



NABORS

**COMPLETION
& PRODUCTION
SERVICES CO.**

**DUAL INDUCTION
LOG**

Company	MULL DRILLING COMPANY, INC.		
Well	#1-32 MISHLER "A"		
Field	WILDCAT		
County	NESS	State	KANSAS
Location:	API # : 15-135-25735-0000		Other Services
	2095' FSL & 1004' FEL		CDL/CNL/PE
	SEC 32 TWP 16S RGE 23W		Elevation
Permanent Datum	GROUND LEVEL	Elevation	2466
Log Measured From	KELLY BUSHING 9' A.G.L.		K.B. 2475
Drilling Measured From	KELLY BUSHING		D.F. 2473
			G.L. 2466
Date	2/9/14		
Run Number	ONE		
Depth Driller	4600		
Depth Logger	4601		
Bottom Logged Interval	4599		
Top Log Interval	00		
Casing Driller	8 5/8"@228'		
Casing Logger	226		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 4,500 PPM	
Density / Viscosity	9.3/47		
pH / Fluid Loss	9.5/7.2		
Source of Sample	FLOWLINE		
Rim @ Meas. Temp	1.10@60F		
Rmf @ Meas. Temp	.825@60F		
Rmc @ Meas. Temp	1.32@60F		
Source of Rmf / Rmc	MEASUREMENT		
Rim @ BHT	.545@121F		
Time Circulation Stopped	2.5 HOURS		
Time Logger on Bottom	9:45 P.M.		
Maximum Recorded Temperature	121F		
Equipment Number	4854		
Location	HAYS, KANSAS		
Recorded By	JEFF LUEBBERS		
Witnessed By	KEVIN KESSLER		

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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.

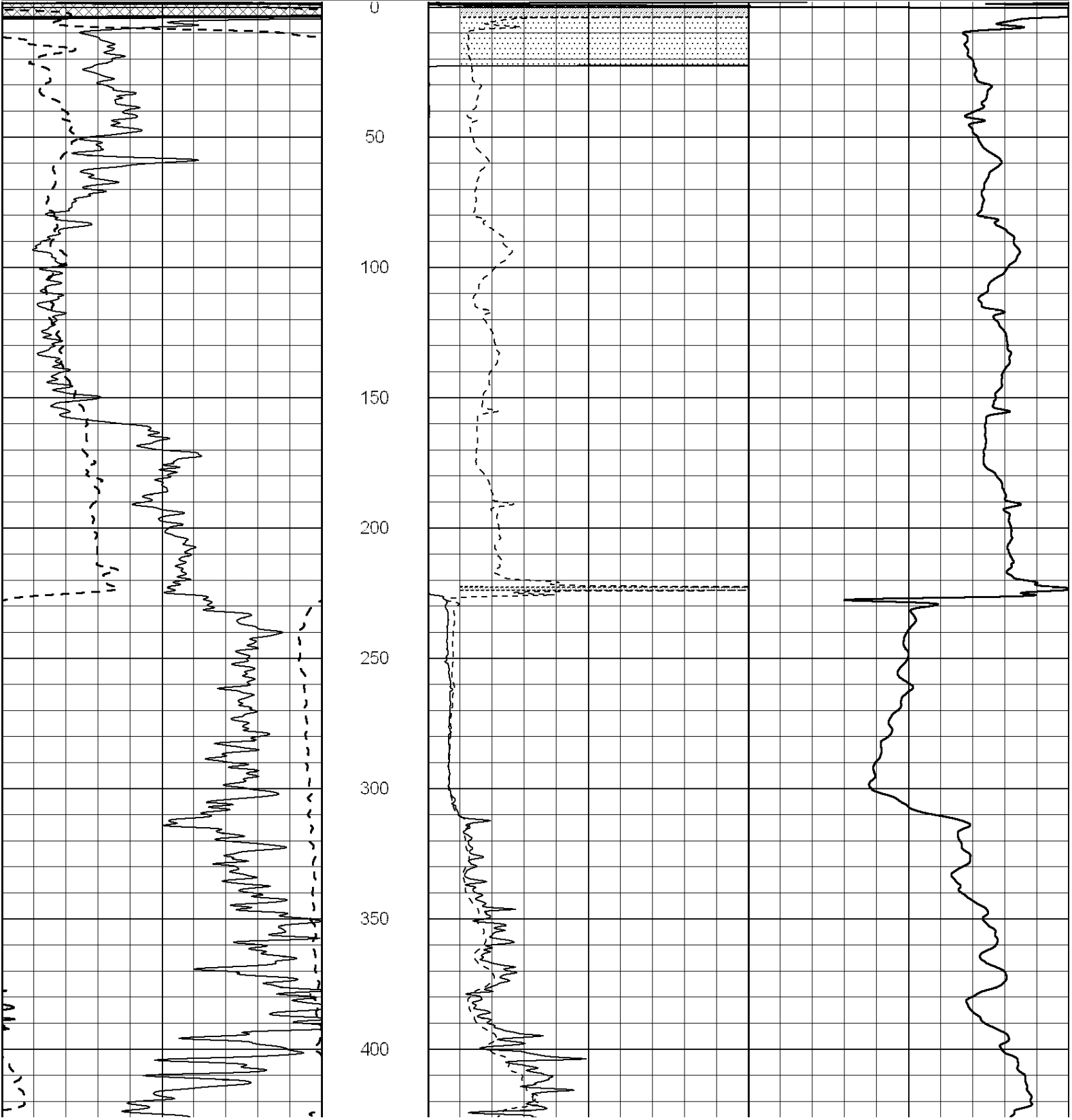
Comments

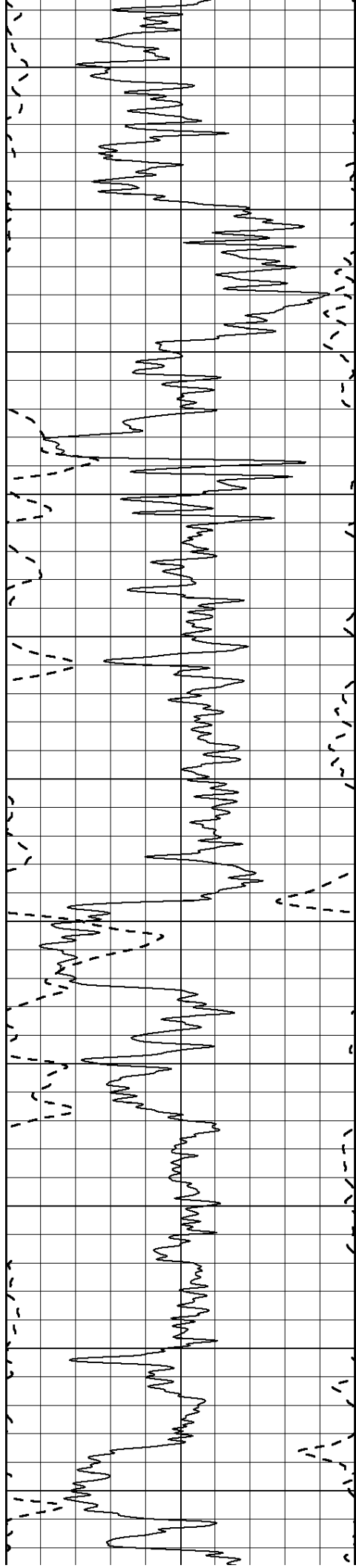
THANK YOU FOR USING "NABORS" HAYS, KANSAS (785) 628-6395
DIRECTIONS

RANSOM, KS. (JUNCTION OF HWY 4 & 283) 1E. ON HWY 4 TO "RD. T", 1S. TO TANK BATTERY, W. INTO

Database File: 22249pe.db
Dataset Pathname: pass3.10
Presentation Format: dil2
Dataset Creation: Sun Feb 09 23:06:26 2014 by Calc SOC 120430
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

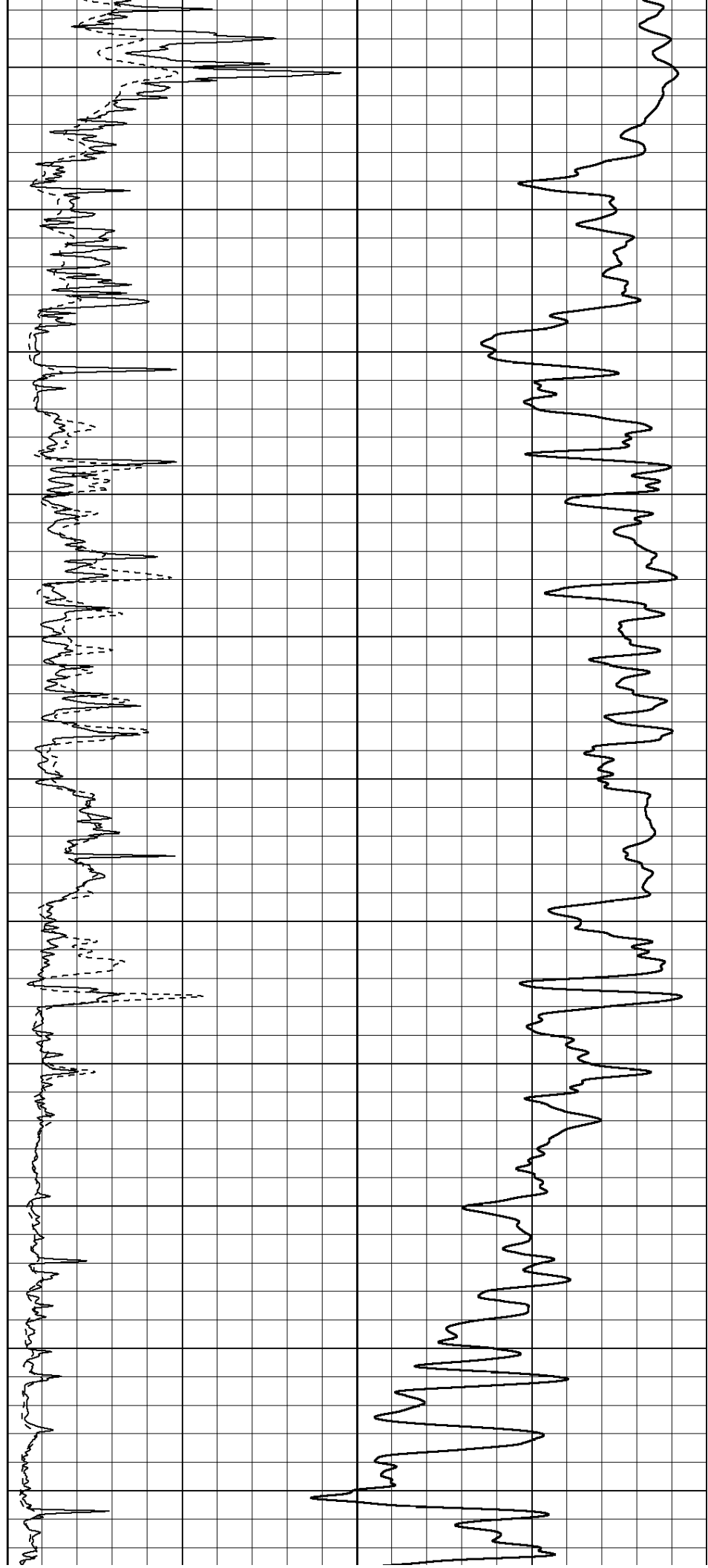
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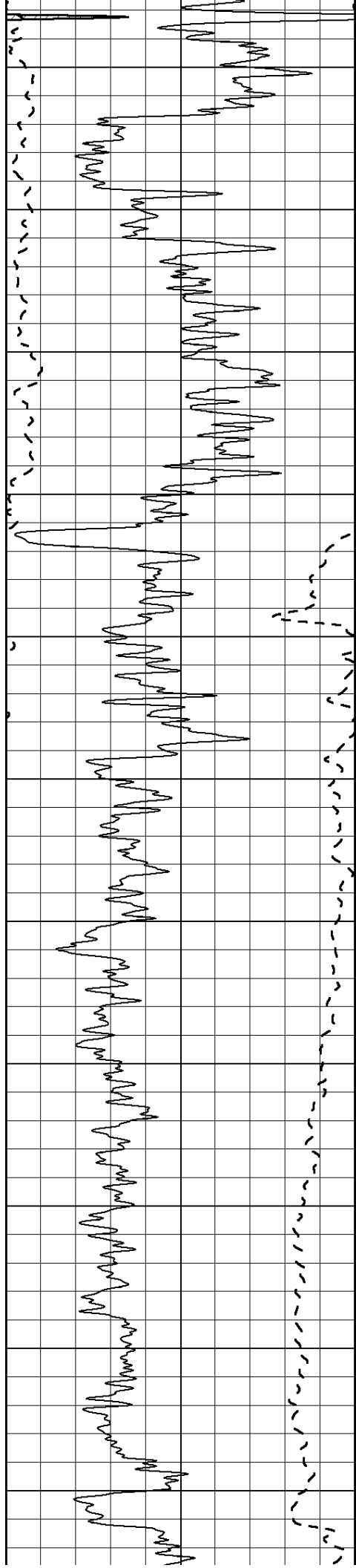
800

