



NABORS

**COMPLETION
& PRODUCTION
SERVICES CO.**

DUAL INDUCTION LOG

Company		RITCHIE EXPLORATION INC.	
Well	HEIER 13D #1		
Field	WILDCAT		
County	GOVE	State	KANSAS
Location:	975' FSL & 1150' FEL NW - SE - SE		API # : 15-063-22216-00-00 Other Services CNL/CDL
Permanent Datum	SEC 13	TWP 12S	RGE 29W
Log Measured From	GROUND LEVEL Elevation 2784		
Drilling Measured From	KELLY BUSHING 5' A.G.L. KELLY BUSHING		
Elevation	K.B. 2789 D.F. 2787 G.L. 2784		
Date	9/12/14		
Run Number	ONE		
Depth Driller	4640		
Depth Logger	4641		
Bottom Logged Interval	4639		
Top Log Interval	00		
Casing Driller	8 5/8" @ 251		
Casing Logger	248		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD		CHLORIDES 1,500 PPM
Density / Viscosity	9.2 / 62		
pH / Fluid Loss	10.5 / 8.0		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	1.00 @ 82F		
Rmt @ Meas. Temp	0.75 @ 82F		
Rmc @ Meas. Temp	1.20 @ 82F		
Source of Rmt / Rmc	MEASUREMENT		
Rm @ BHT	0.67 @ 122F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom			
Maximum Recorded Temperature	122F		
Equipment Number	4010		
Location	HAYS, KANSAS		
Recorded By	IAN MABB		
Witnessed By	MIKE ENGELBRECHT		

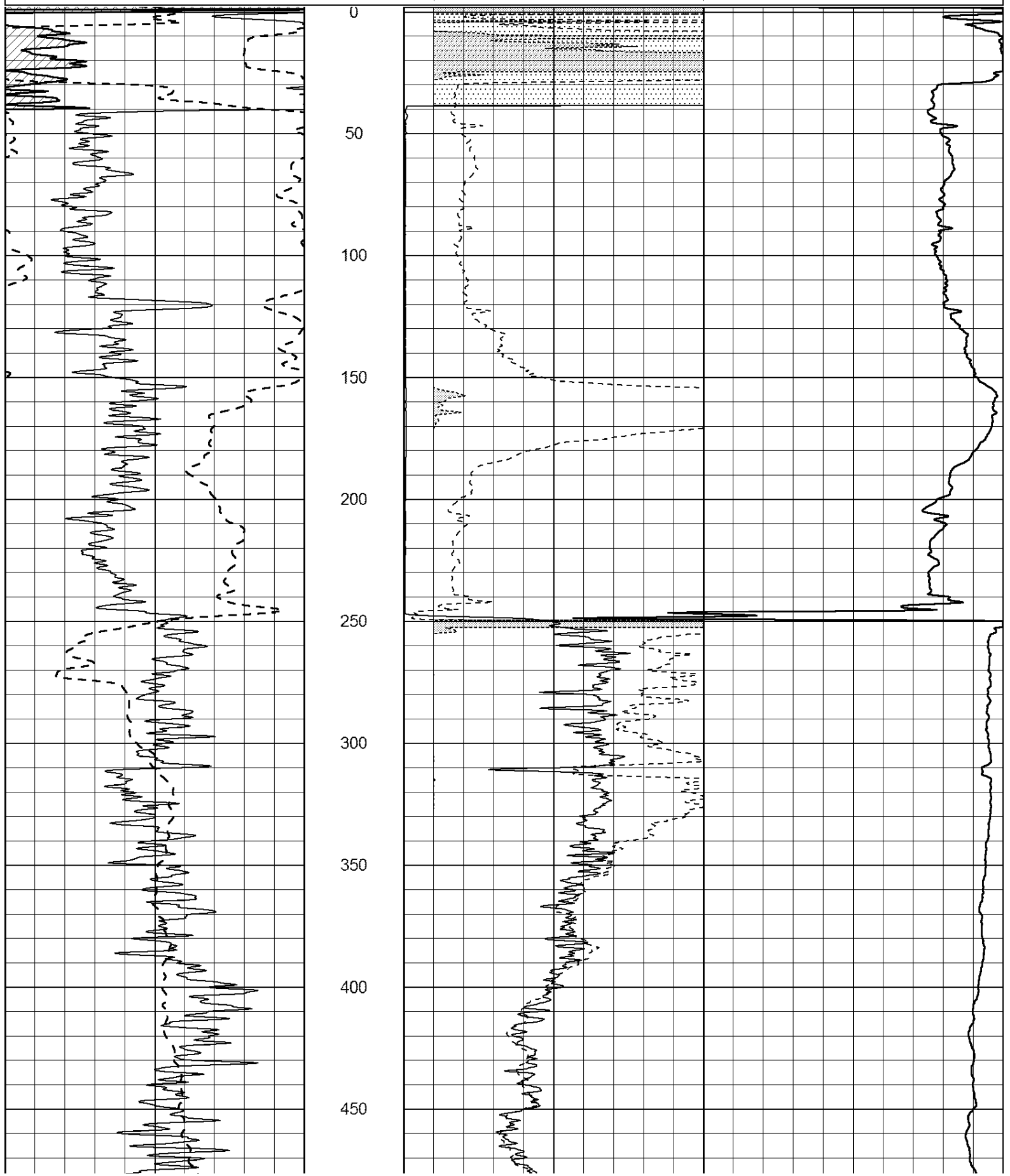
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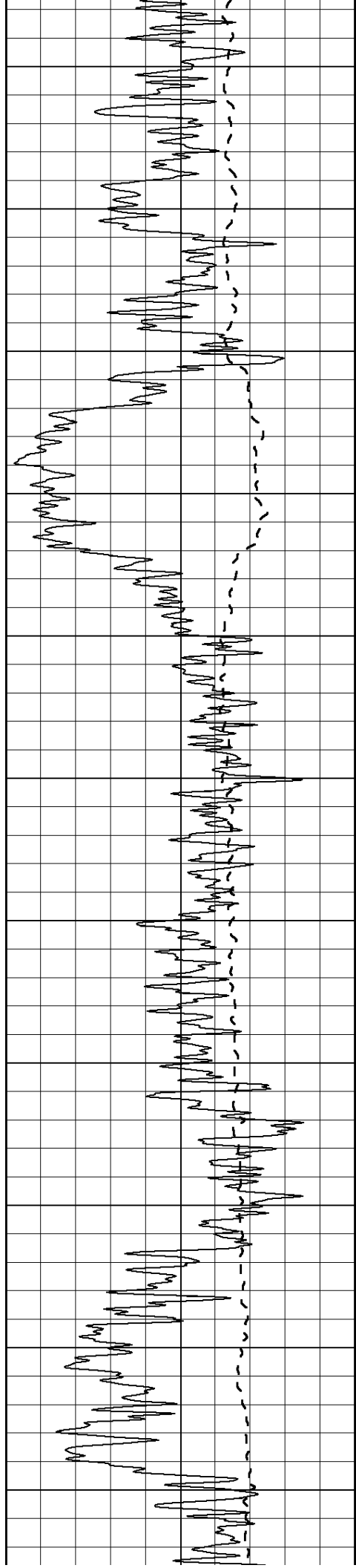
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, 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, KS. (785) 628-6395
 DIRECTIONS:
 GOVE KS. - 3 MILES NORTH - WEST 1/2 MILE - NORTH INTO

Charted by: Depth in feet scaled 1:500					
0	Gamma Ray (GAPI)	150	0	RLL3 (Ohm-m)	50
-100	SP (mV)	100	0	RILD (Ohm-m)	50
-----			-----		
			1000	CILD (mmho/m)	0
			50	RILD X10 (Ohm-m)	500
			50	RLL3 X10 (Ohm-m)	500





500

550

600

650

700

750

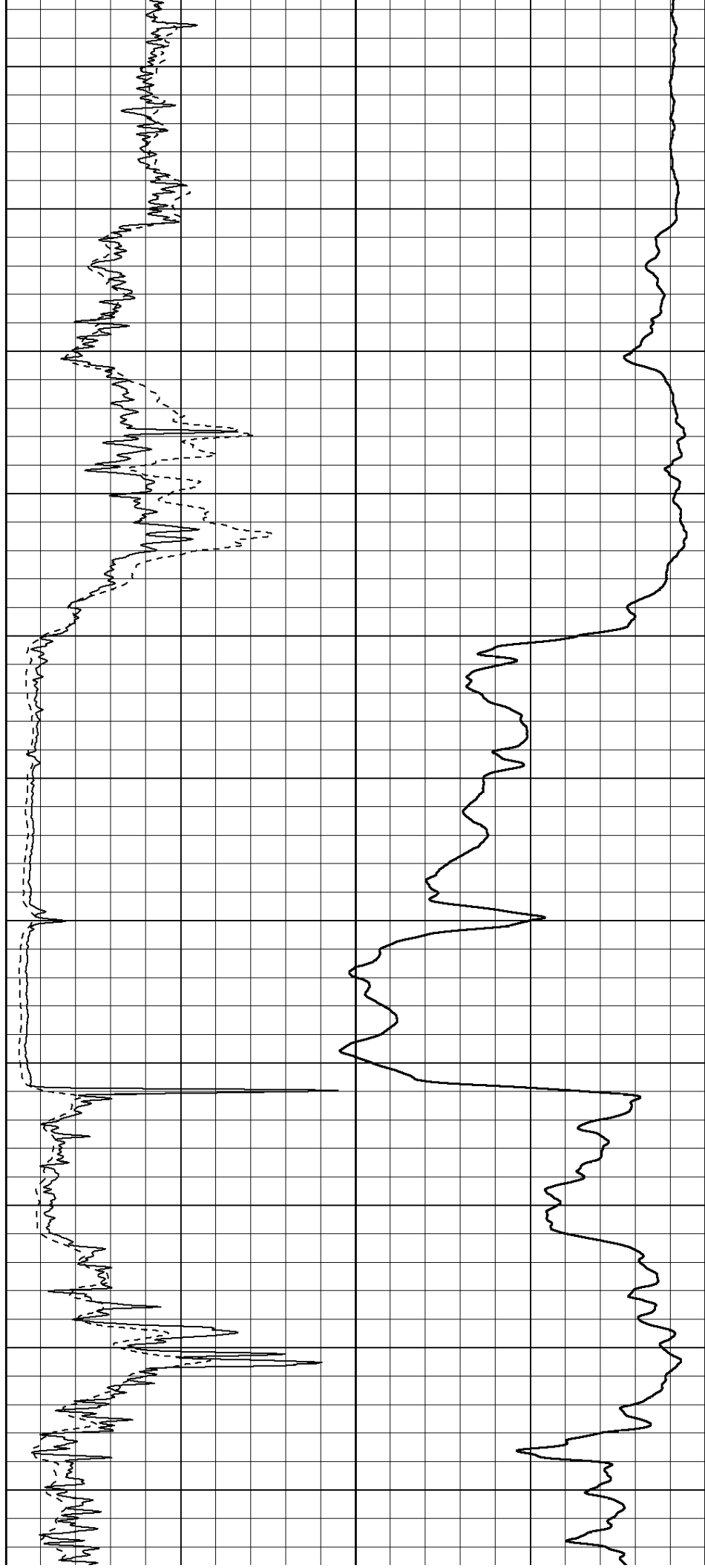
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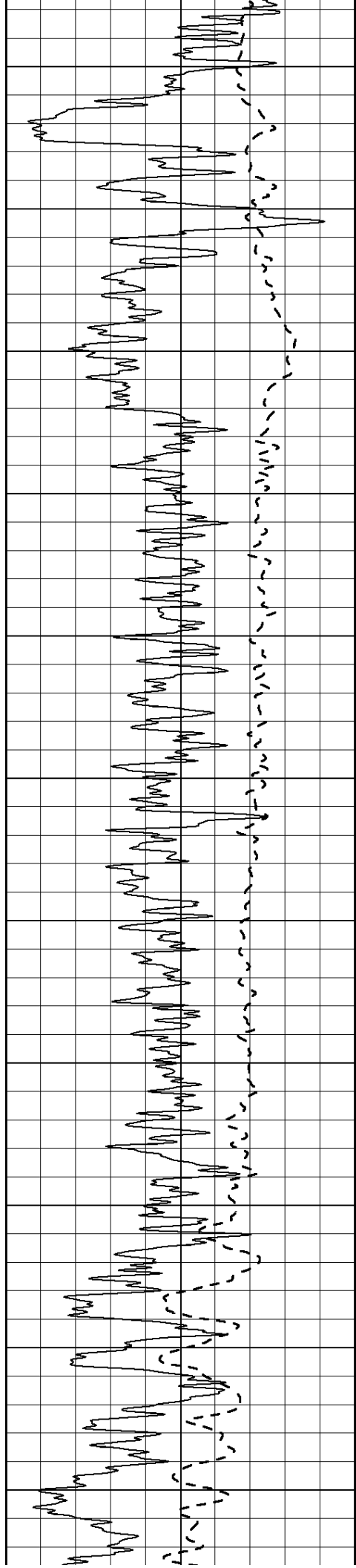
850

