



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

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

Company		MULL DRILLING COMPANY, INC.	
Well		HOFFMAN-BUSBY #1-24	
Field			
County		CHEYENNE	State
State		COLORADO	
Location:		API # : 05-061-07720-00-00 1500' FNL & 660' FEL SE/4 - NE/4	
Permanent Datum		GROUND LEVEL	
Log Measured From		KELLY BUSHING 11' A.G.L.	
Drilling Measured From		KELLY BUSHING	
SEC 24 TWP 14S RGE 45W		Elevation K.B. 4307 D.F. 4305 G.L. 4296	
Date	9/21/12		
Run Number	ONE		
Depth Driller	5600		
Depth Logger	5598		
Bottom Logged Interval	5596		
Top Log Interval	0		
Casing Driller	13 3/8" @ 474		
Casing Logger	476		
Bit Size	7 7/8		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 2,700 PPM	
Density / Viscosity	9.3/57		
pH / Fluid Loss	10.0/6.4		
Source of Sample	FLOWLINE		
Rim @ Meas. Temp	1.00 @ 106F		
Rmf @ Meas. Temp	0.75 @ 106F		
Rmc @ Meas. Temp	1.20 @ 106F		
Source of Rmf / Rmc	MEASURED		
Rim @ BHT	0.82 @ 130F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom			
Maximum Recorded Temperature	130F		
Equipment Number	680		
Location	HAYS, KS.		
Recorded By	JEFF GRONEMEG		
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.

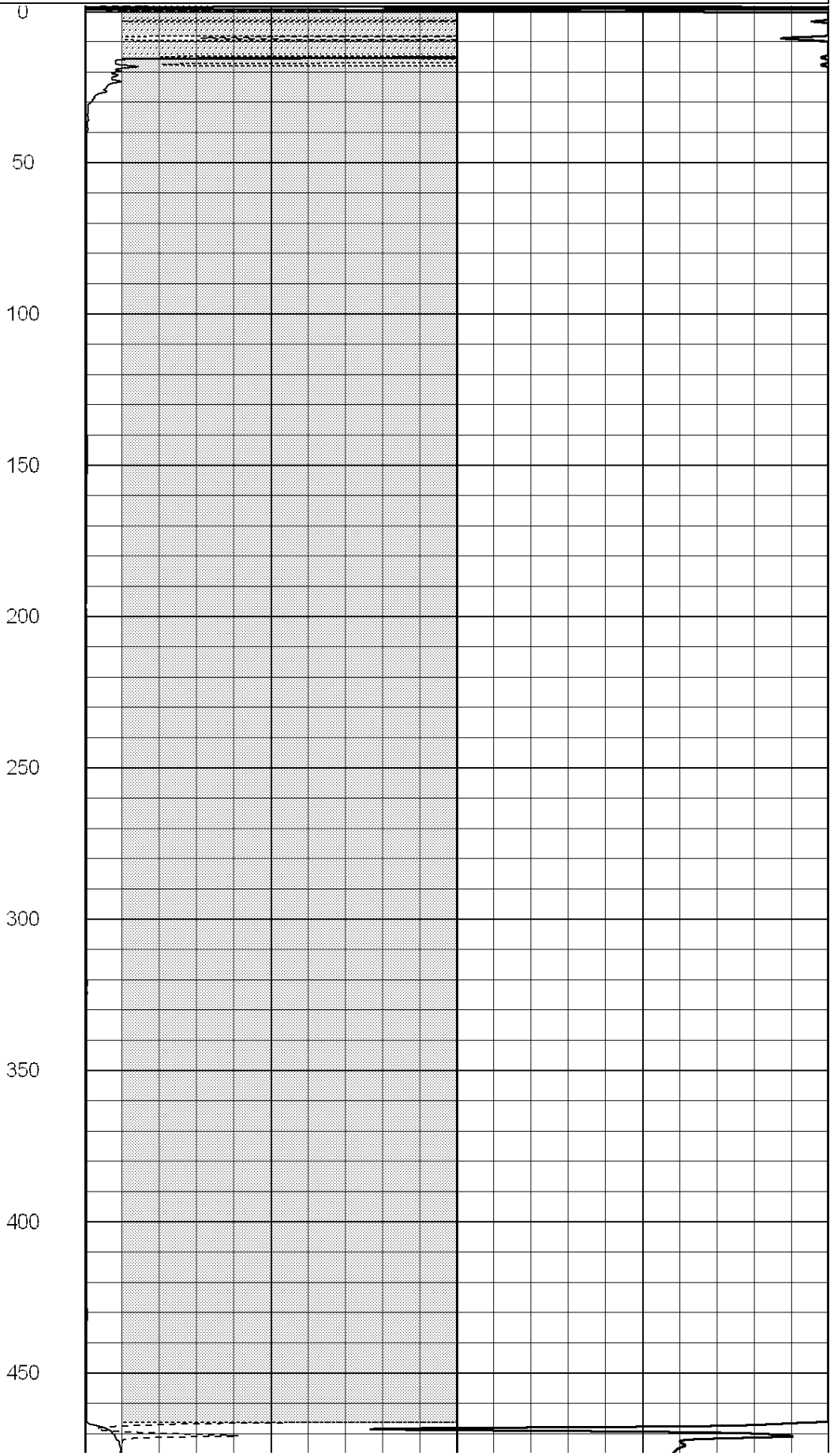
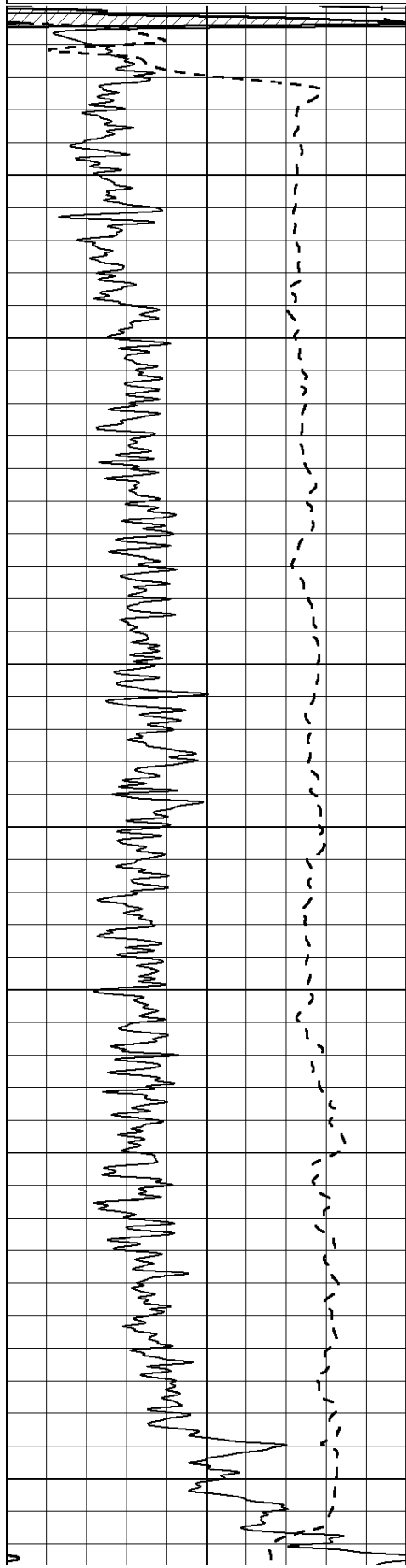
Comments

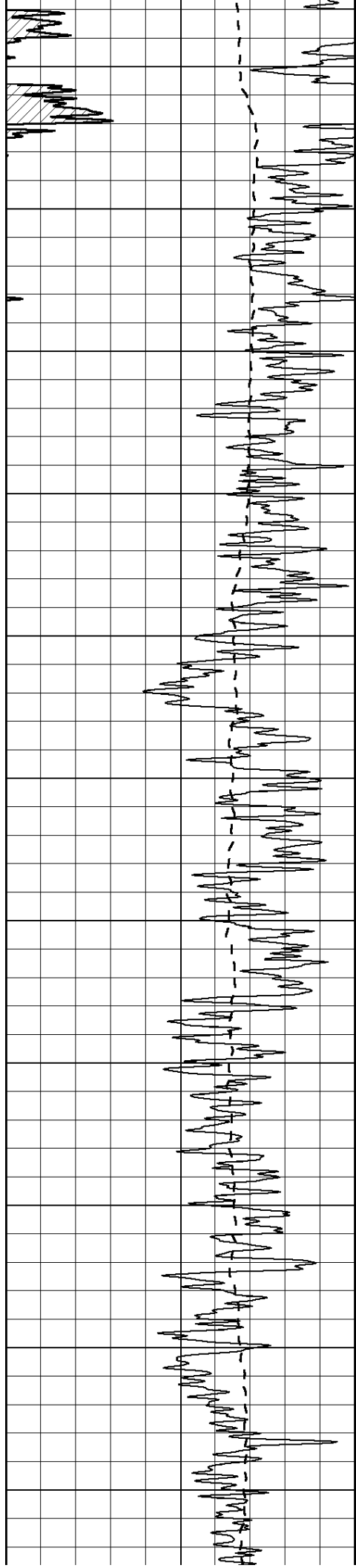
THANK YOU FOR USING SUPERIOR WELL SERVICE (785) 628-6395  
DIRECTIONS  
CHEYENNE WELLS, CO - 1 1/2 MILES WEST TO CR 42 - 1/2 MILE NORTH - WEST INTO

Database File: 009734pe.db  
Dataset Pathname: pass3.3  
Presentation Format: \_dil2  
Dataset Creation: Fri Sep 21 04:01:42 2012 by Calc Open-Cased 090629  
Charted by: Depth in Feet scaled 1:600

0	Gamma Ray (GAPI)	150
-100	SP (mV)	100
<hr style="border-top: 1px dashed black;"/>		

0	RLL3 (Ohm-m)	50
0	Deep Induction (Ohm-m)	50
<hr style="border-top: 1px dashed black;"/>		
1000	CILD (mmho/m)	0
50	RILD X10 (Ohm-m)	500
50	RLL3 X10 (Ohm-m)	500





500

550

600

650

700

750

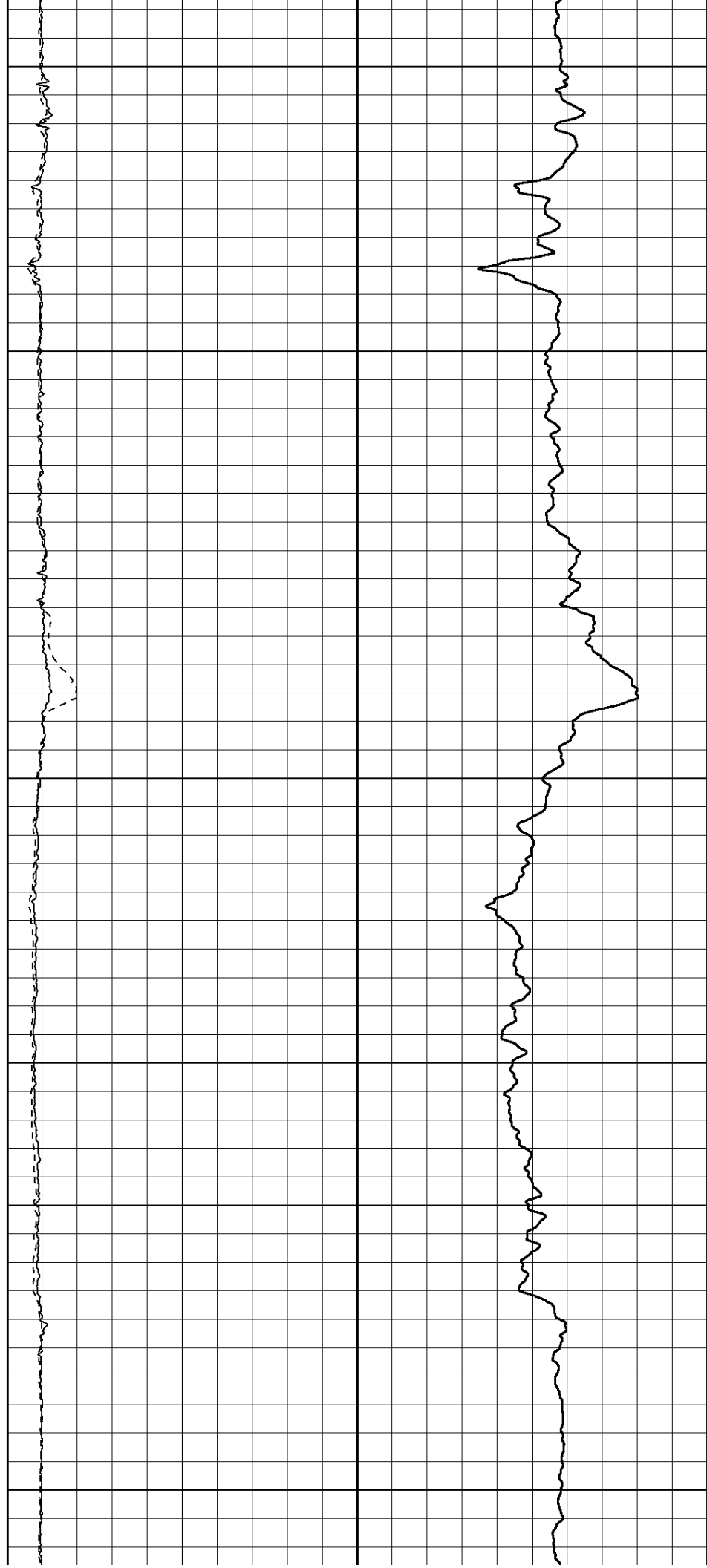
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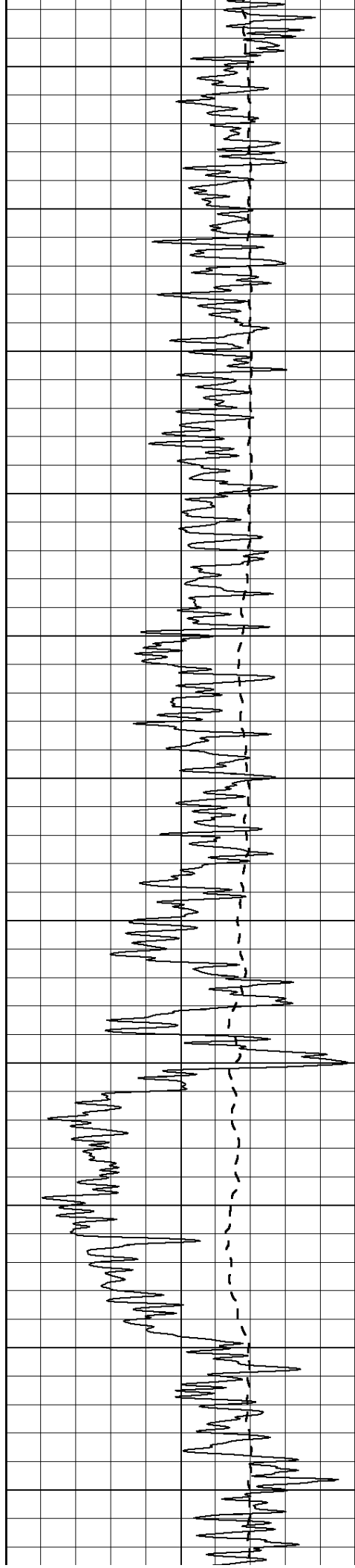
850

