



Pulsed Neutron
Gamma Ray
Casing Collar Log

Company TEP Rocky Mountain LLC		Well Clough NR 344-3		Field Rulison		County Garfield		State Colorado							
Location:		API #: 05-045-23917		Other Services											
SEC 3		TWP 6S		RGE 94W		RBL									
Permanent Datum		Ground Level		Elevation		6719.1'									
Log Measured From		Kelly Bushing		Elevation		24 FT									
Drilling Measured From		Kelly Bushing		Elevation		K.B. 6743.1' D.F. 6742.1' G.L. 6719.1'									
Date		18-DEC-2018													
Run Number		Two													
Depth Driller		10715 FT													
Depth Logger		10650 FT													
Bottom Logged Interval		10644 FT													
Top Log Interval		6263 FT													
Open Hole Size		8.750"													
Type Fluid		Water													
Density / Viscosity		8.34 lb/gal													
Max. Recorded Temp.		---													
Estimated Cement Top		---													
Time Well Ready		ROA													
Time Logger on Bottom		22:30													
Equipment Number		HD-0359													
Location		Grand Junction, CO													
Recorded By		Z. Fisher													
Witnessed By		D. Welsh													
Borehole Record		Bit		From		To		Size		Weight		From		To	
Run Number															
Casing Record		Size (in)		Wgt (lbs/ft)		Grade		Top		Bottom					
Surface Casing		9 5/8		36		J-55		Surface		1114 FT					
Intermediate #1		4 1/2		11.6		P-110		Surface		10674 FT					
Intermediate #2															
Inner															

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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 Reliance Bond Log dated 18-DEC-2018
Log ran from 10644 FT to 6263 FT
Pulsed Neutron Data logged with the Hunter RAS Tool
Thank you for choosing Reliance Oilfield Services, LLC!

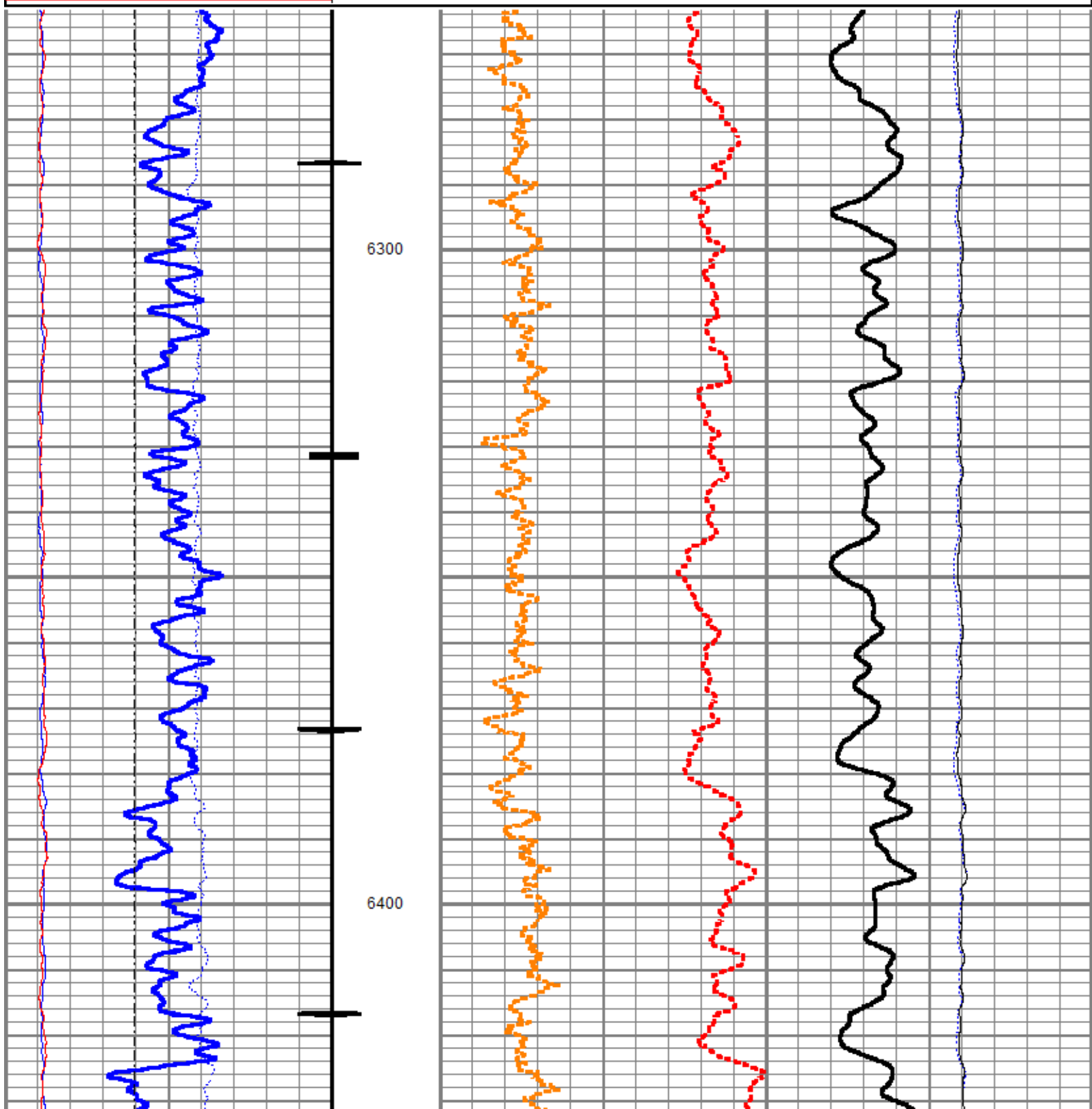


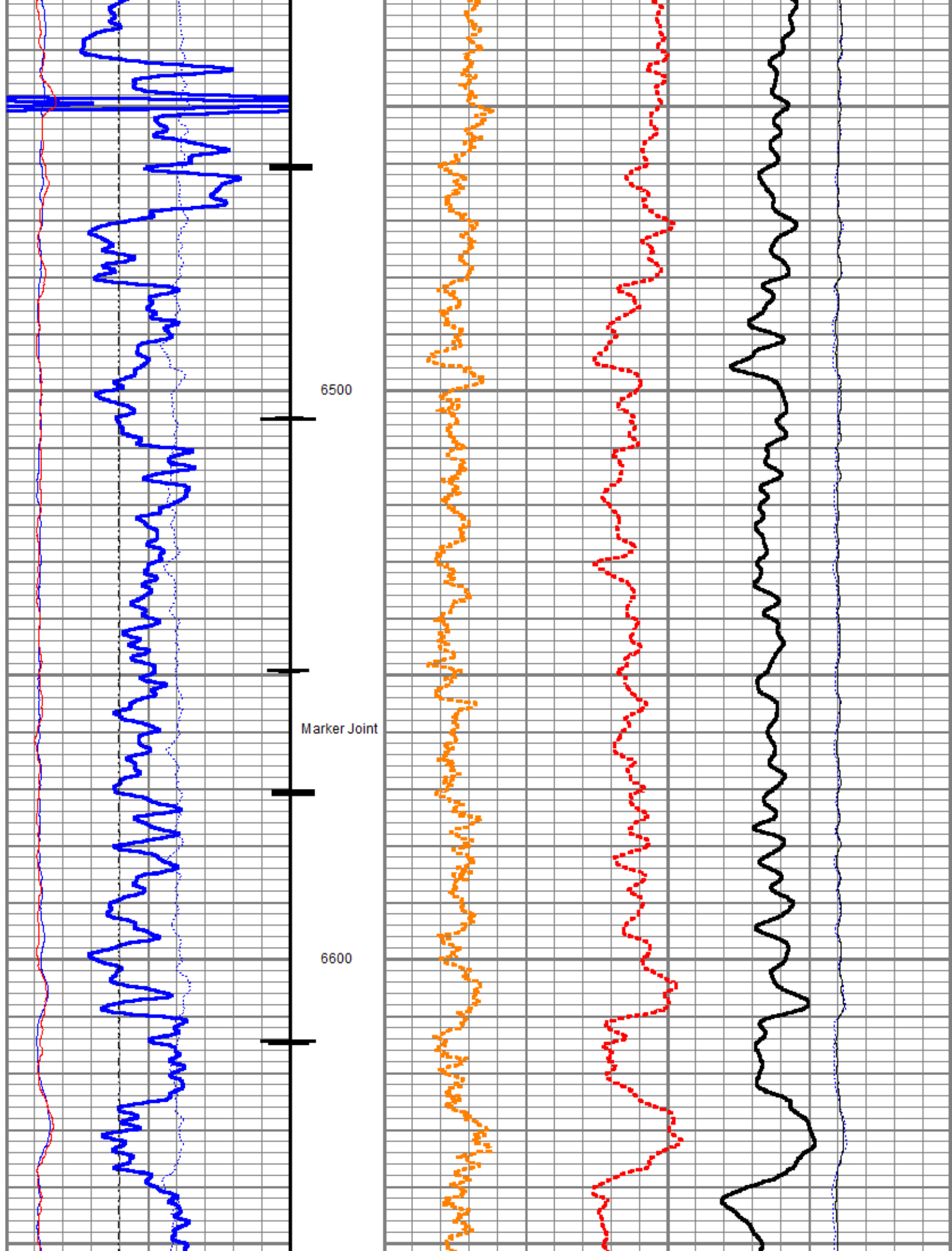
Main Pass

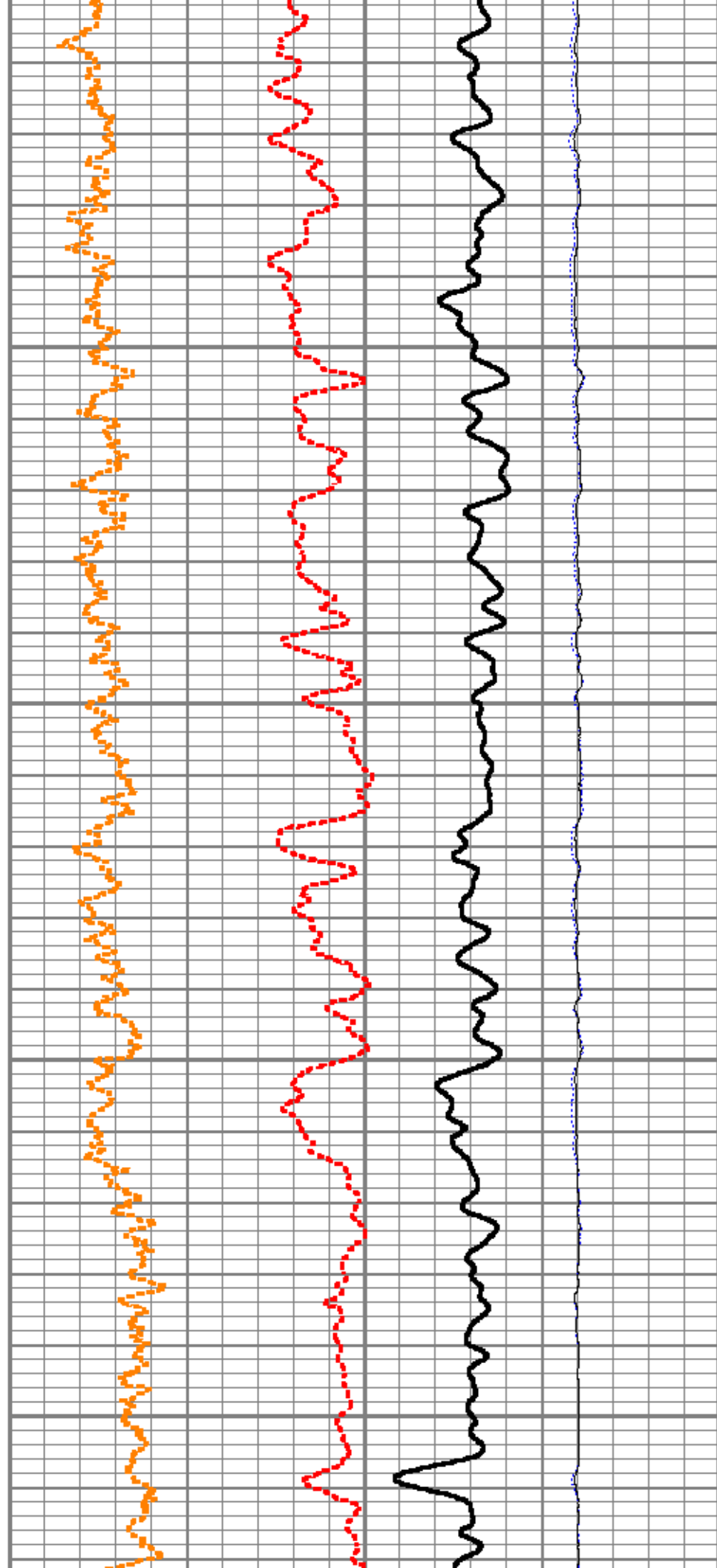
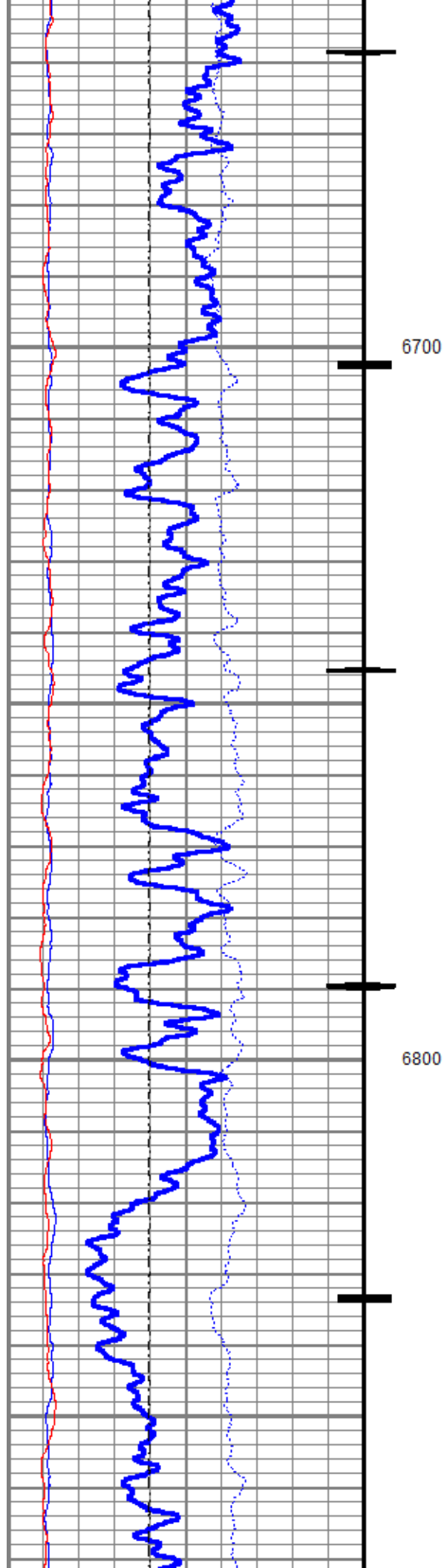
Database File tep_clough_nr_344-3_rbl\pn\tep_clough_nr_344-3_pn_12-18-2018.db
Dataset Pathname run\tep_clough_nr_344-3_pn_12-18-18_make_lo
Presentation Format ros_pdn_hunter
Dataset Creation Fri Dec 21 15:29:19 2018
Charted by Depth in Feet scaled 1:240

