



Compensated Neutron  
Gamma Ray  
Casing Collar Log

Company	Whiting Oil & Gas Corporation	Location:	API # : 05-123-41643	Other Services RBL JB/GR
Well	Horsetail 07E-1802	SEC 7	TWP 10N RGE 57W	Elevation
Field	Wildcat	Permanent Datum	Ground Level	Elevation
County	Weld	Log Measured From	Kelly Bushing	21 FT
State	Colorado	Drilling Measured From	Kelly Bushing	4926'
Date	09-Mar-2016			G.L. 4926'
Run Number	Two			
Depth Driller	14100 FT			
Depth Logger	6102 FT			
Bottom Logged Interval	6101 FT			
Top Log Interval	Surface			
Open Hole Size	---			
Type Fluid	Water			
Density / Viscosity	8.34 LBM/gal			
Max. Recorded Temp.	222°F			
Estimated Cement Top	64 FT			
Time Well Ready	ROA			
Time Logger on Bottom	10:00 A.M.			
Equipment Number	HD-0343			
Location	Fort Lupton, CO			
Recorded By	J. Morrison			
Witnessed By	Jeff Fiehner			
Borehole Record				
Run Number	Bit	From	To	Size
				Weight
				From
				To
Casing Record	Size (in)	Wgt (lbs/ft)	Grade	Top
Surface Casing	9 5/8	36	---	Surface
Intermediate #1	5 1/2	20	---	Surface
Intermediate #2				14100 FT
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  
Depth referenced to Marker Joint at 5348.5 FT  
Gauge Ring/Junk Basket ran 6226 FT with no debris found  
Log ran as deep as possible in heel to surface  
Recorded with 1500 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.



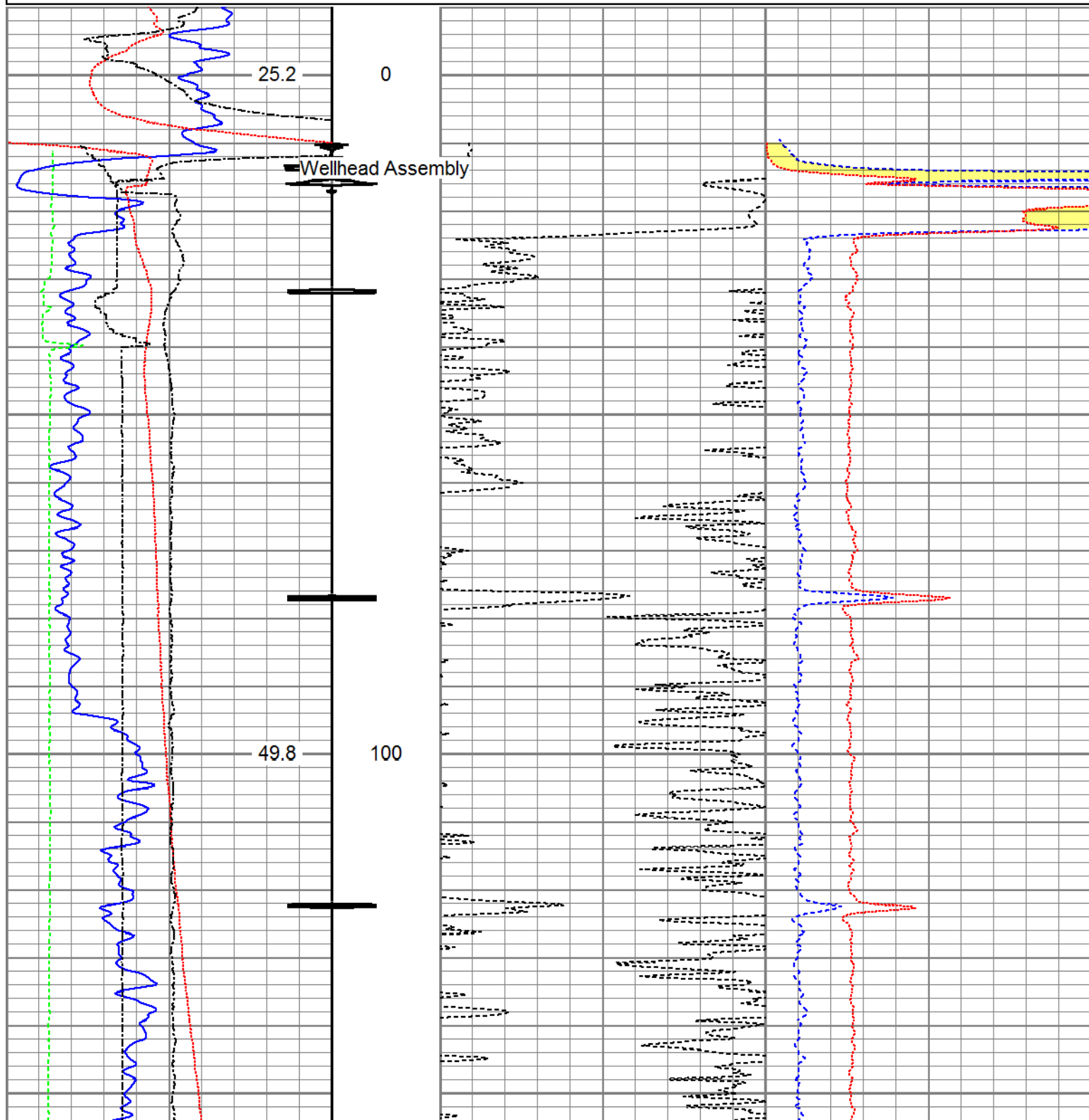
Main Pass

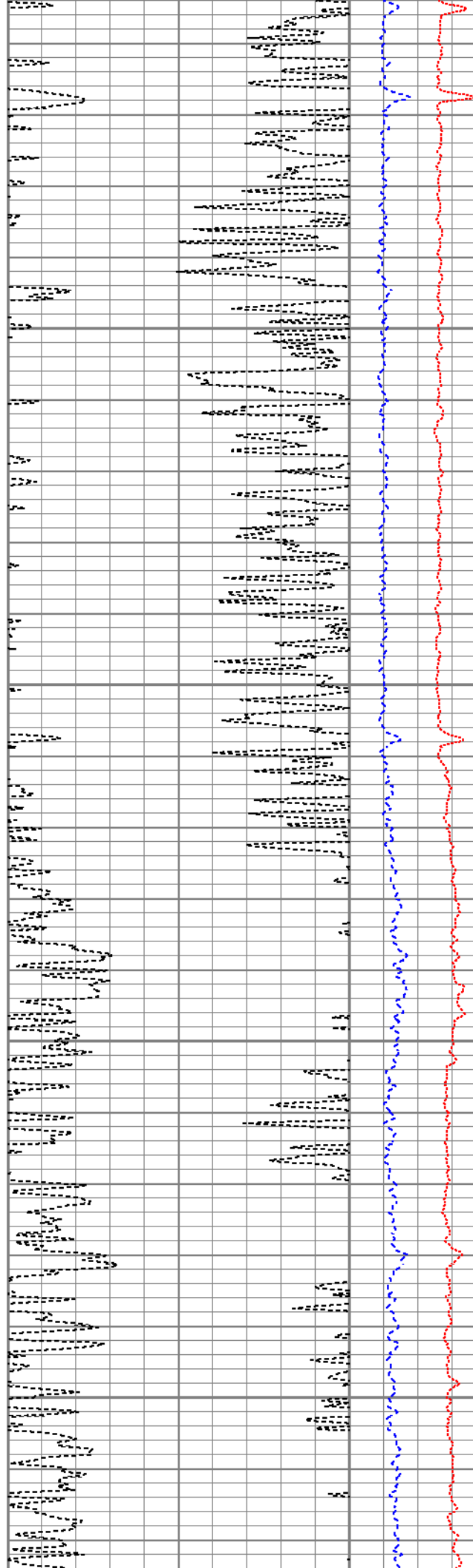
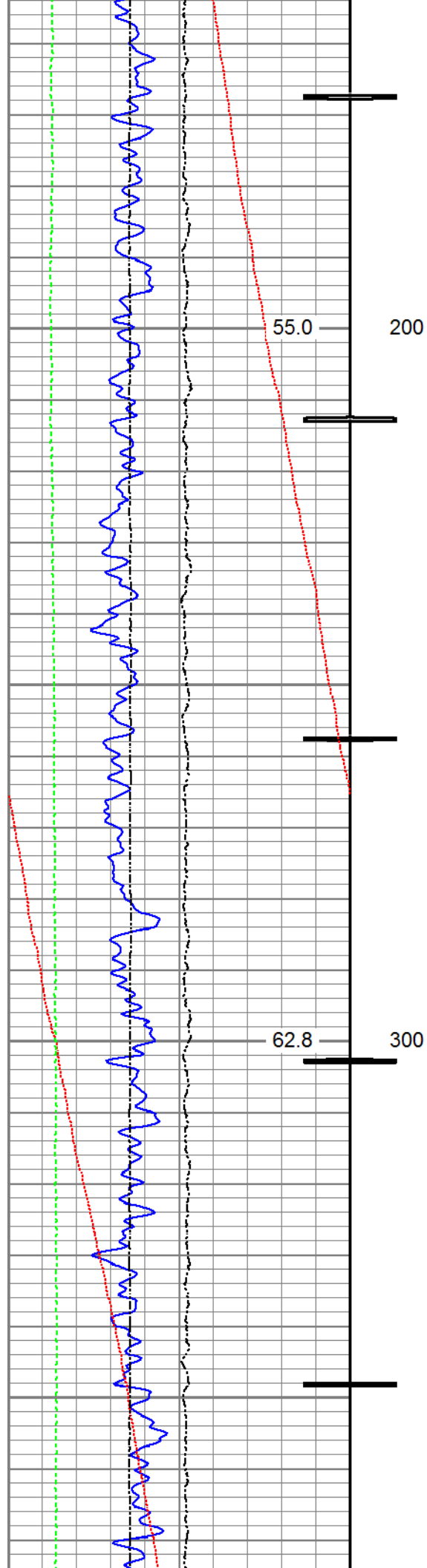
Recorded With 1500 PSI Surface Induced Pressure

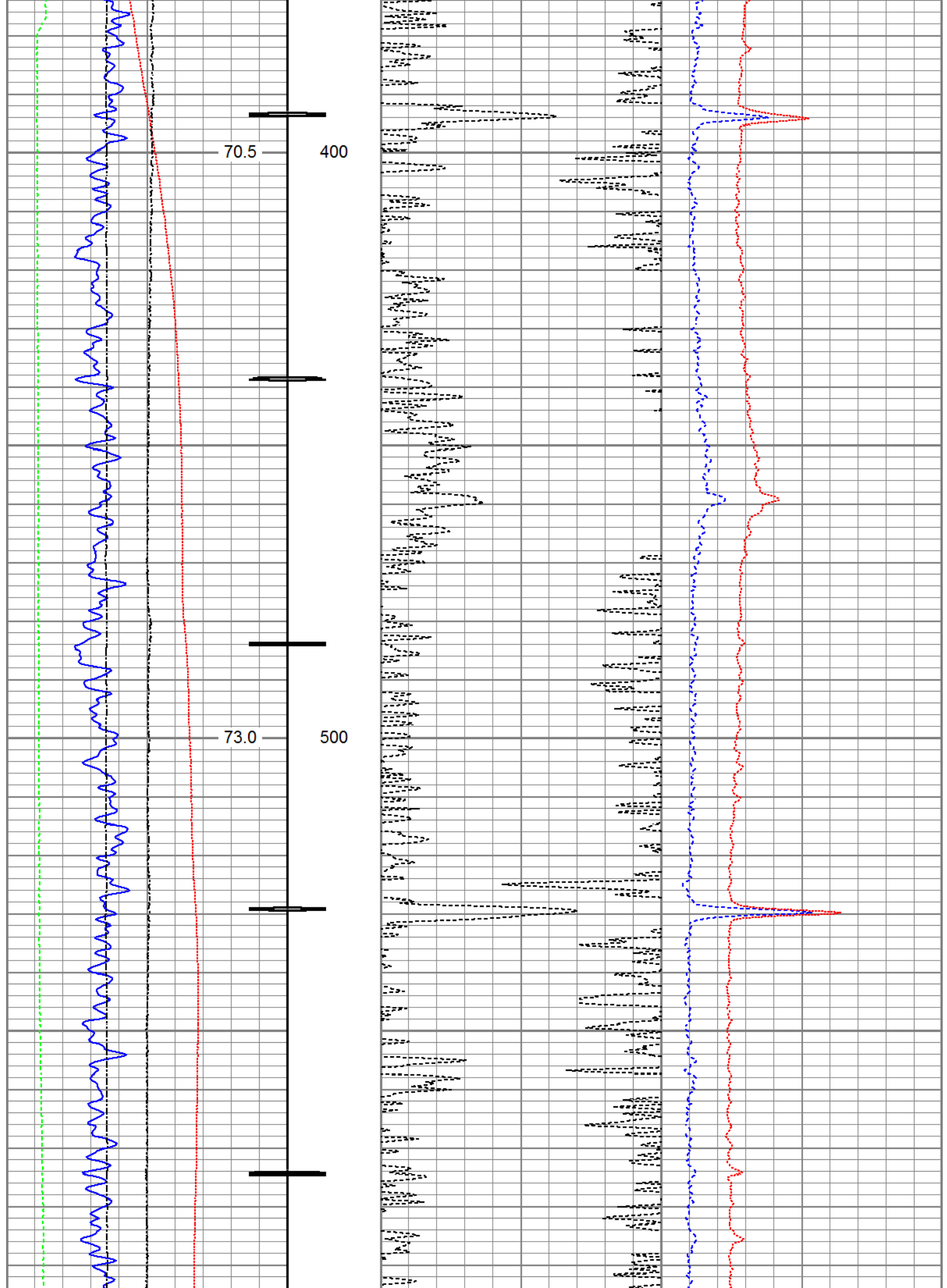
Database File	03-09-16_whiting_horsetail 07e-1802_rbl_cnl\03-09-16_whiting_horsetail 07e-1802_rbl_cnl_w8.db
Dataset Pathname	Main.1
Presentation Format	fmc_cnl_sx
Dataset Creation	Wed Mar 09 14:00:29 2016
Charted by	Depth in Feet scaled 1:240

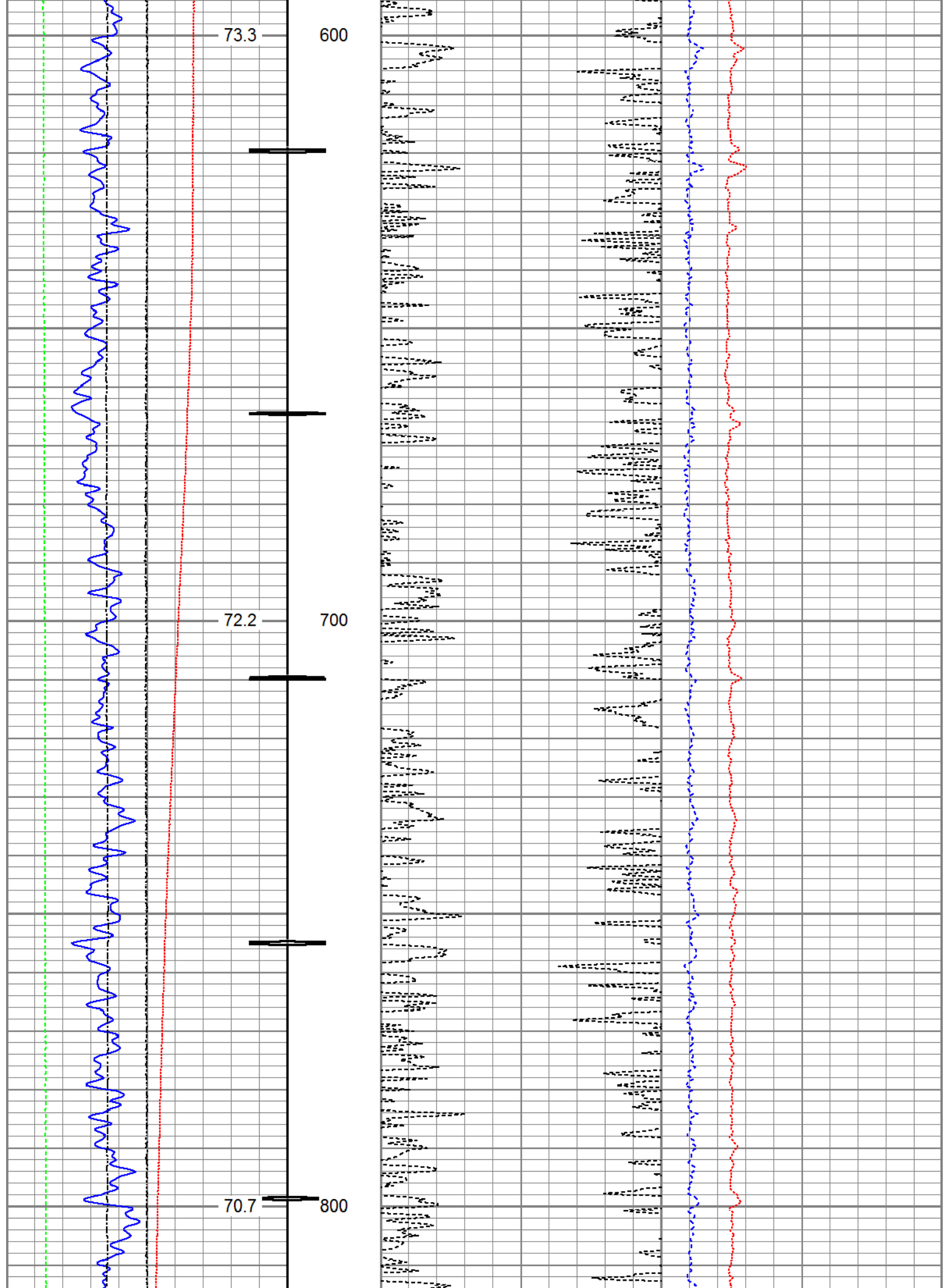
0	Gamma Ray (GAPI)	120
Casing Collar Locator		
0	Temperature (degF)	20
-100	Line Speed (ft/min)	100
0	Line Tension (lb)	2000
Differential Temperature		
-2	(degF)	2