850

900

950





1000

1050

1100

1150

1200

1250

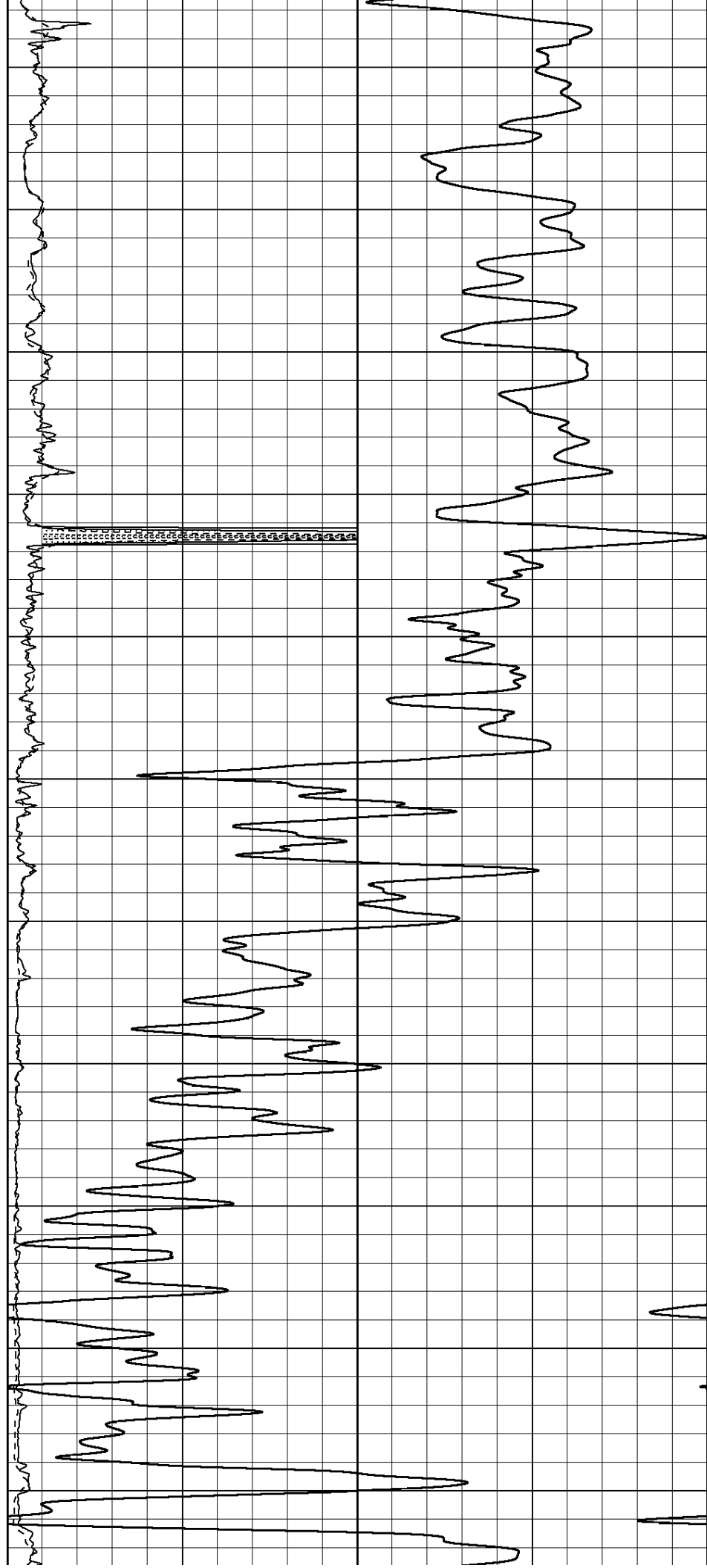
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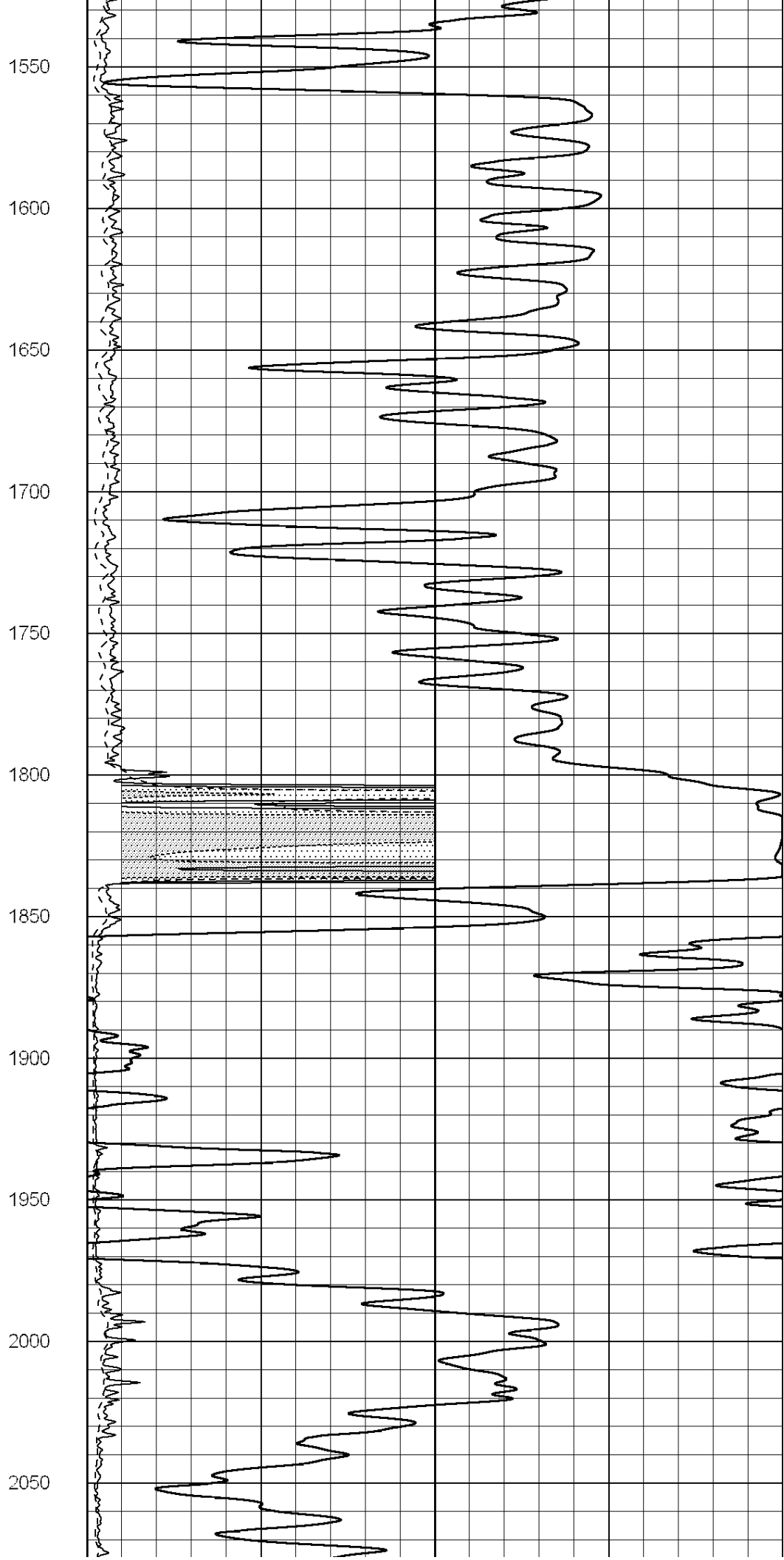
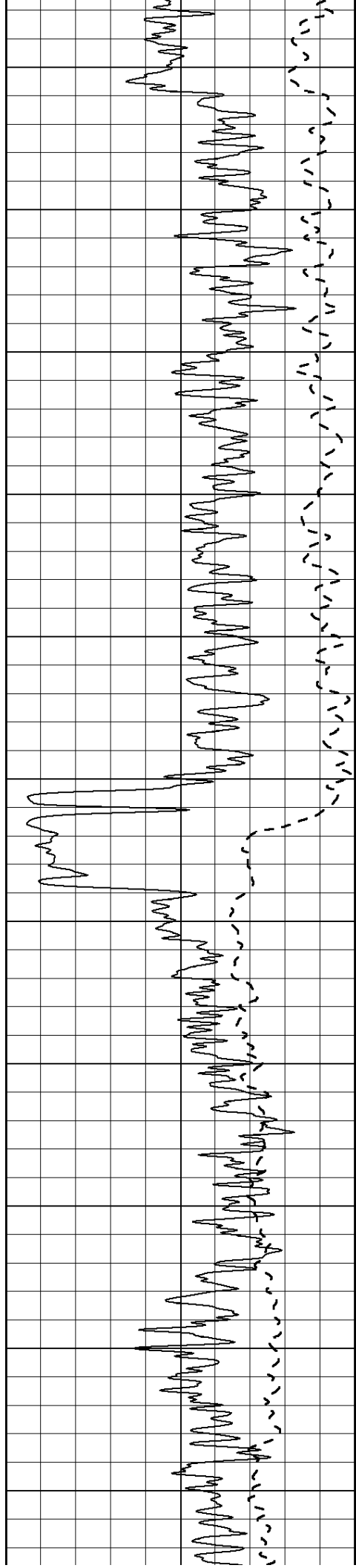
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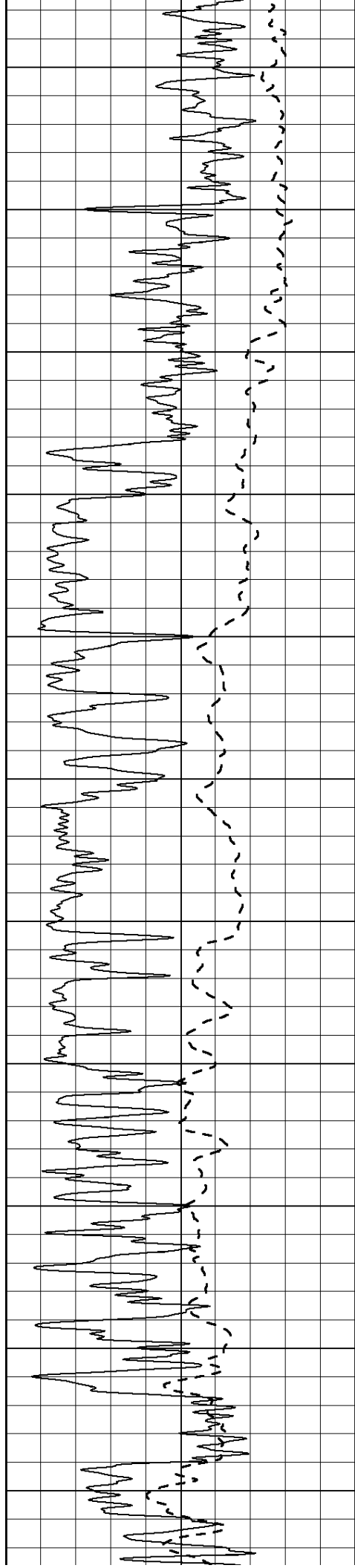
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1450

