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Pioneer Energy Services

DUAL INDUCTION LOG

Company MURFIN DRILLING COMPANY, INC.
Well BANISTER 'A' #3-22
Field WILDCAT
County CHEYENNE State KANSAS

Location: API #: 15-023-21515-00-00
2310' FSL & 330' FWL
SEC 22 TWP 2S RGE 37W

Other Services
CNL/CDL
MEL/BHCS

Elevation
K.B. 3416'
D.F. N/A
G.L. 3411'

Permanent Datum GROUND LEVEL Elevation 3411'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Date	5/28/2019			
Run Number	ONE			
Depth Driller	4950'			
Depth Logger	4950'			
Bottom Logged Interval	4949'			
Top Log Interval	00			
Casing Driller	8.625" @ 373'			
Casing Logger	368'			
Bit Size	7.875"			
Type Fluid in Hole	CHEMICAL			
Salinity,ppm CL	600			
Density / Viscosity	9.0	52		
pH / Fluid Loss	11.5	6.4		
Source of Sample	FLOWLINE			
Rm @ Meas. Temp	.90 @ 75			
Rmf @ Meas. Temp	.68 @ 75			
Rmc @ Meas. Temp	1.22 @ 75			
Source of Rmf / Rmc	CHARTS			
Rm @ BHT	.54 @ 126			
Operating Rig Time	5 HOURS			
Max Rec. Temp. F	126 DEG/F			
Equipment Number	P-108			
Location	HAYS			
Recorded By	J. HENRICKSON			
Witnessed By	ROBERT HENDRIX			

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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.

BIRD CITY KANSAS
EAST TO 32 ROAD, 7 NORTH, EAST INTO @ TANKS

Log Measured From: KELLY BUSHING 5 Ft. Above Permanent Datum

THANK YOU FOR USING PIONEER ENERGY SERVICES
www.pioneeres.com 785-625-3858

Your Pioneer Energy Services Crew	This Log Record Was Witnessed By
Engineer: J. HENRICKSON	Primary Witness: ROBERT HENDRIX
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

Log Variables

DatabaseC:\ProgramData\Warrior\Data\murfin_banister_a_3_22.db
Dataset field/well/stack/pass3.1/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	126	5.5	0	1	2	2.71

NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	0	0	0	150	43	Off	4950

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb
			GR-M&W (89-M&W)	3.00	3.50	50.00
GR	33.00					
CNLSC	29.90		CNT-M&W (tk10-MW)	5.50	3.50	100.00
CNSSC	29.15					
			CDL-M&W (144-84)	8.50	4.00	250.00
LSD	20.85					
DCAL	20.83					
SSD	20.35					
RLL3	15.80					
RLL3F	15.79					
			DIL-M&W (PSI 988)	18.50	3.50	220.00
CILD	8.00					

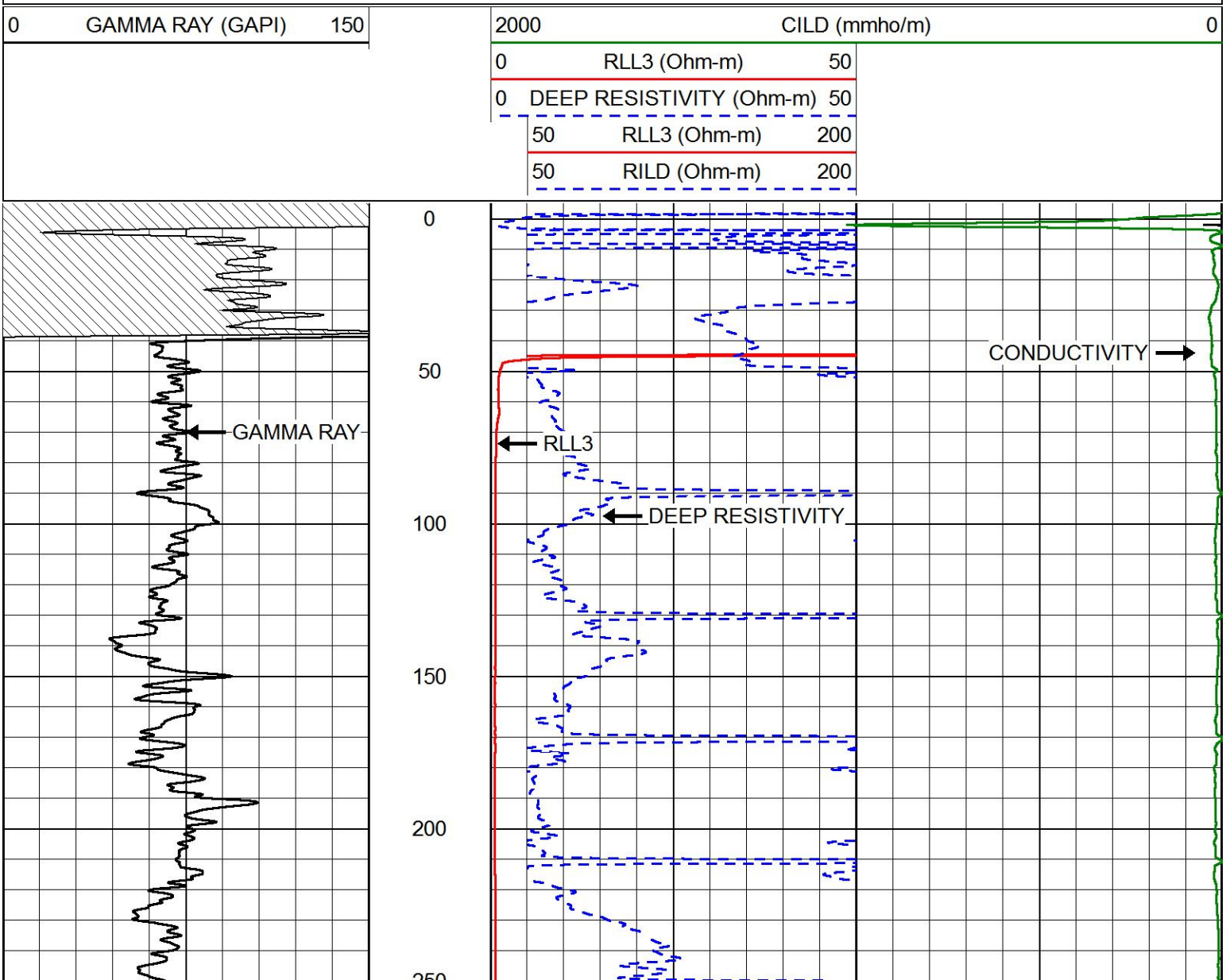
CILM	4.70	
SP	0.20	

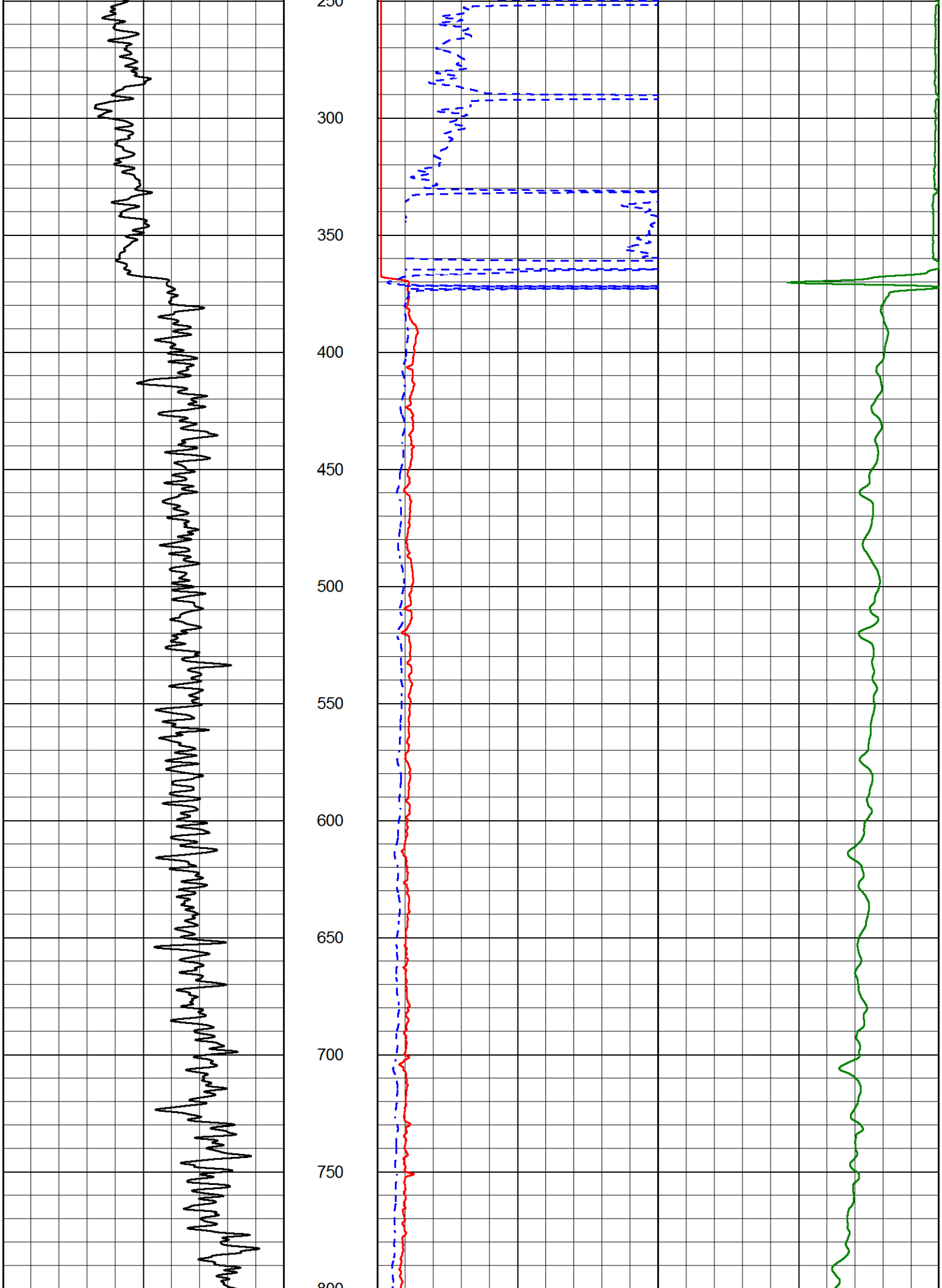
Dataset: murfin_banister_a_3_22.db: field/well/stack/pass3.1
Total length: 35.50 ft
Total weight: 620.00 lb
O.D.: 4.00 in

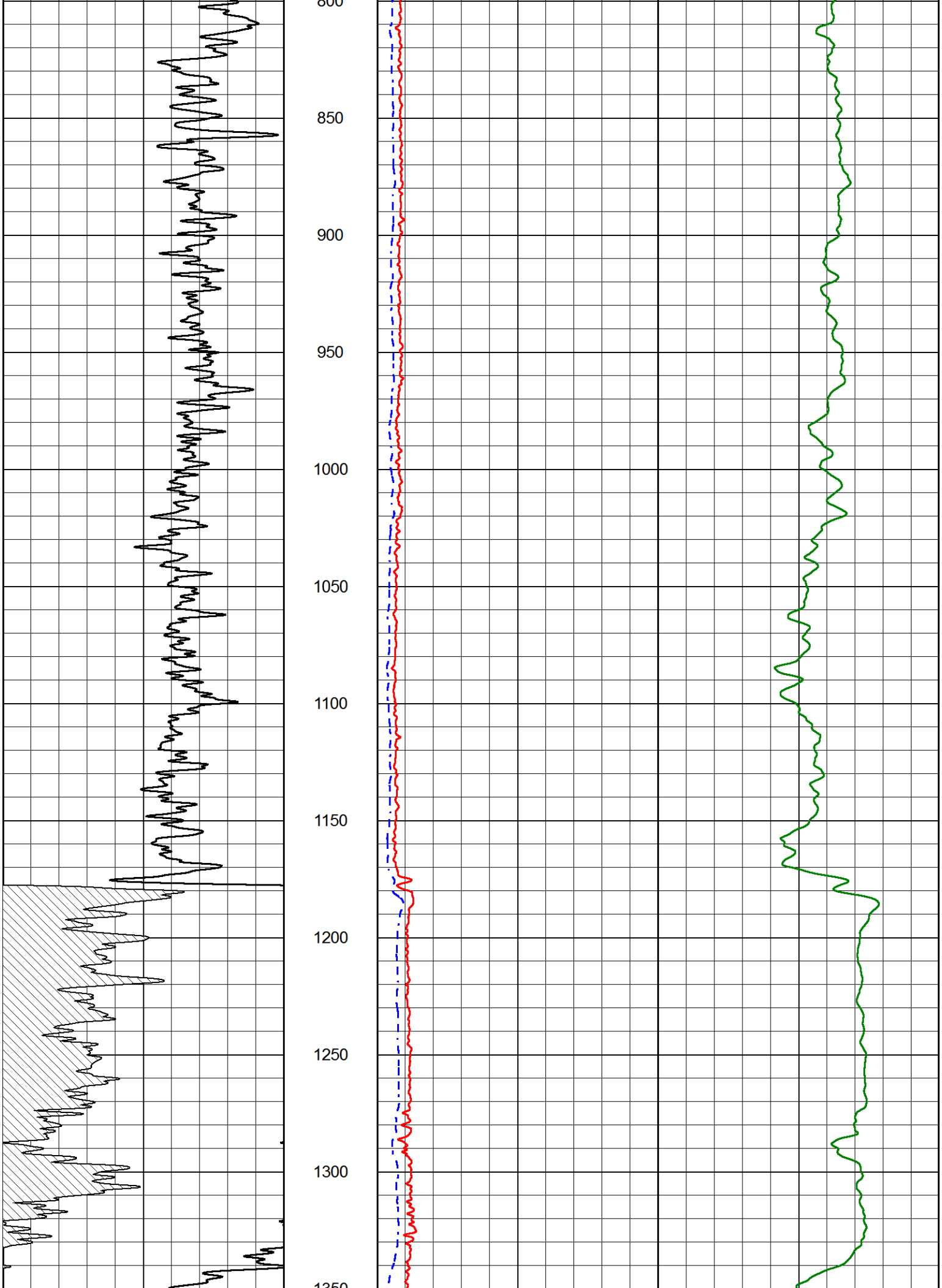
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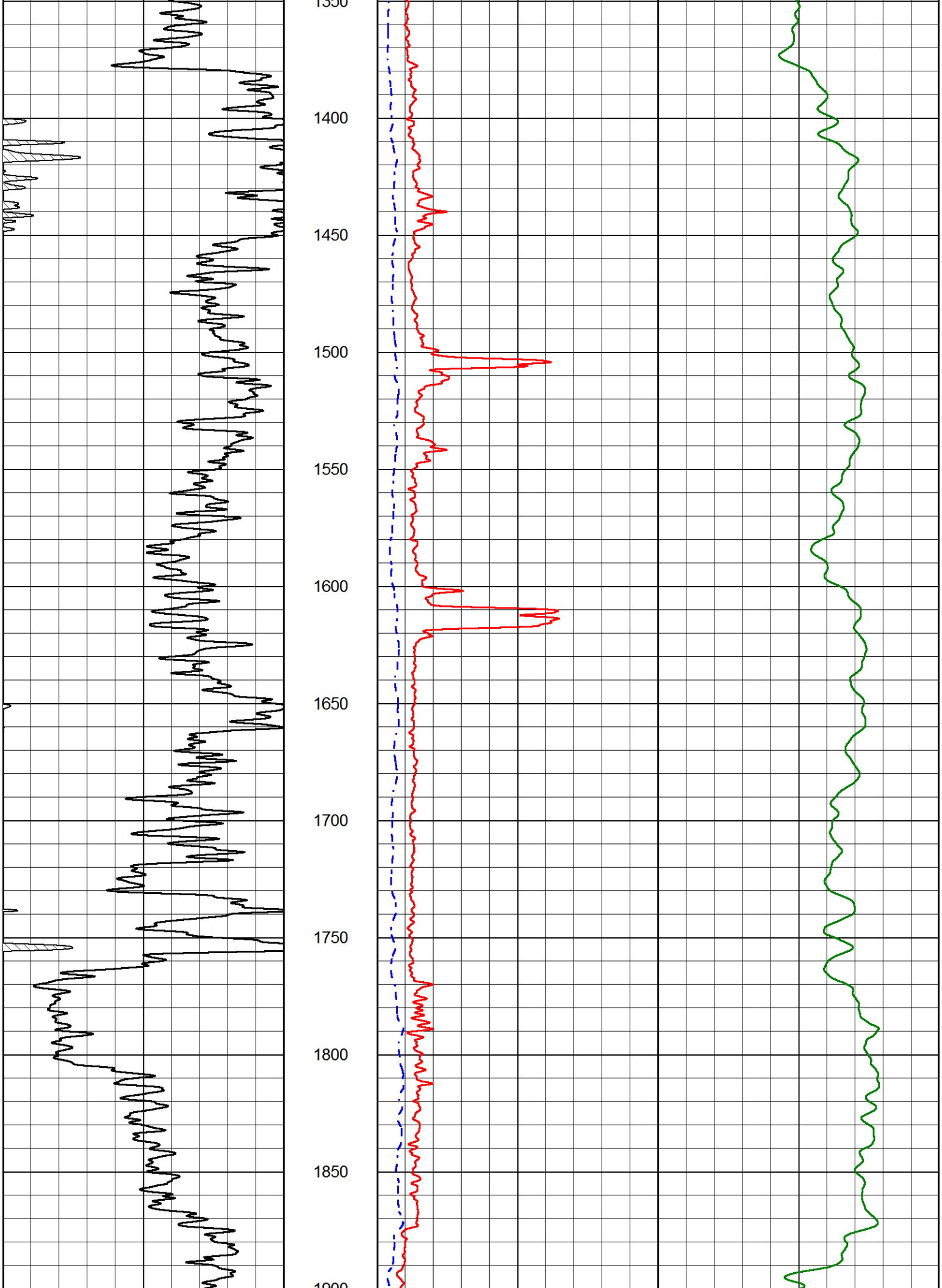
MAIN PASS

