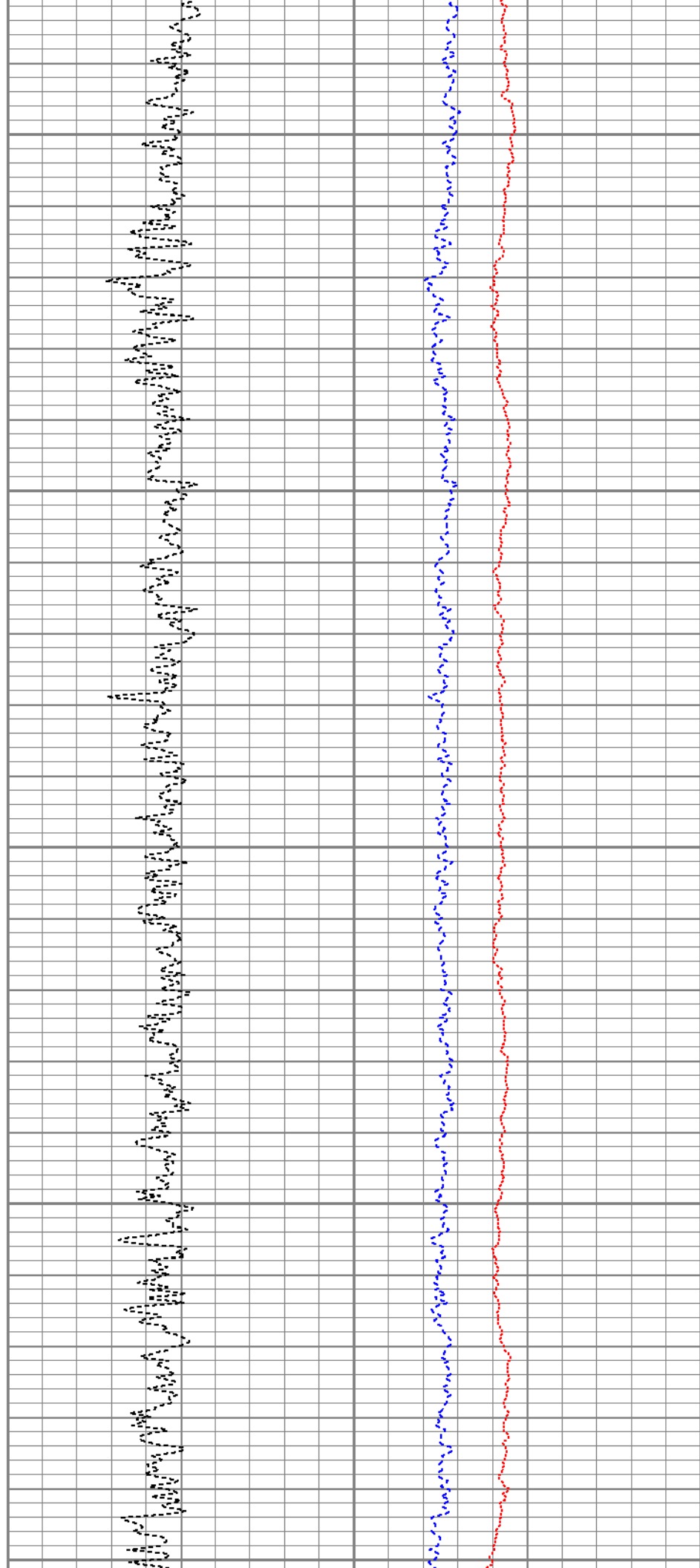
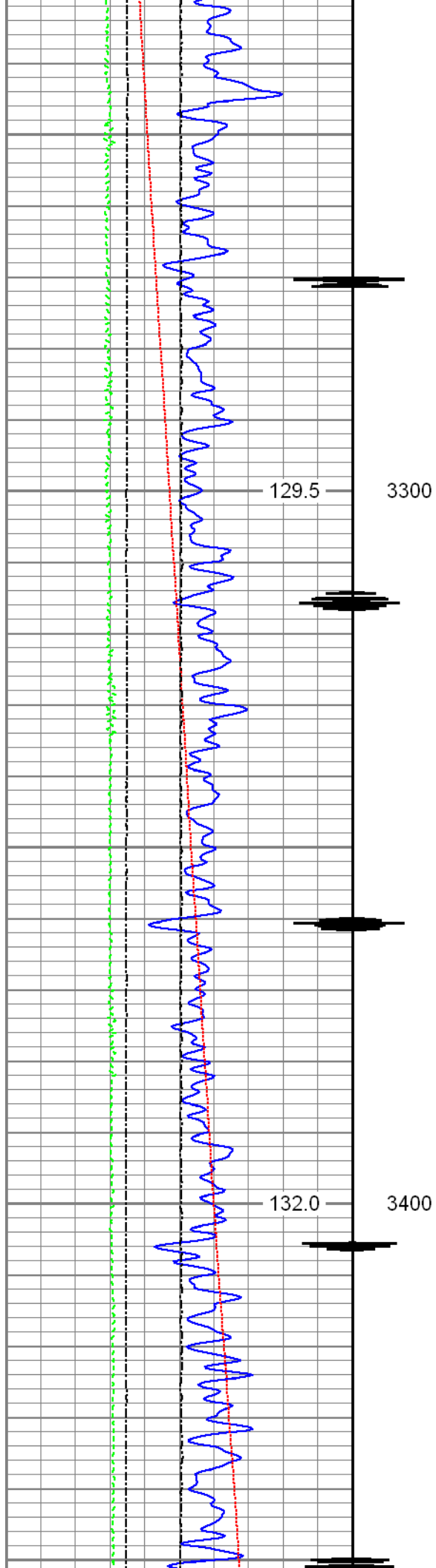


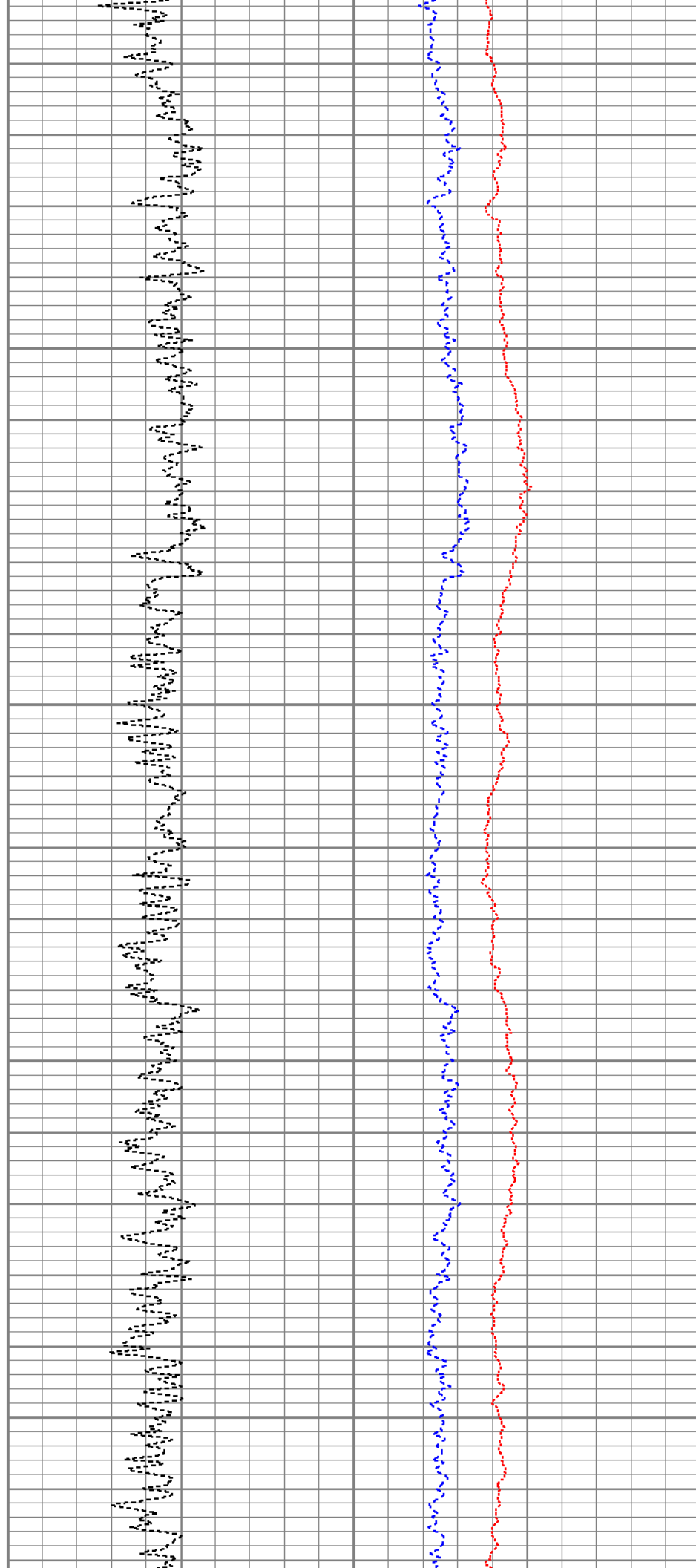
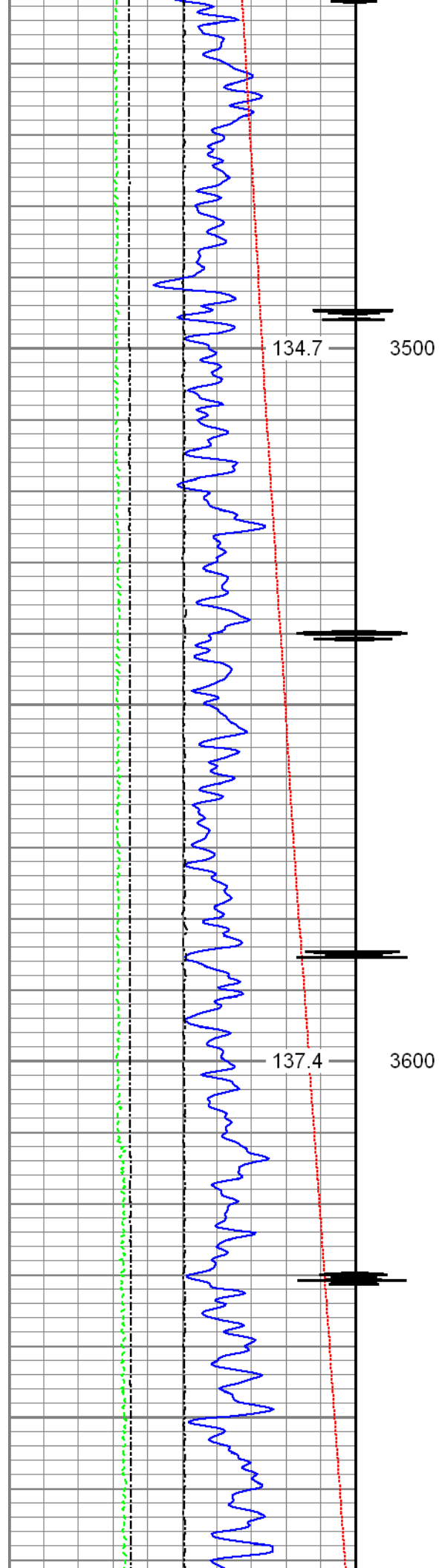


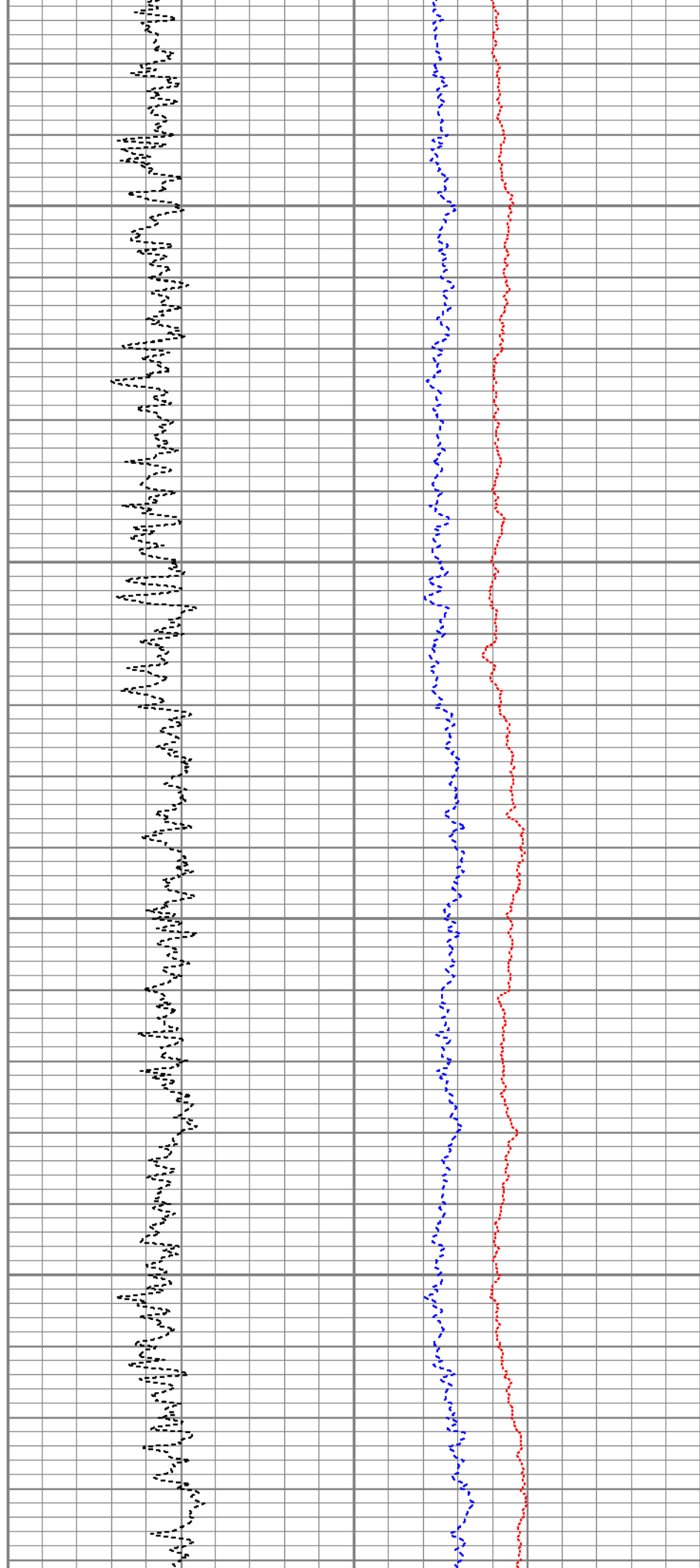
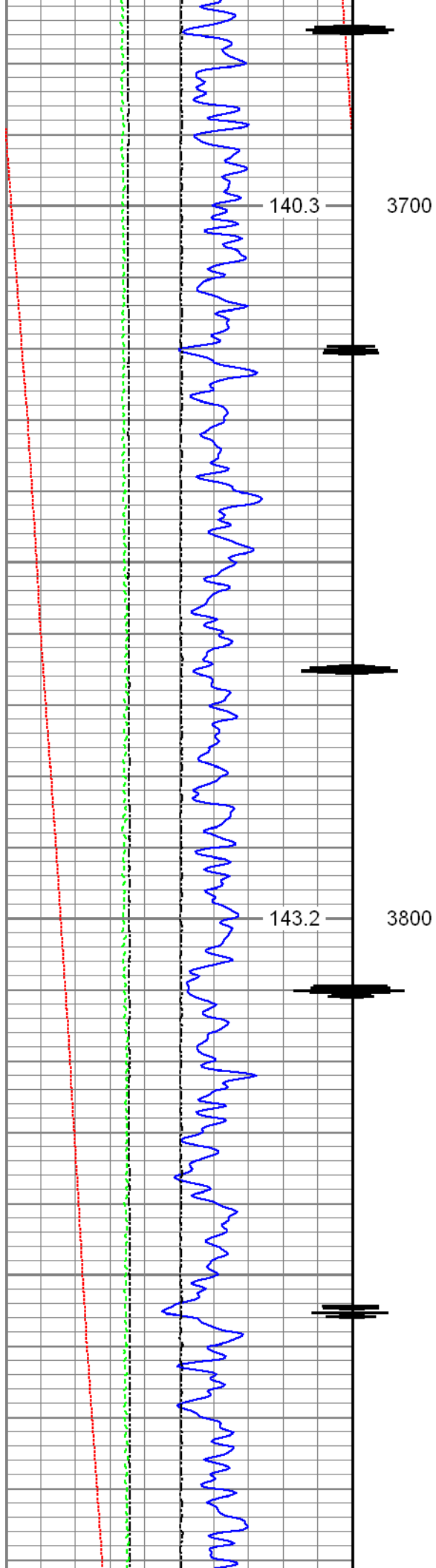


