



DUAL INDUCTION LOG

Company	CMX INC.	Company	CMX INC.
Well	BLACK KETTLE #1-18	Well	BLACK KETTLE #1-18
Field	WILDCAT	Field	WILDCAT
County	SCOTT	County	SCOTT
State	KANSAS	State	KANSAS
Location:	API # : 15-171-21228-00-00	Other Services	CDL/CNL/MEL SONIC
Permanent Datum	1840' FNL & 1436' FEL	Elevation	
Log Measured From	GROUND LEVEL	K.B. 2937	
Drilling Measured From	KELLY BUSHING 8' A.G.L. KELLY BUSHING	D.F. 2935	
		G.L. 2929	
Date	07/24/18		
Run Number	ONE		
Depth Driller	4675		
Depth Logger	4668		
Bottom Logged Interval	4667		
Top Log Interval	50		
Casing Driller	8 5/8" @ 309		
Casing Logger	309		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD		
Density / Viscosity	9.2/5.1		
pH / Fluid Loss	8.0/11.0		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	1.0@77		
Rmt @ Meas. Temp	.75@77		
Rmc @ Meas. Temp	1.2@77		
Source of Rmt / Rmc	MEASURED		
Rm @ BHT	.63@122		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom	///		
Maximum Recorded Temperature	122F		
Equipment Number	1523		
Location	HAYS, KANSAS		
Recorded By	GUS PFANENSTIEL		
Witnessed By	MIKE ENGELBRECHT		

<<< Fold Here >>>

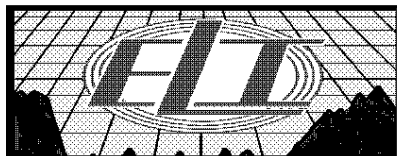
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, 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 ELI WIRELINE, HAYS, KS. (785) 628-6395

DIRECTIONS

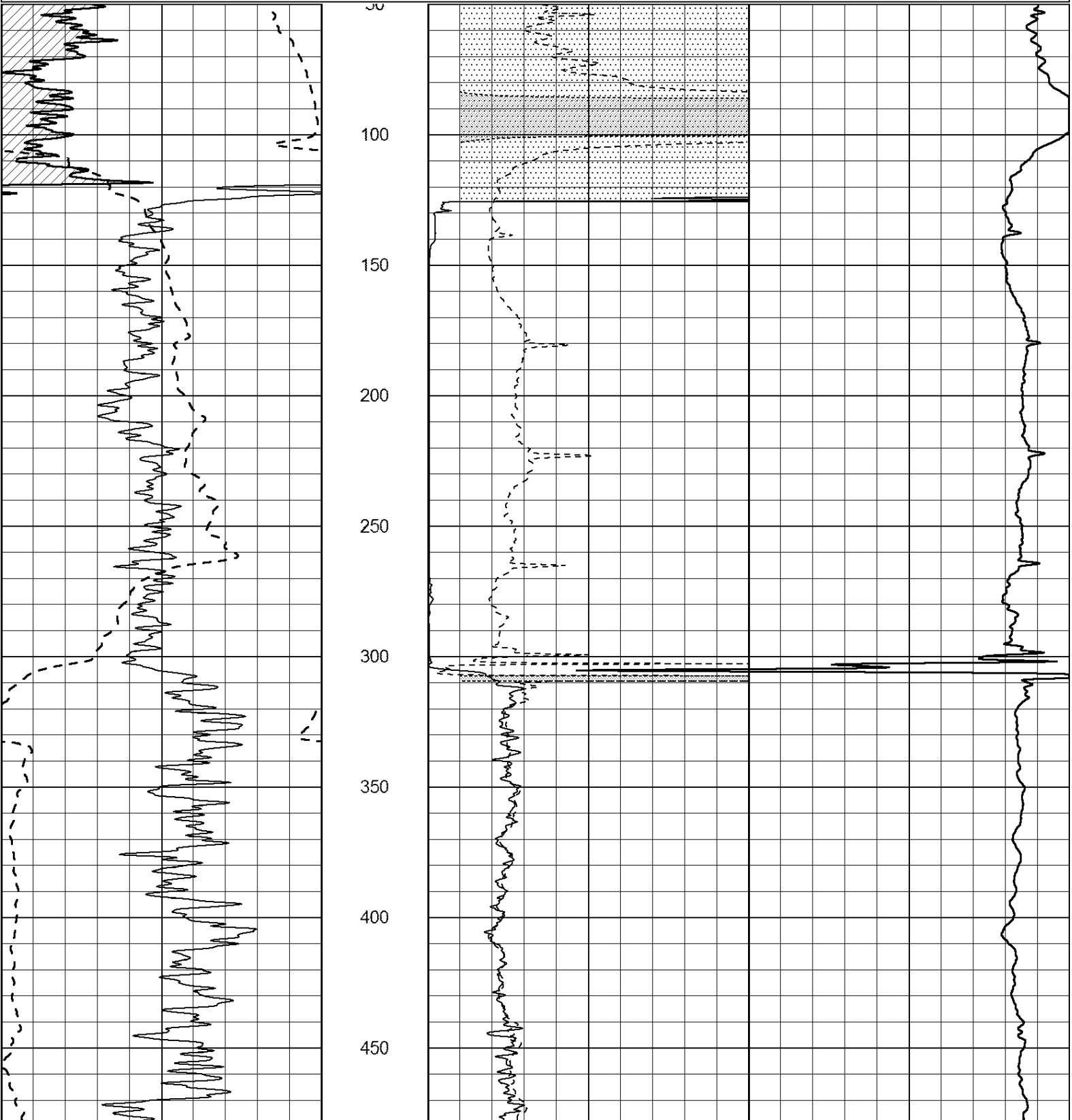
8 N OF SCOTT CITY ON HWY 83, 6 E ON HWY 4,
4 N ON RODEO RD., 1/2 E,
1/2 N, E INTO.



