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Pioneer Energy Services

DUAL INDUCTION LOG

Company MURFIN DRILLING COMPANY, INC.
Well KEN NO. 4-17
Field WILDCAT
County RAWLINS State KANSAS
Location: API # : 15-153-21207-00-00
330' FNL & 1970' FWL
SEC 17 TWP 1S RGE 35W

Other Services
CNL/CDL
MEL/BHCS

Elevation
K.B. 3189'
D.F. N/A
G.L. 3184'

Permanent Datum GROUND LEVEL Elevation 3184'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Date	5/9/2018		
Run Number	ONE		
Depth Driller	4500'		
Depth Logger	4494'		
Bottom Logged Interval	4493'		
Top Log Interval	00		
Casing Driller	8.625" @ 302'		
Casing Logger	302'		
Bit Size	7.875"		
Type Fluid in Hole	CHEMICAL		
Salinity,ppm CL	1000		
Density / Viscosity	9.2 56		
pH / Fluid Loss	11.0 6.0		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	1.1 @ 54		
Rmf @ Meas. Temp	.83 @ 54		
Rmc @ Meas. Temp	1.49 @ 54		
Source of Rmf / Rmc	CHARTS		
Rm @ BHT	.49 @ 121		
Operating Rig Time	4 HOURS		
Max Rec. Temp. F	121 DEG/F		
Equipment Number	108		
Location	HAYS		
Recorded By	J. HENRICKSON		
Witnessed By	CLAYTON ERICKSON		

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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.

BEARDSLEY KANSAS
NORTH TO AA ROAD, WEST TO 7 ROAD, NORTH TO CC ROAD
3/4 EAST, SOUTH INTO

Log Measured From: KELLY BUSHING 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: CLAYTON ERICKSON
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

Log Variables

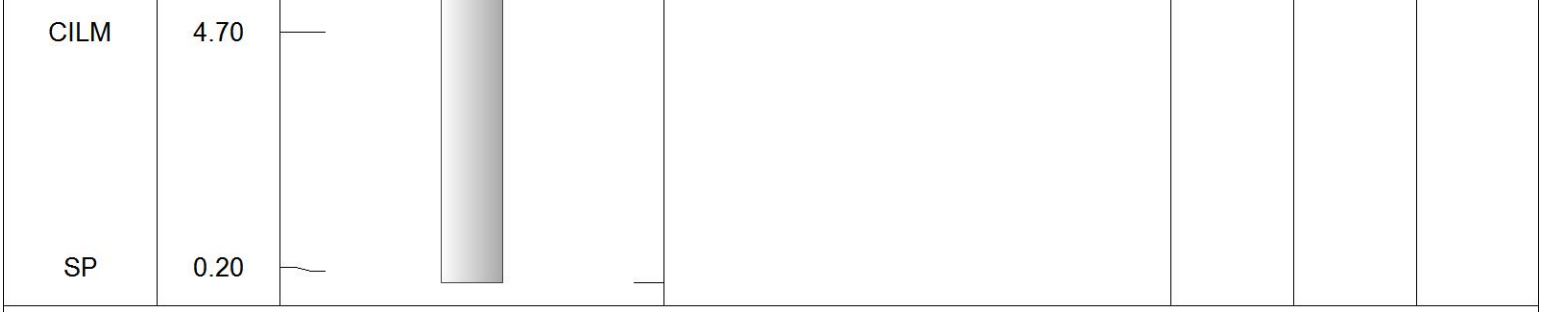
DatabaseC:\ProgramData\Warrior\Data\murfin_ken_4_17.db
Dataset field/well/stackml/pass3.1/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	121	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	-20	56	Off	0

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 (1987)	18.50	3.50	220.00
CILD	8.00					

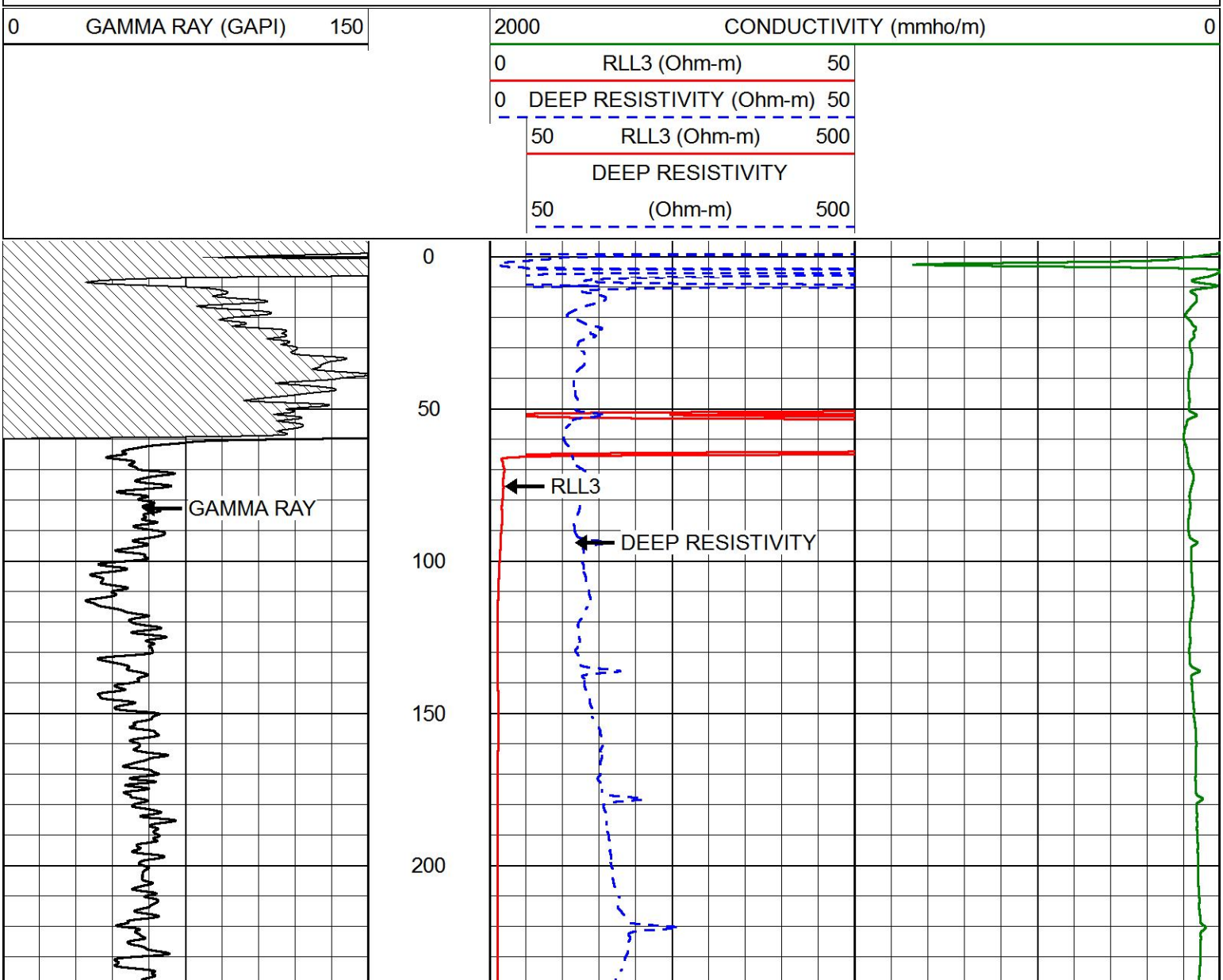


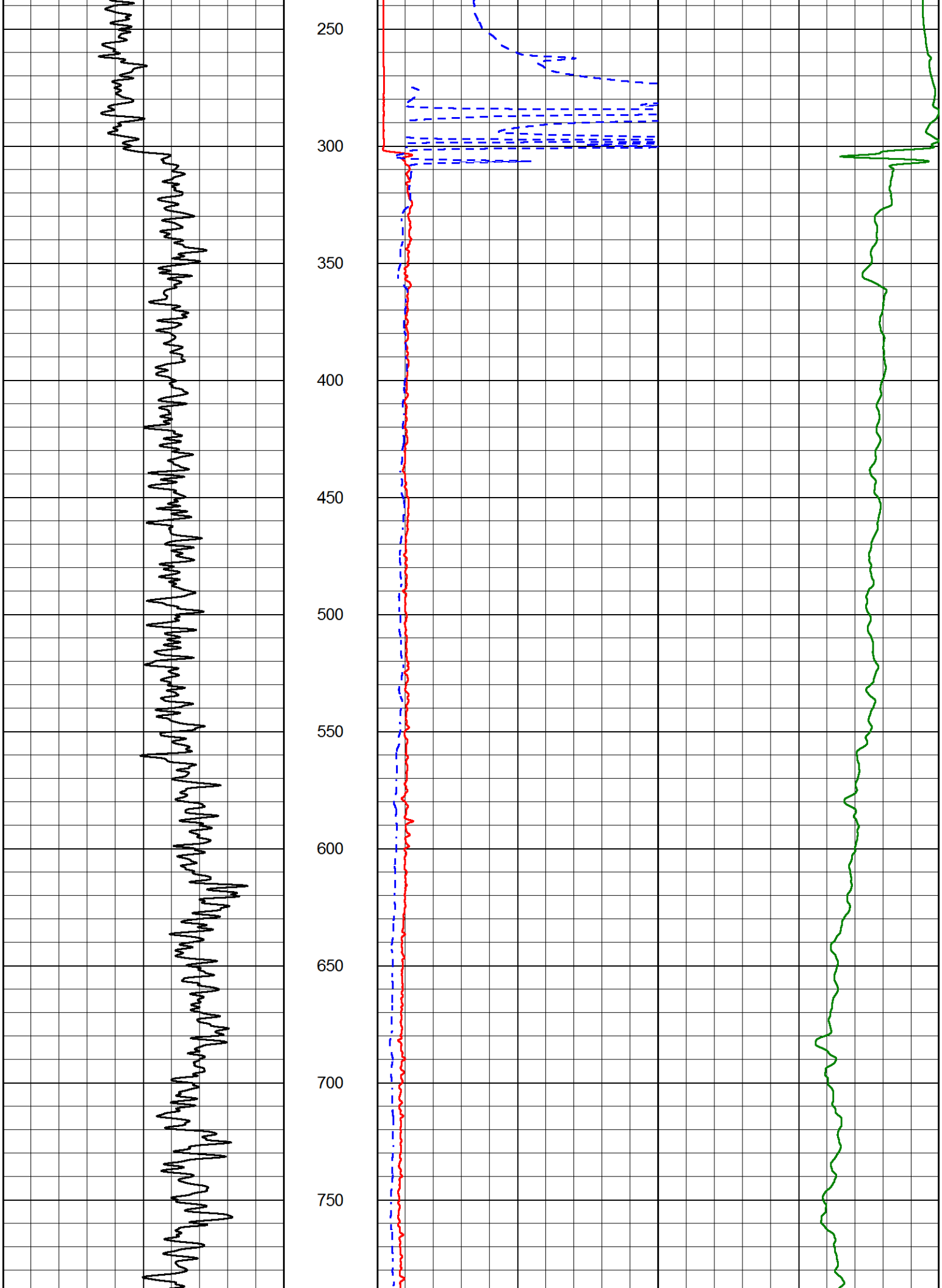
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Total length:	35.50 ft
Total weight:	620.00 lb
O.D.:	4.00 in

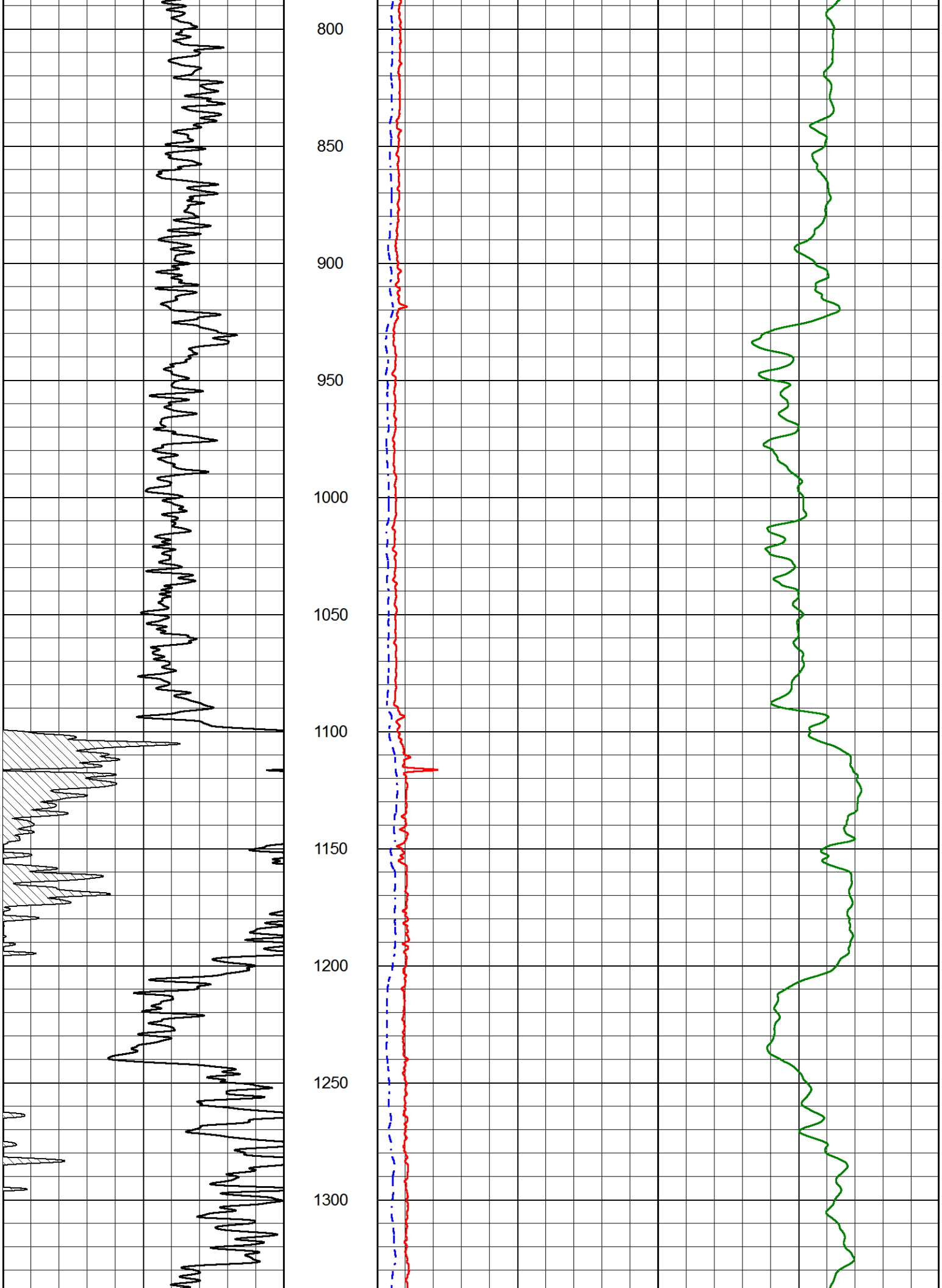
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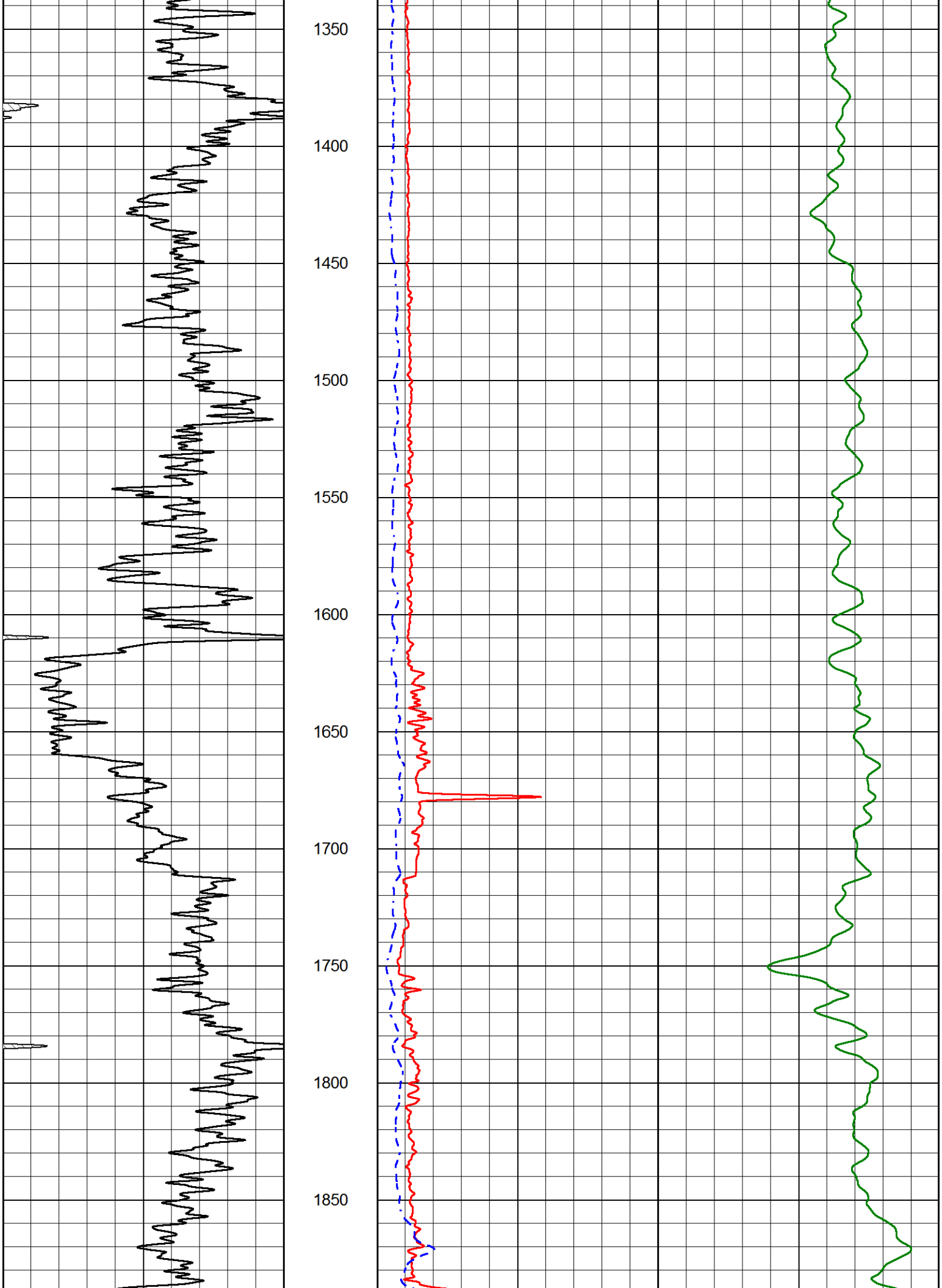
MAIN PASS

