



DUAL INDUCTION LOG

Company HARTMAN OIL INC.
 Well LILLIE #5
 Field ARNOLD SOUTHWEST
 County NESS
 State KANSAS

Company HARTMAN OIL INC.
 Well LILLIE #5
 Field ARNOLD SOUTHWEST
 County NESS State KANSAS

Location: API # : 15-135-26026-0000
 1356' FNL & 1299' FEL
 NW - NW - SE - NE
 Permanent Datum GROUND LEVEL Elevation 2577
 Log Measured From KELLY BUSHING 11' A.G.L.
 Drilling Measured From KELLY BUSHING
 SEC 32 TWP 16S RGE 25W
 Other Services CDL/CNL MEL
 Elevation K.B. 2588
 D.F. 2586
 G.L. 2577

Date	12/4/18		
Run Number	ONE		
Depth Driller	4625		
Depth Logger	4622		
Bottom Logged Interval	4620		
Top Log Interval	00		
Casing Driller	8 5/8"@267'		
Casing Logger	267		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 1,500 PPM	
Density / Viscosity	9.1/53		
pH / Fluid Loss	10.5/6.0		
Source of Sample	FLOWLINE		
Rim @ Meas. Temp	1.40@58F		
Rmf @ Meas. Temp	1.05@58F		
Rmc @ Meas. Temp	1.68@58F		
Source of Rmf / Rmc	MEASUREMENT		
Rim @ BHT	.666@122F		
Time Circulation Stopped	2.5 HOURS		
Time Logger on Bottom	10:00 P.M.		
Maximum Recorded Temperature	122F		
Equipment Number	922339		
Location	HAYS, KANSAS		
Recorded By	JEFF LUEBBERS		
Witnessed By	LOREN DEEVER		

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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 ELI WIRELINE HAYS, KANSAS (785) 628-6395
 DIRECTIONS
 ARNOLD, KS., 4W. ON HWY 4 TO"RD. H", 1S., 1/4W., S. INTO



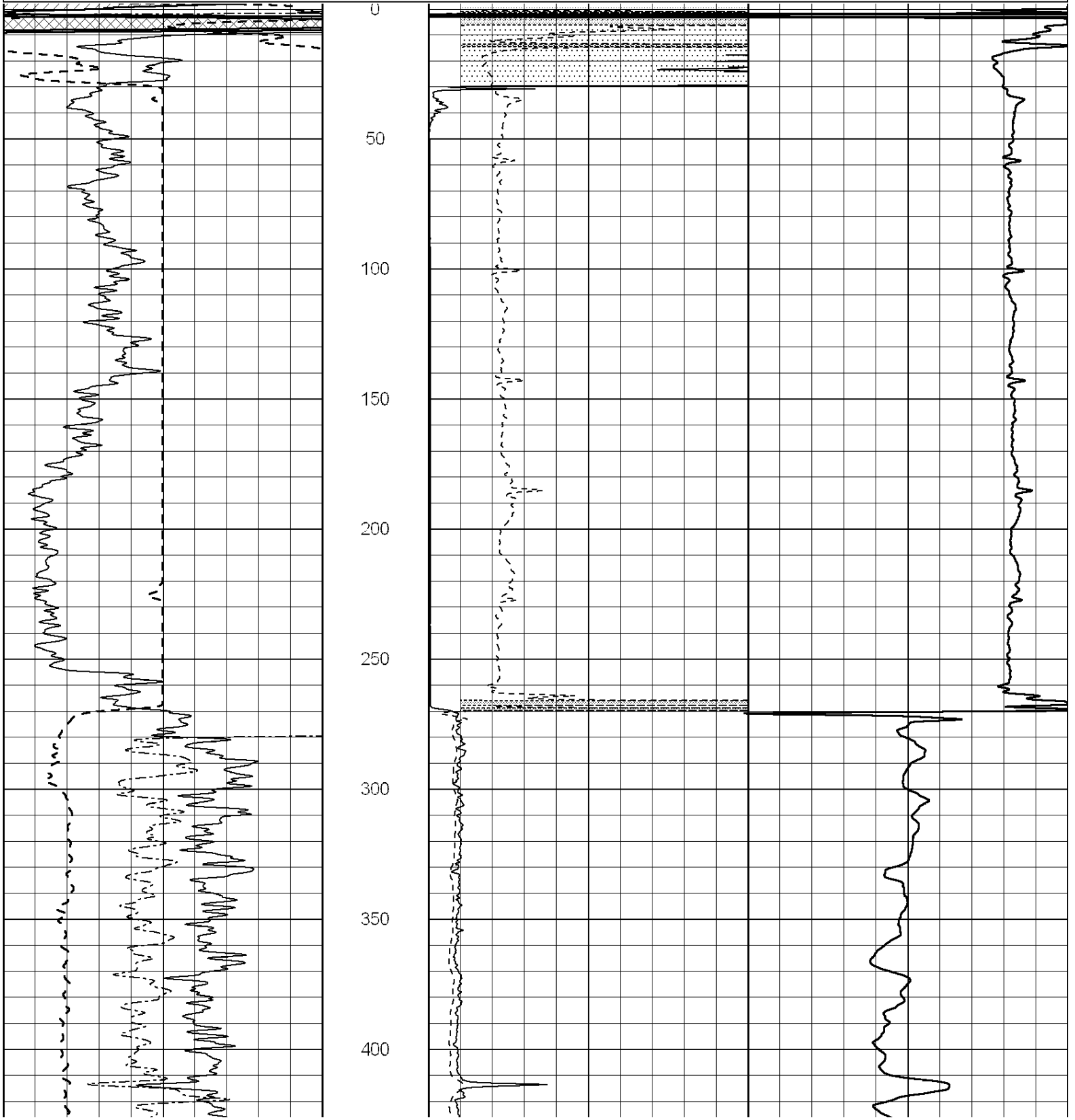
MAIN SECTION

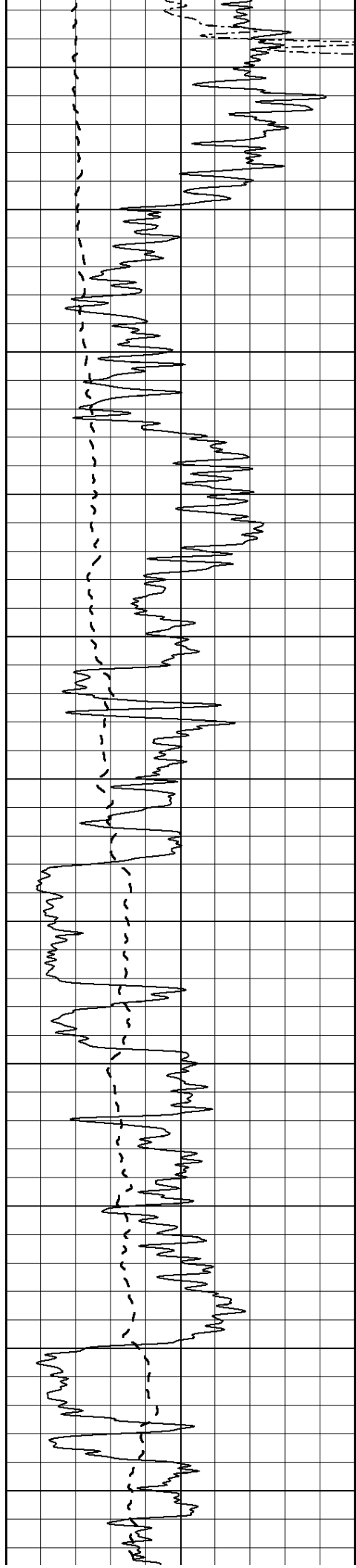
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 Dataset Pathname: pass3.4
 Presentation Format: dil2
 Dataset Creation: Tue Dec 04 23:45:47 2018 by Calc SOC 120430
 Charted by: Depth in Feet scaled 1:600

0	Gamma Ray (GAPI)	150
-100	SP (mV)	100
0	RWA (Ohm-m)	1

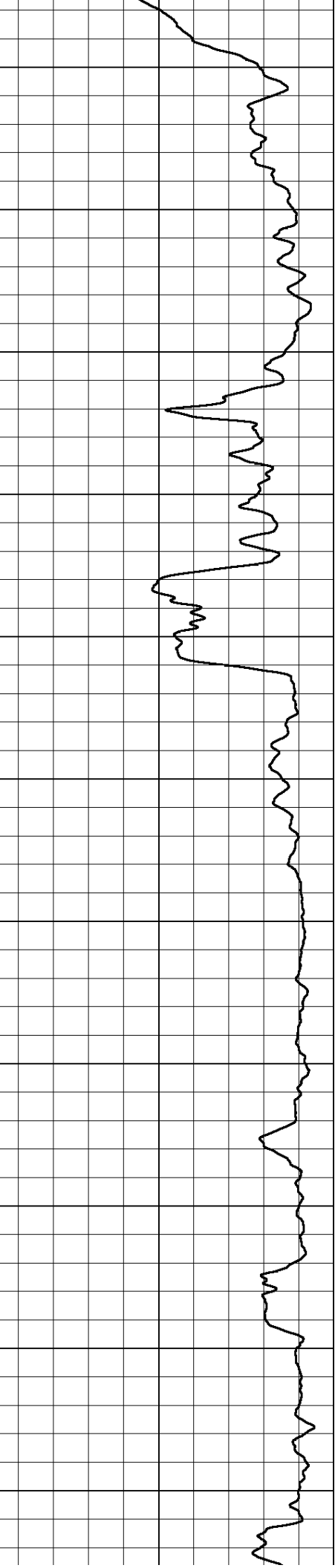
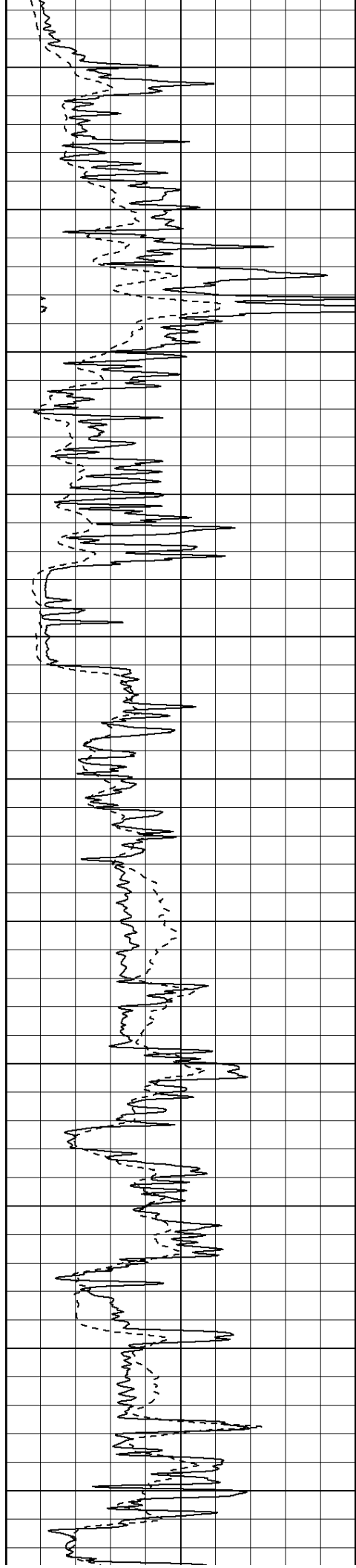
0	RLL3 (Ohm-m)	50
0	RILD (Ohm-m)	50
1000	CILD (mmho/m)	0