900

950

1000





1050

1100

1150

1200

1250

1300

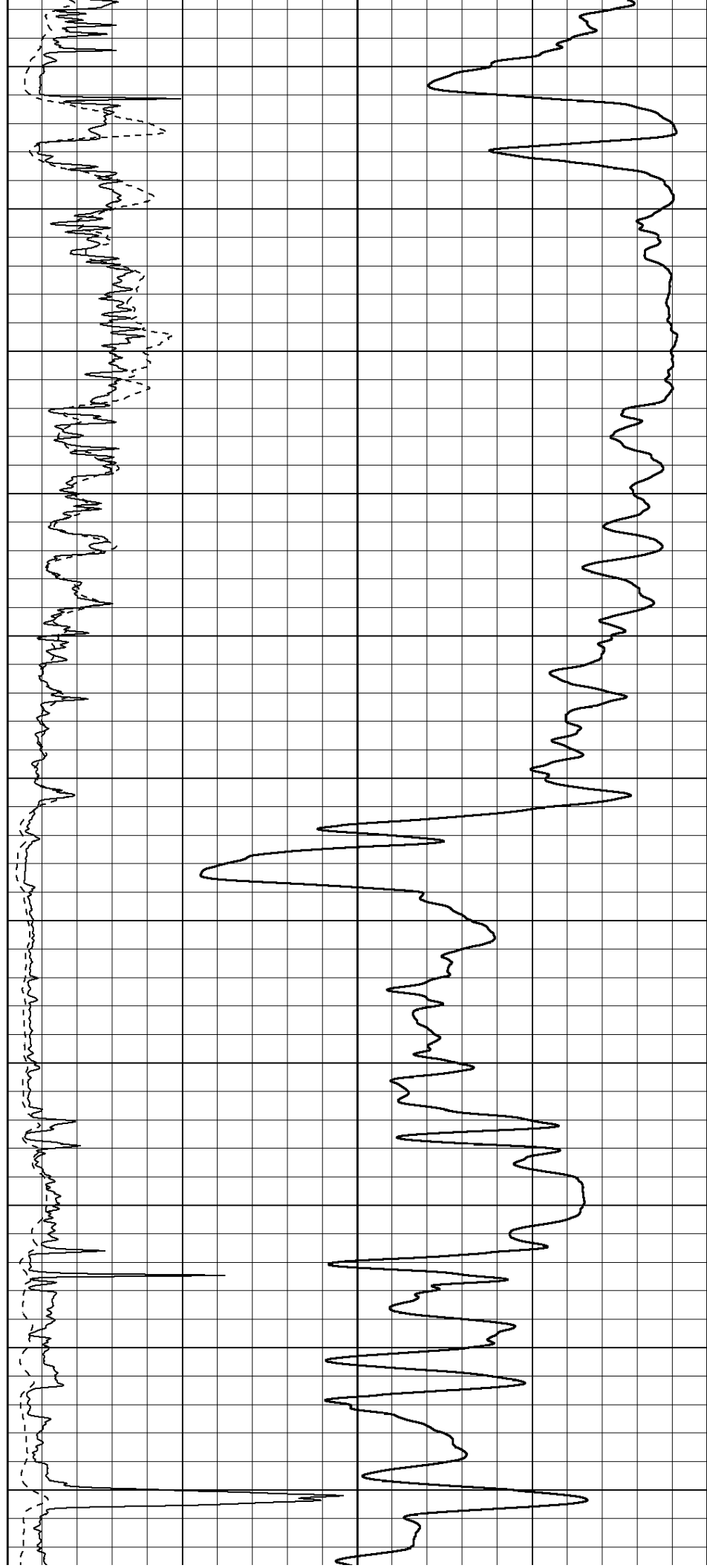
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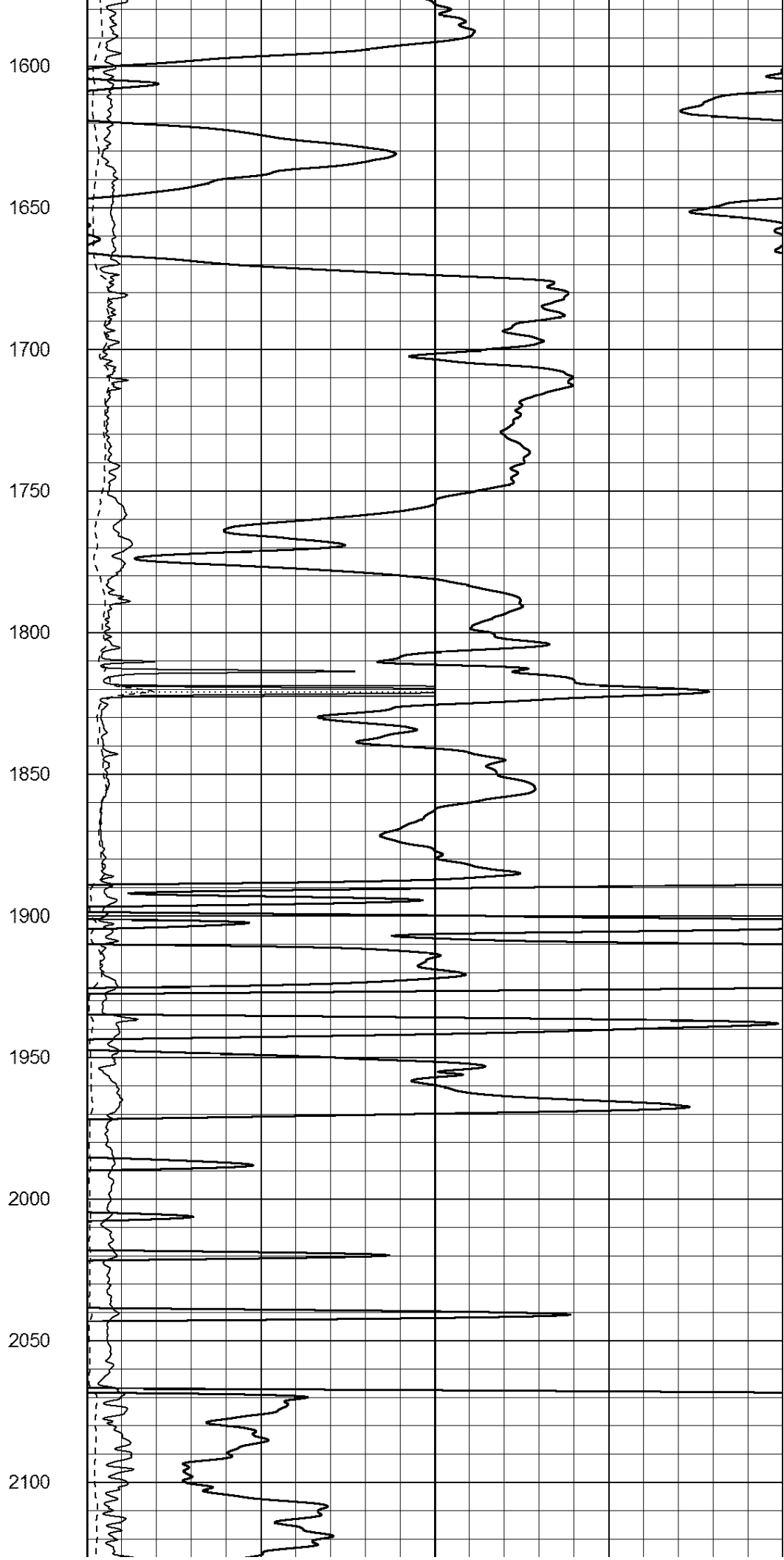
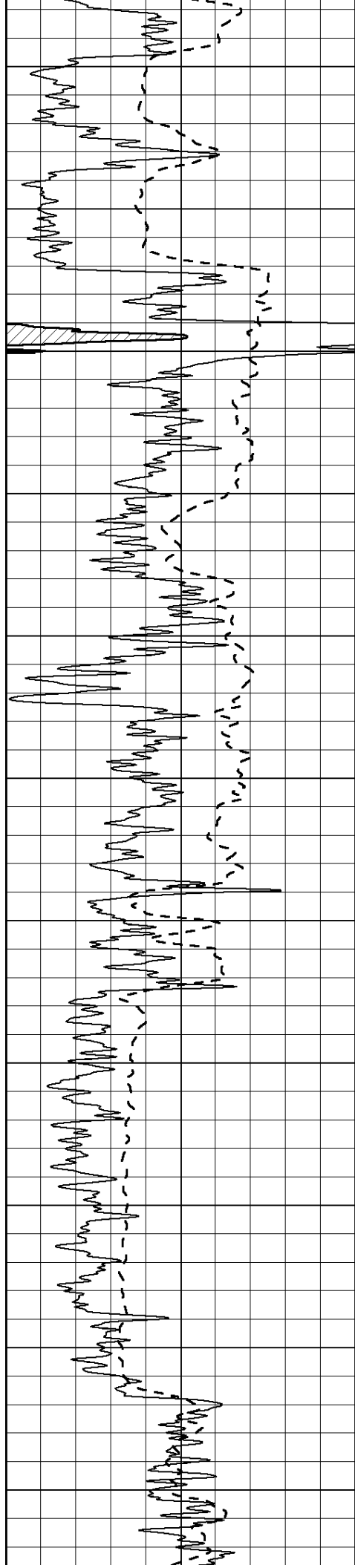
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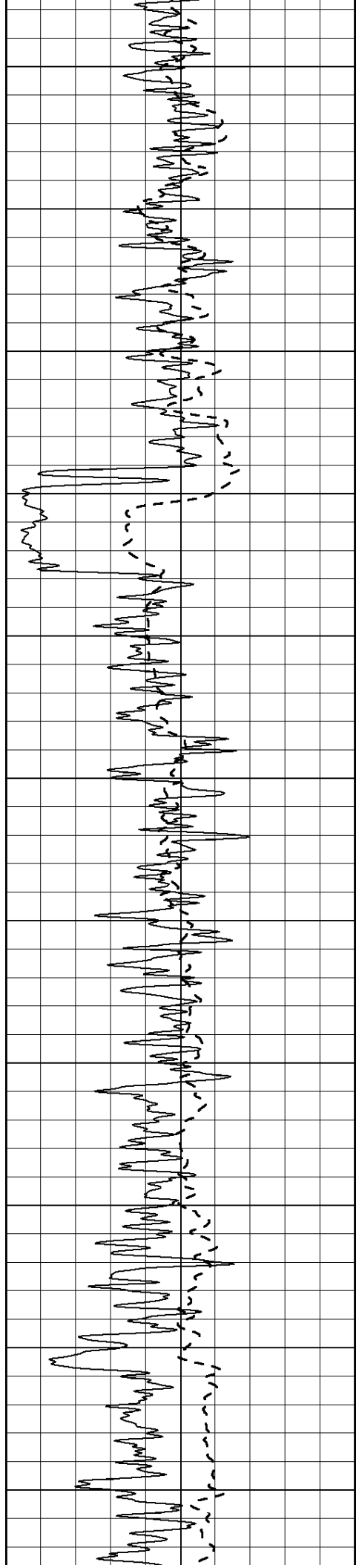
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1500

