



SUPERIOR
Hays,
Kansas

DUAL INDUCTION LOG

Company	MAI OIL OPERATIONS, INC.	Company	MAI OIL OPERATIONS, INC.
Well	LUDWIG #2	Well	LUDWIG #2
Field	CARROLL	Field	CARROLL
County	BARTON	County	BARTON
State	KANSAS	State	KANSAS
Location:	AP1 # : 15-009-25704-0000 2310' FSL & 660' FWL N/2 - NW - SW	Other Services CDL/CNL MEL	
Permanent Datum	GROUND LEVEL	Elevation	1859
Log Measured From	KELLY BUSHING 8' A.G.L.	K.B. 1867 D.F. 1865 G.L. 1859	
Drilling Measured From	KELLY BUSHING		
Date	7/3/12		
Run Number	ONE		
Depth Driller	3425		
Depth Logger	3422		
Bottom Logged Interval	3420		
Top Log Interval	00		
Casing Driller	8 5/8"@839'		
Casing Logger	839		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 9,000 PPM	
Density / Viscosity	8.9/5.1		
pH / Fluid Loss	10.0/10.8		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	.400@90F		
Rmt @ Meas. Temp	.300@90F		
Rmc @ Meas. Temp	.480@90F		
Source of Rmt / Rmc	MEASUREMENT		
Rm @ BHT	.324@111F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom	12:45 A.M.		
Maximum Recorded Temperature	111F		
Equipment Number	4010		
Location	HAYS, KANSAS		
Recorded By	JEFF LUEBBERS		
Witnessed By	KURT TALBOTT		

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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 SUPERIOR WELL SERVICE HAYS, KANSAS (785) 628-6395
DIRECTIONS

S. OF RUSSELL, KS. TO (HWY 4 & 281) 2W. TO "NW 60 RD.", 1/2N. TO SHELTER BELT, E. & S. INTO



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MAIN SECTION

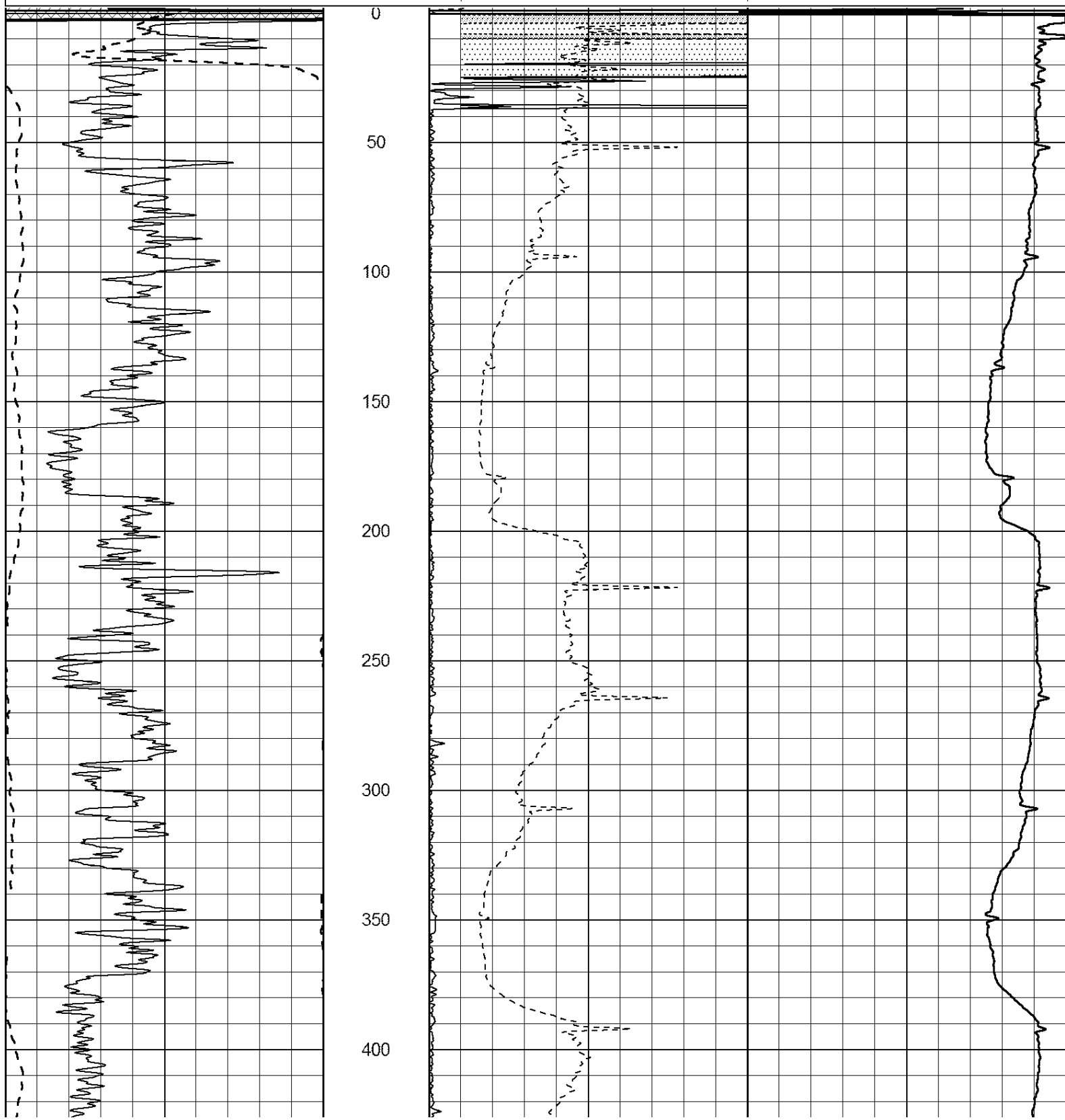
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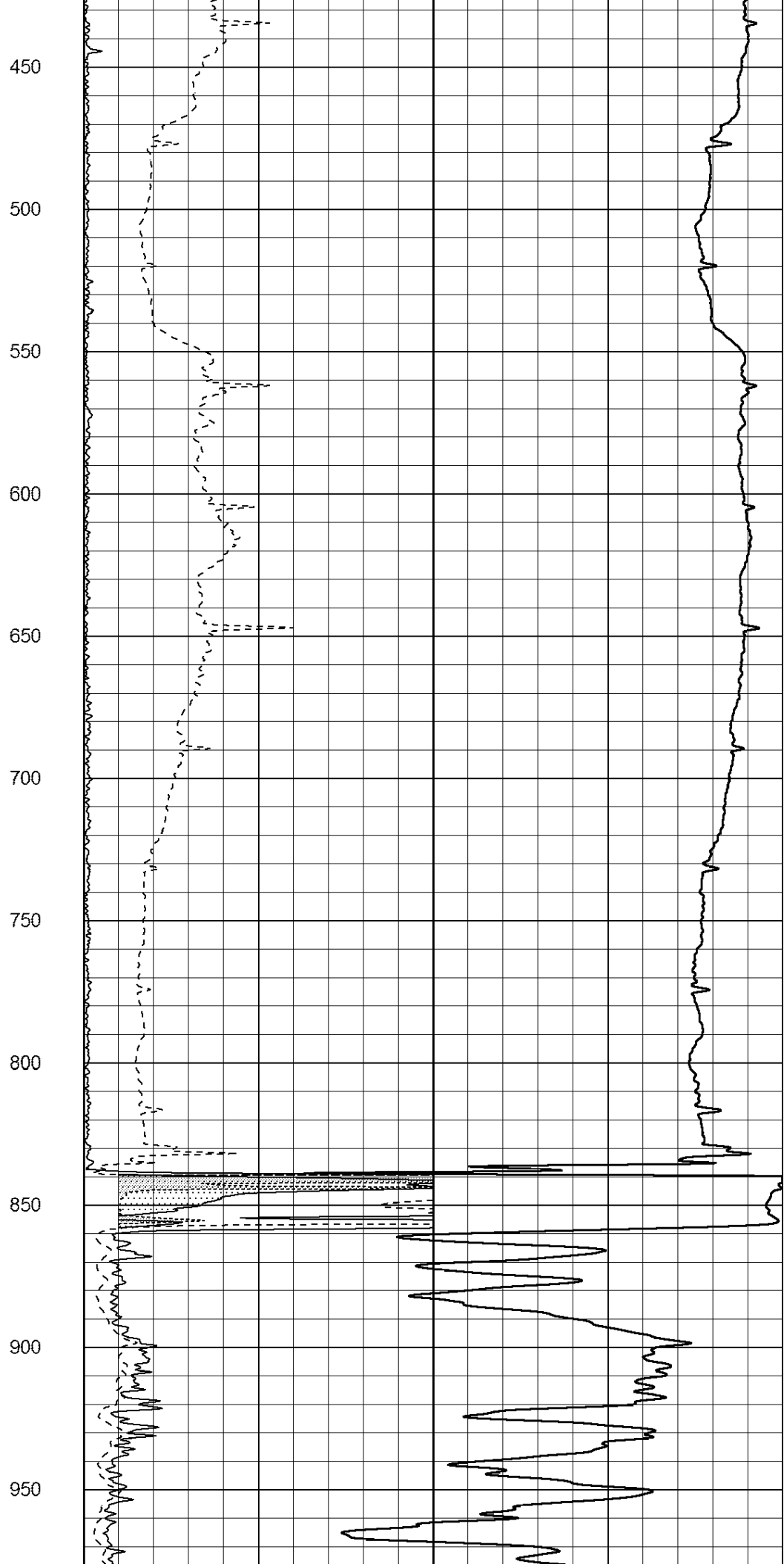
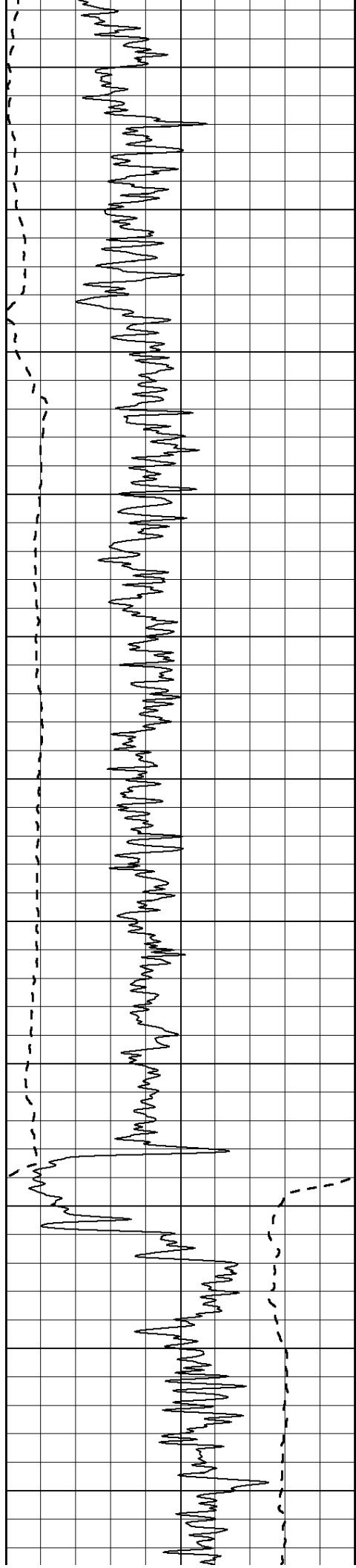
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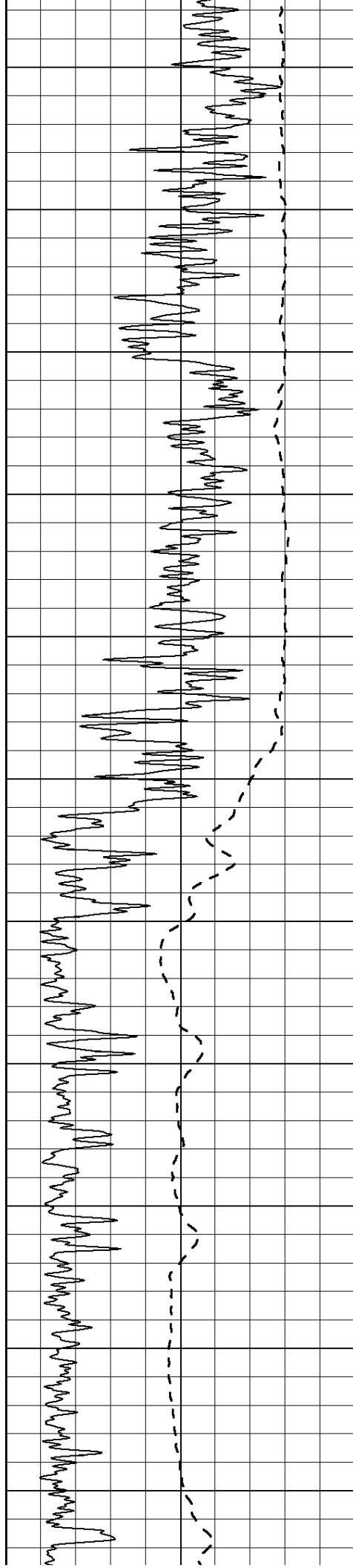
0	RLL3 (Ohm-m)	50
0	RILD (Ohm-m)	50