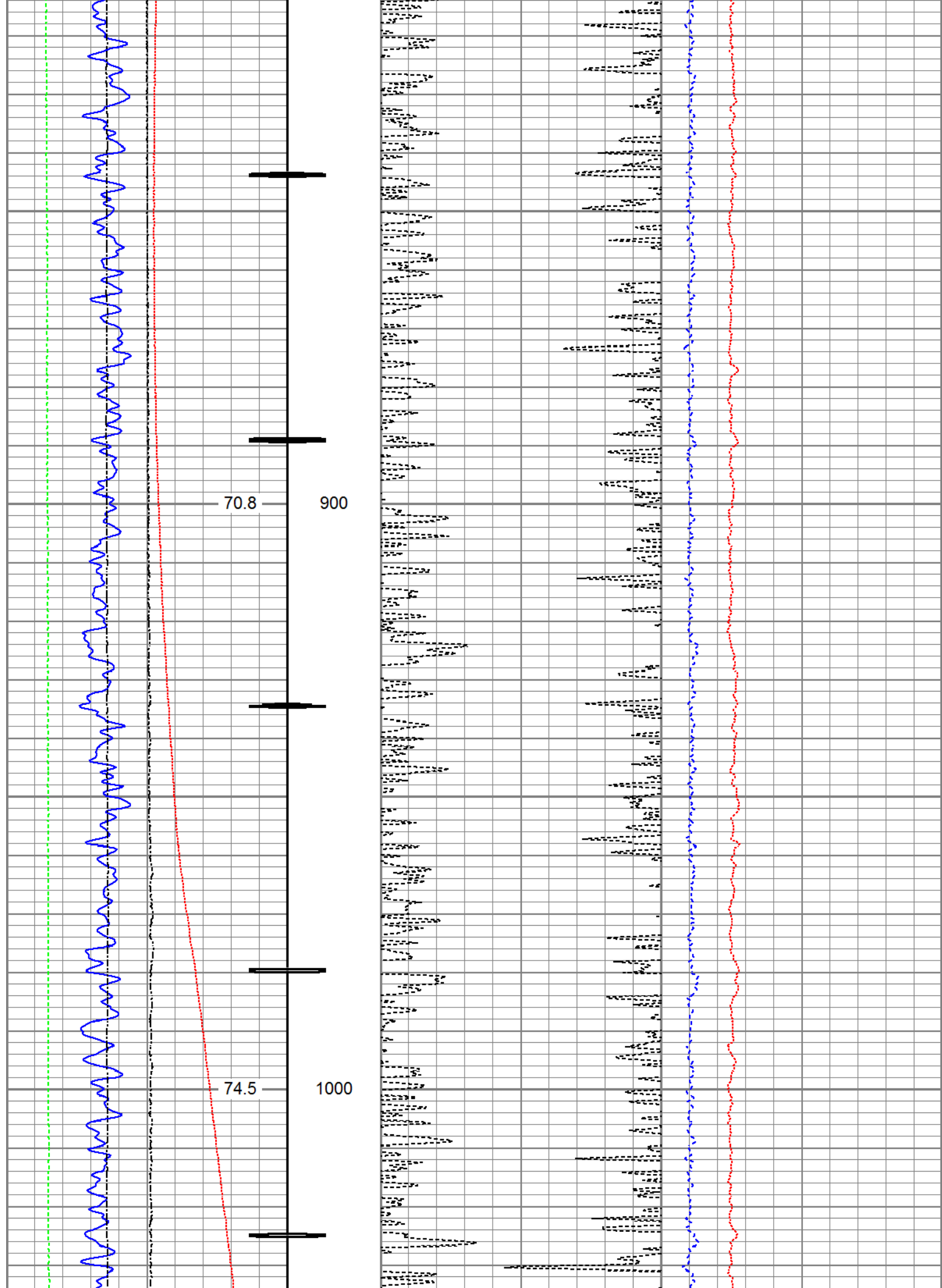
60	Neutron Porosity (pu)	0	0	Far Neutron (cps)	1000
			0	Near Neutron (cps)	10000