1550







2150

2200

2250

2300

2350

2400

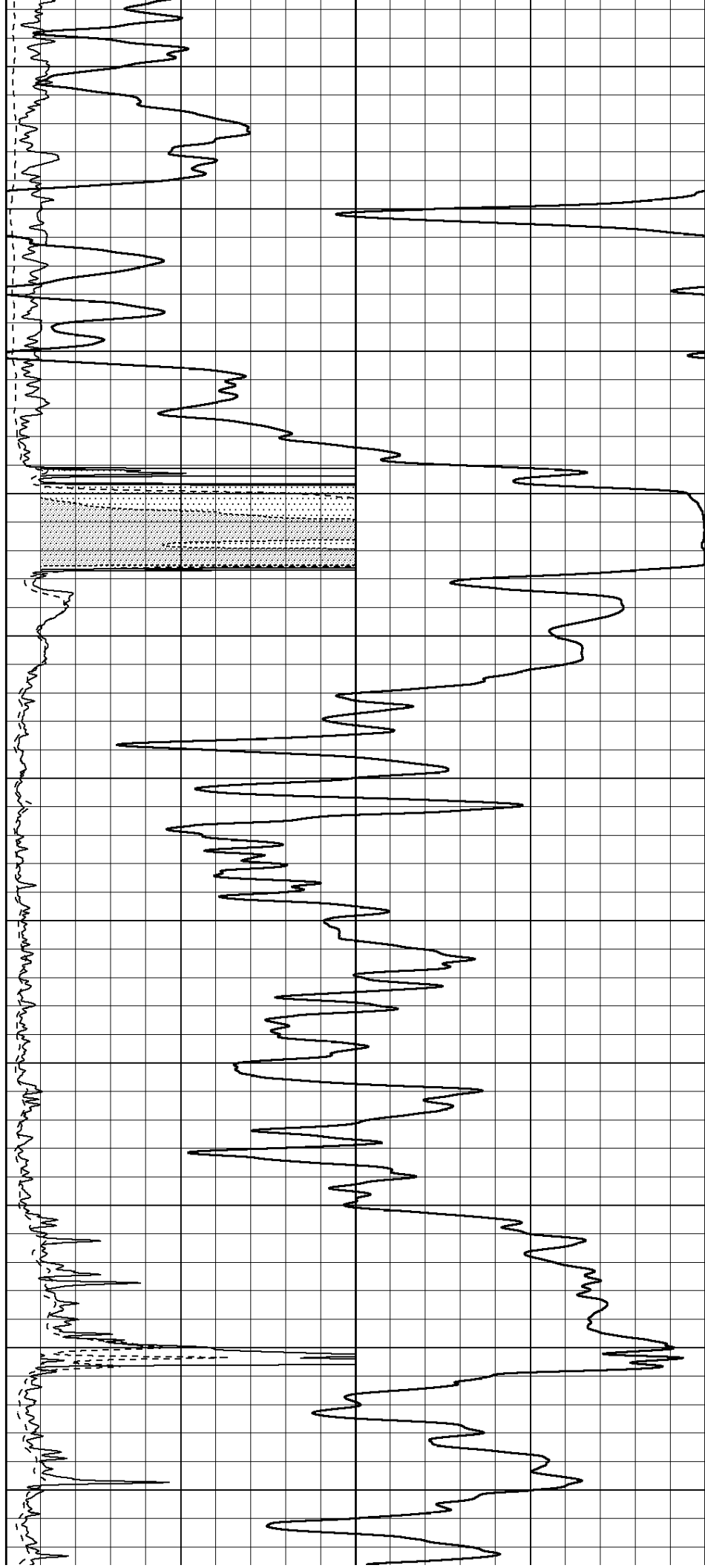
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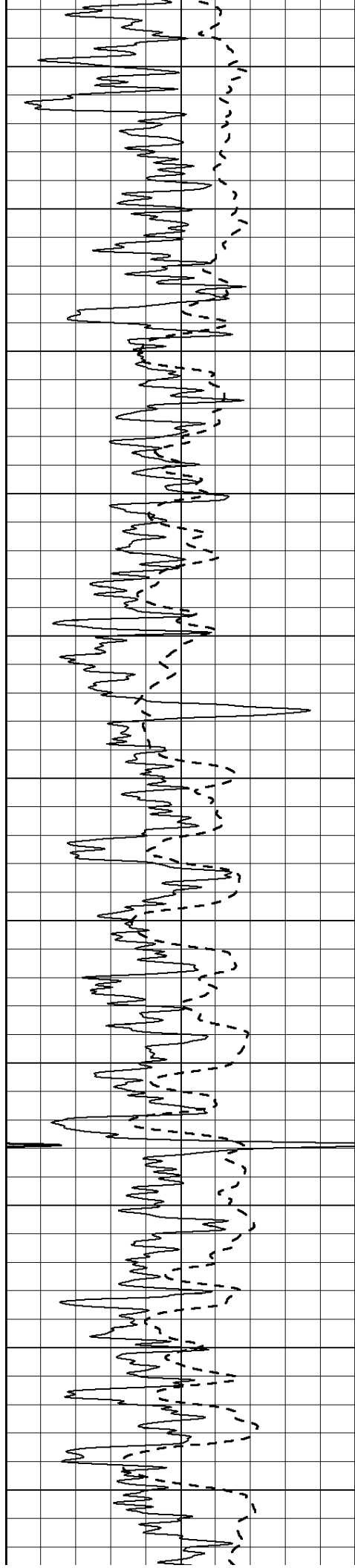
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2550

2600

2650





2700

2750

2800

2850

2900

2950

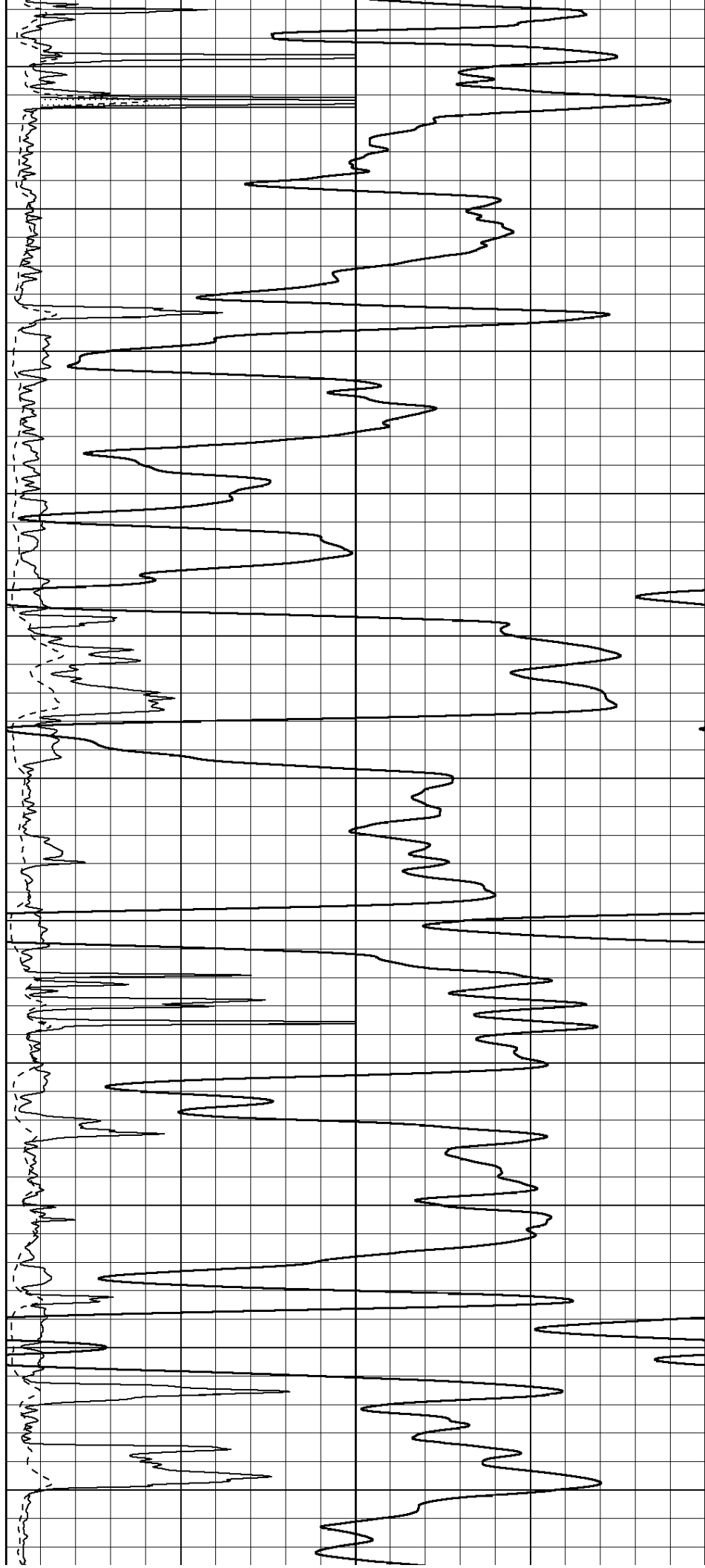
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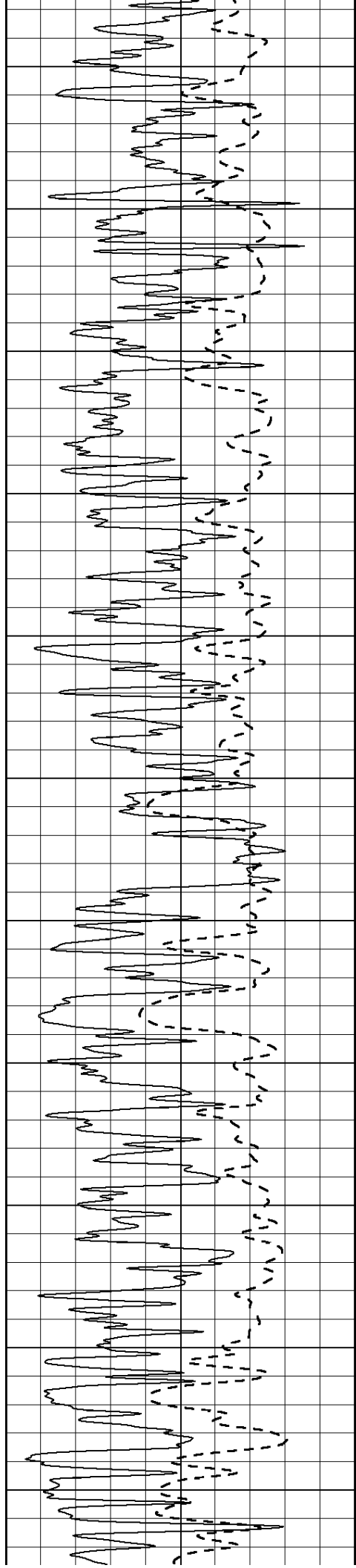
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3100