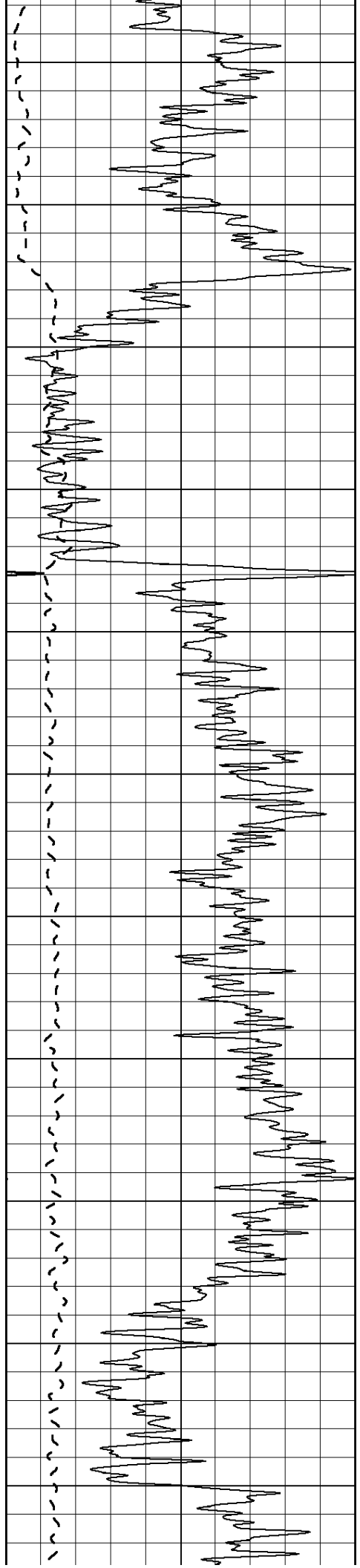
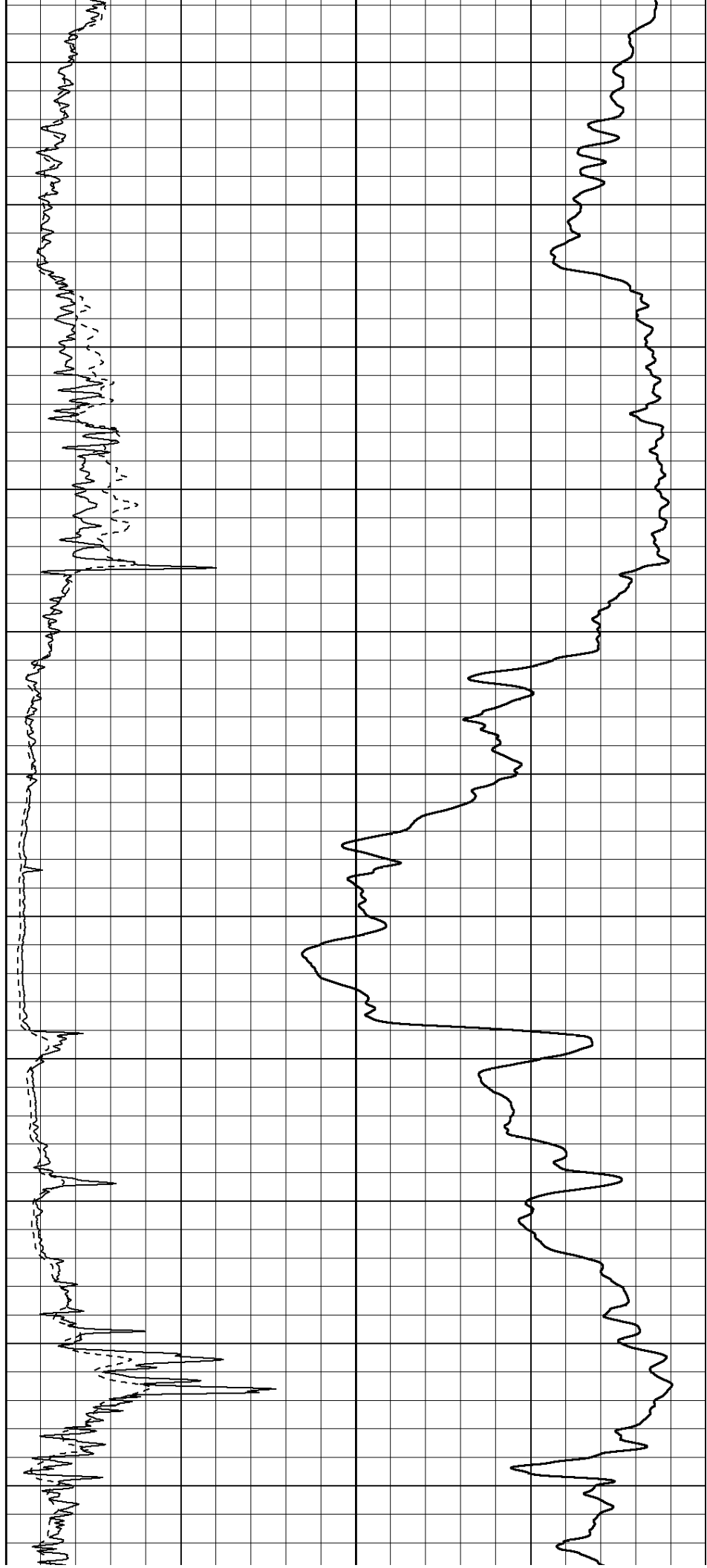
MAIN PASS