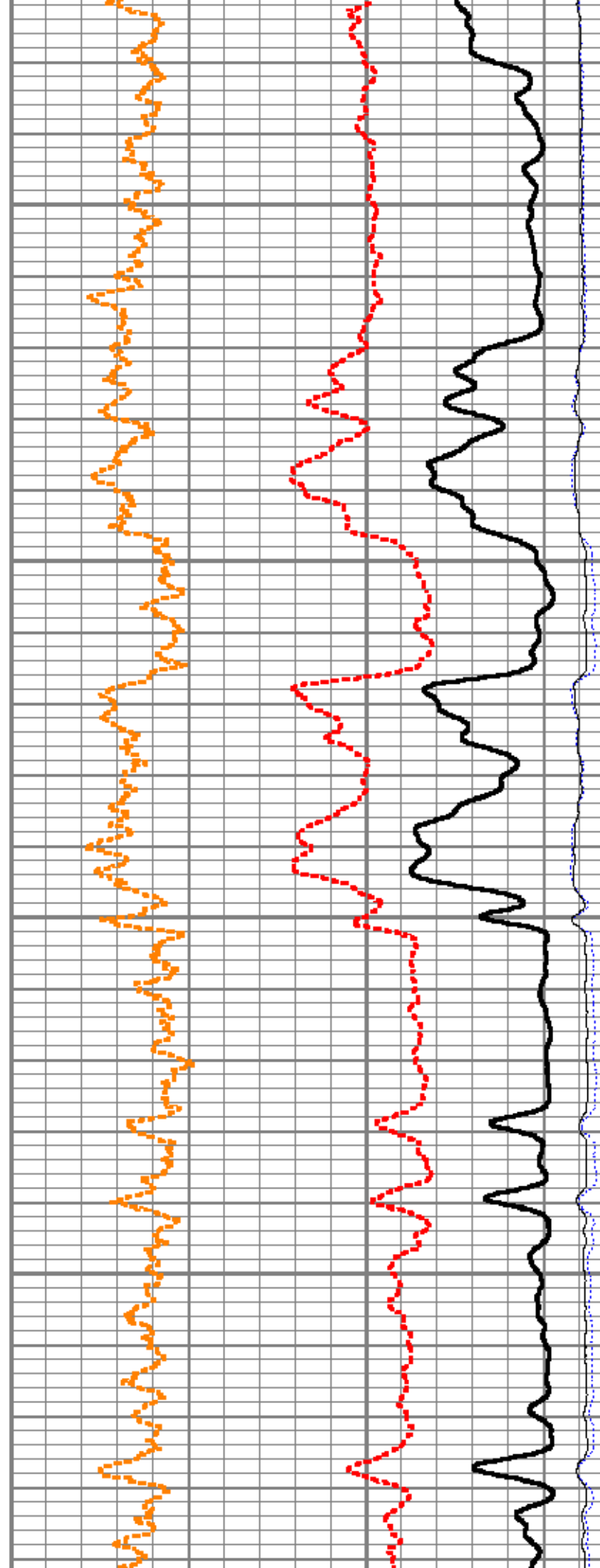
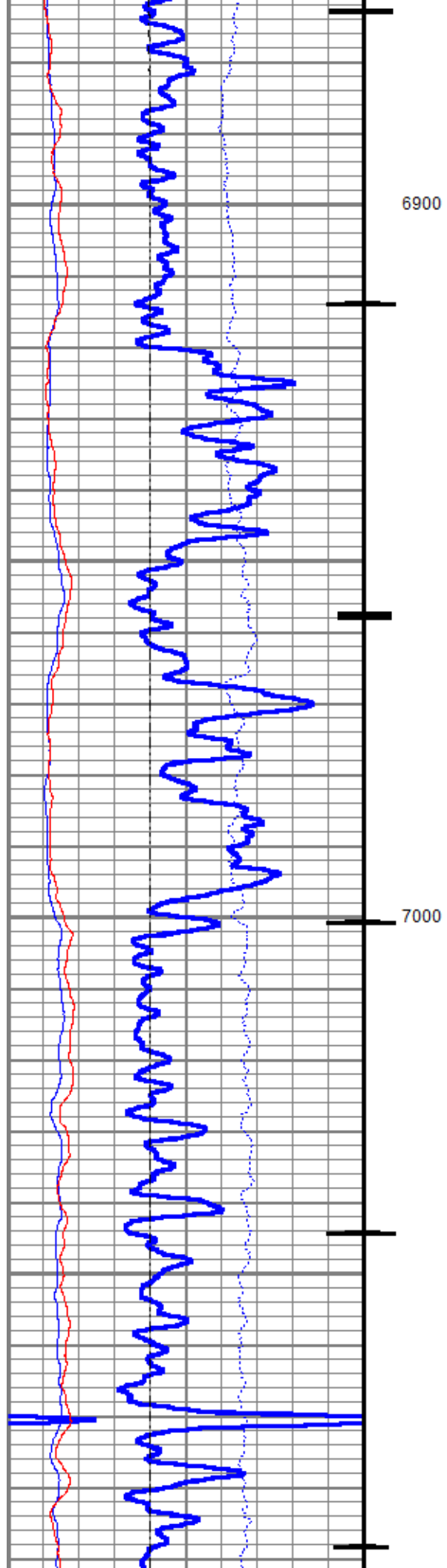
0	Gamma Ray (GAPI)	150
Casing Collar Locator		
-100	Line Speed (ft/min)	100
0	NIRS	400000
0	BKGN (cps)	4000
0	BKGF (cps)	2000

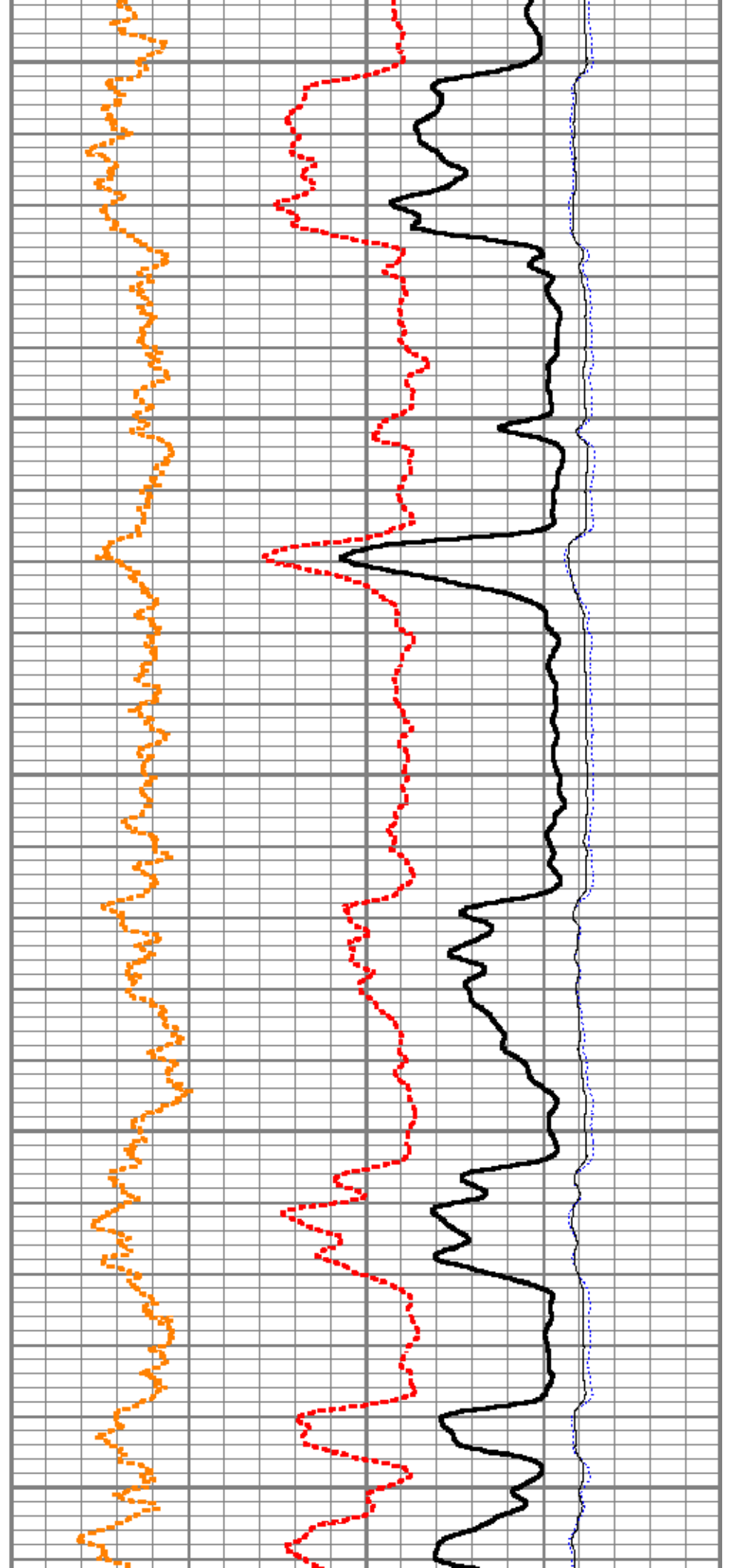
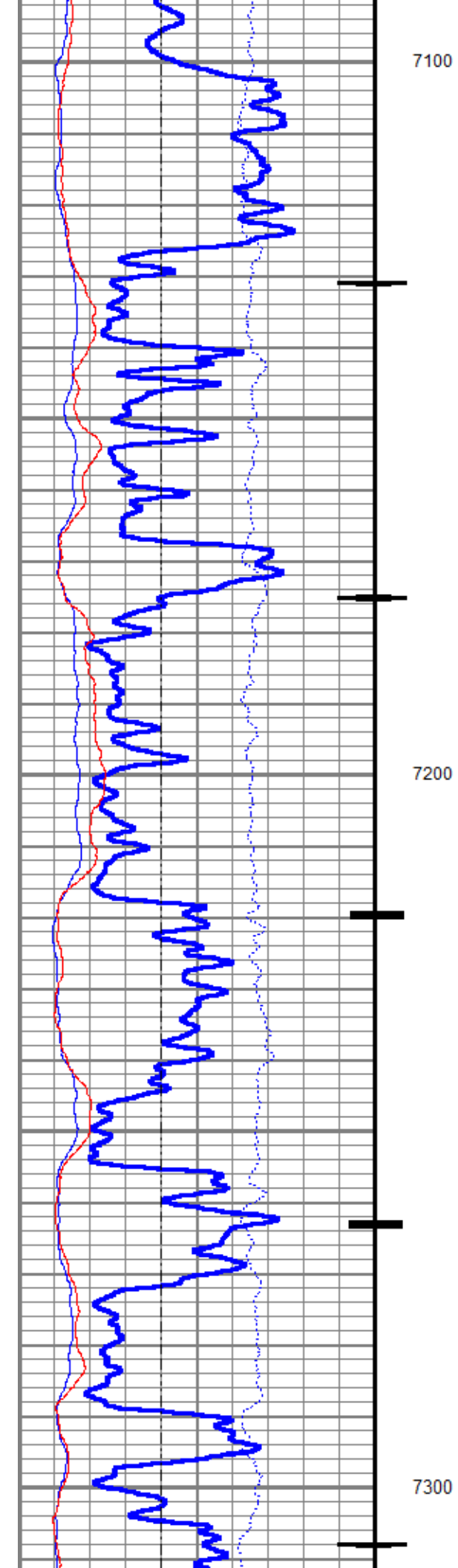
4	RNF2	0
60	SIGMA (cu)	0
4.5	RNFI	0
0	FIS2	45000
0	NIS2	100000