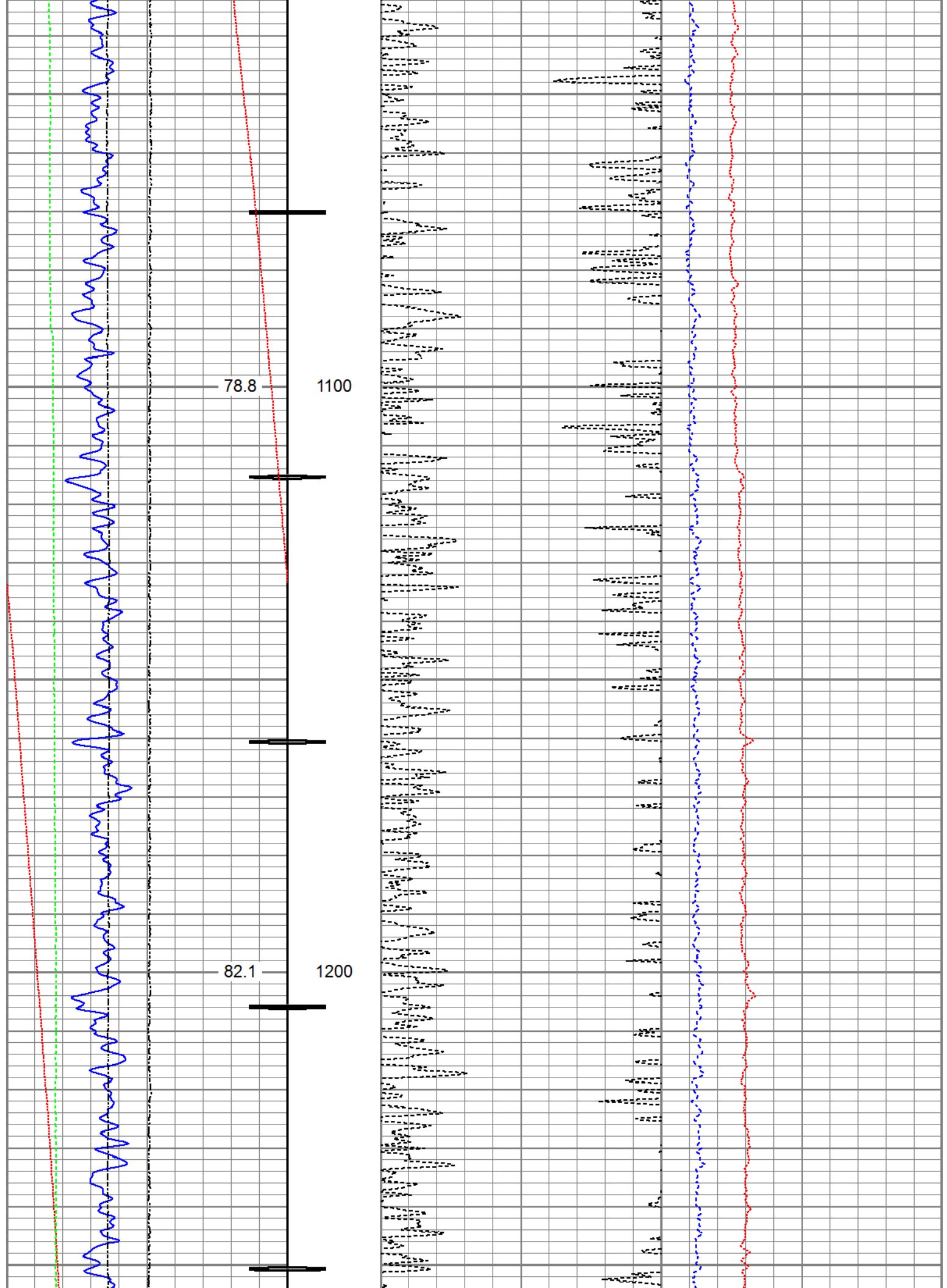




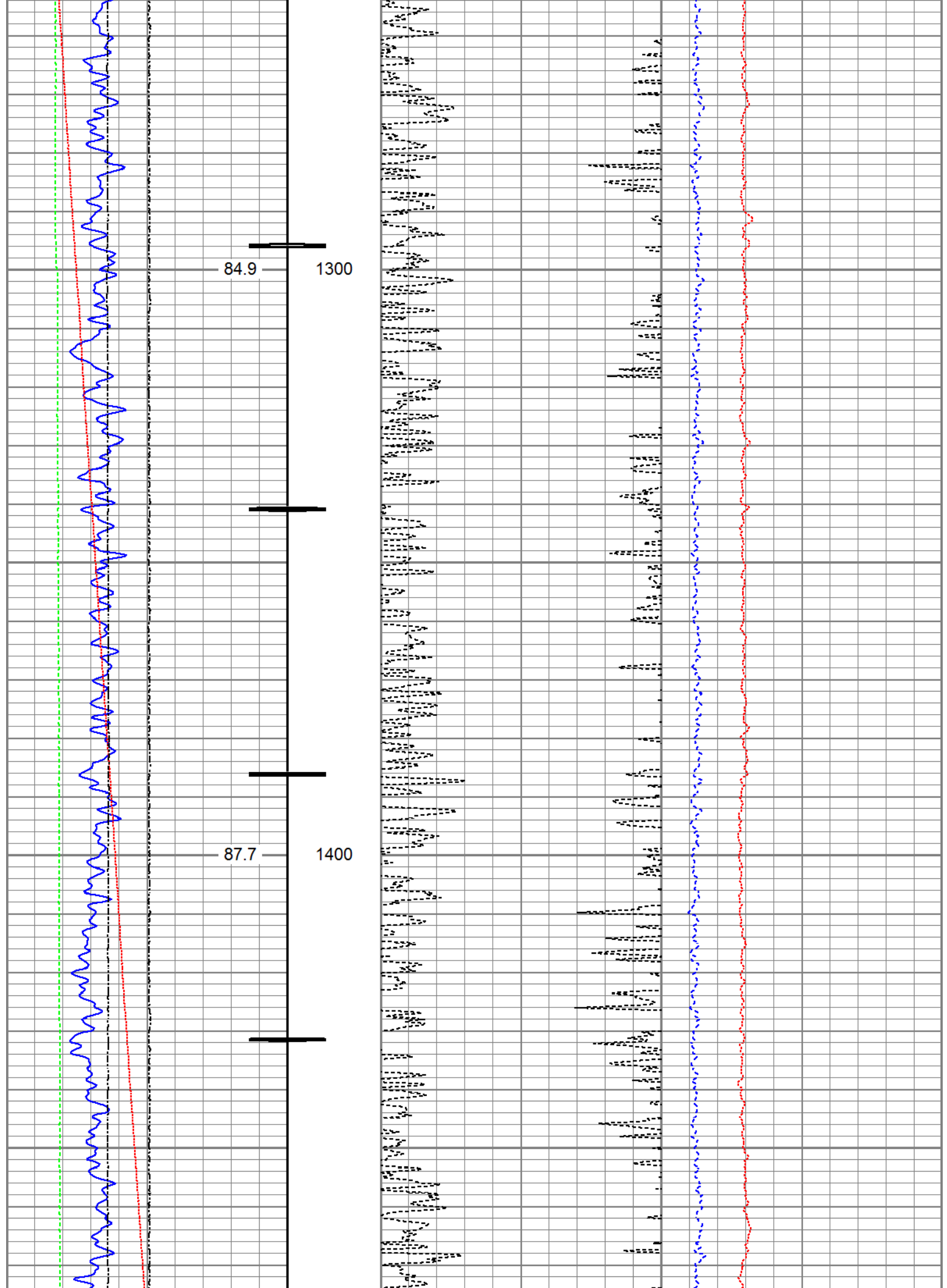




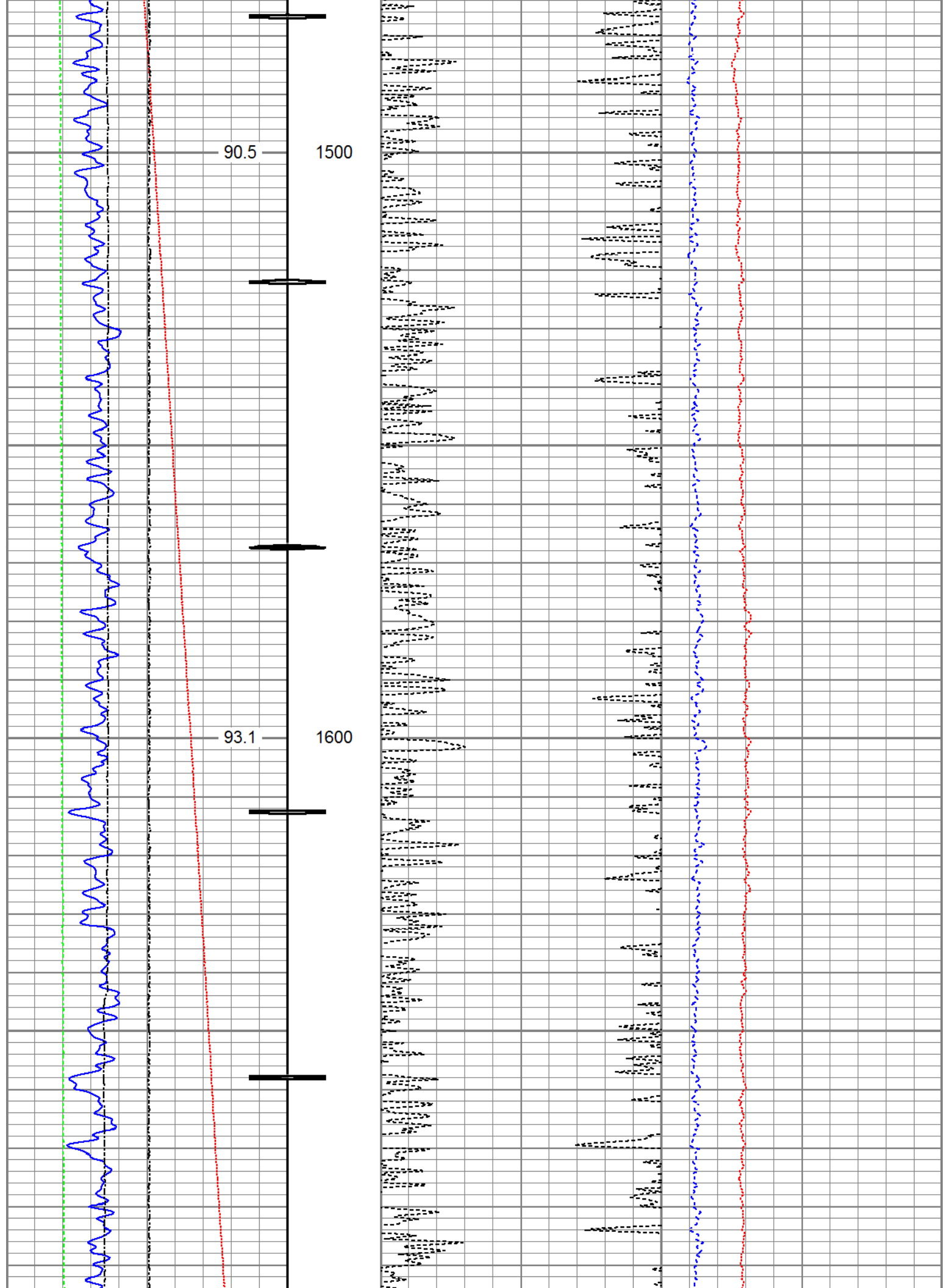


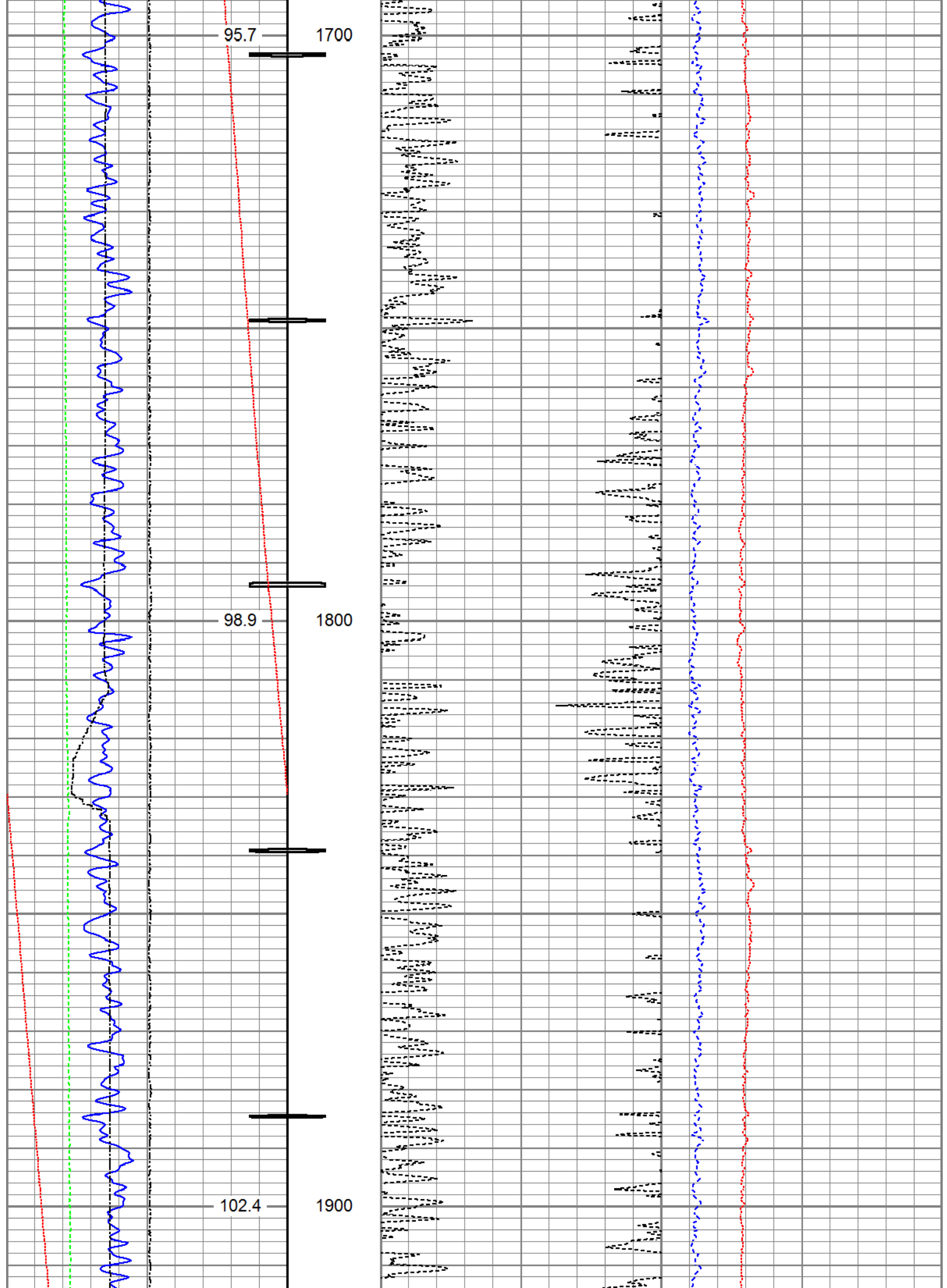


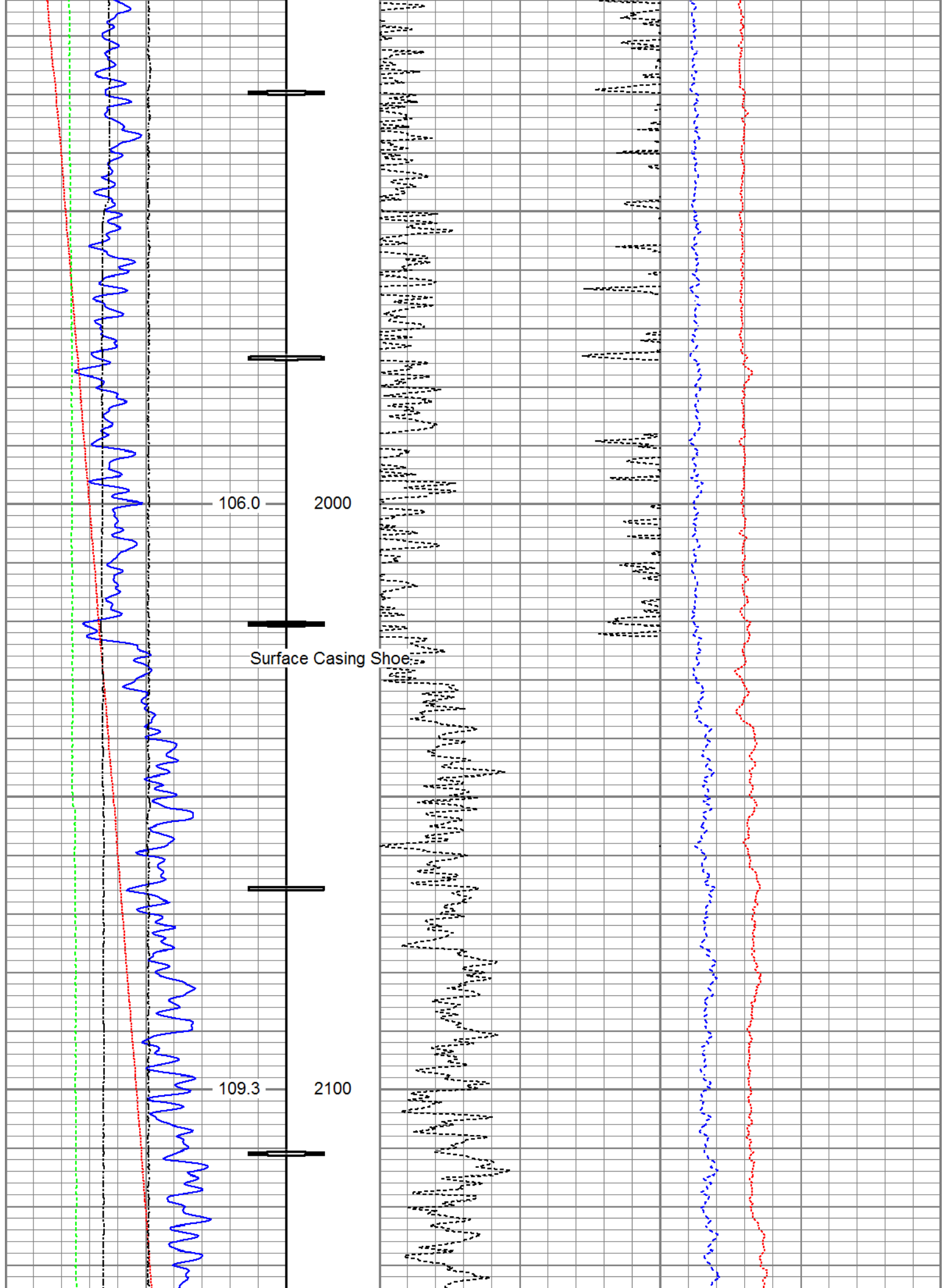


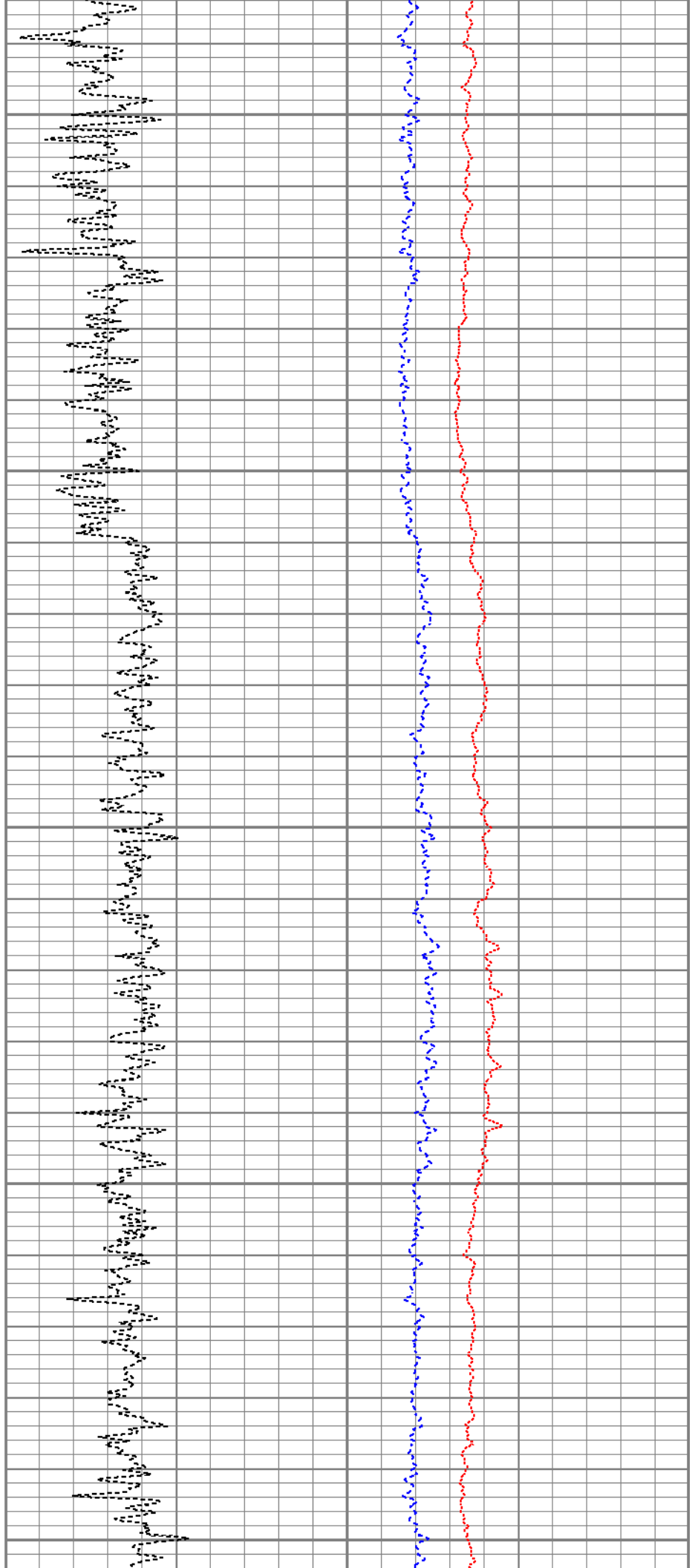
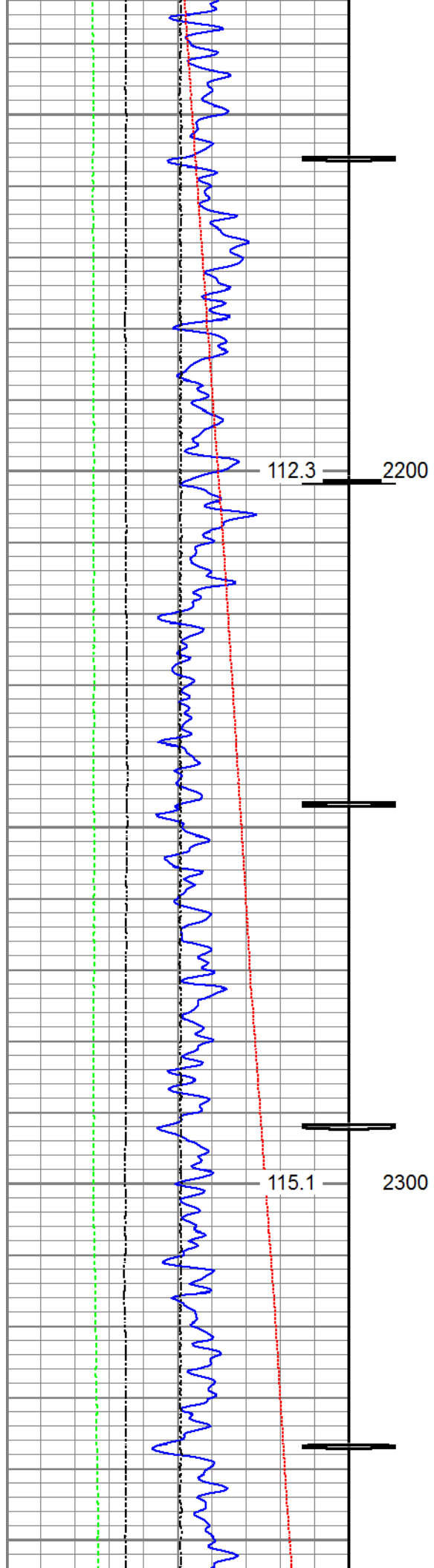


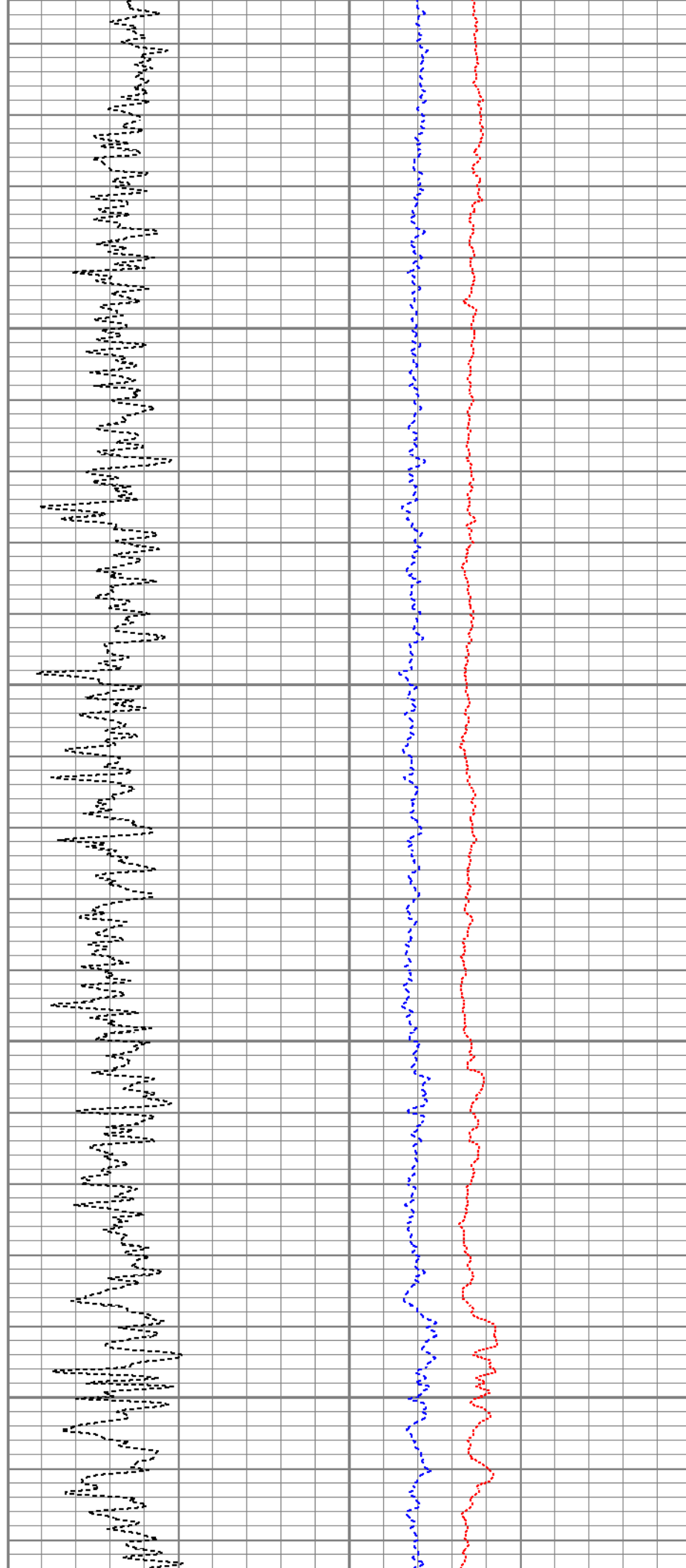
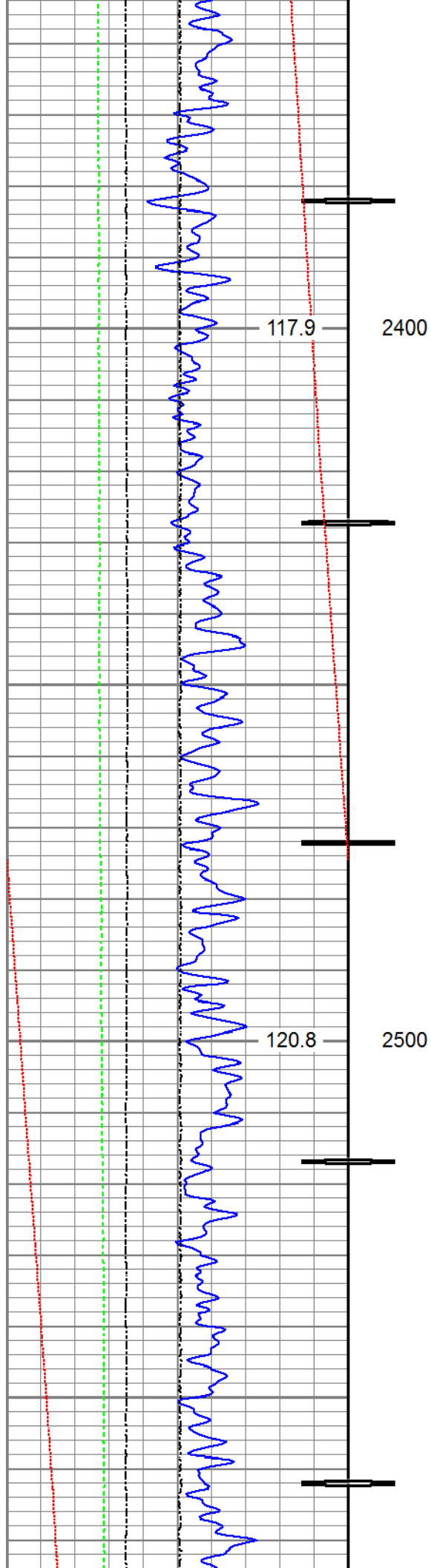


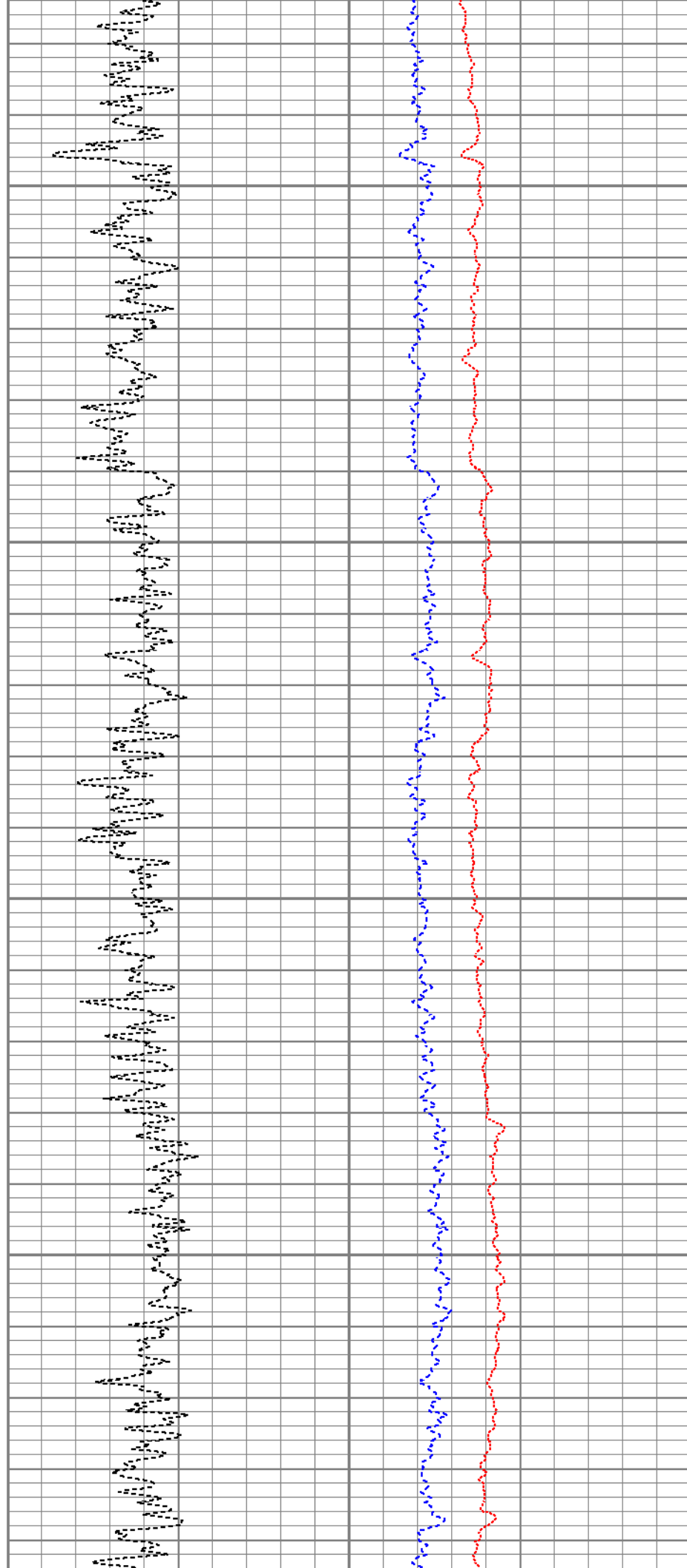
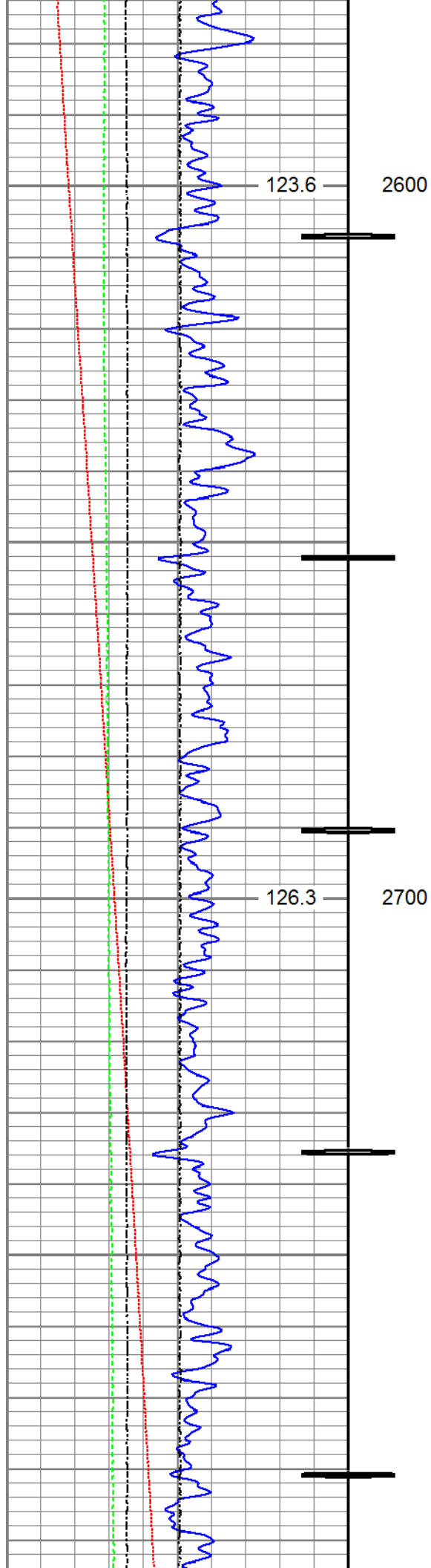


