

**NABORS****COMPLETION
& PRODUCTION
SERVICES CO.****DUAL
INDUCTION
LOG**

Company	BLACK DIAMOND OIL INC.	Company	BLACK DIAMOND OIL INC.
Well	MORRIS UNIT #1	Well	MORRIS UNIT #1
Field	WILDCAT	Field	WILDCAT
County	NORTON	County	NORTON
State	KANSAS	State	KANSAS
Location:	AP1 # : 15-137-20667-0000 175' FSL & 2310' FEL S/2 - SW - SW - SE	Other Services CDL/CNL MEL/SON	
Permanent Datum	GROUND LEVEL	Elevation	1987
Log Measured From	KELLY BUSHING 5' A.G.L.		
Drilling Measured From	KELLY BUSHING		
SEC 2	TWP 5S	RGE 21W	
Date	9/23/13		
Run Number	ONE		
Depth Driller	3510		
Depth Logger	3510		
Bottom Logged Interval	3508		
Top Log Interval	0		
Casing Driller	8 5/8" @ 219		
Casing Logger	219		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 2500 PPM	
Density / Viscosity	9.2/57		
pH / Fluid Loss	10.0/8.0		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	1.90 @ 84F		
Rmt @ Meas. Temp	1.43 @ 84F		
Rmc @ Meas. Temp	2.28 @ 84F		
Source of Rmt / Rmc	MEASUREMENT		
Rm @ BHT	1.42 @ 112F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom			
Maximum Recorded Temperature	112F		
Equipment Number	4010		
Location	HAYS, KANSAS		
Recorded By	JEFF GRONEWEG		
Witnessed By	JEFF LAWLER		

<<< Fold Here >>>

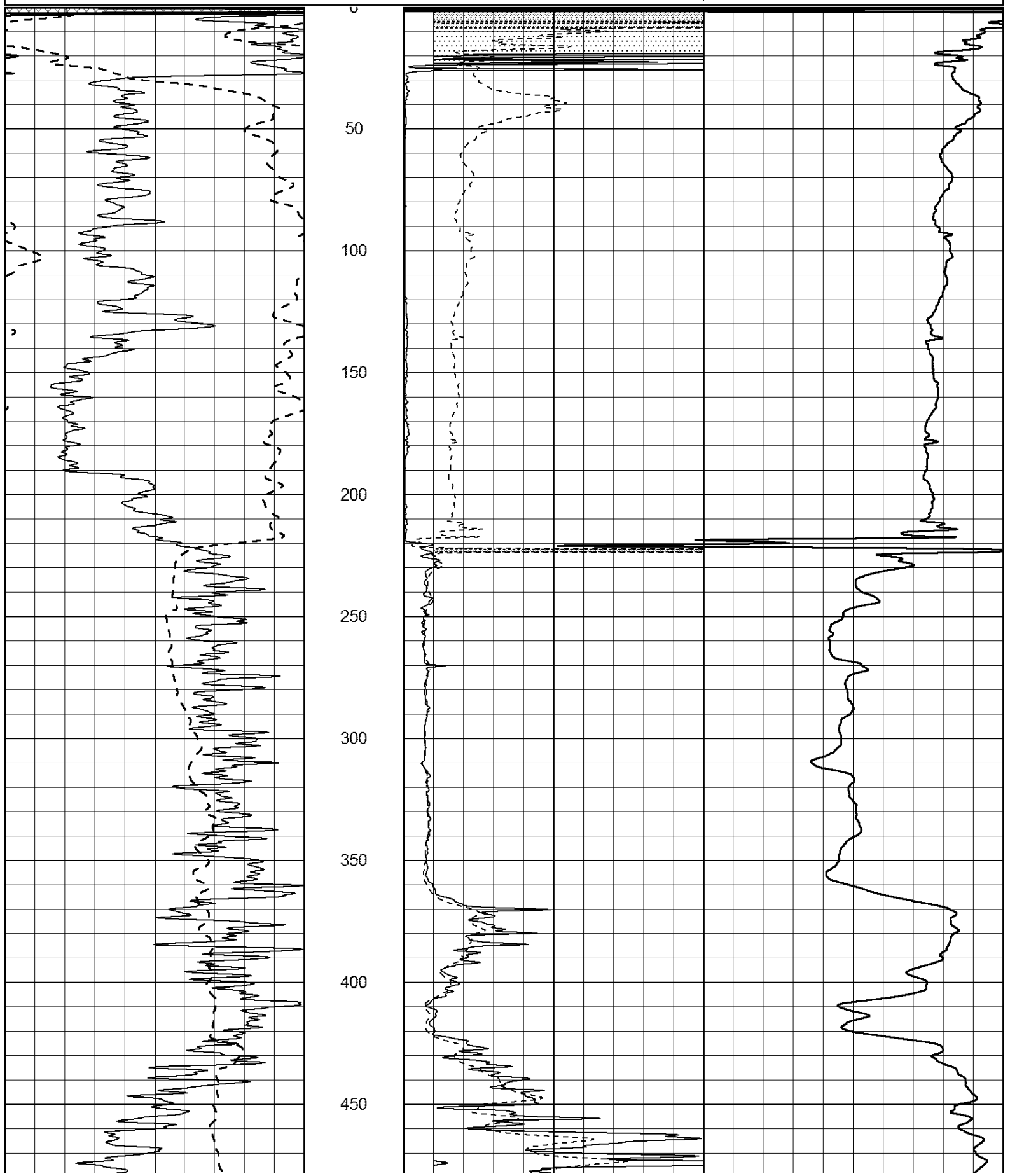
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, 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.

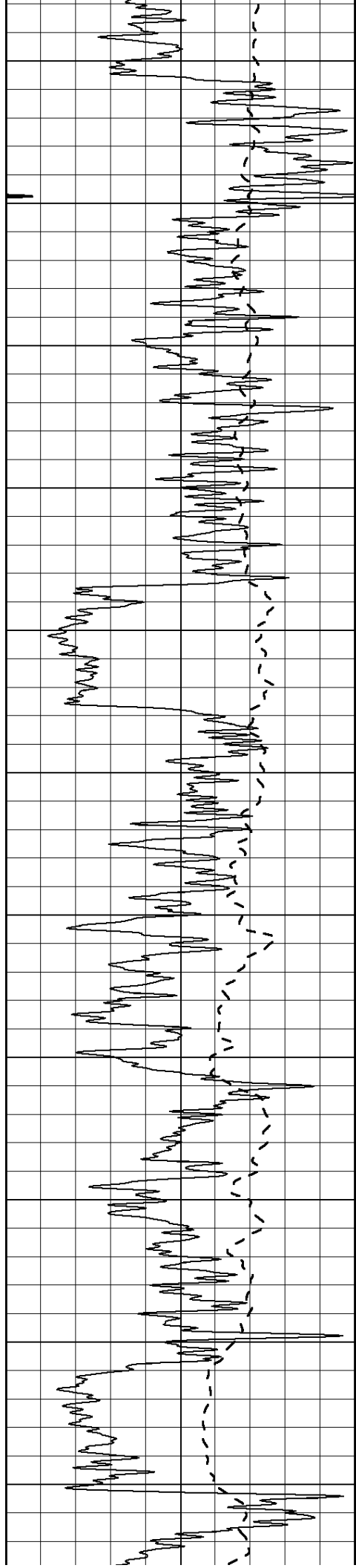
Comments

THANK YOU FOR USING NABORS, HAYS, KS. (785) 628-6395
DIRECTIONS:
LOGAN, KS - 6 MILES WEST TO RD E12 - 1 1/4 MILES SOUTH TO RD Z (STOP SIGN)
1/2 MILE EAST - NORTH INTO

Database File: 011784ddn.db
Dataset Pathname: pass3.3
Presentation Format: _dil2
Dataset Creation: Mon Sep 23 18:50:07 2013 by Calc Open-Cased 090629
Charted by: Depth in Feet scaled 1:600

