



NABORS

**COMPLETION
& PRODUCTION
SERVICES CO.**

DUAL INDUCTION LOG

Company		MULL DRILLING COMPANY, INC.	
Well	APC - CAROLE #2-13		
Field	GOLDEN SPIKE		
County	CHEYENNE	State	COLORADO
Location:	APC # : 05-017-07749-00		Other Services CDL/CNL/PE MEL/SONIC
Permanent Datum		GROUND LEVEL	Elevation 4349
Log Measured From		KELLY BUSHING 11' A.G.L.	K.B. 4360 D.F. 4358 G.L. 4349
Drilling Measured From		KELLY BUSHING	
SEC 13 TWP 16S RGE 45W			
Date	7/15/13		
Run Number	ONE		
Depth Driller	5585		
Depth Logger	5587		
Bottom Logged Interval	5585		
Top Log Interval	00		
Casing Driller	8 5/8"@652'		
Casing Logger	650		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 5,000 PPM	
Density / Viscosity	9.3/62		
pH / Fluid Loss	10.0/9.0		
Source of Sample	FLOWLINE		
Rim @ Meas. Temp	.650@80F		
Rmf @ Meas. Temp	.488@80F		
Rmc @ Meas. Temp	.780@80F		
Source of Rmf / Rmc	MEASUREMENT		
Rim @ BHT	.400@130F		
Time Circulation Stopped	3 HOURS		
Time Logger on Bottom	2:15 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. 10S. ON HWY 385 TO "RD. G", 6 W., 2S., 1E. ON TRAIL, 1/2N.,E. AGAIN

Database File:

011191pe.db

Dataset Pathname:

pass3.12

Presentation Format:

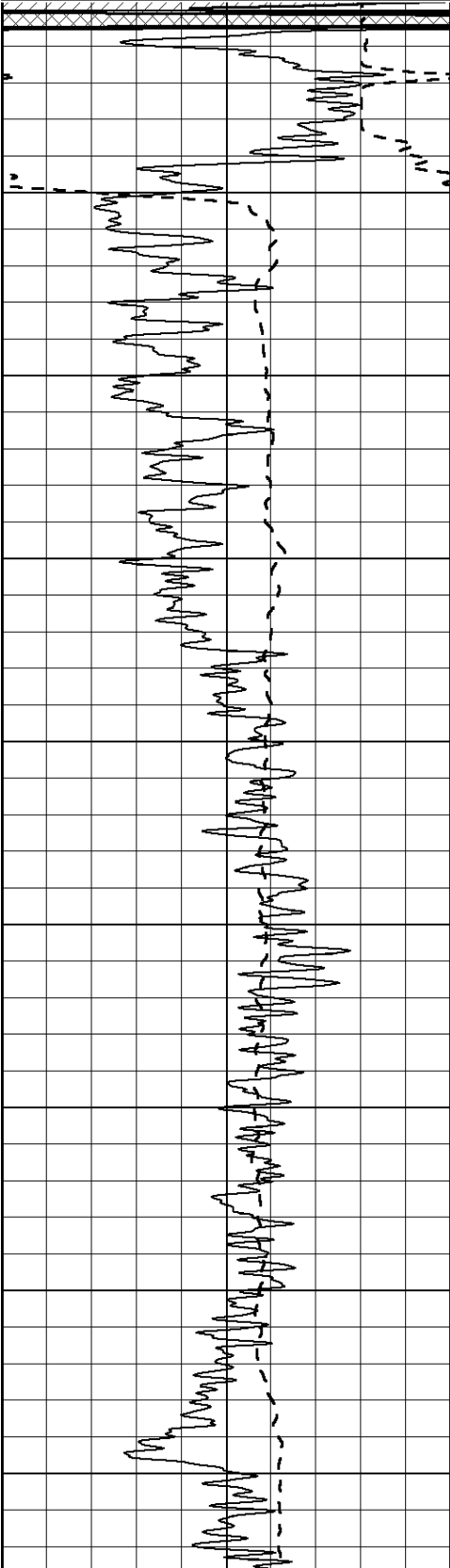
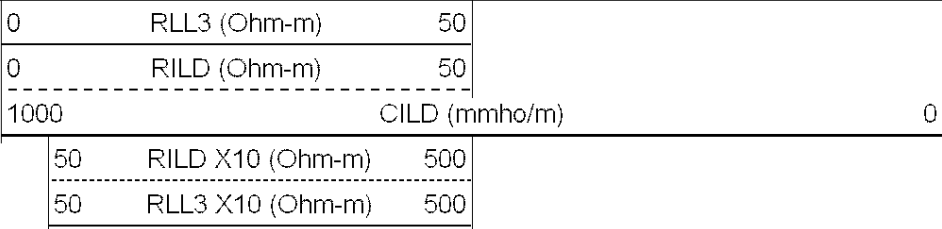
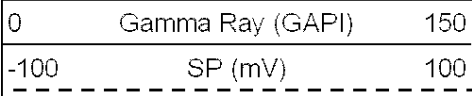
dil2

Dataset Creation:

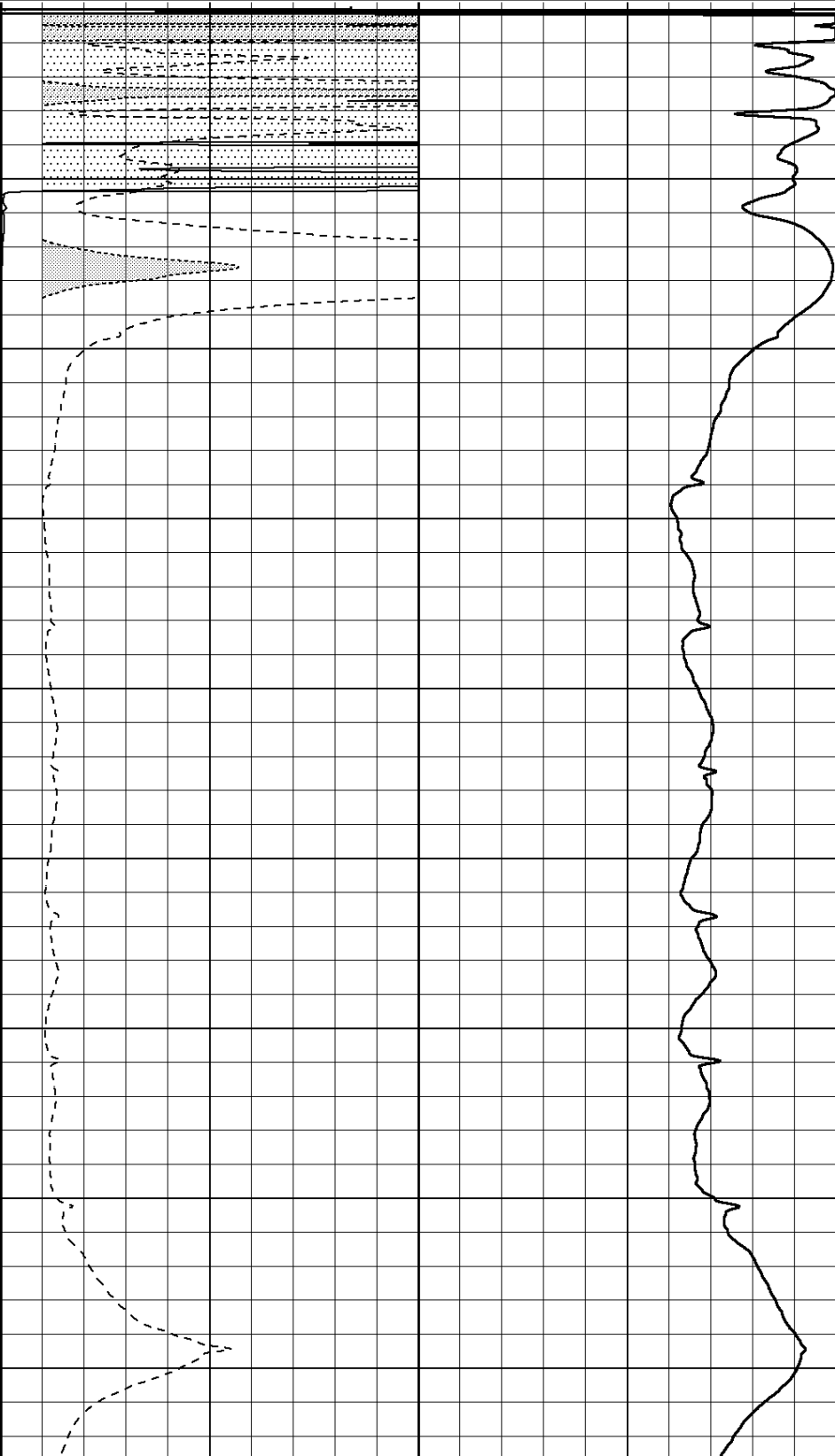
Tue Jul 16 04:22:09 2013

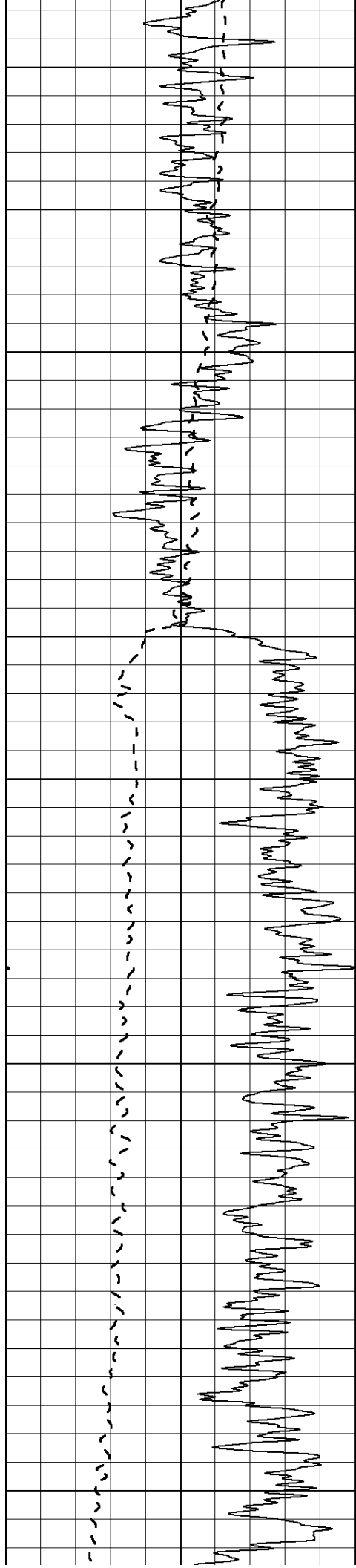
Charted by:

