NABORS
COMPLETION & PRODUCTION SERVICES CO.

DUAL INDUCTION LOG

Company CHIEFTAIN OIL COMPANY, INC.
Well MOLZ #21
Field
County BARBER State KANSAS

Location: API # : 15-007-24057-0000
2300' FNL & 340' FEL
NW - SE - SE - NE
SEC 11 TWP 35S RGE 12W

Other Services
CDL/CNL
PE/MEL

Permanent Datum GROUND LEVEL Elevation 1387
Log Measured From KELLY BUSHING 13' A.G.L.
Drilling Measured From KELLY BUSHING

Elevation
K.B. 1400
D.F. 1398
G.L. 1387

Date	9/29/13		
Run Number	ONE		
Depth Driller	5610		
Depth Logger	5611		
Bottom Logged Interval	5609		
Top Log Interval	00		
Casing Driller	13 3/8" @ 338'		
Casing Logger	334		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 3800 PPM	
Density / Viscosity	9.3 / 62		
pH / Fluid Loss	9.5 / 7.6		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	1.5 @ 85F		
Rmf @ Meas. Temp	1.13 @ 85F		
Rmc @ Meas. Temp	1.8 @ 85F		
Source of Rmf / Rmc	MEASUREMENT		
Rm @ BHT	0.98 @ 130F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom			
Maximum Recorded Temperature	130F		
Equipment Number	4010		
Location	HAYS, KANSAS		
Recorded By	IAN MABB		
Witnessed By	ARDEN RATZLAFF		

Fold Here >>>>

Comments

THANK YOU FOR USING NABORS, HAYS, KS. (785) 628-6395

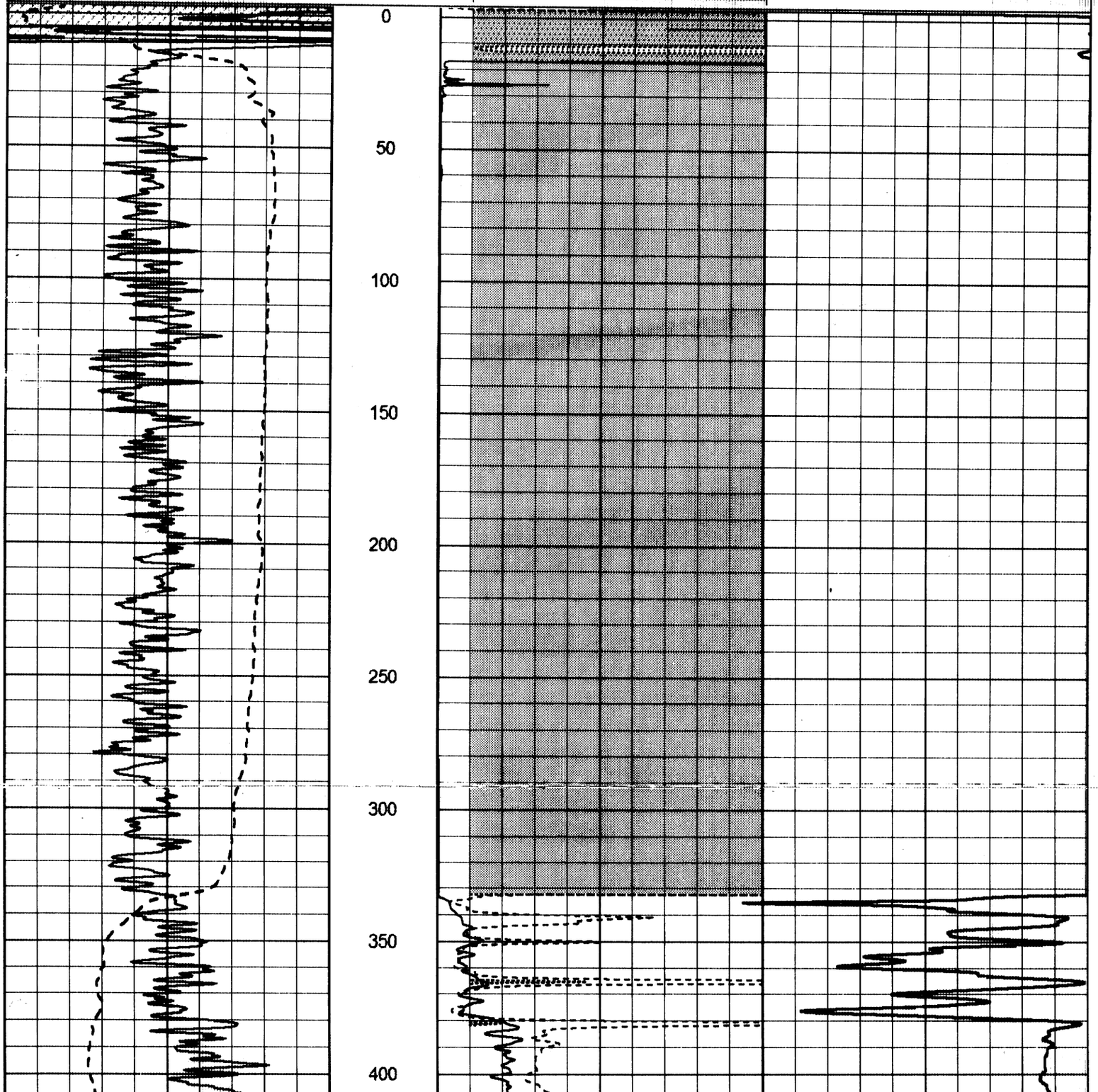
DIRECTIONS:

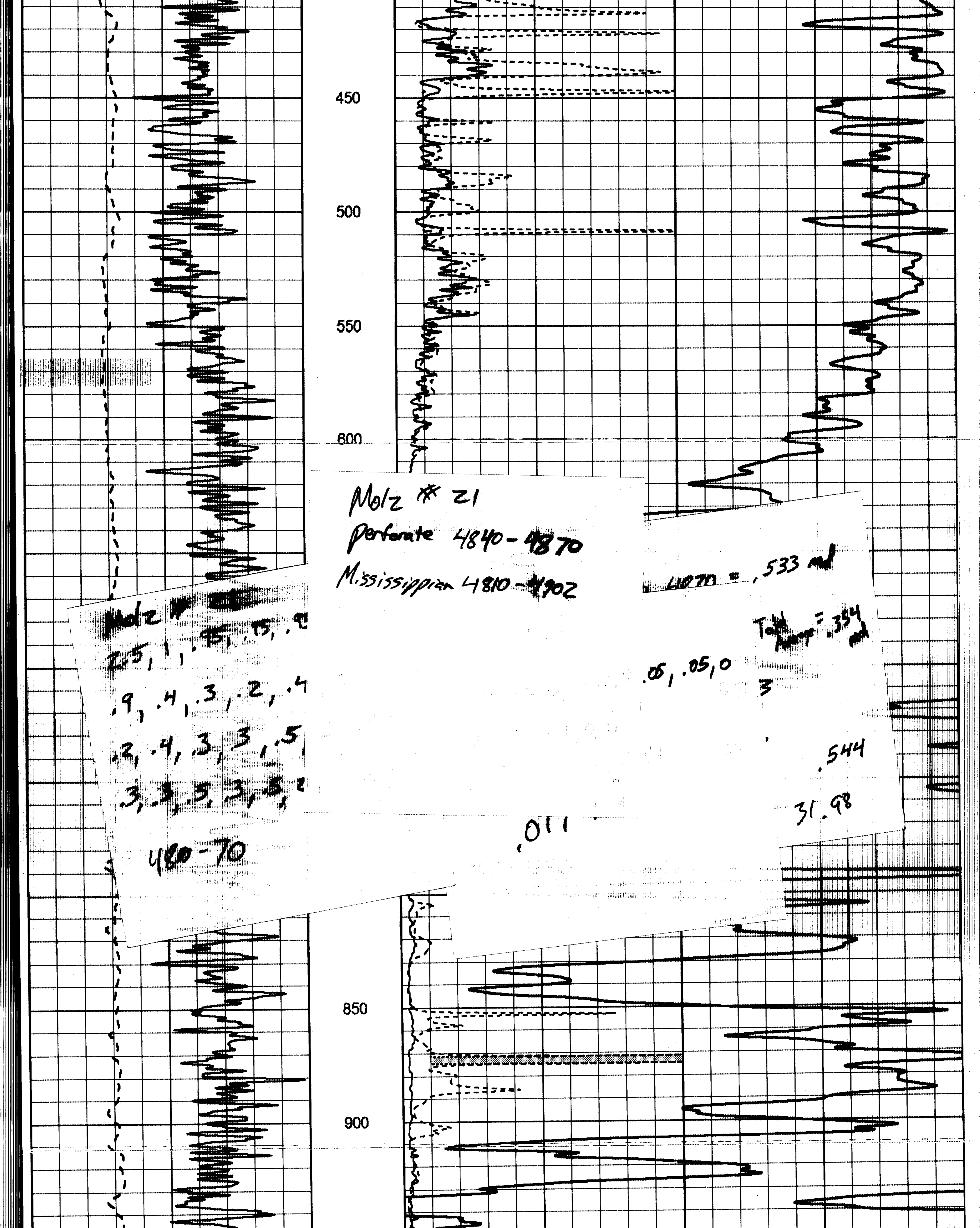
HARDTNER, KS - 3 1/2 MILES EAST TO CLAIRMONT RD - 1/4 MILE NORTH WEST INTO

Database File:	011788pe.db
Dataset Pathname:	pass3.3
Presentation Format:	_dil2
Dataset Creation:	Sun Sep 29 08:56:25 2013 by Calc Open-Cased 090629
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