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

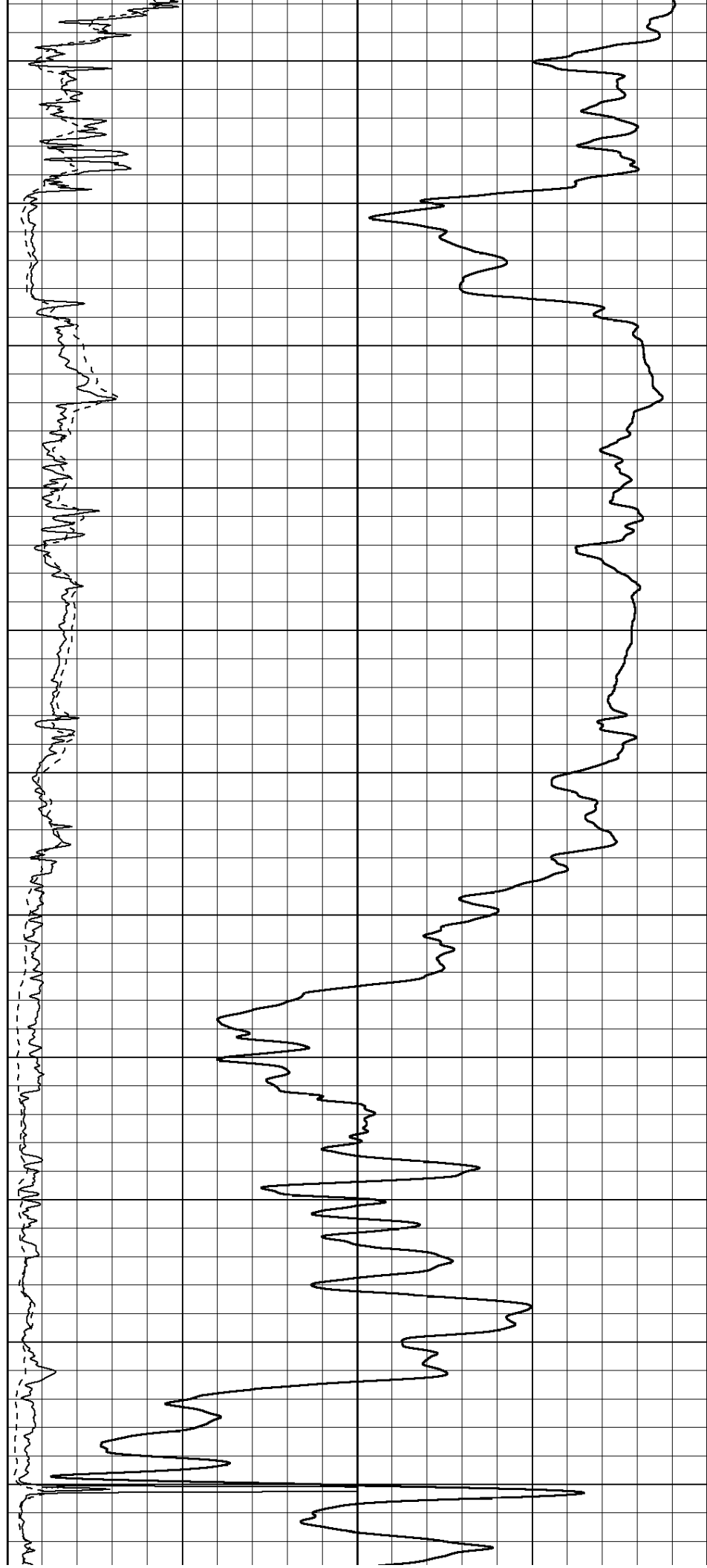
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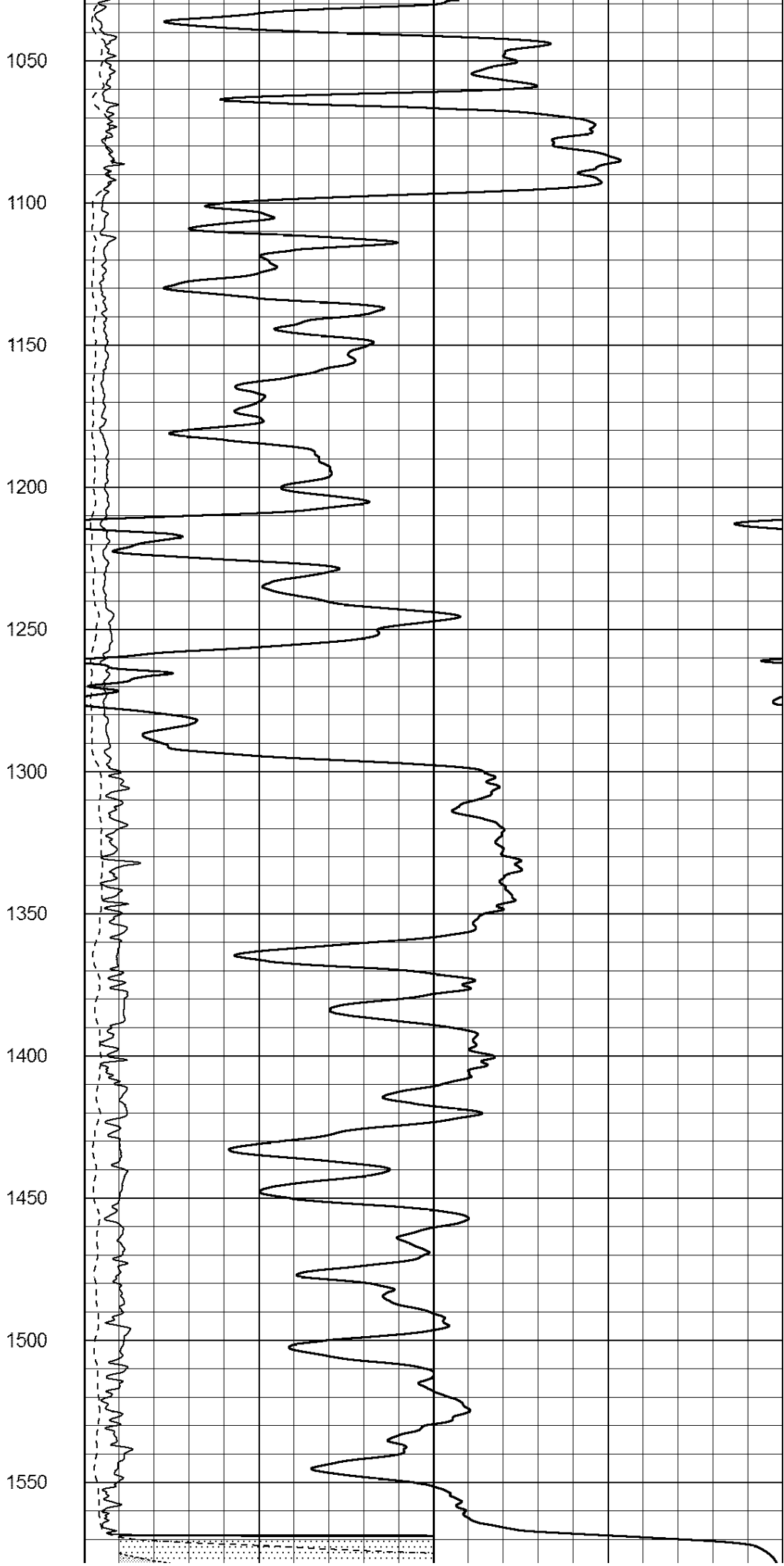
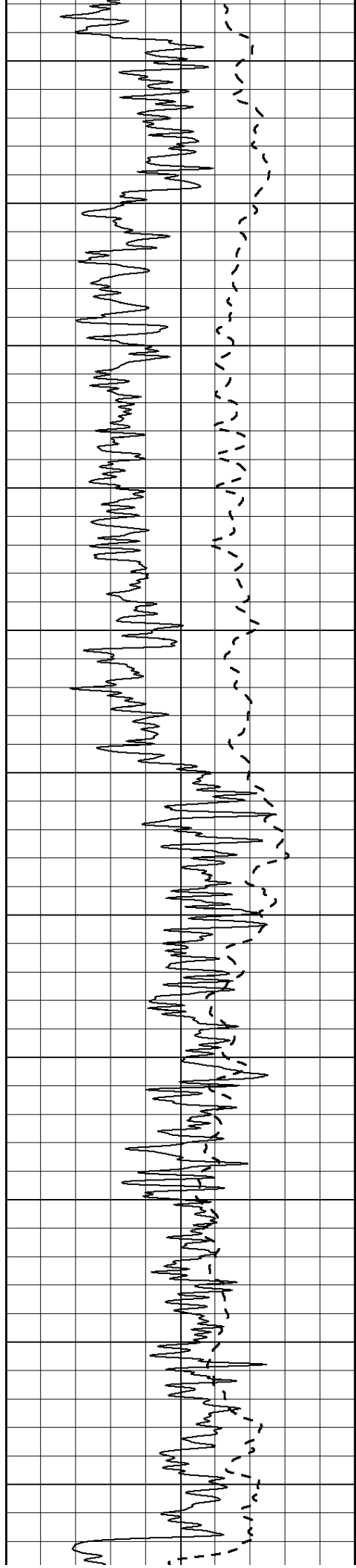
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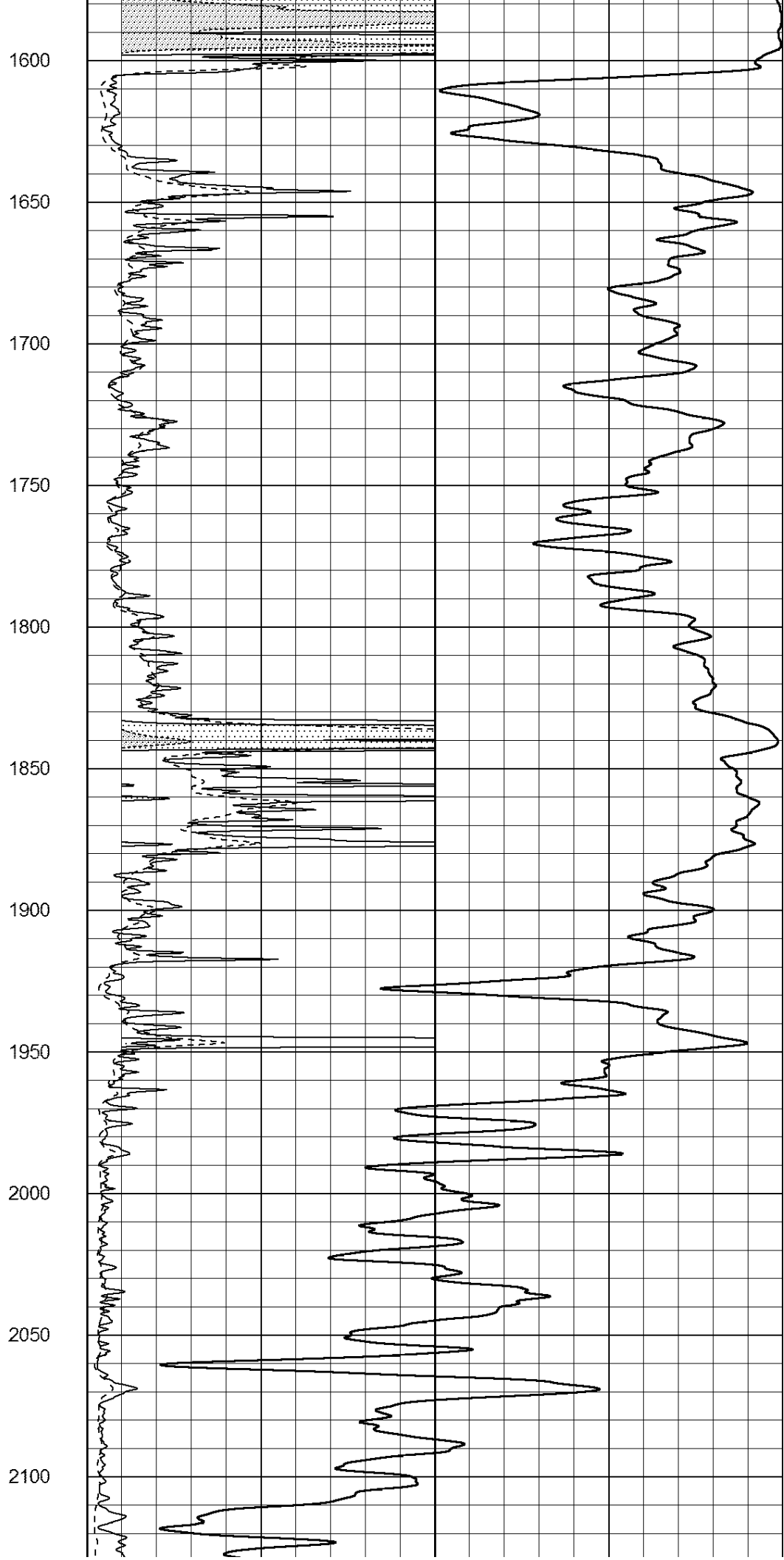
