



**DUAL  
INDUCTION  
LOG**

Company **DOWNING NELSON OIL COMPANY, INC.**  
 Well **HEBERLEIN #1-25**  
 Field **FLAX**  
 County **TREGO** State **KANSAS**

Location: **API # : 15-195-23048-0000**  
**1662' FSL & 335' FWL**  
 Permanent Datum **GROUND LEVEL Elevation 2327**  
 Log Measured From **KELLY BUSHING 8' A.G.L**  
 Drilling Measured From **KELLY BUSHING**  
 SEC 25 TWP 13S RGE 21W  
 Other Services **CDL/CNL MEL/SON**  
 Elevation **K.B. 2335 D.F. 2333 G.L. 2327**

Date	6/8/18
Run Number	ONE
Depth Driller	4108
Depth Logger	4107
Bottom Logged Interval	4105
Top Log Interval	00
Casing Driller	8 5/8" @ 221
Casing Logger	220
Bit Size	7 7/8
Type Fluid in Hole	CHEMICAL MUD
Density / Viscosity	9.2/53
PH / Fluid Loss	9.5/8.8
Source of Sample	FLOWLINE
Rim @ Meas. Temp	.65 @ 98F
Rmt @ Meas. Temp	.48 @ 98F
Rmc @ Meas. Temp	.78 @ 98F
Source of Rmf / Rmc	MEASUREMENT
Rm @ BHT	.54 @ 117F
Time Circulation Stopped	2 HOURS
Time Logger on Bottom	////
Maximum Recorded Temperature	117F
Equipment Number	3802
Location	HAYS, KANSAS
Recorded By	JASON CAPPELLUCCI
Witnessed By	MARC DOWNING

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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.

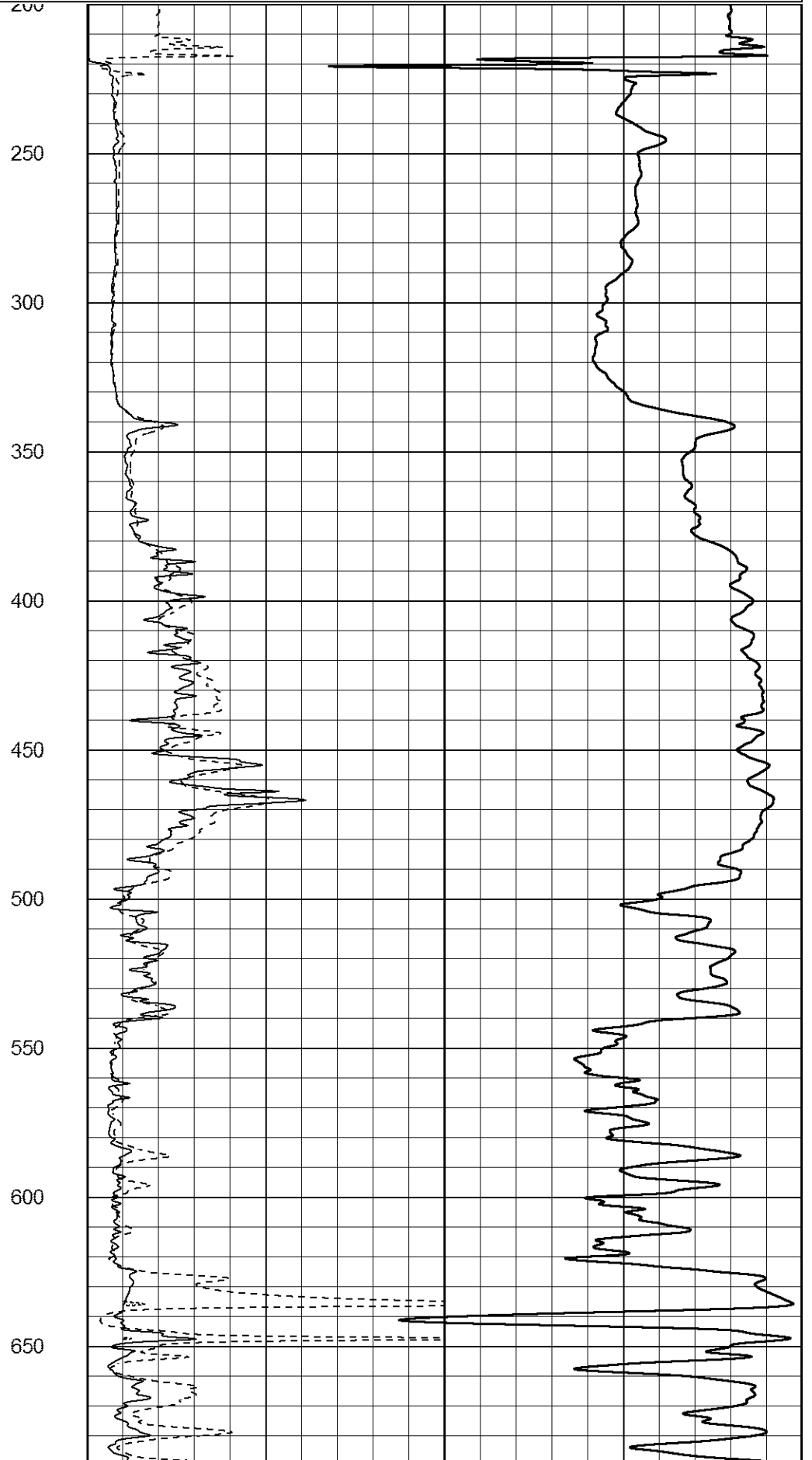
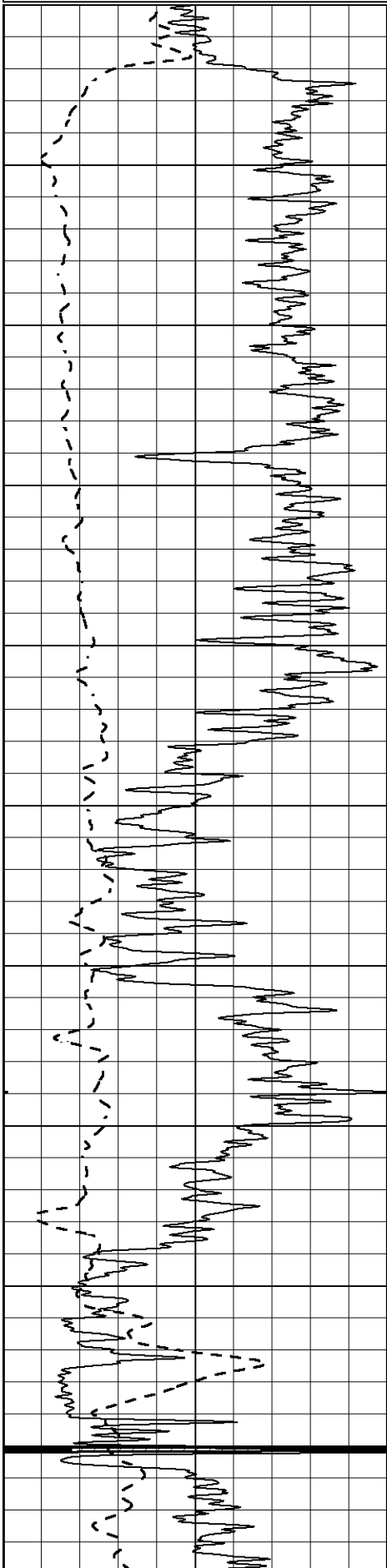
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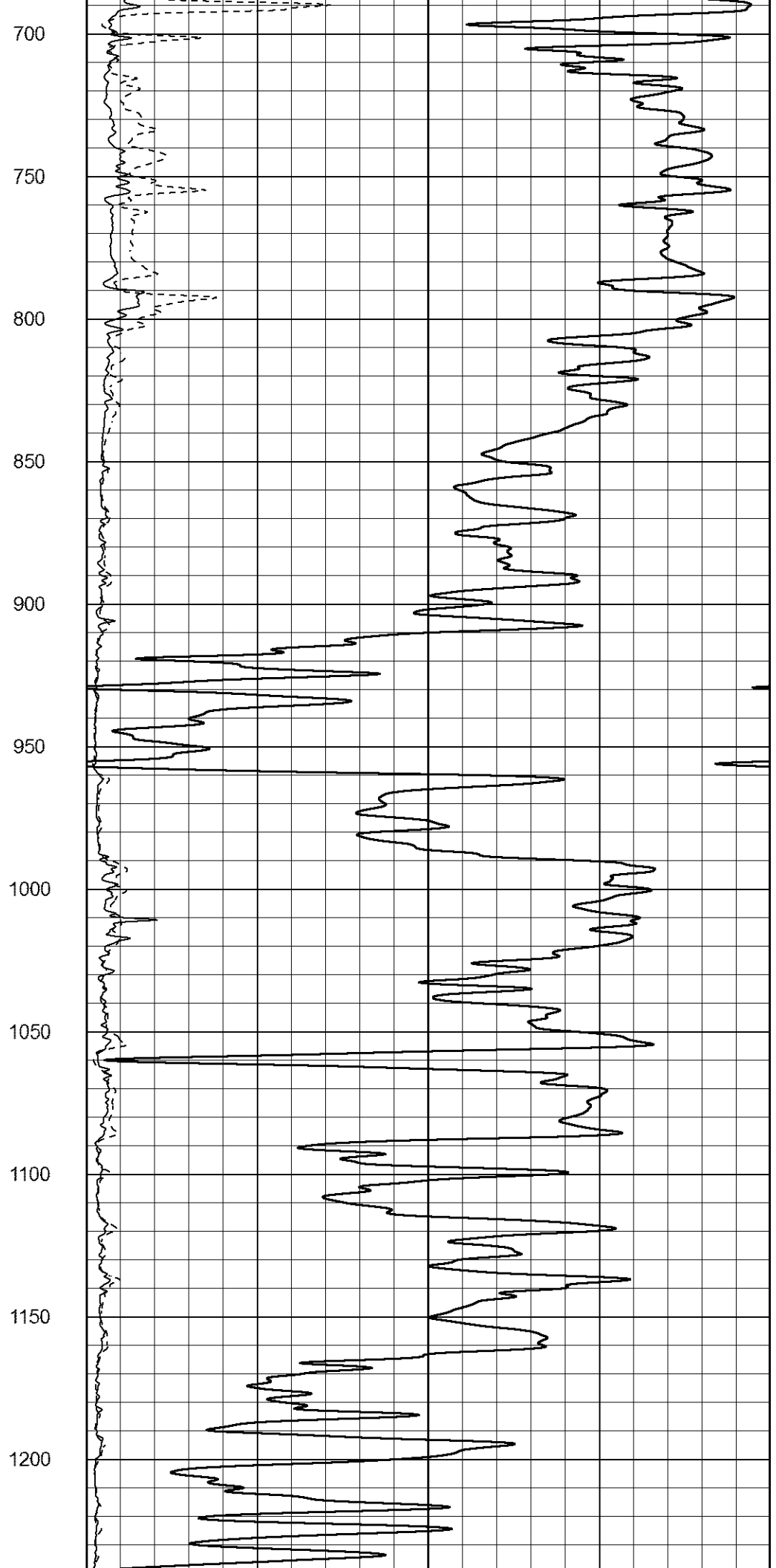
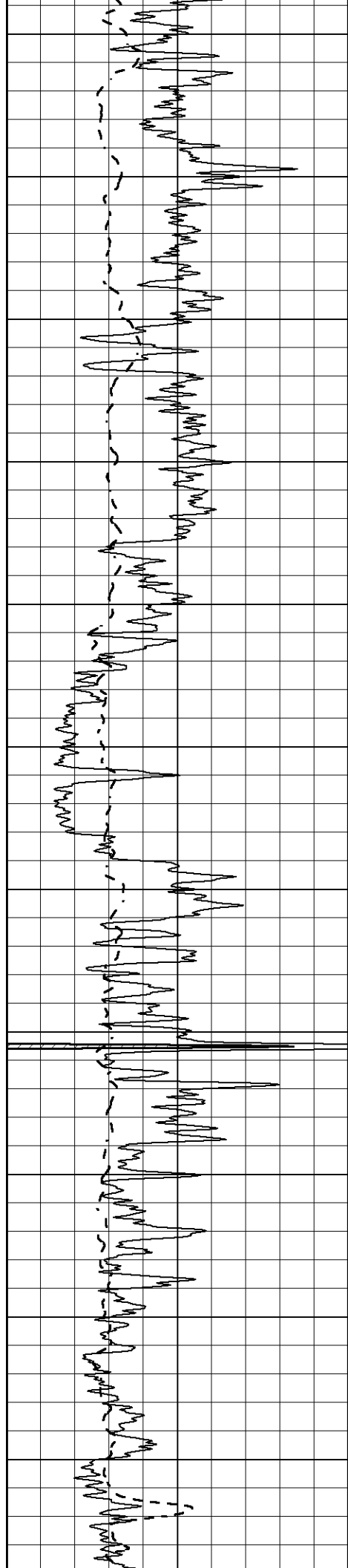
**THANK YOU FOR USING ELI WIRELINE SERVICES, HAYS, KS. ( 785 ) 628-6395**  
**DIRECTIONS**  
**ELLIS, KS. - 2 WEST ON HWY 40 TO RD. 400 - 3 3/4 SOUTH - EAST INTO**

