



**COMPLETION
& PRODUCTION
SERVICES CO.**

**DUAL INDUCTION
LOG**

Company HERTEL OIL COMPANY, LLC.
Well WERTH - PFANNENSTIEL UNIT #1
Field WILDCAT
County ELLIS
State KANSAS

Company HERTEL OIL COMPANY, LLC.
Well WERTH - PFANNENSTIEL UNIT #1
Field WILDCAT
County ELLIS State KANSAS

Location: API # : 15-051-26436-0000
1150' FSL & 1505' FEL
NE - NE - SW - SE
SEC 14 TWP 15S RGE 19W
Permanent Datum GROUND LEVEL Elevation 1995
Log Measured From KELLY BUSHING 8' A.G.L.
Drilling Measured From KELLY BUSHING
Other Services
CDL/CNL
MEL
Elevation
K.B. 2003
D.F. 2001
G.L. 1995

Date	12/14/12		
Run Number	ONE		
Depth Driller	3700		
Depth Logger	3701		
Bottom Logged Interval	3699		
Top Log Interval	00		
Casing Driller	8 5/8" @ 1189'		
Casing Logger	1189		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 1,500 PPM	
Density / Viscosity	8.8/61		
pH / Fluid Loss	10.5/8.8		
Source of Sample	FLOWLINE		
Rim @ Meas. Temp	1.10 @ 88F		
Rmf @ Meas. Temp	.825 @ 88F		
Rmc @ Meas. Temp	1.32 @ 88F		
Source of Rmf / Rmc	MEASUREMENT		
Rim @ BHT	.857 @ 113F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom	5:00 P.M.		
Maximum Recorded Temperature	113F		
Equipment Number	4854		
Location	HAYS, KANSAS		
Recorded By	JEFF LUEBBERS		
Witnessed By	HERB DEINES		

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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
ANTONINO, KS., 2 3/4S., W. INTO



MAIN SECTION

Database File: 010033ddn.db
 Dataset Pathname: pass3.7
 Presentation Format: dil2
 Dataset Creation: Fri Dec 14 18:37:28 2012
 Charted by: Depth in Feet scaled 1:600

