



**Casedhole  
Solutions**

**DUAL  
INDUCTION  
LOG**

Company BLACK RAVEN ENERGY/ENERJEX RESOURCES  
Well LAST WOMAN STANDING #943-15-24-D  
Field WILDCAT  
County SEDGWICK  
State COLORADO

Company BLACK RAVEN ENERGY/ENERJEX RESOURCES  
Well LAST WOMAN STANDING #943-15-24-D  
Field WILDCAT  
County SEDGWICK State COLORADO

Location: API #: 05-115-06111-00-00  
600' FSL & 1575' FWL

Other Services  
CDL/CNL/PE  
MEL/SON

SEC 15 TWP 9N RGE 43W

Permanent Datum GROUND LEVEL Elevation 3642  
Log Measured From KELLY BUSHING 12' A.G.L.  
Drilling Measured From KELLY BUSHING

Elevation  
K.B. 3654  
D.F. 3652  
G.L. 3642

Date	11/6/15		
Run Number	ONE		
Depth Driller	5726		
Depth Logger	5729		
Bottom Logged Interval	5727		
Top Log Interval	00		
Casing Driller	8 5/8" @ 601'		
Casing Logger	600		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 9400 PPM	
Density / Viscosity	9.2/69		
pH / Fluid Loss	11.5/6.4		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	.50 @ 55F		
Rmt @ Meas. Temp	.37 @ 55F		
Rmc @ Meas. Temp	.60 @ 55F		
Source of Rmt / Rmc	MEASUREMENT		
Rm @ BHT	.20 @ 132F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom			
Maximum Recorded Temperature	132F		
Equipment Number	4010		
Location	HAYS, KANSAS		
Recorded By	JASON CAPPELLUCCI		
Witnessed By	PAUL GUNZELMAN		

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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.

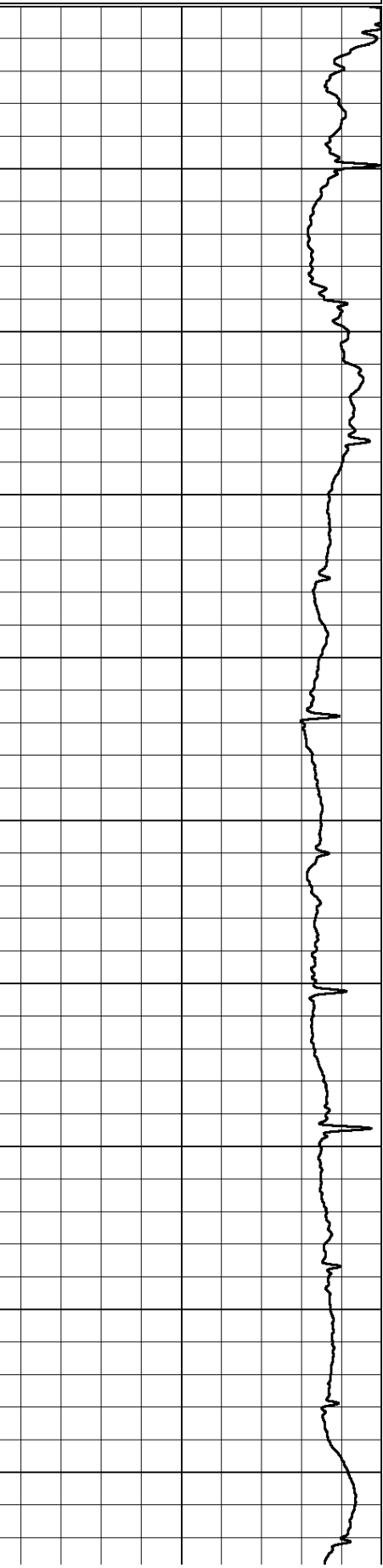
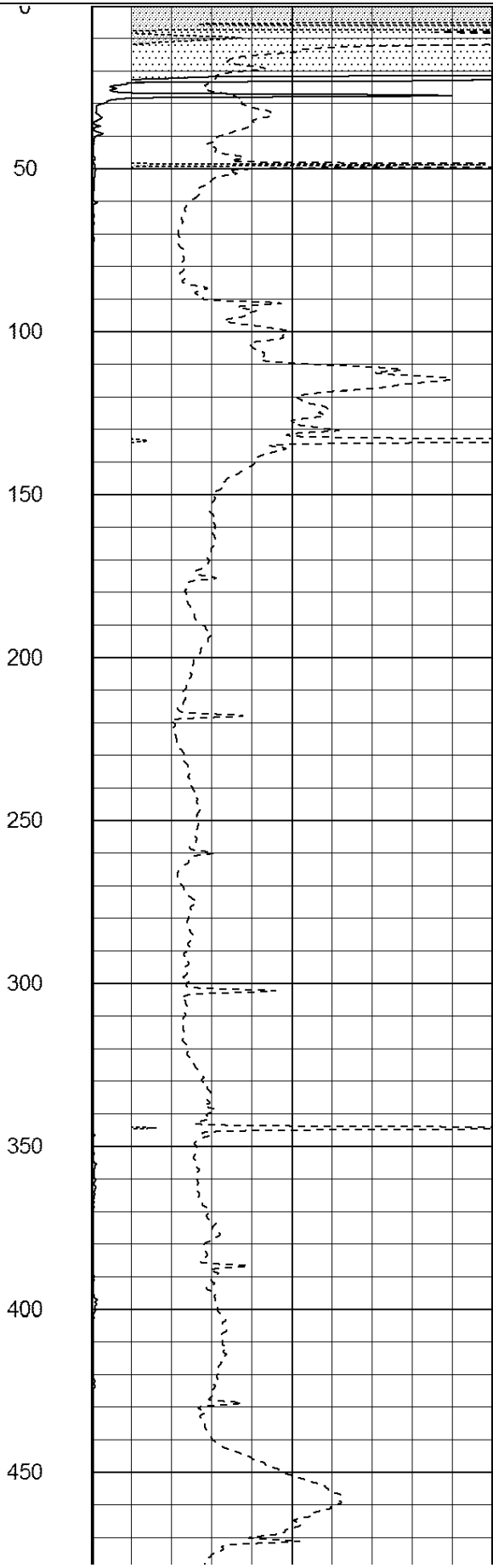
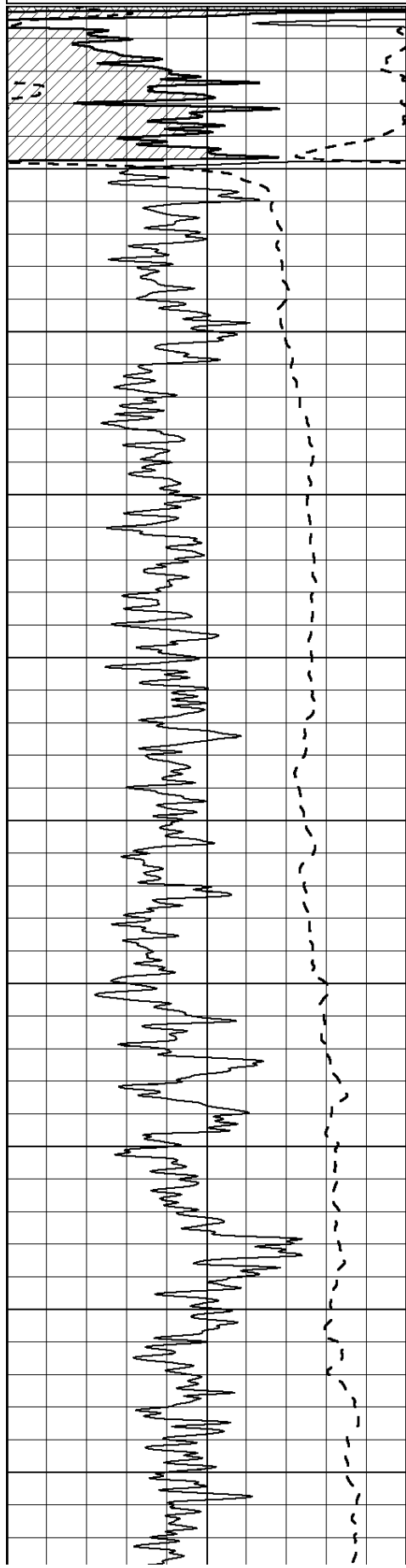
**Comments**

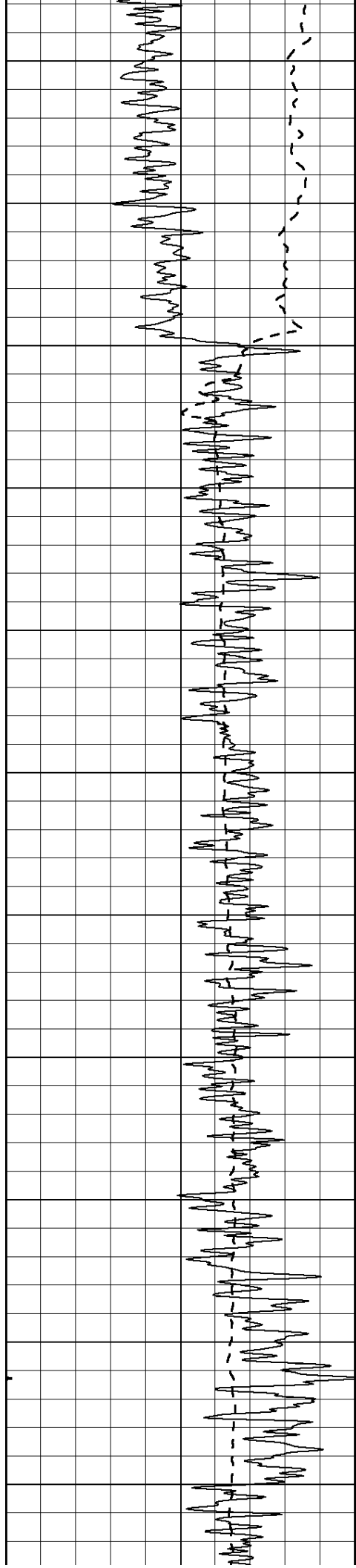
THANK YOU FOR USING CASEDHOLE SOLUTIONS, HAYS, KS. (785) 628-6395  
DIRECTIONS:  
HOLYOKE, CO. - NORTH SIDE OF TOWN TO HWY 23 - 12 MILES NORTHEAST  
TO RD. 55 - 3 NORTH TO RD. 44 - 1/2 EAST - NORTH INTO

Database File: 30880pe.db  
Dataset Pathname: pass3.3  
Presentation Format: \_dil2  
Dataset Creation: Fri Nov 06 04:01:48 2015 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





500

550

600

650

700

750

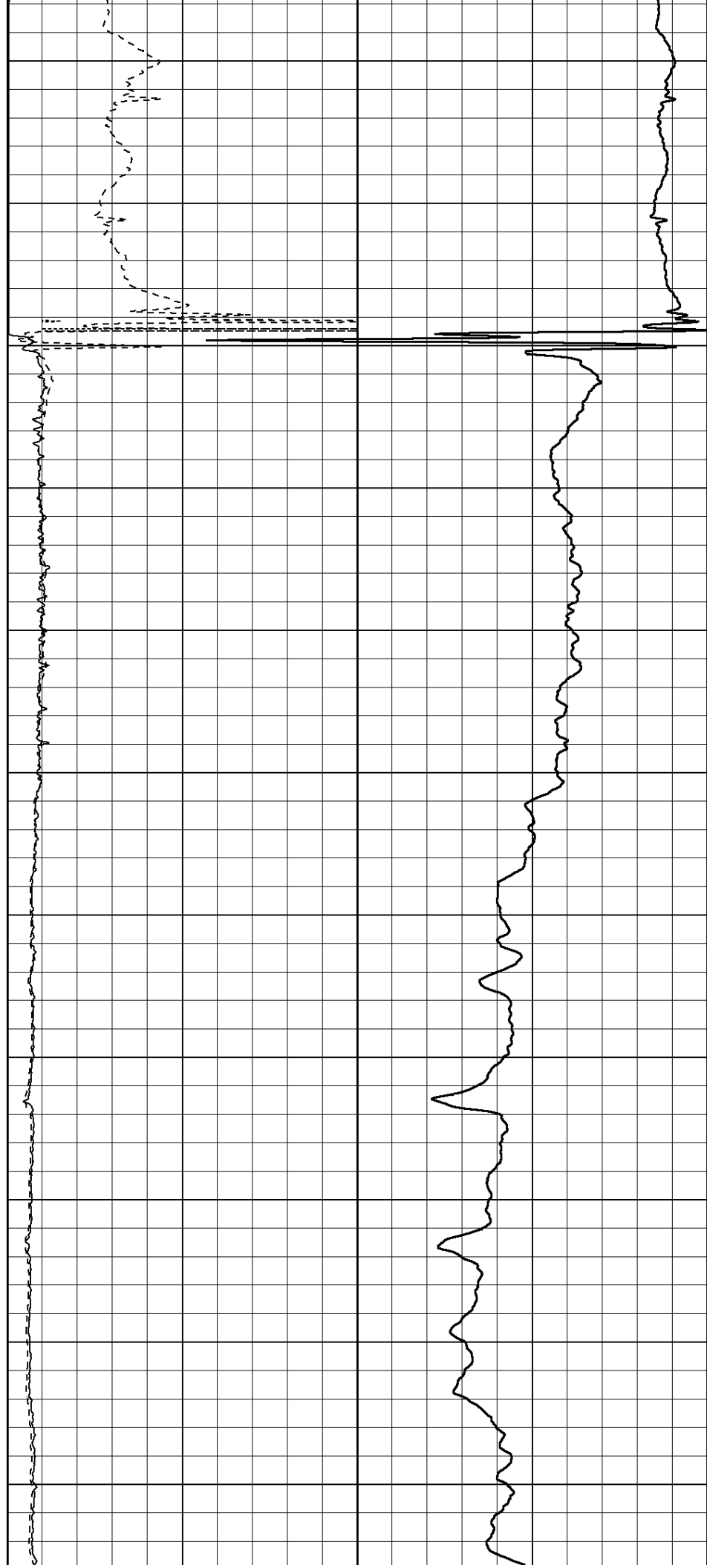
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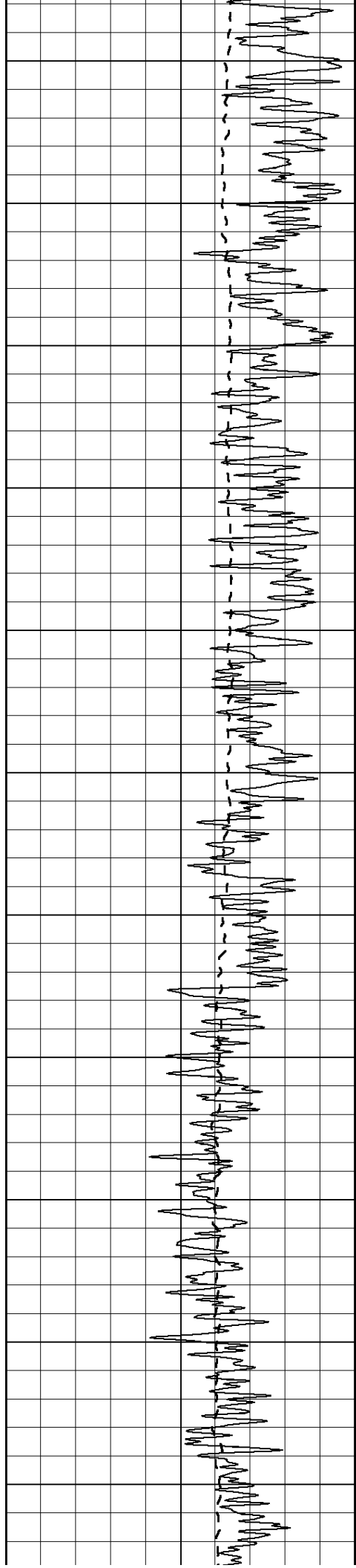
850

