



**COMPLETION
& PRODUCTION
SERVICES CO.**

**DUAL INDUCTION
LOG**

Company RITCHIE EXPLORATION, INC.
Well #1 BIERMANN 8D
Field WILDCAT
County WICHITA
State KANSAS

Company RITCHIE EXPLORATION, INC.
Well #1 BIERMANN 8D
Field WILDCAT
County WICHITA State KANSAS

Location: API # : 15-203-20304-0000
391' FSL & 853' FEL
SEC 8 TWP 17S RGE 37W
Permanent Datum GROUND LEVEL Elevation 3355
Log Measured From KELLY BUSHING 5' A.G.L.
Drilling Measured From KELLY BUSHING
Other Services CDL/CNL
Elevation K.B. 3360
D.F. 3358
G.L. 3355

Date	5/4/15
Run Number	ONE
Depth Driller	5044
Depth Logger	5041
Bottom Logged Interval	5039
Top Log Interval	00
Casing Driller	8 5/8"@256'
Casing Logger	256
Bit Size	7 7/8"
Type Fluid in Hole	CHEMICAL MUD
Density / Viscosity	9.4/60
pH / Fluid Loss	10.0/8.8
Source of Sample	FLOWLINE
Rim @ Meas. Temp	.950@80F
Rmf @ Meas. Temp	.713@80F
Rmc @ Meas. Temp	1.14@80F
Source of Rmf / Rmc	MEASUREMENT
Rim @ BHT	.608@125F
Time Circulation Stopped	2.5 HOURS
Time Logger on Bottom	4:15 P.M.
Maximum Recorded Temperature	125F
Equipment Number	4854
Location	HAYS, KANSAS
Recorded By	JEFF LUEBBERS
Witnessed By	JOHN GOLDSMITH

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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
LEOTI, KS., 9N. ON HWY 25 TO "RD. G", 4W. TO "RD. 9", 2S. INTO ON TRAIL



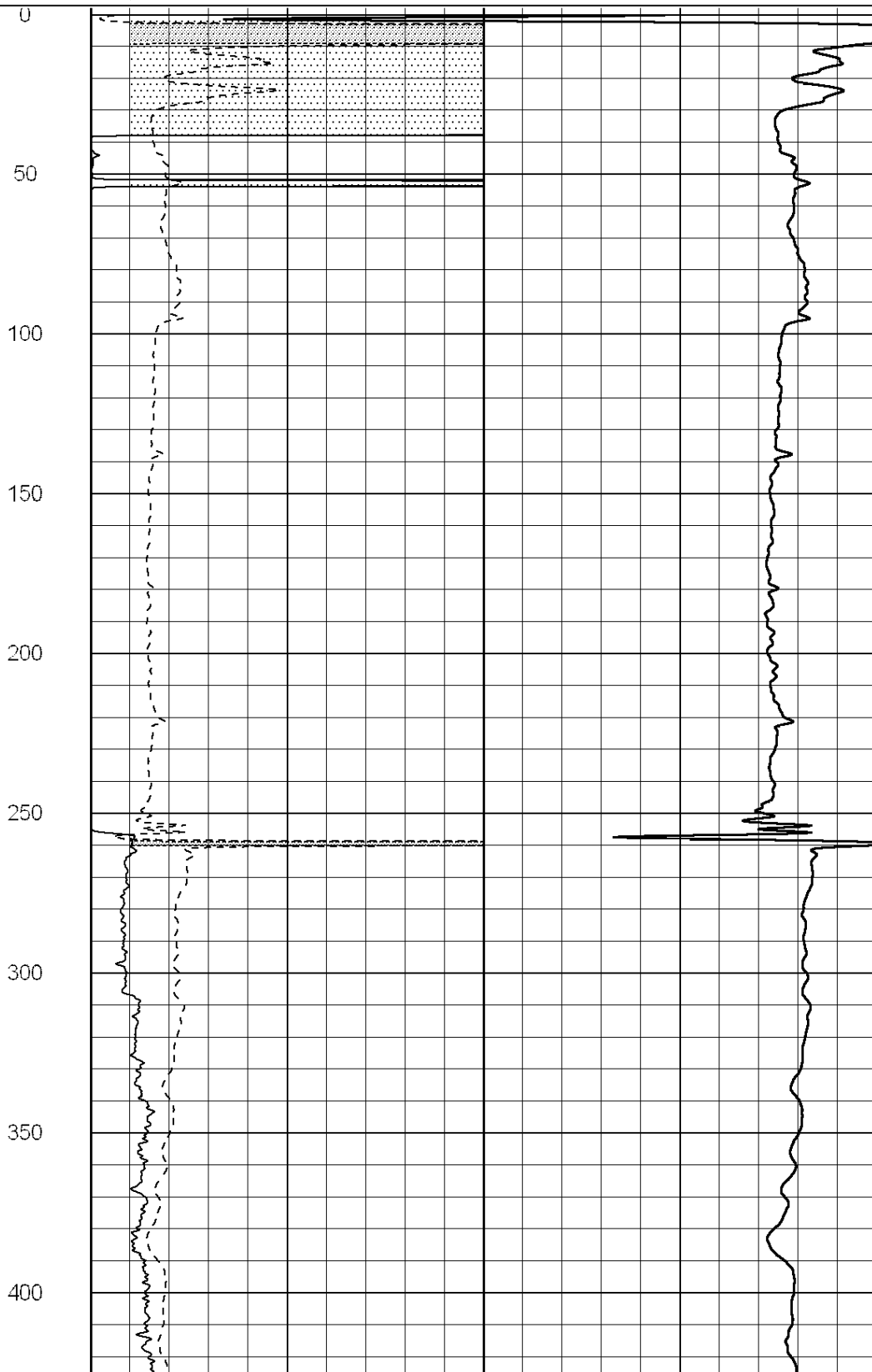
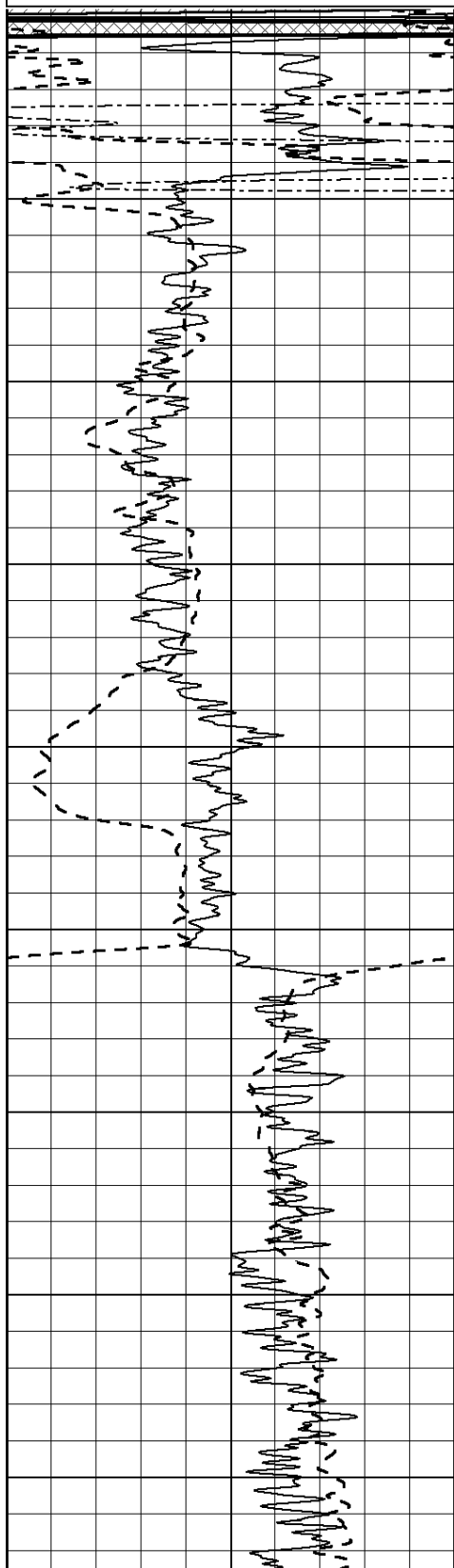
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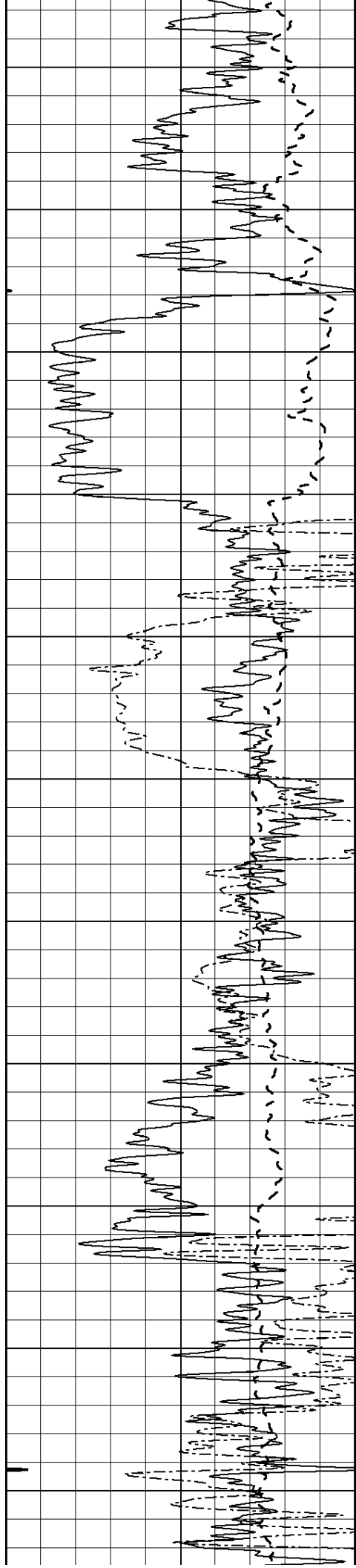
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 Presentation Format: dil2
 Dataset Creation: Mon May 04 17:51:28 2015 by Calc SOC 120430
 Charted by: Depth in Feet scaled 1:600

