



NABORS

**COMPLETION
& PRODUCTION
SERVICES CO.**

**DUAL
INDUCTION
LOG**

Company		RL INVESTMENT, LLC.		Company		RL INVESTMENT, LLC.	
Well		HANNA #1-18		Well		HANNA #1-18	
Field		GRAHAM		Field			
County		GRAHAM		County		GRAHAM	
State		KANSAS		State		KANSAS	
Location:		AP1 # : 15-065-23968-0000		Other Services		CDL/CNL MEL	
Permanent Datum		GROUND LEVEL		Elevation		2524	
Log Measured From		KELLY BUSHING 8' A.G.L.		K.B. 2532		D.F. 2530	
Drilling Measured From		KELLY BUSHING		G.L. 2524			
SEC 18 TWP 10S RGE 25W							
Date		8/27/12					
Run Number		ONE					
Depth Driller		4075					
Depth Logger		4075					
Bottom Logged Interval		4073					
Top Log Interval		00					
Casing Driller		8 5/8" @ 219					
Casing Logger		217					
Bit Size		7 7/8"					
Type Fluid in Hole		CHEMICAL MUD		CHLORIDES 2300 PPM			
Density / Viscosity		9.2/48					
pH / Fluid Loss		10.0/8.4					
Source of Sample		FLOWLINE					
Rm @ Meas. Temp		.75 @ 96F					
Rmt @ Meas. Temp		.56 @ 96F					
Rmc @ Meas. Temp		.90 @ 96F					
Source of Rmt / Rmc		MEASUREMENT					
Rm @ BHT		.61 @ 117F					
Time Circulation Stopped		2 HOURS					
Time Logger on Bottom		7:15 A.M.					
Maximum Recorded Temperature		117F					
Equipment Number		4010					
Location		HAYS, KANSAS					
Recorded By		JASON CAPPELLUCCI					
Witnessed By		RICHARD BELL					

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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:
ST. PETER, KS. - JUST PAST PFEIFFER SERVICE (RD. E)
3 W. - 1/8 S. - W. INTO

Database File:

011592ddn.db

Dataset Pathname:

pass4.3

Presentation Format:

_dil2

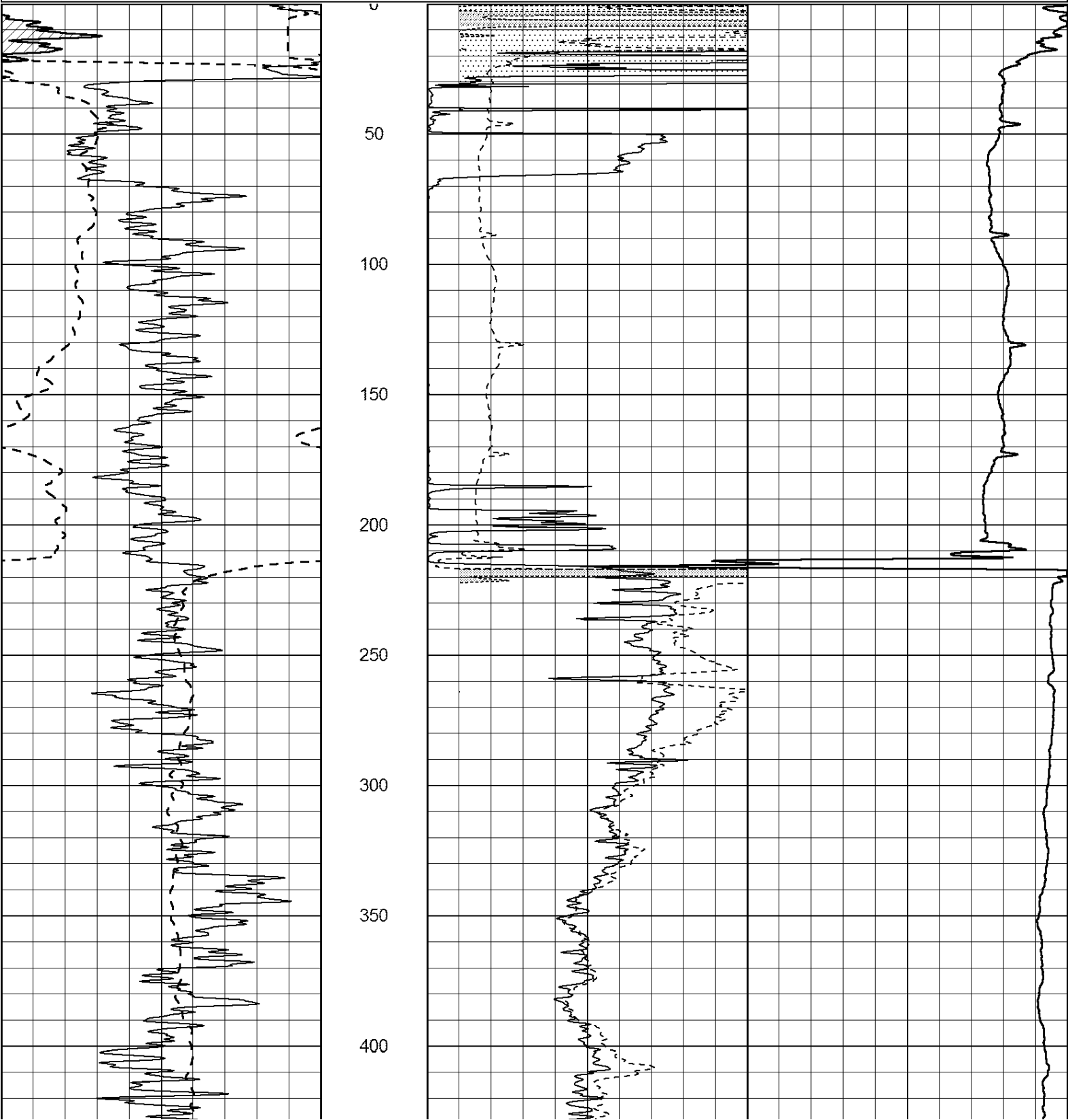
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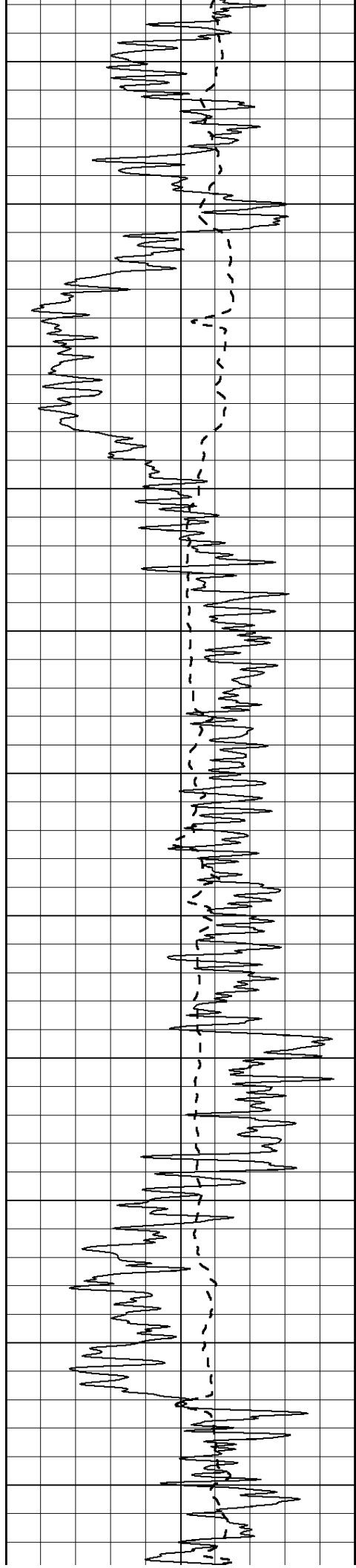
Tue Aug 27 08:55:18 2013 by Calc Open-Cased 090629

Charted by:

Depth in Feet scaled 1:600

0	Gamma Ray (GAPI)	150	0	RLL3 (Ohm-m)	50	
-100	SP (mV)	100	0	RILD (Ohm-m)	50	
-----			1000			CILD (mmho/m)
			50	RILD X10 (Ohm-m)	500	
			50	RLL3 X10 (Ohm-m)	500	