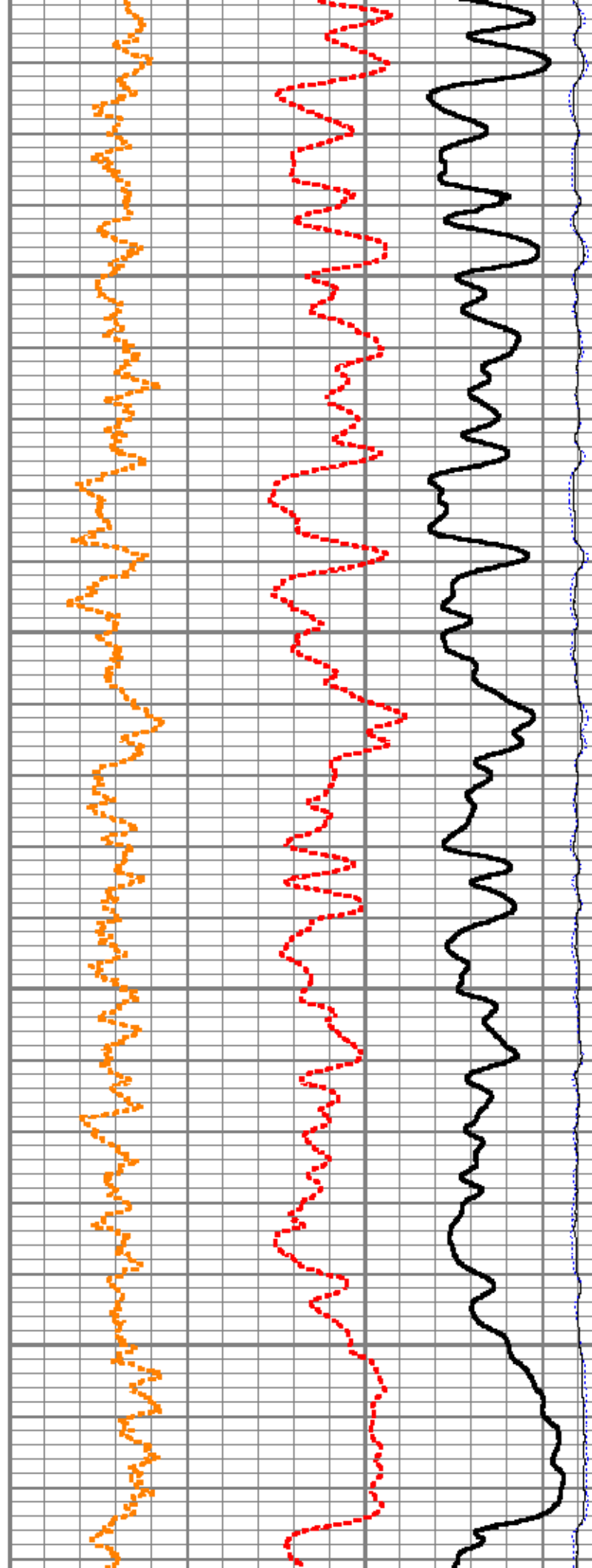
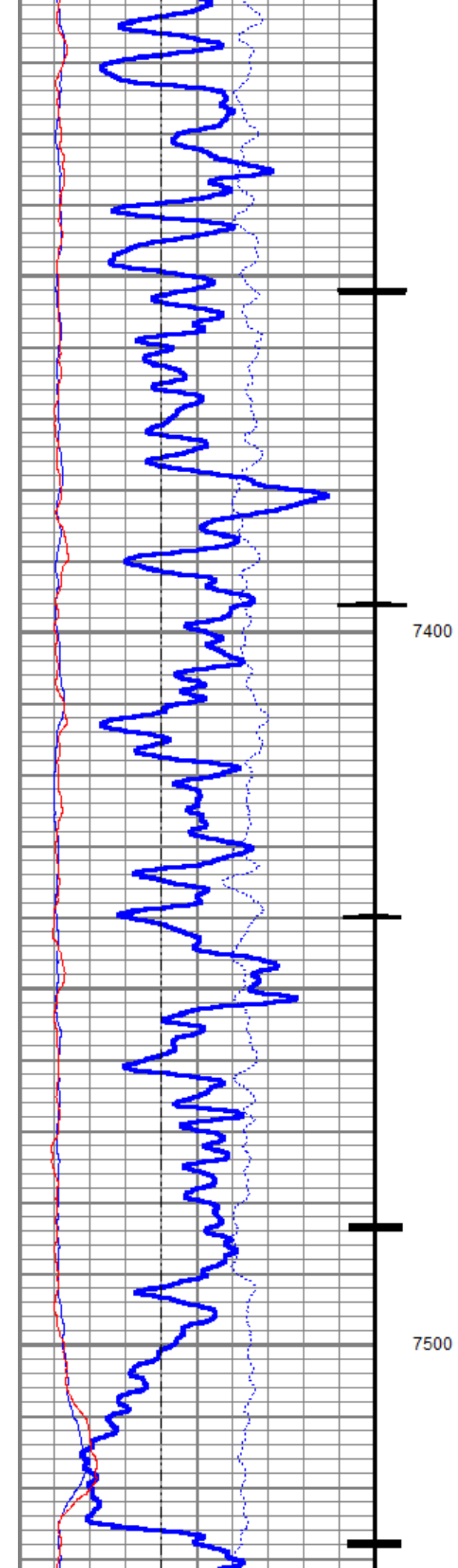


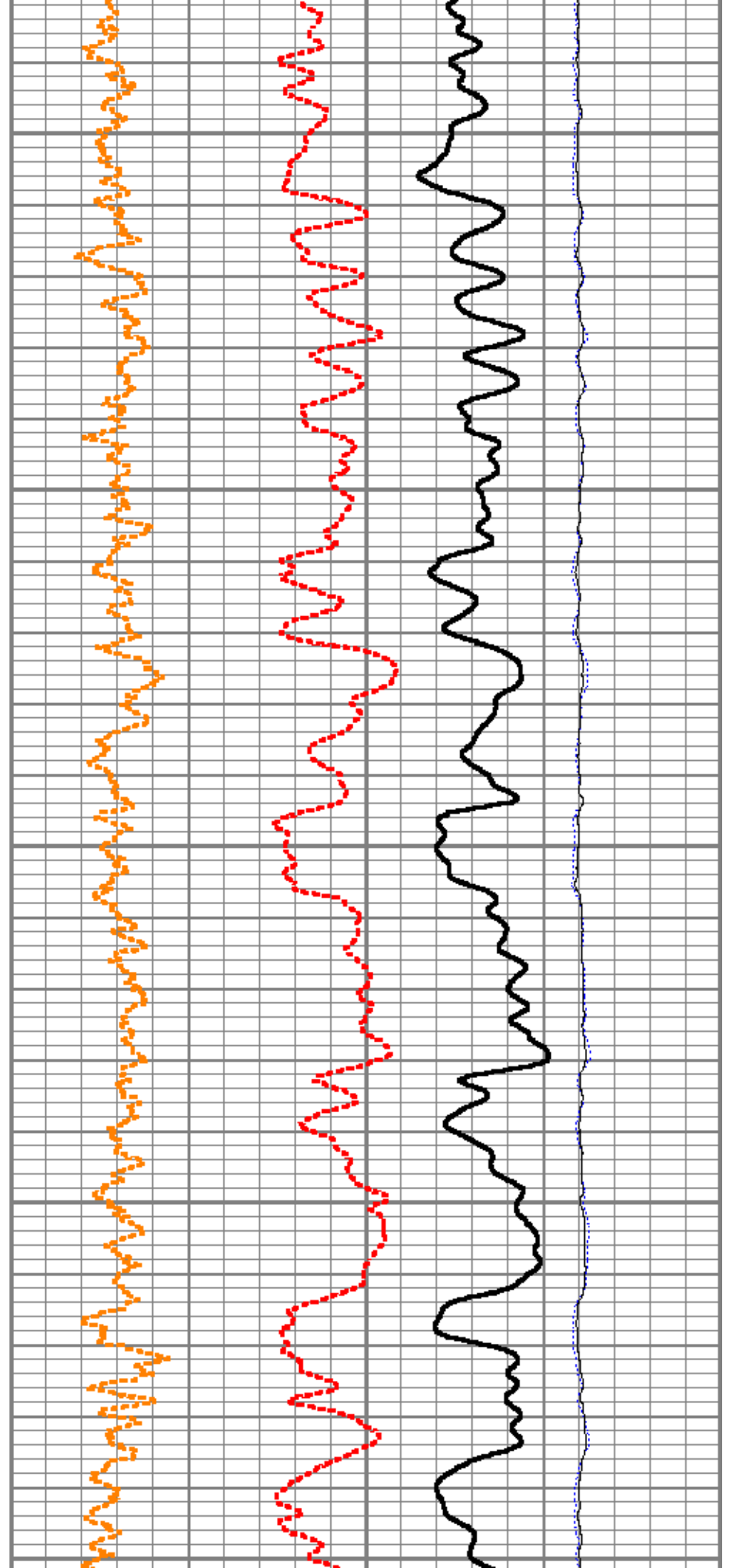
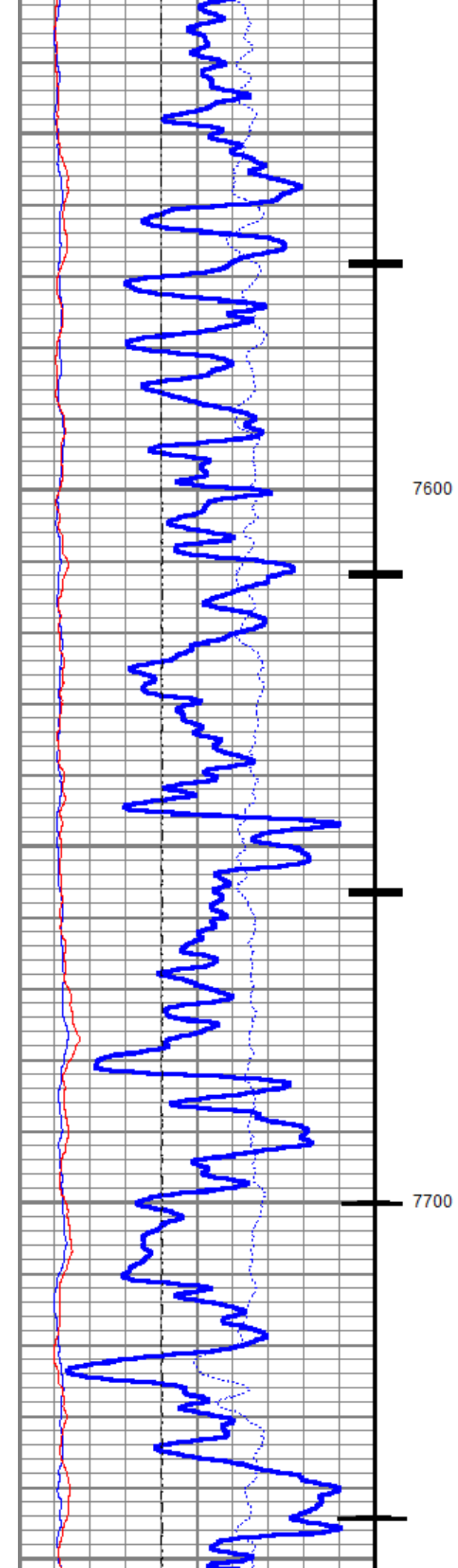


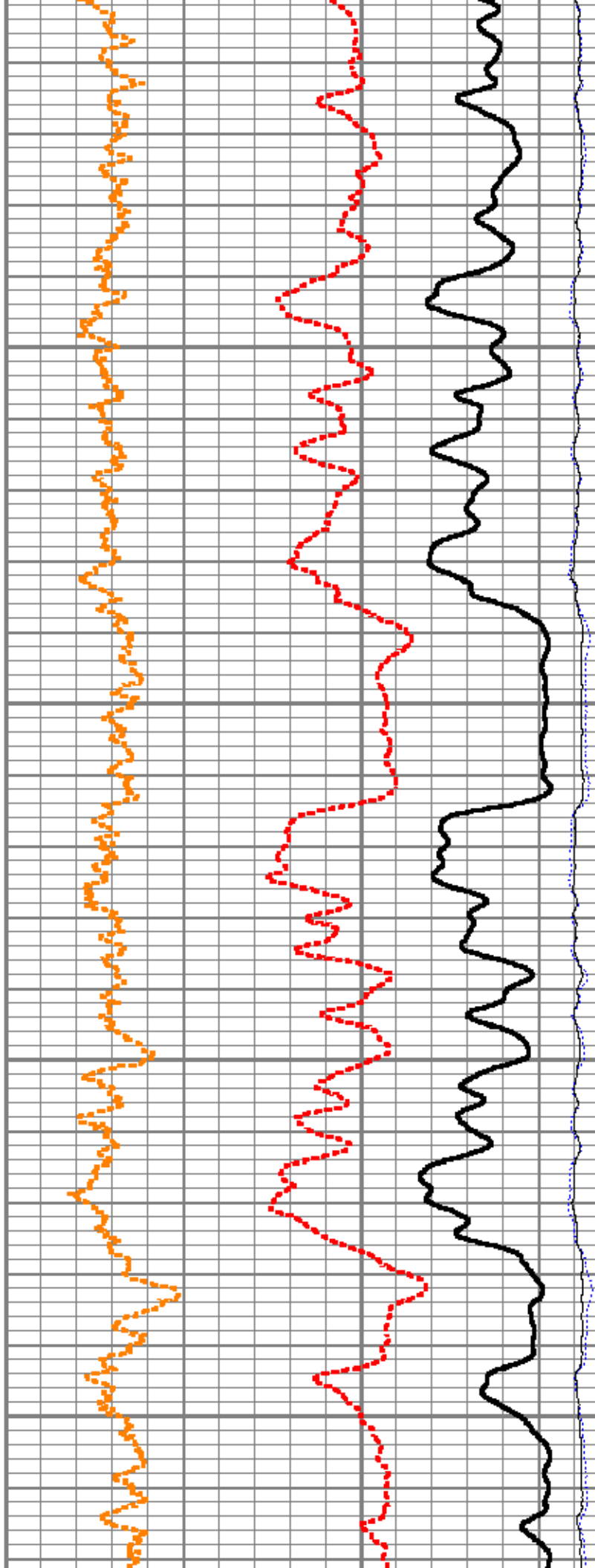
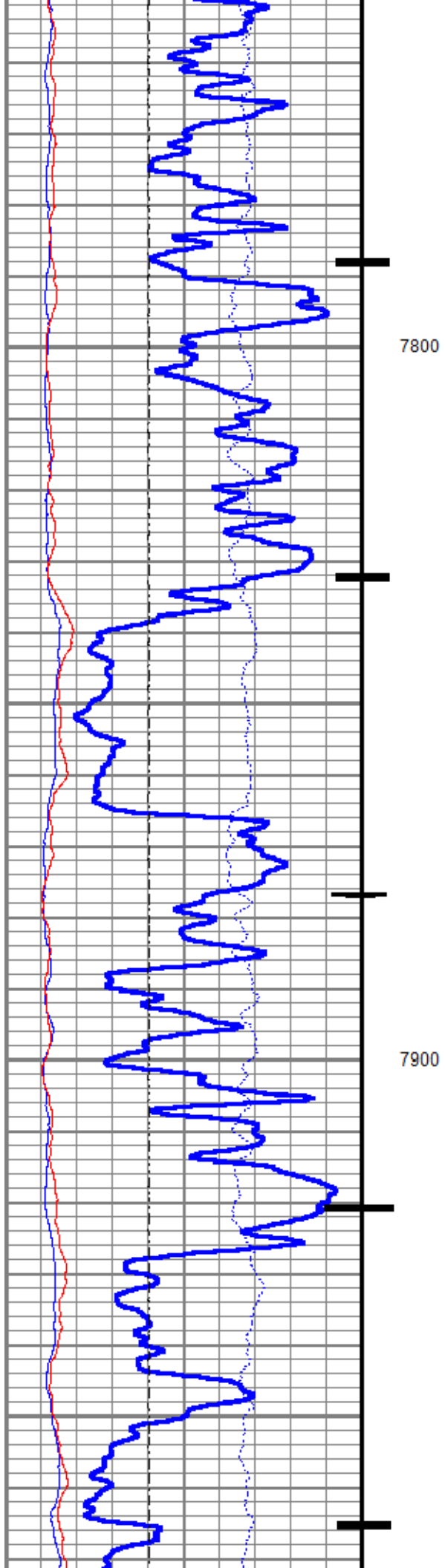


