



PIONEER
Pioneer Energy Services

**DUAL IND / DUAL COMP
POROSITY LOG**

Company **EXTRACTION OIL & GAS, INC.**
Well **LAUNER #2C**
Field **WATTENBERG**
County **WELD**
State **COLORADO**

Company **EXTRACTION OIL & GAS, INC.**
Well **LAUNER #2C**
Field **WATTENBERG**
County **WELD** State **COLORADO**

Location: API #: 05-123-45170-00
884' FSL & 285' FEL
SEC 26 TWP 7N RGE 67W
Permanent Datum **GROUND LEVEL** Elevation **4931'**
Log Measured From **KELLY BUSHING**
Drilling Measured From **KELLY BUSHING**
Other Services **NONE**
Elevation **4956'**
D.F. **N/A**
G.L. **4831'**

Date	12/19/2017
Run Number	ONE
Depth Driller	N/A
Depth Logger	7232'
Bottom Logged Interval	7231'
Top Log Interval	1550'
Casing Driller	9.625" @ 1572'
Casing Logger	1590'
Bit Size	8.50"
Type Fluid in Hole	OIL BASED MUD
Salinity, ppm CL	N/A
Density / Viscosity	9.4 38
pH / Fluid Loss	N/A N/A
Source of Sample	FLOWLINE
Rm @ Meas. Temp	N/A @ N/A
Rmf @ Meas. Temp	N/A @ N/A
Rmc @ Meas. Temp	N/A @ N/A
Source of Rmf / Rmc	CHARTS
Rm @ BHT	N/A @ N/A
Operating Rig Time	3 HOURS
Max Rec. Temp. F	N/A
Equipment Number	91
Location	COLBY
Recorded By	D. SCHMIDT
Witnessed By	TODD STEPHENS

<<< 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.

SO# 1-31A0

NO REPEAT DUE TO HOLE CONDITIONS

Log Measured From: KELLY BUSHING

25 Ft. Above Permanent Datum

THANK YOU FOR USING PIONEER ENERGY SERVICES

www.pioneerenergy.com

785-625-3858

Your Pioneer Energy Services Crew

Engineer: D. SCHMIDT

Operator:

Operator:

Operator:

This Log Record Was Witnessed By

Primary Witness: TODD STEPHENS


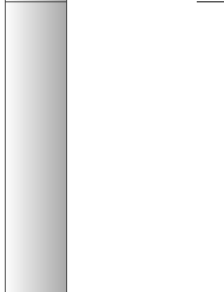
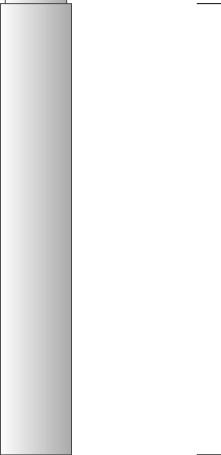

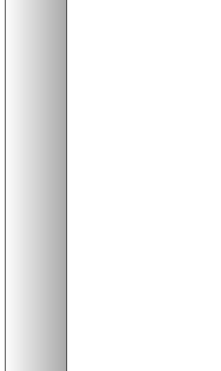
Secondary Witness:

Secondary Witness:


Secondary Witness:

Top - Bottom

M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	0	0
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	30	0	5.5	0	0	255	8.5

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	33.00		GR-M&W (89)	3.00	3.50	50.00
CNLSC CNSSC	29.90 29.15		CNT-M&W (207-MW)	5.50	3.50	100.00
LSD DCAL SSD	20.85 20.83 20.35		CDL-M&W (90-1031)	8.50	4.00	250.00
RLL3F RLL3	15.80 15.80					
CILD	8.00		DIL-M&W (PSI 91)	18.50	3.50	220.00

CILM	4.70								
SP	0.20								
Dataset: extraction_launer 2c.db: field/well/STACK/pass2.2 Total length: 35.50 ft Total weight: 620.00 lb O.D.: 4.00 in									



PIONEER

Pioneer Energy Services

MAIN PASS

Database File

extraction_launer 2c.db

Dataset Pathname

STACK/pass2.1

Presentation Format

split

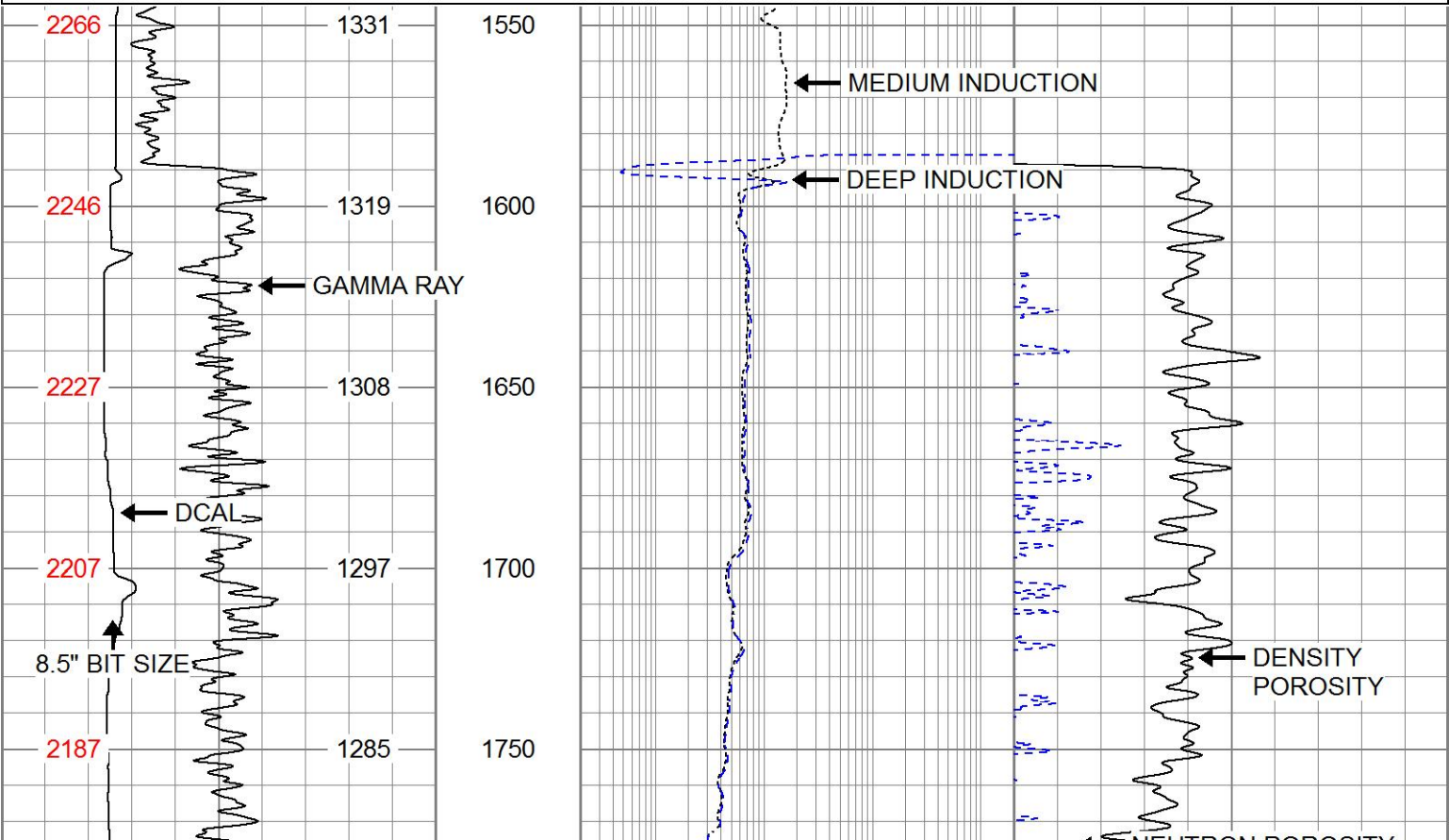
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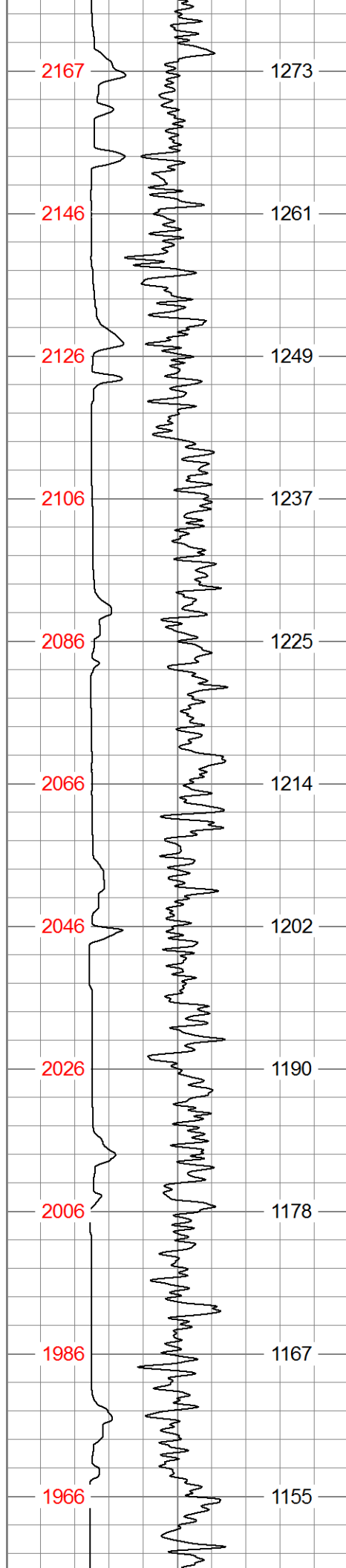
Tue Dec 19 08:20:26 2017

Charted by

Depth in Feet scaled 1:600

0	GAMMA RAY (GAPI)	200	MEDIUM INDUCTION			30	DENSITY POROSITY (pu)	0
6	CALIPER (in)	16	0.2	(Ohm-m)	2000	30	NEUTRON POROSITY (pu)	0
6	DCAL (in)	16	DEEP INDUCTION					
			0.2	(Ohm-m)	2000			





1800

1850

1900

1950

2000

2050

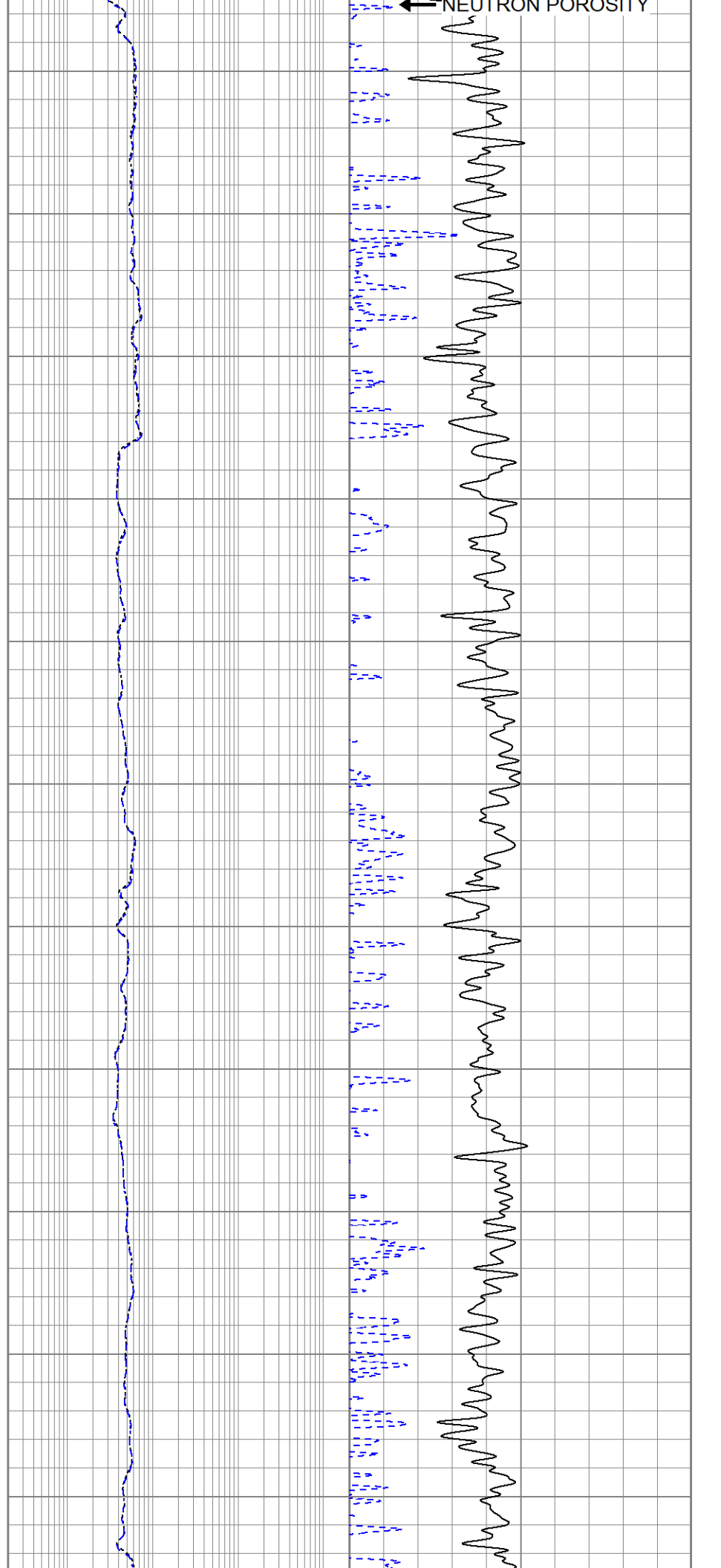
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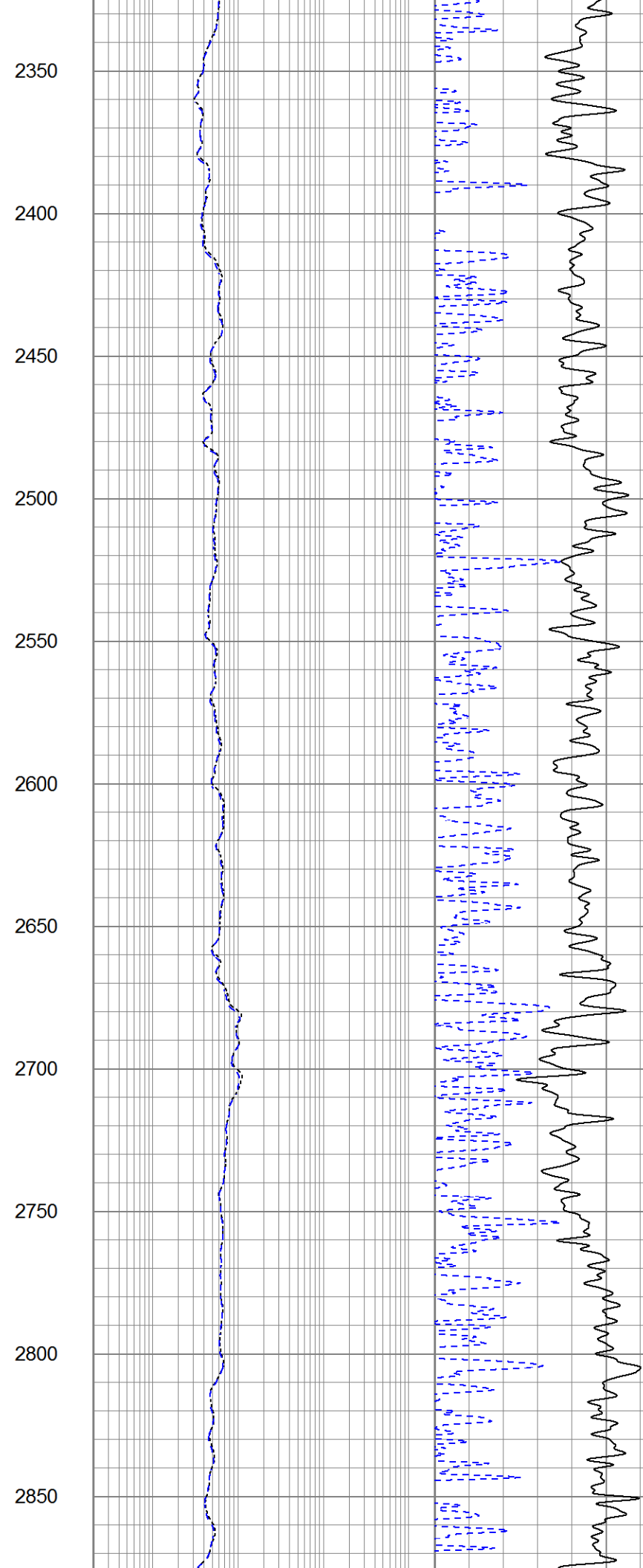
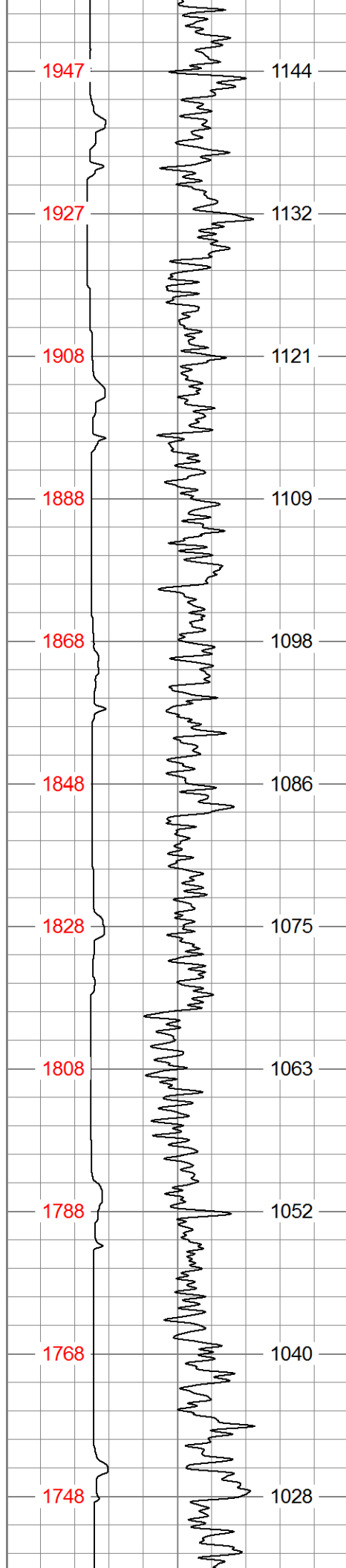
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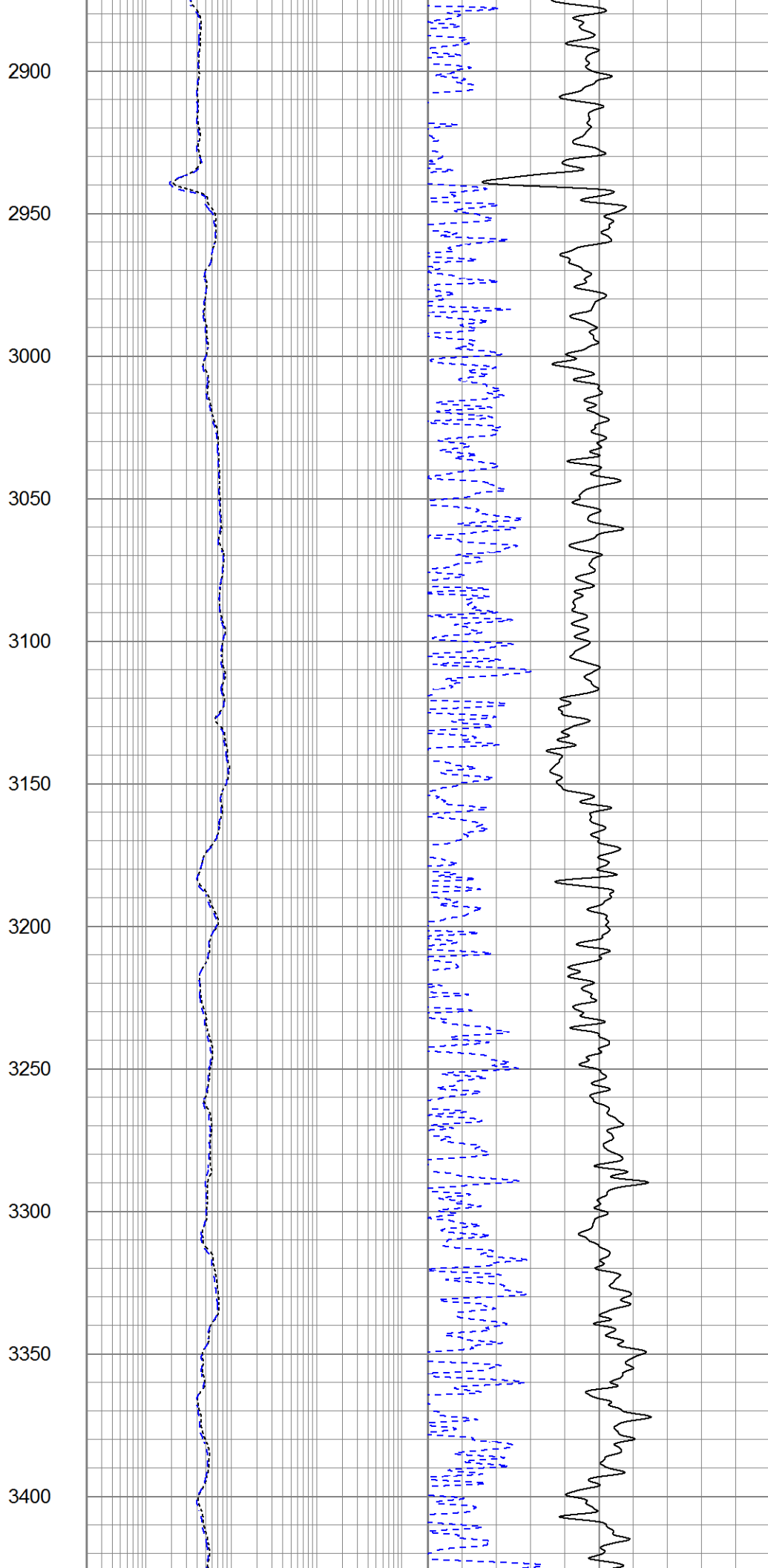
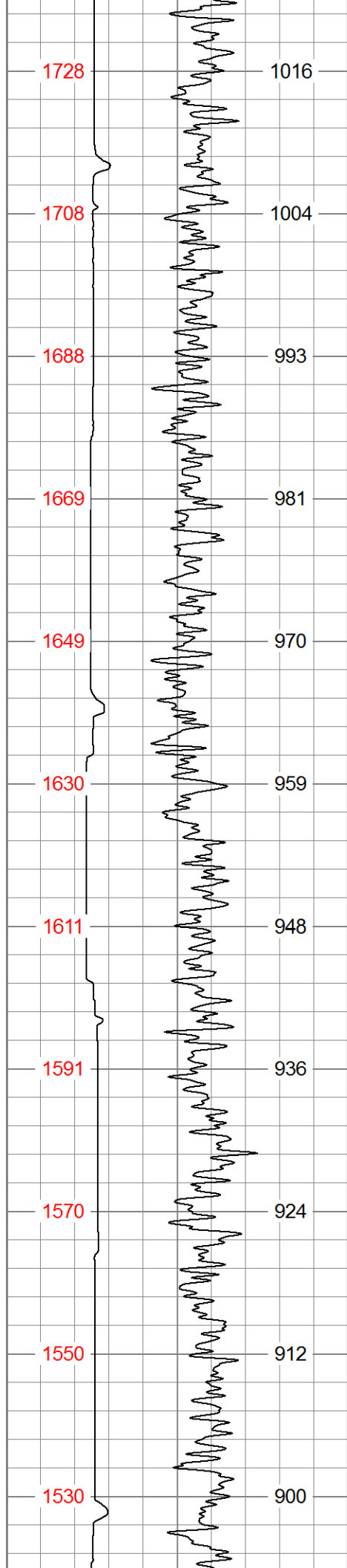
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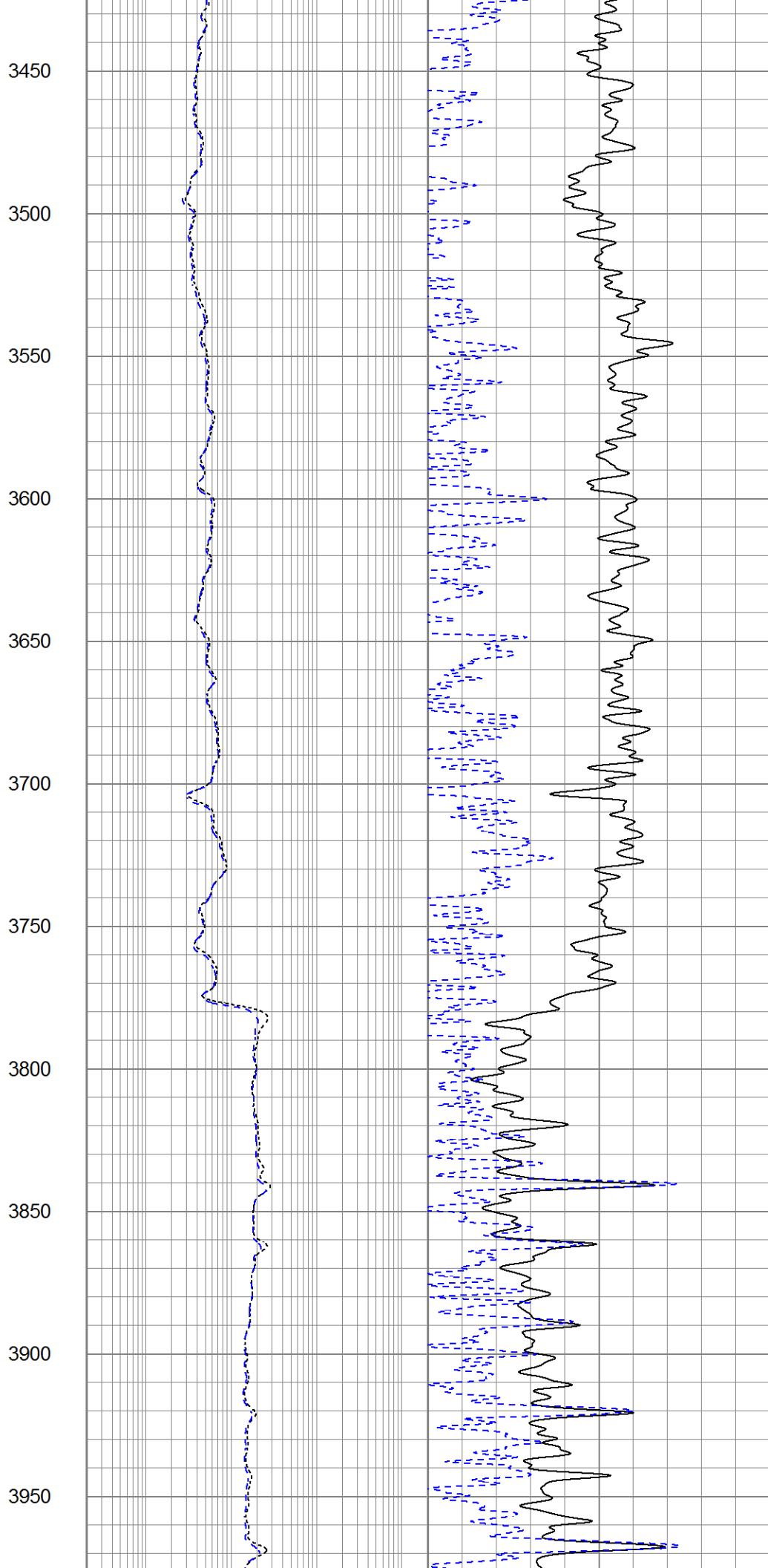
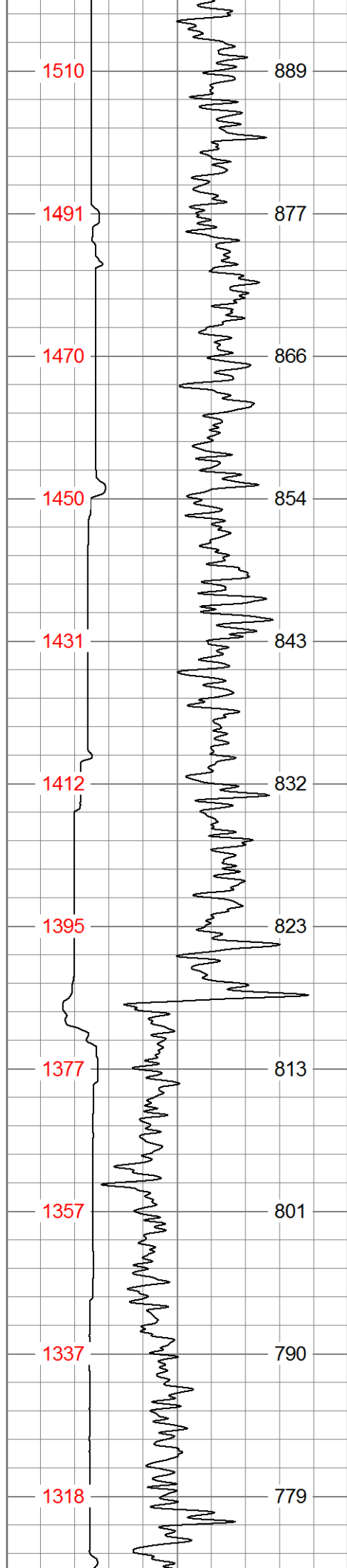
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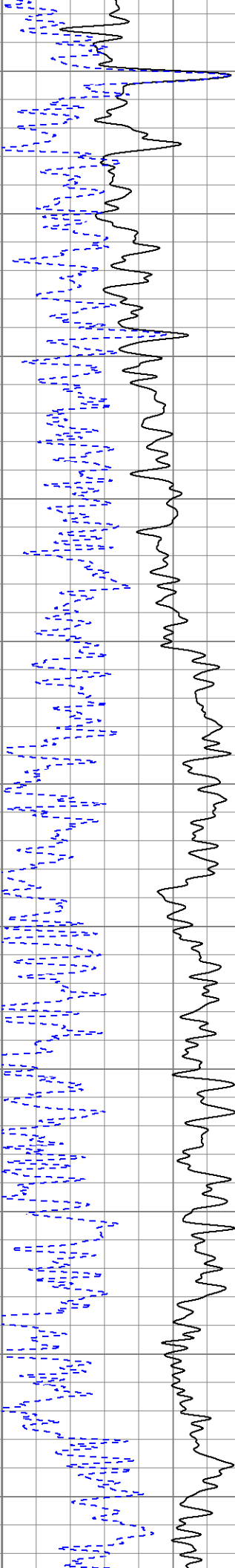
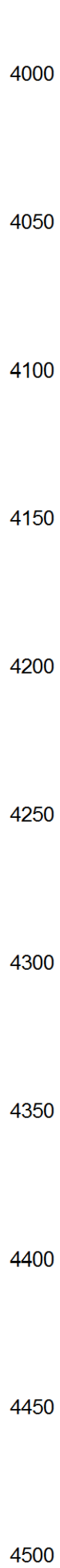
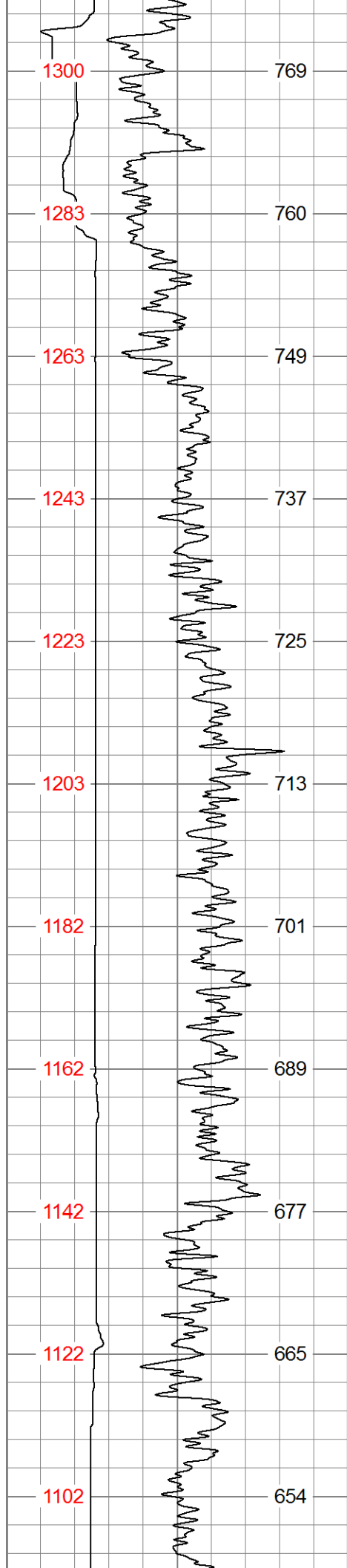
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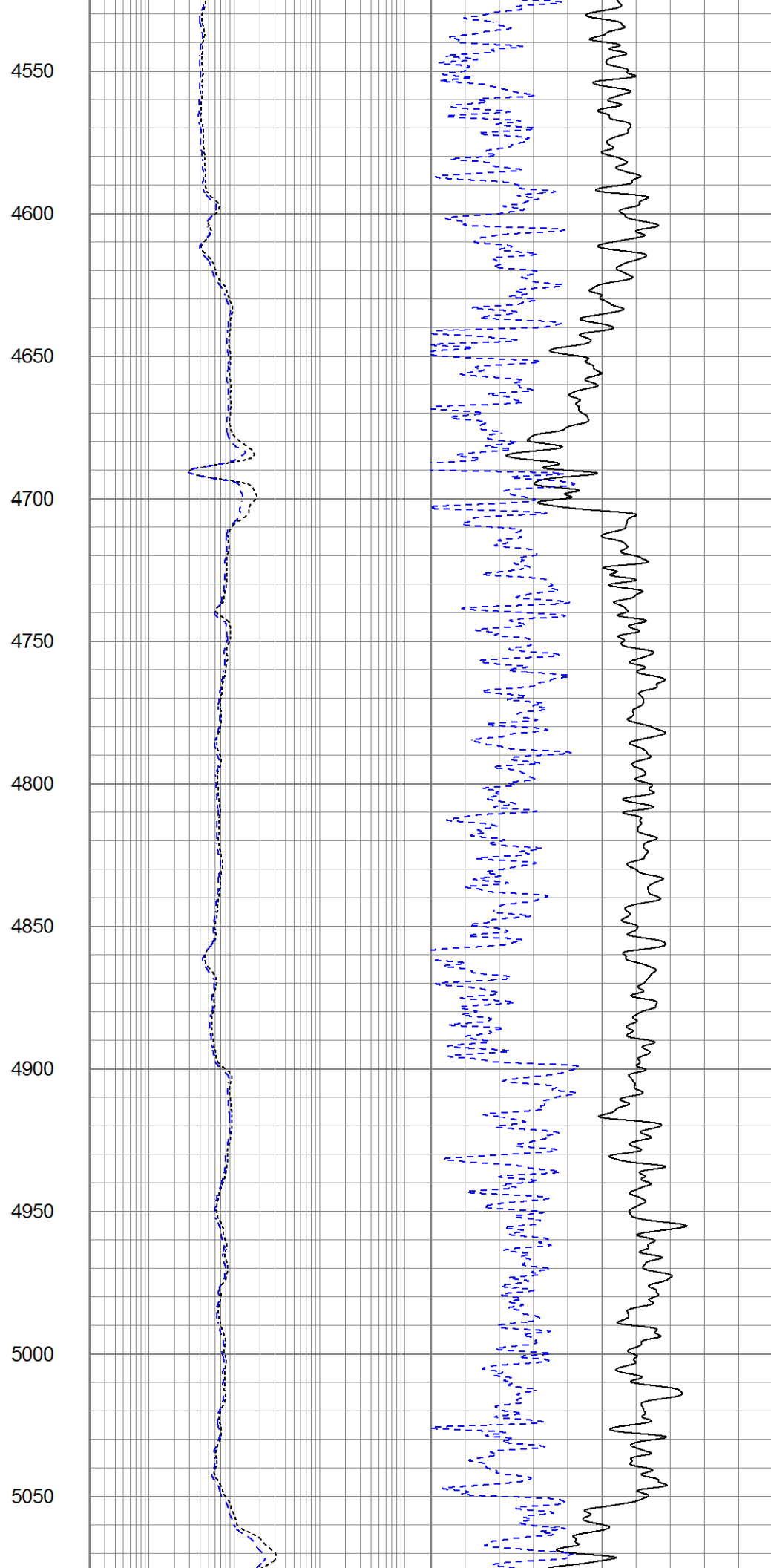
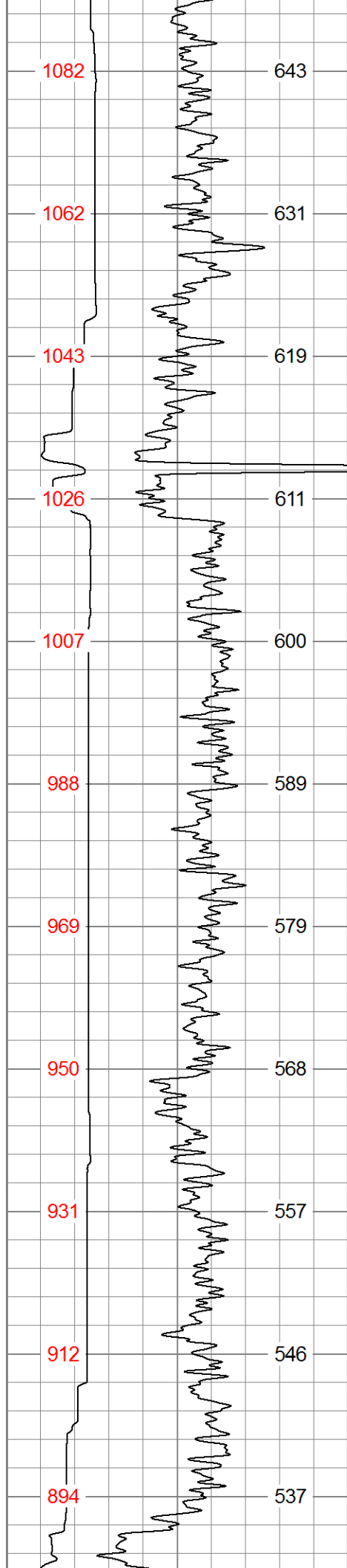