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







1000

1050

1100

1150

1200

1250

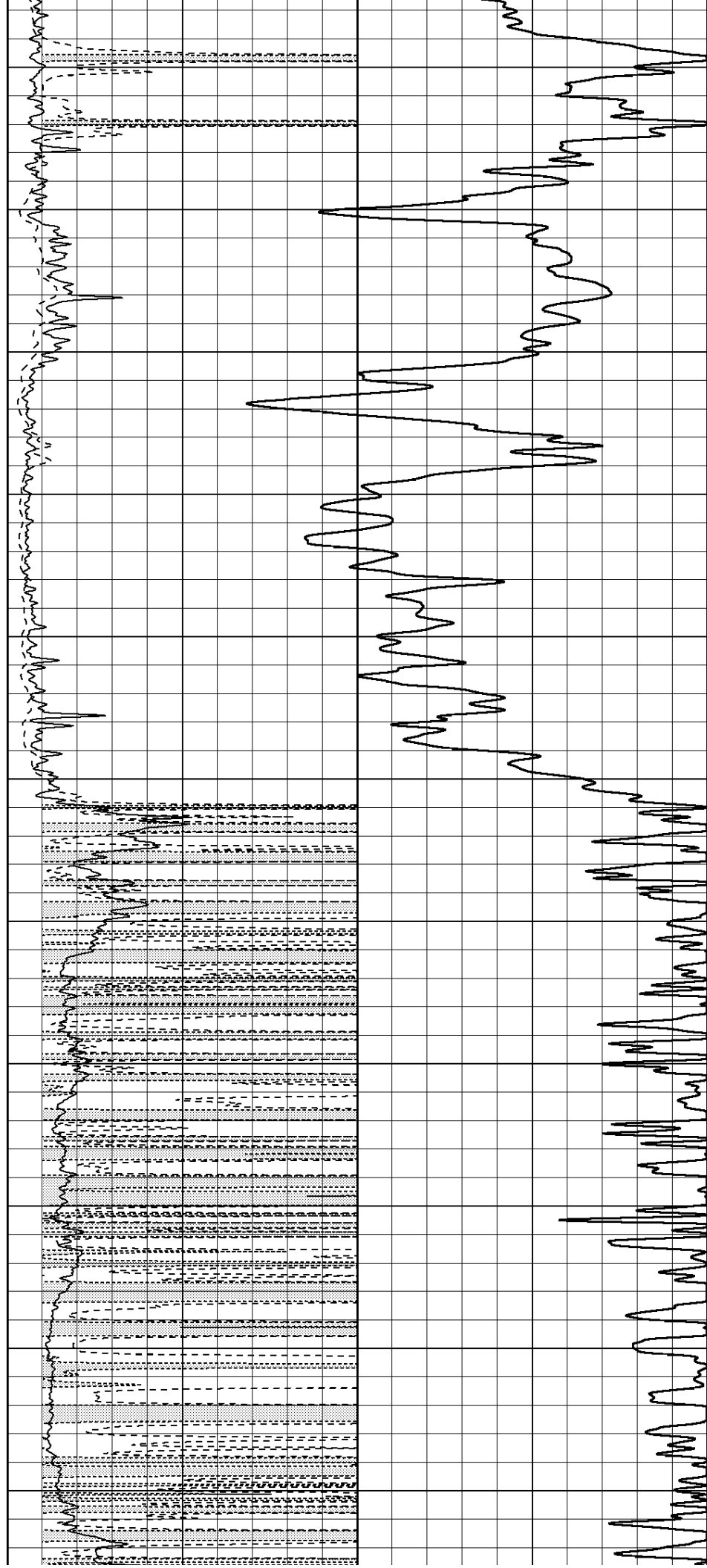
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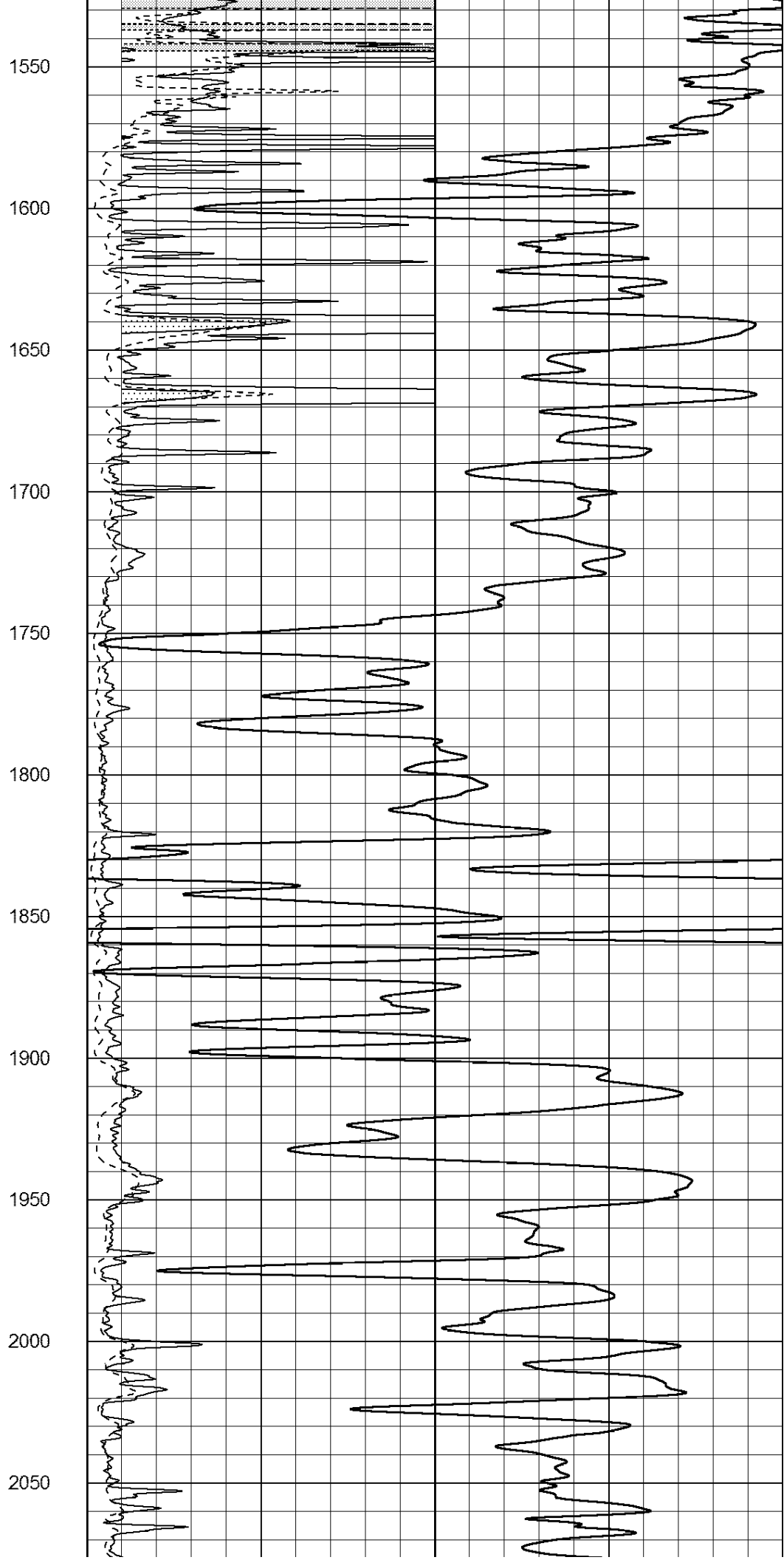
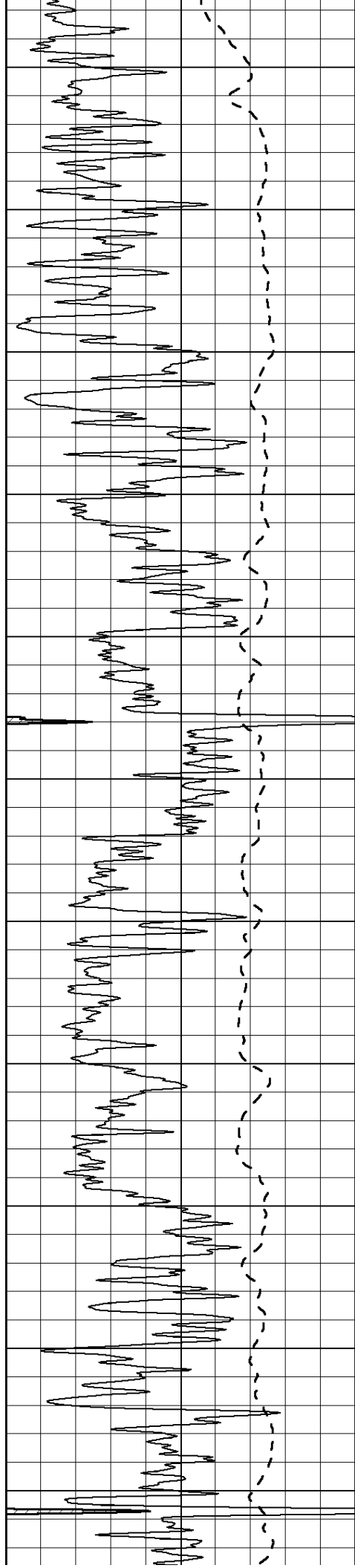
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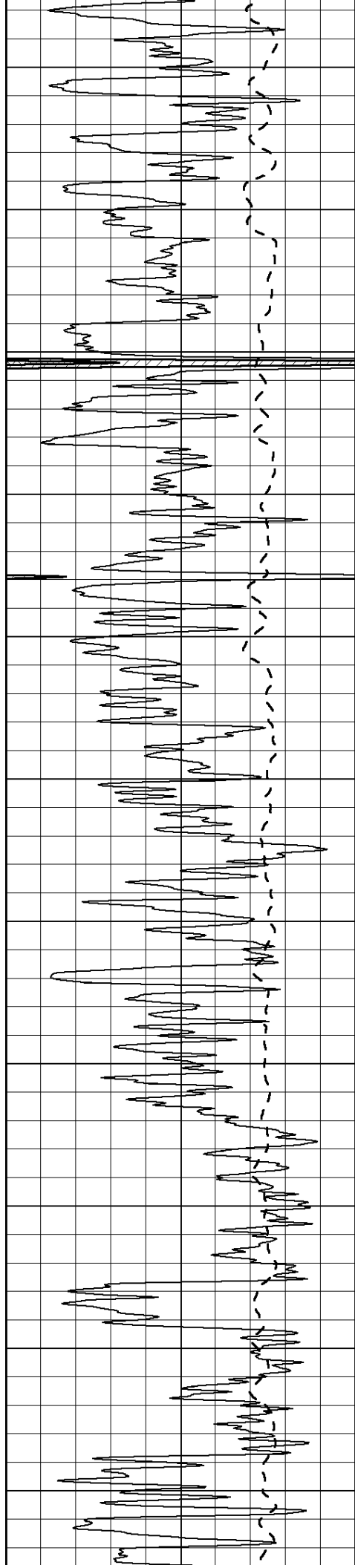
