



**SUPERIOR**  
**Hays,**  
**Kansas**

**DUAL**  
**INDUCTION**  
**LOG**

Company MULL DRILLING COMPANY, INC.

Well APC-TENNELL #1-33

Field

County KIOWA

State COLORADO

Location: API # : 05-061-06853-00

1204' FNL & 1798' FWL

SEC 33 TWP 17S RGE 45W

Permanent Datum GROUND LEVEL Elevation 3998  
Log Measured From KELLY BUSHING 11' A.G.L.  
Drilling Measured From KELLY BUSHING

Other Services  
CDL/CNL/PE  
SONIC/MEL  
Elevation  
K.B. 4009  
D.F.  
G.L. 3998

Date 8-5-11

Run Number ONE

Depth Driller 5213

Depth Logger 5214

Bottom Logged Interval 5212

Top Log Interval 00

Casing Driller 336

Casing Logger 336

Bit Size 7.875

Type Fluid in Hole CHEMICAL MUD

Density / Viscosity 9.3 / 54

pH / Fluid Loss 9.5 / 8.8

Source of Sample FLOWLINE

Rim @ Meas. Temp 0.80 @ 85F

Rmf @ Meas. Temp 0.60 @ 85F

Rmc @ Meas. Temp 0.96 @ 85F

Source of Rmf / Rmc MEASURED

Rim @ BHT .540 @ 127F

Time Circulation Stopped 3 HOURS

Time Logger on Bottom 12:15 A.M.

Maximum Recorded Temperature 127F

Equipment Number 860

Location HAYS, KS.

Recorded By RUPP

Witnessed By PHIL ASKEY

<<< Fold Here >>>

All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, 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. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

SUPERIOR WELL SERVICES  
785-628-6395  
THANK YOU FOR YOUR BUSINESS  
DIRECTIONS: BRANDON, CO., W EGDE TO RD. #58, 6N, E INTO.



**SUPERIOR**  
**Hays,**  
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**MAIN SECTION**

Database File: 007342pdm.db  
 Dataset Pathname: pass3.1A  
 Presentation Format: dil2  
 Dataset Creation: Fri Aug 05 05:45:11 2011  
 Charted by: Depth in Feet scaled 1:600

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

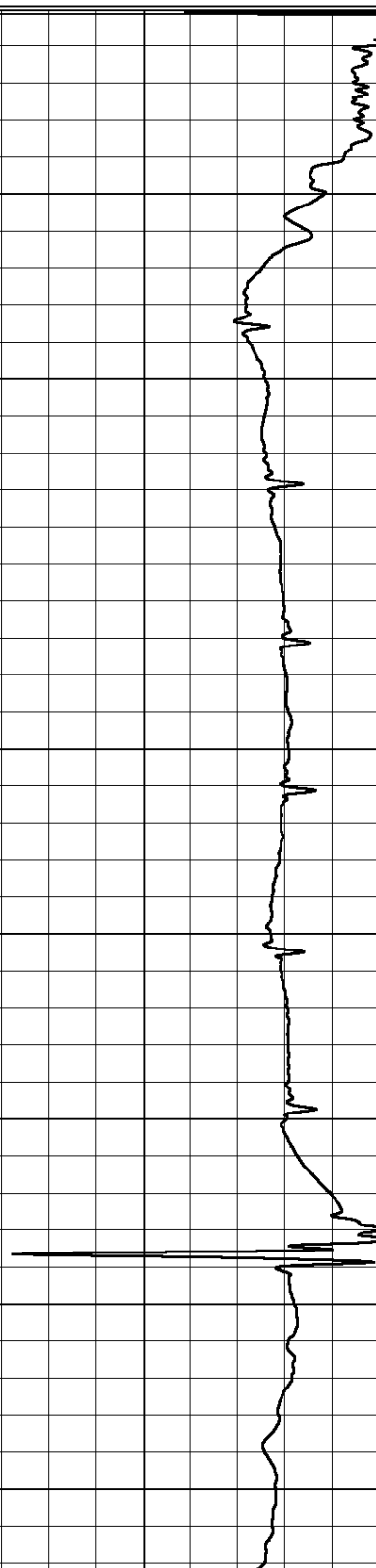
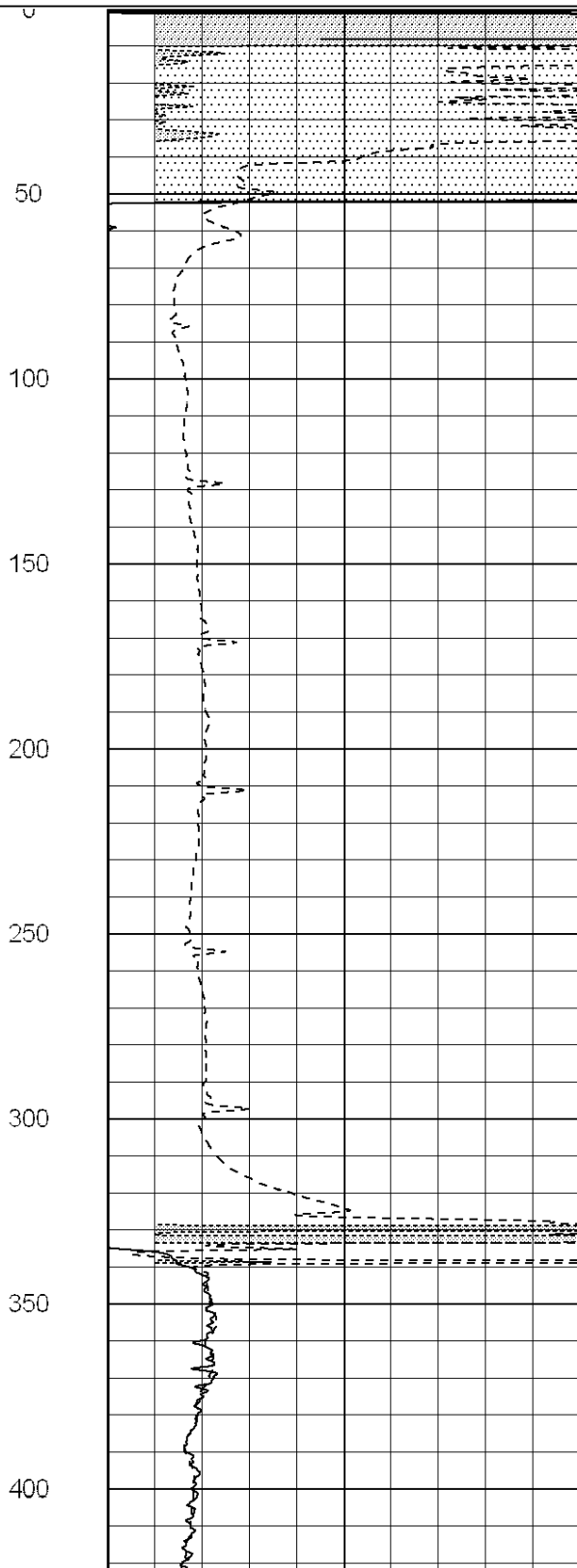
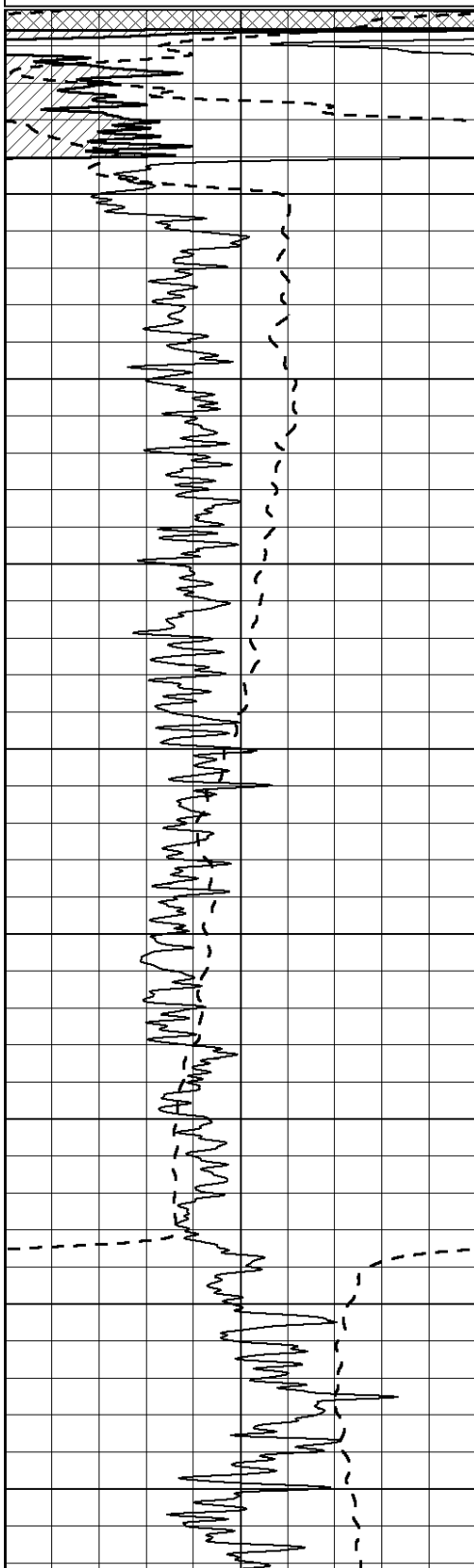
0 RLL3 (Ohm-m) 50

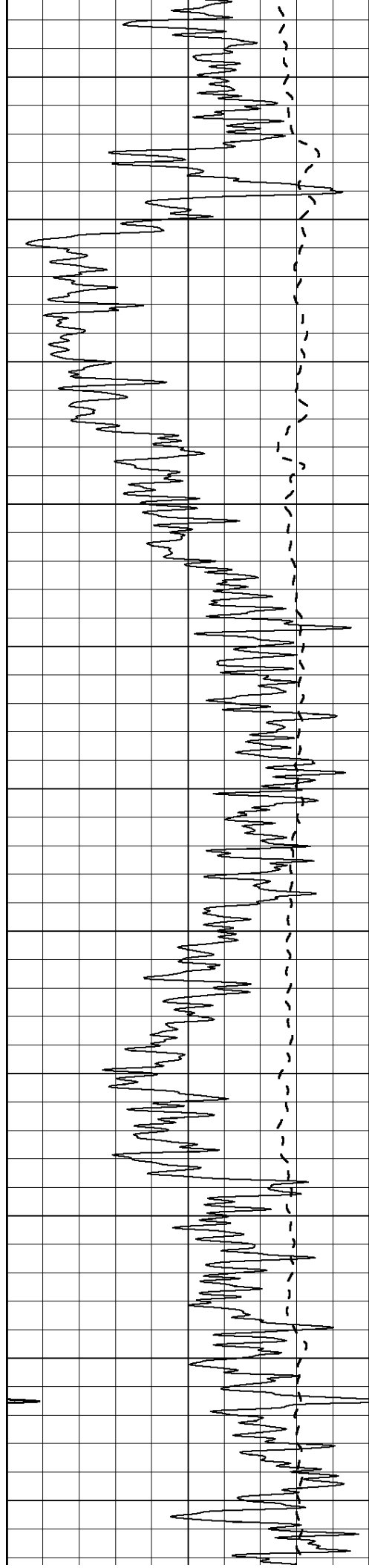
0 Deep Induction (Ohm-m) 50

1000 CILD (mmho/m) 0

50 RILD X10 (Ohm-m) 500

50 RLL3 X10 (Ohm-m) 500





450

500

550

600

650

700

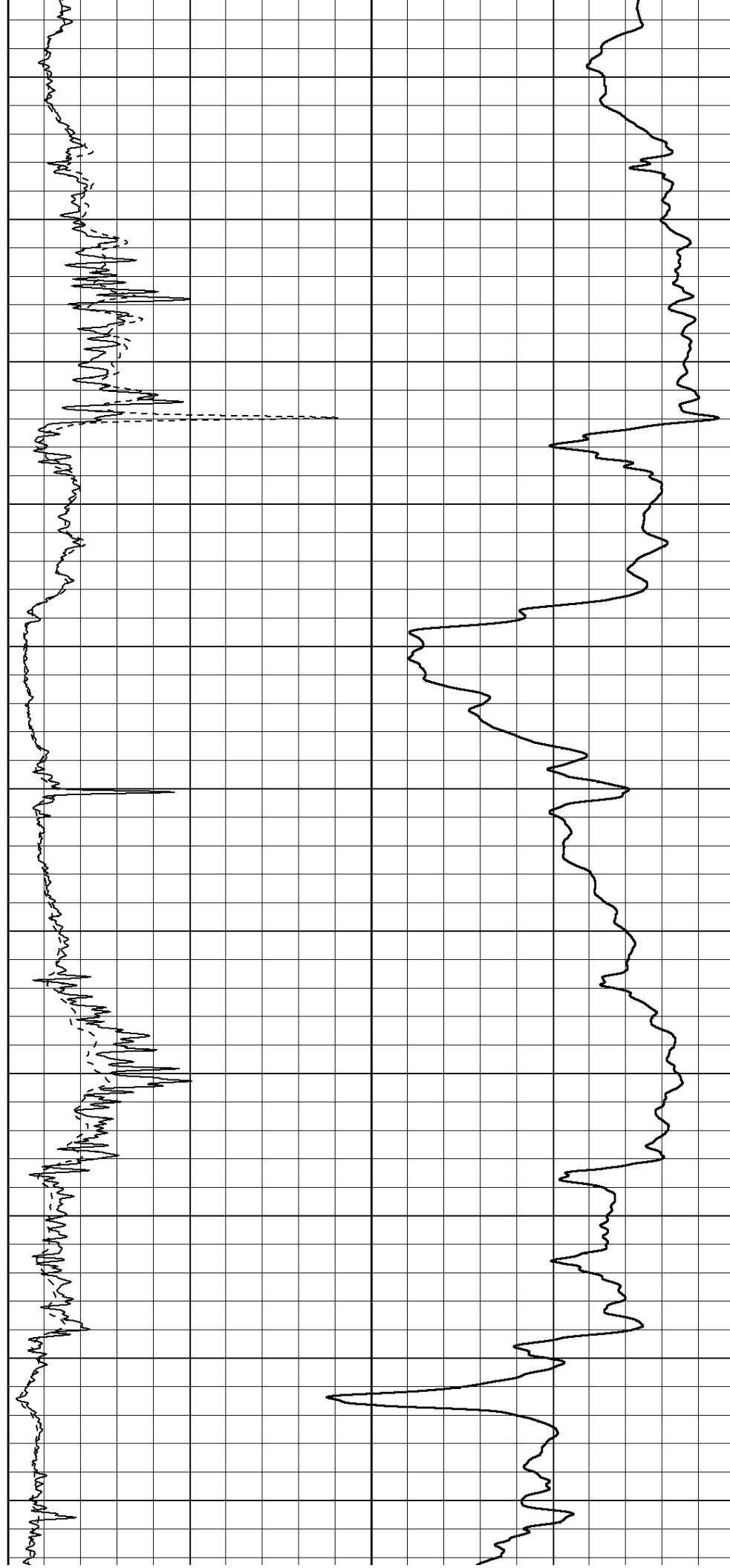
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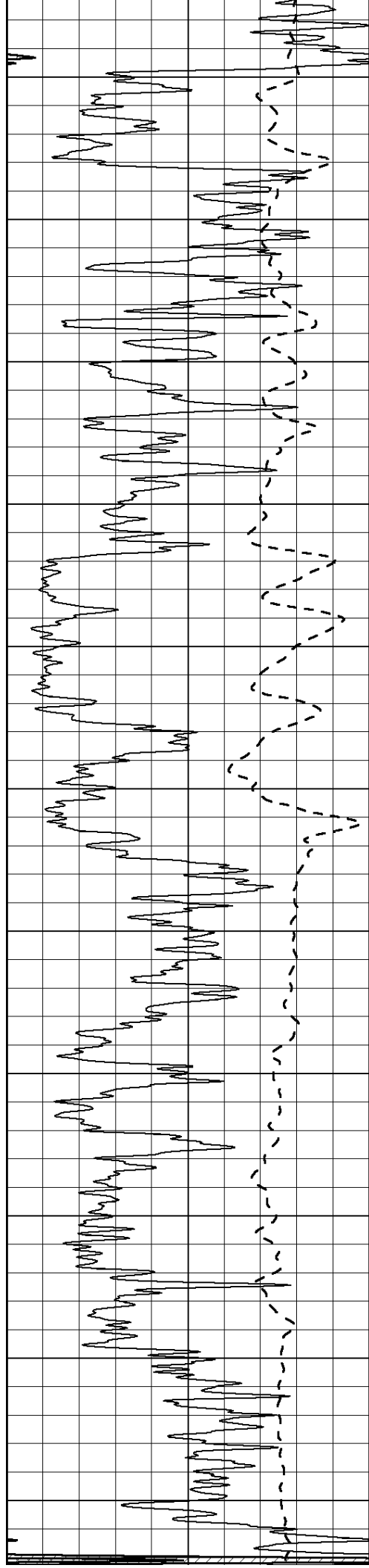
800