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

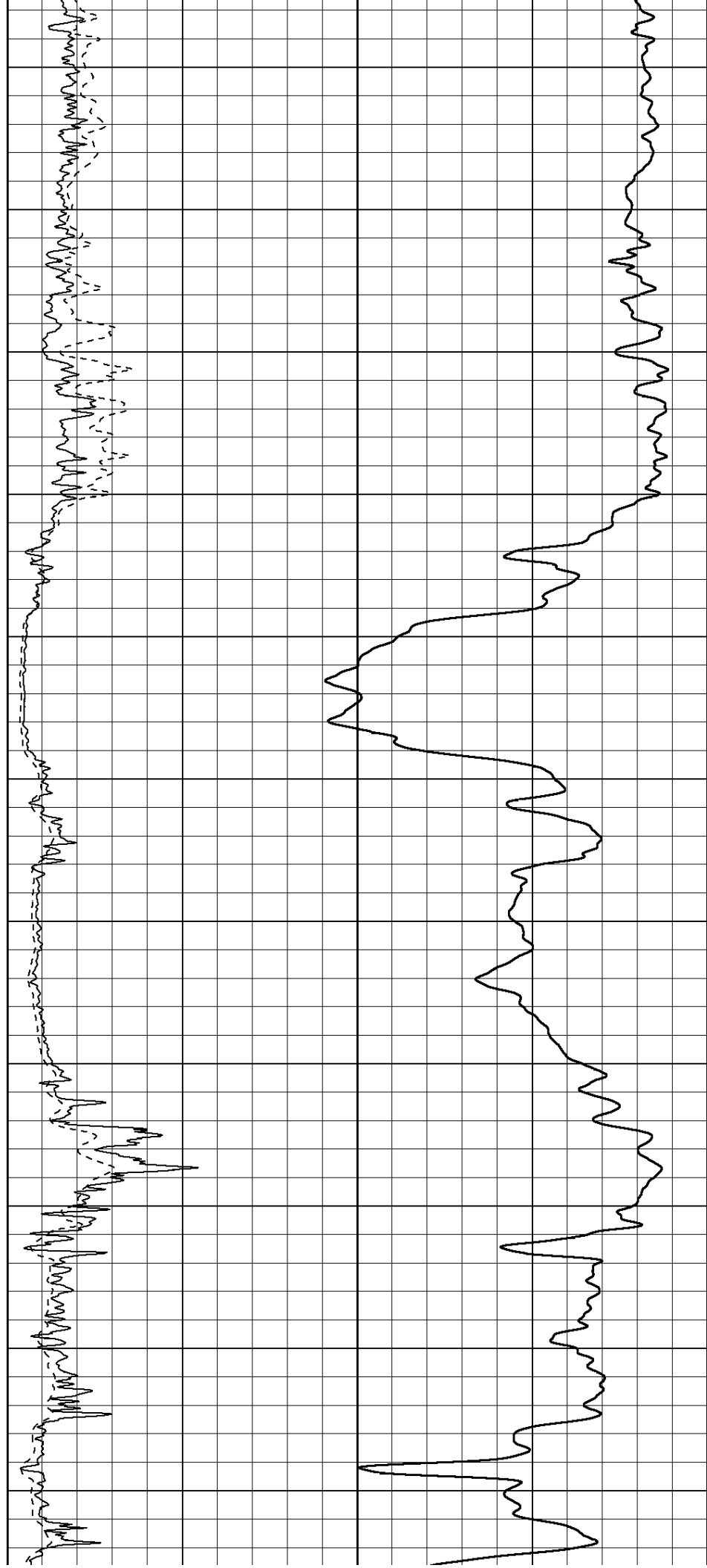
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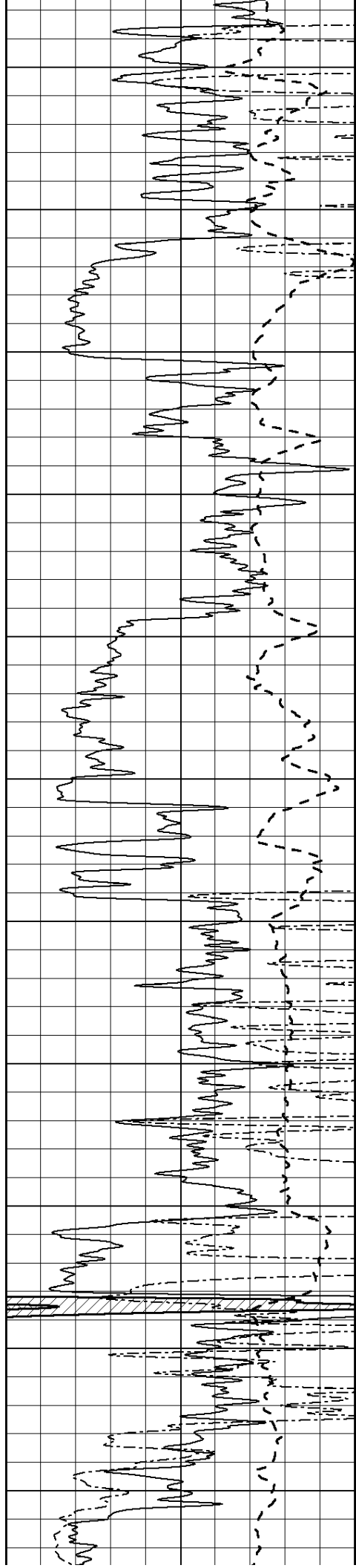
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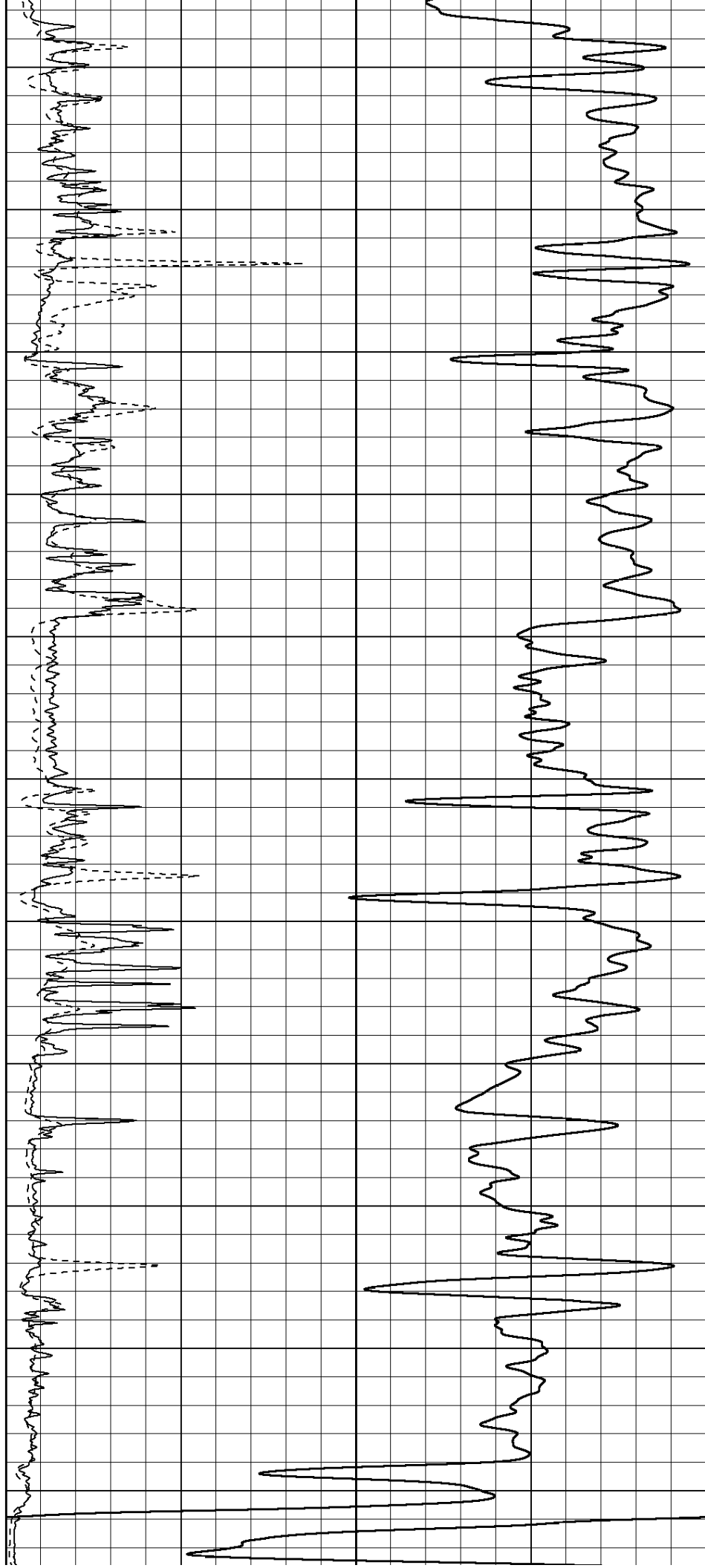
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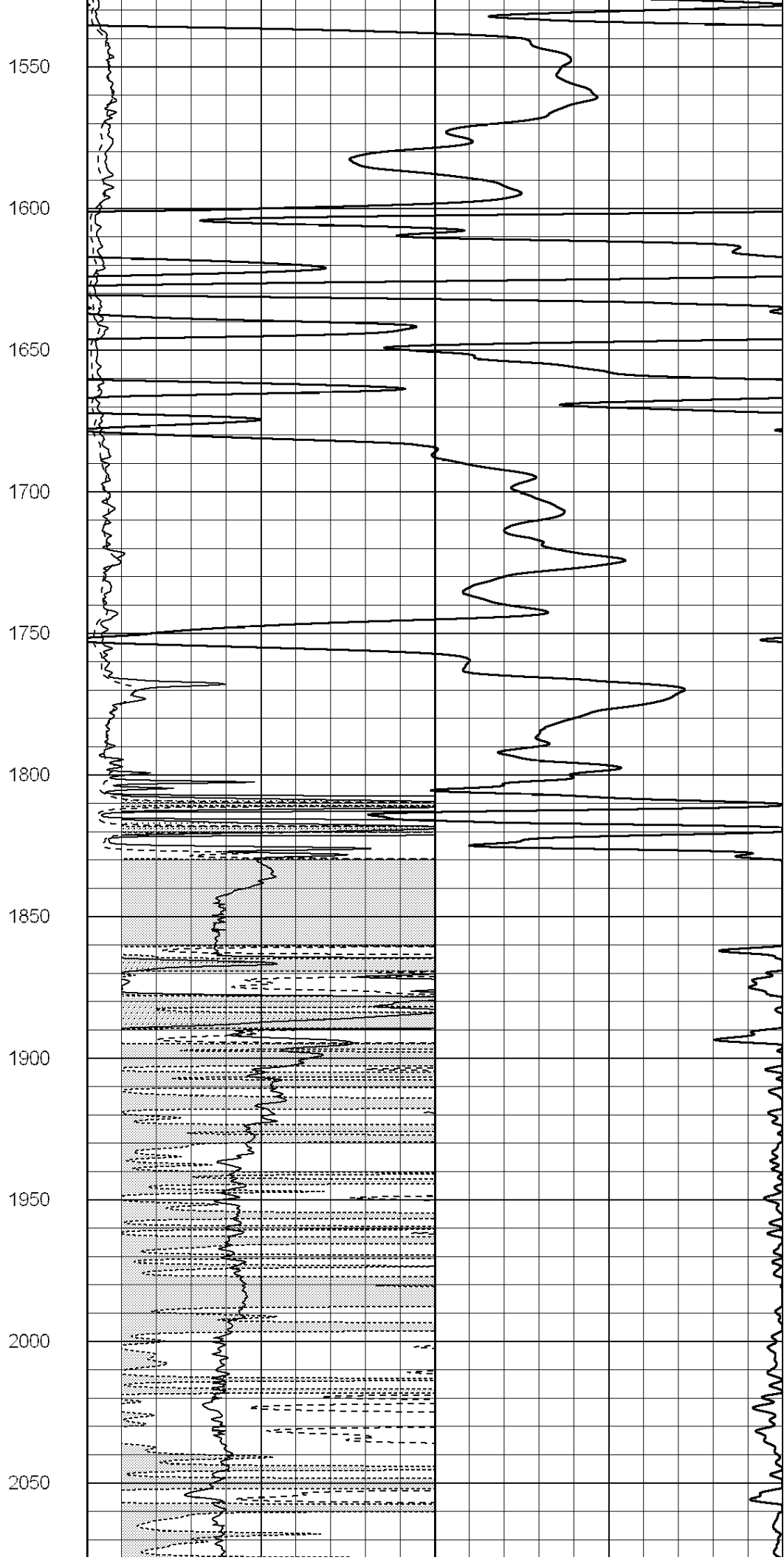
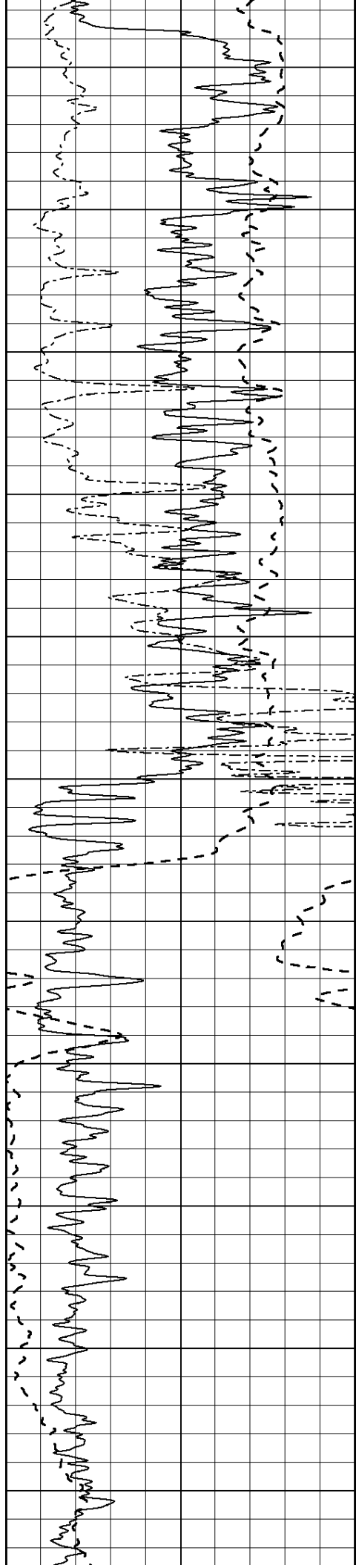
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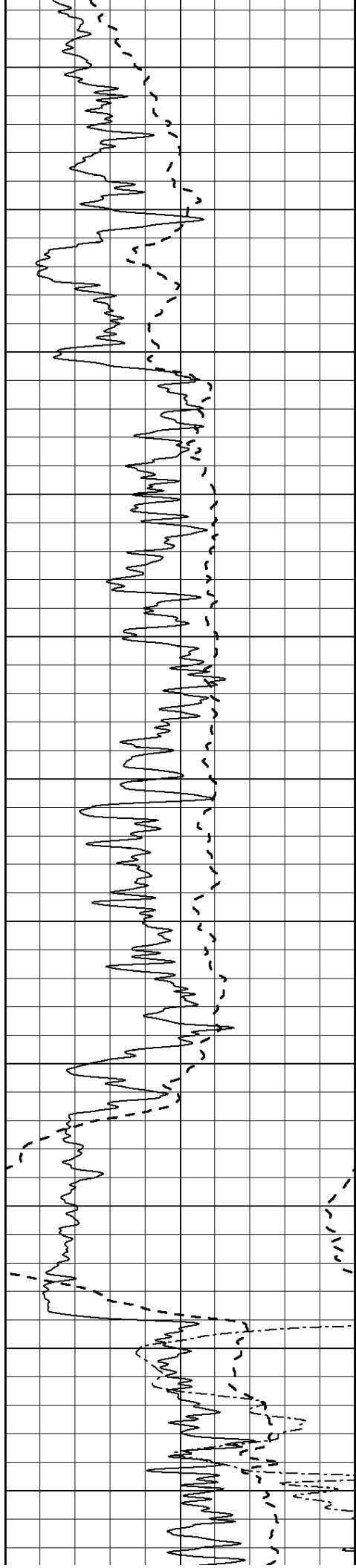




1000
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1100
1150
1200
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1300
1350
1400
1450
1500