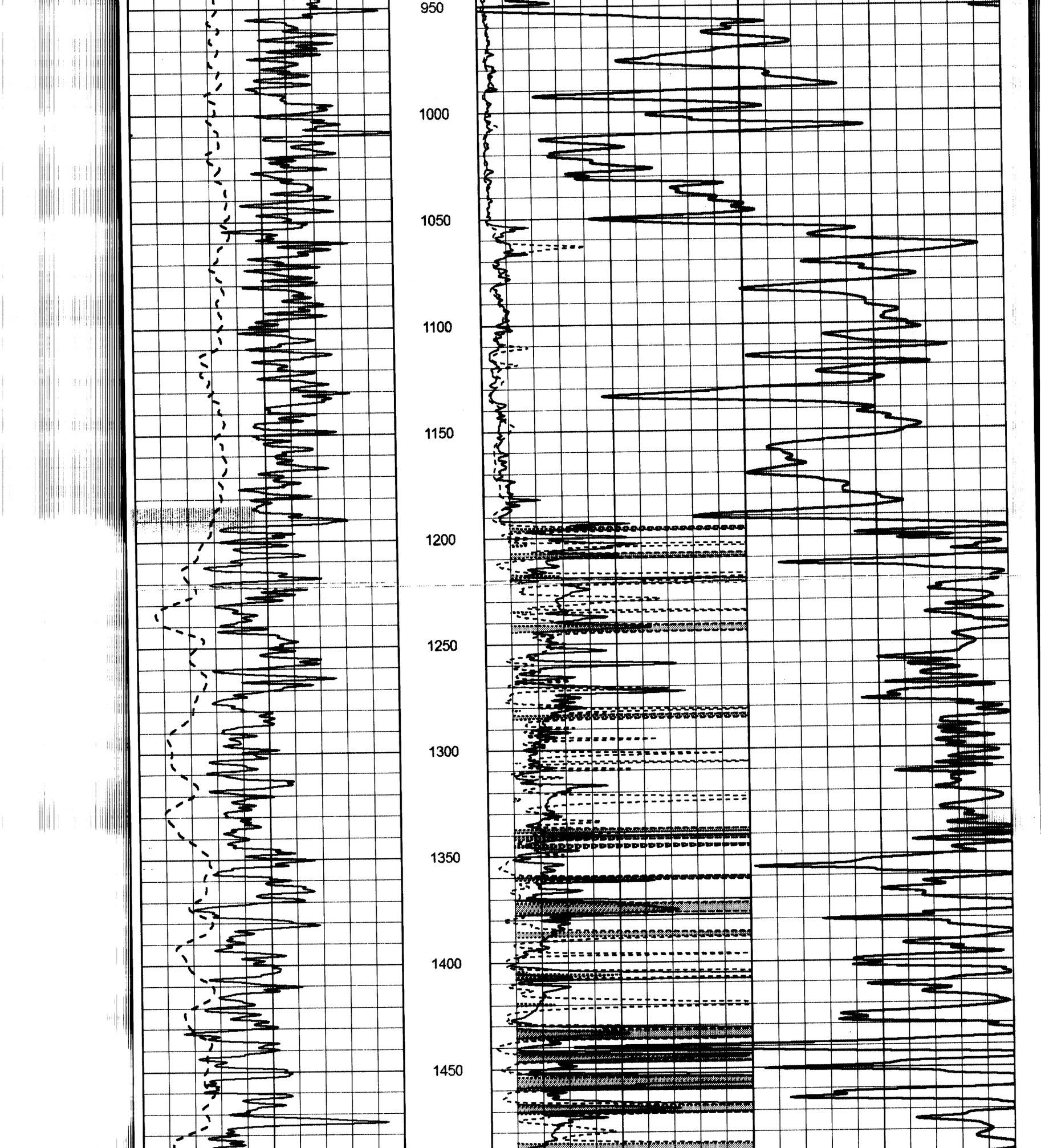




Molz # 21
Perforate 4840-4870
Mississippian 4810-4902

Molz #
2.5, 1, .75, .75, .
.9, .4, .3, .2, .4
.2, .4, .3, .3, .5
.3, .3, .5, .3, .5,
480-70