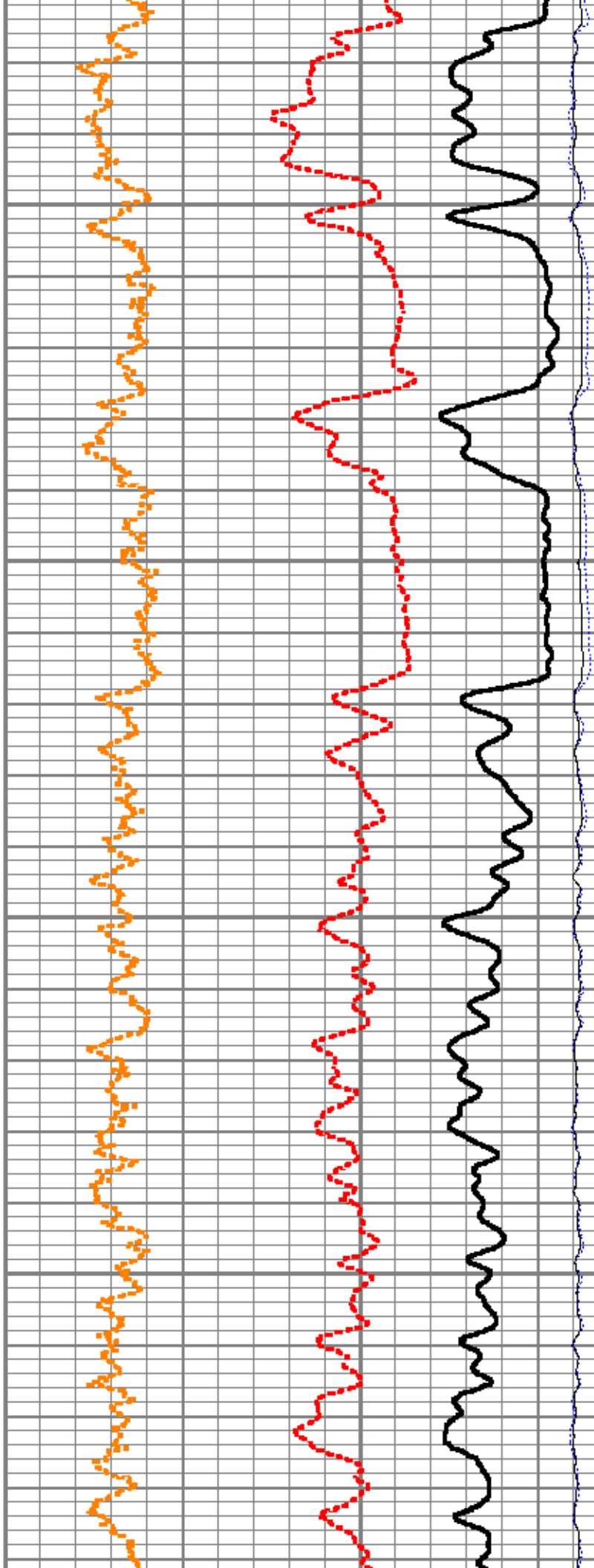
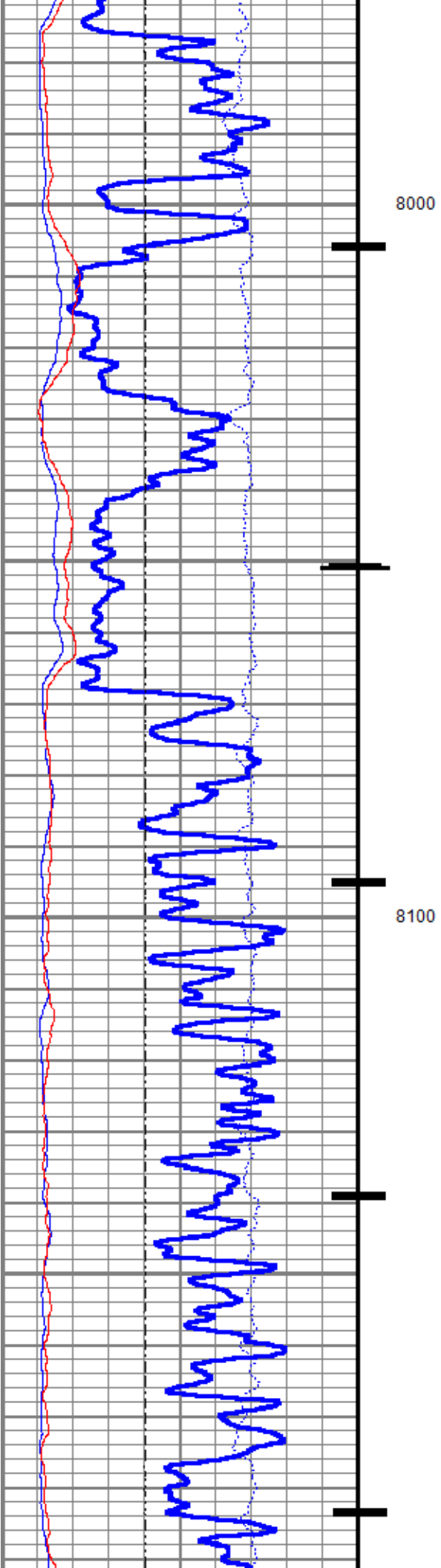


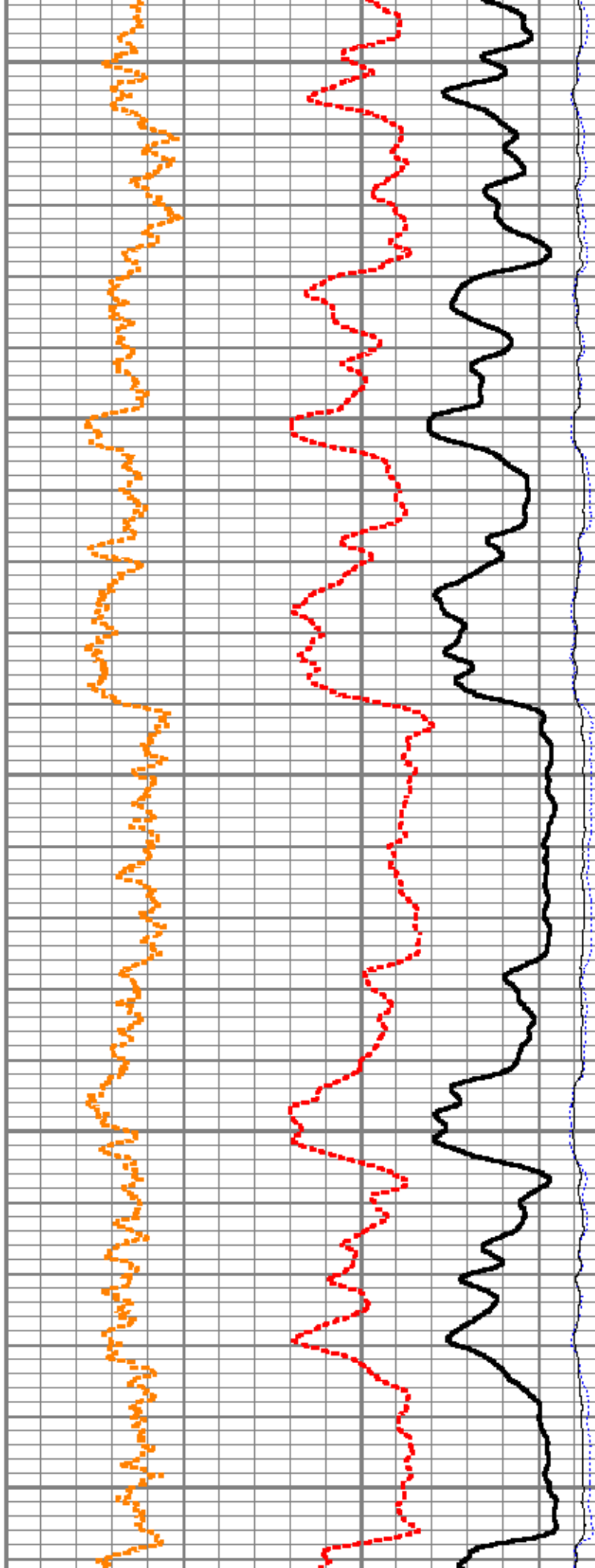
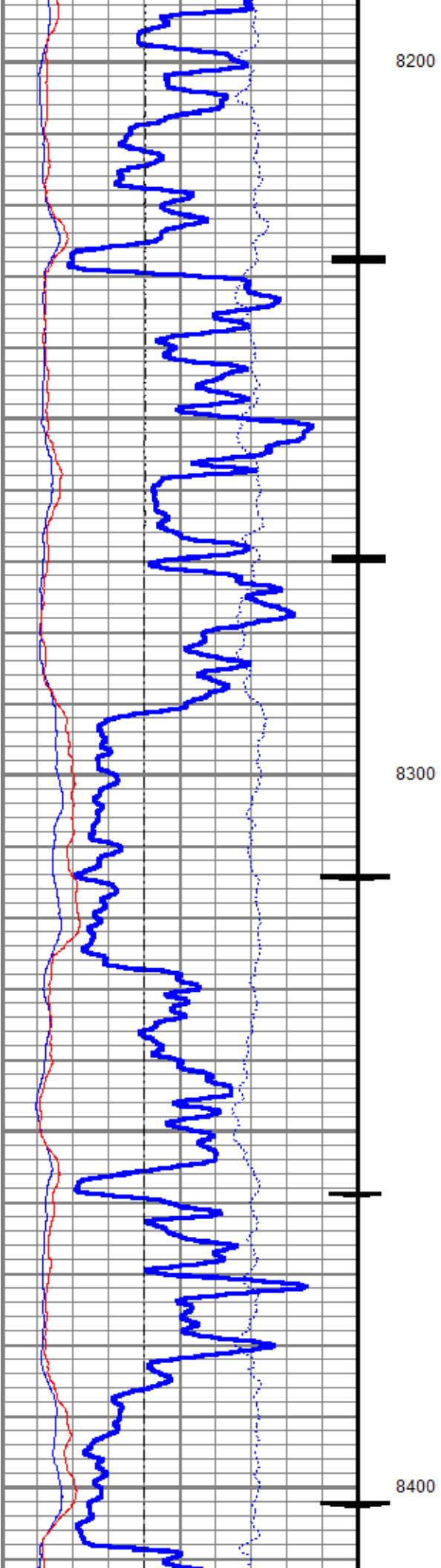


