MIDWEST WIRELINE

BOREHOLE COMPENSATED SONIC LOG

Company Murfin Drilling Company, Inc.
Well Culwell H #3-19
Field
County Cheyenne State Kansas
Location: API #: 15-023-21595-00-00
990 FSL & 1980 FEL
SEC 19 TWP 2S RGE 37W

Other Services: CNL/CDL, DIL/MEL

Elevation: K.B. 3356, D.F., G.L. 3351

Permanent Datum: Ground Level, Elevation 3351
Log Measured From: Kelly Bushing
Drilling Measured From: Kelly Bushing

Company Murfin Drilling Company, Inc.
Well Culwell H #3-19
Field
County Cheyenne
State Kansas

Date	1/14/2023
Run Number	Two
Type Log	BHCS
Depth Driller	4850
Depth Logger	4852
Bottom Logged Interval	4840
Top Logged Interval	300
Type Fluid In Hole	Chemical
Salinity, PPM CL	700
Density	9.4
Level	Full
Max. Rec. Temp. F	125
Operating Rig Time	5 Hours
Equipment -- Location	P-108 | HAYS
Recorded By	D. Schmidt
Witnessed By	Robert Hendrix

Borehole Record

Run No.	Bit	From	To
One	12.25	0	307
Two	7.875	307	TD

Casing Record

Size	Wgt.	From	To
8.625	23	0	307

<<< Fold Here >>>

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

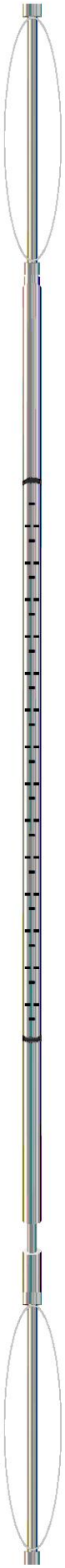
Bird City,
North to R Rd, 2 East, 3 1/3 North,
West into

Log Measured From: Kelly Bushing 5 Ft. Above Permanent Datum

THANK YOU FOR USING MIDWEST WIRELINE LLC
785-625-3858

Your Midwest Wireline Crew	This Log Record Was Witnessed By
Engineer: D. Schmidt	Primary Witness: Robert Hendrix
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb
			CENT-PENGO	4.25	3.00	70.00
WVF4	12.50					
WVF1	12.50		SLT-PENGO (602)	15.92	3.50	300.00
WVF3	10.50					
WVF2	10.50					
			CENT-PENGO	4.25	3.00	70.00

Dataset:	murfin_culwell h 3-19.db: field/well/son/pass2
Total length:	24.42 ft
Total weight:	440.00 lb
O.D.:	3.50 in

Log Variables

DatabaseC:\ProgramData\Warrior\Data\murfin_culwell h 3-19.db
Dataset field/well/stkml/pass4.12/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	125	5.5	0	1	2	2.71

NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	No	0	0	340	30	Off	4852

Variable Description

A : Cement Factor (a)
BOREID : Borehole I.D.
BOTTEMP : Bottom Hole Temperature
CASEOD : Casing O.D.
CASETHCK : Casing Thickness
FLUIDDEN : Fluid Density
M : Cement Exp (m)
MATRXDEN : Matrix Density
NPORSEL : Neutron Porosity Curve Select
PERFS : Perforation Flag
SNDERR : Deep Sonde Error Correction
SNDERRM : Medium Sonde Error Correction
SPSHIFT : S.P. Baseline Offset
SRFTEMP : Surface Temperature
SZCOR : CN Size Cor. ?
TDEPTH : Total Depth