900

950

1000





1050

1100

1150

1200

1250

1300

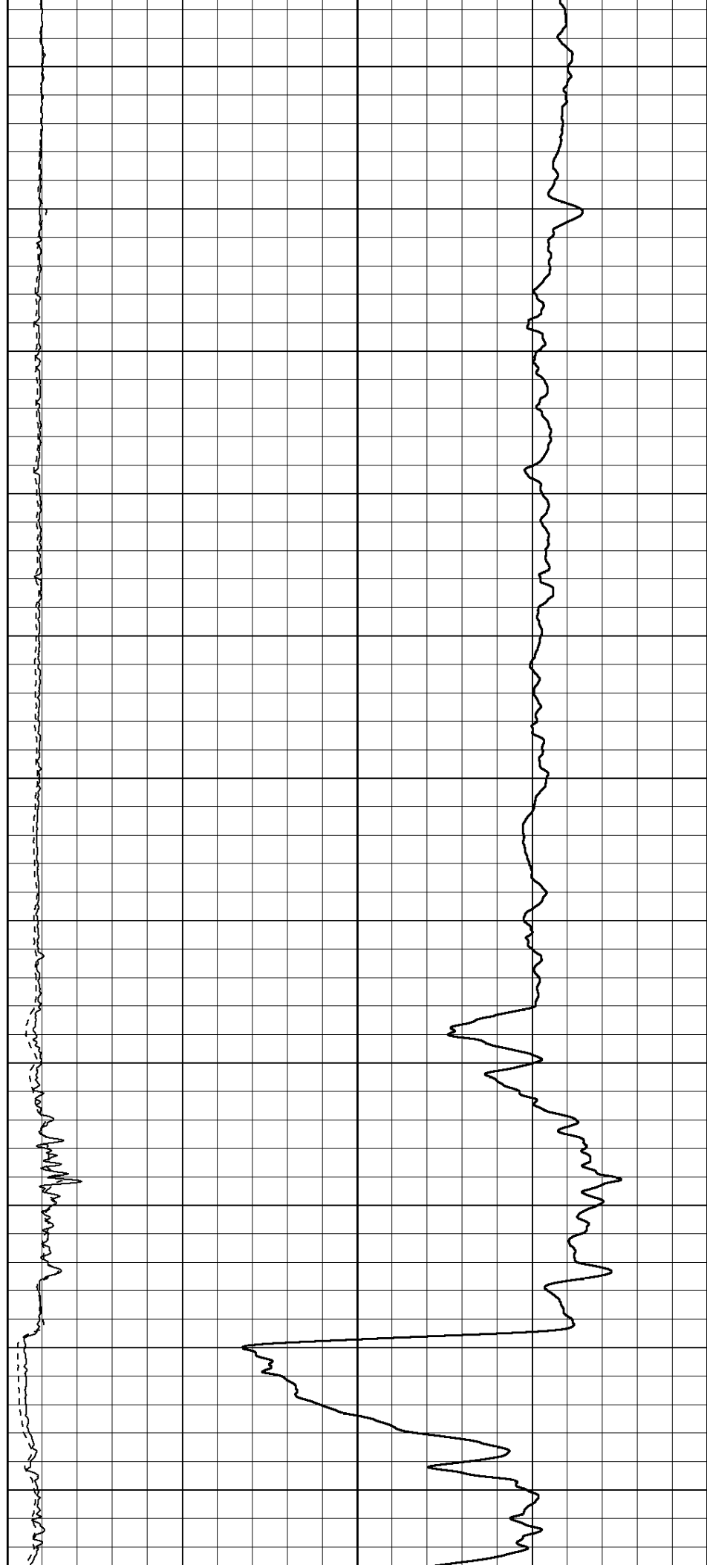
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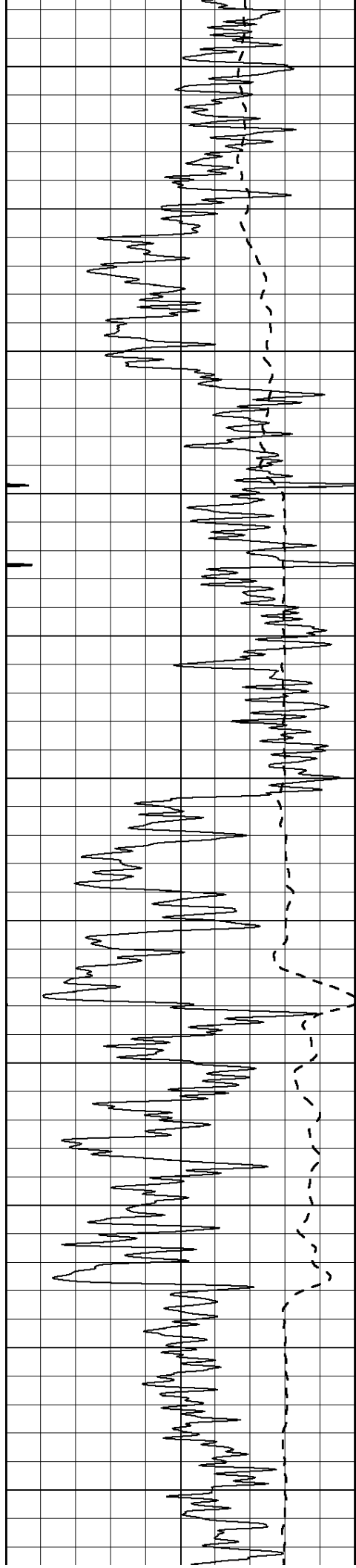
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1450

1500

1550





1600

1650

1700

1750

1800

1850

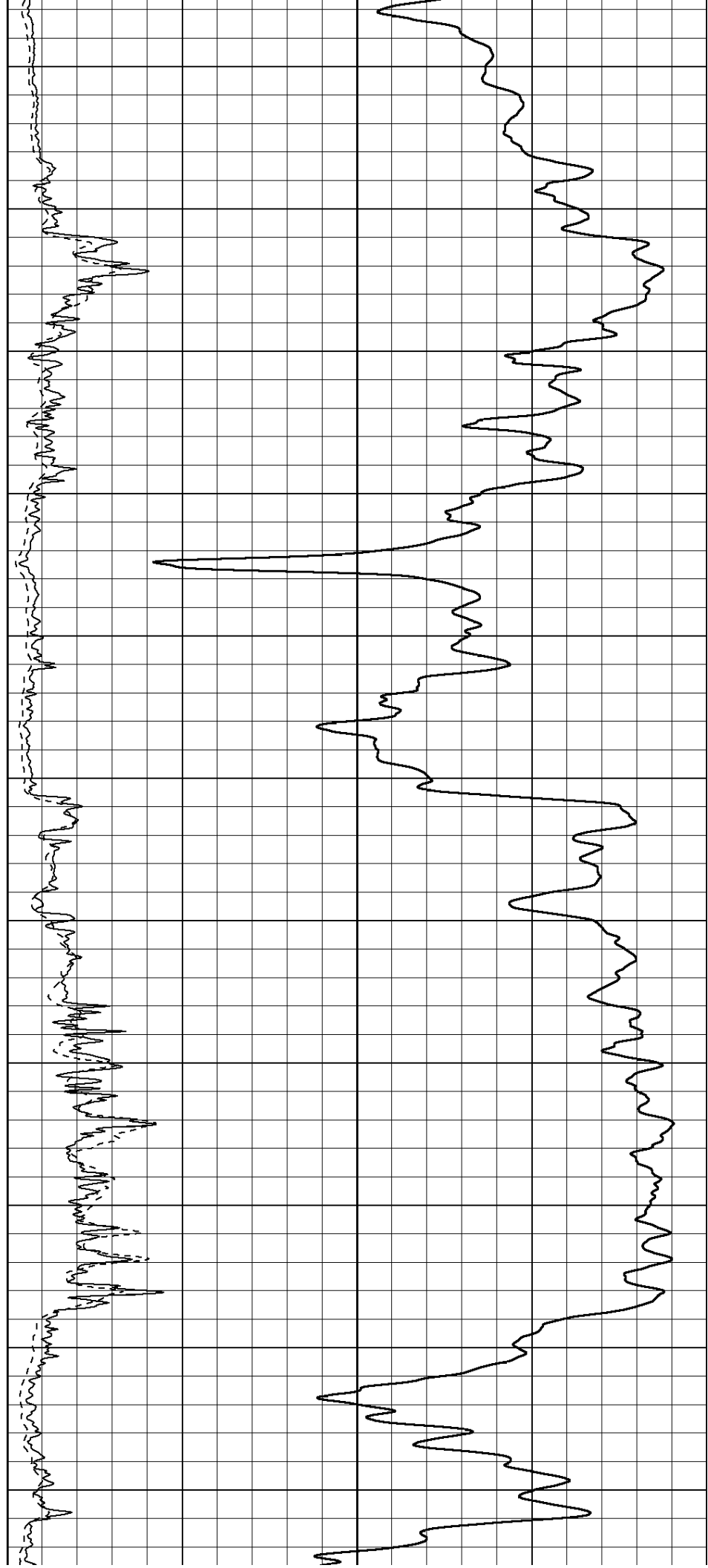
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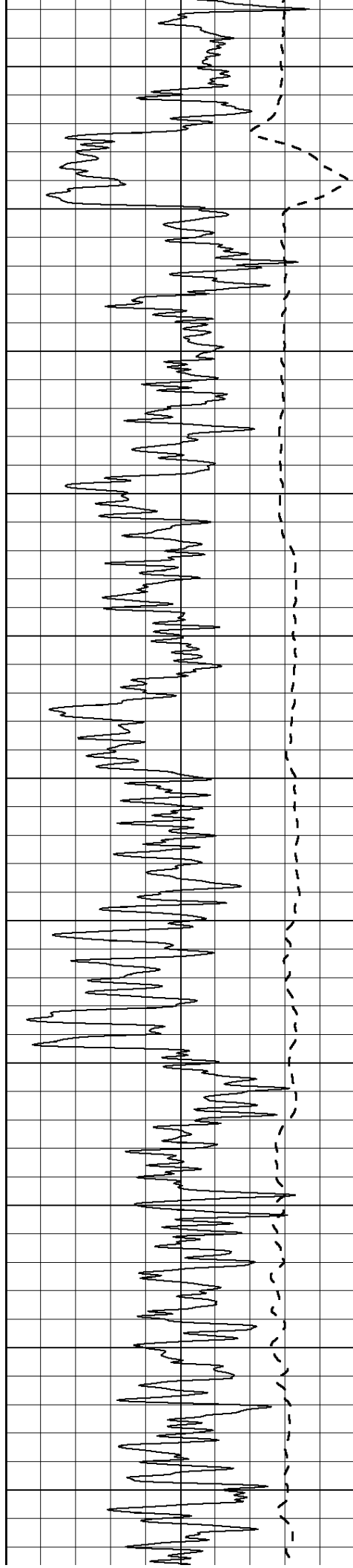
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2000

2050

2100





2150

2200

2250

2300

2350

2400

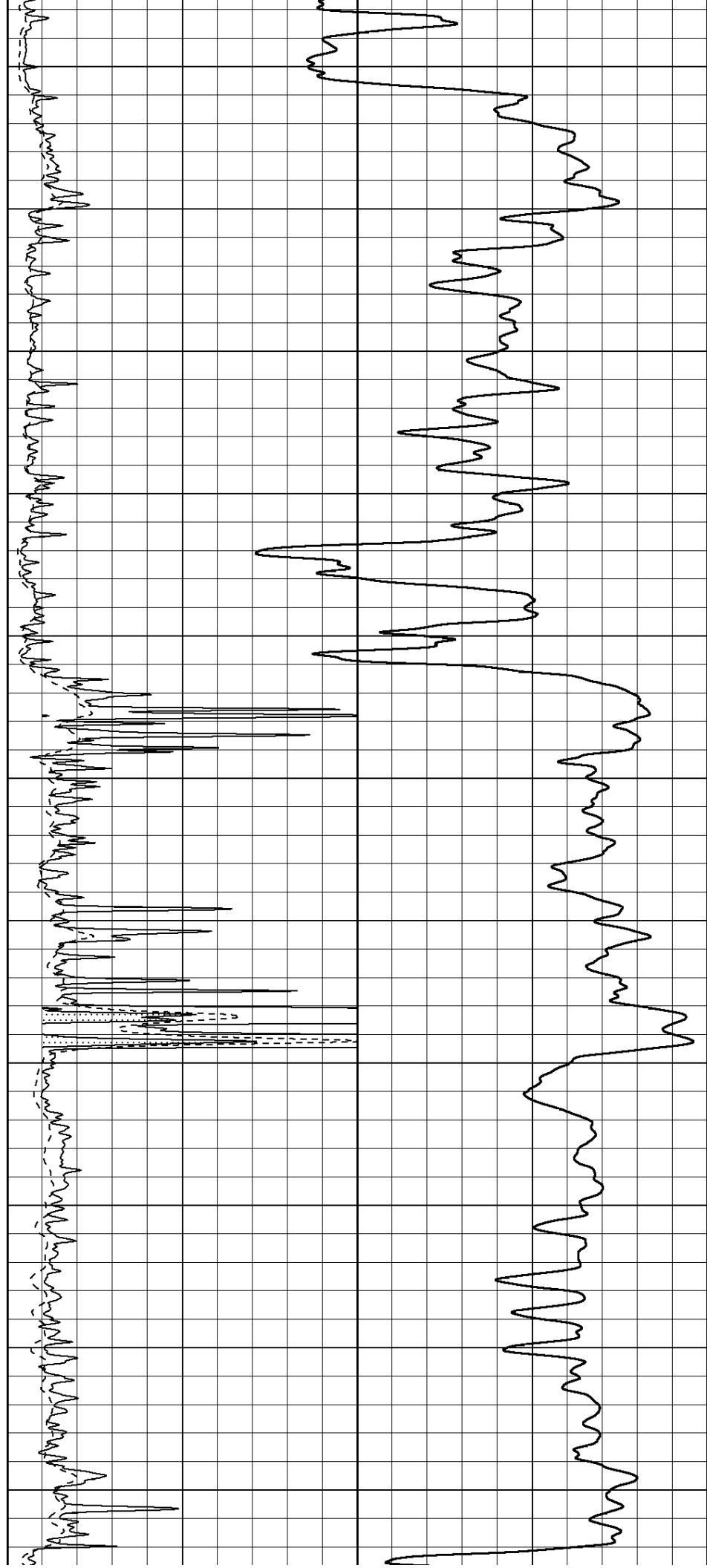
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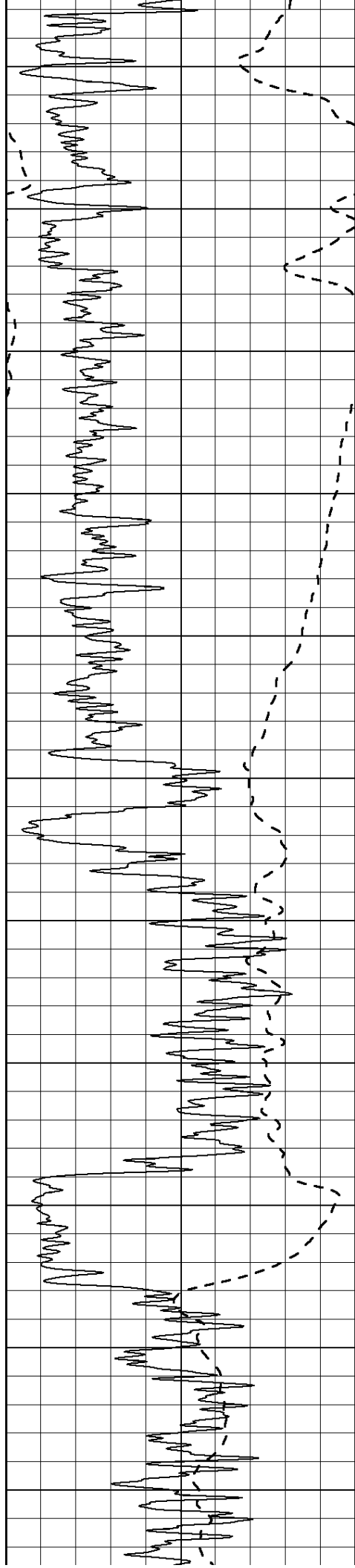
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2550

