



# NABORS

**COMPLETION  
& PRODUCTION  
SERVICES CO.**

## DUAL INDUCTION LOG

Company		MULL DRILLING COMPANY, INC.	
Well		GERWECK #1-4	
Field		CHEYENNE WELLS	
County		CHEYENNE	
State		COLORADO	
Location:		API # : 05-017-07772-00	
Permanent Datum		GROUND LEVEL	
Log Measured From		KELLY BUSHING 11' A.G.L.	
Drilling Measured From		KELLY BUSHING	
SEC 4 TWP 14S RGE 44W		Elevation	
660' FNL & 660' FWL		K.B. 4272	
		D.F. 4270	
		G.L. 4261	
CDL/CNL/PE MEL/SONIC			
Date	11/23/13		
Run Number	ONE		
Depth Driller	5500		
Depth Logger	5499		
Bottom Logged Interval	5497		
Top Log Interval	00		
Casing Driller	8 5/8" @ 1733'		
Casing Logger	1728		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 1,100 PPM	
Density / Viscosity	9.2/64		
pH / Fluid Loss	9.07 / 2		
Source of Sample	FLOWLINE		
Rim @ Meas. Temp	.950 @ 55F		
Rmf @ Meas. Temp	.713 @ 55F		
Rmc @ Meas. Temp	1.14 @ 55F		
Source of Rmf / Rmc	MEASUREMENT		
Rim @ BHT	.402 @ 130F		
Time Circulation Stopped	3 HOURS		
Time Logger on Bottom	3:45 A.M.		
Maximum Recorded Temperature	130F		
Equipment Number	4854		
Location	HAYS, KANSAS		
Recorded By	JEFF LUEBBERS		
Witnessed By	PHIL ASKEY		

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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 "NABORS" HAYS, KANSAS (785) 628 6395  
DIRECTIONS  
CHEYENNE WELLS, CO. 3N. ON HWY 385 TO "RD. U", 1/8 E., S. INTO

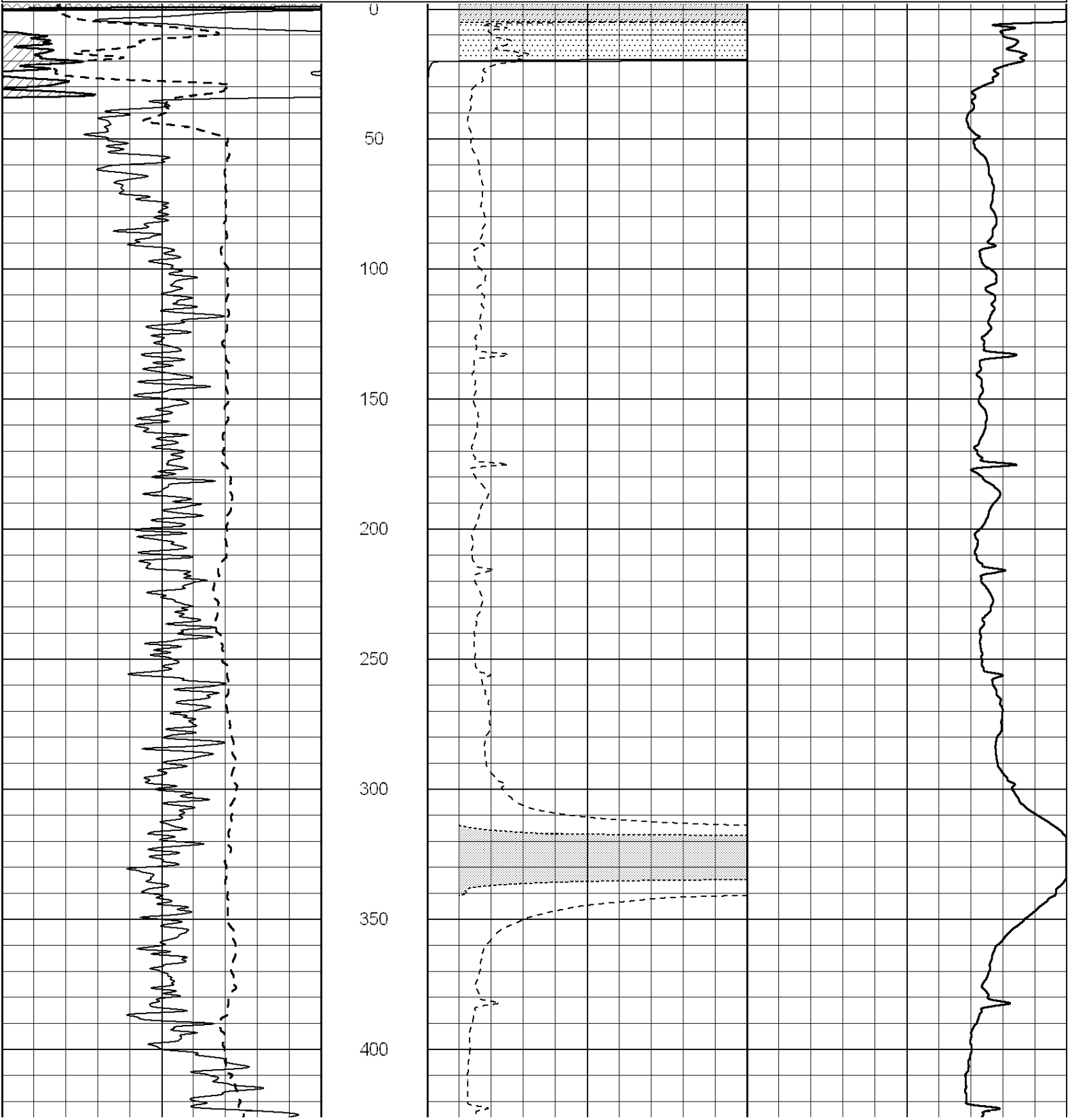


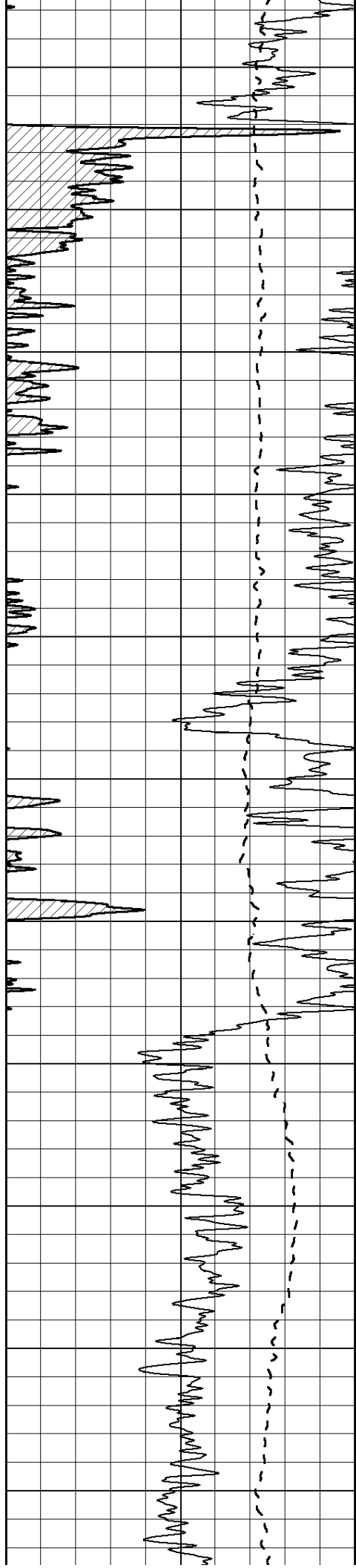
**COMPLETION  
& PRODUCTION**

# MAIN SECTION

Database File: 011813pe.db  
Dataset Pathname: pass4.10  
Presentation Format: dil2  
Dataset Creation: Sat Nov 23 08:00:18 2013  
Charted by: Depth in Feet scaled 1:600

0	Gamma Ray (GAPI)	150	0	RLL3 (Ohm-m)	50
-100	SP (mV)	100	0	RILD (Ohm-m)	50
-----			1000	CILD (mmho/m)	
			50	RILD X10 (Ohm-m)	500
			50	RLL3 X10 (Ohm-m)	500





450

500

550

600

650

700

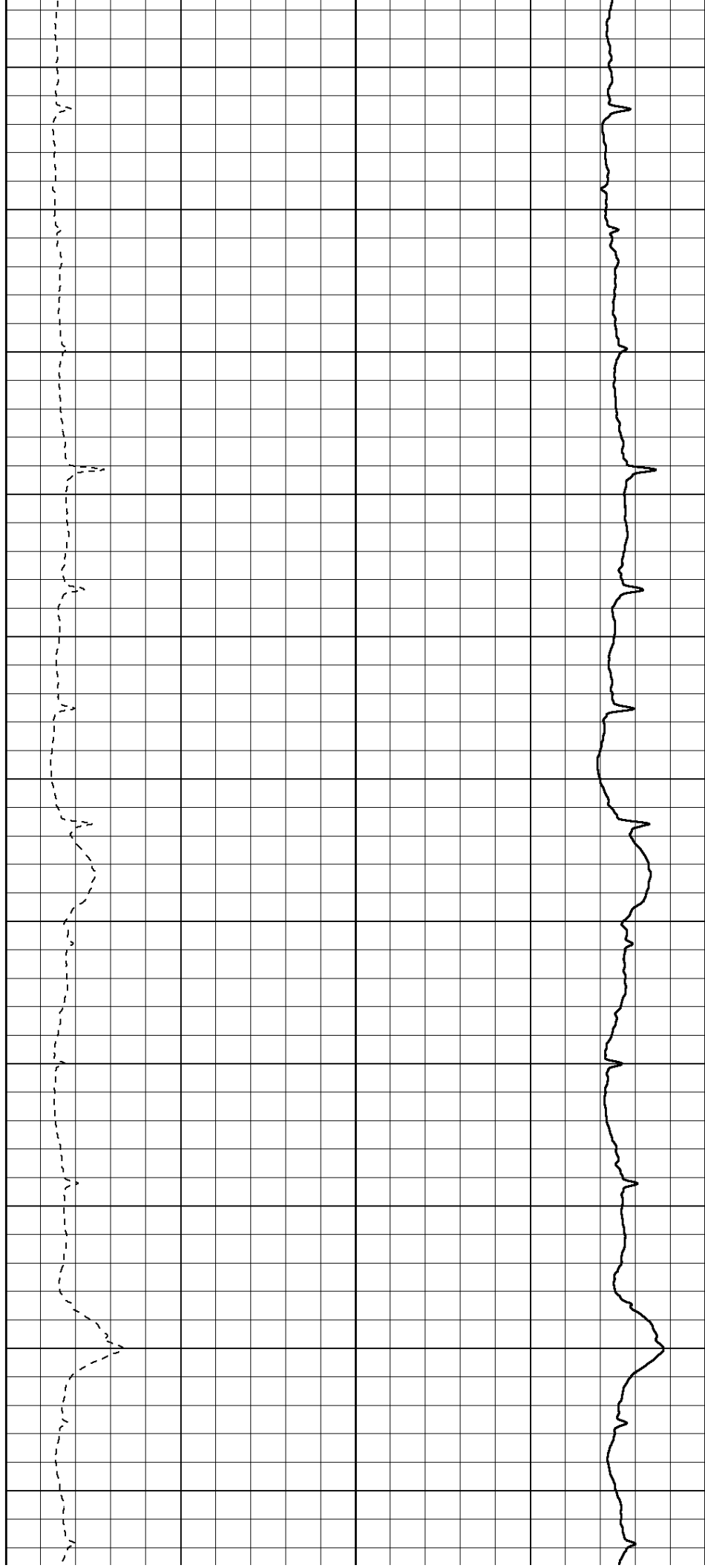
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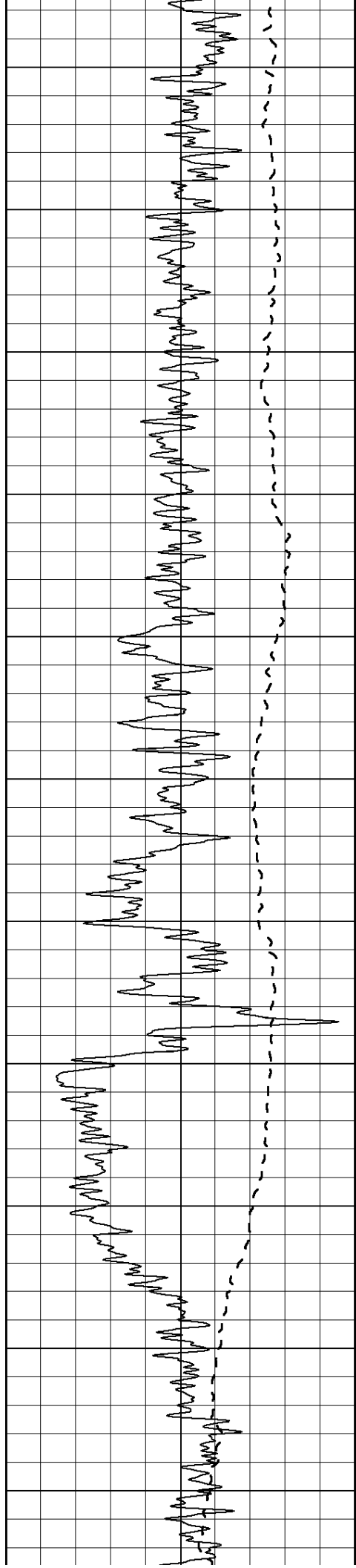
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850