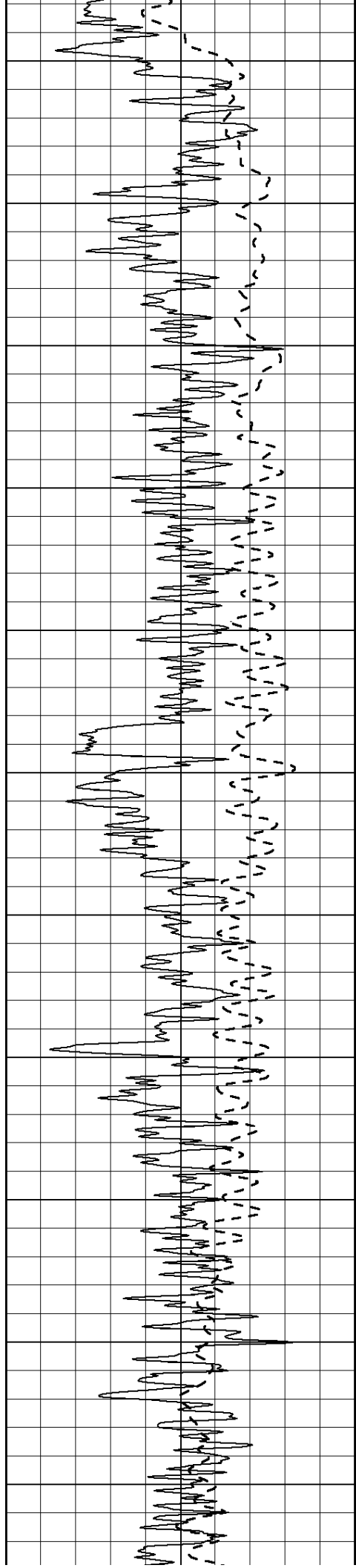
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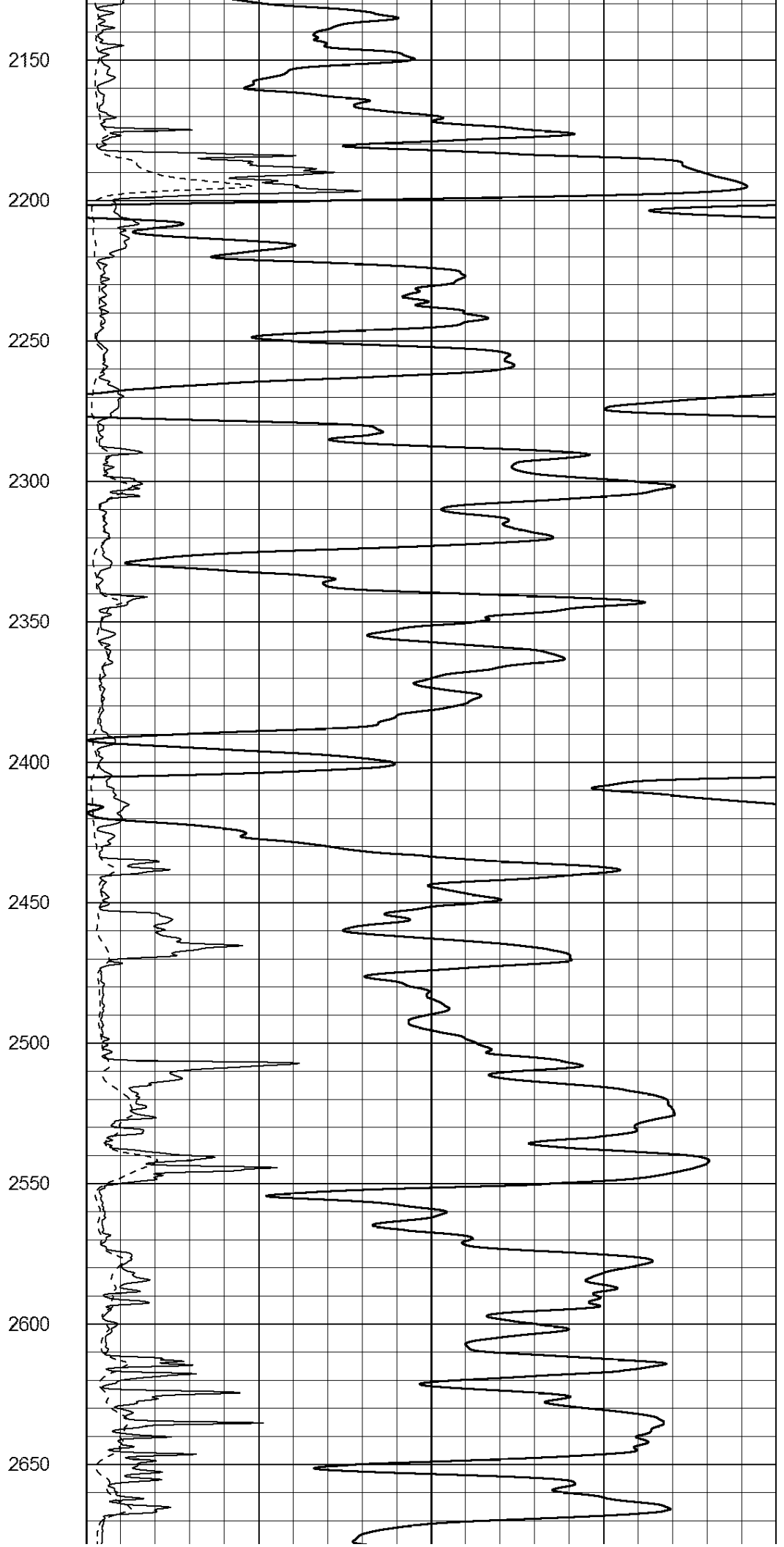
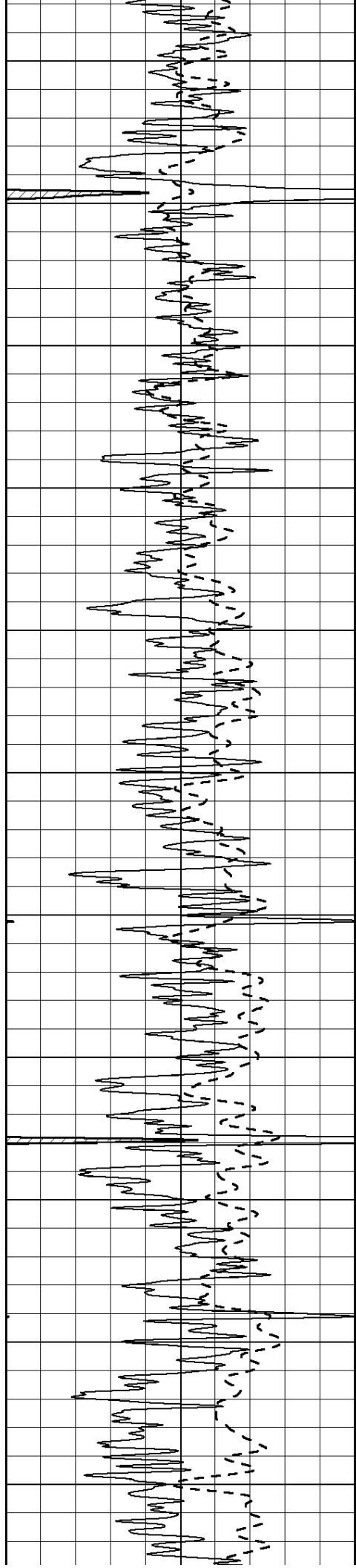
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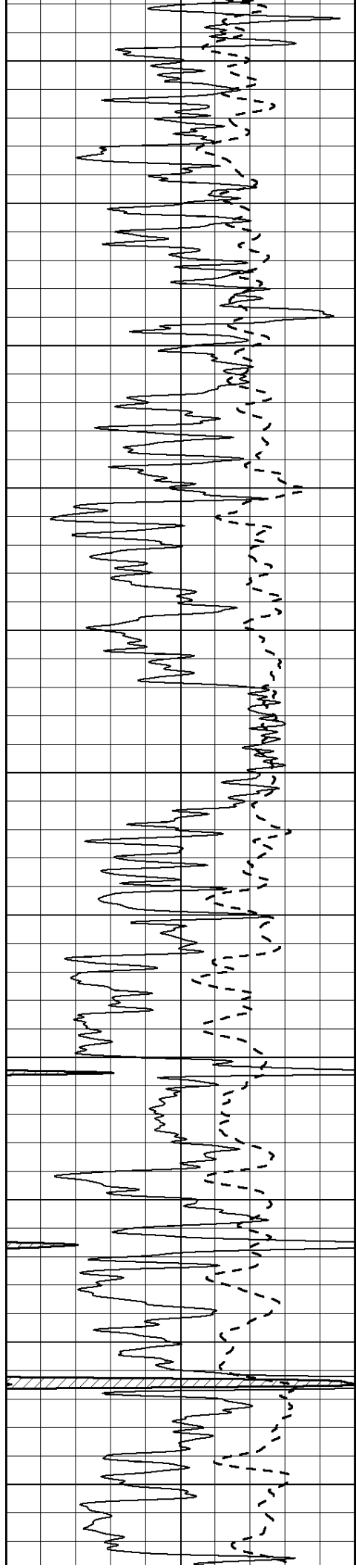
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2700