Database File 2505ddn8.db  
 Dataset Pathname pass3DIL  
 Presentation Format \_dil2  
 Dataset Creation Mon Jun 11 12:17:00 2018  
 Charted by Depth in Feet scaled 1:600

0 Gamma Ray (GAPI) 150  
 -100 SP (mV) 100

1000 CILD (mmho/m) 0  
 0 RLL3 (Ohm-m) 50  
 0 Deep Induction (Ohm-m) 50  
 50 RILD X10 (Ohm-m) 500  
 50 RLL3 X10 (Ohm-m) 500





1250

1300

1350

1400

1450

1500

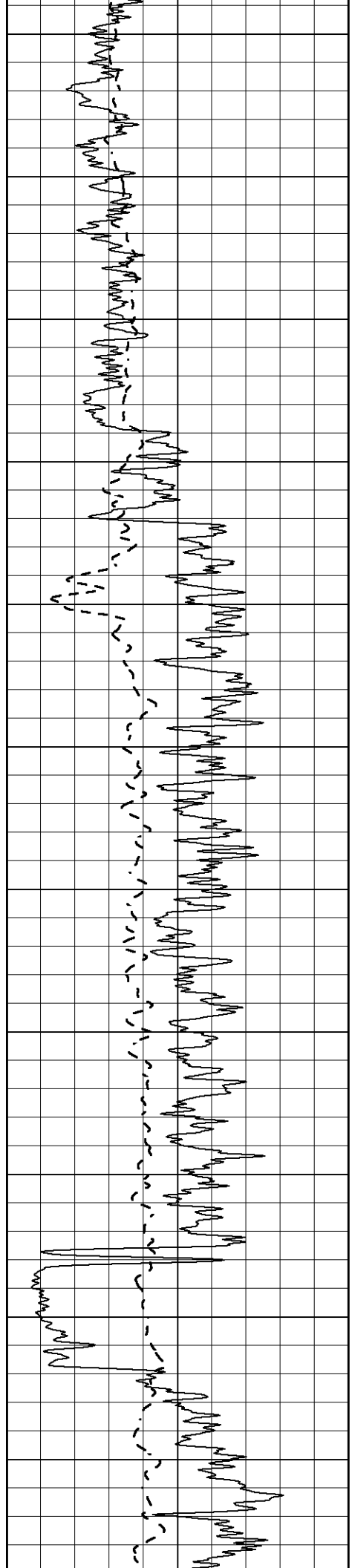
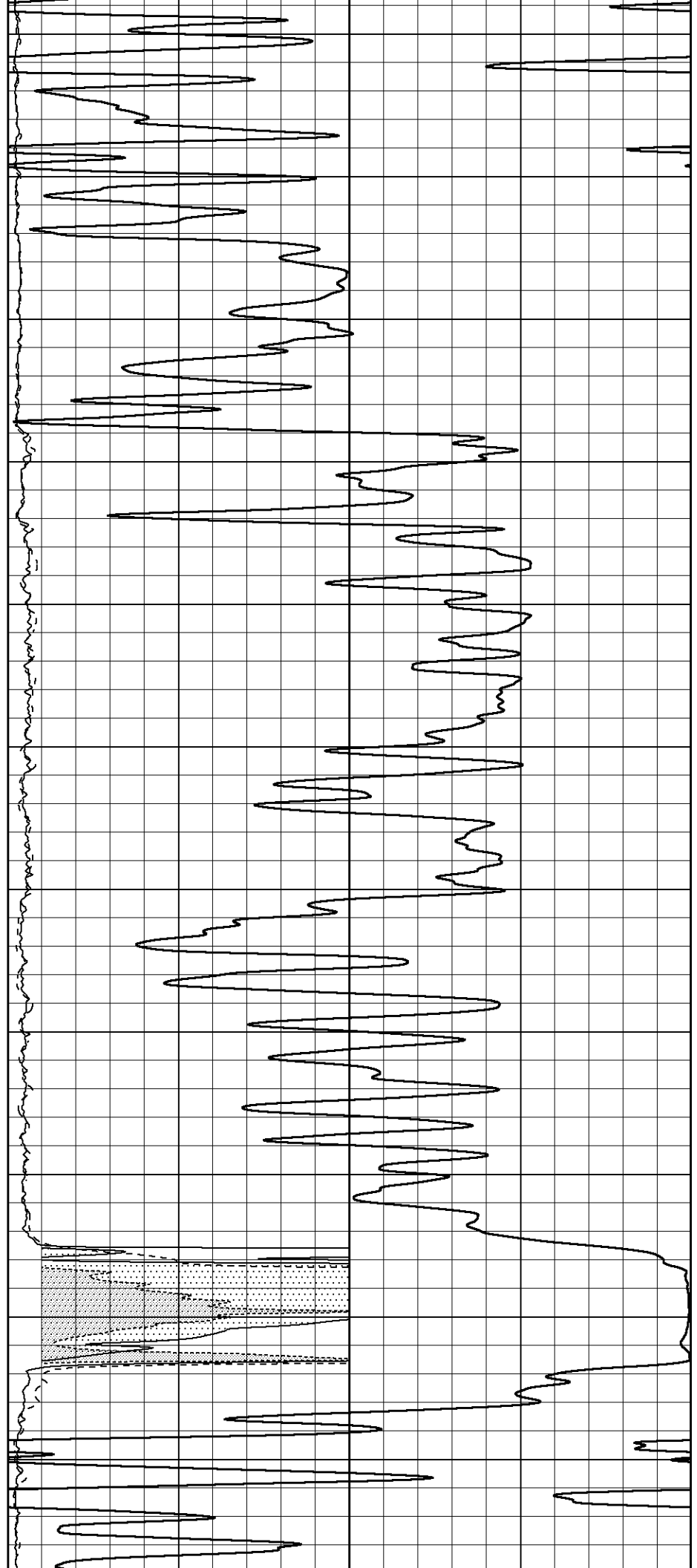
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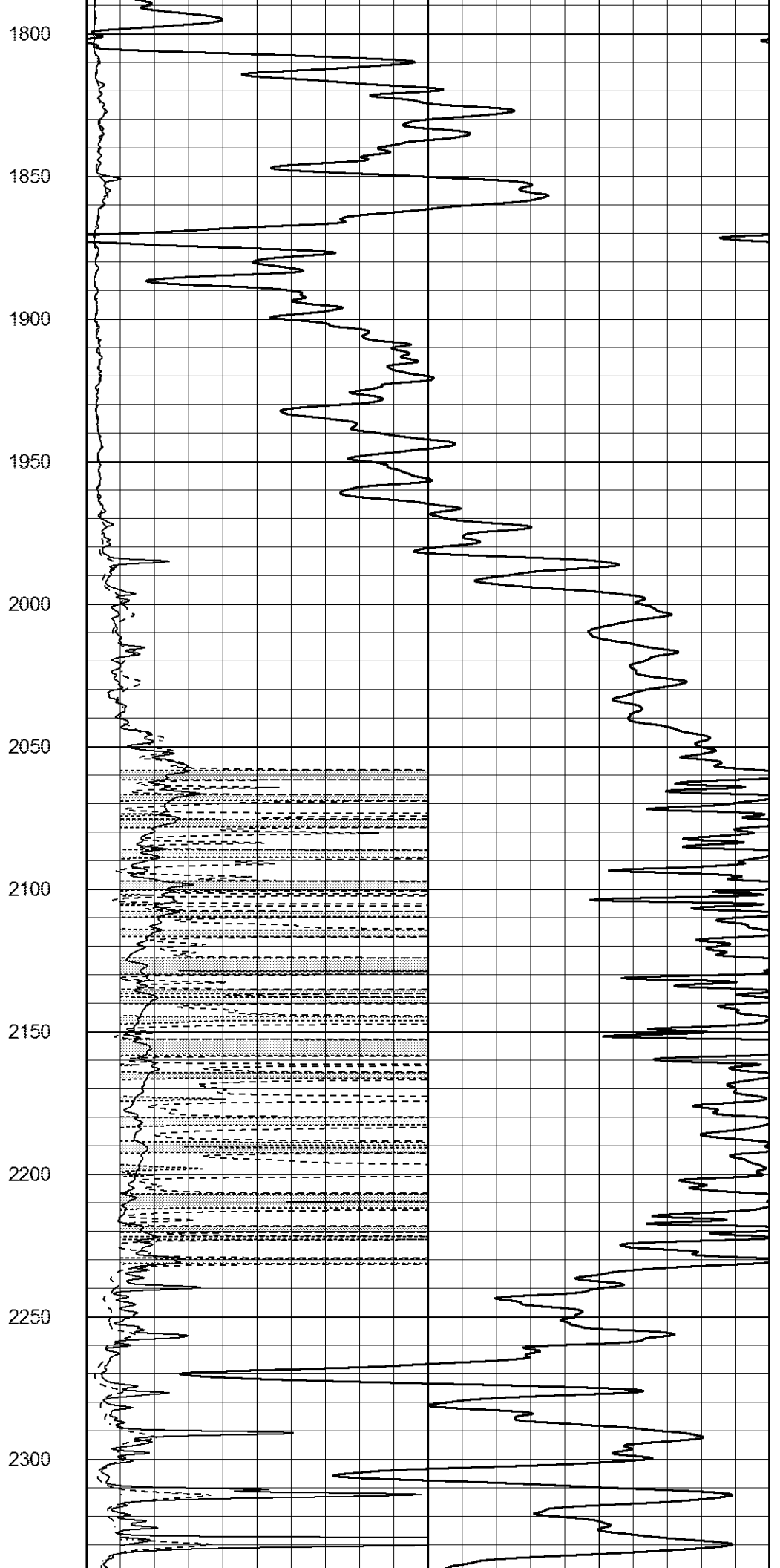
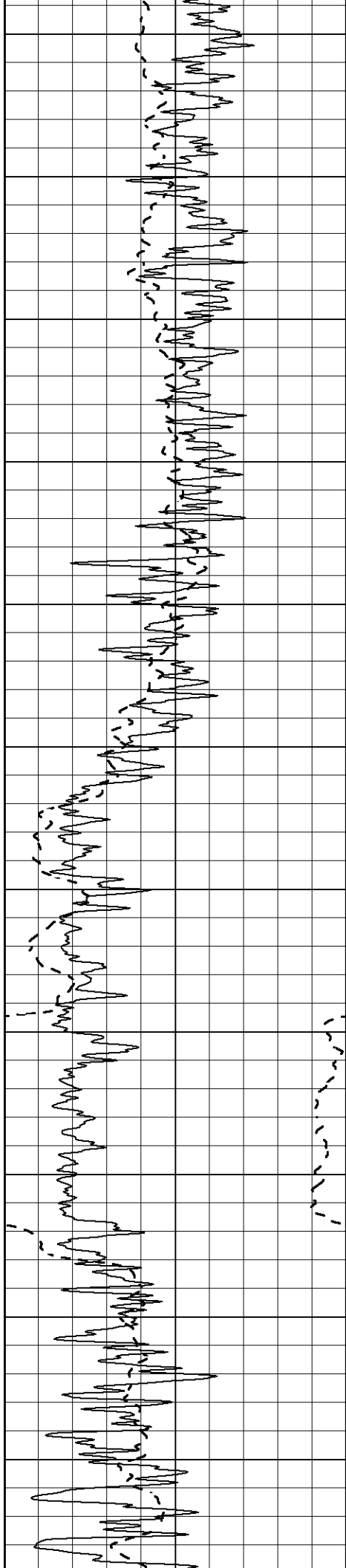
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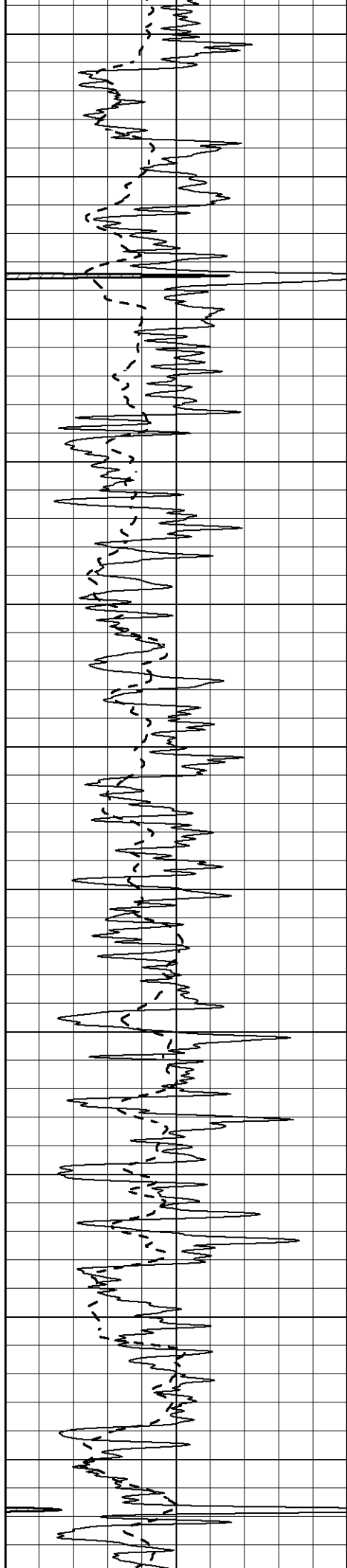
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1700

