



Pulsed Decay Neutron

Gamma Ray

Casing Collar Log

COMPANY: Kerr McGee Oil & Gas Onshore LP.

WELL: Cook 1C-16HZ

FIELD: Wattenberg

COUNTY: Weld STATE: Colorado

Location: API #: 05-123-42240

SHL: 530 FSL 769 FEL SESE

BHL: Latitude: 40.132876

Section: 16 Longitude: -104.662336

Permanent Datum: G.L.

Drill Measured From: K.B. Elevation: 4878'

Log Measured From: K.B. = 25 above Permanent Datum

Elevations

KB: 4903'

DF: 4902'

GL: 4878'

Other Services

Date: 08-03-2016

Run Number: One

Depth Driller: 12698 FT

Depth Logger: 7690 FT

Bottom Logged Interval: 7684 FT

Top Logged Interval: 200 FT

Fluid Type: Water

Fluid Top: Surface

Max. Rec. Temperature: 260° F

Estimated Cement Top: Surface

Time on Bottom: 10:25

Unit Number: HD-264

Location: Grand Junction

Recorded By: A. Ellsworth

Witnessed By: K. Wieser

Borehole Record

Tubing Record

| Run Number | Bit Size | Top | Bottom | Size | Weight | Top | Bottom |
|------------|----------|---------|----------|------|--------|-----|--------|
| One | 13.5" | 0 FT | 1925 FT | | | | |
| Two | 8.5" | 1925 FT | 12698 FT | | | | |

API #: 05-123-42240

Kerr McGee Oil & Gas Onshore LP.

Cook 1C-16HZ

EQUIPMENT DATA

| Run | Trip | Instrument | Series No. | Serial No. | Distance to Reference |
|-----|------|--------------------|------------|------------|-----------------------|
| | | Inline Centralizer | 029 | 0595t | 4.810 ft |
| | | RSBT | 010 | 1333A | 7.697 ft |
| | | Inline Centralizer | | 0595b | 17.480 ft |
| | | Knuckle Joint | | 0814 | 20.367 ft |
| | | PDN | 029 | 1471A | 23.222 ft |
| | | | | | |
| | | | | | |

REMARKS

Log ran as per customer request
Depth referenced to marker joint @ 6634 FT
Adjusted log +5 FT to correlate with marker joint
Log ran from 7684 FT to 200 FT
Recorded with 2800 PSI surface induced pressure
Logging tools were clean and free of debris upon completion of operations

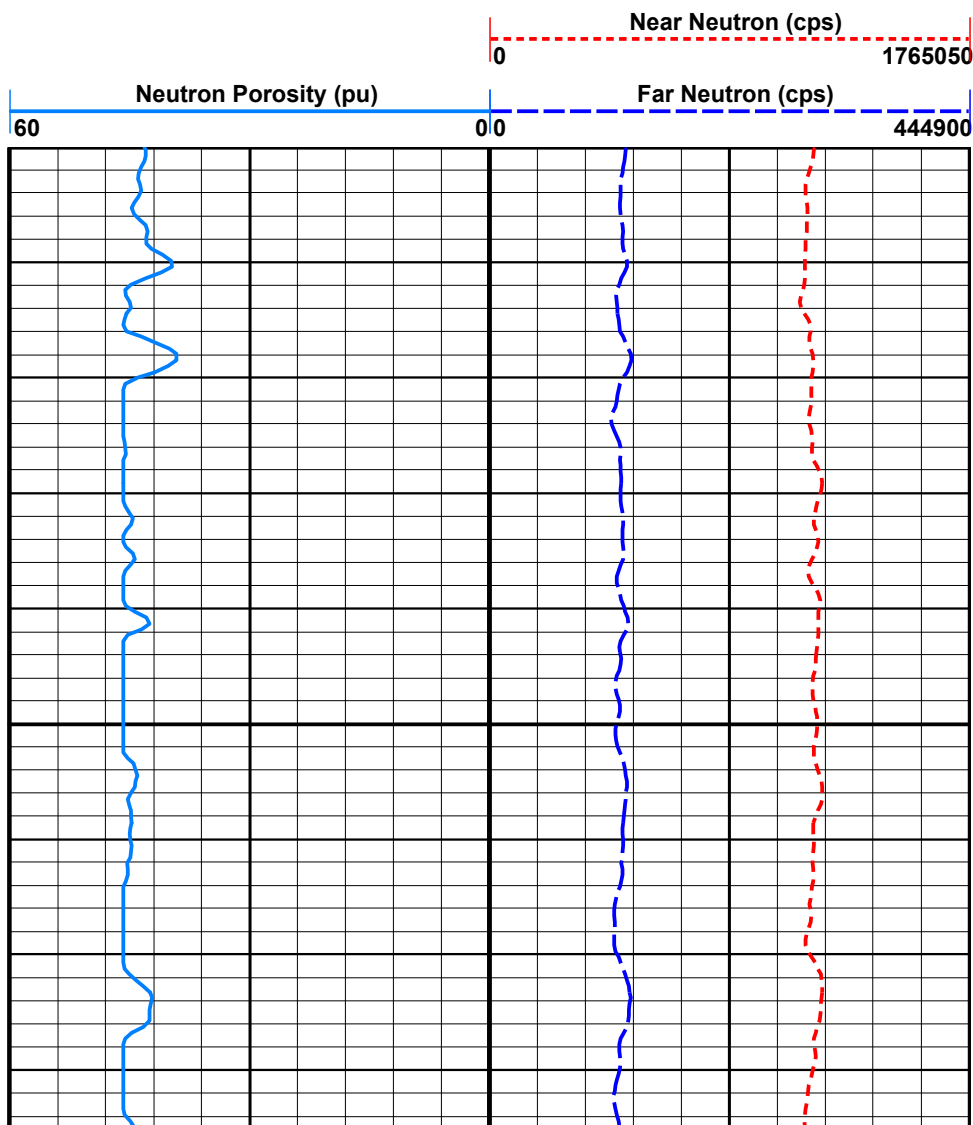
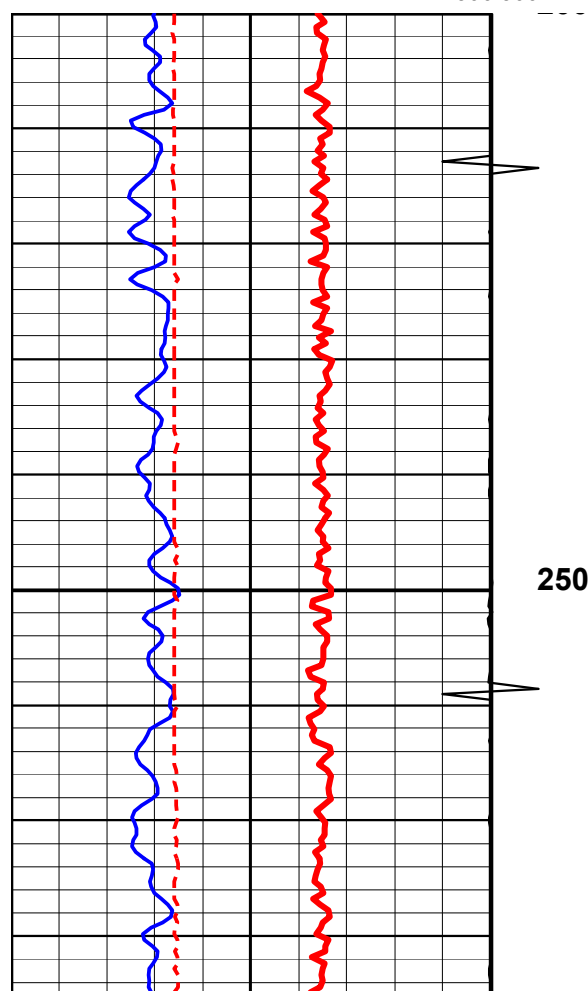
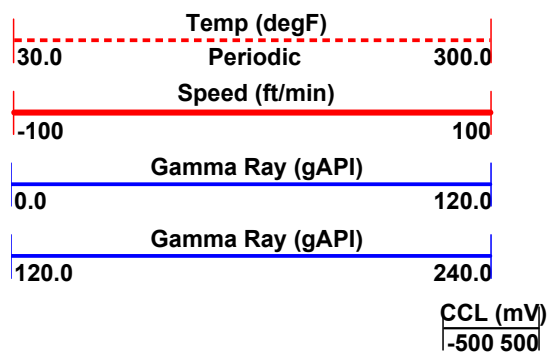
Thank you for choosing Reliance Oil Field Services

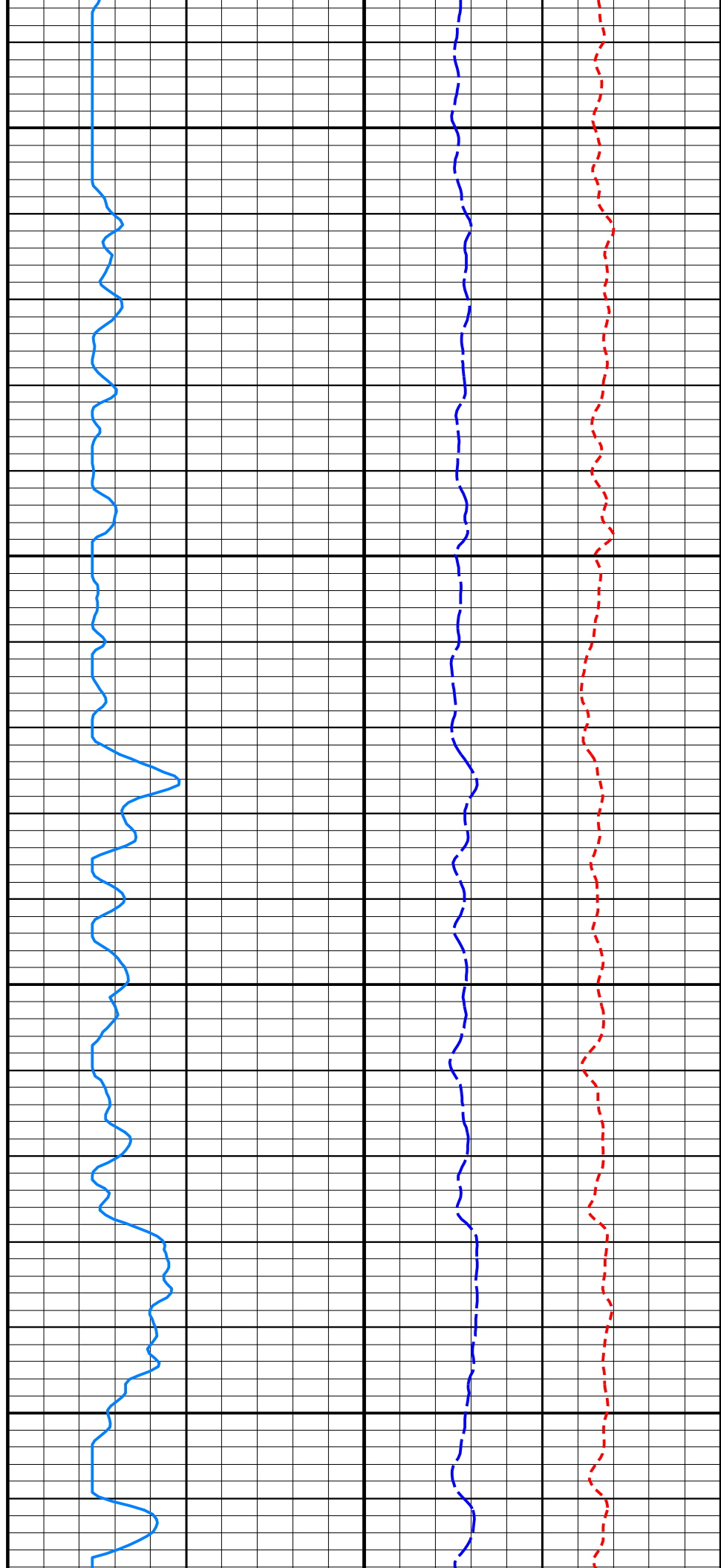
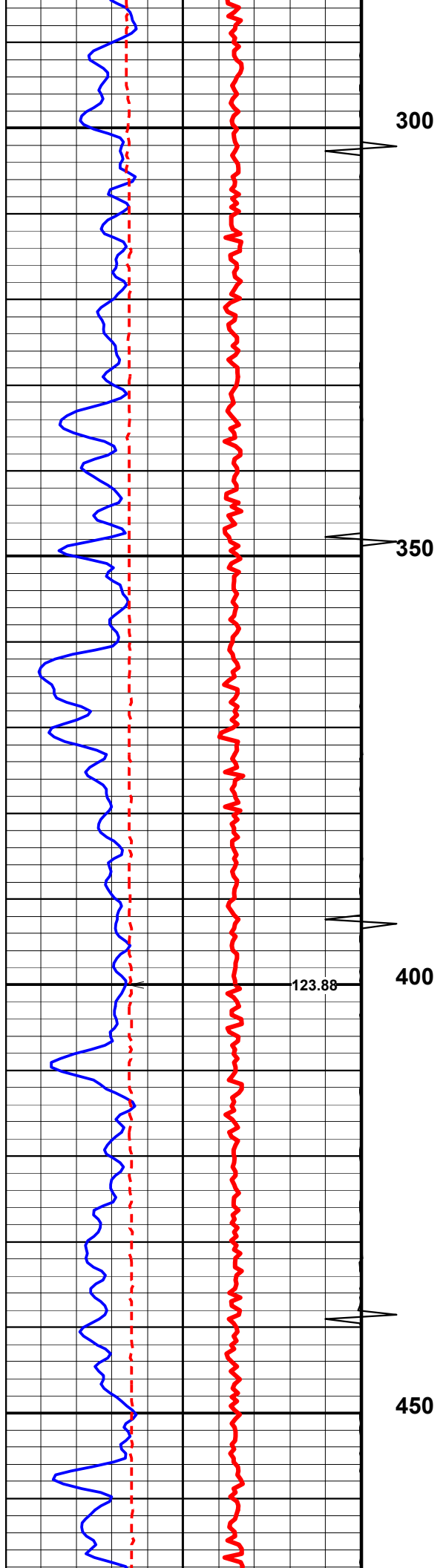
In making interpretations of logs, Contractor's employees will give the customer the benefit of their best judgement, but since all interpretations are opinions, based on inferences from electrical or other measurements, Contractor cannot, and does not, guarantee the accuracy or the correctness of any interpretation.

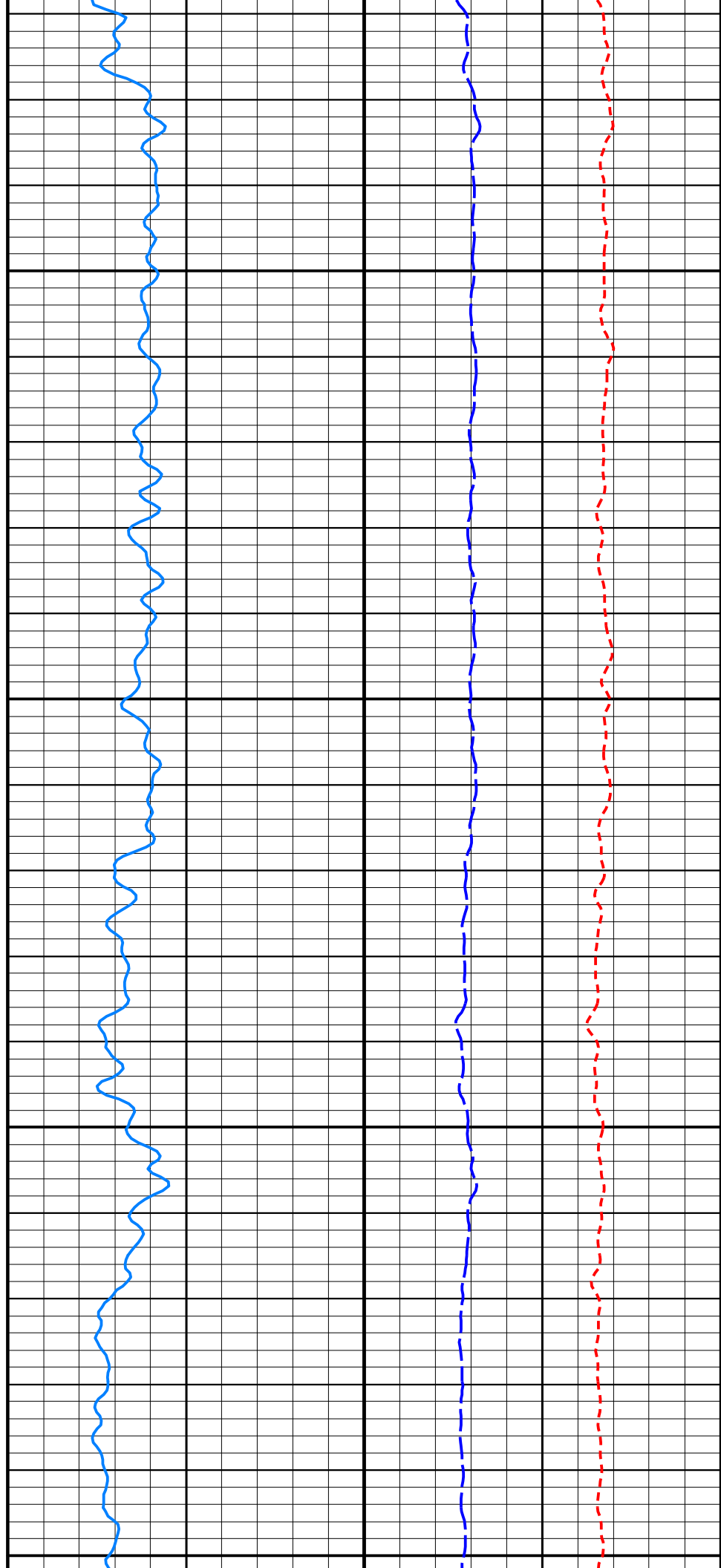
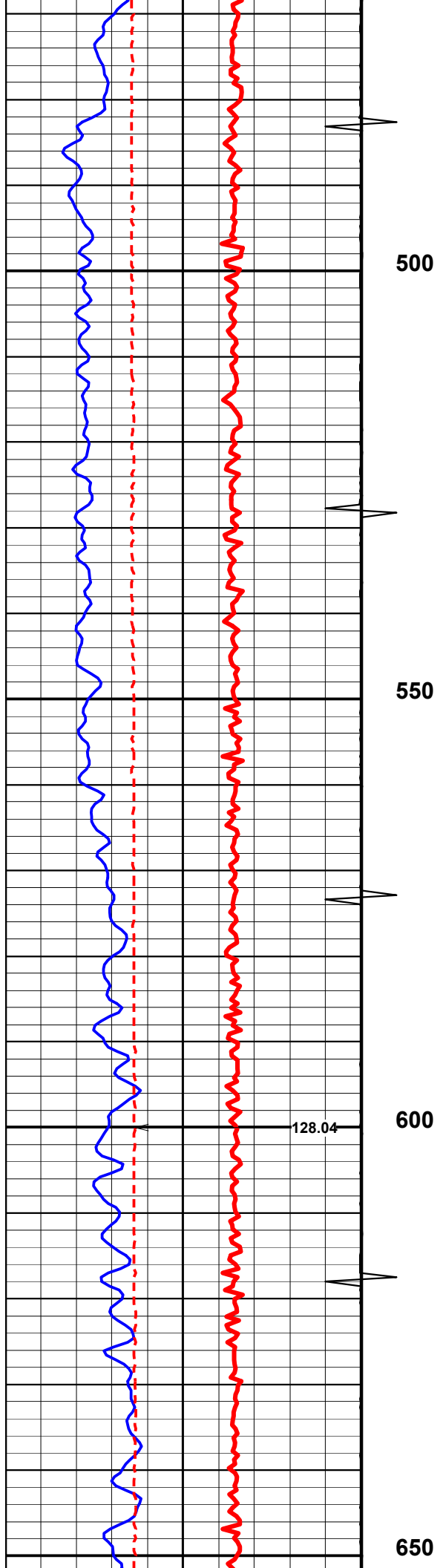
Main Pass Logged with 2800 PSI surfaced induced pressure

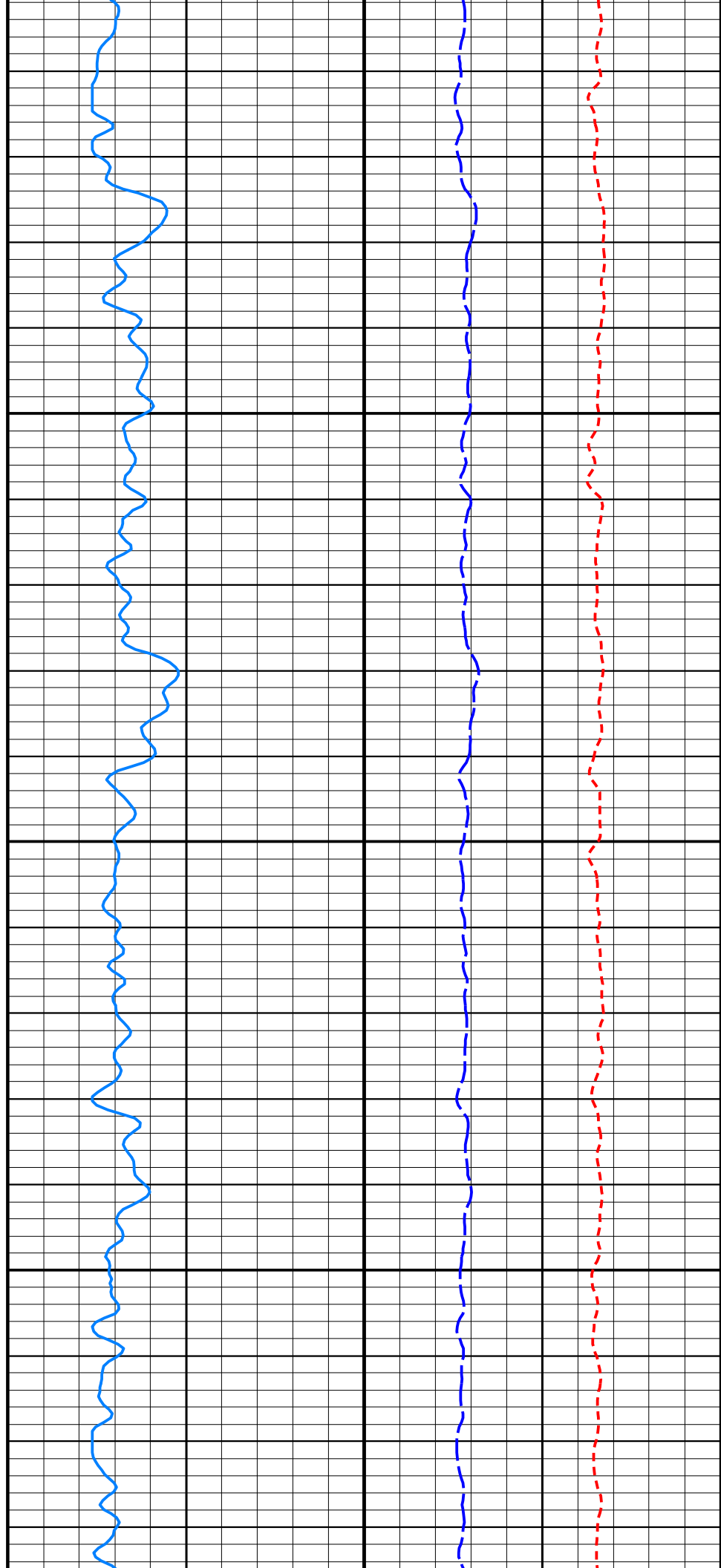
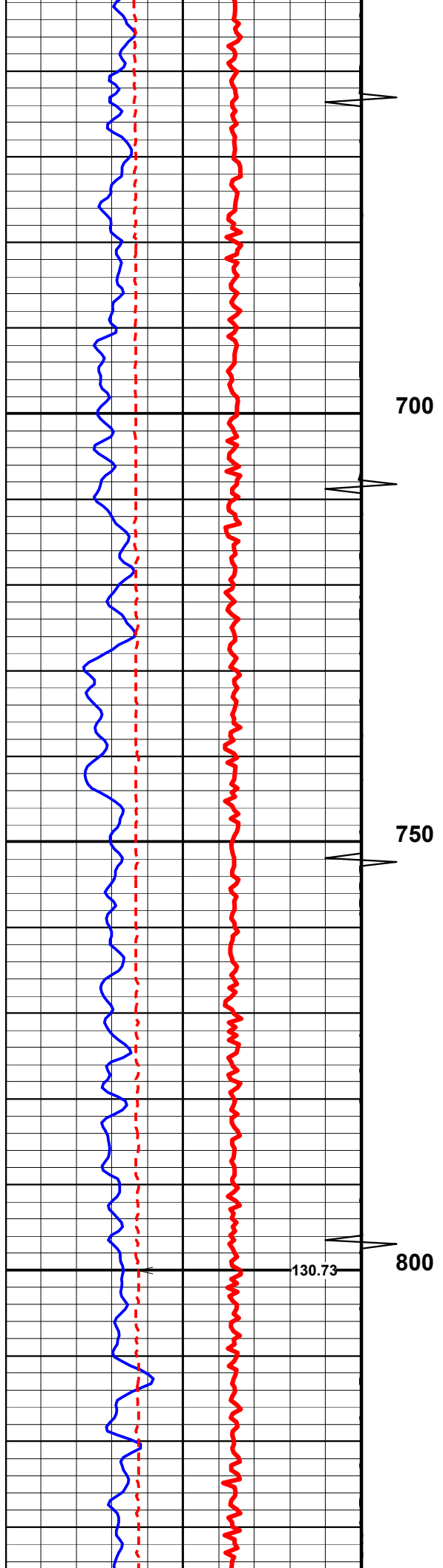
Company :
Well : Cook 1C-16HZ
Scale : 1 : 200
Depth in : Feet
Software : WinAPlot Ver. 5, 92, 12, 0

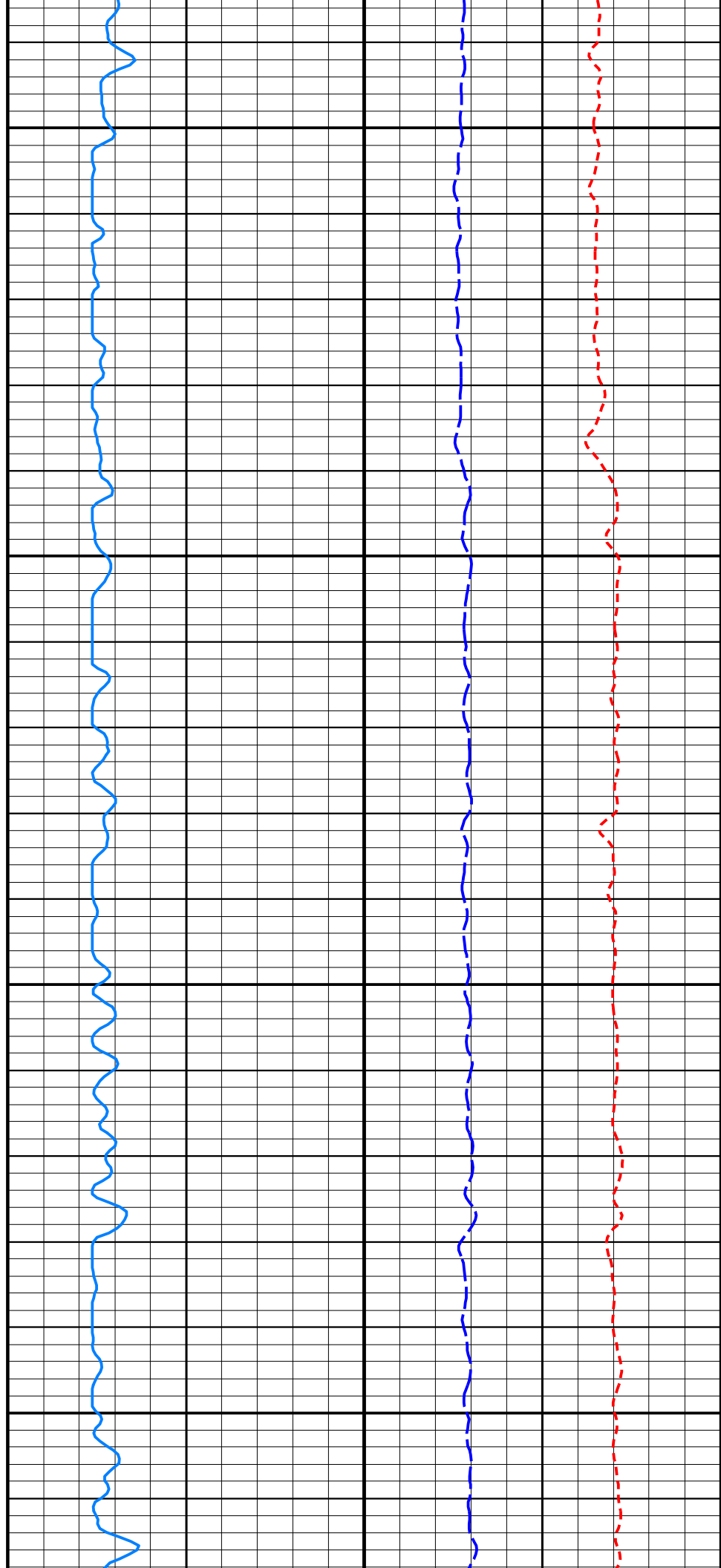
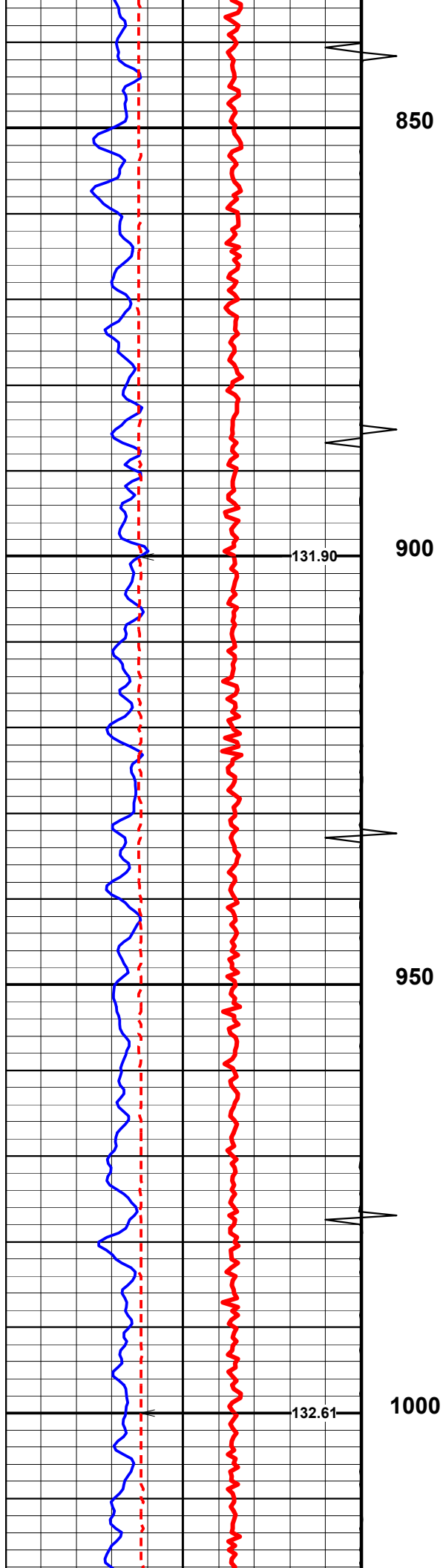
Date : 03.08.2016
Time : 10:36:14
Remarks :
File Name : Main Spliced-Shifted

