

## Compensated Neutron Gamma Ray Casing Collar Log

**Company** Kerr-McGee Oil & Gas Onshore, L.P.

**Well** Badger State 32C-3HZ

**Field** Wattenberg

**County** Weld **State** Colorado

**Location:** API #: 05-123-36463

SEC 15 TWP 1N RGE 68W

**Permanent Datum** Ground Level **Elevation** 5141'

**Log Measured From** Kelly Bushing **20 FT**

**Drilling Measured From** Kelly Bushing

**Other Services**  
JB/GR  
RBP

**Elevation**  
K.B. 5161'  
D.F. ---  
G.L. 5141'

**Company** Kerr-McGee Oil & Gas Onshore, L.P.  
**Well** Badger State 32C-3HZ  
**Field** Wattenberg  
**County** Weld  
**State** Colorado

<b>Date</b>	21-NOV-2020			
<b>Run Number</b>	One			
<b>Depth Driller</b>	15953 FT			
<b>Depth Logger</b>	7260 FT			
<b>Bottom Logged Interval</b>	7259 FT			
<b>Top Log Interval</b>	Surface			
<b>Open Hole Size</b>	8.75"			
<b>Type Fluid</b>	Water			
<b>Density / Viscosity</b>	8.34 lb/gal			
<b>Max. Recorded Temp.</b>	226°F			
<b>E. Estimated Cement Top</b>	---			
<b>Time Well Ready</b>	ROA			
<b>Time Logger on Bottom</b>	11:05			
<b>Equipment Number</b>	HD-0325			
<b>Location</b>	Platteville, CO			
<b>Recorded By</b>	Jason Morrison			
<b>Witnessed By</b>	Chris Haynes			
<b>Borehole Record</b>		<b>Tubing Record</b>		
<b>Run Number</b>	<b>Bit</b>	<b>From</b>	<b>To</b>	<b>Size</b>
				<b>Weight</b>
				<b>From</b>
				<b>To</b>
<b>Casing Record</b>	<b>Size (in)</b>	<b>Wgt (lbs/ft)</b>	<b>Grade</b>	<b>Top</b>
<b>Surface Casing</b>	9 5/8	36	J-55	Surface
<b>Intermediate #1</b>	7	26	P-110	Surface
<b>Intermediate #2</b>				
<b>Liner</b>	4 1/2	11.6	HCP-110	7210 FT
				15943 FT

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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 Casing Tally reported Liner Top at 7210 FT  
Adjusted +5 FT to correlate with Liner Top  
Gauge Ring/Junk Basket ran to 7530 FT  
Retrievable Bridge Plug set at 7270 FT  
Log ran with 0 PSI Surface Induced Pressure  
Logging tools were clean and free of debris upon completion of operations

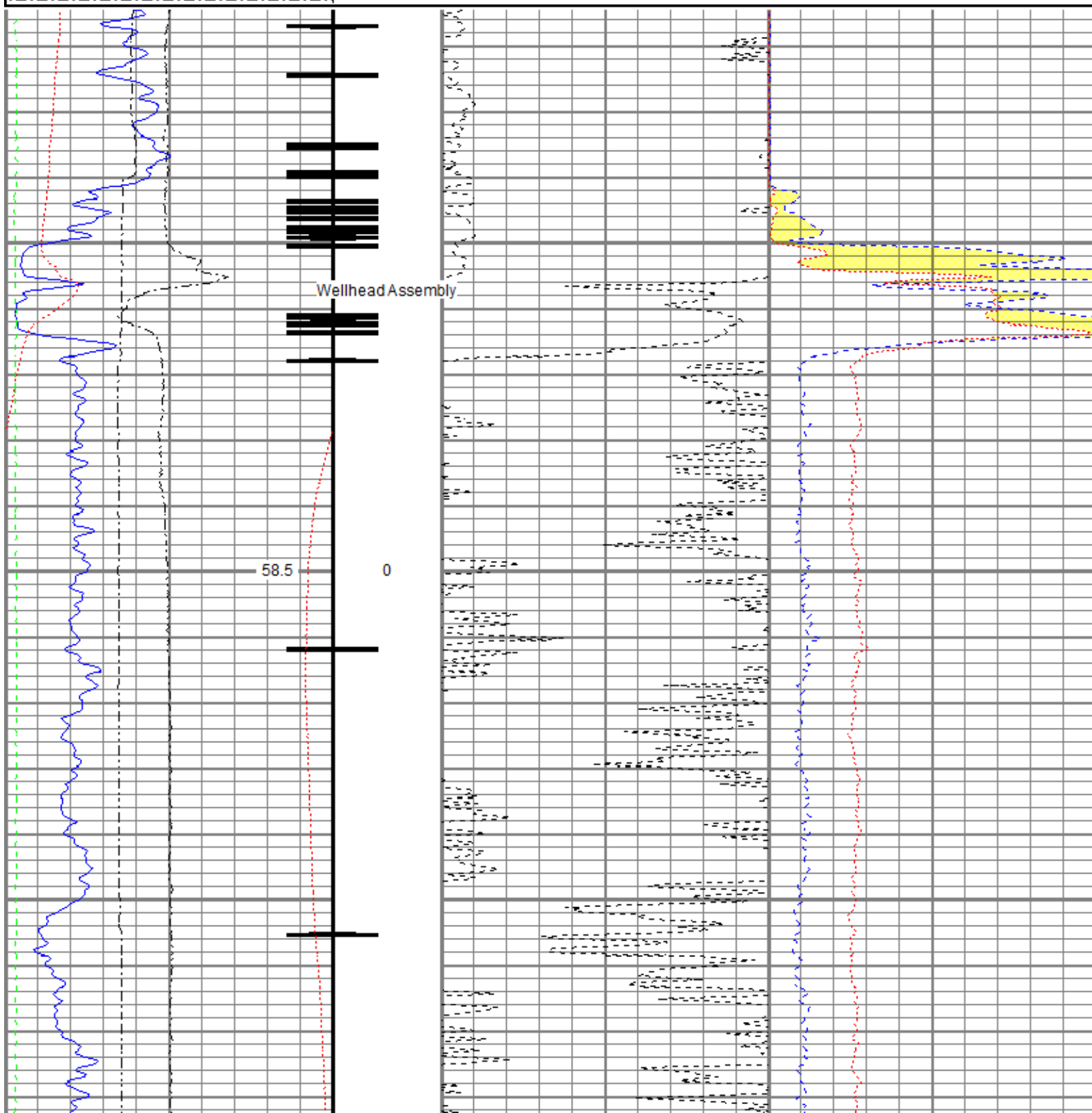
Thank you for choosing Reliance Oilfield Services, LLC!!

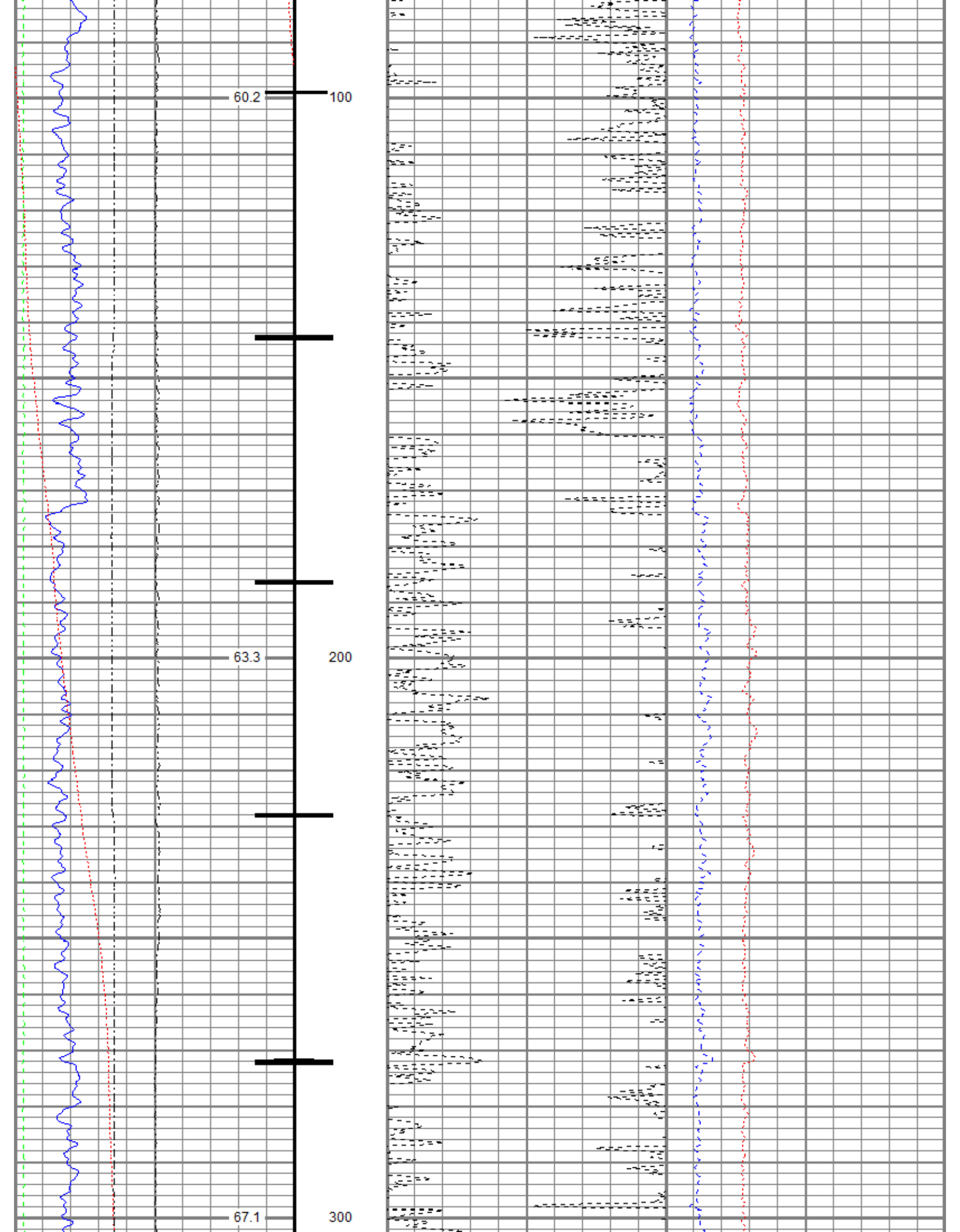
Main Pass

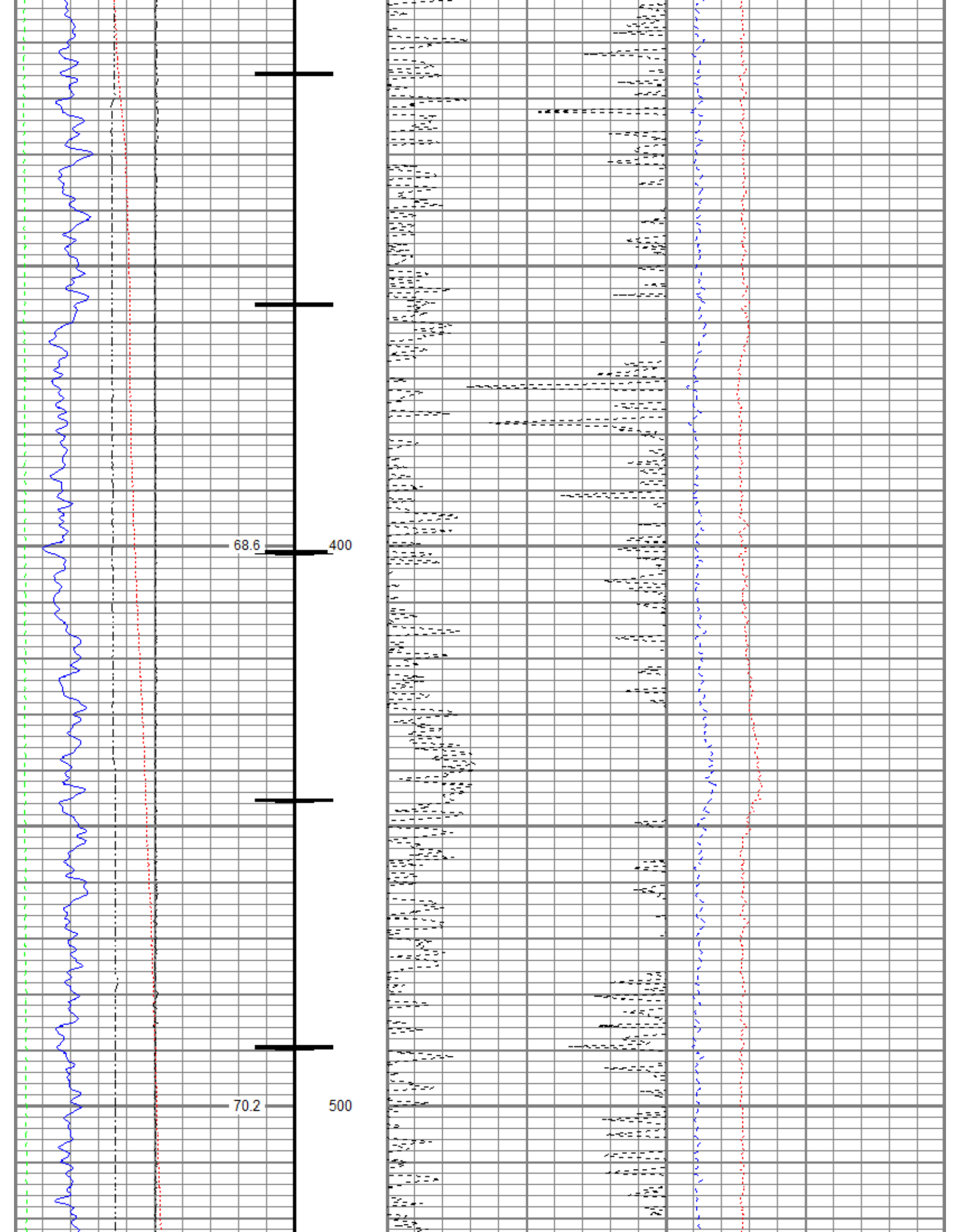
Database File	oxy_badger state 32c-3hz_cnl_11-21-20\0512336463_oxy_badger state 32c-3hz_cnl_11-21-20.db
Dataset Pathname	Main
Presentation Format	ros_cnl_sx
Dataset Creation	Sat Nov 21 11:00:55 2020
Charted by	Depth in Feet scaled 1:240

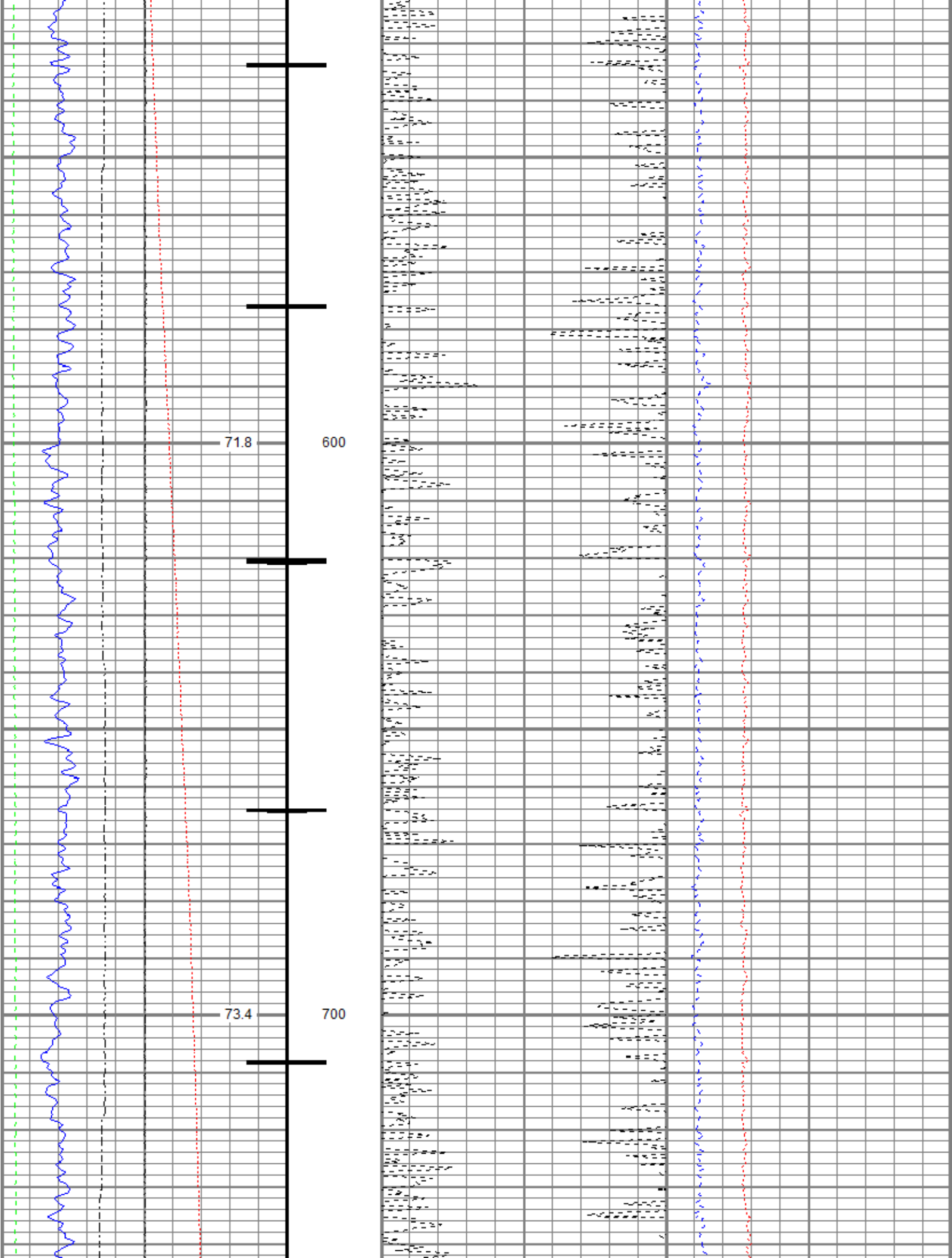
0	Gamma Ray (GAPI)	120
Casing Collar Locator		
0	Temperature (degF)	20
-100	Line Speed (ft/min)	100
0	Line Tension (lb)	2000
-2	Differential Temperature (degF)	2

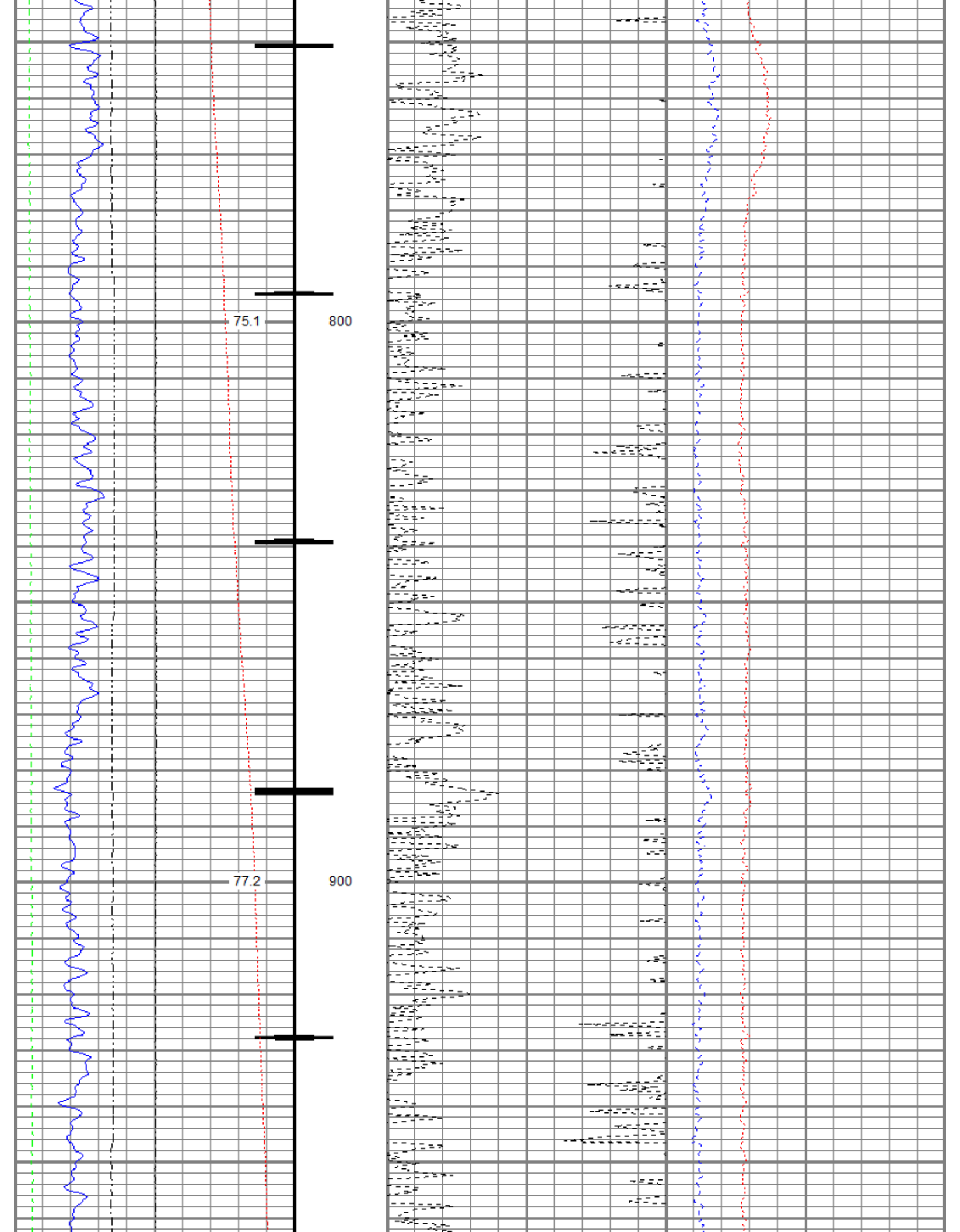
60	Neutron Porosity (pu)	0	0	Far Neutron (cps)	1000
			0	Near Neutron (cps)	10000