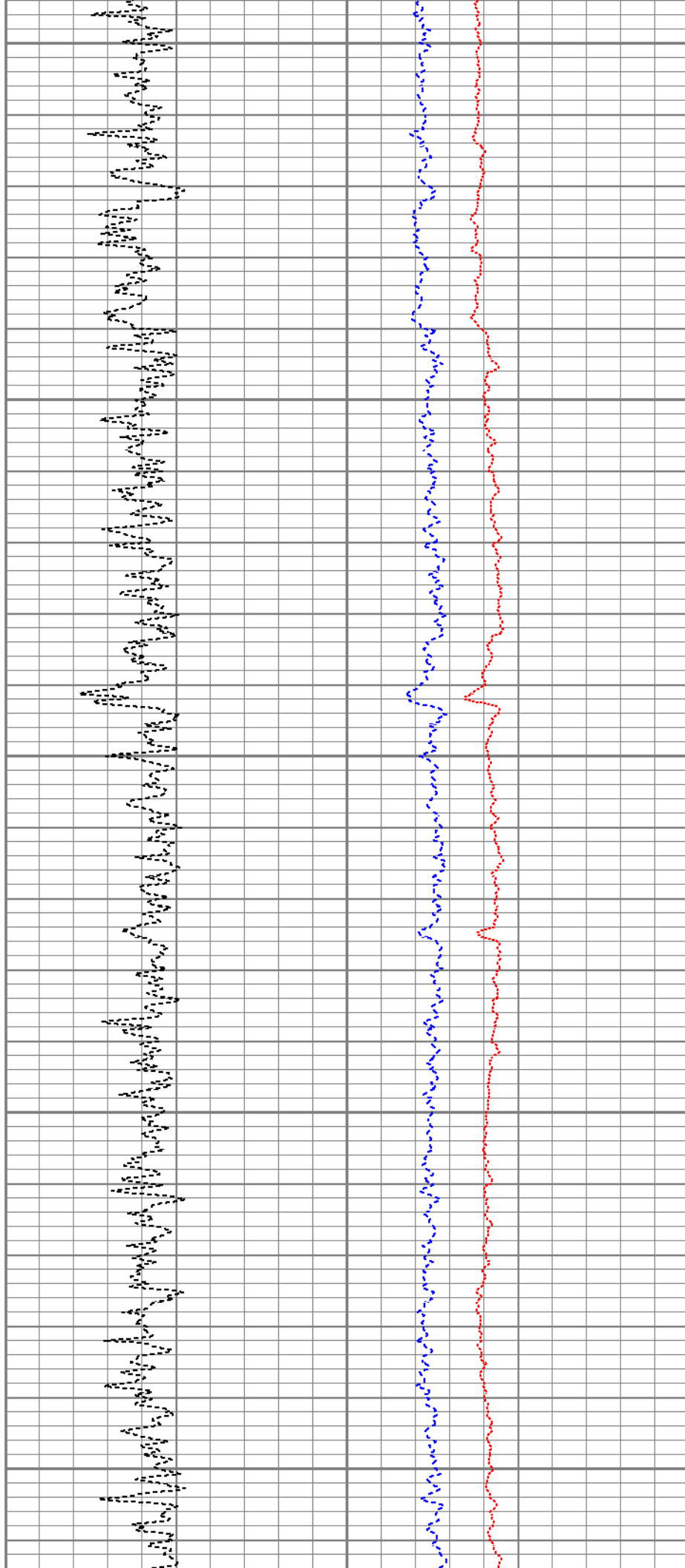
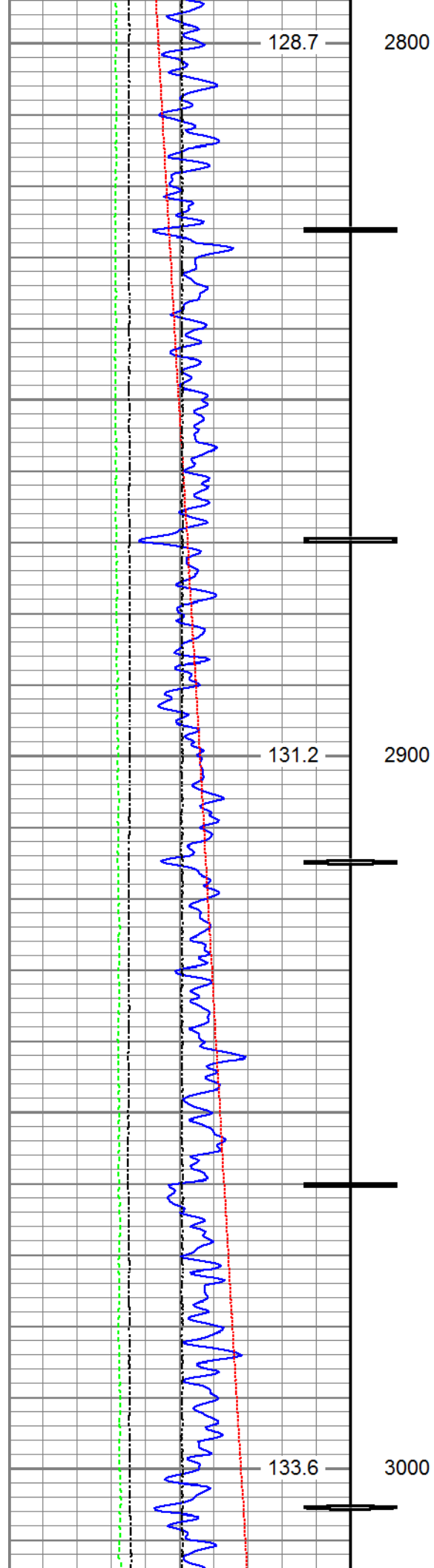




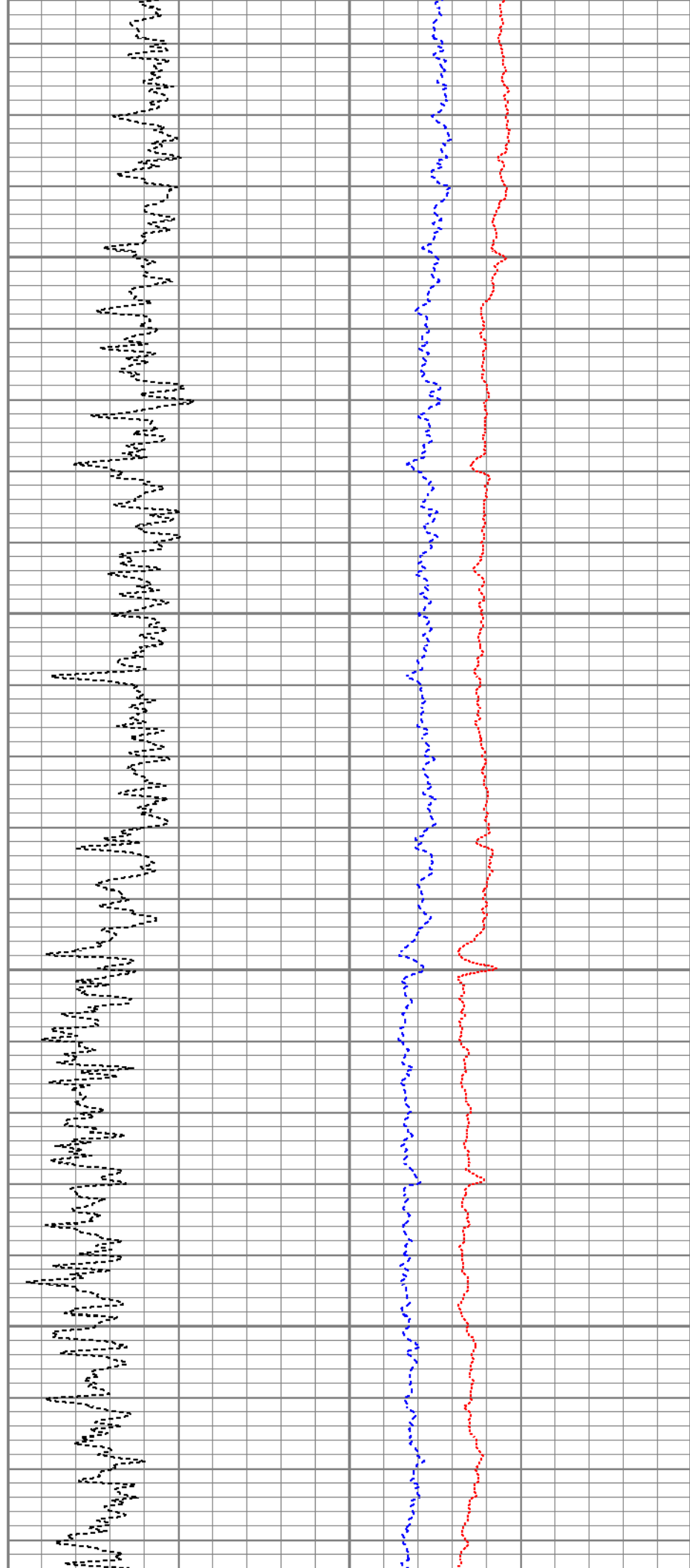
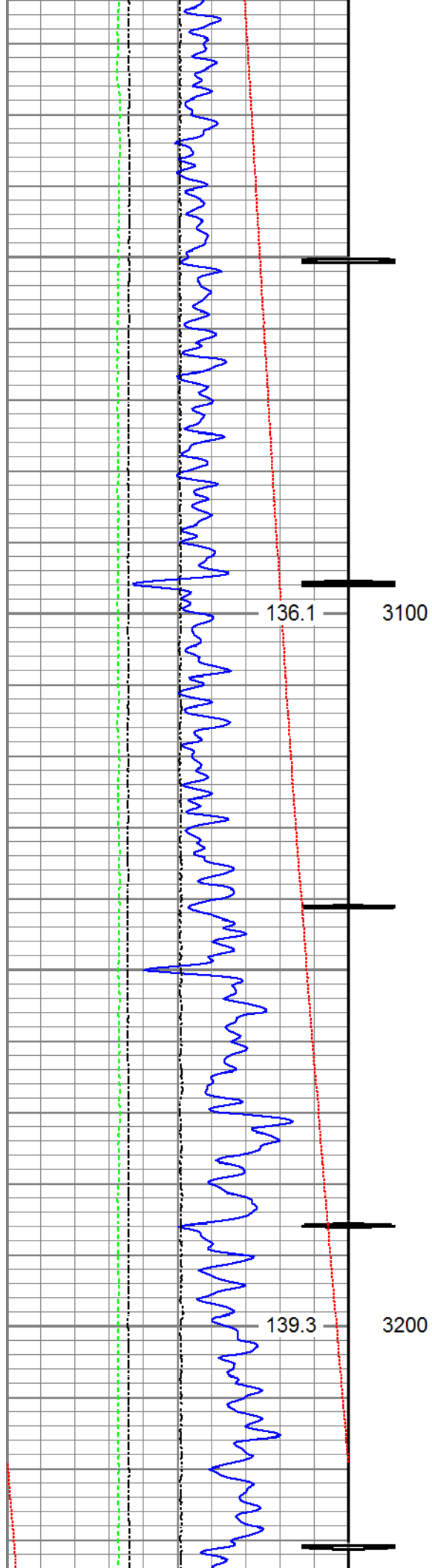


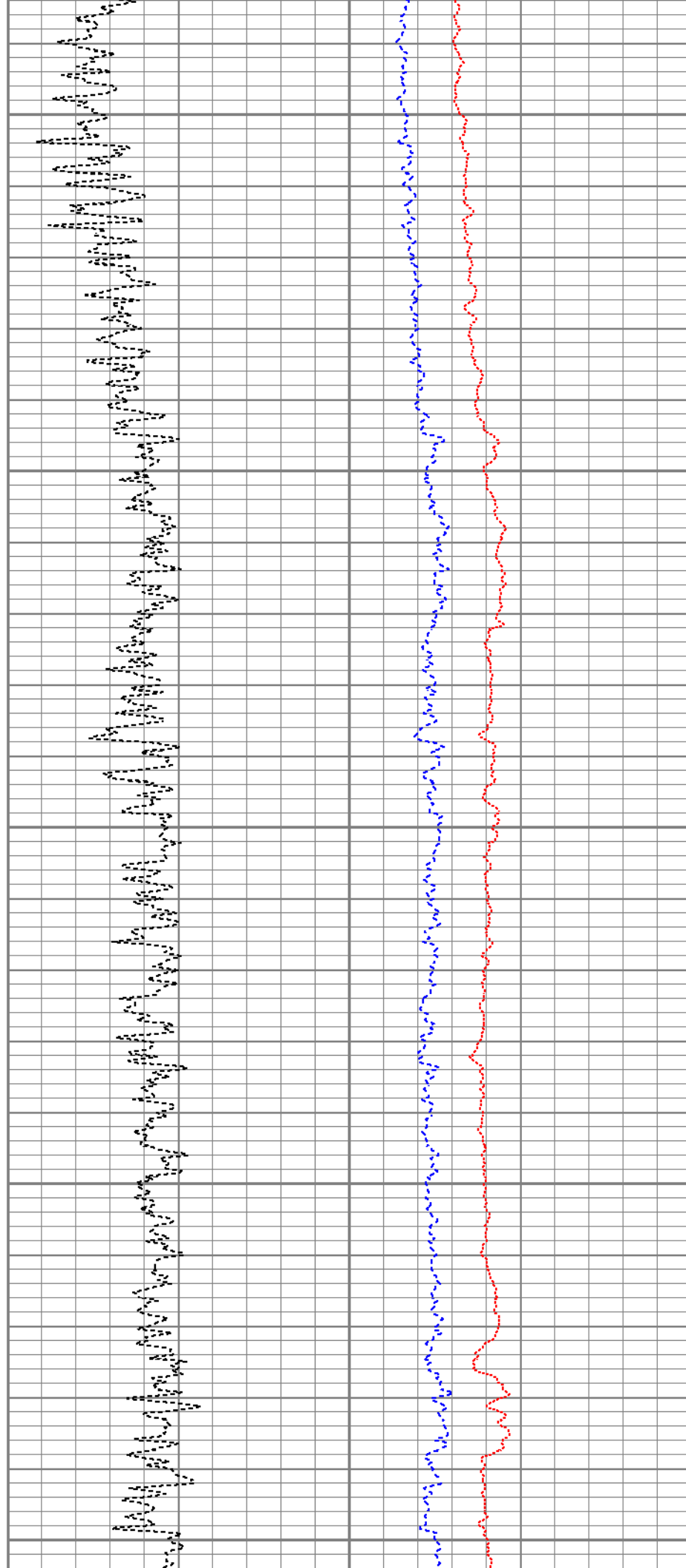
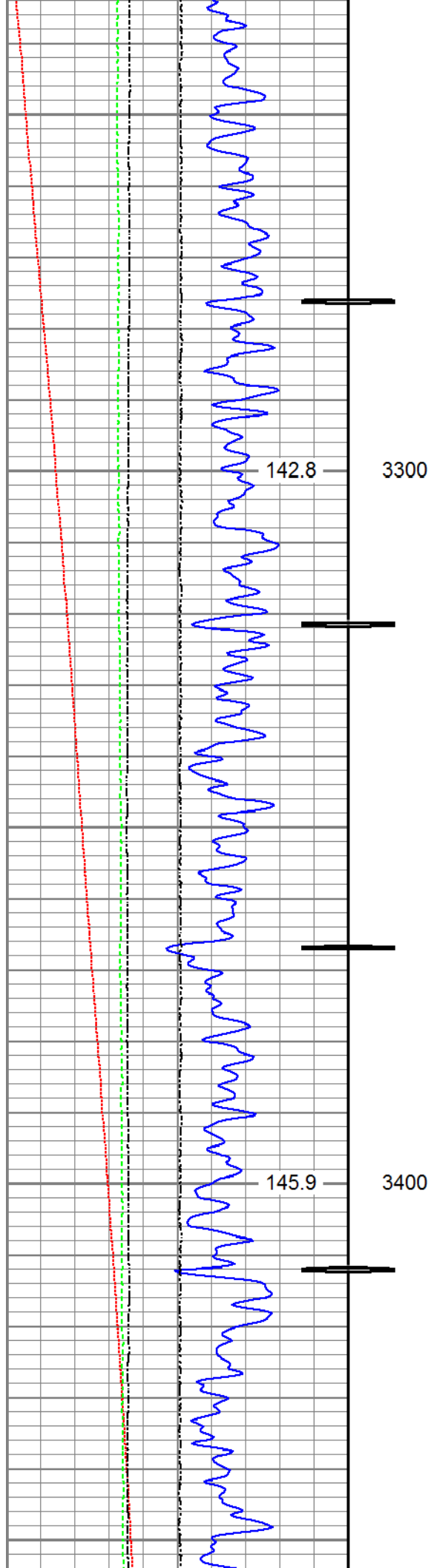