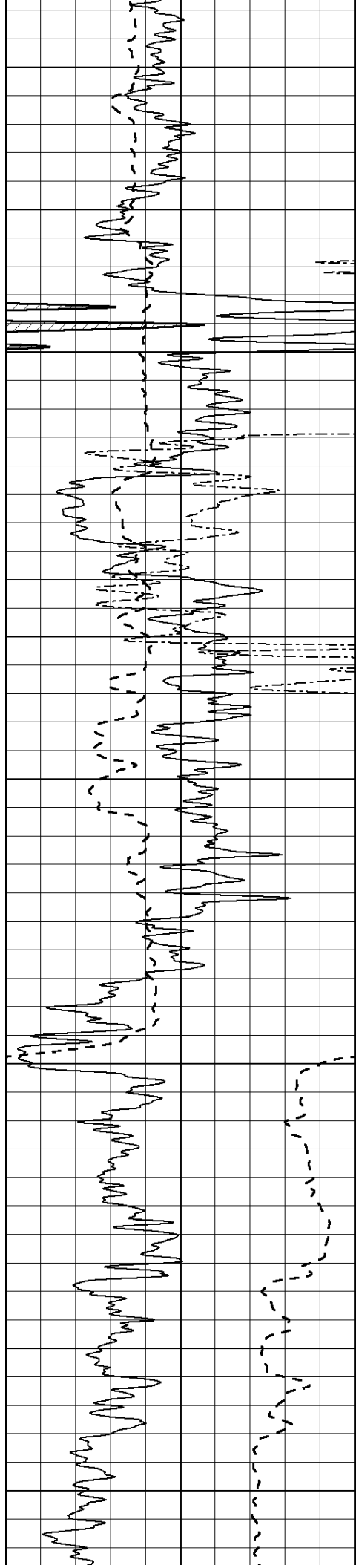
50	RILD X10 (Ohm-m)	500
50	RLL3 X10 (Ohm-m)	500





450
500
550
600
650
700
750
800
850
900
950





1000

1050

1100

1150

1200

1250

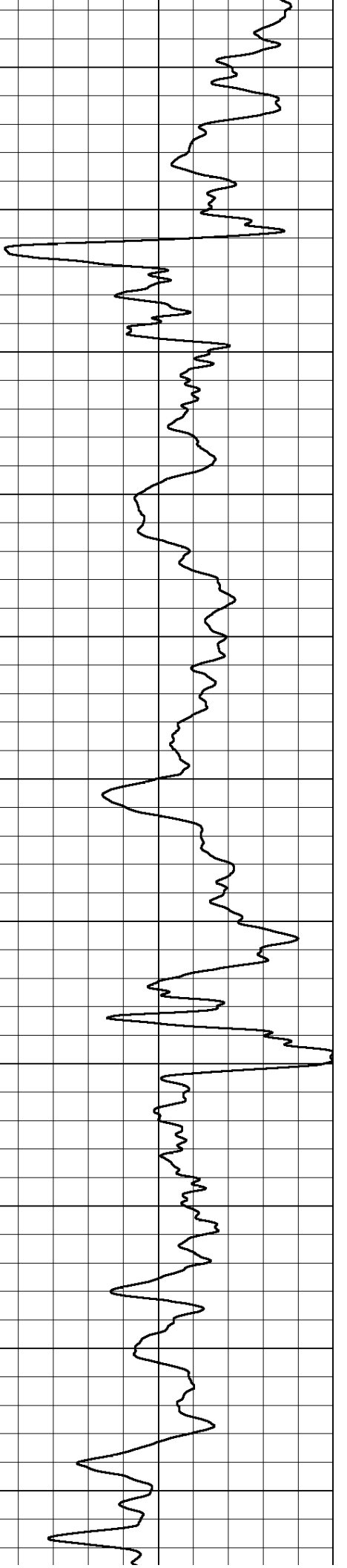
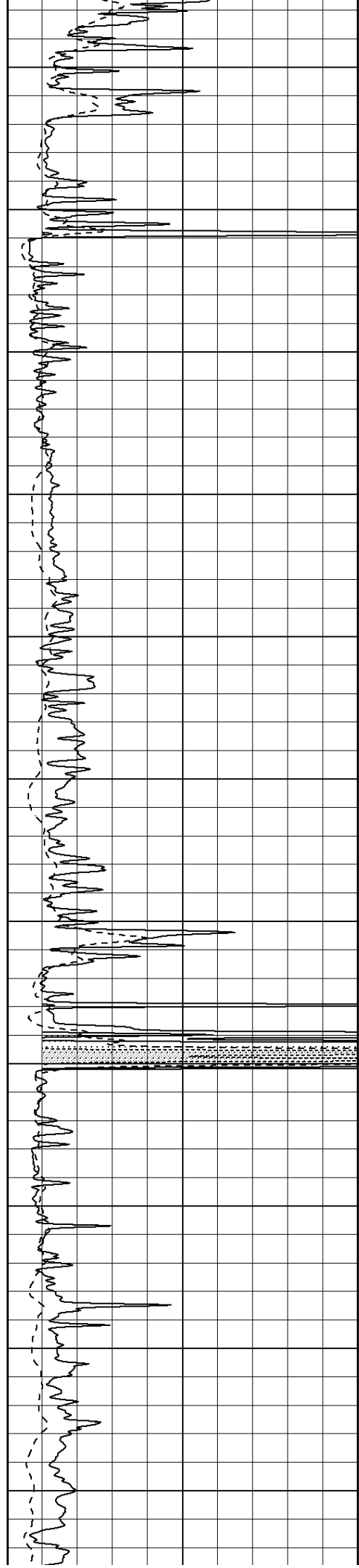
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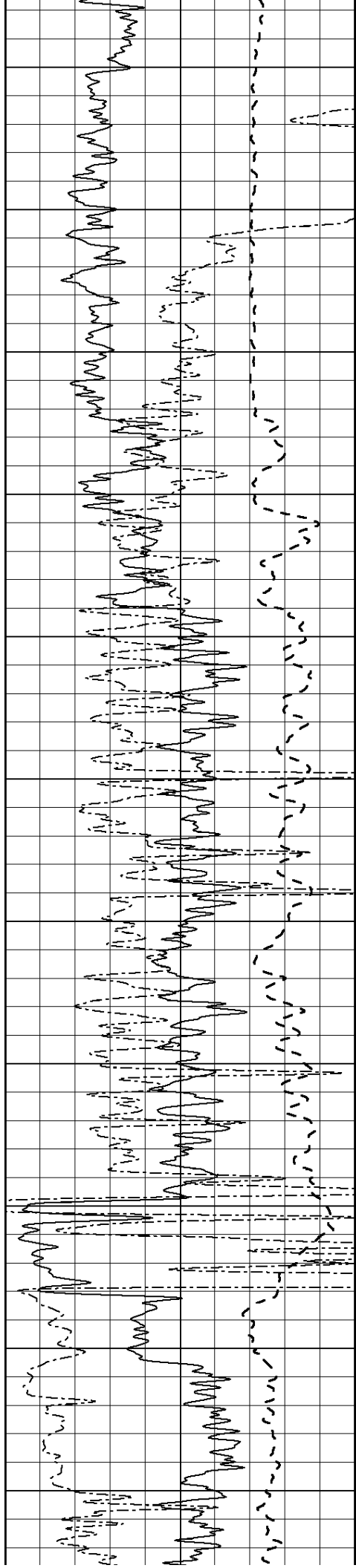
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1400

1450

1500





1550

1600

1650

1700

1750

1800

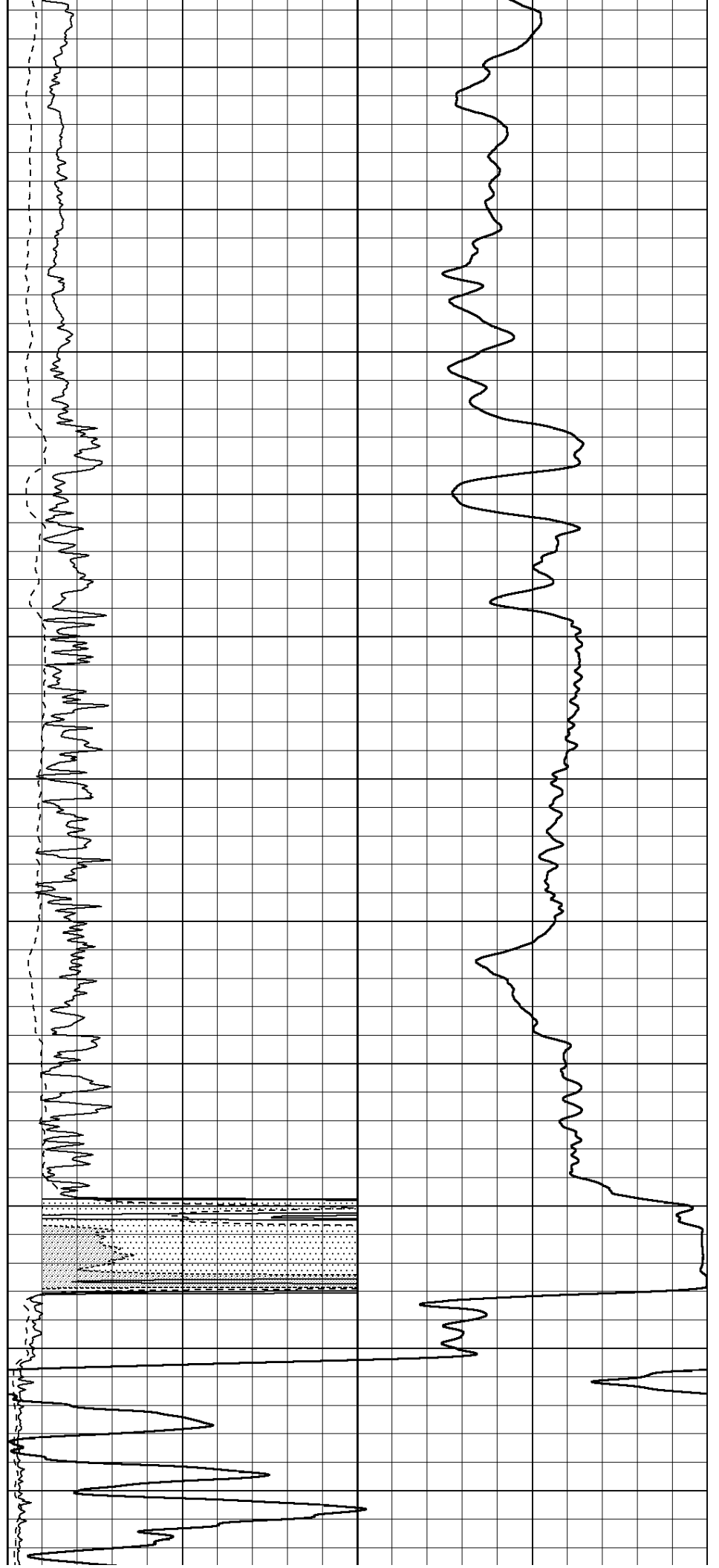
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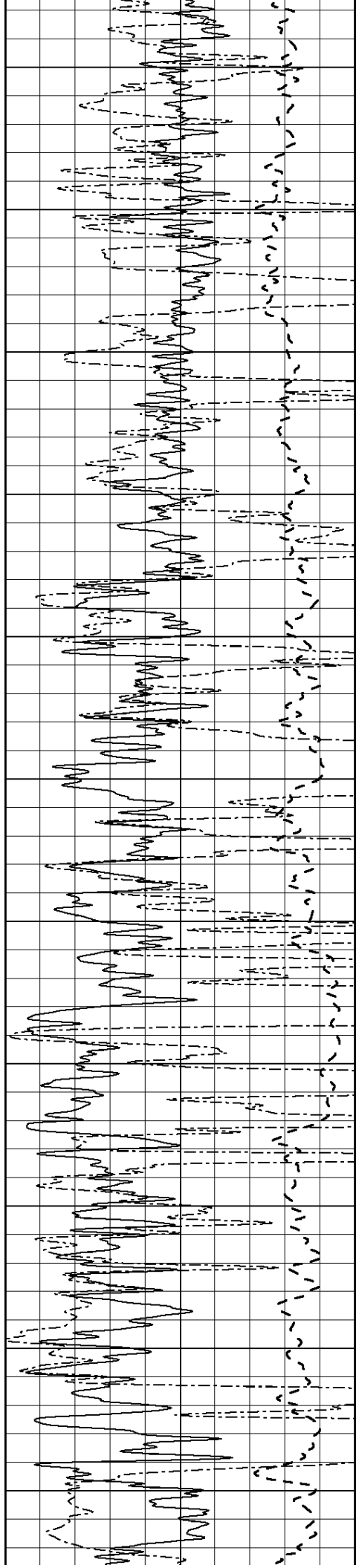
1900