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

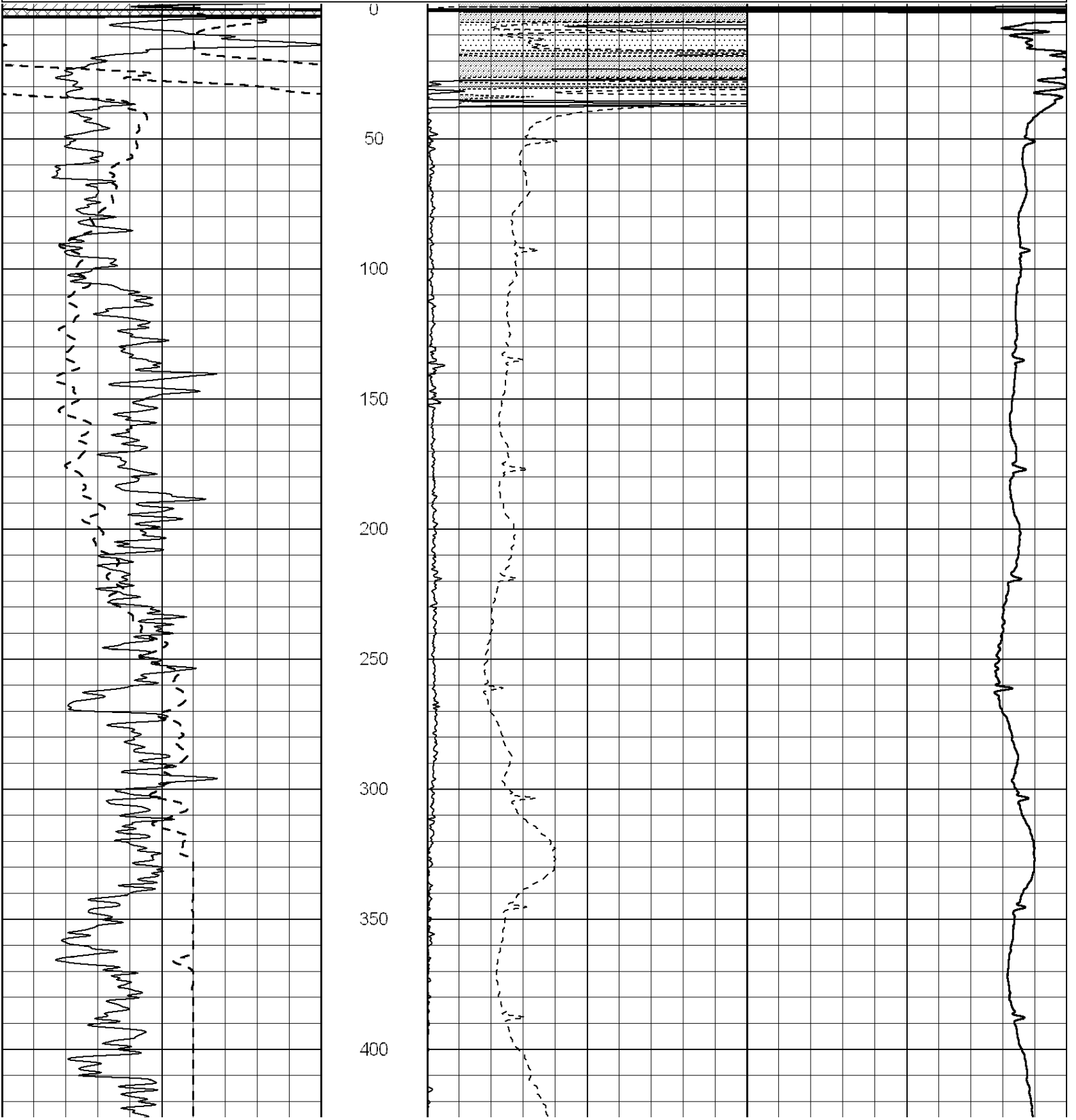
0	RLL3 (Ohm-m)	50
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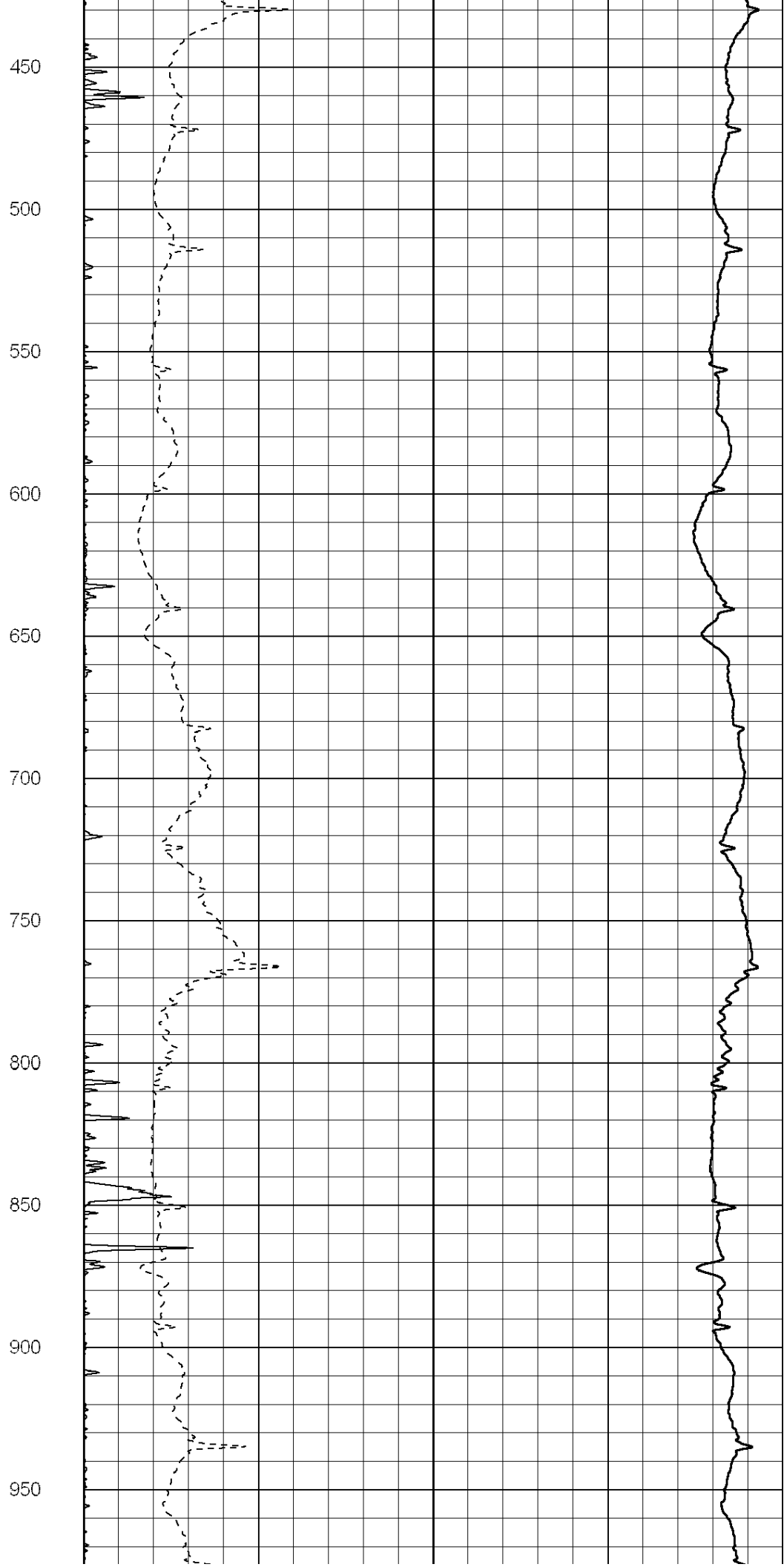
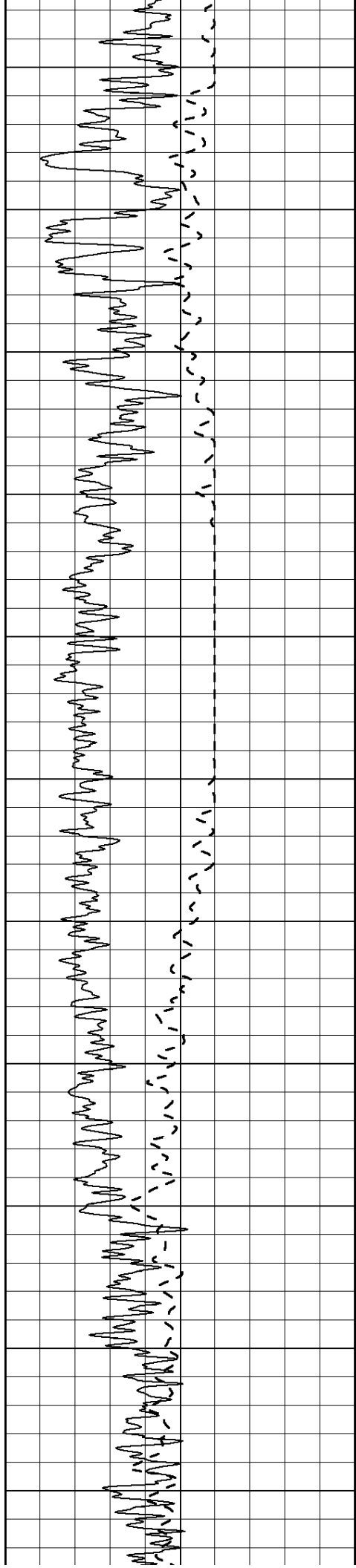
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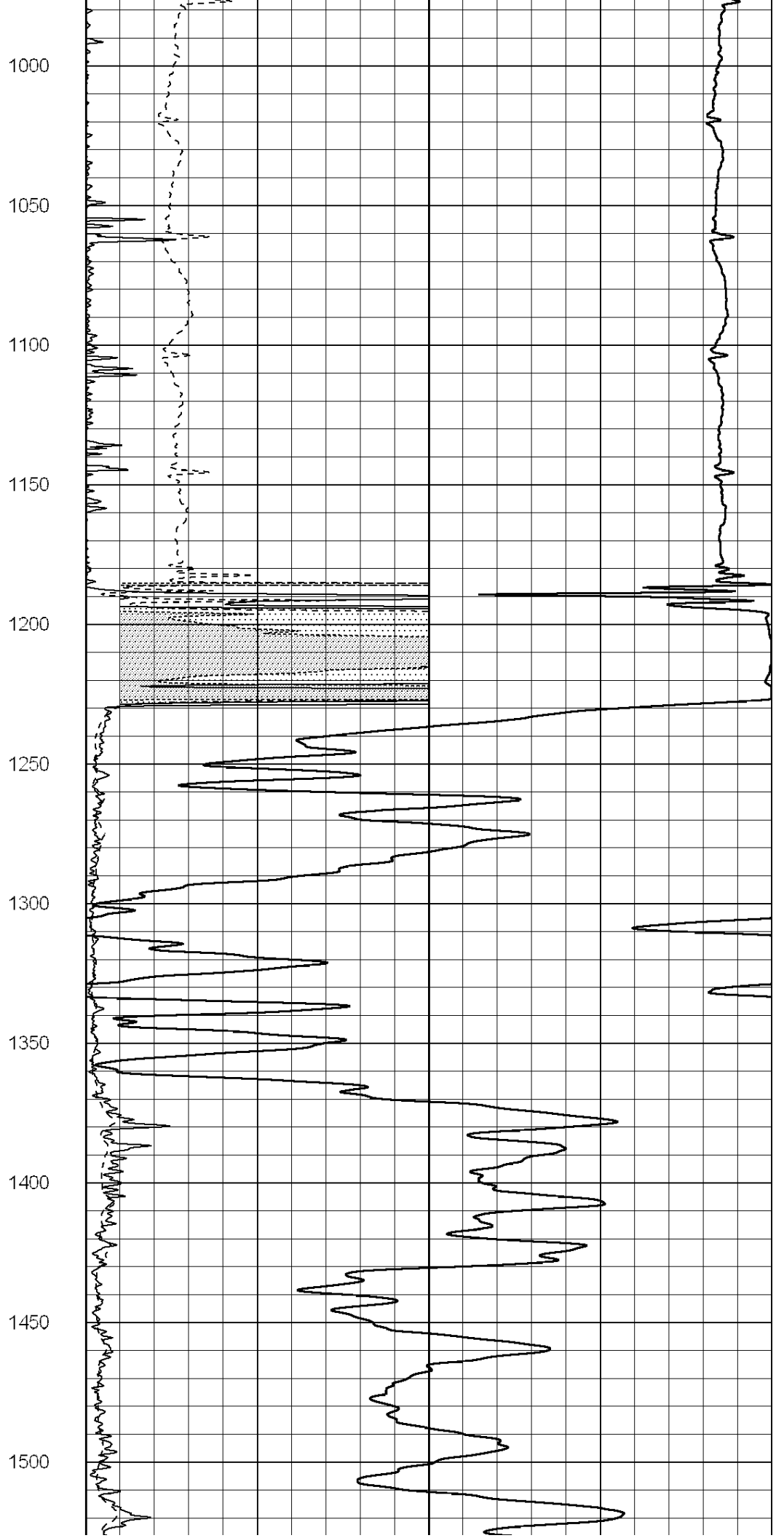
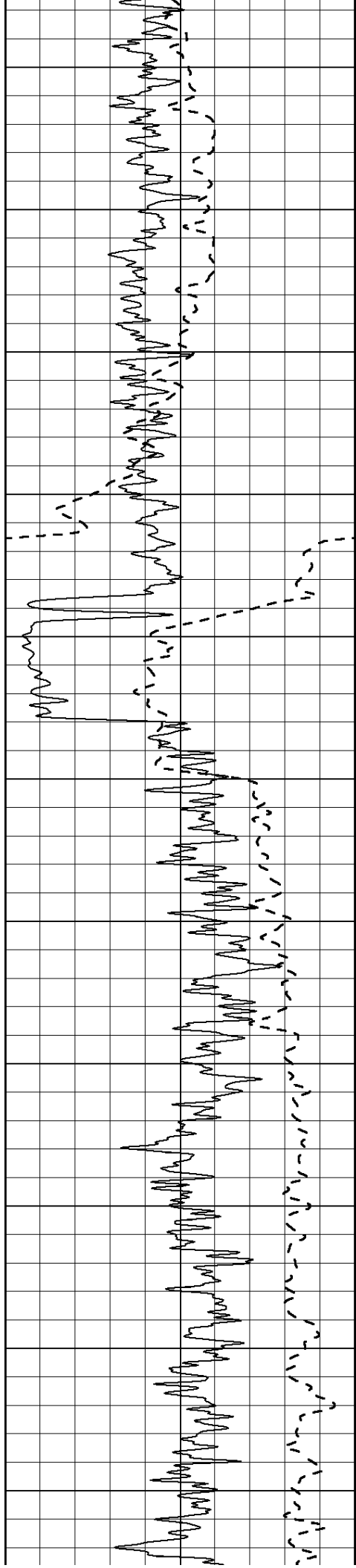
1000	CILD (mmho/m)	0
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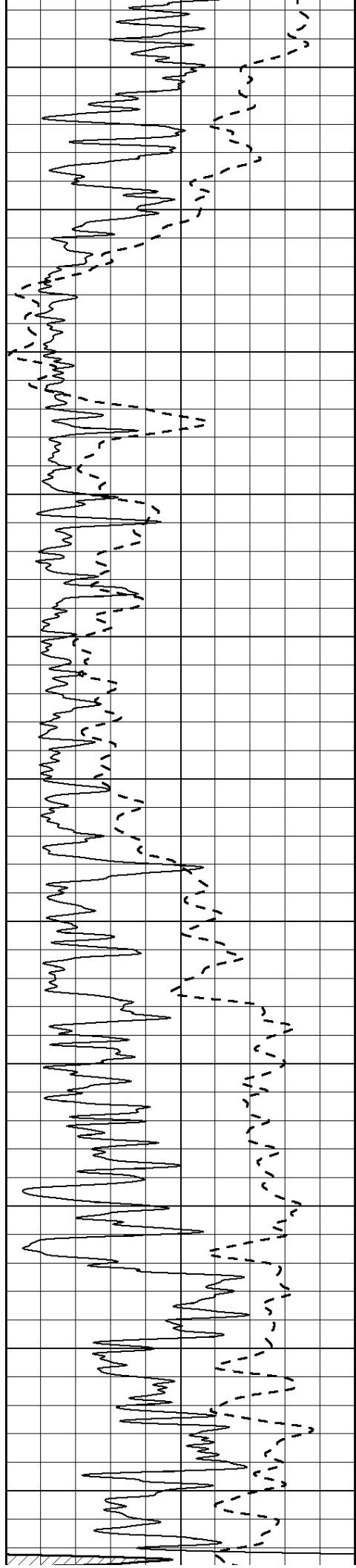
50	RILD X10 (Ohm-m)	500
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50	RLL3 X10 (Ohm-m)	500
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1550