2750

2800

2850

2900

2950

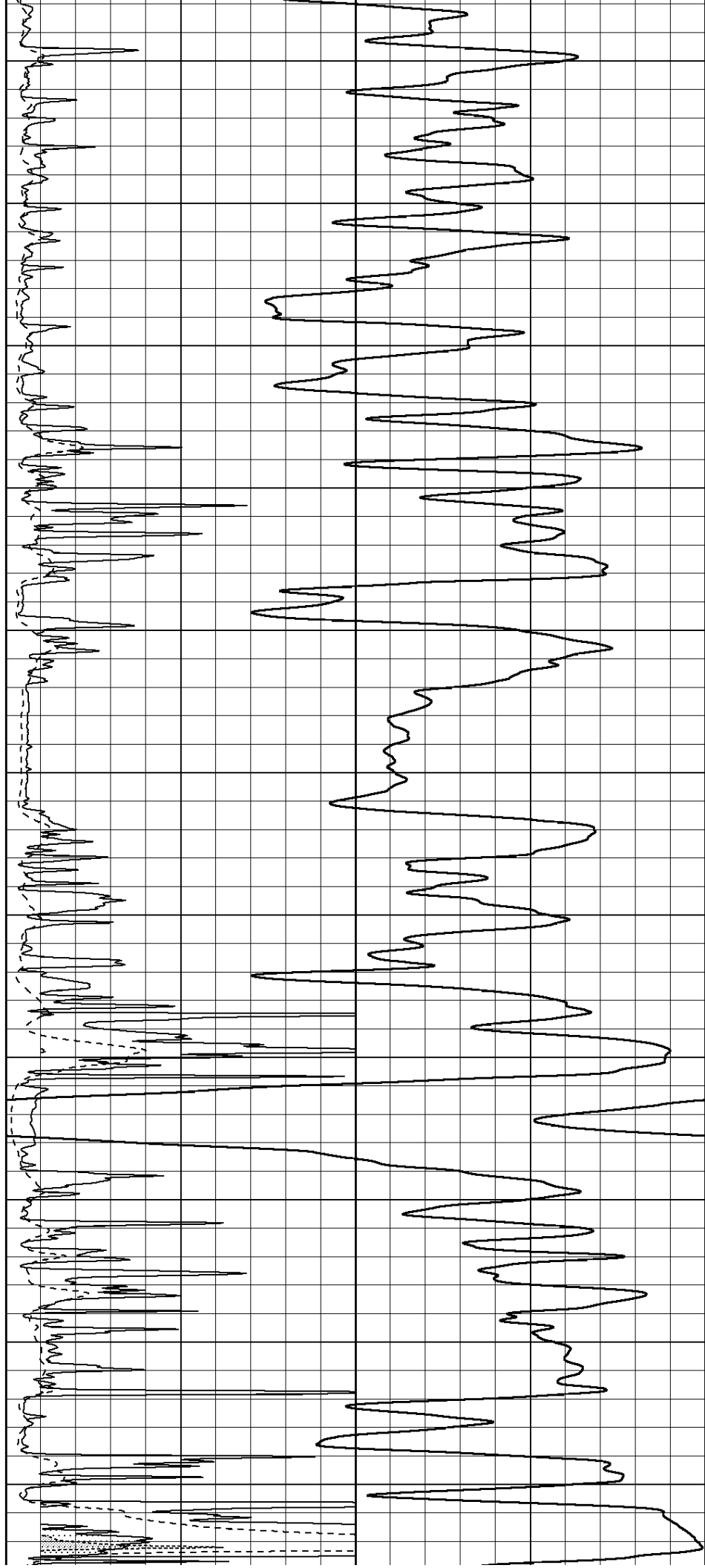
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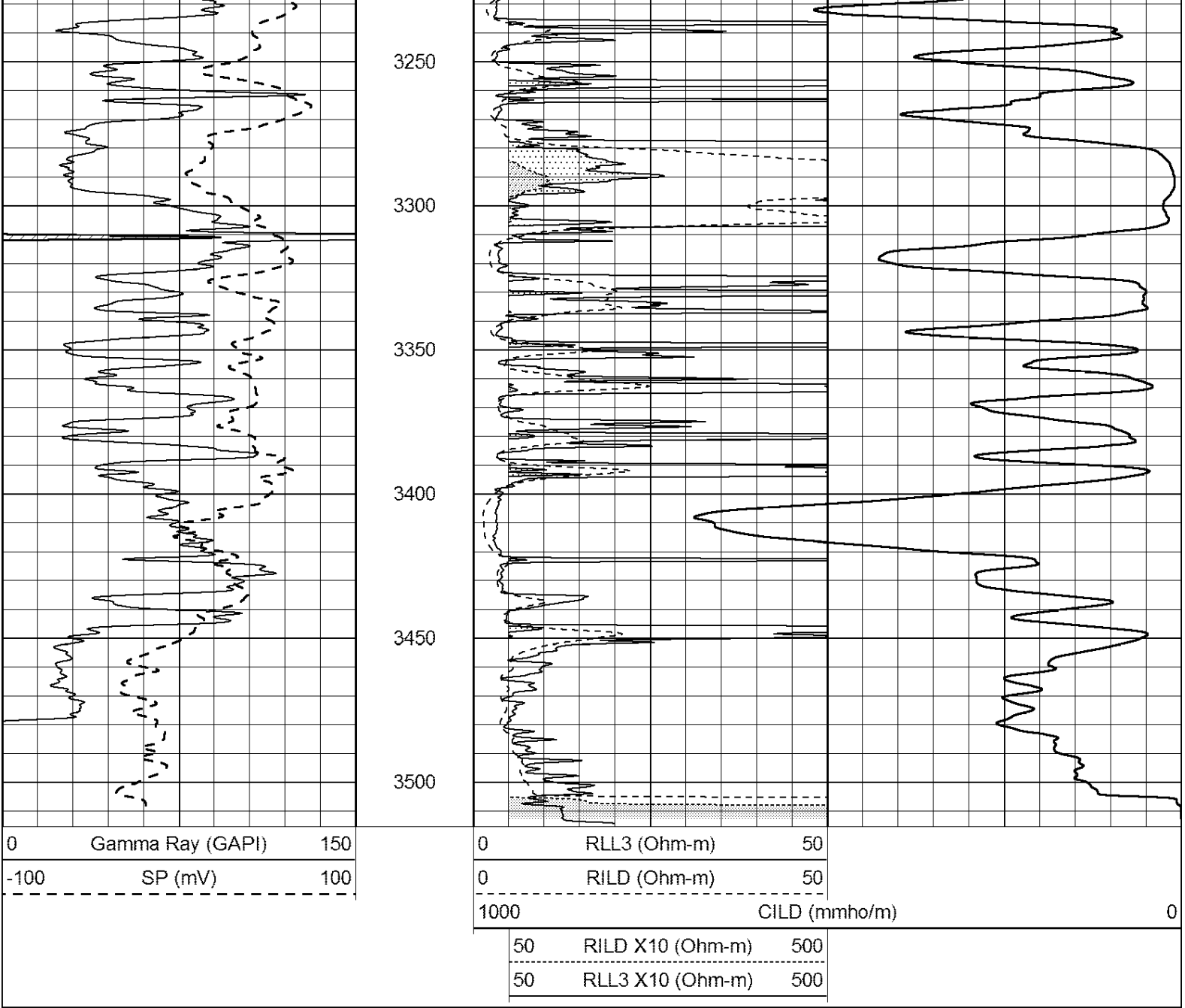
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3100