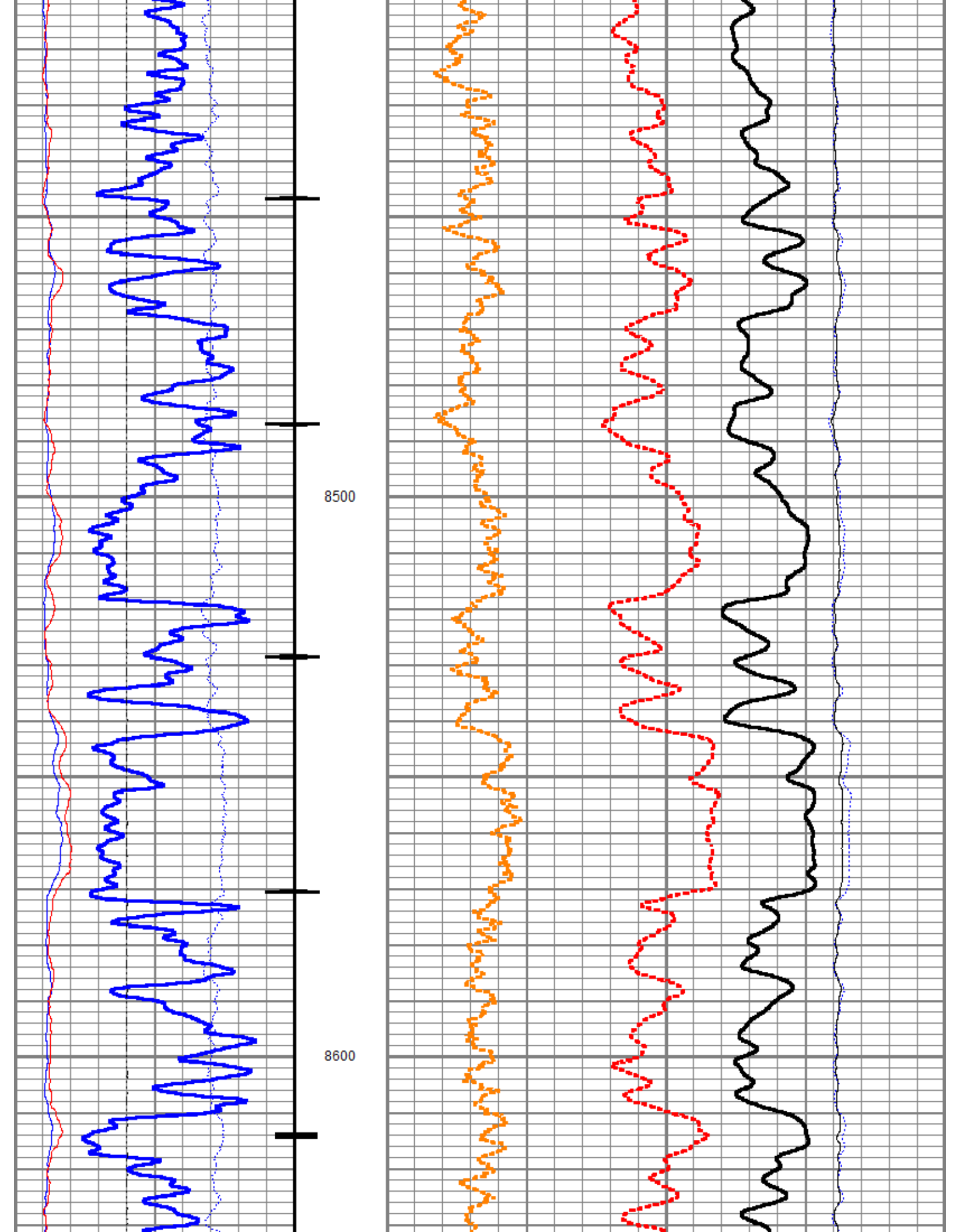


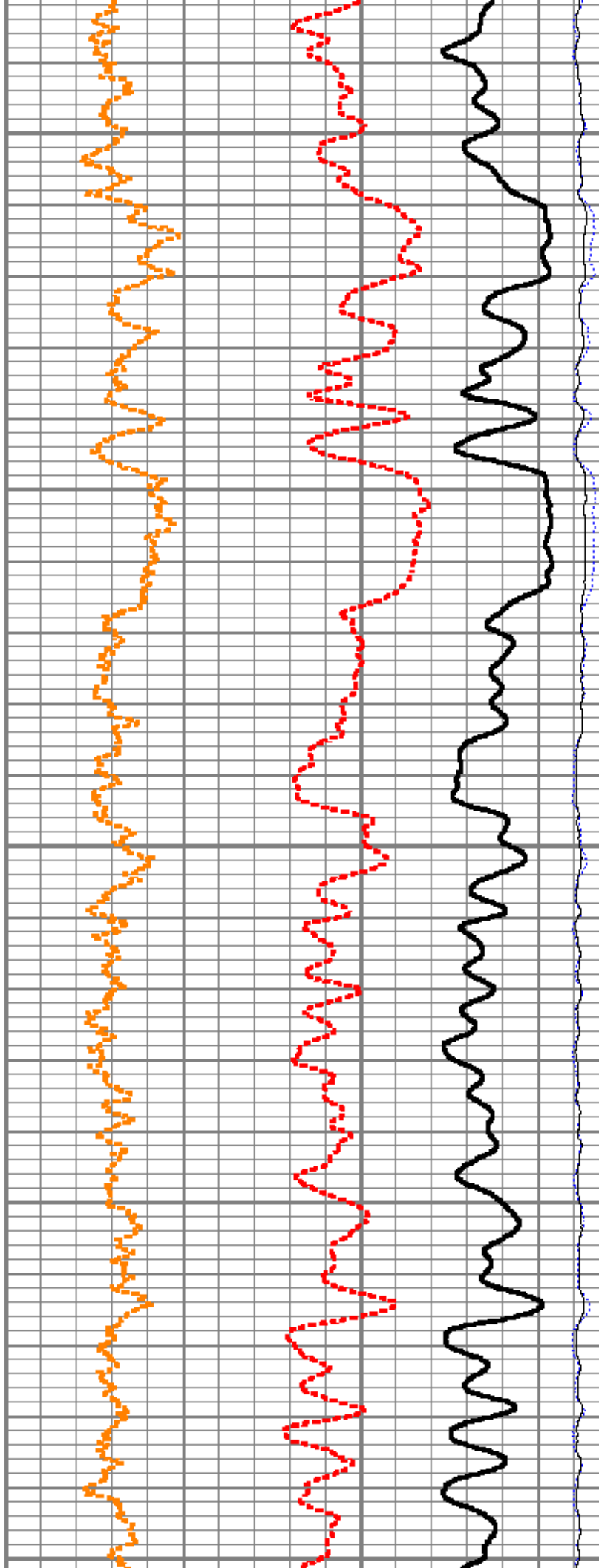
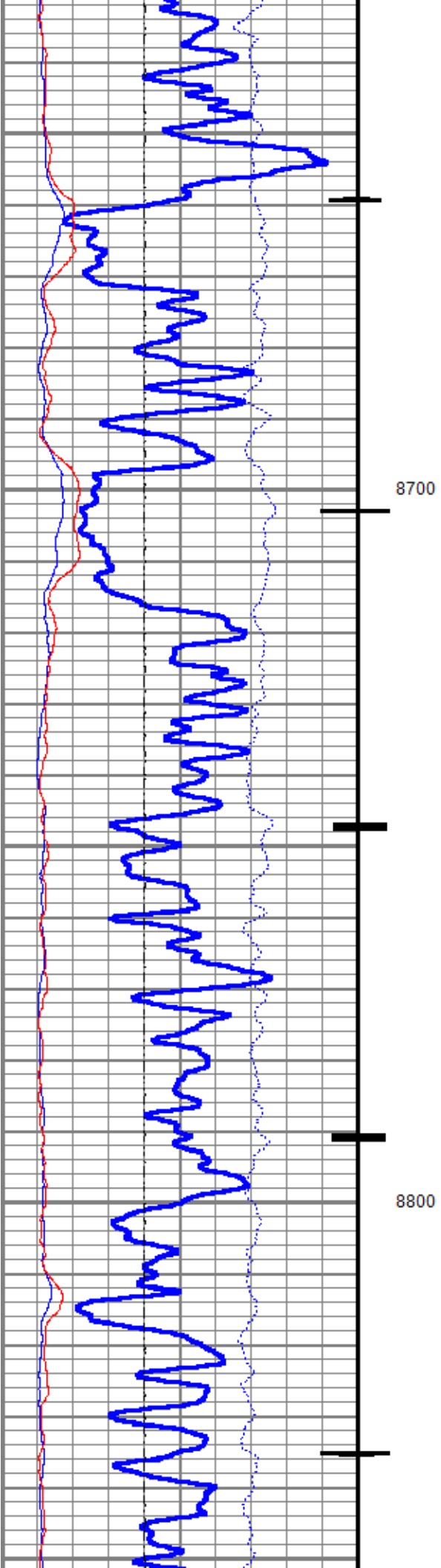


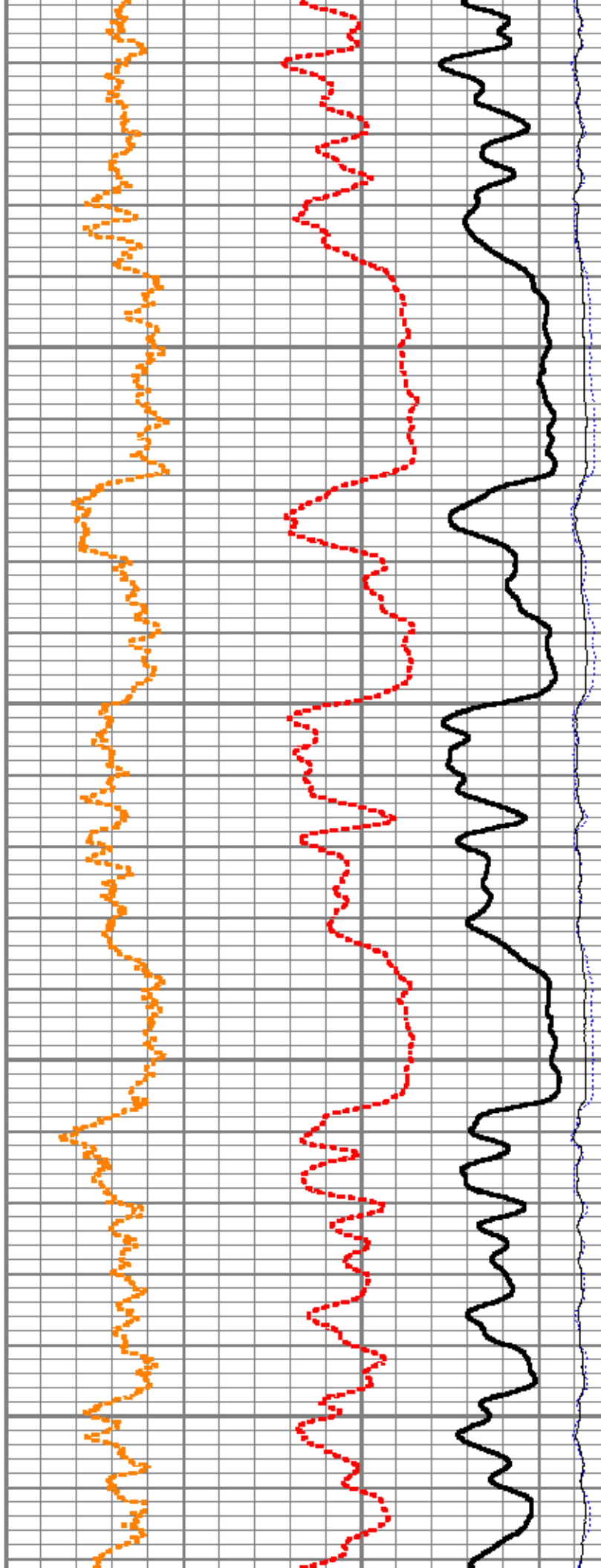
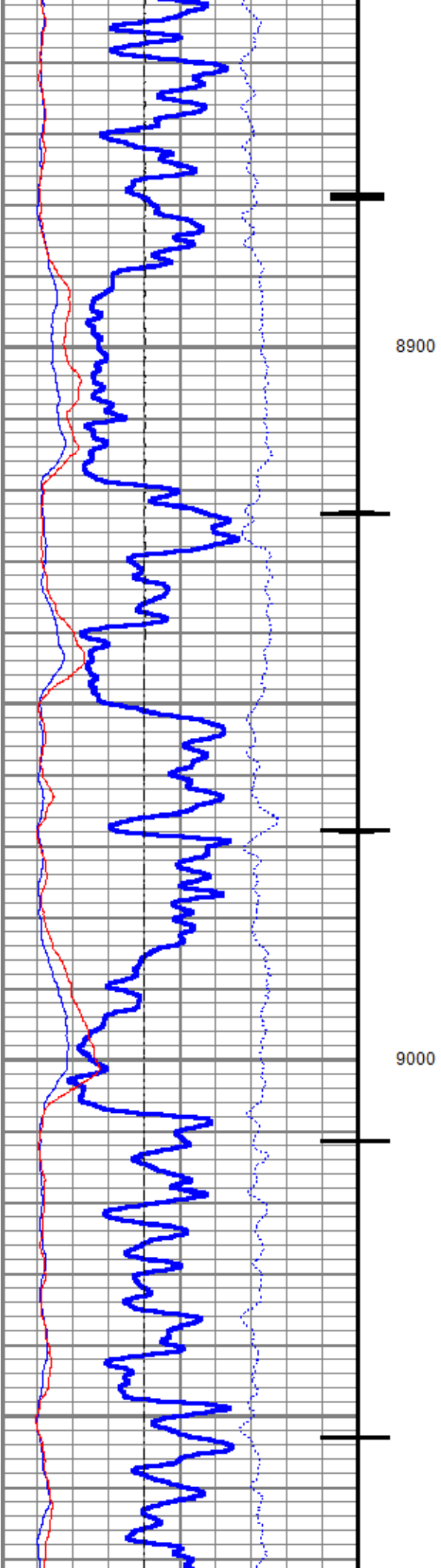


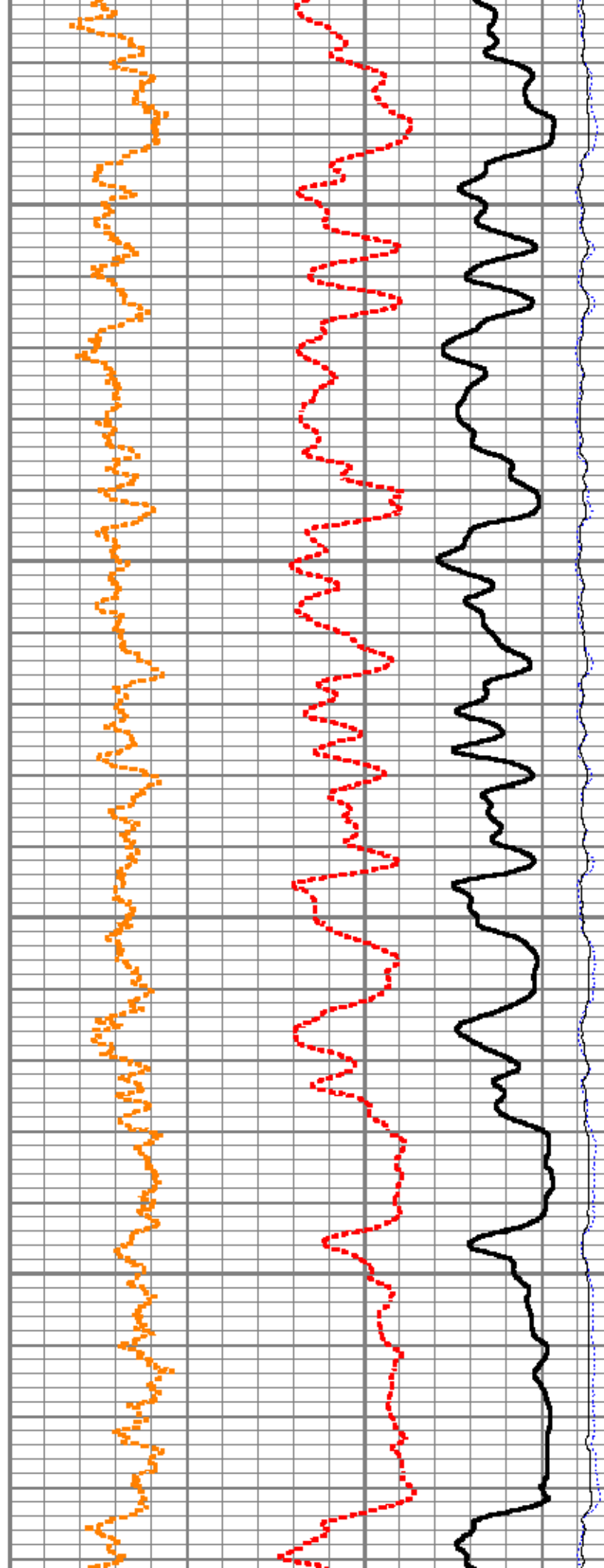
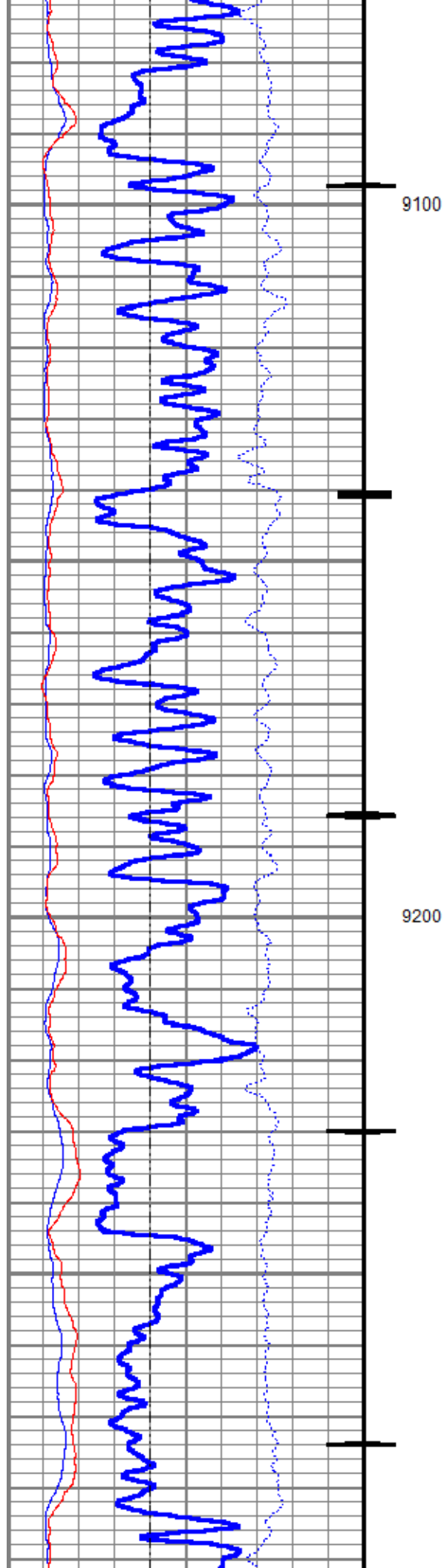