900

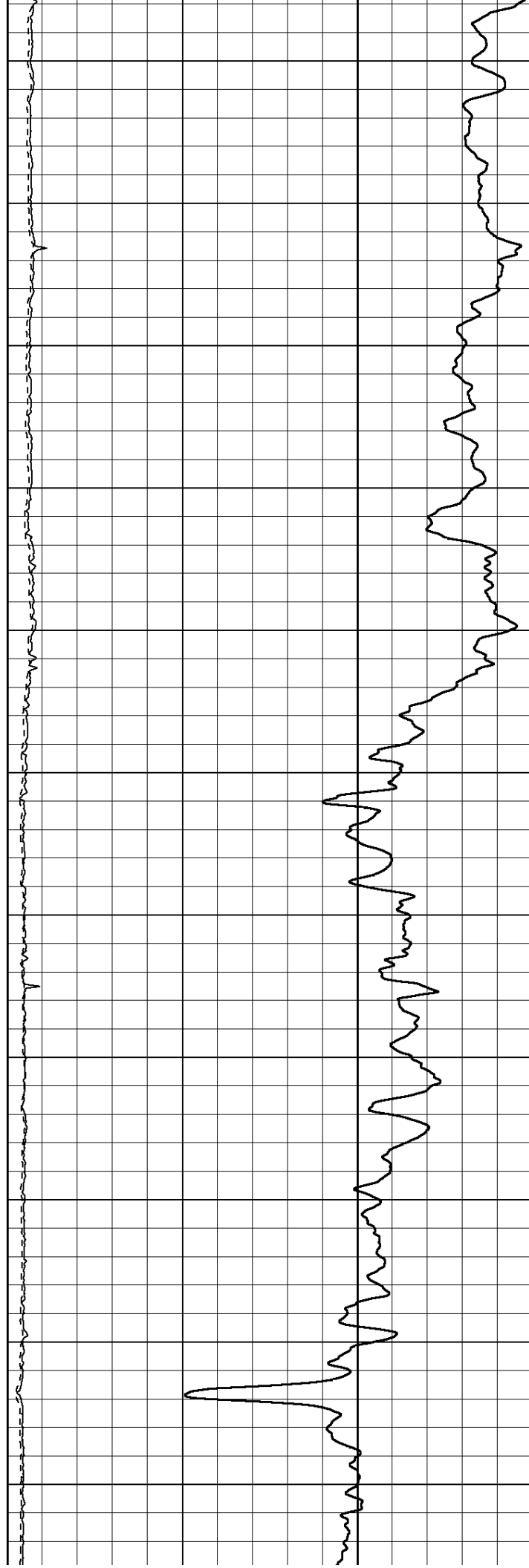
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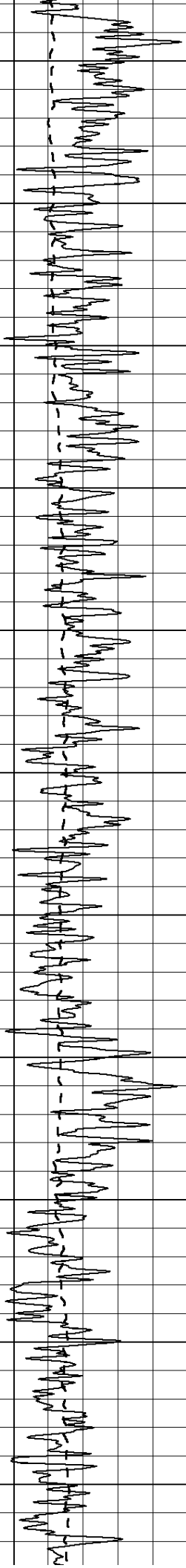
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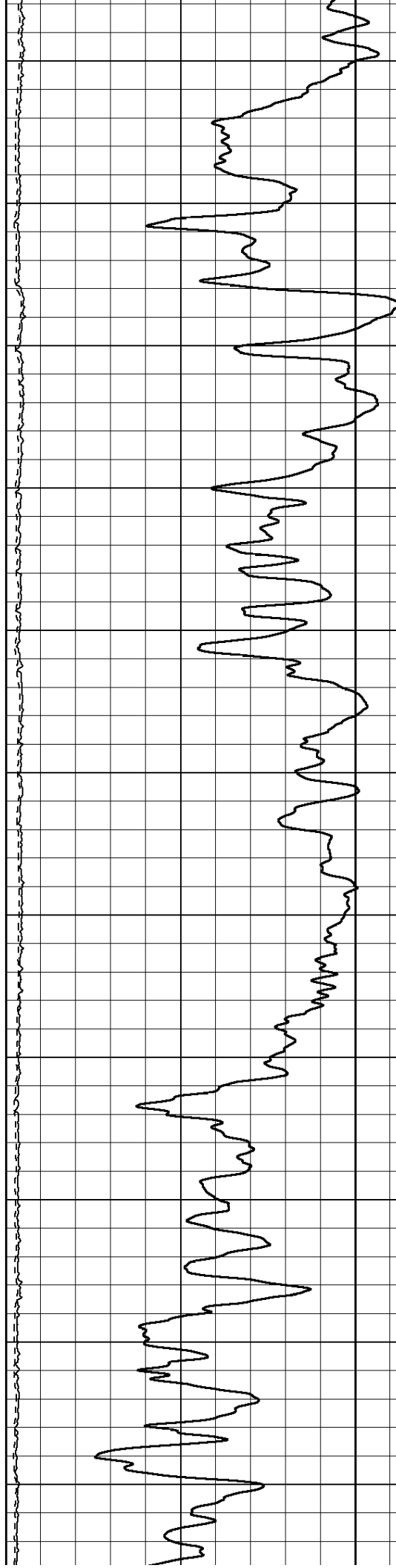


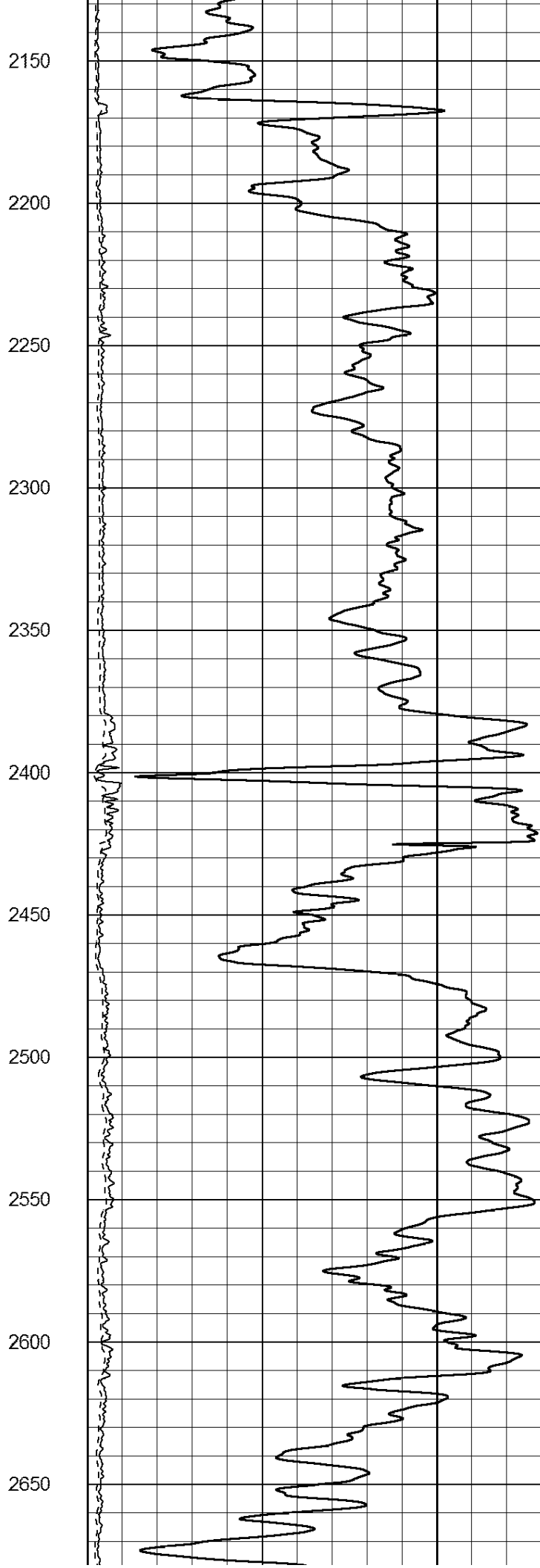
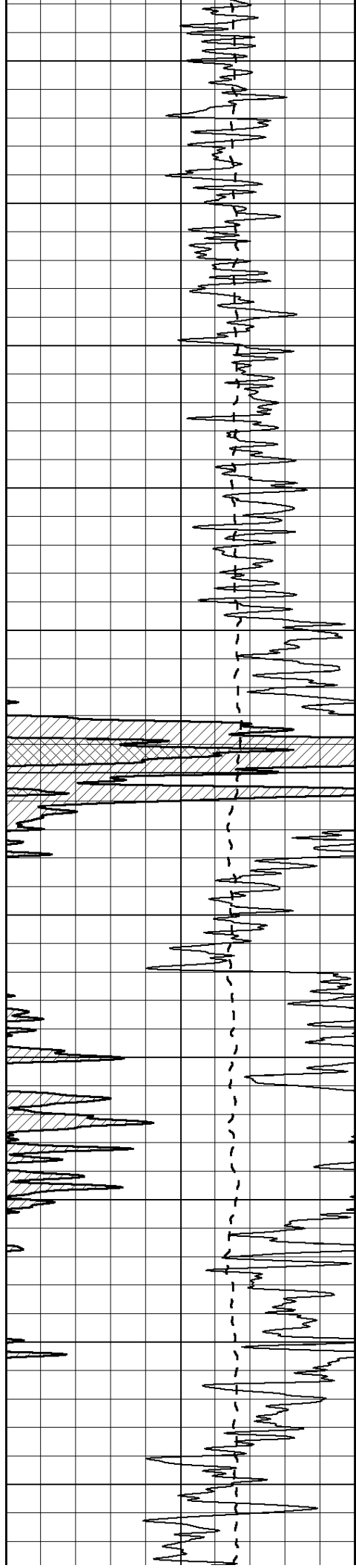
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1100  
1150  
1200  
1250  
1300  
1350  
1400  
1450  
1500  
1550