3150

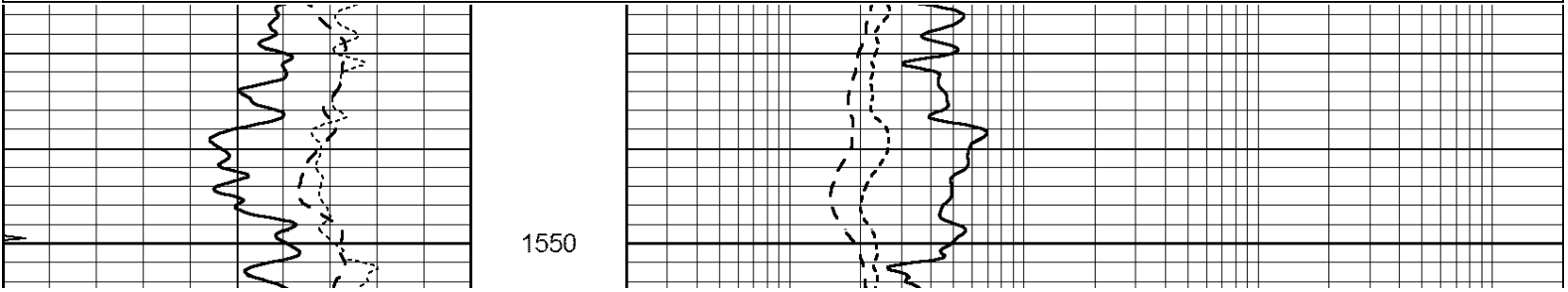
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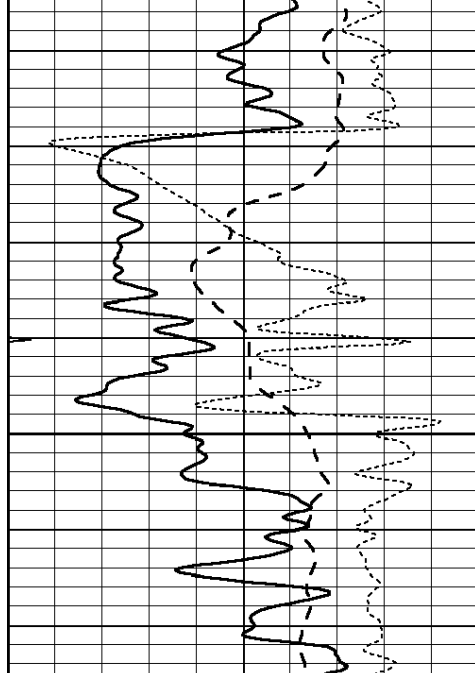




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Dataset Pathname: pass3.3					
Presentation Format: _dil					
Dataset Creation: Mon Sep 23 18:50:07 2013 by Calc Open-Cased 090629					
Charted by: Depth in Feet scaled 1:240					

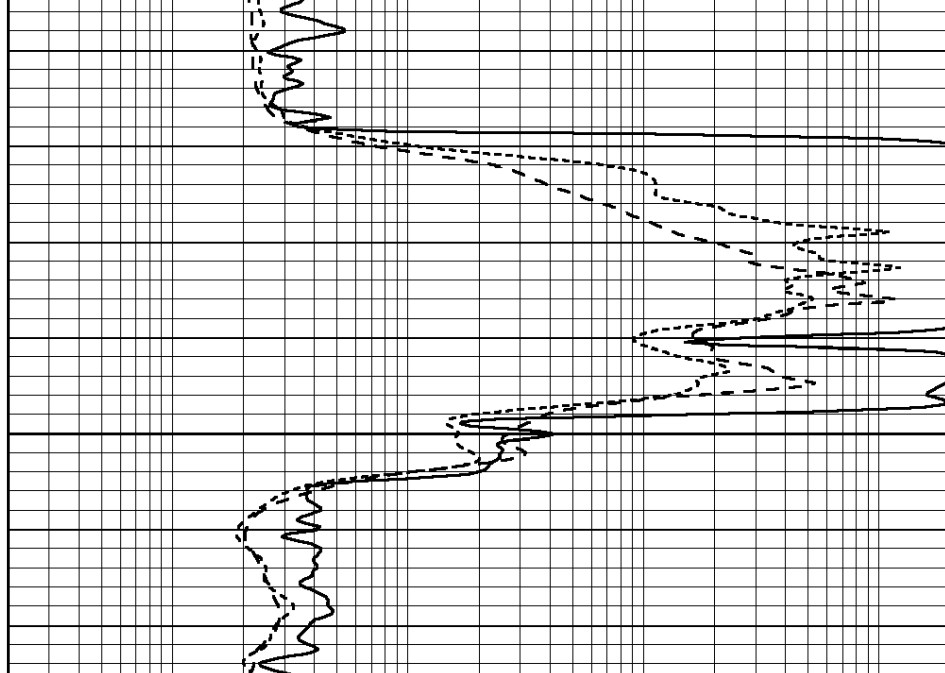
0	GAMMA RAY (GAPI)	150	0.2	SHALLOW GUARD (Ohm-m)	2000
-100	SP (mV)	100	0.2	DEEP INDUCTION (Ohm-m)	2000
-250	Rxo/Rt	50	0.2	MEDIUM INDUCTION (Ohm-m)	2000
0	MINMK	20			





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

1600

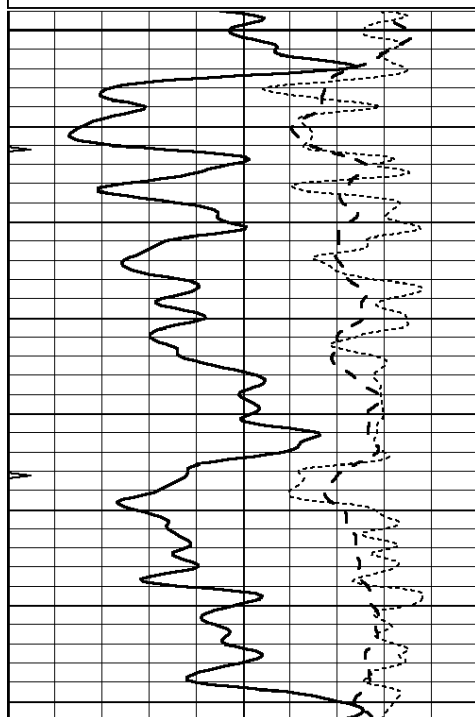


0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000

Database File: 011784ddn.db
 Dataset Pathname: pass3.2
 Presentation Format: _dil
 Dataset Creation: Mon Sep 23 17:37:28 2013 by Calc Open-Cased 090629
 Charted by: Depth in Feet scaled 1:240