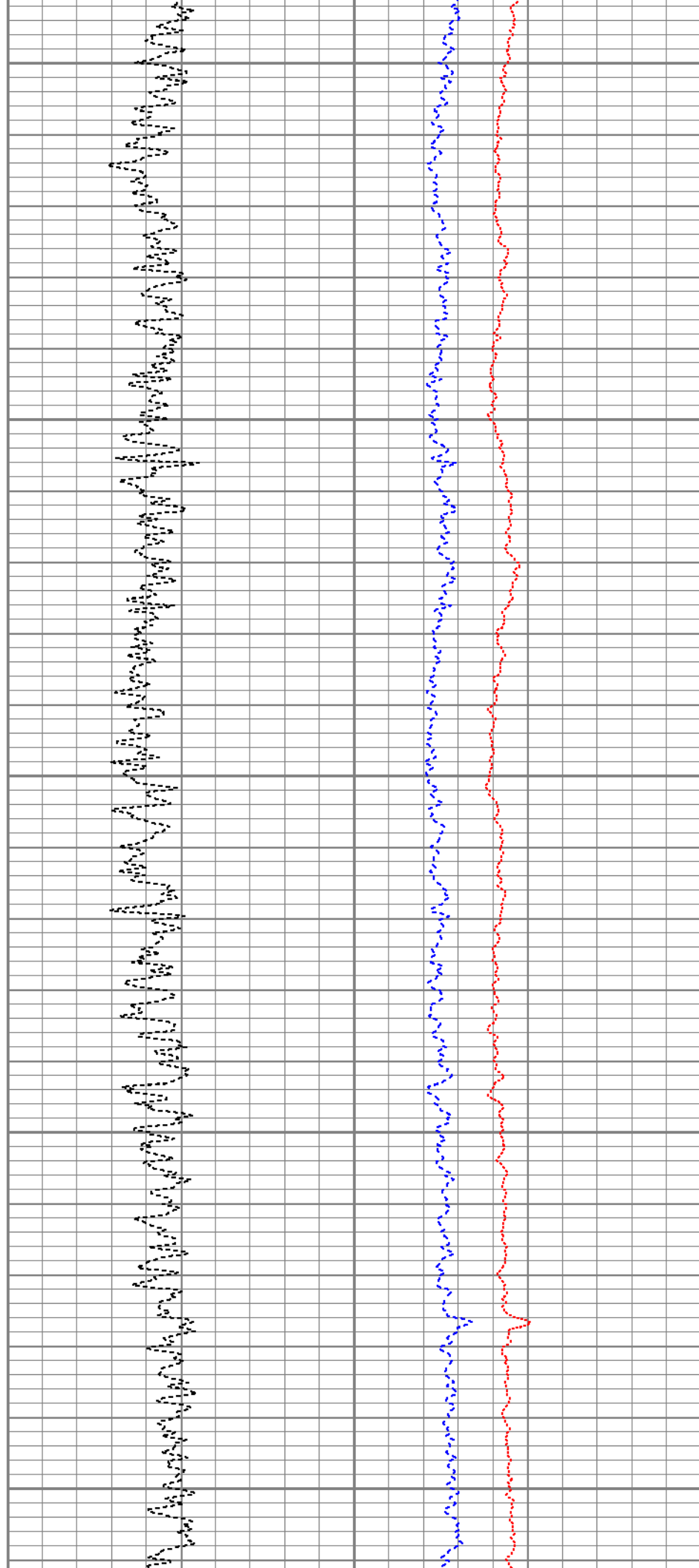
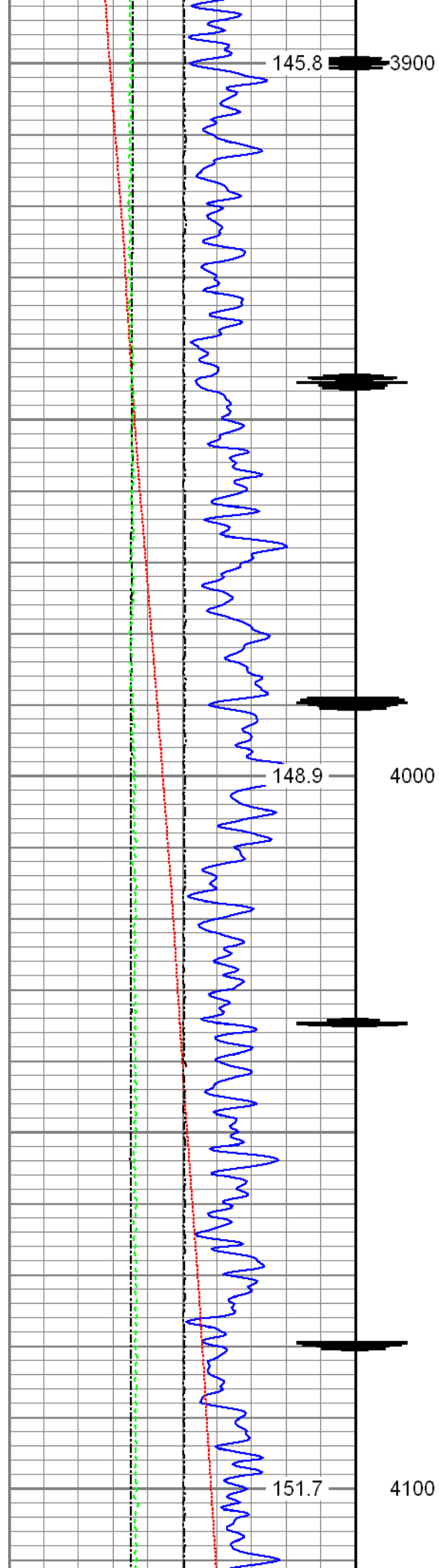


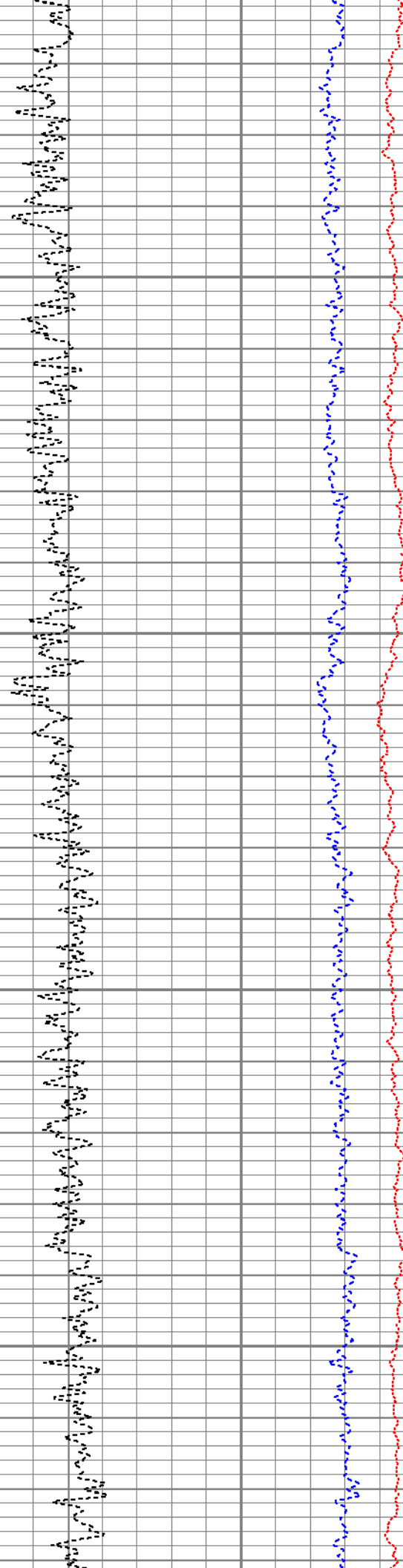
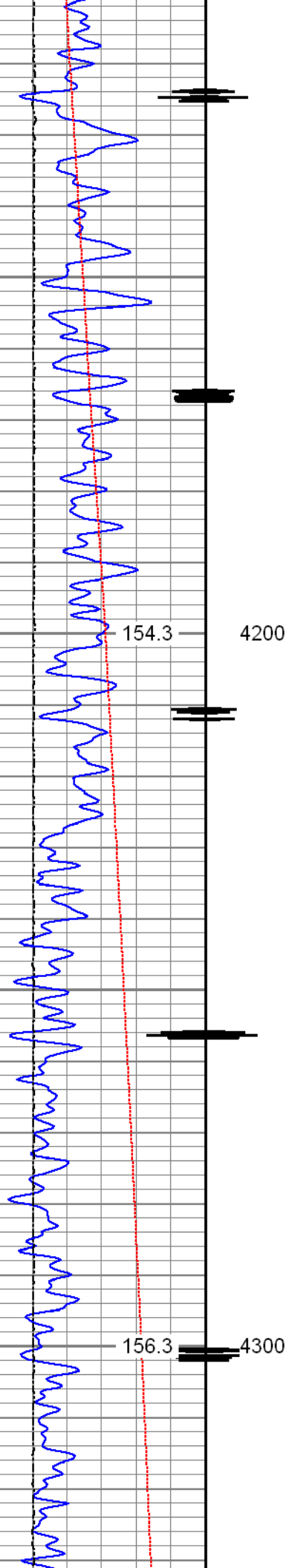


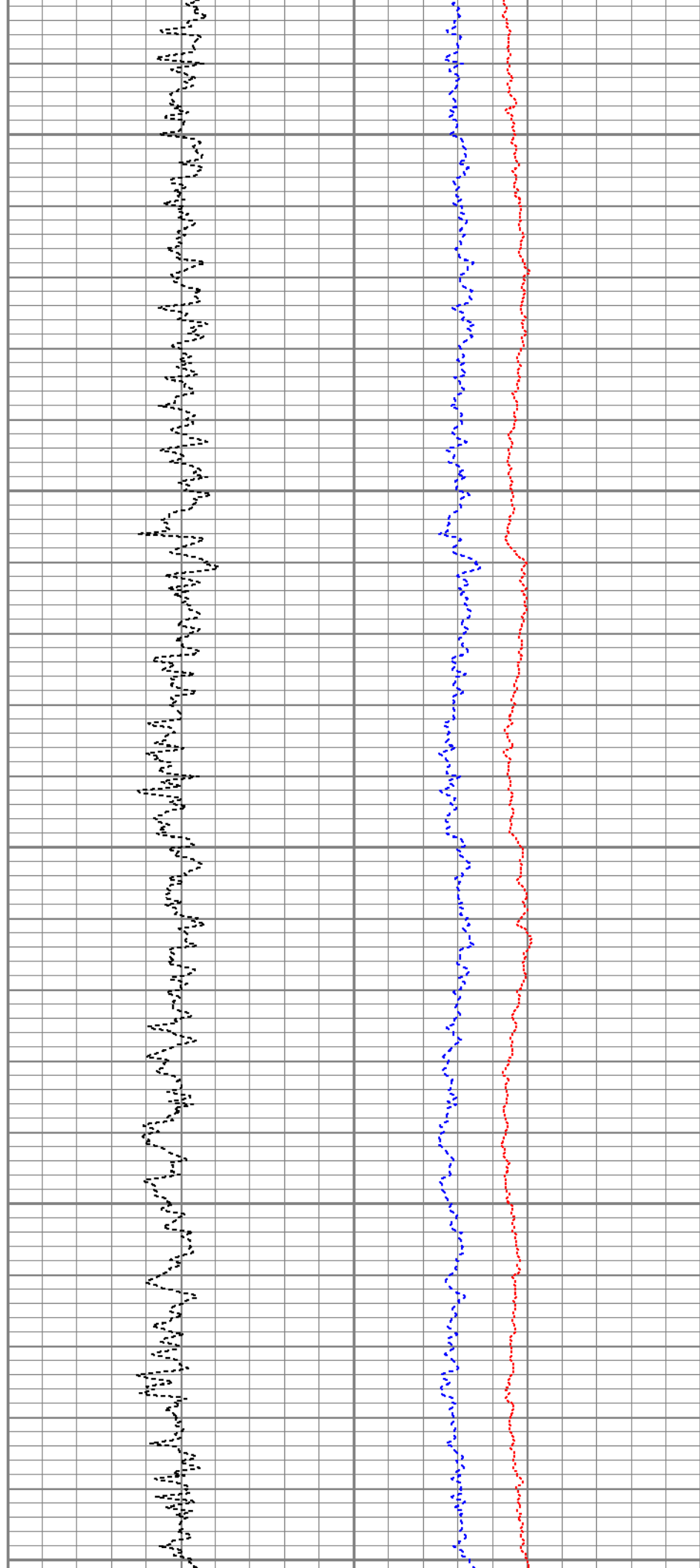
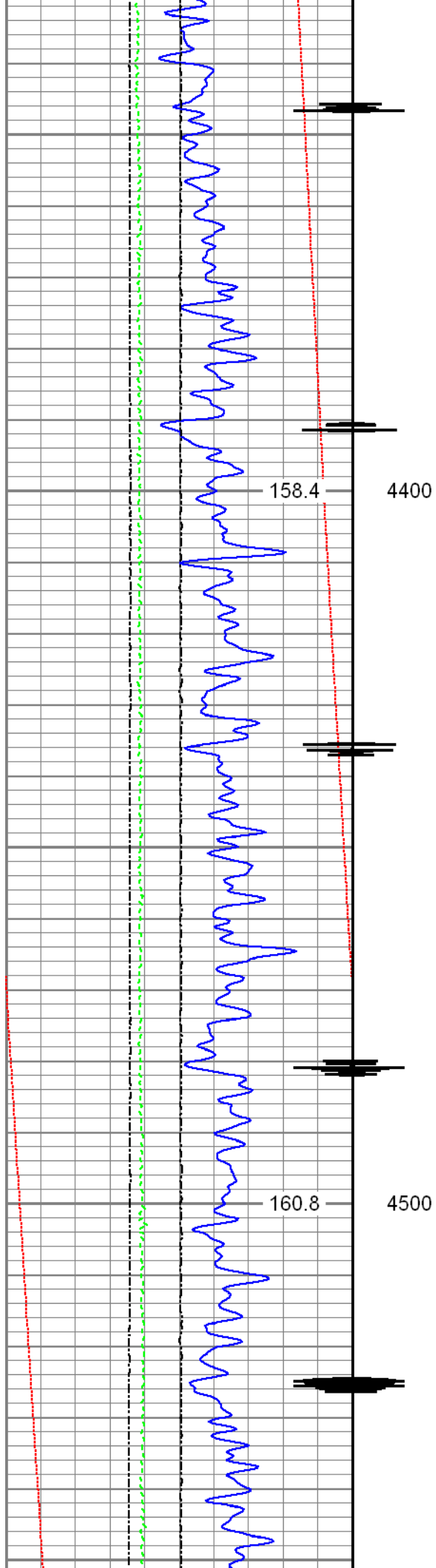