2600

2650





2700

2750

2800

2850

2900

2950

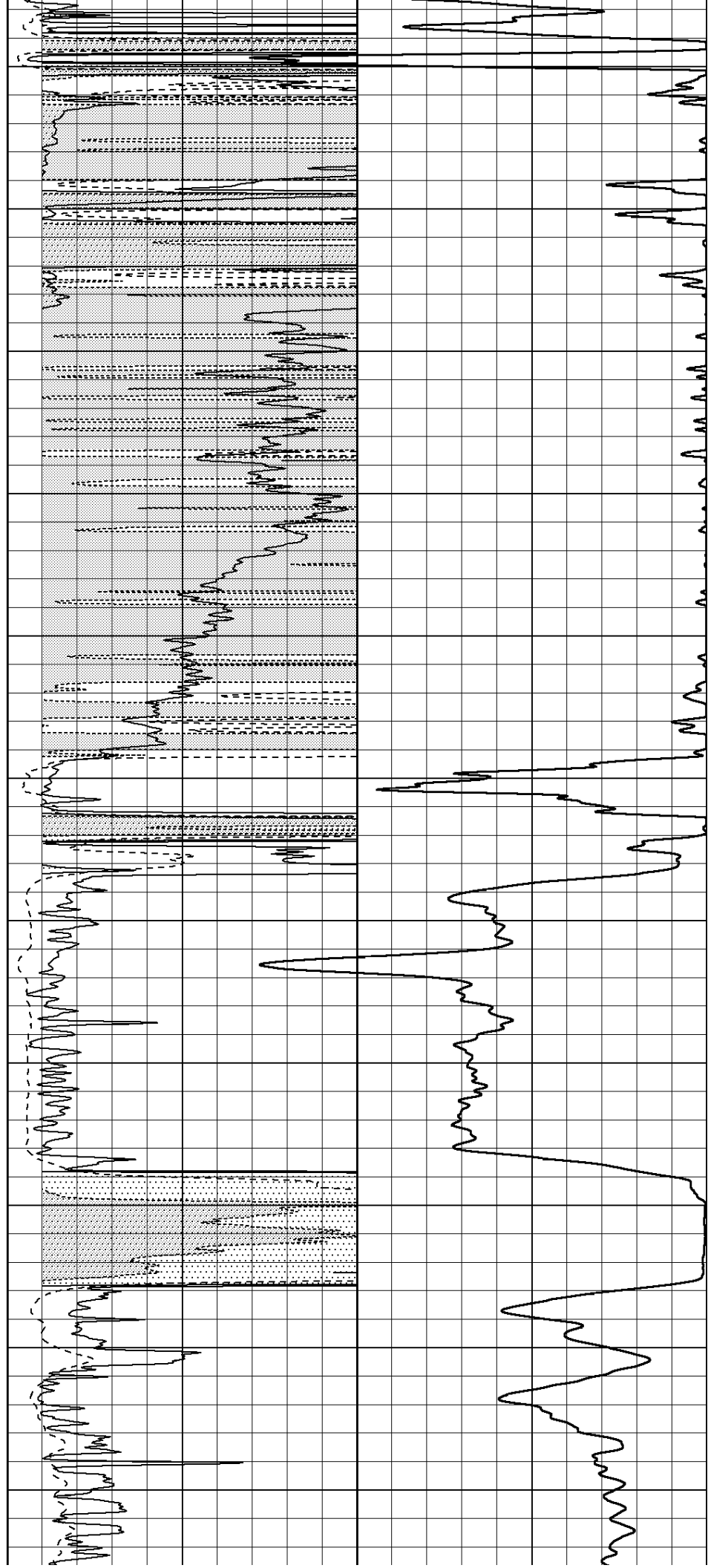
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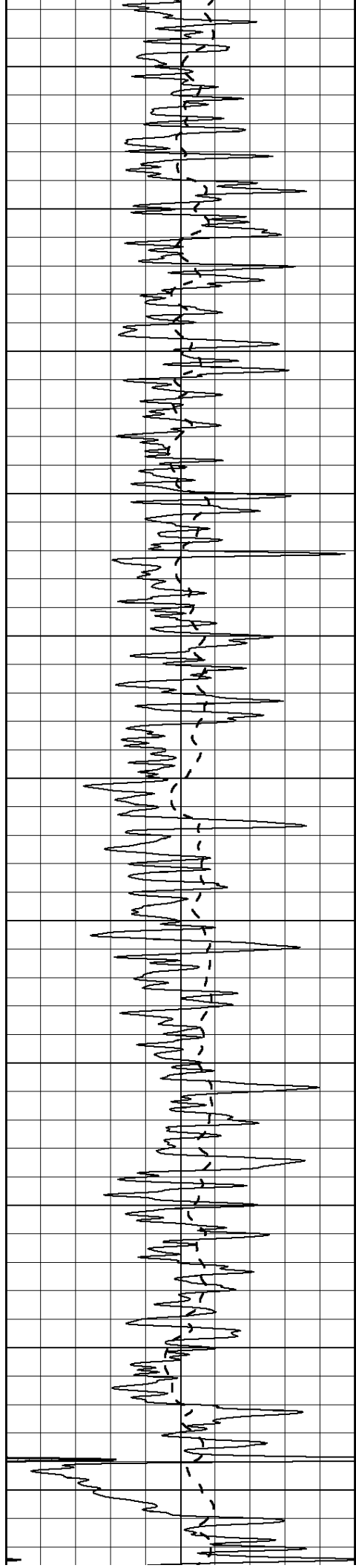
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3100

3150

3200





3250

3300

3350

3400

3450

3500

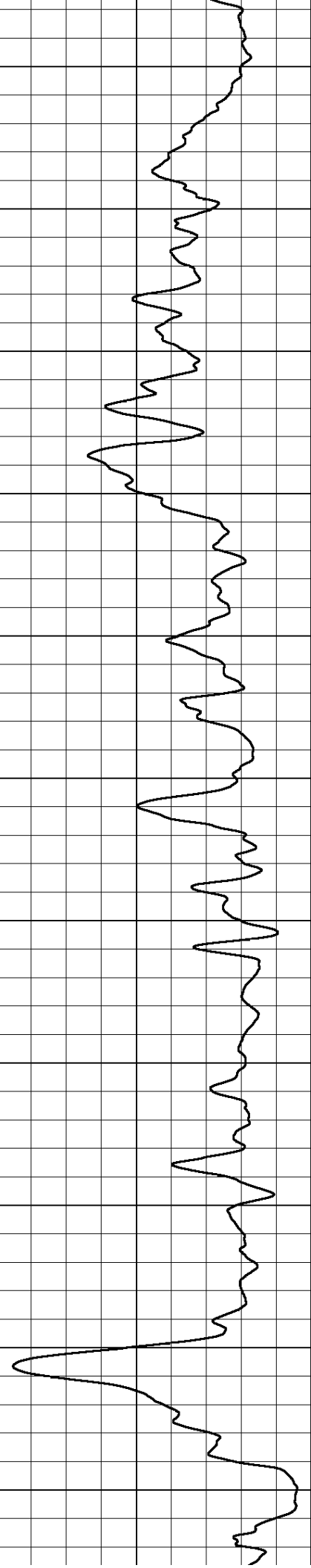
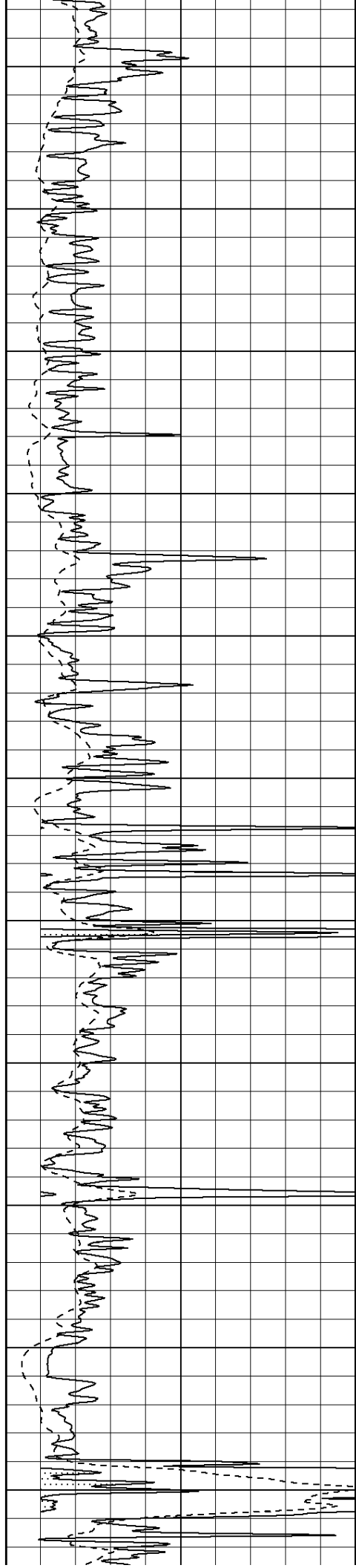
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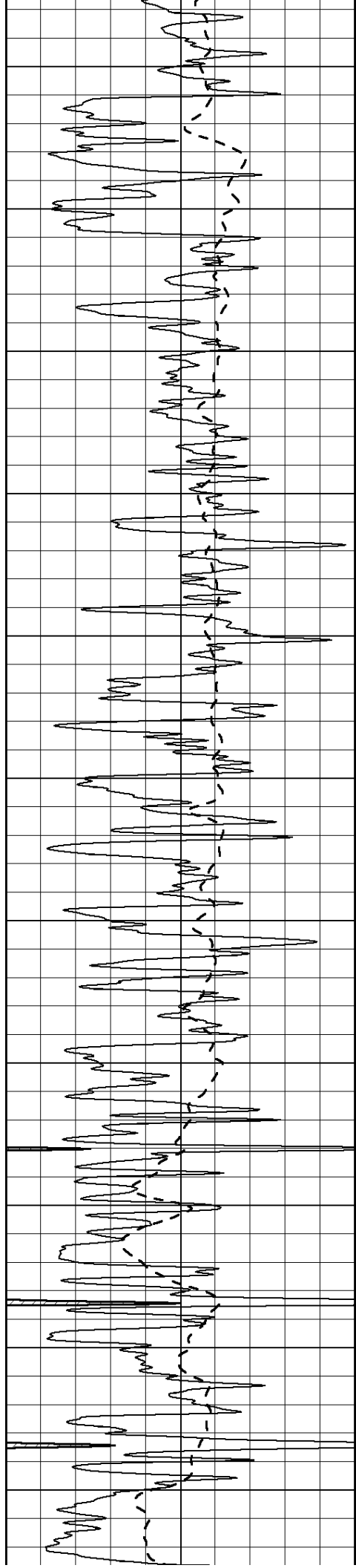
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3700

3750







3800

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3900

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4000

4050

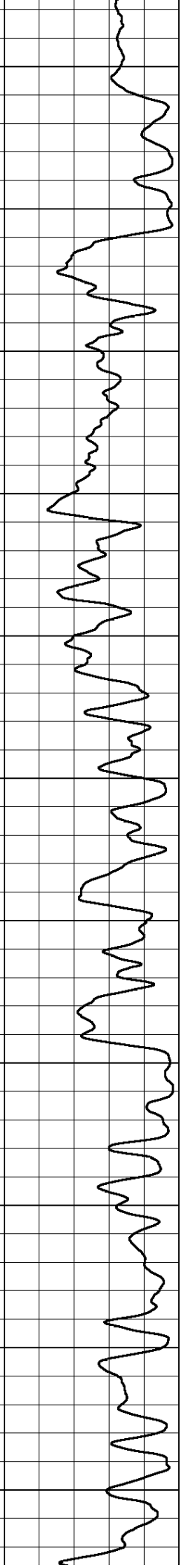
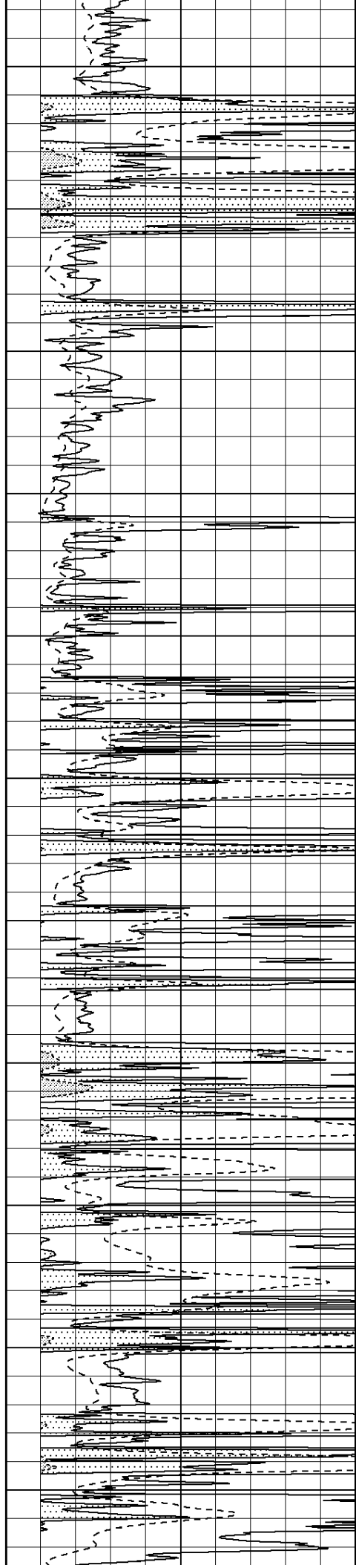
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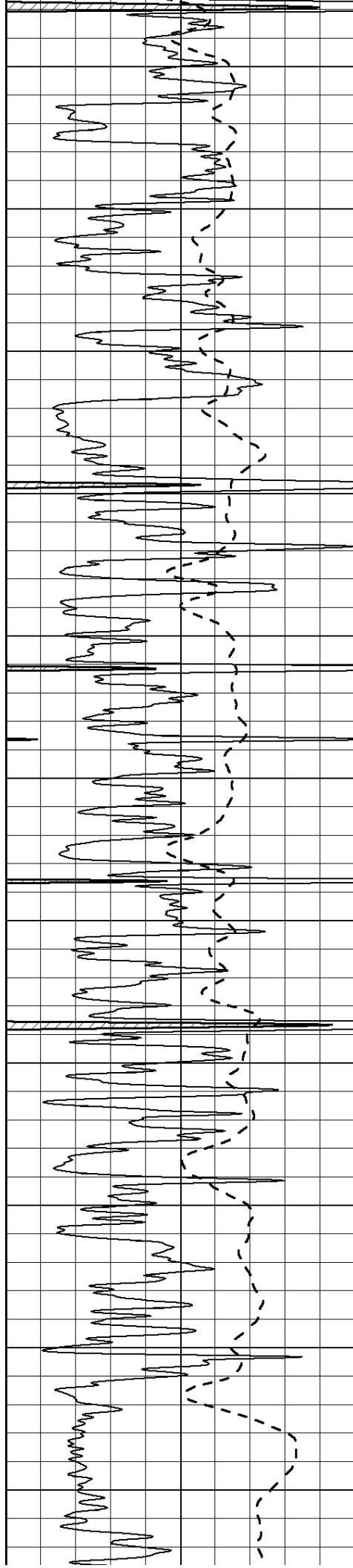
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4200

