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DUAL INDUCTION LOG

Company MURFIN DRILLING COMPANY, INC.
Well BANISTER 'A' NO. 1-22
Field WILDCAT
County CHEYENNE State KANSAS
Location: API #: 15-023-21479-00-00
2310' FSL & 2310' FWL
SEC 22 TWP 2S RGE 37W

Permanent Datum GROUND LEVEL Elevation 3409'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Other Services
CNL/CDL
MEL/BHCS

Elevation
K.B. 3414'
D.F. N/A
G.L. 3409'

Date	4/15/2018			
Run Number	ONE			
Depth Driller	5101'			
Depth Logger	5102'			
Bottom Logged Interval	5101'			
Top Log Interval	00			
Casing Driller	8.625" @ 385'			
Casing Logger	385'			
Bit Size	7.875"			
Type Fluid in Hole	CHEMICAL			
Salinity,ppm CL	1000			
Density / Viscosity	9.5 49			
pH / Fluid Loss	10.5 6.8			
Source of Sample	FLOWLINE			
Rm @ Meas. Temp	1.10 @ 57			
Rmf @ Meas. Temp	.83 @ 57			
Rmc @ Meas. Temp	1.49 @ 57			
Source of Rmf / Rmc	CHARTS			
Rm @ BHT	.49 @ 127			
Operating Rig Time	5 HOURS			
Max Rec. Temp. F	127 DEG/F			
Equipment Number	108			
Location	HAYS			
Recorded By	J. HENRICKSON			
Witnessed By	SAMAN SHARIFAIE			

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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 RD, 7 1/2 NORTH TO V RD, EAST INTO

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: SAMAN SHARIFAIE
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

Log Variables

DatabaseC:\ProgramData\Warrior\Data\murfin_banister_a_1_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	127	5.5	0	1	2	2.71

NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	0	-1	2	-155	34	Off	5102

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 (168-986)	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 978)	18.50	3.50	220.00
CILD	8.00					

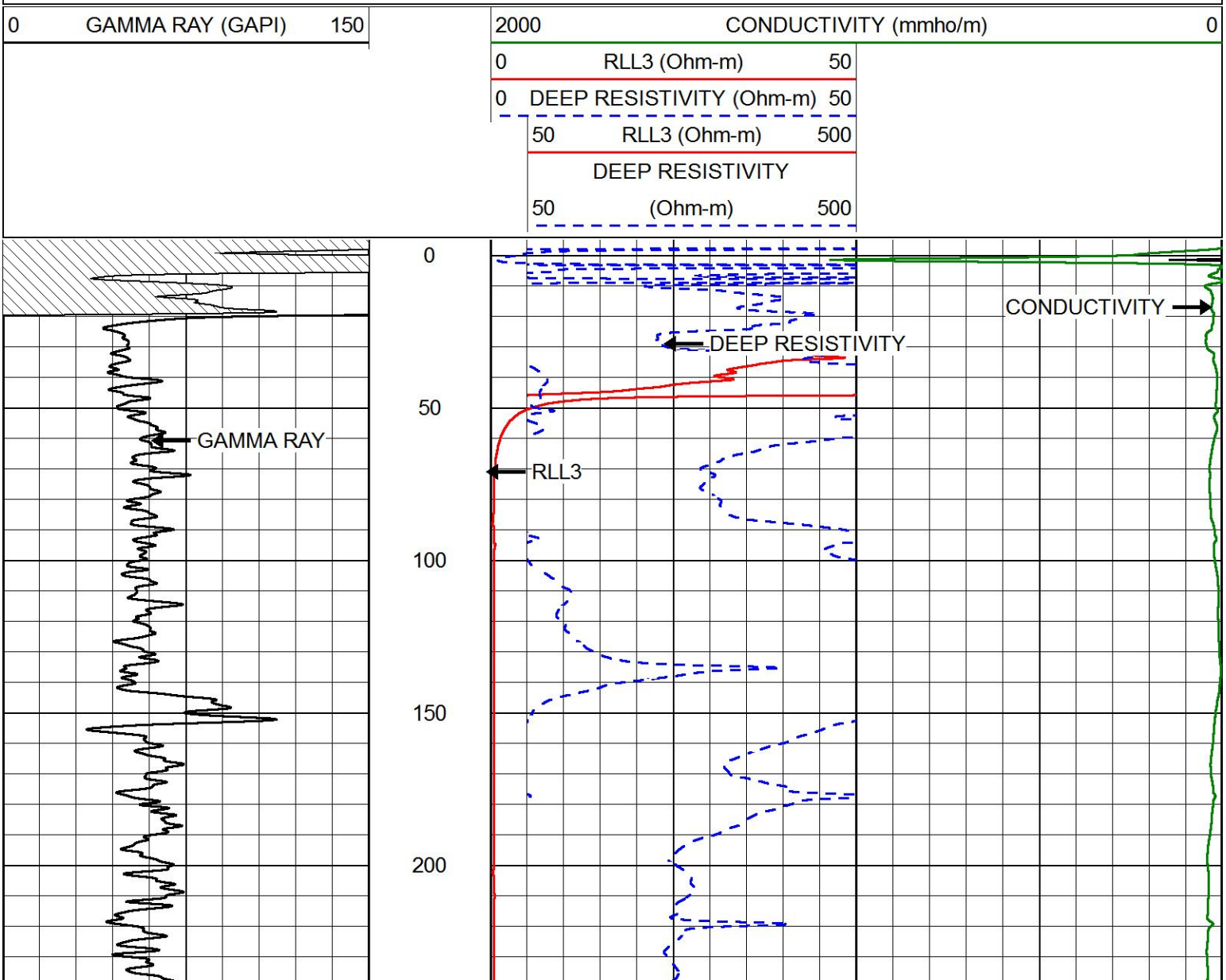
CILM	4.70	
SP	0.20	

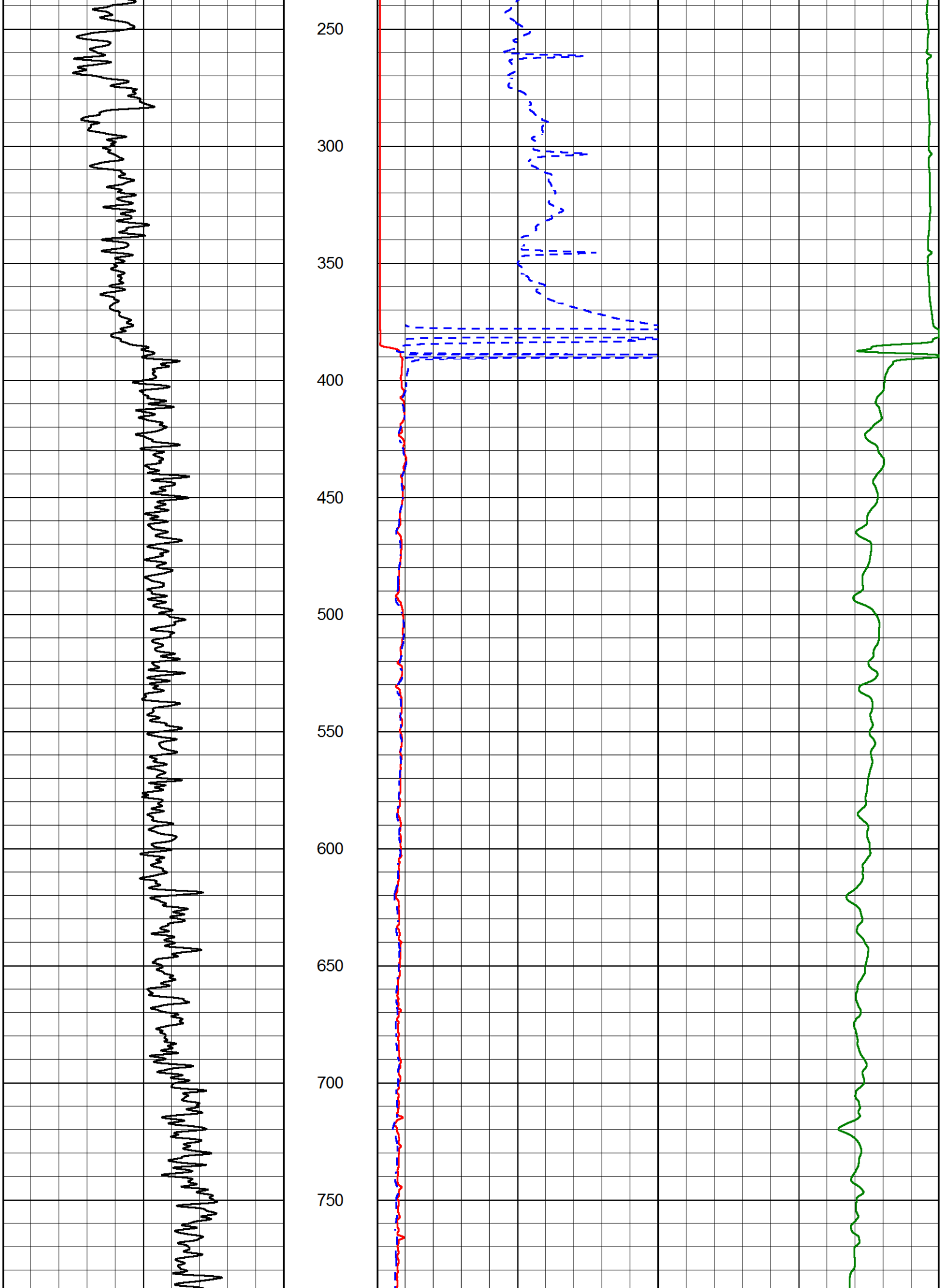
Dataset: murfin_banister_a_1_22.db: field/well/stack/pass3.1
Total length: 35.50 ft
Total weight: 620.00 lb
O.D.: 4.00 in

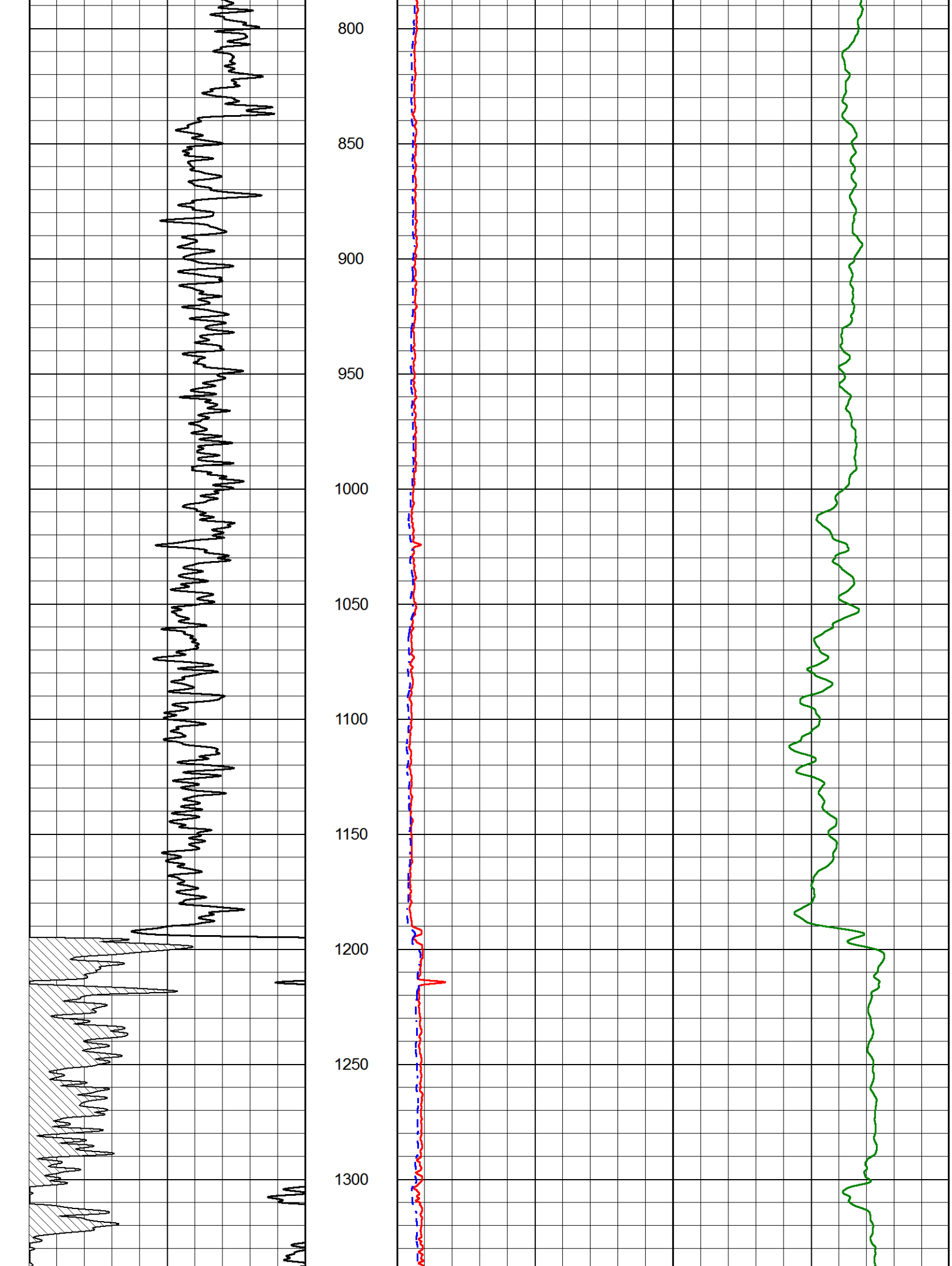
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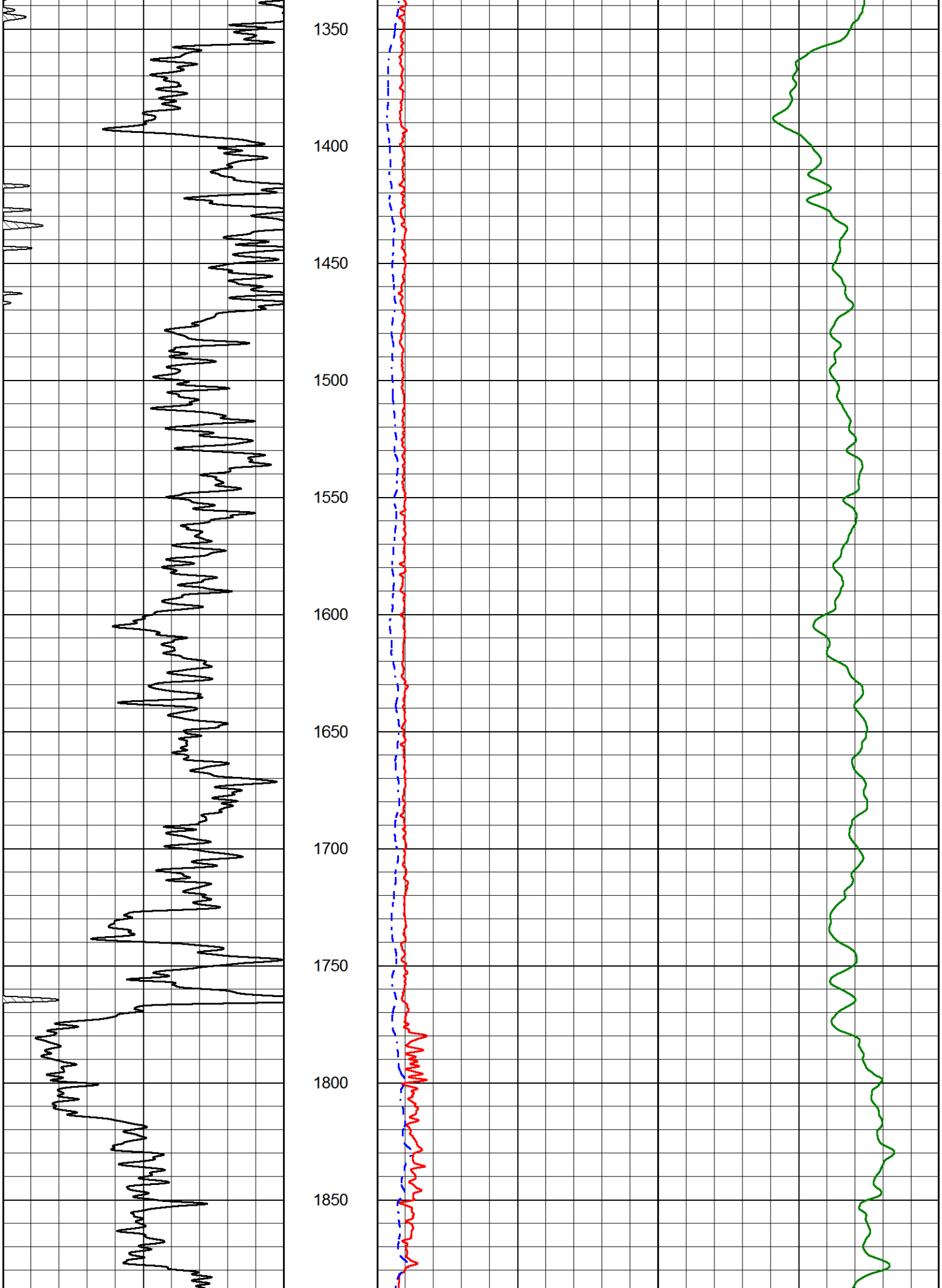
MAIN PASS