4870 = .533 md
Total Average = .354 md
.05, .05, 0
3
.544
31.98
.011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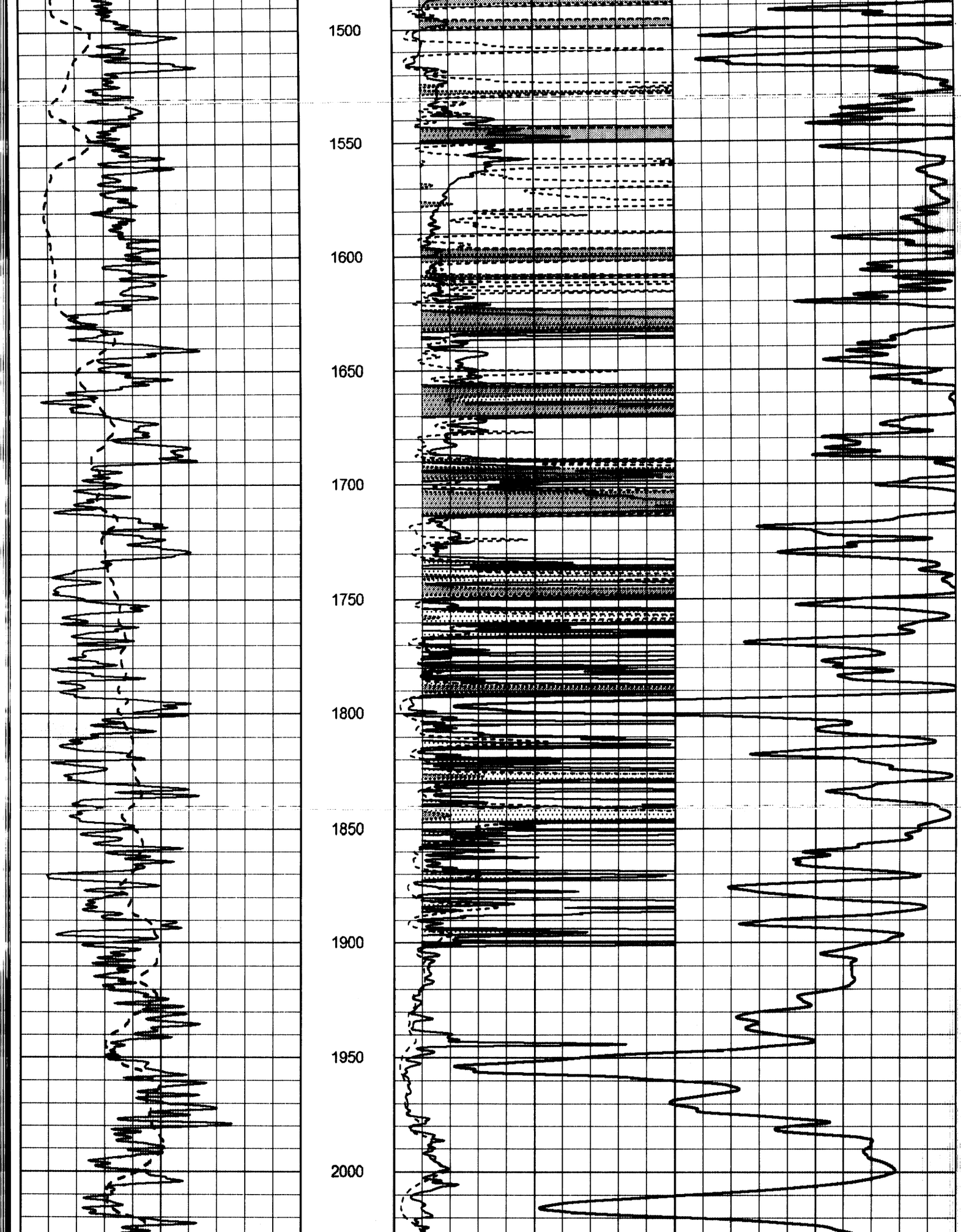
1200
1250
1300
1350
1400
1450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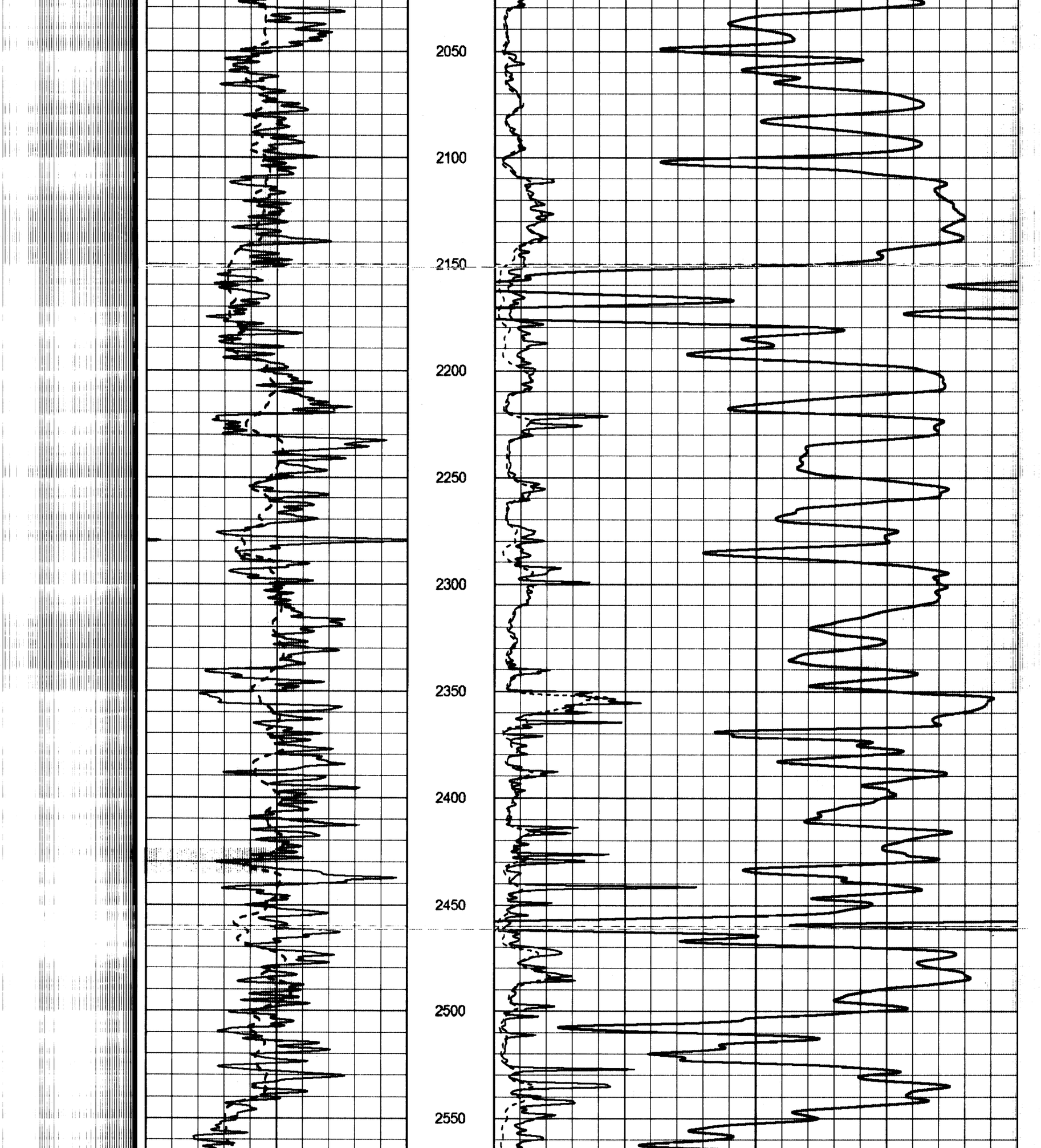
1700
1750
1800
1850
1900
1950
2000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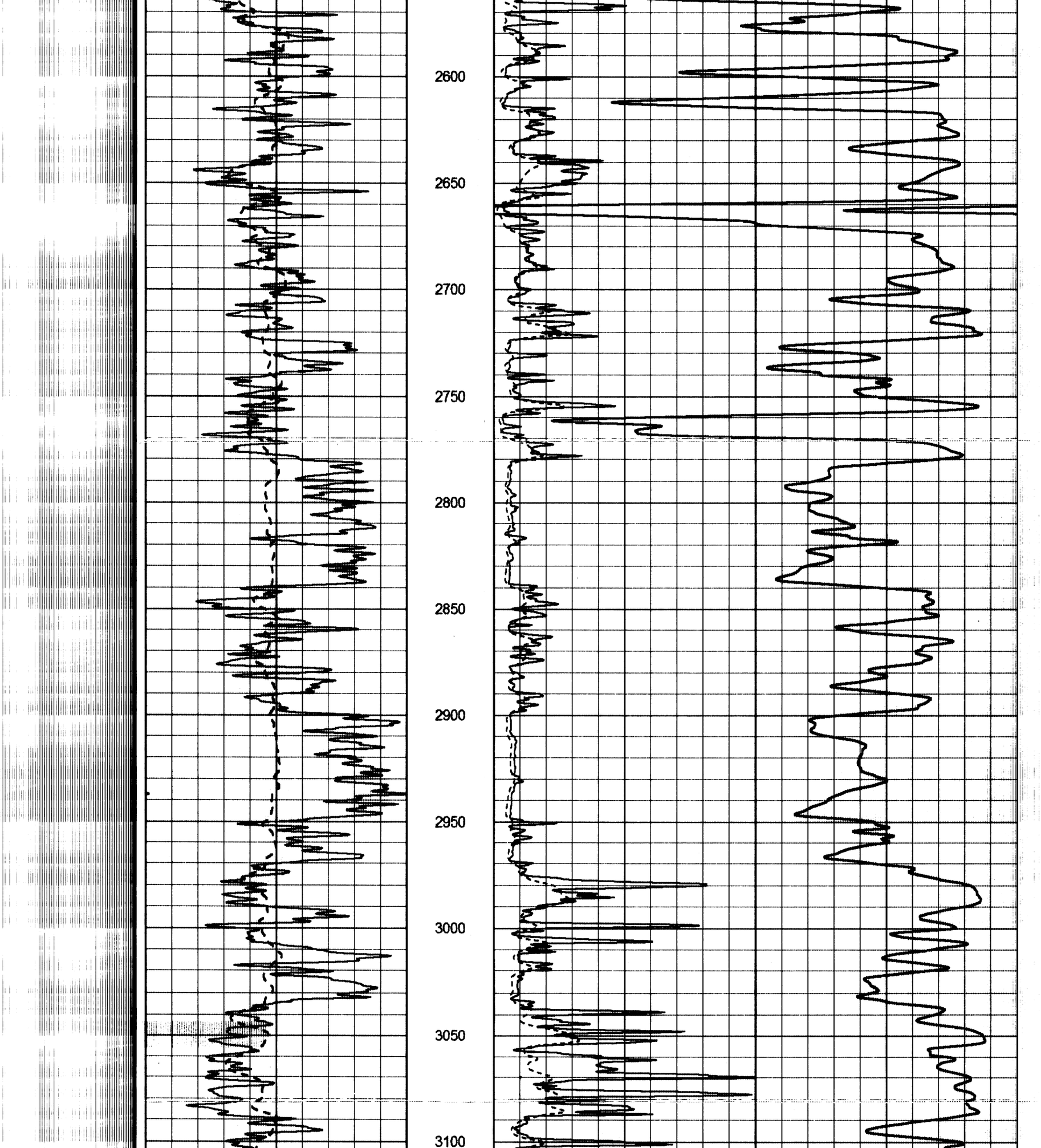
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2900
2950
3000
3050