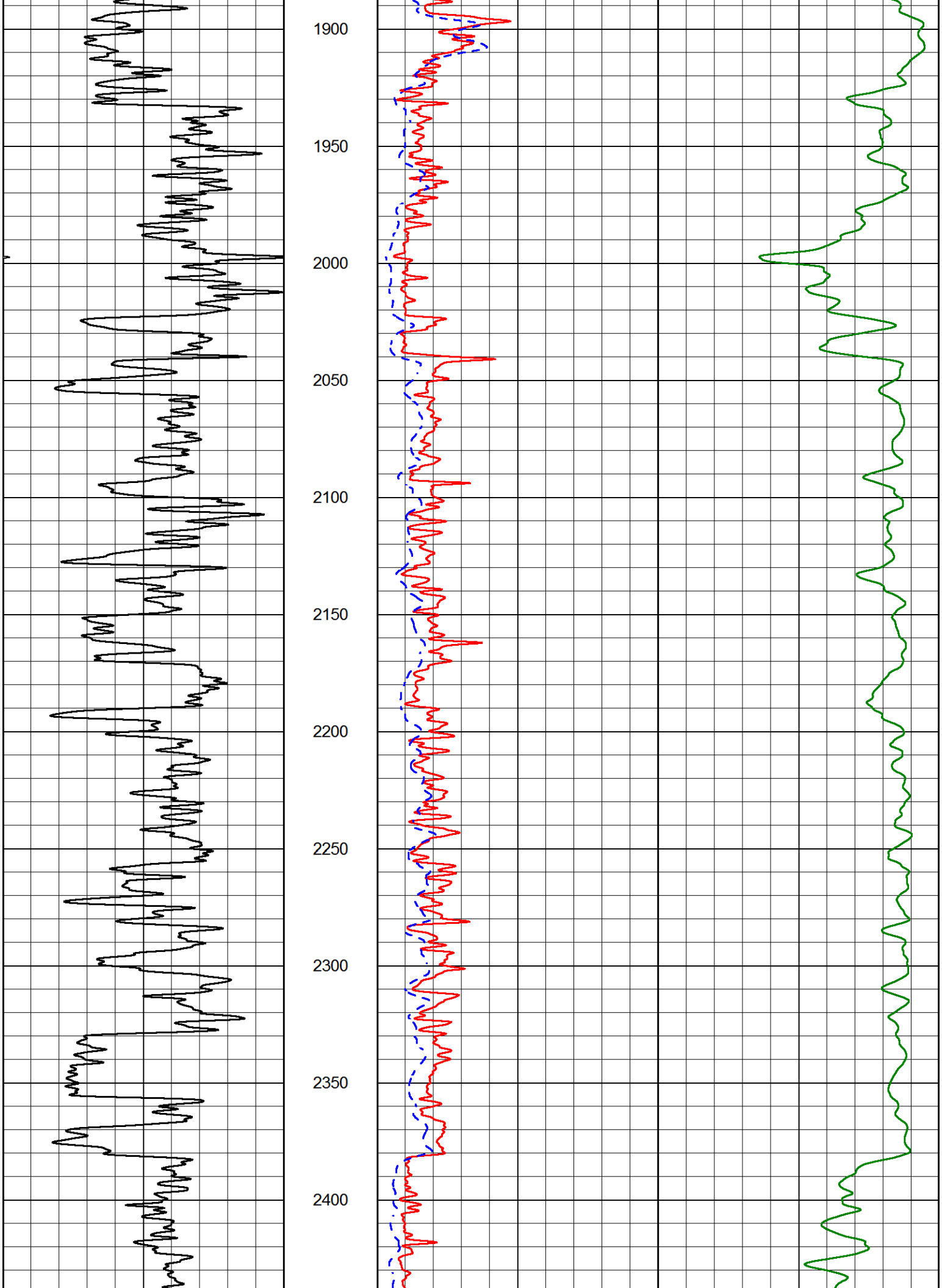
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Presentation Format	dil2in
Dataset Creation	Wed May 09 08:11:28 2018
Charted by	Depth in Feet scaled 1:600