3150

3200





3250

3300

3350

3400

3450

3500

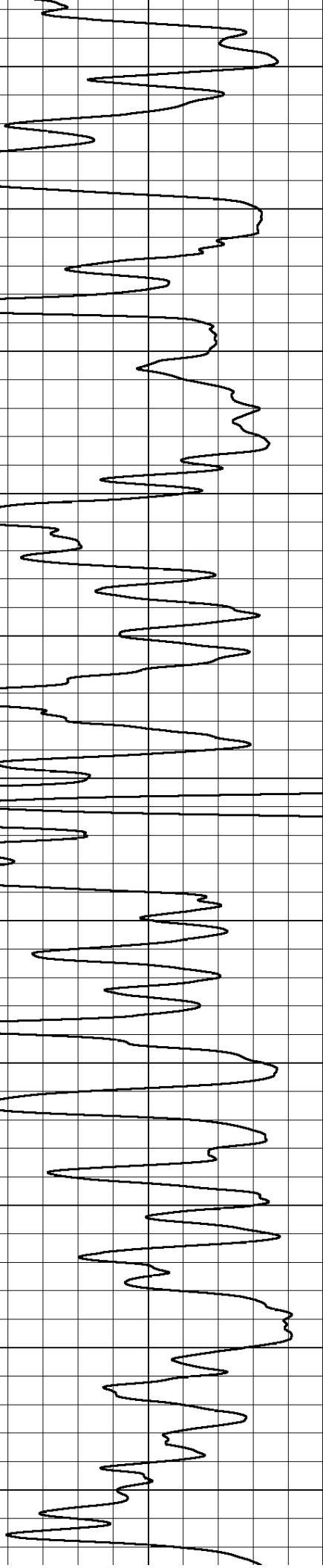
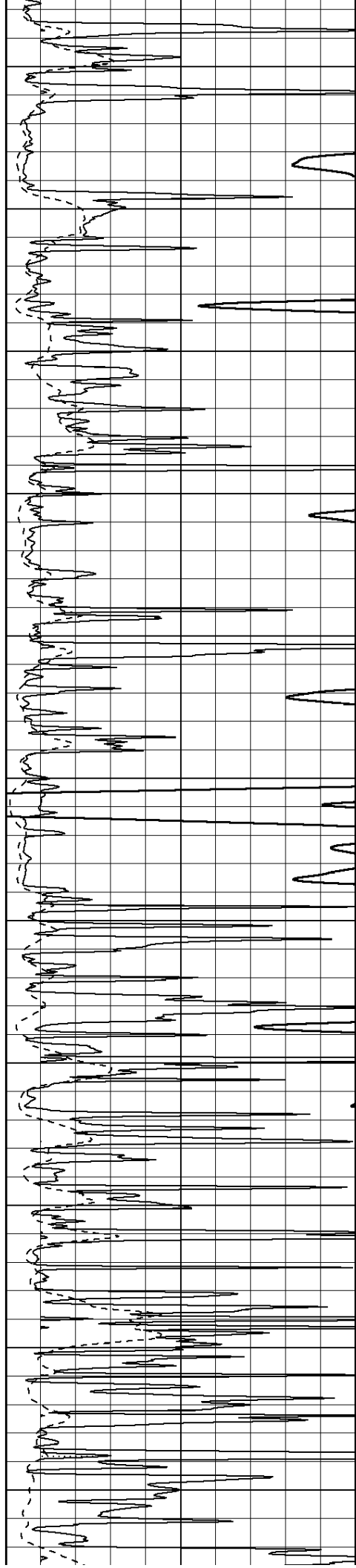
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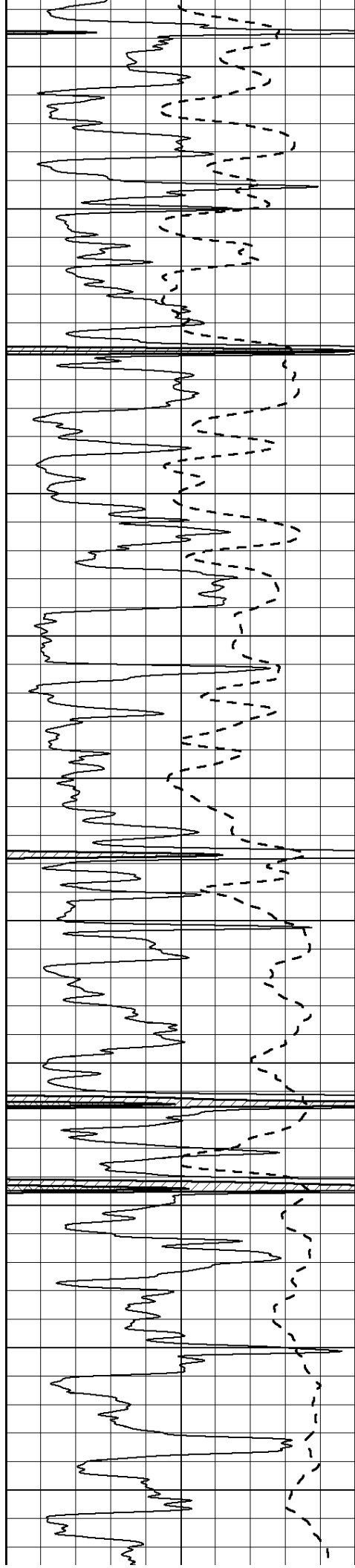
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3650