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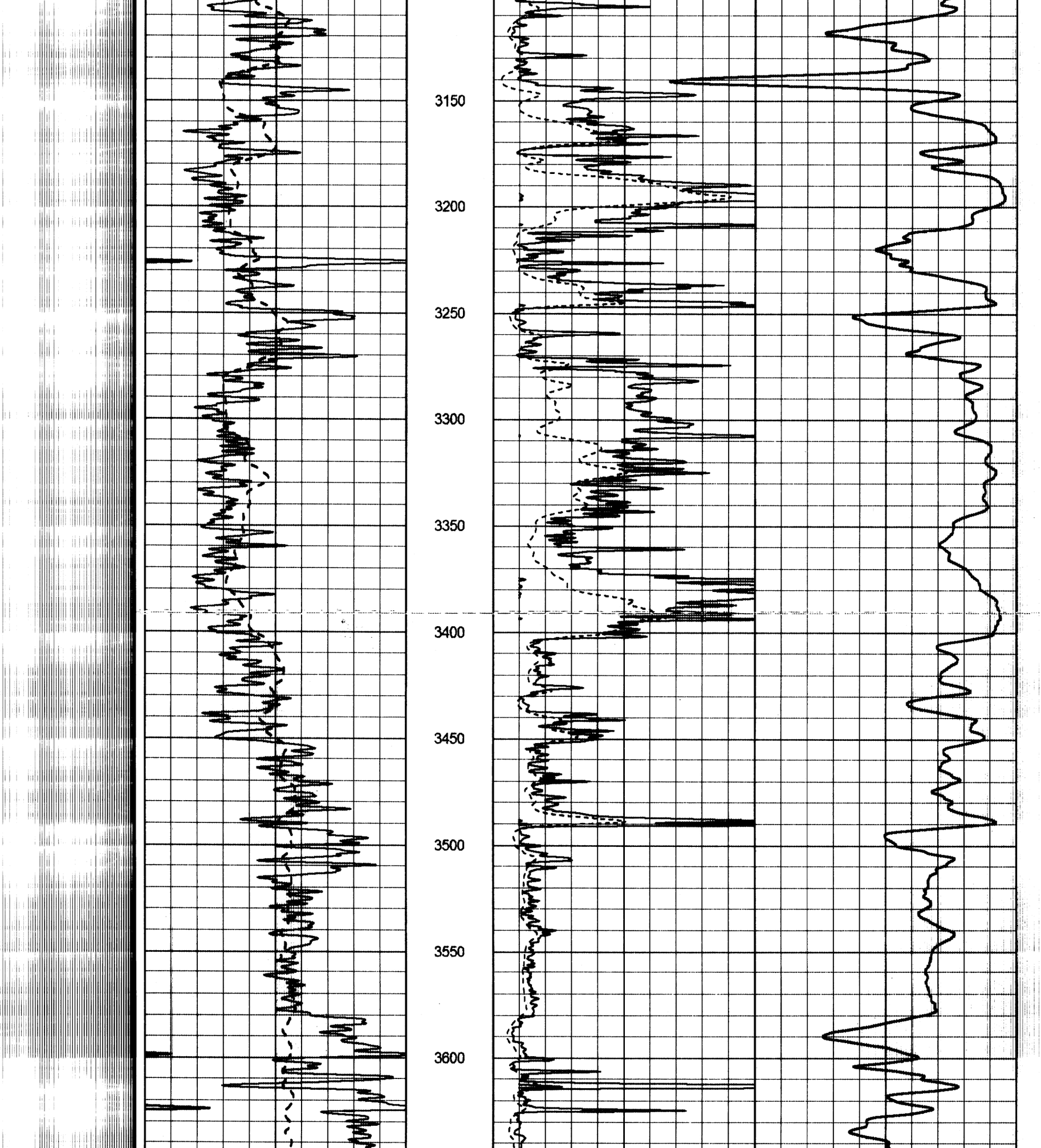
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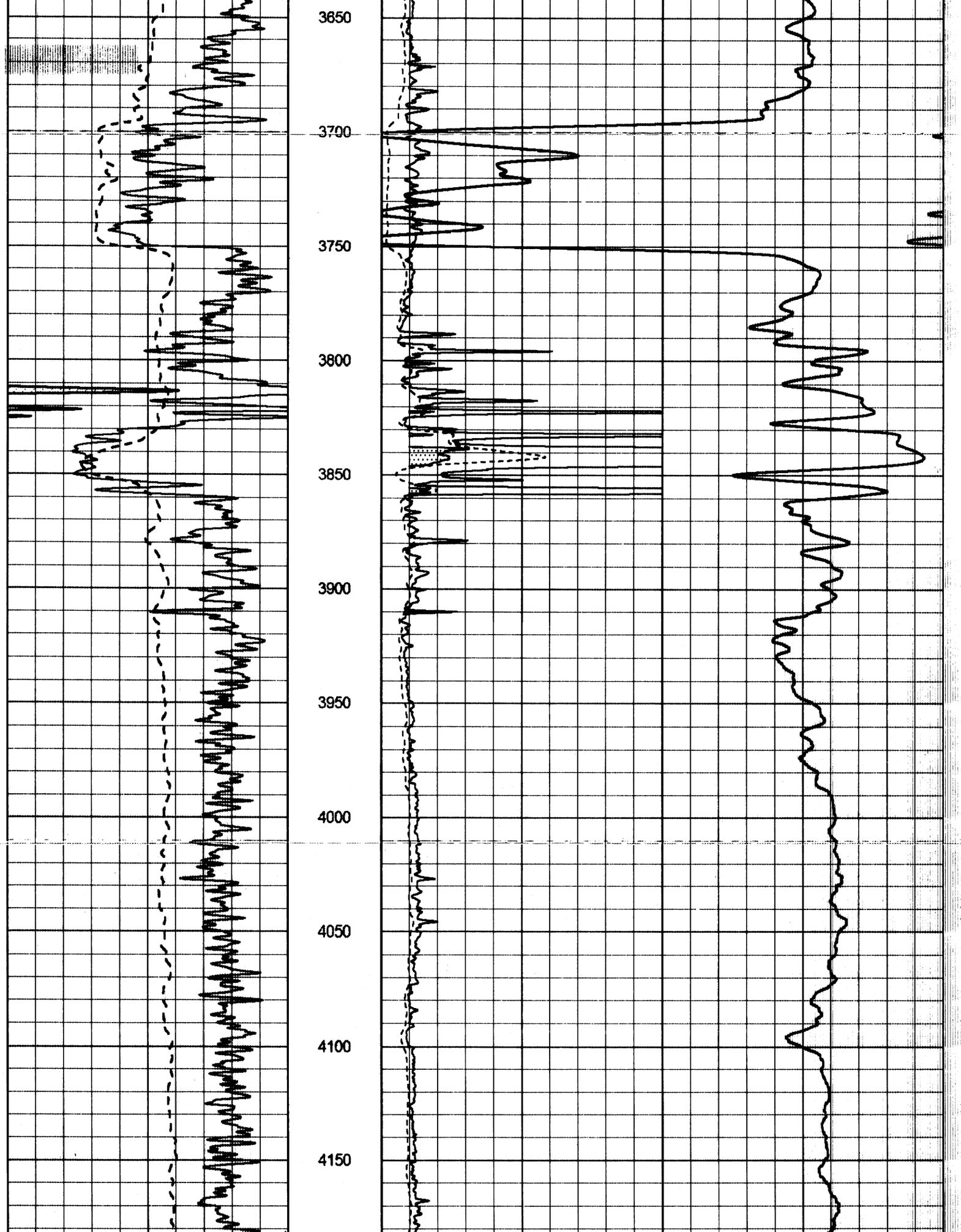
3600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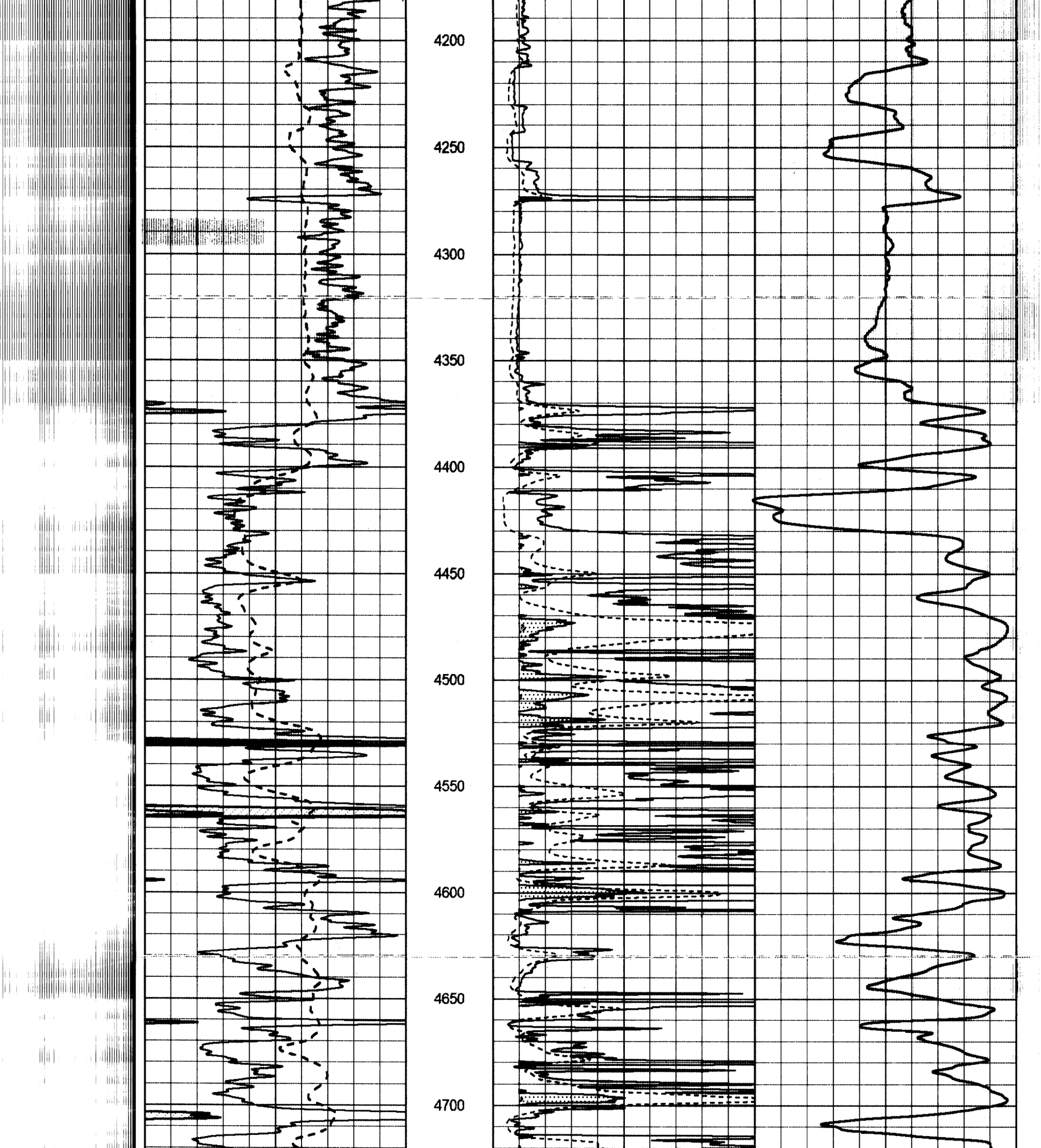
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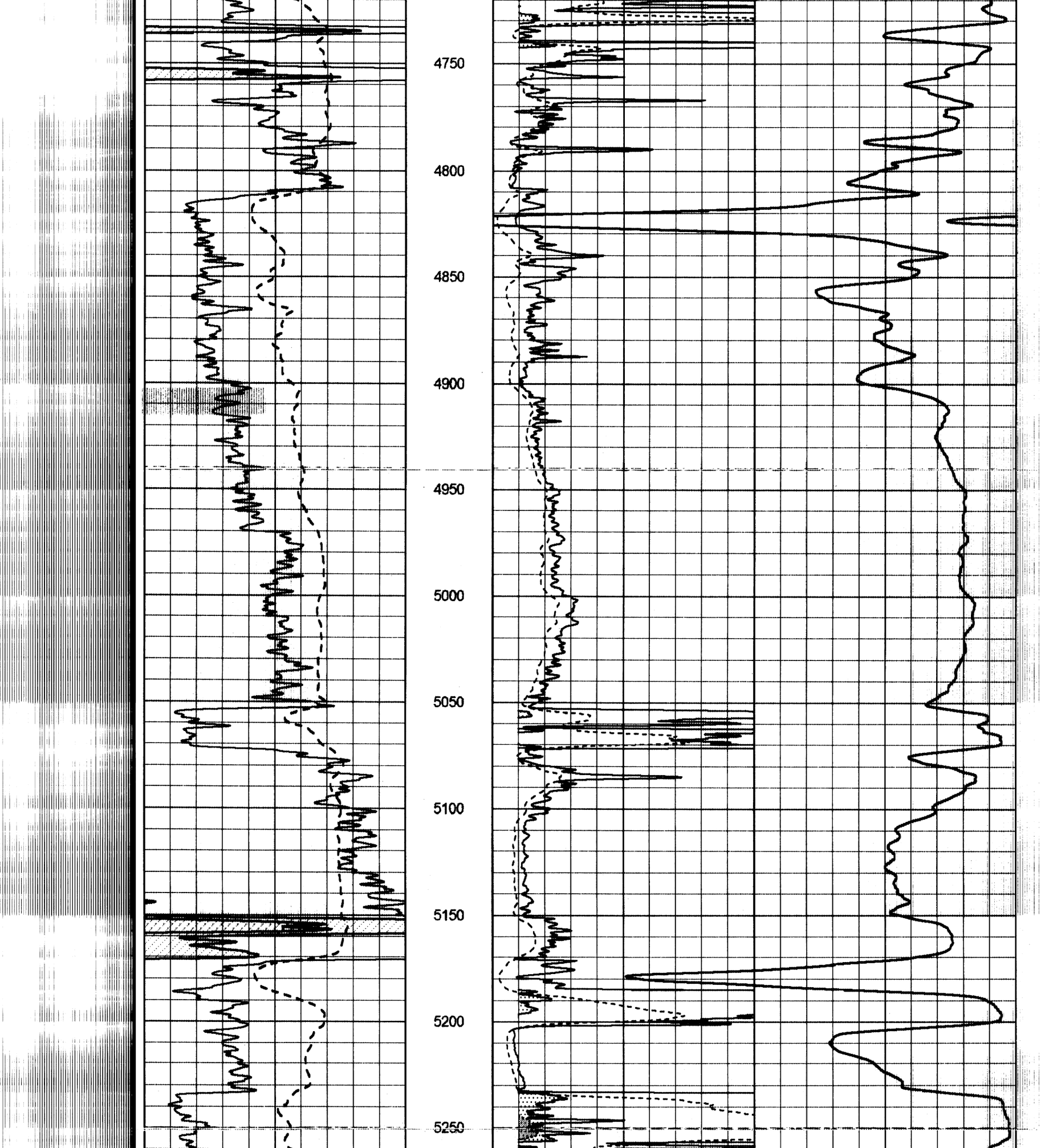
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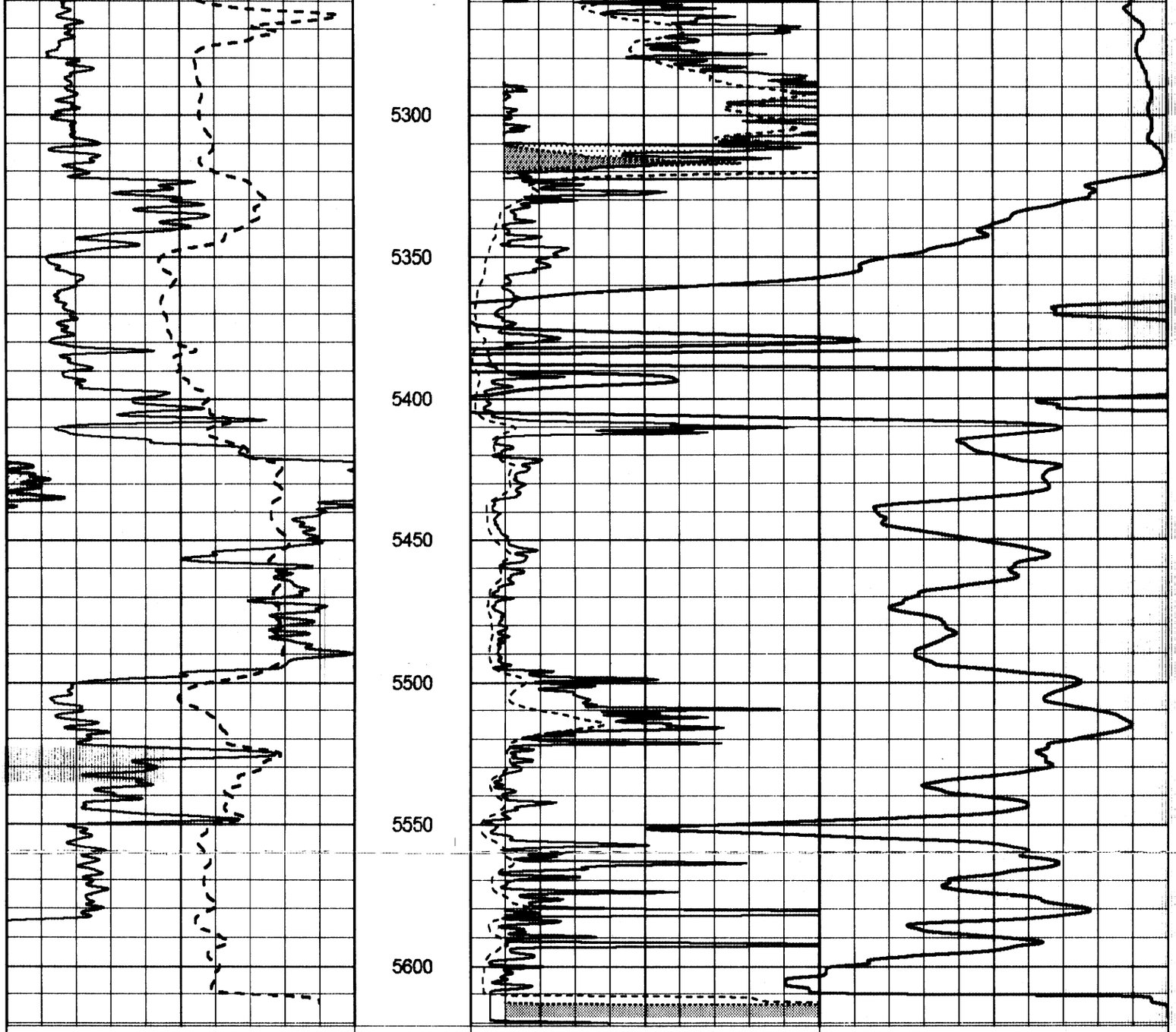
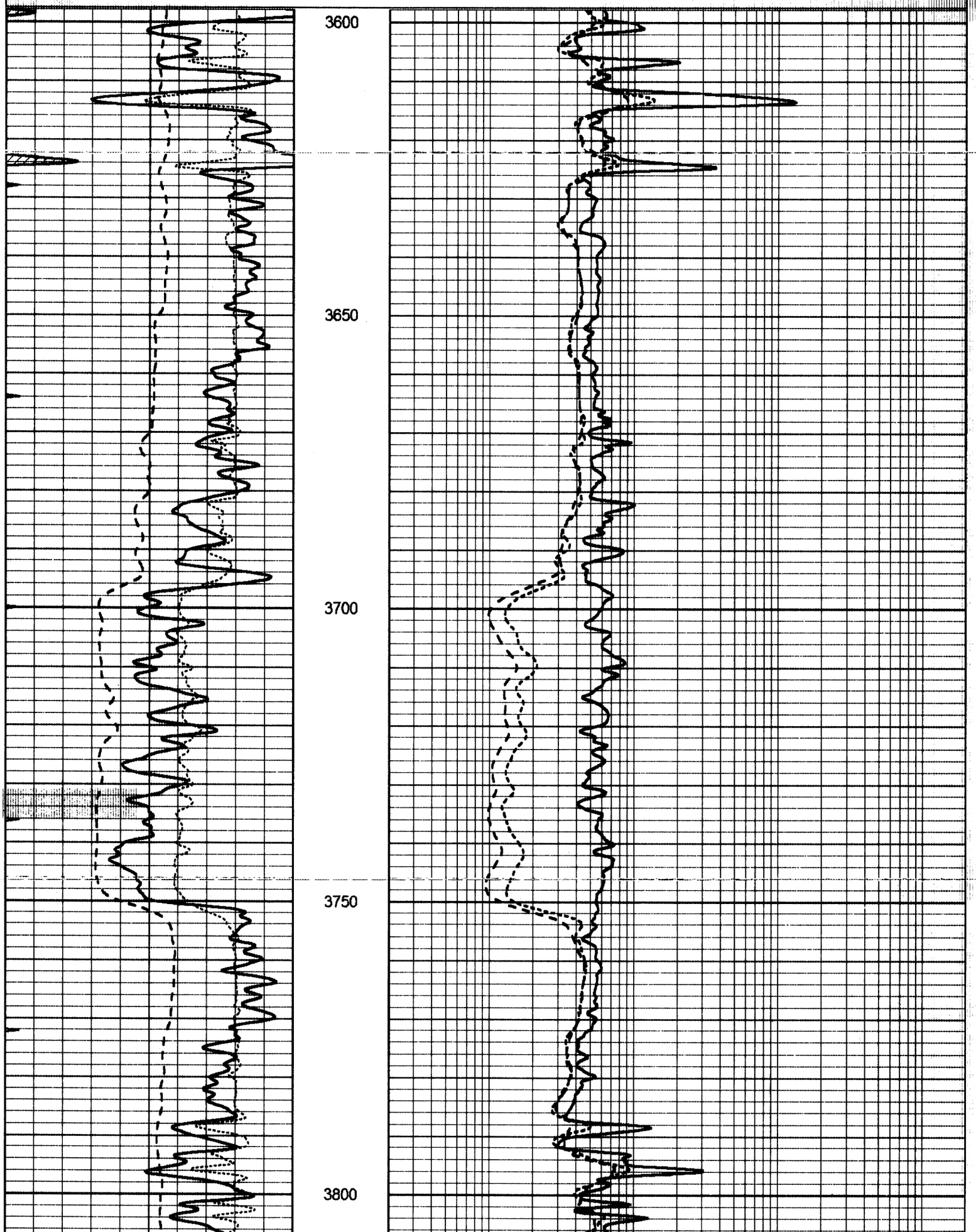