4250

4300





4350

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4500

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4600

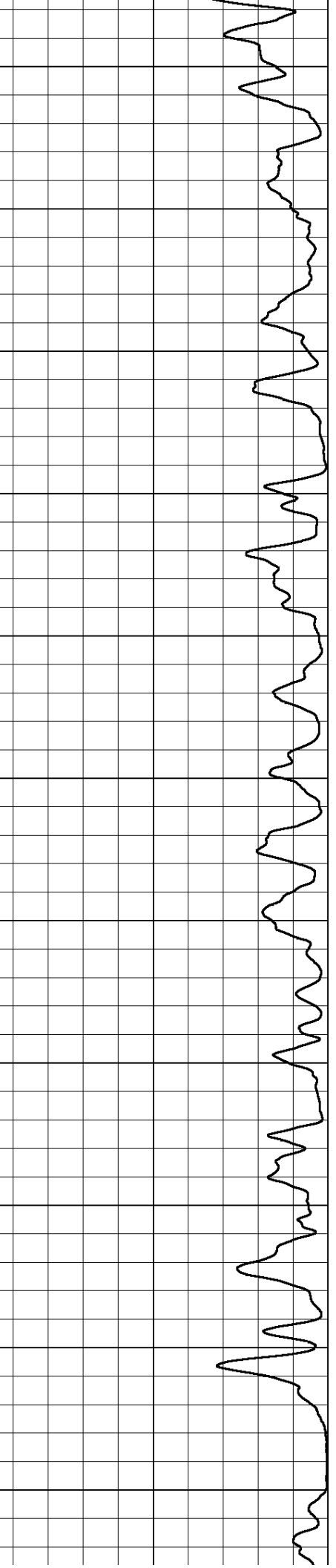
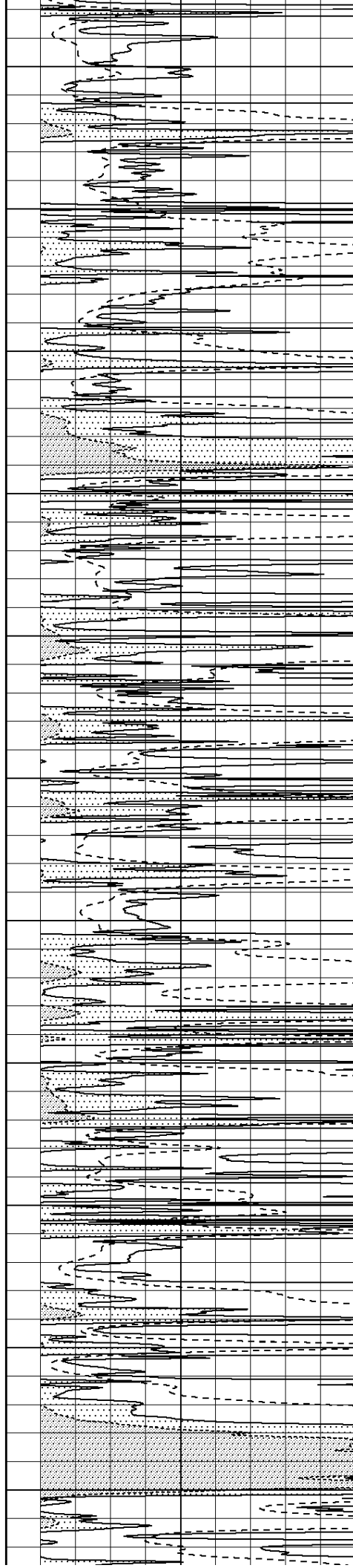
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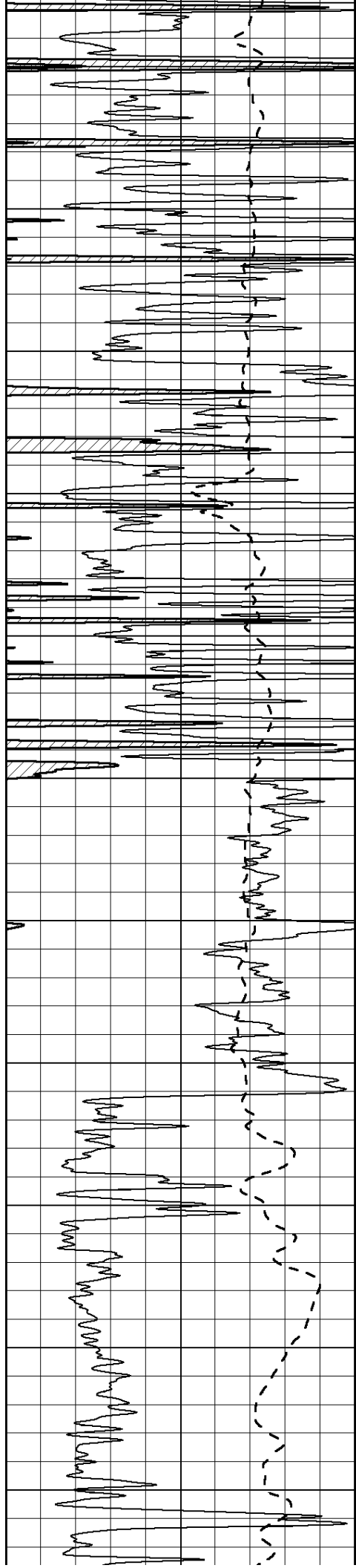
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4850





4900

4950

5000

5050

5100

5150

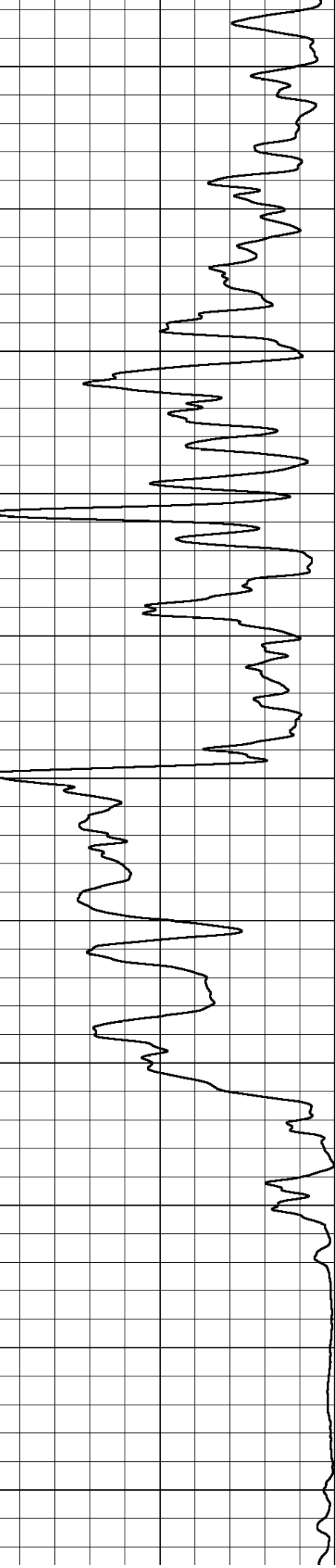
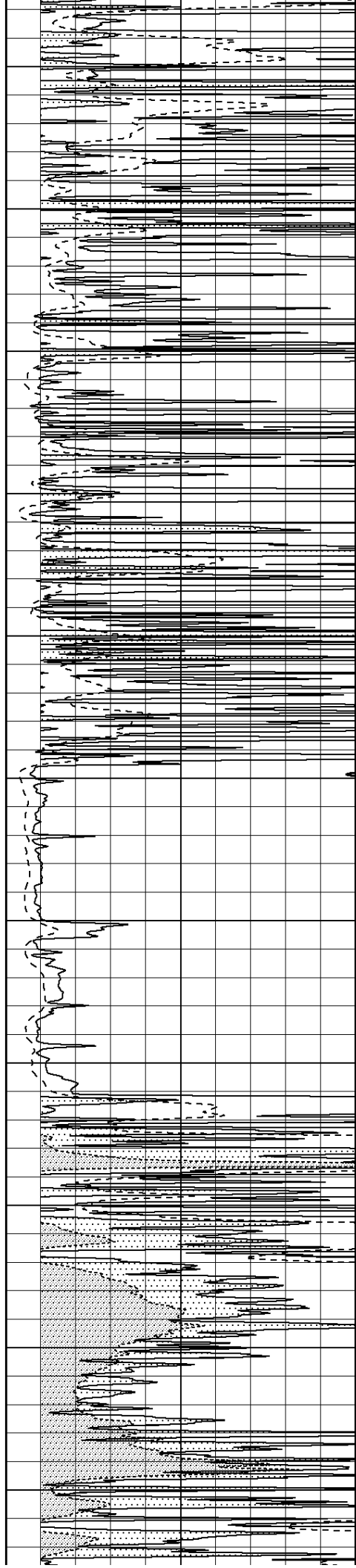
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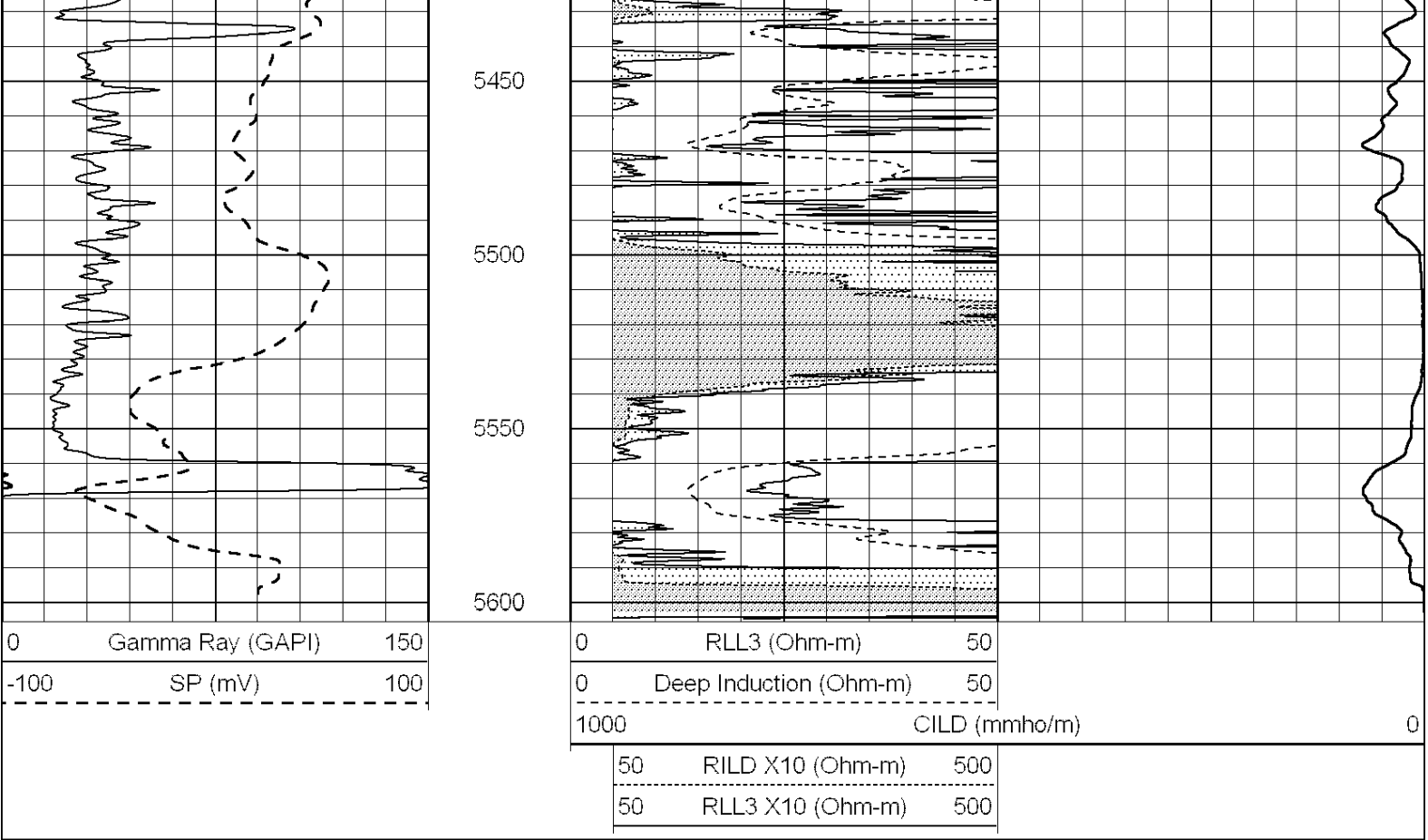
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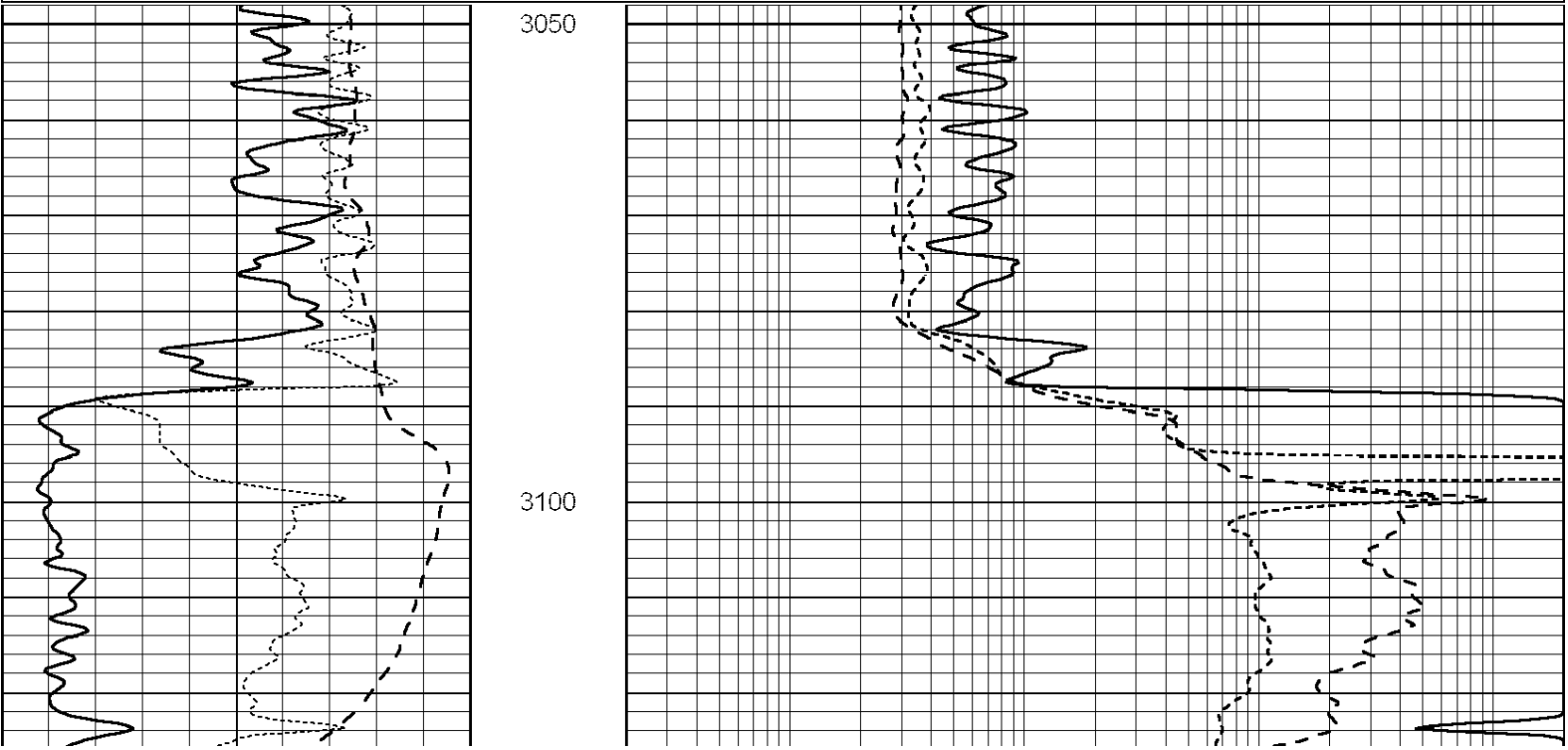
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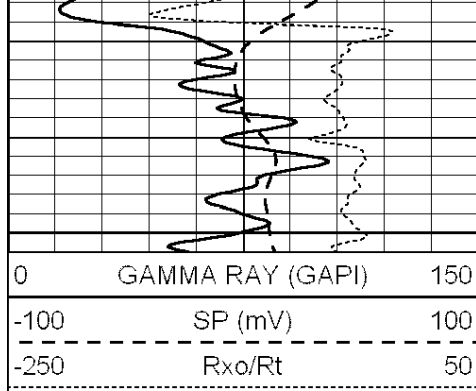