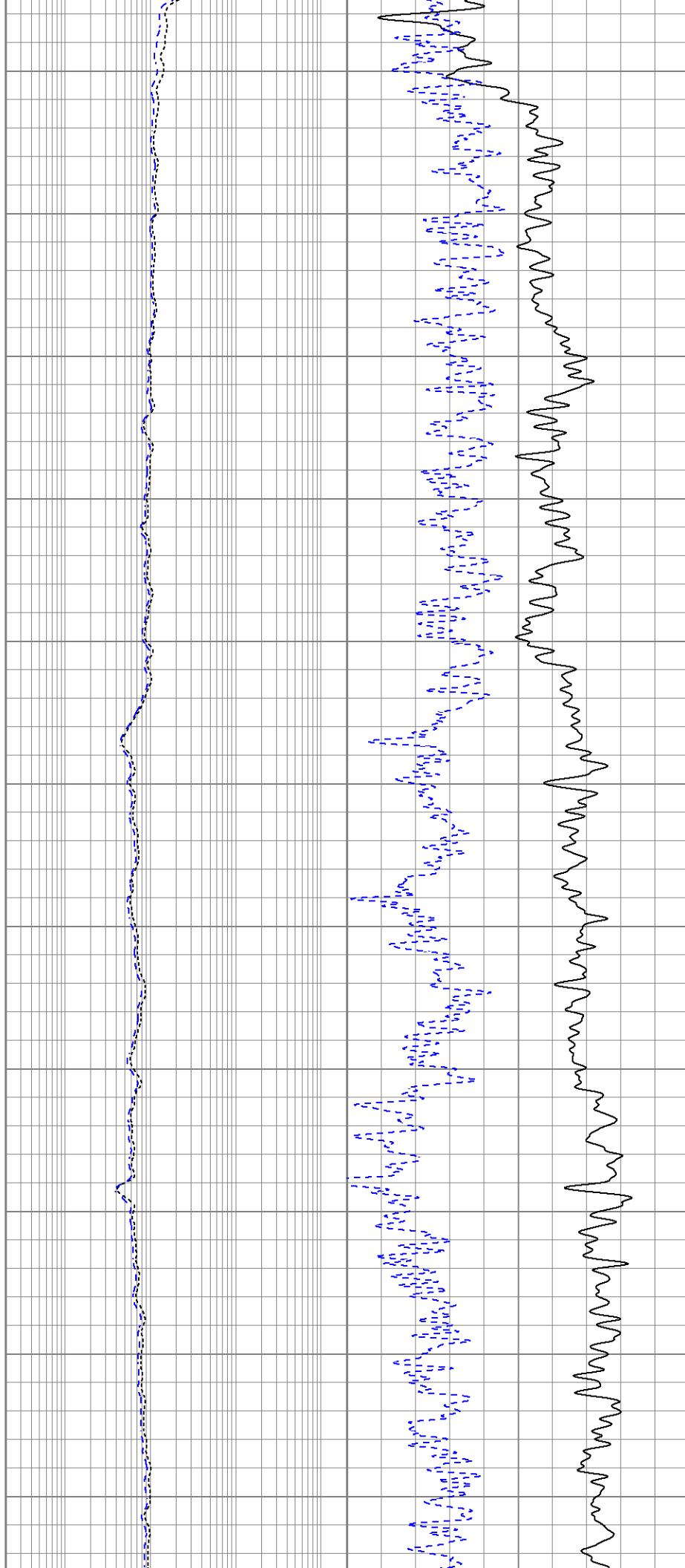
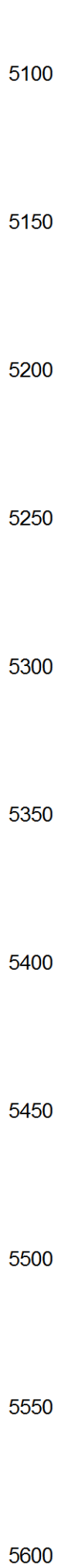
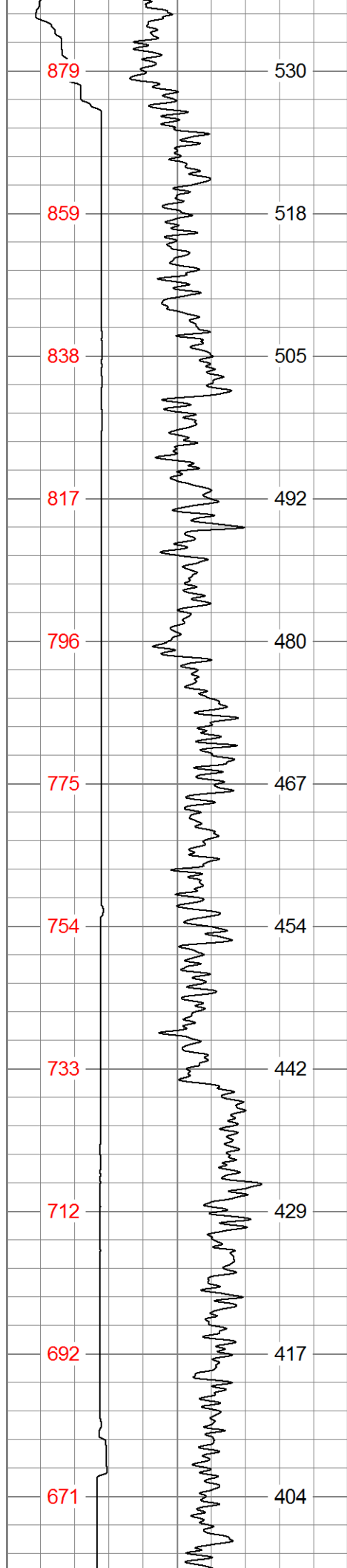


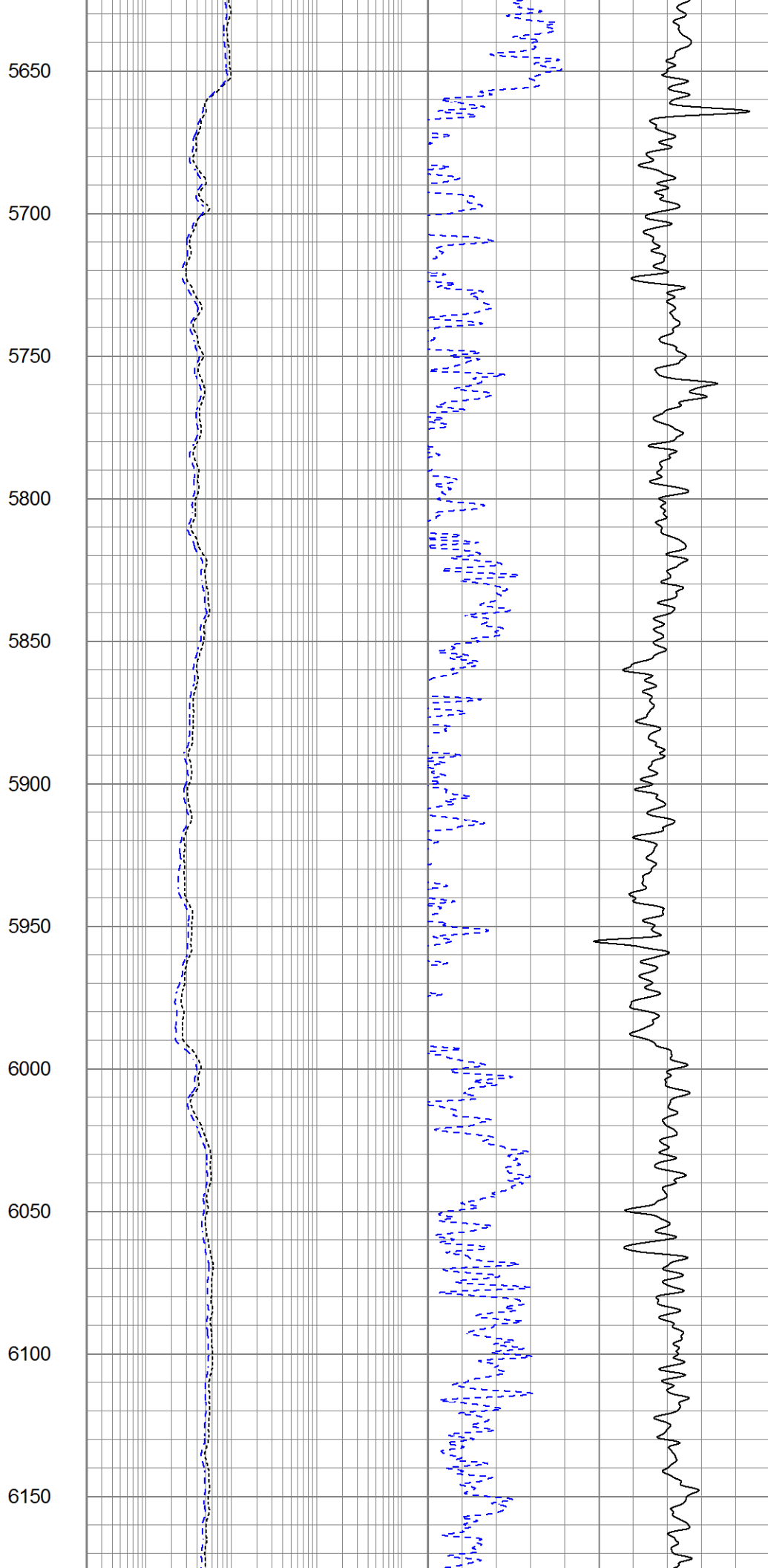
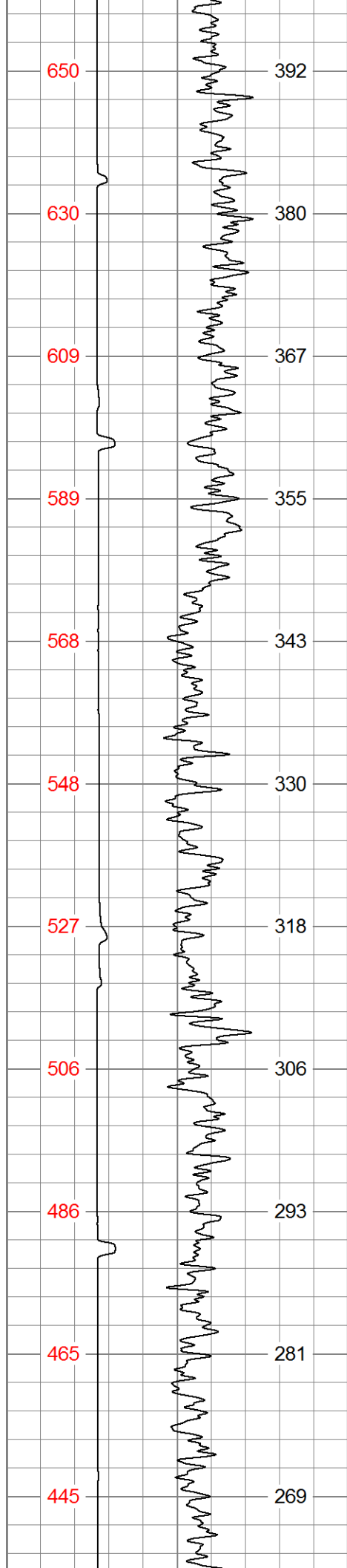