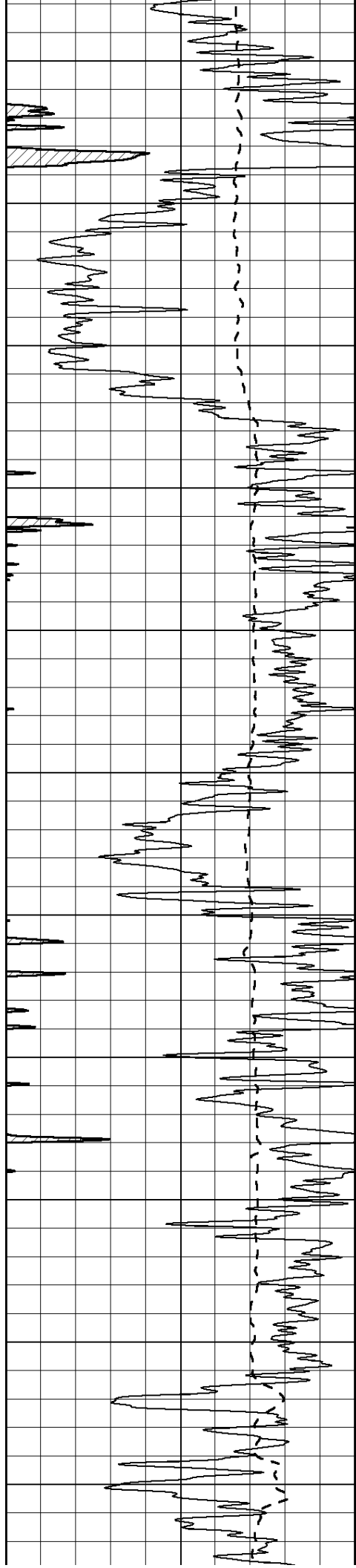




1600  
1650  
1700  
1750  
1800  
1850  
1900  
1950  
2000  
2050  
2100







2700

2750

2800

2850

2900

2950

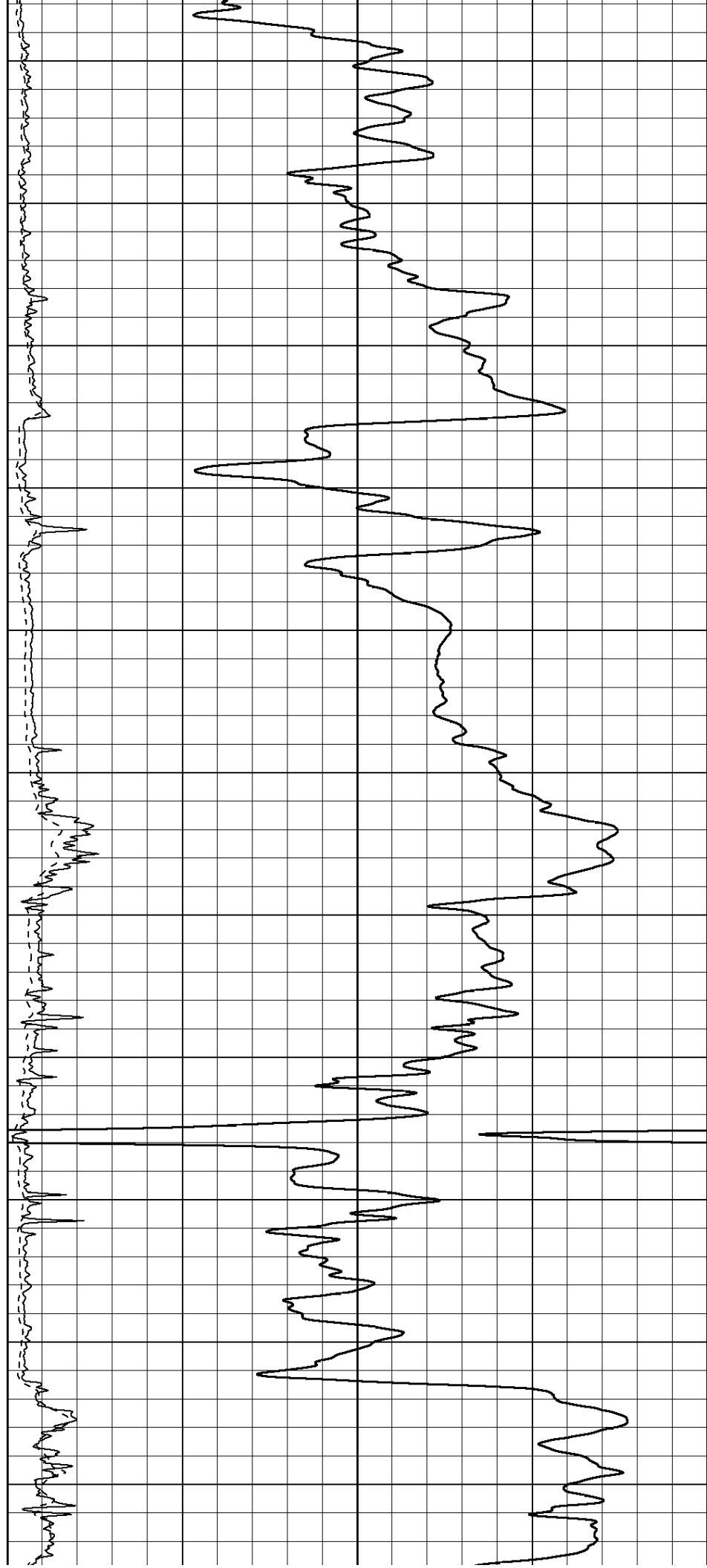
3000

3050

3100

3150

3200



3250

3300

3350

3400

3450

3500

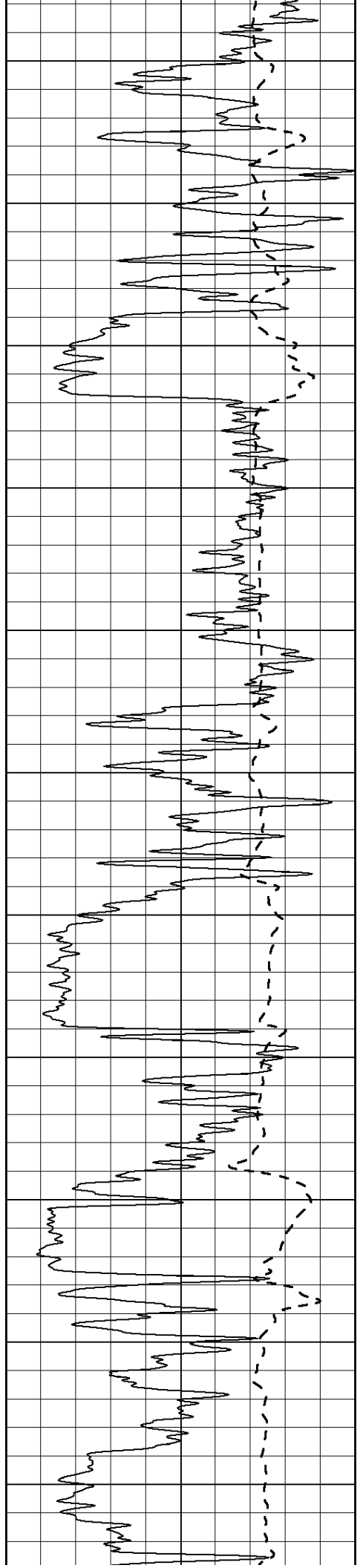
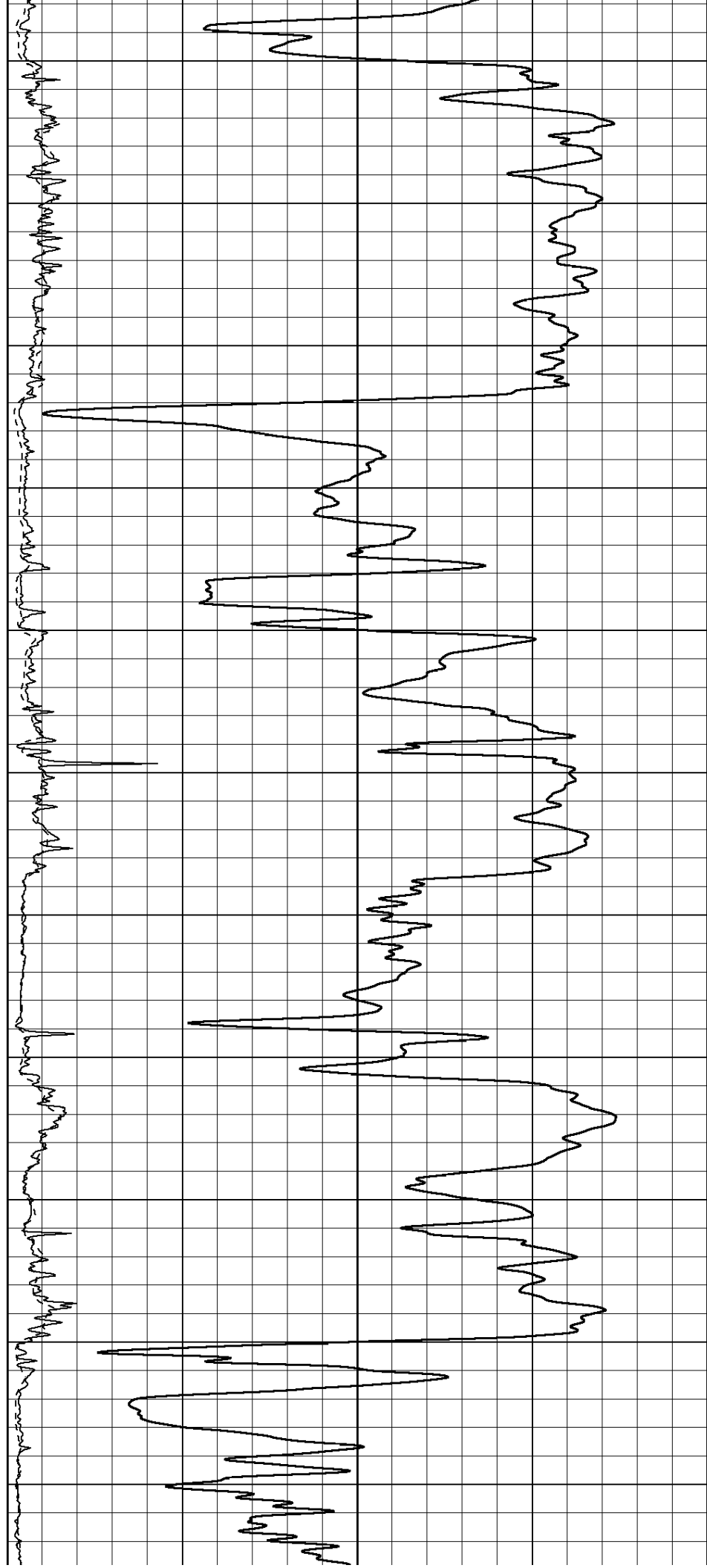
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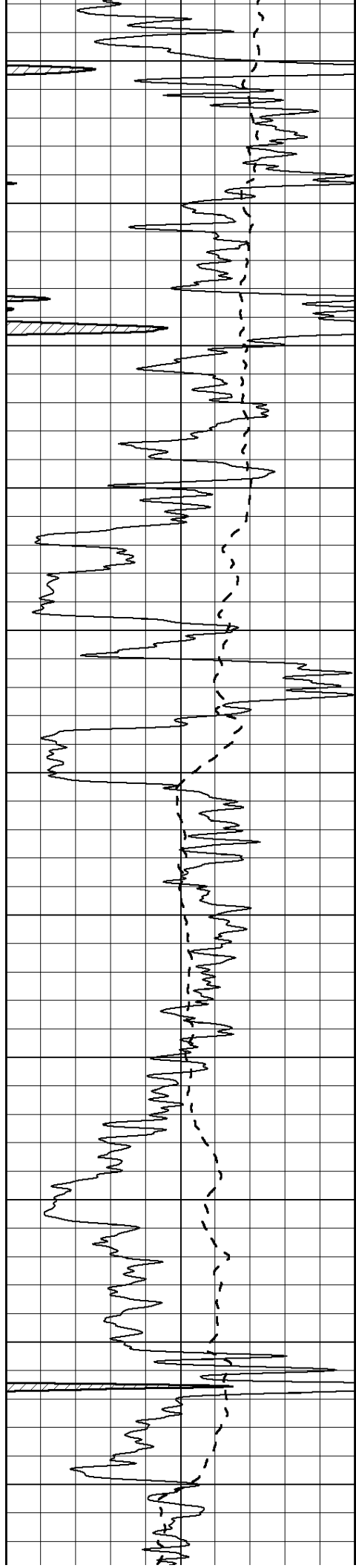
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3700

3750





3800

3850

3900

3950

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4050

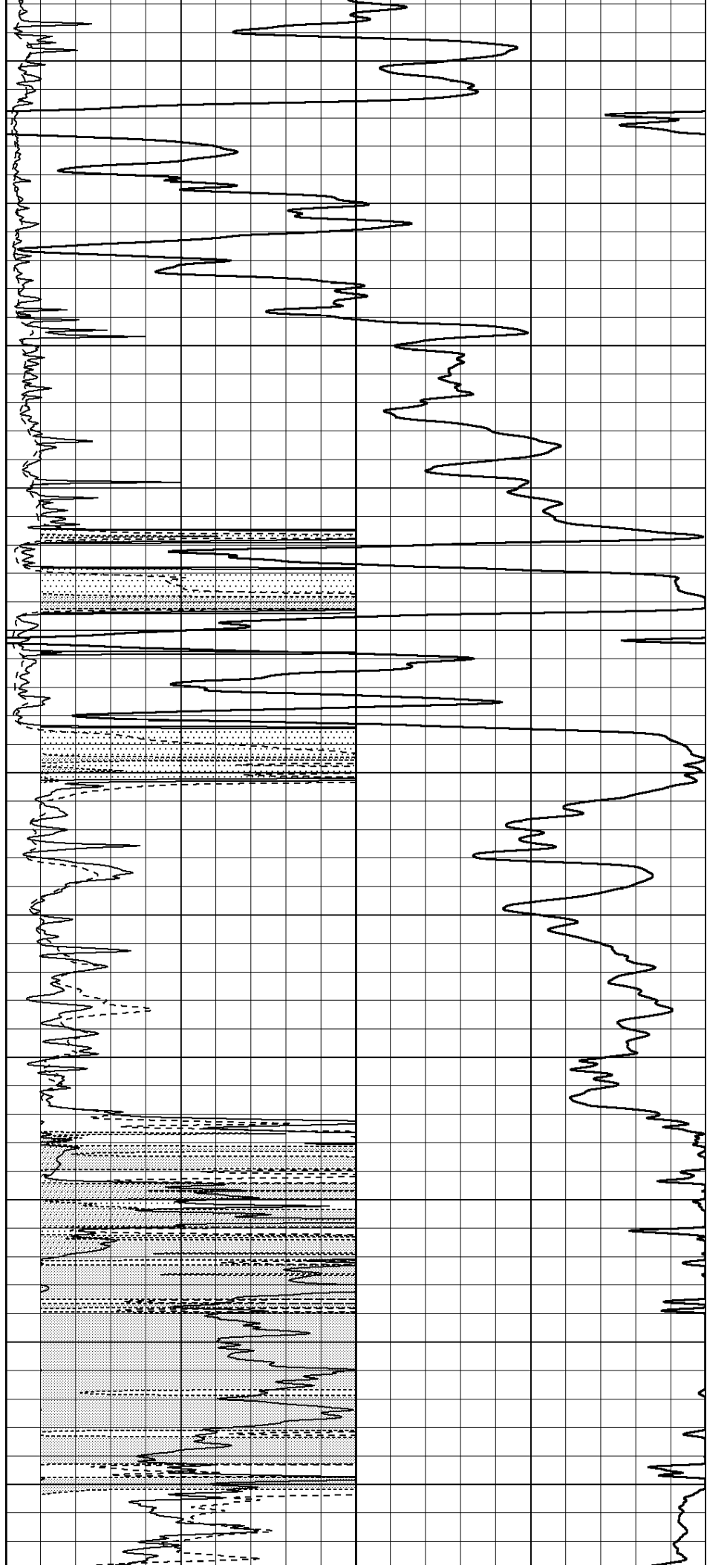
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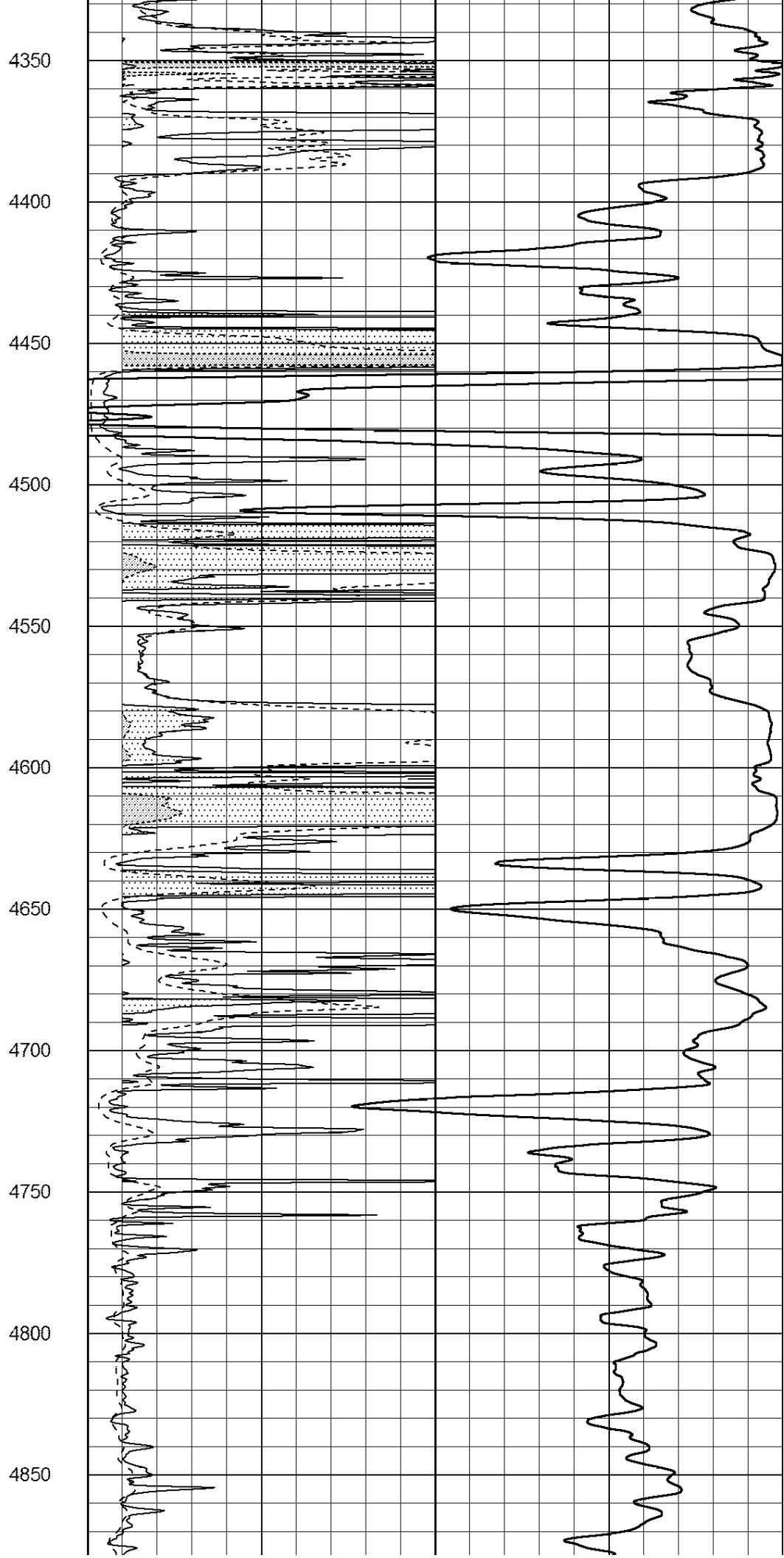
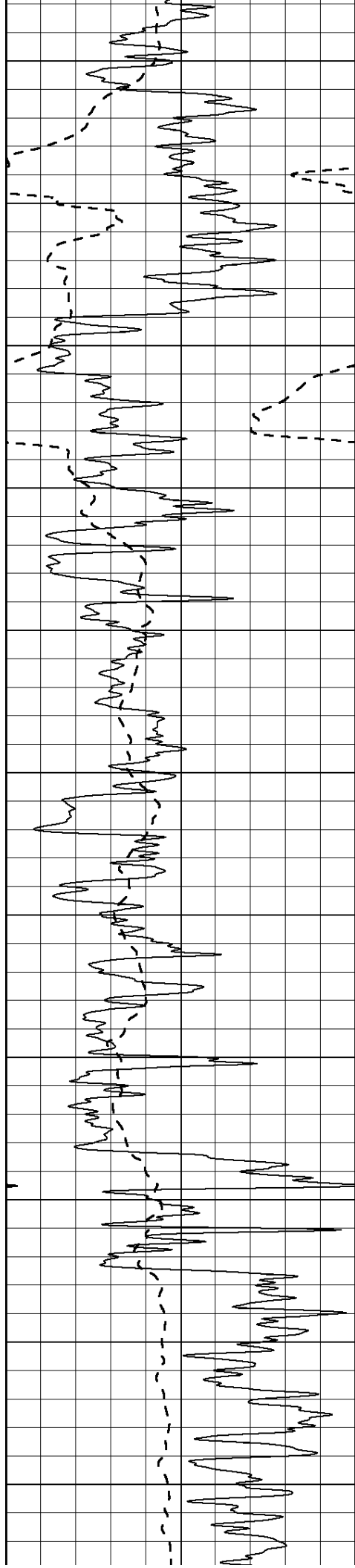
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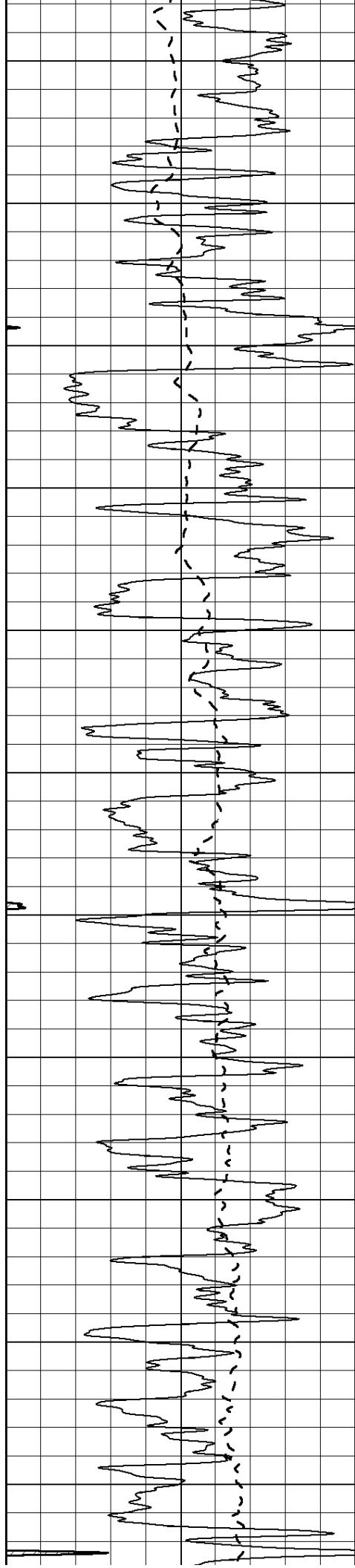
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4300