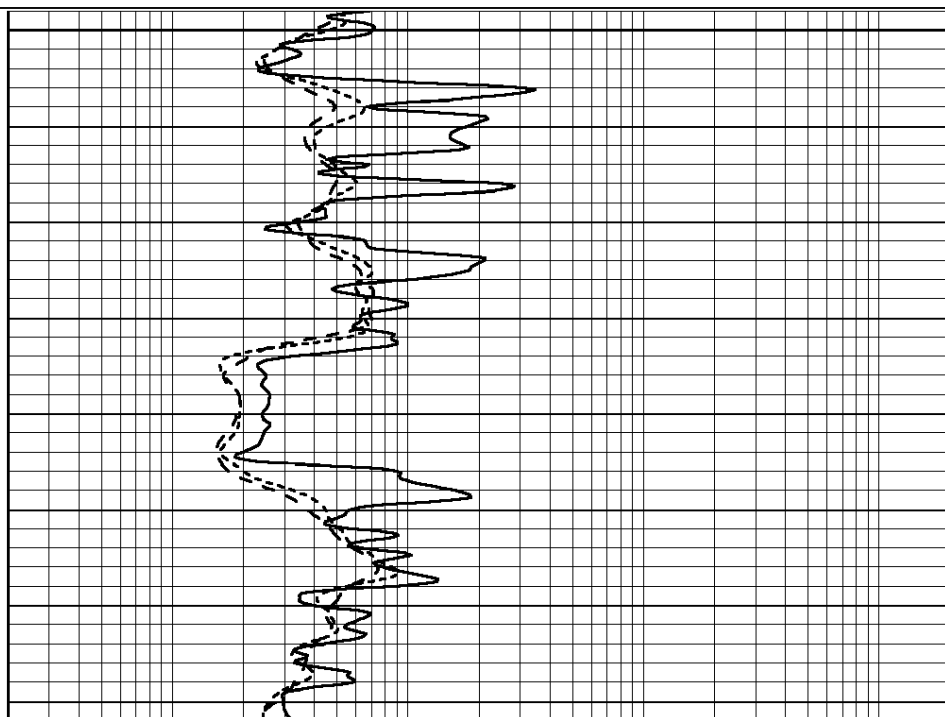
0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

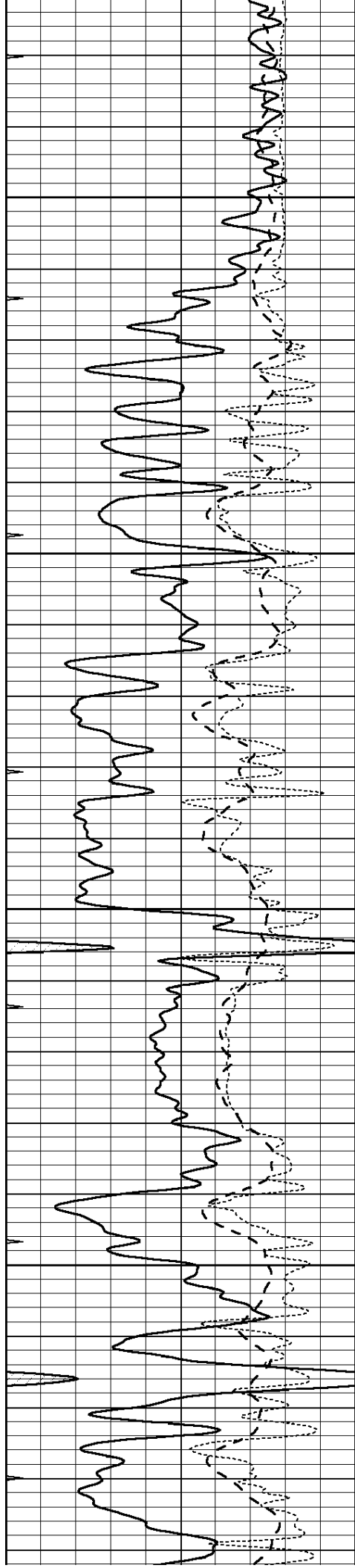
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000