Depth in Feet scaled 1:600



0
50
100
150
200
250
300
350
400





450

500

550

600

650

700

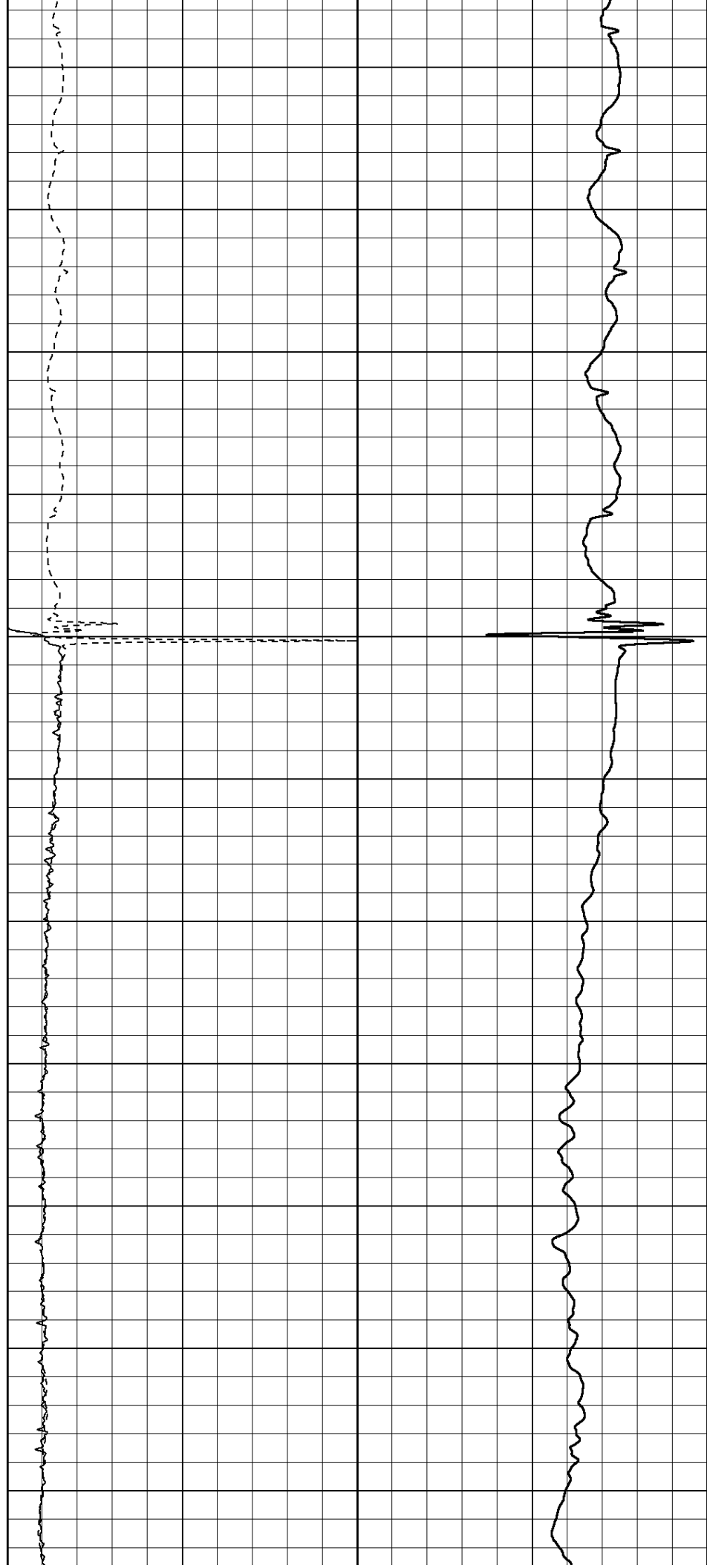
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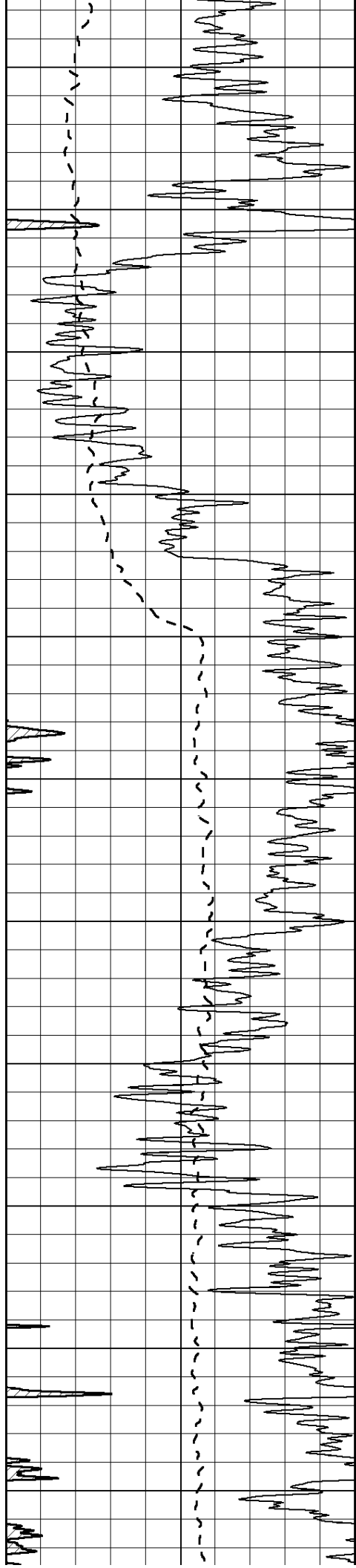
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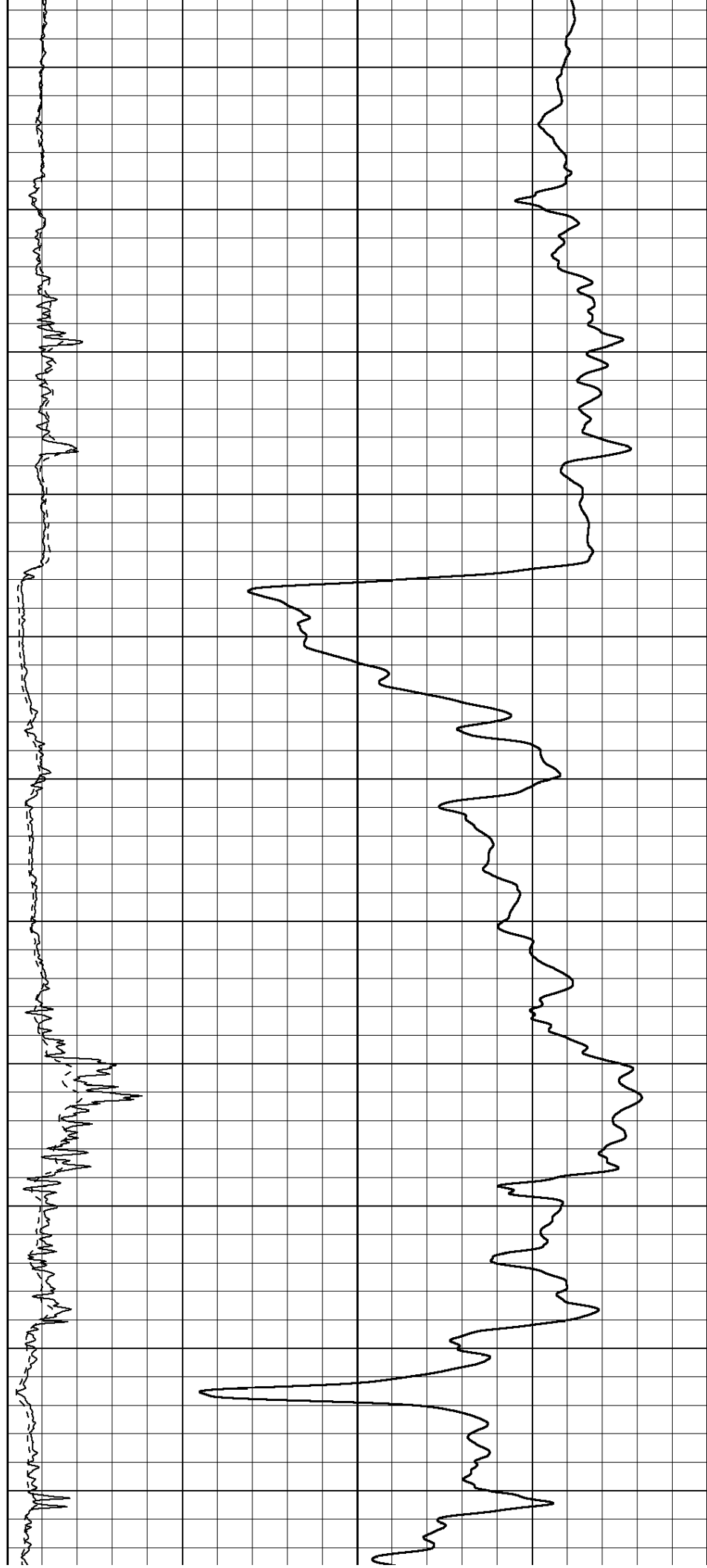
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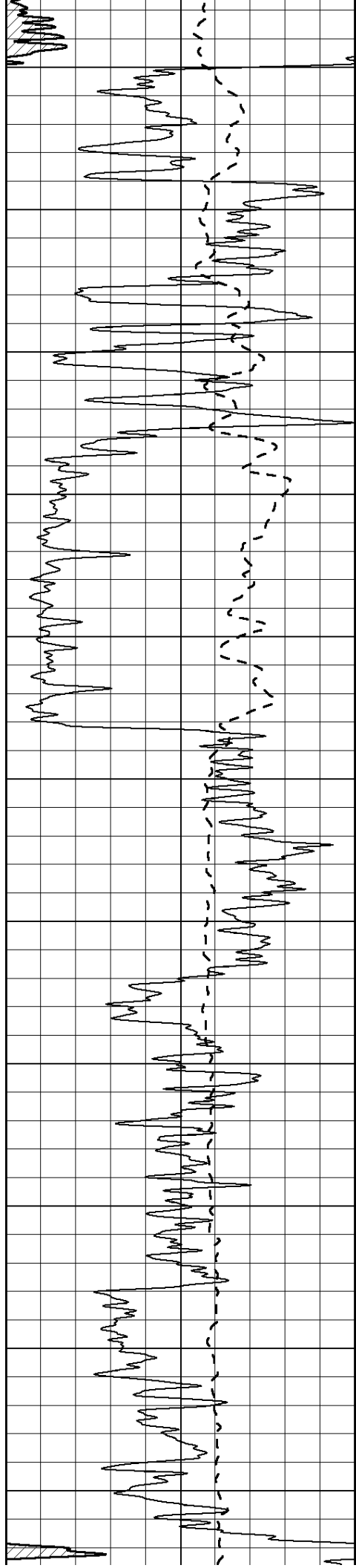
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1000
1050
1100
1150
1200
1250
1300
1350
1400
1450
1500





1550

1600

1650

1700

1750

1800

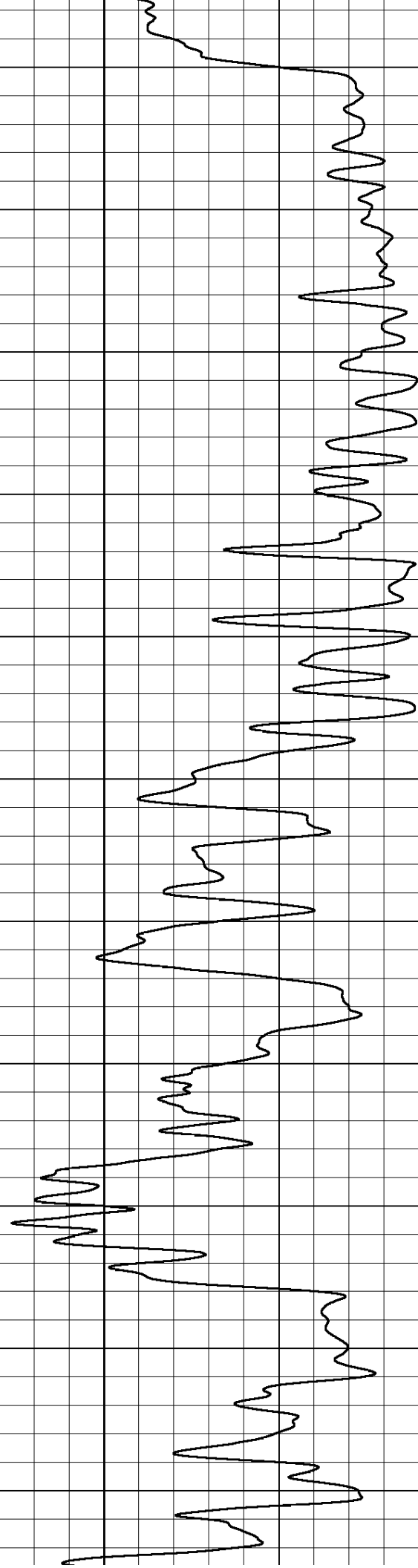
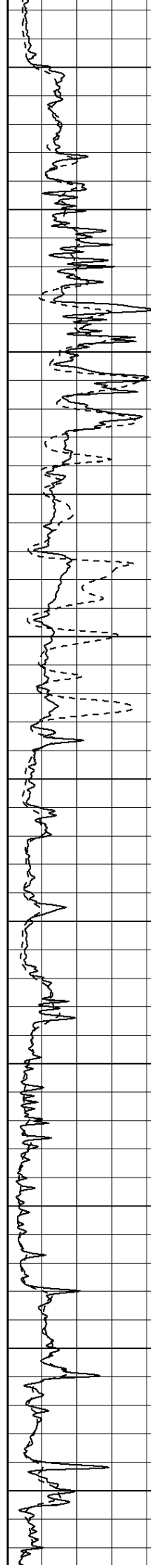
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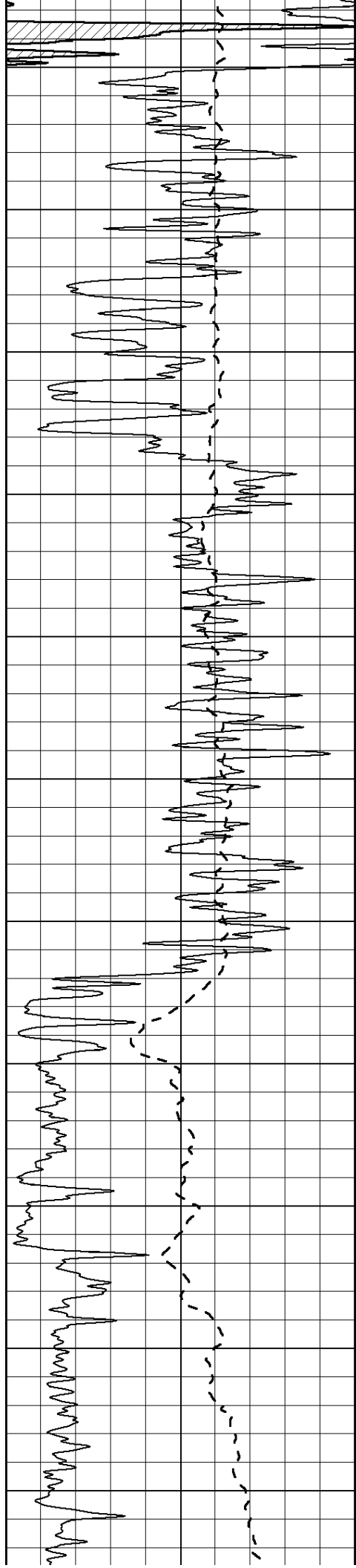
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2000