450

500

550

600

650

700

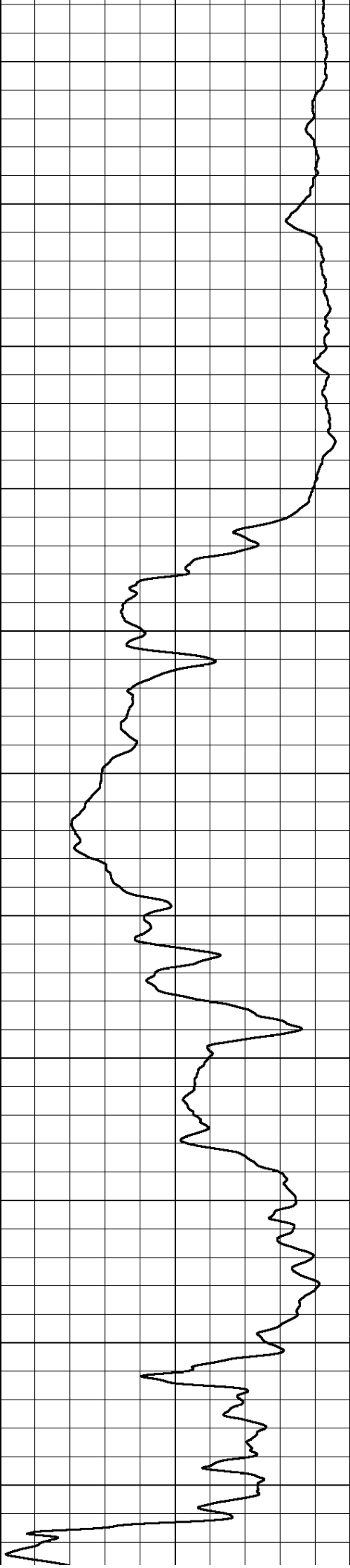
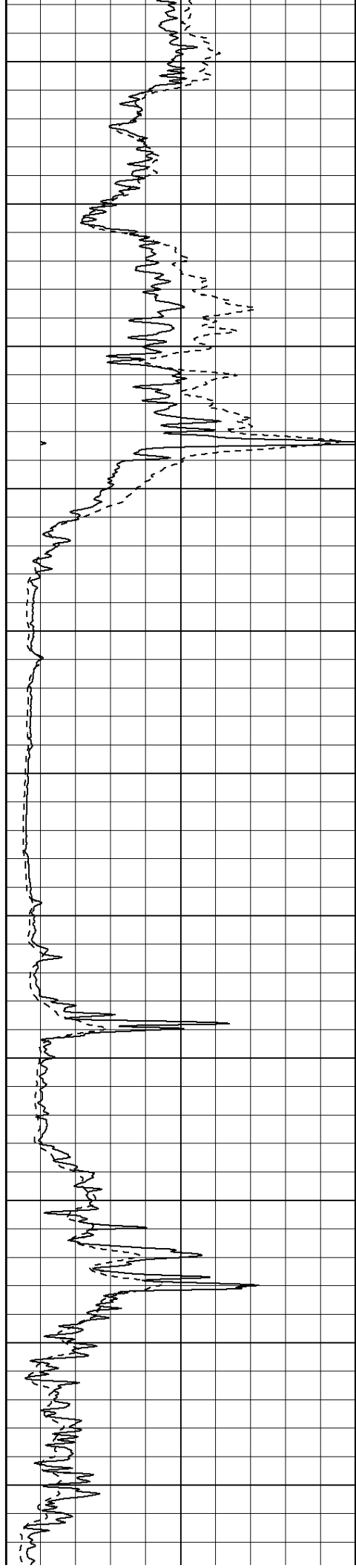
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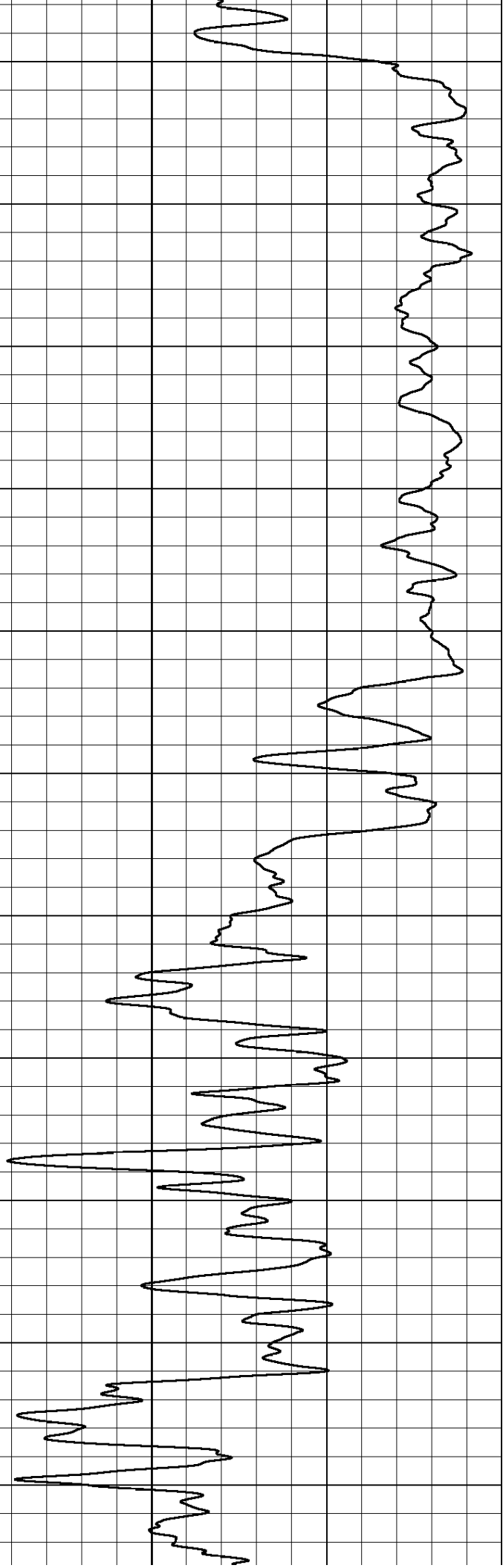
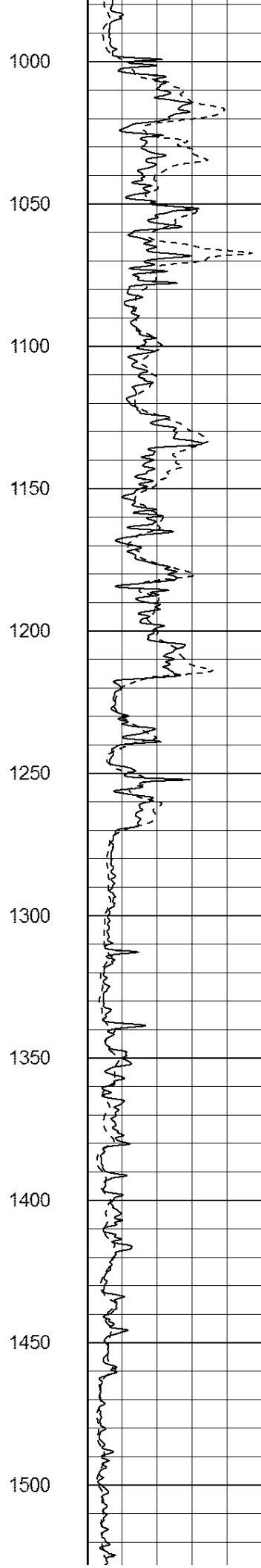
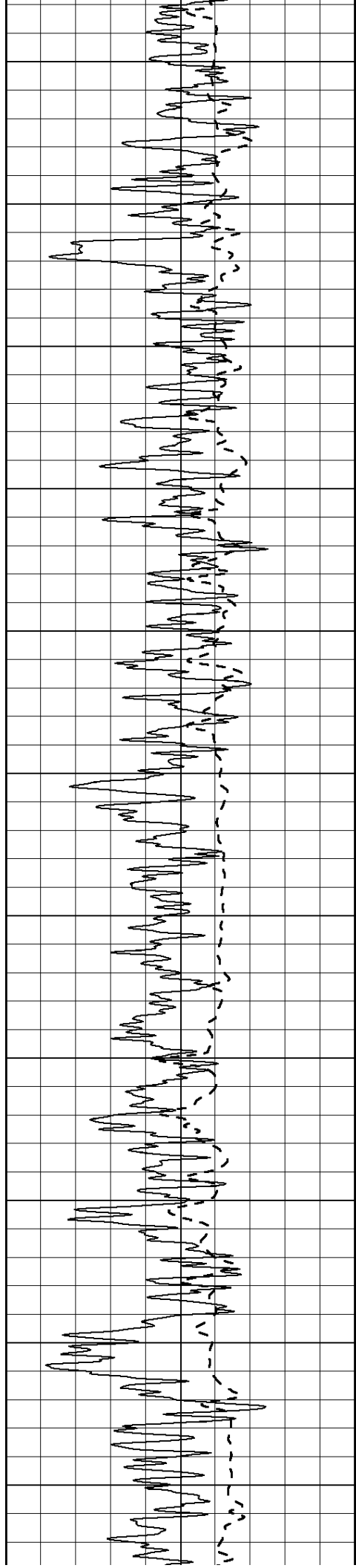
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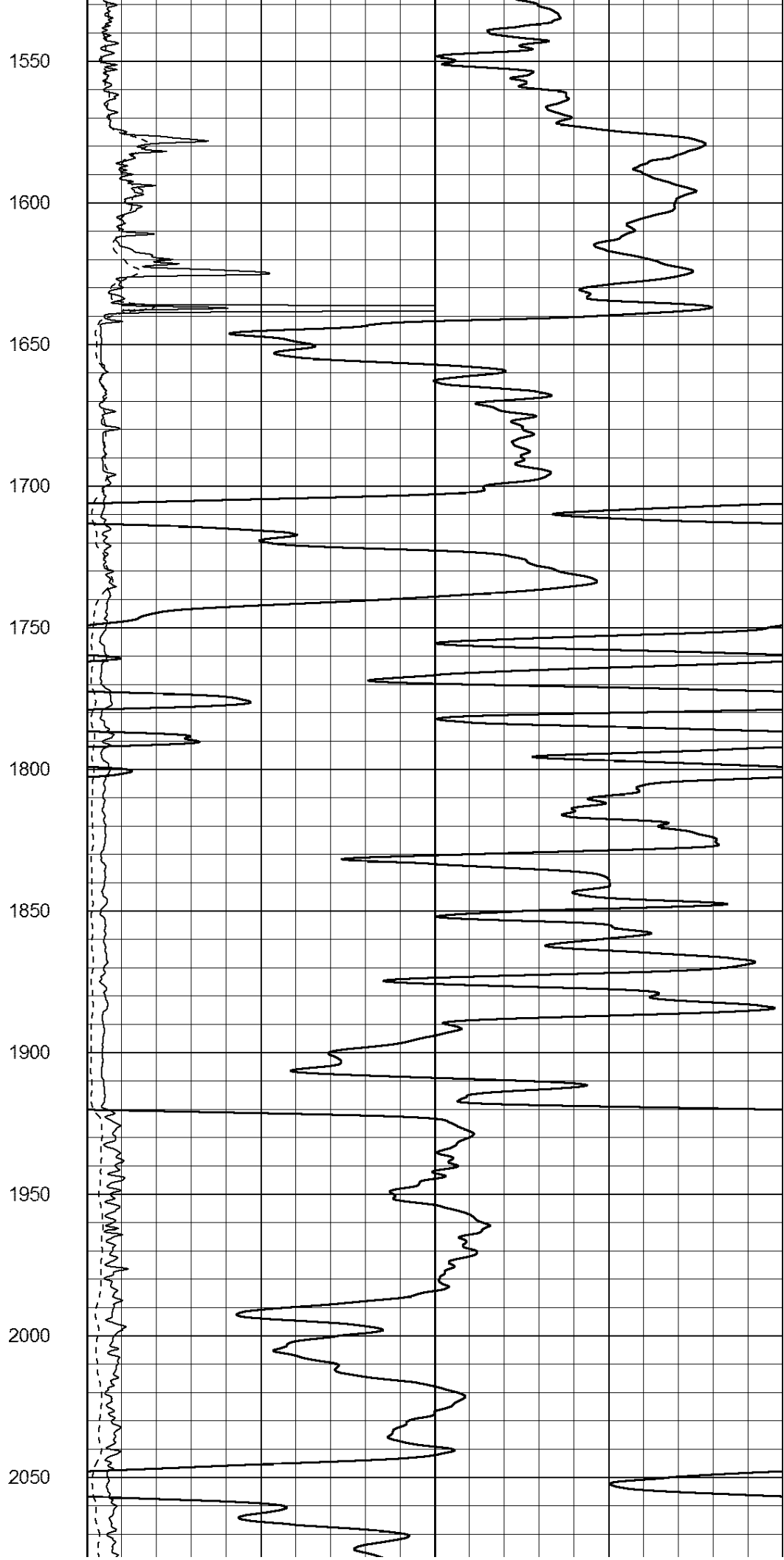
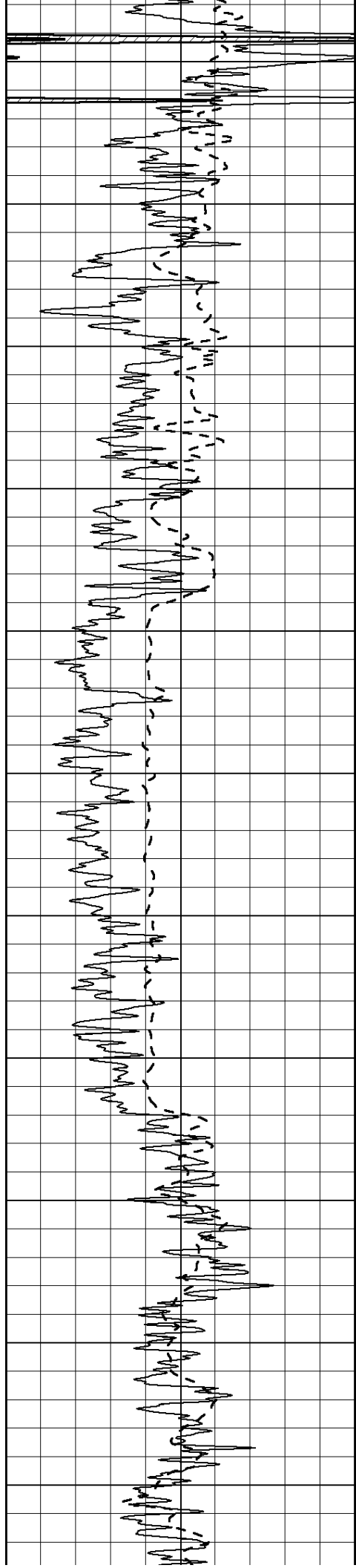
850