850

900

950





1000

1050

1100

1150

1200

1250

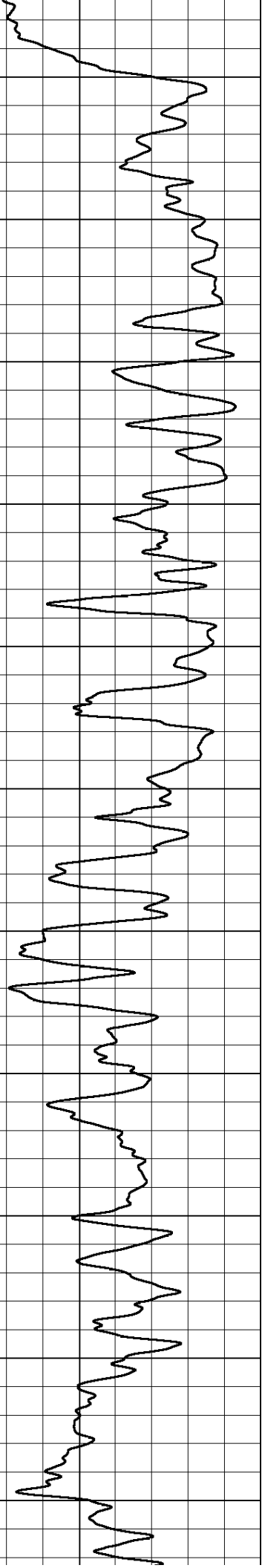
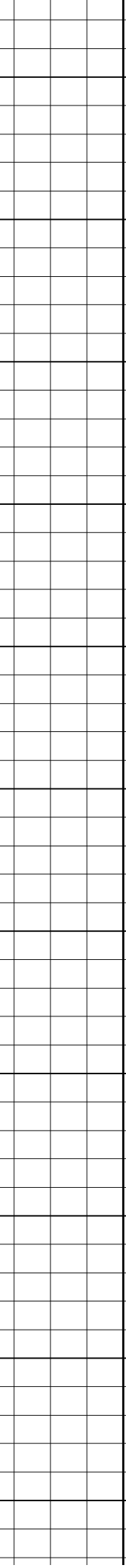
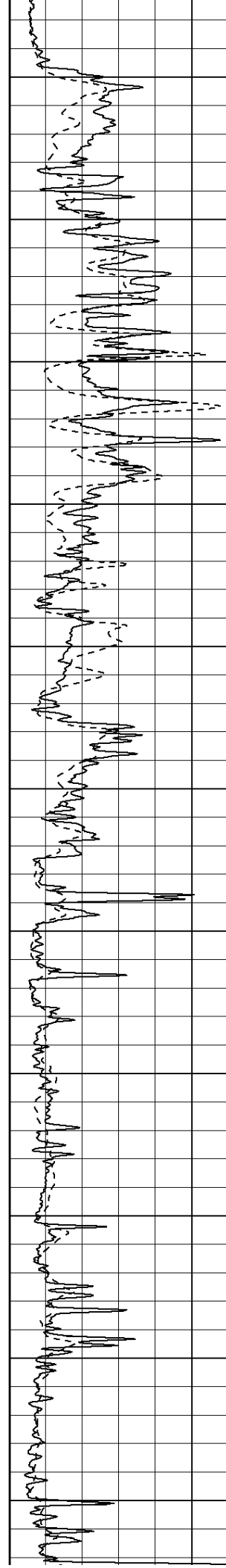
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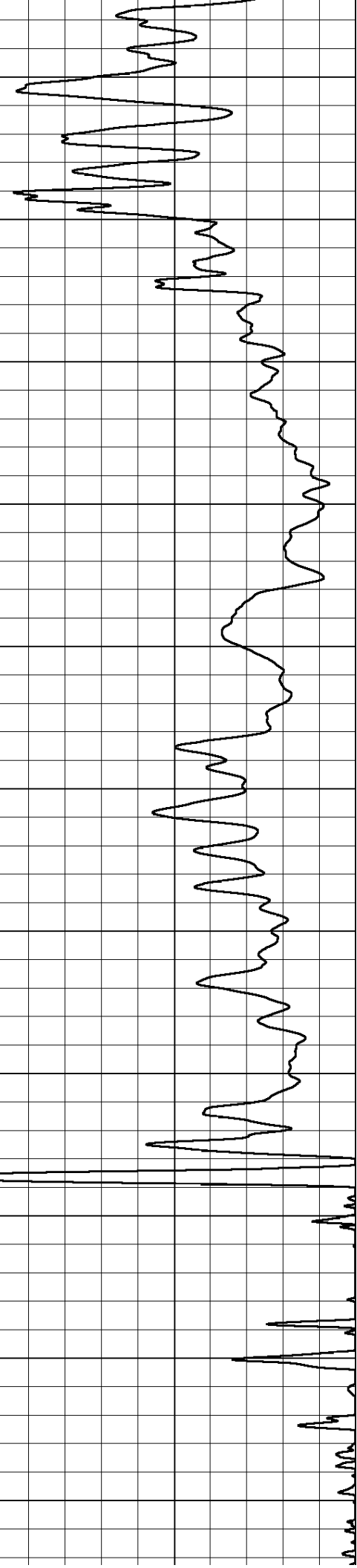
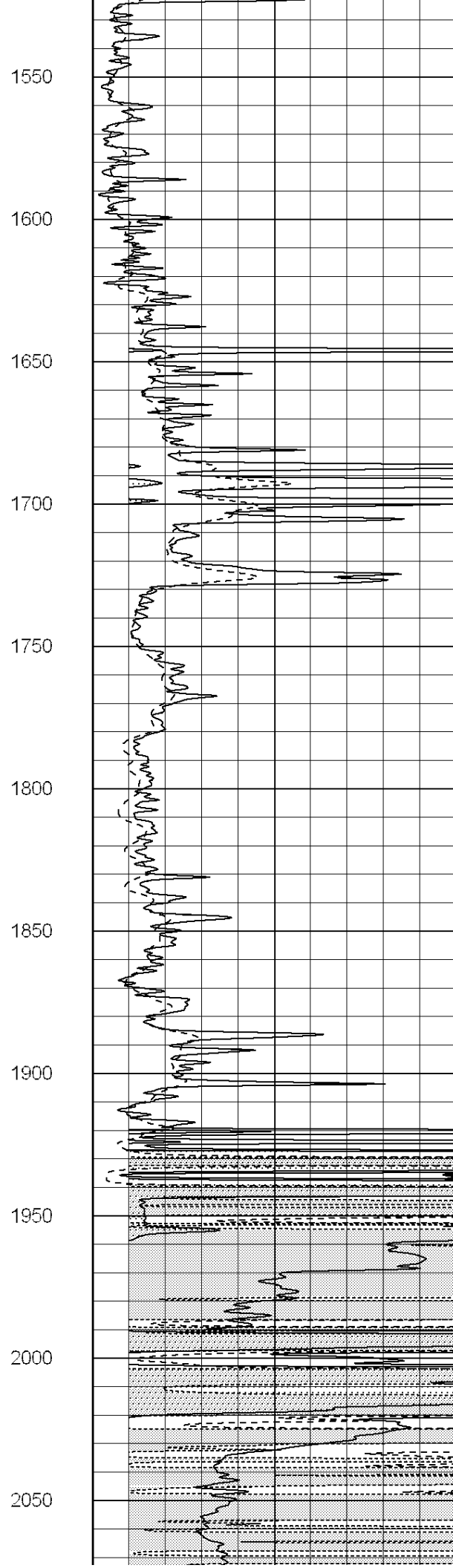
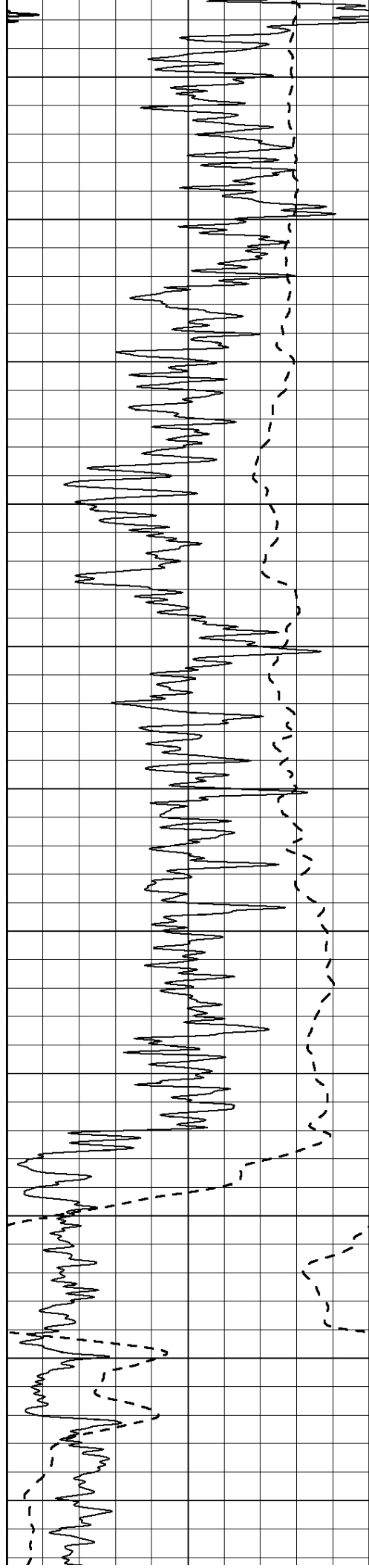
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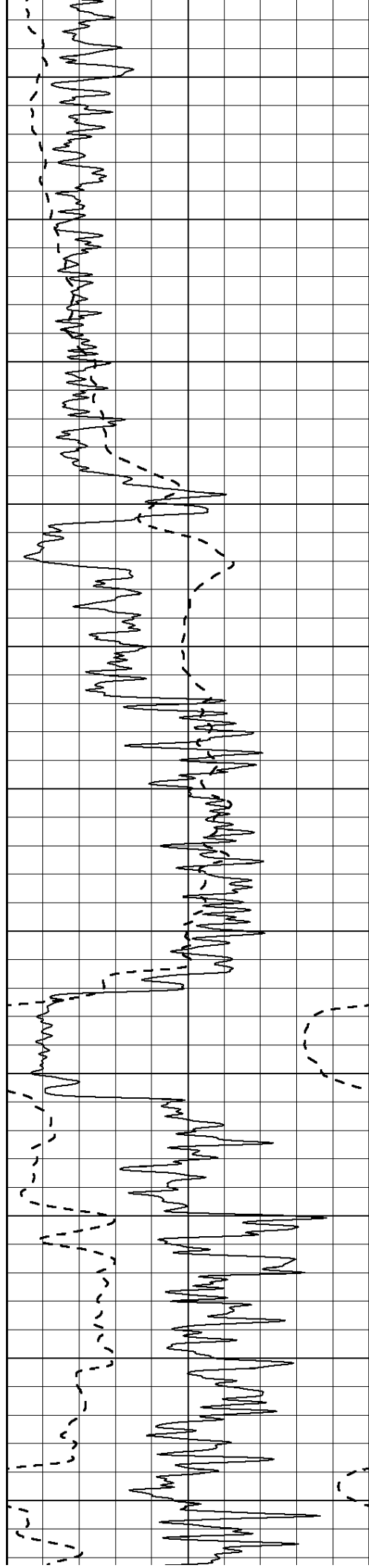
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1450

1500







2100

2150

2200

2250

2300

2350

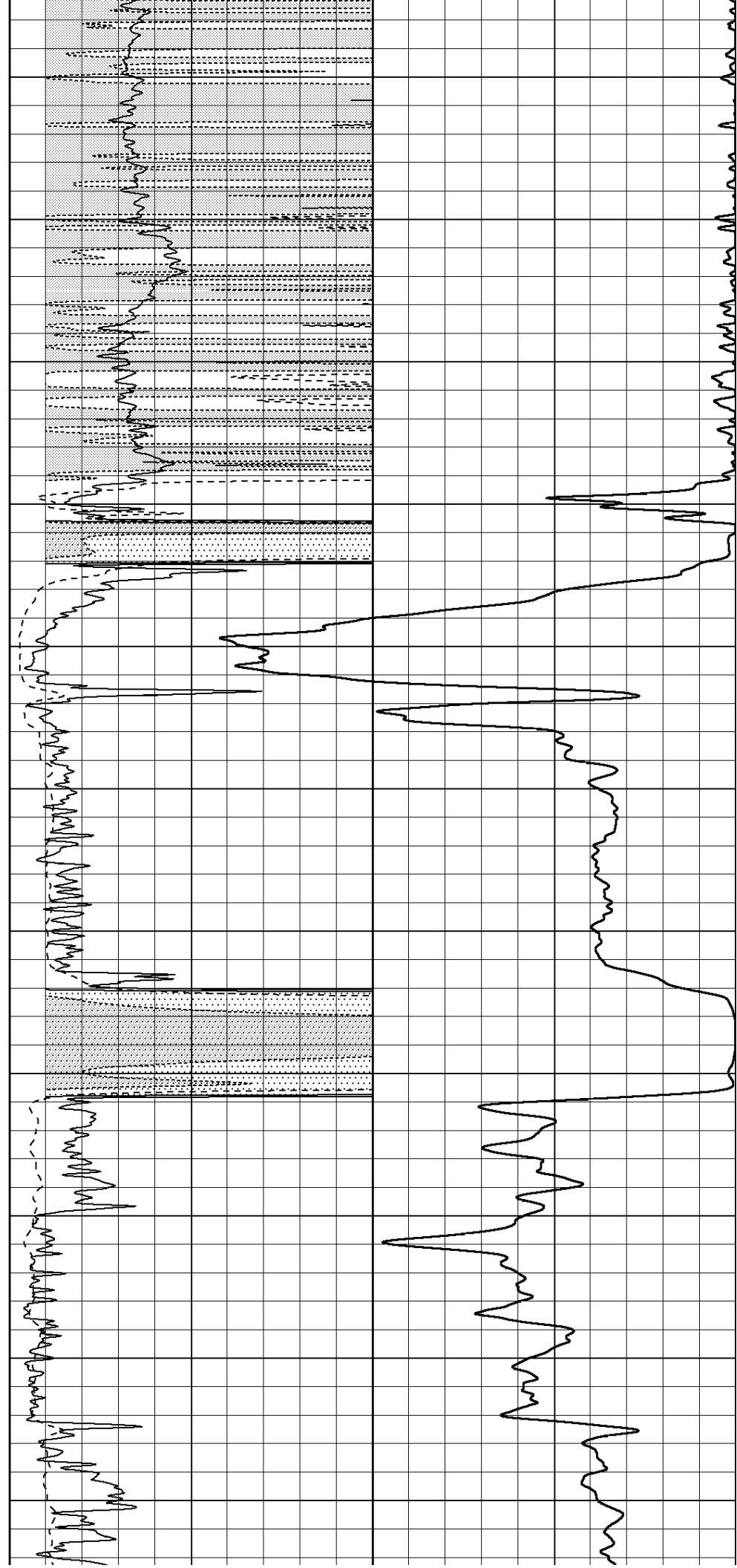
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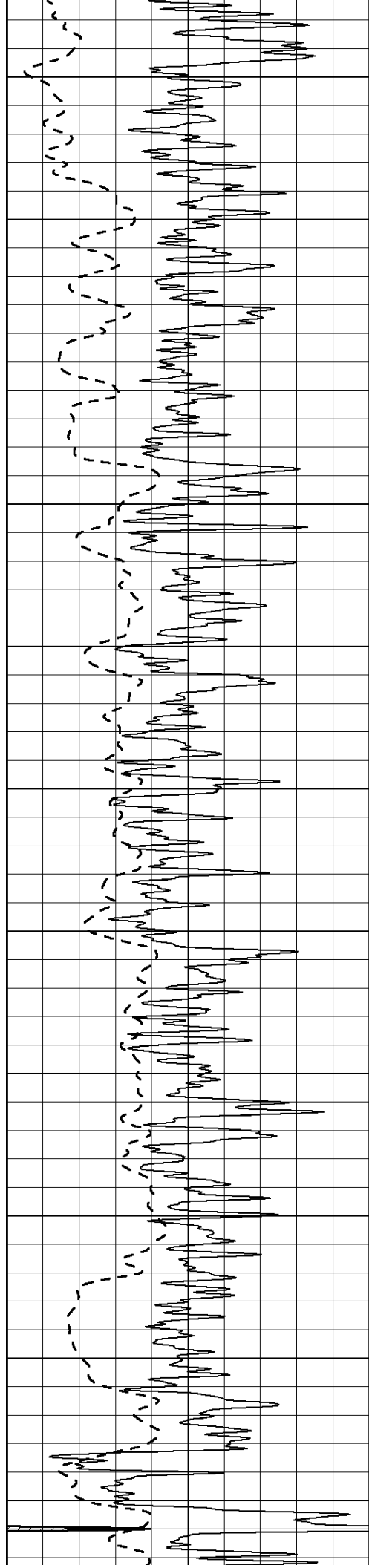
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2500

