



**PIONEER**

Pioneer Energy Services

## DUAL INDUCTION LOG

Company WIEPKING-FULLERTON ENERGY, LLC

Well MA-STATE NO. 13

Field GREAT PLAINS

County LINCOLN State COLORADO

Location: API #: 05-073-06588-00

660' FSL & 660' FEL

CNL/CDL

SEC 24 TWP 10S RGE 56W

Permanent Datum GROUND LEVEL Elevation 5271'

Log Measured From KELLY BUSHING

Drilling Measured From KELLY BUSHING

Elevation  
K.B. 5284'  
D.F. N/A  
G.L. 5271'

Date 5/28/2018

Run Number ONE

Depth Driller 8000'

Depth Logger 7996'

Bottom Logged Interval 7994'

Top Log Interval 300'

Casing Driller 8,625" @ 314'

Casing Logger 314'

Bit Size 7.875"

Type Fluid in Hole CHEMICAL

Salinity, ppm CL 400

Density / Viscosity 9.4 72

pH / Fluid Loss 9.5 8.8

Source of Sample FLOWLINE

Rm @ Meas. Temp 1.2 @ 75

Rmt @ Meas. Temp .90 @ 75

Rmc @ Meas. Temp 1.52 @ 75

Source of Rmt / Rmc CHARTS

Rm @ BHT .58 @ 156

Operating Rig Time 4 HOURS

Max Rec. Temp. F 156 DEGF

Equipment Number 108

Location HAYS

Recorded By J. HENRICKSON

Witnessed By GREGG SMITH

<<< Fold Here >>>

All interpretations are opinions based on inferences from electrical or other measurements and Pioneer Wireline Services, LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Pioneer Wireline Services, LLC will not 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.

### Comments

N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.

HUGO COLORADO

7 MILES NW TO CR 26, 3.2 SOUTH, 2 1/2 WEST

Log Measured From: KELLY BUSHING

13 Ft. Above Permanent Datum

THANK YOU FOR USING PIONEER ENERGY SERVICES

[www.pioneerenergy.com](http://www.pioneerenergy.com)

785-625-3858

Your Pioneer Energy Services Crew

Engineer: J. HENRICKSON

Operator:

Operator:

Operator:

This Log Record Was Witnessed By

Primary Witness: GREGG SMITH

Secondary Witness:

Secondary Witness:

Secondary Witness:

Top - 4150.00 ft

A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in	degF	in	in	g/cc		g/cc
	7.875	156	5.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR	SNDERRM	SPSHIFT	SRFTEMP	SZCOR	TDEPTH
Limestone	0	mmho/m	mmho/m	mV	degF	Off	ft
		24	-8	-85	78		7996

4150.00 ft - 4600.00 ft

A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in	degF	in	in	g/cc		g/cc
	7.875	156	5.5	0	1	2	2.68
NPORSEL	PERFS	SNDERR	SNDERRM	SPSHIFT	SRFTEMP	SZCOR	TDEPTH
Sandstone	0	mmho/m	mmho/m	mV	degF	Off	ft
		24	-8	-85	78		7996

4600.00 ft - 7600.00 ft


A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in	degF	in	in	g/cc		g/cc
	7.875	156	5.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR	SNDERRM	SPSHIFT	SRFTEMP	SZCOR	TDEPTH
Limestone	0	mmho/m	mmho/m	mV	degF	Off	ft
		24	-8	-85	78		7996

7600.00 ft - 7800.00 ft

A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in	degF	in	in	g/cc		g/cc
	7.875	156	5.5	0	1	2	2.68
NPORSEL	PERFS	SNDERR	SNDERRM	SPSHIFT	SRFTEMP	SZCOR	TDEPTH
Sandstone	0	mmho/m	mmho/m	mV	degF	Off	ft
		24	-8	-85	78		7996

7800.00 ft - Bottom

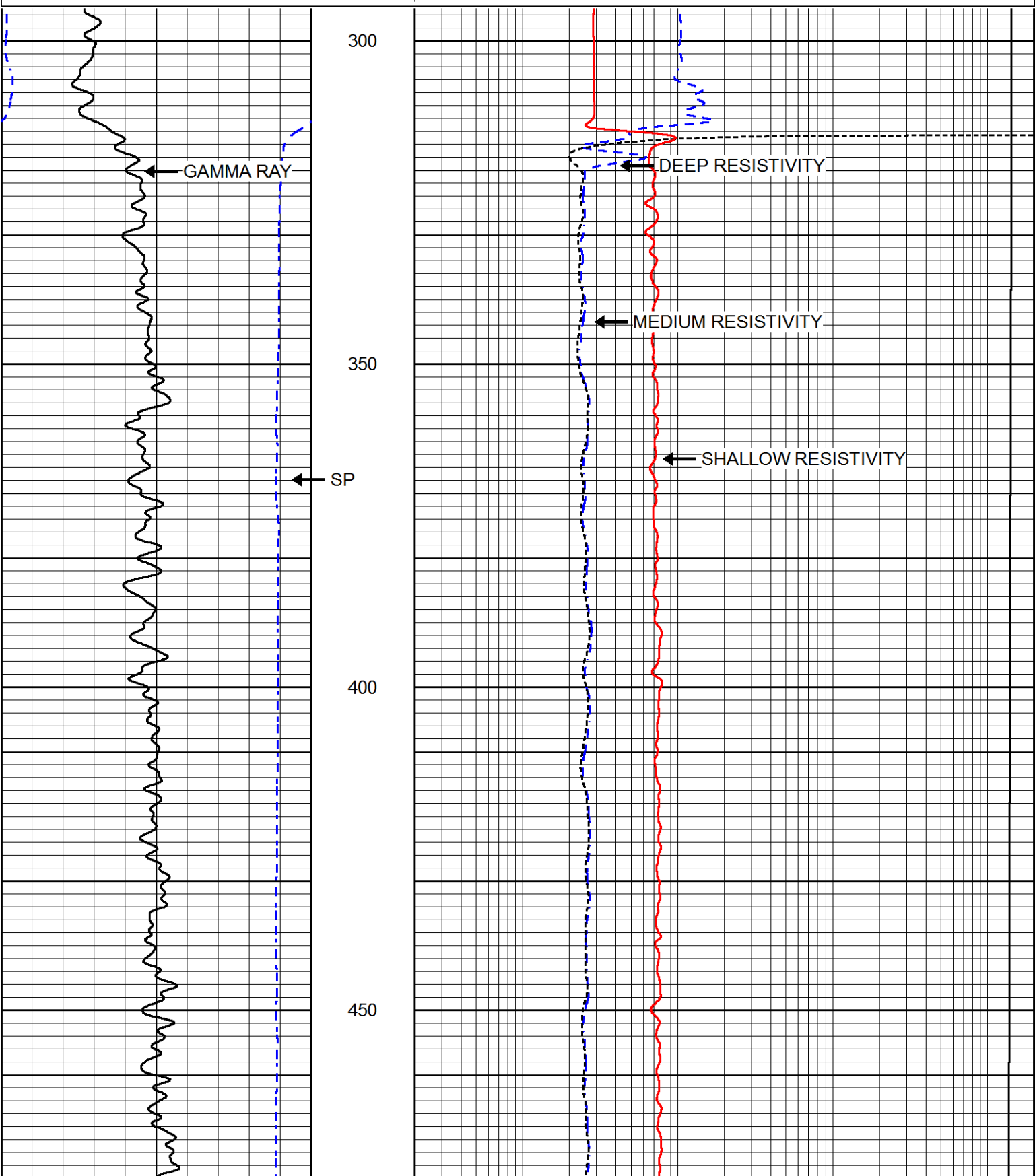
A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in	degF	in	in	g/cc		g/cc
	7.875	156	5.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR	SNDERRM	SPSHIFT	SRFTEMP	SZCOR	TDEPTH
Limestone	0	mmho/m	mmho/m	mV	degF	Off	ft
		24	-8	-85	78		7996

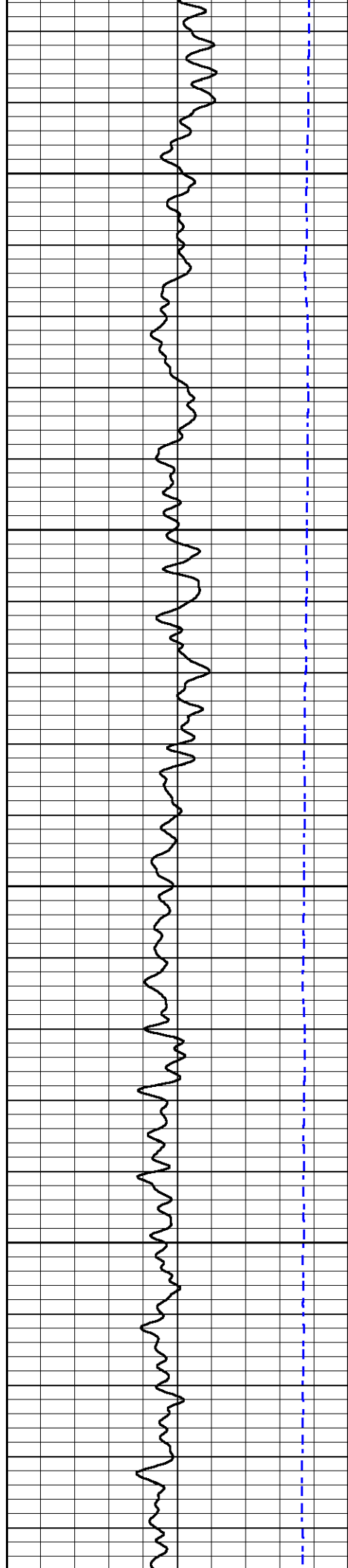
Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	33.00		GR-M&W (89-M&W)	3.00	3.50	50.00

CNLSC	29.90			CNT-M&W (tk10-MW)	5.50	3.50	100.00
CNSSC	29.15						
				CDL-M&W (128-4110)	8.50	4.00	250.00
LSD	20.85						
DCAL	20.83						
SSD	20.35						
RLL3	15.80						
RLL3F	15.79						
				DIL-M&W (1987)	18.50	3.50	220.00
CILD	8.00						
CILM	4.70						
SP	0.20						
Dataset: wiepking_fullerton_ma_state_13.db: field/well/stack/pass5.1 Total length: 35.50 ft Total weight: 620.00 lb O.D.: 4.00 in							

Database File	wiepking_fullerton_ma_state_13.db
Dataset Pathname	stack/pass5.1
Presentation Format	DILCOL~1
Dataset Creation	Mon May 28 23:14:45 2018
Charted by	Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	200	0.2	DEEP RESISTIVITY (Ohm-m)	2000
-200	SP (mV)	0	0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
			0.2	SHALLOW RESISTIVITY (Ohm-m)	2000
			15000	LINE TENSION (lb)	0