2050





2100

2150

2200

2250

2300

2350

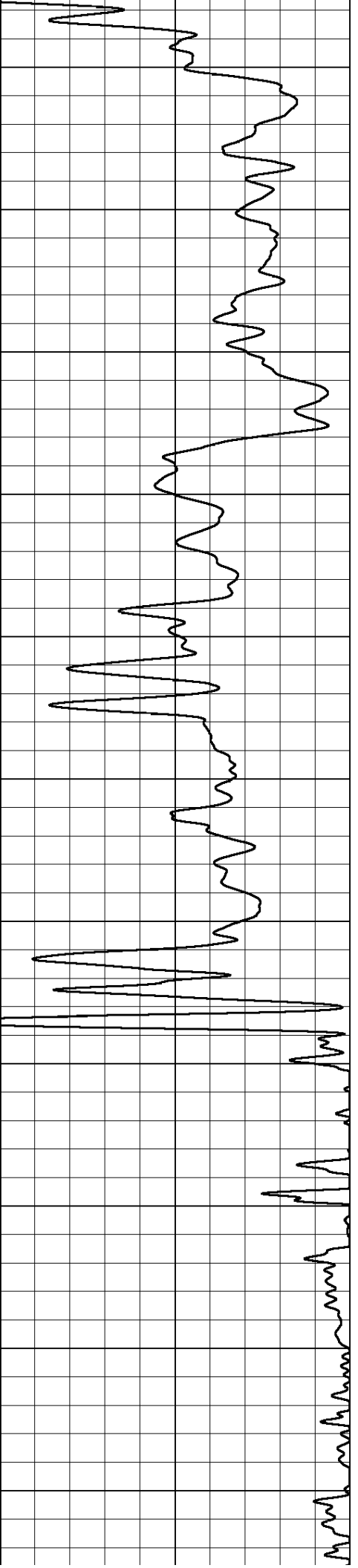
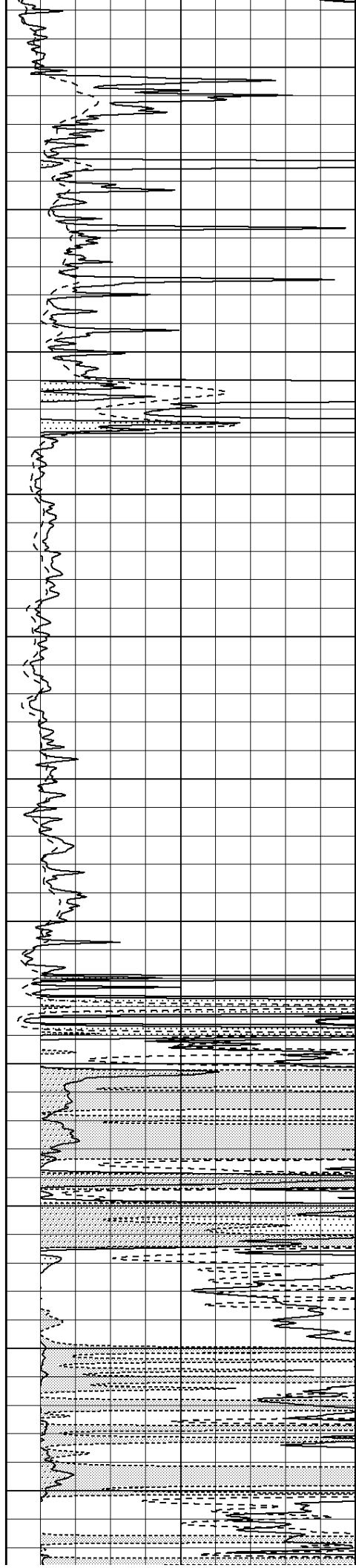
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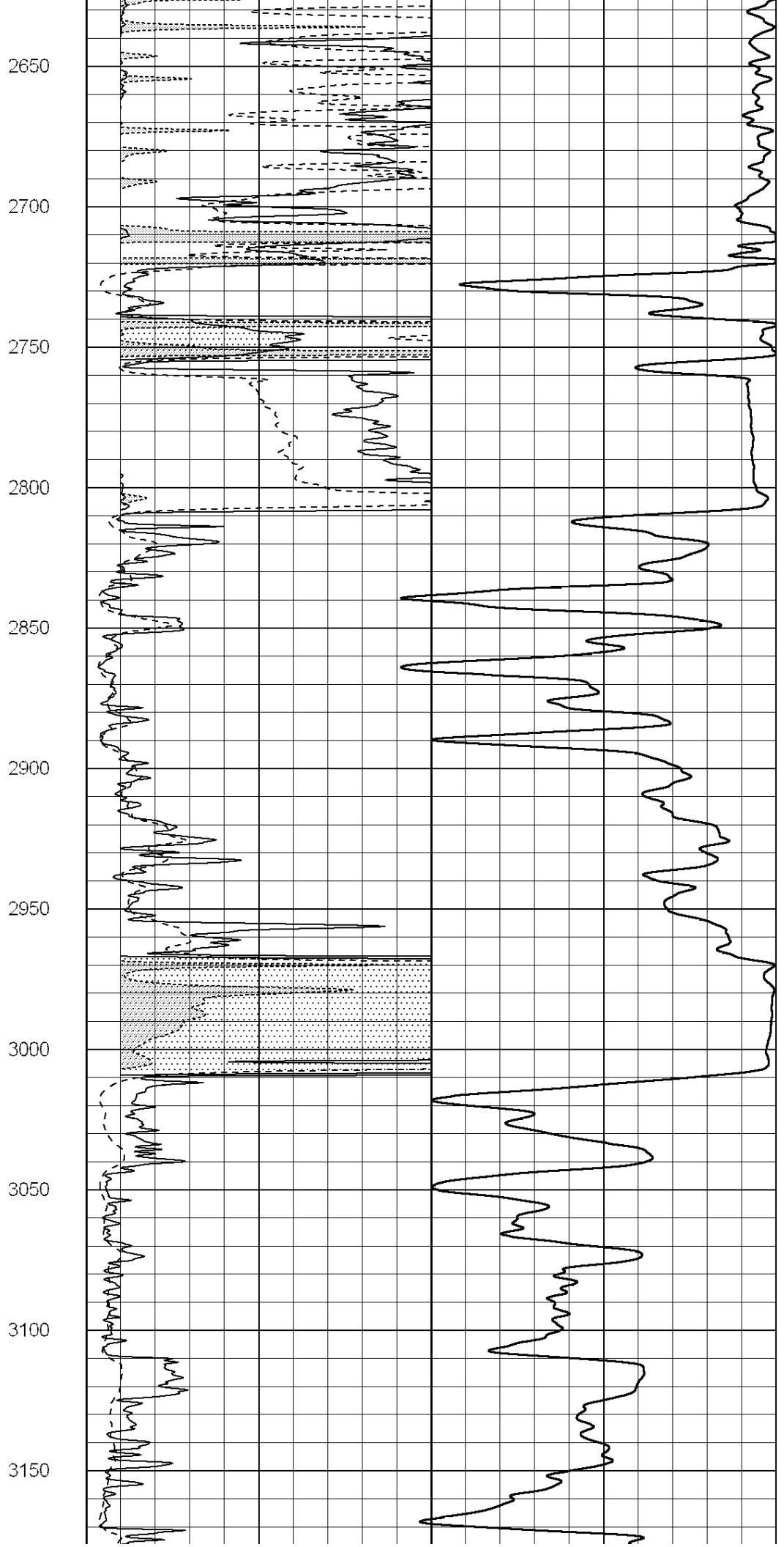
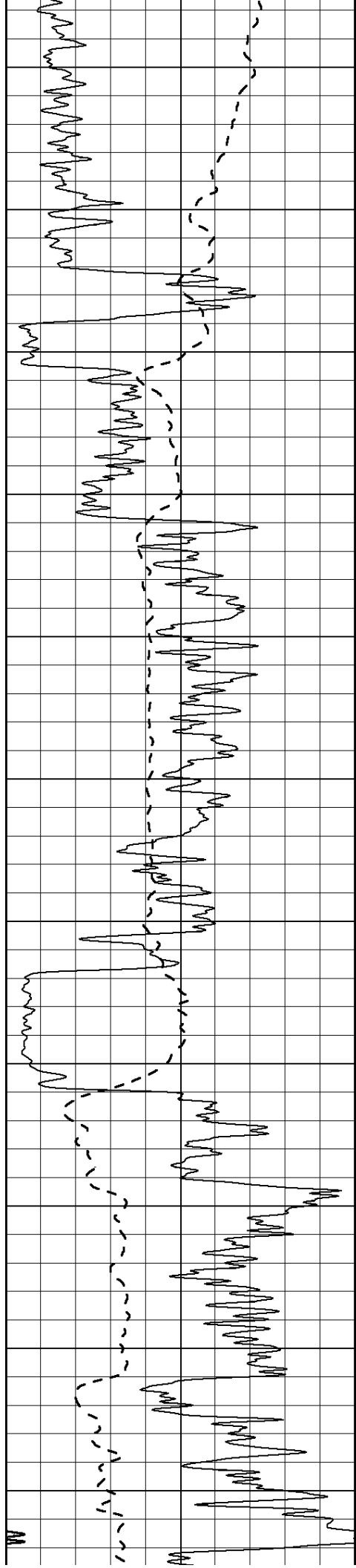
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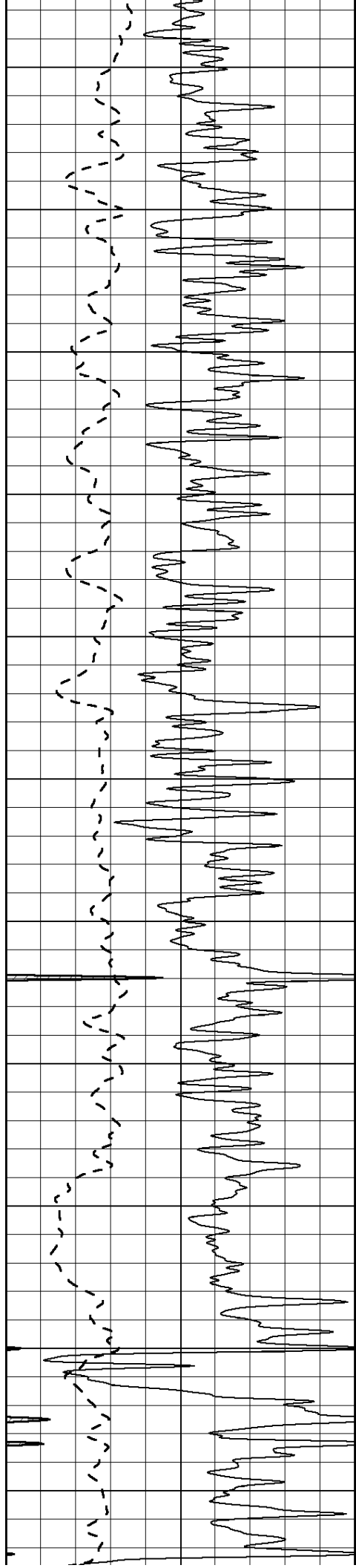
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2600







3200

3250

3300

3350

3400

3450

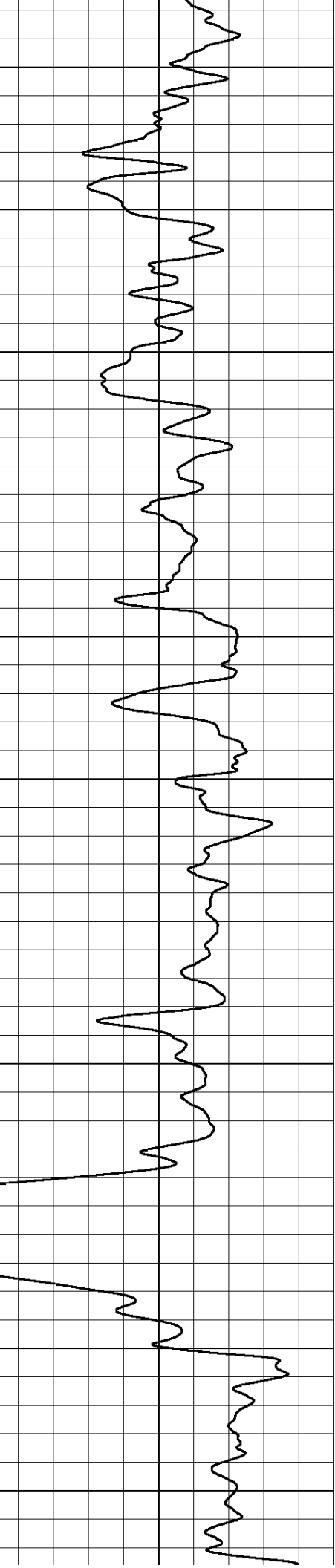
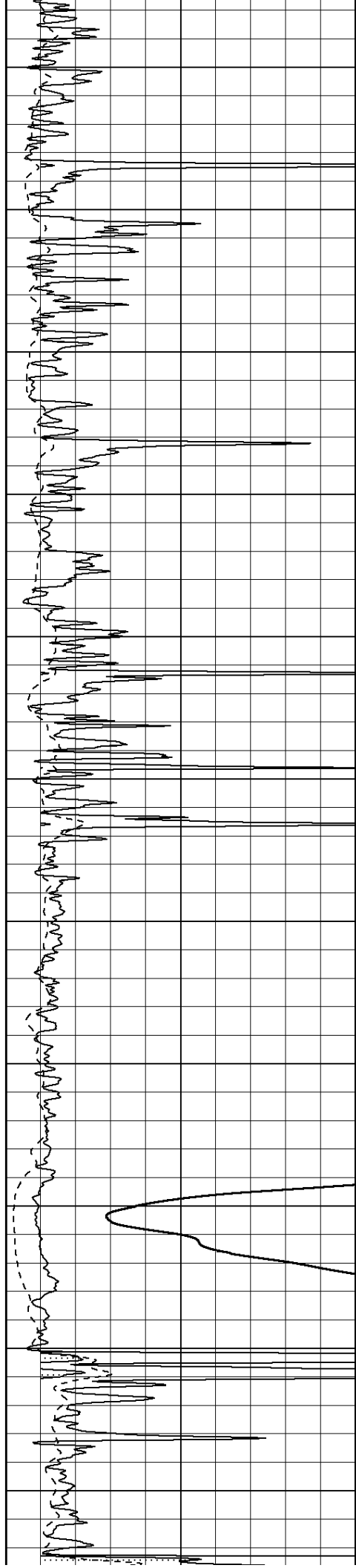
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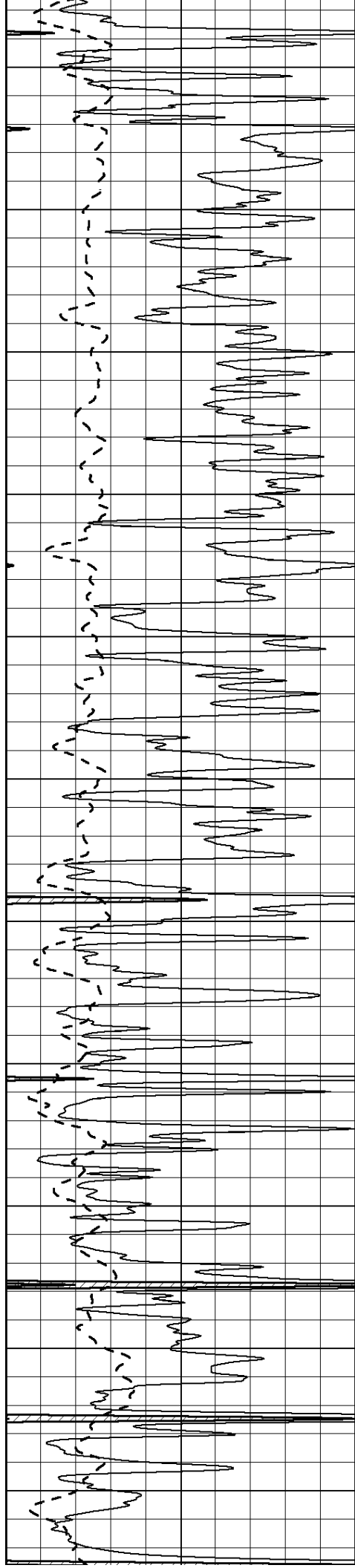
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3700





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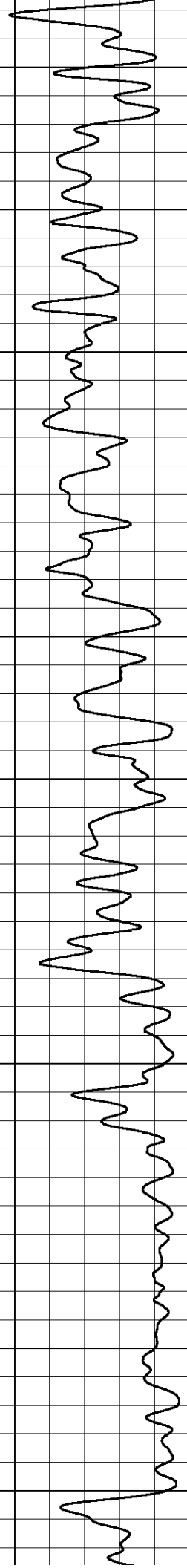
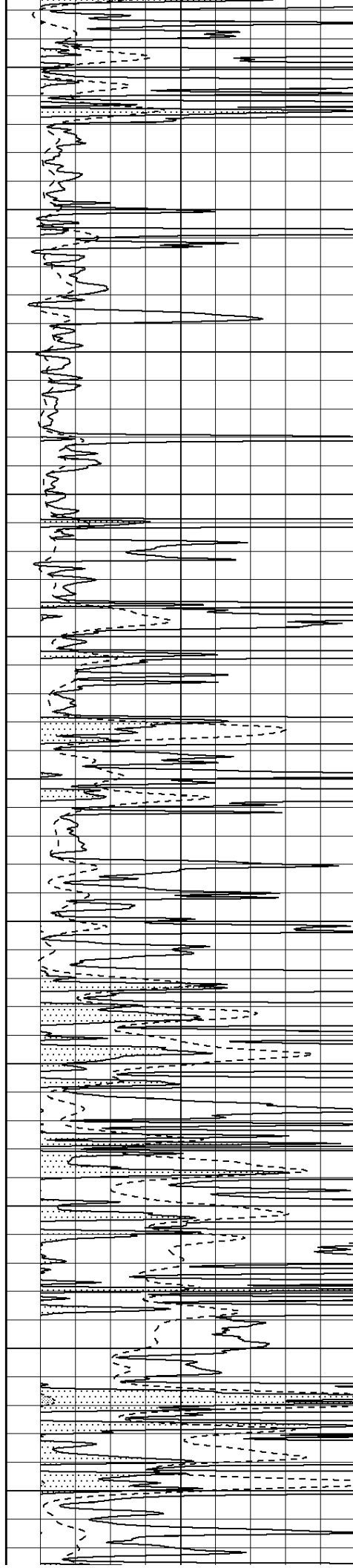
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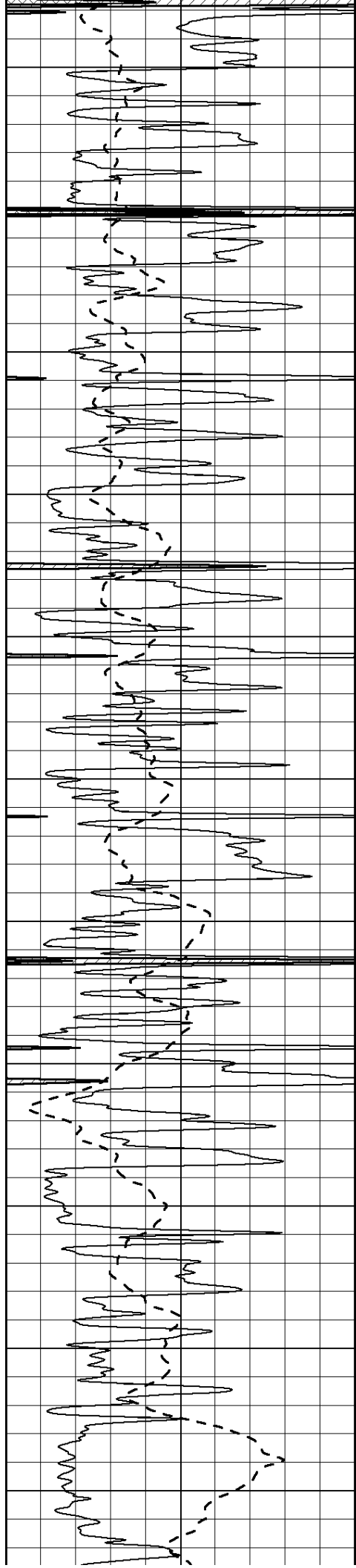
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4150