1500







2100

2150

2200

2250

2300

2350

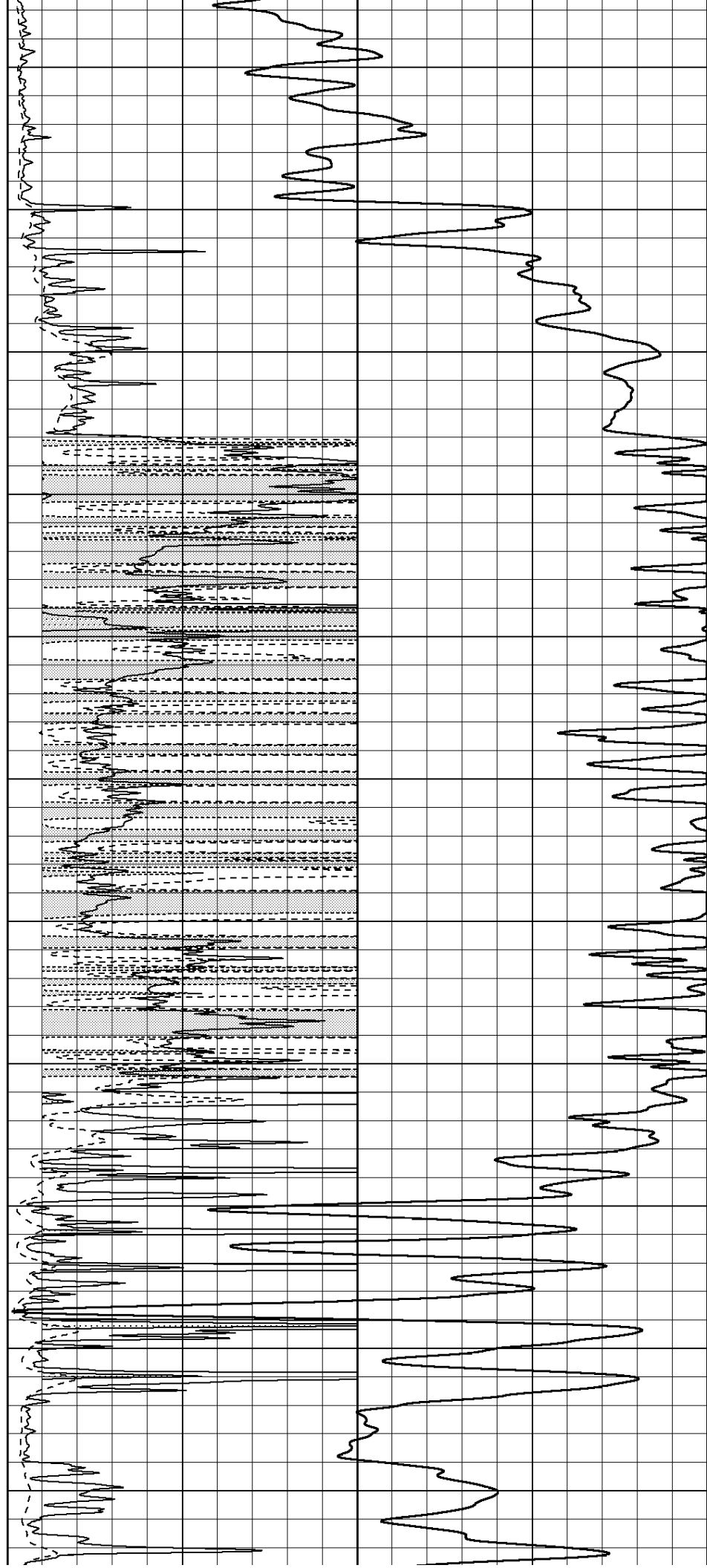
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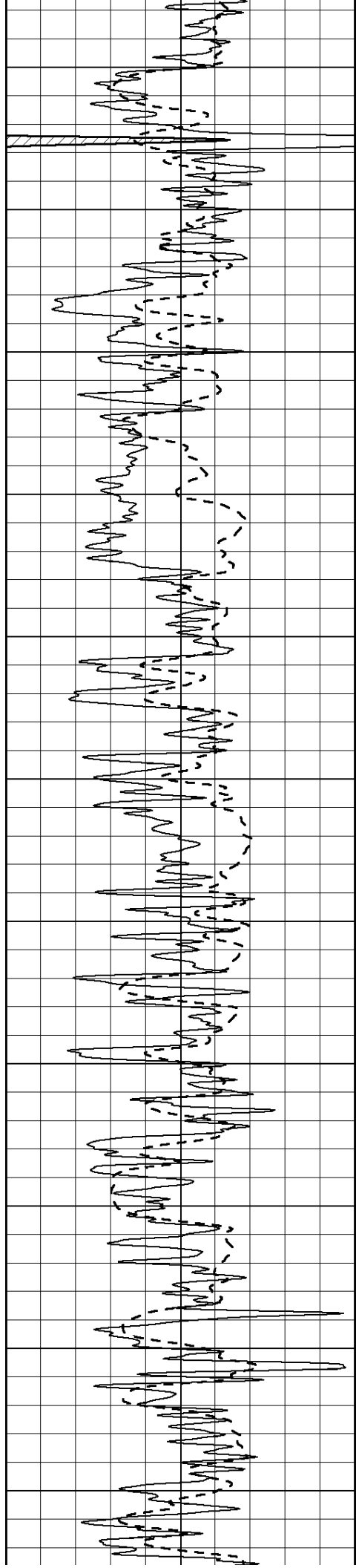
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2500

2550

2600





2650

2700

2750

2800

2850

2900

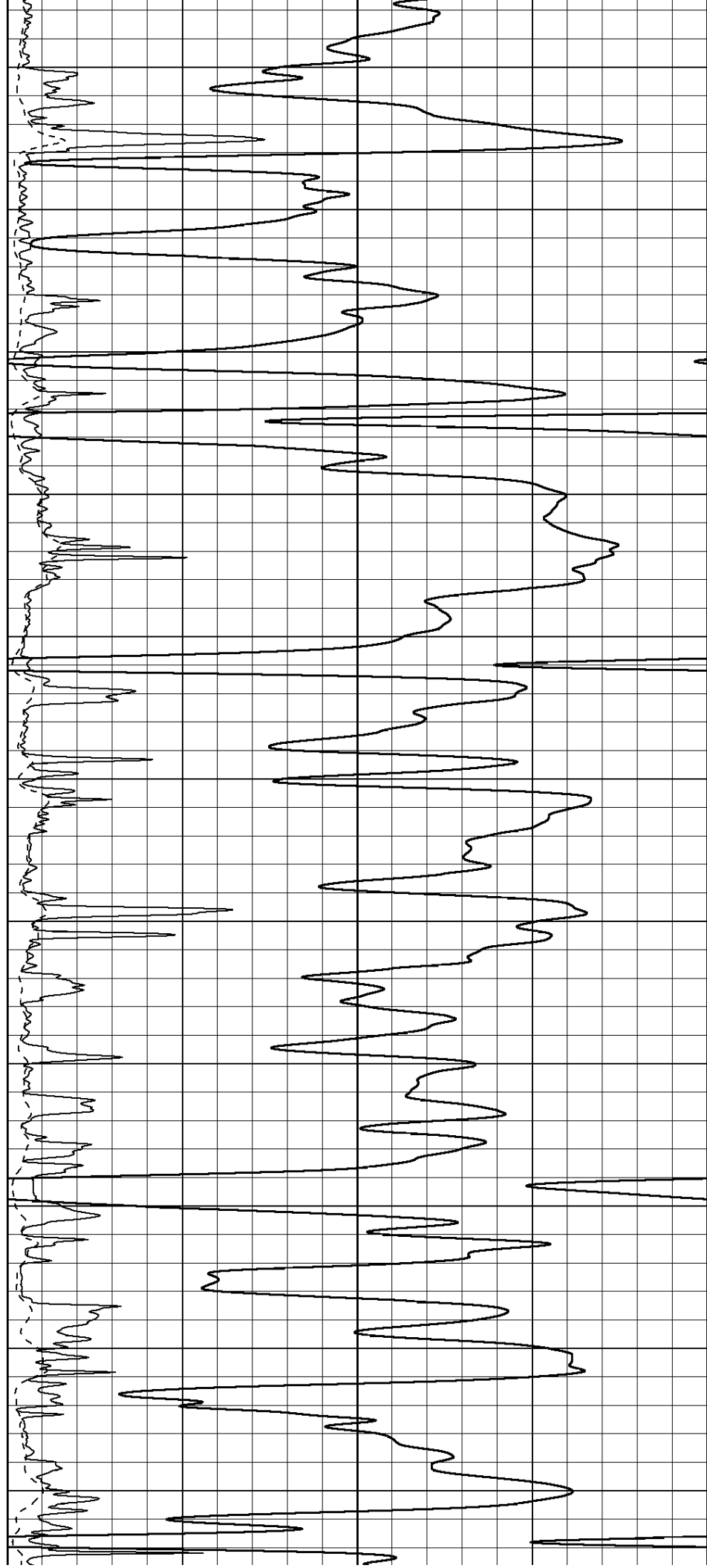
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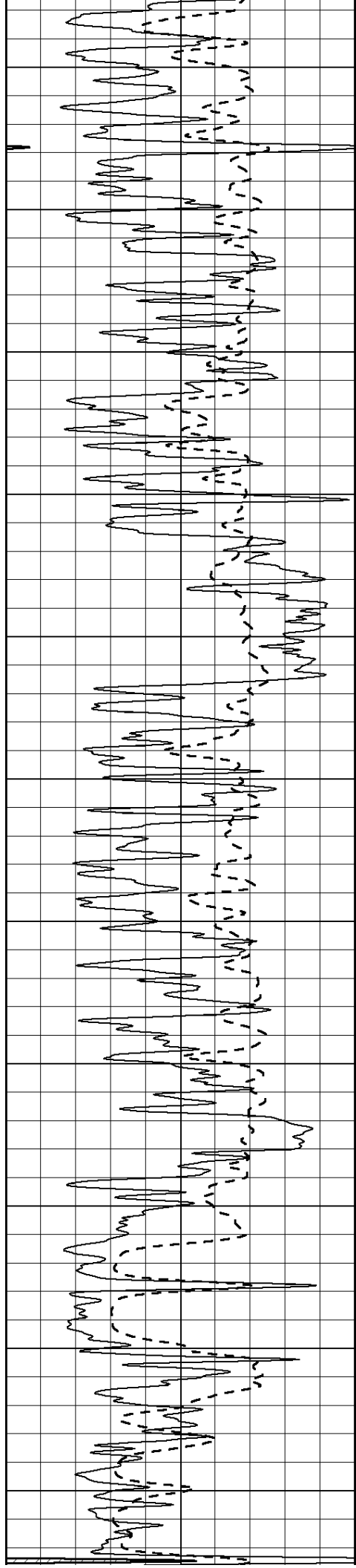
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3050