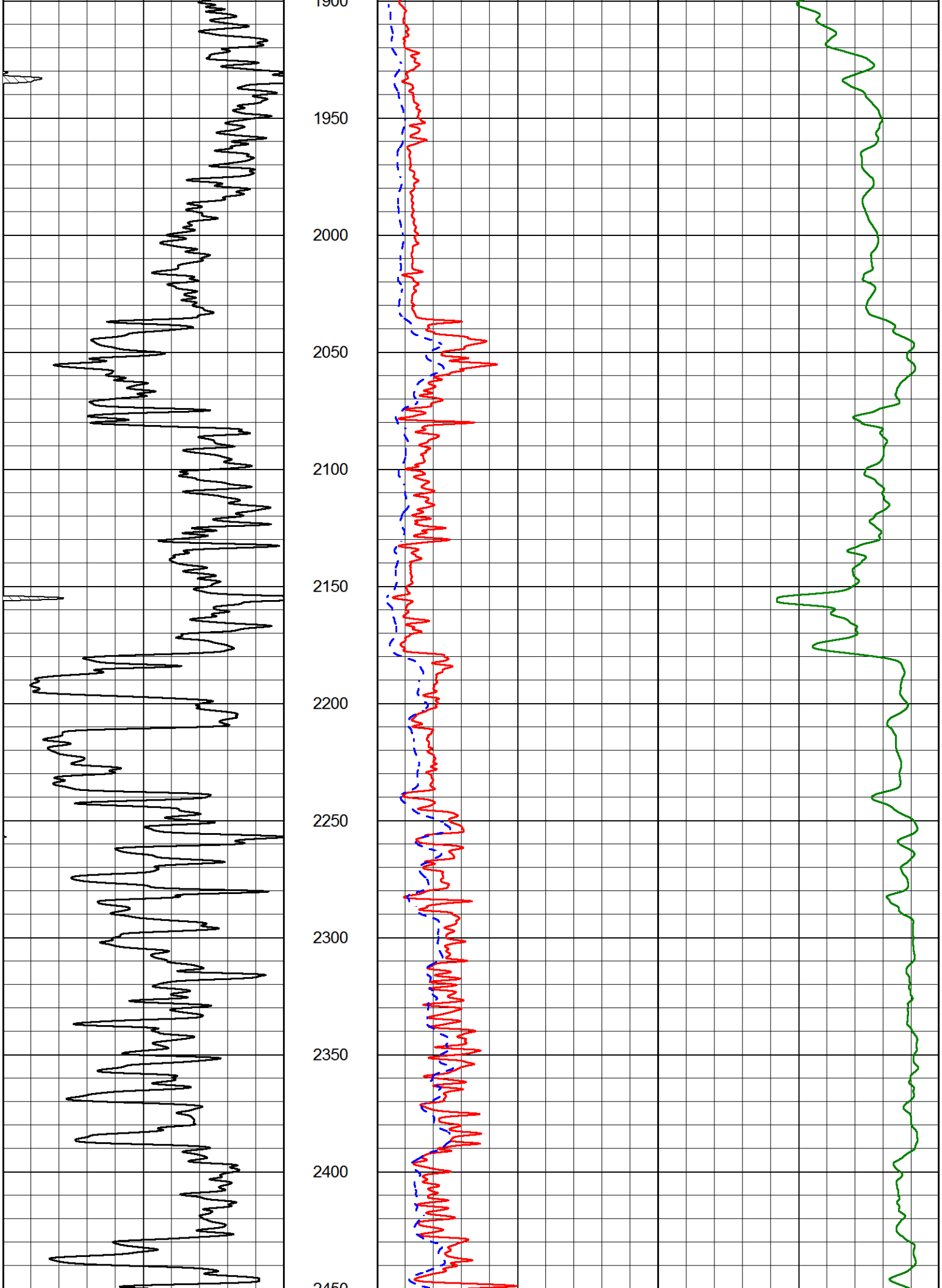
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Presentation Format	dil2in
Dataset Creation	Tue May 28 12:35:47 2019
Charted by	Depth in Feet scaled 1:600

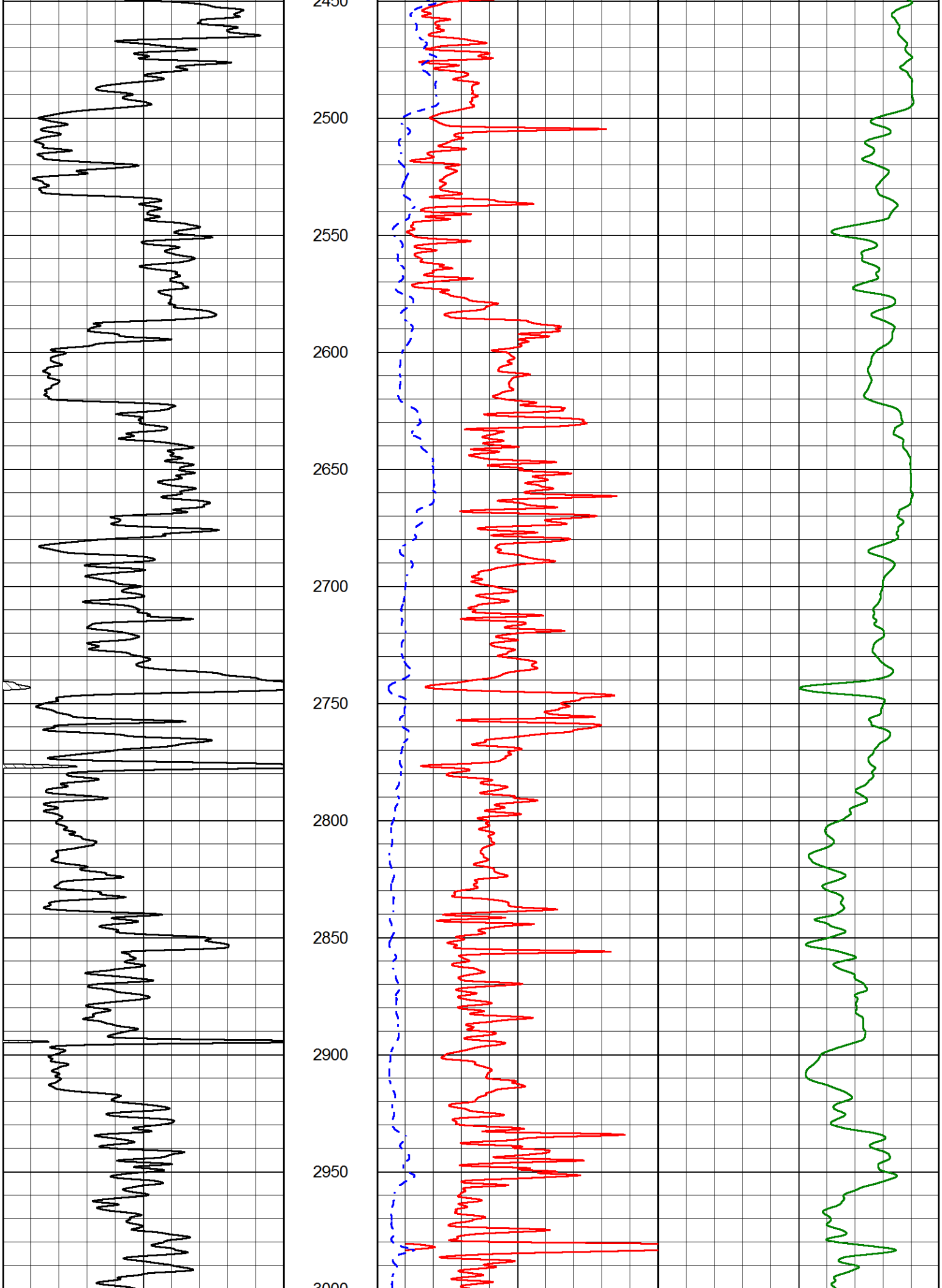


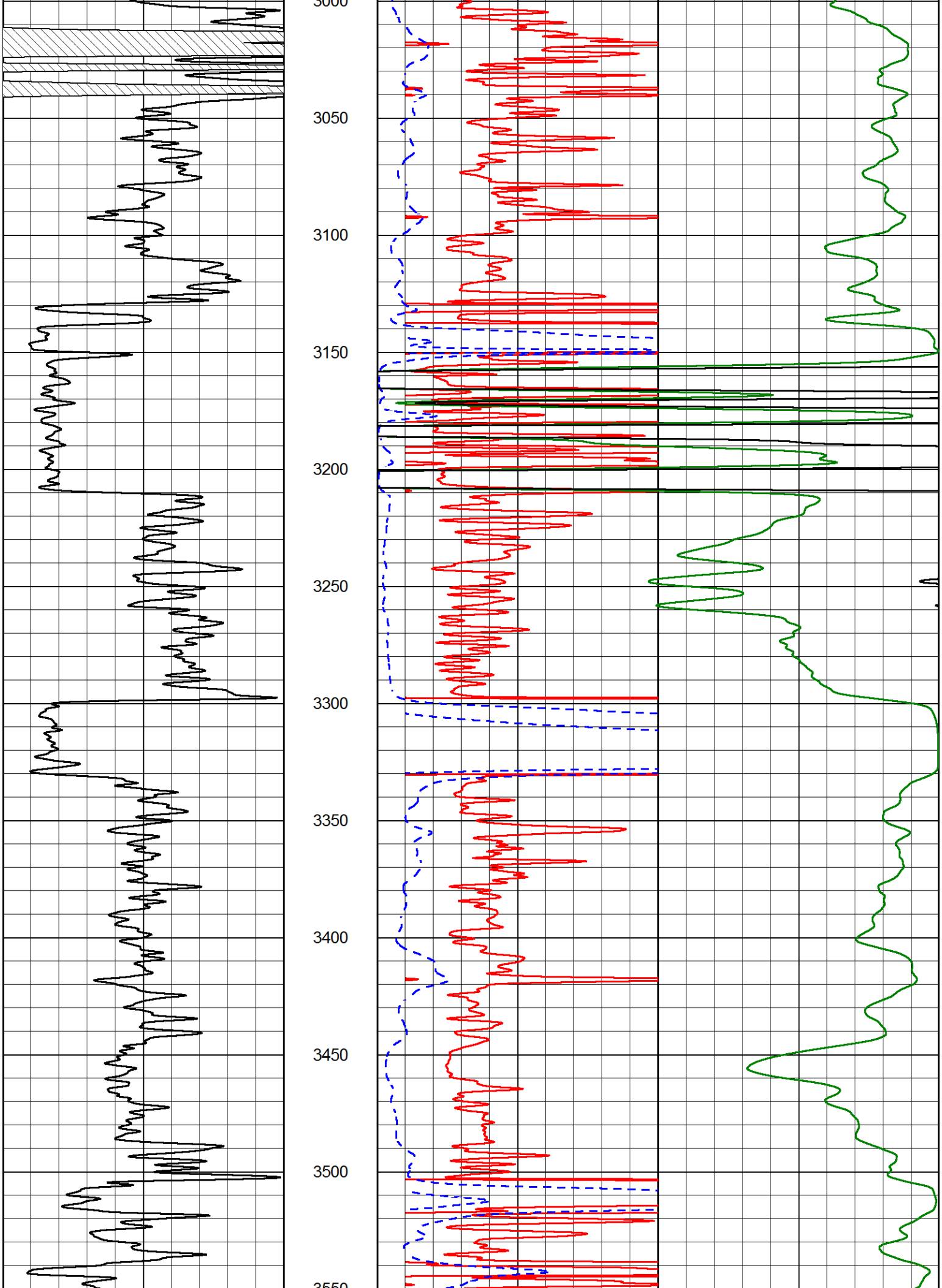

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300
350
400
450
500
550
600
650
700
750
800