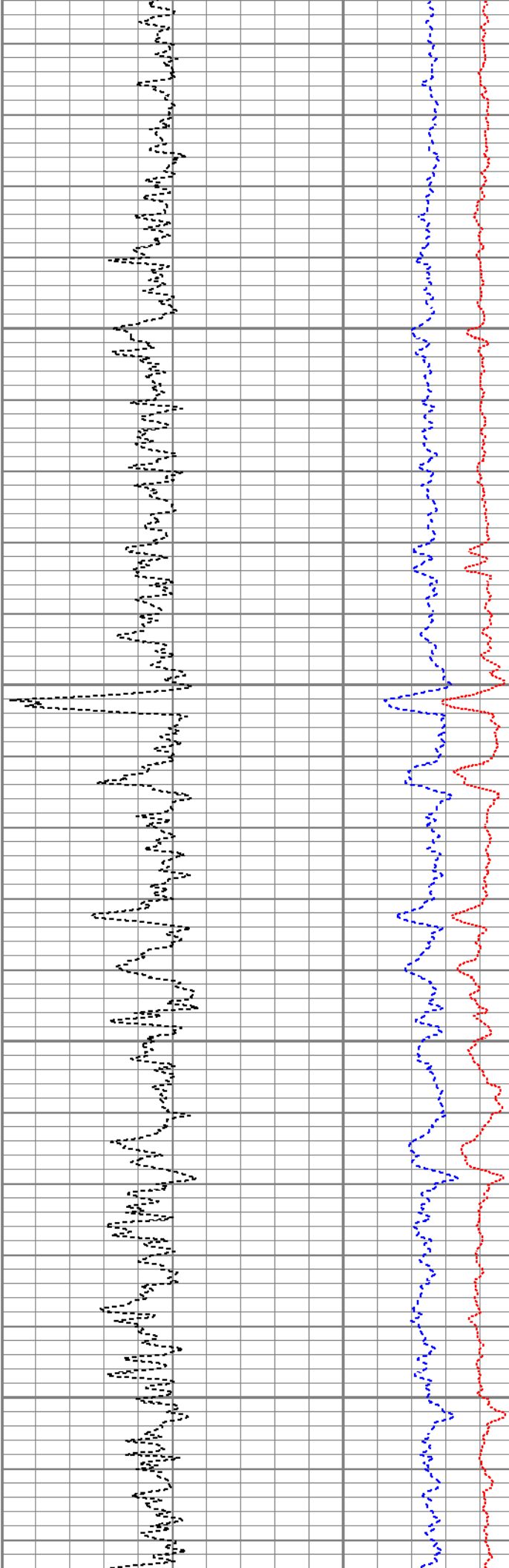
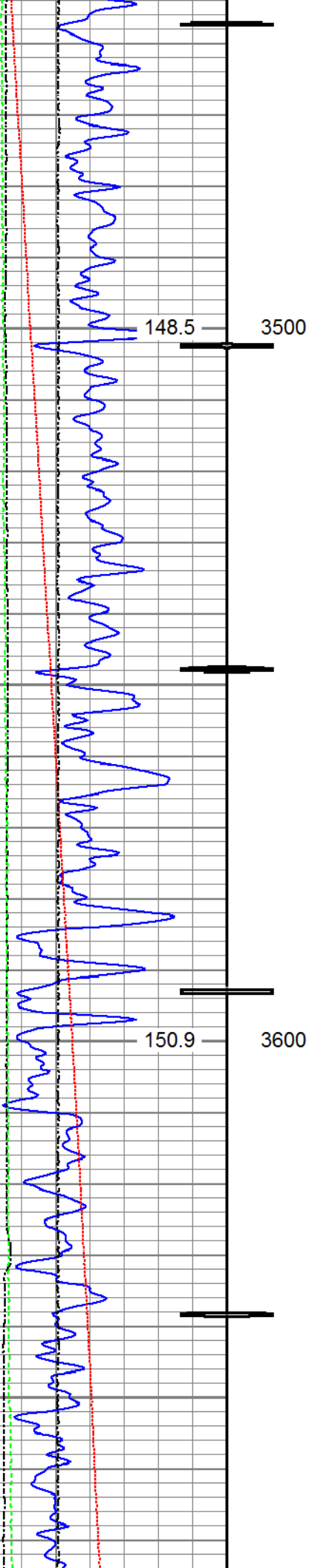


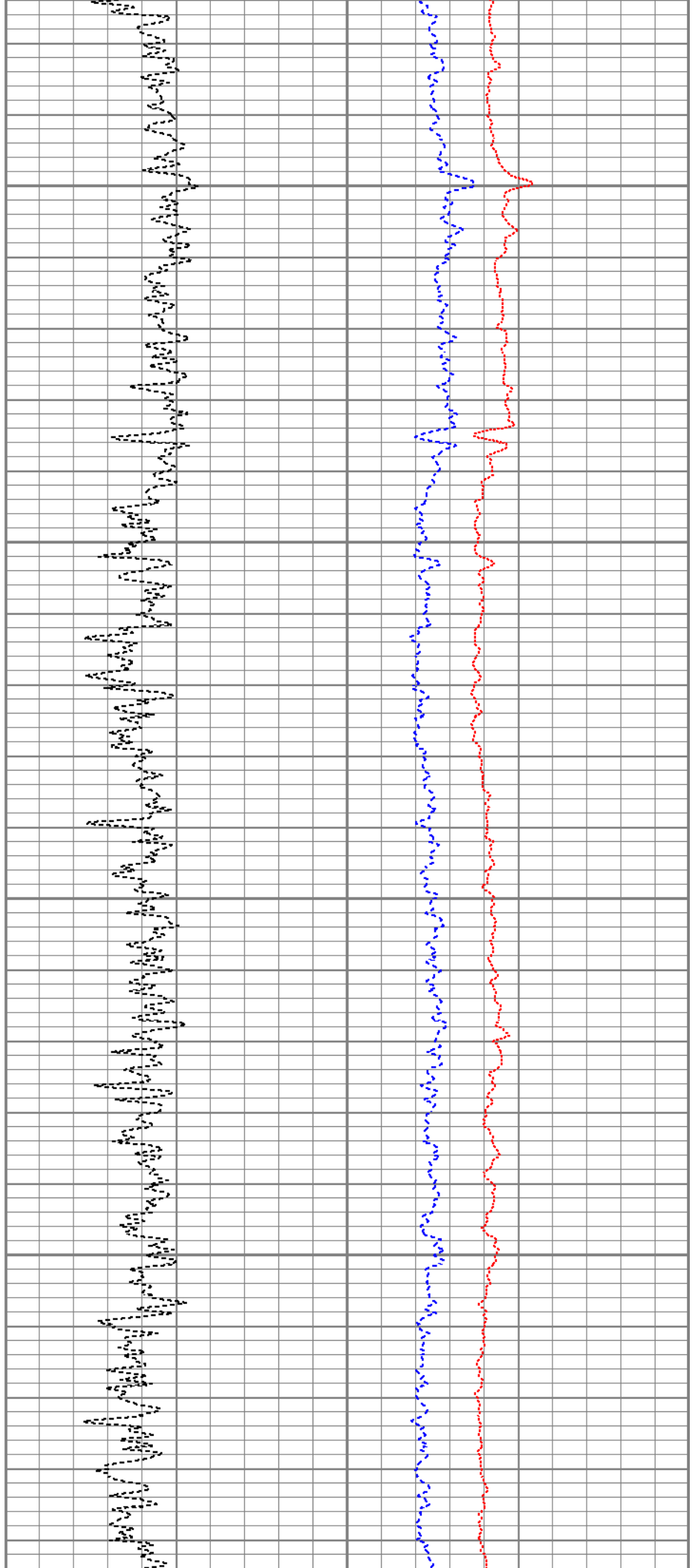
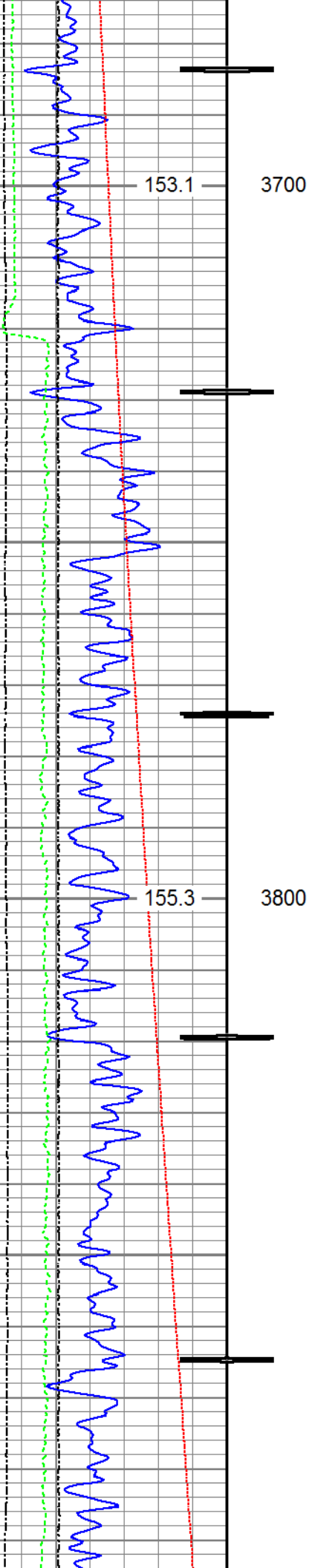


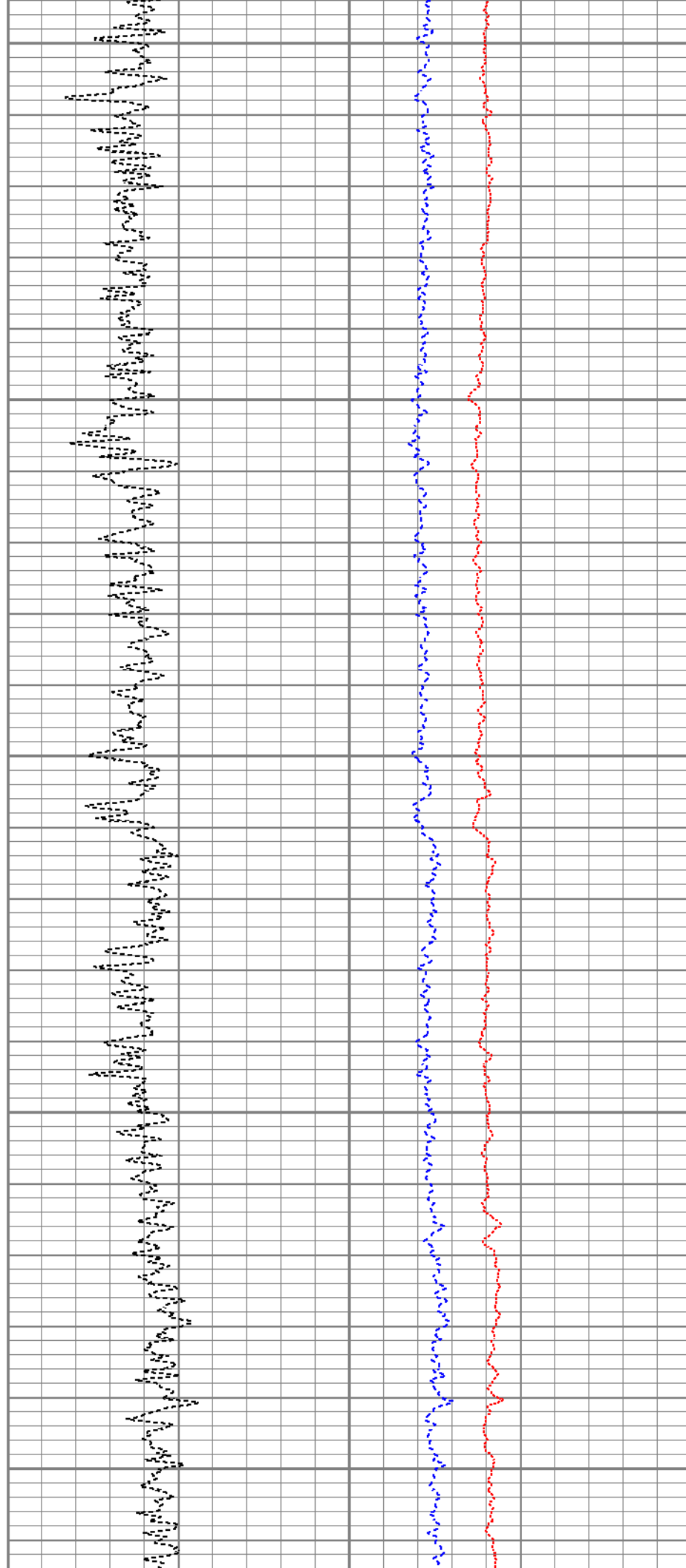
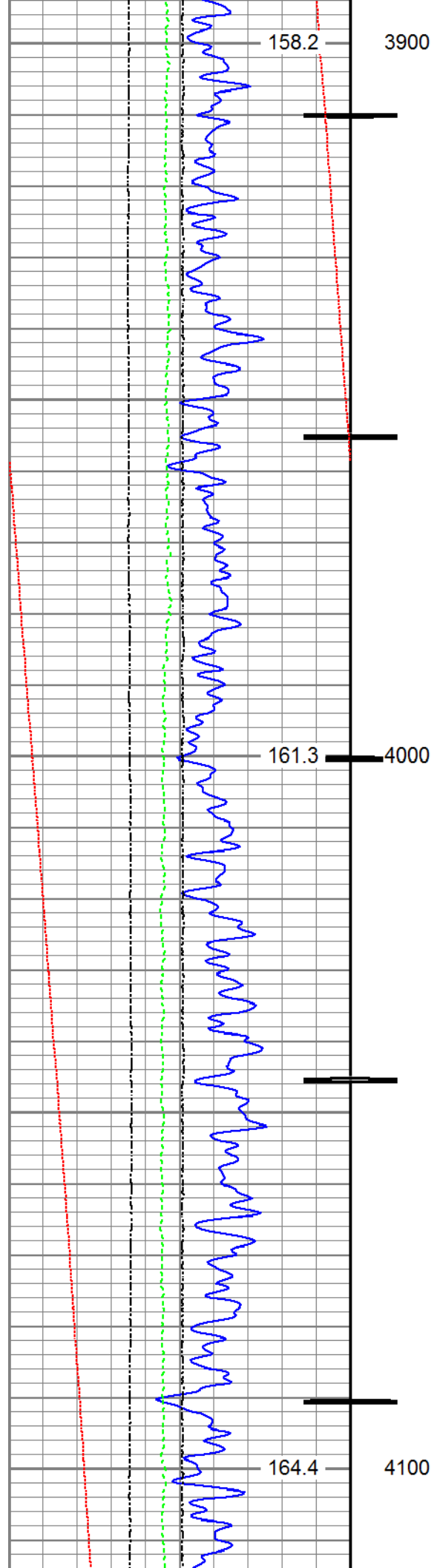


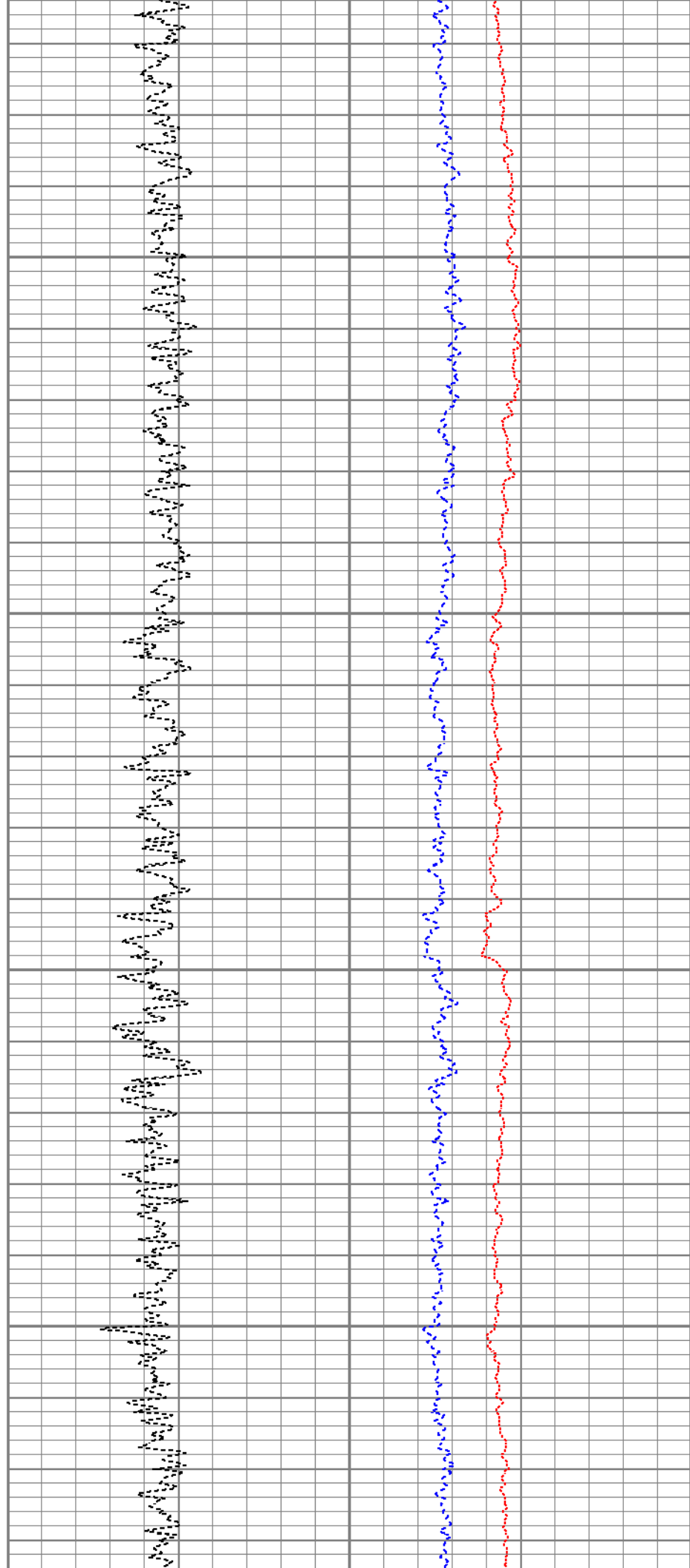
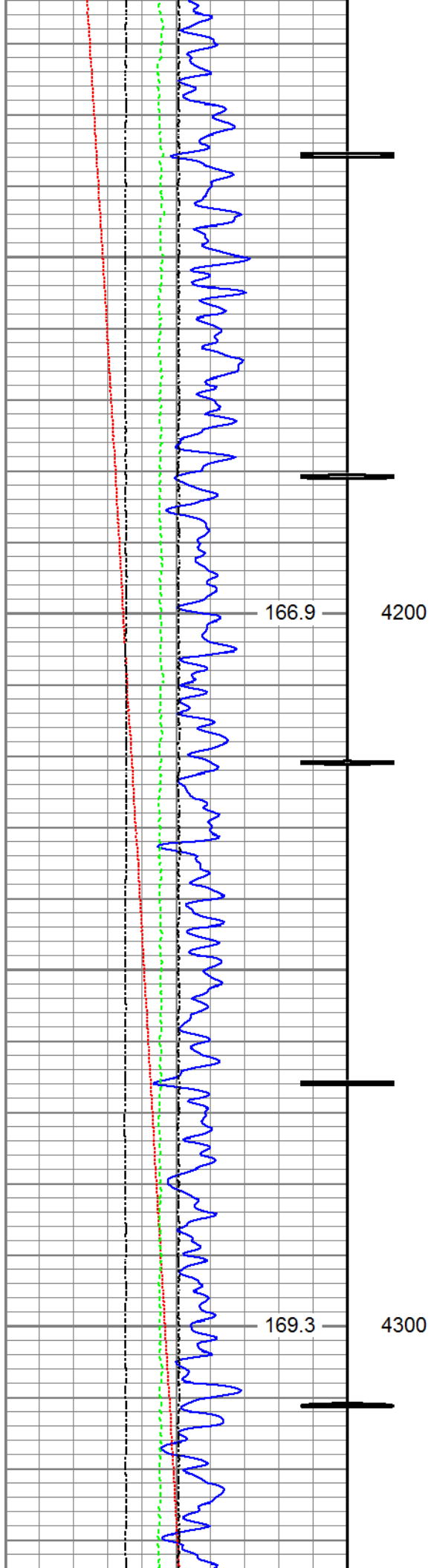


