



**COMPLETION
& PRODUCTION
SERVICES CO.**

**DUAL
INDUCTION
LOG**

Company HERMAN L. LOEB, LLC.
Well MUSSELMAN #5-34
Field LARNED
County PAWNEE
State KANSAS

Company HERMAN L. LOEB, LLC.
Well MUSSELMAN #5-34
Field LARNED
County PAWNEE State KANSAS

Location: API # : 15-145-21727-0000
335' FSL & 2185' FEL
Permanent Datum GROUND LEVEL Elevation 1984
Log Measured From KELLY BUSHING 13' A.G.L.
Drilling Measured From KELLY BUSHING
SEC 34 TWP 21S RGE 16W
Elevation
Other Services
CDL/CNL/PE
MEL/SON
K.B. 1997
D.F. 1995
G.L. 1984

Date	7/25/13		
Run Number	ONE		
Depth Driller	3920		
Depth Logger	3920		
Bottom Logged Interval	3918		
Top Log Interval	00		
Casing Driller	8 5/8" @ 1009		
Casing Logger	1008		
Bit Size	7 7/8		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 6200 PPM	
Density / Viscosity	9.3/52		
pH / Fluid Loss	9.5/11.2		
Source of Sample	FLOWLINE		
Rin @ Meas. Temp	.65 @ 94F		
Rmf @ Meas. Temp	.48 @ 94F		
Rmc @ Meas. Temp	.78 @ 94F		
Source of Rmf / Rmc	MEASURED		
Rin @ BHT	.53 @ 115F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom			
Maximum Recorded Temperature	115F		
Equipment Number	680		
Location	HAYS, KS.		
Recorded By	JASON CAPPELLUCCI		
Witnessed By	JON CHRISTENSEN		

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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 COMPLETION & PRODUCTION SVCS. (785) 628-6395

DIRECTIONS:
LARNED, KS. - 1 E. ON HWY 156 TO 100TH RD. - 2 S. TO M. RD. - 3/4 E. - N. INTO



MAIN SECTION

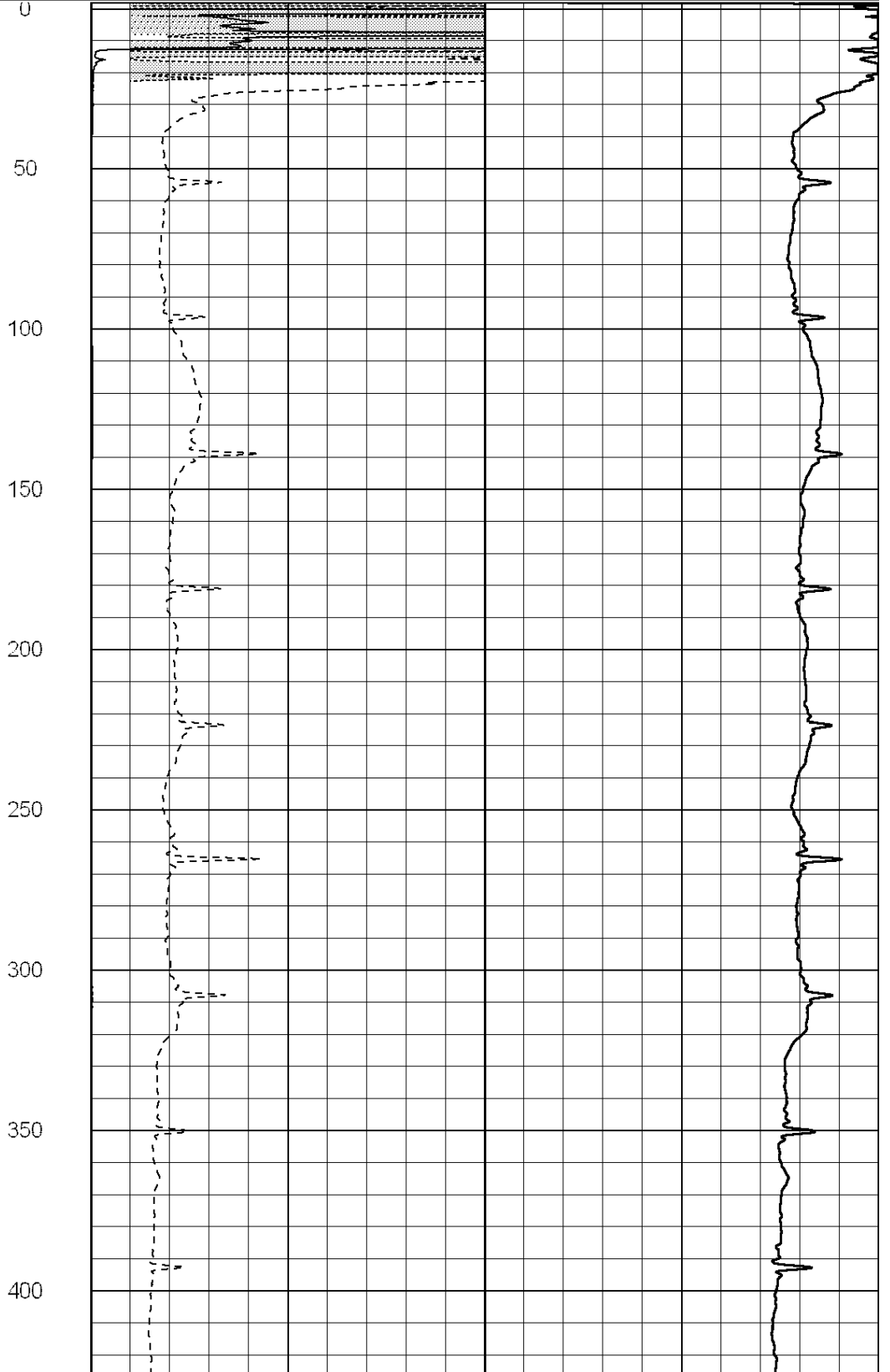
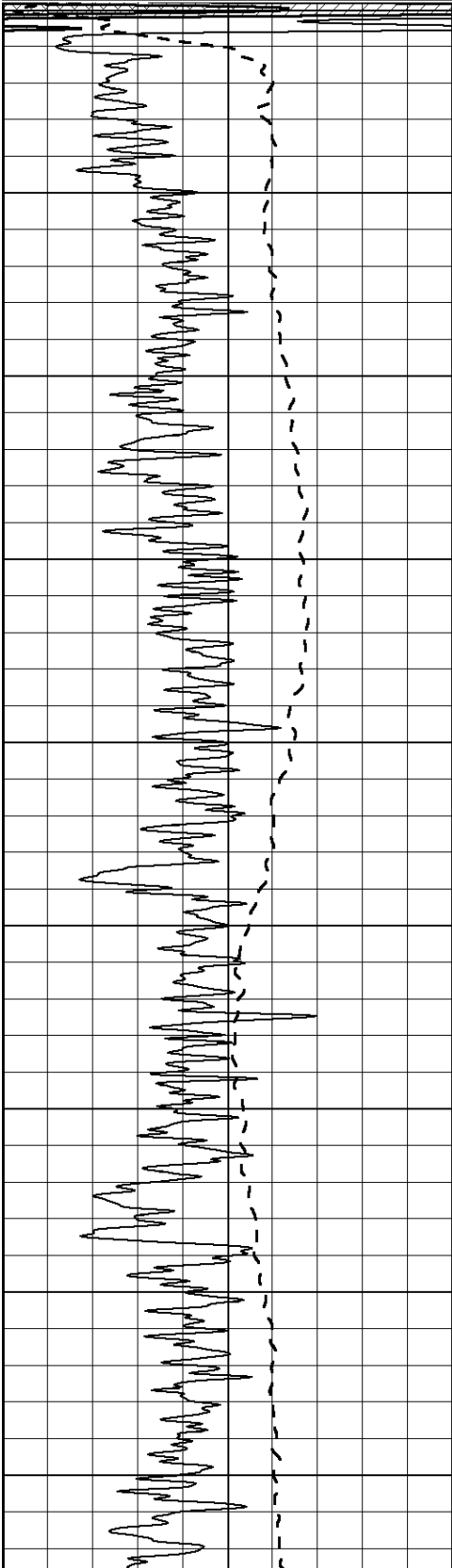
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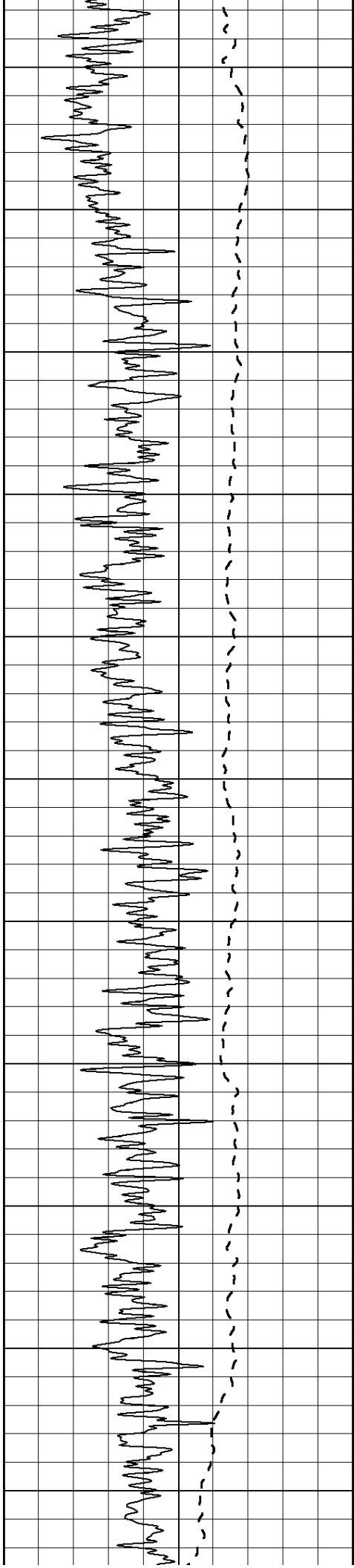
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-100	SP (mV)	100