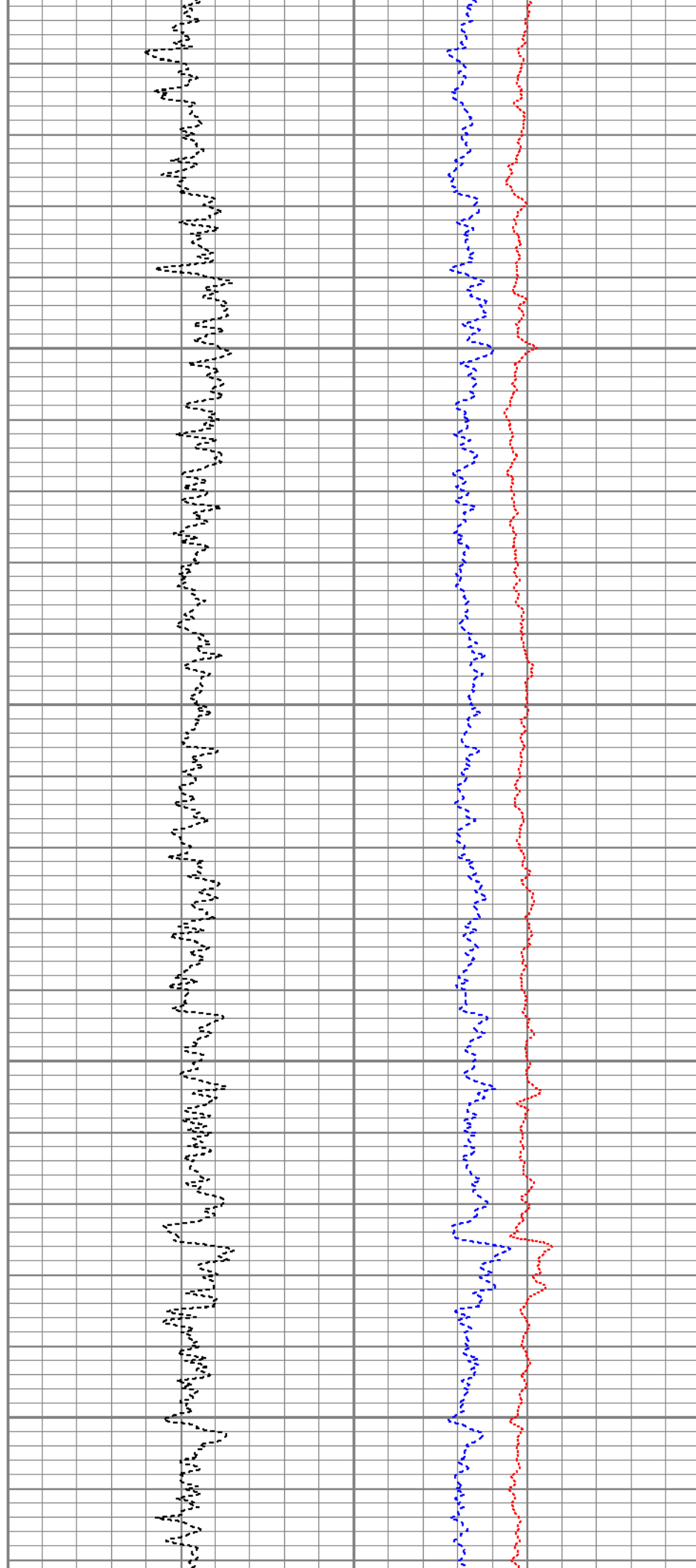
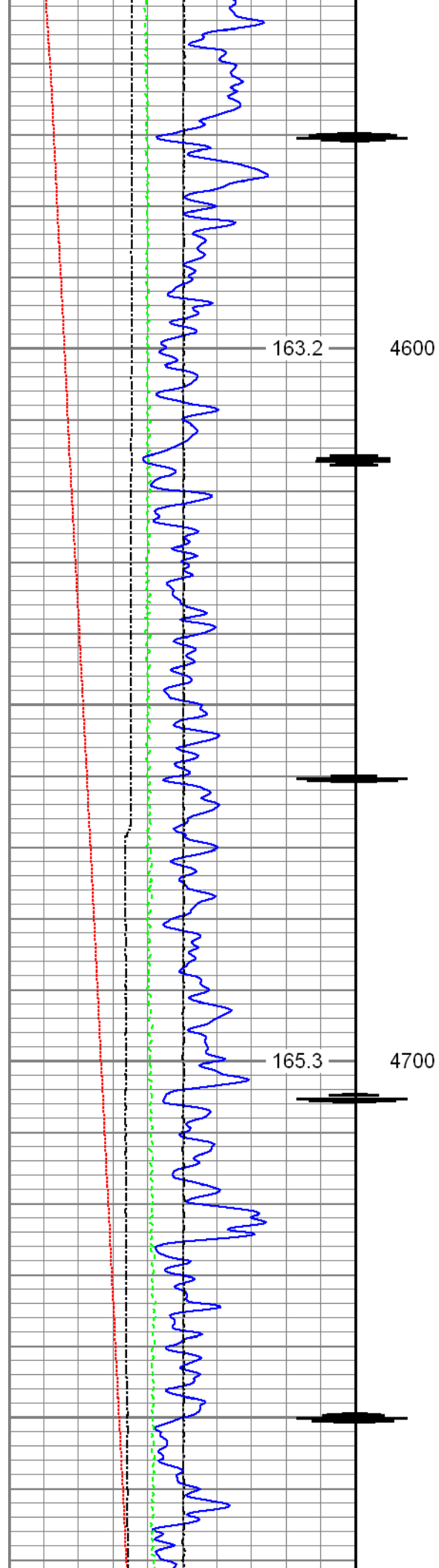


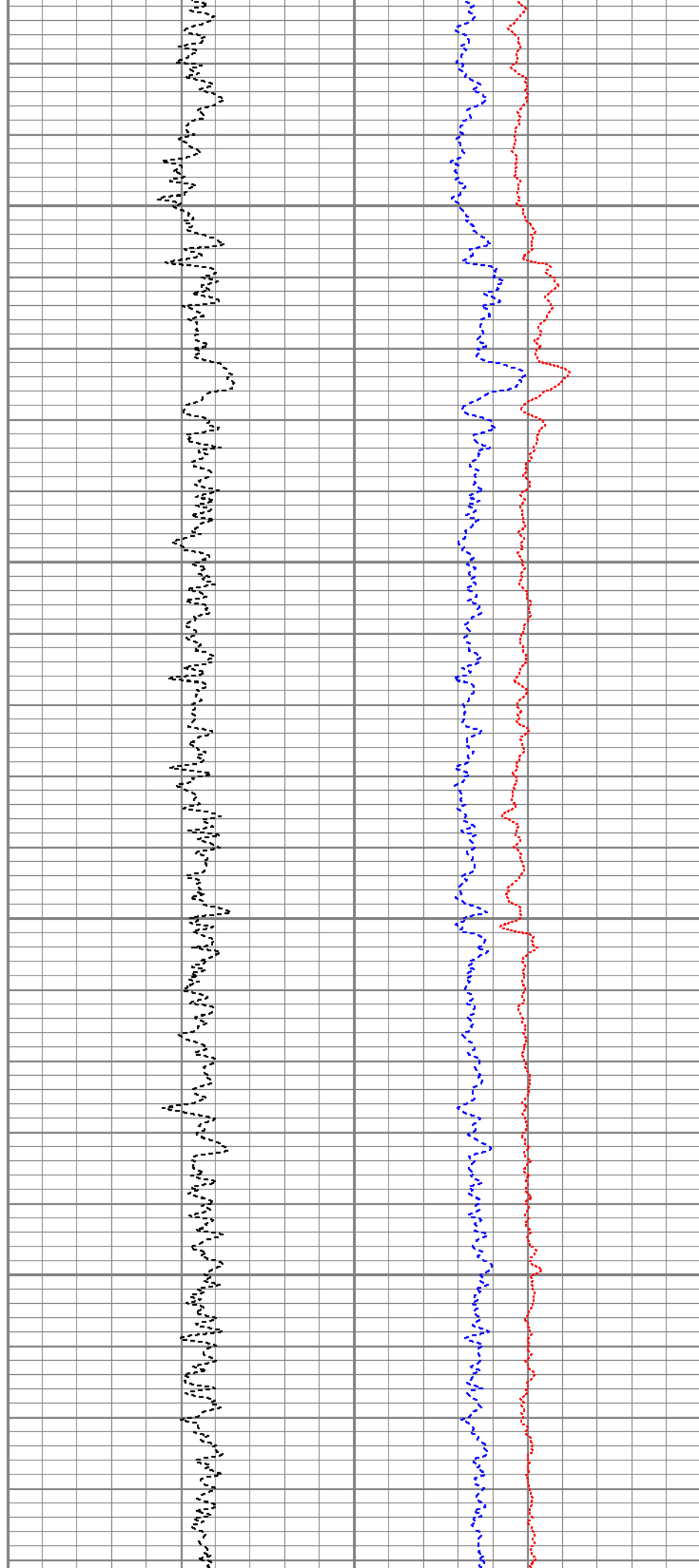
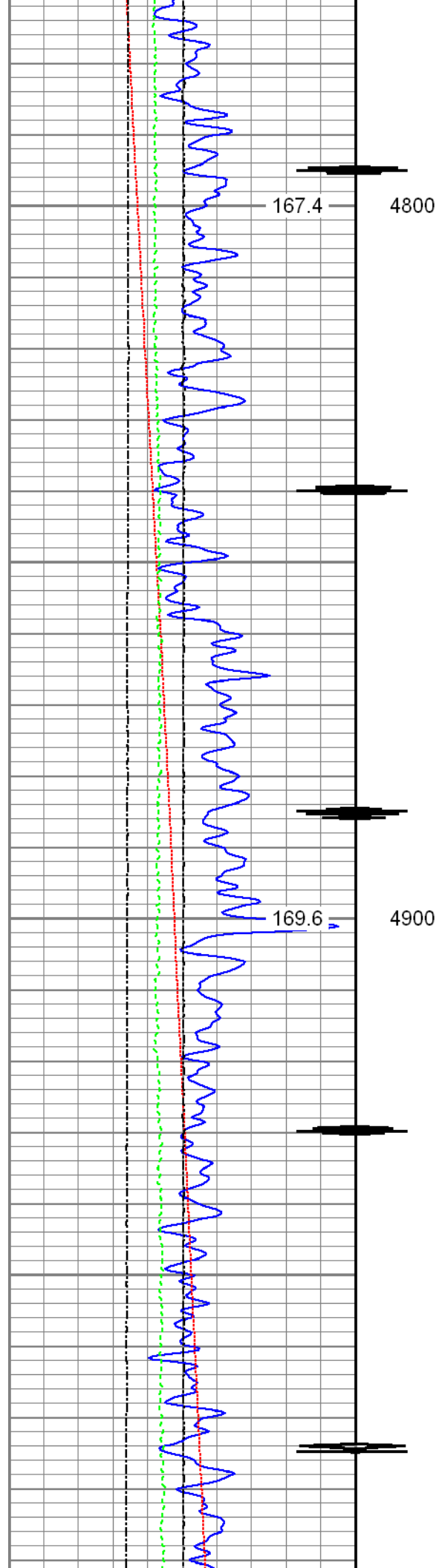


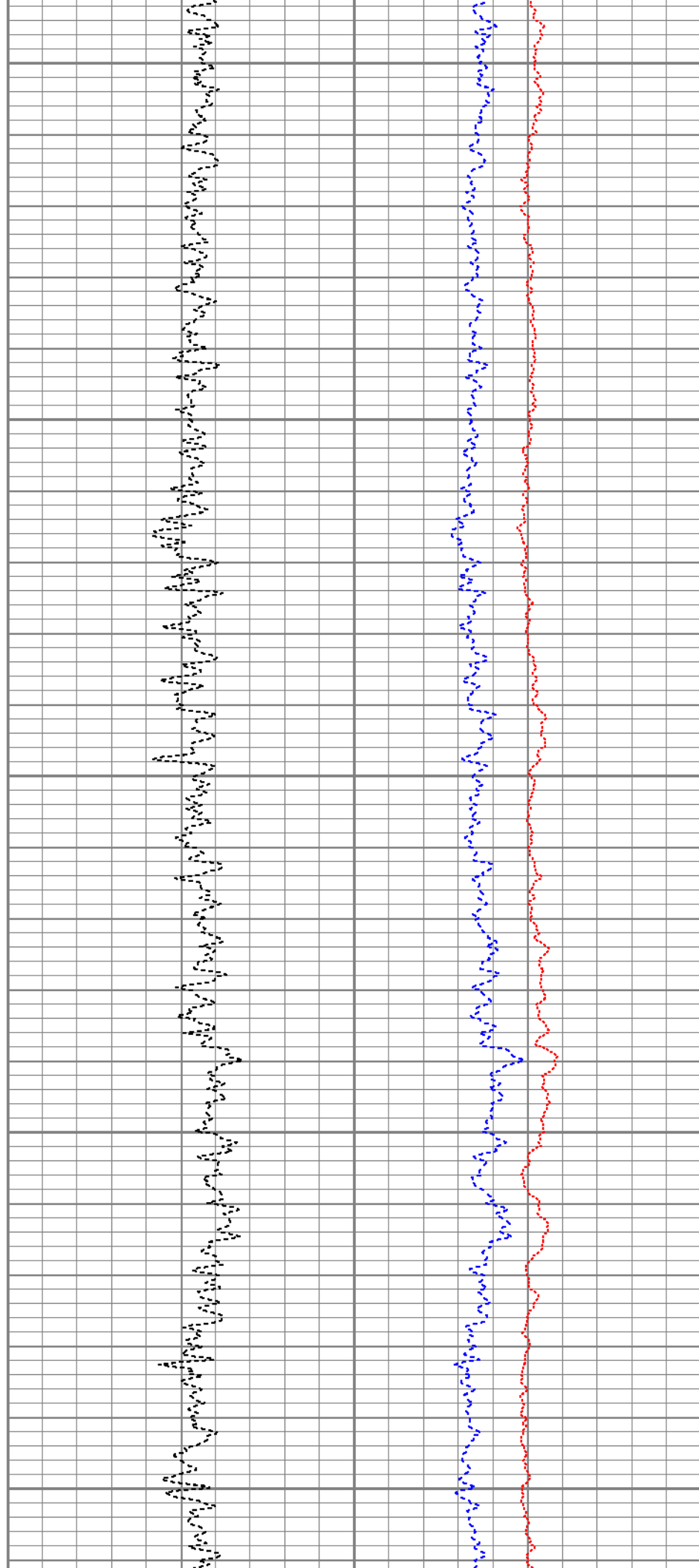
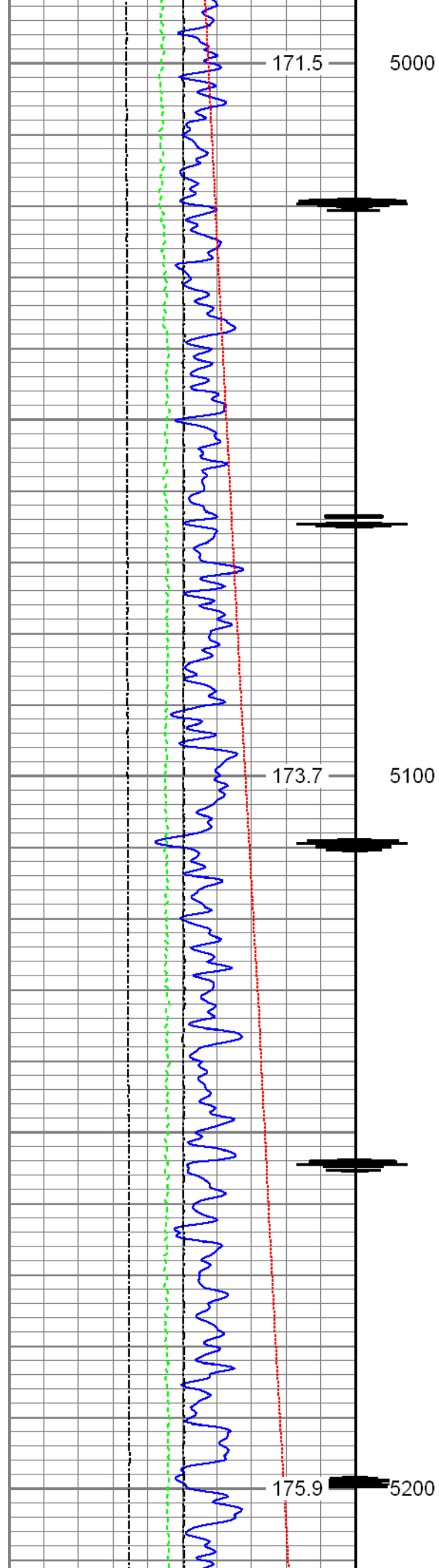