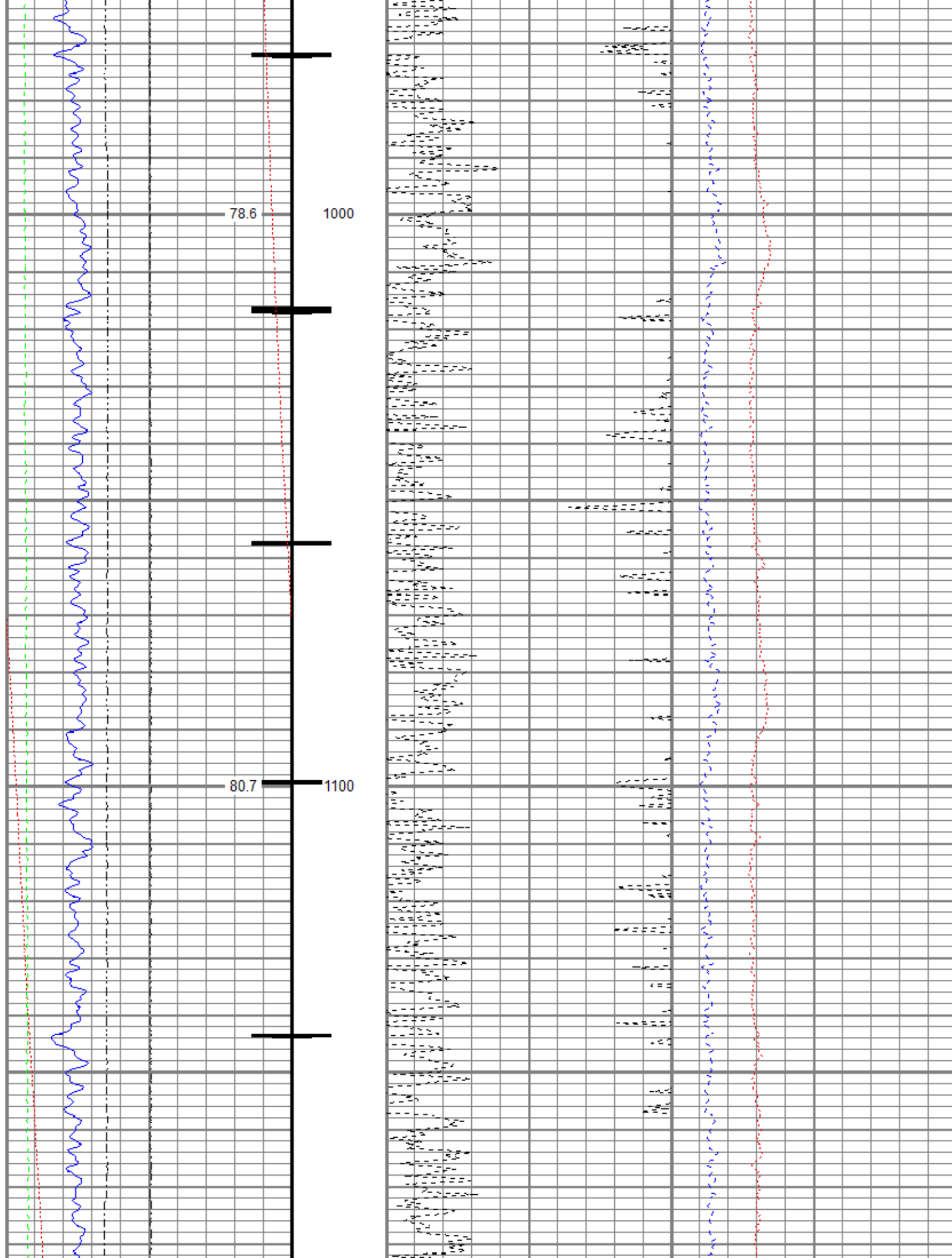


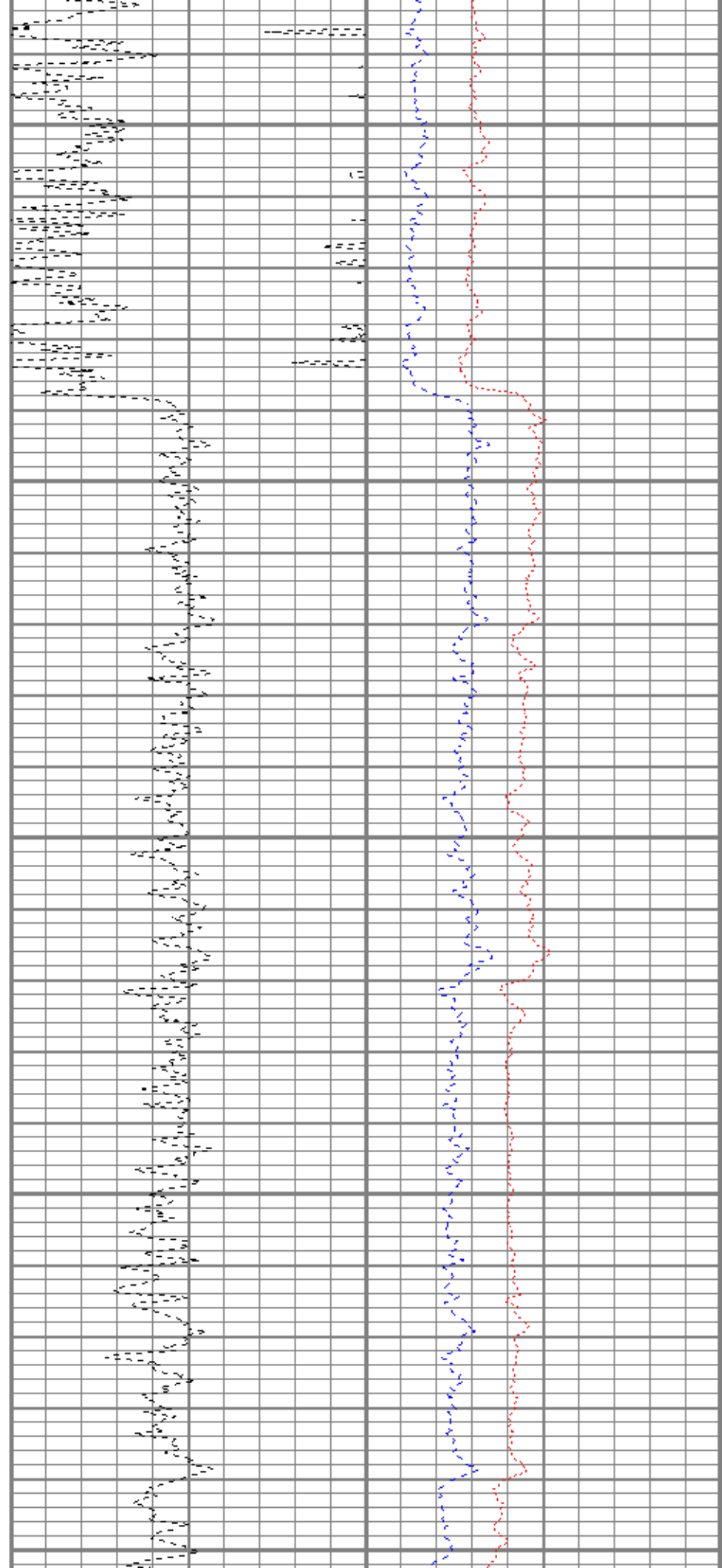
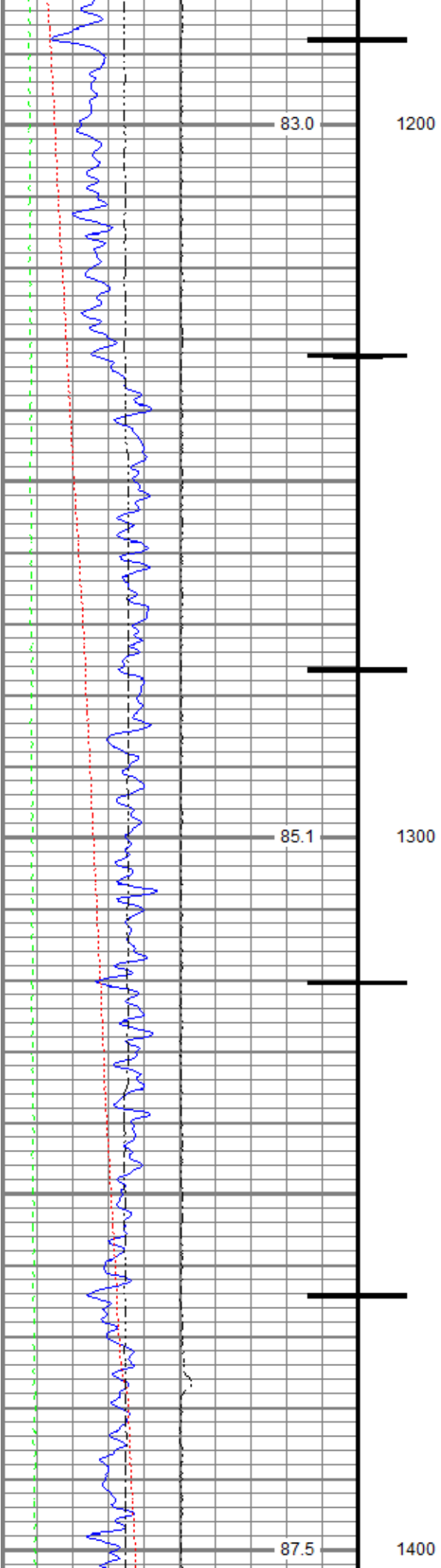




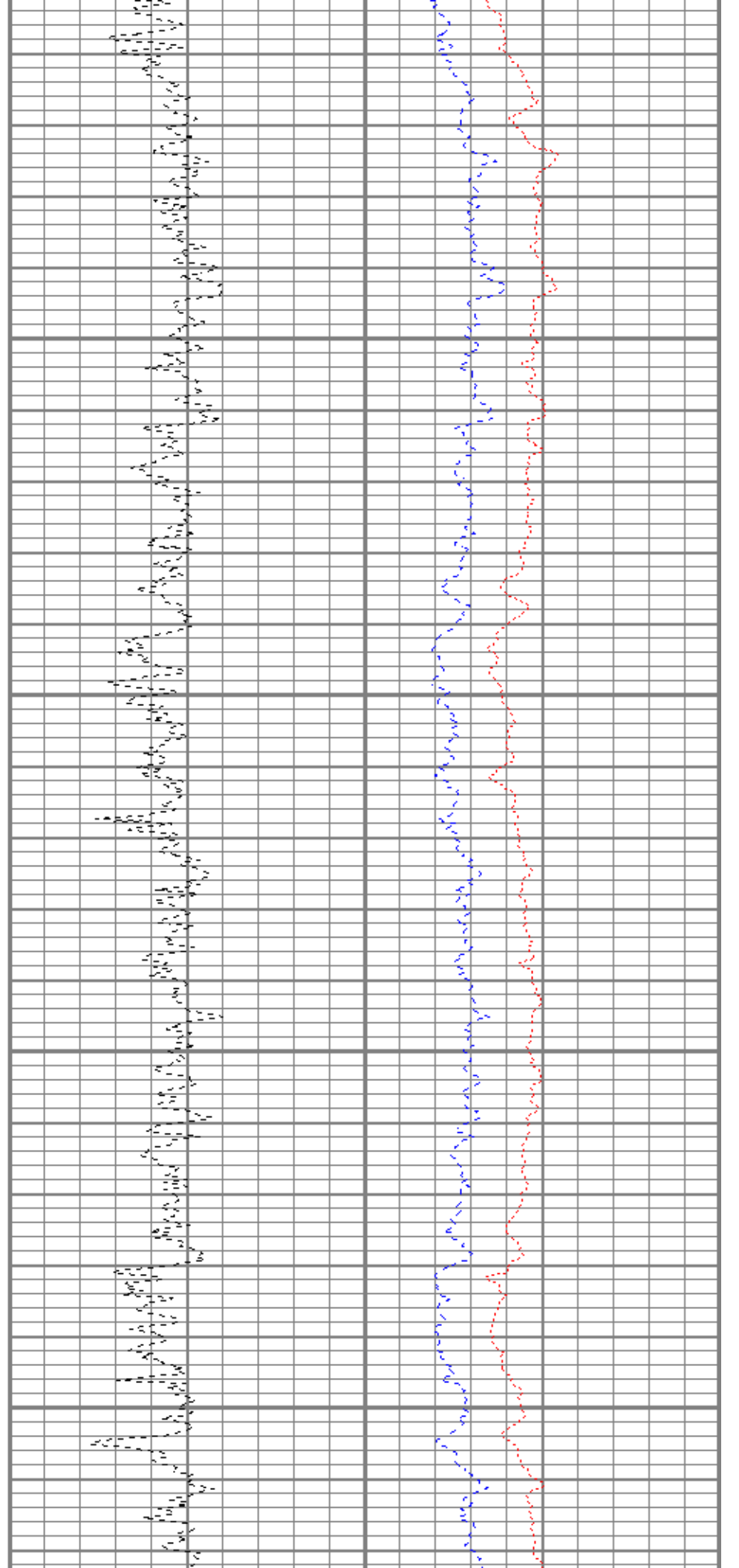
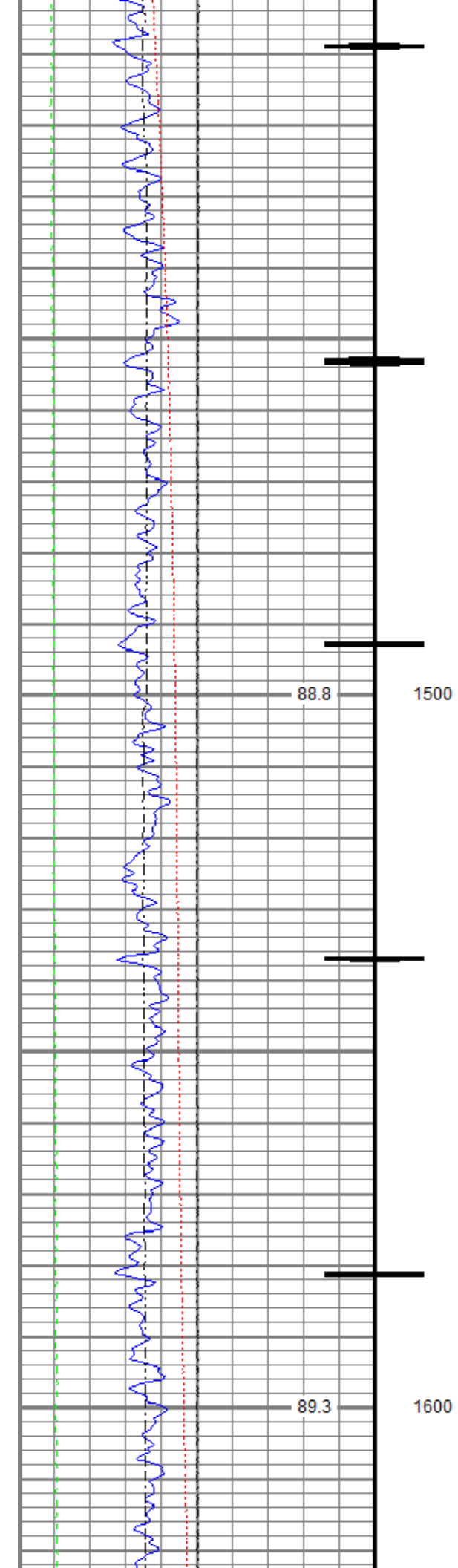


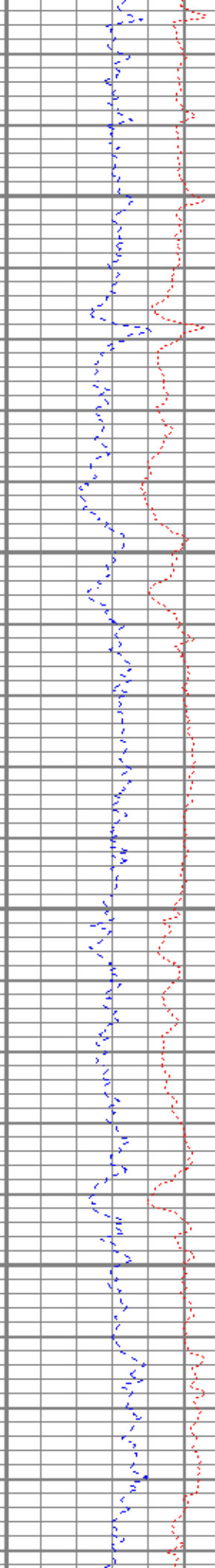
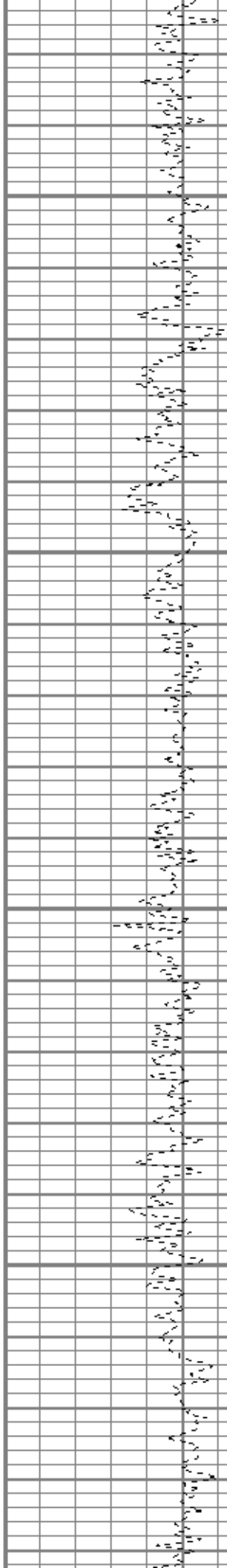
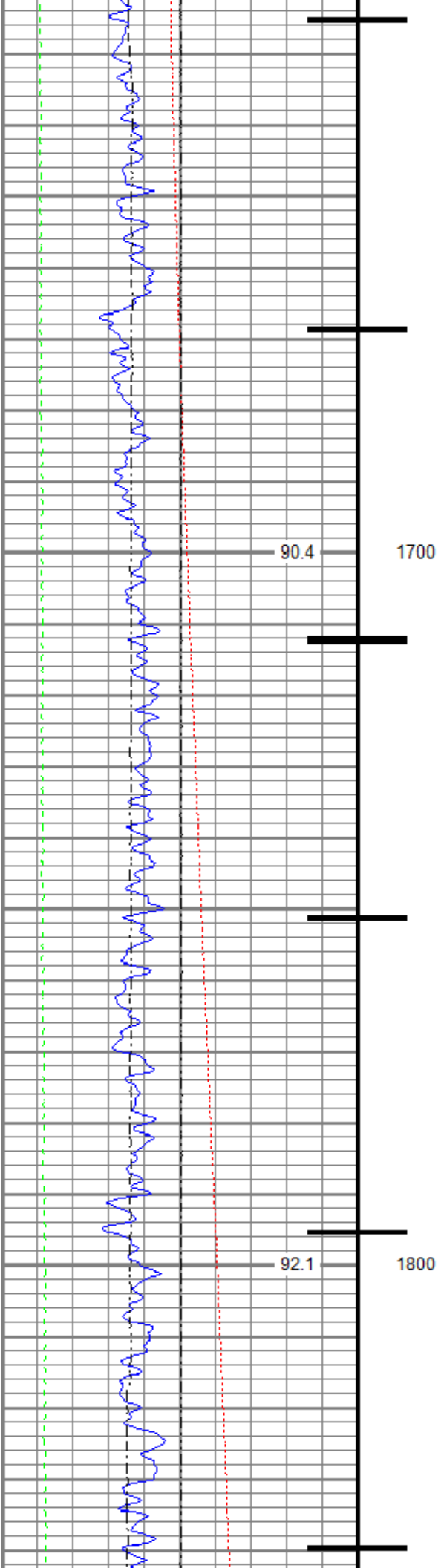