900

950







2100

2150

2200

2250

2300

2350

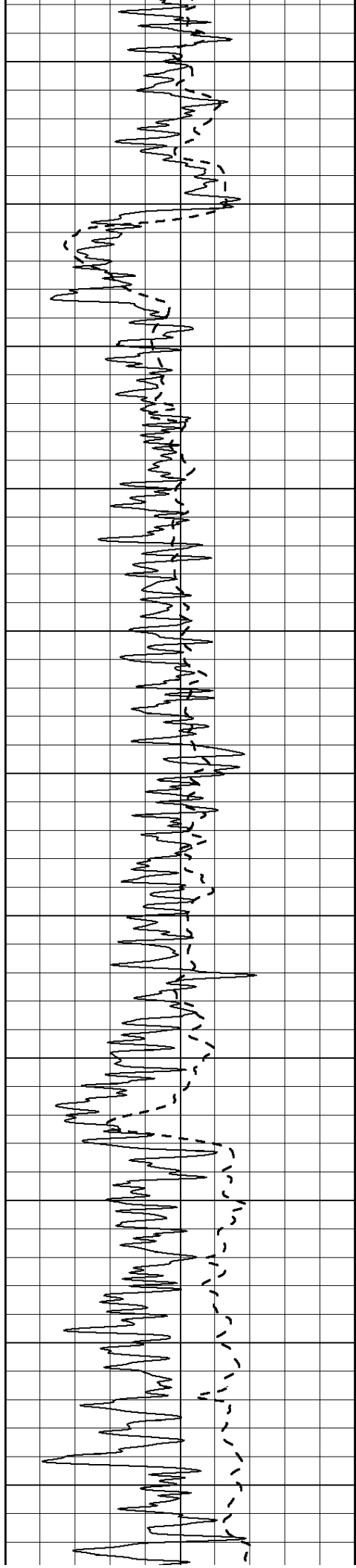
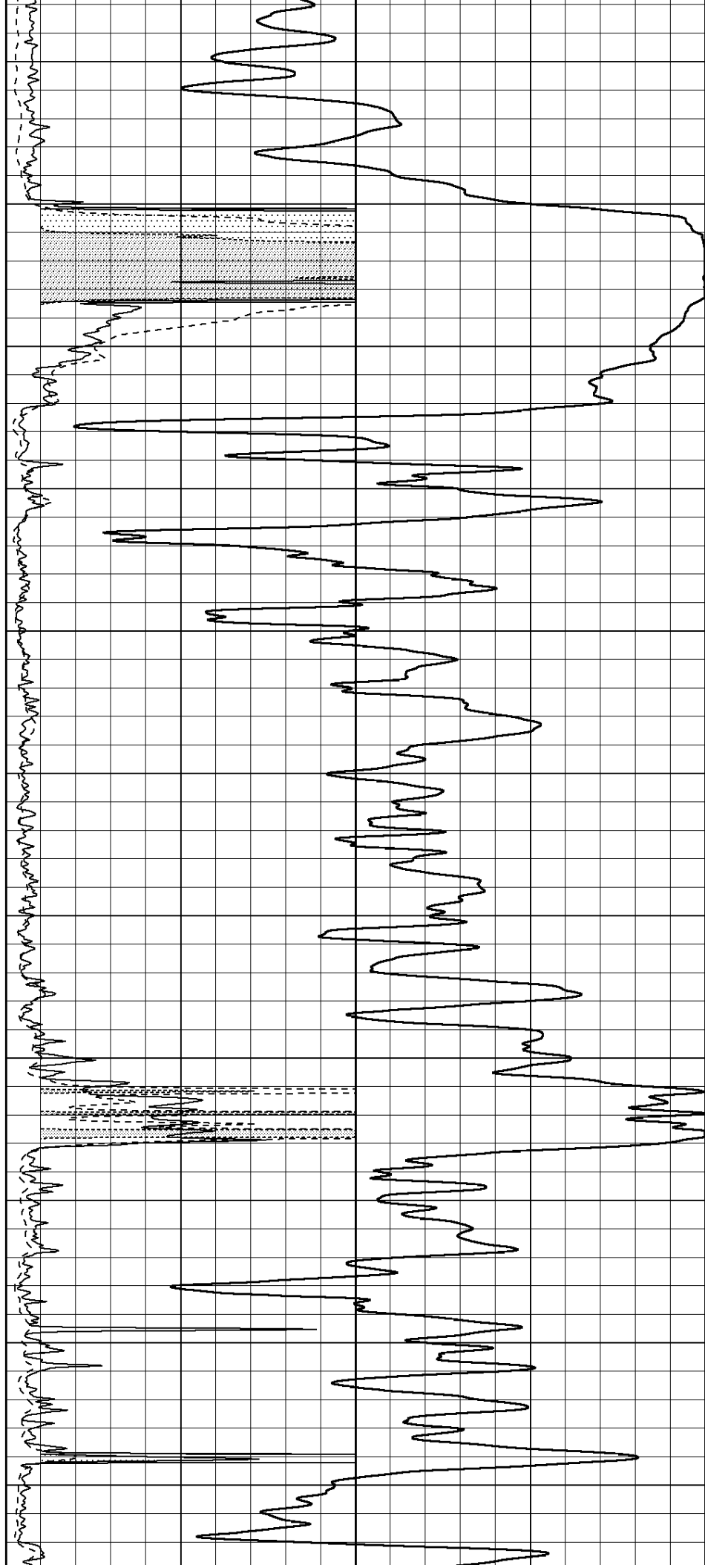
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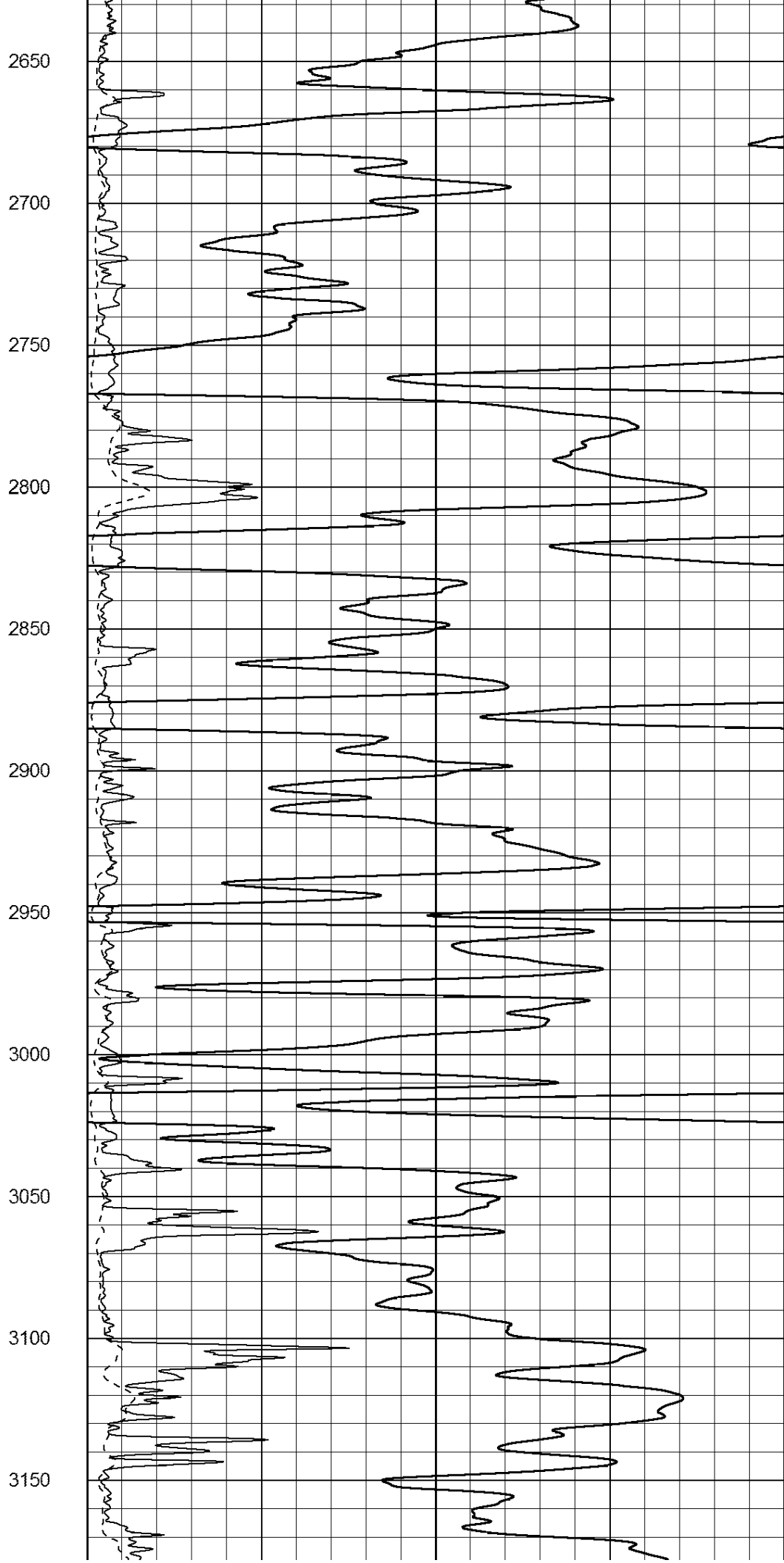
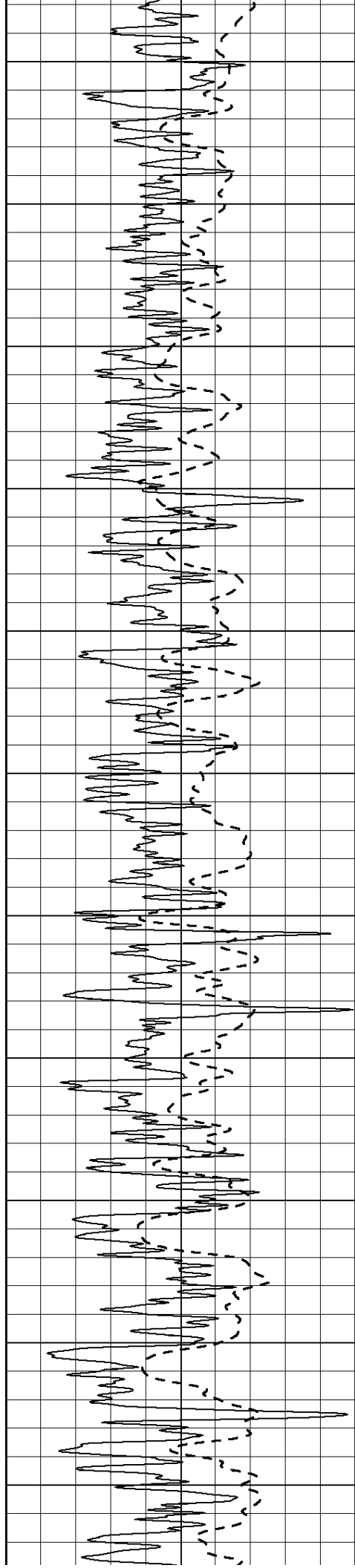