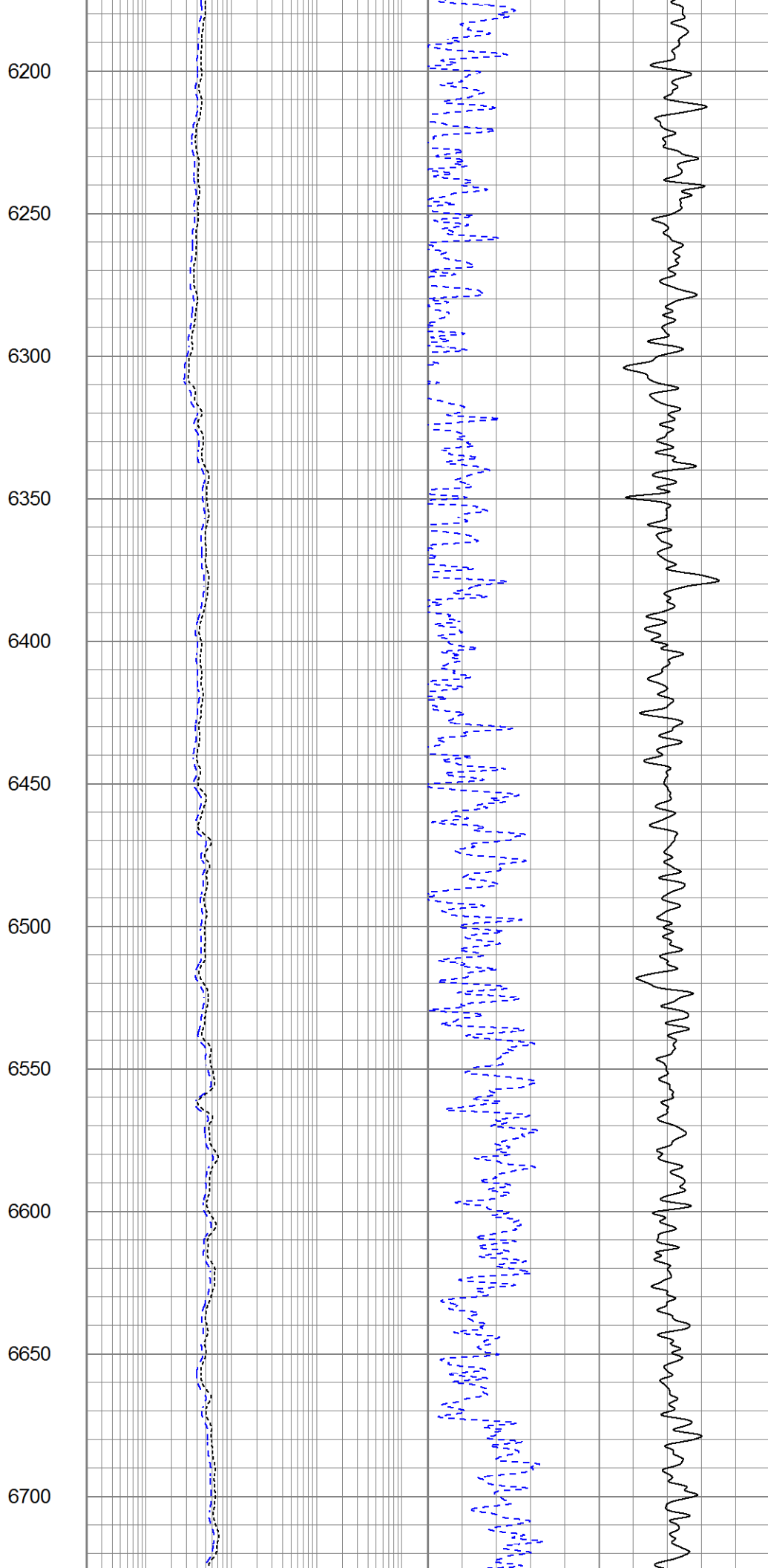
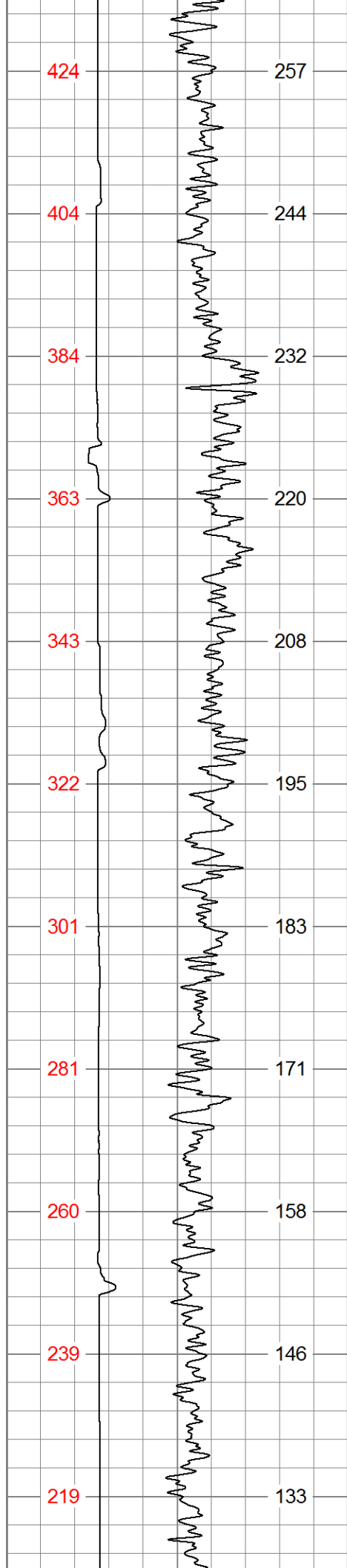


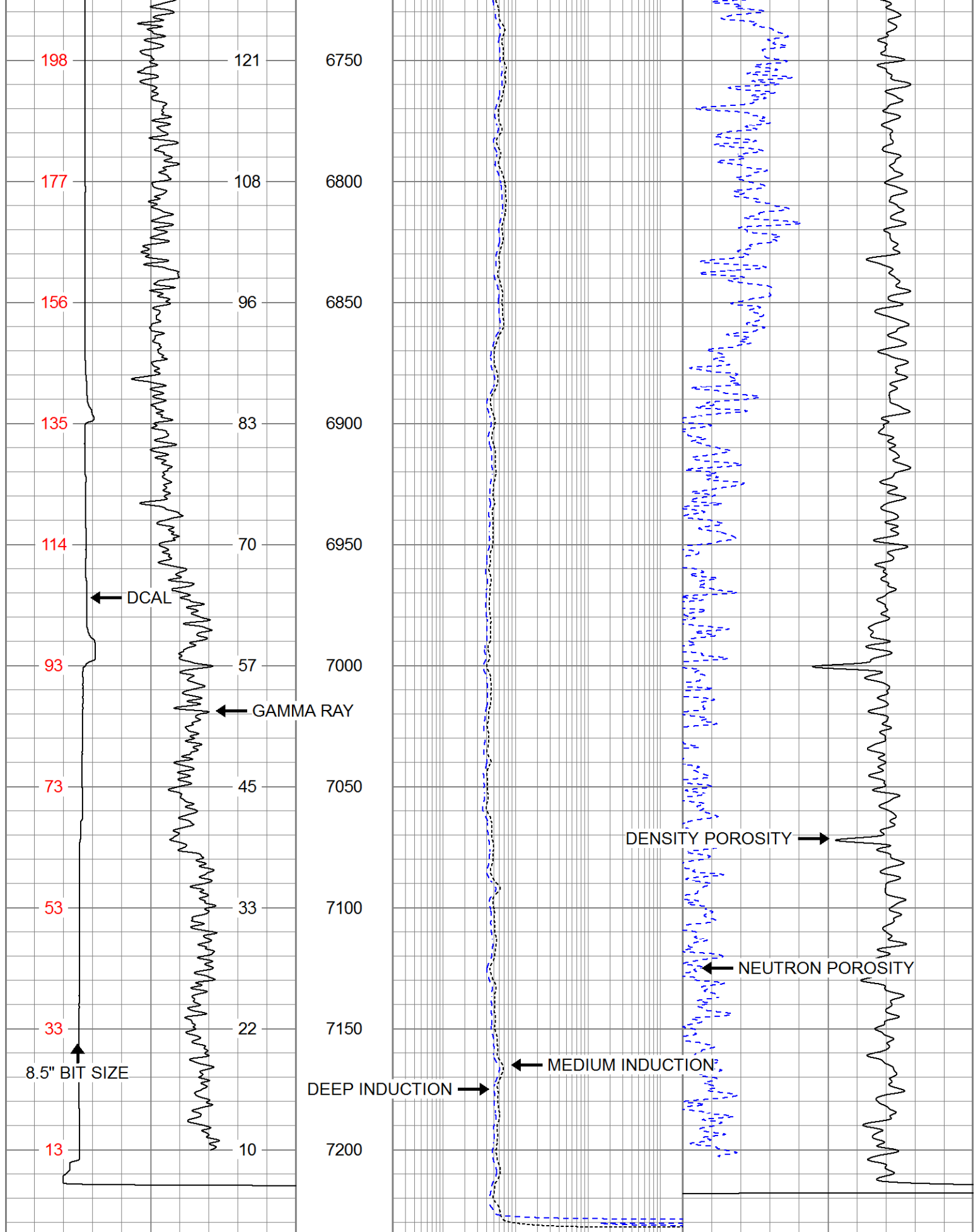












0	GAMMA RAY (GAPI)	200
6	CALIPER (in)	16
6	DCAL (in)	16

	MEDIUM INDUCTION	
0.2	(Ohm-m)	2000
	DEEP INDUCTION	

30	DENSITY POROSITY (pu)	0
30	NEUTRON POROSITY (pu)	0



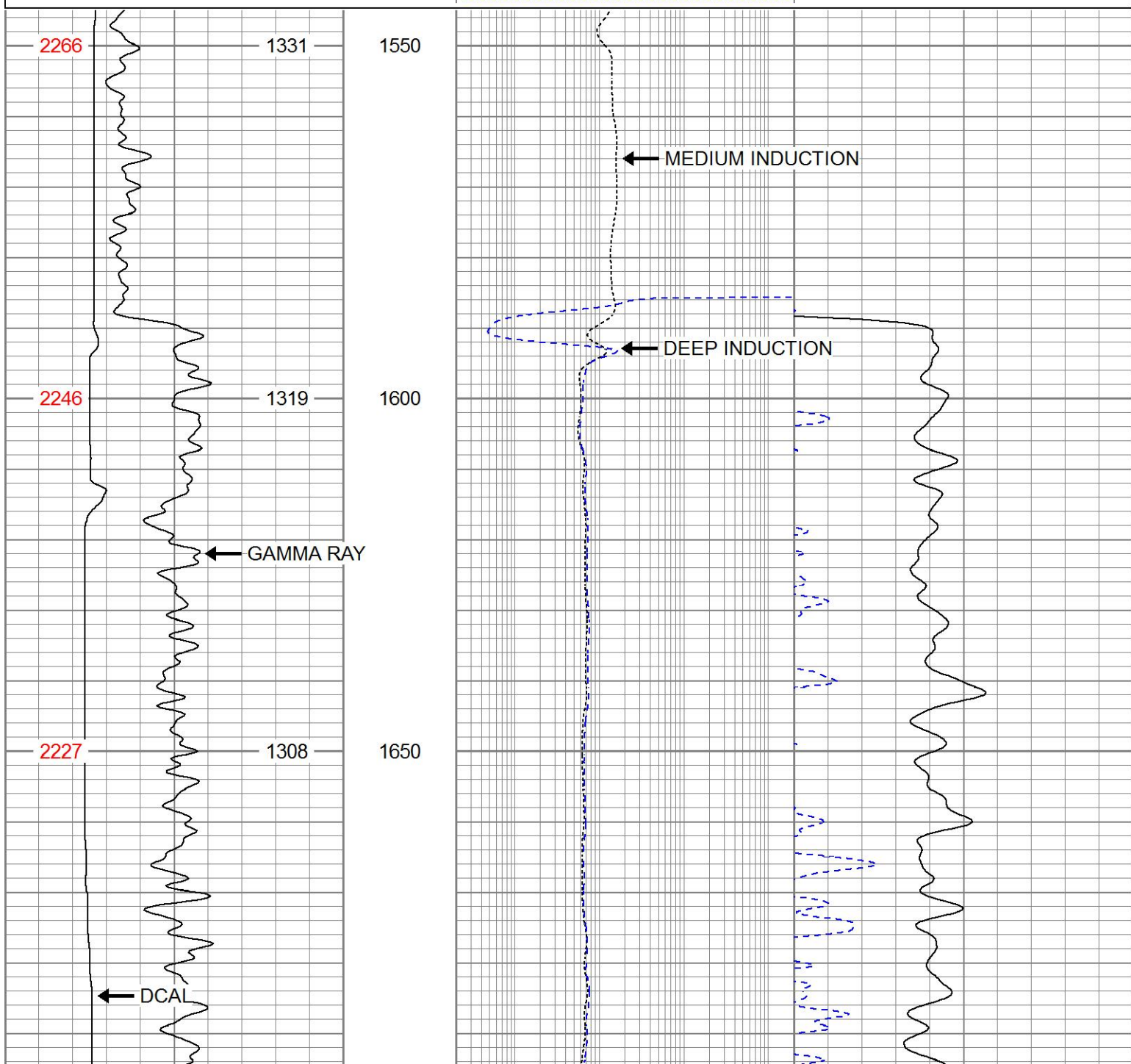
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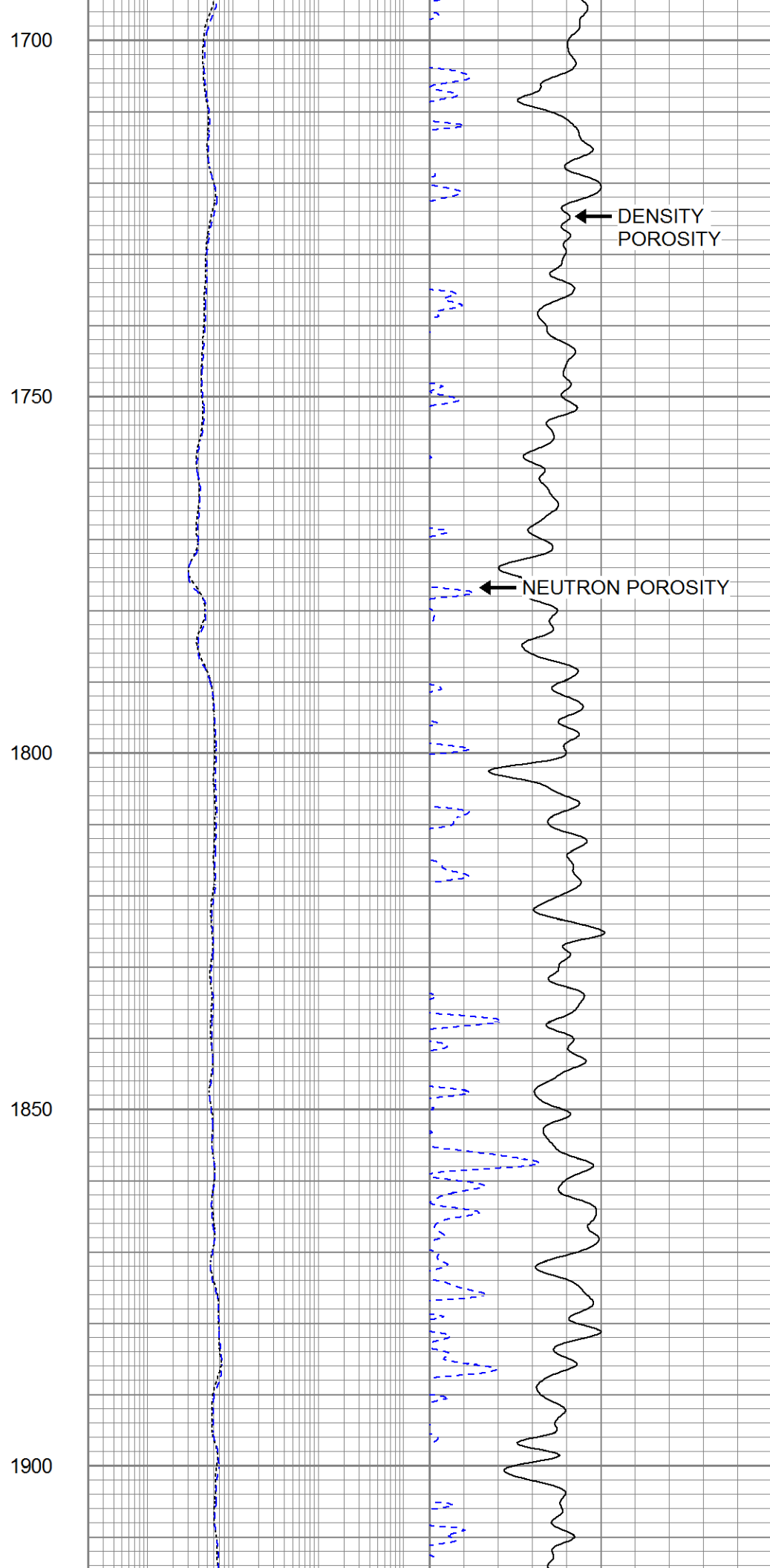
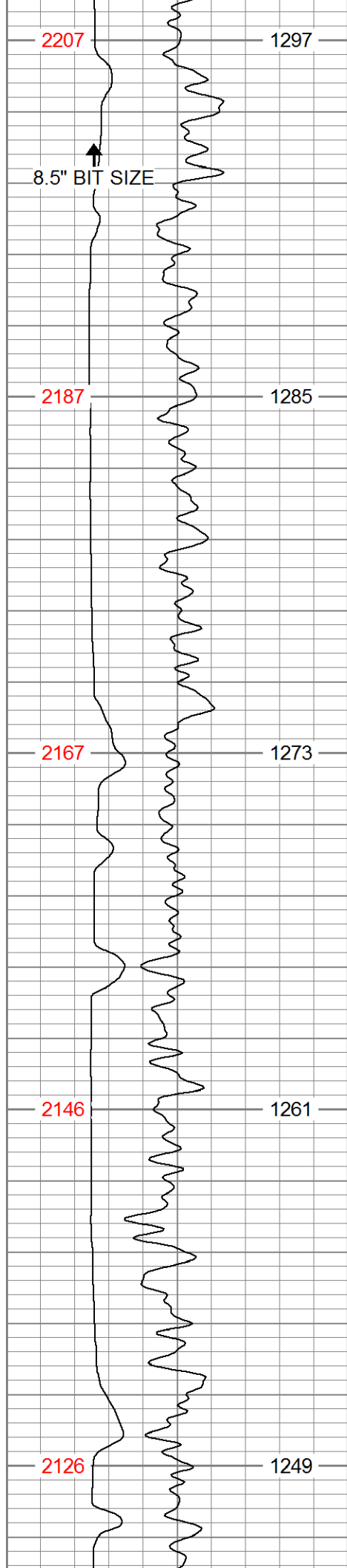
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Dataset Pathname STACK/pass2.1
Presentation Format split
Dataset Creation Tue Dec 19 08:20:26 2017
Charted by Depth in Feet scaled 1:240

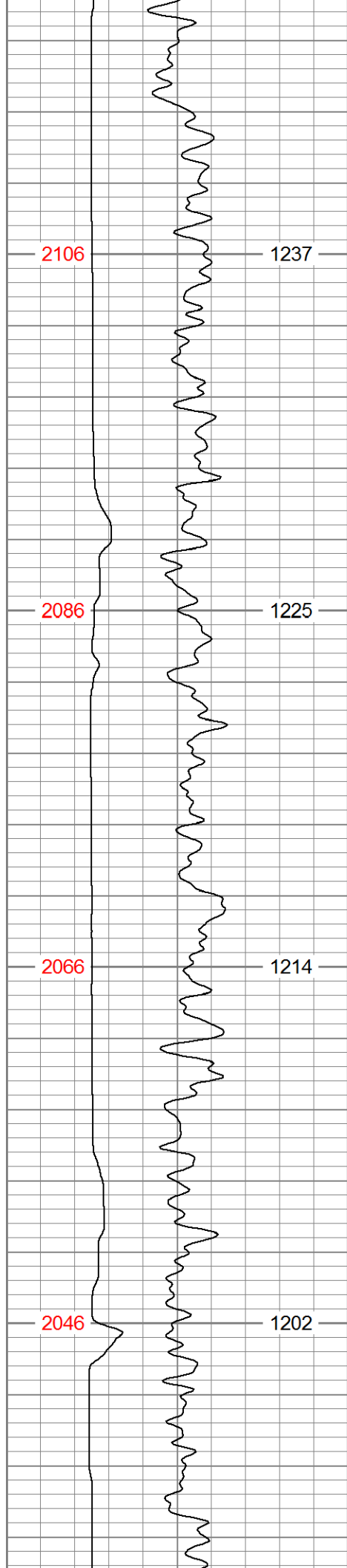
0	GAMMA RAY (GAPI)	200
6	CALIPER (in)	16
6	DCAL (in)	16