2100

2150

2200

2250

2300

2350

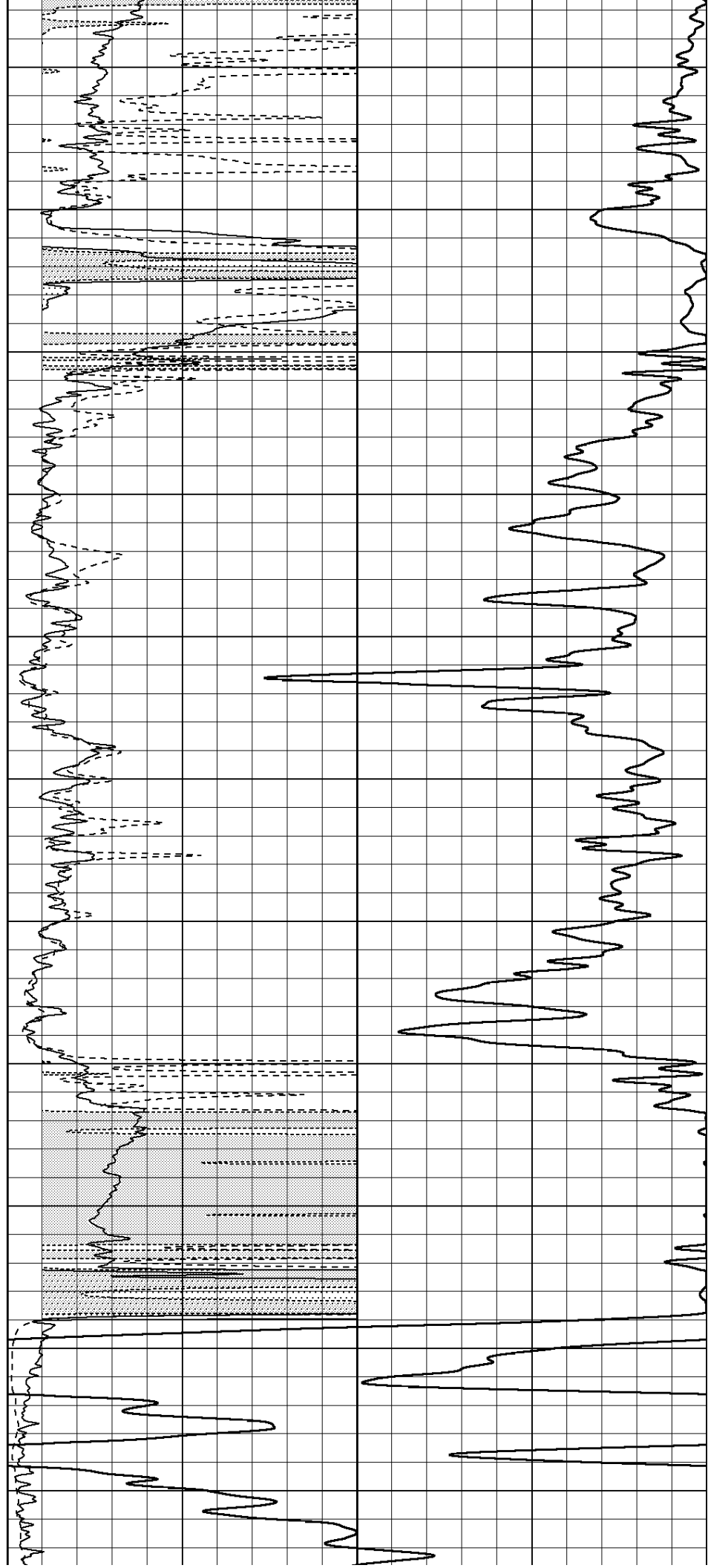
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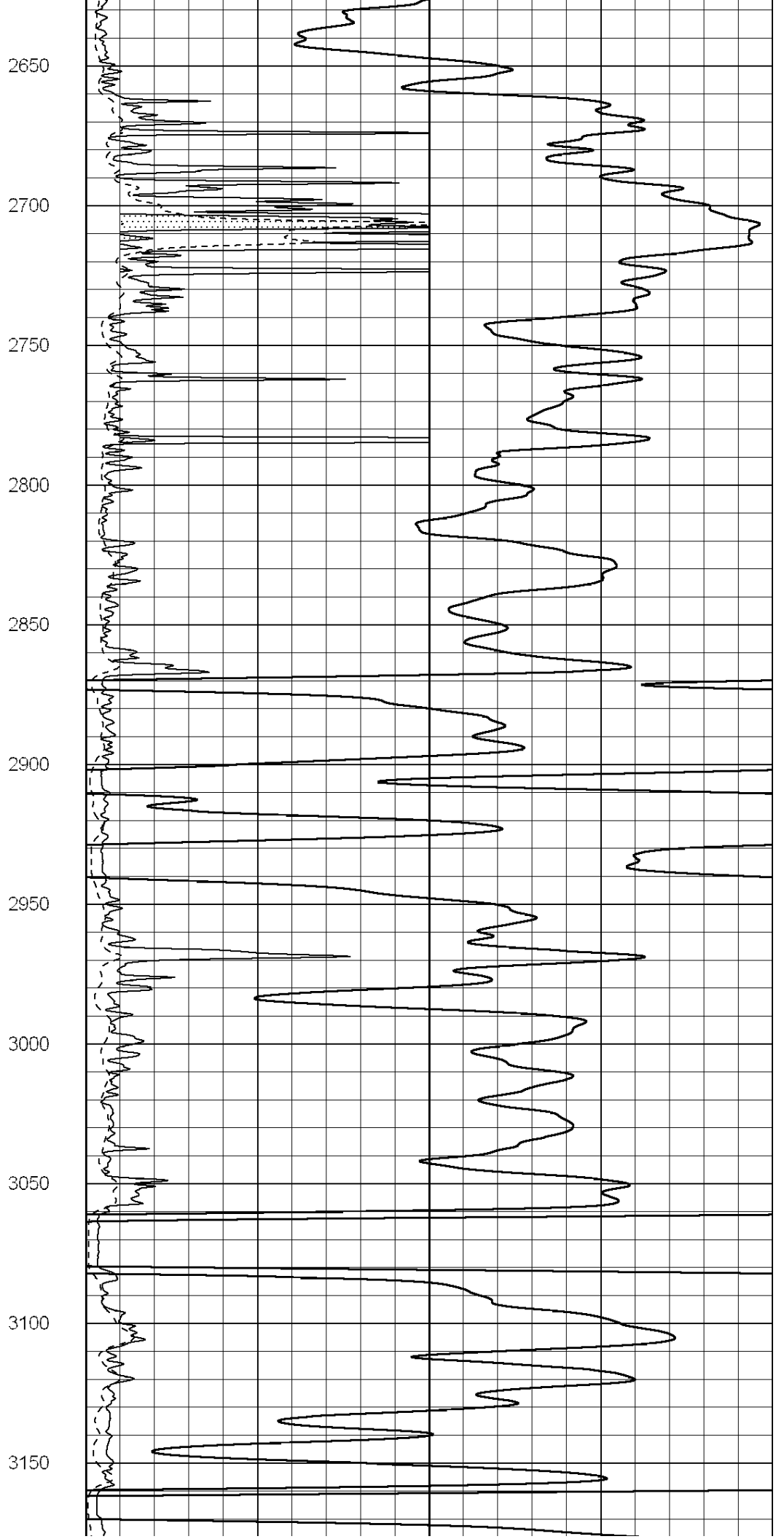
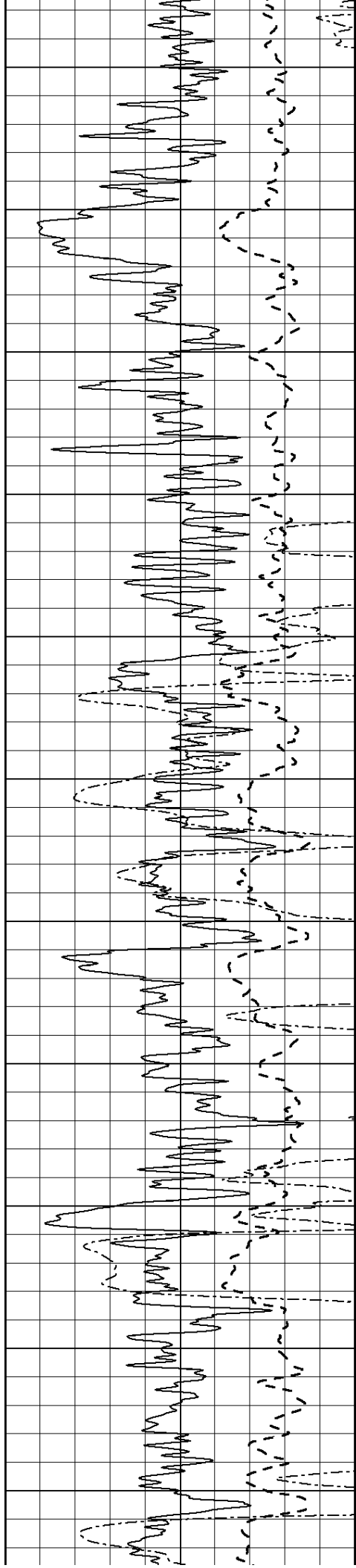
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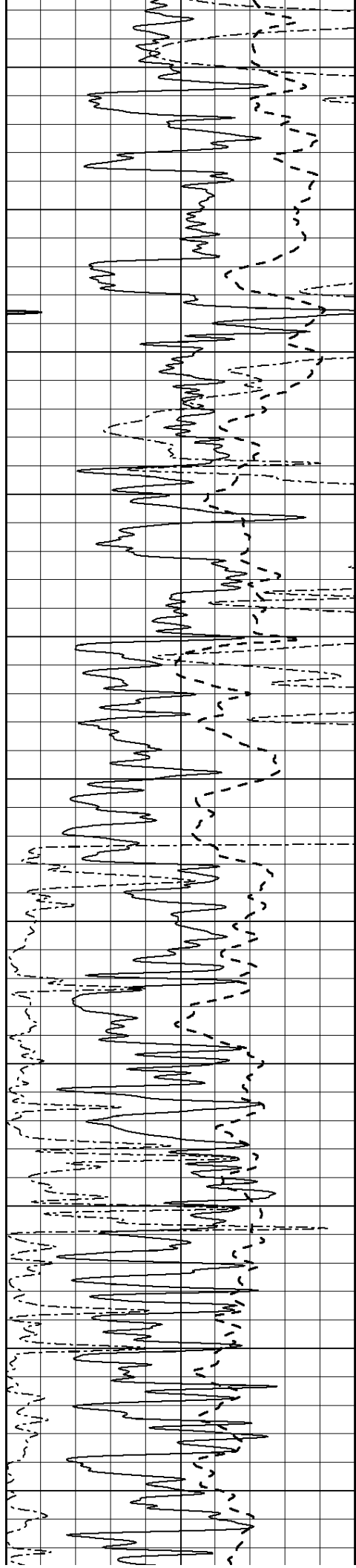
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3450