0	RLL3 (Ohm-m)	50
0	Deep Induction (Ohm-m)	50

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





450

500

550

600

650

700

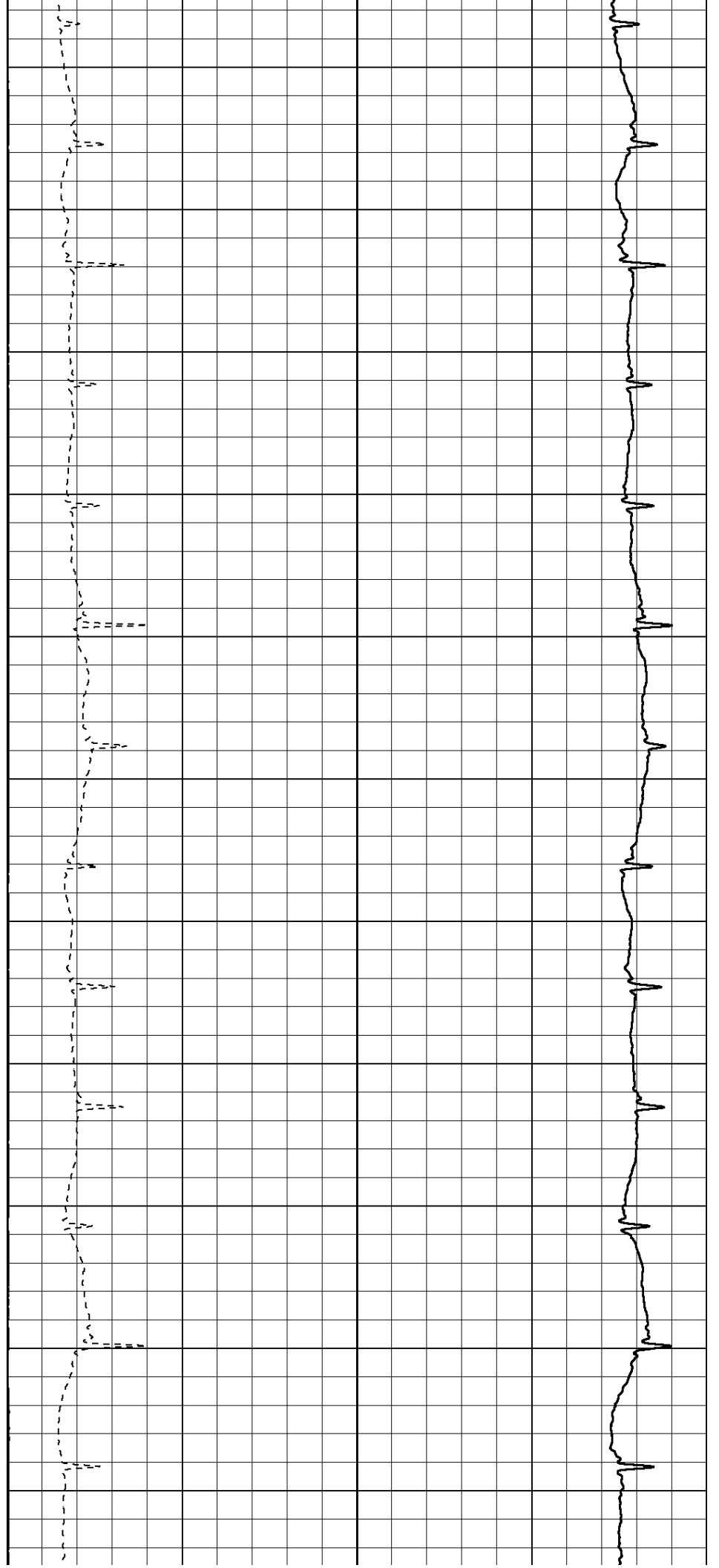
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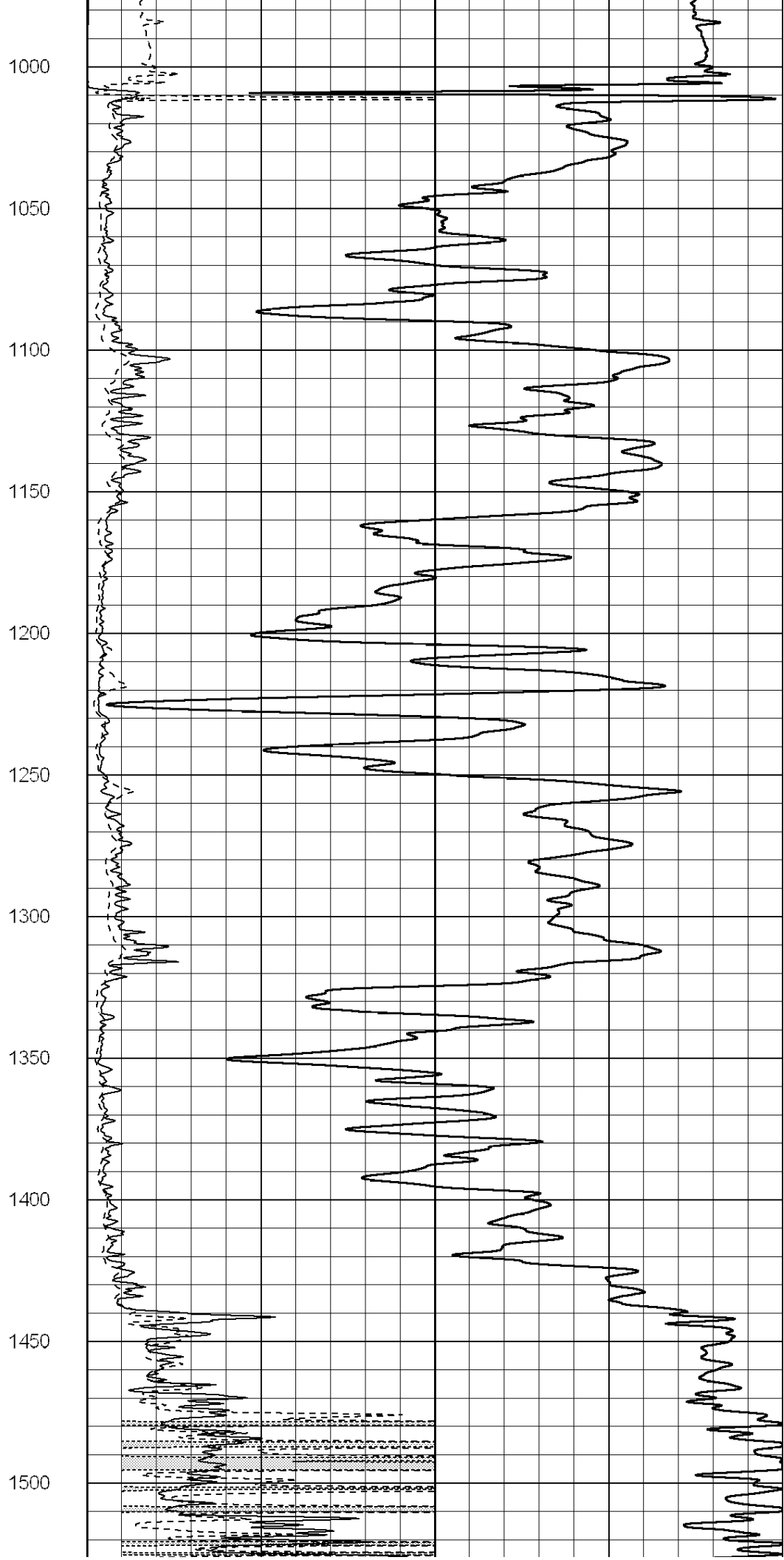
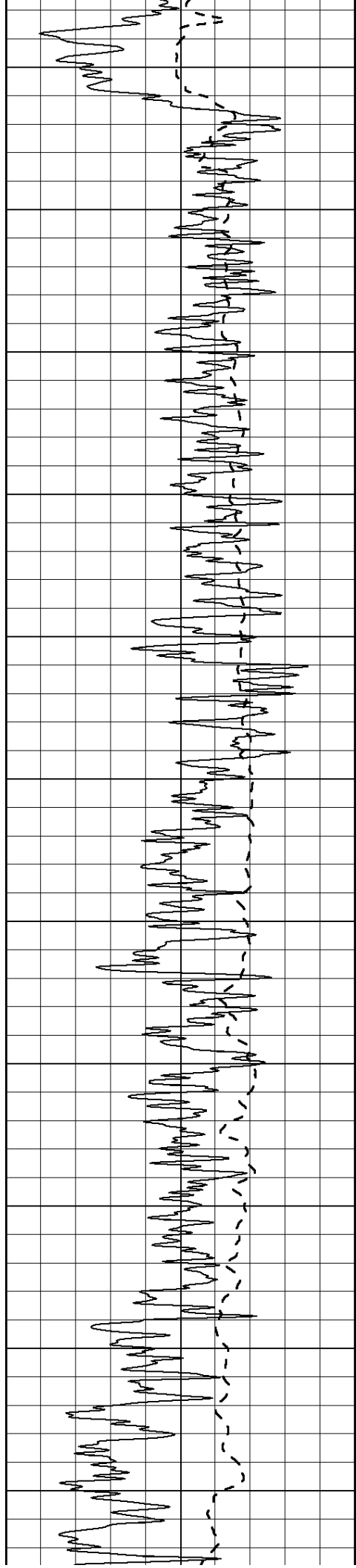
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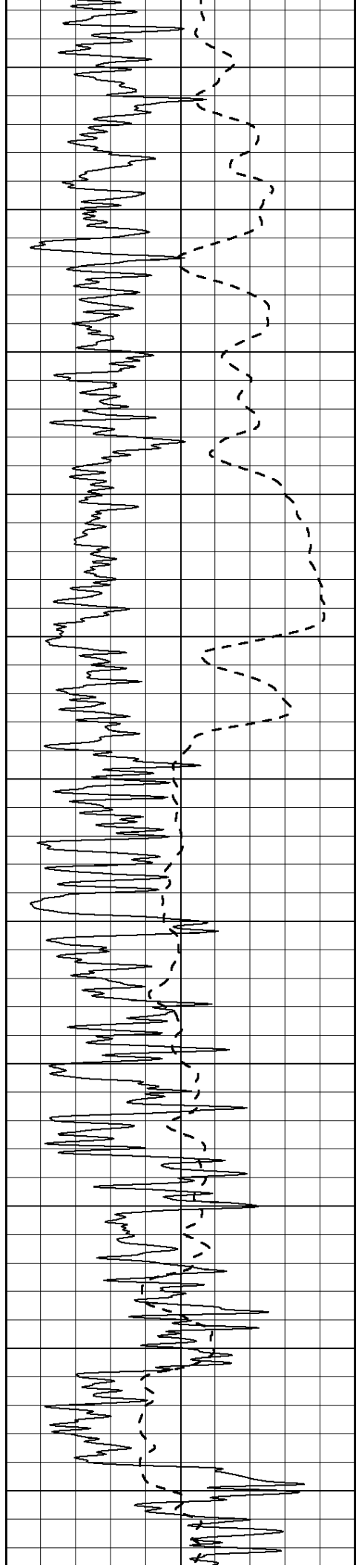
850