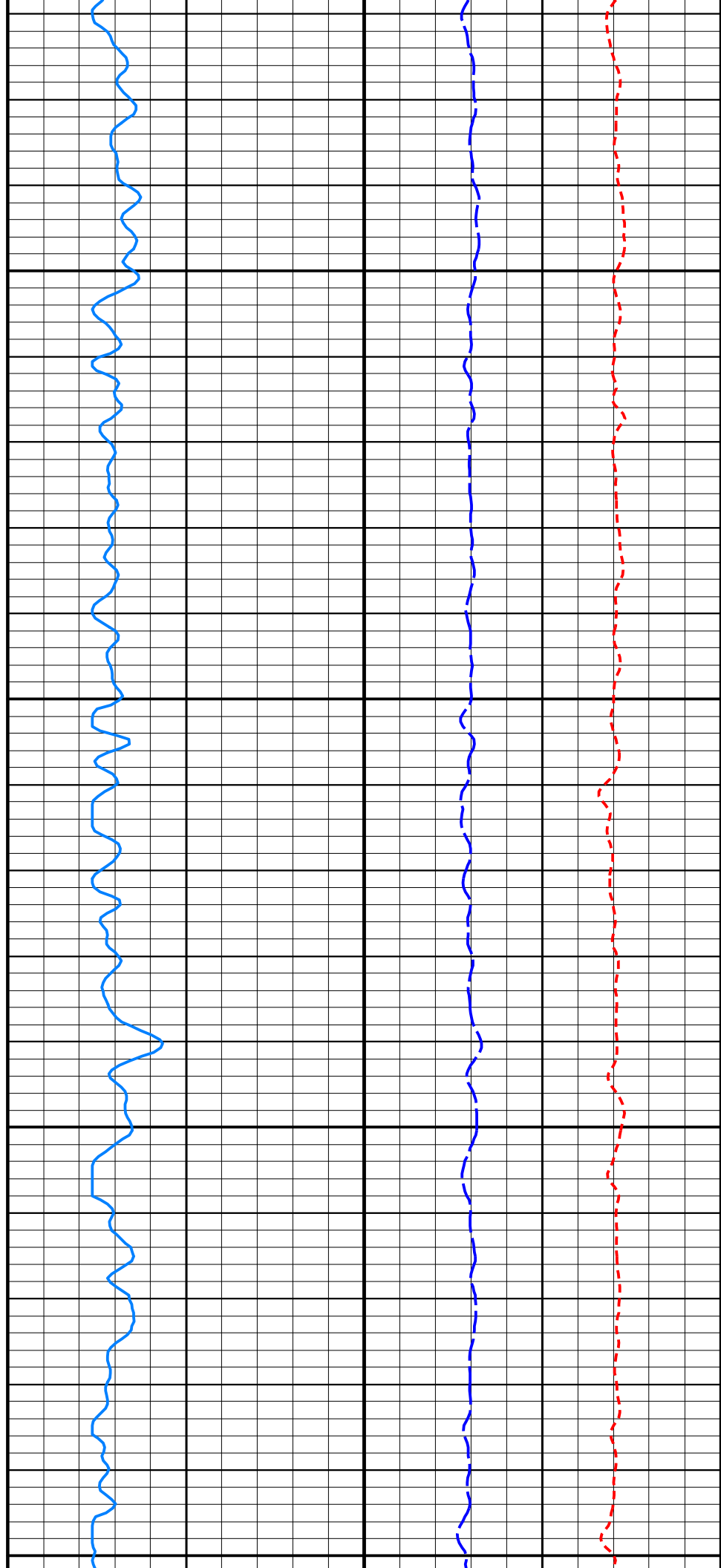
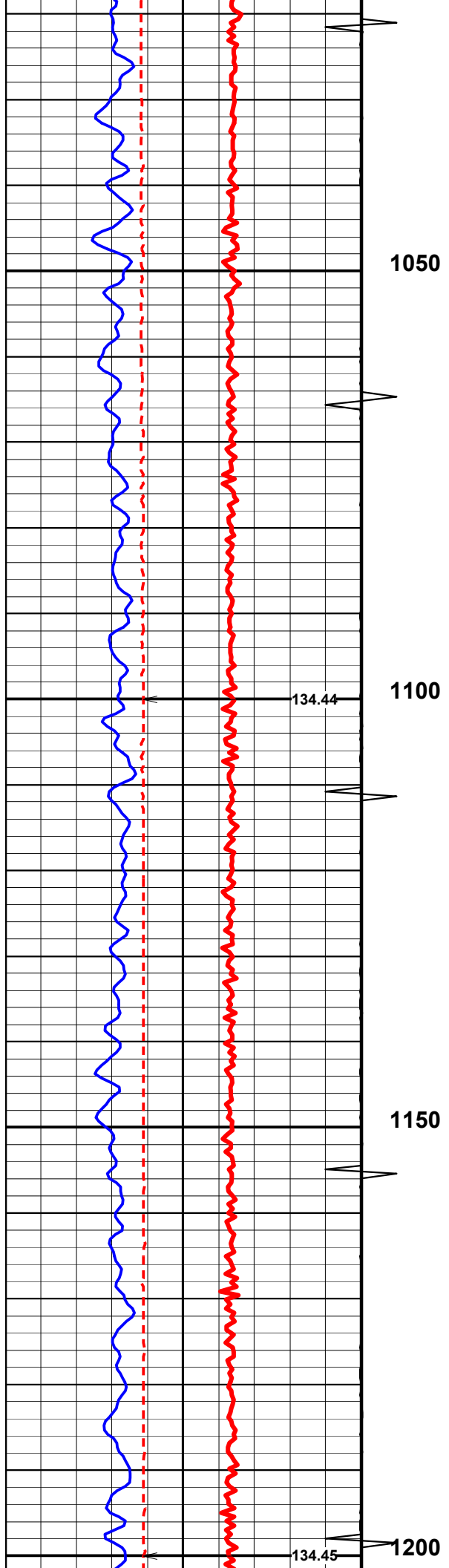


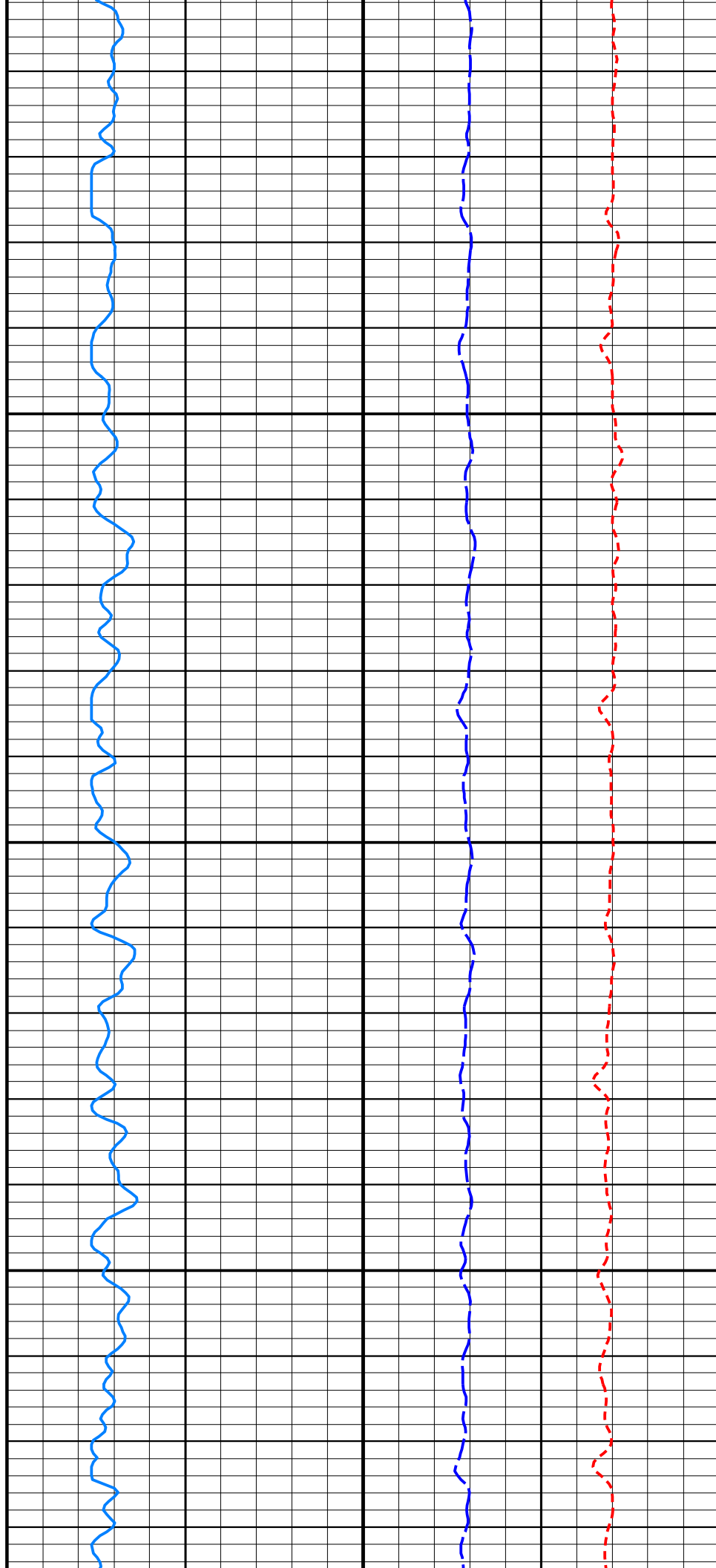
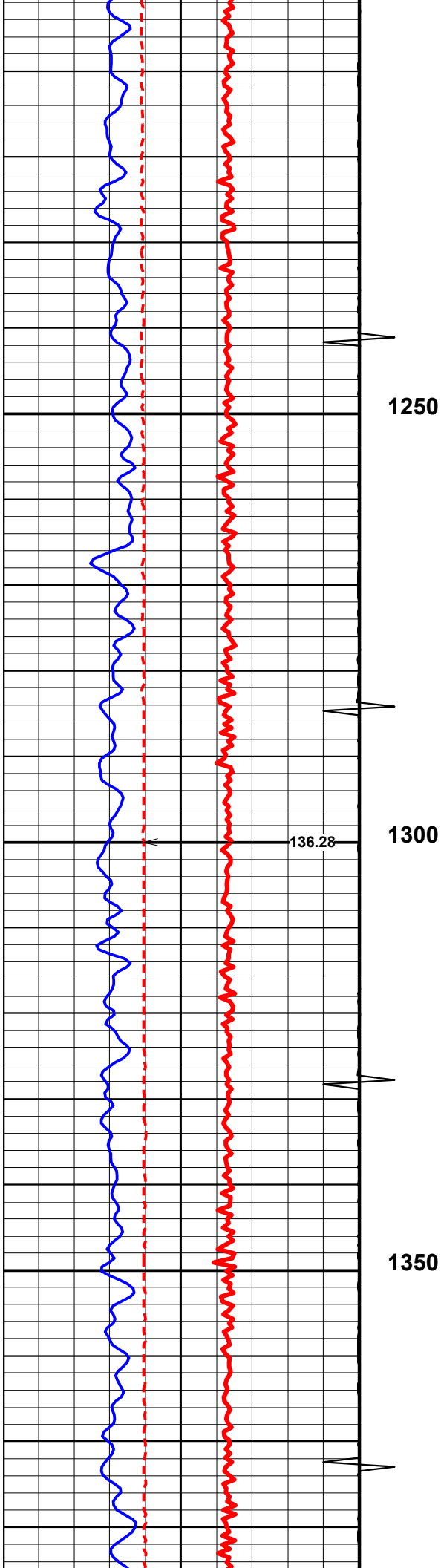


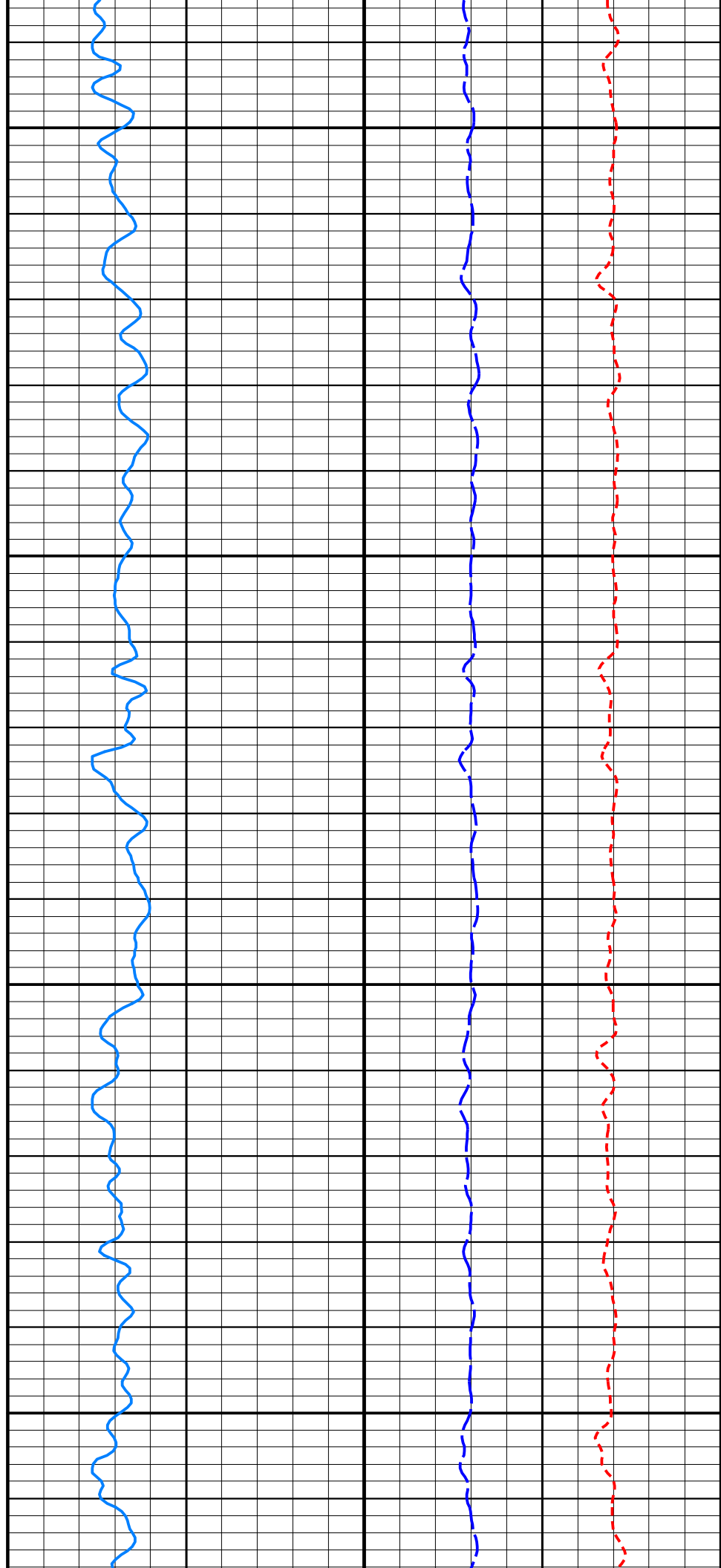
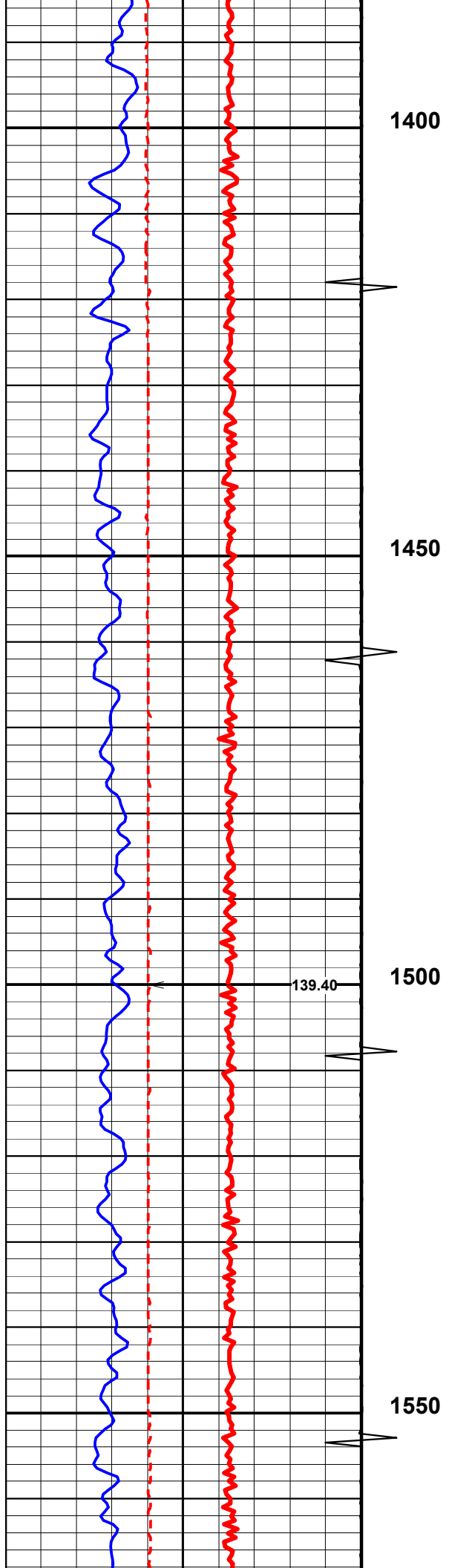


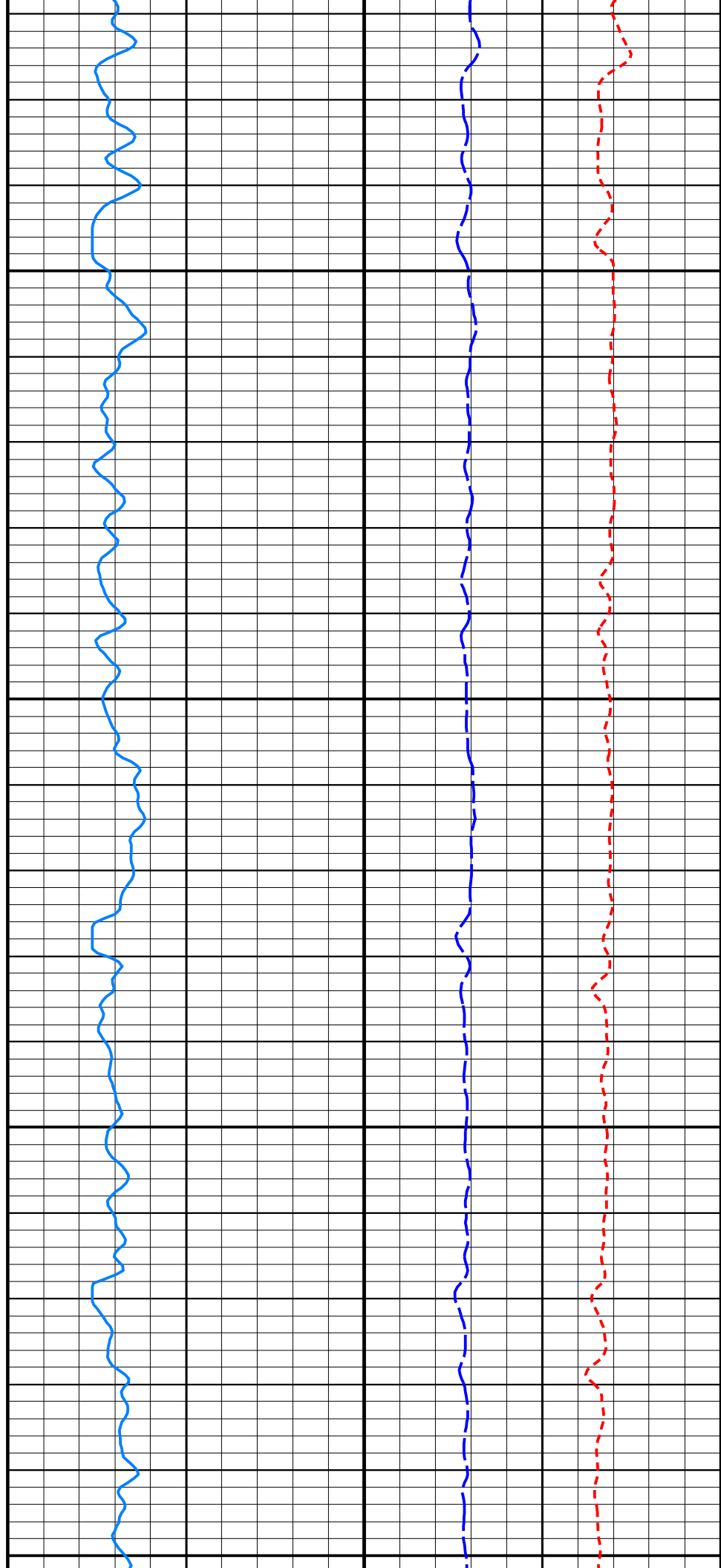
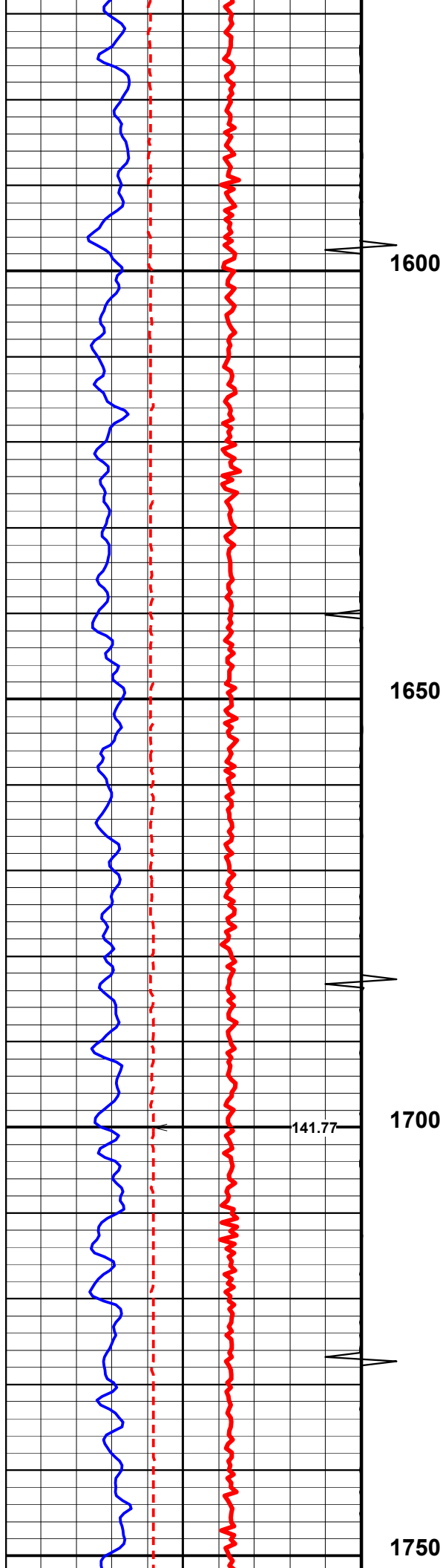


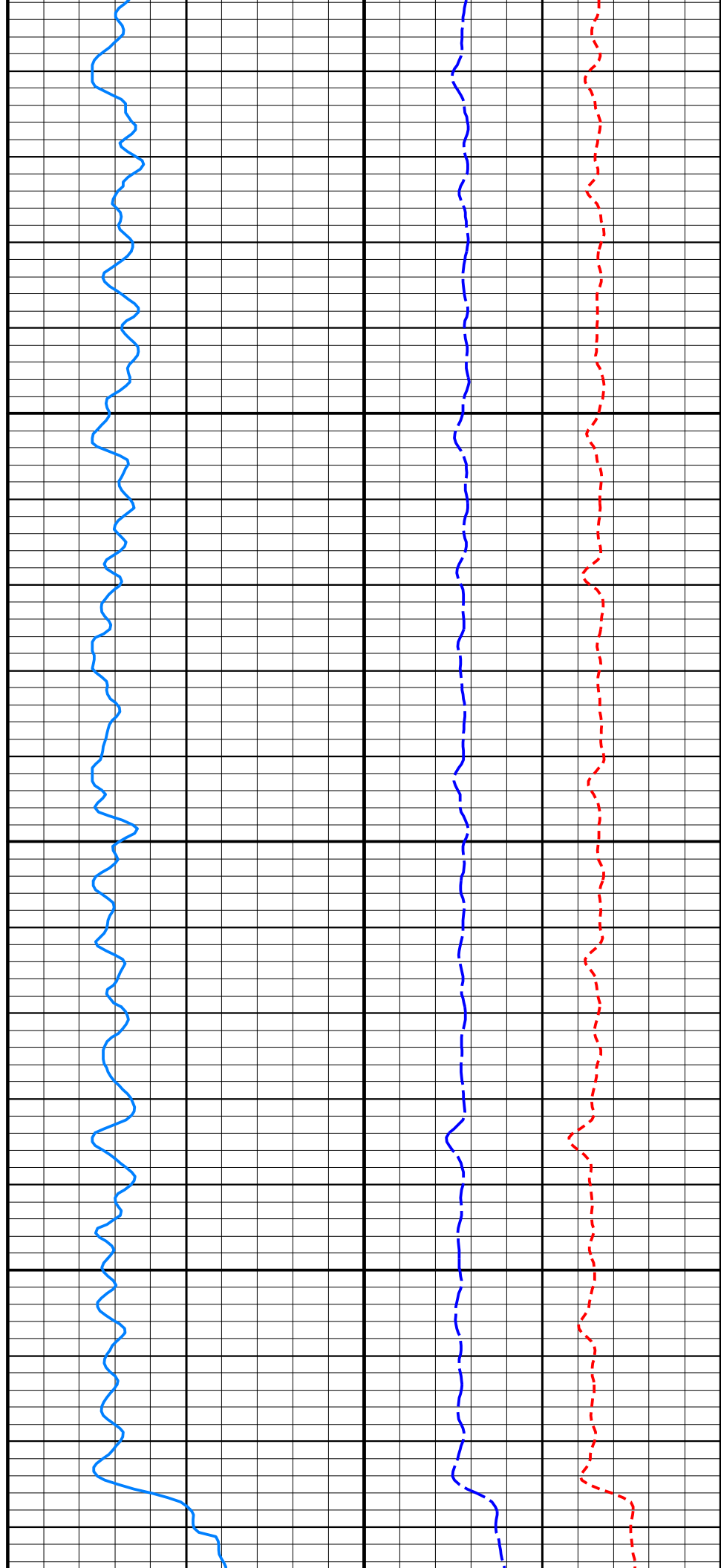
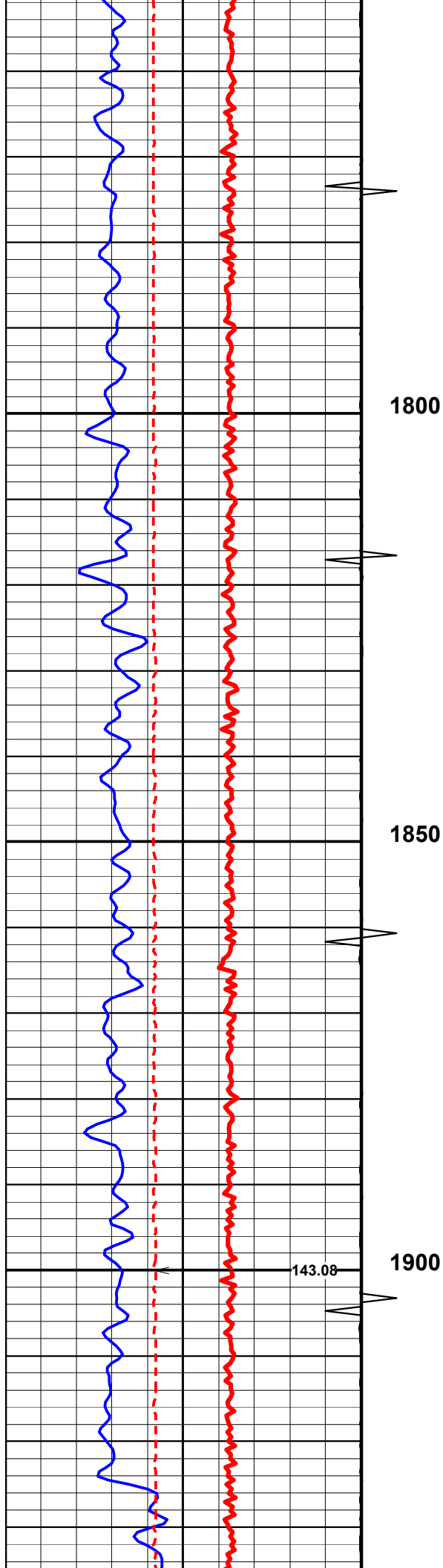


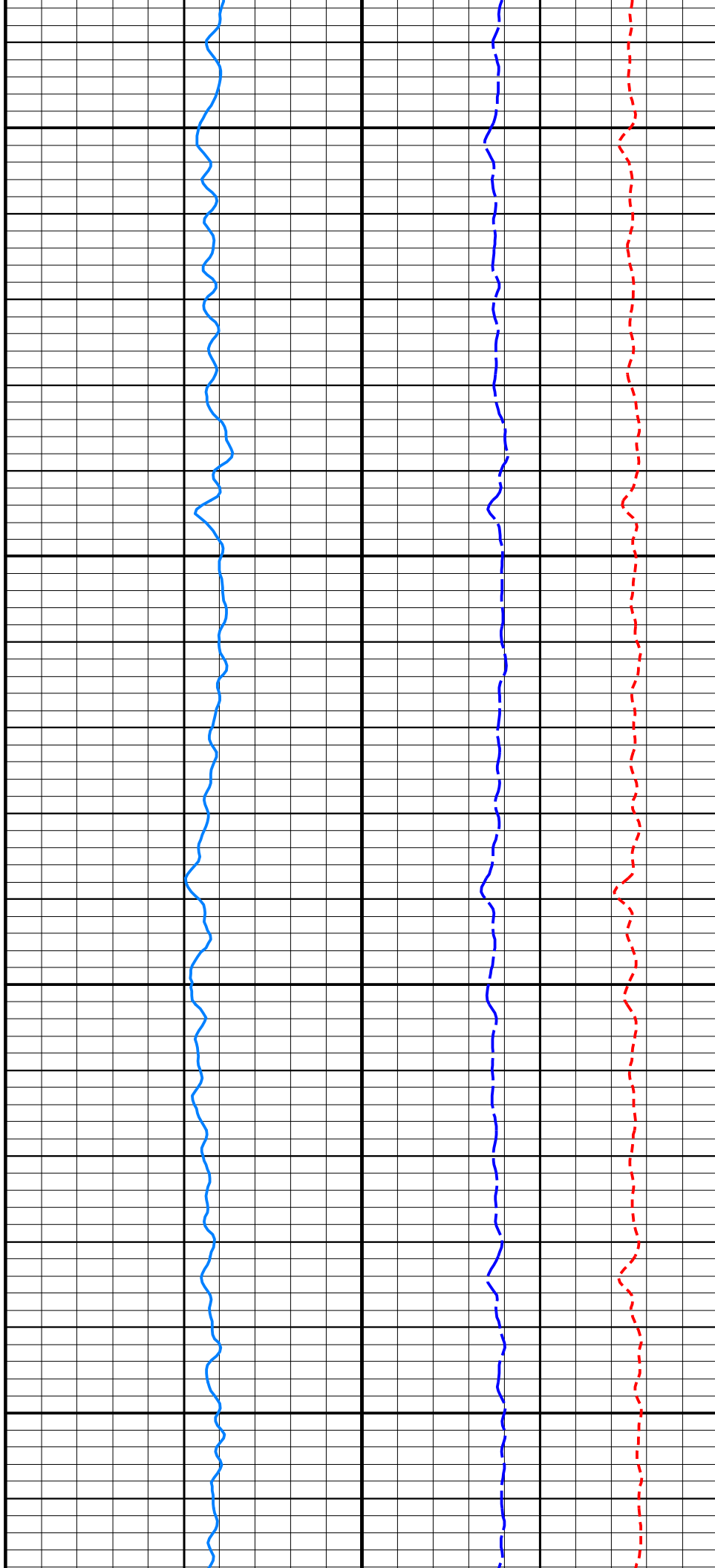
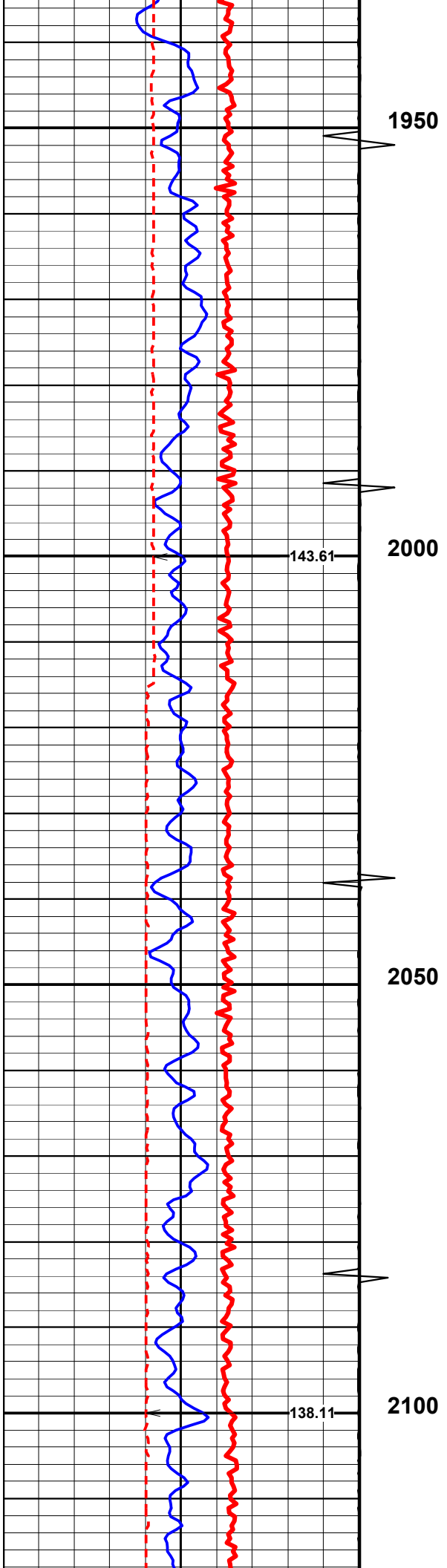