1950

2000

2050





2100

2150

2200

2250

2300

2350

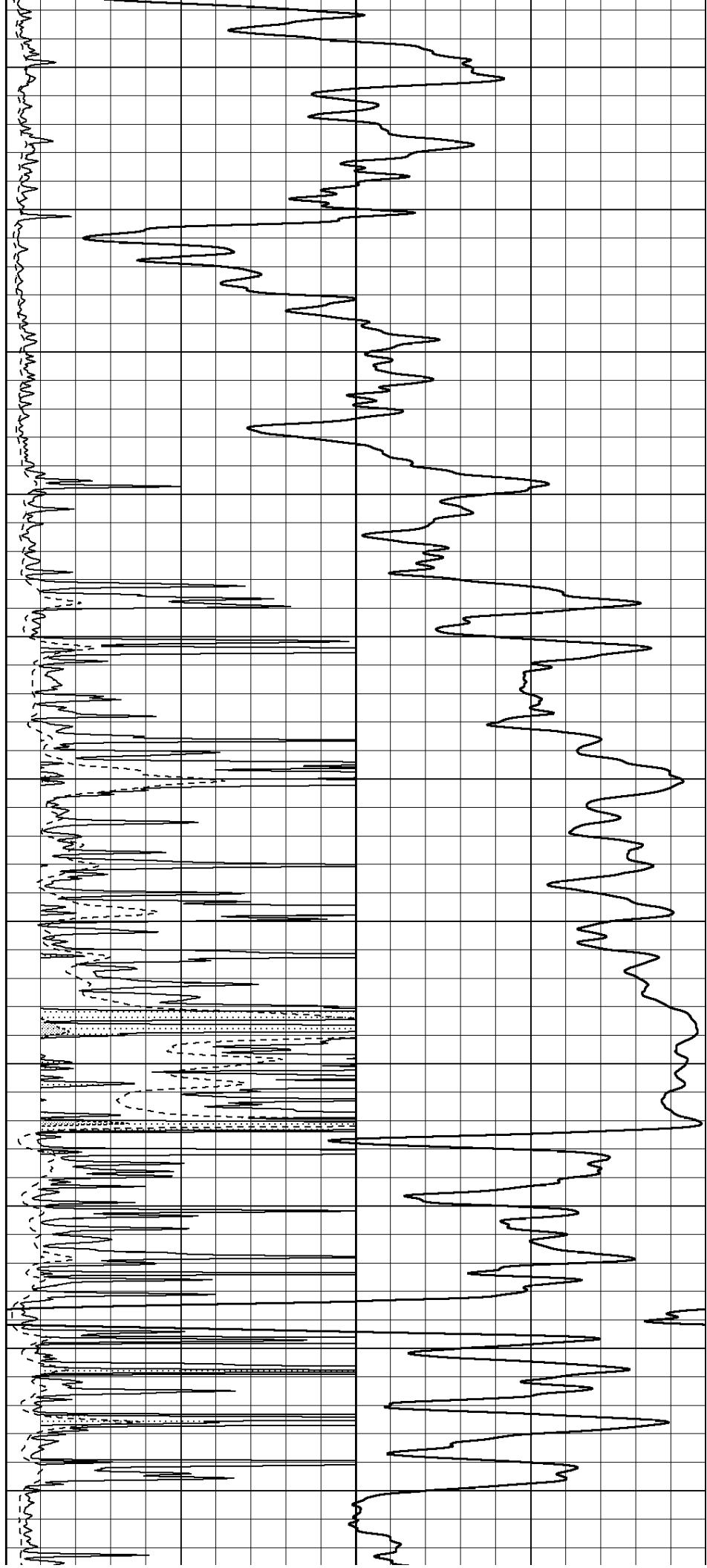
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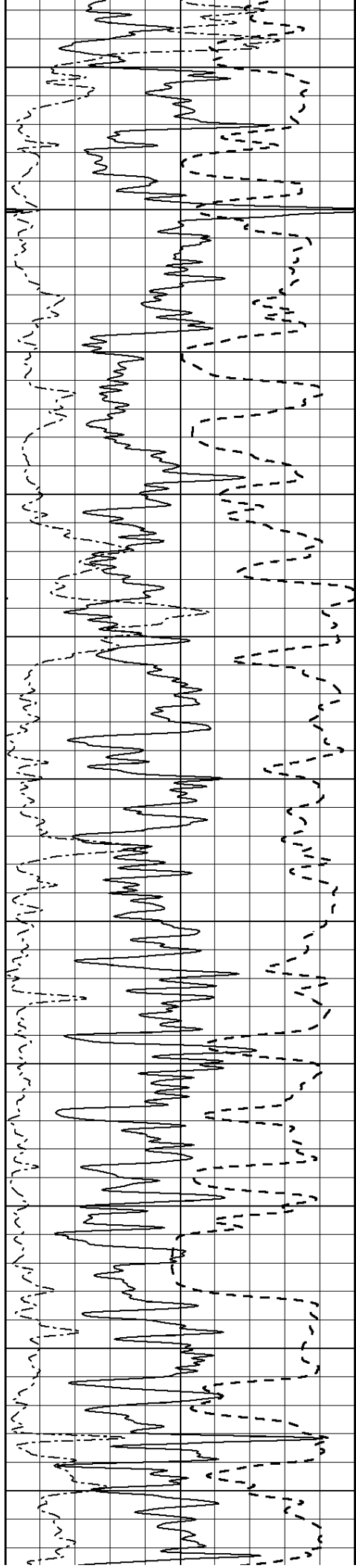
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2500

2550

2600





2650

2700

2750

2800

2850

2900

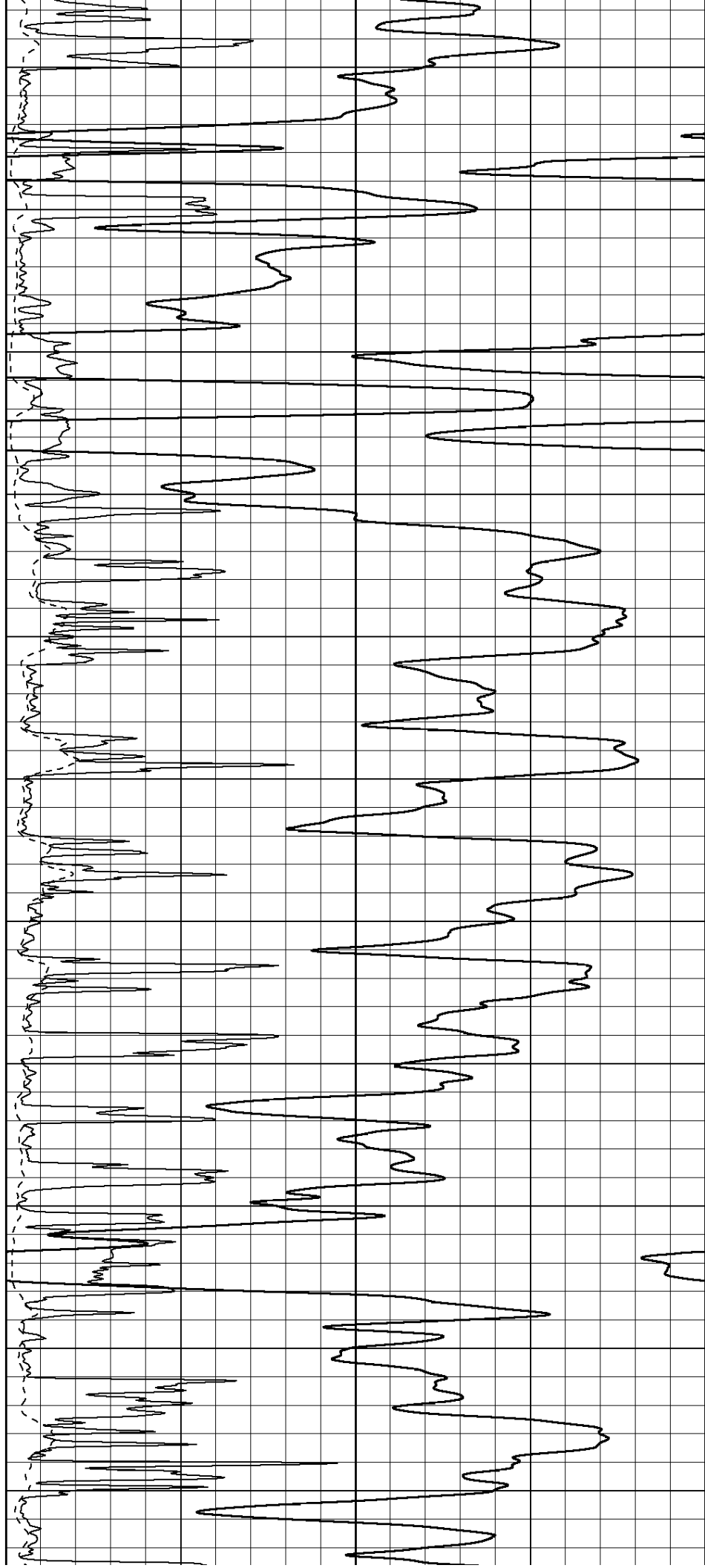
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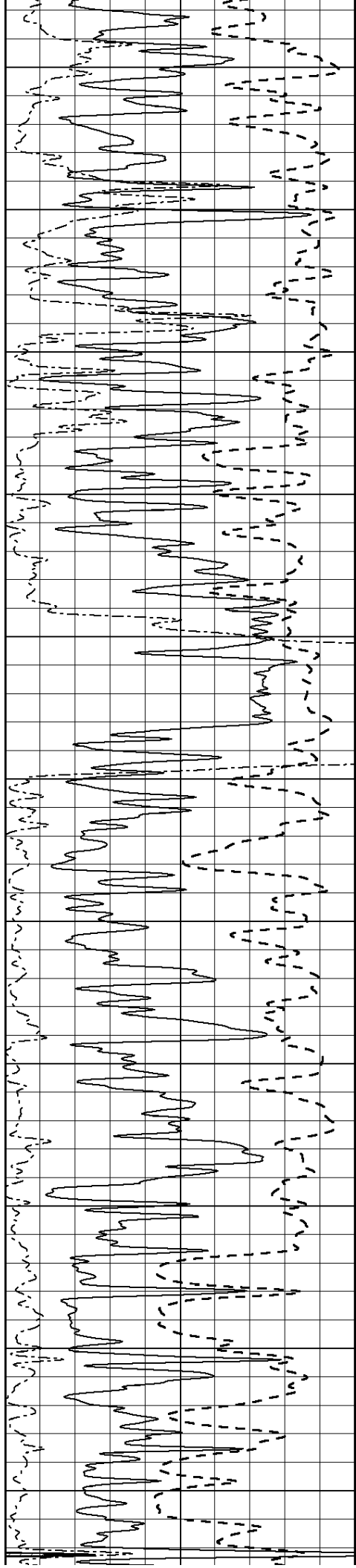
3000