4200

4250





4300

4350

4400

4450

4500

4550

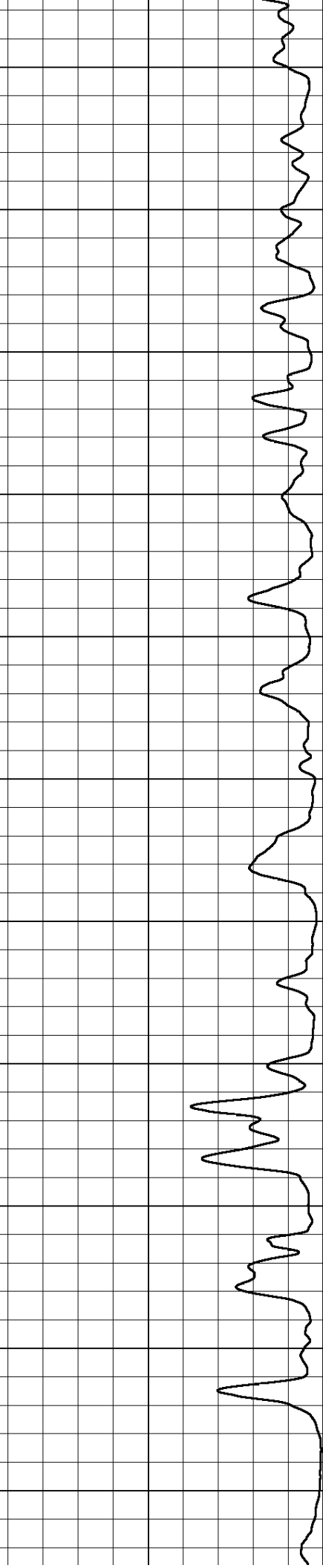
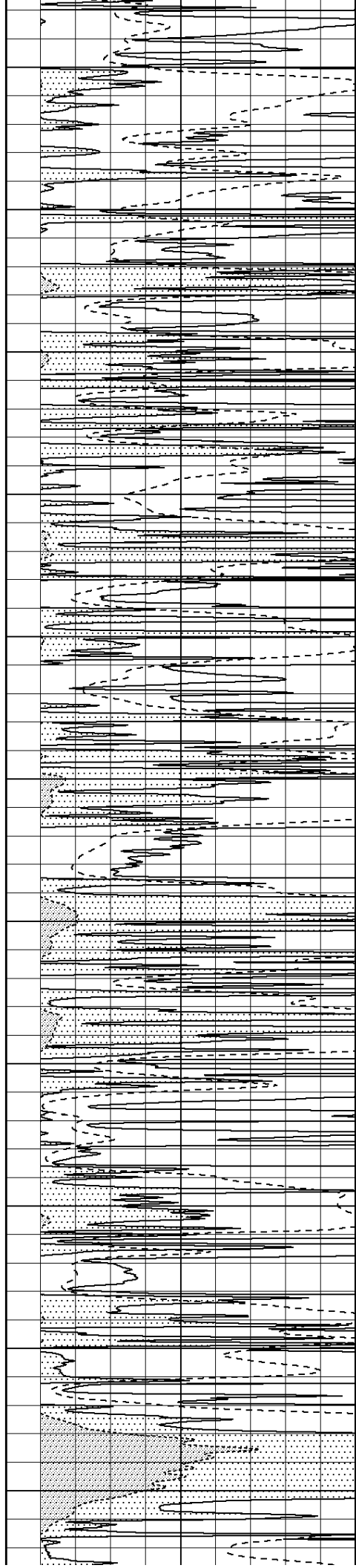
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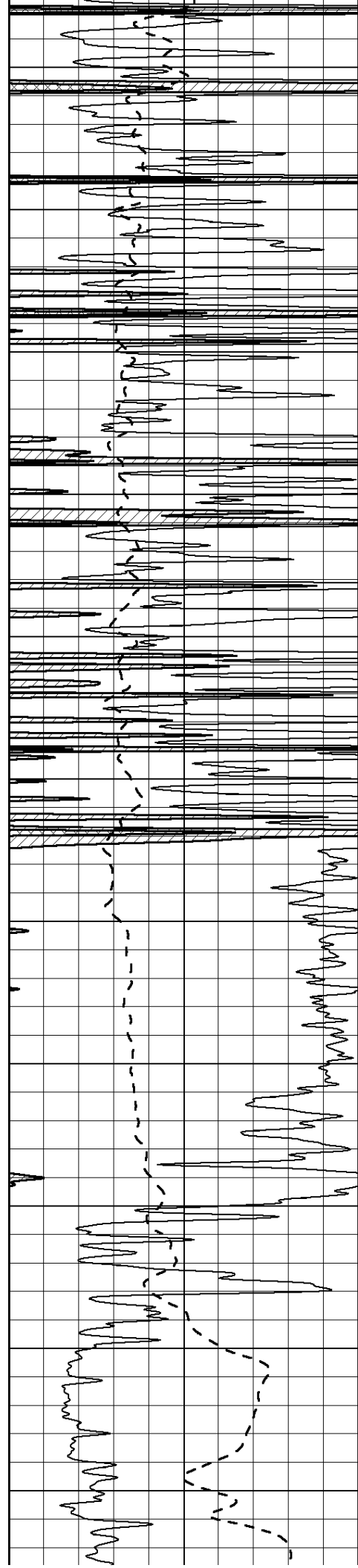
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4700

4750

4800





4850

4900

4950

5000

5050

5100

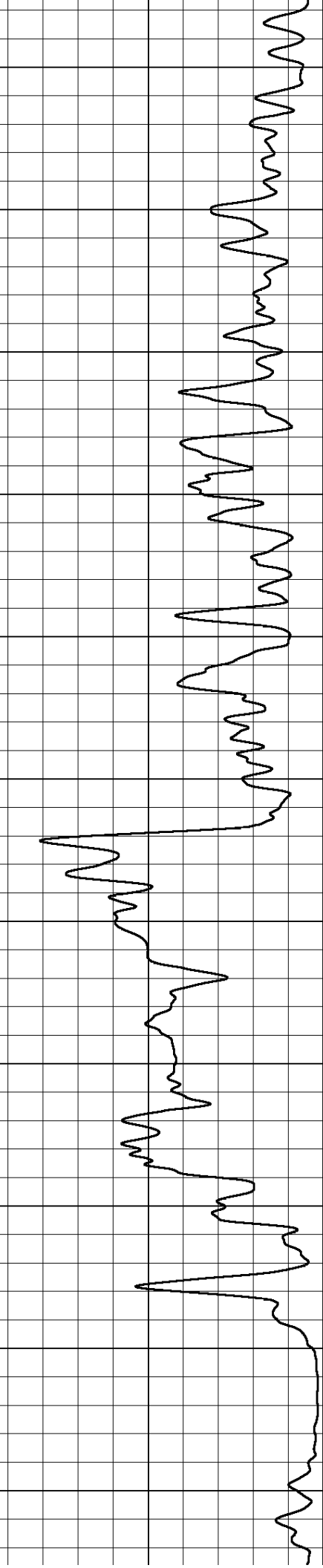
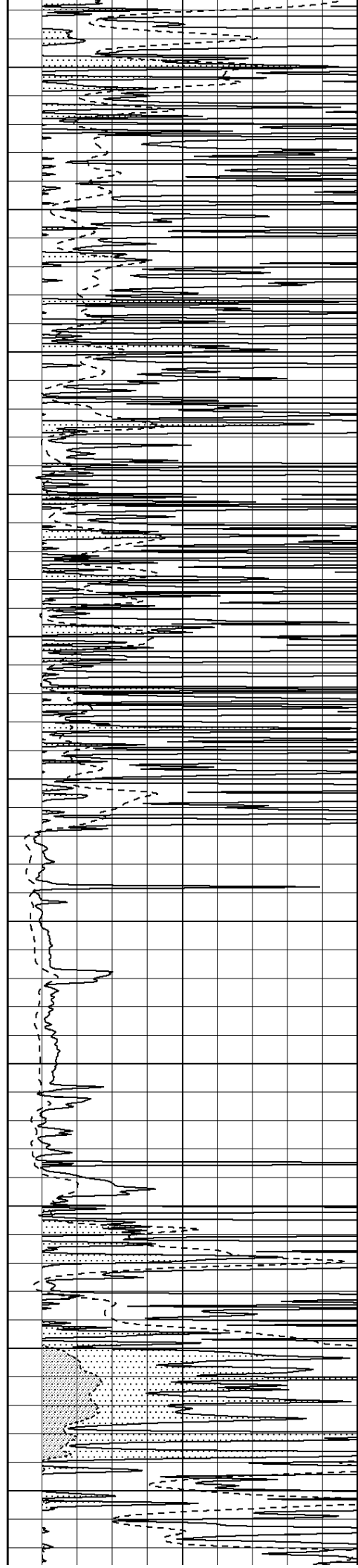
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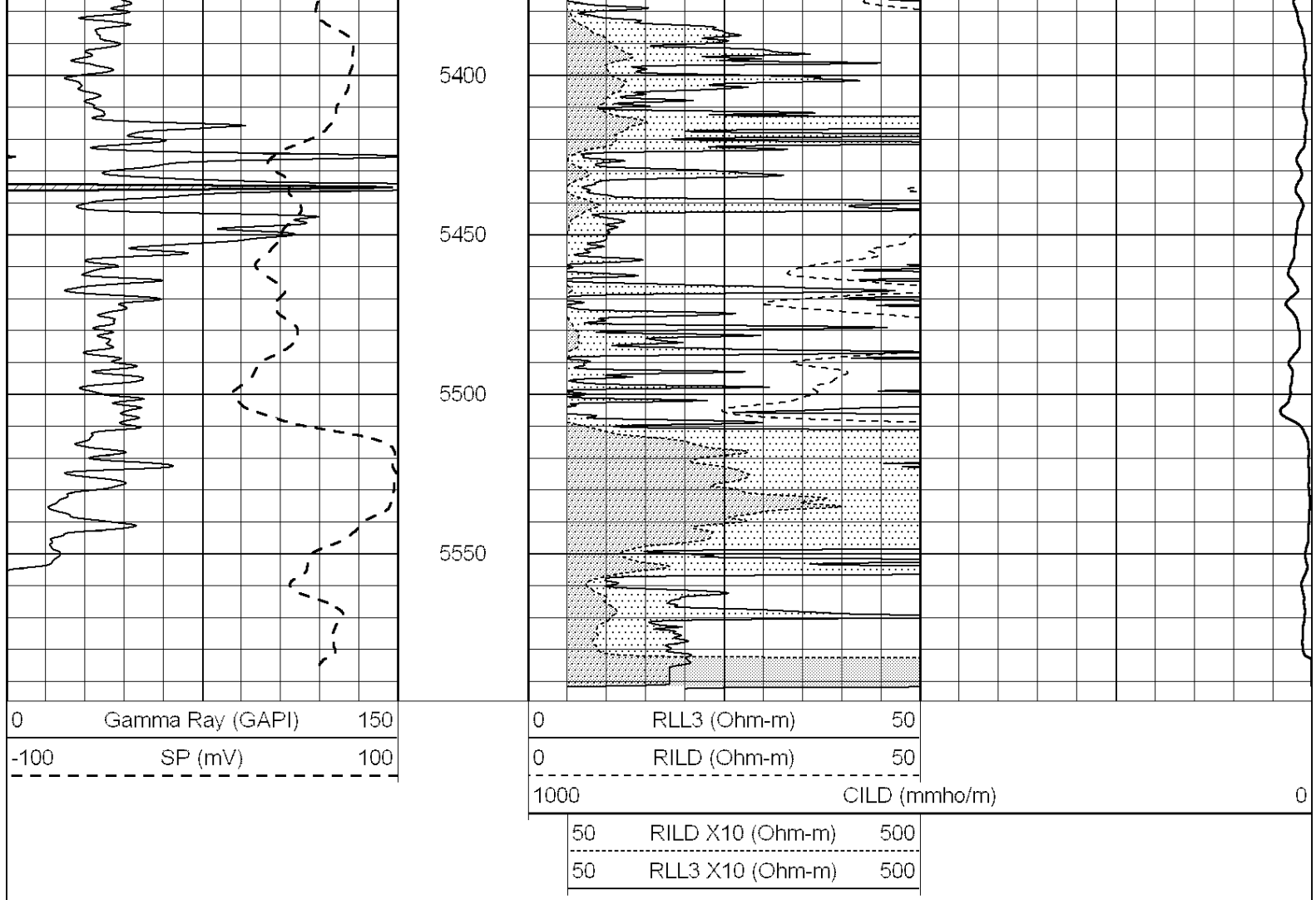
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5350





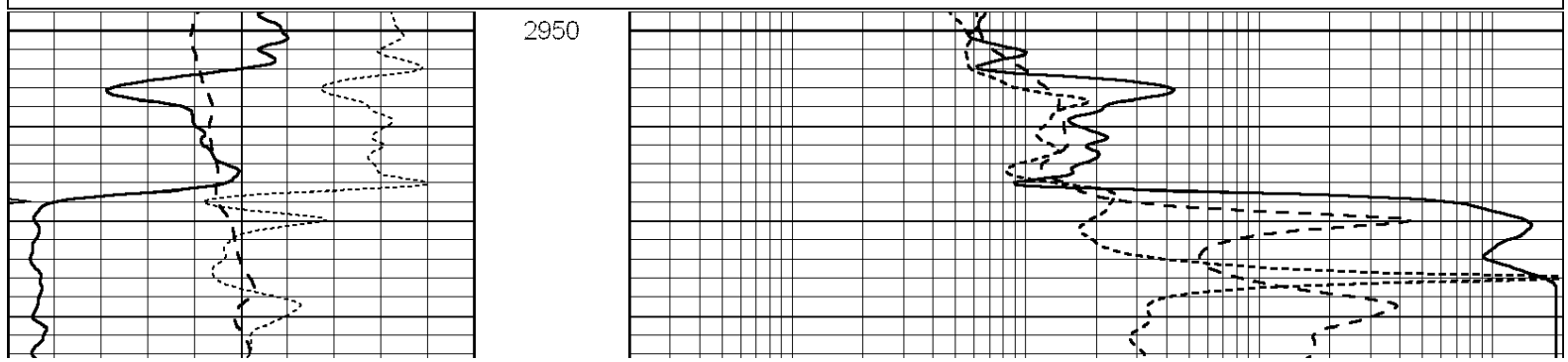


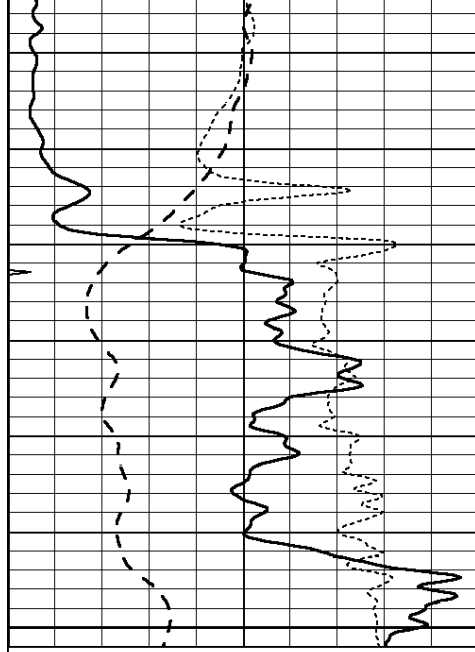
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ANHYDRITE