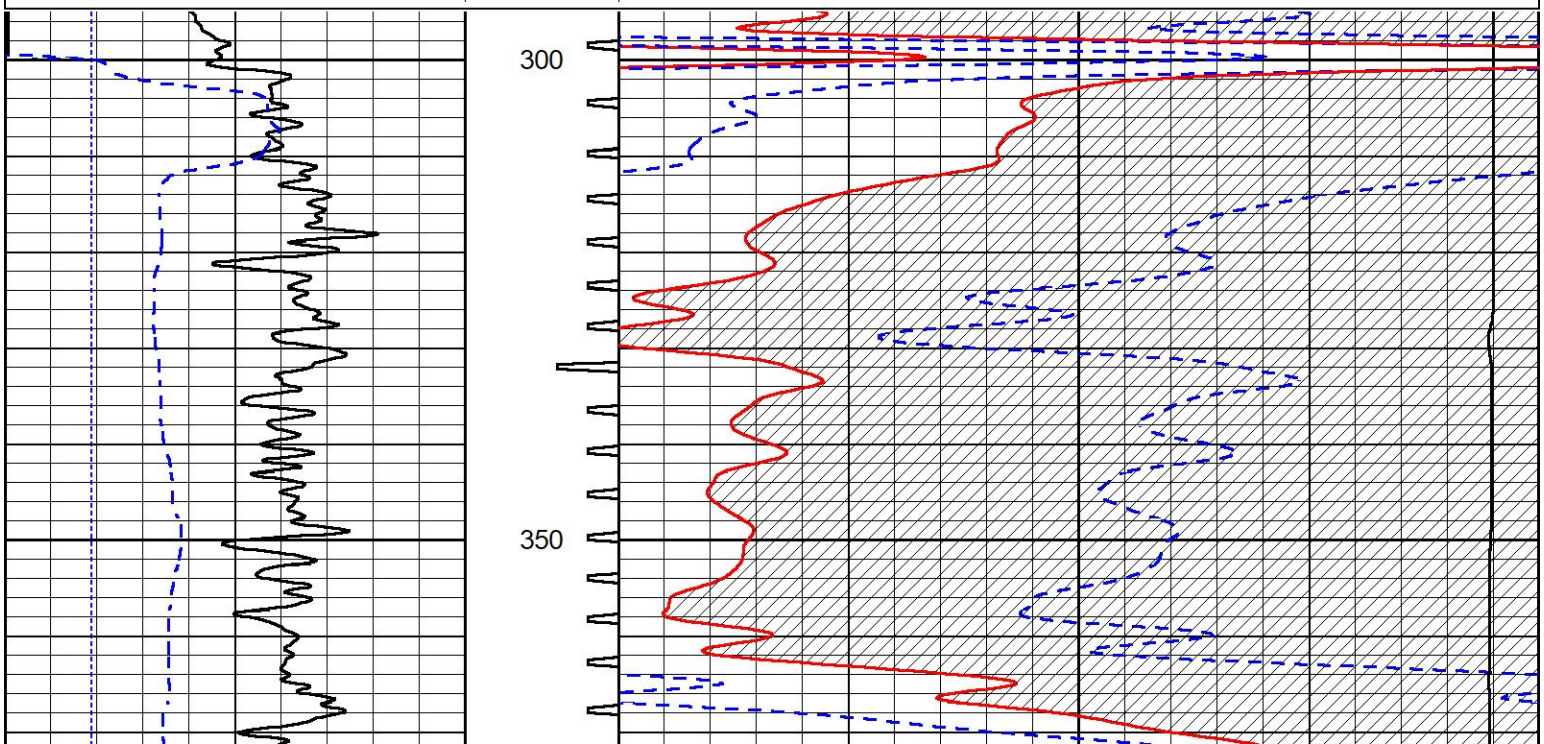
MIDWEST WIRELINE

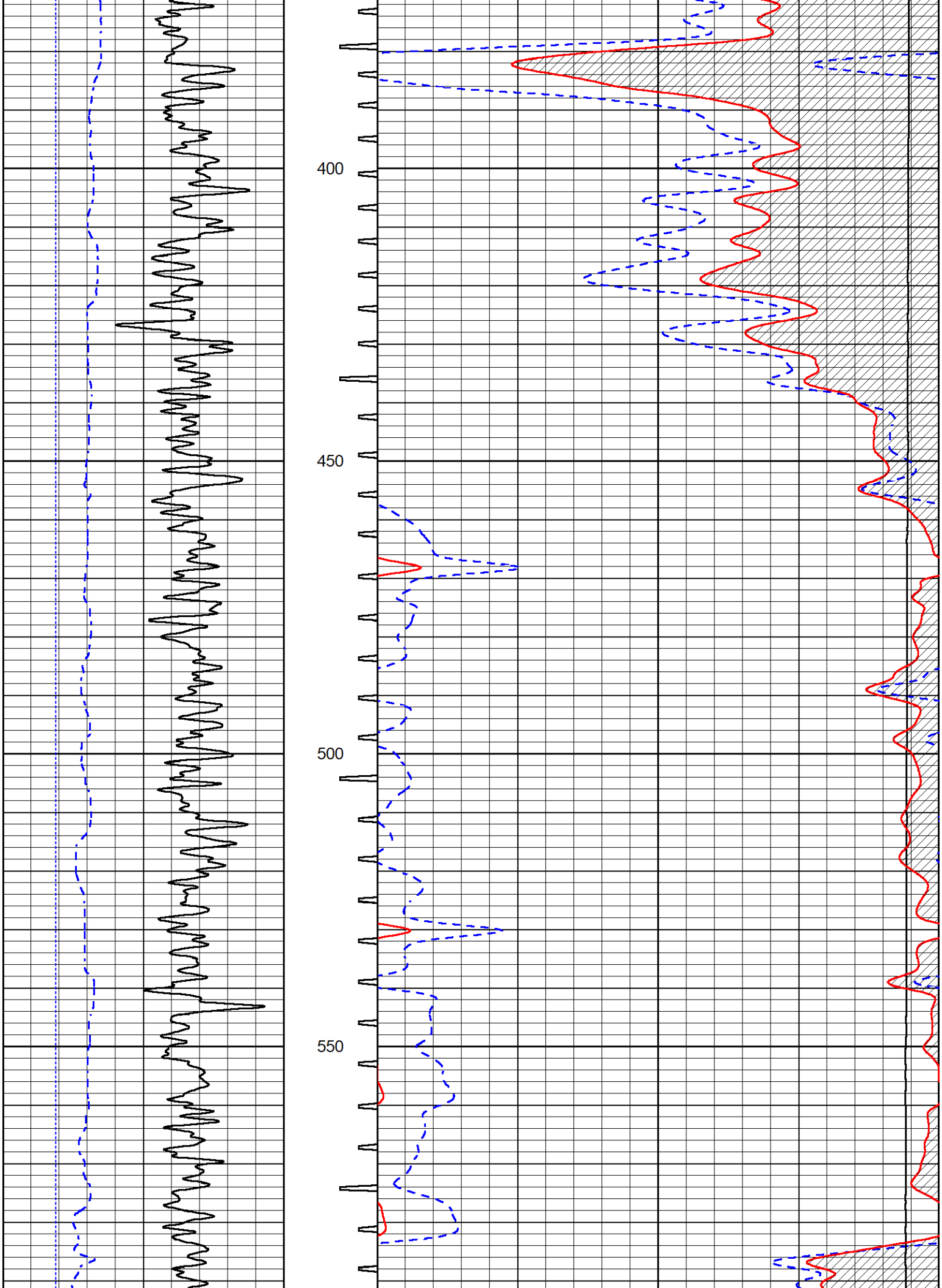
DETAIL SECTION

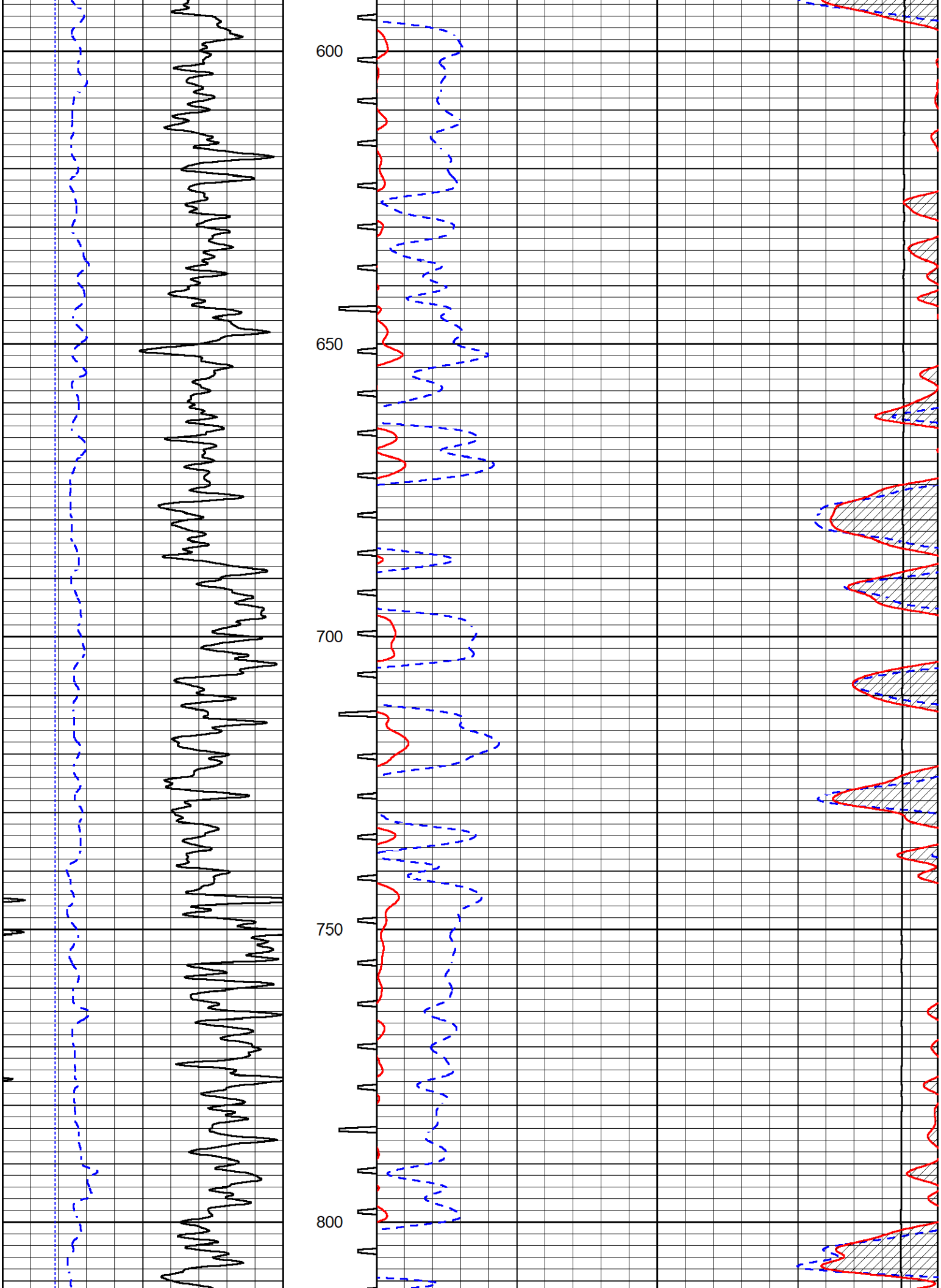
MAIN PASS

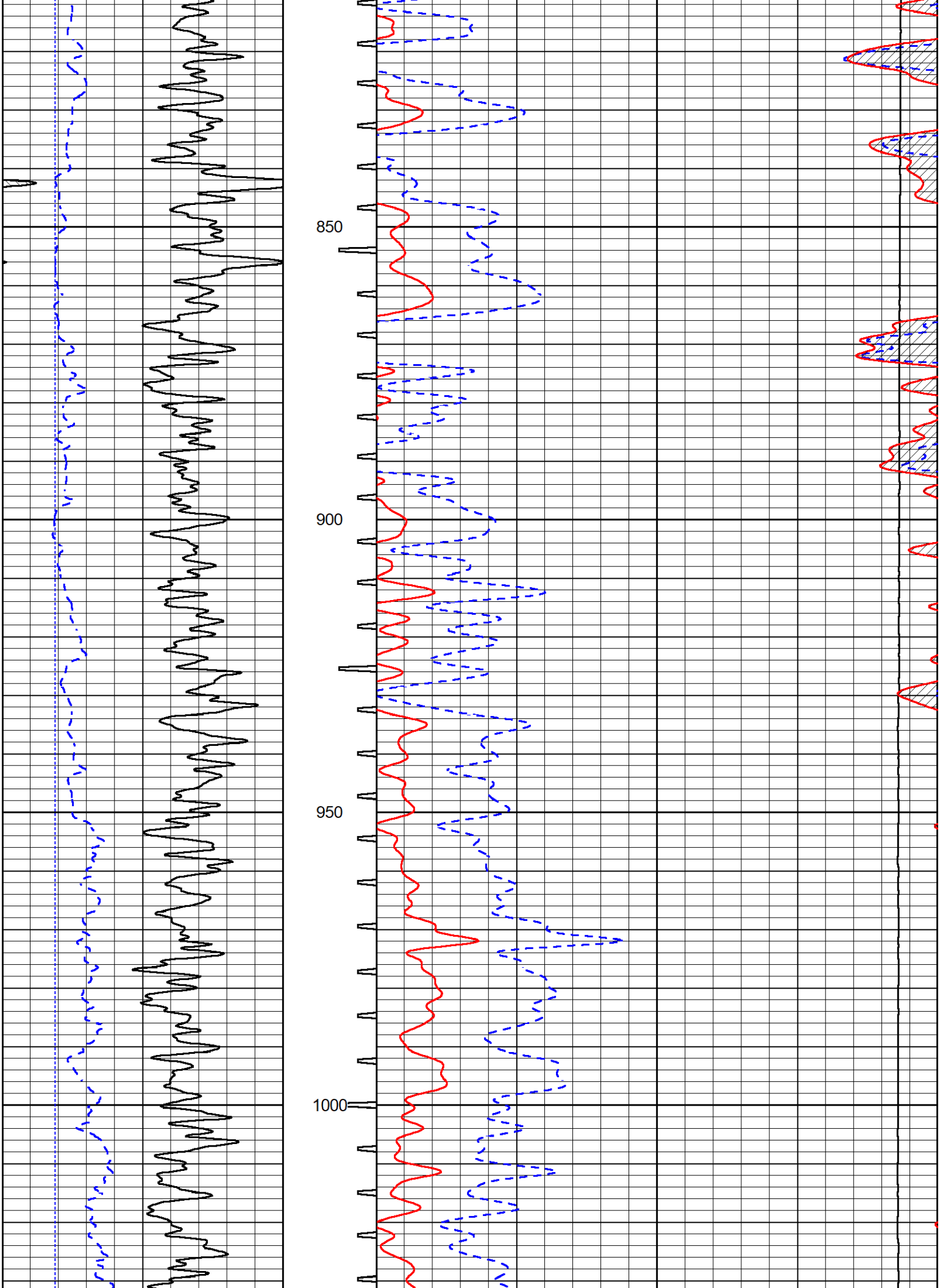
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Dataset Pathname	stkml/pass4.4
Presentation Format	_sonic
Dataset Creation	Sat Jan 14 23:38:36 2023
Charted by	Depth in Feet scaled 1:240

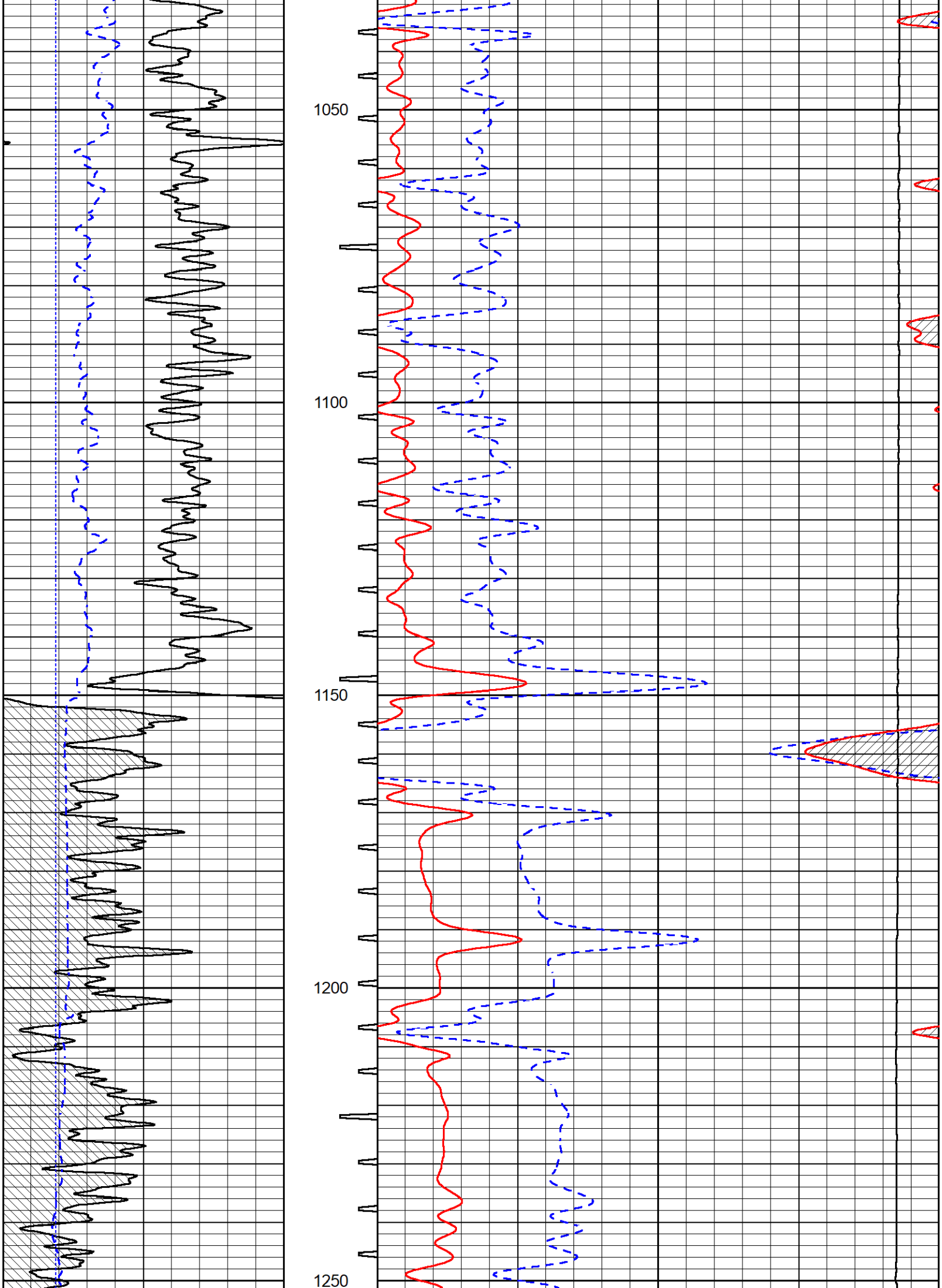
0	Gamma Ray (GAPI)	150	Sonic Int	140	Delta Time (usec/ft) (usec/ft) 40
150	GR (GAPI)	300	5 (msec) 0	30	Sonic Porosity (pu) (pu) -10
6	Caliper (in)	16		15000	Line Tension (lb) 0

