



NABORS

**COMPLETION
& PRODUCTION
SERVICES CO.**

DUAL INDUCTION LOG

Company		EDISON OPERATING COMPANY, LLC.	
Well	WAITE #1A-21		
Field	VAN LIEU		
County	STAFFORD	State	KANSAS
Location:		API # : 15-185-23820-0000	
SEC 21 TWP 24S RGE 13W		CDL/CNL/PE MEL/SONIC	
Permanent Datum	GROUND LEVEL	Elevation	1923
Log Measured From	KELLY BUSHING 5' A.G.L.		
Drilling Measured From	KELLY BUSHING	Elevation	K.B. 1928 D.F. 1926 G.L. 1923
Date	8/8/13		
Run Number	ONE		
Depth Driller	4183		
Depth Logger	4180		
Bottom Logged Interval	4178		
Top Log Interval	00		
Casing Driller	8 5/8"@300'		
Casing Logger	300		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 8,500 PPM	
Density / Viscosity	9.3/52		
pH / Fluid Loss	11.0/10.8		
Source of Sample	FLOWLINE		
Rin @ Meas. Temp	.300@90F		
Rinf @ Meas. Temp	.225@90F		
Rinc @ Meas. Temp	.360@90F		
Source of Rinf / Rinc	MEASUREMENT		
Rin @ BHT	.229@118F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom	1:00 P.M.		
Maximum Recorded Temperature	118F		
Equipment Number	4854		
Location	HAYS, KANSAS		
Recorded By	JEFF LUEBBERS		
Witnessed By	ADAM NIGHSWONGER		

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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

ST. JOHN, KS.,S. TO (HWY 281 & 50 JUNCTION) 1W. ON HWY 50 TO "RD. SW 10TH", 1/4S., E. INTO



**COMPLETION
& PRODUCTION**

MAIN SECTION

Database File:

011200pe.db

Dataset Pathname:

pass3.13

Presentation Format:

dil2

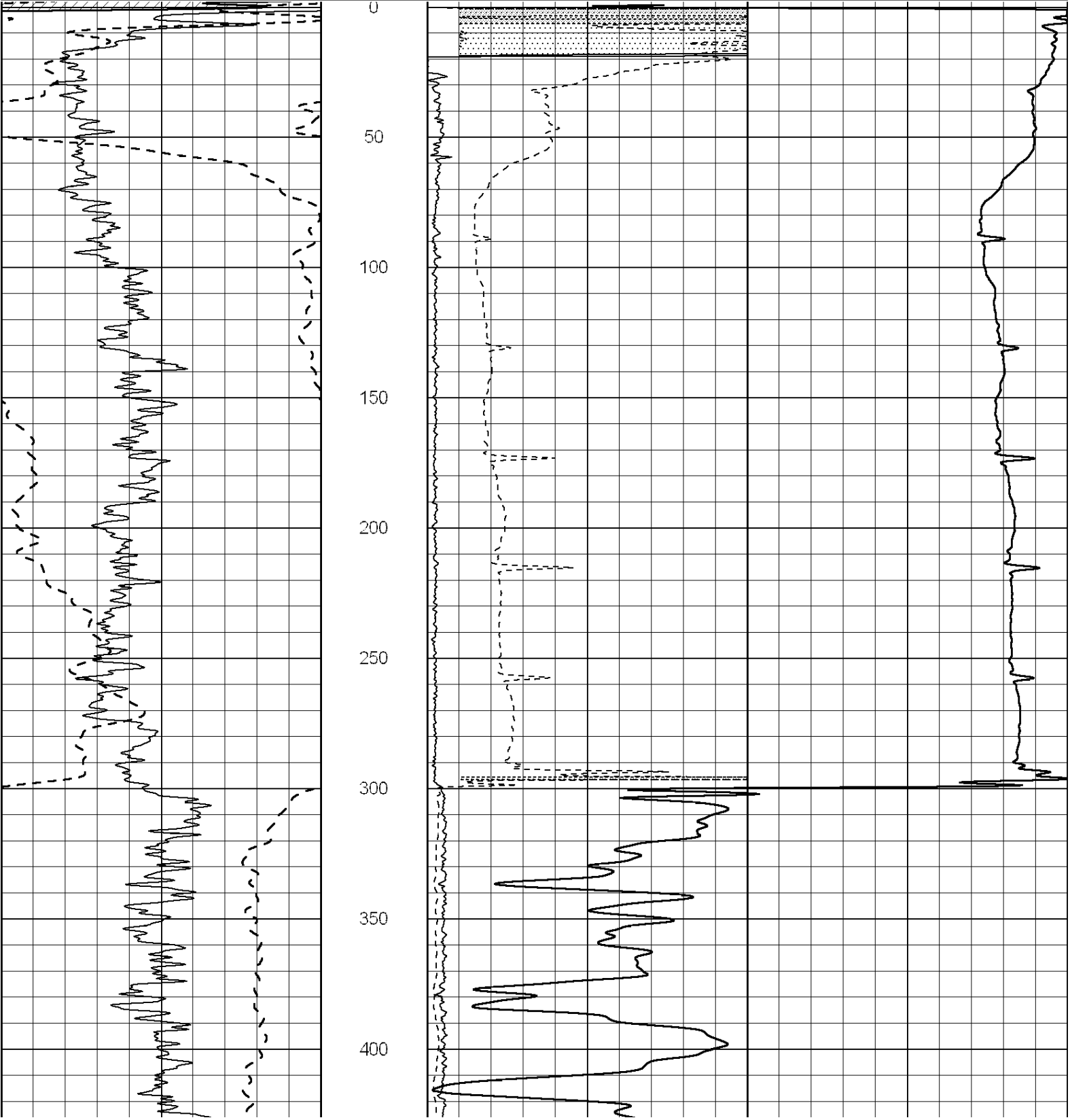
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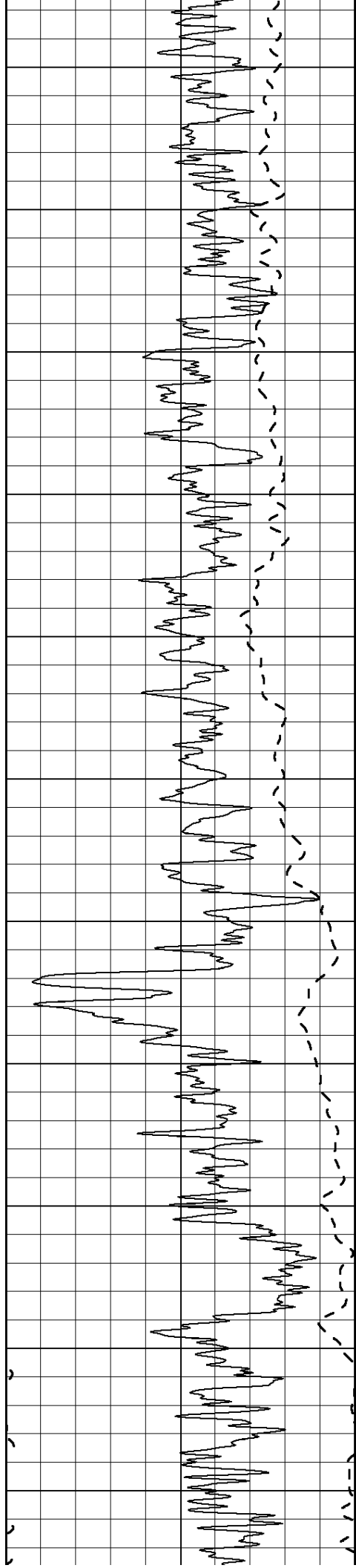
Thu Aug 08 15:15:00 2013

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) 0		
			50	RILD X10 (Ohm-m)	500
			50	RLL3 X10 (Ohm-m)	500





450

500

550

600

650

700

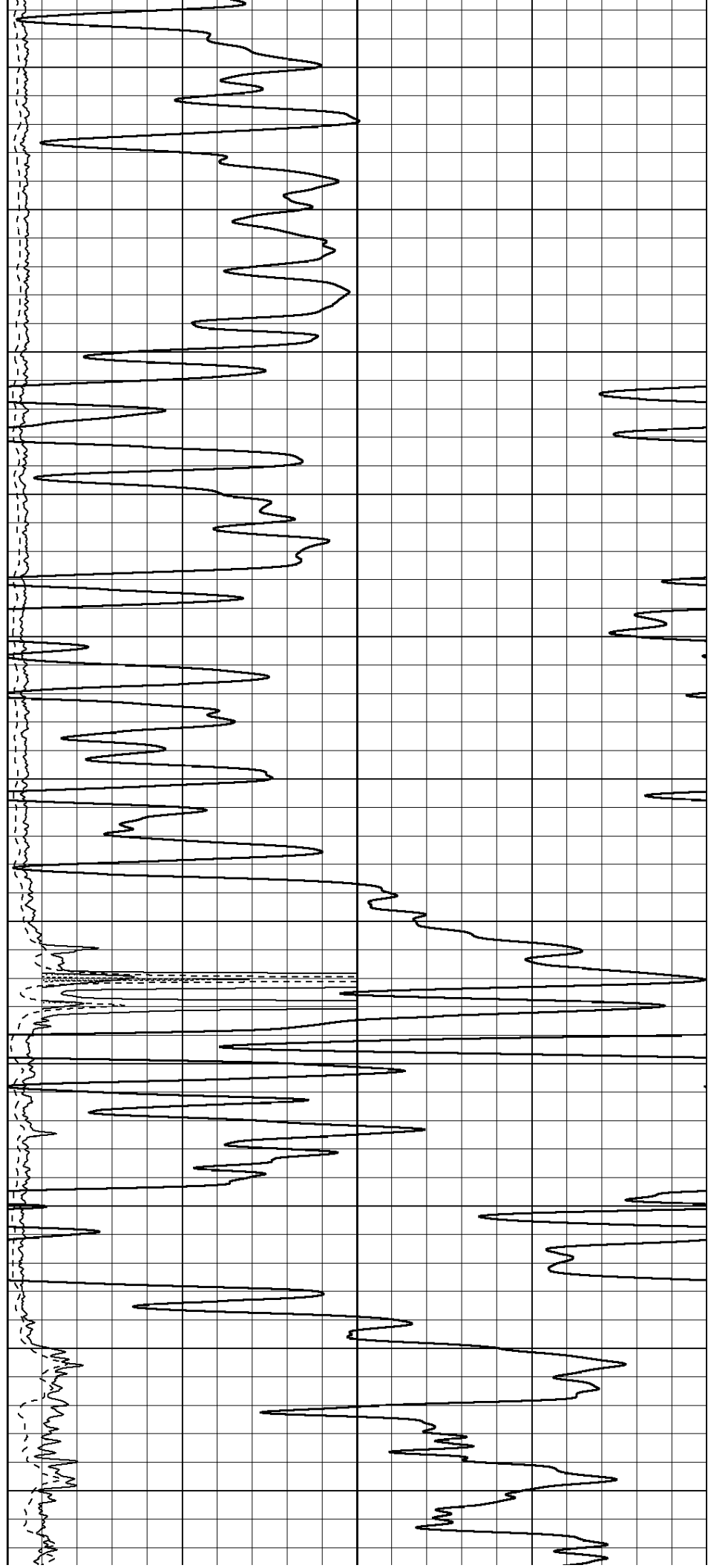
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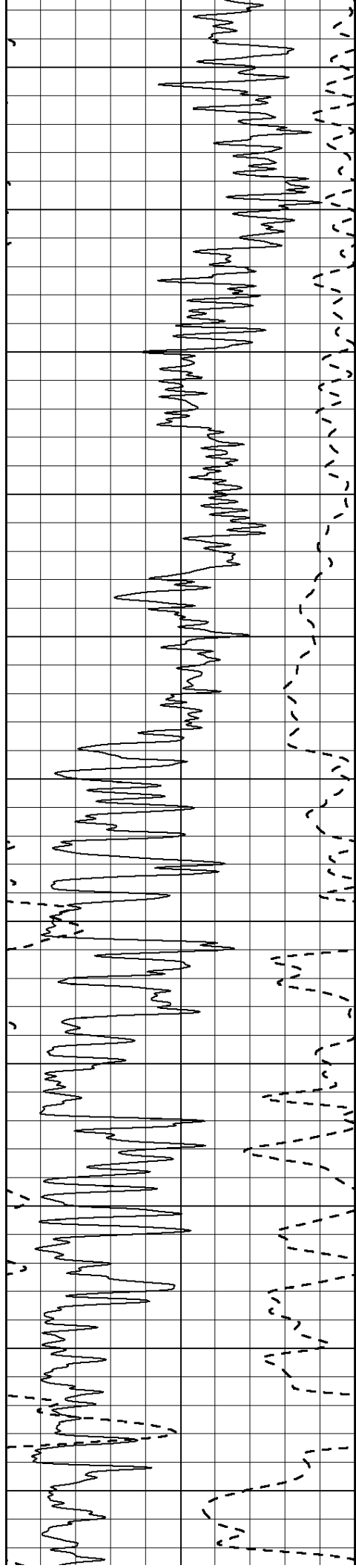
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850