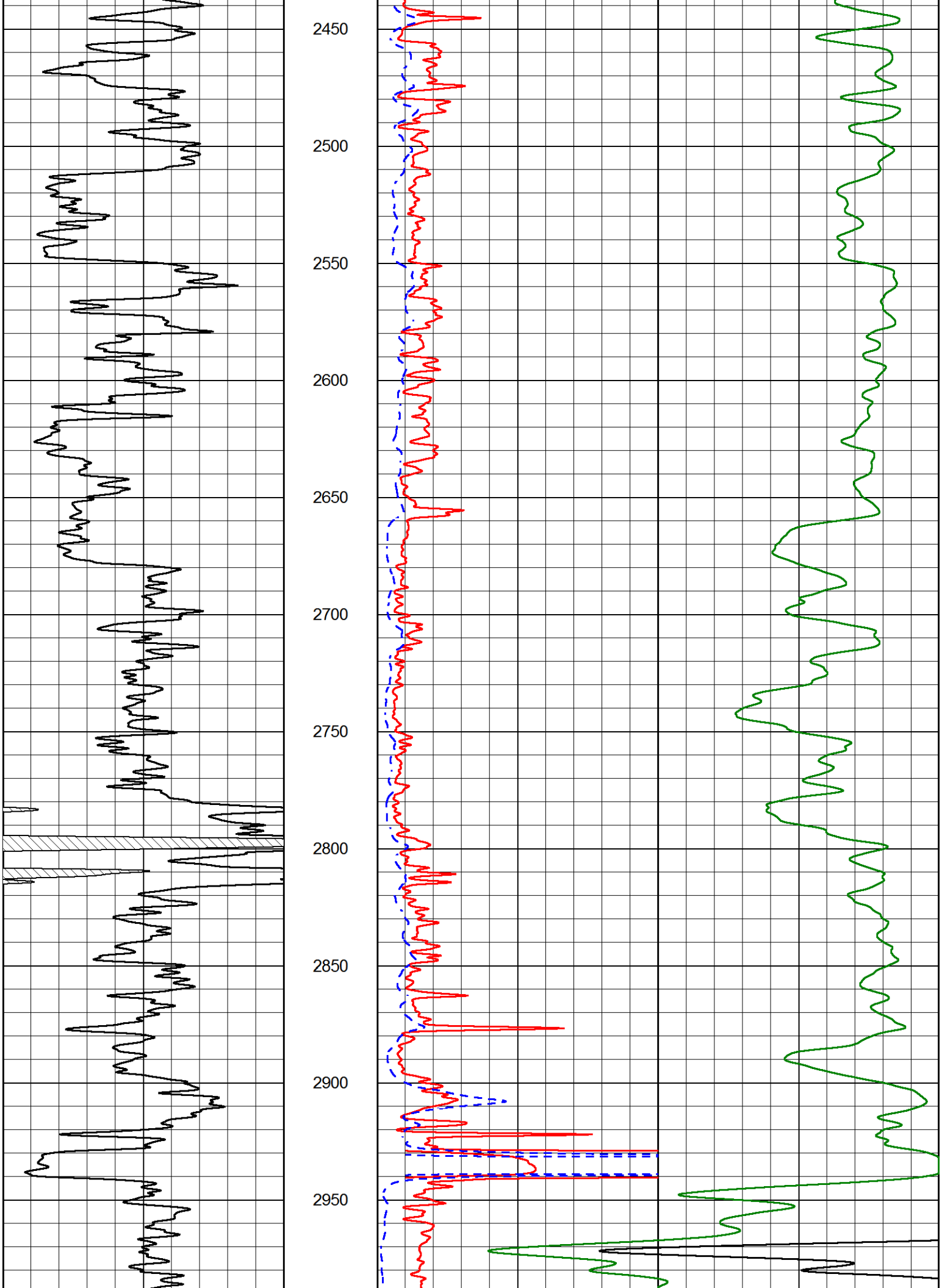


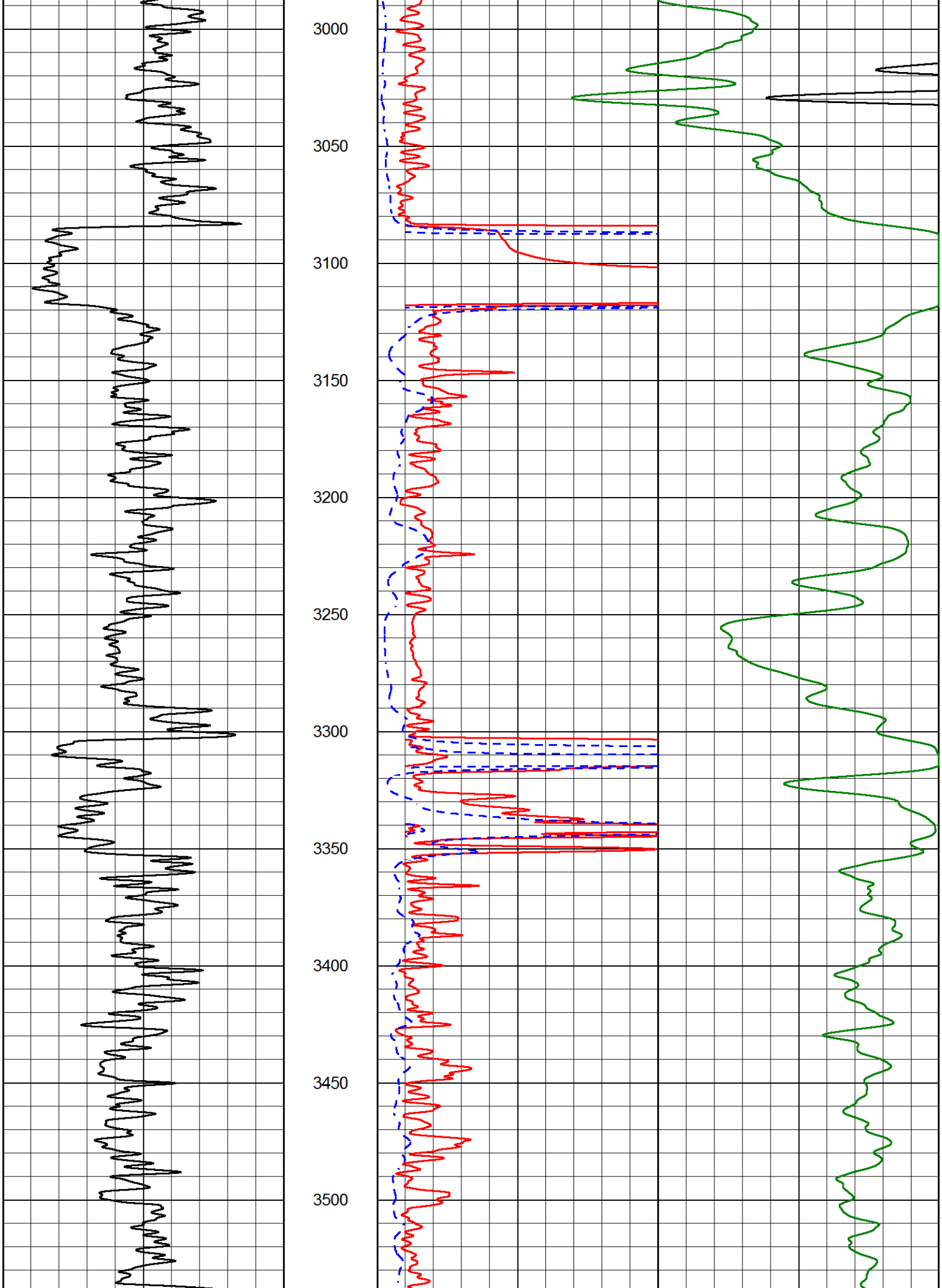

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650
700
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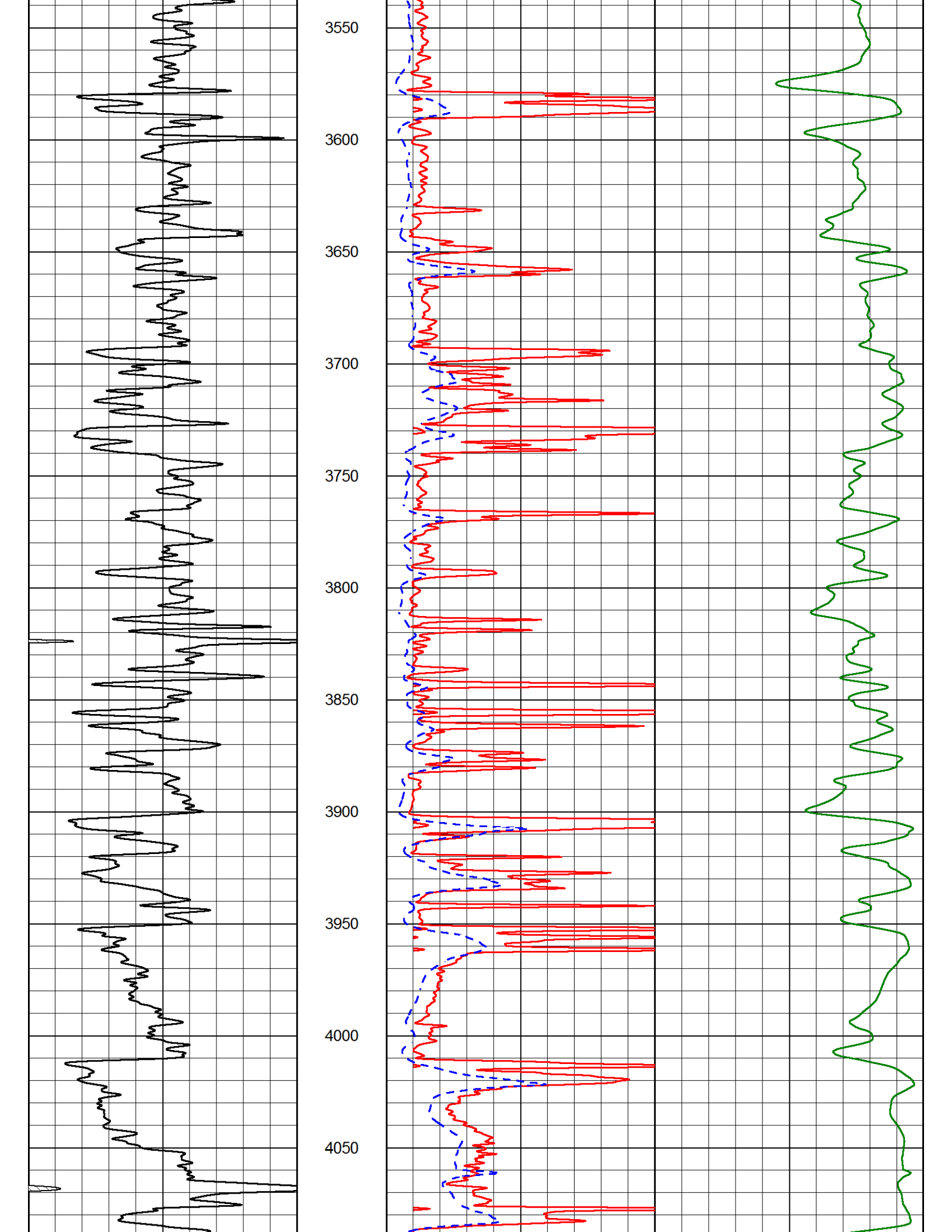

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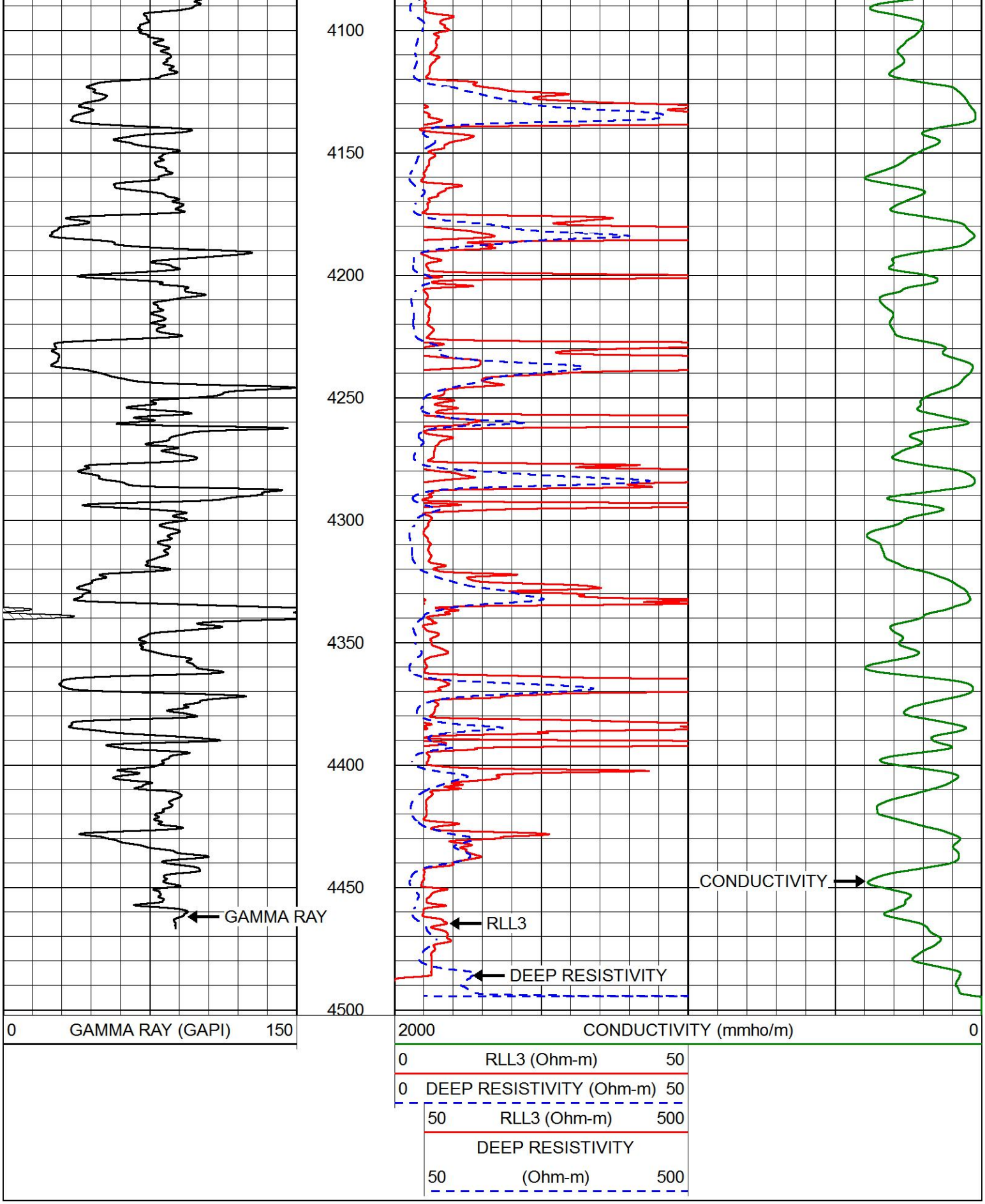

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2350
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2450
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2600
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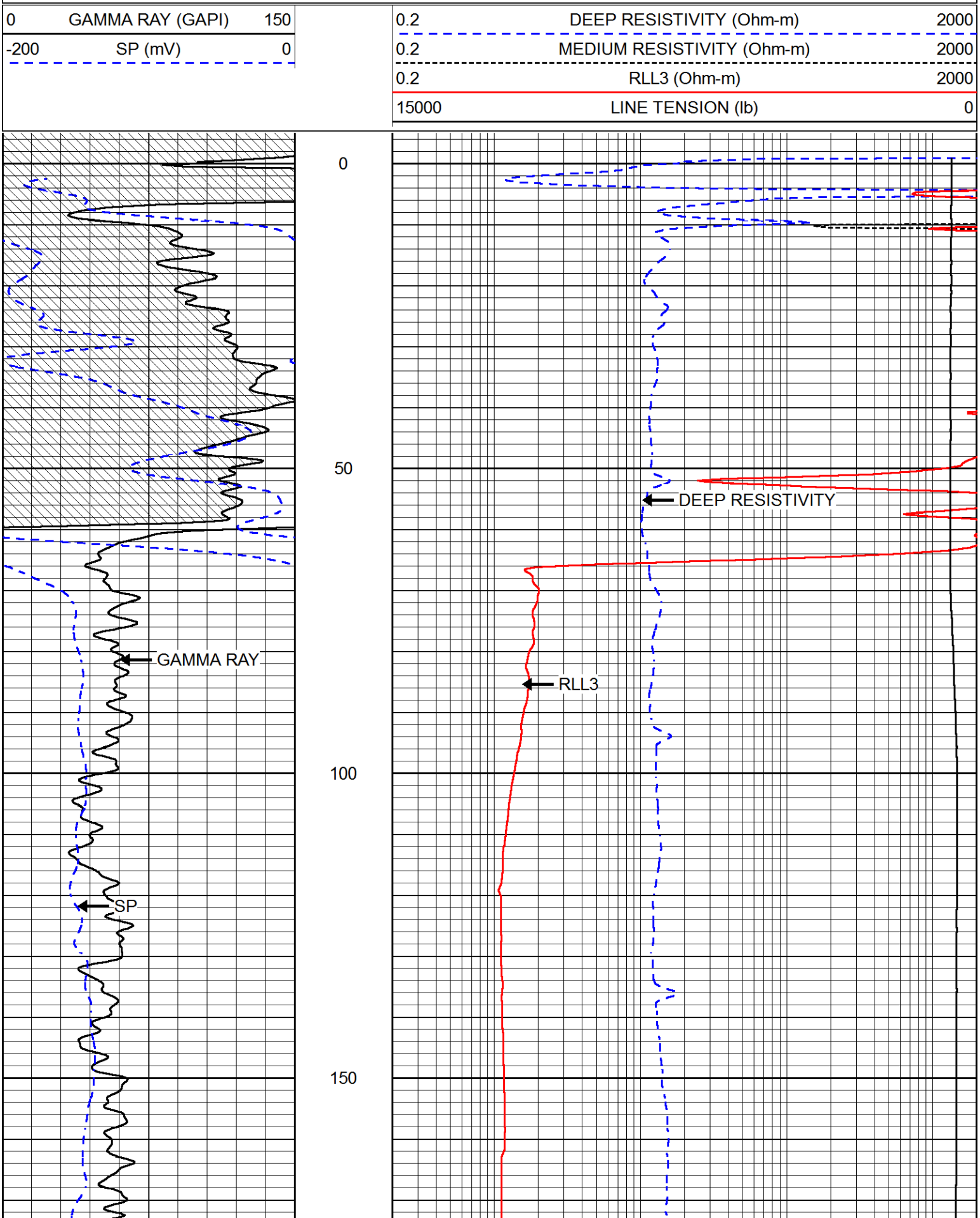

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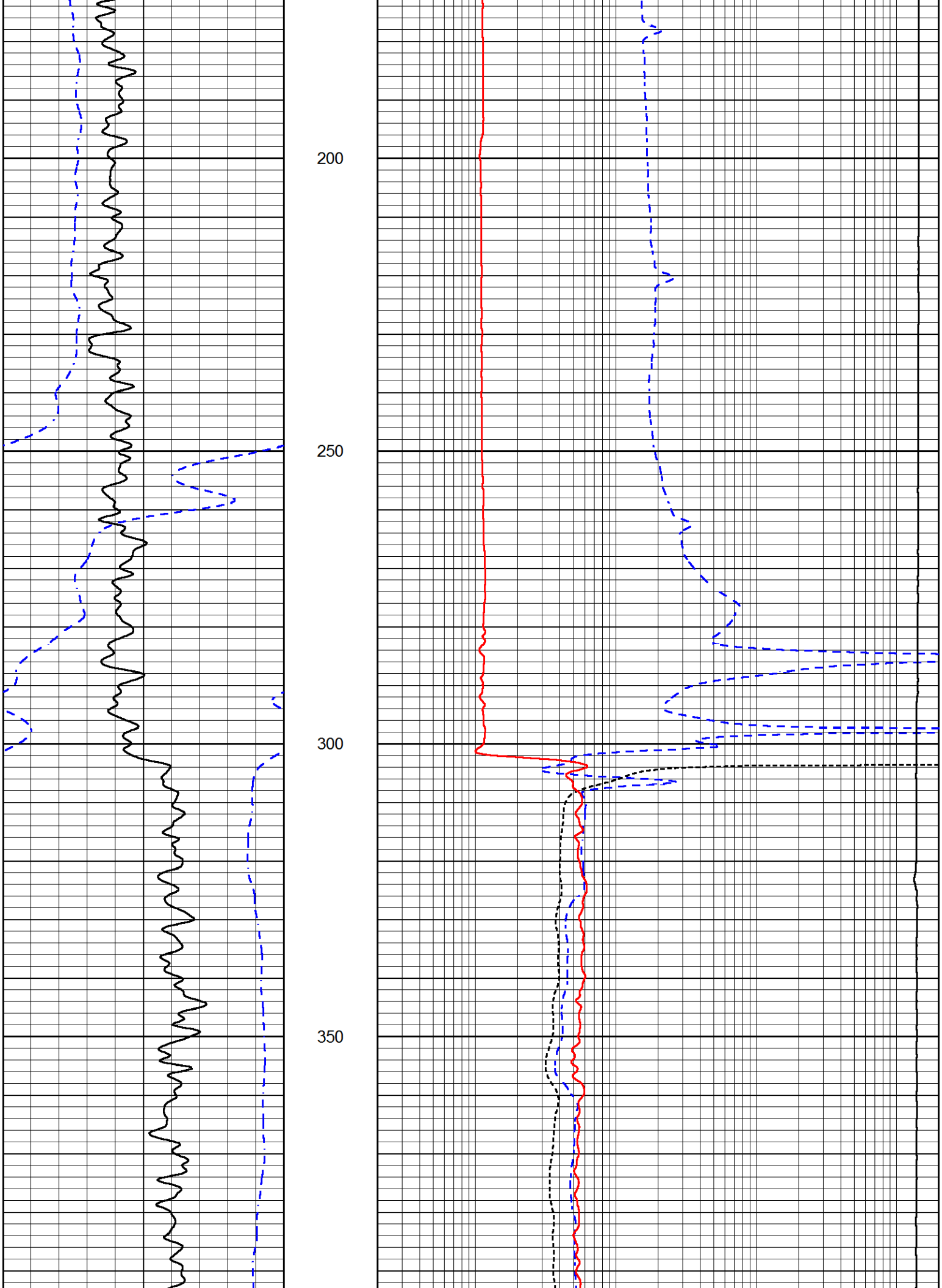