1600

1650

1700

1750

1800

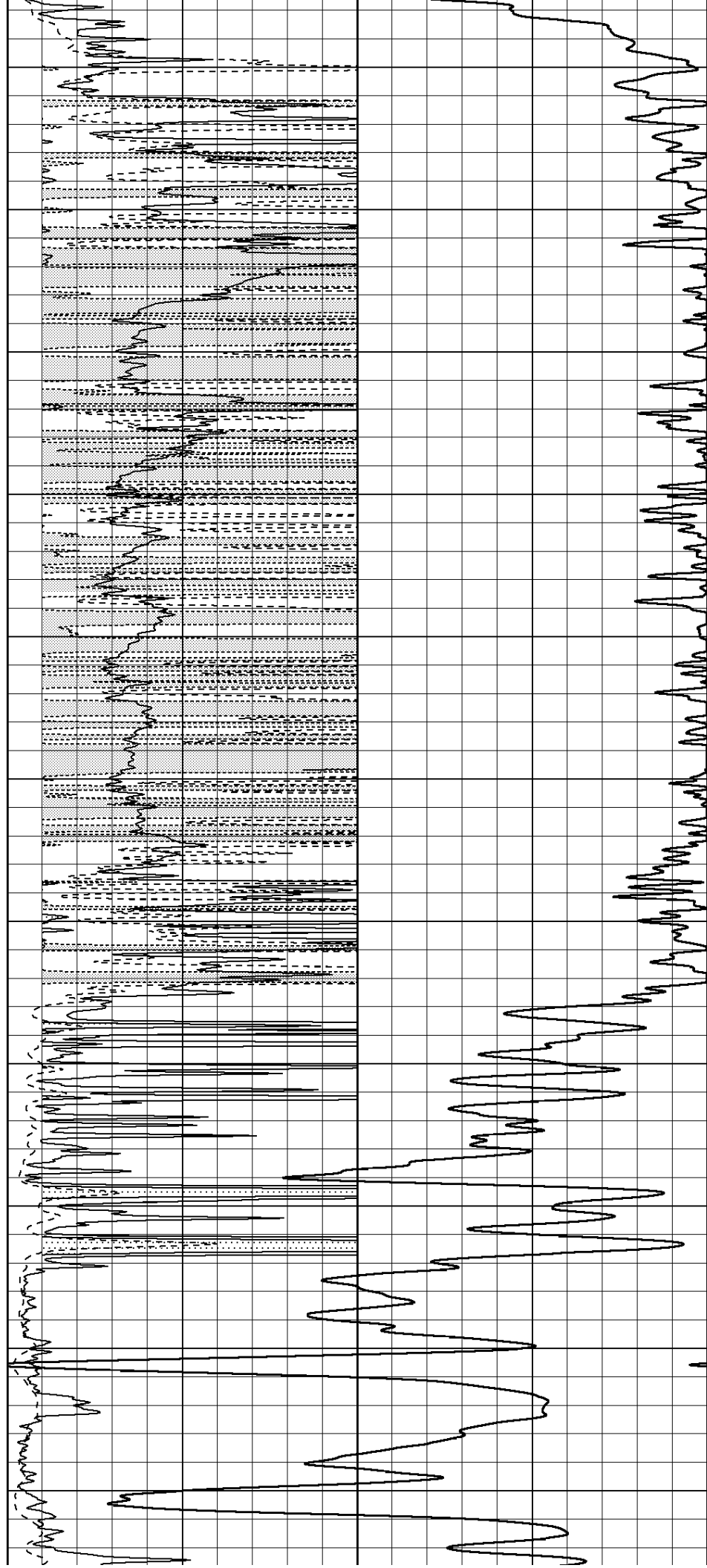
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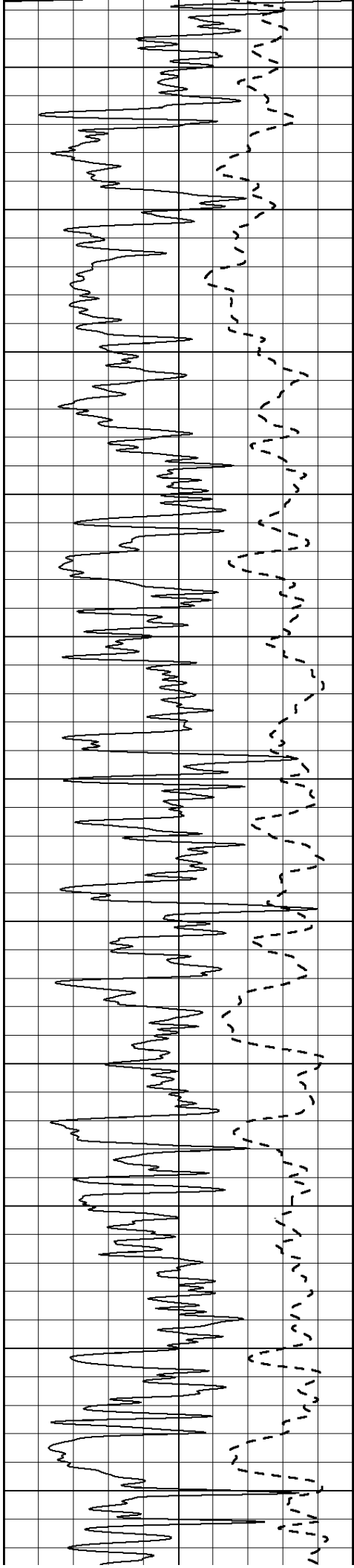
1900

1950

2000

2050





2100

2150

2200

2250

2300

2350

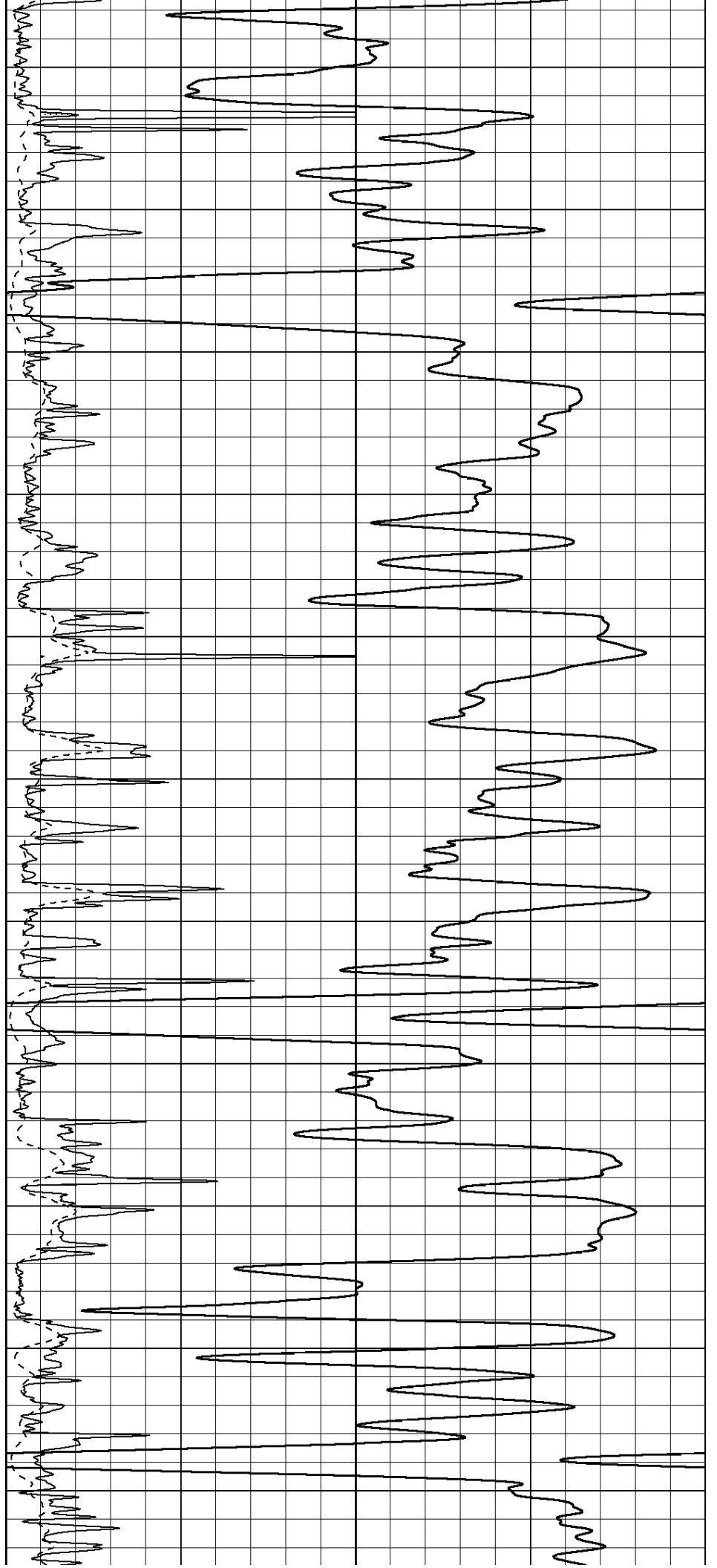
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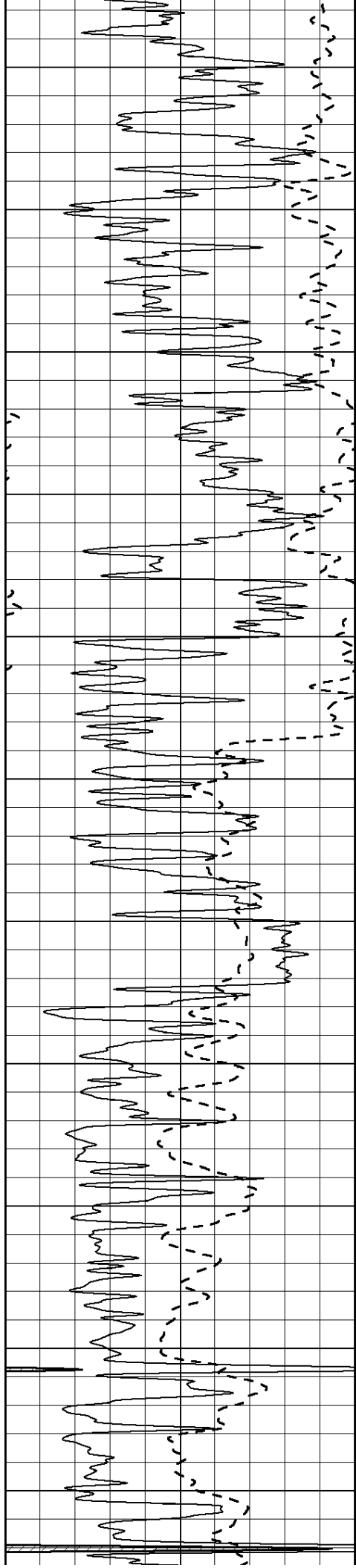
2450