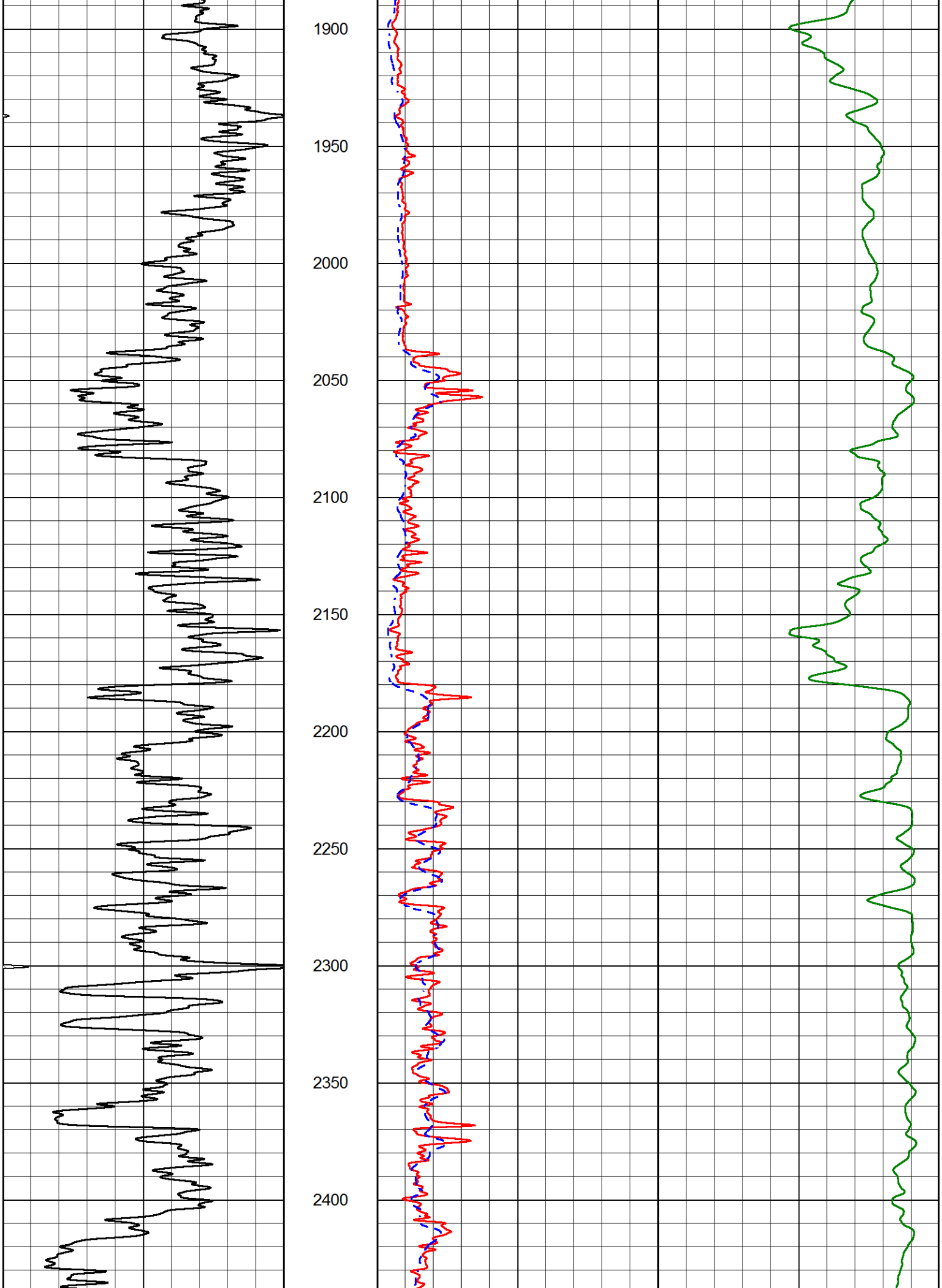
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Presentation Format	dil2in
Dataset Creation	Sun Apr 15 10:58:00 2018
Charted by	Depth in Feet scaled 1:600

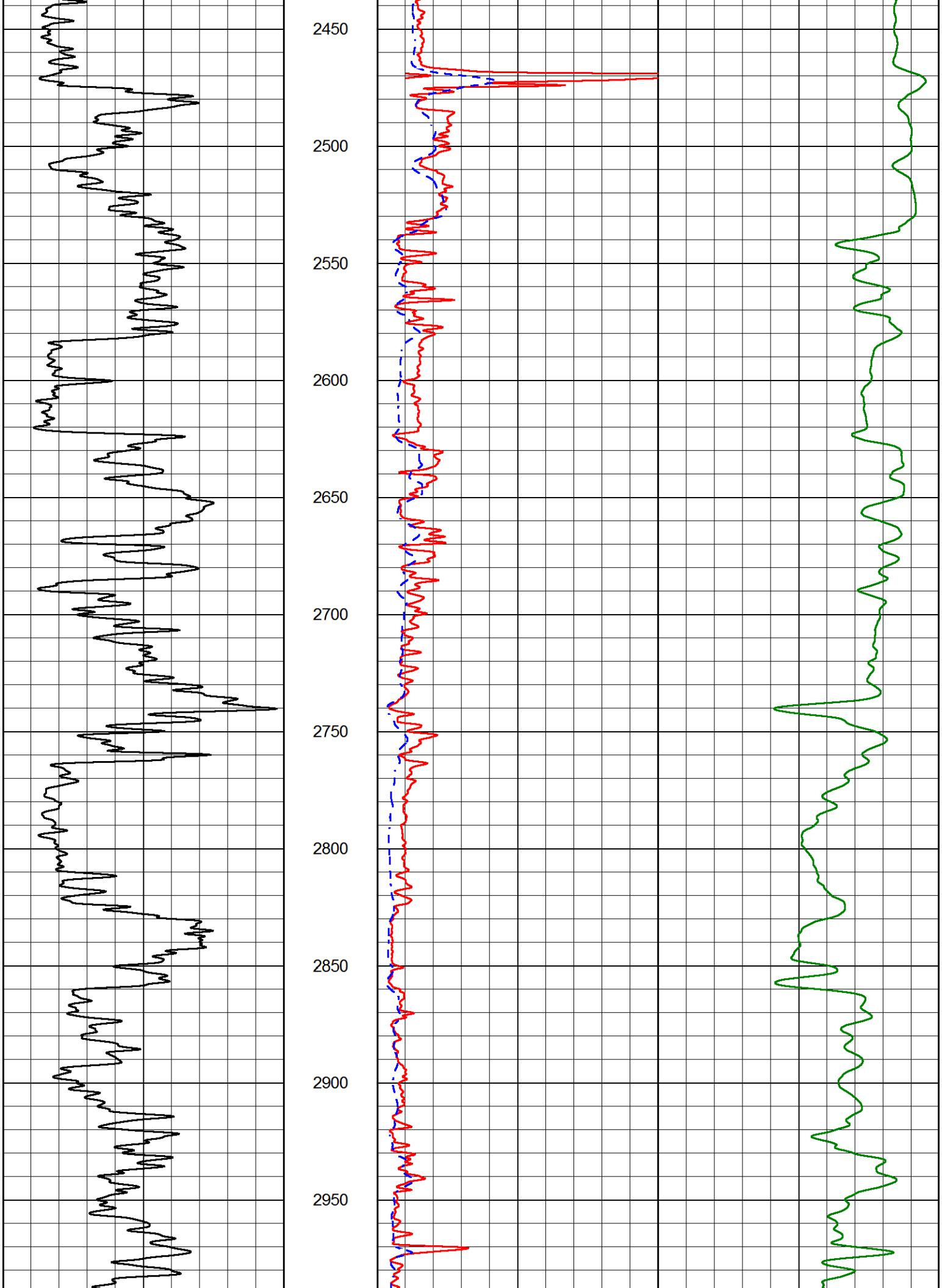


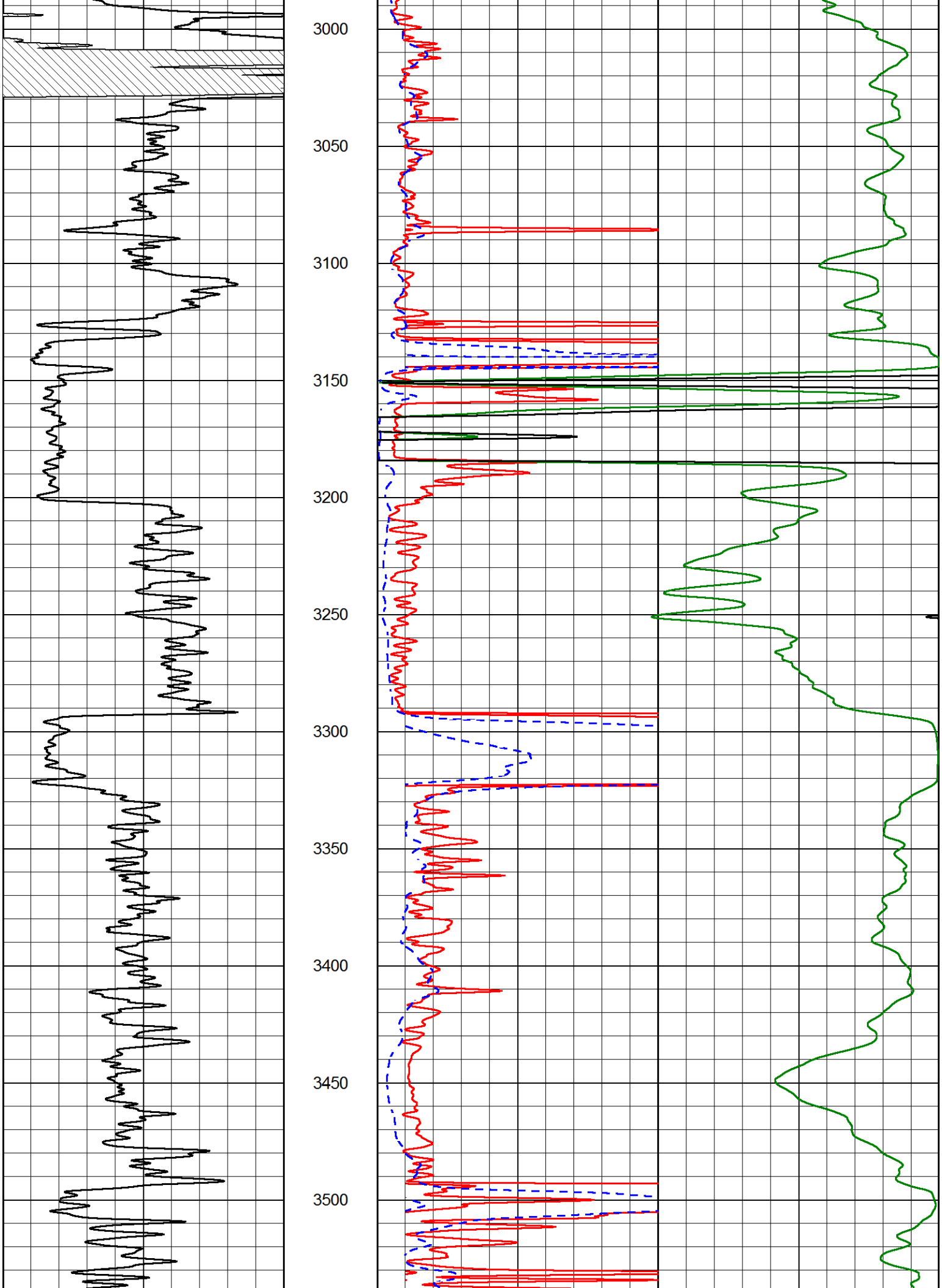

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400
450
500
550
600
650
700
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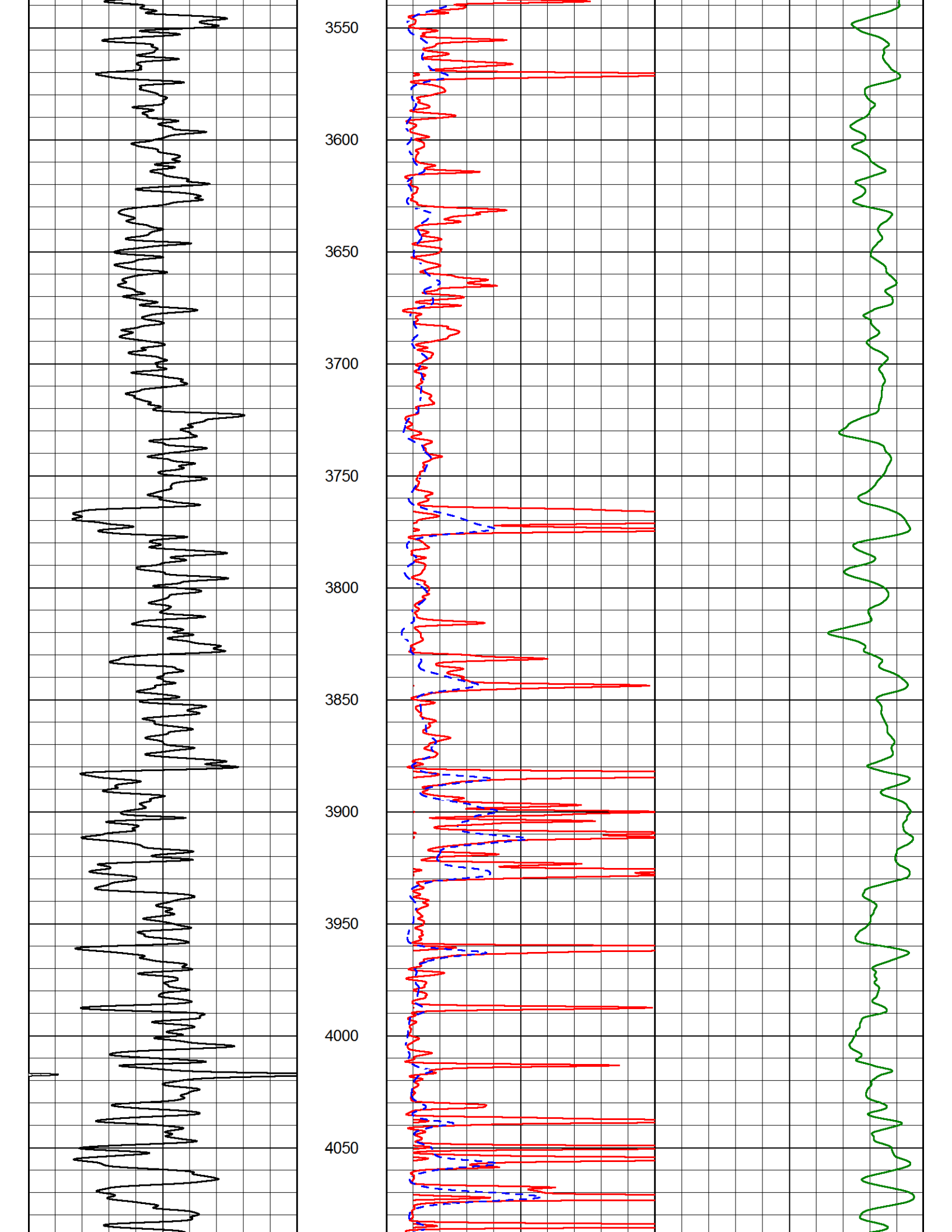

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900
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1050
1100
1150
1200
1250
1300

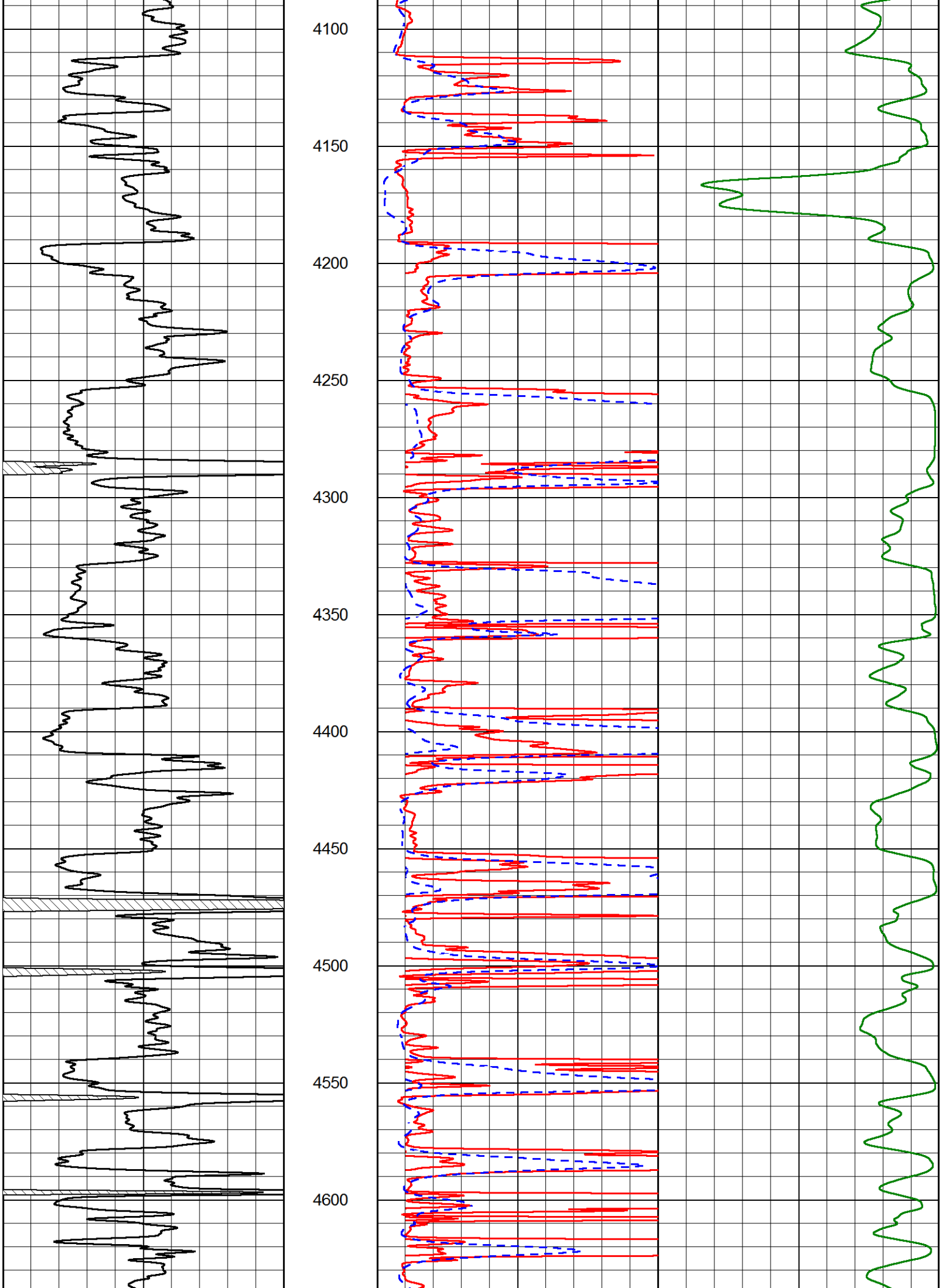

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1750
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1850