Database File: 011788pe.db
Dataset Pathname: pass3.3
Presentation Format: _dil
Dataset Creation: Sun Sep 29 08:56:25 2013 by Calc Open-Cased 090629
Charted by: Depth in Feet scaled 1:240

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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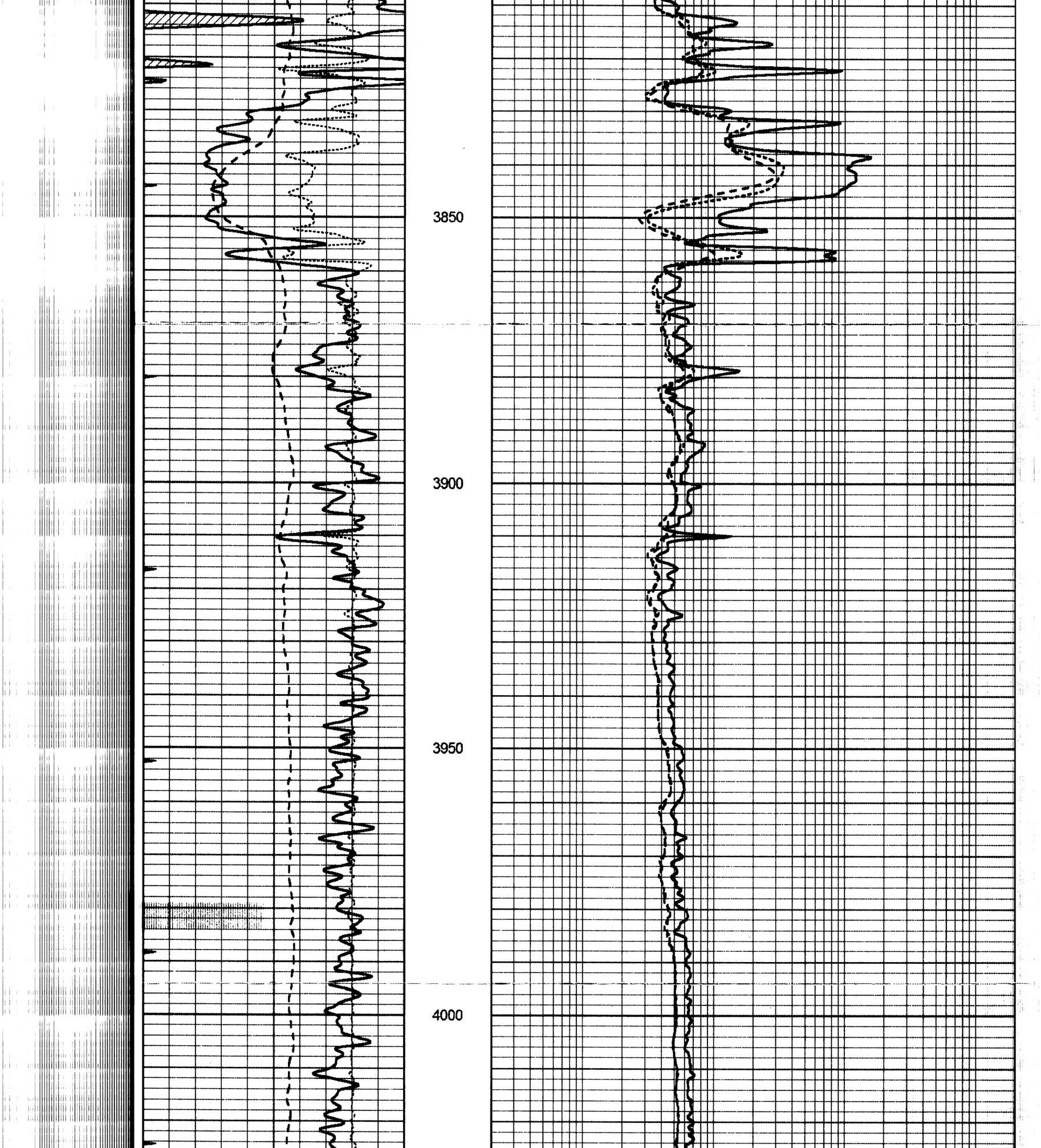