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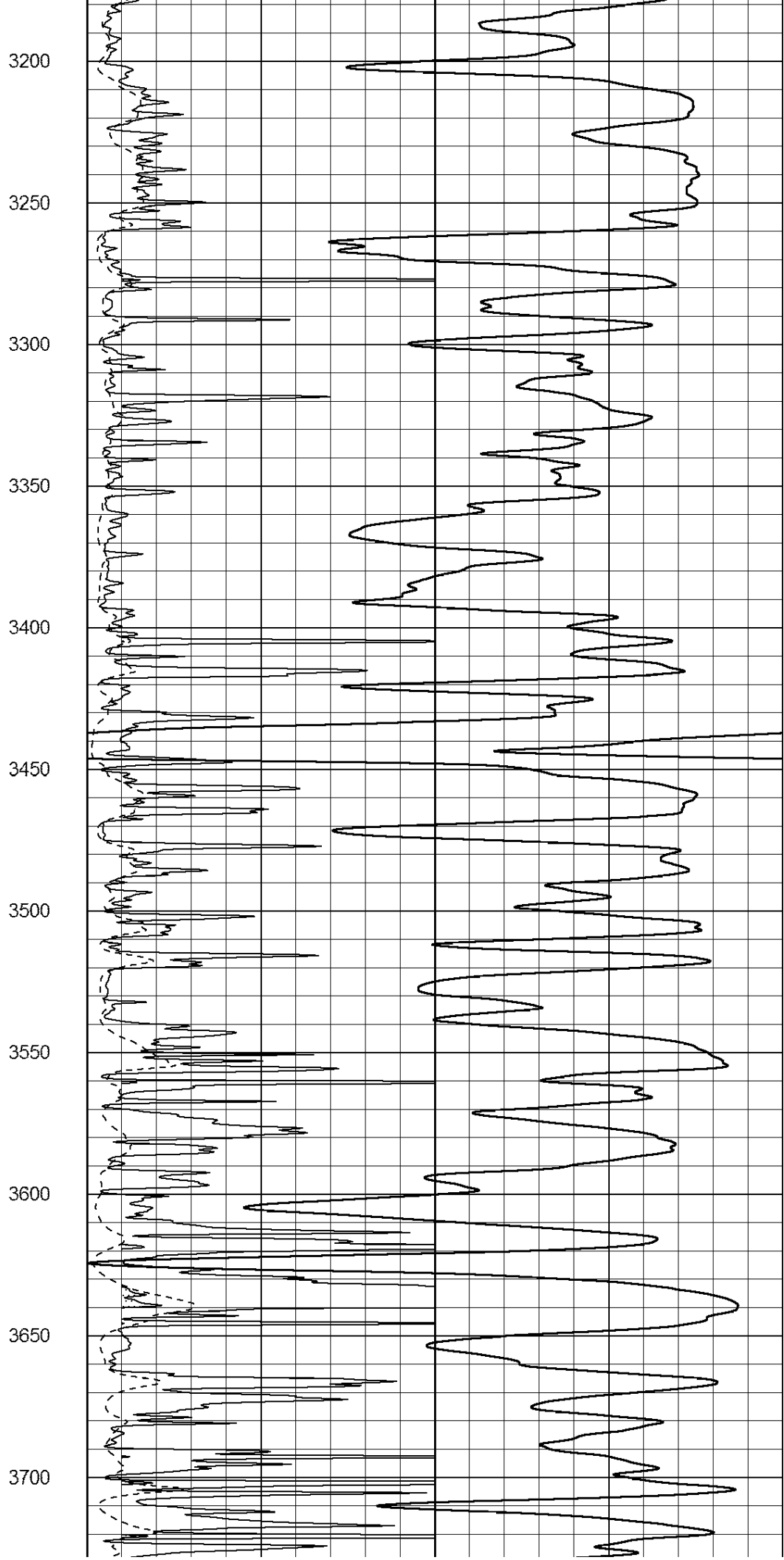
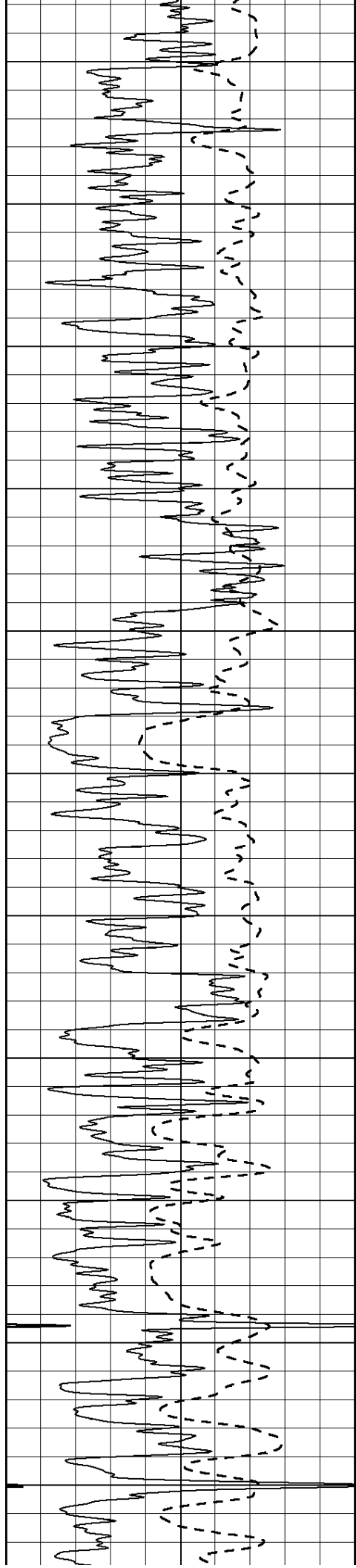
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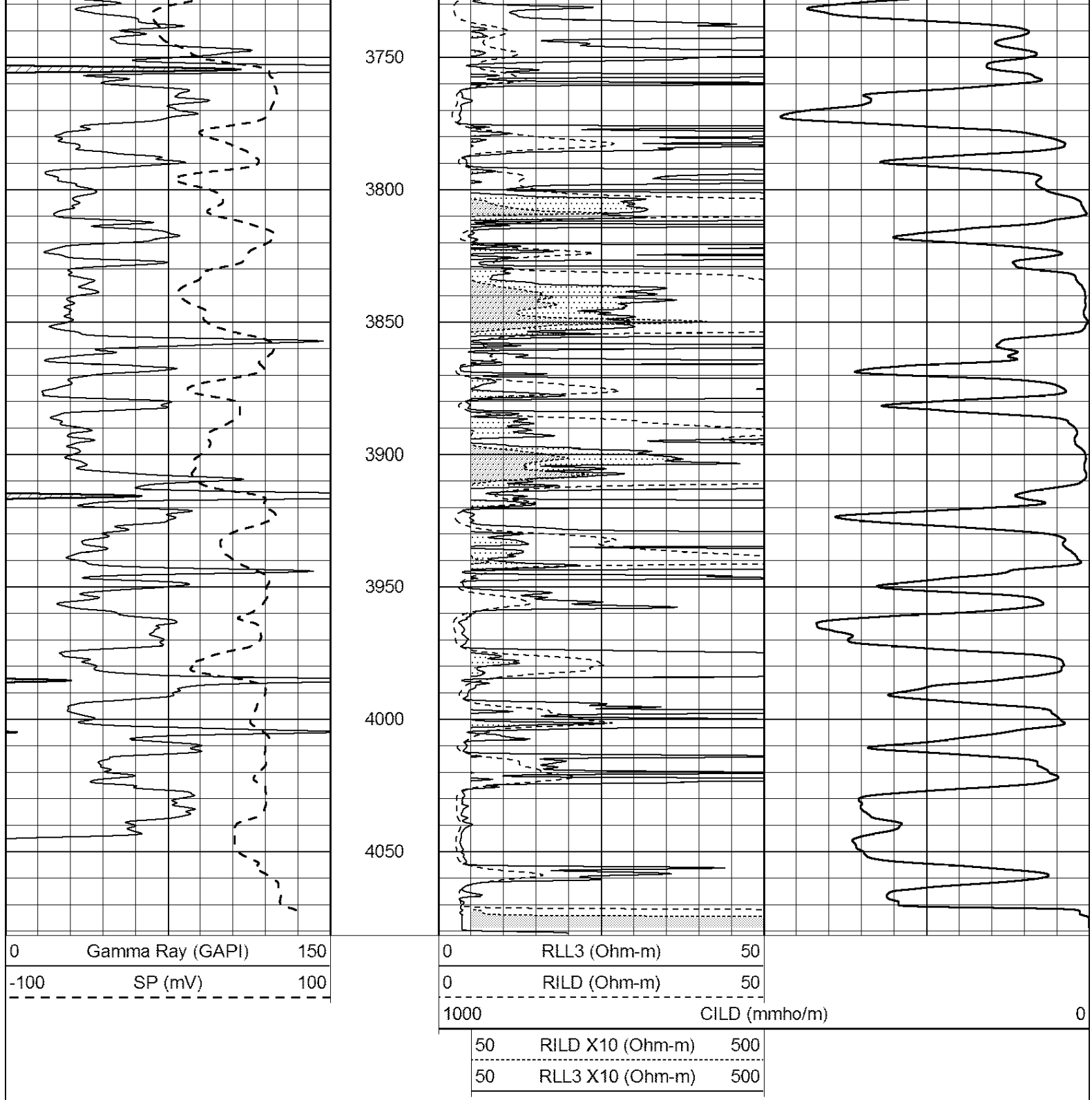
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2600