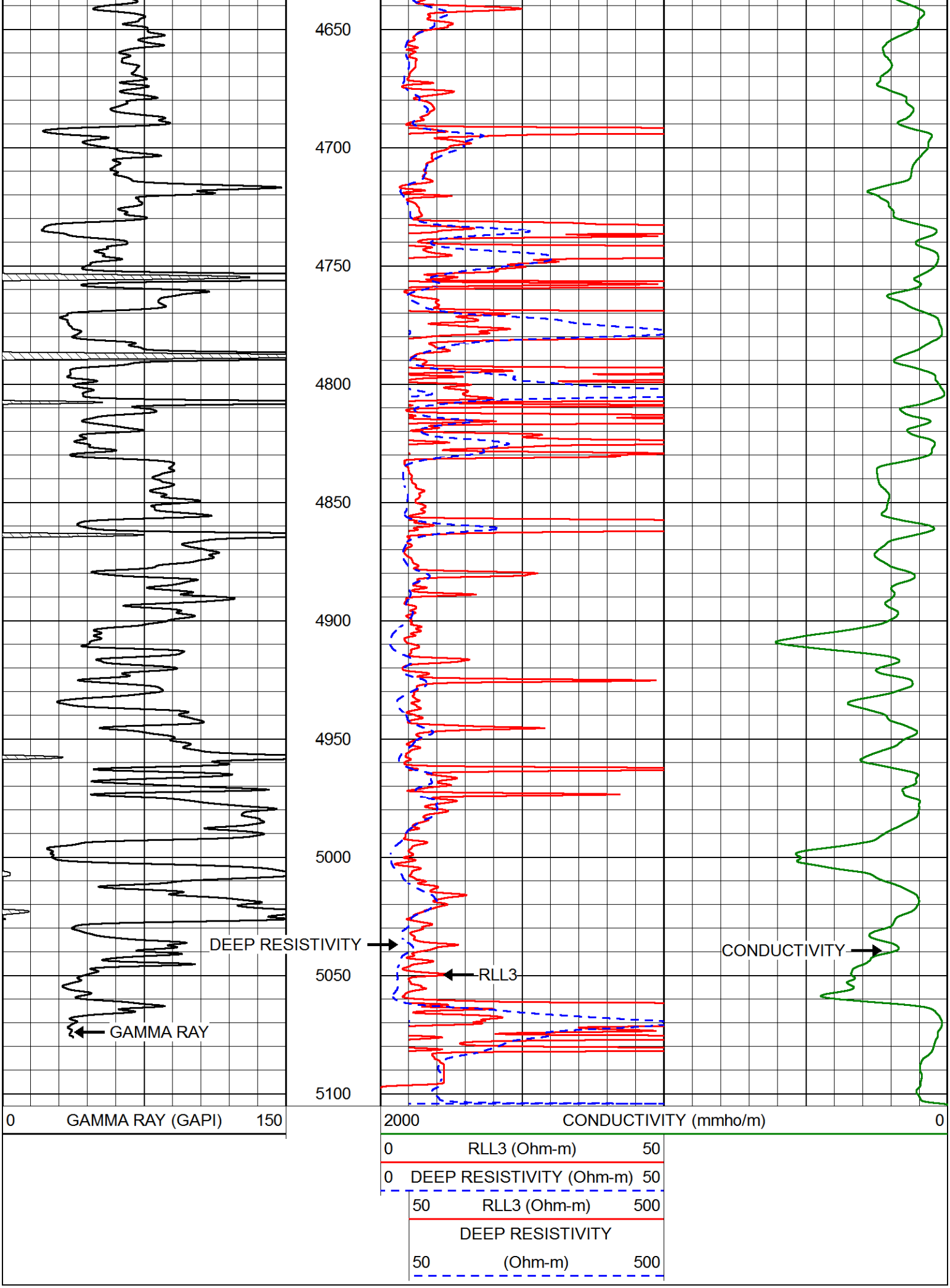

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2000
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2100
2150
2200
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2300
2350
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2500
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2700
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2800
2850
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3000
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4000
4050


4100
4150
4200
4250
4300
4350
4400
4450
4500
4550
4600


4650
4700
4750
4800
4850
4900
4950
5000
5050
5100
DEEP RESISTIVITY
RLL3
CONDUCTIVITY
GAMMA RAY
0
GAMMA RAY (GAPI)
150
2000
CONDUCTIVITY (mmho/m)
0
0
RLL3 (Ohm-m)
50
0
DEEP RESISTIVITY (Ohm-m)
50
50
RLL3 (Ohm-m)
500
DEEP RESISTIVITY
50
(Ohm-m)
500

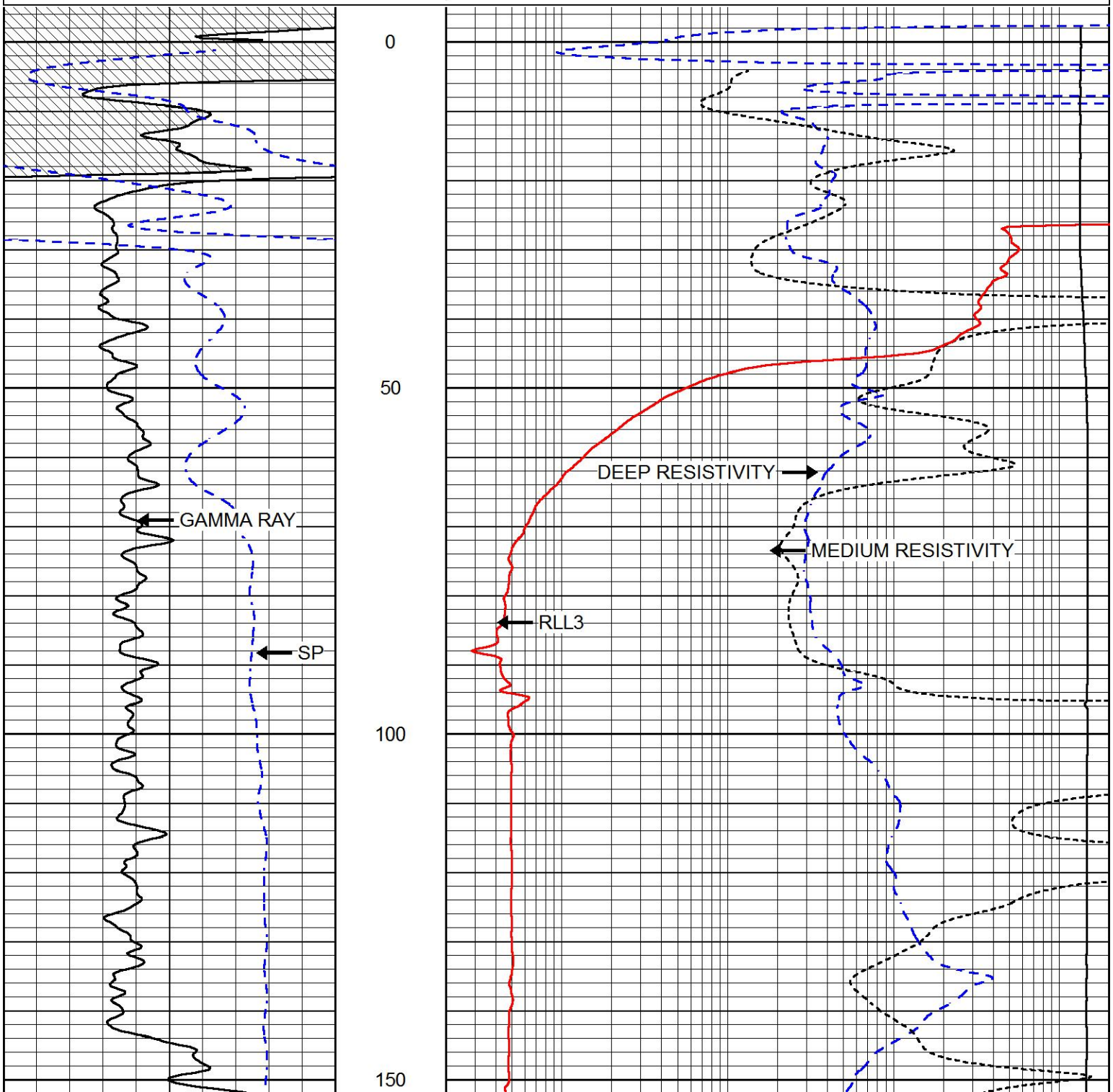
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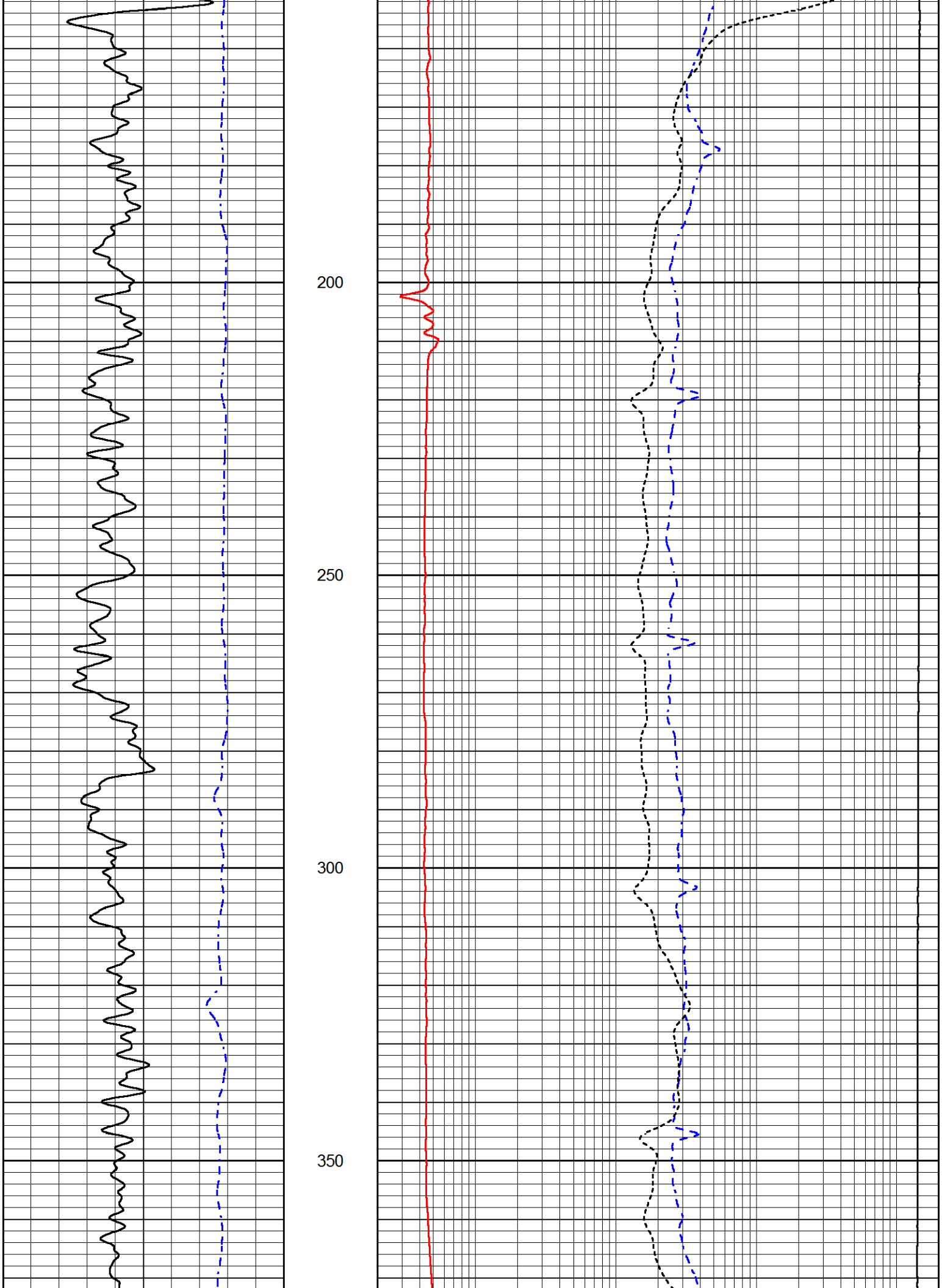
MAIN PASS

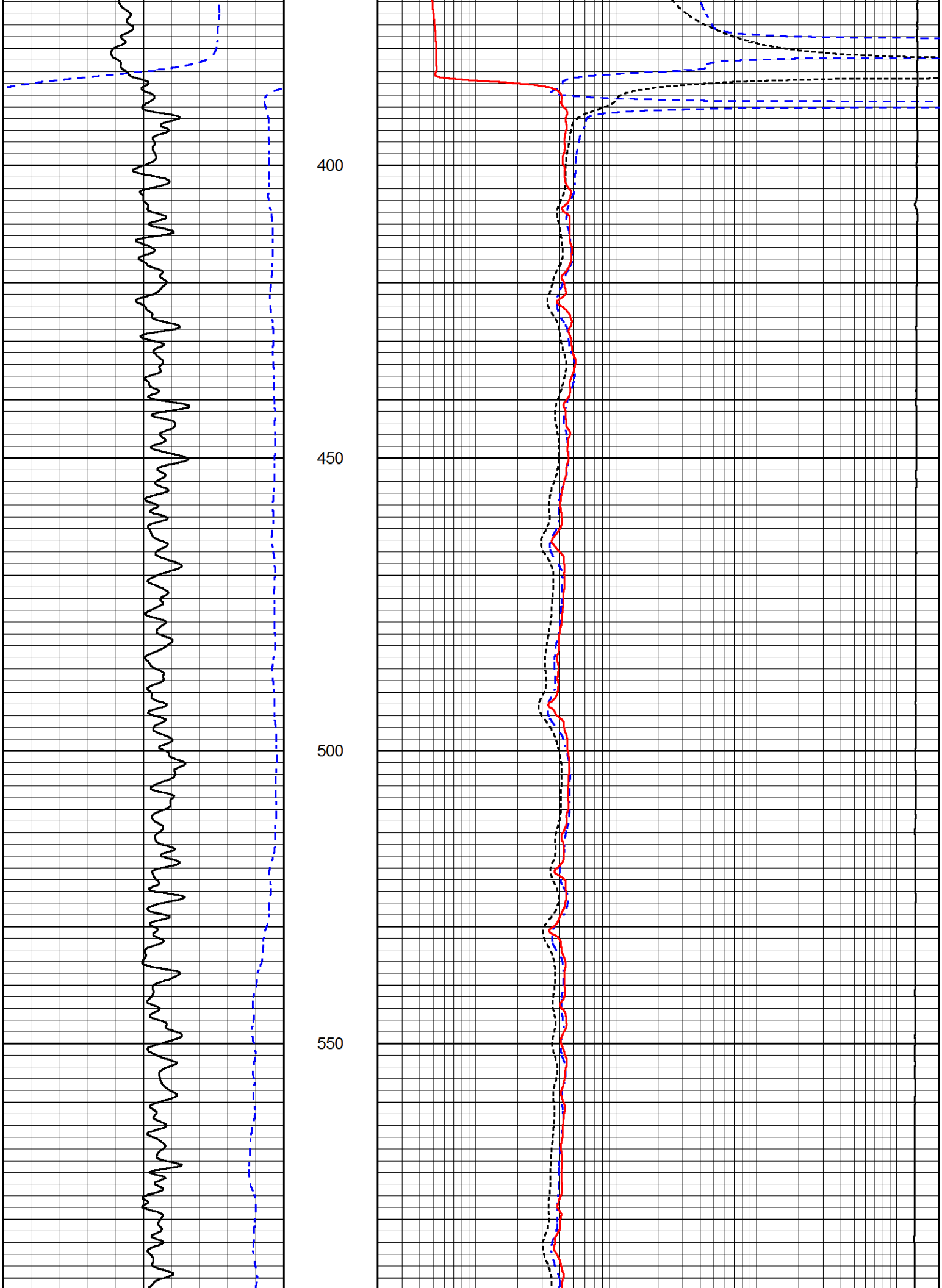
Database File	murfin_banister_a_1_22.db
Dataset Pathname	stack/pass3.1
Presentation Format	dil
Dataset Creation	Sun Apr 15 10:58:00 2018
Charted by	Depth in Feet scaled 1:240