MEDIUM INDUCTION		
0.2	(Ohm-m)	2000
DEEP INDUCTION		
0.2	(Ohm-m)	2000

30	DENSITY POROSITY (pu)	0
30	NEUTRON POROSITY (pu)	0





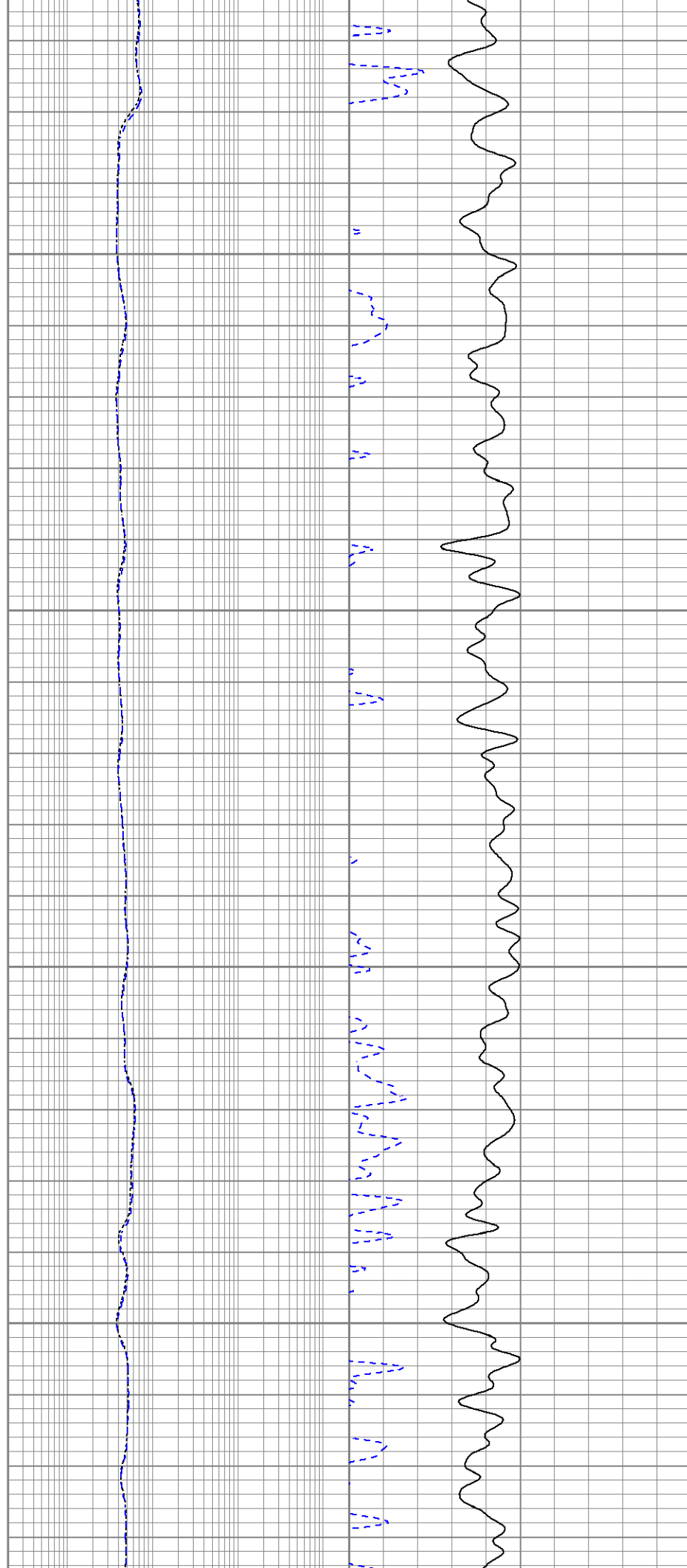


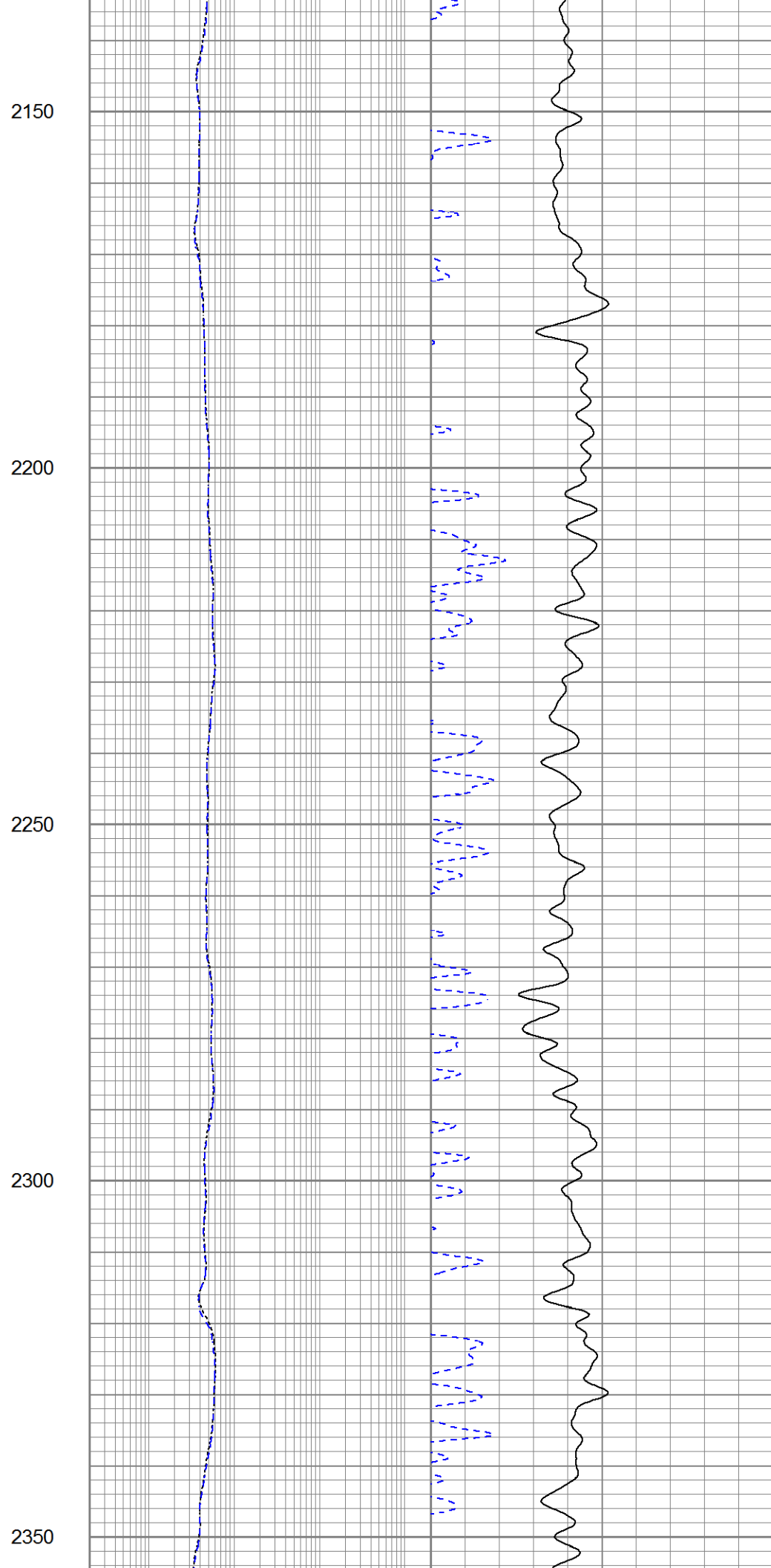
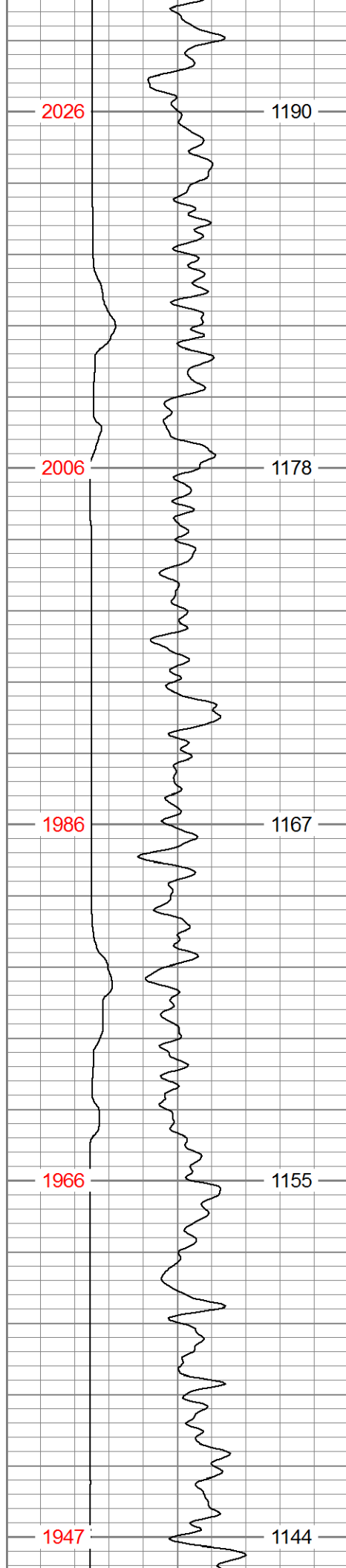
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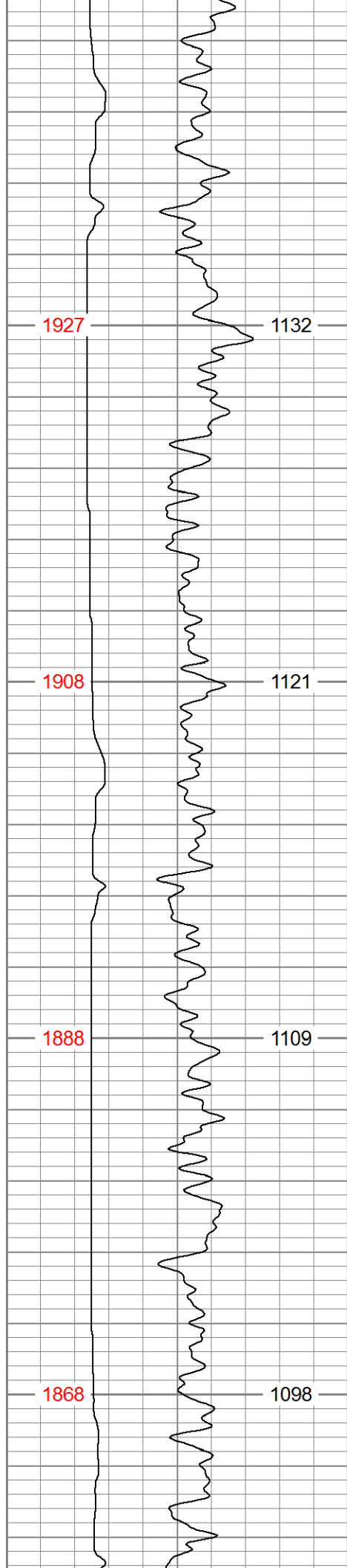
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2050

2100





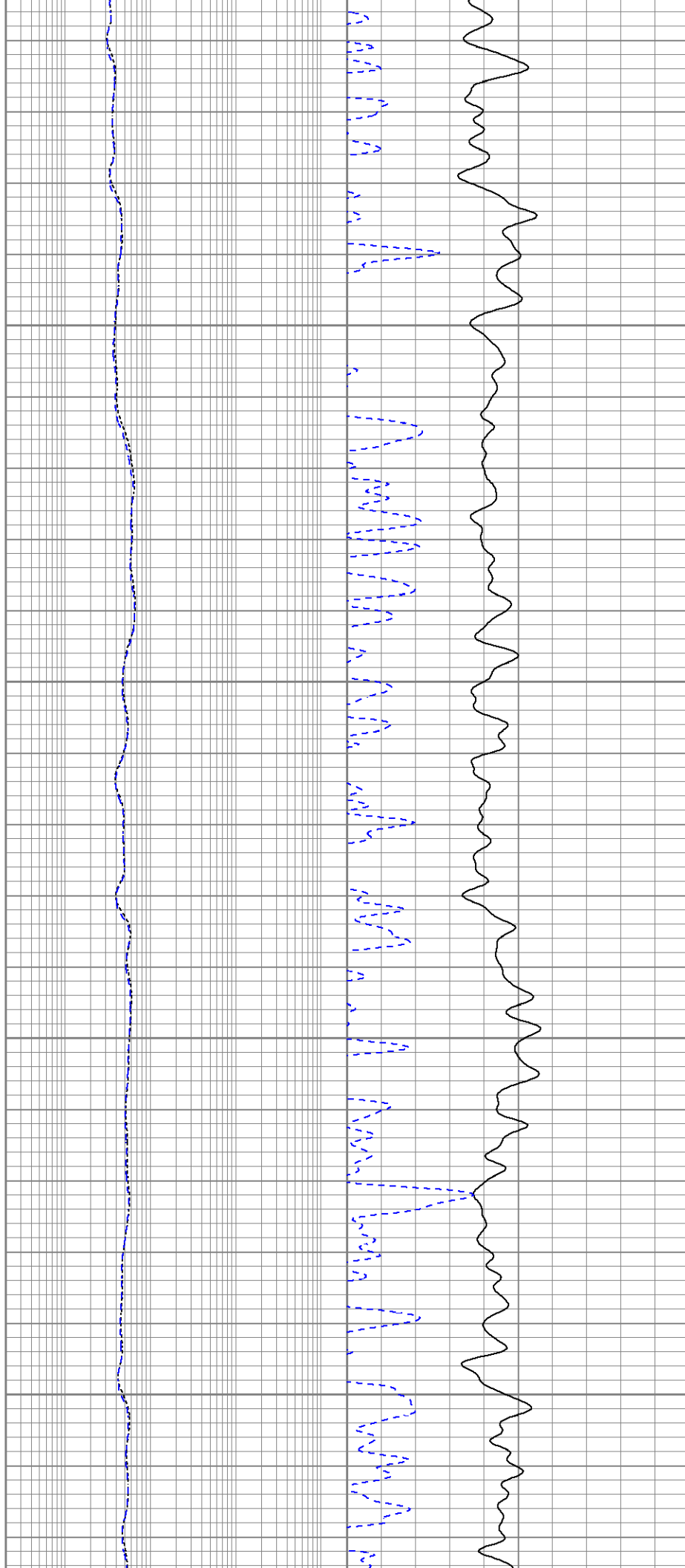


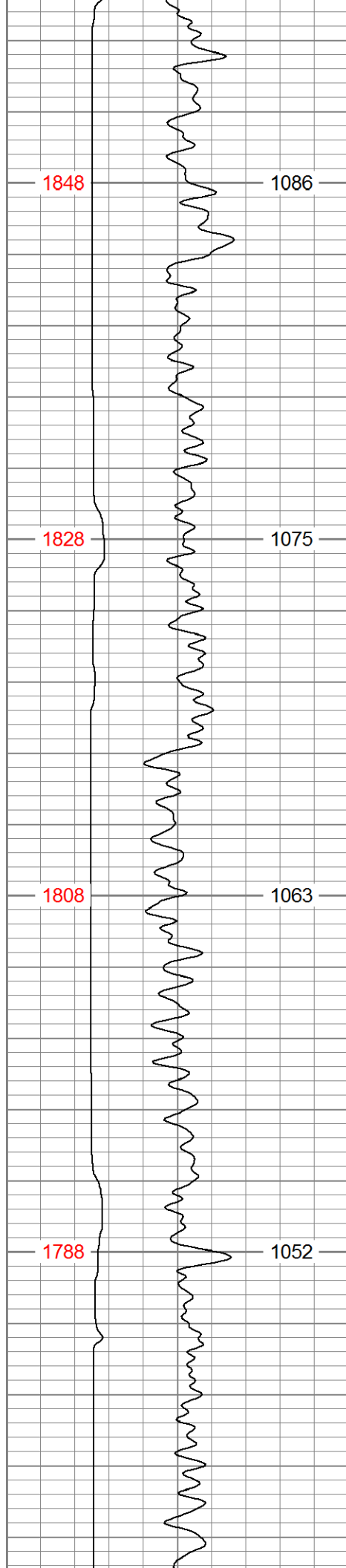
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2450

2500

2550



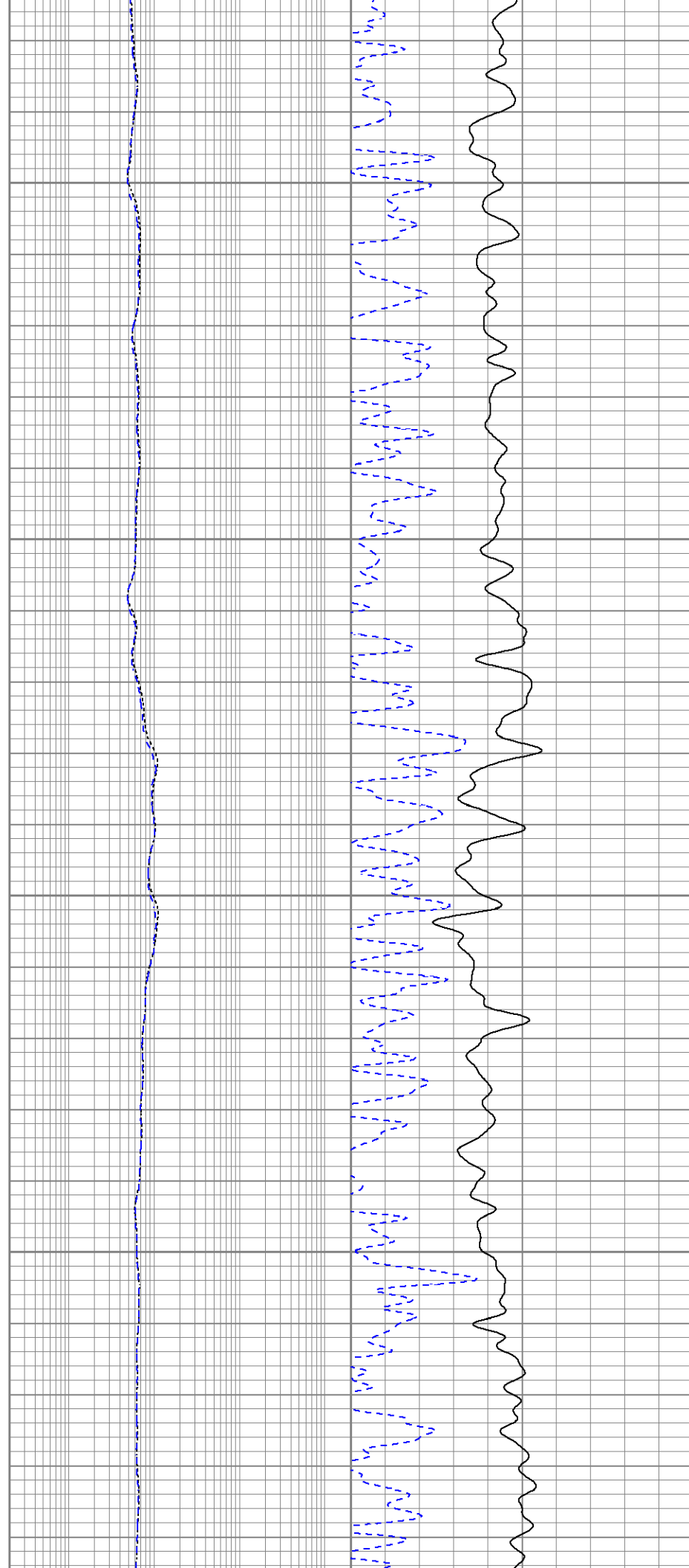


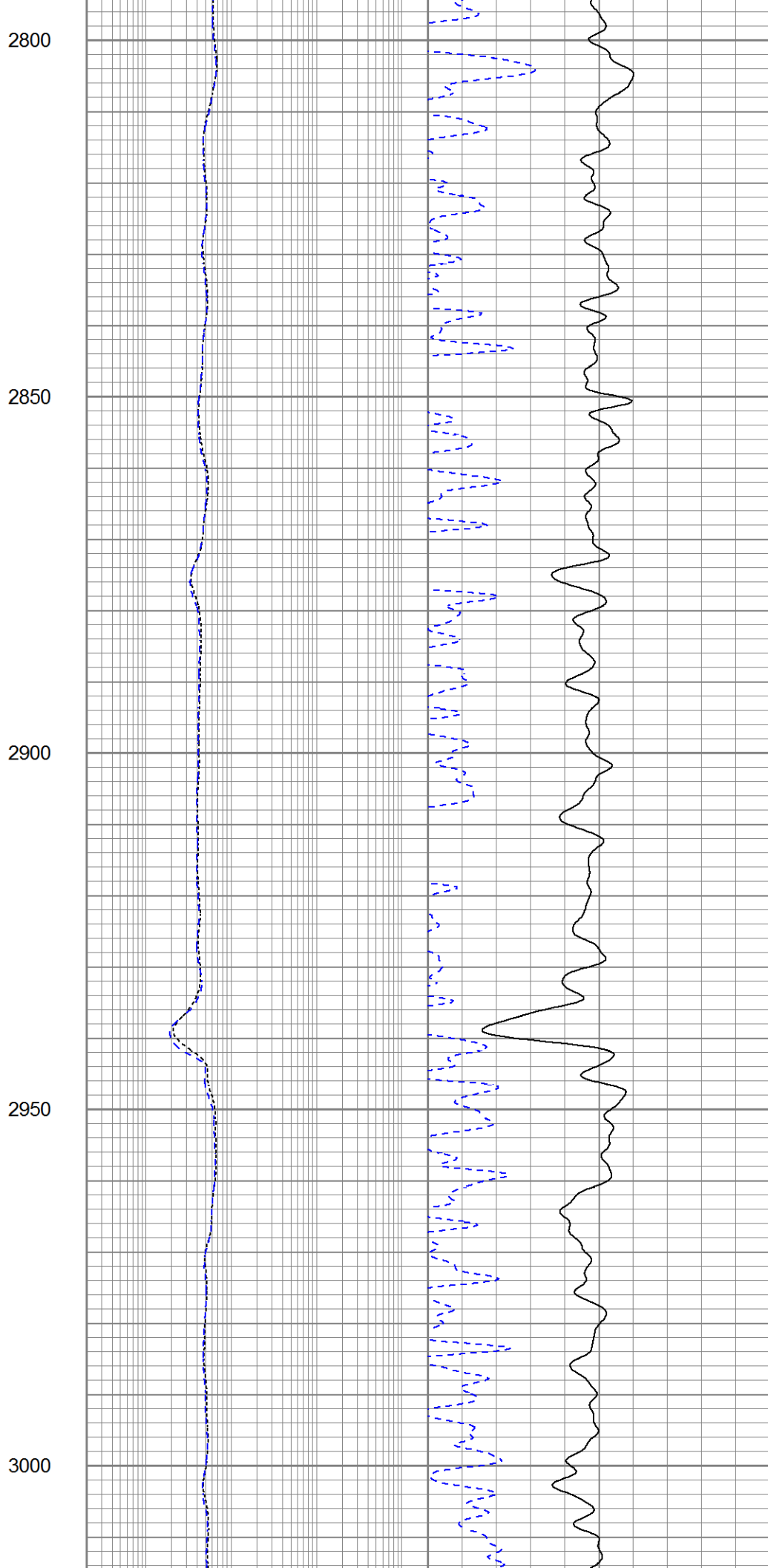
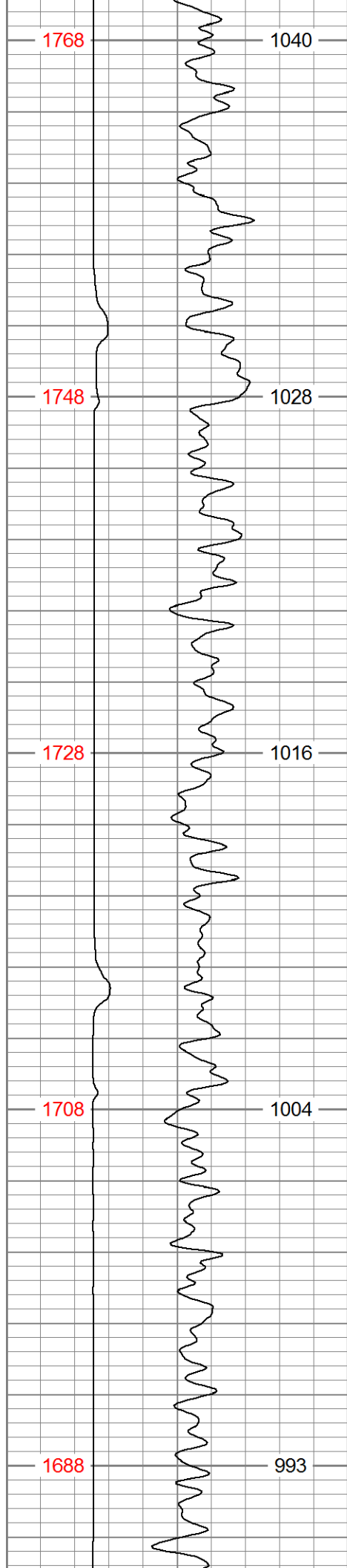
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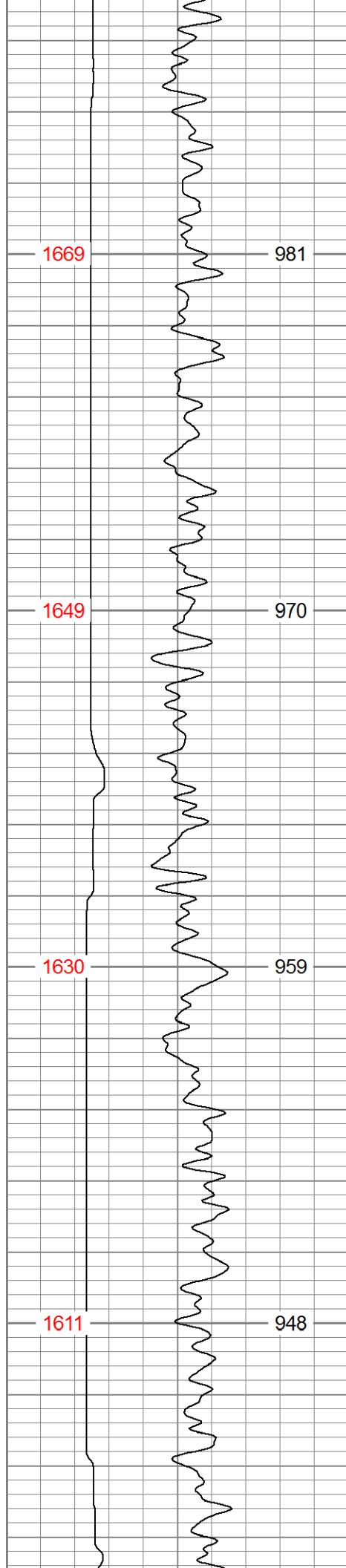
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2700

2750





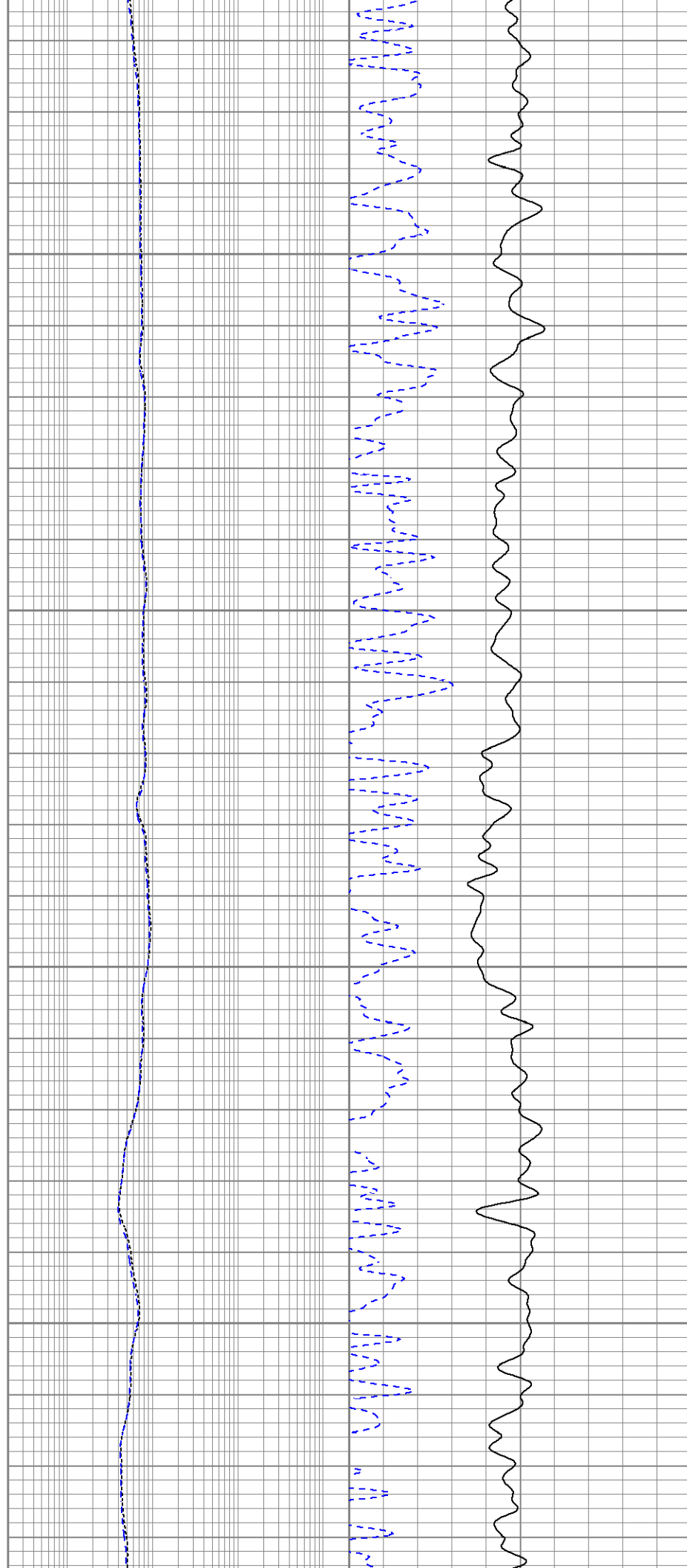


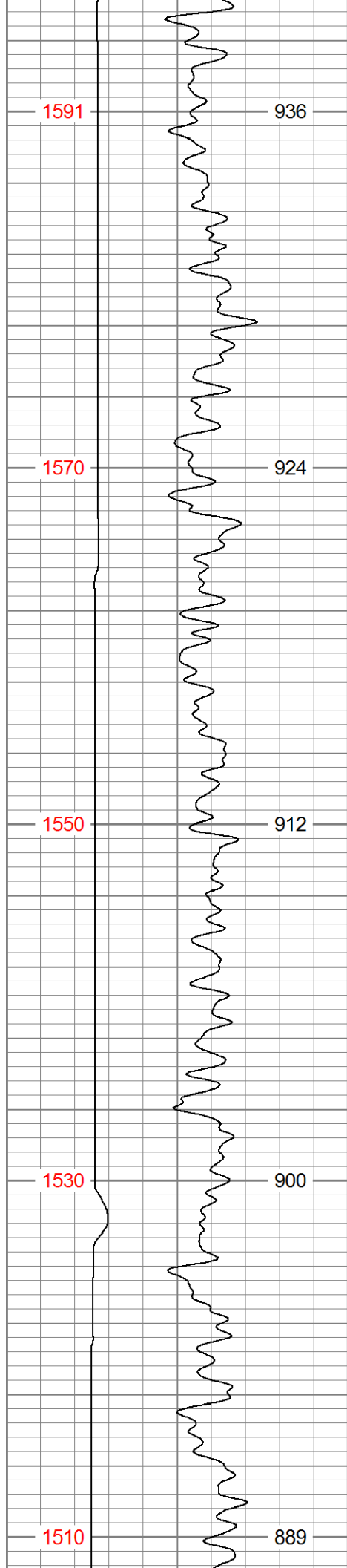
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3100