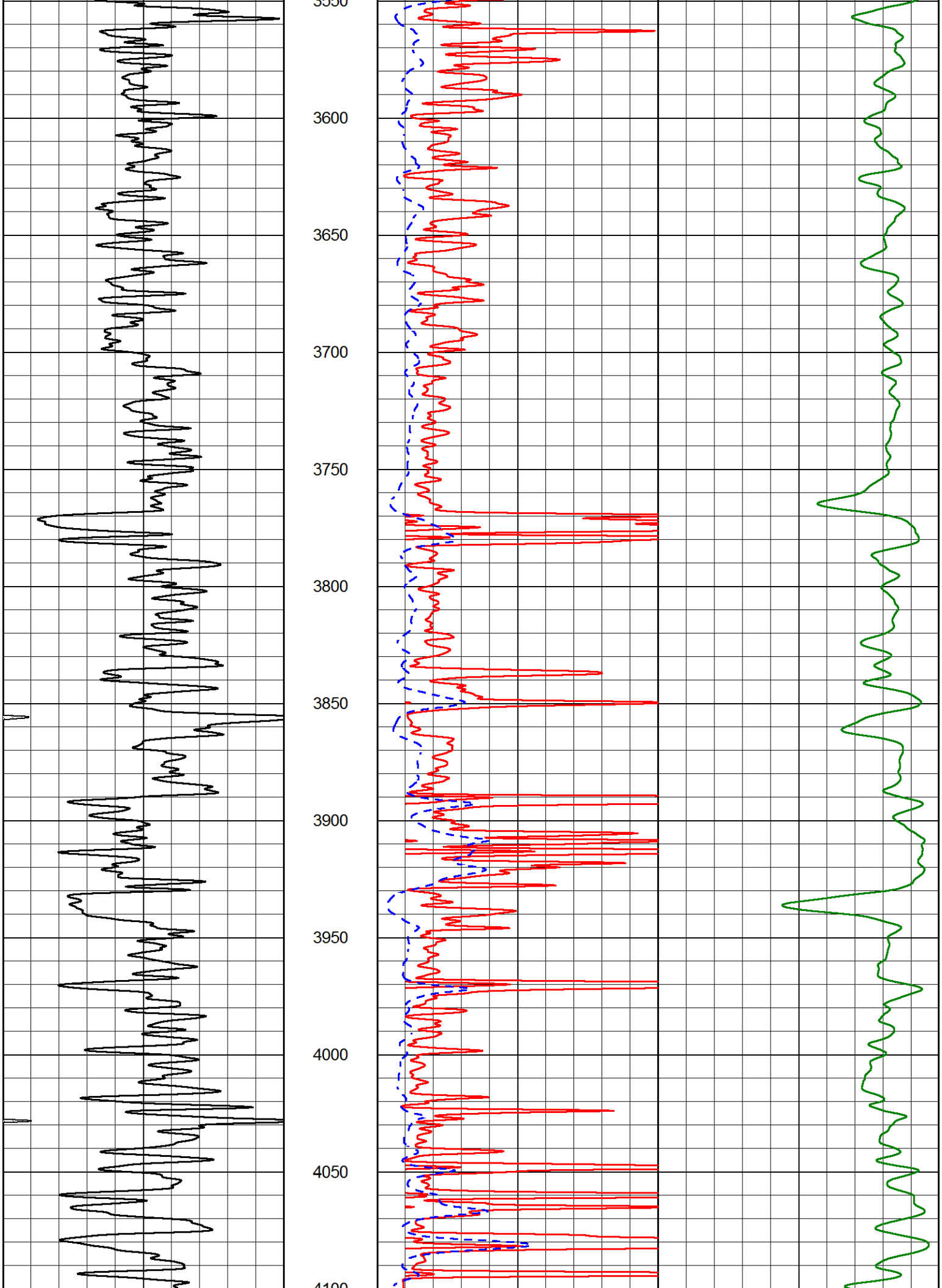

800
850
900
950
1000
1050
1100
1150
1200
1250
1300
1350

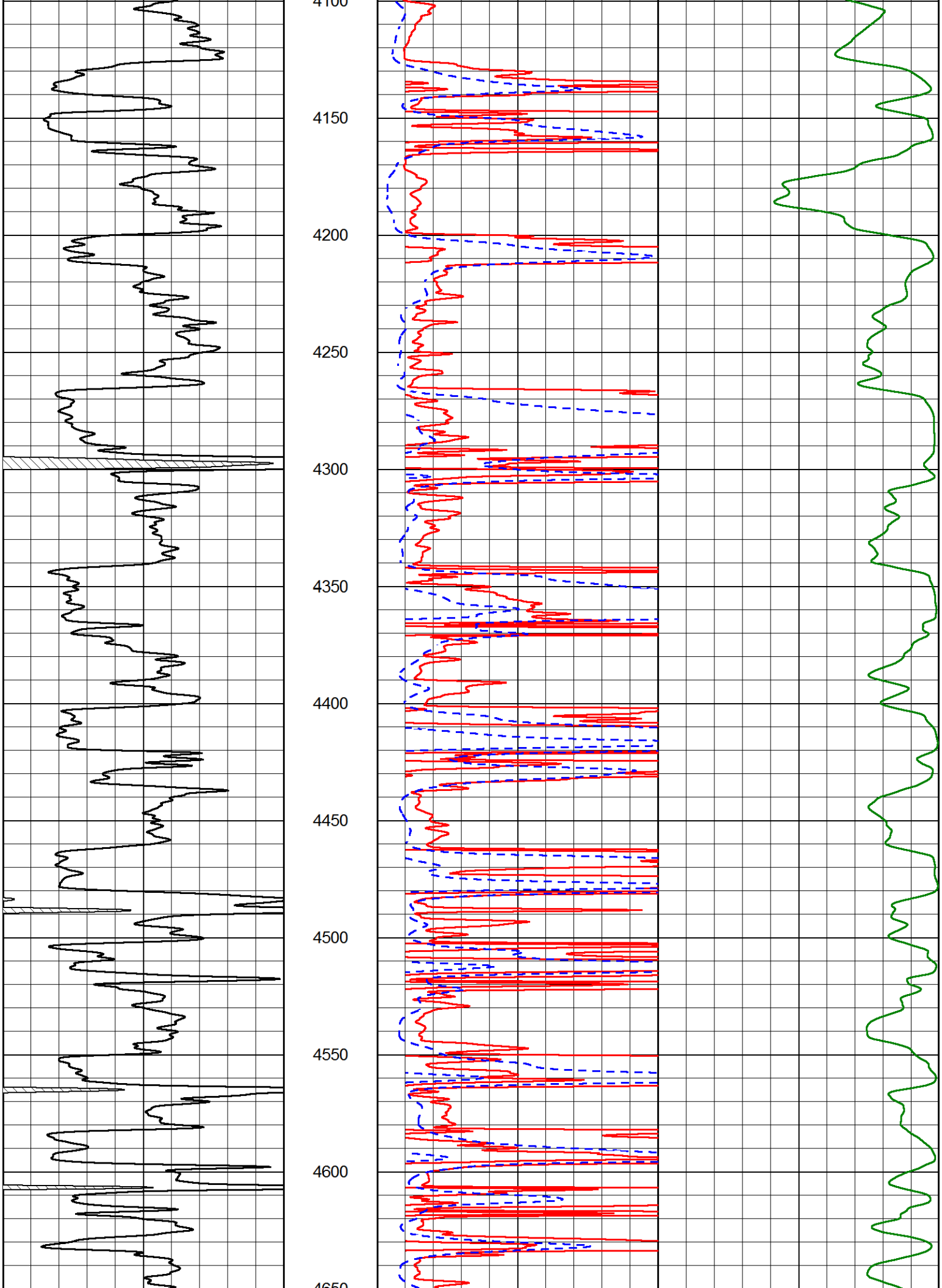

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1400
1450
1500
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1650
1700
1750
1800
1850
1900

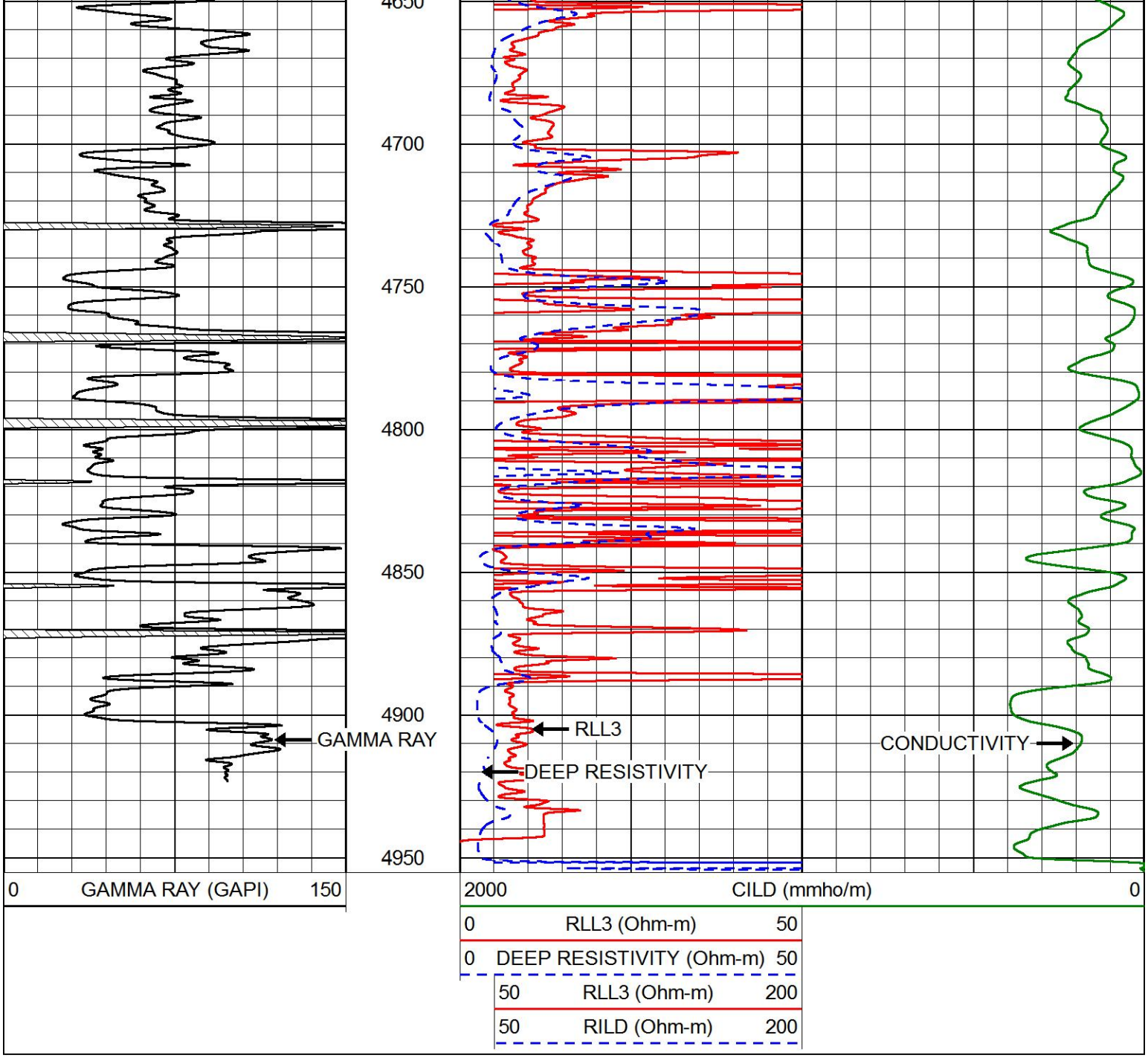

1900
1950
2000
2050
2100
2150
2200
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4100


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4600
4650



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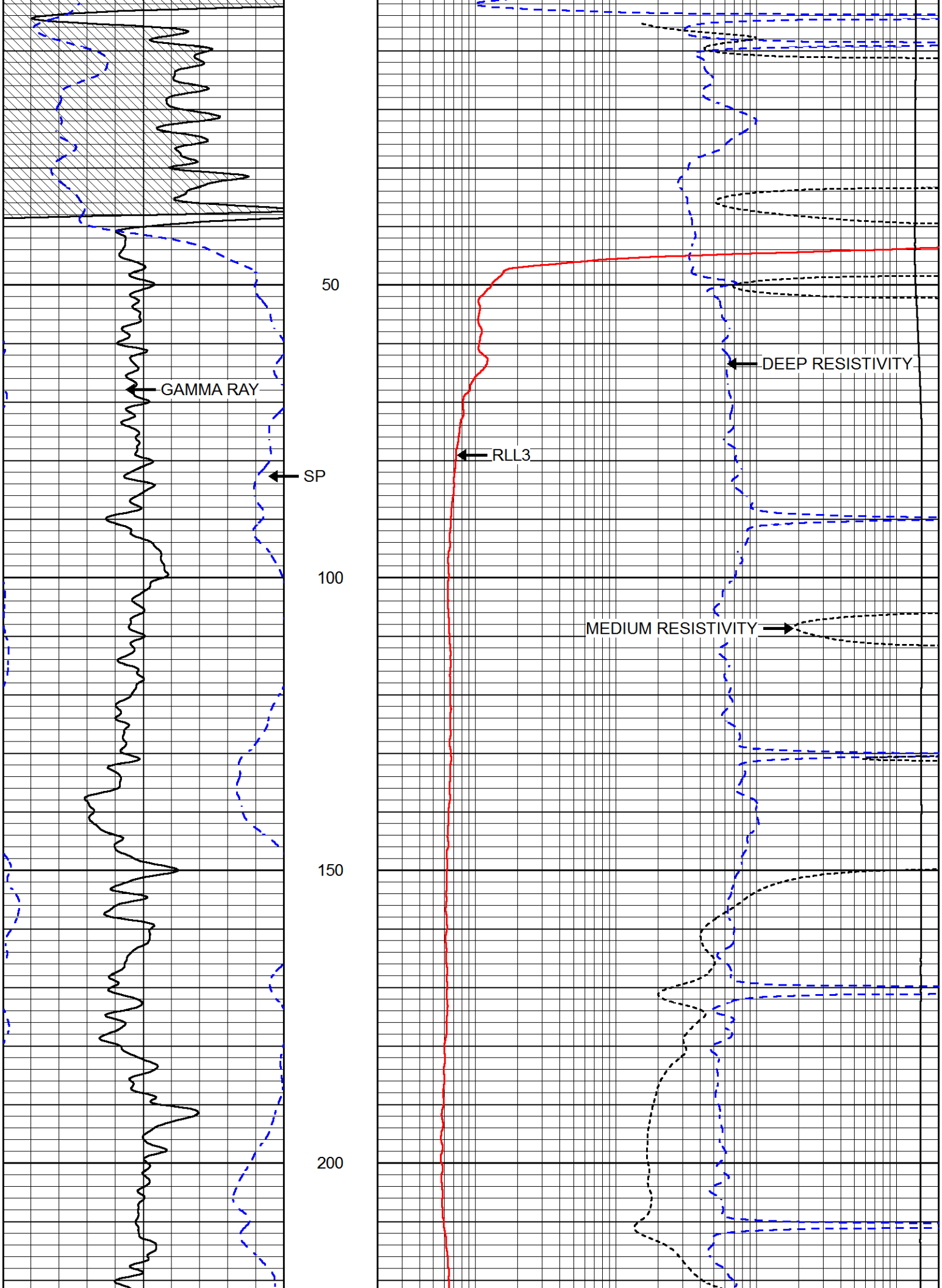
MAIN PASS

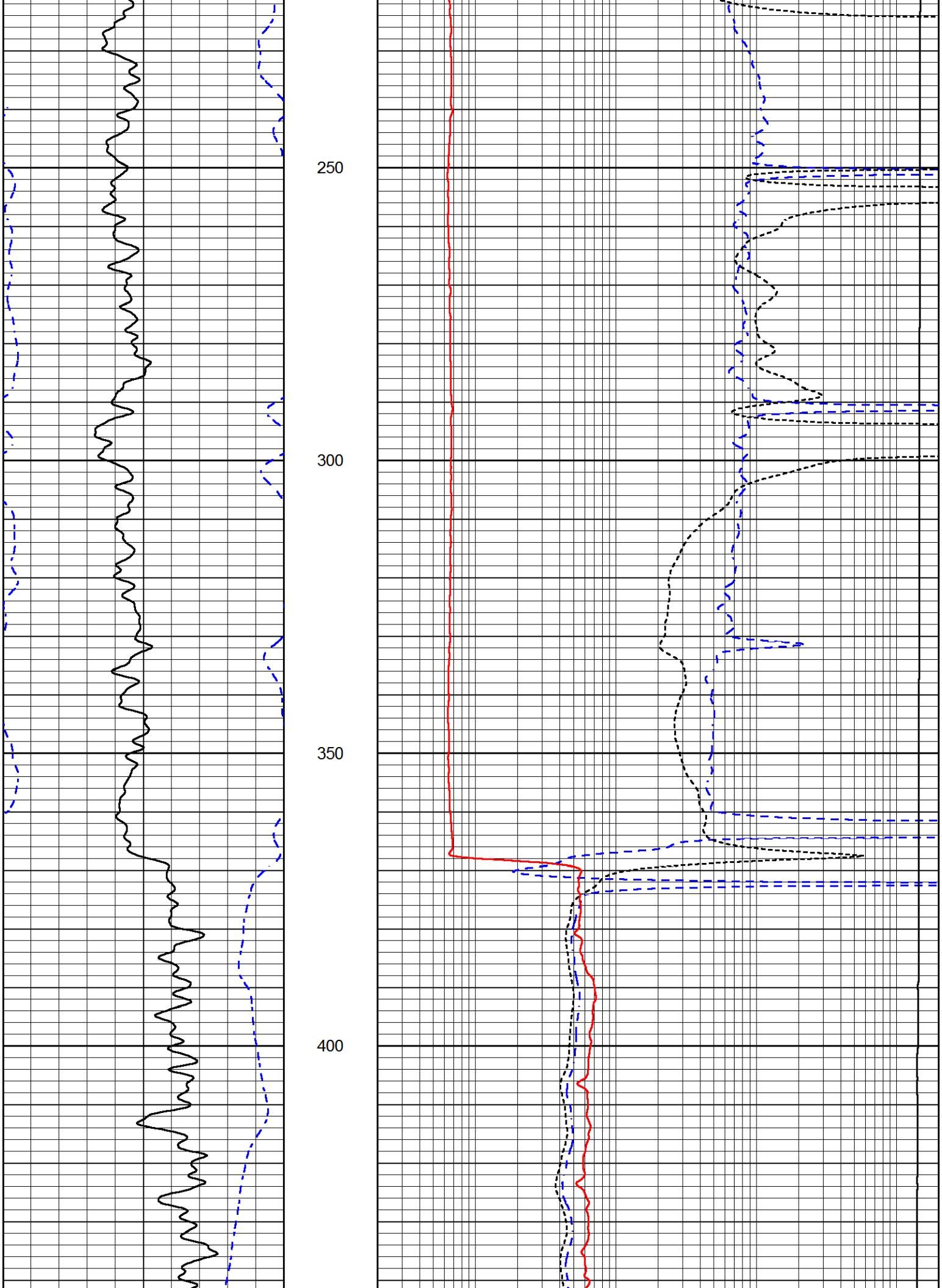
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Presentation Format	dil
Dataset Creation	Tue May 28 12:35:47 2019
Charted by	Depth in Feet scaled 1:240