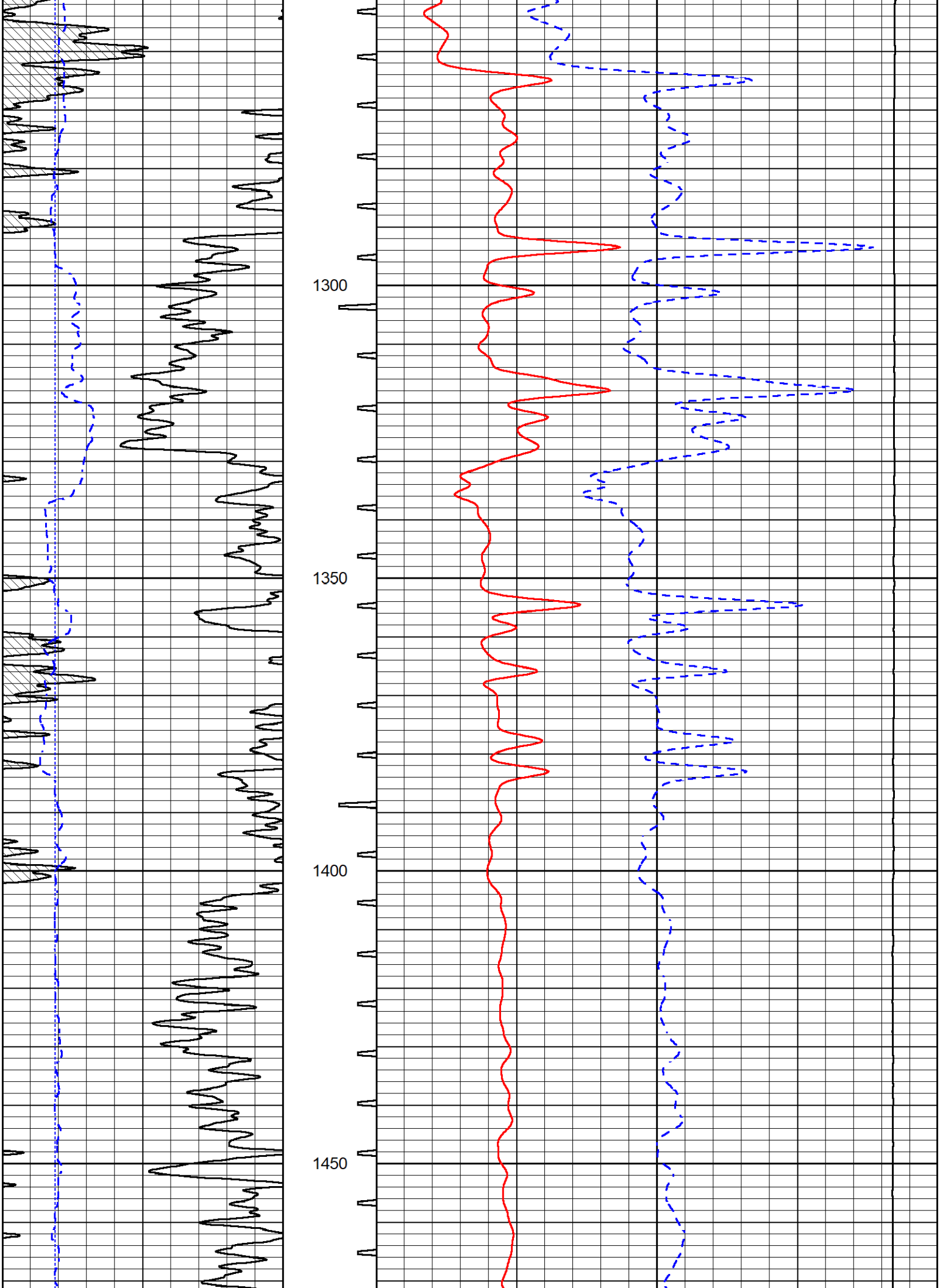


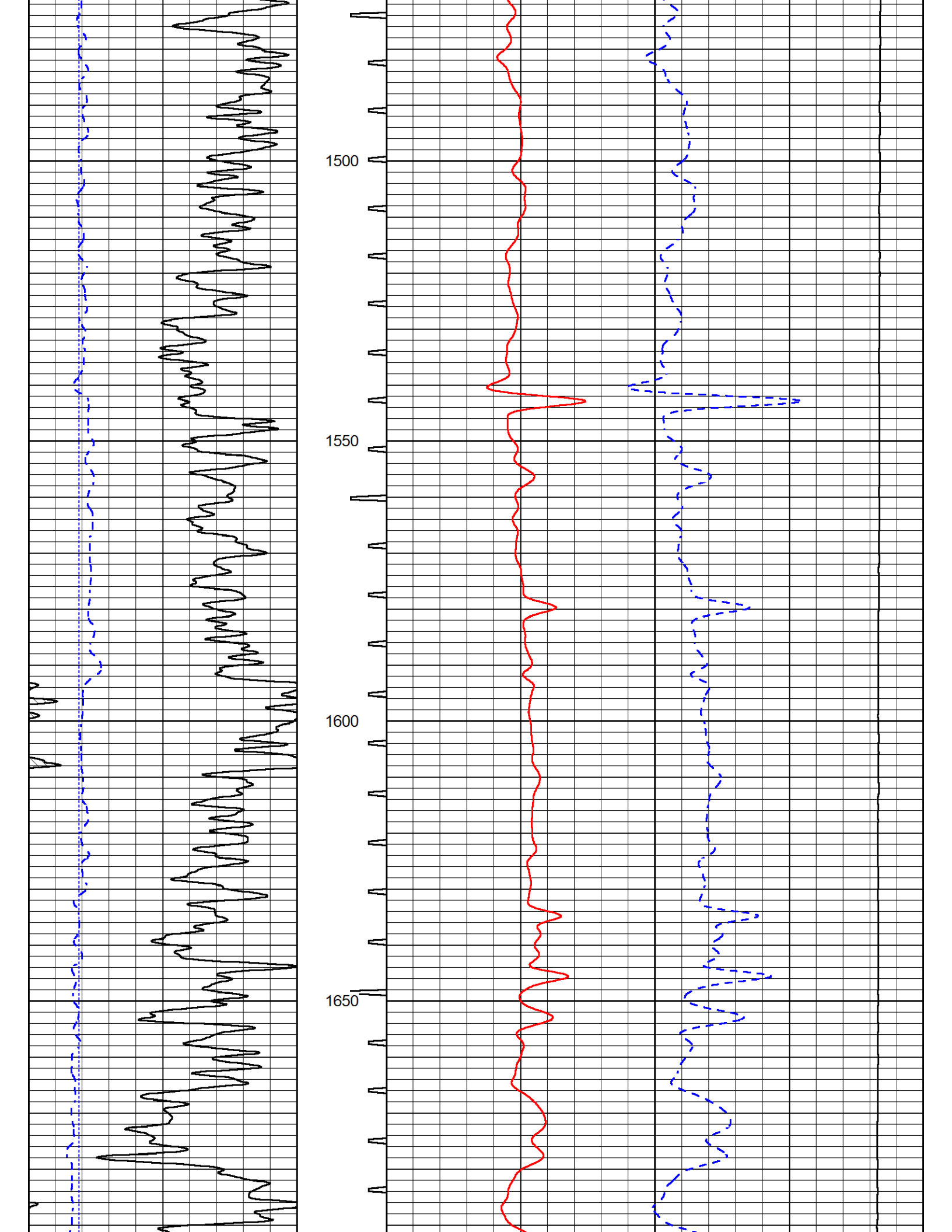

400
450
500
550

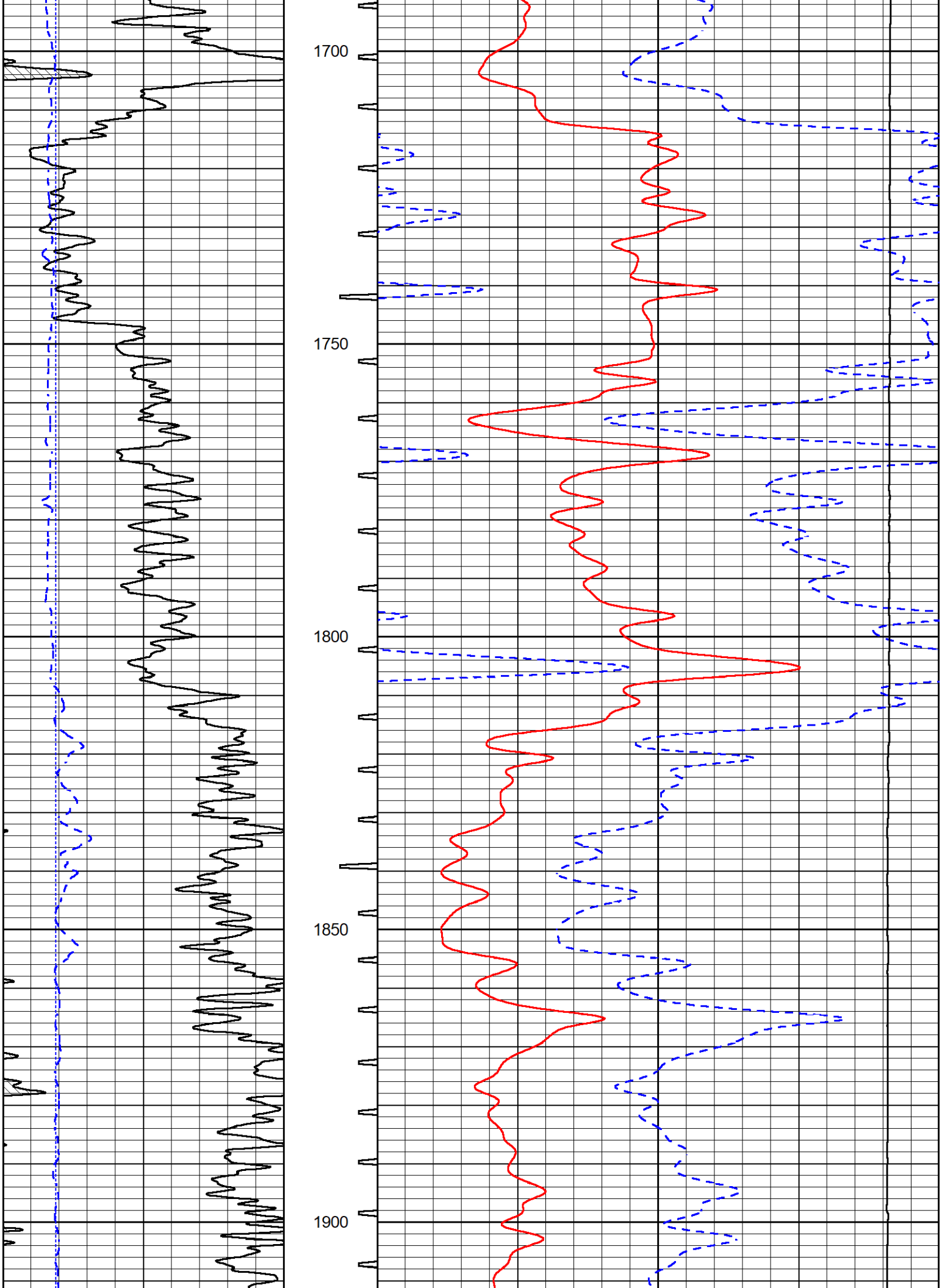

600
650
700
750
800

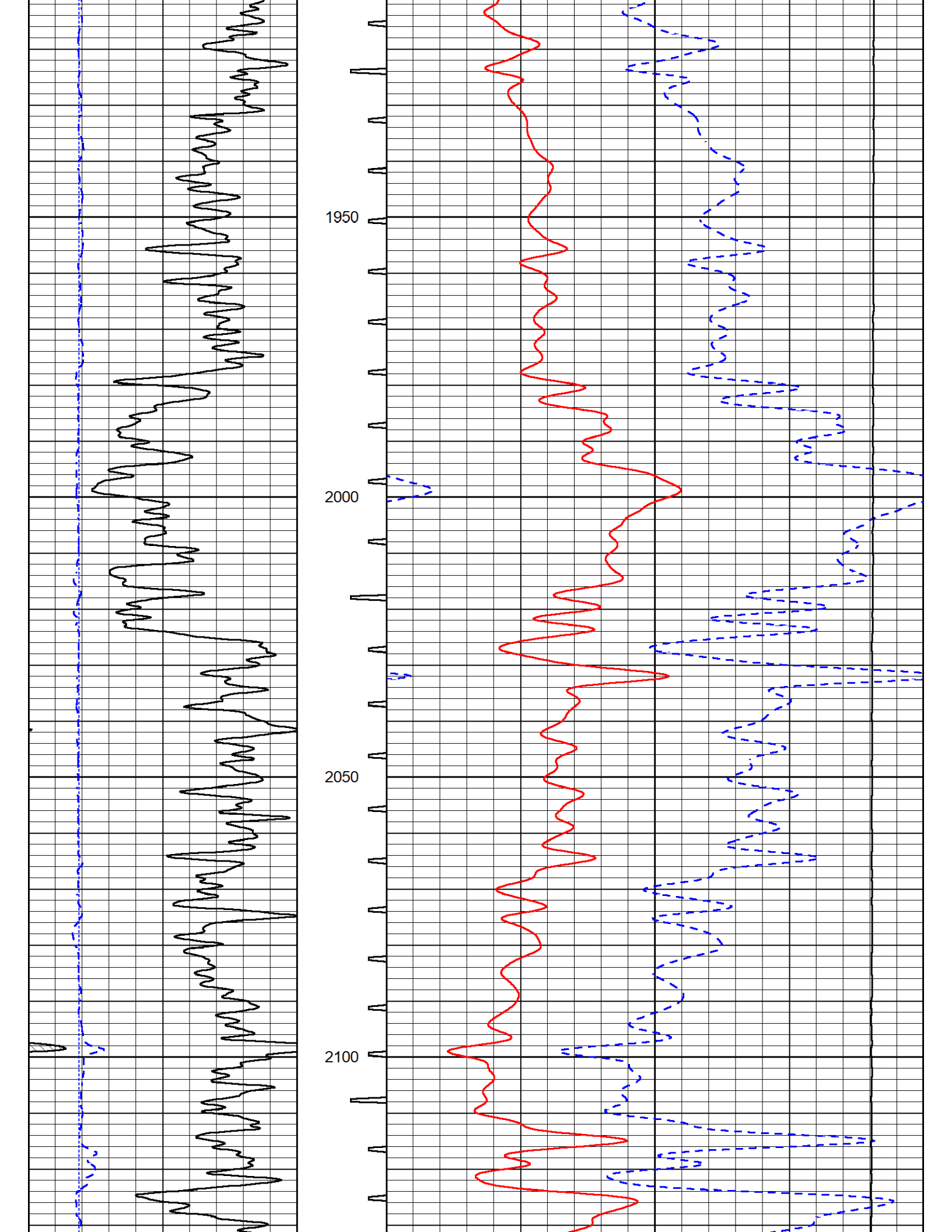

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950
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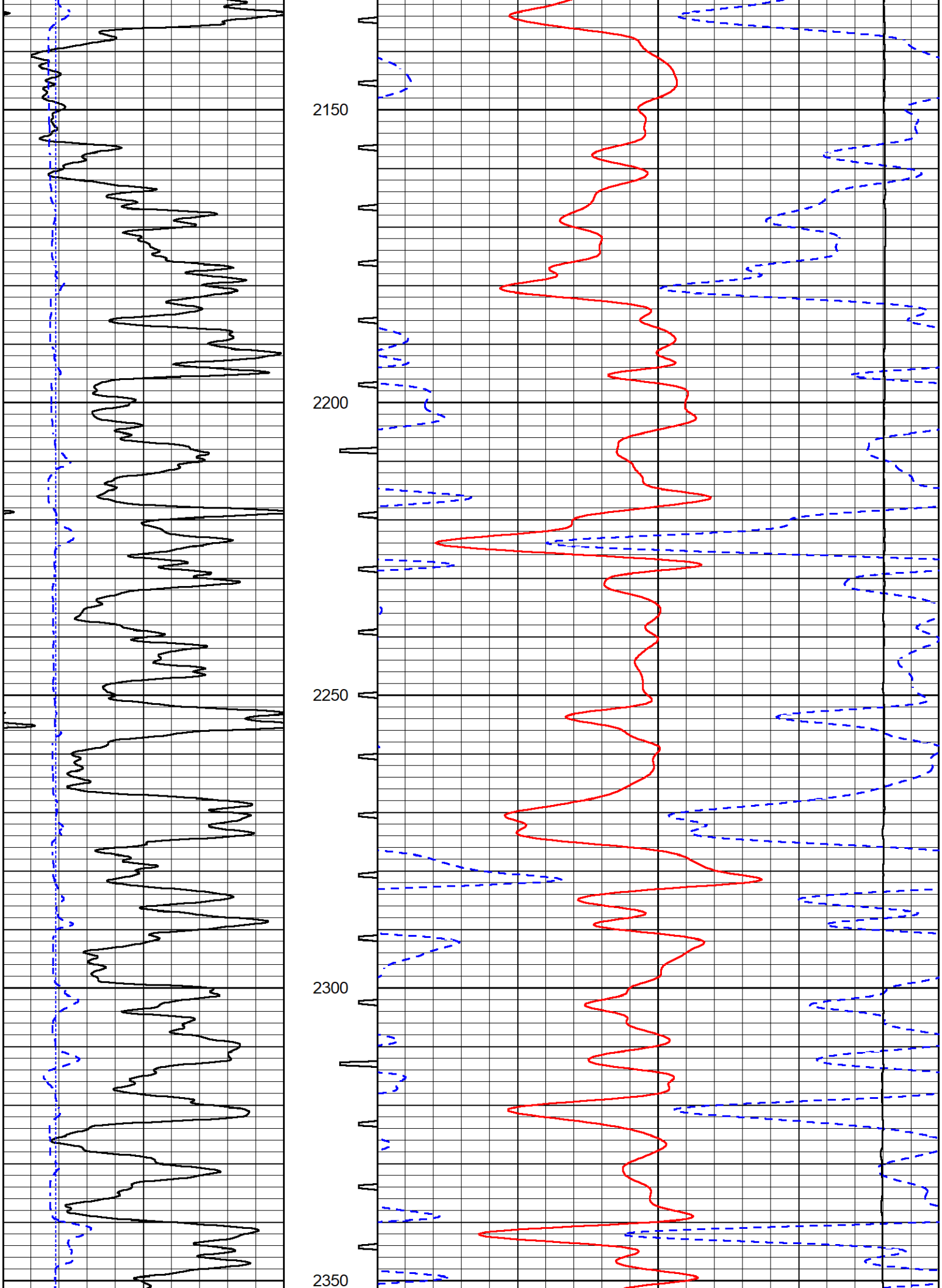