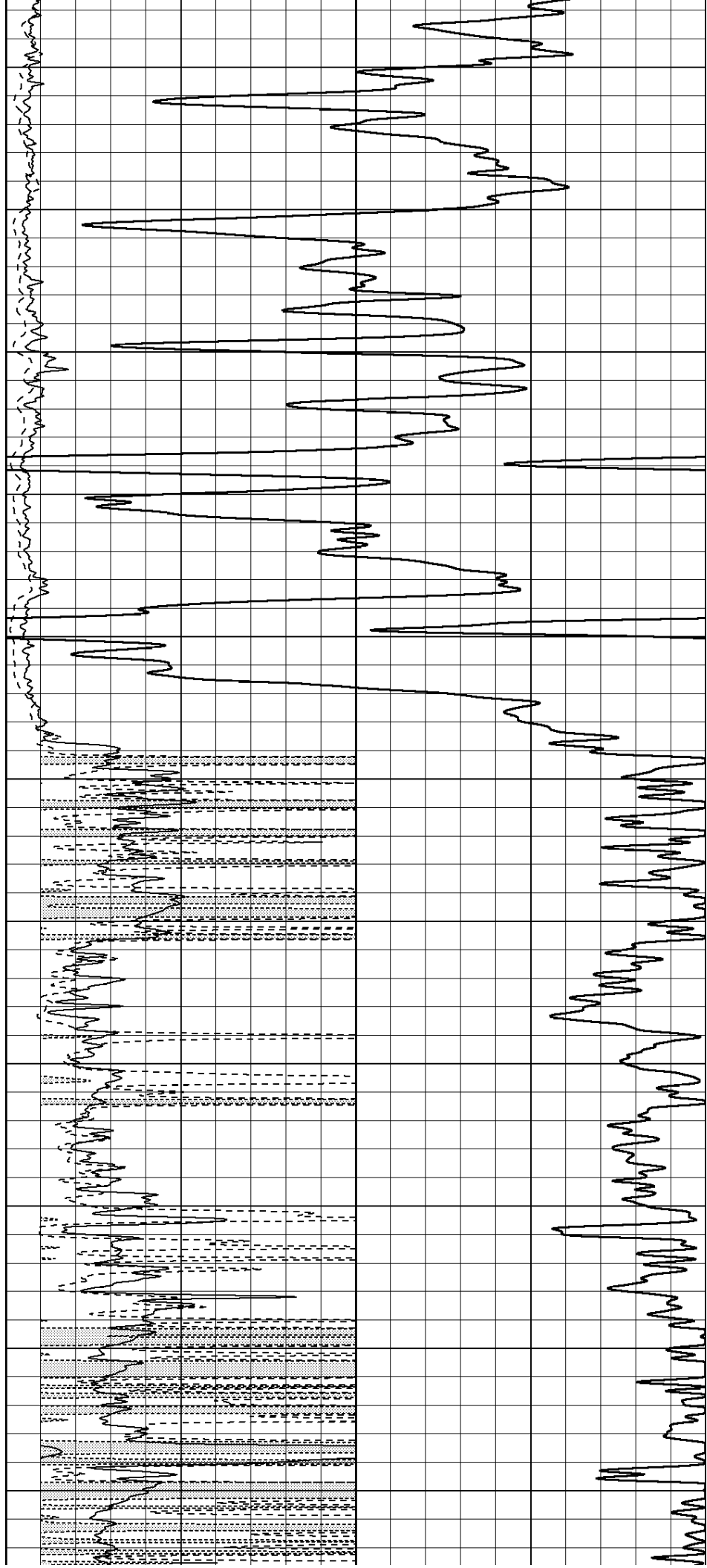
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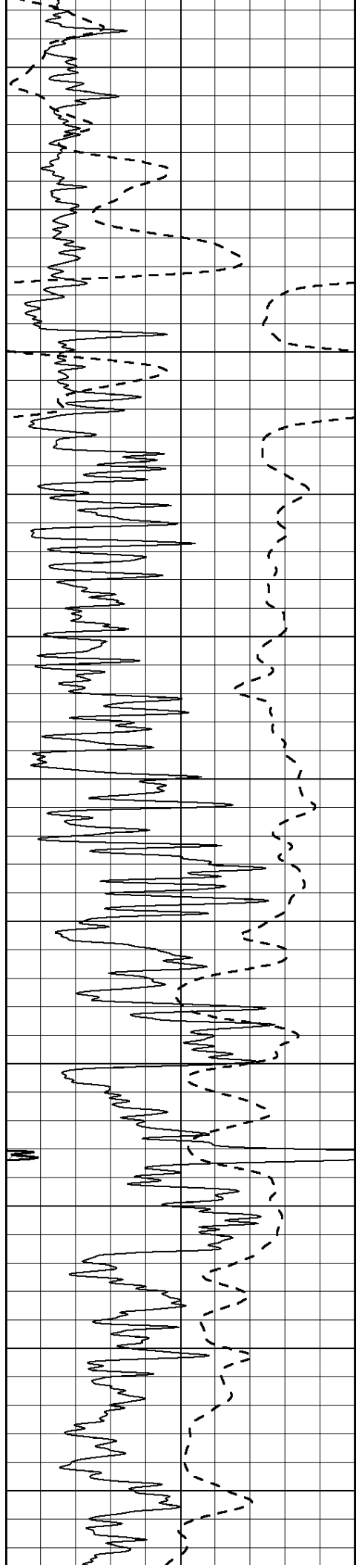
950





1000
1050
1100
1150
1200
1250
1300
1350
1400
1450
1500





1550

1600

1650

1700

1750

1800

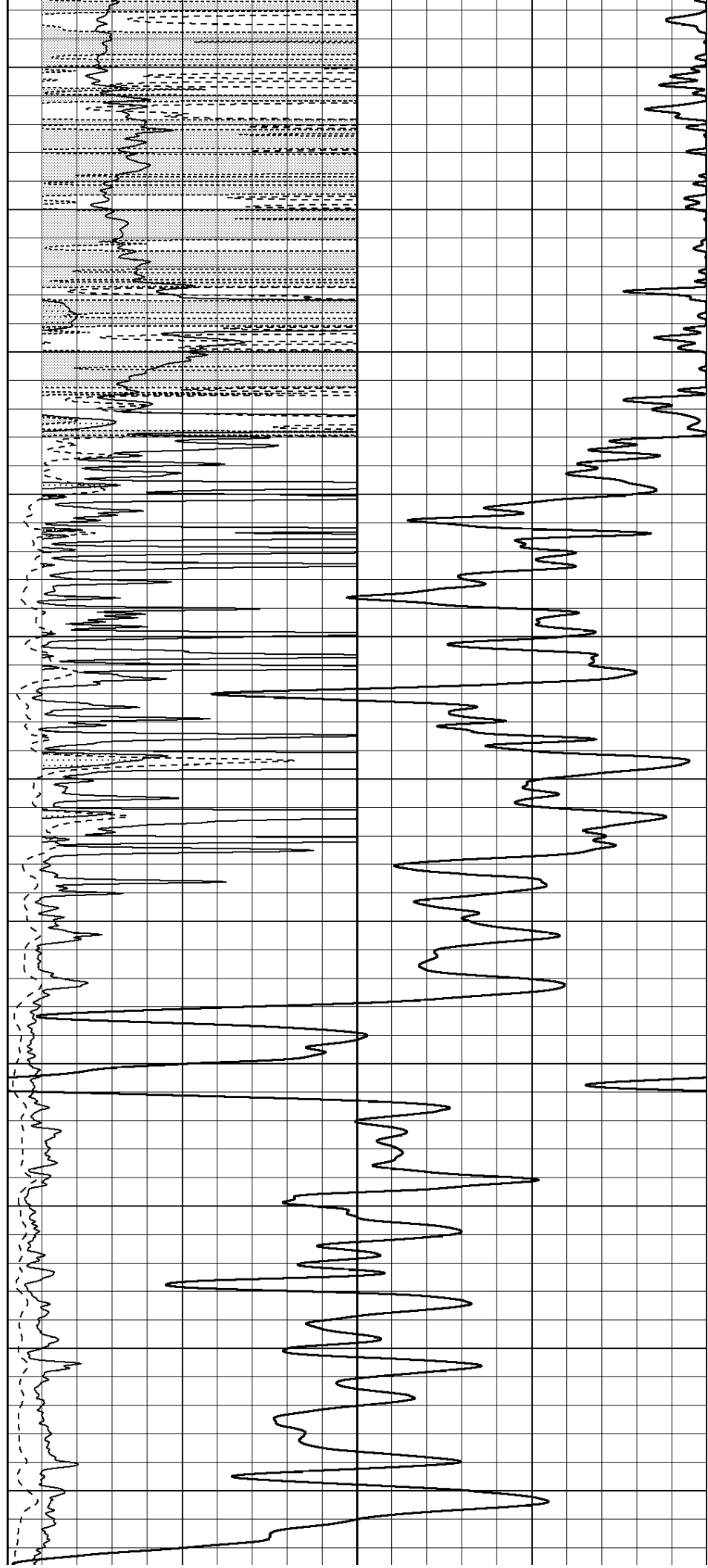
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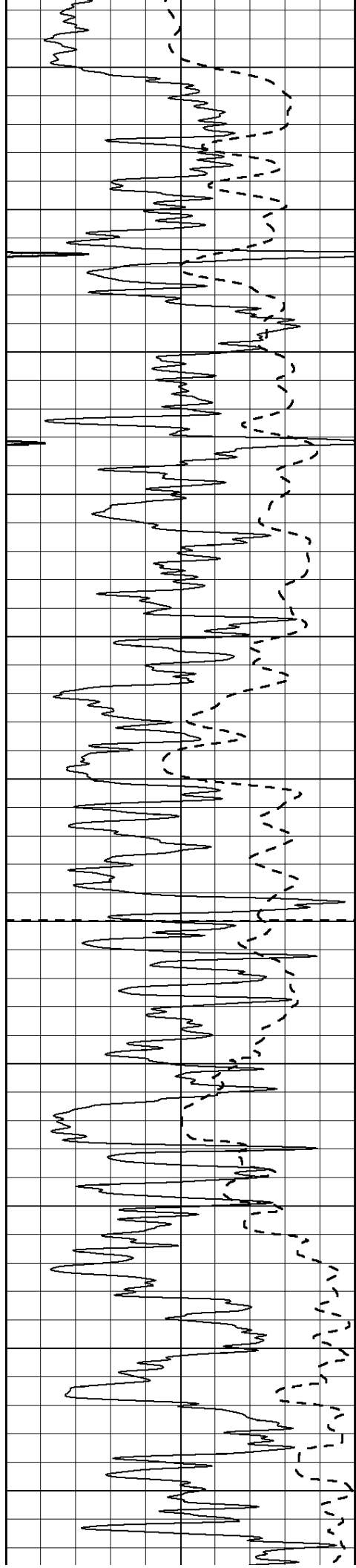
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1950