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1450

1500







2100

2150

2200

2250

2300

2350

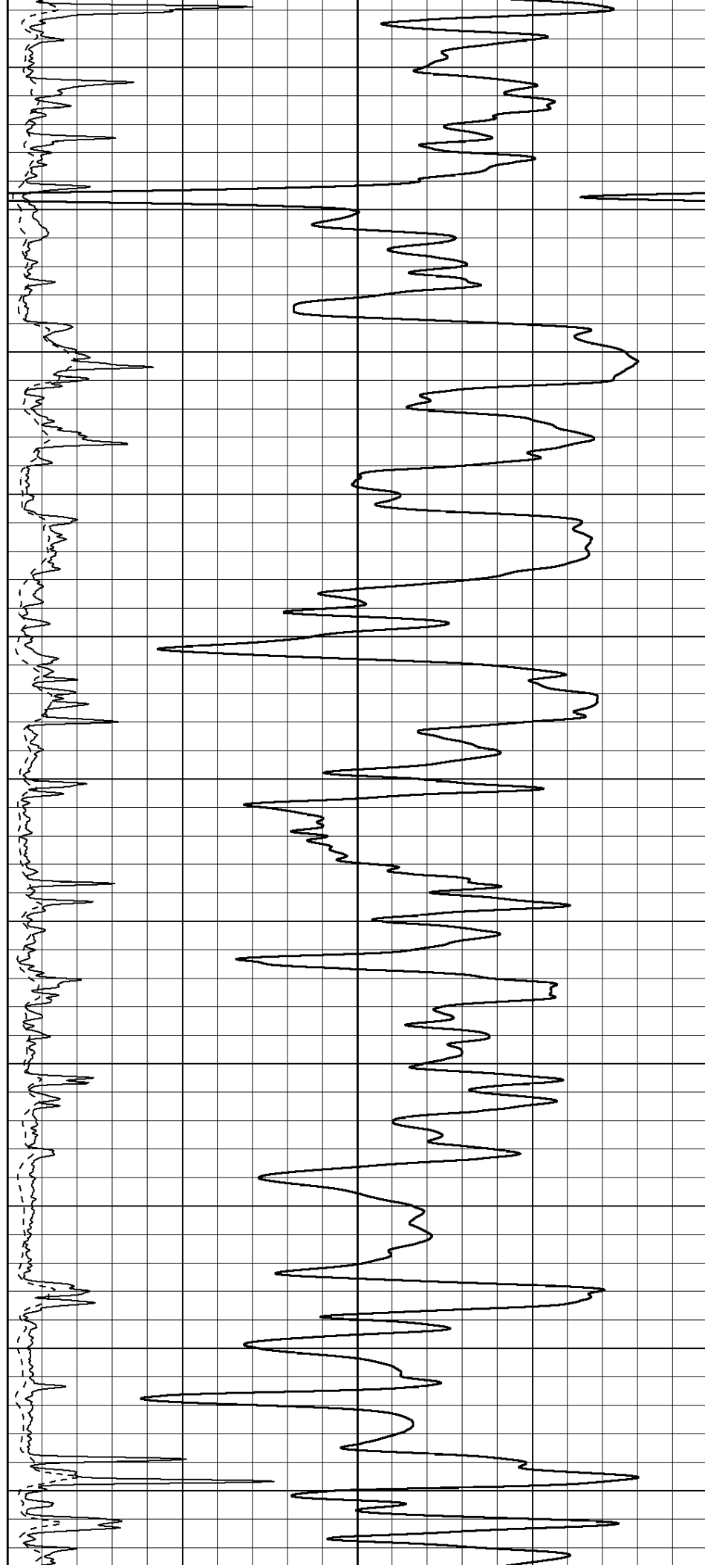
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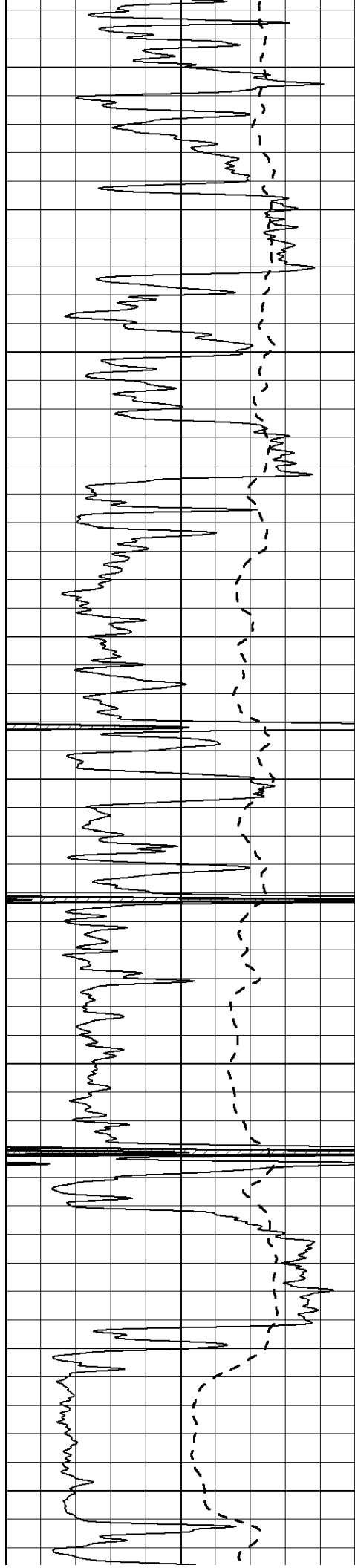
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2500

