



DUAL INDUCTION LOG

Company	PHILLIPS EXPLORATION COMPANY L.C.
Well	WANKER #3-4 SHR
Field	DOWNER CREEK
County	TREGO
State	KANSAS
Company	PHILLIPS EXPLORATION COMPANY L.C.
Well	WANKER #3-4 SHR
Field	DOWNER CREEK
County	TREGO
State	KANSAS
Location:	API # : 15-195-23095-0000
Permanent Datum	1200' FSL & 550' FEL
Log Measured From	GROUND LEVEL Elevation 2479
Drilling Measured From	KELLY BUSHING 5' A.G.L. KELLY BUSHING Elevation K.B. 2484 D.F. 2482 G.L. 2479
Date	10/15/19
Run Number	ONE
Depth Driller	4180
Depth Logger	4179
Bottom Logged Interval	4178
Top Log Interval	00
Casing Driller	8 5/8" @ 208
Casing Logger	208
Bit Size	7 7/8"
Type Fluid in Hole	CHEMICAL MUD
Density / Viscosity	9.667
pH / Fluid Loss	8.5/9.2
Source of Sample	FLOWLINE
Rm @ Meas. Temp	1.1 @ 66F
Rmt @ Meas. Temp	.83 @ 66F
Rmc @ Meas. Temp	1.32 @ 66F
Source of Rmt / Rmc	MEASURED
Rm @ BHT	.61 @ 118F
Time Circulation Stopped	2 HOURS
Time Logger on Bottom	///
Maximum Recorded Temperature	118F
Equipment Number	1523
Location	HAYS, KANSAS
Recorded By	GUS PFANENSTIEL
Witnessed By	PAT DEENIHAN

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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 ELI WIRELINE, HAYS, KS. (785) 628-6395

DIRECTIONS
WAKEENEY SOUTH TO LANDFILL, WEST 5 MILES
SOUTH INTO.



MAIN PASS

Database File: 4098ddn.db
Dataset Pathname: pass4.1
Presentation Format: _dil2
Dataset Creation: Tue Oct 15 15:14:50 2019 by Calc Open-Cased 090629
Charted by: Depth in Feet scaled 1:600