900

950







1550

1600

1650

1700

1750

1800

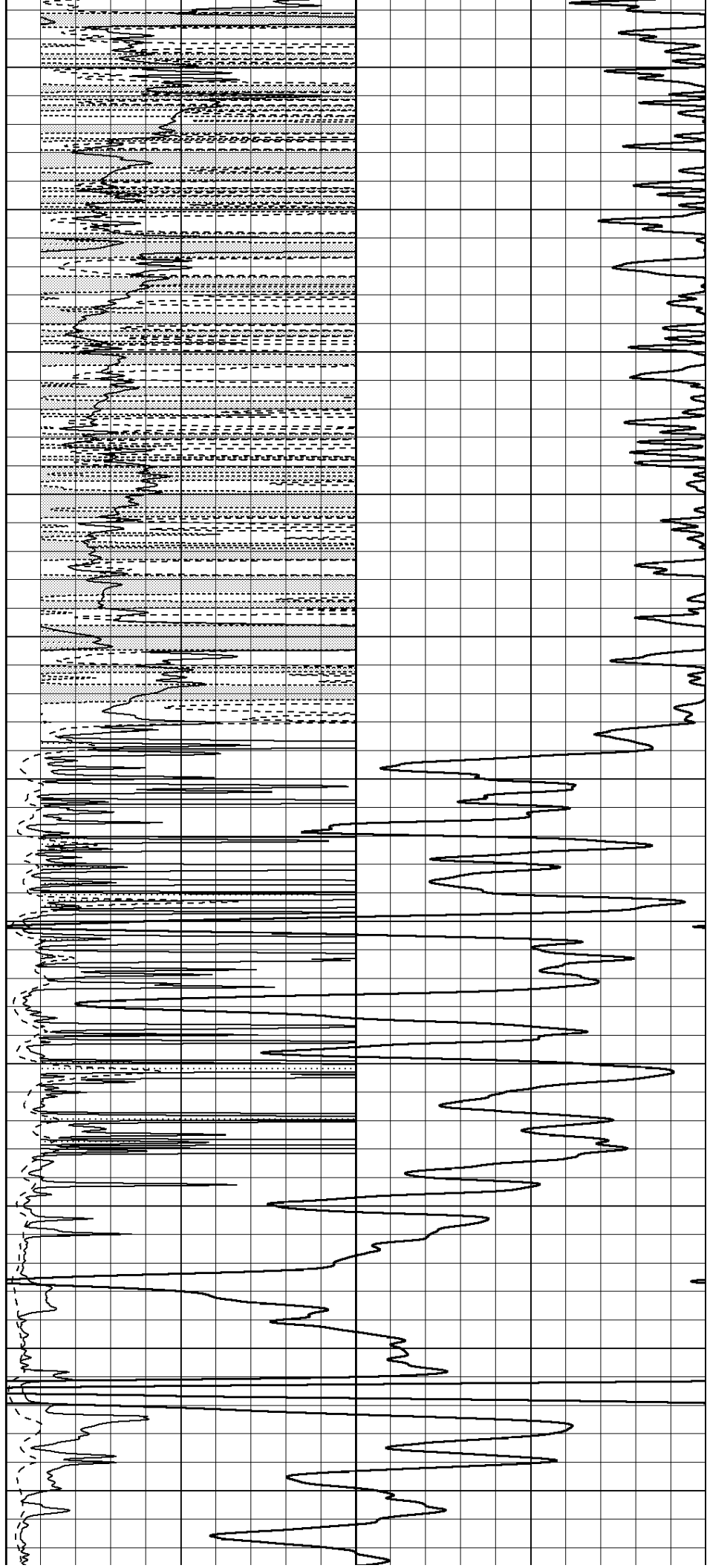
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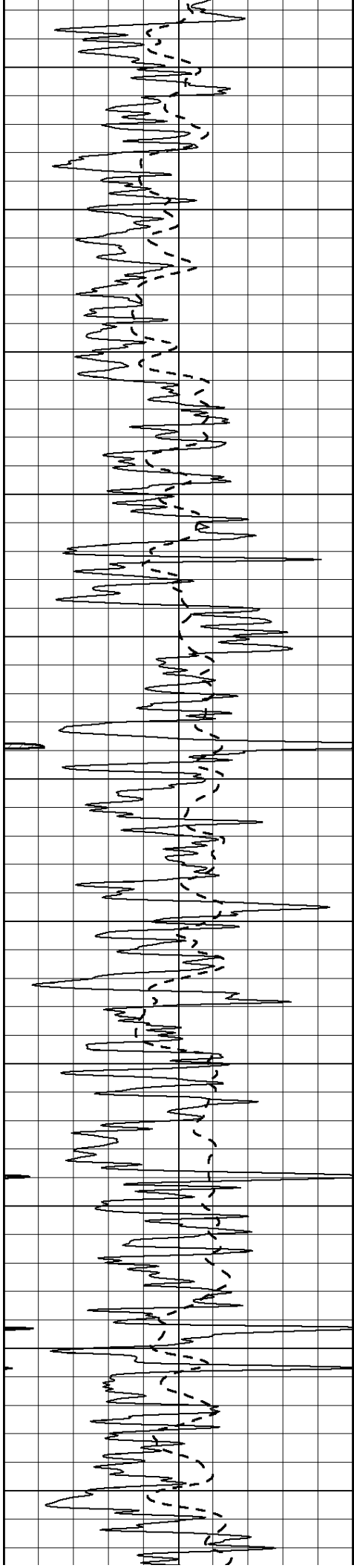
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1950

2000

2050





2100

2150

2200

2250

2300

2350

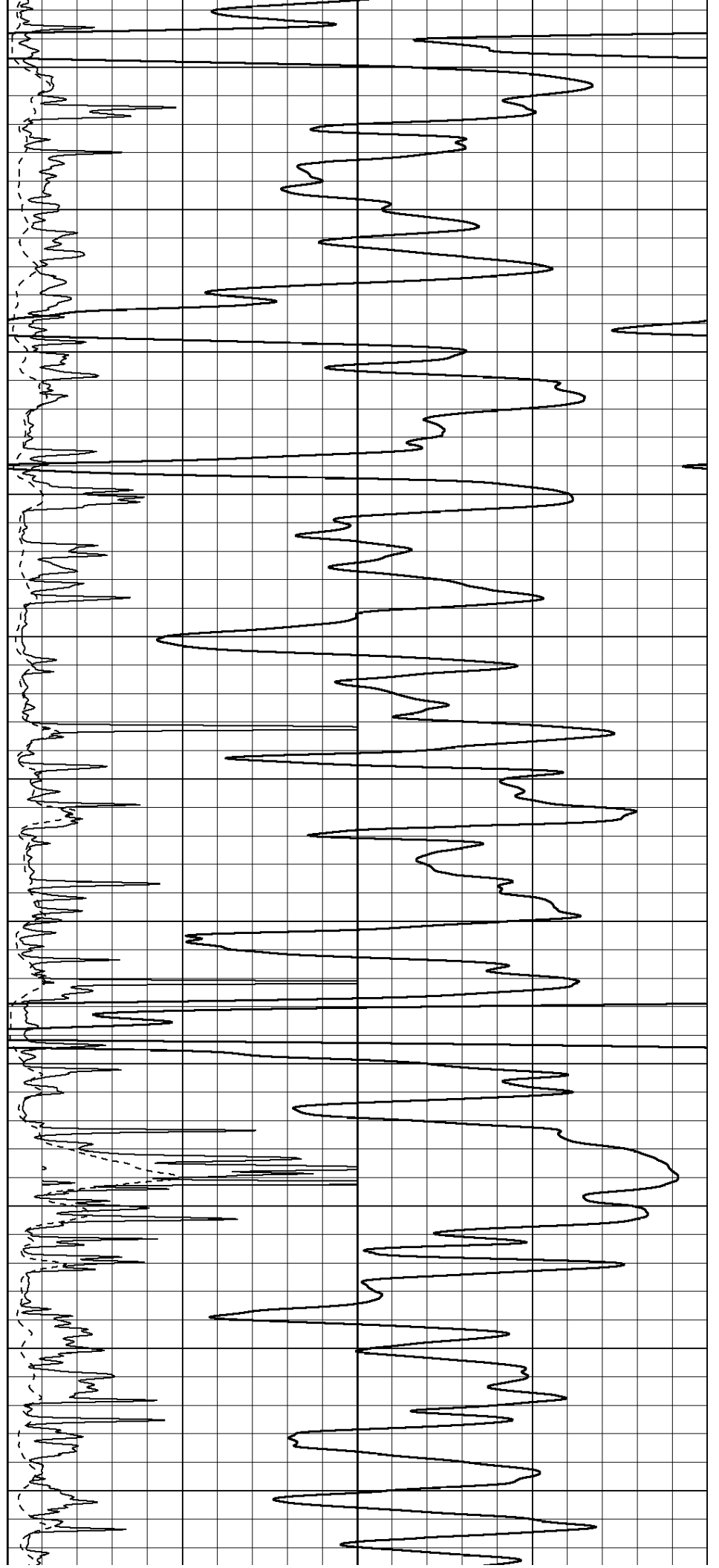
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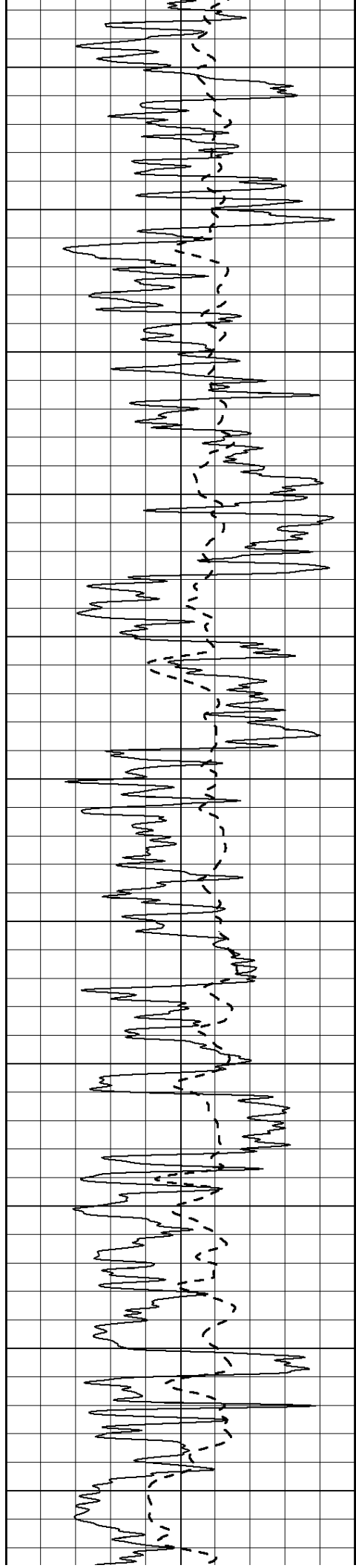
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2500

