NABORS COMPLETION & PRODUCTION SERVICES CO.

DUAL INDUCTION LOG

Company	CHIEFTAIN OIL COMPANY, INC.
Well	MOLZ #20
Field	STRANATHAN
County	BARBER
State	KANSAS

Company CHIEFTAIN OIL COMPANY, INC.
Well MOLZ #20
Field STRANATHAN
County BARBER State KANSAS
Location: API # : 15-007-24042-0000
565' FNL & 440' FEL
NW - NE - NE- NE
SEC 11 TWP 35S RGE 12W

Permanent Datum GROUND LEVEL Elevation 1393
Log Measured From KELLY BUSHING 13' A.G.L.
Drilling Measured From KELLY BUSHING

Other Services: CNL/CDL, PE/MEL

Elevation: K.B. 1406, D.F. 1404, G.L. 1393

Date	9/16/13		
Run Number	ONE		
Depth Driller	5587		
Depth Logger	5586		
Bottom Logged Interval	5584		
Top Log Interval	0		
Casing Driller	13 3/8" @ 308'		
Casing Logger	306'		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 3800 PPM	
Density / Viscosity	9.3 / 68		
pH / Fluid Loss	10.0 / 7.8		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	0.65 @ 93F		
Rmf @ Meas. Temp	0.49 @ 93F		
Rmc @ Meas. Temp	0.78 @ 93F		
Source of Rmf / Rmc	MEASUREMENT		
Rm @ BHT	0.47 @ 130F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom			
Maximum Recorded Temperature	130F		
Equipment Number	4010		
Location	HAYS, KANSAS		
Recorded By	JEFF GRONEWEG		
Witnessed By	ARDEN RATZLAFF		

<<< Fold Here >>>

Comments

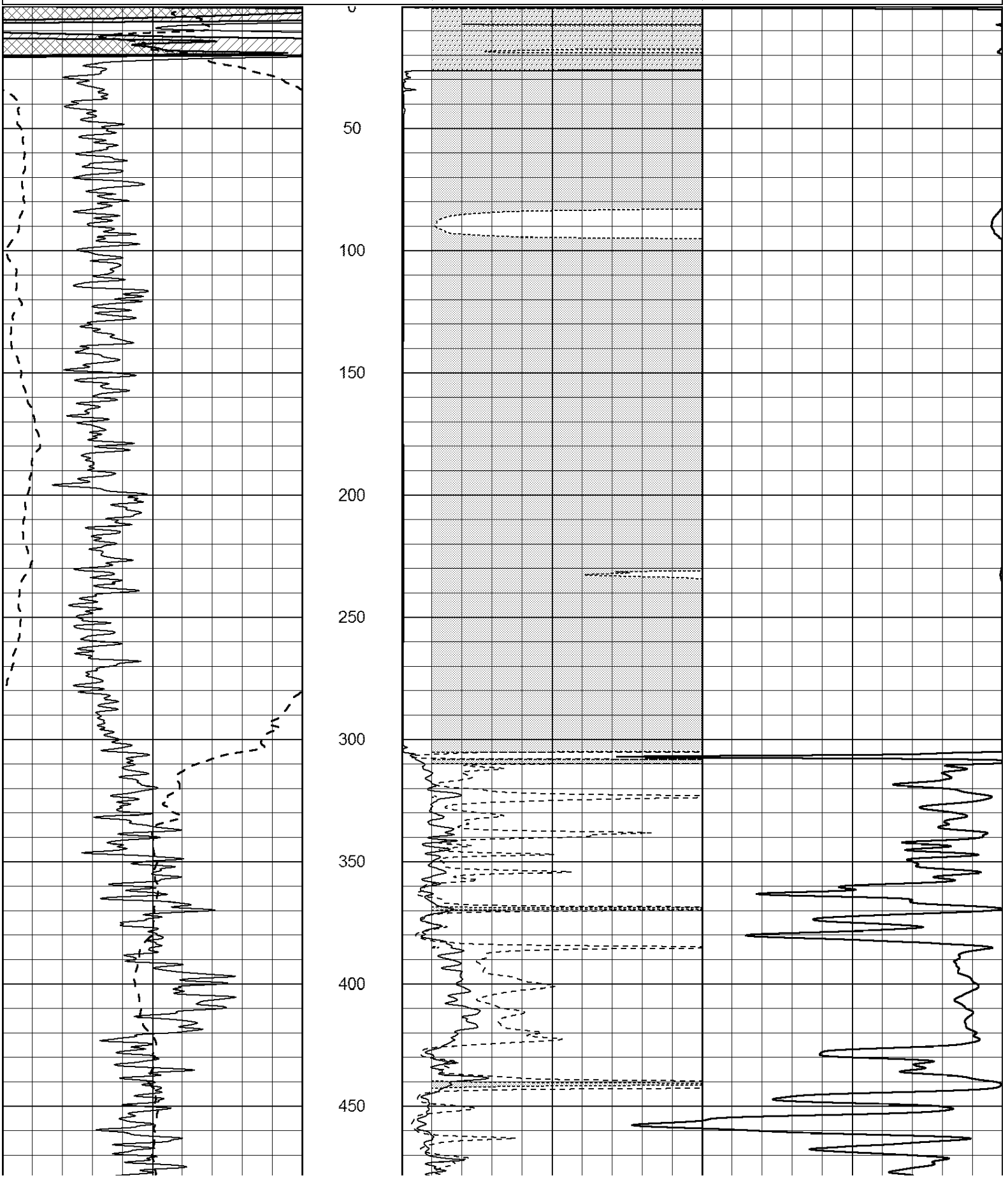
THANK YOU FOR USING NABORS, HAYS, KS. (785) 628-6395
DIRECTIONS:
HARDTNER, KS - 3 1/2 MILES EAST TO CLAIRMONT RD - 1/2 MILE NORTH
WEST INTO

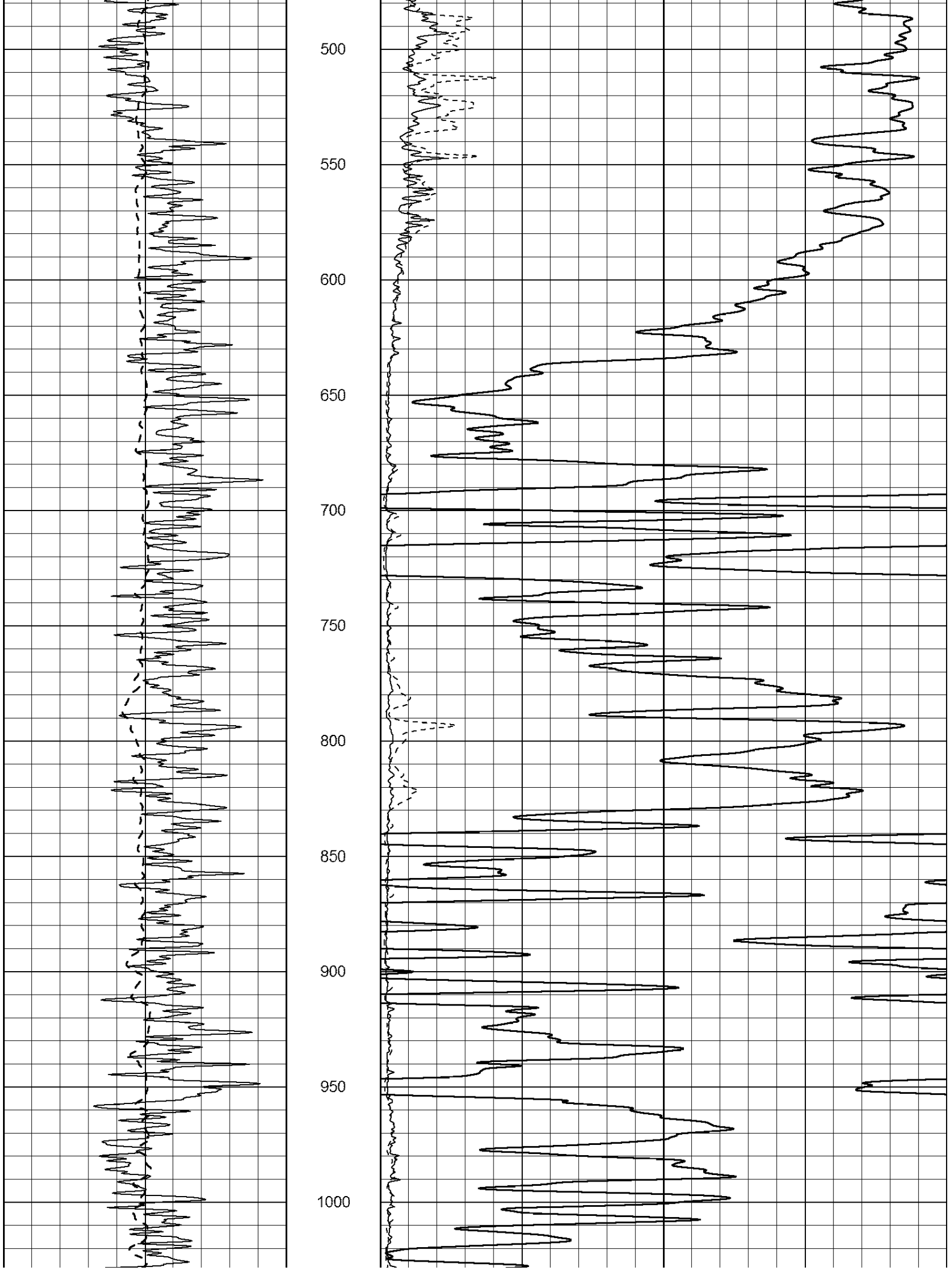
Database File:	011782pe.db
Dataset Pathname:	pass3.4
Presentation Format:	_dil2
Dataset Creation:	Tue Sep 17 00:52:56 2013
Charted by:	Depth in Feet scaled 1:600