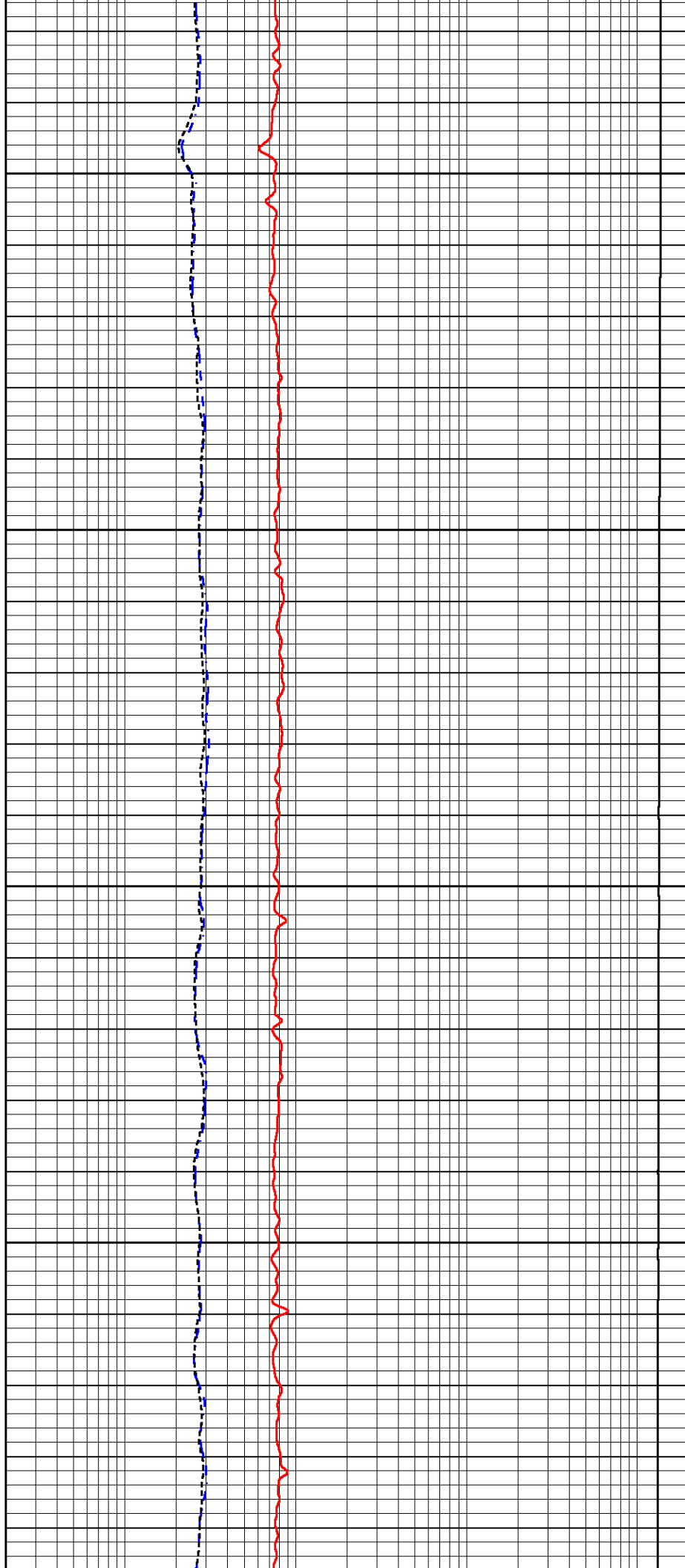


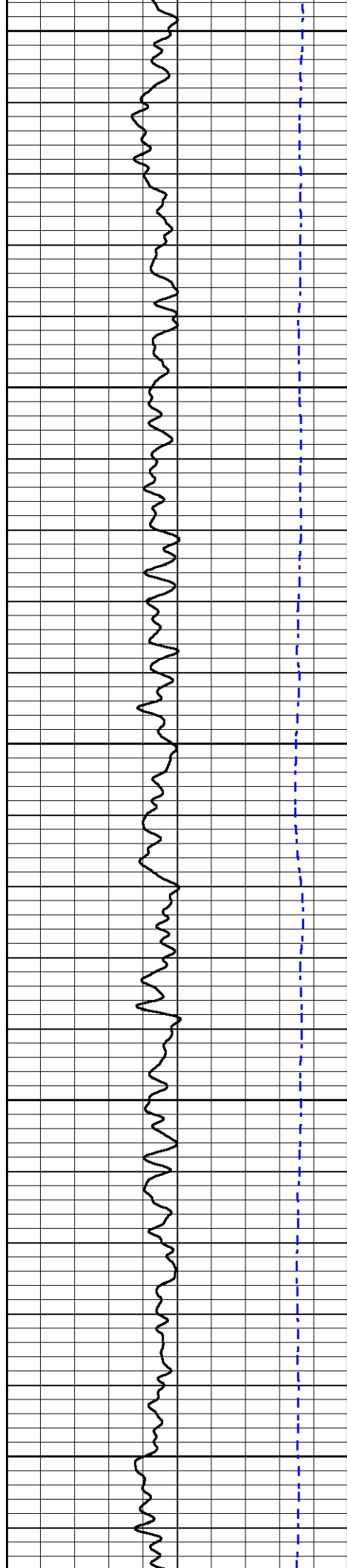
500

550

600

650





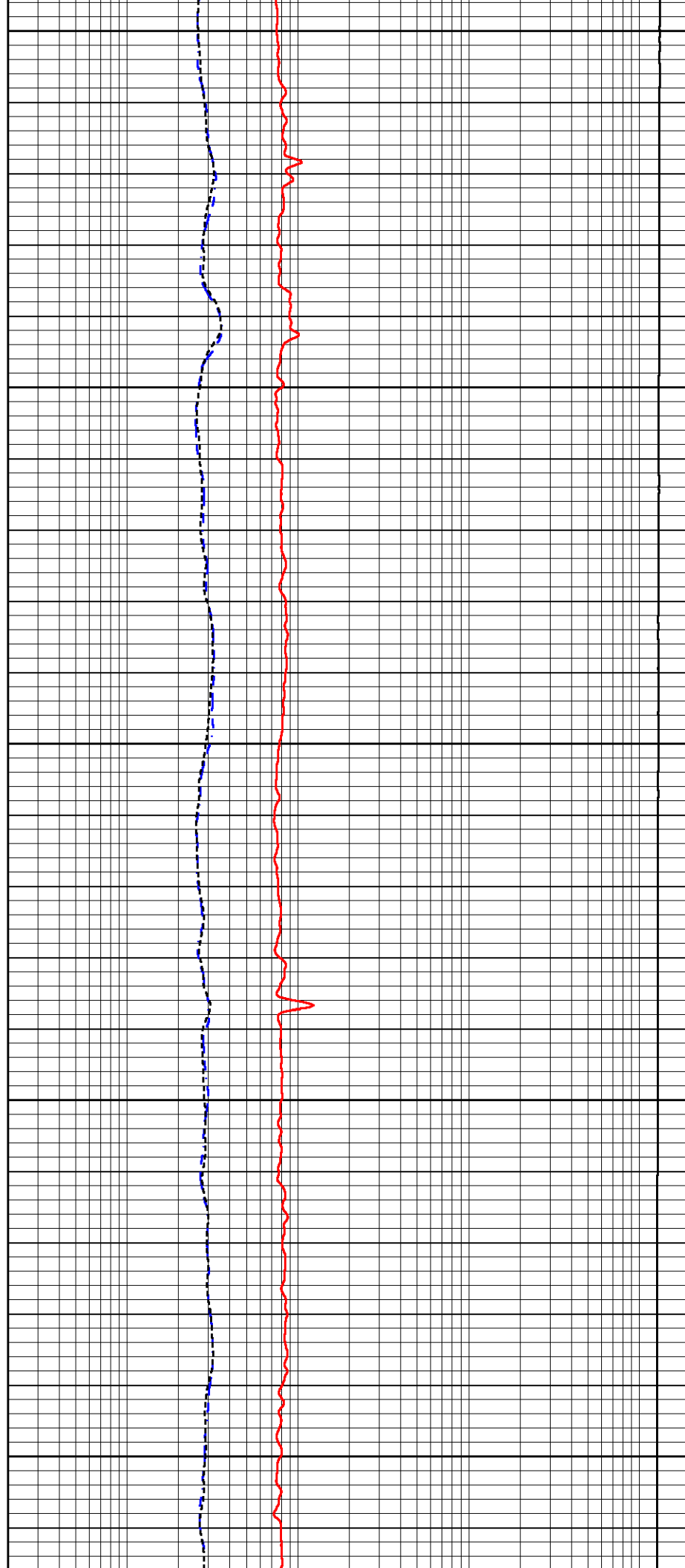
700

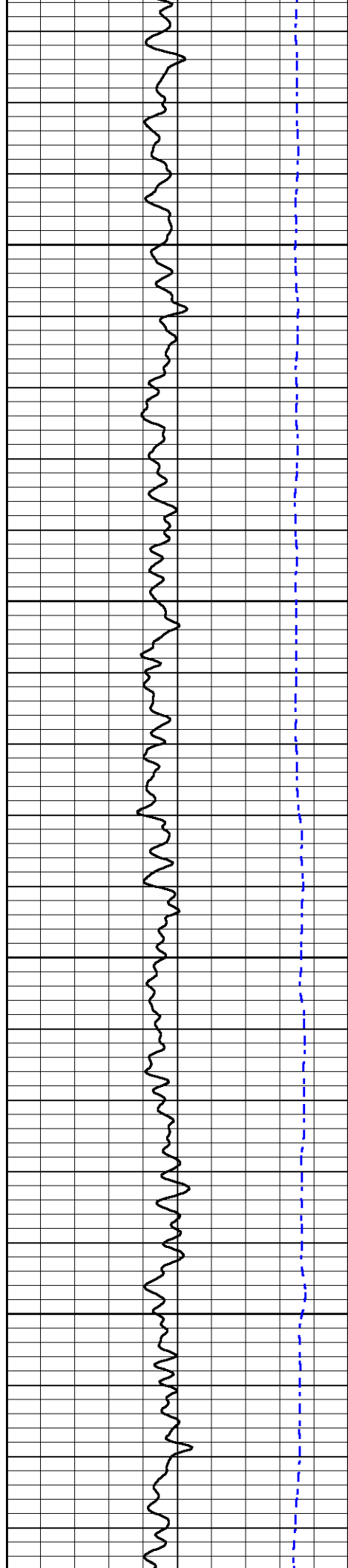
750

800

850

900



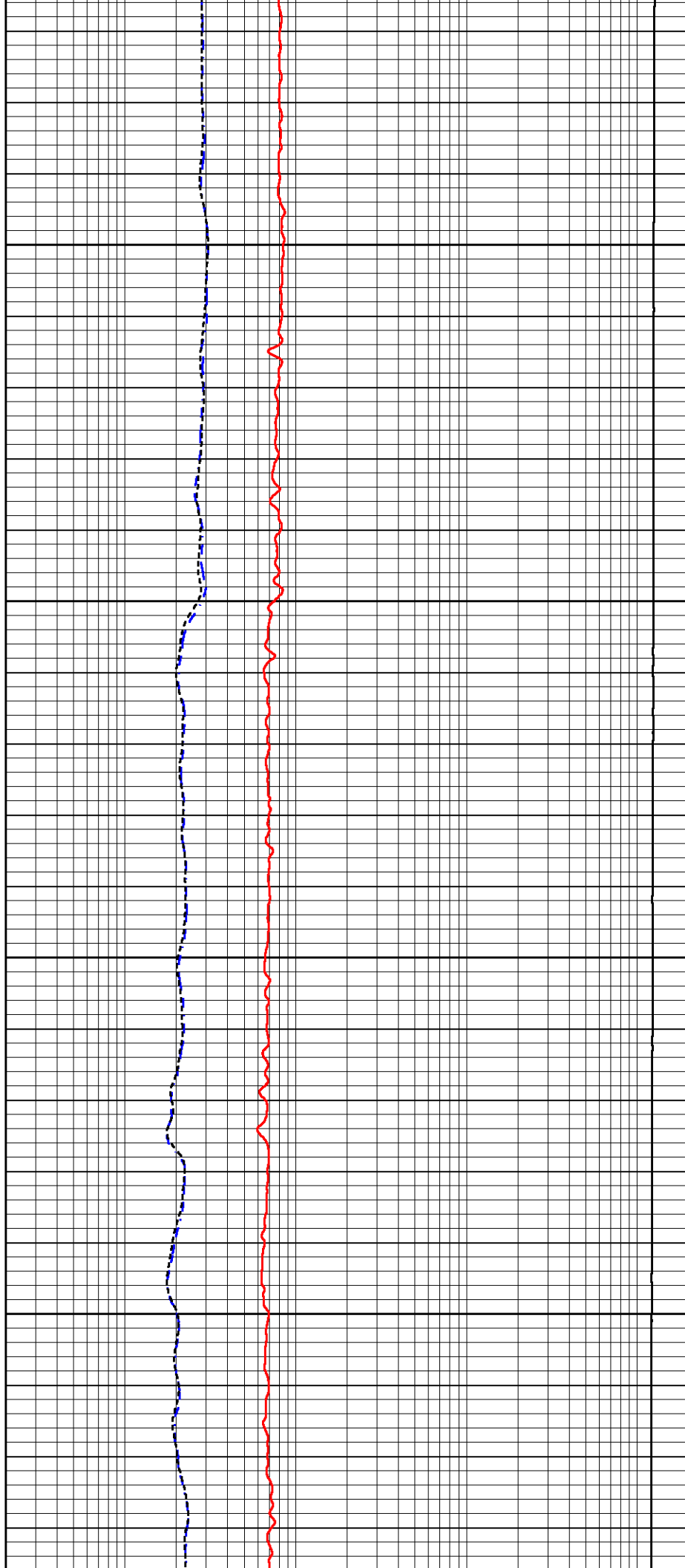


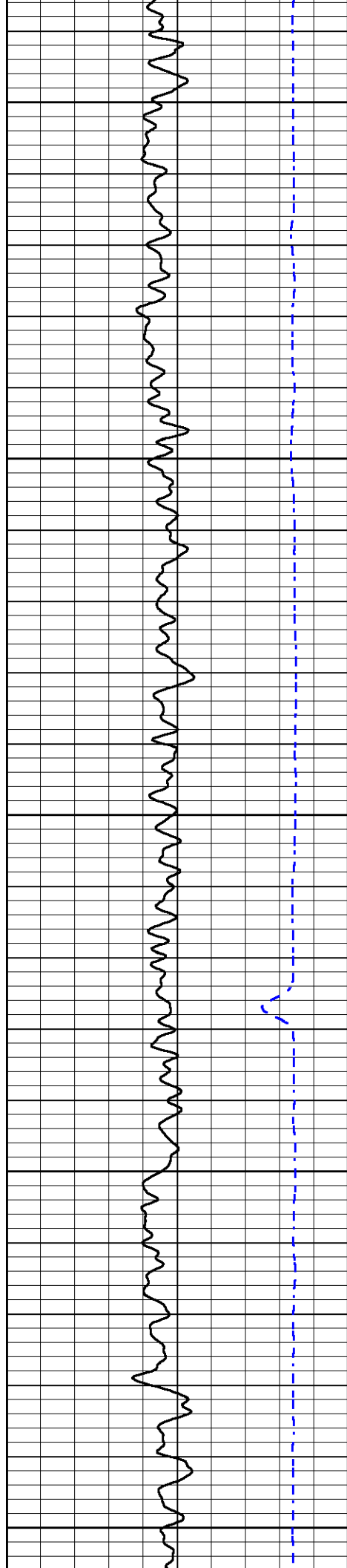
950

1000

1050

1100





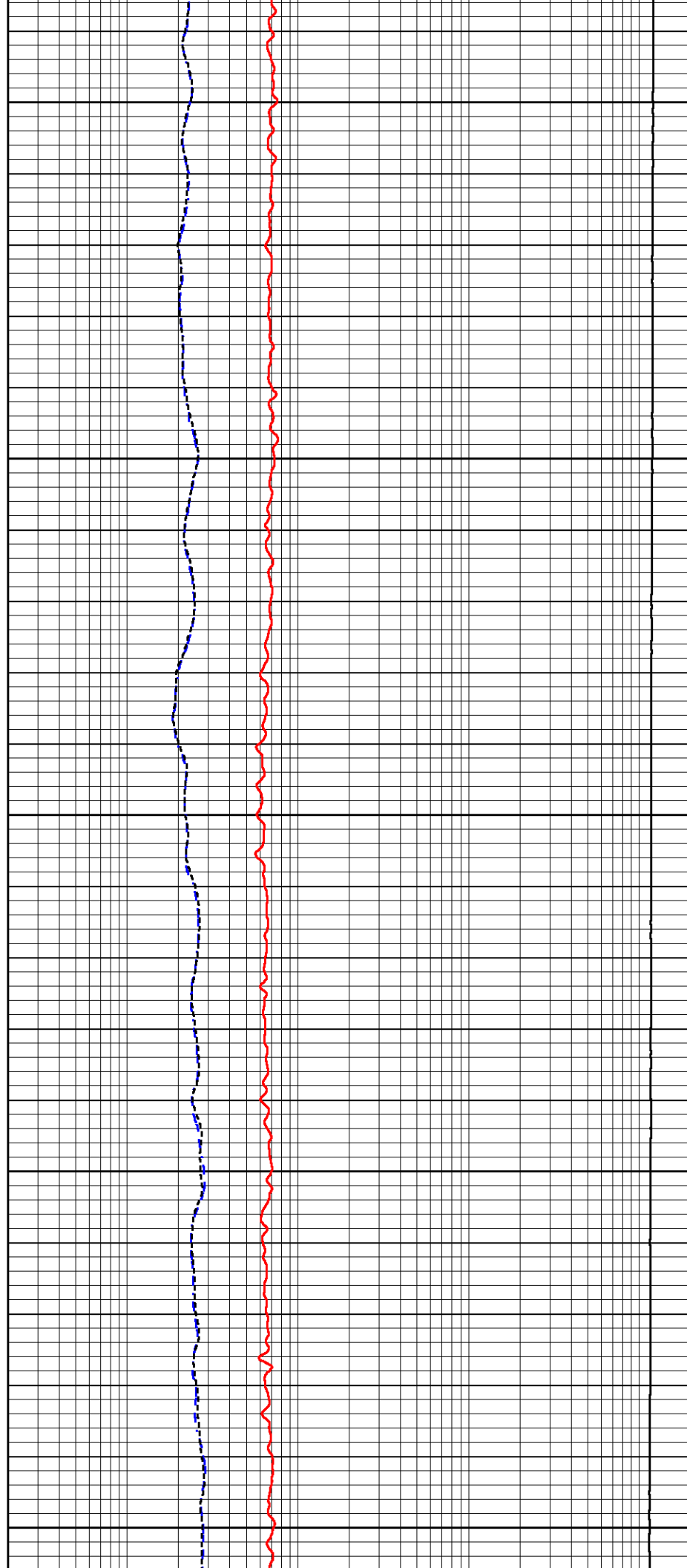
1150

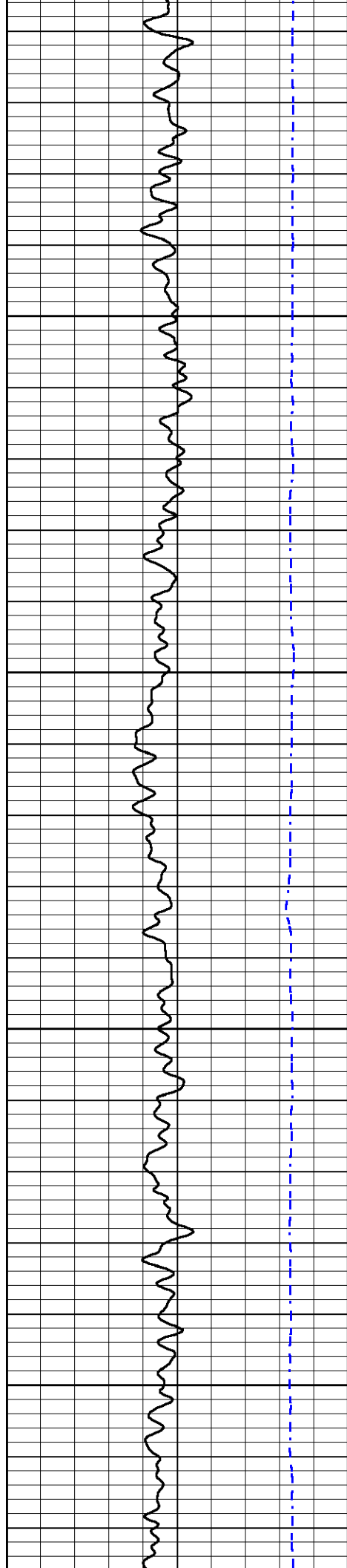
1200

1250

1300

1350



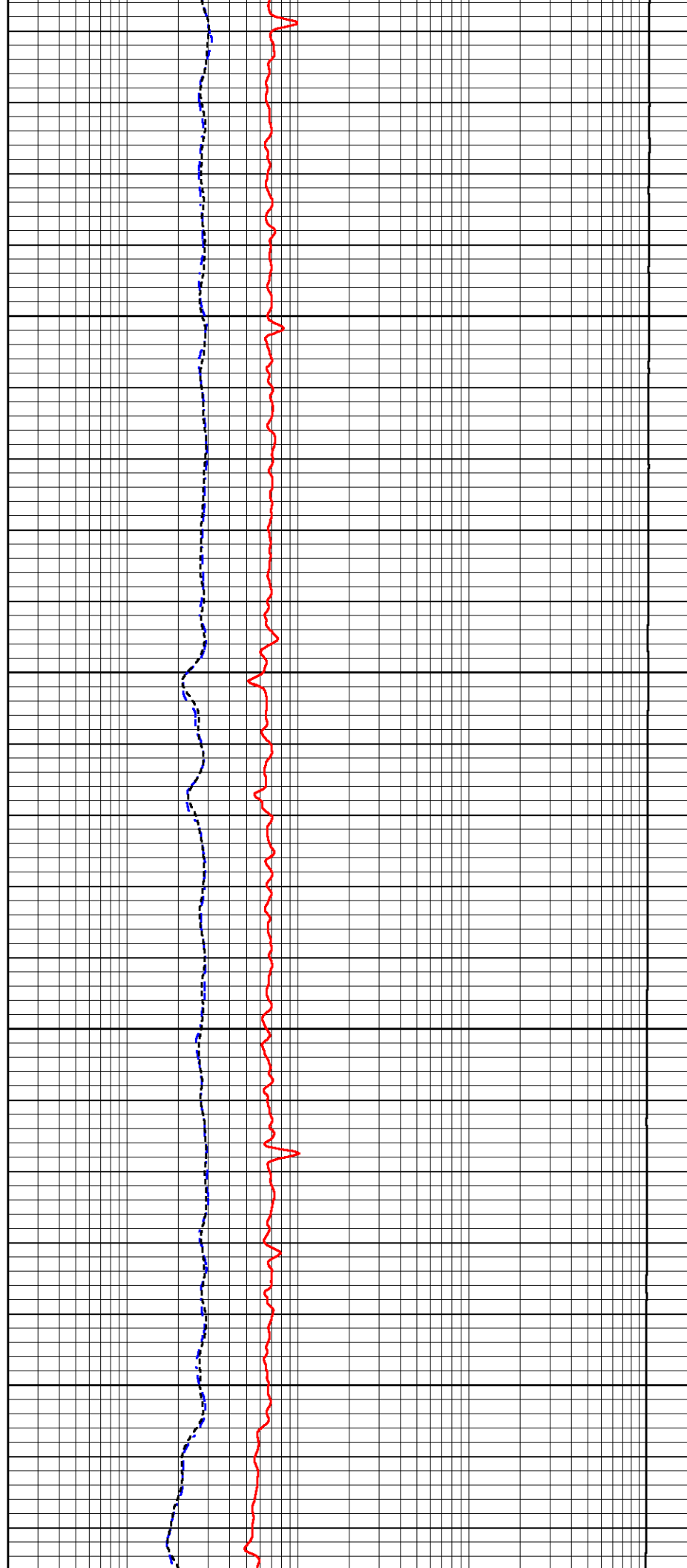


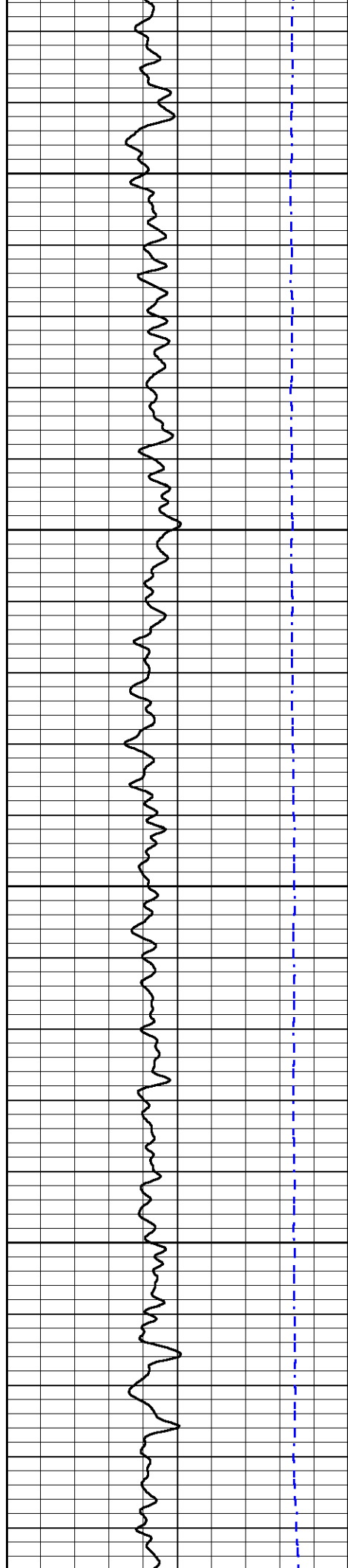
1400

1450

1500

1550



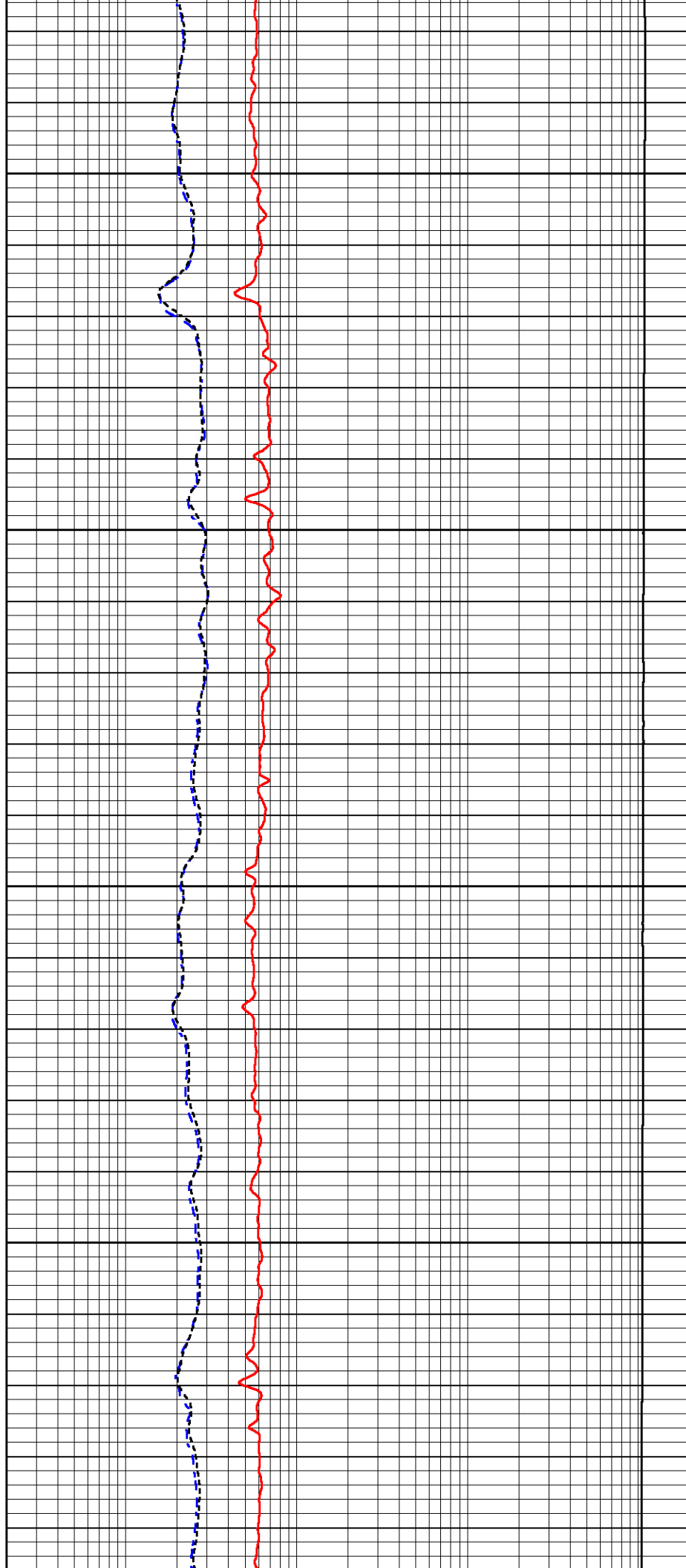


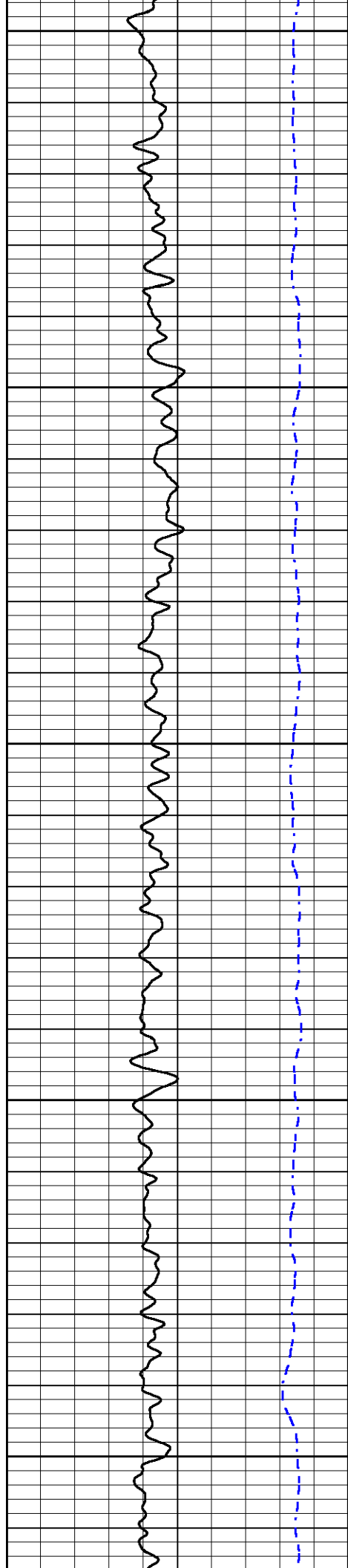
1600

1650

1700

1750





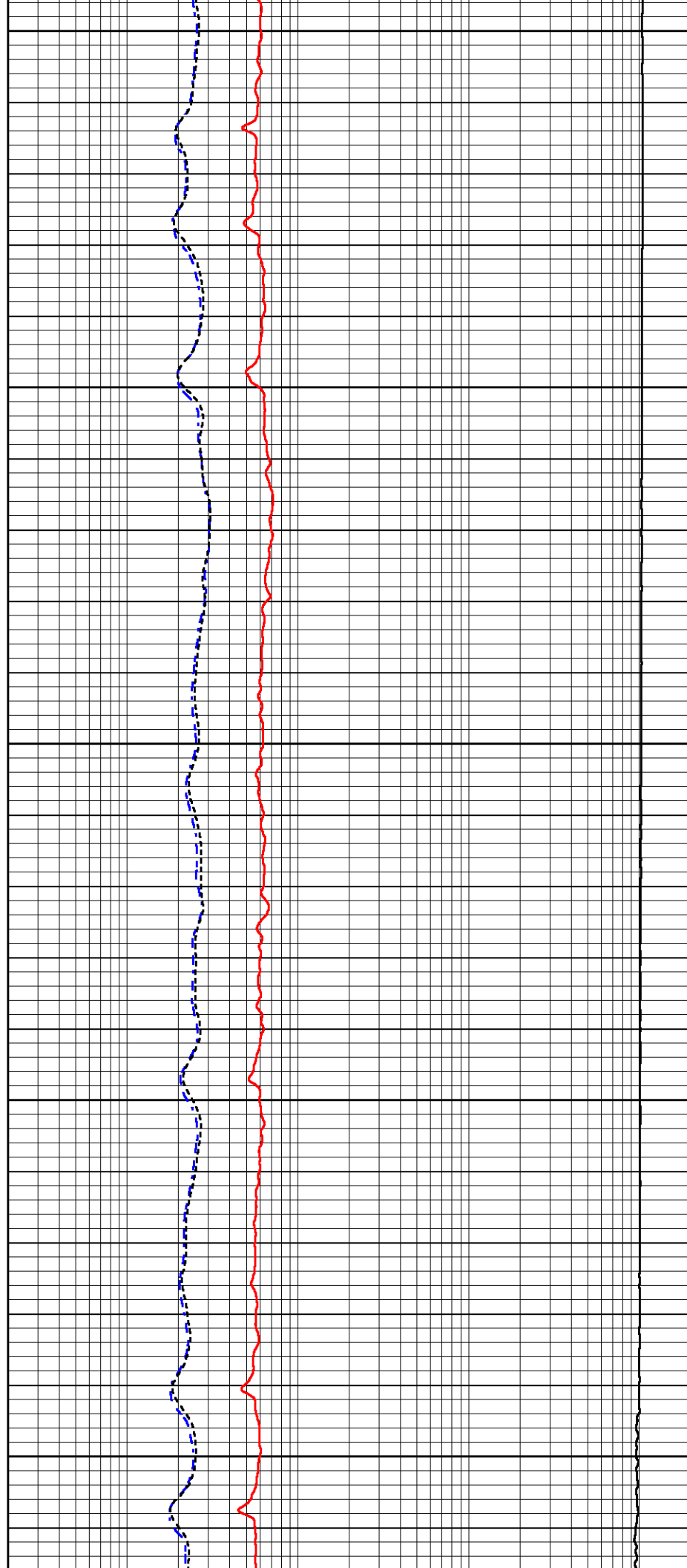
1800

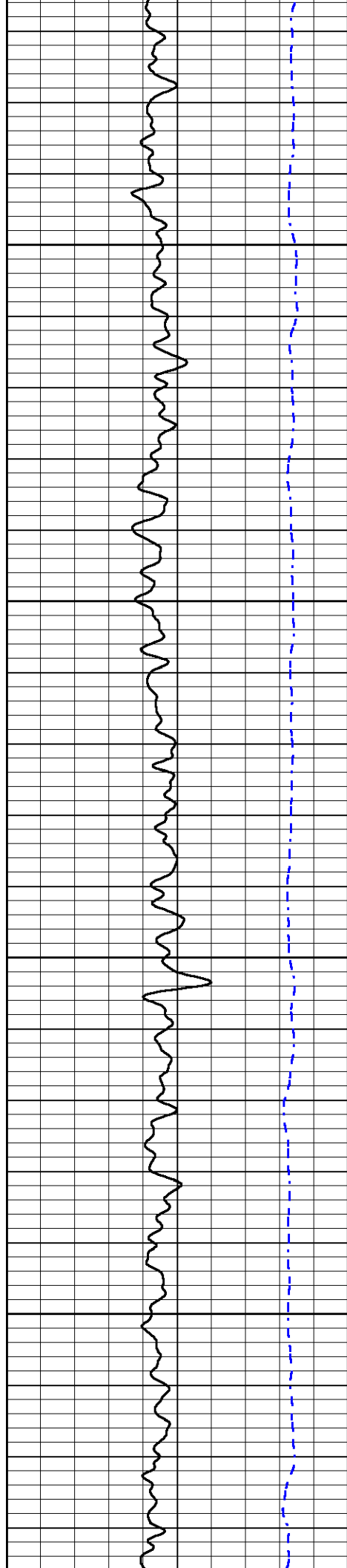
1850

1900

1950

2000



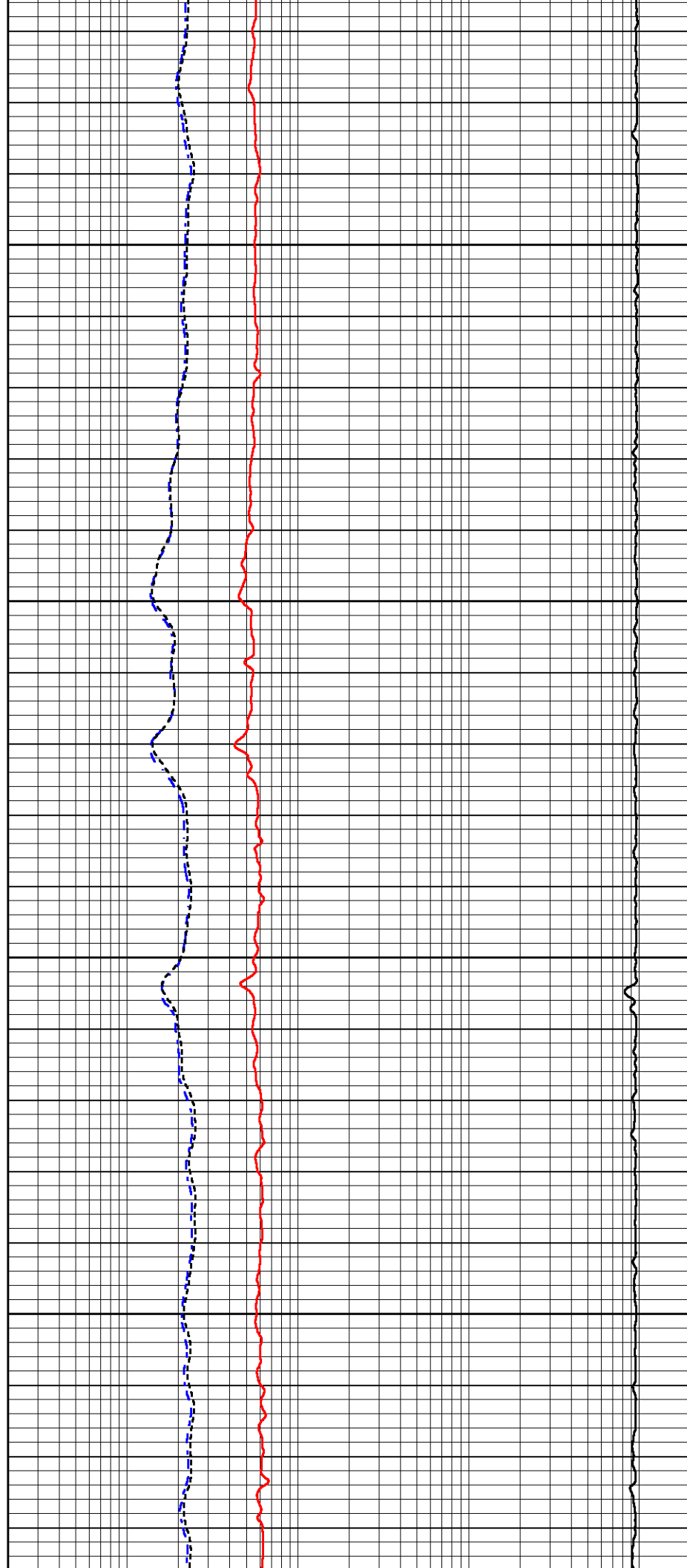