2550

2600





2650

2700

2750

2800

2850

2900

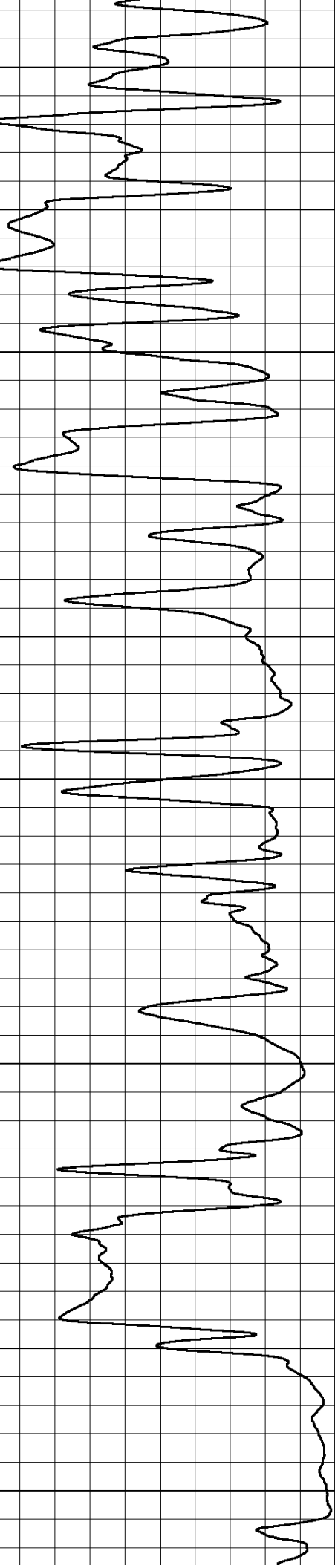
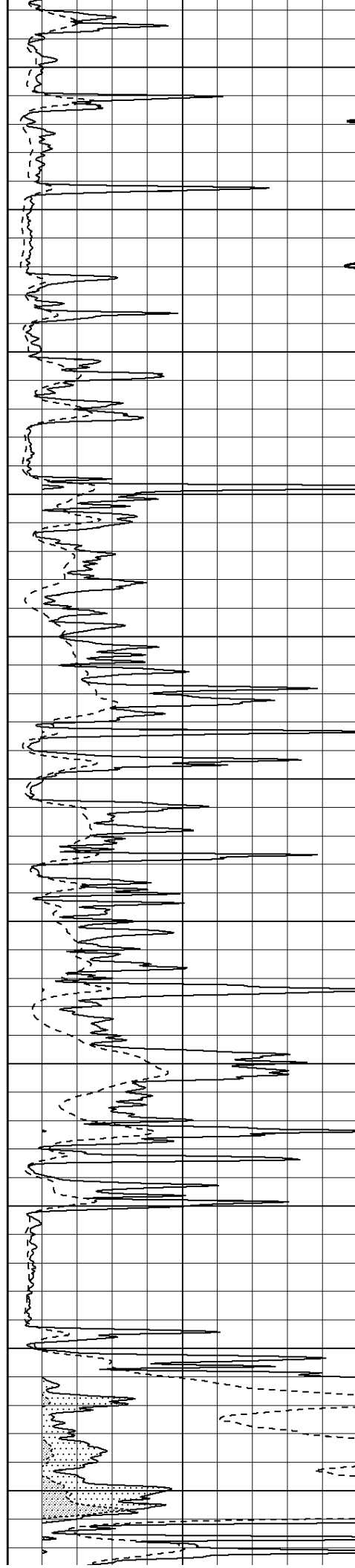
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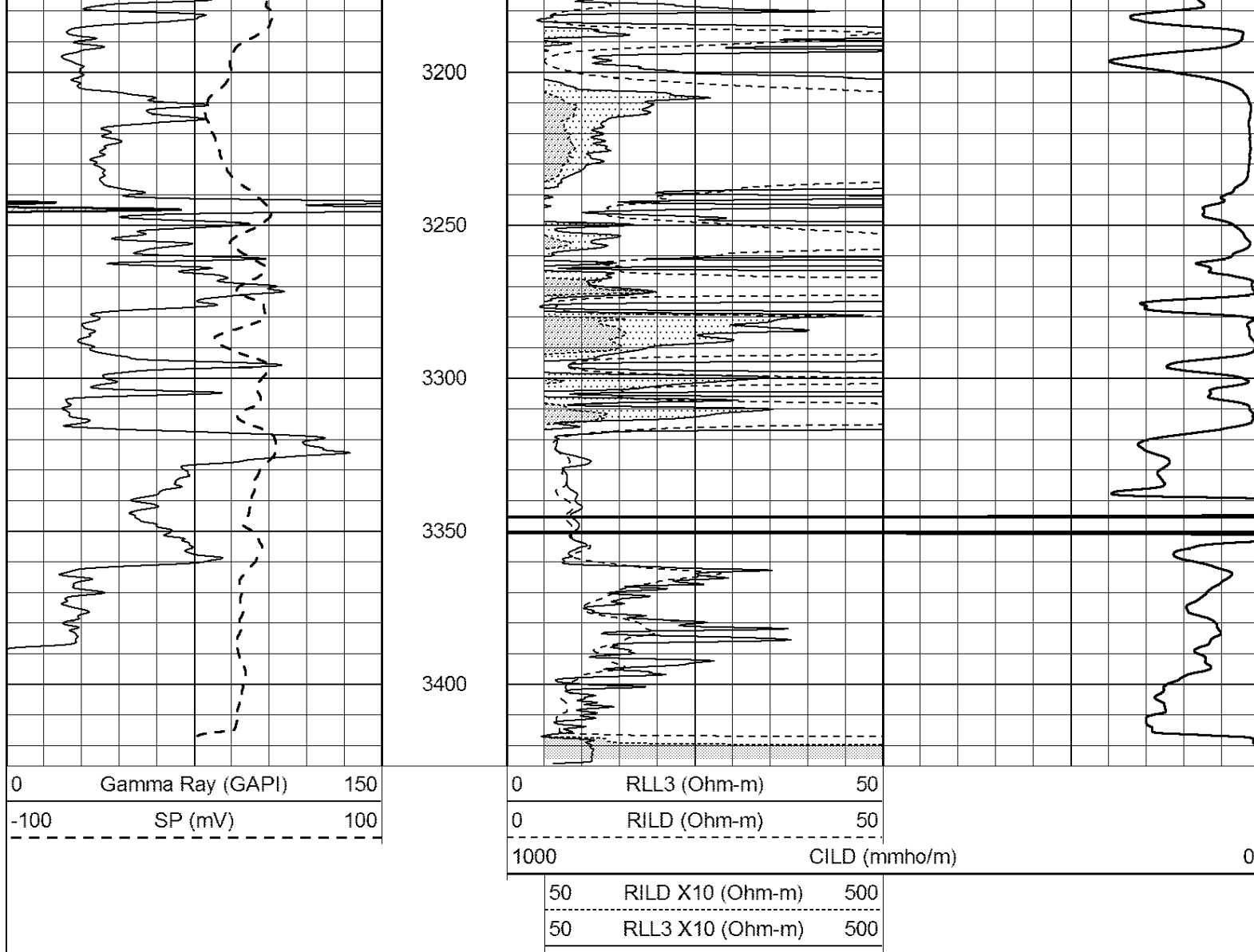
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3050

3100

3150





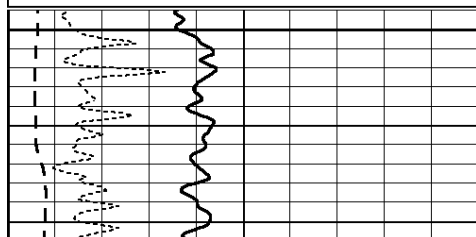
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ANHYDRITE