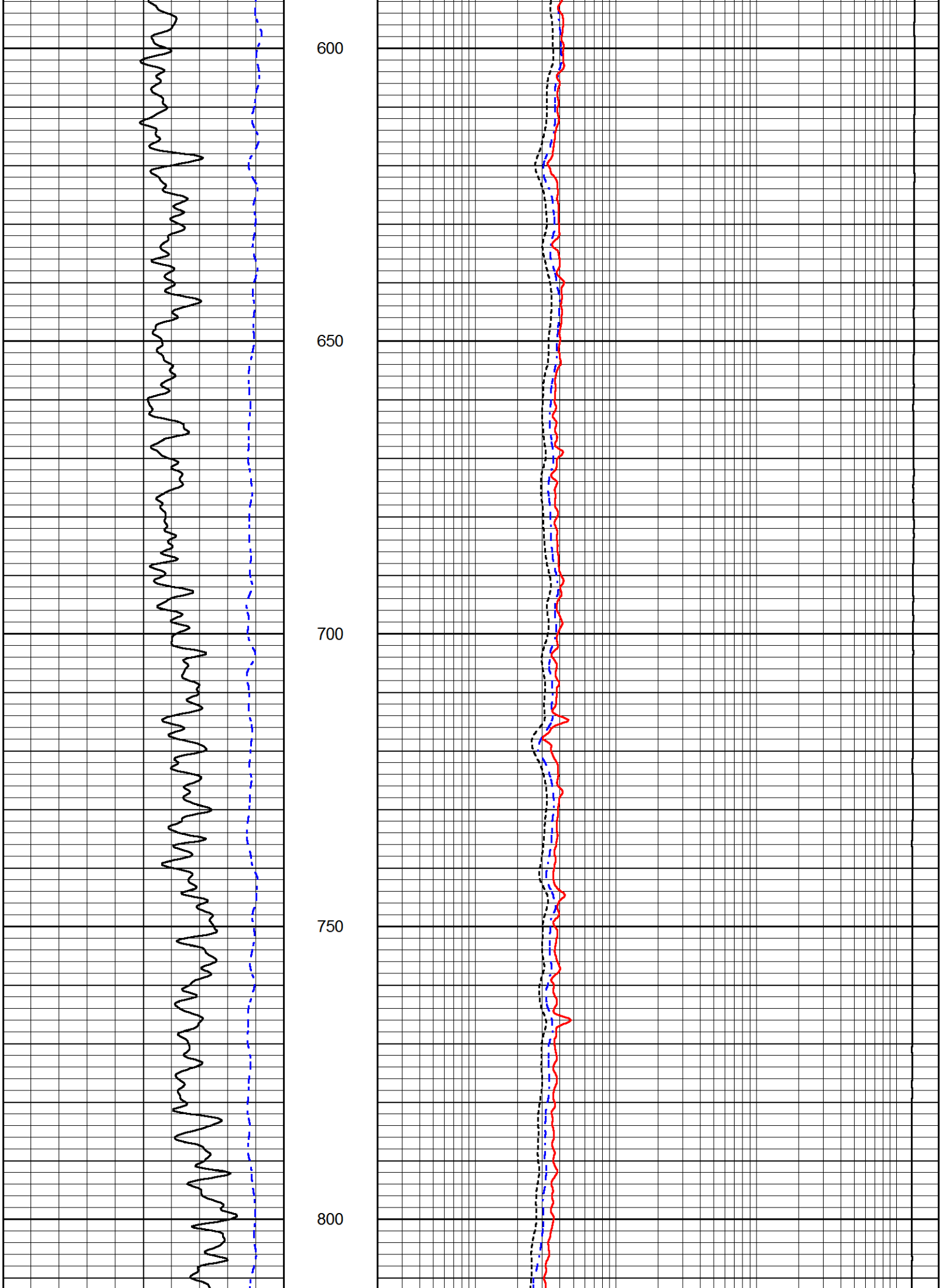
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-200	SP (mV)	0

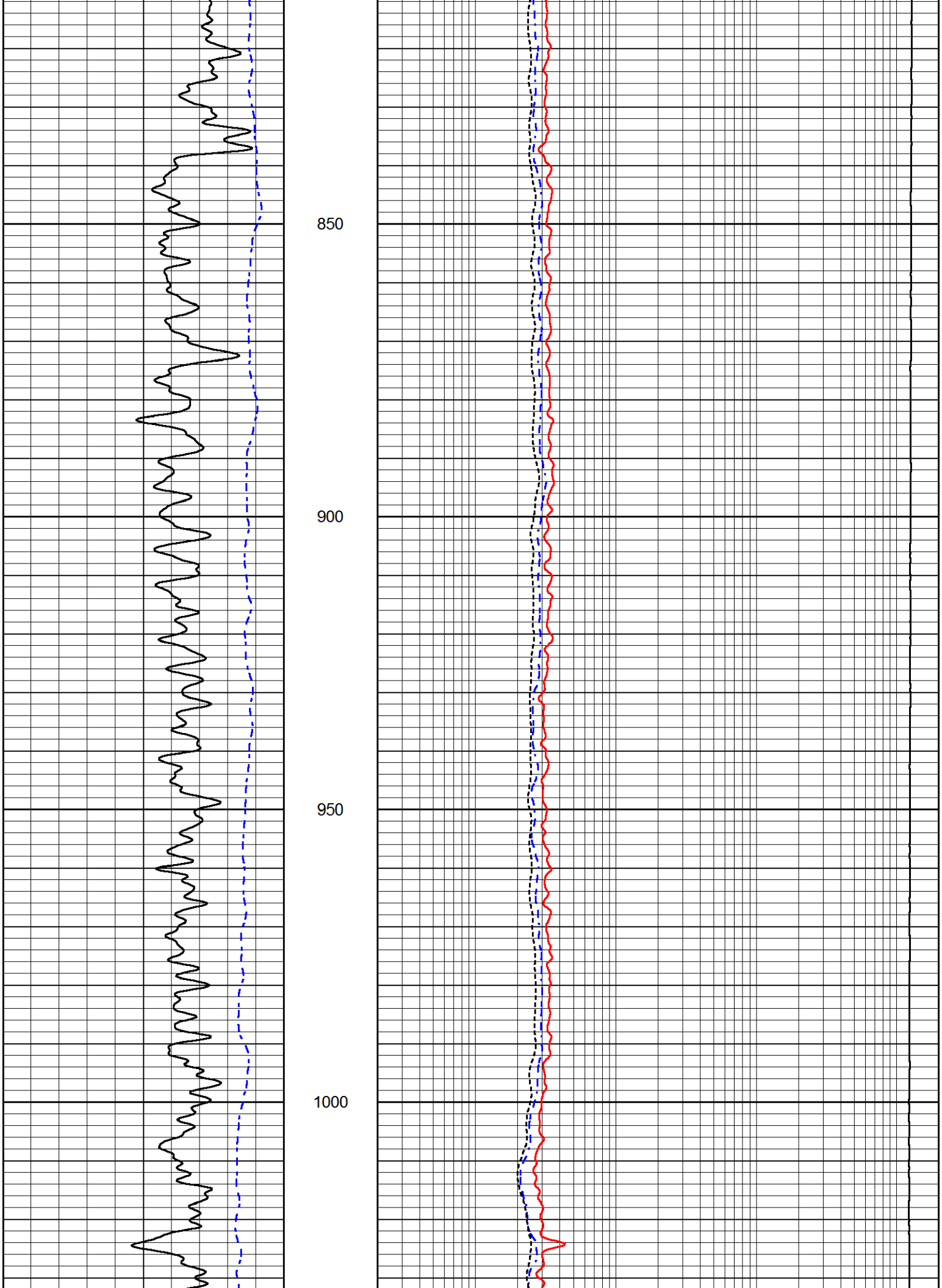
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
15000	LINE TENSION (lb)	0

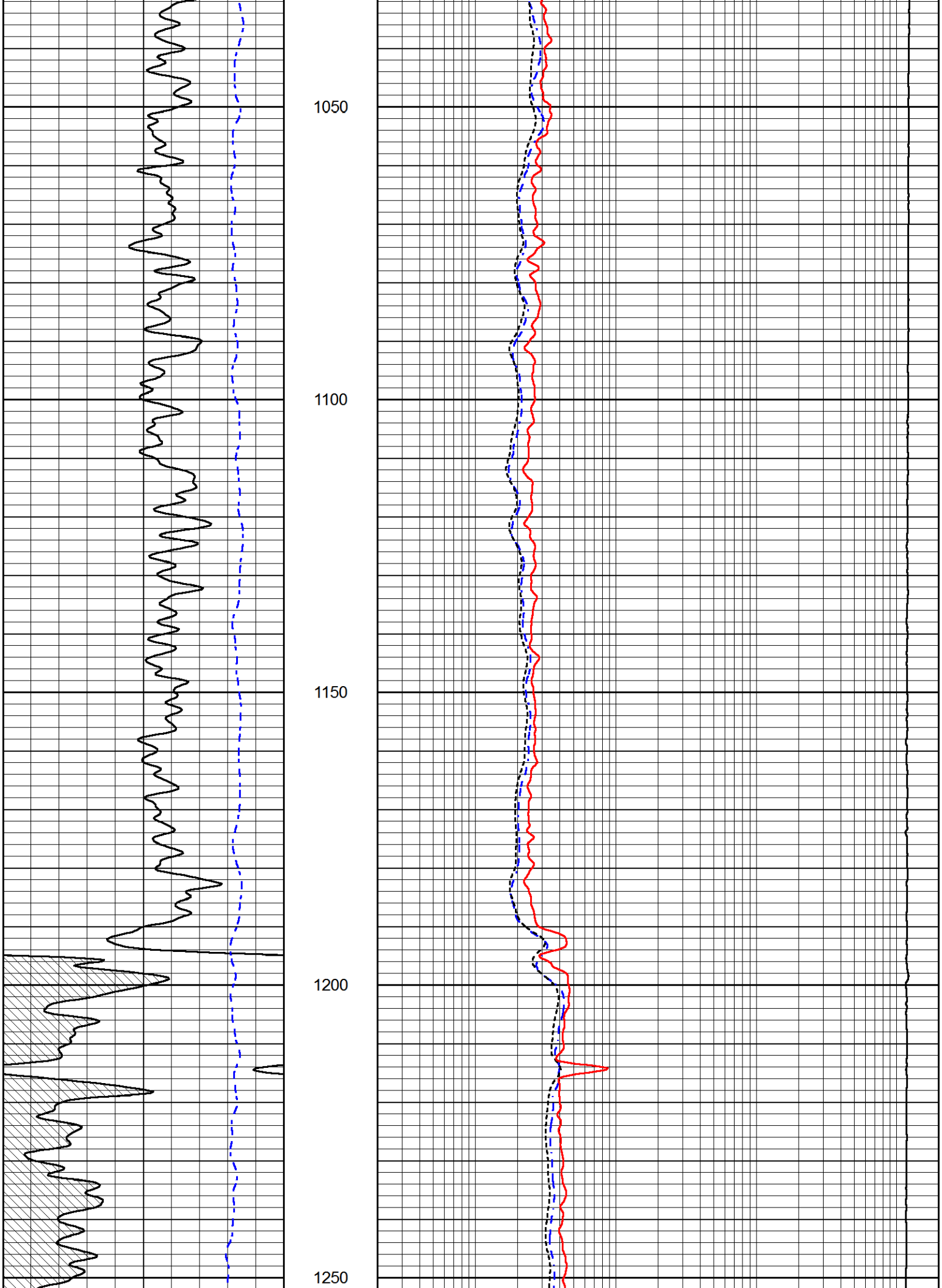


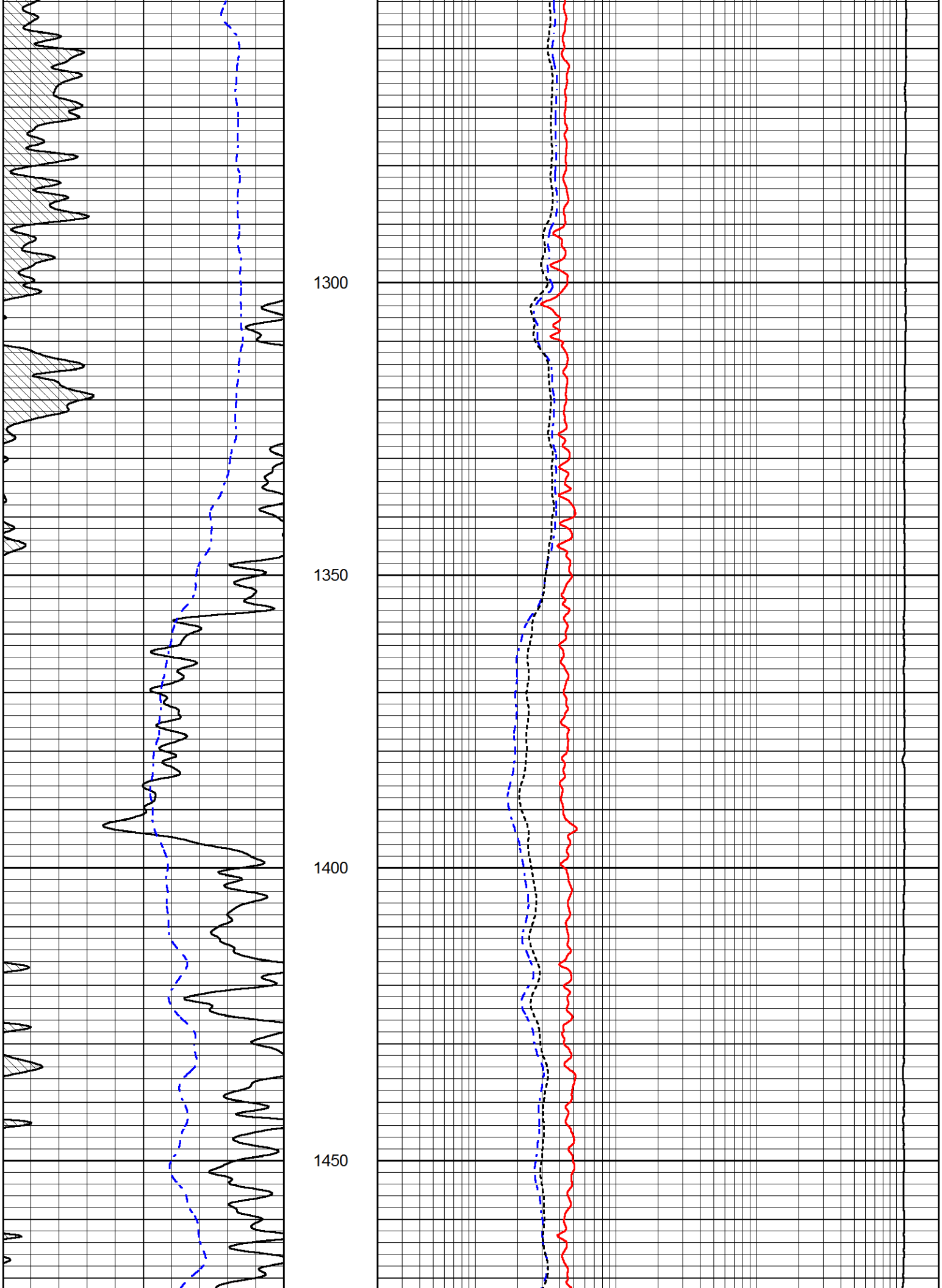

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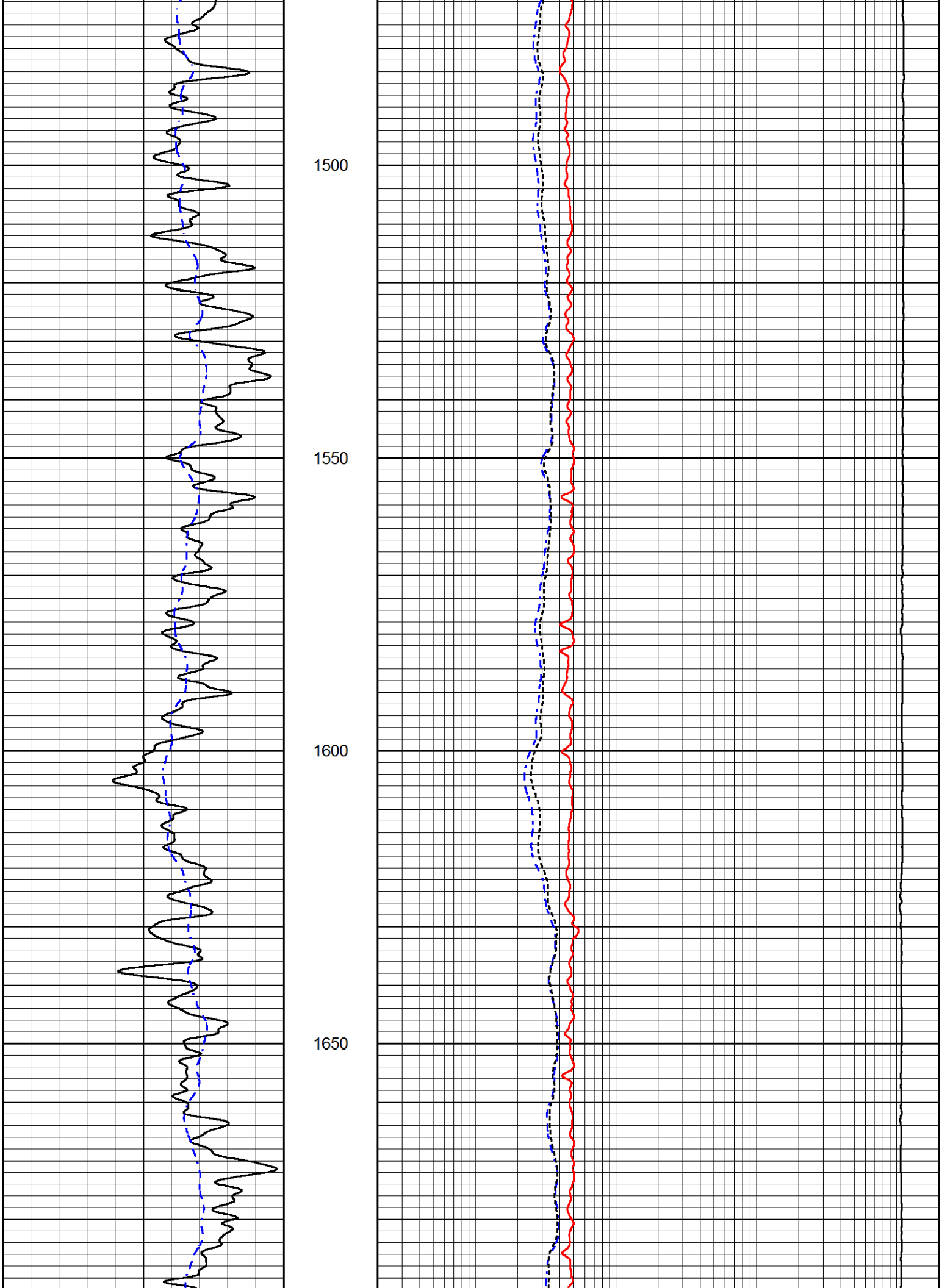