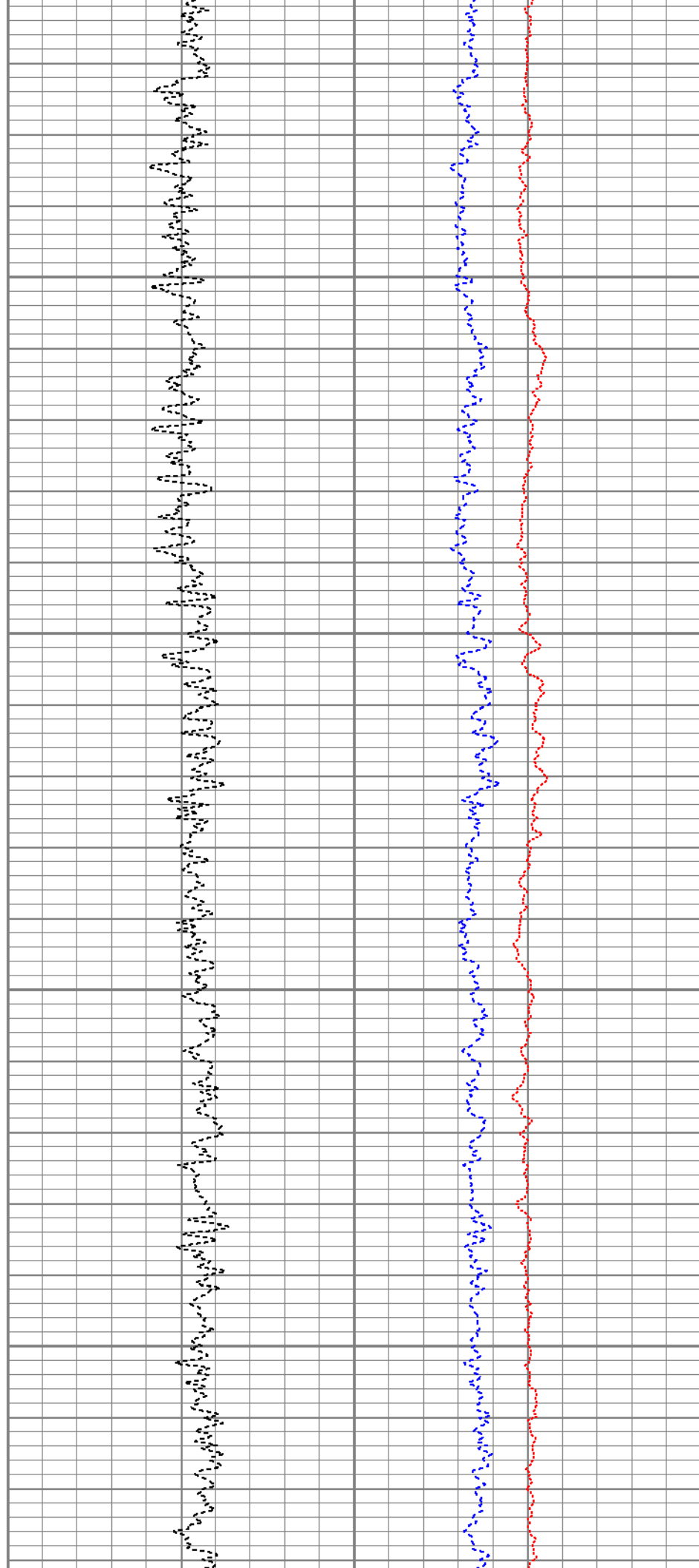
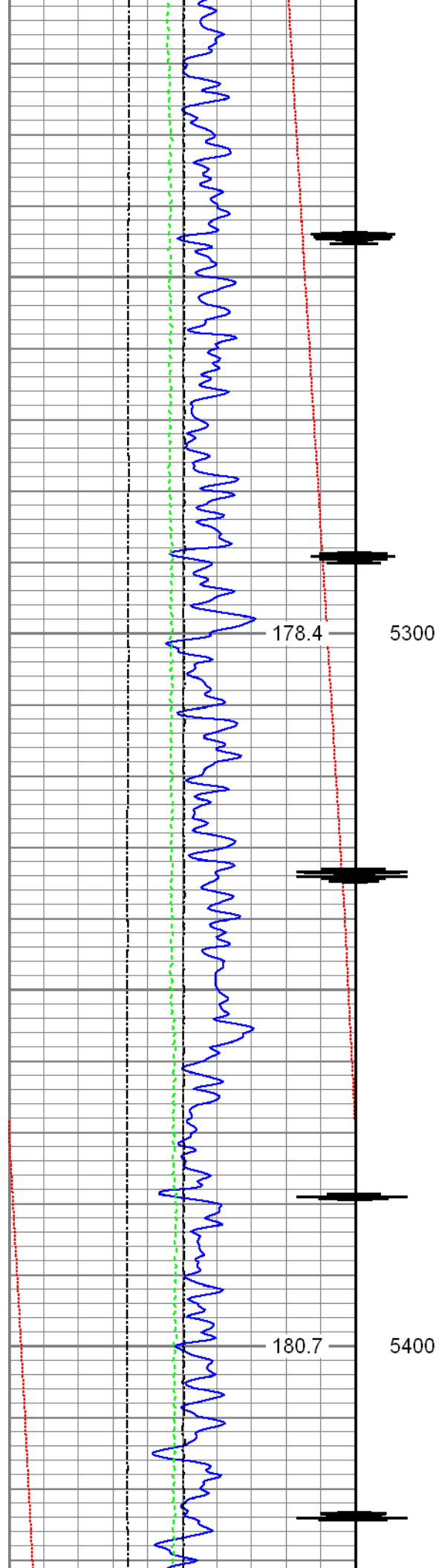


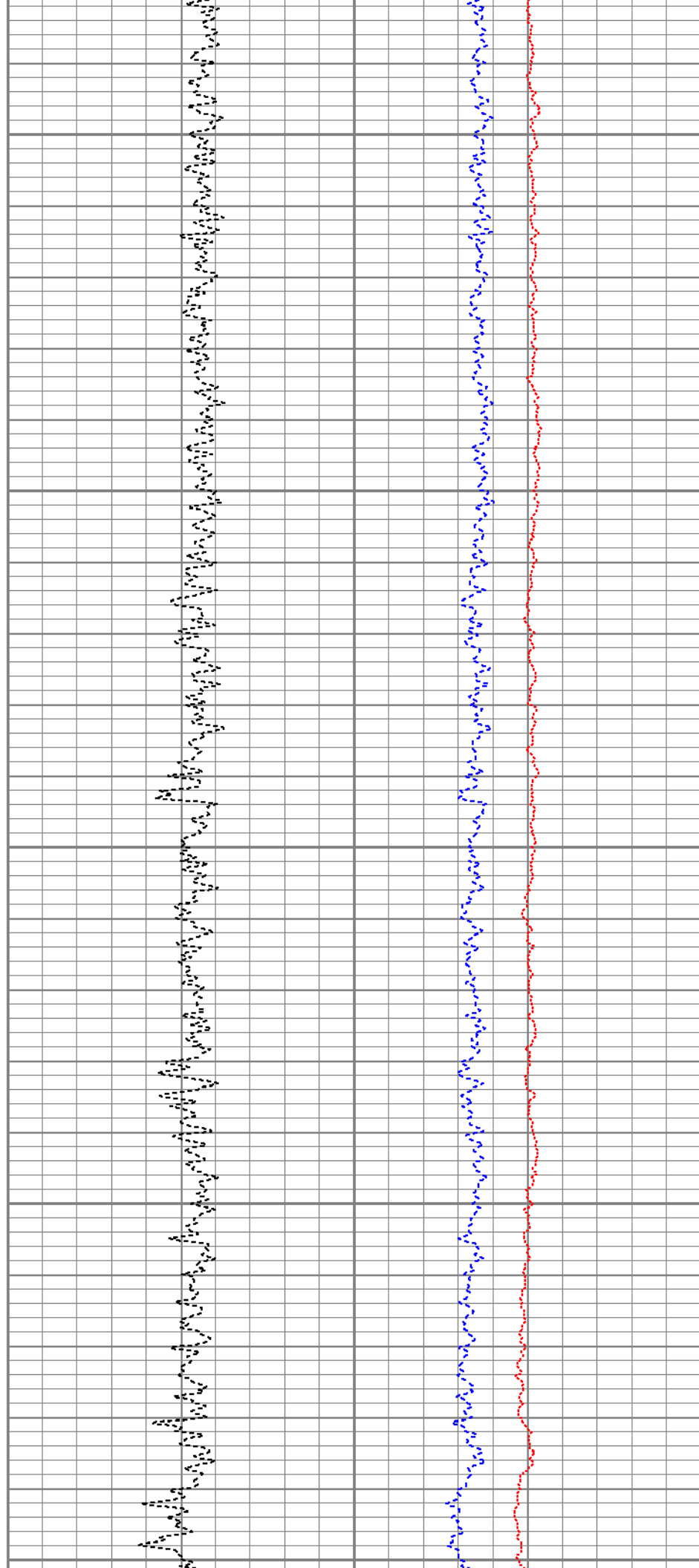
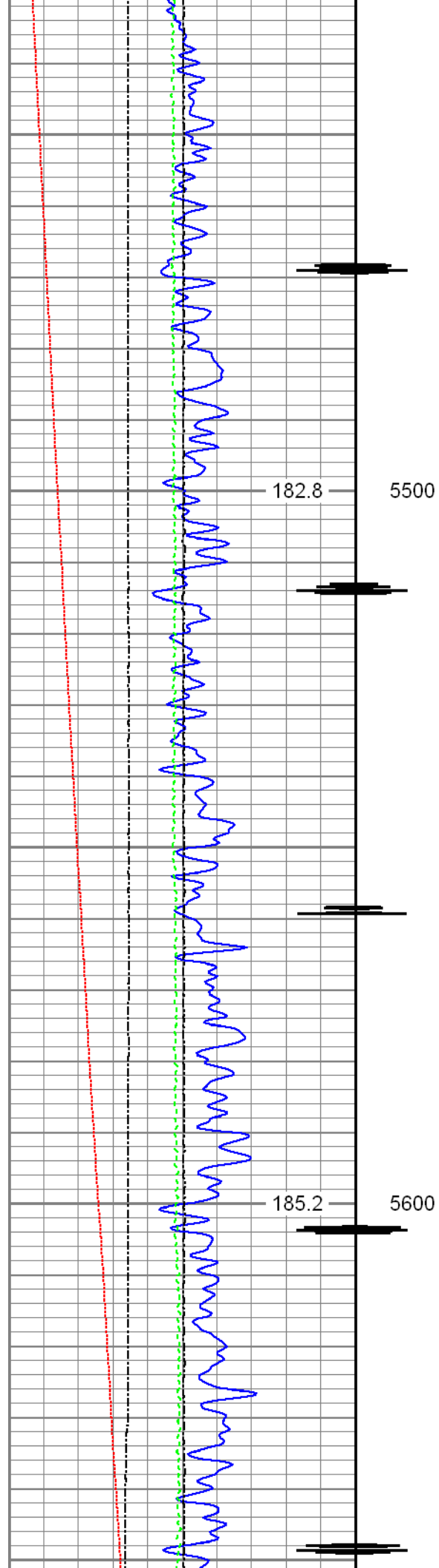


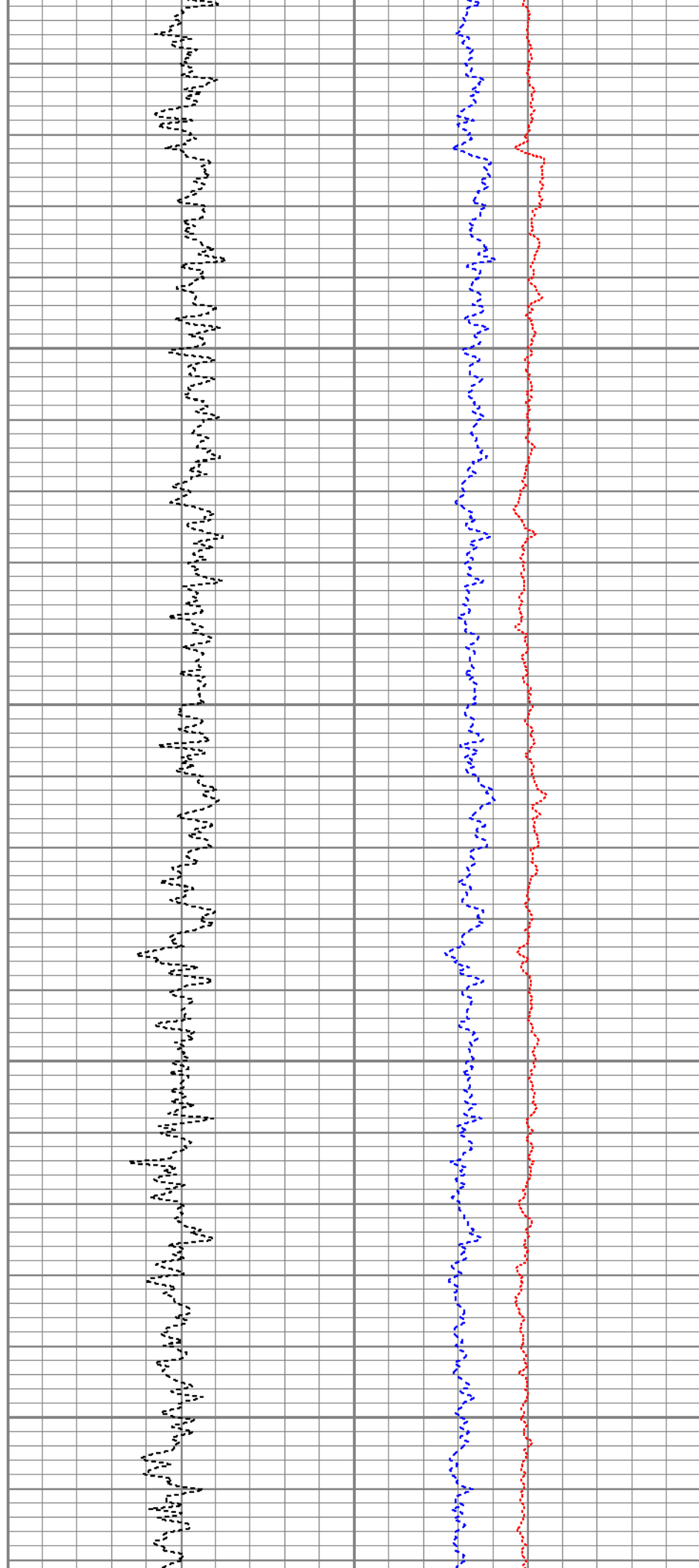
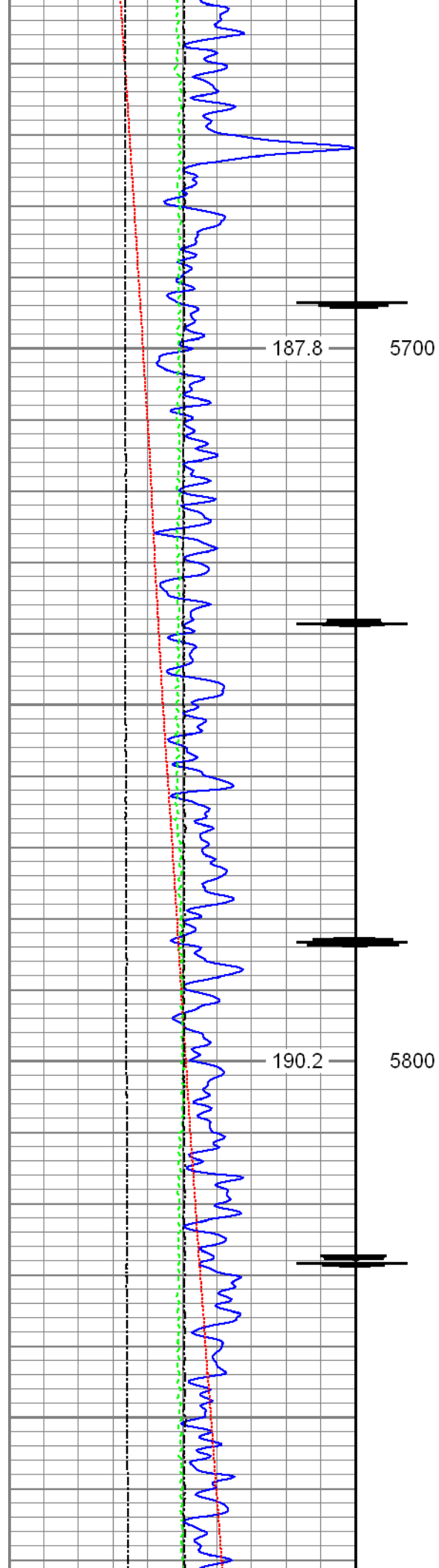