2550

2600





2650

2700

2750

2800

2850

2900

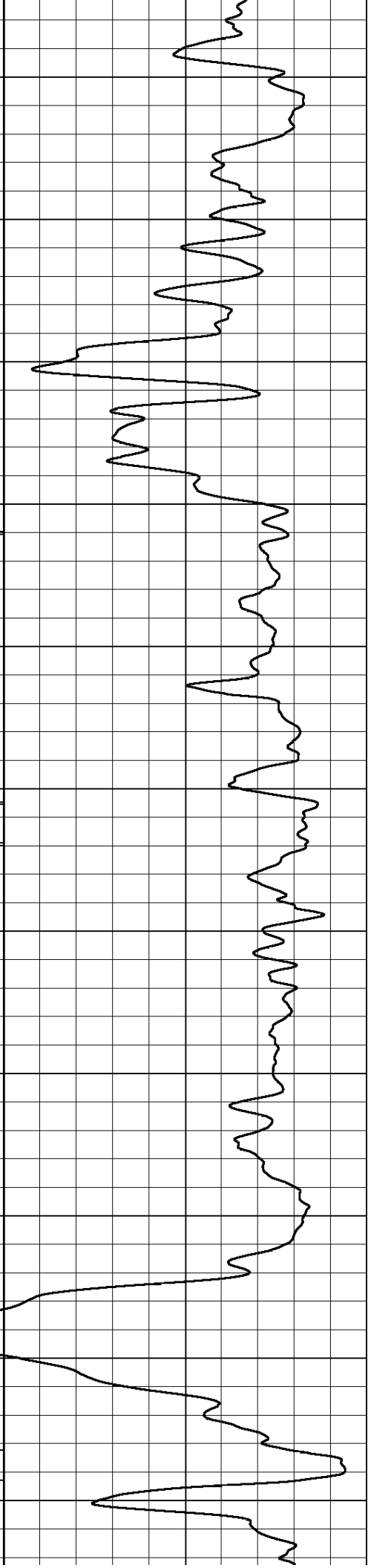
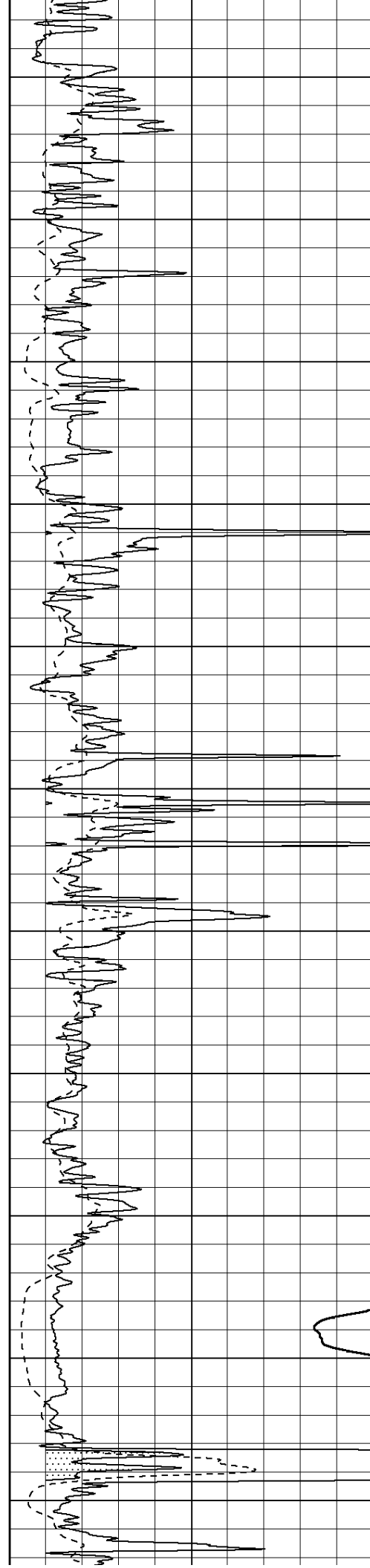
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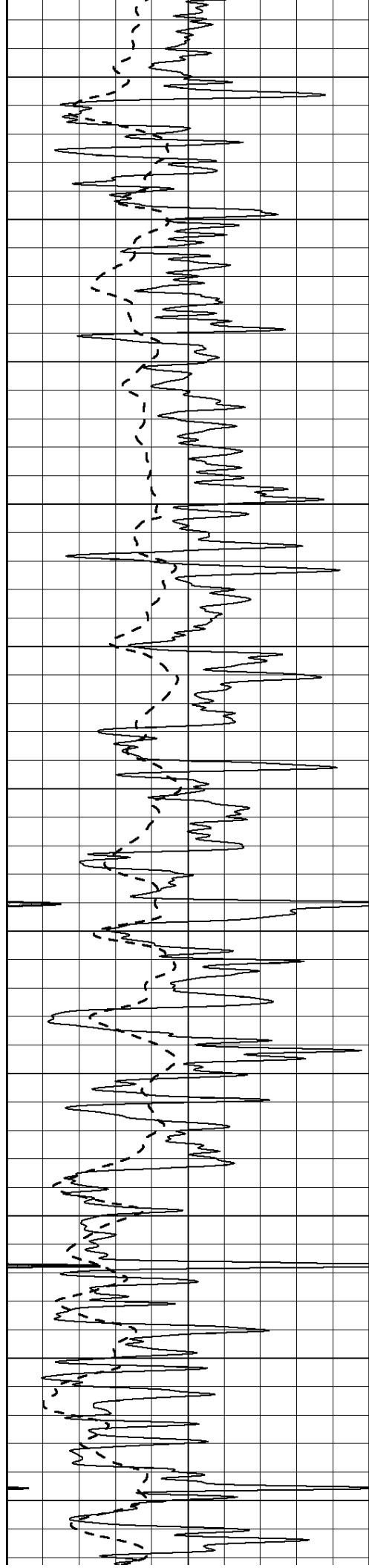
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3050

3100

3150





3200

3250

3300

3350

3400

3450

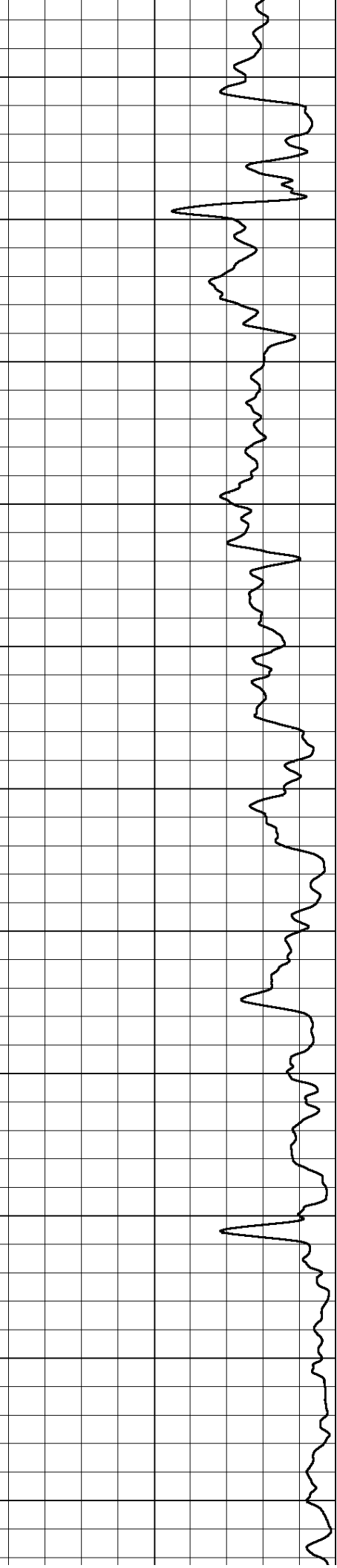
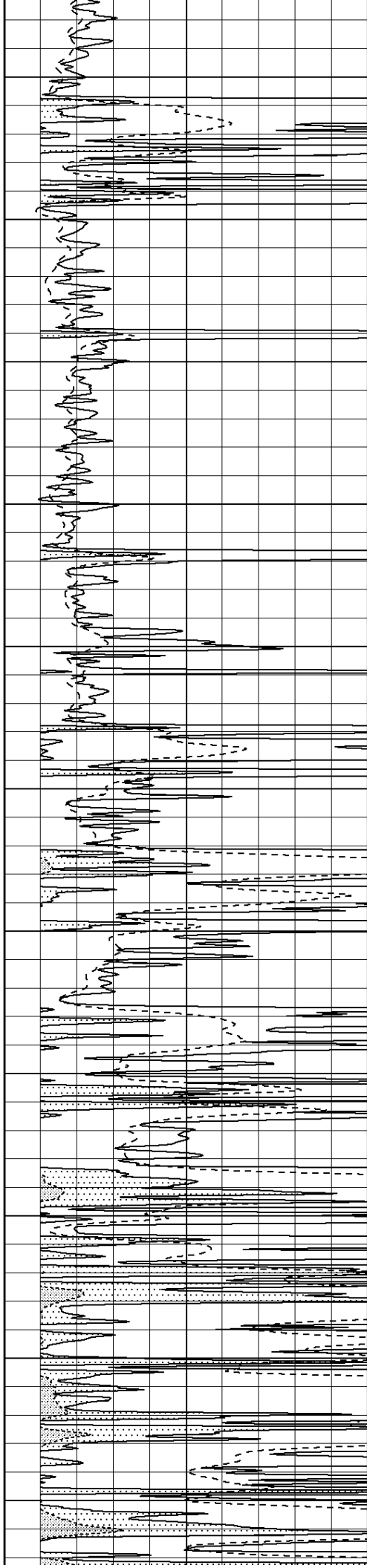
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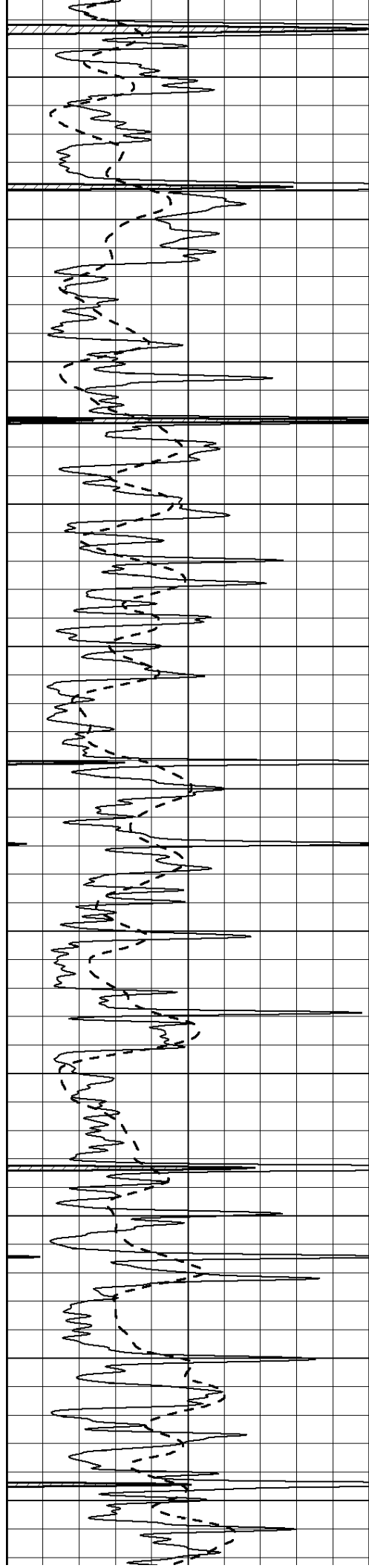
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3650