3050

3100

3150





3200

3250

3300

3350

3400

3450

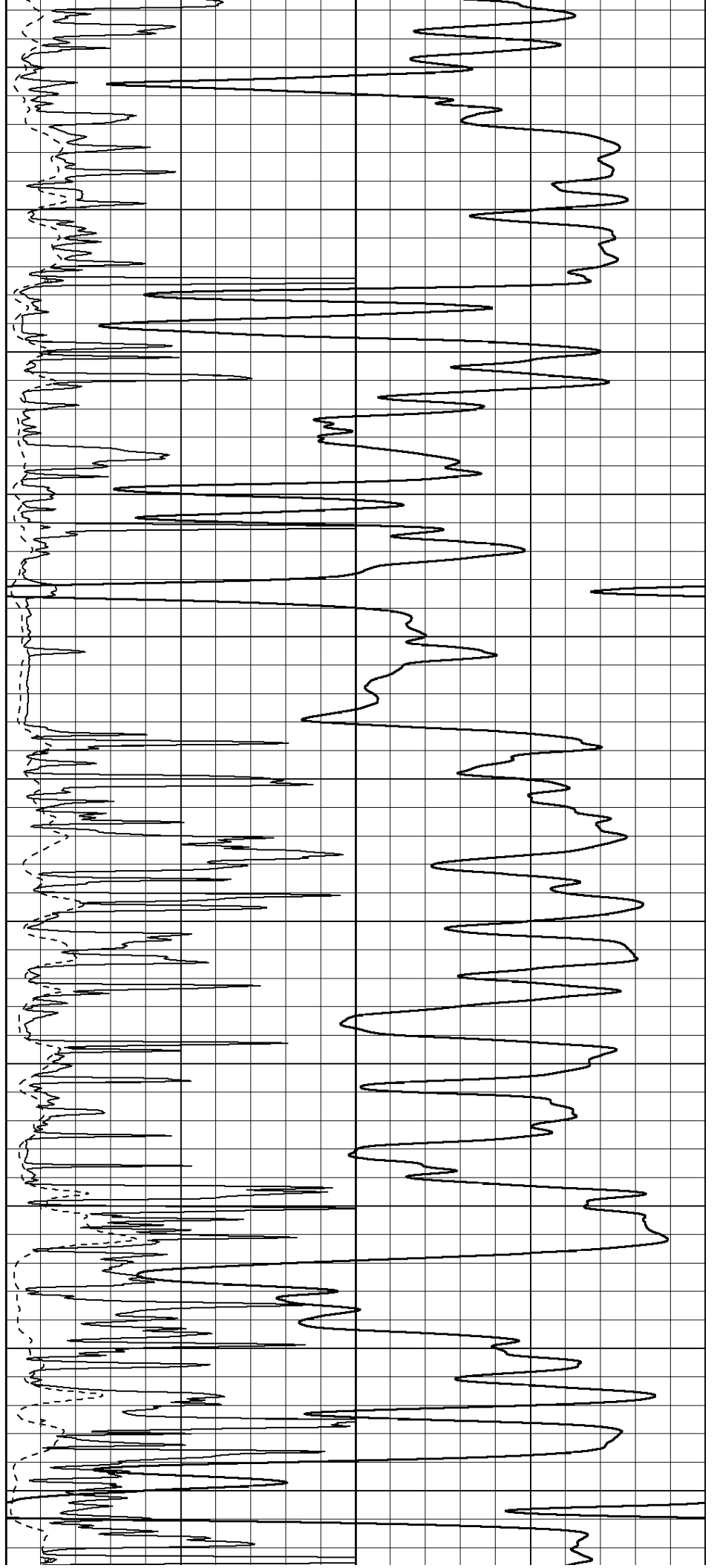
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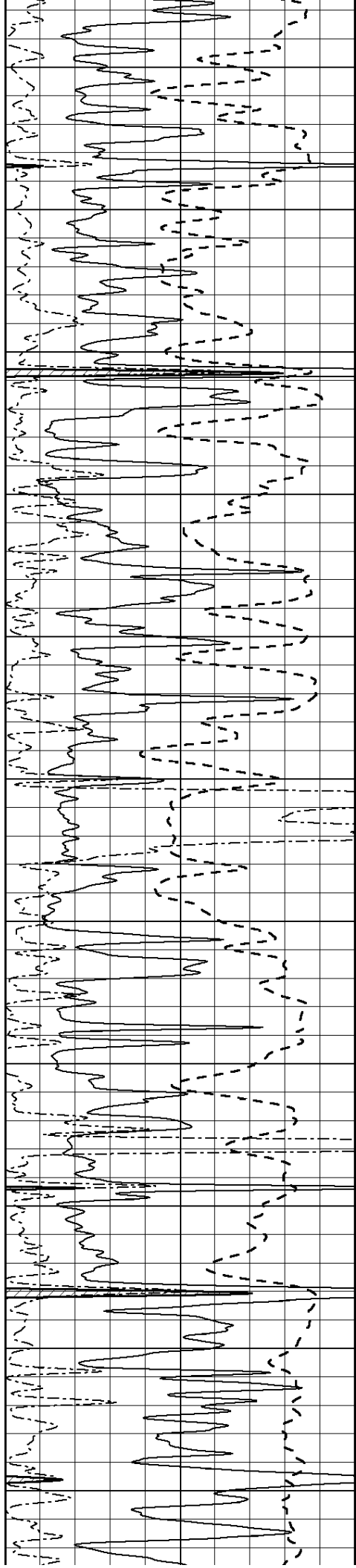
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3600