4900

4950

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5050

5100

5150

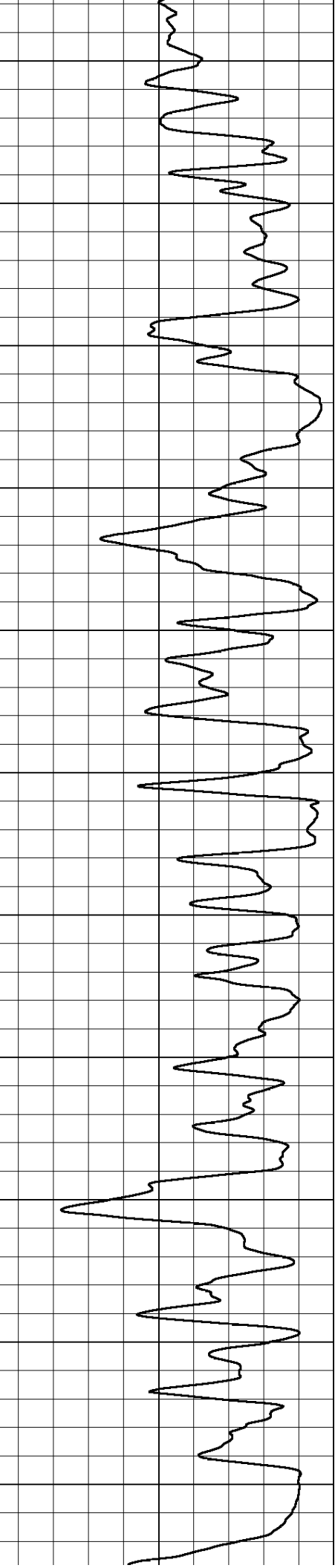
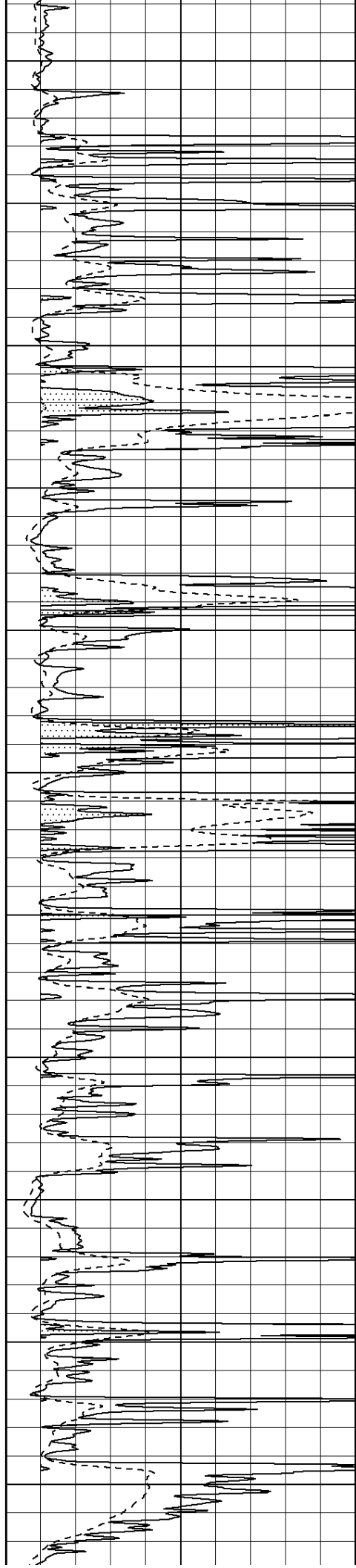
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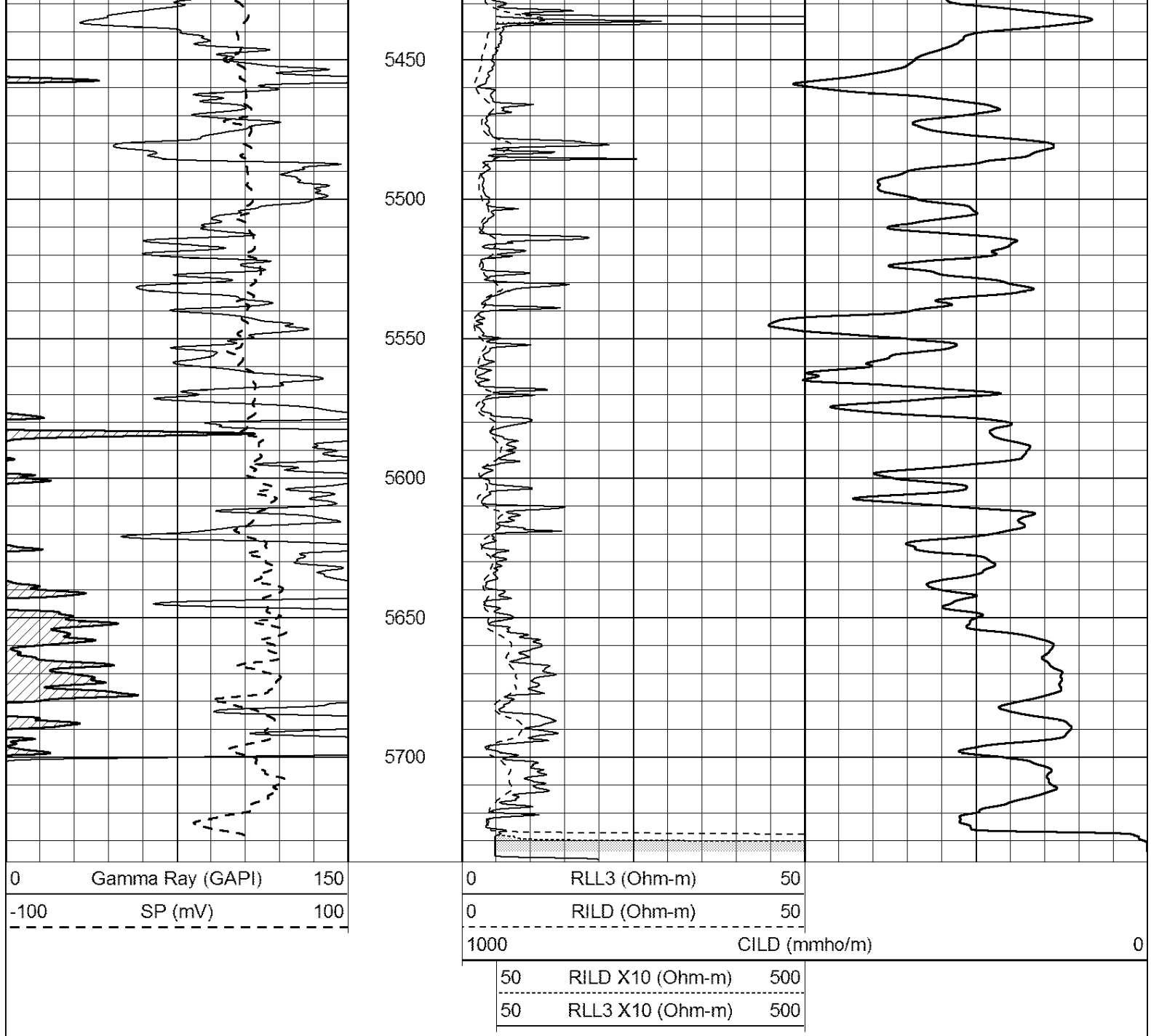
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5300

5350

5400





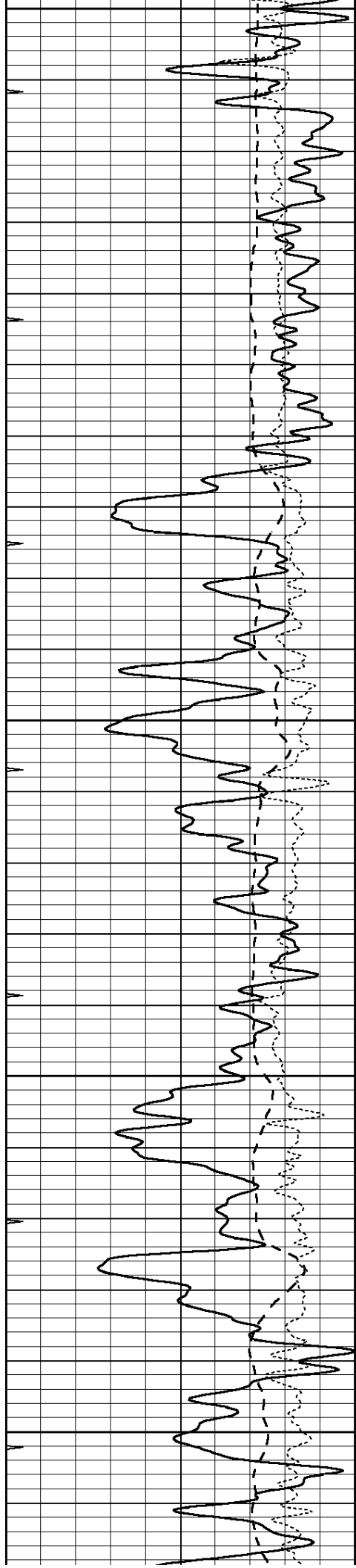
**Casedhole  
Solutions**

# MAIN SECTION

Database File: 30880pe.db  
 Dataset Pathname: pass3.2  
 Presentation Format: \_dil  
 Dataset Creation: Fri Nov 06 03:09:22 2015 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



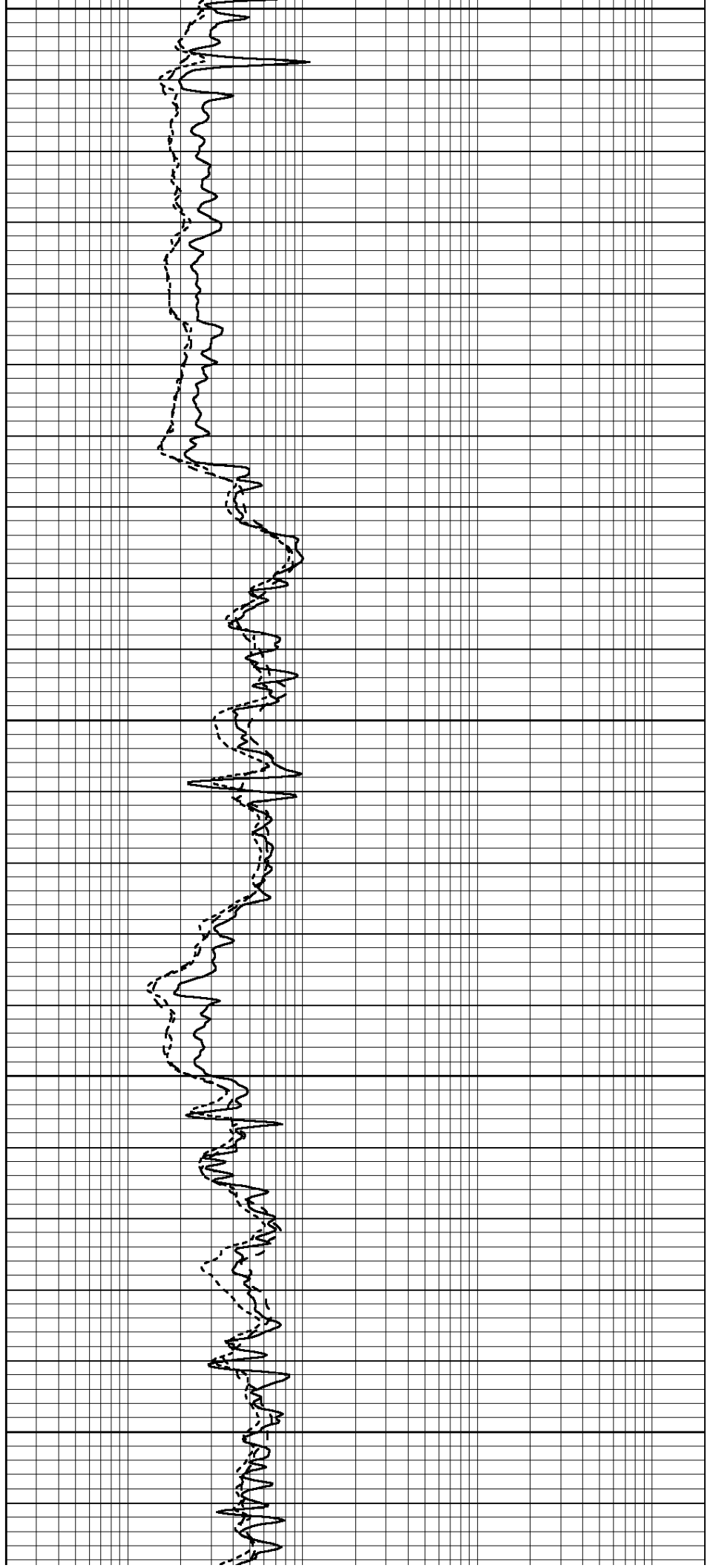
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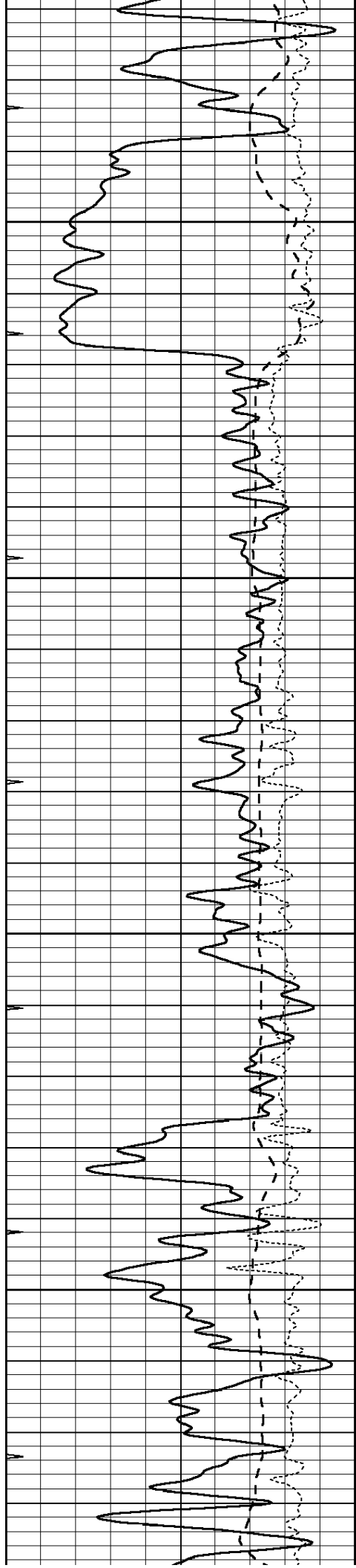
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3200