Charted by: Depth in Feet scaled 1:600

0	Gamma Ray (GAPI)	150
-100	SP (mV)	100

0	RLL3 (Ohm-m)	50
0	RILD (Ohm-m)	50
1000	CILD (mmho/m)	0
50	RILD X10 (Ohm-m)	500
50	RLL3 X10 (Ohm-m)	500

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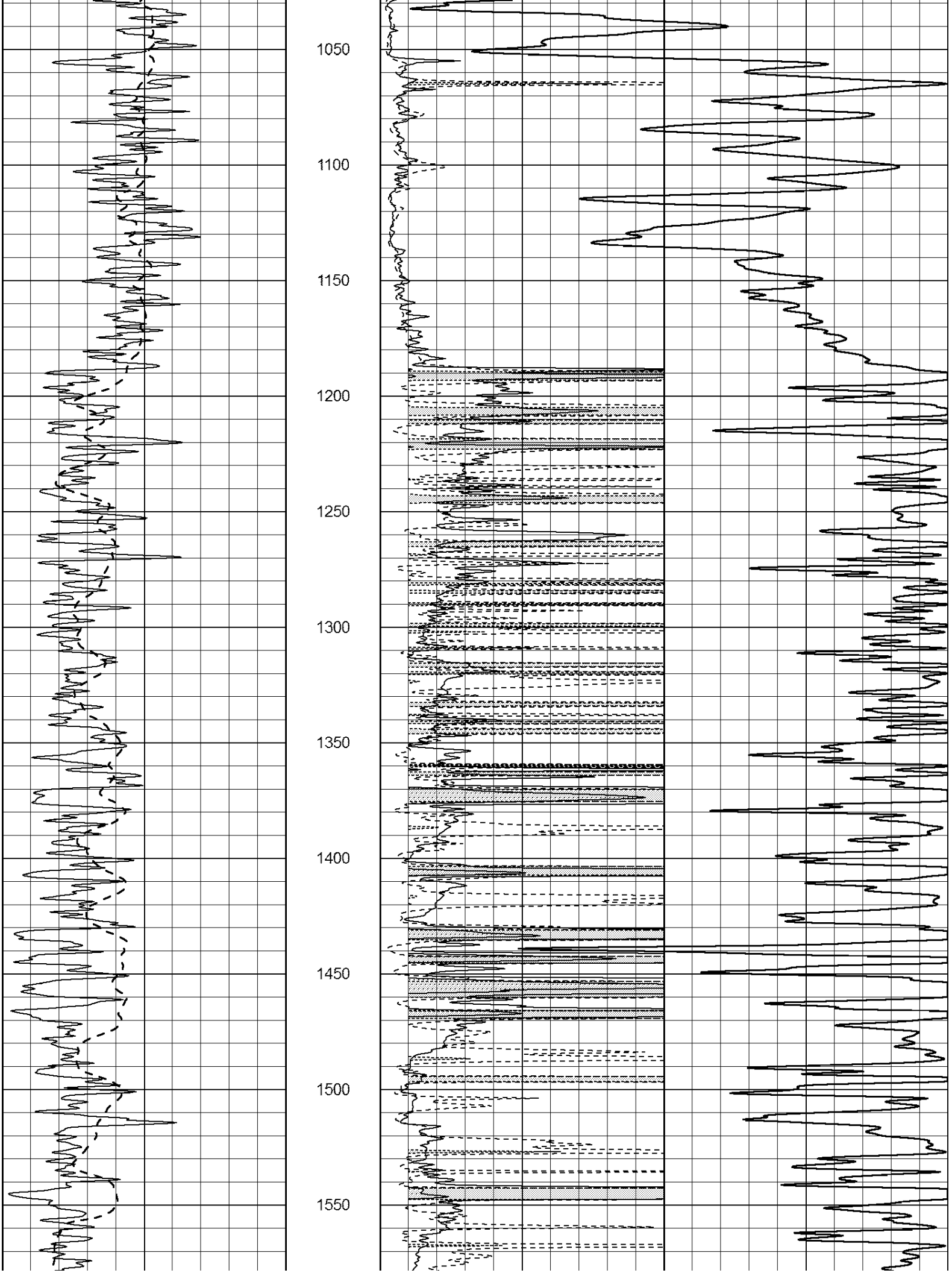
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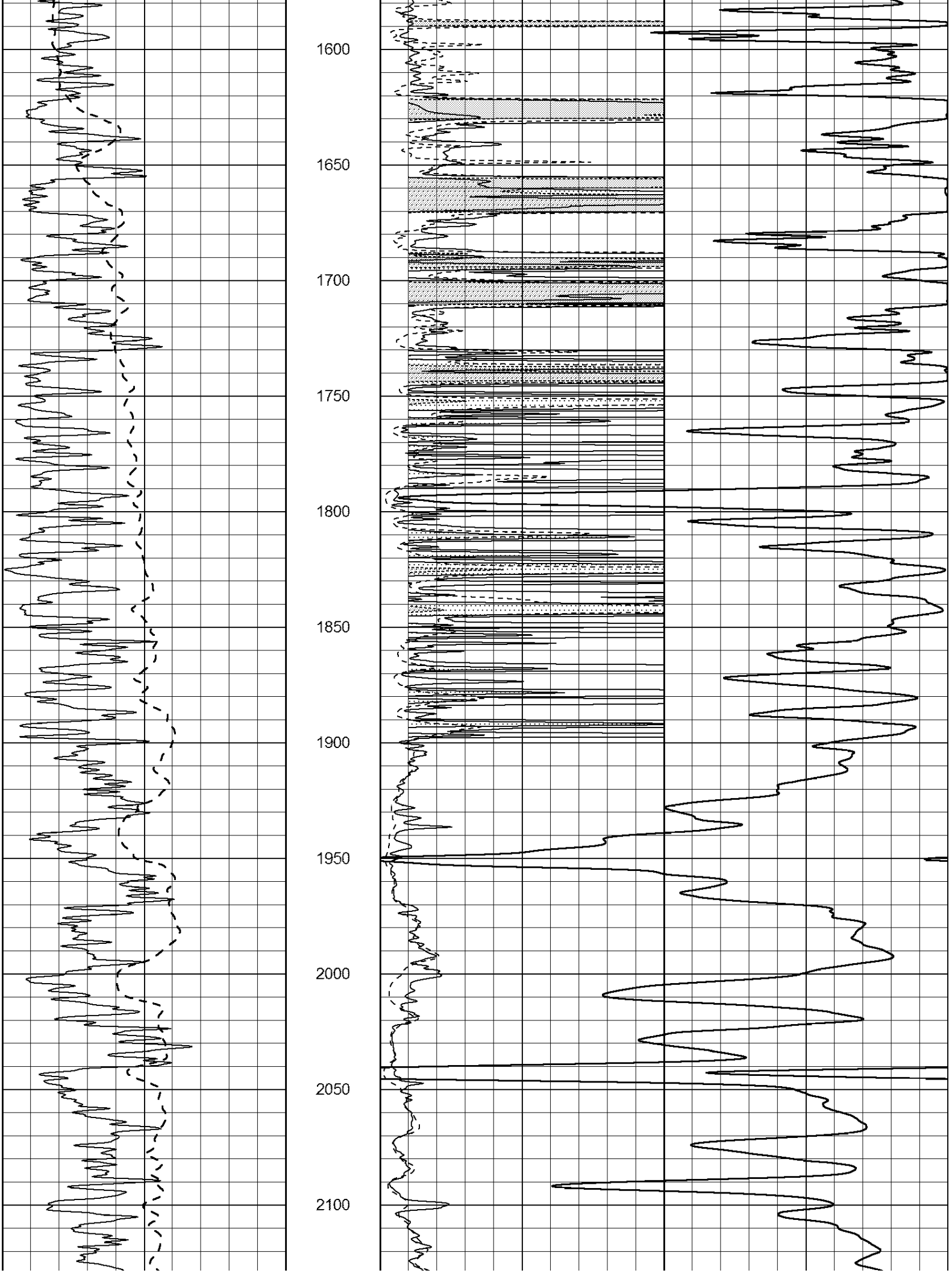