3700







3750

3800

3850

3900

3950

4000

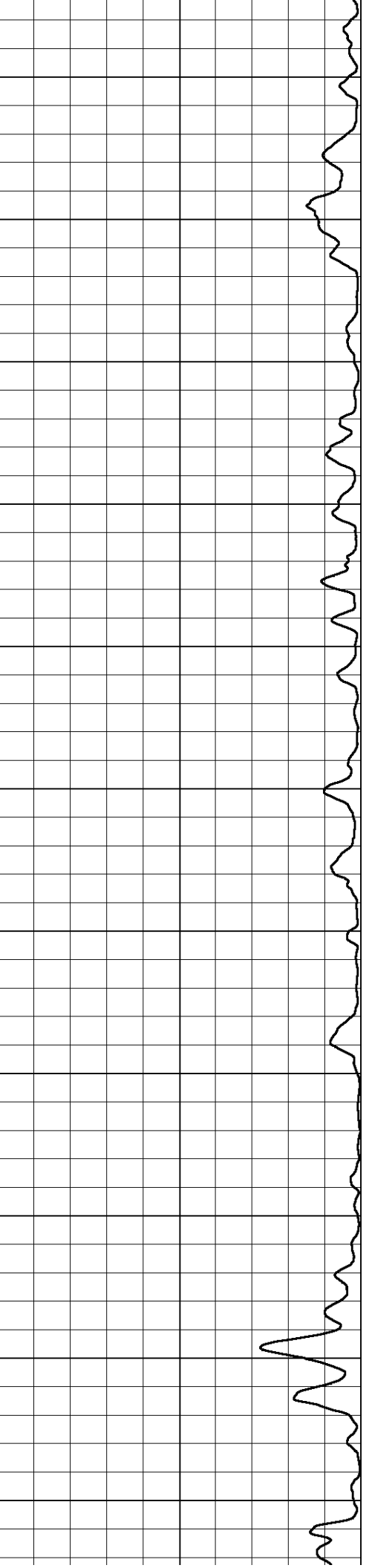
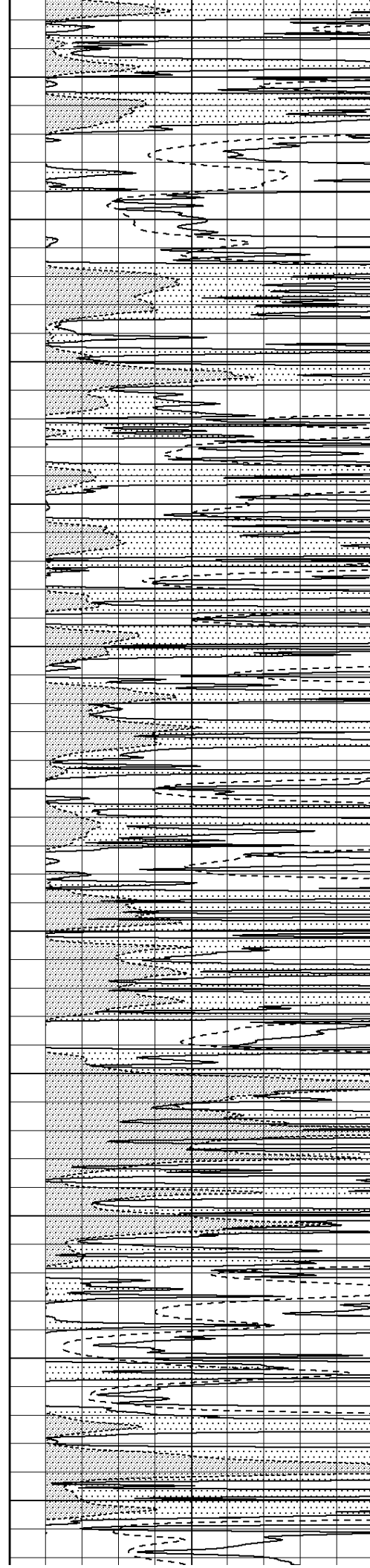
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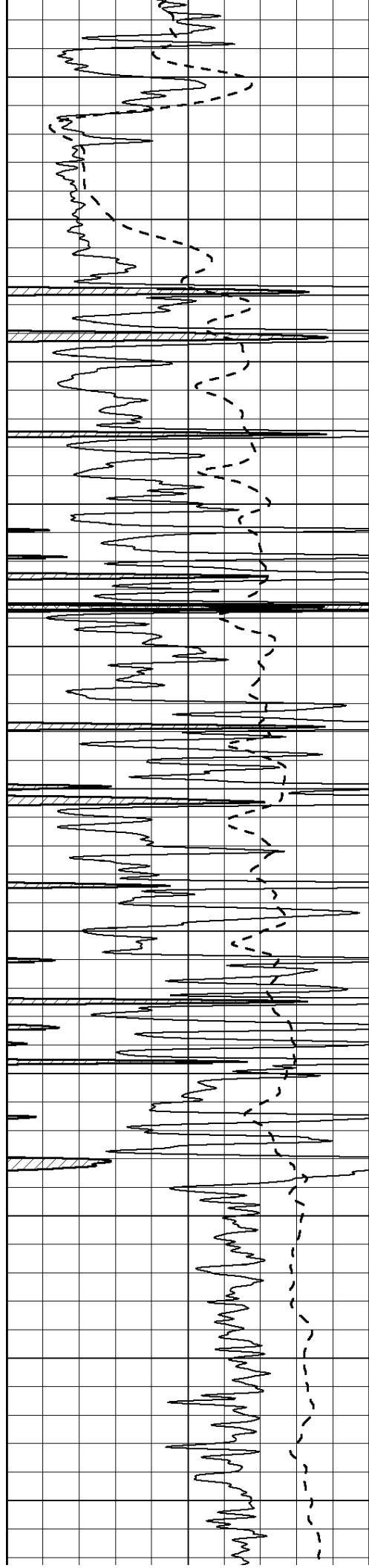
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4150

4200

4250





4300

4350

4400

4450

4500

4550

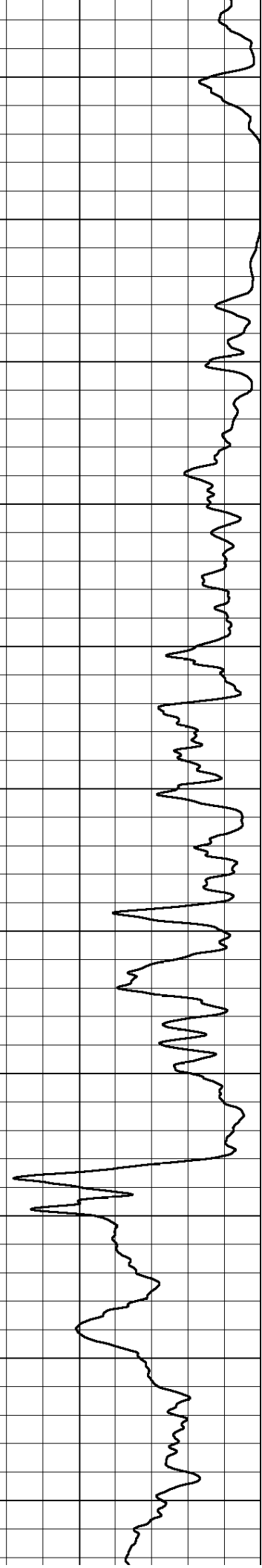
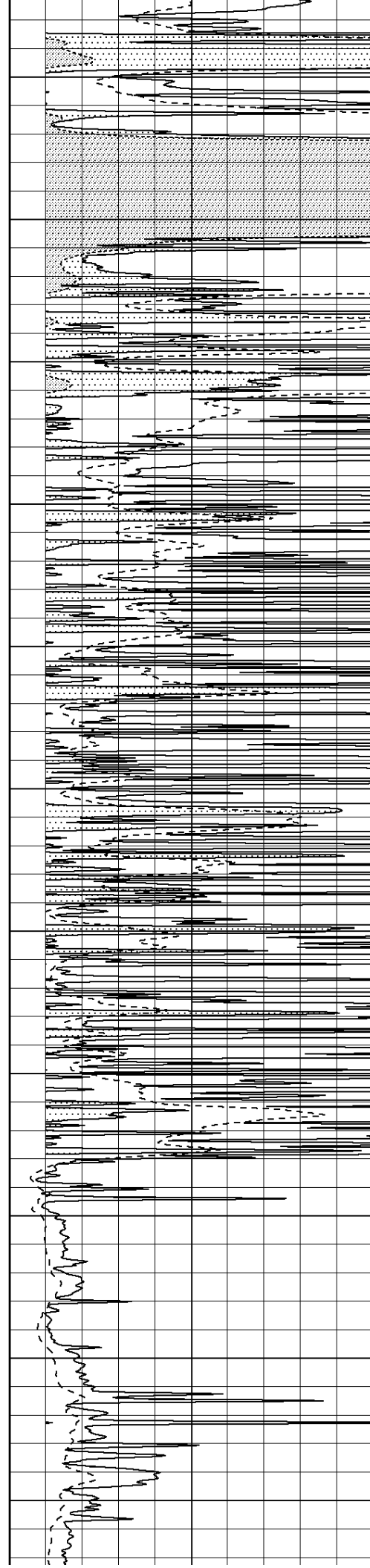
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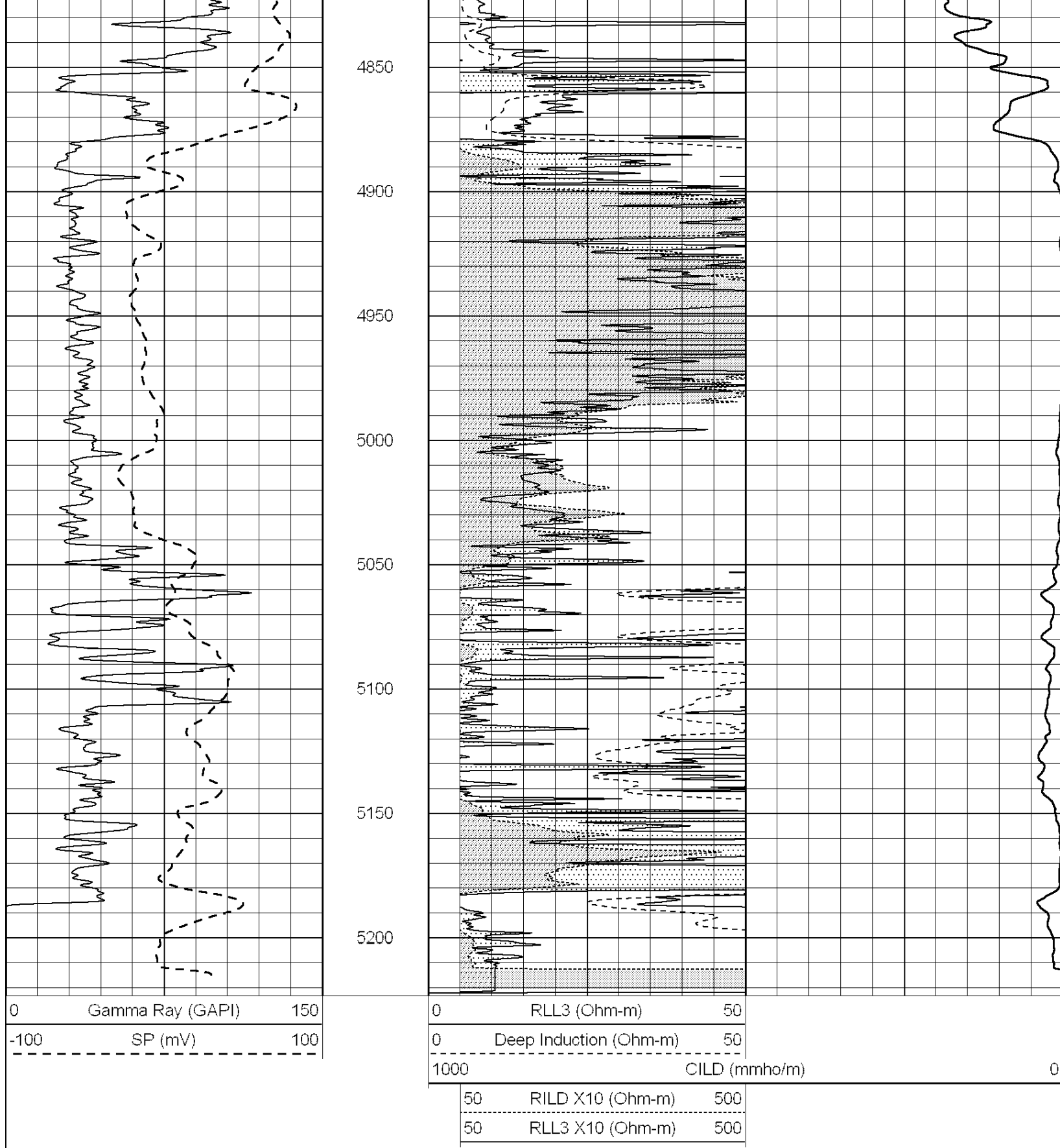
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4700

4750

4800



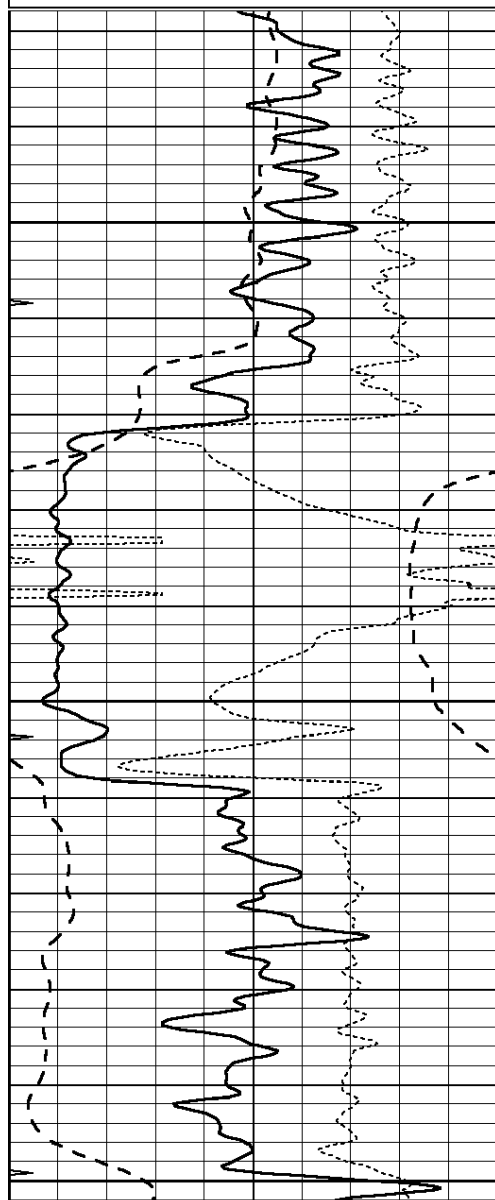


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# MAIN SECTION

0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	RxoRt	50
0	MINMK	20

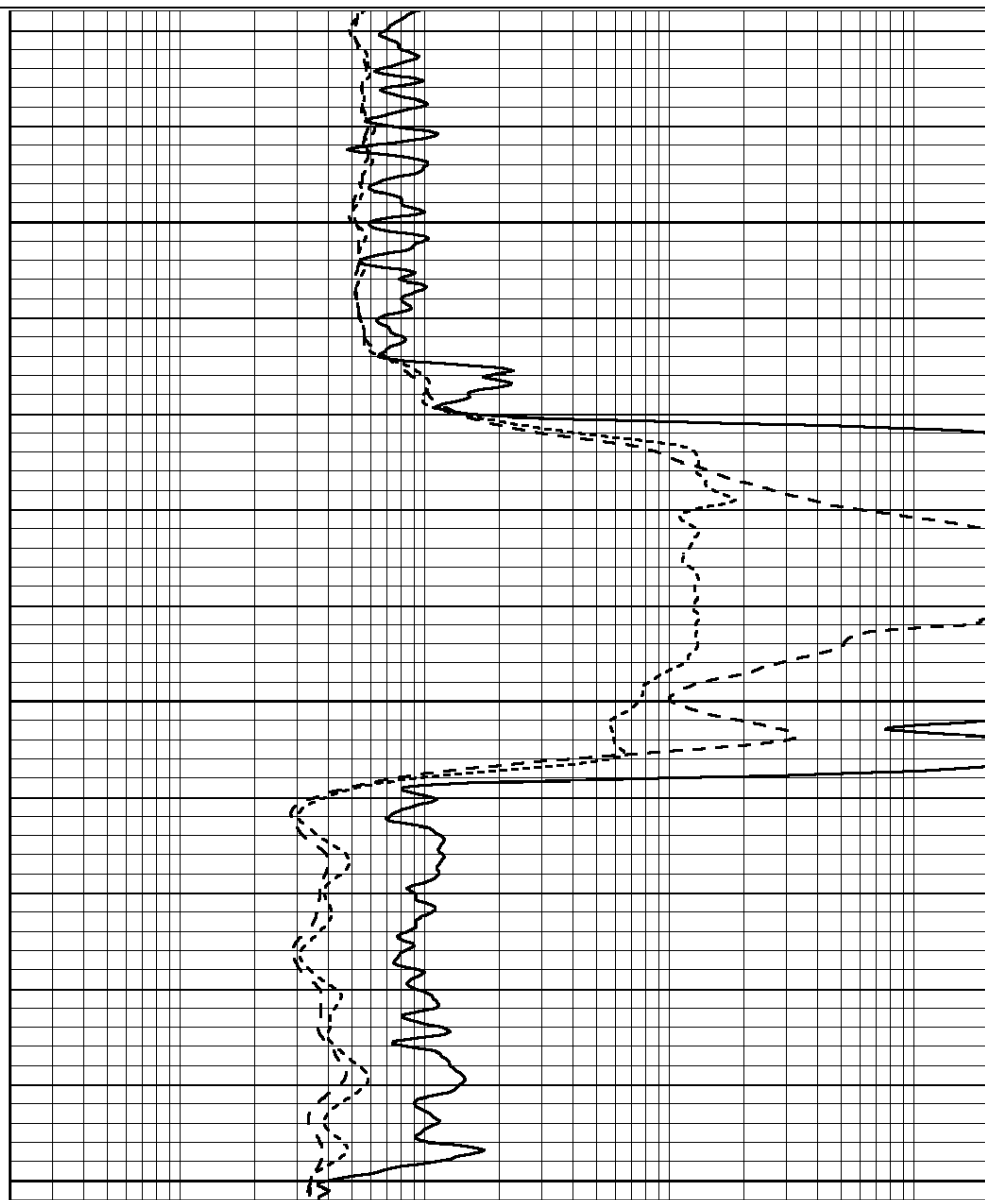
0.2	RLL3 (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000