3700

3750





3800

3850

3900

3950

4000

4050

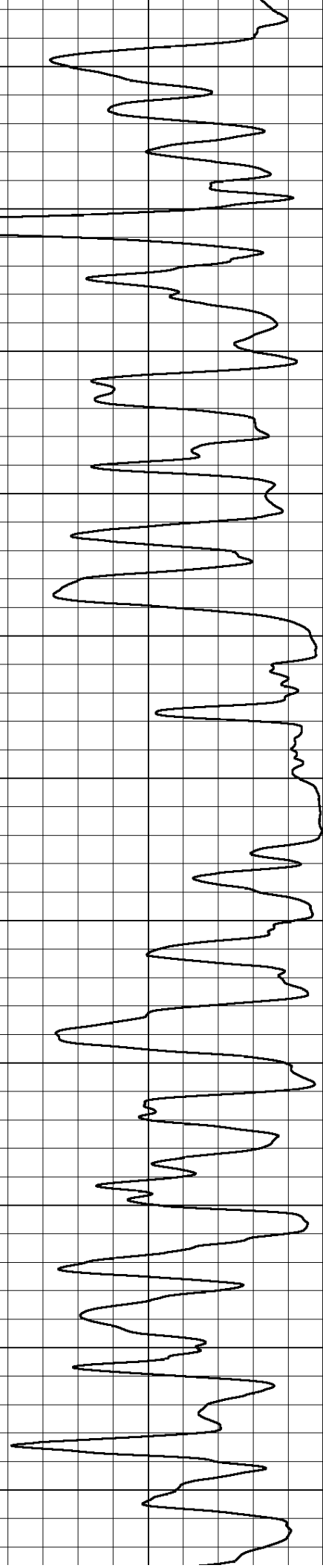
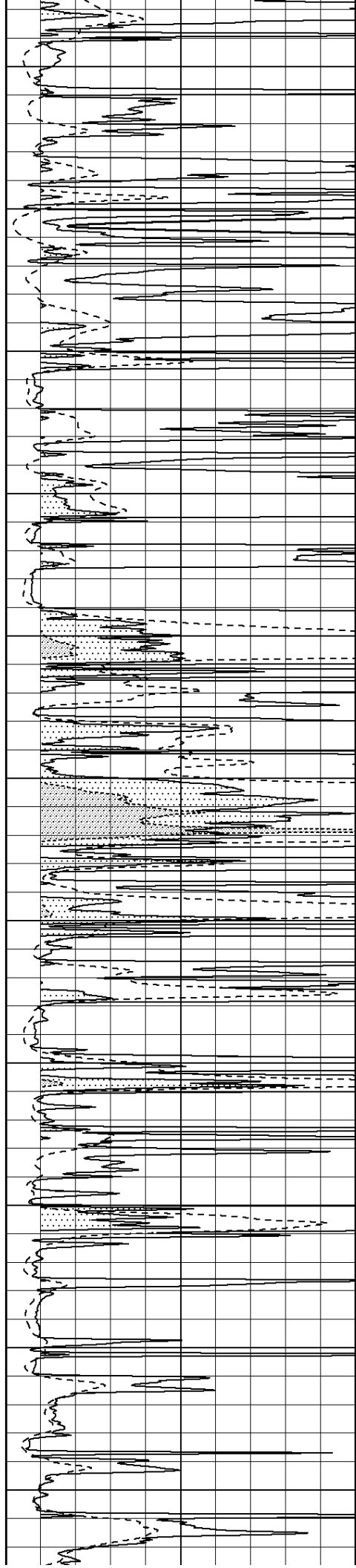
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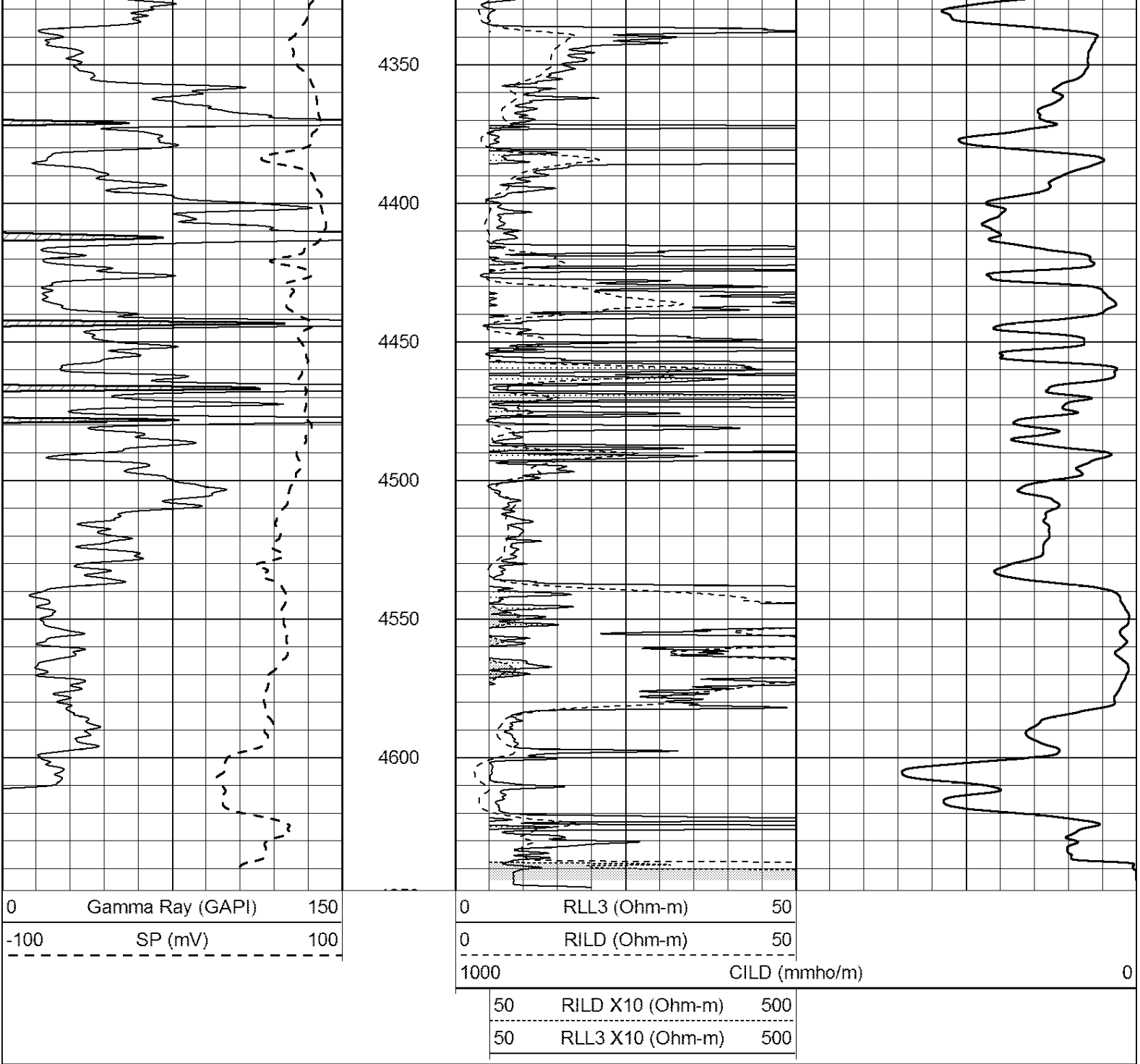
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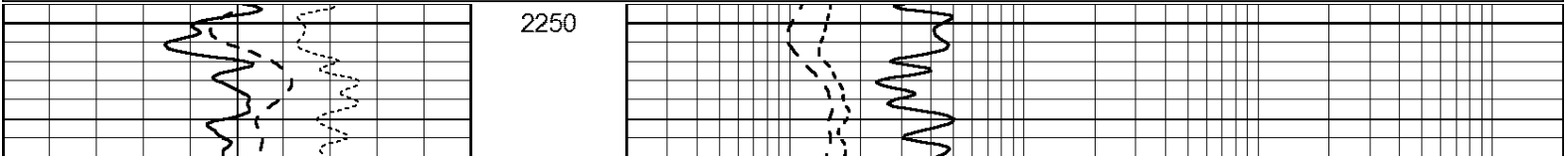
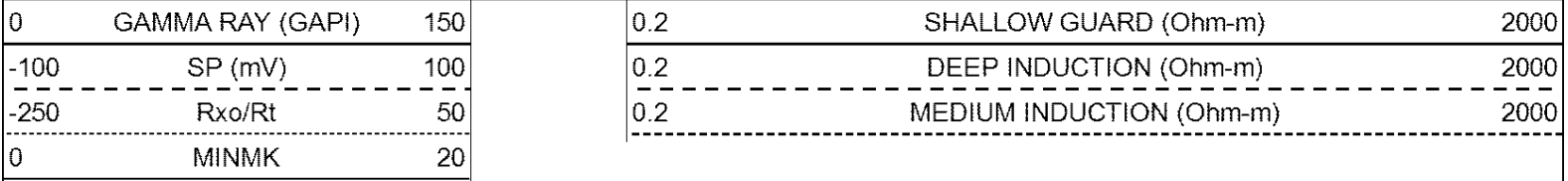
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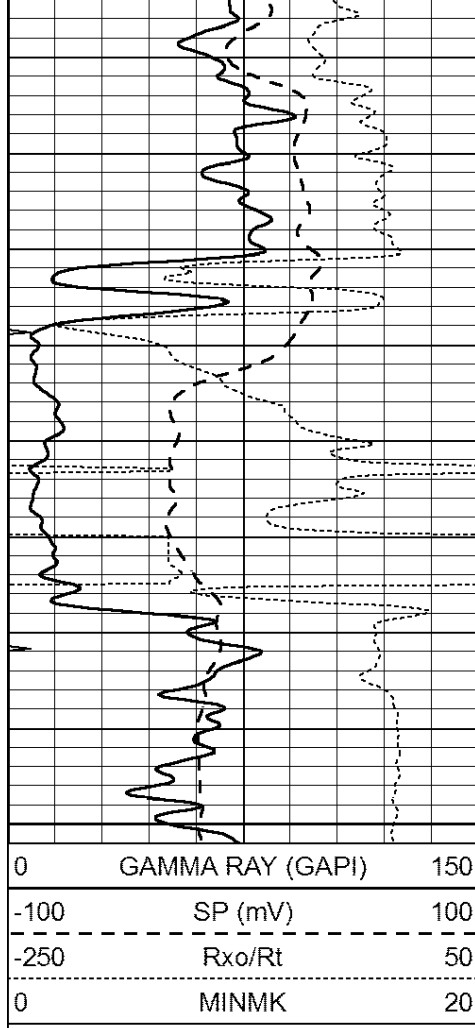
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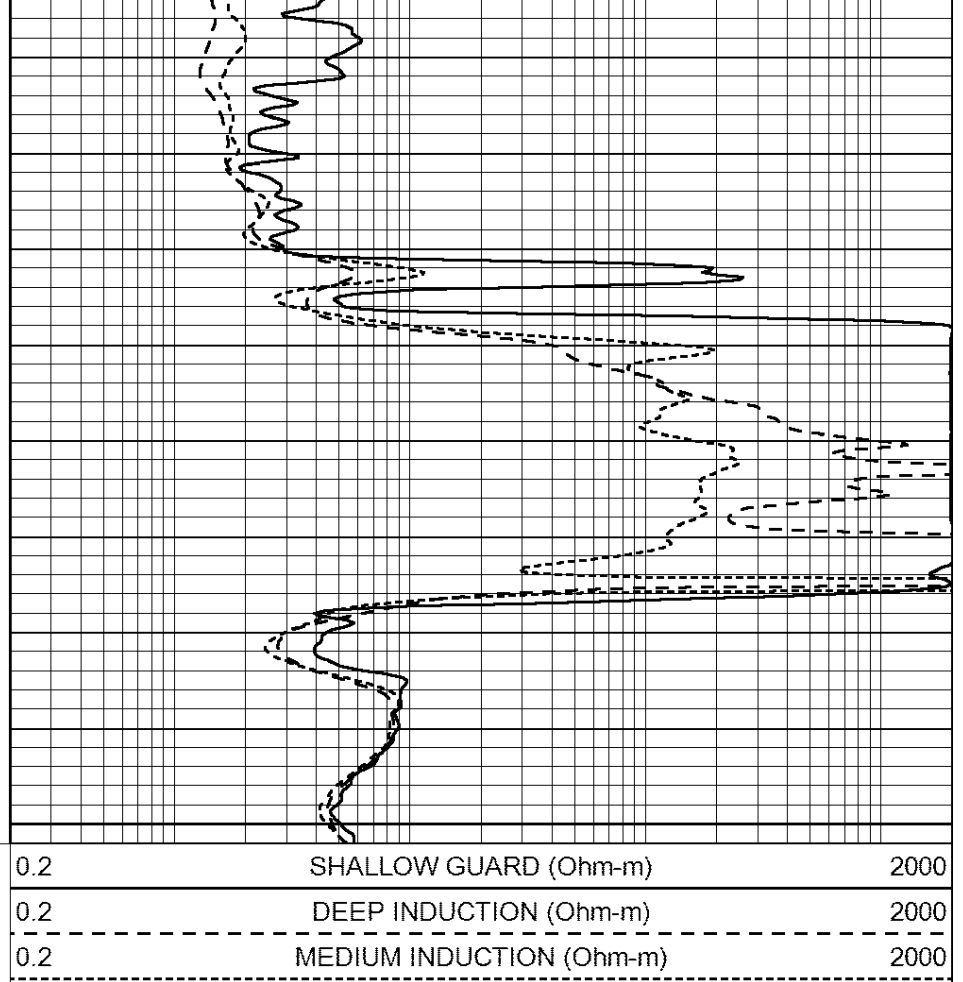
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Presentation Format: _dil
Dataset Creation: Fri Sep 12 23:25:41 2014 by Calc Open-Cased 090629
Charted by: Depth in Feet scaled 1:240



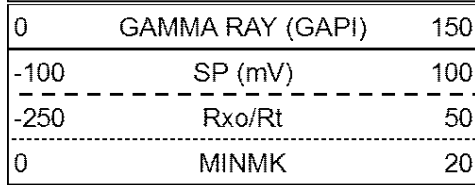


2300

2350

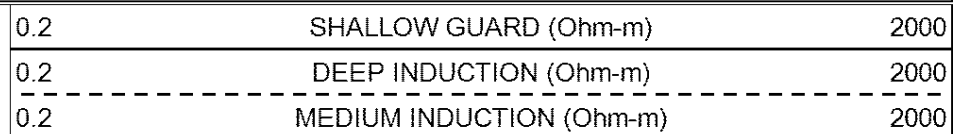


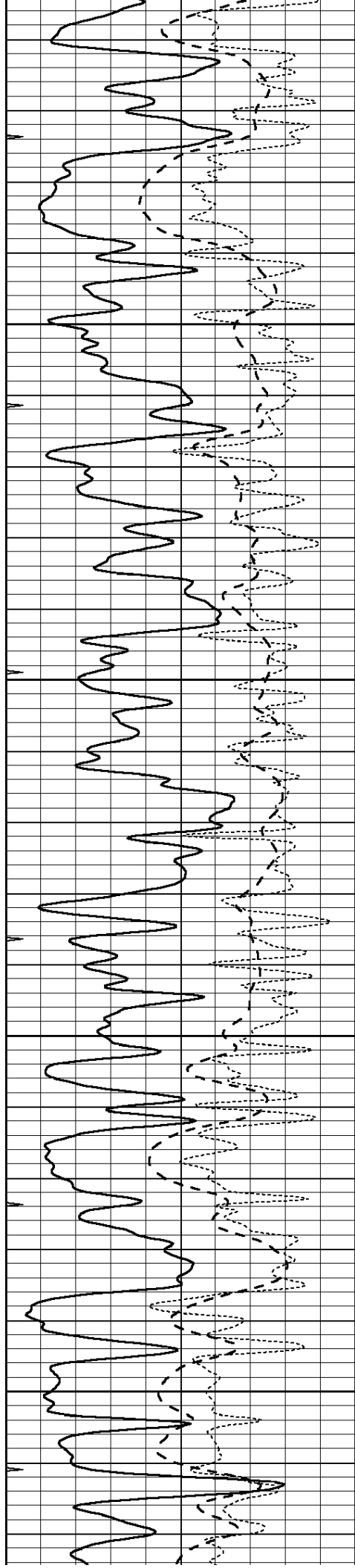
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3500