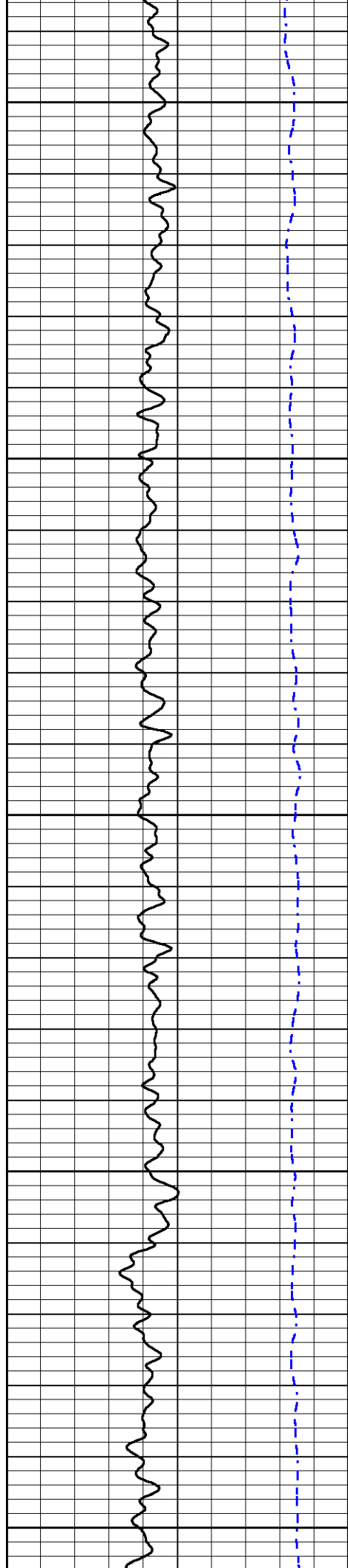
2050

2100

2150

2200





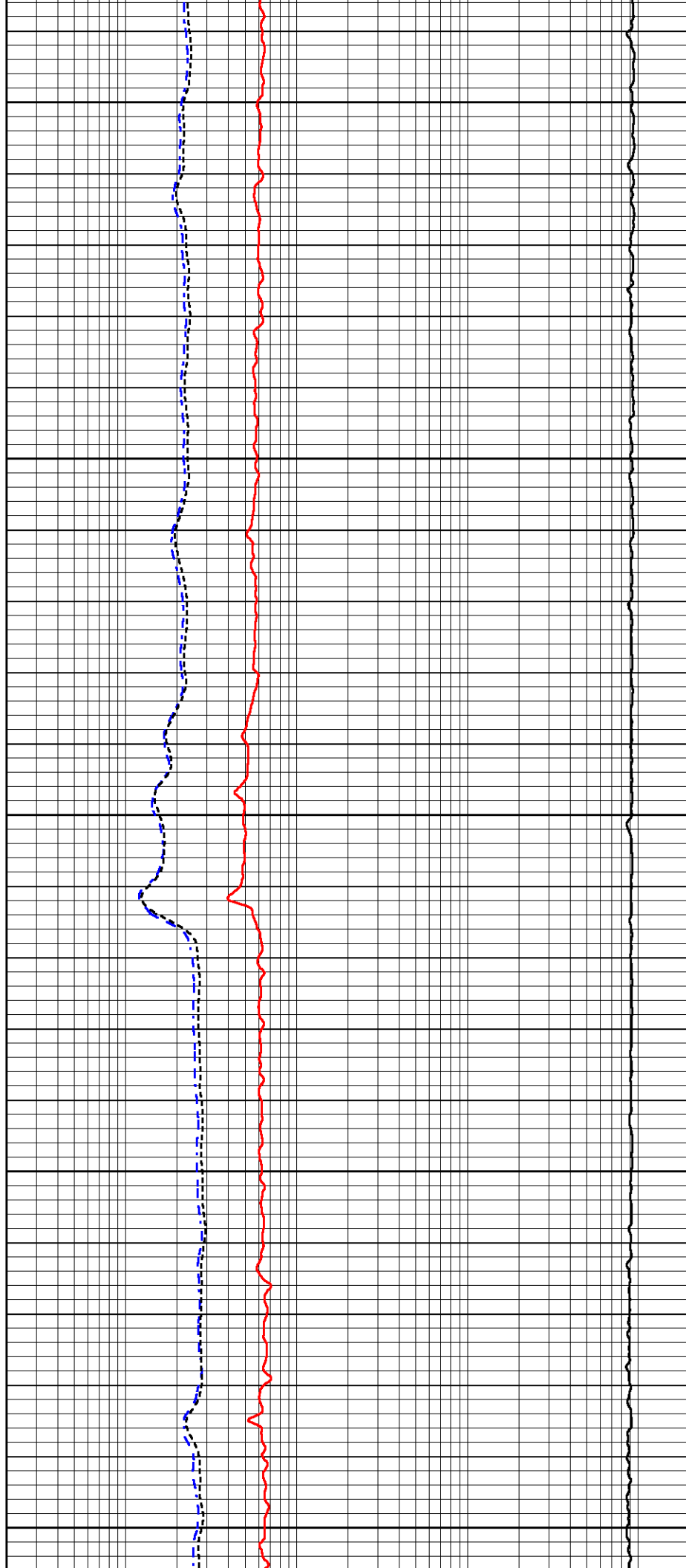
2250

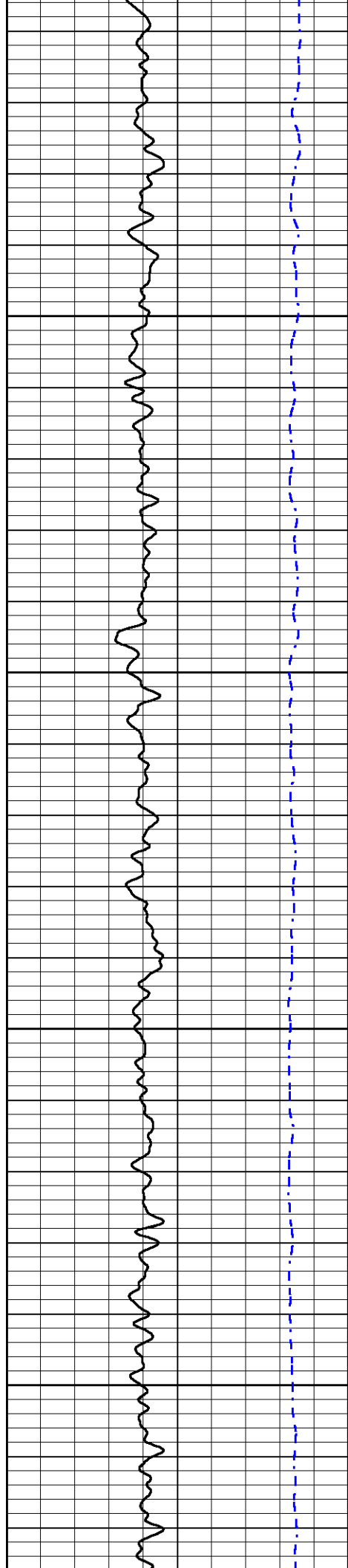
2300

2350

2400

2450



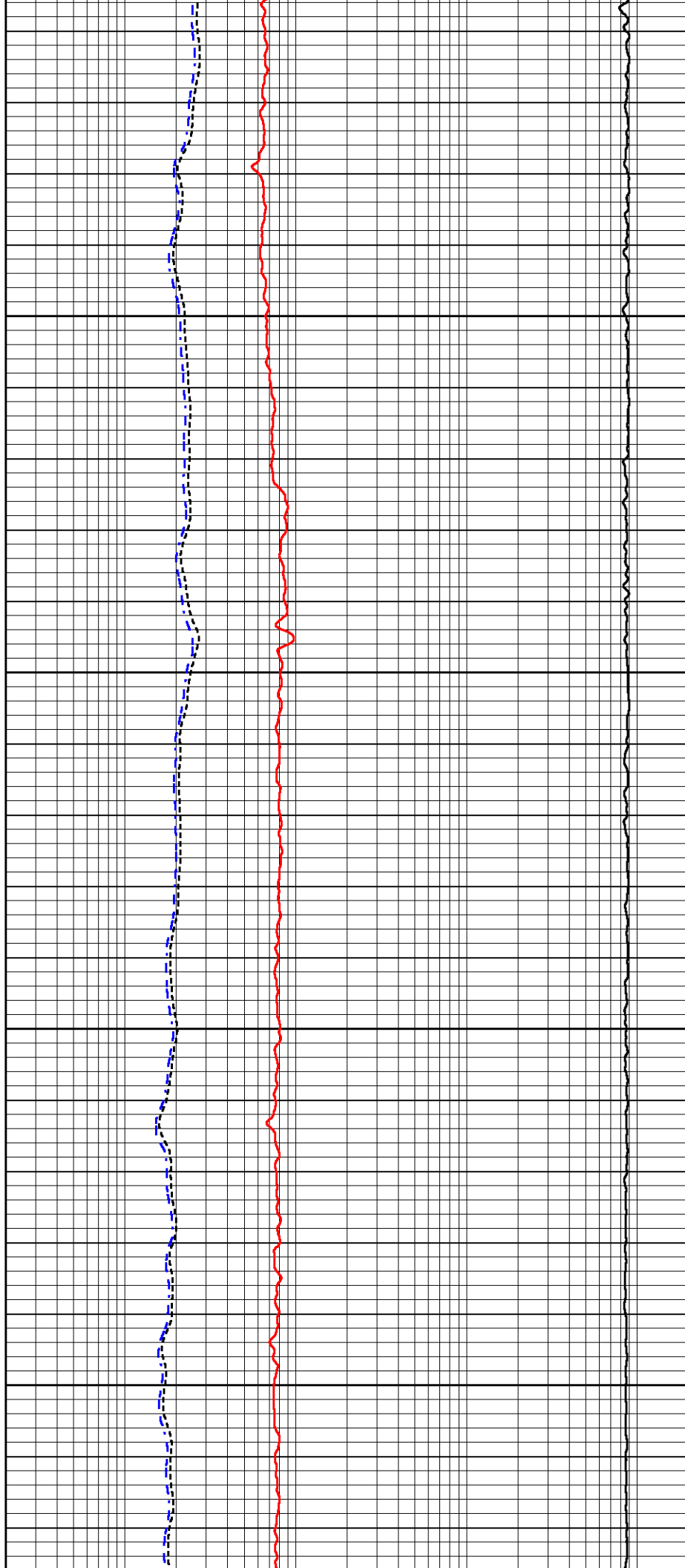


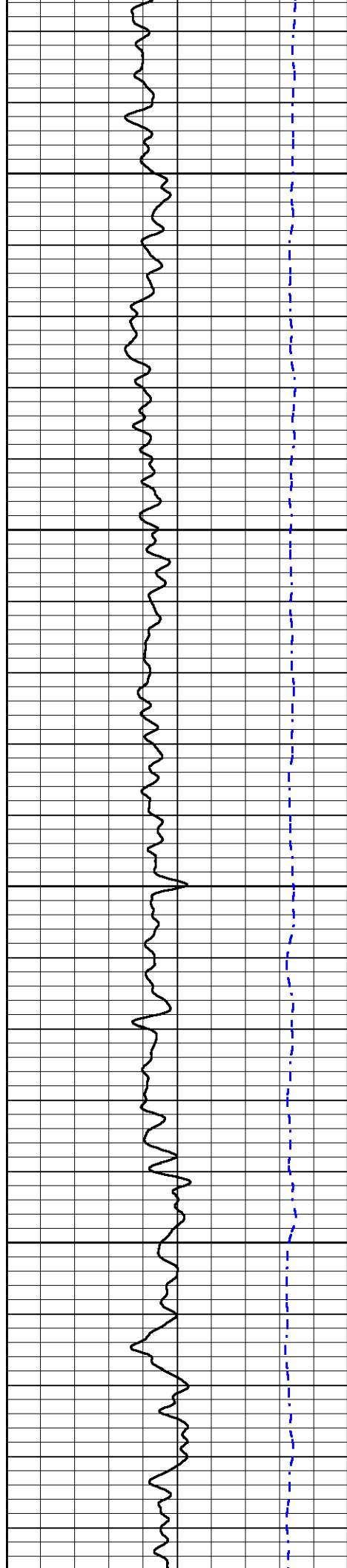
2500

2550

2600

2650



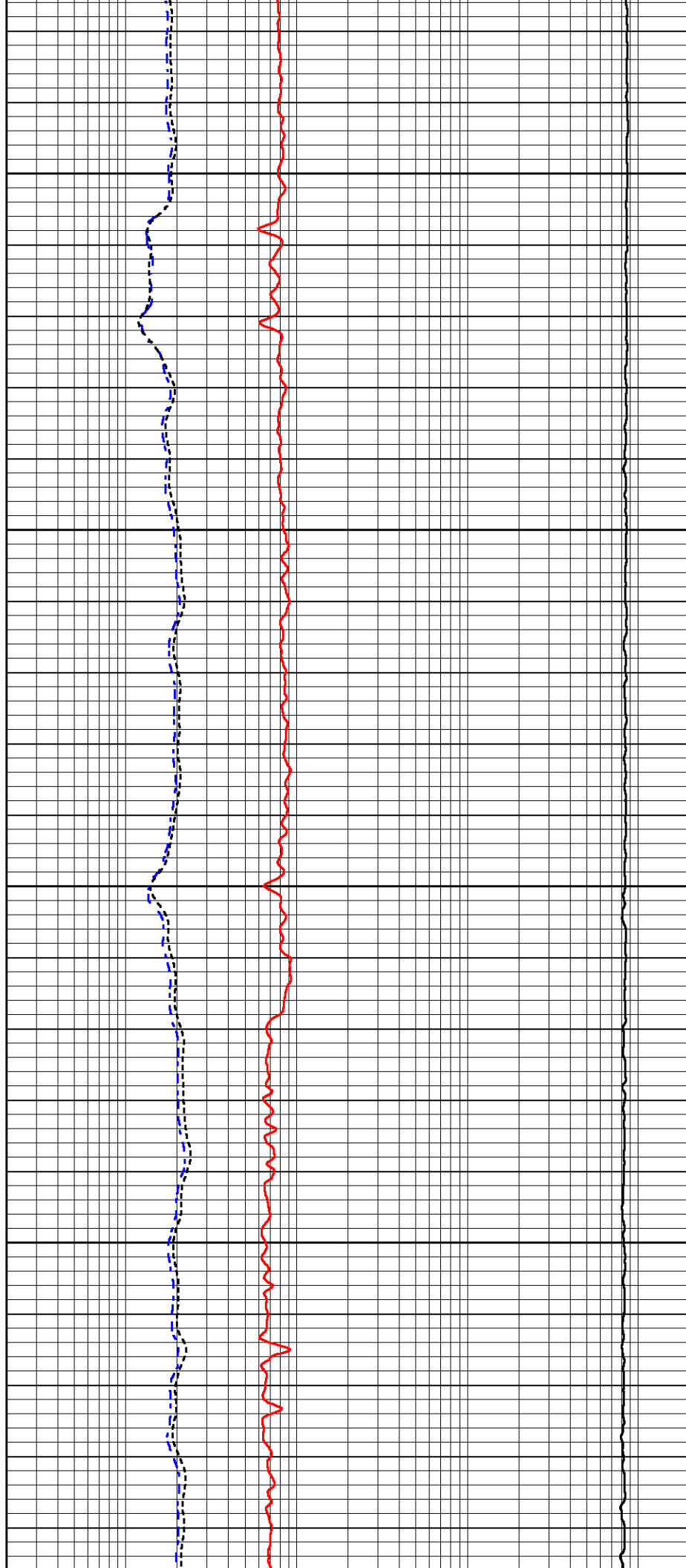


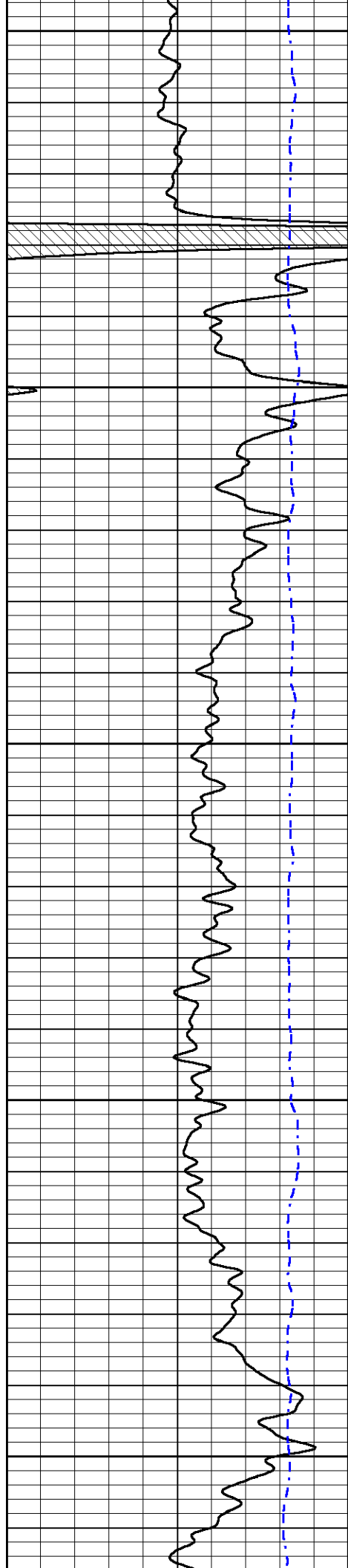
2700

2750

2800

2850





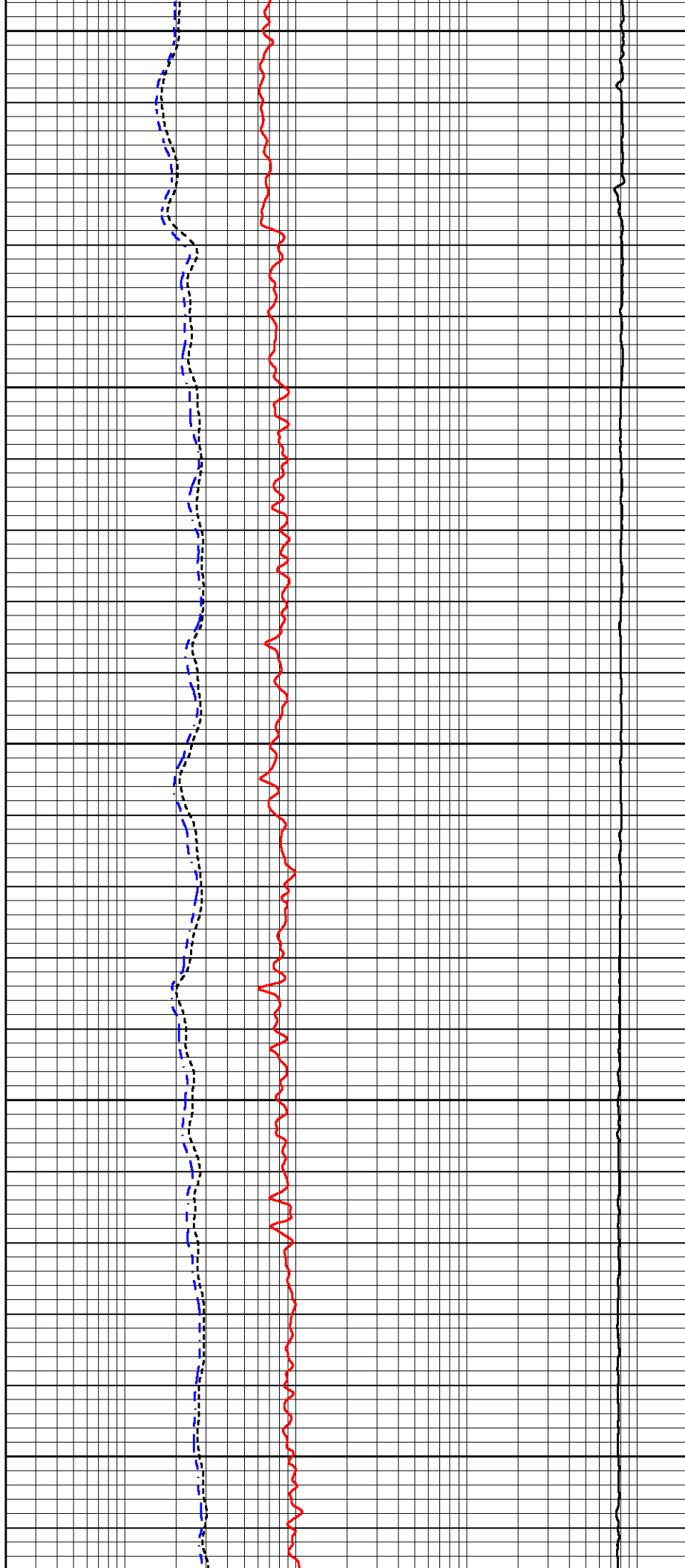
2900

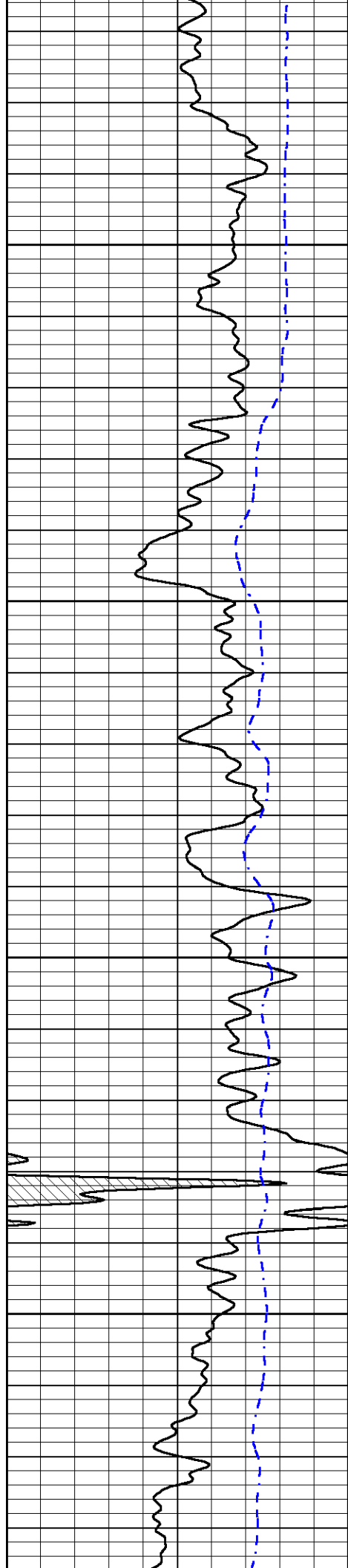
2950

3000

3050

3100



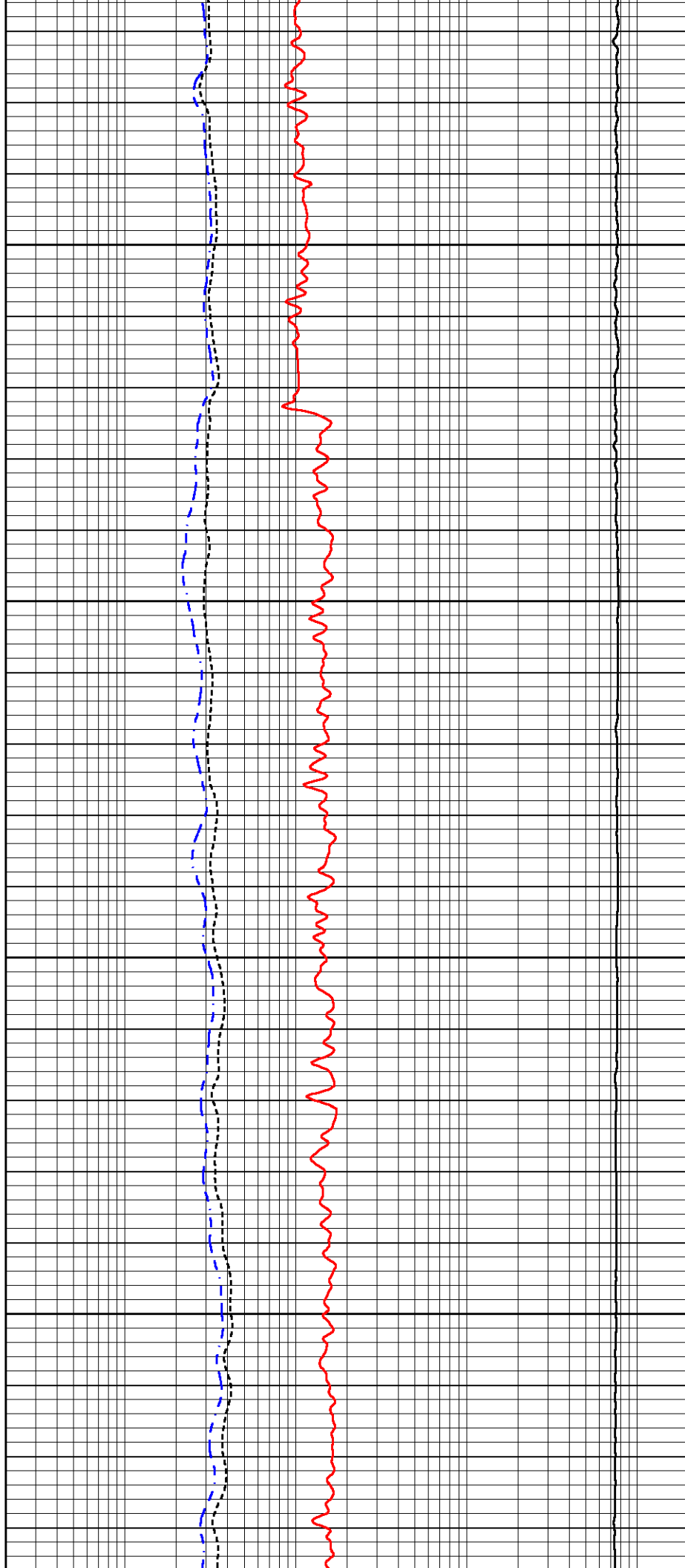


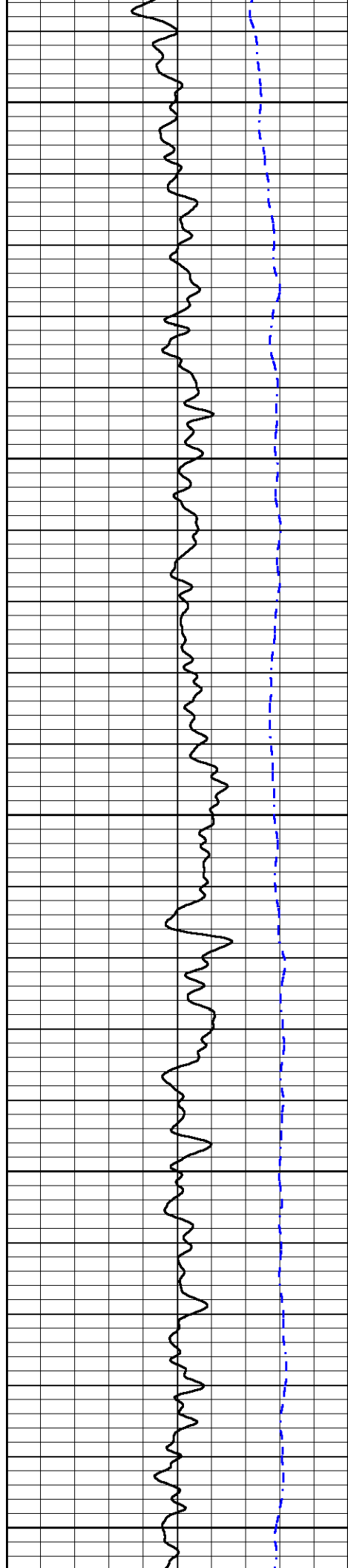
3150

3200

3250

3300





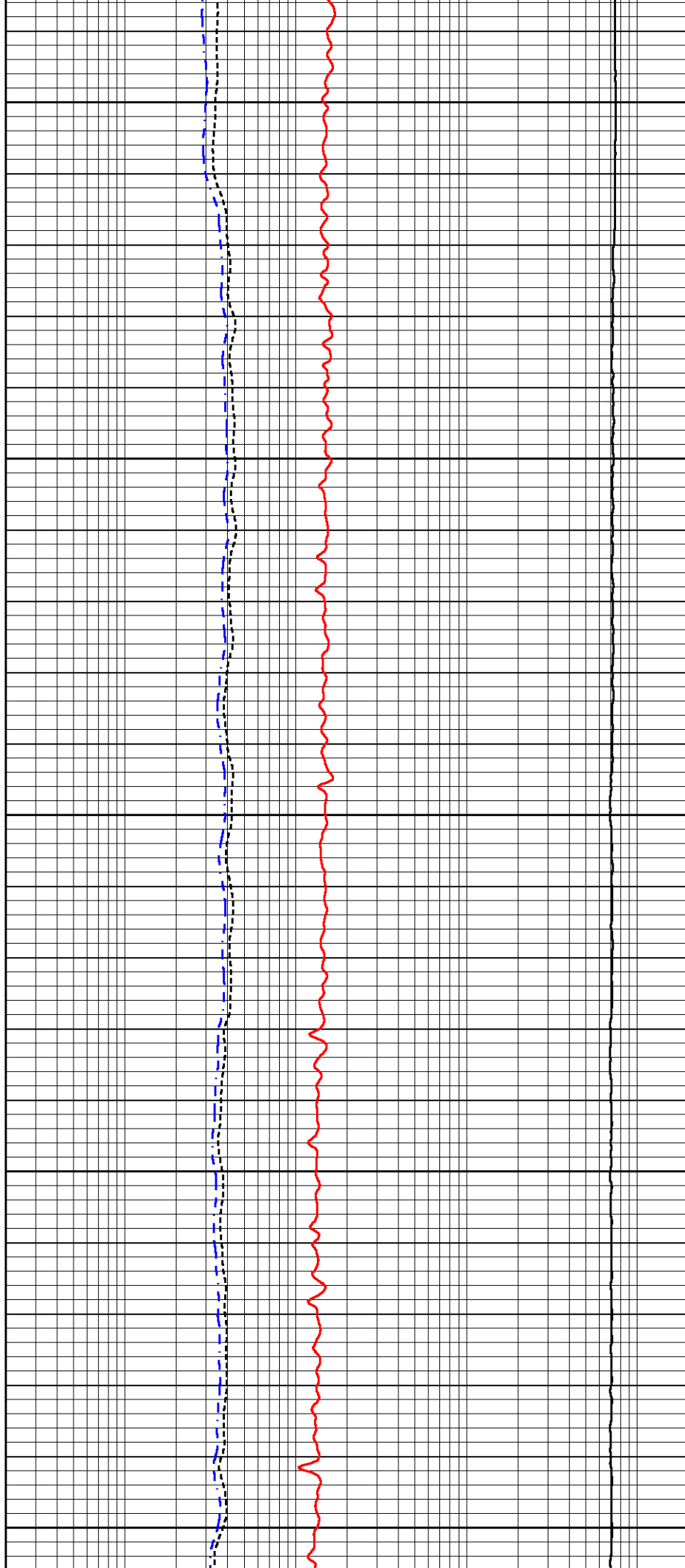
3350

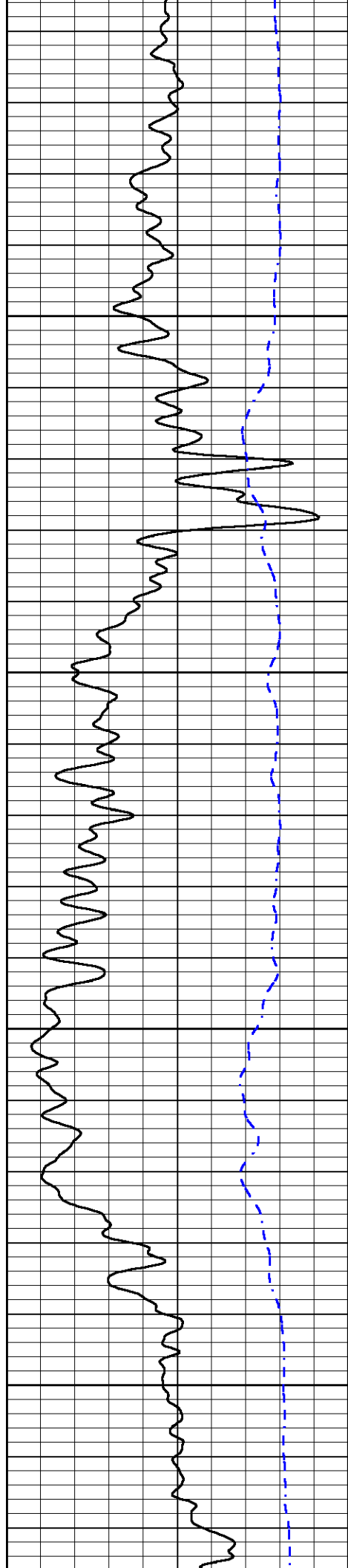
3400

3450

3500

3550



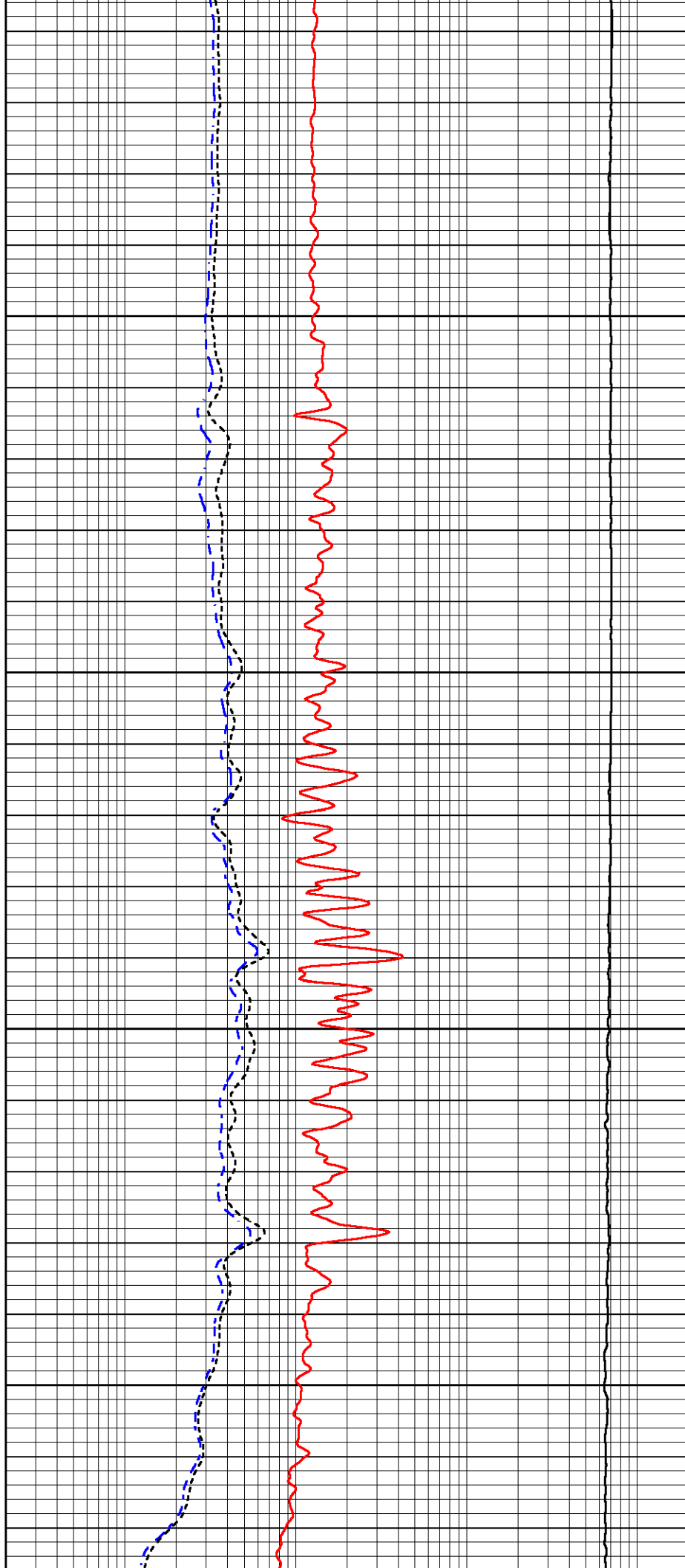