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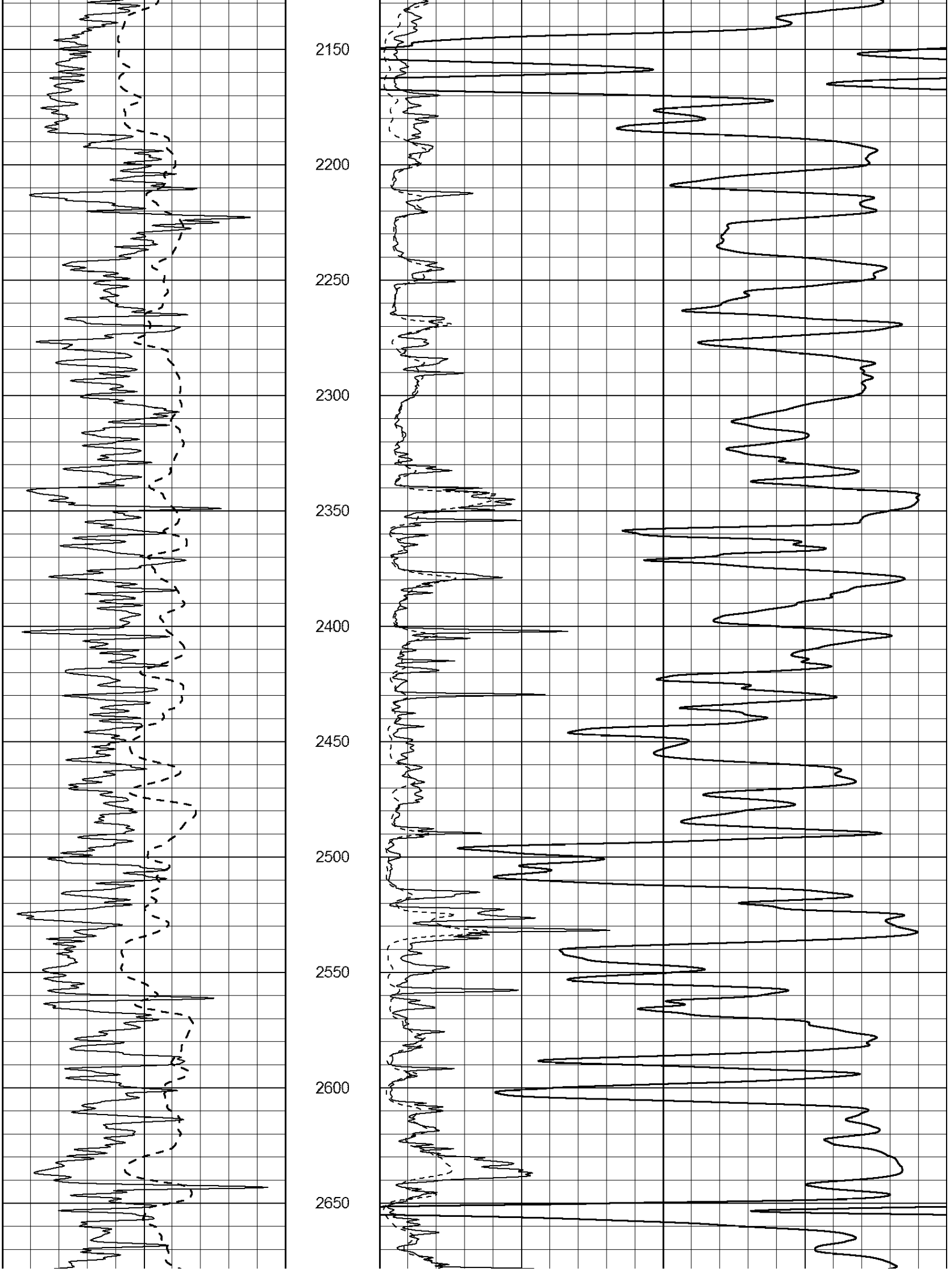
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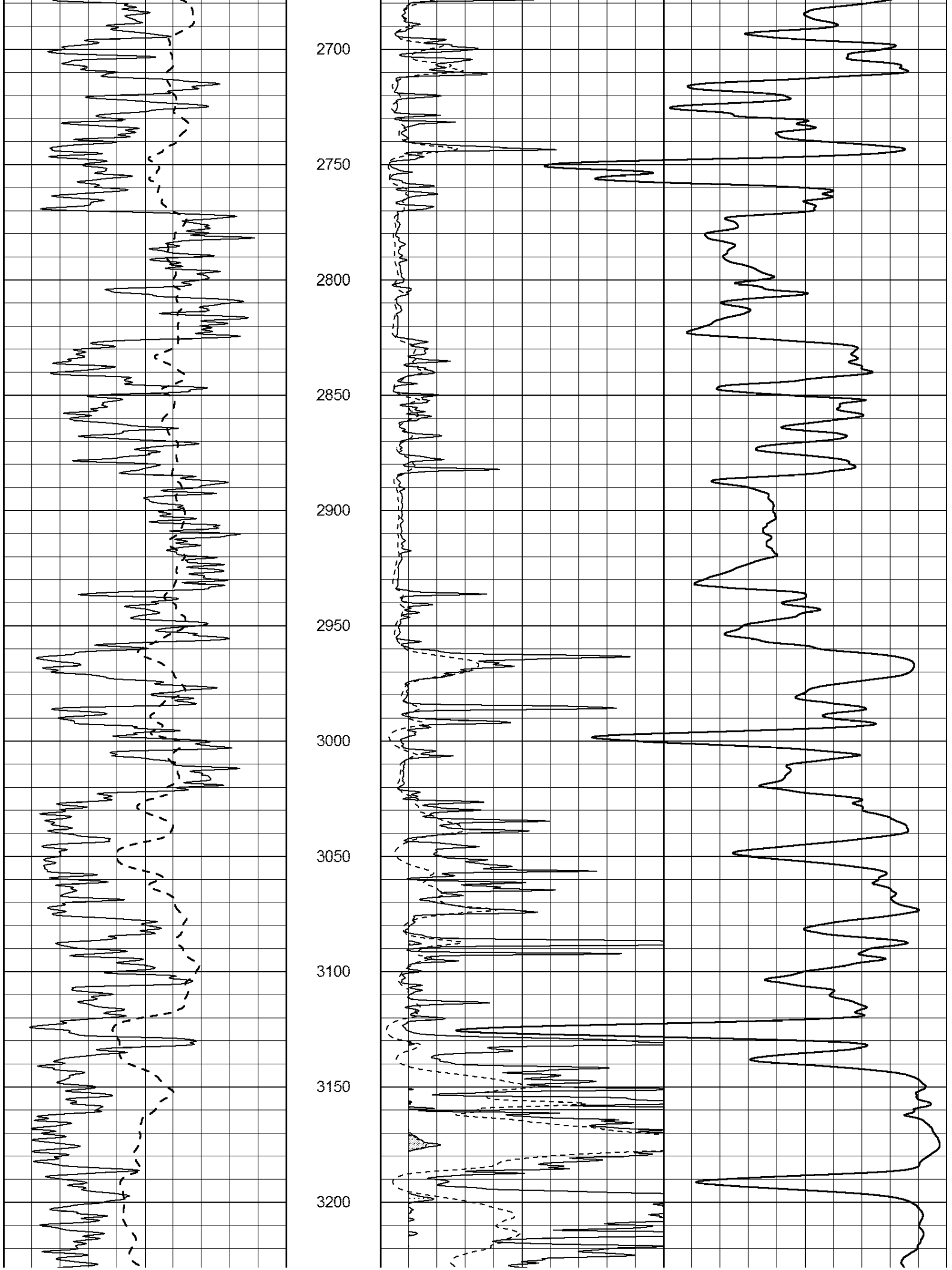
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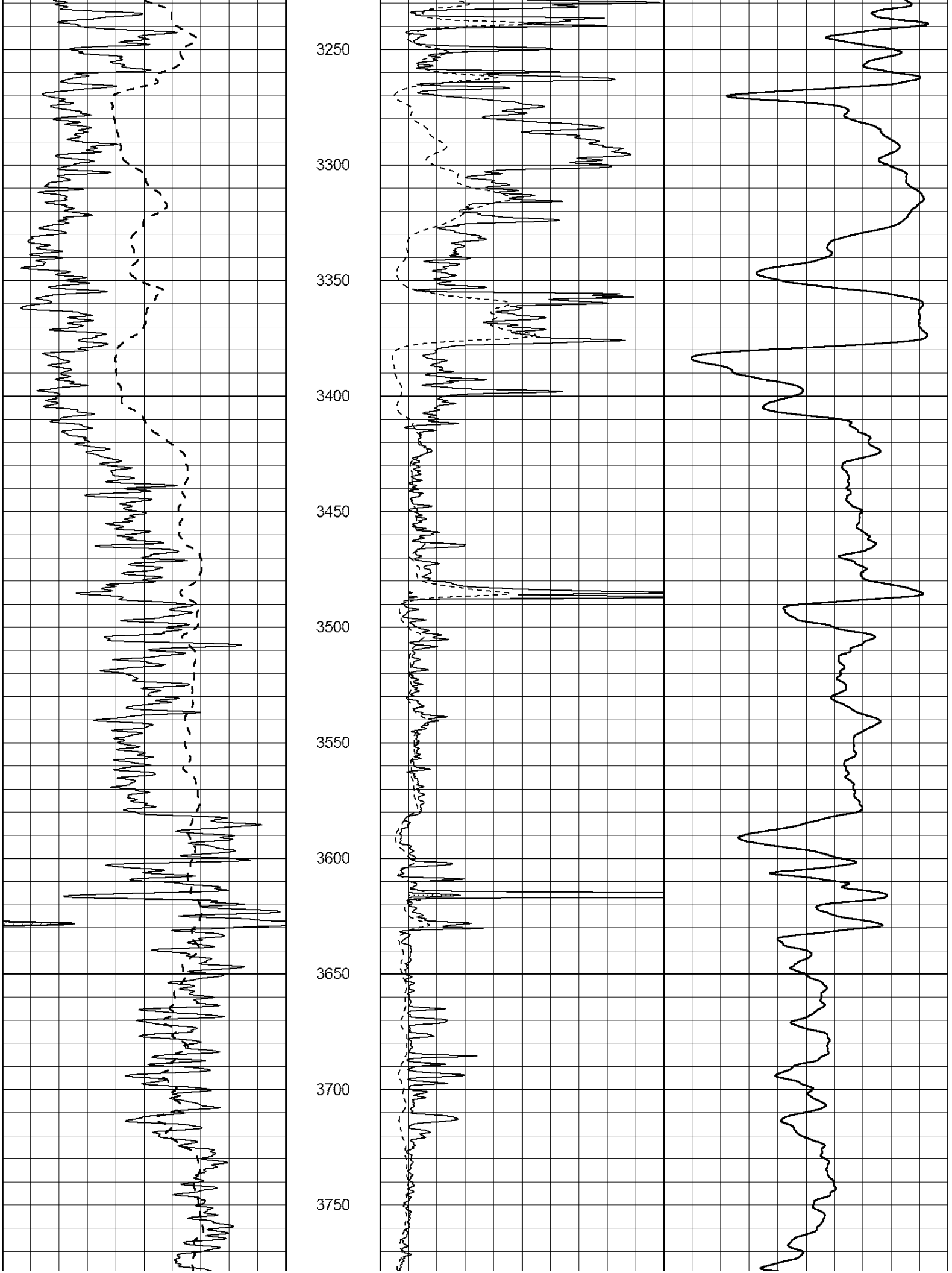