3650

3700





3750

3800

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3950

4000

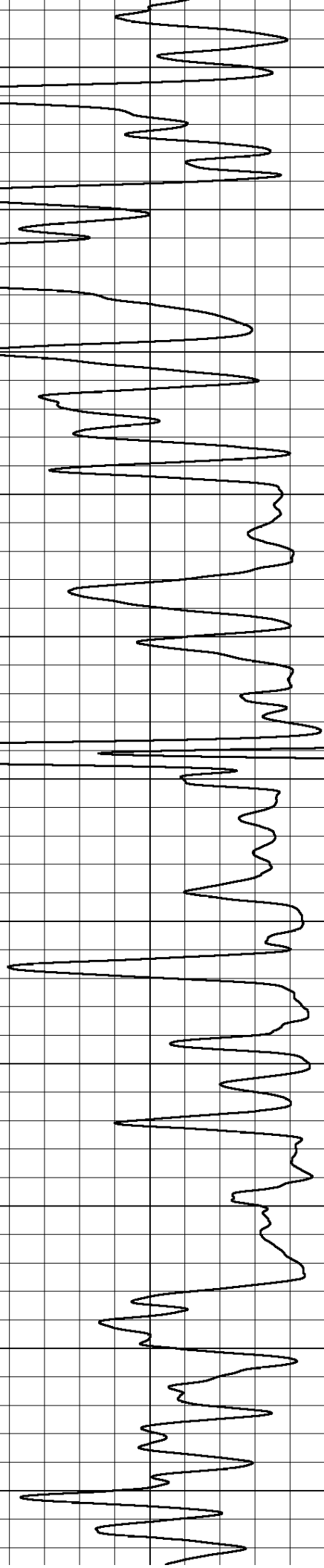
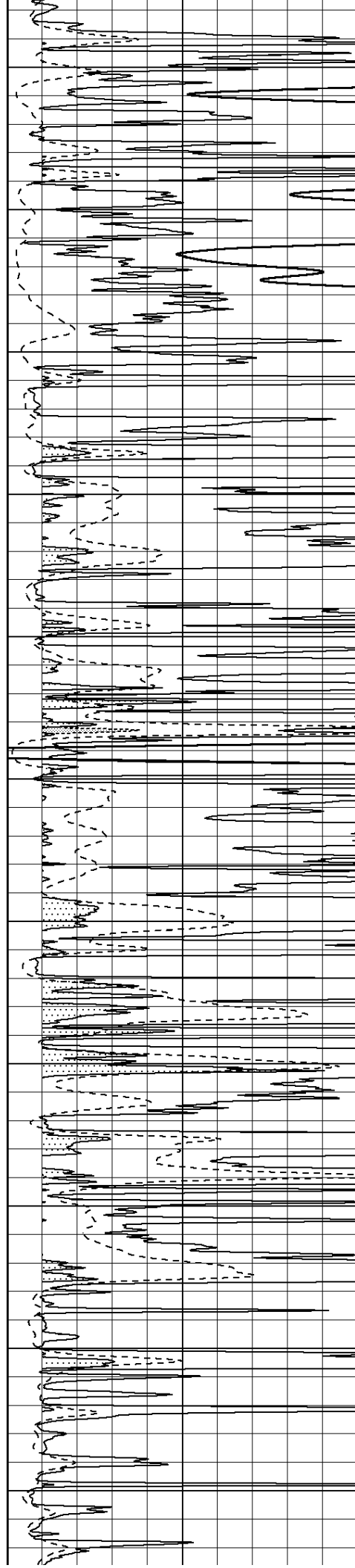
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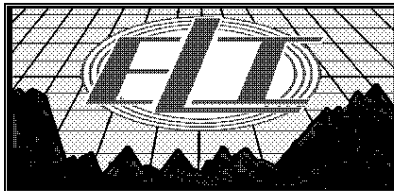
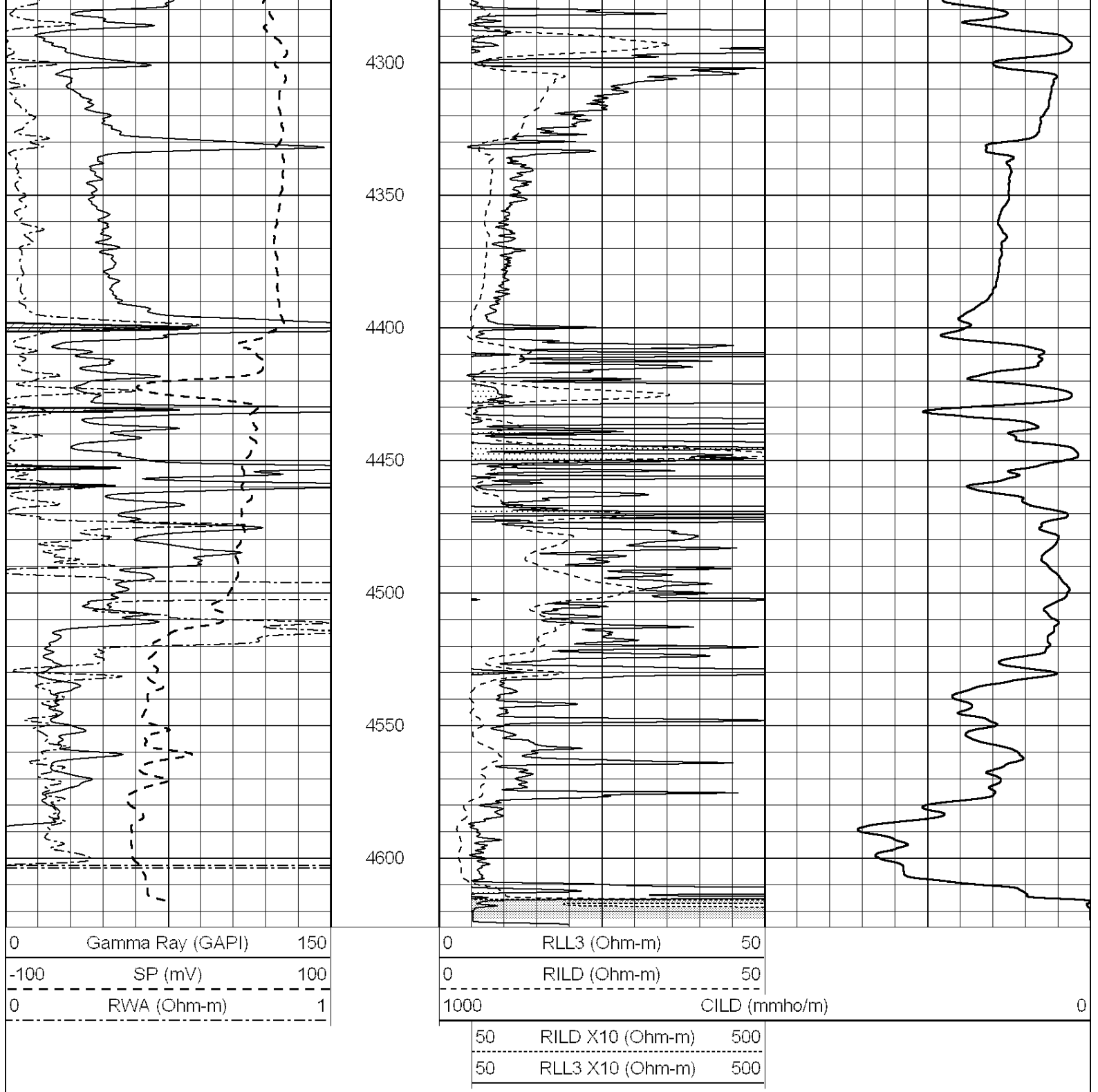
4100

4150

4200

4250



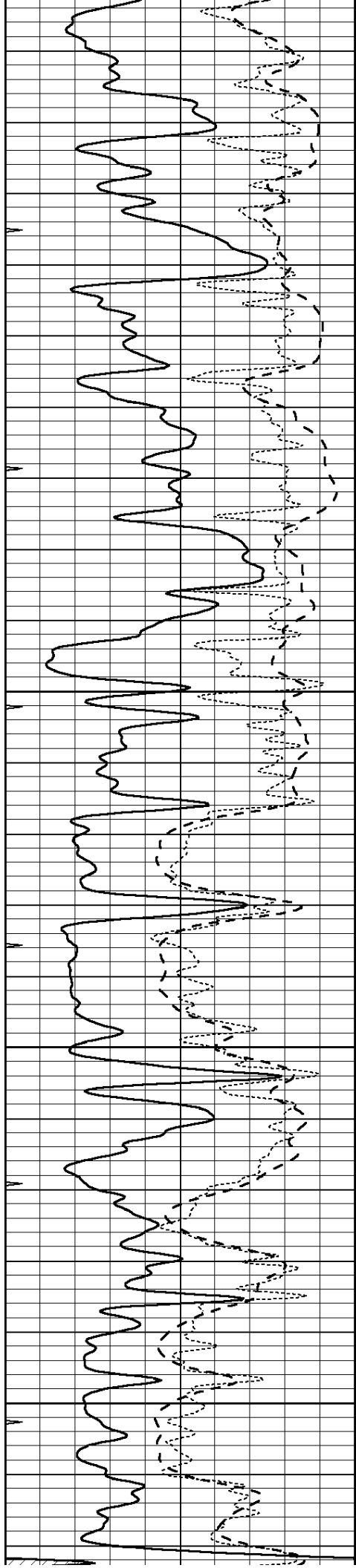


ANHYDRITE

Database File: 3068ddn.db
 Dataset Pathname: pass3.4N
 Presentation Format: _dil
 Dataset Creation: Tue Dec 04 23:52:22 2018
 Charted by: Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100

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

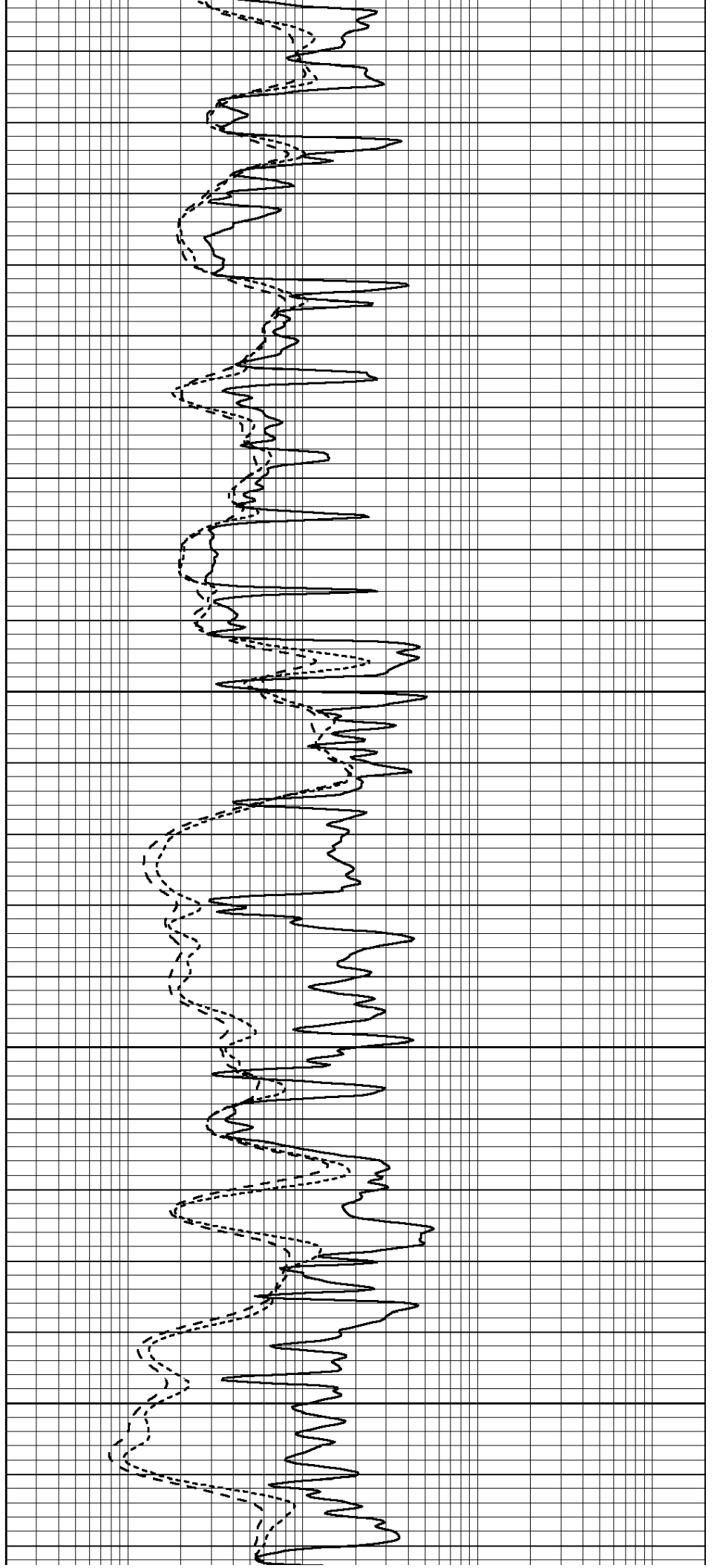


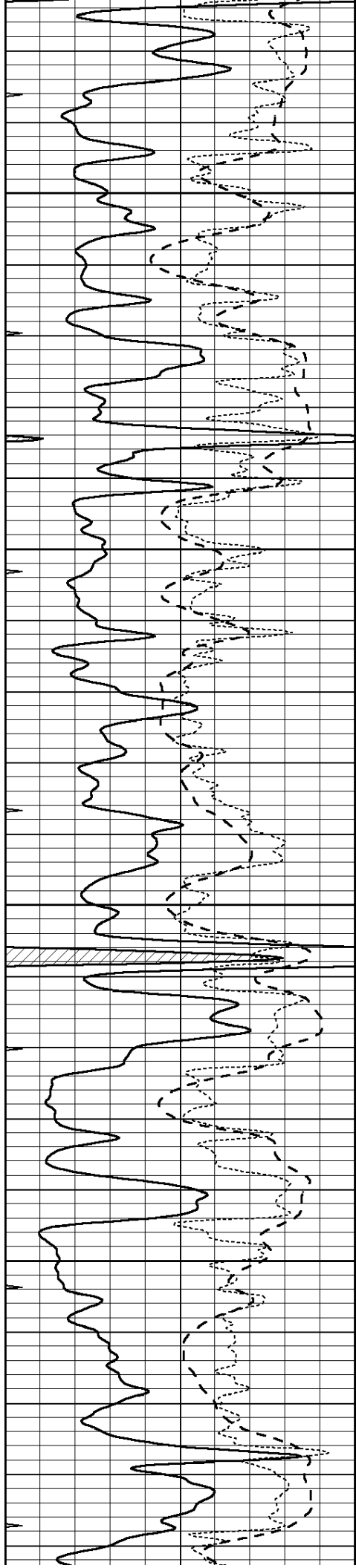
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3600