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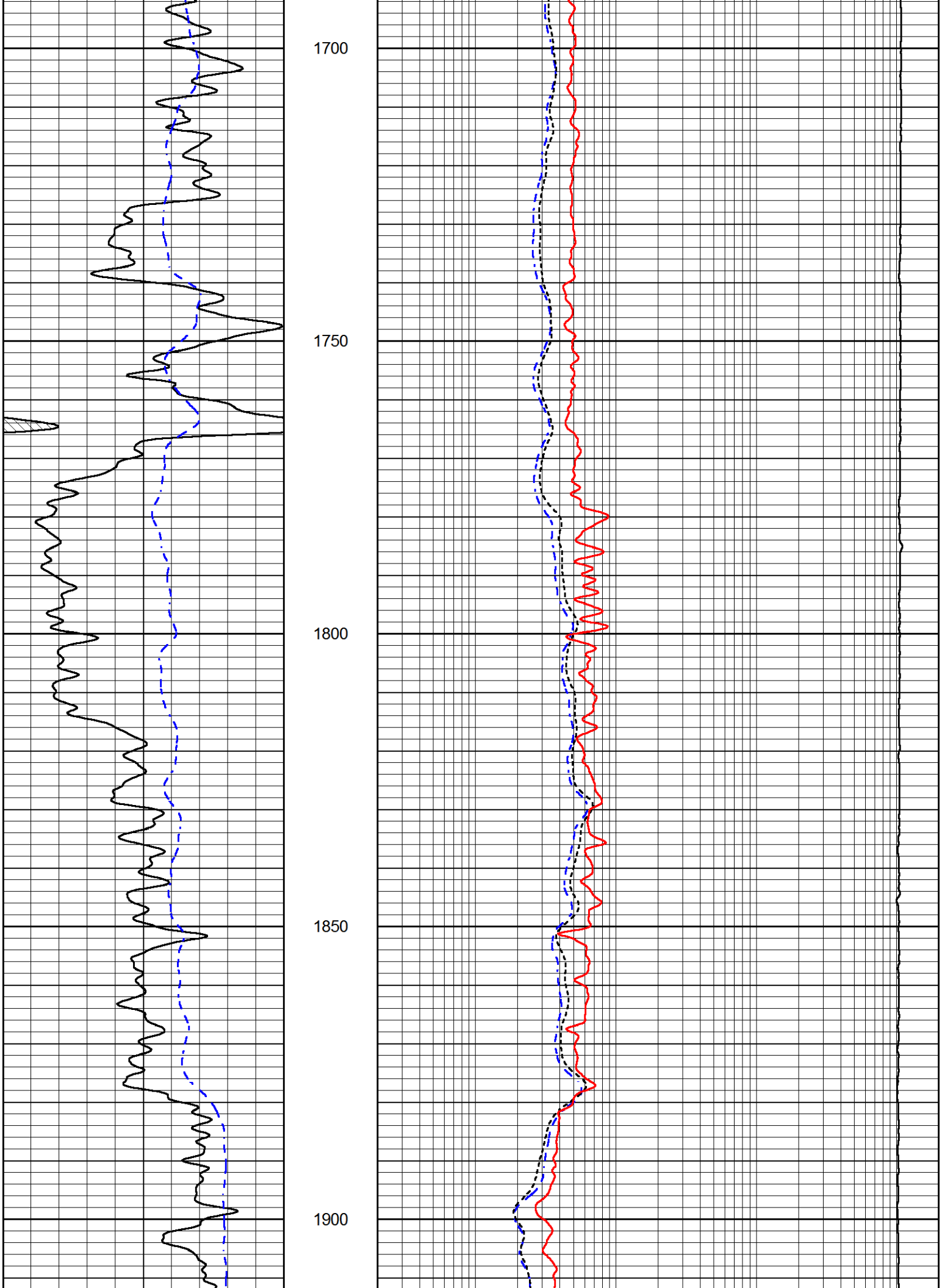

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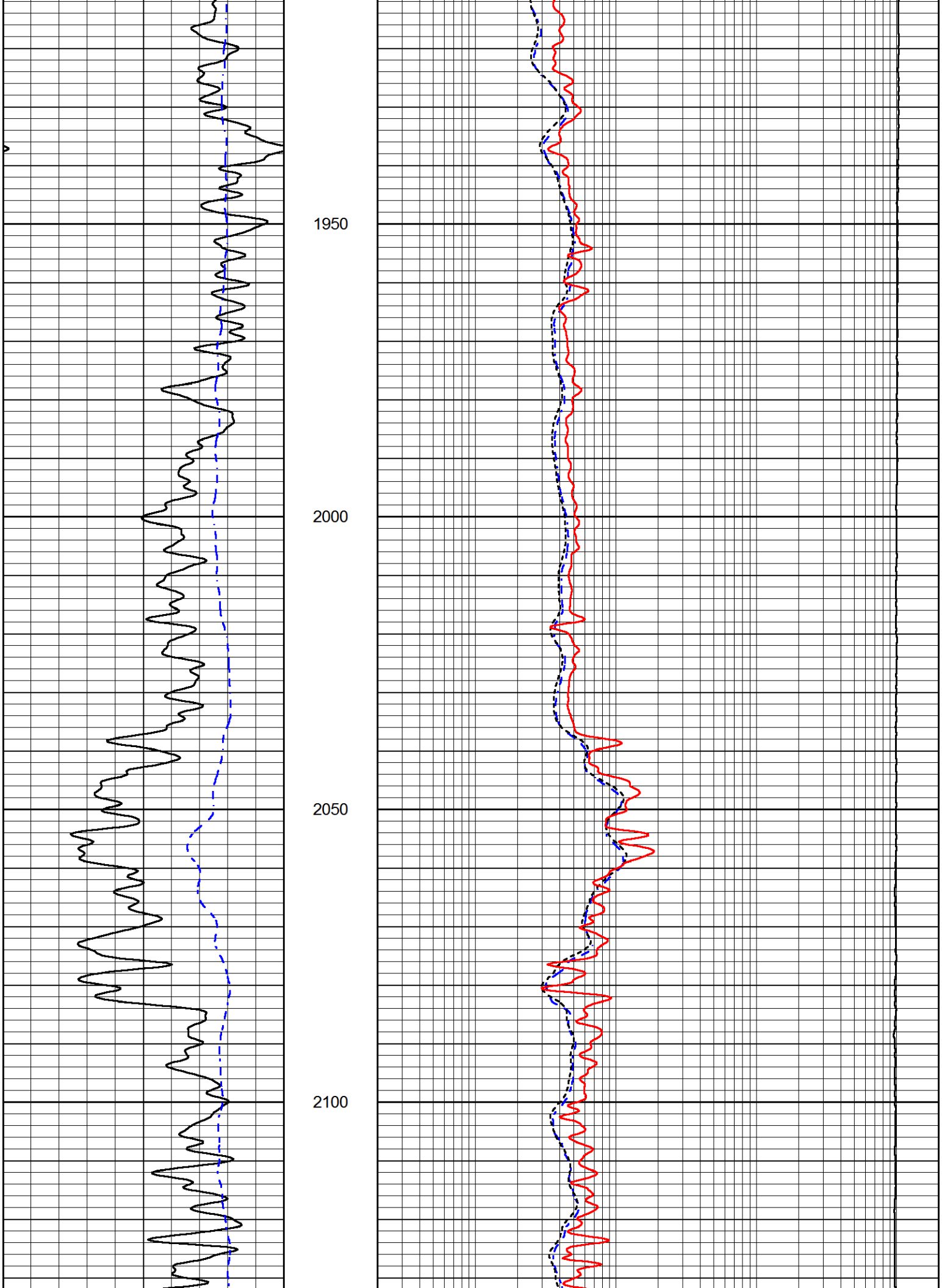

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950
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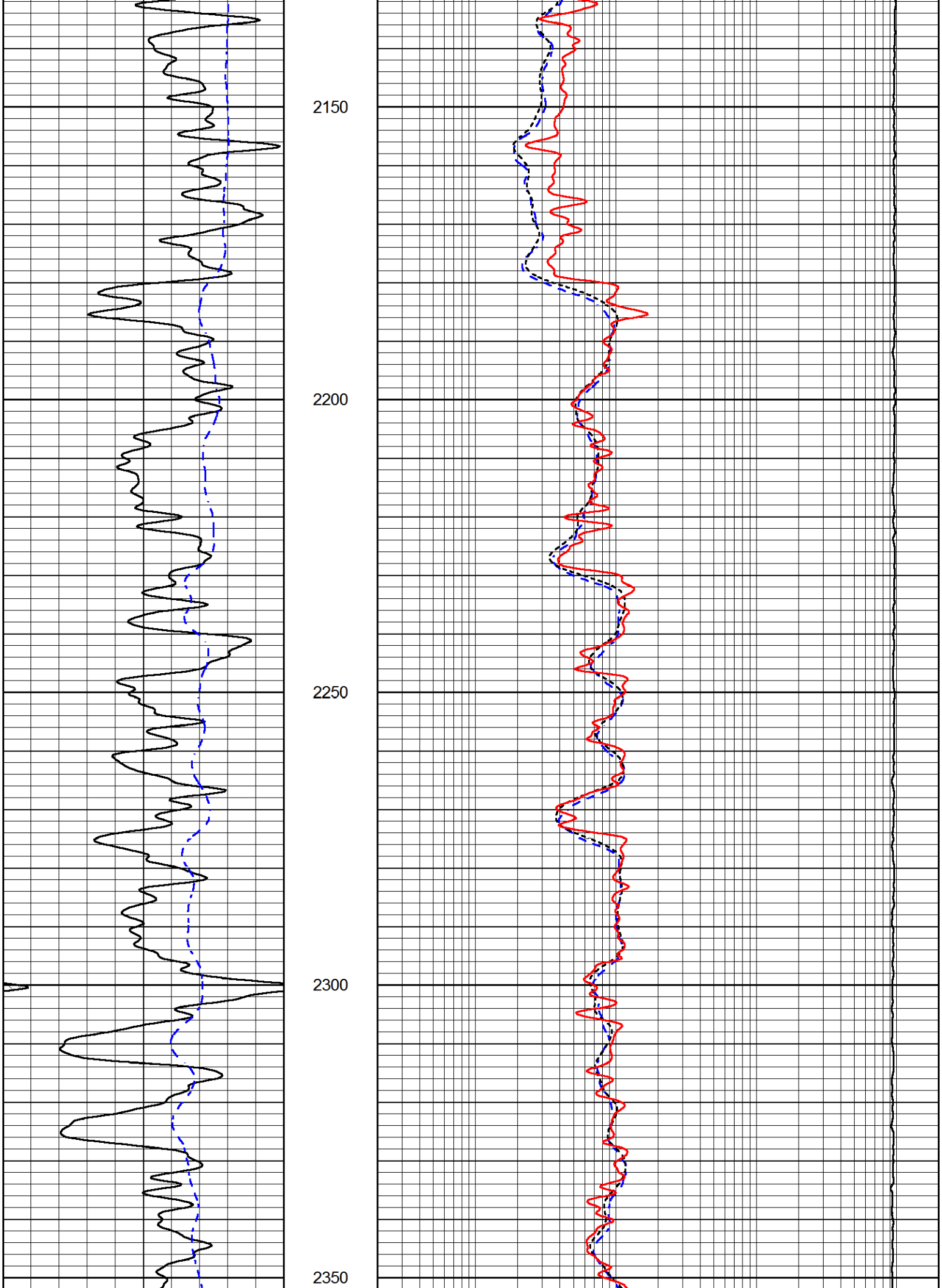

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1200
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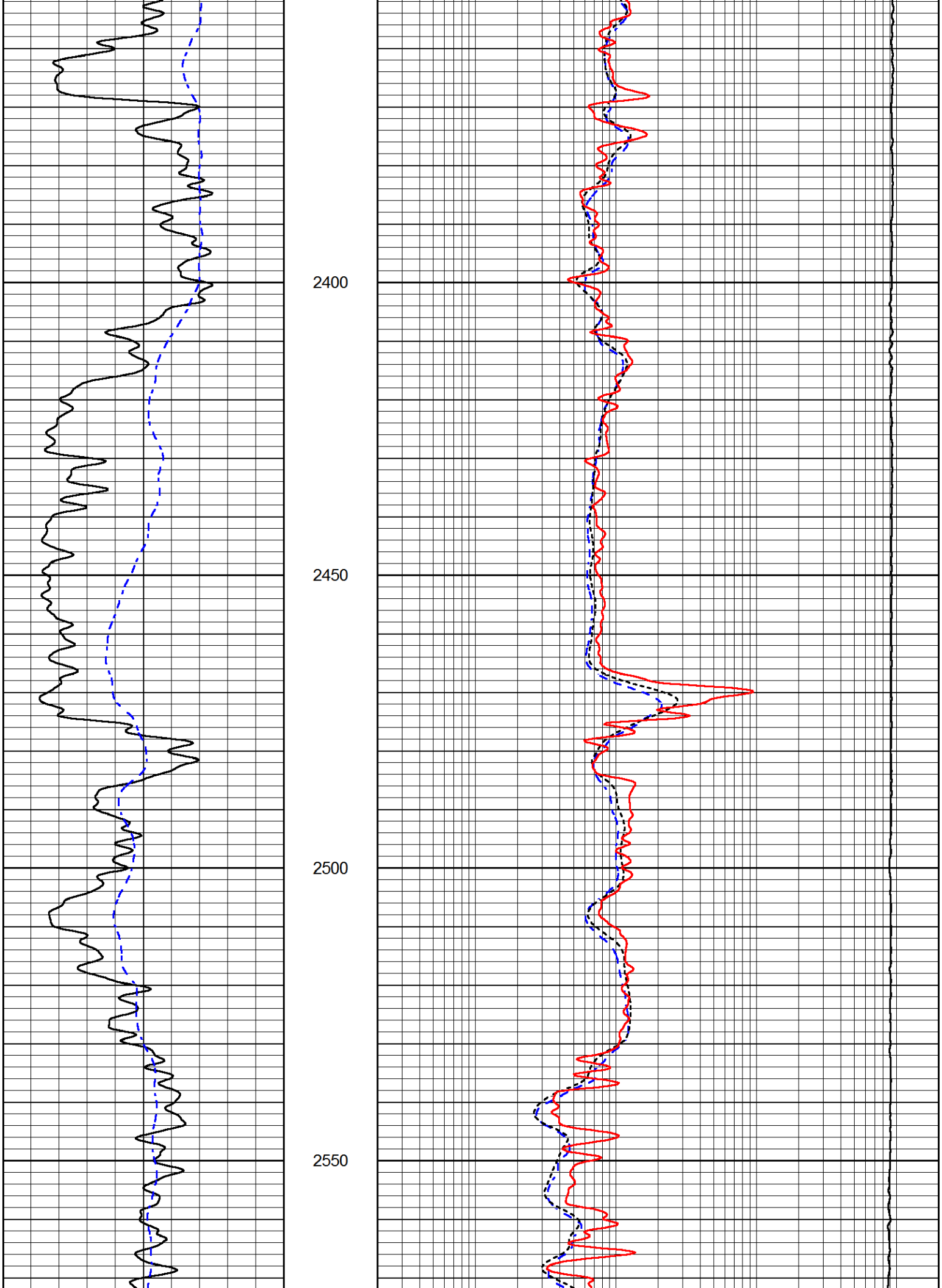