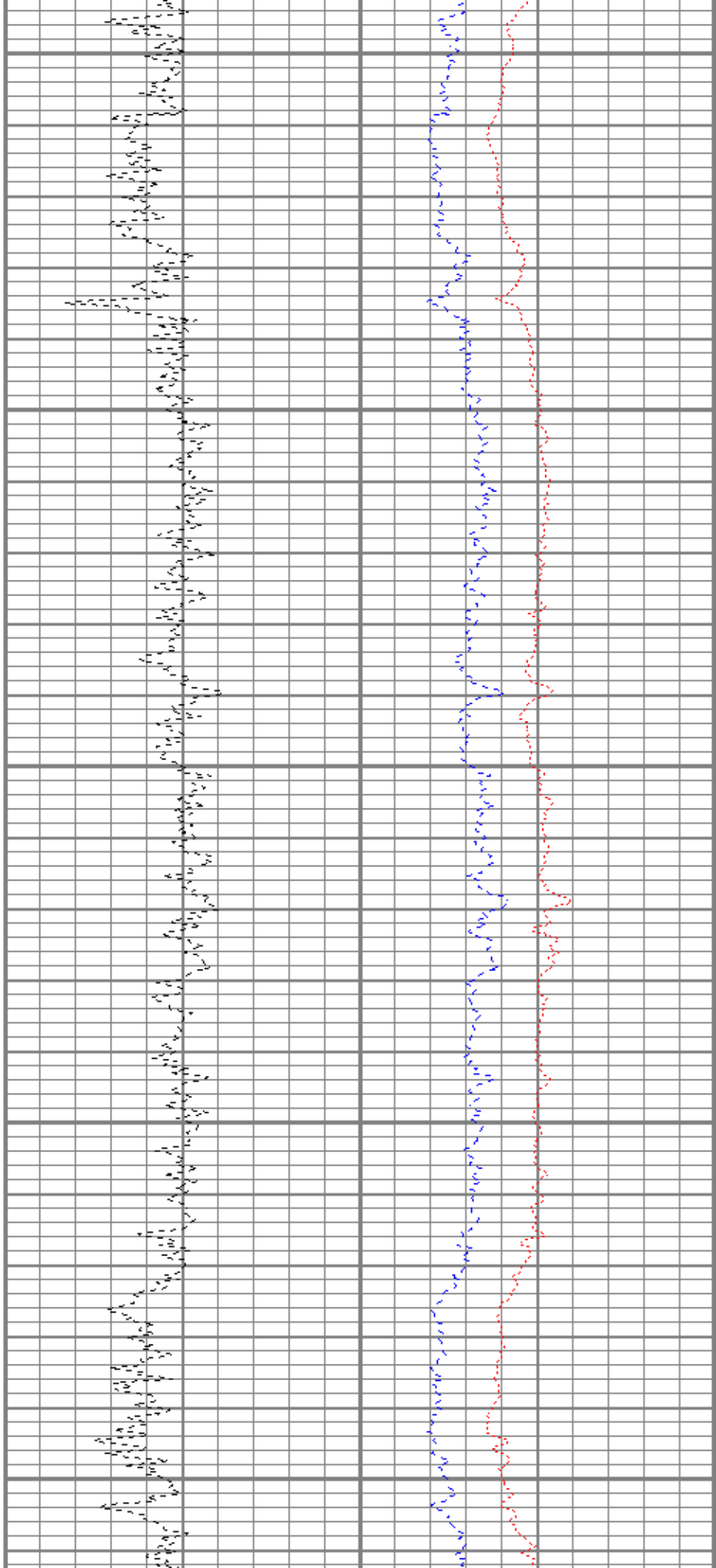
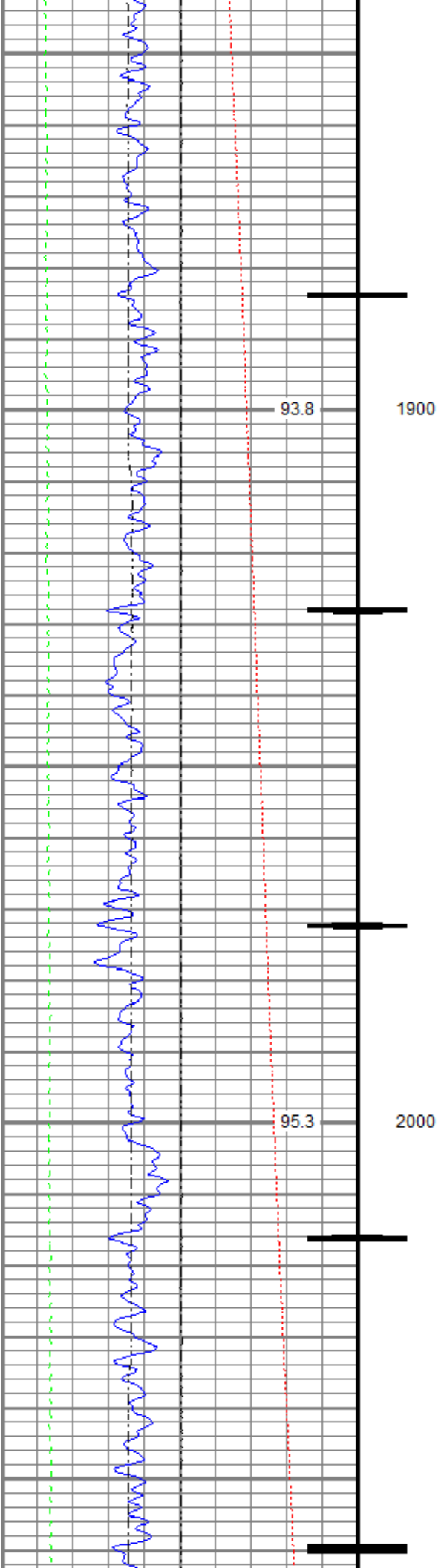


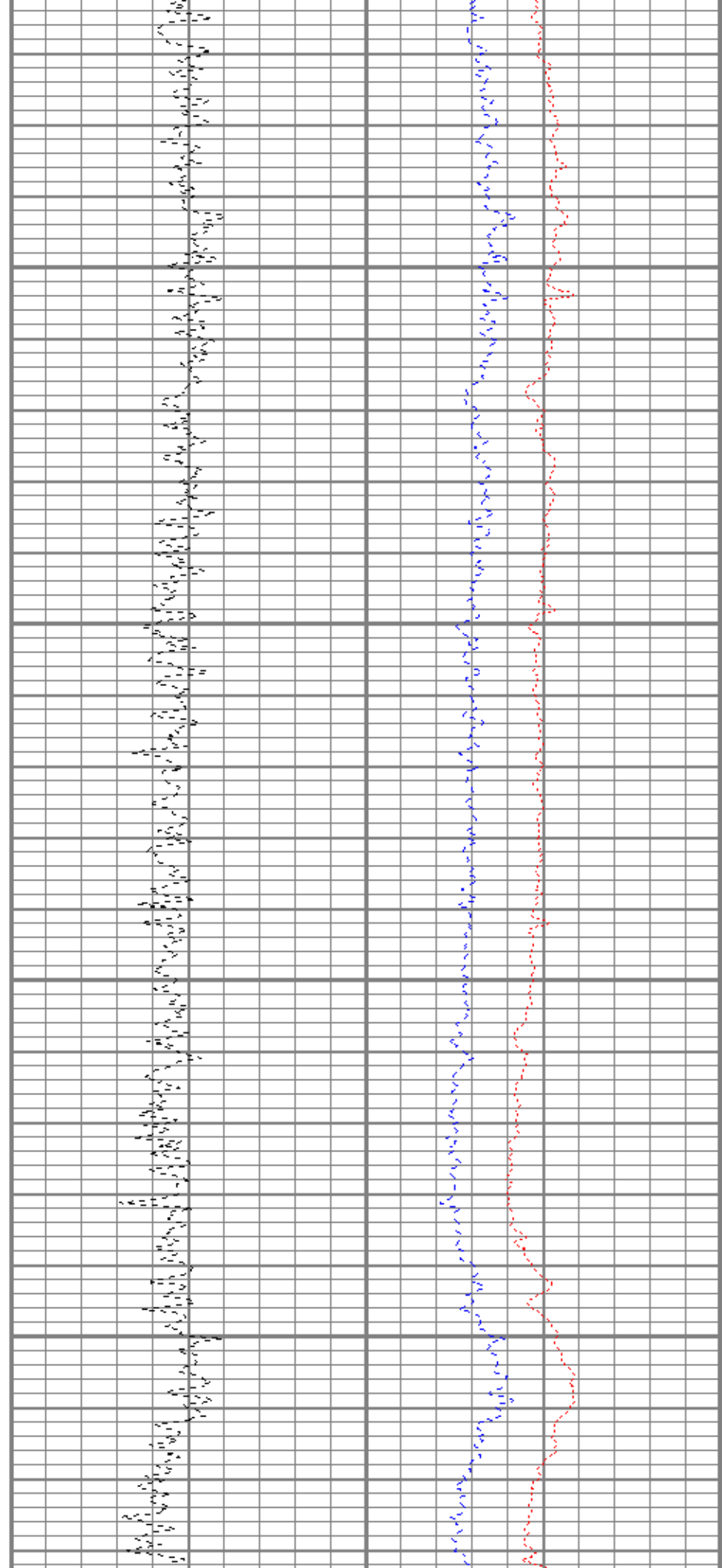
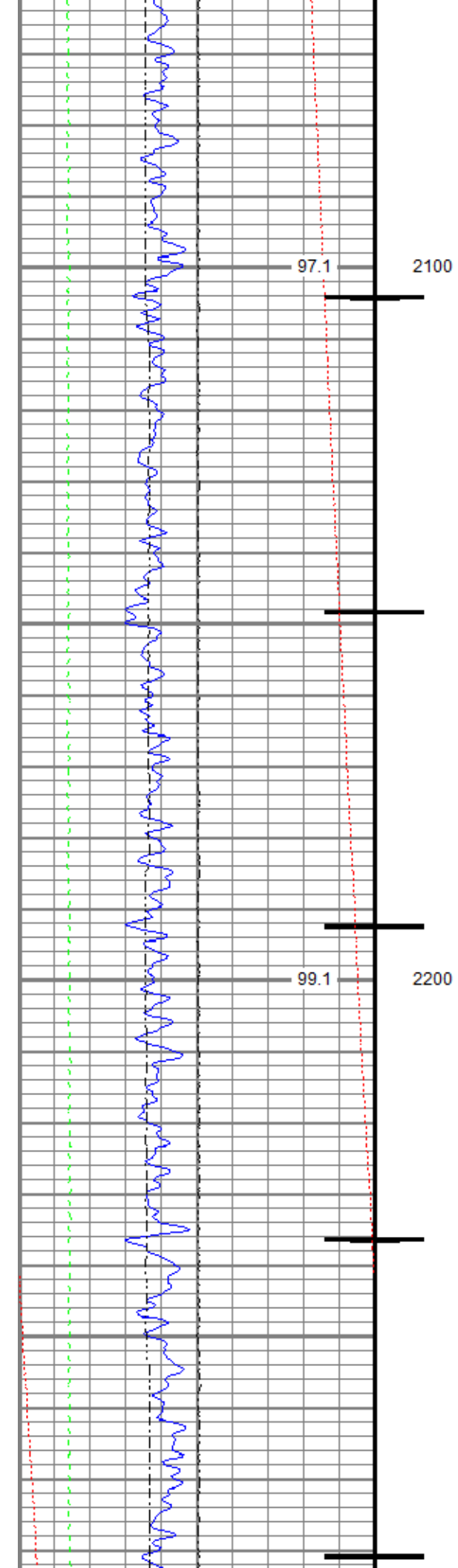


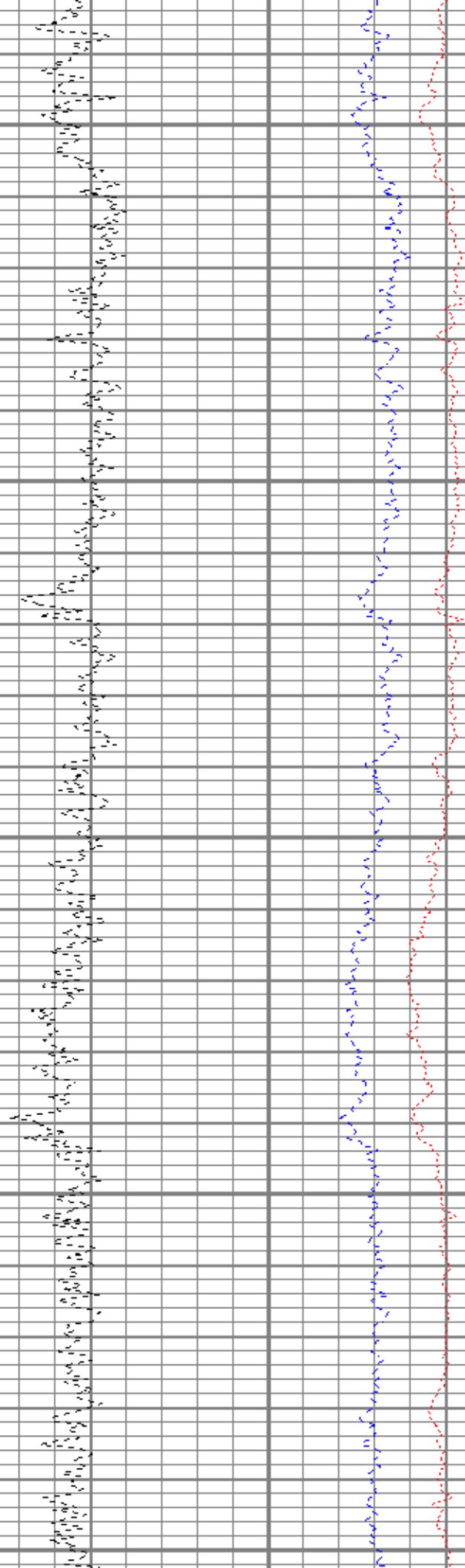
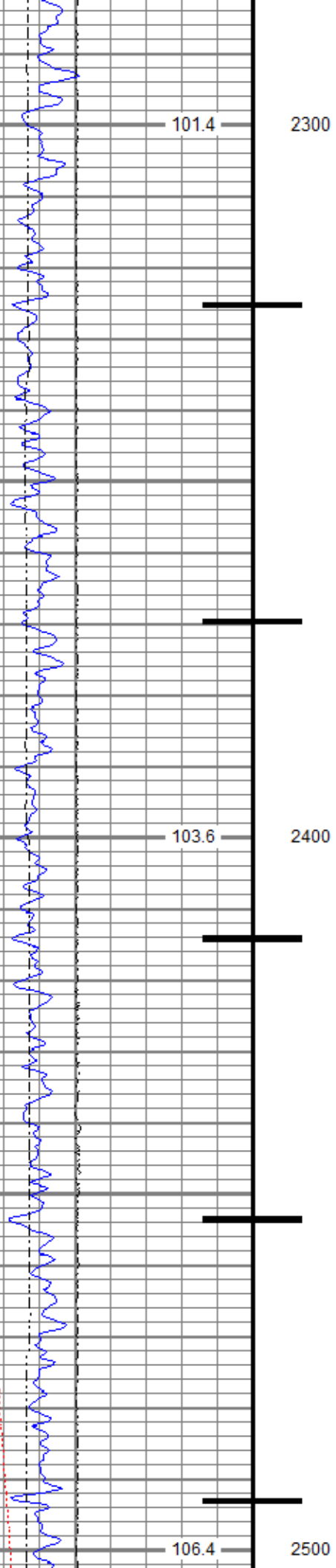


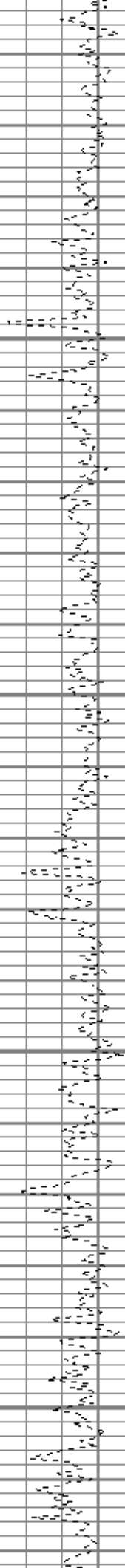
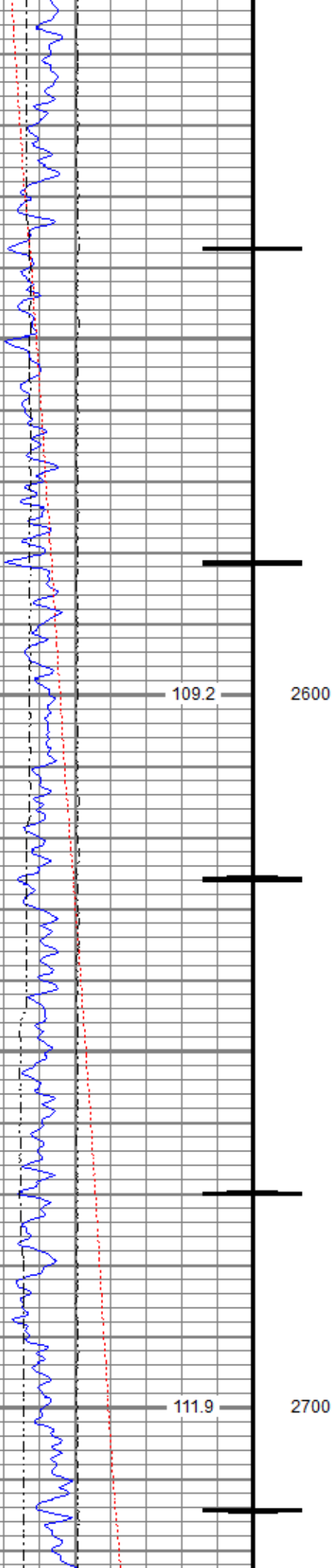


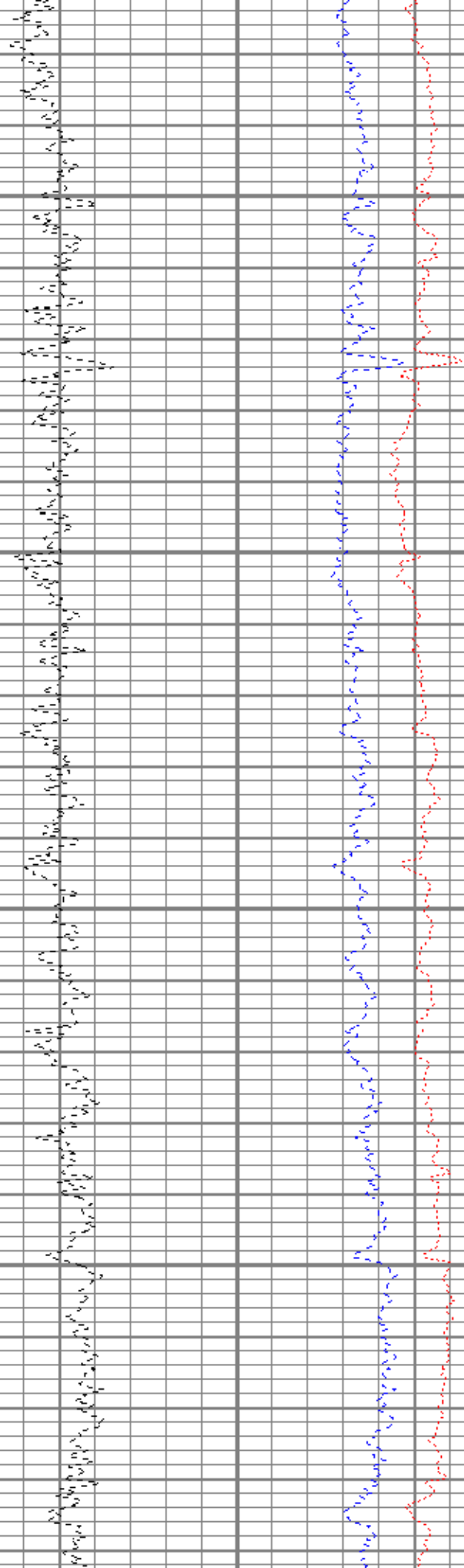
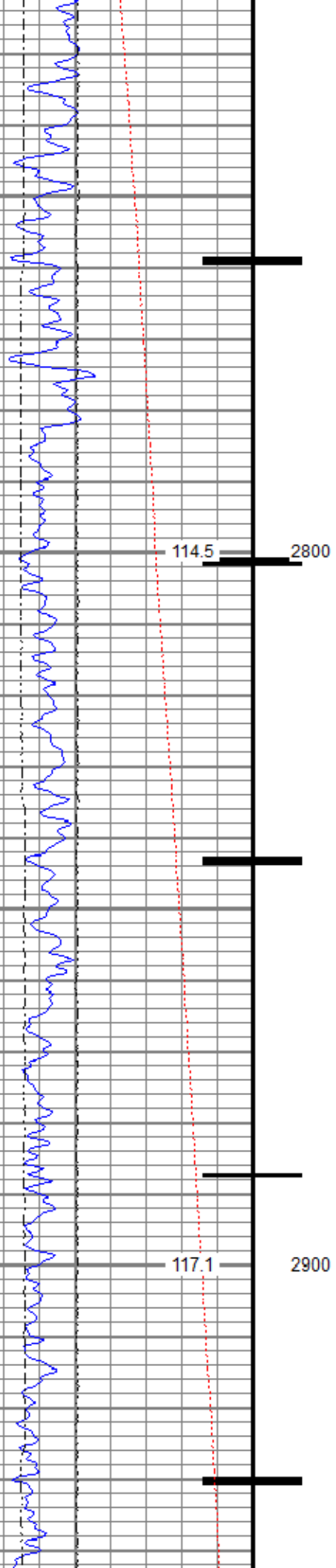