3250

3300



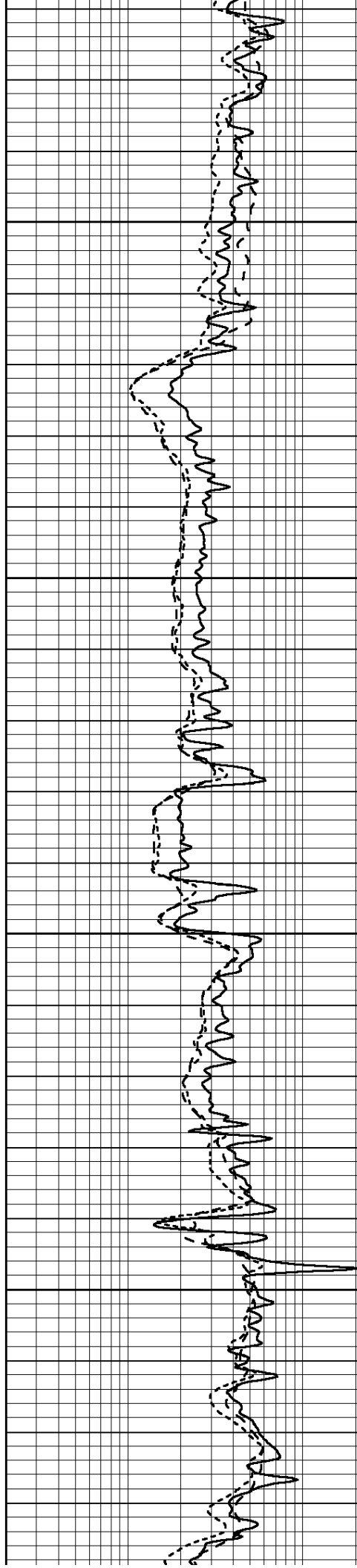


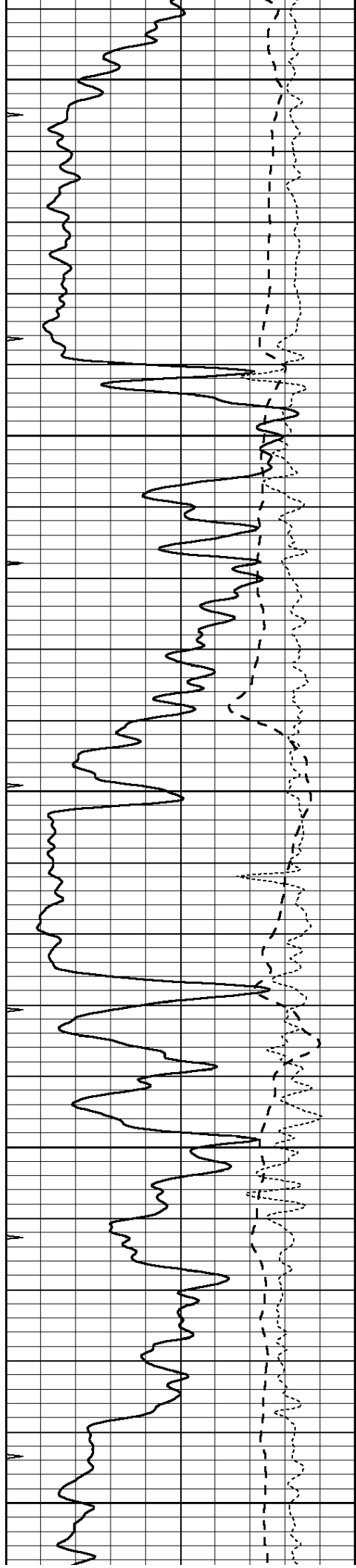
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3500





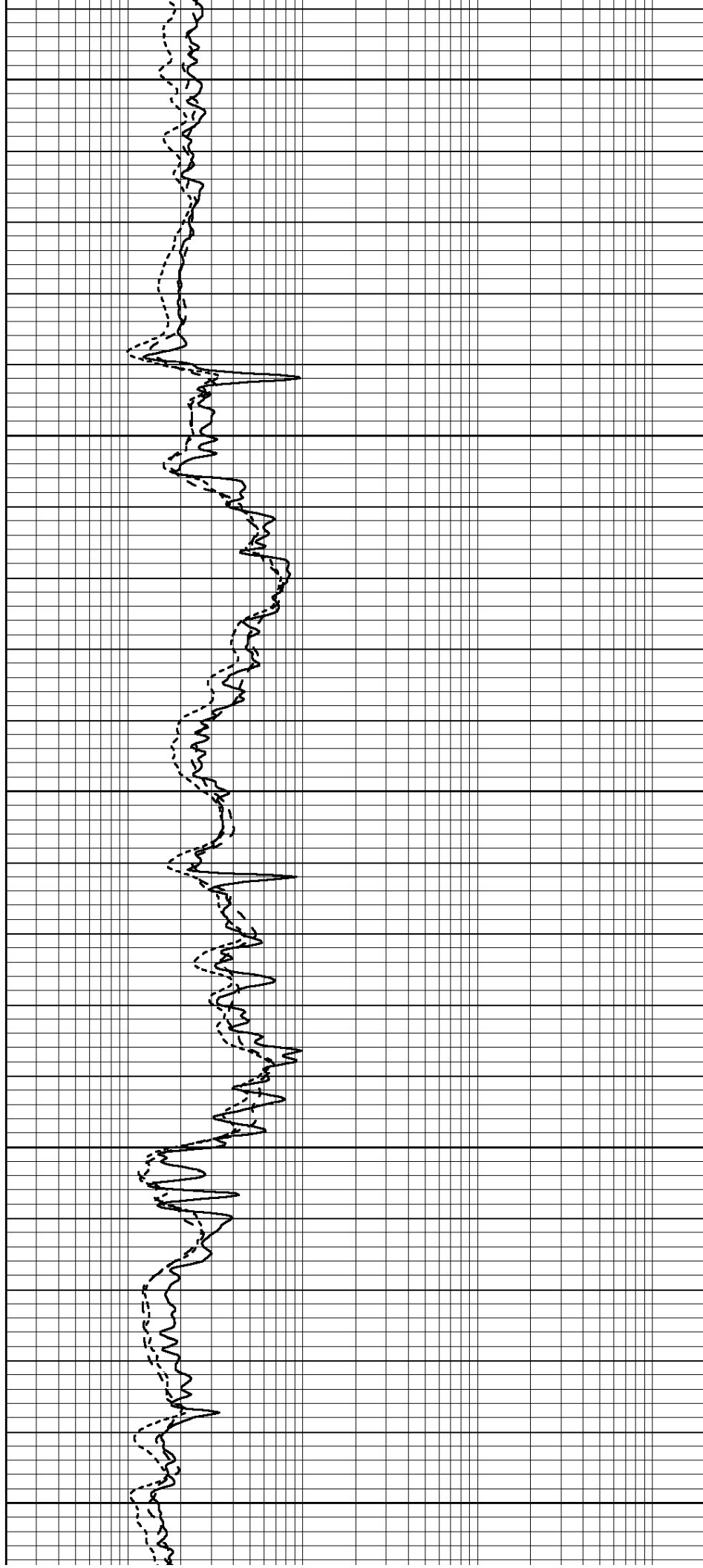
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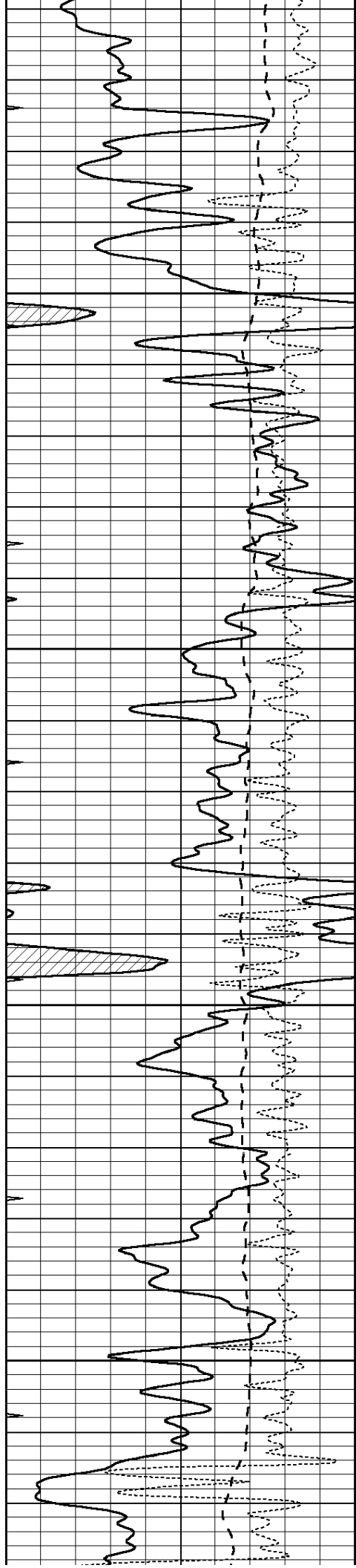
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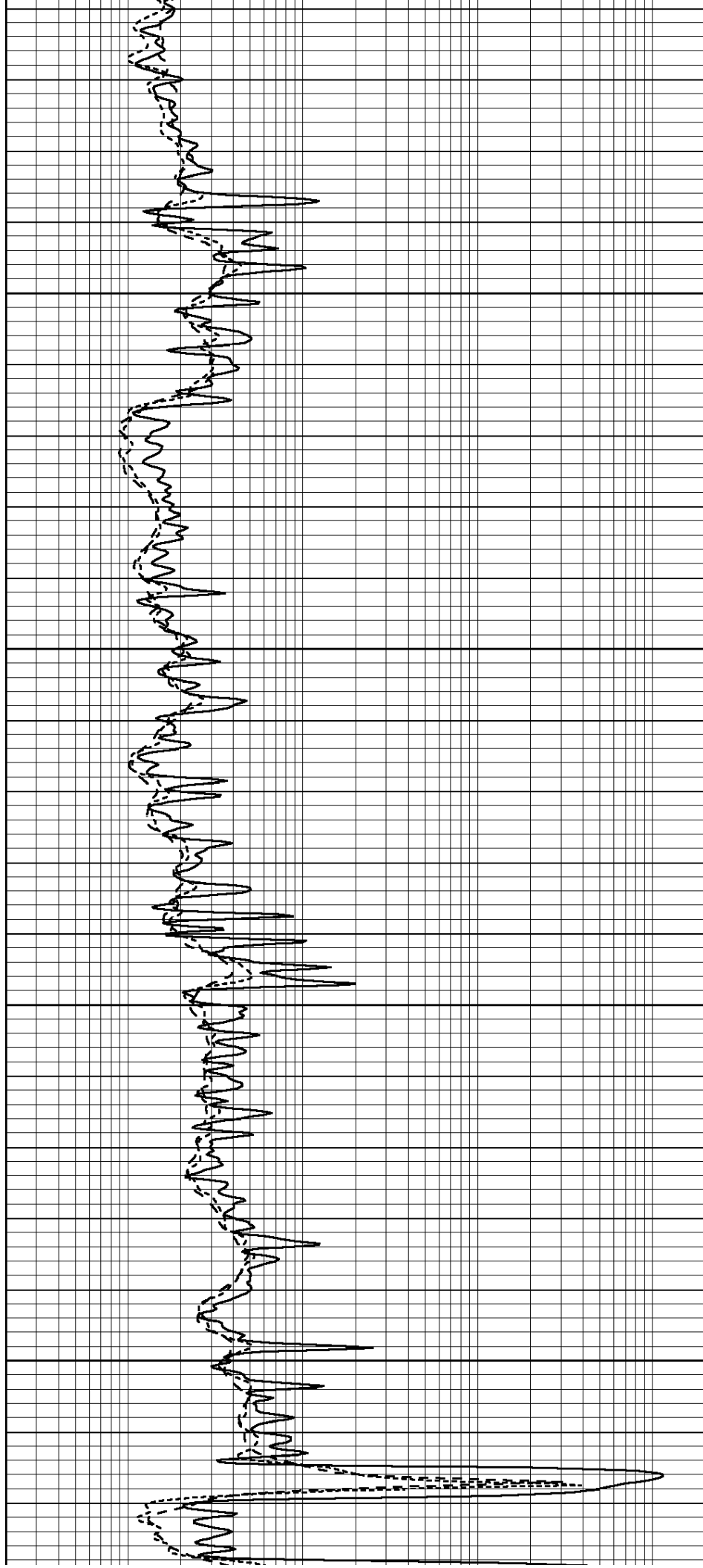


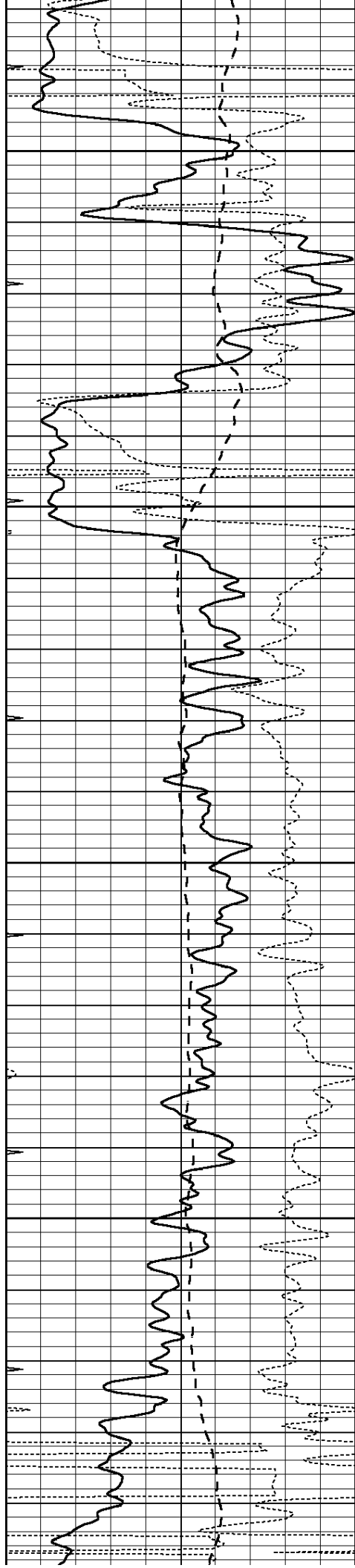
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3850