1050
1100
1150
1200
1250

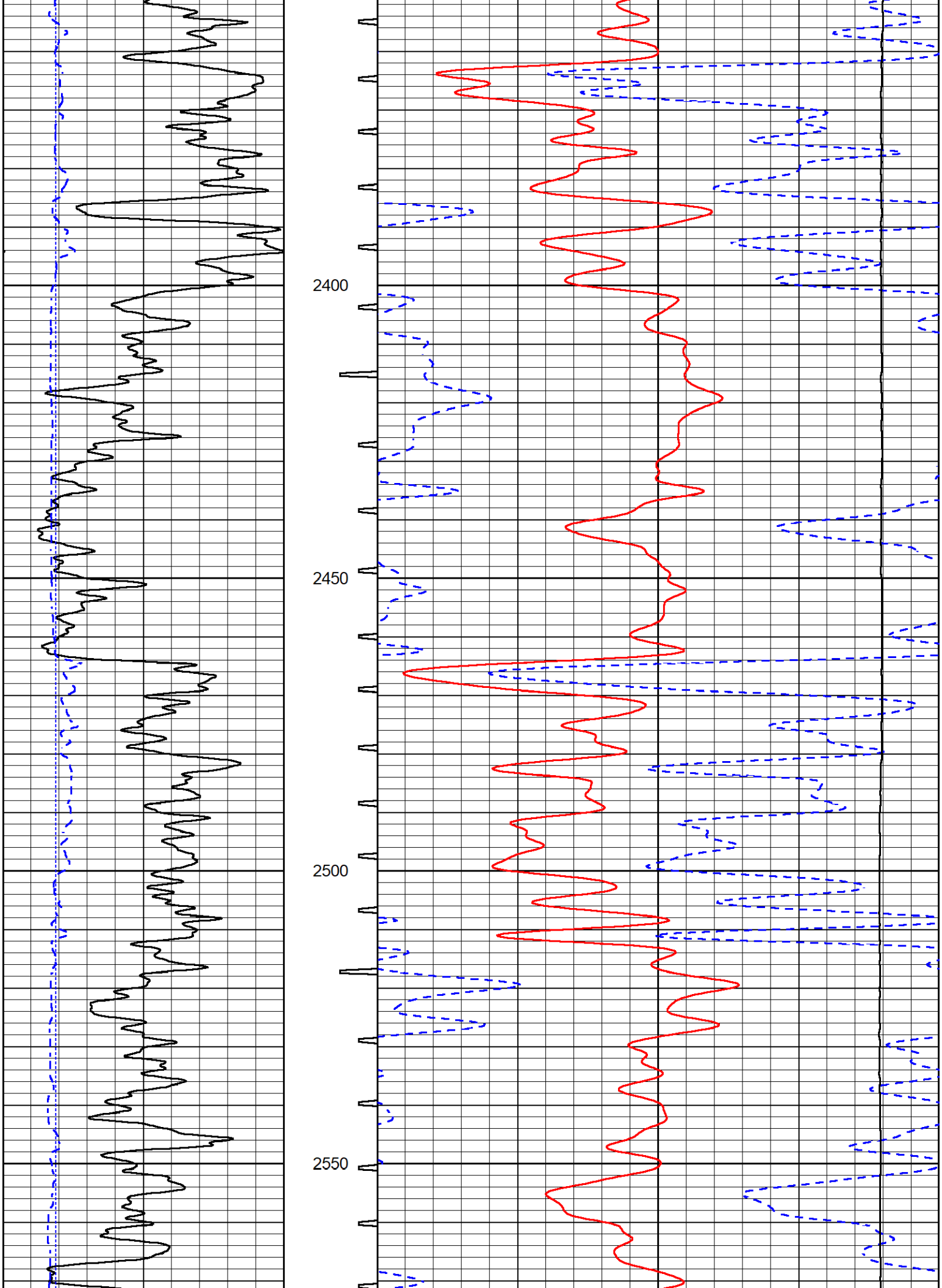

1300
1350
1400
1450

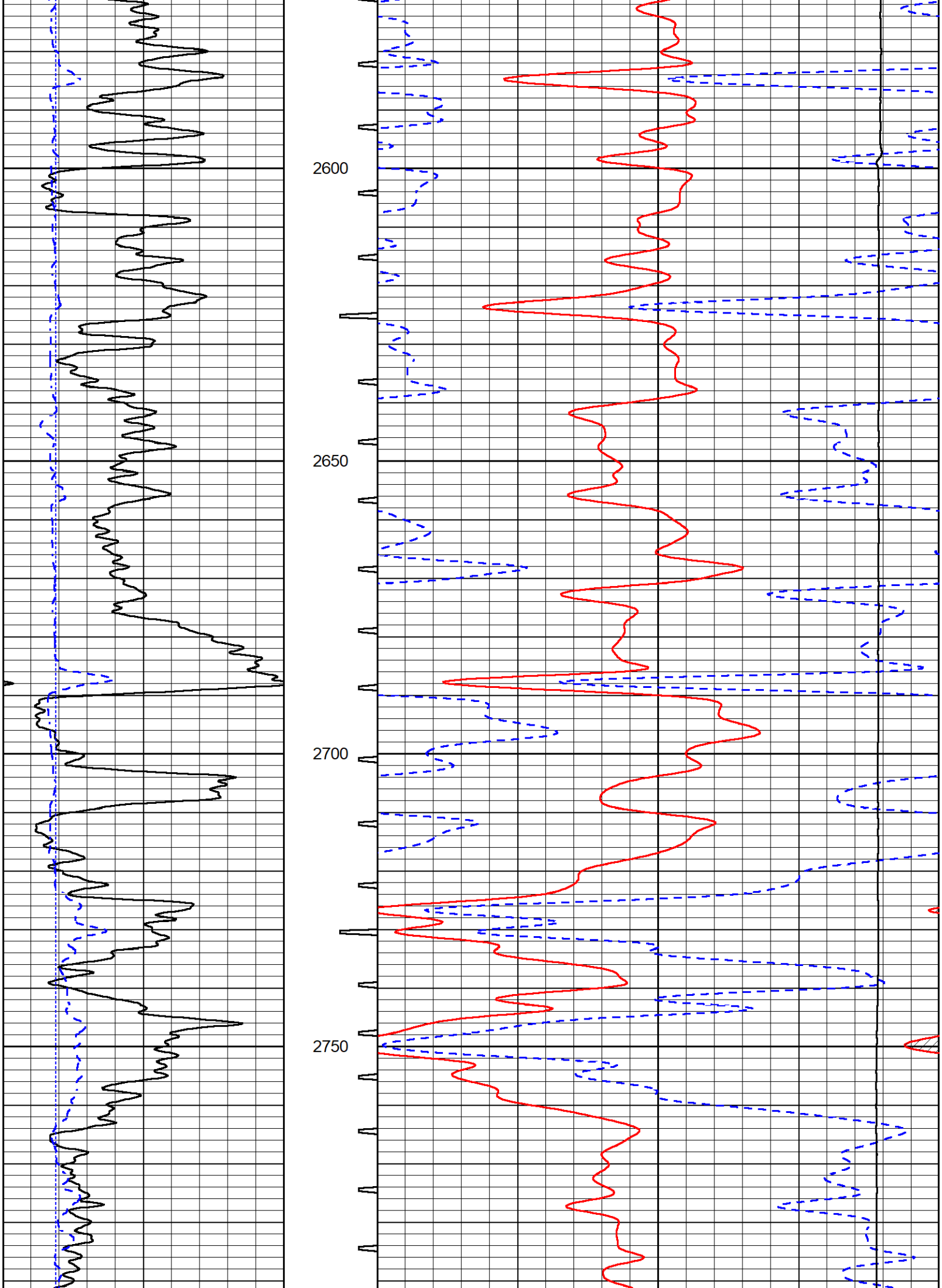

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1550
1600
1650

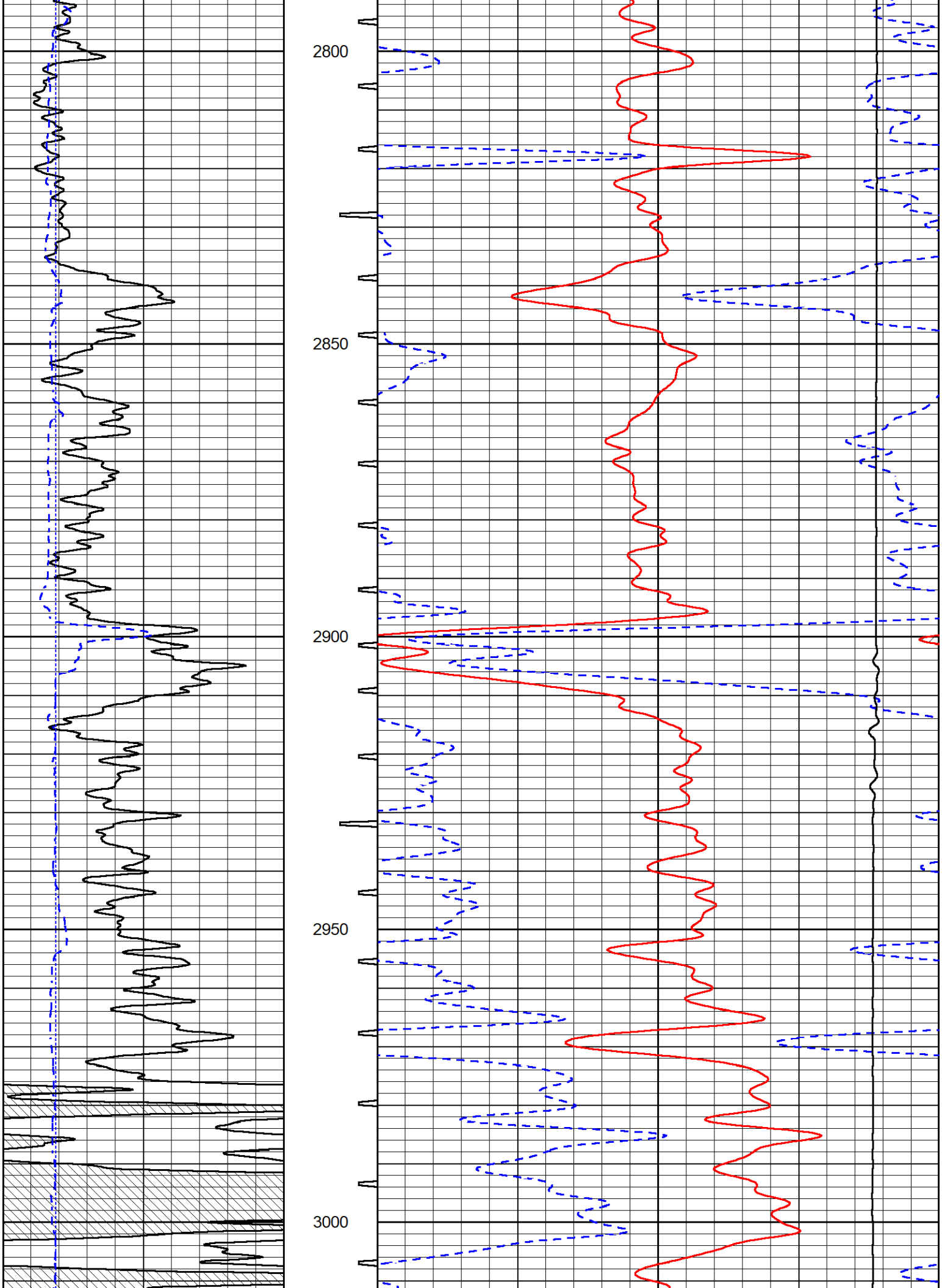

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1750
1800
1850
1900

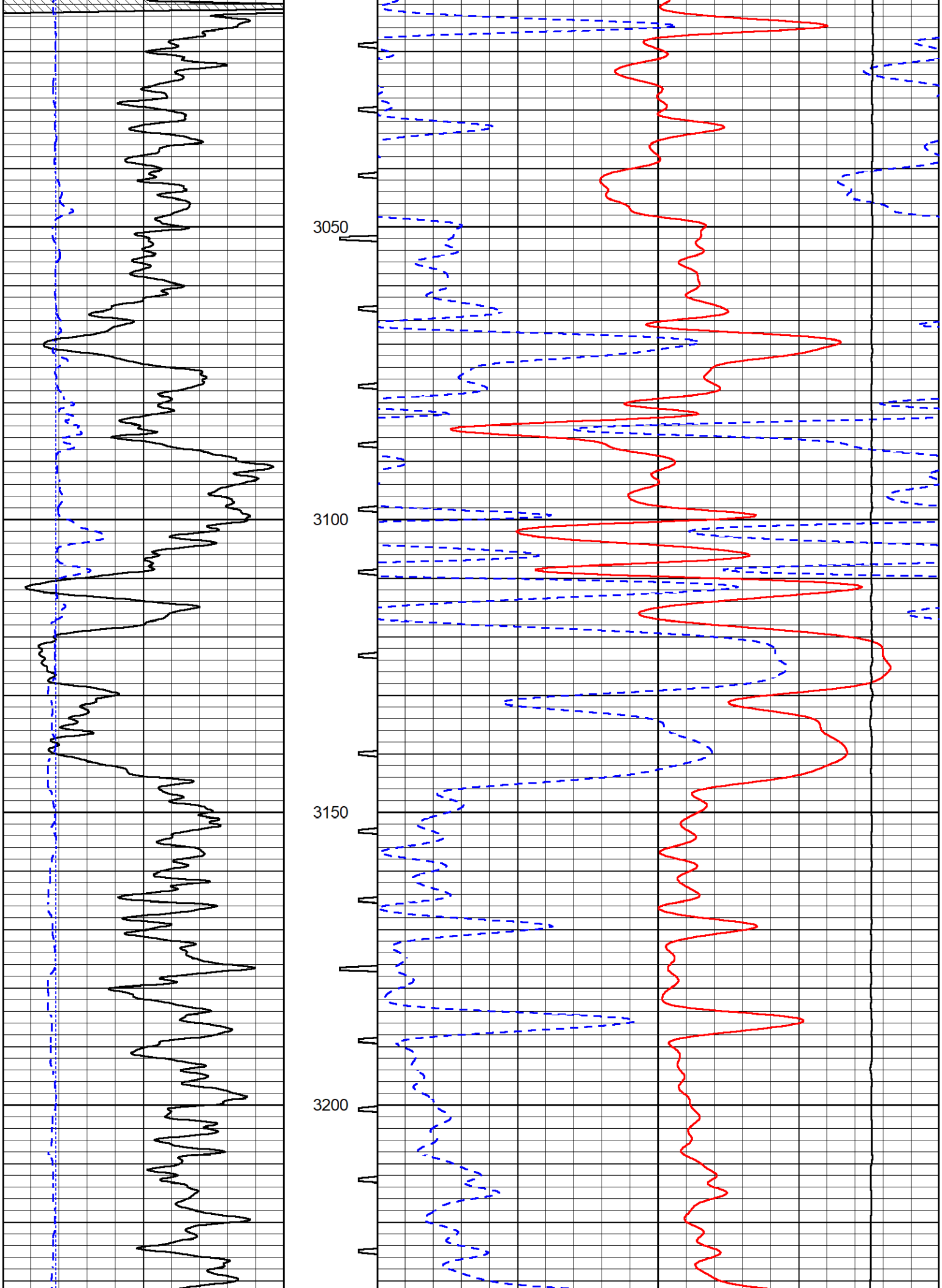