Database File: 011191pe.db
 Dataset Pathname: pass3.13
 Presentation Format: _dil
 Dataset Creation: Tue Jul 16 04:22:26 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			

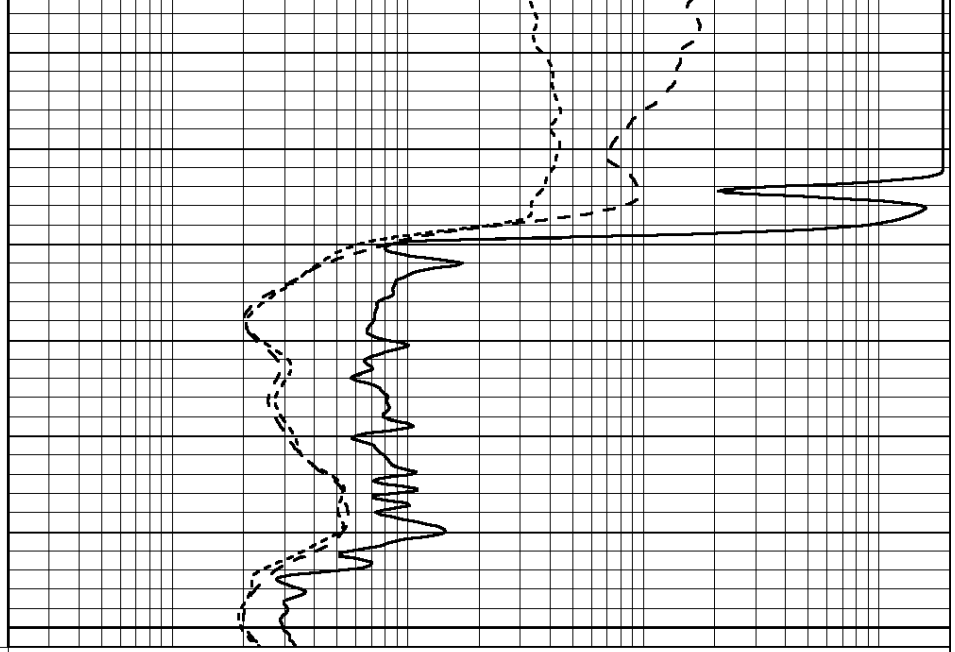




0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

3000

3050



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

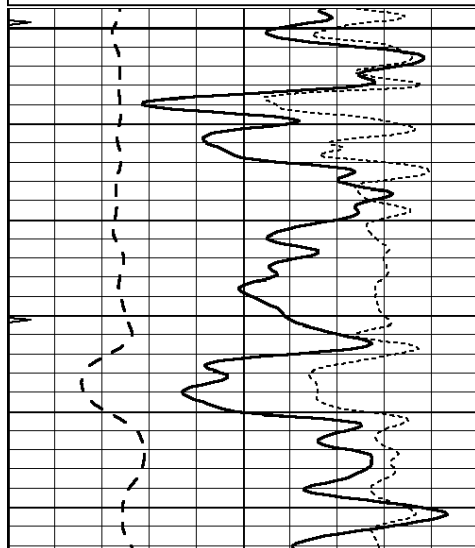


MAIN SECTION

Database File: 011191pe.db
Dataset Pathname: pass3.12
Presentation Format: dil
Dataset Creation: Tue Jul 16 04:22:09 2013
Charted by: Depth in Feet scaled 1:240

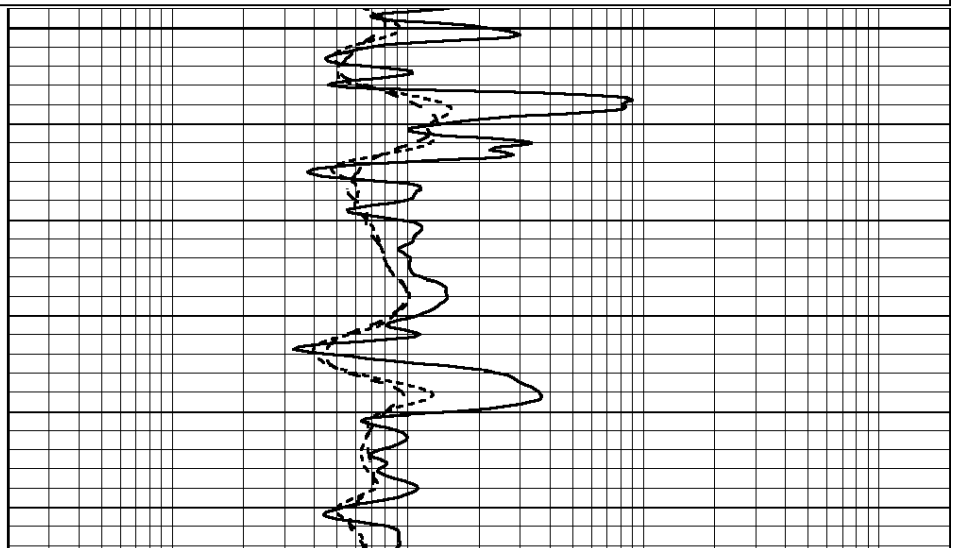
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-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

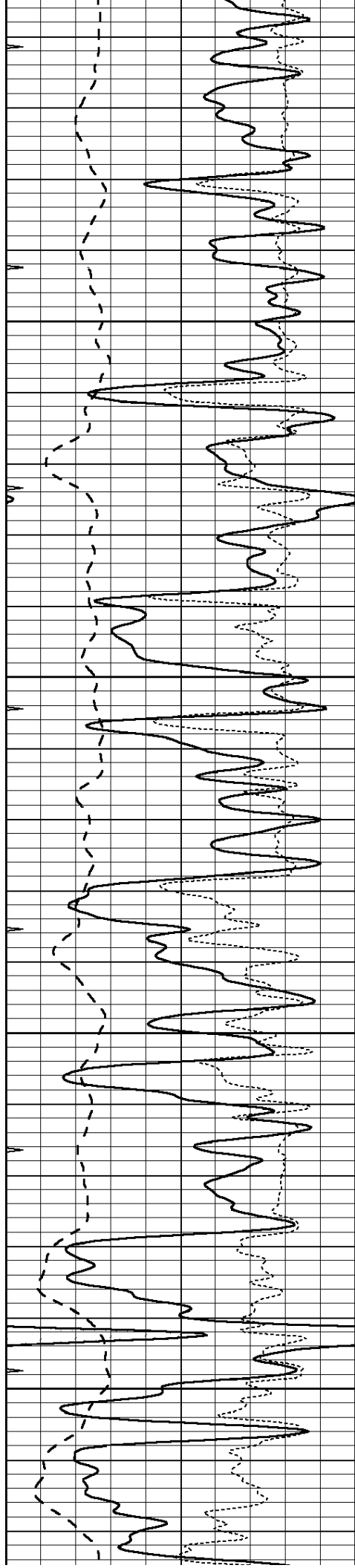
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000



3800

3850



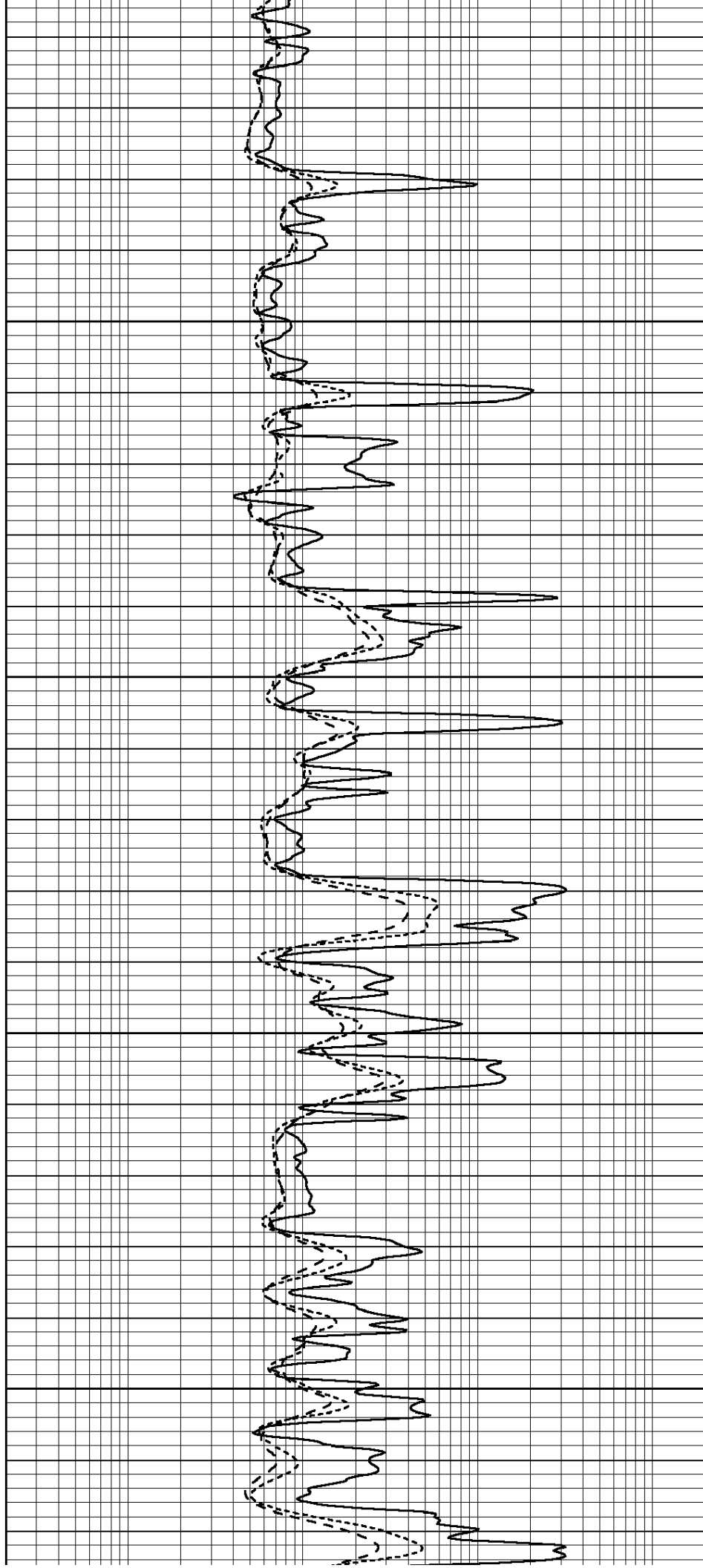


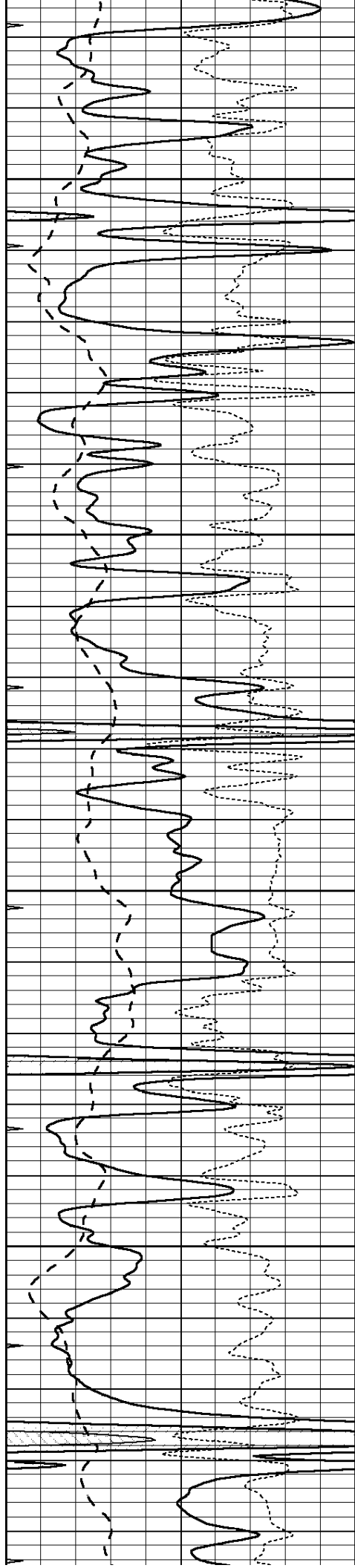
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3950