3150

3200





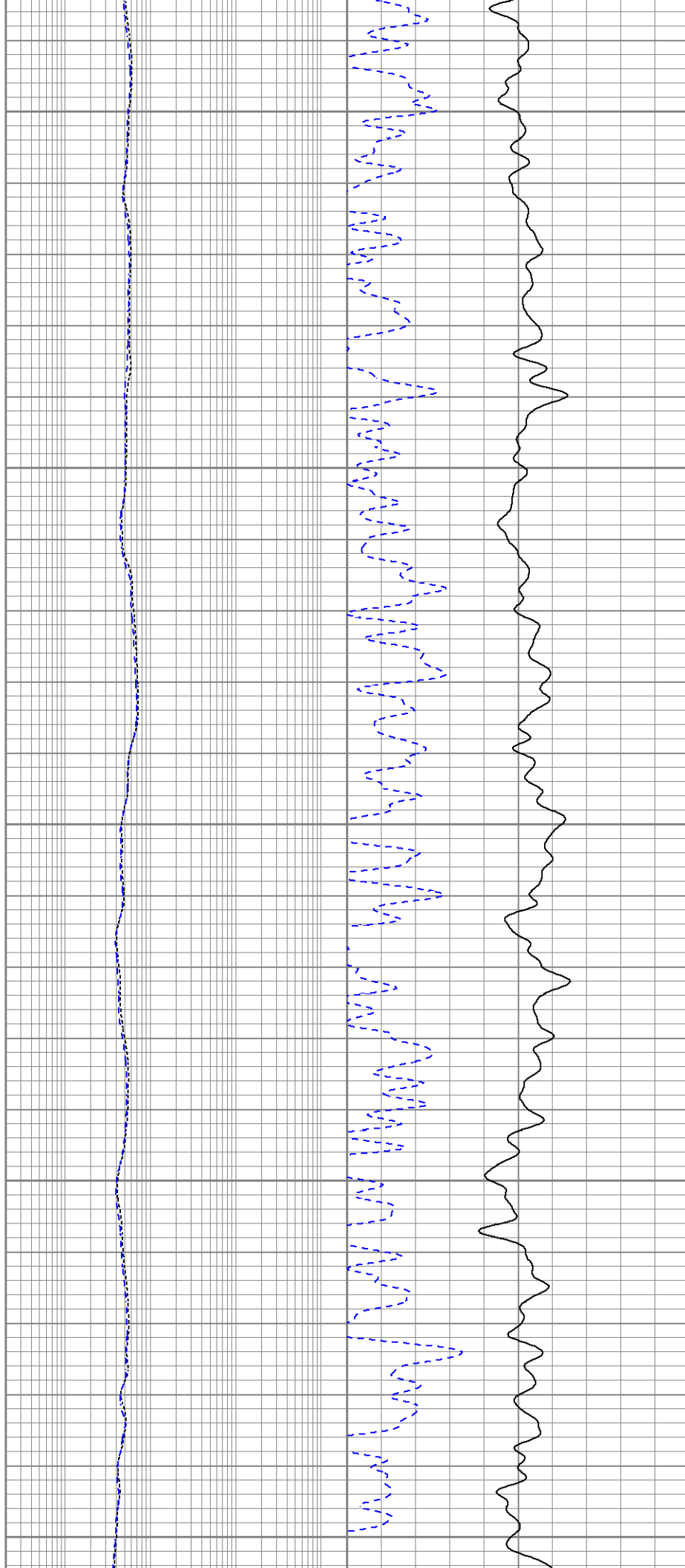
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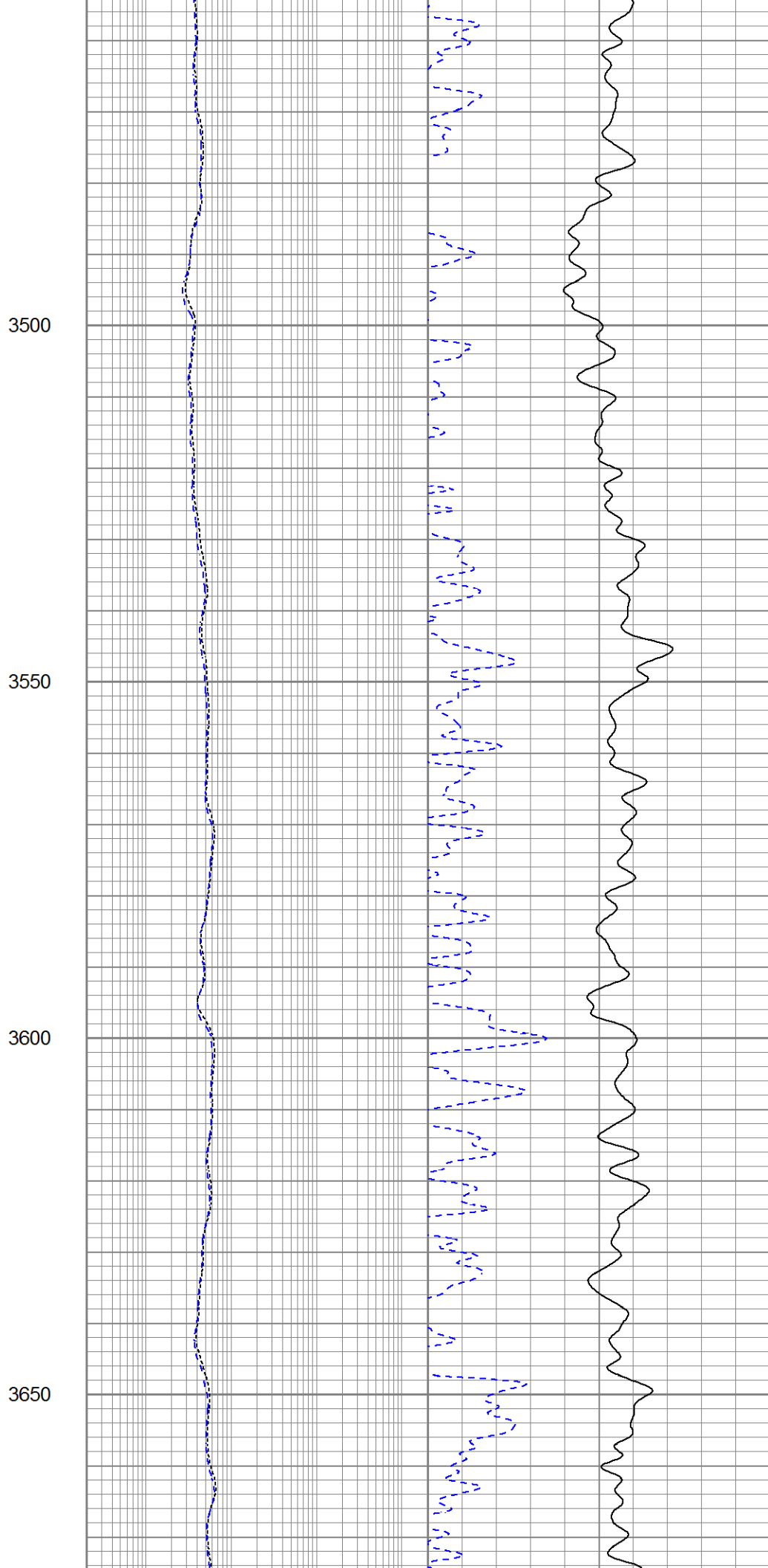
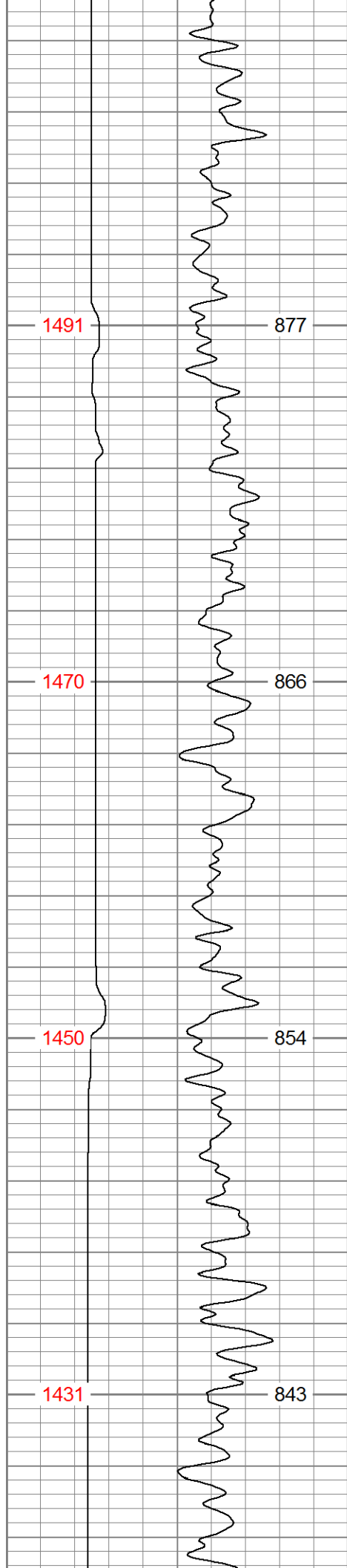
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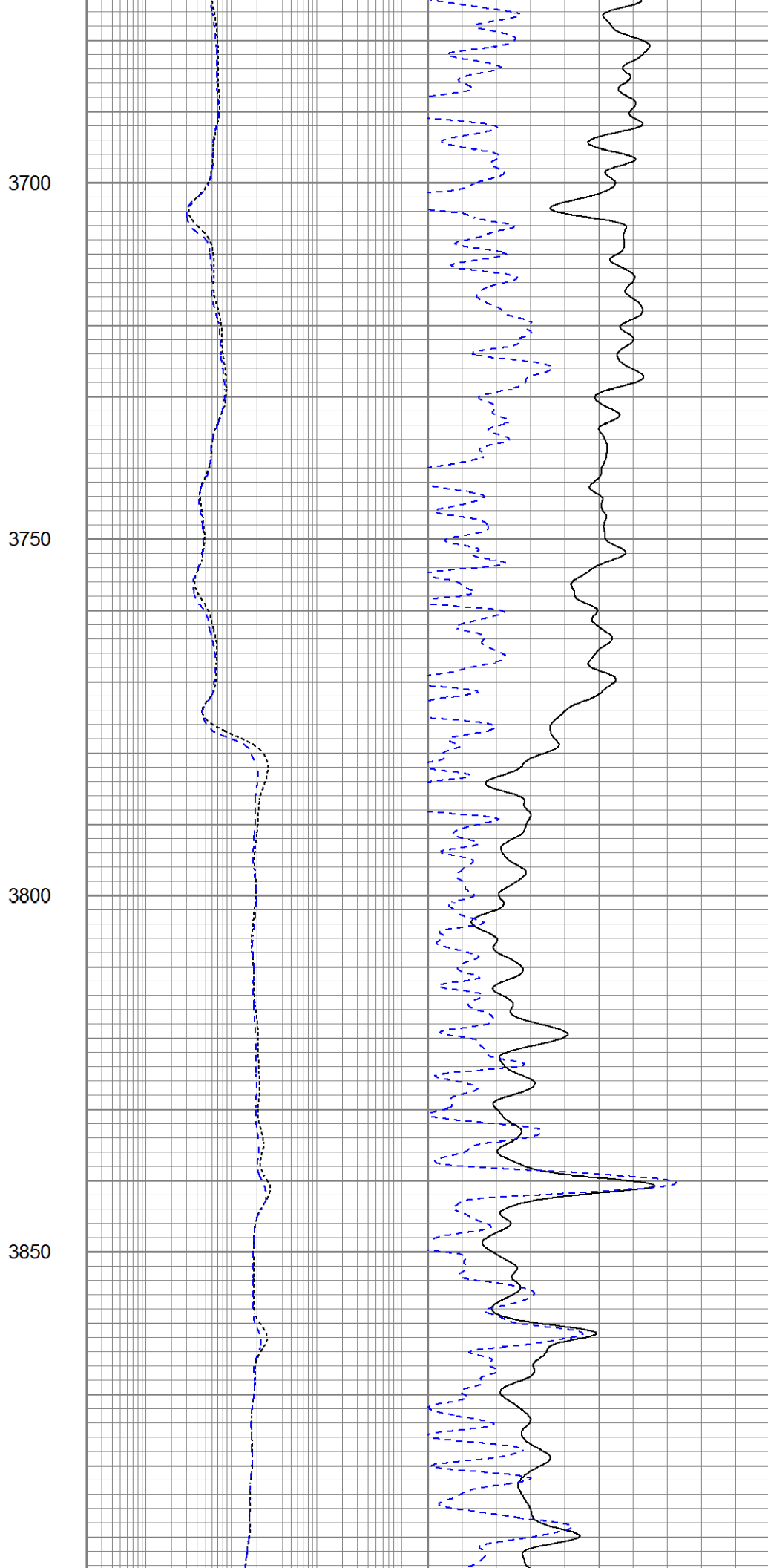
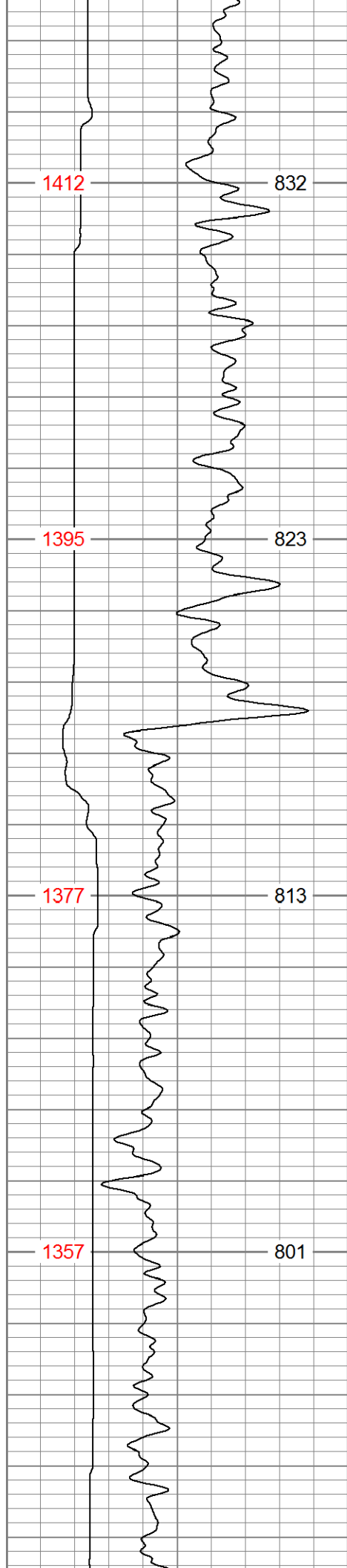
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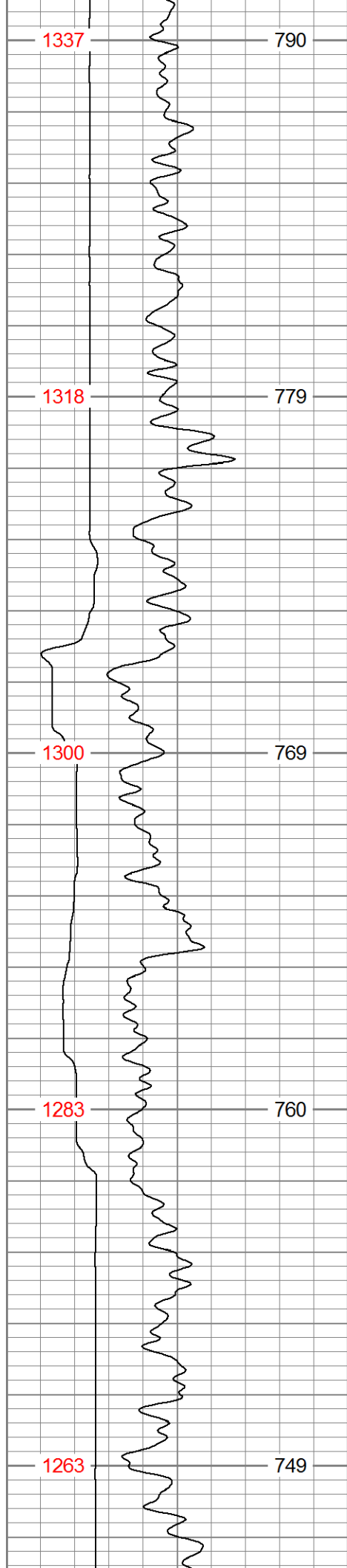
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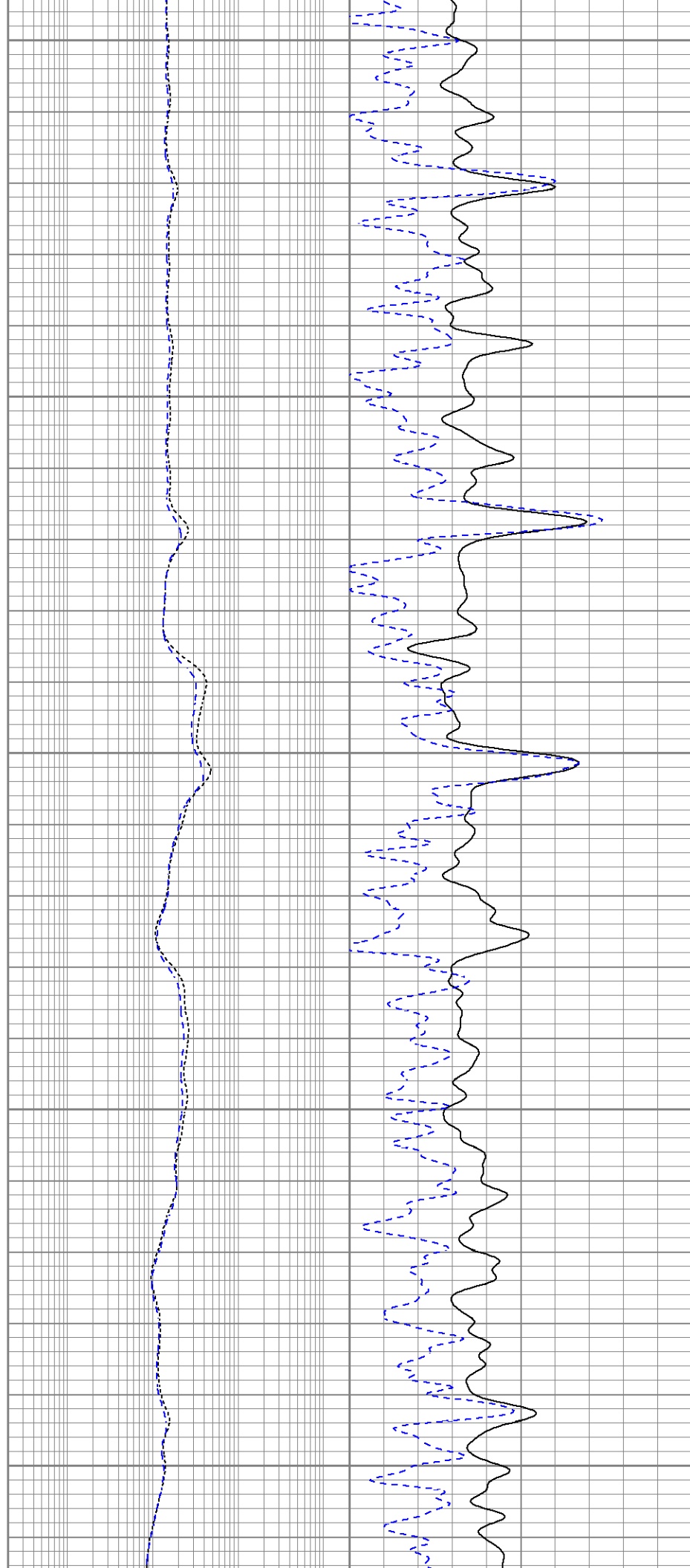
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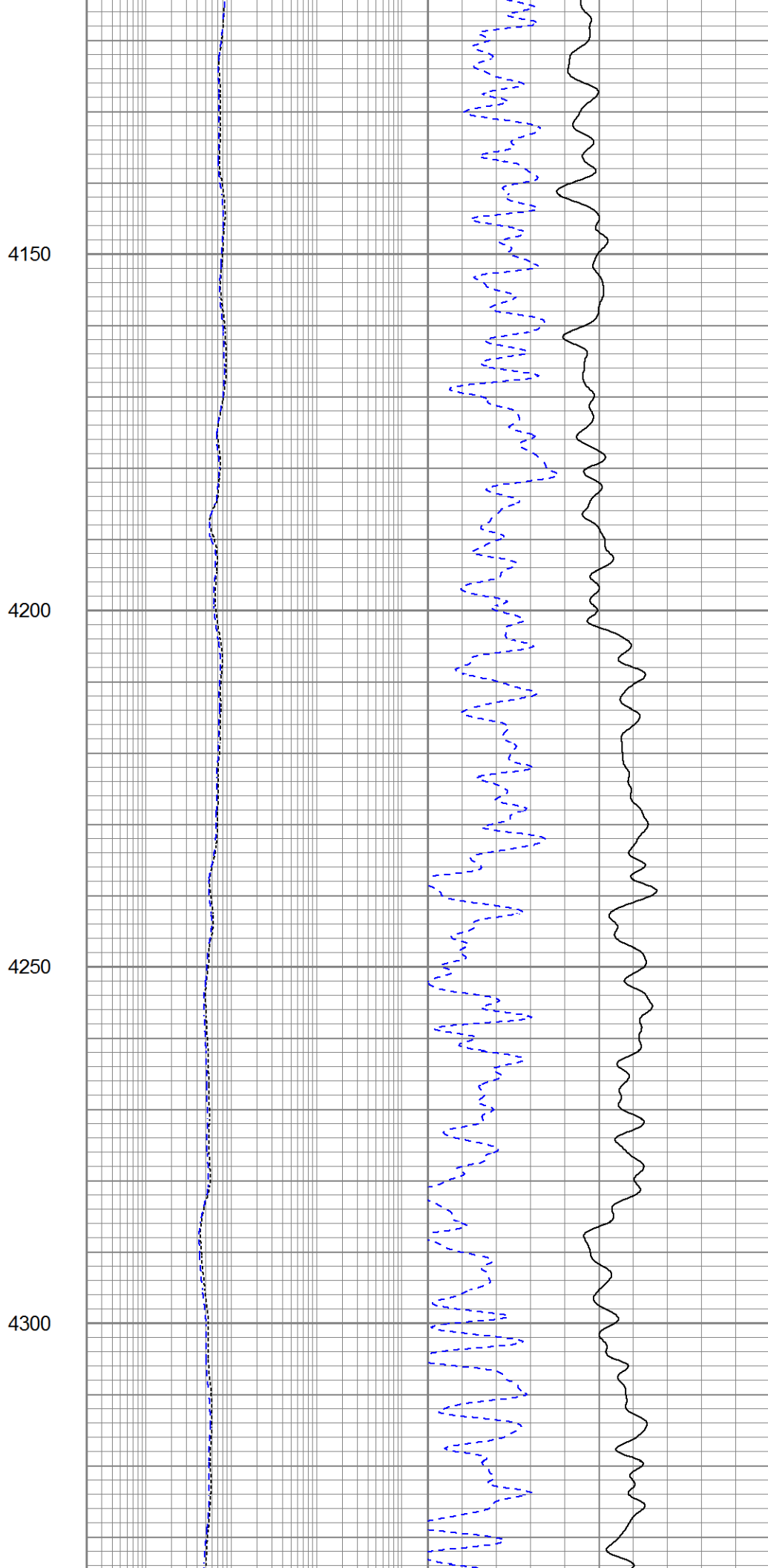
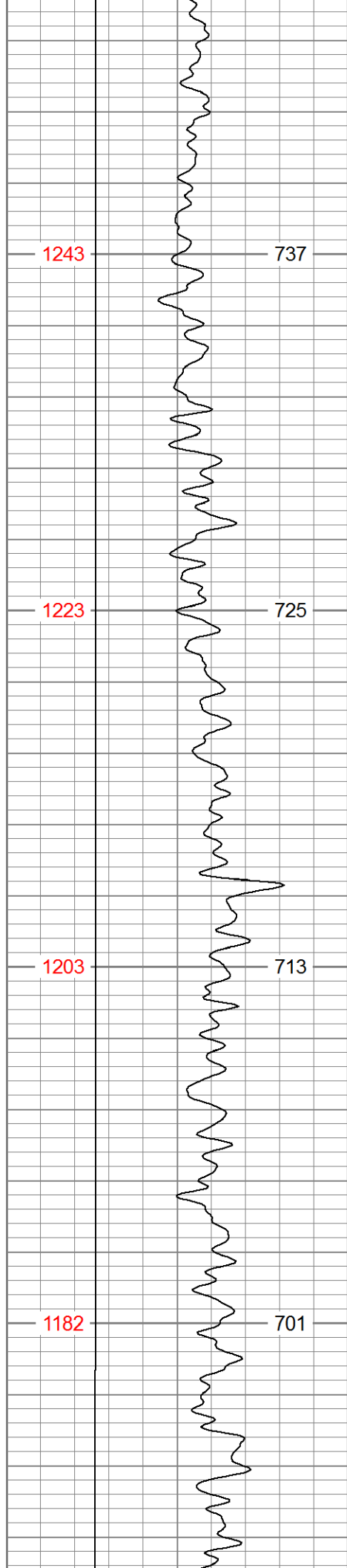
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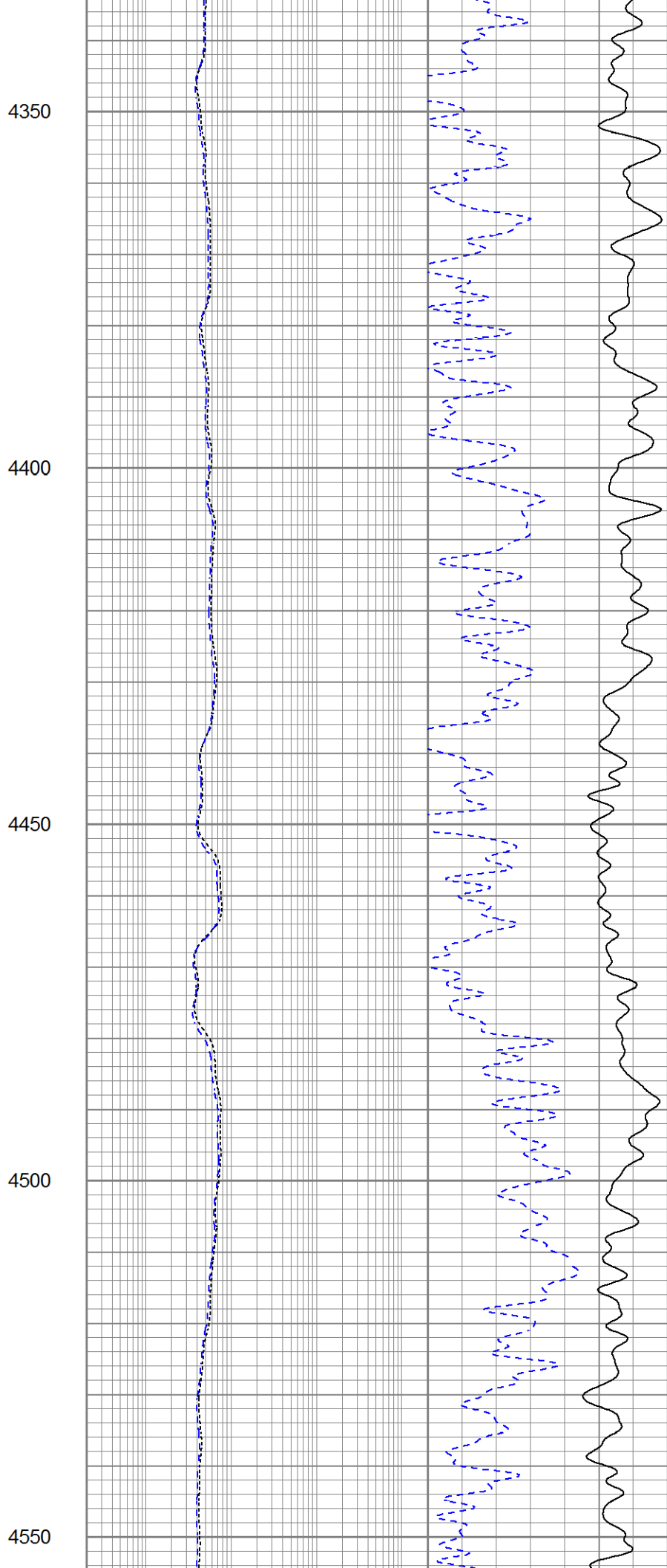
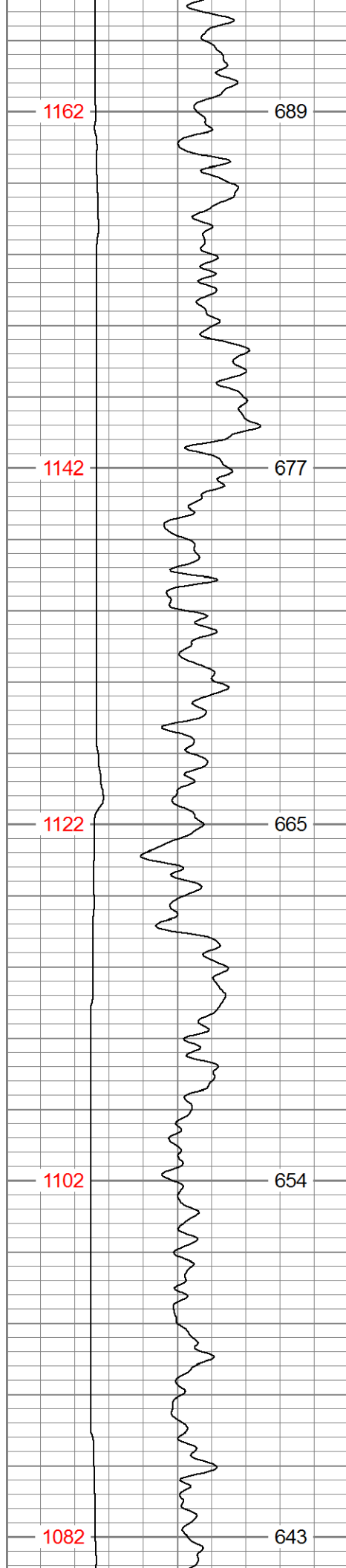
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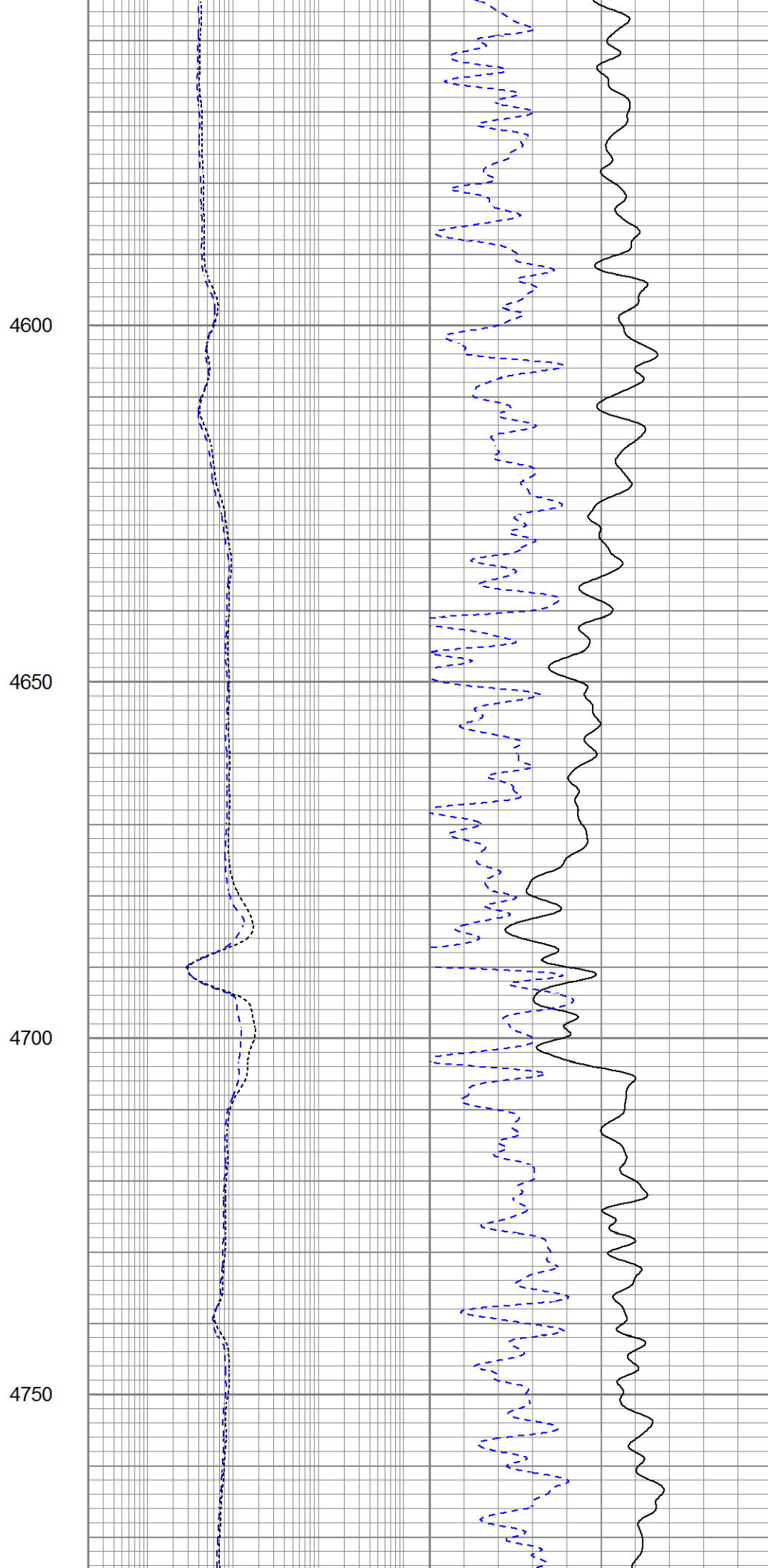
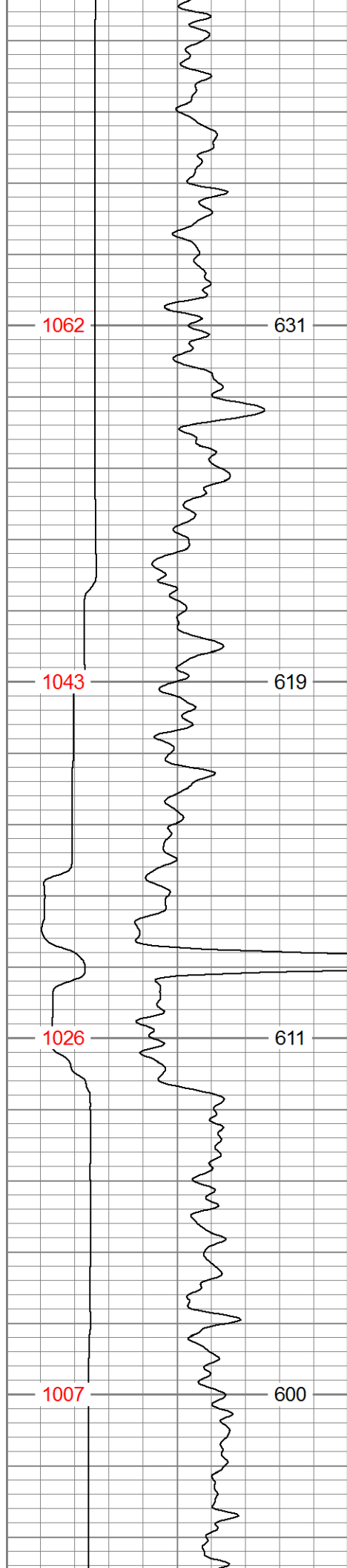
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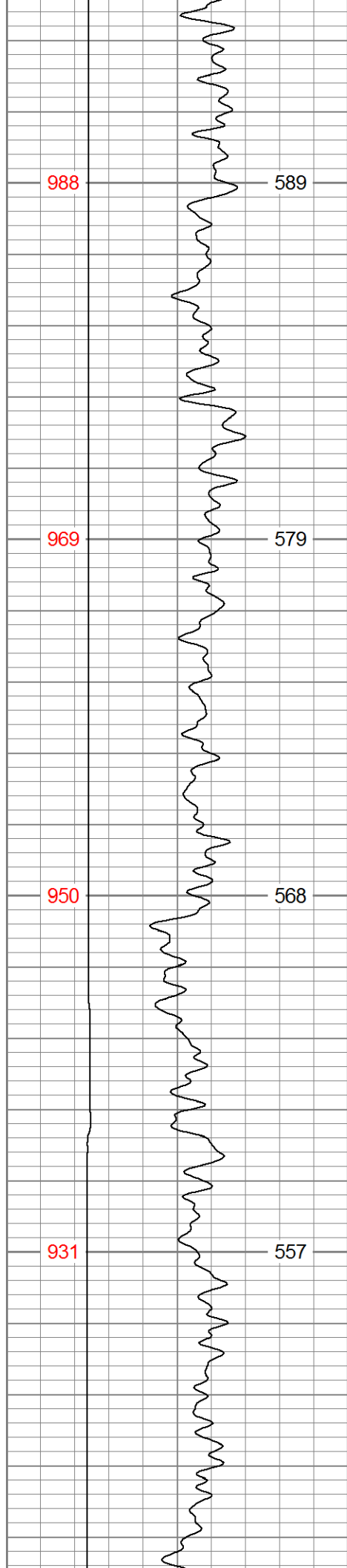
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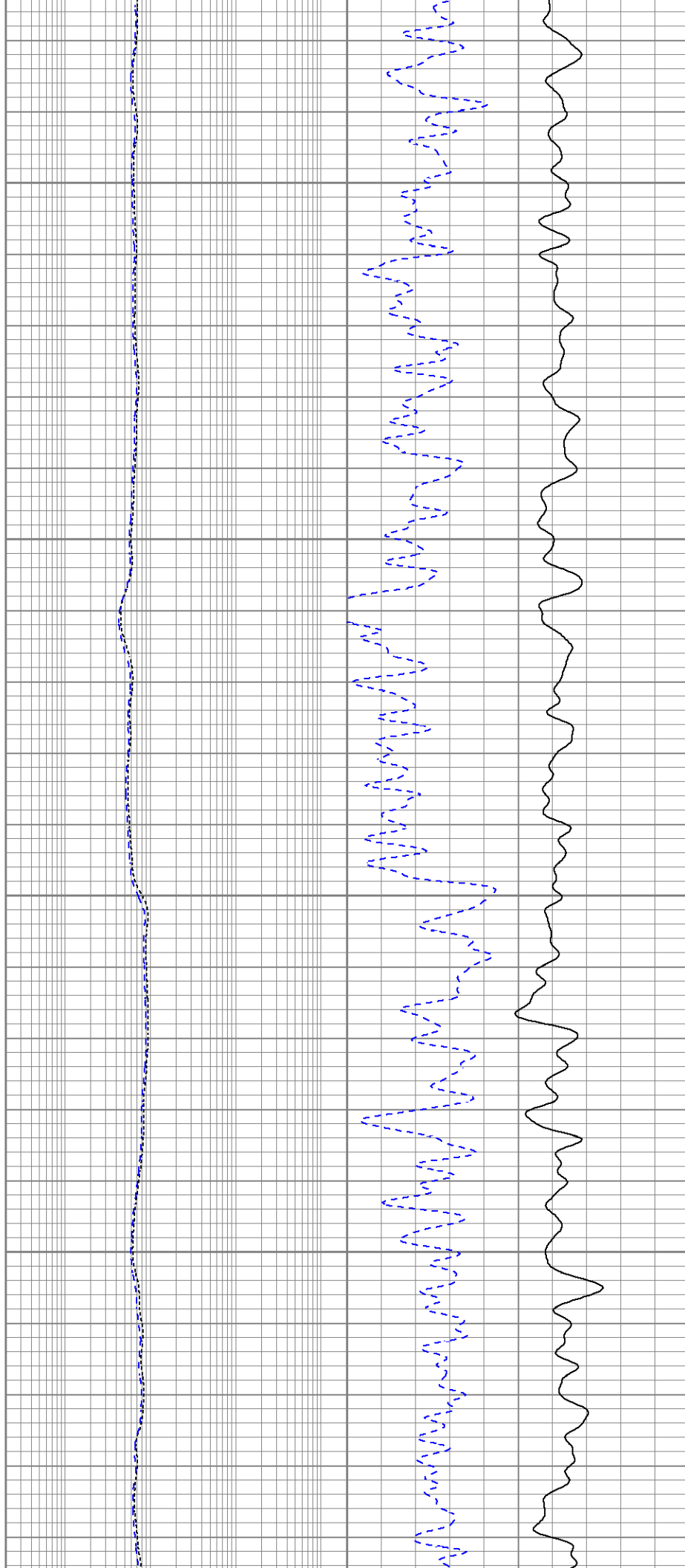