1750







2350

2400

2450

2500

2550

2600

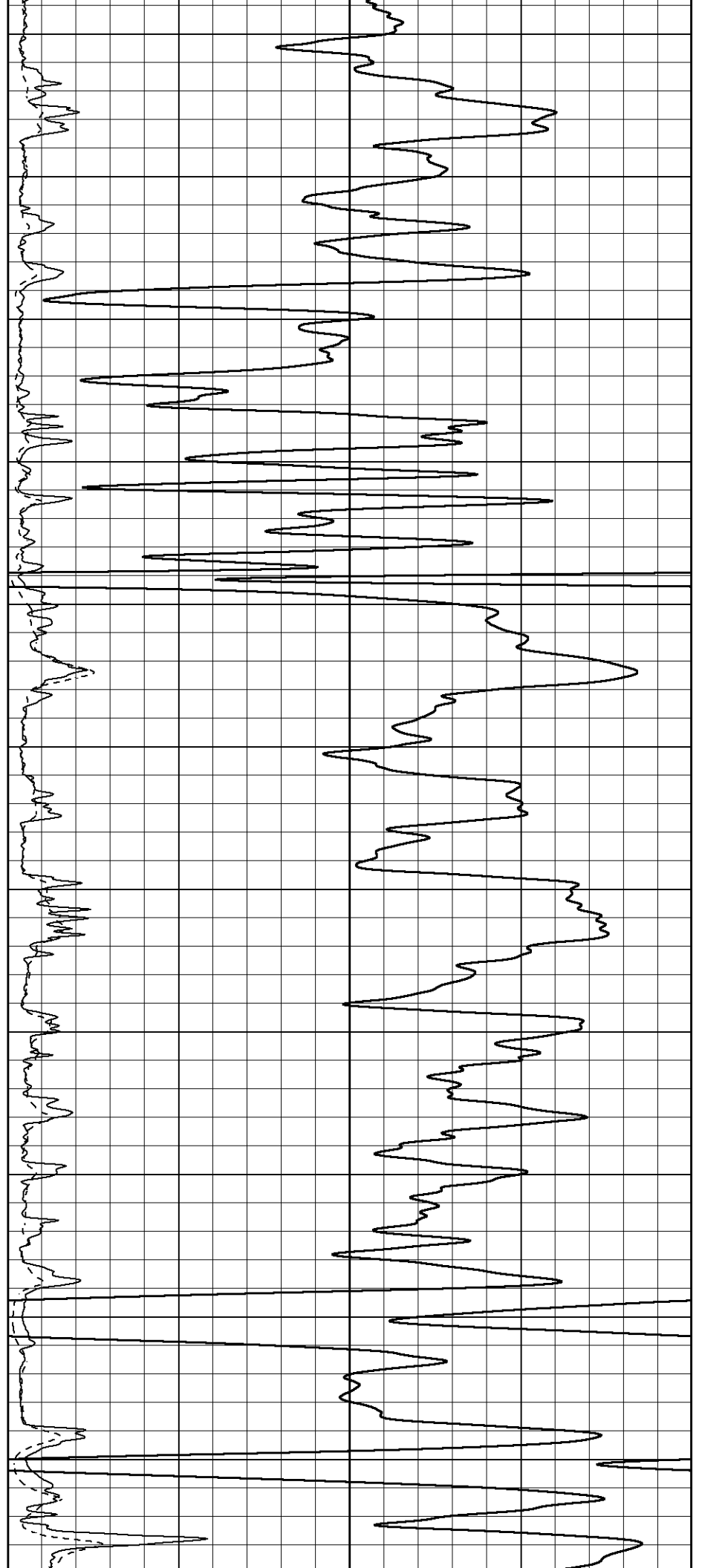
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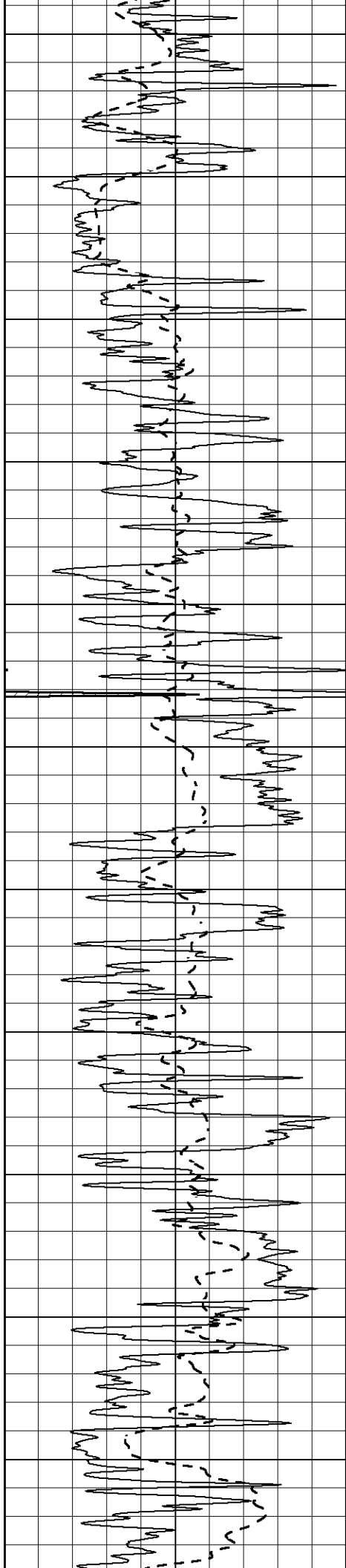
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2850