2500

2550

2600





2650

2700

2750

2800

2850

2900

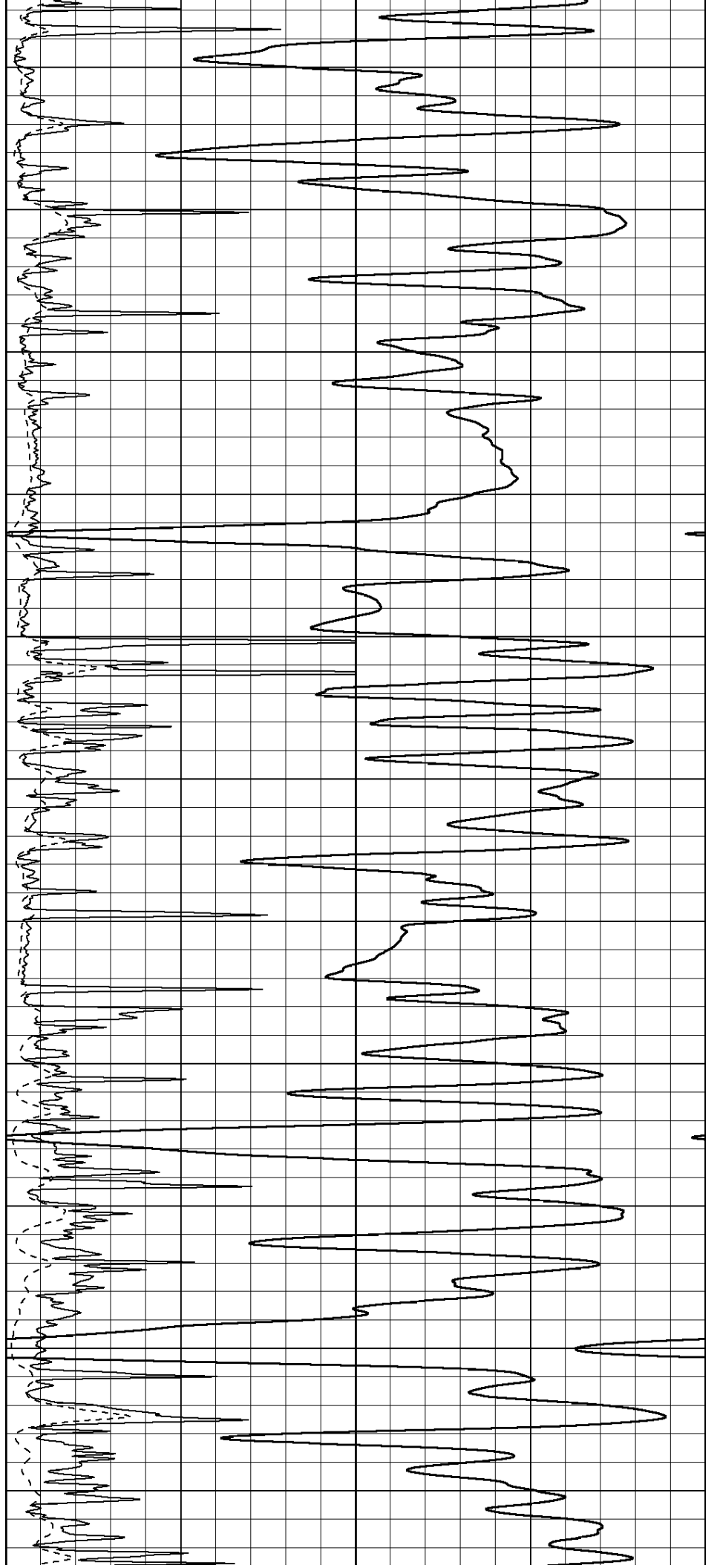
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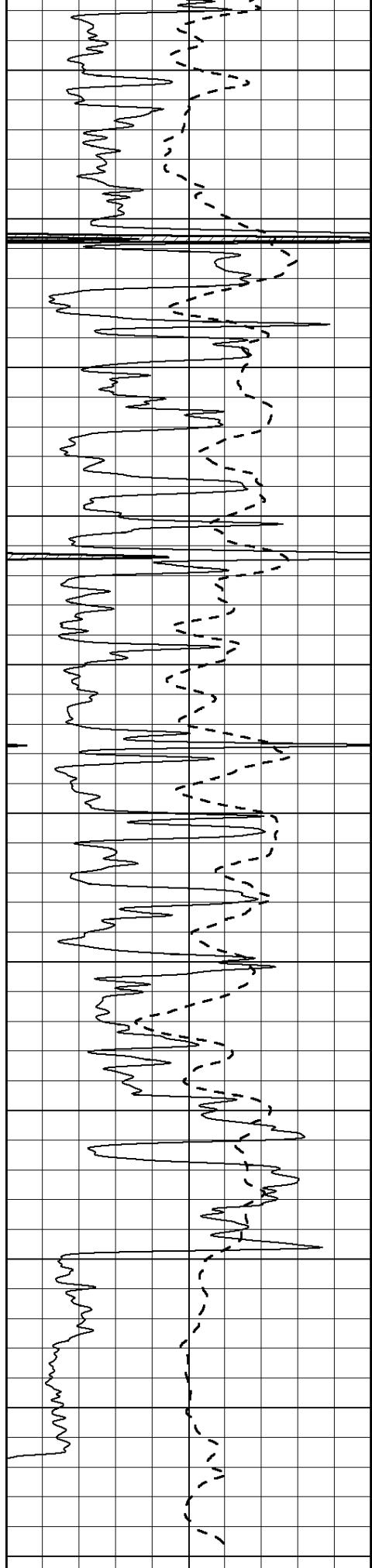
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3050

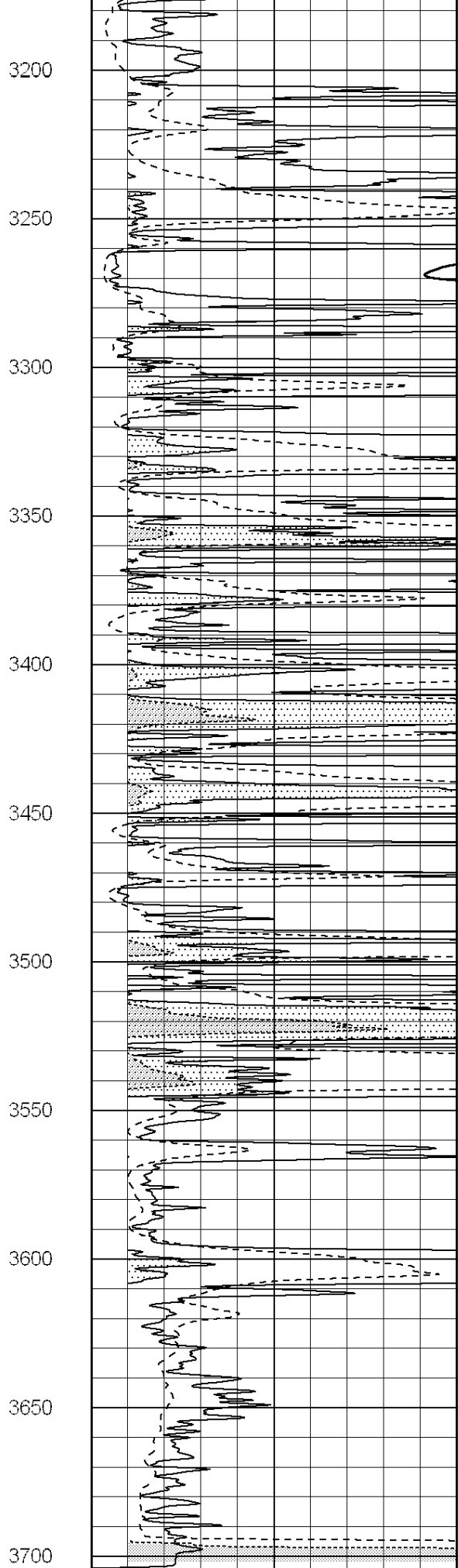
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3150