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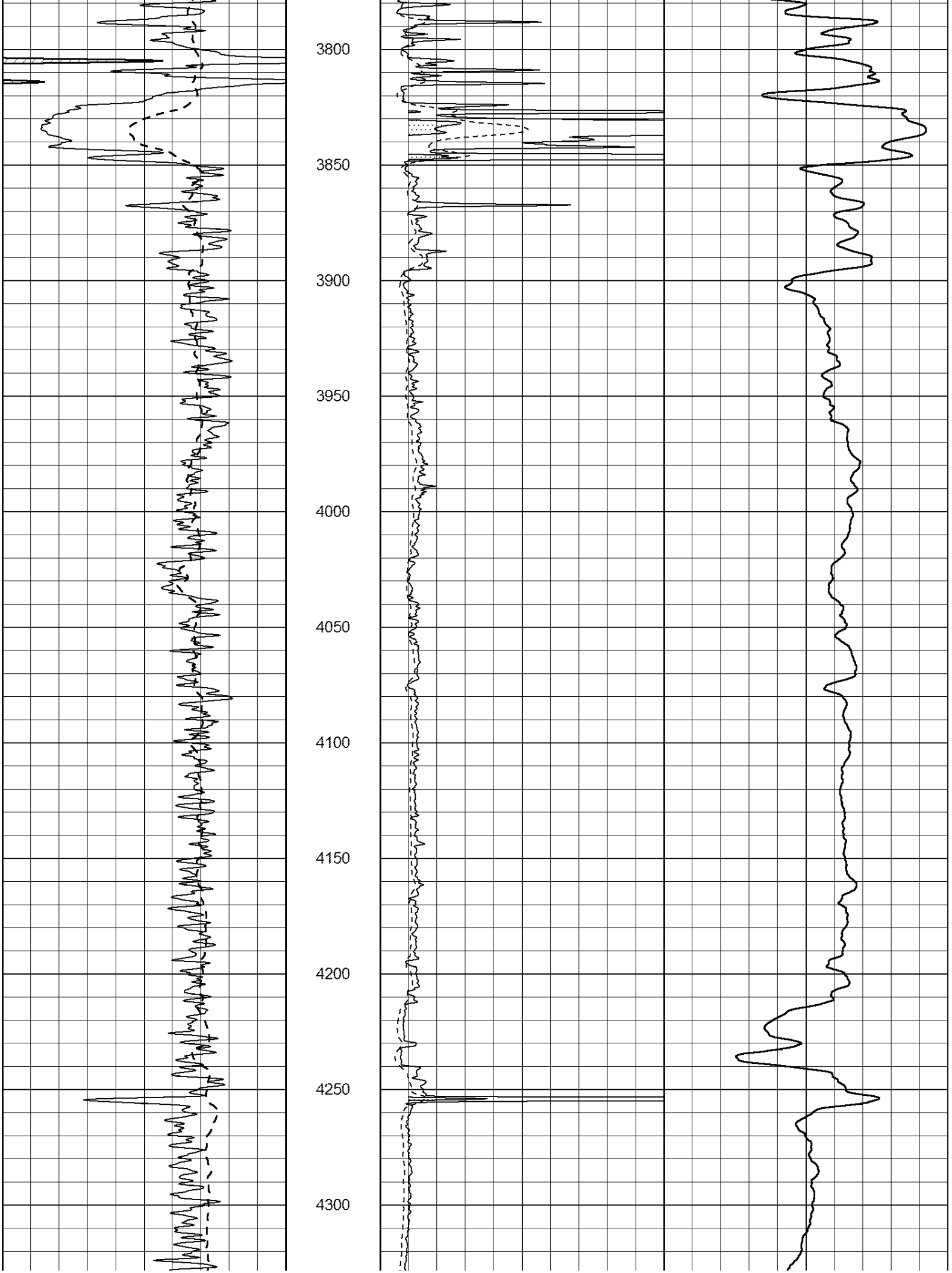
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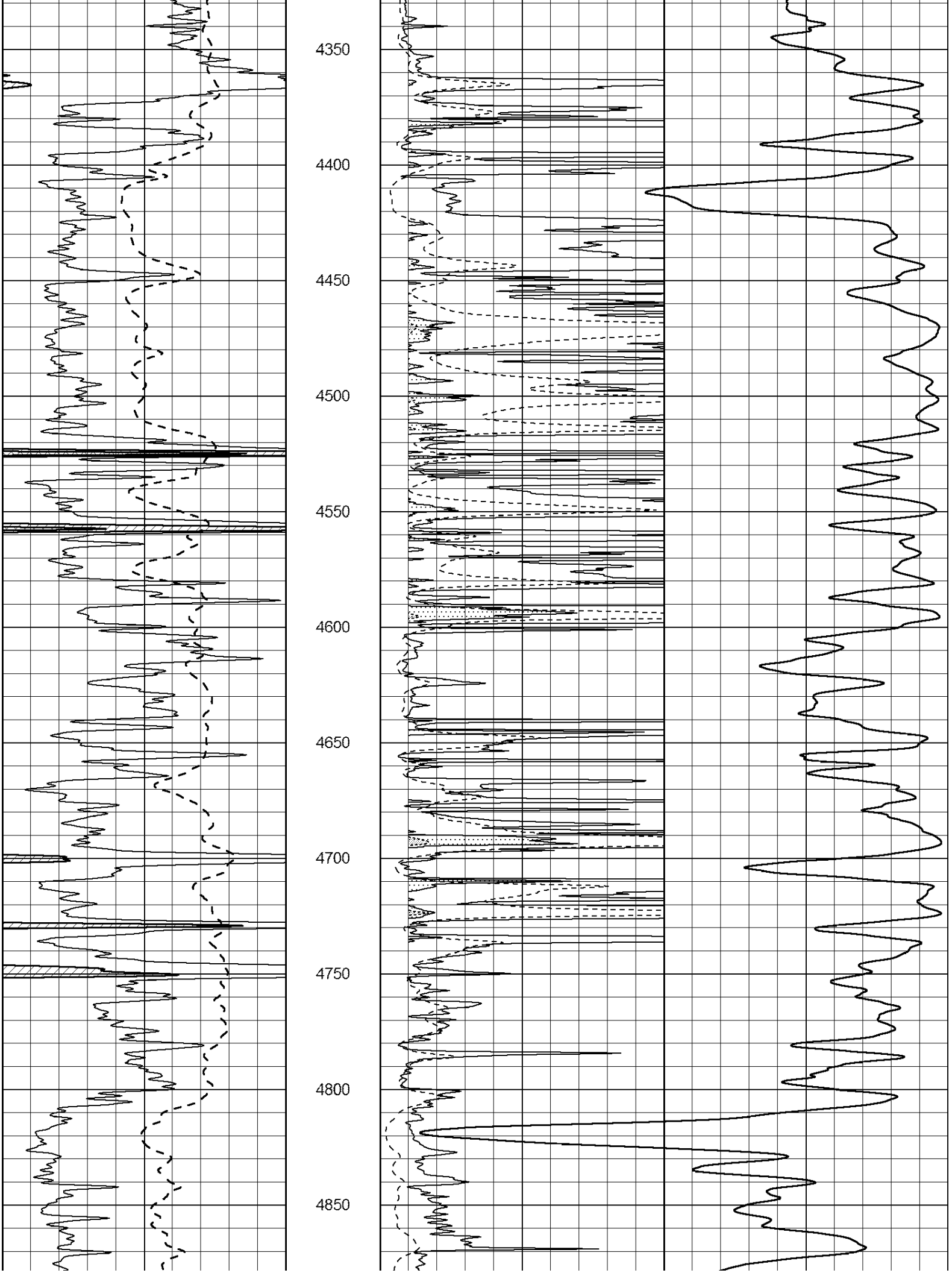
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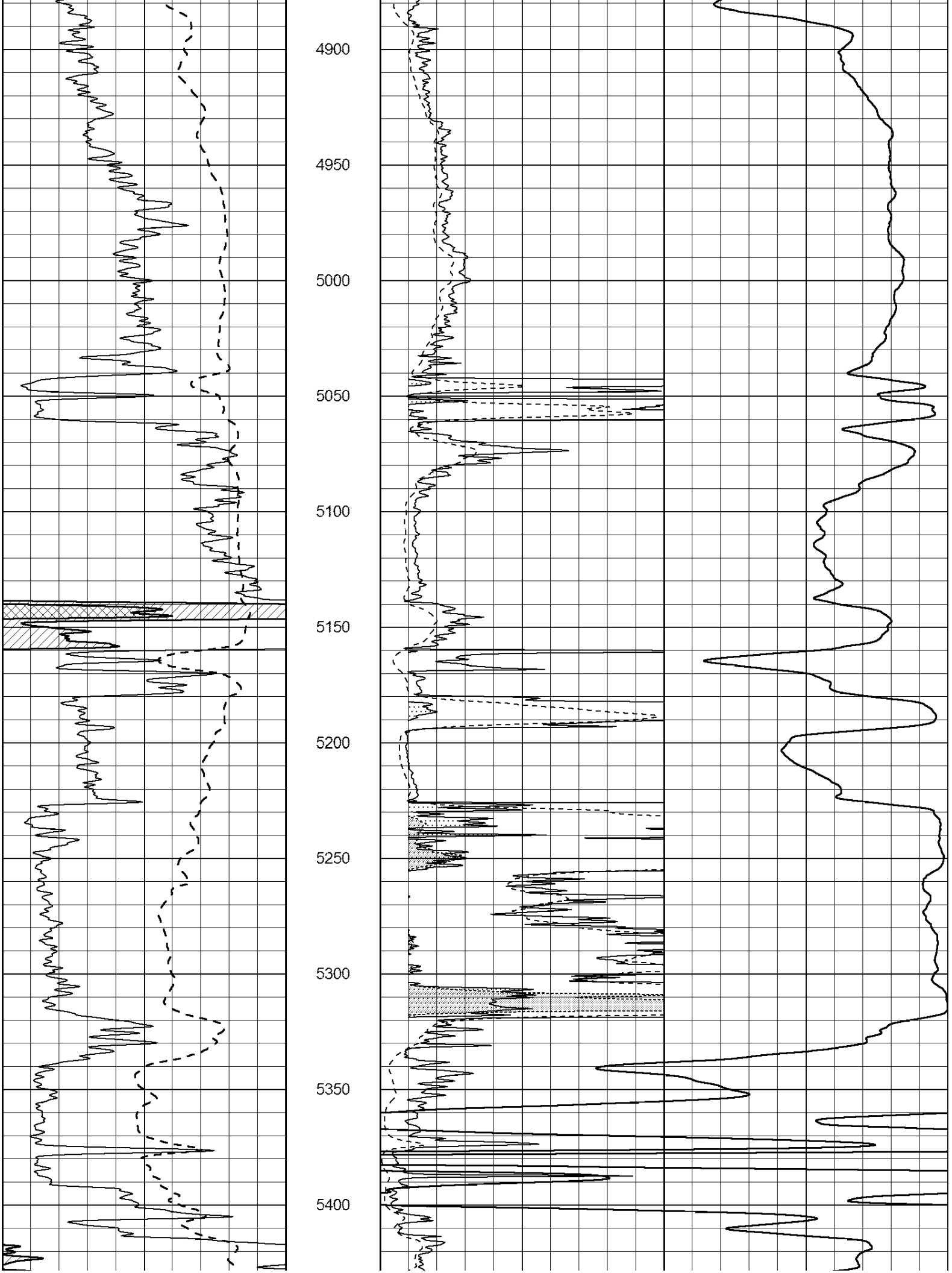
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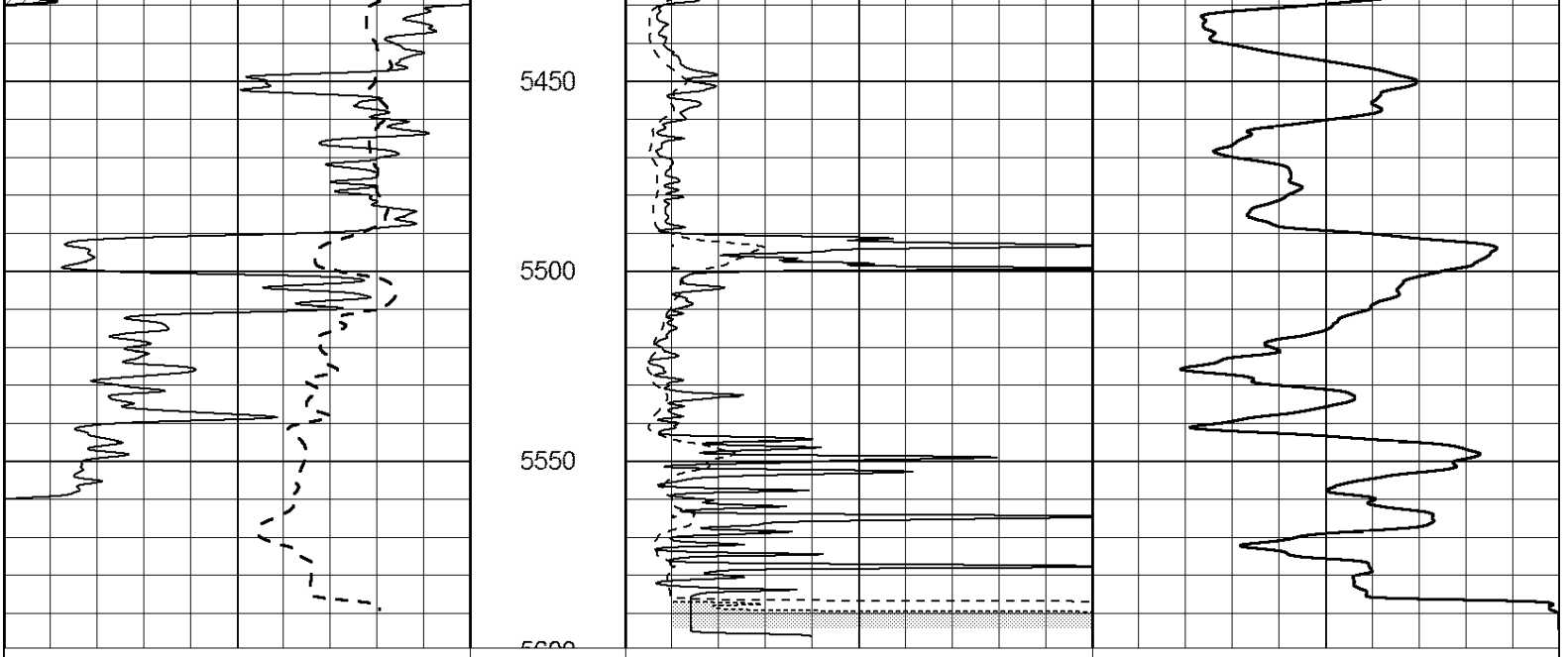