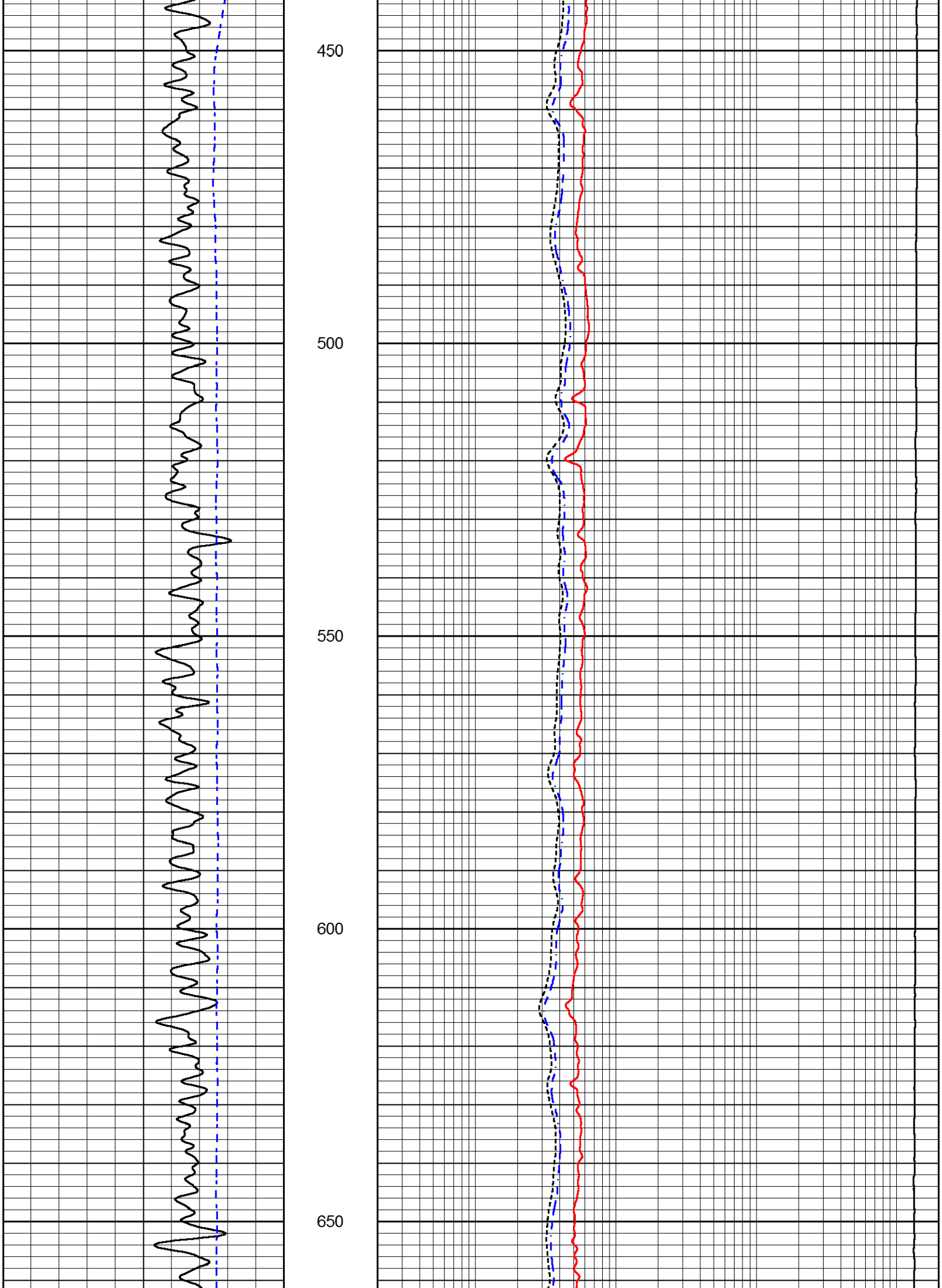
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-200	SP (mV)	0

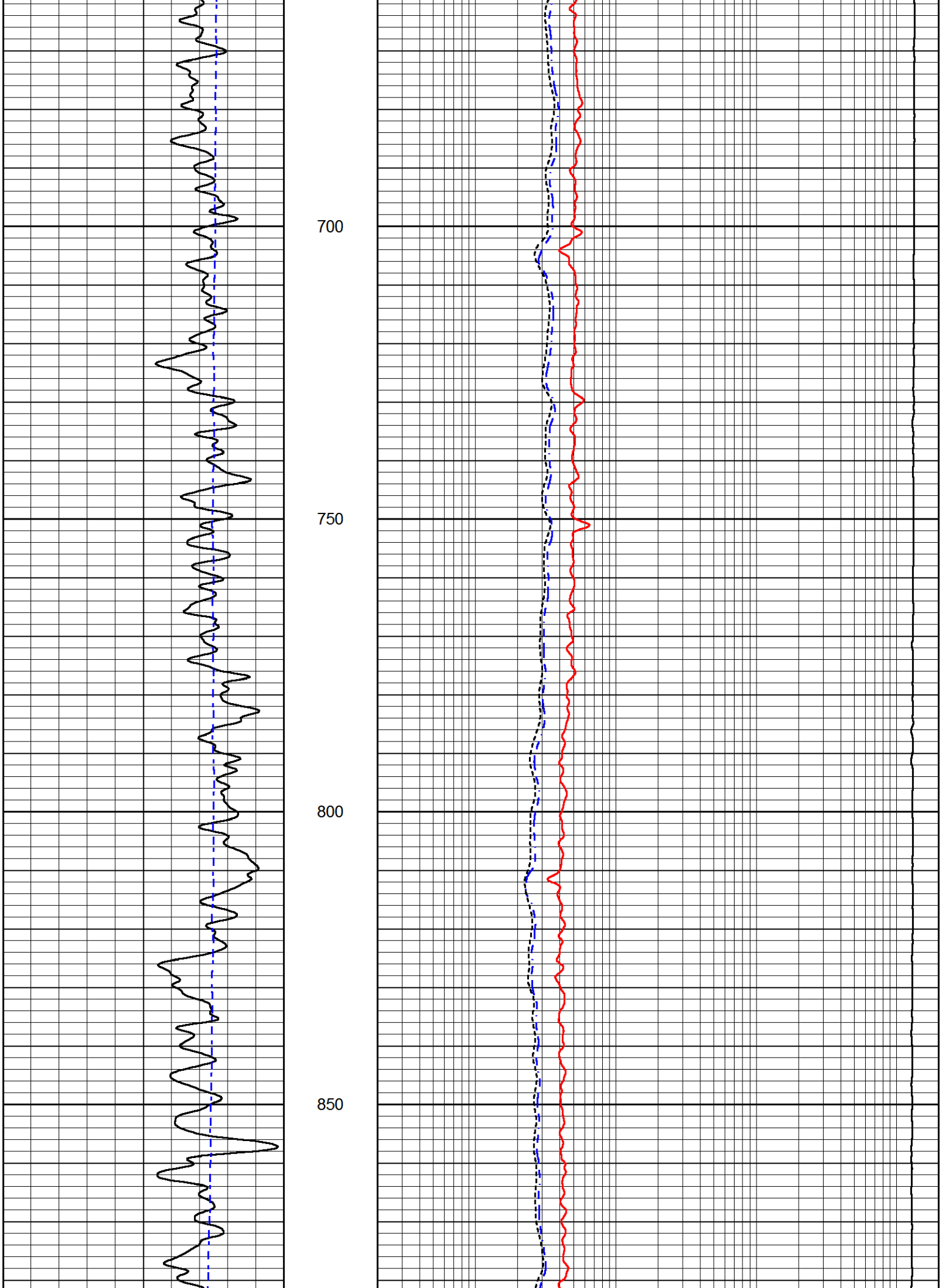
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
15000	LINE TENSION (lb)	0

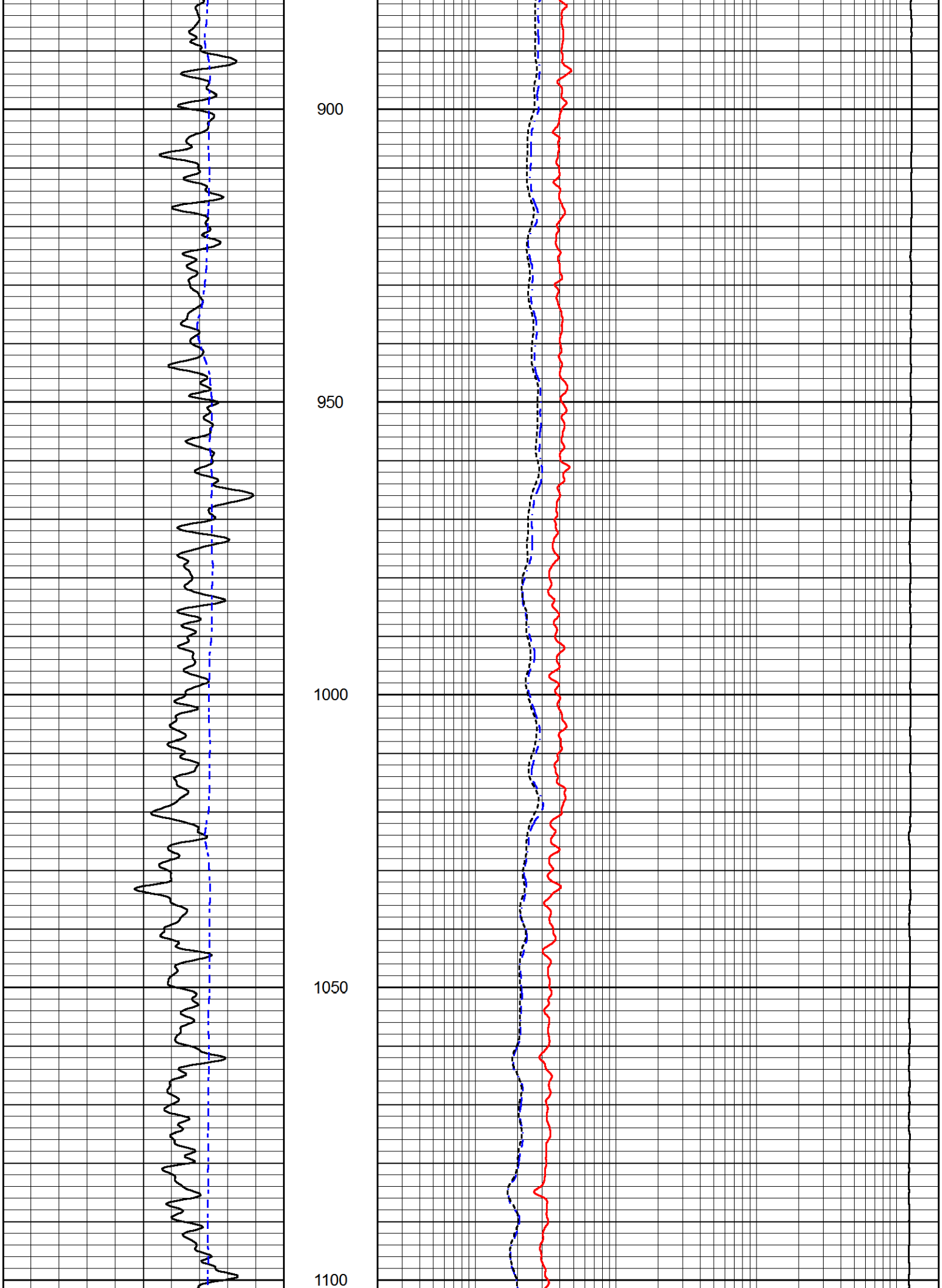
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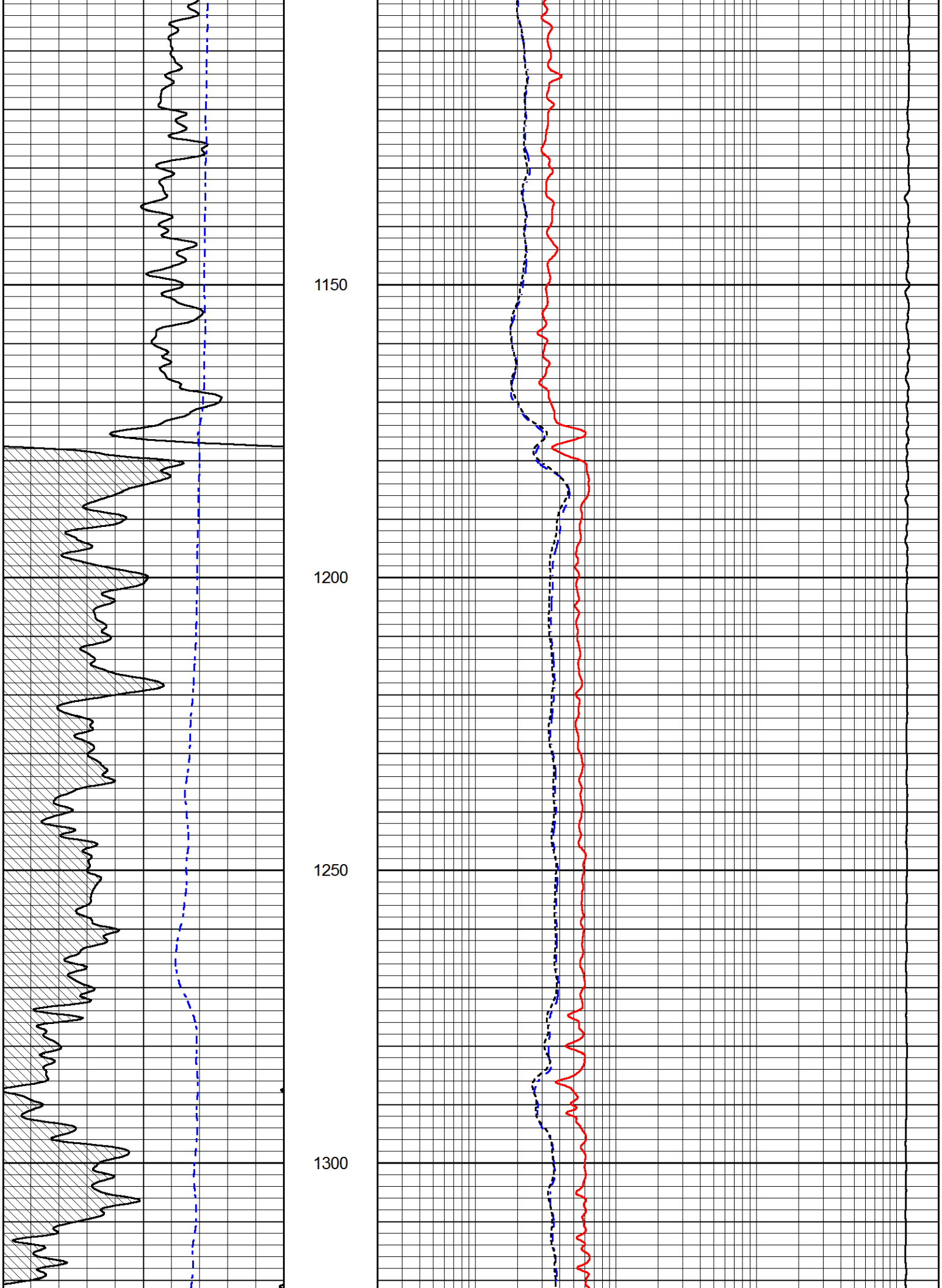