2000

2050





2100

2150

2200

2250

2300

2350

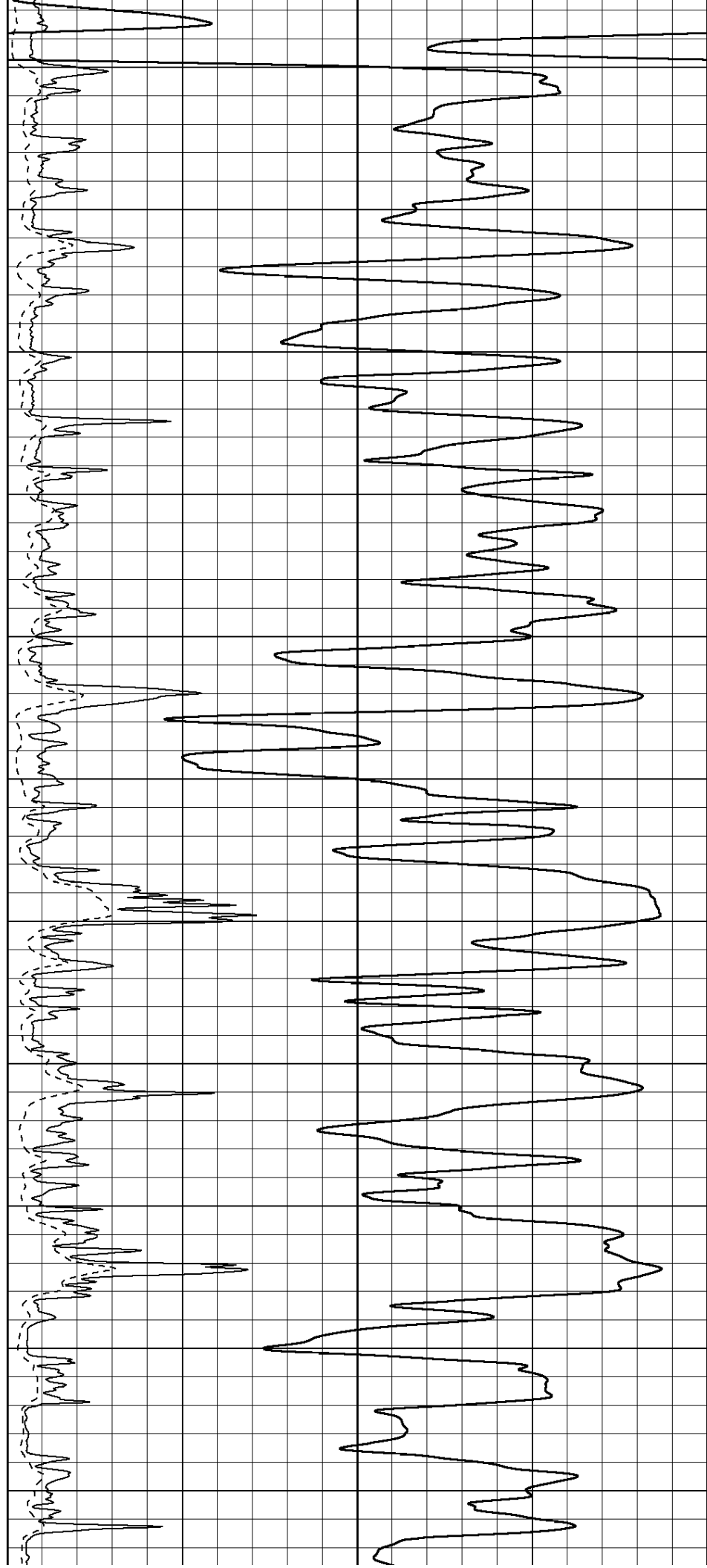
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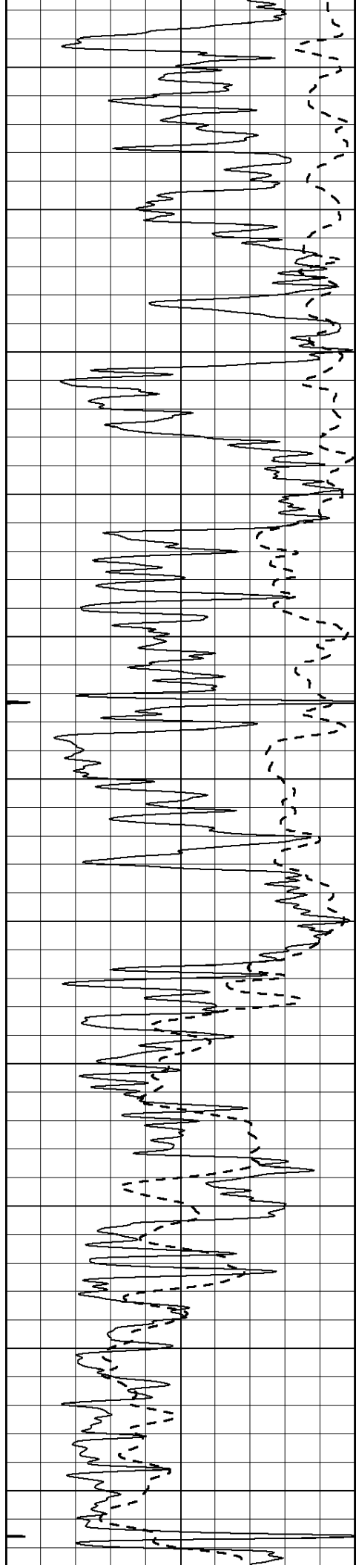
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2500

2550

2600





2650

2700

2750

2800

2850

2900

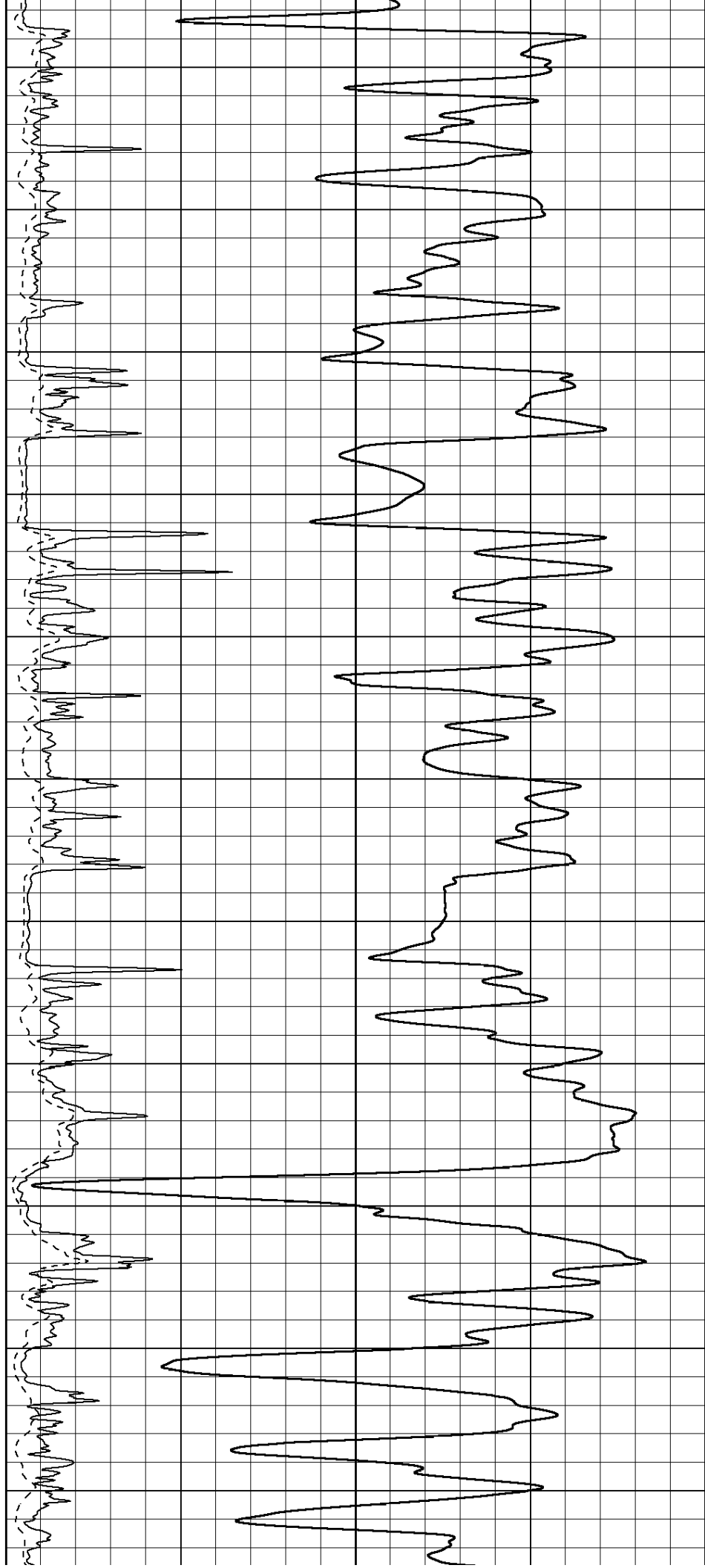
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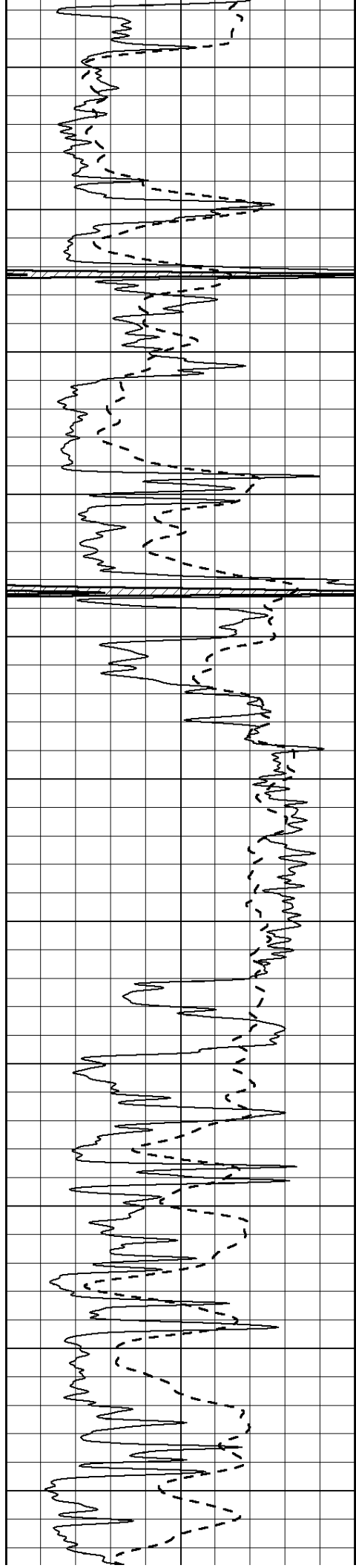
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3050