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

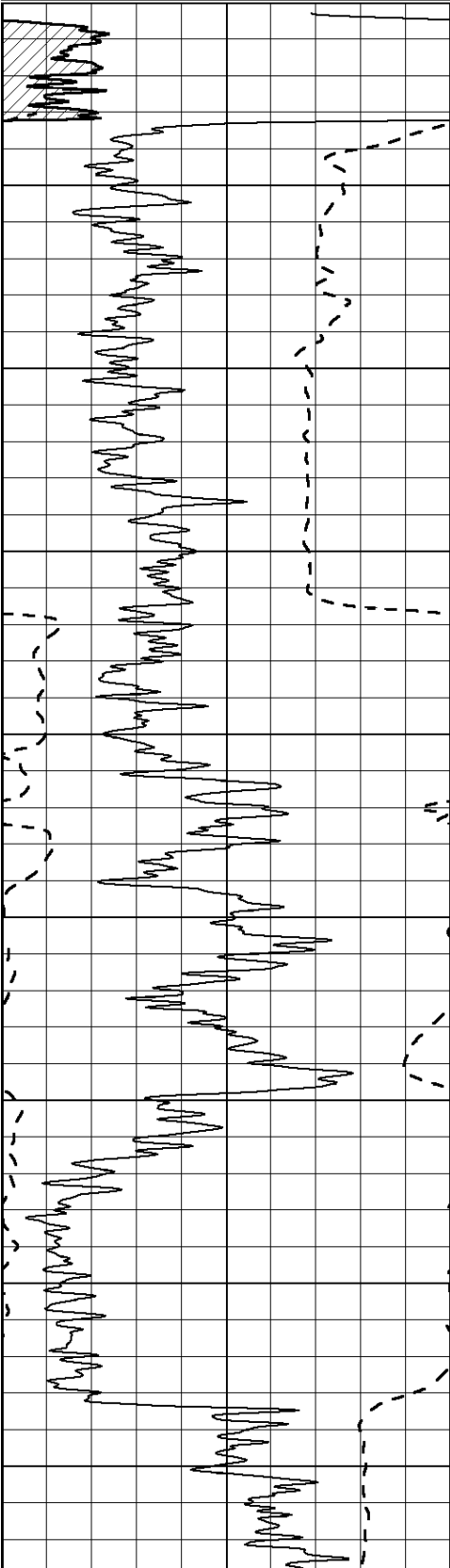
0 RLL3 (Ohm-m) 50

0 RILD (Ohm-m) 50

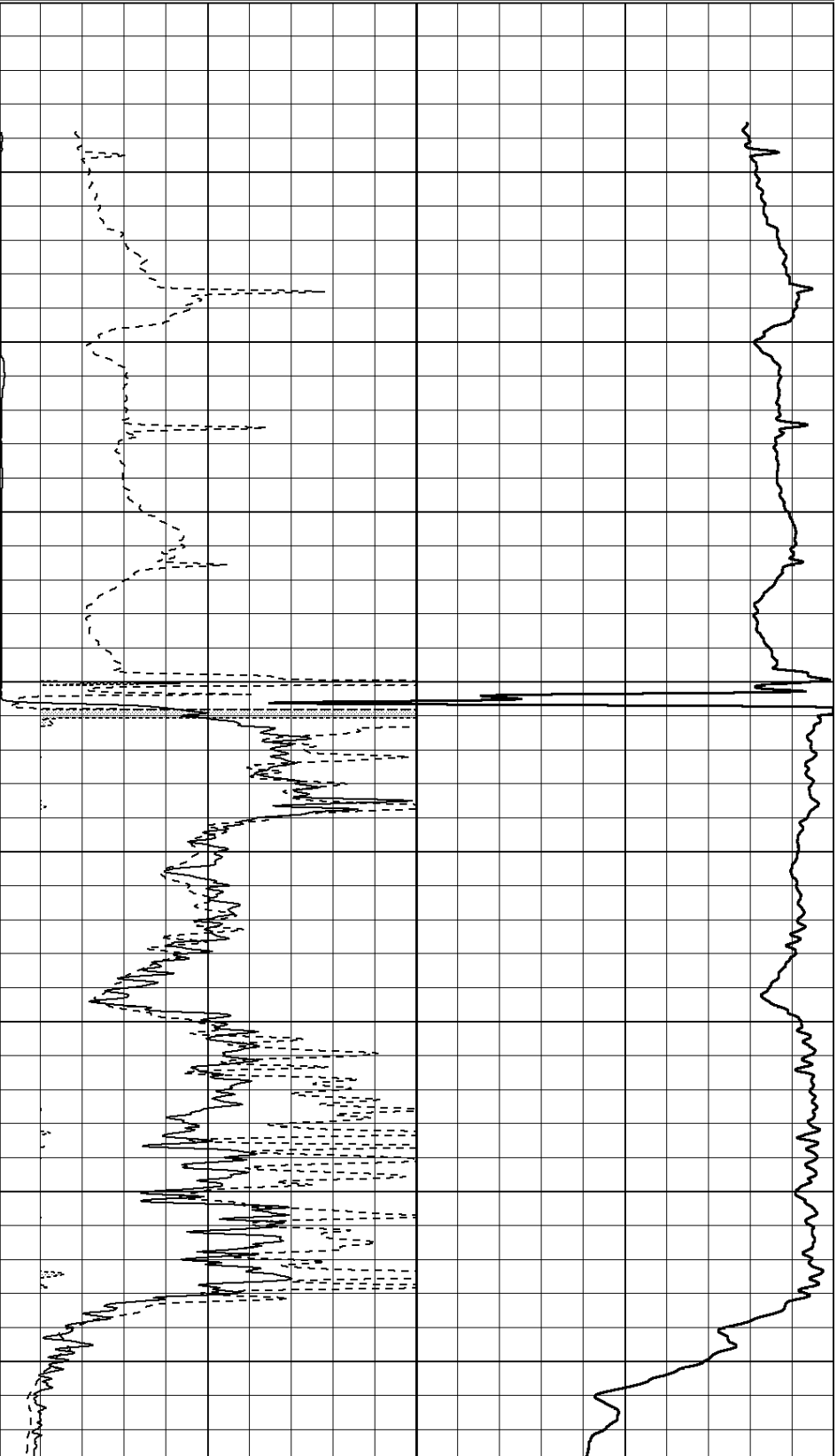
1000 CILD (mmho/m) 0

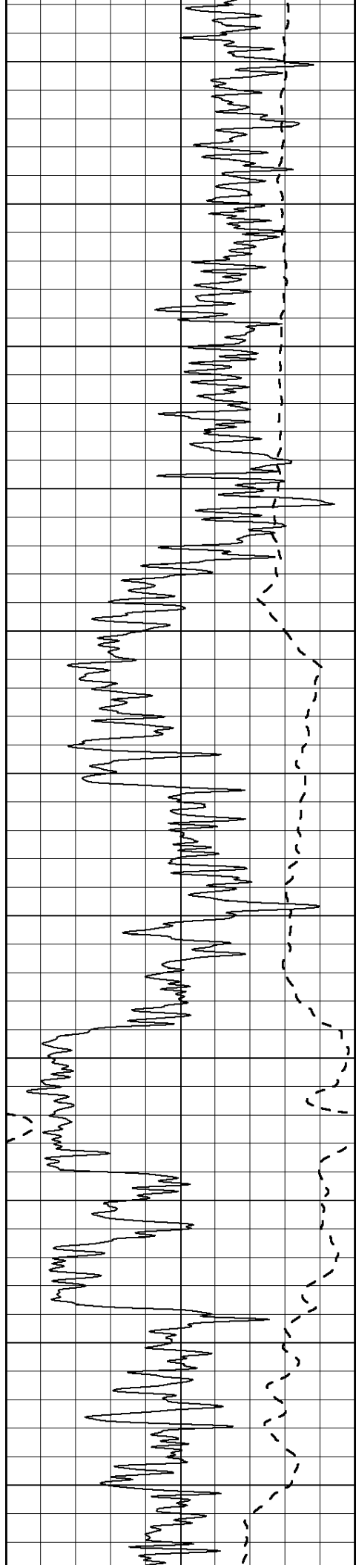
50 RILD X10 (Ohm-m) 500

50 RLL3 X10 (Ohm-m) 500

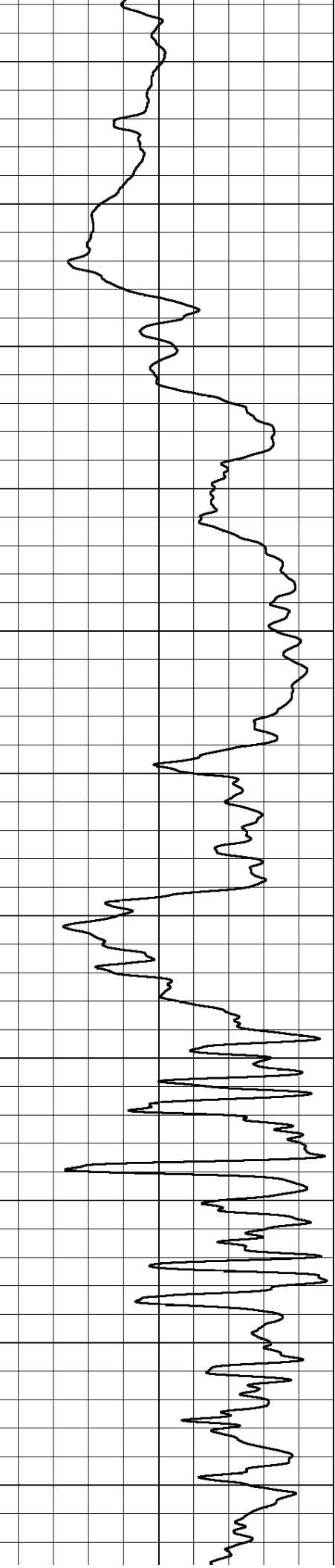
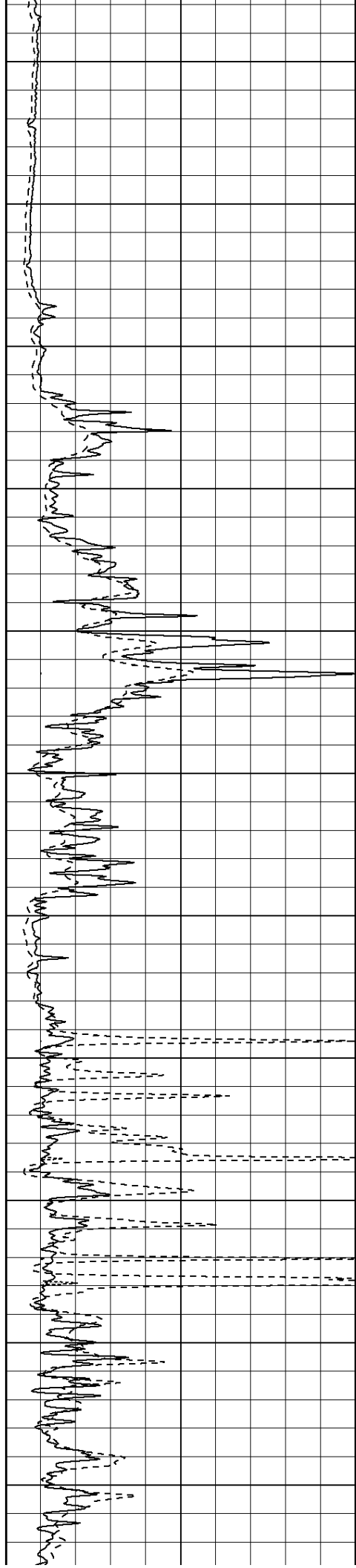


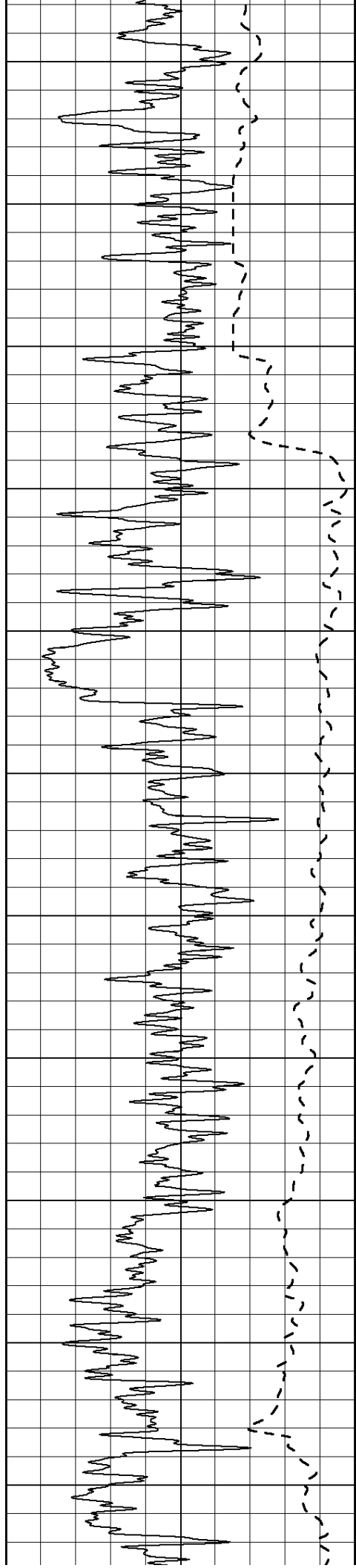
0
50
100
150
200
250
300
350
400





450
500
550
600
650
700
750
800
850
900
950





1000

1050

1100

1150

1200

1250

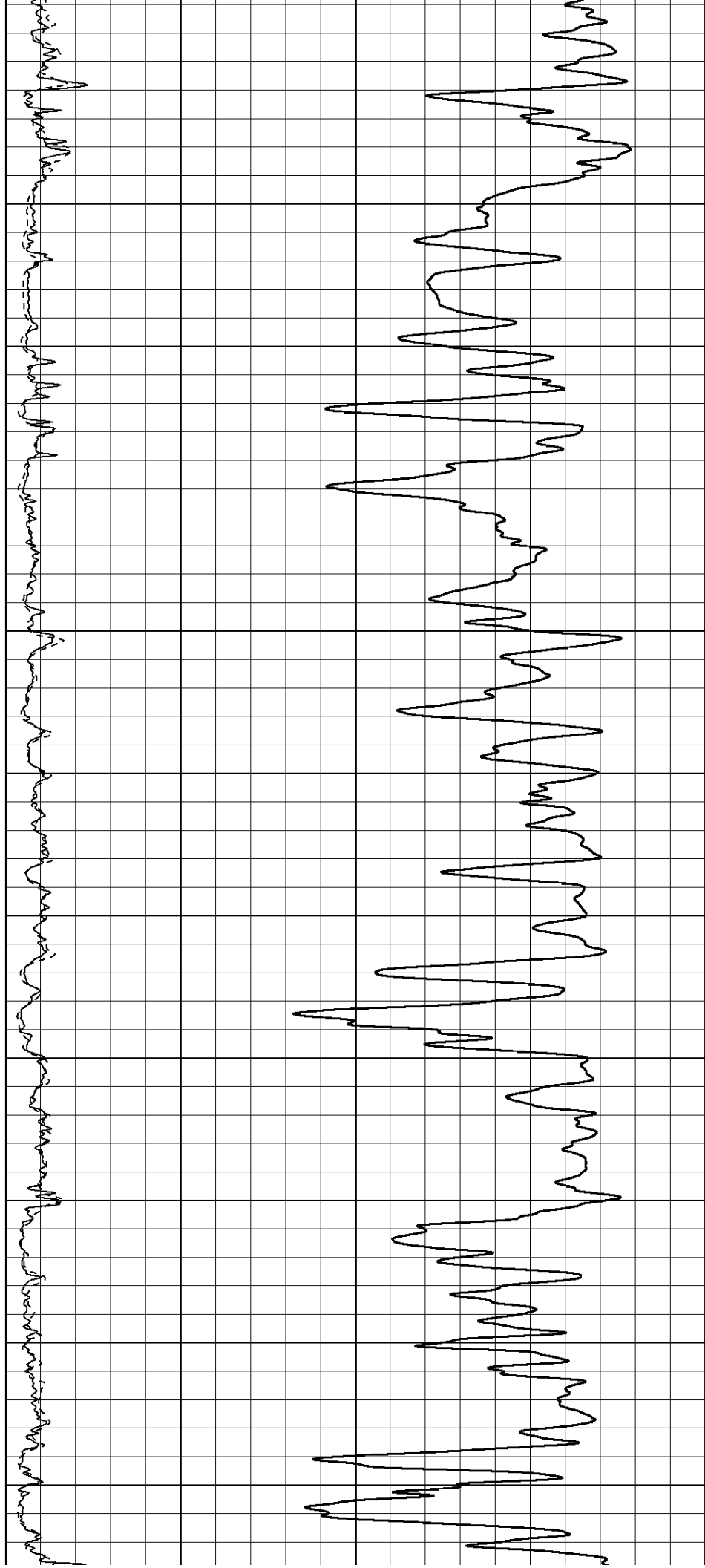
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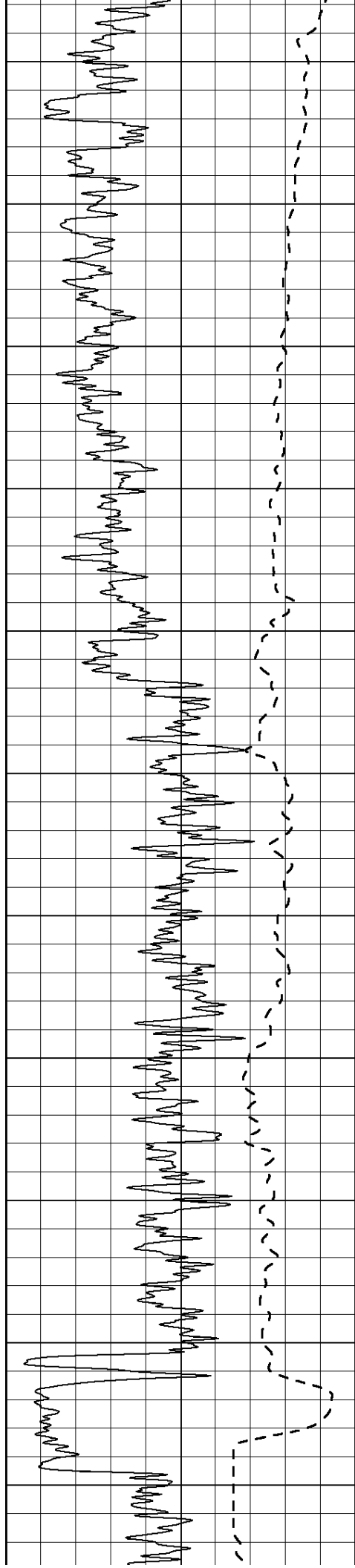
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1400