2400

2450

2500



0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	RxoRt	50
0	MINMK	20

0.2	RLL3 (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000

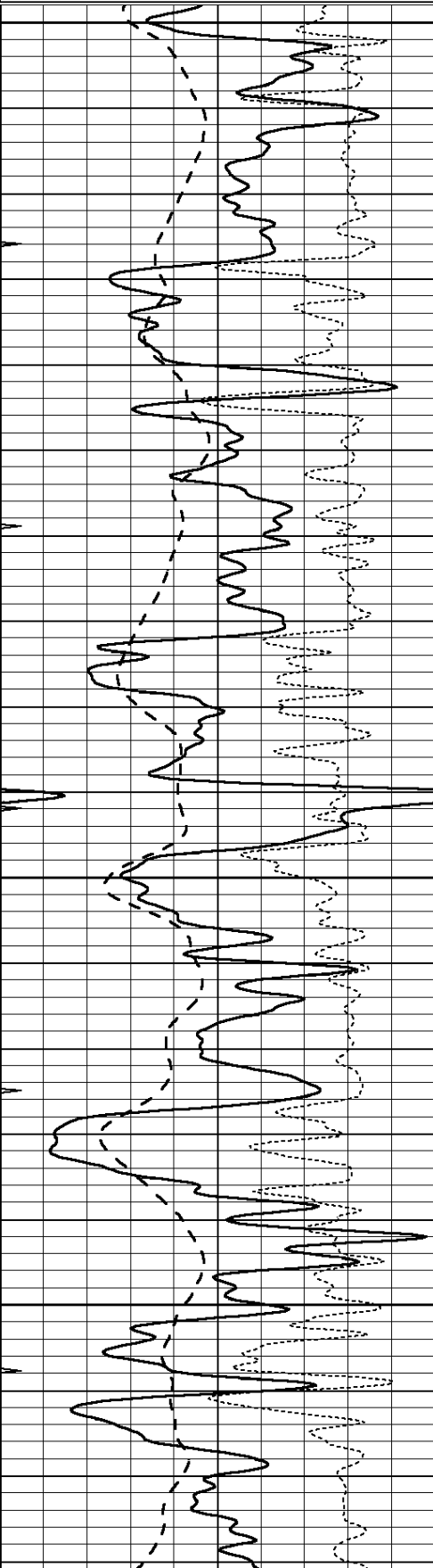


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# MAIN SECTION

0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
<hr style="border-top: 1px dashed black;"/>		
-250	RxoRt	50
<hr style="border-top: 1px dotted black;"/>		
0	MINMK	20

0.2	RLL3 (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
<hr style="border-top: 1px dashed black;"/>		
0.2	MEDIUM INDUCTION (Ohm-m)	2000
<hr style="border-top: 1px dotted black;"/>		

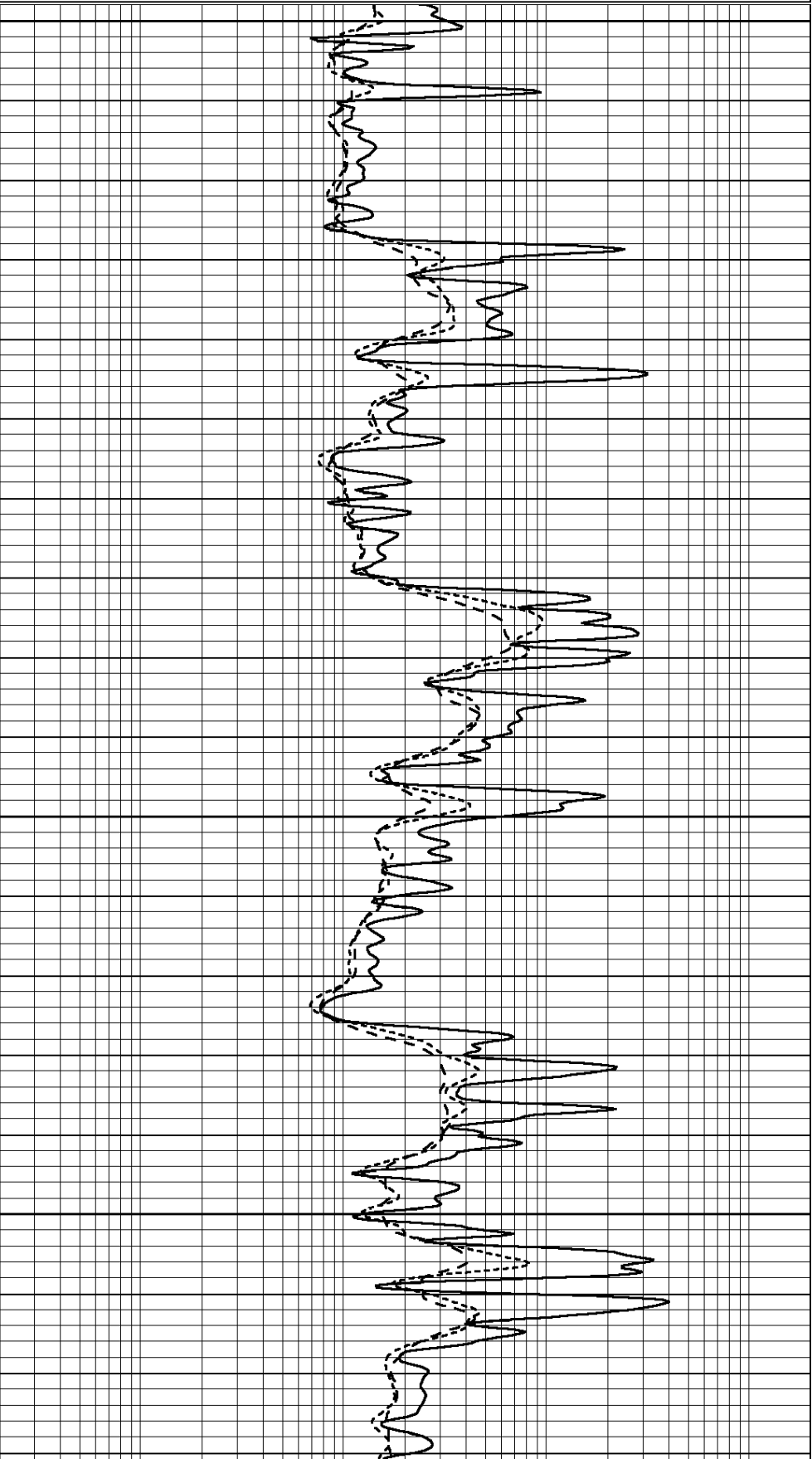


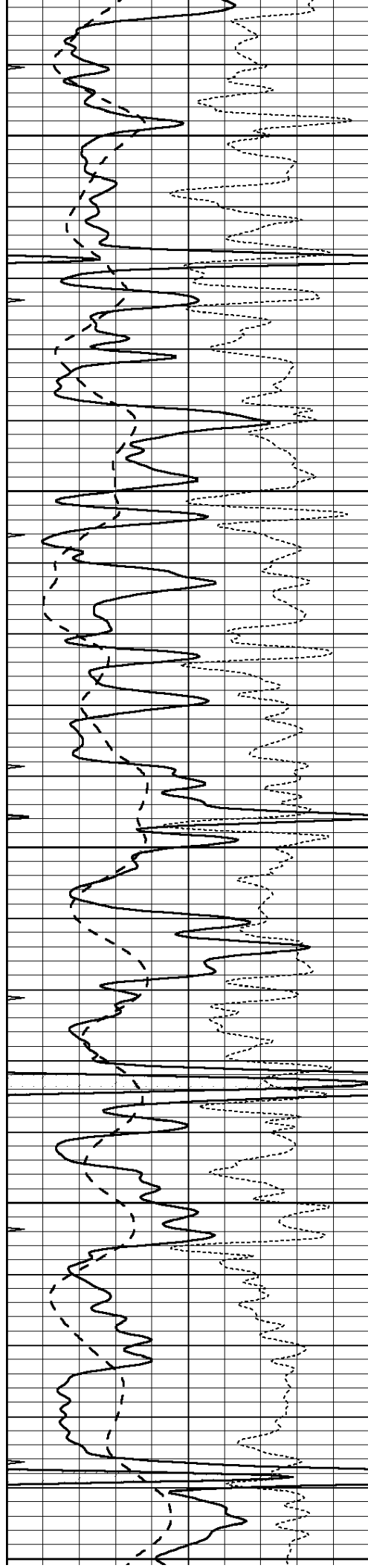
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3450

3500

3550





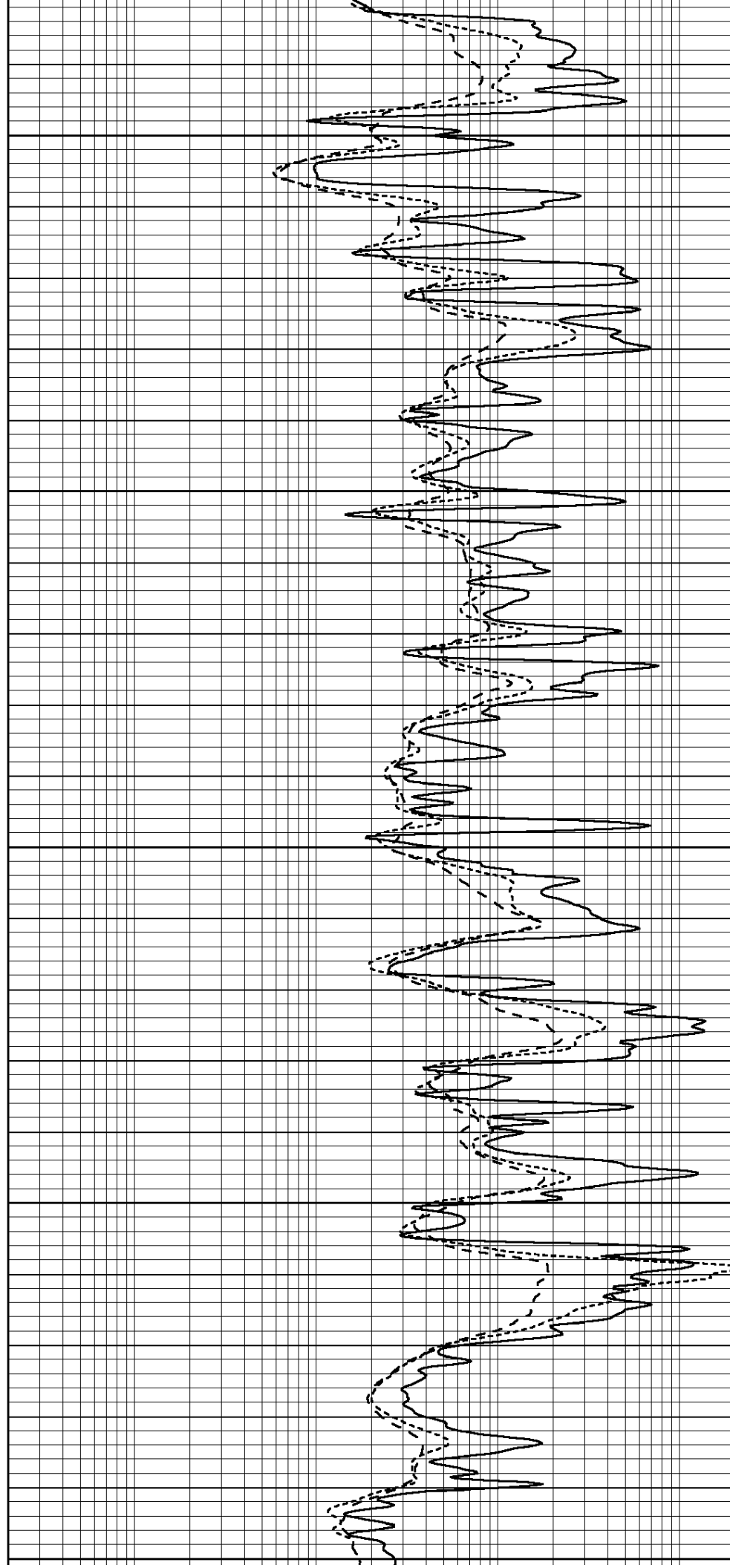
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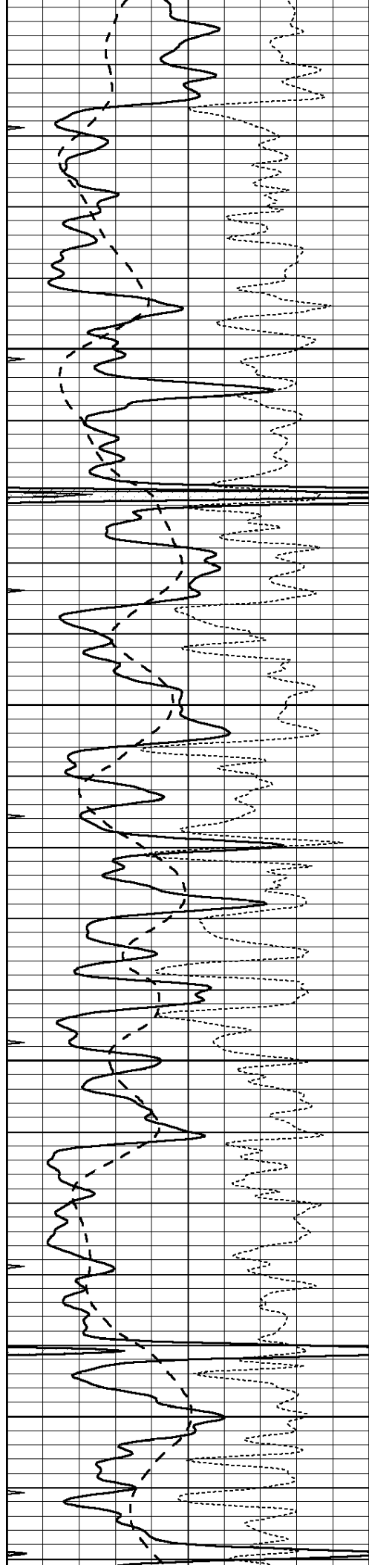
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3700