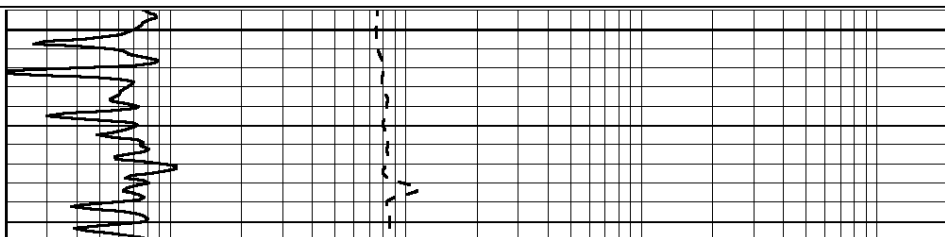
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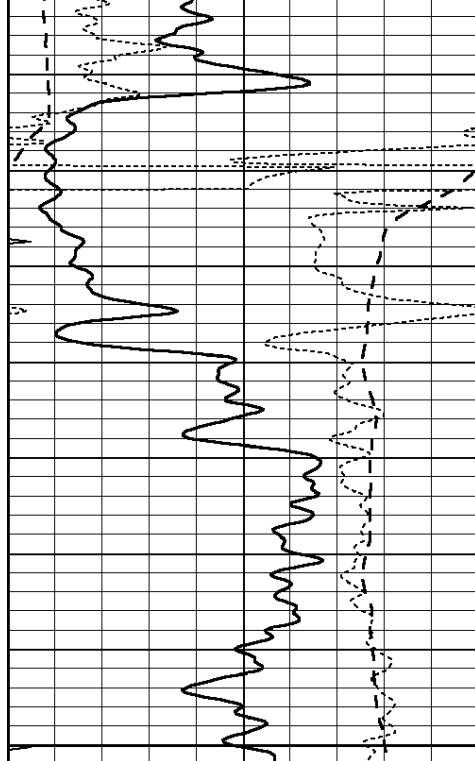
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-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

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



800

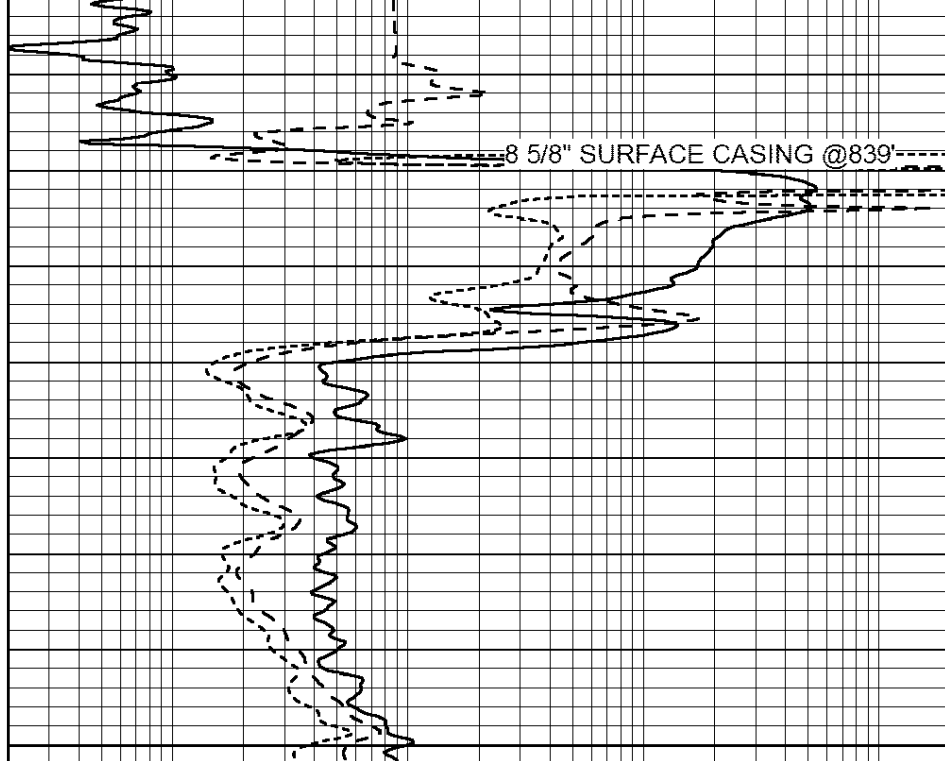




850

900

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



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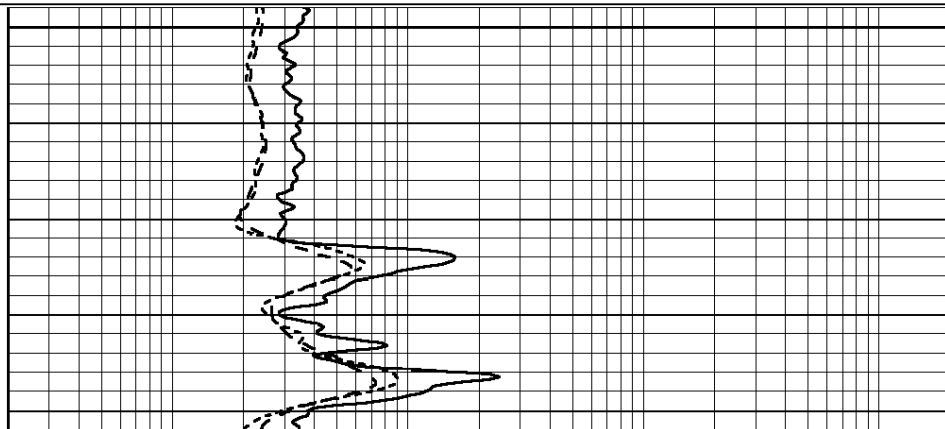
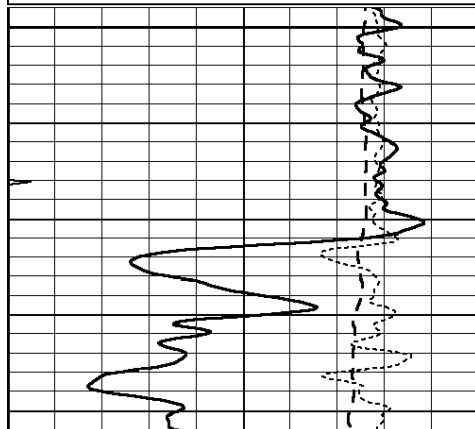
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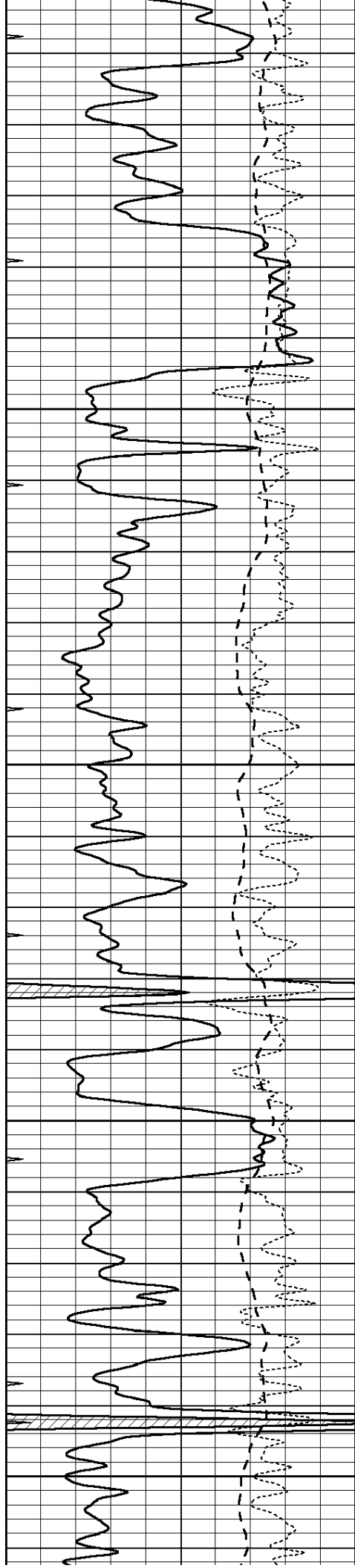
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Charted by: Depth in Feet scaled 1:240