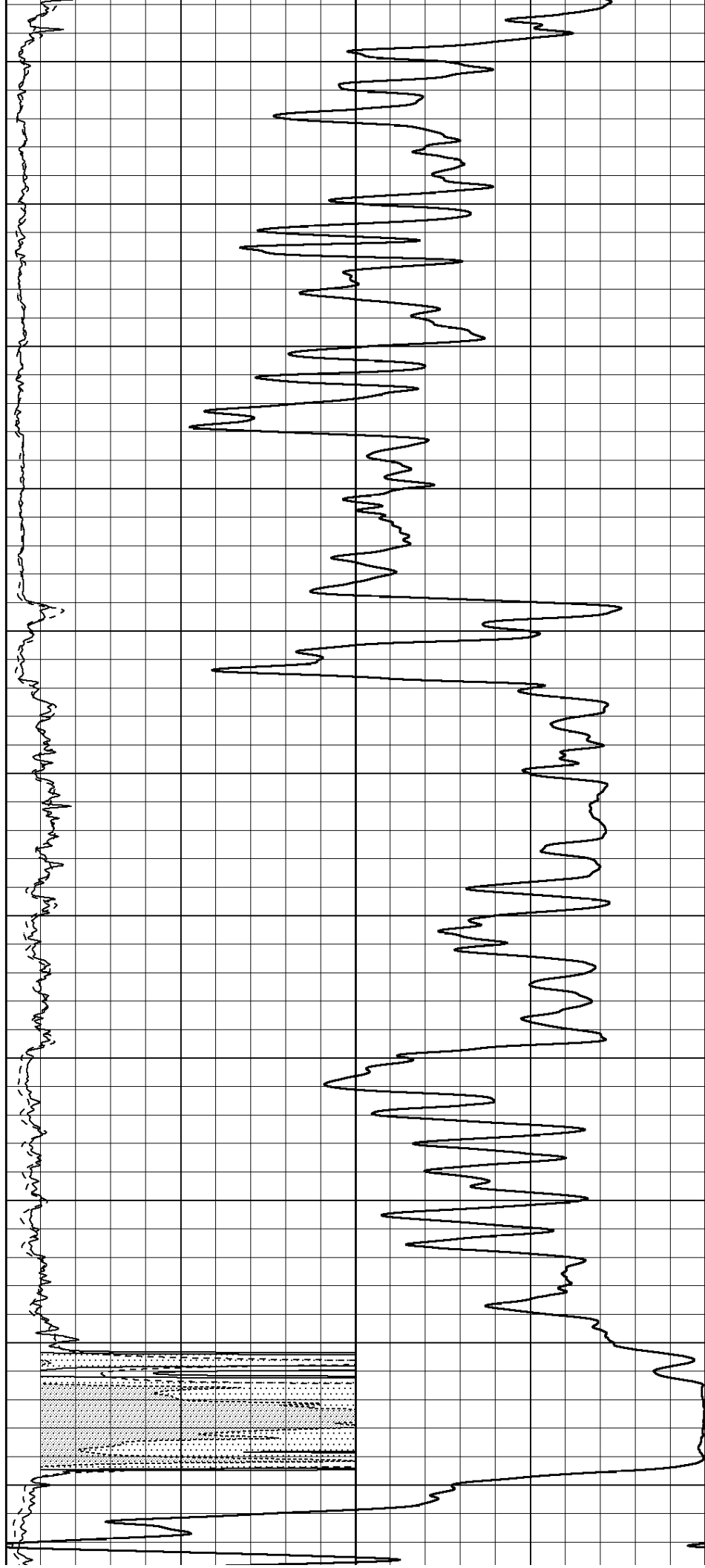
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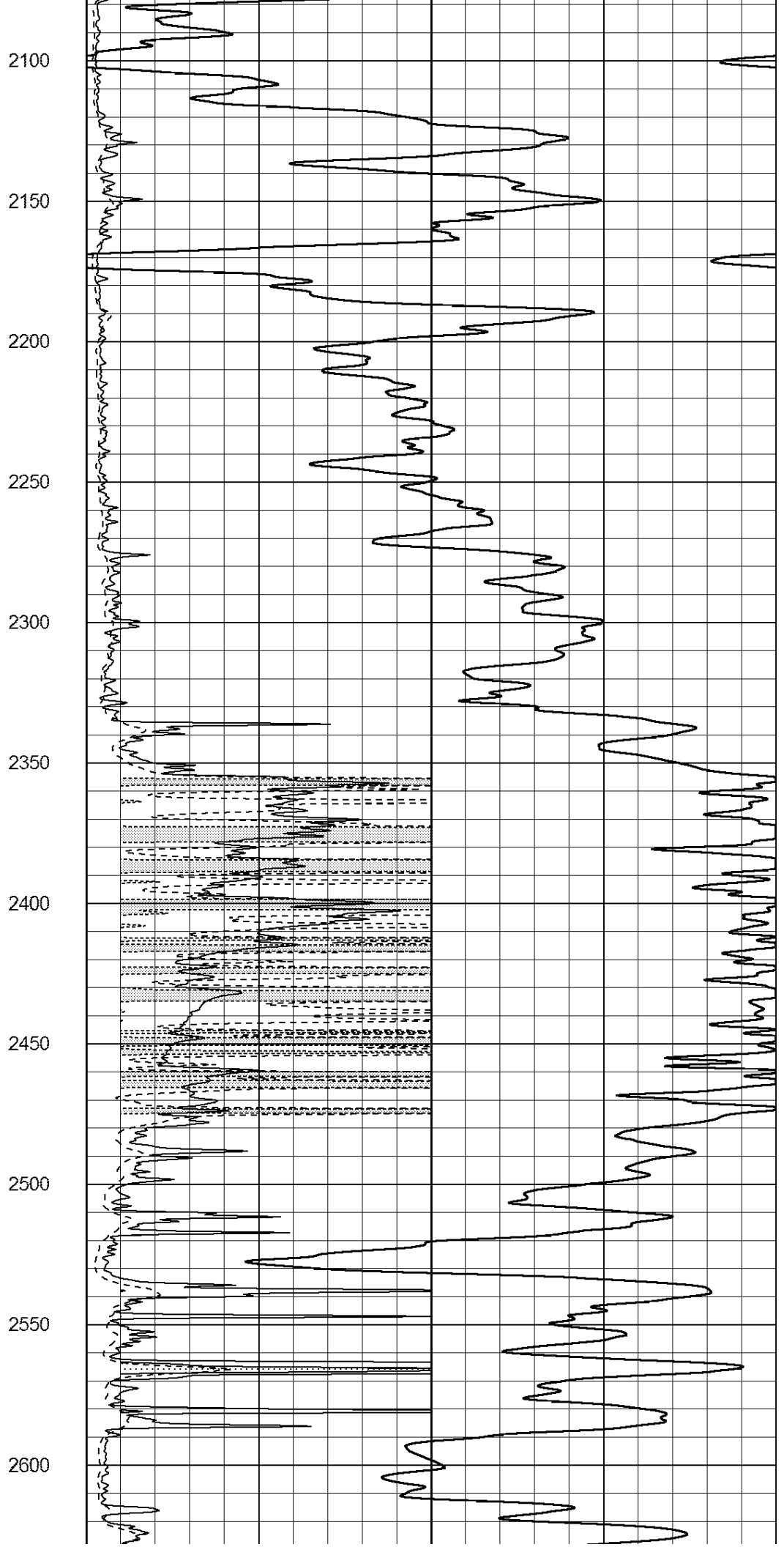
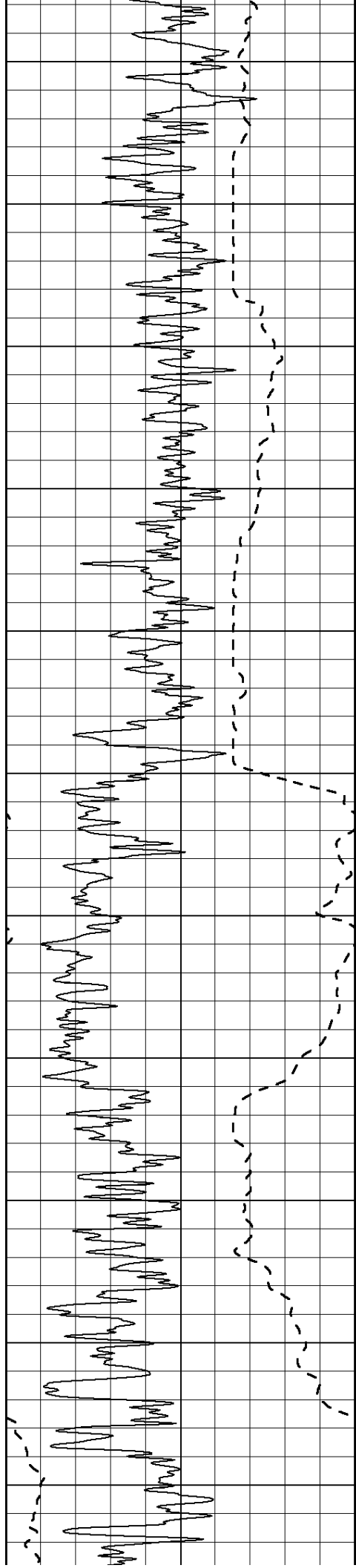
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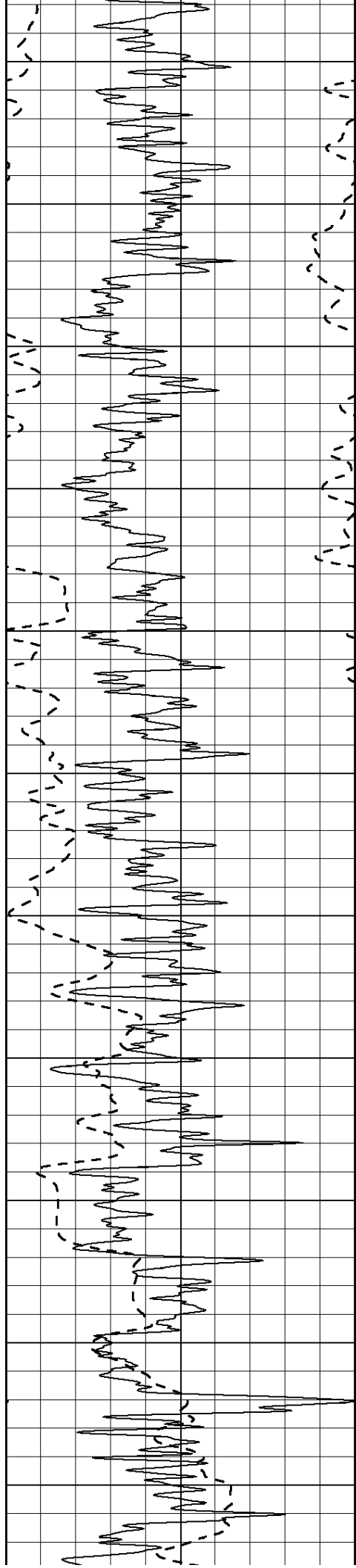