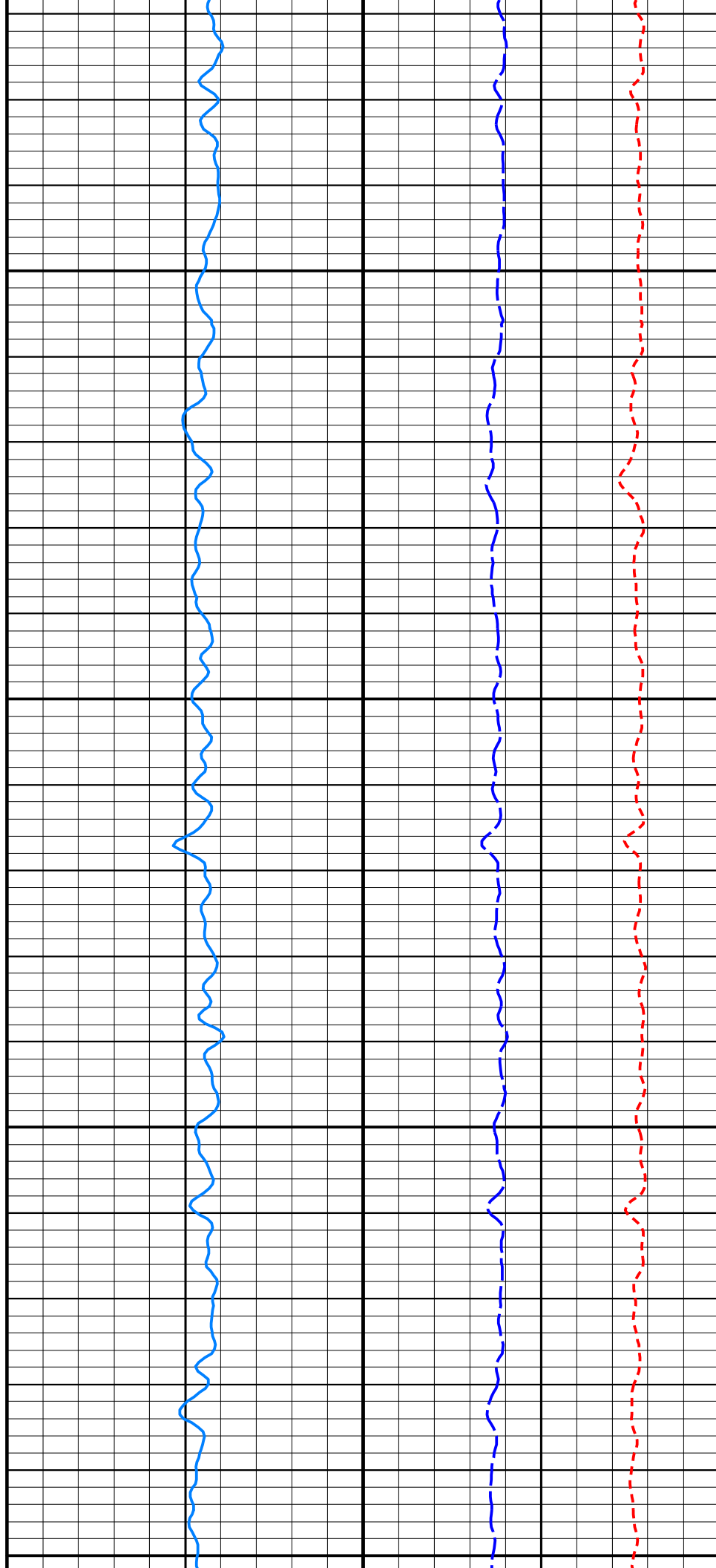
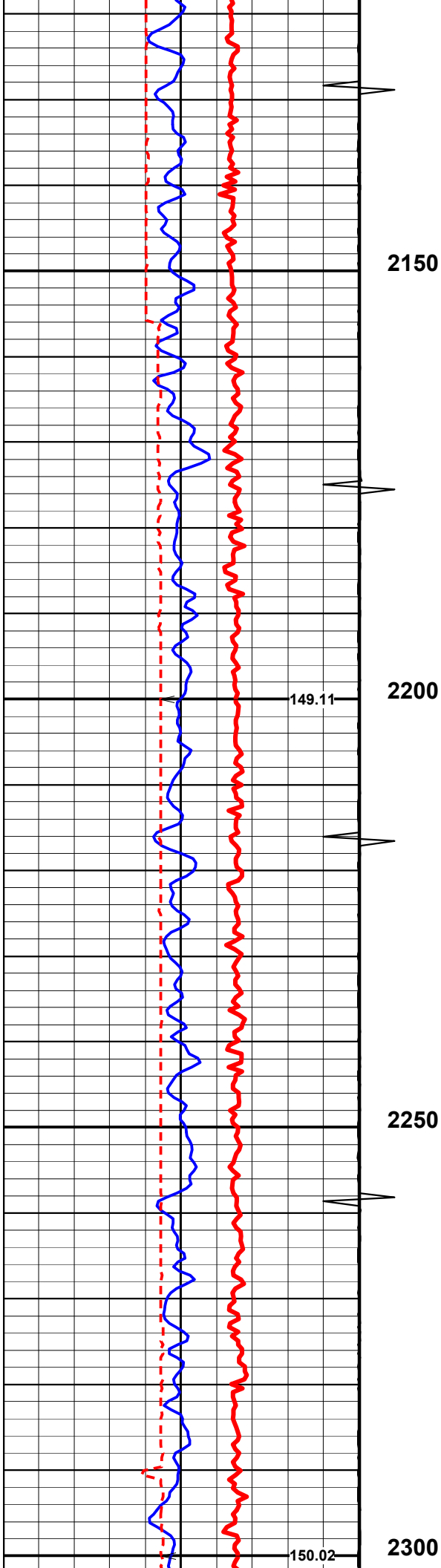


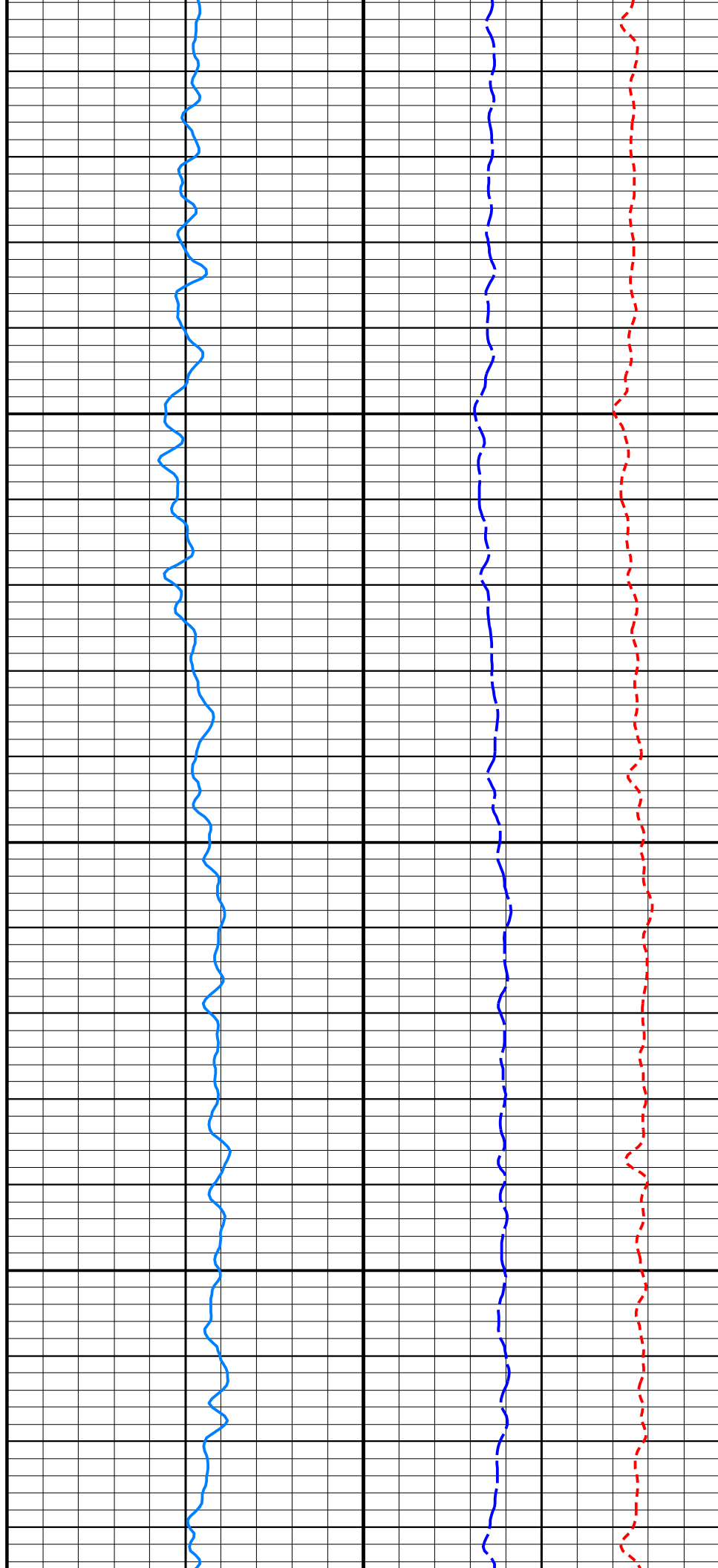
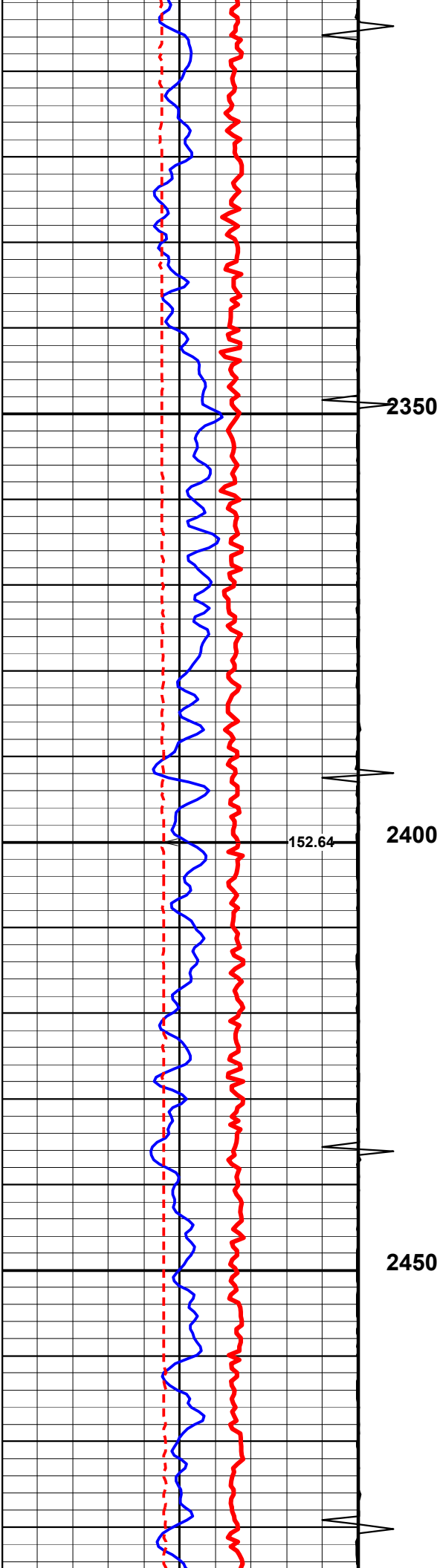


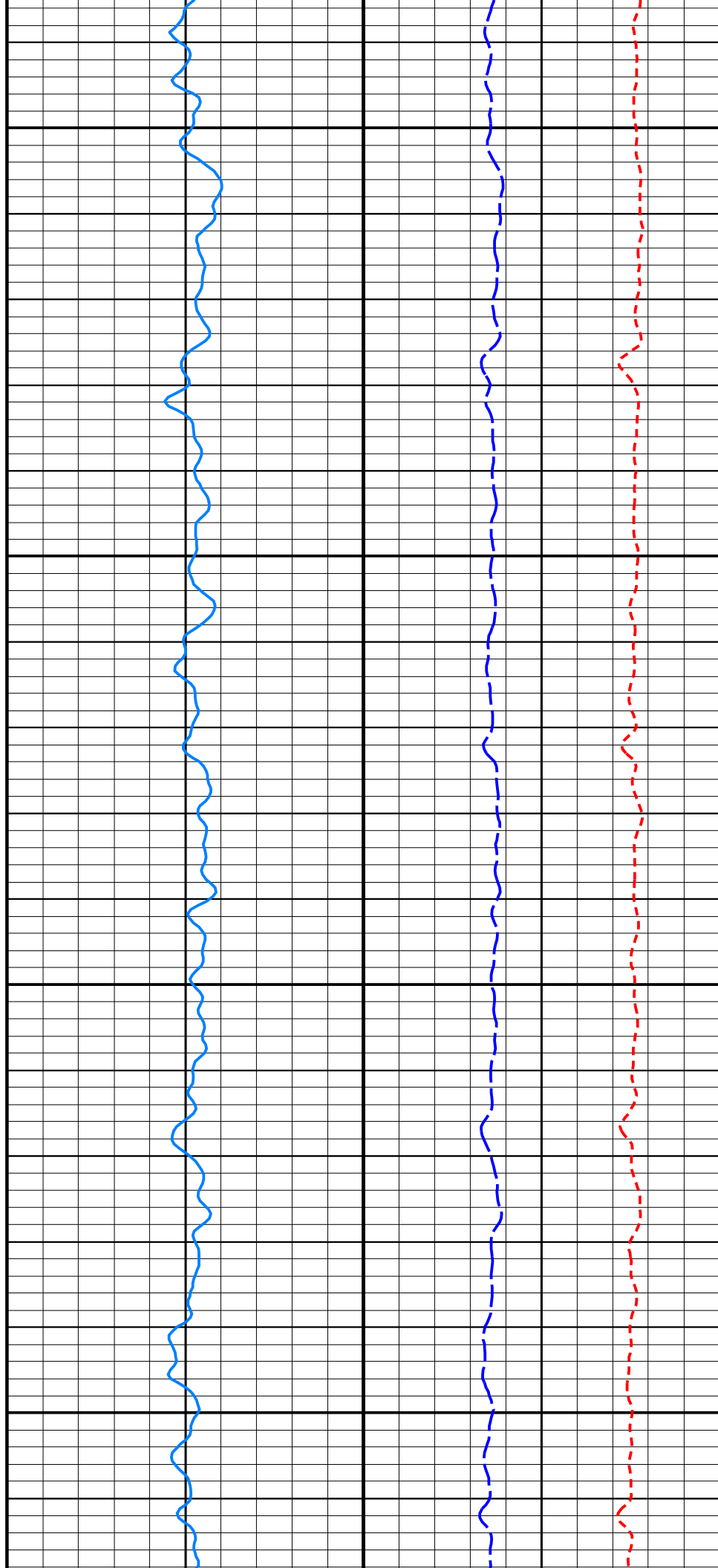
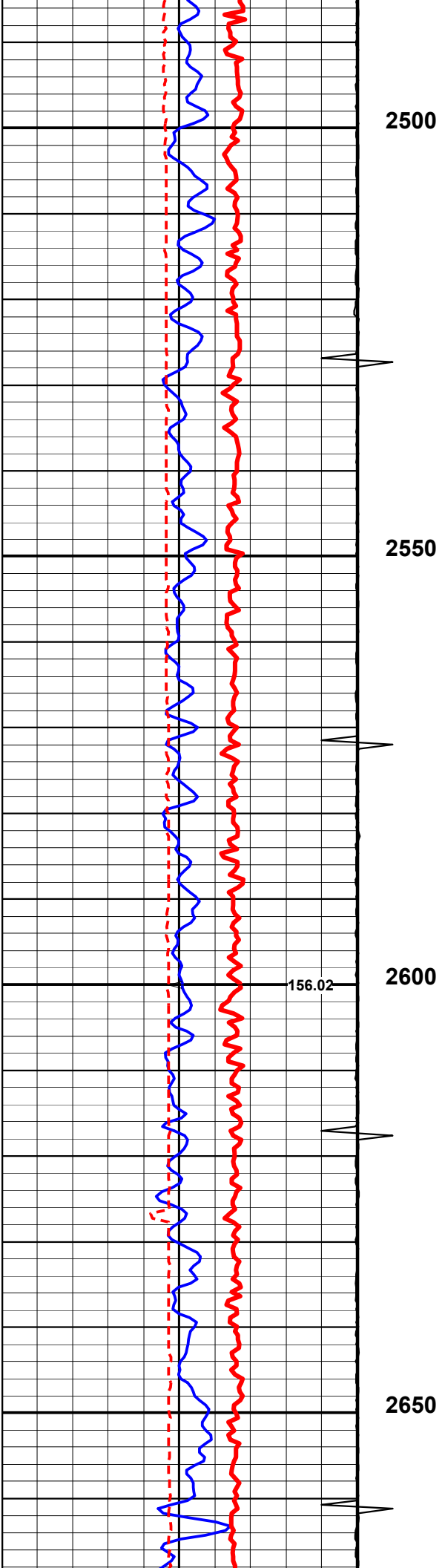


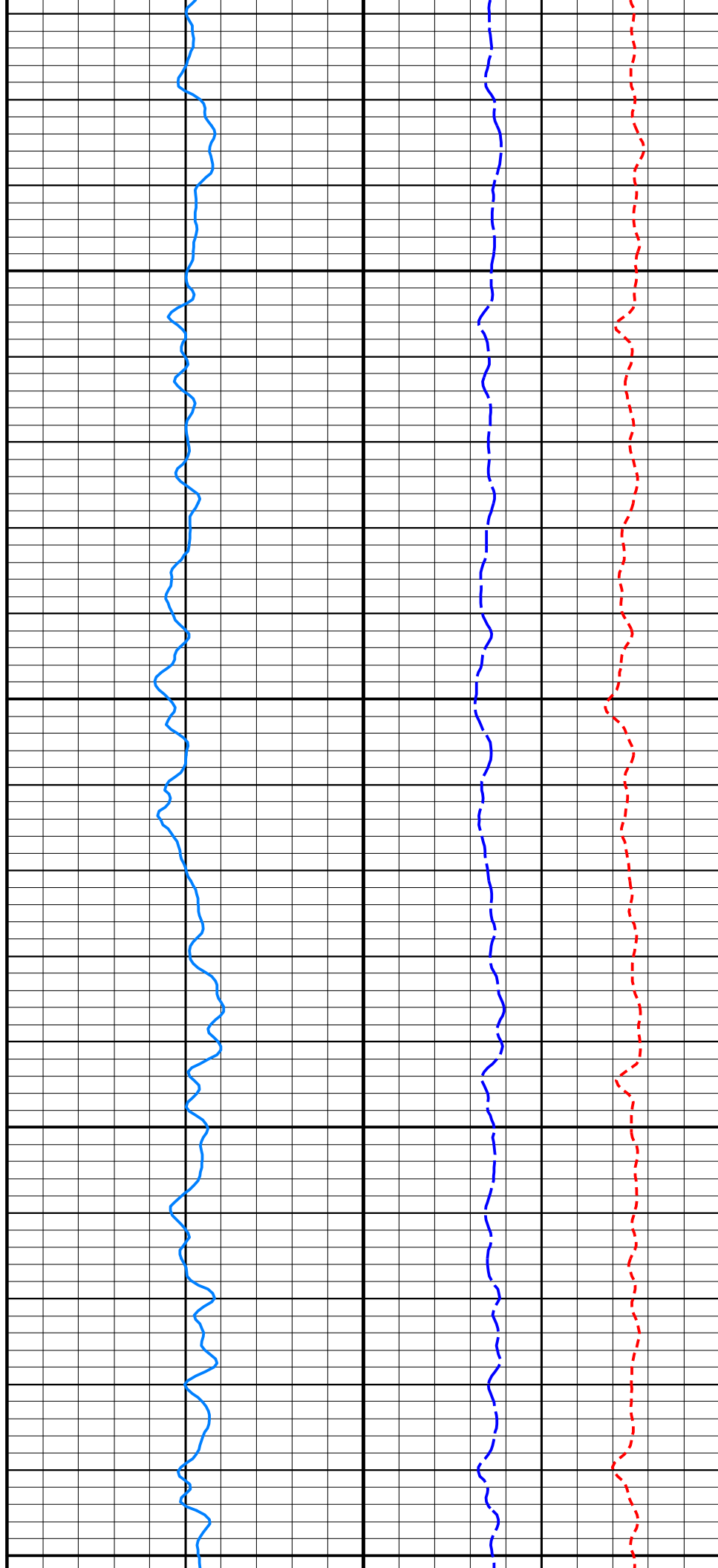
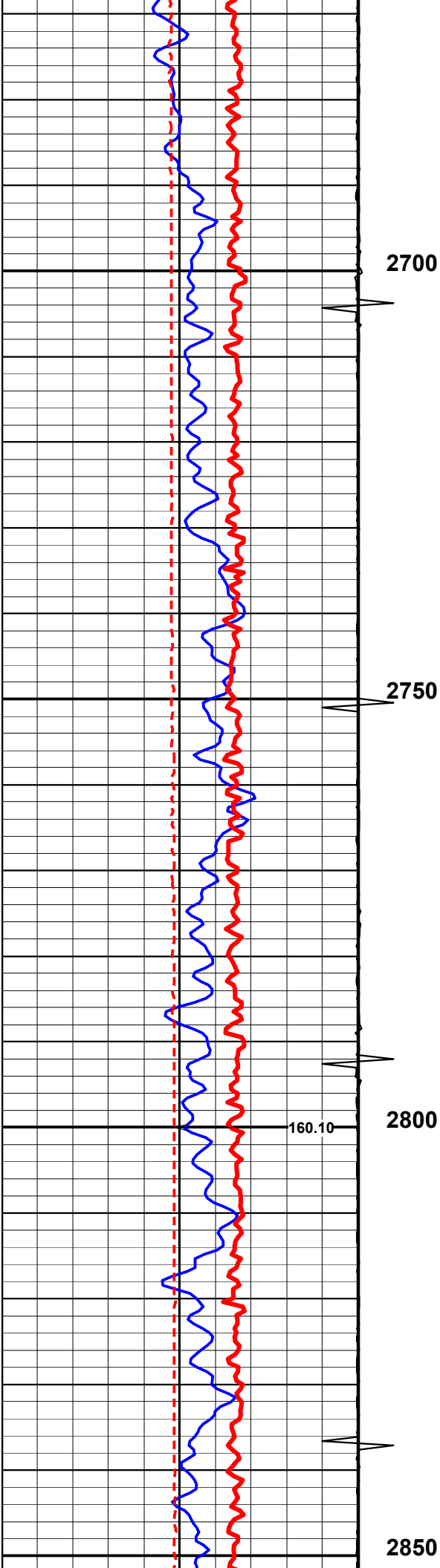


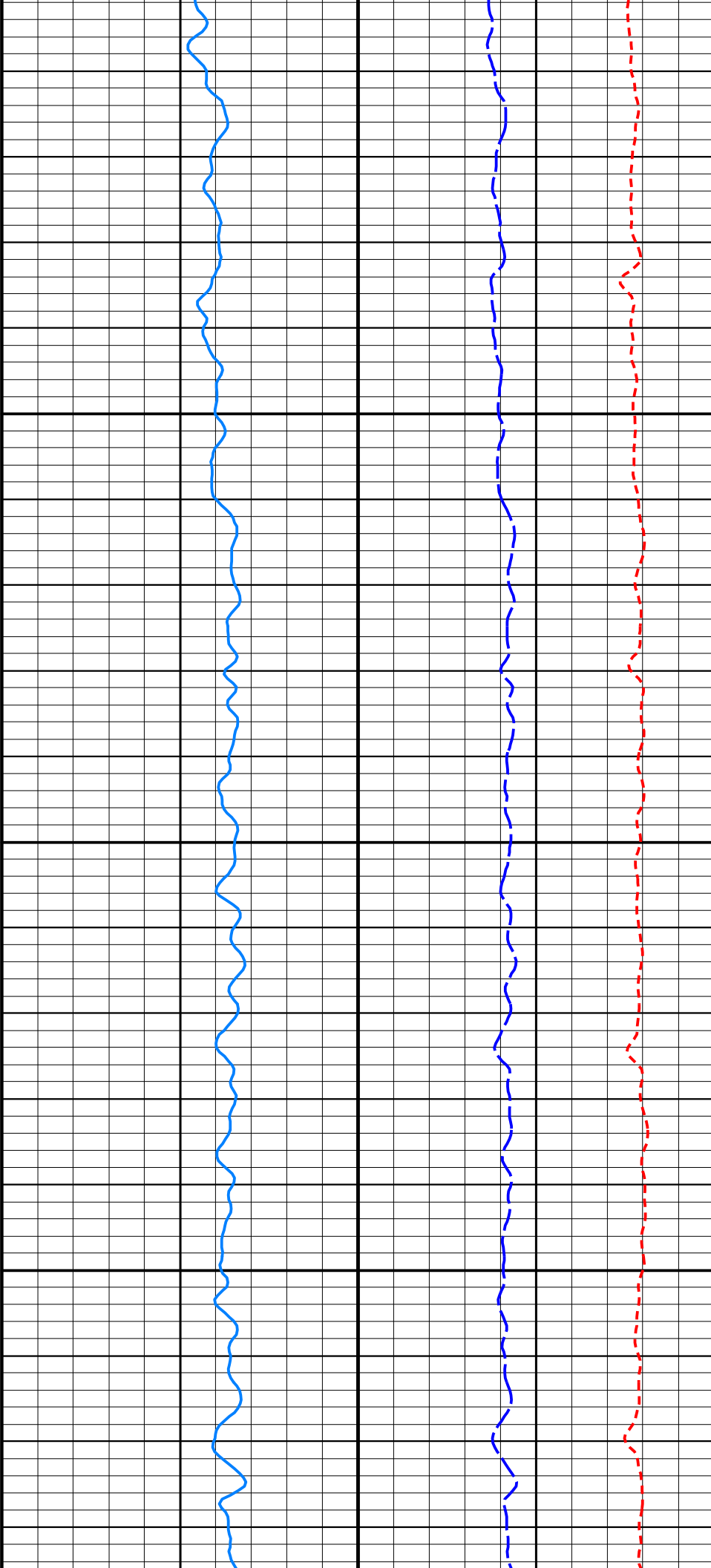
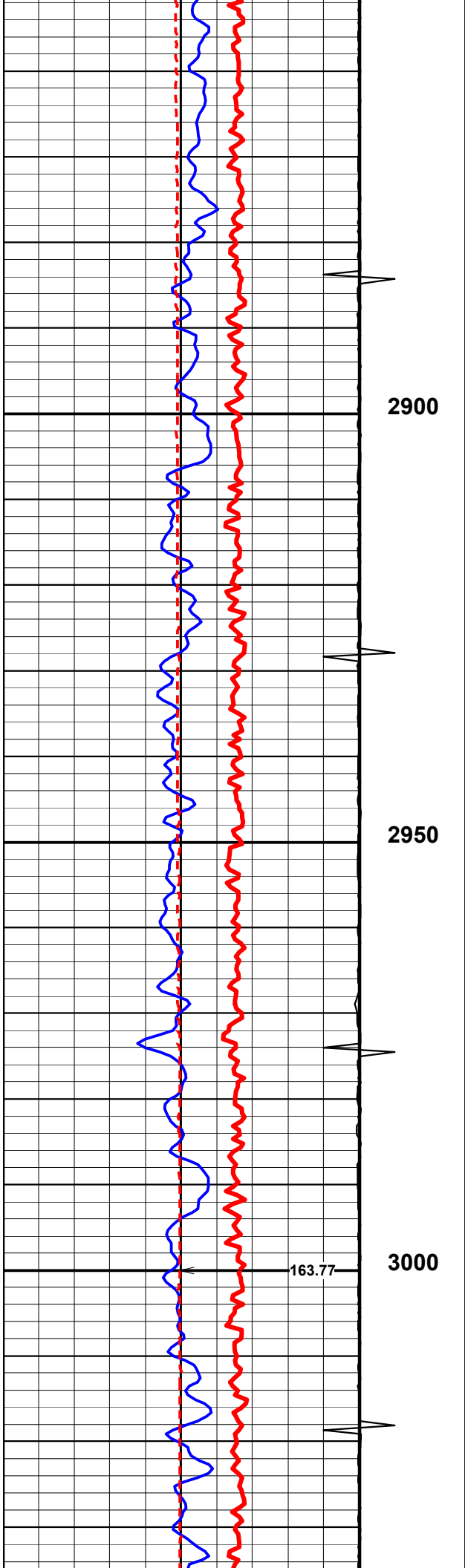