2900

2950

3000

3050

3100

3150

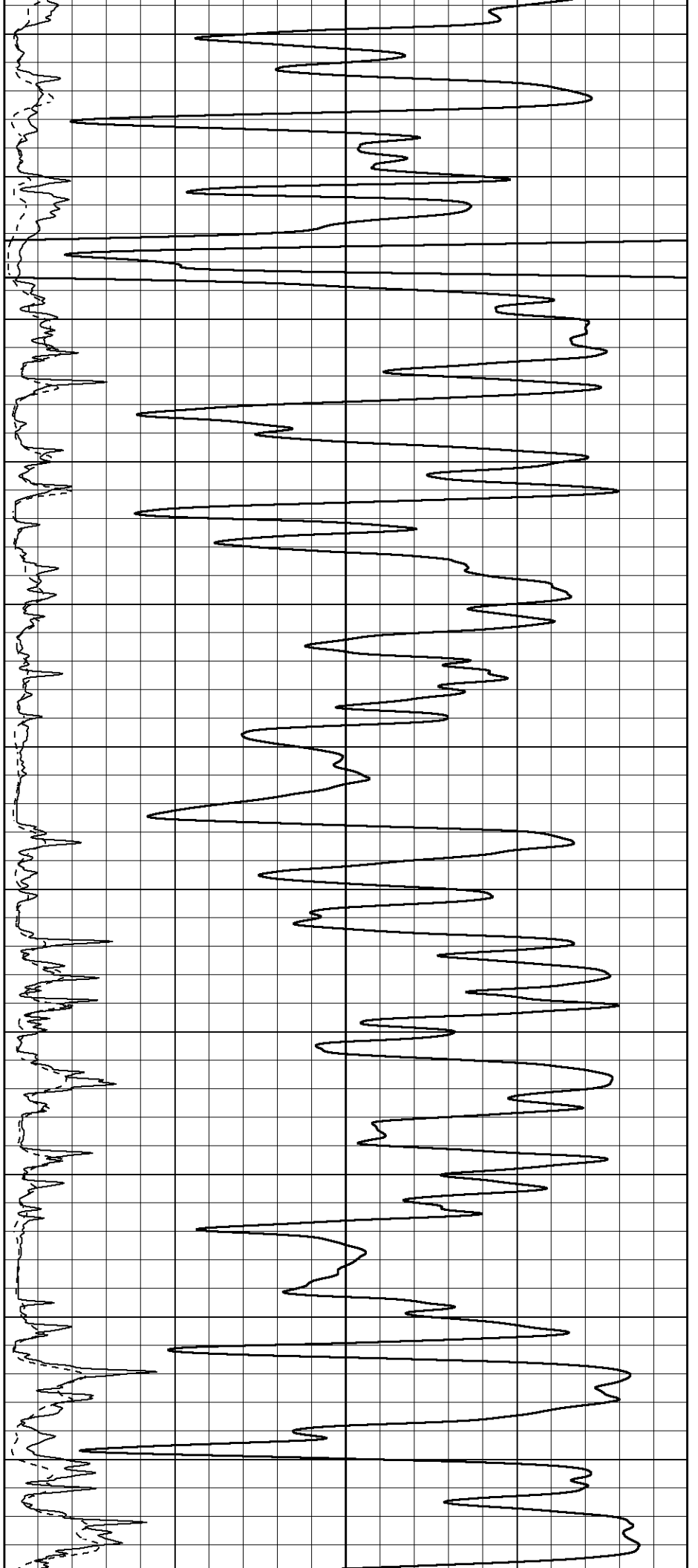
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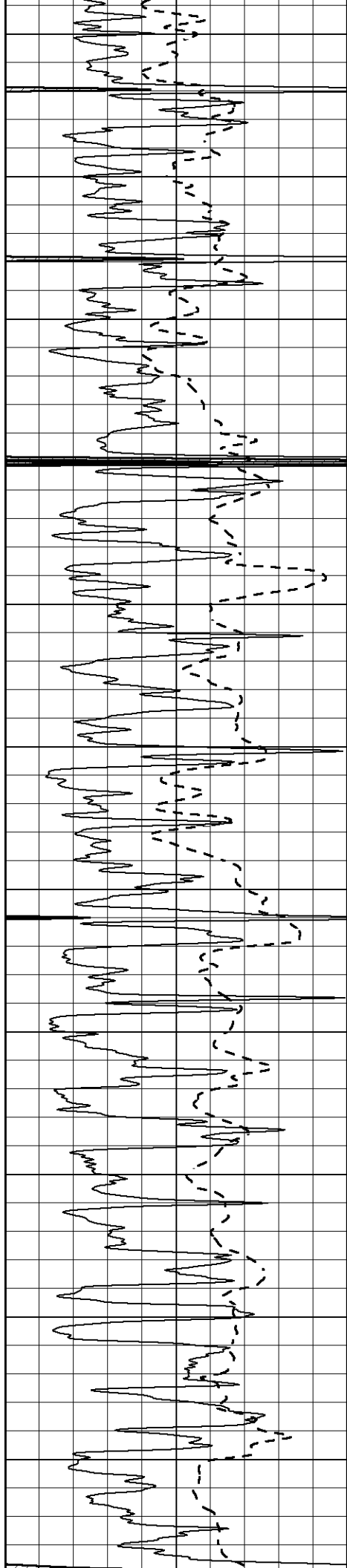
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3350