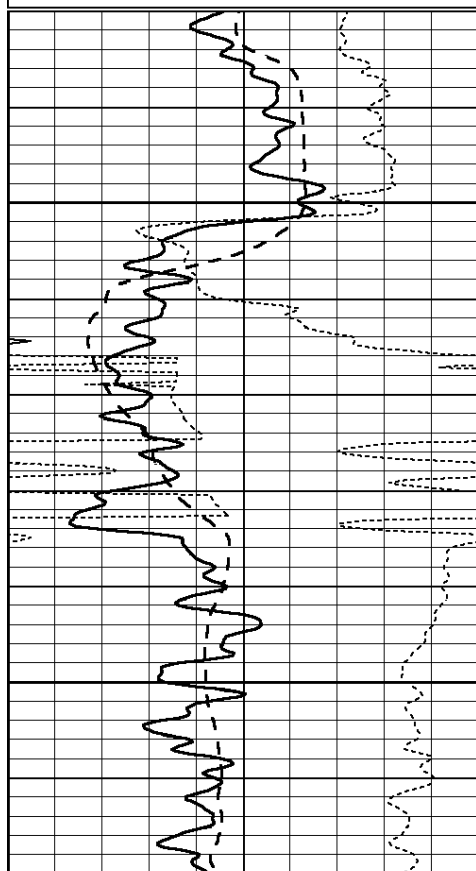
ANHYDRITE

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 Charted by: Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150	0.2	SHALLOW GUARD (Ohm-m)	2000
-100	SP (mV)	100	0.2	DEEP INDUCTION (Ohm-m)	2000

-250	Rxo/Rt	50
0	MINMK	20

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



2150

2200

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

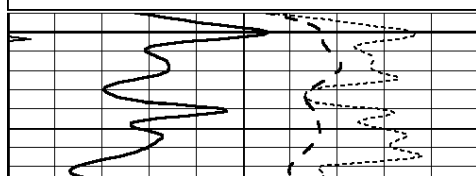


MAIN SECTION

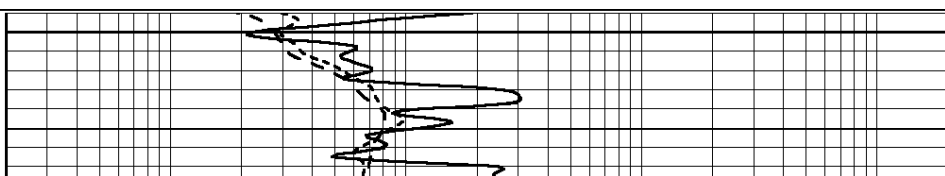
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Presentation Format: _dil
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Charted by: Depth in Feet scaled 1:240