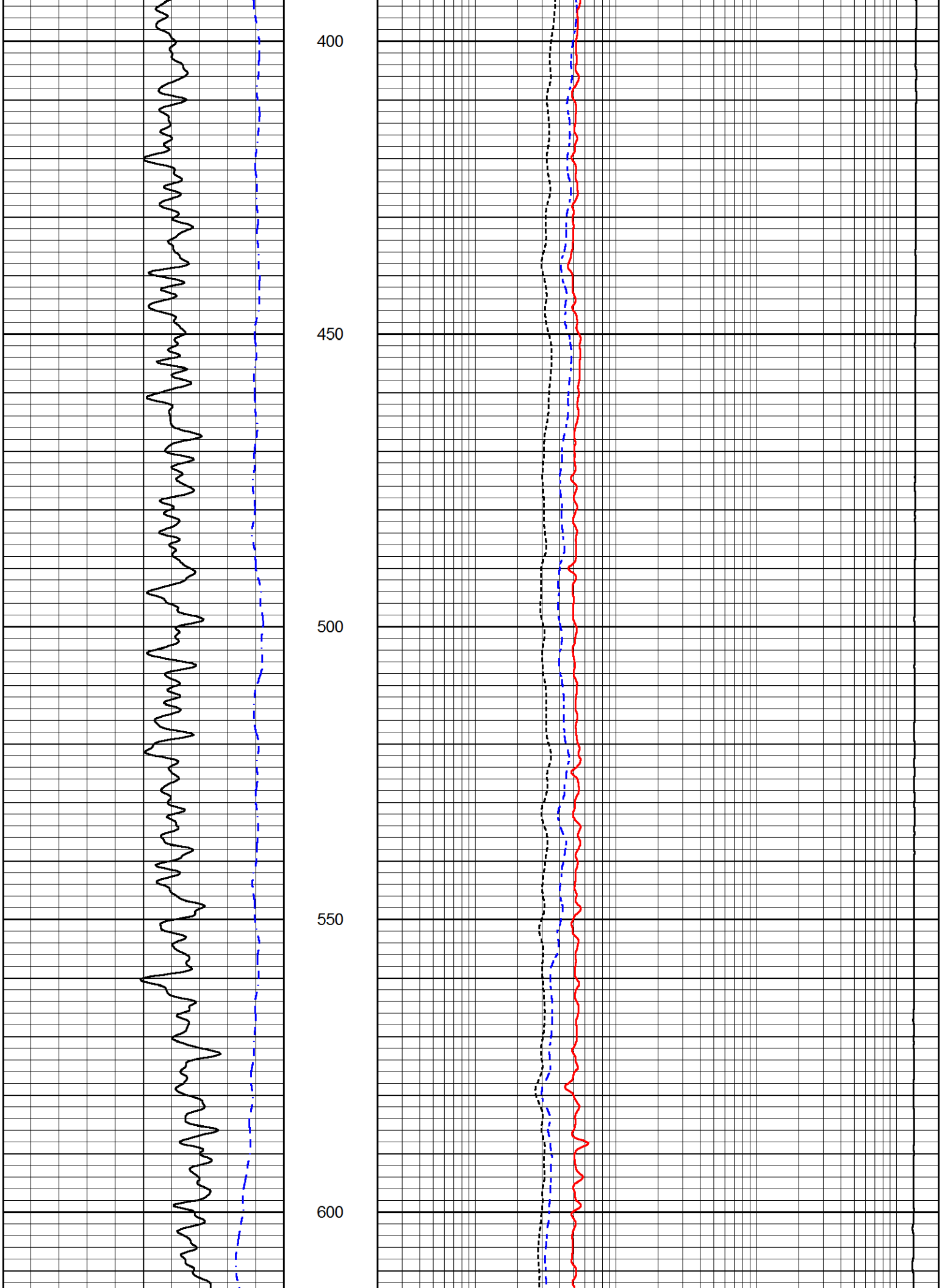
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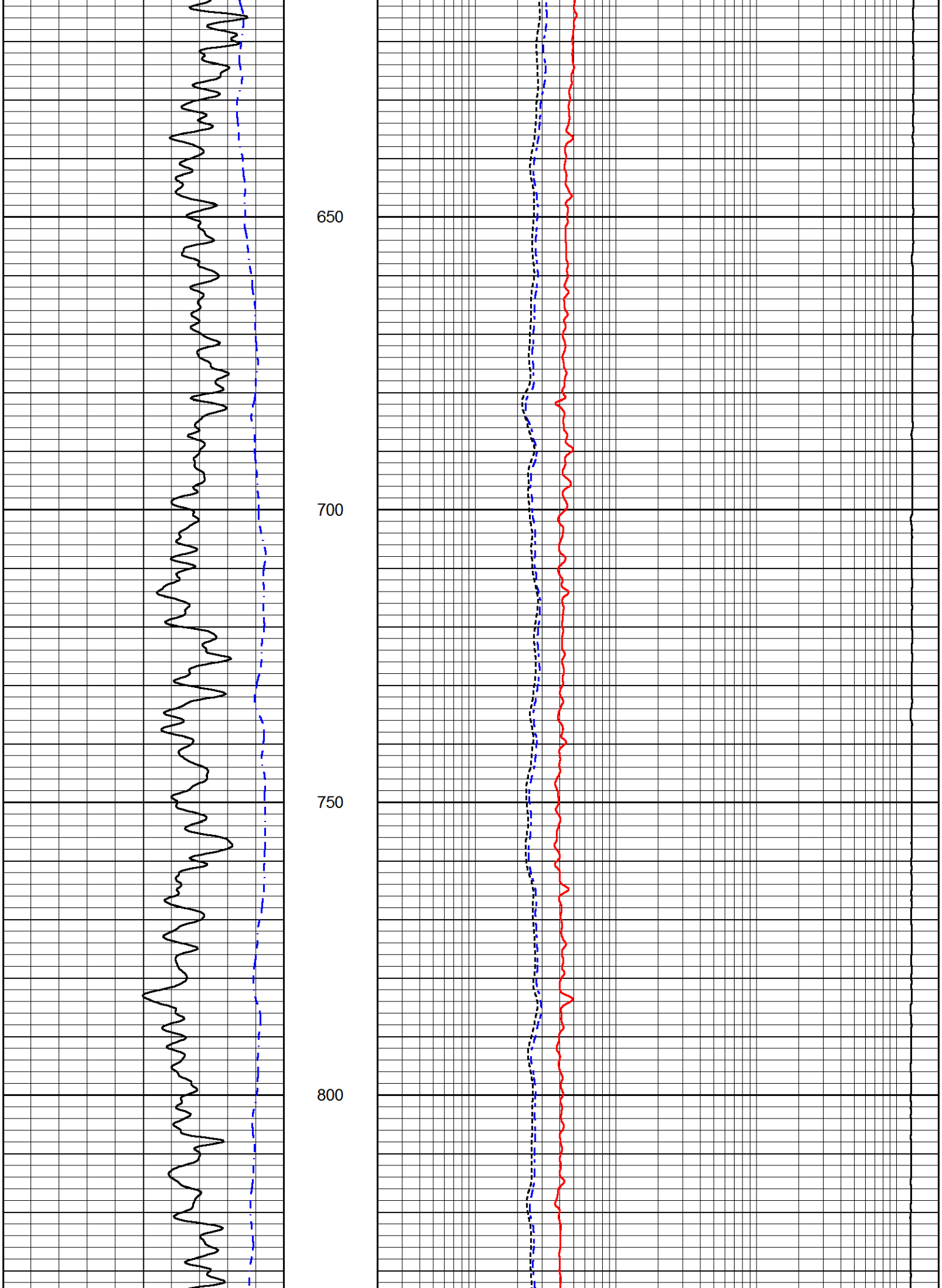
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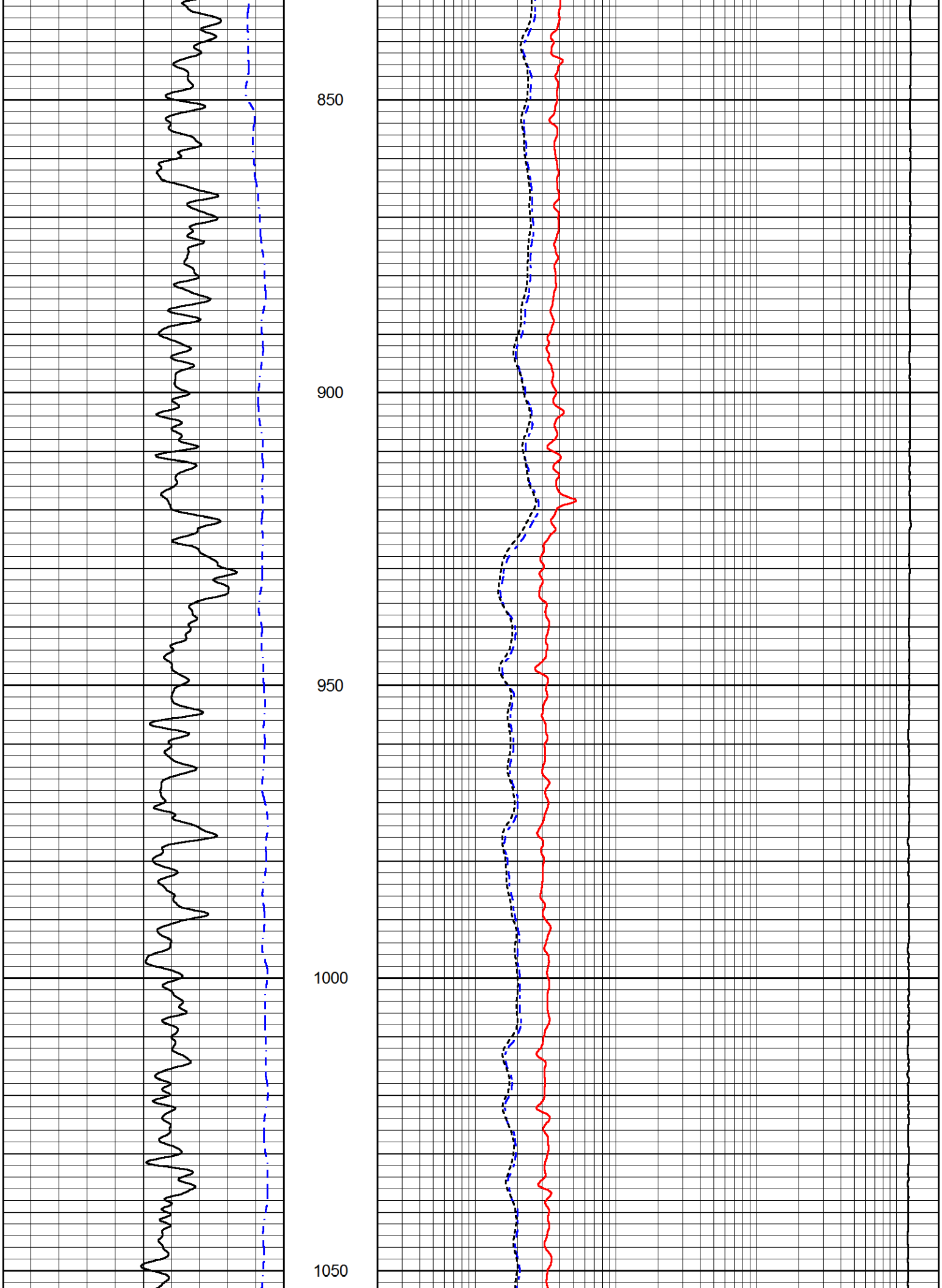
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Dataset Pathname	stackml/pass3.1
Presentation Format	dil
Dataset Creation	Wed May 09 08:11:28 2018
Charted by	Depth in Feet scaled 1:240