Database File: 011782pe.db
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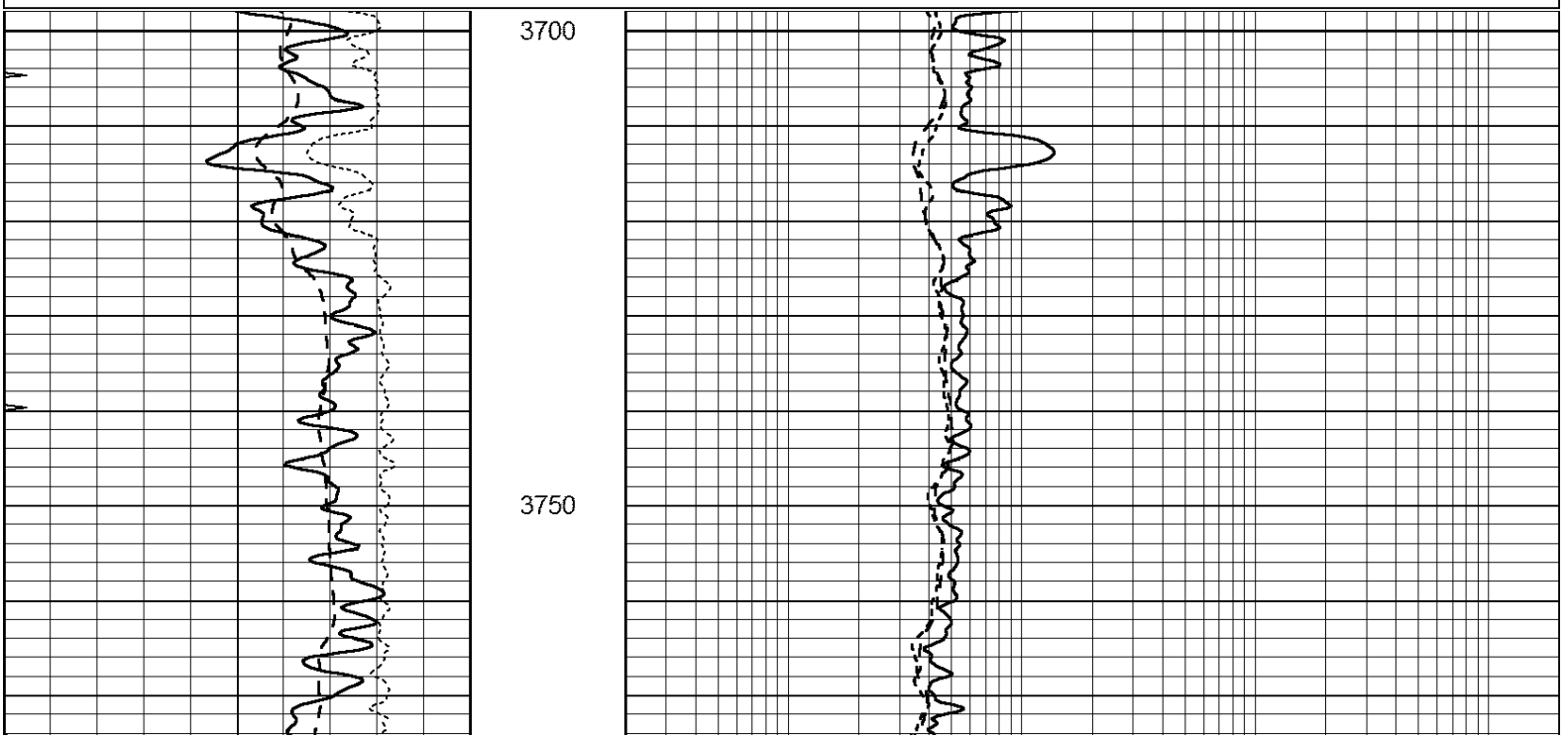
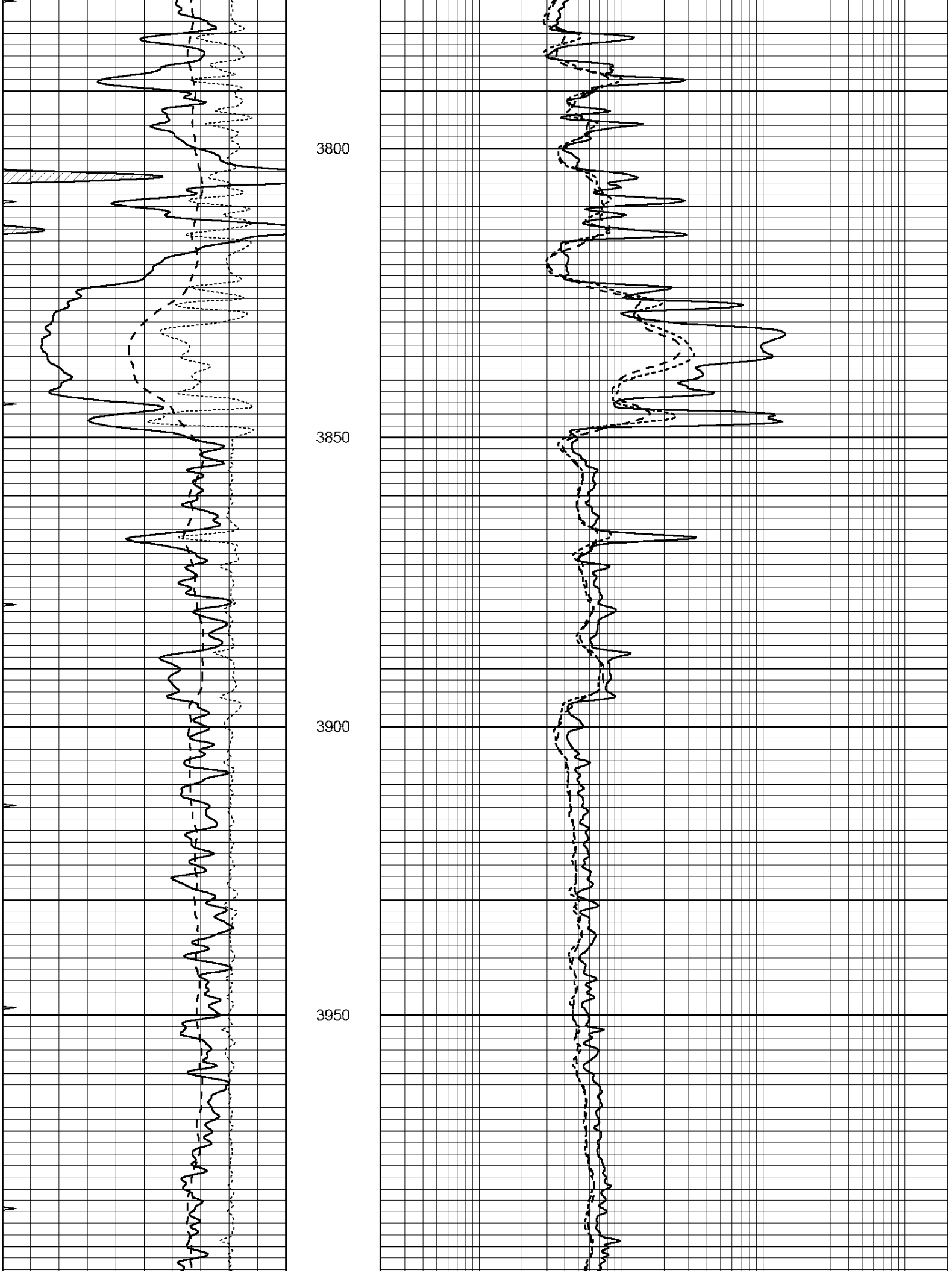
Presentation Format: _dil
Dataset Creation: Mon Sep 16 23:58:07 2013 by Calc Open-Cased 090629
Charted by: Depth in Feet scaled 1:240