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2000
2050
2100

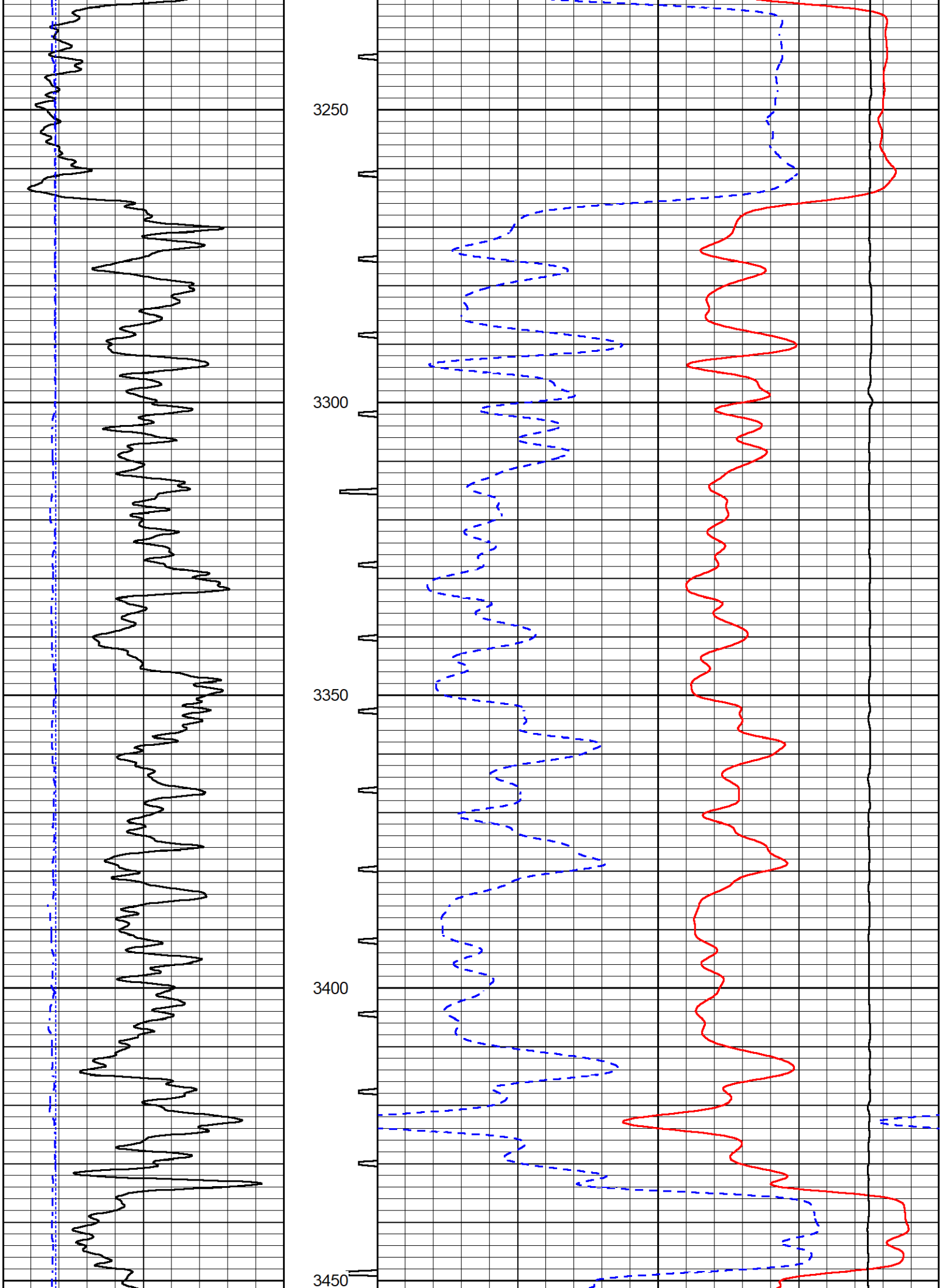

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2200
2250
2300
2350

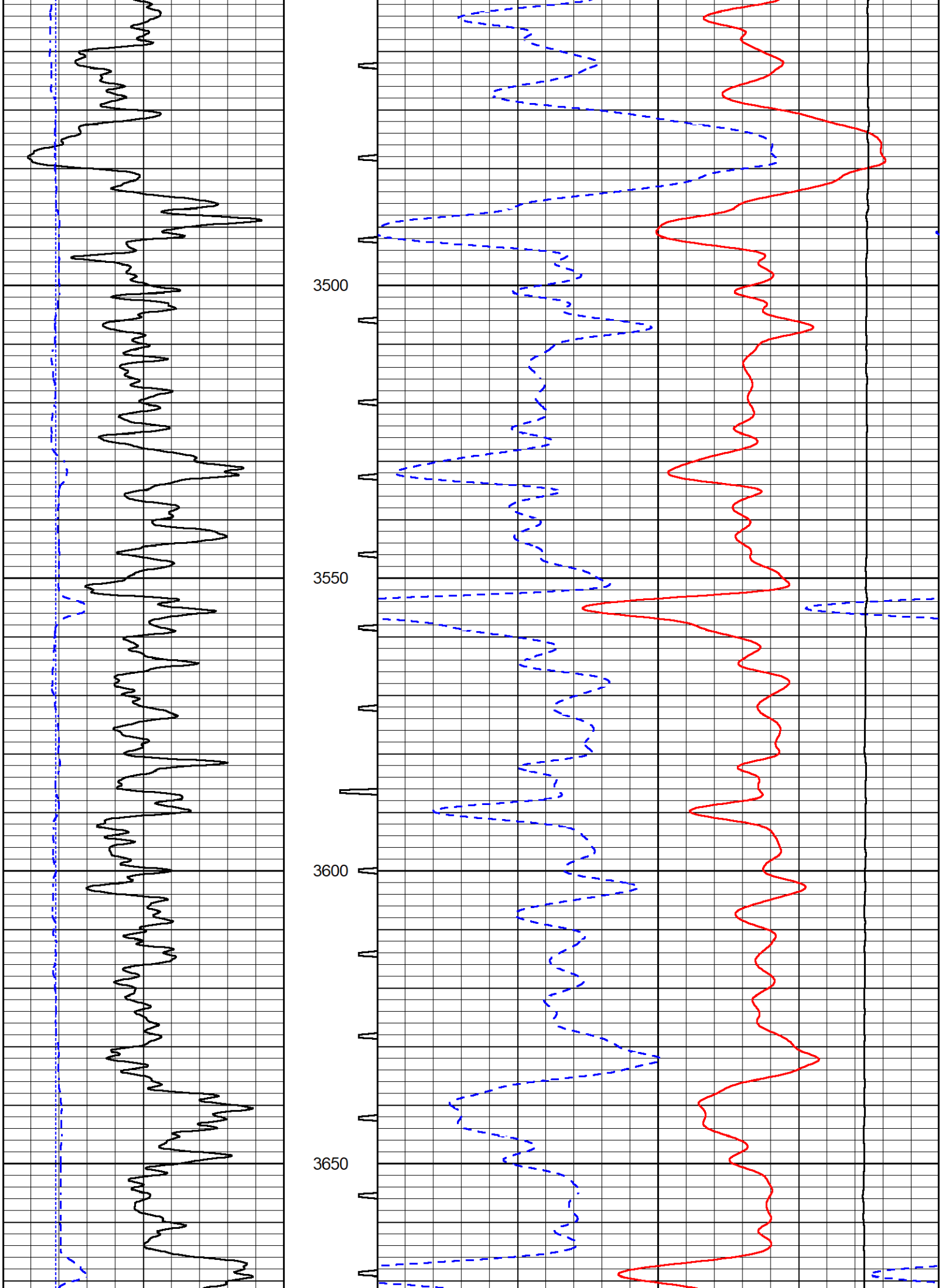

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2450
2500
2550

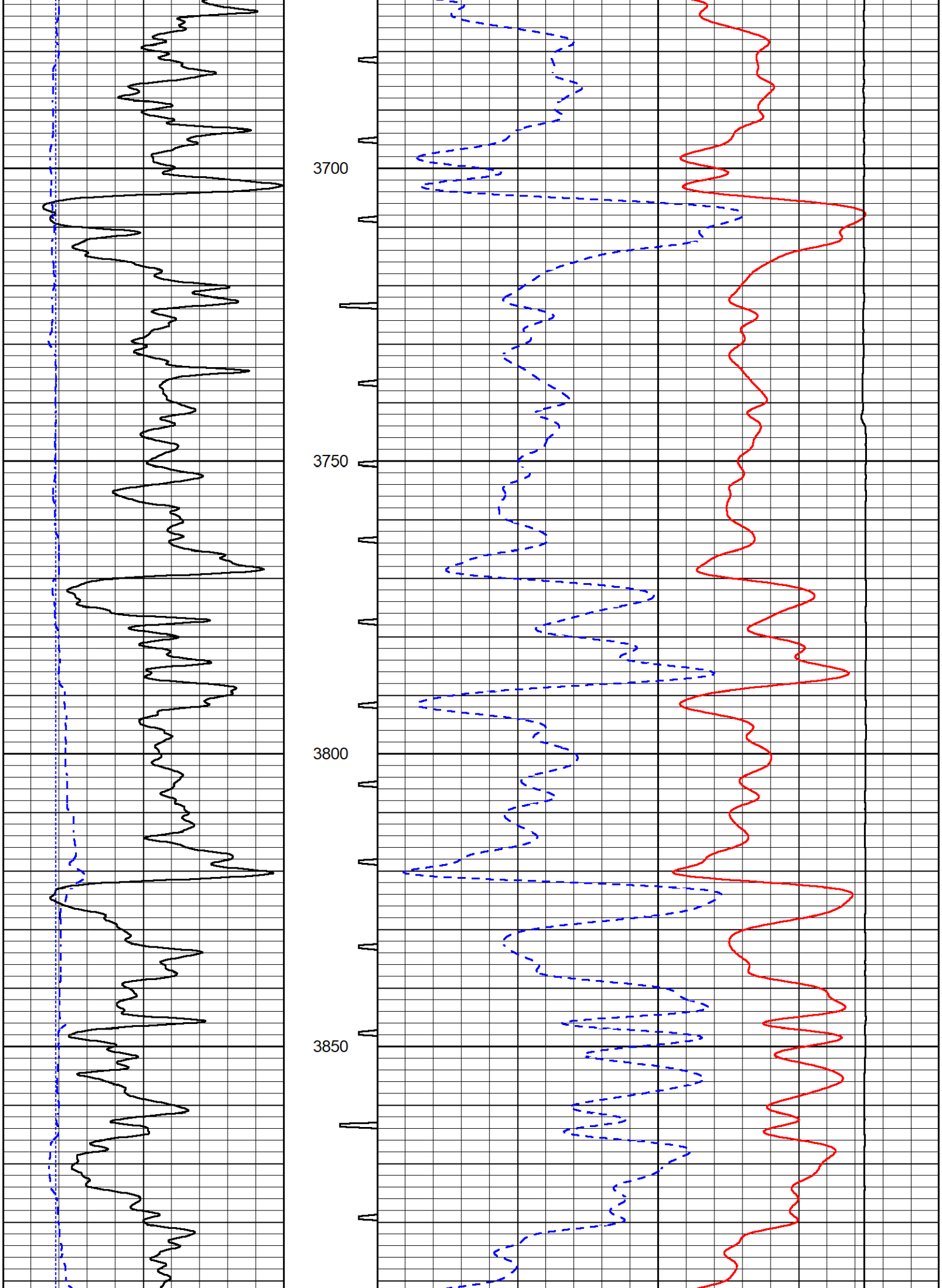

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2650