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

2700





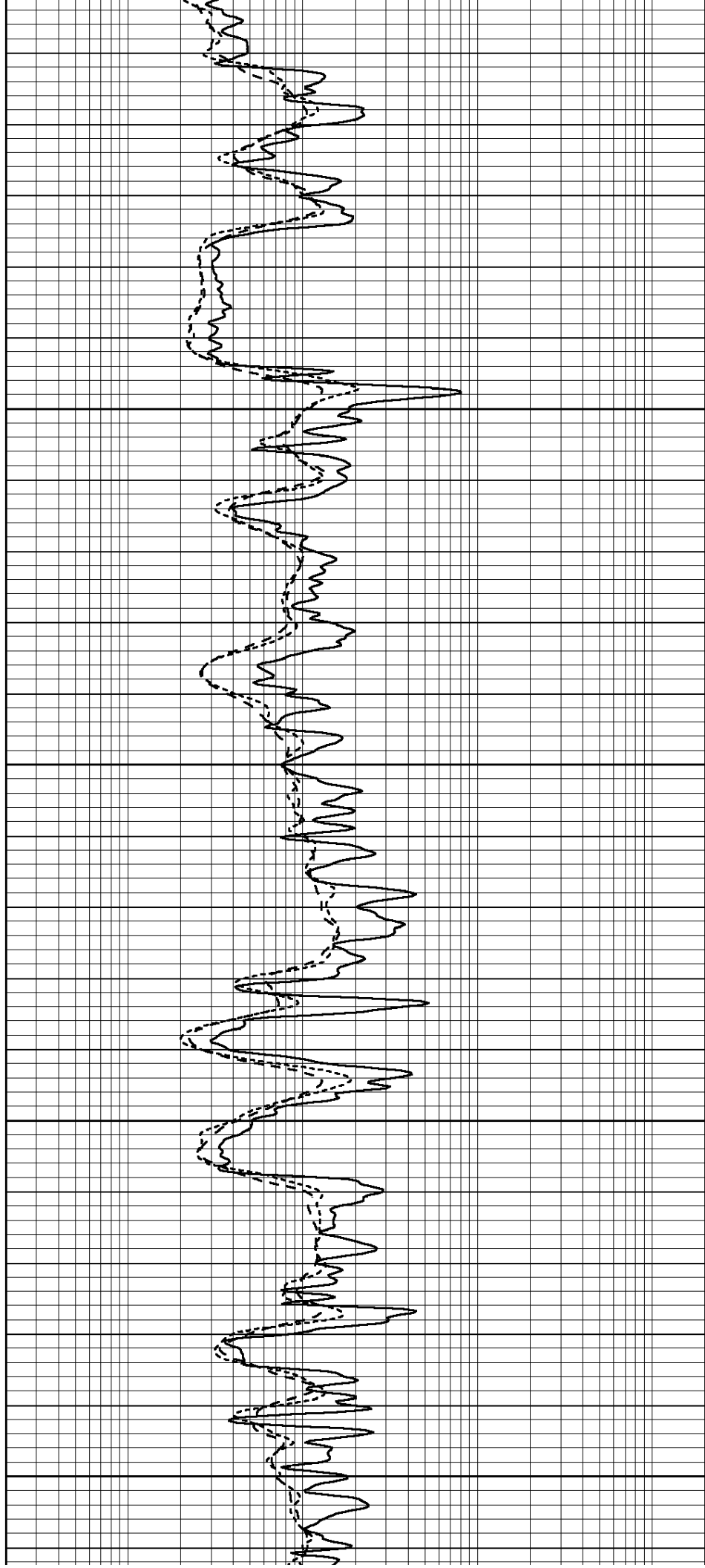
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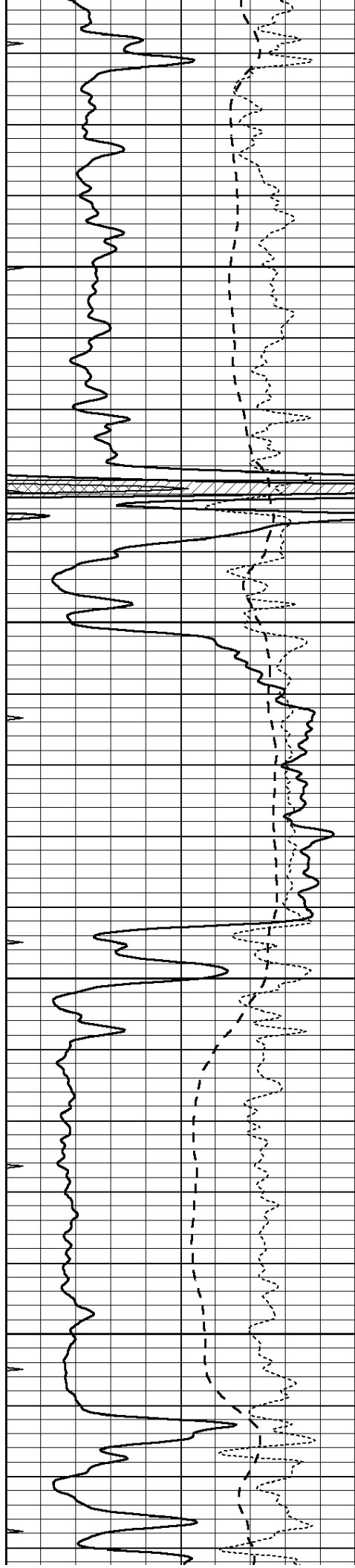
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2850

2900

2950



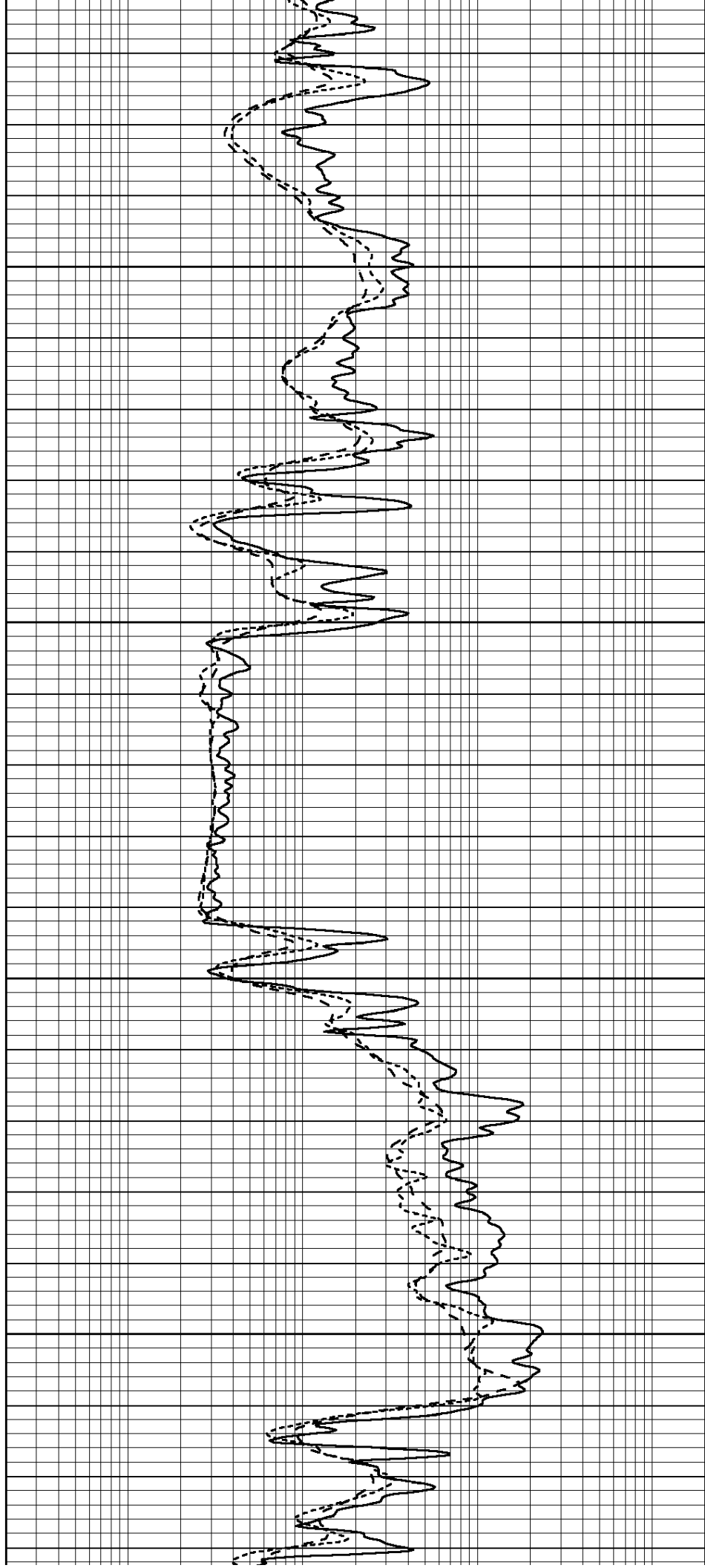


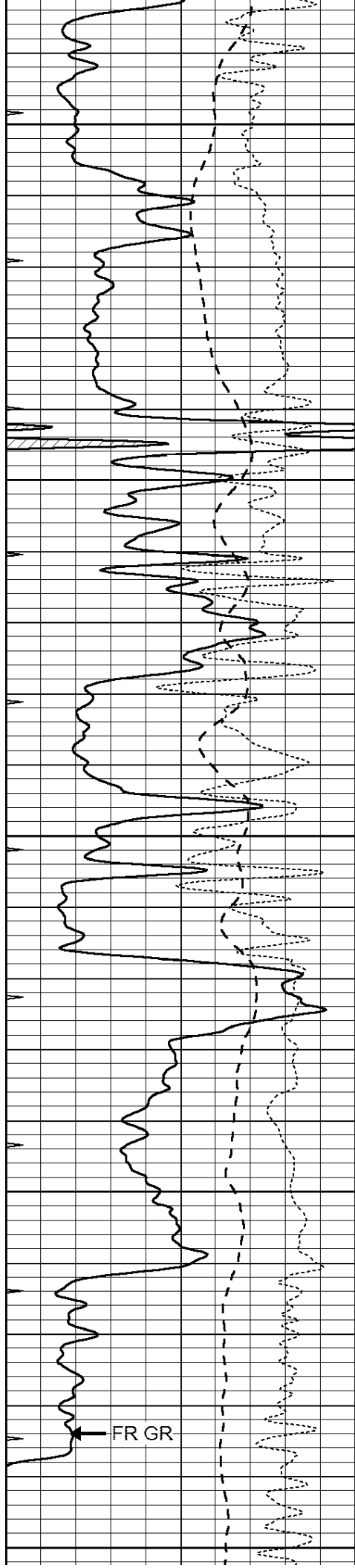
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3050