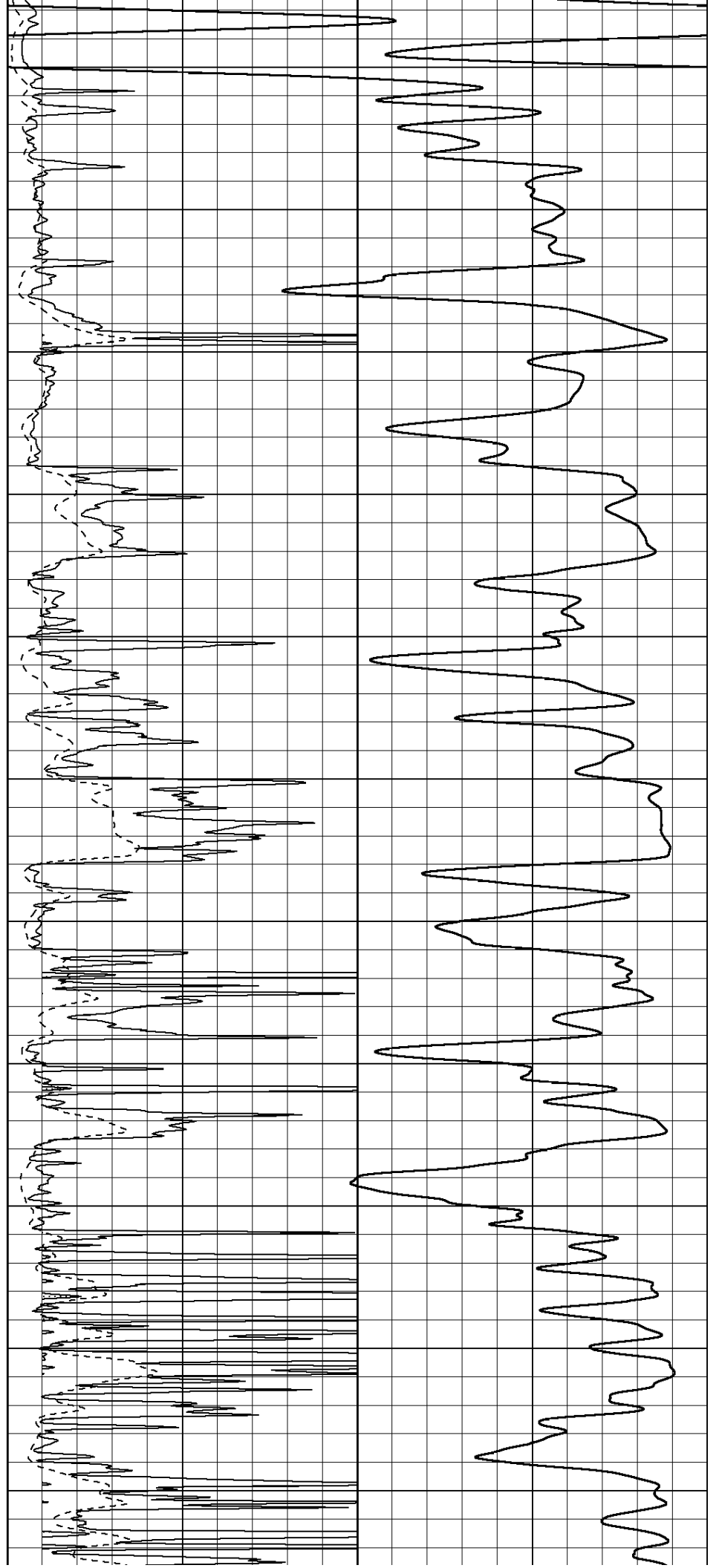
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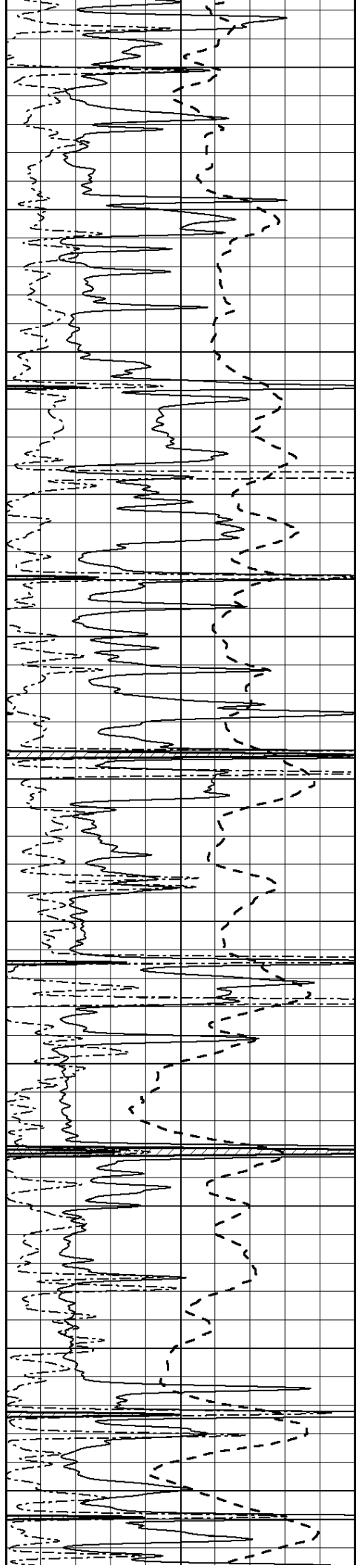
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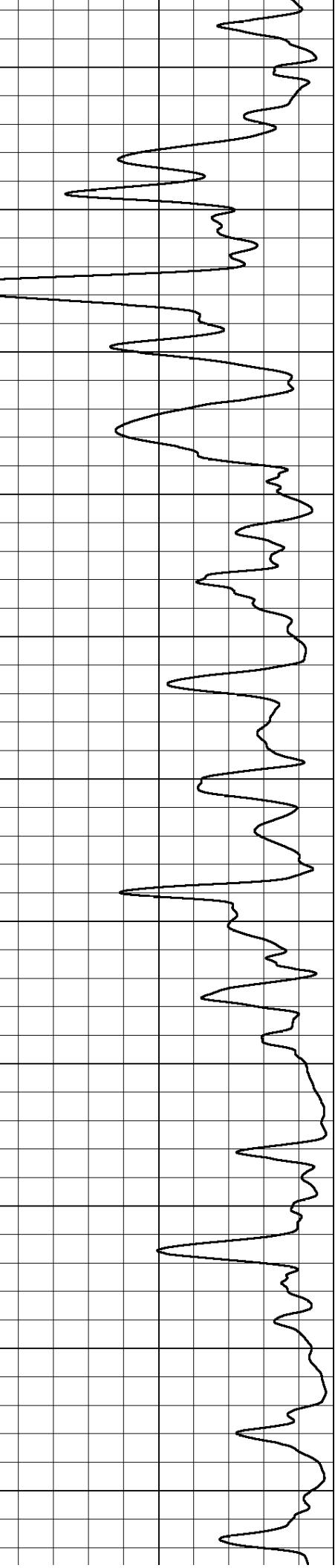
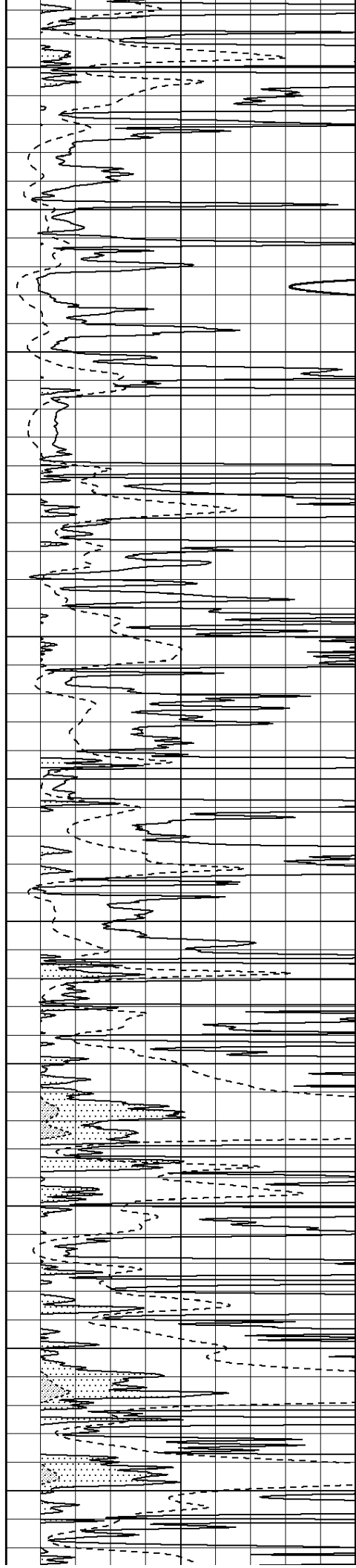
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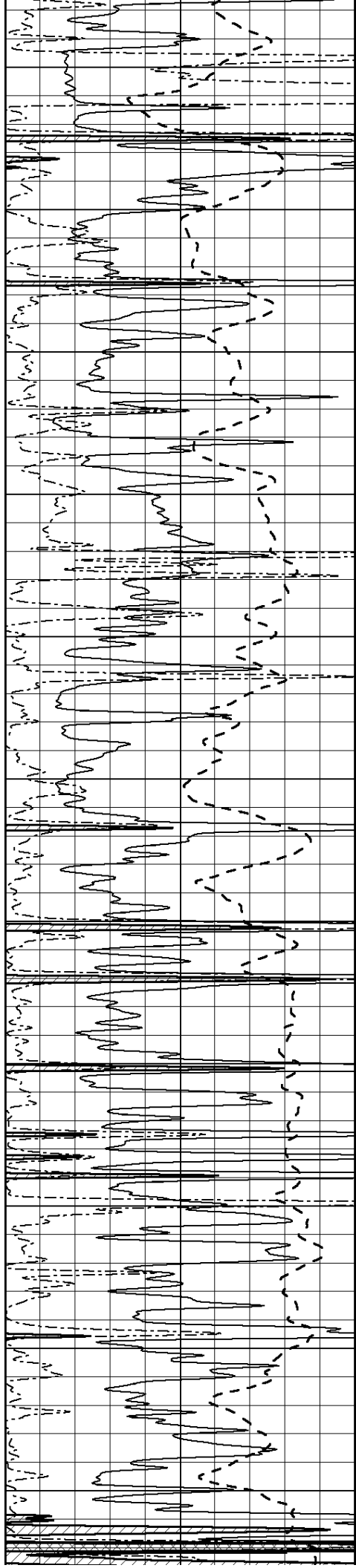
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4150

4200

4250





4300

4350

4400

4450

4500

4550

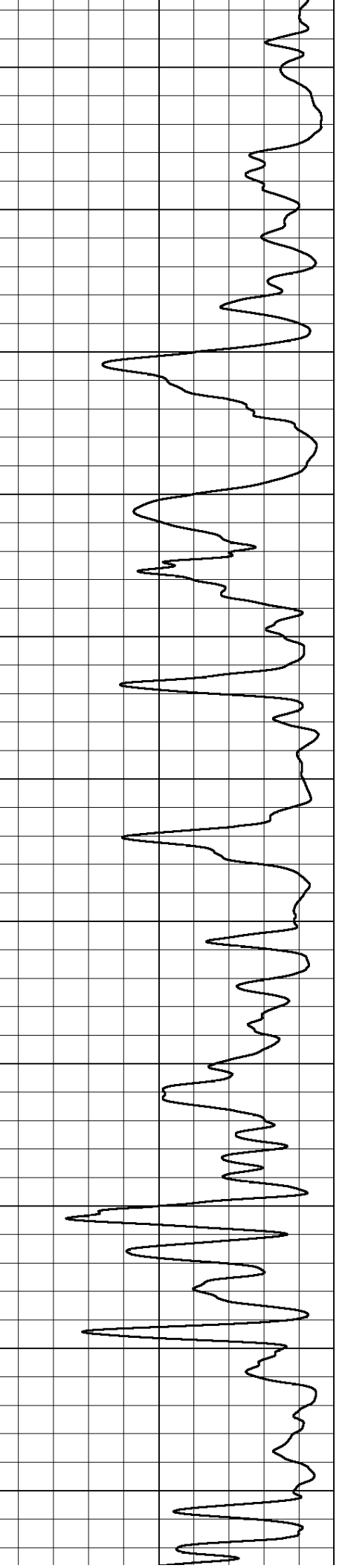
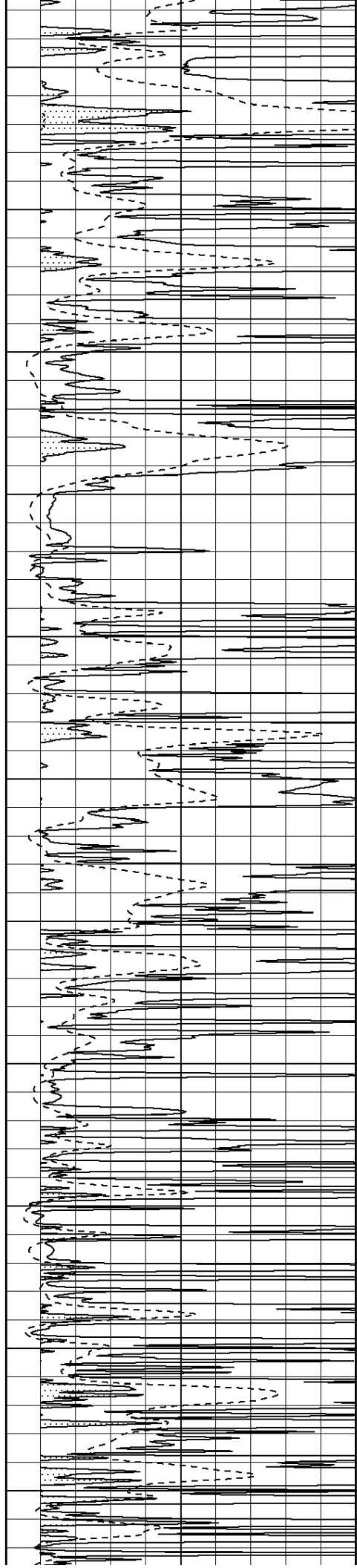
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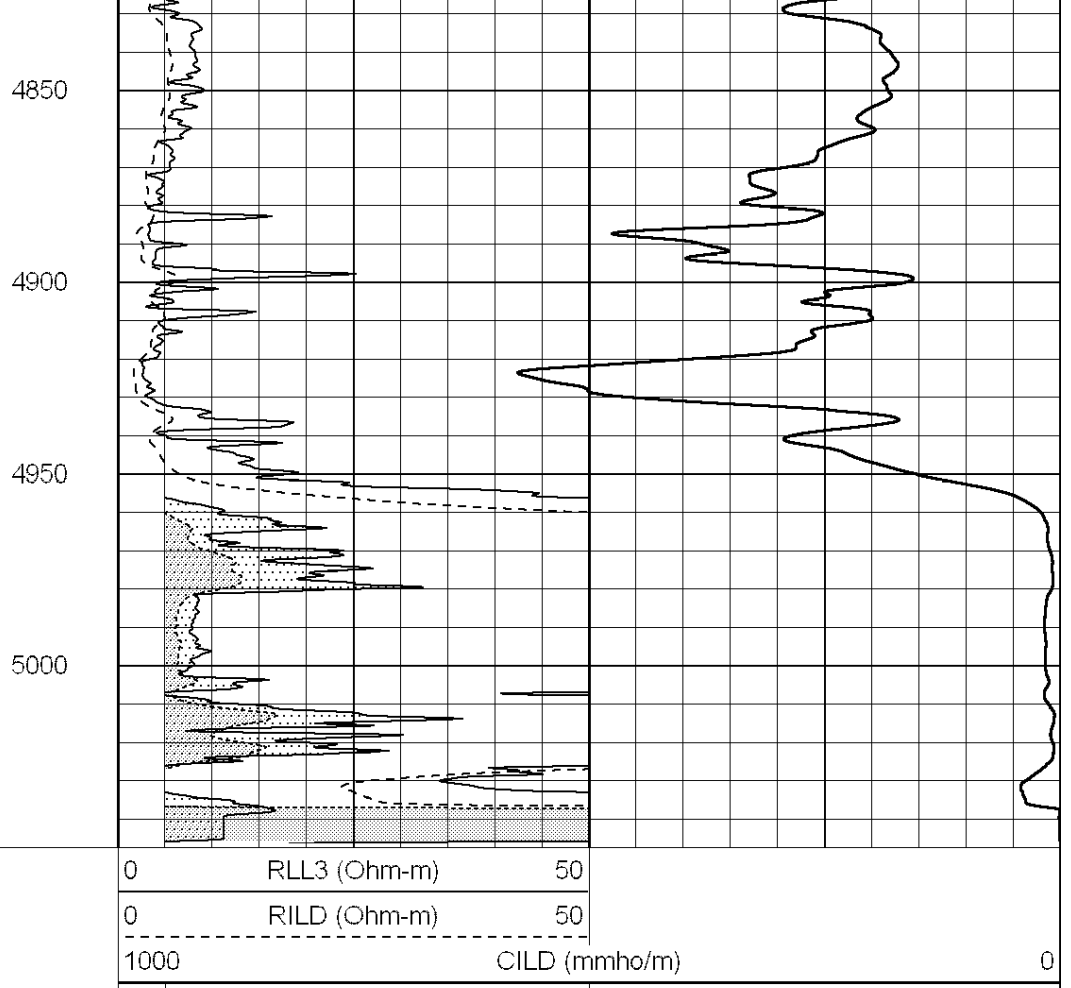
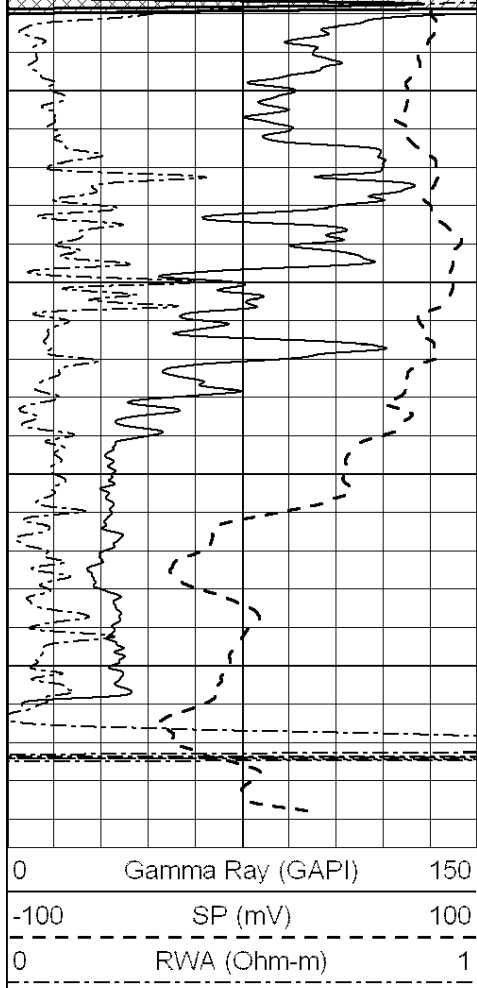
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4700