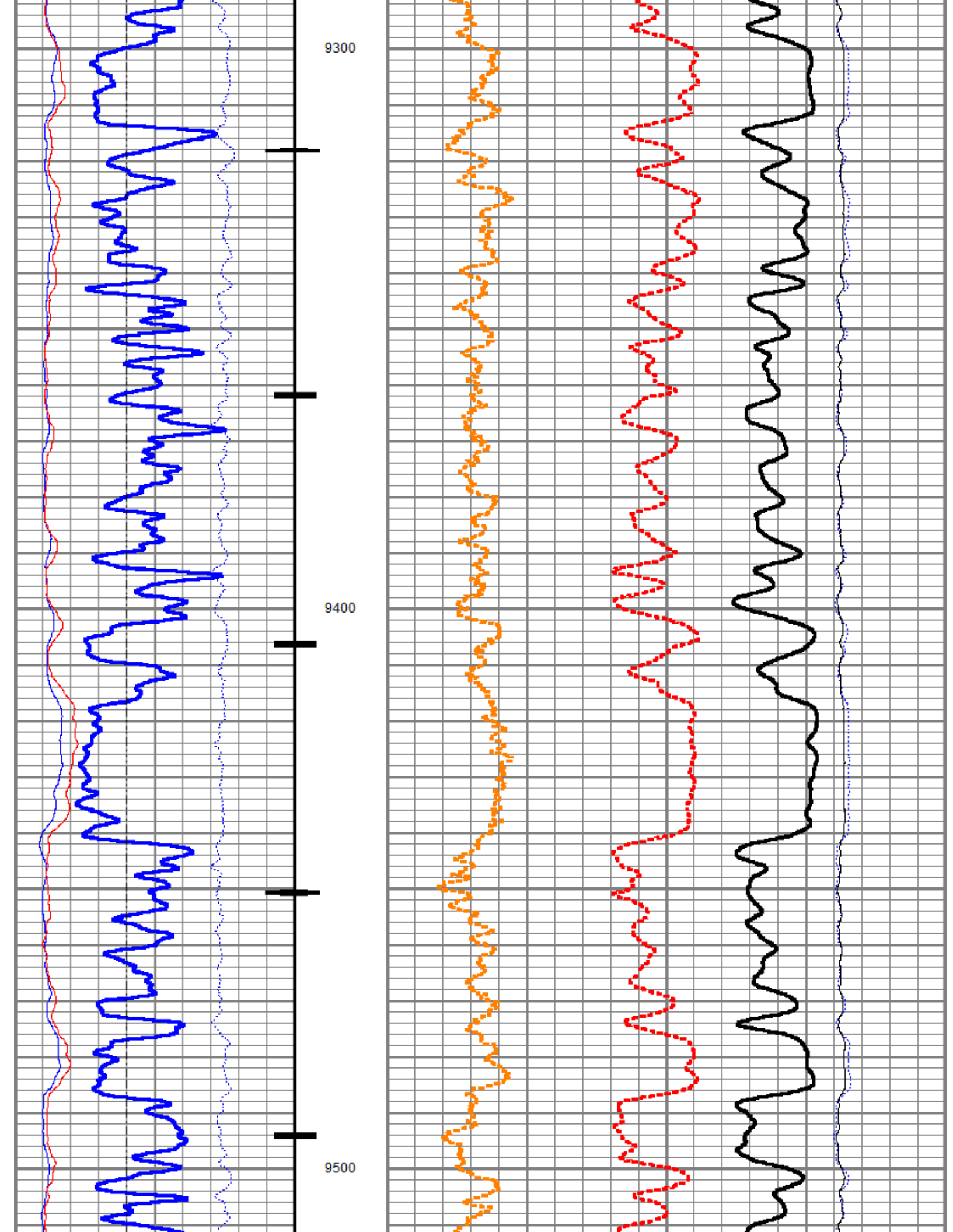


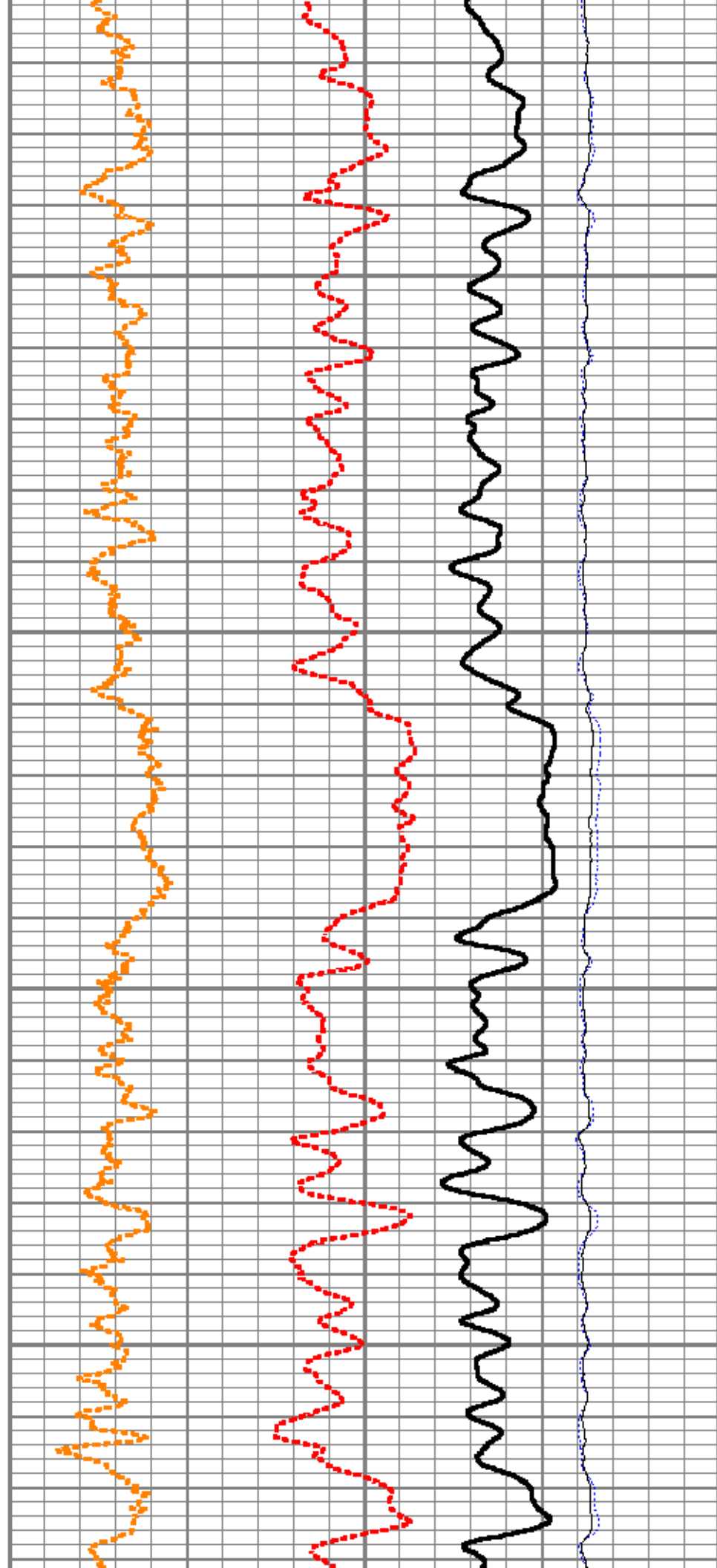
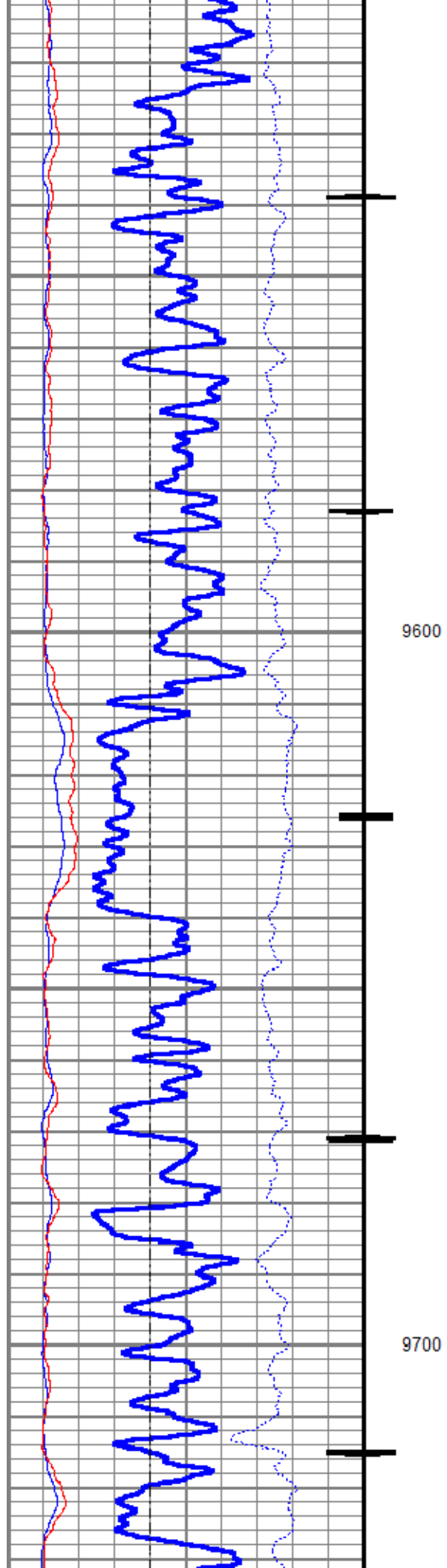


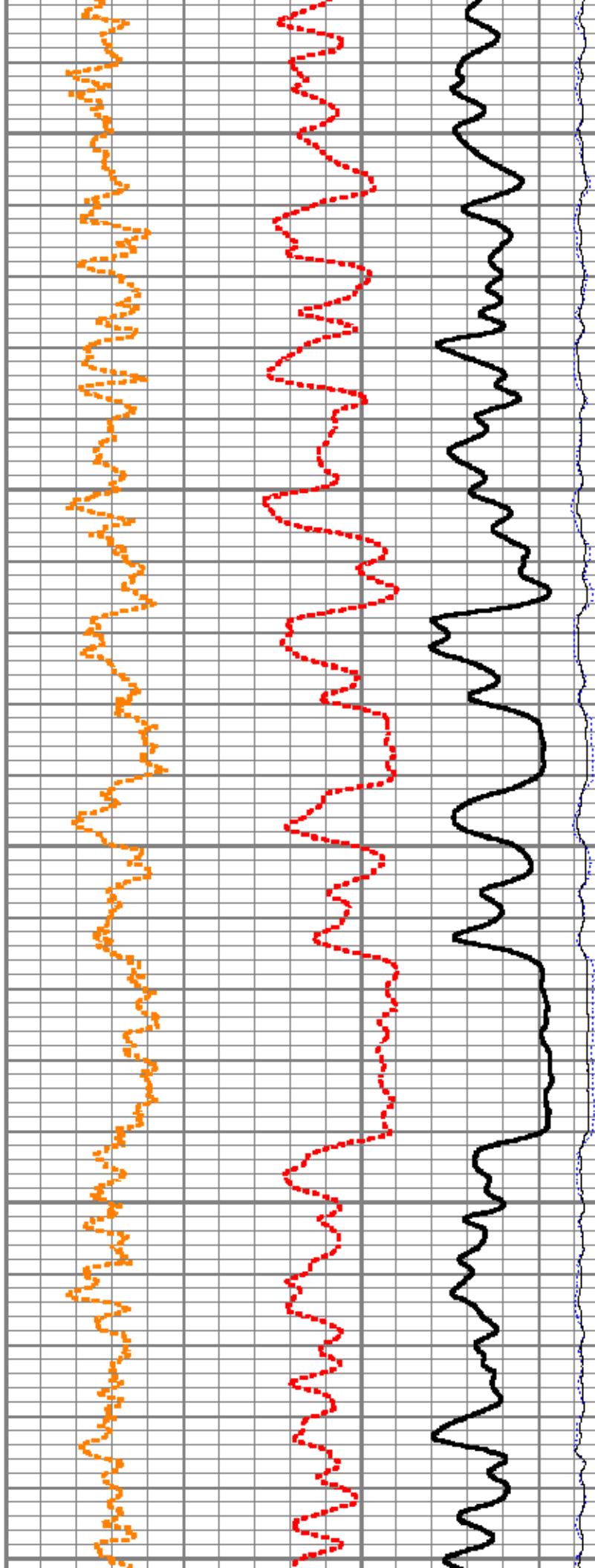
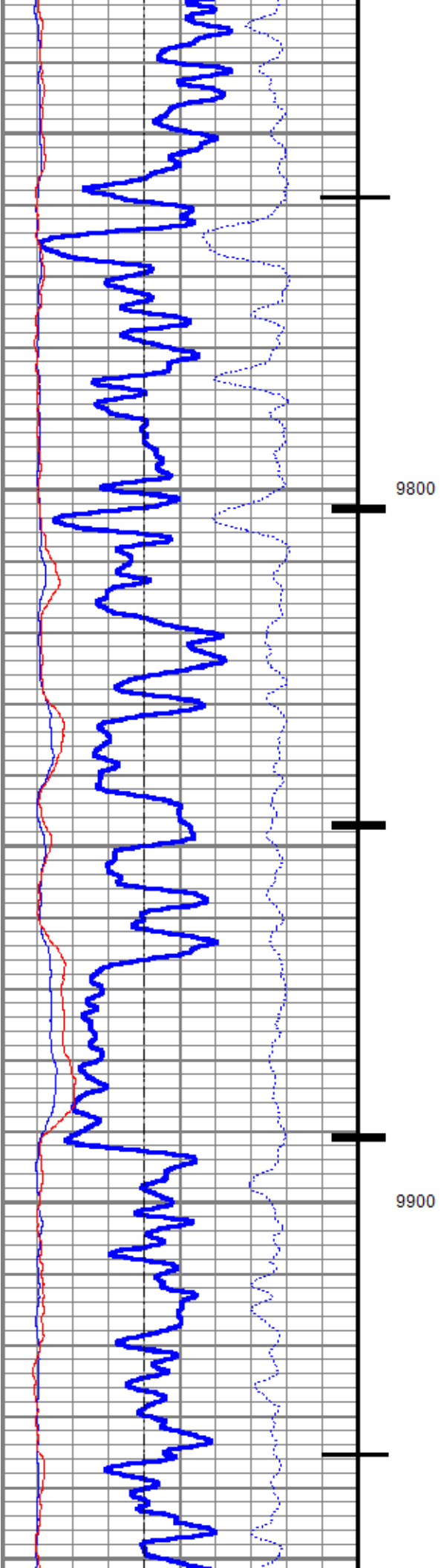