1550
1600
1650
1700
1750
1800
1850
1900
1950
2000
2050







2650

2700

2750

2800

2850

2900

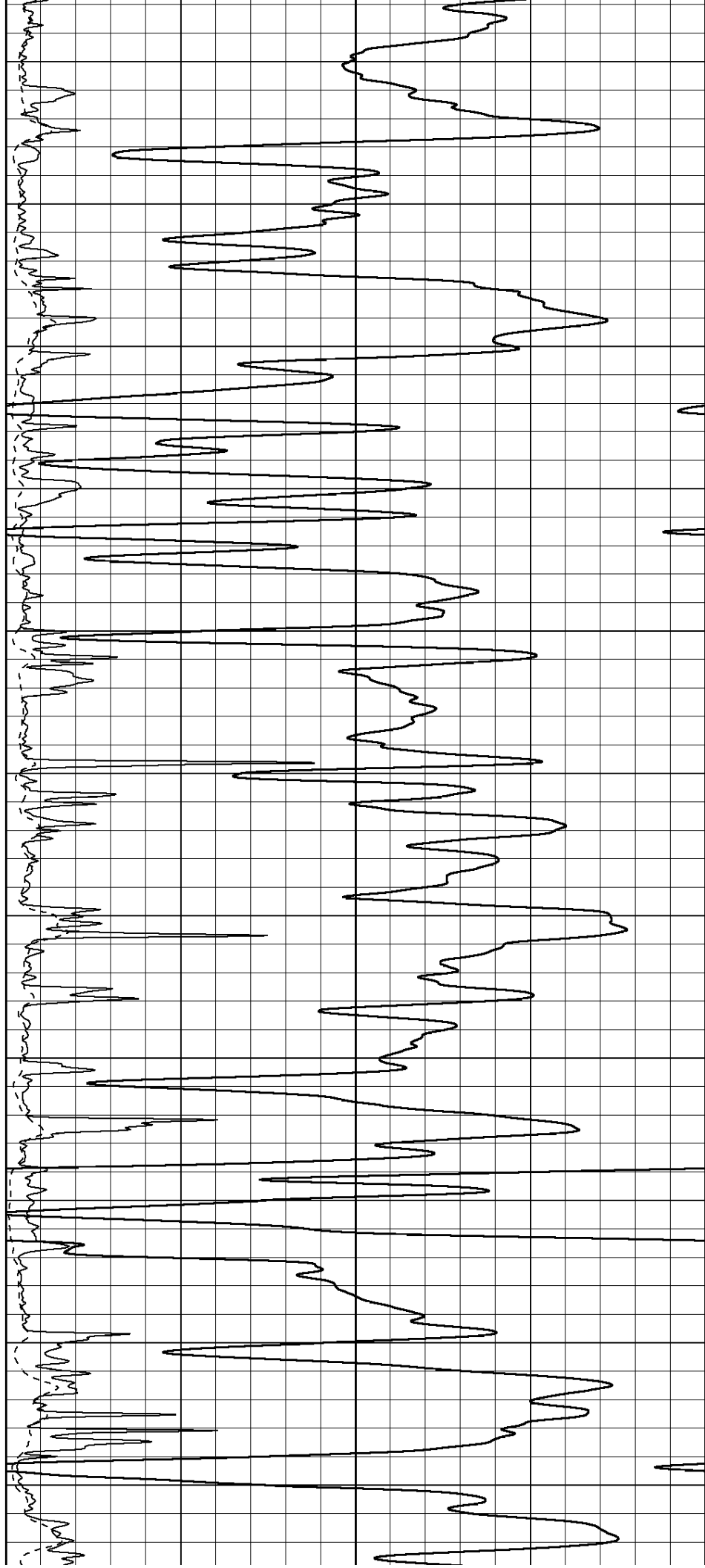
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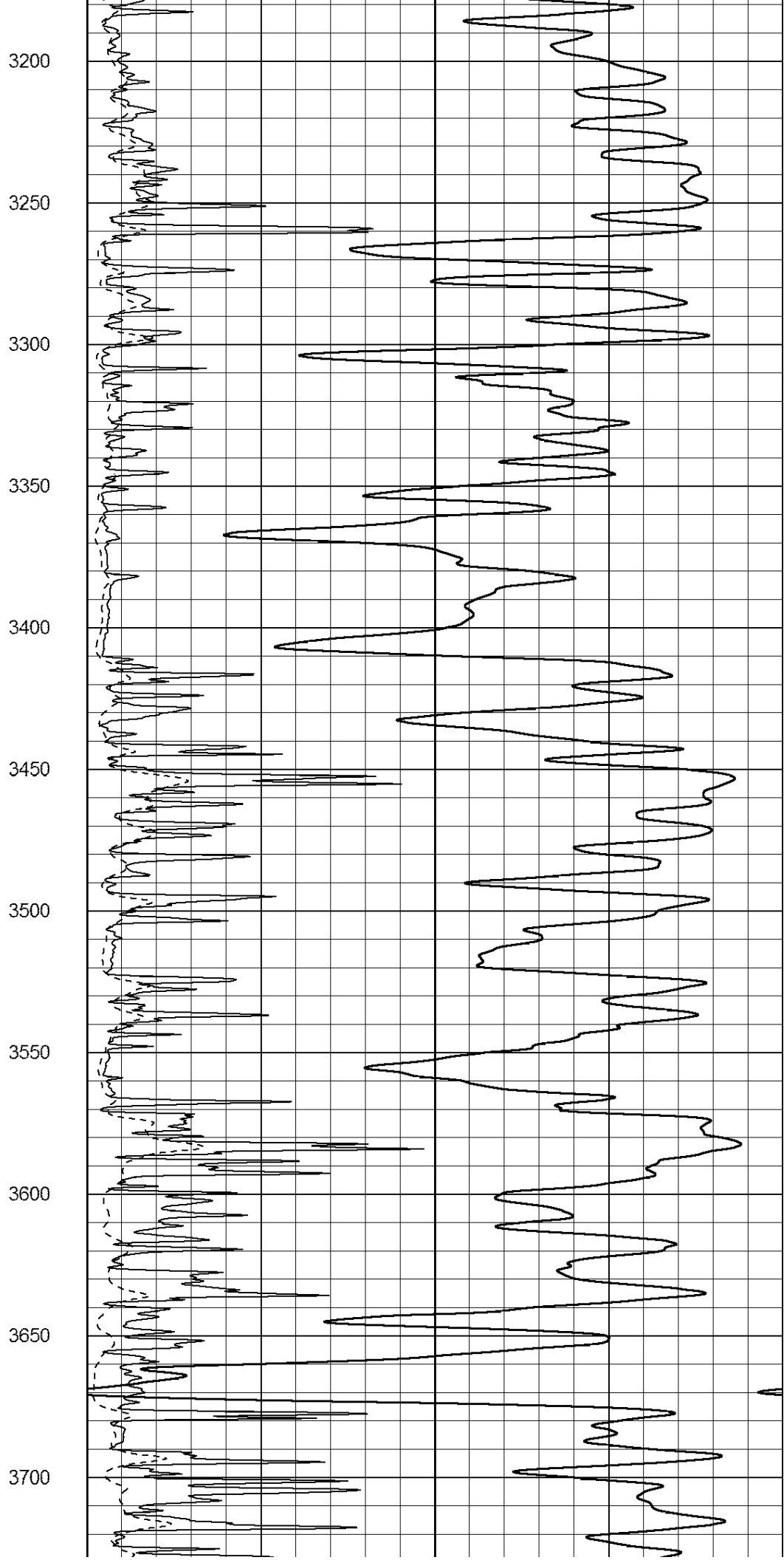
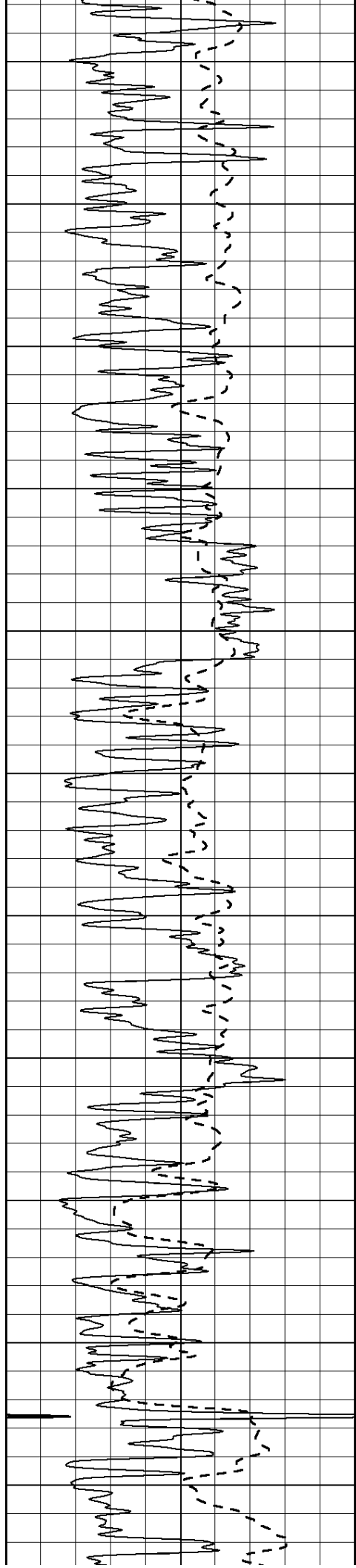
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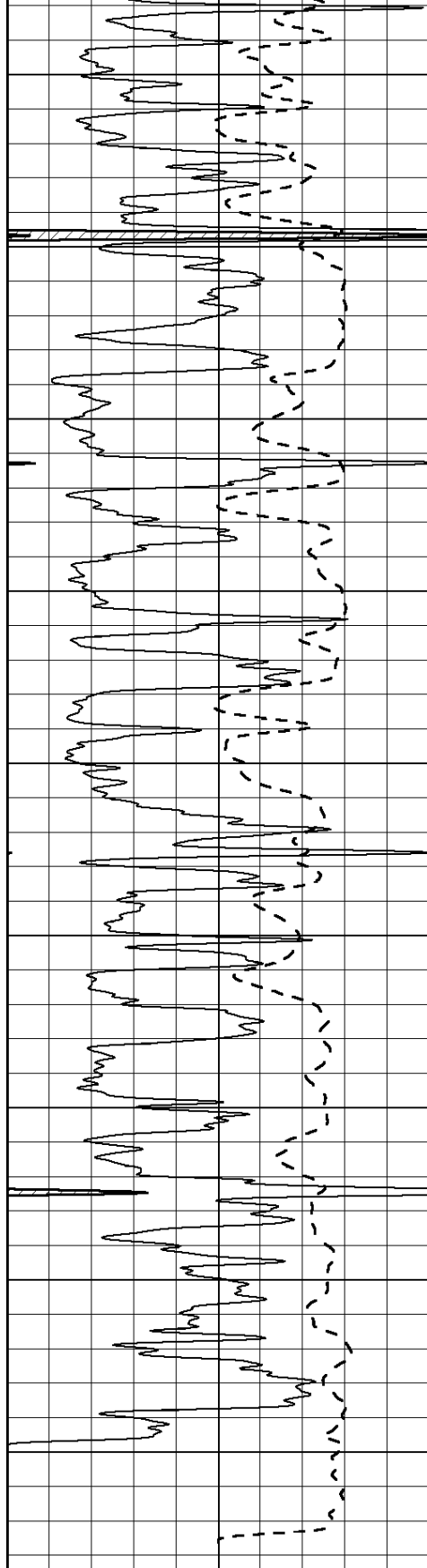
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3100