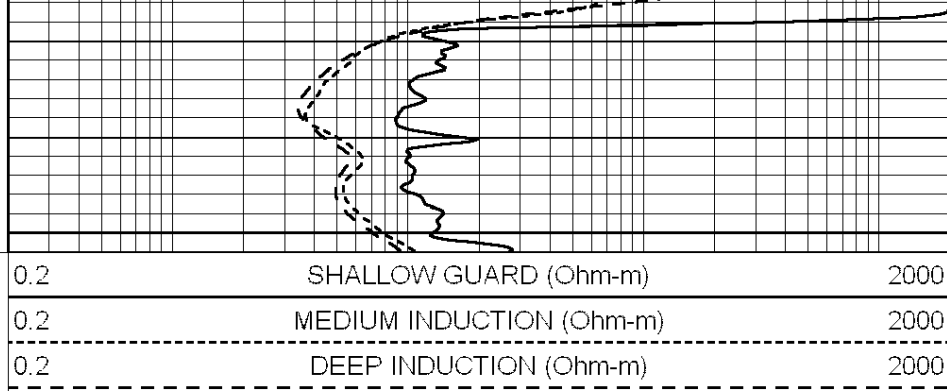
Database File:	009734pe.db
Dataset Pathname:	pass3.3
Presentation Format:	_dil
Dataset Creation:	Fri Sep 21 04:01:42 2012 by Calc Open-Cased 090629
Charted by:	Depth in Feet scaled 1:240

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

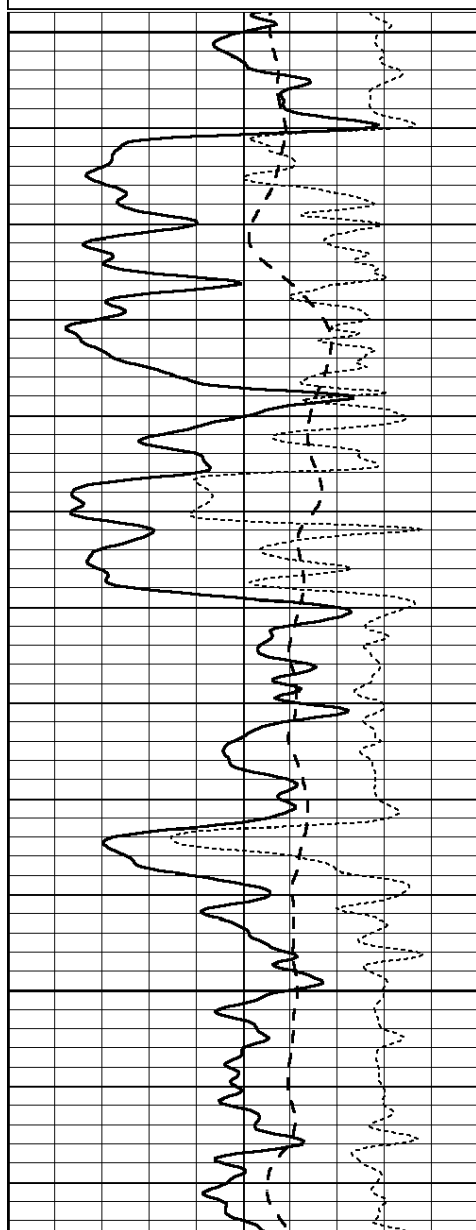
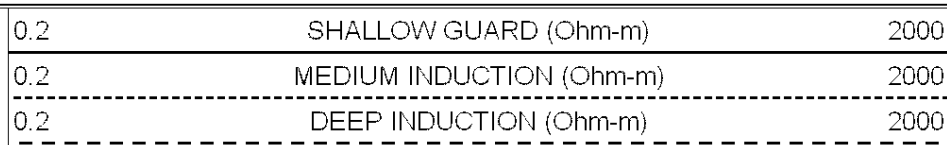
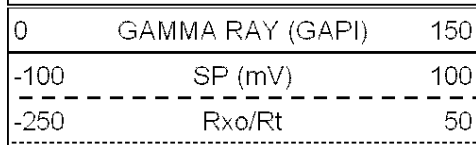




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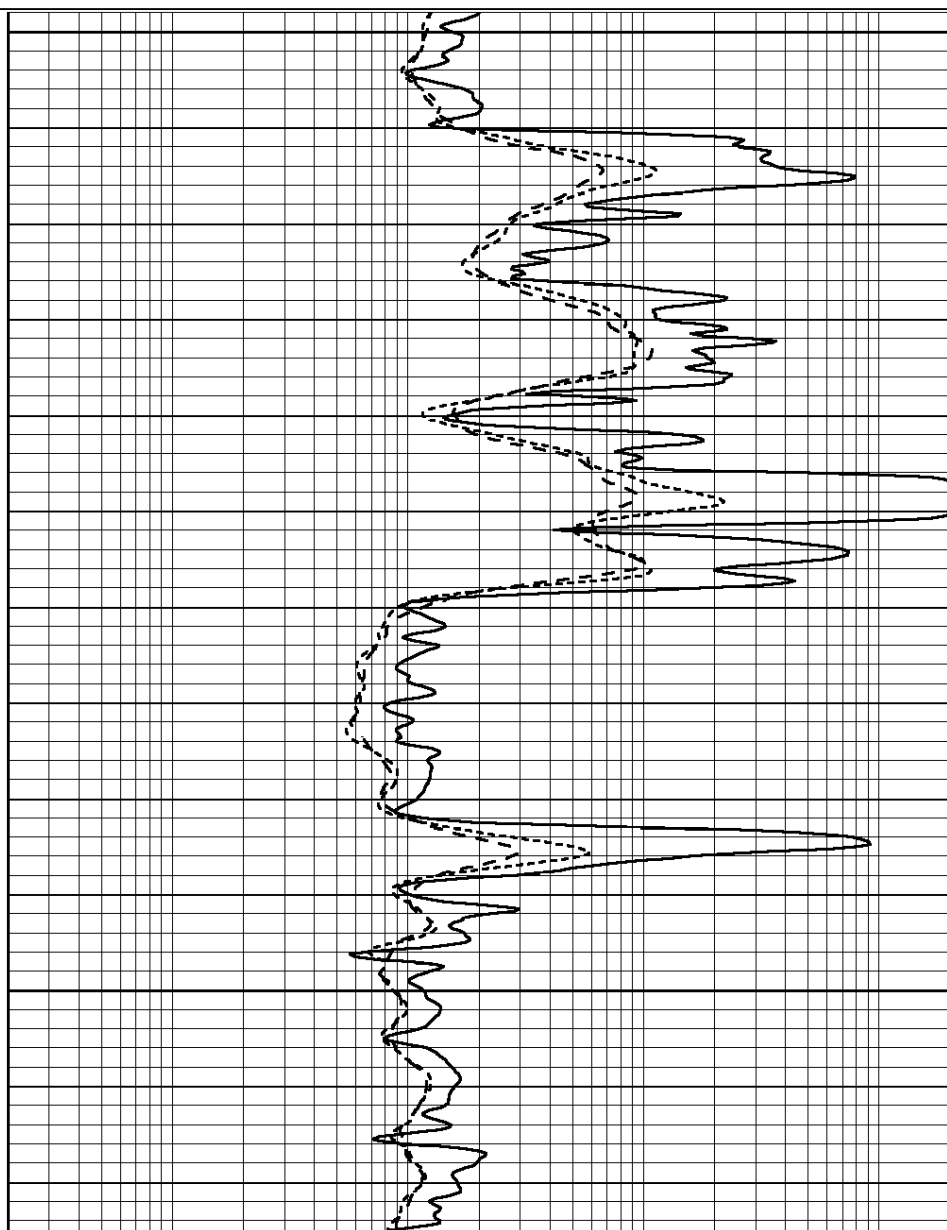
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 Dataset Pathname: pass3.2  
 Presentation Format: \_dil  
 Dataset Creation: Fri Sep 21 02:17:45 2012 by Calc Open-Cased 090629  
 Charted by: Depth in Feet scaled 1:240