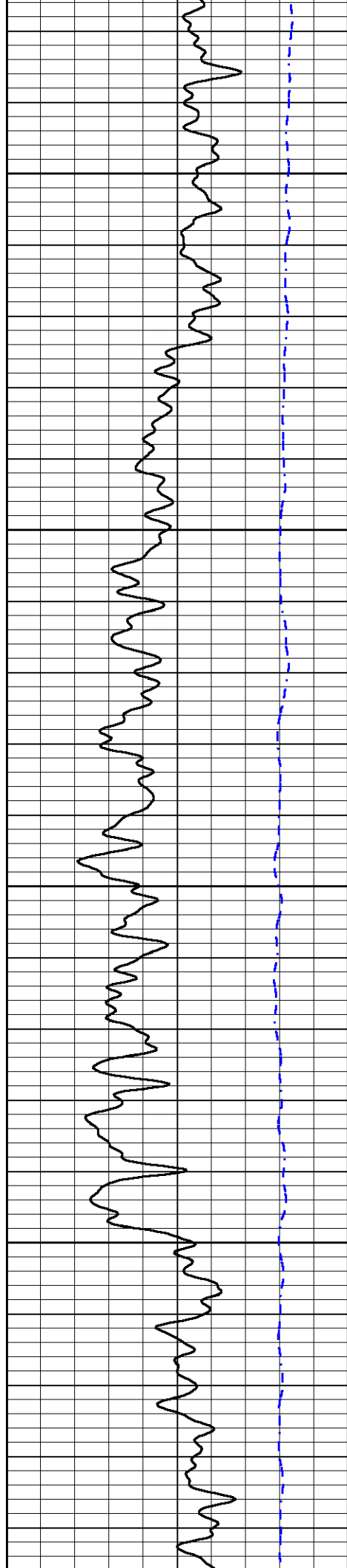
3600

3650

3700

3750



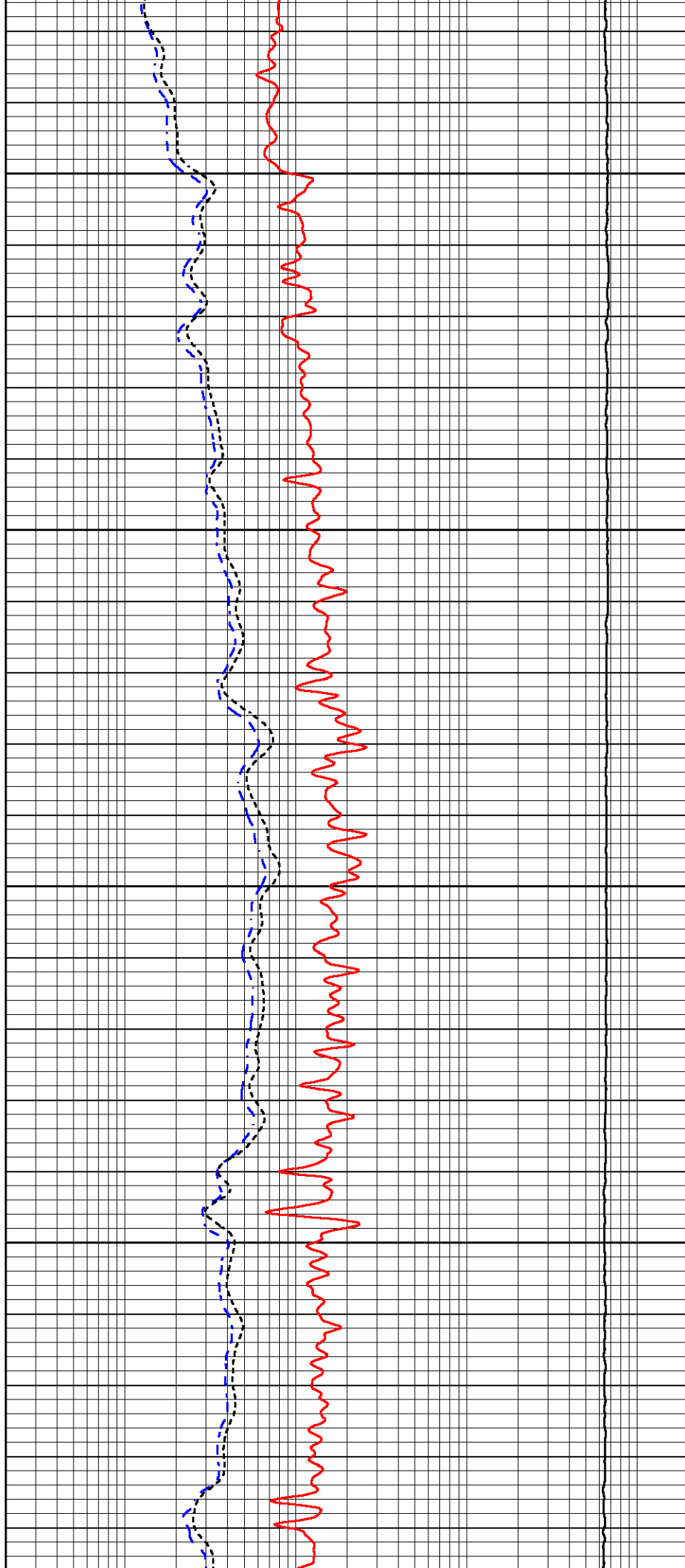


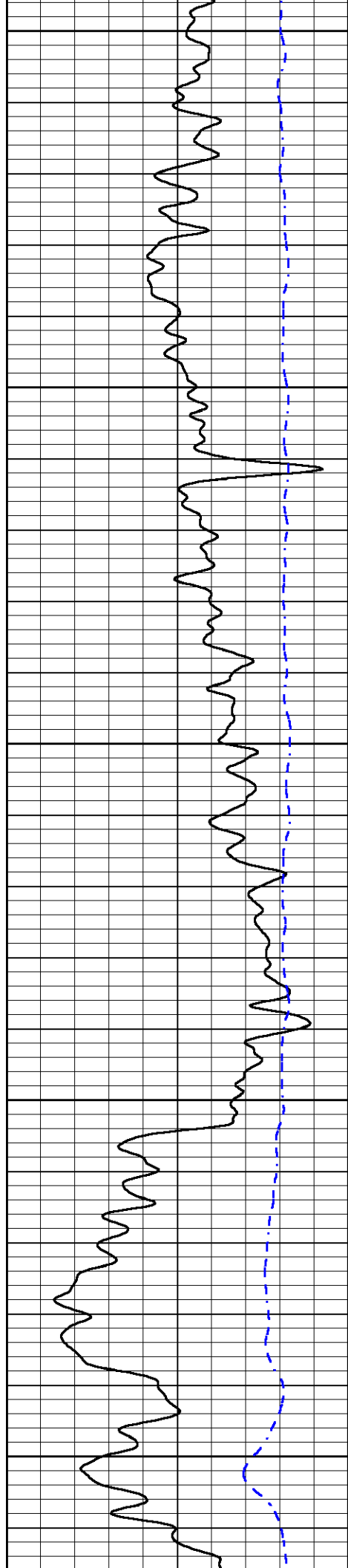
3800

3850

3900

3950





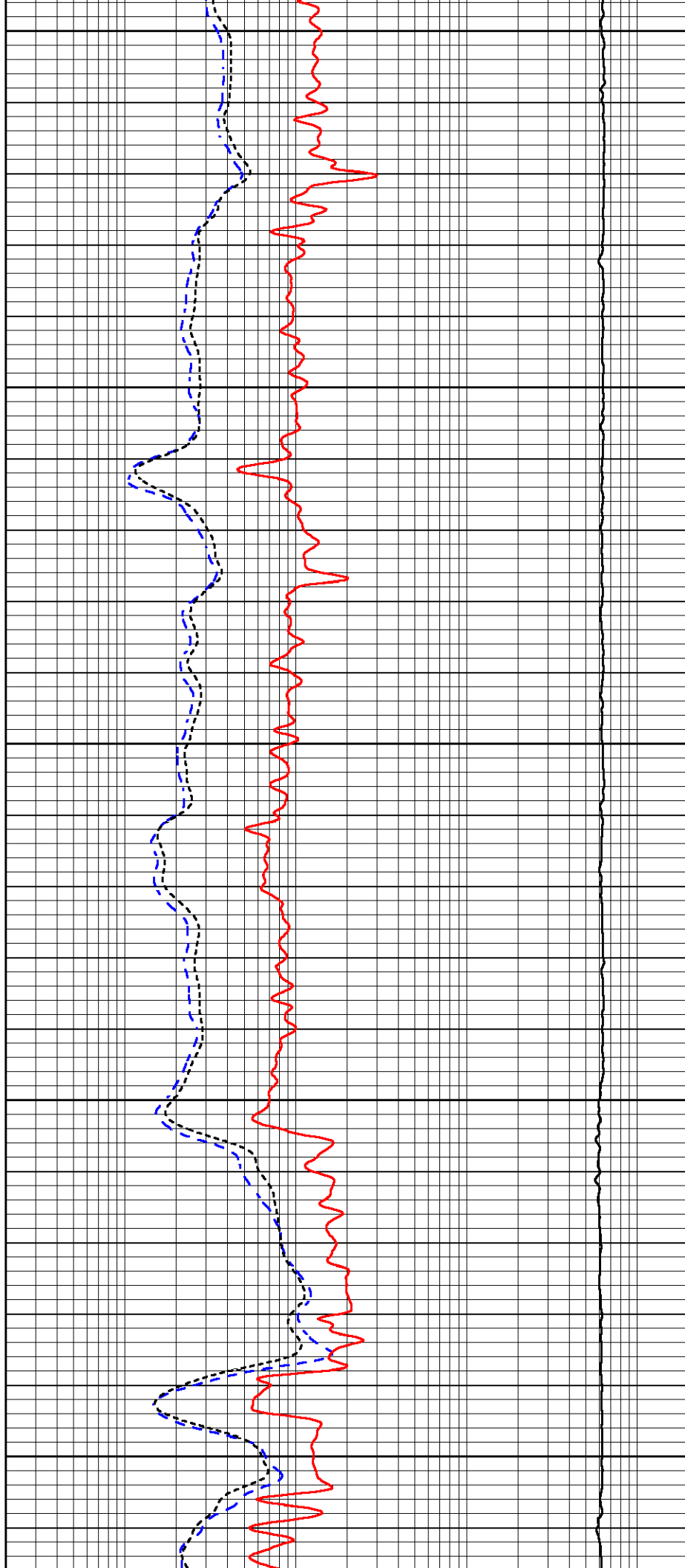
4000

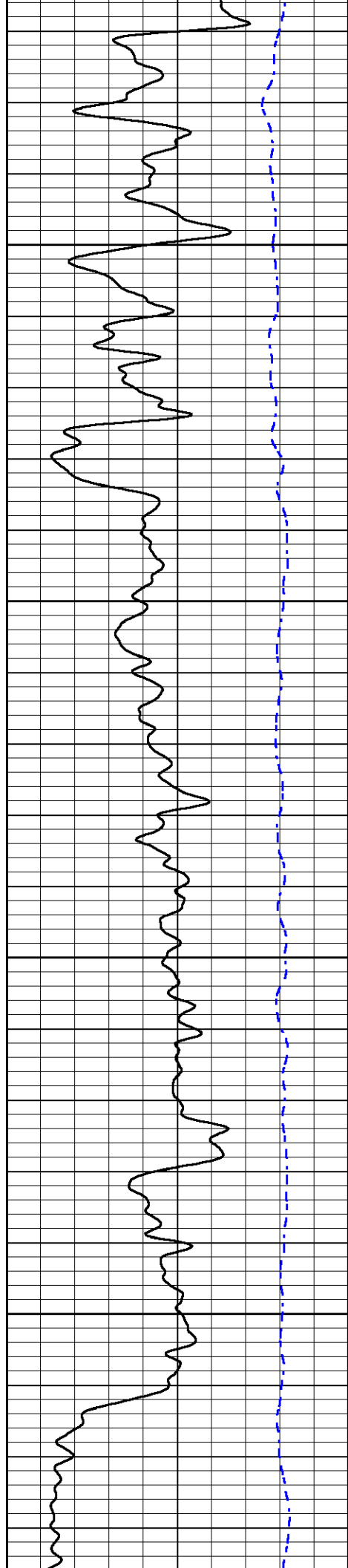
4050

4100

4150

4200



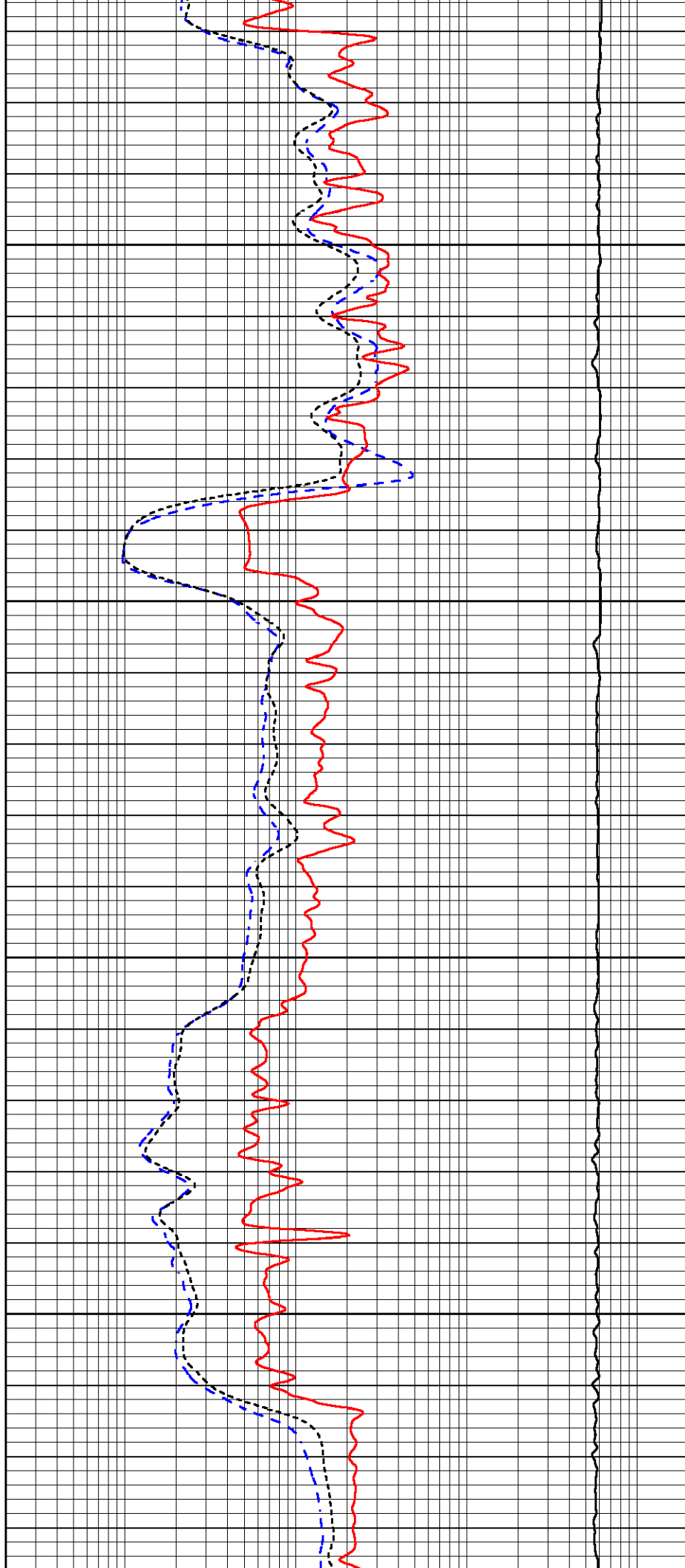


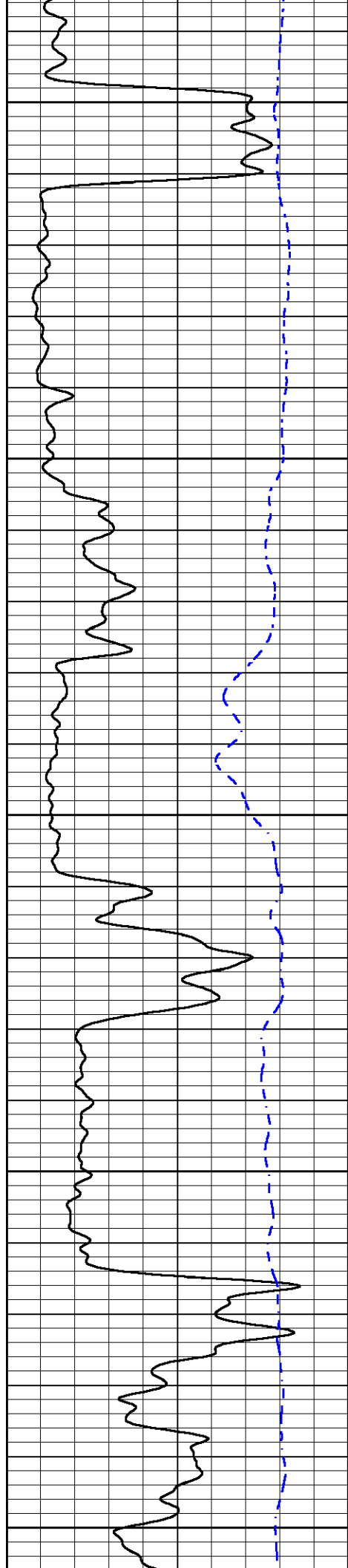
4250

4300

4350

4400





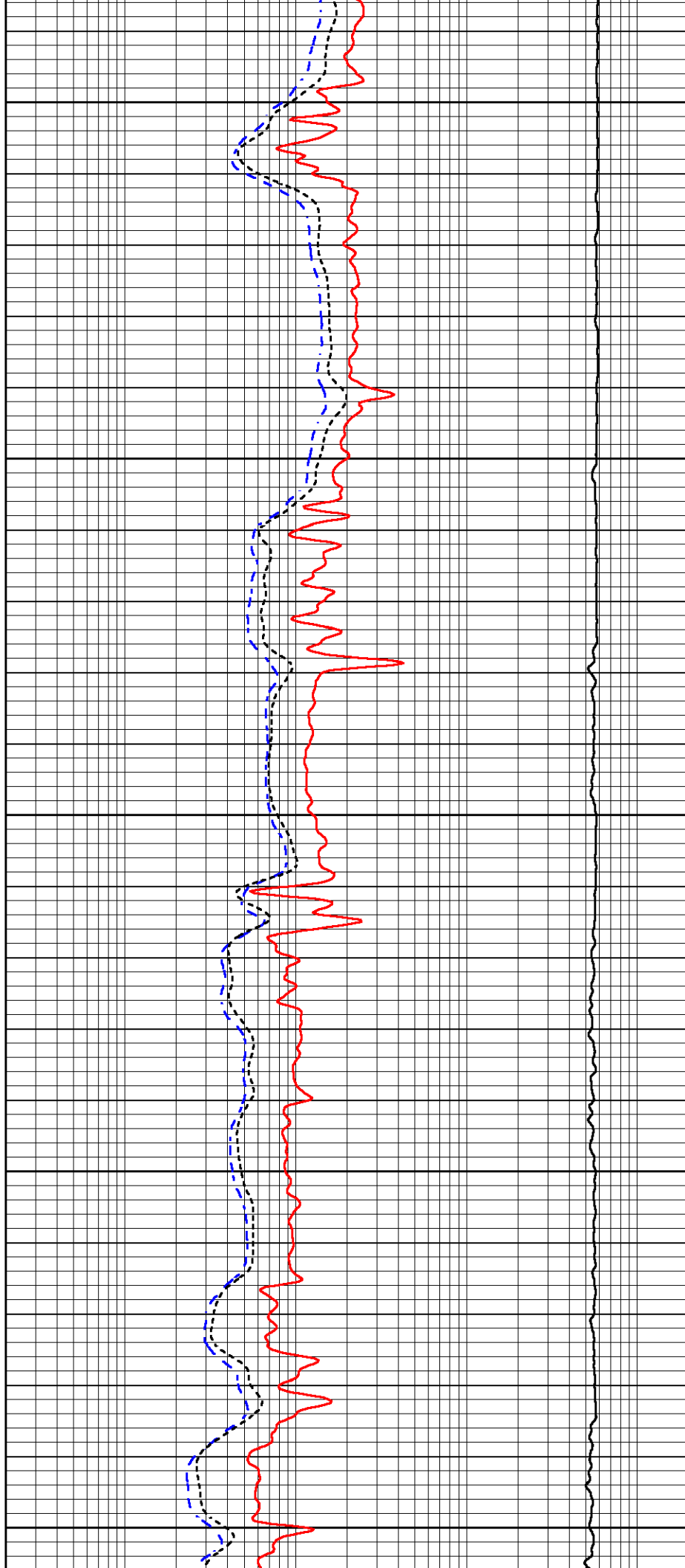
4450

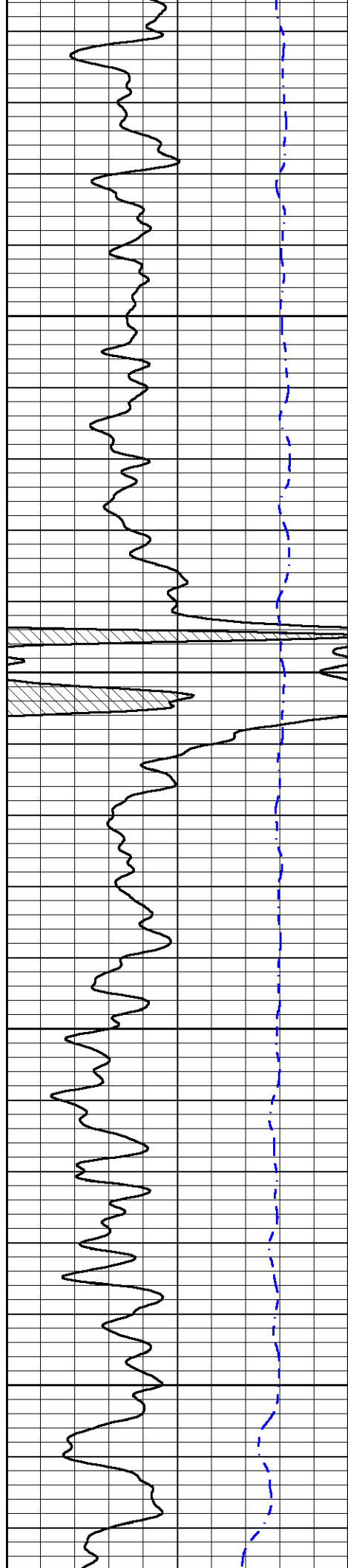
4500

4550

4600

4650



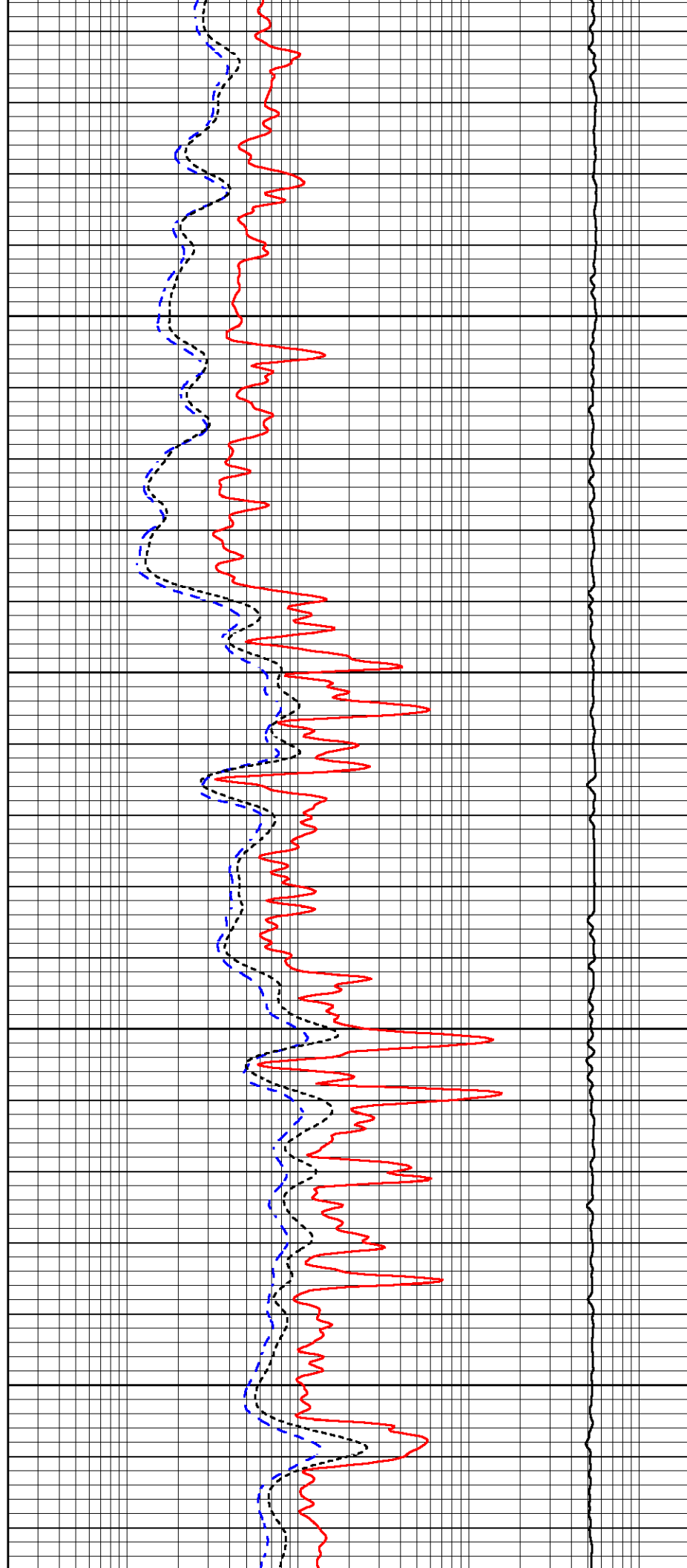


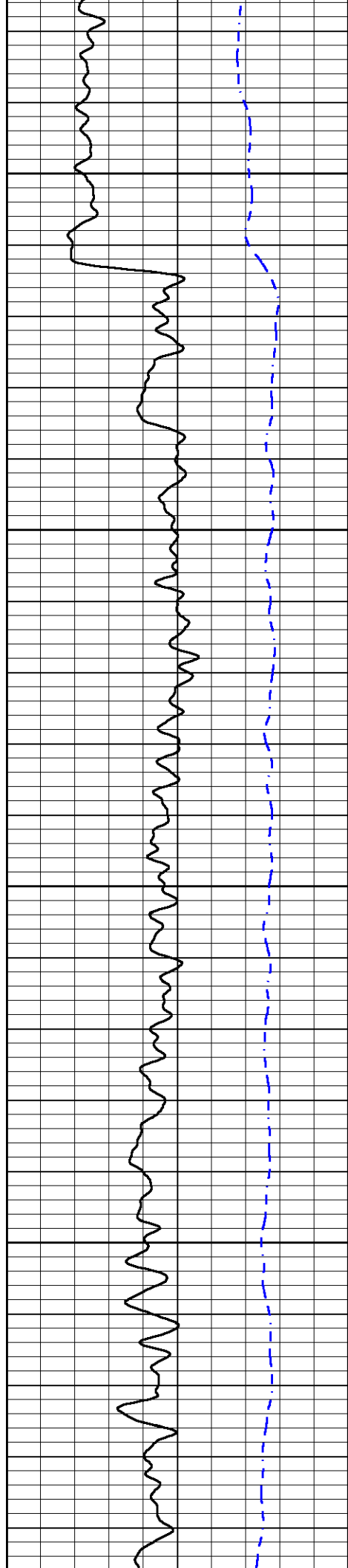
4700

4750

4800

4850



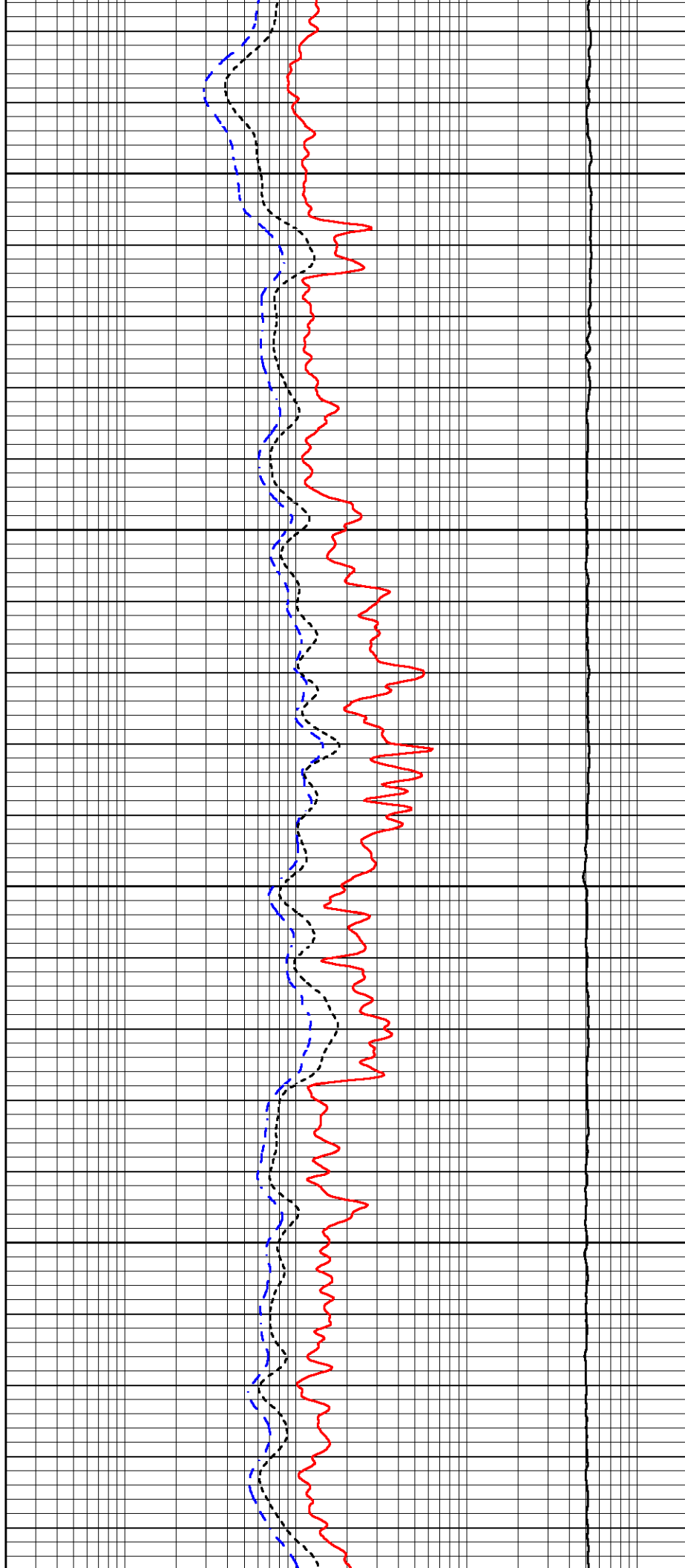


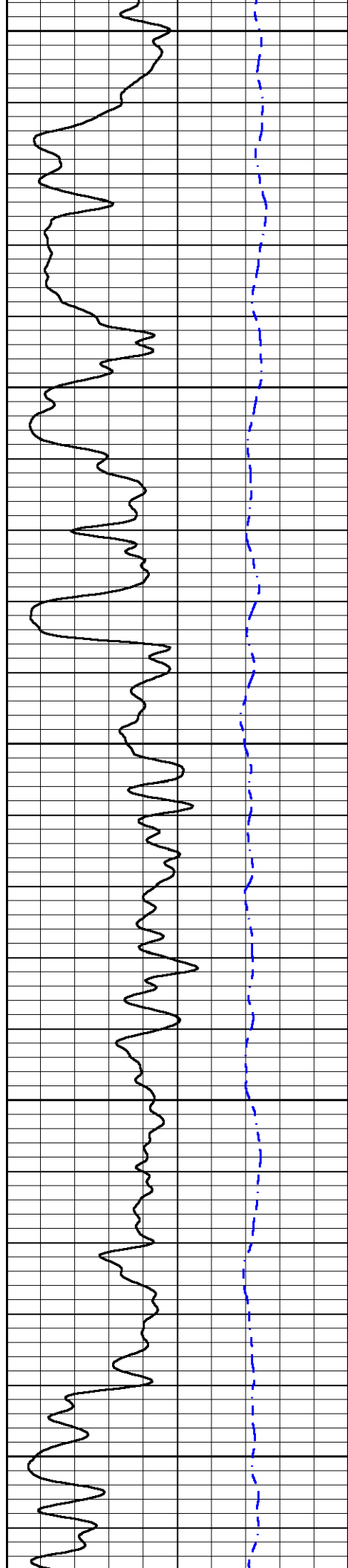
4900

4950

5000

5050





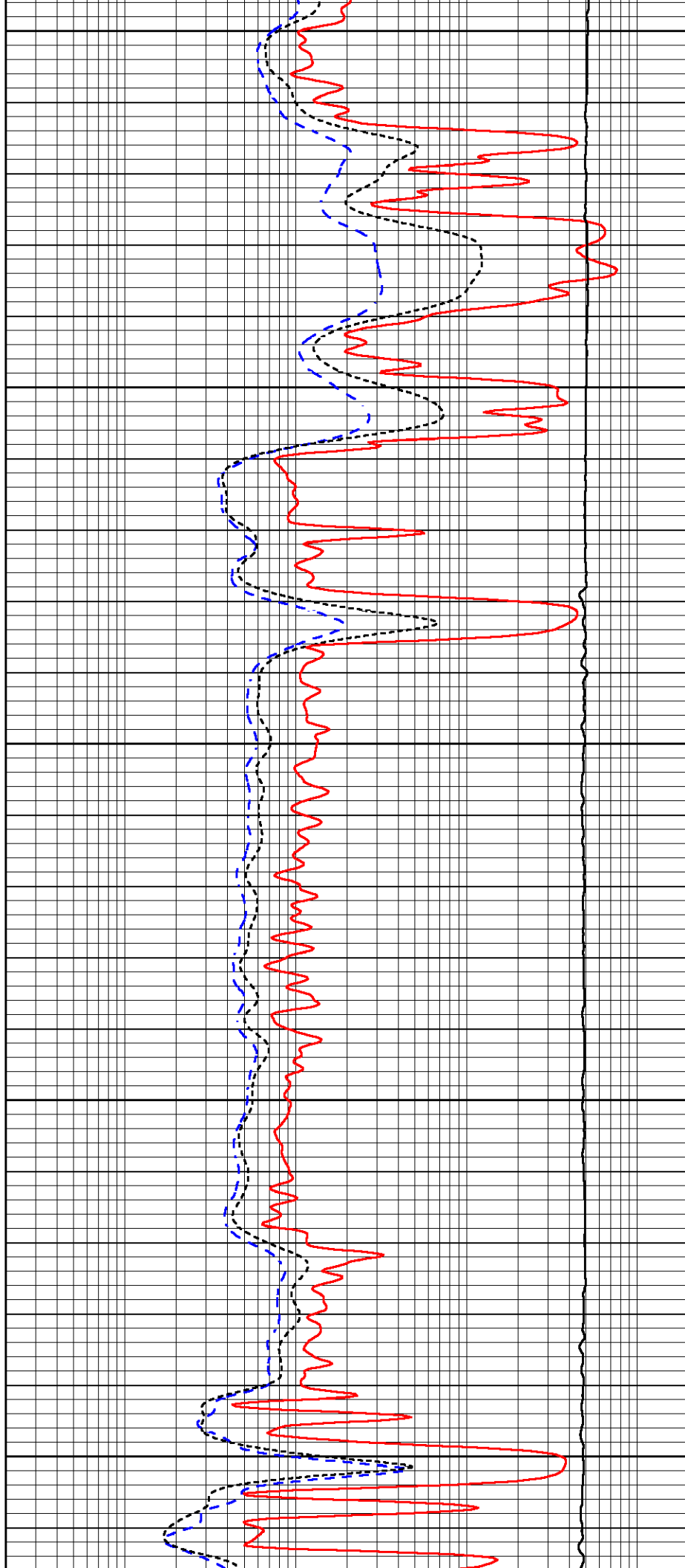
5100

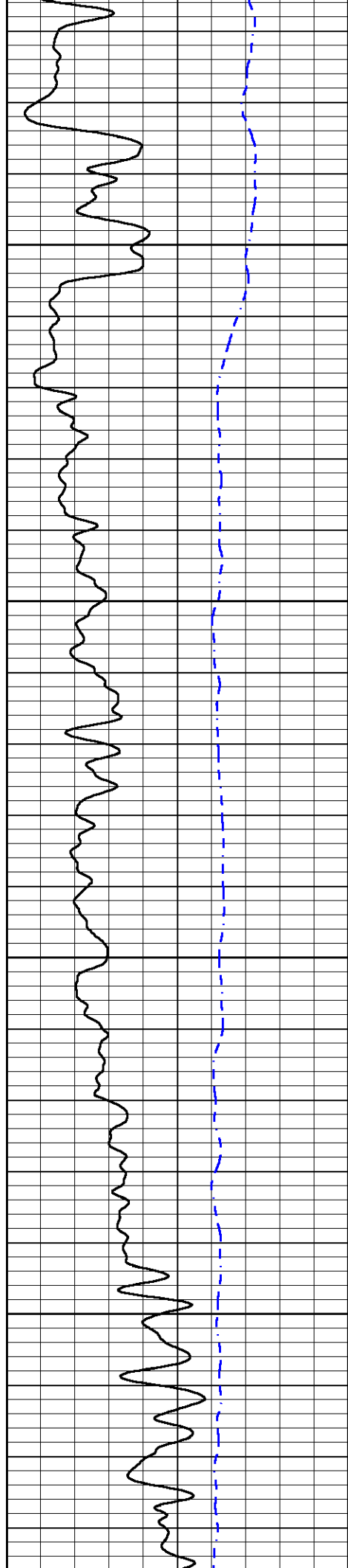