2850

2900



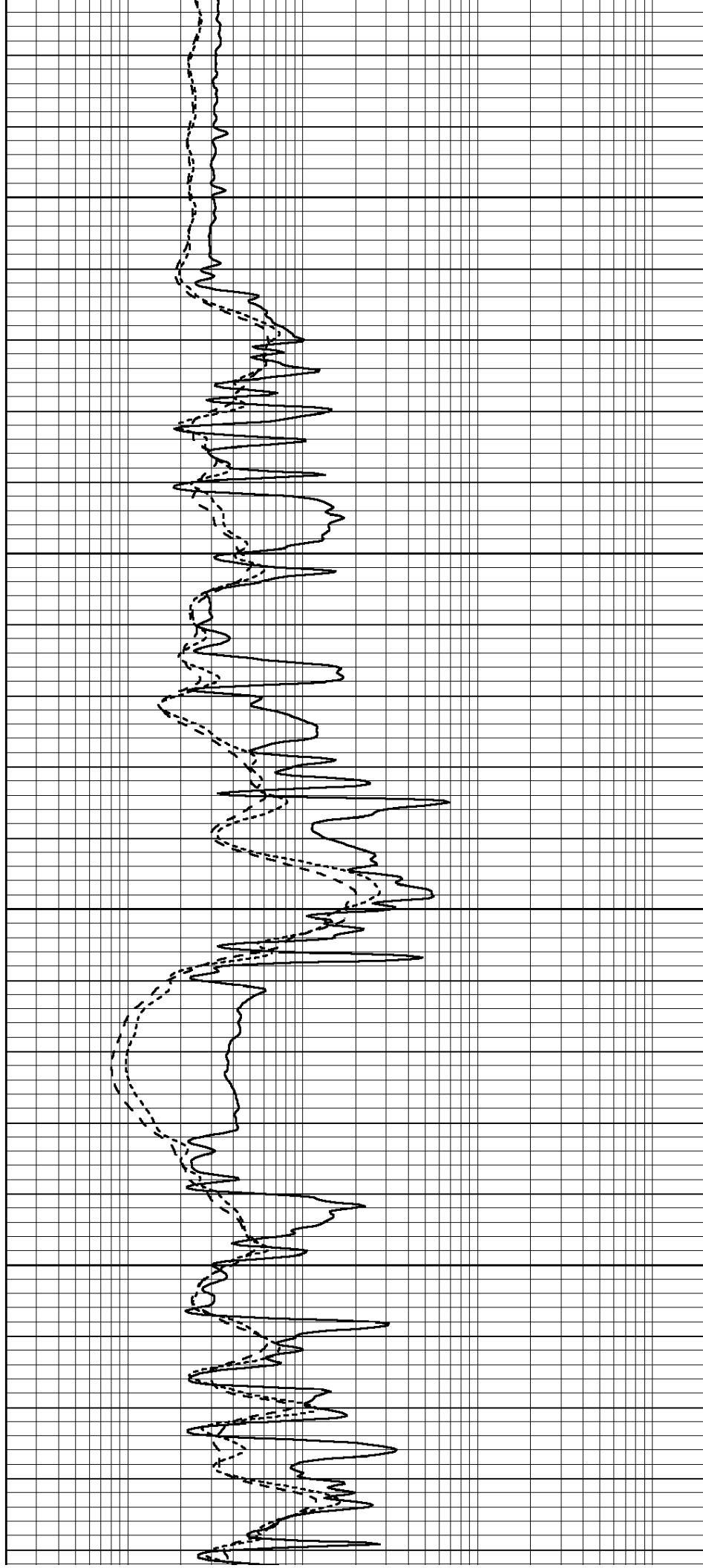


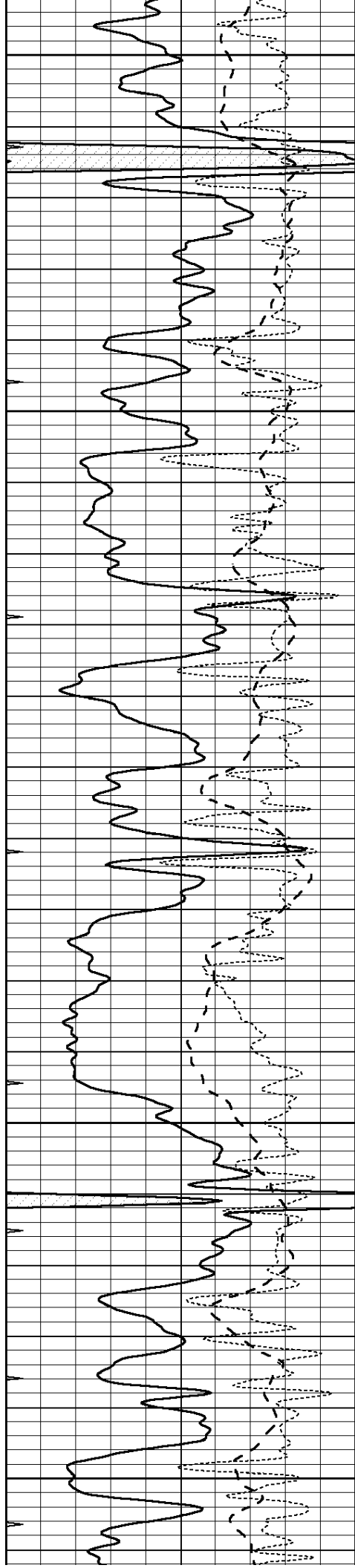
2950

3000

3050

3100





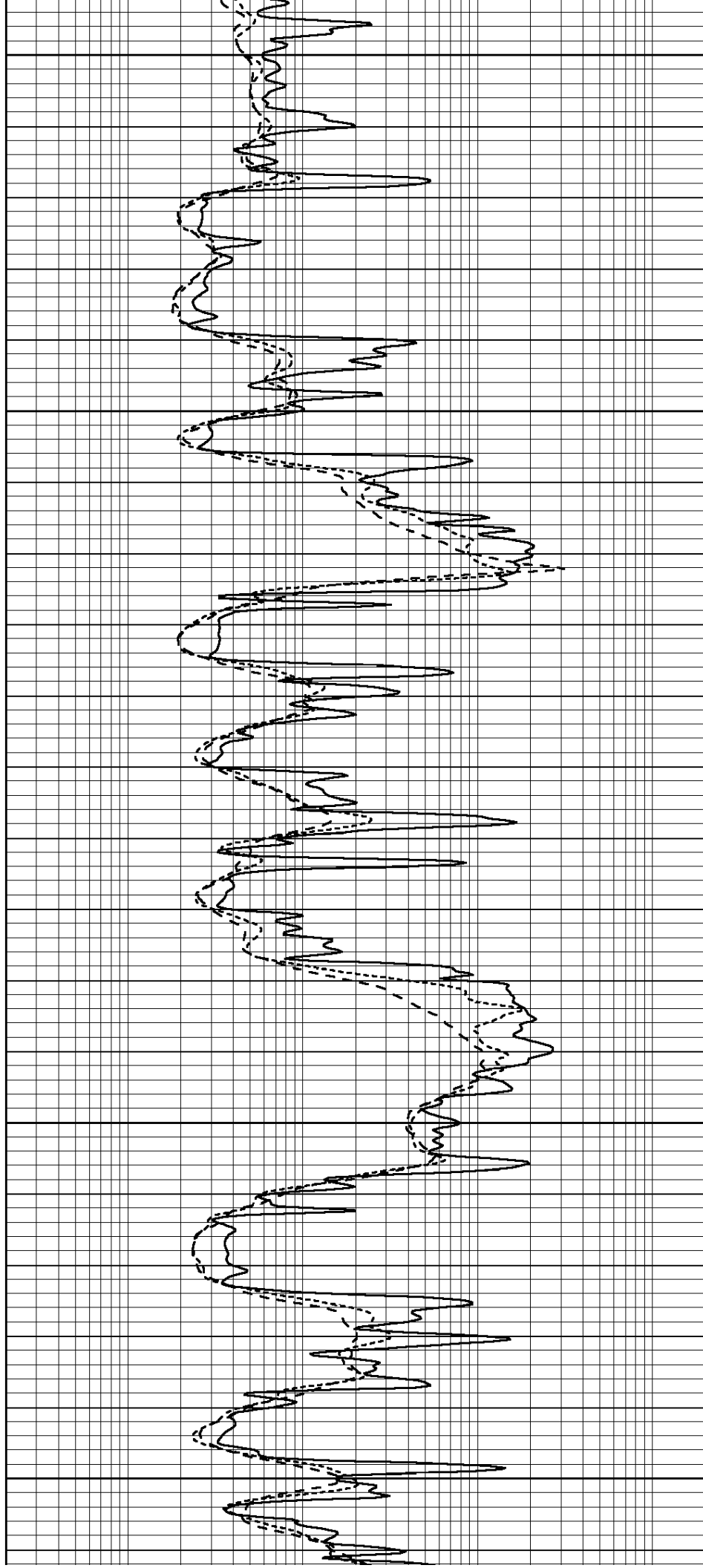
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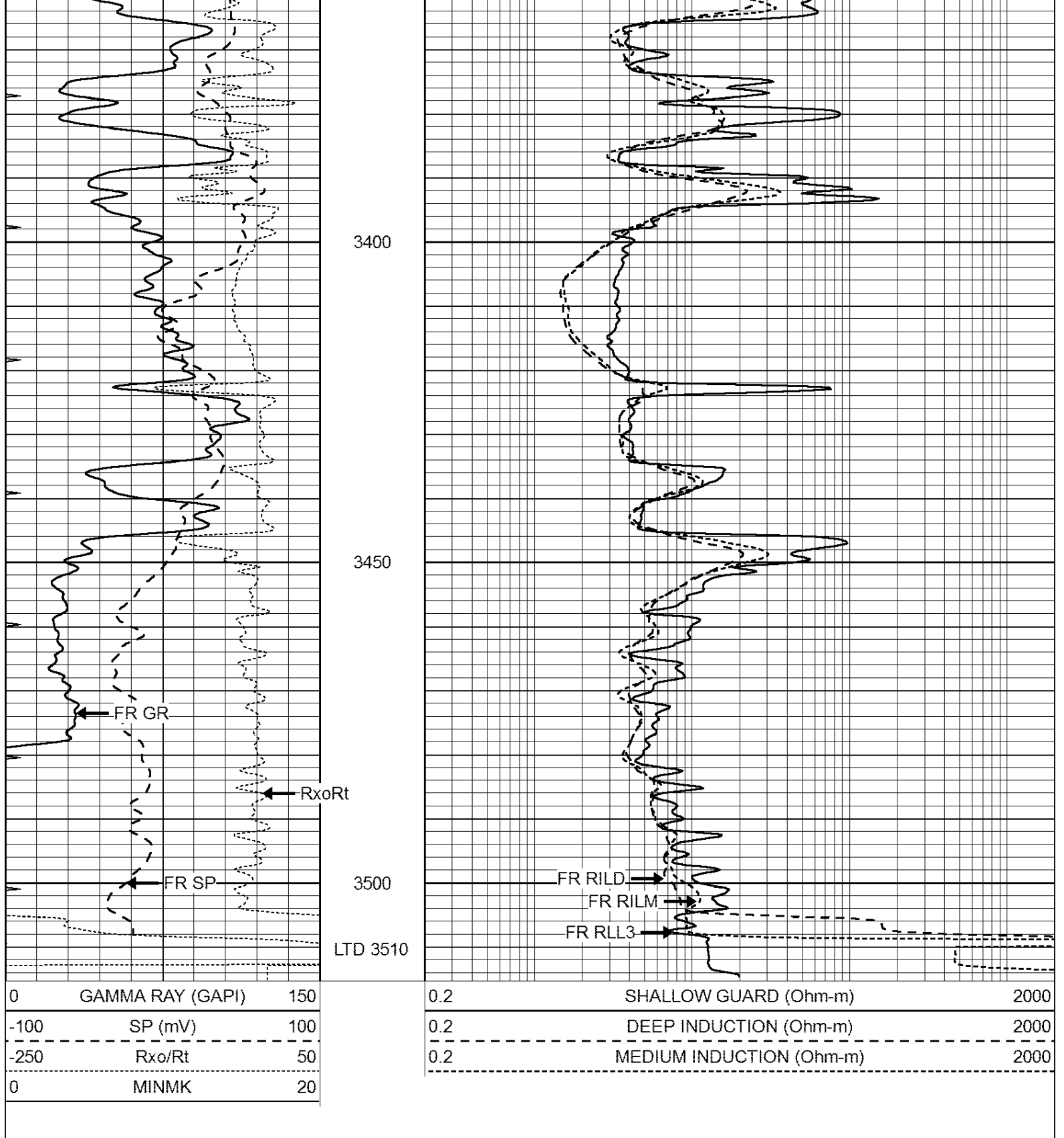
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3250