2700
2750

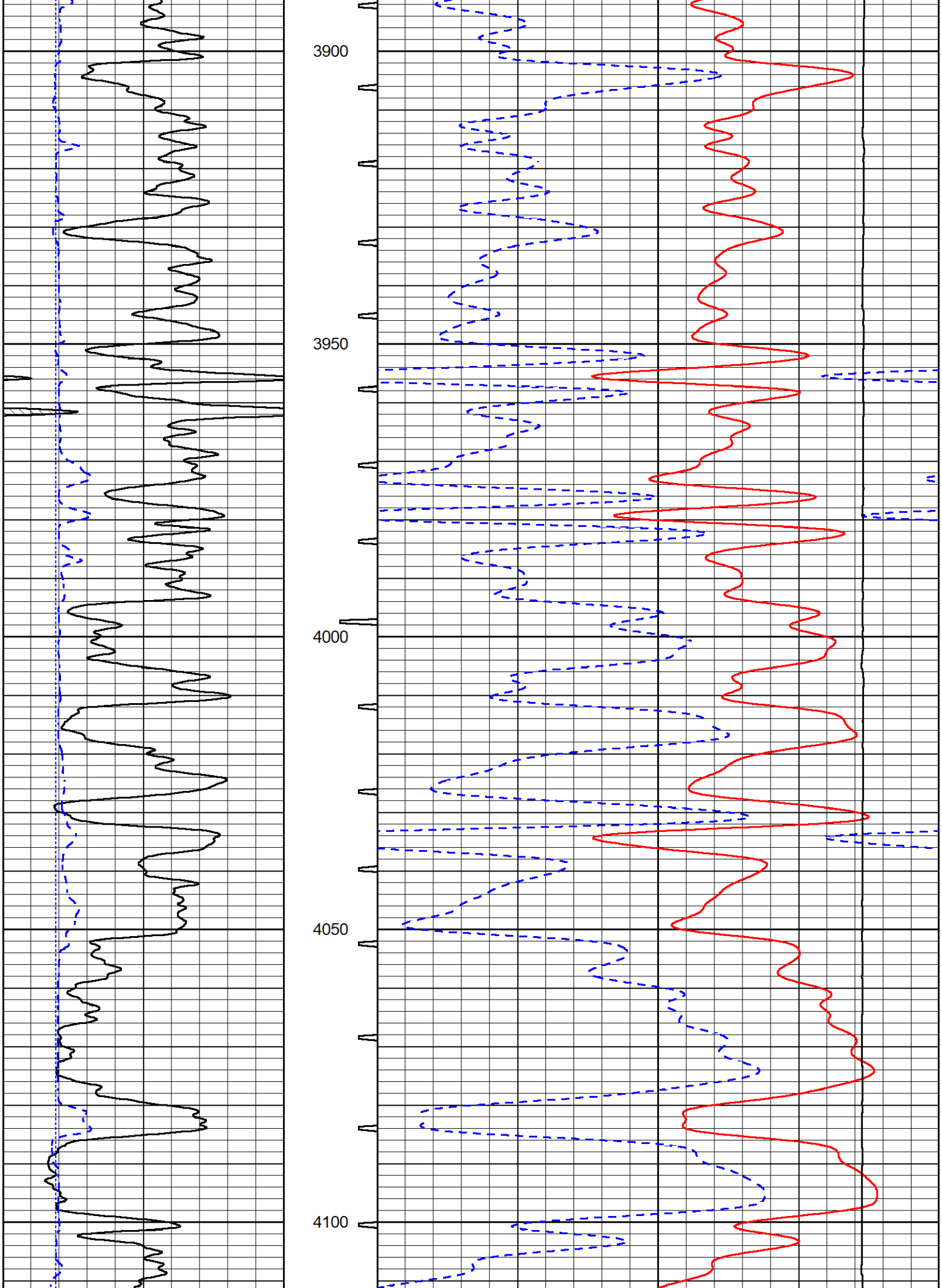

2800
2850
2900
2950
3000

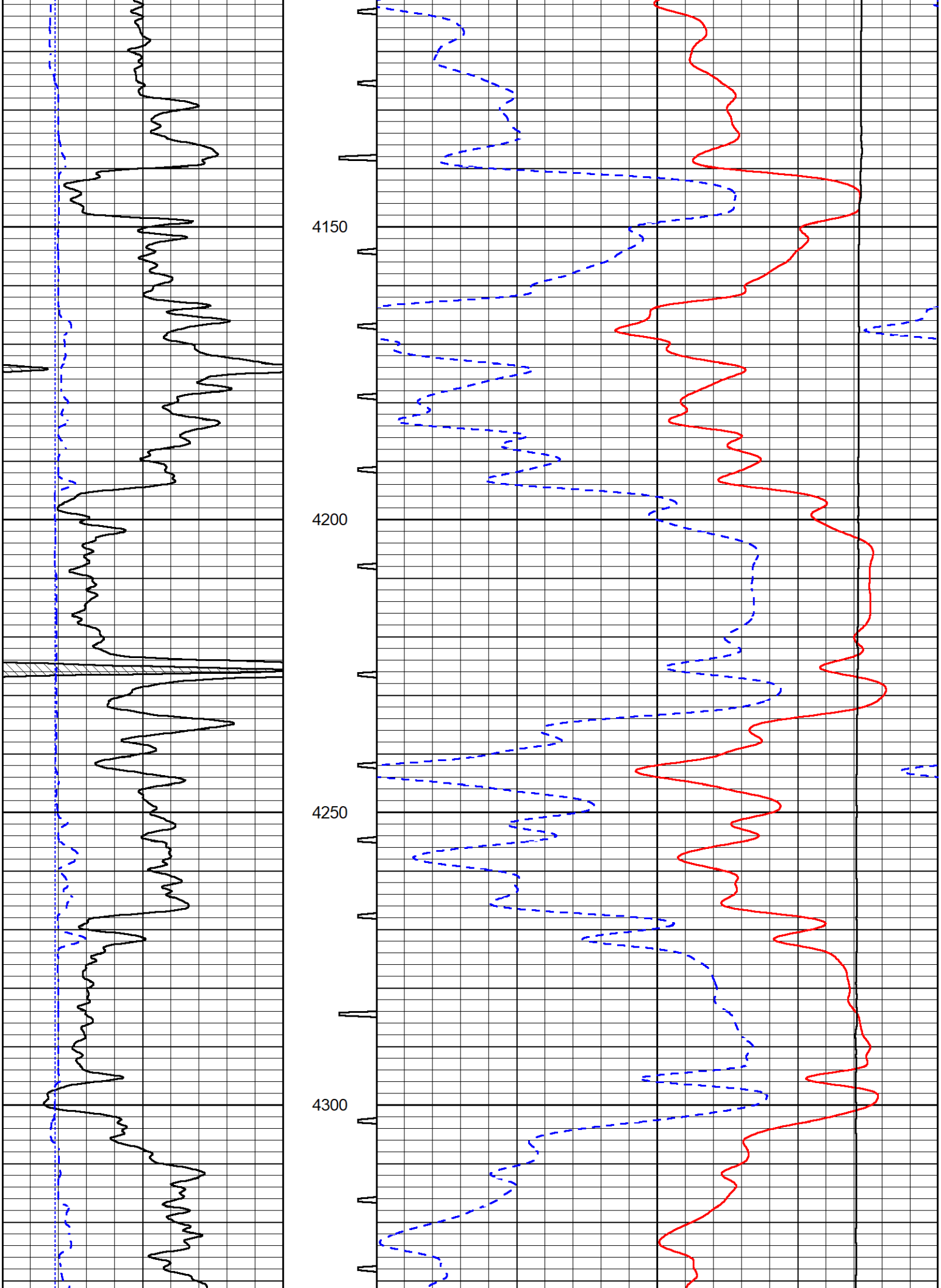

3050
3100
3150
3200

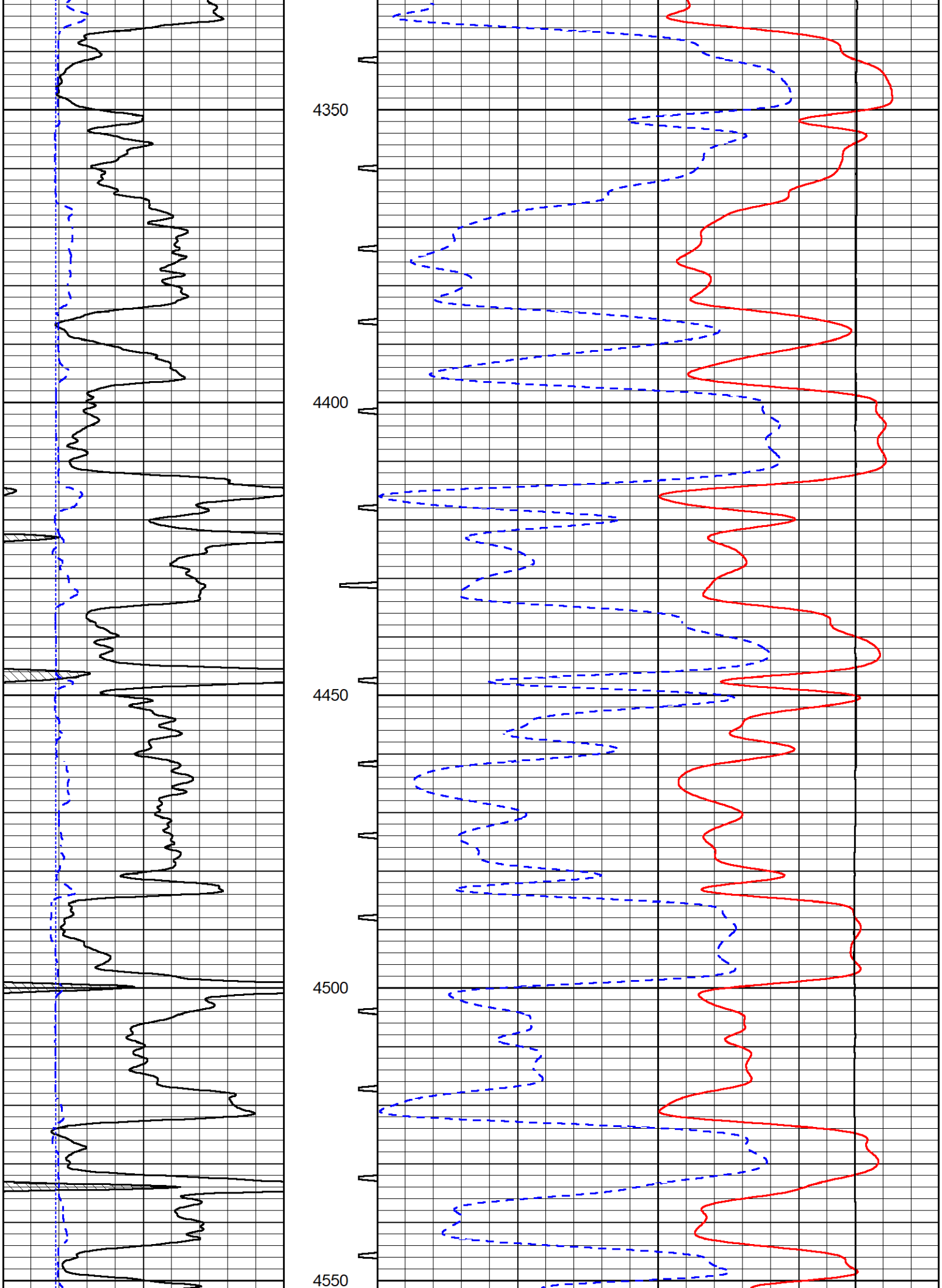

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3350
3400
3450

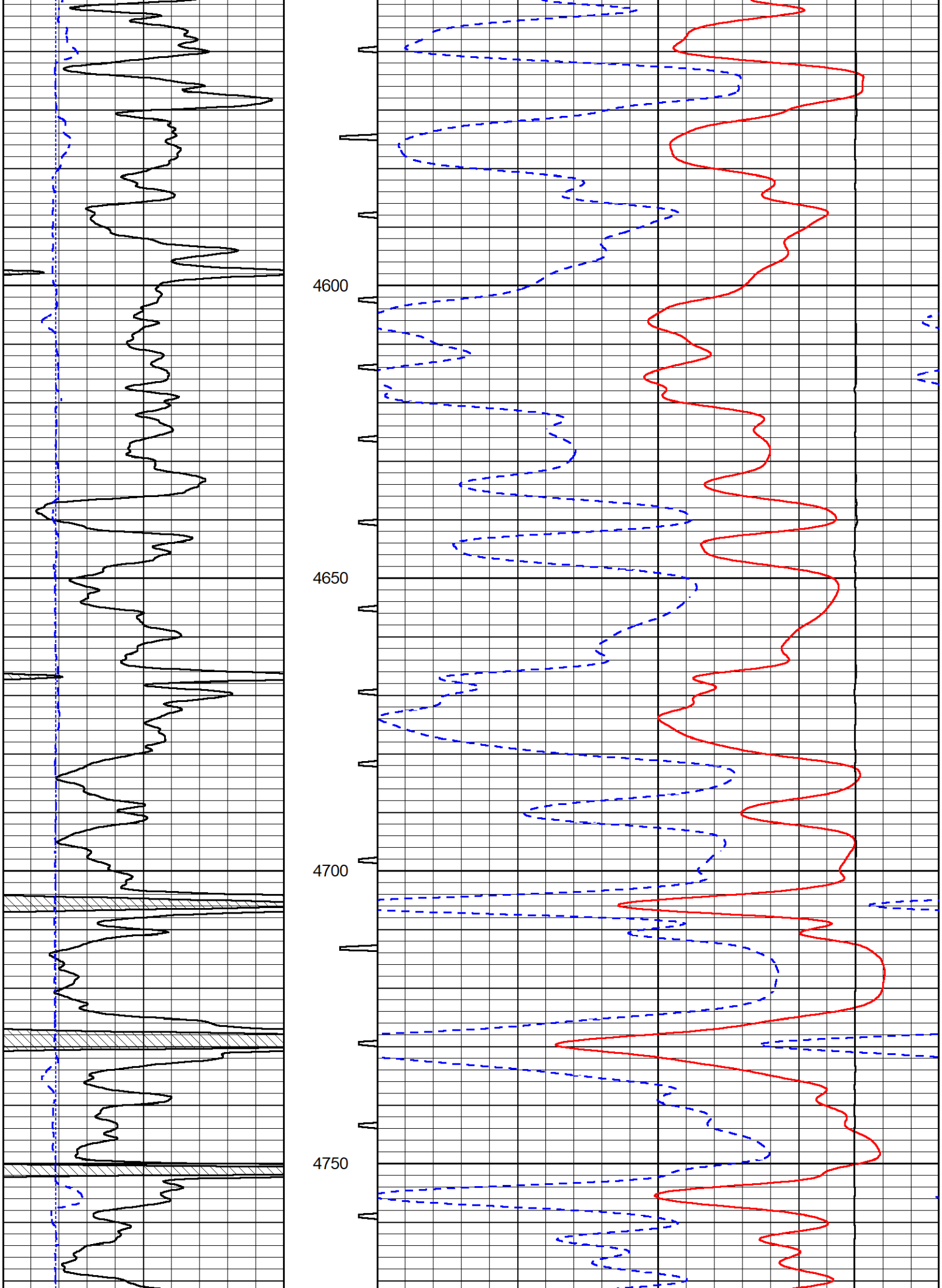

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3600