50
100
150
200
GAMMA RAY
SP
RLL3
DEEP RESISTIVITY
MEDIUM RESISTIVITY

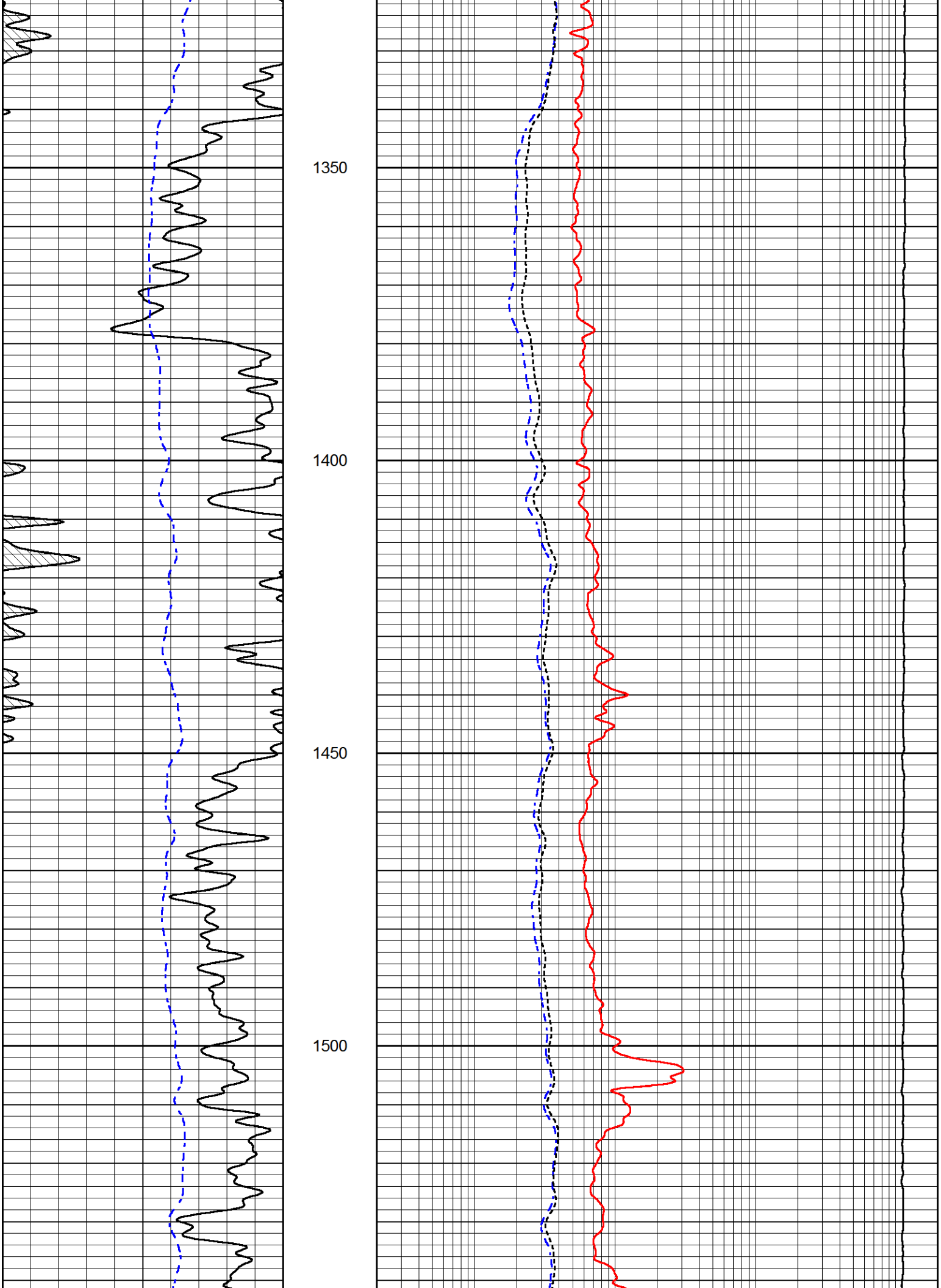

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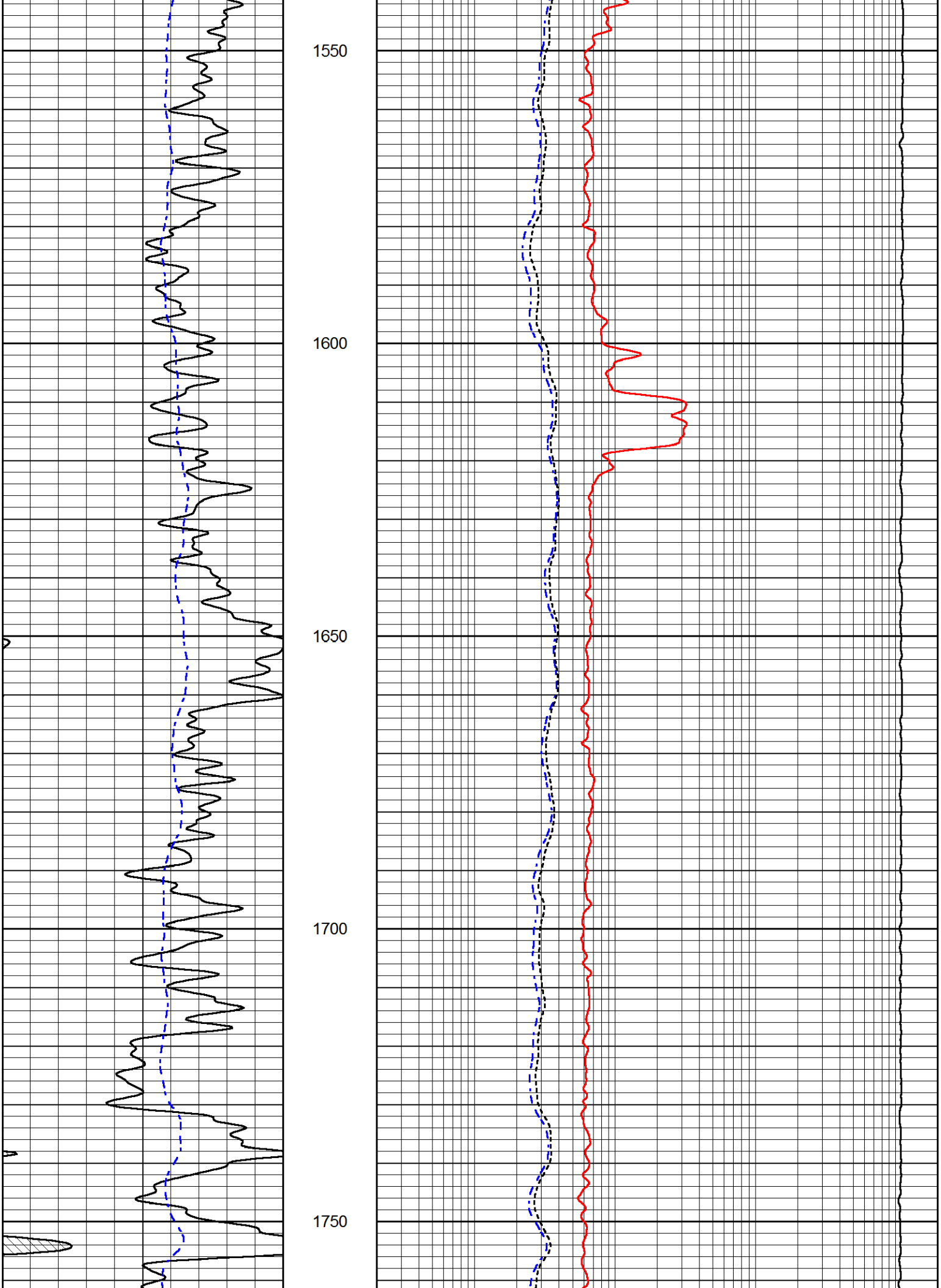