3100

3150





3200

3250

3300

3350

3400

3450

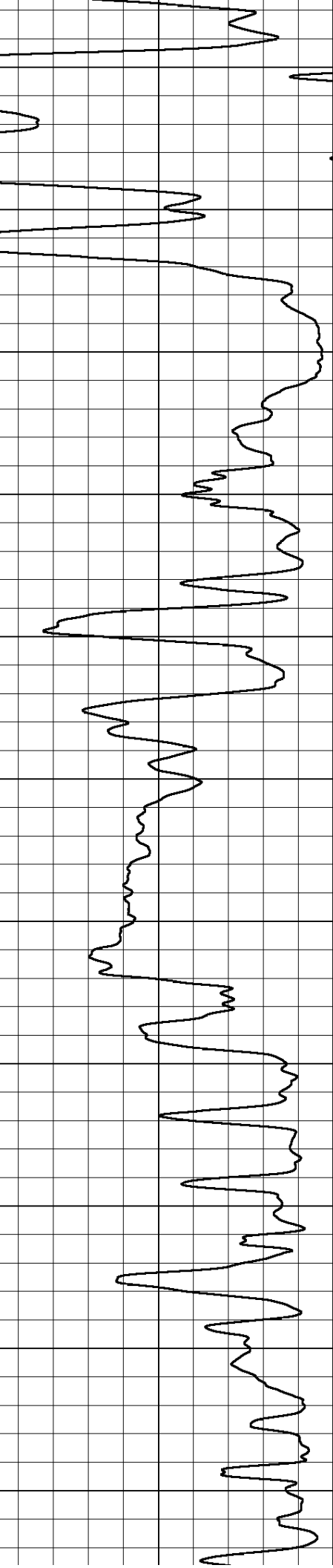
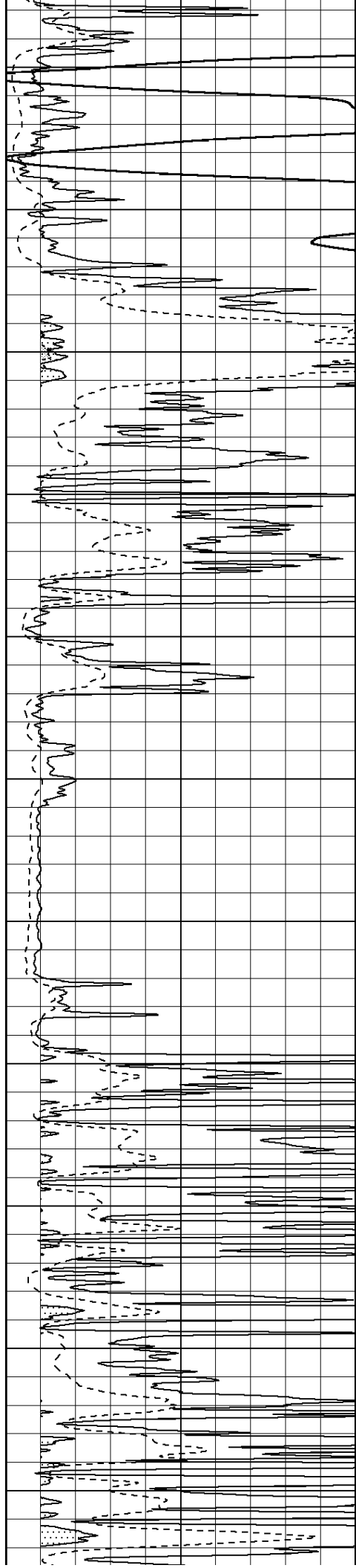
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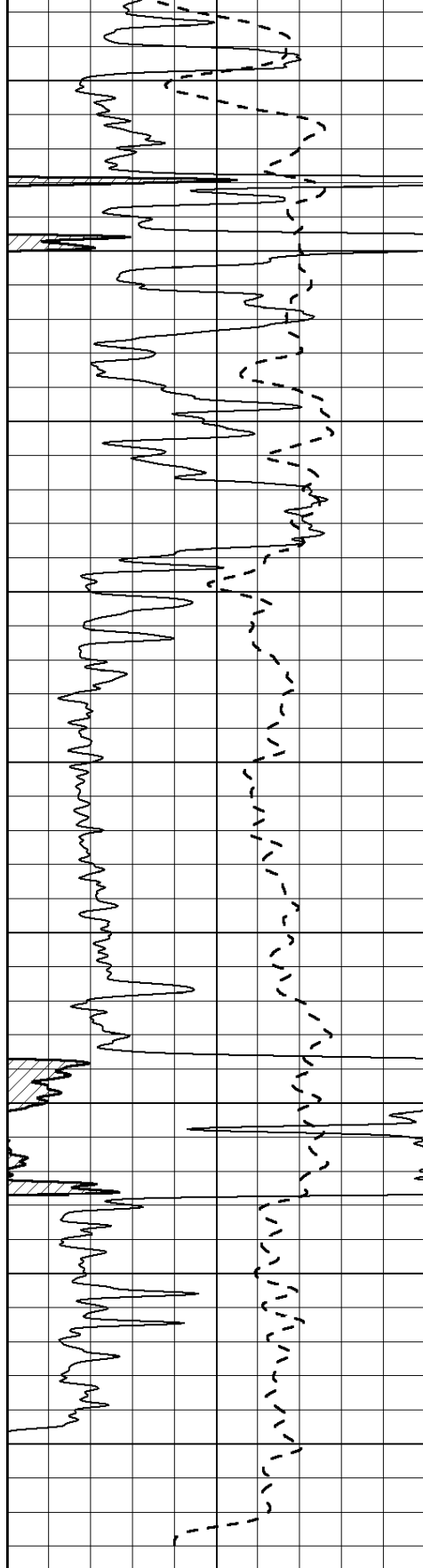
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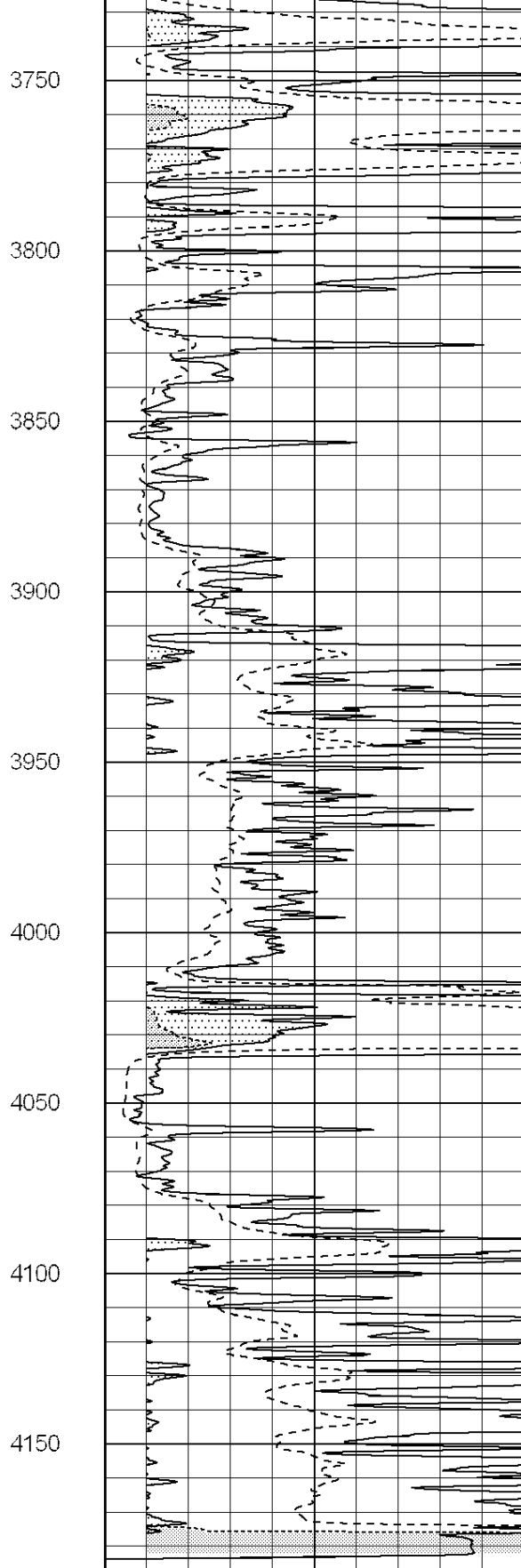
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3700

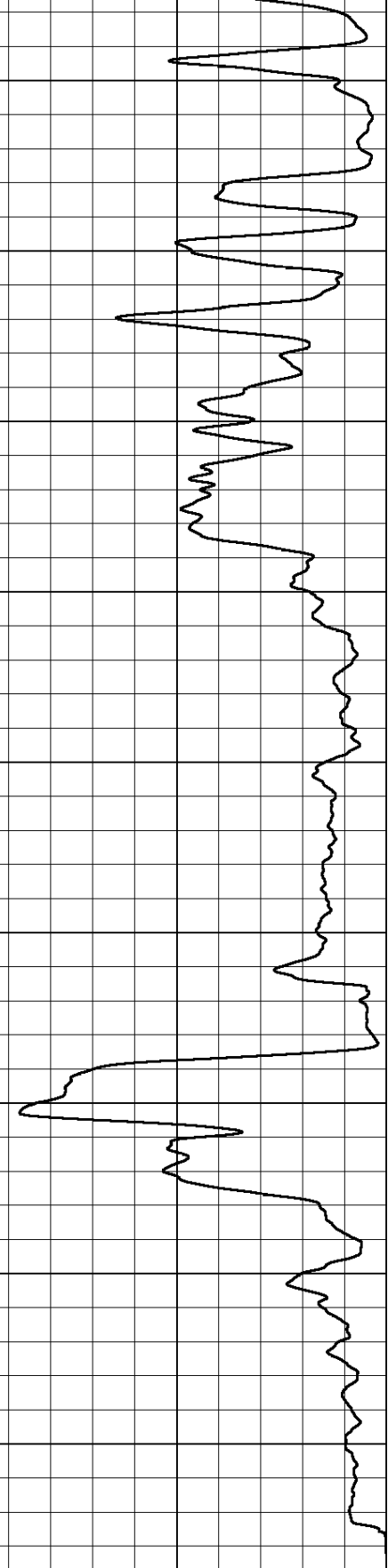




0 Gamma Ray (GAPI) 150
 -100 SP (mV) 100



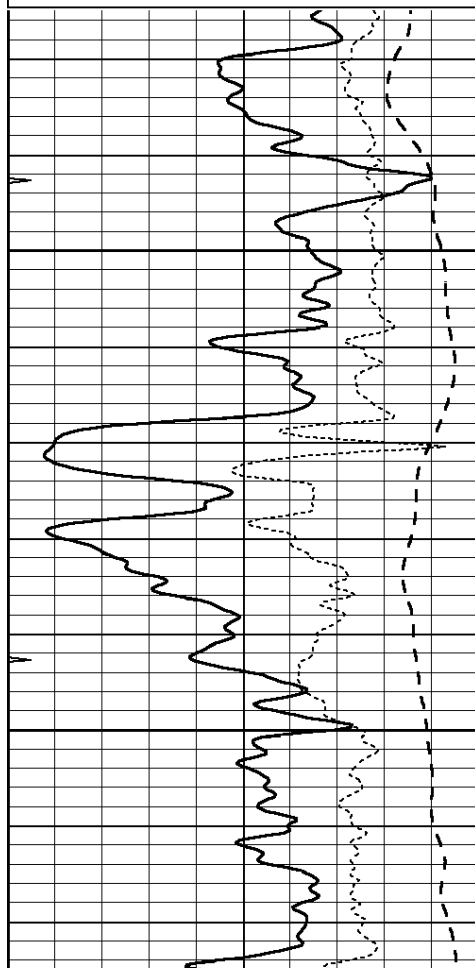
0 RLL3 (Ohm-m) 50
 0 RILD (Ohm-m) 50
 1000 CILD (mmho/m) 500
 50 RILD X10 (Ohm-m) 500
 50 RLL3 X10 (Ohm-m) 500



Database File: 011200pe.db
 Dataset Pathname: pass3.11
 Presentation Format: dil
 Dataset Creation: Thu Aug 08 14:54:32 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