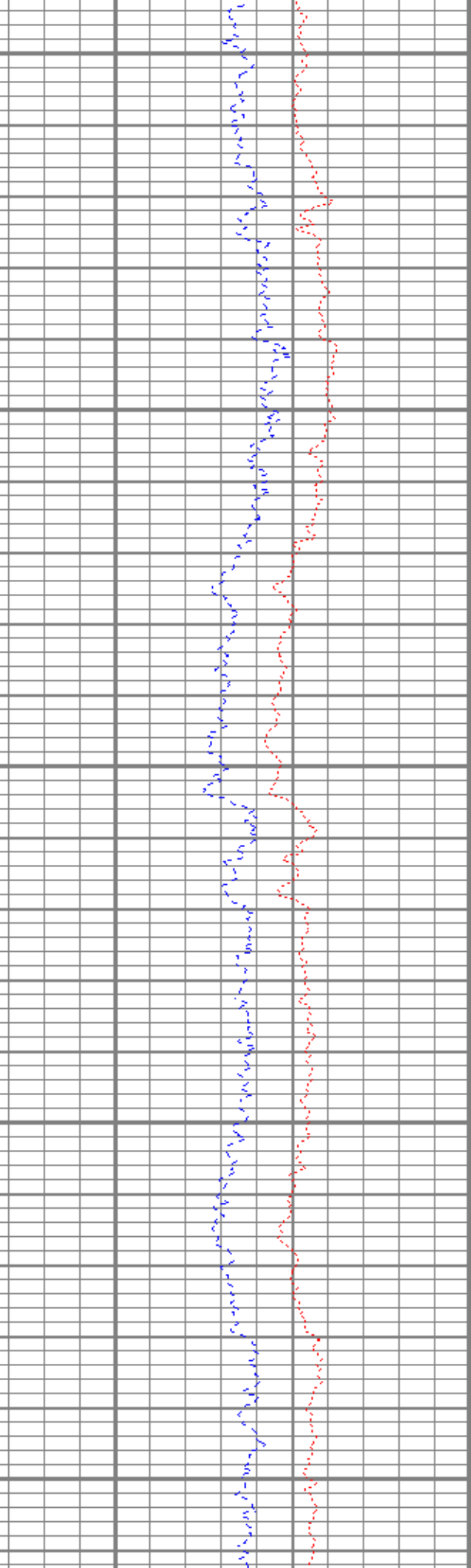
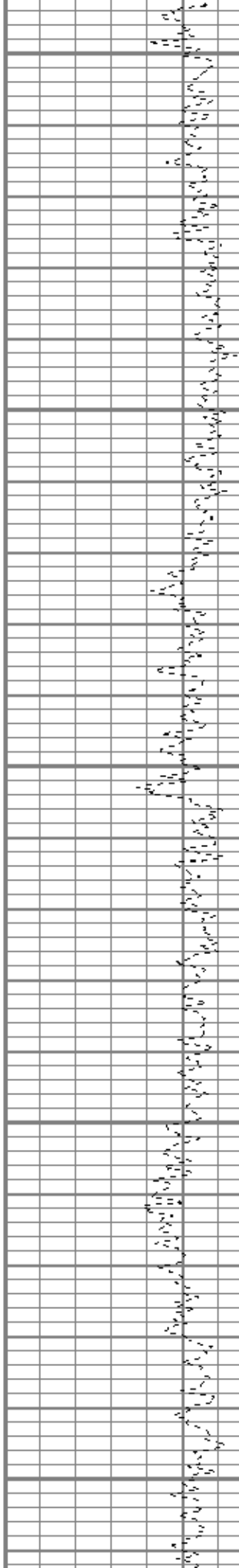
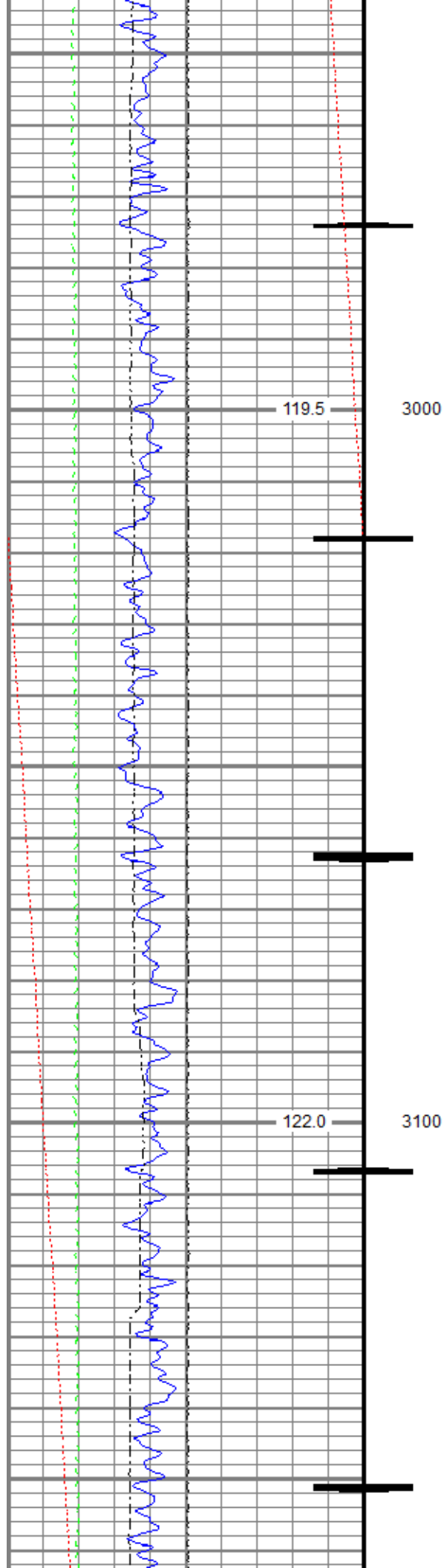


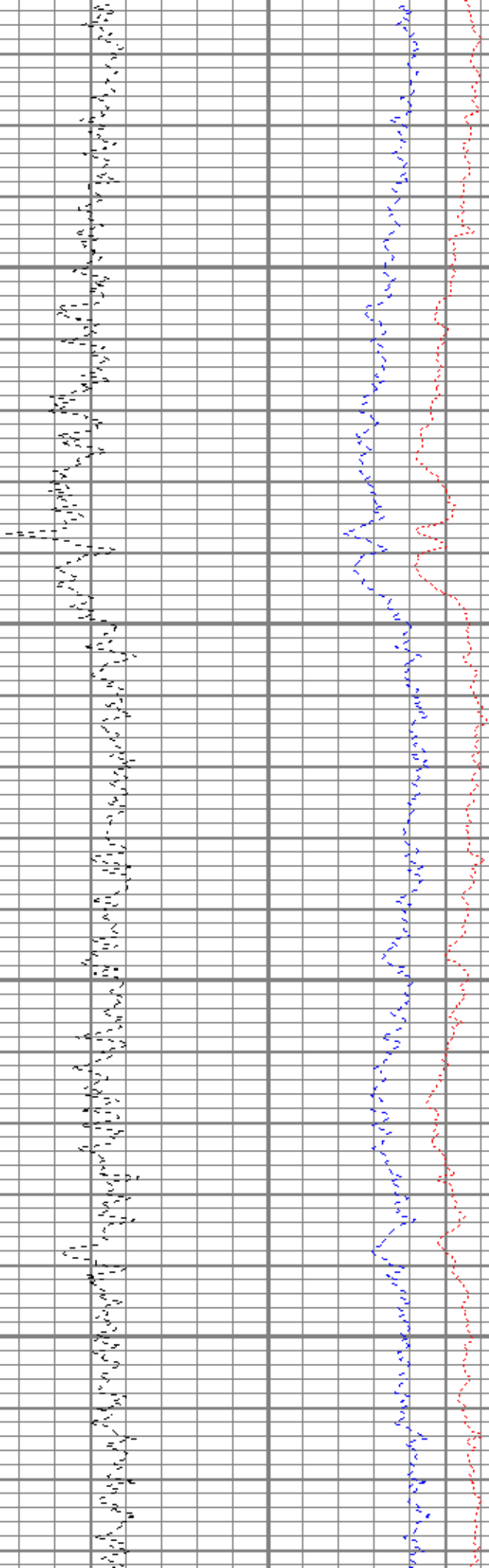
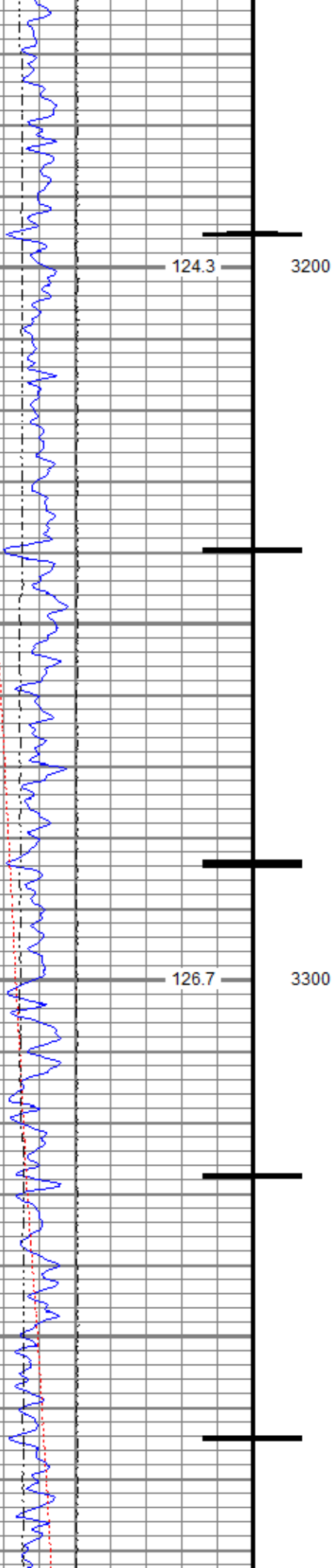


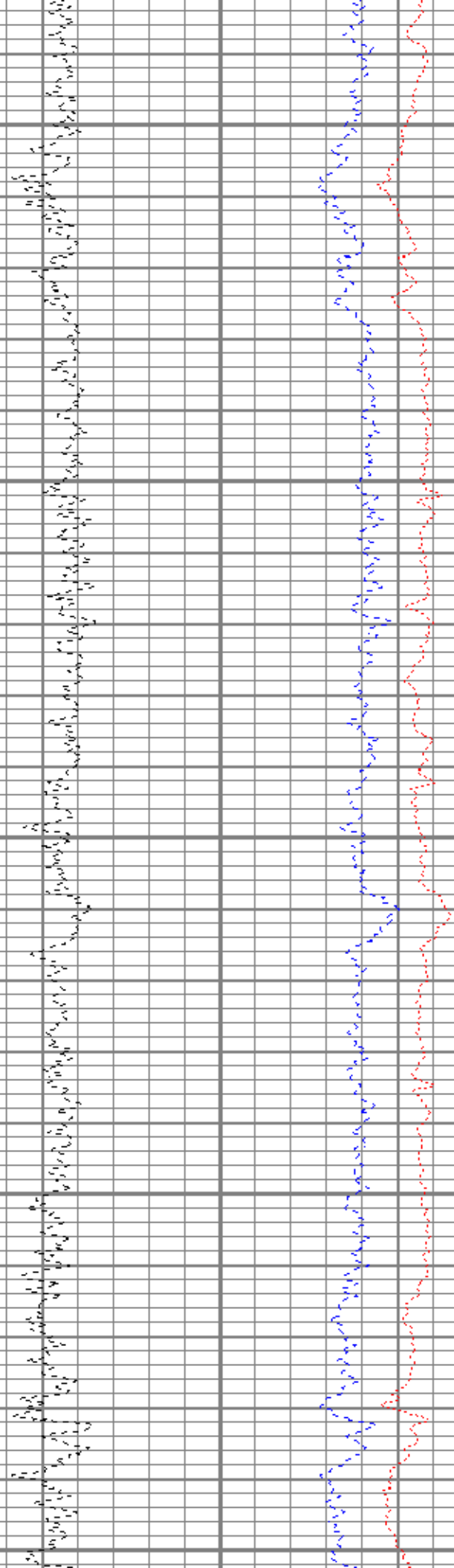
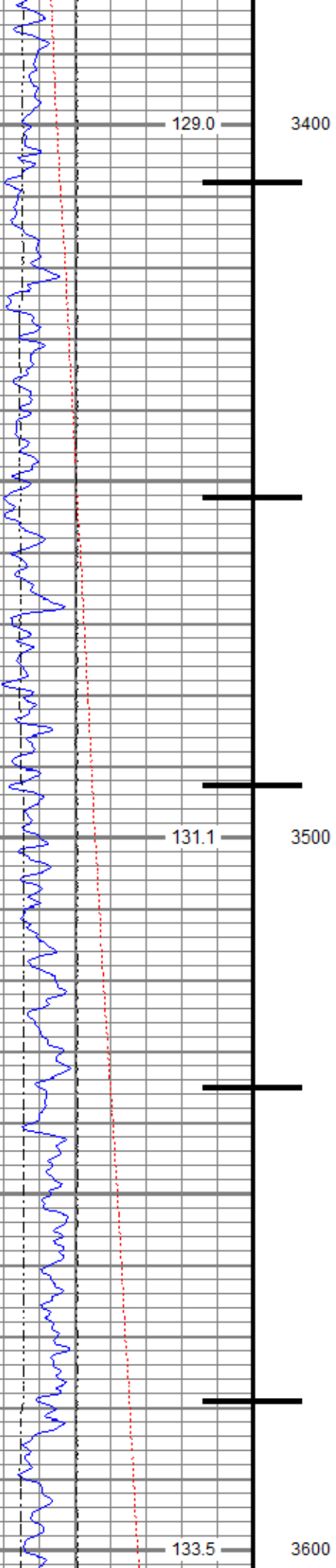


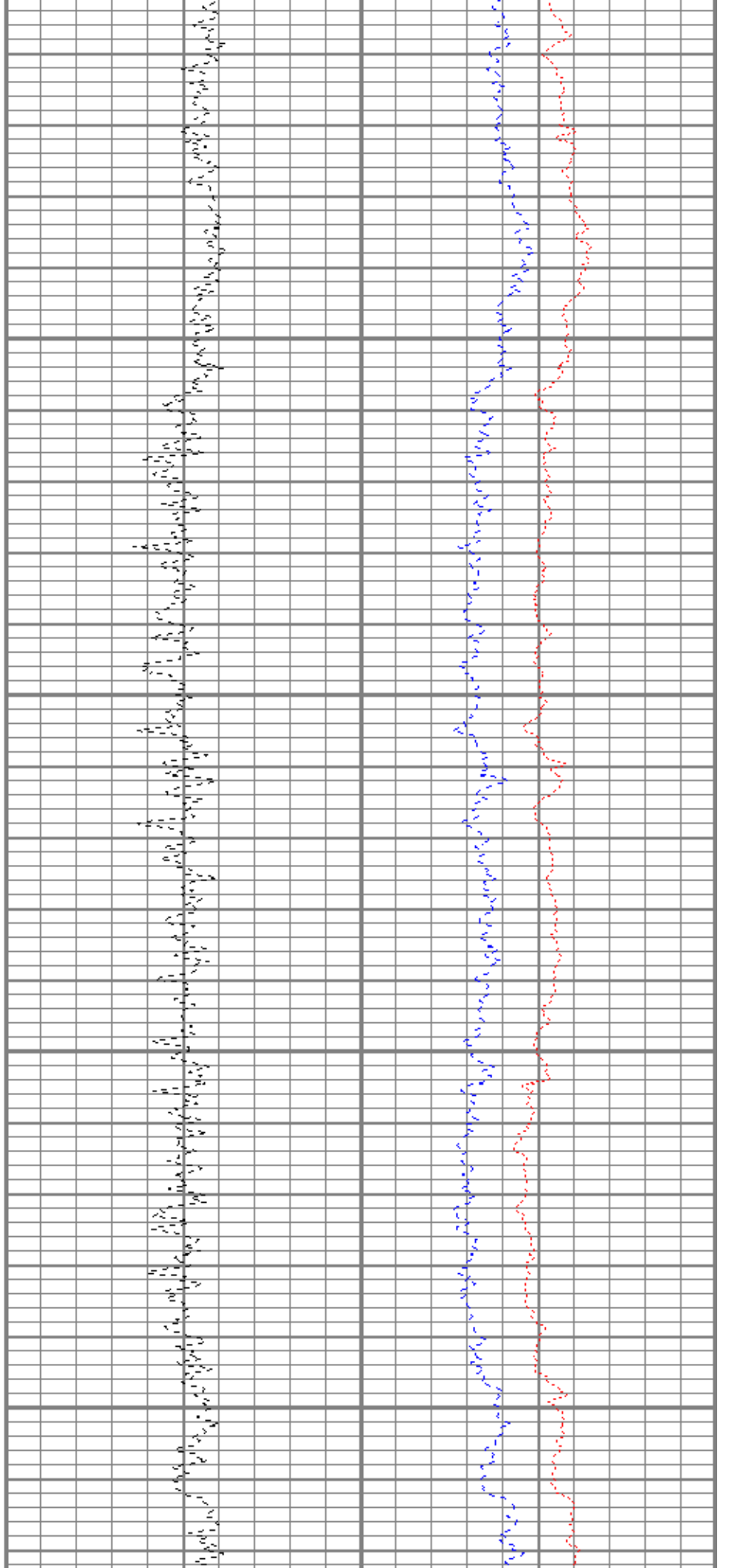
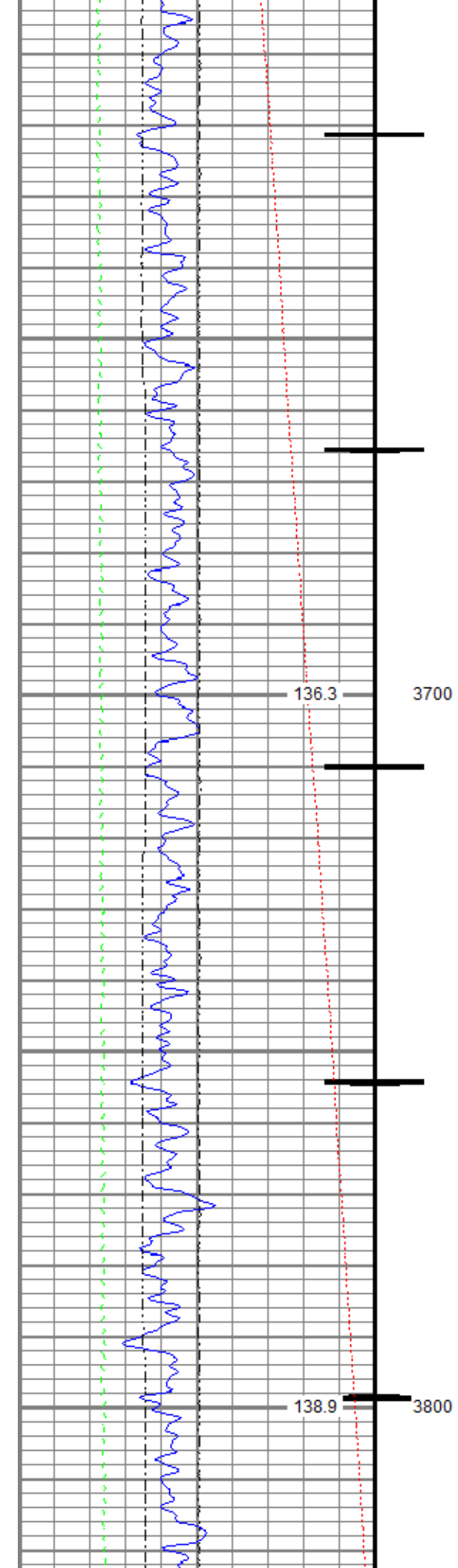