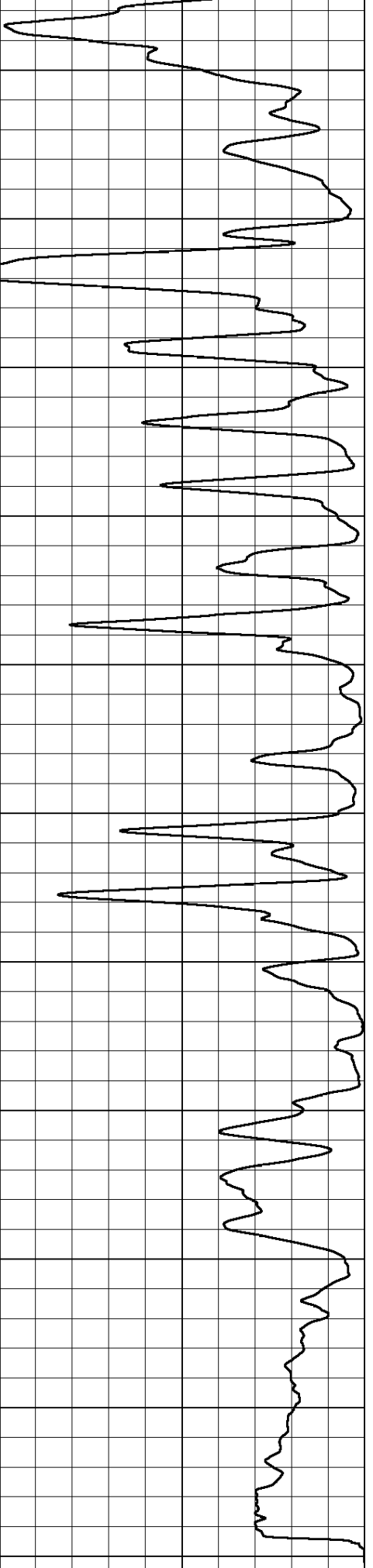




0	Gamma Ray (GAPI)	150
-100	SP (mV)	100



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



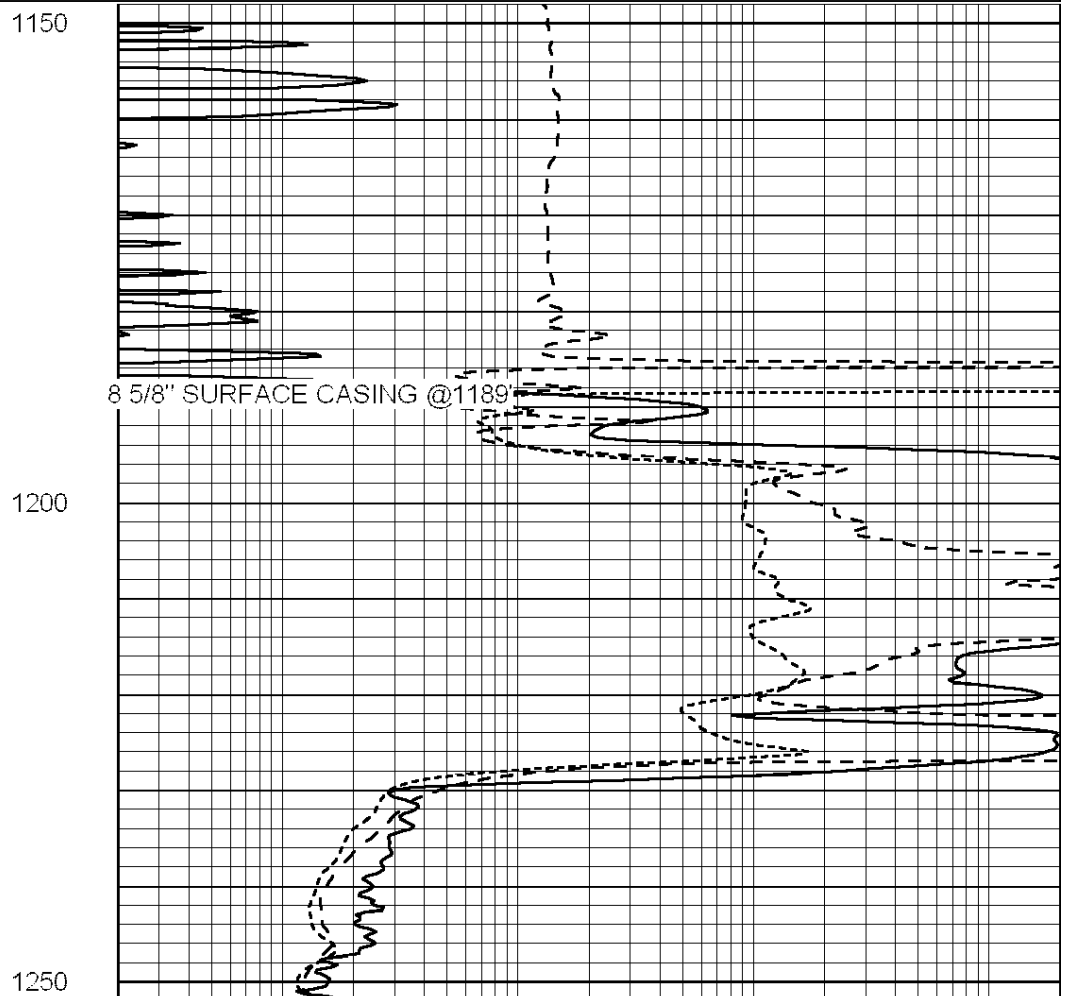
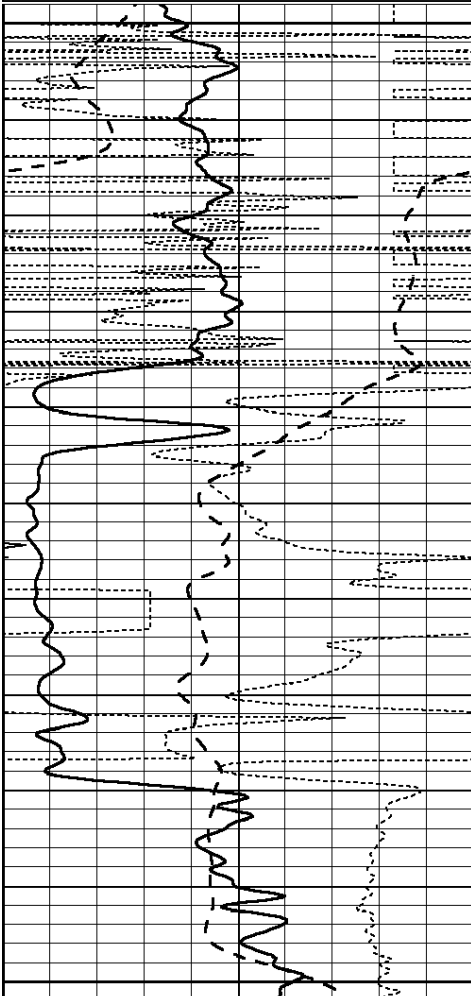
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ANHYDRITE

Database File: 010033ddn.db
 Dataset Pathname: pass3.6
 Presentation Format: dil
 Dataset Creation: Fri Dec 14 18:21:07 2012 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

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



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

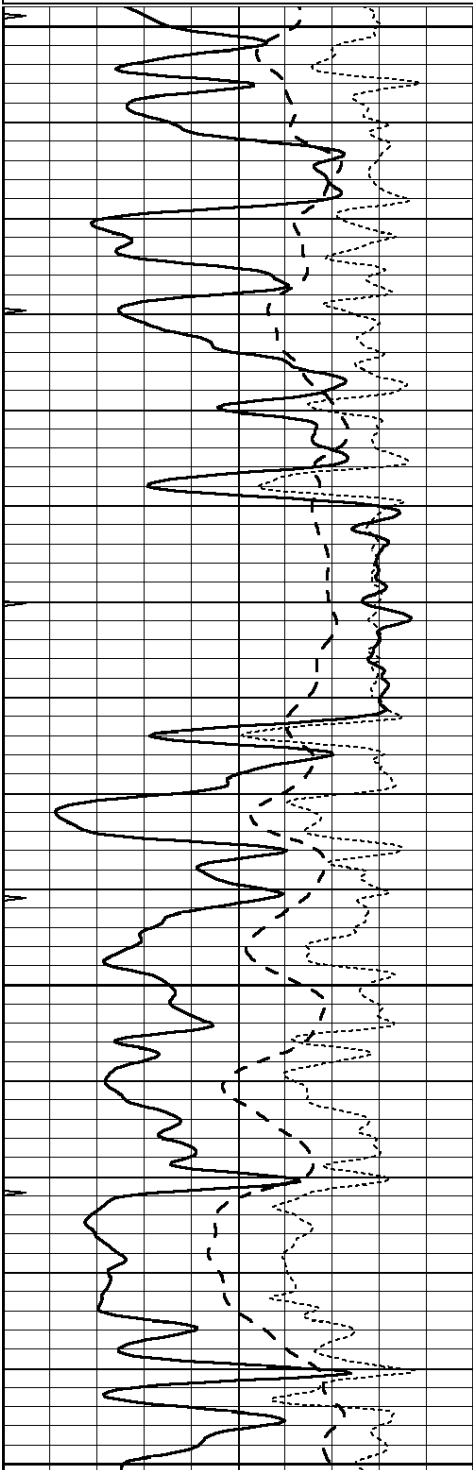
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000

MAIN SECTION

Database File: 010033ddn.db
 Dataset Pathname: pass3.7
 Presentation Format: dil
 Dataset Creation: Fri Dec 14 18:37:28 2012
 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