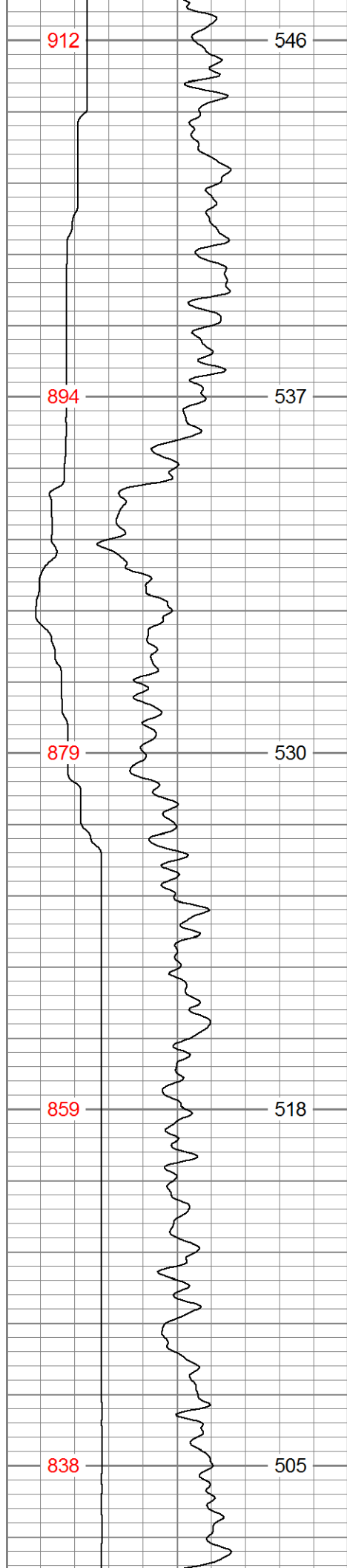
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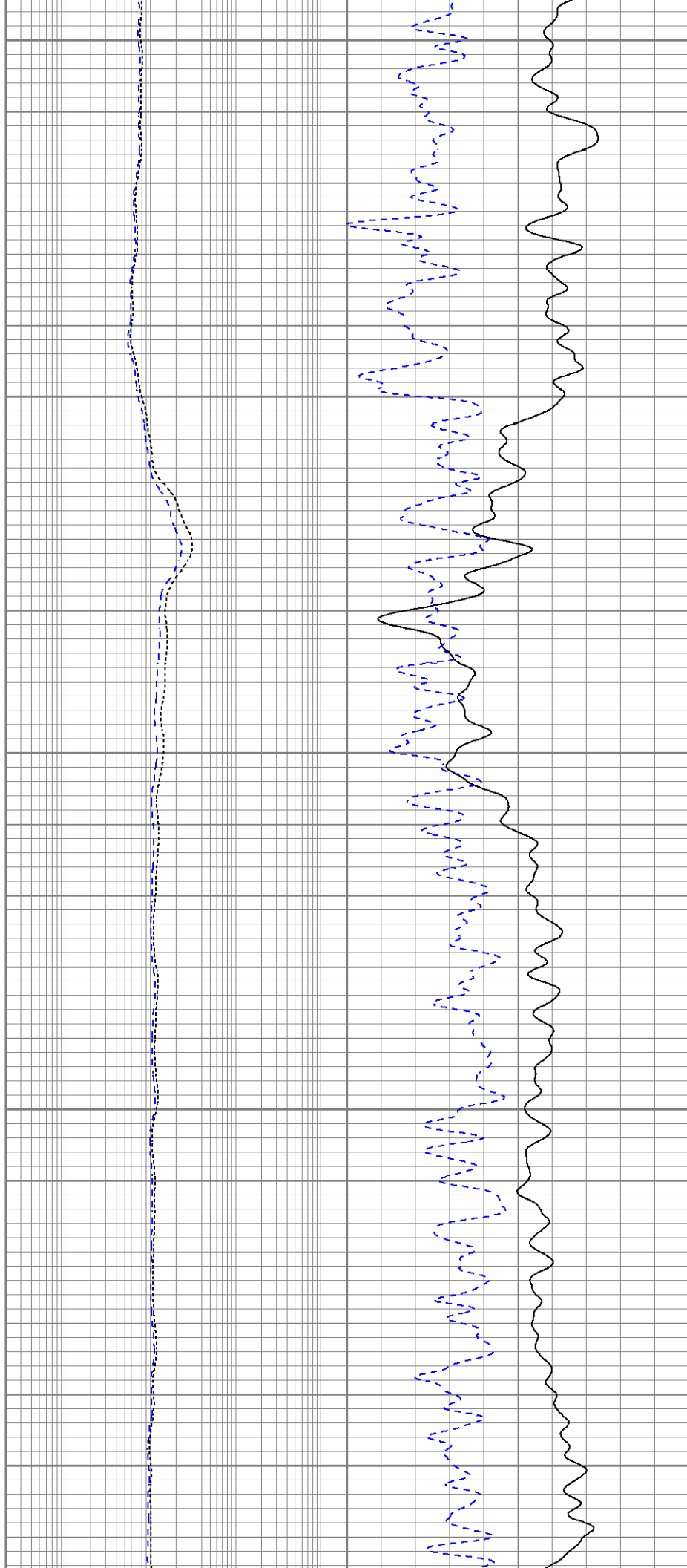
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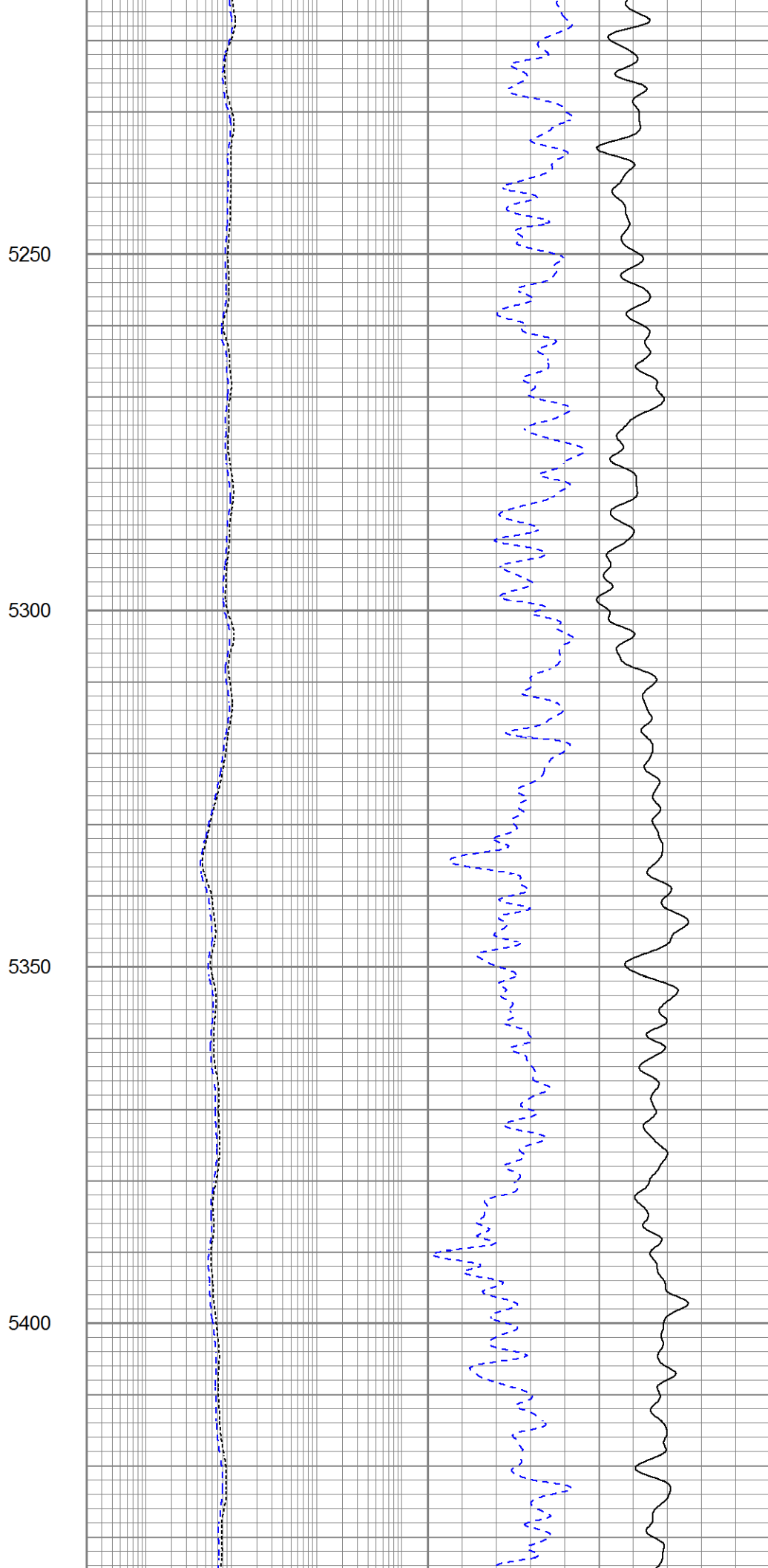
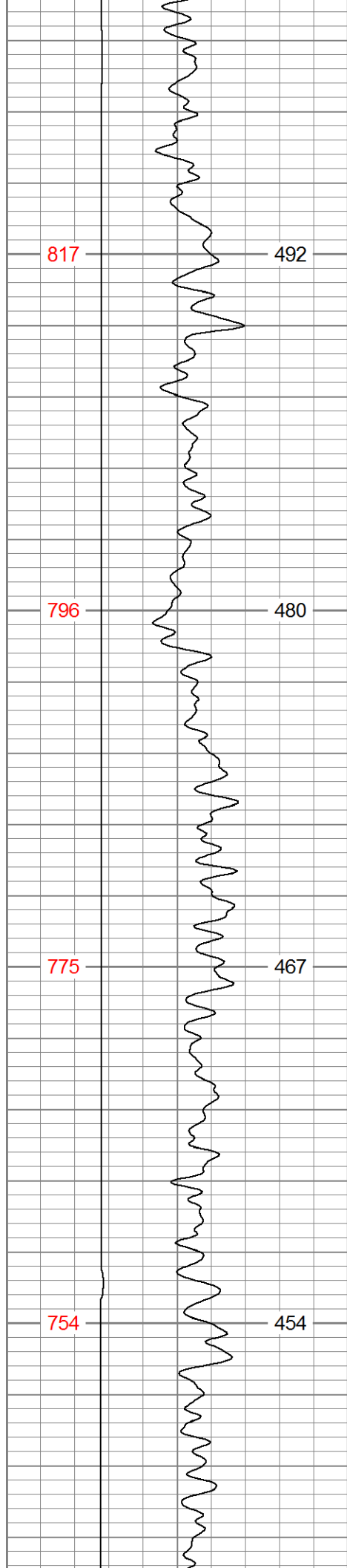
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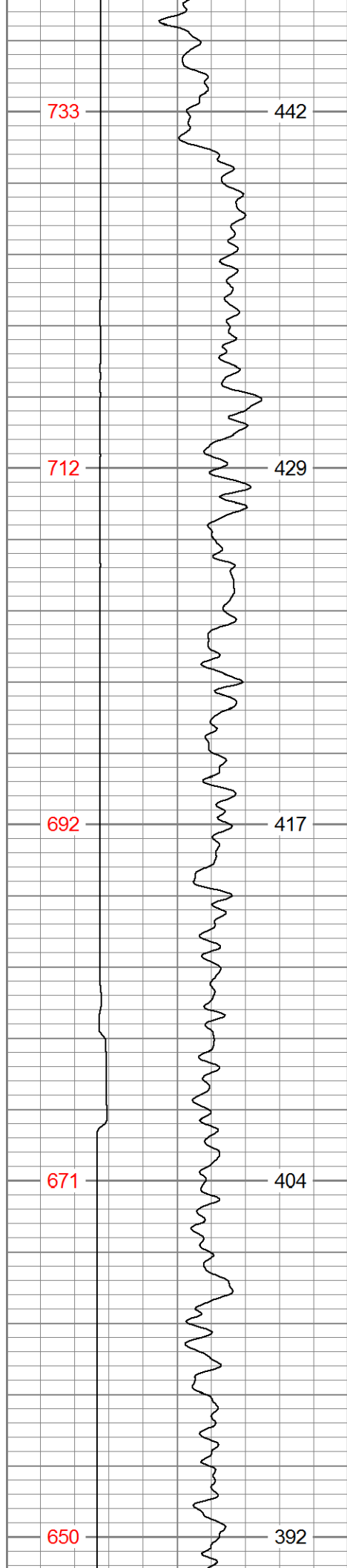