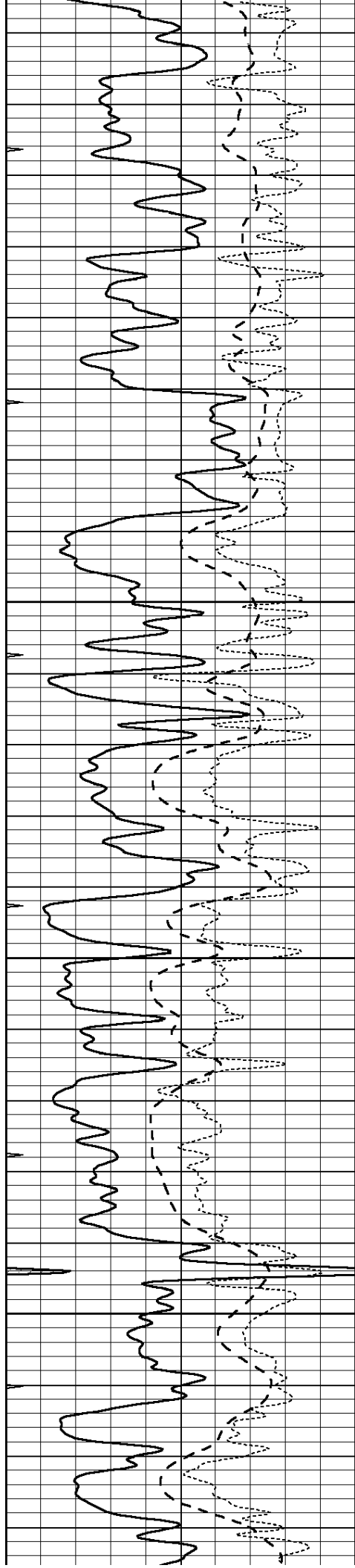
0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