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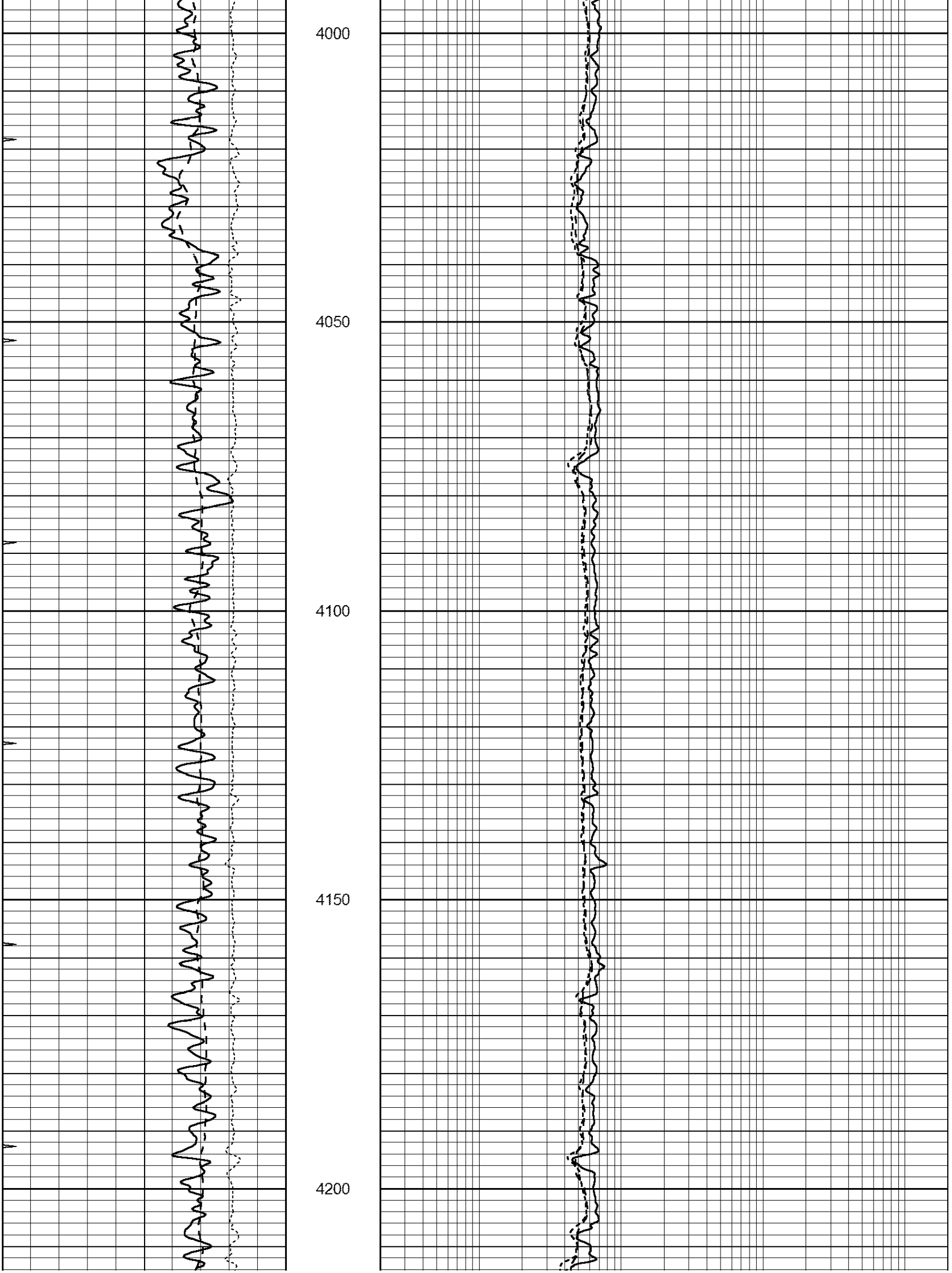
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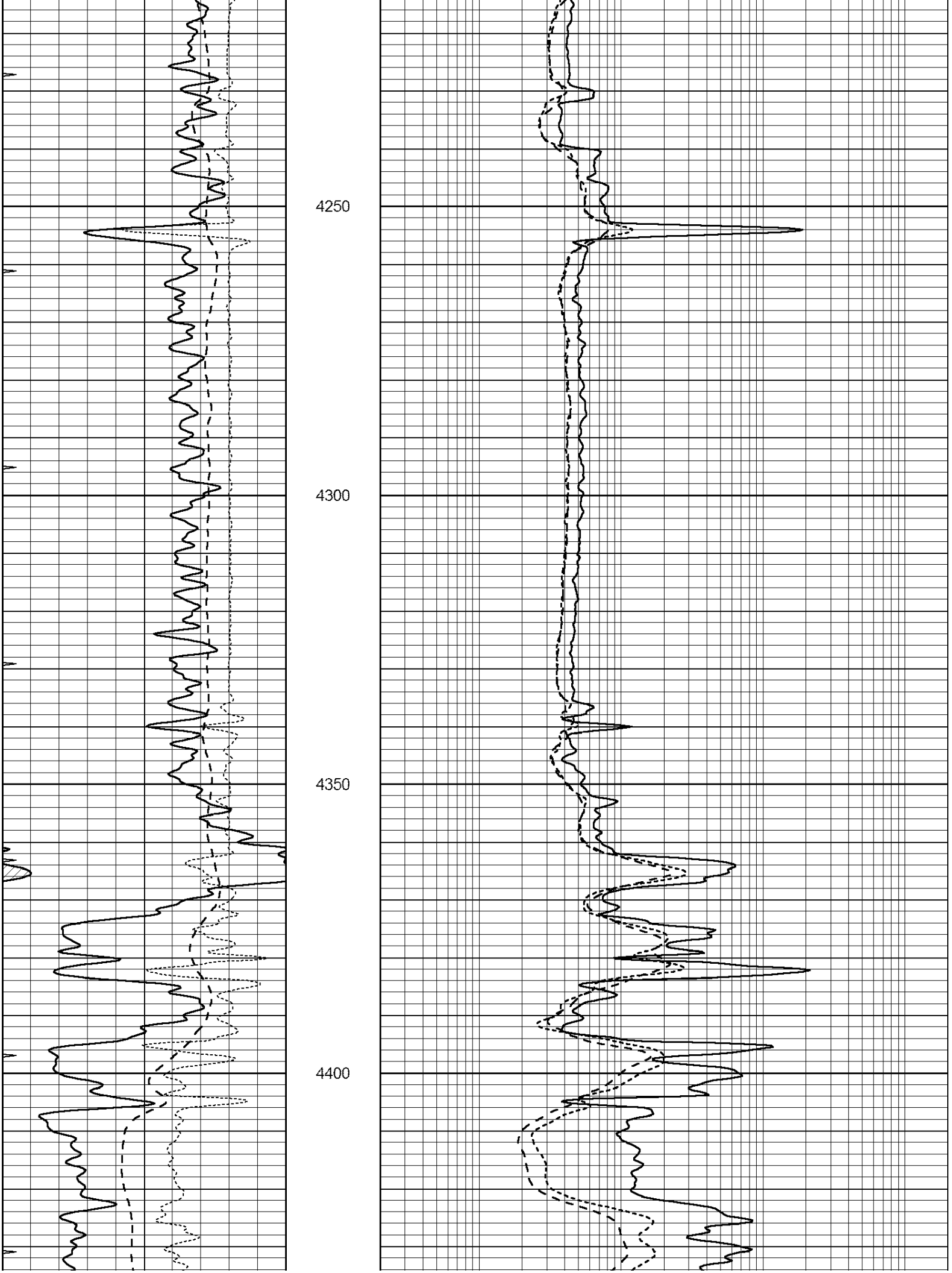
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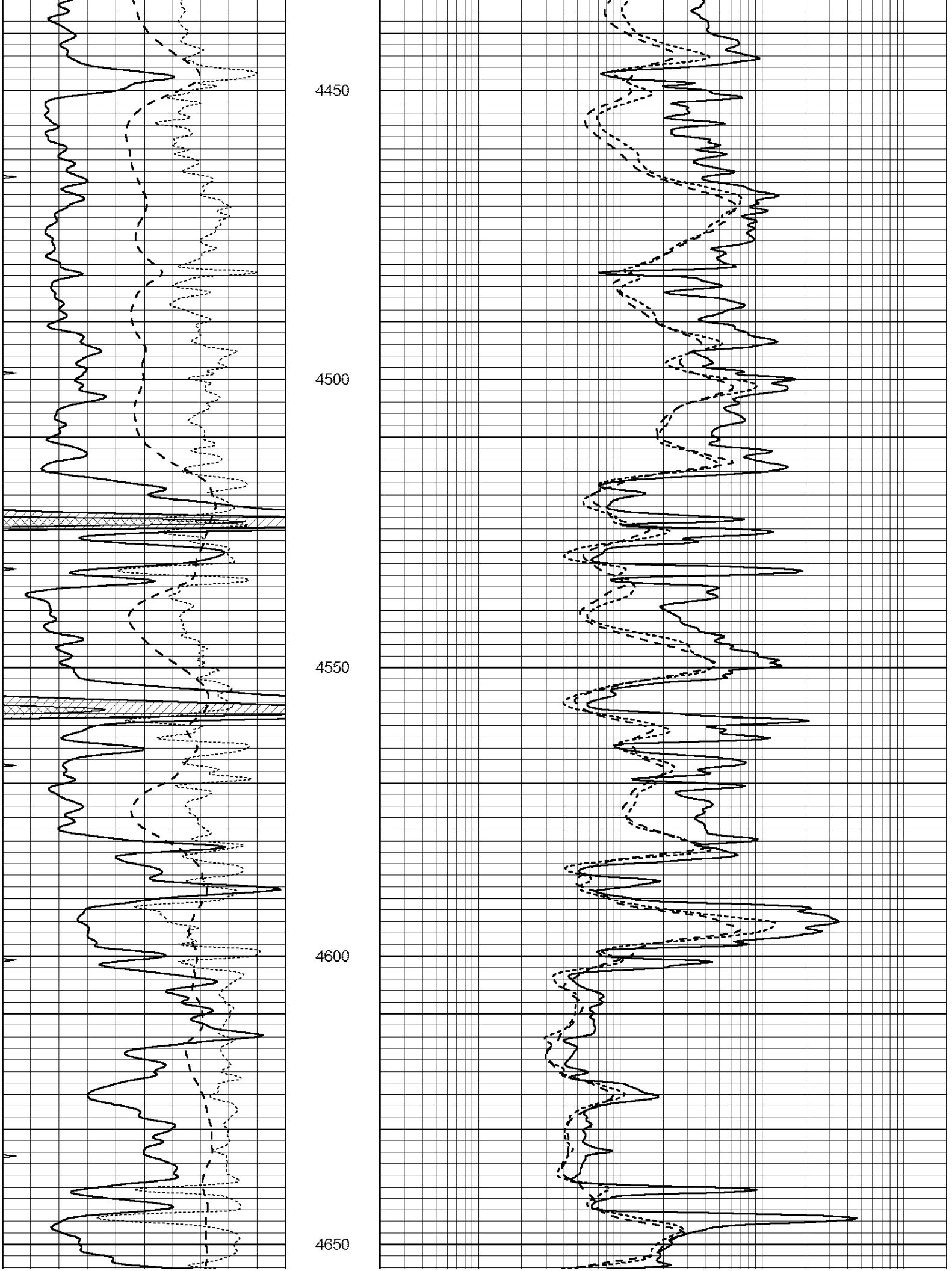
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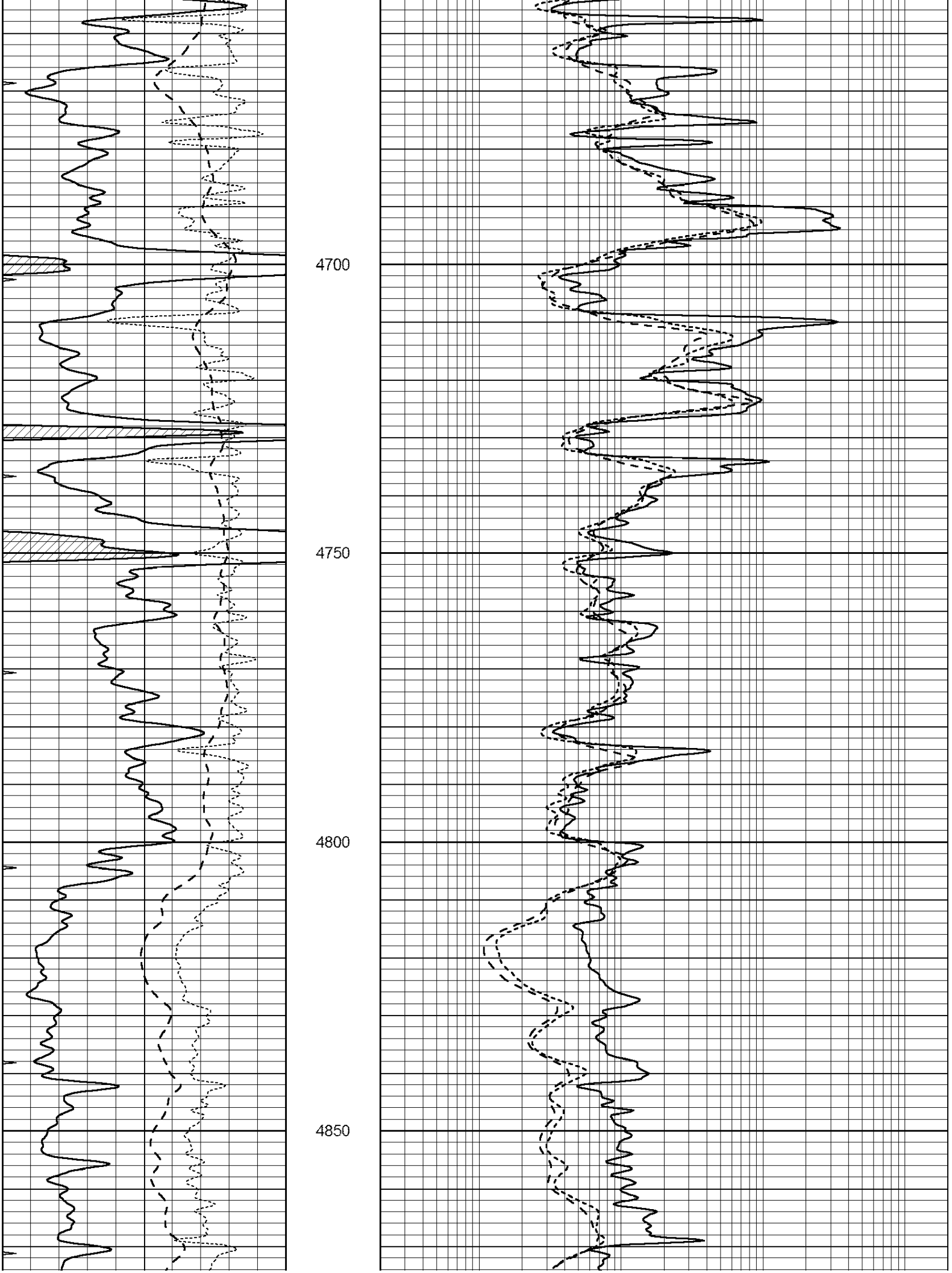