3100

3150





3200

3250

3300

3350

3400

3450

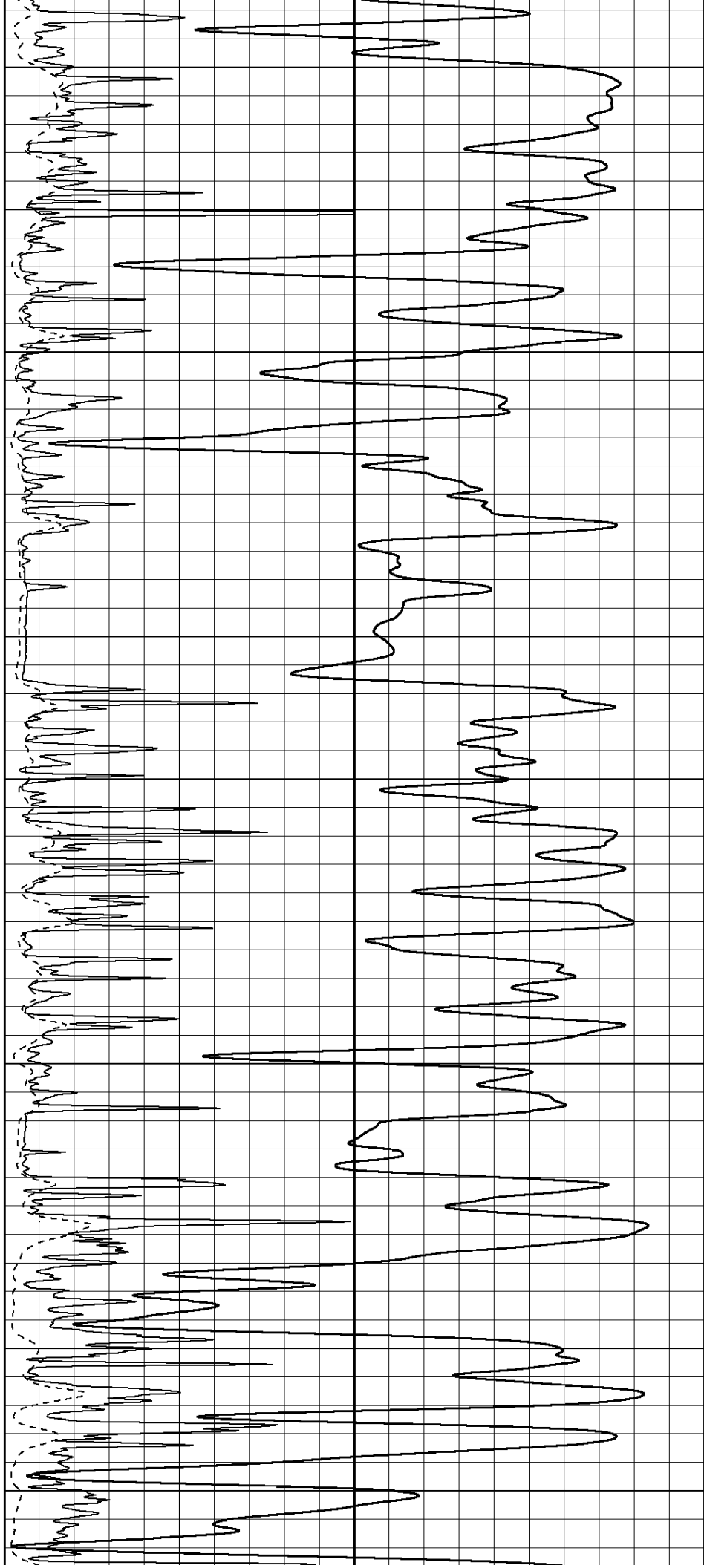
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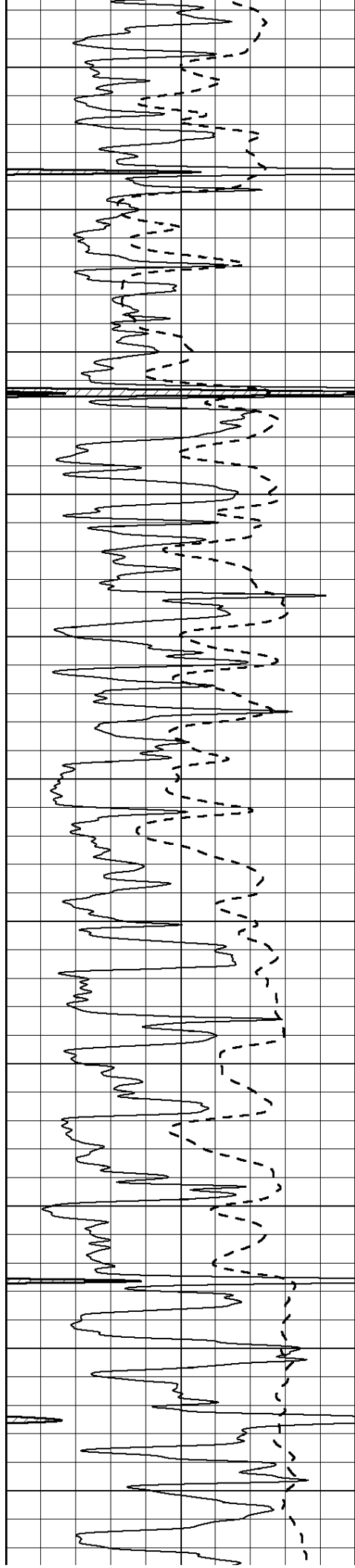
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3600

3650

3700





3750

3800

3850

3900

3950

4000

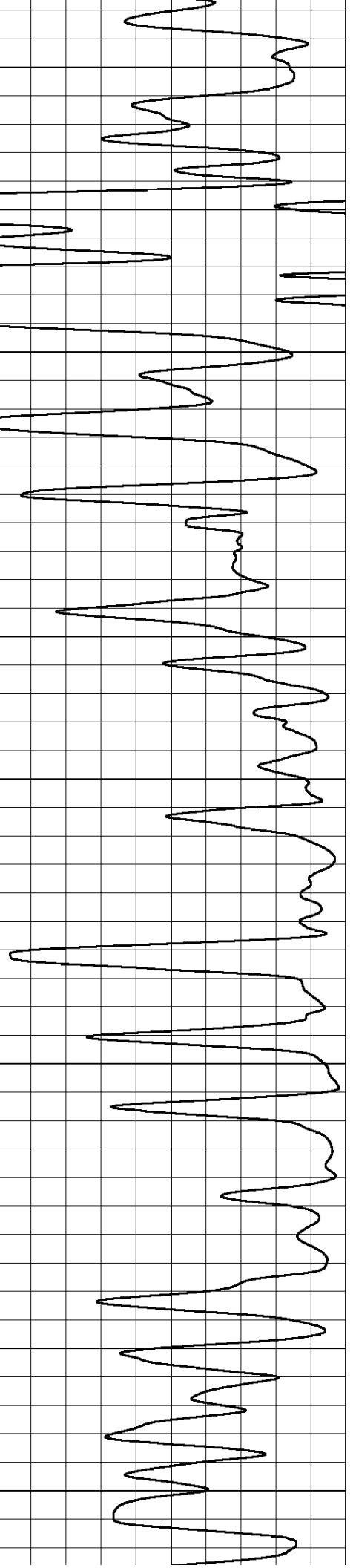
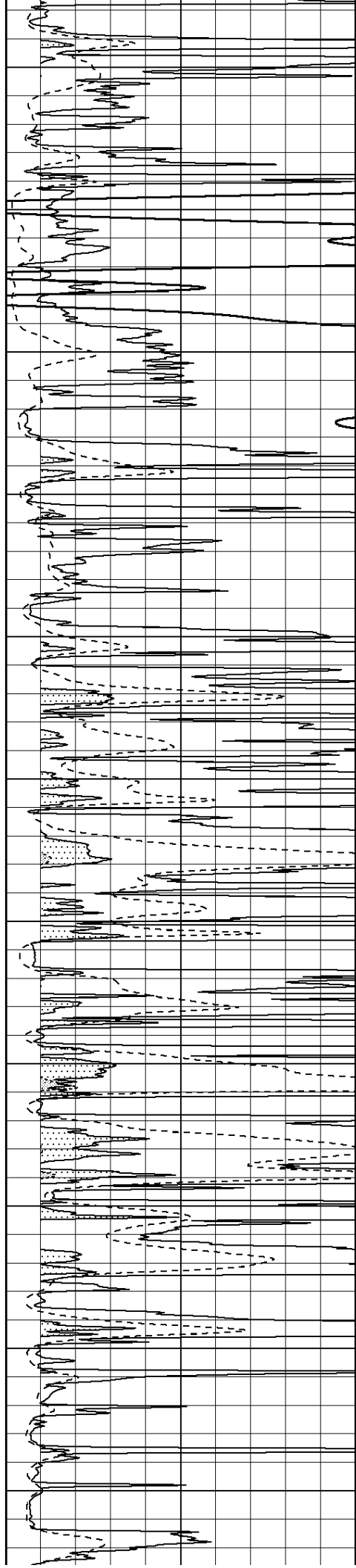
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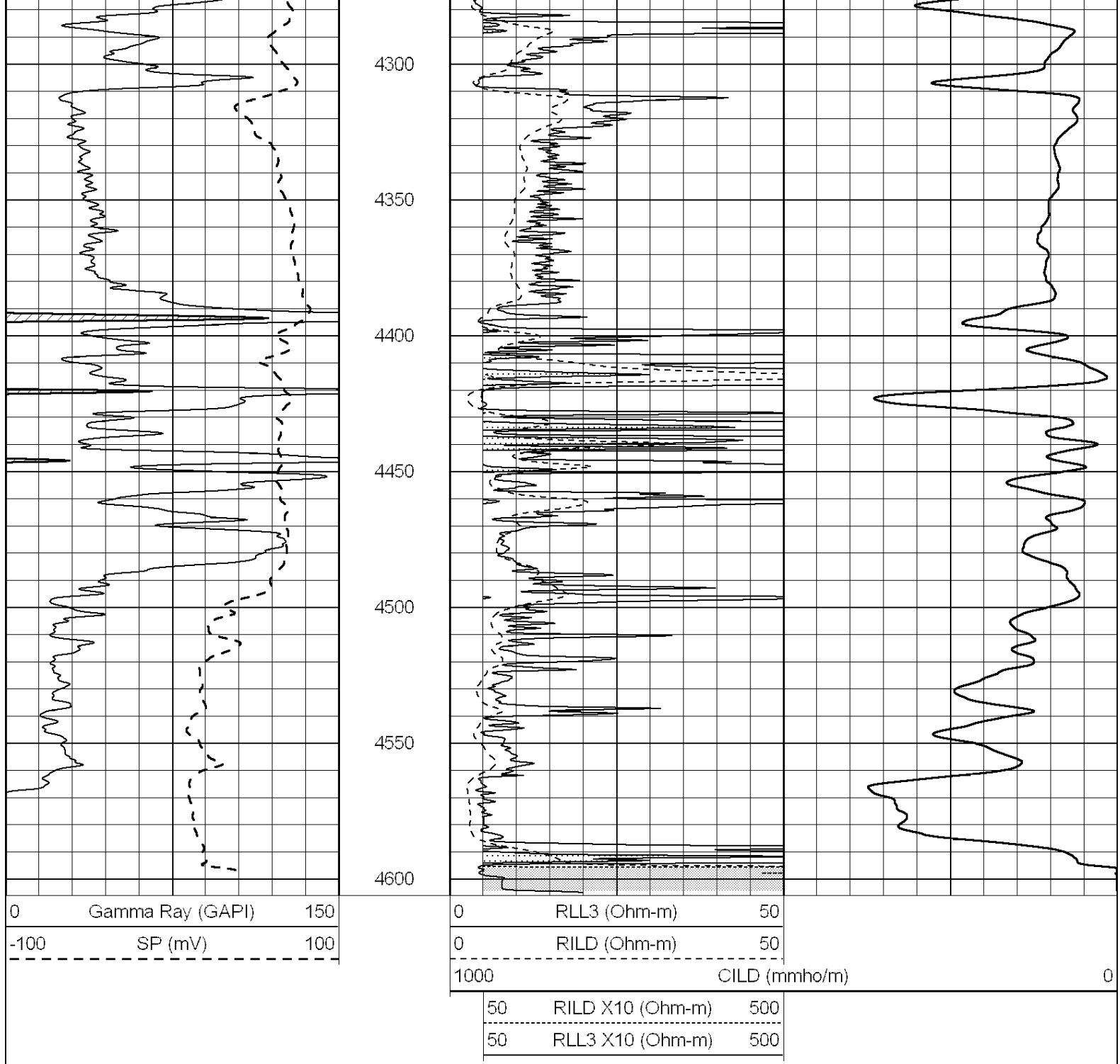
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4150