900

950





1000

1050

1100

1150

1200

1250

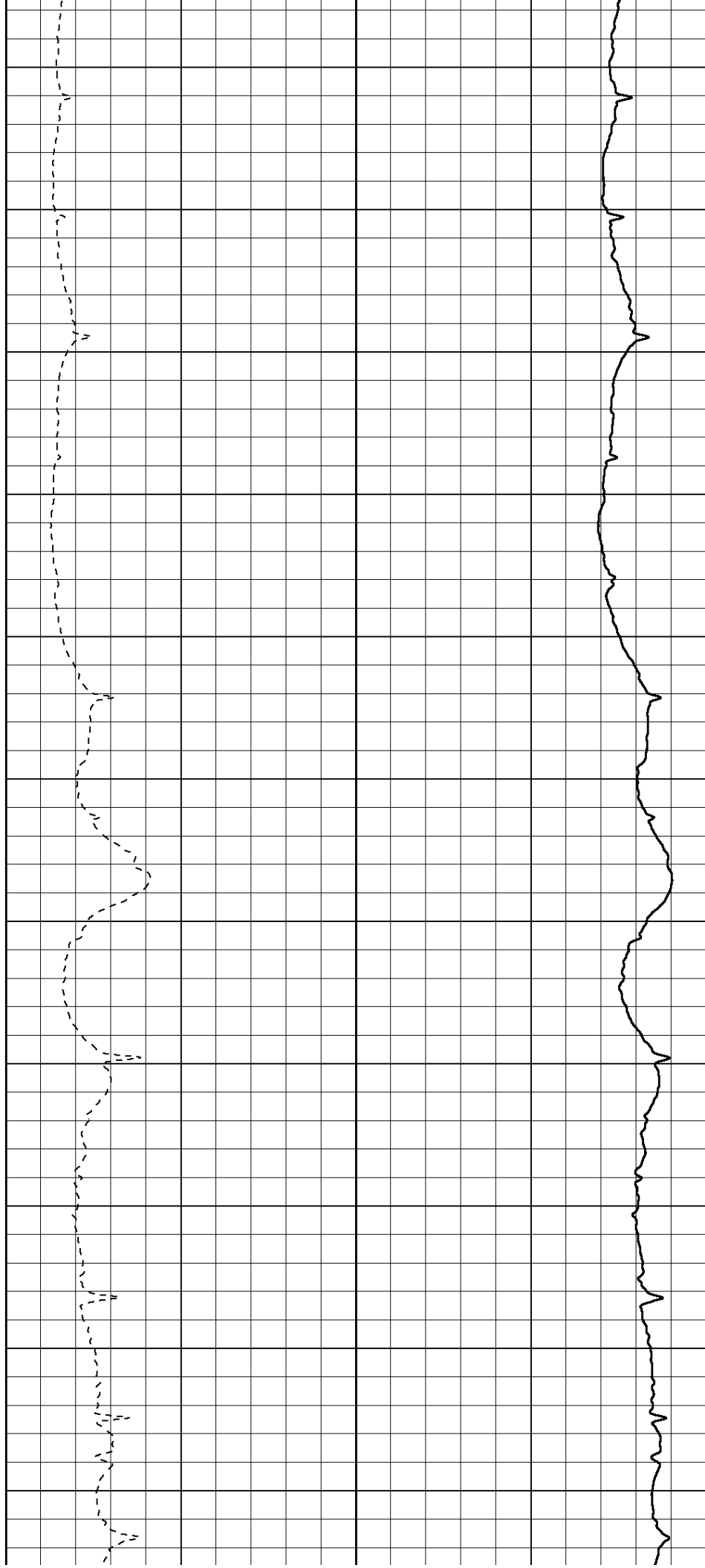
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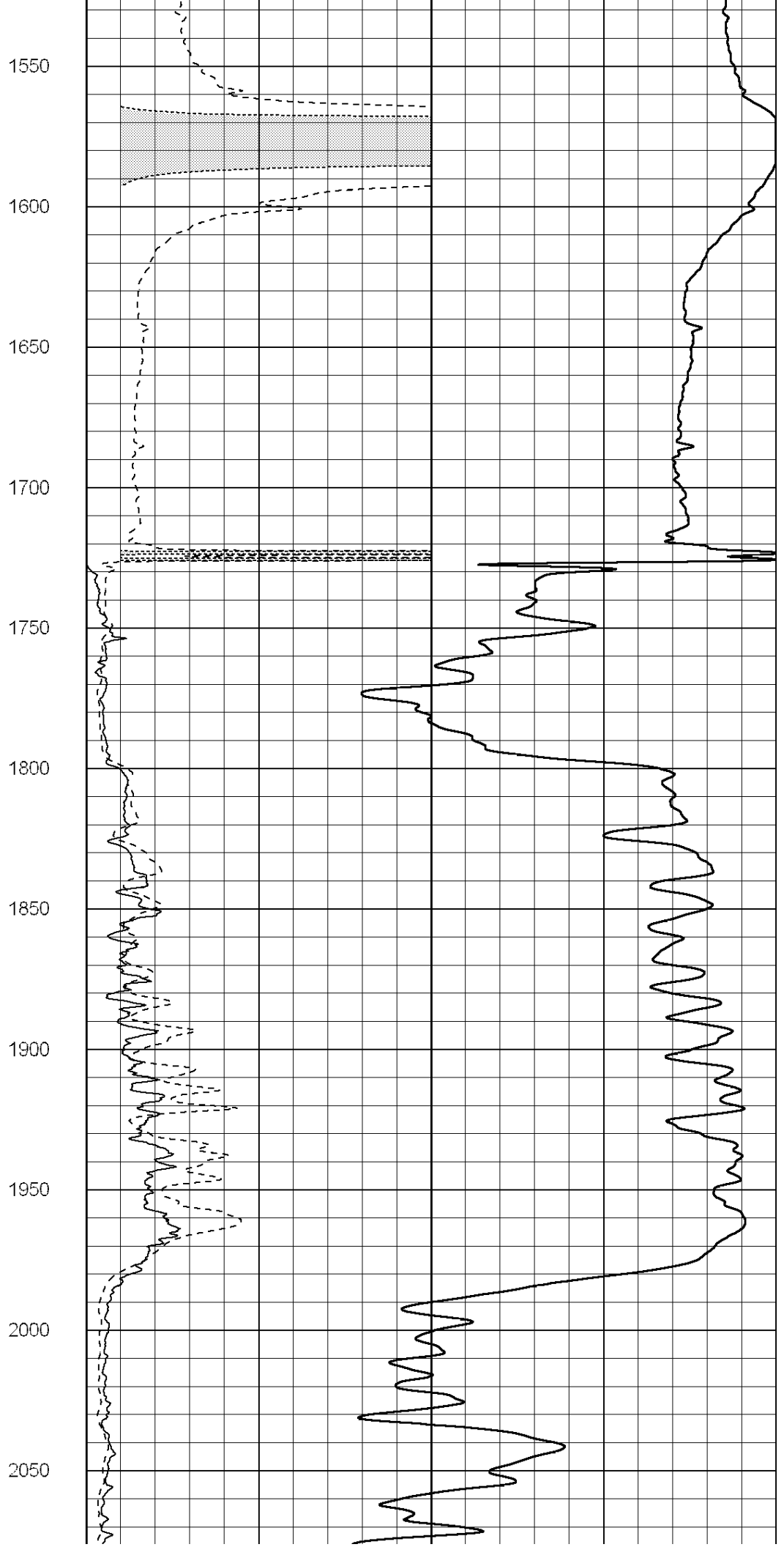
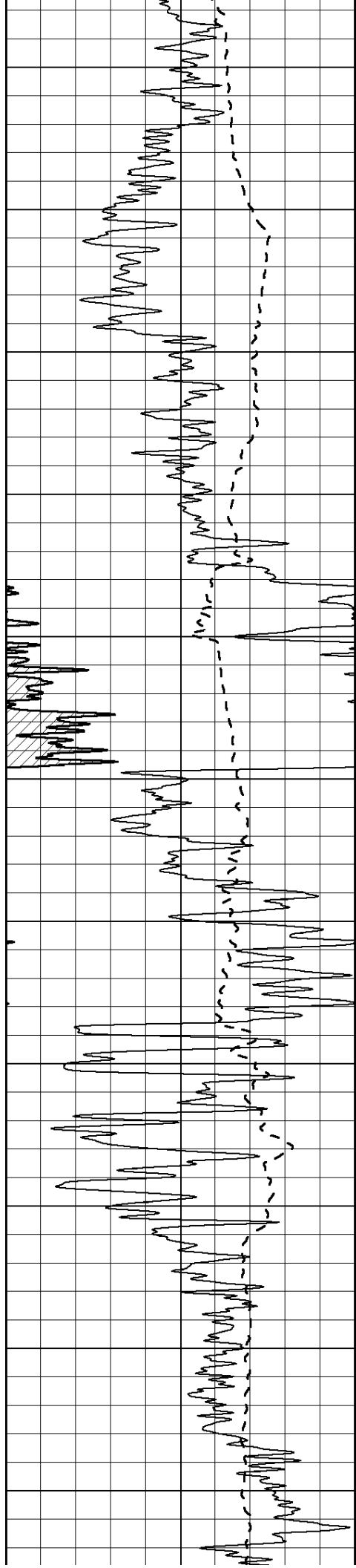
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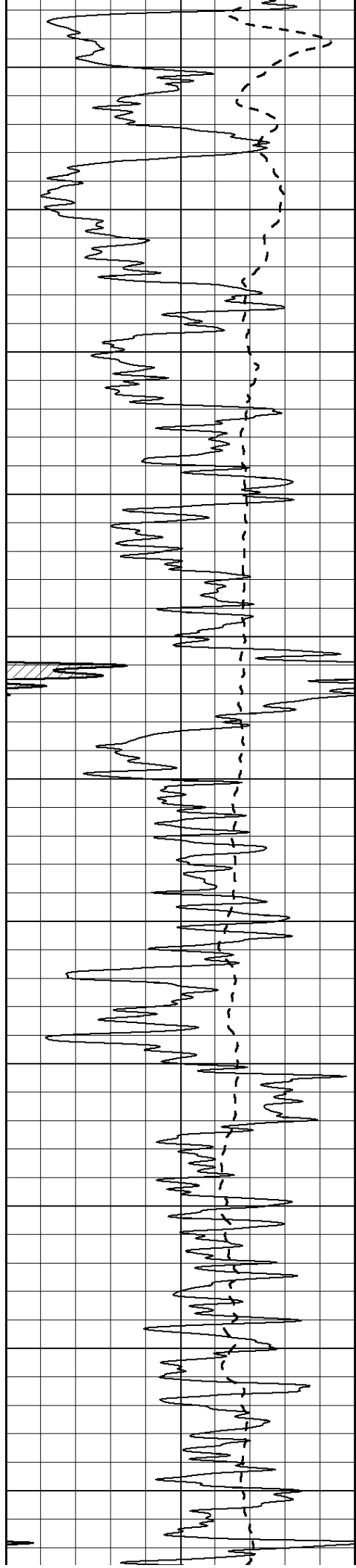
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1450