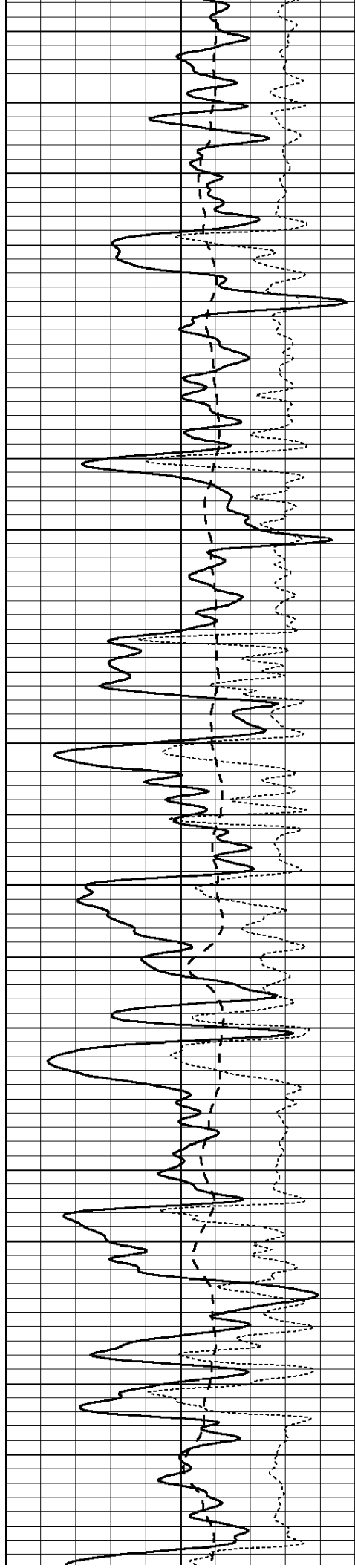


3800

3850

3900



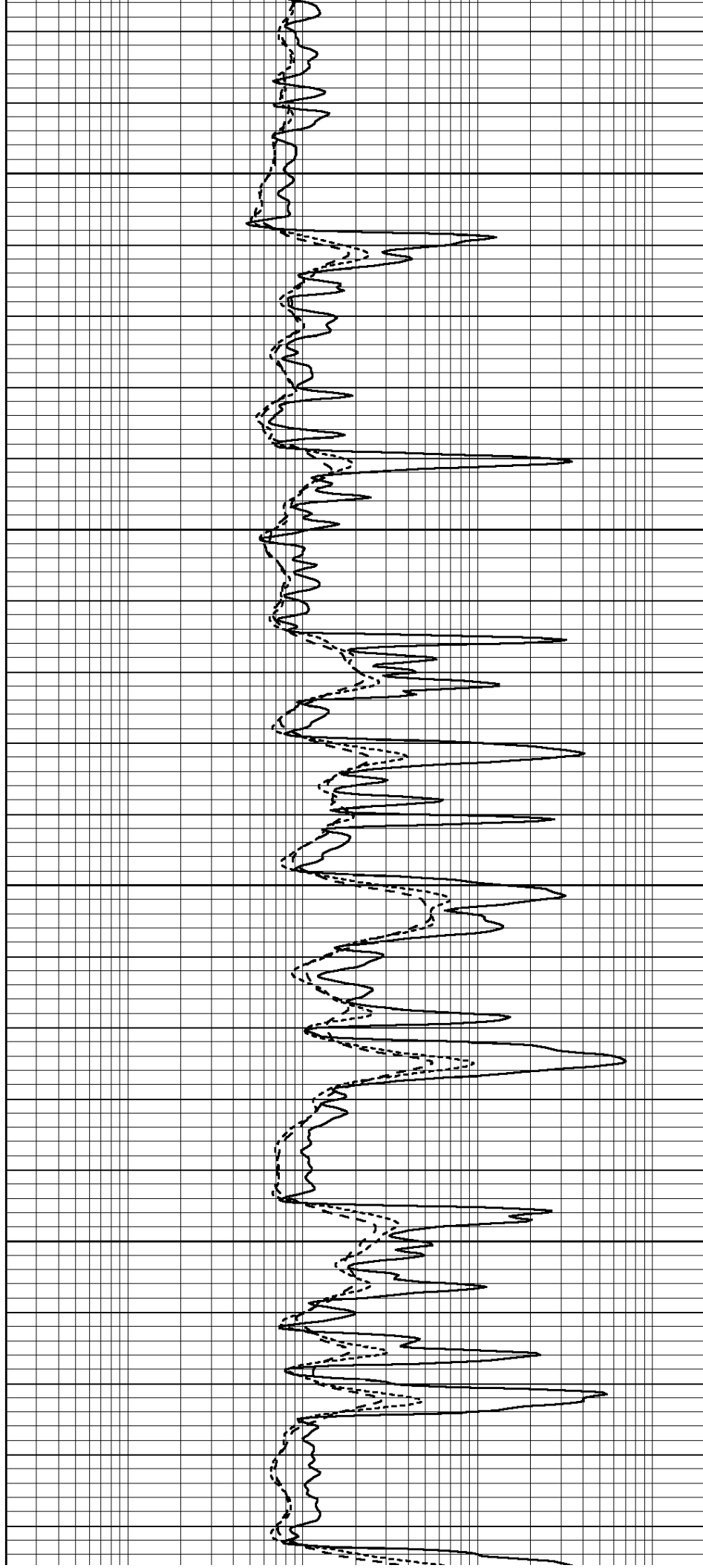


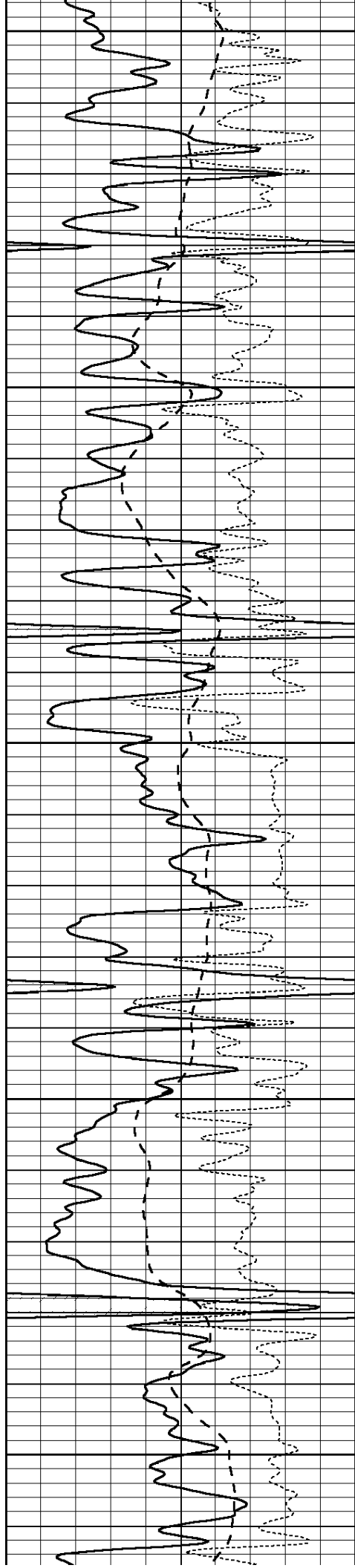
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4000

4050

4100





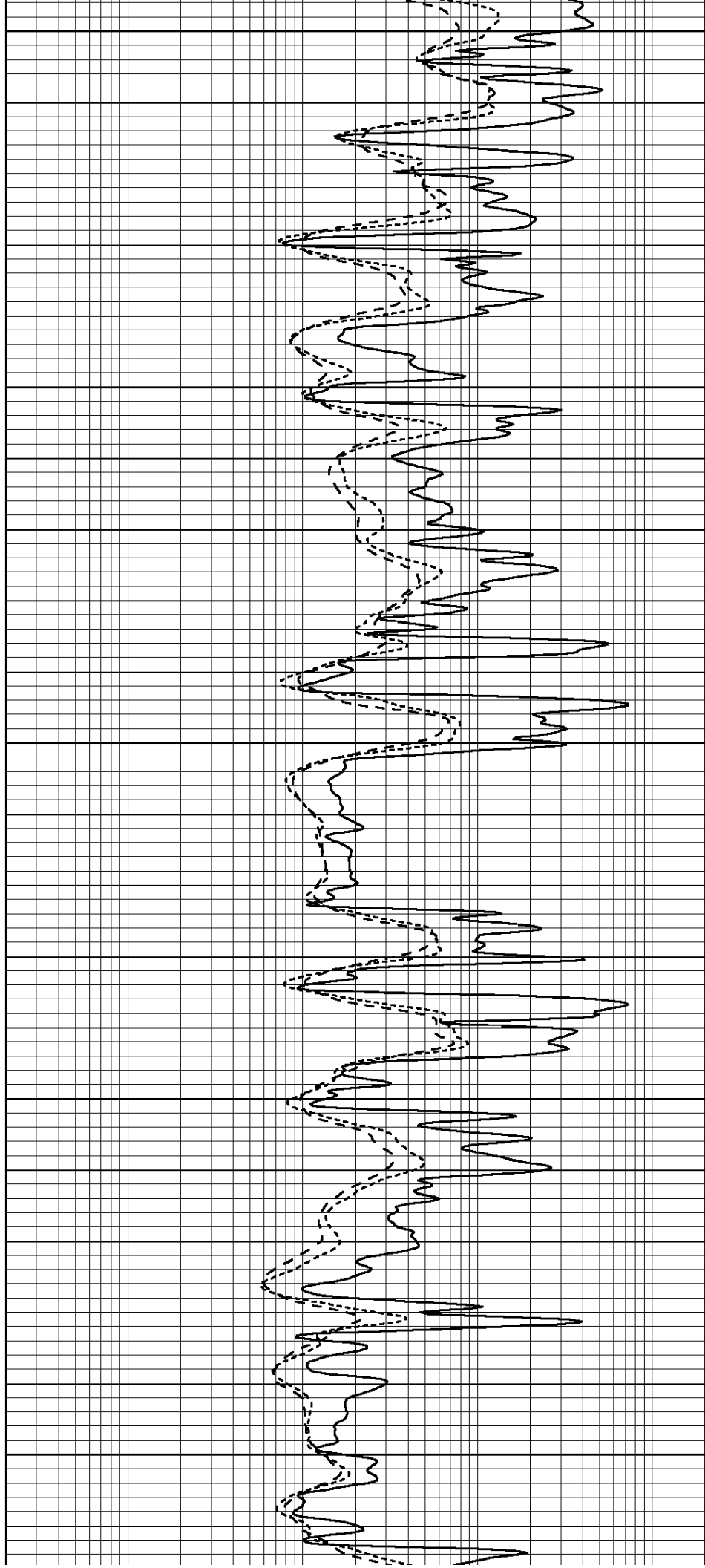
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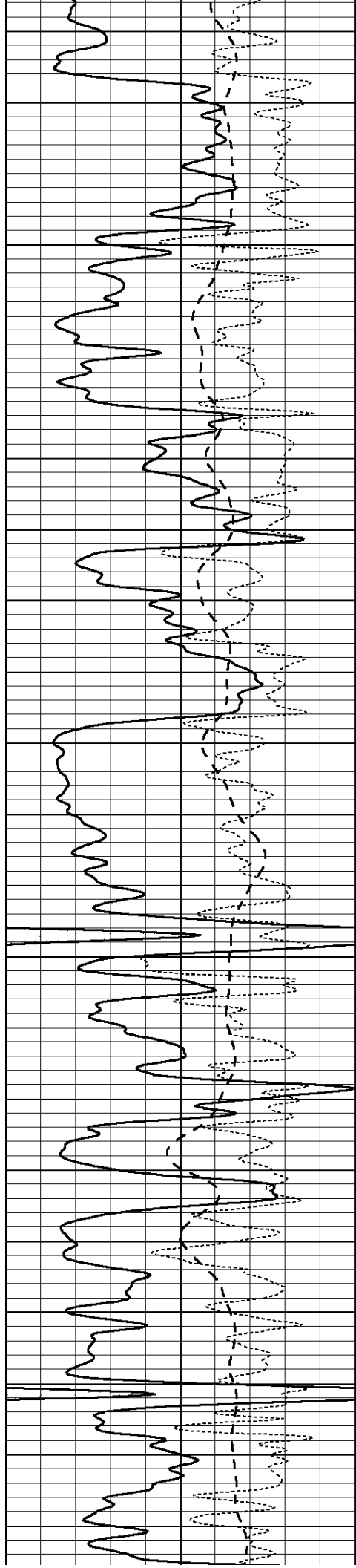
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4250

4300

4350



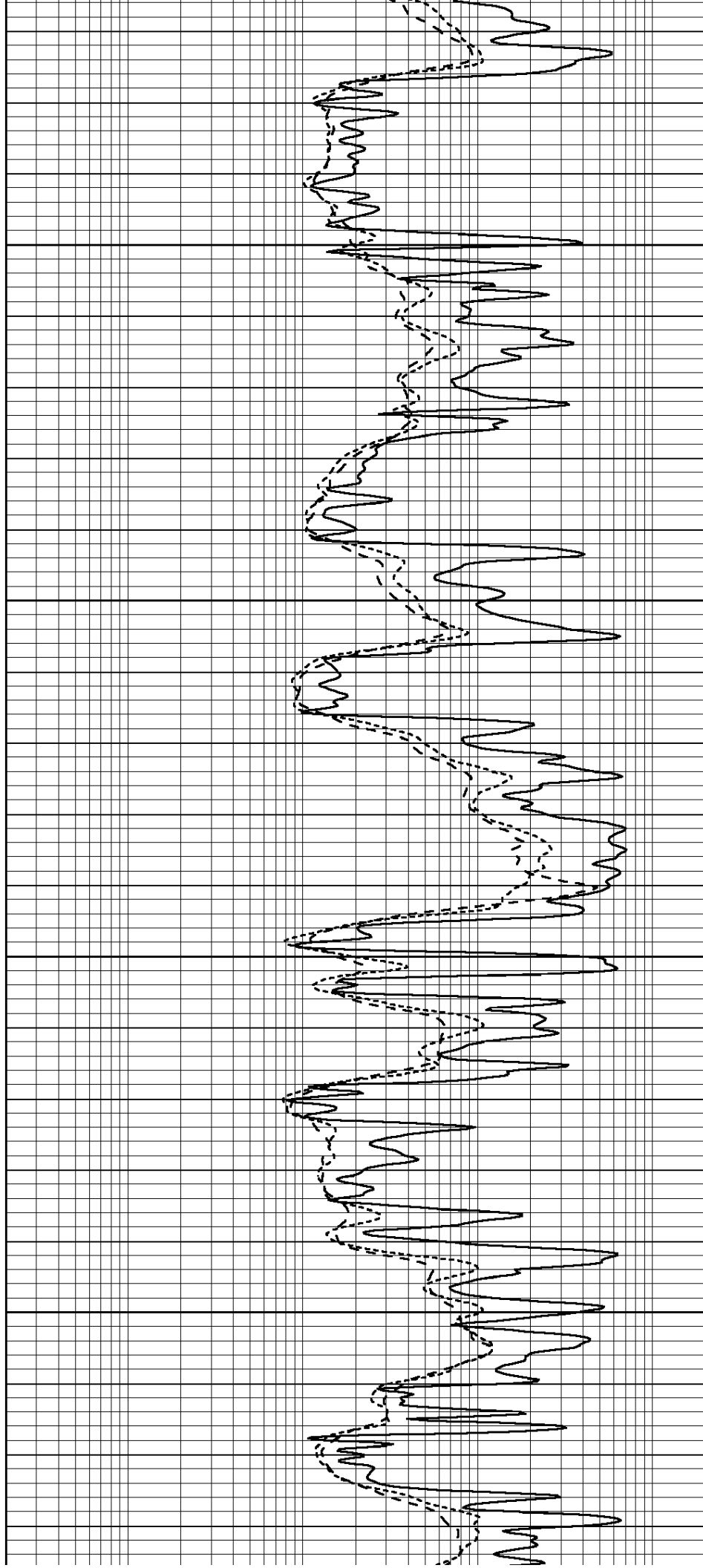


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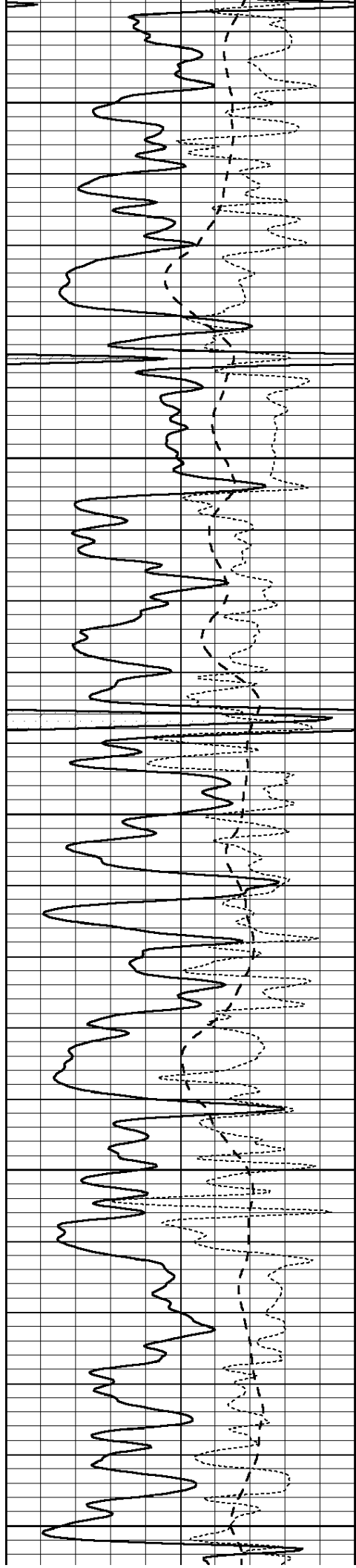
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4500