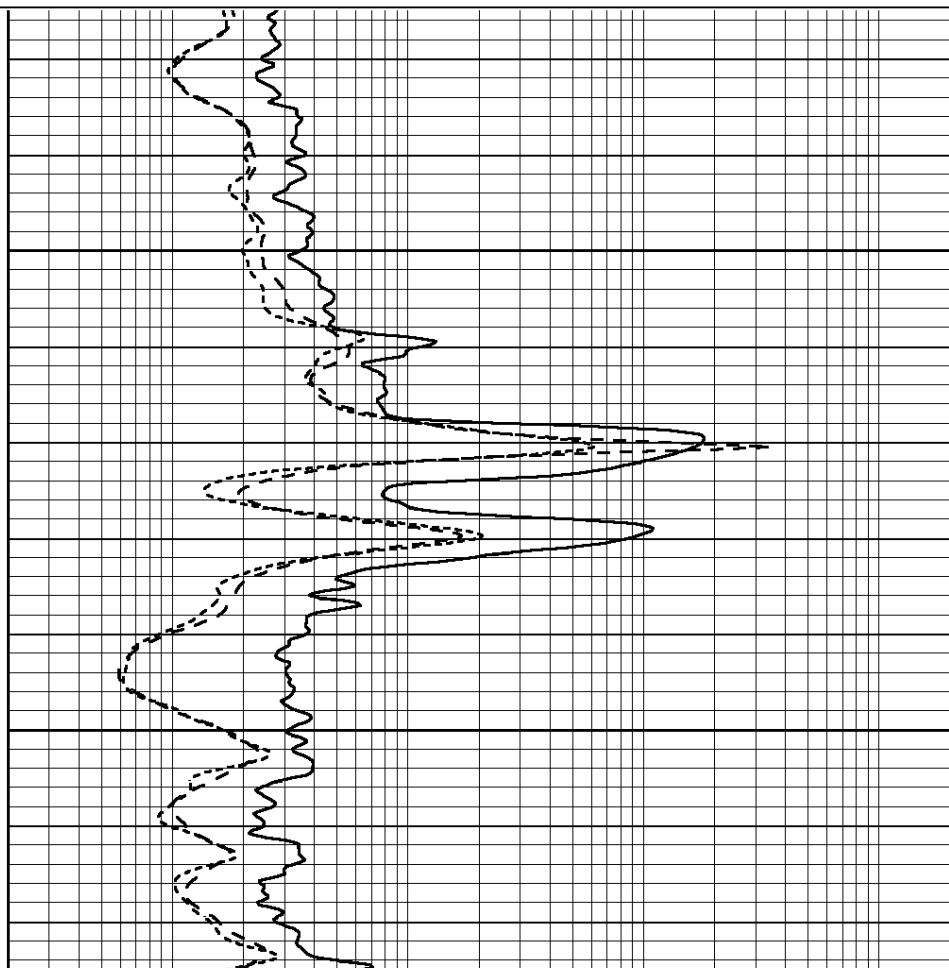
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000



750

800

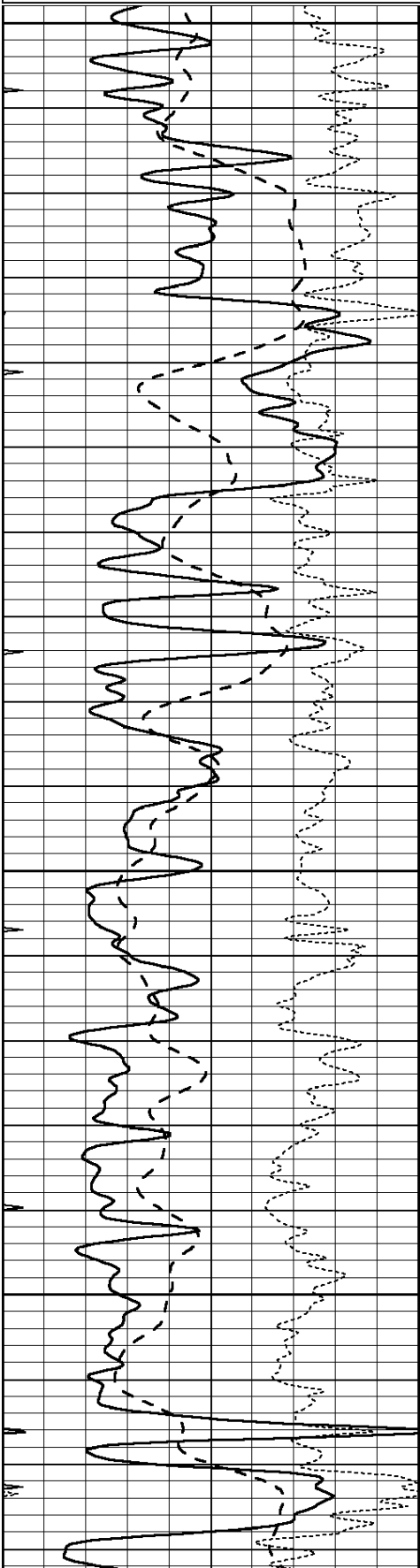
0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20