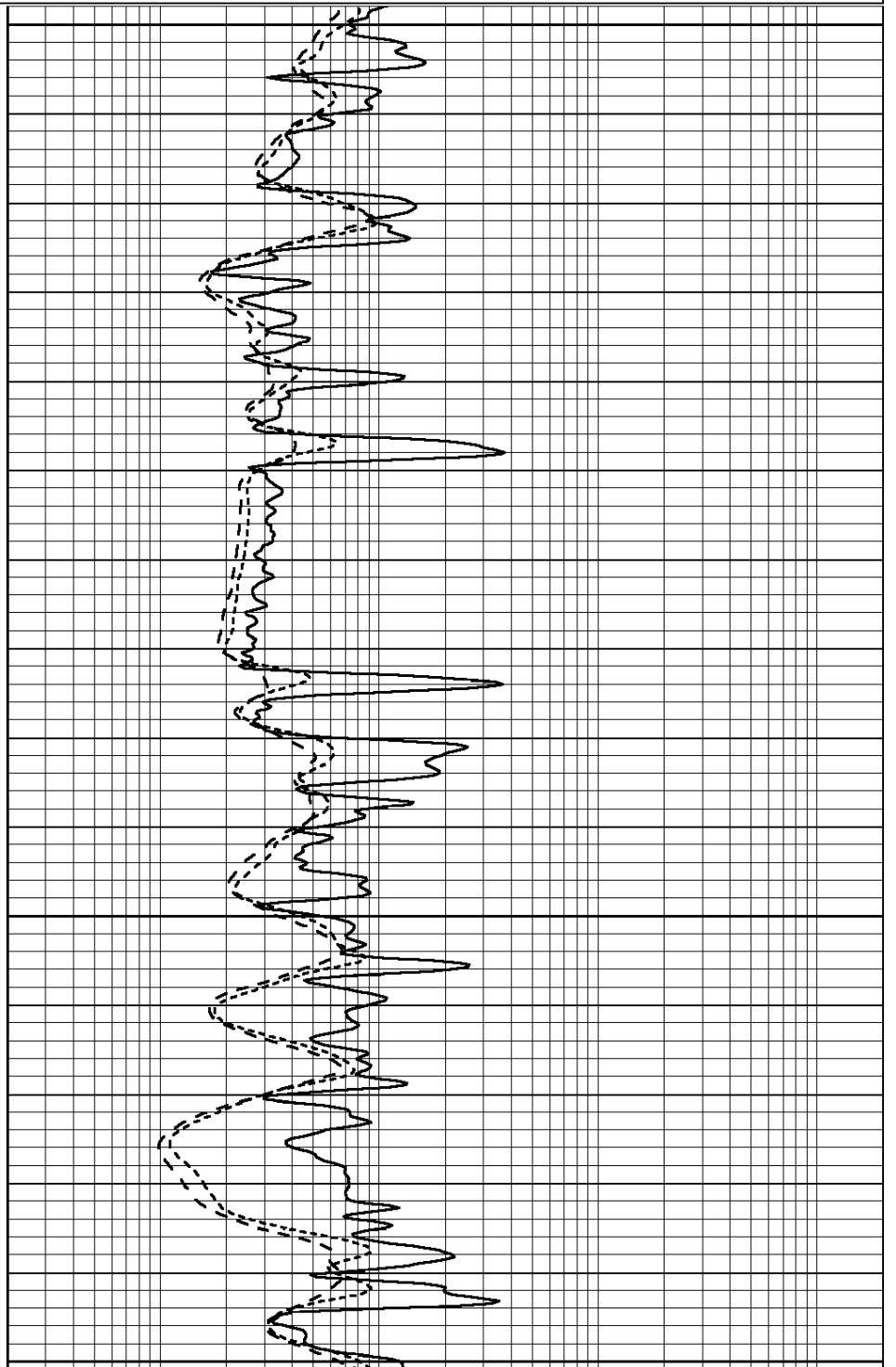


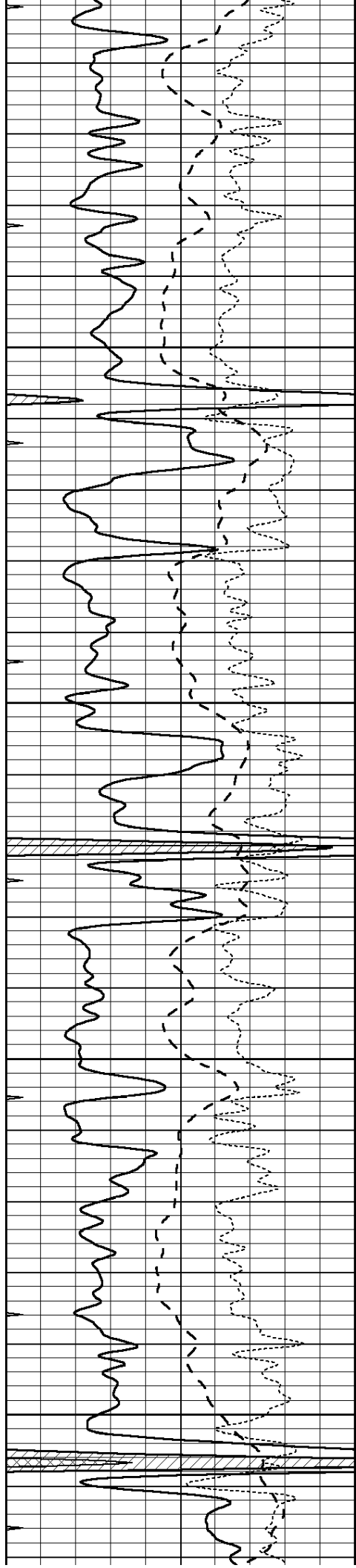
2900

2950

3000

3050



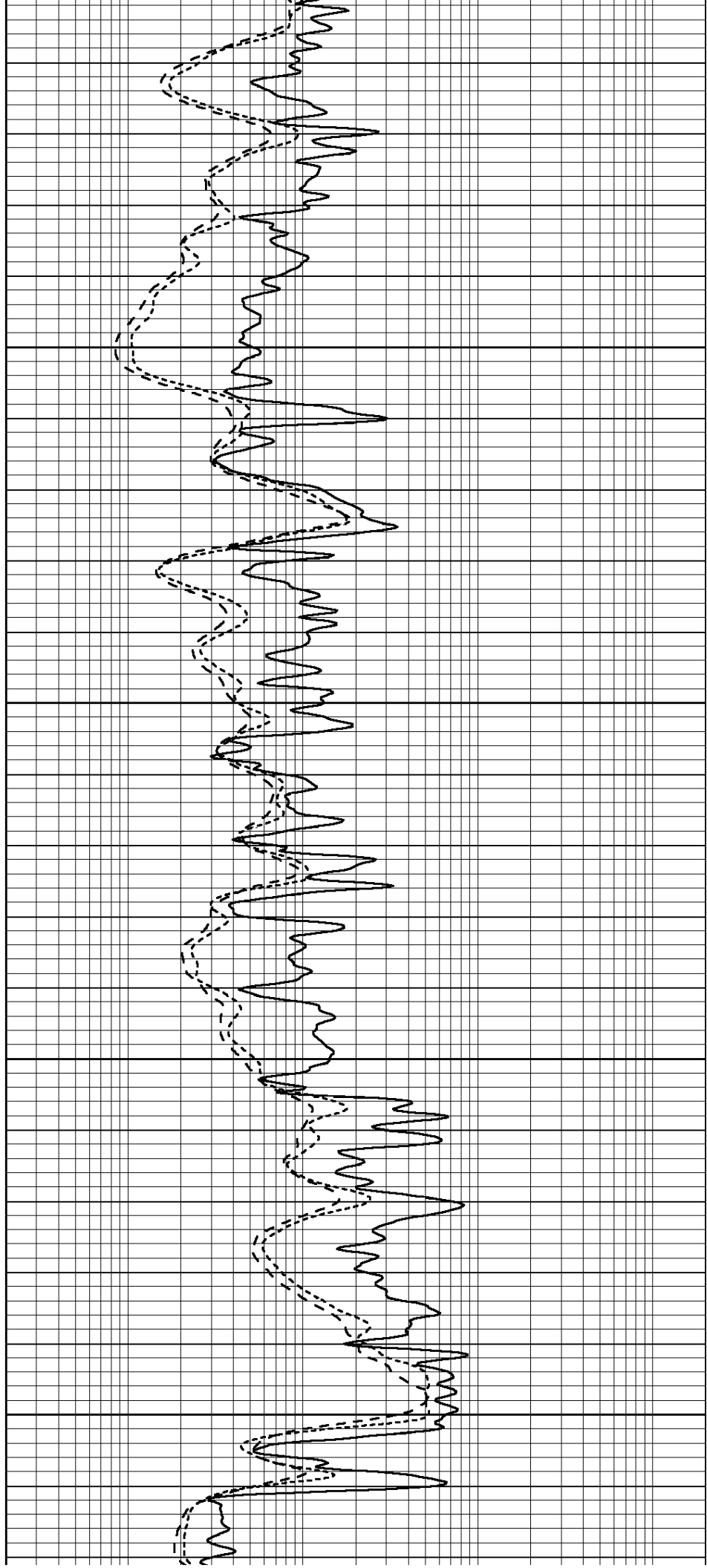


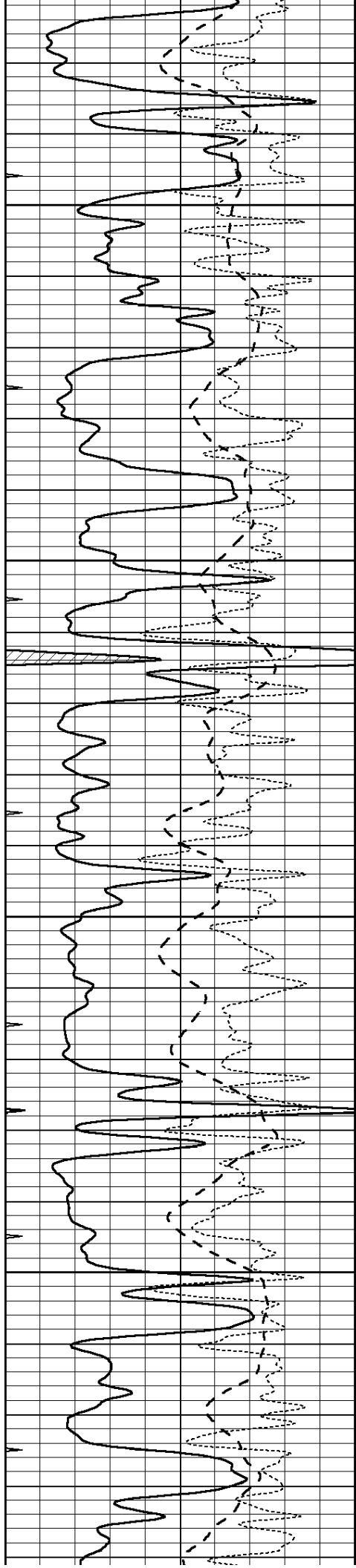
3100

3150

3200

3250



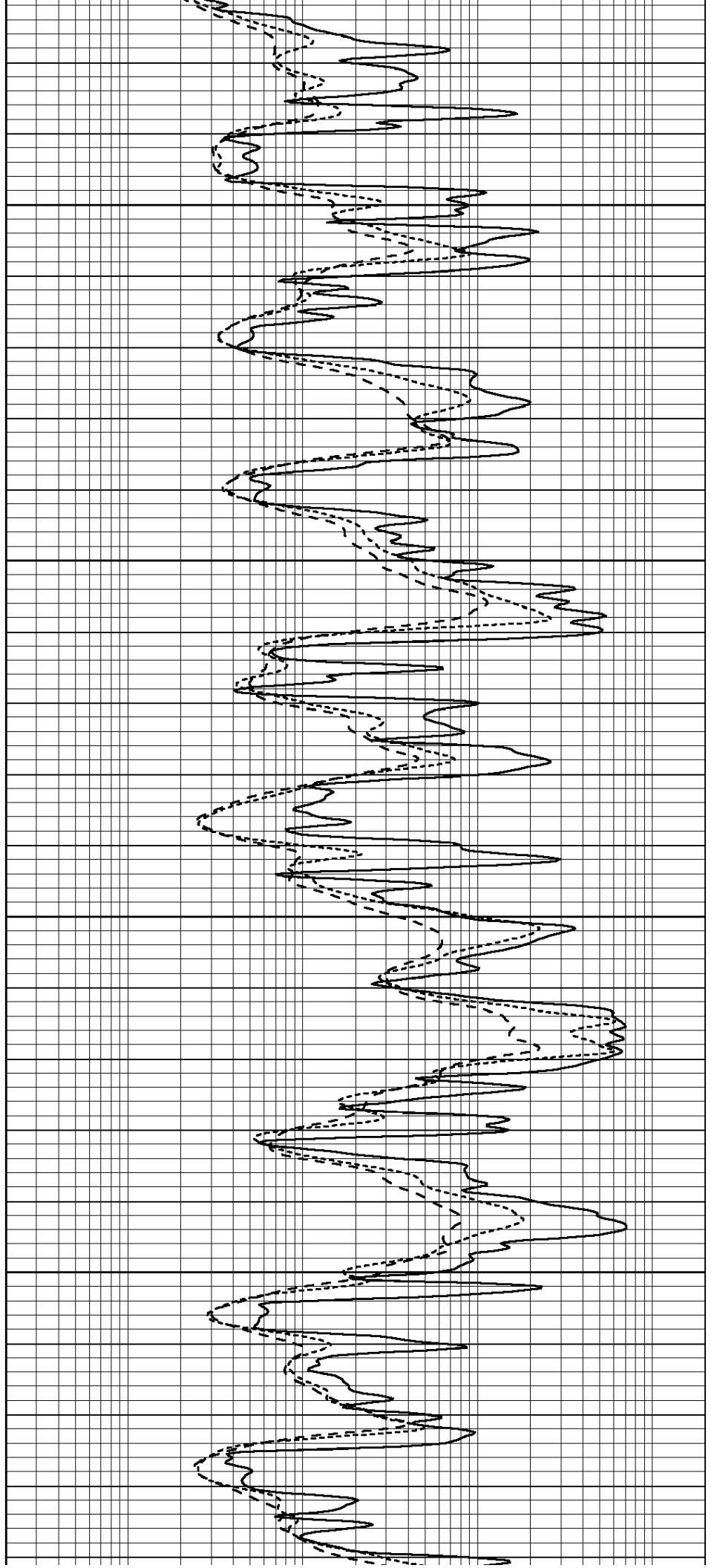


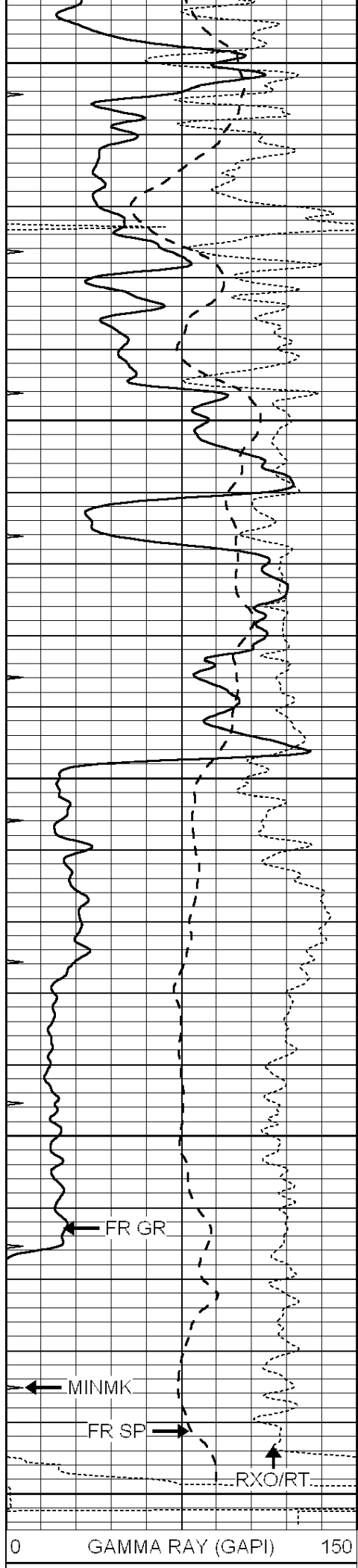
3300

3350

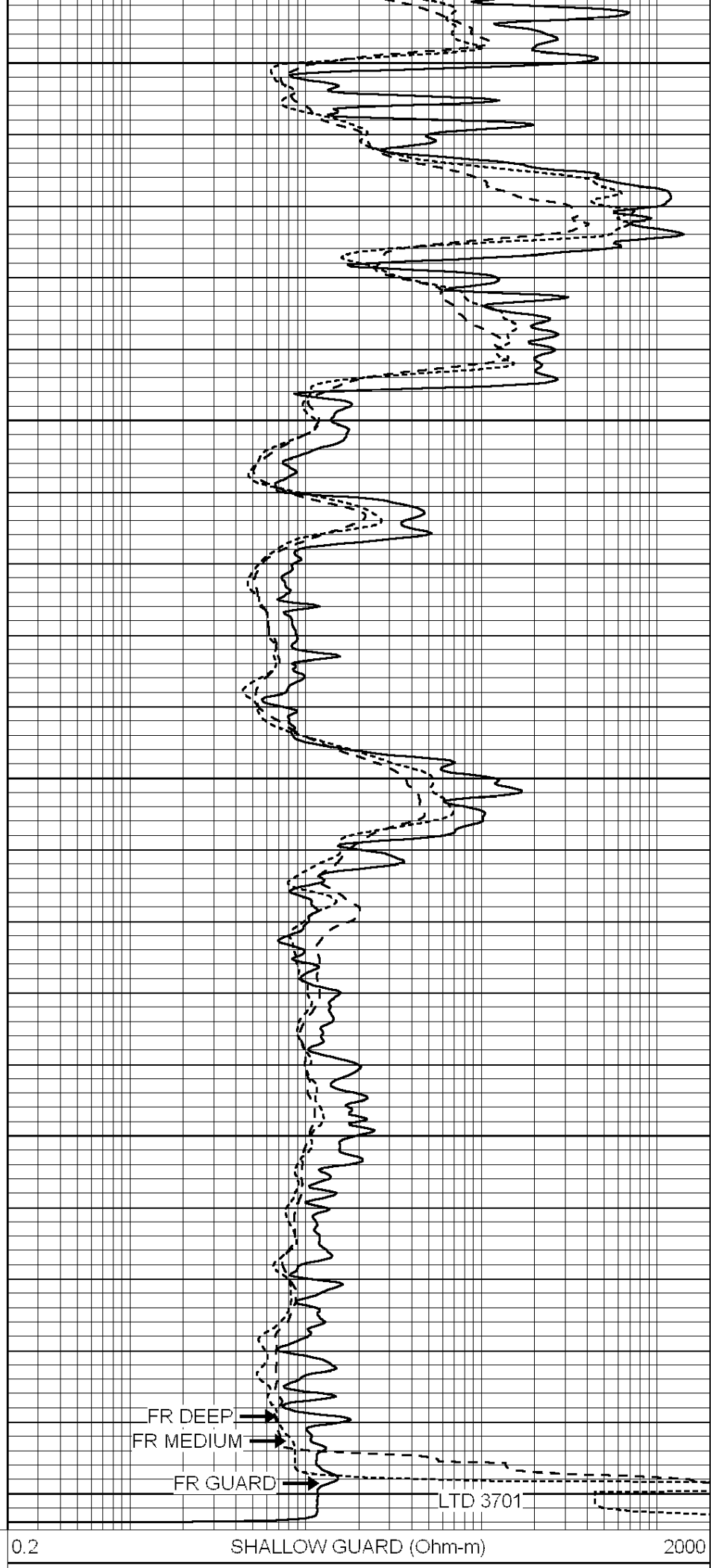
3400

3450





3500
3550