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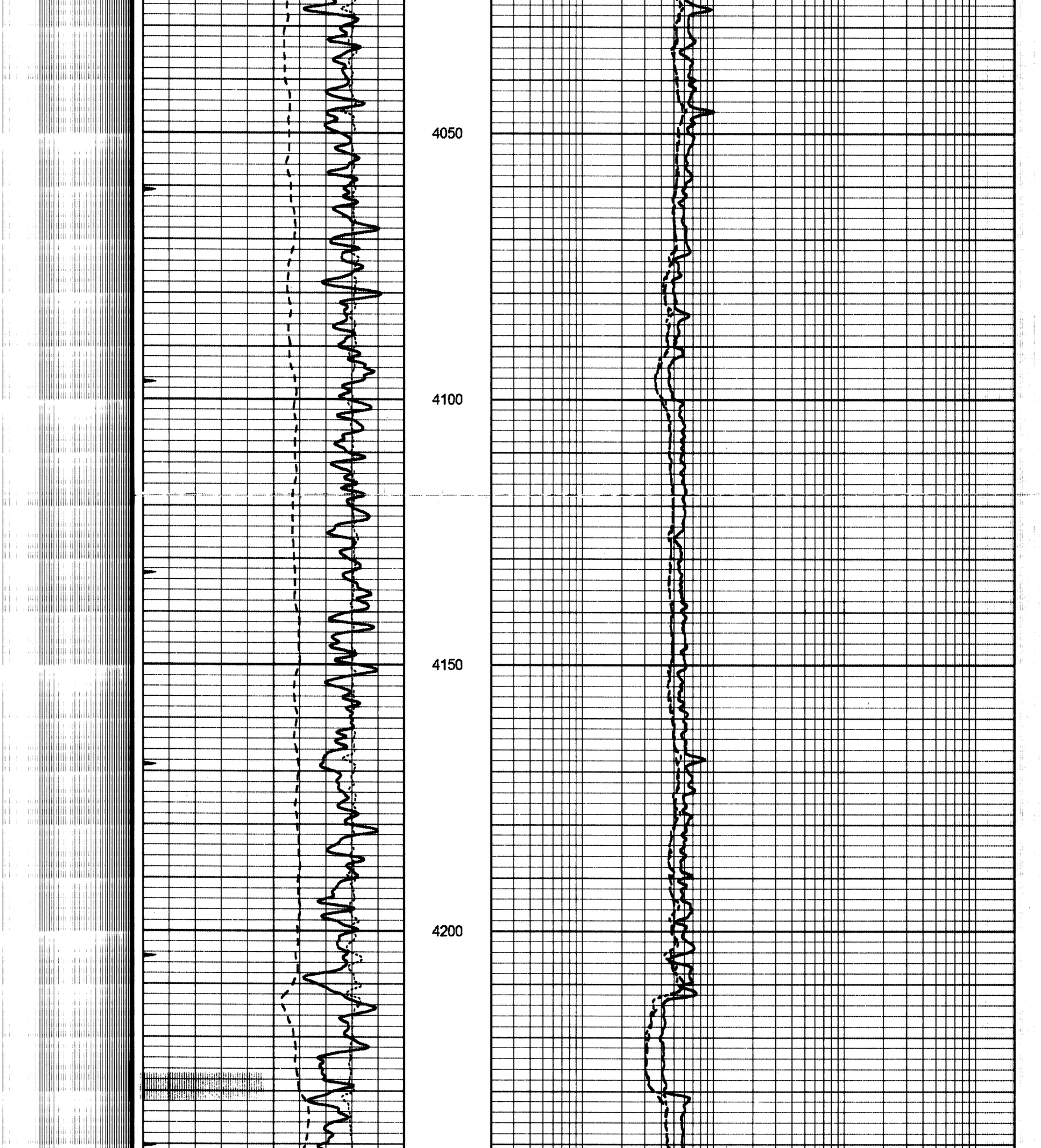
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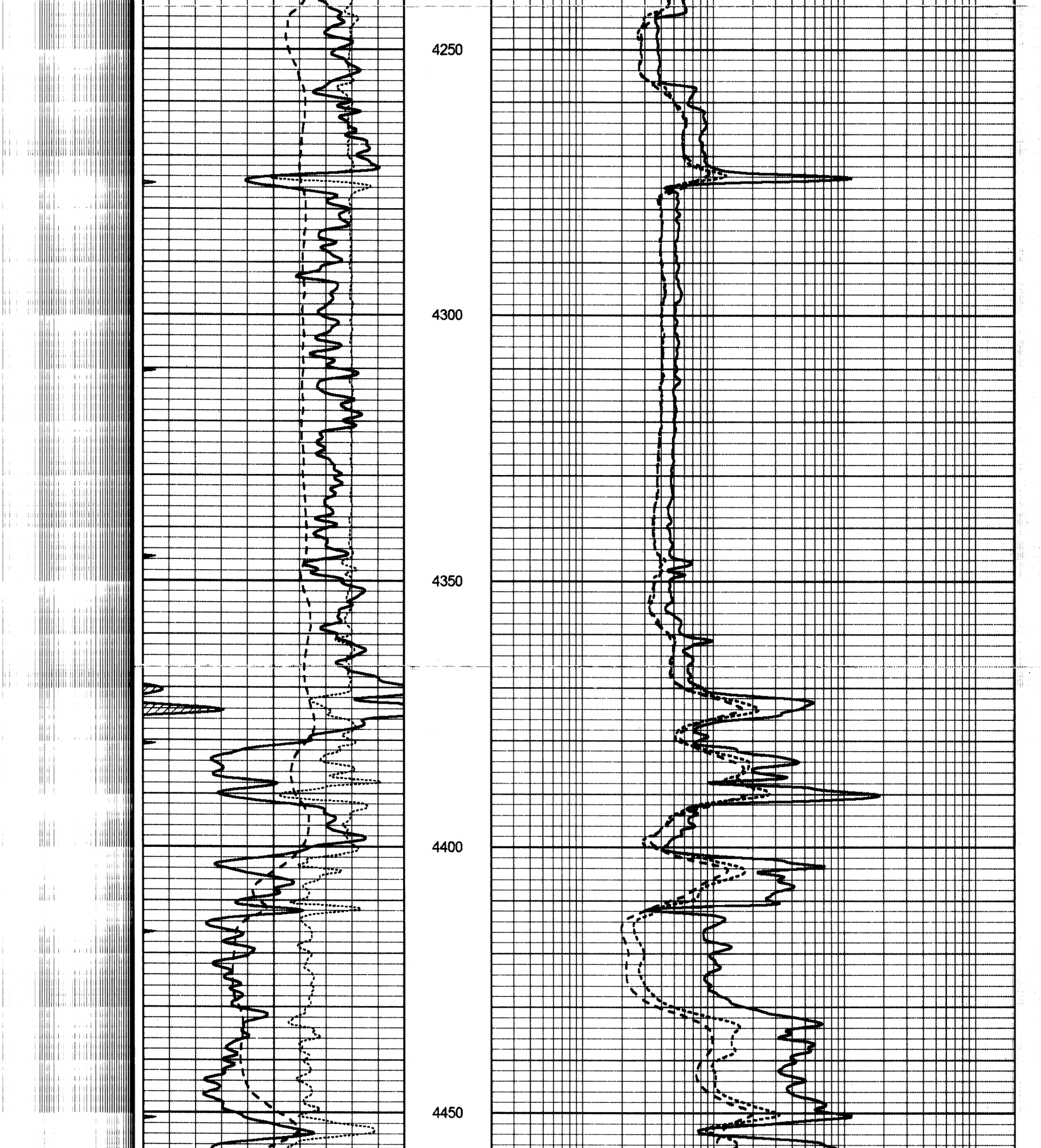
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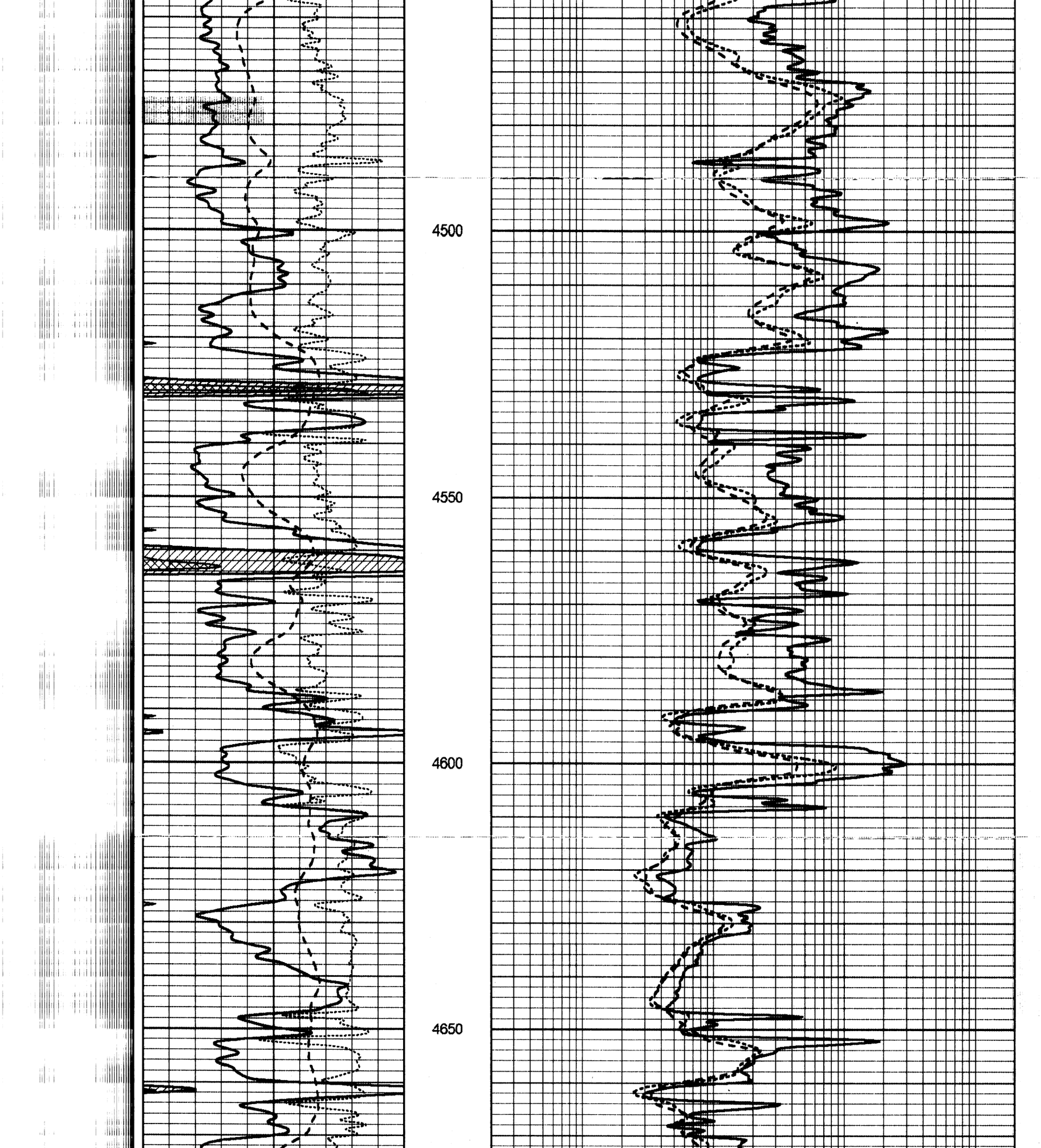
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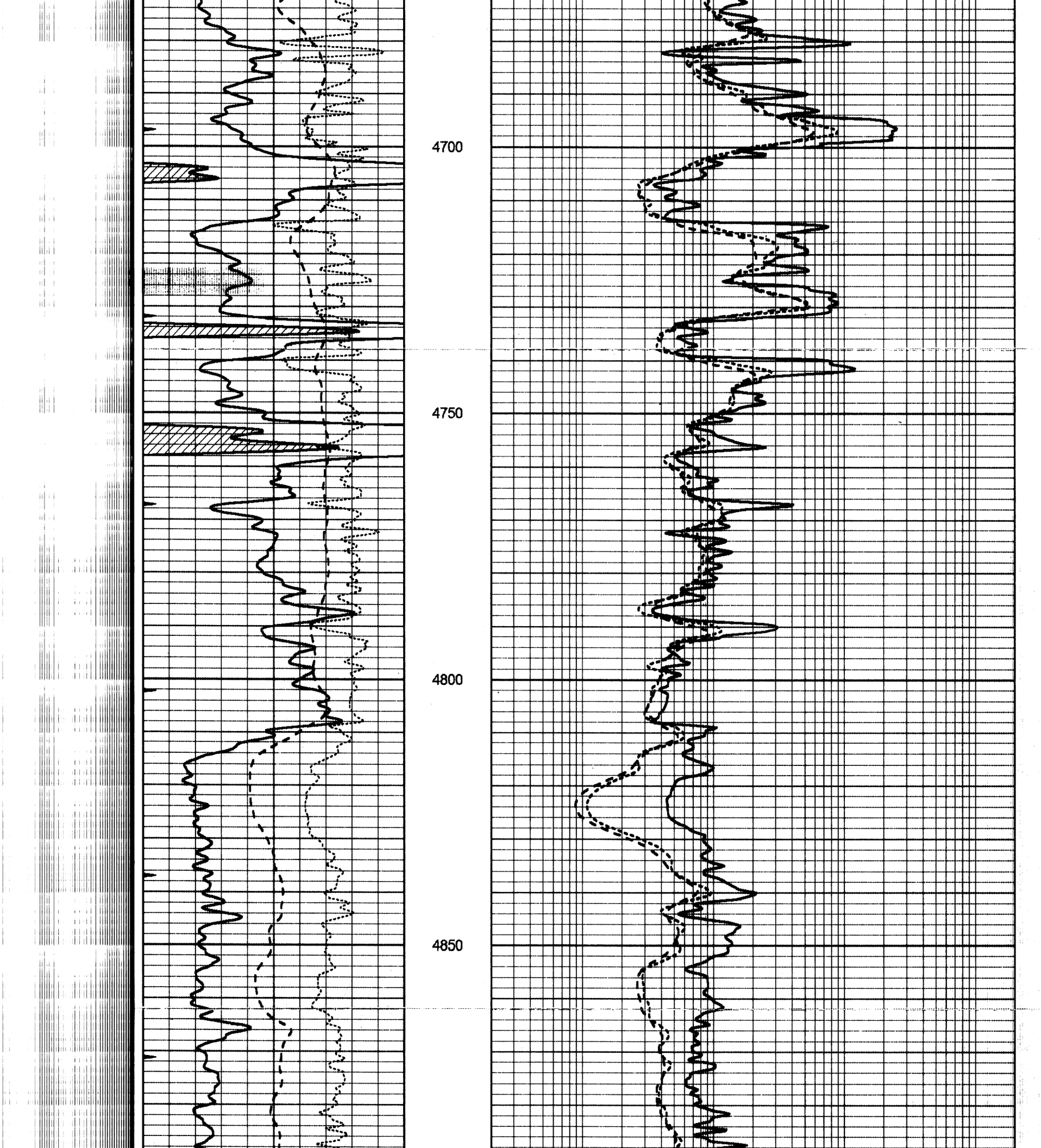