4000

4050



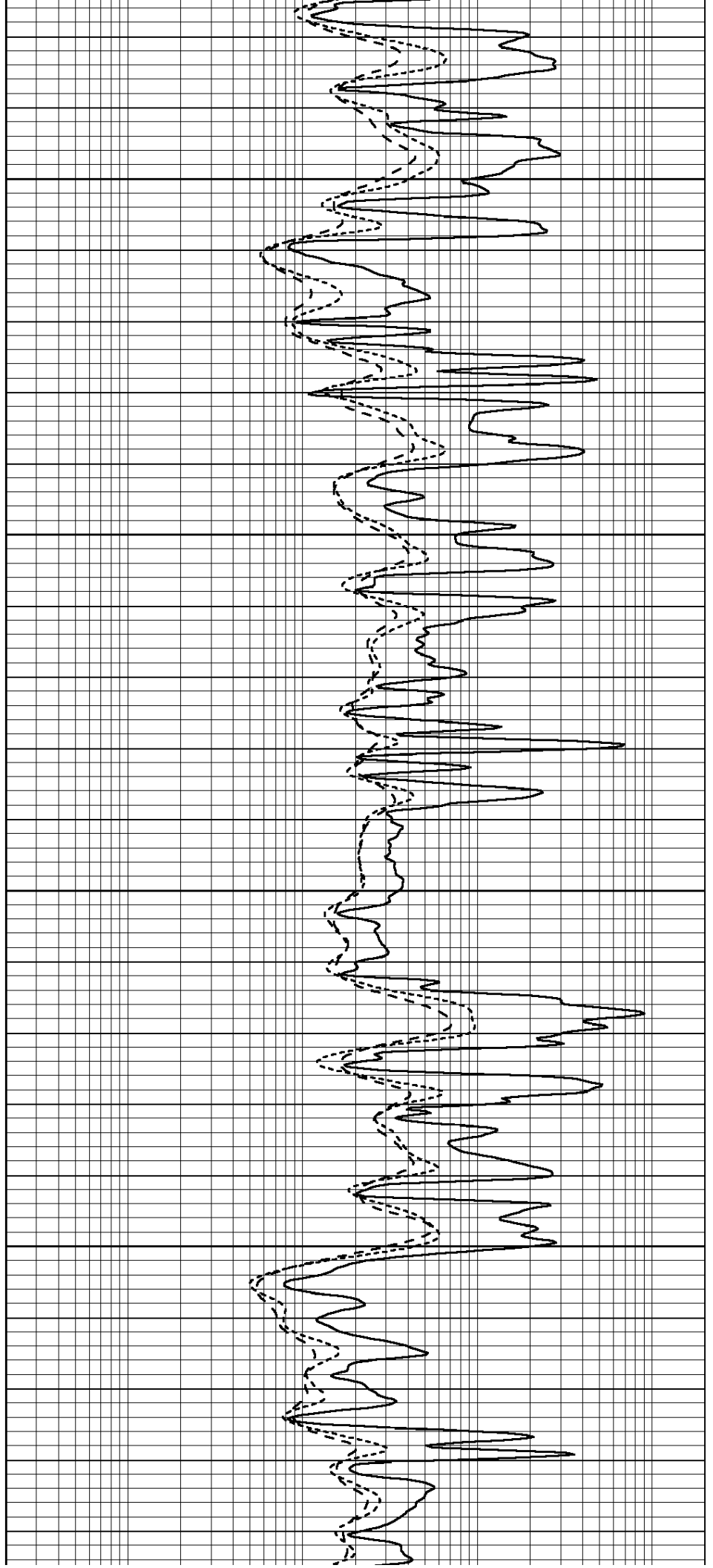


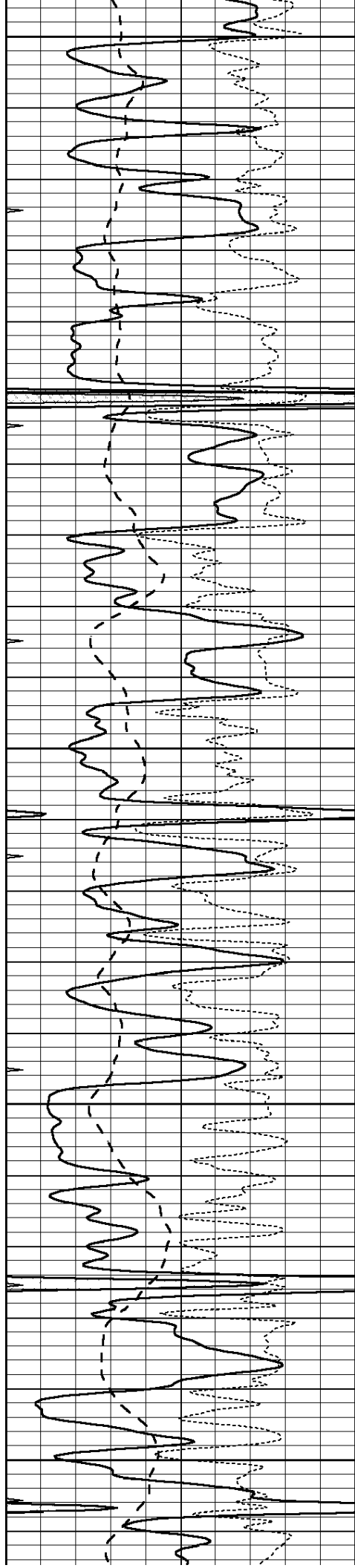
4100

4150

4200

4250





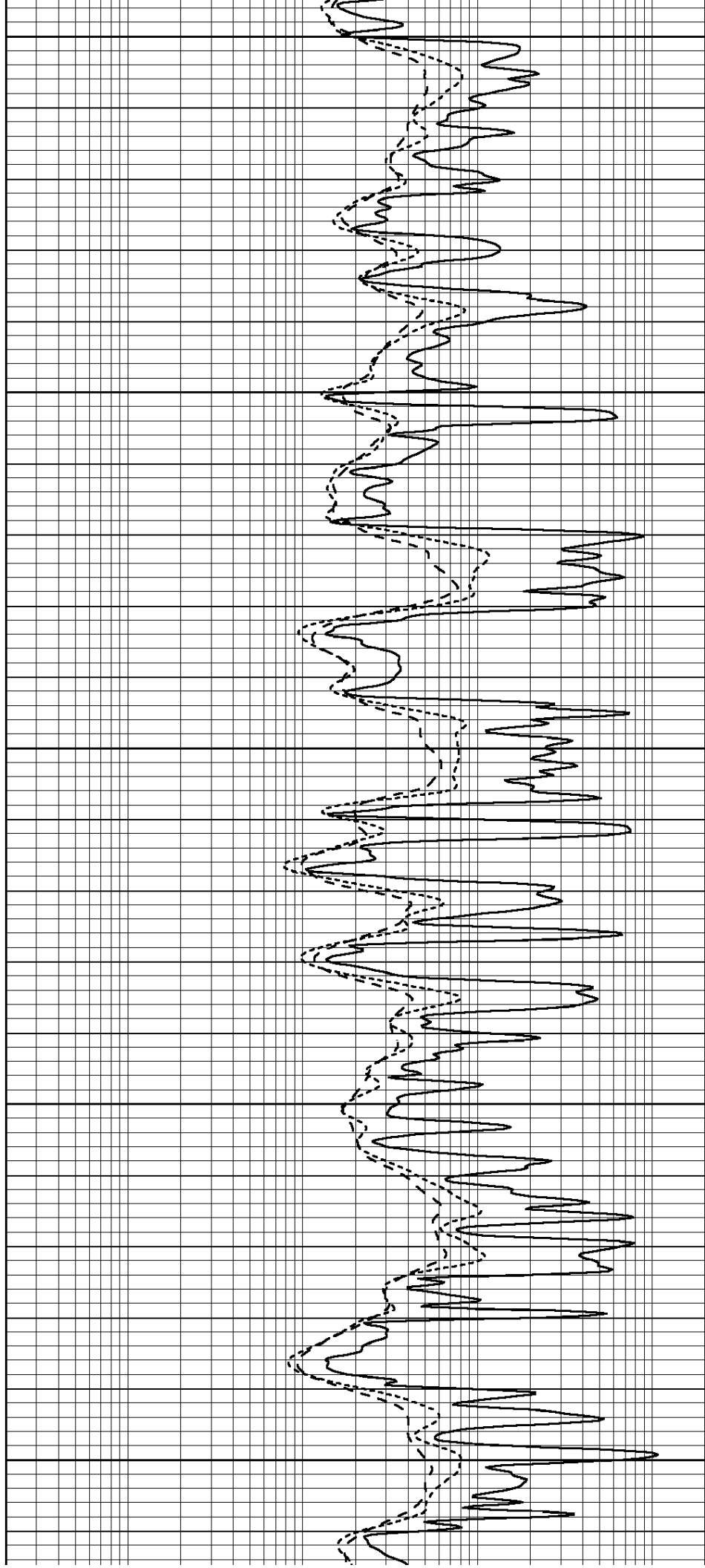
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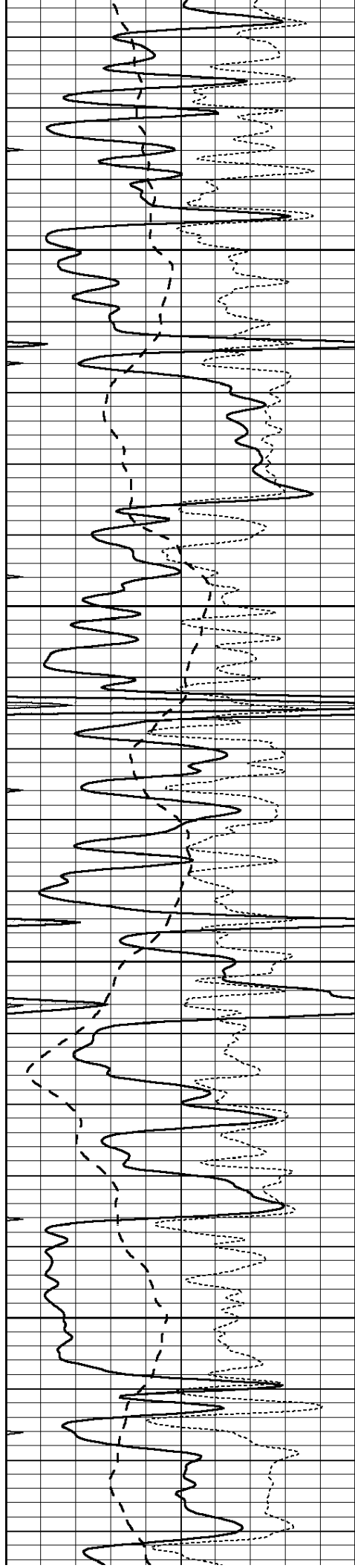
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4450

4500



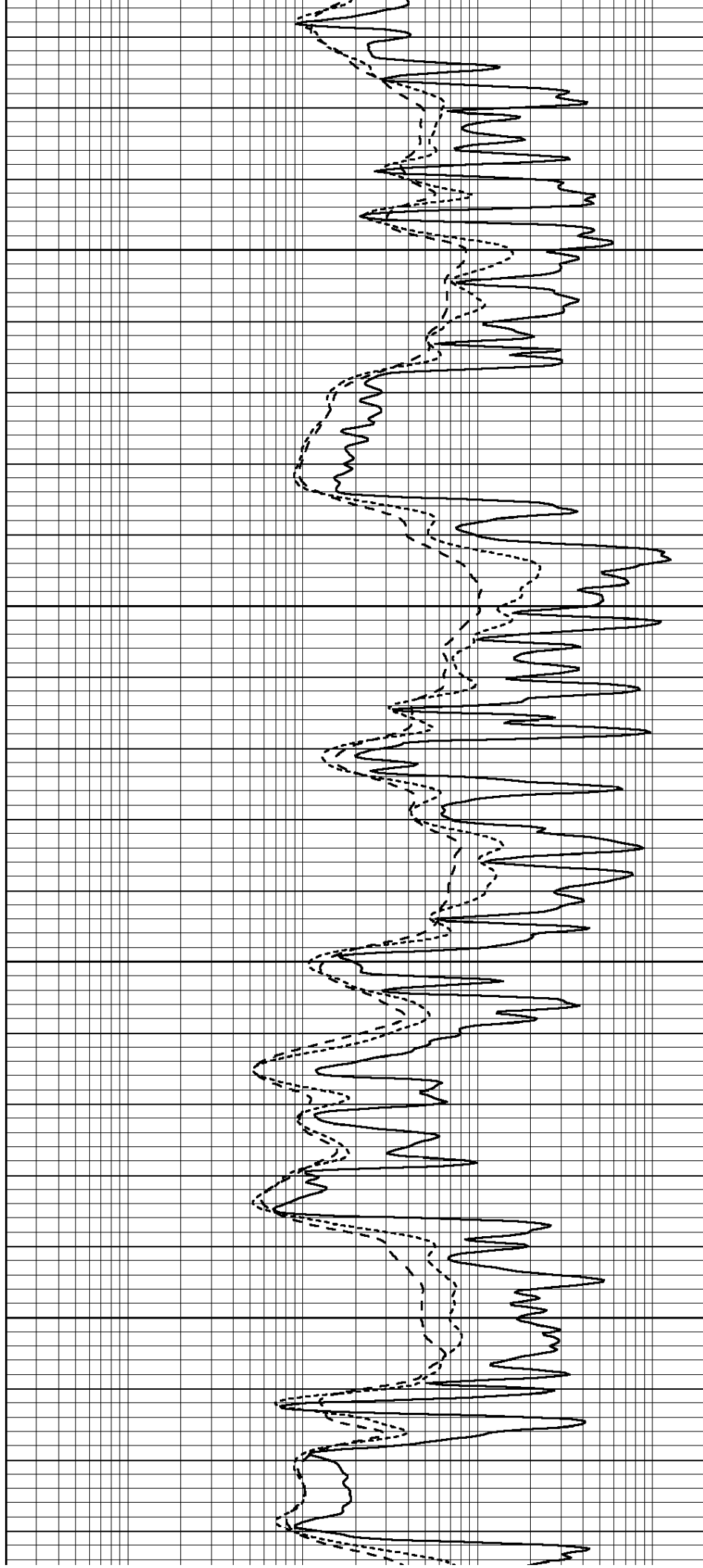


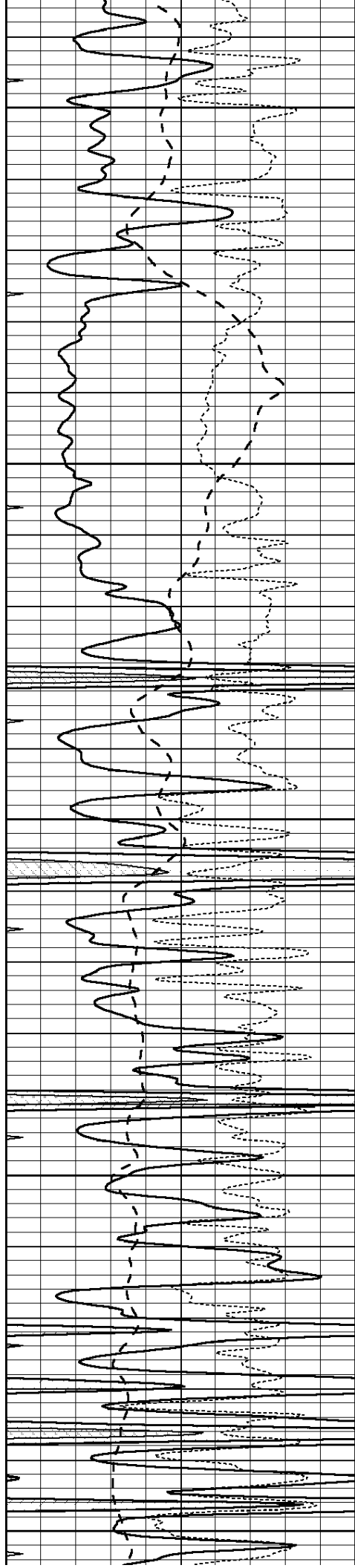
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4700