3650

3700



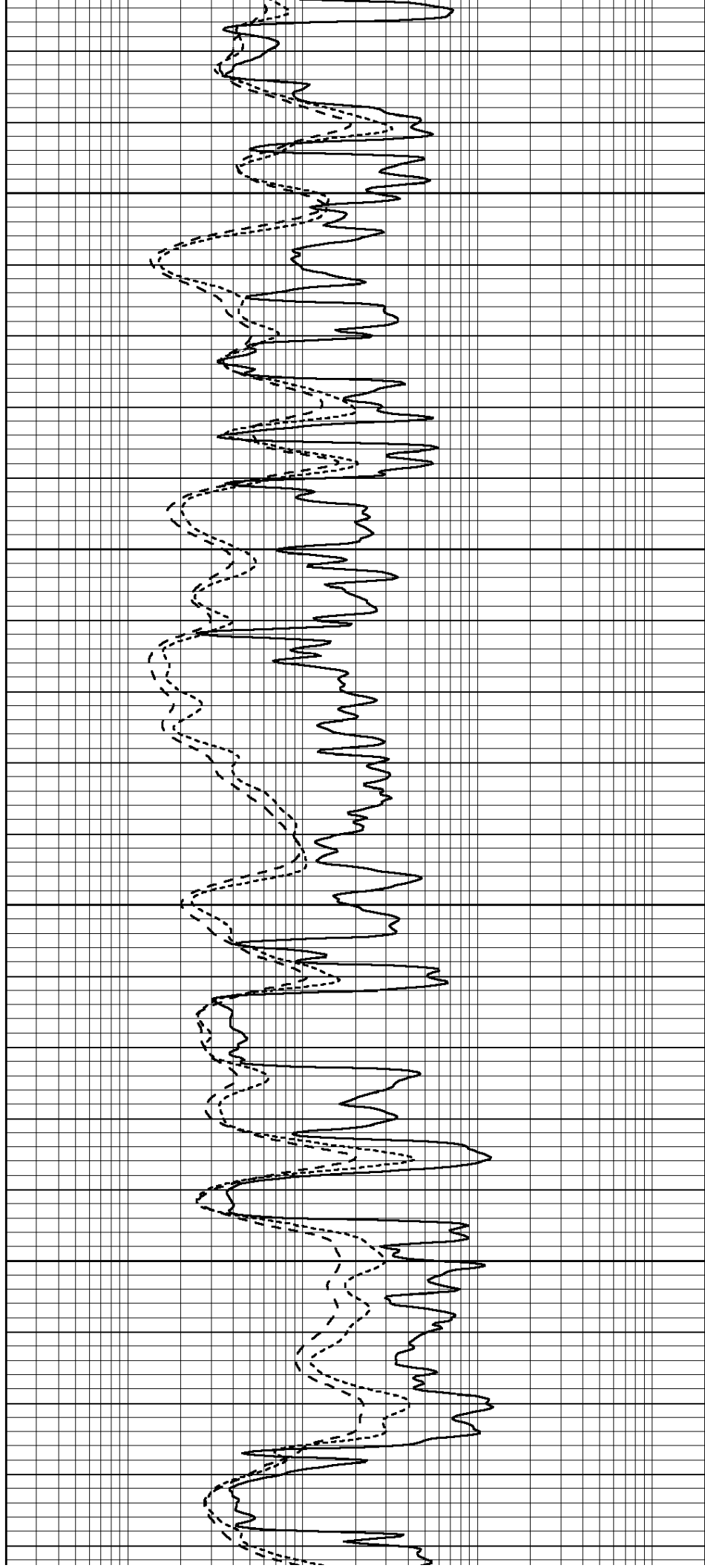


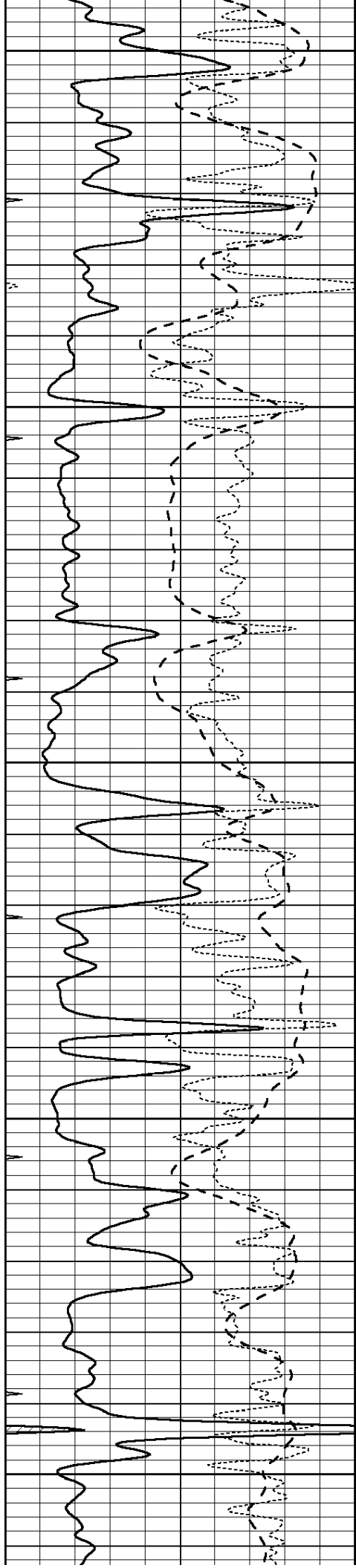
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3800

3850

3900





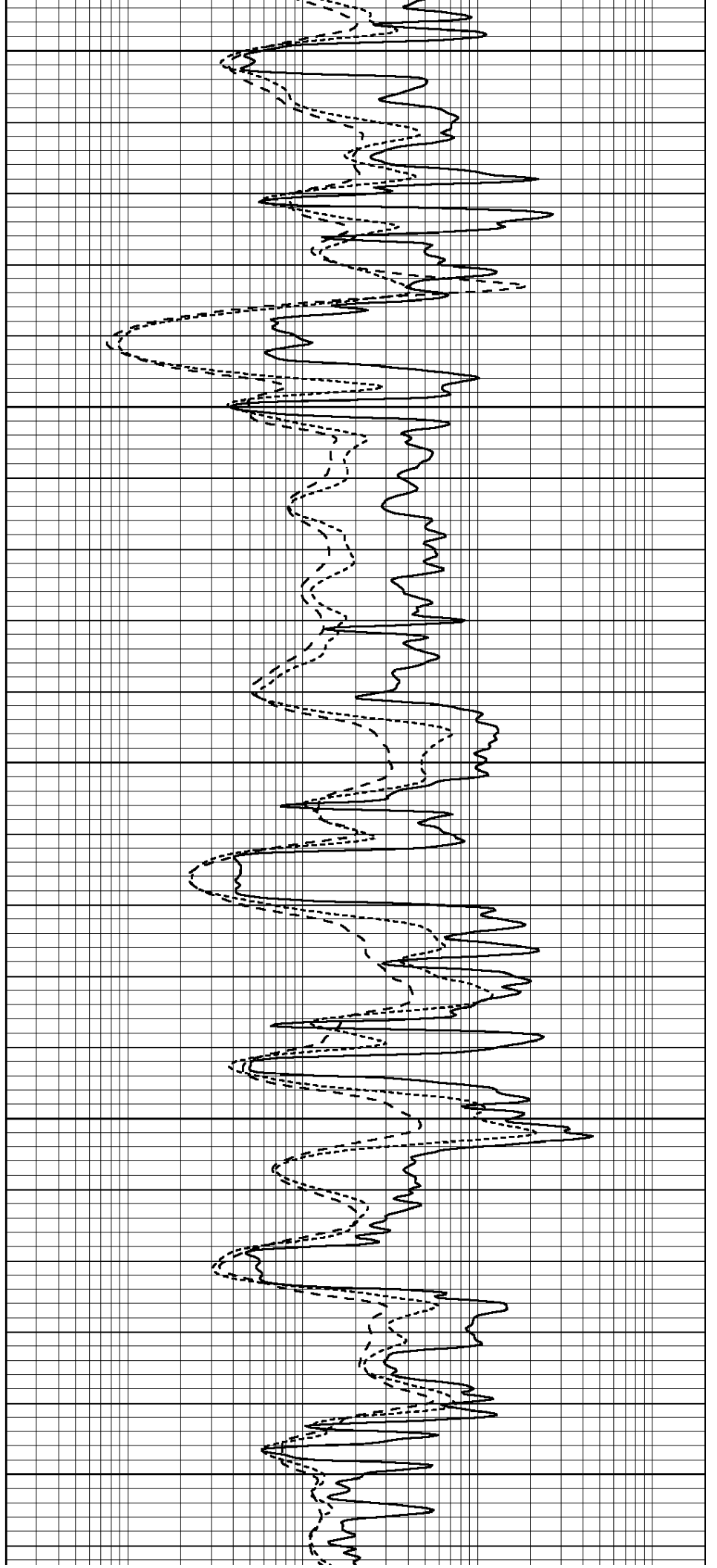
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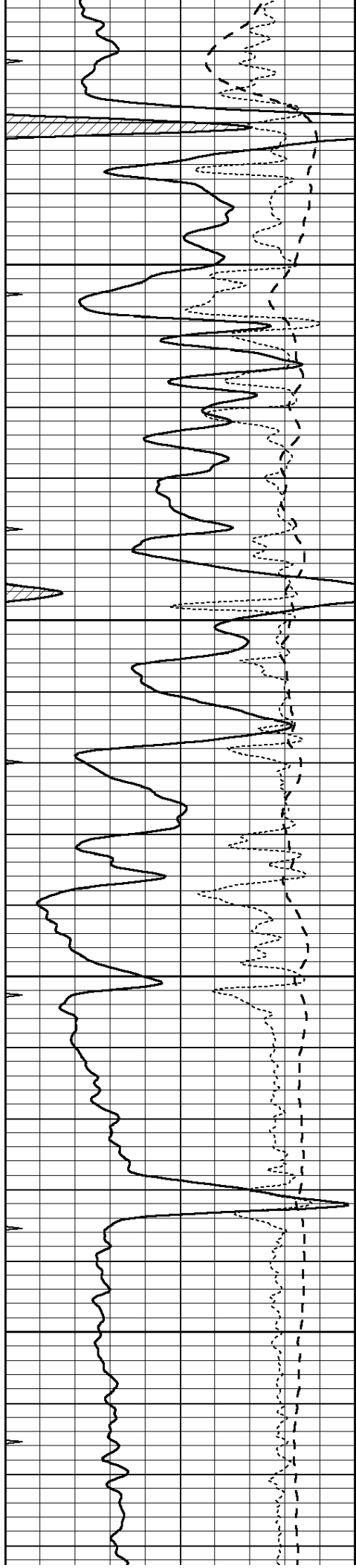
4000