3150

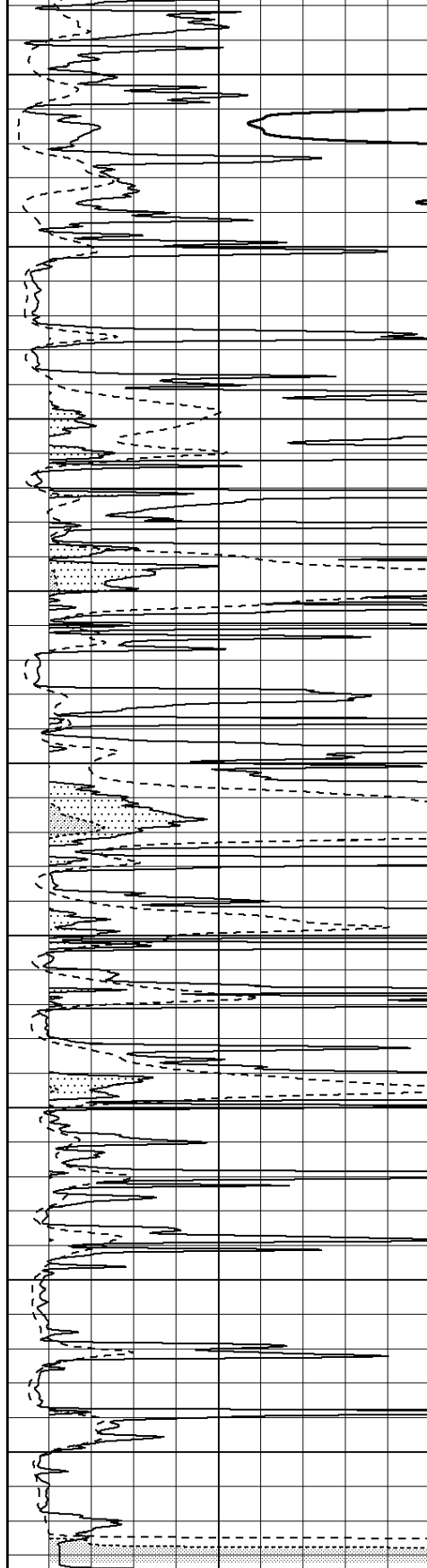




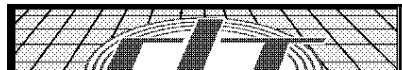
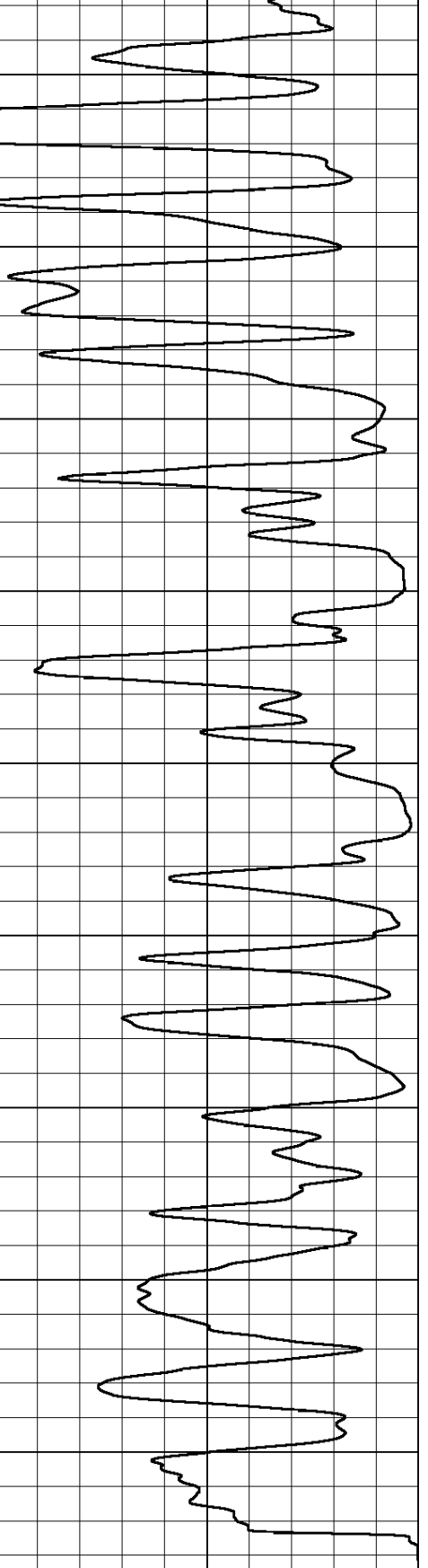


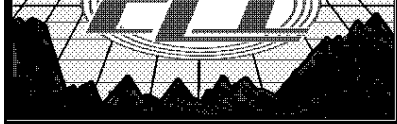
0 Gamma Ray (GAPI) 150
 -100 SP (mV) 100

3750
 3800
 3850
 3900
 3950
 4000
 4050
 4100
 4150



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



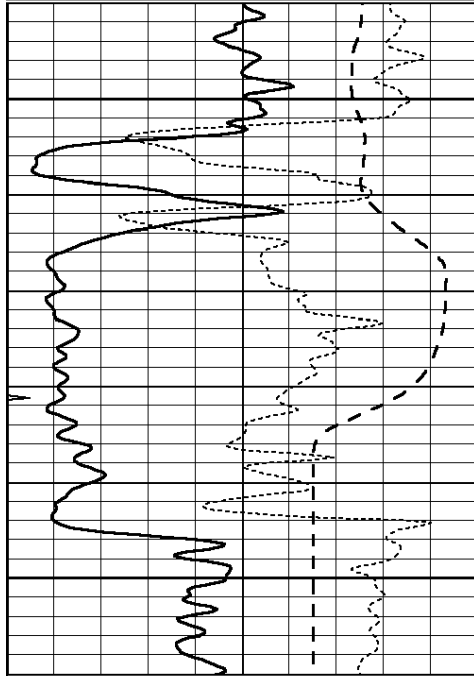


MAIN PASS

Database File: 4098ddn.db
Dataset Pathname: pass4.1
Presentation Format: _dil
Dataset Creation: Tue Oct 15 15:14:50 2019 by Calc Open-Cased 090629
Charted by: Depth in Feet scaled 1:240

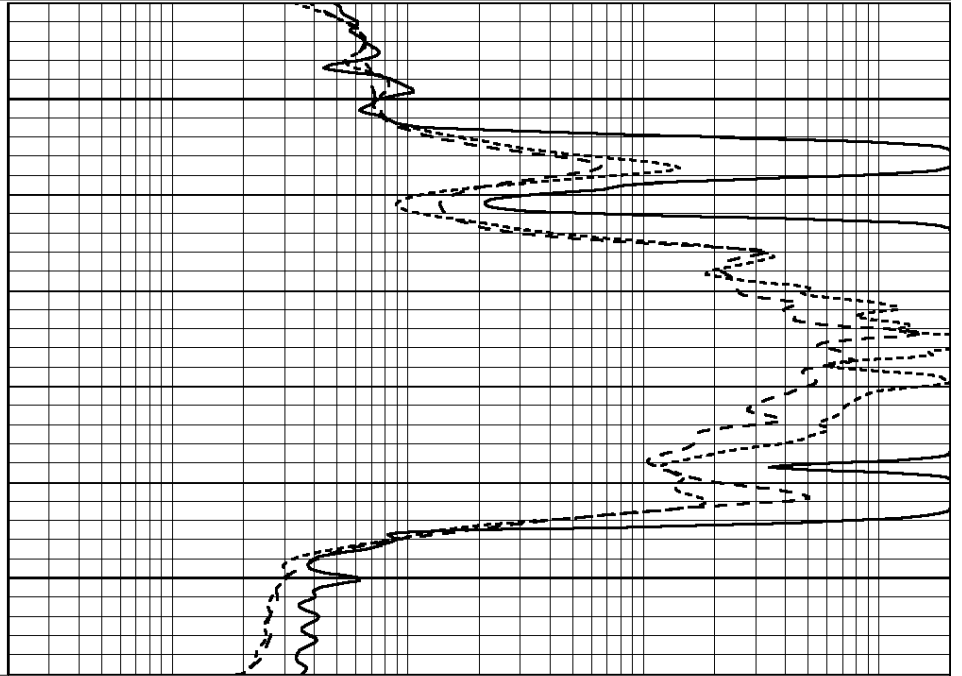
0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