5000
5050
5100
5150
5200







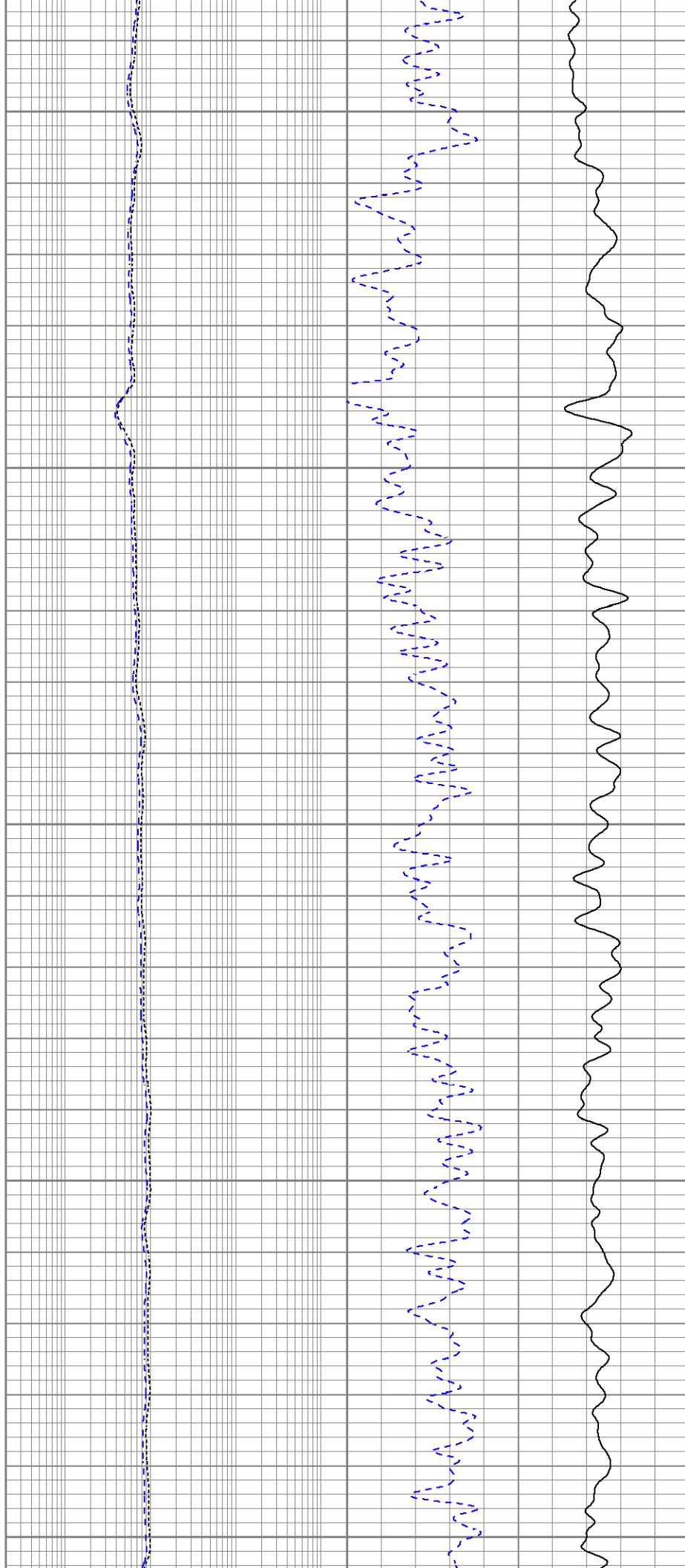
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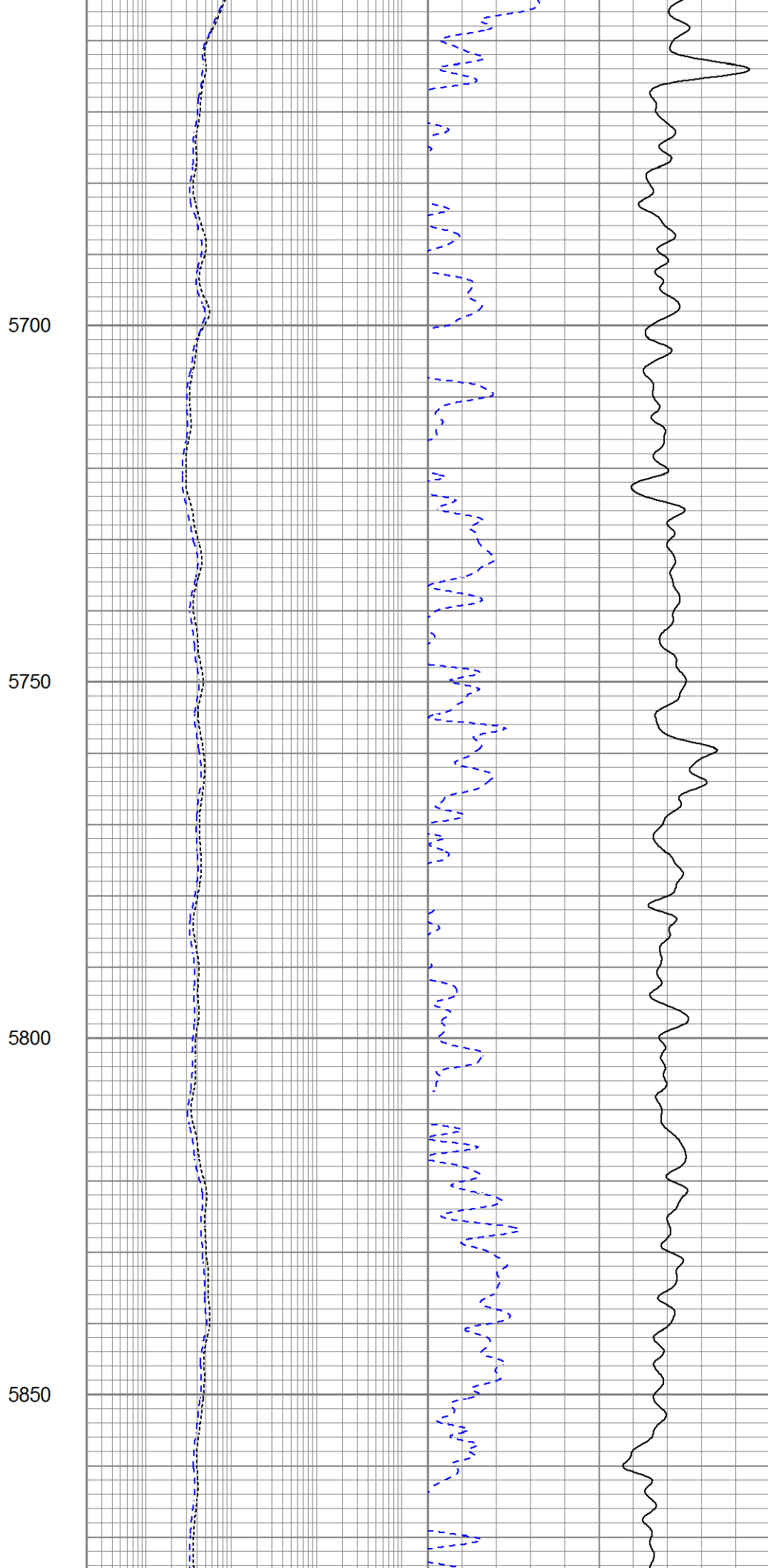
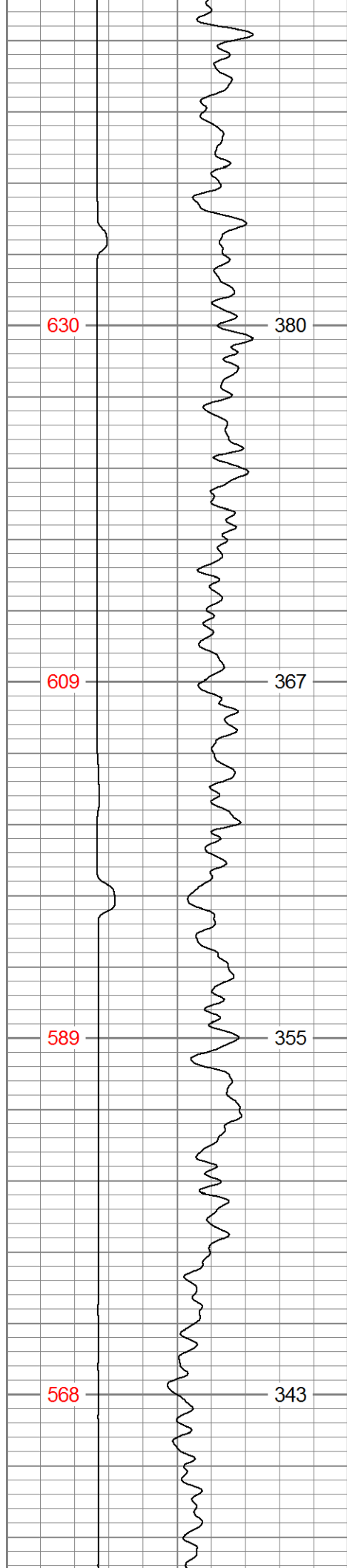
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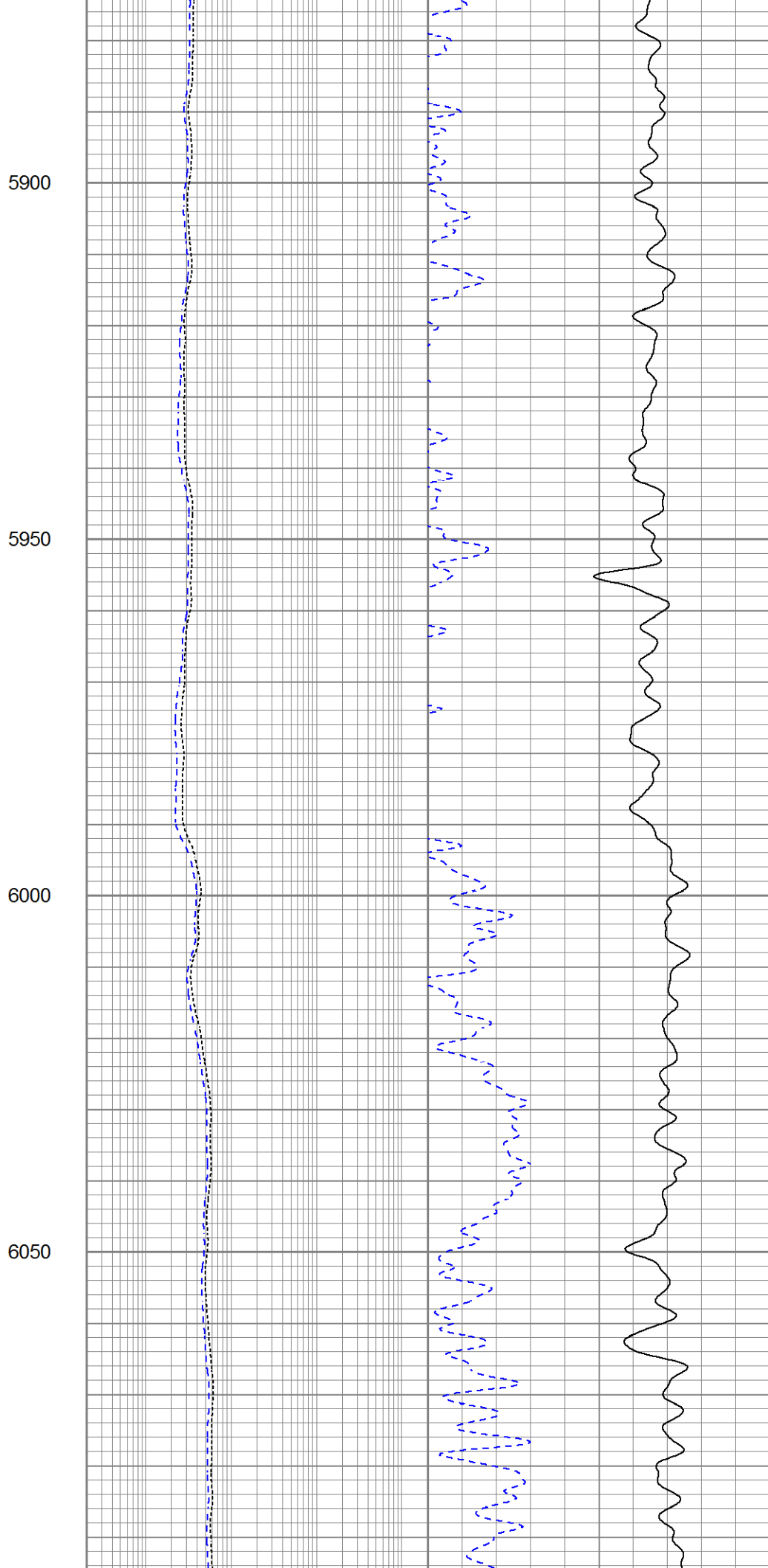
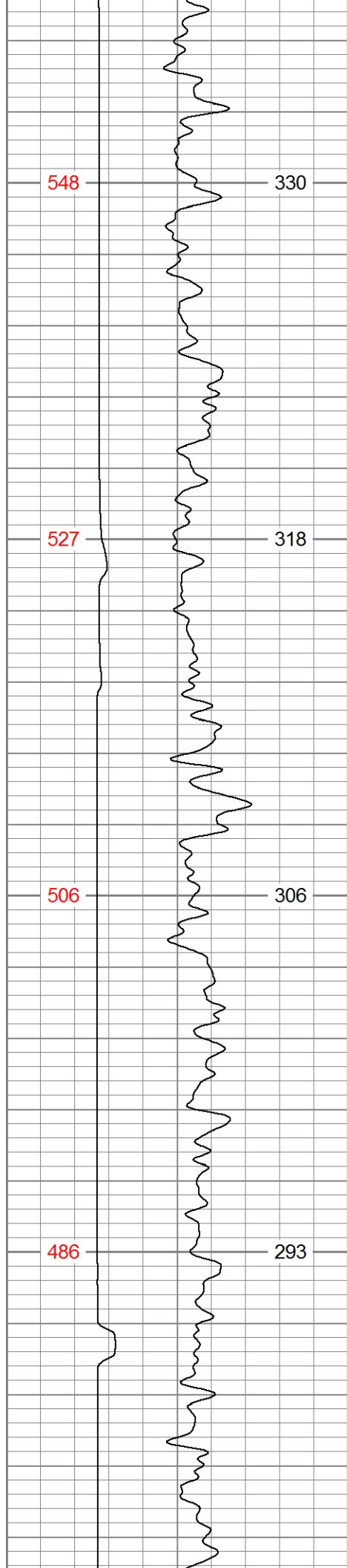
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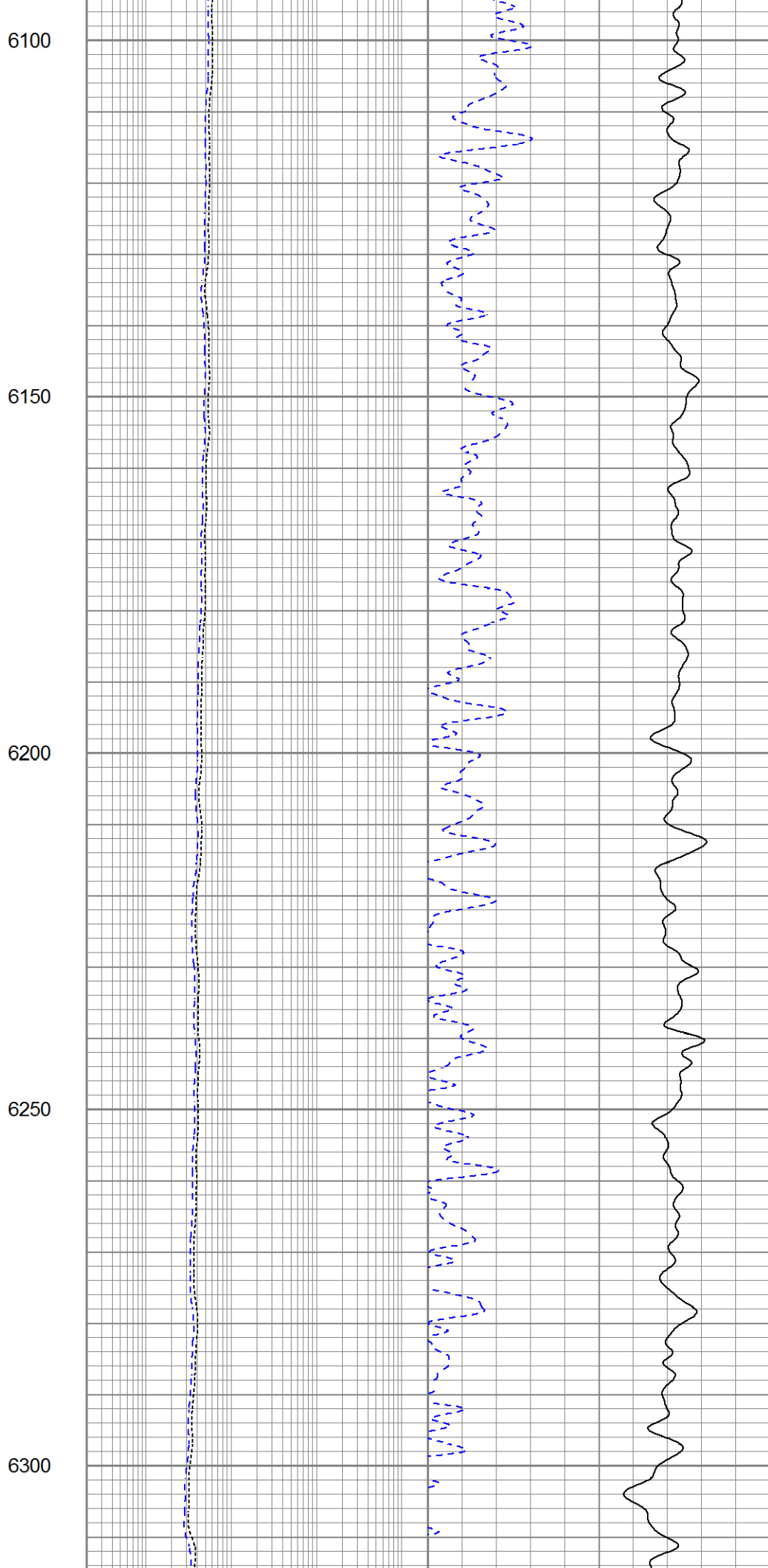
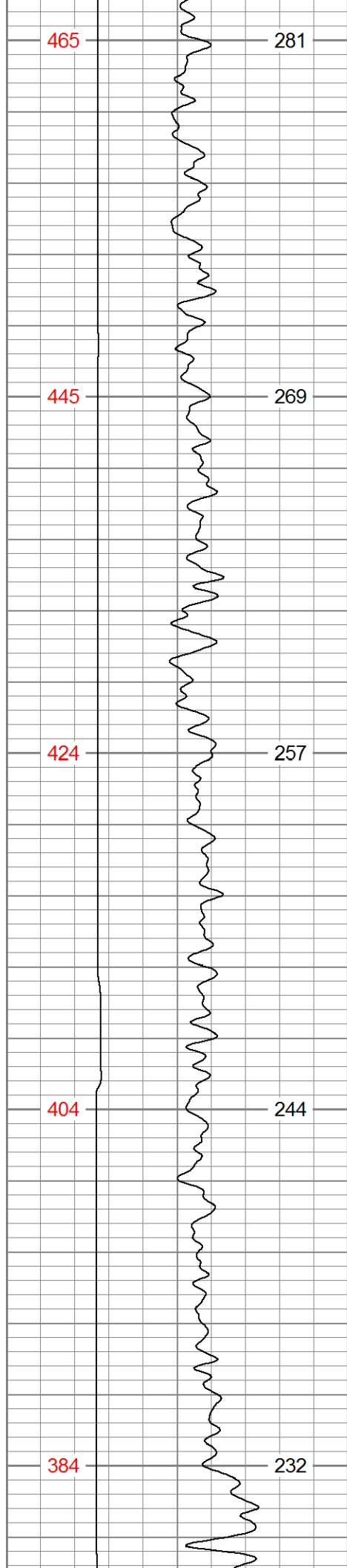
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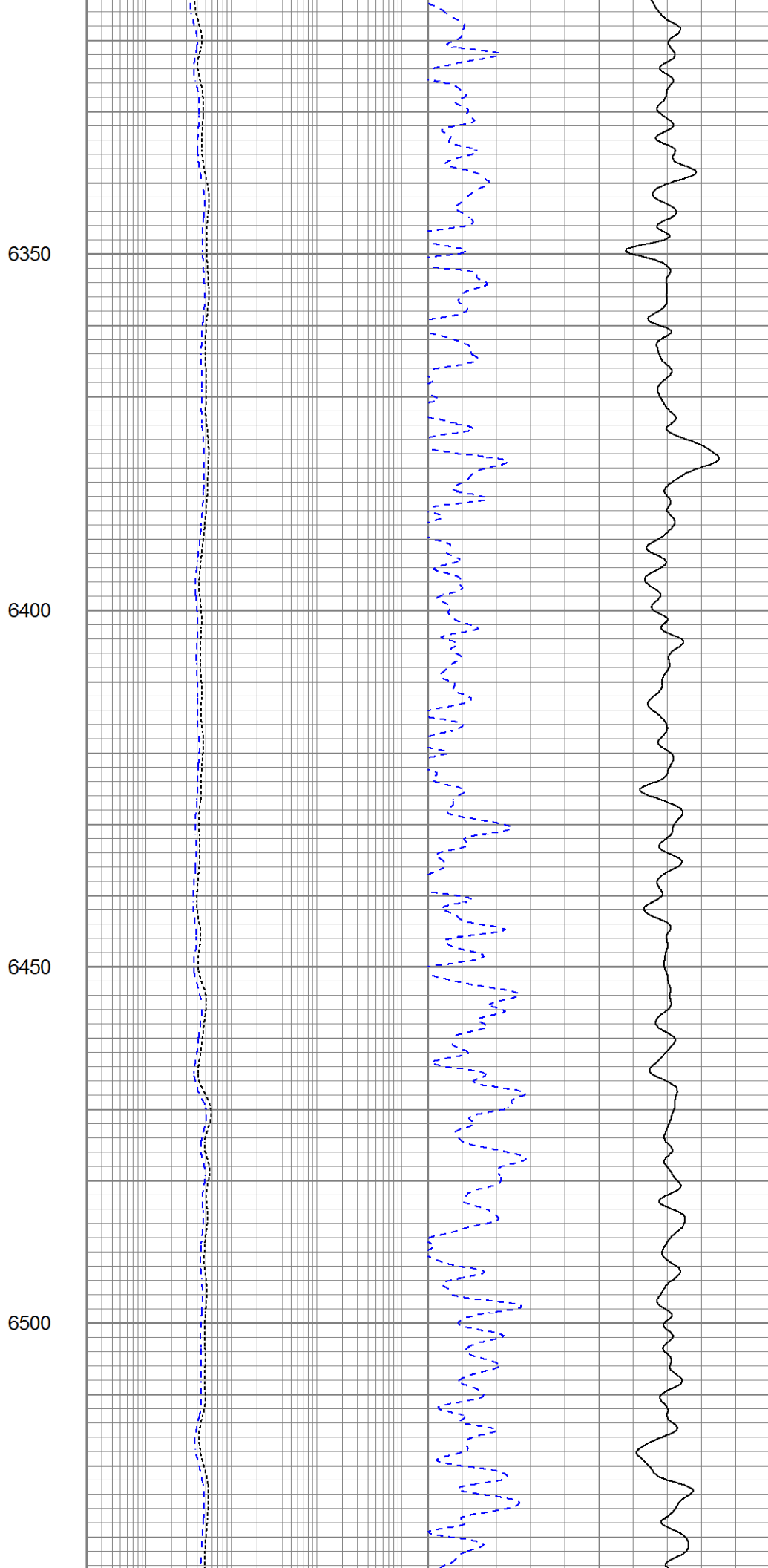
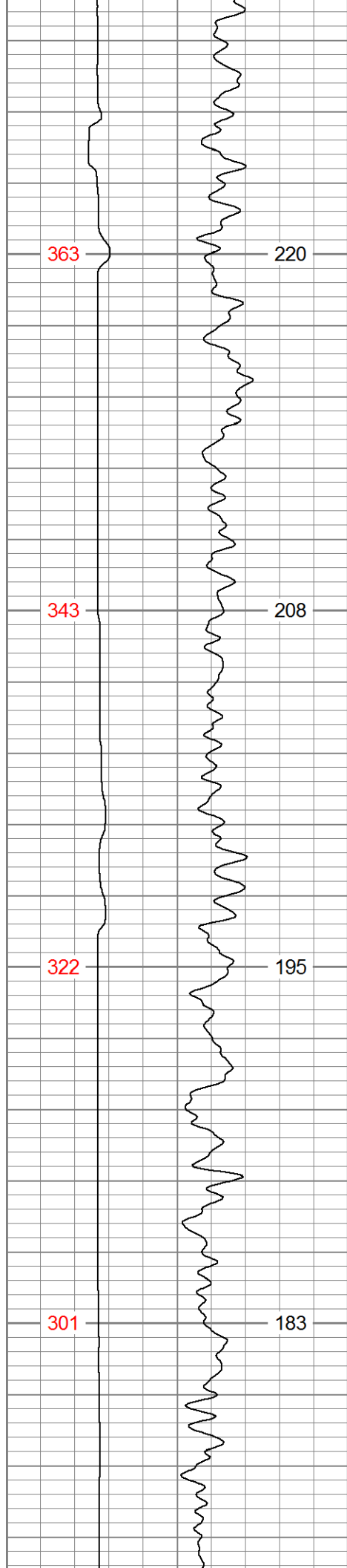
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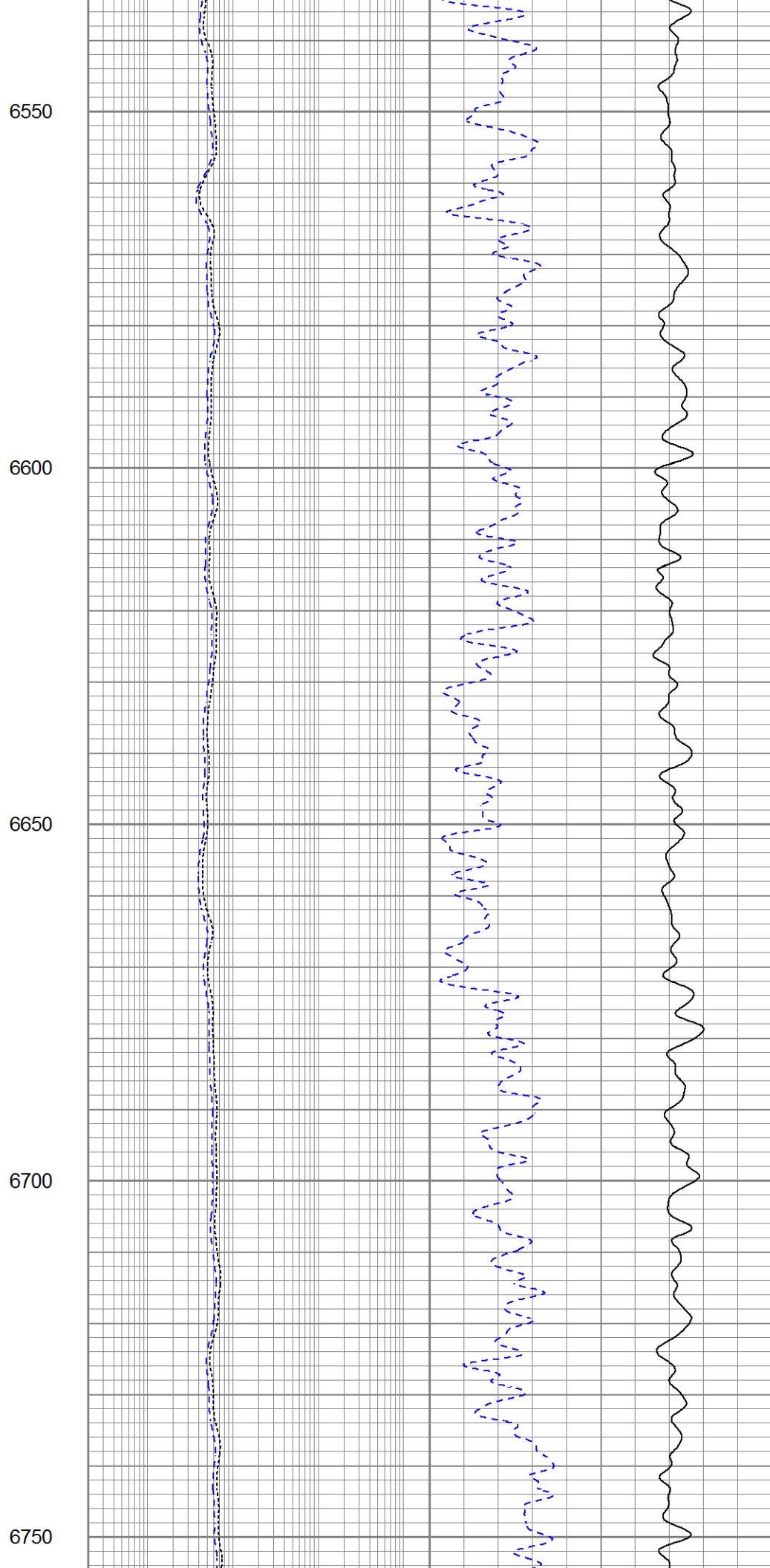
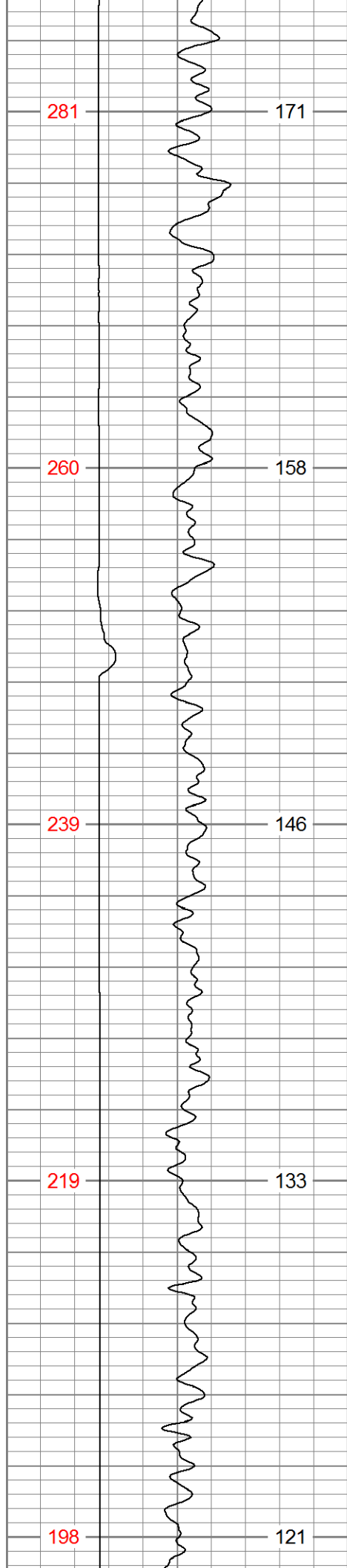