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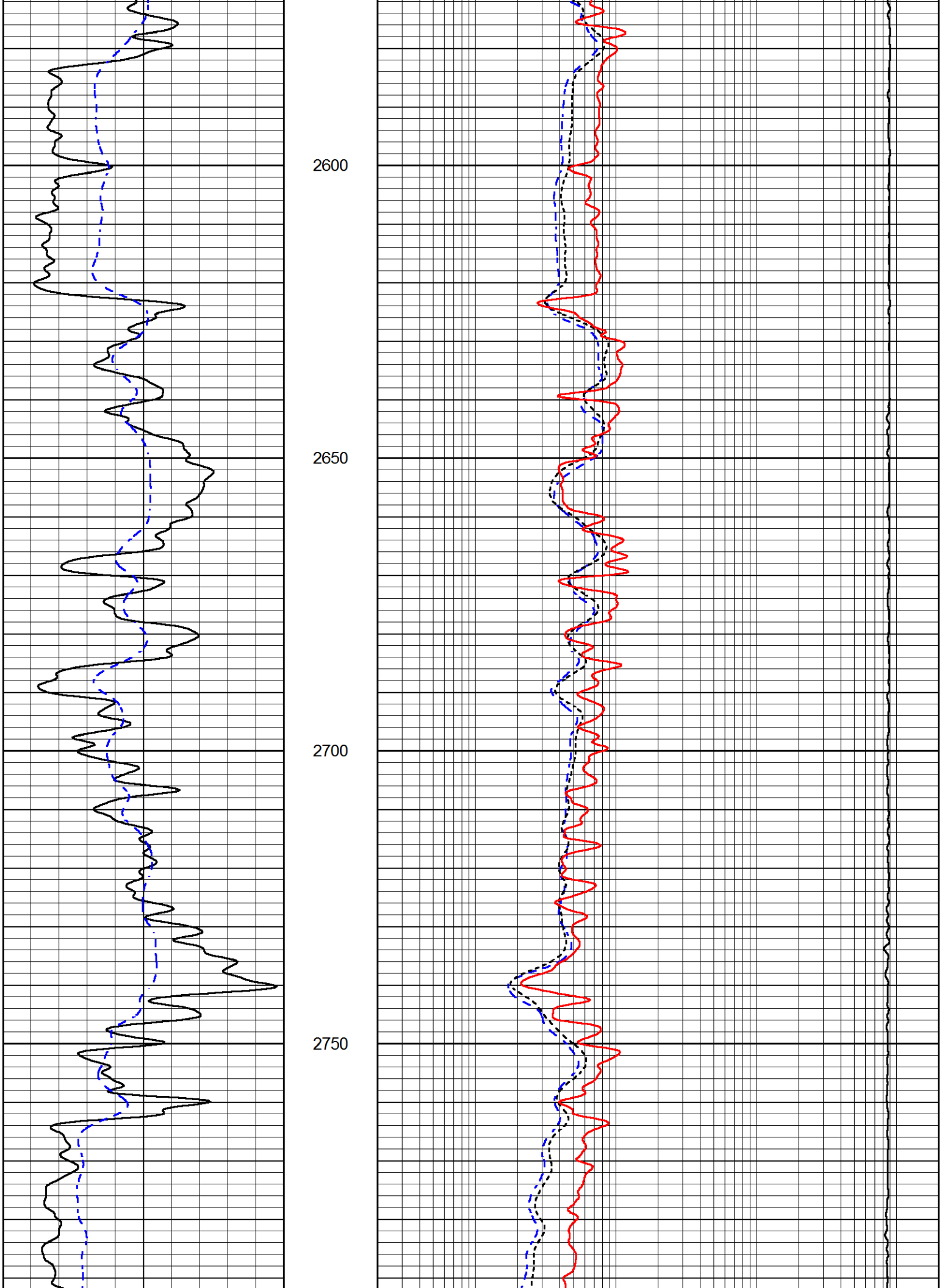

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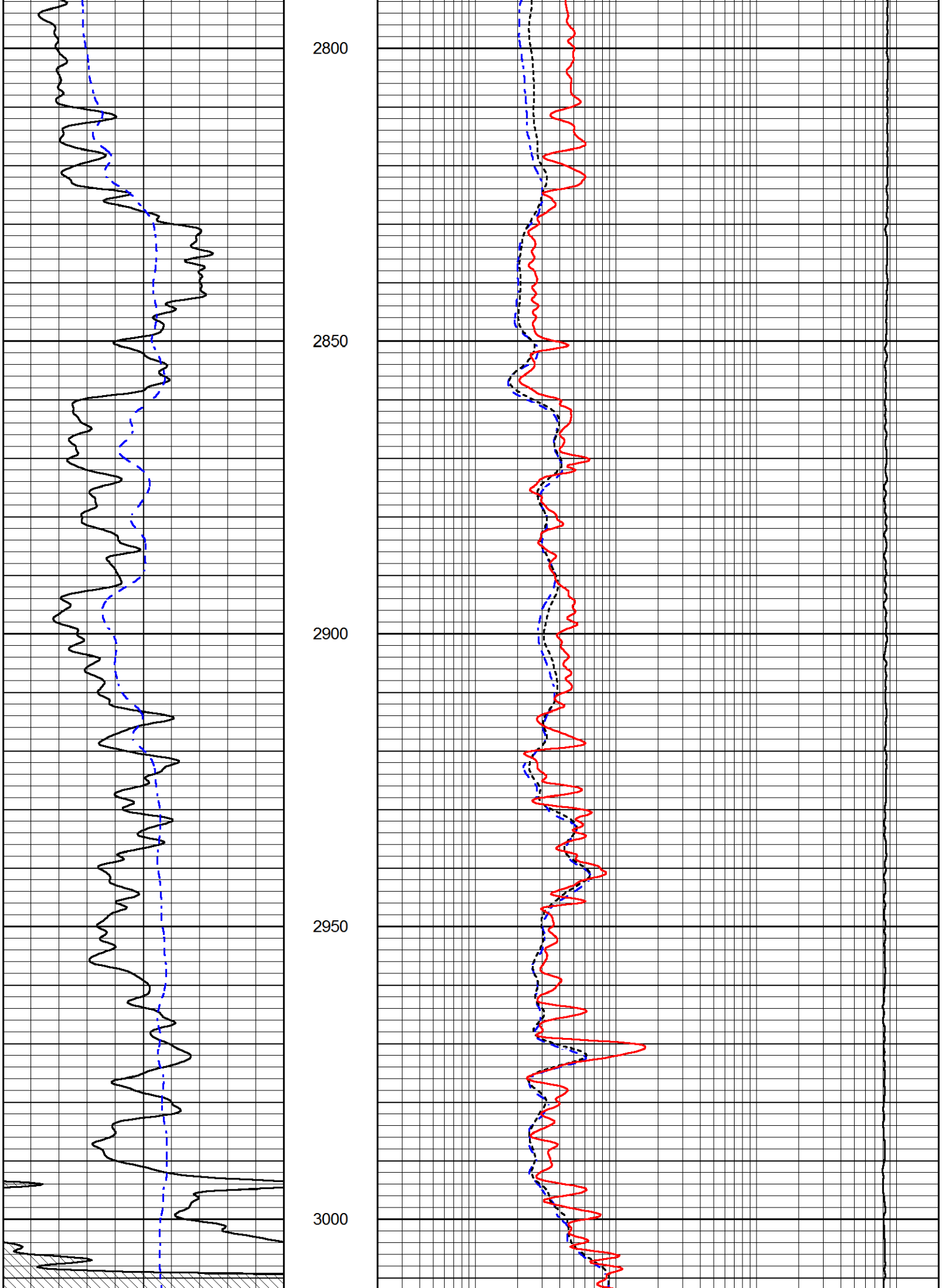

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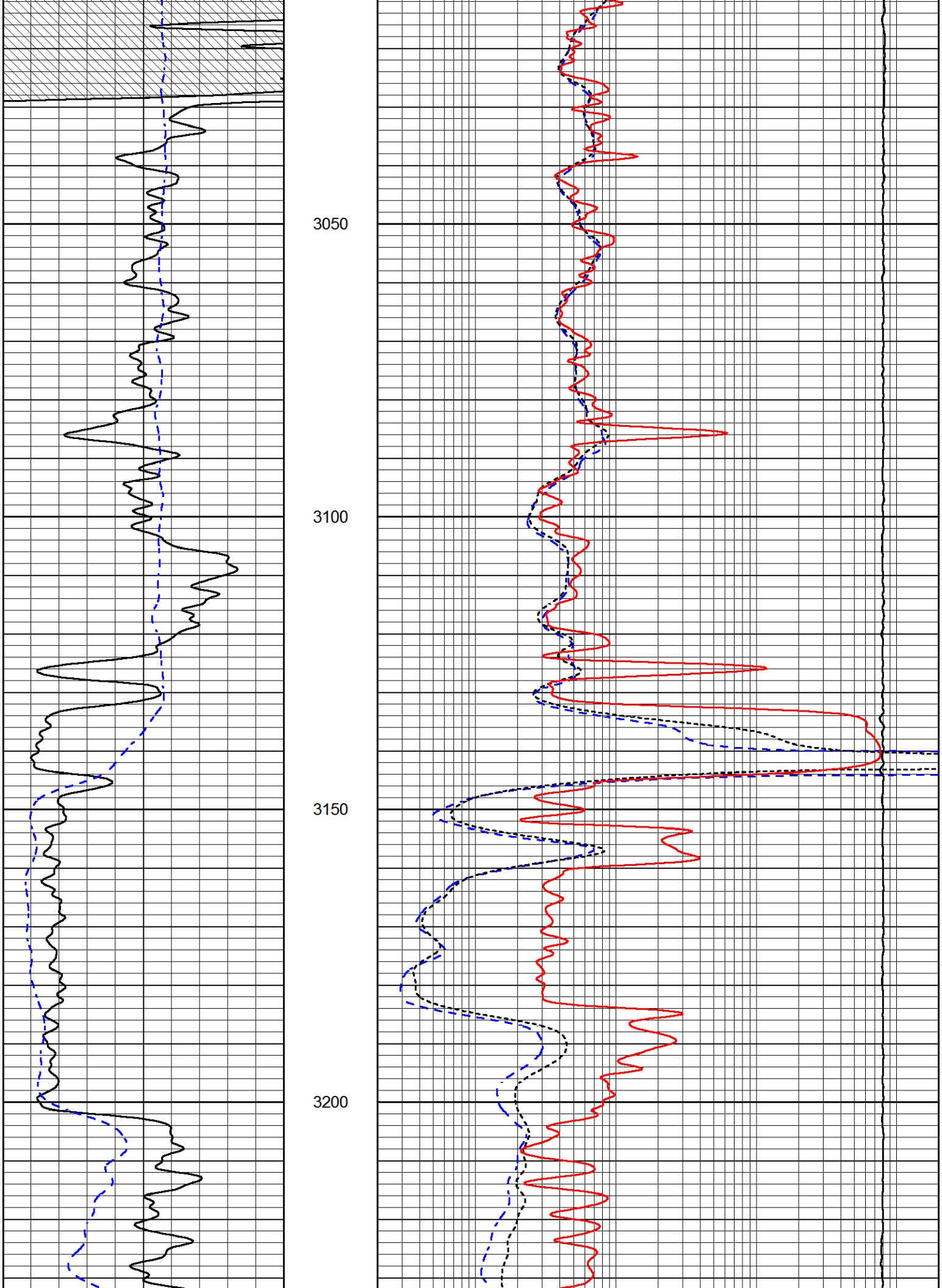

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2050
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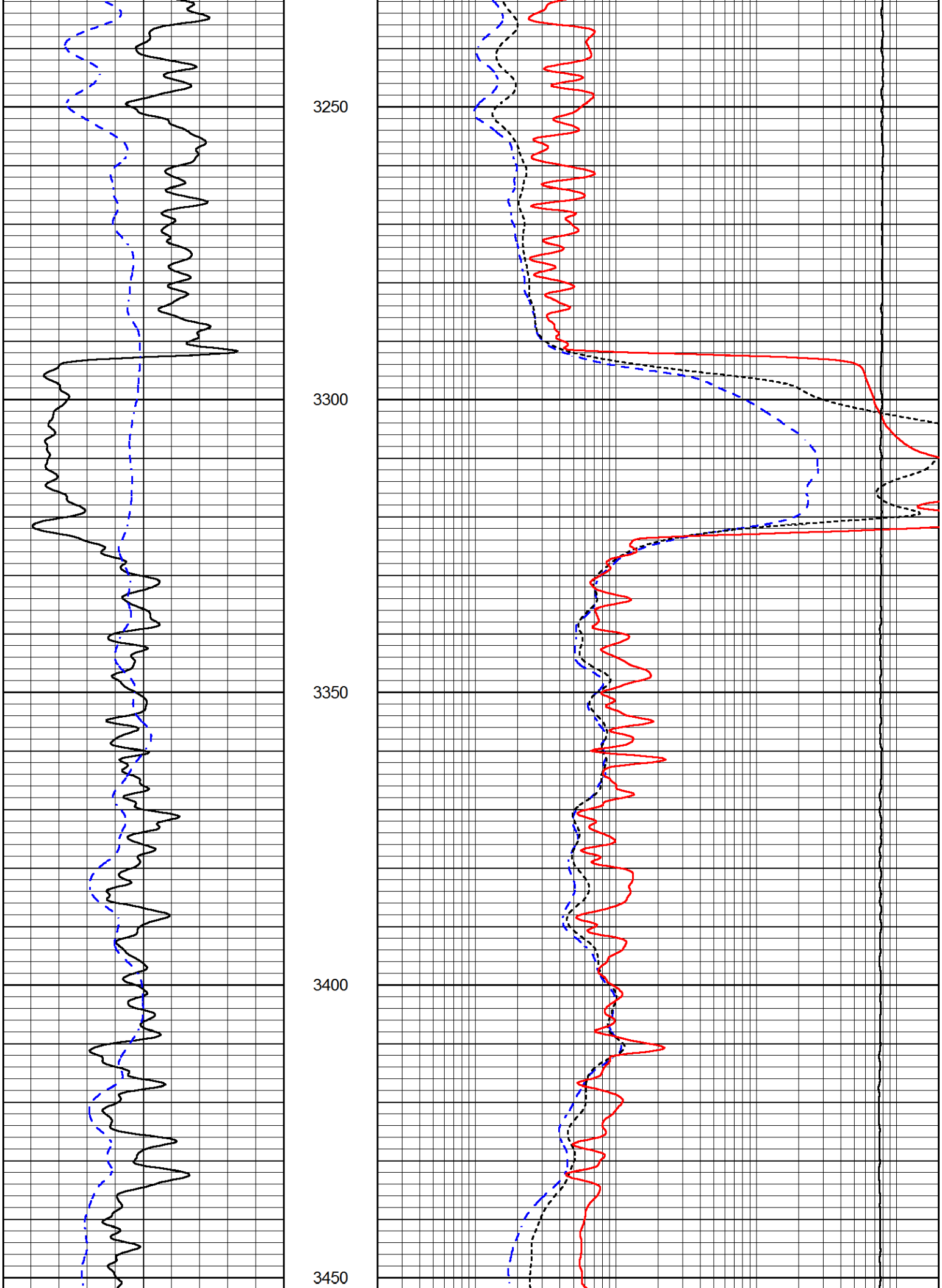