1500







2100

2150

2200

2250

2300

2350

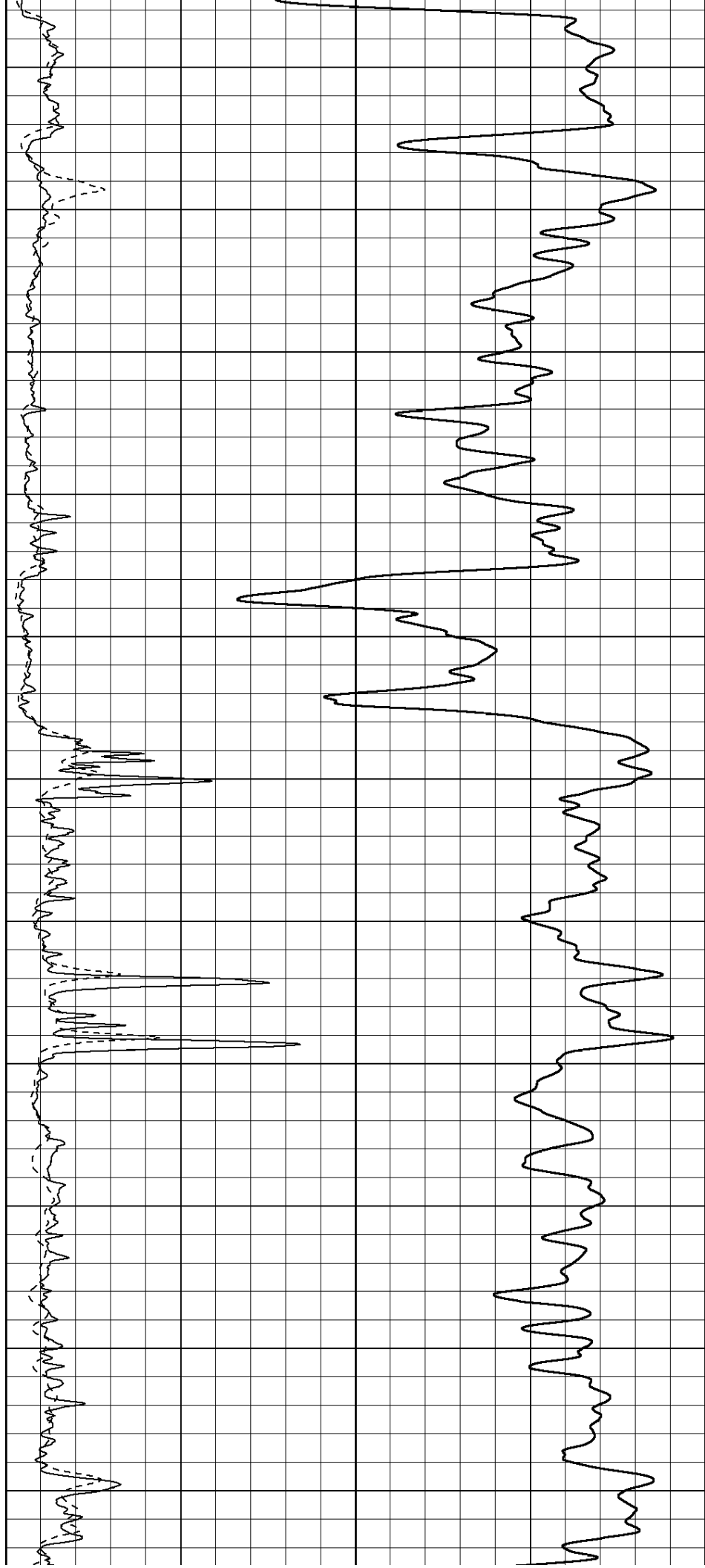
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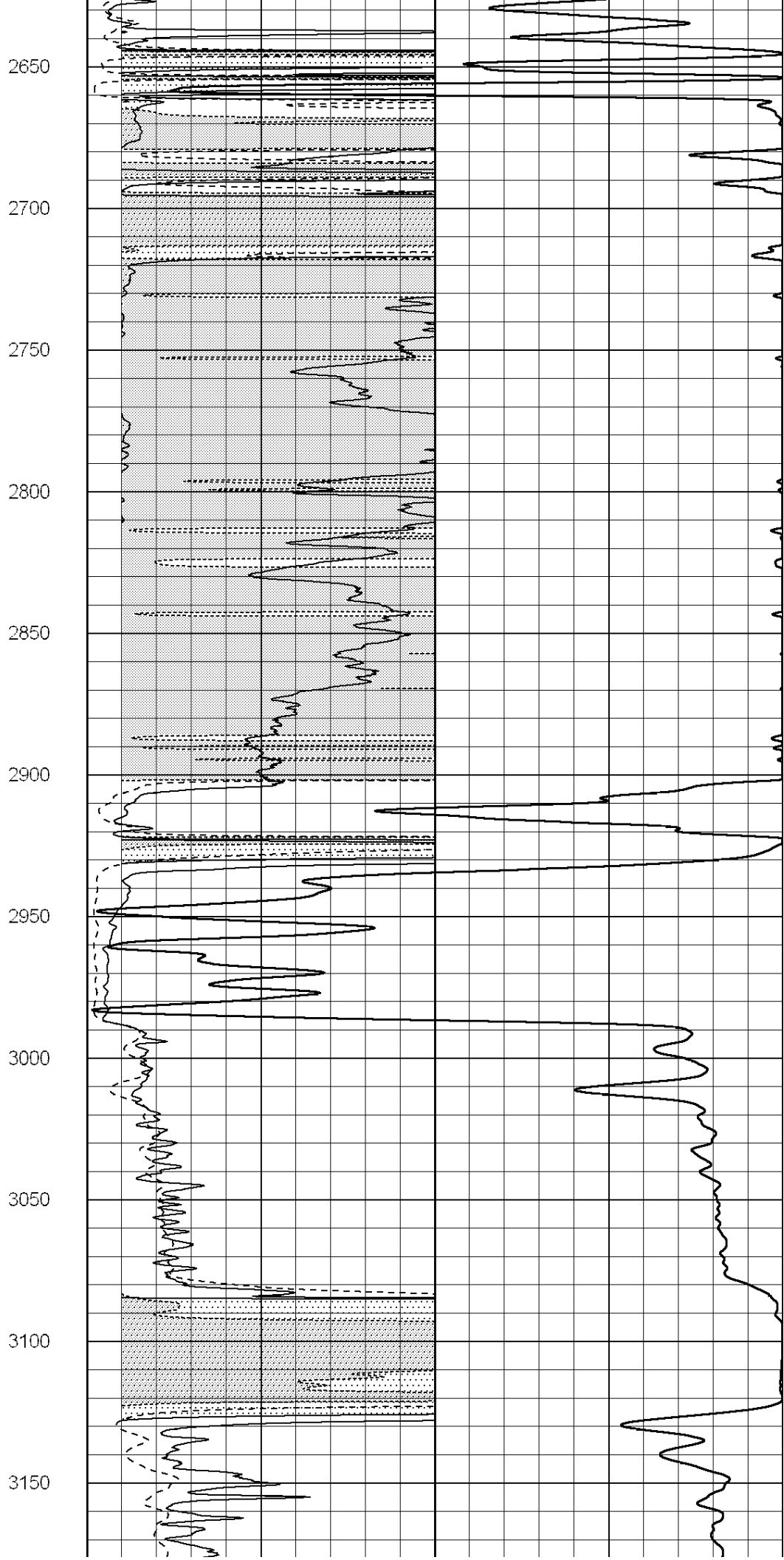
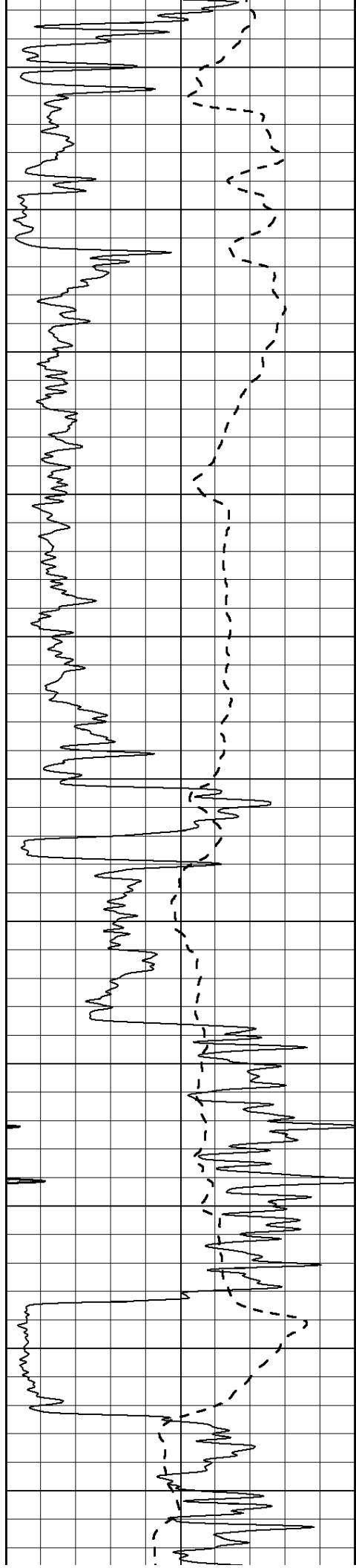
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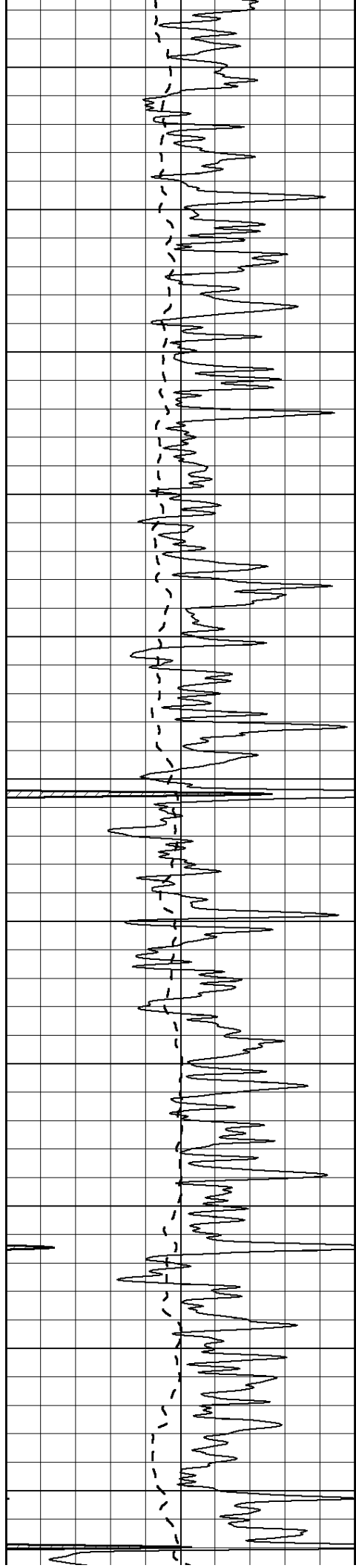
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2550

2600







3200

3250

3300

3350

3400

3450

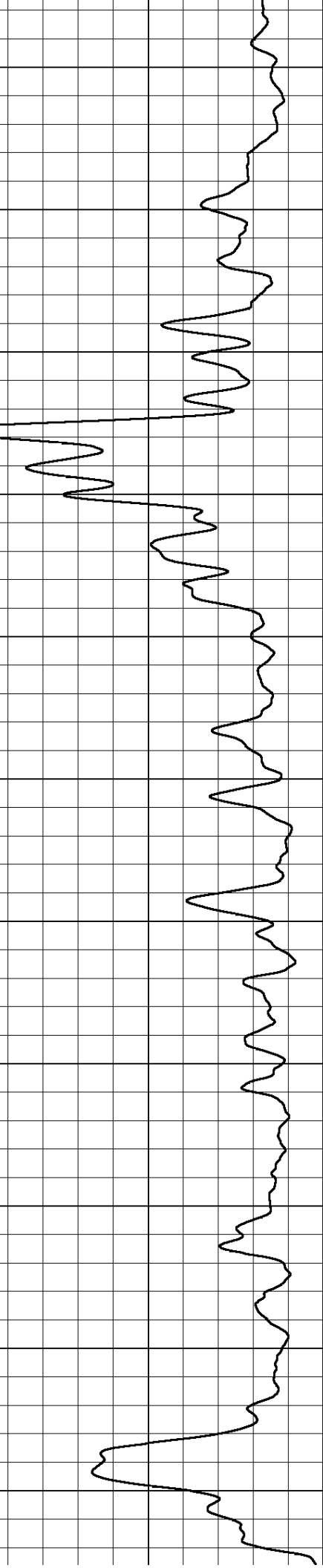
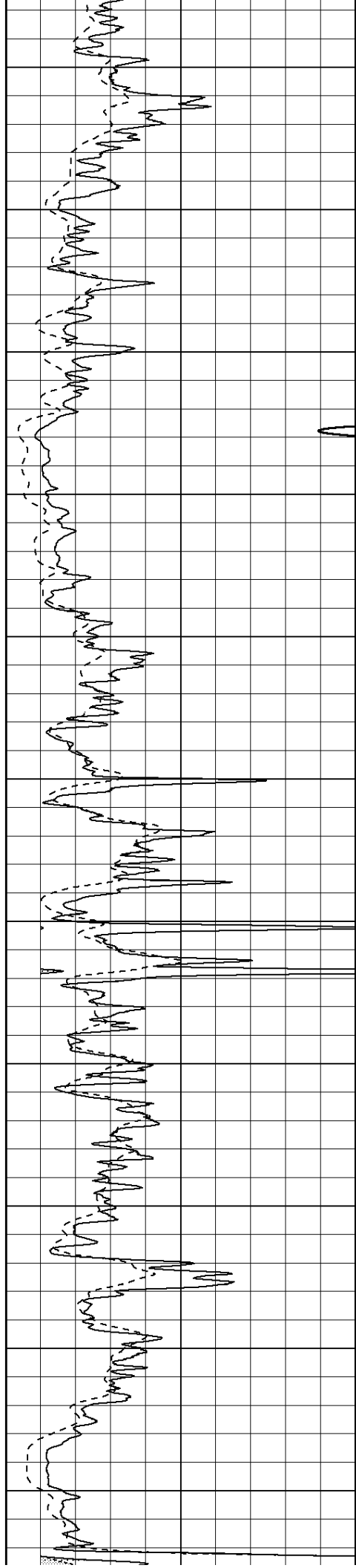
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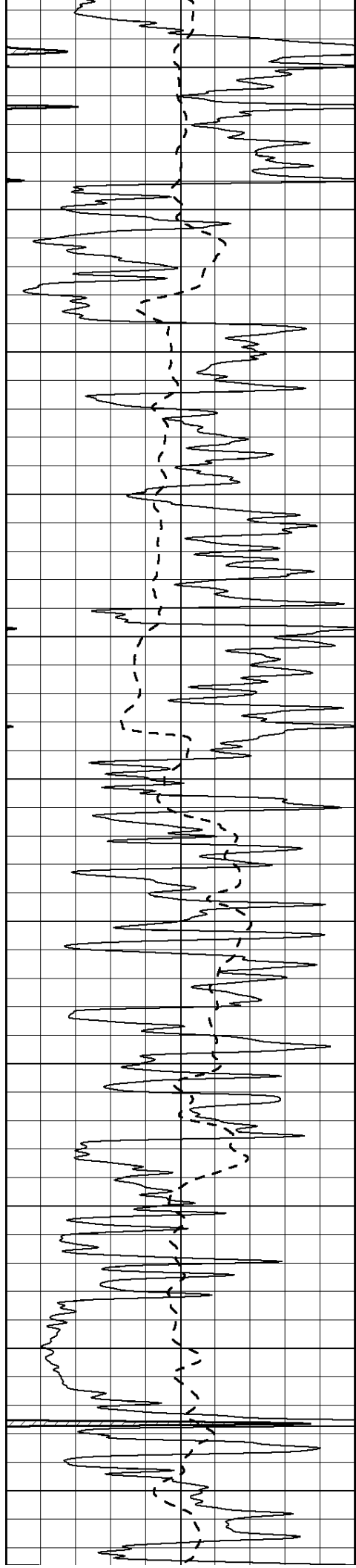
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3700