3400





3450

3500

3550

3600

3650

3700

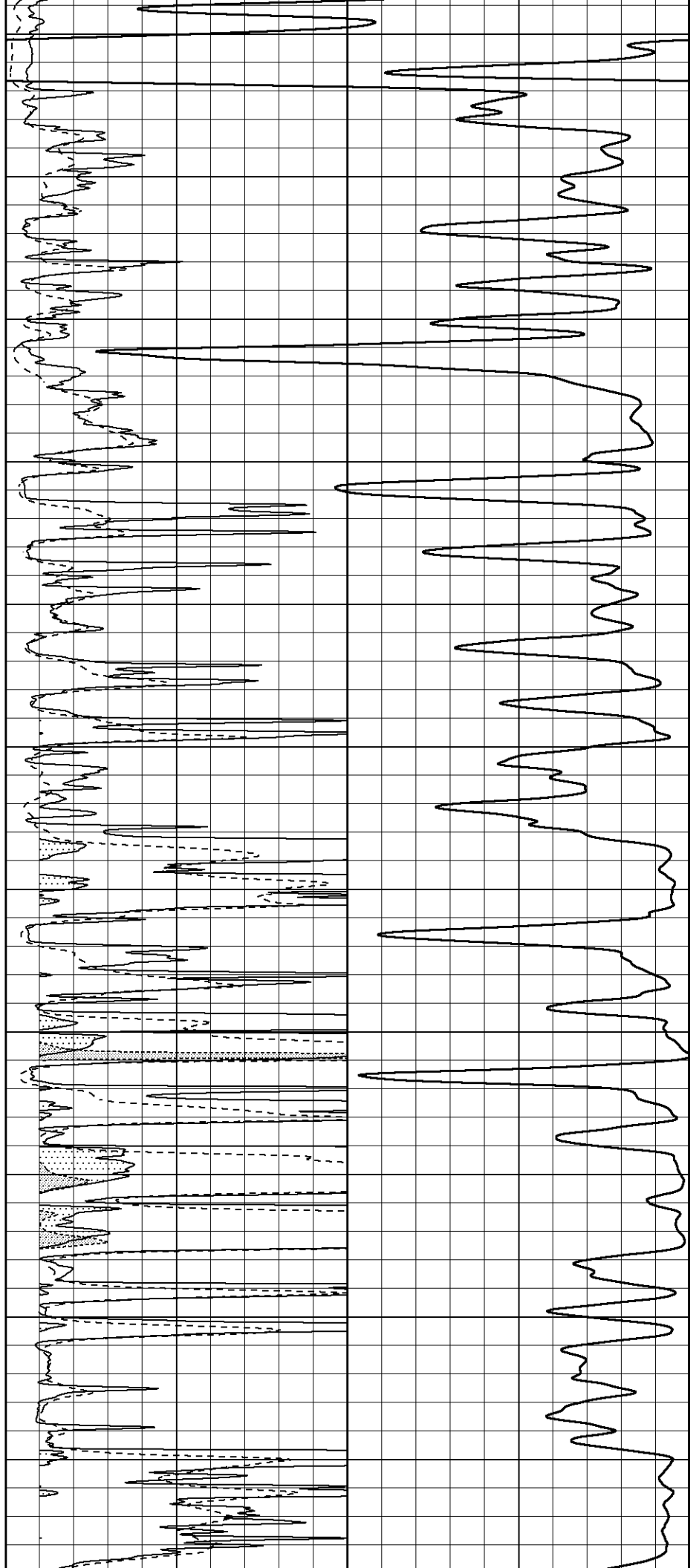
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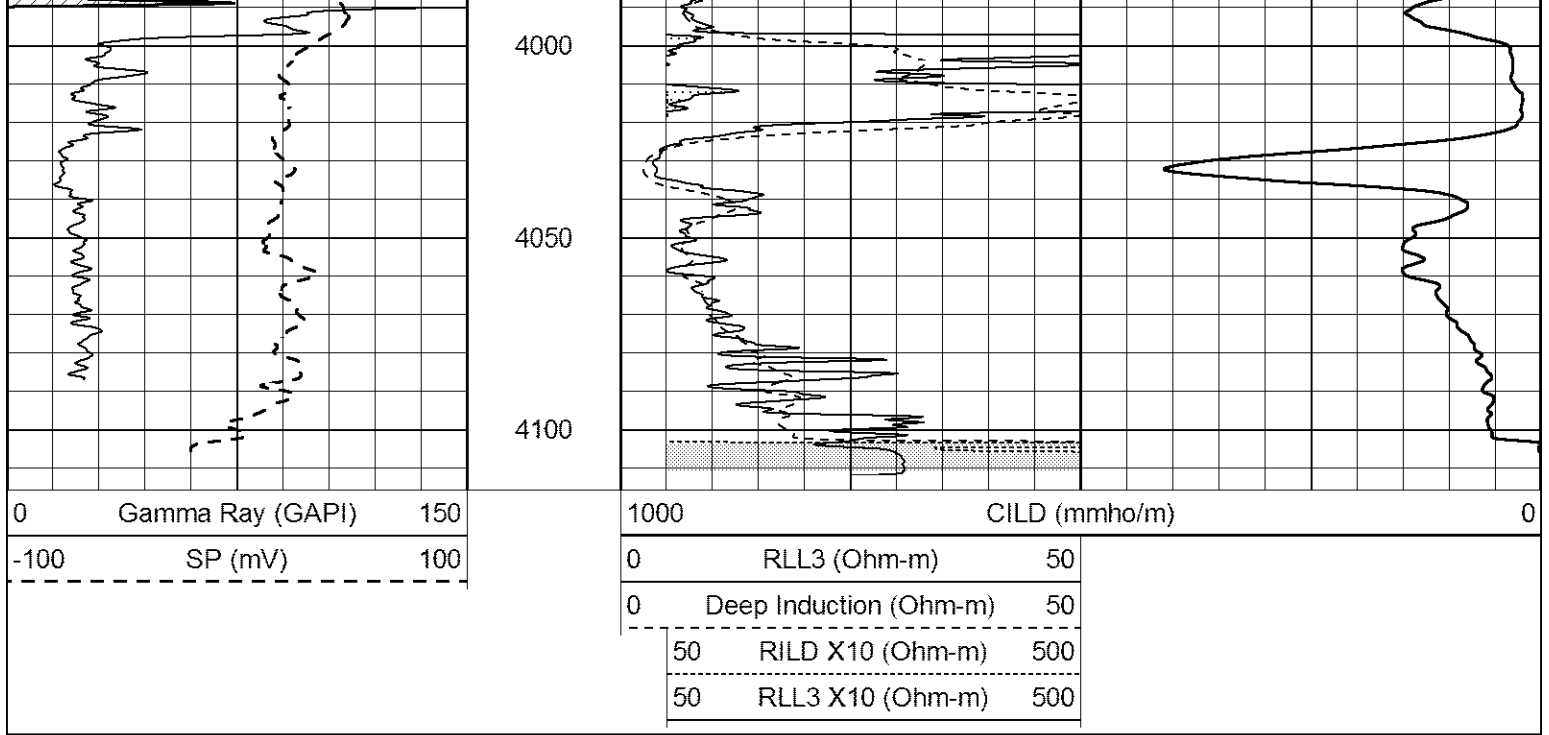
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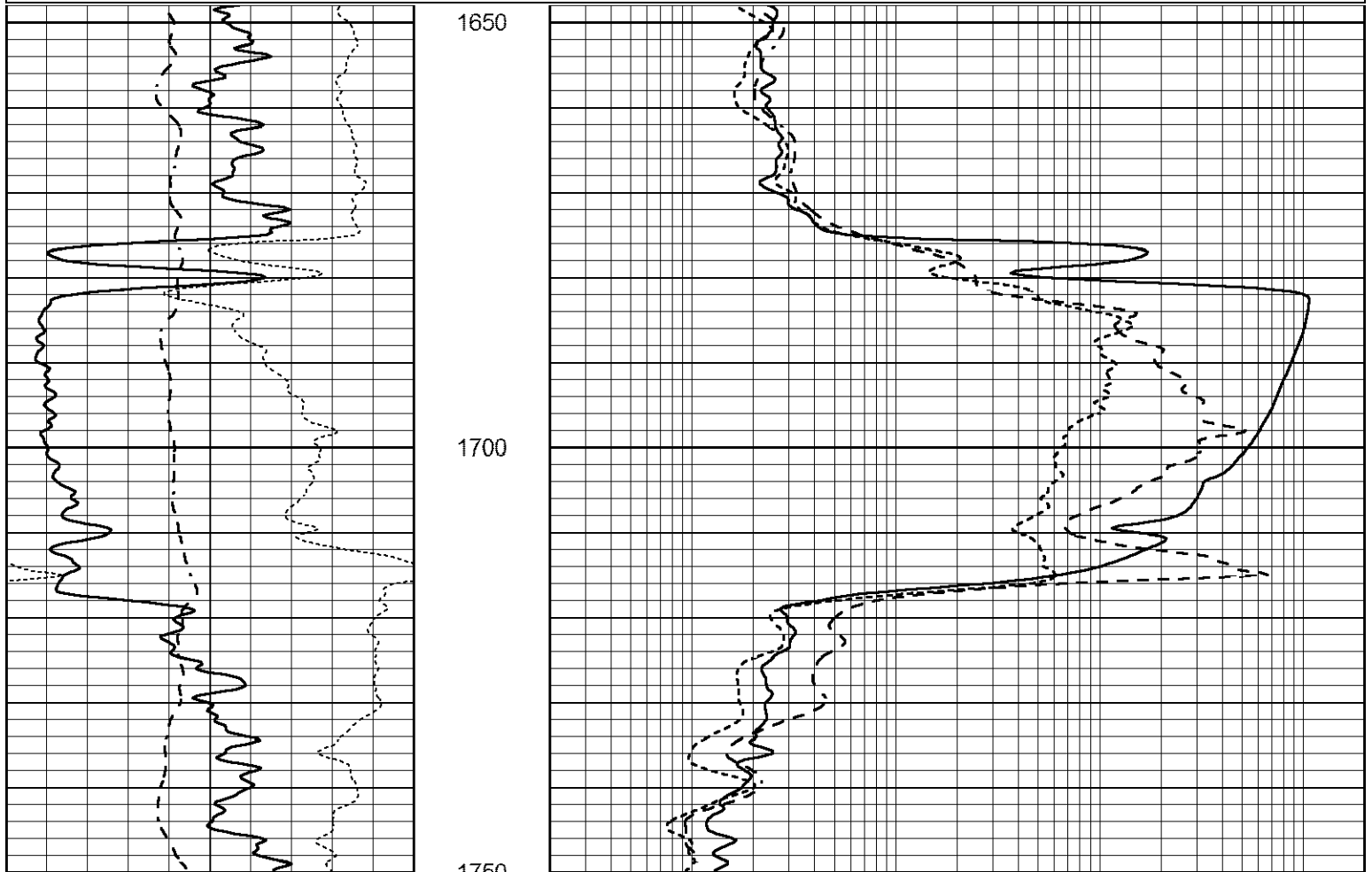
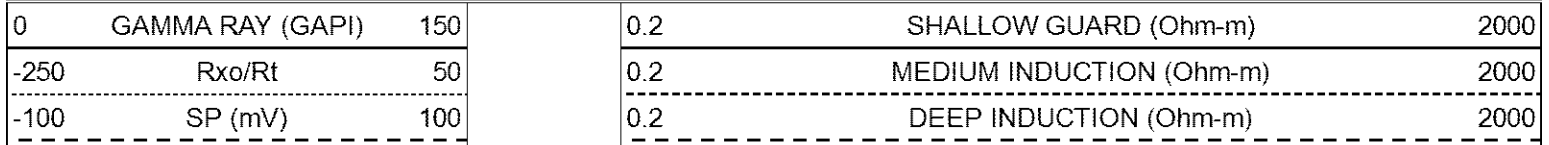
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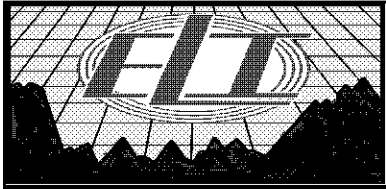
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 Presentation Format \_dil  
 Dataset Creation Mon Jun 11 12:17:00 2018  
 Charted by Depth in Feet scaled 1:240