3550



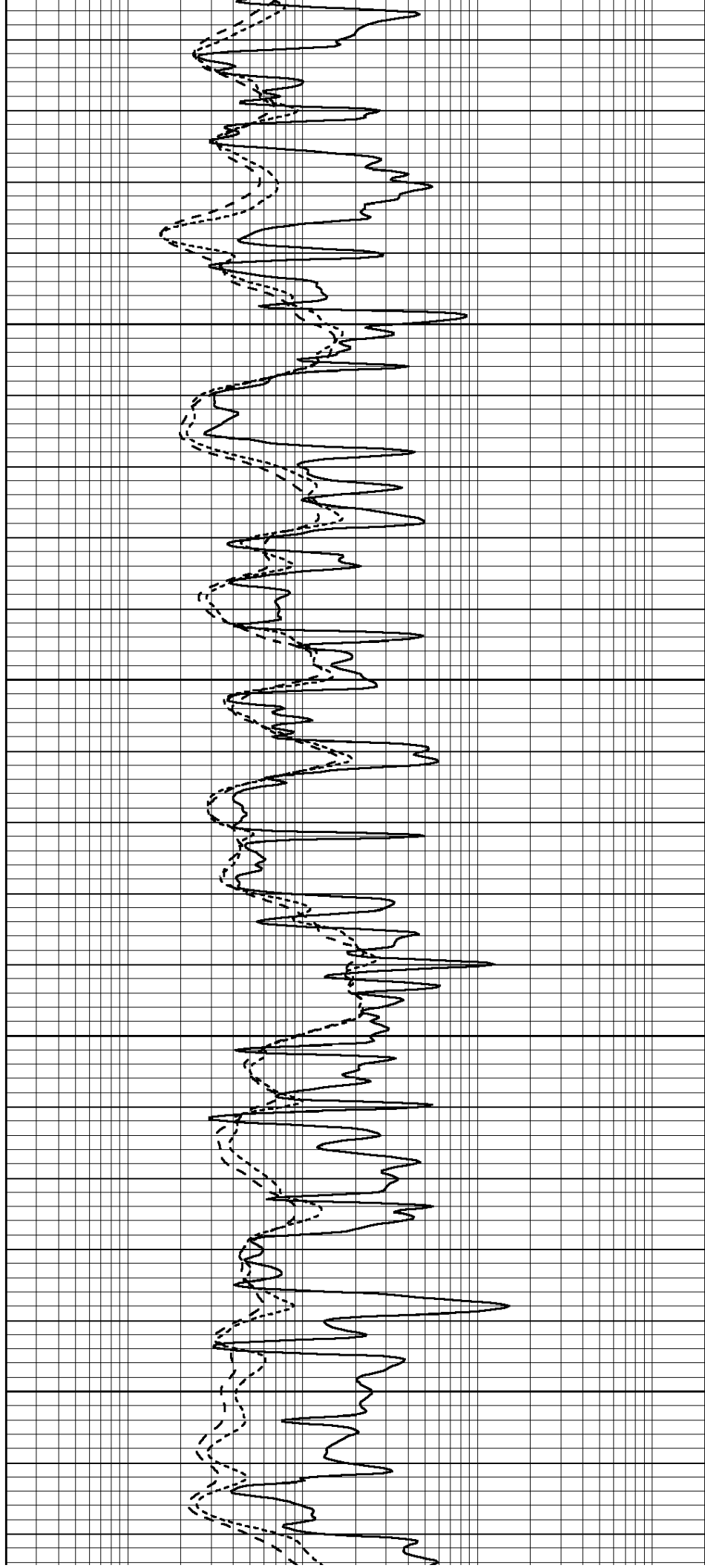


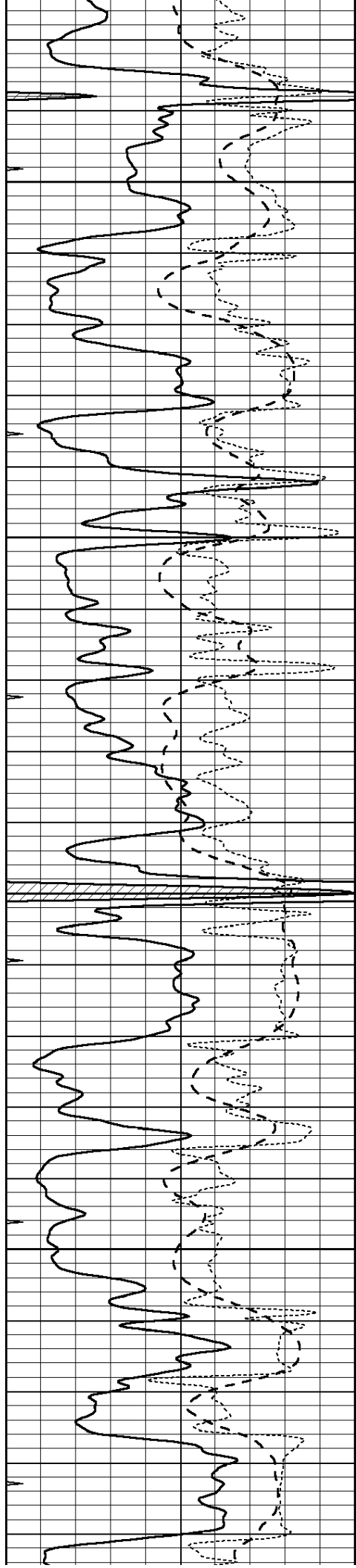
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3700

3750



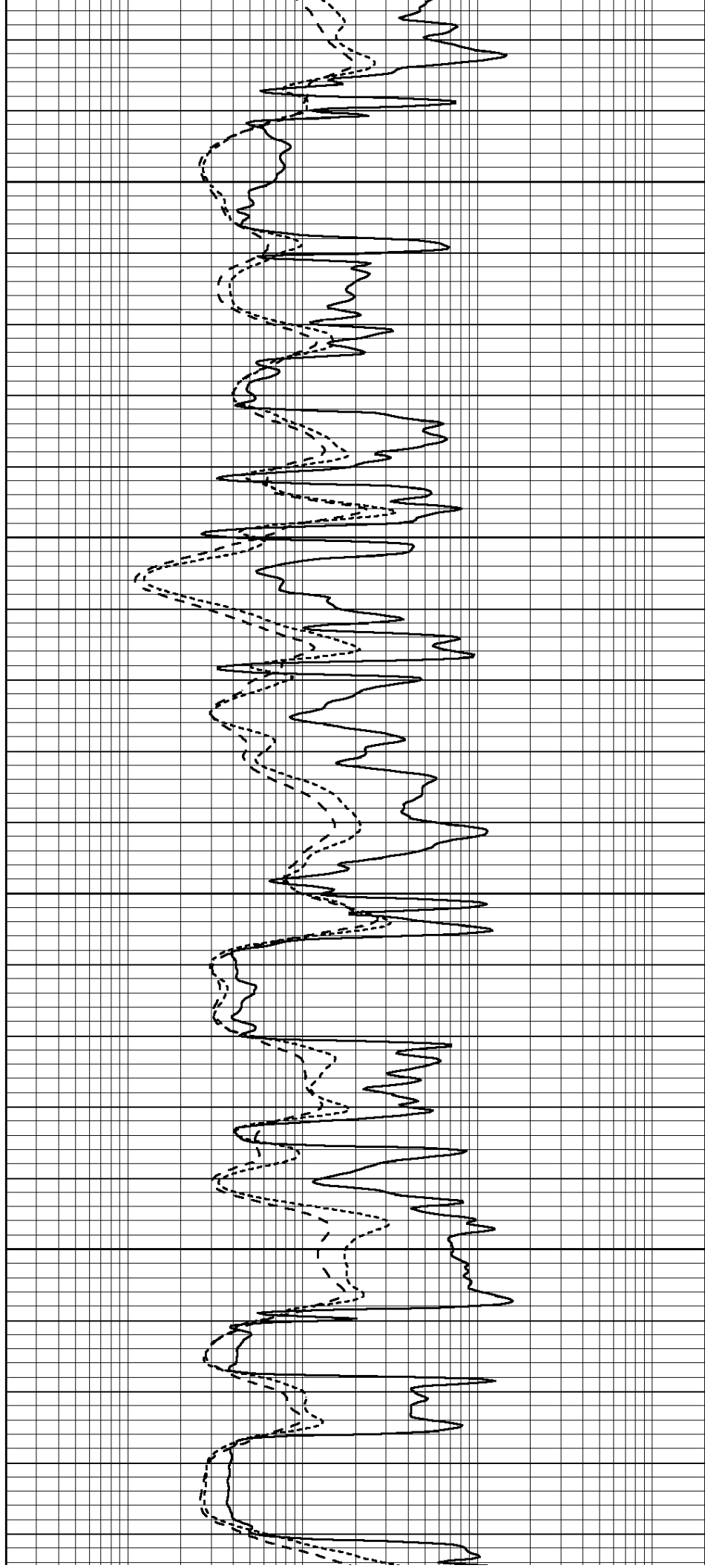


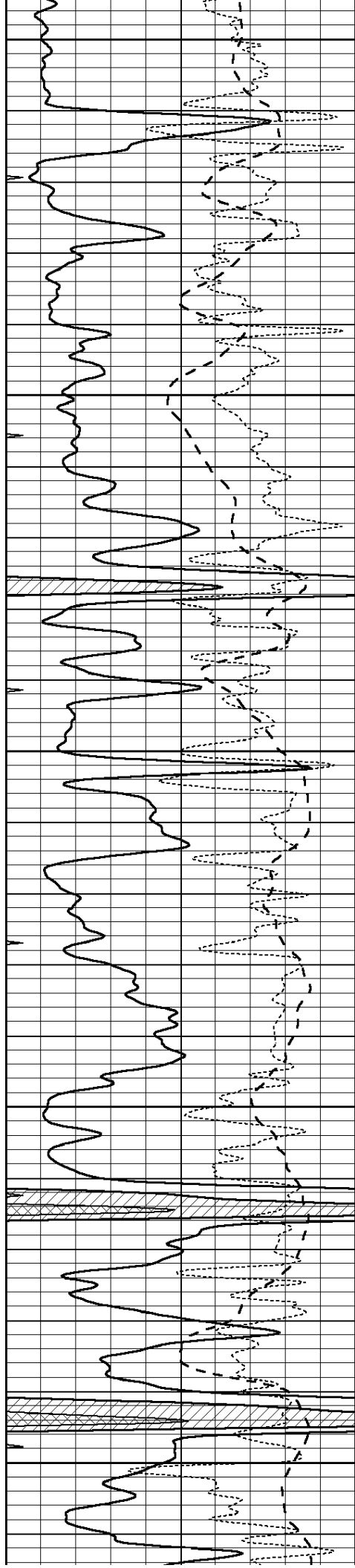
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3900

3950





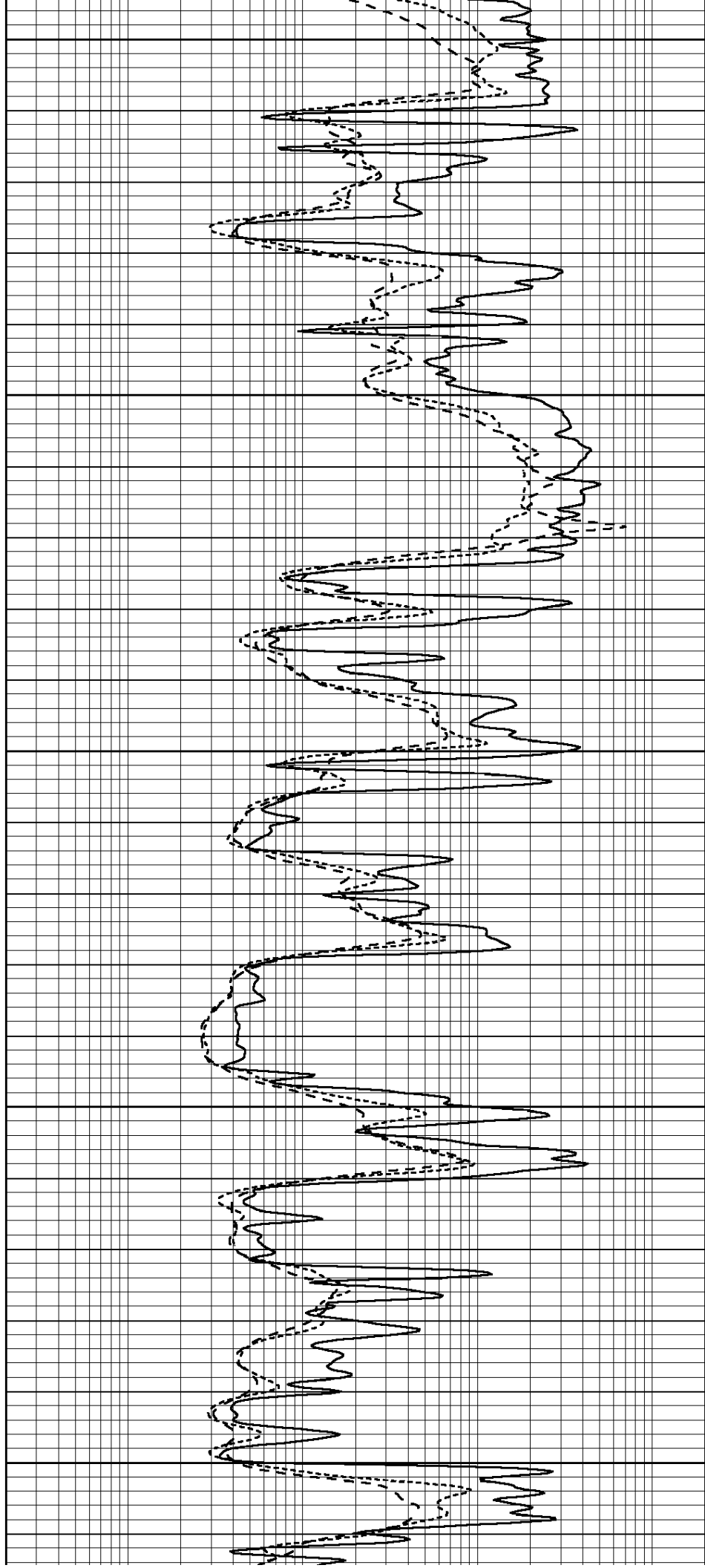
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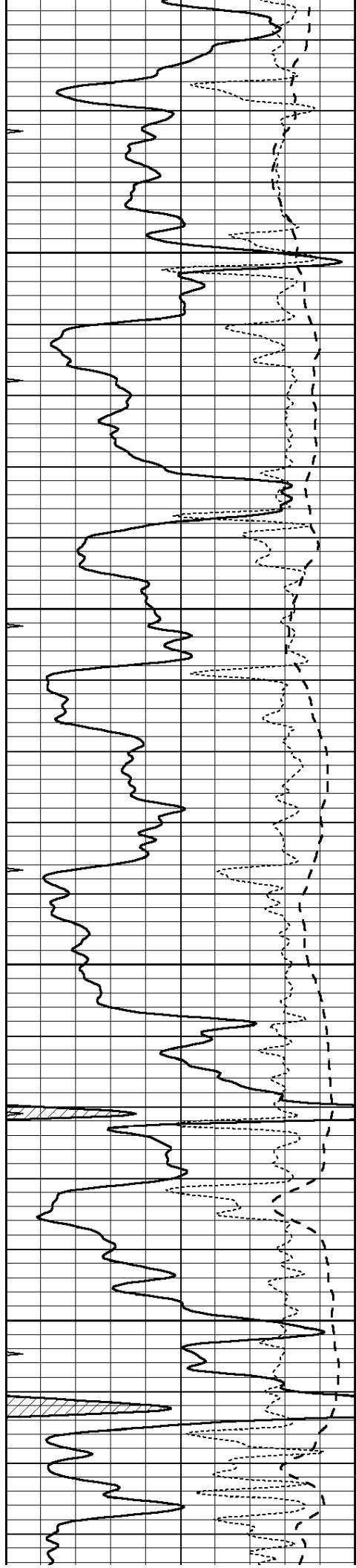
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4100