3750

3800

3850

3900

3950

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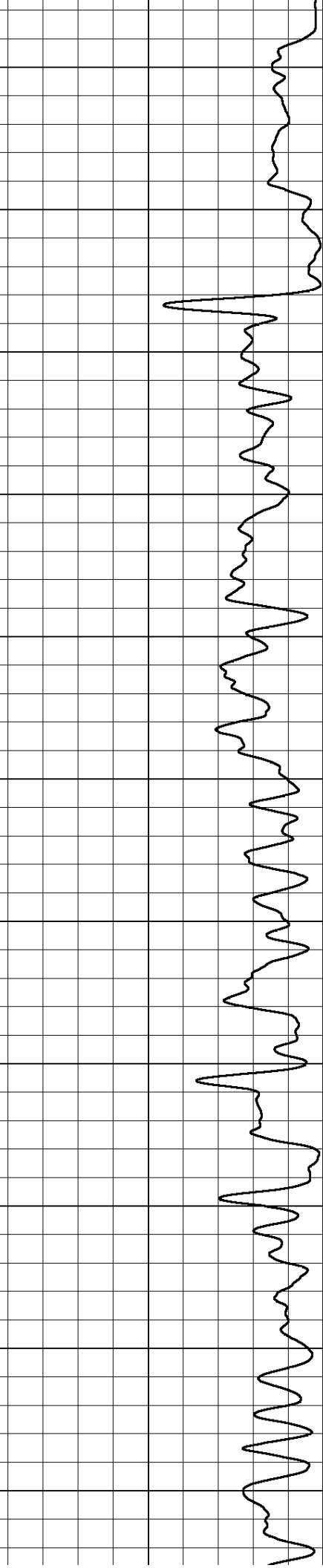
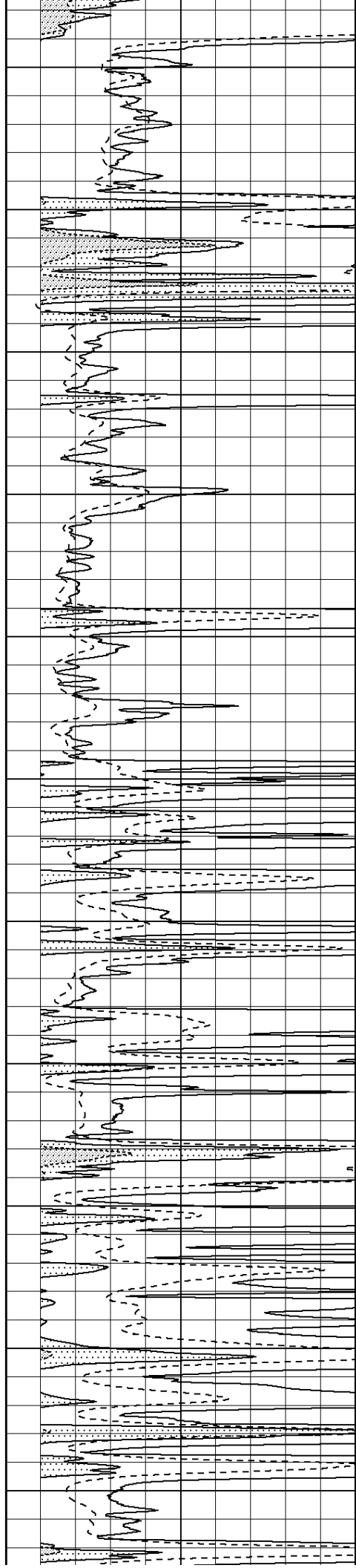
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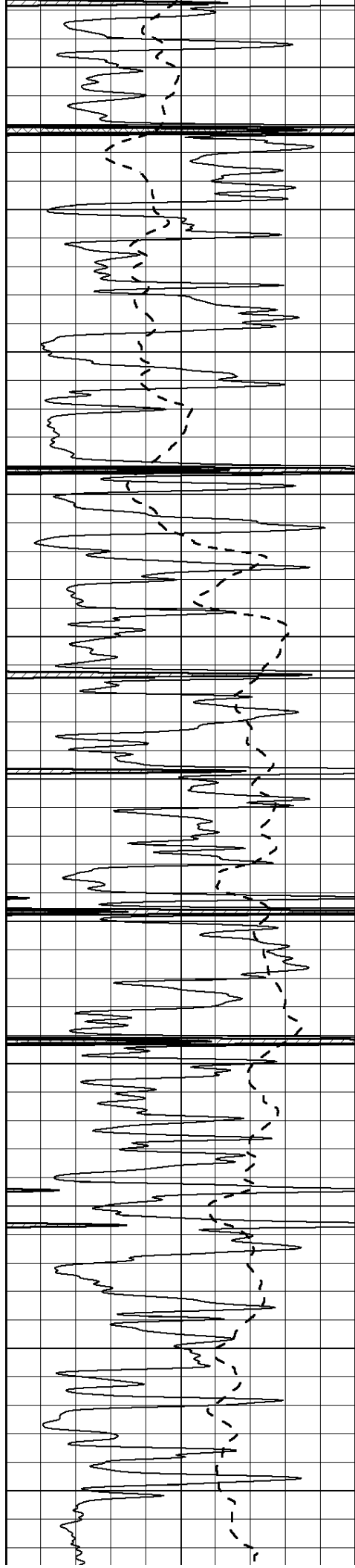
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4250





4300

4350

4400

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4500

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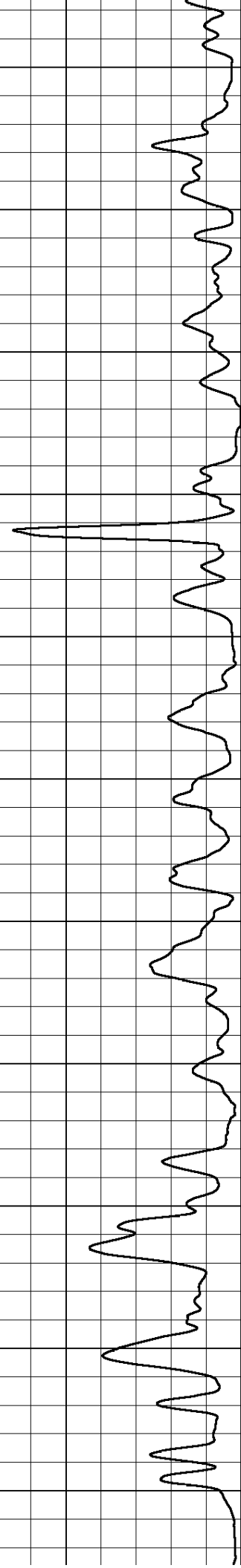
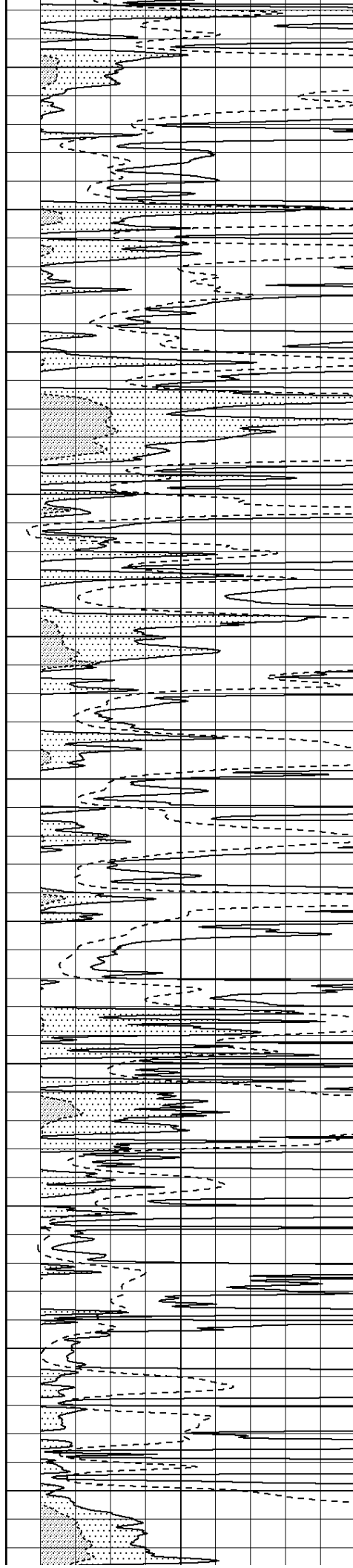
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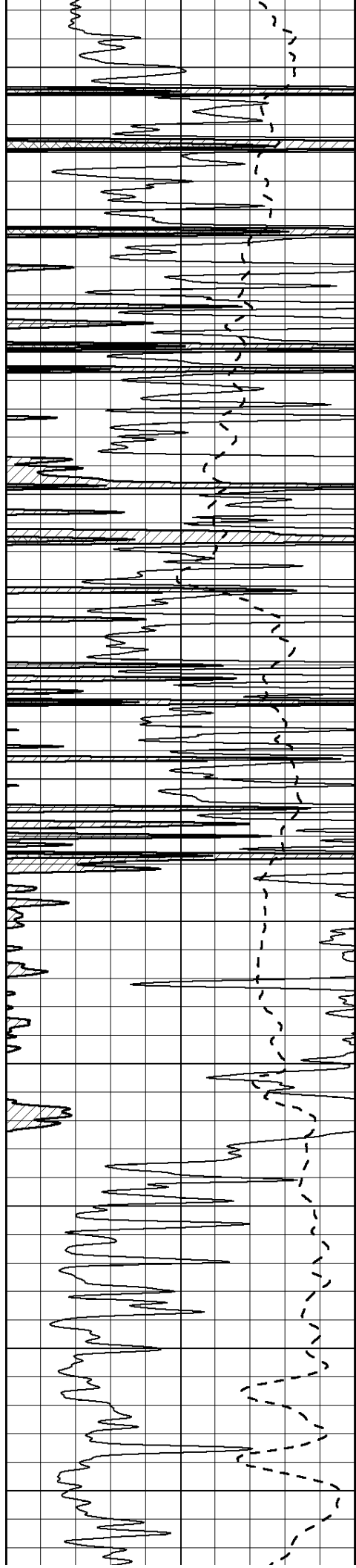
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4700

4750

4800





4850

4900

4950

5000

5050

5100

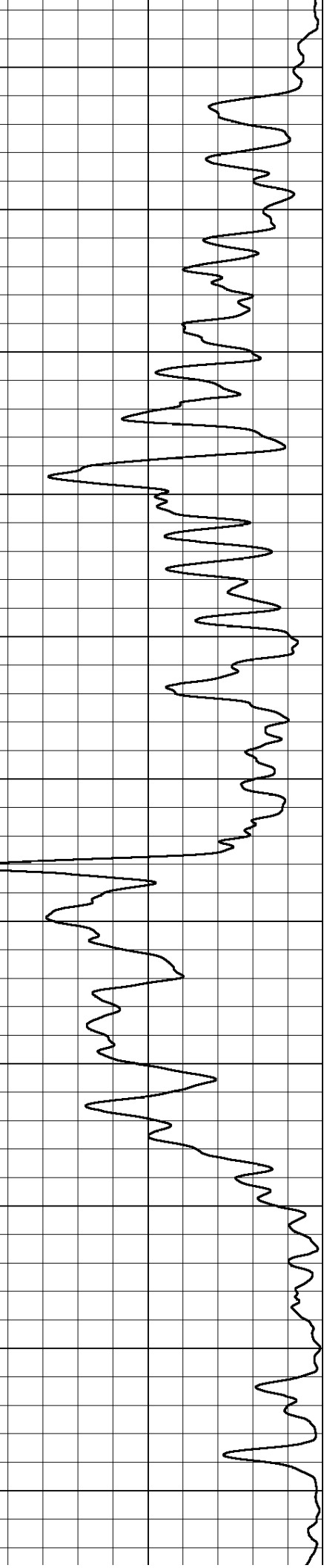
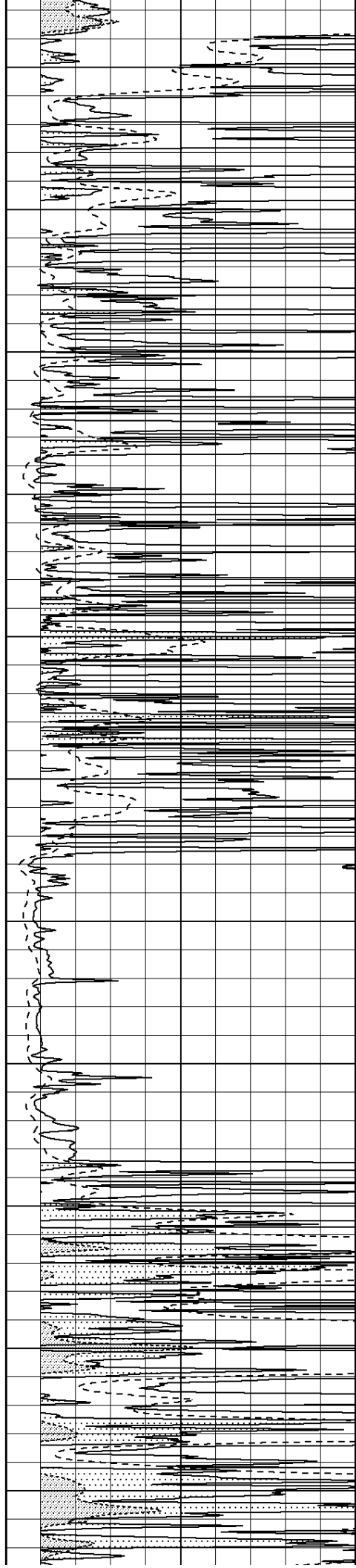
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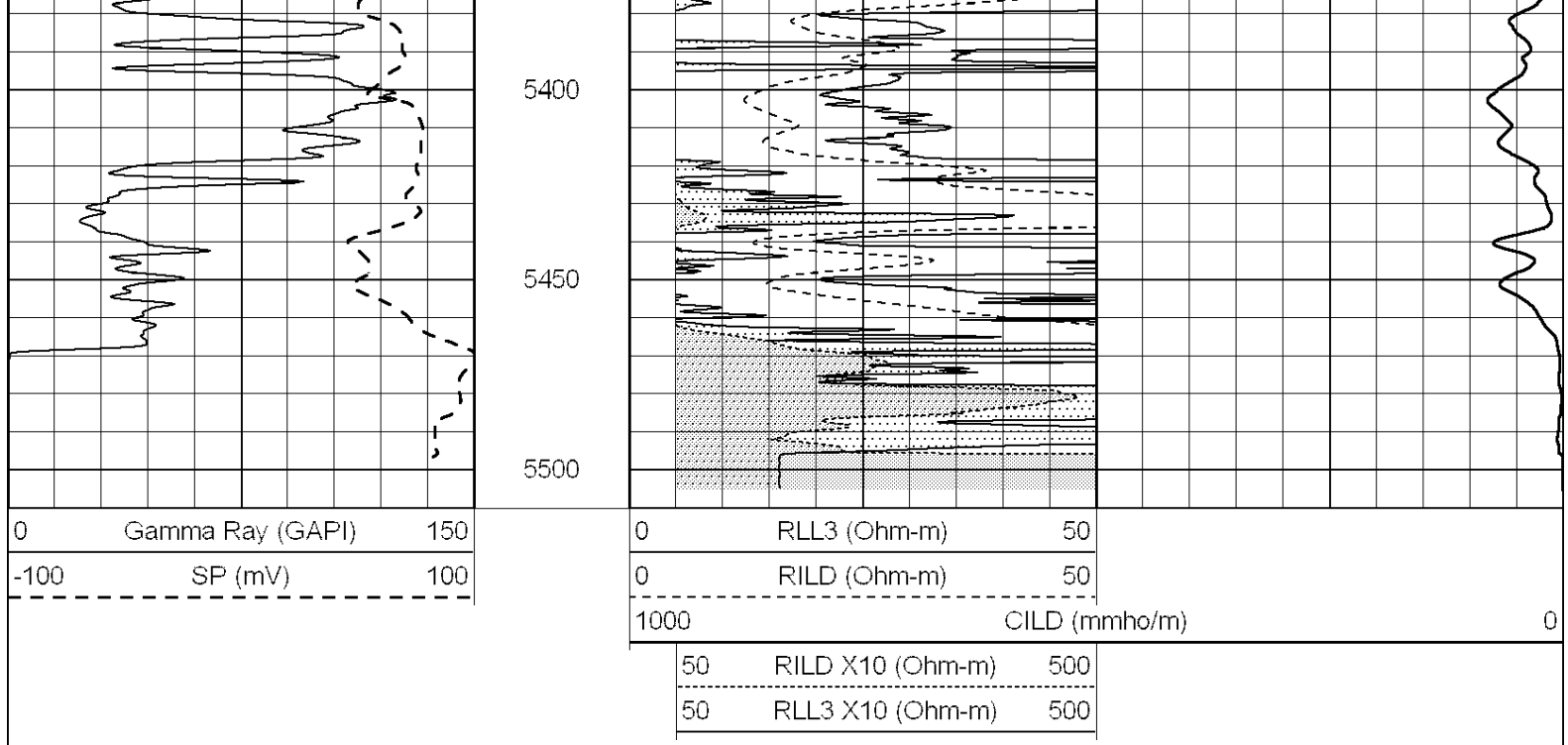
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5250