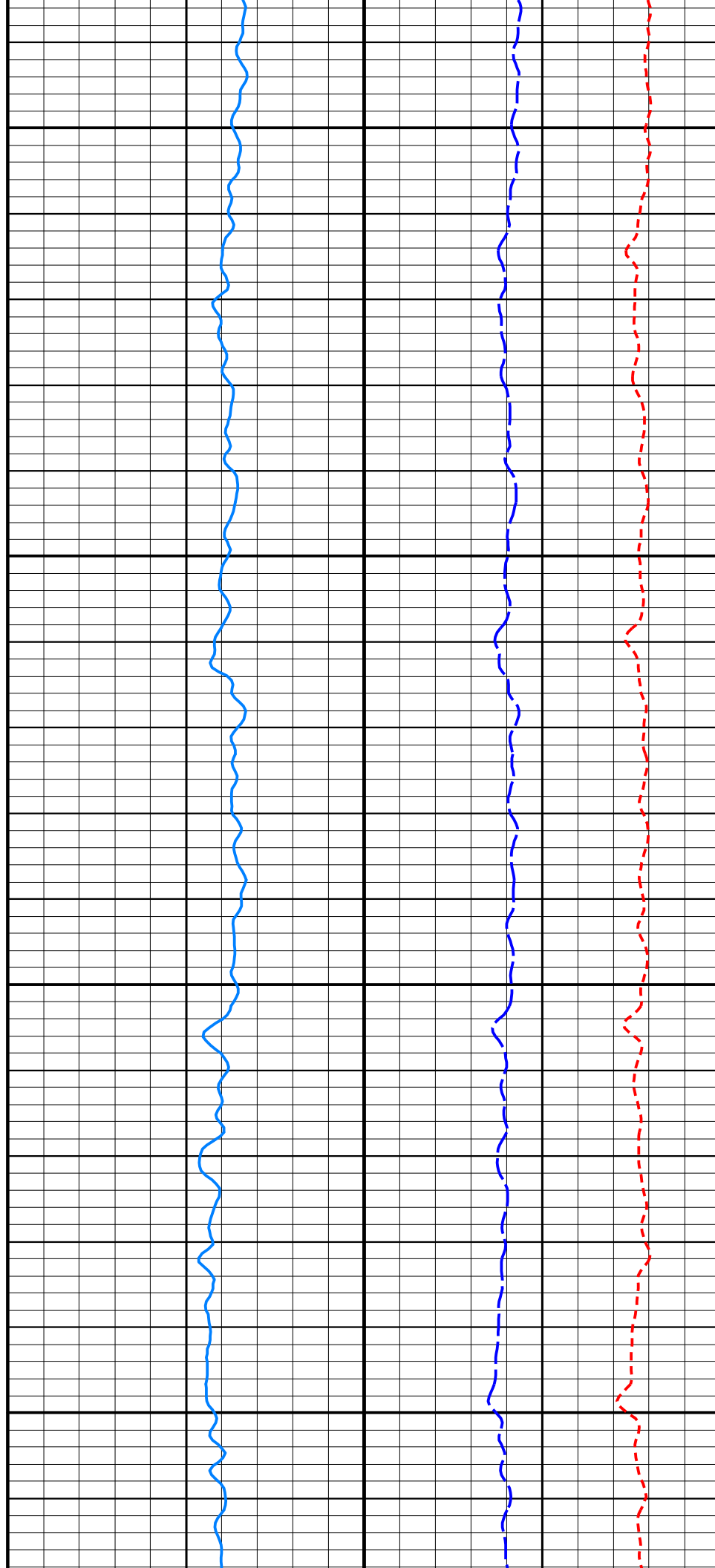
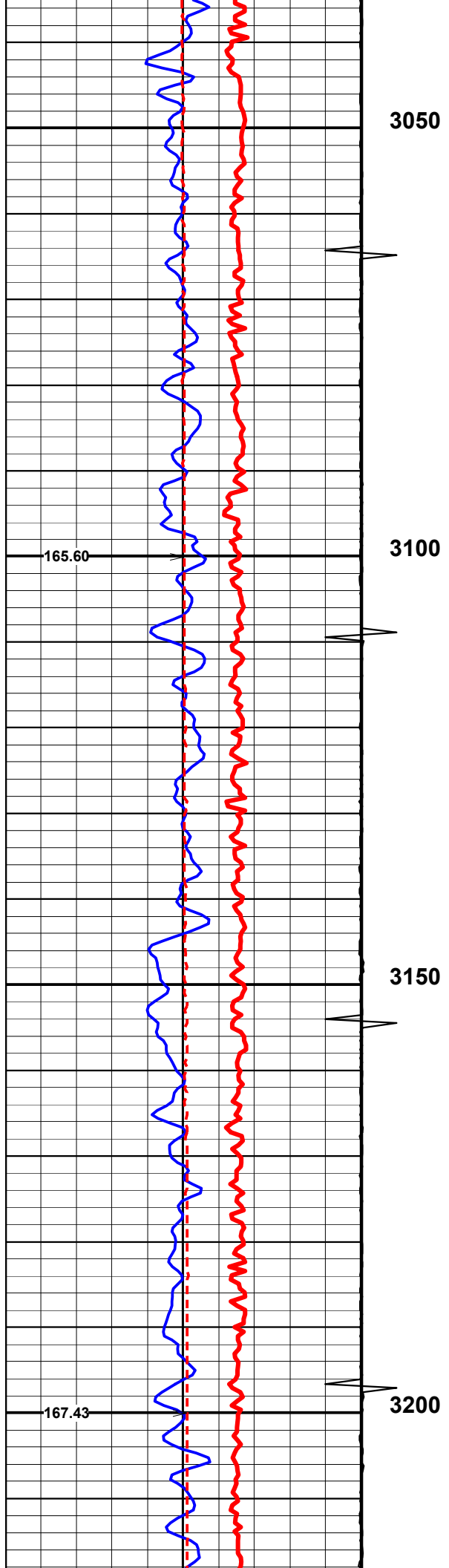


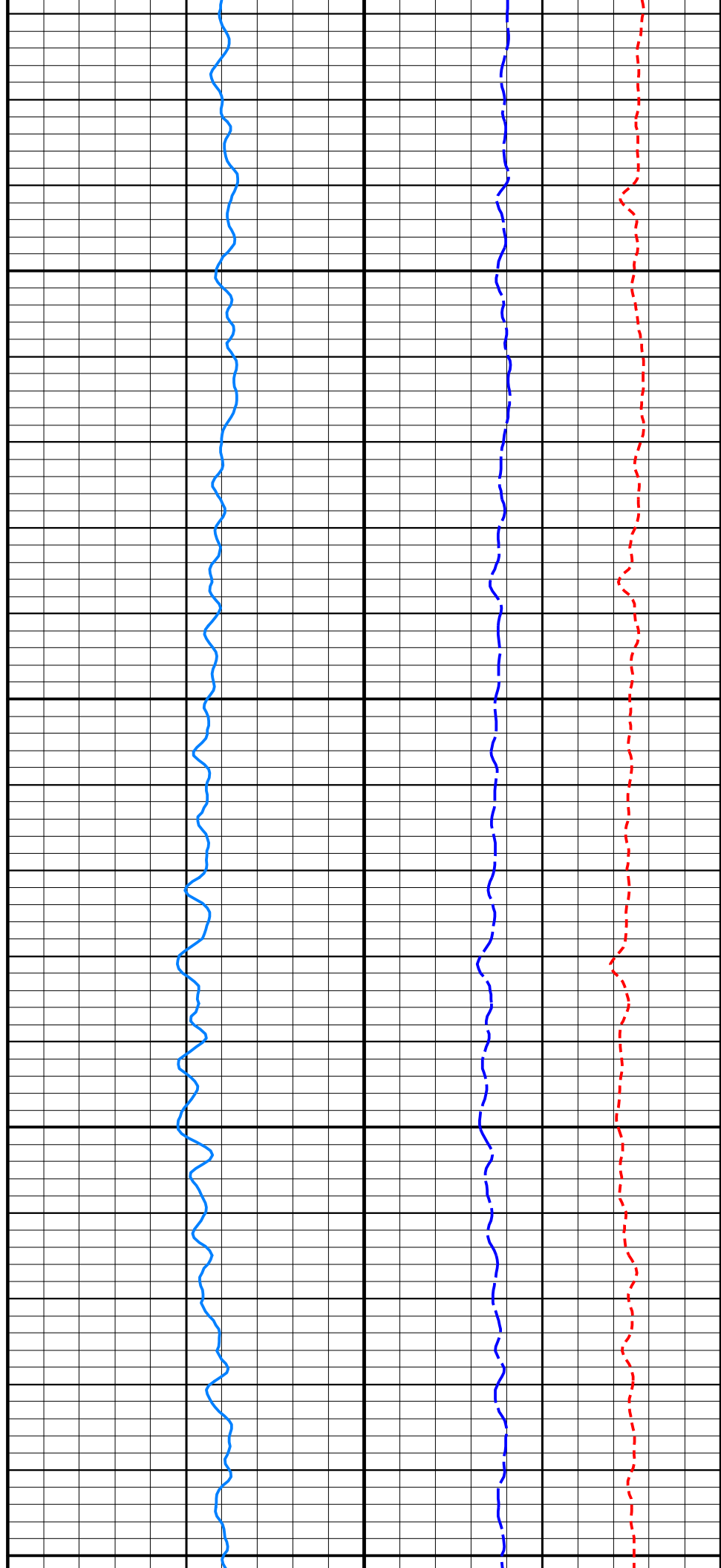
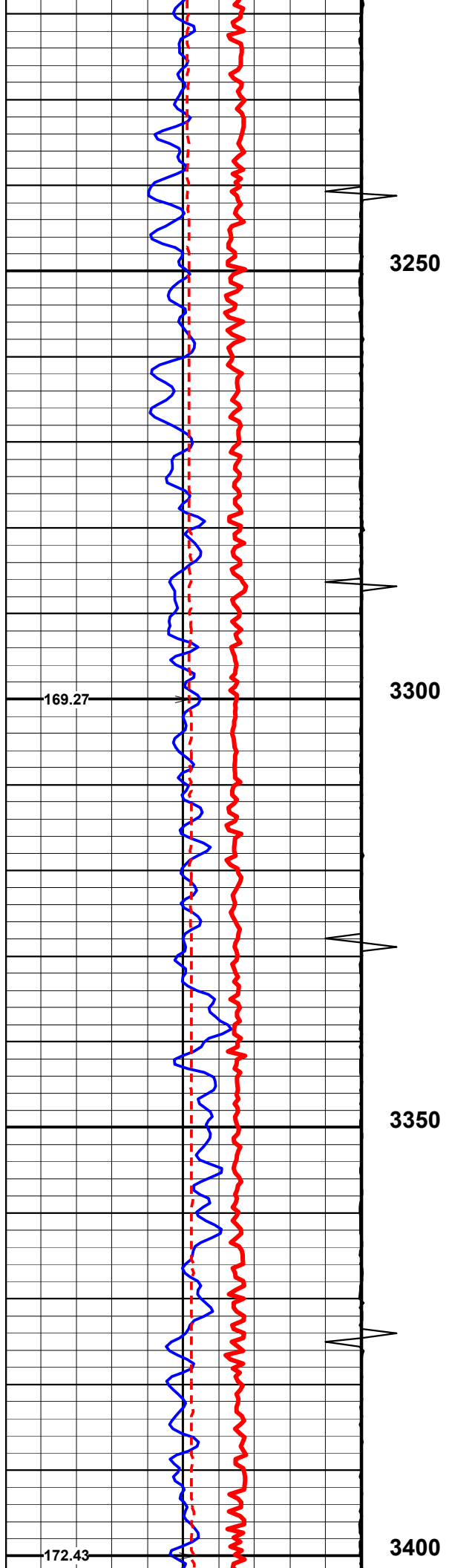


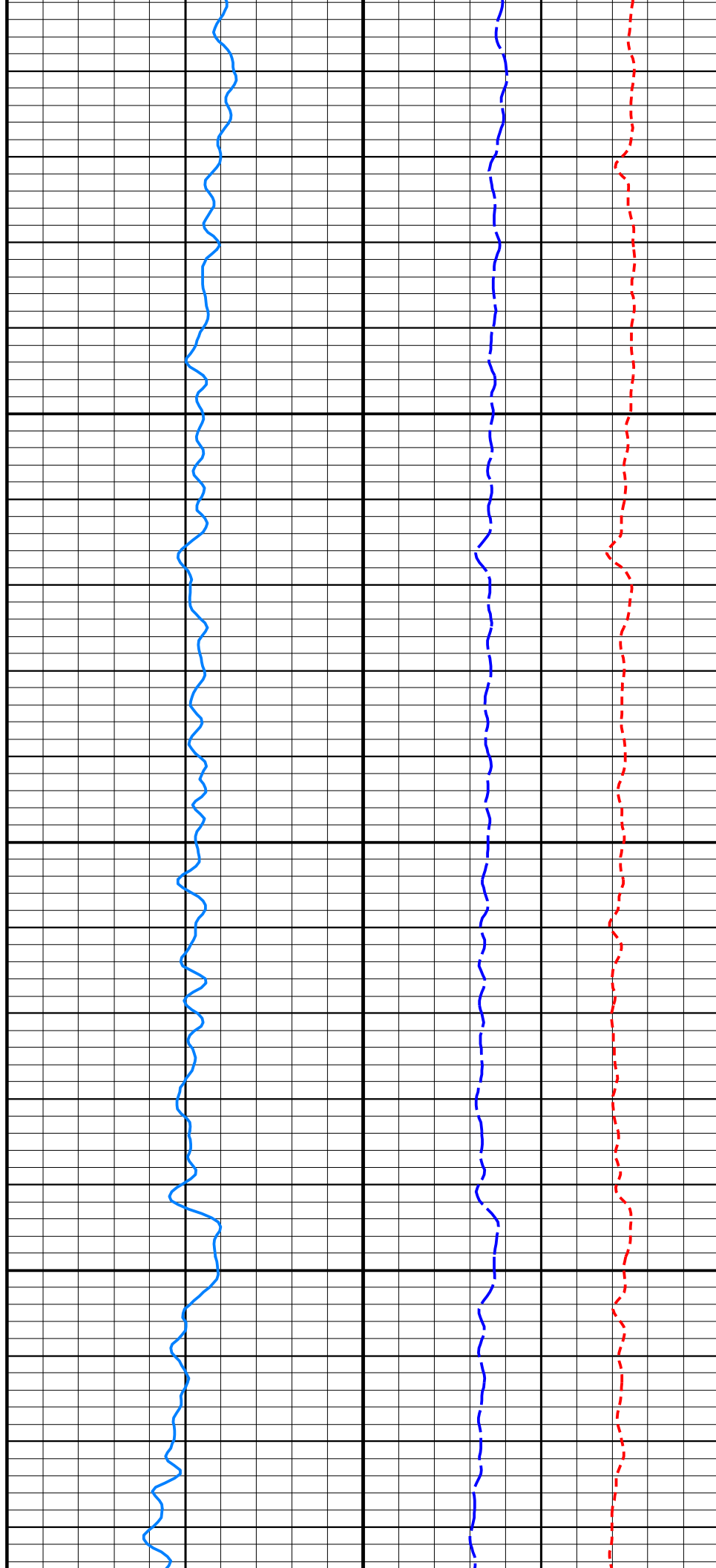
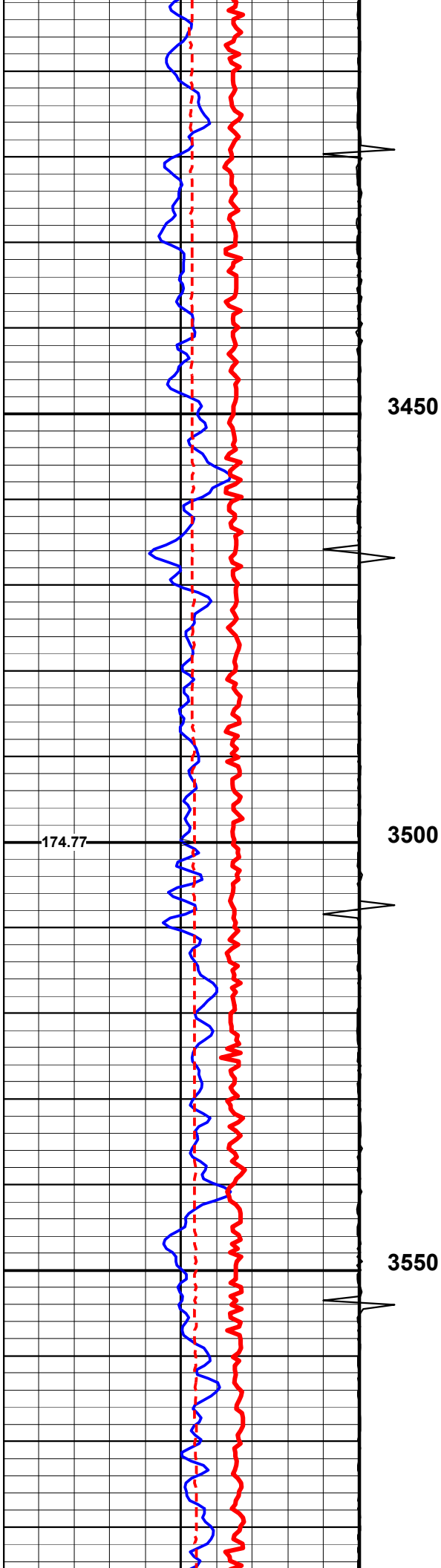


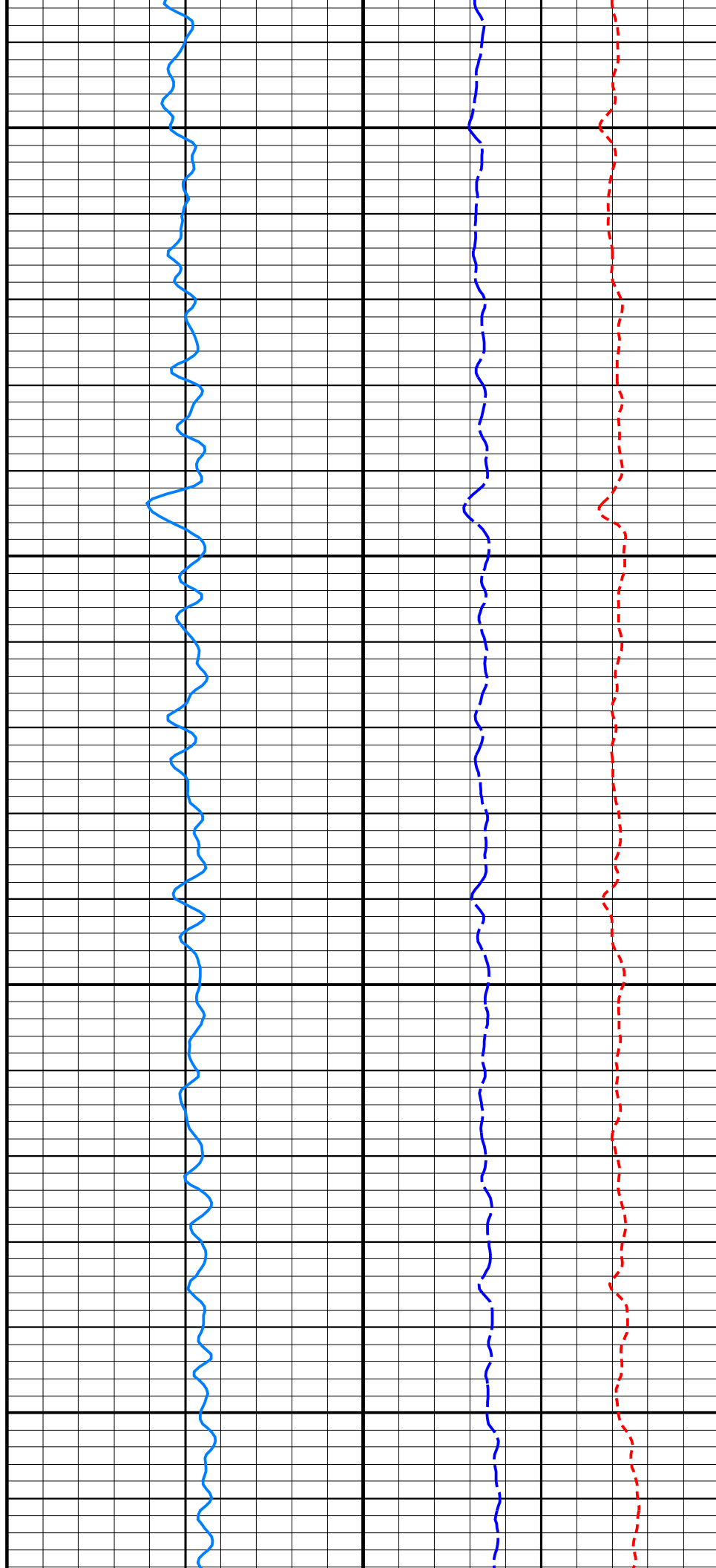
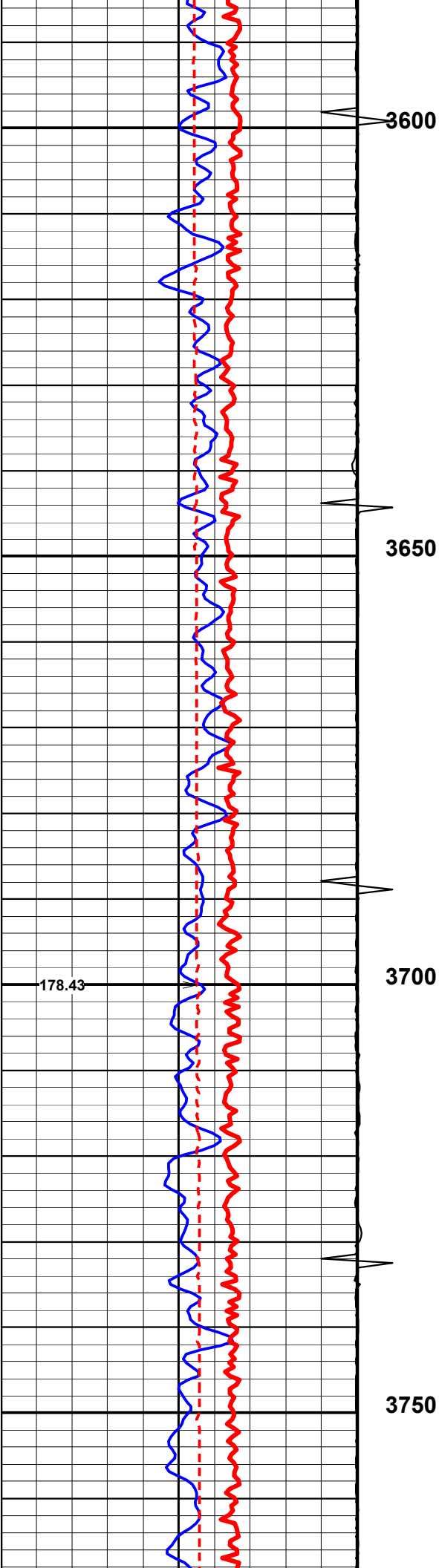


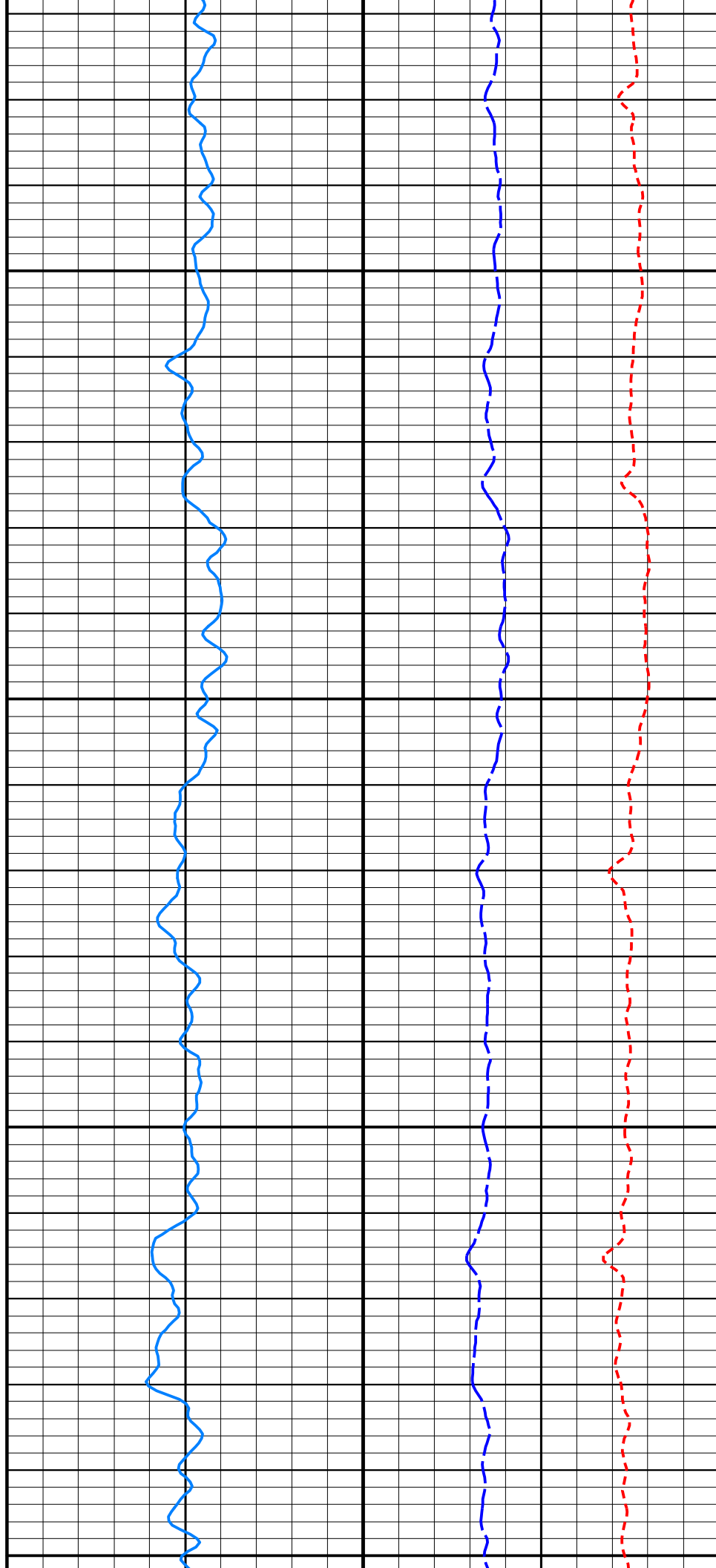
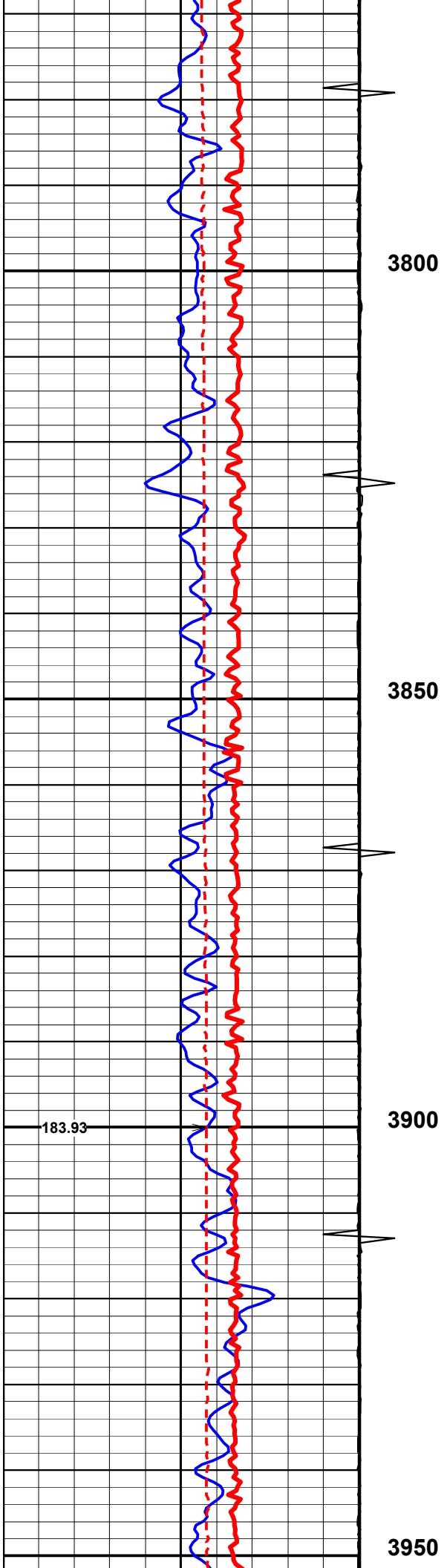


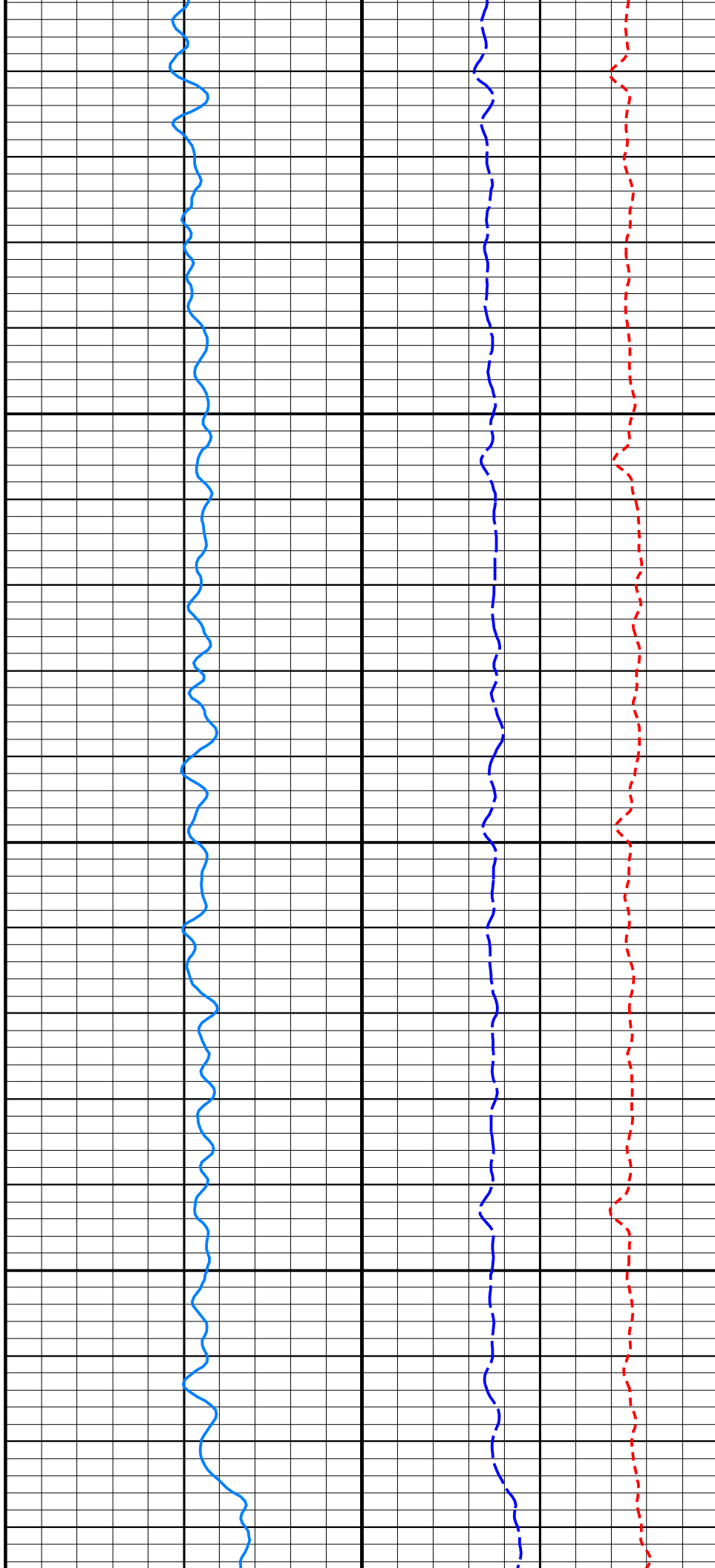
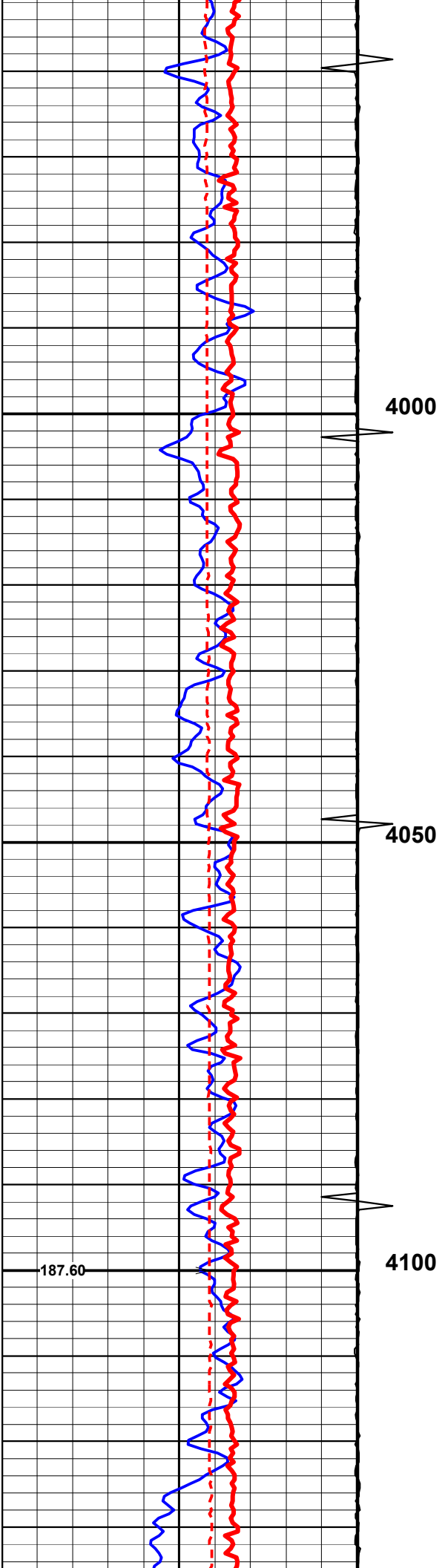