4150

4200



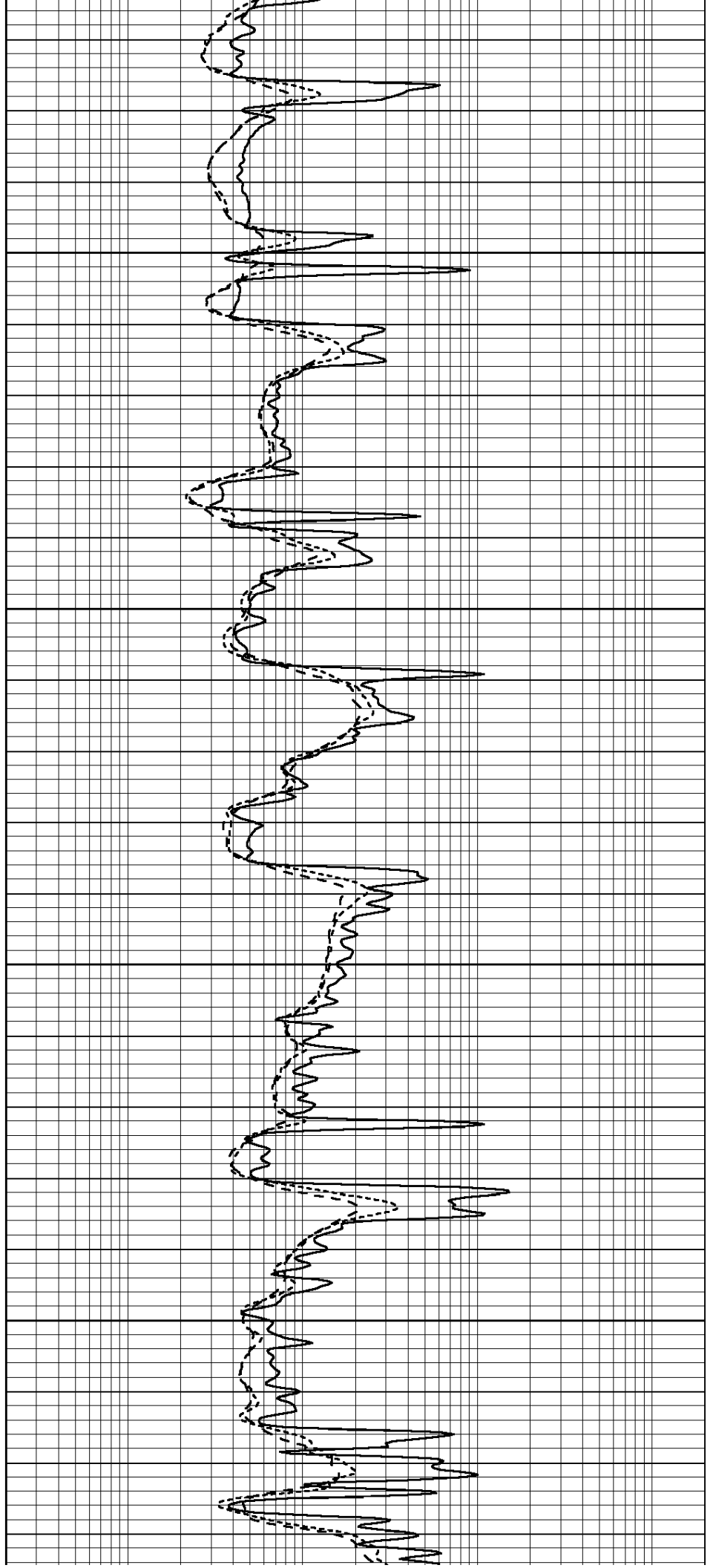


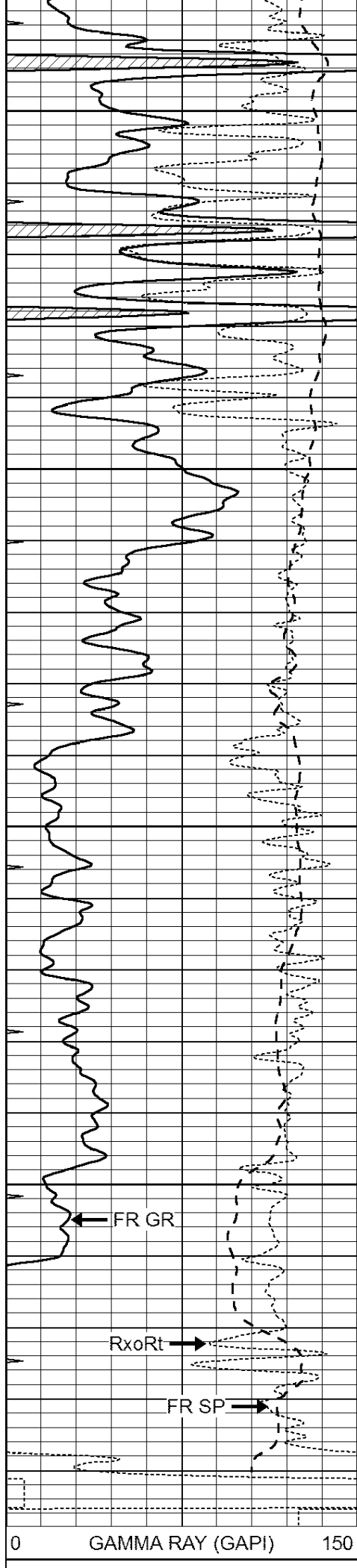
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4300

4350

4400





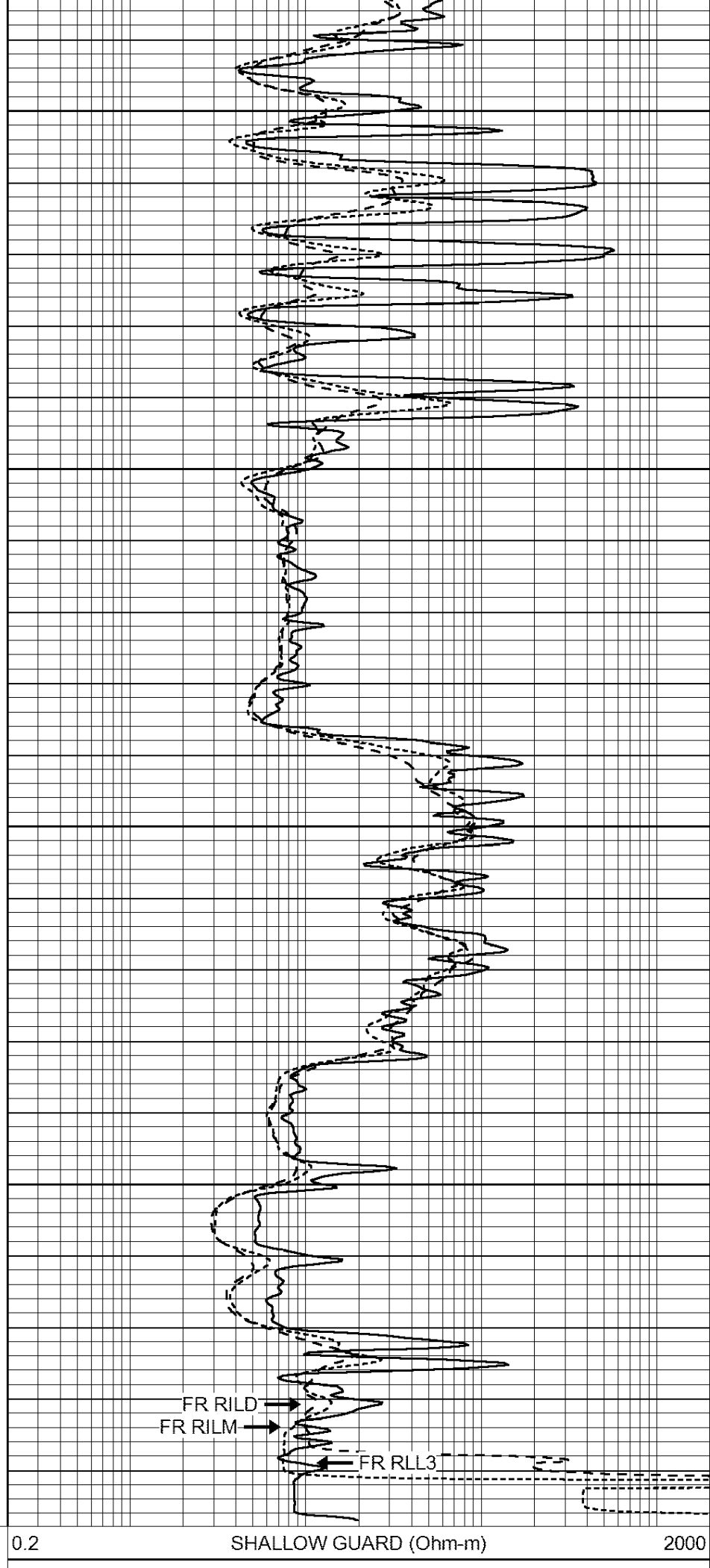
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4500