3600
3650
3700



0.2 SHALLOW GUARD (Ohm-m) 2000

-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



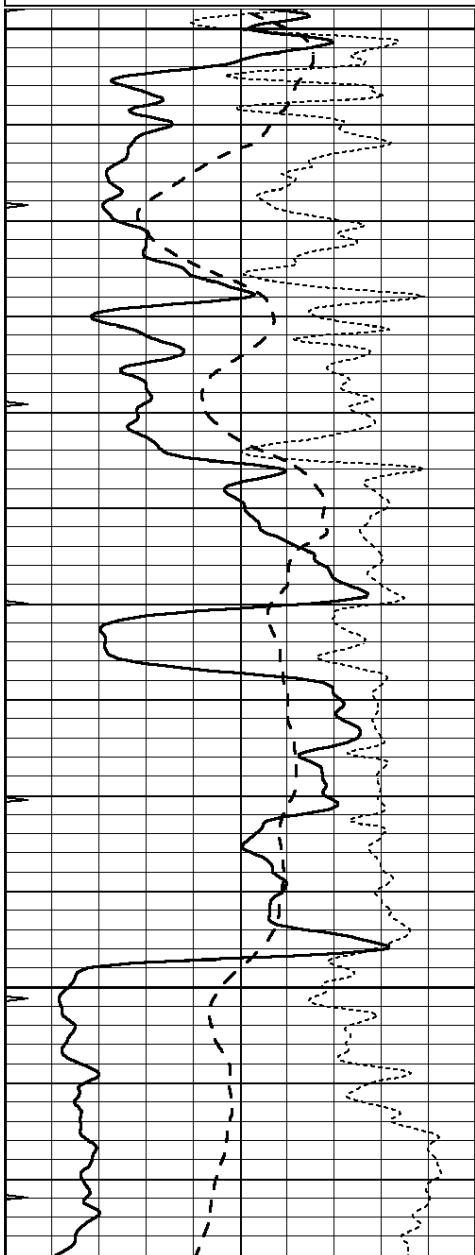
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REPEAT SECTION

Database File: 010033ddn.db
 Dataset Pathname: pass2.5
 Presentation Format: dil
 Dataset Creation: Fri Dec 14 18:51:19 2012
 Charted by: Depth in Feet scaled 1:240