4050

4100

4150



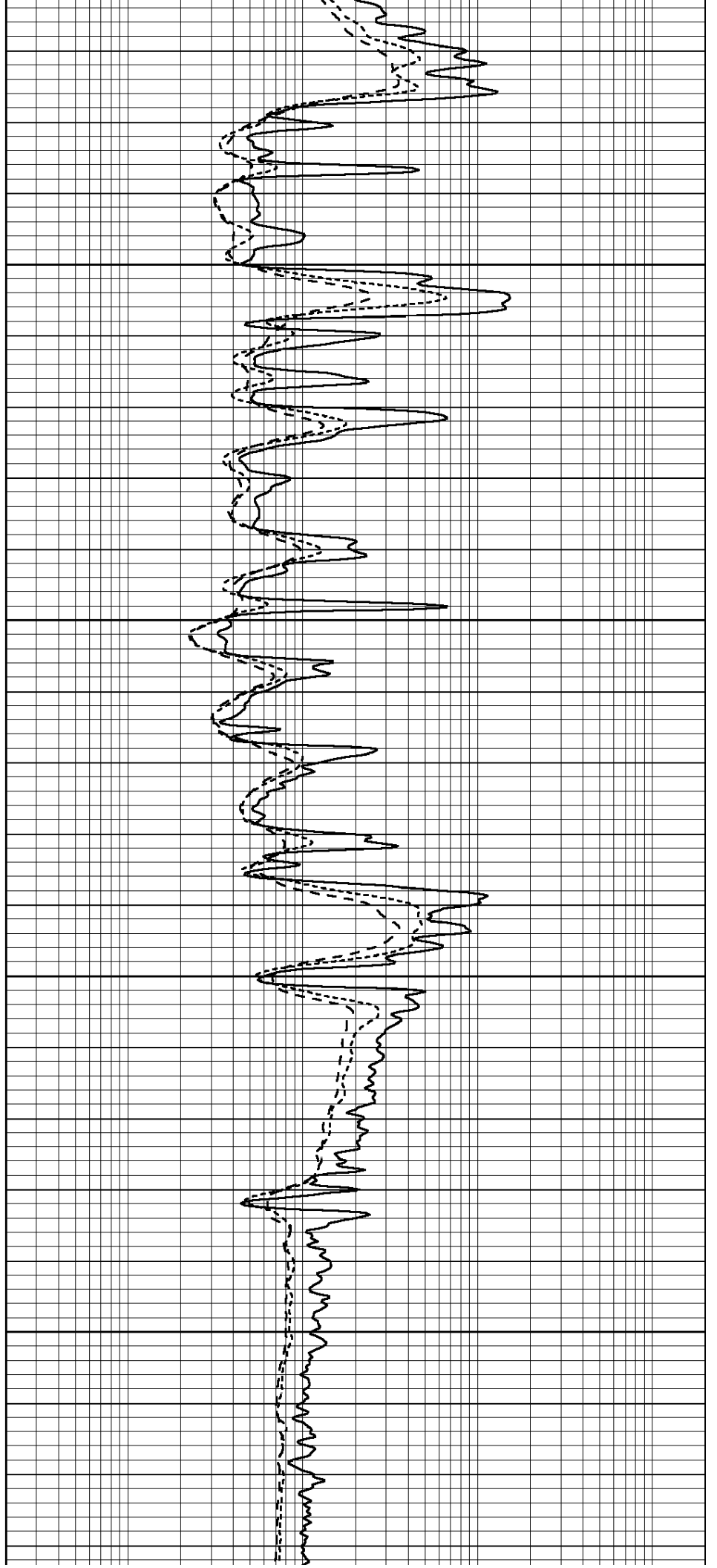


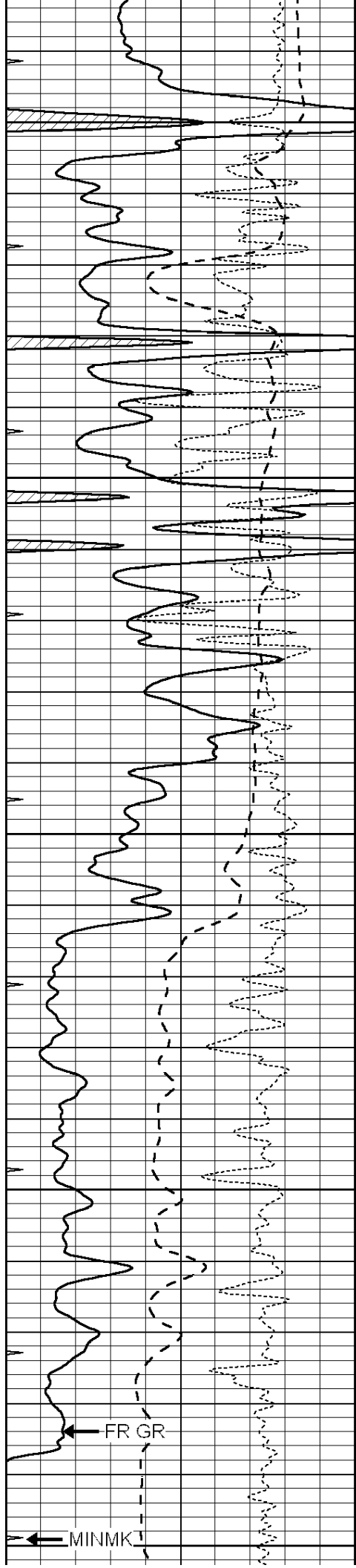
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4250

4300

4350





4400

4450

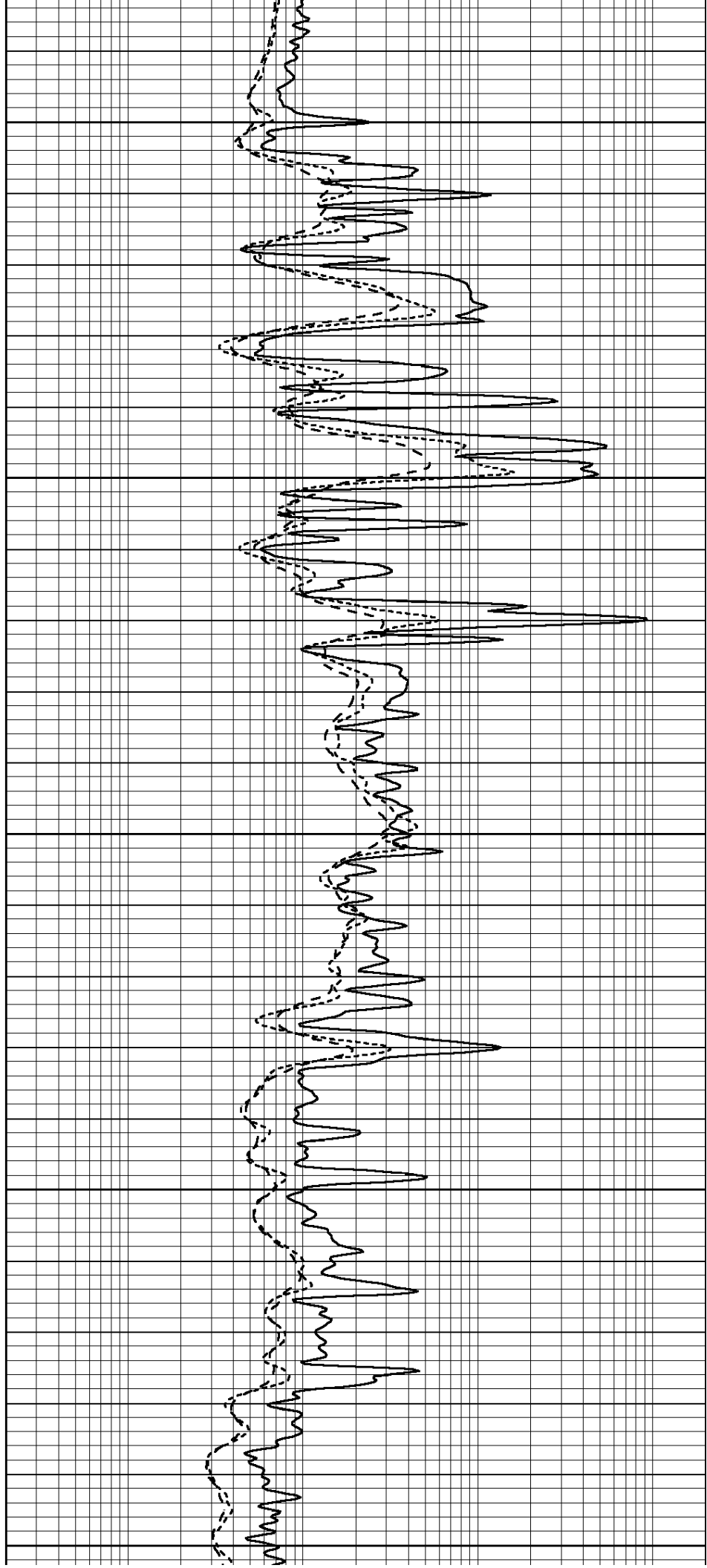
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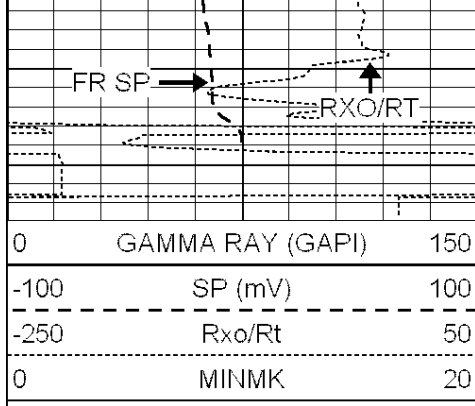
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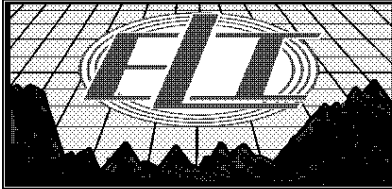
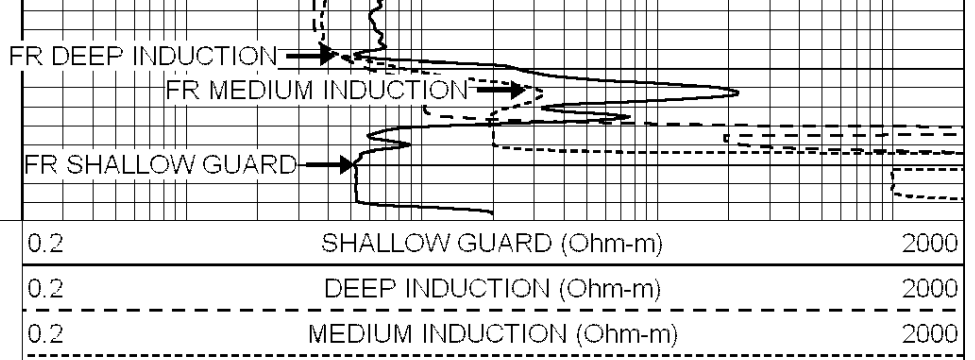
FR GR