2550

2600





2650

2700

2750

2800

2850

2900

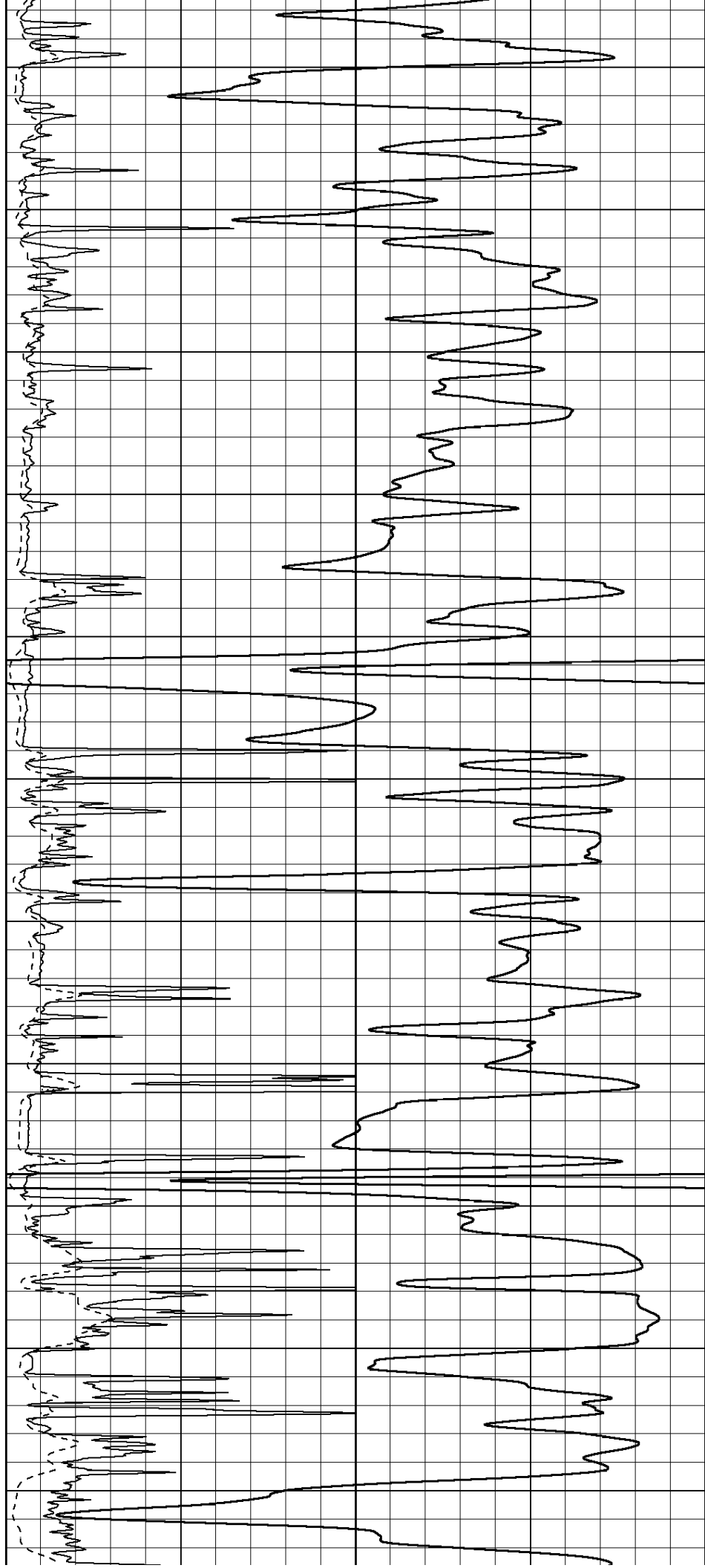
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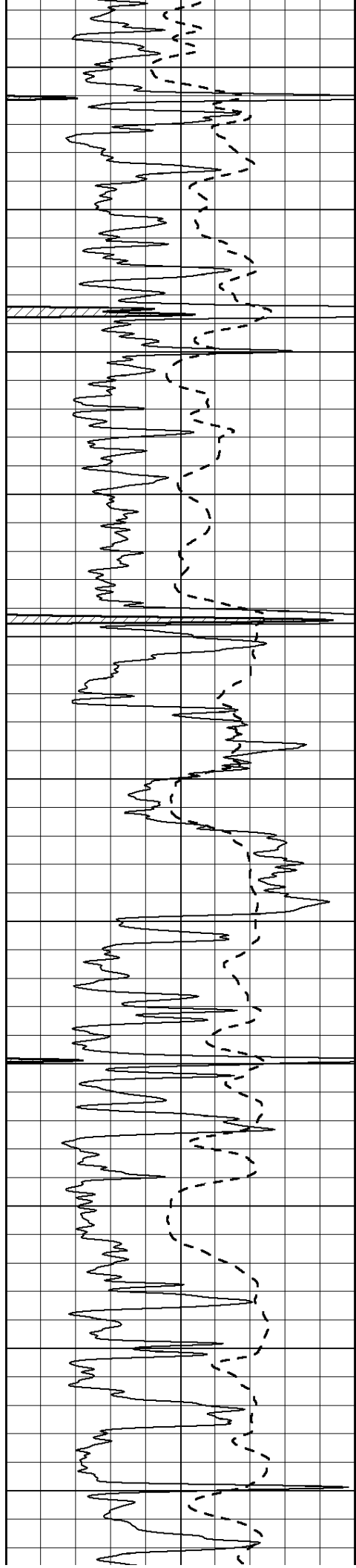
3000

3050

3100

3150





3200

3250

3300

3350

3400

3450

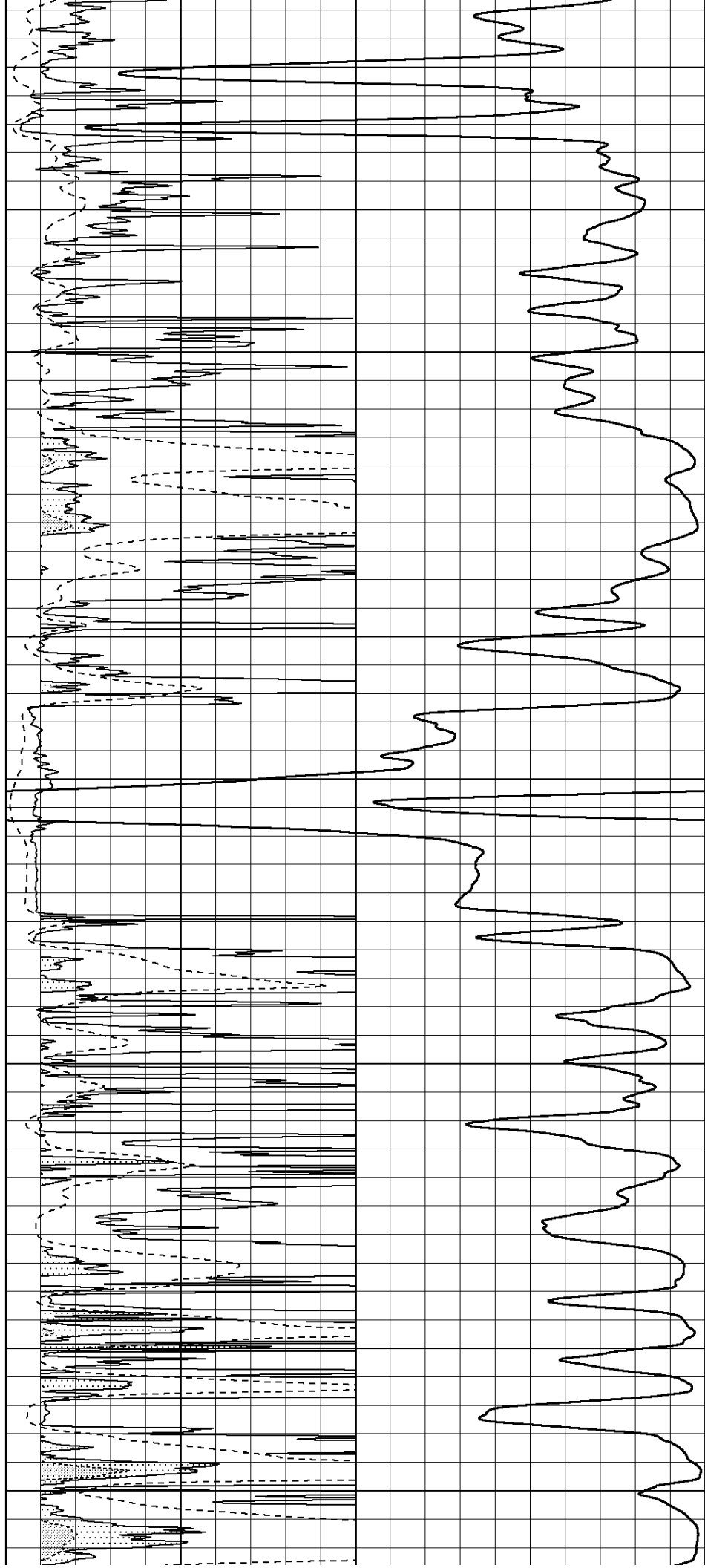
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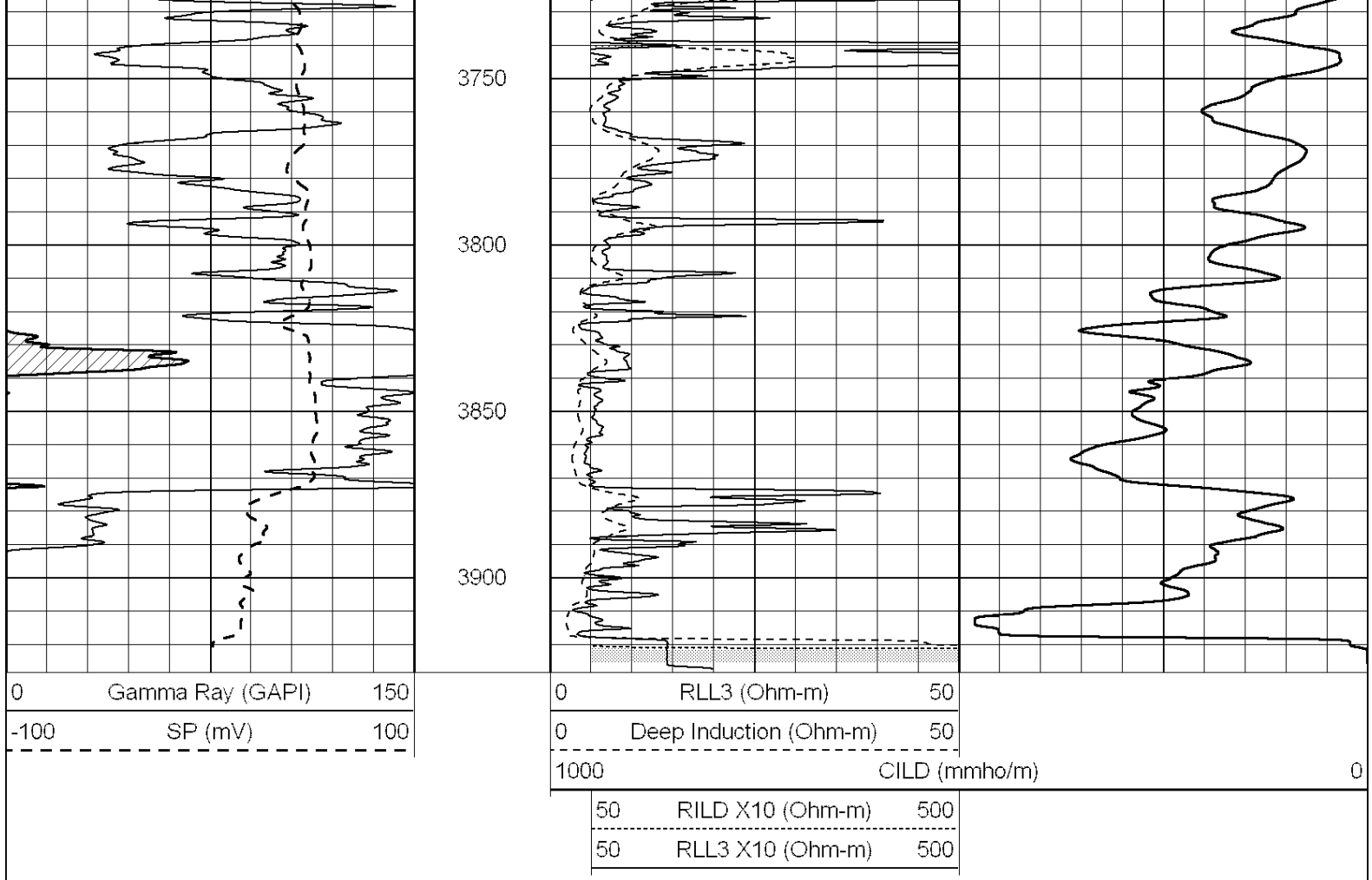
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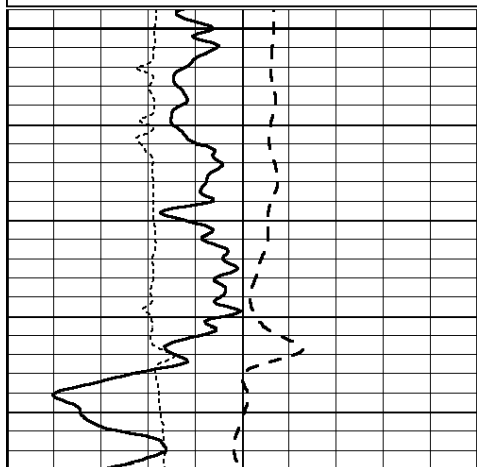
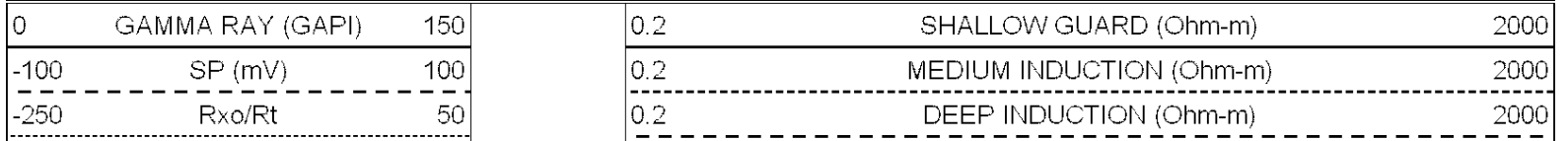
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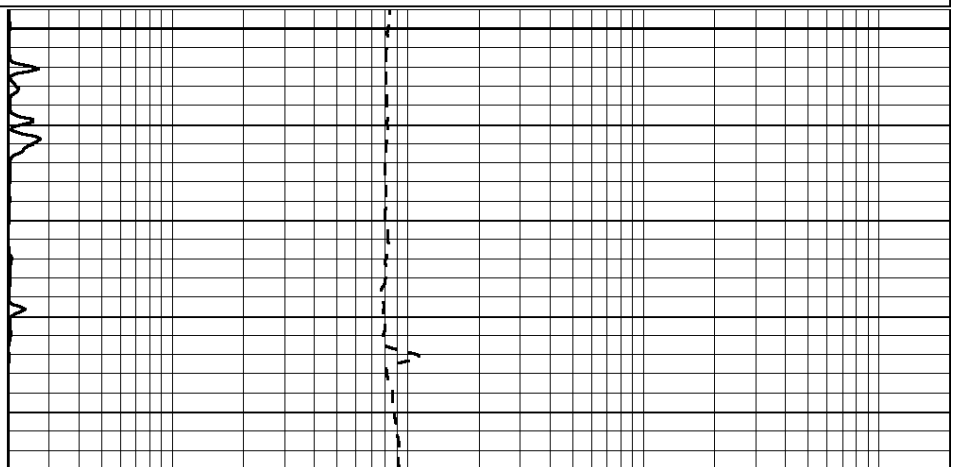