4200

4250



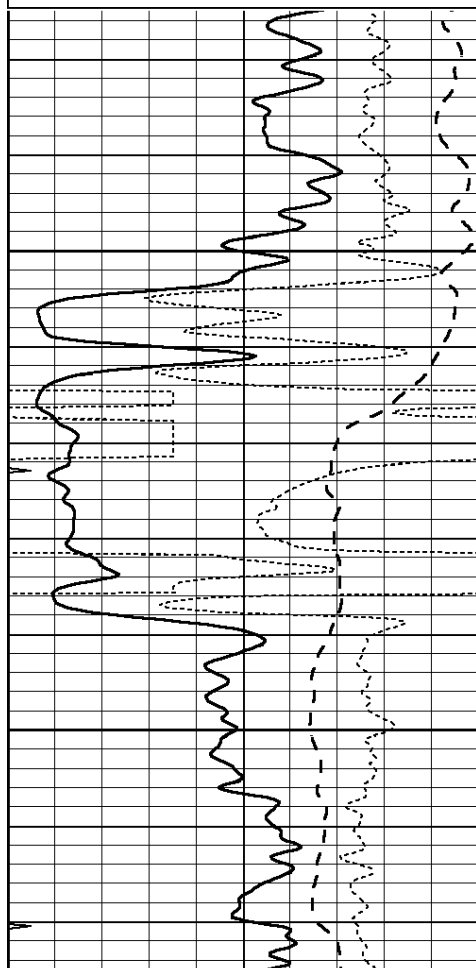


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ANHYDRITE

Database File: 22249pe.db
Dataset Pathname: pass3.11
Presentation Format: _dil
Dataset Creation: Sun Feb 09 23:06:42 2014 by Calc SOC 120430
Charted by: Depth in Feet scaled 1:240

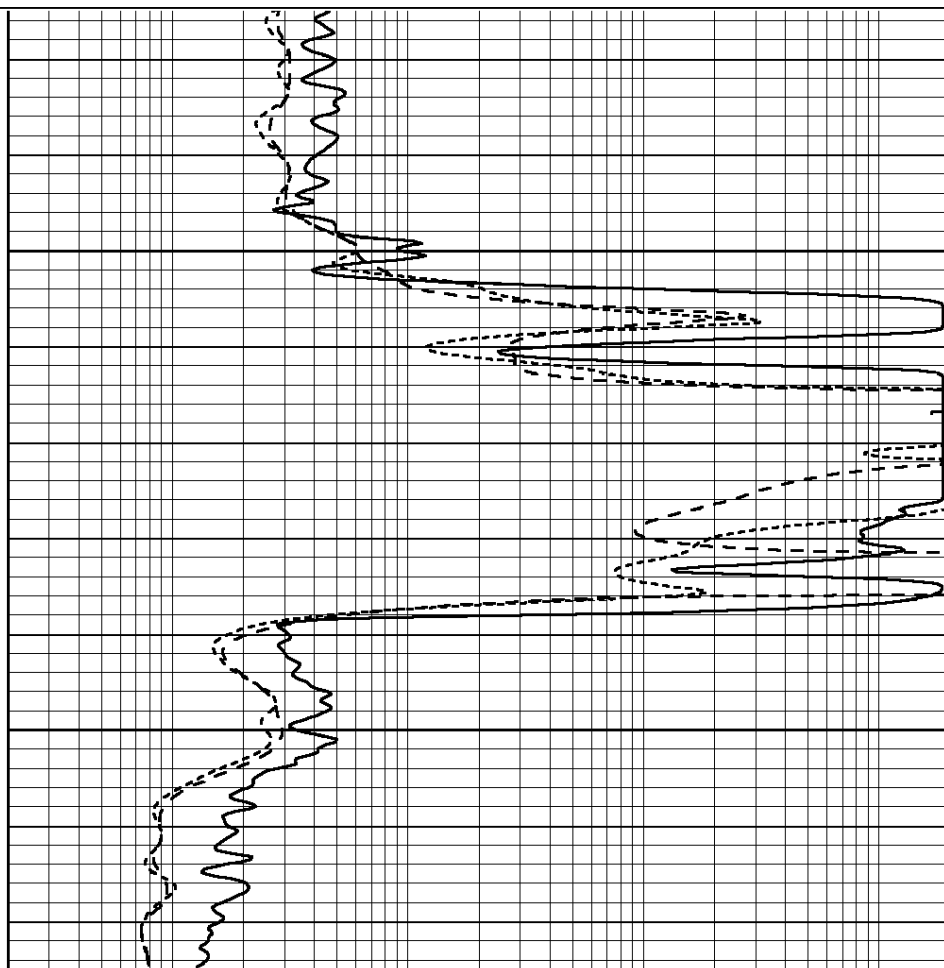
0	GAMMA RAY (GAPI)	150	0.2	SHALLOW GUARD (Ohm-m)	2000
-100	SP (mV)	100	0.2	DEEP INDUCTION (Ohm-m)	2000
-250	Rxo/Rt	50	0.2	MEDIUM INDUCTION (Ohm-m)	2000
0	MINMK	20			



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

1800

1850



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

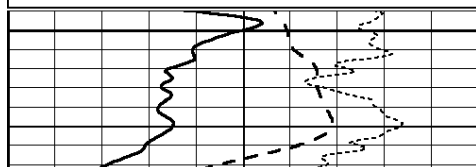


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MAIN SECTION

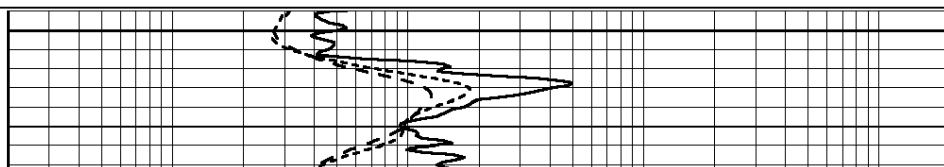
Database File: 22249pe.db
Dataset Pathname: pass3.10
Presentation Format: _dil
Dataset Creation: Sun Feb 09 23:06:26 2014 by Calc SOC 120430
Charted by: Depth in Feet scaled 1:240

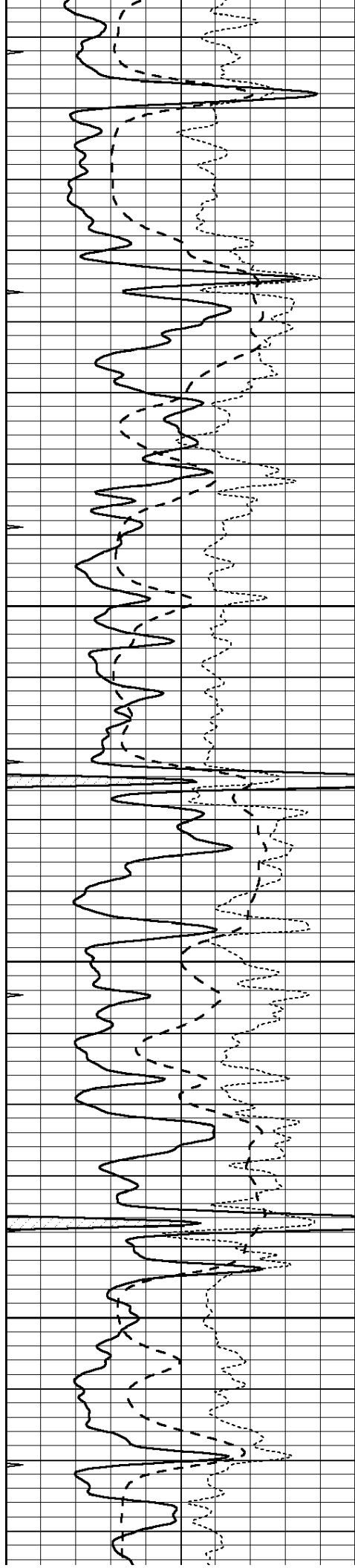
0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20