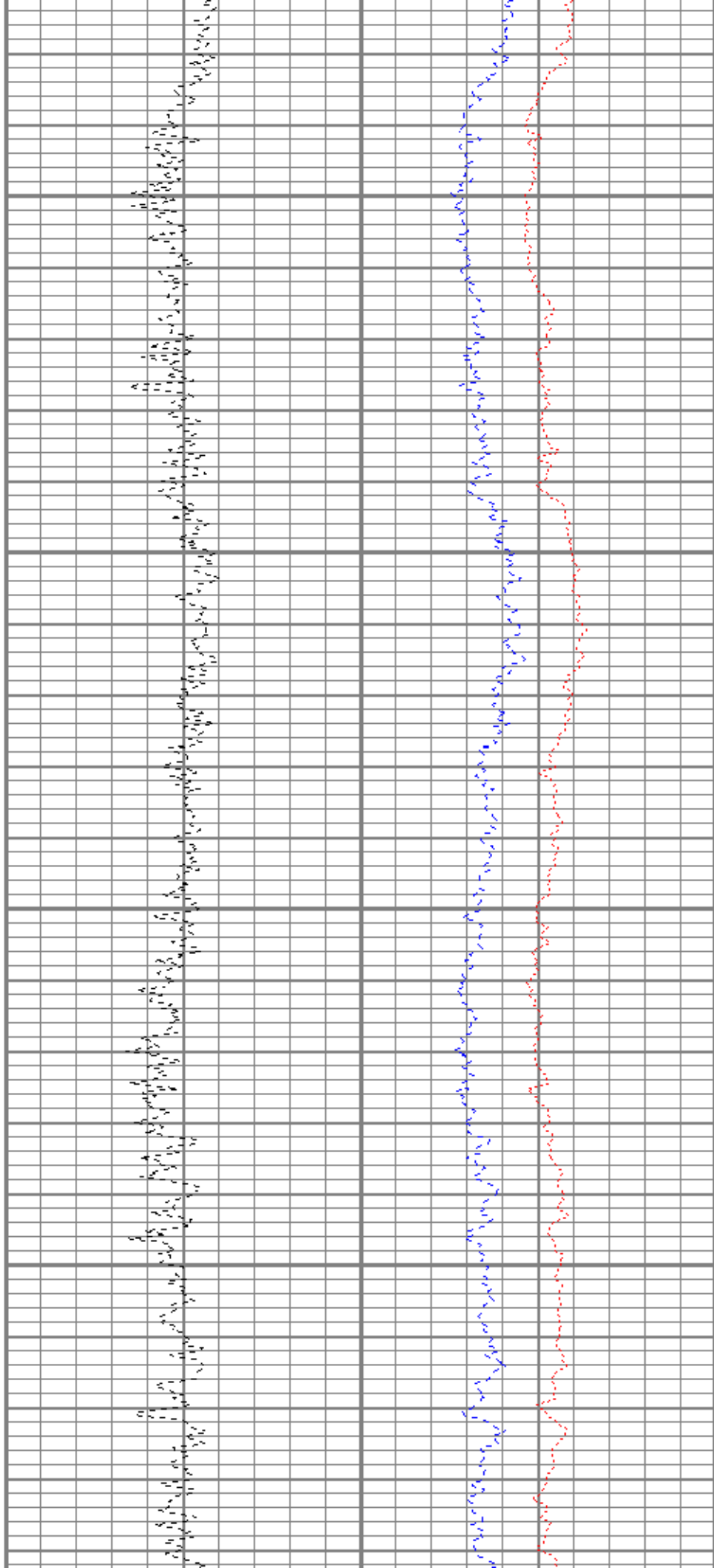
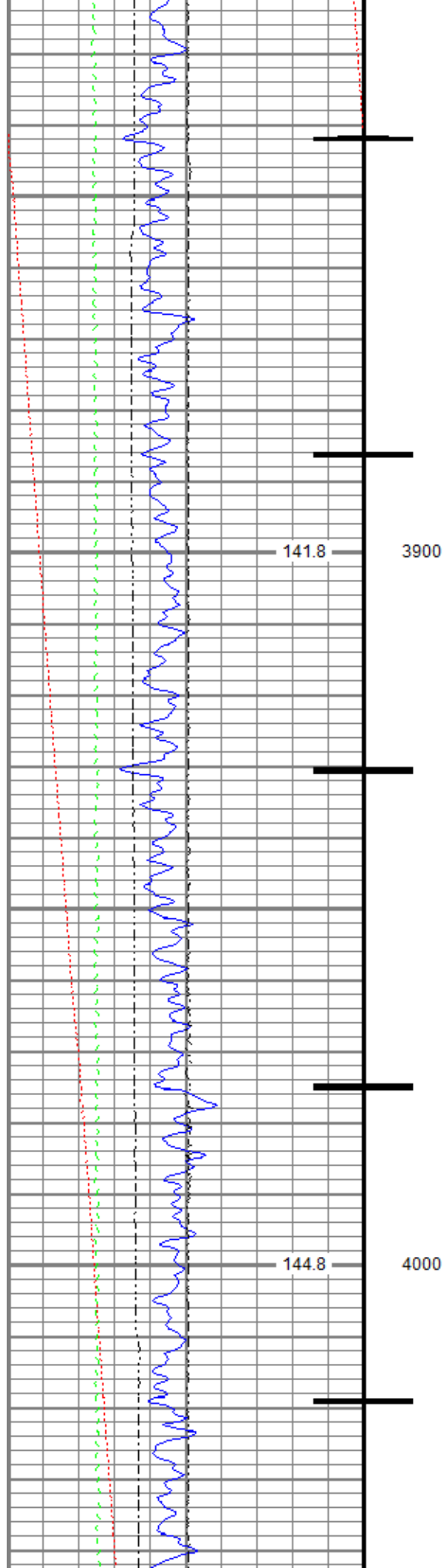


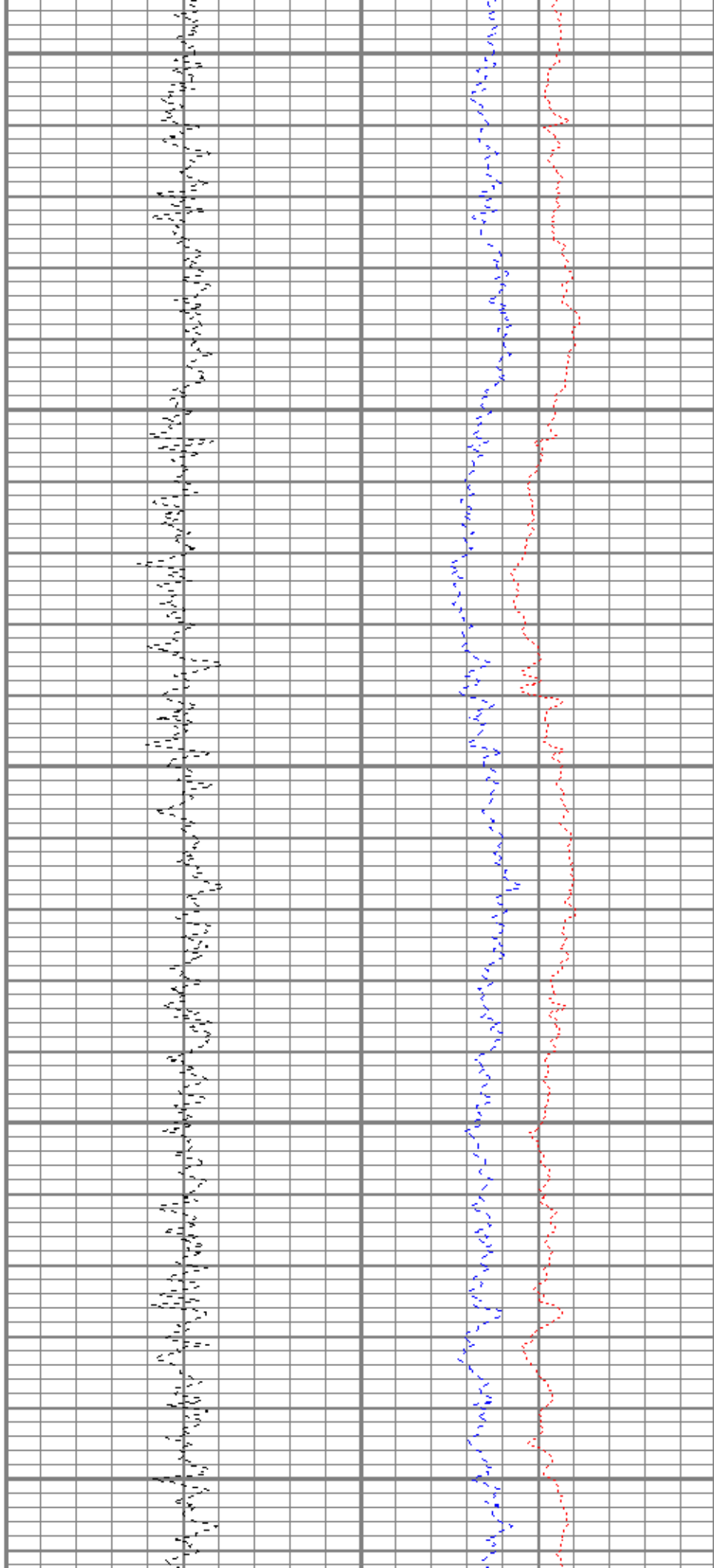
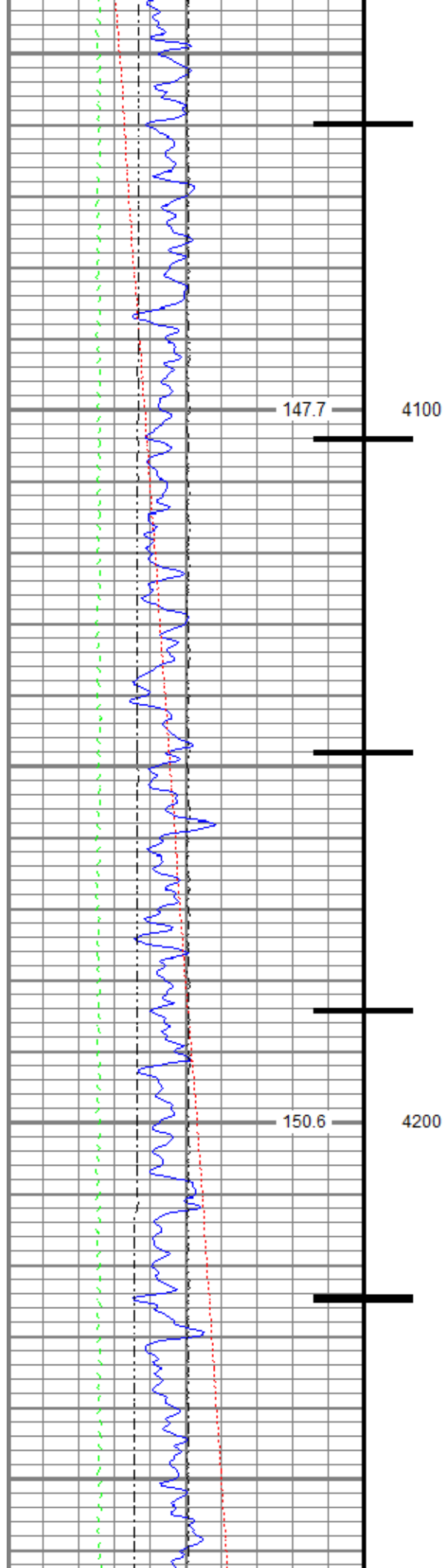


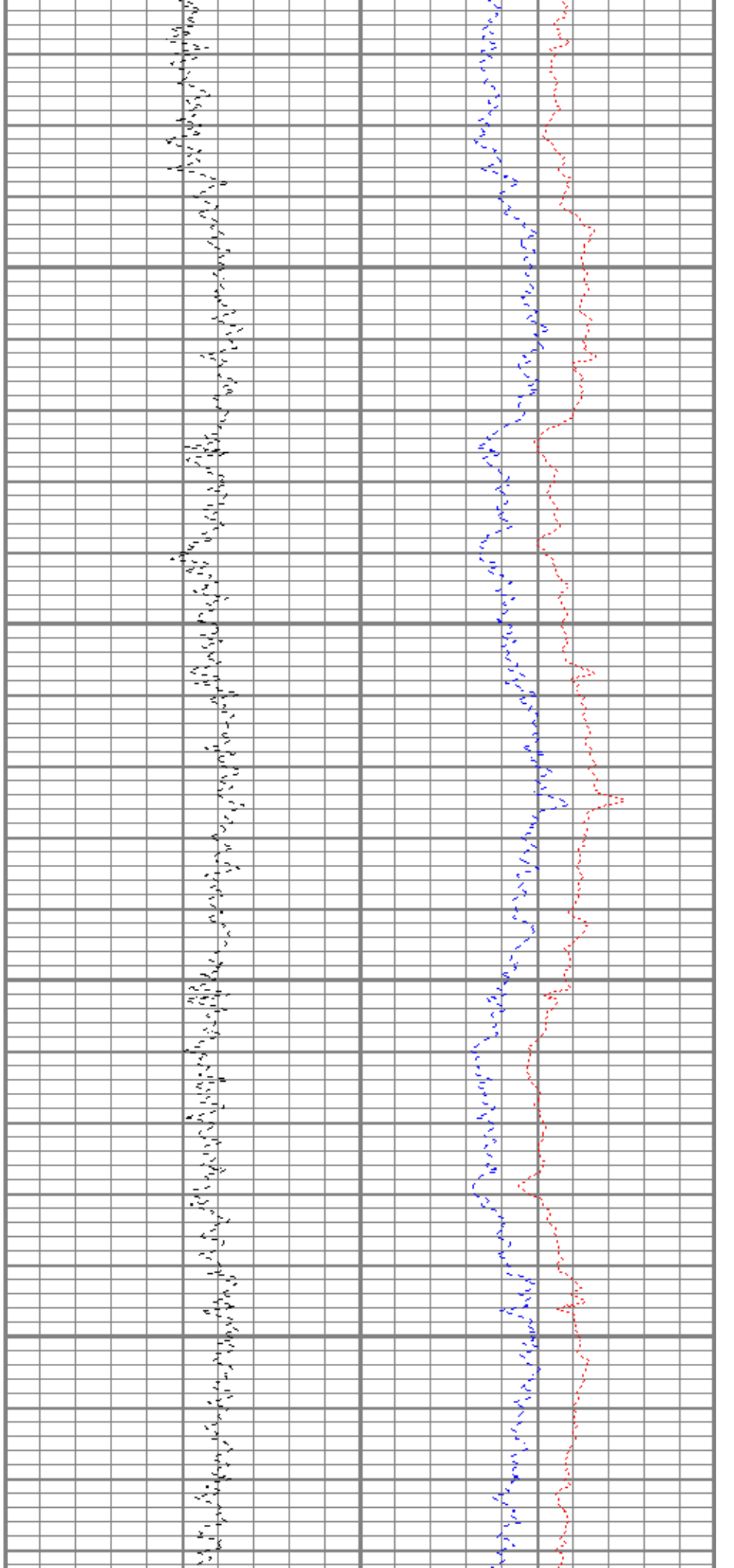
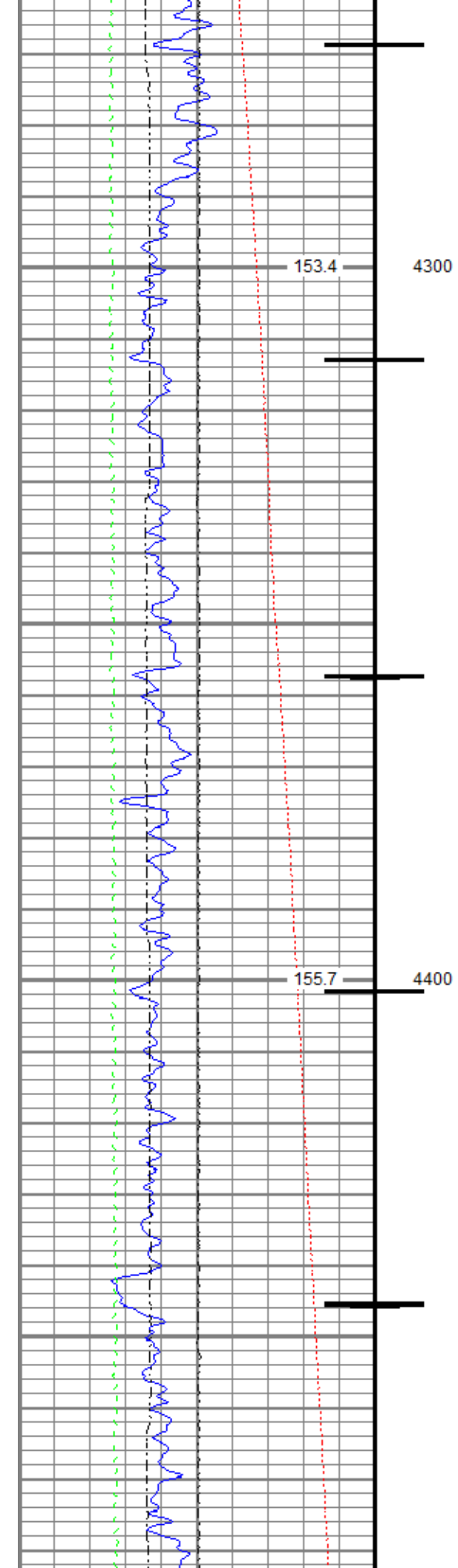