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500
550
600
650

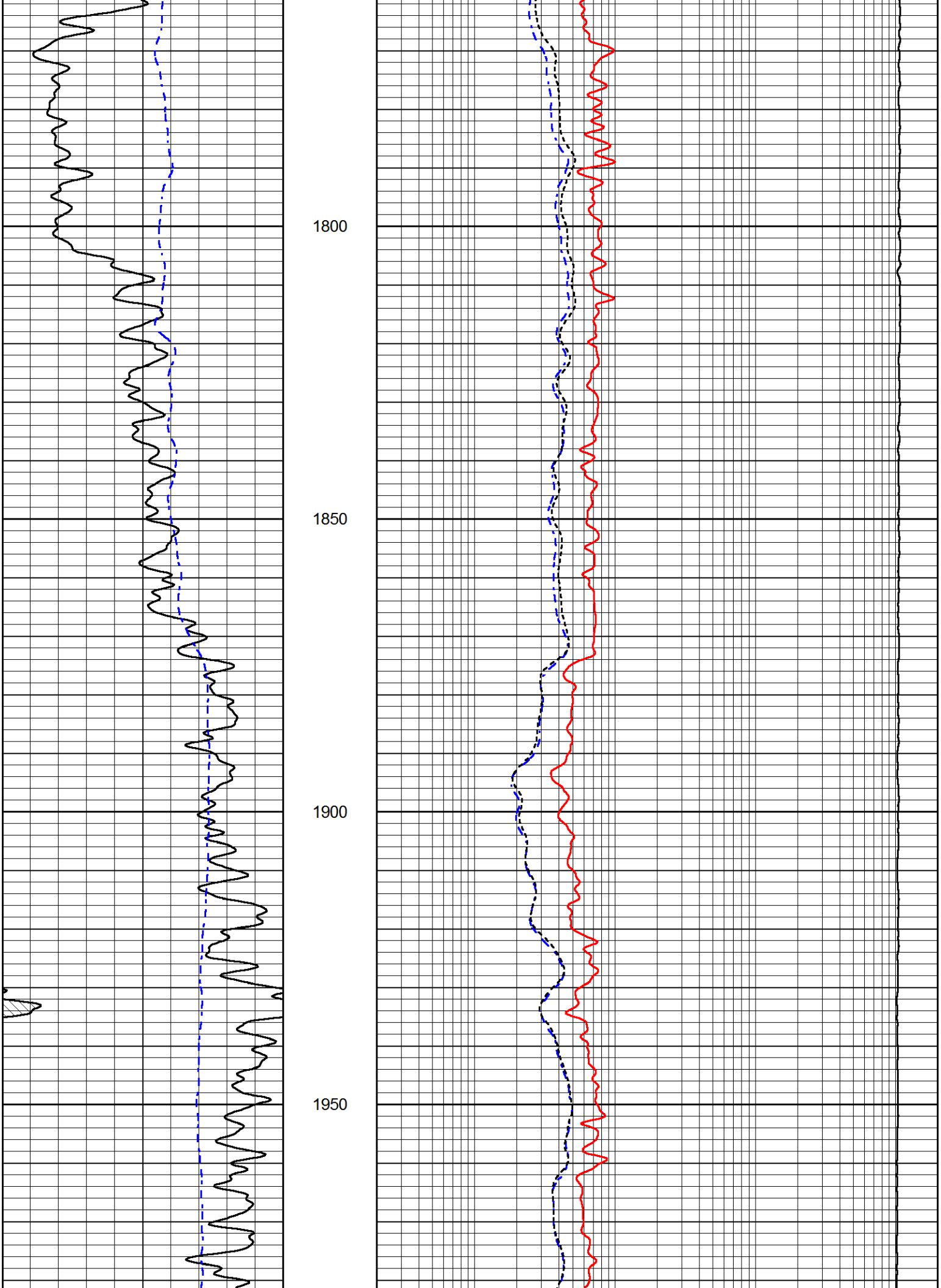

700
750
800
850

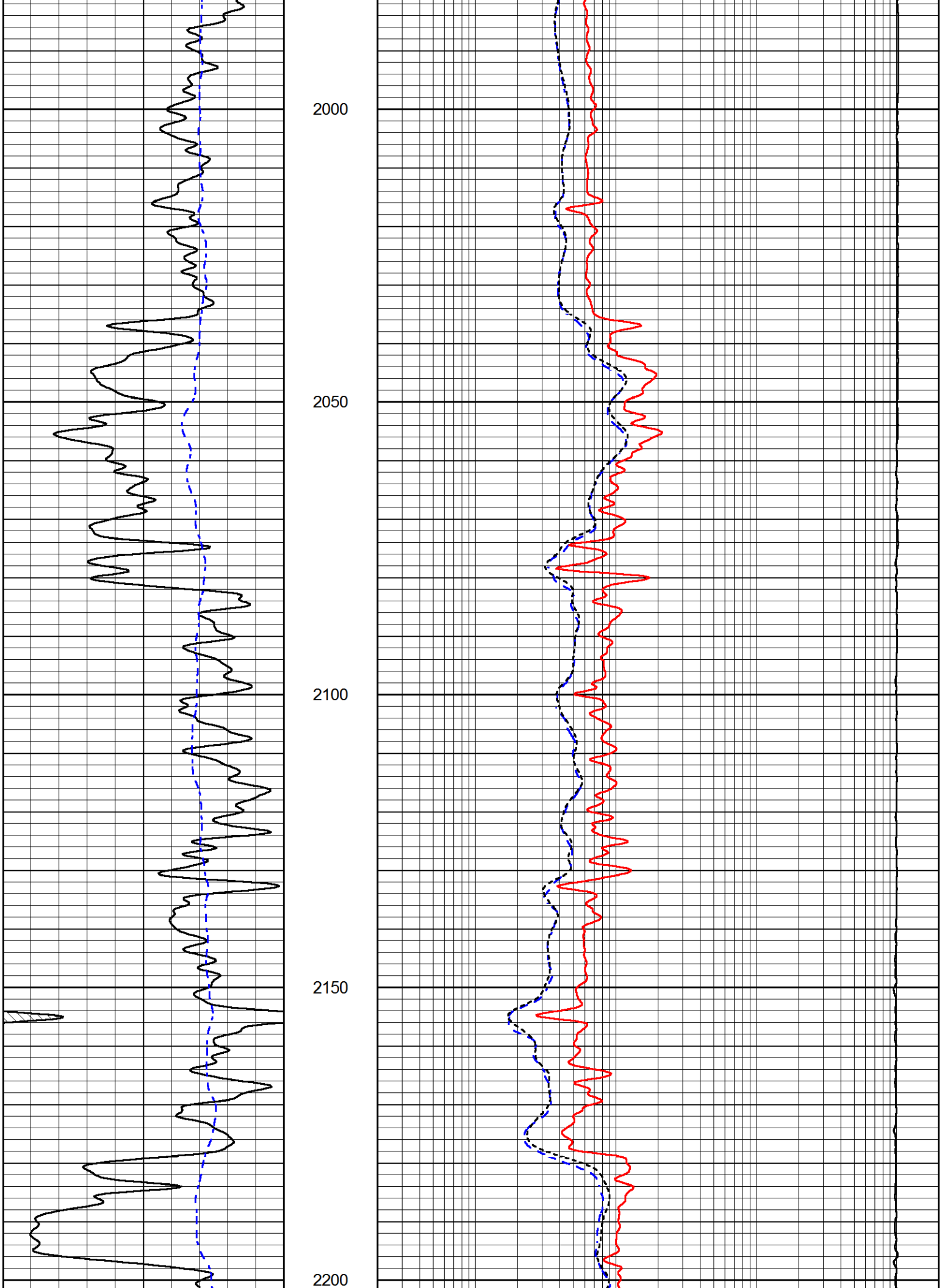

900
950
1000
1050
1100

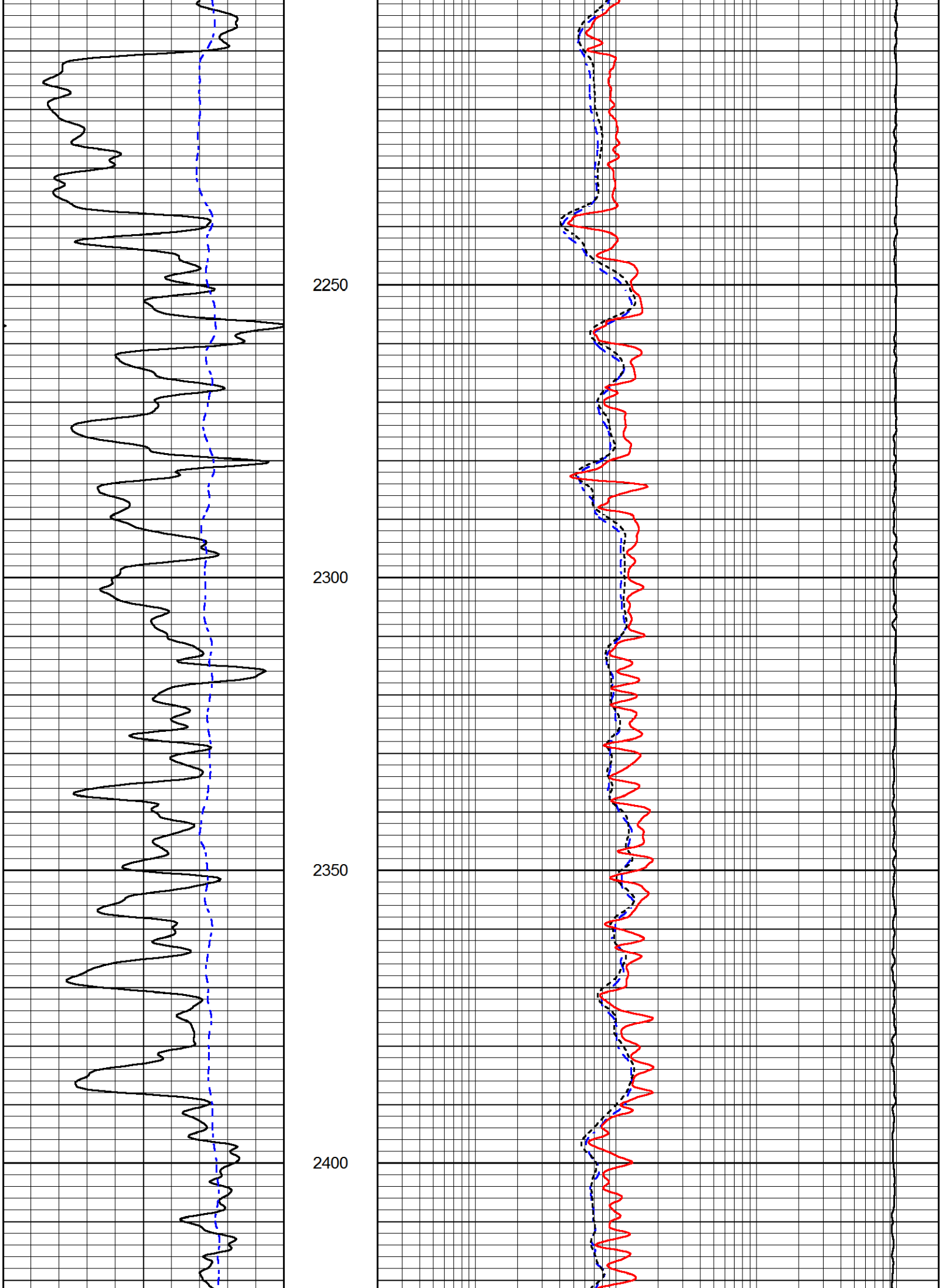

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1200
1250
1300

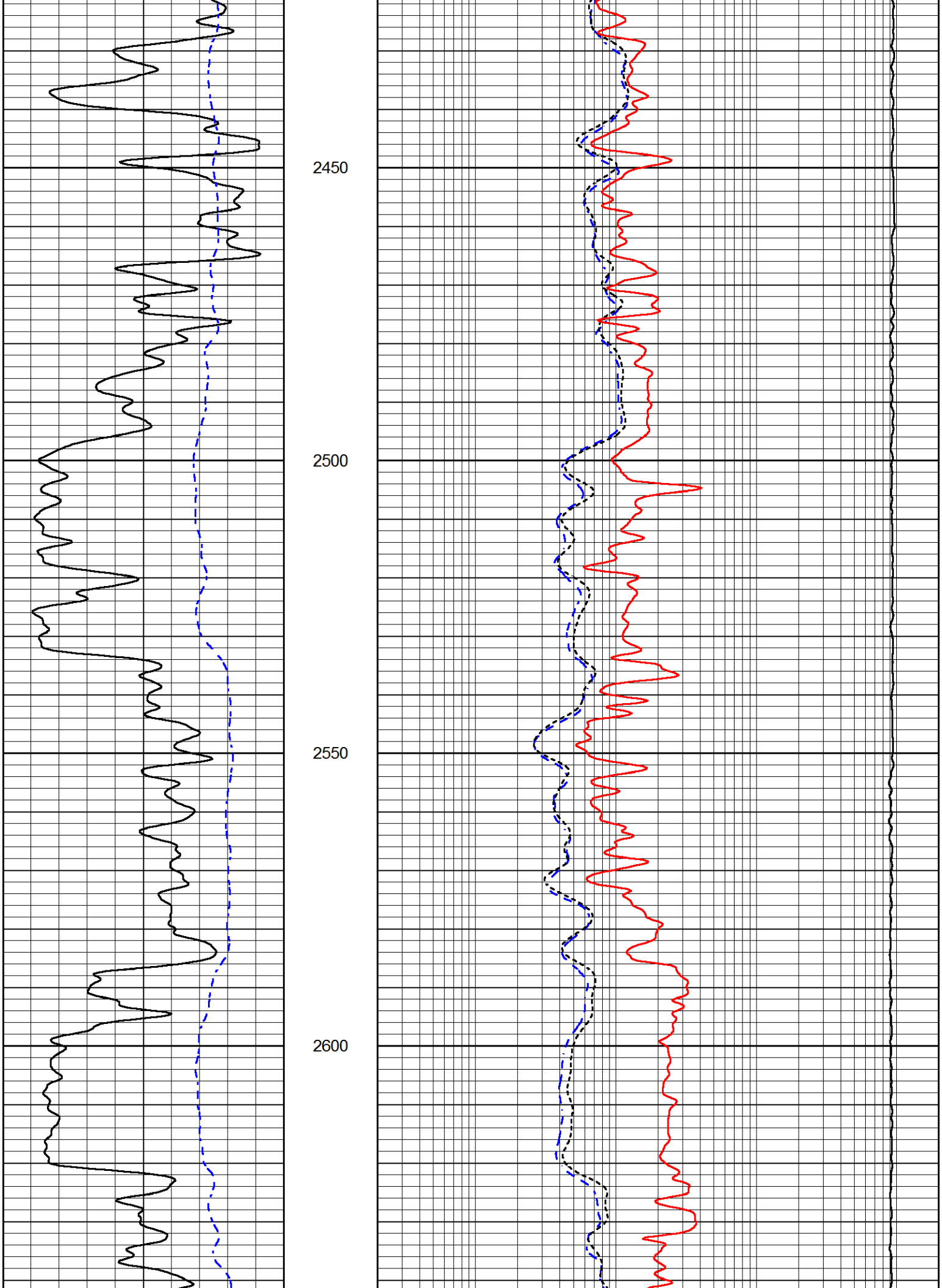

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1400
1450
1500

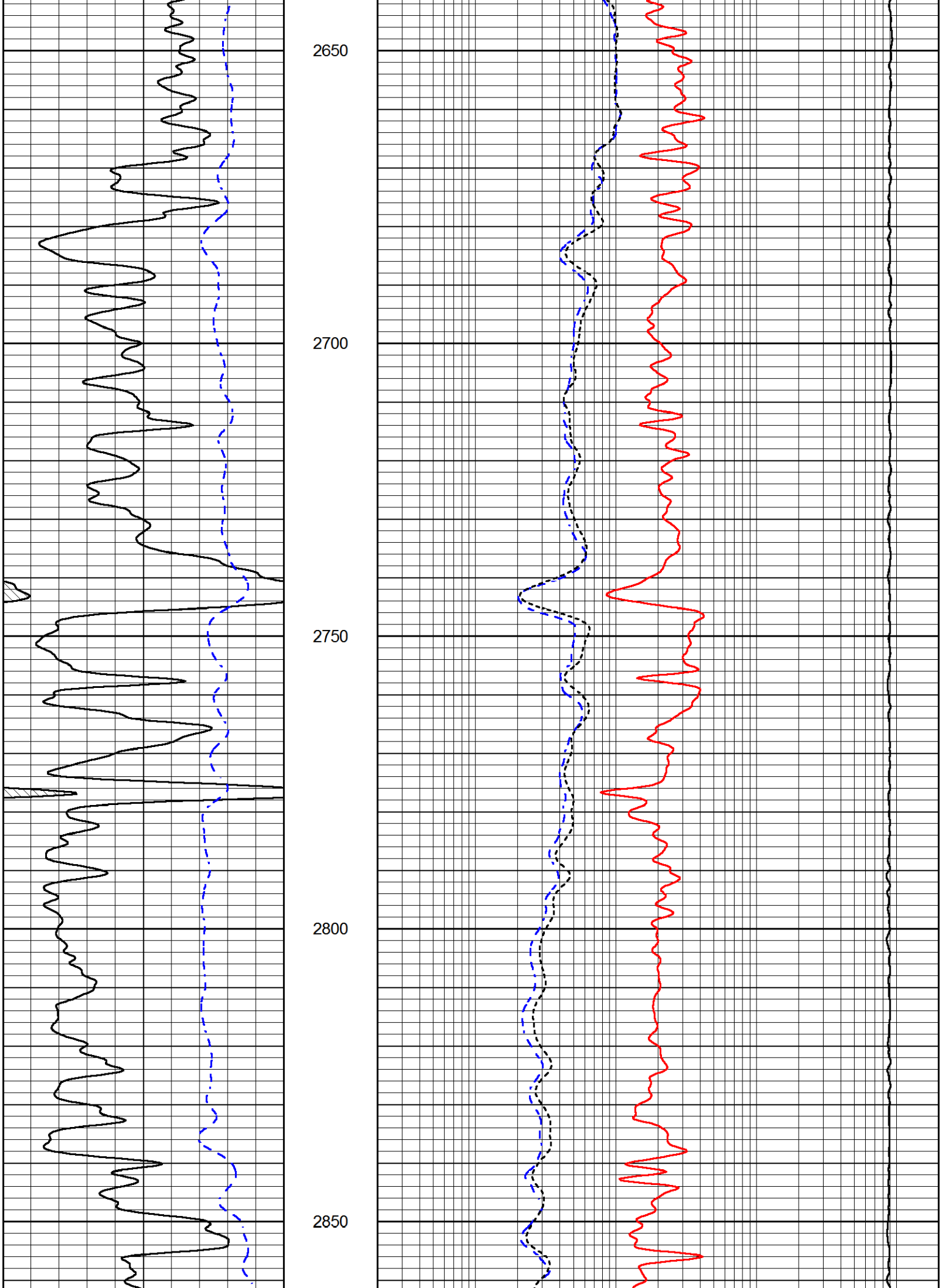

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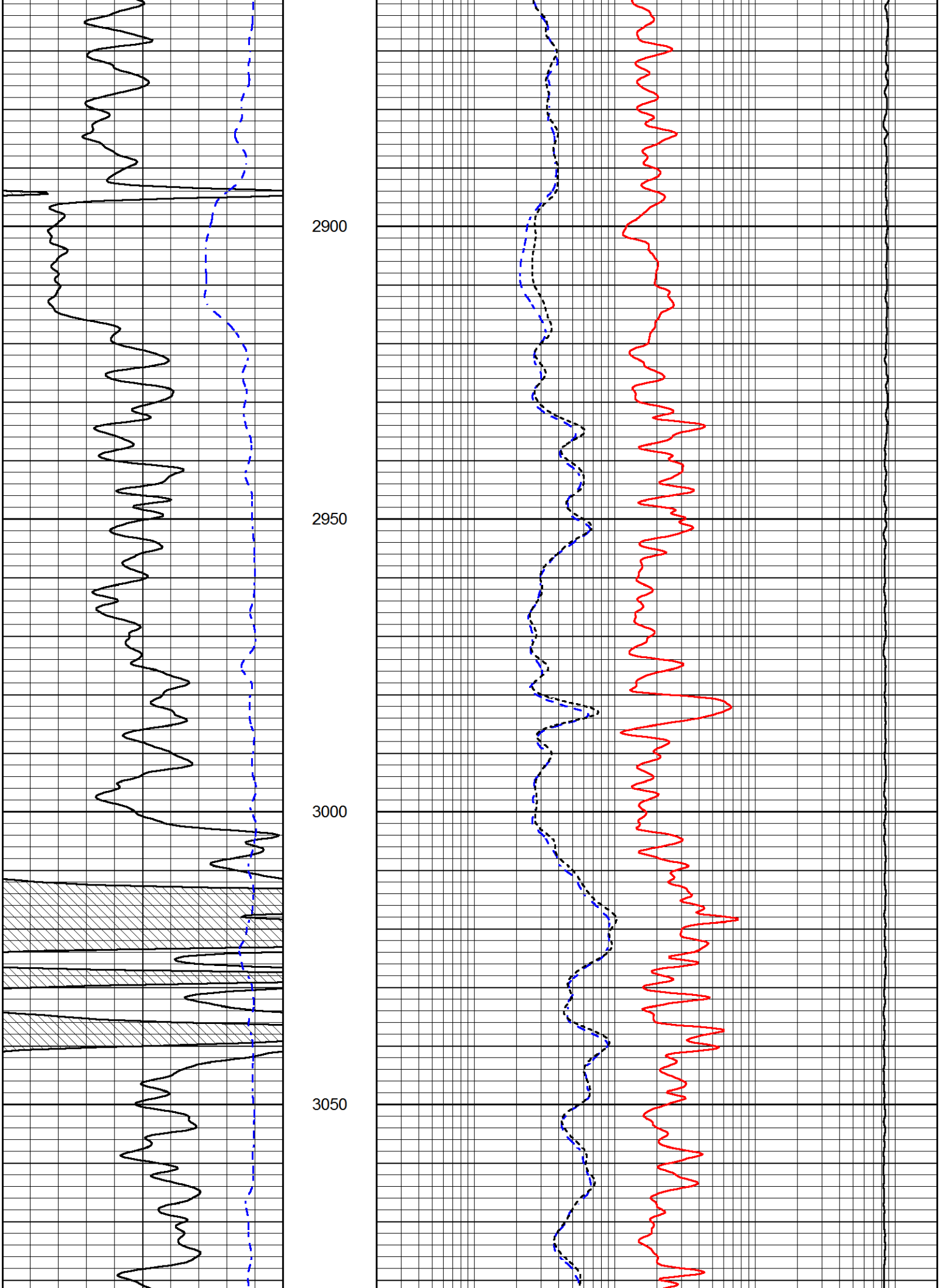