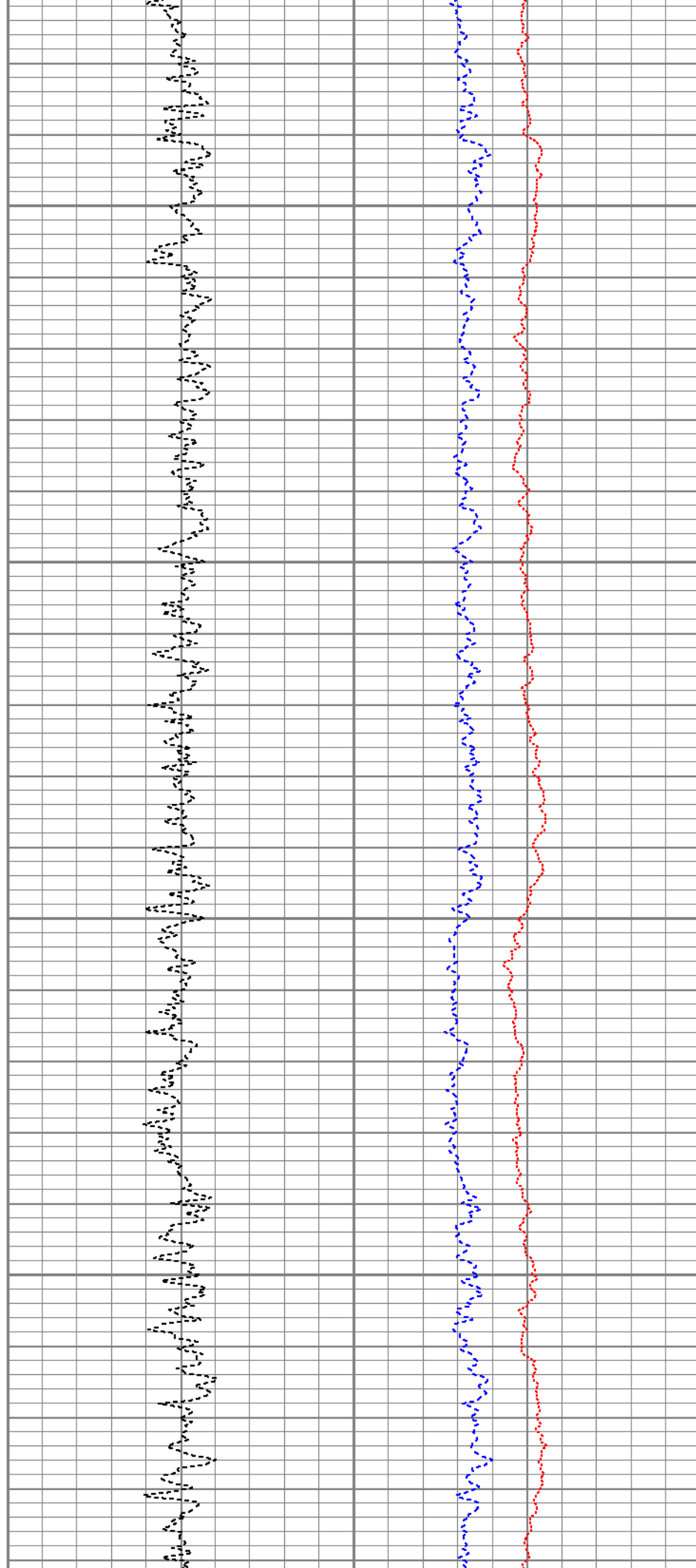
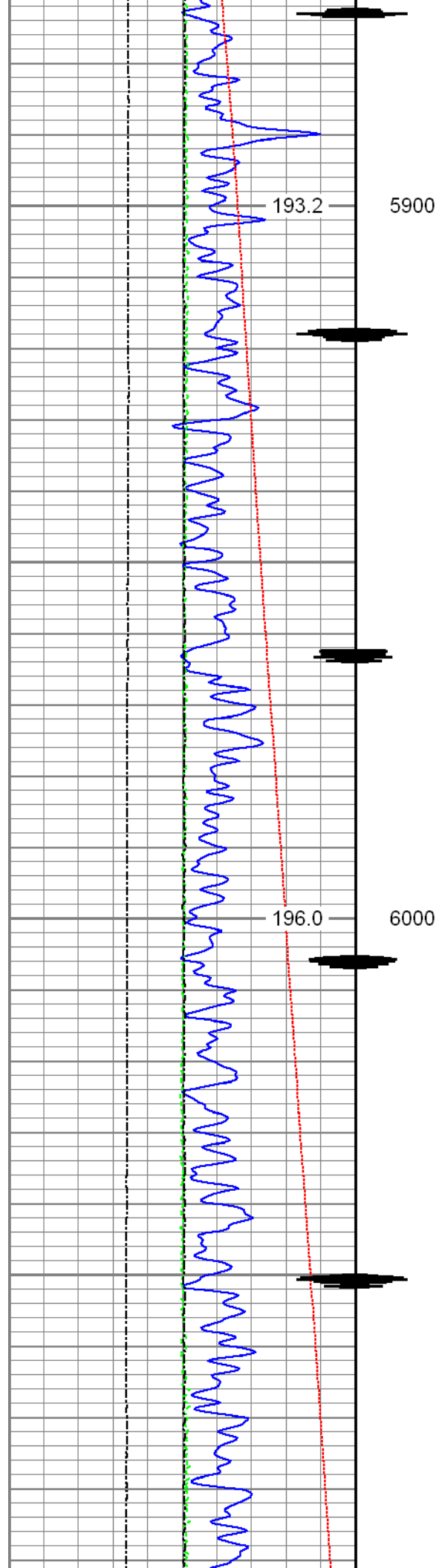




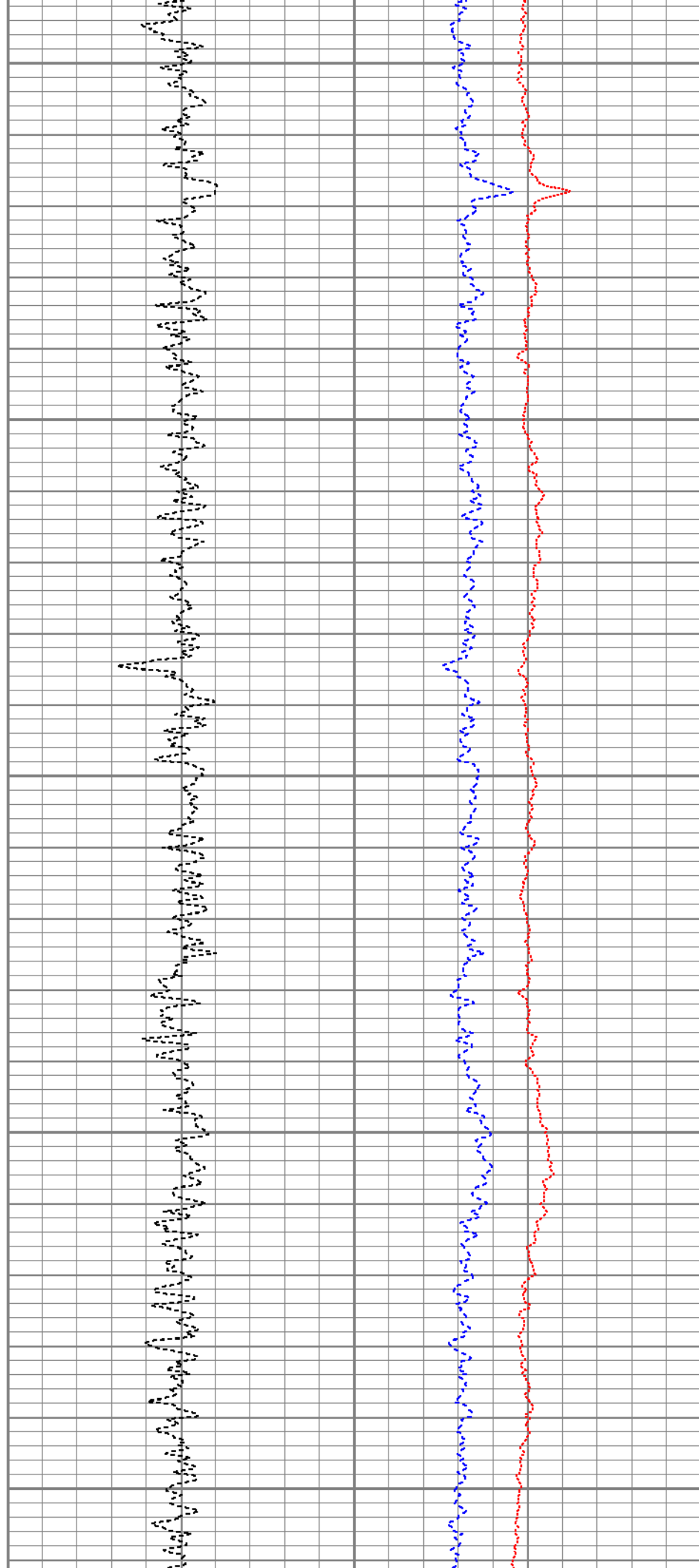
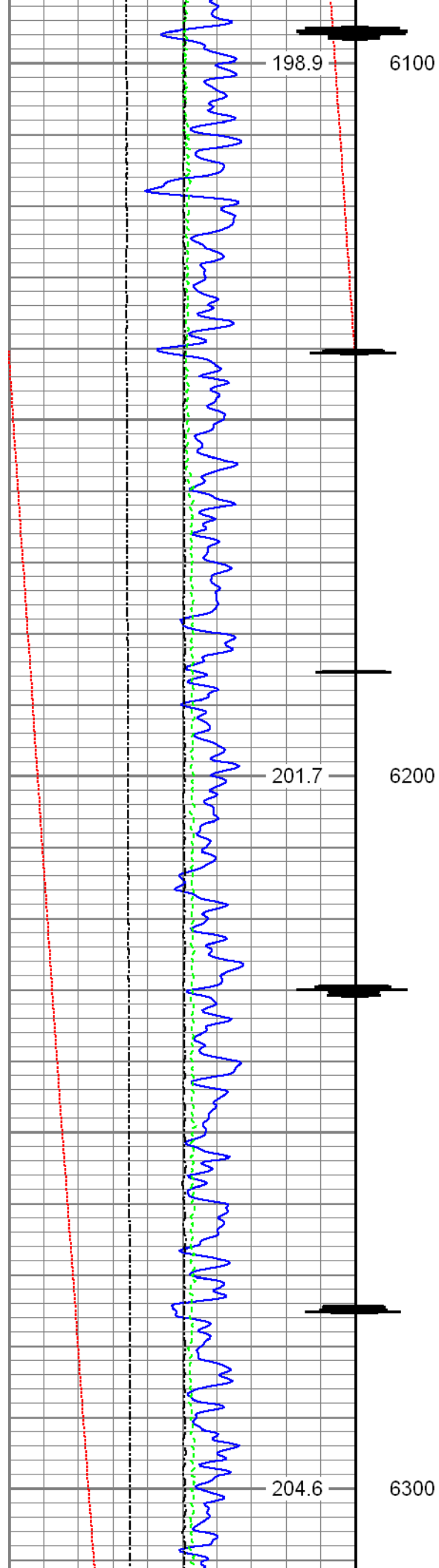


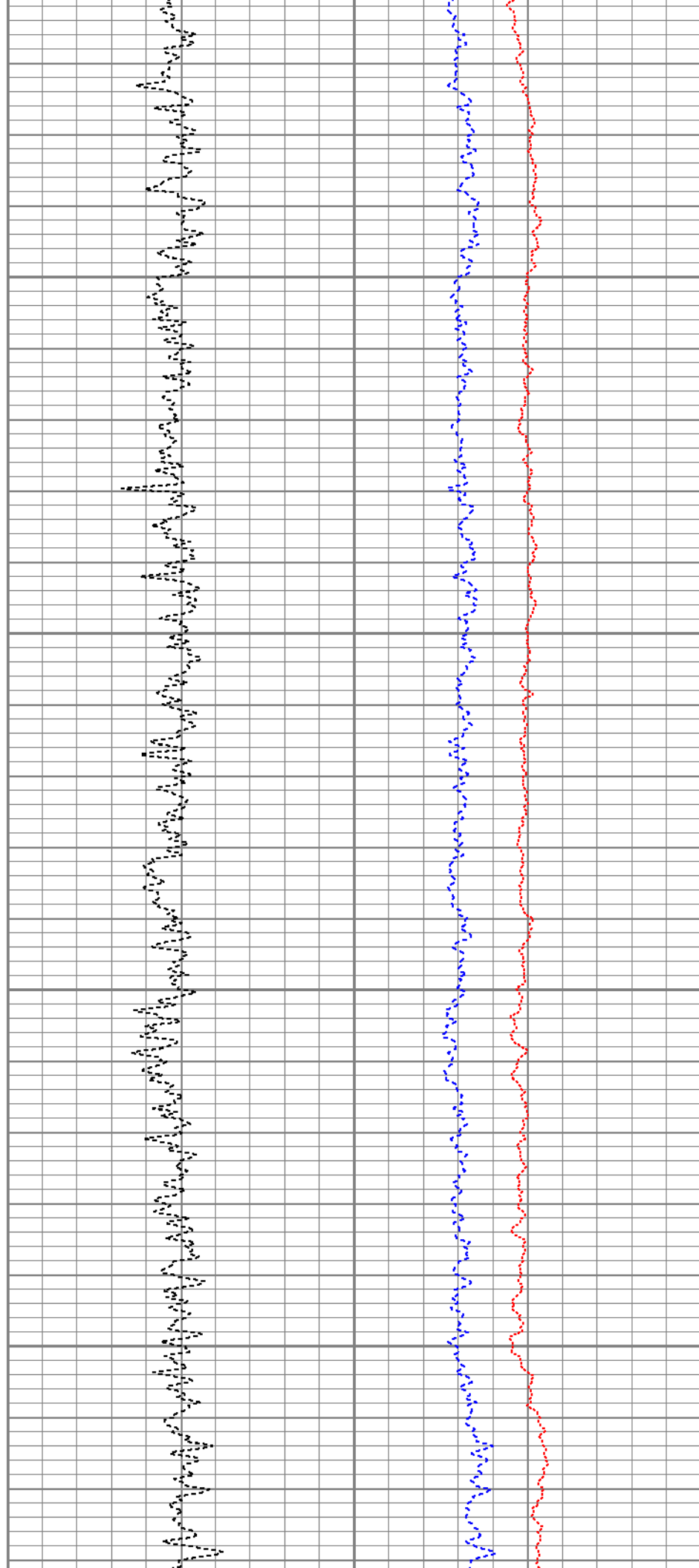
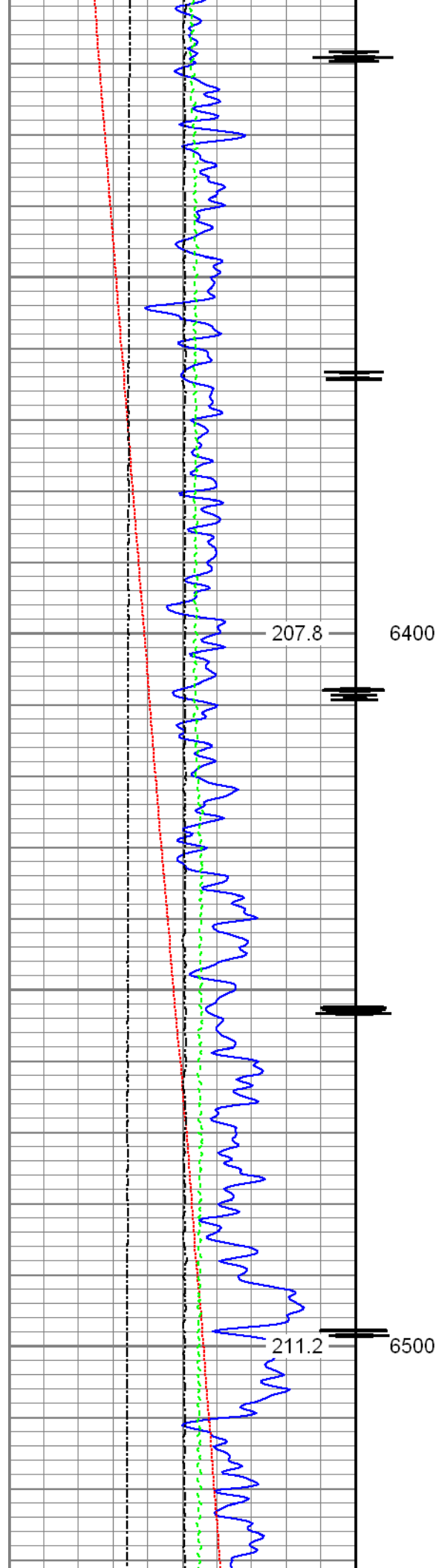