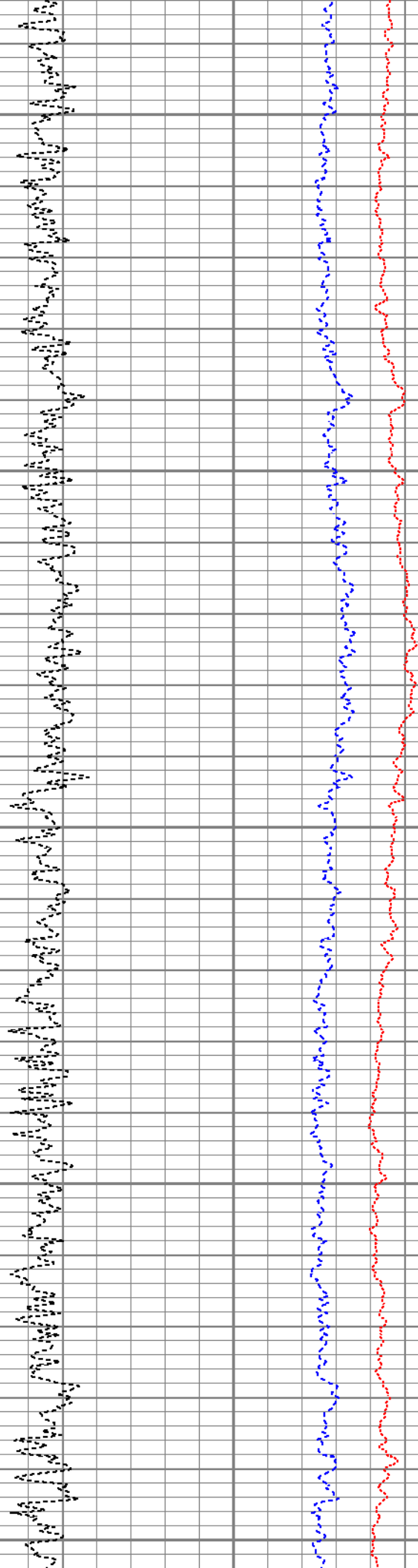
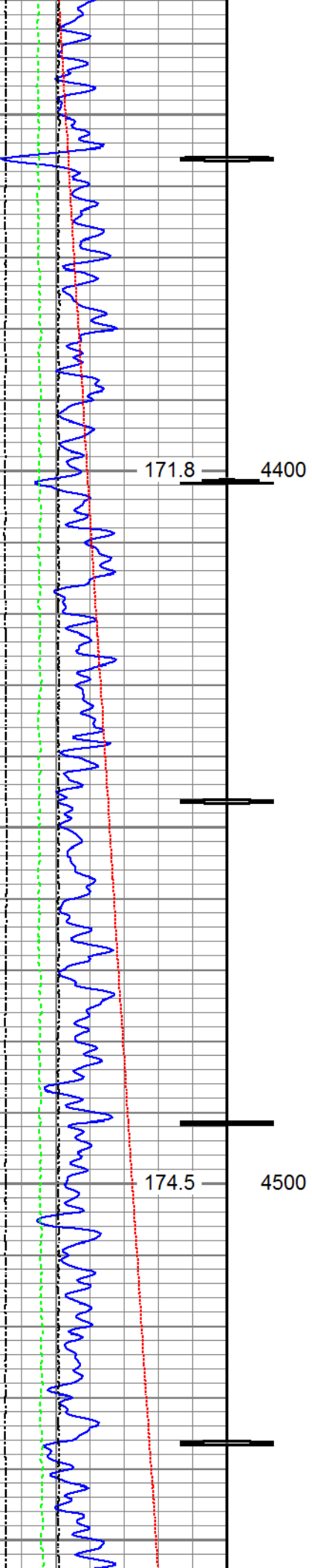




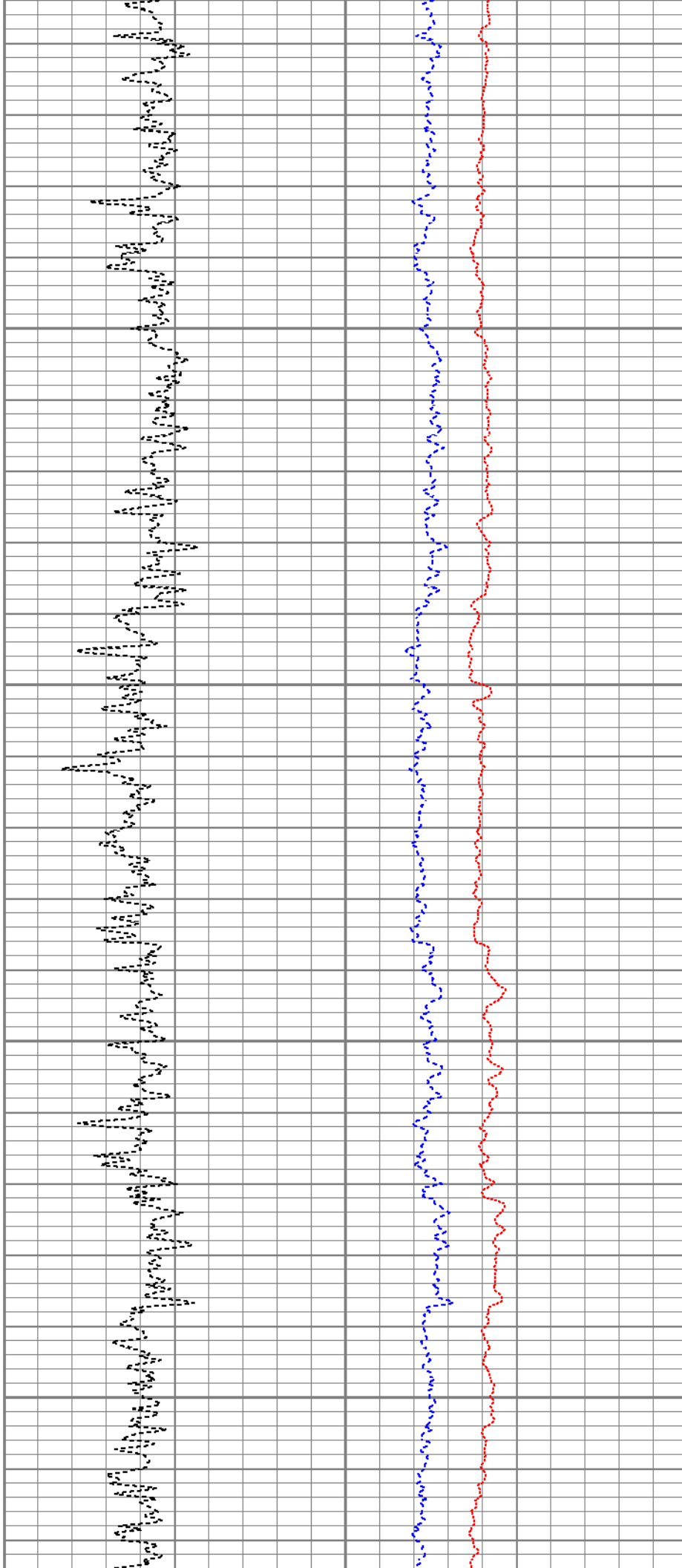
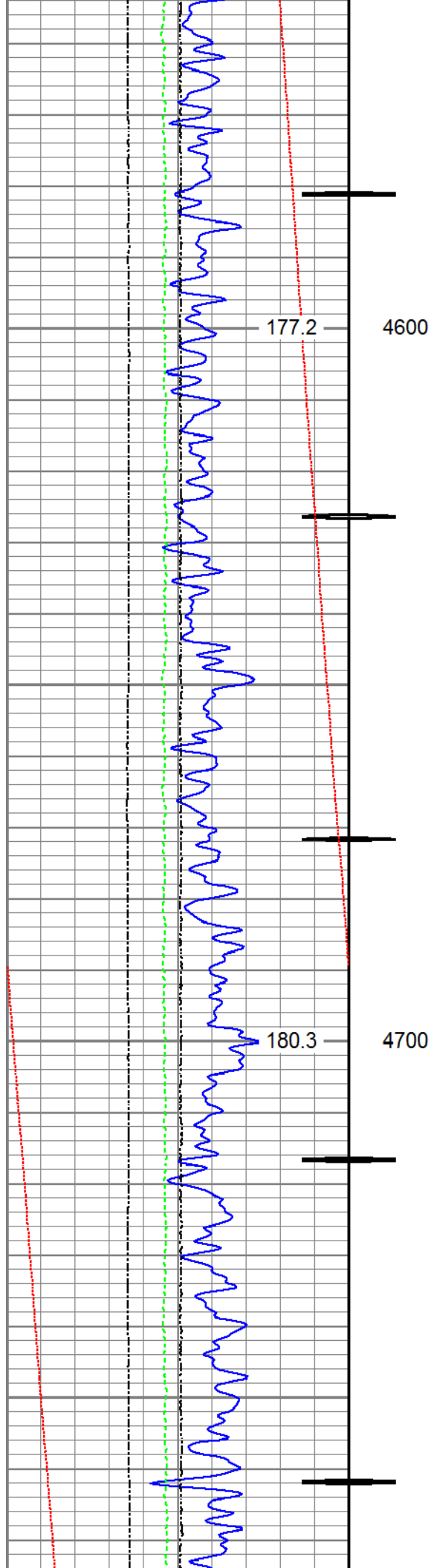


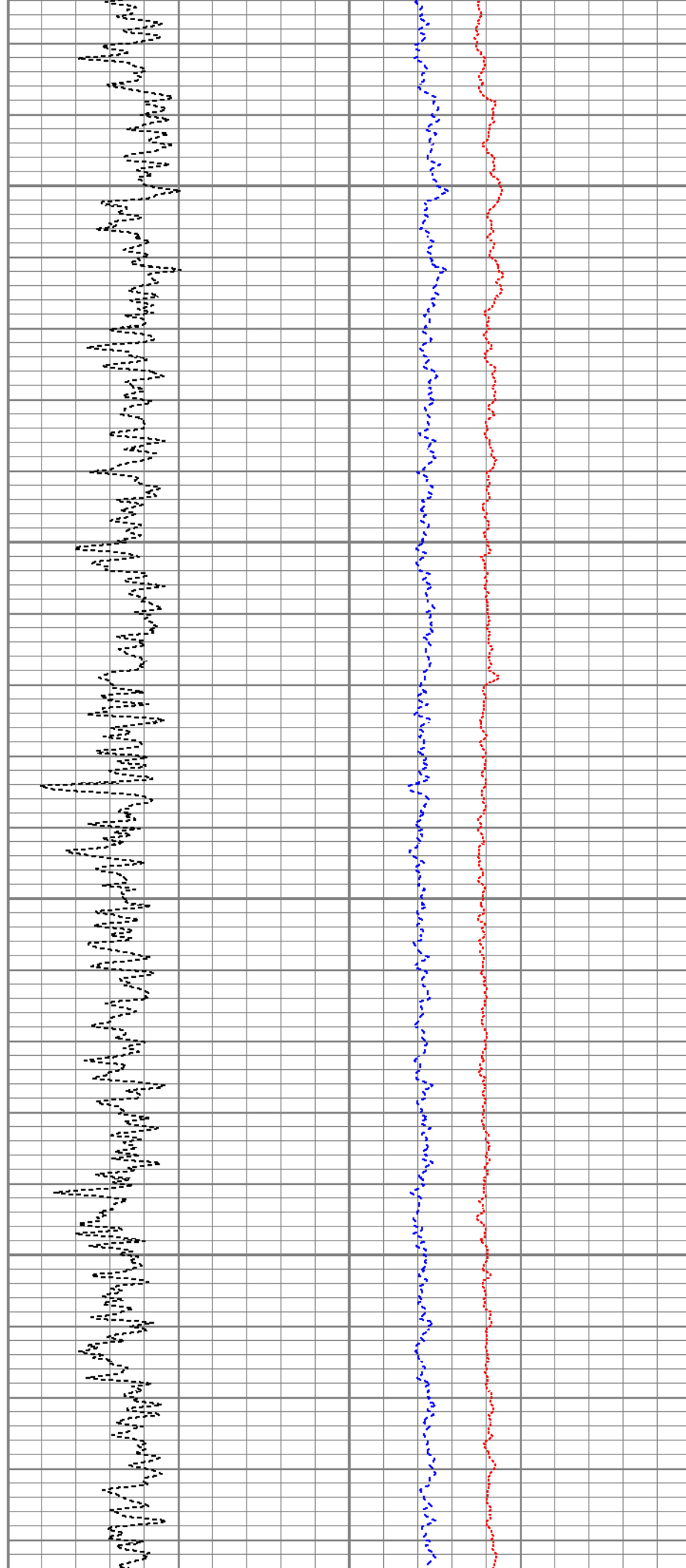
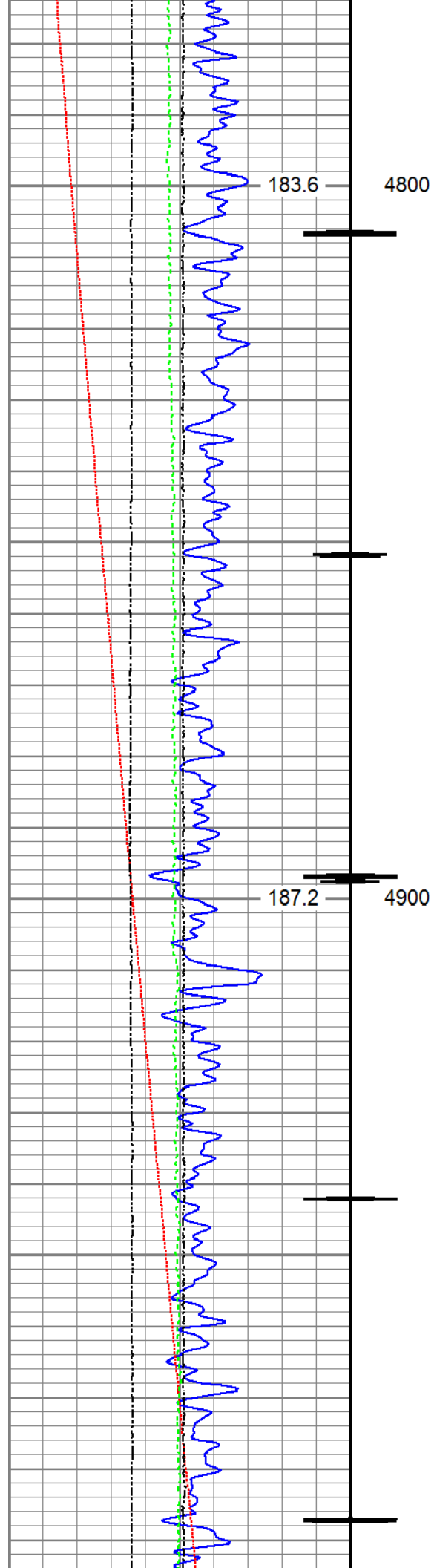