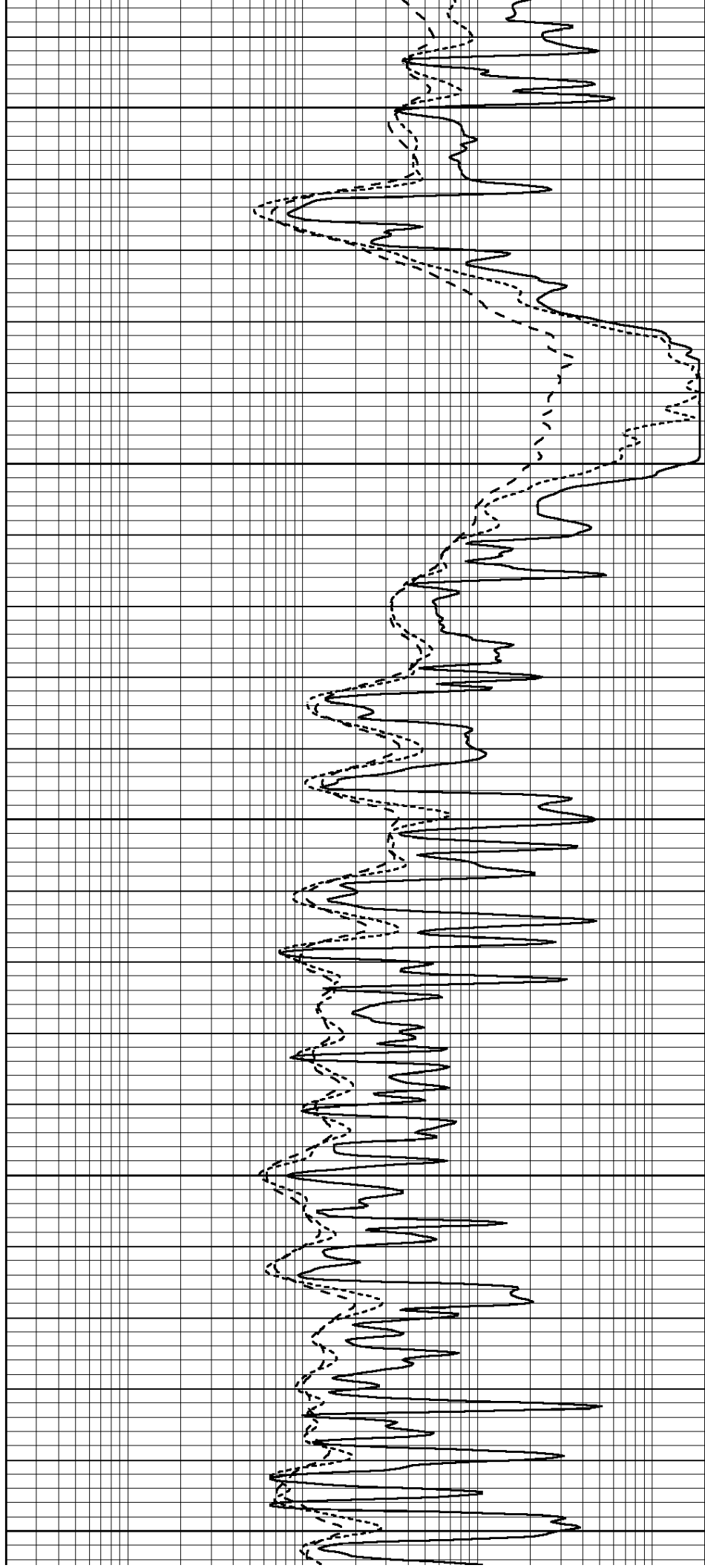
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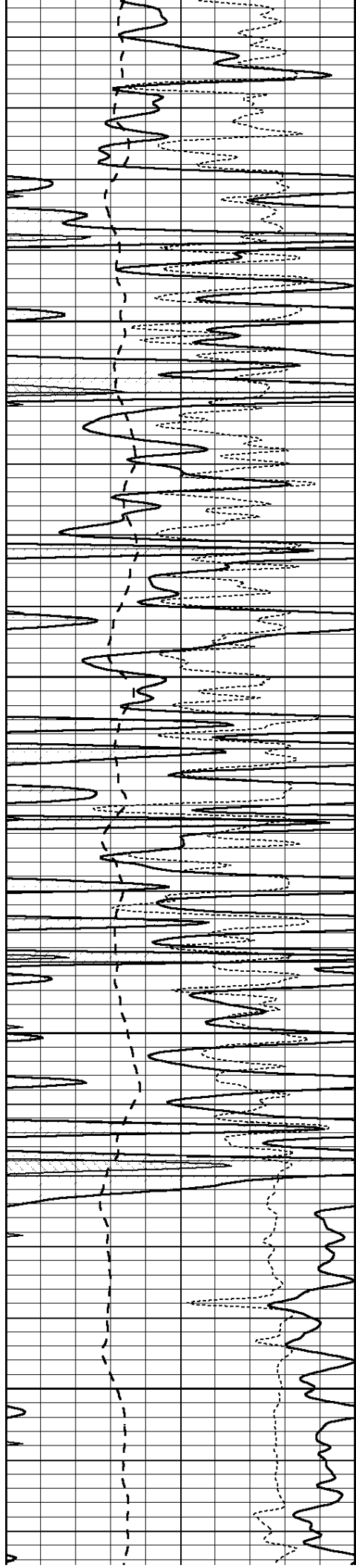
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4900

4950



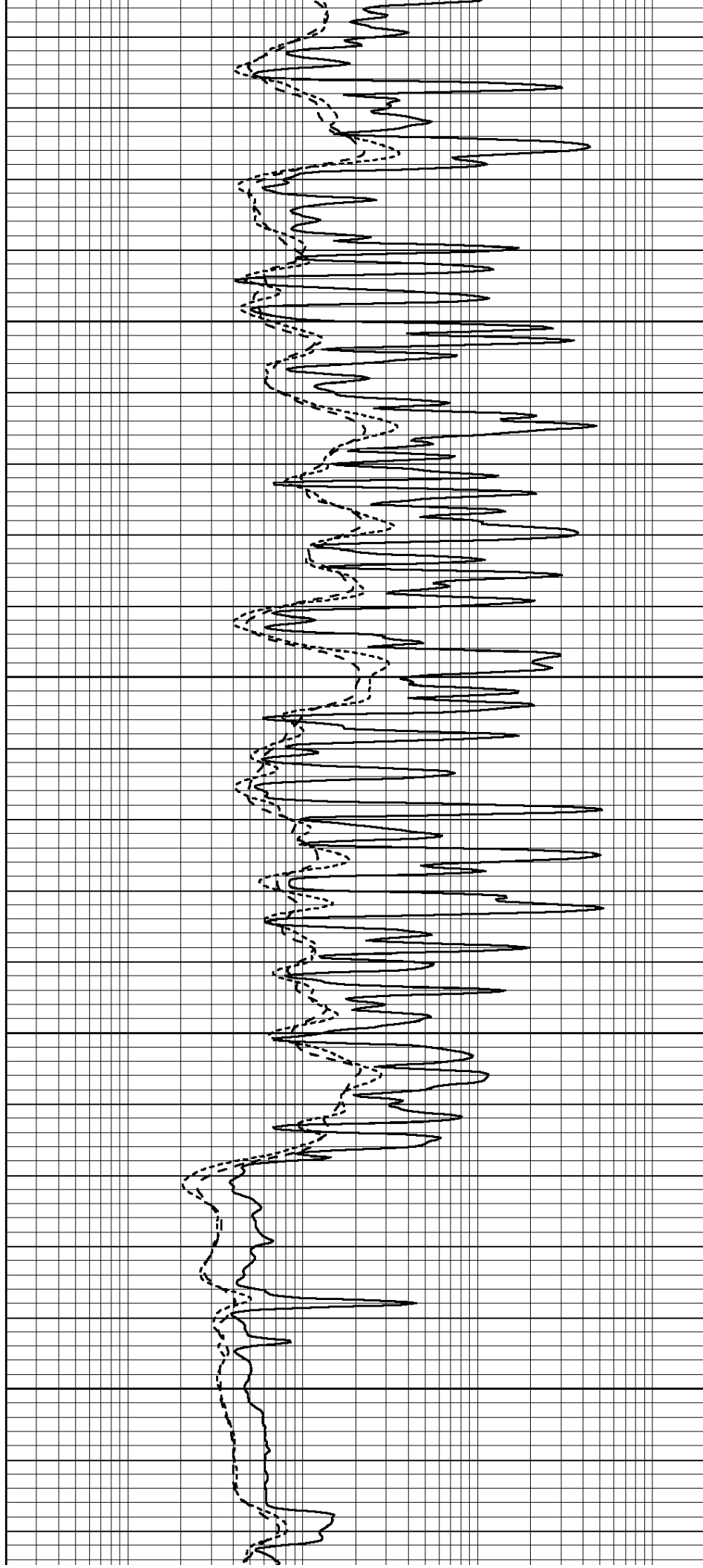


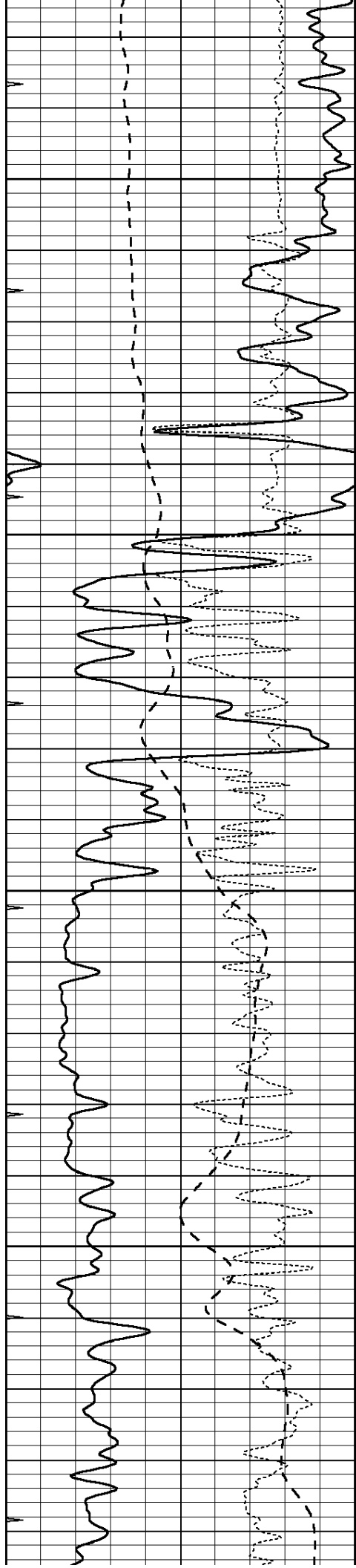
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5100

5150



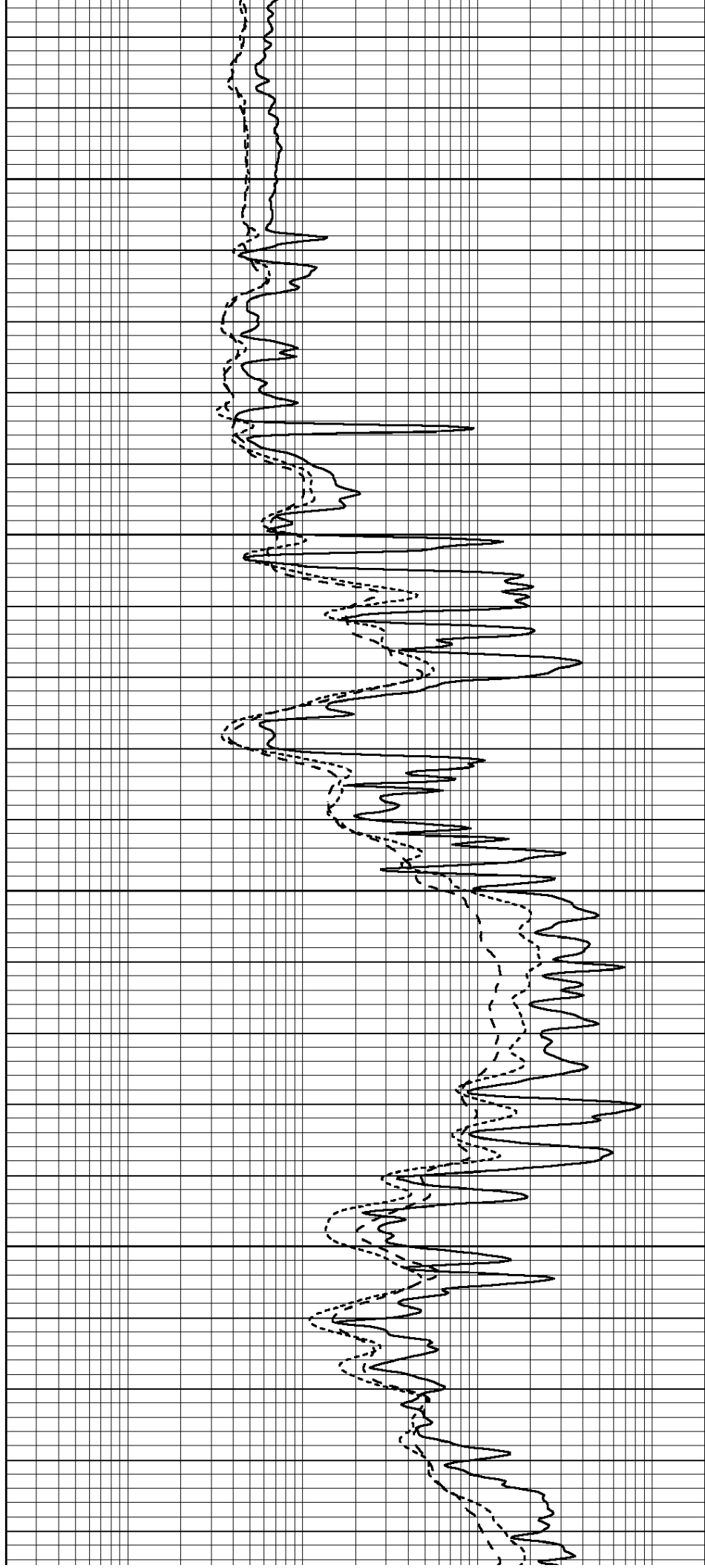


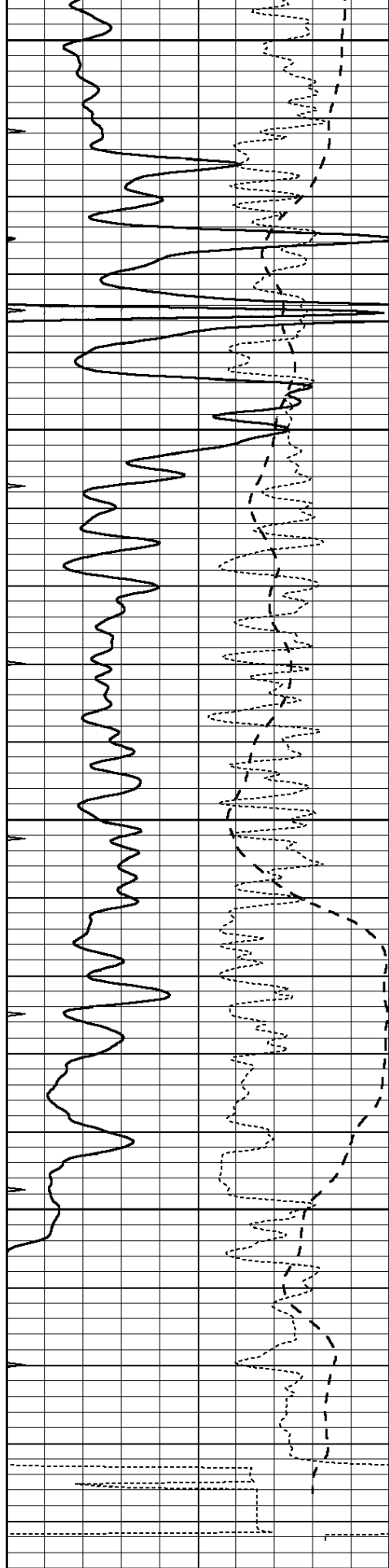
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5350