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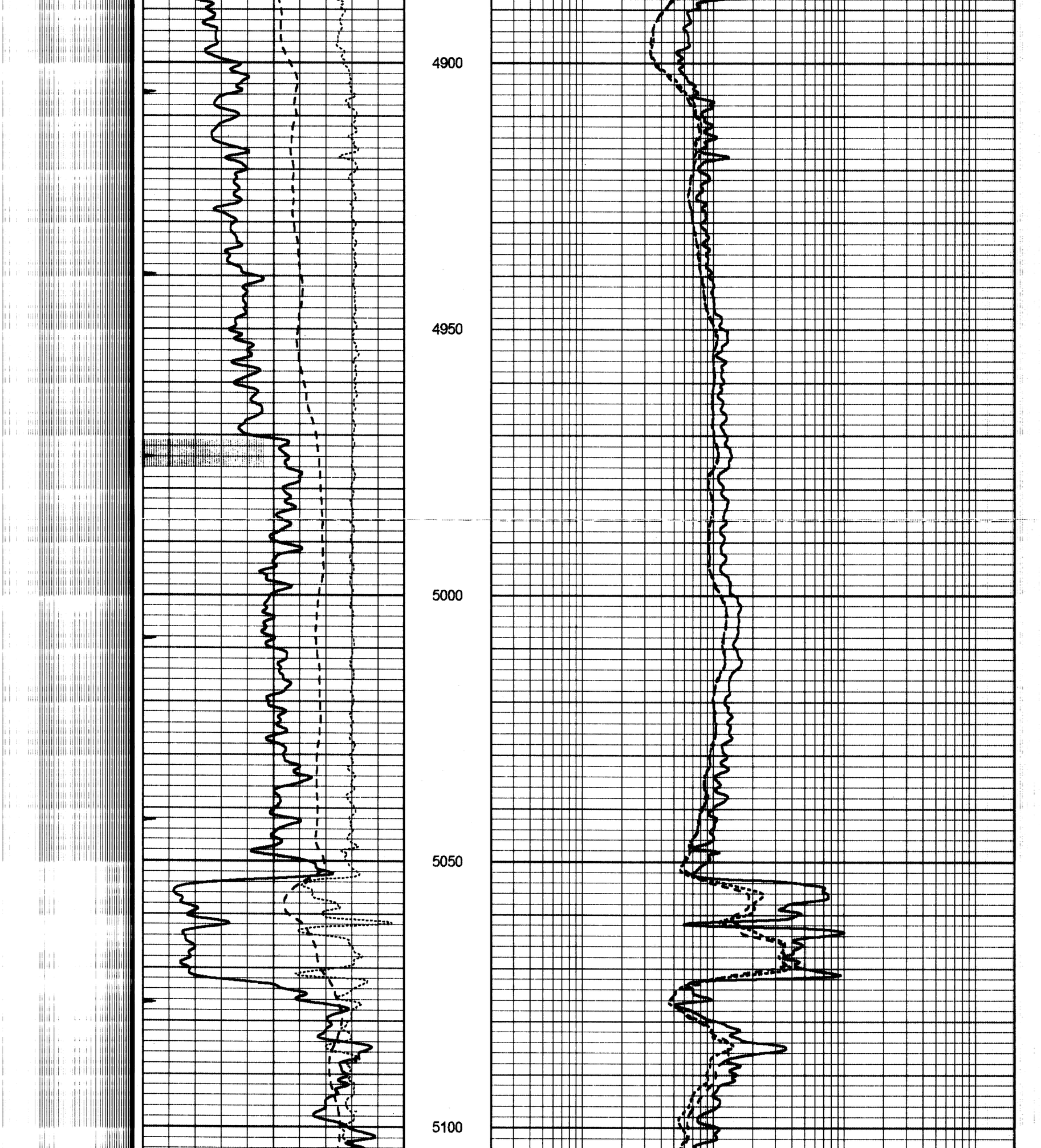
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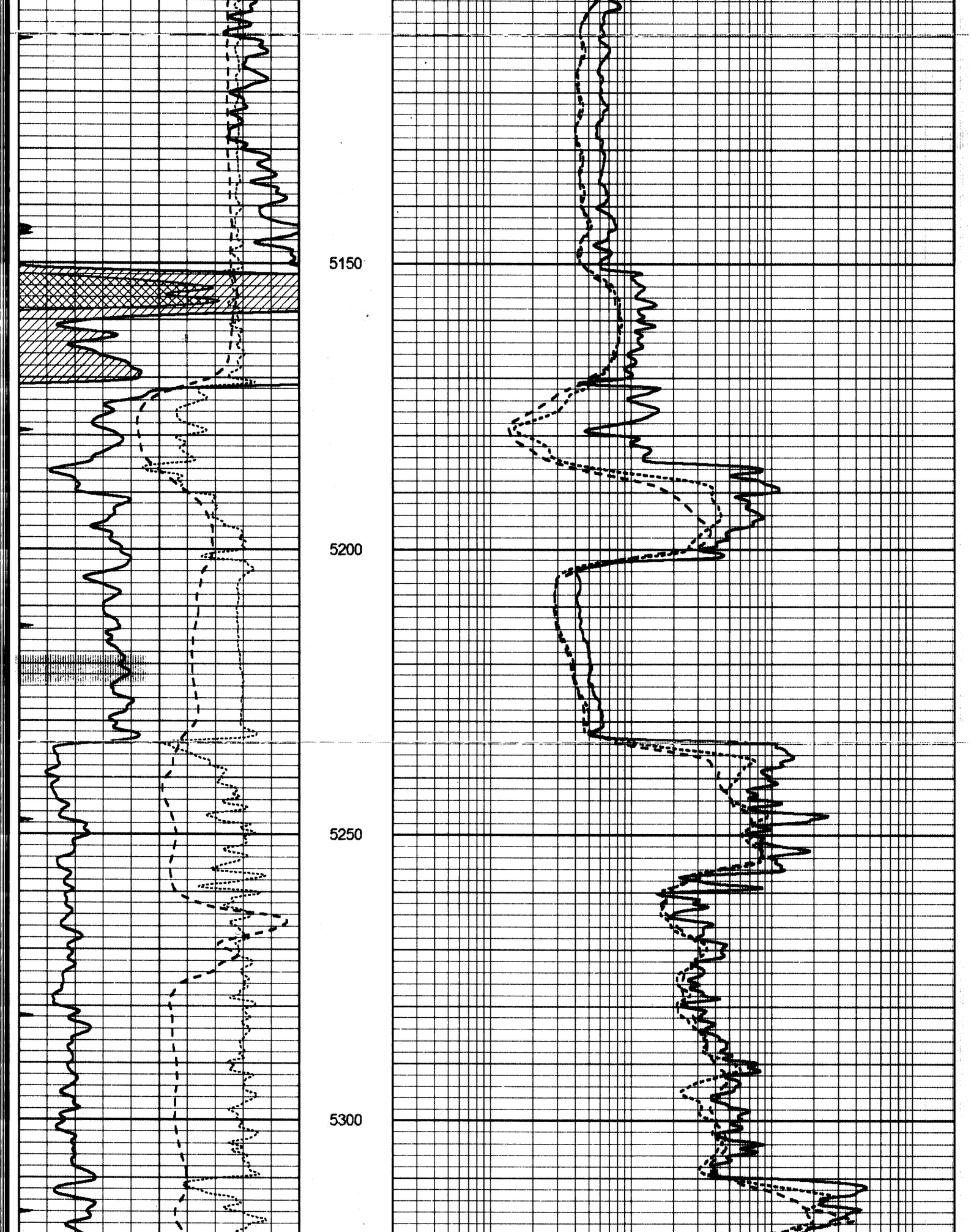
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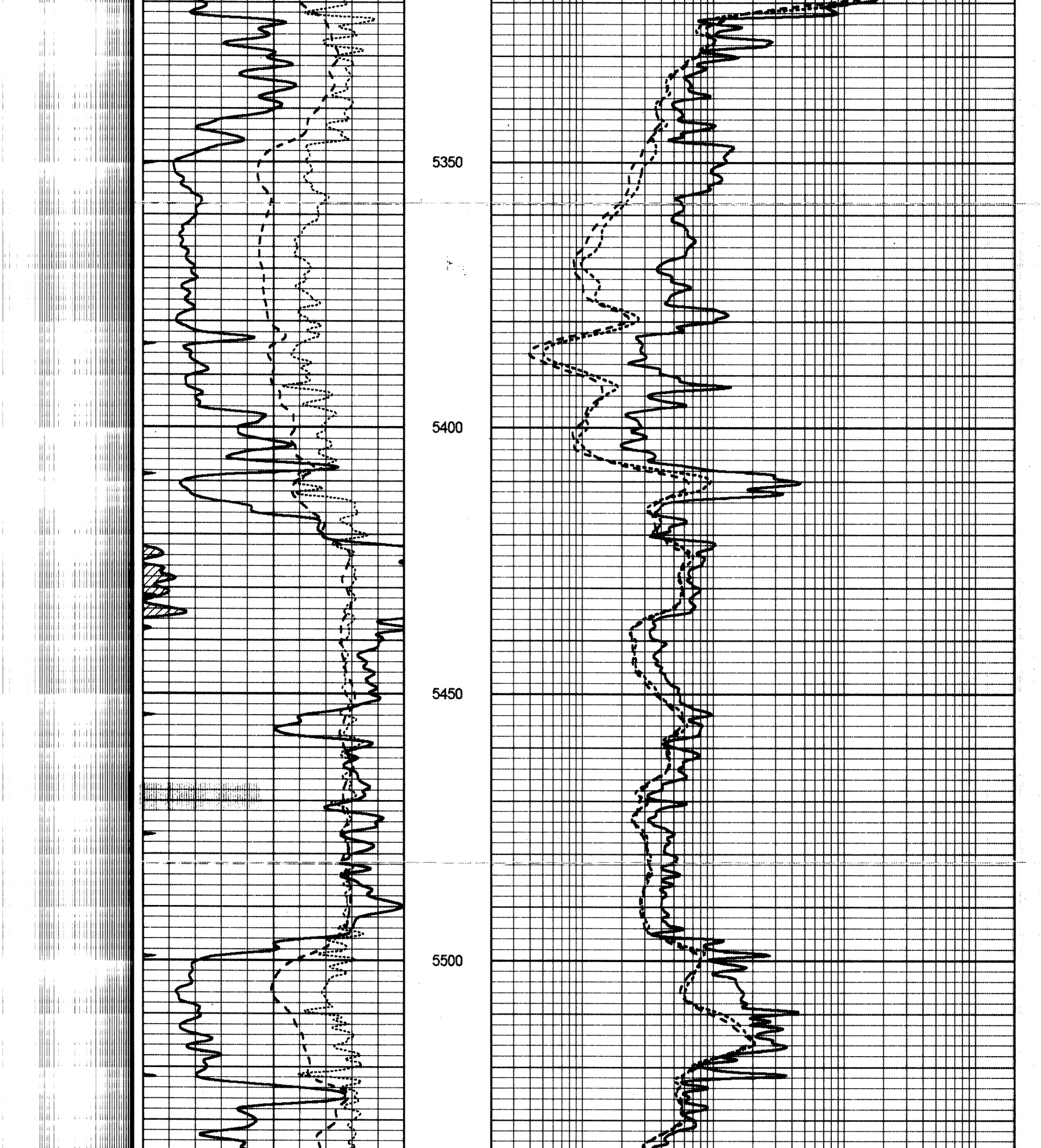
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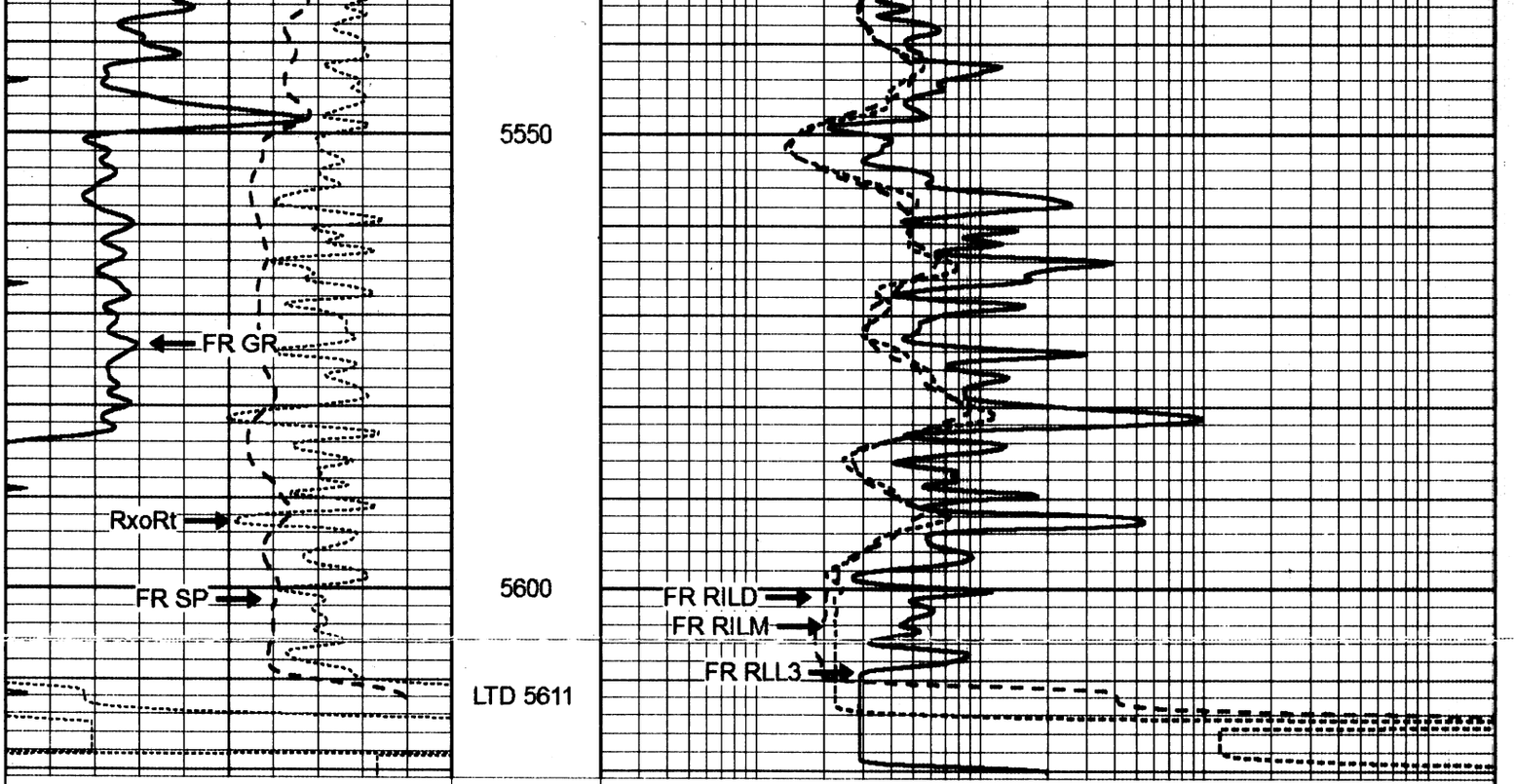