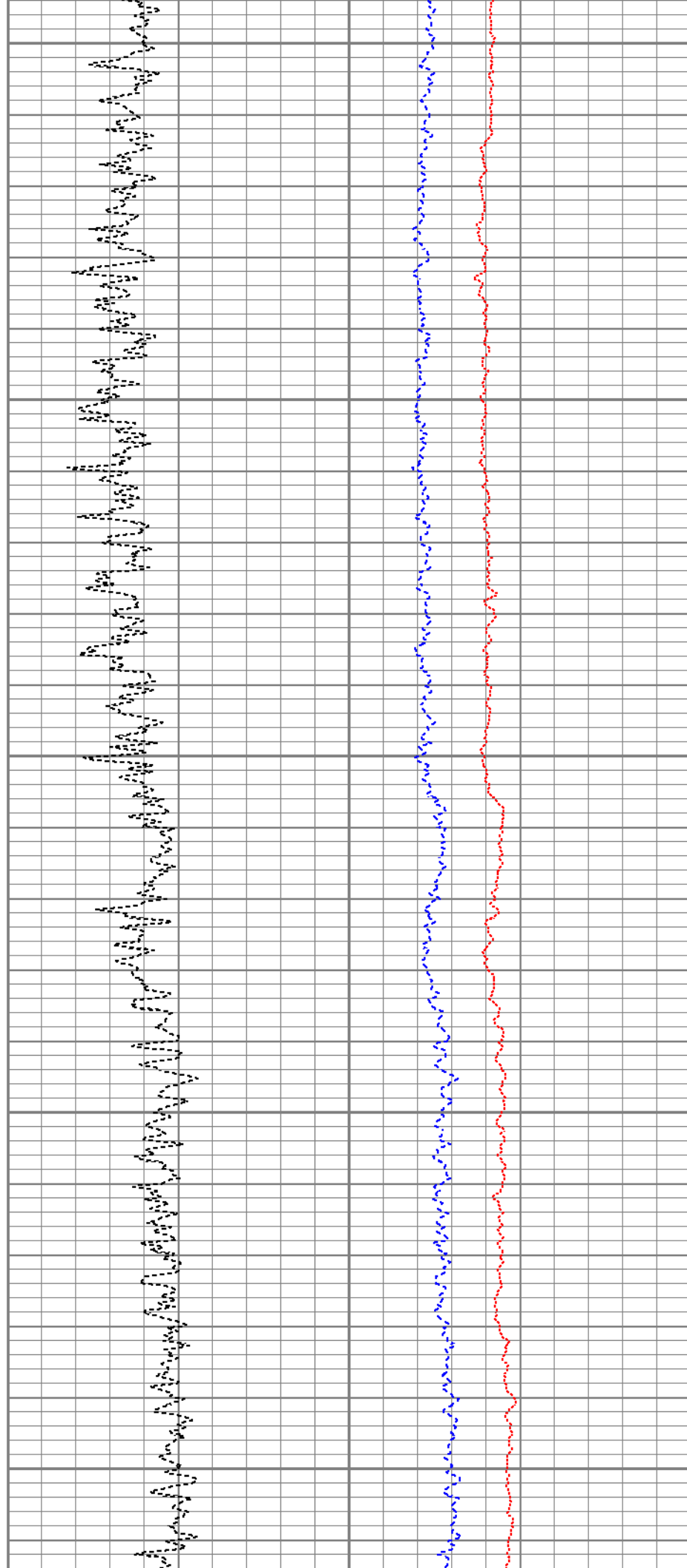
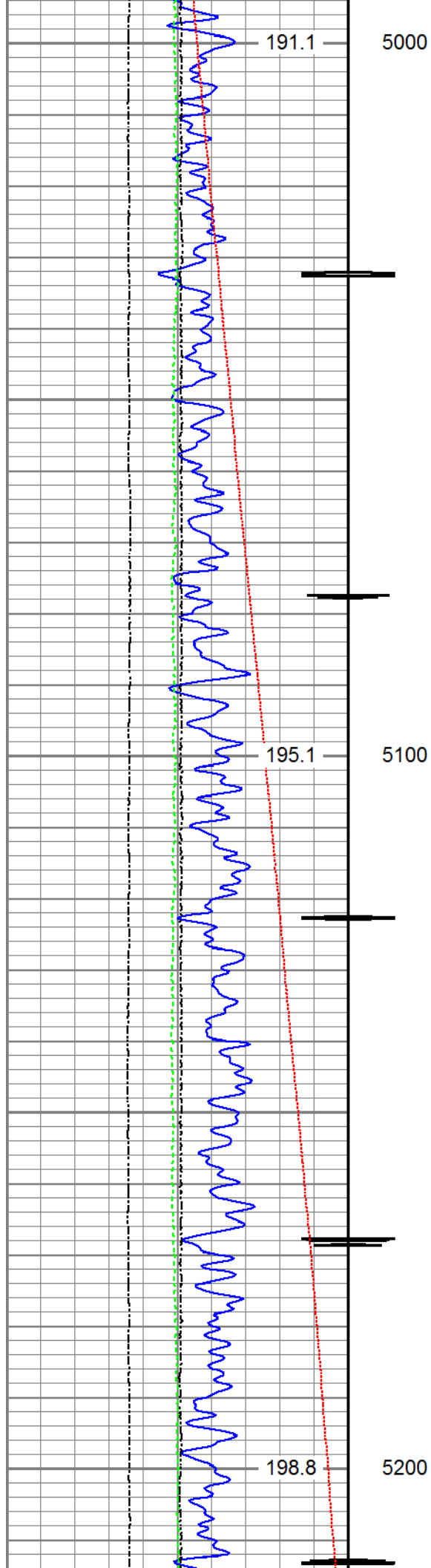


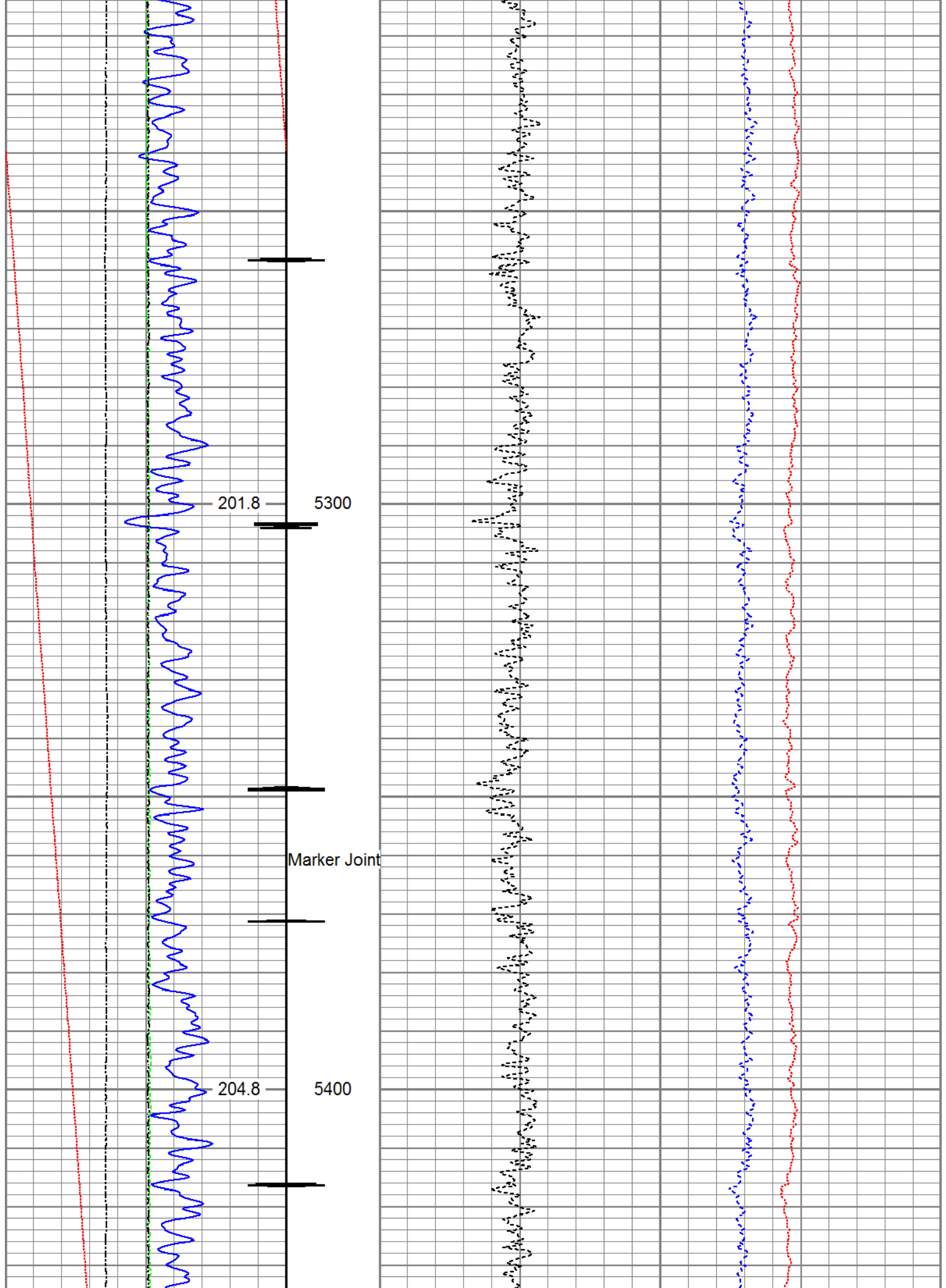


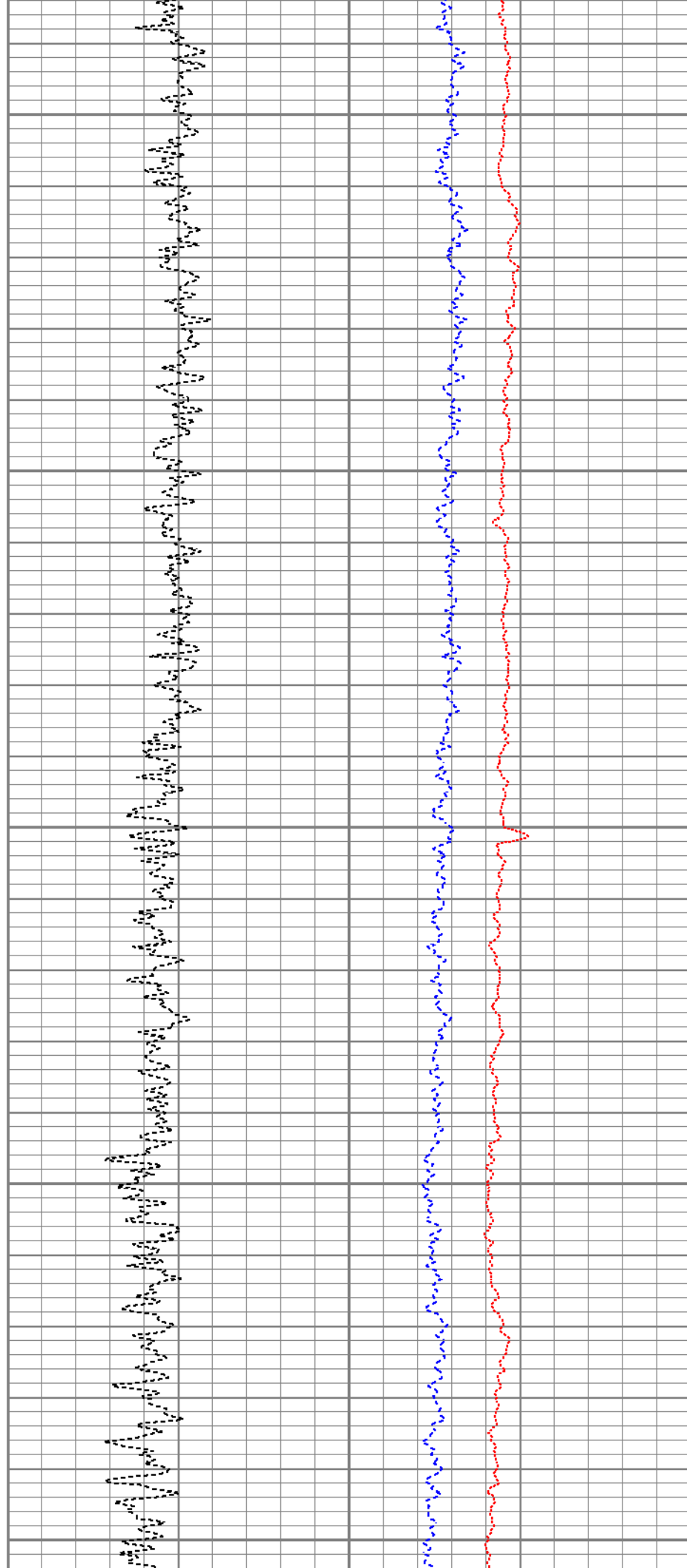
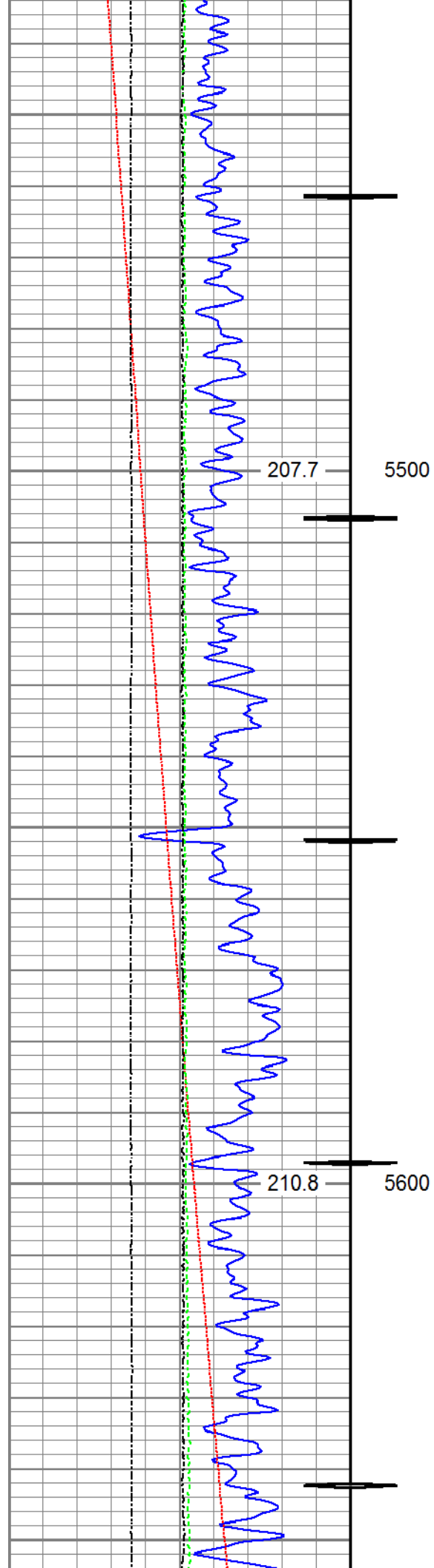


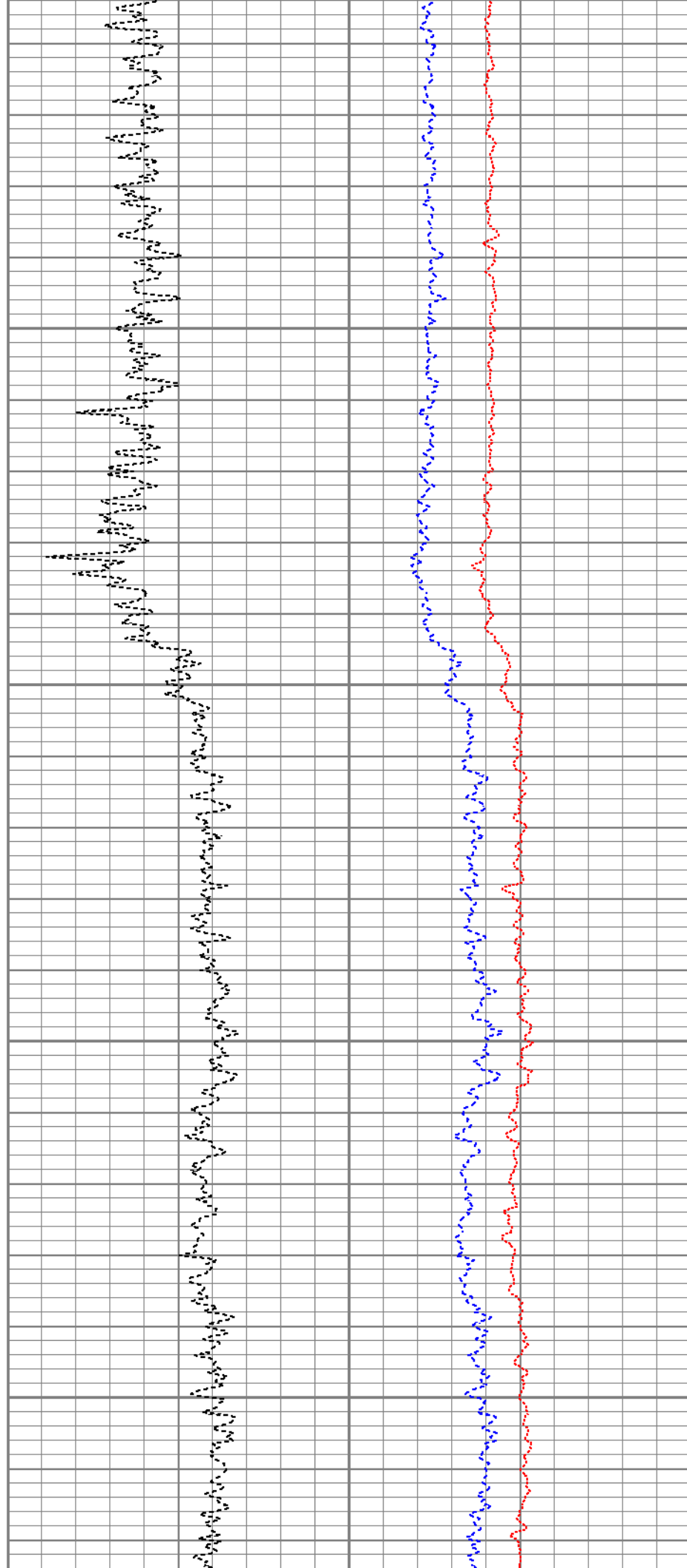
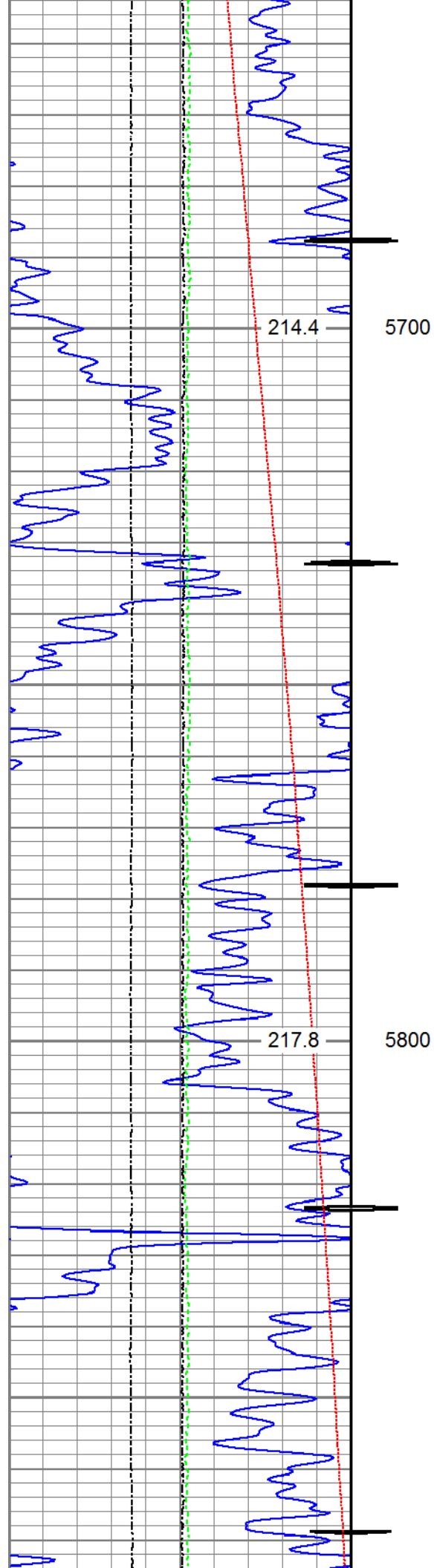