4550







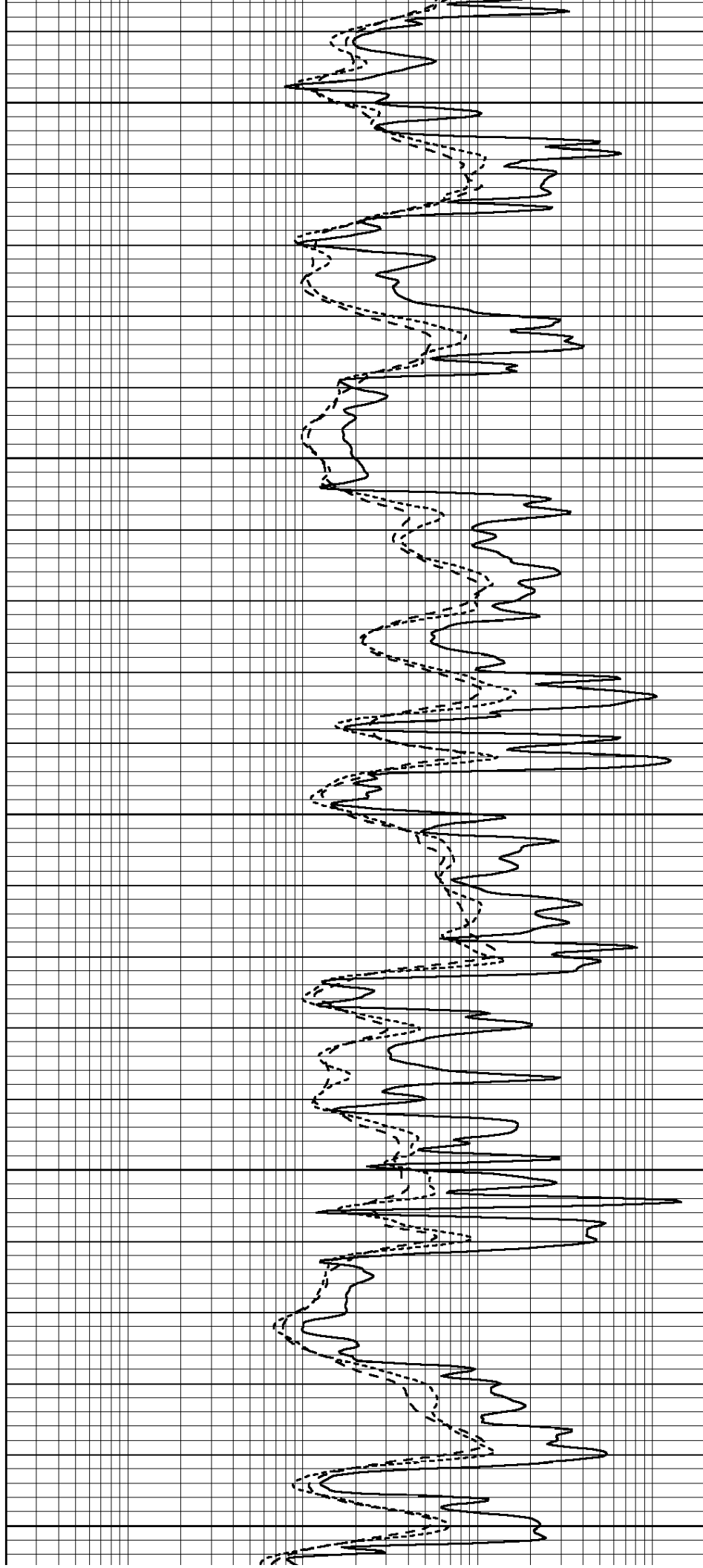
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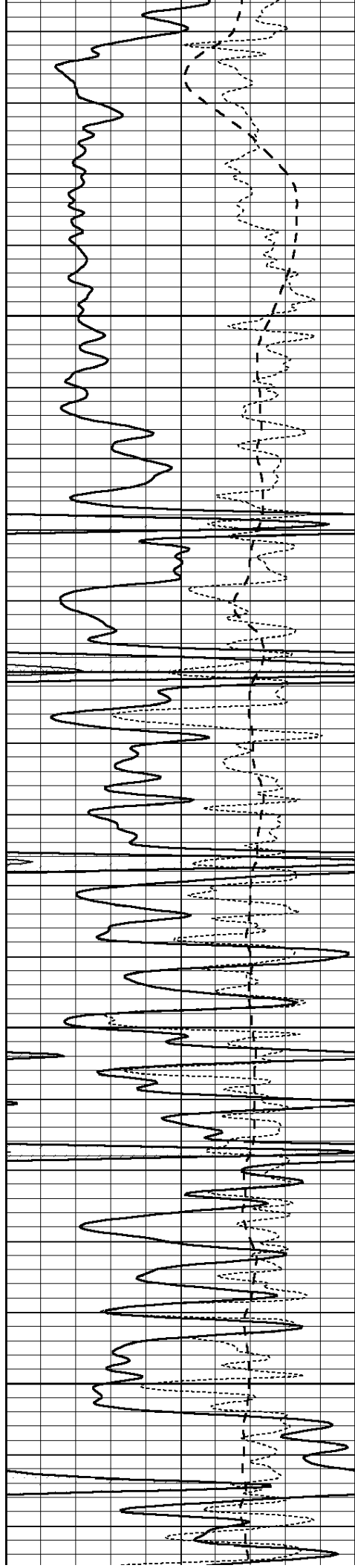
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4800



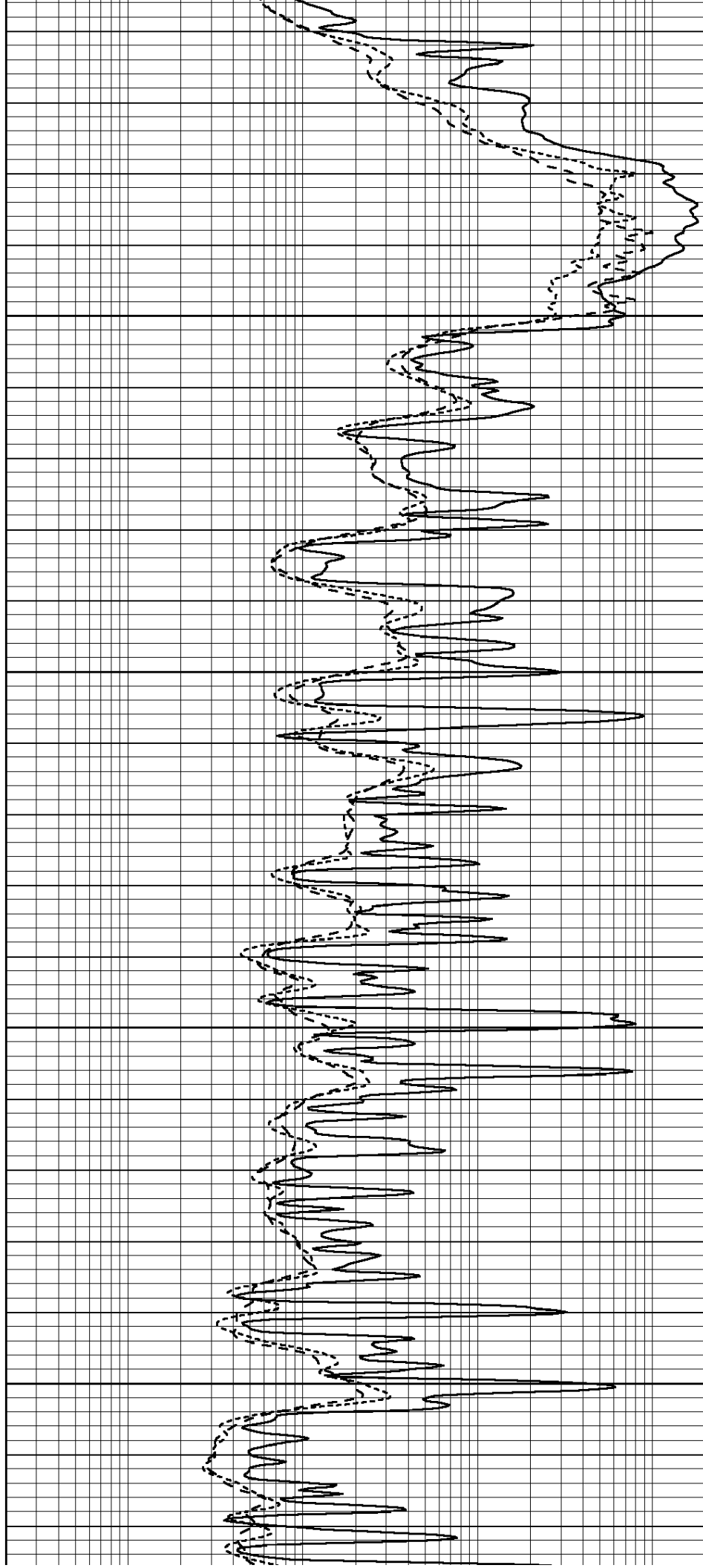


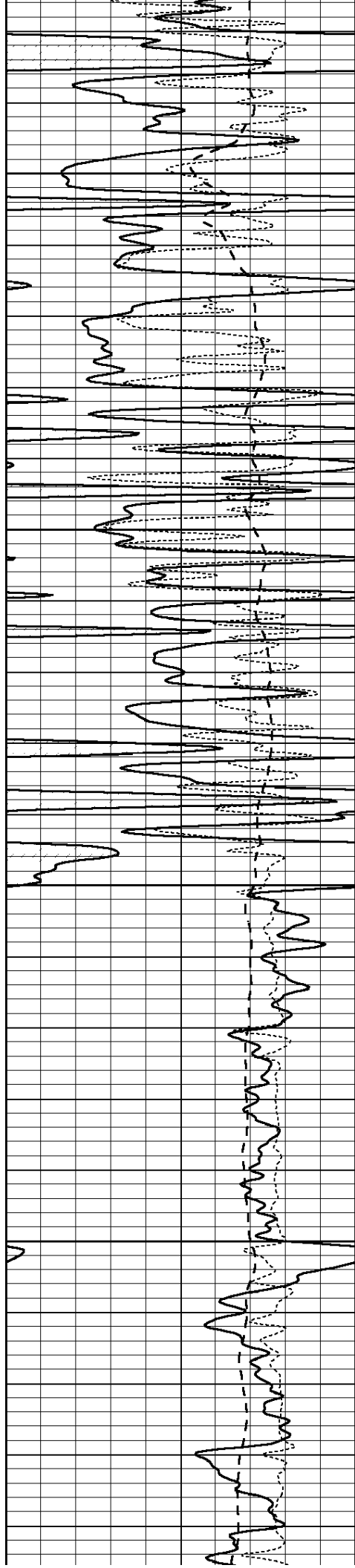
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4900