3600

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



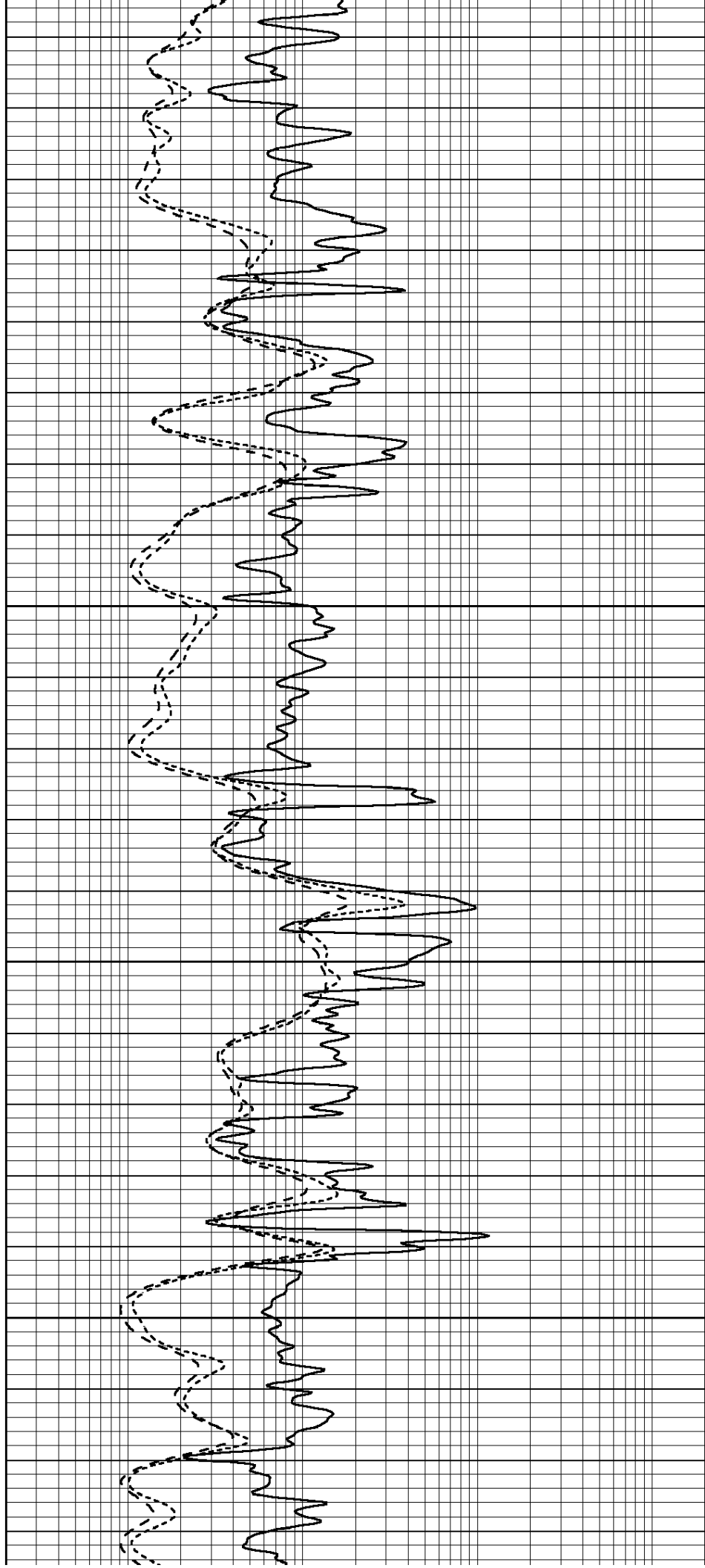


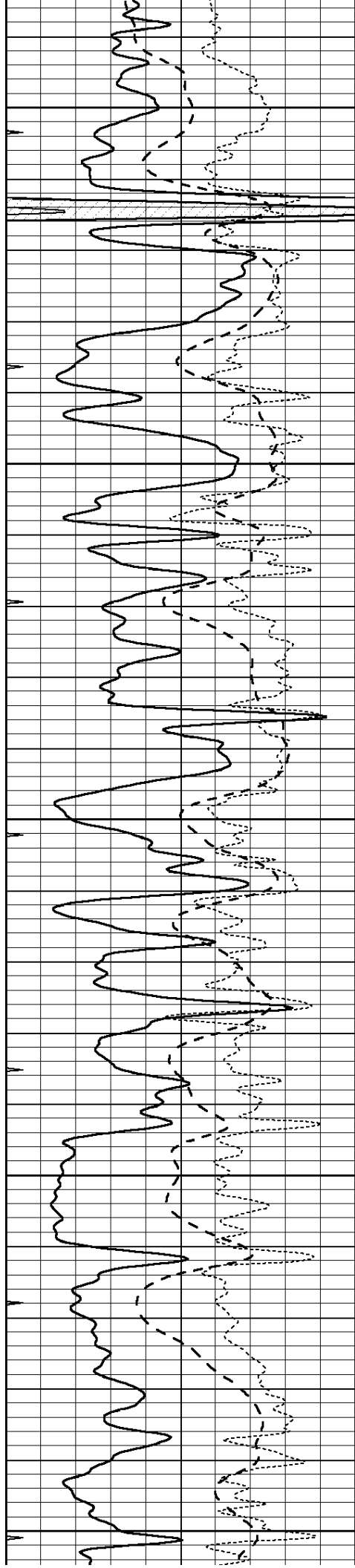
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3700

3750

3800





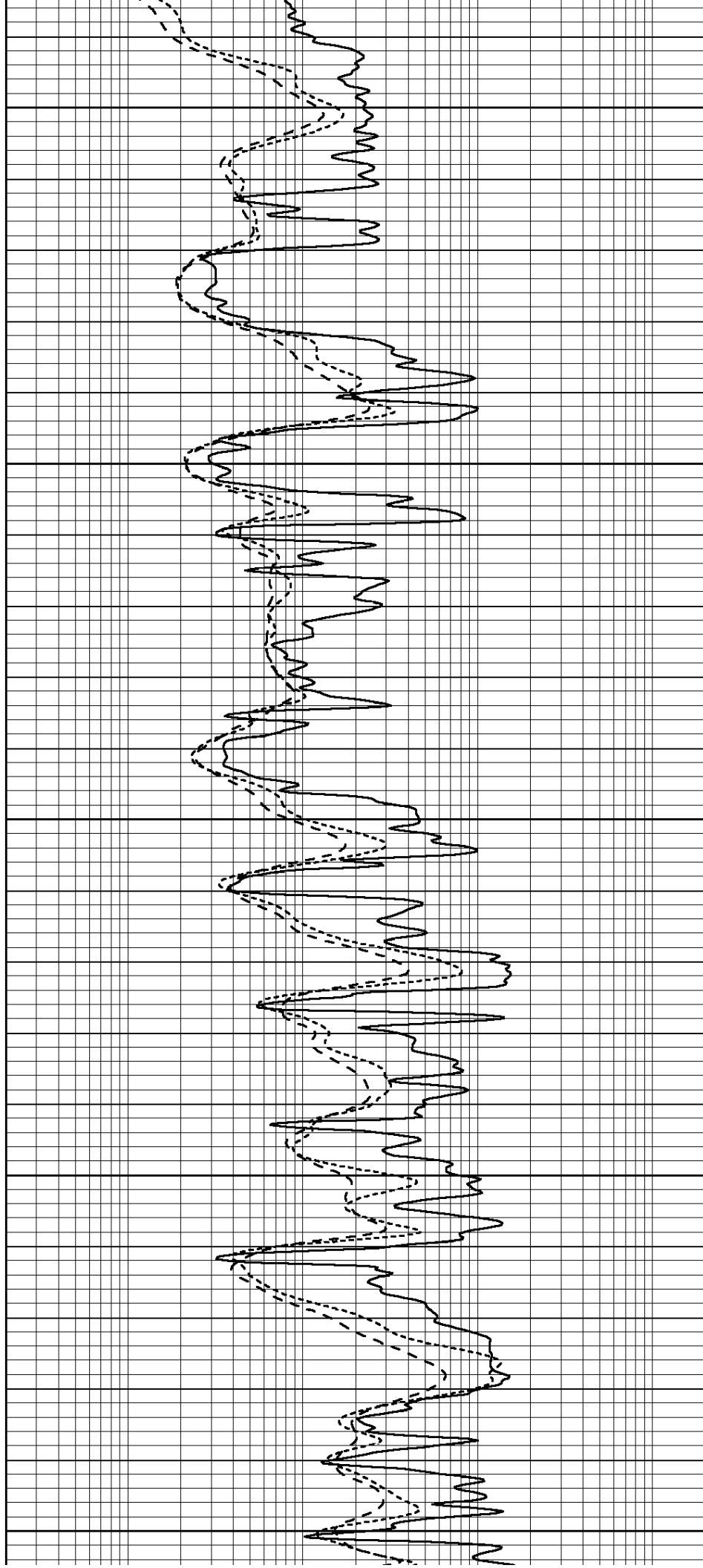
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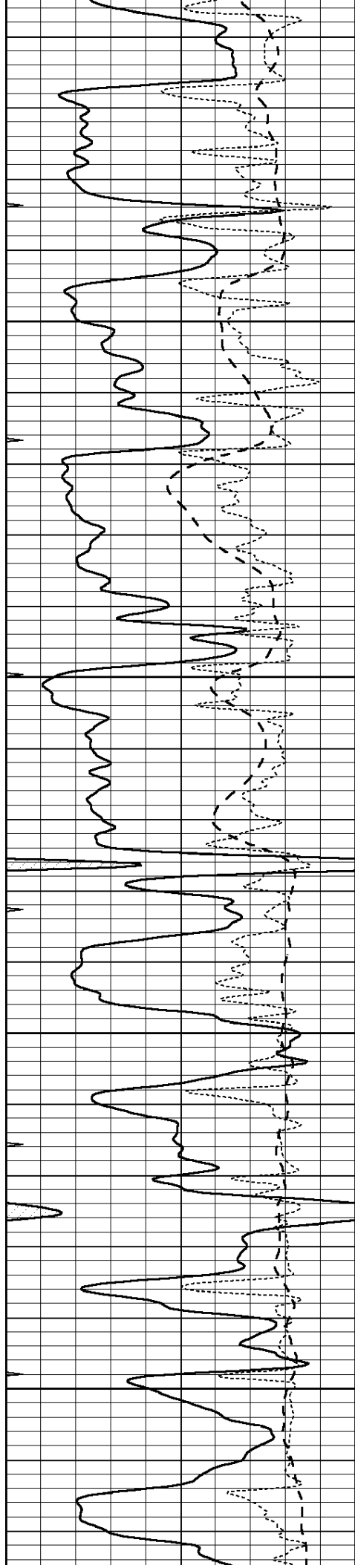
3900