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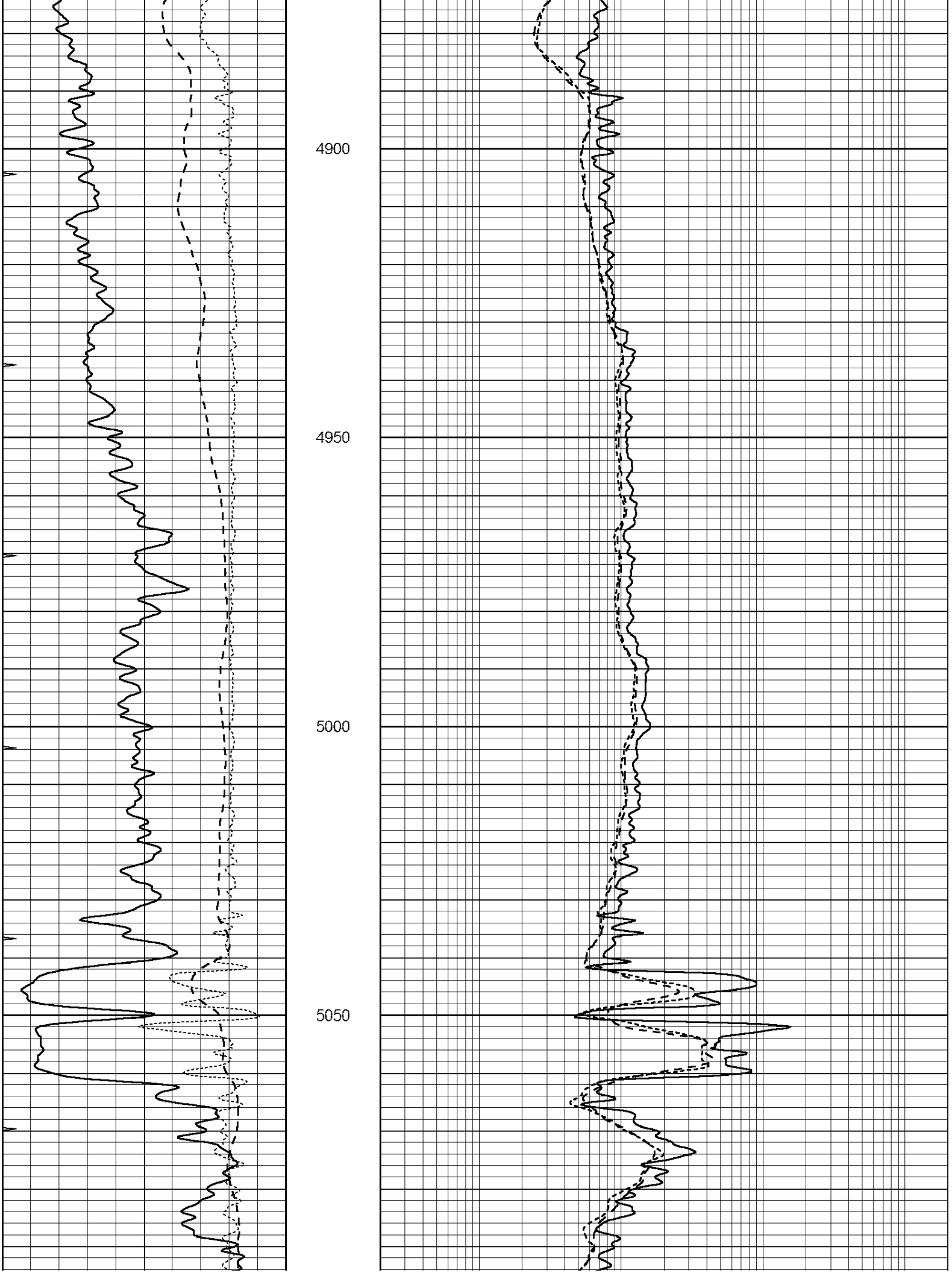
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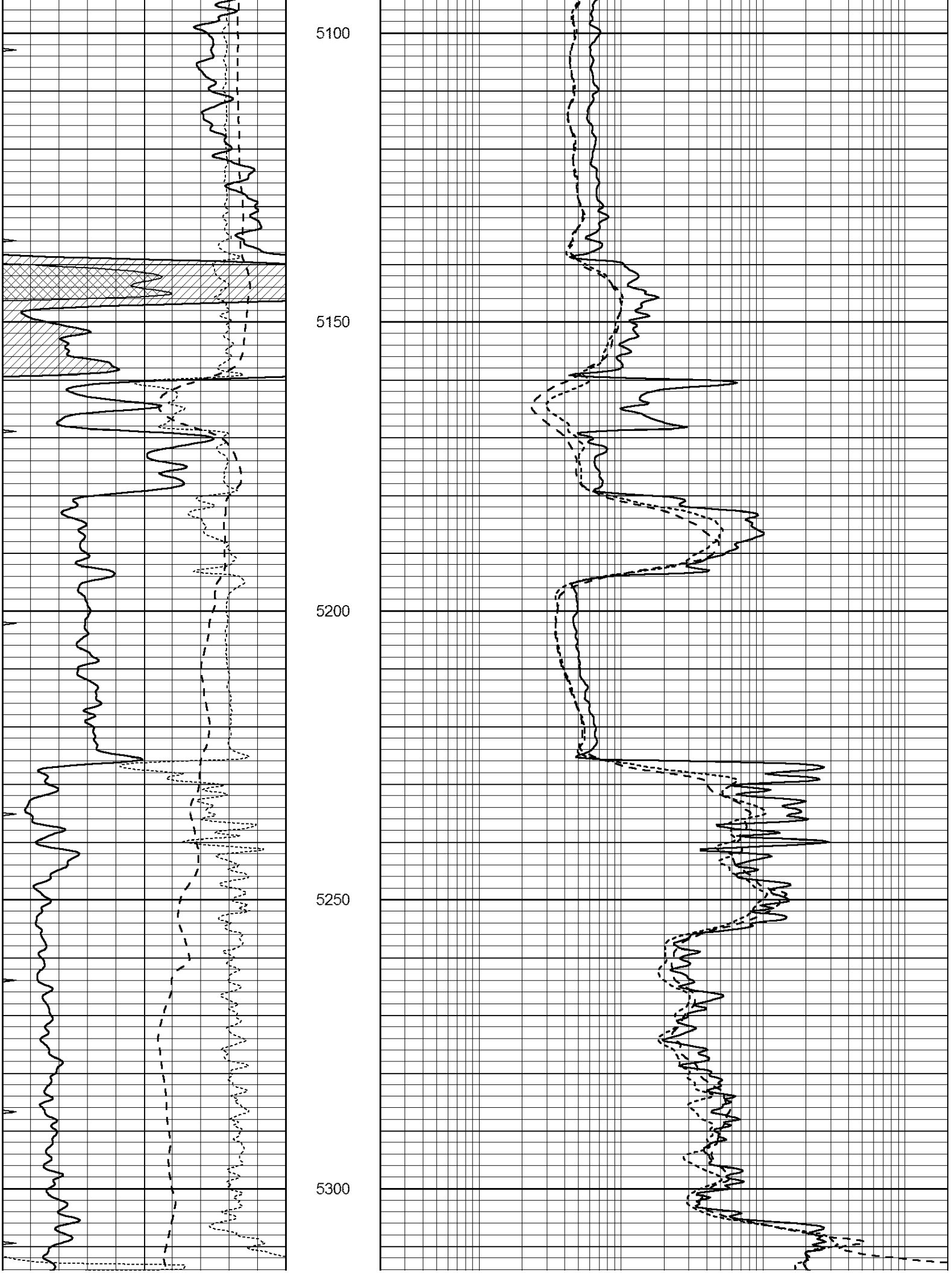
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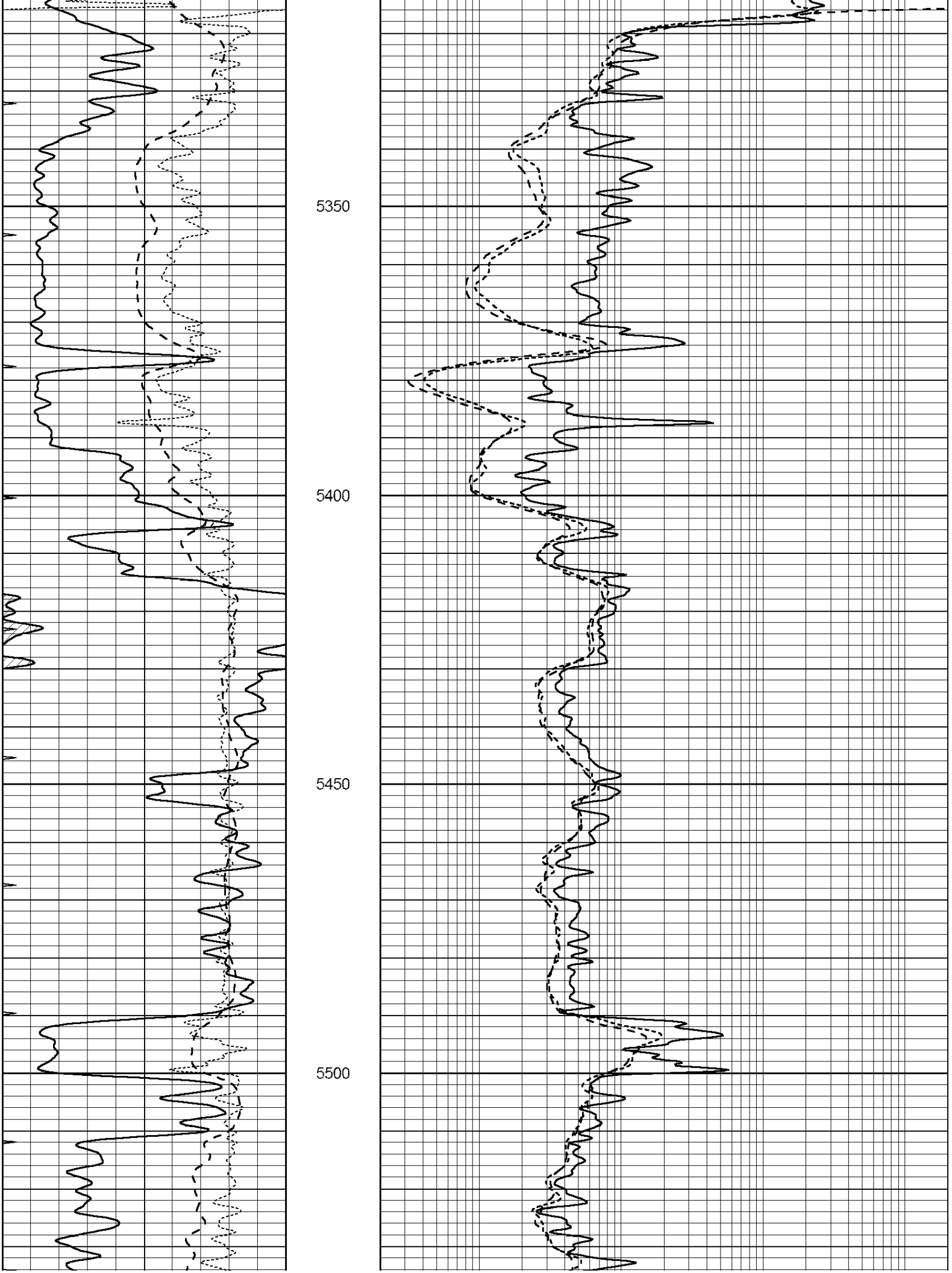
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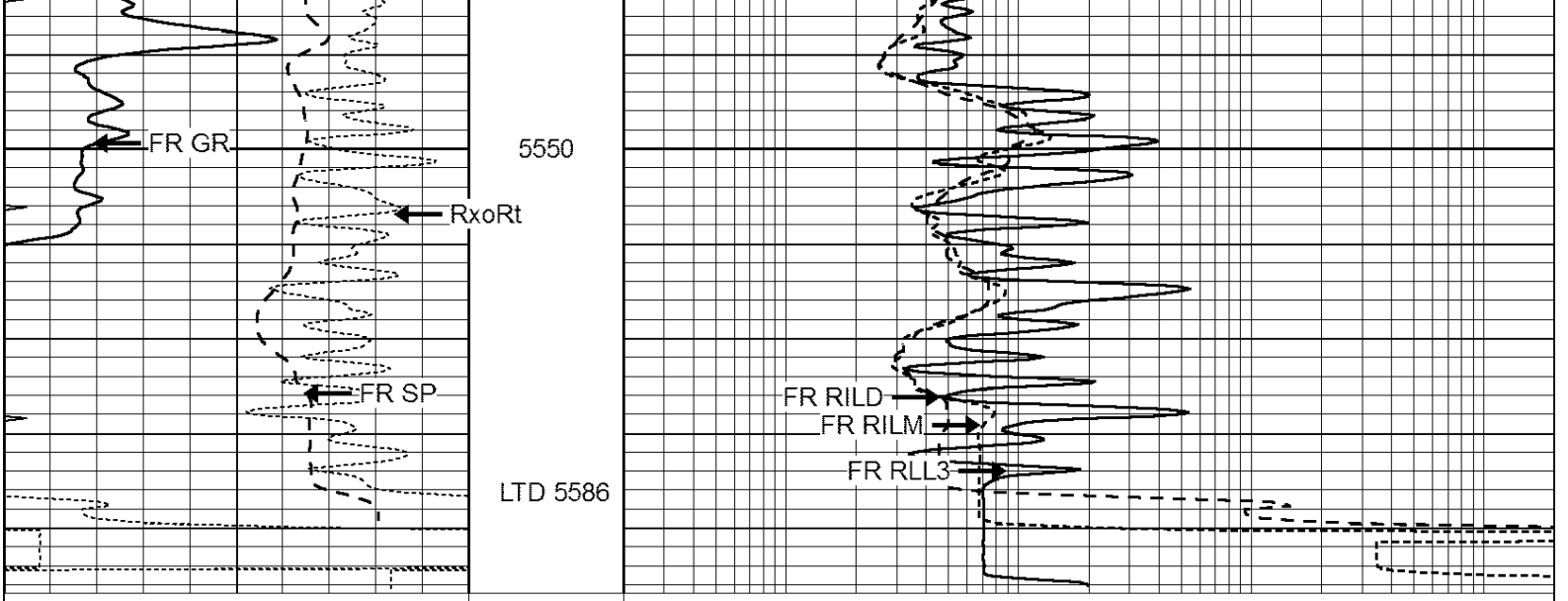