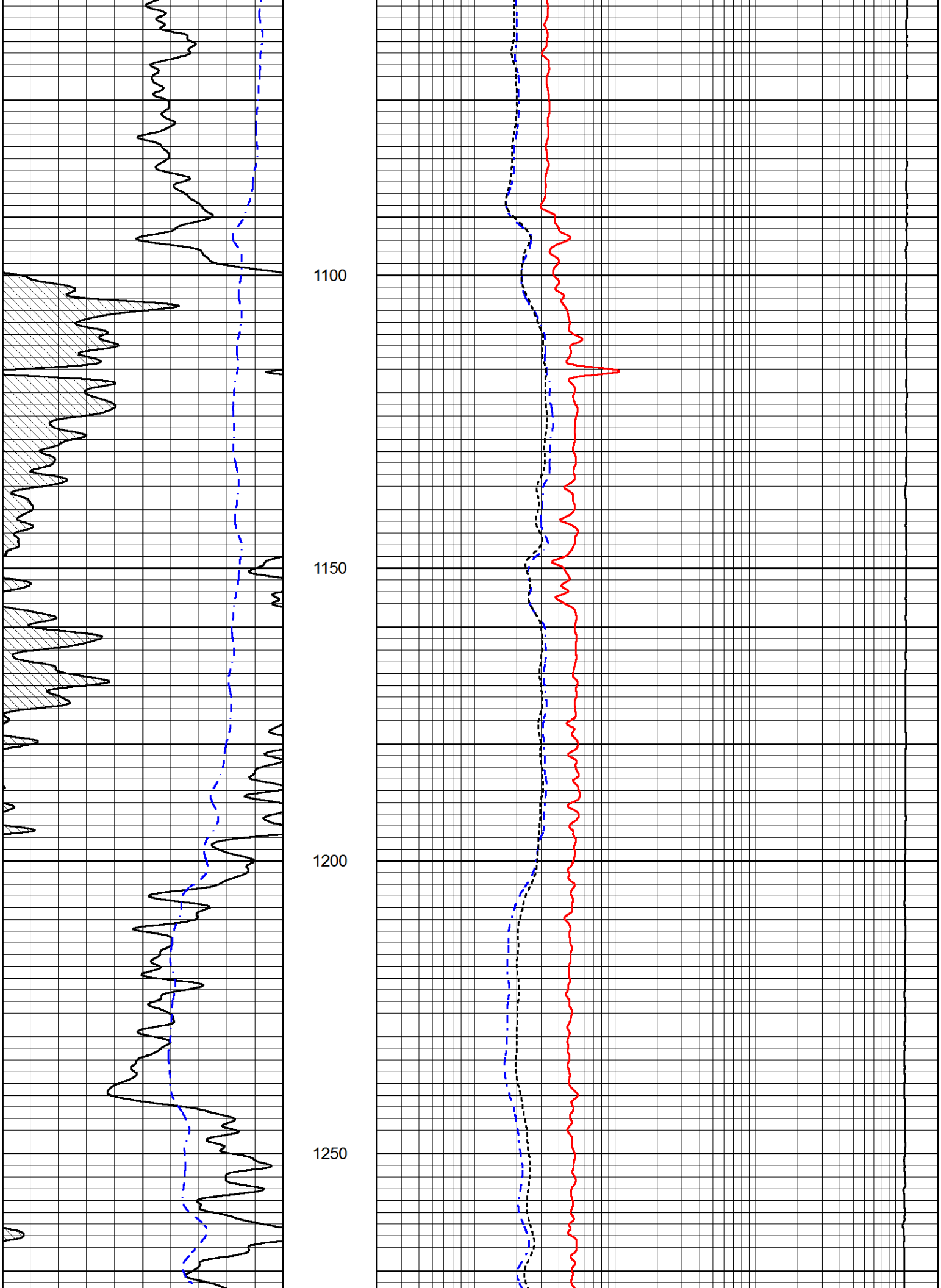


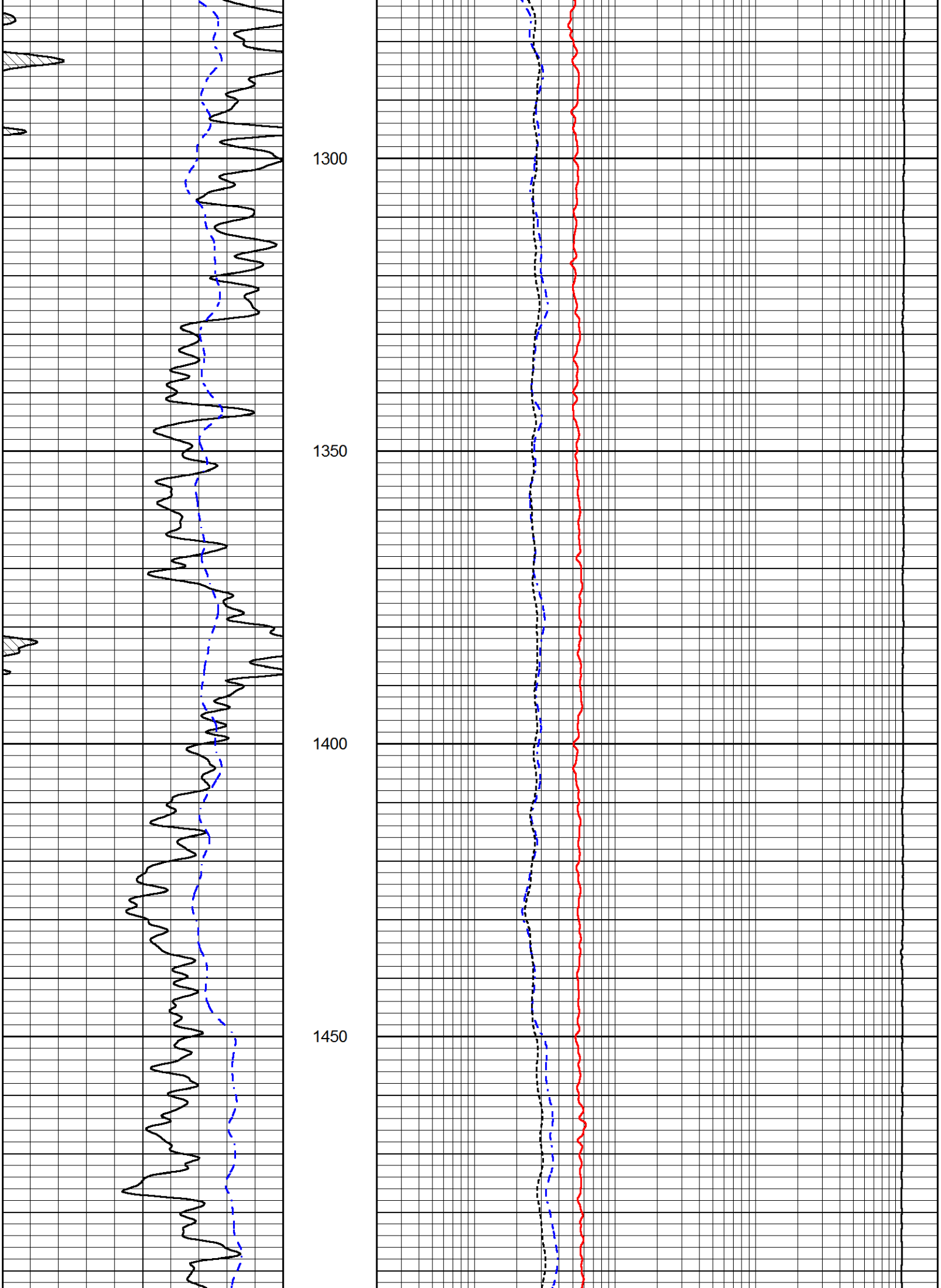

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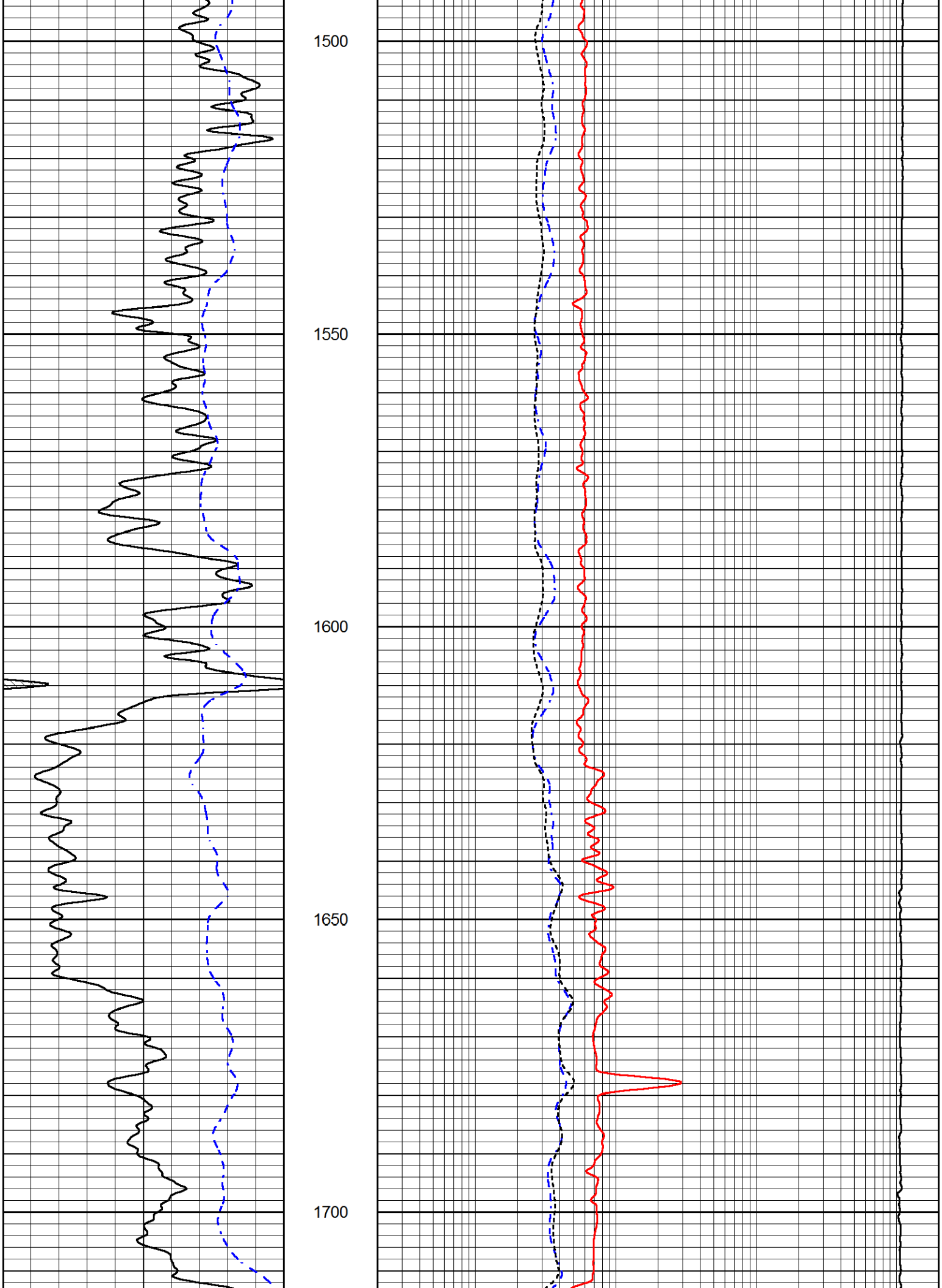

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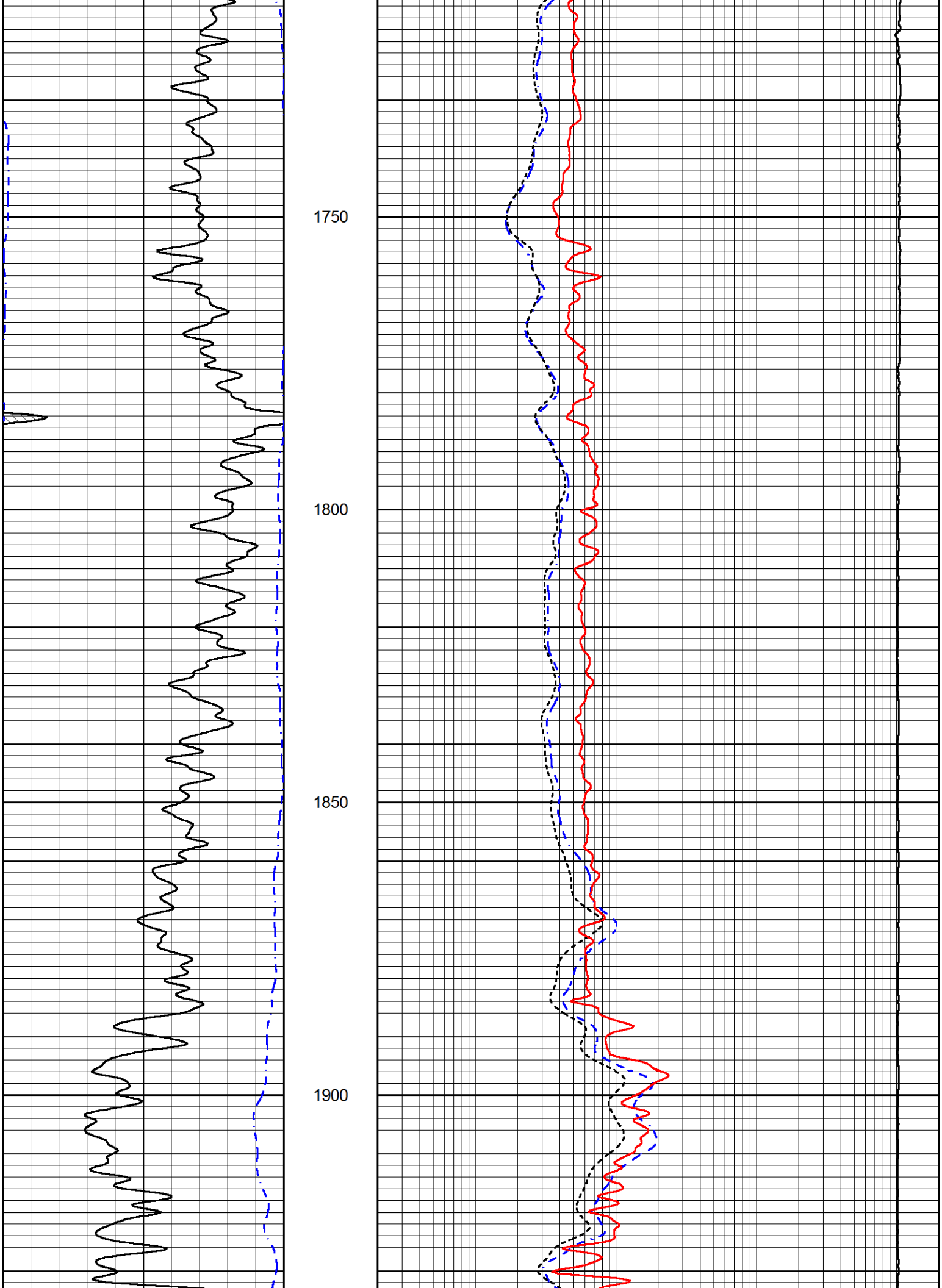

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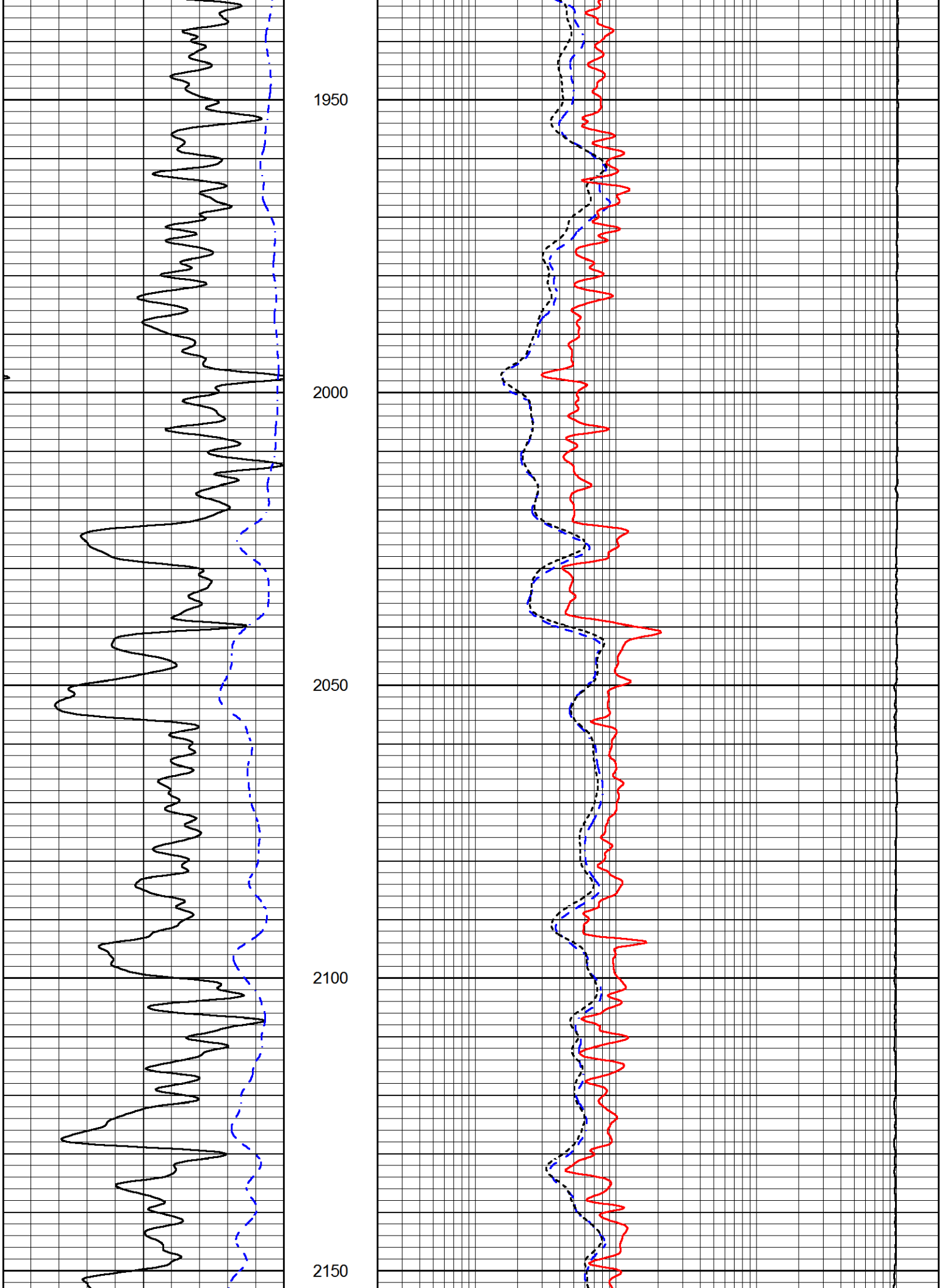