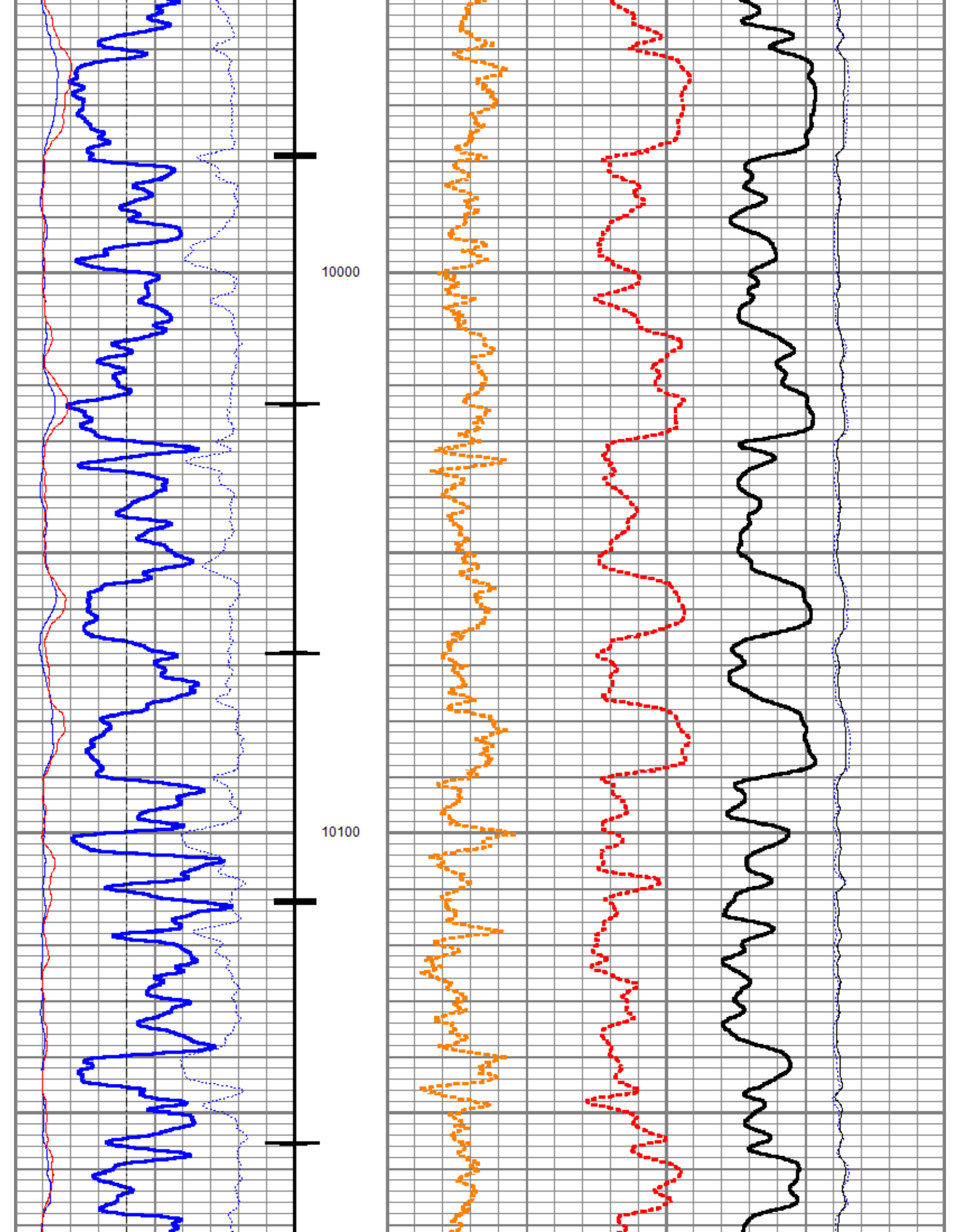


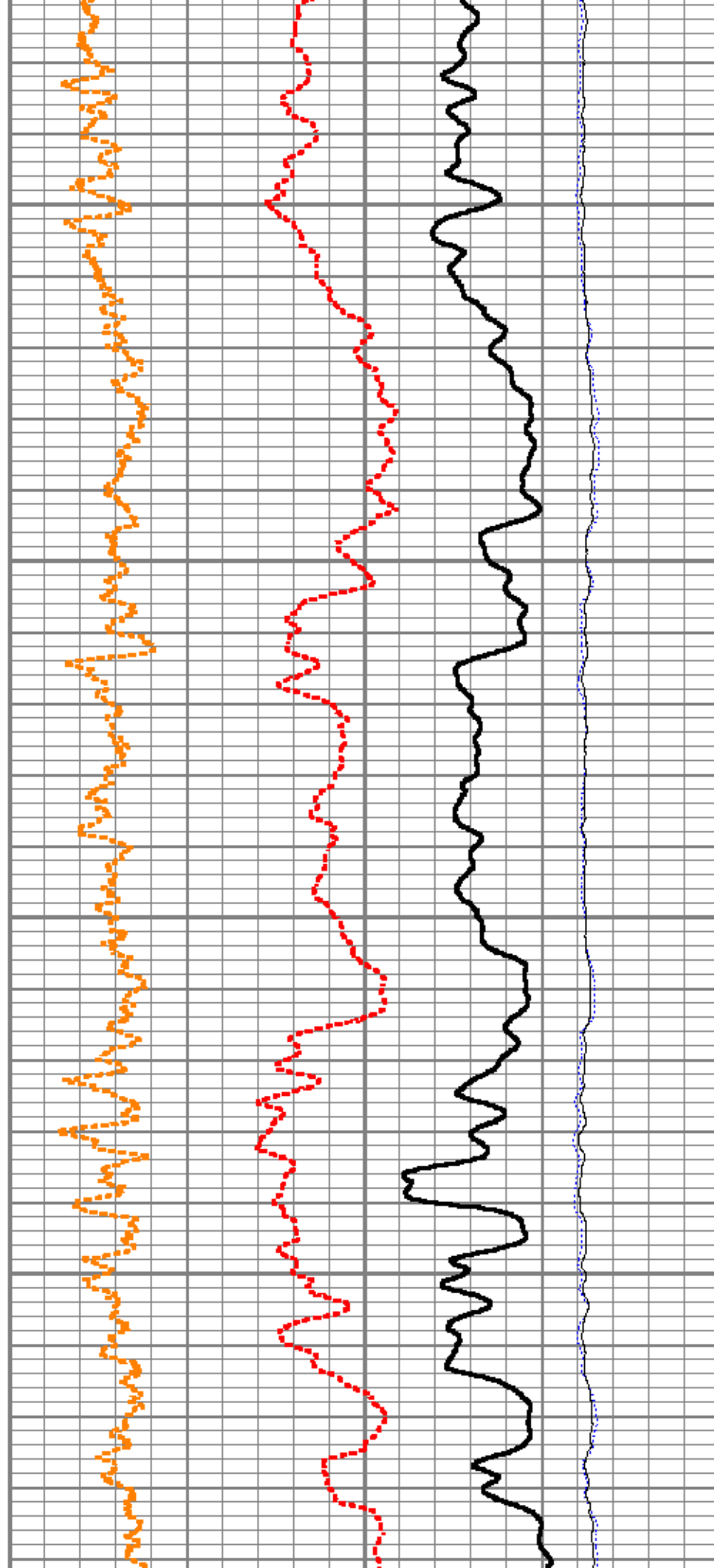
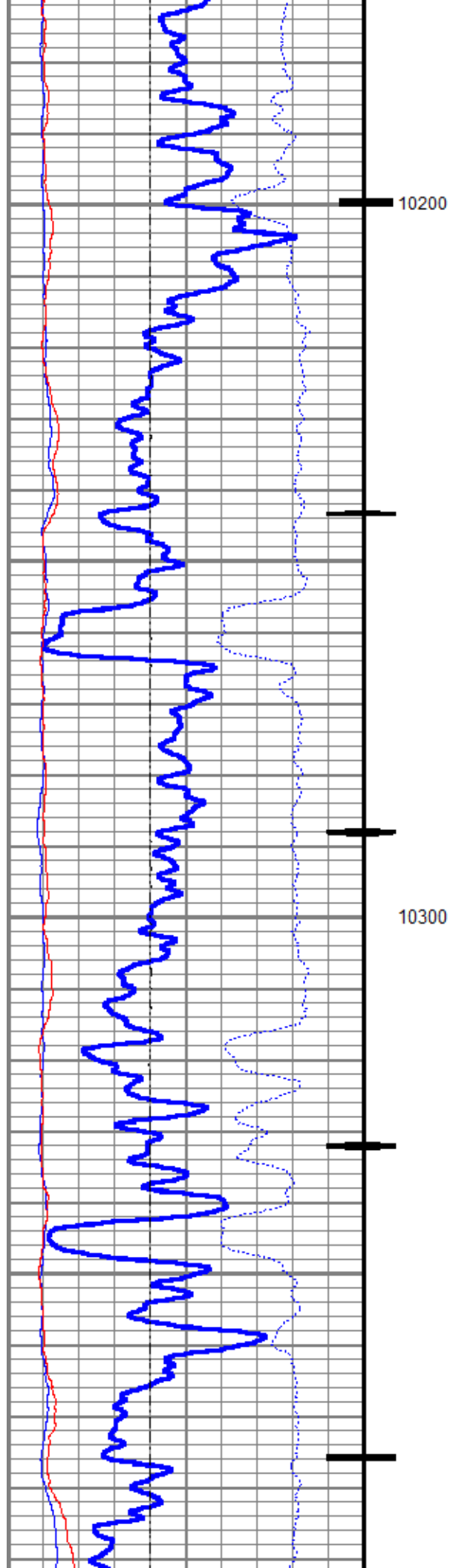


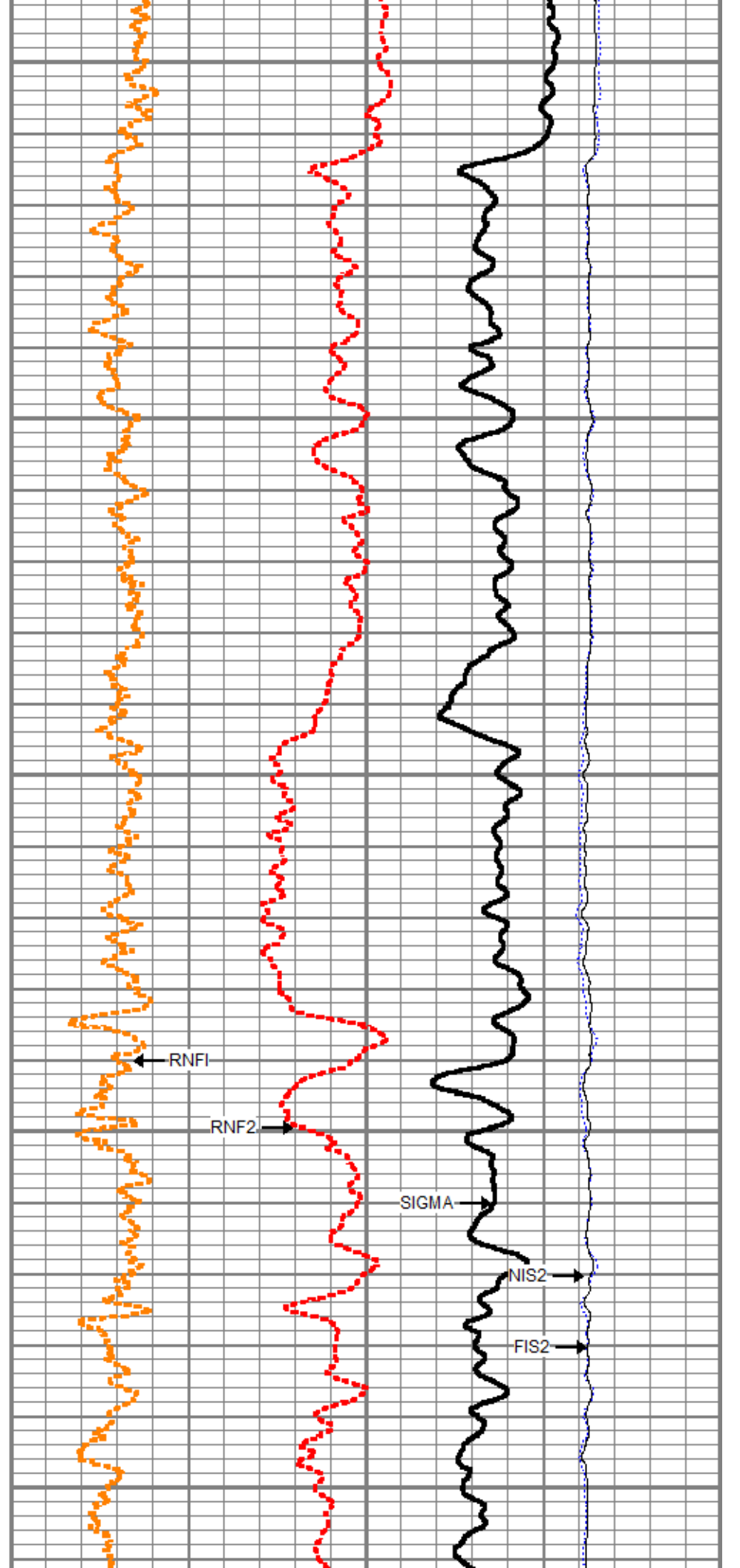
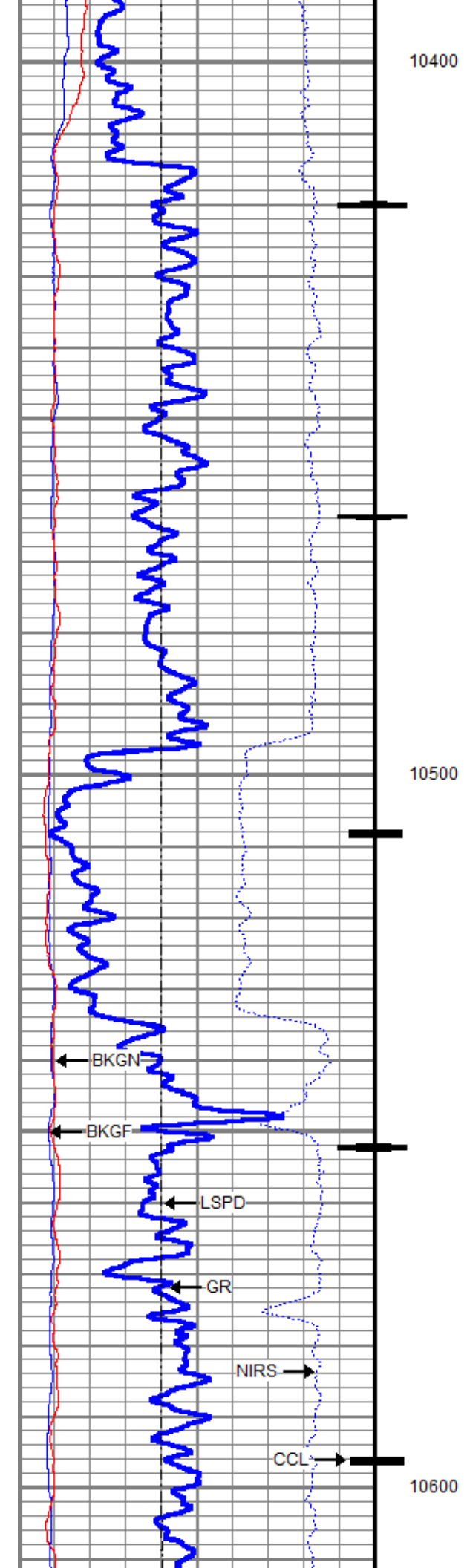