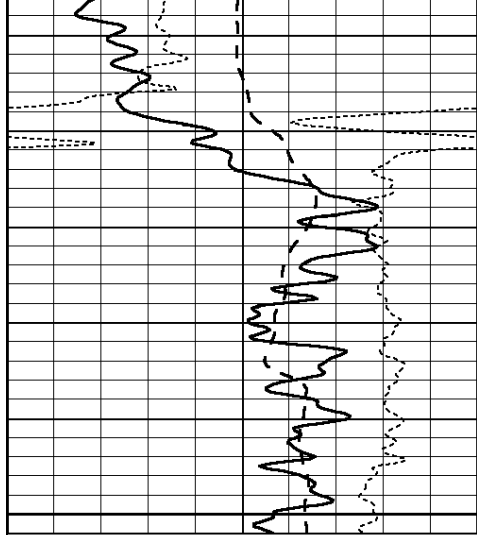
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 Charted by: Depth in Feet scaled 1:240



950

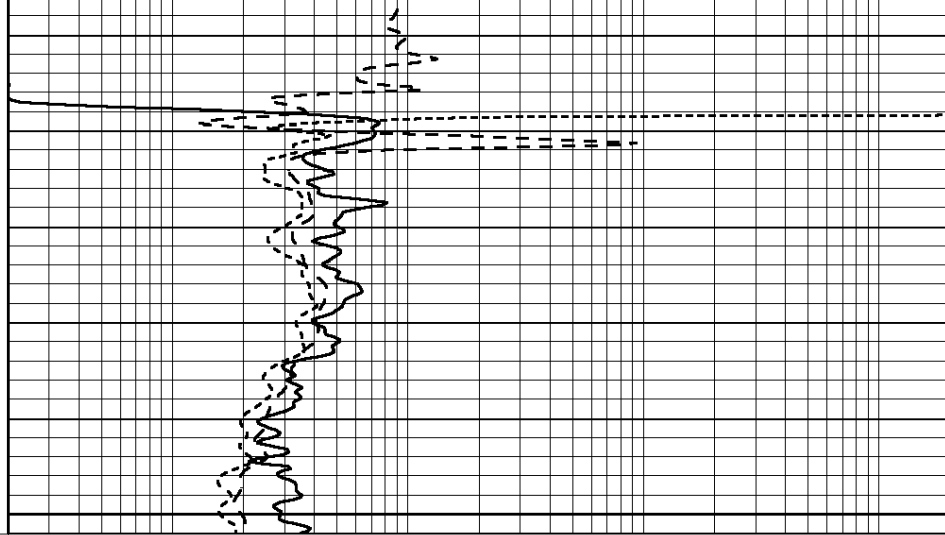




0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50

1000

1050



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

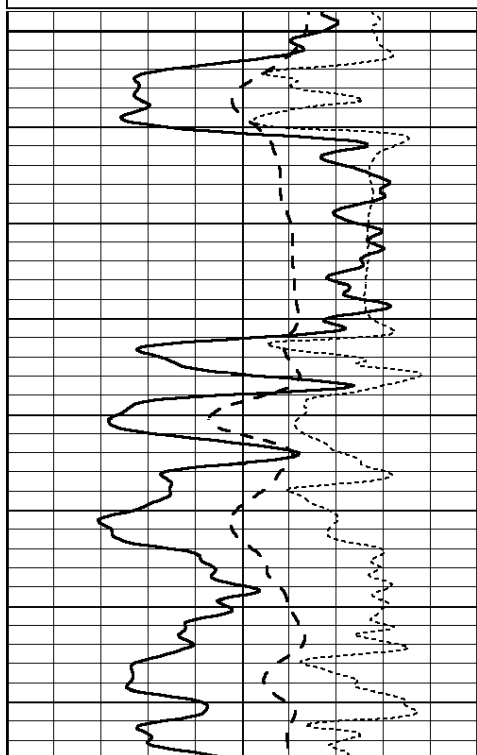


MAIN SECTION

Database File: 011577pe.db
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 Charted by: Depth in Feet scaled 1:240

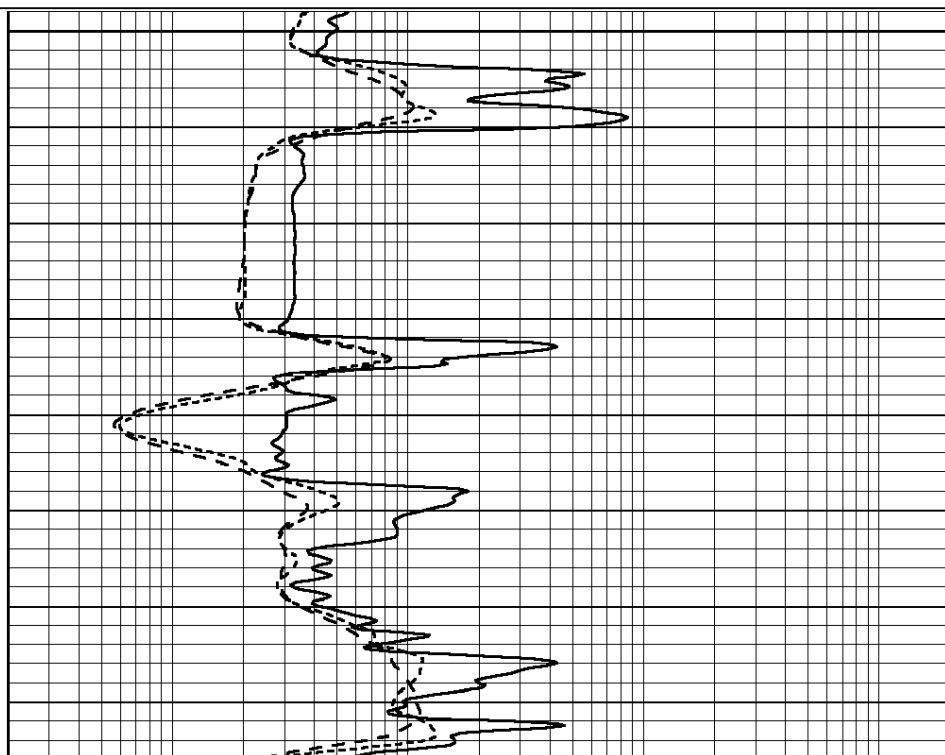
0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50

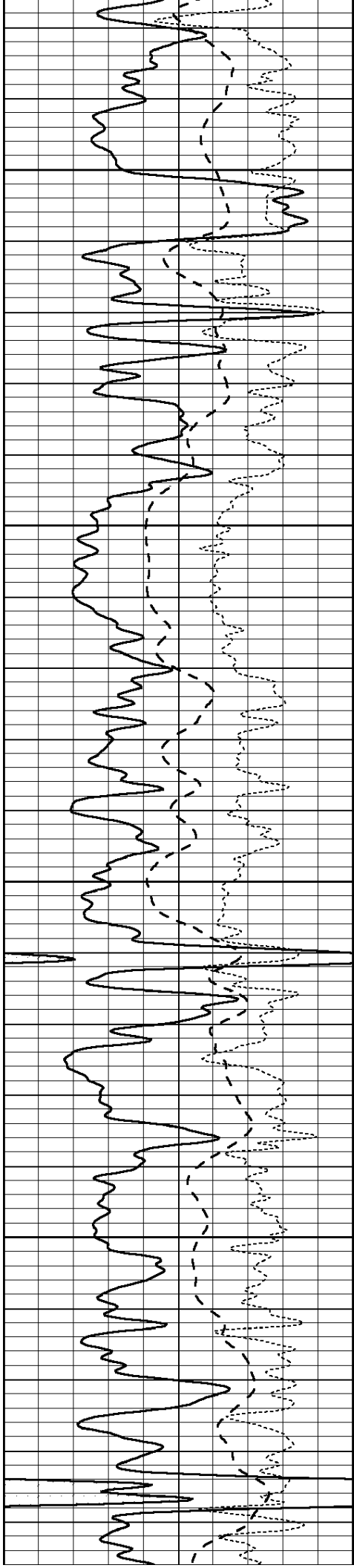
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000