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

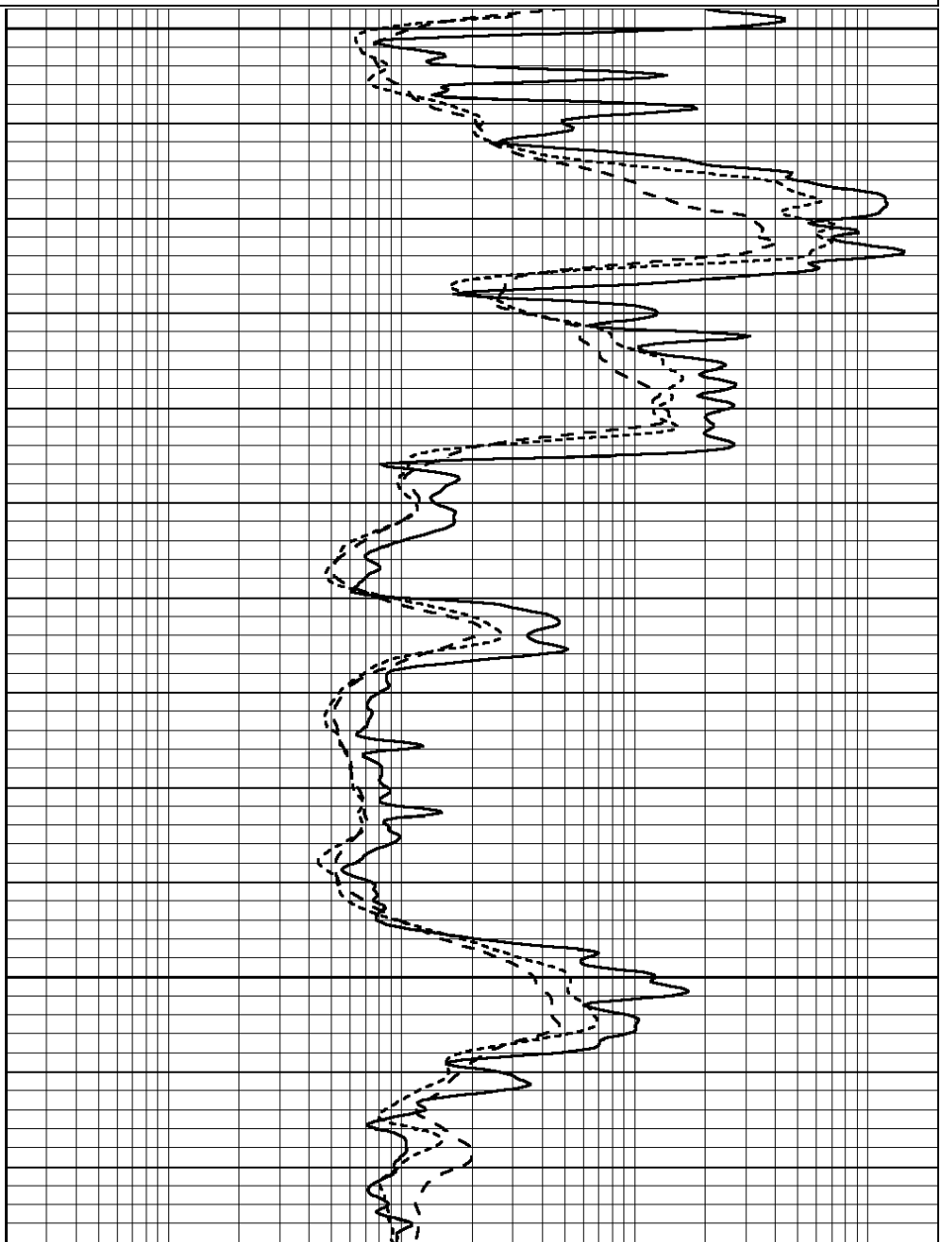
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000

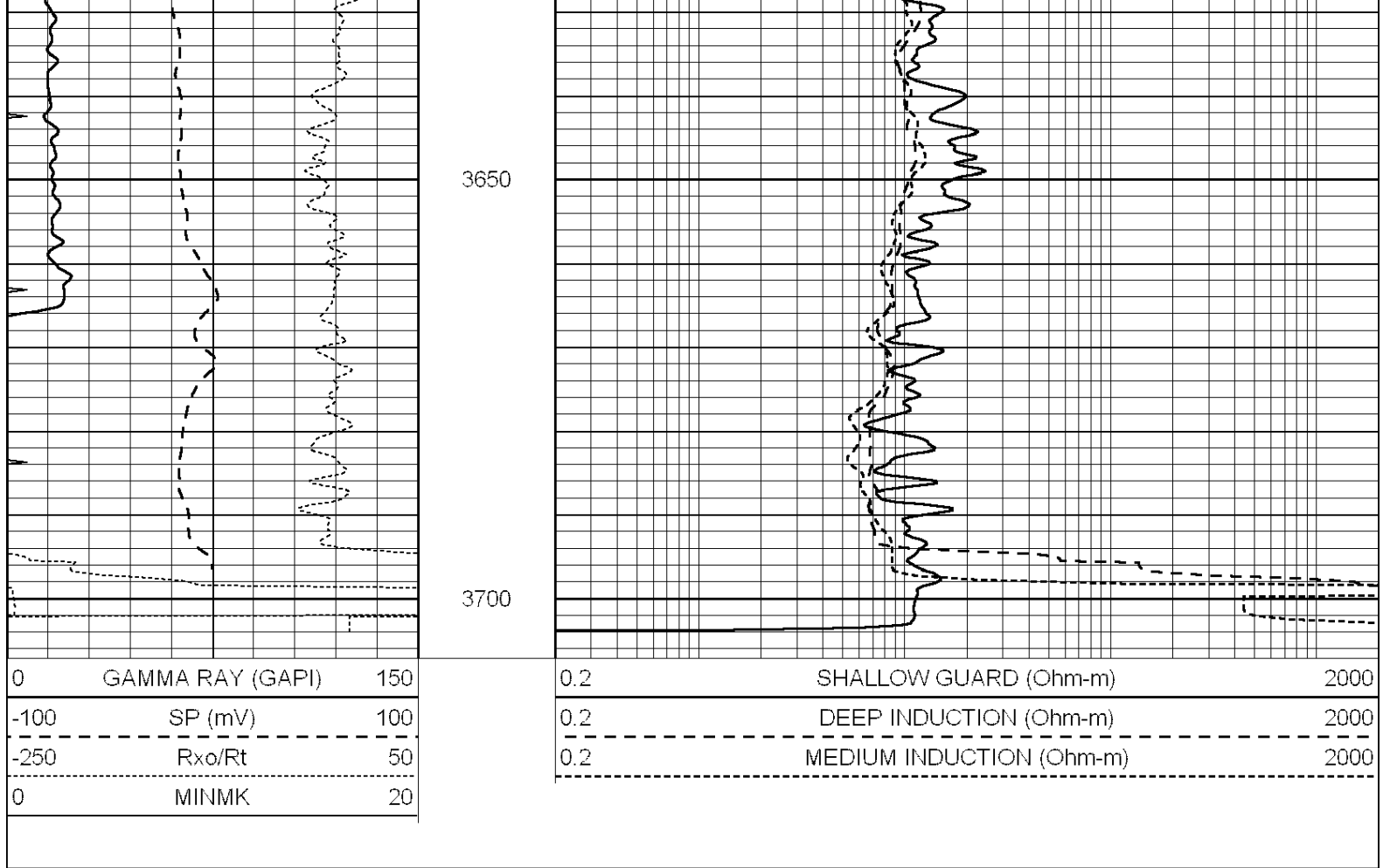


3500

3550

3600





Calibration Report

Database File: 010033ddn.db
 Dataset Pathname: pass3.7
 Dataset Creation: Fri Dec 14 18:37:28 2012

Dual Induction Calibration Report

Serial-Model: DIL3-GEAR
 Surface Cal Performed: Fri Dec 14 17:06:35 2012
 Downhole Cal Performed: Fri Mar 21 02:34:00 2003
 After Survey Verification Performed: Tue Apr 13 17:49:23 2010

Surface Calibration

Loop:	Readings				References		Results	
	Air	Loop			Air	Loop	m	b
Deep	0.011	0.656	V	0.000	400.000	mmho/m	640.000	8.000
Medium	0.013	0.740	V	0.000	462.500	mmho/m	720.000	2.500
Internal:	Zero				Cal		m	b
Deep	0.002	0.645	V	0.000	400.000	mmho/m	622.059	-1.071
Medium	0.007	0.740	V	0.000	462.500	mmho/m	631.393	-4.555

Downhole Calibration

Internal:	Readings				References		Results	
	Zero	Cal			Zero	Cal	m	b
Deep	0.000	1.000	mmho/m	0.000	1.000	mmho/m	1.000	0.000
Medium	0.000	1.000	mmho/m	0.000	1.000	mmho/m	1.000	0.000
Shallow	2.503	0.050	V	500.000	2.000	Ohm-m	250.000	-3.500

After Survey Verification								
Internal:	Readings			Targets			Results	
	Zero	Cal		Zero	Cal		m'	b'
Deep	0.000	1.000	mmho/m	0.000	1.000	mmho/m	1.000	0.000
Medium	0.000	1.000	mmho/m	0.000	1.000	mmho/m	1.000	0.000
Shallow	0.000	0.000	Ohm-m	500.000	2.000	Ohm-m	1.000	0.000

Litho Density Calibration Report
Serial: 006 Model: PRB

Master Calibration		Performed Sun Aug 15 09:48:41 2010				
	Background	Magnesium	Aluminum	Sandstone		
Window 1	1686.6	11612.8	3932.0	12718.8	cps	
Window 2	1531.4	9204.7	3267.8	9851.9	cps	
Window 3	1198.3	4733.6	1952.5	4920.6	cps	
Window 4	317.3	321.2	325.9	303.6	cps	
Long Space	0.0	7673.3	1736.4	8320.4	cps	
Short Space	1.7	2548.5	1657.2	2628.8	cps	
Rho		1.7100	2.5900	1.3800	g/cc	
Pe		0.0000	2.5700	1.5500		
Rib Angle	: 43.8	Rib Slope	: 0.961	Density/Spine Ratio	: 0.569	
Spine Angle	: 73.8	Spine Slope	: 3.453	Spine Intercept	: -18.1	

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:	070559		
Tool Model:	OPEN_GR		
Performed:	Wed Nov 28 18:32:17 2012		
Calibrator Value:	1.0	GAPI	
Background Reading:	0.0	cps	
Calibrator Reading:	1.0	cps	
Sensitivity:	0.3000	GAPI/cps	