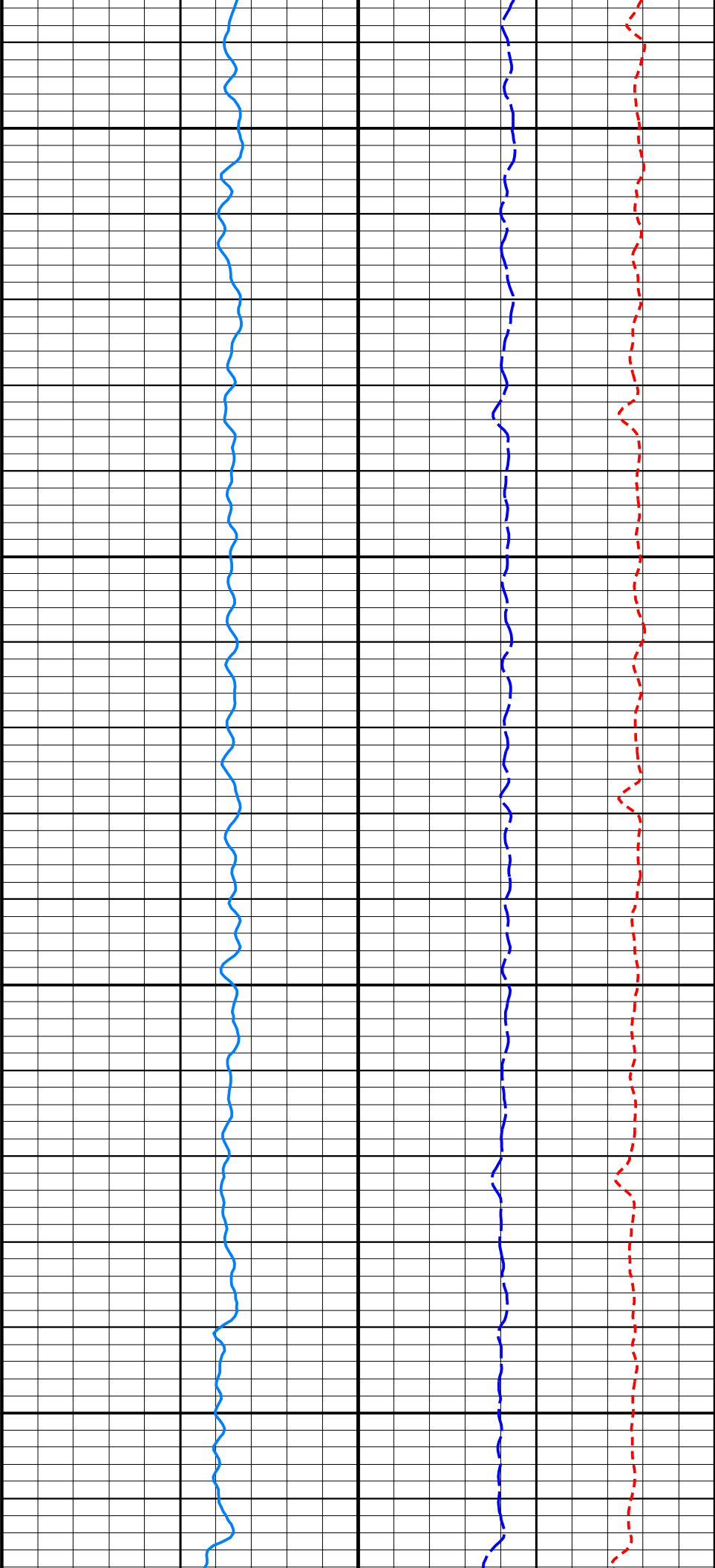
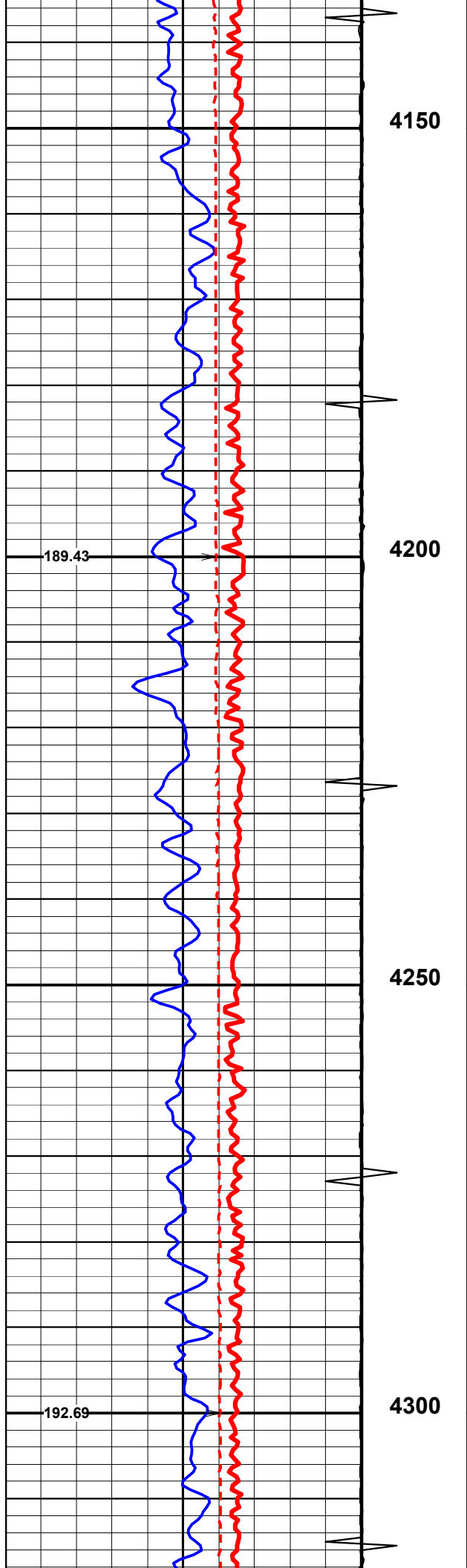


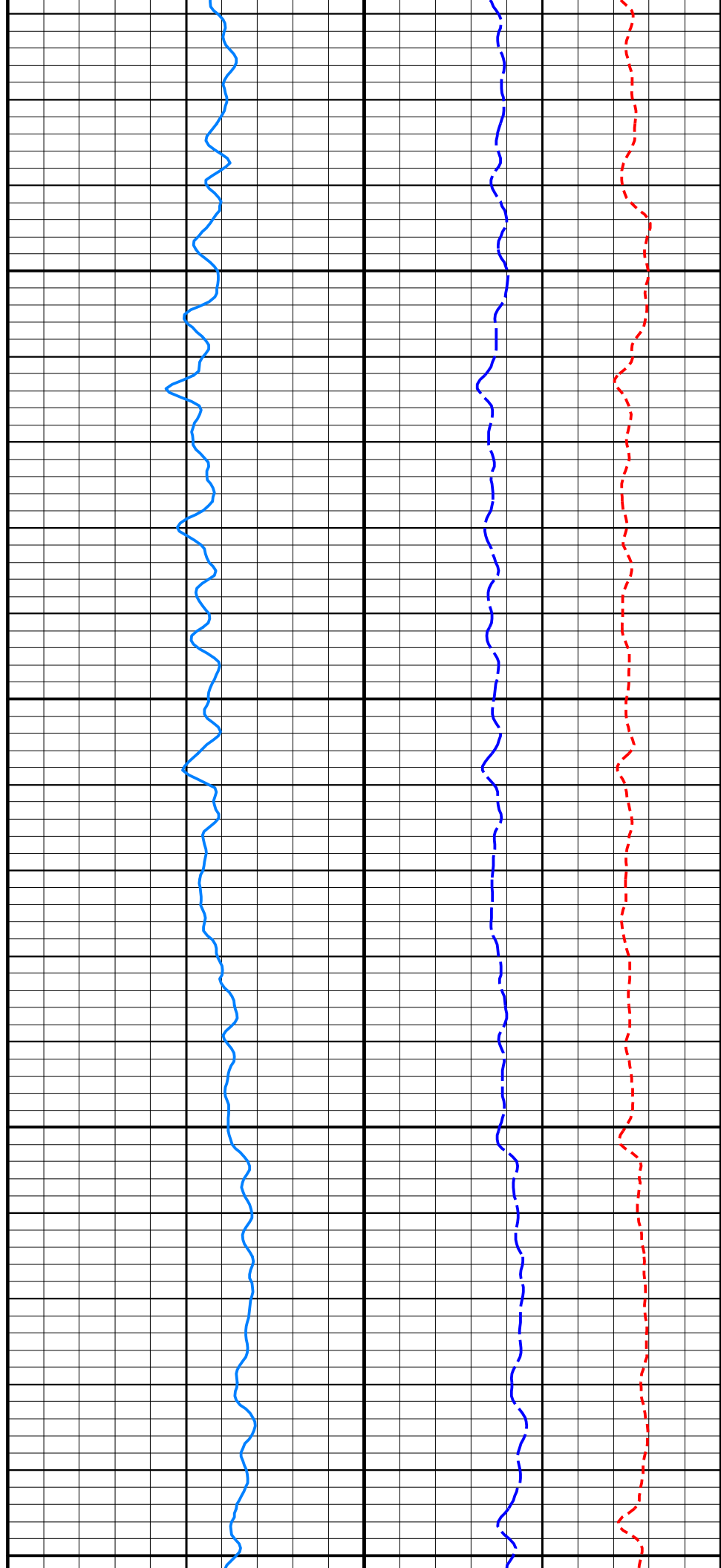
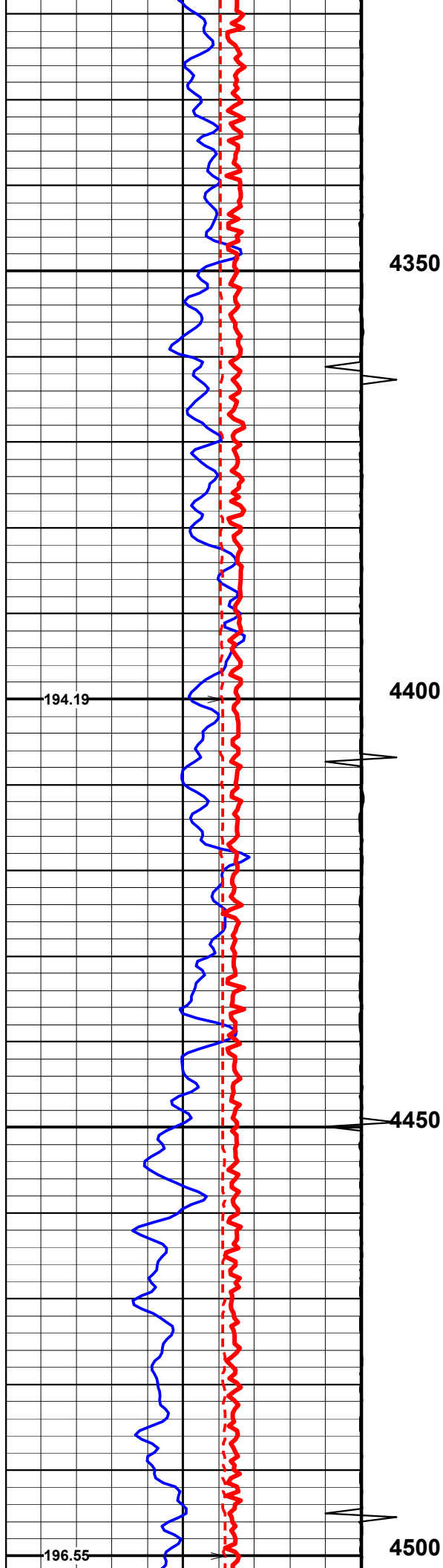


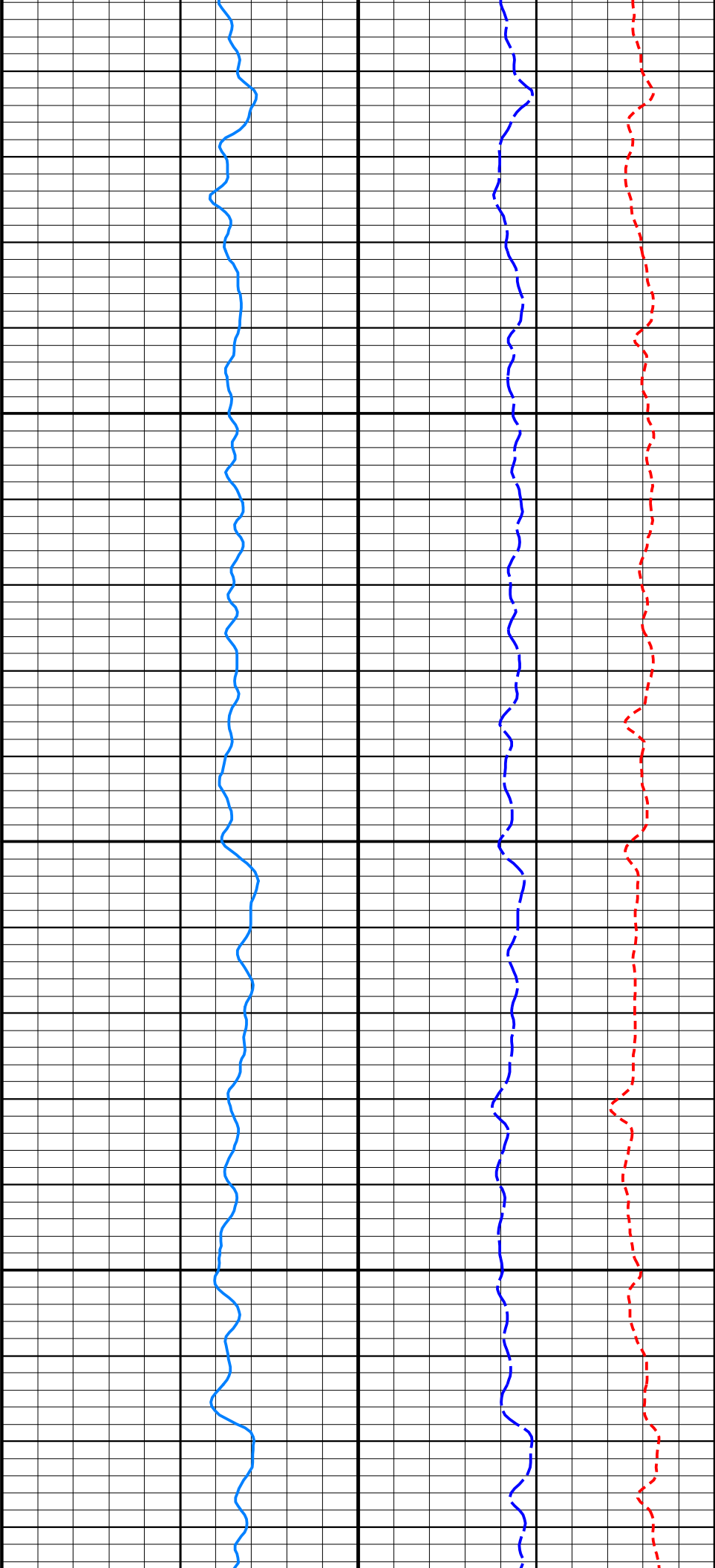
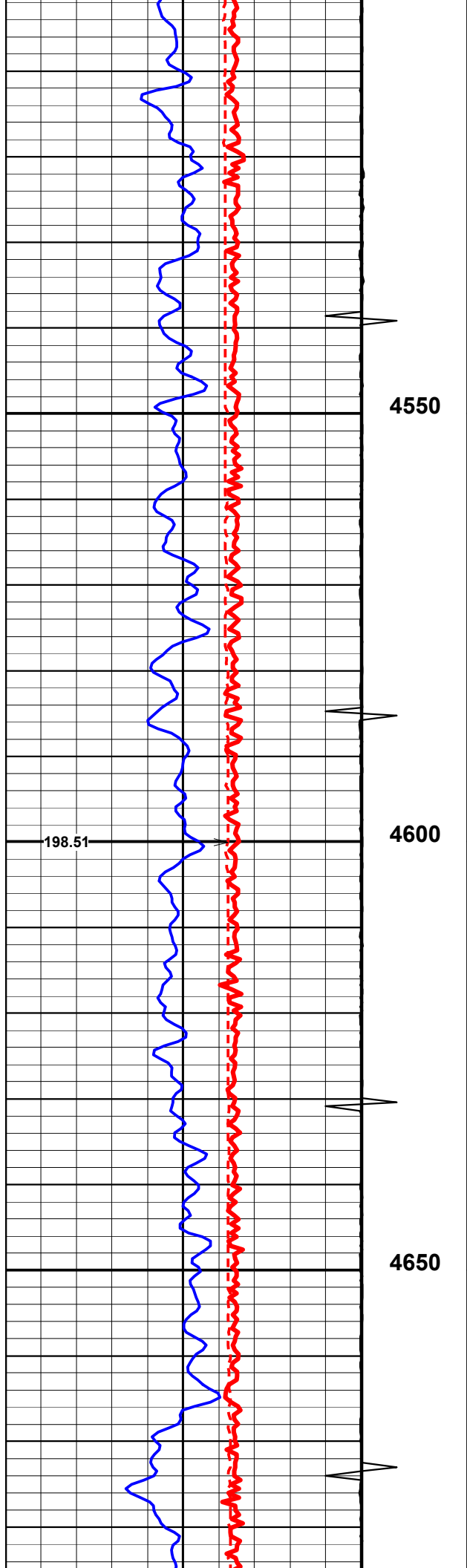


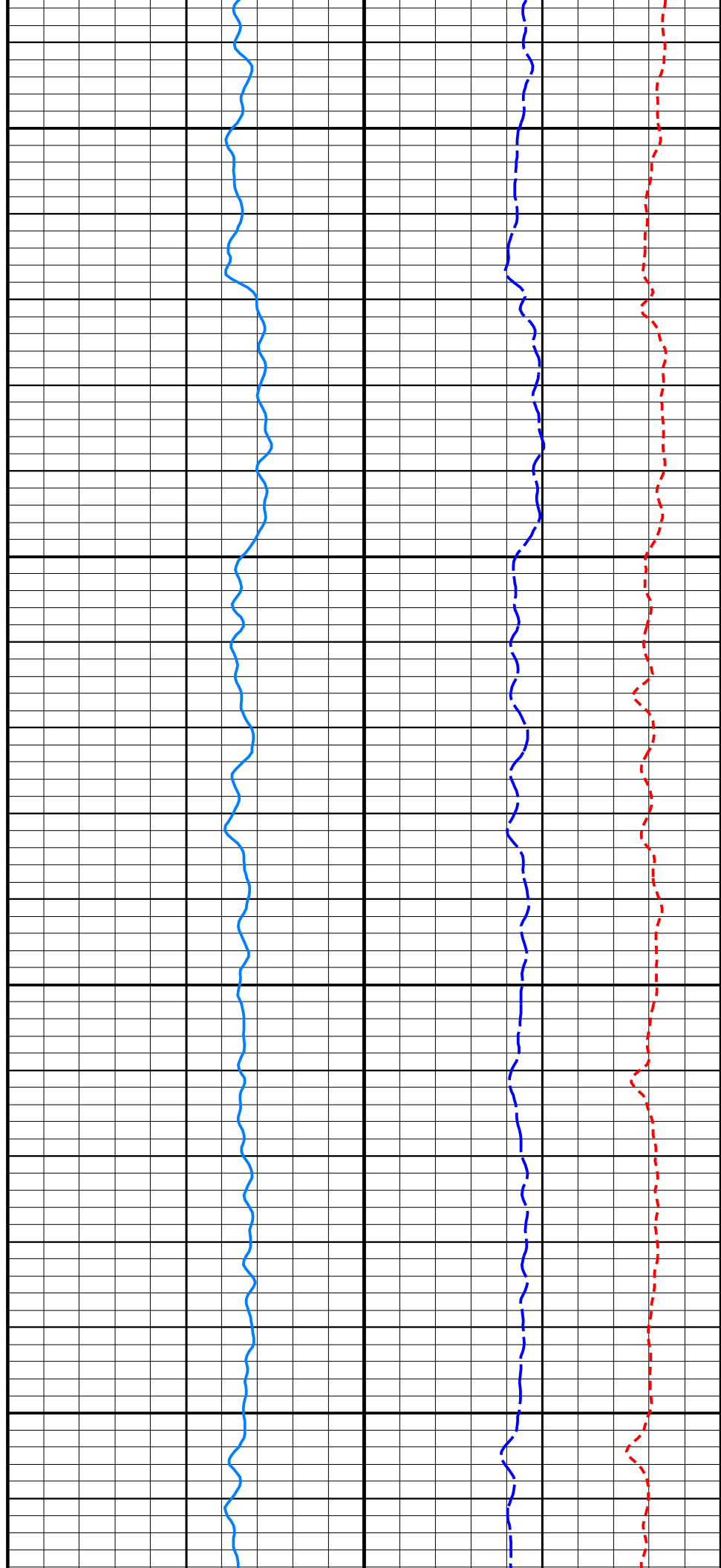
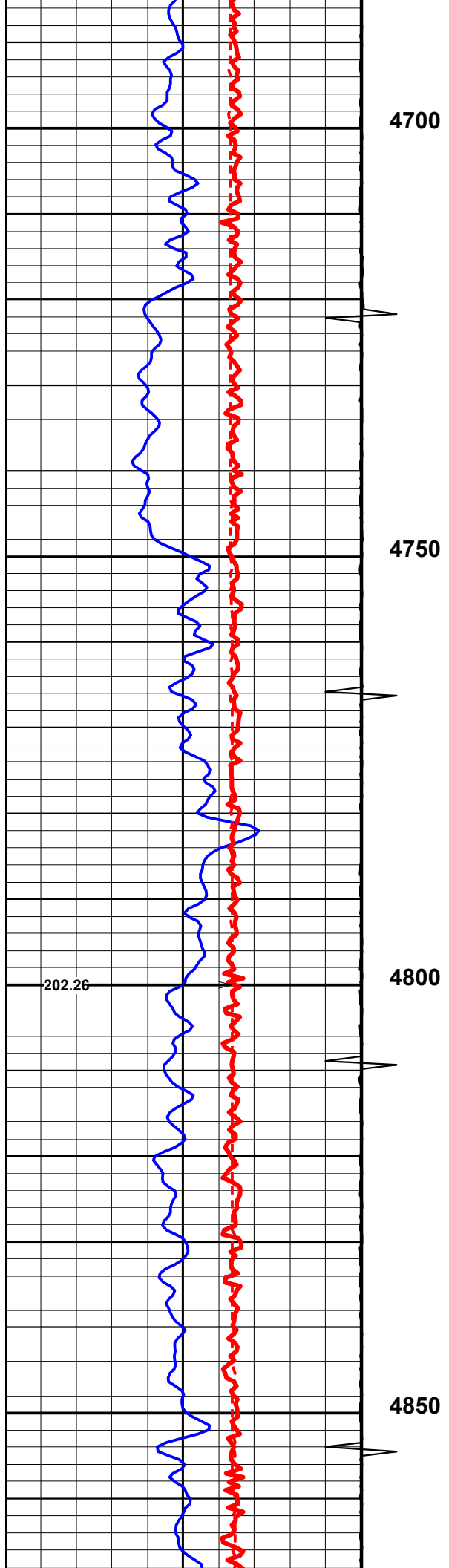


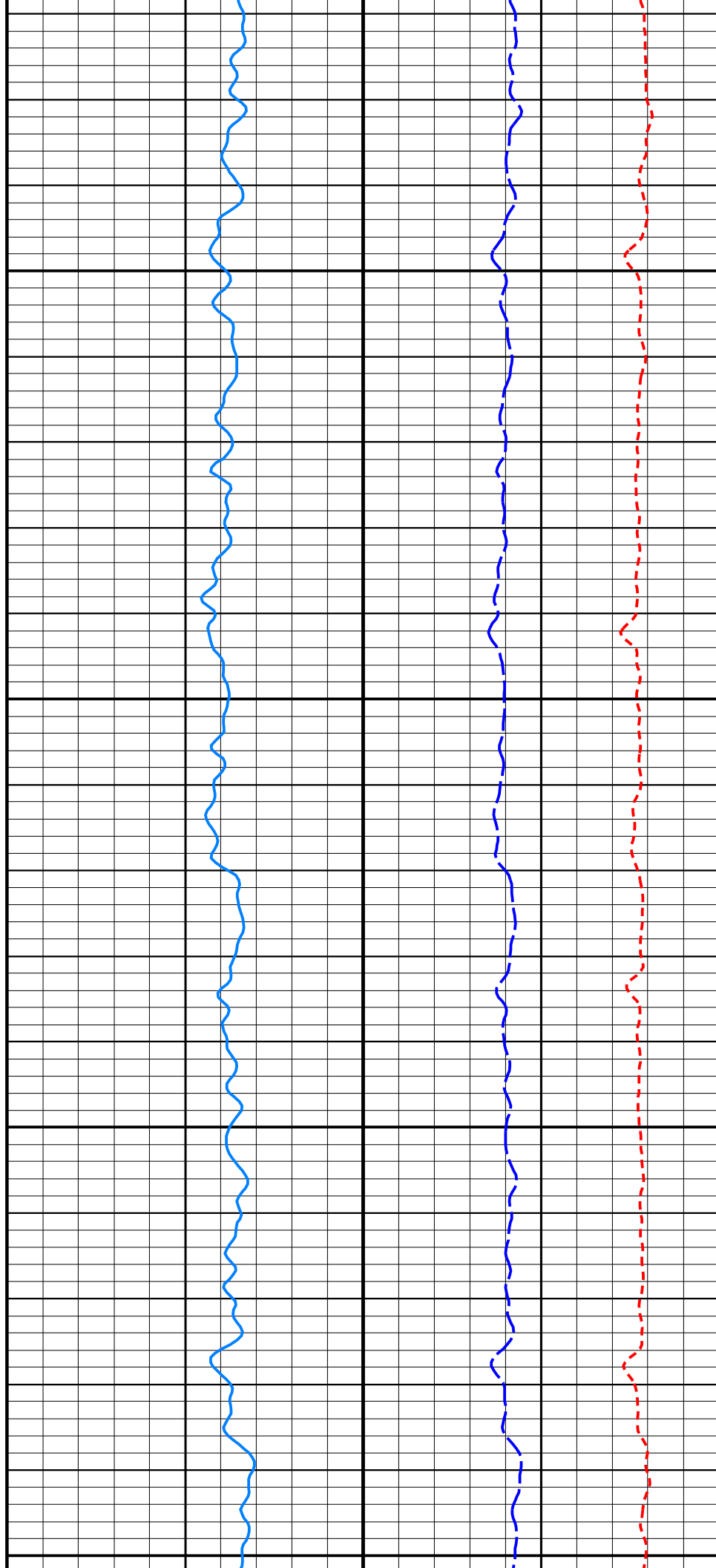
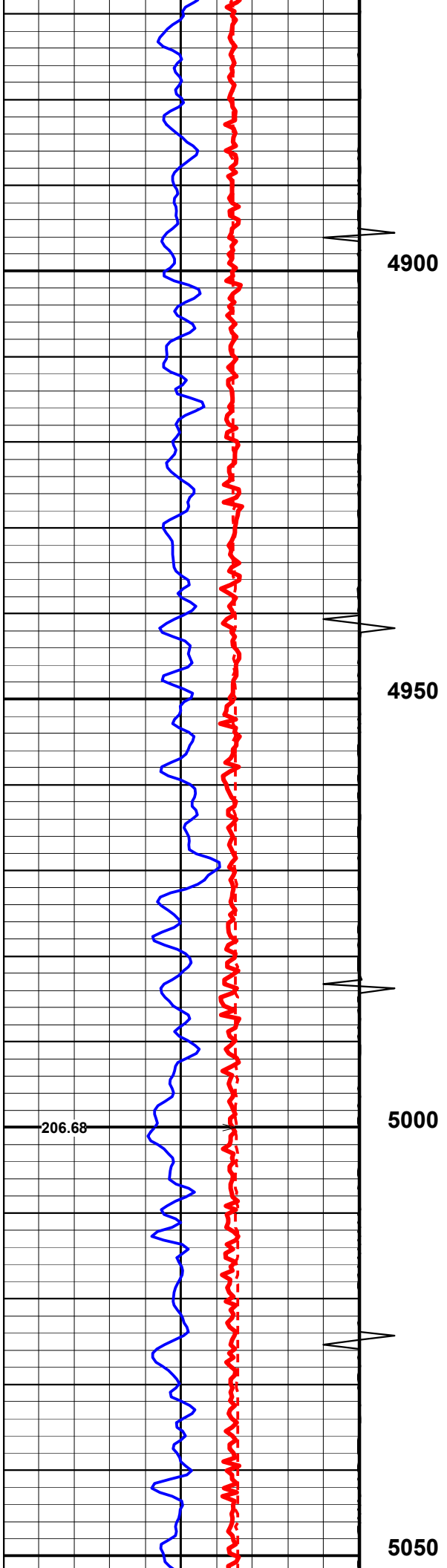


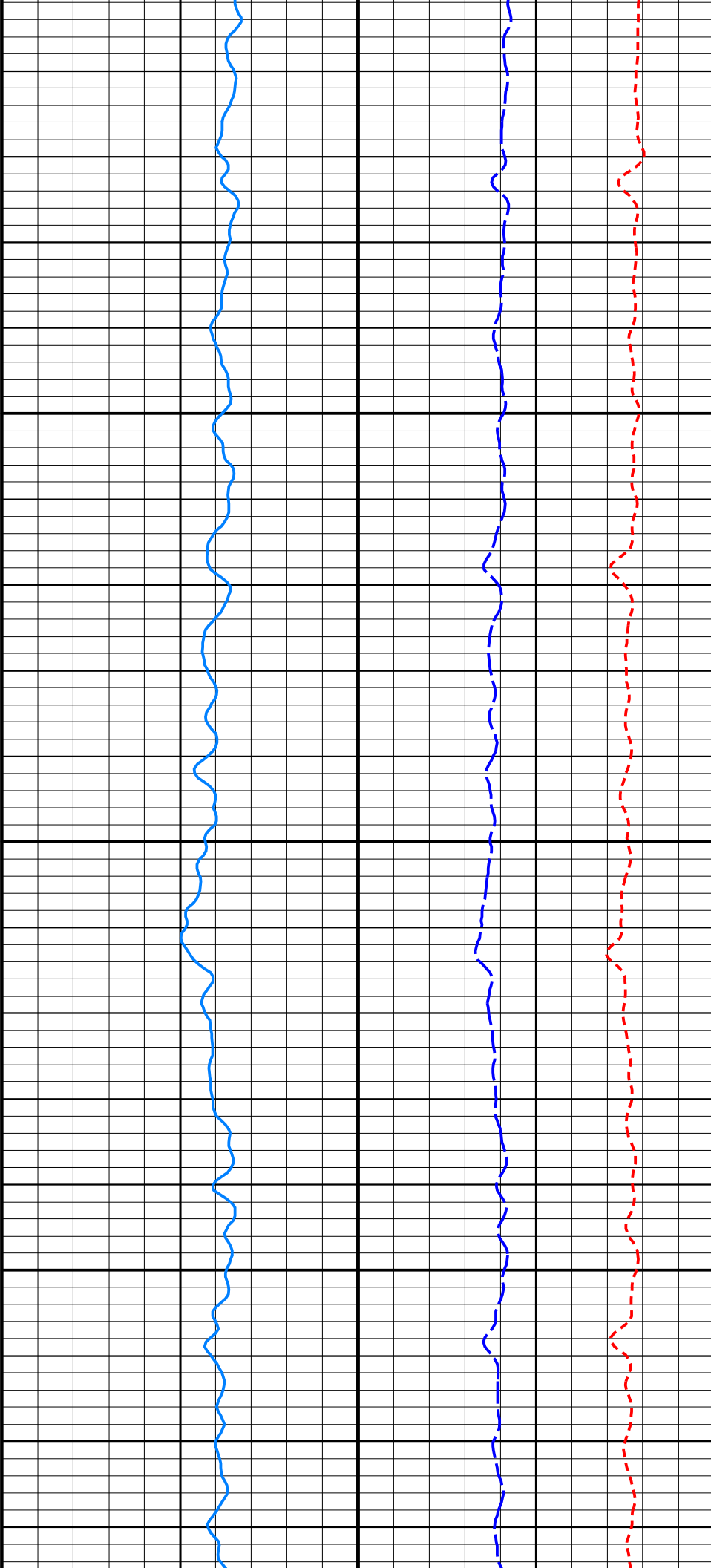
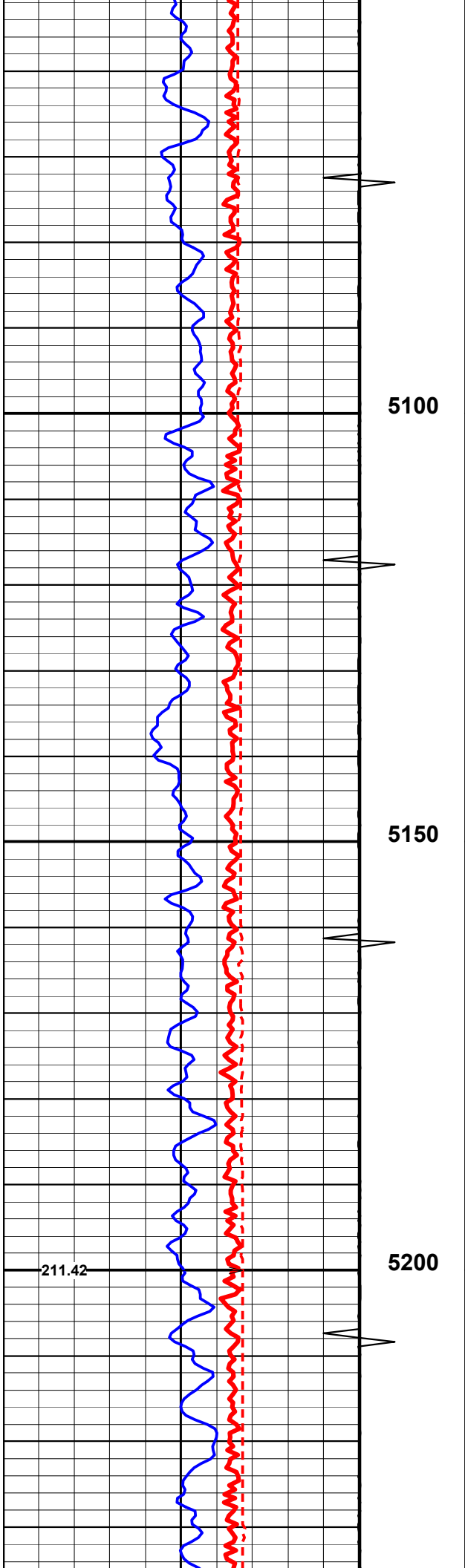