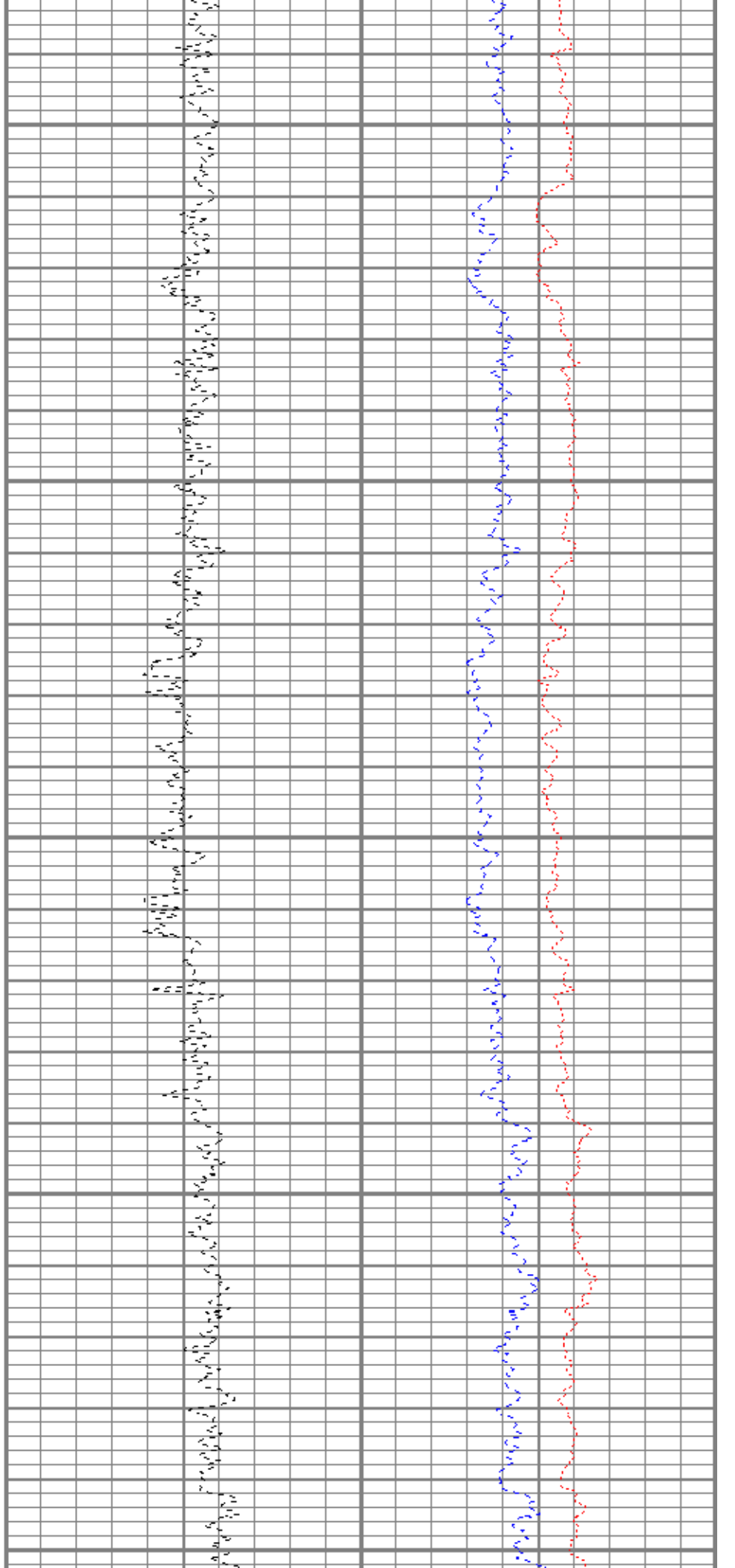
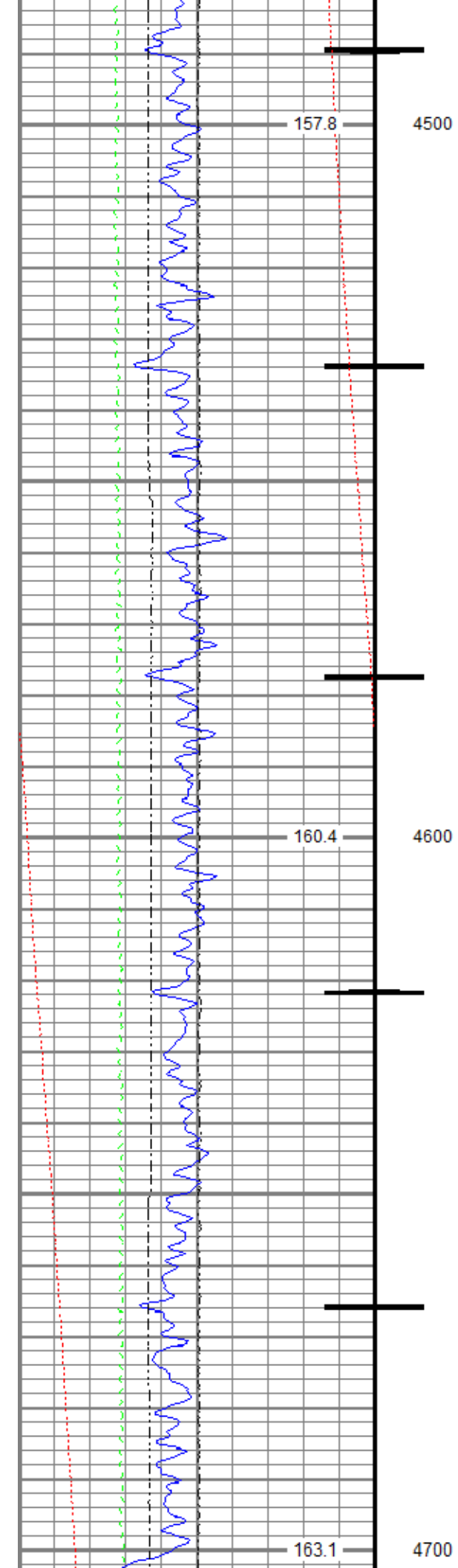


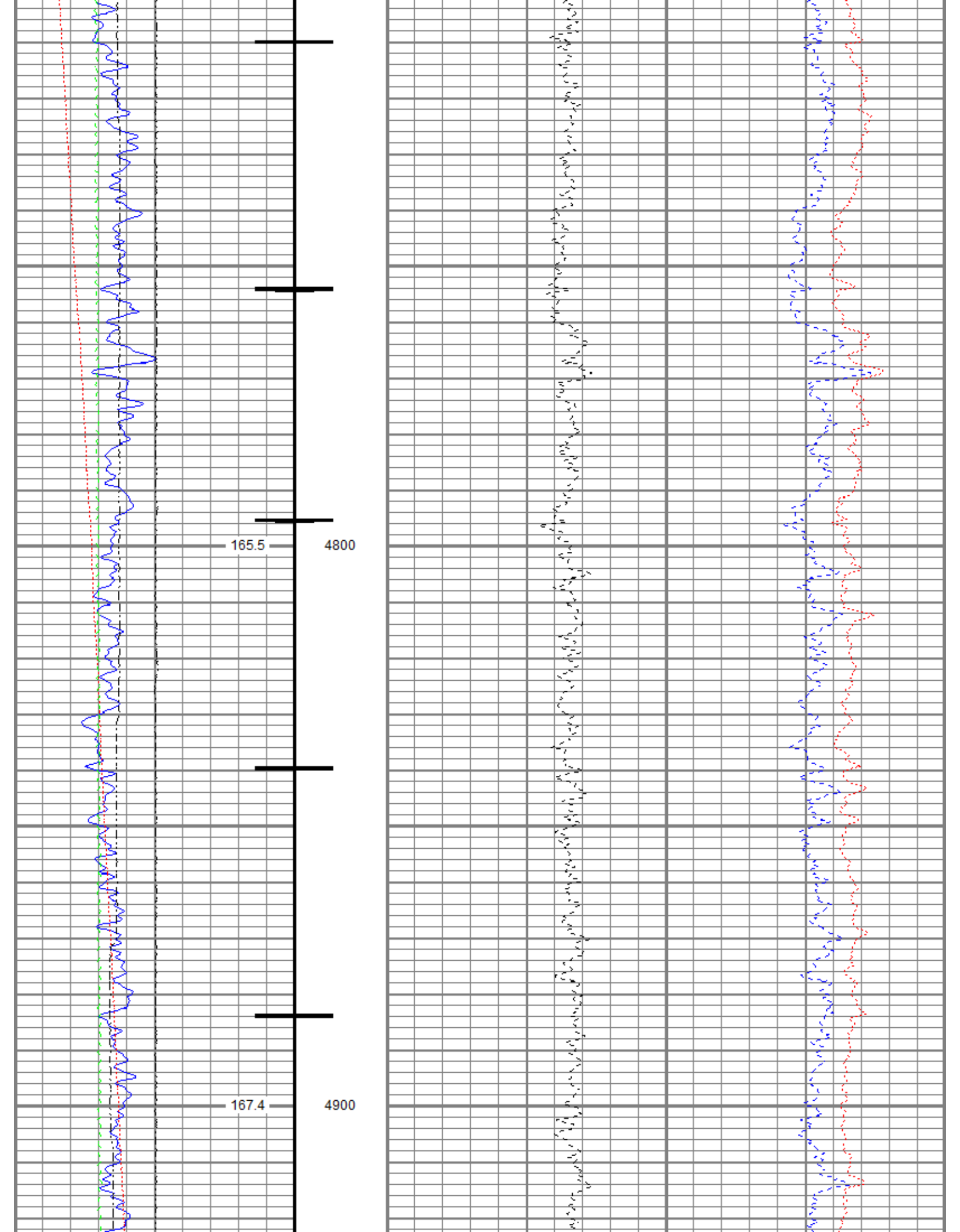


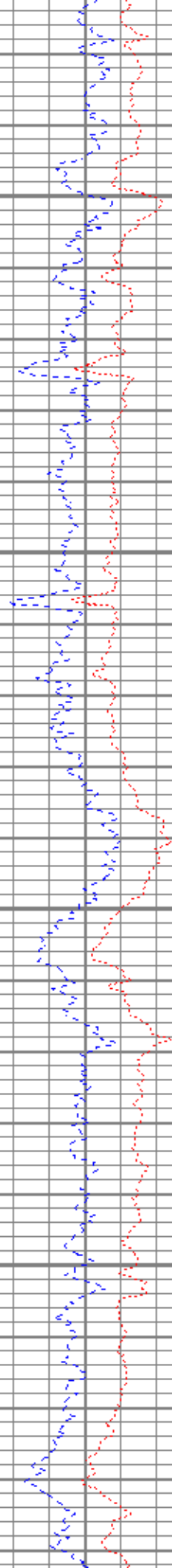
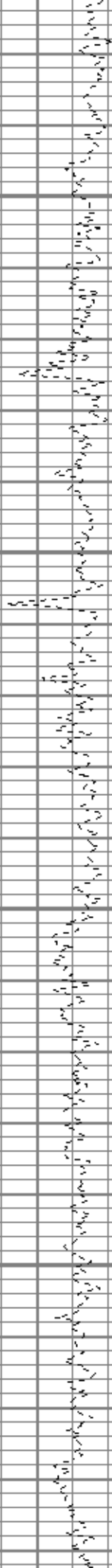
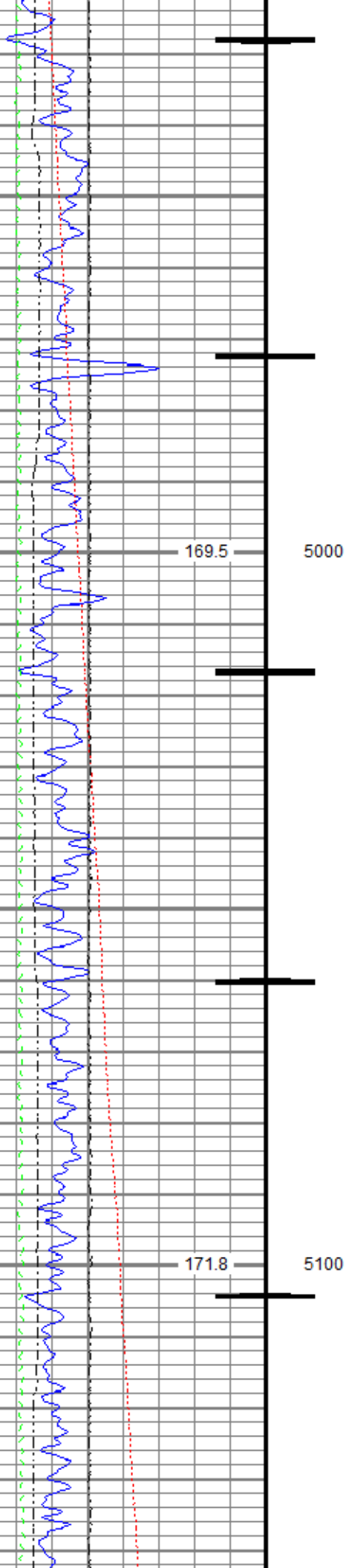


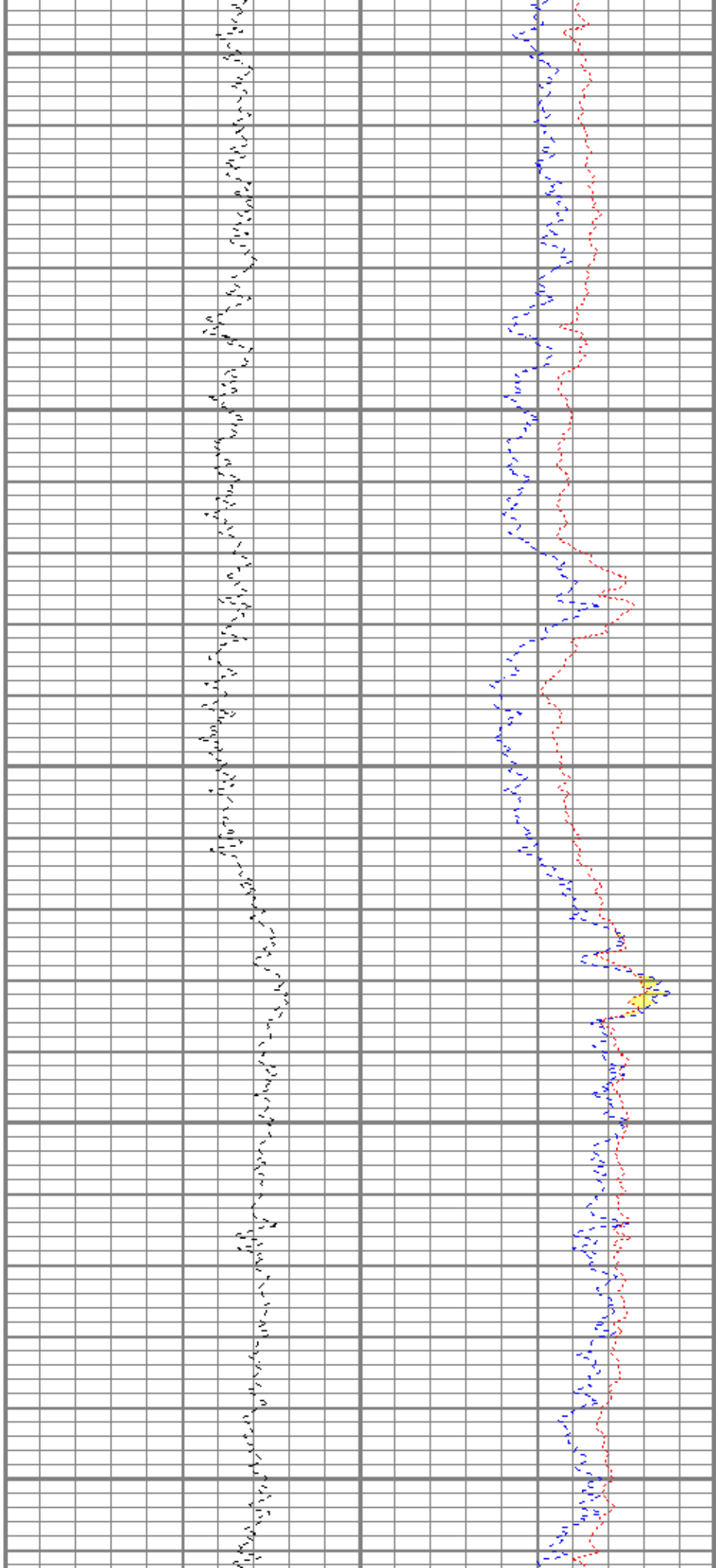
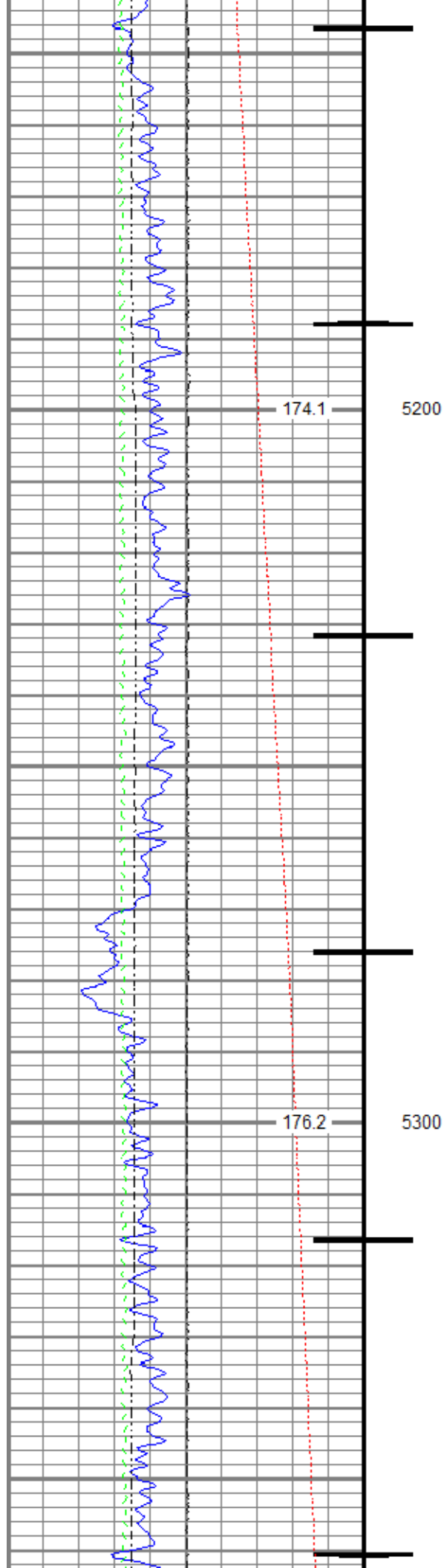


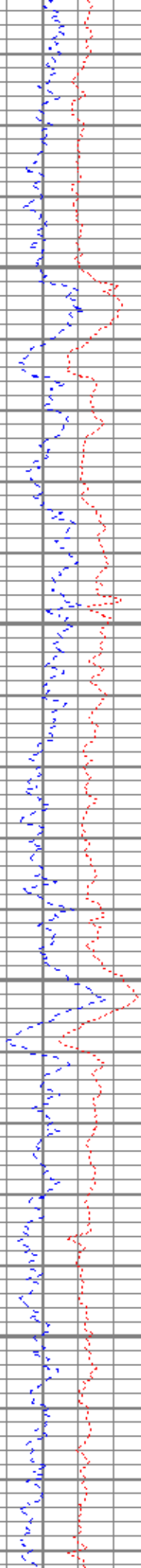
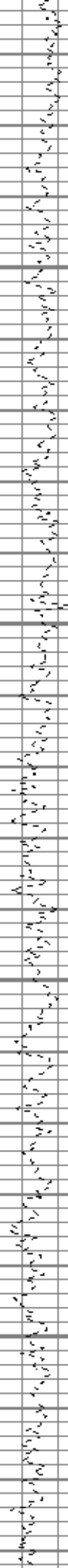
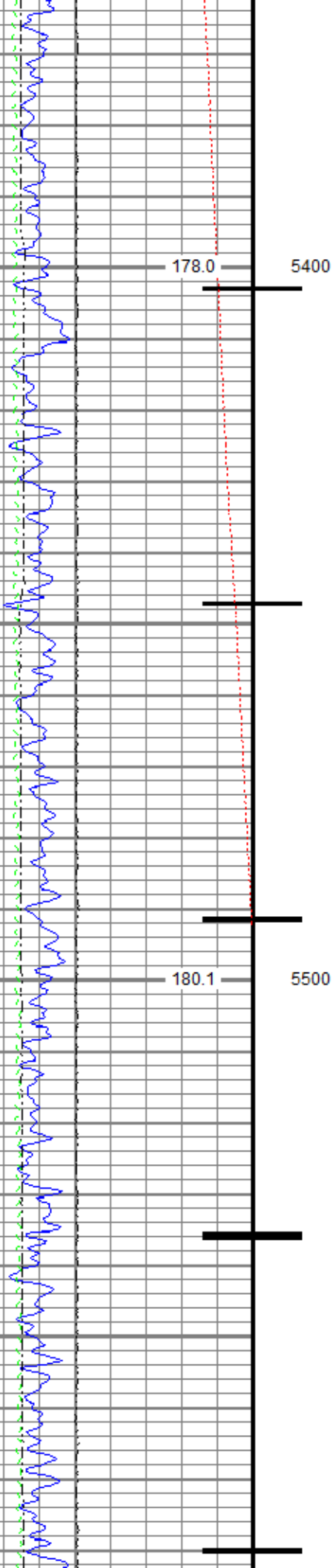