MINMK



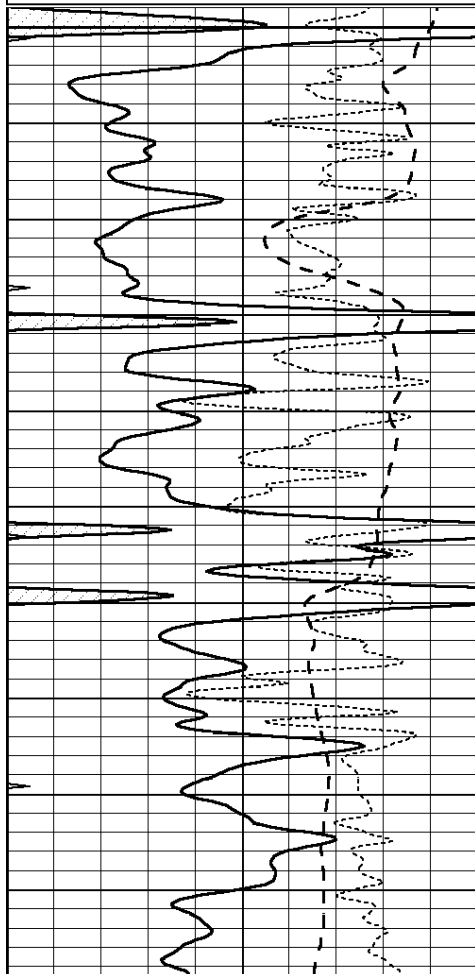
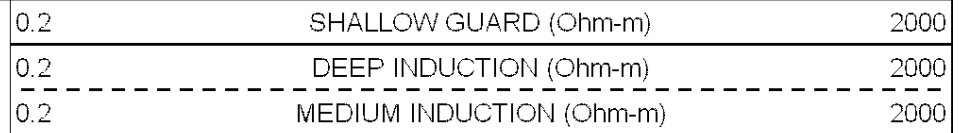
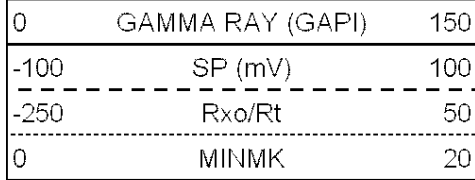


LTD 4622



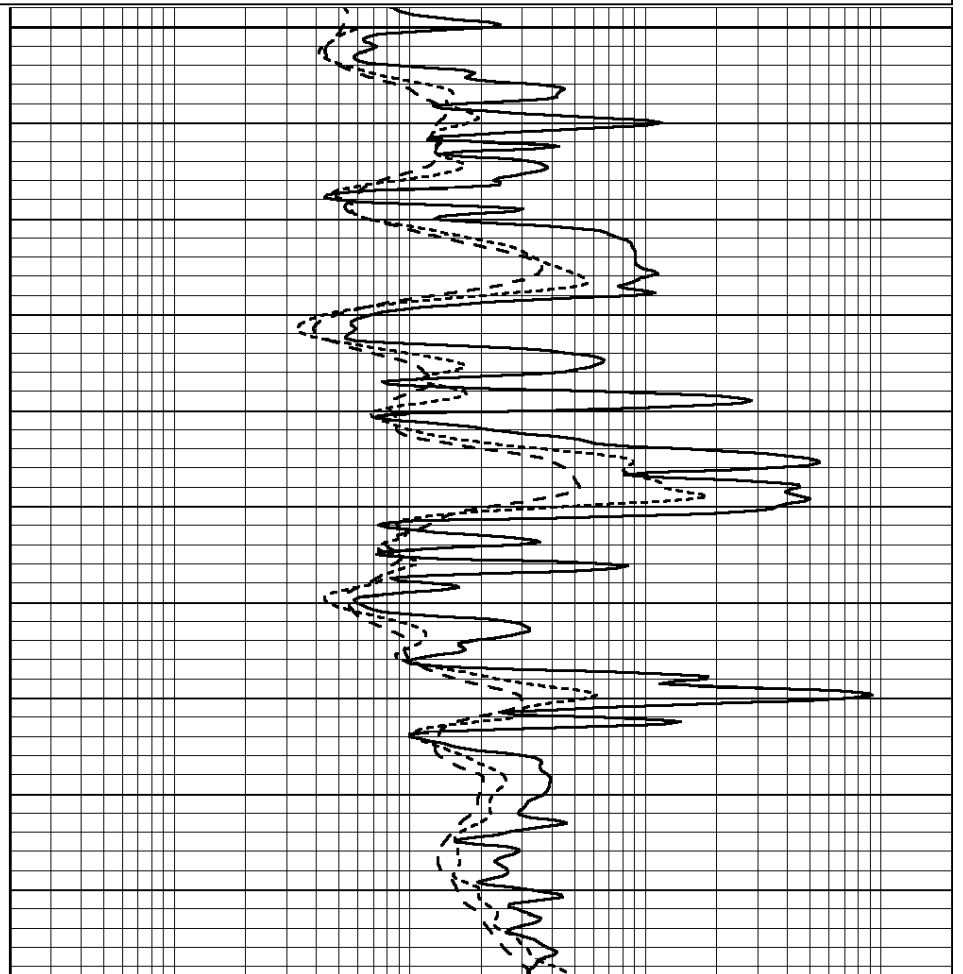
REPEAT SECTION

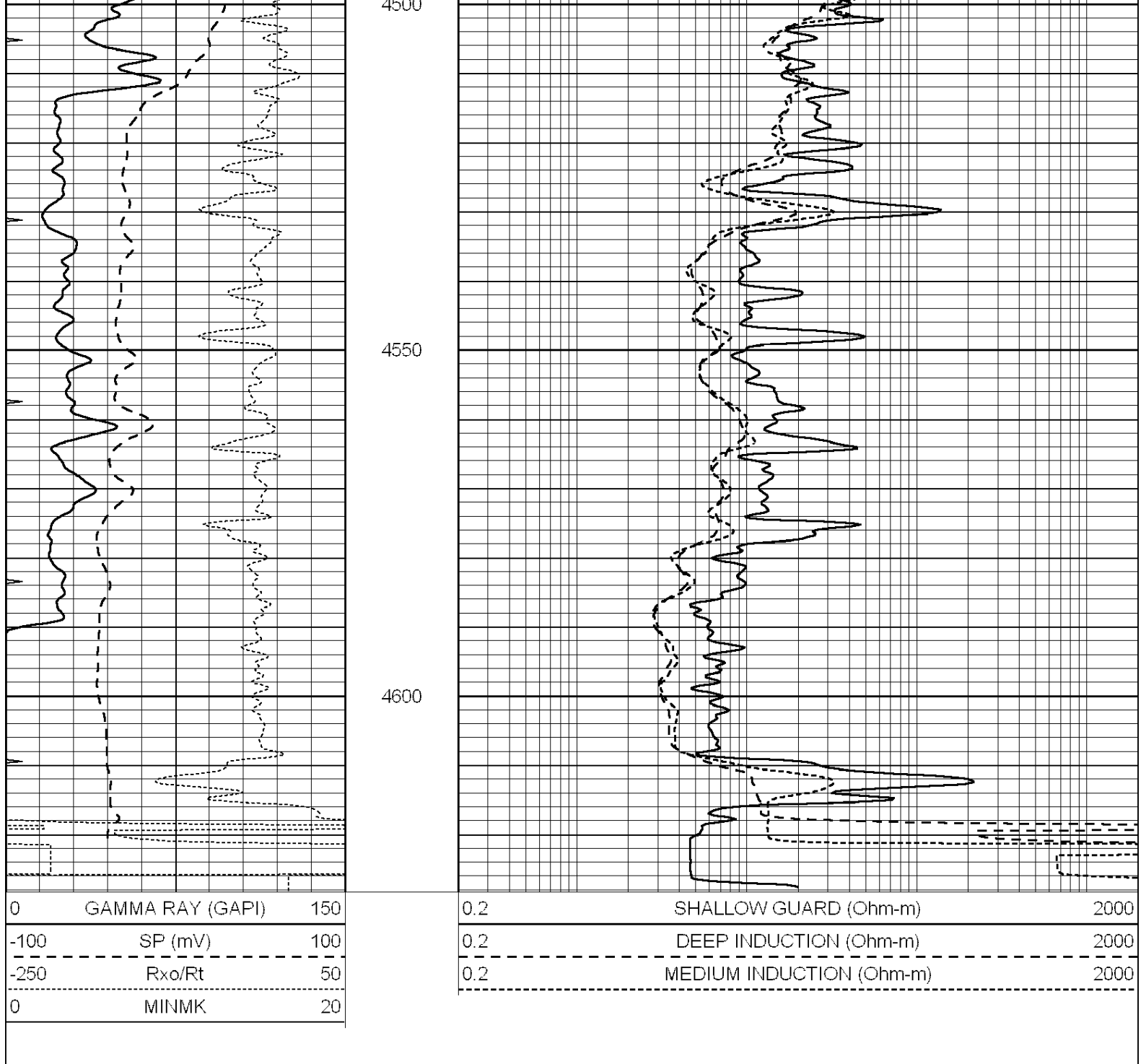
Database File: 3068ddn.db
 Dataset Pathname: pass2.4
 Presentation Format: _dil
 Dataset Creation: Tue Dec 04 23:50:35 2018 by Calc SOC 120430
 Charted by: Depth in Feet scaled 1:240



4400

4450





Calibration Report

Database File: 1598ddn.db
 Dataset Pathname: pass4
 Dataset Creation: Wed Aug 30 02:13:00 2017 by Log SOC 120430

Dual Induction Calibration Report

Serial-Model: PROBE7-DILG
 Surface Cal Performed: Wed Aug 30 00:06:33 2017
 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		V	References			Results	
	Air	Loop		Air	Loop		m	b
Deep	-0.014	0.629	V	0.000	400.000	mmho/m	620.000	0.000
Medium	0.039	0.728	V	0.000	464.000	mmho/m	675.000	-44.000

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: 002 Model: PRB

Master Calibration						Performed Mon Aug 21 11:27:42 2017		
	Background	Magnesium	Aluminum	Sandstone				
Window 1	837.1	10632.5	2945.1	12110.1				cps
Window 2	772.0	9117.4	2570.1	10197.3				cps
Window 3	631.7	4669.0	1481.9	5042.9				cps
Window 4	187.0	187.5	185.9	189.9				cps
Long Space	0.0	8345.4	1798.1	9425.3				cps
Short Space	1.1	1927.9	1285.9	2050.2				cps
Rho		1.7100	2.5960	1.3800				g/cc
Pe		0.0000	2.5700	1.5500				
Rib Angle	: 45.2	Rib Slope	: 1.008	Density/Spine Ratio			: 0.558	
Spine Angle	: 75.2	Spine Slope	: 3.790	Spine Intercept			: -19.6	

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: 070558
Tool Model: OPEN_GR
Performed: Wed May 31 00:09:32 2017

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 1.0 cps

Sensitivity: 0.2800 GAPI/cps