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

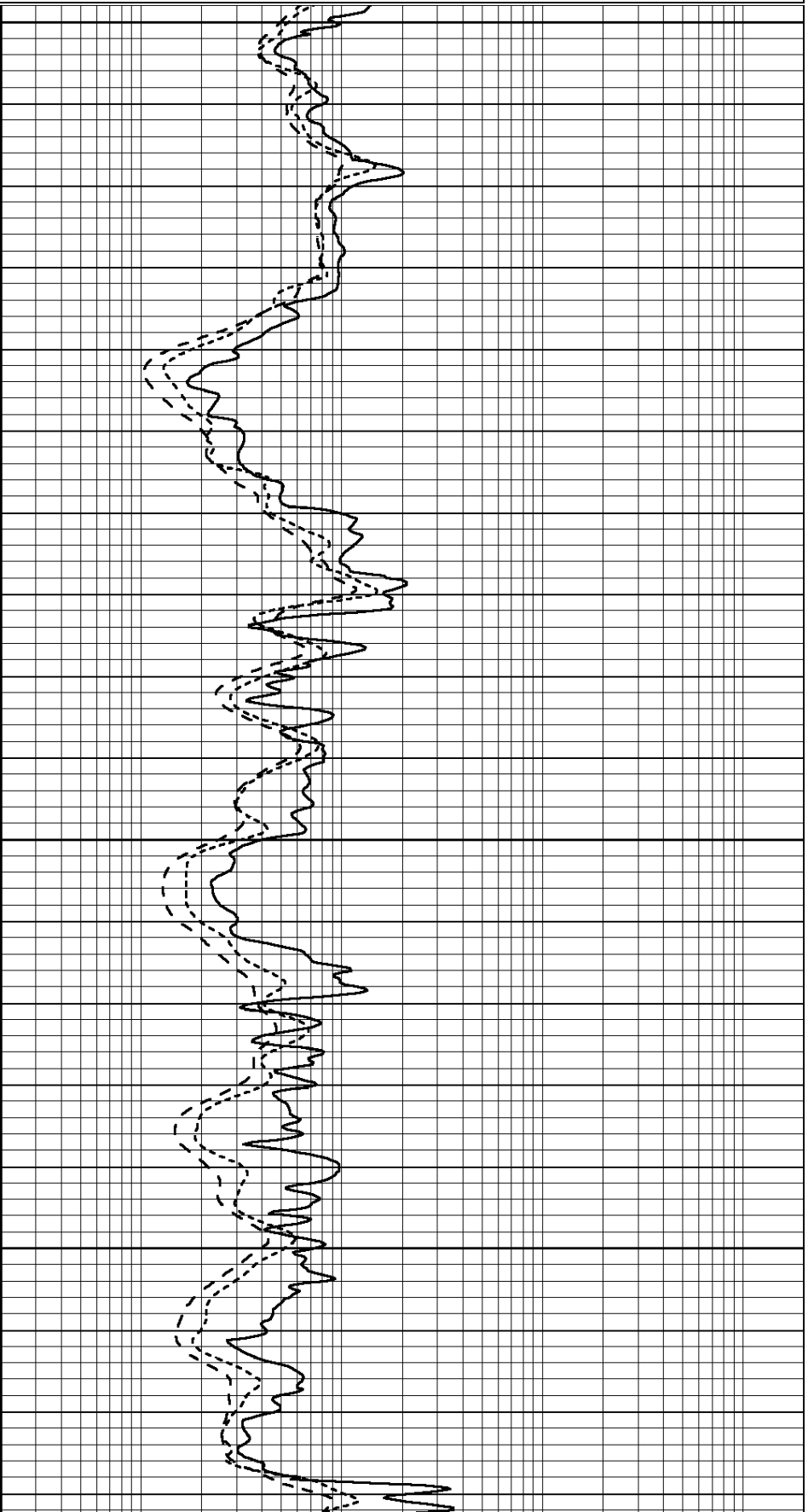


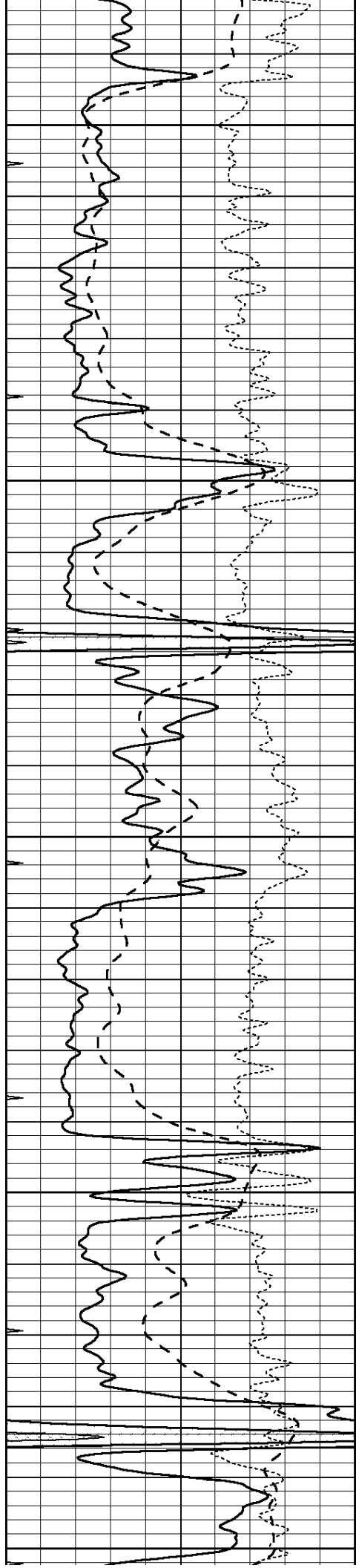
3000

3050

3100

3150





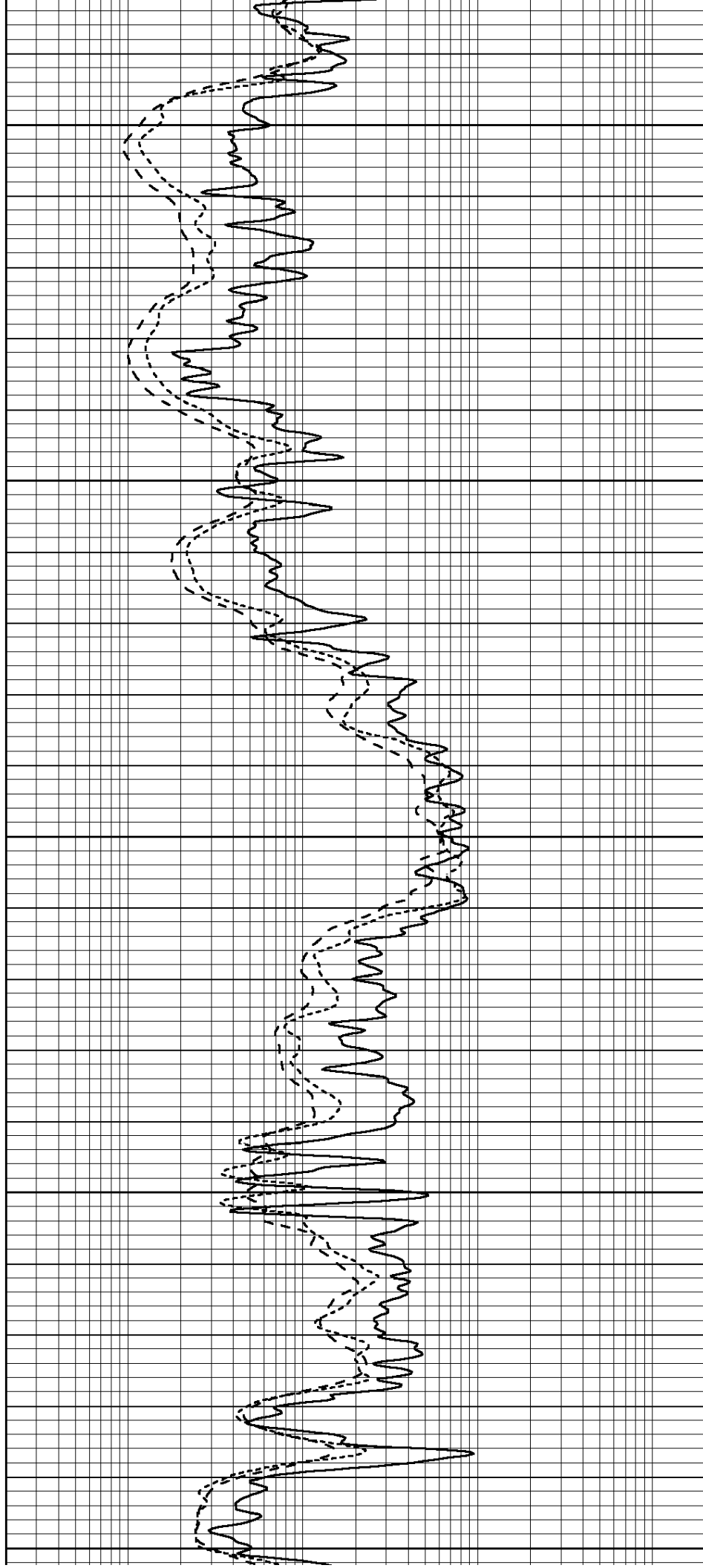
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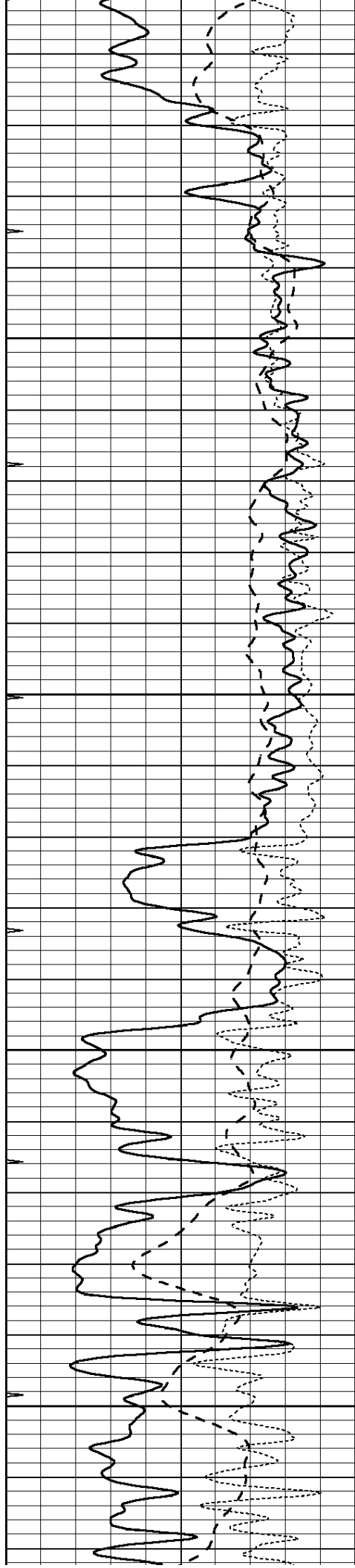
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3300

3350

3400



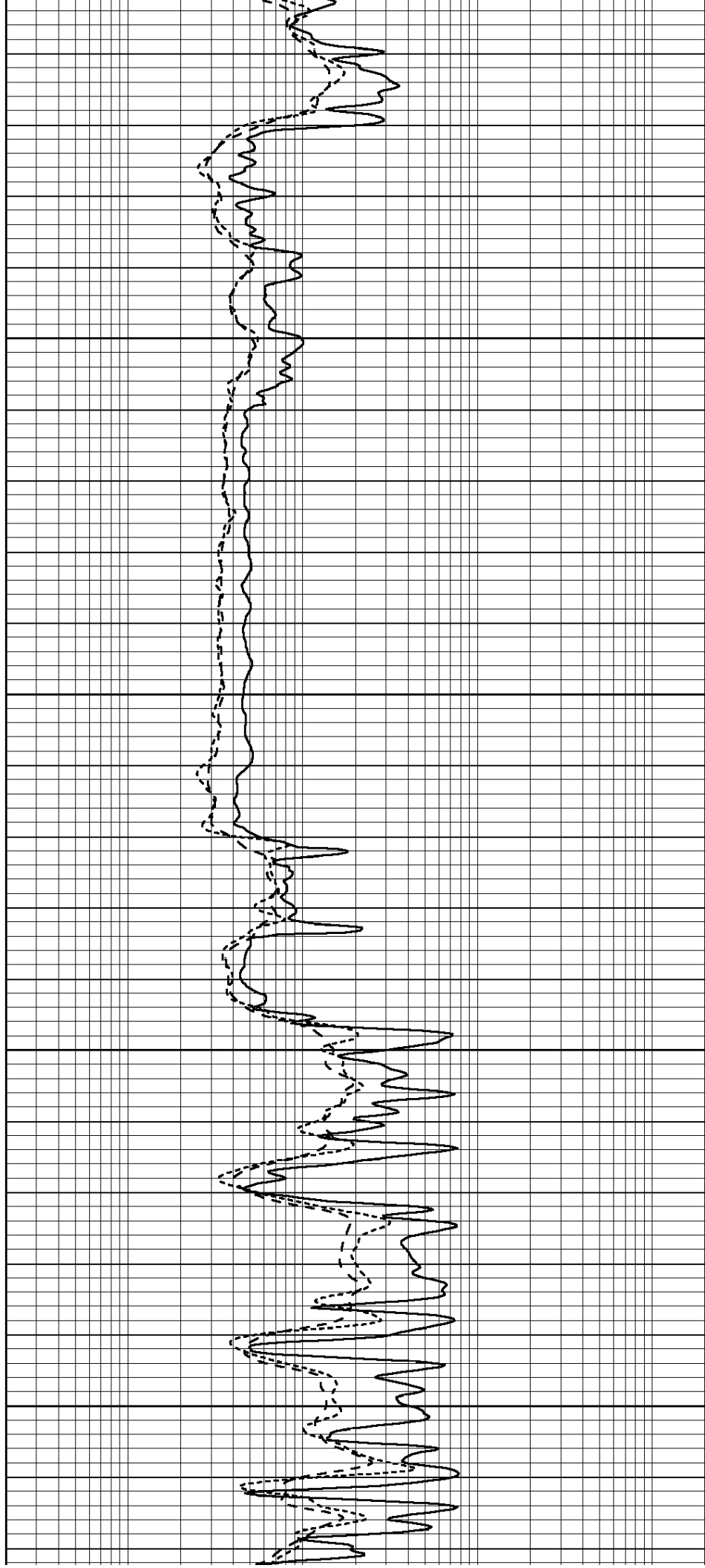


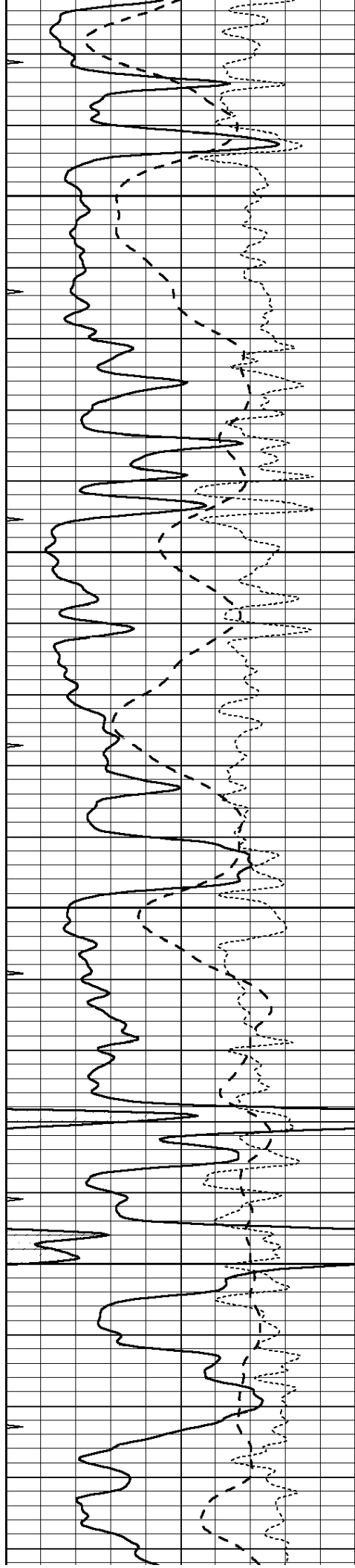
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3500