3750

3800



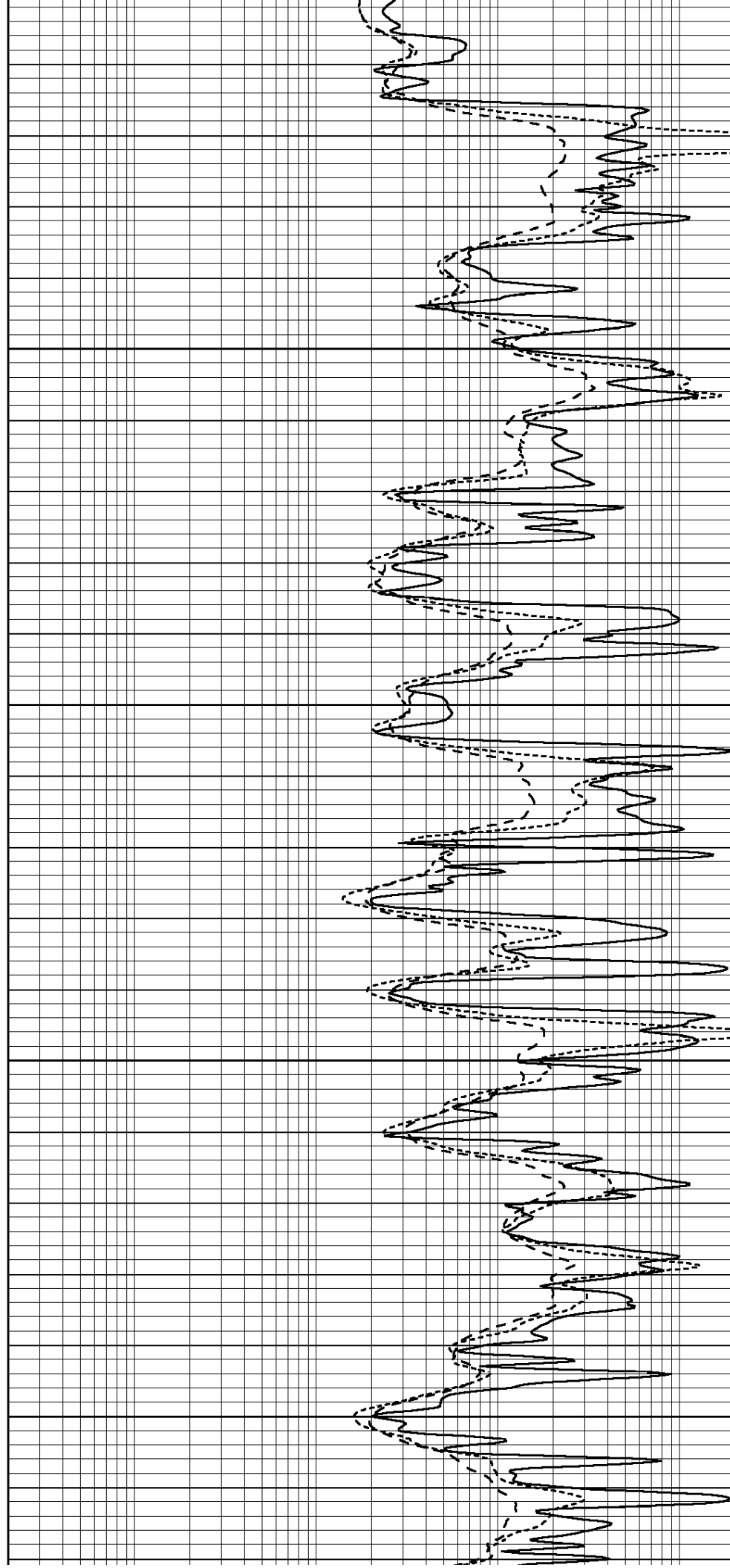


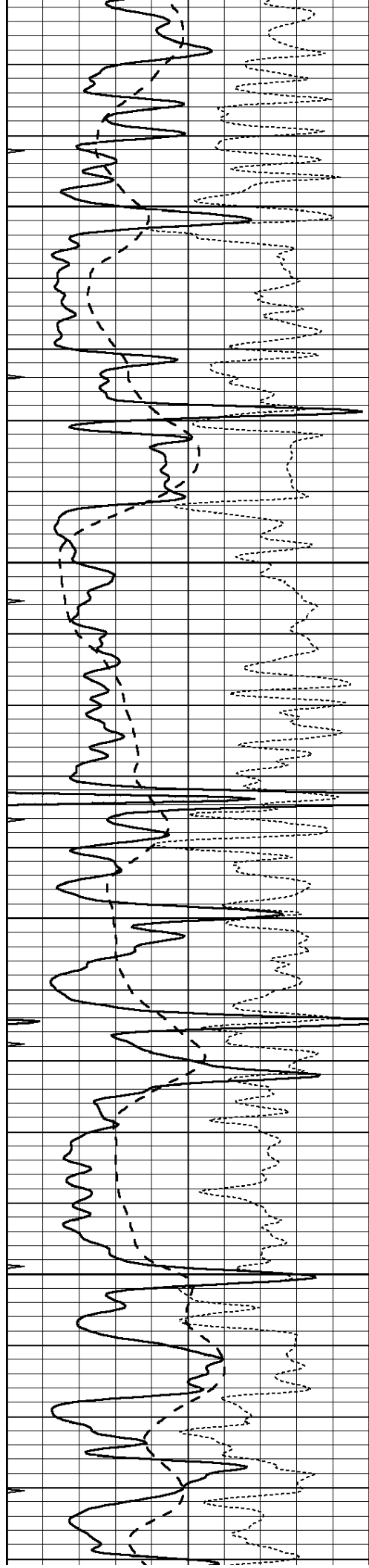
3850

3900

3950

4000



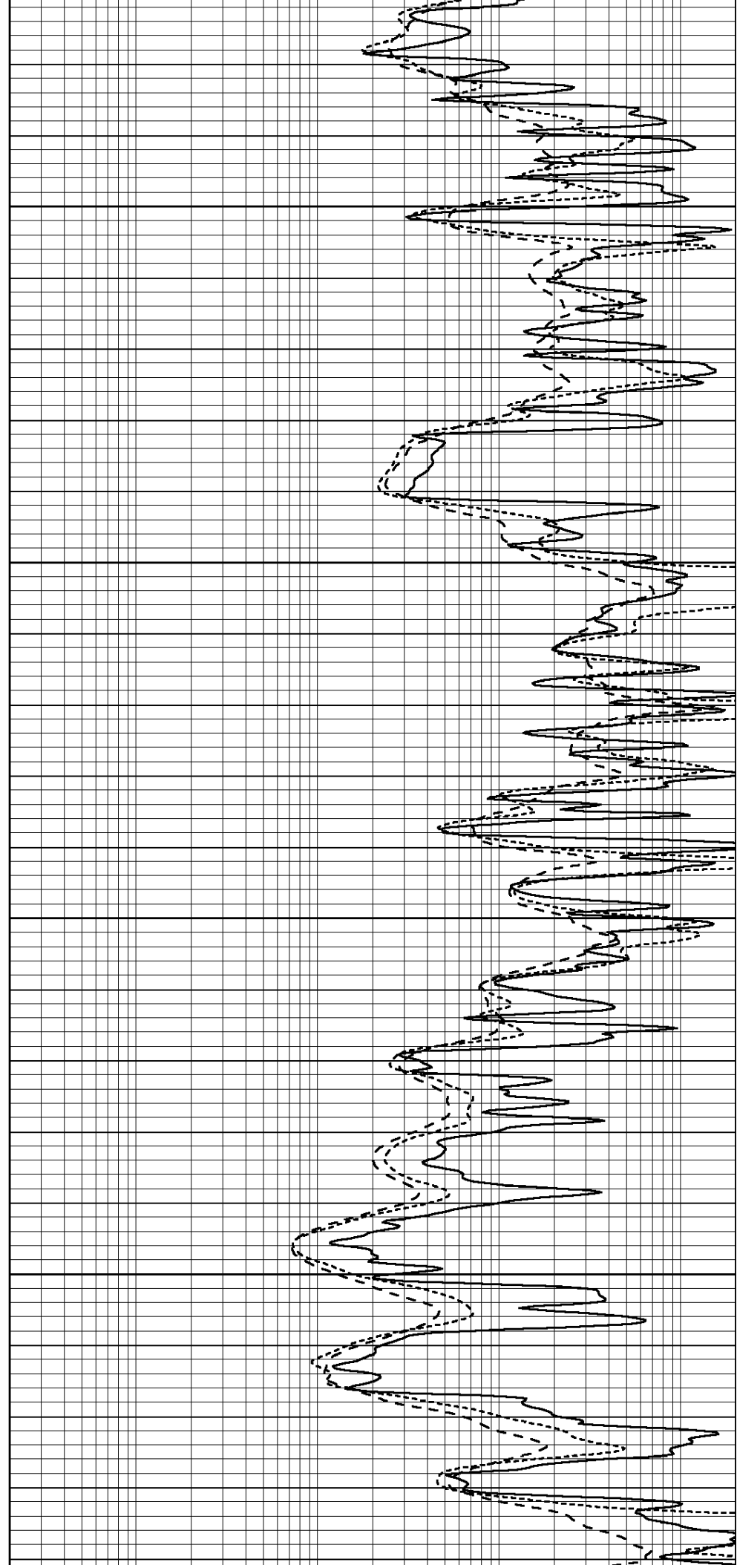


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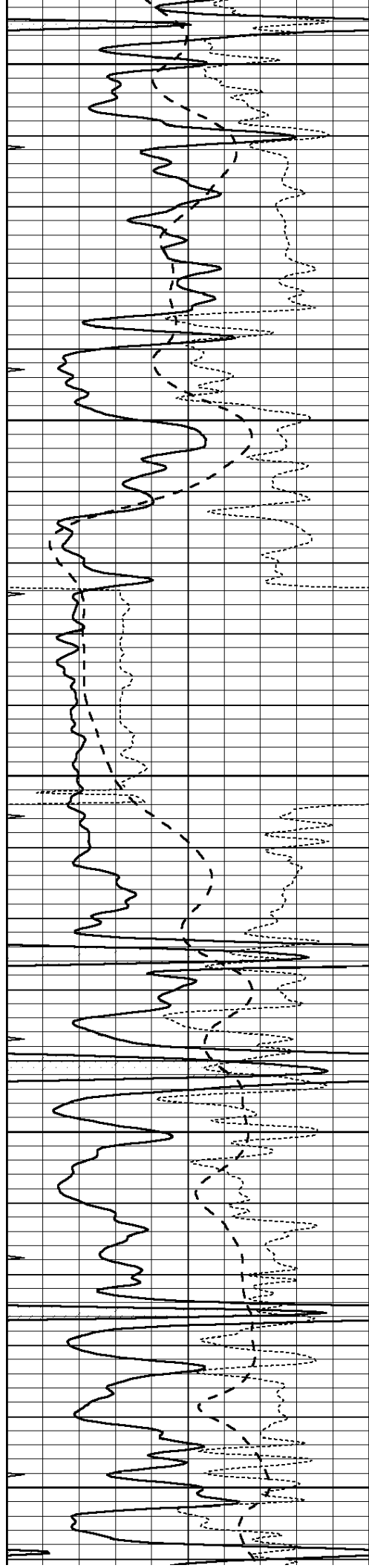
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4150

4200







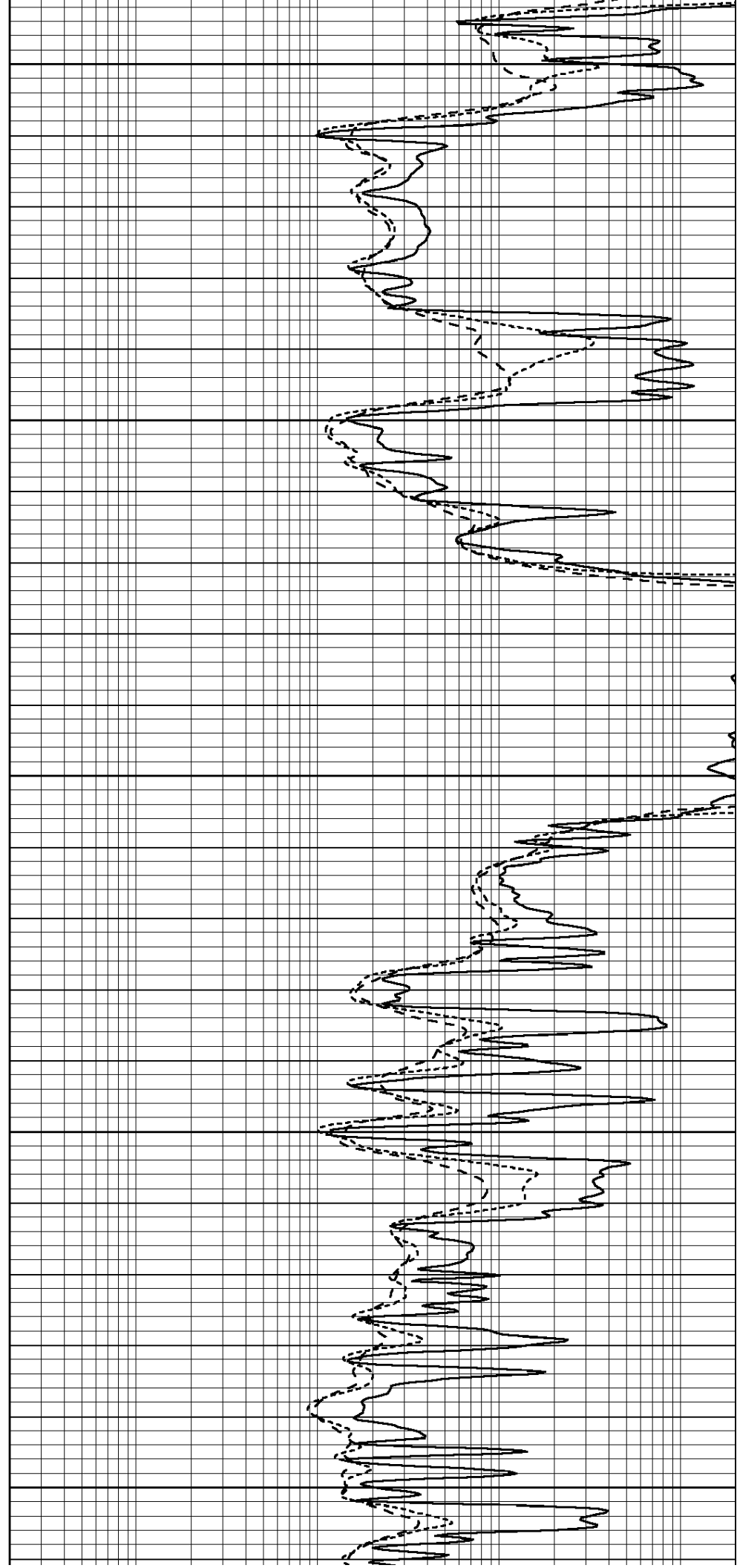
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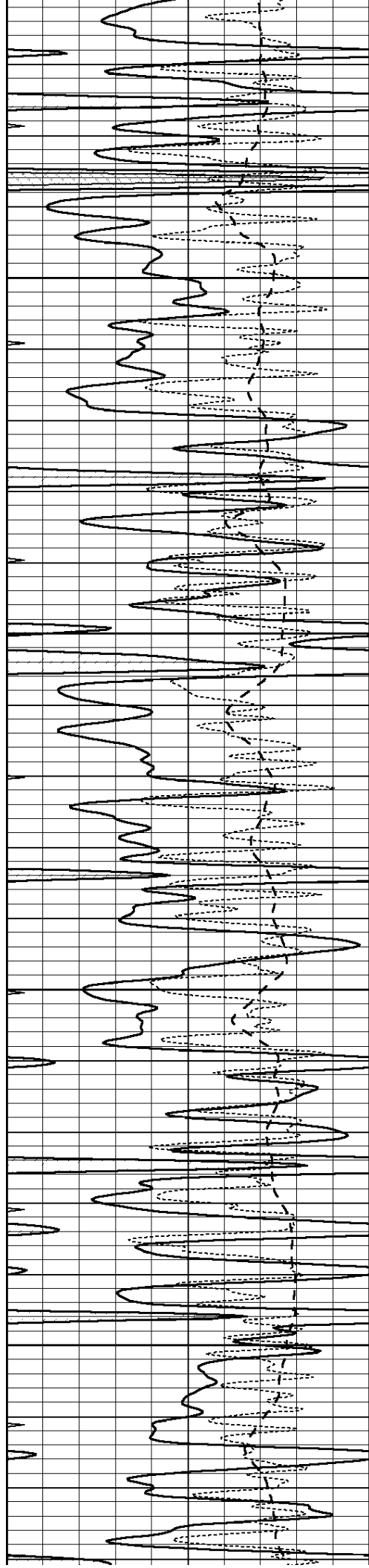
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4350