5300

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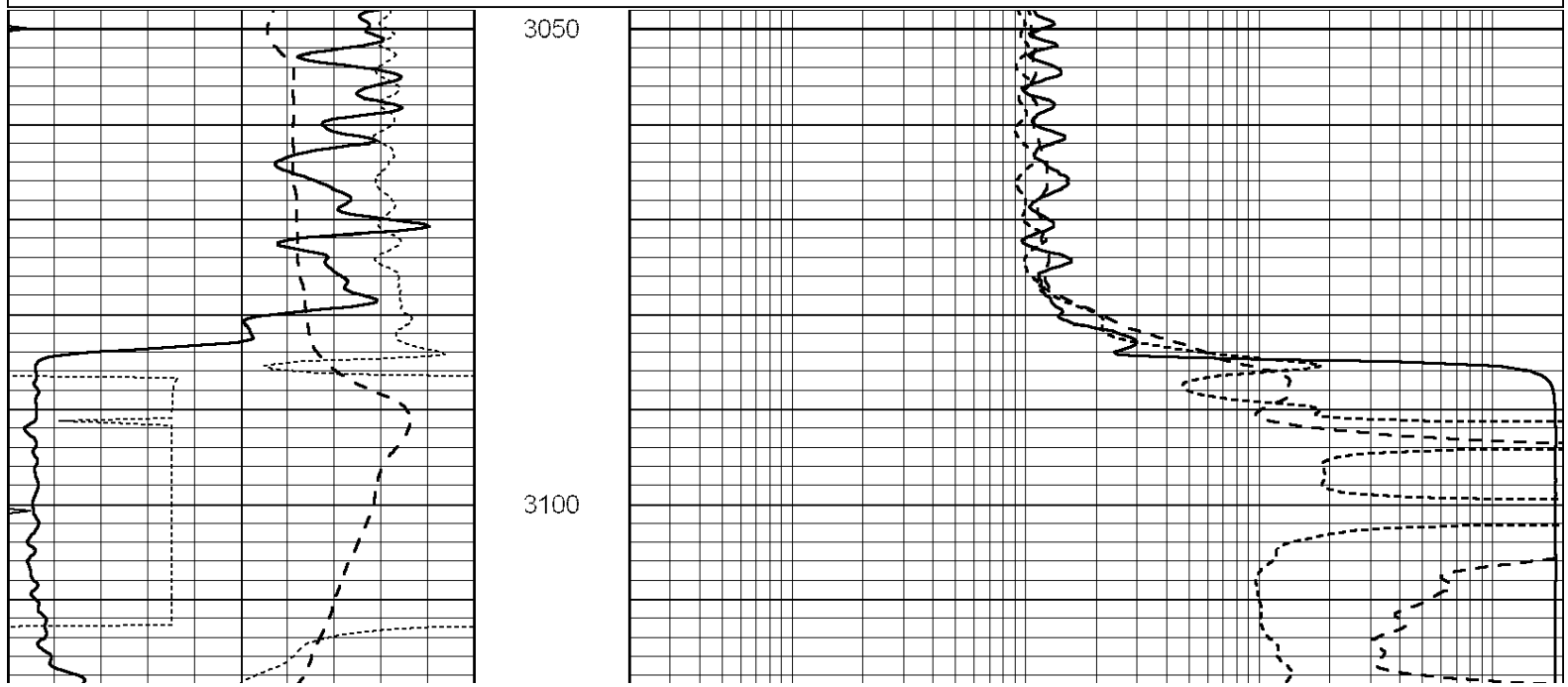


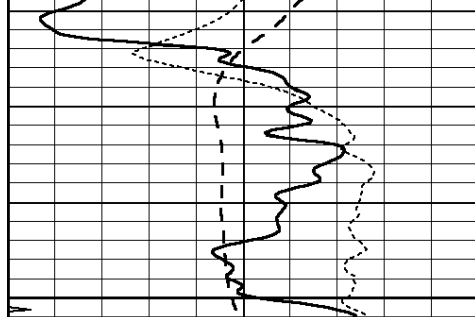


# ANHYDRITE

Database File: 011813pe.db  
Dataset Pathname: pass4.11  
Presentation Format: \_dil  
Dataset Creation: Sat Nov 23 08:00:38 2013  
Charted by: Depth in Feet scaled 1:240

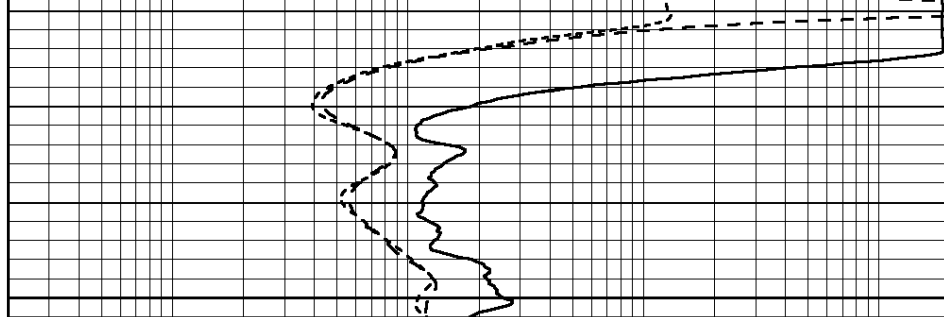
0	GAMMA RAY (GAPI)	150	0.2	SHALLOW GUARD (Ohm-m)	2000
-100	SP (mV)	100	0.2	DEEP INDUCTION (Ohm-m)	2000
-250	Rxo/Rt	50	0.2	MEDIUM INDUCTION (Ohm-m)	2000
0	MINMK	20			





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

3150



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

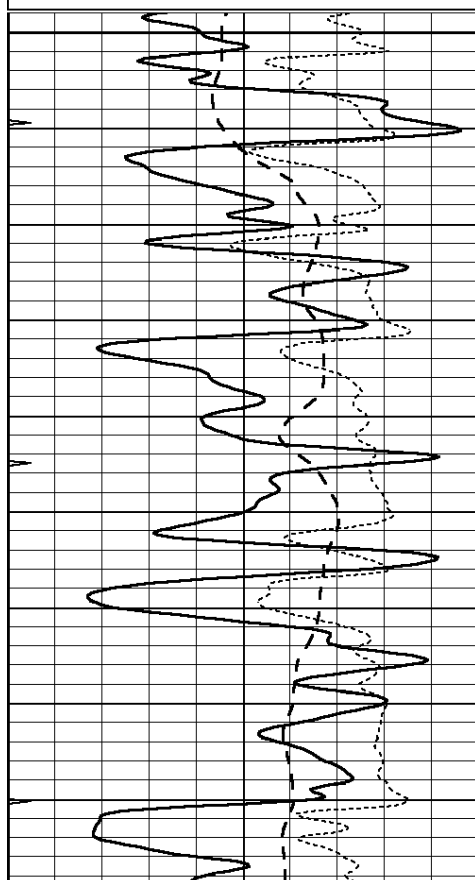


# MAIN SECTION

Database File: 011813pe.db  
 Dataset Pathname: pass4.10  
 Presentation Format: dil  
 Dataset Creation: Sat Nov 23 08:00:18 2013  
 Charted by: Depth in Feet scaled 1:240

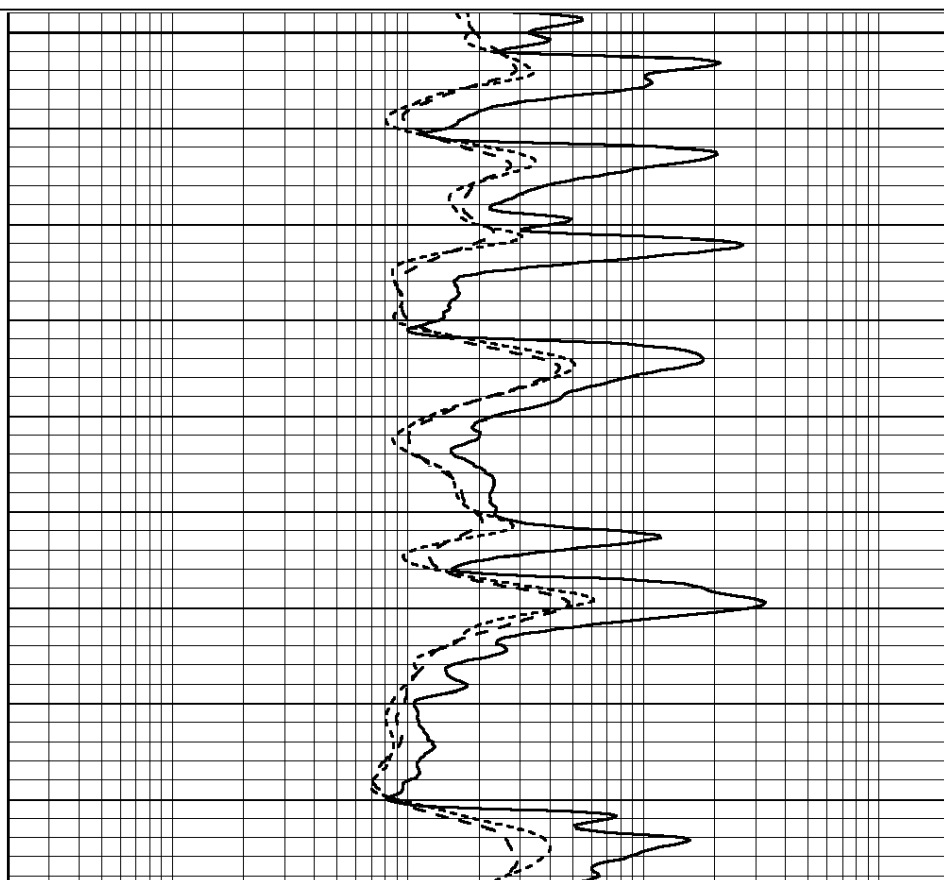
0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

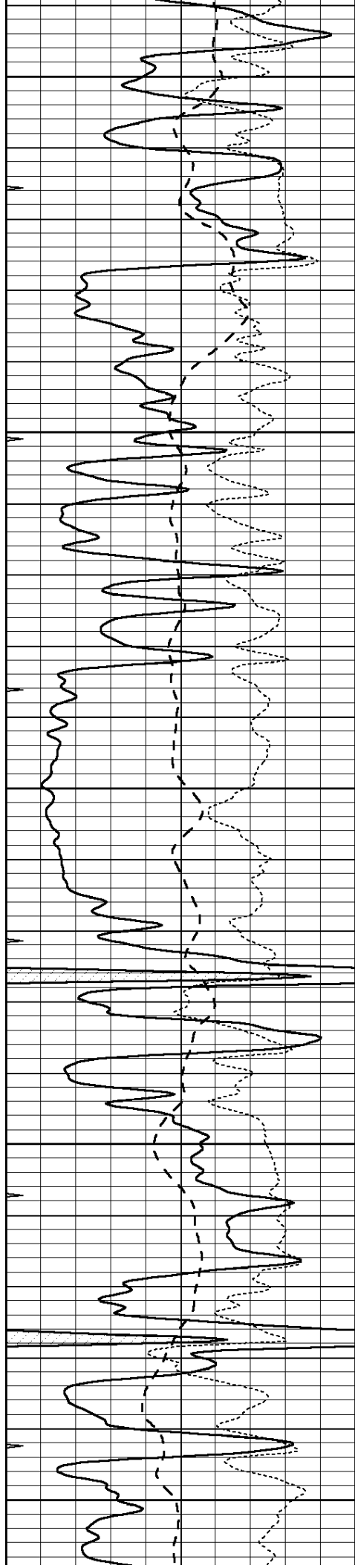
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000