4750

4800





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

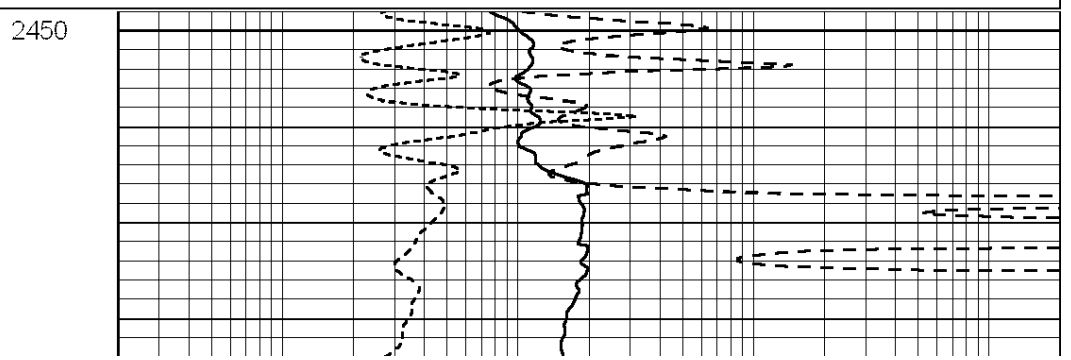
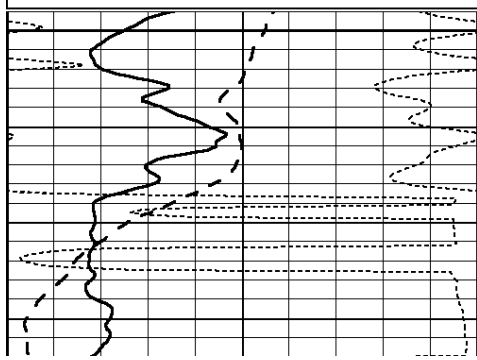
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ANHYDRITE

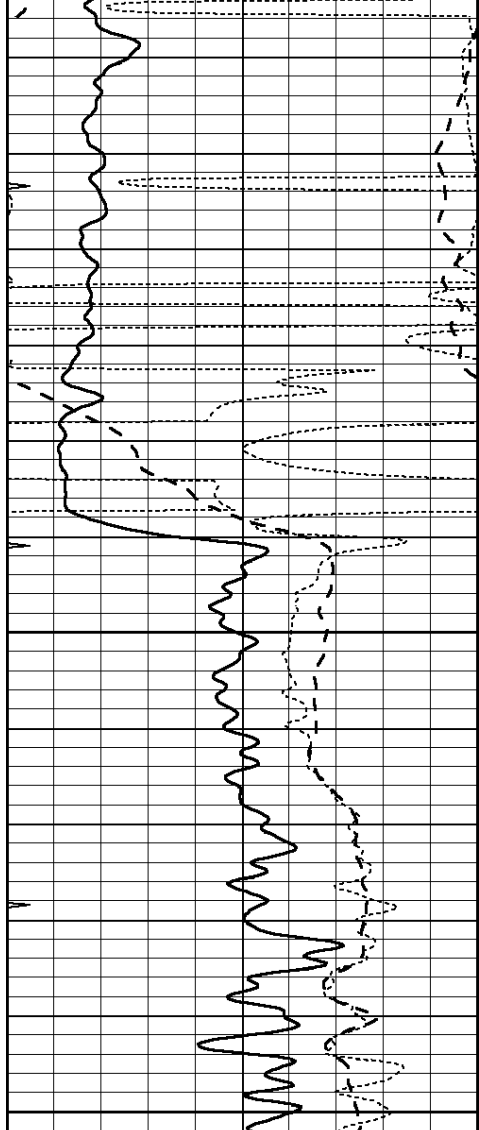
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 Charted by: Depth in Feet scaled 1:240

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



2450

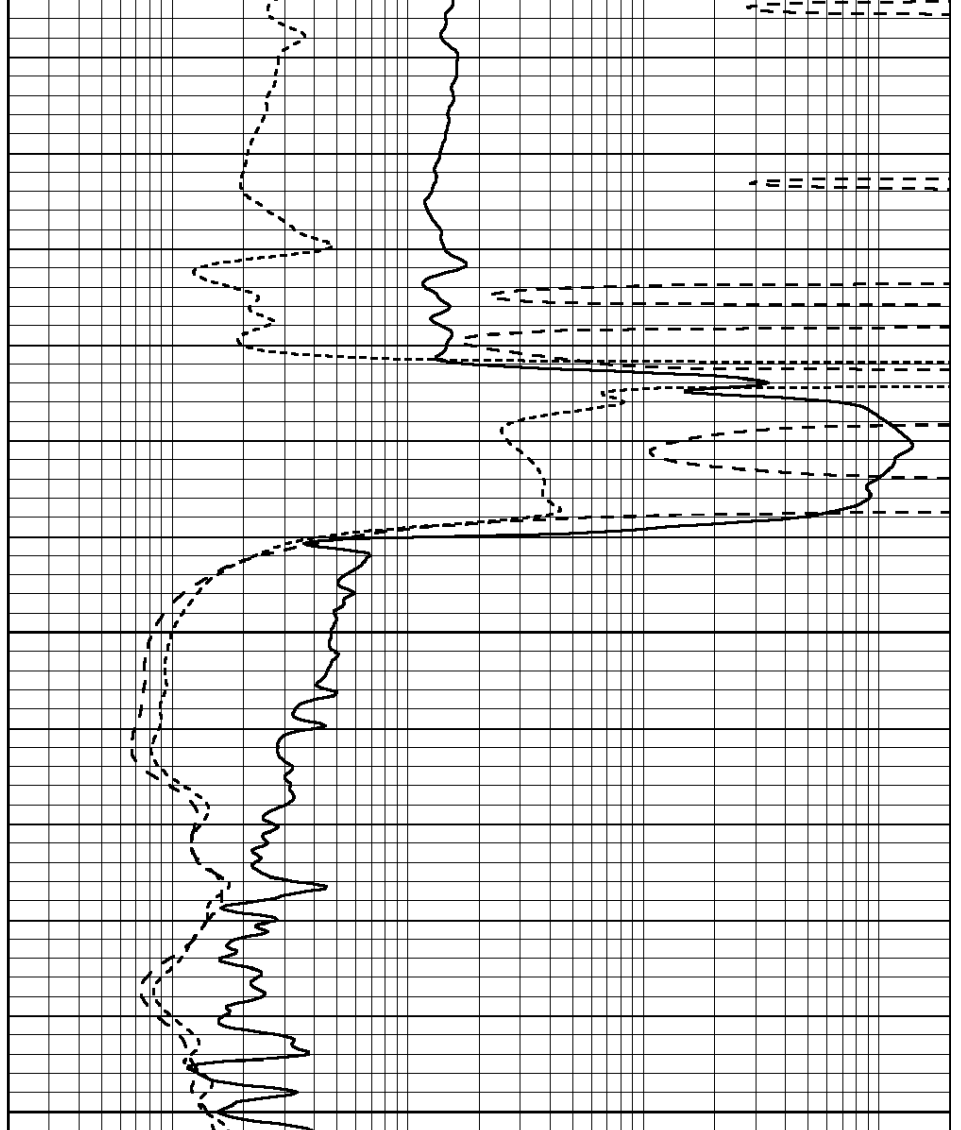


2500

2550

2600

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

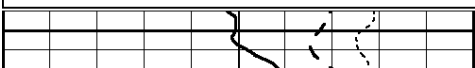


MAIN SECTION

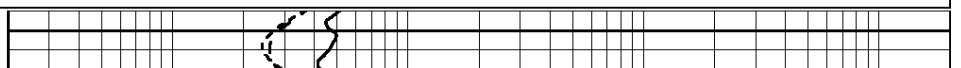
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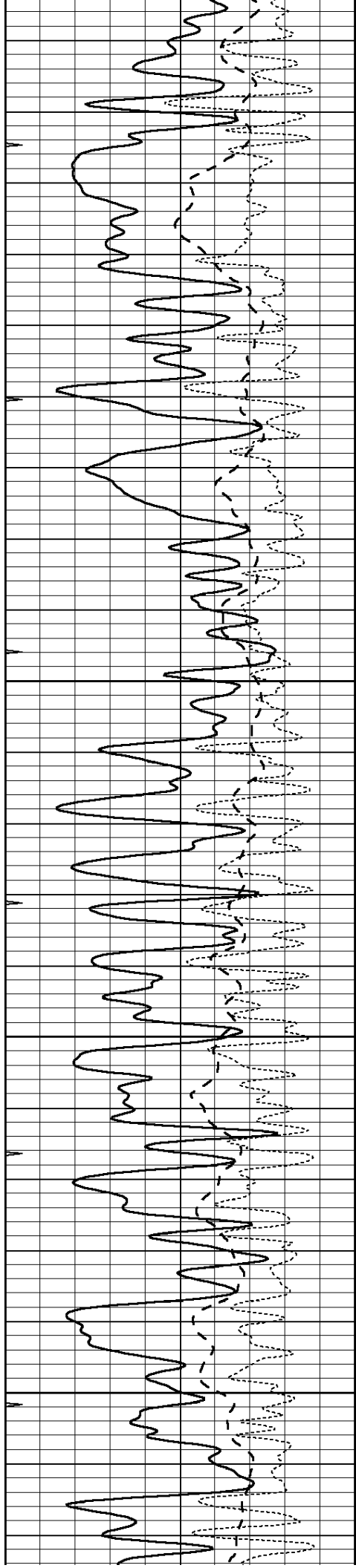
0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

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



3500



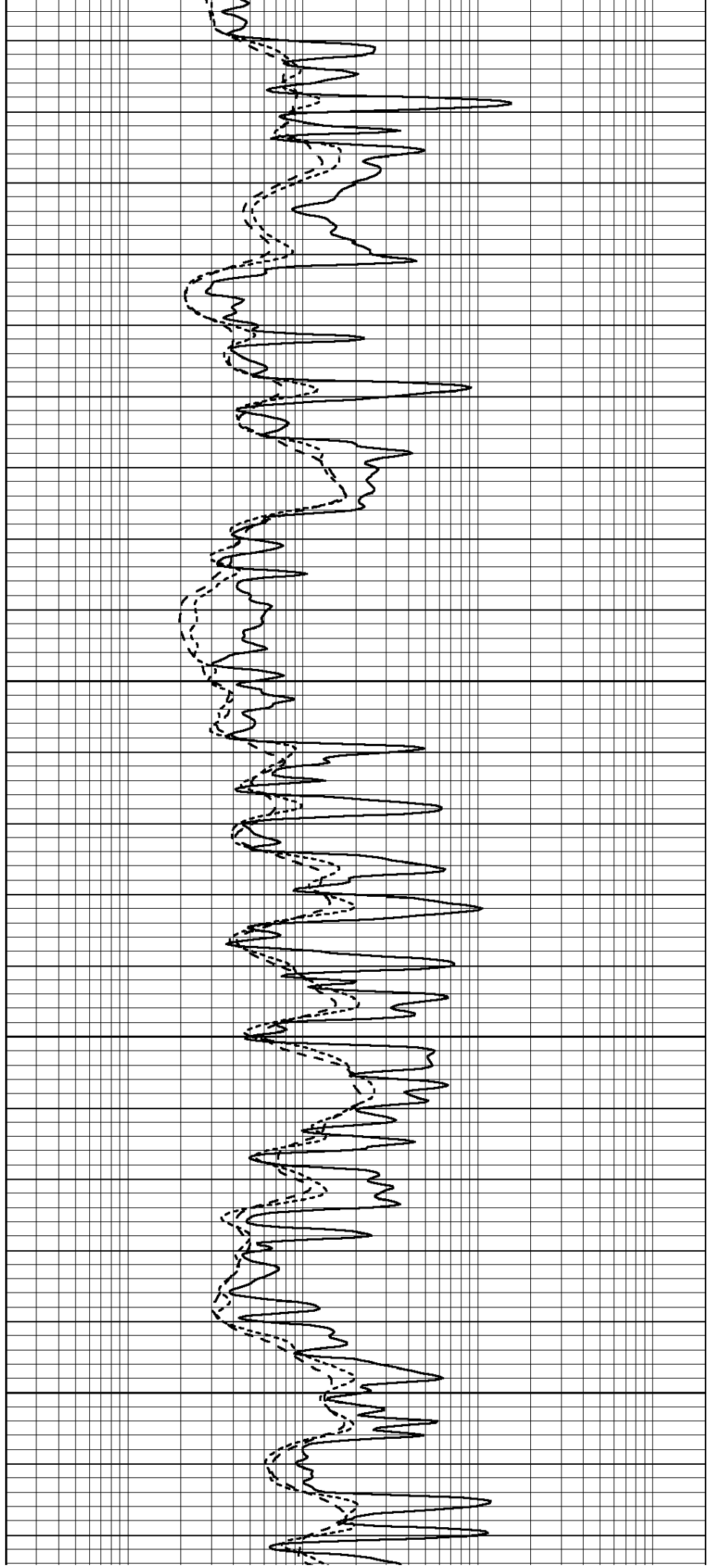


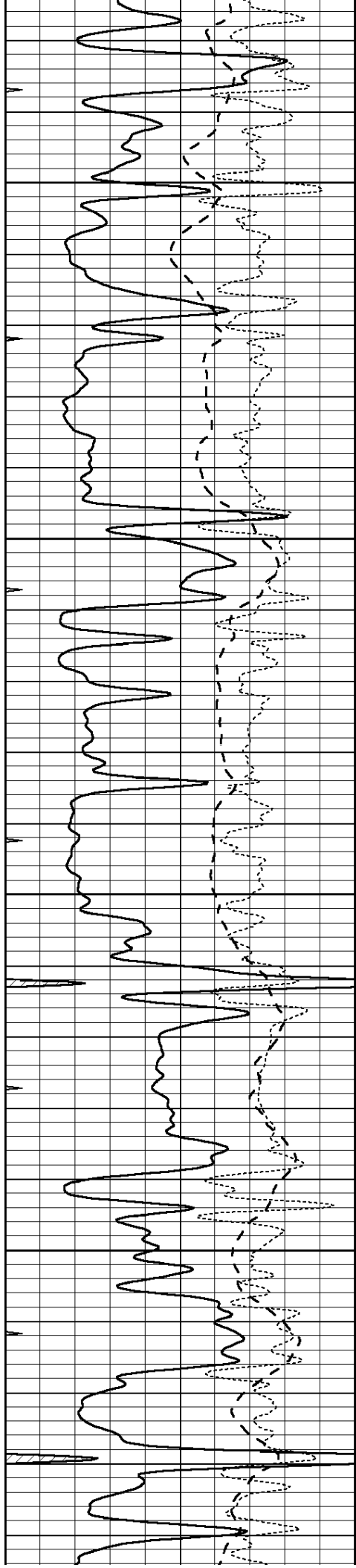
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3700