4950

5000



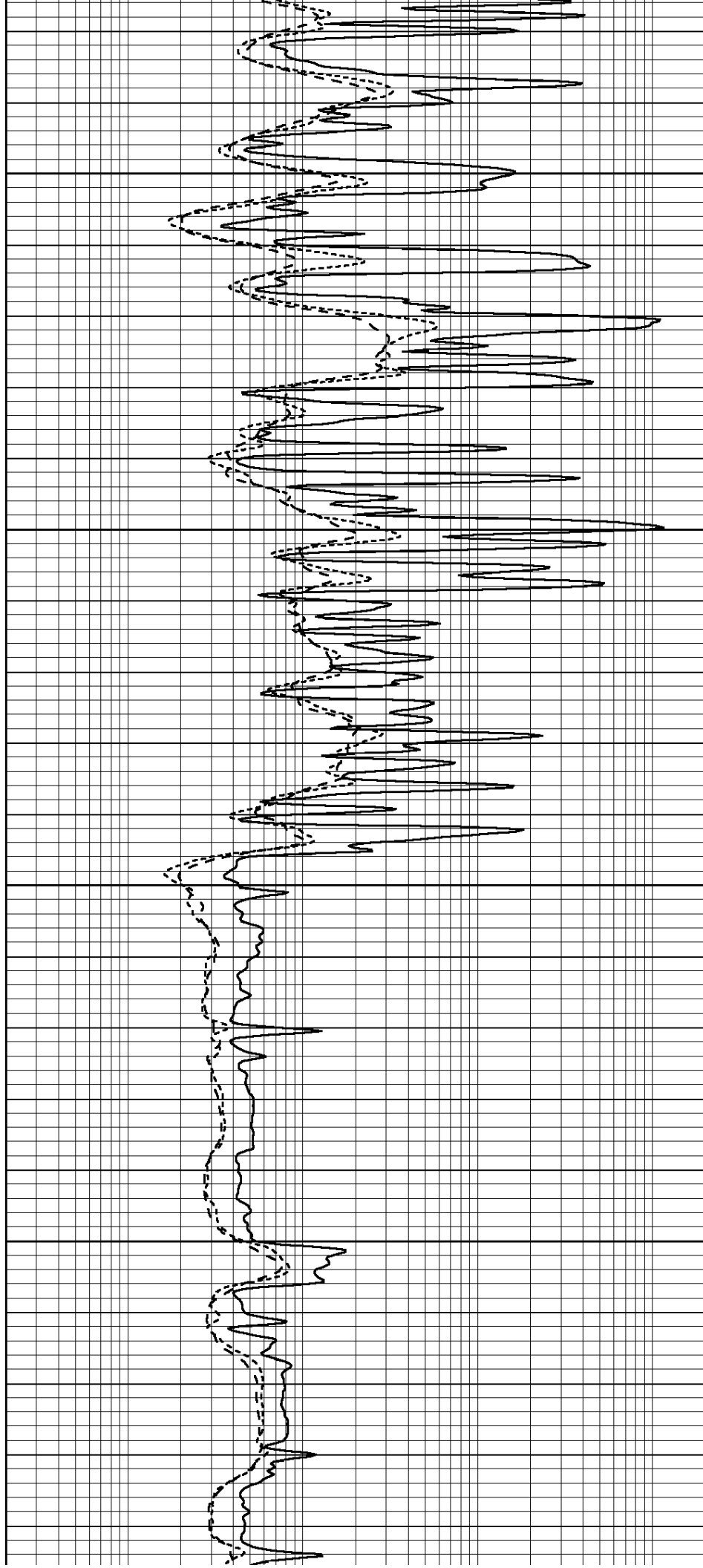


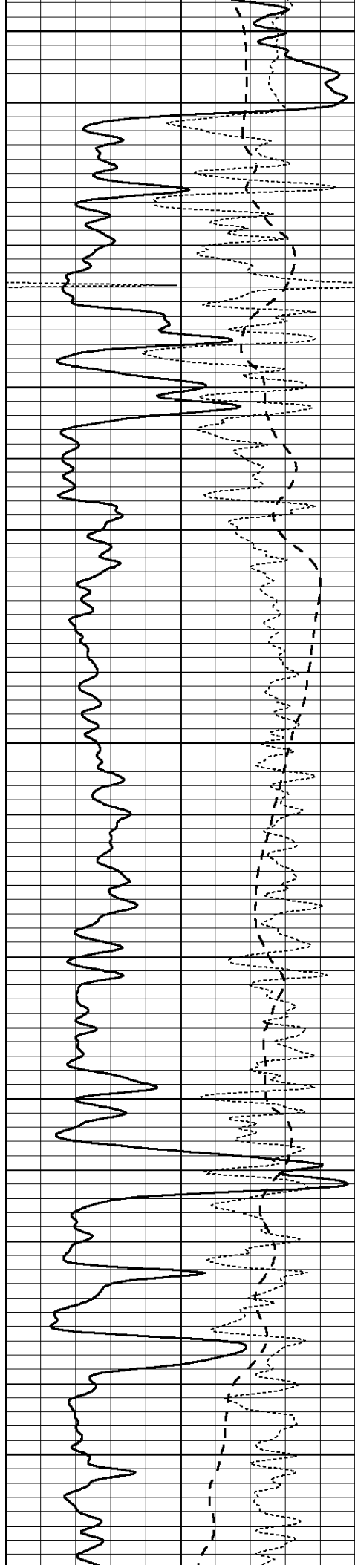
5050

5100

5150

5200





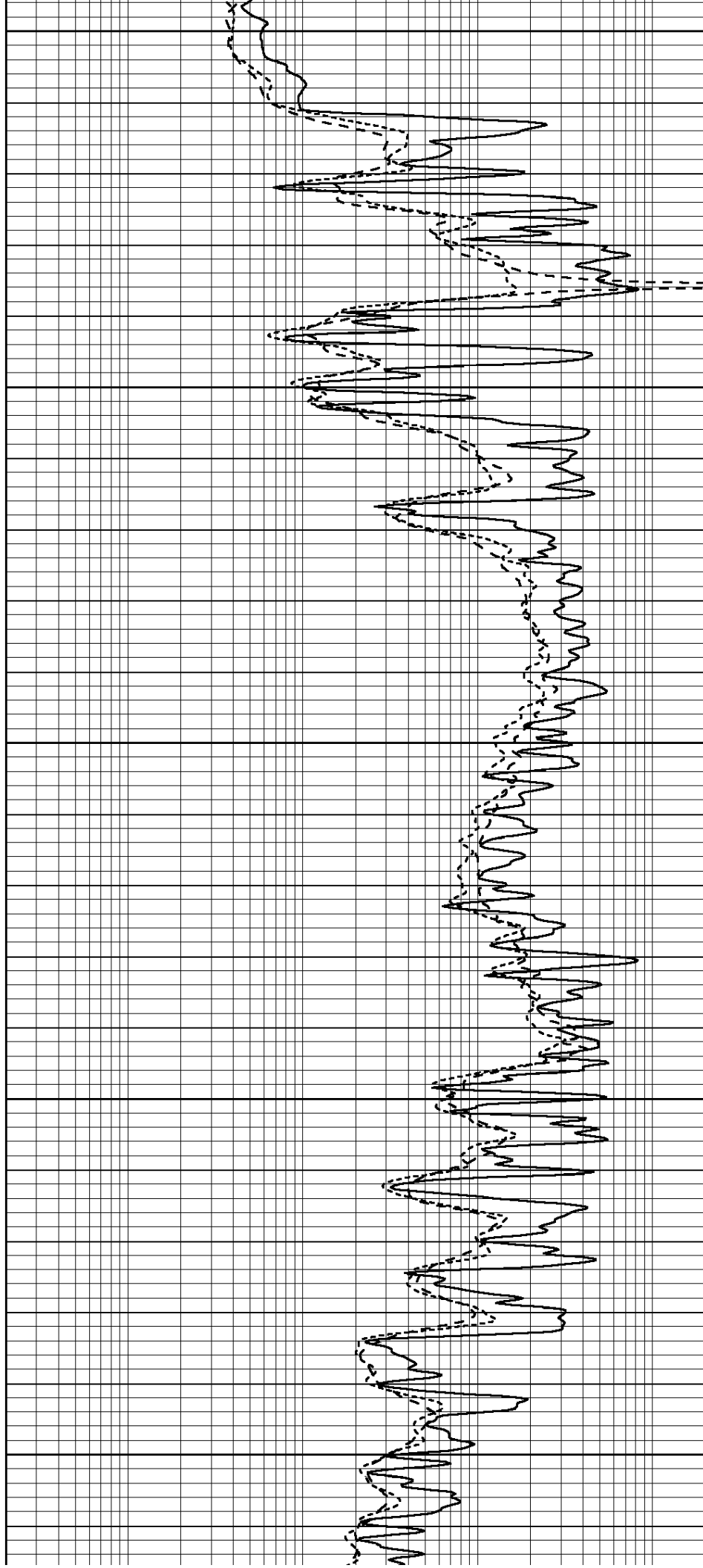
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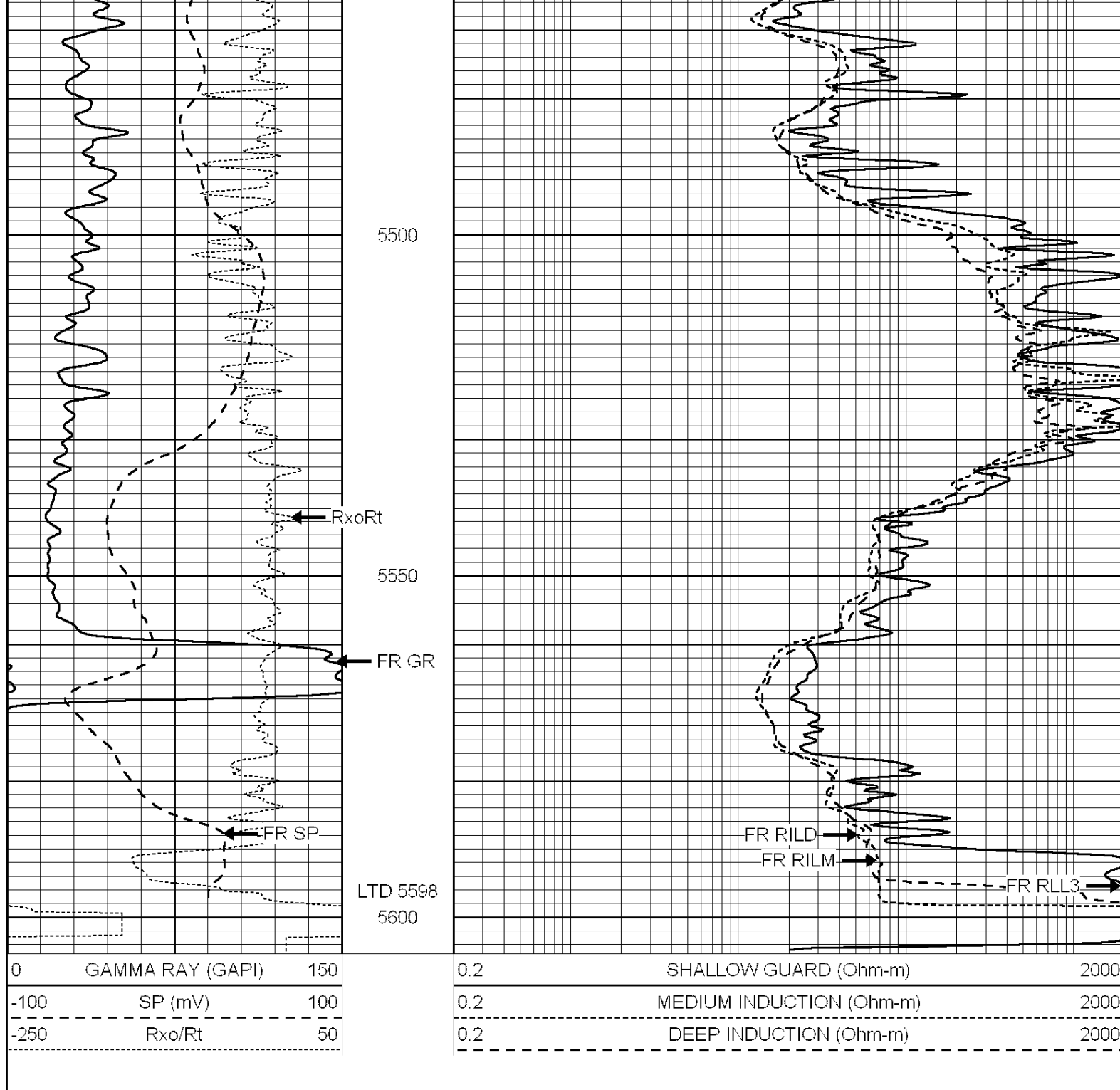
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5350

5400

5450



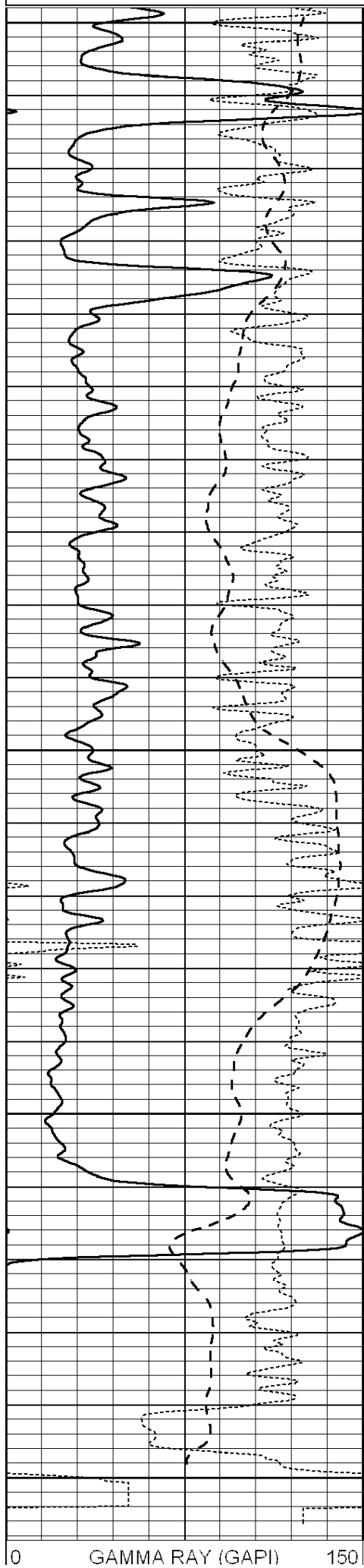


SUPERIOR  
Hays,  
Kansas

# REPEAT SECTION

Database File: 009734pe.db  
 Dataset Pathname: pass2.2  
 Presentation Format: \_dil  
 Dataset Creation: Fri Sep 21 01:37:41 2012  
 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	MEDIUM INDUCTION (Ohm-m)	2000
-250	Rxo/Rt	50	0.2	DEEP INDUCTION (Ohm-m)	2000



5400

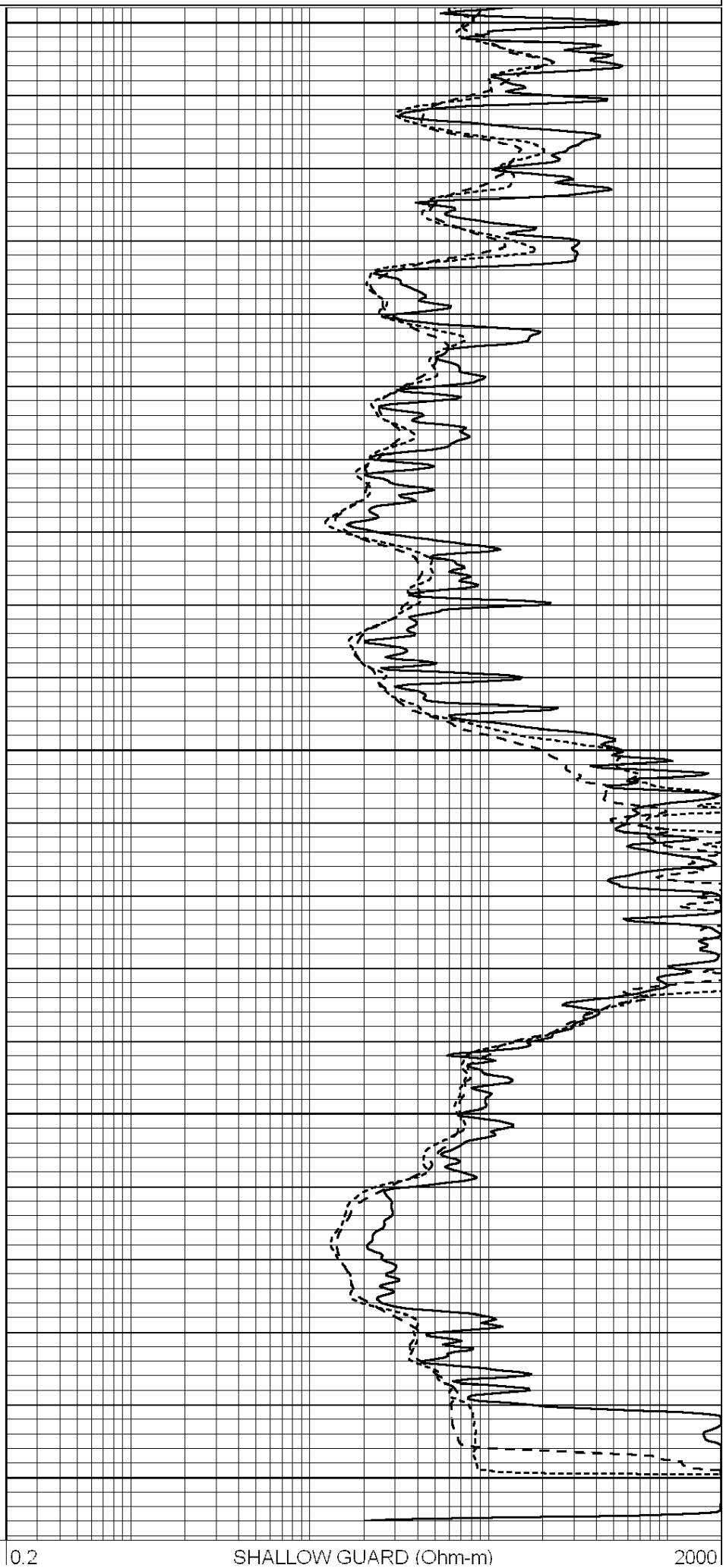
5450

5500

5550

5600

0 GAMMA RAY (GAPI) 150



0.2 SHALLOW GUARD (Ohm-m) 2000

-100	SP (mV)	100	0.2	MEDIUM INDUCTION (Ohm-m)	2000
-250	Rxo/Rt	50	0.2	DEEP INDUCTION (Ohm-m)	2000

Calibration Report	
Database File:	009734pe.db
Dataset Pathname:	pass3.3
Dataset Creation:	Fri Sep 21 04:01:42 2012 by Calc Open-Cased 090629

Dual Induction Calibration Report	
Serial-Model:	PROBE8-DILG
Surface Cal Performed:	Fri Aug 01 06:33:19 2008
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	632.616	-9.730
Medium	0.029	0.796	V	0.000	464.000	mmho/m	605.049	-17.680
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
LL3		7.500	V		1500.000	Ohm-m		
		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: 001	Model: PRB
Performed Thu Sep 17 09:57:21 2009	

Litho Density Calibration					
	Background	Magnesium	Aluminum	Sandstone	
Window 1	2056.0	9796.8	3673.1	10821.3	cps
Window 2	1920.0	8541.1	3303.5	9307.2	cps
Window 3	1563.1	4735.7	2212.8	5017.5	cps
Window 4	466.0	466.1	465.6	471.5	cps
Long Space	0.0	6621.1	1383.5	7387.2	cps
Short Space	2.5	2361.7	1523.2	2534.0	cps
Rho		1.7100	2.5900	1.3800	g/cc

Pe	2.5700				1.5500			
Rib Angle	: 44.4	Rib Slope	: 0.978	Density/Spine Ratio	: 0.541			
Spine Angle	: 74.4	Spine Slope	: 3.570	Spine Intercept	: -18.9			
Caliper	Readings	Reference						
Low Ref	3.1	8.4						
High Ref	4.3	14.3						
	Gain: 4.6	Offset: -7.6						
Compensated Neutron Calibration Report								
		Serial Number:	6I					
		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:	#8						
	Tool Model:	OPEN						
	Performed:	Mon Jun 13 16:56:43 2011						
	Calibrator Value:	150.0	GAPI					
	Background Reading:	0.0	cps					
	Calibrator Reading:	175.0	cps					
	Sensitivity:	0.8371	GAPI/cps					