3650

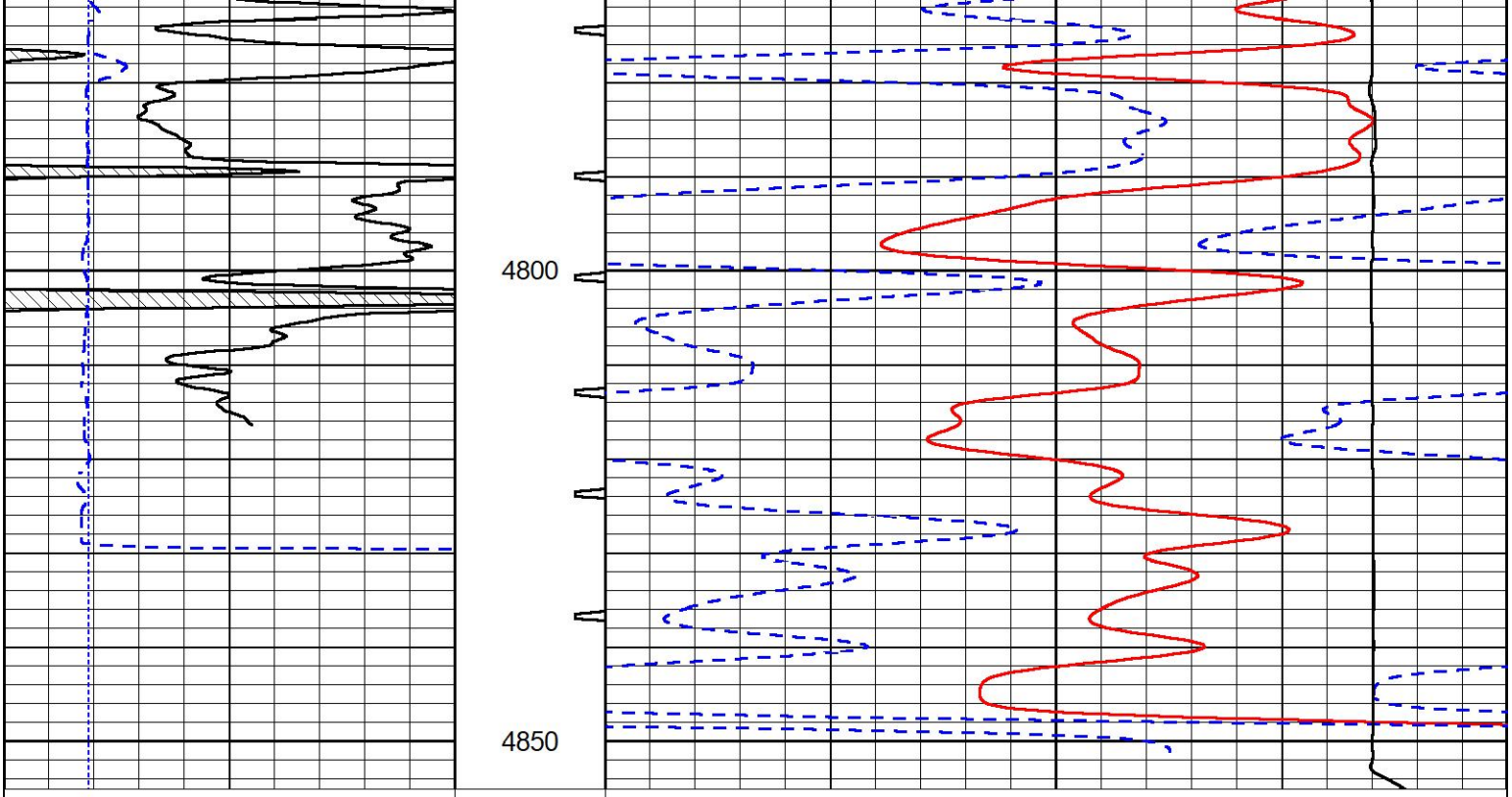

3700
3750
3800
3850


3900
3950
4000
4050
4100


4150
4200
4250
4300


4350
4400
4450
4500
4550


4600
4650
4700
4750



0	Gamma Ray (GAPI)	150	Sonic Int	140	Delta Time (usec/ft) (usec/ft)	40
150	GR (GAPI)	300	5 (msec) 0	30	Sonic Porosity (pu) (pu)	-10
6	Caliper (in)	16		15000	Line Tension (lb)	0