3000

3050



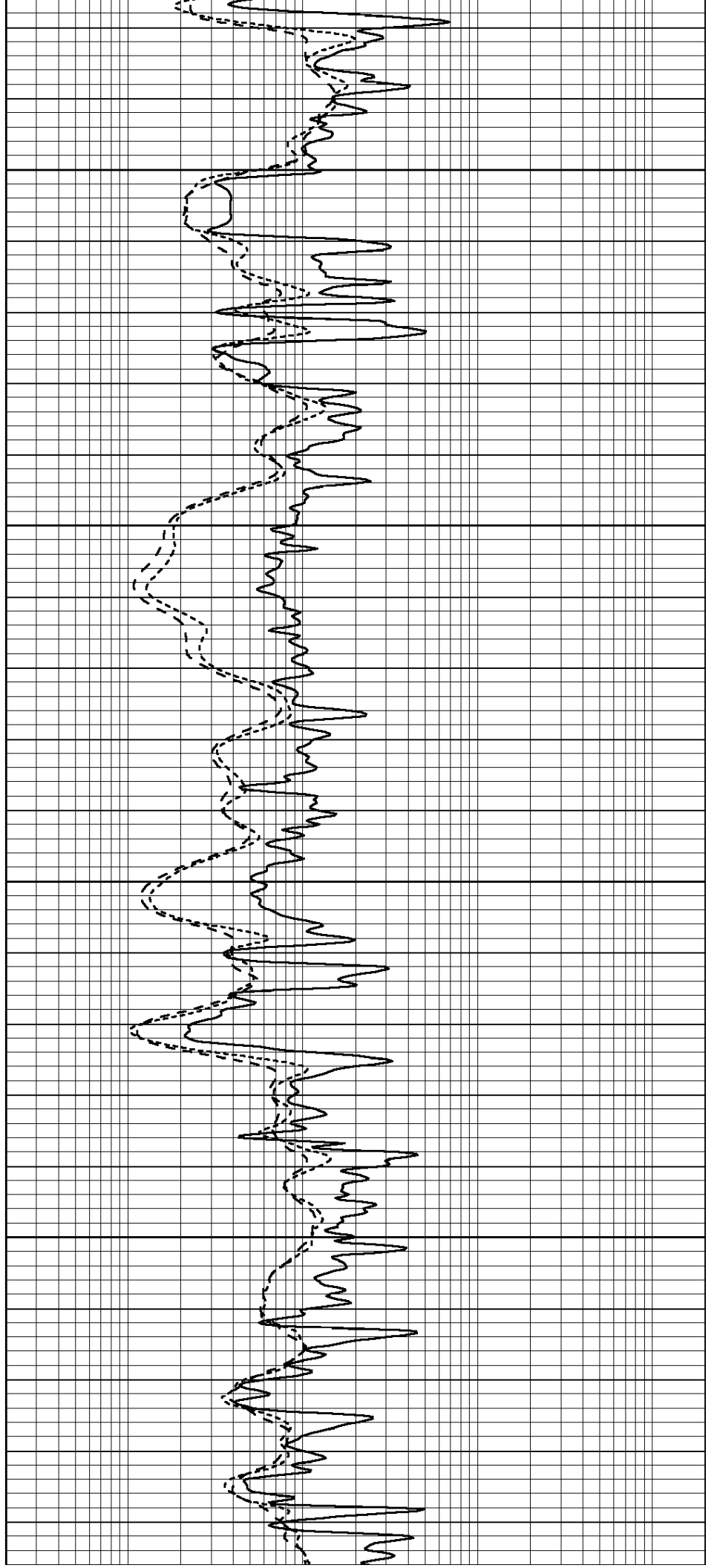


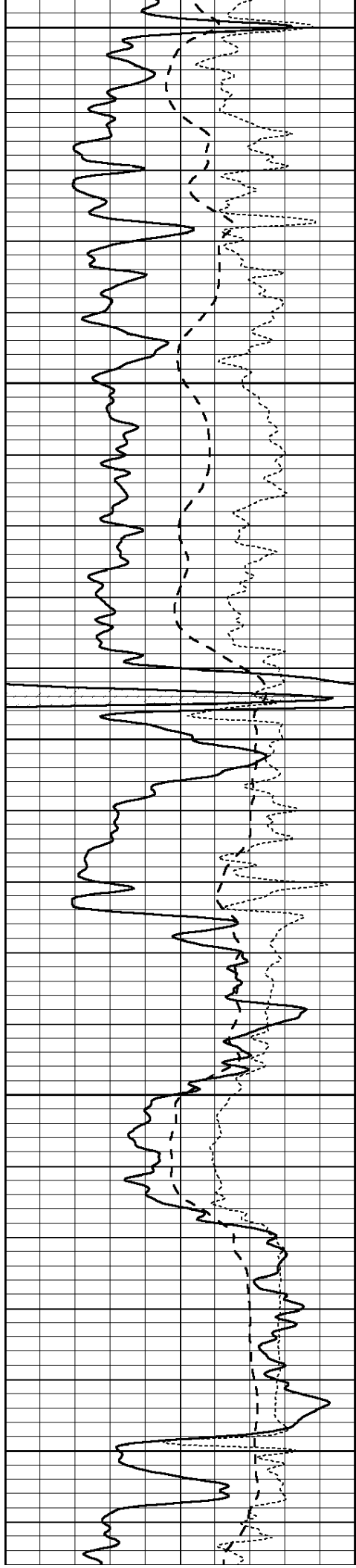
3100

3150

3200

3250





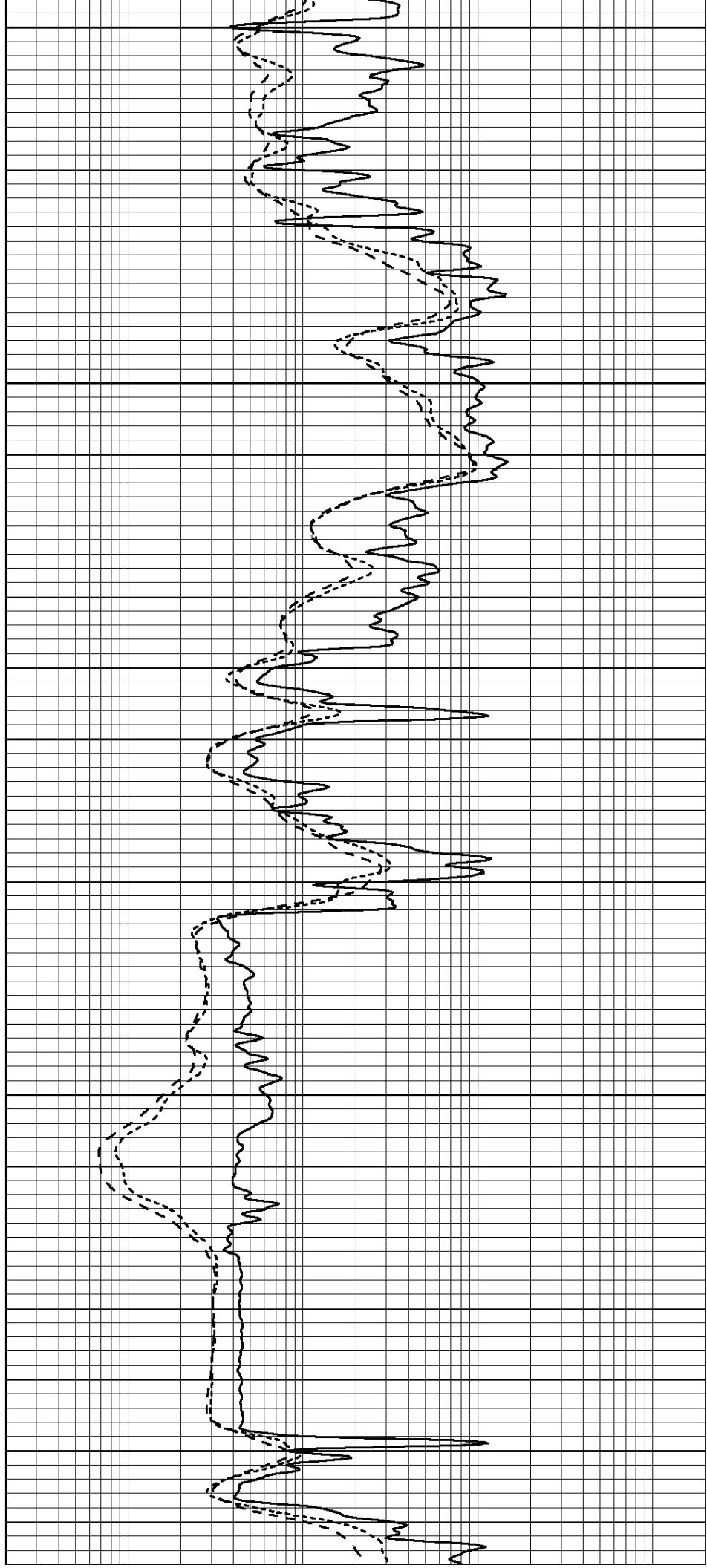
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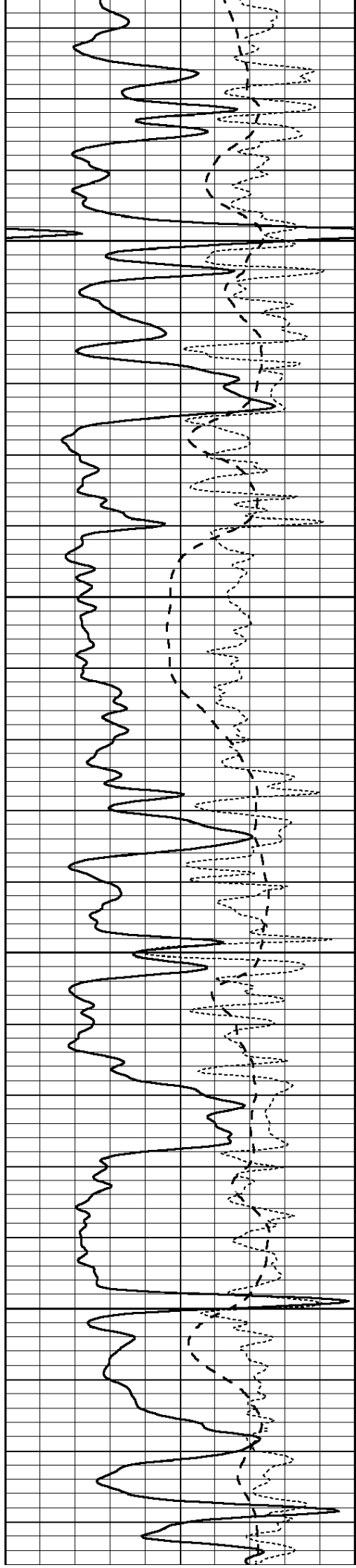
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3400