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



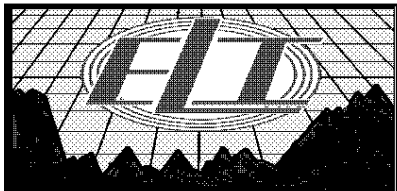
2000

2050



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

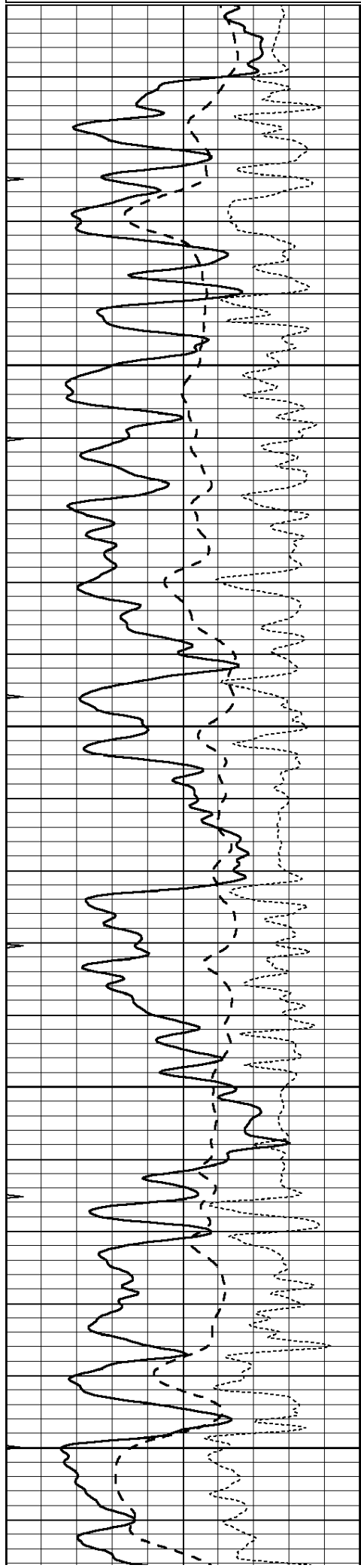


MAIN PASS

Database File: 4098ddn.db
Dataset Pathname: pass4.1
Presentation Format: _dil
Dataset Creation: Tue Oct 15 15:14:50 2019 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



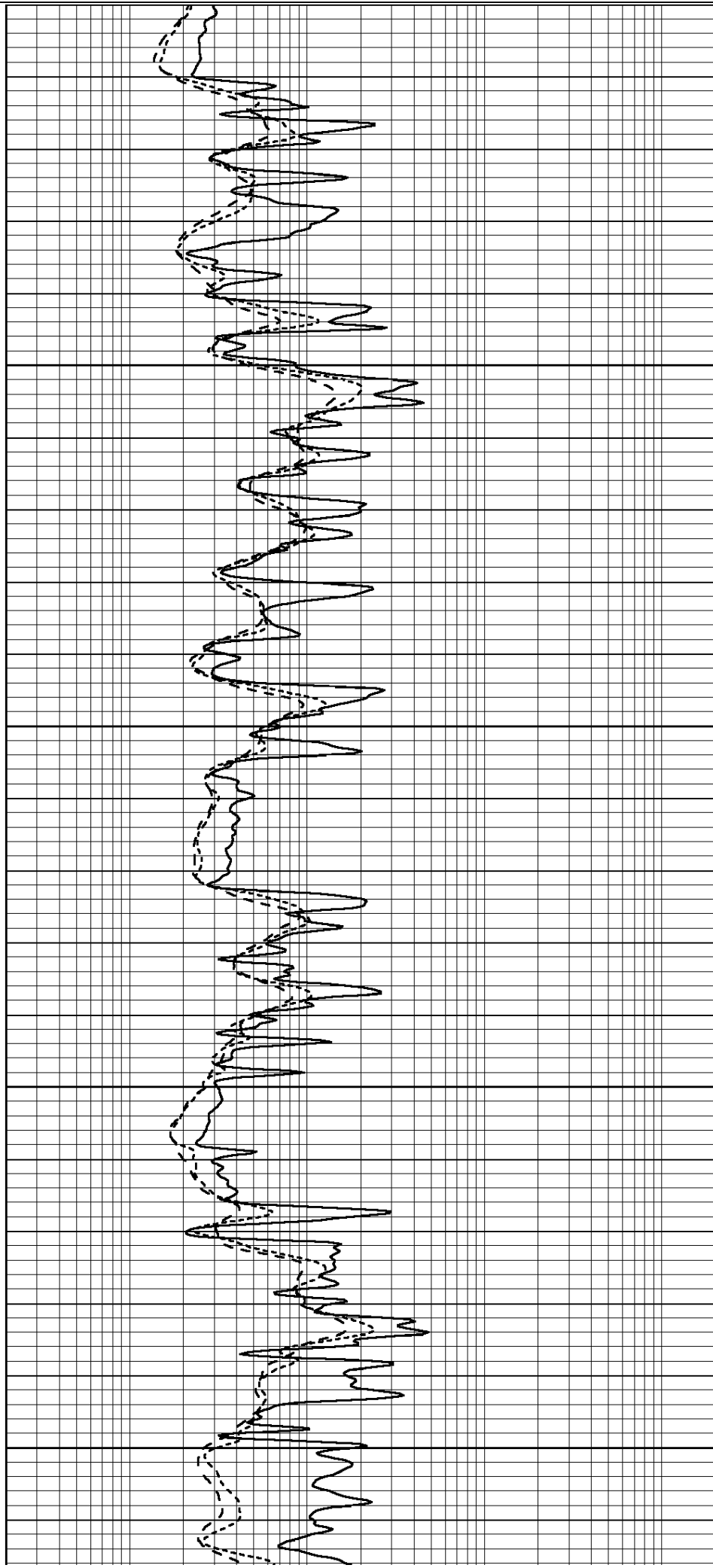
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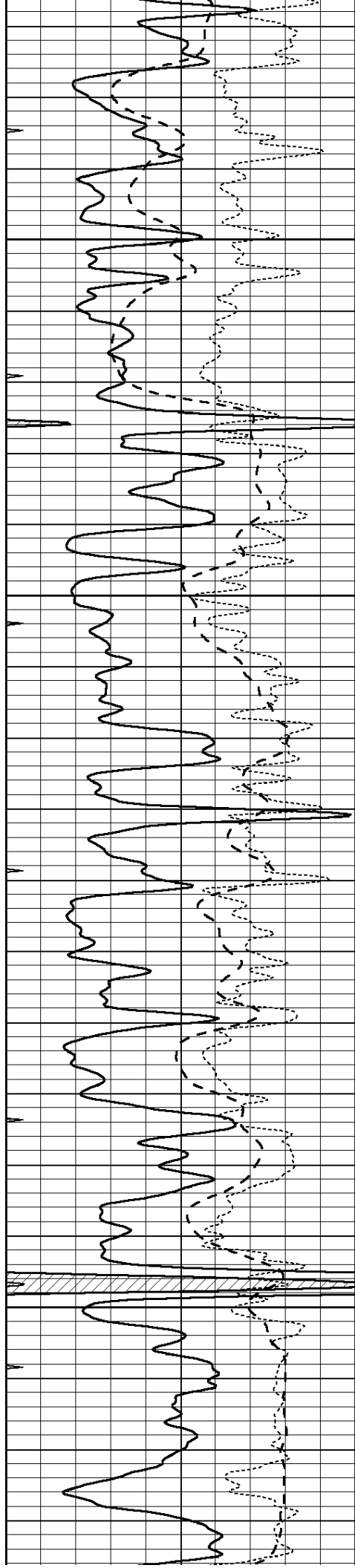
3450