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



3450



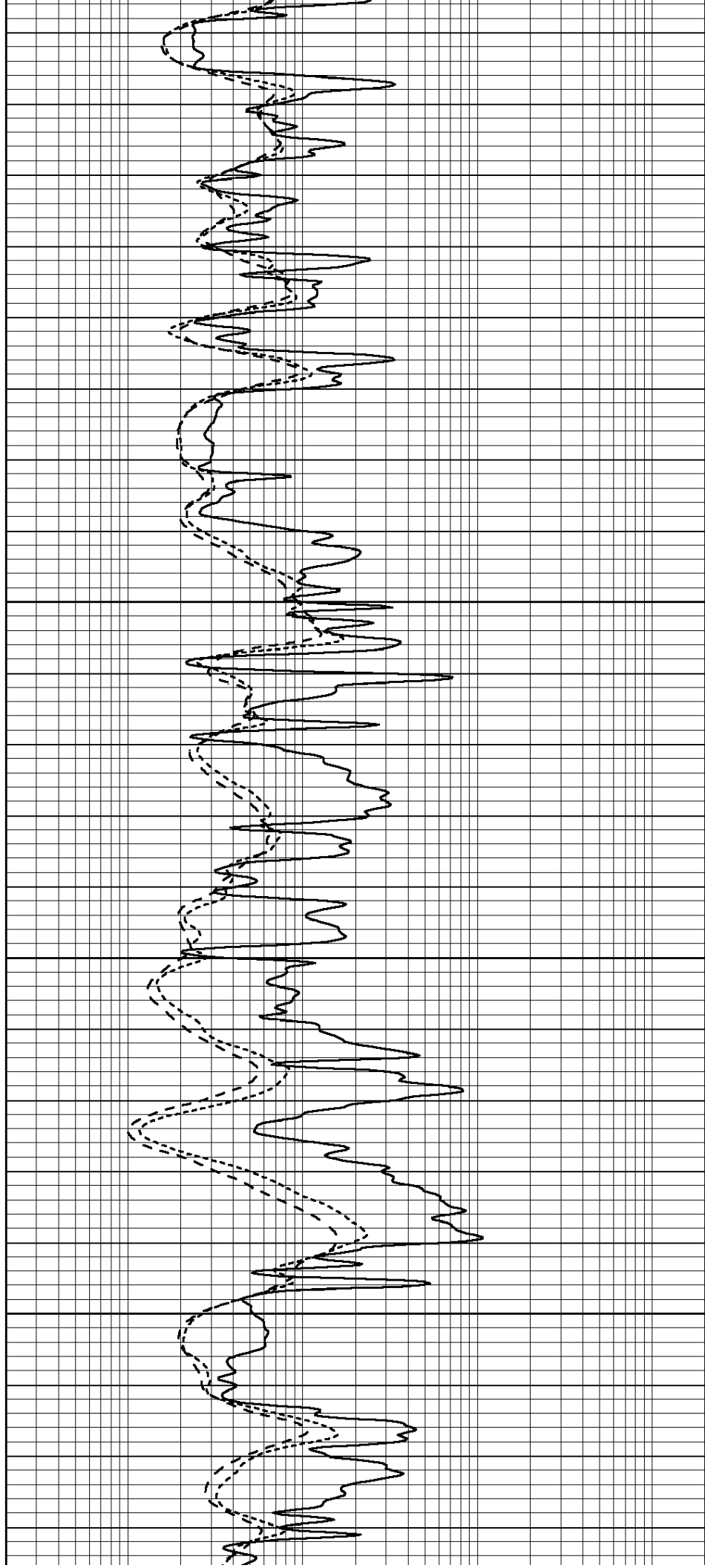


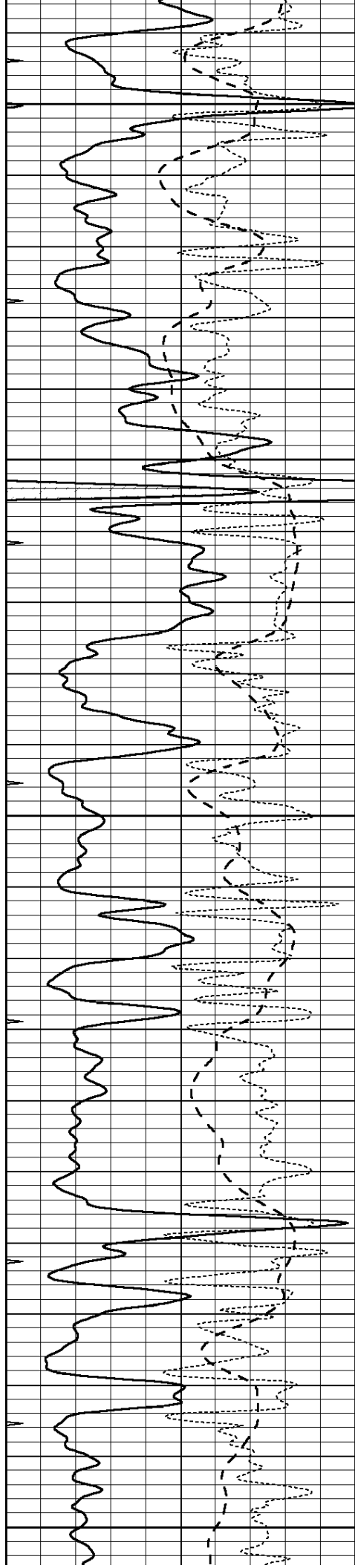
3500

3550

3600

3650





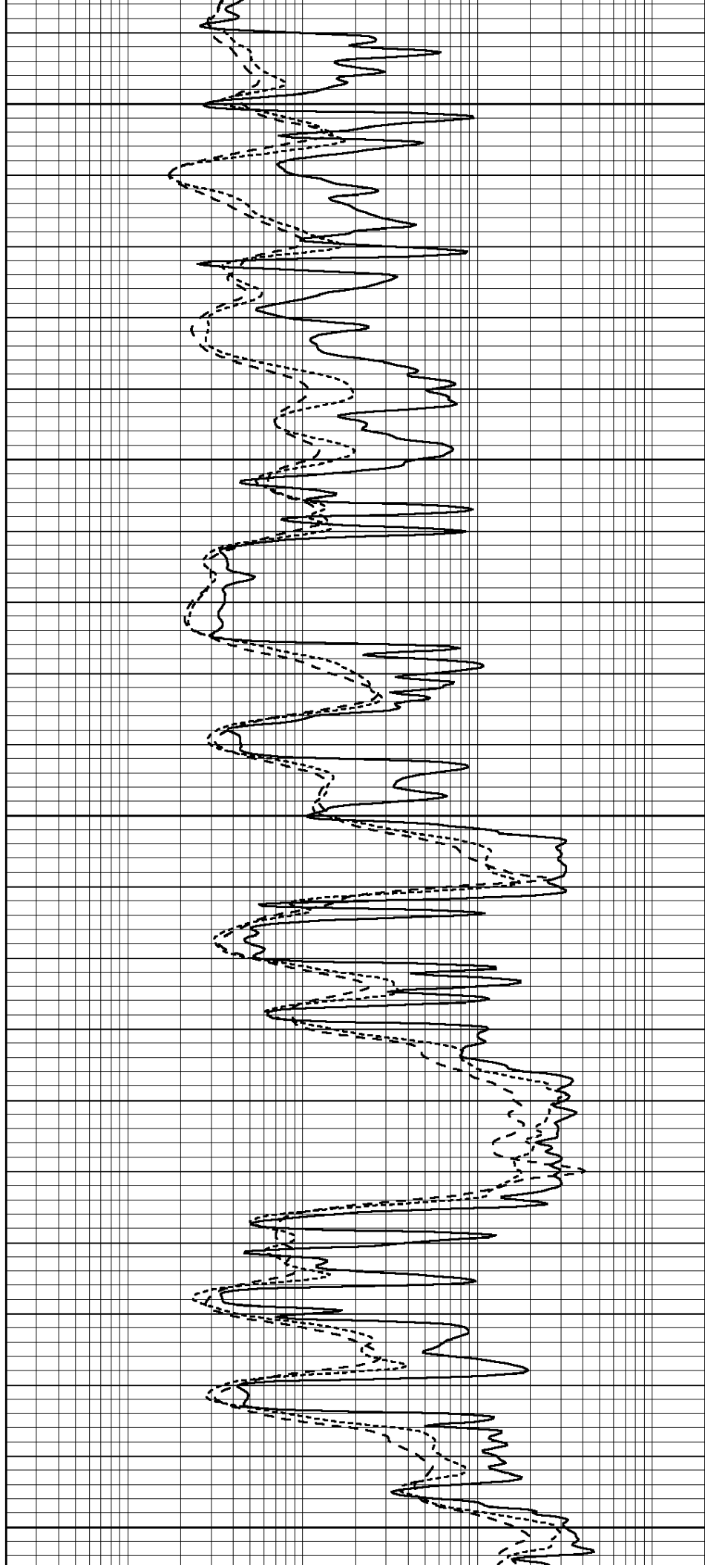
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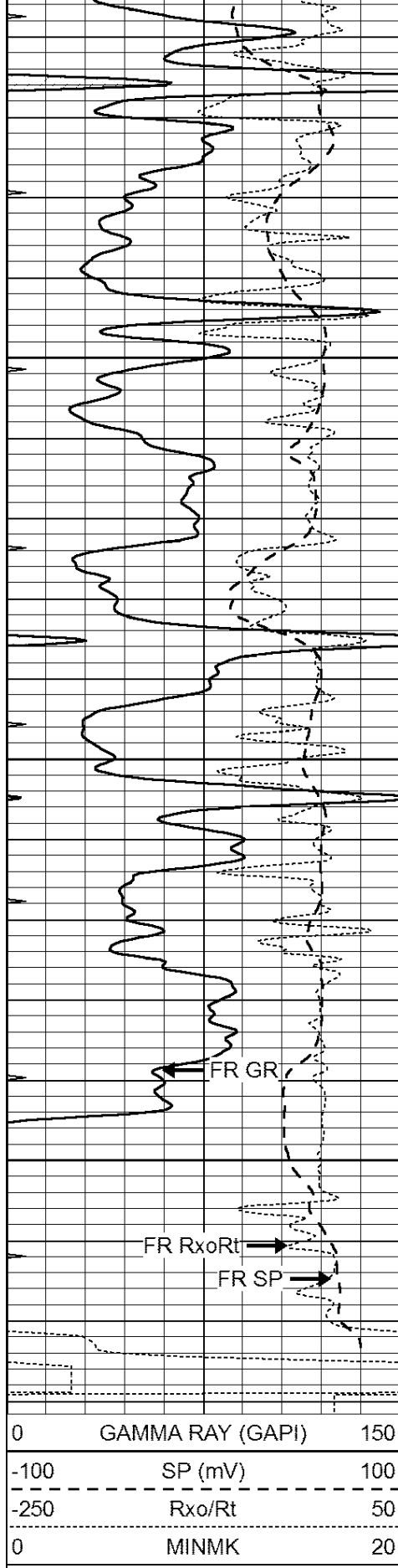
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3800

3850

3900



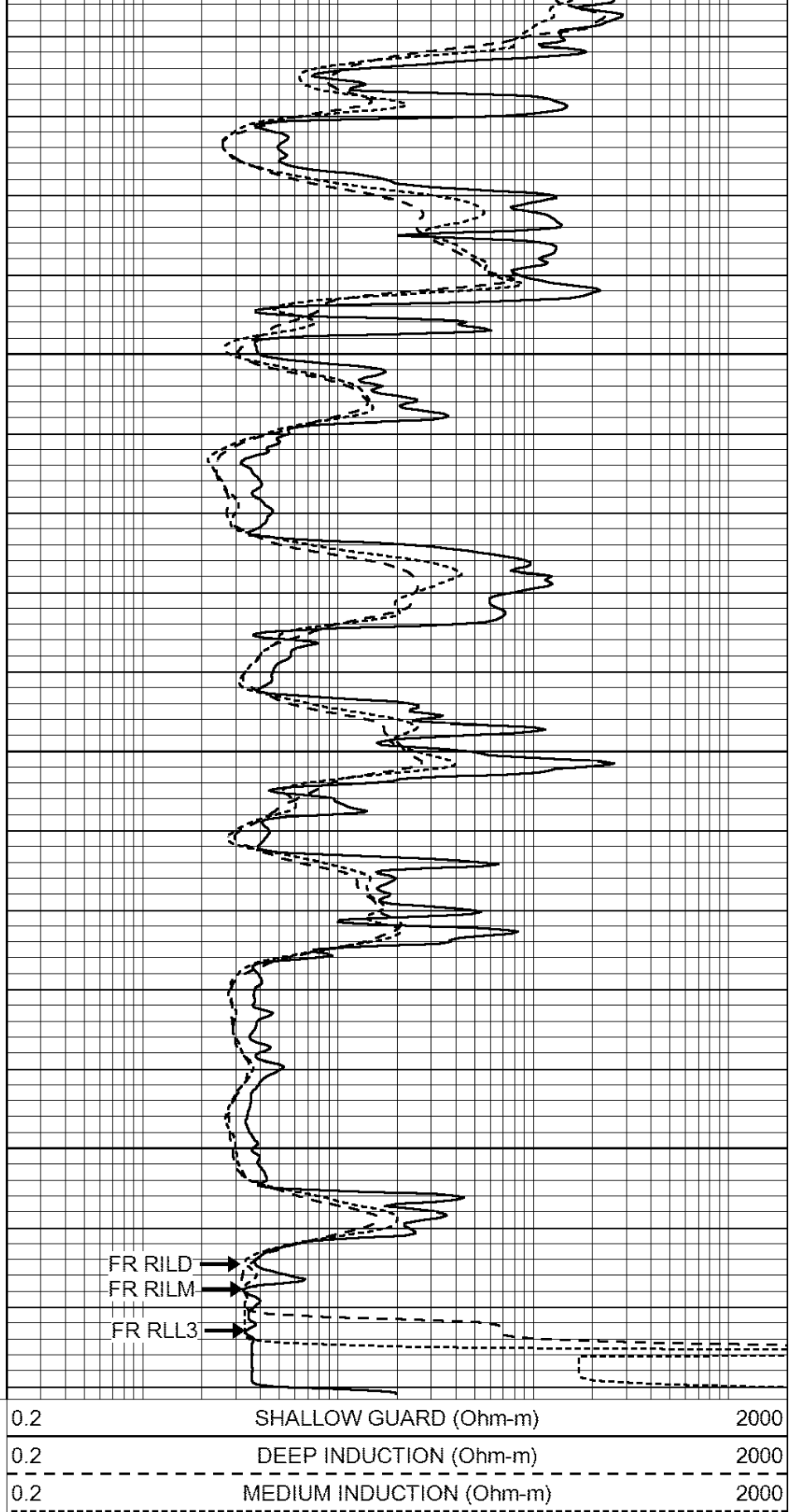


3950

4000

4050

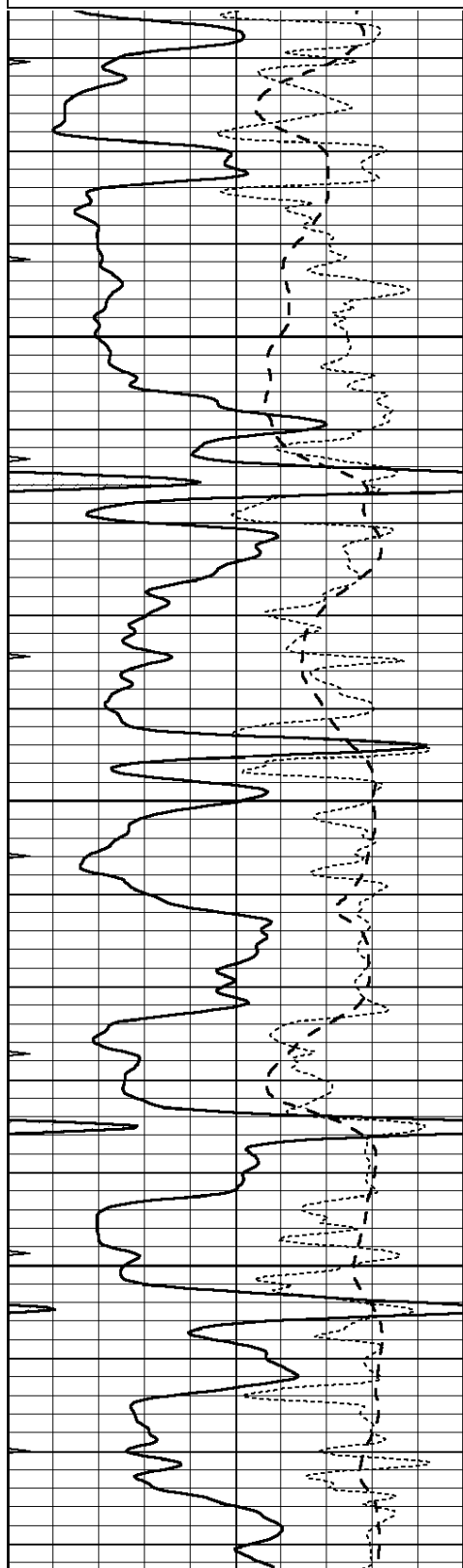
LTD 4075



Database File: 011592ddn.db
 Dataset Pathname: pass3.1
 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