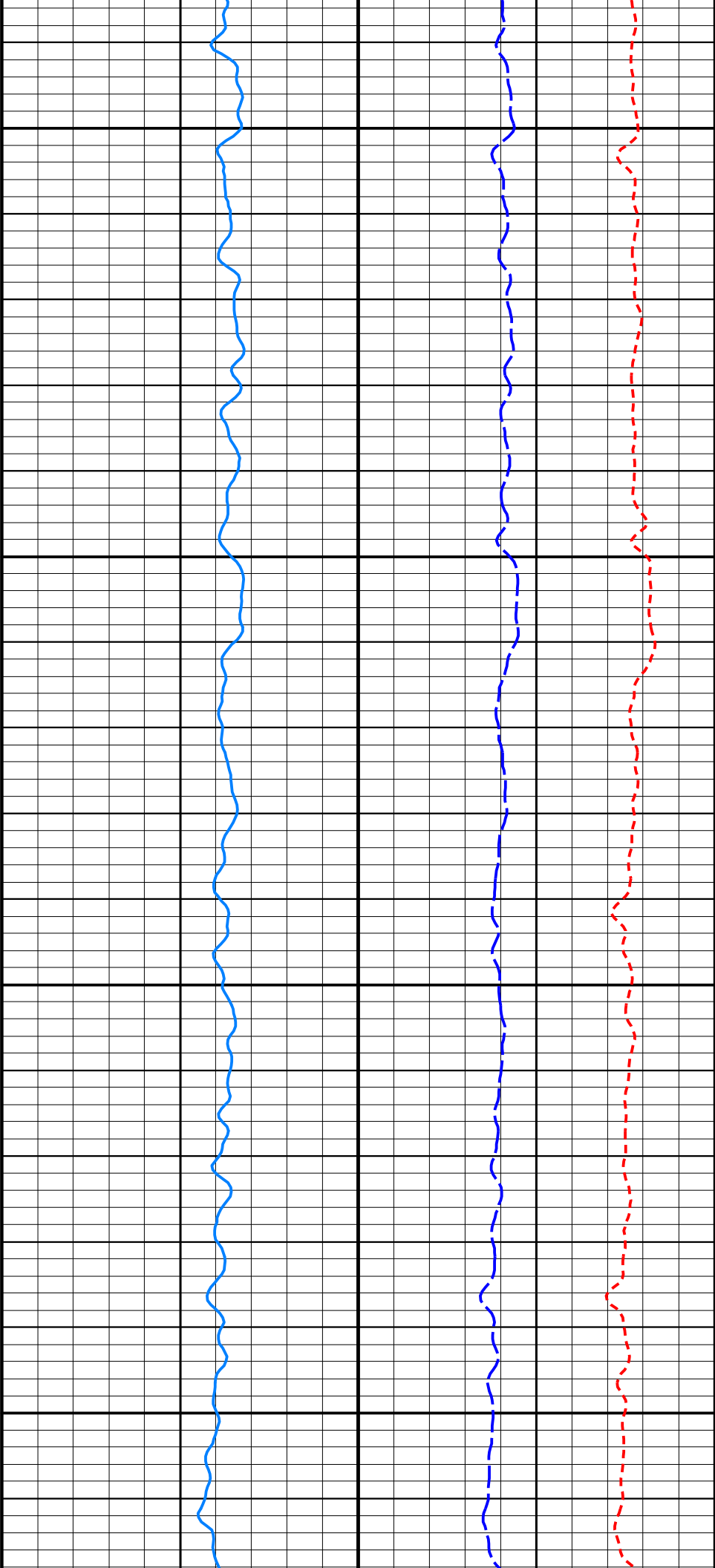
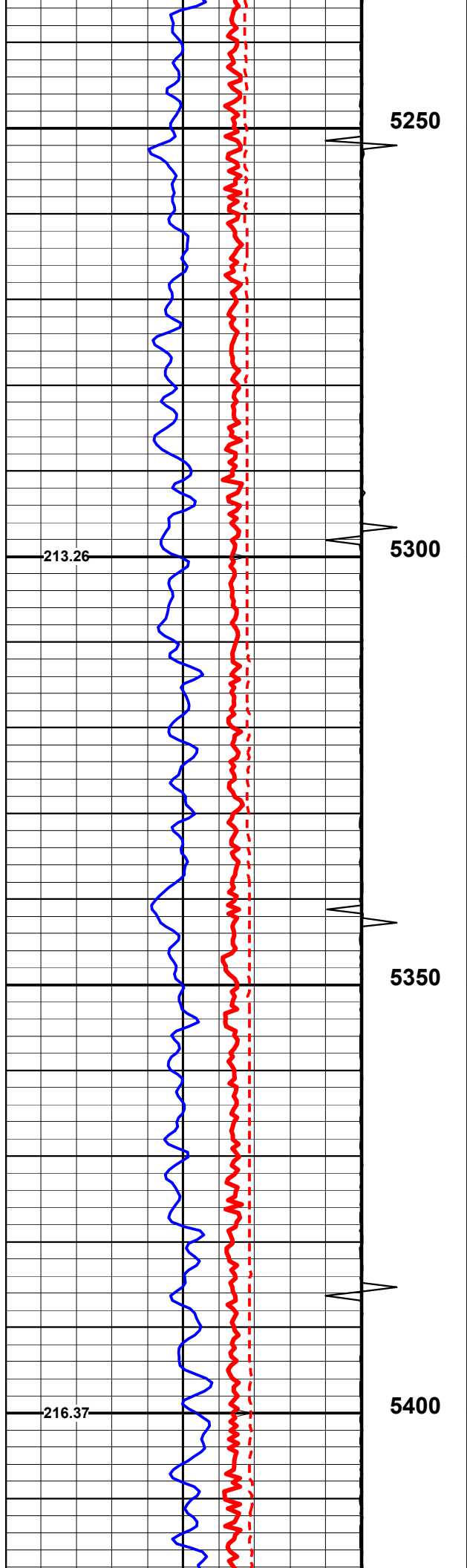


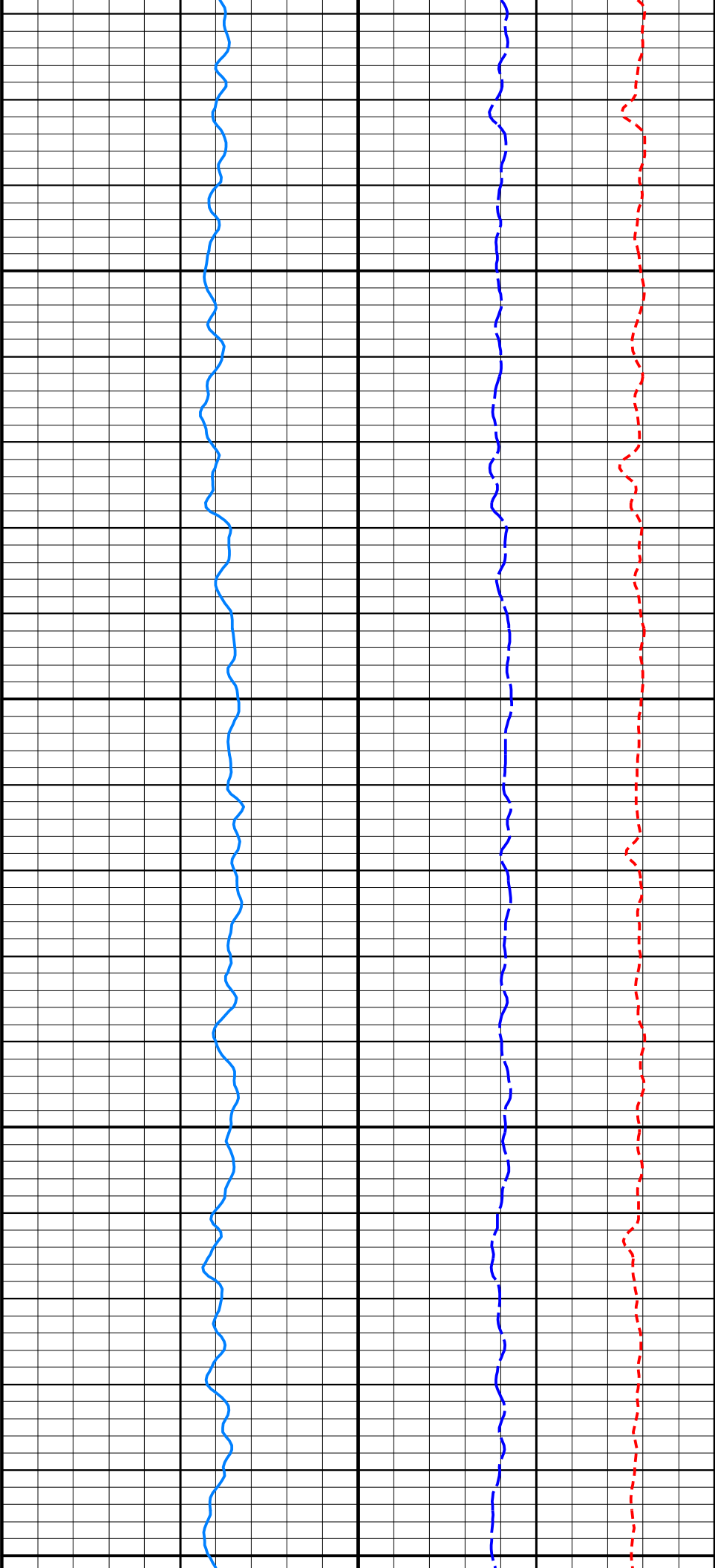
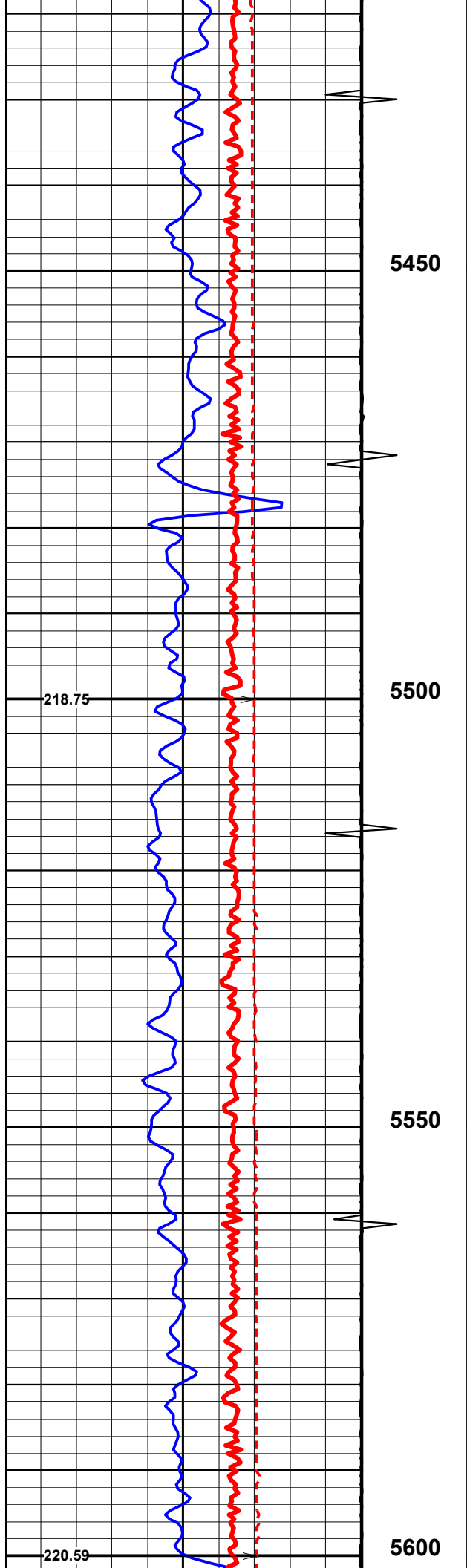


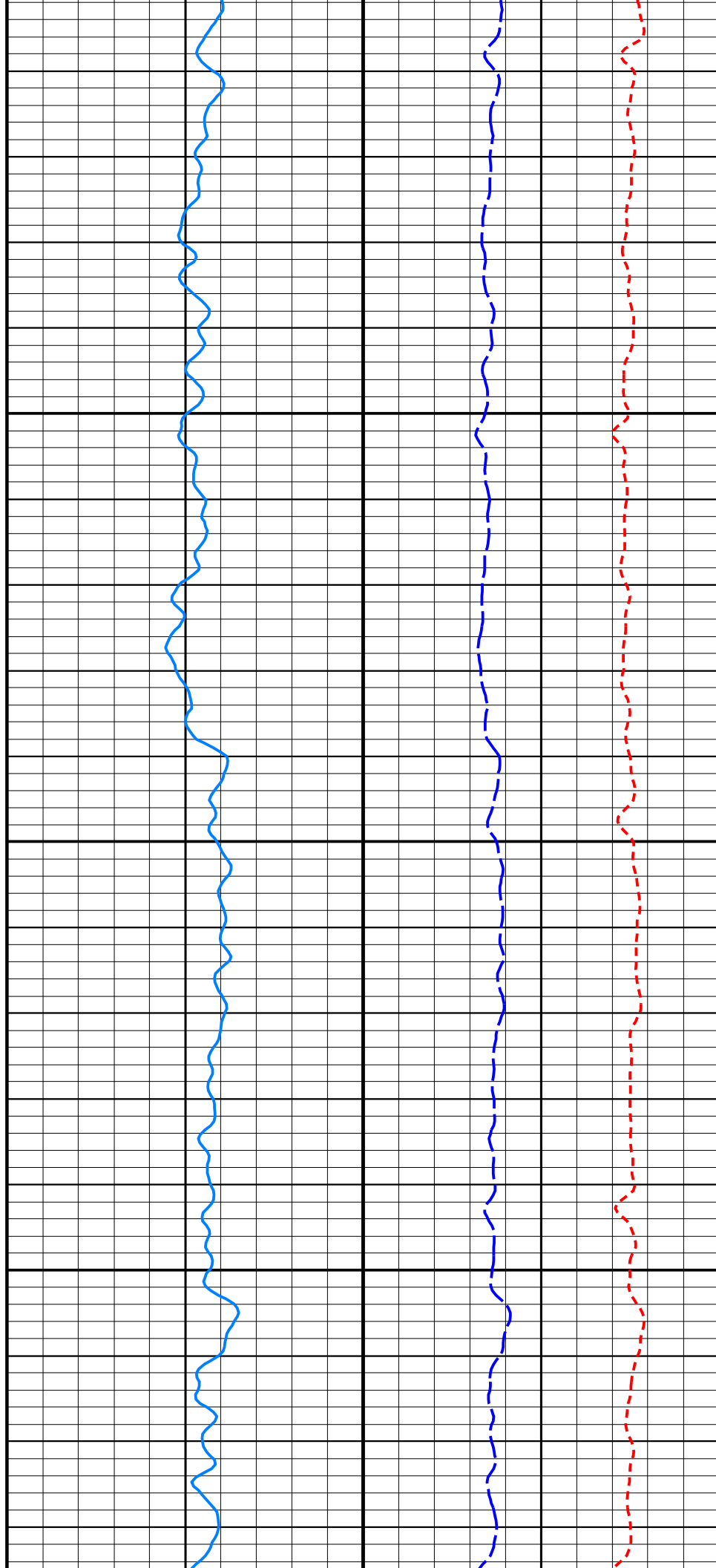
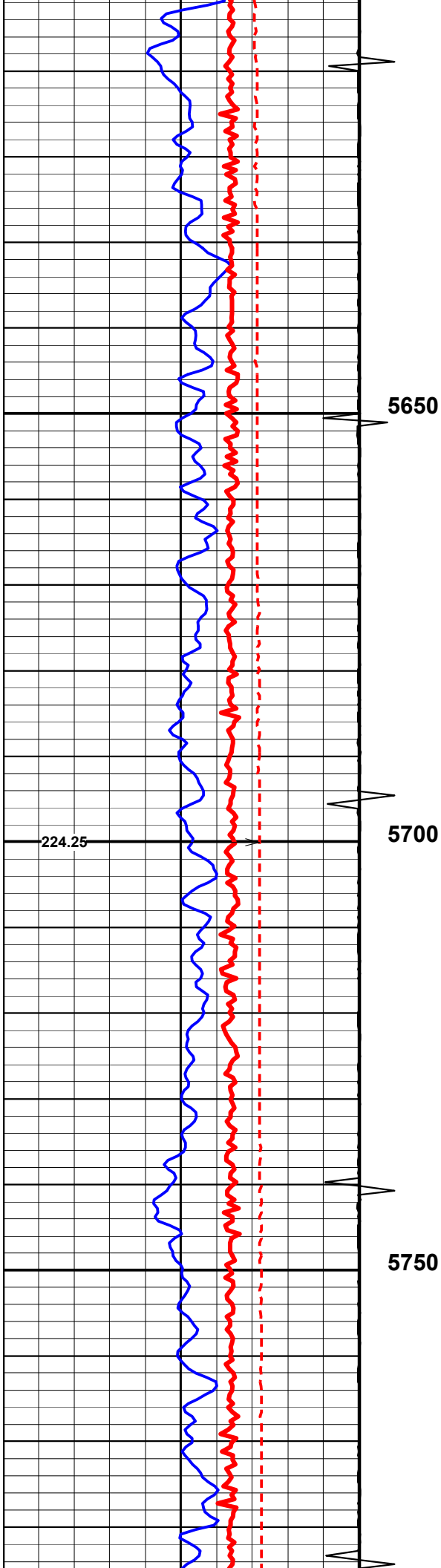


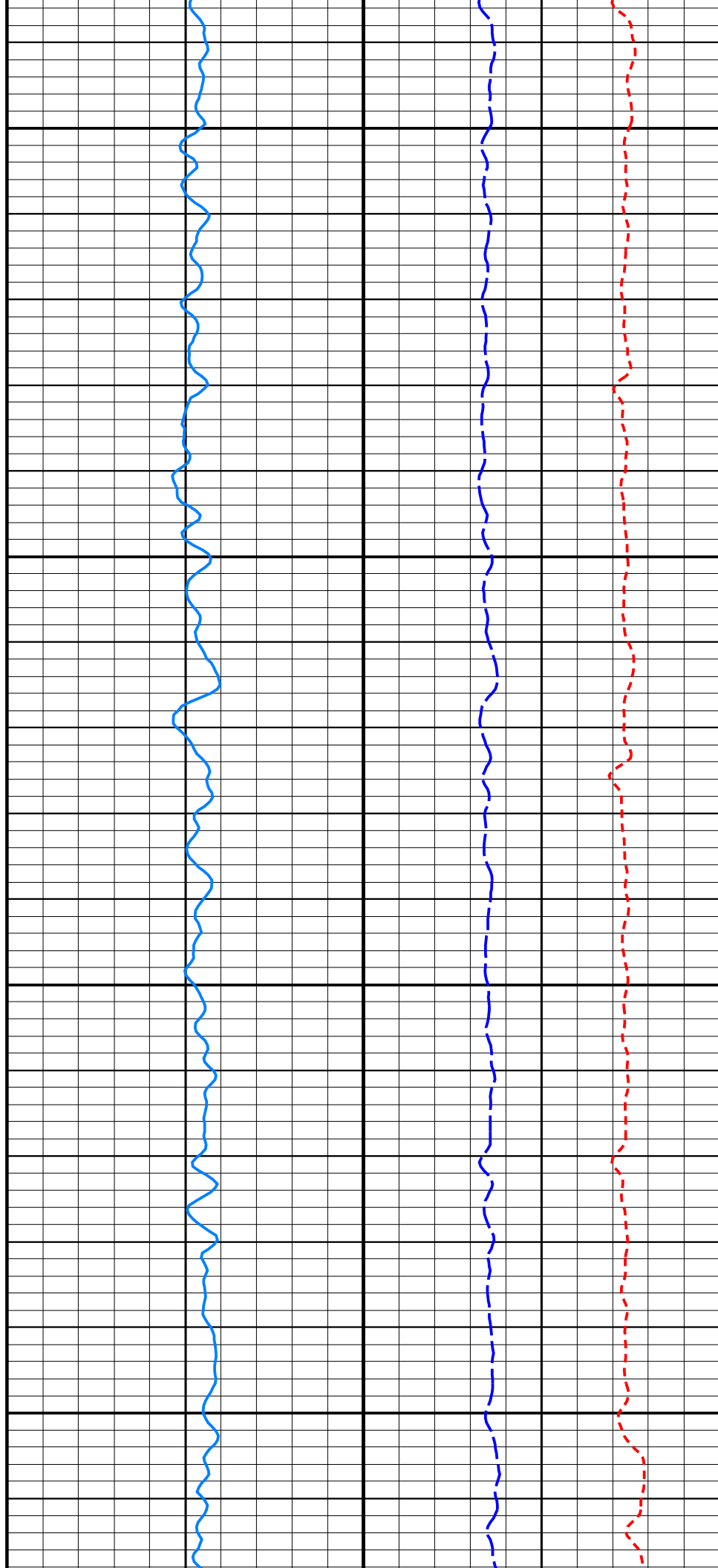
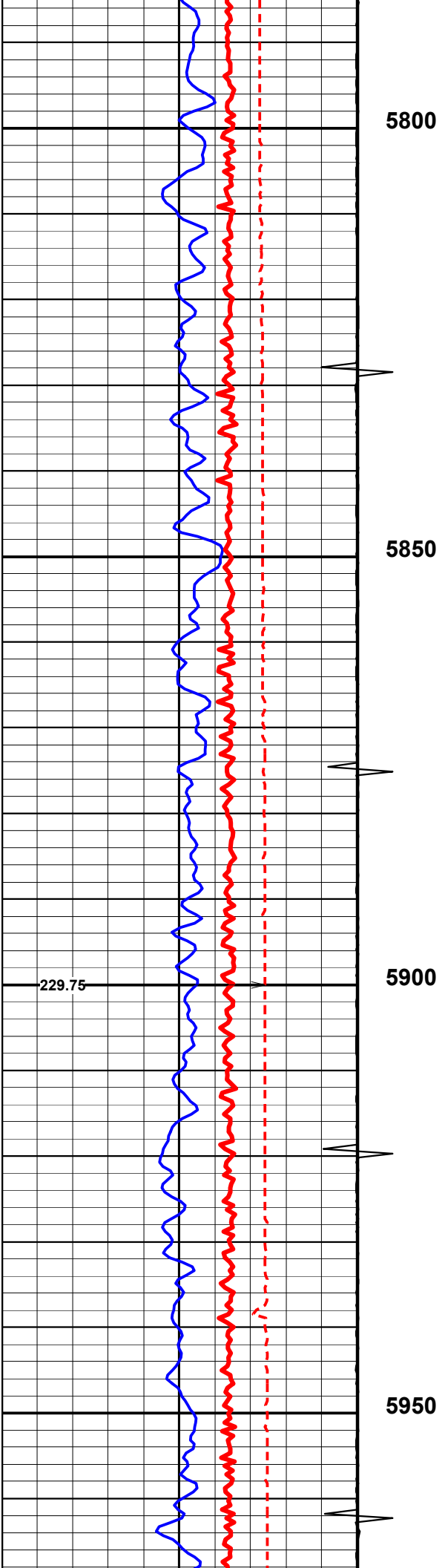


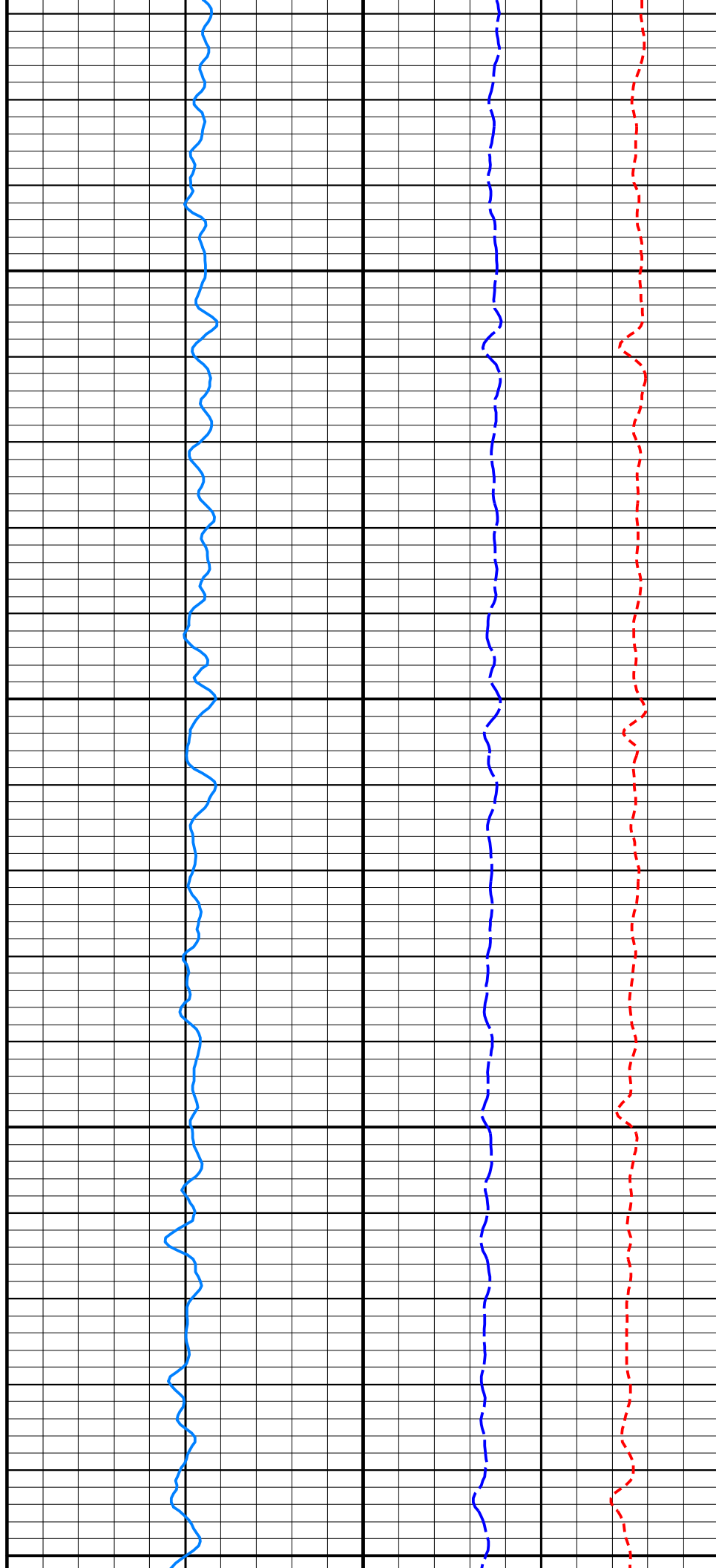
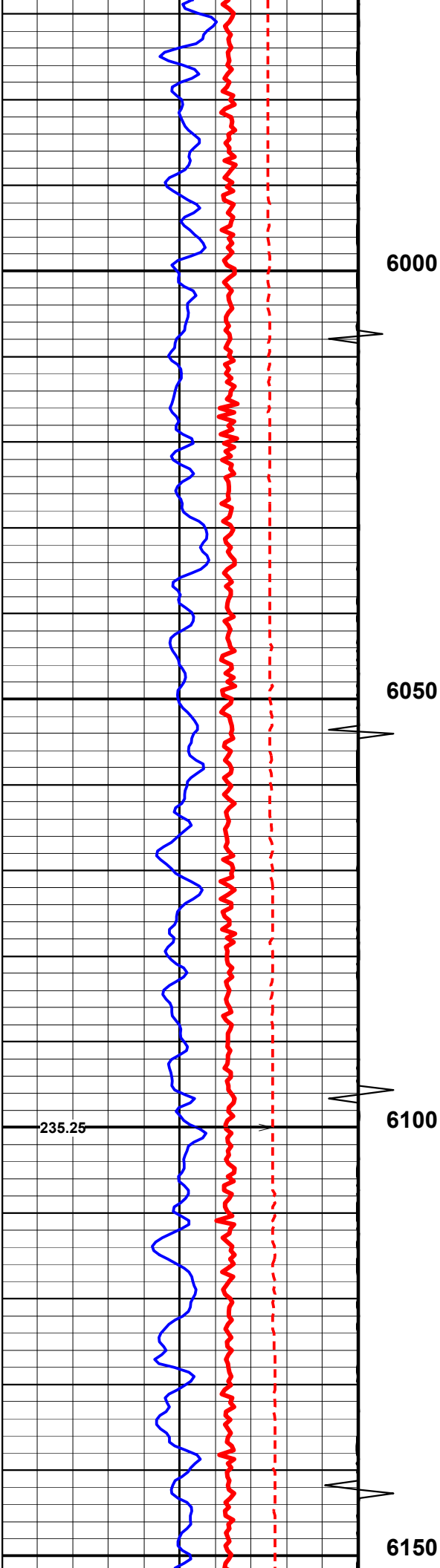