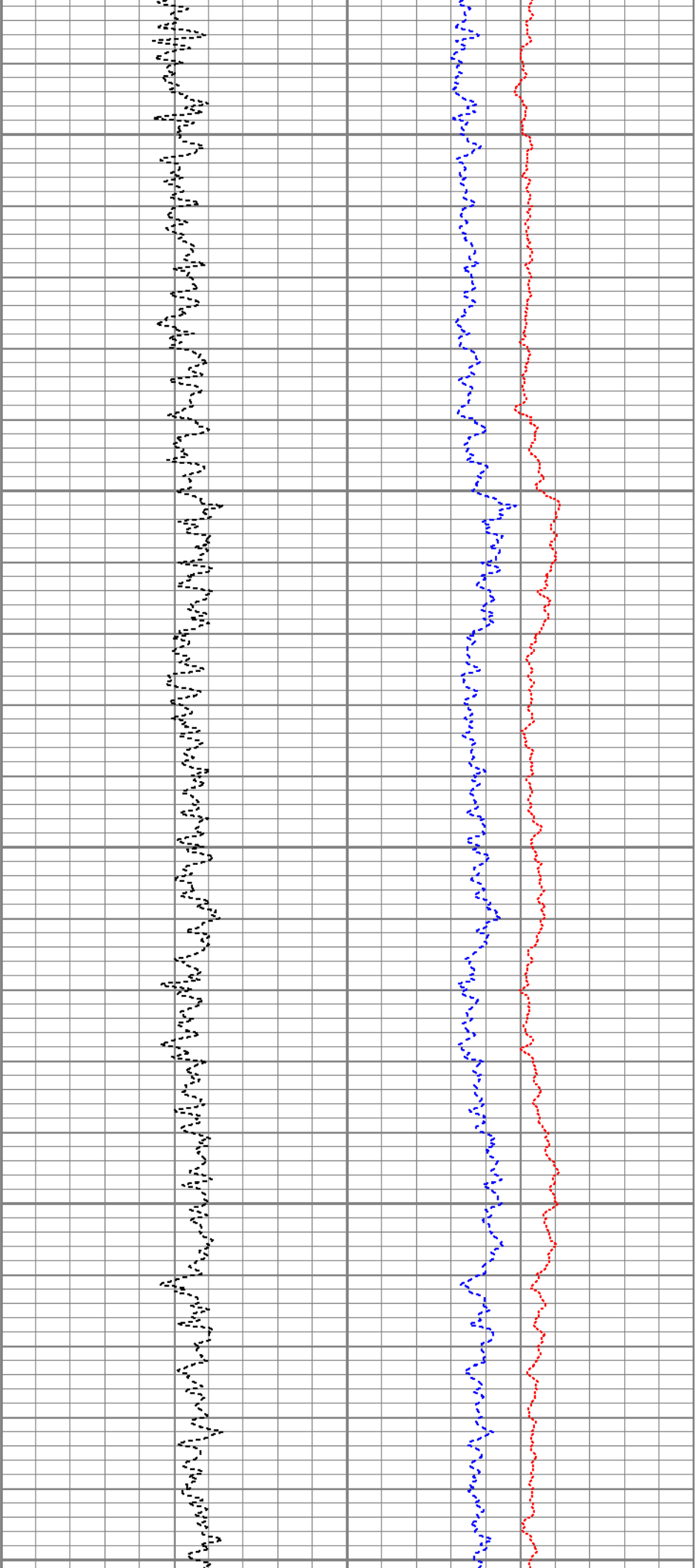
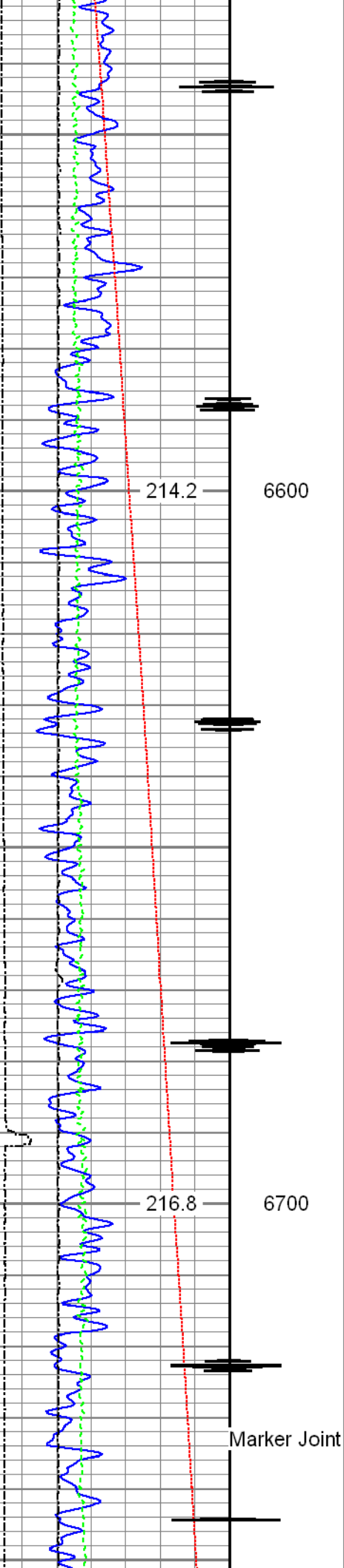


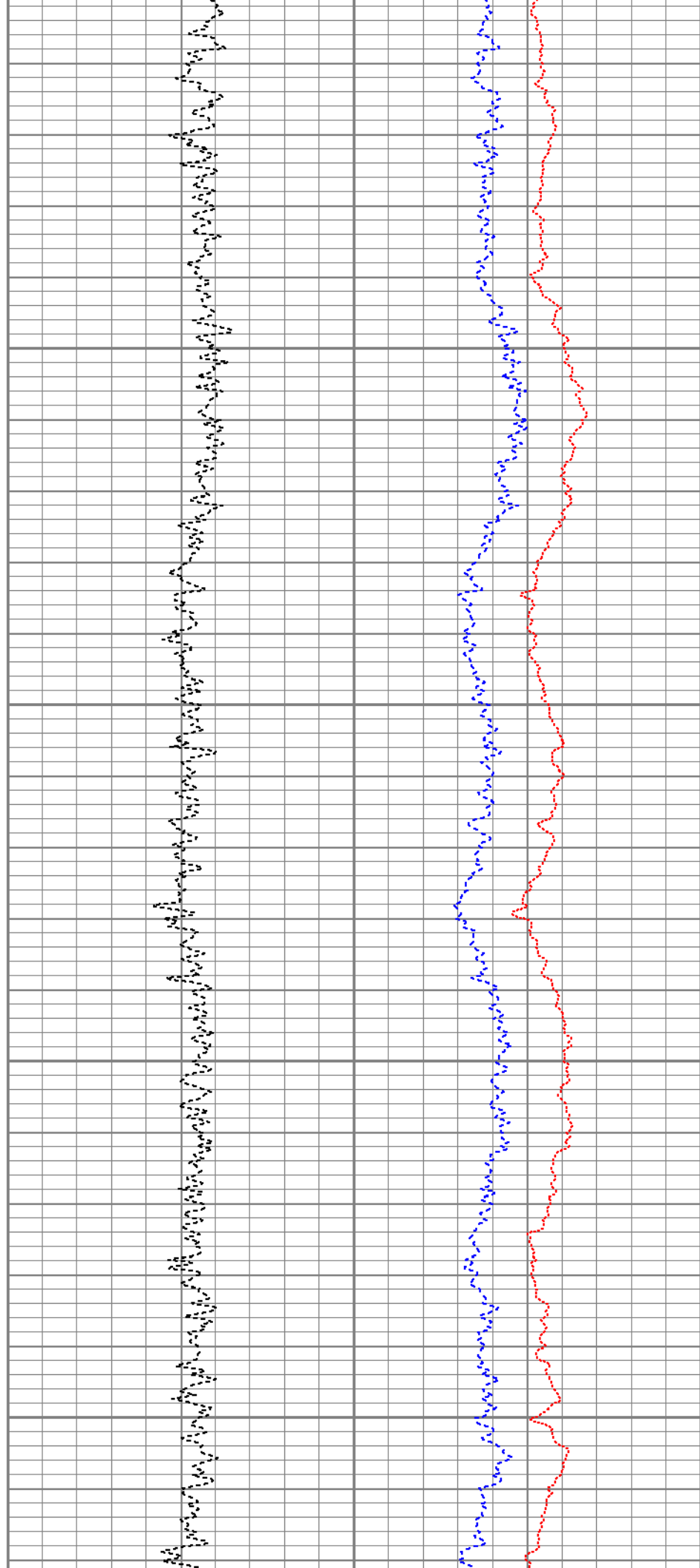
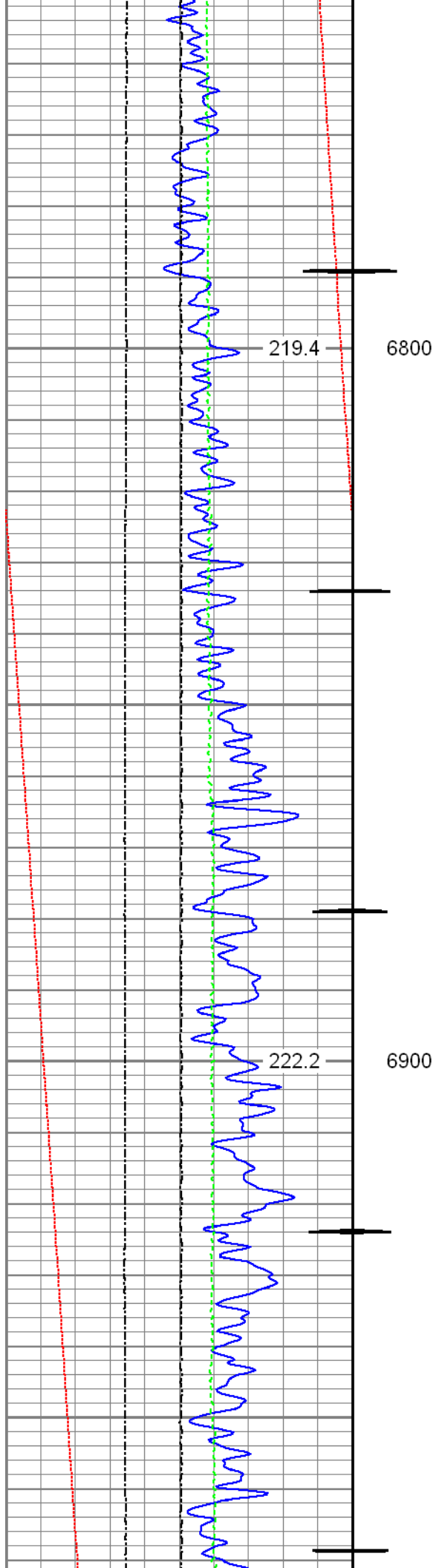


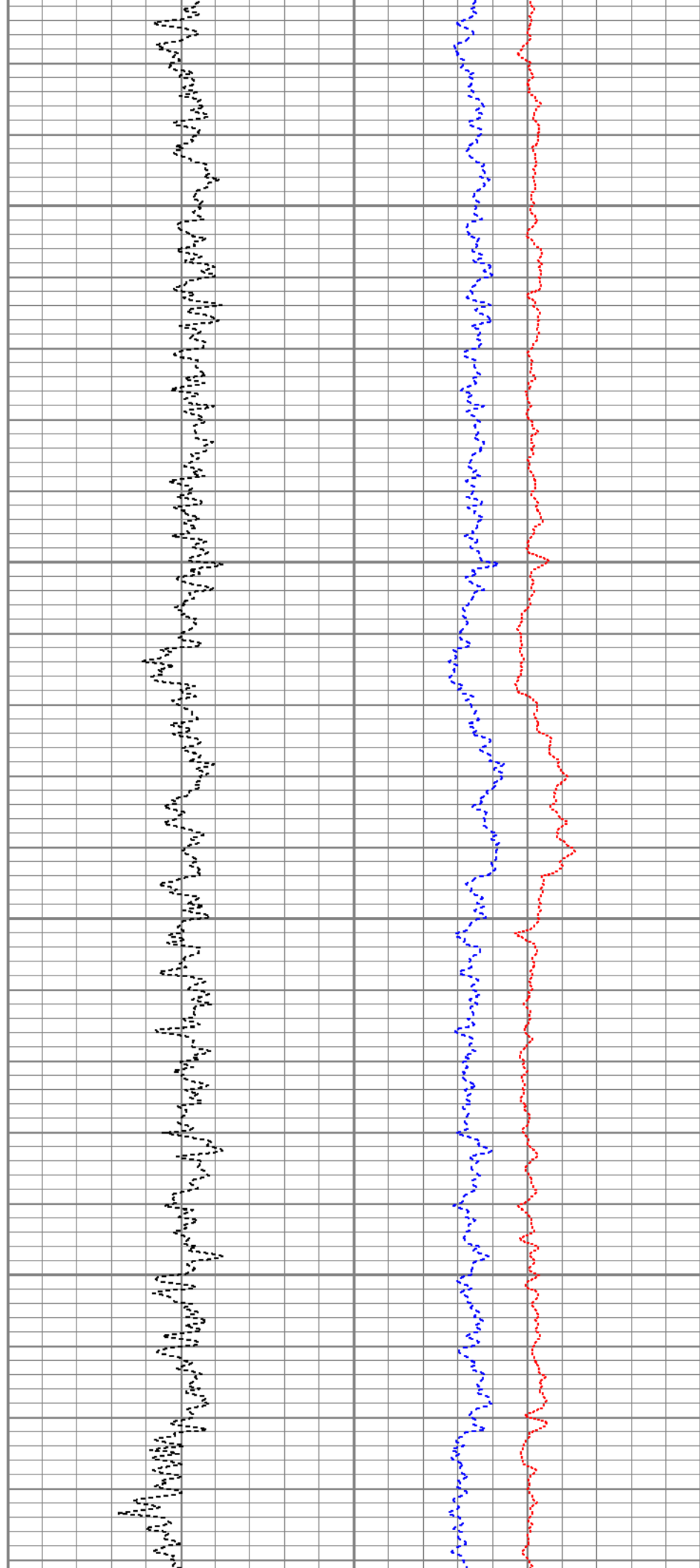
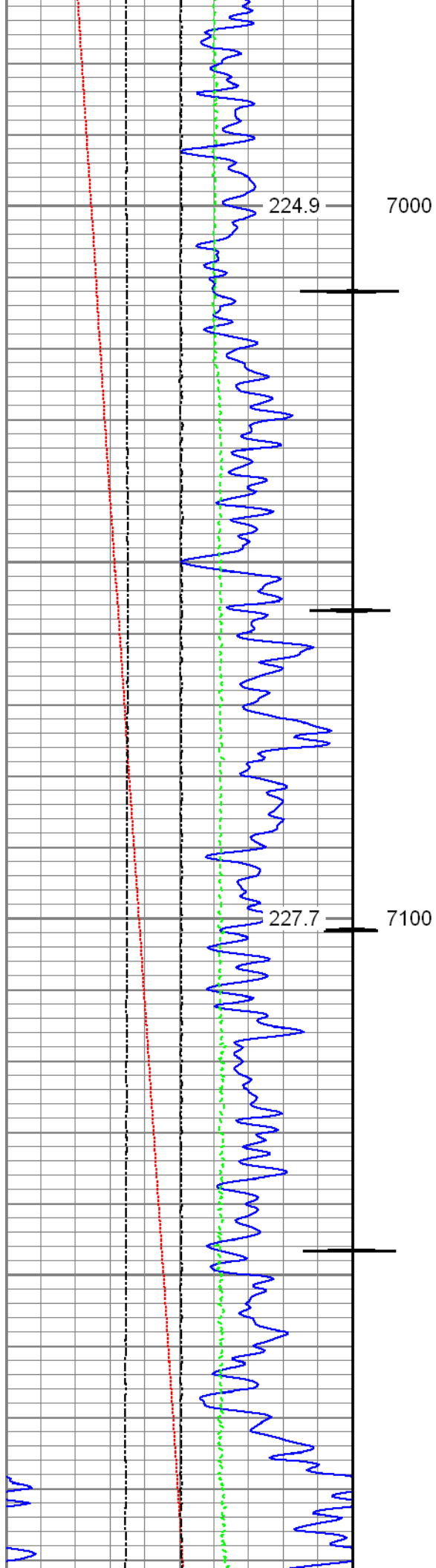