0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

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

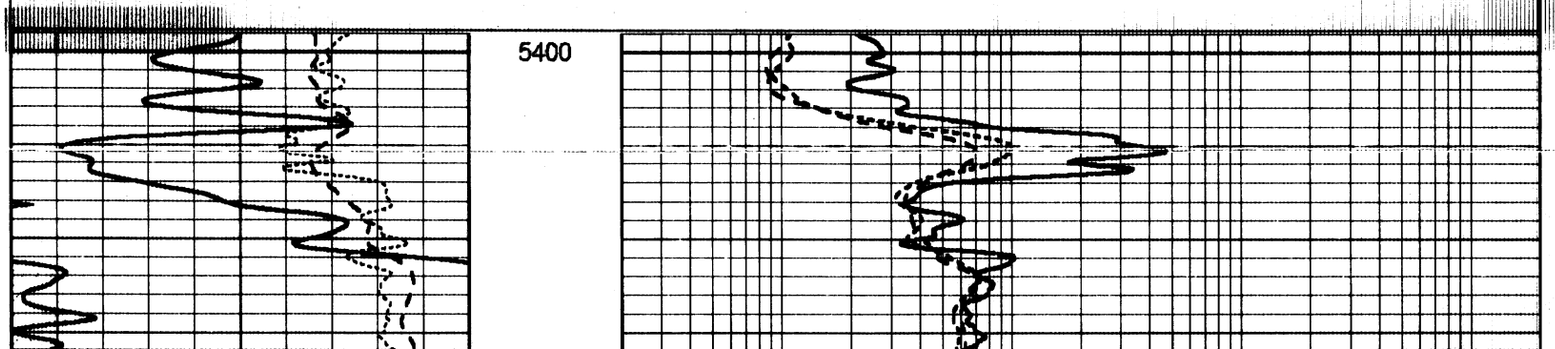
NABORS
COMPLETION & PRODUCTION SERVICES CO.

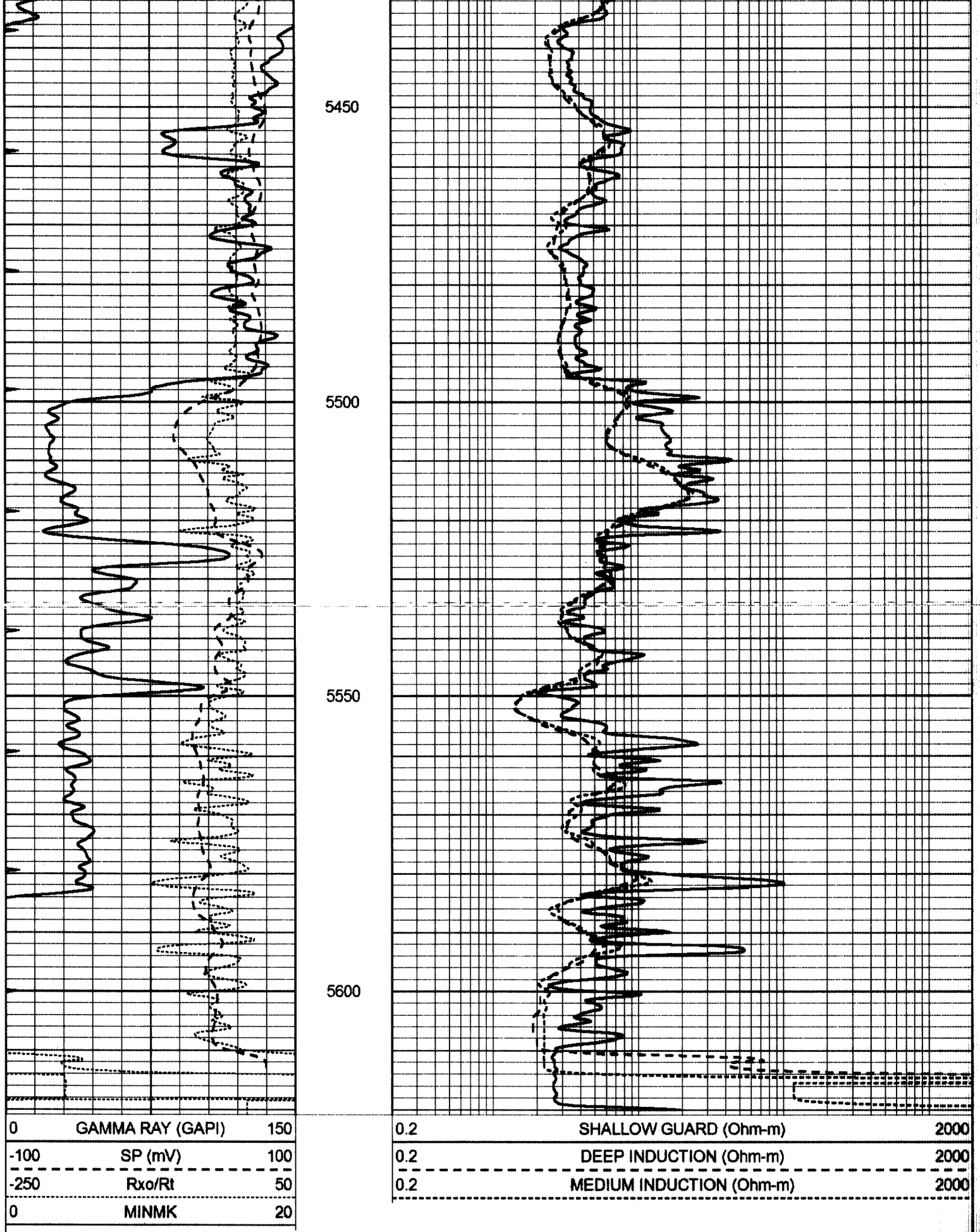
REPEAT SECTION

Database File: 011788pe.db
Dataset Pathname: pass2.3
Presentation Format: _dil
Dataset Creation: Sun Sep 29 07:16:49 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




5450
5500
5550
5600
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: 011788pe.db
Dataset Pathname: pass3.3
Dataset Creation: Sun Sep 29 08:56:25 2013 by Calc Open-Cased 090629

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
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