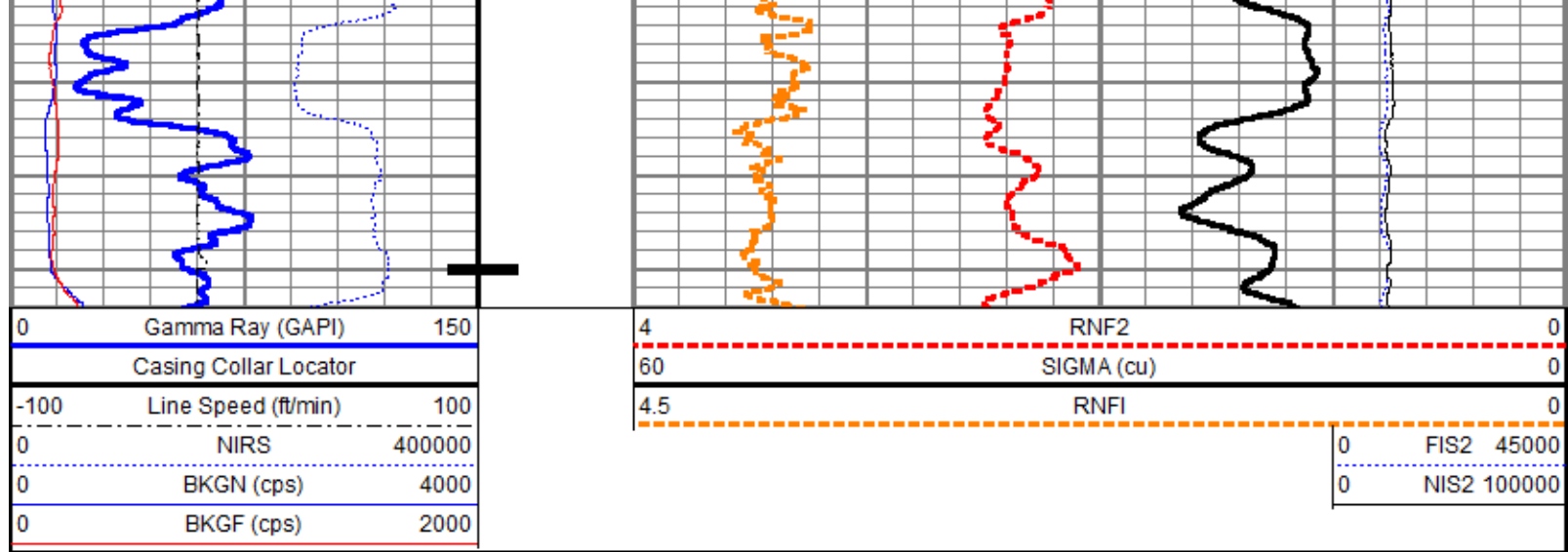






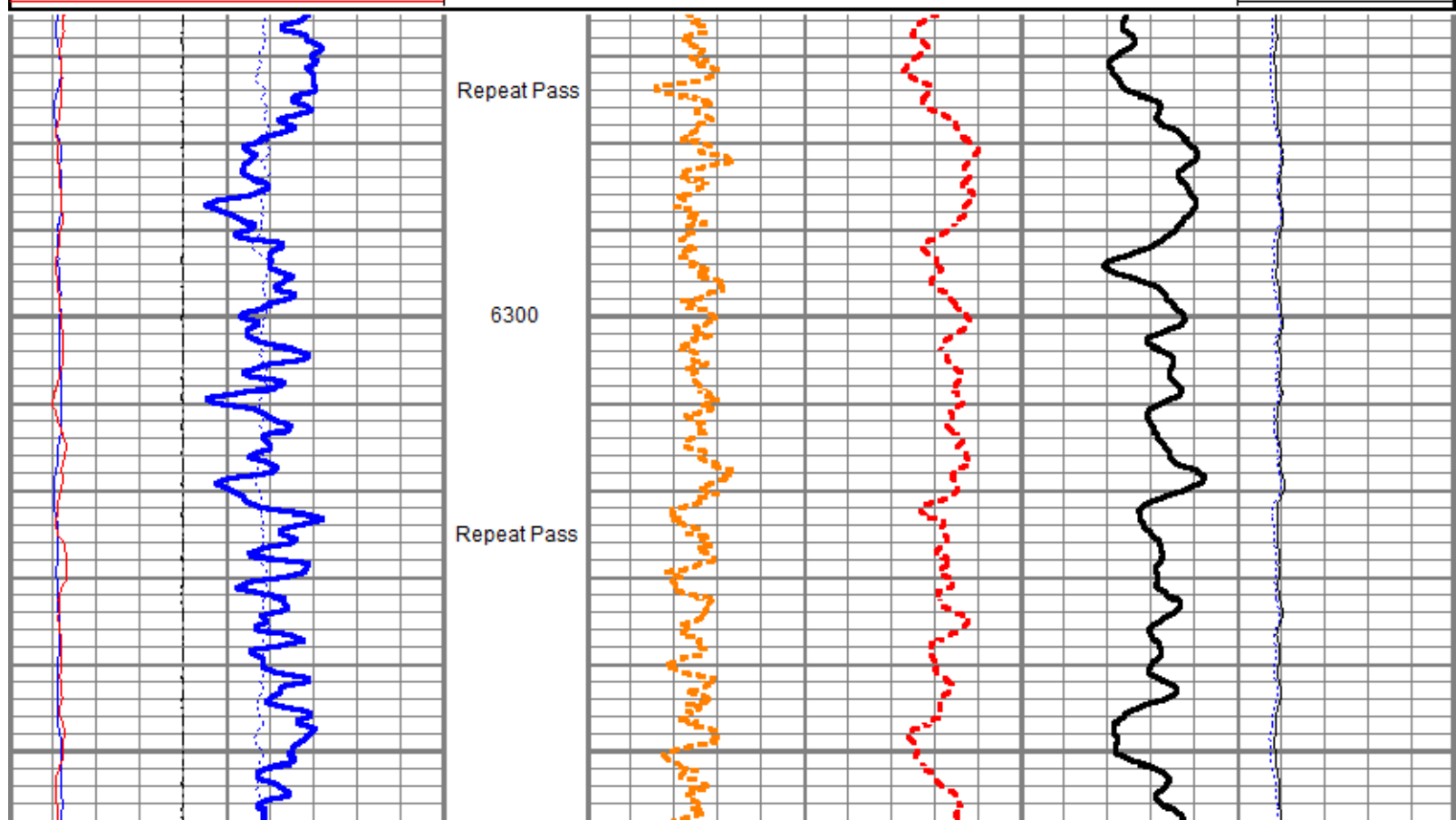


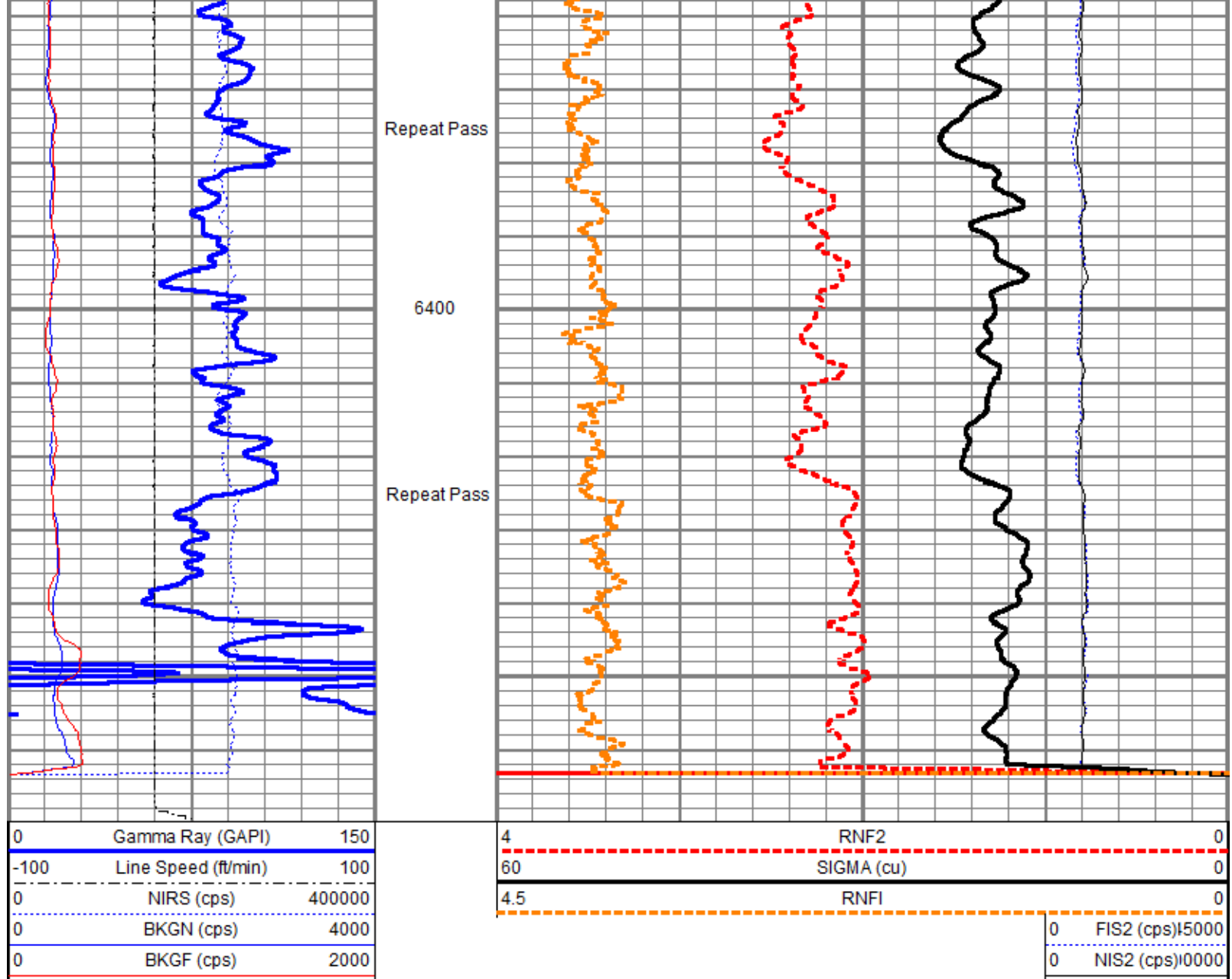




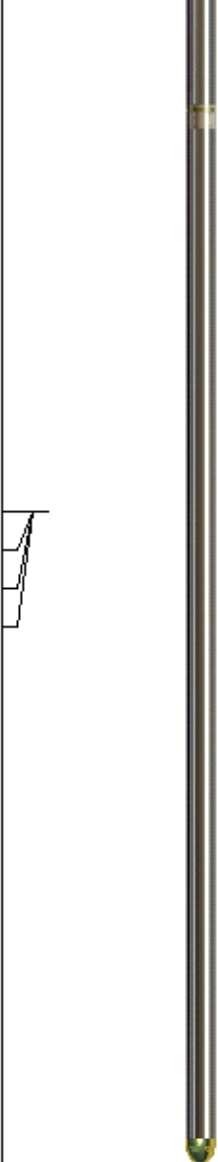
Repeat Pass

Database File: tep_clough nr 344-3_rbl\pn\tep_clough_nr_344-3_pn_12-18-2018.db
 Dataset Pathname: repeat.2
 Presentation Format: ros_pdn_hunter
 Dataset Creation: Wed Dec 19 03:36:15 2018
 Charted by: Depth in Feet scaled 1:240





Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
TCUTEMP	14.69		Titan CHD-16875 GO	1.03	1.69	5.40
TCUVOLT	14.69		Titan 1-11/16" Assembled Electric Cable Head w/ 1" Fishing Neck			
GCL_CCL	13.97		HWS_TCU-002 (001704) HWS Telemetry Control Unit (TCU002)	2.30	1.69	10.87
			HWS_GCL-001 (001681) HWS Gamma Ray Collar Locator (1.6875")	2.69	1.69	13.40
GCL_GR	12.50					
GCL_GR	12.50					

Long	6.25		HWS_RAS-RAS002 (003041) Hunter Well Science Pulsed Neutron Tool	11.75	1.69	55.82
Far	6.25					
Near	6.25					
Anci	6.25					
			HWS_TBN-001 (001725) HWS Terminator Bull Nose (1.6875")	0.25	1.69	0.99
Dataset: tep_clough_nr_344-3_pn_12-18-2018.db: field/well/run1/main.2 Total length: 18.02 ft Total weight: 86.48 lb O.D.: 1.69 in						

Calibration Report	
Database File	c:\programdata\warrior\data\tep_clough nr 344-3_rbl\pn\tep_clough_nr_344-3_pn_12-18-2018.db
Dataset Pathname	main.2
Dataset Creation	Wed Dec 19 03:34:53 2018

RAS Calibration Report	
Calibration Date:	Tue Dec 18 22:55:48 2018
Meas #:	003041

Water Tank				
Description	Curve	Standard	Mean	Dev
Sigma Near	SIGN	23.1	24.2	0.35
Sigma Far	SIGF	22.8	23.4	0.46
Ratio Near-Long Capture	RNL2	5.79	6.61	0.05
Ratio Near-Long Burst	RNLB	6.49	6.90	0.05
Ratio Near-Far Capture	RNF2	1.85	2.02	0.02
Ratio Near-Far Burst	RNFB	2.03	2.19	0.01
Spectral Hydrogen Index	HIS2	12.84	13.24	0.21
Carbon-Oxygen Ratio	CORS	1.34	1.36	0.05
Ratio Burst Capture Near	RNBC	1.46	1.74	0.02

Ratio Burst-Capture Near	RNBC	1.40	1.74	0.02
Ratio Burst-Capture Far	RFBC	1.50	1.65	0.01

Hydrocarbon Tank

Description	Curve	Standard	Mean	Dev
Sigma Near	SIGN	25.7	26.5	0.49
Sigma Far	SIGF	25.1	25.9	0.54
Ratio Near-Long Capture	RNL2	1.78	3.07	0.03
Ratio Near-Long Burst	RNLB	2.57	4.52	0.02
Ratio Near-Far Capture	RNF2	0.98	1.31	0.01
Ratio Near-Far Burst	RNFB	1.30	1.67	0.01
Spectral Hydrogen Index	HIS2	16.68	18.05	0.35
Carbon-Oxygen Ratio	CORS	1.51	1.56	0.04
Ratio Burst-Capture Near	RNBC	2.23	2.47	0.02
Ratio Burst-Capture Far	RFBC	2.09	2.16	0.01

Gamma Ray Calibration Report

Serial Number:	001681	
Tool Model:	001	
Performed:	(Not Performed)	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	
Calibrator Reading:	1.0	
Sensitivity:	1.0000	GAPI/



Company	TEP Rocky Mountain LLC
Well	Clough NR 344-3
Field	Rulison
County	Garfield
State	Colorado