3500

3550

3600



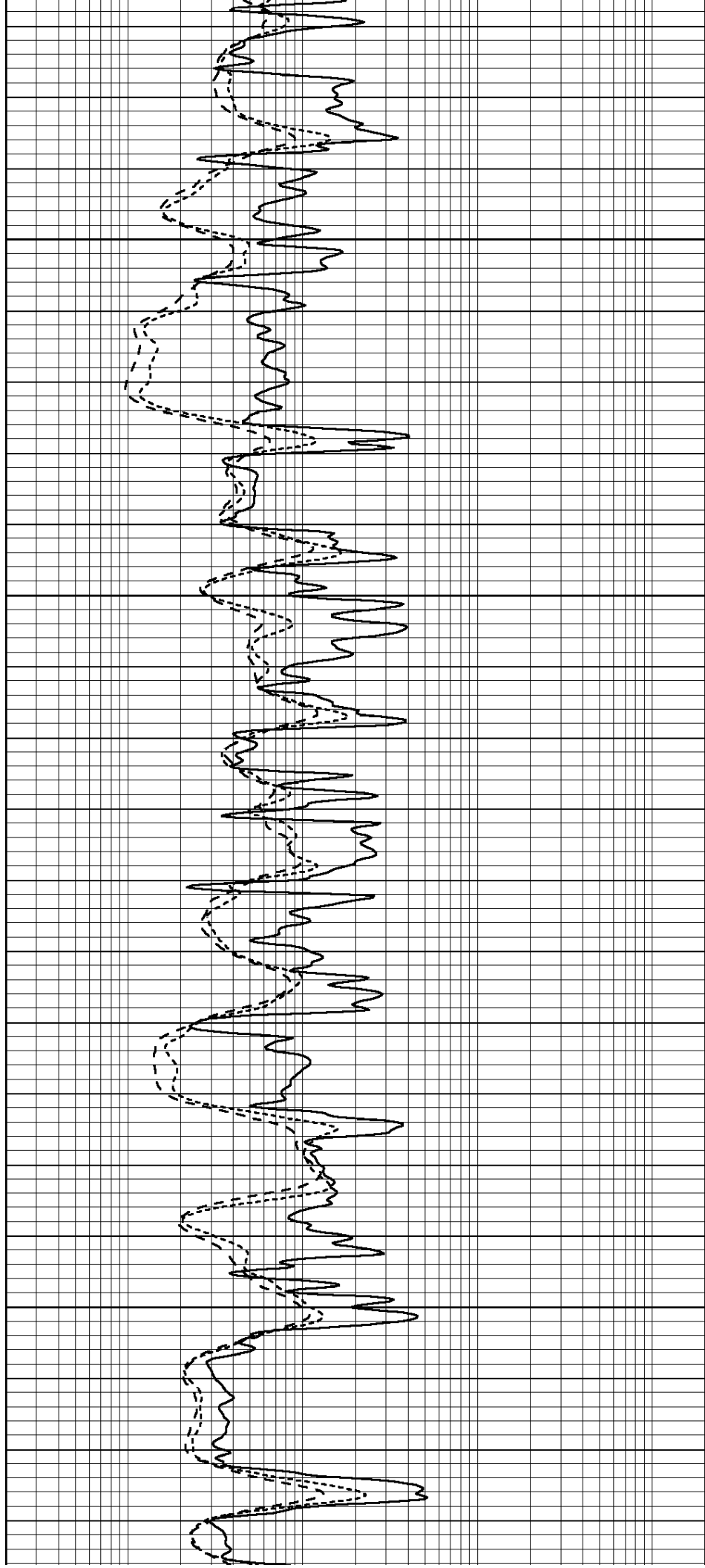


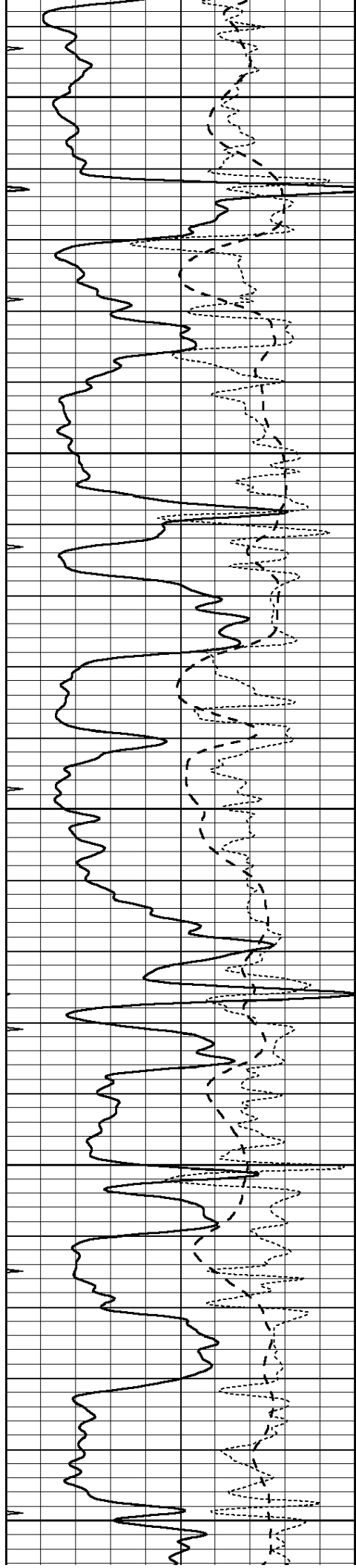
3650

3700

3750

3800





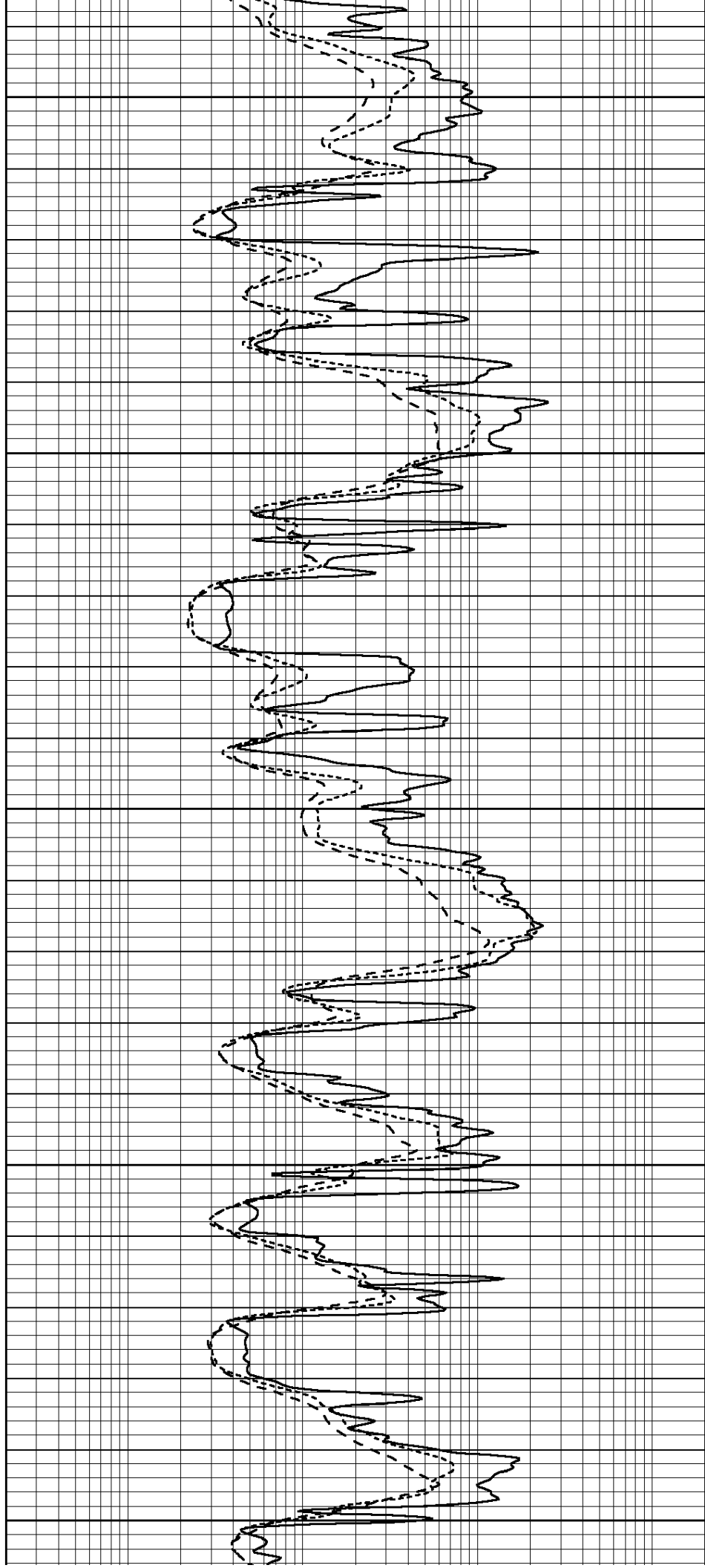
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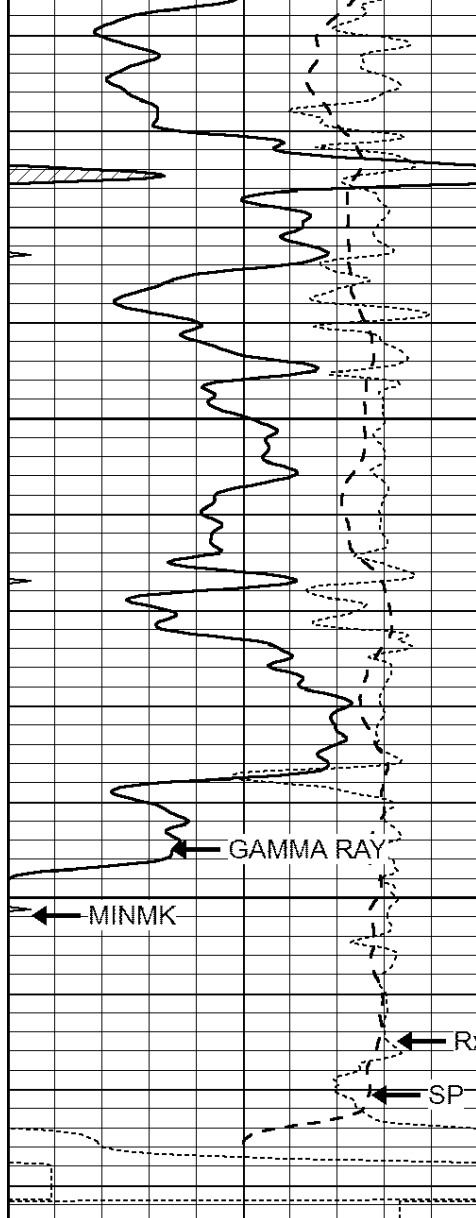
3900