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1850
1900
1950

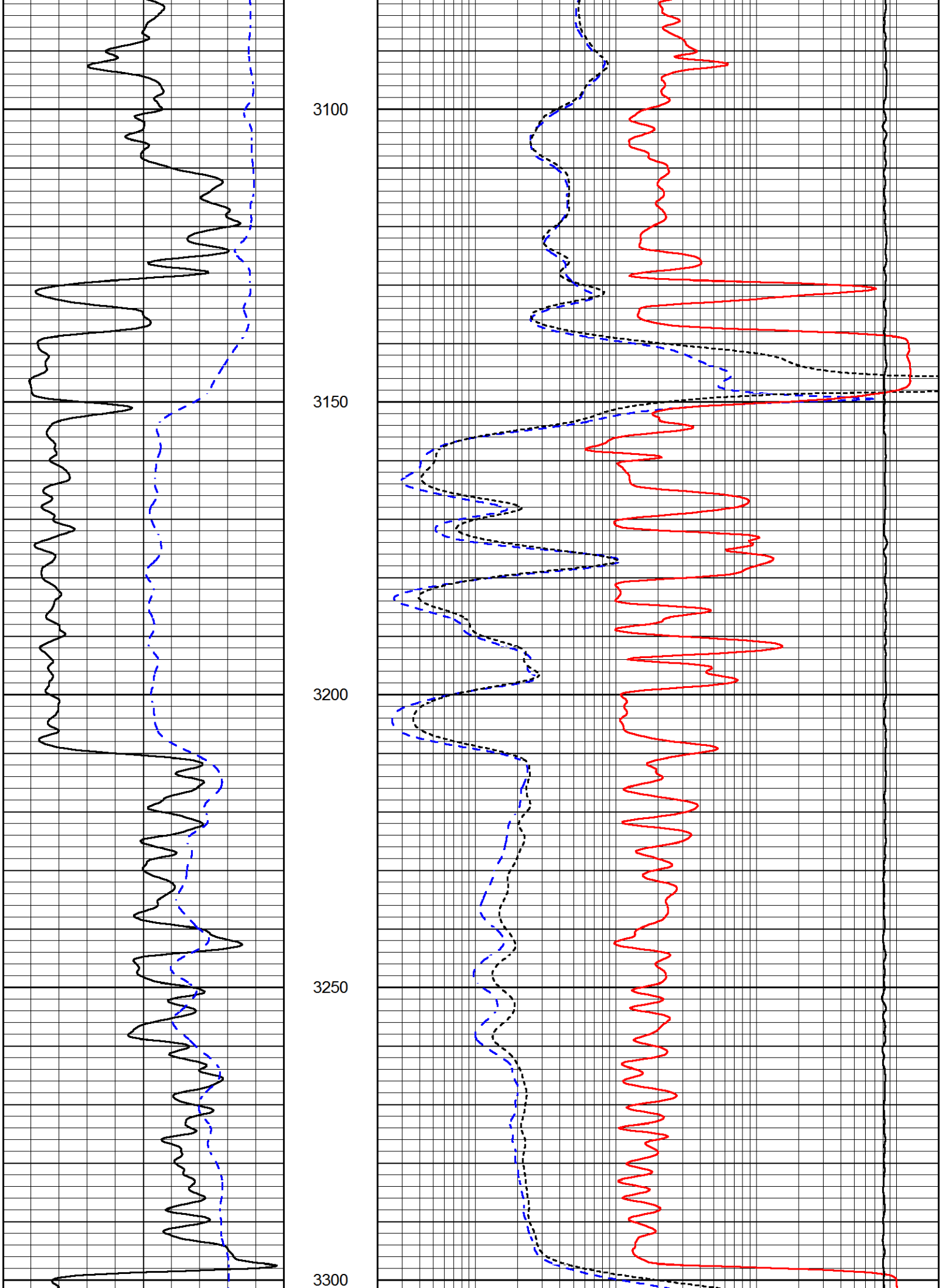

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2100
2150
2200

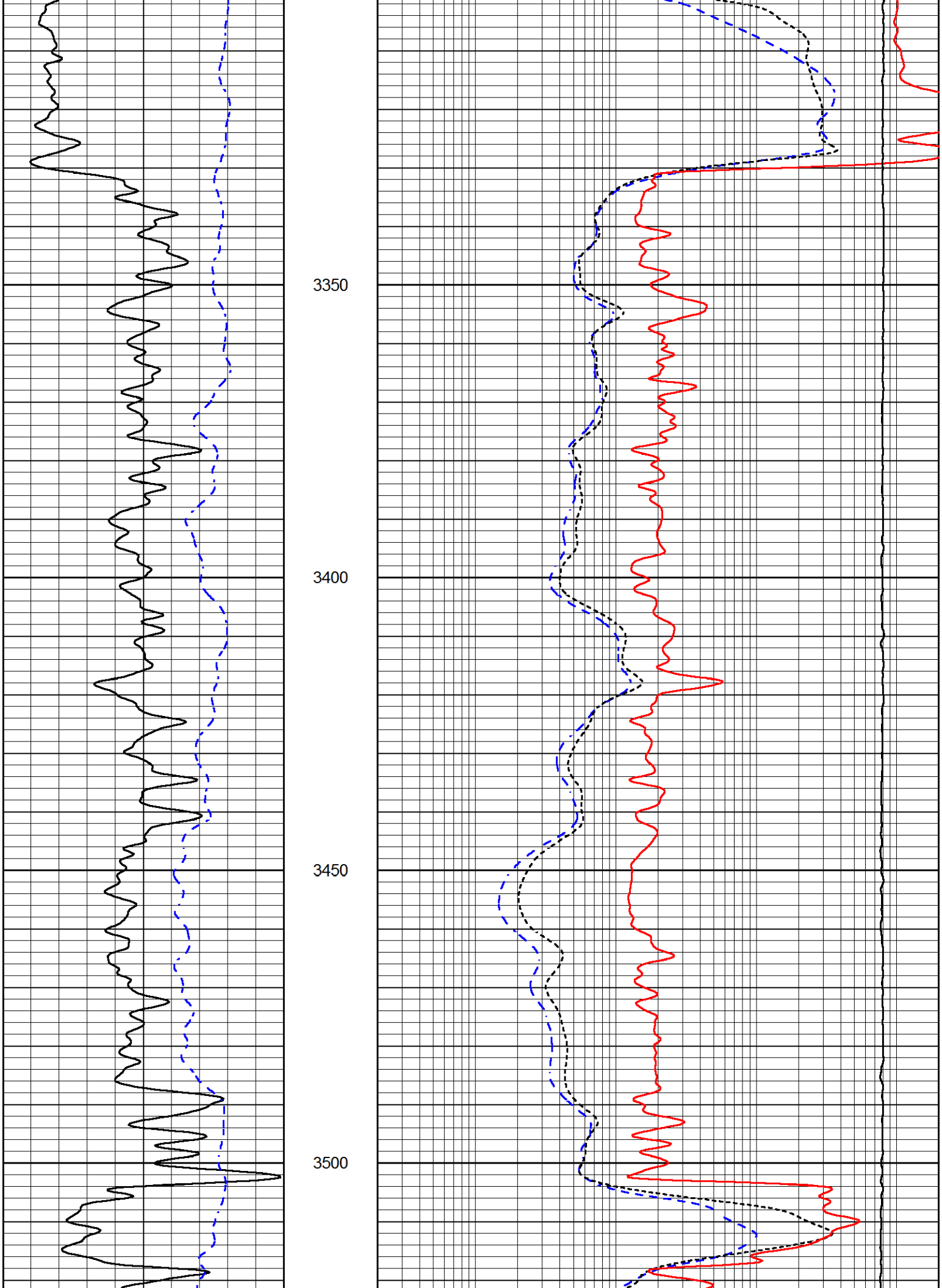

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2300
2350
2400

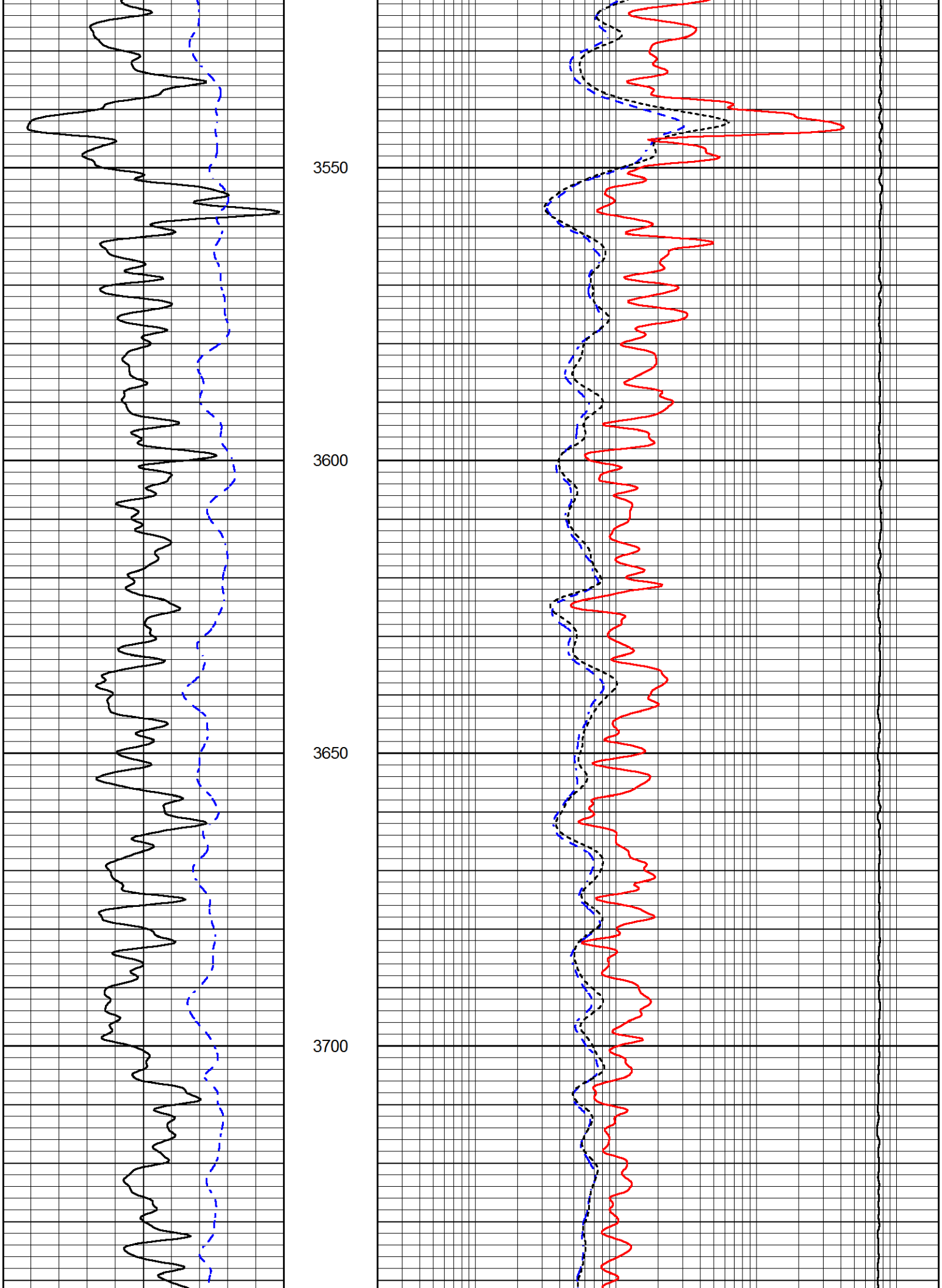

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2600

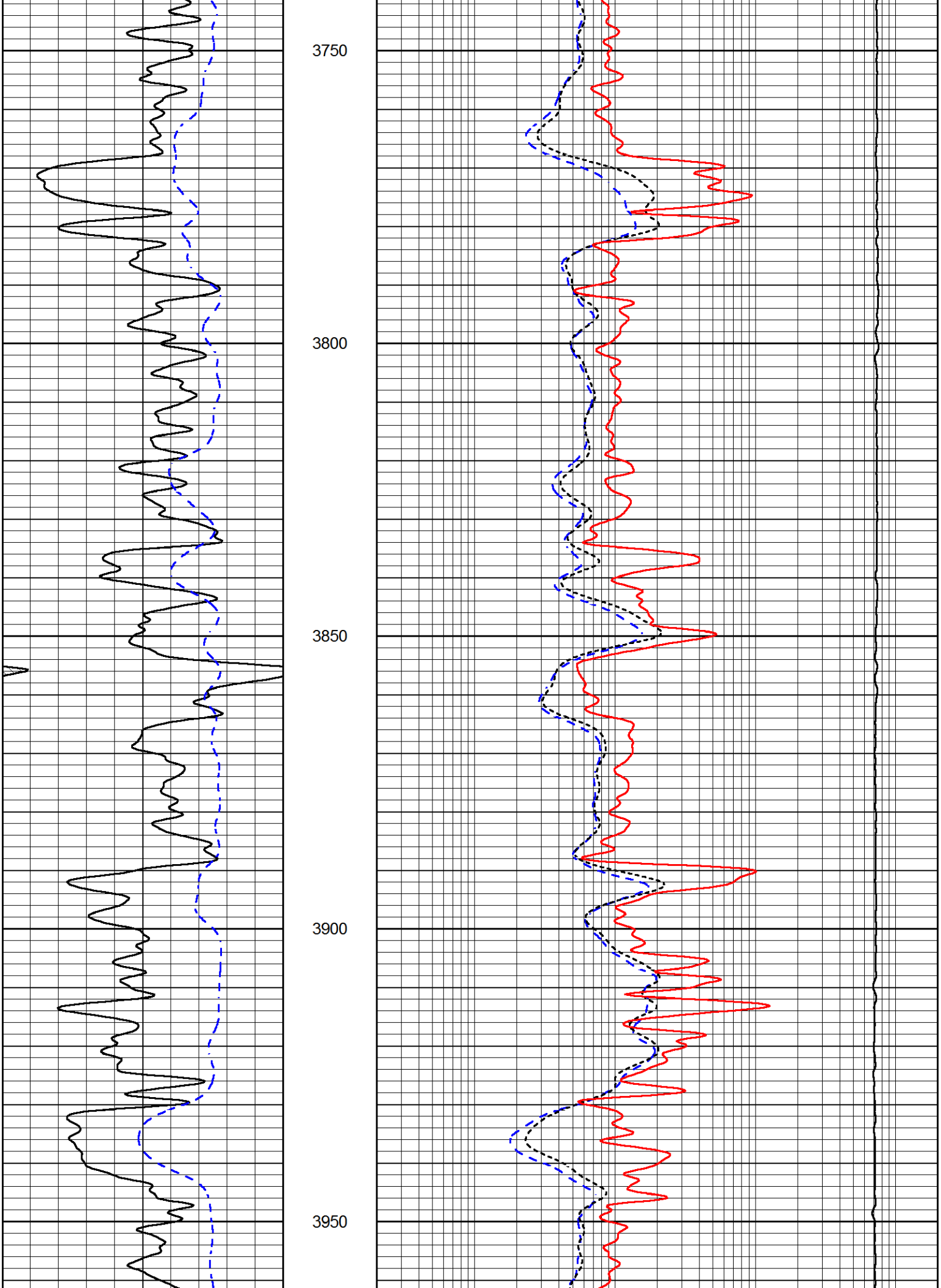

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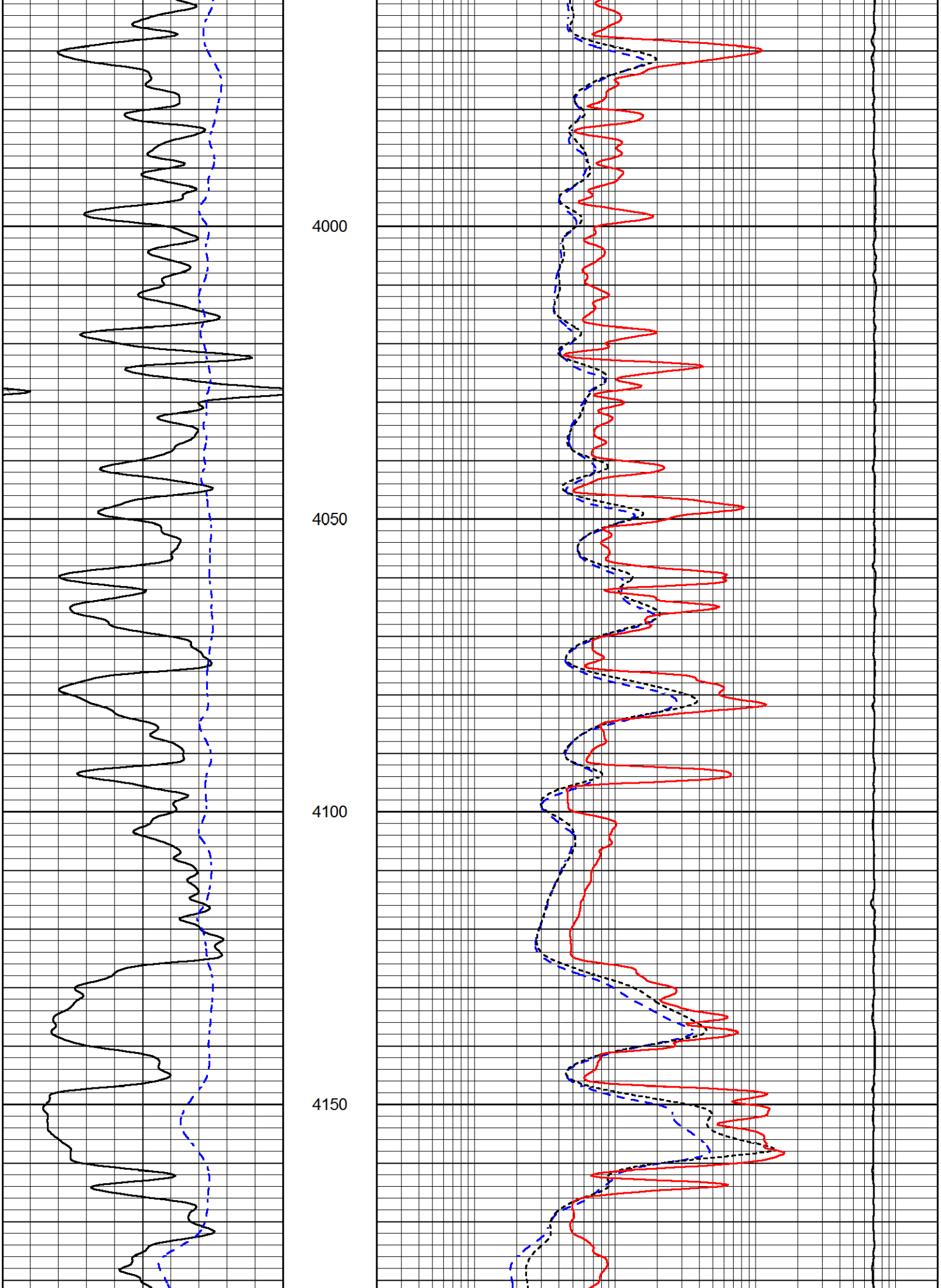