4550

4600

LTD 4641



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

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

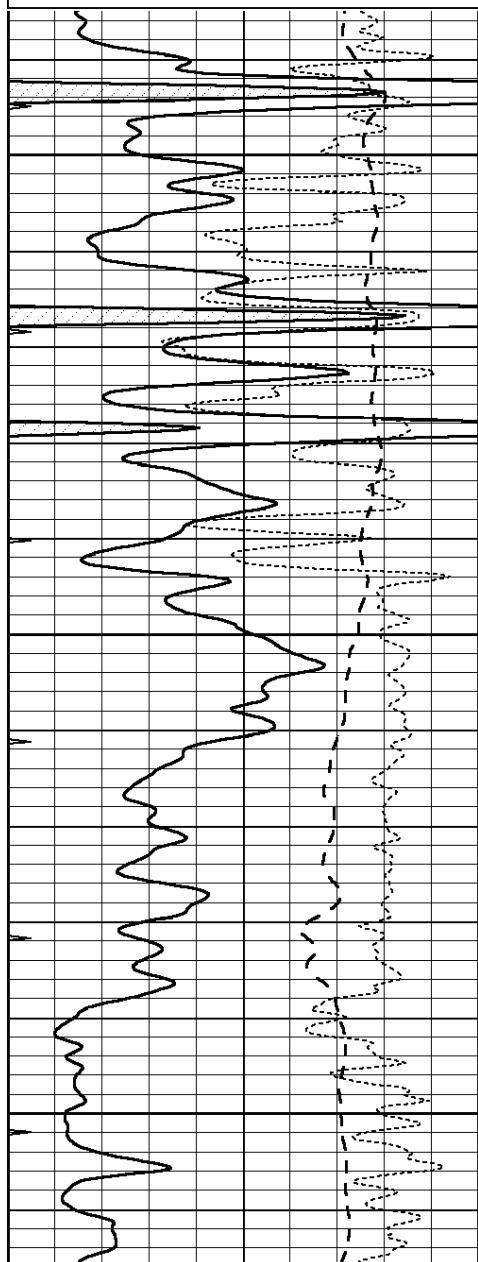


REPEAT SECTION

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 Dataset Pathname: pass2.3
 Presentation Format: _dil
 Dataset Creation: Fri Sep 12 22:01:40 2014 by Calc Open-Cased 090629
 Charted by: Depth in Feet scaled 1:240

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

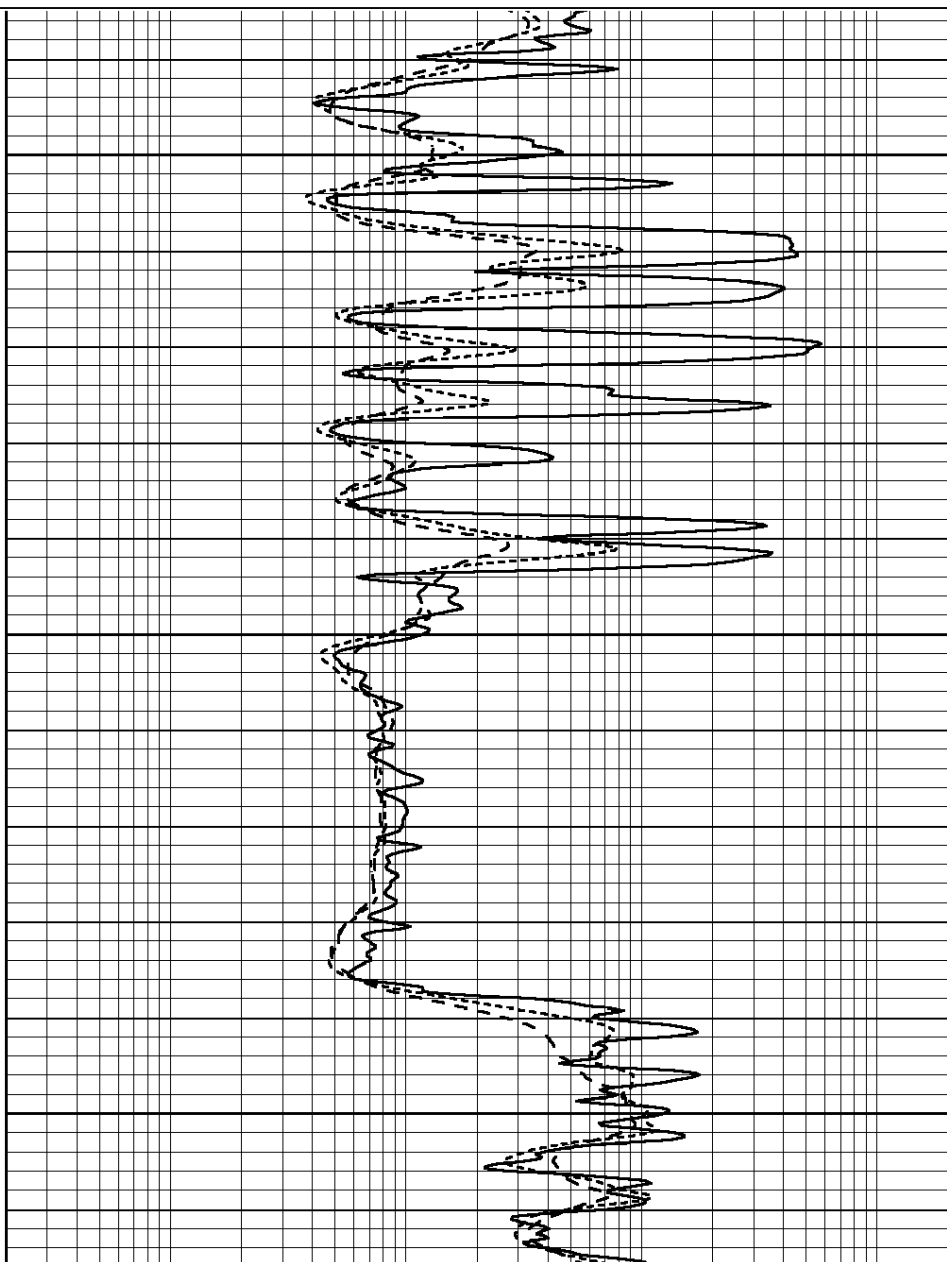
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000

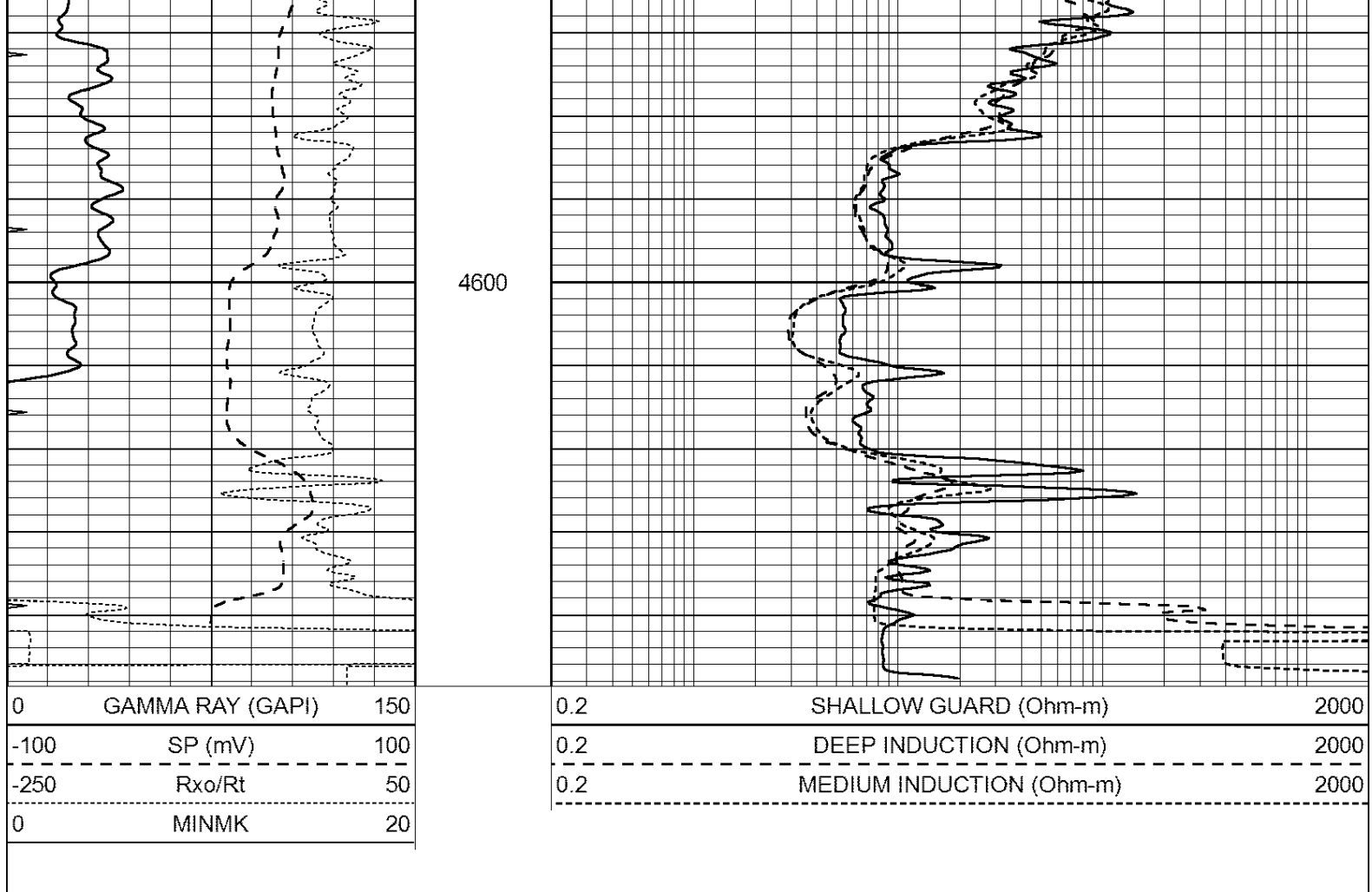


4450

4500

4550





Calibration Report									
Database File:		25868ddn.db							
Dataset Pathname:		pass3.4							
Dataset Creation:		Fri Sep 12 23:25:41 2014 by Calc Open-Cased 090629							
Dual Induction Calibration Report									
Serial-Model:				PROBE8-DILG					
Surface Cal Performed:				Sun Aug 17 08:09:53 2014					
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	620.000	-2.000	
Medium	0.029	0.796	V	0.000	464.000	mmho/m	590.000	-16.000	
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		00.000	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	0.000	0.000
Medium		0.000	0.000	mmho/m	0.000	0.000	0.000	0.000
LL3			1.000	Ohm-m		1.000		
			0.000	Ohm-m		0.000		
			1.000	mmho-m		1.000		
Compensated Density Calibration Report								
	Serial-Model:				GEAR3-GEARHART			
	Source / Verifier:				143 / 143			
	Master Calibration Performed:				Sun Aug 17 08:09:42 2014			
	Before Survey Verification Performed:							
	After Survey Verification Performed:							
Master Calibration								
		Density			Far Detector		Near Detector	
Magnesium		1.710	g/cc		935.36		501.55	cps
Aluminum		2.580	g/cc		209.32		357.01	cps
		Spine Angle = 77.21			Density/Spine Ratio = 0.567			
		Size			Reading			
Small Ring		8.00	in		4.29	V		
Large Ring		14.00	in		6.24	V		
Before Survey Verification								
		Target			Measured			
				g/cc			g/cc	
				g/cc			g/cc	
				g/cc			g/cc	
After Survey Verification								
		Target			Measured			
				g/cc			g/cc	
				g/cc			g/cc	
				g/cc			g/cc	
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	
PRE-SURVEY VERIFICATION								
	Detector	Readings			Measured		Target	
1)	Short Space		cps					
	Long Space		cps		pu		pu	

2)	Short Space Long Space	cps cps	pu	
3)	Short Space Long Space	cps cps	pu	
POST-SURVEY VERIFICATION				
	Detector	Readings	Measured	Target
1)	Short Space Long Space	cps cps	pu	pu
2)	Short Space Long Space	cps cps	pu	pu
3)	Short Space Long Space	cps cps	pu	pu
Gamma Ray Calibration Report				
Serial Number:		GR6		
Tool Model:		OPEN		
Performed:		Sun Aug 17 15:23:09 2014		
Calibrator Value:		150.0	GAPI	
Background Reading:		0.0	cps	
Calibrator Reading:		276.0	cps	
Sensitivity:		0.7000	GAPI/cps	