3900

3950



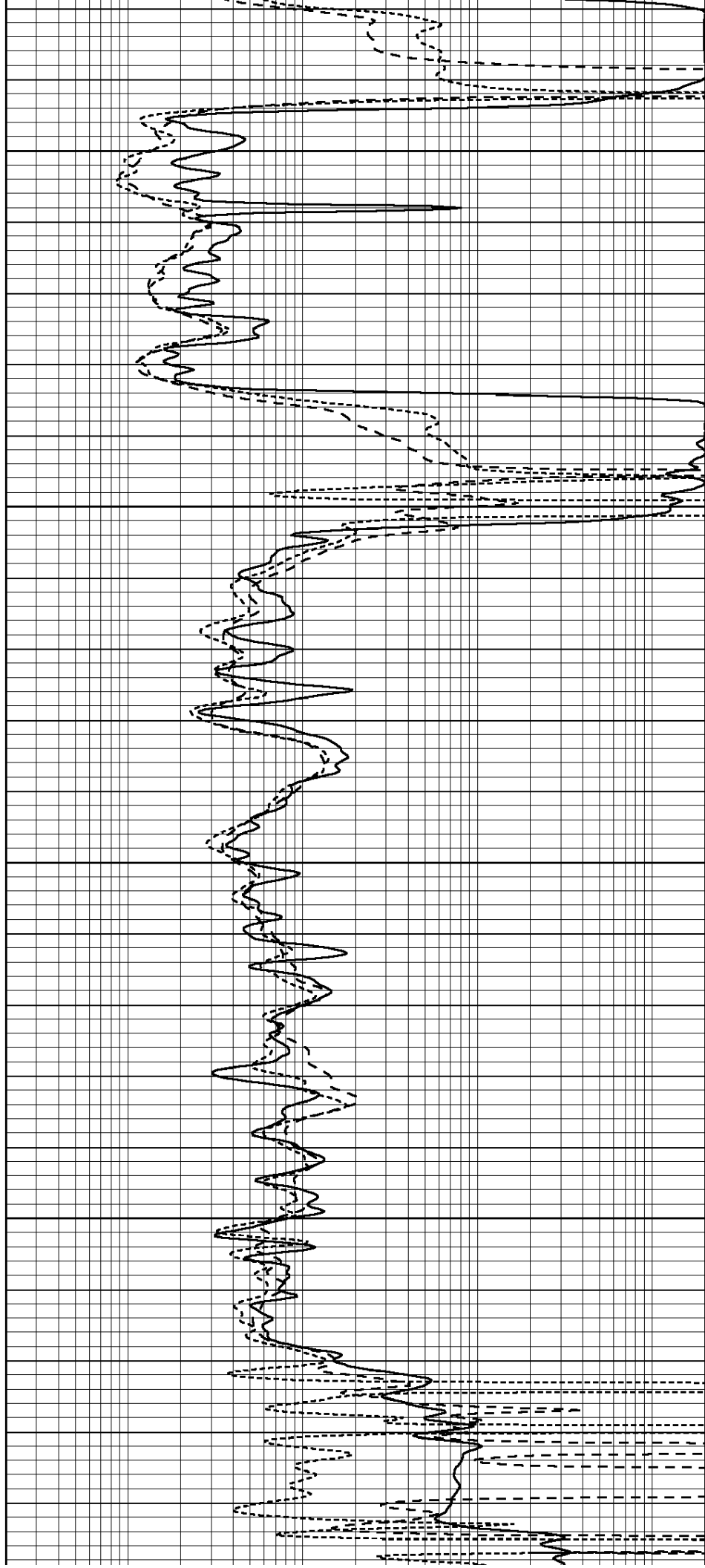


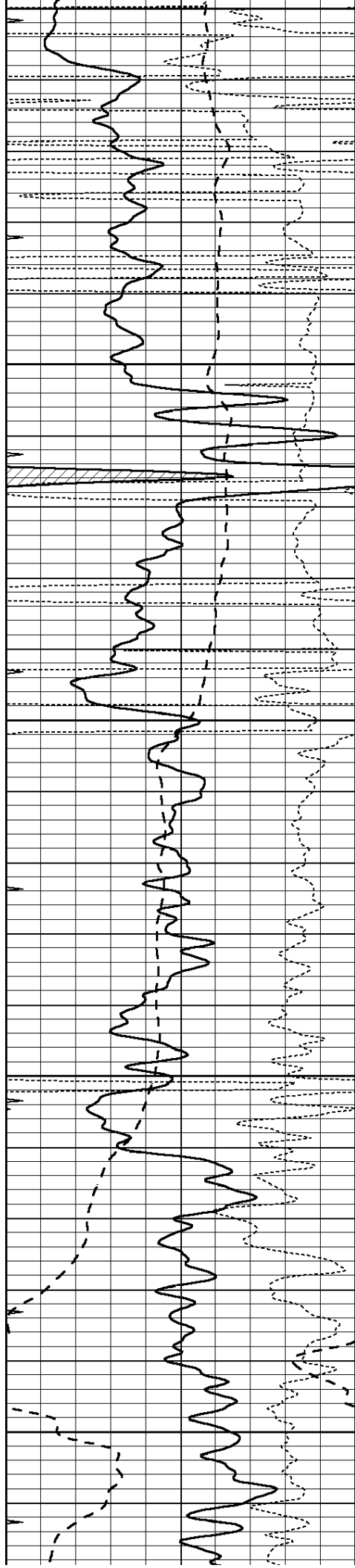
4000

4050

4100

4150





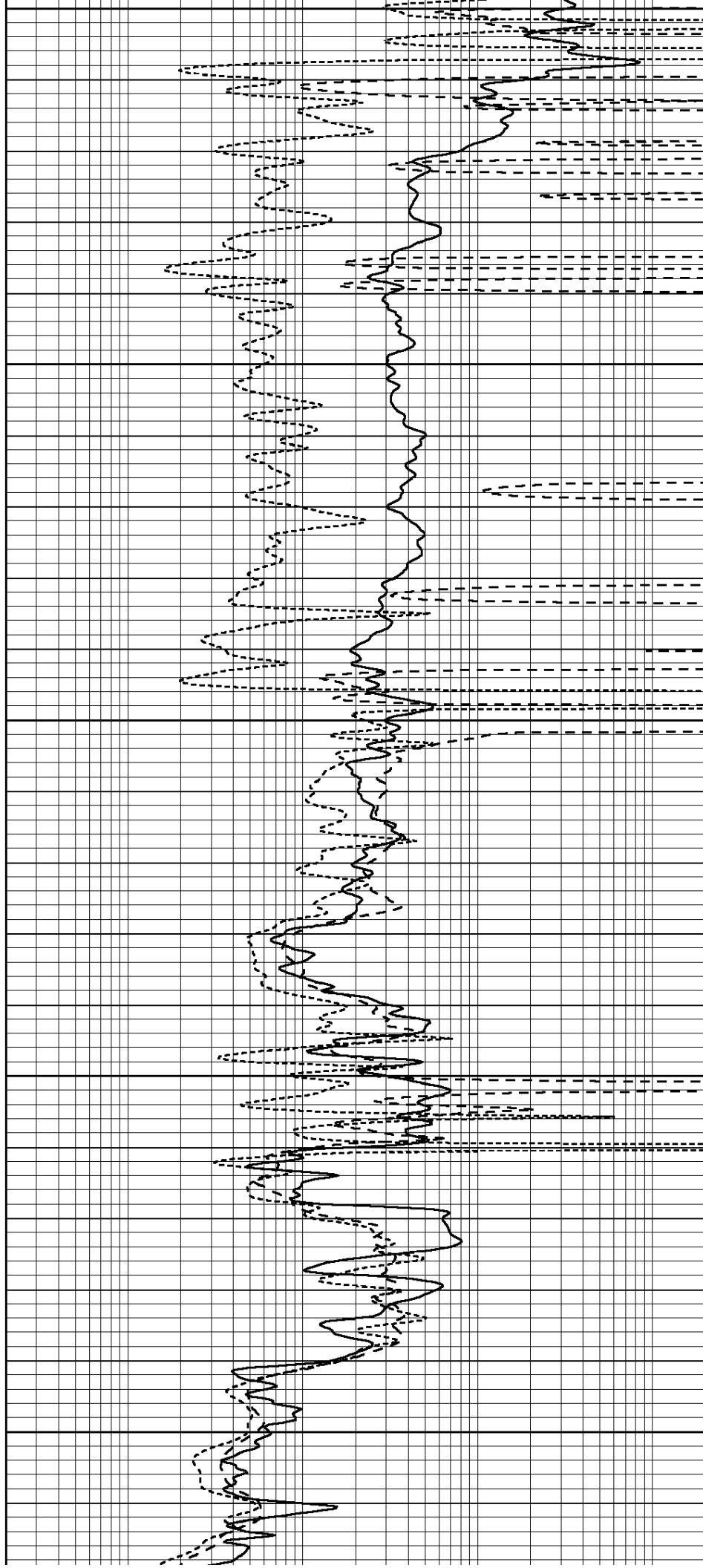
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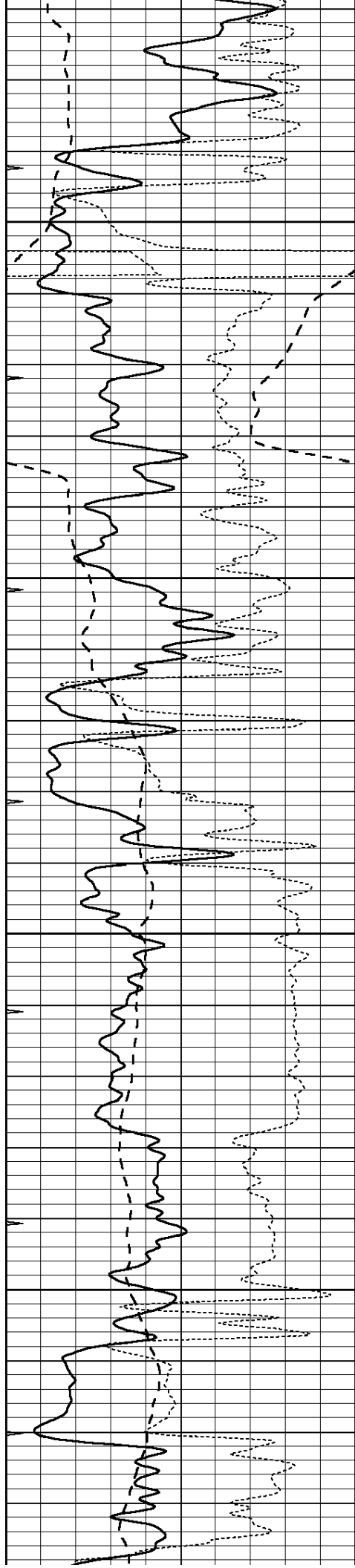
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4400



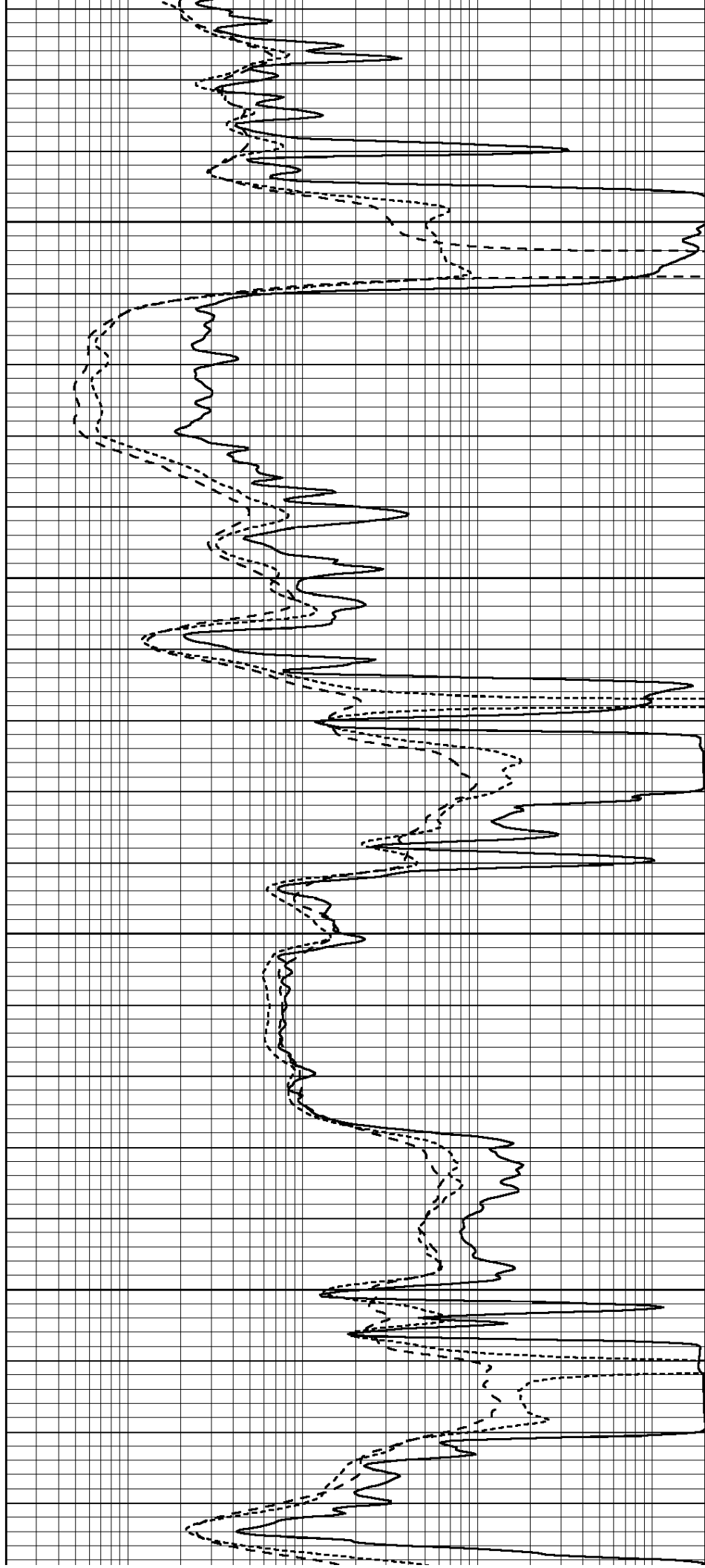


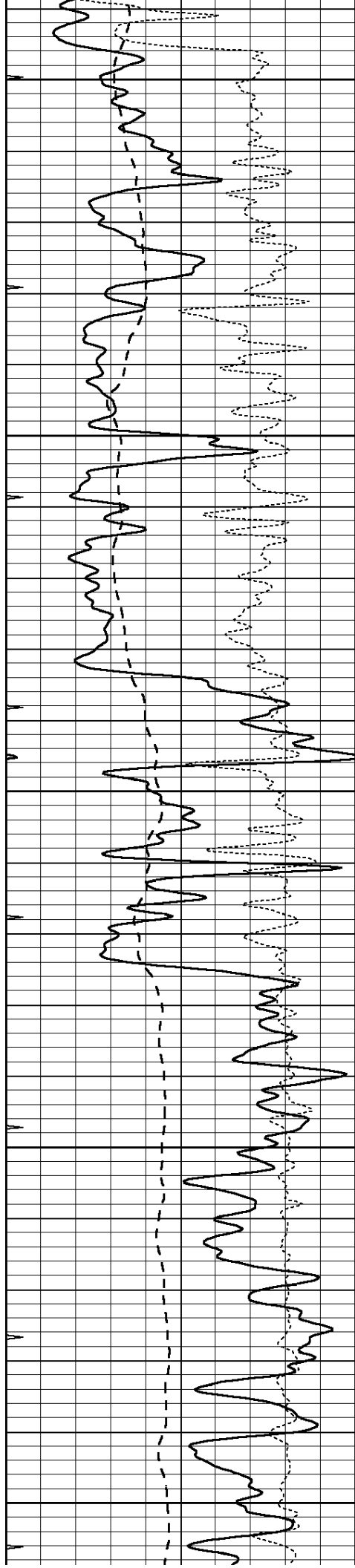
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4500

4550

4600





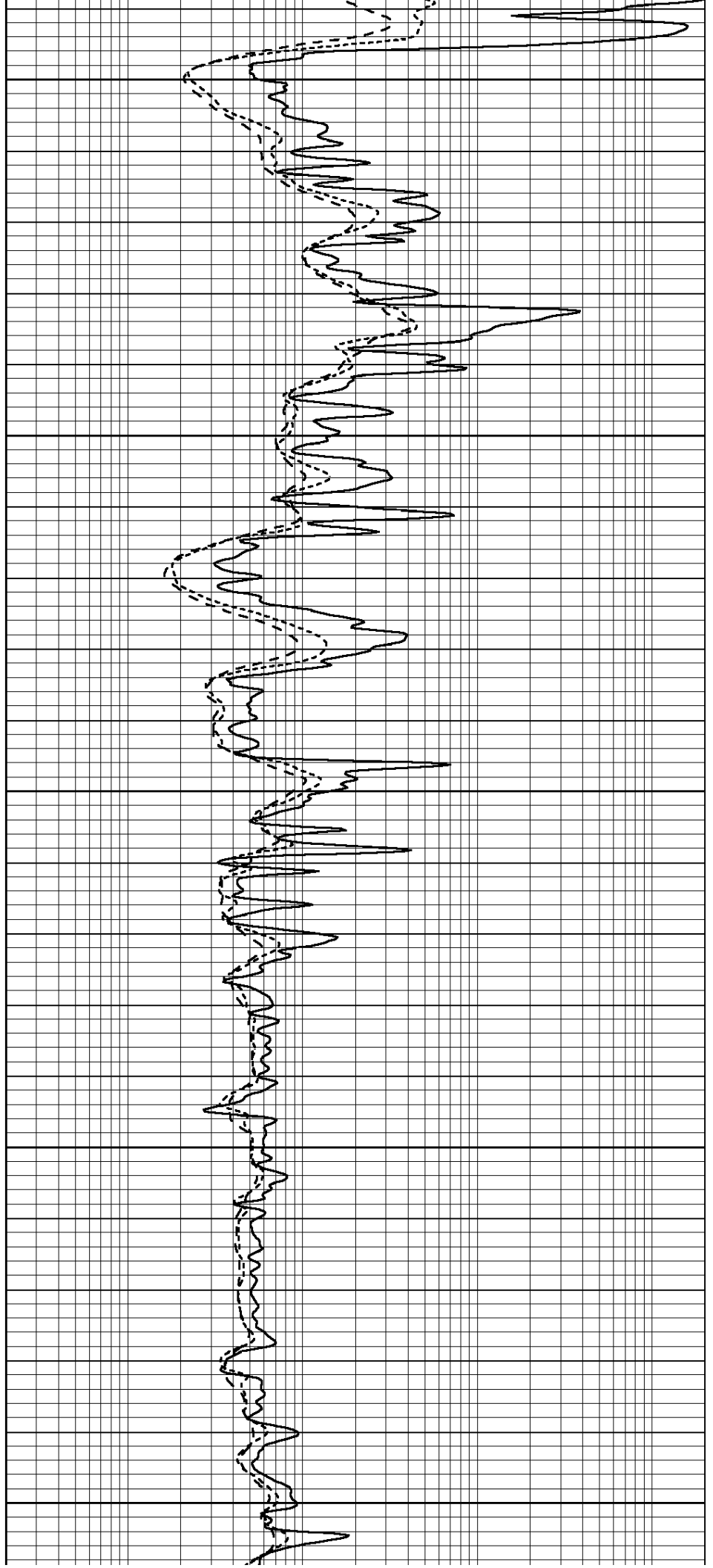
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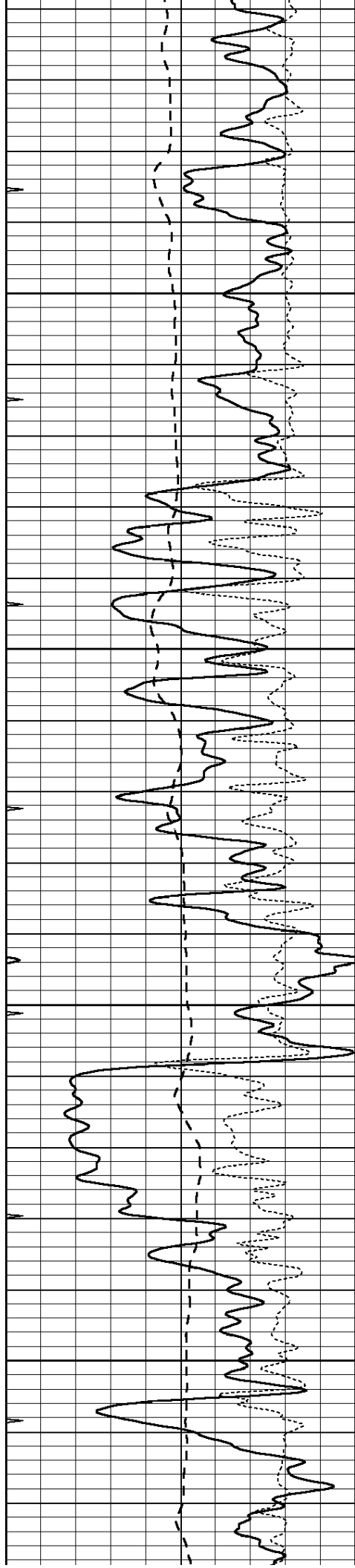
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4800