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2950
3000
3050

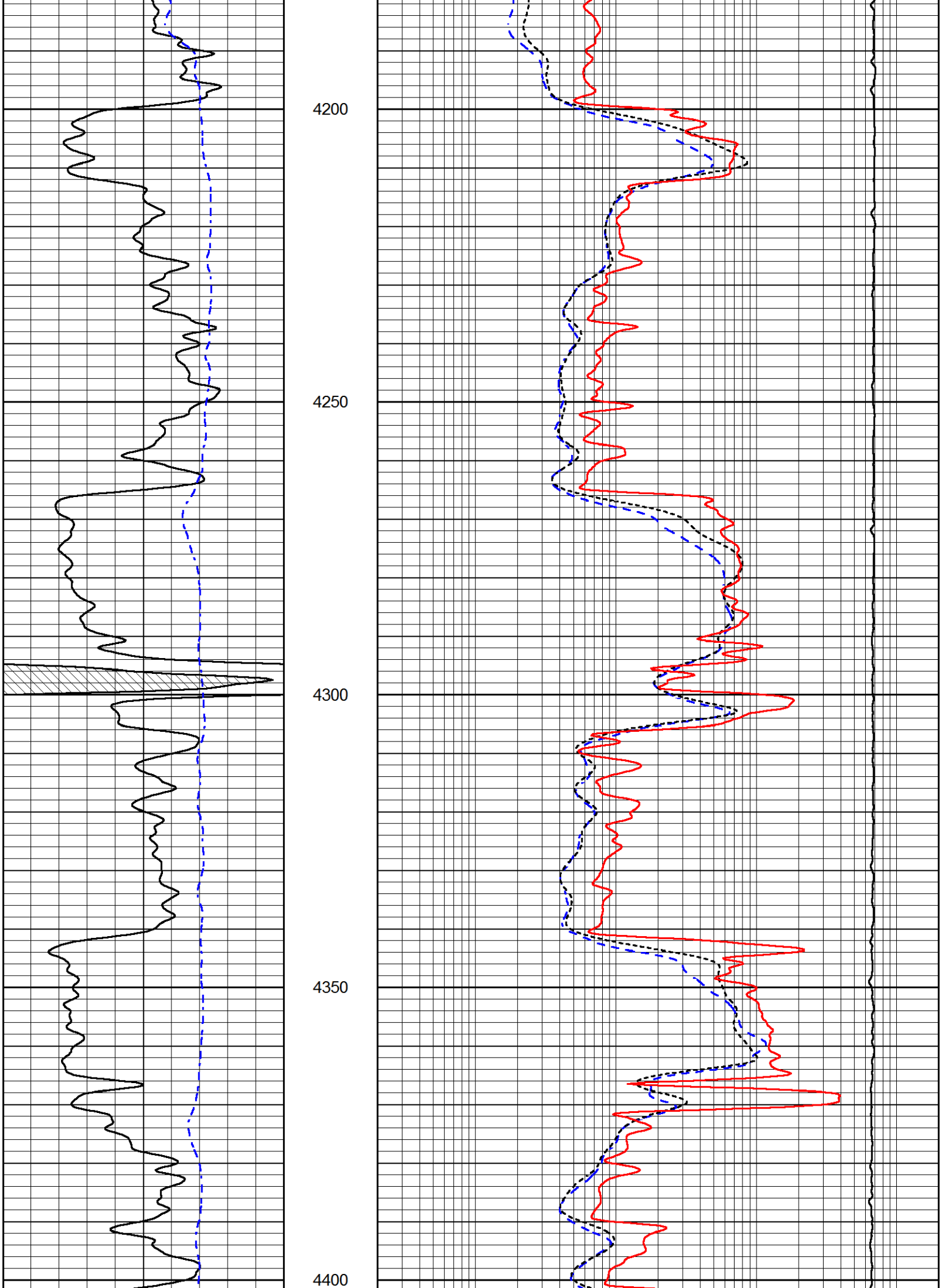

3100
3150
3200
3250
3300

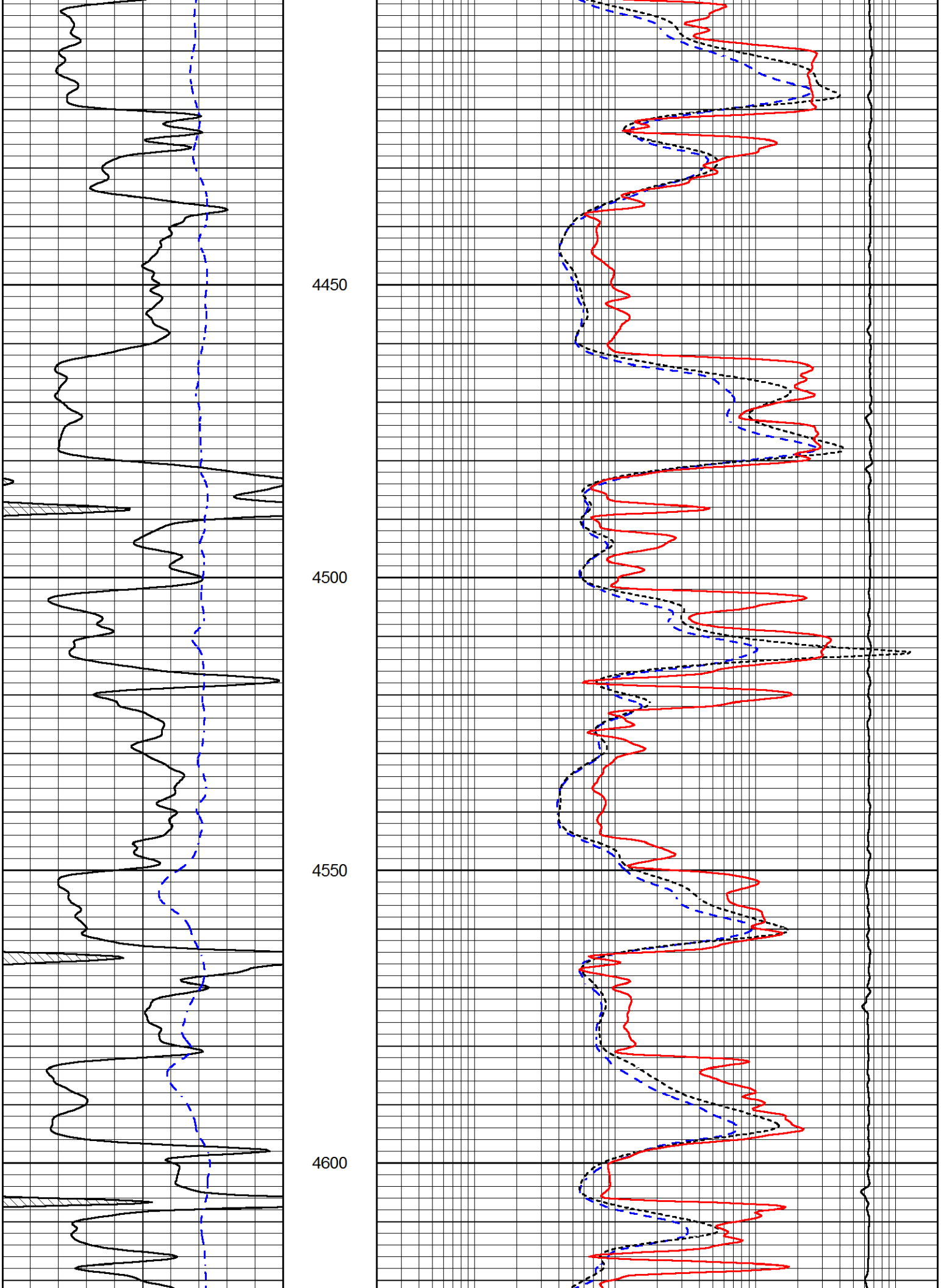

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3500

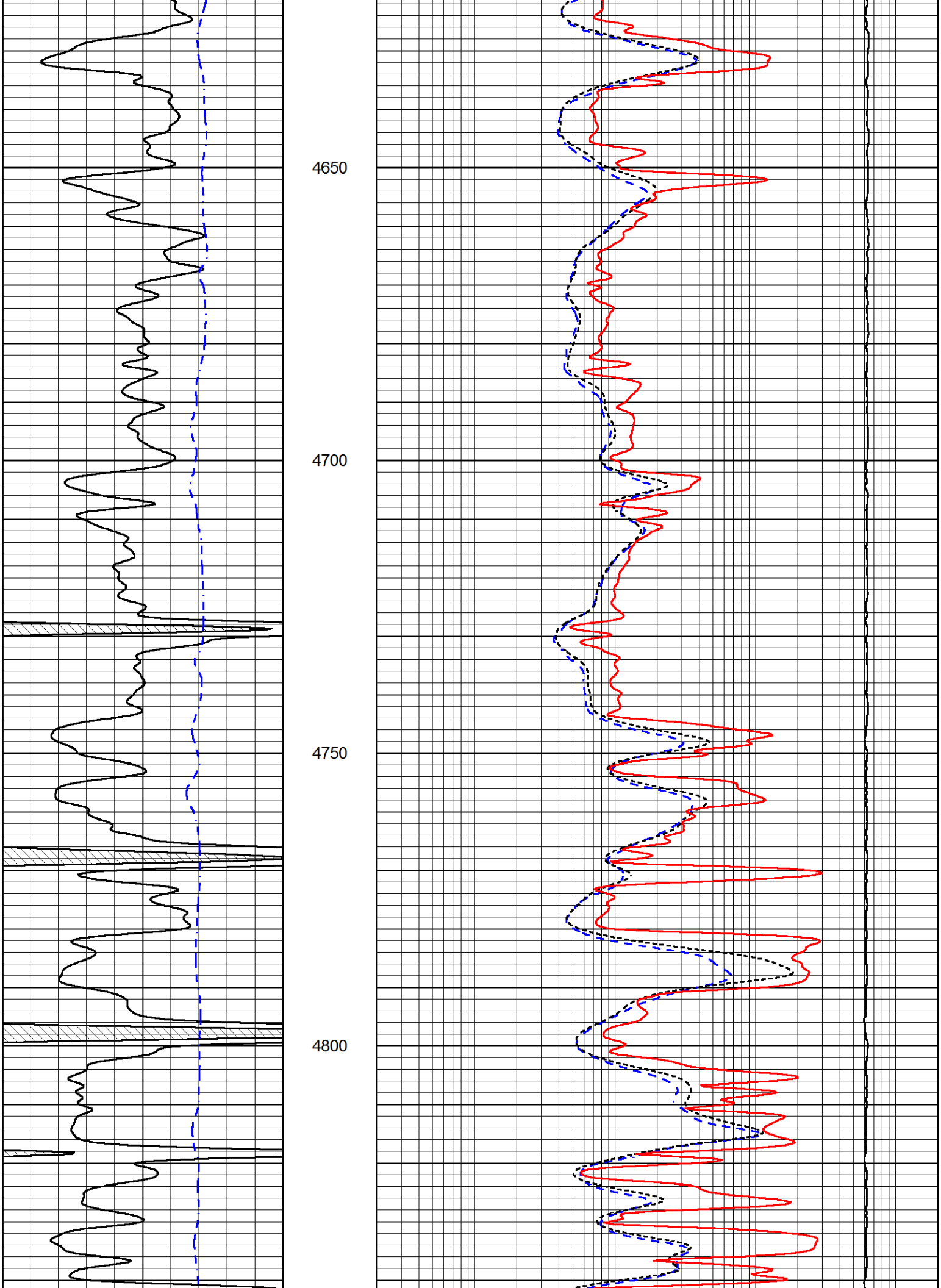

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3700

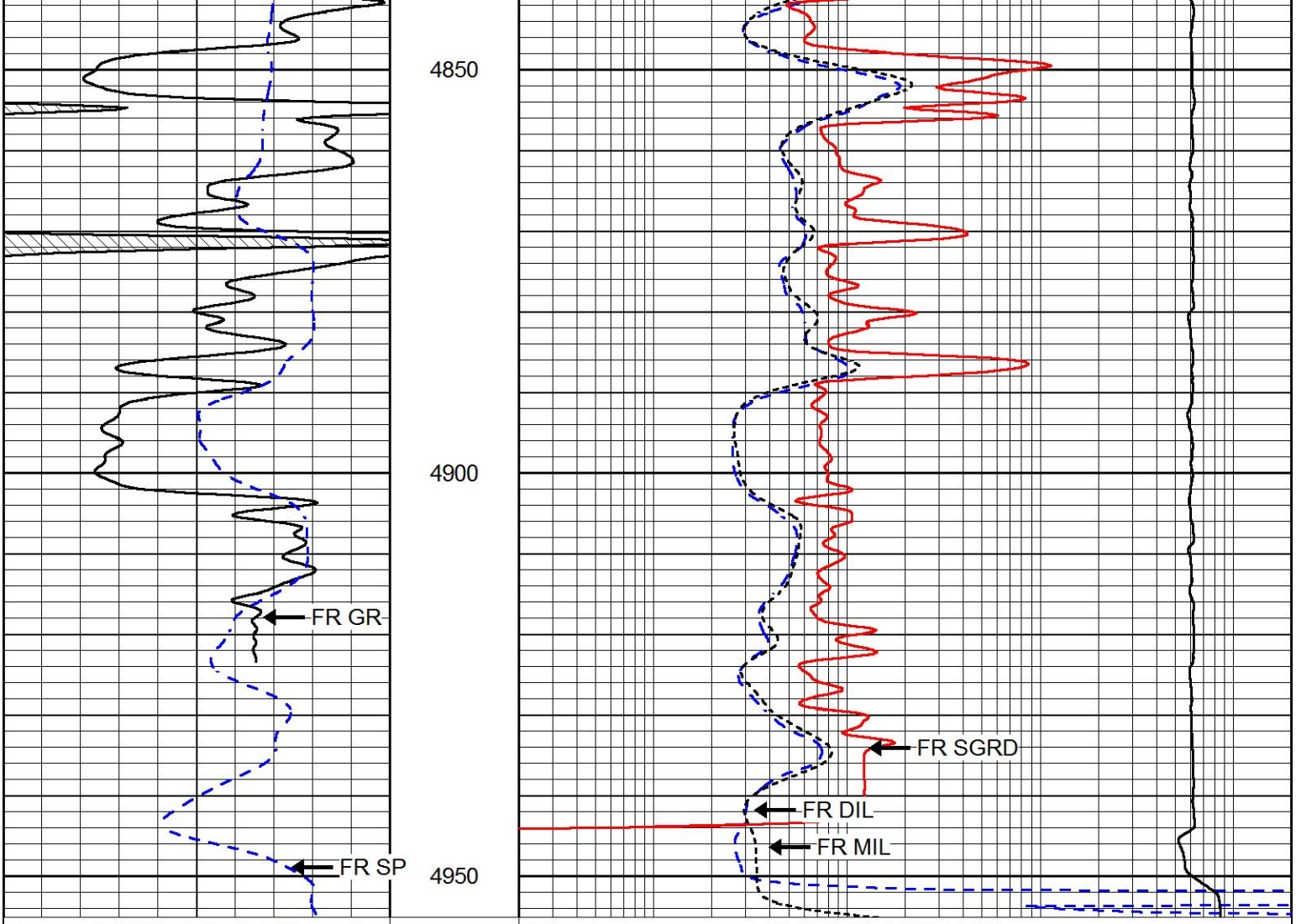

3750
3800
3850
3900
3950


4000
4050
4100
4150


4200
4250
4300
4350
4400


4450
4500
4550
4600


4650
4700
4750
4800



0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0

0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
15000	LINE TENSION (lb)	0

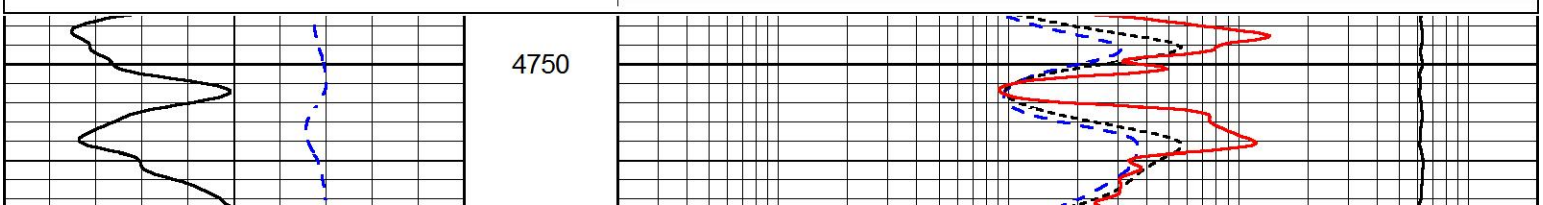
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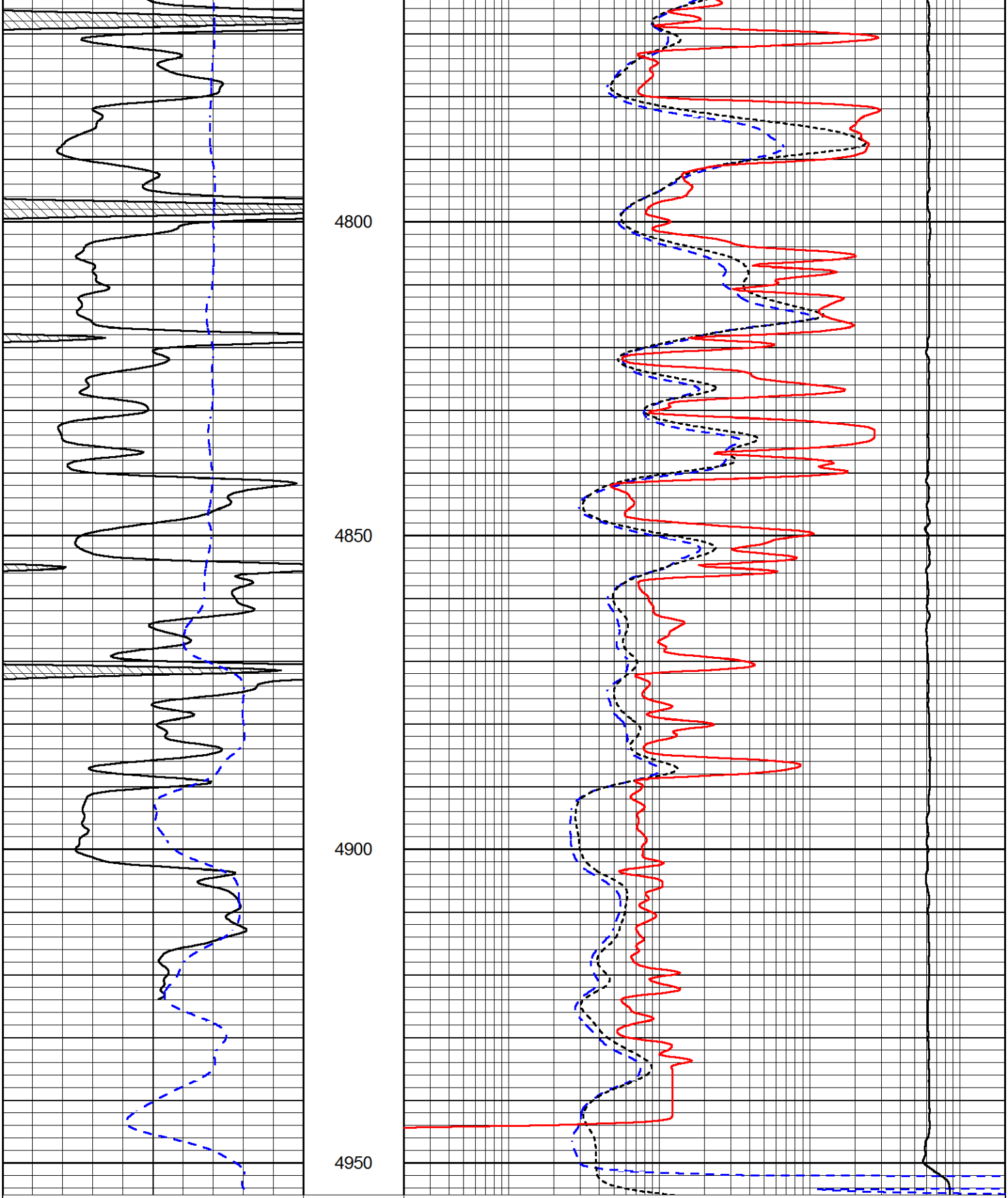
REPEAT SECTION

Database File	murfin_banister_a_3_22.db
Dataset Pathname	stack/pass2.1
Presentation Format	dil
Dataset Creation	Tue May 28 12:04:01 2019
Charted by	Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0

0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
15000	LINE TENSION (lb)	0





Calibration Report

Calibration Report

Database File	murfin_banister_a_3_22.db
Dataset Pathname	stack/pass3.1
Dataset Creation	Tue May 28 12:35:47 2019

Dual Induction Calibration Report

Serial-Model:	PSI 988-M&W
Calibration Performed:	Tue Nov 20 10:50:19 2018

	Readings		References			Results	
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.525	-44.000
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.400	-17.000

Compensated Density Calibration Report

Serial-Model:	144-84-M&W
Source / Verifier:	/
Master Calibration Performed:	Mon Jan 07 15:00:31 2019

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4315.49	5309.89	cps
Aluminum	2.675	g/cc	825.26	3443.46	cps

Spine Angle = 75.33 Density/Spine Ratio = 0.538

	Size		Reading
Small Ring	4.00	in	0.69
Large Ring	14.00	in	0.04

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



PIONEER

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Company	MURFIN DRILLING COMPANY, INC.
Well	BANISTER 'A' #3-22
Field	WILDCAT
County	CHEYENNE
State	KANSAS