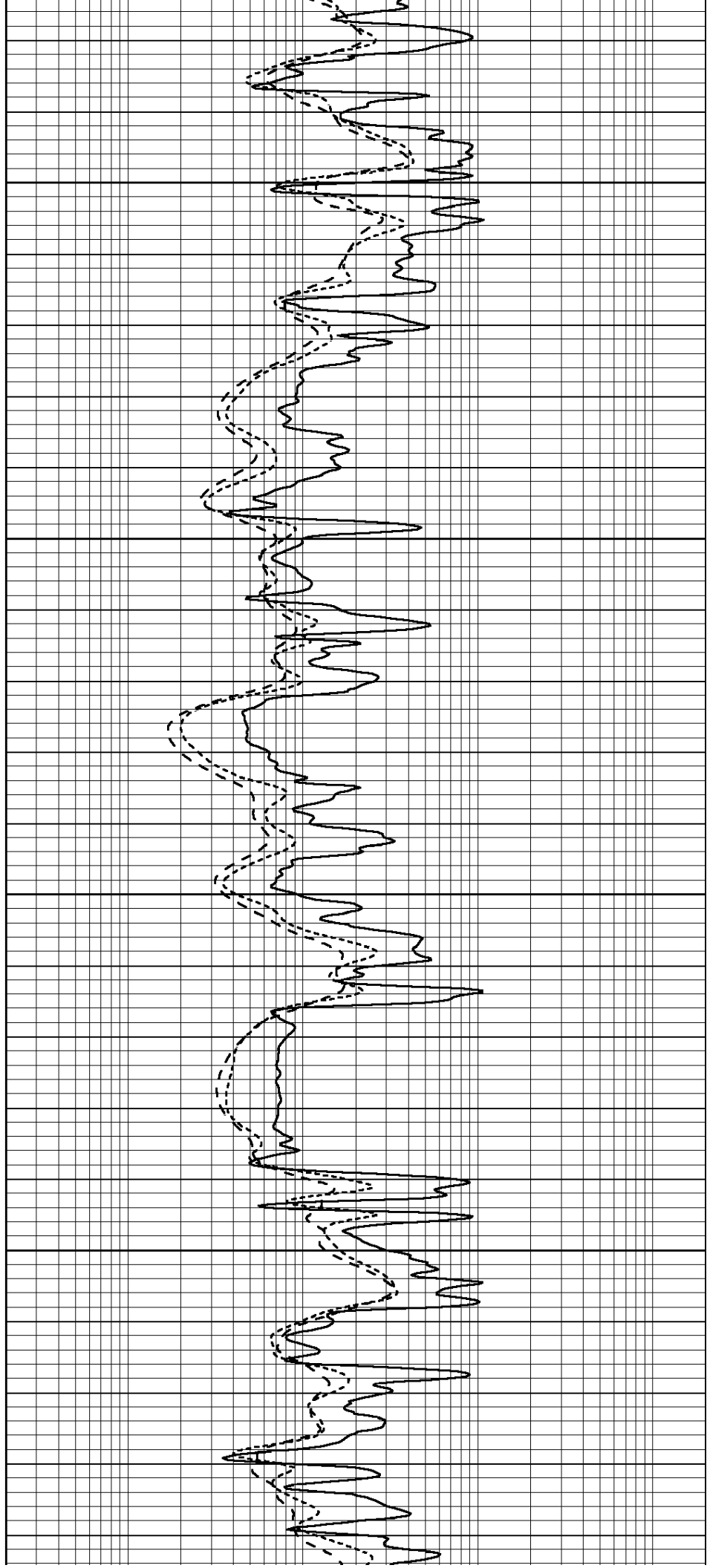


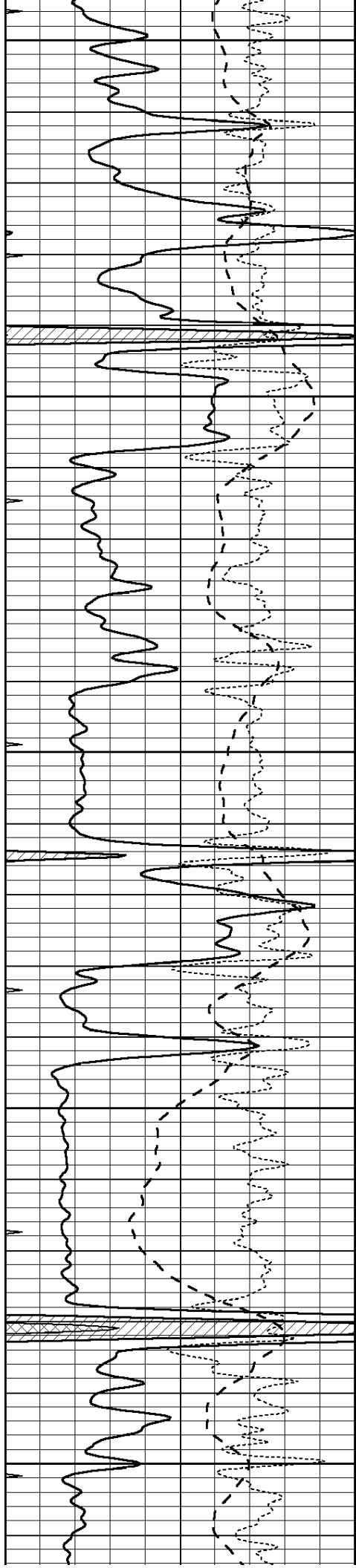
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3850

3900





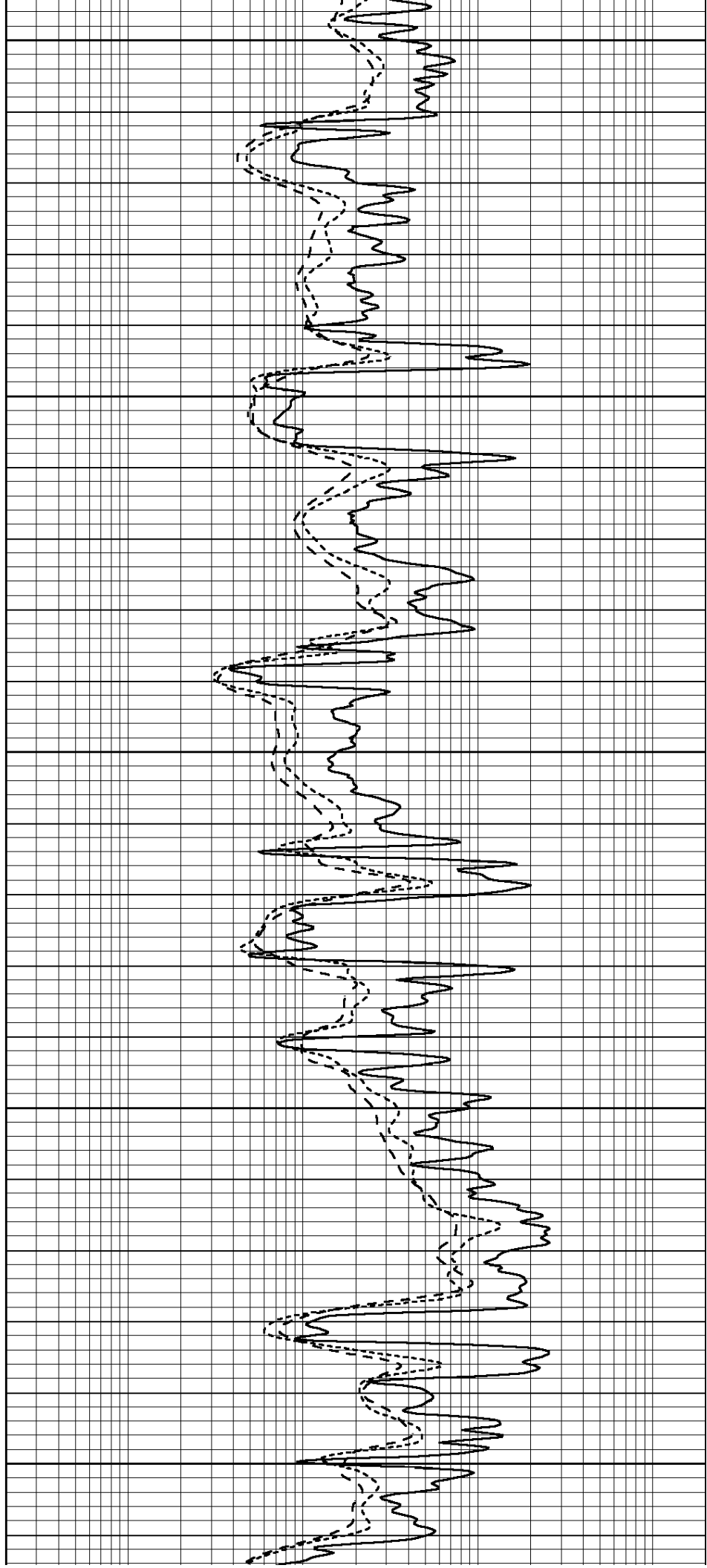
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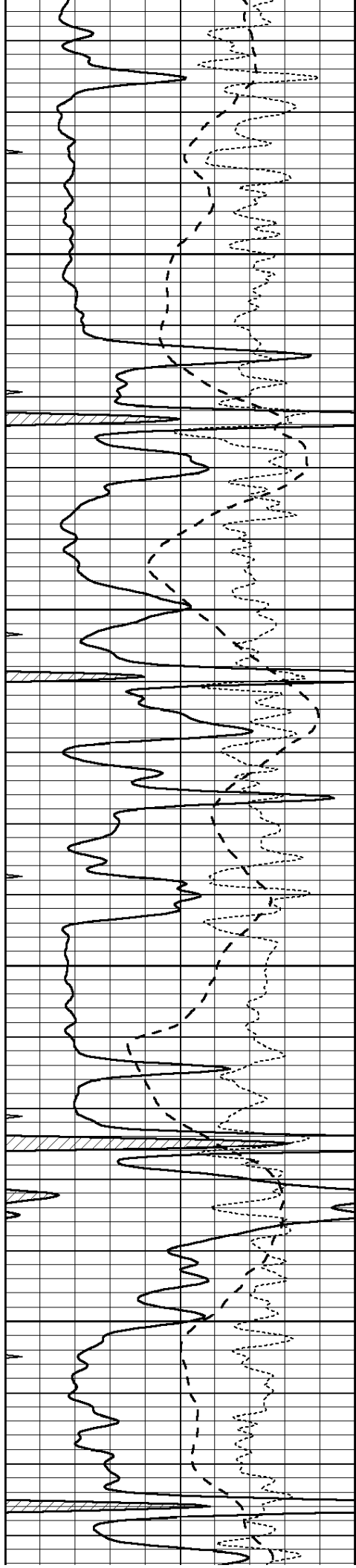
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4050