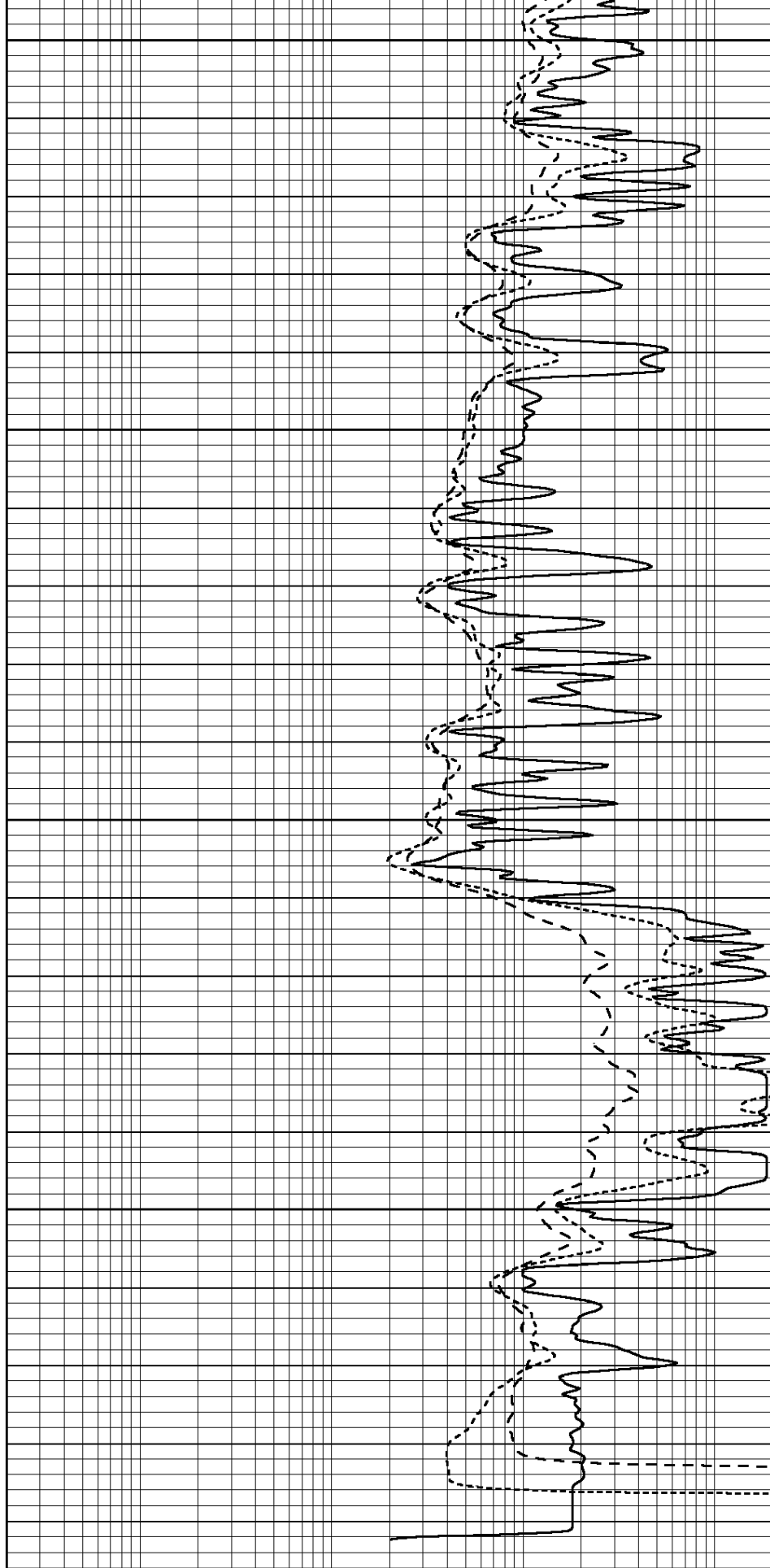
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5500

5550

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



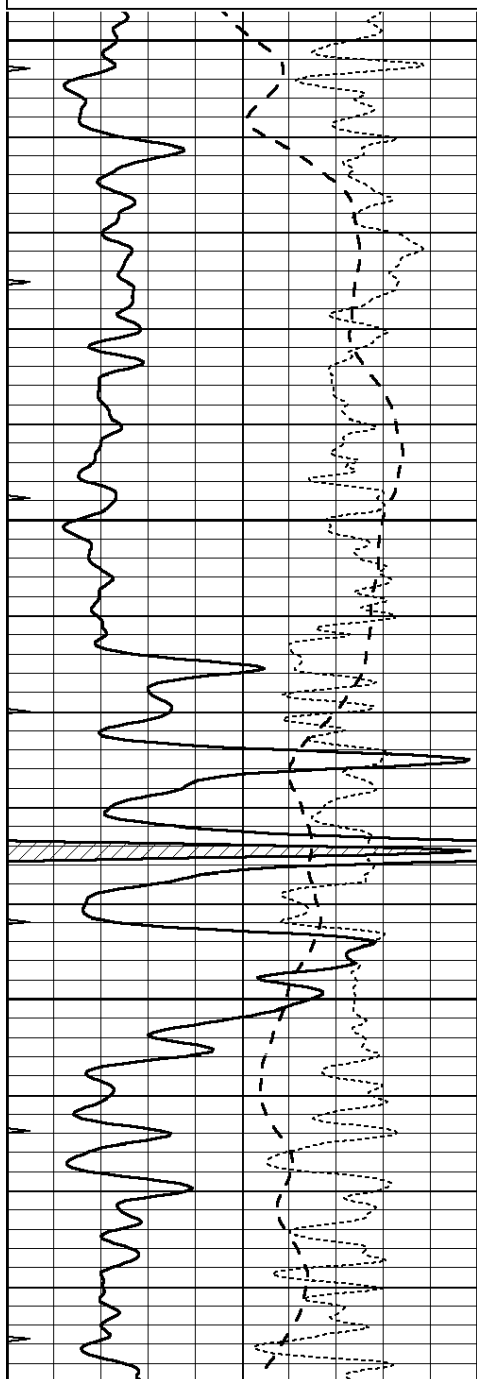
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REPEAT SECTION

Database File: 011191pe.db
Dataset Pathname: pass2.5
Presentation Format: _dil
Dataset Creation: Tue Jul 16 02:53:46 2013 by Calc SOC 120430
Charted by: Depth in Feet scaled 1:240

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-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

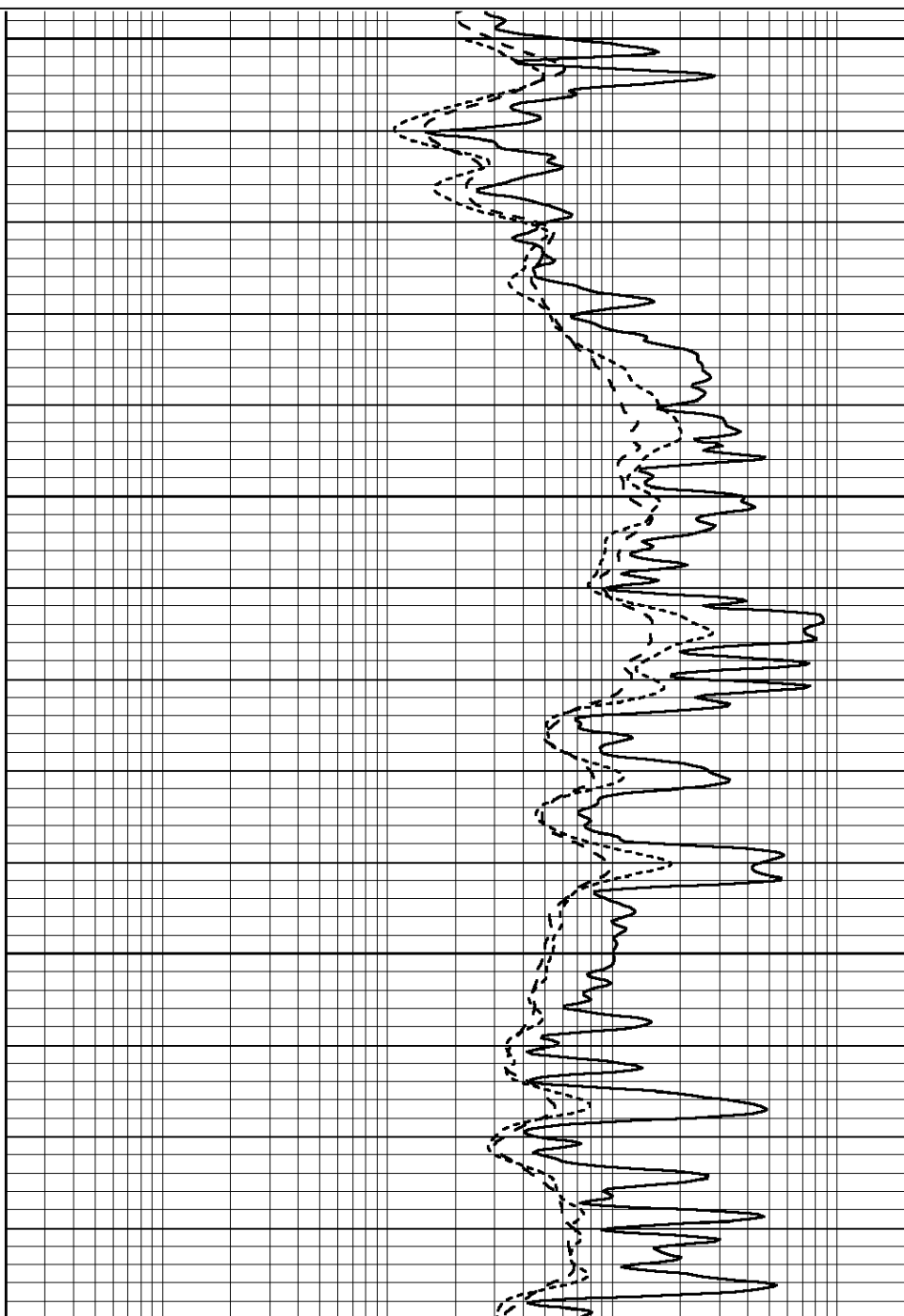
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000

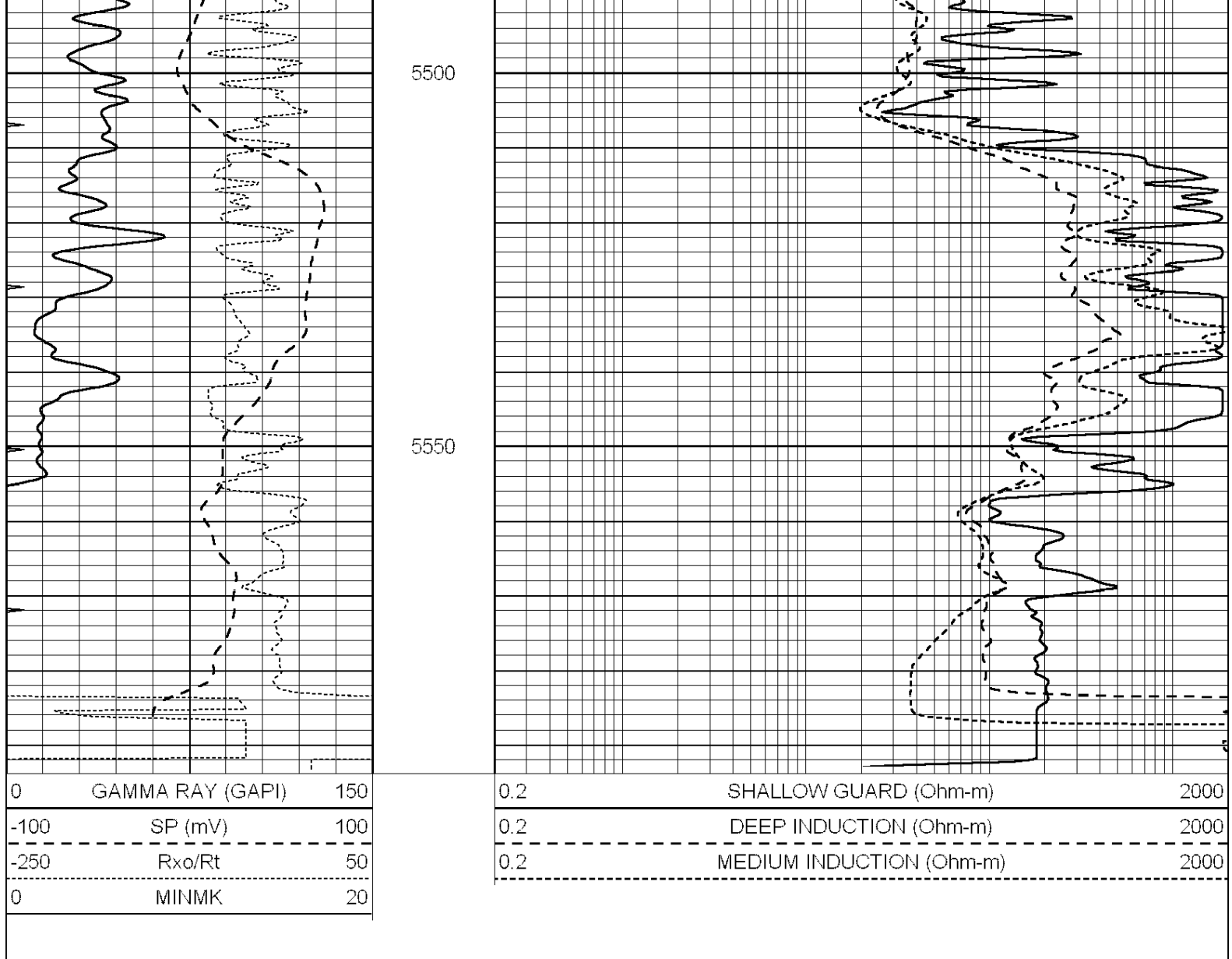


5350

5400

5450





Calibration Report

Database File: 011191pe.db
 Dataset Pathname: pass3.12
 Dataset Creation: Tue Jul 16 04:22:09 2013

Dual Induction Calibration Report

Serial-Model: PROBE9-DILG
 Surface Cal Performed: Thu Jul 11 13:14:55 2013
 Downhole Cal Performed: Mon Jul 28 12:02:56 2008
 After Survey Verification Performed: Mon Jul 28 12:02:56 2008

Surface Calibration

Loop:	Readings			References			Results	
	Air	Loop		Air	Loop		m	b
Deep	-0.014	0.629	V	0.000	400.000	mmho/m	621.923	-4.000
Medium	0.039	0.728	V	0.000	464.000	mmho/m	640.000	-9.000
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

Readings			Reference			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: 001			Model: PRB					

Master Calibration			Performed Tue May 28 08:54:22 2013					
	Background	Magnesium	Aluminum	Sandstone				
Window 1	1890.3	12786.5	4236.7	13497.2			cps	
Window 2	1764.1	11051.7	3765.5	11456.4			cps	
Window 3	1442.8	5894.4	2376.2	5911.4			cps	
Window 4	428.0	428.9	420.8	426.5			cps	
Long Space	0.0	9287.6	2001.3	9692.3			cps	
Short Space	3.2	3351.1	2186.8	3398.0			cps	
Rho		1.7100	2.5900	1.3800			g/cc	
Pe		0.0000	2.5700	1.5500				
Rib Angle	: 44.5	Rib Slope	: 0.981	Density/Spine Ratio			: 0.552	
Spine Angle	: 74.5	Spine Slope	: 3.596	Spine Intercept			: -20.1	

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:		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	