4850



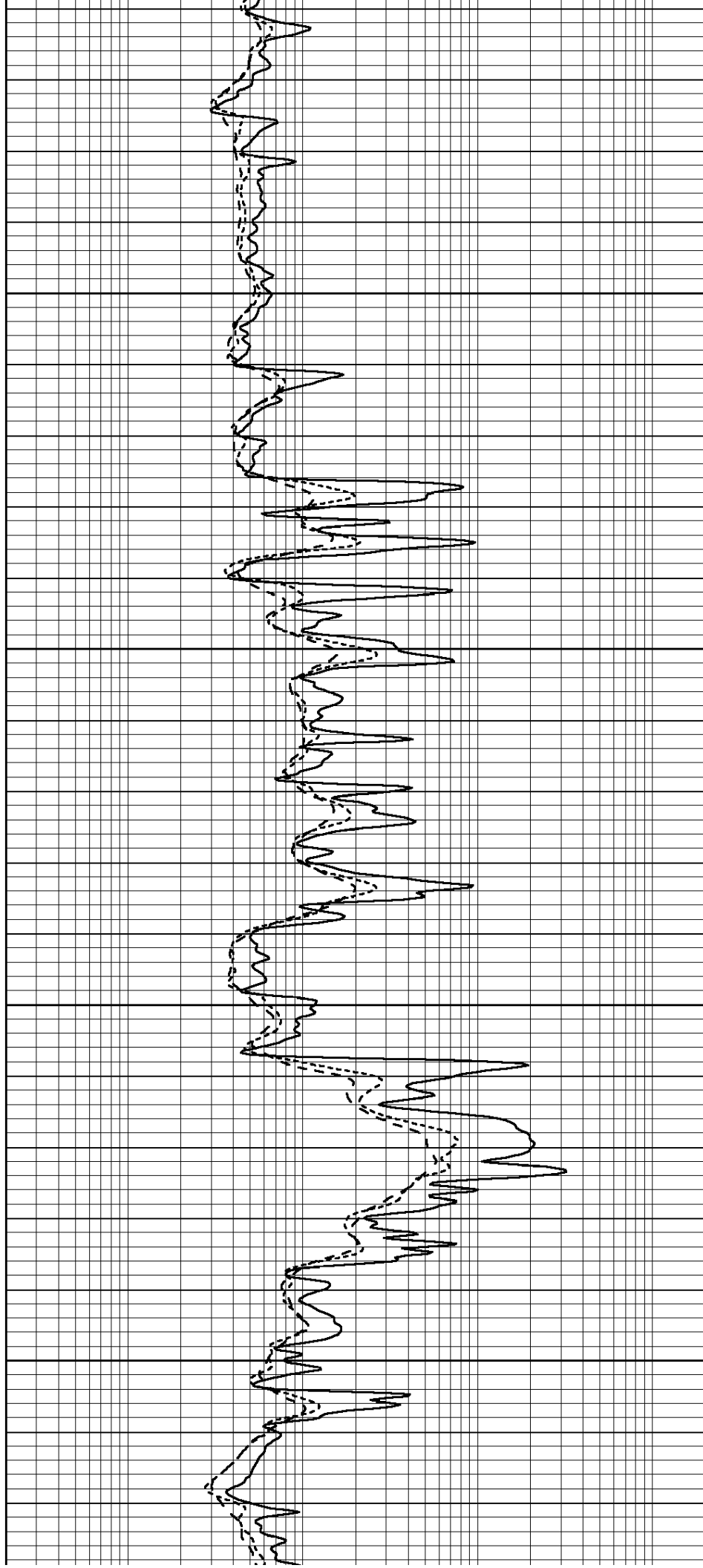


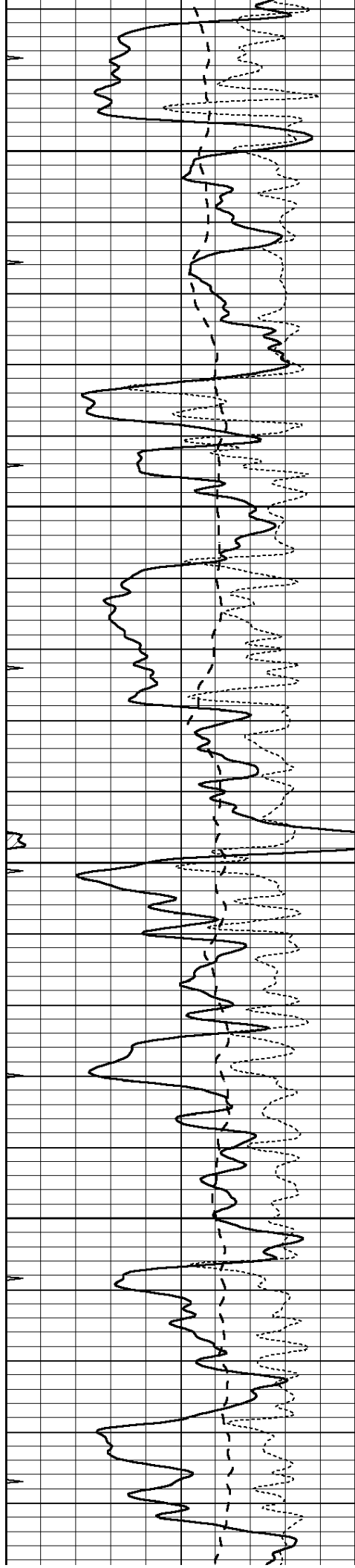
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4950

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5050



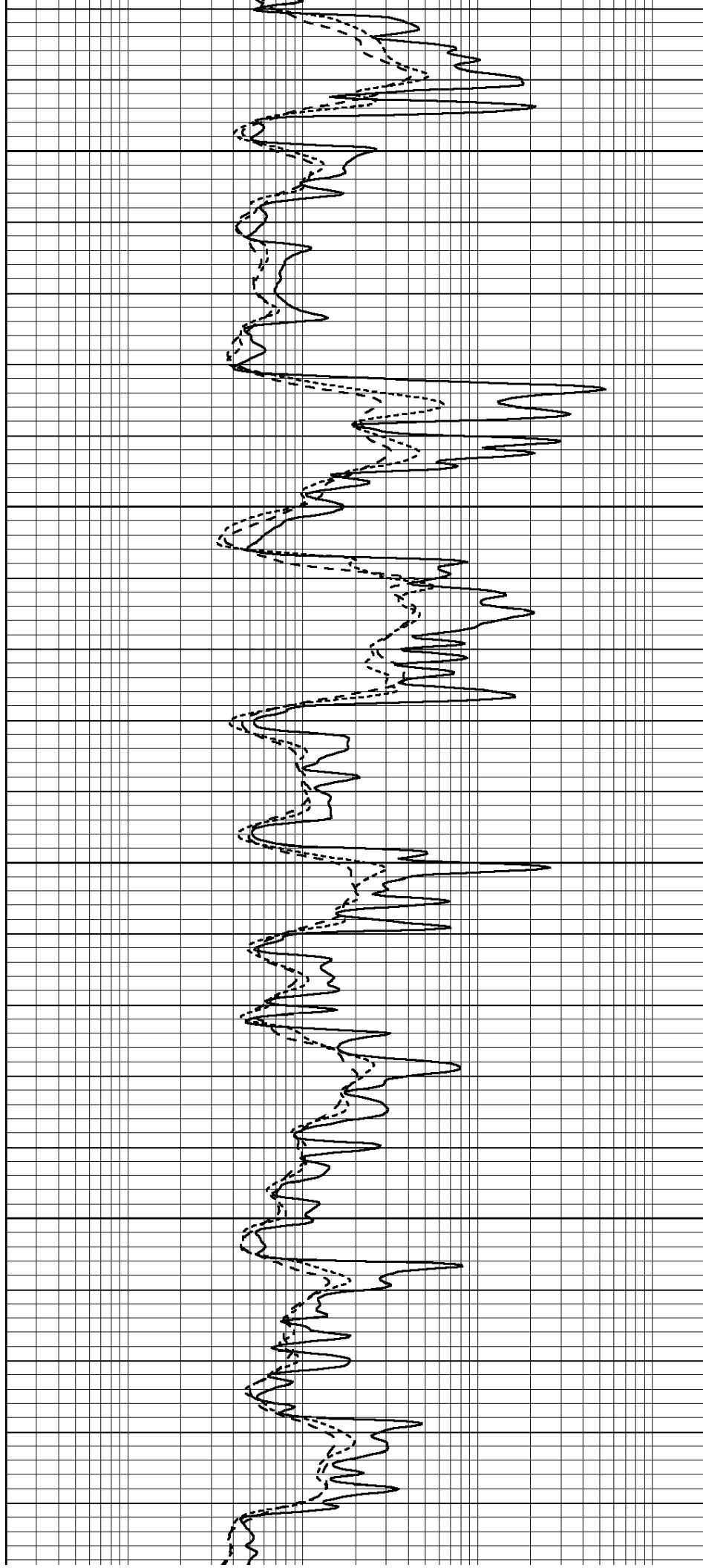


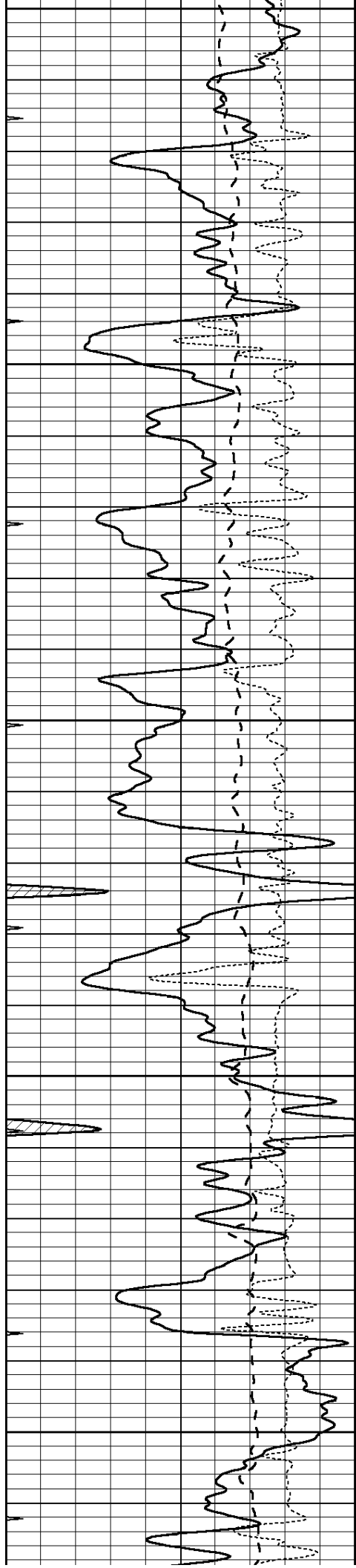
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5150

5200

5250





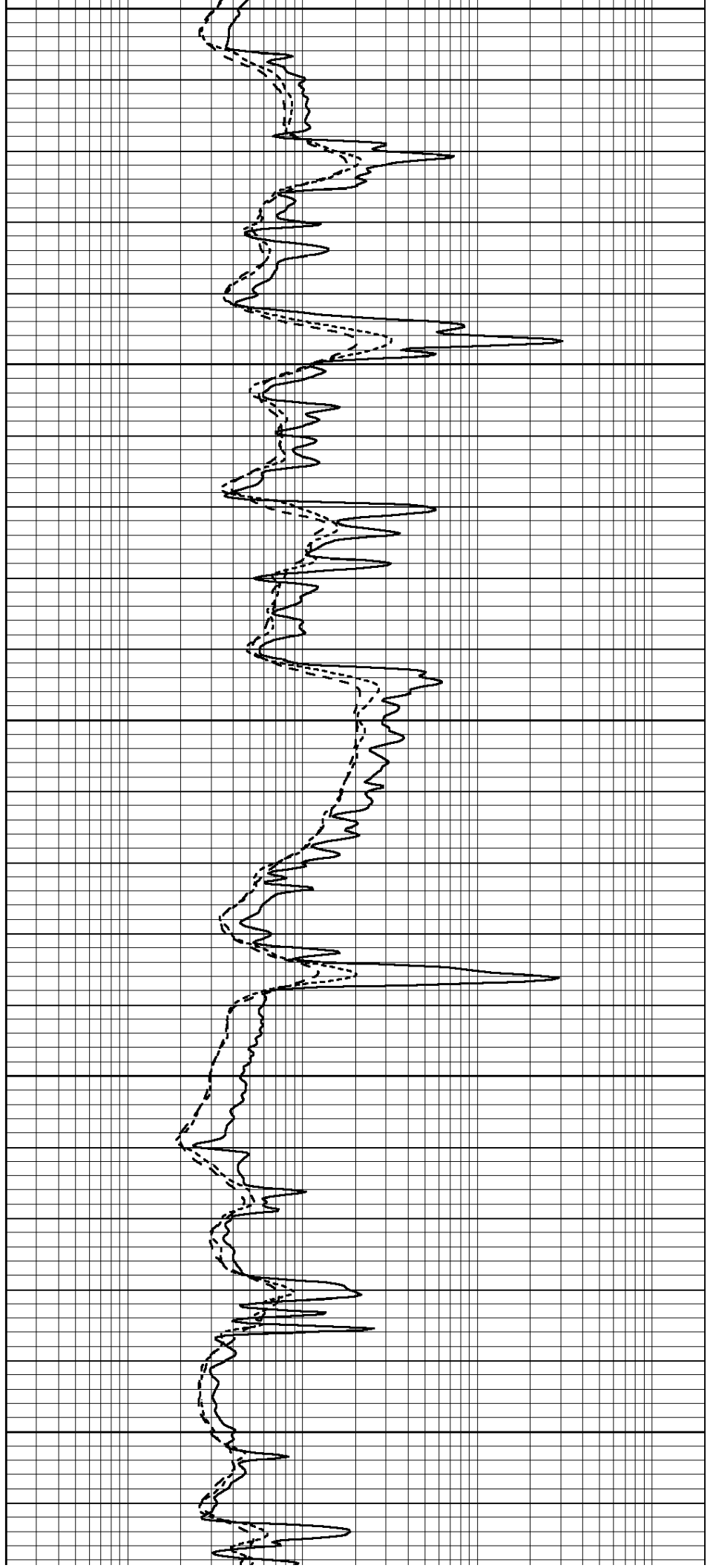
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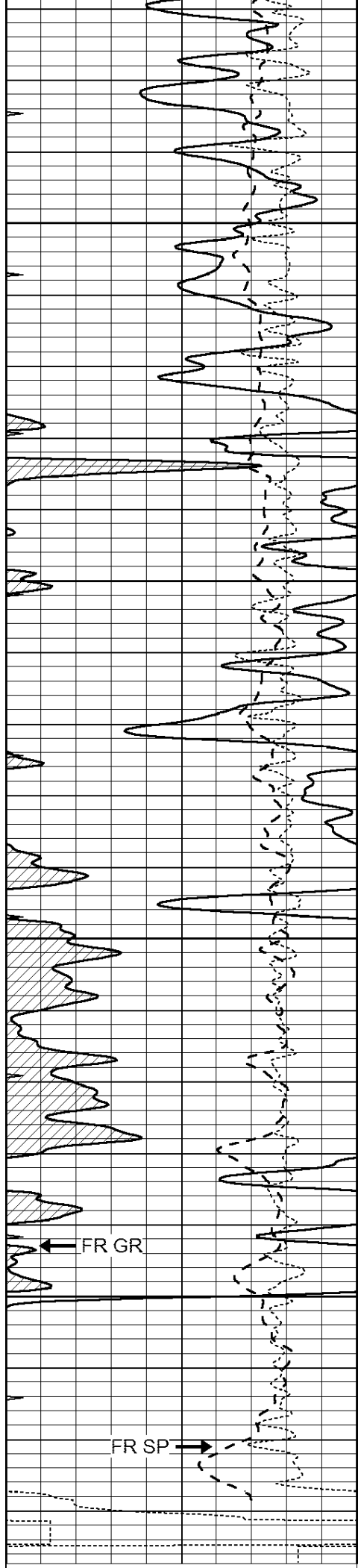
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5400