5150

5200

5250

5300



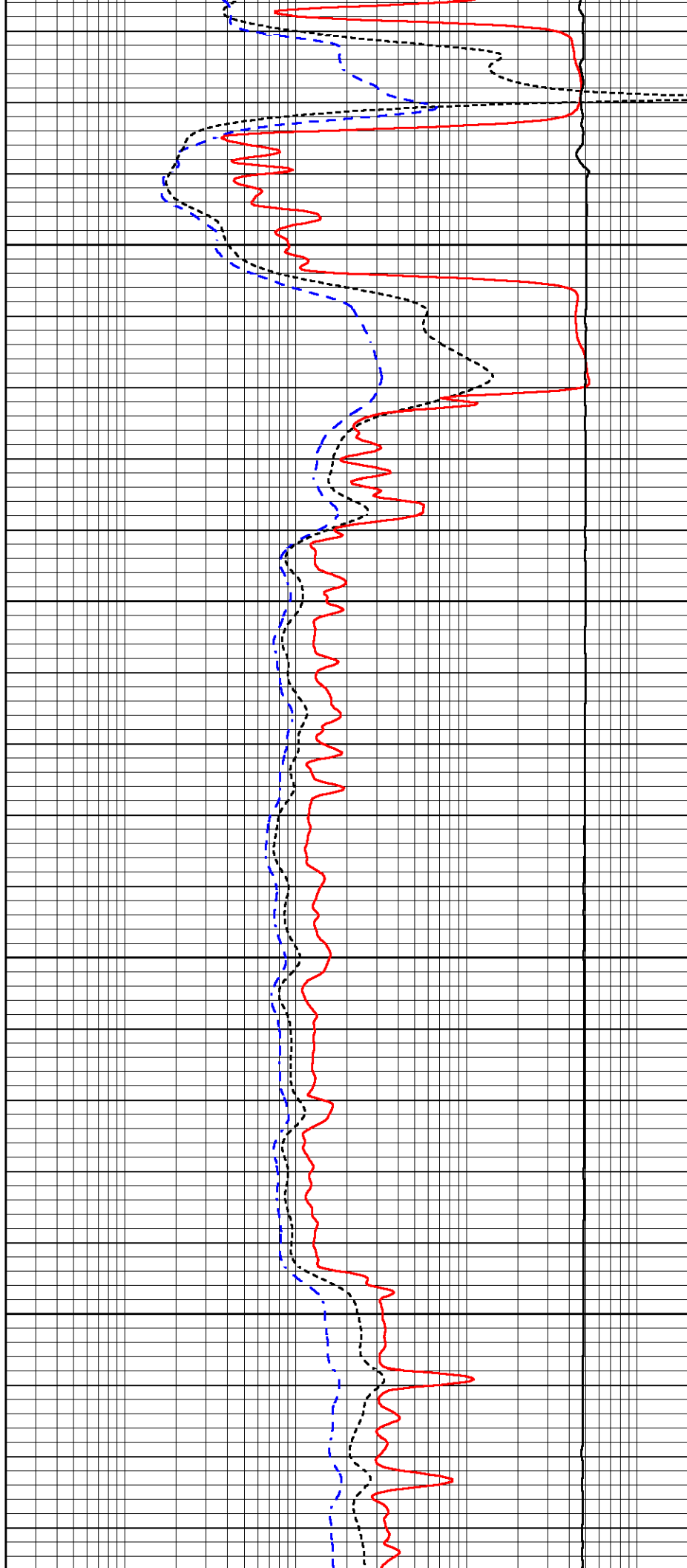


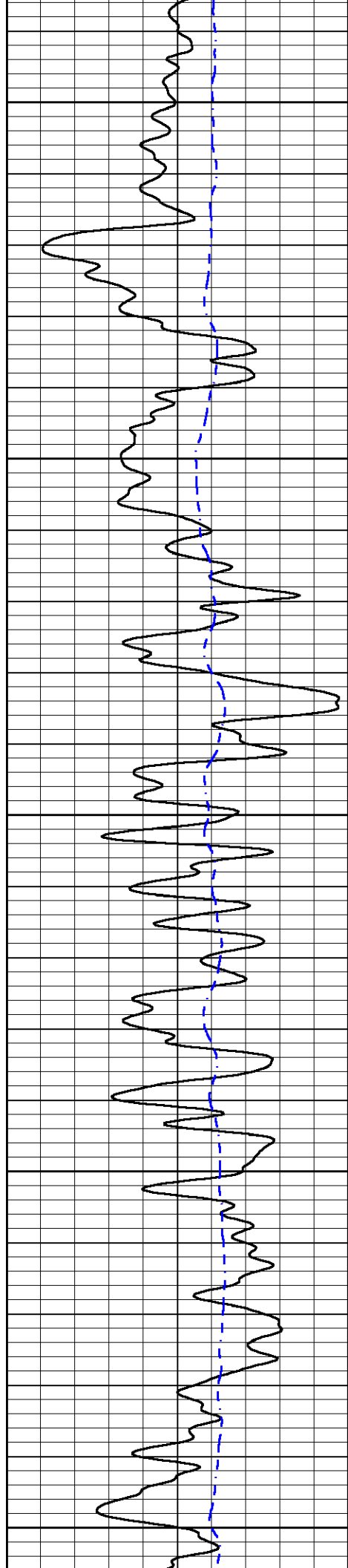
5350

5400

5450

5500





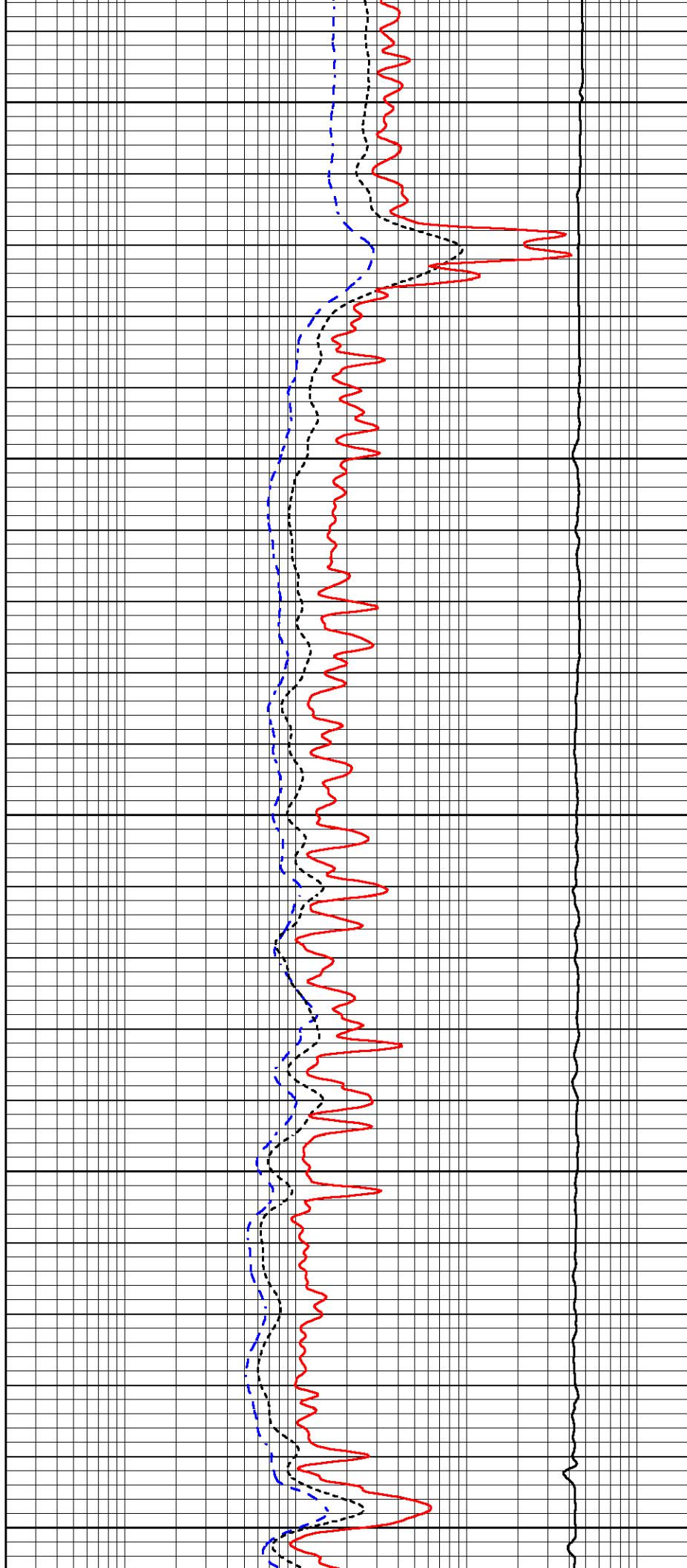
5550

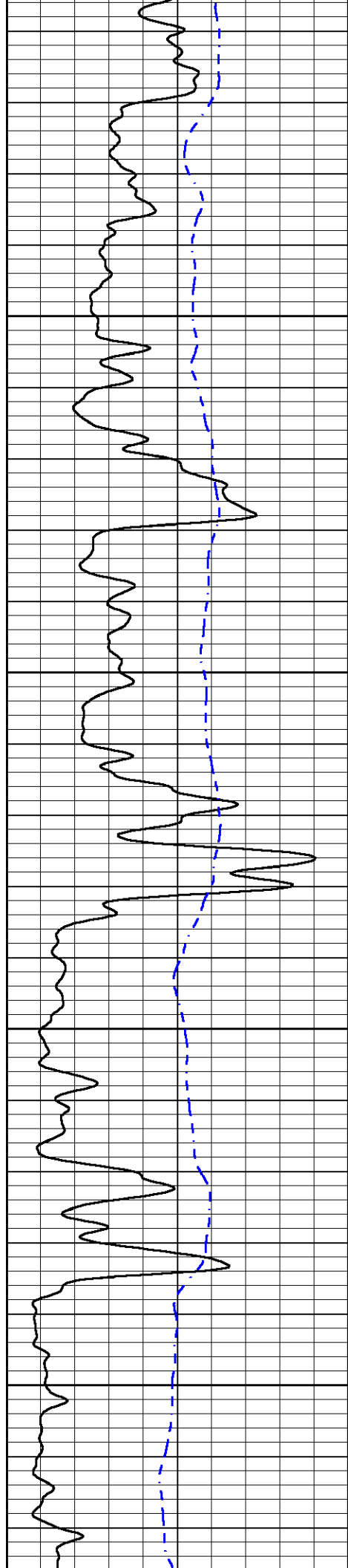
5600

5650

5700

5750



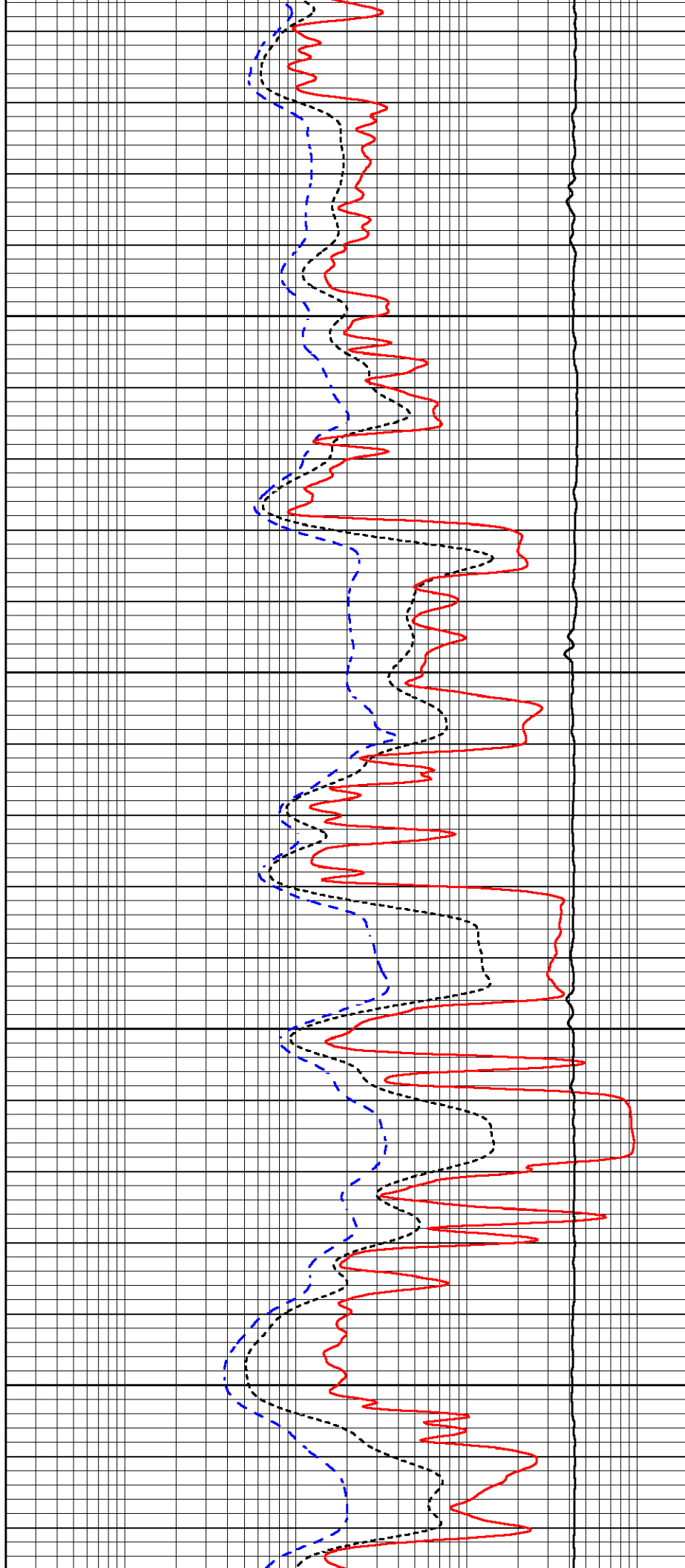


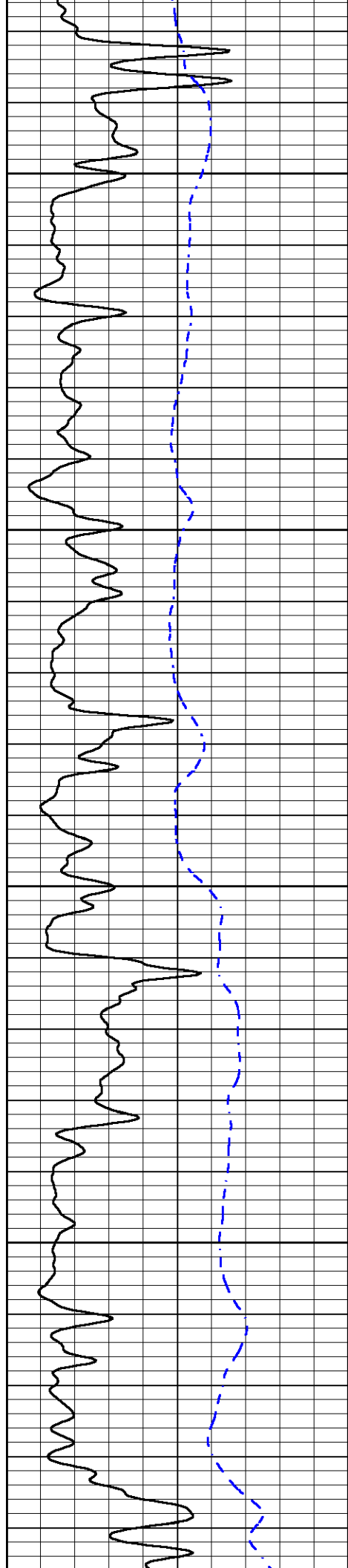
5800

5850

5900

5950



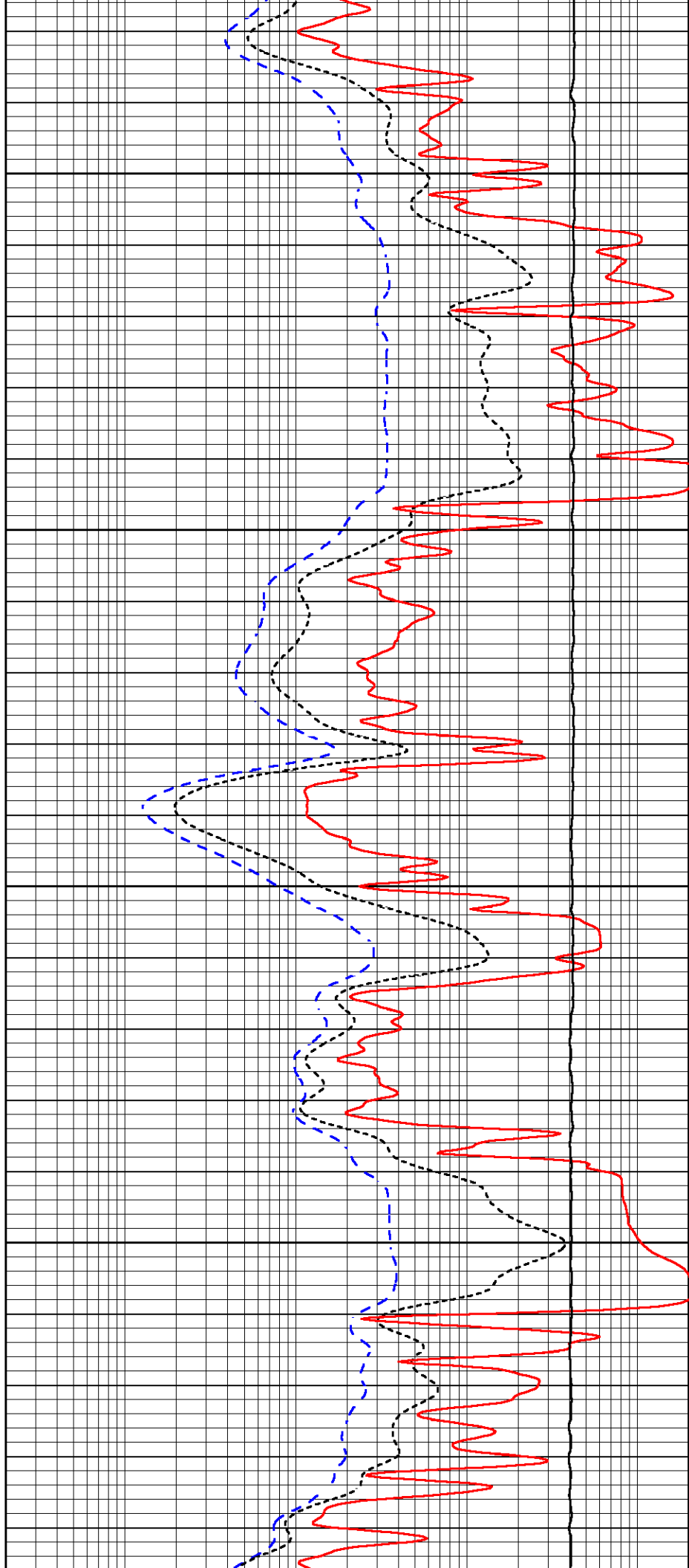


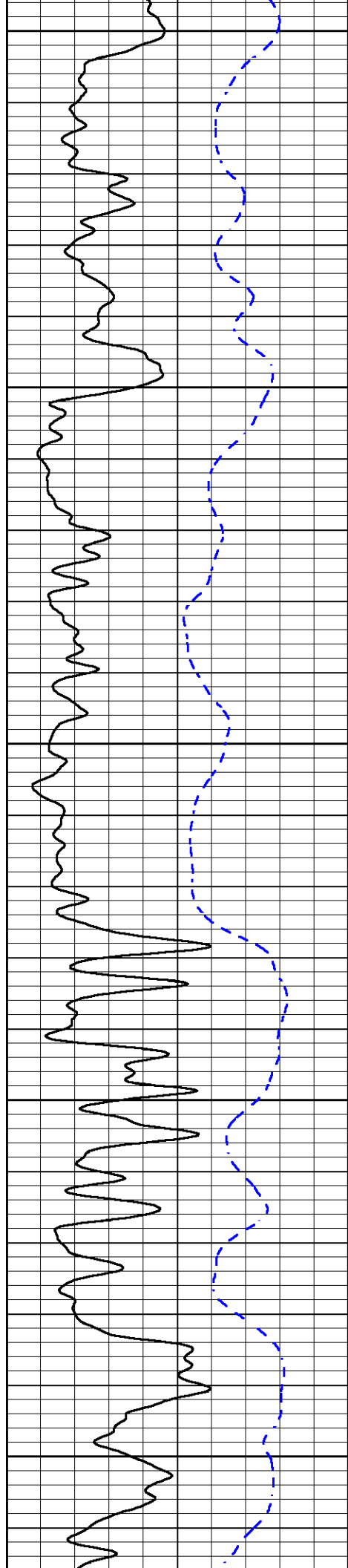
6000

6050

6100

6150





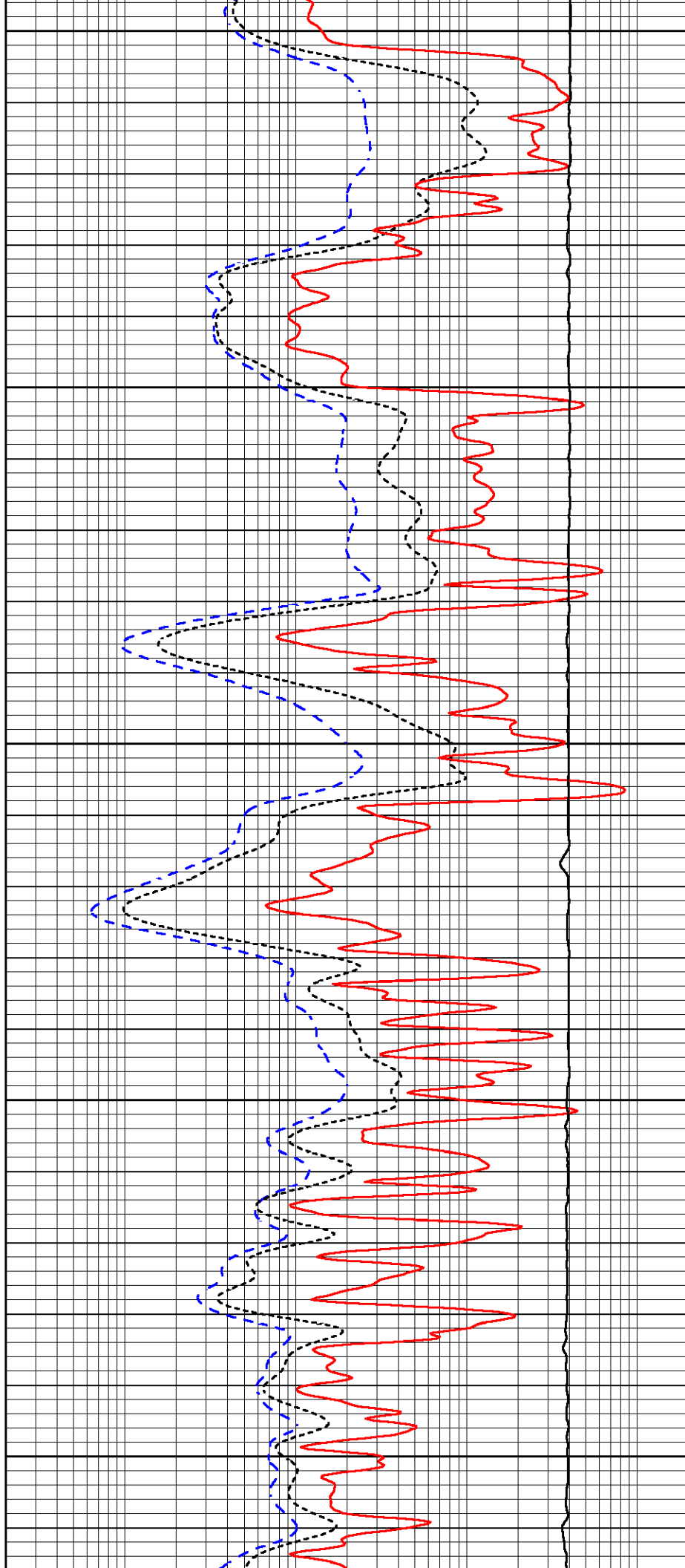
6200

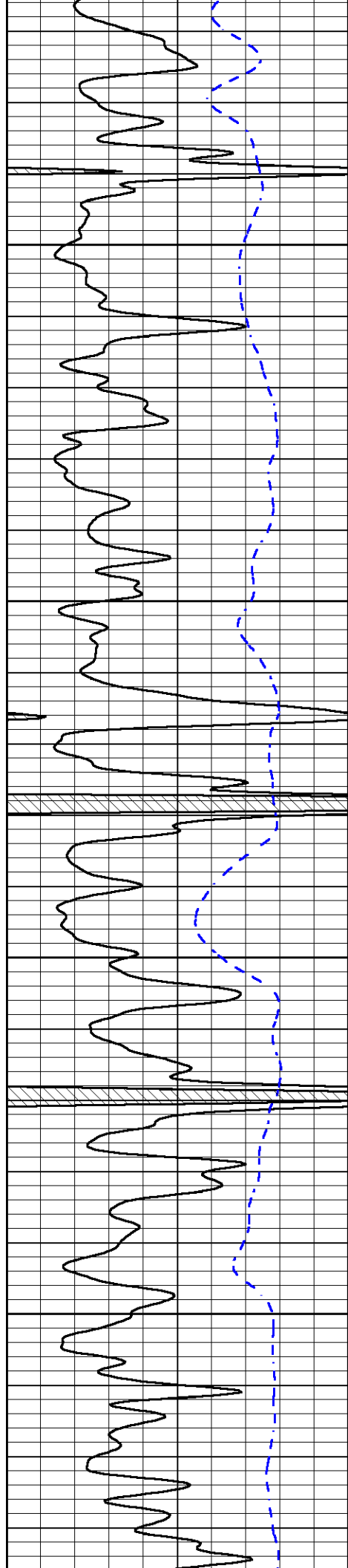
6250

6300

6350

6400



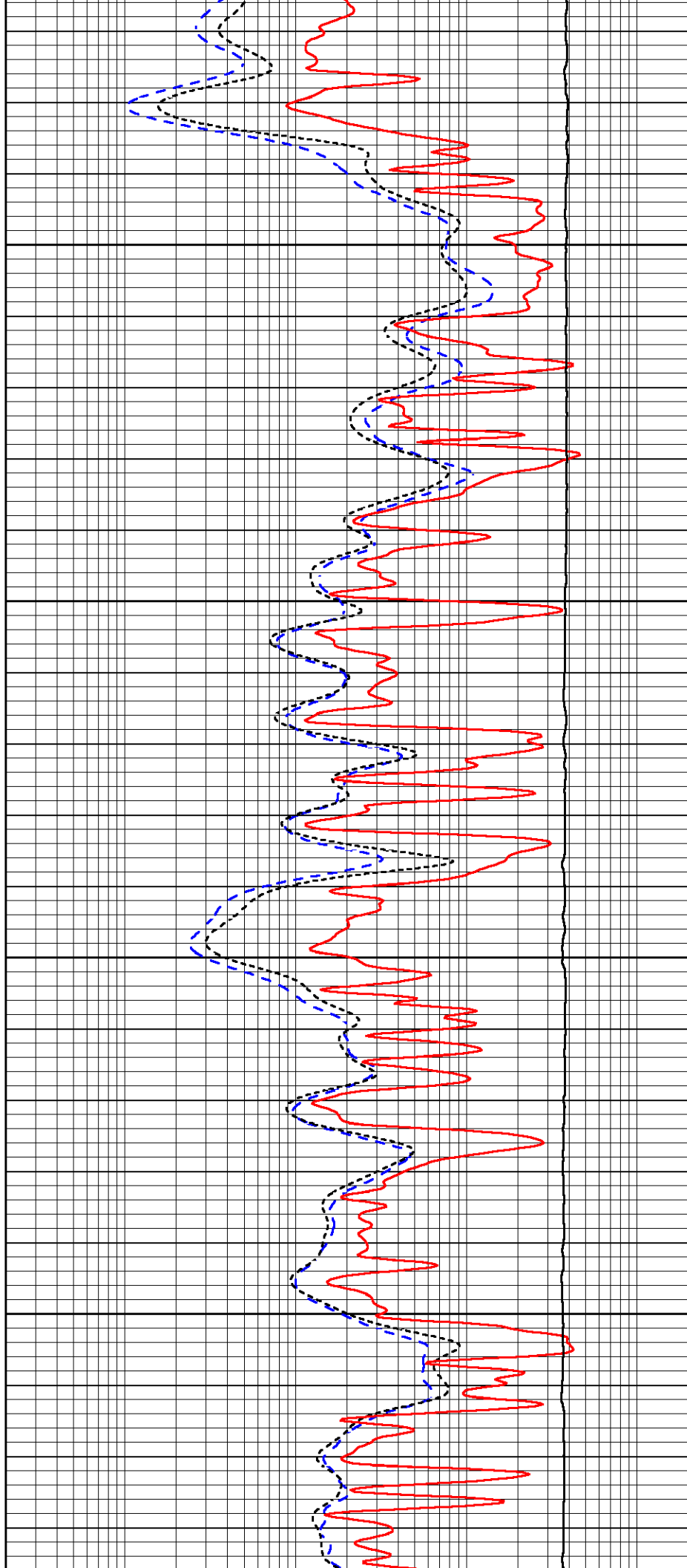


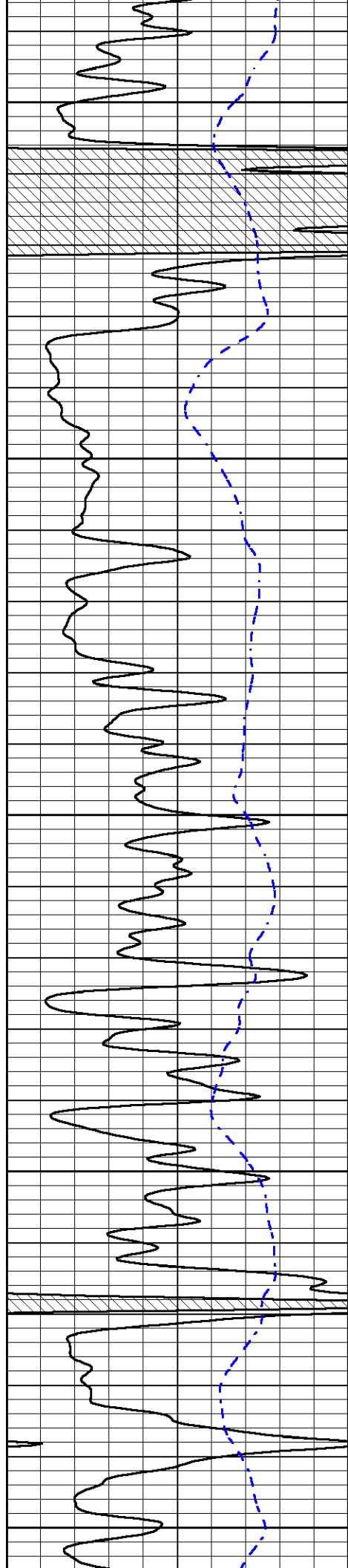
6450

6500

6550

6600





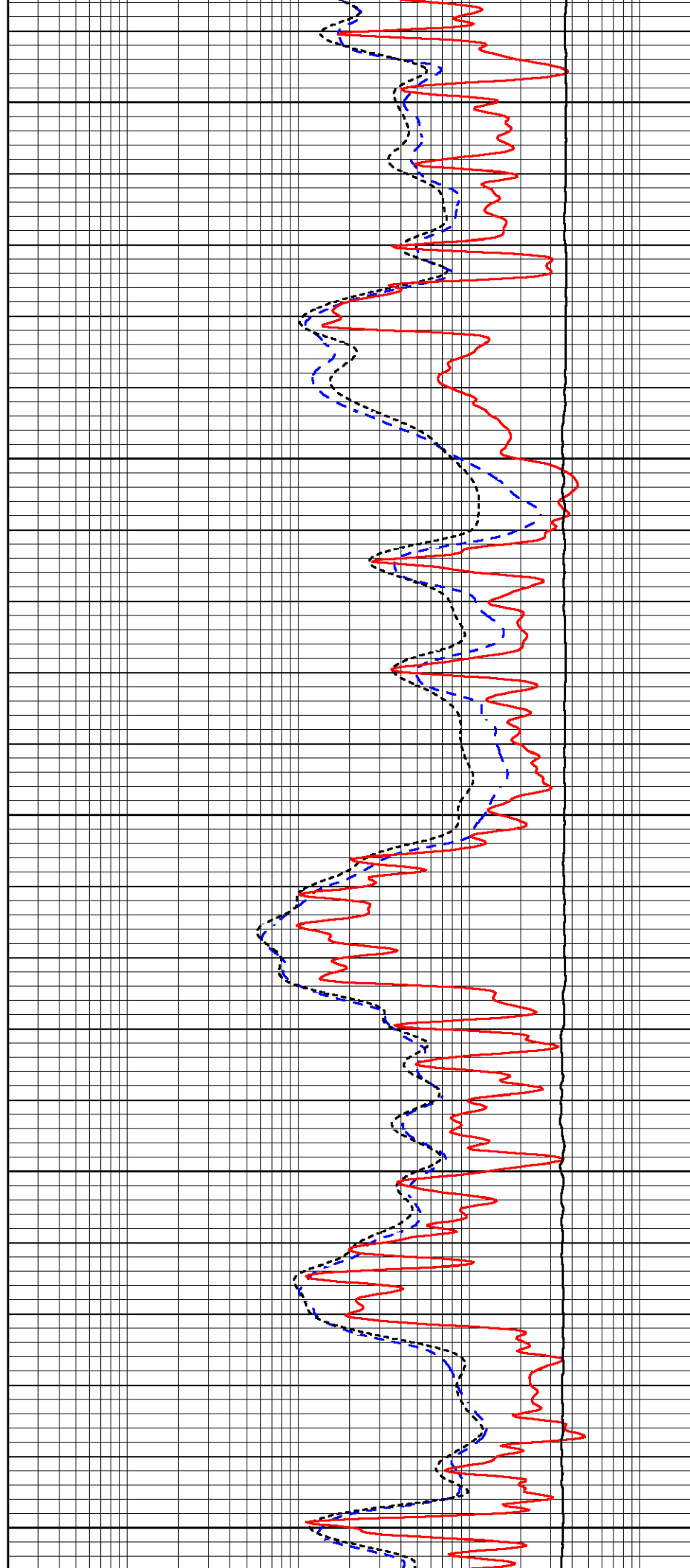
6650

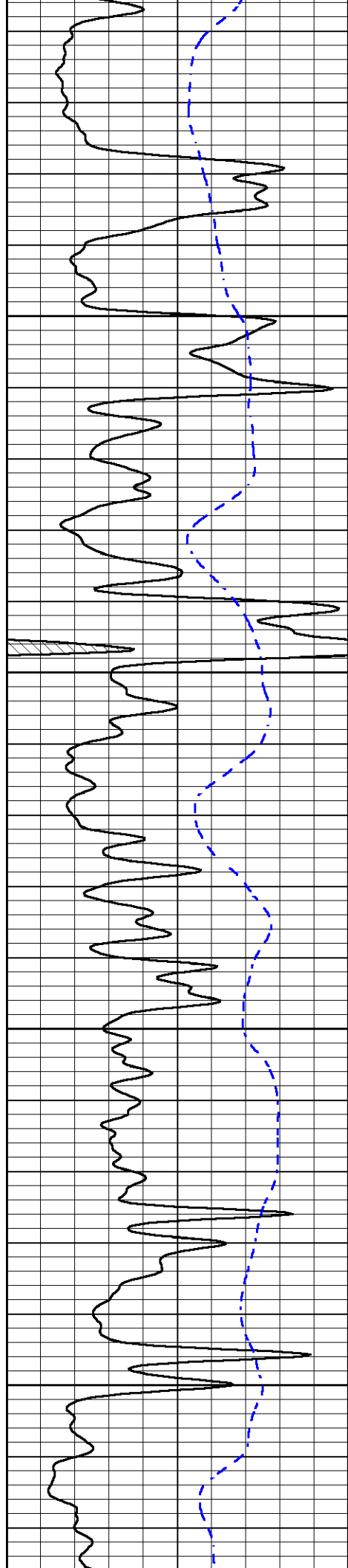
6700

6750

6800