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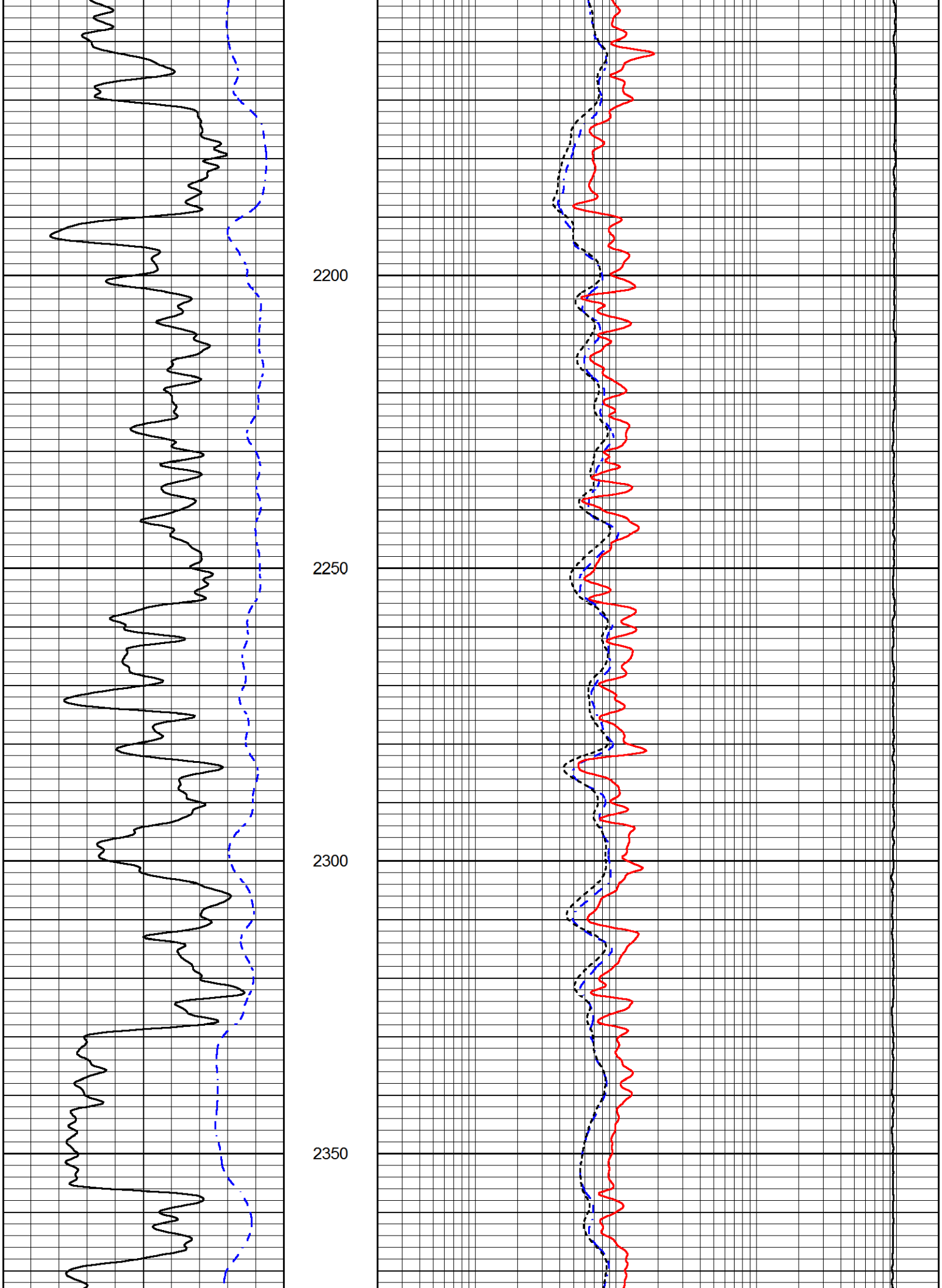

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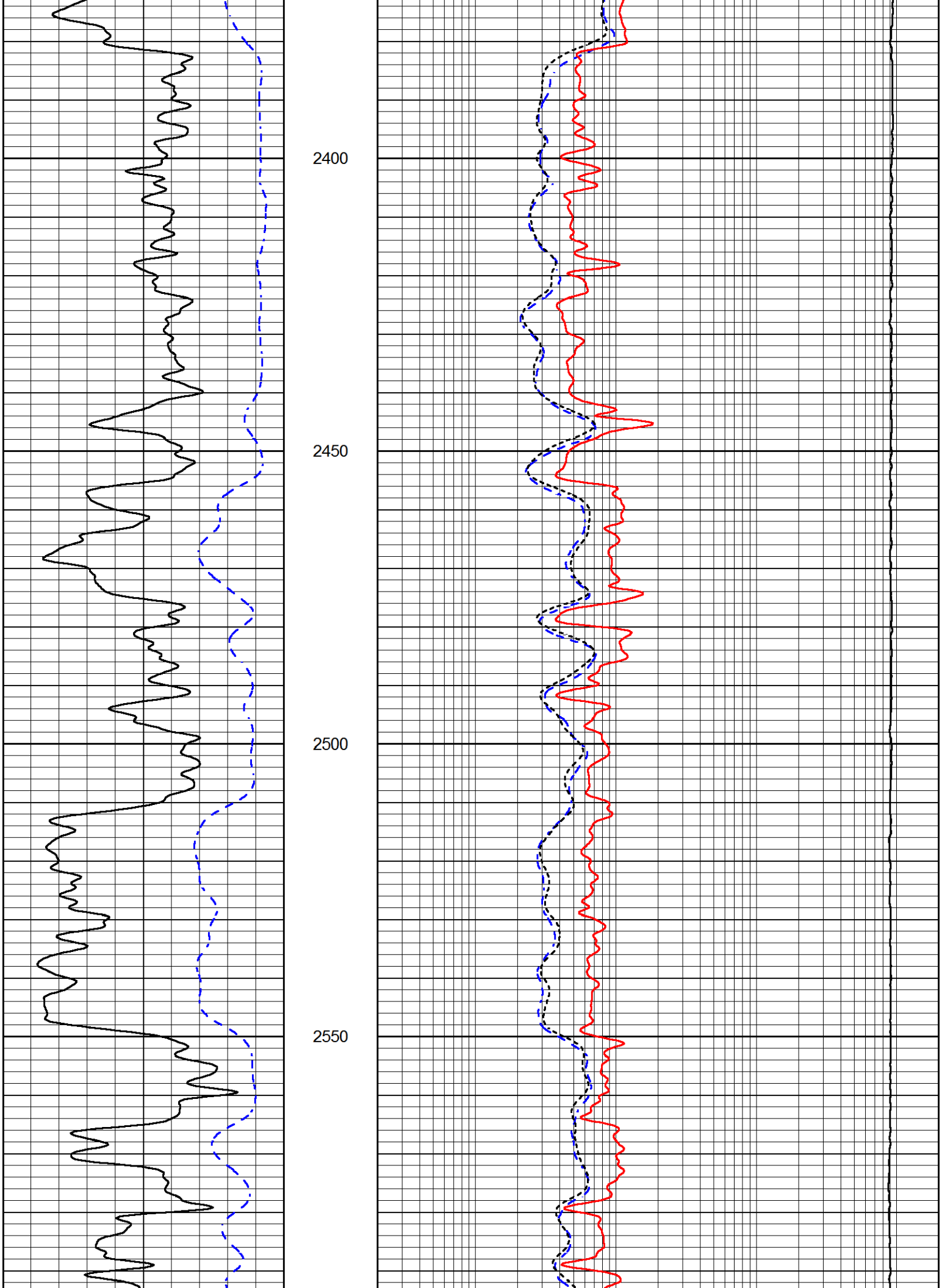

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1450

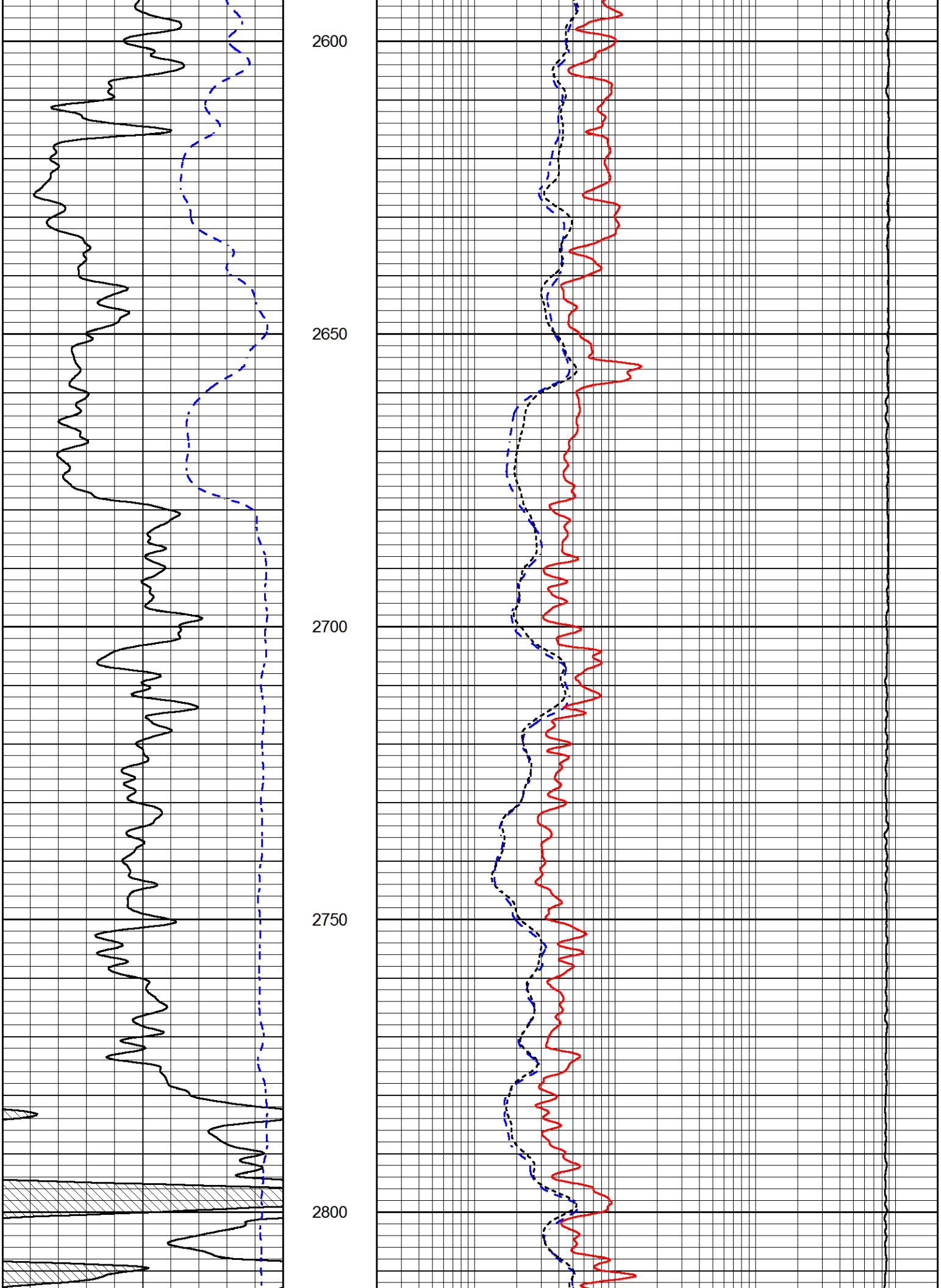

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1650
1700

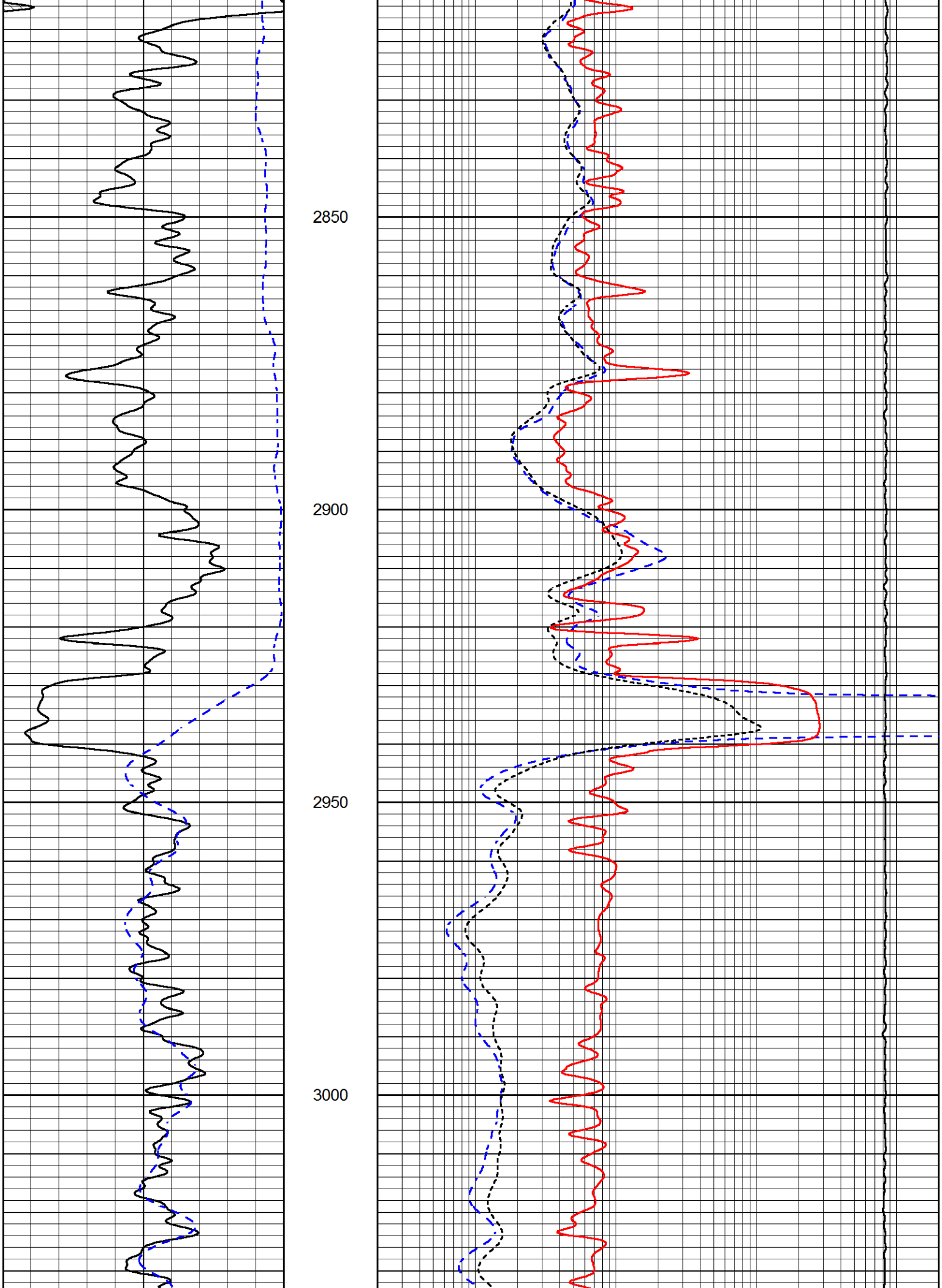

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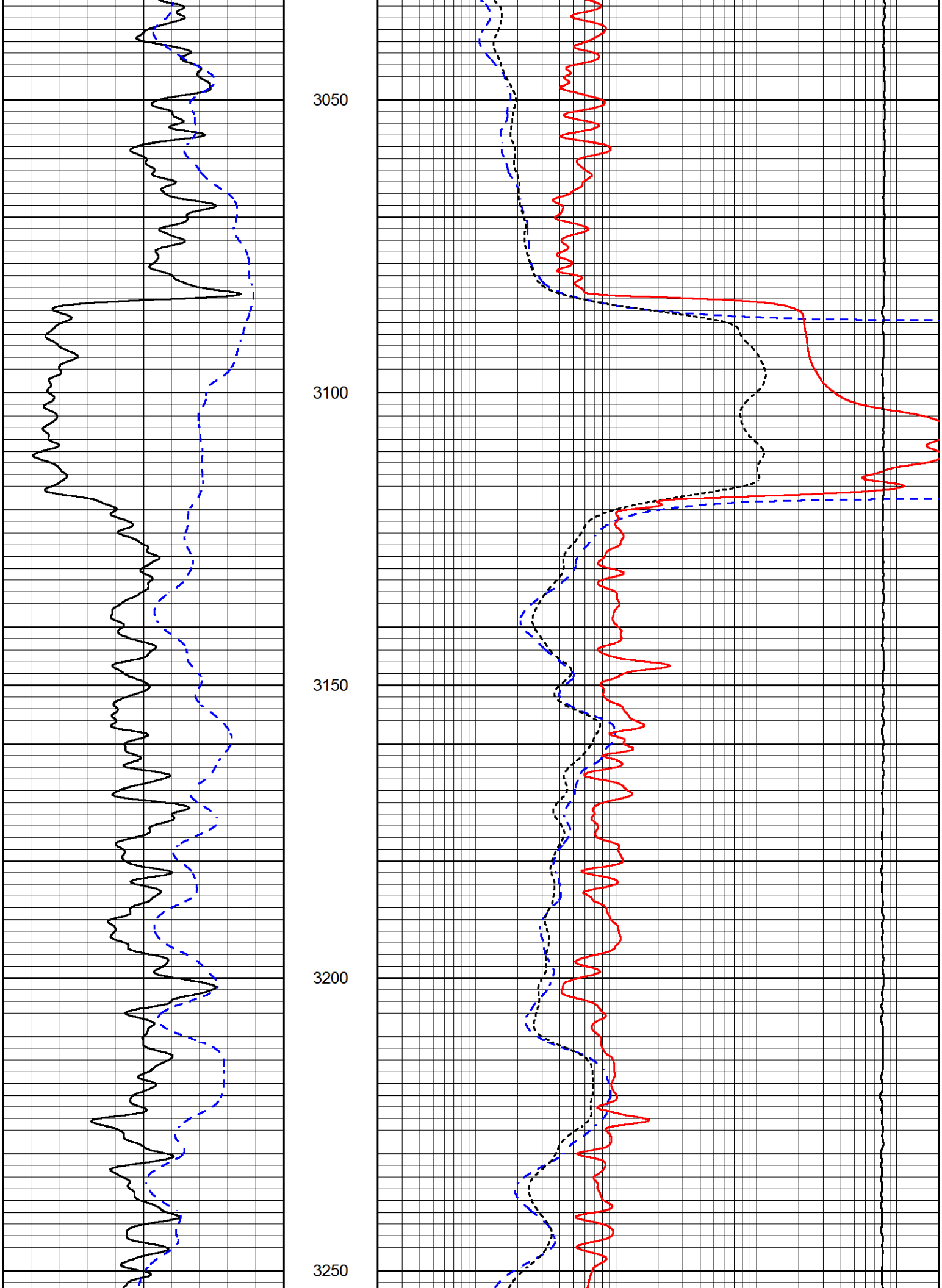