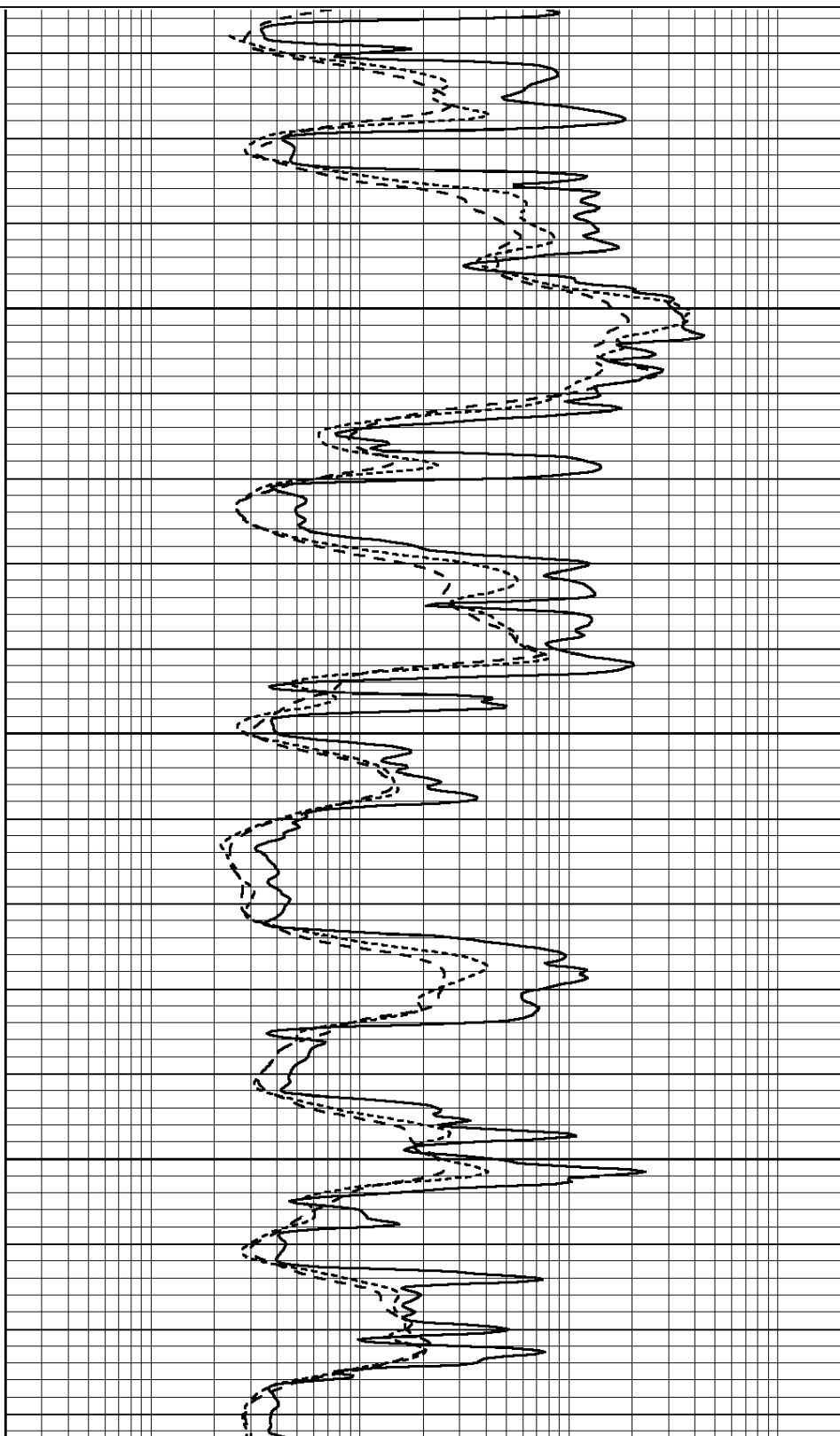
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000

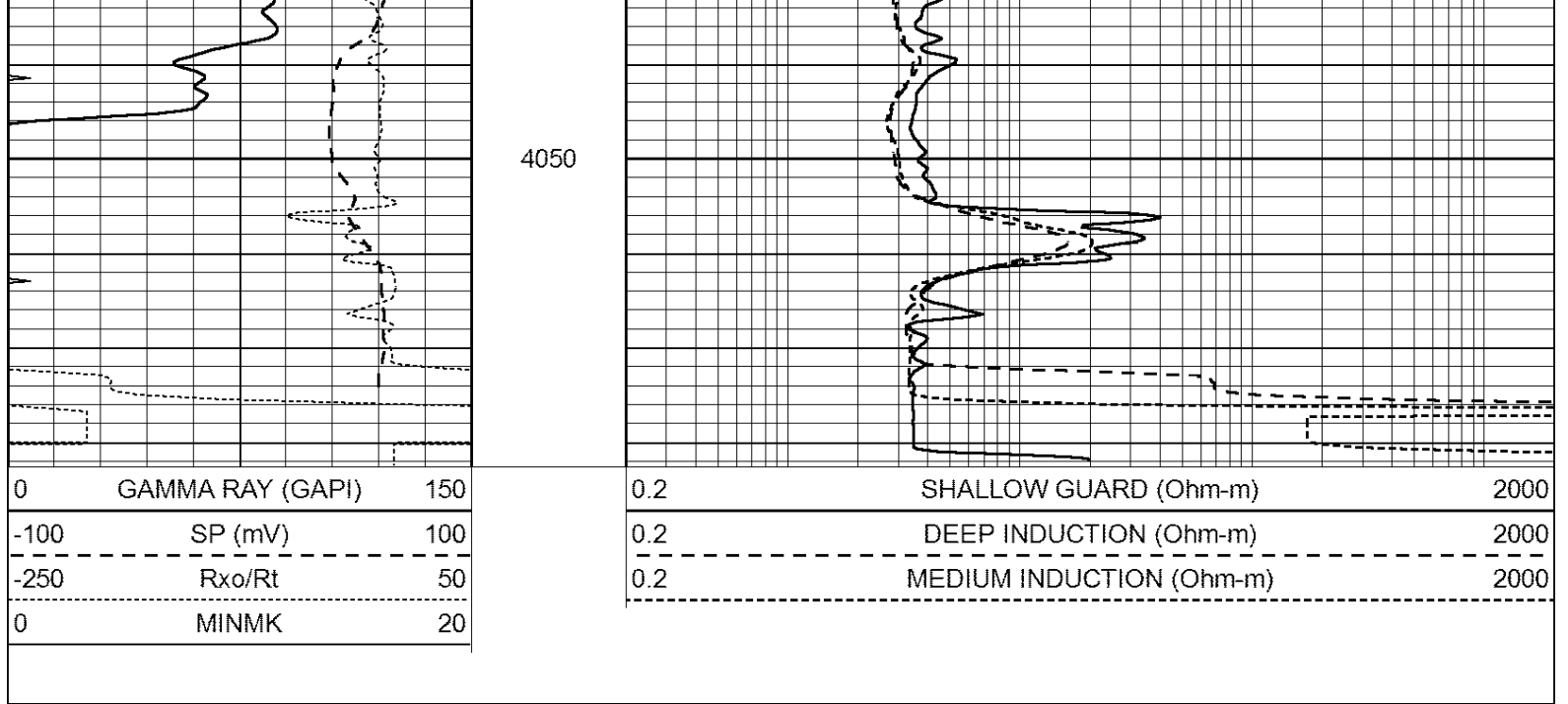


3900

3950

4000





Calibration Report

Database File: 011592ddn.db
Dataset Pathname: pass3.1
Dataset Creation: Tue Aug 27 07:56:11 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

Readings				References			Results	
Loop:	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

Compensated Density Calibration Report			
Serial-Model:		GEAR4-GEARHART	
Source / Verifier:		143 / 143	
Master Calibration Performed:		Tue Jun 18 20:13:29 2013	
Before Survey Verification Performed:			
After Survey Verification Performed:			

Master Calibration					
		Density			
			Far Detector	Near Detector	
Magnesium	1.710	g/cc	1075.98	532.39	cps
Aluminum	2.510	g/cc	286.51	422.88	cps
Spine Angle = 80.13			Density/Spine Ratio = 0.596		
		Size	Reading		
Small Ring	8.00	in	3.21	V	
Large Ring	14.00	in	5.46	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		cps				
Long Space		cps		pu		
3) Short Space		cps				
Long Space		cps		pu		

POST-SURVEY VERIFICATION						
Detector		Readings		Measured		Target

1)	Short Space	cps		
	Long Space	cps	pu	pu
2)	Short Space	cps		
	Long Space	cps	pu	pu
3)	Short Space	cps		
	Long Space	cps	pu	pu

Gamma Ray Calibration Report

Serial Number:	#8		
Tool Model:	OPEN		
Performed:	Tue Jun 18 19:34:11 2013		
Calibrator Value:	150.0	GAPI	
Background Reading:	0.0	cps	
Calibrator Reading:	175.0	cps	
Sensitivity:	0.8371	GAPI/cps	