4100

4150



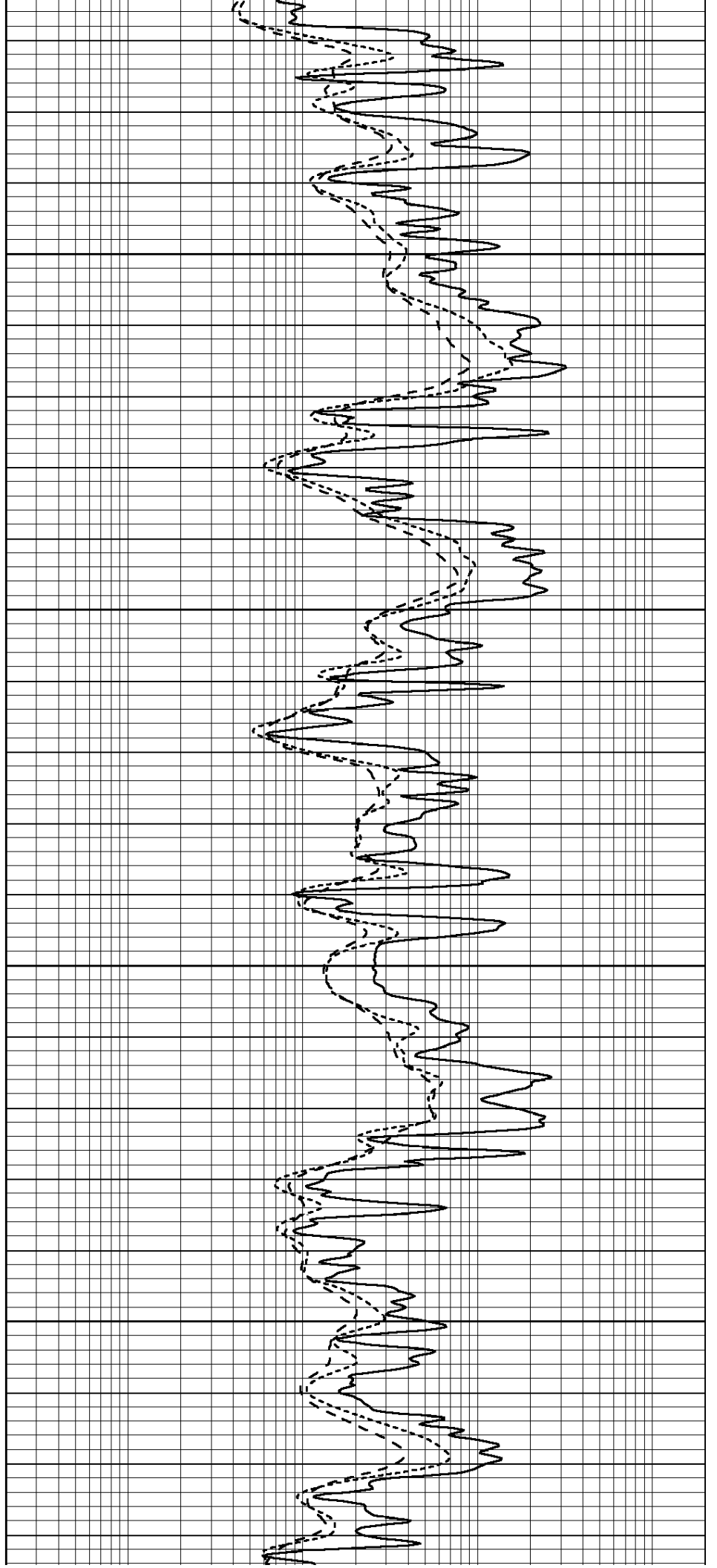


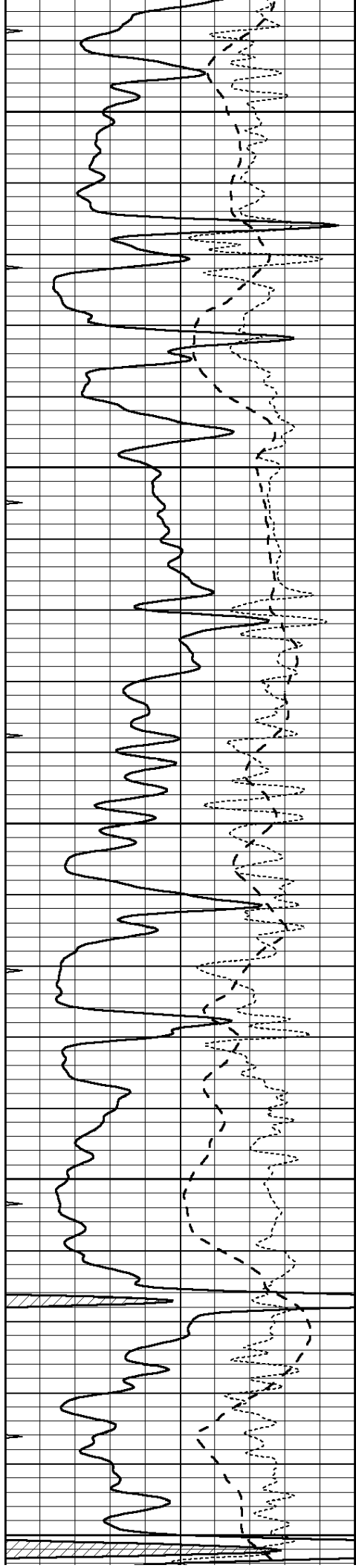
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4250

4300

4350





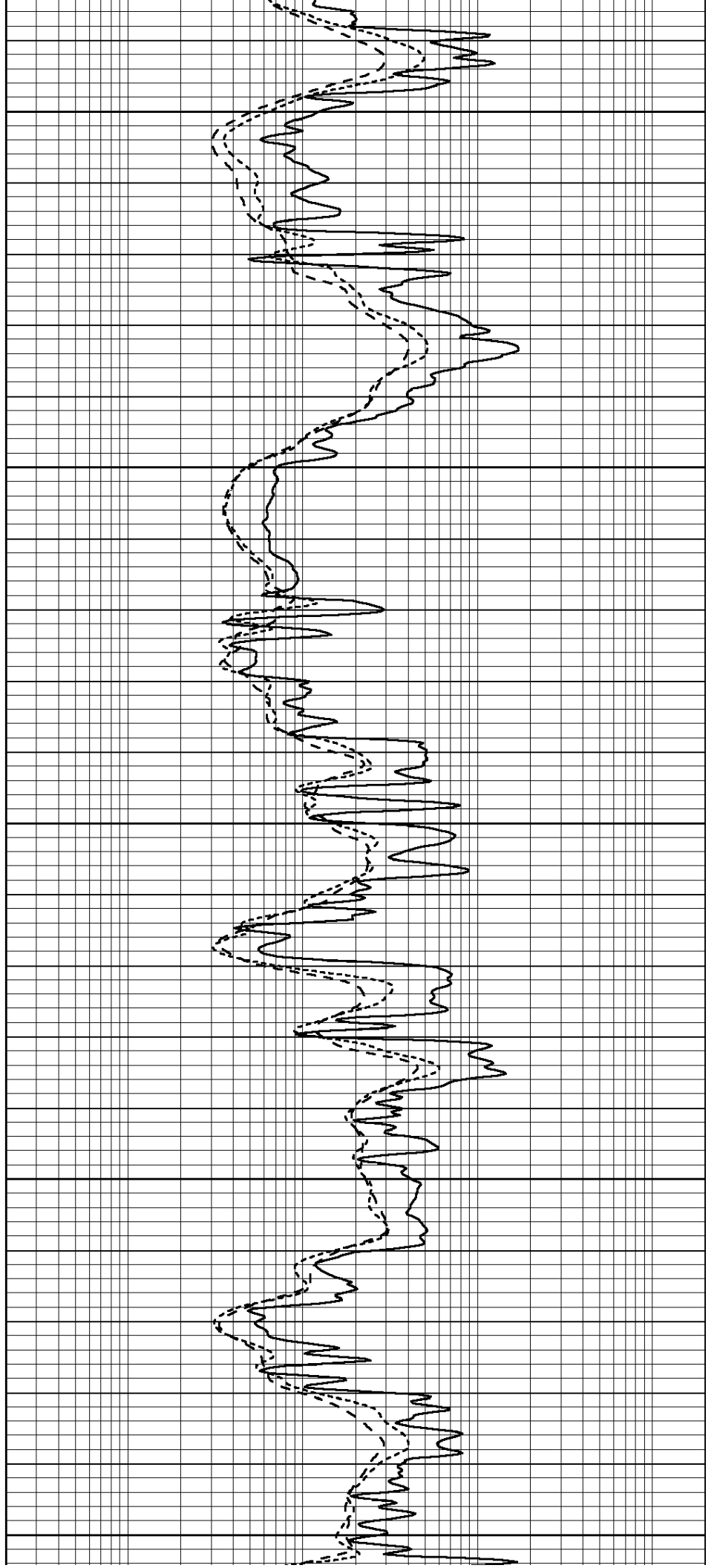
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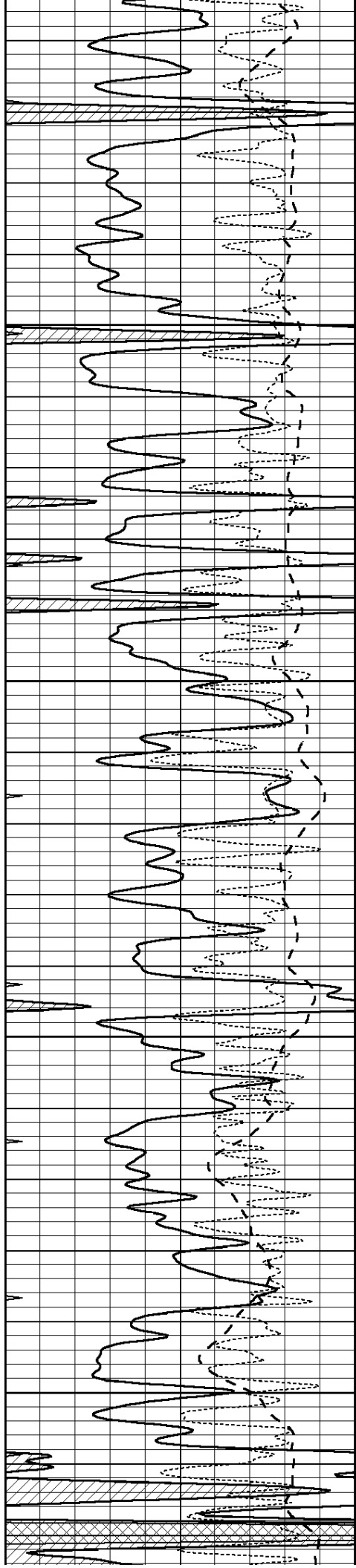
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4600



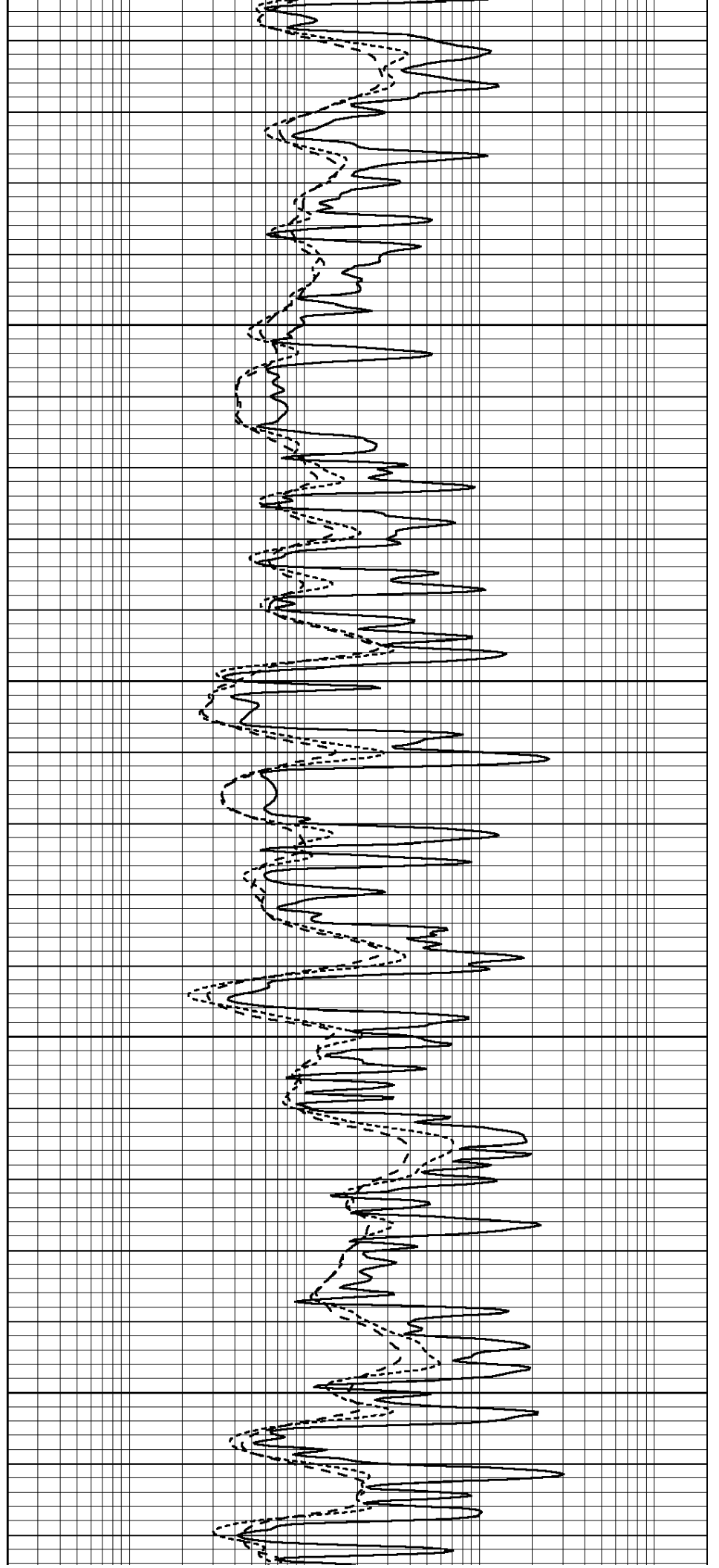


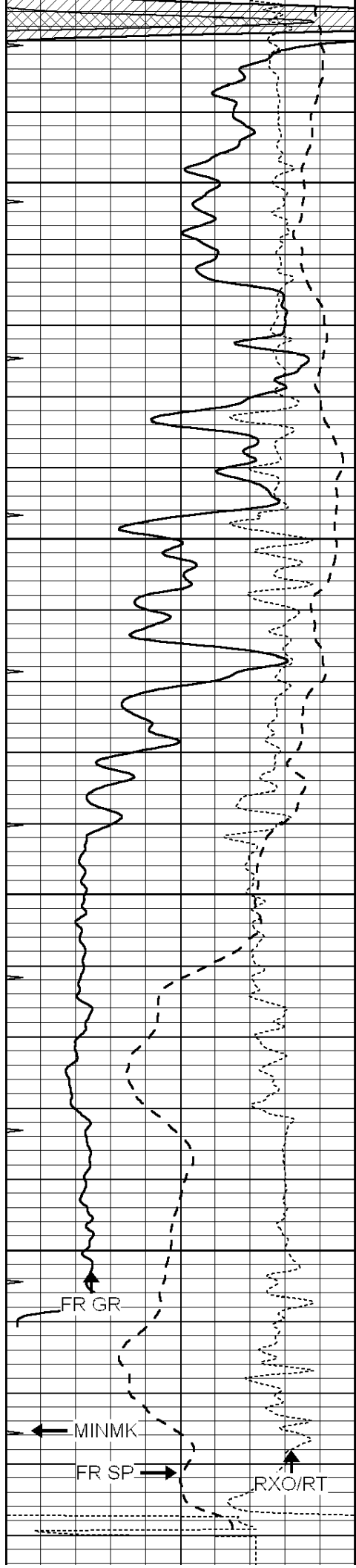
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4700