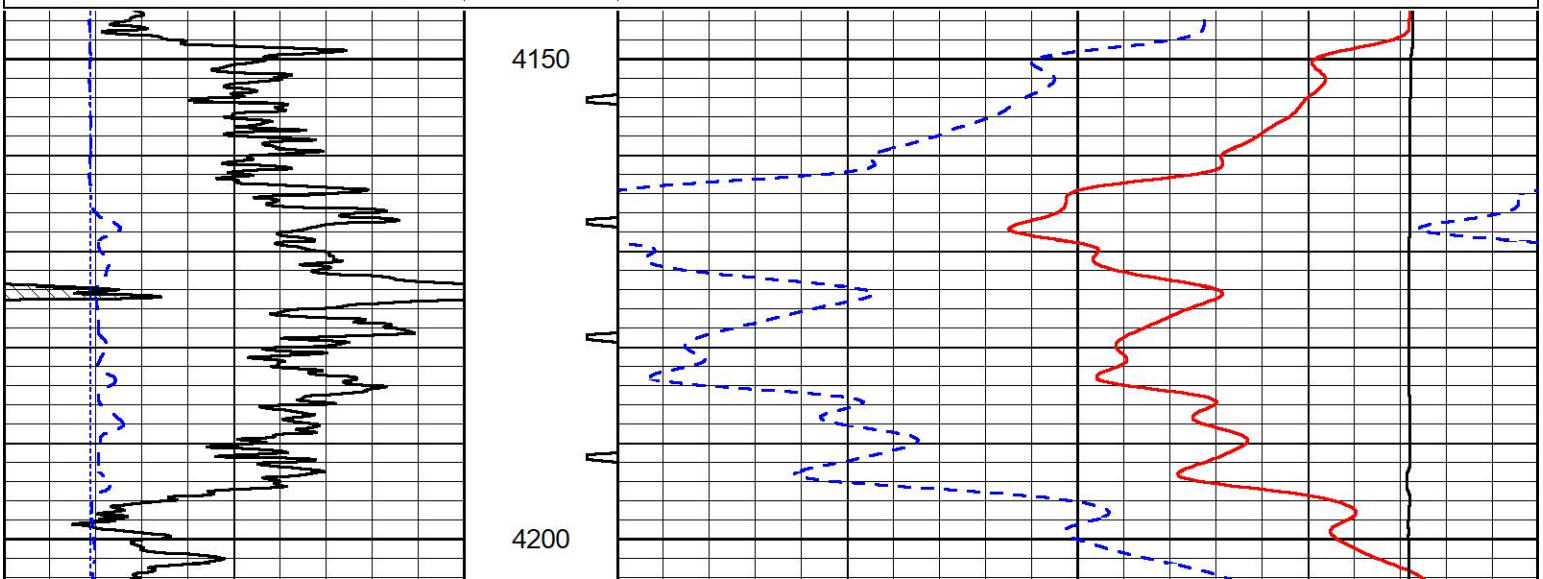
MIDWEST WIRELINE

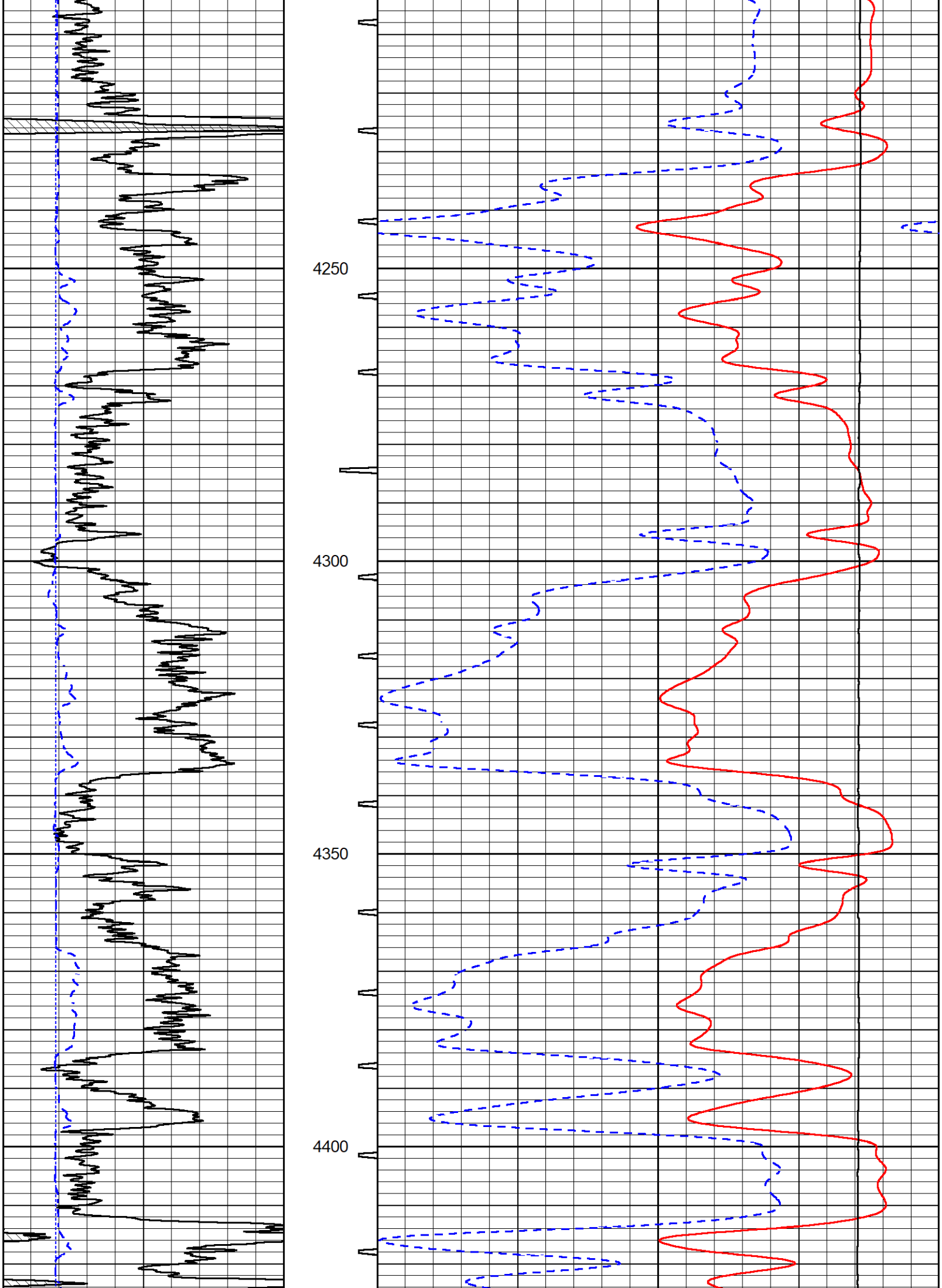
REPEAT SECTION

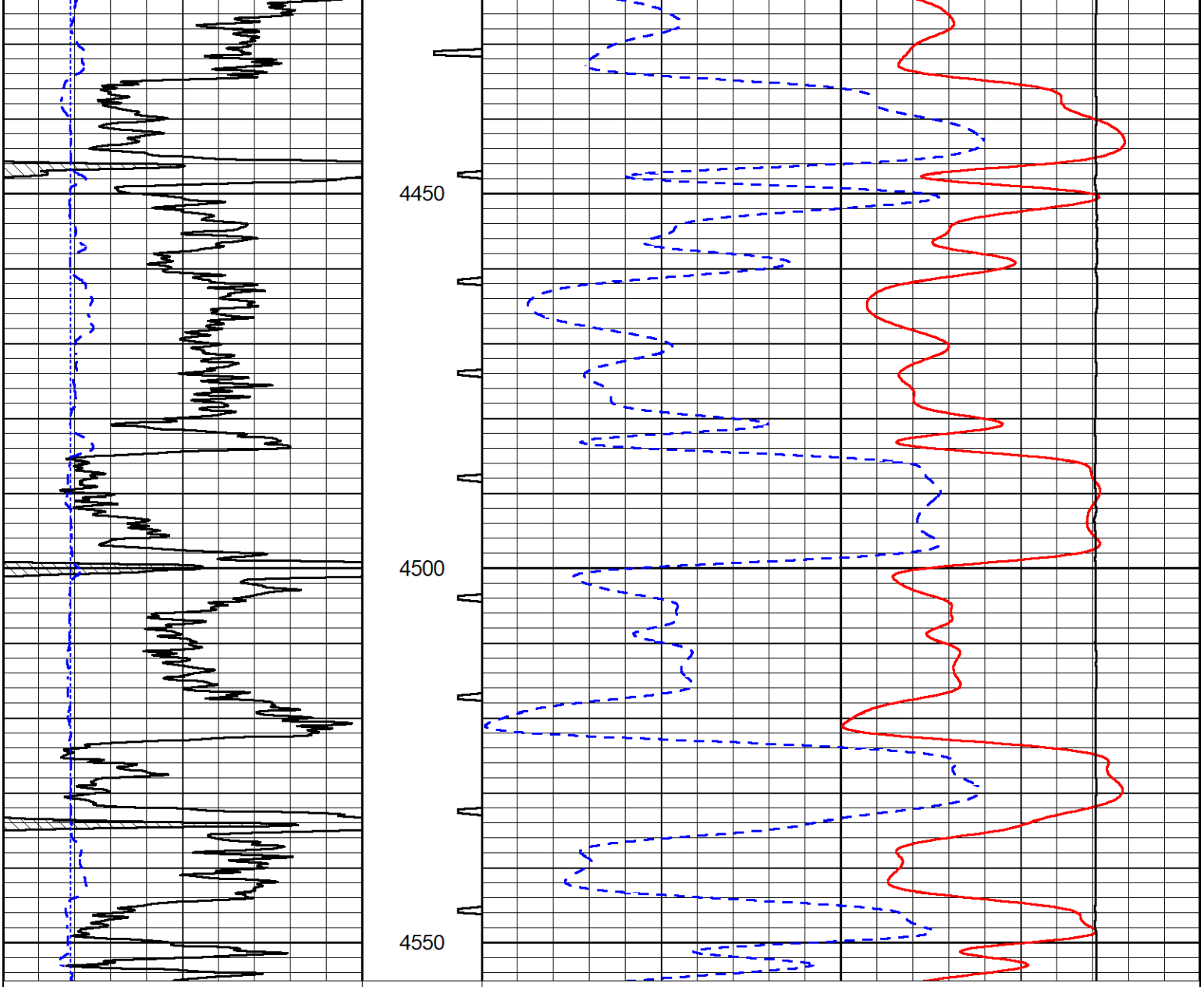
REPEAT PASS

Database File	murfin_culwell h 3-19.db
Dataset Pathname	stkml/pass2.1
Presentation Format	_sonic
Dataset Creation	Sat Jan 14 23:14:19 2023
Charted by	Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	150	Sonic Int	140	Delta Time (usec/ft) (usec/ft)	40
150	GR (GAPI)	300	5 (msec) 0	30	Sonic Porosity (pu) (pu)	-10
6	Caliper (in)	16		15000	Line Tension (lb)	0




4250
4300
4350
4400



Calibration Report

Database File	murfin_culwell h 3-19.db
Dataset Pathname	stkml/pass4.12
Dataset Creation	Sat Jan 14 22:52:47 2023

Dual Induction Calibration Report

Serial-Model:	505 HT-M&W
Surface Cal Performed:	Mon Nov 14 06:05:40 2022

	Readings		References			Results	
Loop:	Air	Loop	Air	Loop		m	b
Deep	167.000	835.000	0.000	255.800	mmho/m	0.480	-49.500
Medium	1348.000	1348.000	0.000	255.800	mmho/m	0.390	-33.500

Microlog Calibration Report

Serial-Model: 402-PSI STKBL ML
Performed: Tue Jan 3 20:52:47 2023

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0037	0.0043	0.0000	10.0000	Ohm-m	14500.0000	-1.0000
Inverse	0.1208	0.0013	0.0000	10.0000	Ohm-m	13500.0000	-0.5000
Caliper	1.0046	1.1419	5.5000	20.0000	in	50.0000	-44.5500

Compensated Density Calibration Report

Serial-Model: 303-03-M&W
Source #: 21170B
Master Calibration Performed: Mon Jan 2 03:21:14 2023

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	3841.78	5151.73	cps
Aluminum	2.640	g/cc	700.98	3068.49	cps

Spine Angle = 73.06 Density/Spine Ratio = 0.498

	Size		Reading
Small Ring	4.00	in	1.17
Large Ring	14.00	in	1.04

Compensated Neutron Calibration Report

Serial-Model: 210-M&W
Source #: N-1238
Master Calibration Performed: Fri Dec 3 09:16:24 2021

Master Calibration

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: 103
Tool Model: M&W
Performed: Fri Dec 3 12:13:24 2021

Calibrator Value: 500.0 GAPI

Background Reading: 28.0 cps
Calibrator Reading: 986.0 cps

Sensitivity: 0.5700 GAPI/cps

Company Murfin Drilling Company, Inc.
Well Culwell H 3-19
Field

MIDWEST WIRELINE

County	Cheyenne
State	Kansas