6850



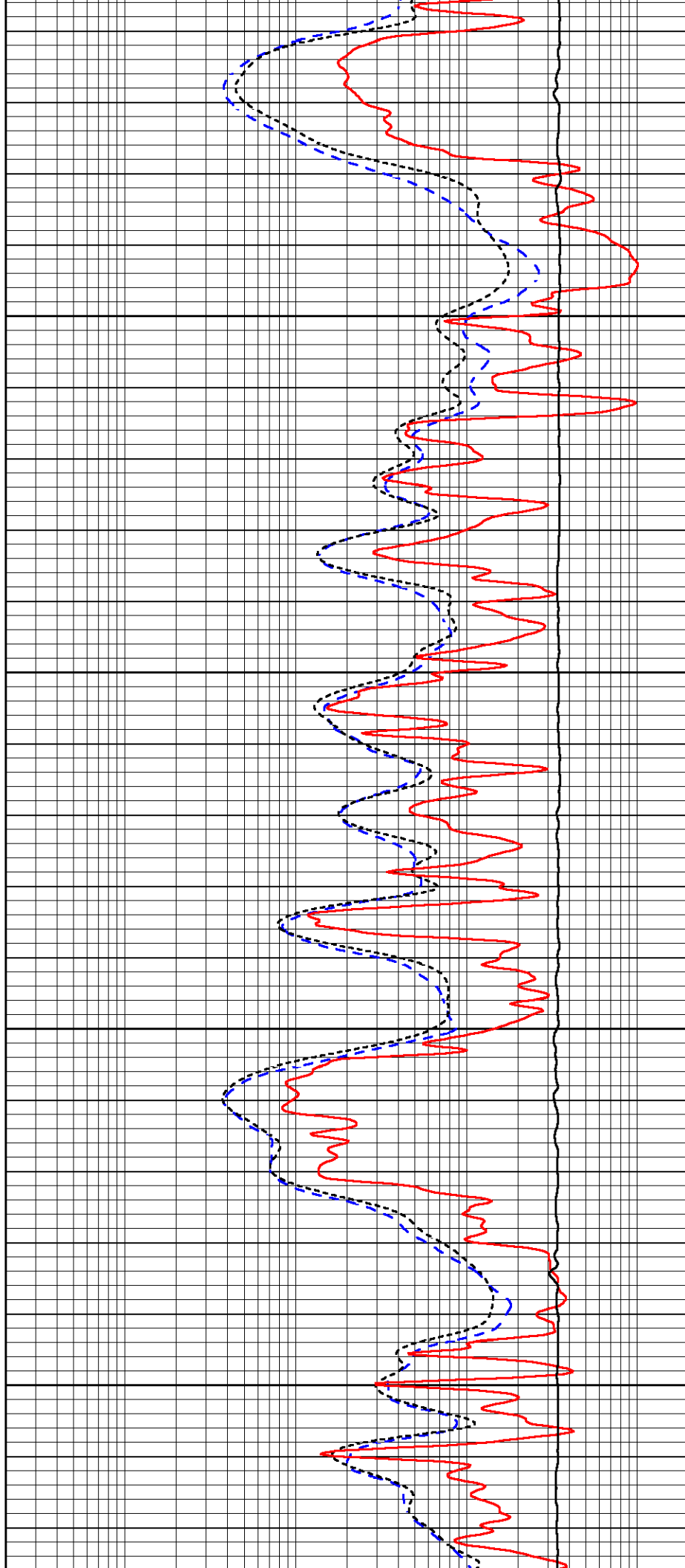


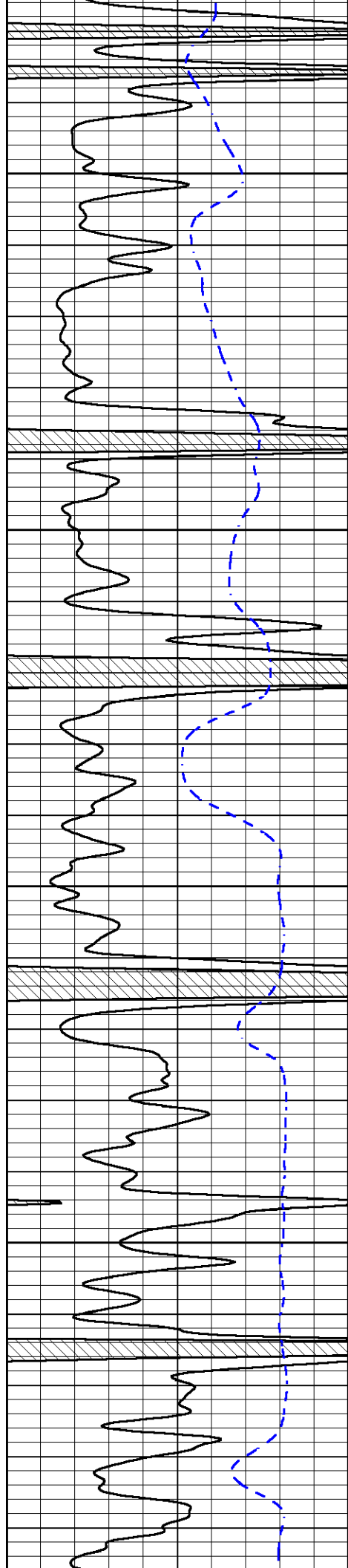
6900

6950

7000

7050



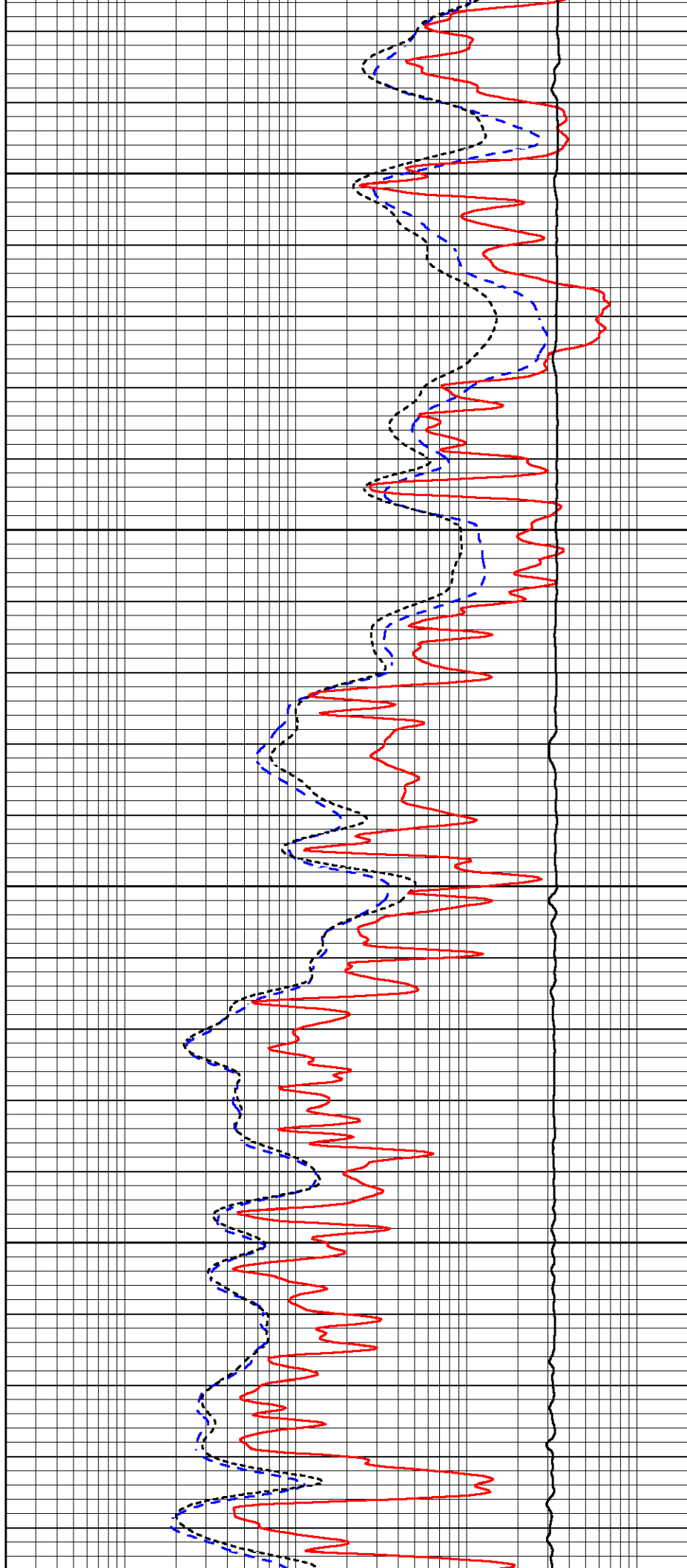


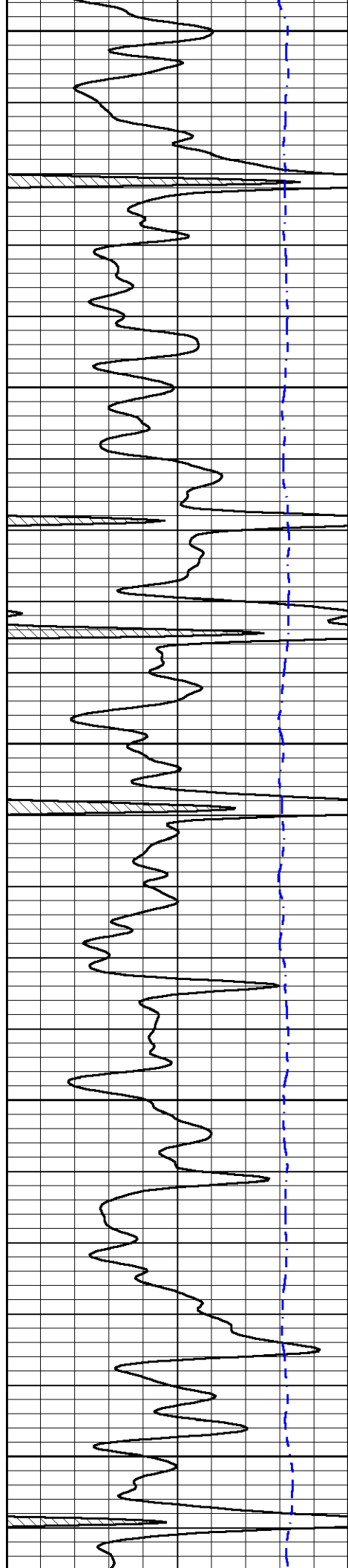
7100

7150

7200

7250





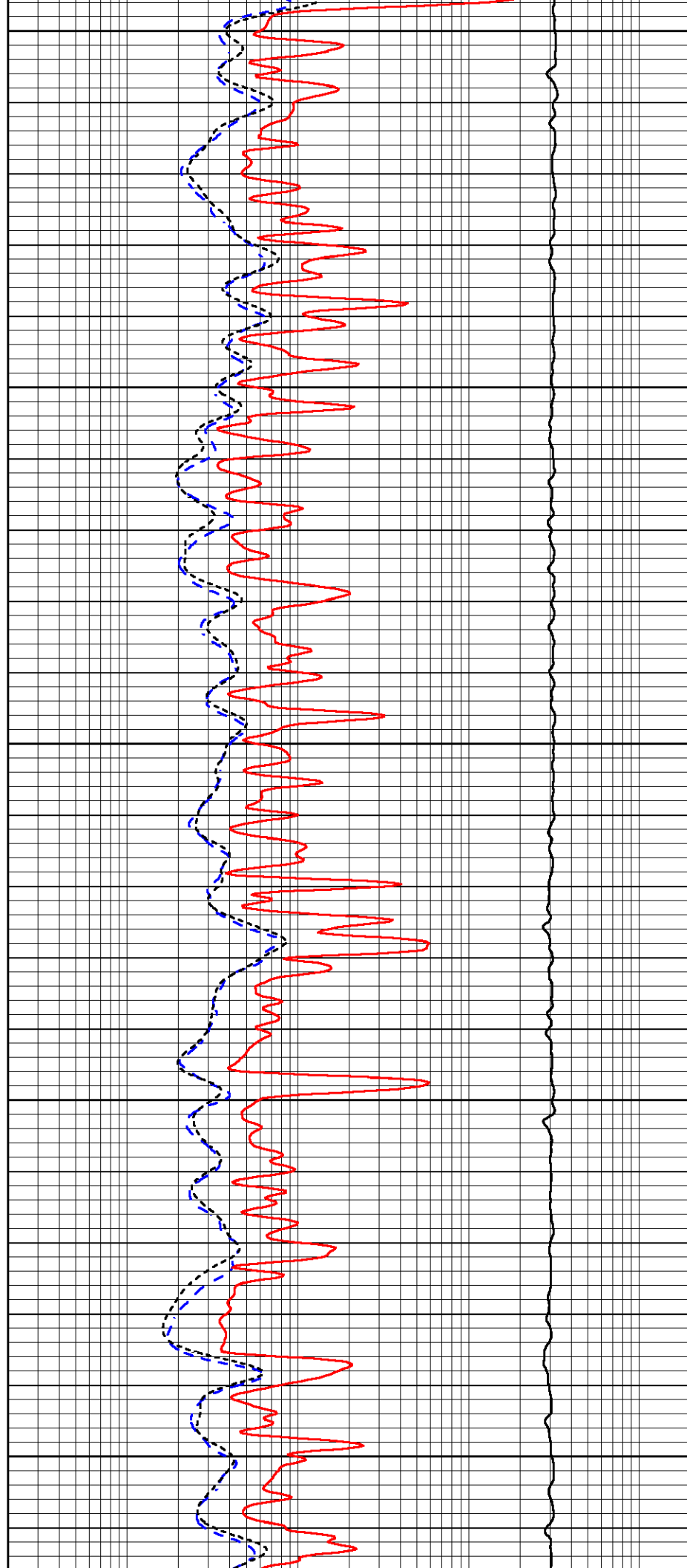
7300

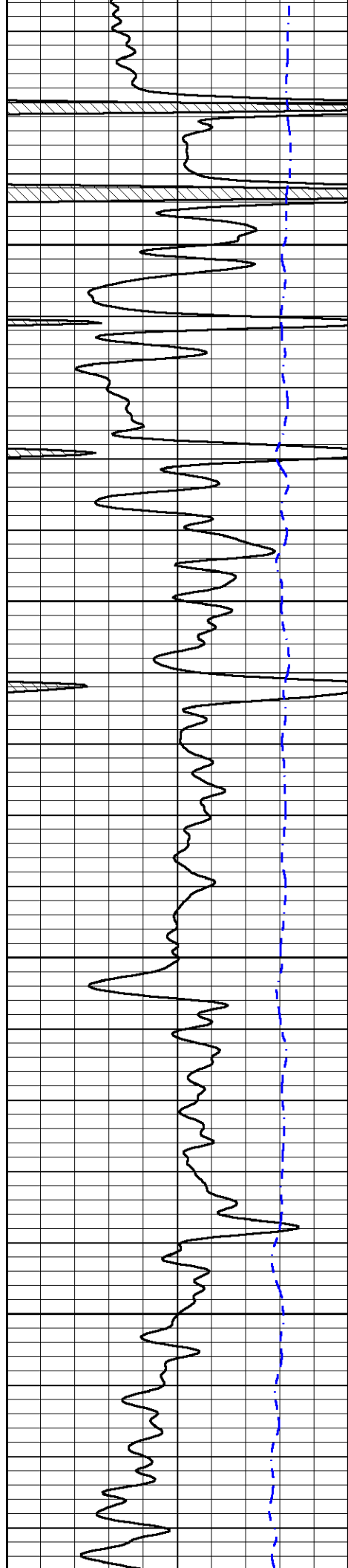
7350

7400

7450

7500



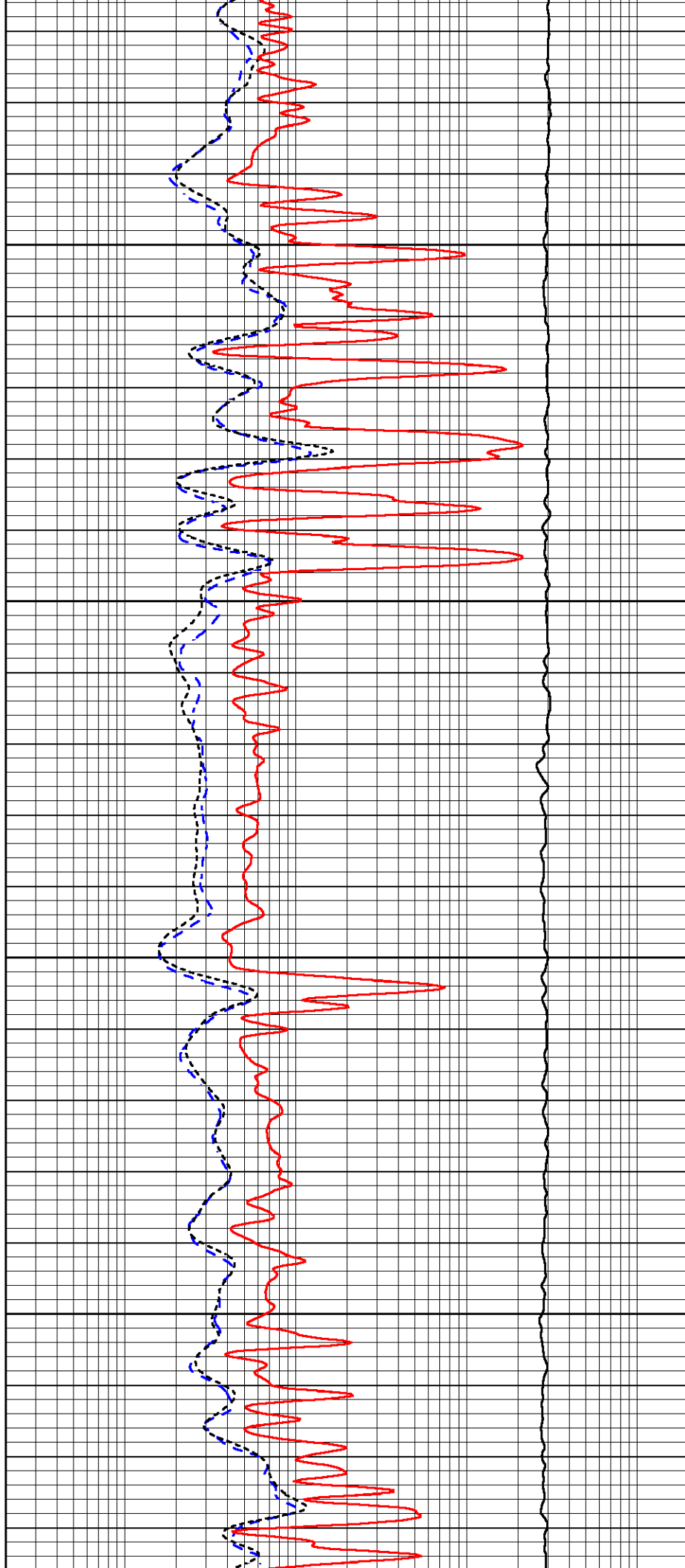


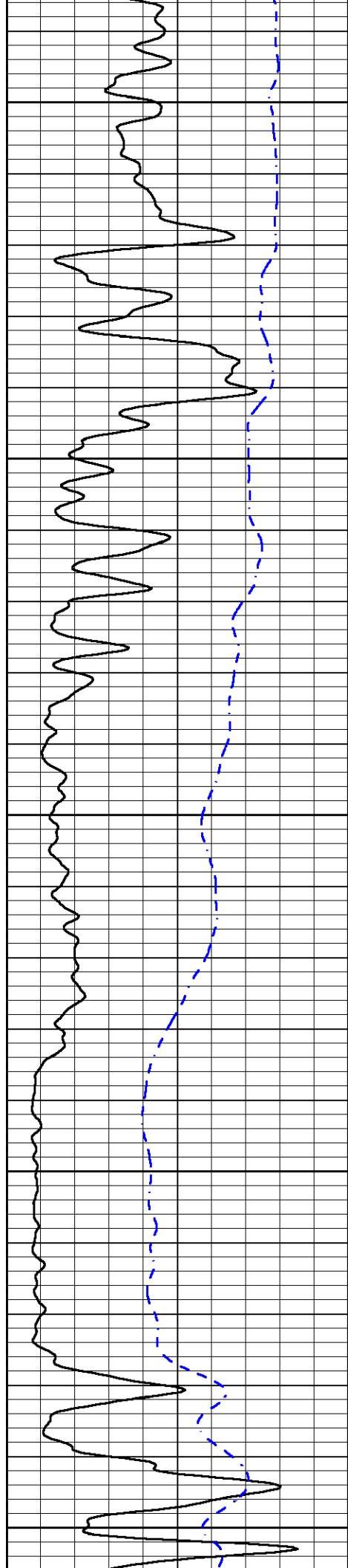
7550

7600

7650

7700





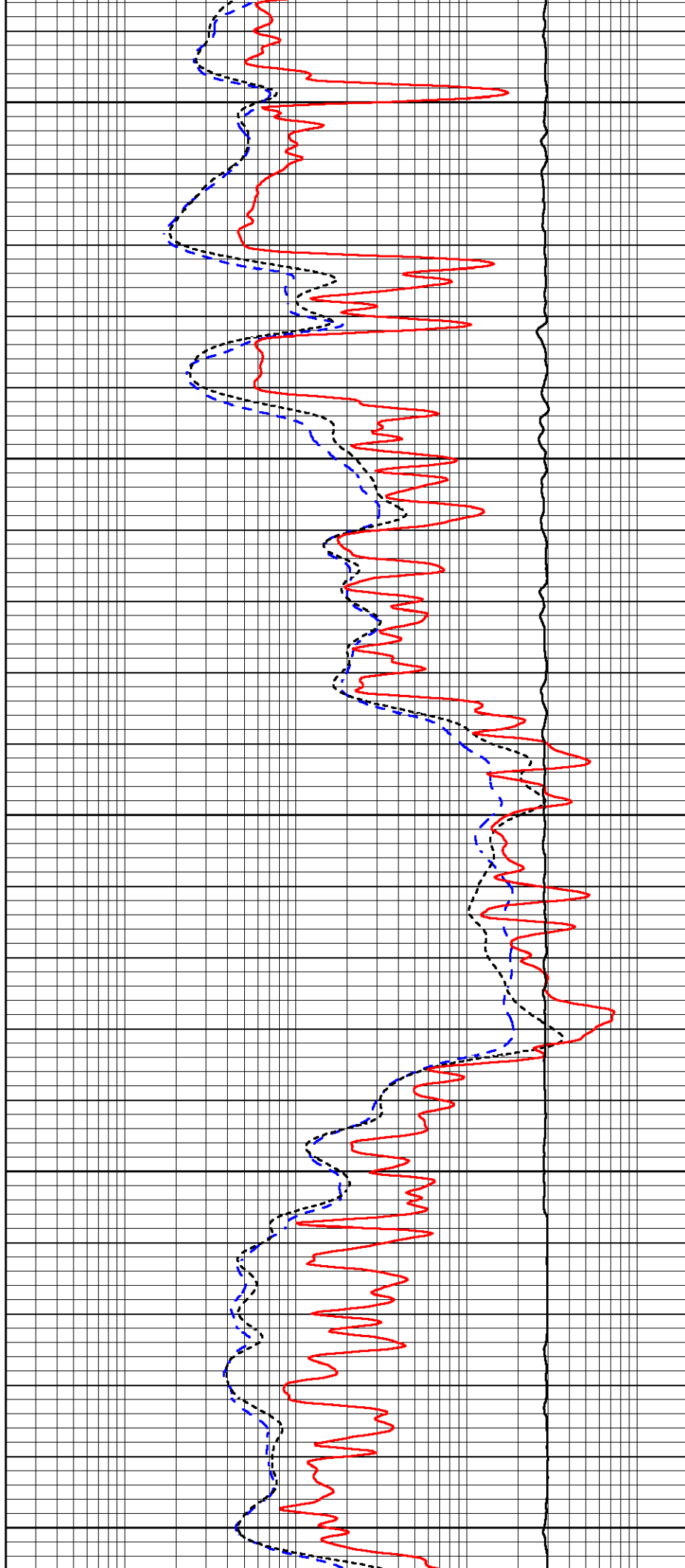
7750

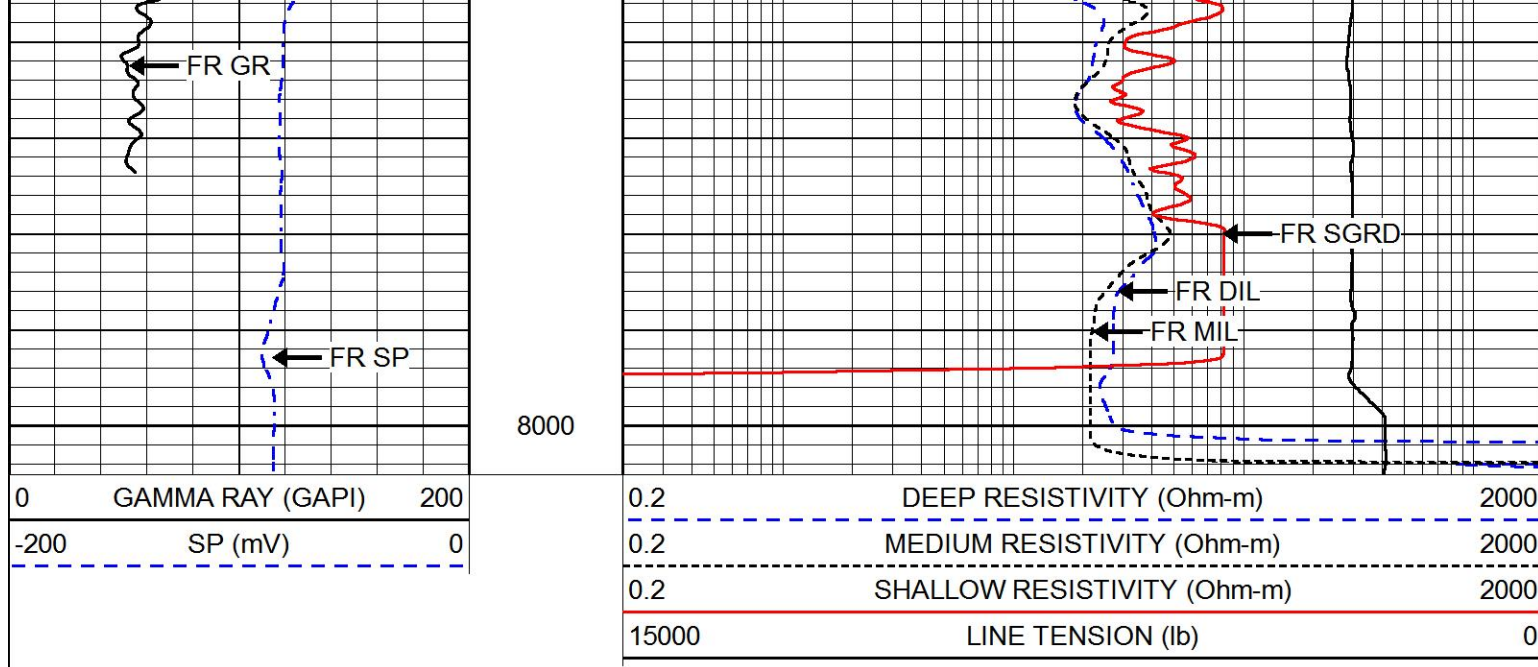
7800

7850

7900

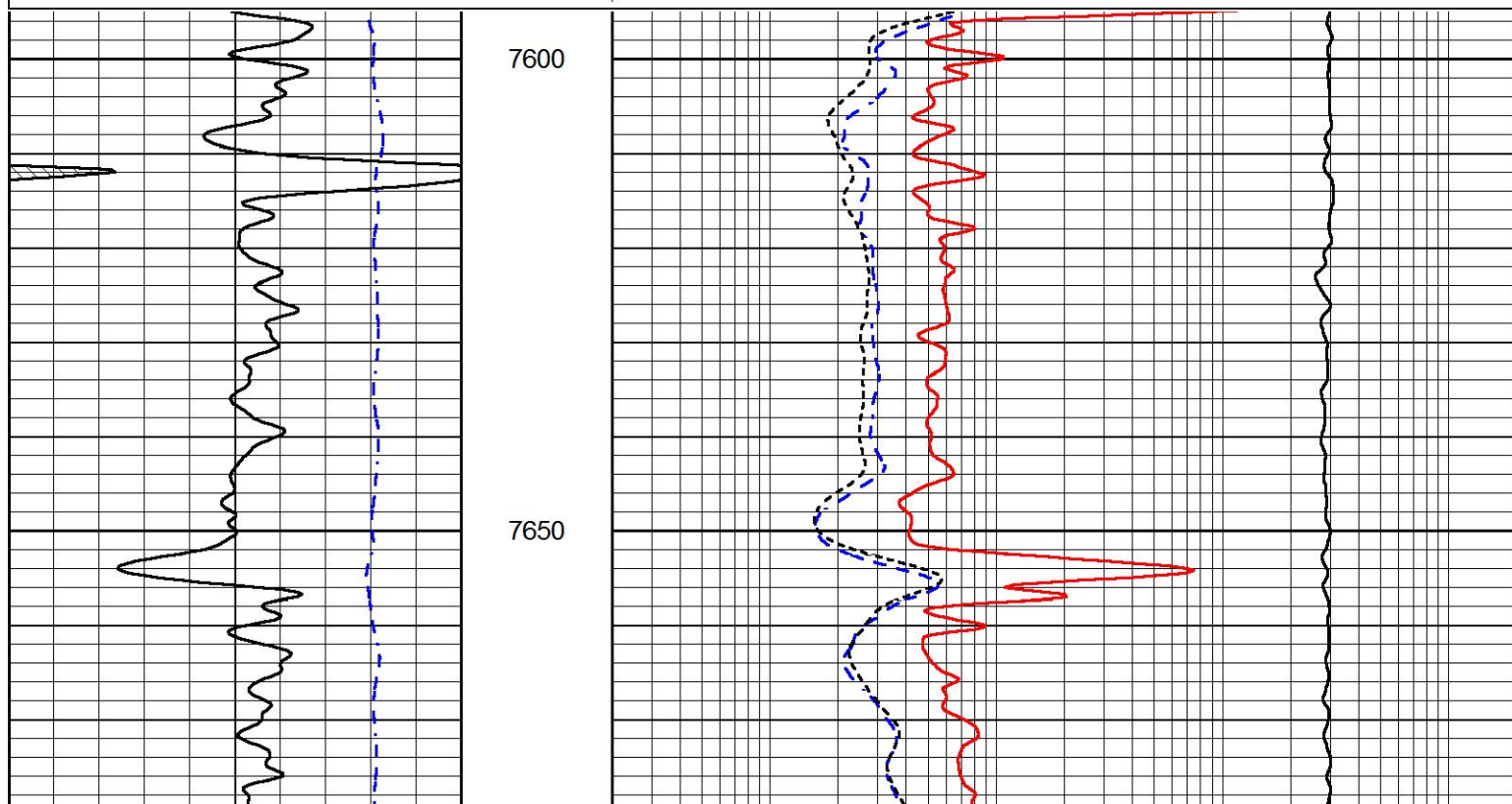
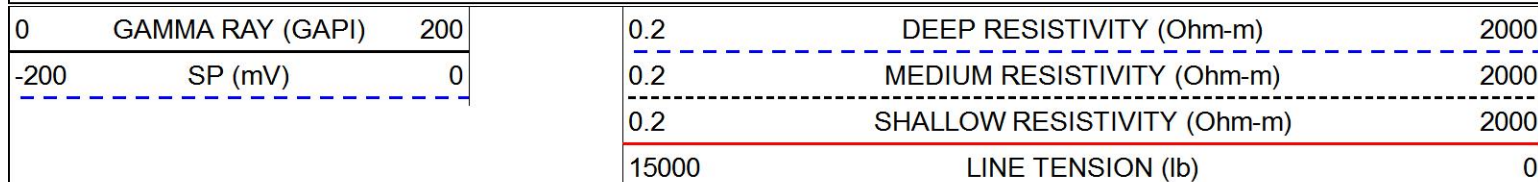
7950

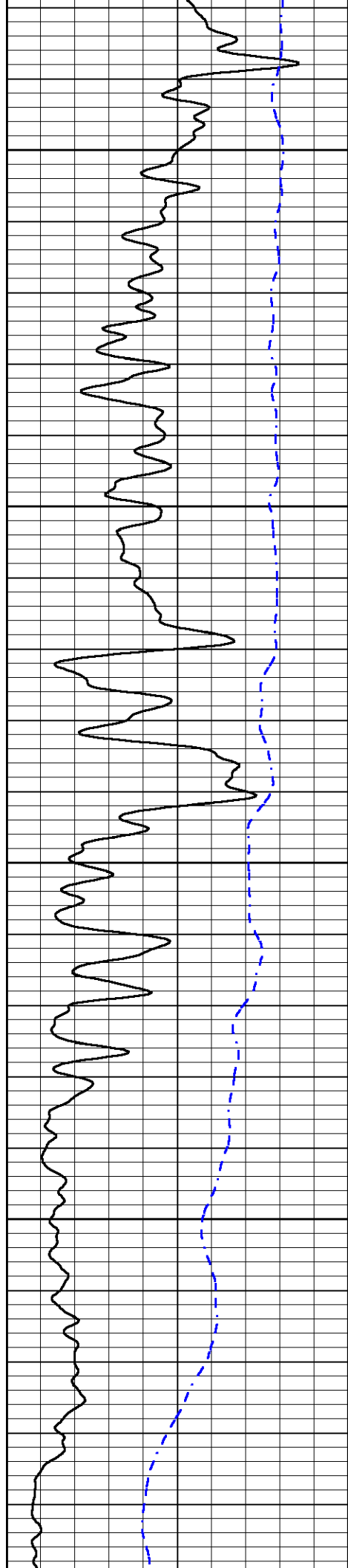




# REPEAT SECTION

Database File wiepking\_fullerton\_ma\_state\_13.db  
 Dataset Pathname stack/pass2.1  