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

1730

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

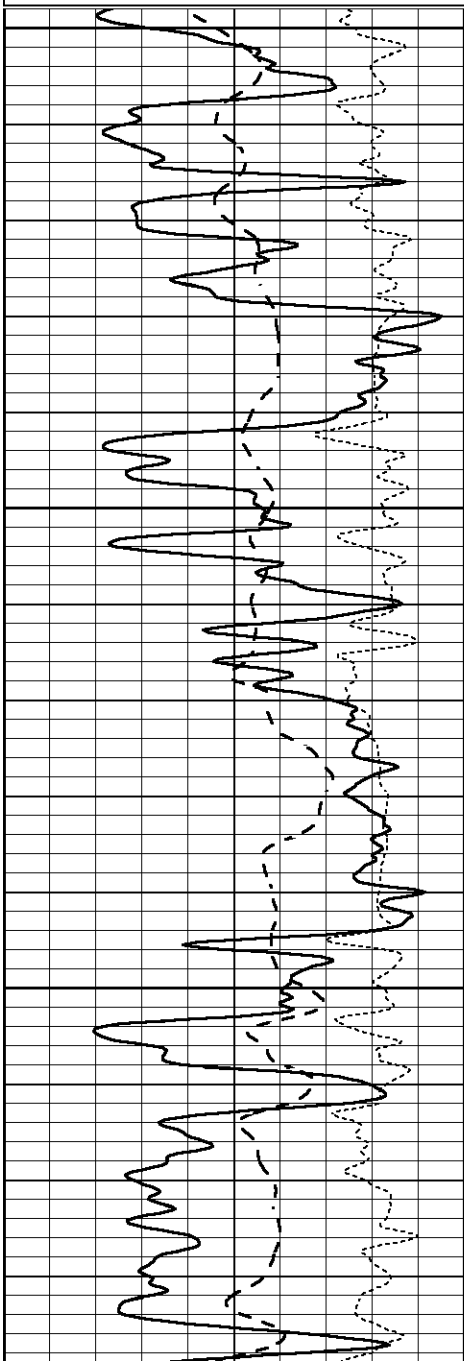


# MAIN SECTION

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-100	SP (mV)	100

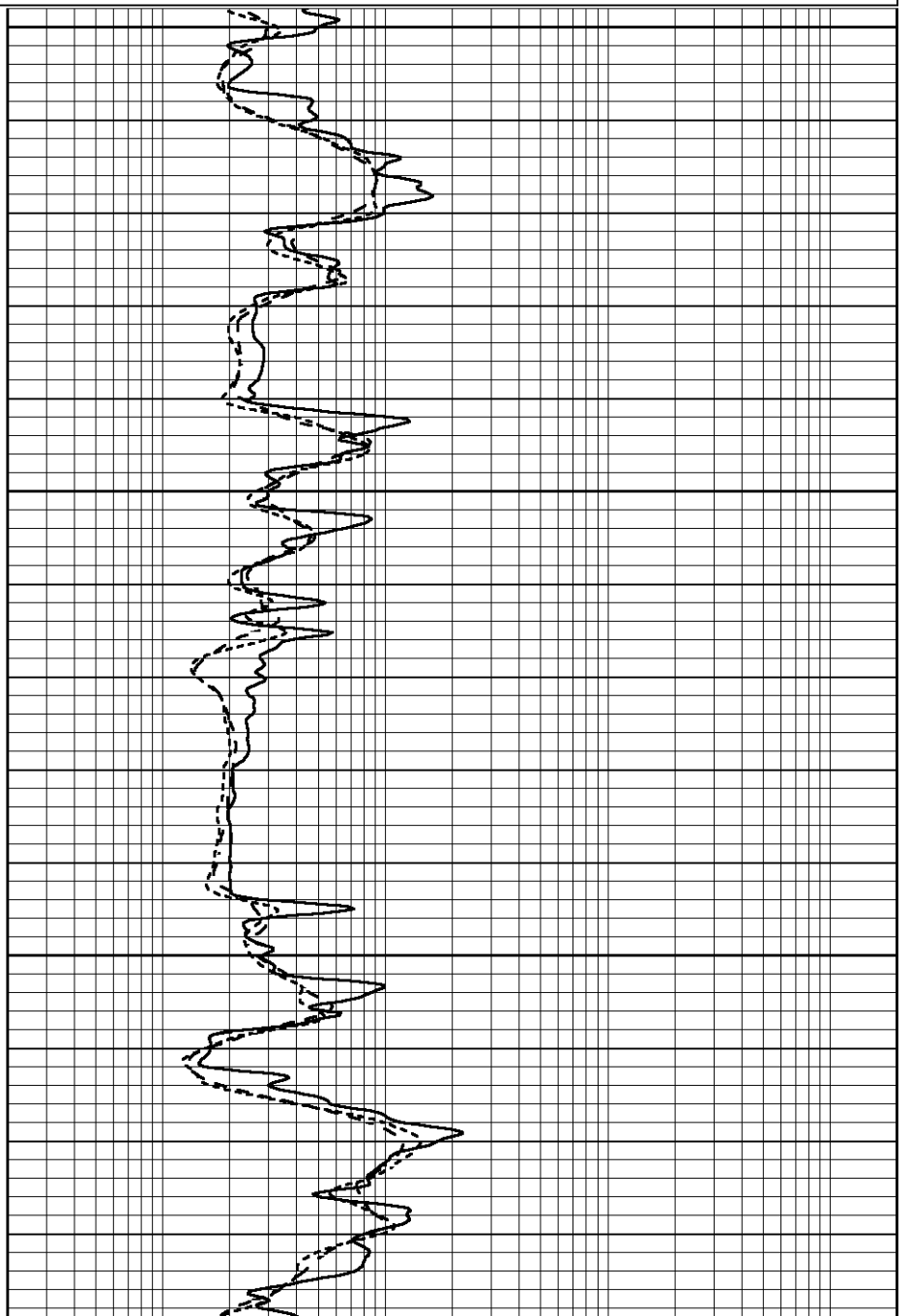
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000

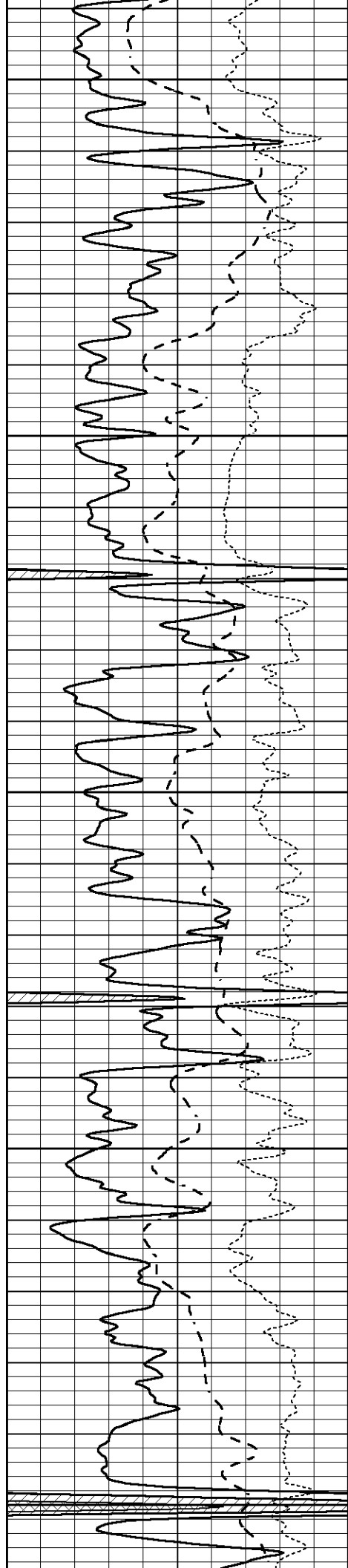


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3300

3350





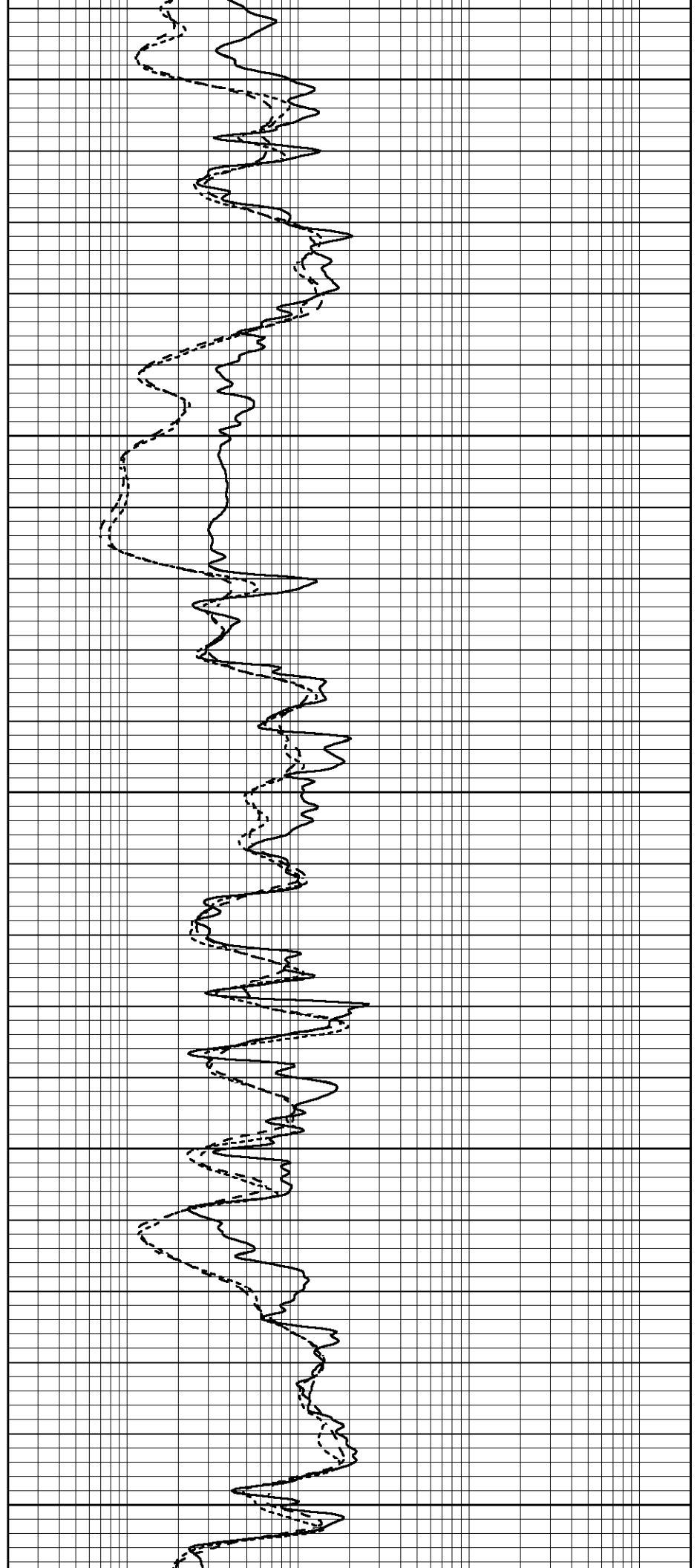
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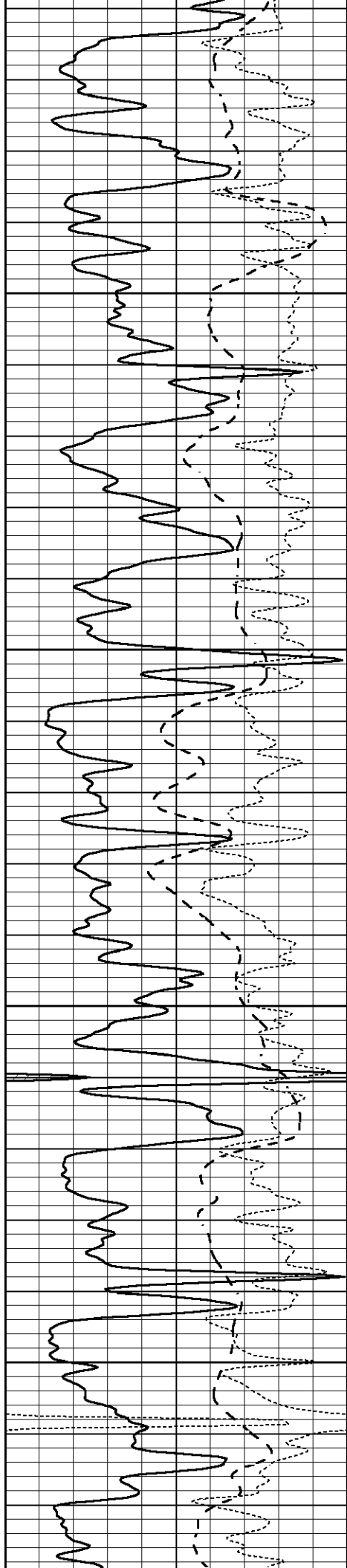
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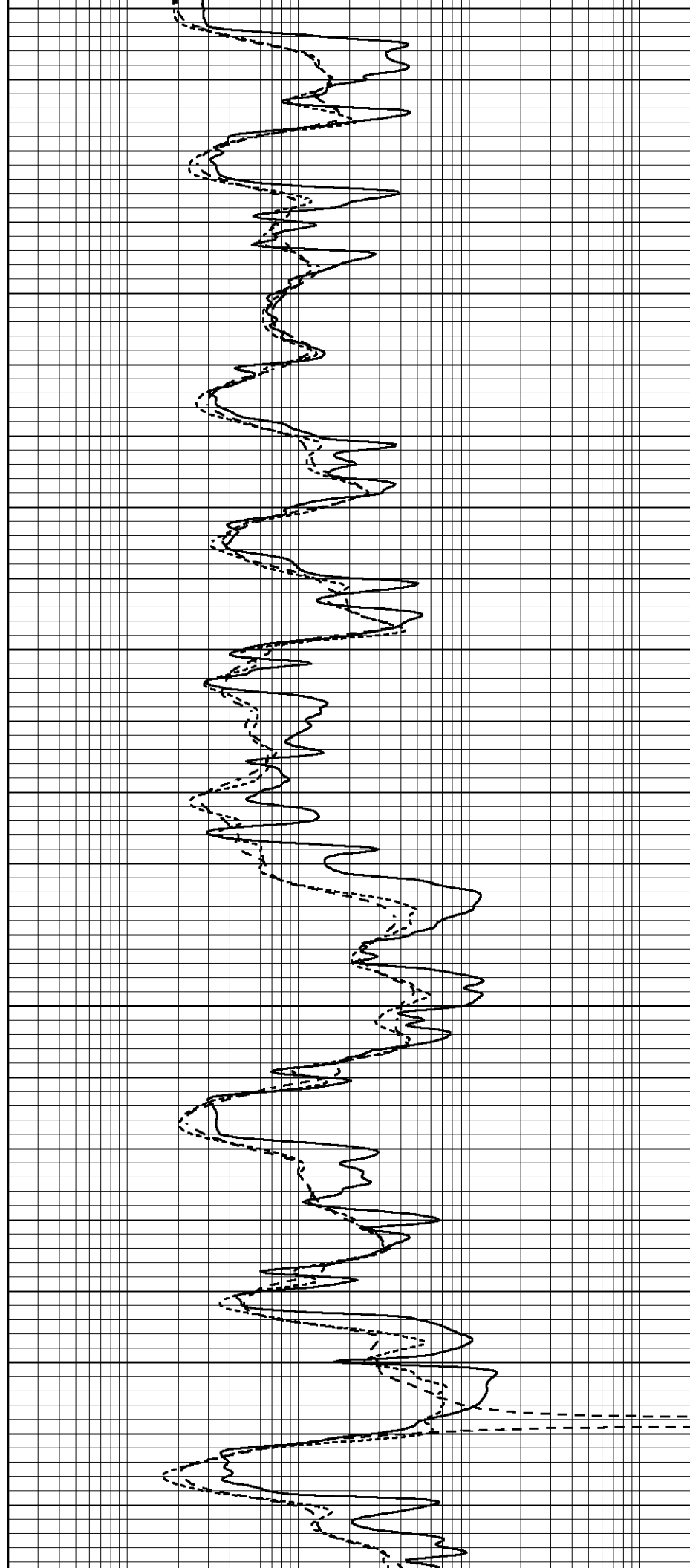