3450

3500



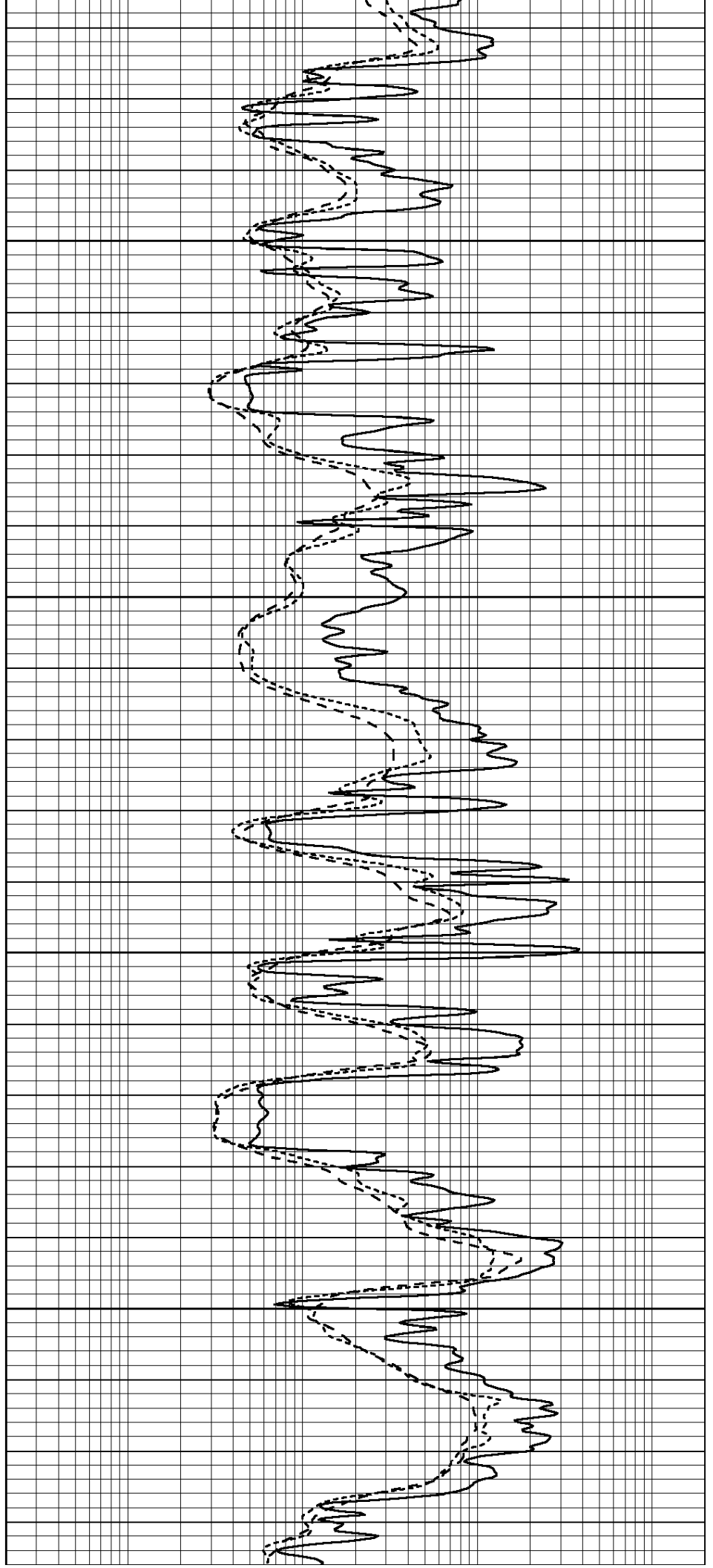


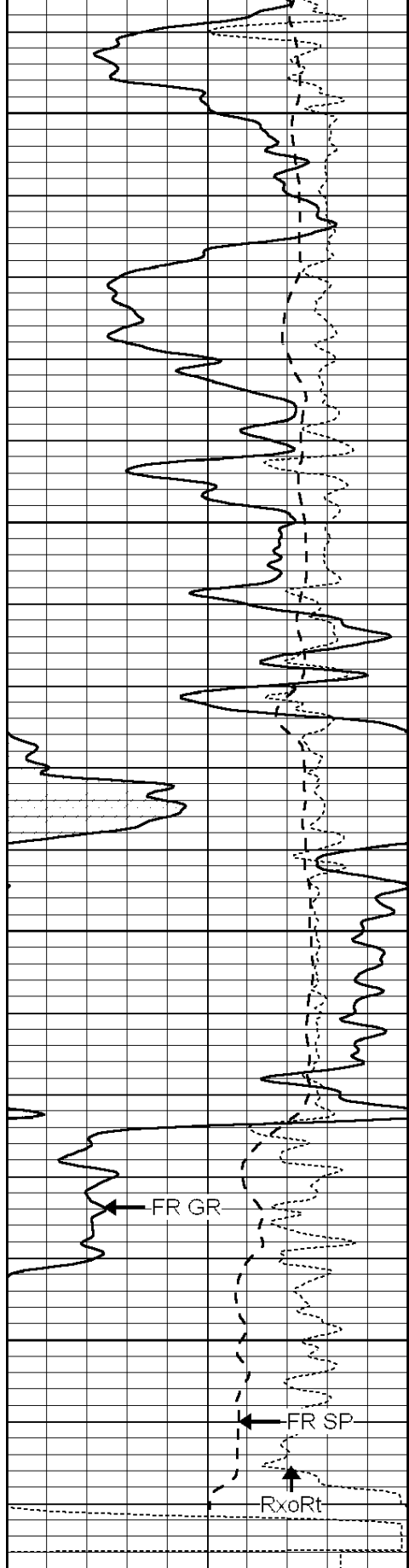
3550

3600

3650

3700





3750

3800

3850

3900

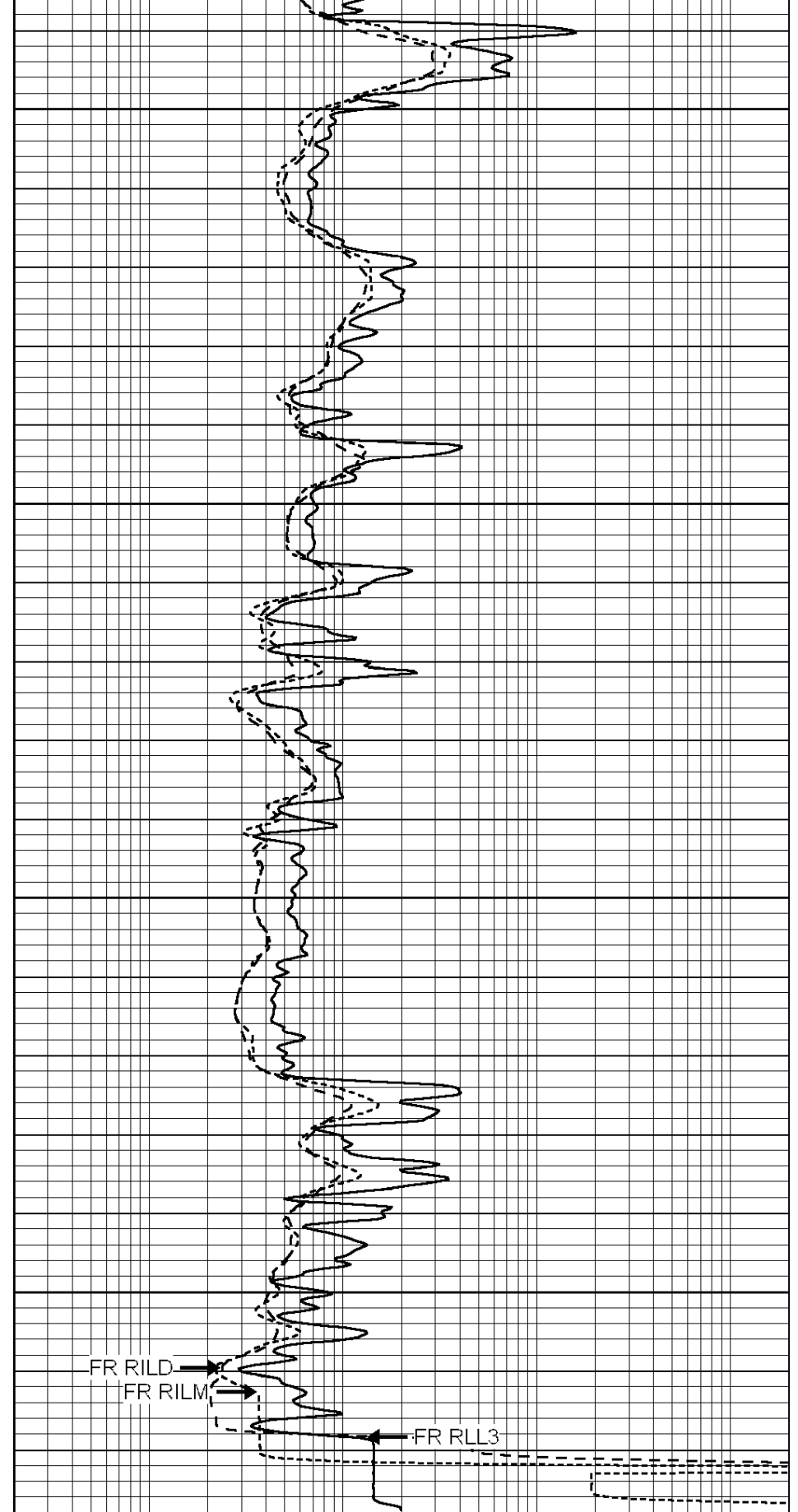
LTD 3920

FR GR

FR SP

Rxo/Rt

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



FR RILD

FR RILM

FR RLL3

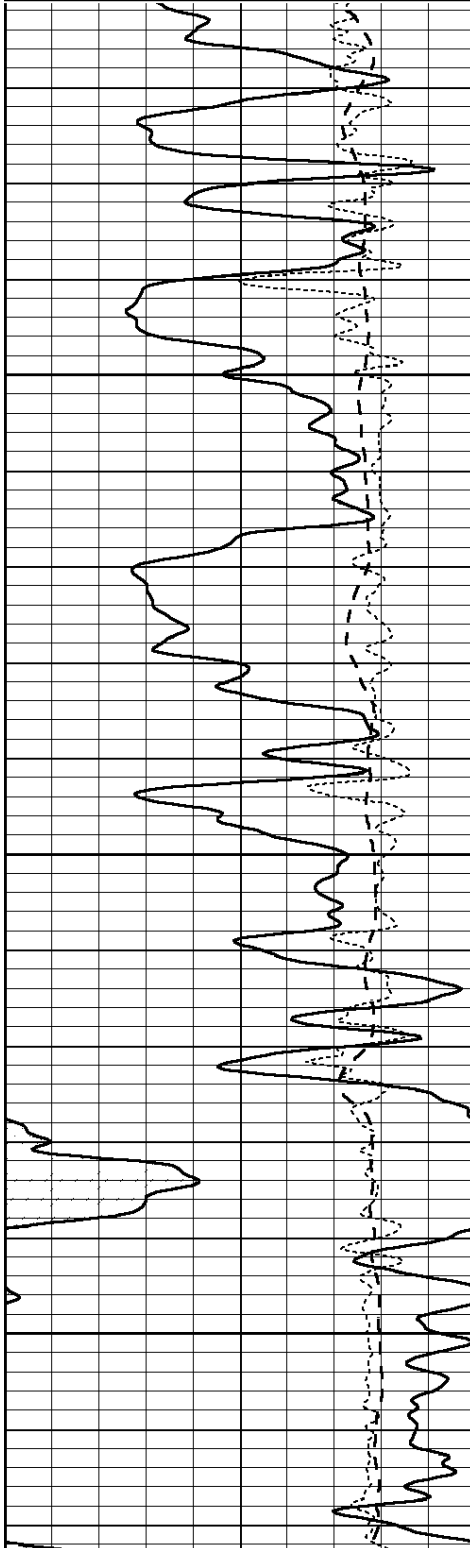
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0.2	MEDIUM INDUCTION (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000