4000

4050





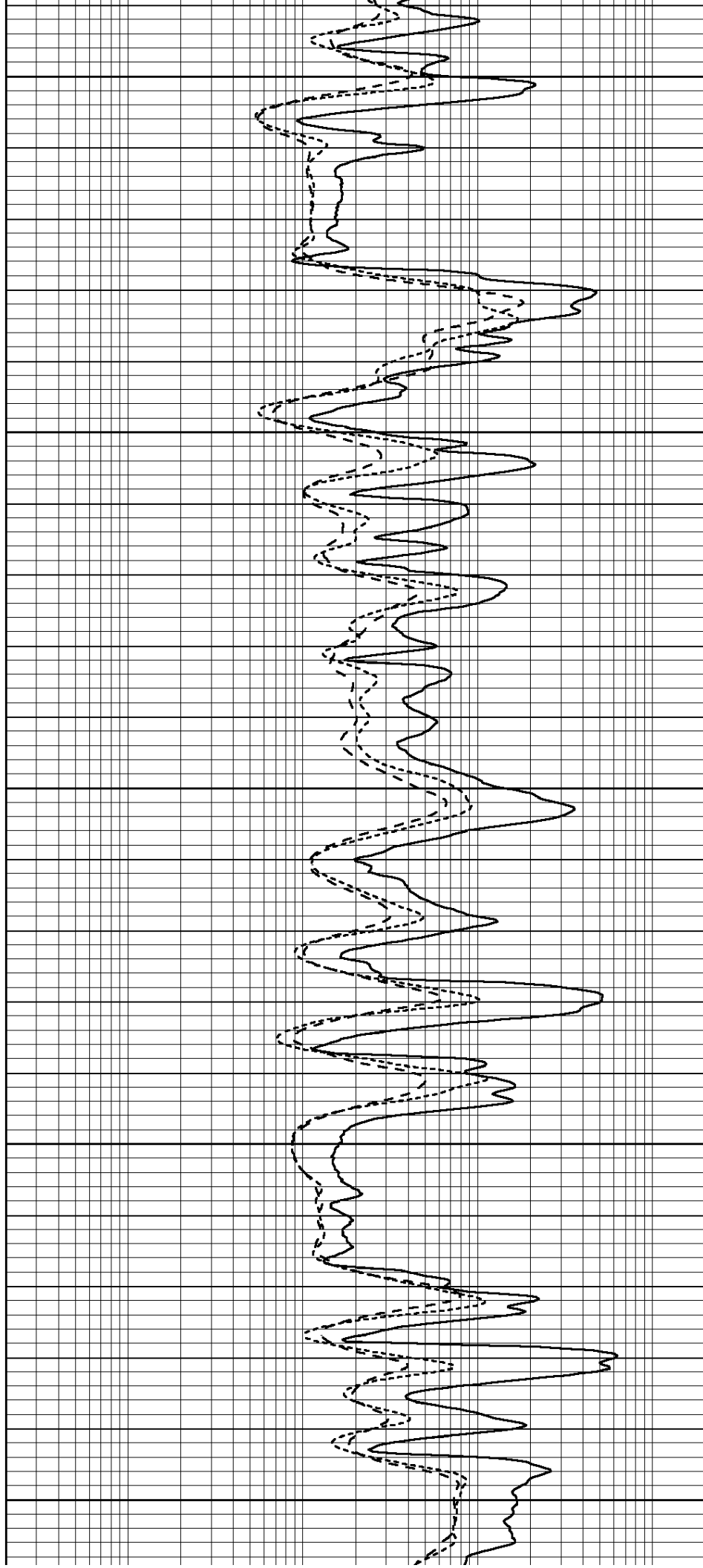
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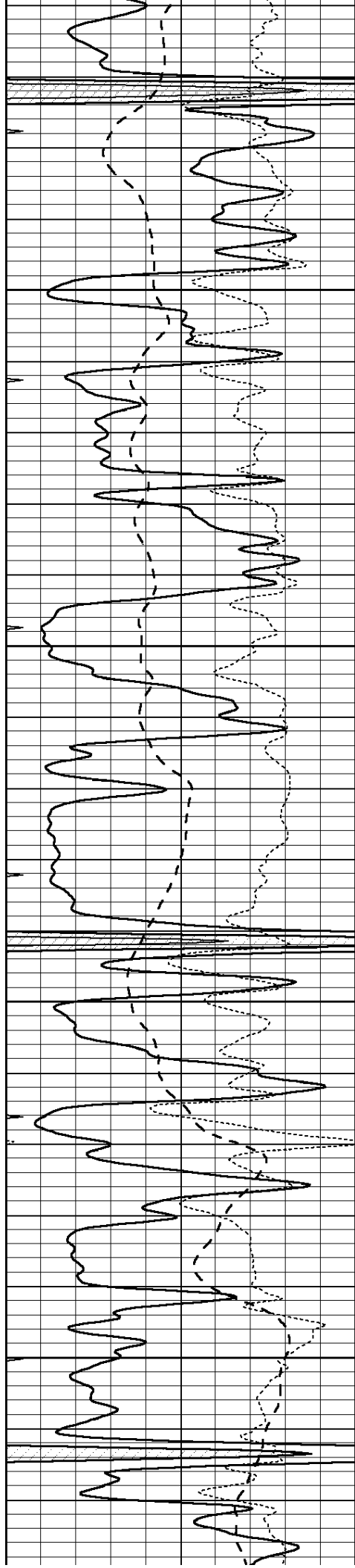
4150

4200

4250

4300



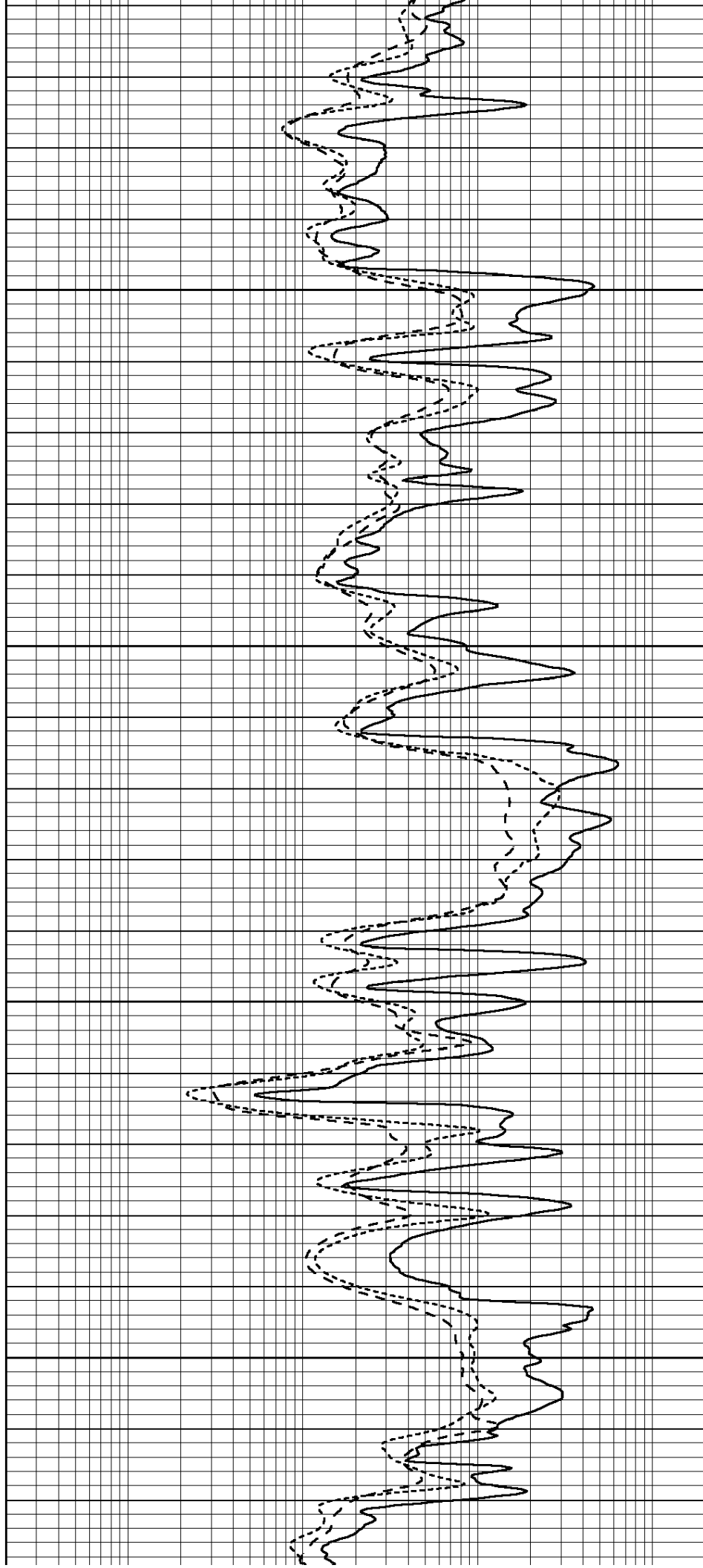


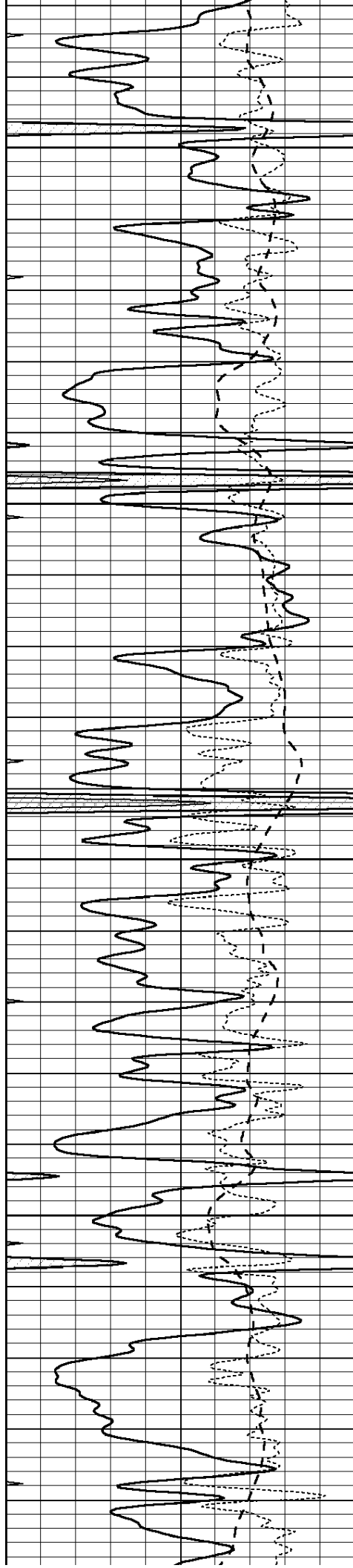
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4400

4450

4500



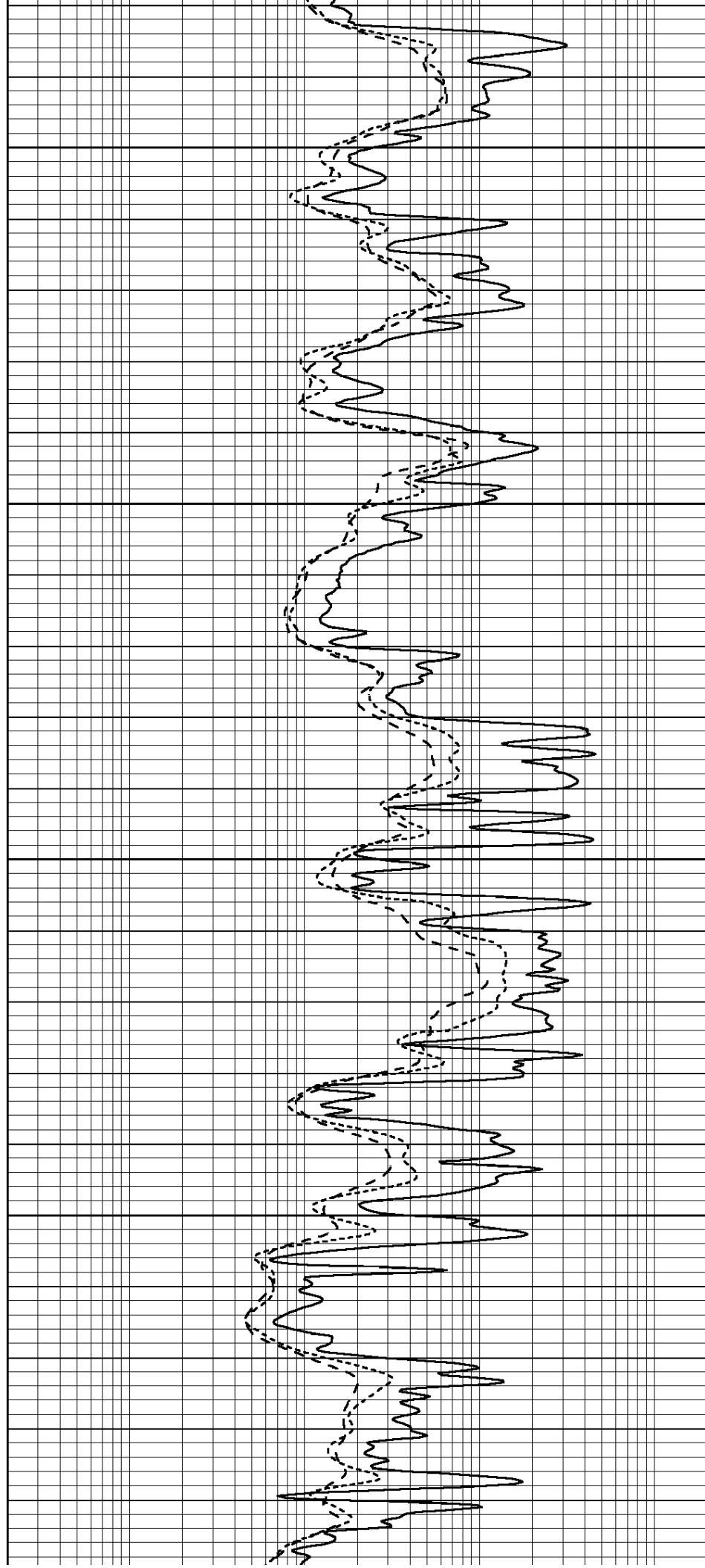


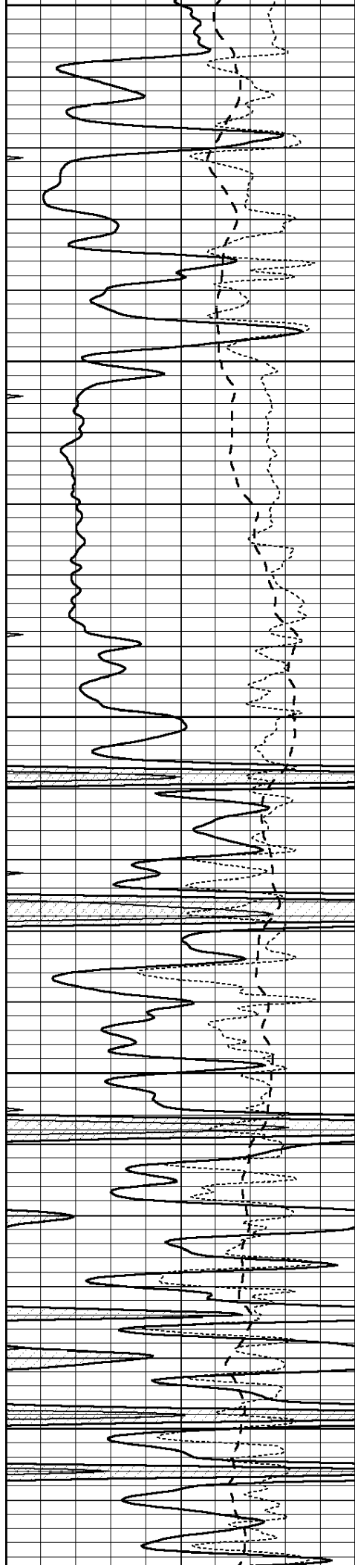
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4600