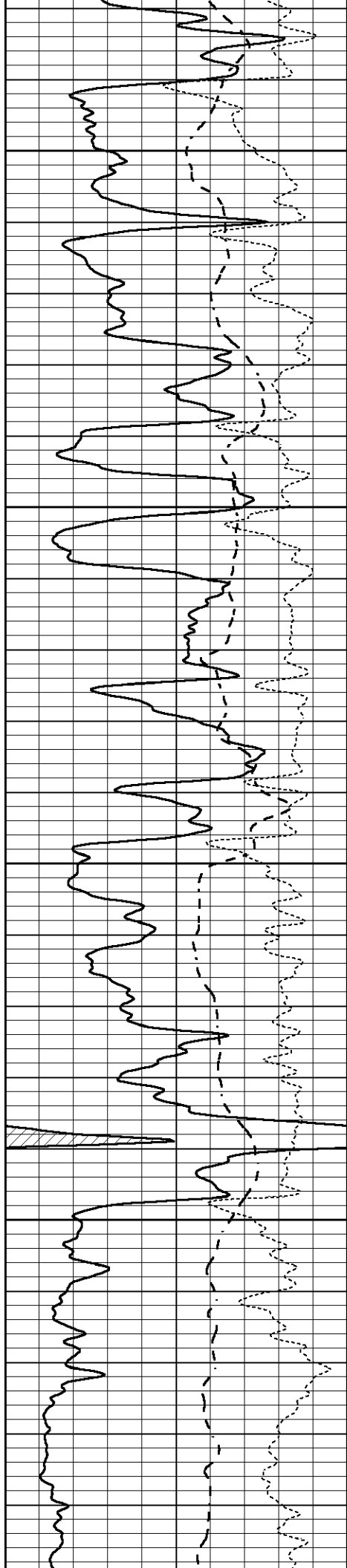
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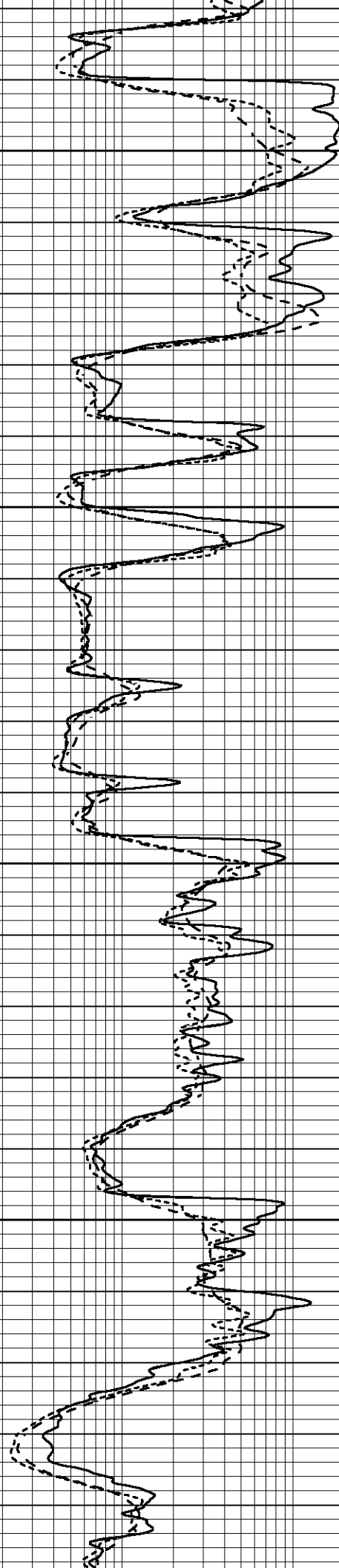


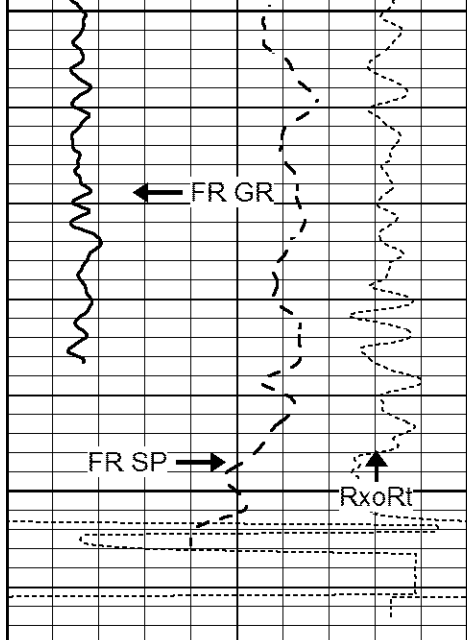
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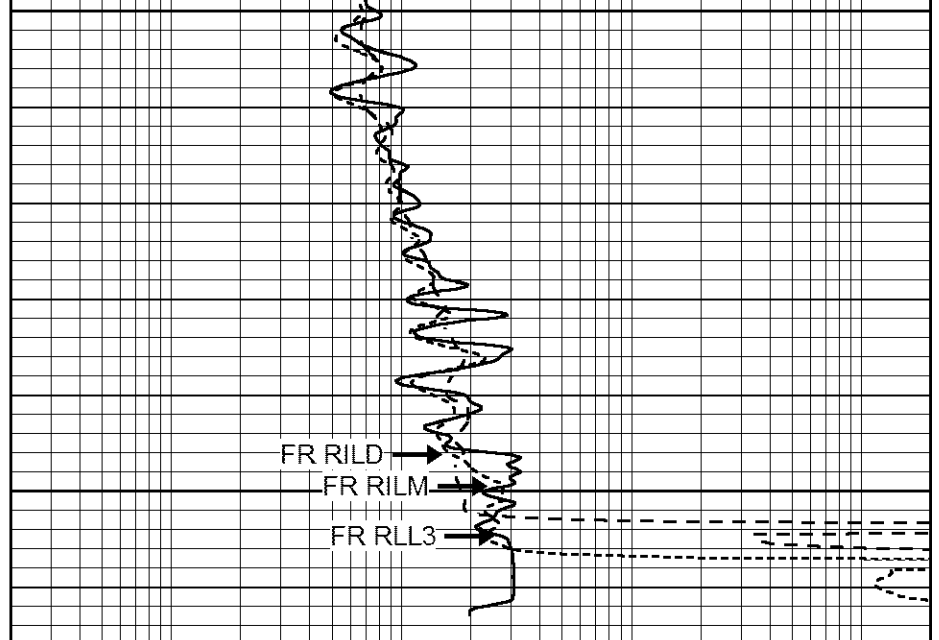
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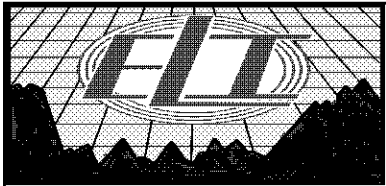