3300

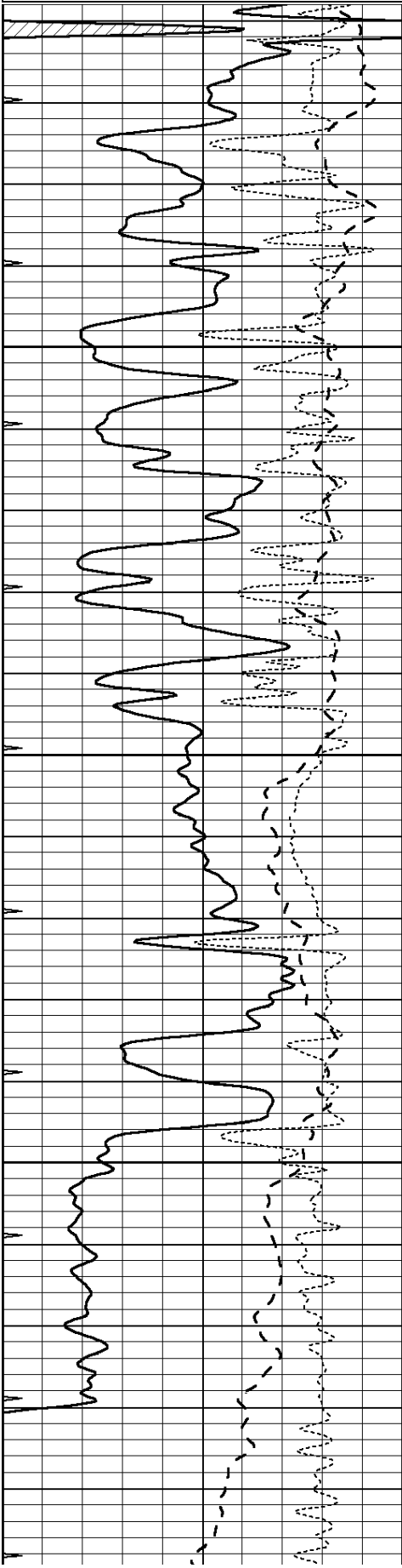
3350





Charted by: Depth in feet scaled 1:1.0		
0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

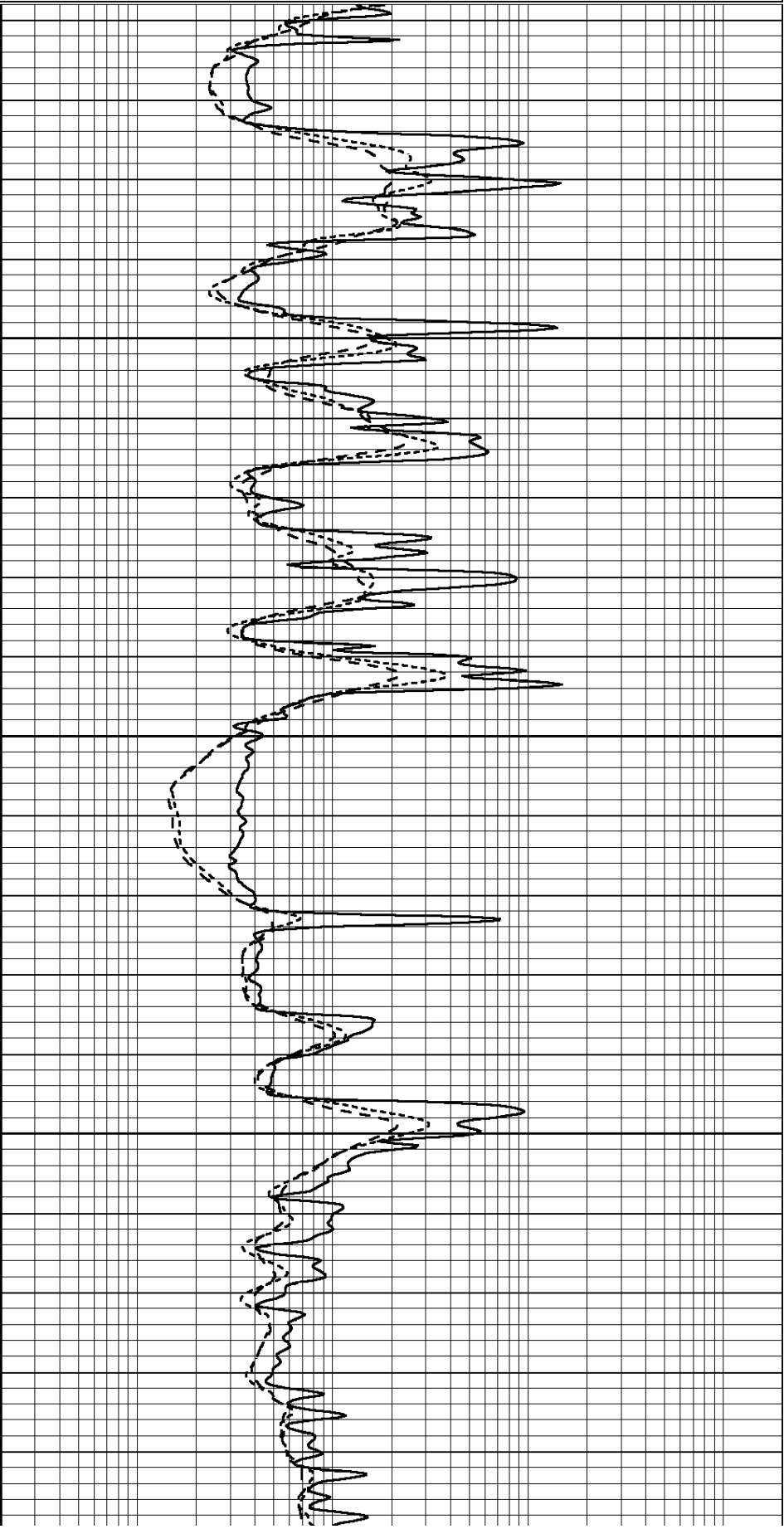
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000

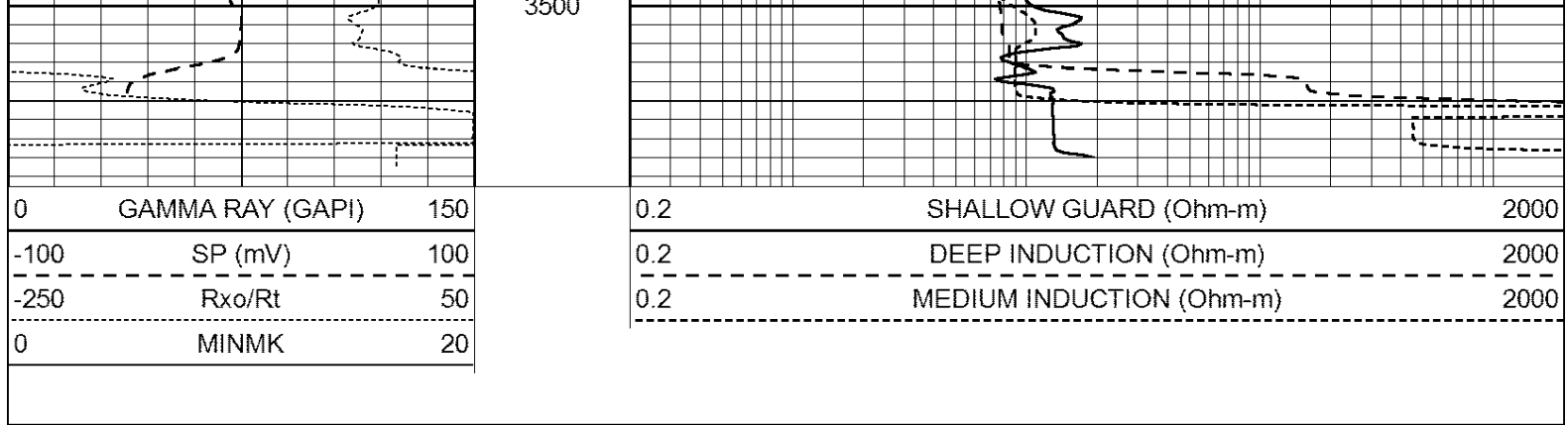


3350

3400

3450





Calibration Report									
Database File:		011784ddn.db							
Dataset Pathname:		pass3.3							
Dataset Creation:		Mon Sep 23 18:50:07 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:		Wed Sep 18 03:03:09 2013							
Before Survey Verification Performed:									

Master Calibration						
	<u>Density</u>			<u>Far Detector</u>		<u>Near Detector</u>
Magnesium	1.710	g/cc		1075.98	532.39	cps
Aluminum	2.560	g/cc		286.51	422.88	cps
	Spine Angle = 80.13			Density/Spine Ratio = 0.633		
	<u>Size</u>			<u>Reading</u>		
Small Ring	8.00	in		3.21	V	
Large Ring	14.00	in		5.46	V	
Before Survey Verification						
	<u>Target</u>			<u>Measured</u>		
		g/cc			g/cc	
		g/cc			g/cc	
		g/cc			g/cc	
After Survey Verification						
	<u>Target</u>			<u>Measured</u>		
		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	
	Short Space		1.00	cps	1.00	cps
	Long Space		1.00	cps	1.00	cps
PRE-SURVEY VERIFICATION						
	Detector		Readings		Measured	
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	
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