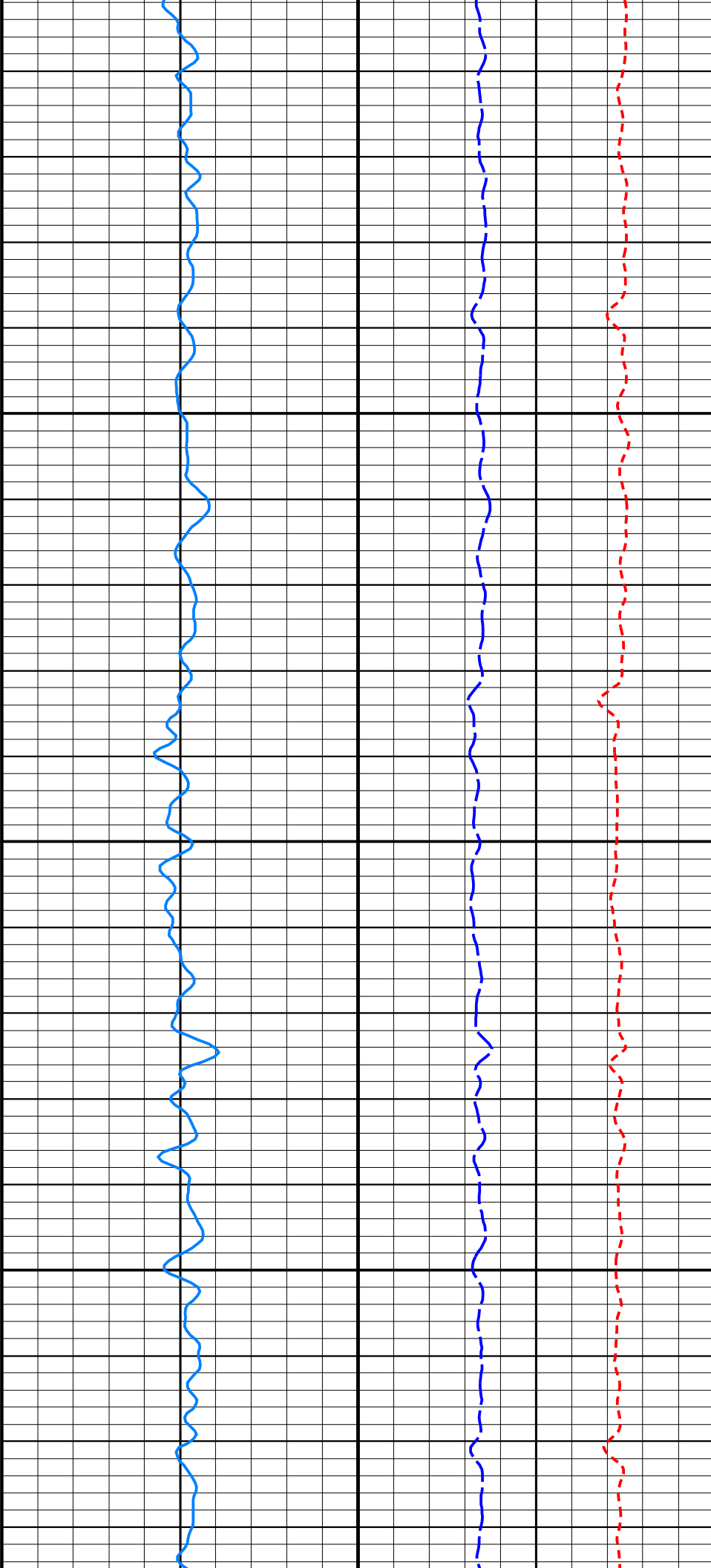
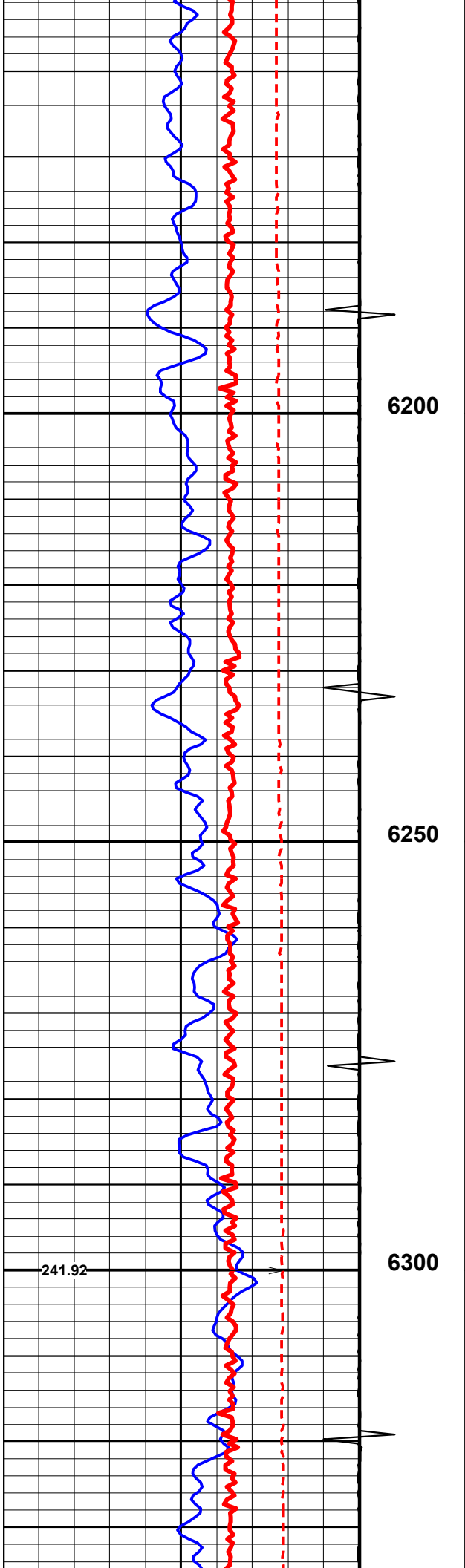


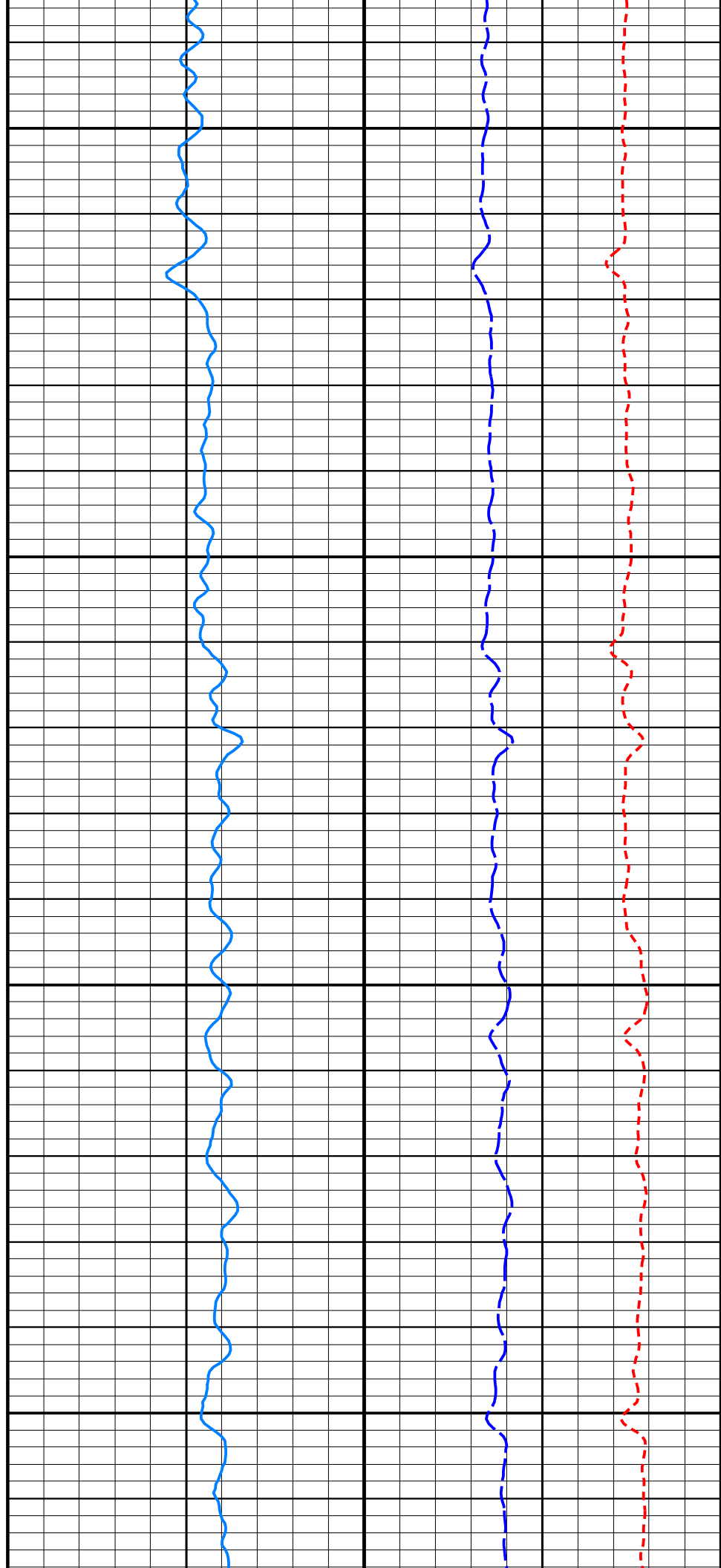
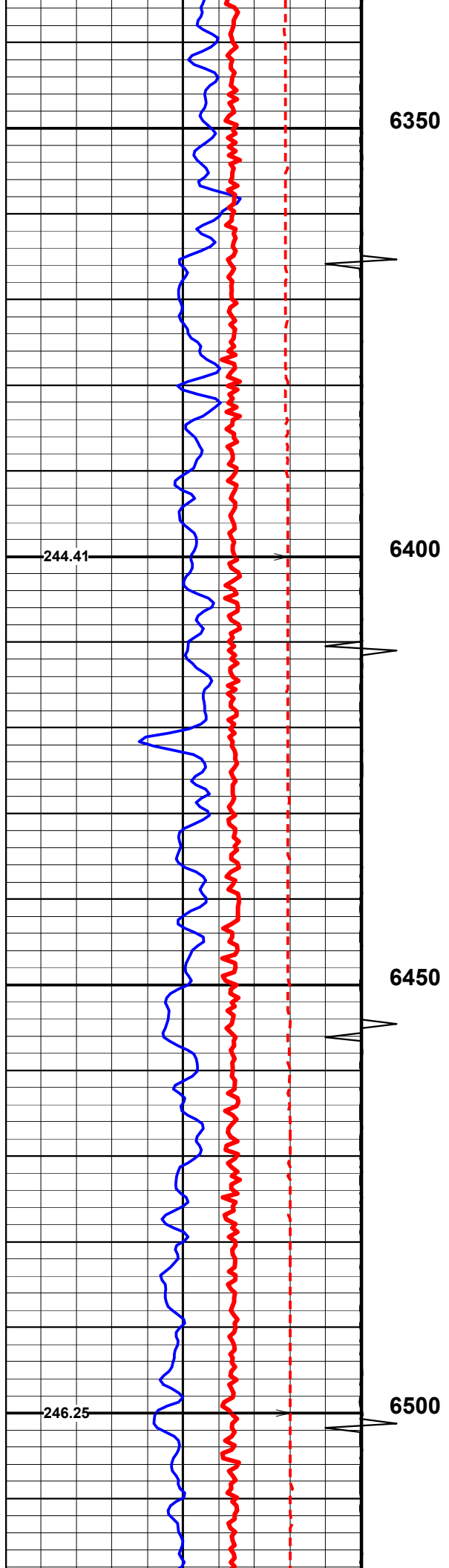


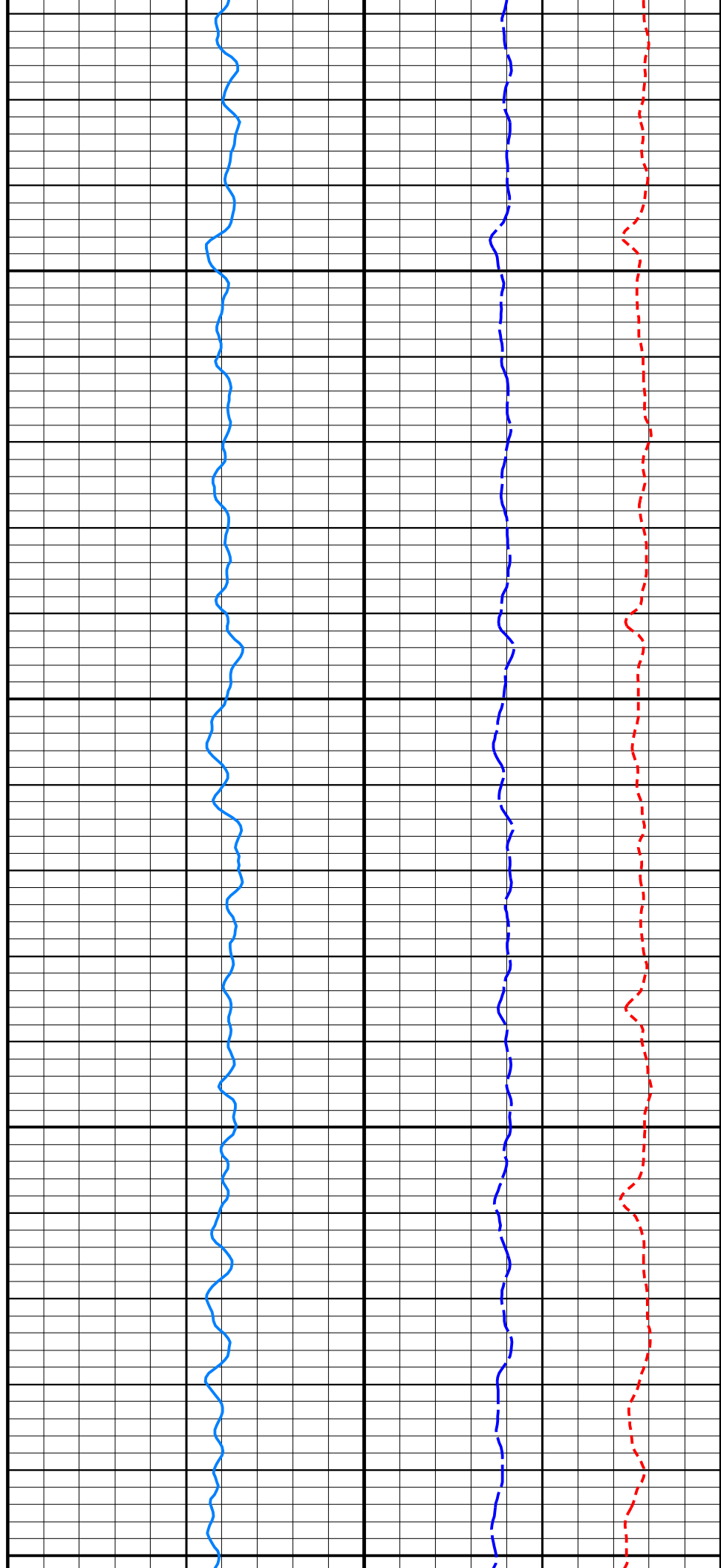
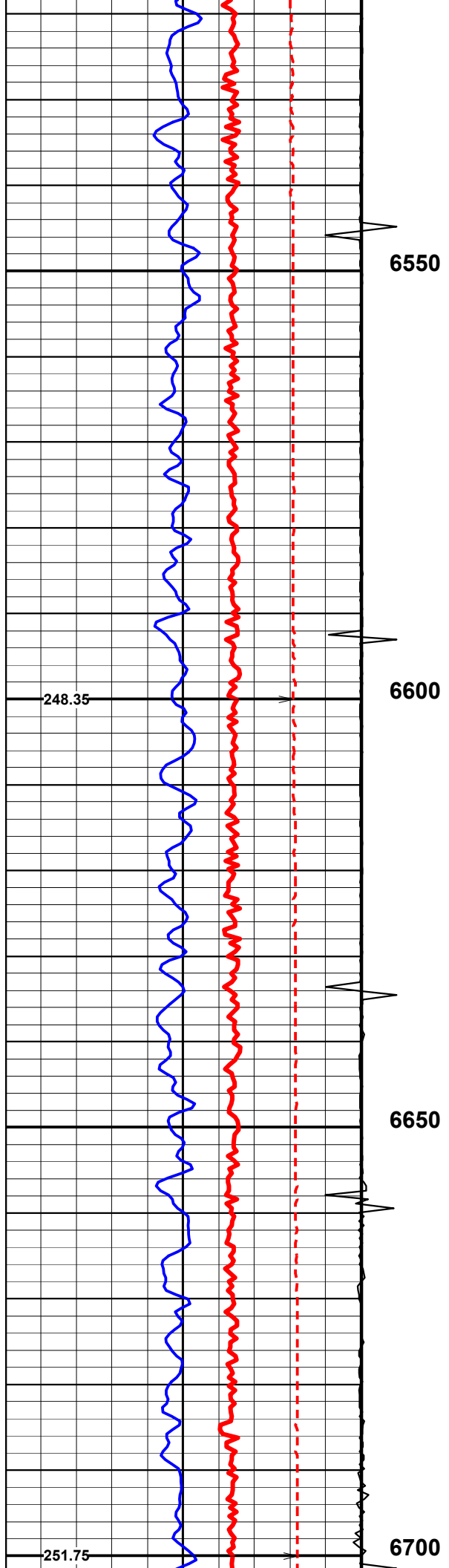


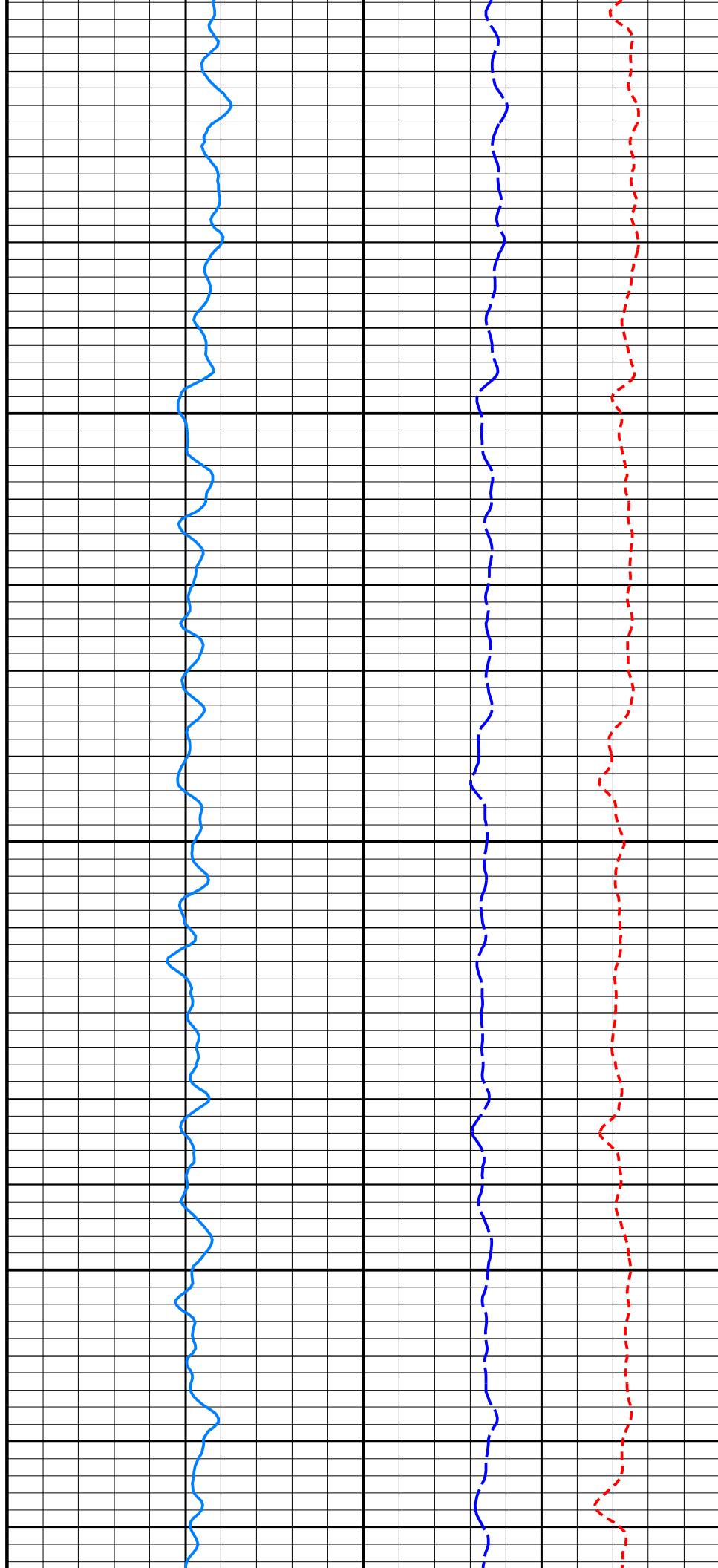
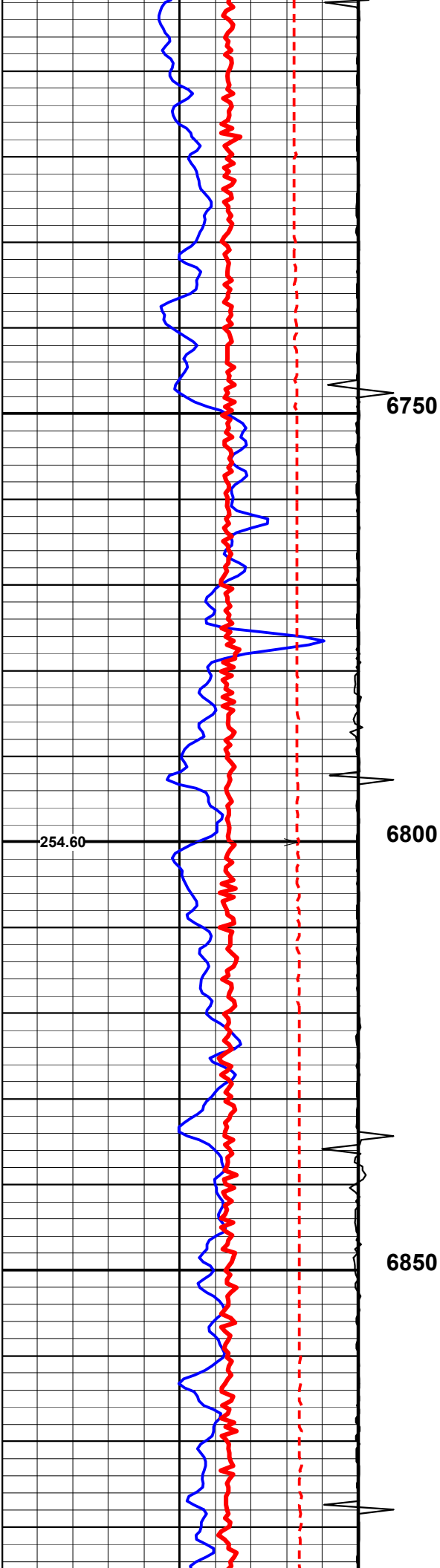


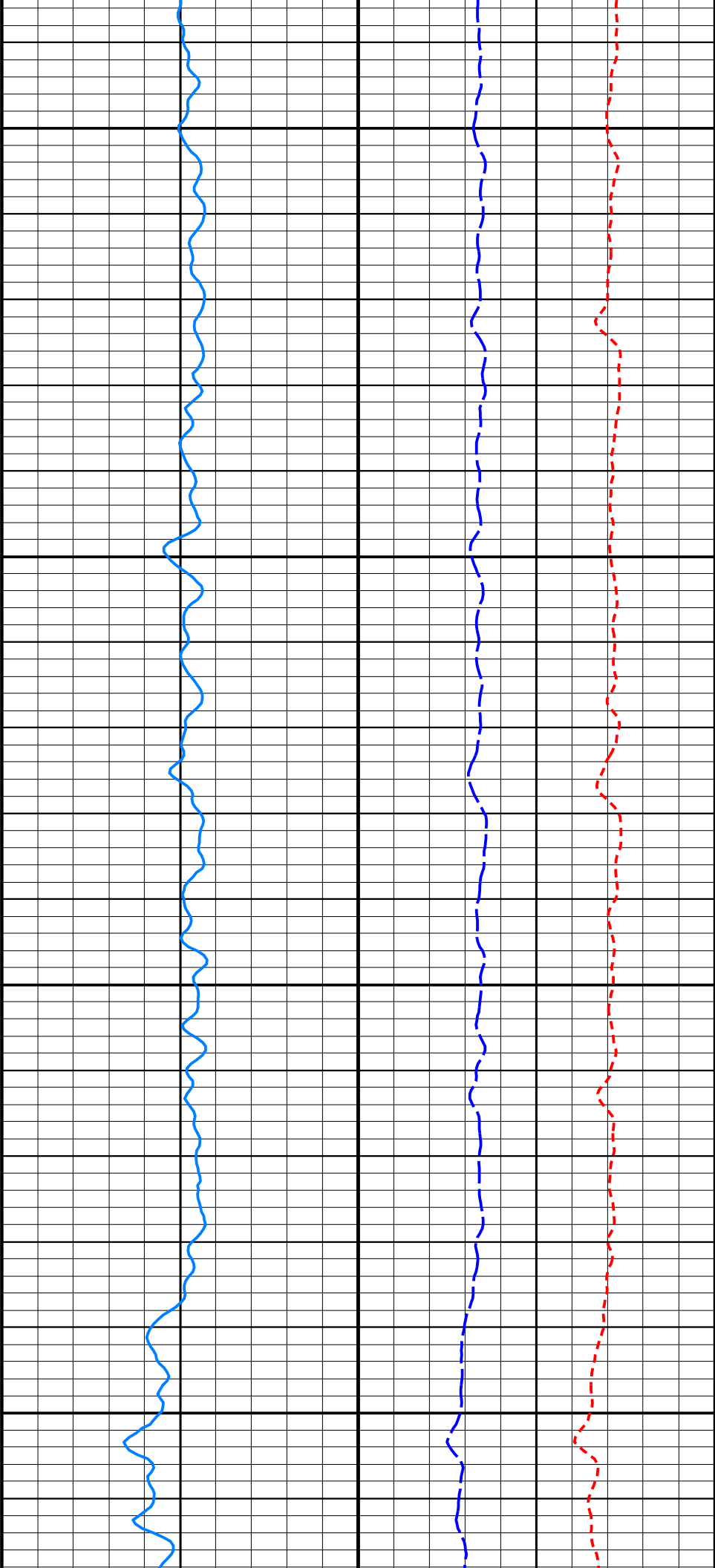
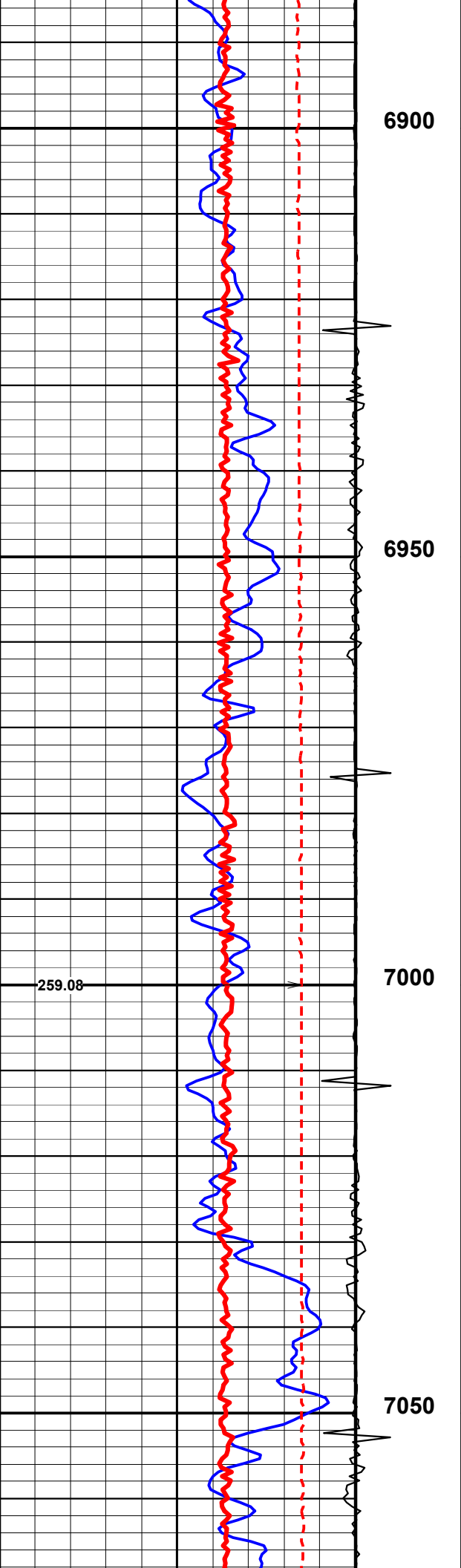


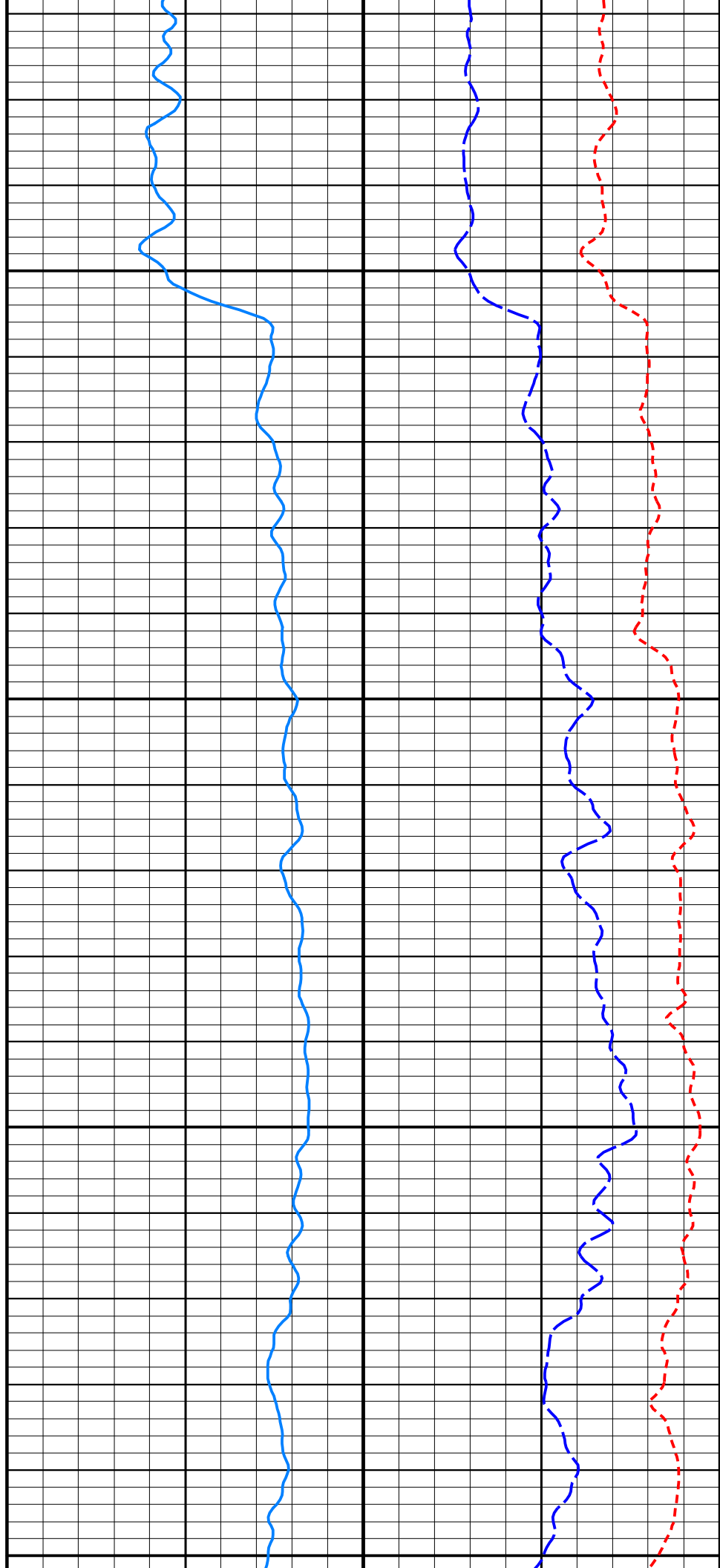
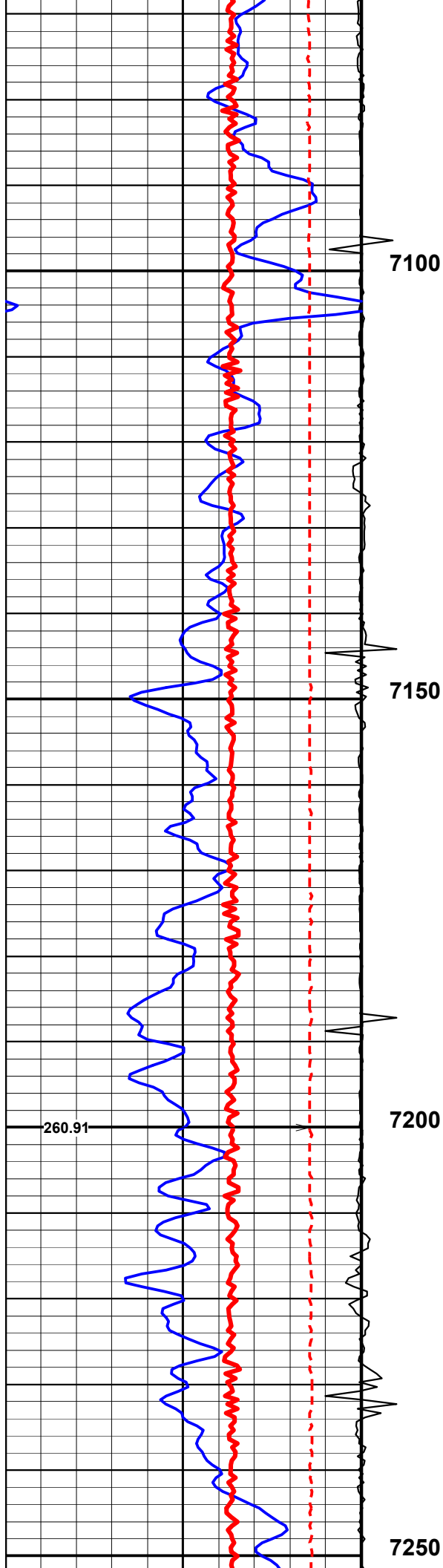