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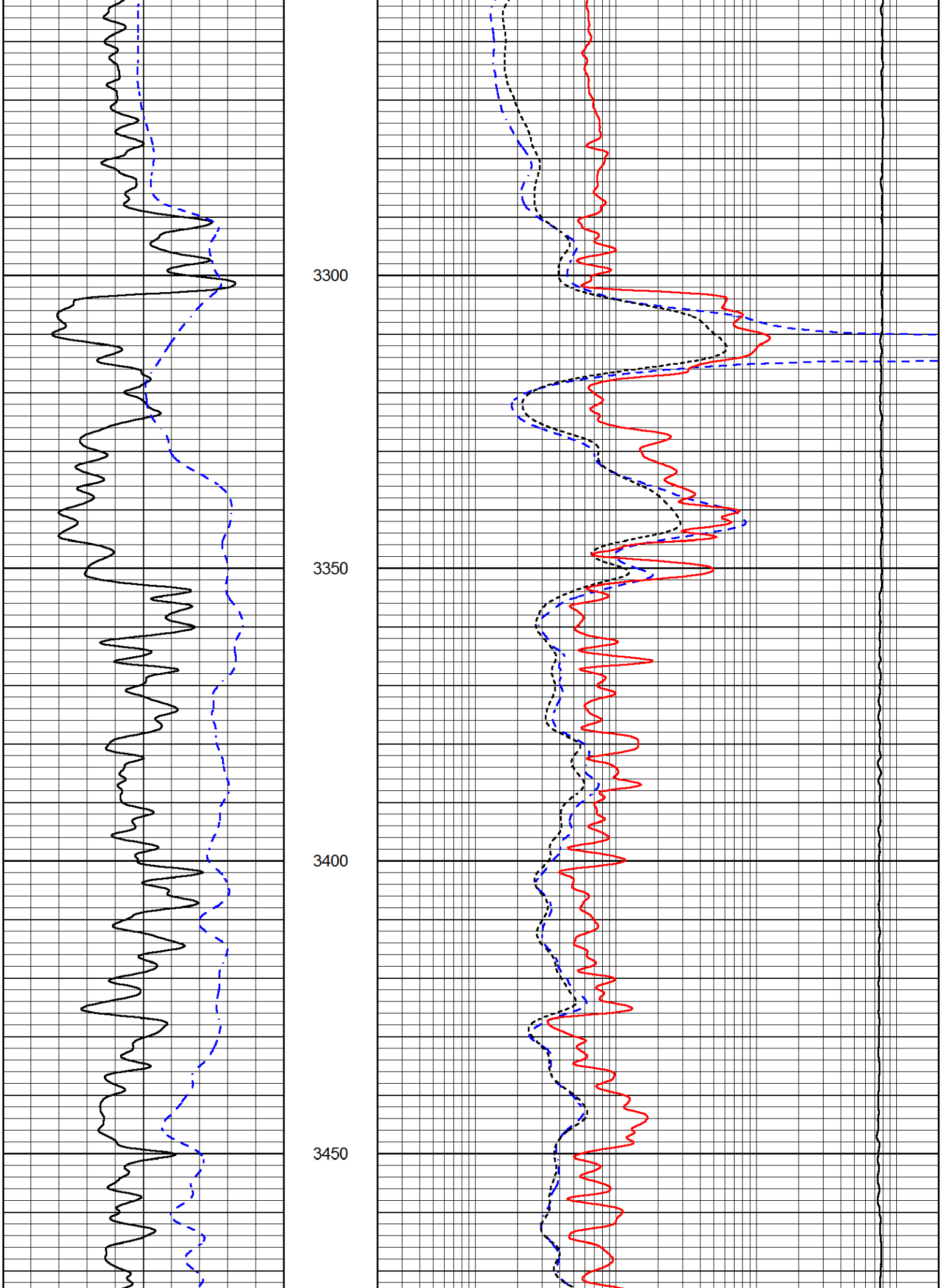

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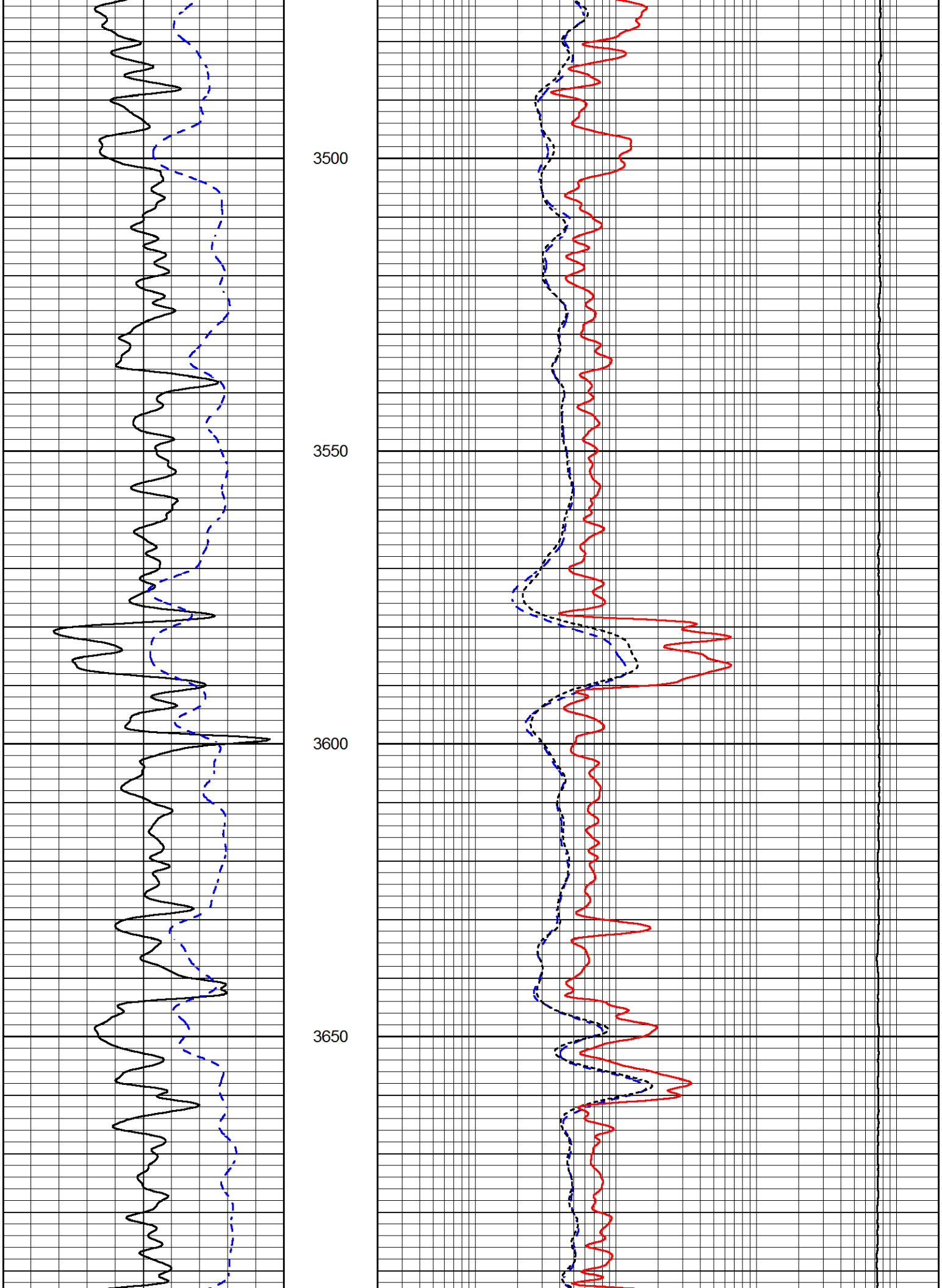

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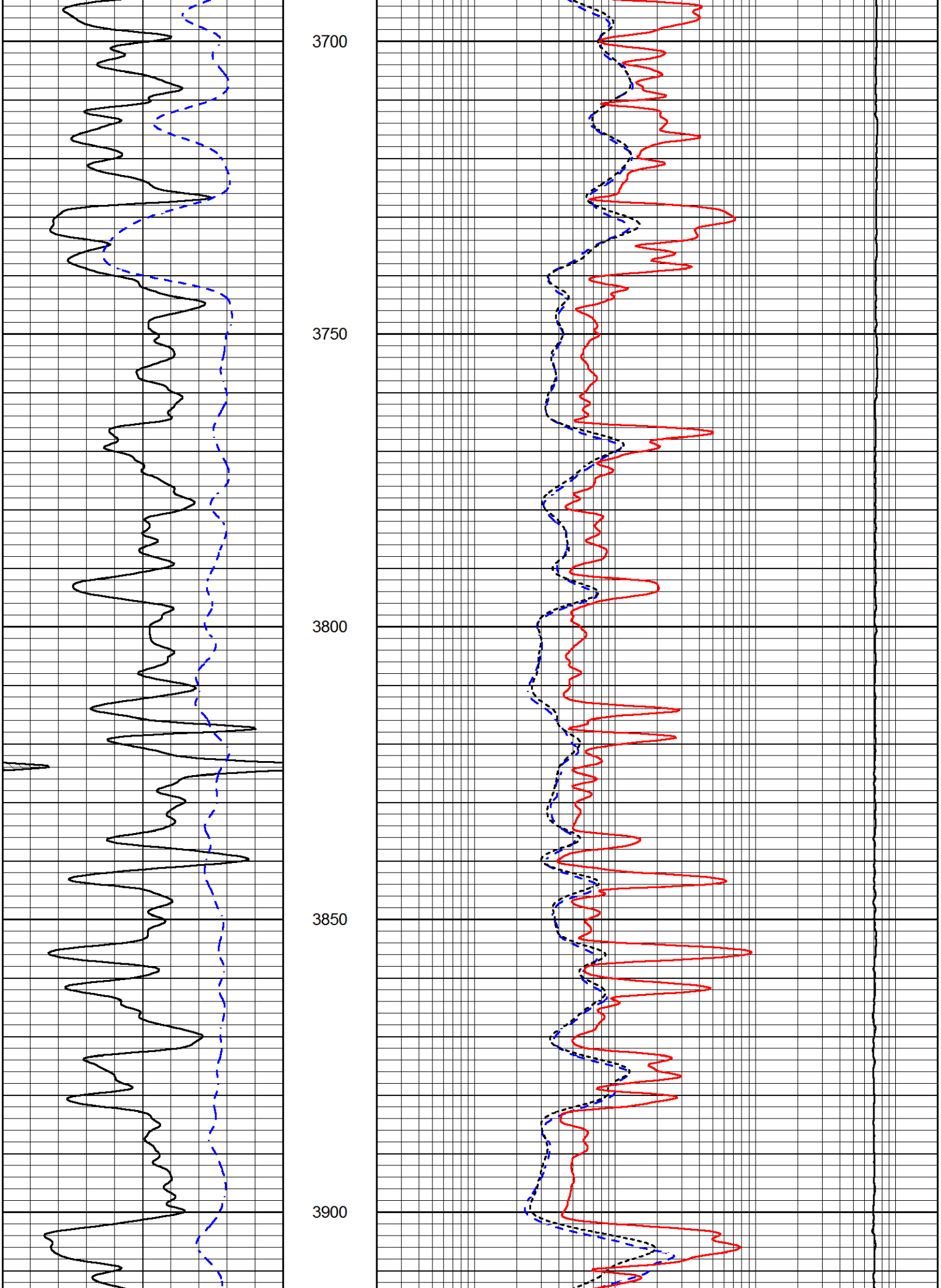

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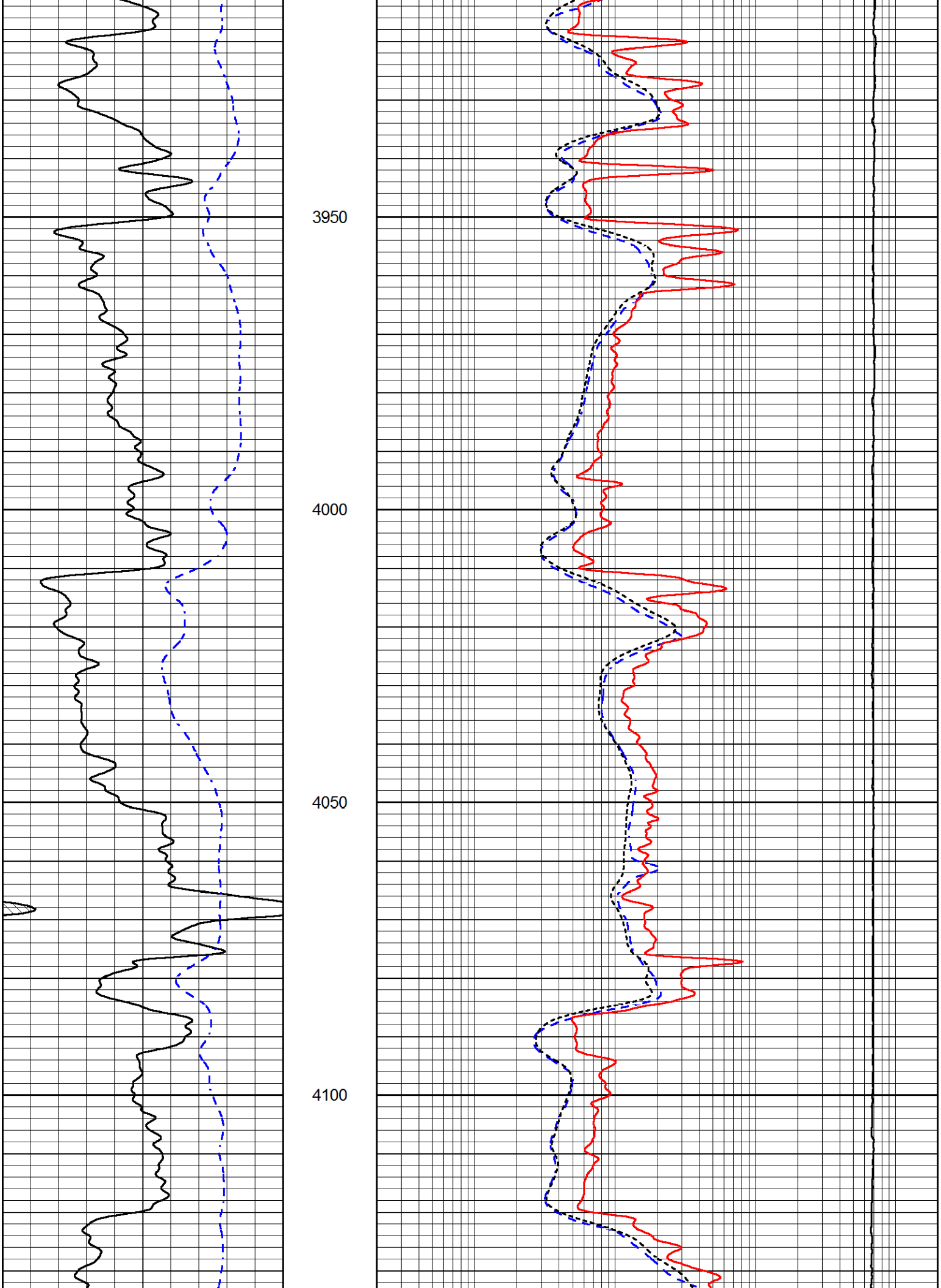