3100

3150





3200

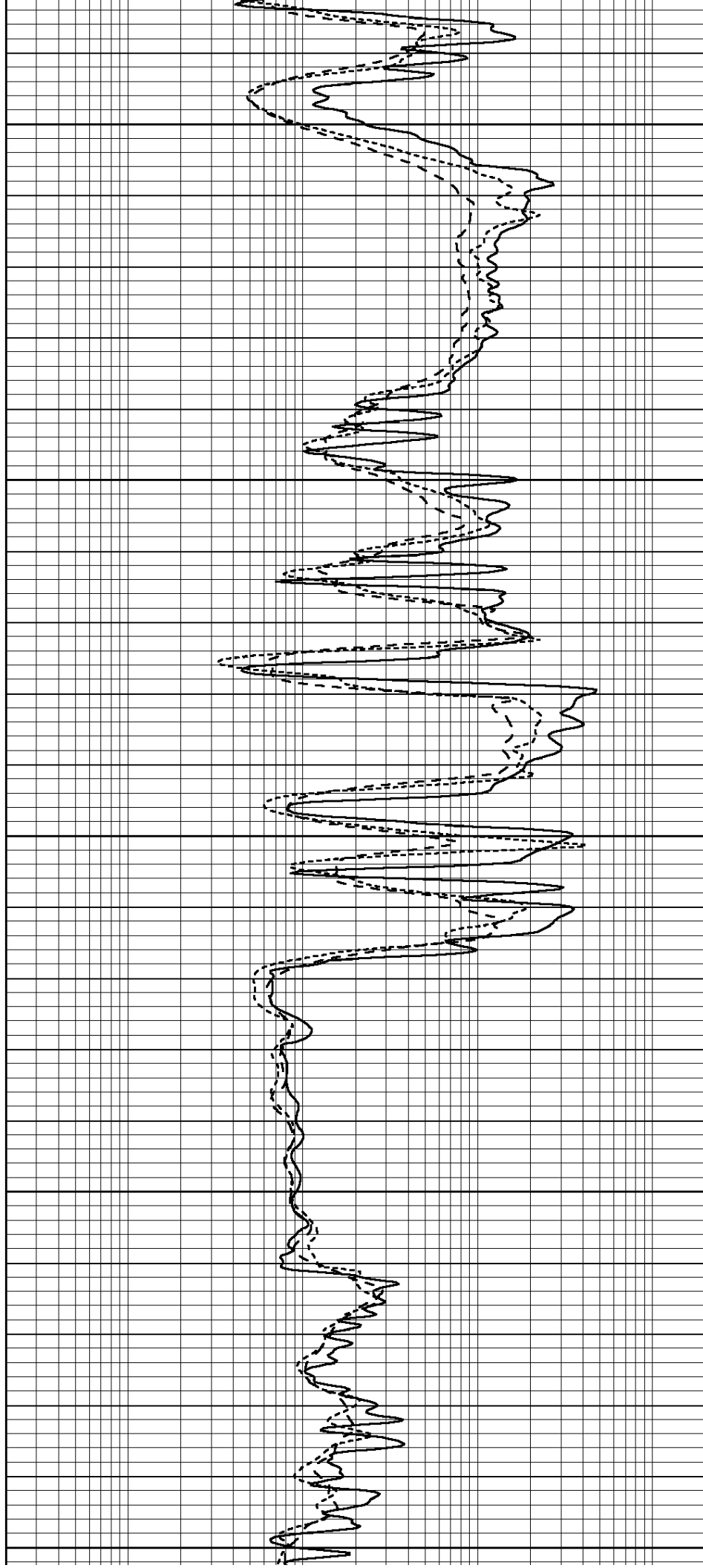
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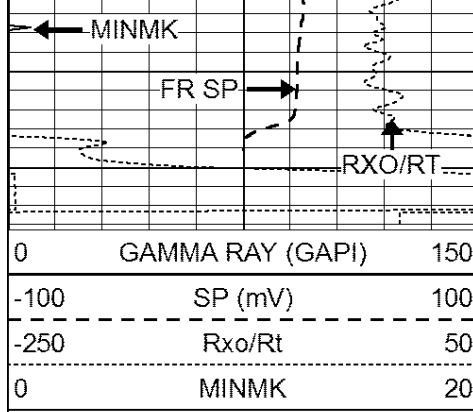
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3350

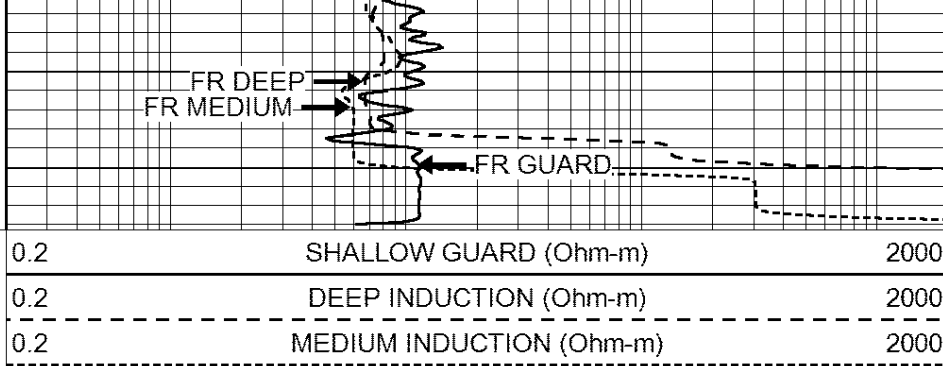
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FR GR





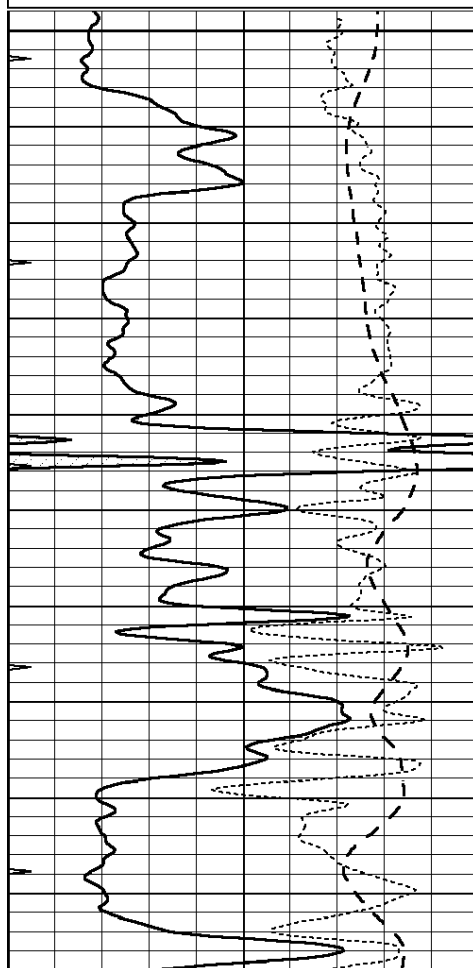
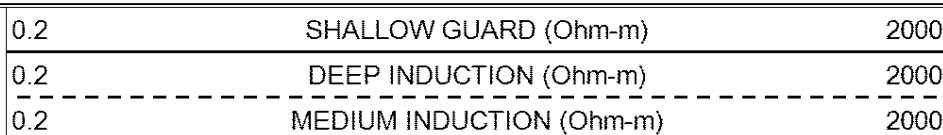
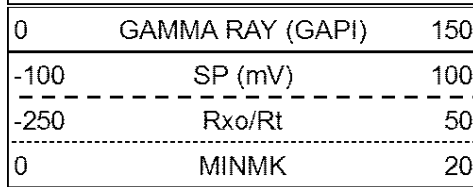
LTD 3422