REPEAT SECTION

Database File: 011577pe.db
 Dataset Pathname: pass2.1
 Presentation Format: _dil
 Dataset Creation: Thu Jul 25 10:13:24 2013 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

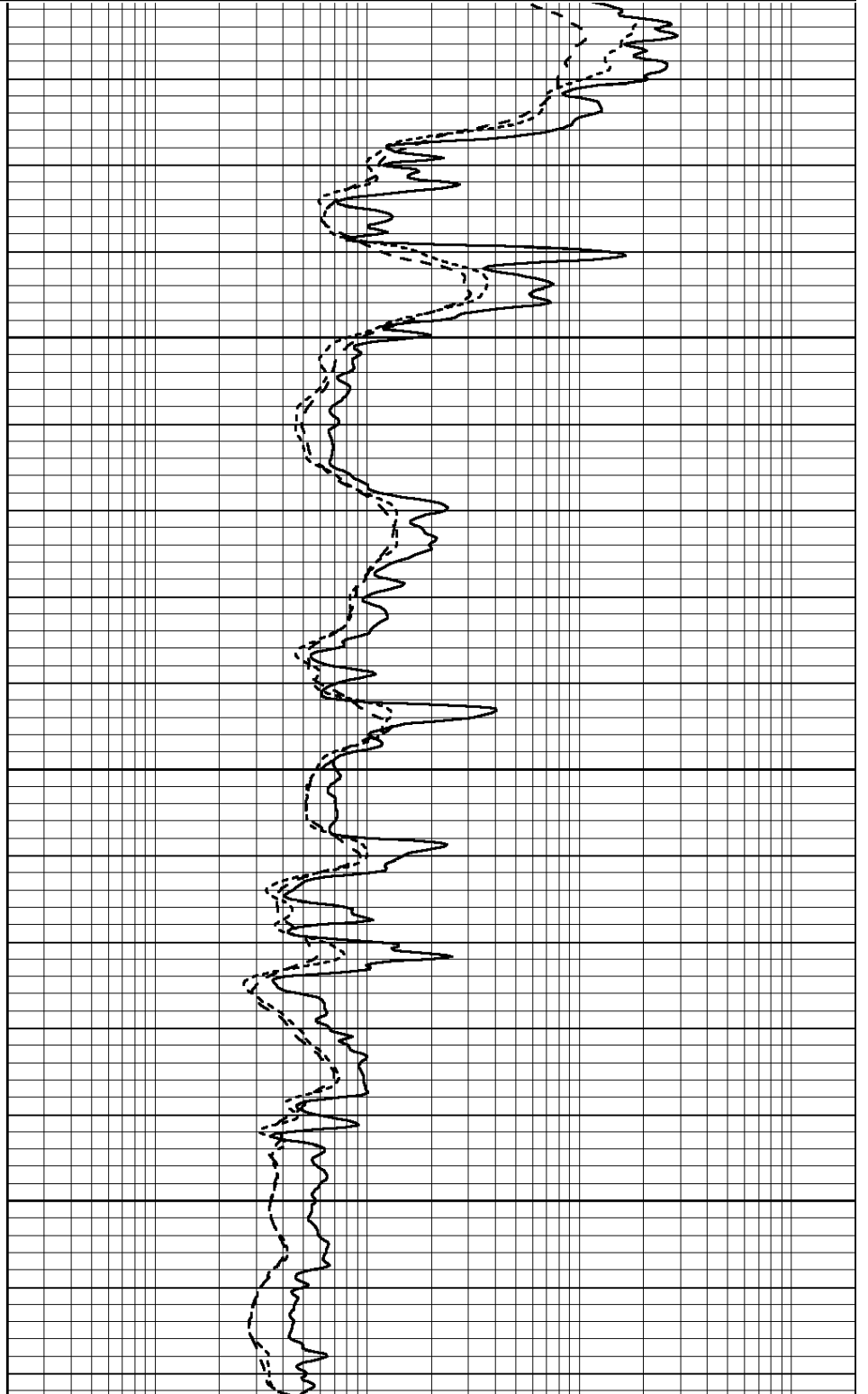
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0.2	MEDIUM INDUCTION (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000

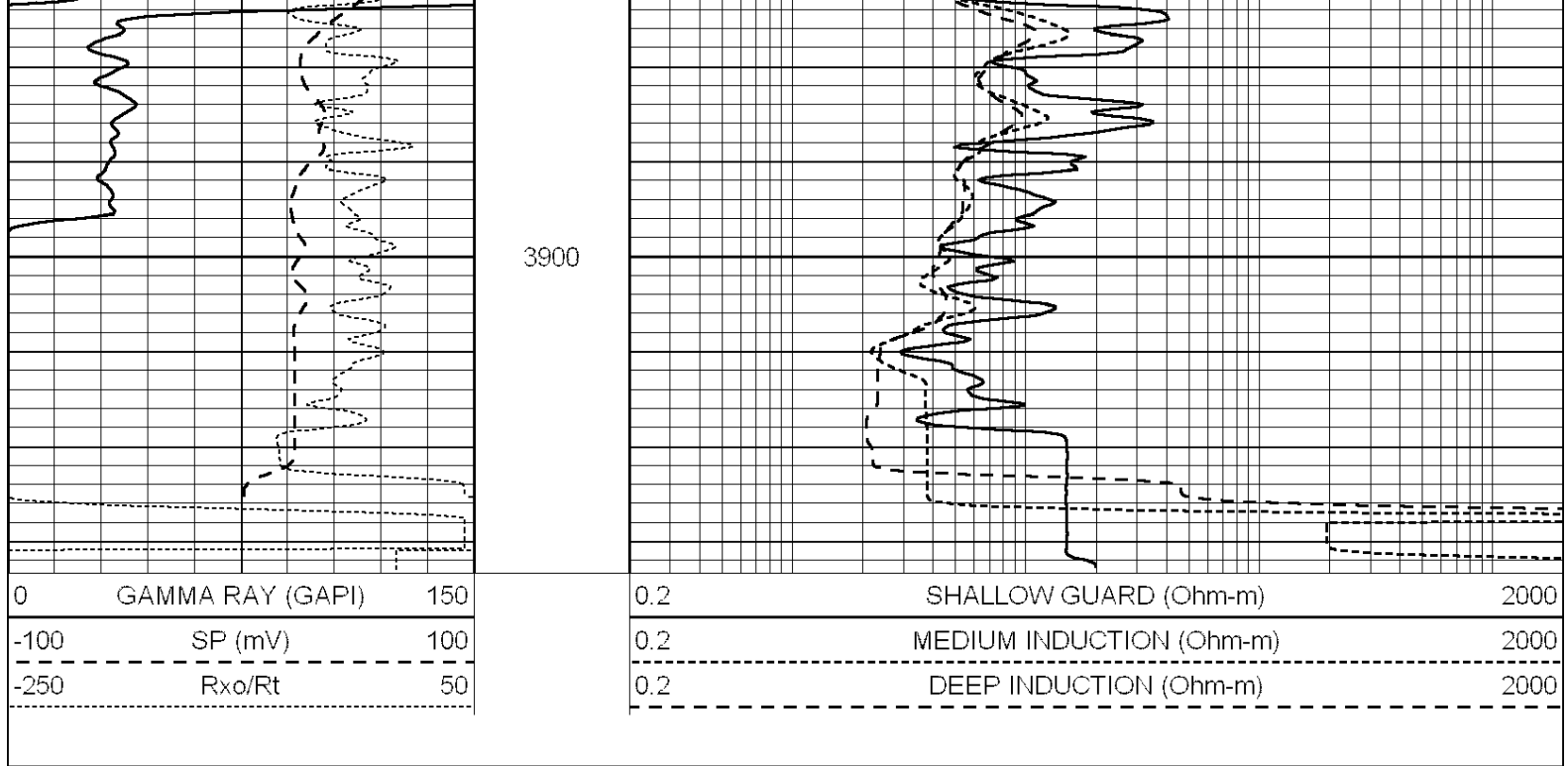


3750

3800

3850





Calibration Report

Database File: 011577pe.db
 Dataset Pathname: pass2.1
 Dataset Creation: Thu Jul 25 10:13:24 2013 by Calc Open-Cased 090629

Dual Induction Calibration Report

Serial-Model: PROBE8-DILG
 Surface Cal Performed: Fri Aug 01 06:33:19 2008
 Downhole Cal Performed: Mon Jul 28 11:08:27 2008
 After Survey Verification Performed: Mon Jul 28 11:08:27 2008

Surface Calibration

Loop:	Readings				References		Results	
	Air	Loop			Air	Loop	m	b
Deep	0.015	0.648	V	0.000	400.000	mmho/m	632.616	-9.730
Medium	0.029	0.796	V	0.000	464.000	mmho/m	605.049	-17.680
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		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	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
Performed Thu May 24 10:48:35 2012

Litho Density Calibration

	Background	Magnesium	Aluminum	Sandstone	
Window 1	869.0	7503.7	2278.2	8031.6	cps
Window 2	814.2	6016.2	1916.9	6332.7	cps
Window 3	662.8	3301.5	1210.8	3422.7	cps
Window 4	200.3	202.6	201.6	200.2	cps
Long Space	0.0	5202.0	1102.6	5518.5	cps
Short Space	1.2	998.0	637.9	1006.2	cps
Rho		1.7100	2.5900	1.3800	g/cc
Pe			2.5700	1.5500	
Rib Angle	: 43.9	Rib Slope	: 0.963	Density/Spine Ratio	: 0.545
Spine Angle	: 73.9	Spine Slope	: 3.466	Spine Intercept	: -15.4

Caliper

	Readings	Reference	
Low Ref	3.7	8.0	
High Ref	6.1	14.0	
	Gain: 2.5		Offset: -2.2

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

Gamma Ray Calibration Report

Serial Number: #8
Tool Model: OPEN
Performed: Mon Jun 13 16:56:43 2011

Calibrator Value: 150.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 175.0 cps

Sensitivity: 0.8371 GAPI/cps