4650

4700





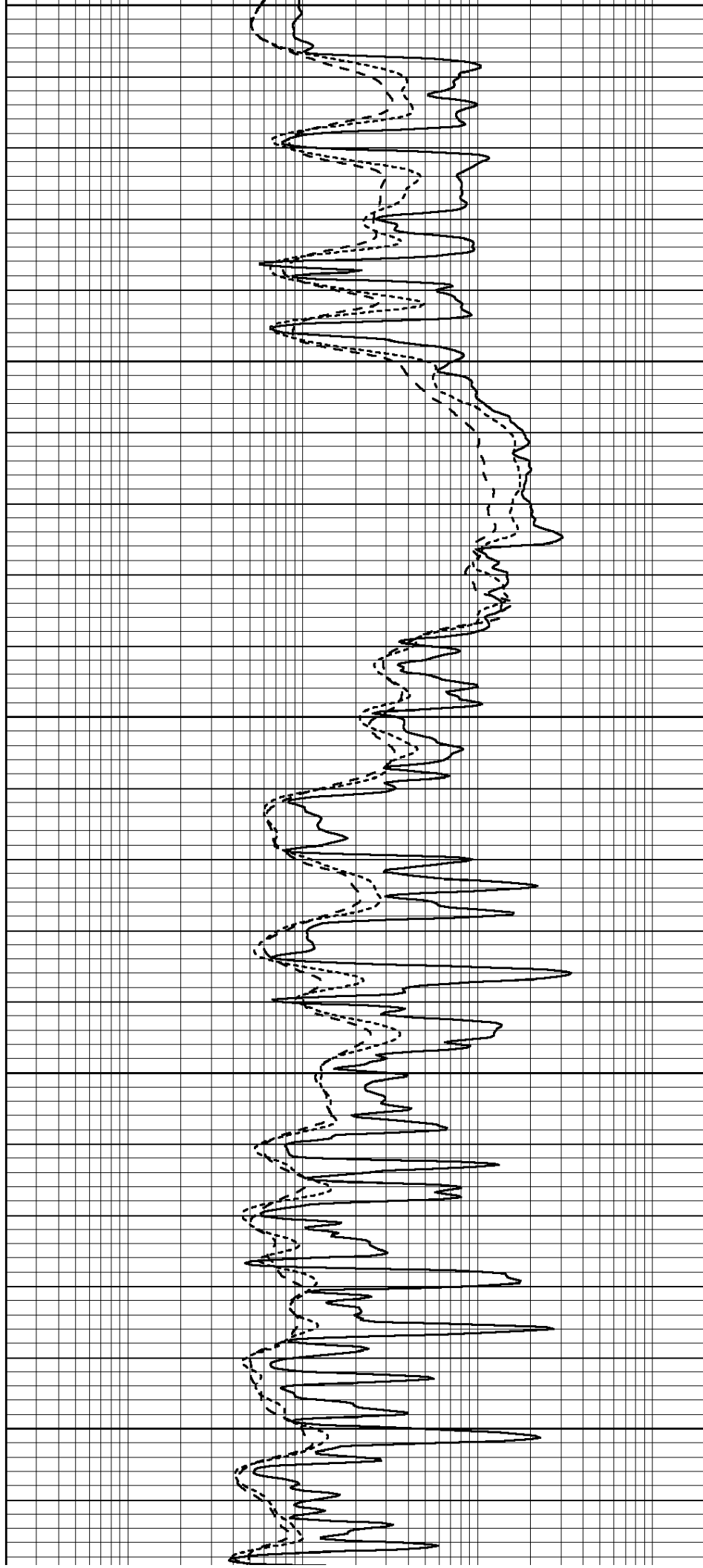
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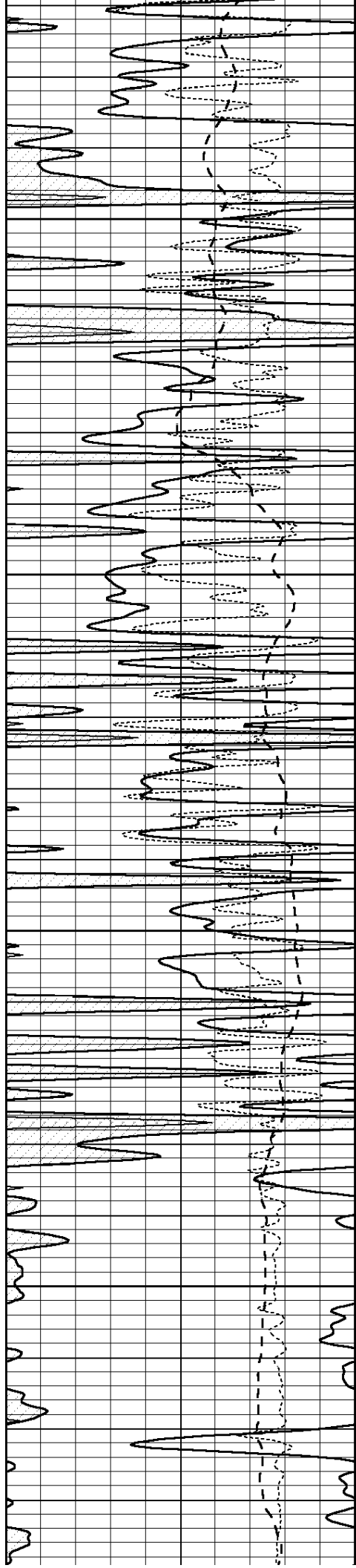
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4900

4950



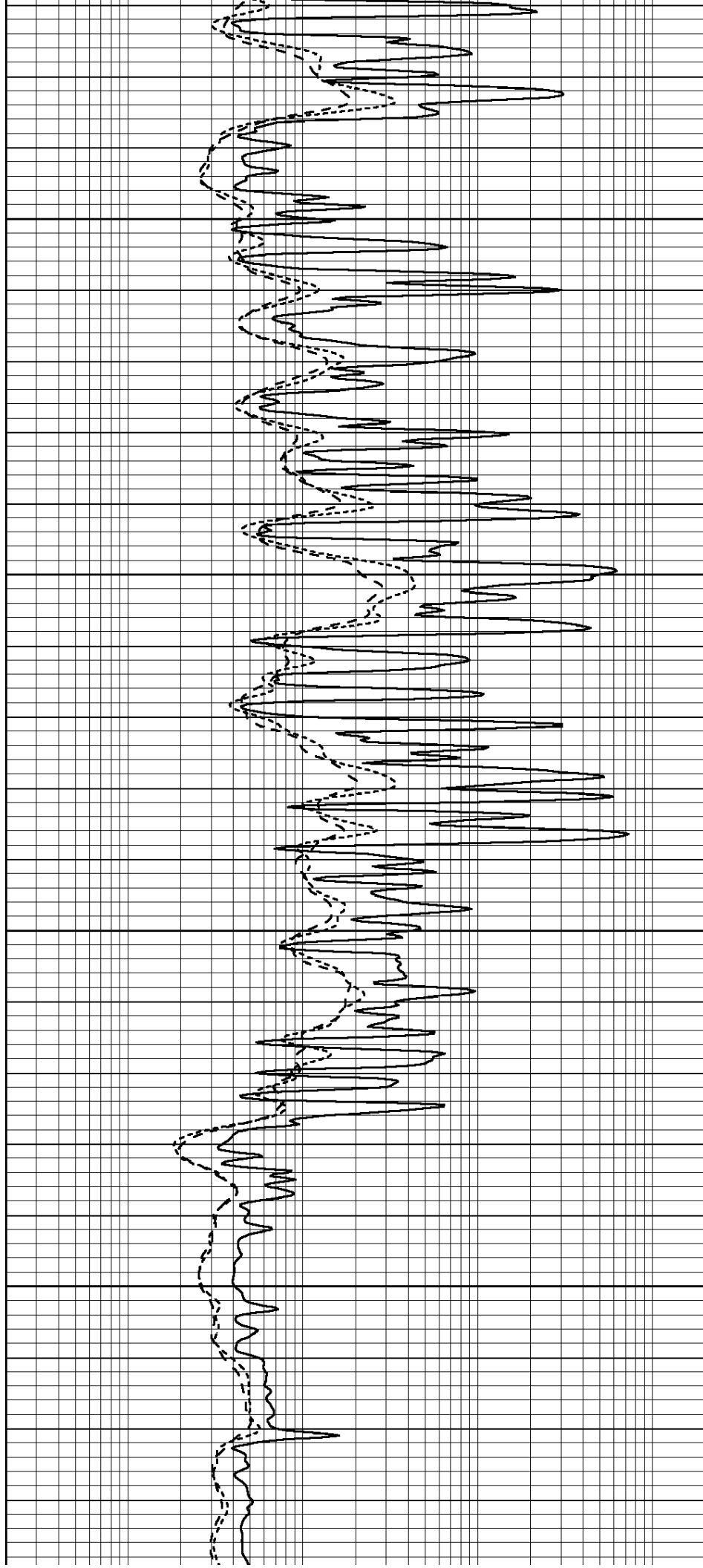


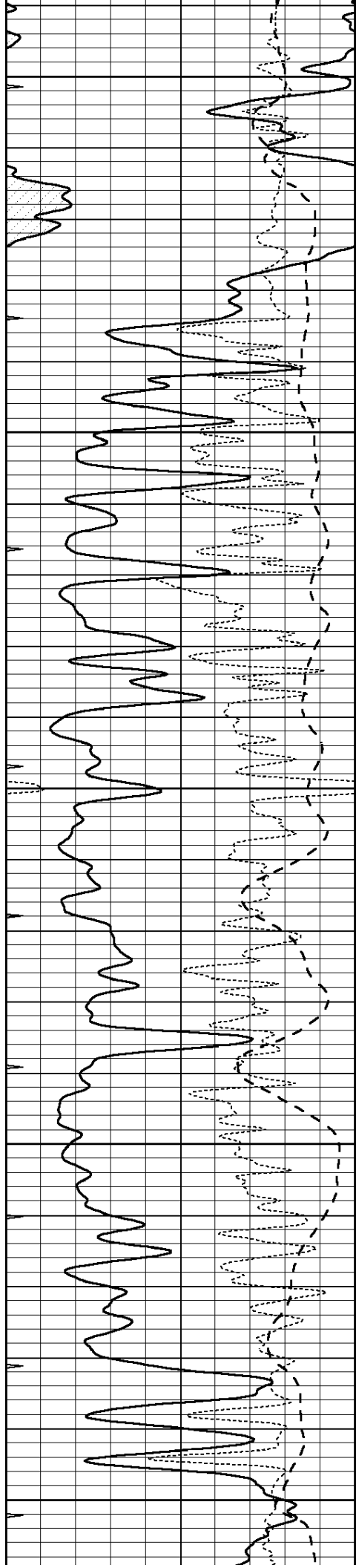
5000

5050

5100

5150





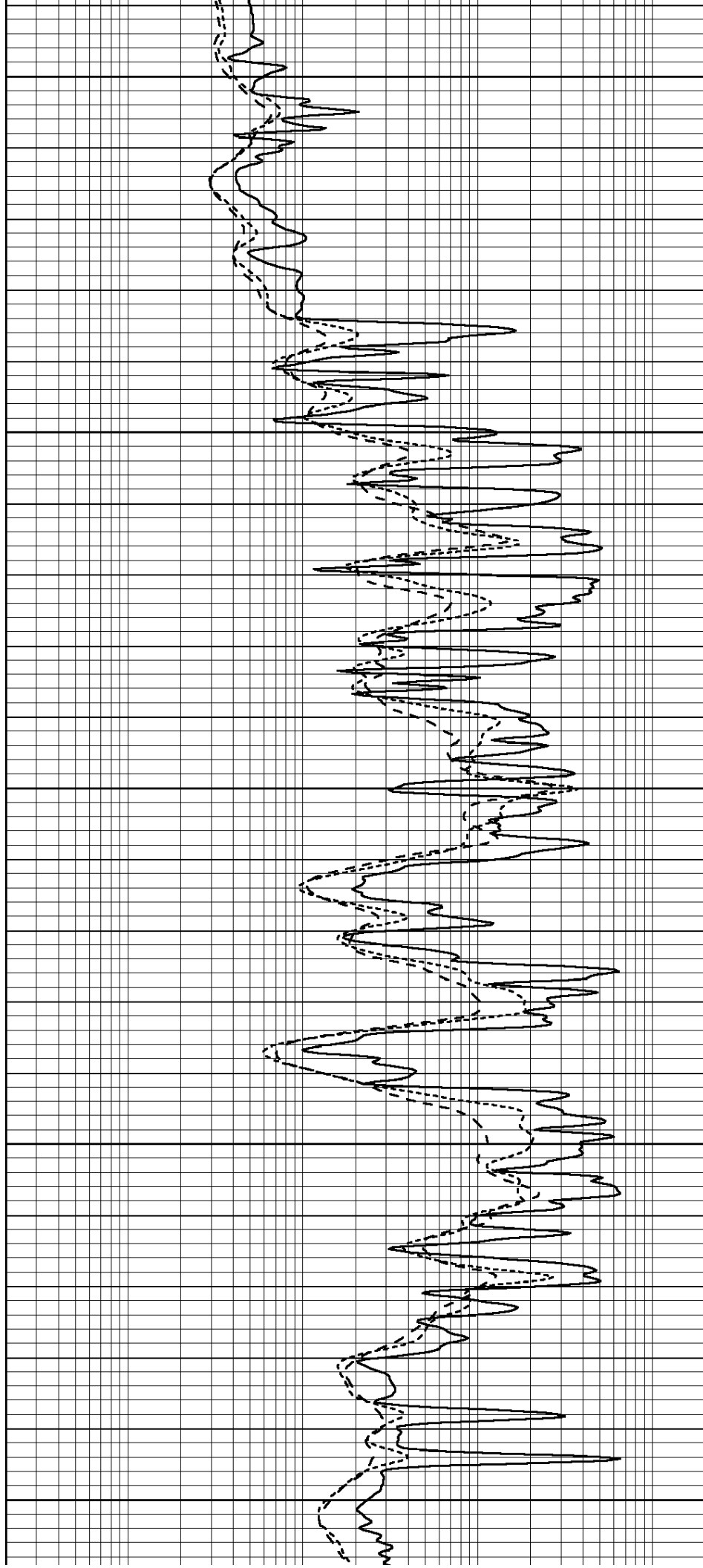
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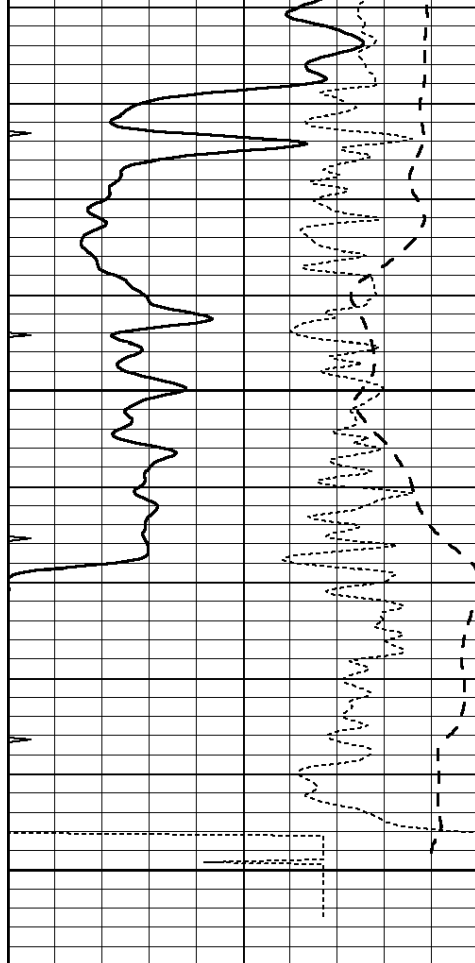
5250