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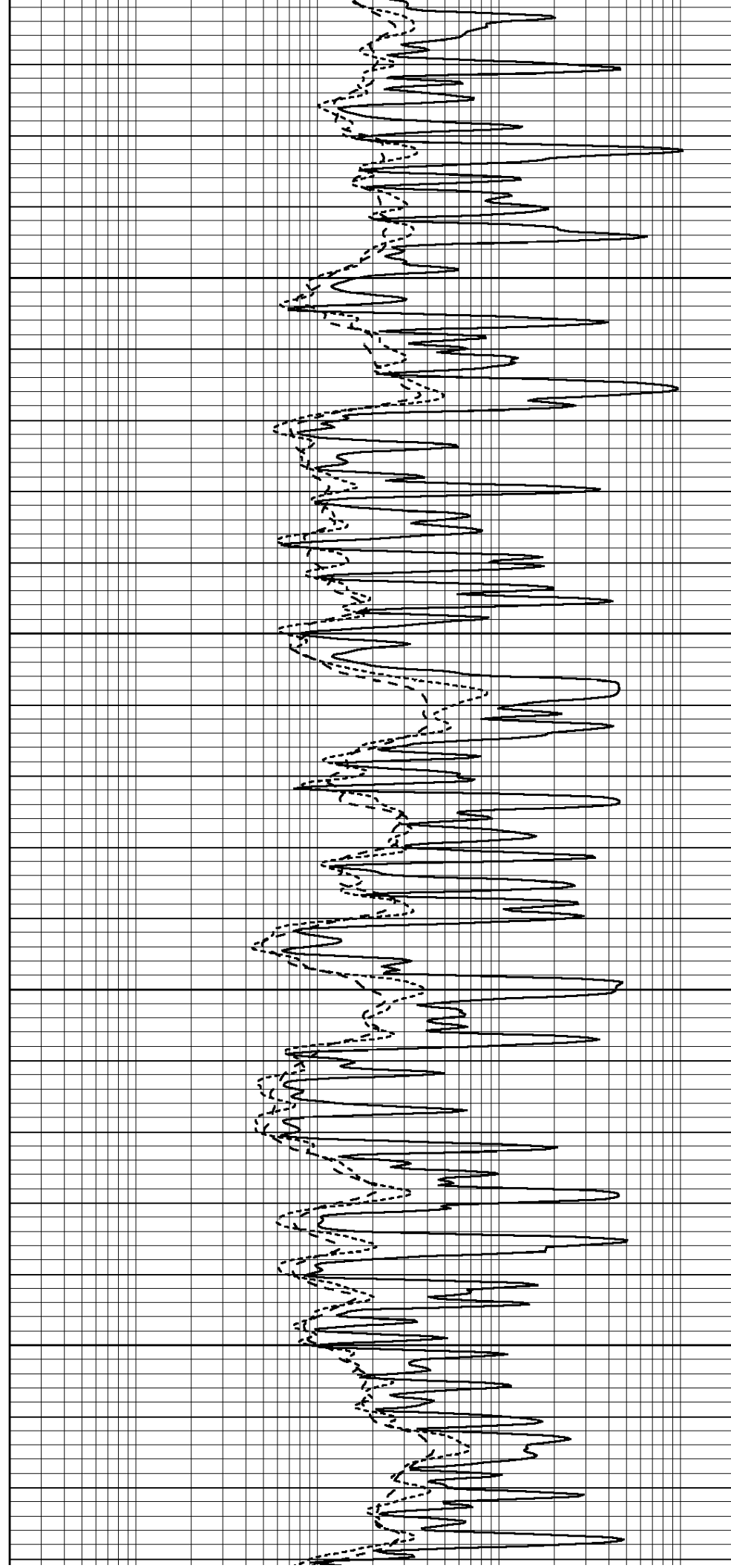


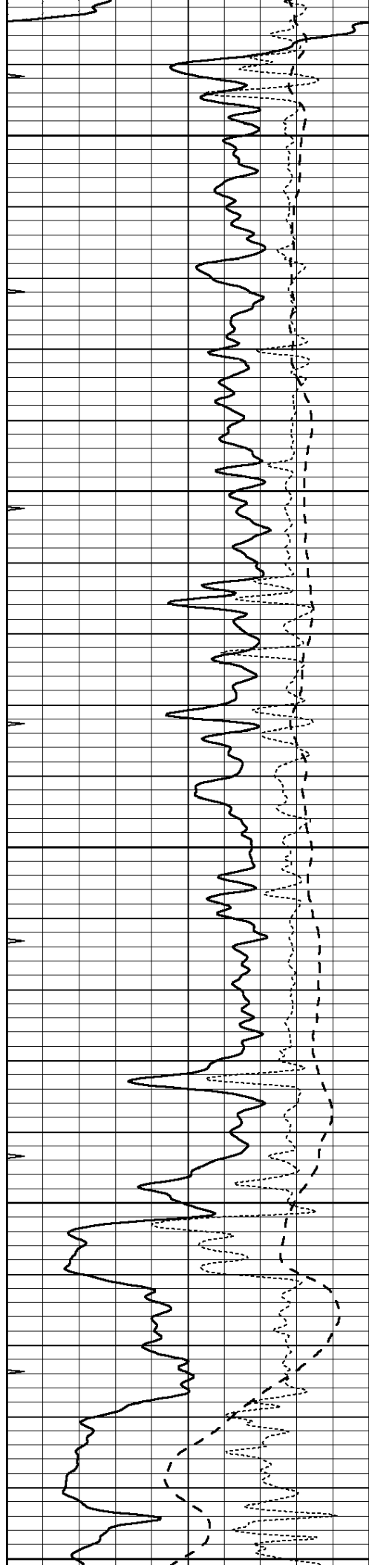
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4550

4600

4650





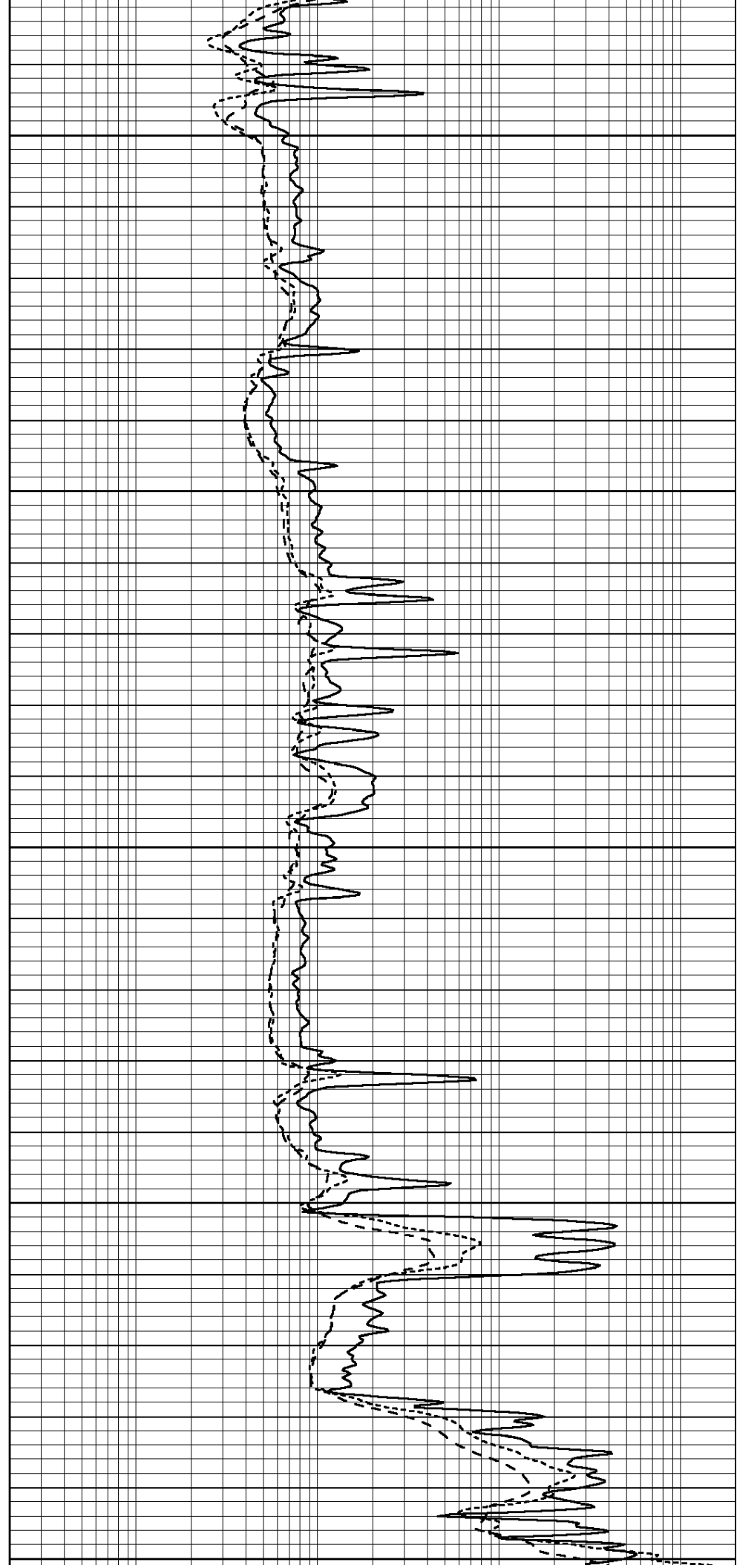
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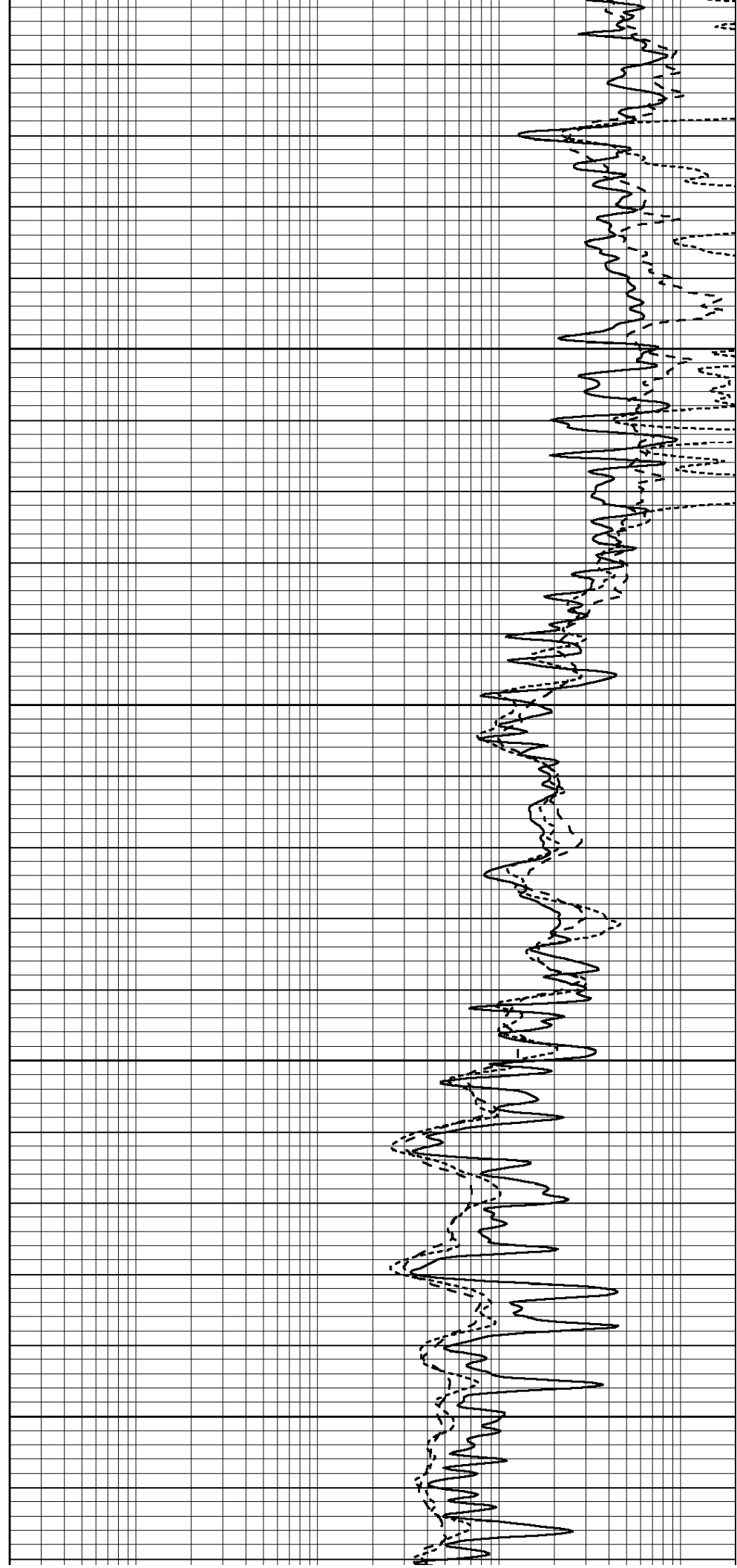
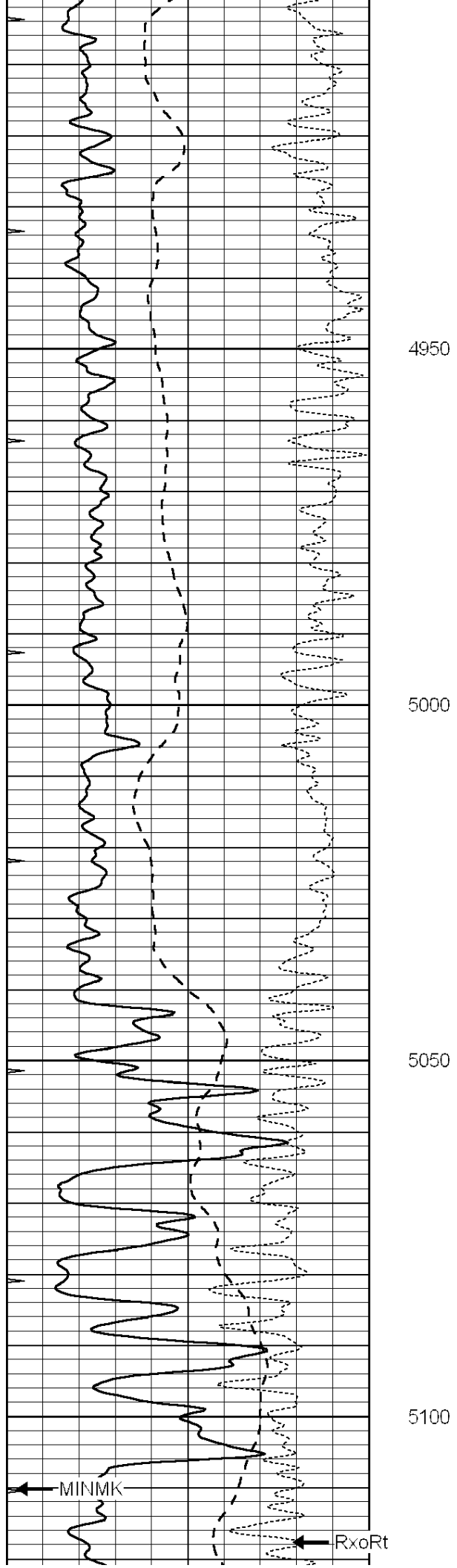
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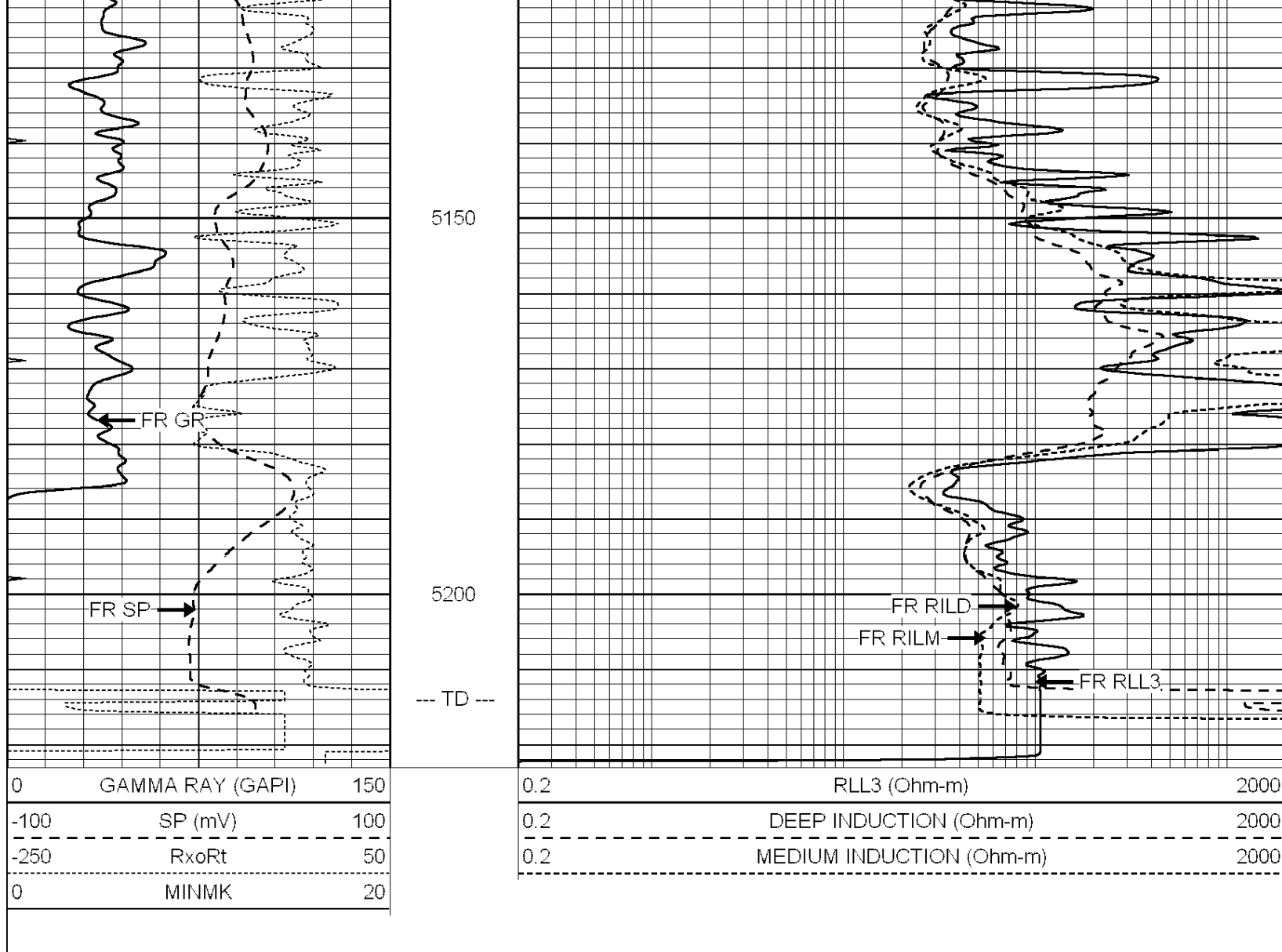
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4900