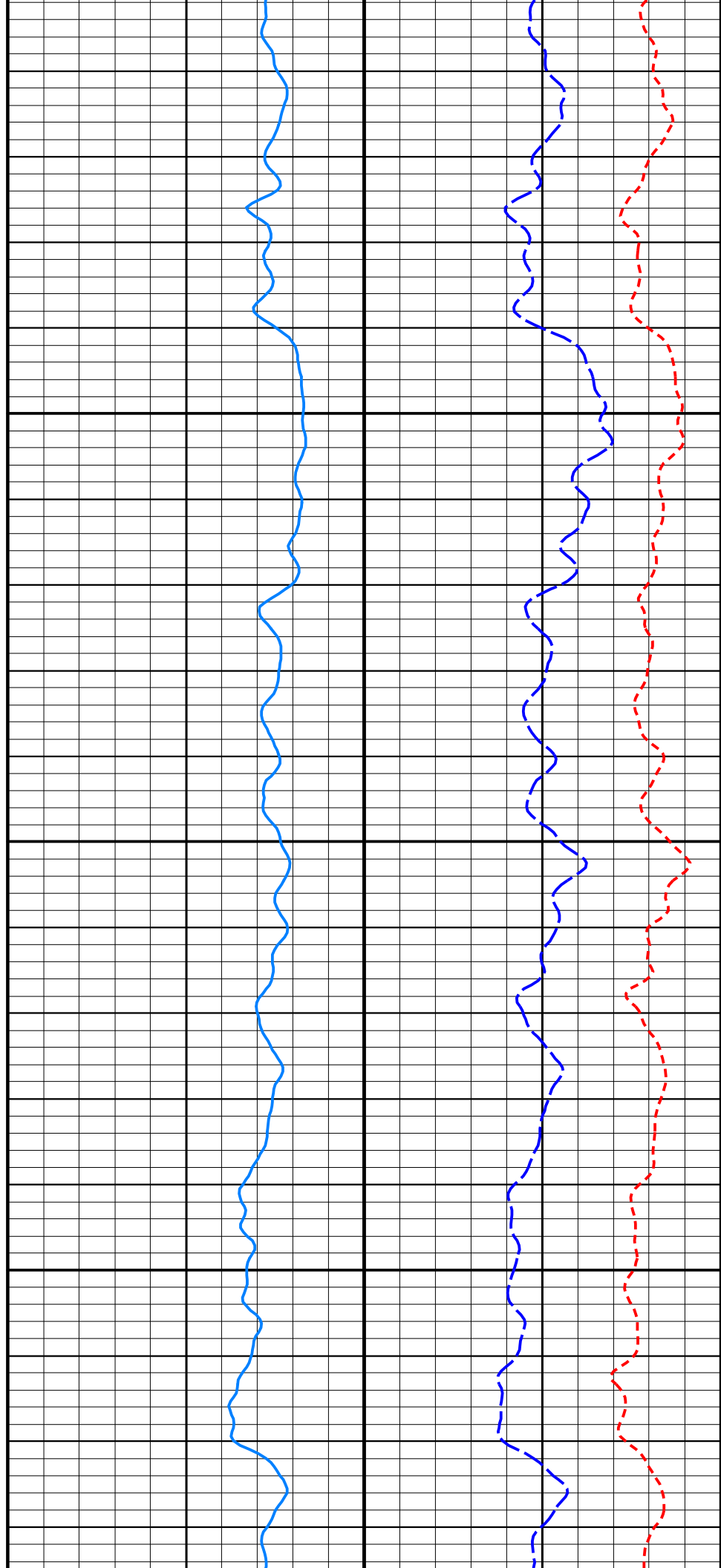
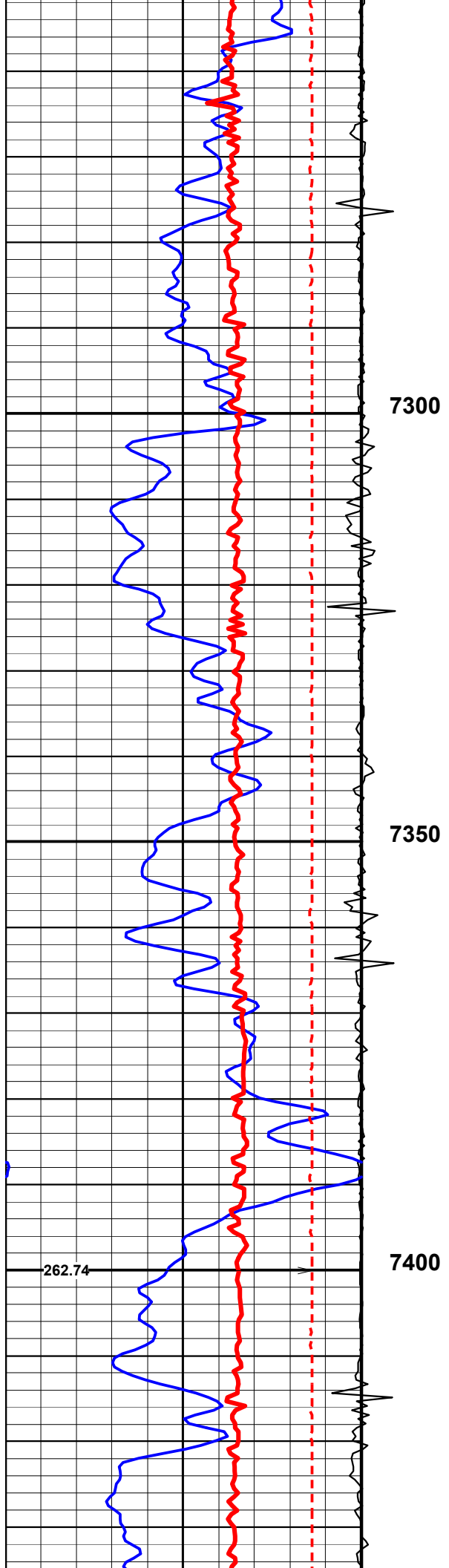


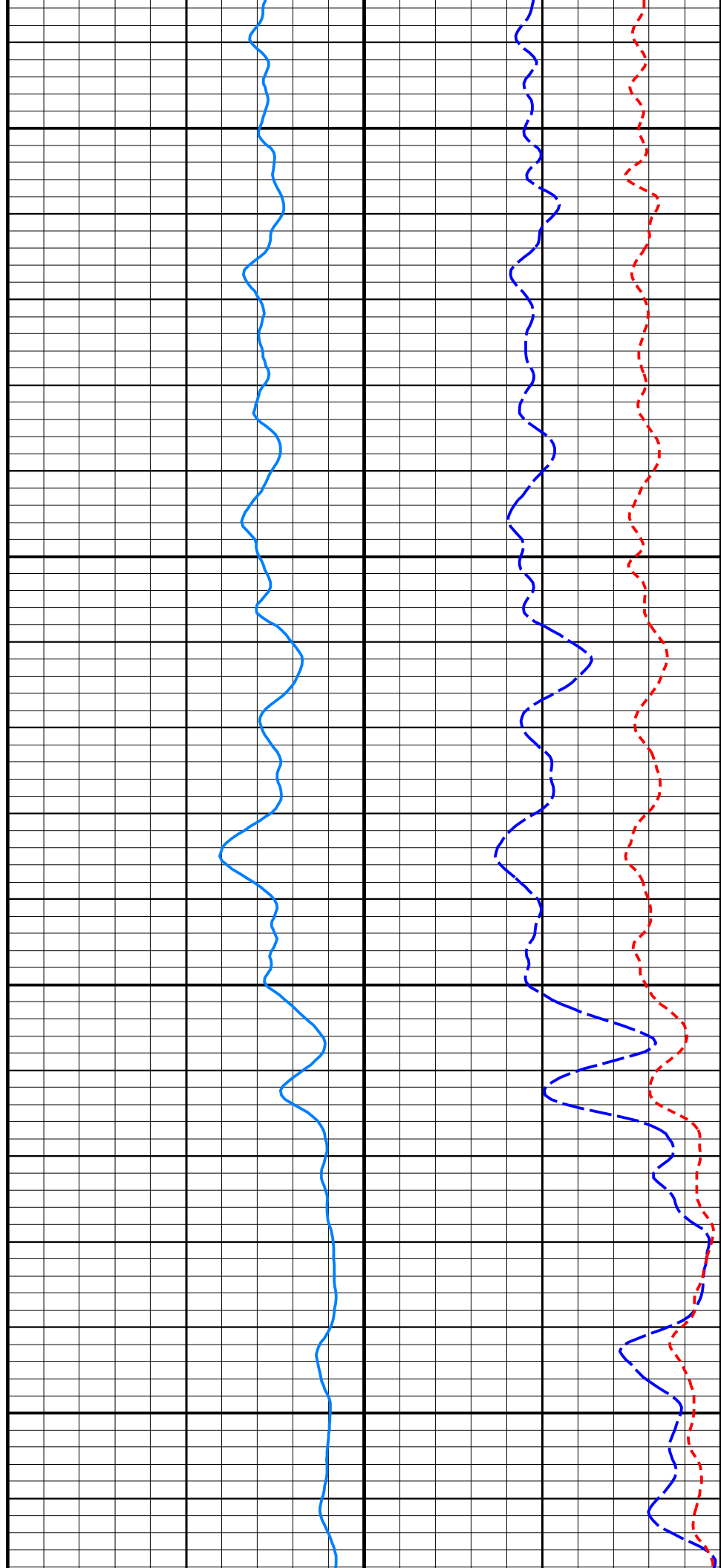
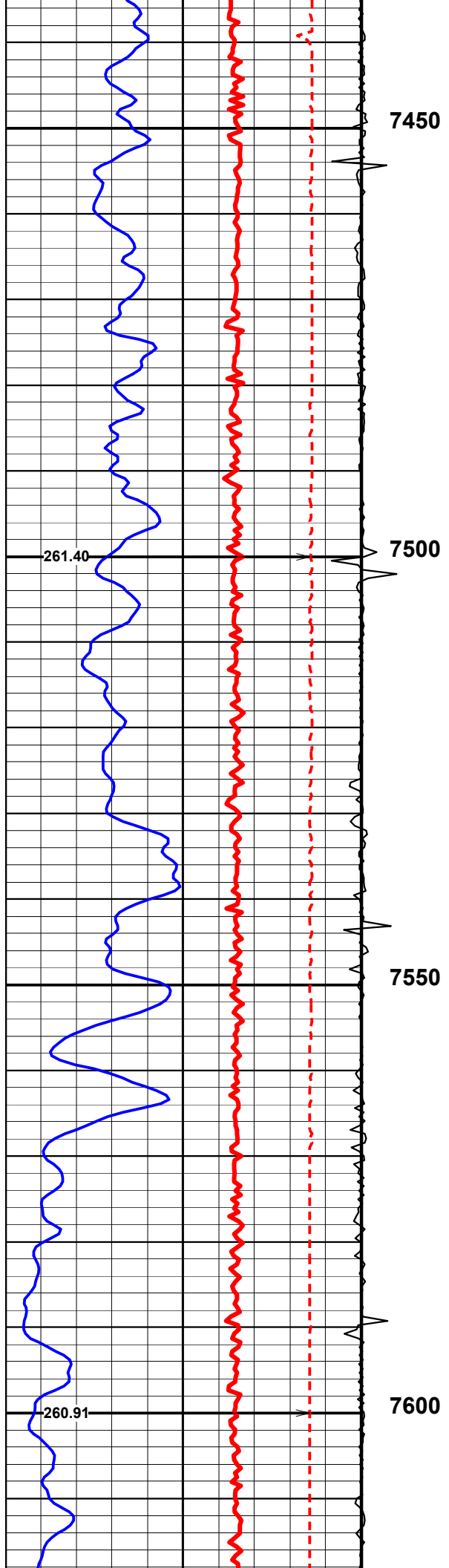


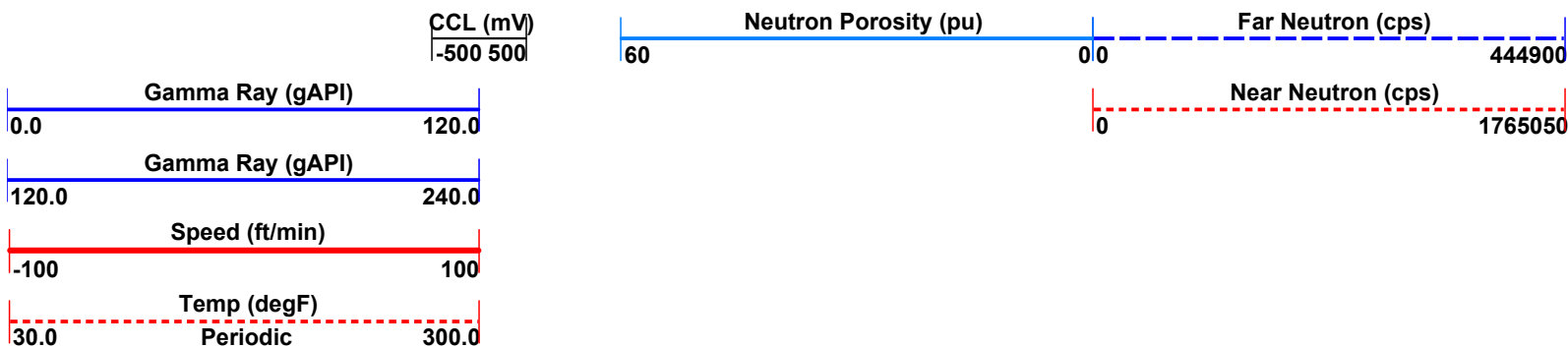
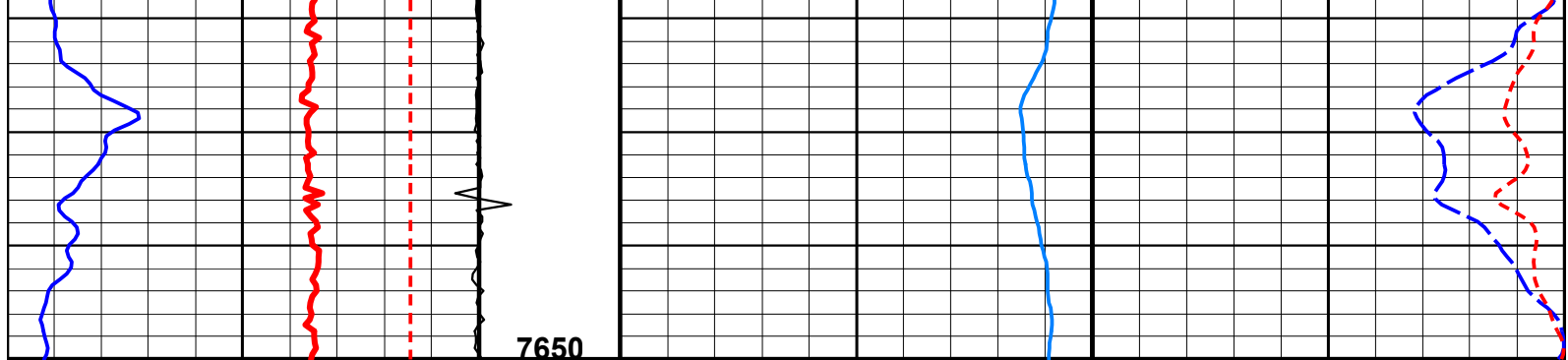








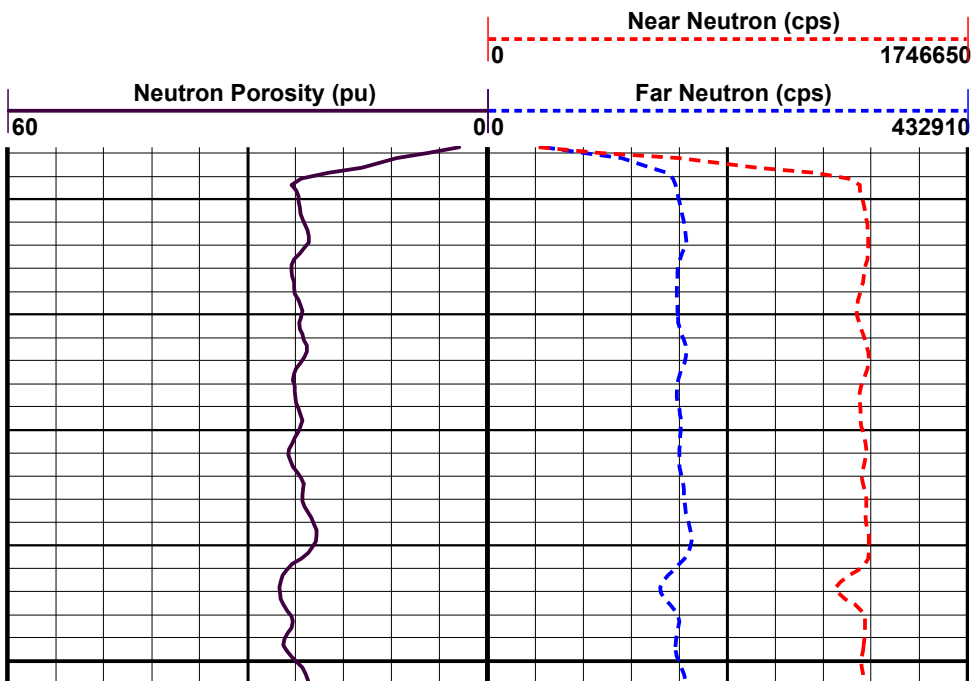
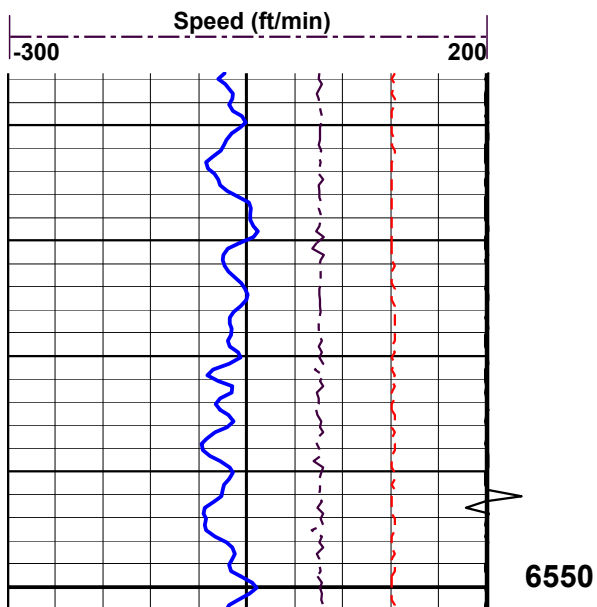
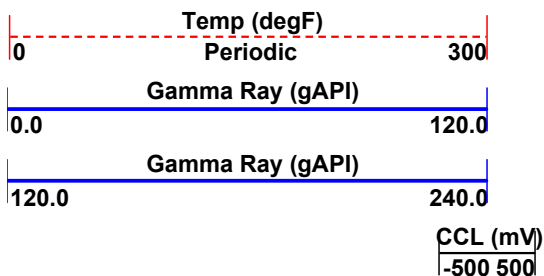


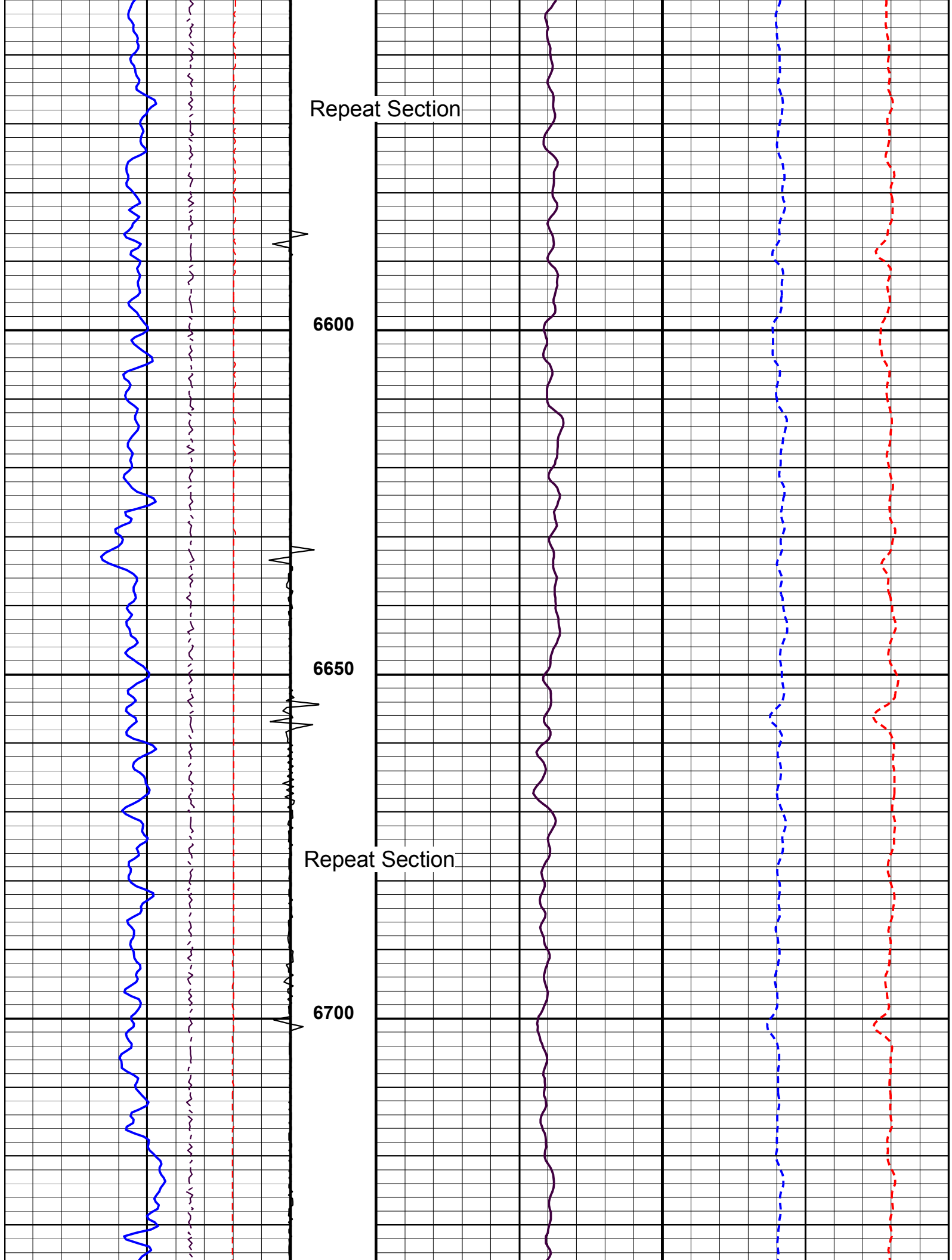


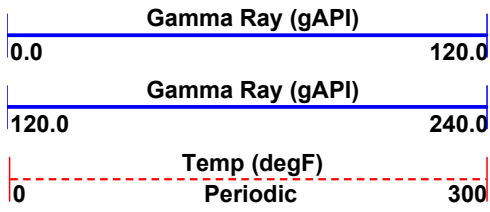
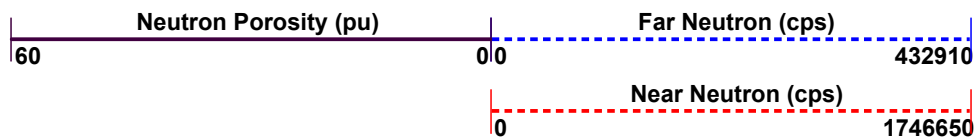
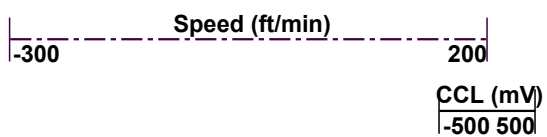
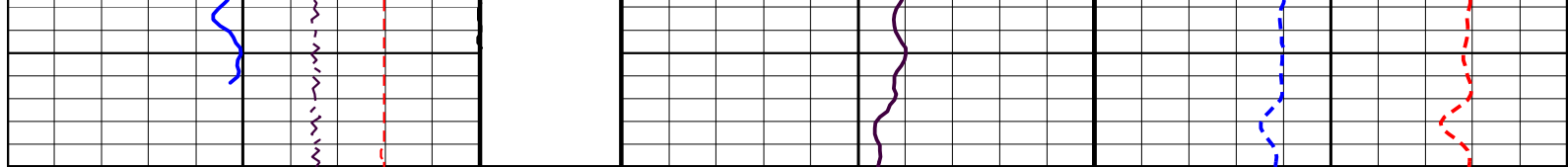
Repeat Pass
Logged with 0 PSI surfaced induced pressure

Company :
Well : Cook 1C-16HZ
Scale : 1 : 200
Depth in : ft
Software : WinAPIPlot Ver. 5, 92, 12, 0

Date : 03.08.2016
Time : 10:07:03
Remarks :
File Name : Repeat with pdn





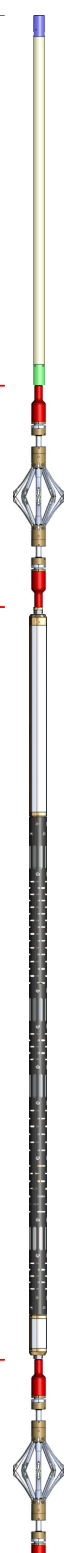


Telemetry
Identifier :0929A
Asset Number :047
Length :4.810 ft
Diameter :1.7 inch
Weight :17.6 lbs
Measure Point :0.741 ft : Gamma
Measure Point :3.976 ft : CCL

Inline Centralizer
Identifier :0595t
Length :2.887 ft
Diameter :2.7 inch
Weight :11.0 lbs

RSBT
Identifier :1333A
Asset Number :010
Length :9.783 ft
Diameter :2.7 inch
Weight :149.9 lbs
Measure Point :2.730 ft : CBL
Measure Point :4.229 ft : Far
Measure Point :5.230 ft : Near
Measure Point :5.728 ft : Radial

Inline Centralizer
Identifier :0595b
Length :2.887 ft
Diameter :2.7 inch
Weight :11.0 lbs



CCL 42.56 ft
CCL 41.73 ft
Gamma 38.49 ft
Radial 30.81 ft
Near 30.31 ft
Far 29.31 ft
CBL 27.81 ft

Knuckle Joint

Identifier :0814
Length :2.854 ft
Diameter :1.7 inch
Weight :16.5 lbs

PDN

Identifier :1471A
Asset Number :029
Length :19.337 ft
Diameter :1.7 inch
Weight :85.8 lbs
Measure Point :7.575 ft : ShortSpace
Measure Point :8.051 ft : LongSpace

LongSpace 8.05 ft
ShortSpace 7.58 ft

0.00 ft

Total Length : 42.56 ft
Total Weight : 291.89 lbs
Max Diameter : 2.7 inch

File : C:\...\UserData\Job Files\COOK 1C-16HZ\ASF_0929A_047.cvf

Tool name : **Telemetry** Asset : **047** Series : **0929A** Source ID :

Gamma

Gamma Calibration

Time

Setup

Description

Setup Version 00000

| Block | Raw Value | User Value | Device | Device SN | Mult. |
|------------|-----------|------------|--------|-----------|-------|
| Background | 0 | | | | |
| Jig ON | 1 | | | | |
| Gamma | 1 | 0.9 gAPI | | | 0.9 |

Tool name : **Telemetry** Asset : **047** Series : **0929A** Source ID :

Acc

Two Point Calibration

Time

Setup

Description

Setup Version 00000

| Curve Name | pt | Raw Value | User Value | Device | Mult. | Add. |
|------------|----|-----------|------------|--------|----------|--------|
| Accel | 1 | 0 | 0 g | | 0.991621 | -0.000 |
| Accel | 2 | 1.00845 | 1 g | | | |

File : C:\...\UserData\Job Files\COOK 1C-16HZ\ASF_1333A_010.cvf

Tool name : **RSBT** Asset : **010** Series : **1333A** Source ID :

GoodAmpPercentF

Array Calibration

Time

Setup

Description

Setup Version 00000

| No | Value | No | Value | No | Value | No | Value | No | Value | No | Value |
|-----|-------|----|-------|----|-------|----|-------|----|-------|----|-------|
| 01: | 10 | | | | | | | | | | |

Tool name : **RSBT** Asset : **010** Series : **1333A** Source ID :

GoodAmpPercentN

Array Calibration

Time

Setup

Description

Setup Version 00000

| No | Value | No | Value | No | Value | No | Value | No | Value | No | Value |
|-----|-------|----|-------|----|-------|----|-------|----|-------|----|-------|
| 01: | 10 | | | | | | | | | | |

Tool name : **RSBT** Asset : **010** Series : **1333A** Source ID :

GoodAmpPercentS

Array Calibration

Time
Setup
Description
Setup Version 00000

No Value No Value No Value No Value No Value No Value
01:

Tool name : **RSBT** Asset : **010** Series : **1333A** Source ID :

Amplitudes

RSBT Amplitude Calibration

Time
Setup
Description
Setup Version 00000

Device Description

Casing ID
Fluid Velocity
Amplitude

Instrument Readings

| | Near | Far | | | | | | |
|-------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| CBL Amplitudes | <input type="text" value="6490.870"/> | <input type="text" value="7339.970"/> | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Radial Amplitudes | <input type="text" value="5565.980"/> | <input type="text" value="5479.440"/> | <input type="text" value="5792.180"/> | <input type="text" value="6143.380"/> | <input type="text" value="6237.380"/> | <input type="text" value="5866.010"/> | <input type="text" value="5760.950"/> | <input type="text" value="5637.710"/> |

File : C:\...\UserData\Job Files\COOK 1C-16HZ\ASF_1471A_029.cvf

Tool name : **PDN** Asset : **029** Series : **1471A** Source ID :

Ratio

Compensated Neutron Calibration

Time
Setup
Description
Setup Version 00000

| Curve Name | pt | Raw Value | User Value | Device | Mult. |
|------------|--------------------------------|------------------------------------|---|----------------------|---------------------------------------|
| Ratio | <input type="text" value="1"/> | <input type="text" value="5.271"/> | <input type="text" value="5.271 none"/> | <input type="text"/> | <input type="text" value="1.000000"/> |



API #: 05-123-42240
COMPANY: Kerr McGee Oil & Gas Onshore LP.
WELL: Cook 1C-16HZ
FIELD: Wattenberg
COUNTY: Weld

DATE : 08-03-2016

STATE: Colorado

**Pulsed Decay Neutron
Gamma Ray
Casing Collar Log**