5300

5350

5400

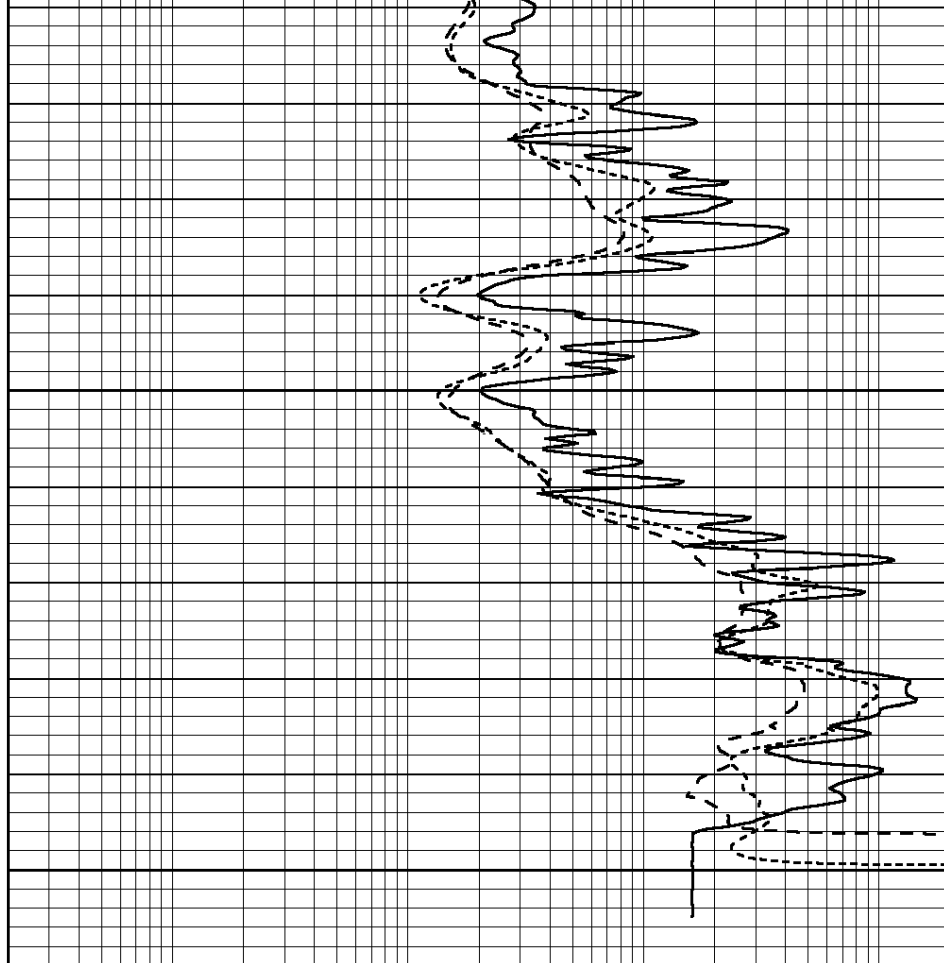




5450

5500

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

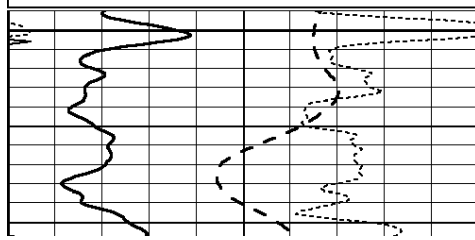


# REPEAT SECTION

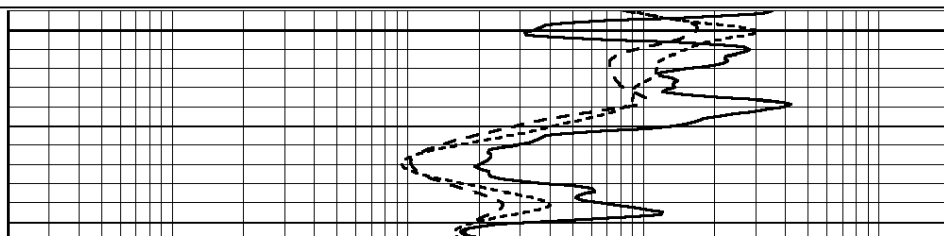
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Dataset Pathname: pass3.6  
Presentation Format: \_dil  
Dataset Creation: Sat Nov 23 08:09:33 2013 by Calc SOC 120430  
Charted by: Depth in Feet scaled 1:240

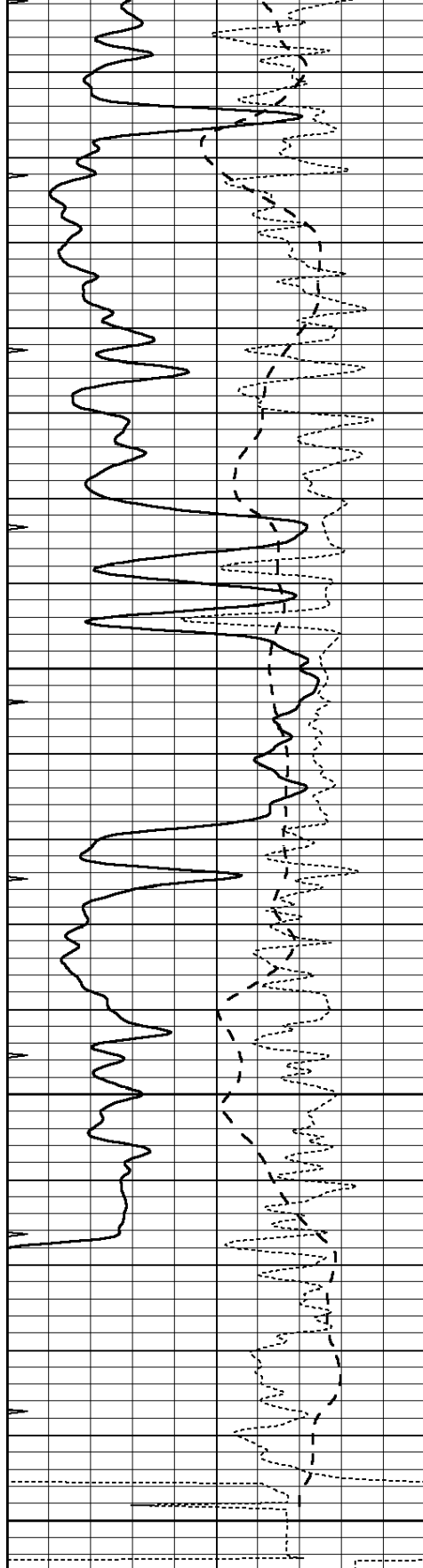
0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

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



5300





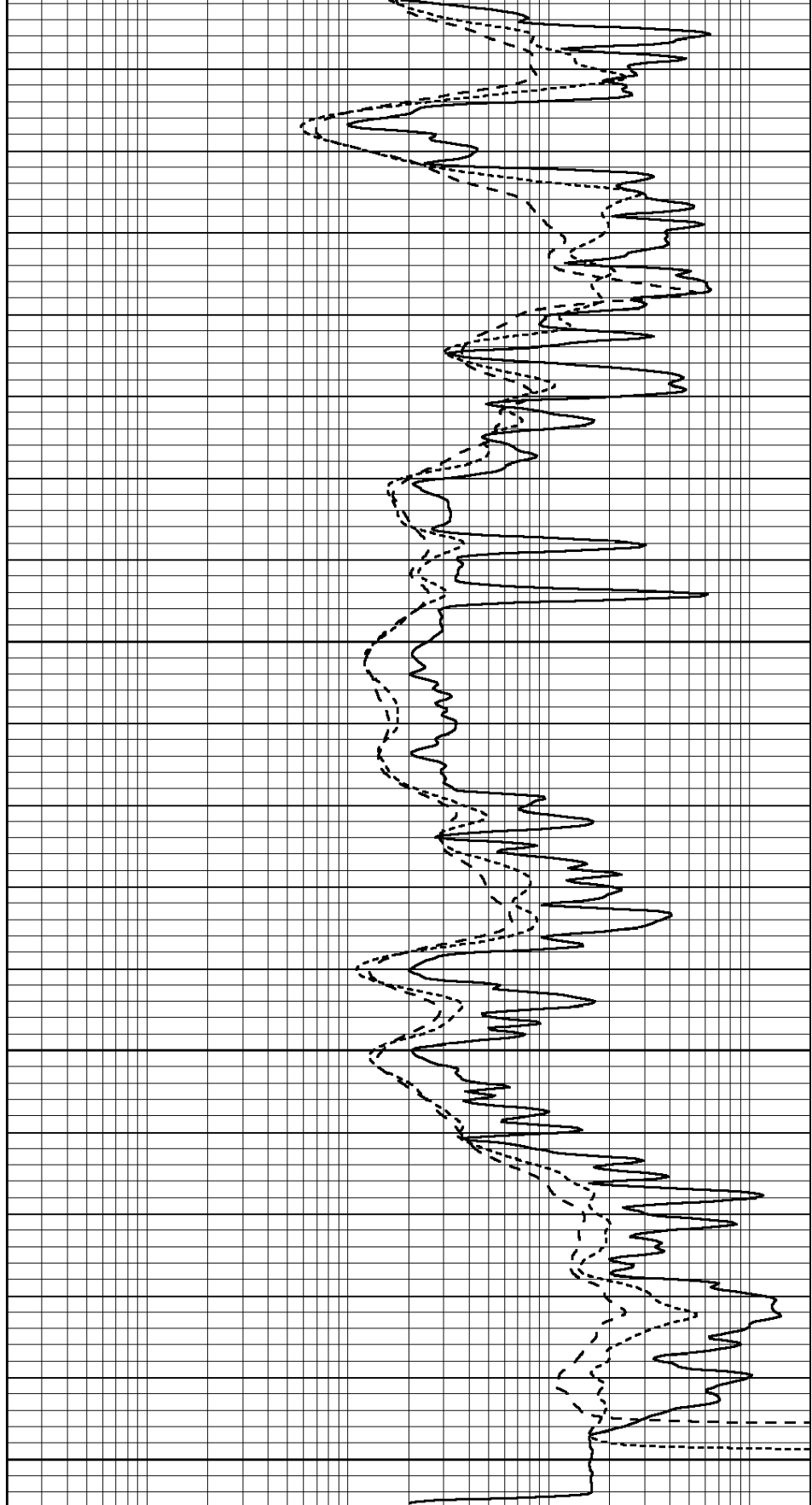
0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

5350

5400

5450

5500



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

Database File: 011813pe.db  
Dataset Pathname: pass4.10  
Dataset Creation: Sat Nov 23 08:00:18 2013

### Dual Induction Calibration Report

Serial-Model: PROBE9-DILG  
Surface Cal Performed: Tue Nov 19 06:44:33 2013  
Downhole Cal Performed: Mon Jul 28 12:02:56 2008  
After Survey Verification Performed: Mon Jul 28 12:02:56 2008

#### Surface Calibration

Readings				References			Results	
Loop:	Air	Loop		Air	Loop		m	b
Deep	-0.014	0.629	V	0.000	400.000	mmho/m	650.000	-10.000
Medium	0.039	0.728	V	0.000	464.000	mmho/m	640.000	-12.000
Internal:	Zero	Cal		Zero	Cal		m	b
Deep	0.011	0.610	V	0.000	400.000	mmho/m	667.135	-7.256
Medium	0.005	0.712	V	0.000	464.000	mmho/m	655.677	-3.102

#### Downhole Calibration

Readings				References			Results	
	Zero	Cal		Zero	Cal		m'	b'
Deep	0.000	0.000	mmho/m	14.508	388.384	mmho/m	1.000	0.000
Medium	0.000	0.000	mmho/m	166.367	504.400	mmho/m	1.000	0.000
LL3		7.500	V		1400.000	Ohm-m		
		0.000	V		20.000	Ohm-m		
		-7.200	V		4000.000	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: 004N Model: PRB

#### Master Calibration

Performed Mon Jun 03 09:36:56 2013

	Background	Magnesium	Aluminum	Sandstone	
Window 1	1417.6	10391.4	3464.6	11537.5	cps
Window 2	1295.0	8959.7	3050.1	9816.4	cps
Window 3	1105.1	5464.2	2051.0	5838.8	cps
Window 4	315.0	317.7	312.9	319.8	cps
Long Space	0.0	7664.6	1755.0	8521.3	cps
Short Space	1.8	1582.4	1040.8	1699.4	cps
Rho		1.7100	2.5900	1.3800	g/cc
Pe		0.0000	2.5700	1.5500	
Rib Angle	: 44.1	Rib Slope	: 0.970	Density/Spine Ratio	: 0.574
Spine Angle	: 74.1	Spine Slope	: 3.519	Spine Intercept	: -17.0

#### 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	

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Compensated Neutron Calibration Report

Serial Number:	070808
Tool Model:	Probe

PRE-SURVEY VERIFICATION			
Detector	Readings	Measured	Target
Short Space	cps		
Long Space	cps	pu	pu

POST-SURVEY VERIFICATION			
Detector	Readings	Measured	Target
Short Space	cps		
Long Space	cps	pu	pu

Gamma Ray Calibration Report

Serial Number:	070559	
Tool Model:	OPEN_GR	
Performed:	Sun Nov 03 21:08:13 2013	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.3000	GAPI/cps