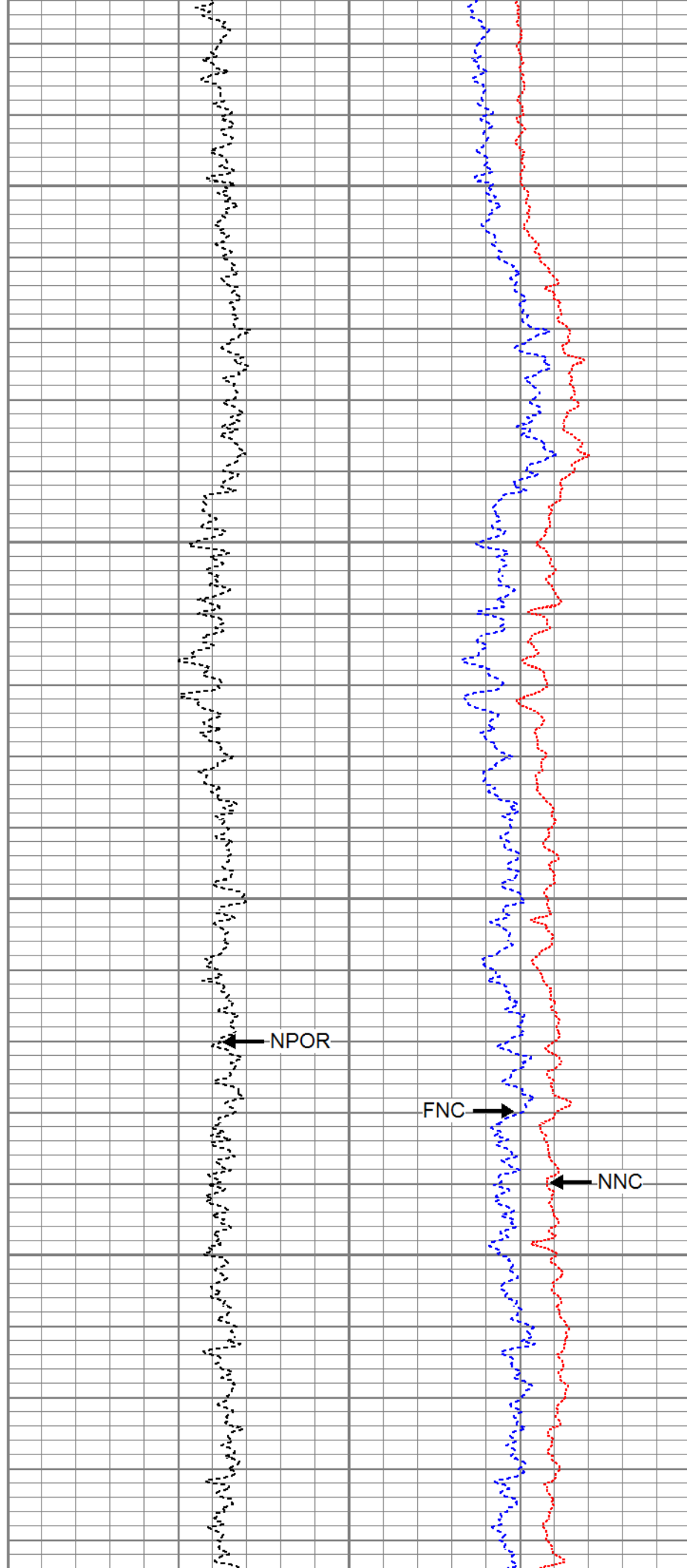
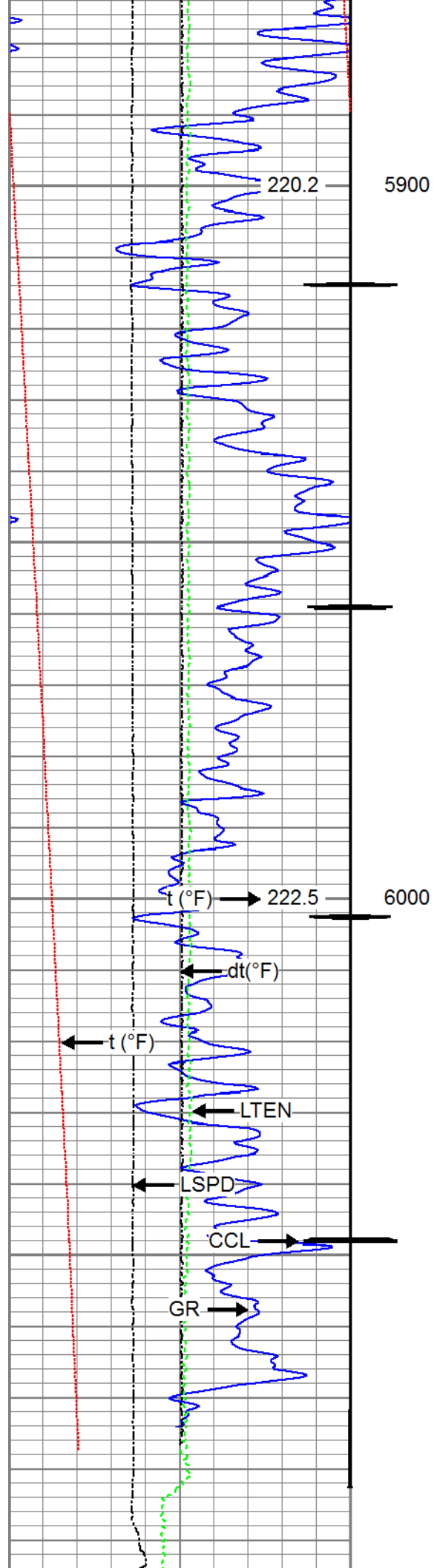














			6100						
0	Gamma Ray (GAPI)	120		60	Neutron Porosity (pu)	0	0	Far Neutron (cps)	1000
	Casing Collar Locator								
0	Temperature (degF)	20							
-100	Line Speed (ft/min)	100							
0	Line Tension (lb)	2000							
	Differential Temperature								
-2	(degF)	2							

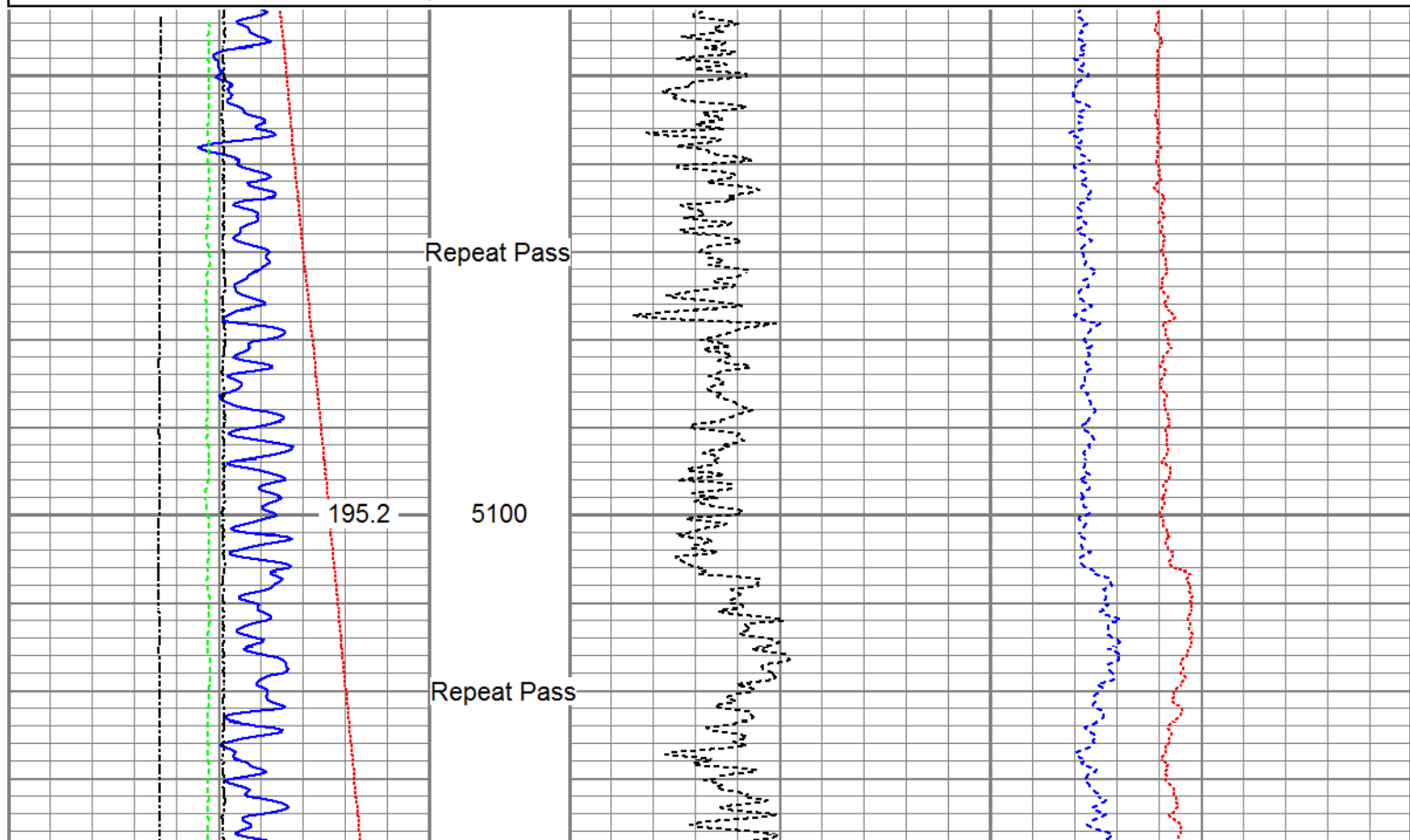


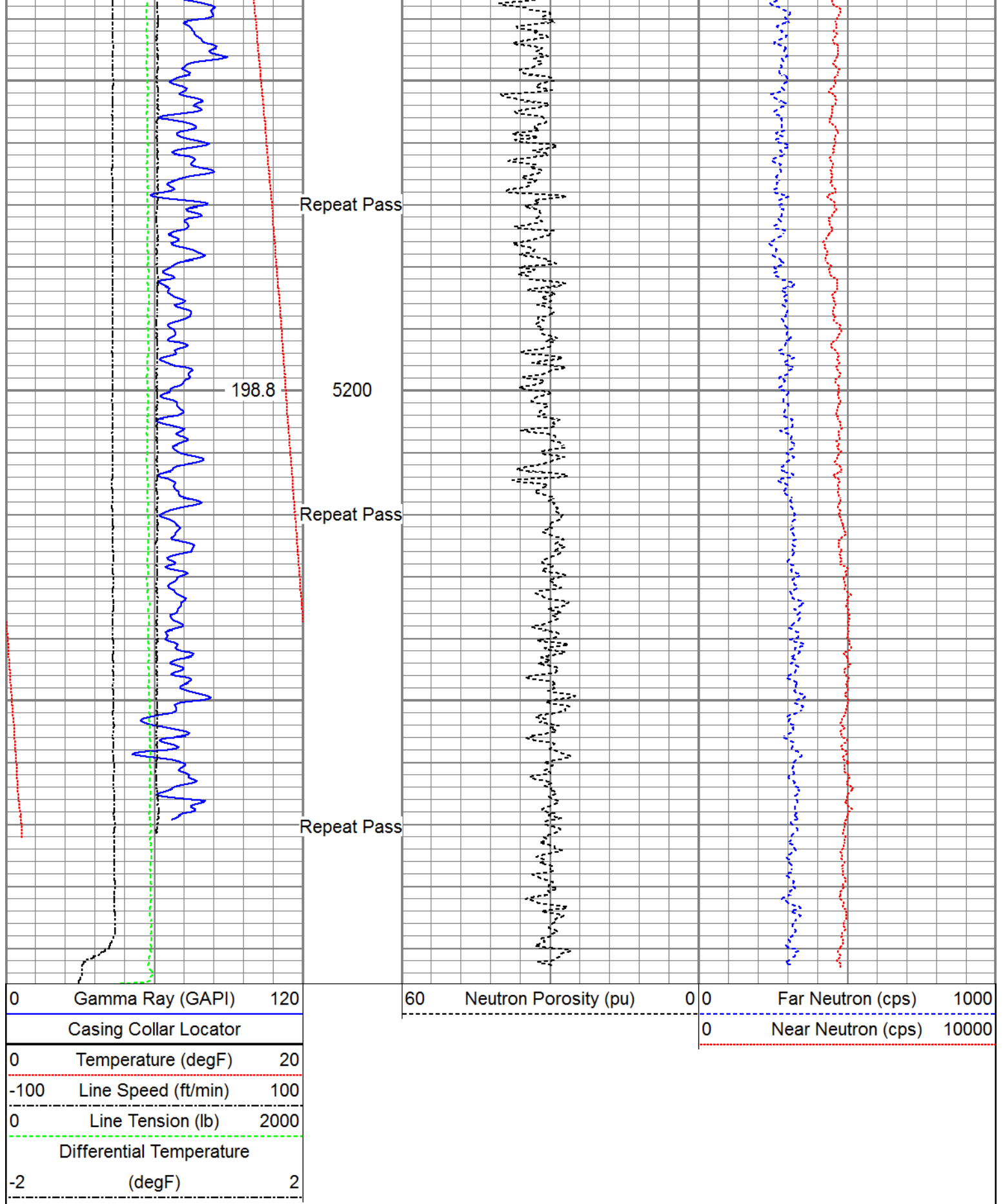
## Repeat Pass


Recorded With 1500 PSI Surface Induced Pressure

Database File 03-09-16\_whiting\_horsetail 07e-1802\_rbl\_cnl\03-09-16\_whiting\_horsetail 07e-1802\_rbl\_cnl\_w8.db  
Dataset Pathname Repeat  
Presentation Format fmc\_cnl\_sx  
Dataset Creation Wed Mar 09 09:54:06 2016  
Charted by Depth in Feet scaled 1:240

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





Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
			Titan_Electric_Cable_Heads-Titan_1-11/16"	1.03	1.69	5.40
			Electric Cable Head with 1" Fishing Neck			
			UW_AGS-UW_AGS_001 (219135)	0.21	1.69	1.00
			Sondex Adapter - GO Box to Sondex Pin			

			UW_XTU-UW_XTU_002 (219135) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50
GR	24.49		UW_PGR-UW_PGR_020 (10013899) Production Gamma Ray	1.92	1.69	9.50
TEMP	23.10		UW_PRT-PRT_016 (10025097) Platinum Resistance Thermometer	1.04	1.69	5.20
CCL	21.85		UW_CCL-UW_CCL_028 (10026420) 3-1/8" Ultrawire Casing Collar Locator	1.61	3.13	36.00
			UW_PRC-DSS_RAC 5 Arm 2-3/4" Roller Centralizer	2.55	2.75	32.00
CBLROT	14.45		UW_RBT-UW_RBT_004 (10013454) Sondex Ultrawire 3-1/8" Radial Bond Tool	9.48	3.13	140.00
WVFS8	14.45					
WVFS7	14.45					
WVFS6	14.45					
WVFS5	14.45					
WVFS4	14.45					
WVFS3	14.45					
WVFS2	14.45					
WVFS1	14.45					
WVF3FT	14.45					
WVF5FT	13.45					
CBLTEMP	9.32		UW_PRC-PRC_057 4 Arm 2-3/4" Production Roller Centralizer	2.71	2.75	32.00
			UW_CNL-UW_CNL_007 (1005) Sondex Compensated Neutron Logging Tool	6.61	1.69	30.00
CNLSC	1.53					
CNSSC	1.12					
HVOLTX	0.00					
ITEMPX	0.00					
TSTAMP	0.00					
Dataset: 03-09-16_Whiting_Horsetail 07E-1802_RBL_CNL_W8.db: field/well/run1/Main.1 Total length: 28.74 ft Total weight: 297.60 lb O.D.: 3.13 in						

Calibration Report	
Database File	C:\ProgramData\Warrior\Data\03-09-16_Whiting_Horsetail 07E-1802_RBL_CNL\03-09-16_Whiting_H
Dataset Pathname	Main.1
Dataset Creation	Wed Mar 09 14:00:29 2016

Compensated Neutron Calibration Report						
Serial Number:	1005					
Tool Model:	UW_CNL_007					
Master Calibration	Sun Feb 07 11:39:11 2016					
Detector	Readings					
Short Space	240.87	cps				
Long Space	303.55	cps				
Ratio	Measured	Reference				
CNRAT Gain K	0.8150	Sleeve: 1.0000				
	1.0271					
Before Survey						
Detector	Readings					
Short Space		cps				
Long Space		cps				
Ratio	Measured	Reference				
After Survey						
Detector	Readings					
Short Space		cps				
Long Space		cps				
Ratio	Measured	Reference				
Segmented Cement Bond Log Calibration Report						
Serial Number:	10013454					
Tool Model:	UW_RBT_004					
Calibration Casing Diameter:	5.500	in				
Calibration Depth:	4.556	ft				
Master Calibration, performed (Derived):						
	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	-0.001	0.799	0.800	71.921	88.895	0.912
5FT	-0.004	0.800	0.800	71.921	88.529	1.129
S1	-0.002	0.805	0.000	100.000	123.958	0.216
S2	-0.003	0.808	0.000	100.000	123.304	0.388
S3	-0.003	0.802	0.000	100.000	124.272	0.344
S4	-0.003	0.835	0.000	100.000	119.246	0.397
S5	-0.002	0.830	0.000	100.000	120.174	0.222
S6	-0.003	0.825	0.000	100.000	120.749	0.365
S7	-0.002	0.813	0.000	100.000	122.654	0.242
S8	-0.002	0.803	0.000	100.000	124.227	0.297
Temperature Calibration Report						
Serial Number:	10025097					

Tool Model:  
Performed:

PRT\_016  
Sun Oct 11 12:34:58 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: 10013899  
Tool Model: UW\_PGR\_020  
Performed: (Not Performed)

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps  
Calibrator Reading: 1.0 cps

Sensitivity: 1.0000 GAPI/cps



Company Whiting Oil & Gas Corporation  
Well Horsetail 07E-1802  
Field Wildcat  
County Weld  
State Colorado