3950

4000

4050



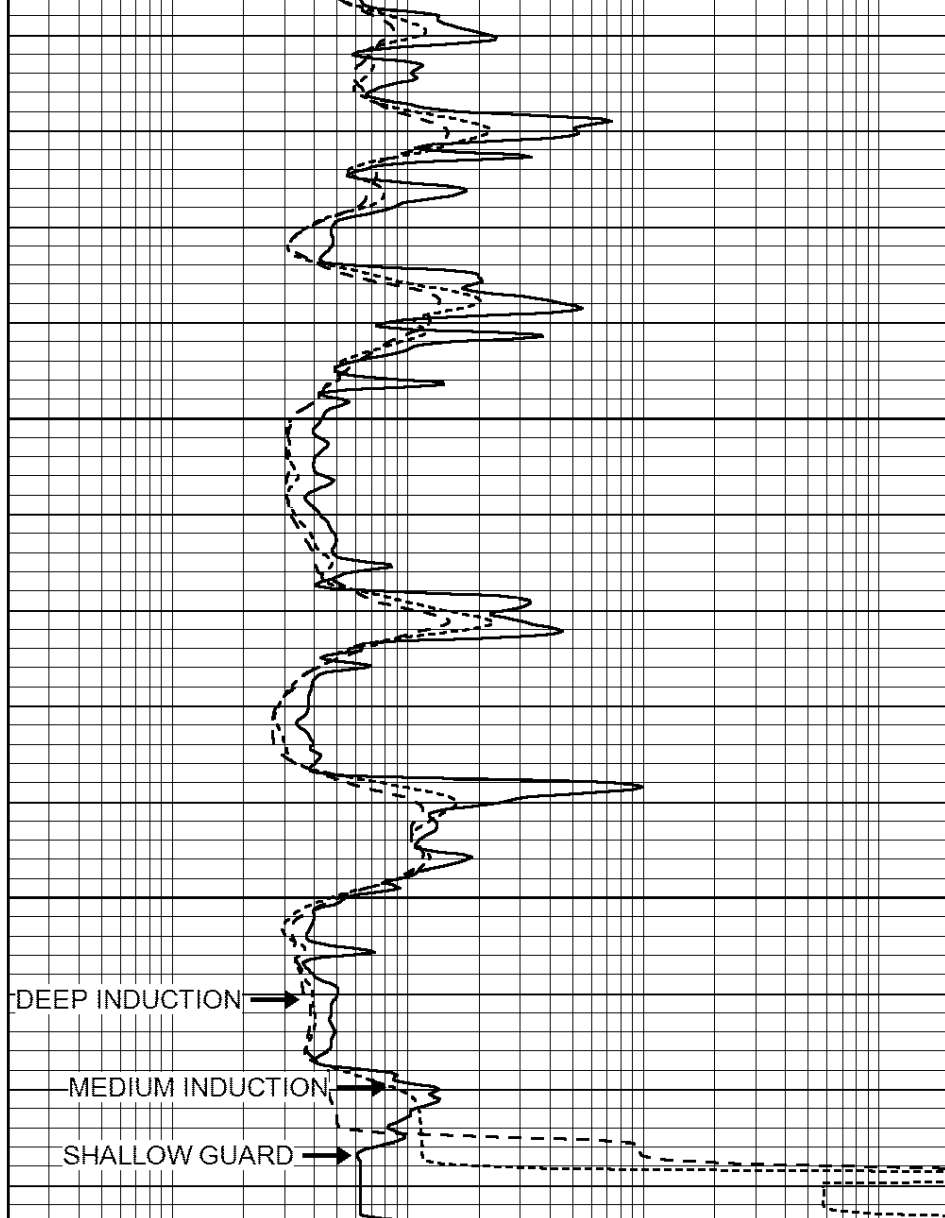


4100

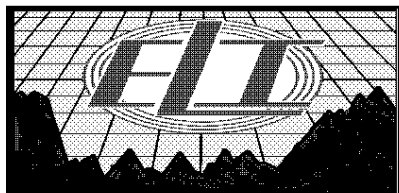
4150

LTD 4179

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

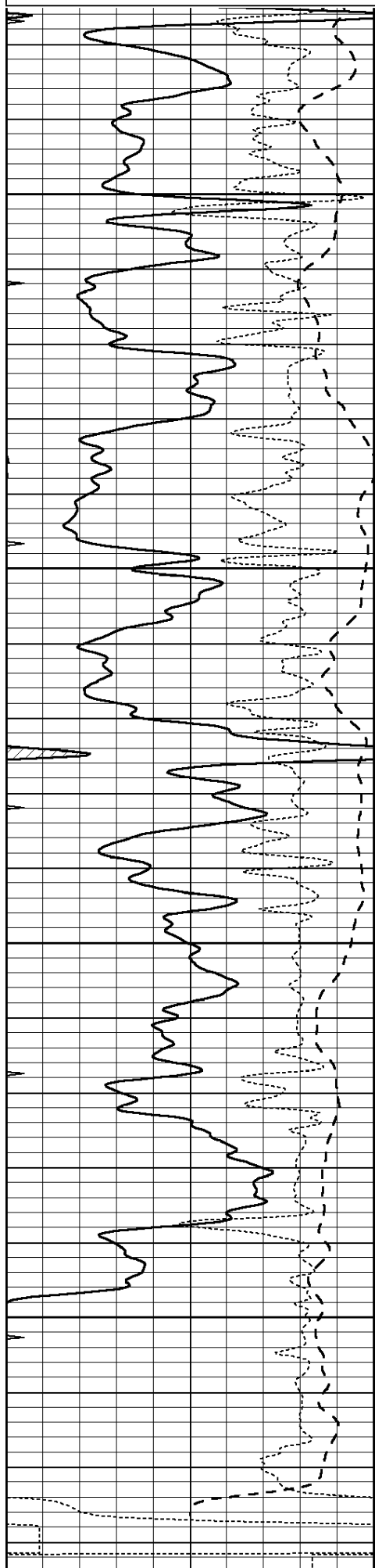


REPEAT SECTION

Database File: 4098ddn.db
 Dataset Pathname: pass3.1
 Presentation Format: _dil
 Dataset Creation: Tue Oct 15 15:18:16 2019 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



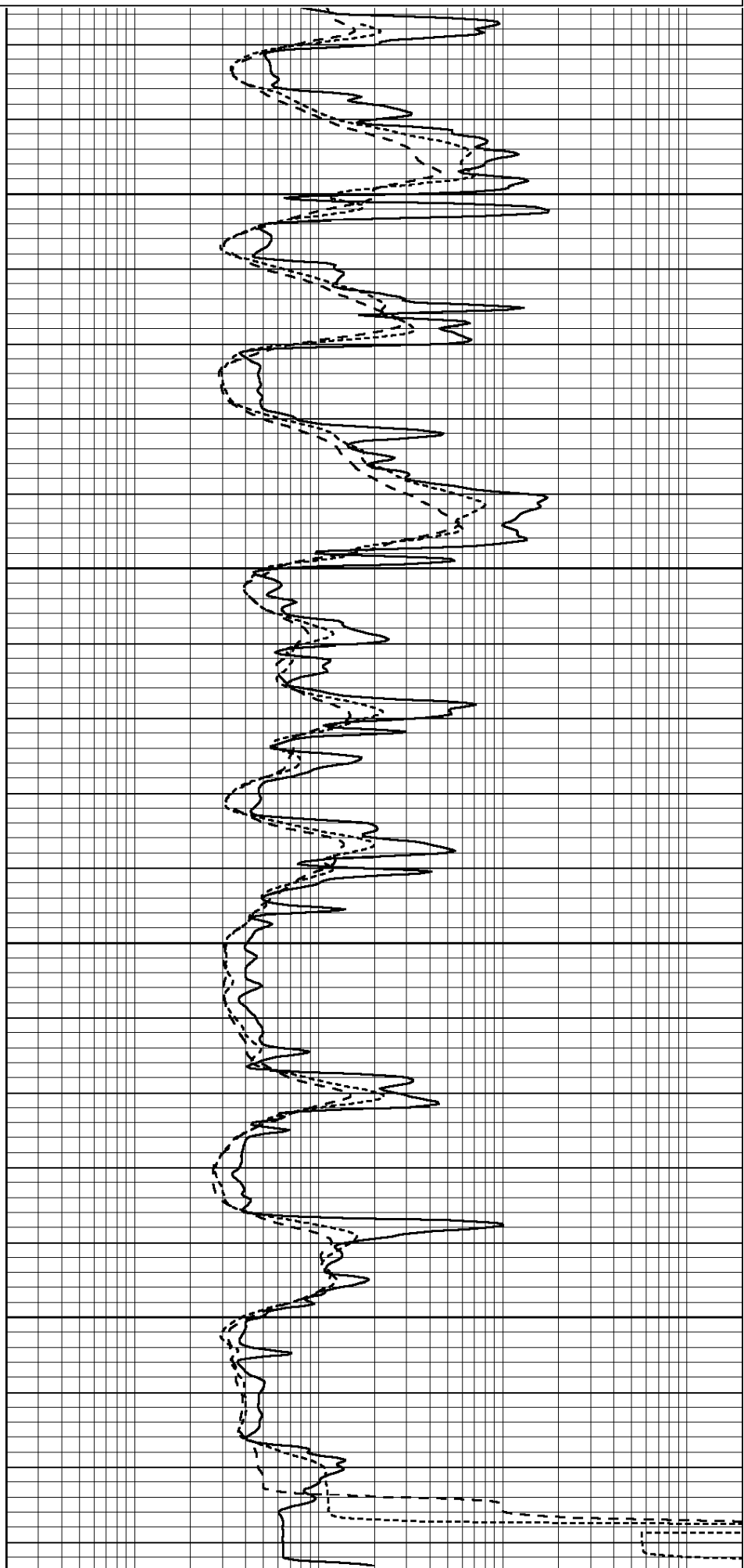
4000

4050

4100

4150

0 GAMMA RAY (GAPI) 150
-100 SP (mV) 100



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

-250	Rxo/Rt	50	0.2	MEDIUM INDUCTION (Ohm-m)	2000
0	MINMK	20			

Calibration Report	
Database File:	4098ddn.db
Dataset Pathname:	pass3.1
Dataset Creation:	Tue Oct 15 15:18:16 2019 by Calc Open-Cased 090629

Dual Induction Calibration Report	
Serial-Model:	PROBE8-DILG
Surface Cal Performed:	Mon Sep 10 14:28:35 2018
Downhole Cal Performed:	Mon Sep 10 14:28:38 2018
After Survey Verification Performed:	Mon Sep 10 14:28:40 2018

Surface Calibration								
Readings			References				Results	
Loop:	Air	Loop		Air	Loop		m	b
Deep	0.015	0.648	V	0.000	400.000	mmho/m	620.000	0.000
Medium	0.029	0.796	V	0.000	464.000	mmho/m	590.000	-12.000
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: 006	Model: PRB

Master Calibration					Performed Fri Feb 22 09:59:16 2019
	Background	Magnesium	Aluminum	Sandstone	
Window 1	1164.1	7287.2	2529.1	8656.3	cps
Window 2	1091.2	5350.1	2037.8	6279.8	cps
Window 3	821.7	2635.2	1183.7	2961.9	cps
Window 4	277.9	276.4	275.2	279.7	cps
Long Space	0.0	4355.6	946.5	5188.6	cps
Short Space	1.6	1496.1	994.4	1563.6	cps
Rho		1.7100	2.5960	1.3800	g/cc
Pe		0.0000	2.5700	1.5500	

Rib Angle	: 44.8	Rib Slope	: 0.993	Density/Spine Ratio	: 0.569
Spine Angle	: 74.8	Spine Slope	: 3.682	Spine Intercept	: -18.6

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	

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Compensated Neutron Calibration Report					
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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)	Long Space	cps	pu	pu
	Short Space	cps	pu	pu

Gamma Ray Calibration Report

Serial Number:	GR6	
Tool Model:	OPEN	
Performed:	Wed Jul 03 12:57:34 2019	
Calibrator Value:	150.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	276.0	cps
Sensitivity:	0.5700	GAPI/cps