4750

4800





4850

4900

4950

5000

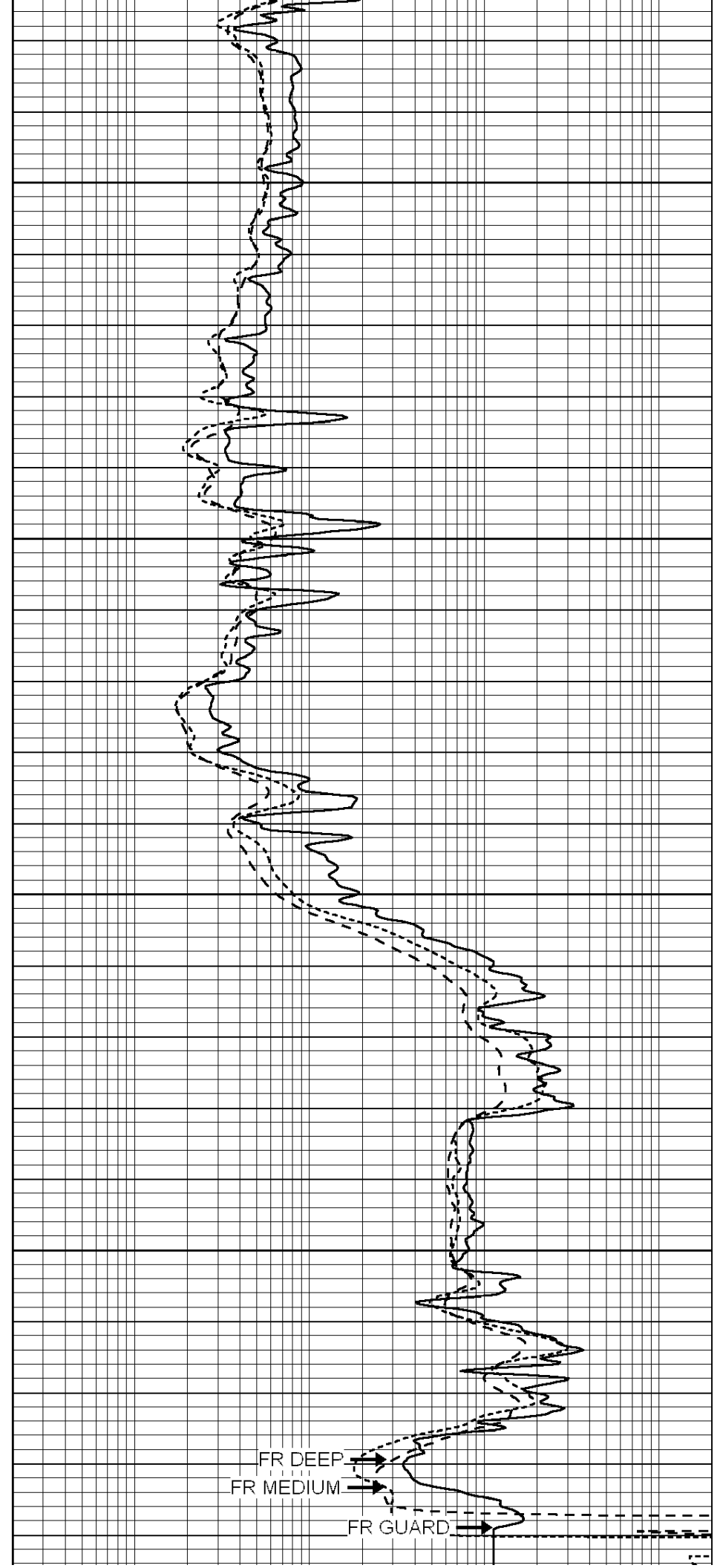
FR GR

MINMK

FR SP

RXO/RT

LTD 5041



FR DEEP

FR MEDIUM

FR GUARD

LTD 5041

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



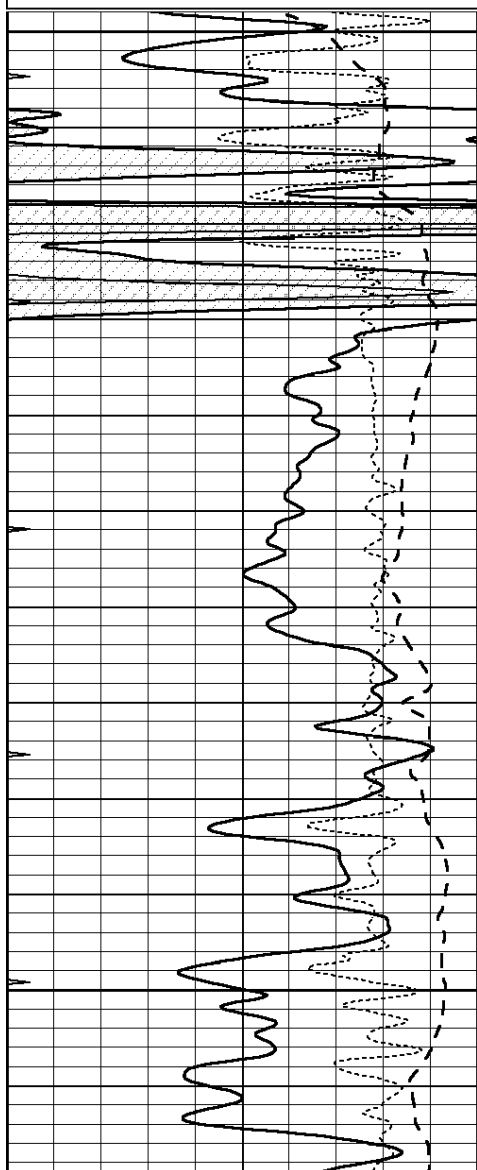
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REPEAT SECTION

Database File: 26513ddn.db
 Dataset Pathname: pass2.3
 Presentation Format: _dil
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 Charted by: Depth in Feet scaled 1:240

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

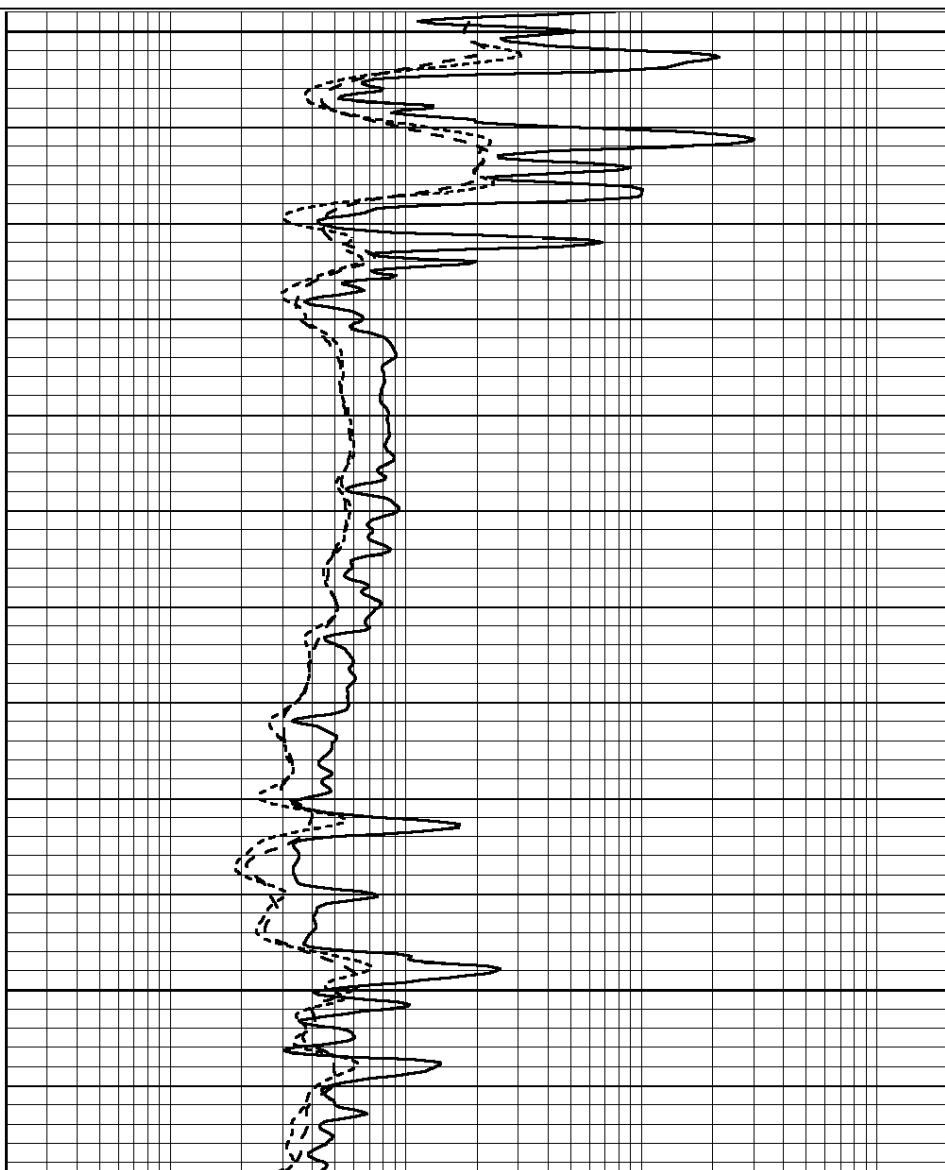
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000

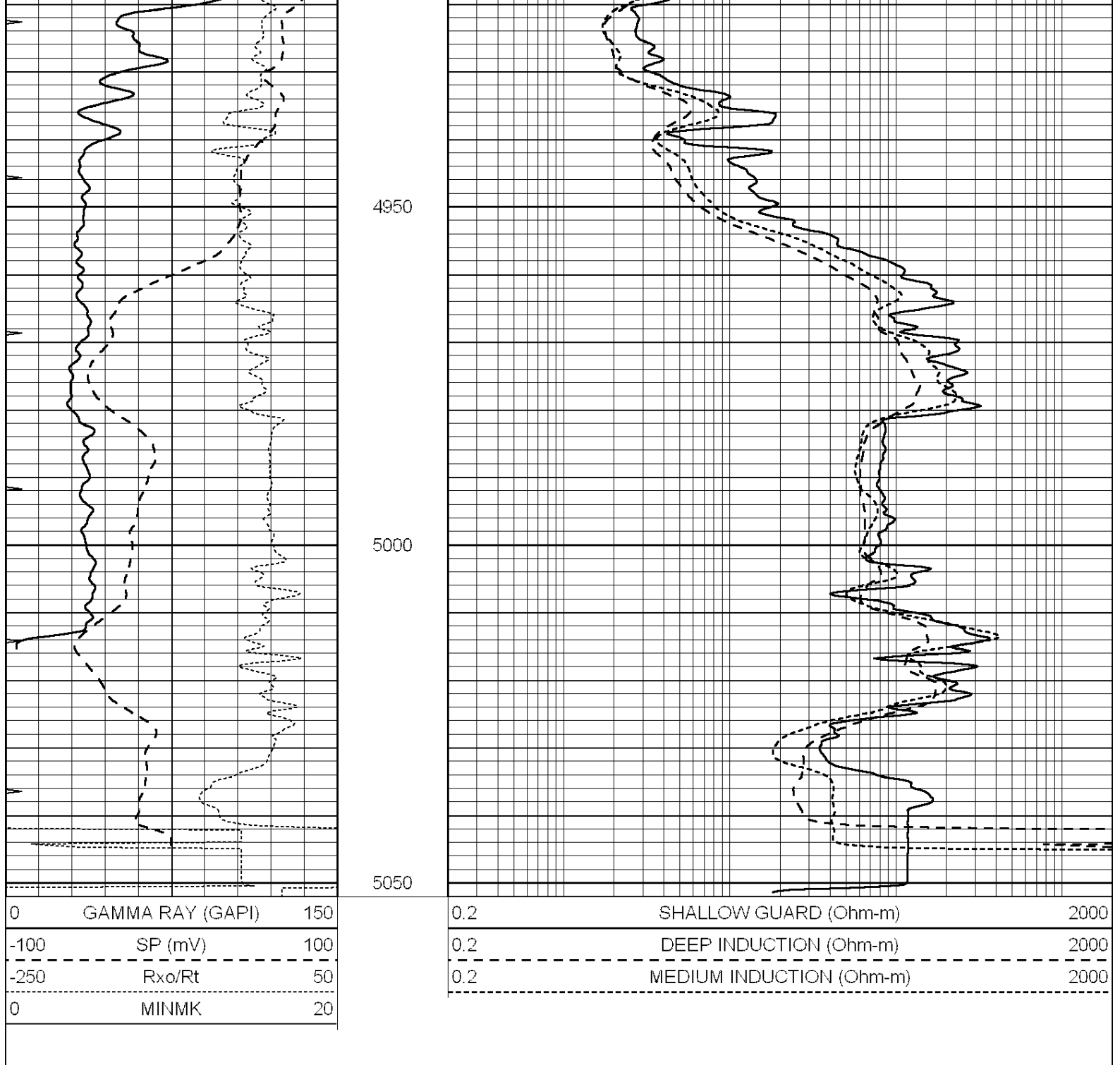


4800

4850

4900





Calibration Report

Database File: 26513ddn.db
 Dataset Pathname: pass3.4
 Dataset Creation: Mon May 04 17:51:28 2015 by Calc SOC 120430

Dual Induction Calibration Report

Serial-Model: PROBE9-DILG
 Surface Cal Performed: Mon May 04 16:08:03 2015
 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		m	b
	Air	Loop		Air	Loop		
Deep	0.014	0.020		0.000	400.000	070.000	11.000

Deep	-0.014	0.629	V	0.000	464.000	mmho/m	670.000	-14.000
Medium	0.039	0.728	V	0.000	464.000	mmho/m	670.000	-27.000
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	

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: Sat Mar 21 17:40:37 2015

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 1.0 cps

Sensitivity: 0.2600 GAPI/cps