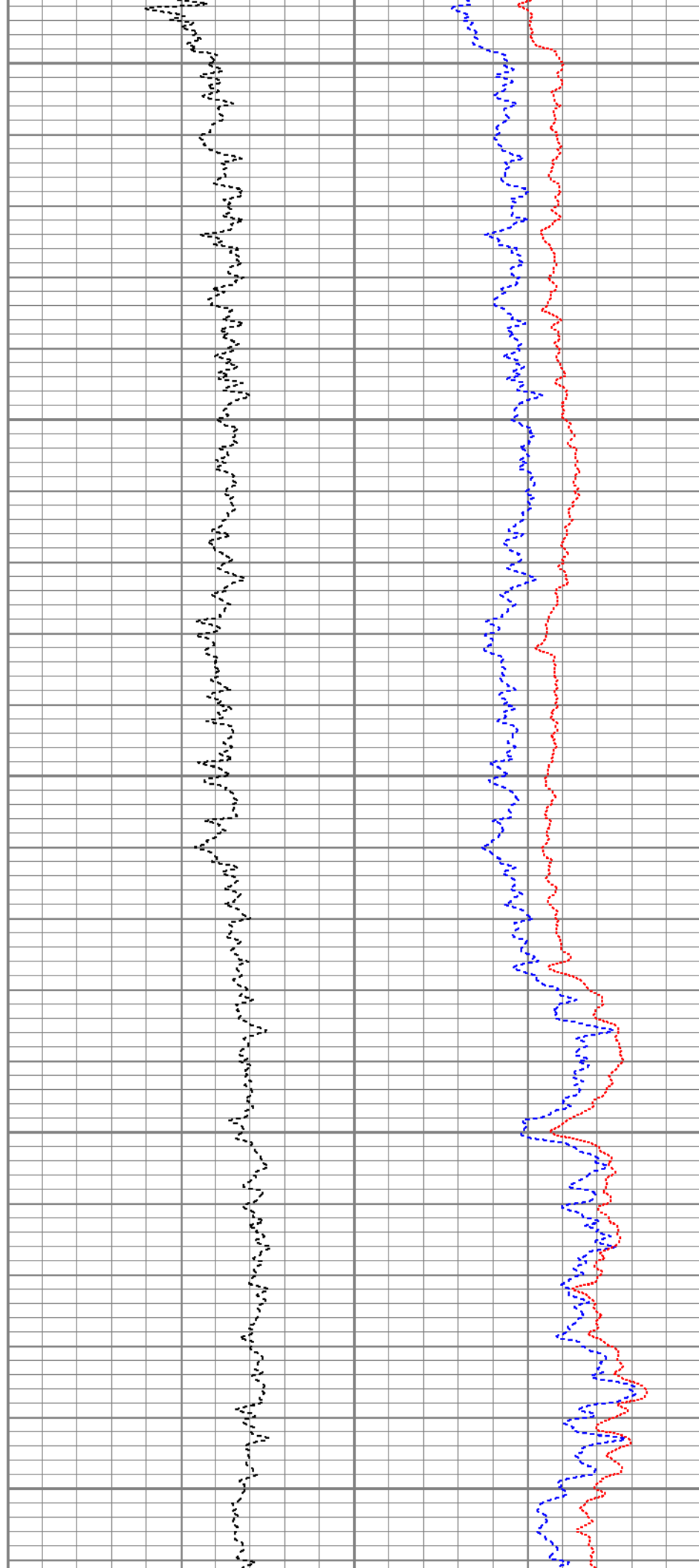
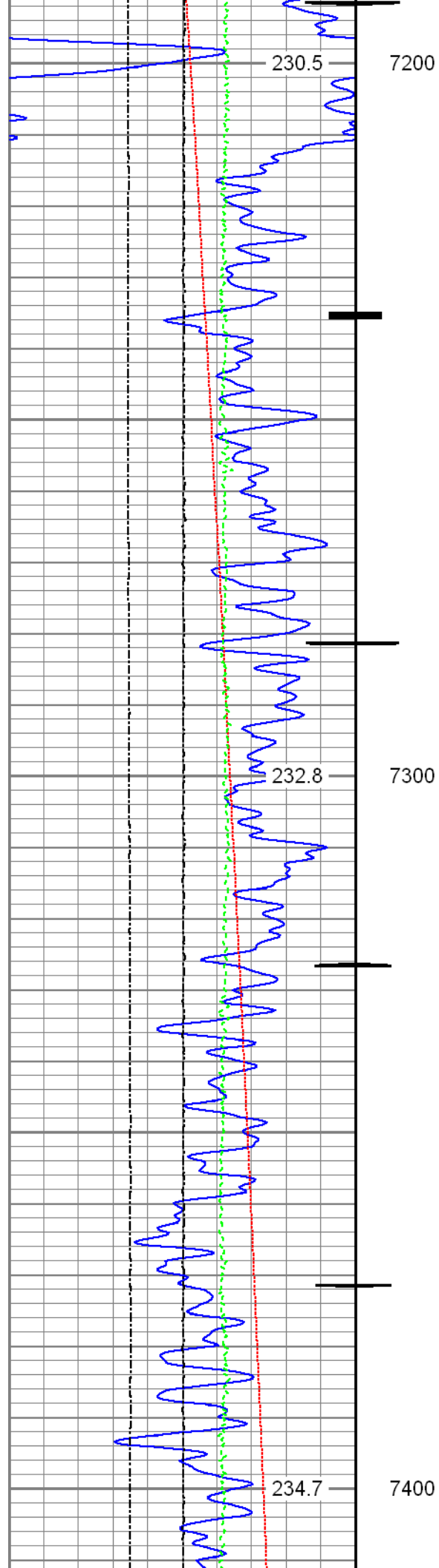


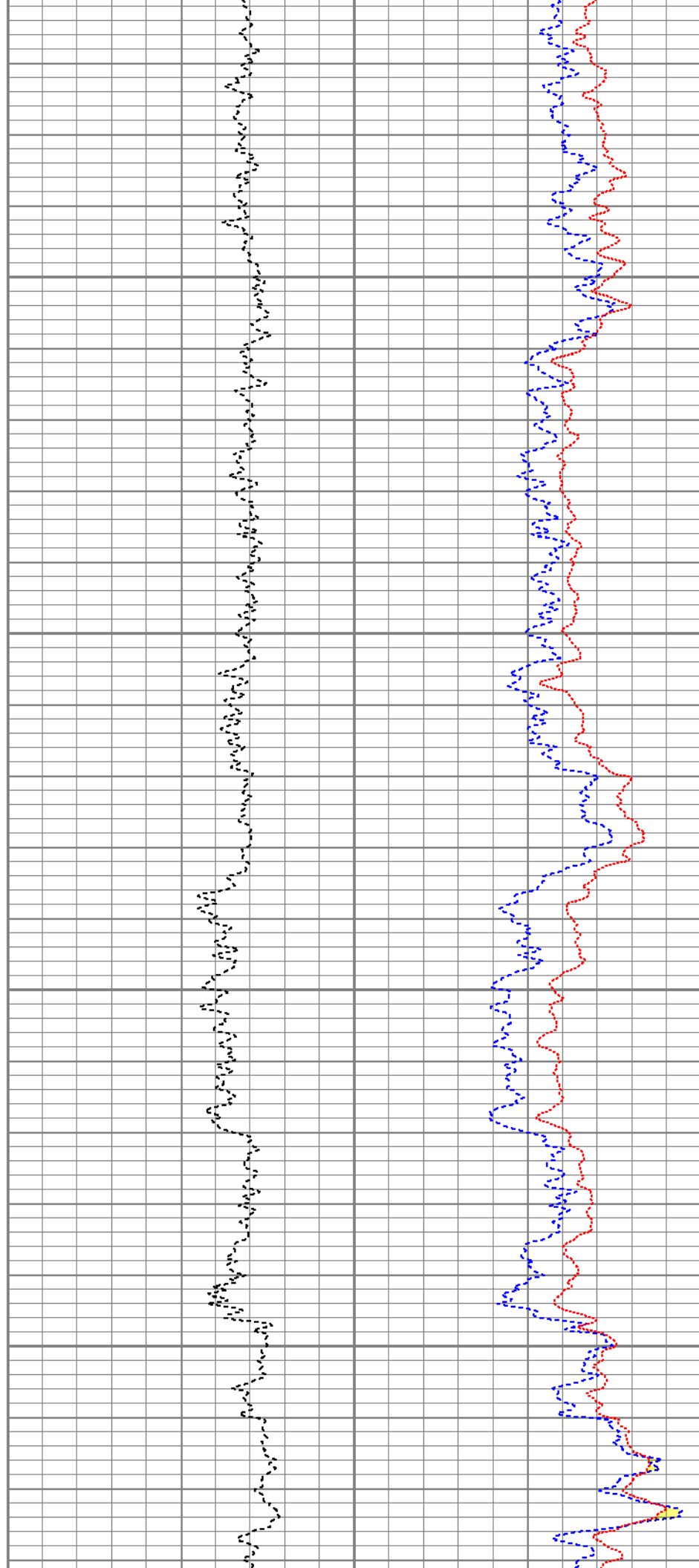
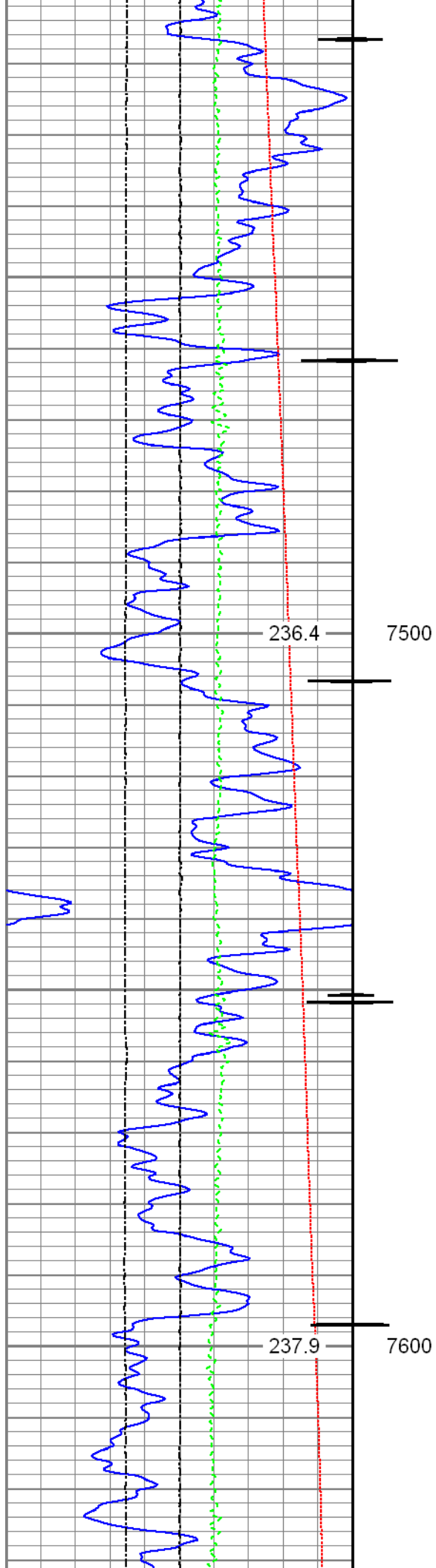


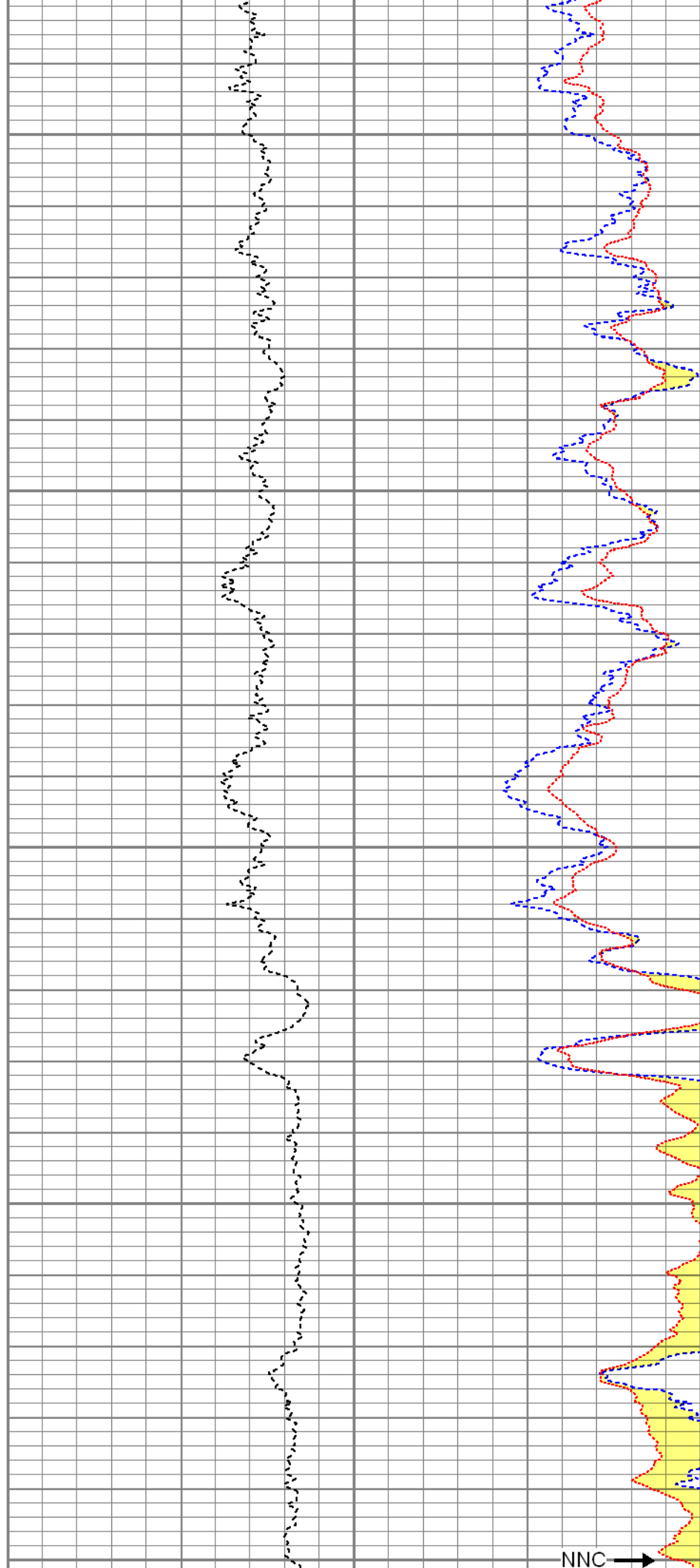
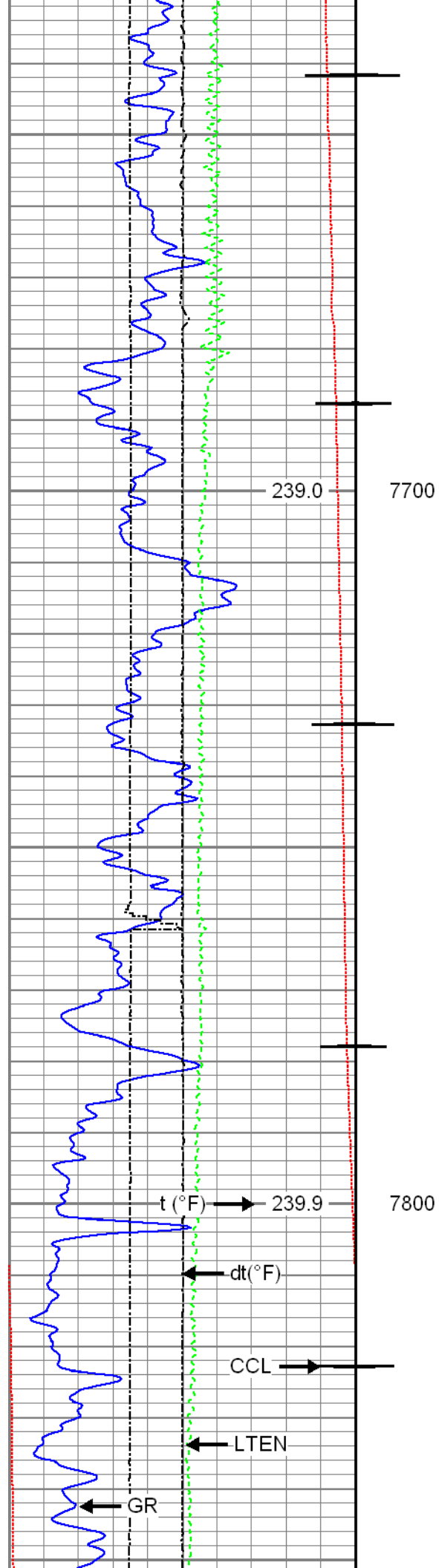