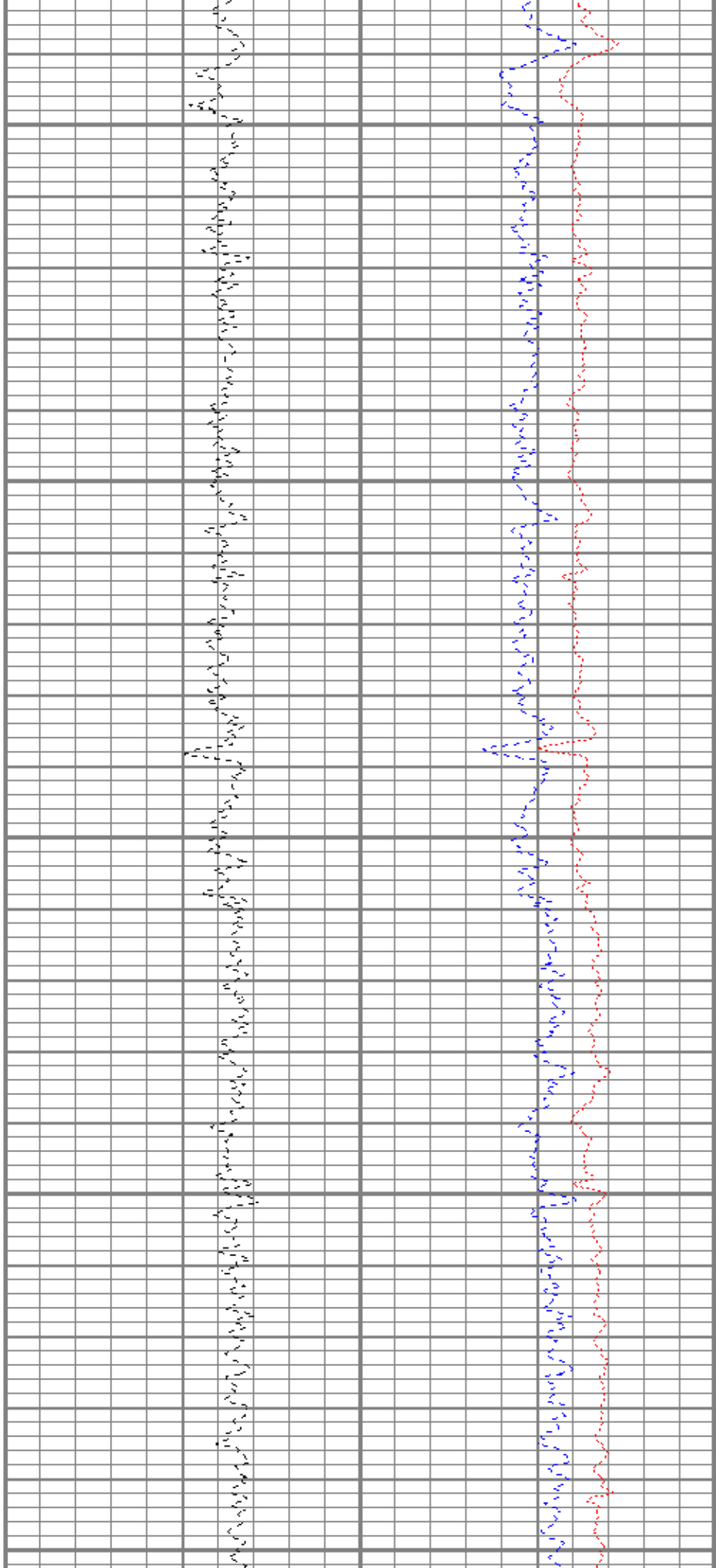
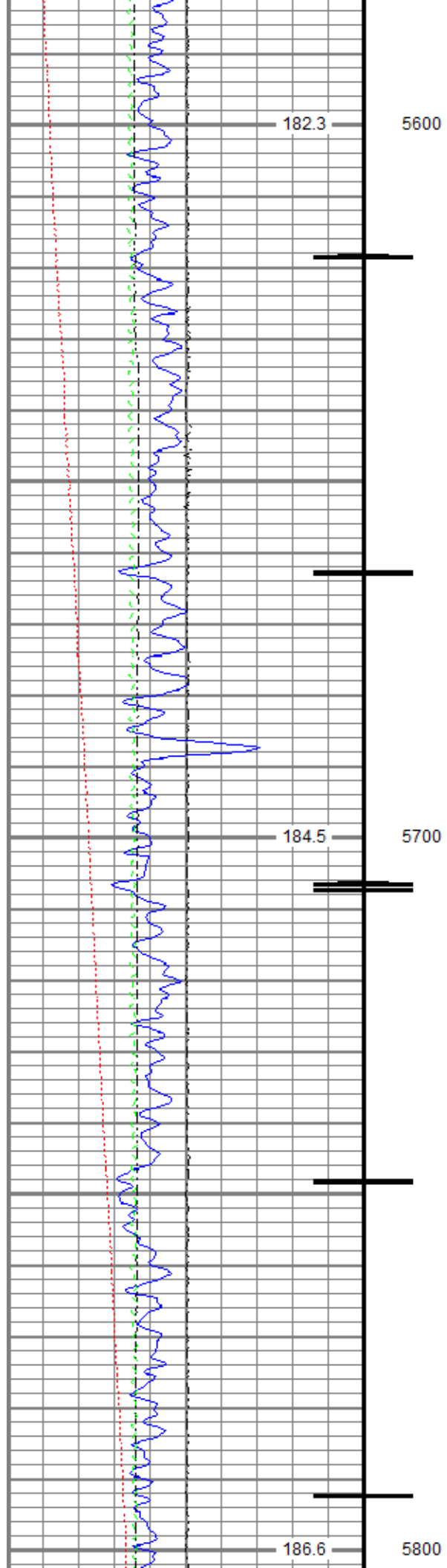


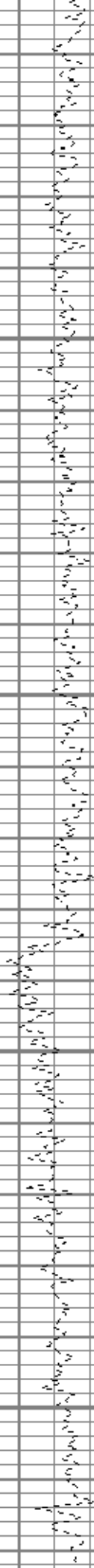
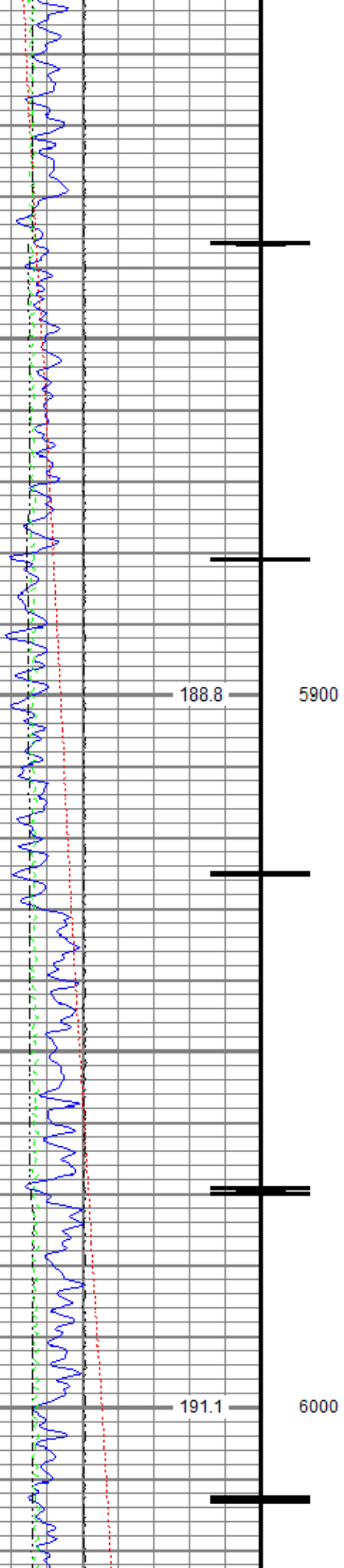




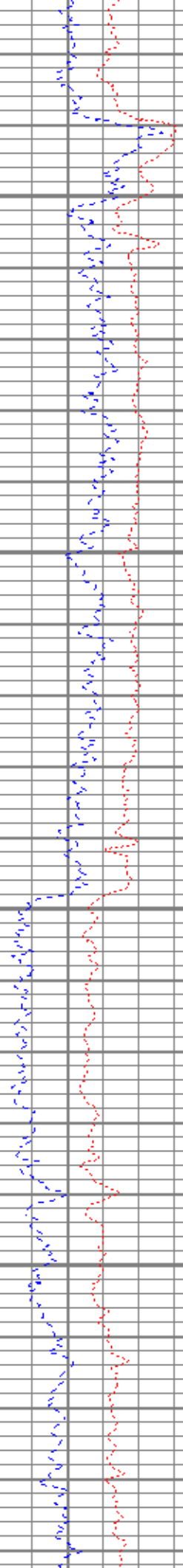
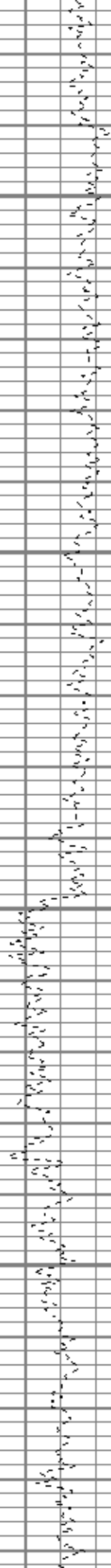
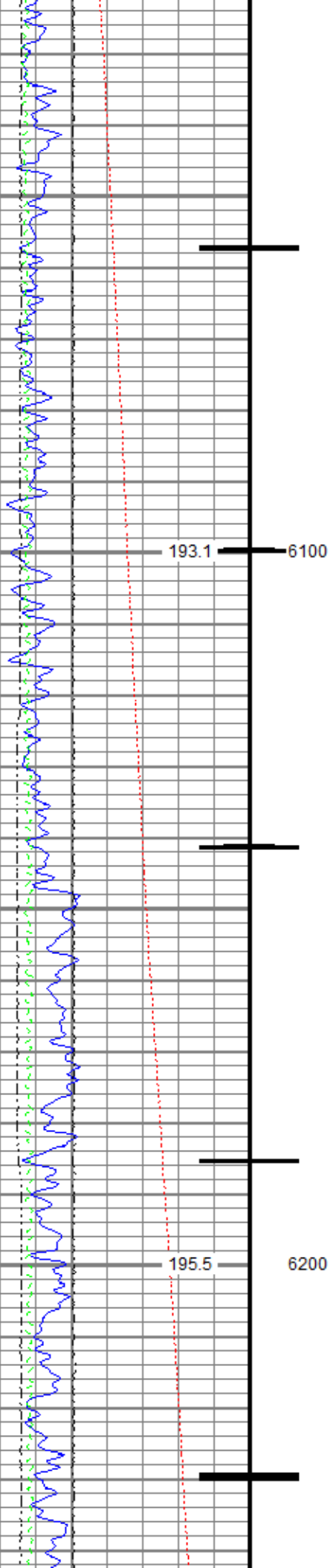


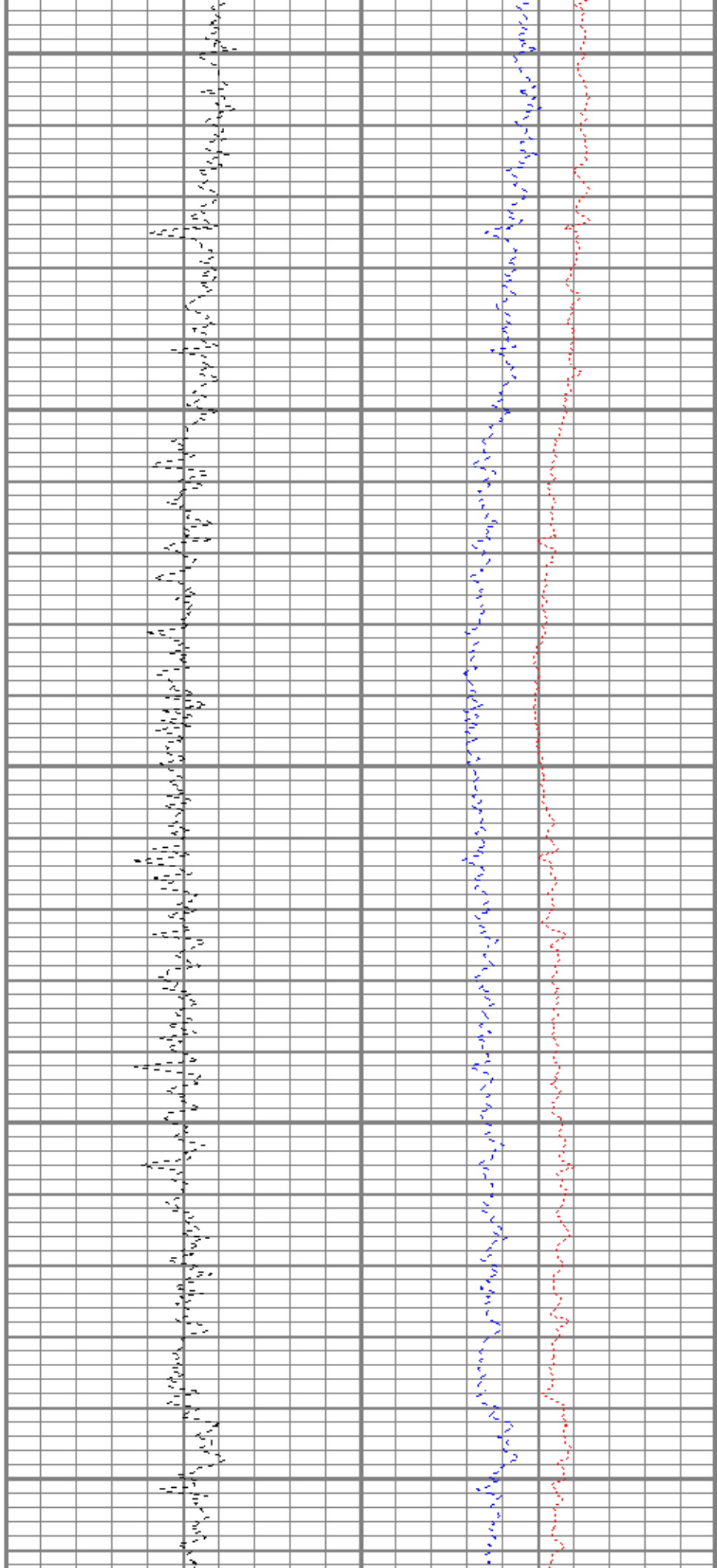
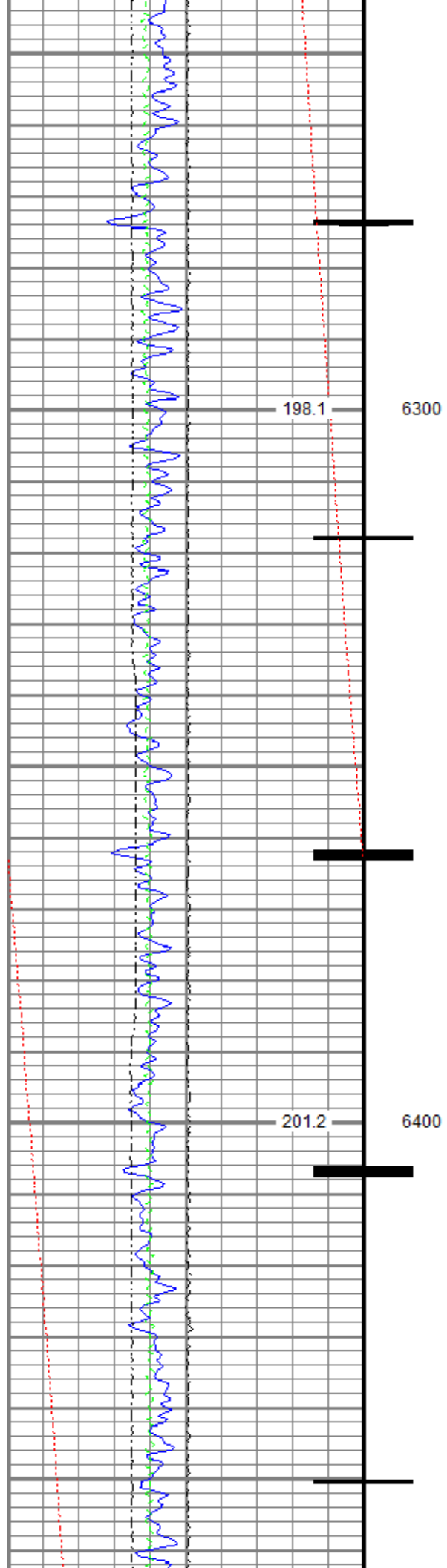


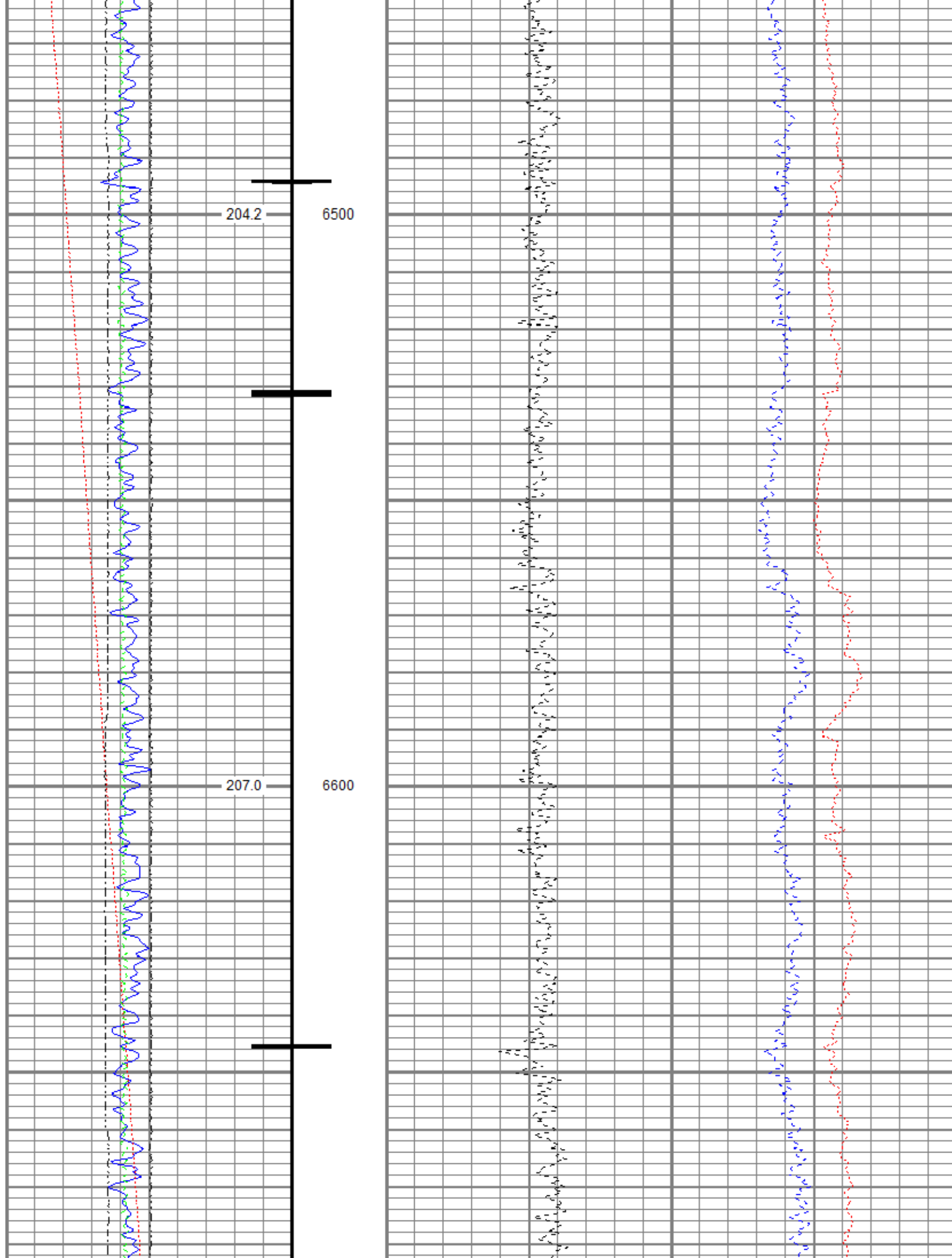


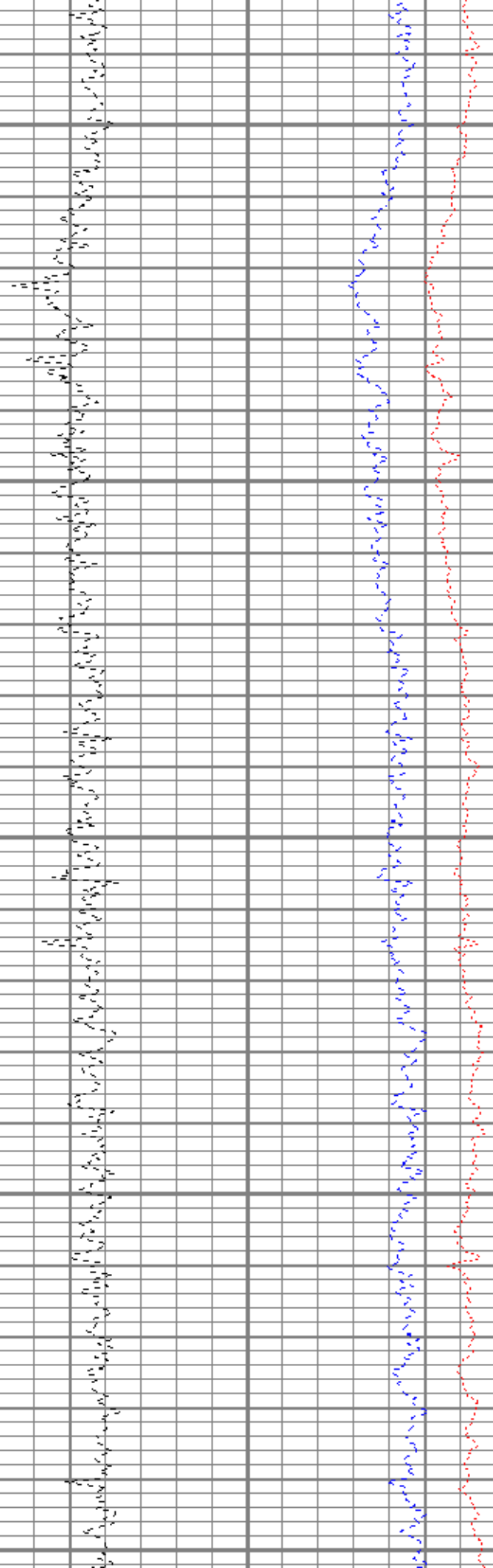
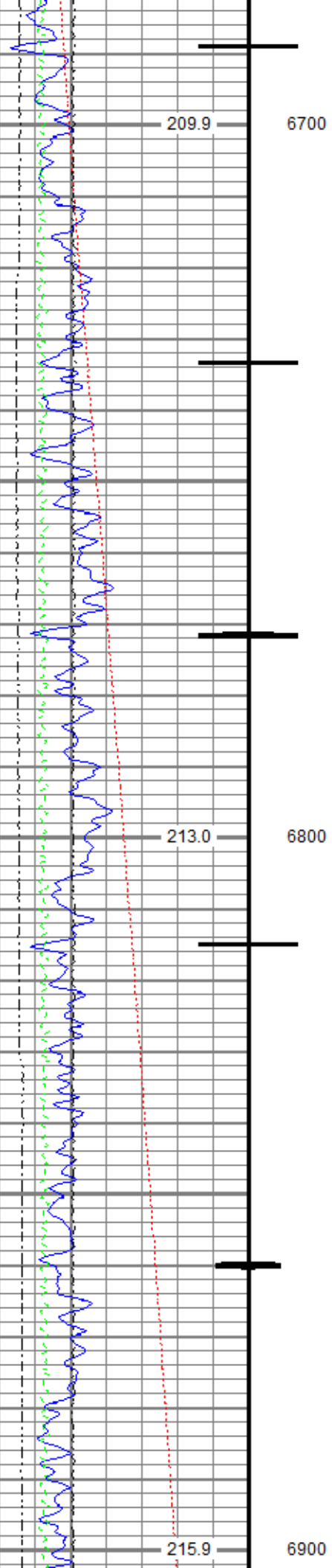