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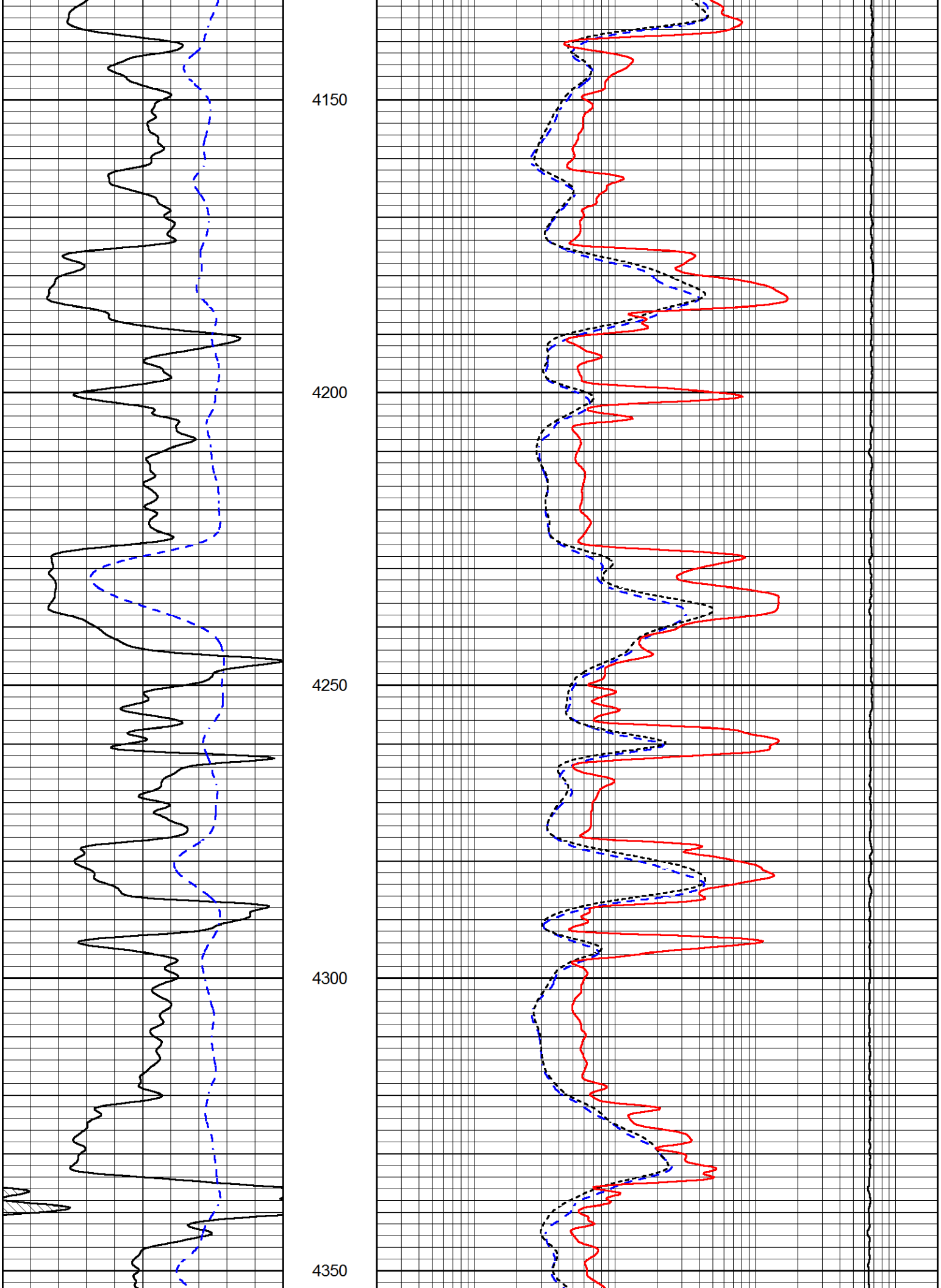

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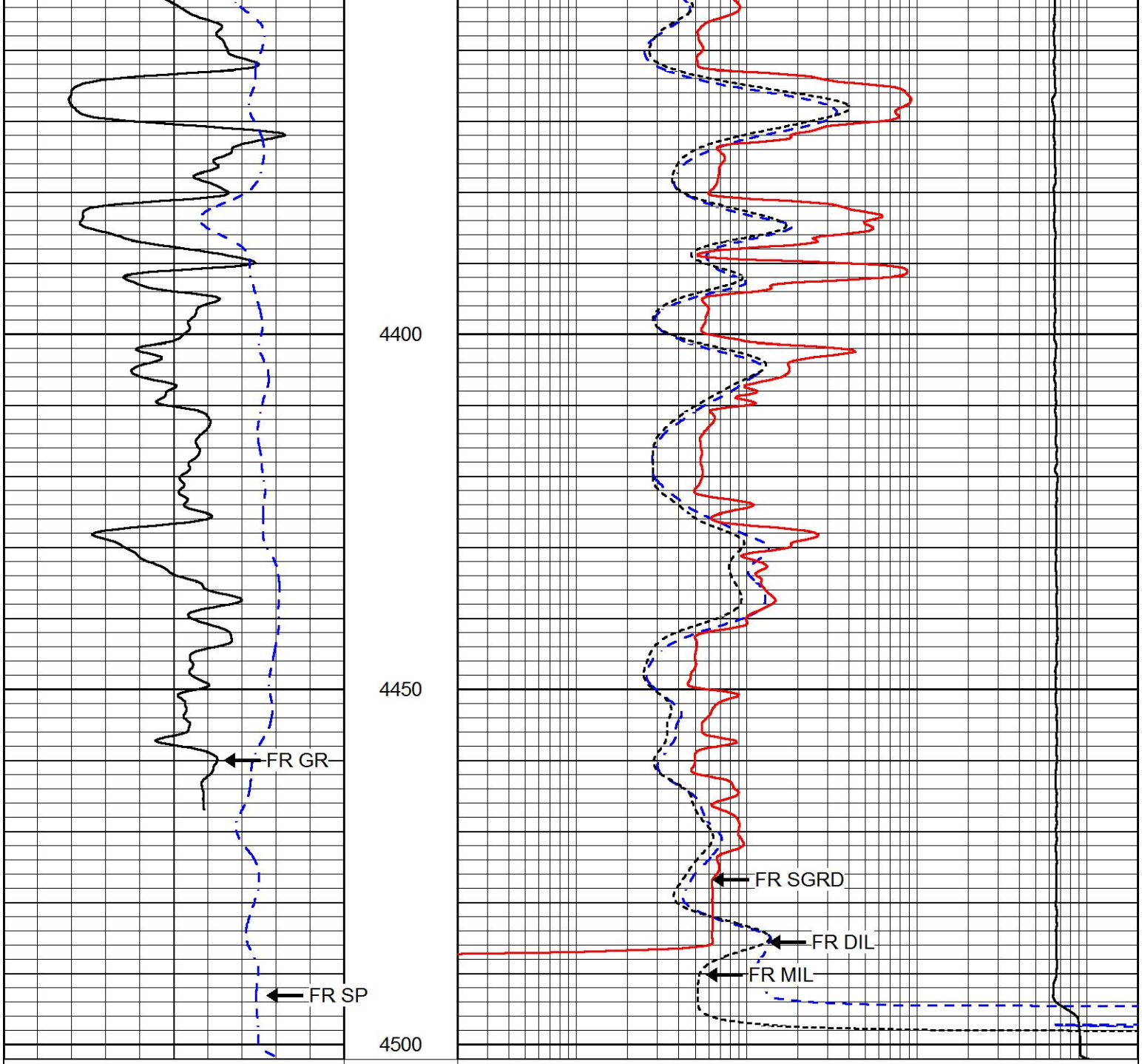

3300
3350
3400
3450


3500
3550
3600
3650


3700
3750
3800
3850
3900


3950
4000
4050
4100


4150
4200
4250
4300
4350



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

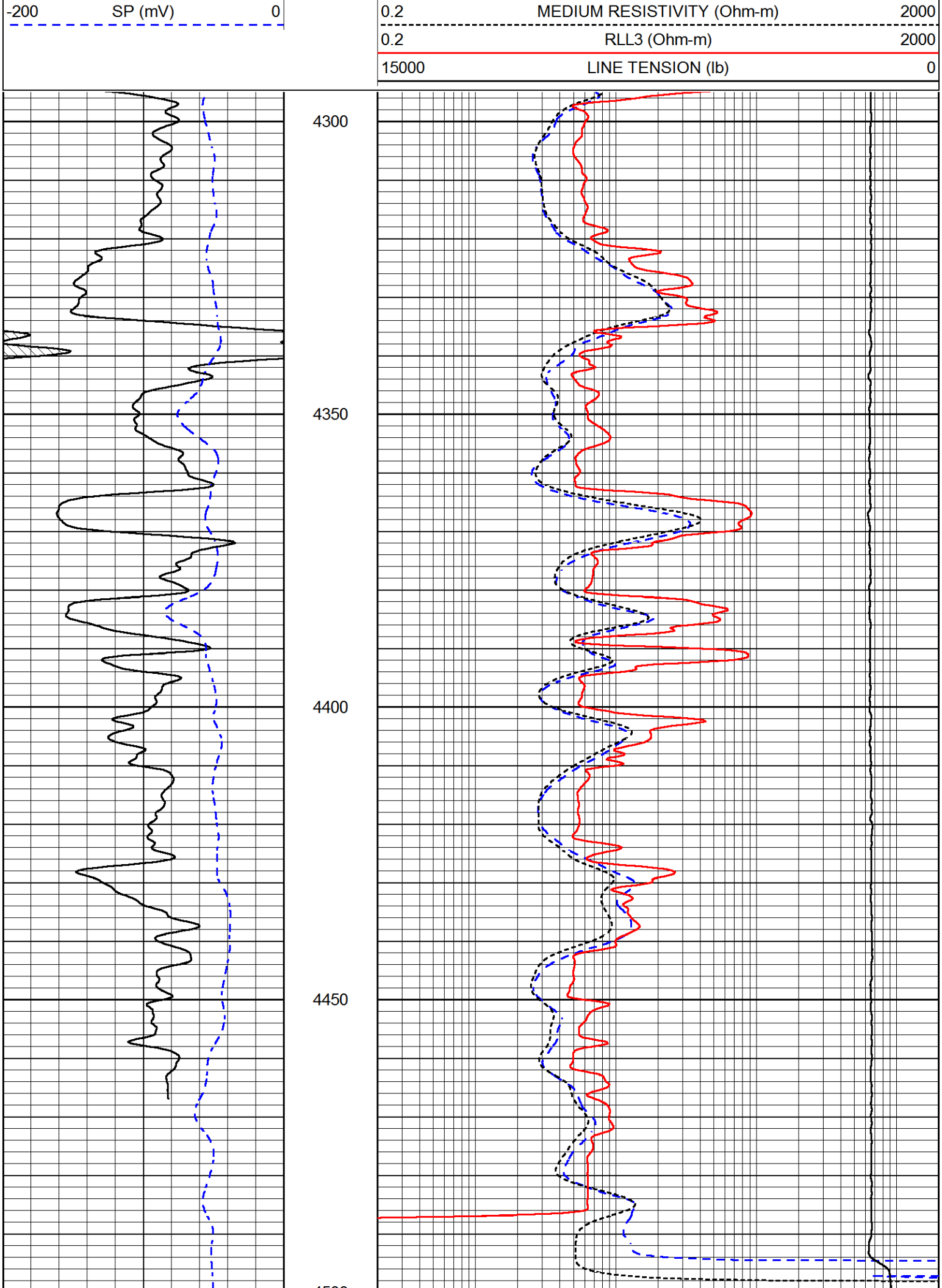
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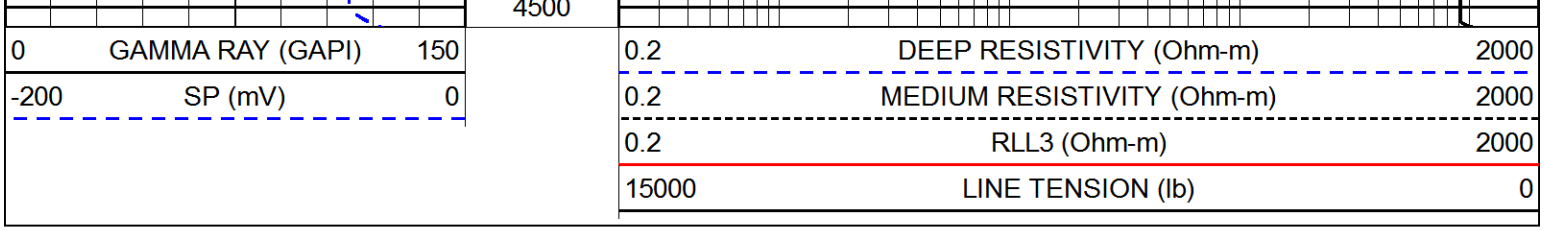
REPEAT SECTION

Database File	murfin_ken_4_17.db
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Presentation Format	dil
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Charted by	Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150

0.2	DEEP RESISTIVITY (Ohm-m)	2000


-200
SP (mV)
0
0.2
MEDIUM RESISTIVITY (Ohm-m)
2000
0.2
RLL3 (Ohm-m)
2000
15000
LINE TENSION (lb)
0
4300
4350
4400
4450



Calibration Report

Database File	murfin_ken_4_17.db
Dataset Pathname	stackml/pass3.1
Dataset Creation	Wed May 09 08:11:28 2018

Dual Induction Calibration Report

Serial-Model:	1987-M&W
Calibration Performed:	Tue Apr 11 17:07:38 2017

	Readings		References			Results	
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.530	-36.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.440	-110.500

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	2.695	g/cc	859.57	3020.22	cps

Spine Angle = 74.61

Density/Spine Ratio = 0.534

	Size		Reading
Small Ring	4.00	in	1.00
Large Ring	16.00	in	1.22

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

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Company	MURFIN DRILLING COMPANY, INC.
Well	KEN NO. 4-17
Field	WILDCAT
County	RAWLINS
State	KANSAS