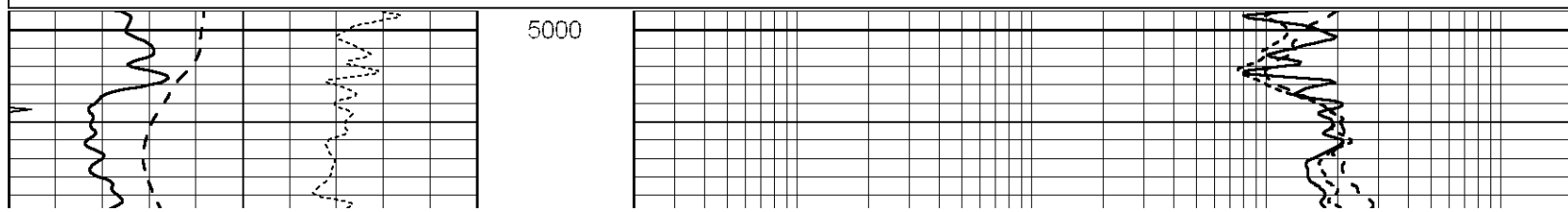
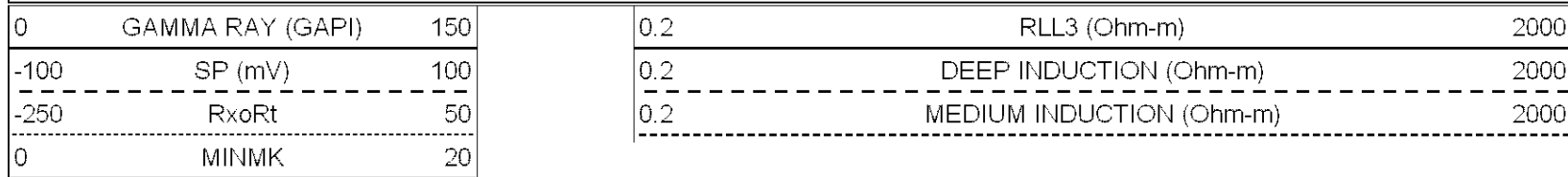


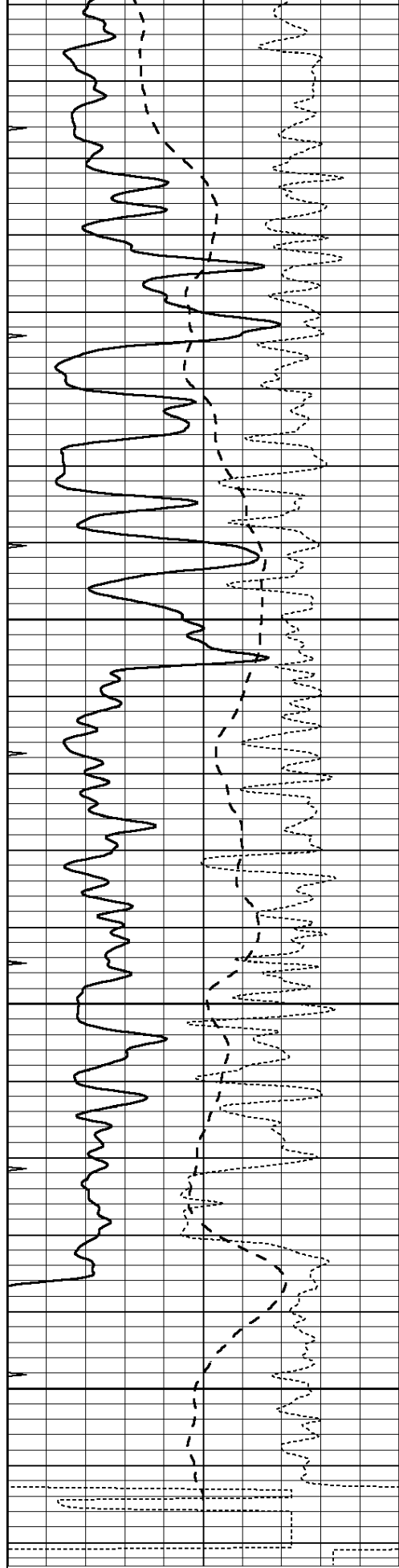


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# REPEAT SECTION

Database File: 007342pdn.db  
 Dataset Pathname: pass2.2A  
 Presentation Format: dil  
 Dataset Creation: Fri Aug 05 05:56:44 2011  
 Charted by: Depth in Feet scaled 1:240





5050

5100

5150

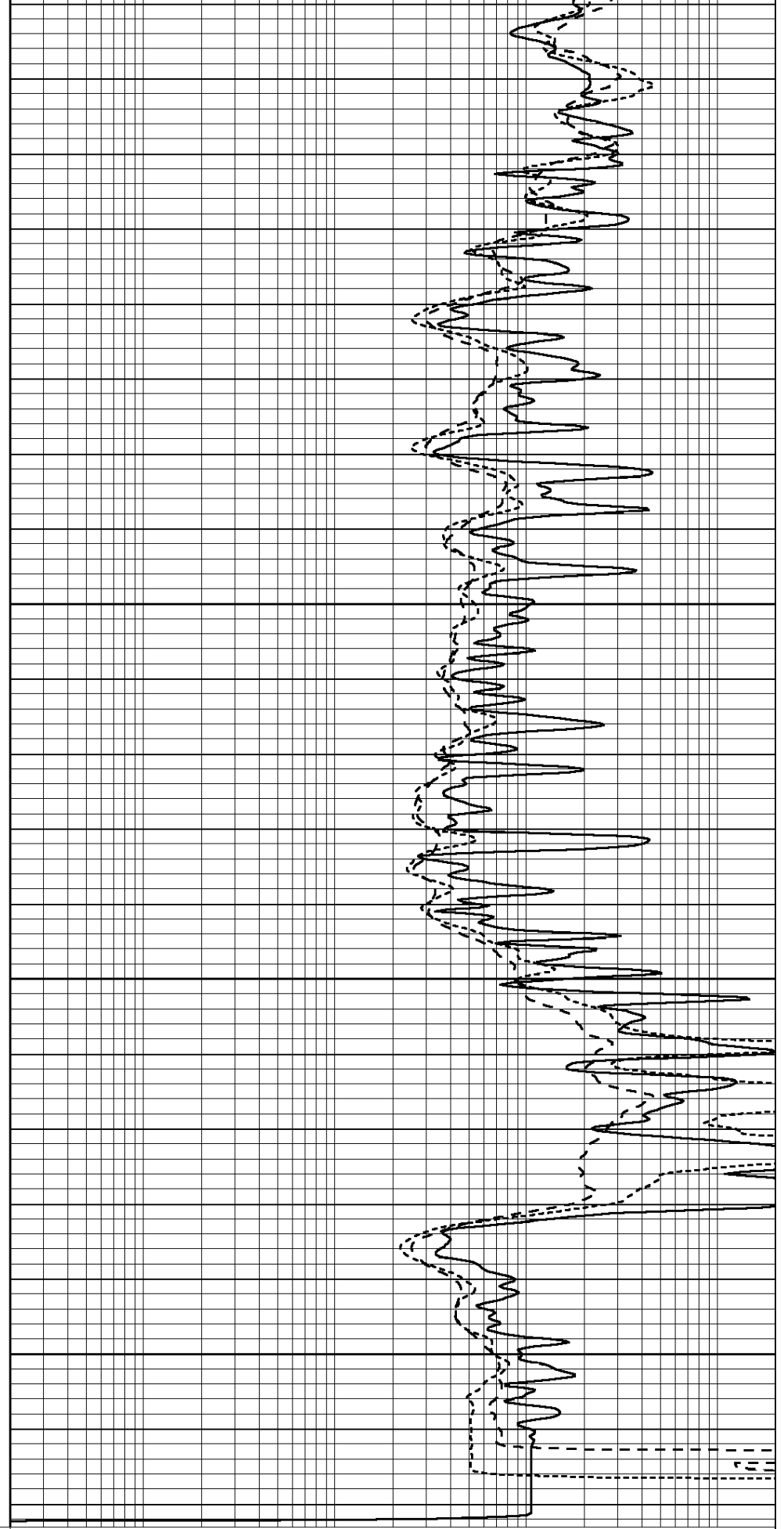
5200

0 GAMMA RAY (GAPI) 150

-100 SP (mV) 100

-250 RxoRt 50

0 25



0.2 RLL3 (Ohm-m) 2000

0.2 DEEP INDUCTION (Ohm-m) 2000

0.2 MEDIUM INDUCTION (Ohm-m) 2000

0 25

# Calibration Report

Database File: 007342pdr.db  
Dataset Pathname: pass3.1A  
Dataset Creation: Fri Aug 05 05:45:11 2011

## Dual Induction Calibration Report

Serial-Model: DIL5-GEAR  
Performed: Fri Aug 05 03:42:11 2011

Readings				References			Results	
Loop:	Air	Loop		Air	Loop		m	b
Deep	0.004	0.654	V	0.000	400.000	mmho/m	540.000	-12.000
Medium	-0.005	0.737	V	0.000	462.500	mmho/m	560.000	-6.000
Internal:	Zero	Cal		Zero	Cal		m	b
Deep	0.006	0.655	V	0.000	400.000	mmho/m	615.668	-3.483
Medium	0.010	0.747	V	0.000	462.500	mmho/m	627.607	-6.064

## Litho Density Calibration Report Serial: 002 Model: PRB Performed Tue Jul 03 11:12:28 2007

### Litho Density Calibration

	Background	Magnesium	Aluminum	Sandstone	
Window 1	1059.5	9172.0	2859.6	10210.6	cps
Window 2	976.0	7793.2	2486.1	8515.6	cps
Window 3	689.8	2930.5	1159.0	3096.2	cps
Window 4	231.9	237.2	231.1	234.0	cps
Long Space	0.0	6817.1	1510.1	7539.6	cps
Short Space	1.6	1758.1	1188.6	1898.8	cps
Rho		1.7100	2.5960	1.3800	g/cc
Pe			2.5700	1.5500	
Rib Angle	: 45.4	Rib Slope	: 1.015	Density/Spine Ratio	: 0.569
Spine Angle	: 75.4	Spine Slope	: 3.850	Spine Intercept	: -19.9

### Caliper

Readings	Reference
Low Ref 3.8	9.7
High Ref 5.9	14.0
Gain: 2.0	Offset: 2.1

## Compensated Neutron Calibration Report

Serial Number: NUE\_2I  
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

## Gamma Ray Calibration Report

Serial Number: GR5  
Tool Model: OPEN

Tool Model: OPEN  
Performed: Fri Aug 05 03:36:27 2011

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps

Calibrator Reading: 1.0 cps

Sensitivity: 0.6500 GAPI/cps