5450

5500





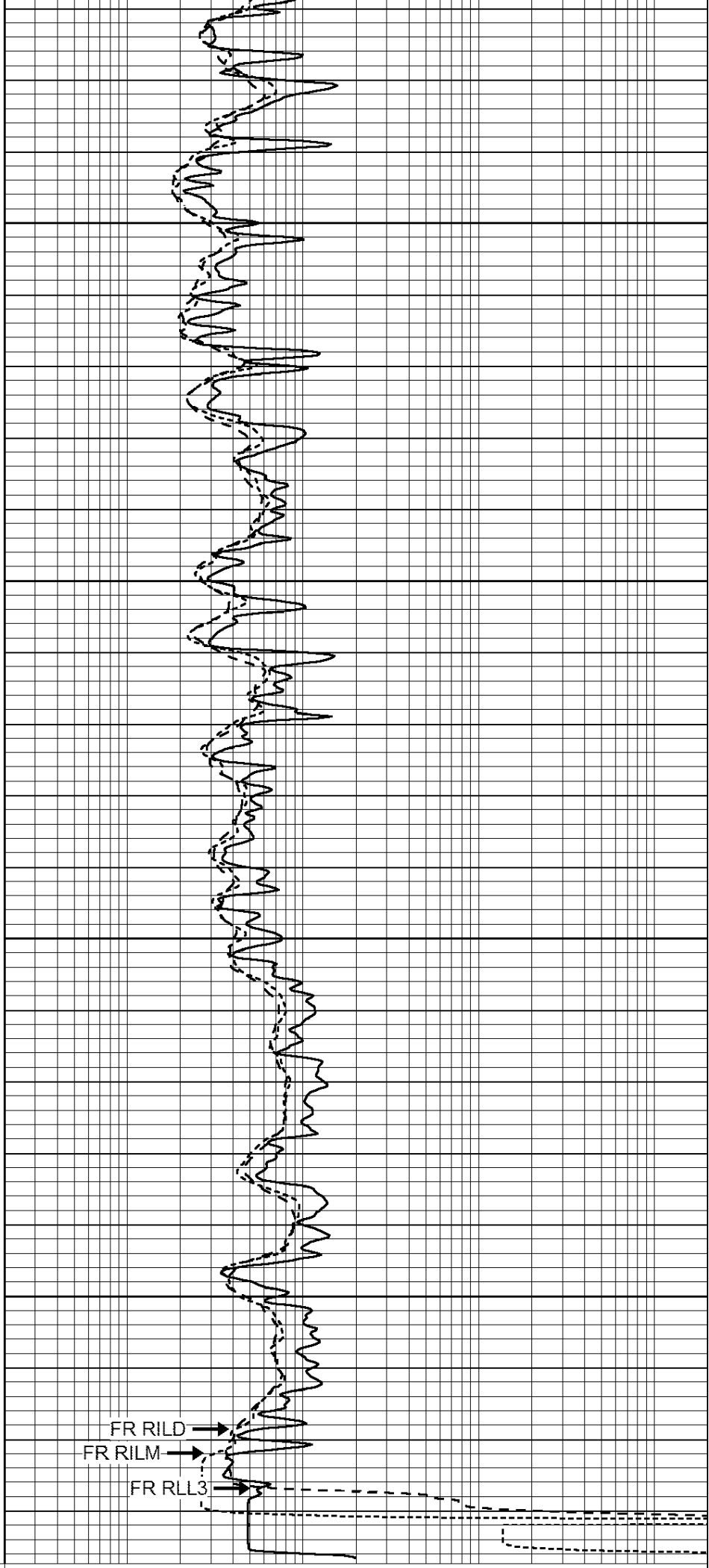
5550

5600

5650

5700

LTD 5729



FR RILD

FR RILM

FR RLL3

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



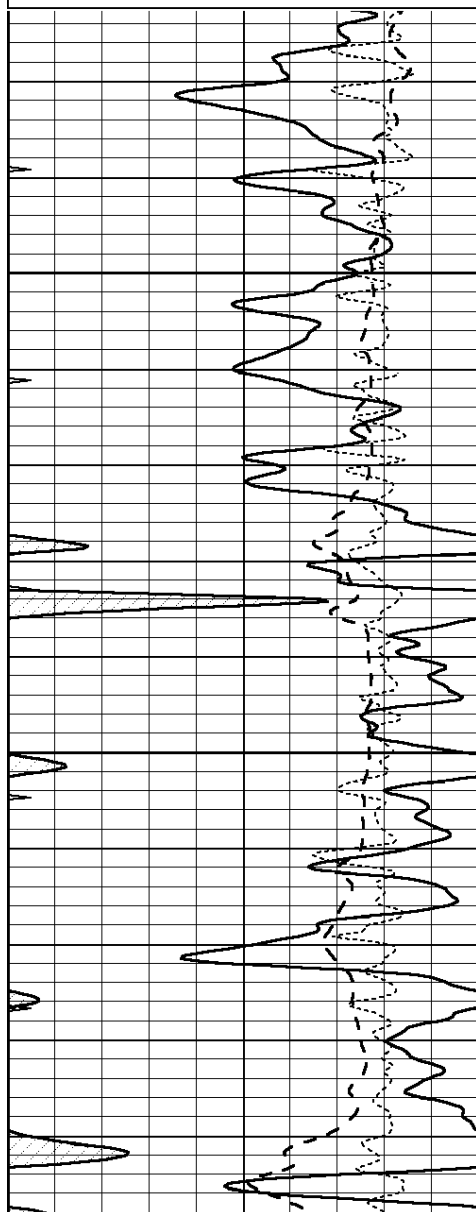
**Casedhole  
Solutions**

# REPEAT SECTION

Database File: 30880pe.db  
Dataset Pathname: pass2.1  
Presentation Format: \_dil  
Dataset Creation: Fri Nov 06 02:45:37 2015 by Calc Open-Cased 090629  
Charted by: Depth in Feet scaled 1:240

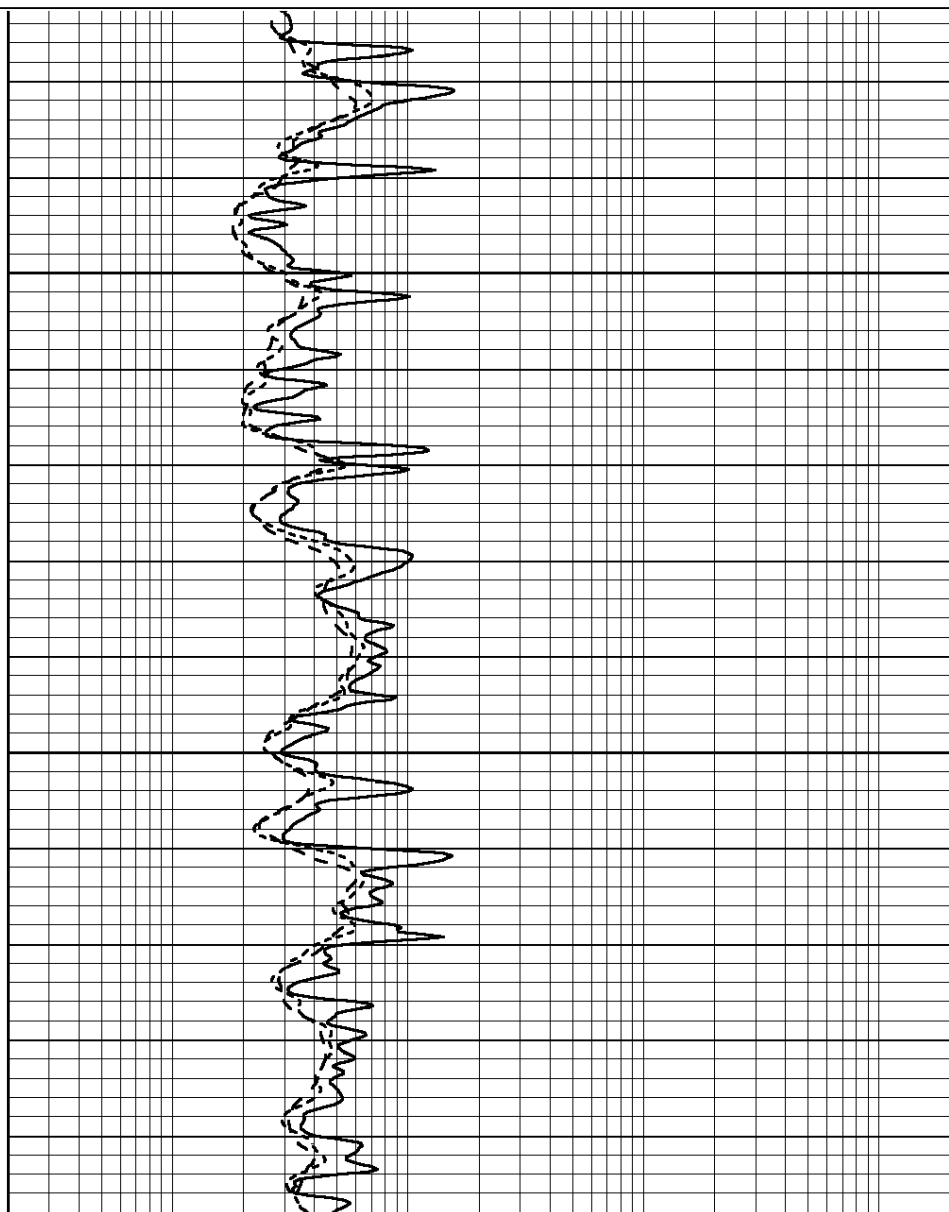
0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

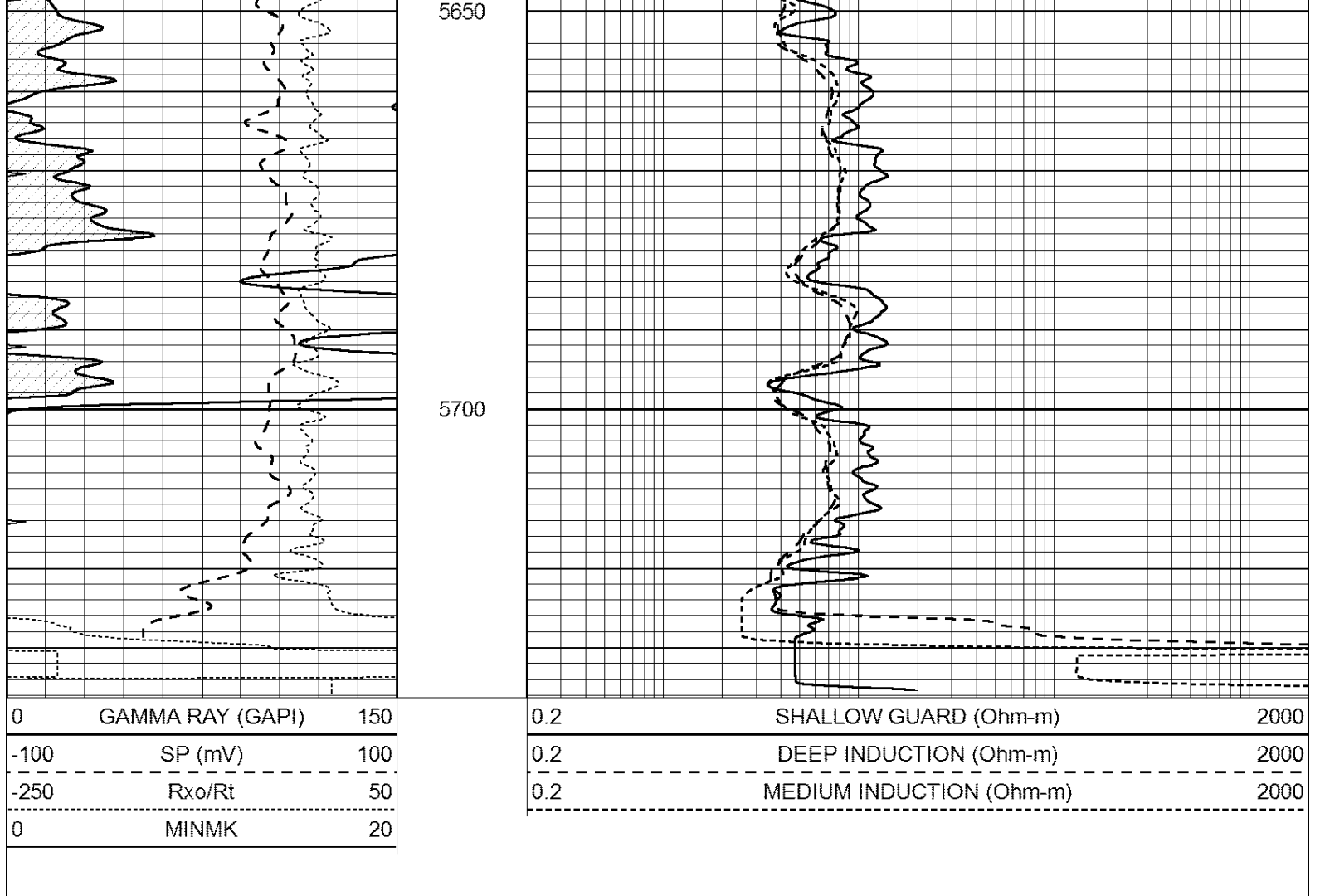
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000



5550

5600





Calibration Report									
Database File:		30880pe.db							
Dataset Pathname:		pass2.1							
Dataset Creation:		Fri Nov 06 03:45:37 2015 by Calc Open-Cased 090629							
Dual Induction Calibration Report									
Serial-Model:				PROBE8-DILG					
Surface Cal Performed:				Sun May 10 19:54:09 2015					
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	620.000	0.000	
Medium	0.029	0.796	V	0.000	464.000	mmho/m	590.000	-12.000	
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	

Medium	0.000	7.500	V	1500.000	Ohm-m	0.000
LL3		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: 006			Model: PRB					

Master Calibration					Performed Wed Mar 12 14:26:38 2014			
	Background	Magnesium	Aluminum	Sandstone				
Window 1	1296.6	7199.0	2625.4	7833.2				cps
Window 2	1218.8	5956.6	2257.8	6372.0				cps
Window 3	926.7	2990.0	1318.7	3107.7				cps
Window 4	314.3	319.6	320.3	326.2				cps
Long Space	0.0	4737.9	1039.0	5153.3				cps
Short Space	1.3	1655.6	1074.2	1728.4				cps
Rho		1.7100	2.5960	1.3800				g/cc
Pe		0.0000	2.5700	1.5500				
Rib Angle	: 44.1	Rib Slope	: 0.969	Density/Spine Ratio			: 0.562	
Spine Angle	: 74.1	Spine Slope	: 3.507	Spine Intercept			: -17.5	

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								
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Serial Number:			61					
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## 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:	GR6	
Tool Model:	OPEN	
Performed:	Fri Sep 04 01:07:14 2015	
Calibrator Value:	150.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	276.0	cps
Sensitivity:	0.8000	GAPI/cps