 Presentation Format dilcolorado  
 Dataset Creation Mon May 28 23:19:46 2018  
 Charted by Depth in Feet scaled 1:240



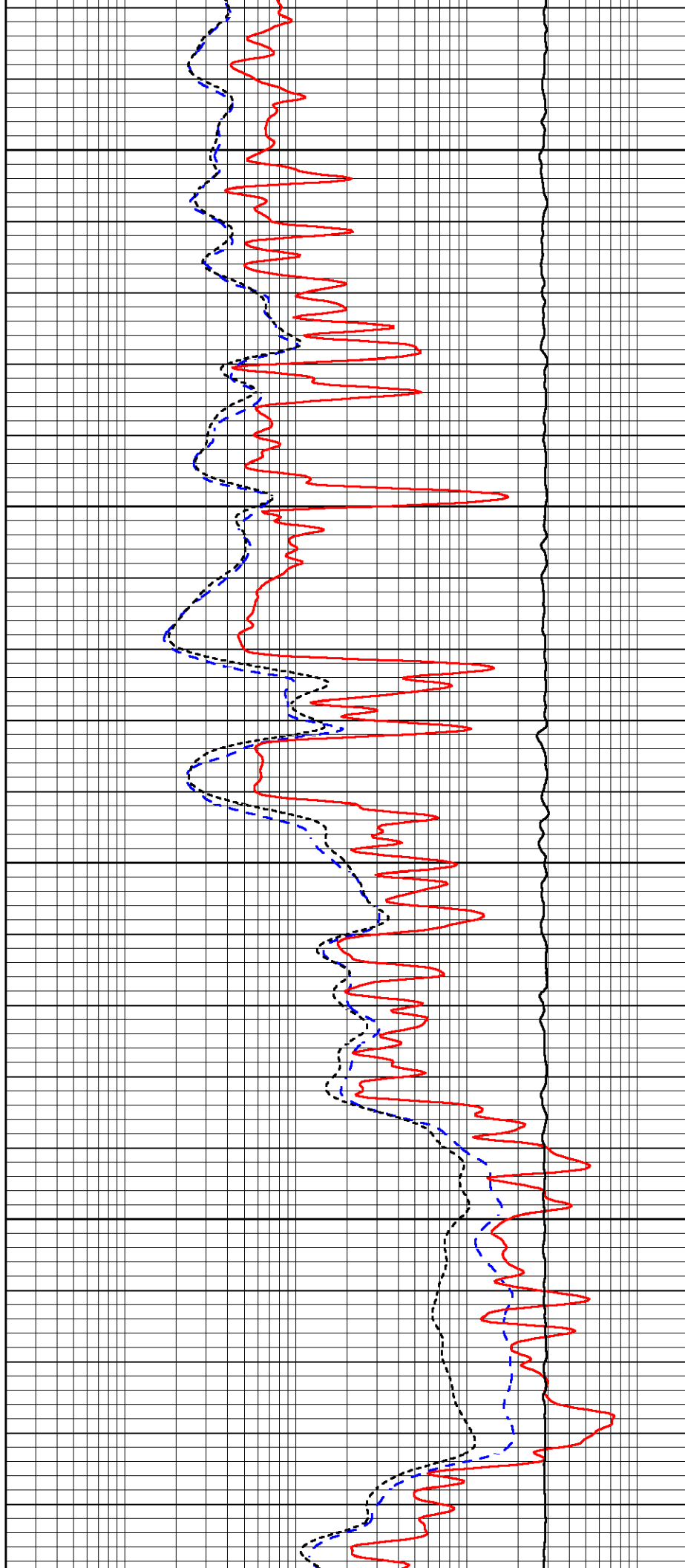


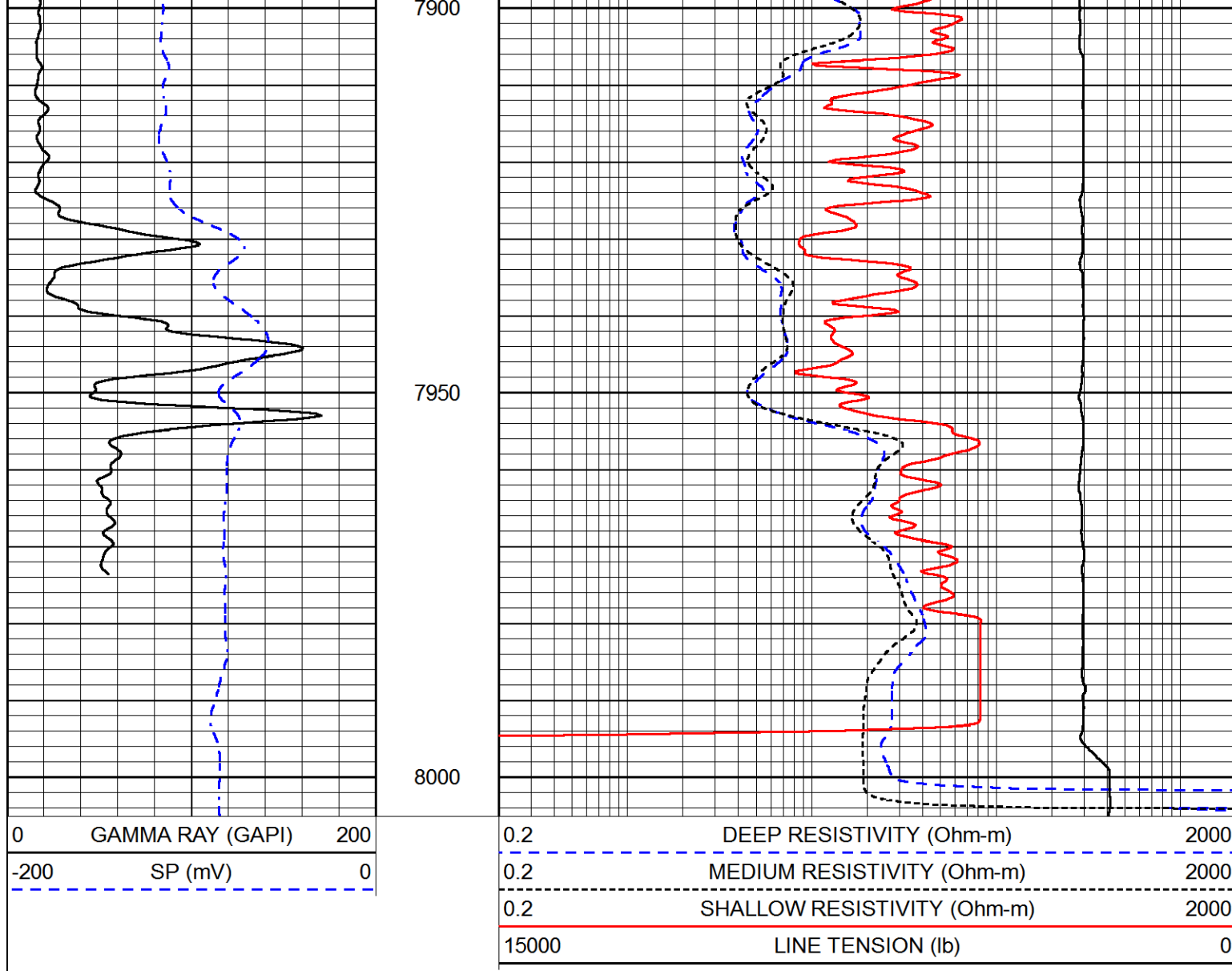
7700

7750

7800

7850





Calibration Report	
Database File	wiepkig_fullerton_ma_state_13.db
Dataset Pathname	stack/pass5.1
Dataset Creation	Mon May 28 23:14:45 2018

### Dual Induction Calibration Report

Serial-Model:	1987-M&W
Calibration Performed:	Tue Apr 11 17:07:38 2017

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.530	-36.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.440	-110.500

### Compensated Density Calibration Report

Serial-Model:	128-4110-M&W
Source / Verifier:	/
Master Calibration Performed:	Thu Mar 02 17:30:49 2017

## Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.750	g/cc	4555.61	2204.19	cps
Aluminum	2.650	g/cc	856.69	1405.61	cps
Spine Angle = 74.93			Density/Spine Ratio = 0.520		
	Size		Reading		
Small Ring	4.00	in	1.15		
Large Ring	14.00	in	1.04		

## Compensated Neutron Calibration Report

Serial Number: tk10-MW  
Tool Model: M&W  
Calibration Performed: Wed Nov 16 11:21:36 2016

Detector	Readings		Target	Normalization
Short Space	6240.00	cps	1000.00 cps	1.6025
Long Space	460.00	cps	1000.00 cps	1.9500

## Gamma Ray Calibration Report

Serial Number: 89-M&W  
Tool Model: M&W  
Calibration Performed: Tue Apr 11 17:08:01 2017

Calibrator Value: 1000.0 GAPI

Background Reading: 0.0 cps  
Calibrator Reading: 6.2 cps

Sensitivity: 0.5200 GAPI/cps



Company WIEPKING-FULLERTON ENERGY, LLC  
Well MA-STATE NO. 13  
Field GREAT PLAINS  
County LINCOLN  
State COLORADO