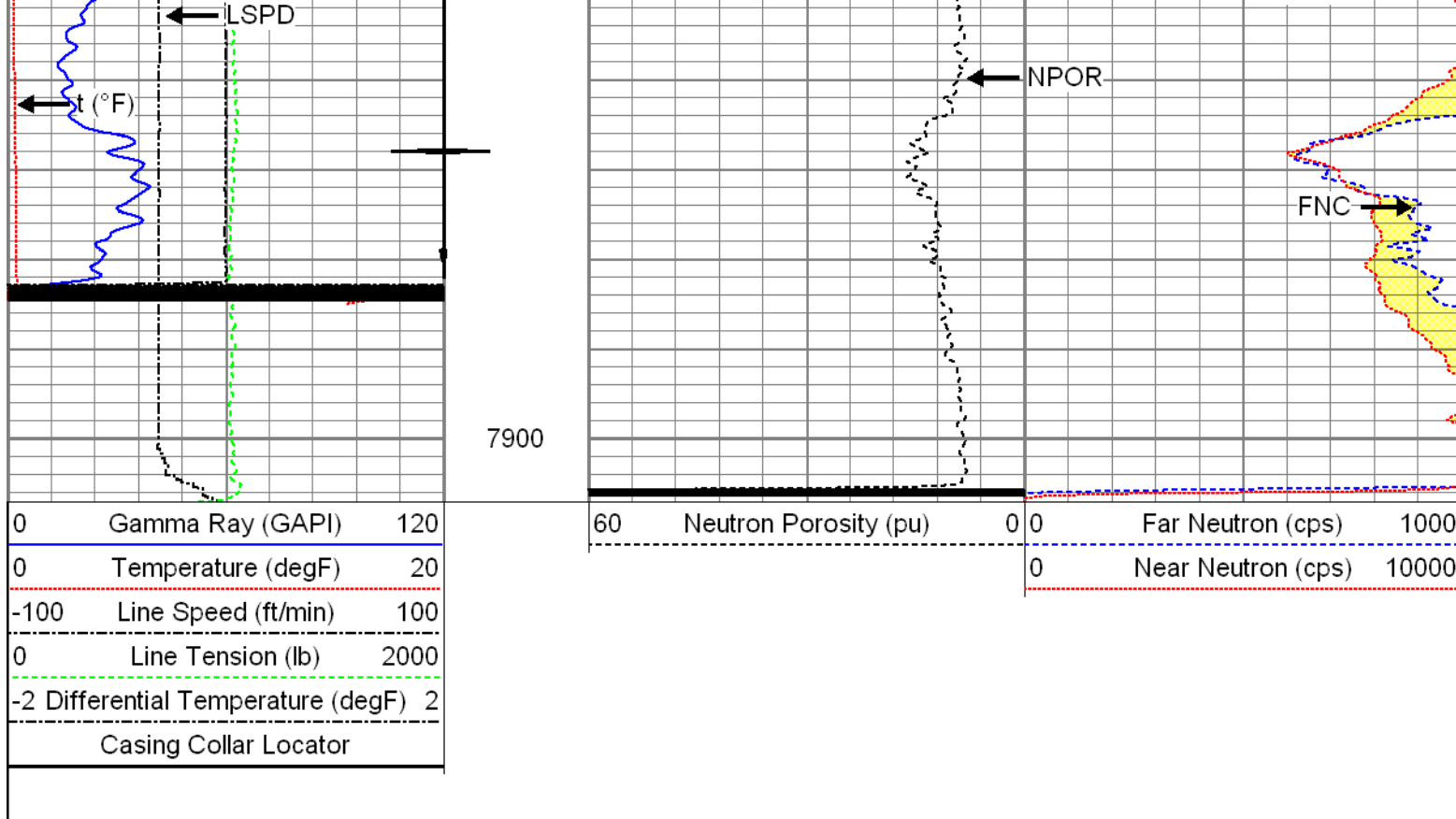















## Repeat Pass

Recorded with 2800 PSI Surface Induced Pressure

Database File: c:\warrior\data\anadarko\_bat 4c-9hz\0512341290\_anadarko\_bat 4c-9hz\_08-04-15\_rbl\_cnl.db

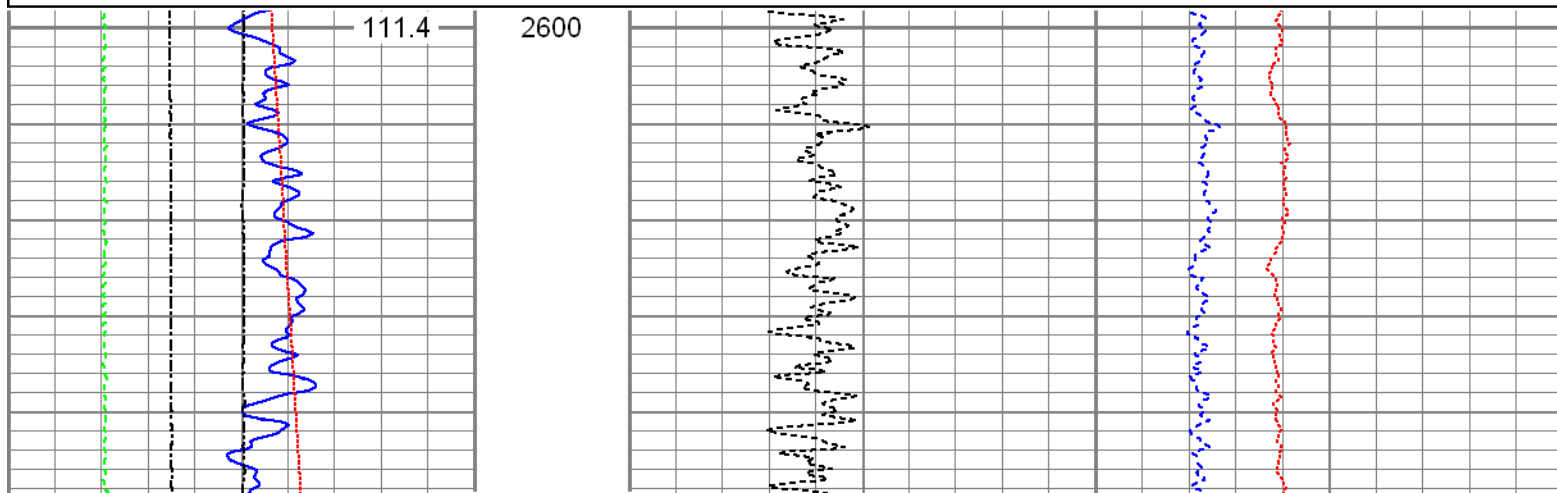
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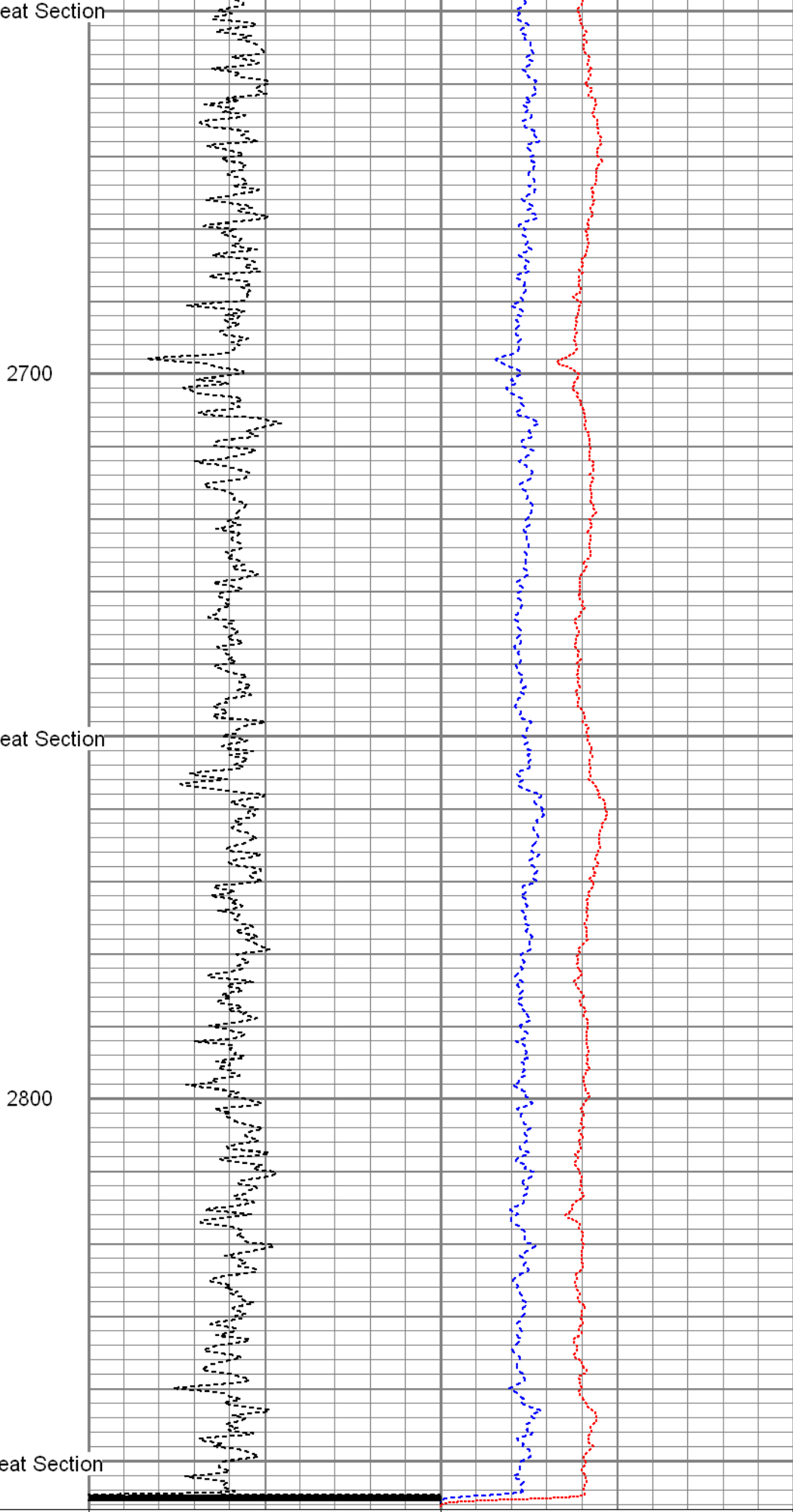
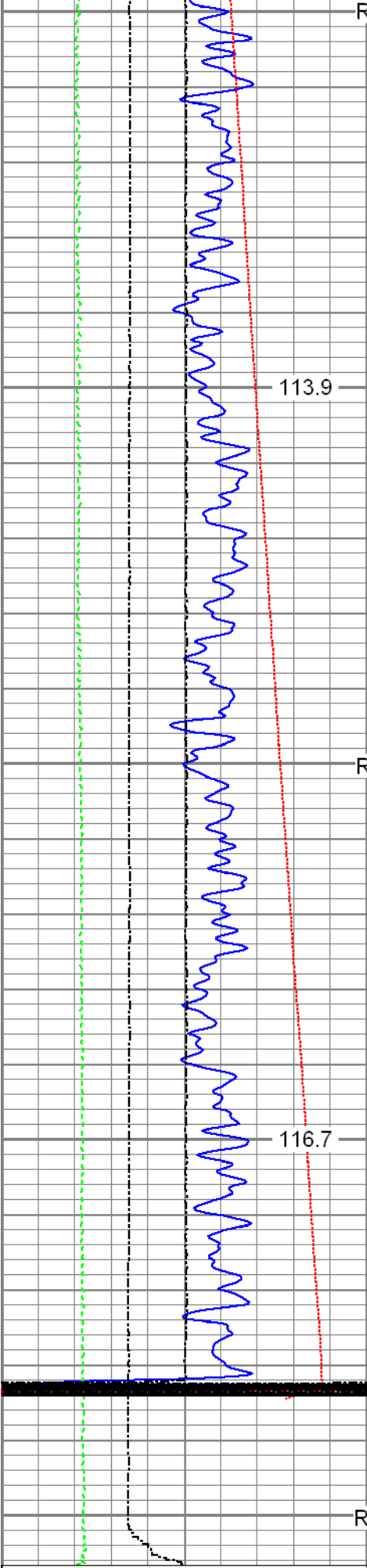
Presentation Format: cnl

Dataset Creation: Tue Aug 04 08:34:36 2015 by Log 7.0 B1

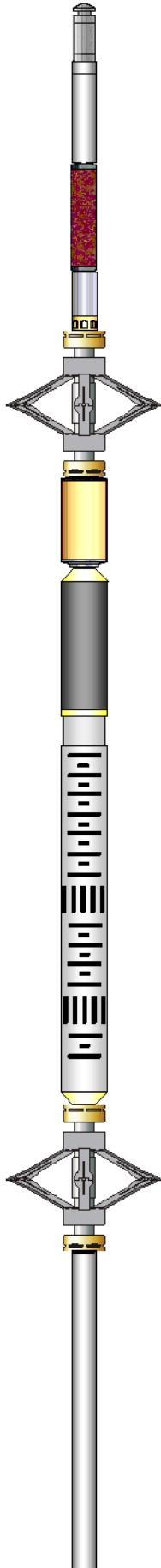
Charted by: Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	120	60	Neutron Porosity (pu)	0	0	Far Neutron (cps)	1000
0	Temperature (degF)	20				0	Near Neutron (cps)	10000
-100	Line Speed (ft/min)	100						
0	Line Tension (lb)	2000						
-2	Differential Temperature (degF)	2						





100	Line Speed (ft/min)	100
0	Line Tension (lb)	2000
-2	Differential Temperature (degF)	2

Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
GR	24.33		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 (10019072) Production Gamma Ray	1.93	1.69	9.50
TEMP	22.94		UW_PRT-UW_PRT_016 (10024052) Platinum Resistance Thermometer	1.04	1.69	5.20
CCL	19.14		UW_PRC #4 -DSSRAC (081) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
			UW_CCL-UW_CCL_028 (10009470) Ultrawire 3-1/8" CCL	1.61	3.13	36.00
WVF3FT	14.29		UW_RBT-UW_RBT_004 (10022773) Sondex Ultrawire 3-1/8" Radial Bond Tool	9.47	3.13	140.00
WVFS1	14.29					
WVFS2	14.29					
WVFS3	14.29					
WVFS4	14.29					
WVFS5	14.29					
WVFS6	14.29					
WVFS7	14.29					
WVFS8	14.29					
CBLTEMP	14.29		UW_PRC-DSSRAC (080) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
CBLROT	14.29					
WVF5FT	13.29					
CNLSC	1.53	CNL-007 (1004) Compensated Neutron Logging Tool	6.61	1.69	30.00	
	1.13					

CNSSC	1.12					
TSTAMP	0.00					
Dataset: 0512341290_Anadarko_Bat 4C-9HZ_08-04-15_RBL_CNL.db: field/well/run1/Main1.1 Total Length: 28.58 ft Total Weight: 296.20 lb O.D. 3.13 in						

Calibration Report			
Database File:	C:\Warrior\Data\Anadarko_Bat 4C-9HZ\0512341290_Anadarko_Bat 4C-9HZ_08-04-15_RBL_CNL.db		
Dataset Pathname:	Main1.1		
Dataset Creation:	Tue Aug 04 14:17:46 2015 by Calc 7.0 B1		
Compensated Neutron Calibration Report			
Serial Number:	1004		
Tool Model:	007		
Master Calibration	Tue Jun 03 14:35:57 2014		
Detector	Readings		
Short Space	241.46	cps	
Long Space	300.95	cps	
Ratio	Measured	Reference	
CNRAT Gain K	0.8150	Sleeve: 1.0000	
	1.0158		
Before Survey			
Detector	Readings		
Short Space		cps	
Long Space		cps	
	Measured	Reference	
Ratio			
After Survey			
Detector	Readings		
Short Space		cps	
Long Space		cps	
	Measured	Reference	
Ratio			

Segmented Cement Bond Log Calibration Report						
Serial Number:		10022773				
Tool Model:		UW_RBT_004				
Calibration Casing Diameter:		5.500	in			
Calibration Depth:		124.356	ft			

Master Calibration, performed Tue Aug 04 07:56:03 2015:						
Raw (v)		Calibrated (mv)		Results		
Zero		Cal		Gain	Offset	
3ET	0.003	0.795	0.800	71.921	89.777	0.514

SFT	0.003	0.793	0.800	71.921	89.777	0.314
5FT	0.000	0.584	0.800	71.921	121.717	0.800
S1	0.011	0.780	0.000	100.000	129.950	-1.424
S2	0.010	0.790	0.000	100.000	128.177	-1.252
S3	0.012	0.767	0.000	100.000	132.450	-1.639
S4	0.012	0.753	0.000	100.000	135.059	-1.657
S5	0.015	0.774	0.000	100.000	131.673	-1.919
S6	0.013	0.778	0.000	100.000	130.815	-1.713
S7	0.012	0.789	0.000	100.000	128.820	-1.590
S8	0.011	0.793	0.000	100.000	127.890	-1.407

#### Temperature Calibration Report

Serial Number: 10024052  
 Tool Model: UW\_PRT\_016  
 Performed: Wed Feb 11 16:41:28 2015

Point #	Reading	Reference
1	12242.00 cps	68.00 degF
2	18329.00 cps	104.00 degF
3	29563.00 cps	176.00 degF
4	41222.00 cps	248.00 degF
5	52988.00 cps	320.00 degF
6	58824.00 cps	356.00 degF
7	cps	degF
8	cps	degF
9	cps	degF
10	cps	degF

#### Gamma Ray Calibration Report

Serial Number: 10019072  
 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: Bat 4C-9HZ  
 Field: Wattenberg  
 County: Weld  
 State: Colorado