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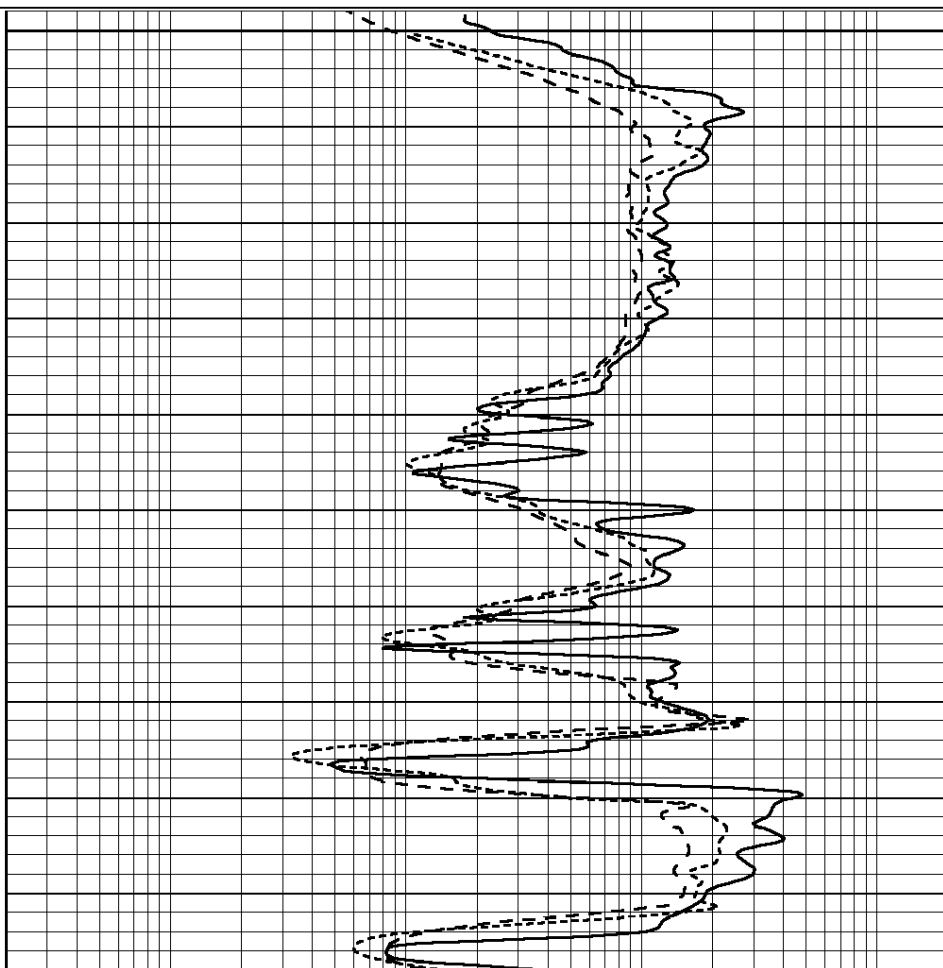
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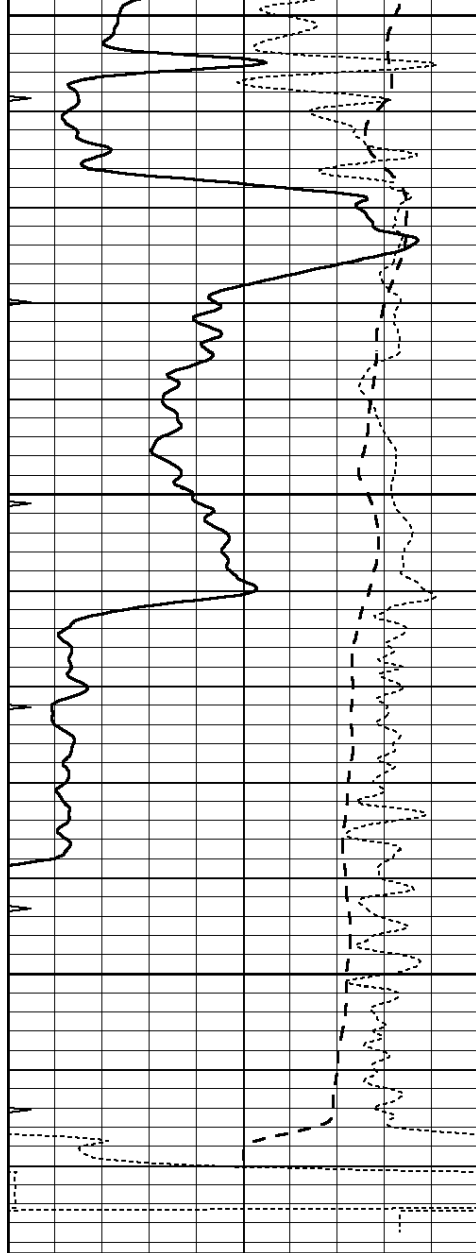
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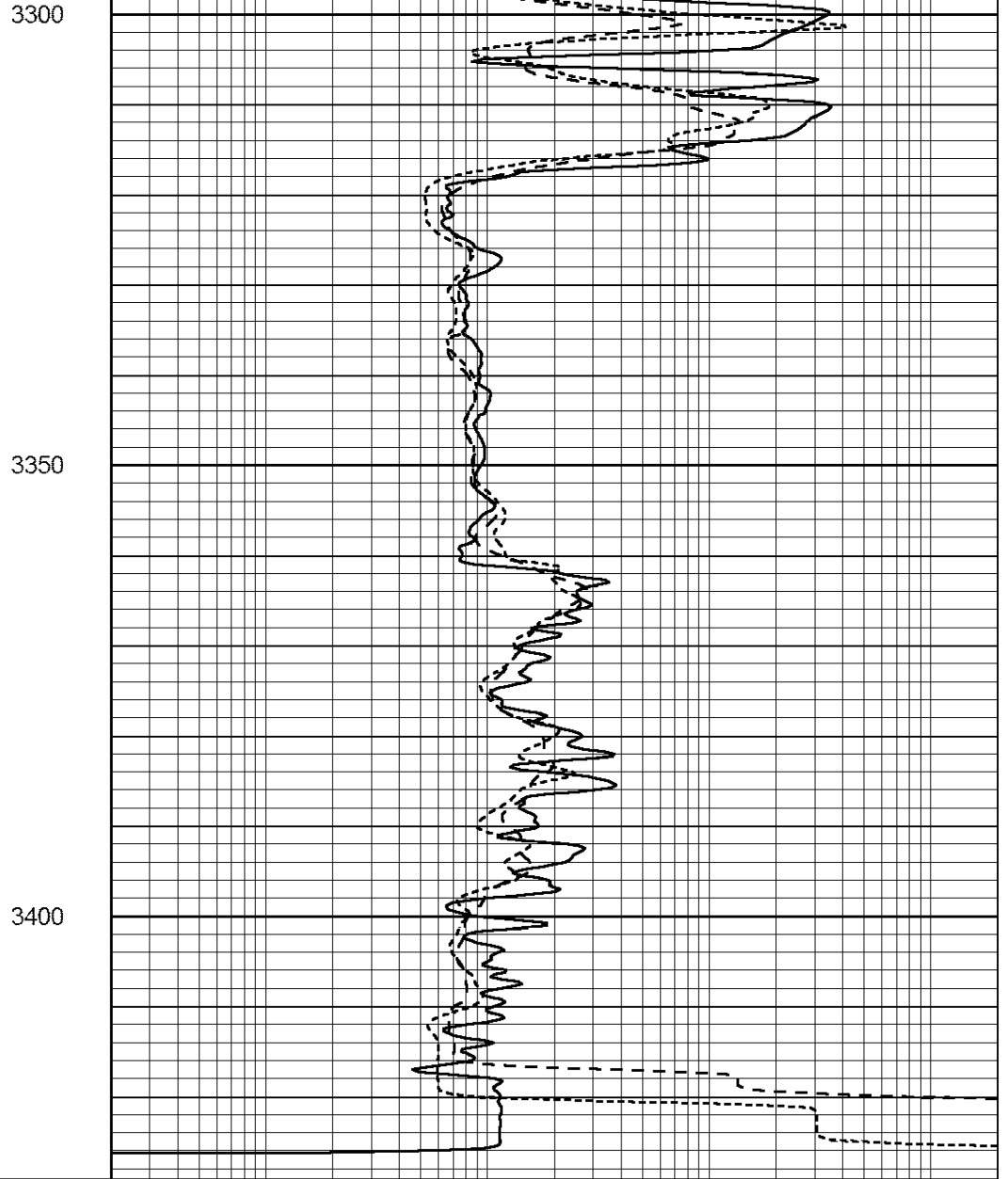
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3250





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

Calibration Report

Database File: 409426ddn.db
 Dataset Pathname: pass3.6
 Dataset Creation: Wed Jul 04 02:49:02 2012

Dual Induction Calibration Report

Serial-Model: DIL4-GEAR
 Performed: Wed Jul 04 00:12:35 2012

Readings				References			Results	
Loop:	Air	Loop		Air	Loop		m	b
Deep	0.008	0.666	V	0.000	400.000	mmho/m	570.000	2.000
Medium	-0.003	0.769	V	0.000	462.500	mmho/m	560.000	1.000
Internal:	Zero	Cal		Zero	Cal		m	b

Deep	0.013	0.651	V	0.000	400.000	mmho/m	627.541	-8.365
Medium	0.020	0.754	V	0.000	462.500	mmho/m	630.311	-12.549

Litho Density Calibration Report
Serial: 003N Model: PRB
Performed Tue Sep 08 14:14:44 2009

Litho Density Calibration

	Background	Magnesium	Aluminum	Sandstone	
Window 1	2042.6	12312.8	4225.8	13758.4	cps
Window 2	1855.8	10134.7	3624.2	11113.1	cps
Window 3	1639.4	6760.2	2716.3	7260.3	cps
Window 4	466.4	469.2	466.1	476.5	cps
Long Space	0.0	8278.9	1768.4	9257.4	cps
Short Space	2.2	2377.3	1544.1	2574.2	cps
Rho		1.7100	2.5900	1.3800	g/cc
Pe			2.5700	1.5500	
Rib Angle	: 44.4	Rib Slope	: 0.979	Density/Spine Ratio	: 0.549
Spine Angle	: 74.4	Spine Slope	: 3.577	Spine Intercept	: -18.8

Caliper

	Readings	Reference	
Low Ref	3.4	8.0	
High Ref	5.5	15.0	
	Gain: 3.3		Offset: -3.3

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: Tue Jul 03 02:09:35 2012

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 1.0 cps

Sensitivity: 0.3000 GAPI/cps