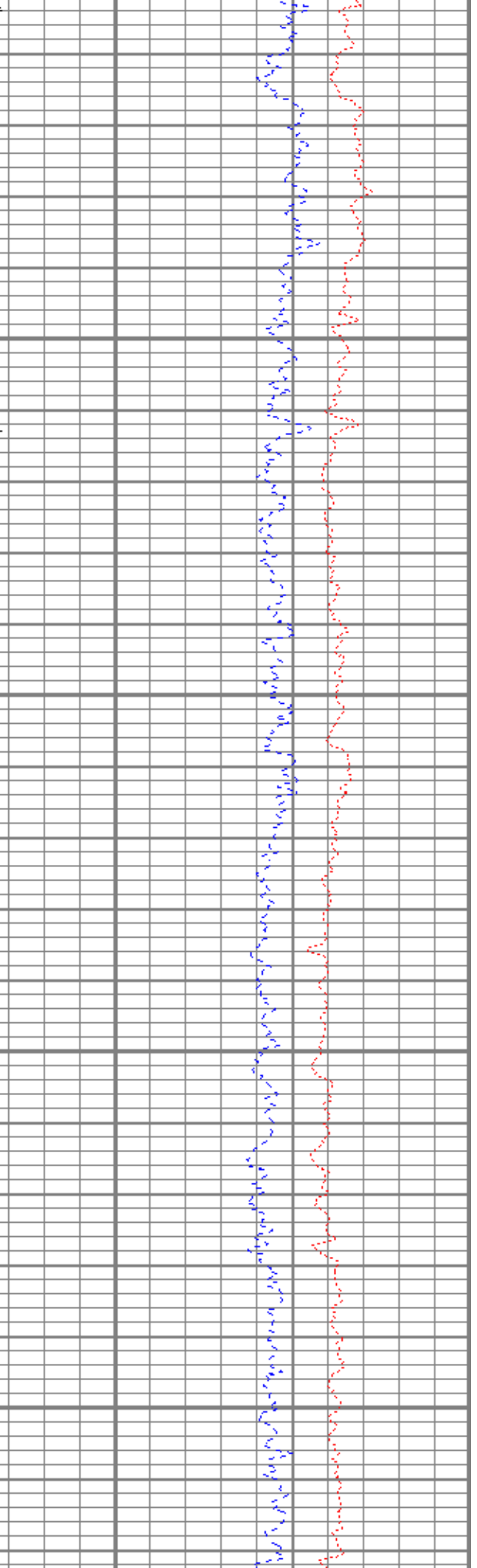
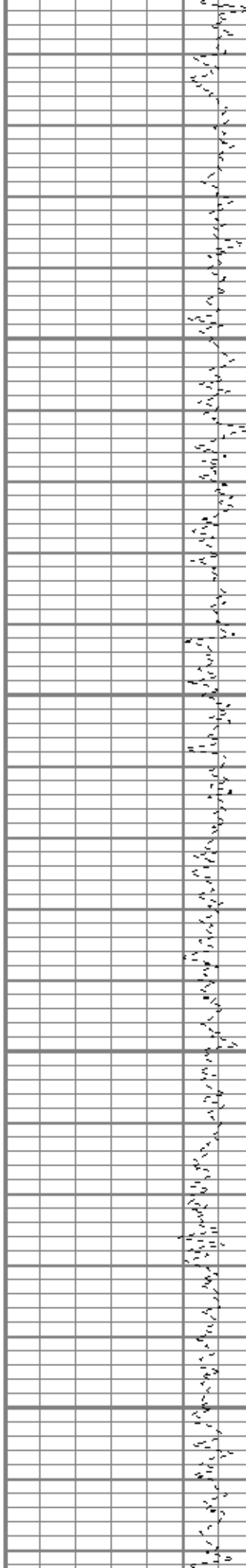
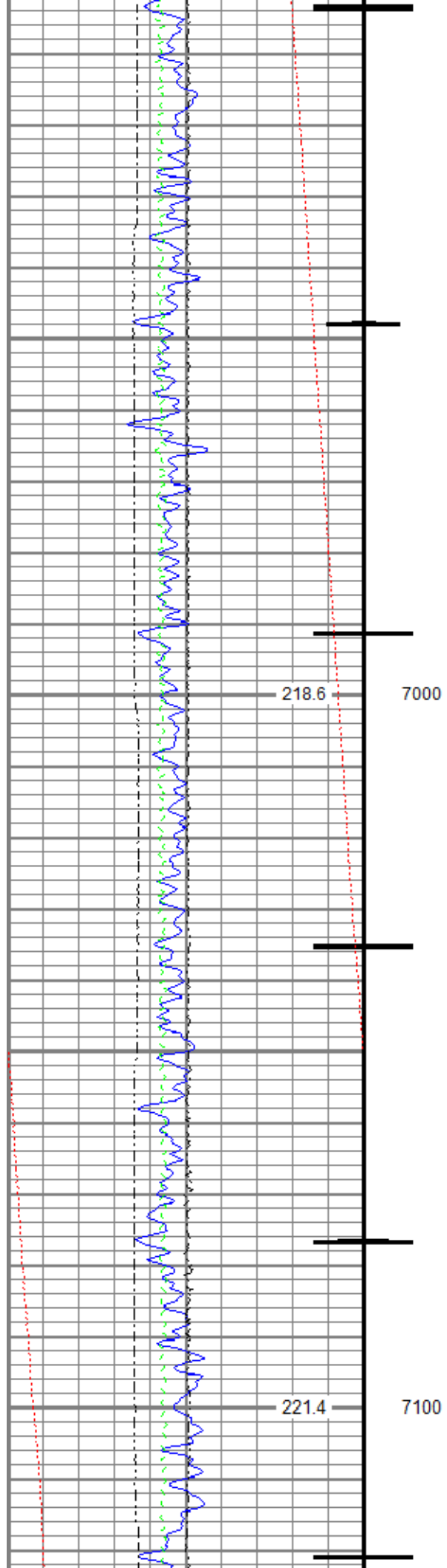


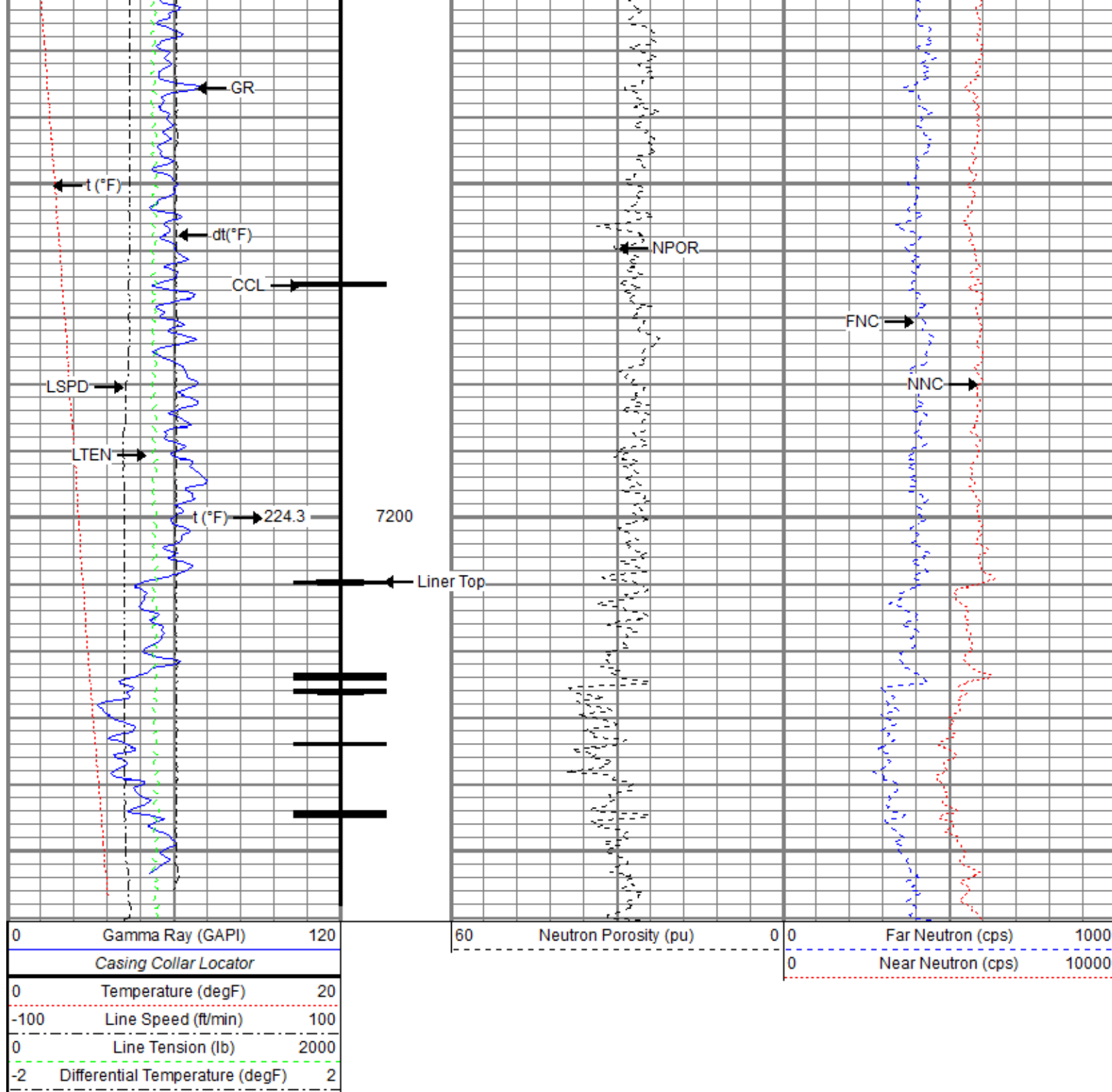








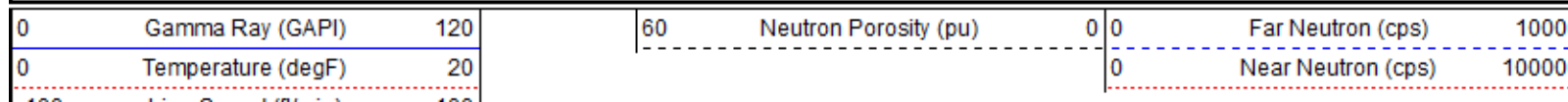




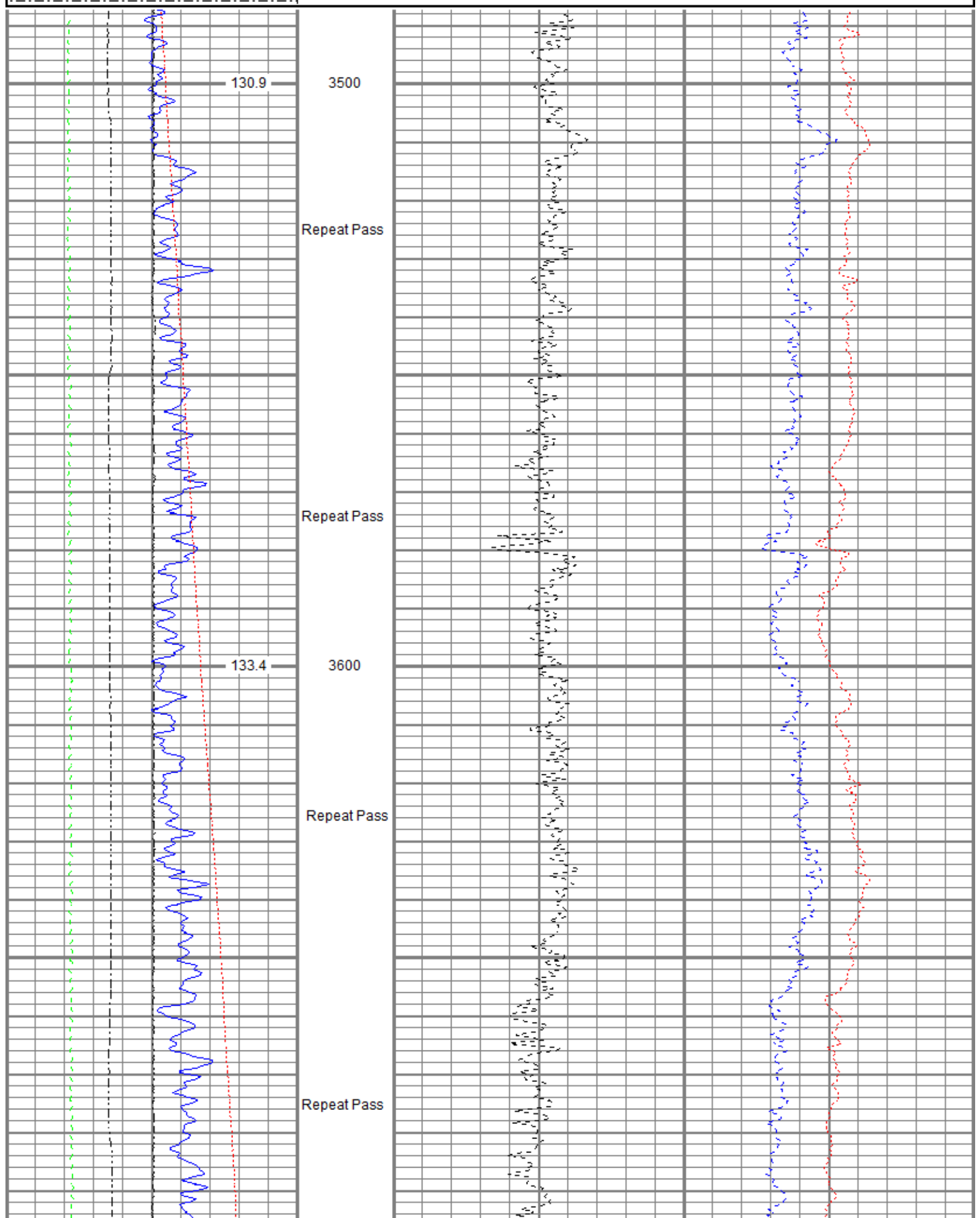
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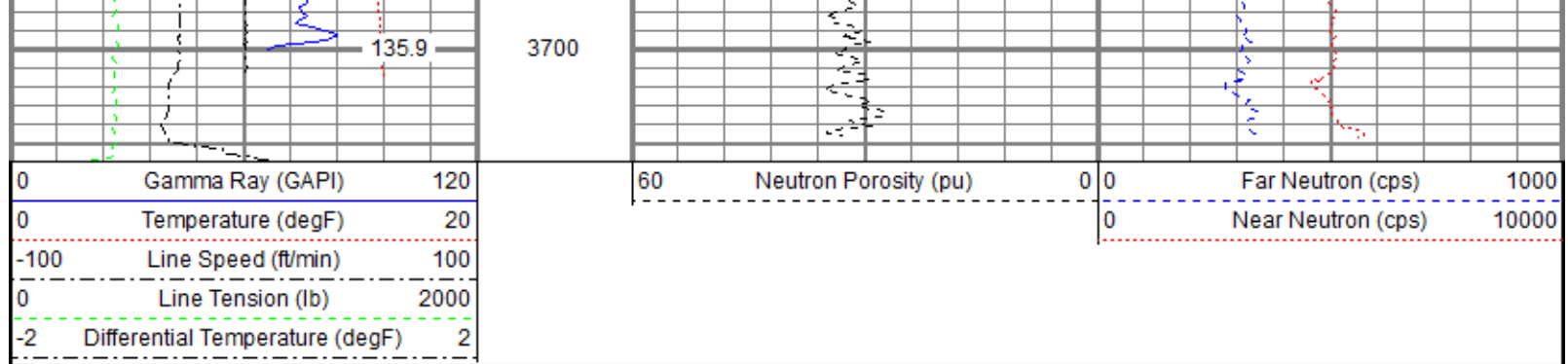
Recorded with 0 PSI Surface Induced Pressure

Database File oxy\_badger state 32c-3hz\_cnl\_11-21-20\0512336463\_oxy\_badger state 32c-3hz\_cnl\_11-21-20.db  
 Dataset Pathname Repeat  
 Presentation Format ros\_cnl\_sx  
 Dataset Creation Sat Nov 21 10:30:23 2020  
 Charted by Depth in Feet scaled 1:240



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





Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	9.69		Titan CHD-14375 GO Titan 1-7/16" Assembled Electric Cable Head with 1" Fishing Neck	1.03	1.44	3.60
			UW XTU-002 (10017430) Sondex 1-11/16" Ultrawire Toolbus Crossover to Ultralink Telemetry with AGS	1.79	1.69	8.80
			UW PGR-020 (10024770) Sondex 1-11/16" Ultrawire Production Gamma Ray	1.92	1.69	9.50
TEMP	8.30		UW PRT-016 (10025092) Sondex 1-11/16" Ultrawire Platinum Resistance Thermometer	1.04	1.69	5.20
CCL	7.15		UW CCL-015 (10012972) Sondex 1-11/16" Ultrawire Casing Collar Locator	1.54	1.69	12.10
			UW CNL-007 (1005) Sondex 1-11/16" Ultrawire Compensated Neutron Logging Tool	6.61	1.69	30.00



CNLSC	1.53					
CNSSC	1.12					
TSTAMP	0.00					
LOCTIM	0.00					
UTCTIM	0.00					
Dataset: 0512336463_Oxy_Badger State 32C-3HZ_CNL_11-21-20.db: field/well/run1/Main Total length: 13.94 ft Total weight: 69.20 lb O.D.: 1.69 in						

Calibration Report			
Database File	C:\ProgramData\Warrior\Data\Oxy_Badger State 32C-3HZ_CNL_11-21-20\0512336463_Oxy_Badger State 32C-3HZ_CNL_11-2		
Dataset Pathname	Main		
Dataset Creation	Sat Nov 21 11:00:55 2020		
Compensated Neutron Calibration Report			
Serial Number:	1005		
Tool Model:	007		
Master Calibration	Tue Dec 03 09:24:53 2019		
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	
	Measured	Reference	
Ratio			
After Survey			
Detector	Readings		
Short Space		cps	
Long Space		cps	
	Measured	Reference	
Ratio			

Temperature Calibration Report					
		Serial Number:	10025092		
		Tool Model:	016		
		Performed:	Tue Dec 03 09:24:53 2019		
Point #	Reading		Reference		
1	11860.00	cps	68.00	degF	
2	18212.00	cps	104.00	degF	
3	29317.00	cps	176.00	degF	
4	41018.00	cps	248.00	degF	
5	52511.00	cps	320.00	degF	
6	58369.00	cps	356.00	degF	
7		cps		degF	

8  
9  
10

cps  
cps  
cps

degF  
degF  
degF

Gamma Ray Calibration Report

Serial Number:	10024770	
Tool Model:	020	
Performed:	Tue Dec 03 09:24:53 2019	
Calibrator Value:	637.0	GAPI
Background Reading:	78.8	cps
Calibrator Reading:	1069.9	cps
Sensitivity:	0.6427	GAPI/cps



Company	Kerr-McGee Oil & Gas Onshore, L.P.
Well	Badger State 32C-3HZ
Field	Wattenberg
County	Weld
State	Colorado