3550

3600



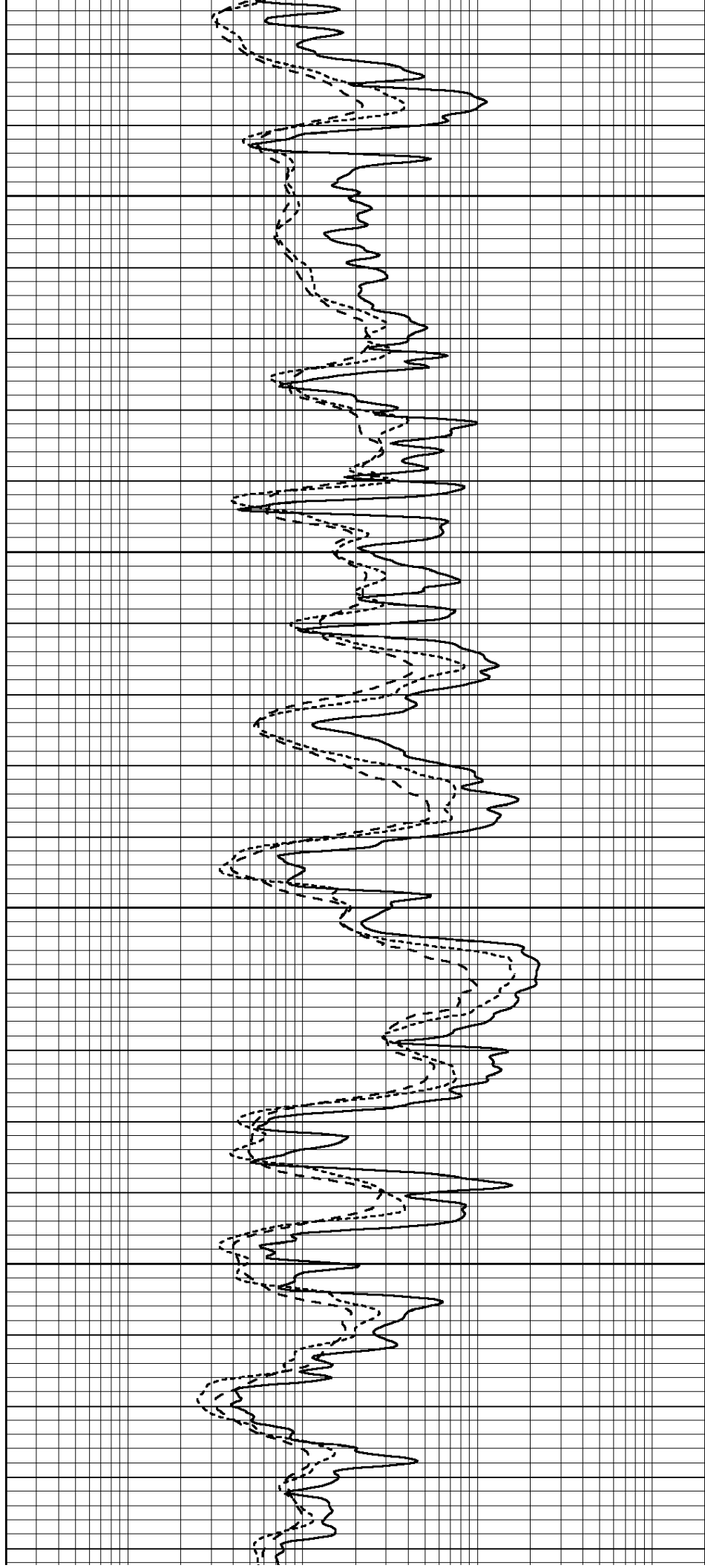


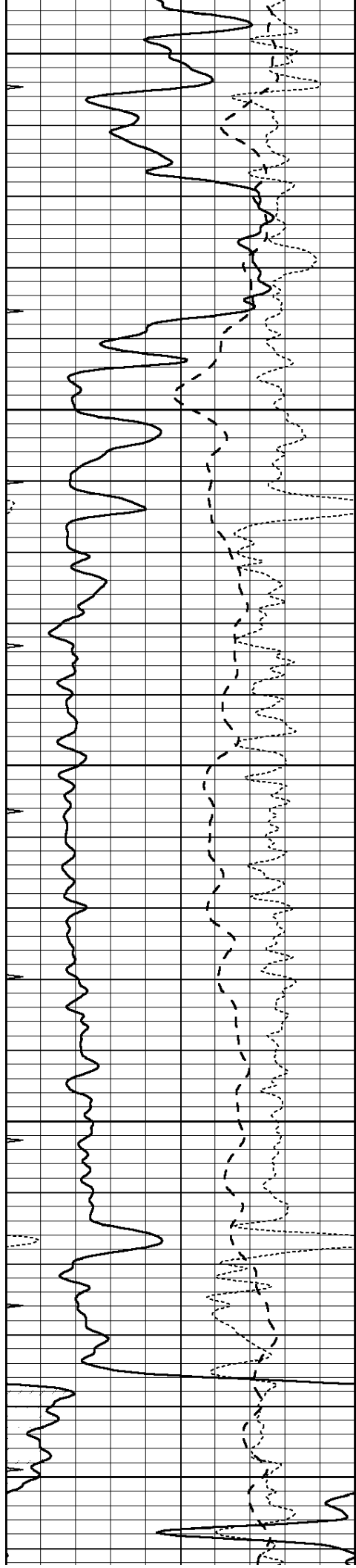
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3700

3750

3800





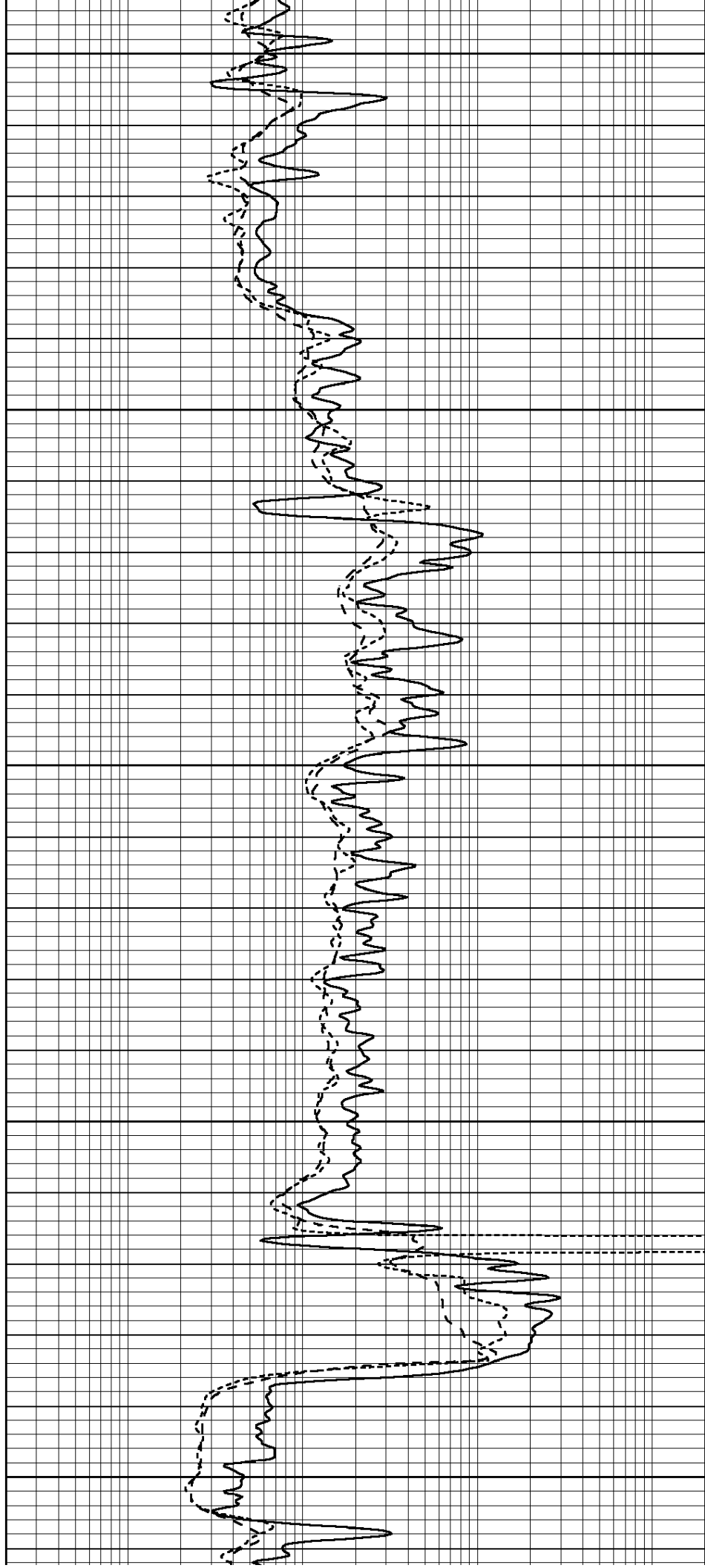
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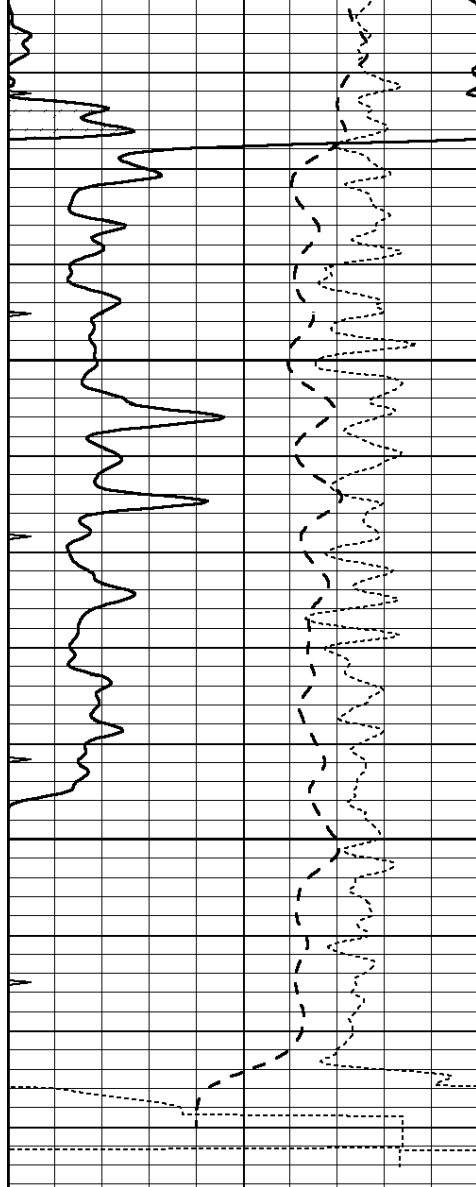
3900

3950

4000

4050

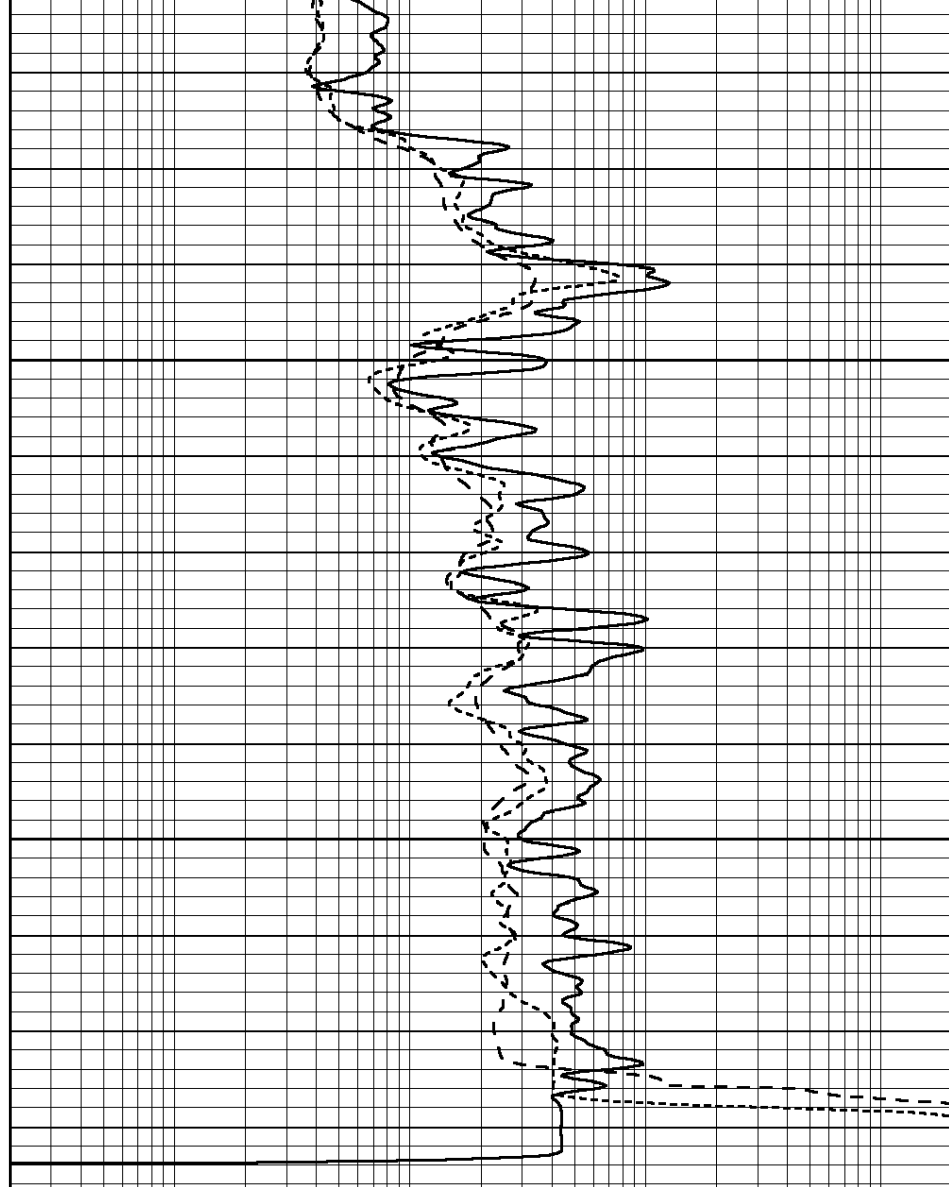




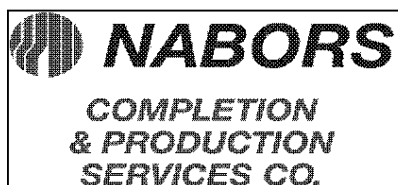
0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