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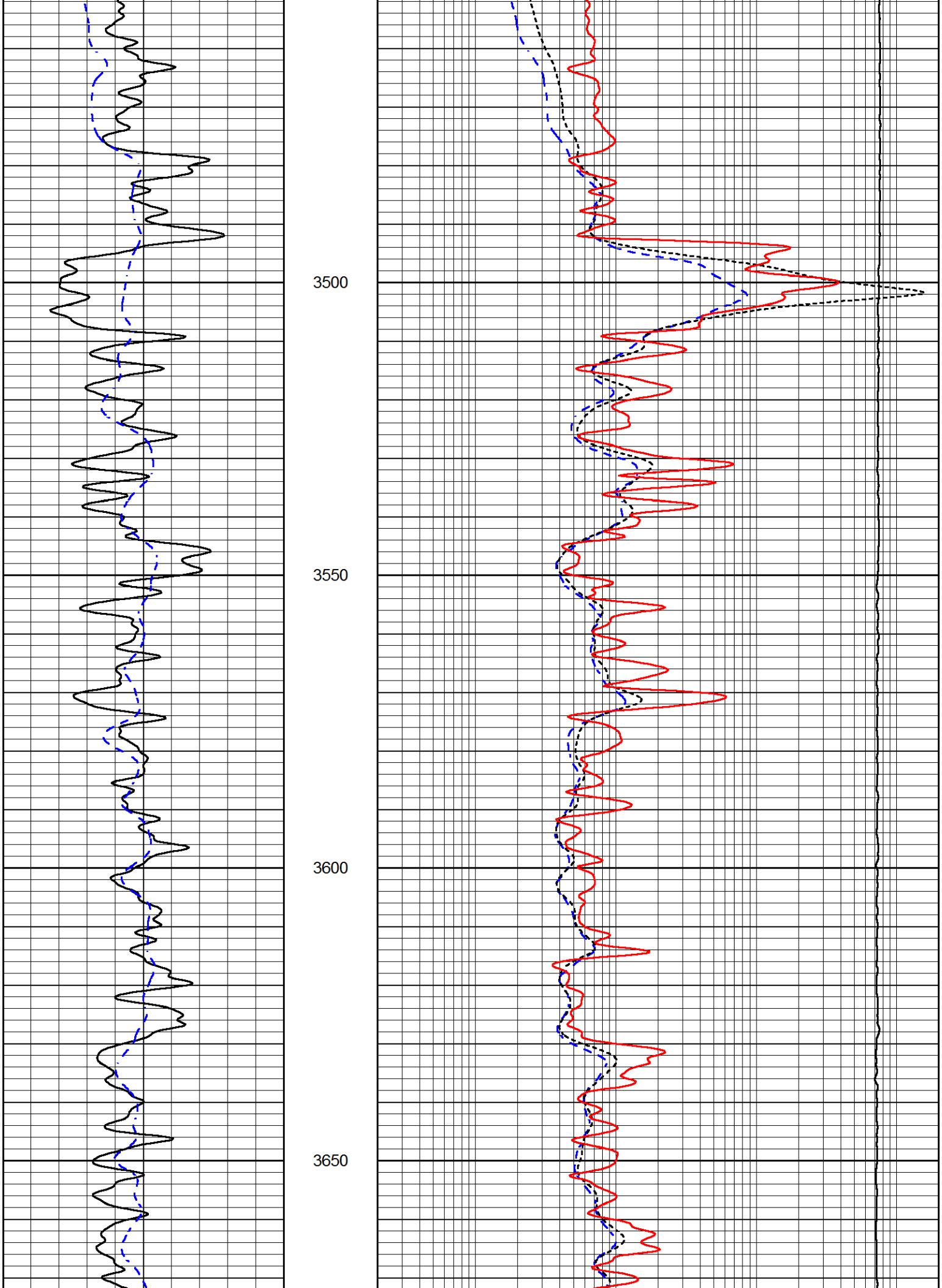

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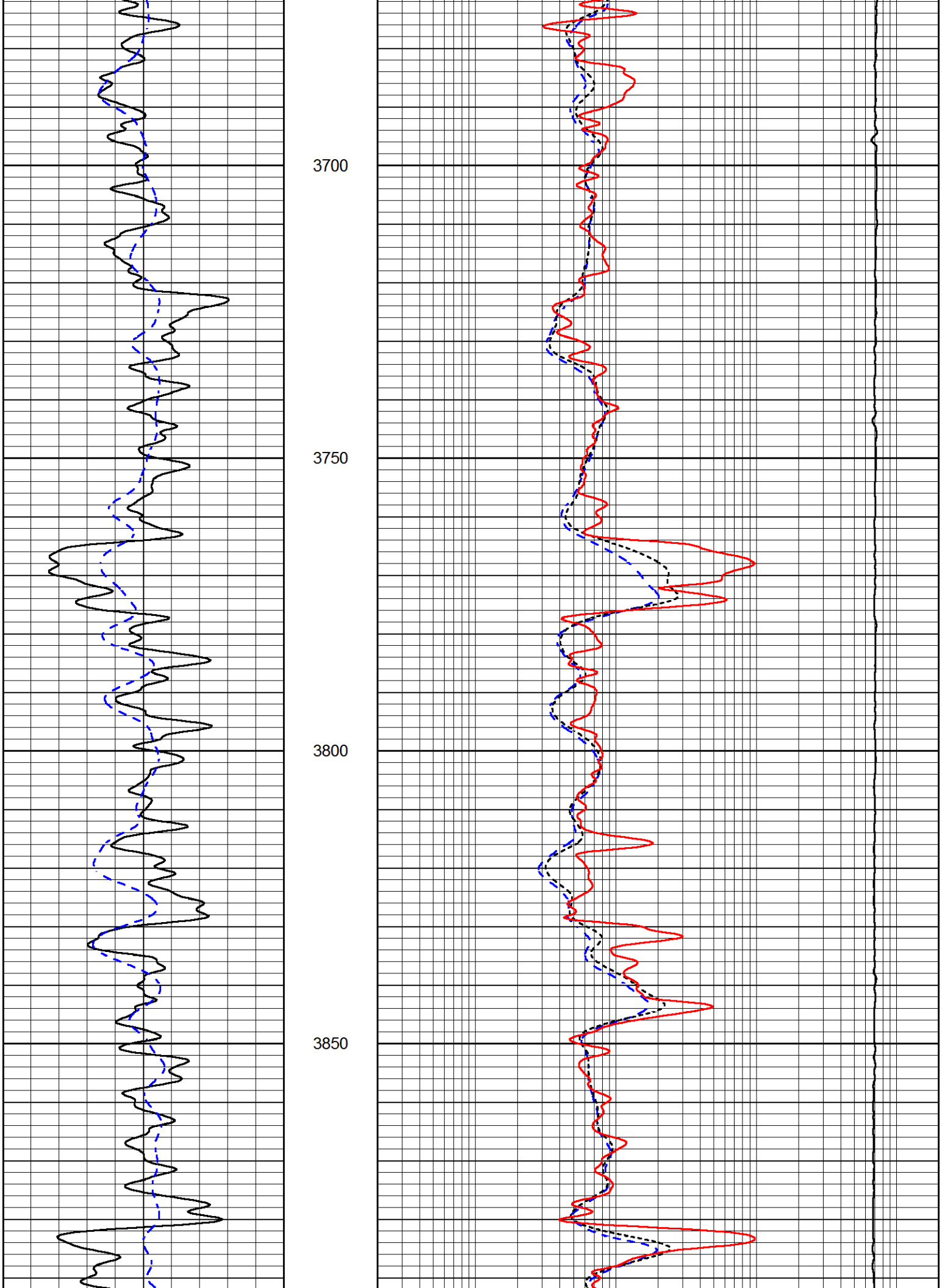

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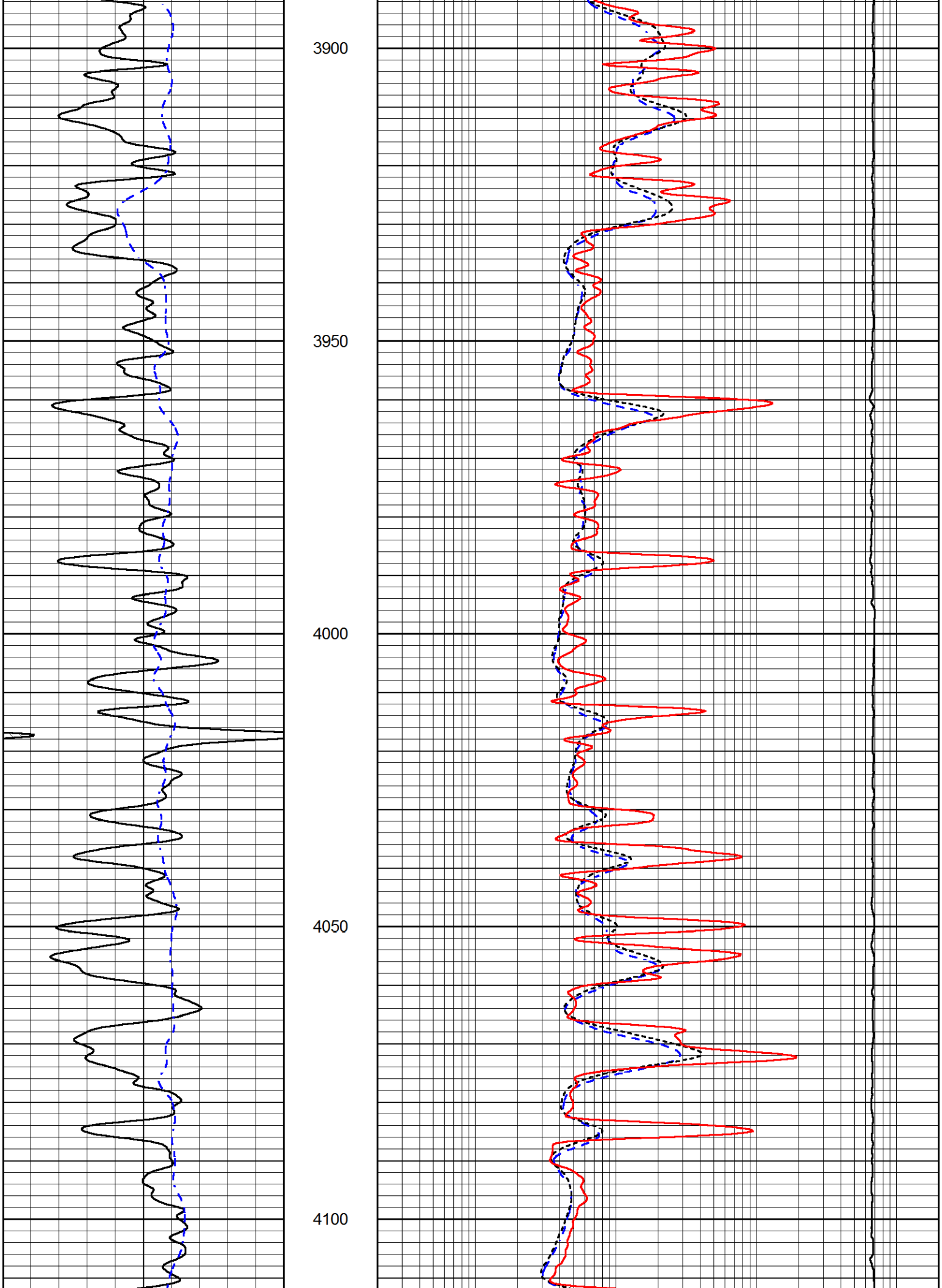

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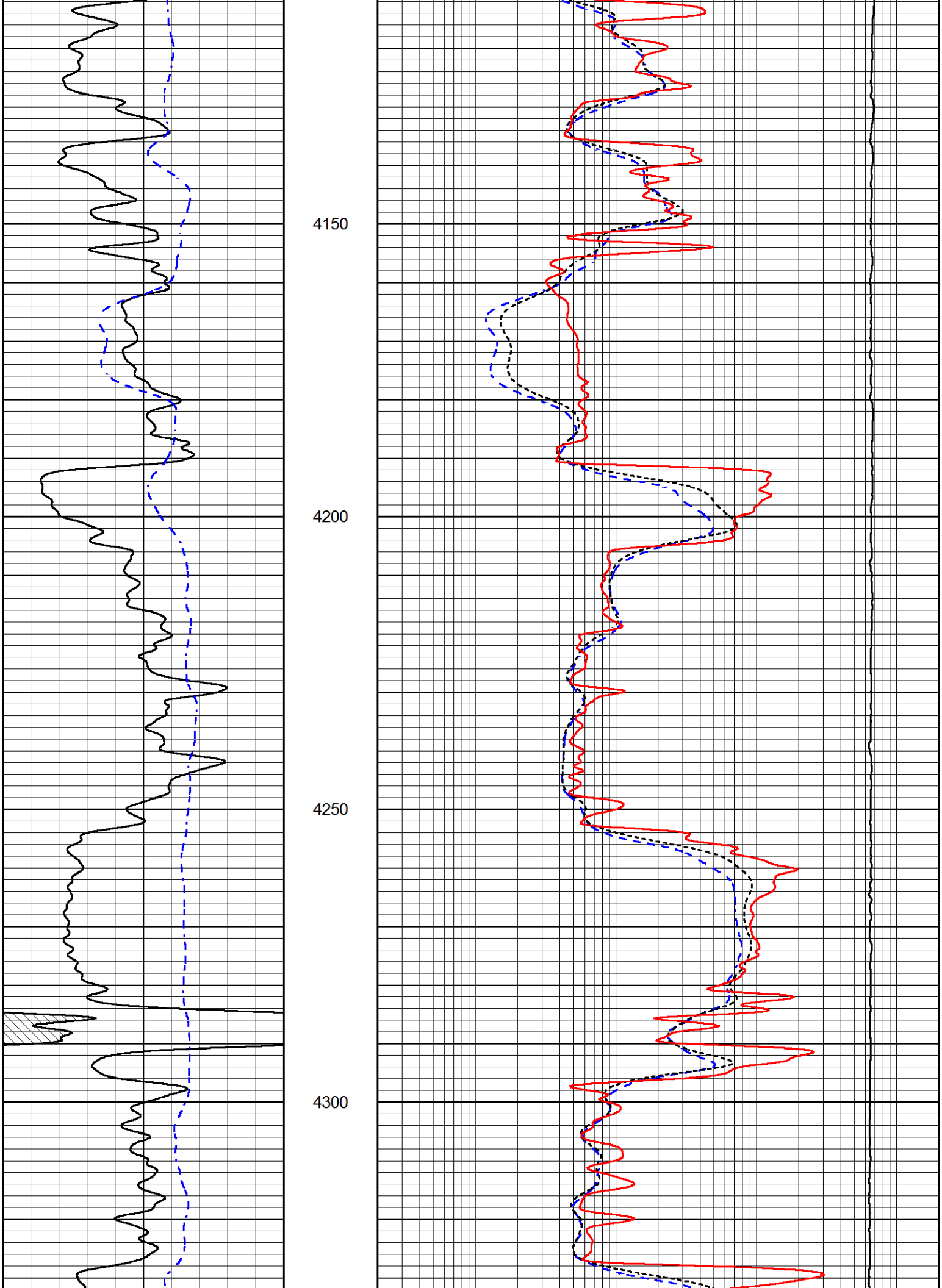

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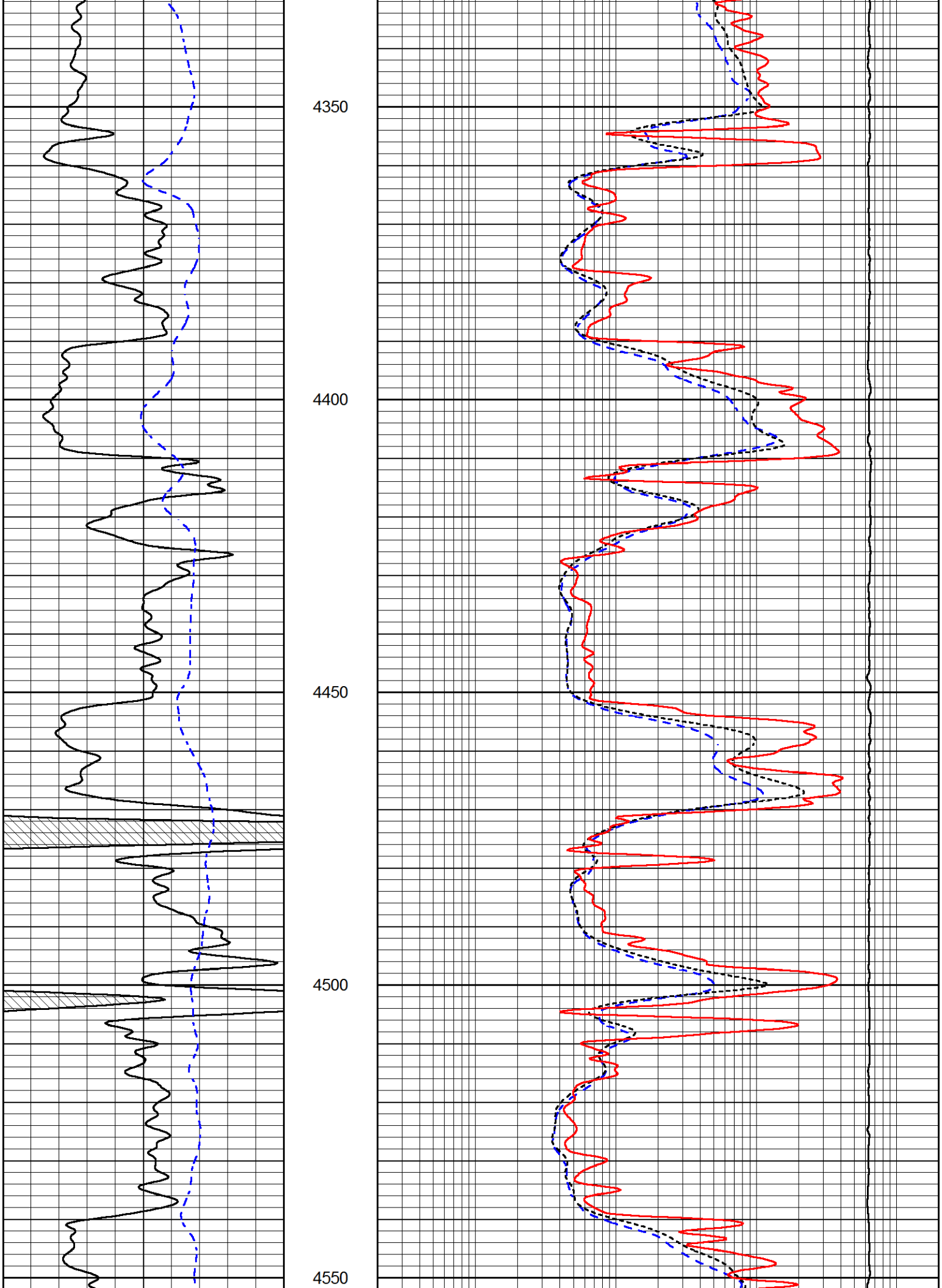