0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

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

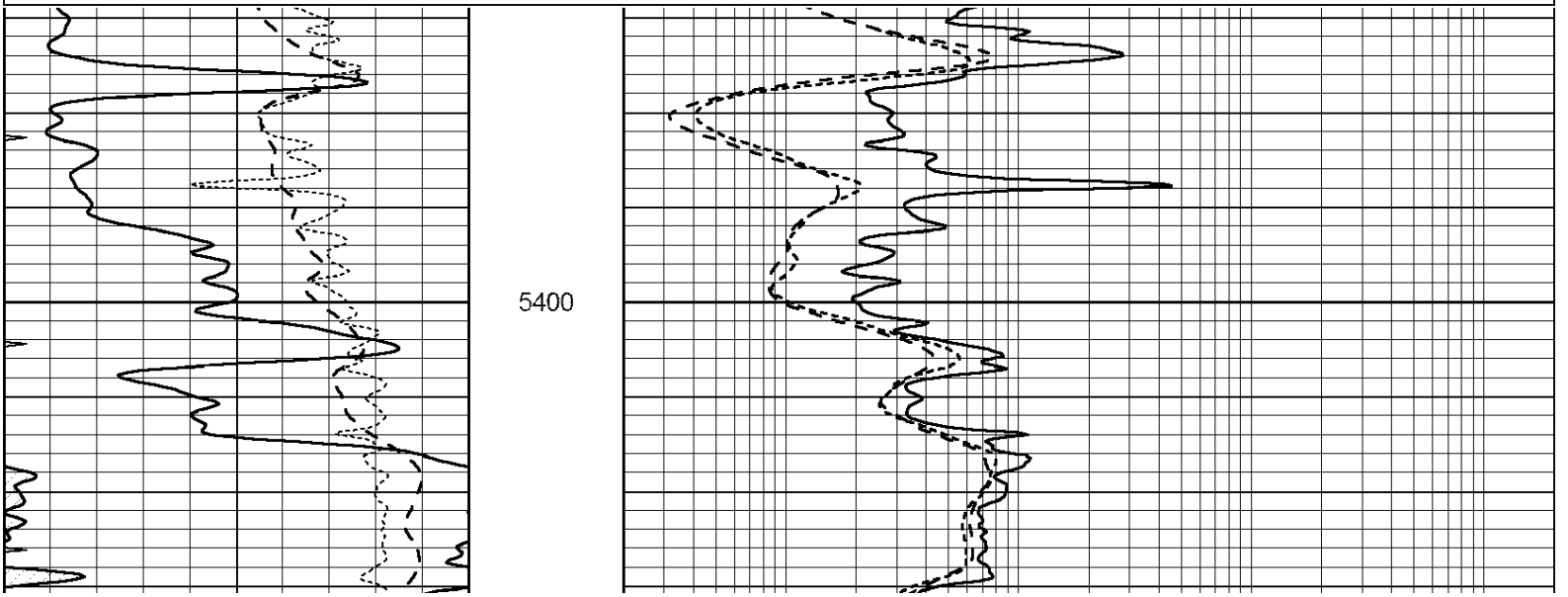
NABORS
COMPLETION & PRODUCTION SERVICES CO.

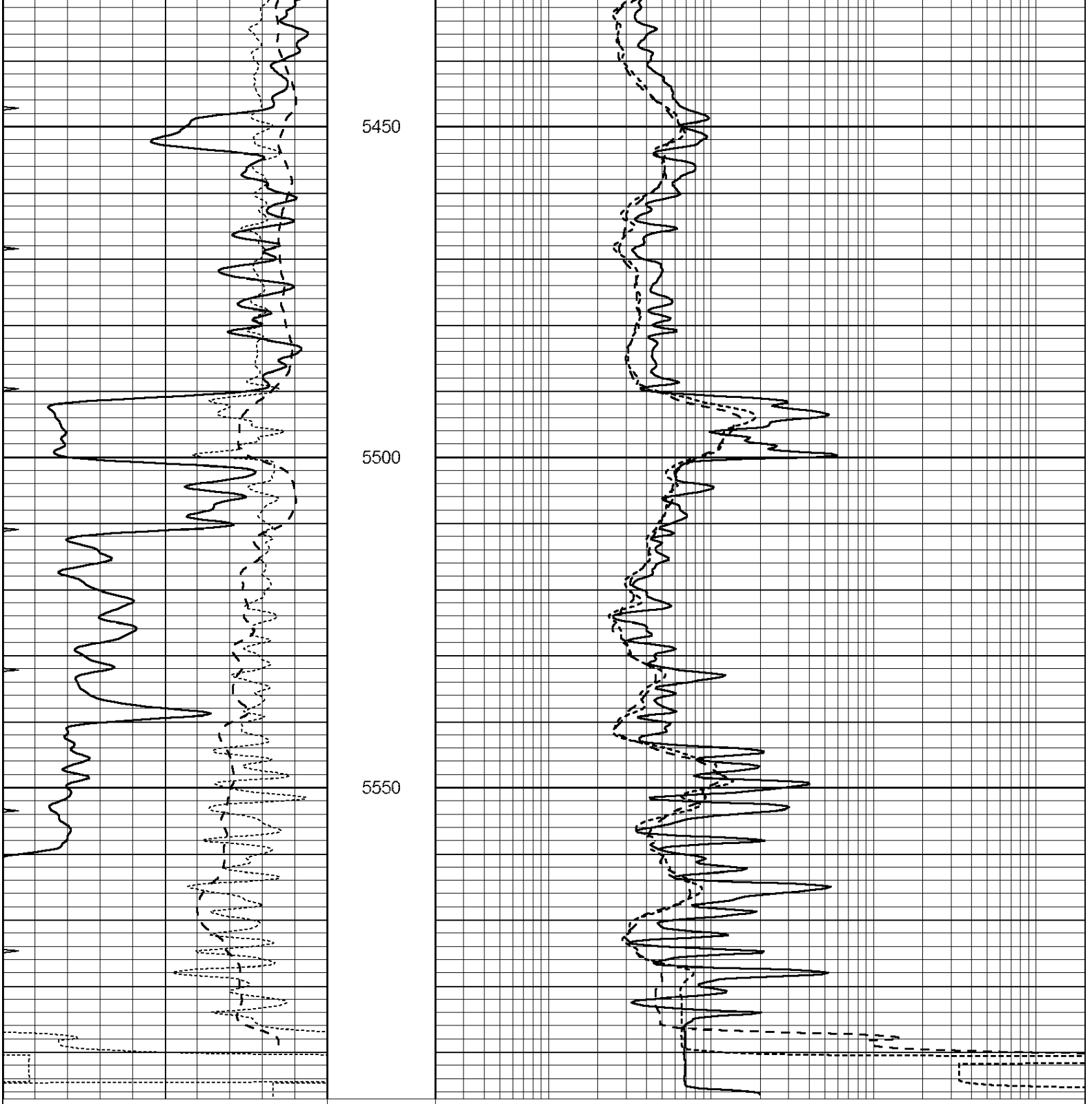
REPEAT SECTION

Database File: 011782pe.db
Dataset Pathname: pass2.2
Presentation Format: _dil
Dataset Creation: Tue Sep 17 00:08:59 2013 by Calc Open-Cased 090629
Charted by: Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

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





0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

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

Calibration Report

Database File: 011782pe.db
Dataset Pathname: pass3.4
Dataset Creation: Tue Sep 17 00:52:56 2013

Dual Induction Calibration Report

Serial-Model:	PROBE8-DILG
Surface Cal Performed:	Fri Aug 01 06:33:19 2008
Downhole Cal Performed:	Mon Jul 28 11:08:27 2008
After Survey Verification Performed:	Mon Jul 28 11:08:27 2008

Surface Calibration

	Readings			References			Results	
Loop:	Air	Loop		Air	Loop		m	b
Deep	0.015	0.648	V	0.000	400.000	mmho/m	632.616	-9.730
Medium	0.029	0.796	V	0.000	464.000	mmho/m	605.049	-17.680
Internal:	Zero	Cal		Zero	Cal		m	b
Deep	0.017	0.657	V	0.000	400.000	mmho/m	625.153	-10.619
Medium	0.016	0.757	V	0.000	464.000	mmho/m	625.992	-9.739

Downhole Calibration

	Readings			References			Results	
	Zero	Cal		Zero	Cal		m'	b'
Deep	0.000	0.000	mmho/m	2.011	405.777	mmho/m	1.000	0.000
Medium	0.000	0.000	mmho/m	7.590	503.393	mmho/m	1.000	0.000
LL3		7.500	V		1500.000	Ohm-m		
		0.000	V		20.000	Ohm-m		
		-7.200	V		3800.000	mmho-m		

After Survey Verification

	Readings			Targets			Results	
	Zero	Cal		Zero	Cal		m'	b'
Deep	0.000	0.000	mmho/m	0.000	0.000	mmho/m	0.000	0.000
Medium	0.000	0.000	mmho/m	0.000	0.000	mmho/m	0.000	0.000
LL3		1.000	Ohm-m		1.000	Ohm-m		
		0.000	Ohm-m		0.000	Ohm-m		
		1.000	mmho-m		1.000	mmho-m		

Litho Density Calibration Report
Serial: 003 Model: PRB

Master Calibration — Performed Thu Jul 26 15:13:22 2007

	Background	Magnesium	Aluminum	Sandstone	
Window 1	2128.0	9601.6	3737.0	10737.0	cps
Window 2	1913.5	7519.1	3114.0	8210.1	cps
Window 3	1668.2	5026.8	2370.0	5373.3	cps
Window 4	492.7	497.5	492.3	491.1	cps
Long Space	0.0	5605.6	1200.5	6296.6	cps
Short Space	2.2	2279.3	1489.7	2489.1	cps
Rho		1.7100	2.5900	1.3800	g/cc
Pe		0.0000	2.5700	1.5500	

Rib Angle	: 44.6	Rib Slope	: 0.985	Density/Spine Ratio	: 0.550
Spine Angle	: 74.6	Spine Slope	: 3.623	Spine Intercept	: -19.4

Before Survey Verification — Performed Wed Dec 31 18:00:00 1969

Window 1	0.0	0.0	0.0	0.0	cps
Window 2	0.0	0.0	0.0	0.0	cps
Window 3	0.0	0.0	0.0	0.0	cps
Window 4	0.0	0.0	0.0	0.0	cps
Long Space	0.0	0.0	0.0	0.0	cps
Short Space	0.0	0.0	0.0	0.0	cps

Short Space	0.0	0.0	0.0	0.0	cps
Measured Rho		0.0000	0.0000	0.0000	g/cc
Measured Correction		0.0000	0.0000	0.0000	g/cc
Measured Pe			0.0000	0.0000	

After Survey Verification — Performed Wed Dec 31 18:00:00 1969

Window 1	0.0	0.0	0.0	0.0	cps
Window 2	0.0	0.0	0.0	0.0	cps
Window 3	0.0	0.0	0.0	0.0	cps
Window 4	0.0	0.0	0.0	0.0	cps
Long Space	0.0	0.0	0.0	0.0	cps
Short Space	0.0	0.0	0.0	0.0	cps
Measured Rho		0.0000	0.0000	0.0000	g/cc
Measured Correction		0.0000	0.0000	0.0000	g/cc
Measured Pe			0.0000	0.0000	

Compensated Neutron Calibration Report

Serial Number: 6I
Tool Model: G

CALIBRATION

Detector	Readings		Target		Normalization
Short Space	1.00	cps	1.00	cps	1.0000
Long Space	1.00	cps	1.00	cps	1.0000

PRE-SURVEY VERIFICATION

	Detector	Readings		Measured		Target	
1)	Short Space		cps				
	Long Space		cps		pu		pu
2)	Short Space		cps				
	Long Space		cps		pu		
3)	Short Space		cps				
	Long Space		cps		pu		

POST-SURVEY VERIFICATION

	Detector	Readings		Measured		Target	
1)	Short Space		cps				
	Long Space		cps		pu		pu
2)	Short Space		cps				
	Long Space		cps		pu		pu
3)	Short Space		cps				
	Long Space		cps		pu		pu

Gamma Ray Calibration Report

Serial Number: #8
Tool Model: OPEN
Performed: Tue Jun 18 19:34:11 2013

Calibrator Value: 150.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 175.0 cps

Sensitivity:	0.8371	GAPI/cps