4100

4150



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

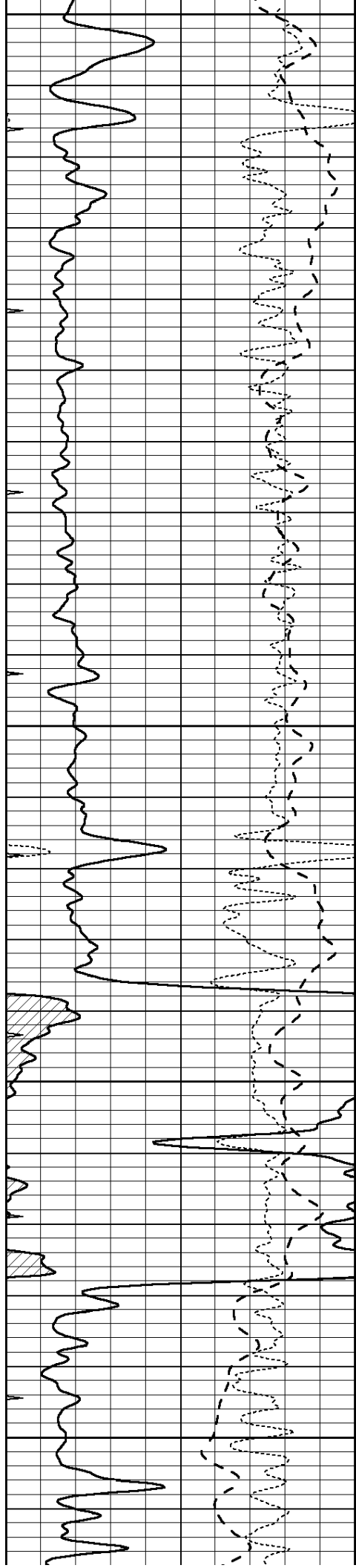


REPEAT SECTION

Database File: 011200pe.db
 Dataset Pathname: pass2.10
 Presentation Format: dil
 Dataset Creation: Thu Aug 08 15:26:05 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



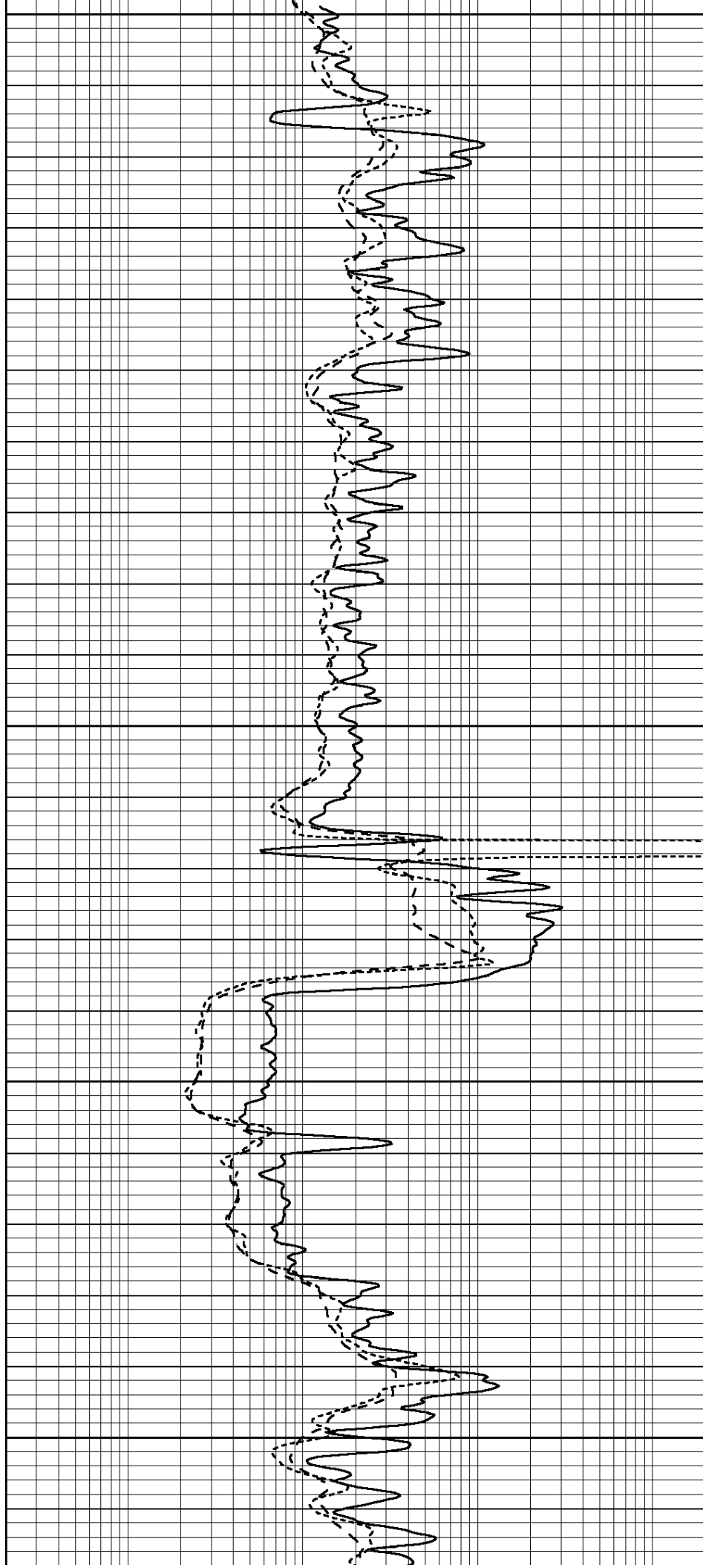
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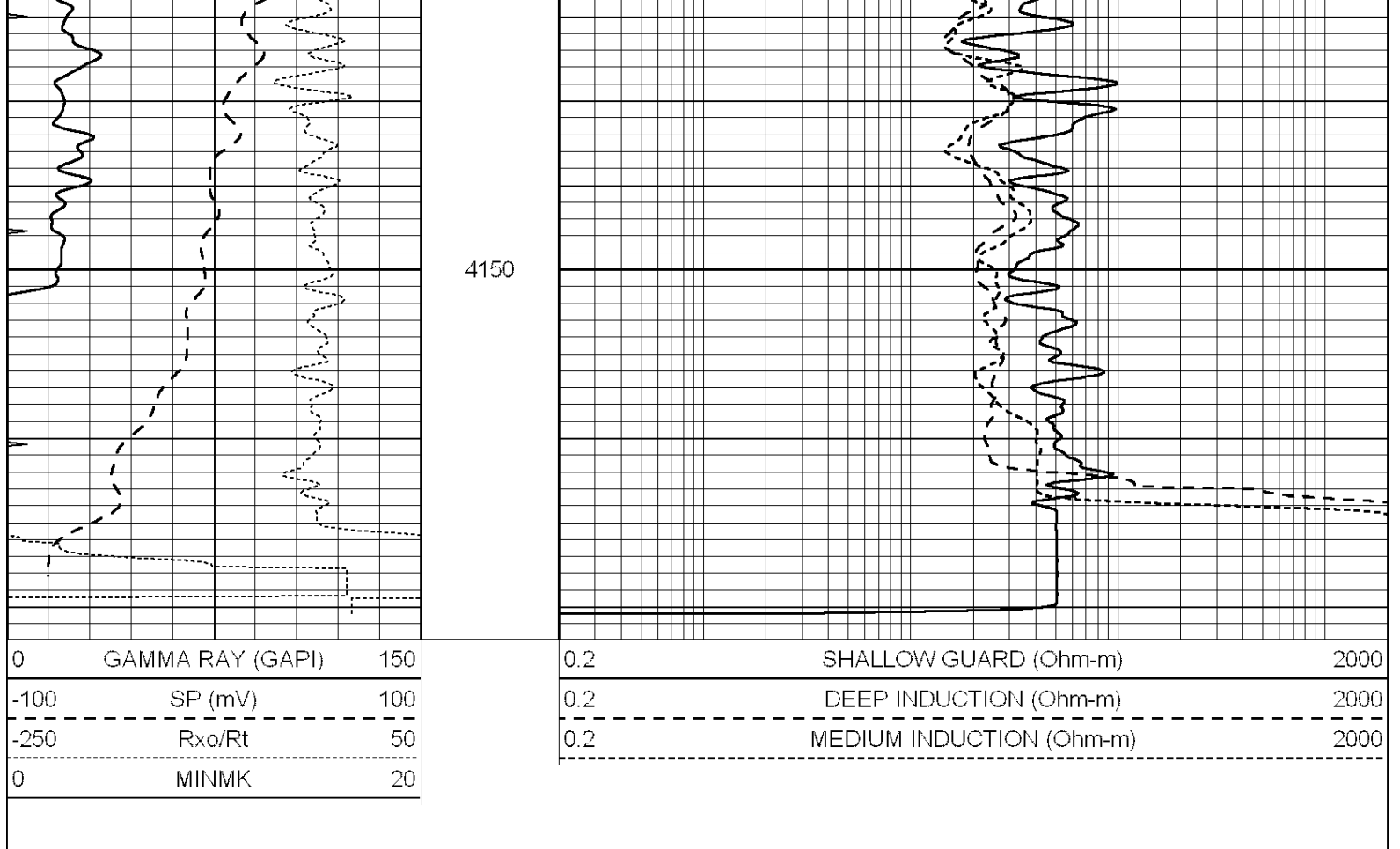
3950

4000

4050

4100





Calibration Report										
Database File:		011200pe.db								
Dataset Pathname:		pass3.13								
Dataset Creation:		Thu Aug 08 15:15:00 2013								
Dual Induction Calibration Report										
Serial-Model:		DIL4-GEAR								
Surface Cal Performed:		Thu Aug 08 13:00:27 2013								
Downhole Cal Performed:		Tue Sep 25 17:01:29 2001								
After Survey Verification Performed:		Sat Jun 11 16:07:12 2005								
Surface Calibration										
		Readings					References		Results	
Loop:	Air	Loop		Air	Loop		m	b		
Deep	0.008	0.666	V	0.000	400.000	mmho/m	570.000	6.000		
Medium	-0.003	0.769	V	0.000	462.500	mmho/m	560.000	0.000		
Internal:	Zero	Cal		Zero	Cal		m	b		
Deep	0.013	0.651	V	0.000	400.000	mmho/m	627.541	-8.365		
Medium	0.020	0.754	V	0.000	462.500	mmho/m	630.311	-12.549		
Downhole Calibration										
		Readings					References		Results	
Internal:	Zero	Cal		Zero	Cal		m	b		
Deep	0.000	1.000	mmho/m	0.000	1.000	mmho/m	1.000	0.000		
Medium	0.000	1.000	mmho/m	0.000	1.000	mmho/m	1.000	0.000		
Shallow	2.525	0.026	V	500.000	2.000	Ohm-m	250.000	-4.000		

After Survey Verification								
Internal:	Readings			Targets			Results	
	Zero	Cal		Zero	Cal		m'	b'
Deep	0.000	1.000	mmho/m	0.000	1.000	mmho/m	1.000	0.000
Medium	0.000	1.000	mmho/m	0.000	1.000	mmho/m	1.000	0.000
Shallow	0.000	0.000	Ohm-m	500.000	2.000	Ohm-m	1.000	0.000

Litho Density Calibration Report Serial: 004N Model: PRB								
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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				

Compensated Neutron Calibration Report								
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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:	Wed Jun 12 18:25:42 2013		
Calibrator Value:	1.0	GAPI	
Background Reading:	0.0	cps	
Calibrator Reading:	1.0	cps	
Sensitivity:	0.3500	GAPI/cps	