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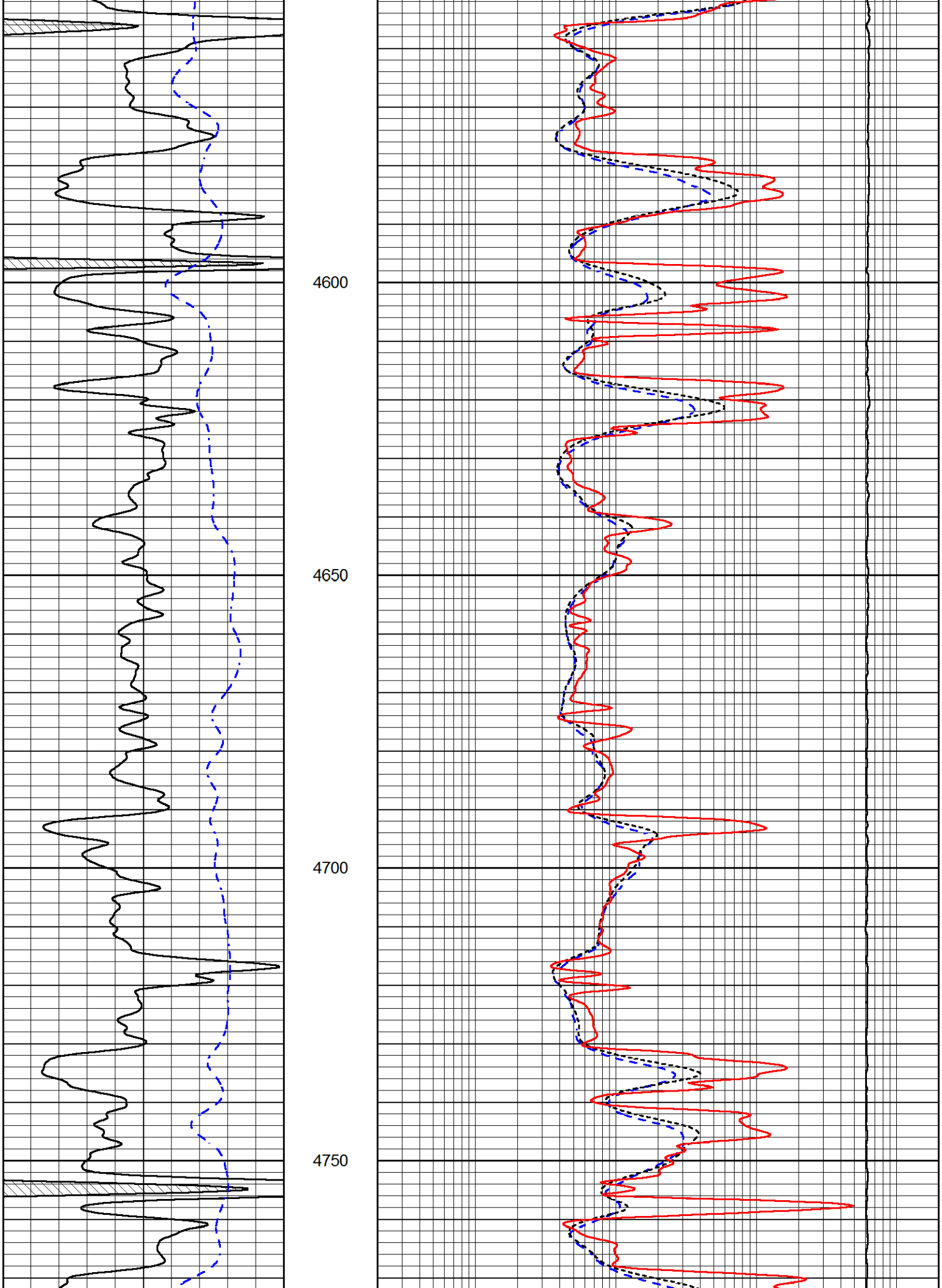

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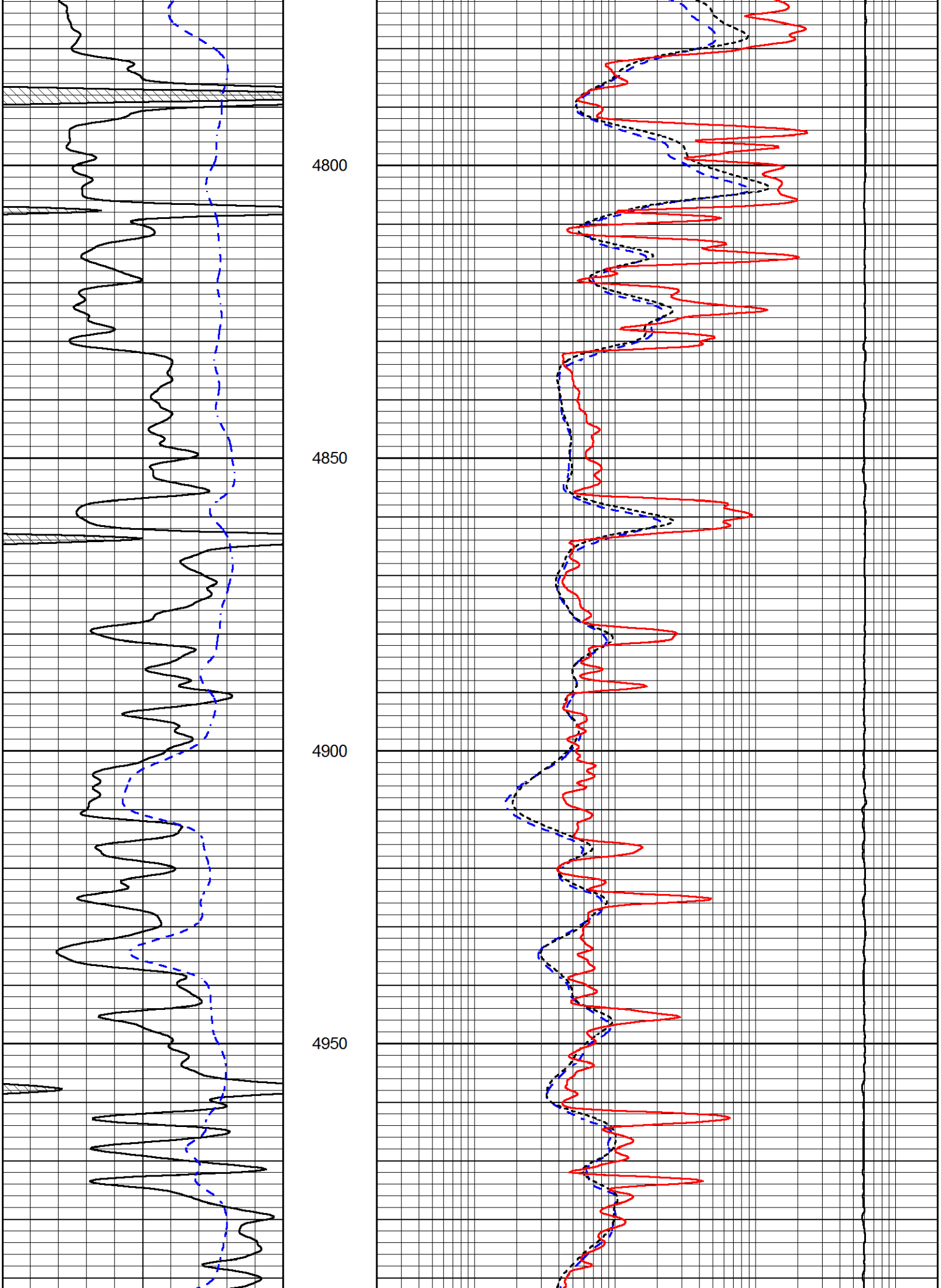

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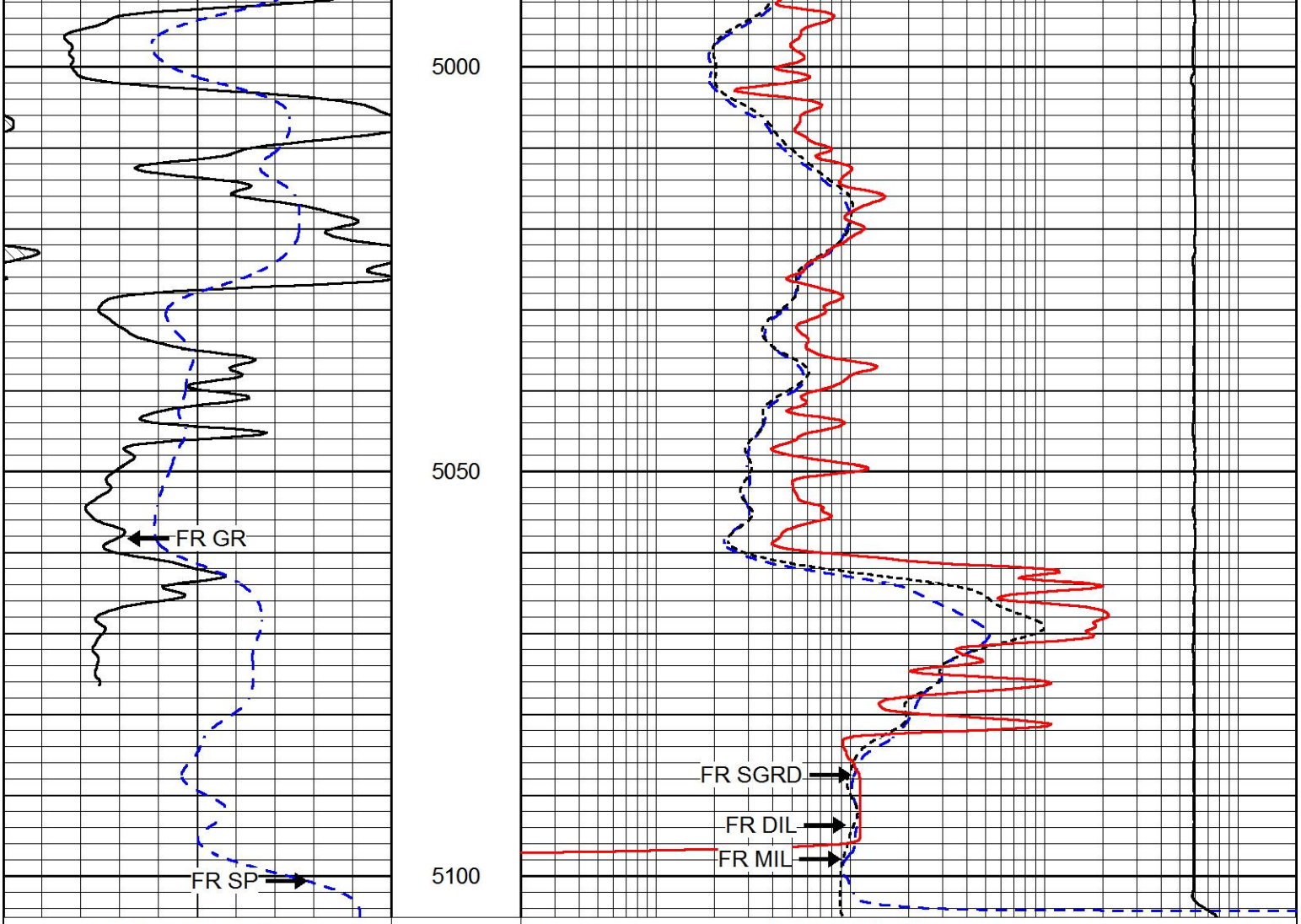

3900
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4150
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4250
4300


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4550


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4750


4800
4850
4900
4950



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

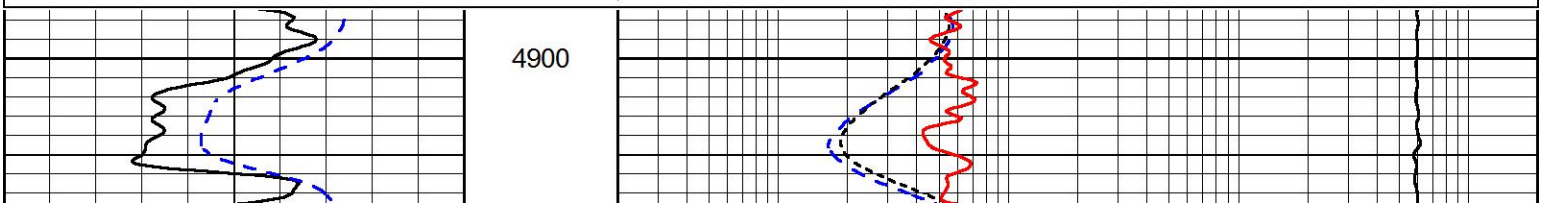
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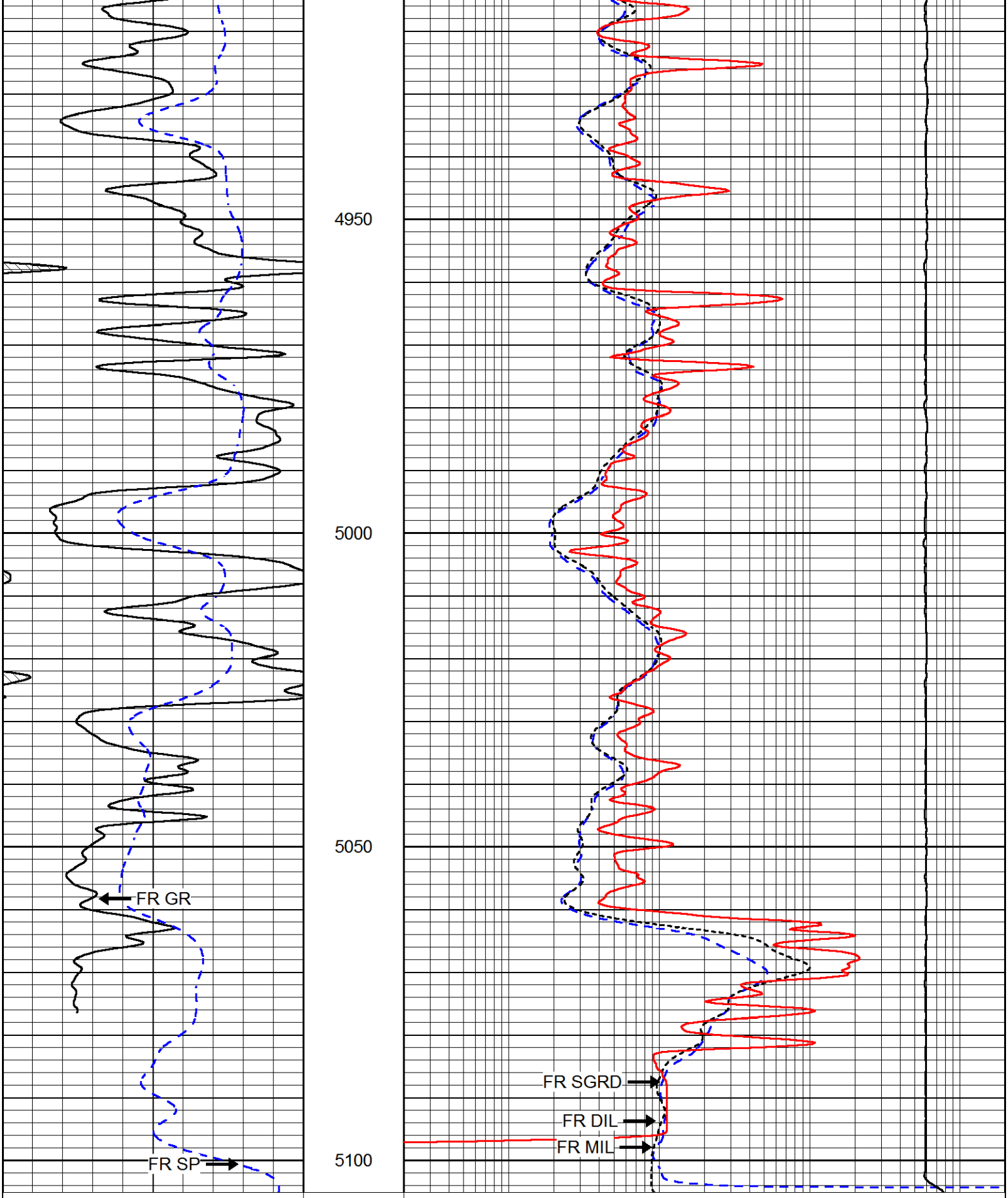
MAIN PASS

Database File	murfin_banister_a_1_22.db
Dataset Pathname	stack/pass3.1
Presentation Format	dil
Dataset Creation	Sun Apr 15 10:58:00 2018
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_1_22.db
Dataset Pathname	stack/pass3.1
Dataset Creation	Sun Apr 15 10:58:00 2018

Dual Induction Calibration Report

Serial-Model:	PSI 978-M&W
Calibration Performed:	Sun Feb 04 11:50:02 2018

	Readings		References			Results	
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.570	-40.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.400	-37.000

Compensated Density Calibration Report

Serial-Model:	168-986-M&W
Source / Verifier:	/
Master Calibration Performed:	Tue Apr 11 17:07:47 2017

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4691.86	4818.19	cps
Aluminum	2.685	g/cc	859.57	3020.22	cps

Spine Angle = 74.61

Density/Spine Ratio = 0.528

	Size		Reading
Small Ring	4.00	in	1.00
Large Ring	14.00	in	1.20

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' NO. 1-22
Field	WILDCAT
County	CHEYENNE
State	KANSAS