3950

4000

4050



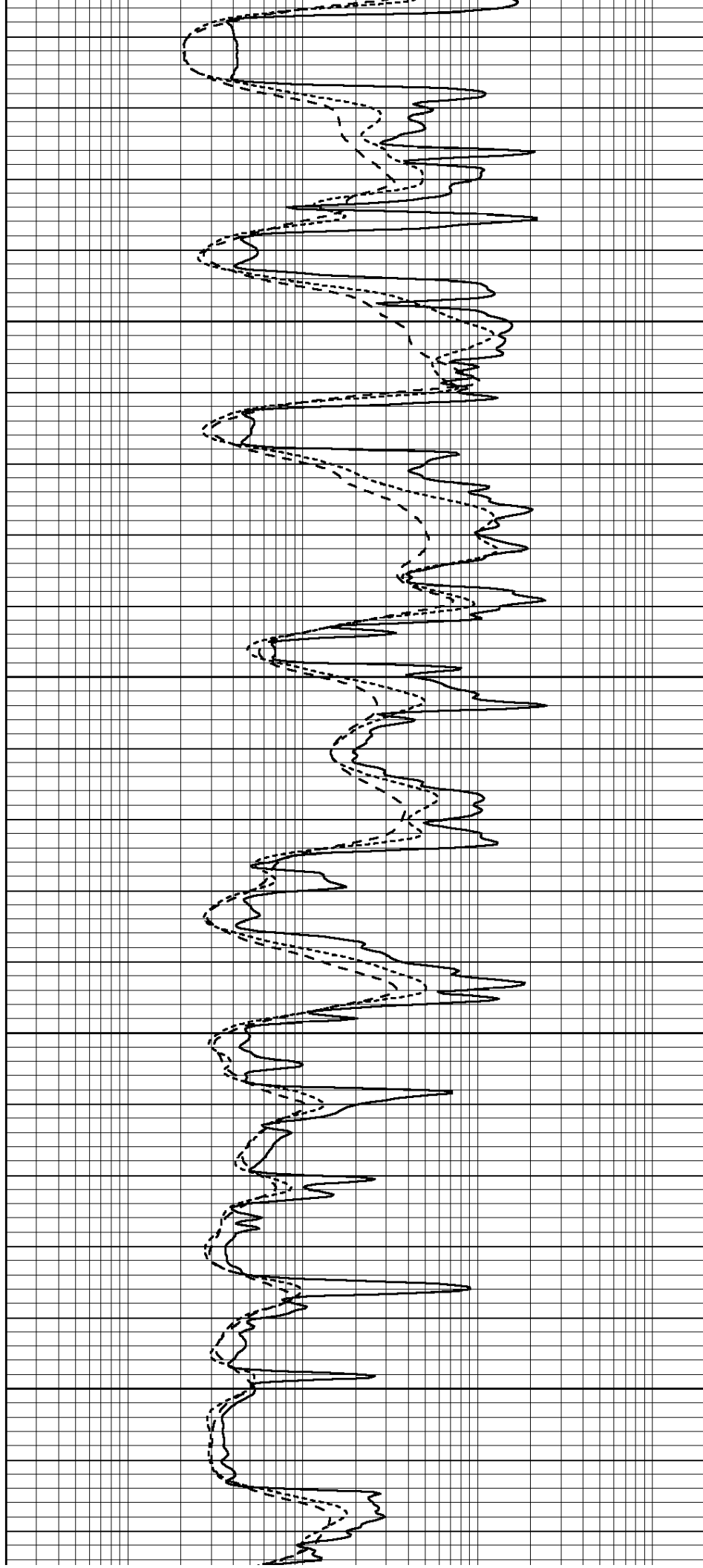


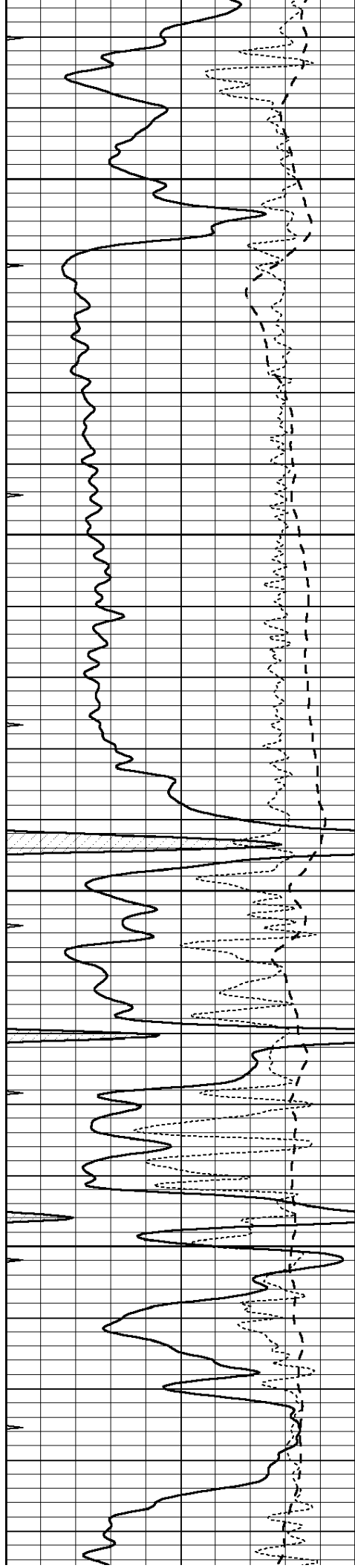
4100

4150

4200

4250



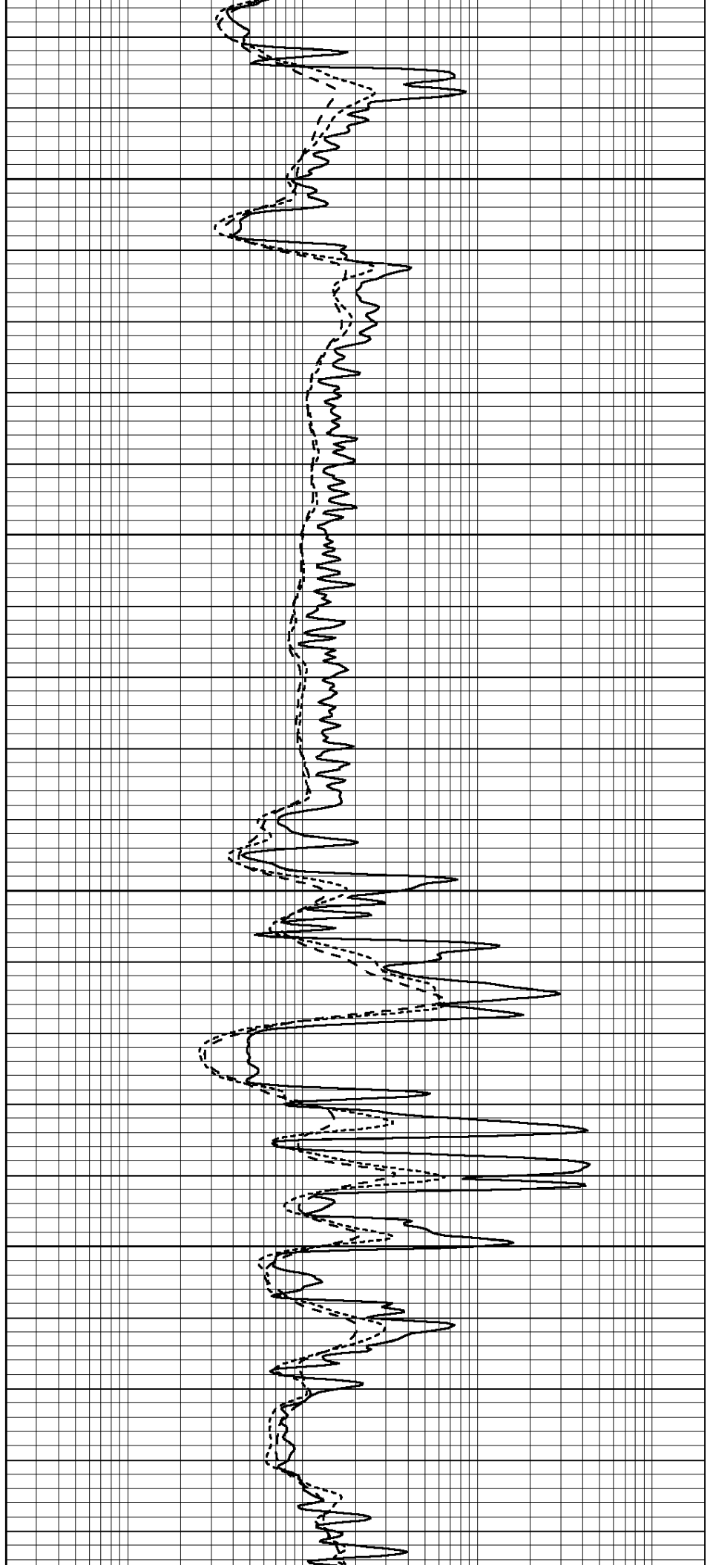


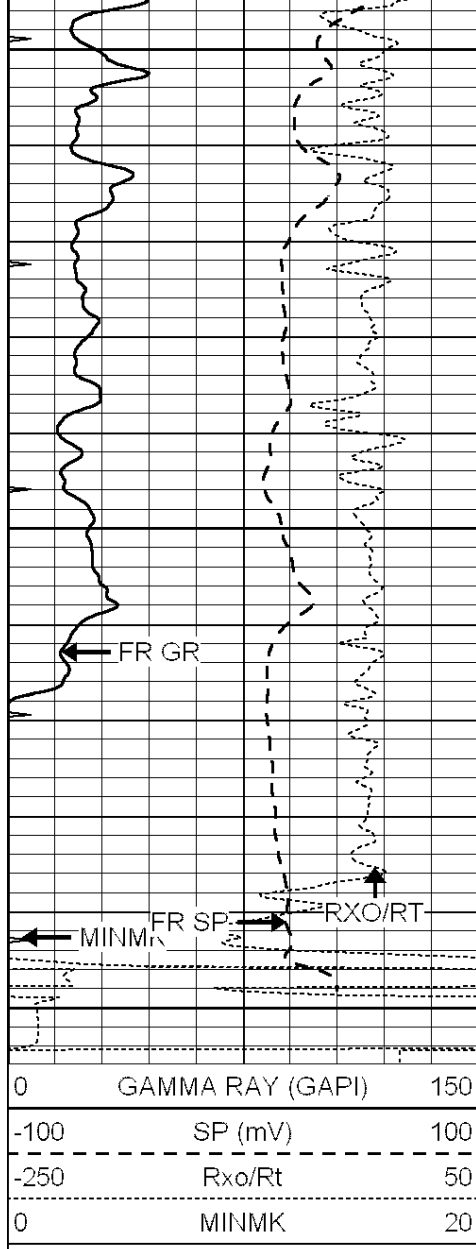
4300

4350

4400

4450

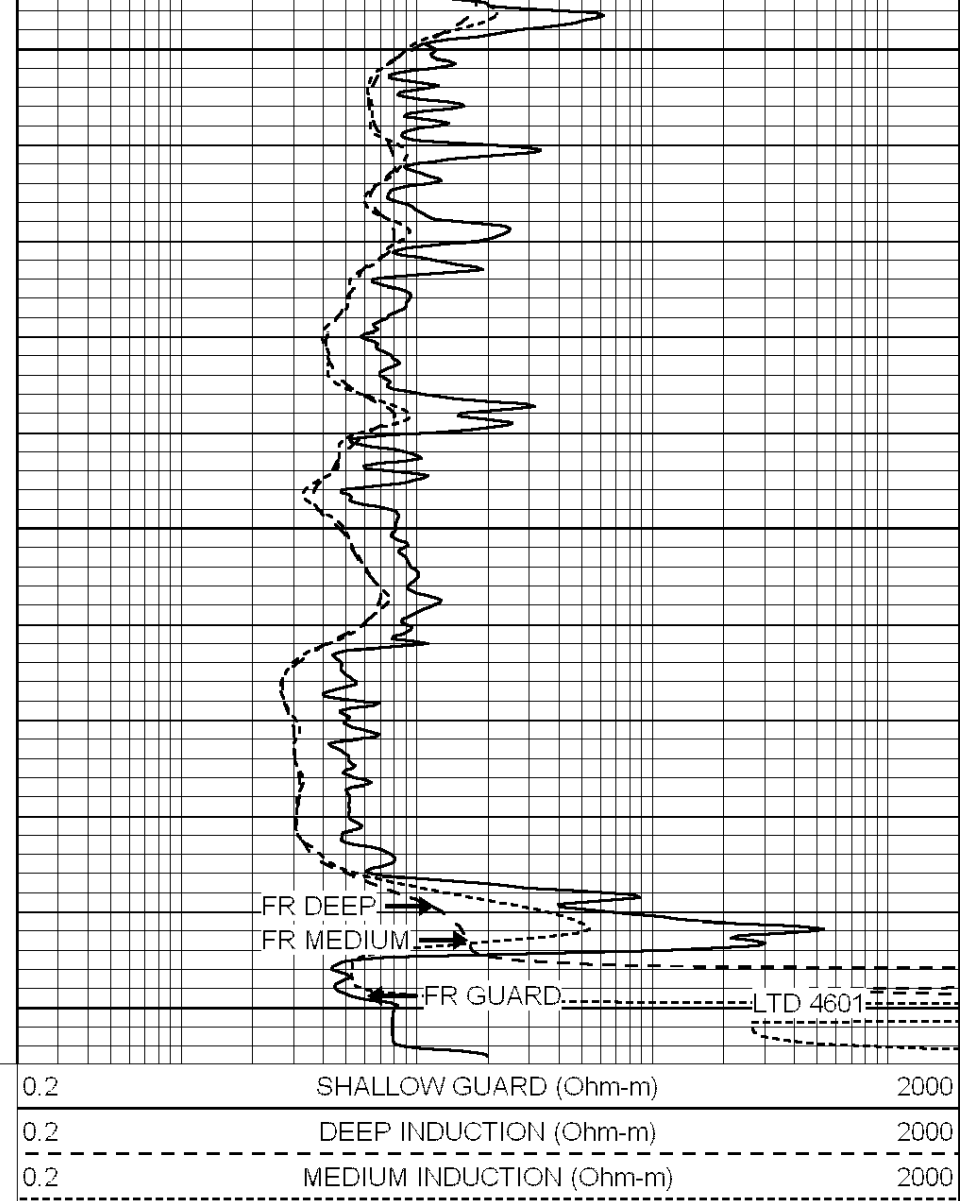




4500

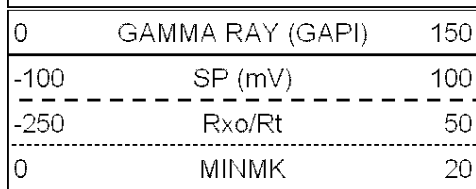
4550

4600

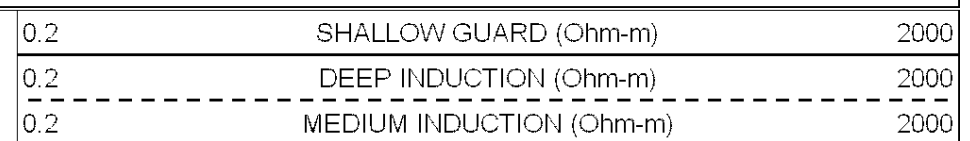


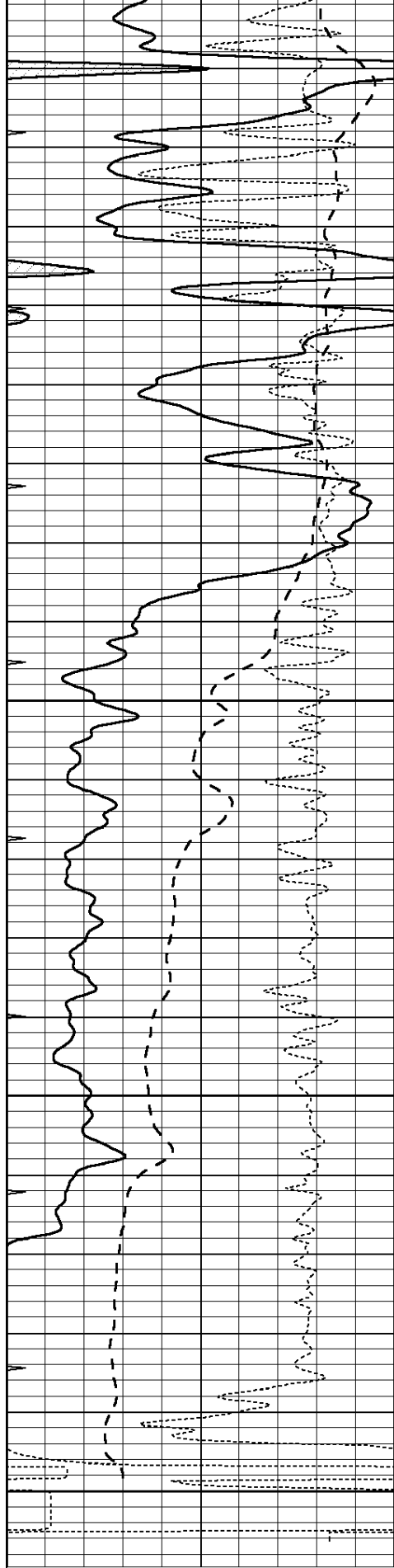
REPEAT SECTION

Database File: 22249pe.db
Dataset Pathname: pass2.6
Presentation Format: _dil
Dataset Creation: Sun Feb 09 22:07:44 2014
Charted by: Depth in Feet scaled 1:240



4400





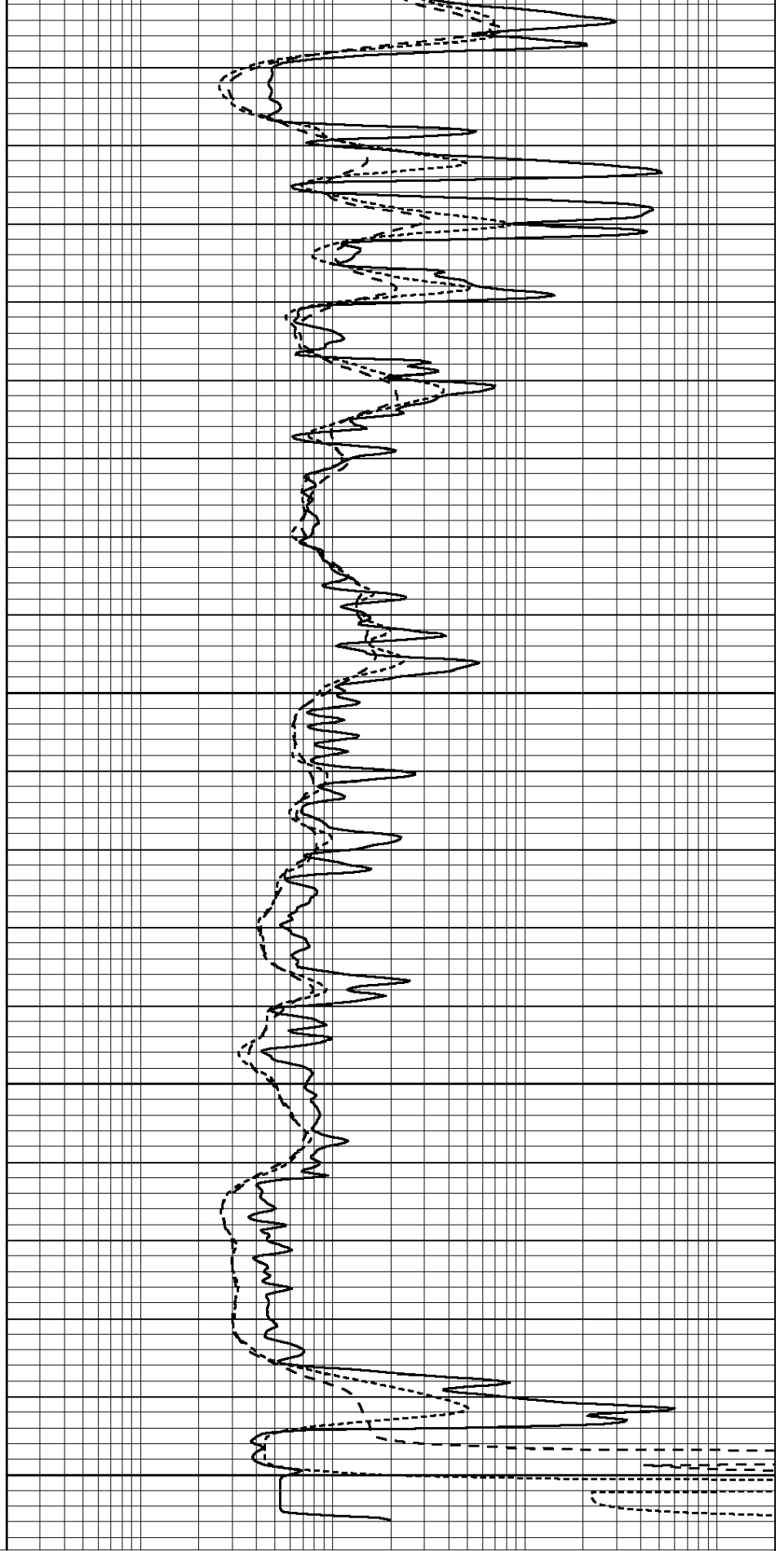
0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

4450

4500

4550

4600



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

Calibration Report

Database File: 22249pe.db
Dataset Pathname: pass3.10
Dataset Creation: Sun Feb 09 23:06:26 2014 by Calc SOC 120430

Dual Induction Calibration Report

Serial-Model: PROBE9-DILG
Surface Cal Performed: Wed Feb 05 09:18:43 2014
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	-16.000
Medium	0.039	0.728	V	0.000	464.000	mmho/m	660.000	-24.000
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: 003N Model: PRB

Master Calibration

Performed Tue Sep 08 14:14:44 2009

	Background	Magnesium	Aluminum	Sandstone	
Window 1	2042.6	12312.8	4225.8	13758.4	cps
Window 2	1855.8	10134.7	3624.2	11113.1	cps
Window 3	1639.4	6760.2	2716.3	7260.3	cps
Window 4	466.4	469.2	466.1	476.5	cps
Long Space	0.0	8278.9	1768.4	9257.4	cps
Short Space	2.2	2377.3	1544.1	2574.2	cps
Rho		1.7100	2.5900	1.3800	g/cc
Pe		0.0000	2.5700	1.5500	

Rib Angle : 44.4 Rib Slope : 0.979 Density/Spine Ratio : 0.549
Spine Angle : 74.4 Spine Slope : 3.577 Spine Intercept : -18.8

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
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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:	Thu Dec 19 09:01:02 2013	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.2800	GAPI/cps