4050  
4100  
LTD 4107

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



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

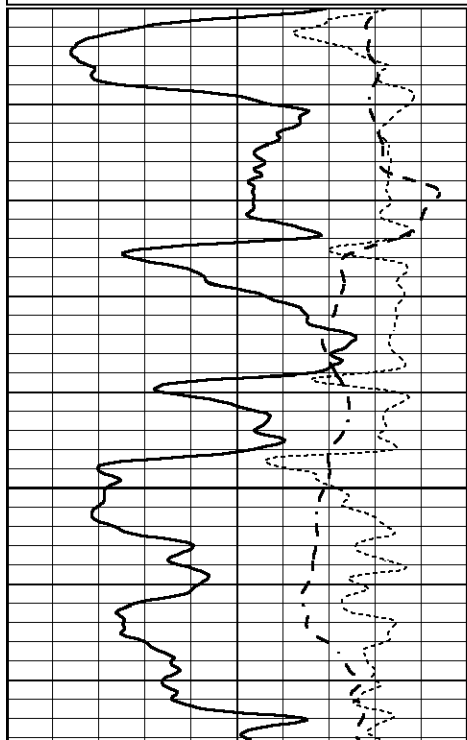


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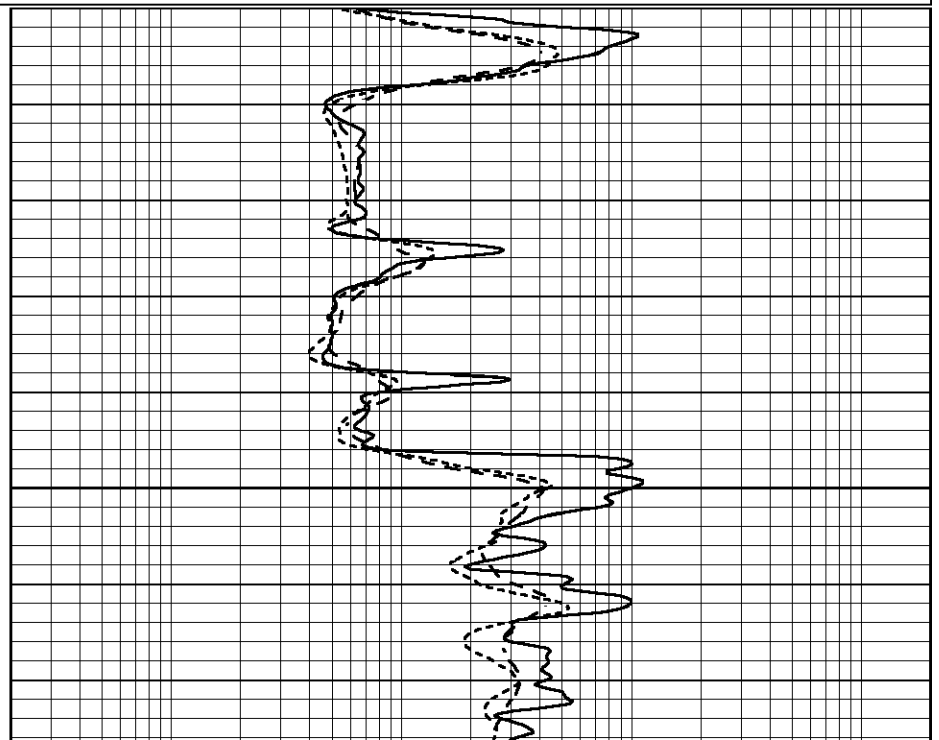
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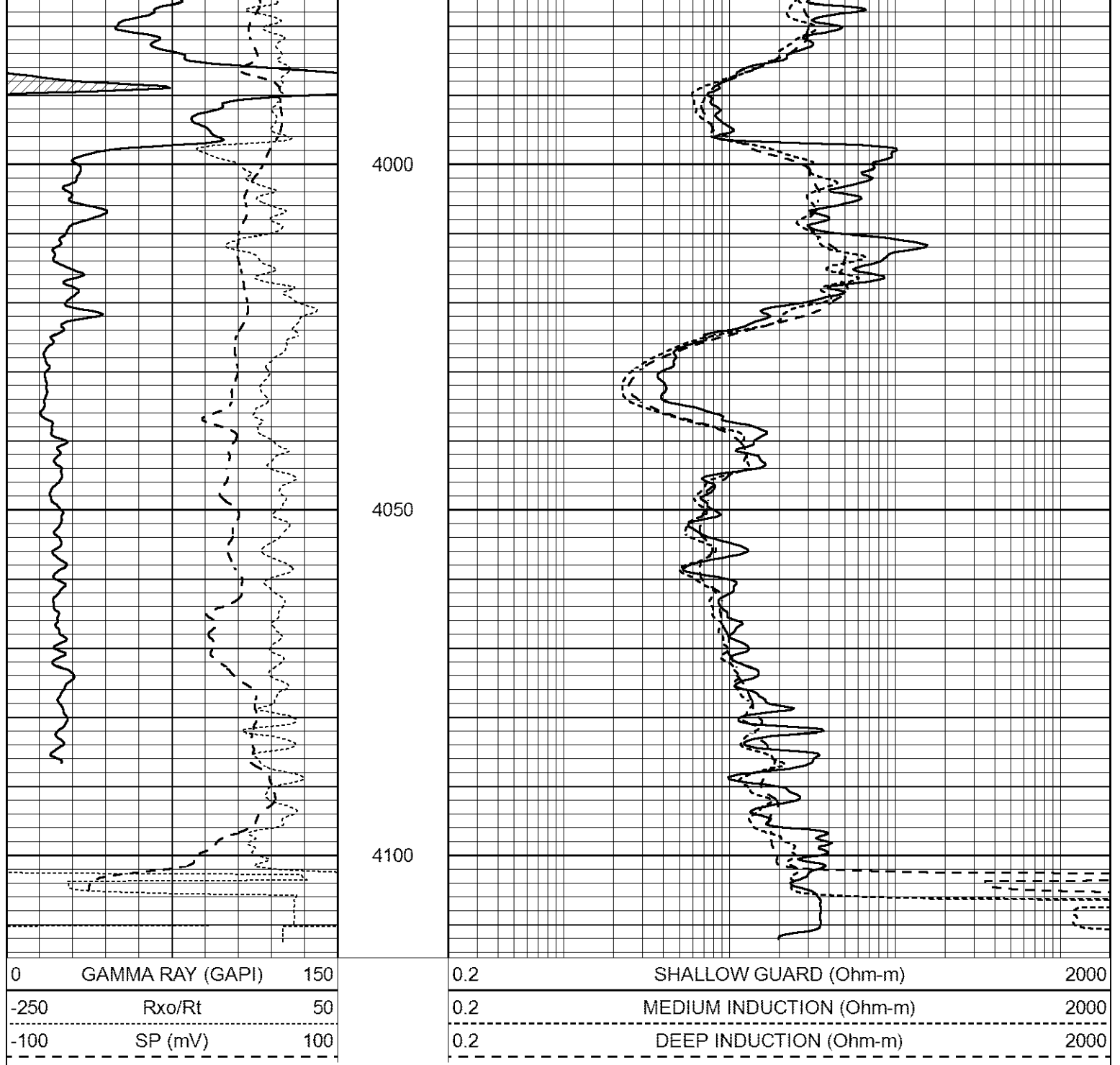
0	GAMMA RAY (GAPI)	150
-250	Rxo/Rt	50
-100	SP (mV)	100

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



3950  
4050





Calibration Report

Database File 2505ddn8.db  
 Dataset Pathname pass3.1  
 Dataset Creation Fri Jun 08 19:53:09 2018

Dual Induction Calibration Report

Serial-Model: FW1410-55-Probe  
 Surface Cal Performed: Mon May 22 14:23:32 2017  
 Downhole Cal Performed: Thu Mar 12 09:29:20 2015  
 After Survey Verification Performed: Thu Mar 12 09:29:20 2015

Surface Calibration

Loop:	Readings		References	Results	
	Air	Loop		m	b
Deep	0.011	0.656	1.000 400.000 mmho/m	618.595	-5.524

Medium	-0.000	0.731	V	1.000	464.000	mmho/m	632.856	1.197
Internal:	Zero	Cal		Zero	Cal		m	b
Deep	0.007	0.649	V	0.000	400.000	mmho/m	623.784	-4.595
Medium	0.004	0.743	V	0.000	464.000	mmho/m	627.284	-2.251

Downhole Calibration								
	Readings			References			Results	
	Zero	Cal		Zero	Cal		m'	b'
Deep	-0.824	395.917	mmho/m	-0.976	397.550	mmho/m	1.004	-0.149
Medium	3.565	471.327	mmho/m	3.468	471.590	mmho/m	1.001	-0.099
LL3		7.503	V		2500.000	Ohm-m		
		0.001	V		20.000	Ohm-m		
		-7.481	V		3745.000	mmho-m		

After Survey Verification								
	Readings			Targets			Results	
	Zero	Cal		Zero	Cal		m'	b'
Deep	0.000	0.000	mmho/m	-0.824	395.917	mmho/m	1.000	0.000
Medium	0.000	0.000	mmho/m	3.565	471.327	mmho/m	1.000	0.000
LL3		0.000	Ohm-m		1500.000	Ohm-m		
		0.000	Ohm-m		20.000	Ohm-m		
		0.000	mmho-m		3745.000	mmho-m		

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Compensated Neutron Calibration Report

Serial Number:	080621PMC
Tool Model:	NABORS

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:	Probe1	
Performed:	Tue Jul 25 12:16:33 2017	
Calibrator Value:	1.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	1.0	cps
Sensitivity:	0.4000	GAPI/cps