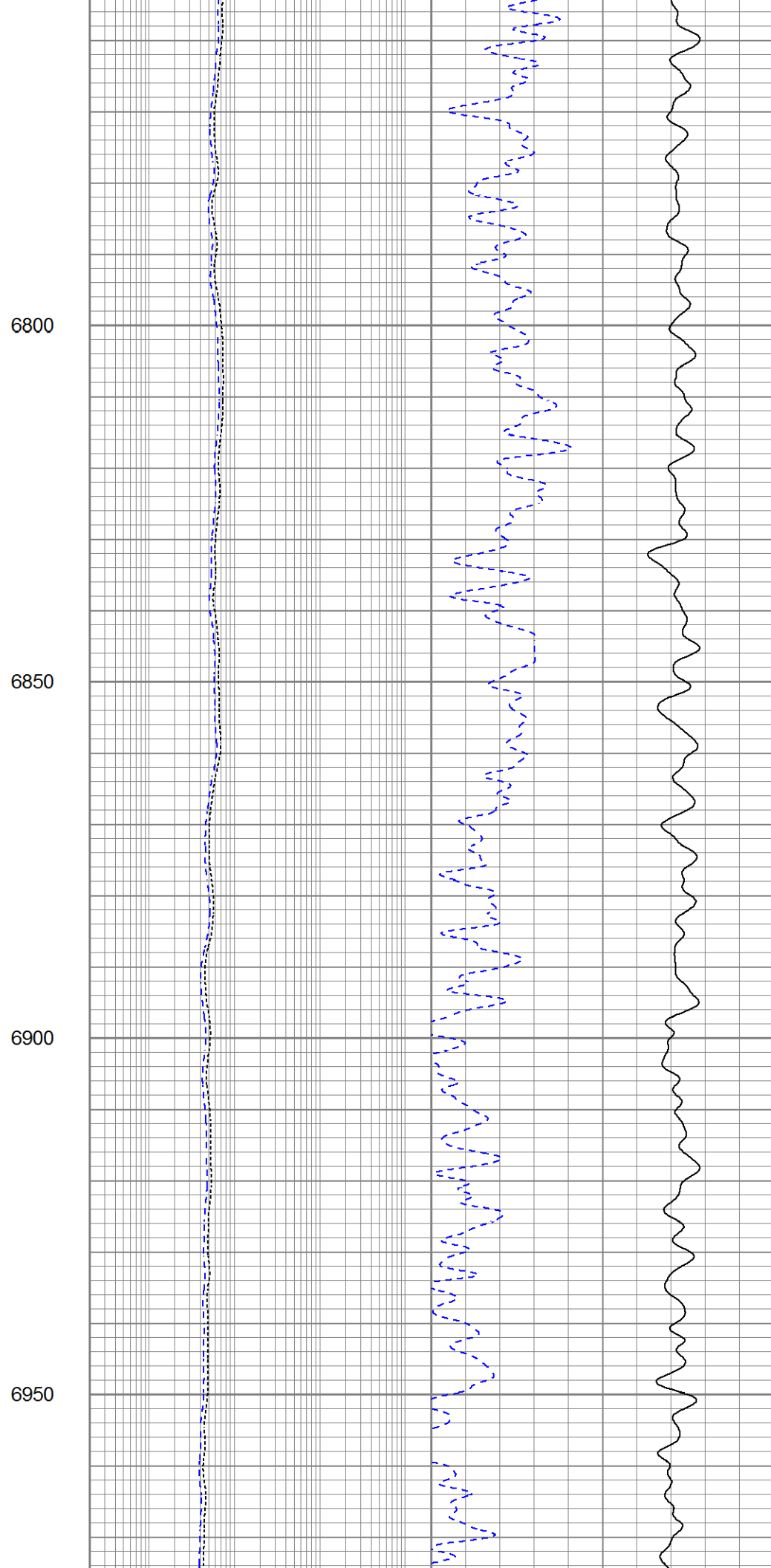
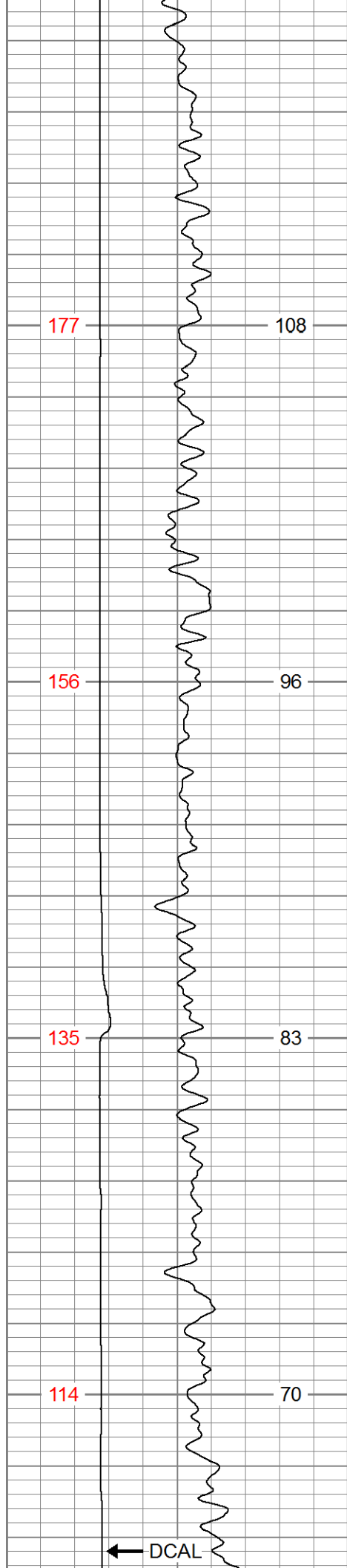


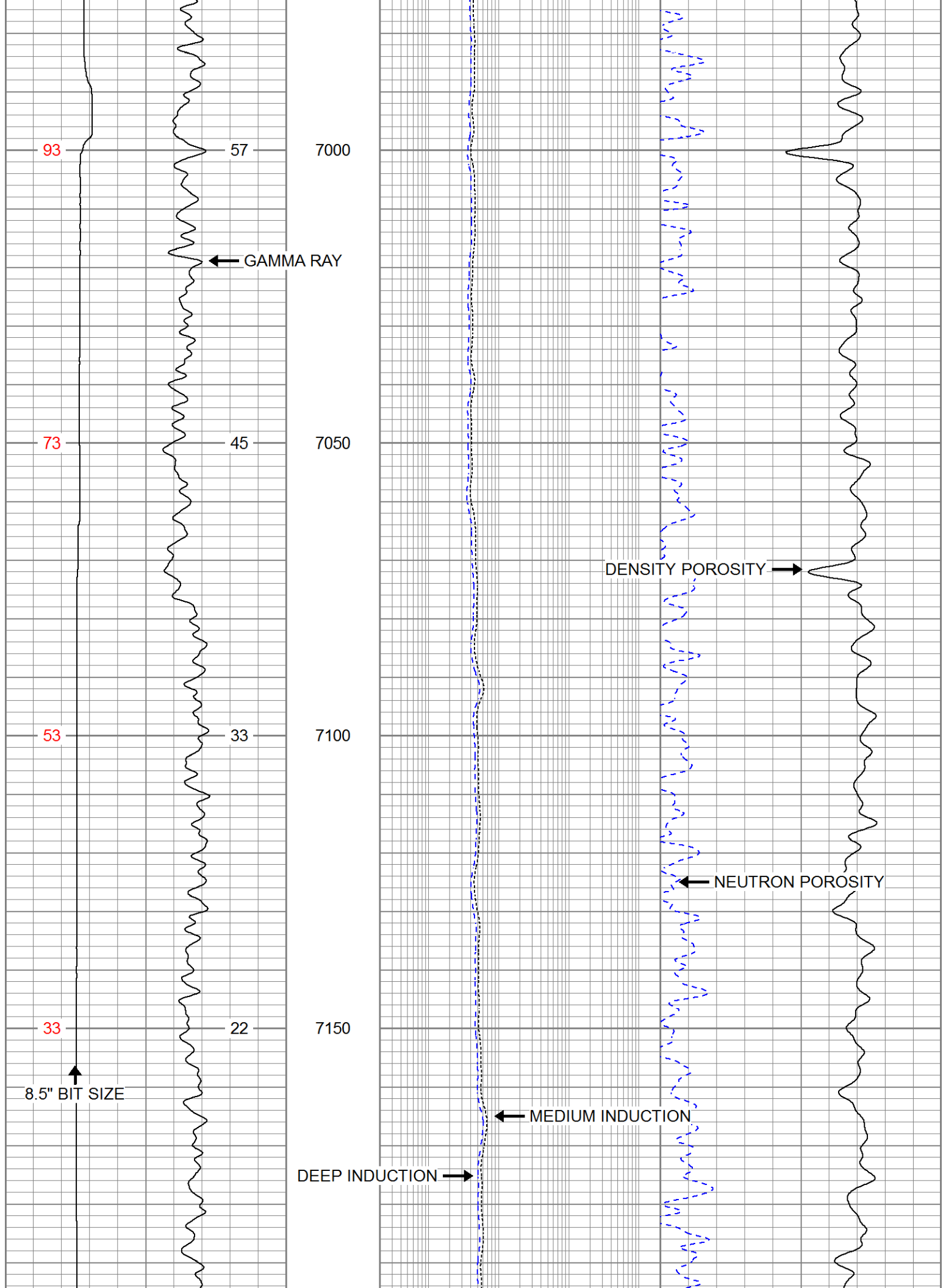


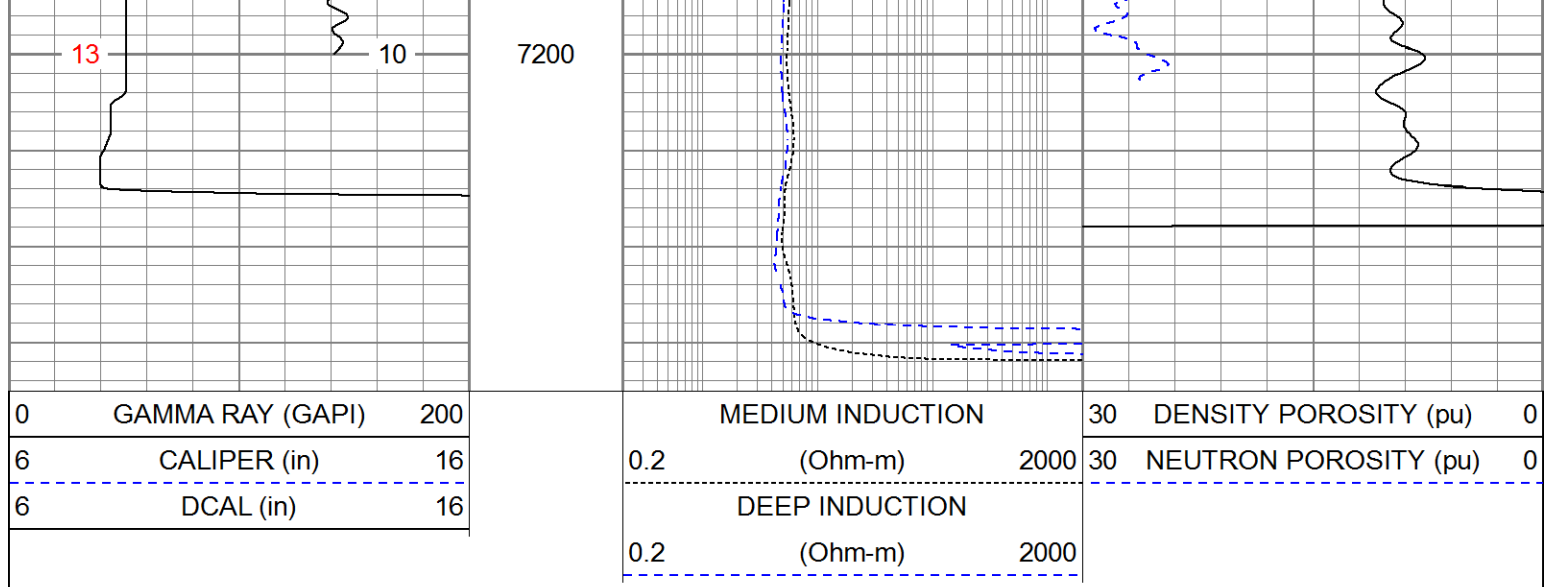












Calibration Report							
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Dataset Pathname	STACK/pass2.2						
Dataset Creation	Tue Dec 19 07:51:05 2017						
Dual Induction Calibration Report							
Serial-Model:				PSI 91-M&W			
Calibration Performed:				Thu Nov 09 00:57:24 2017			
		Readings		References		Results	
Loop:	Air	Loop		Air	Loop	Gain	Offset
Deep	166.796	835.089		0.000	255.800 mmho/m	0.560	-23.000
Medium	142.009	1348.560		0.000	255.800 mmho/m	0.360	-40.000
Compensated Density Calibration Report							
Serial-Model:				90-1031-M&W			
Source / Verifier:				16955B / 2ci			
Master Calibration Performed:				Sat Dec 02 18:42:45 2017			
Master Calibration							
		Density		Far Detector		Near Detector	
Magnesium	1.755	g/cc		4903.44	6153.79	cps	
Aluminum	2.640	g/cc		934.50	4021.31	cps	
Spine Angle = 75.61				Density/Spine Ratio = 0.517			
		Size		Reading			
Small Ring	8.00	in		1.84			
Large Ring	22.00	in		1.46			
Compensated Neutron Calibration Report							
Serial Number:				207-MW			
Tool Model:				M&W			
Calibration Performed:				WED DEC 13 10:30:30 2017			

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	
Tool Model:	M&W	
Calibration Performed:	Wed Sep 06 19:51:14 2017	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.6000	GAPI/cps

	Company	EXTRACTION OIL & GAS, INC.
	Well	LAUNER #2C
	Field	WATTENBERG
	County	WELD
	State	COLORADO