Database File: 2696pe.db
Dataset Pathname: pass5.1
Presentation Format: _dil2
Dataset Creation: Tue Jul 24 09:43:23 2018 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)	0
			50	RILD X10 (Ohm-m)	500
			50	RLL3 X10 (Ohm-m)	500



500 550 600 650 700 750 800 850 900 950 1000



1050

1100

1150

1200

1250

1300

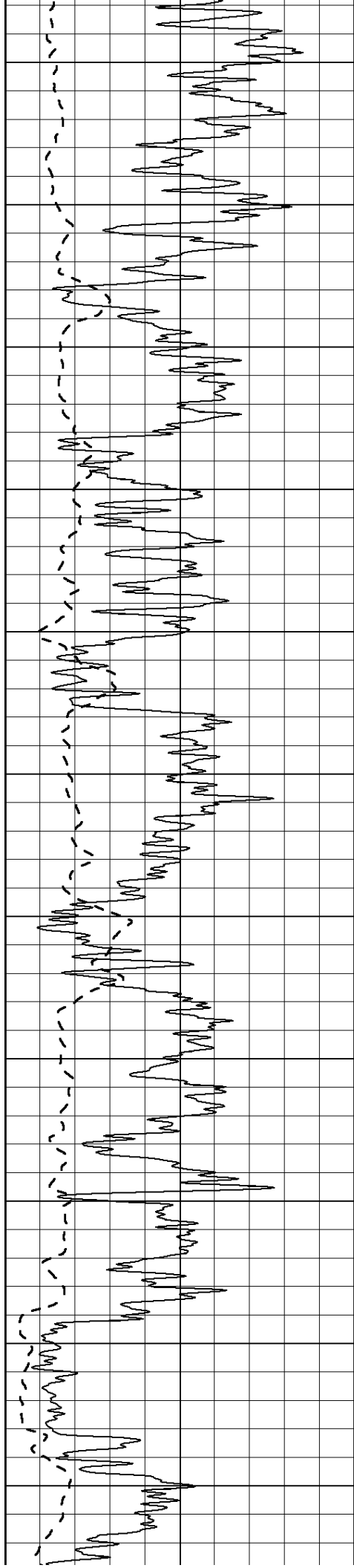
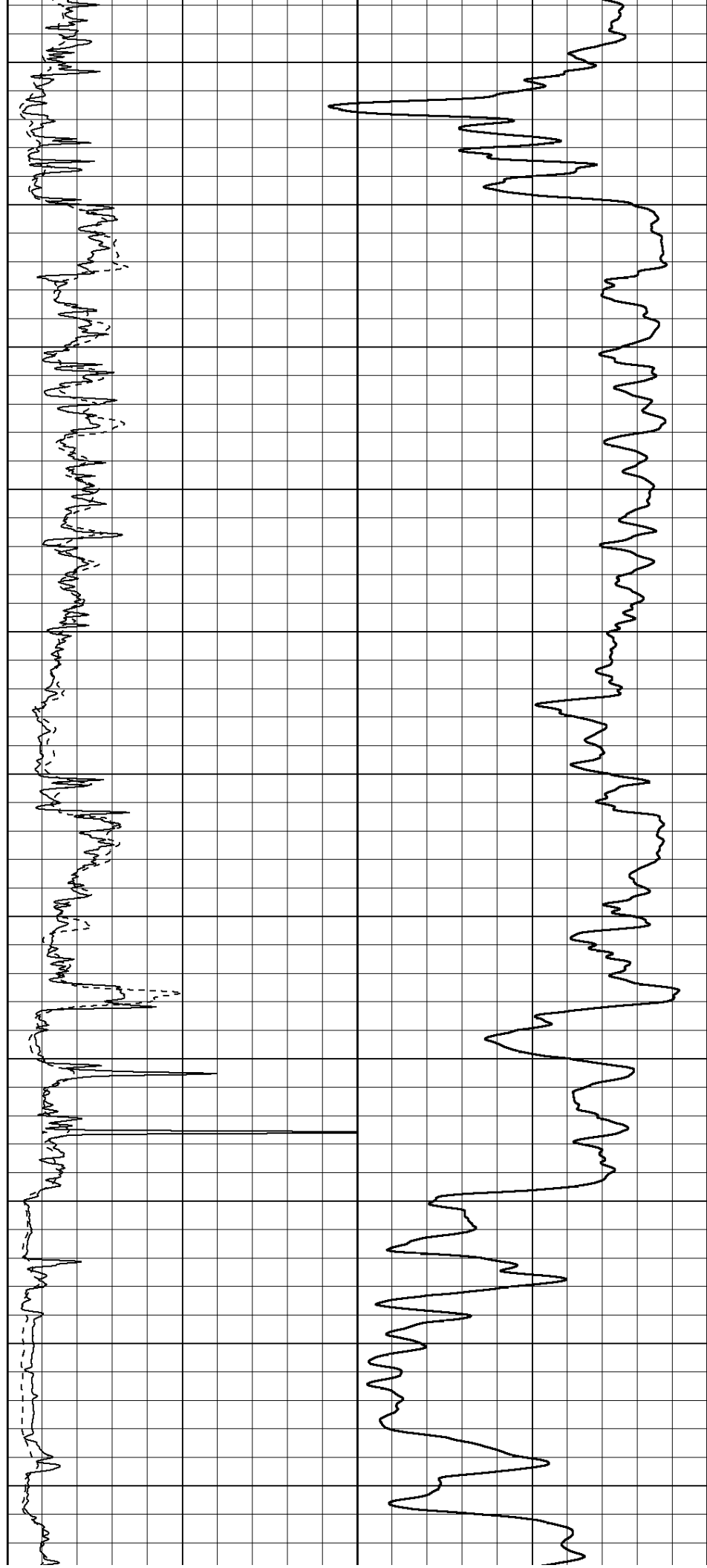
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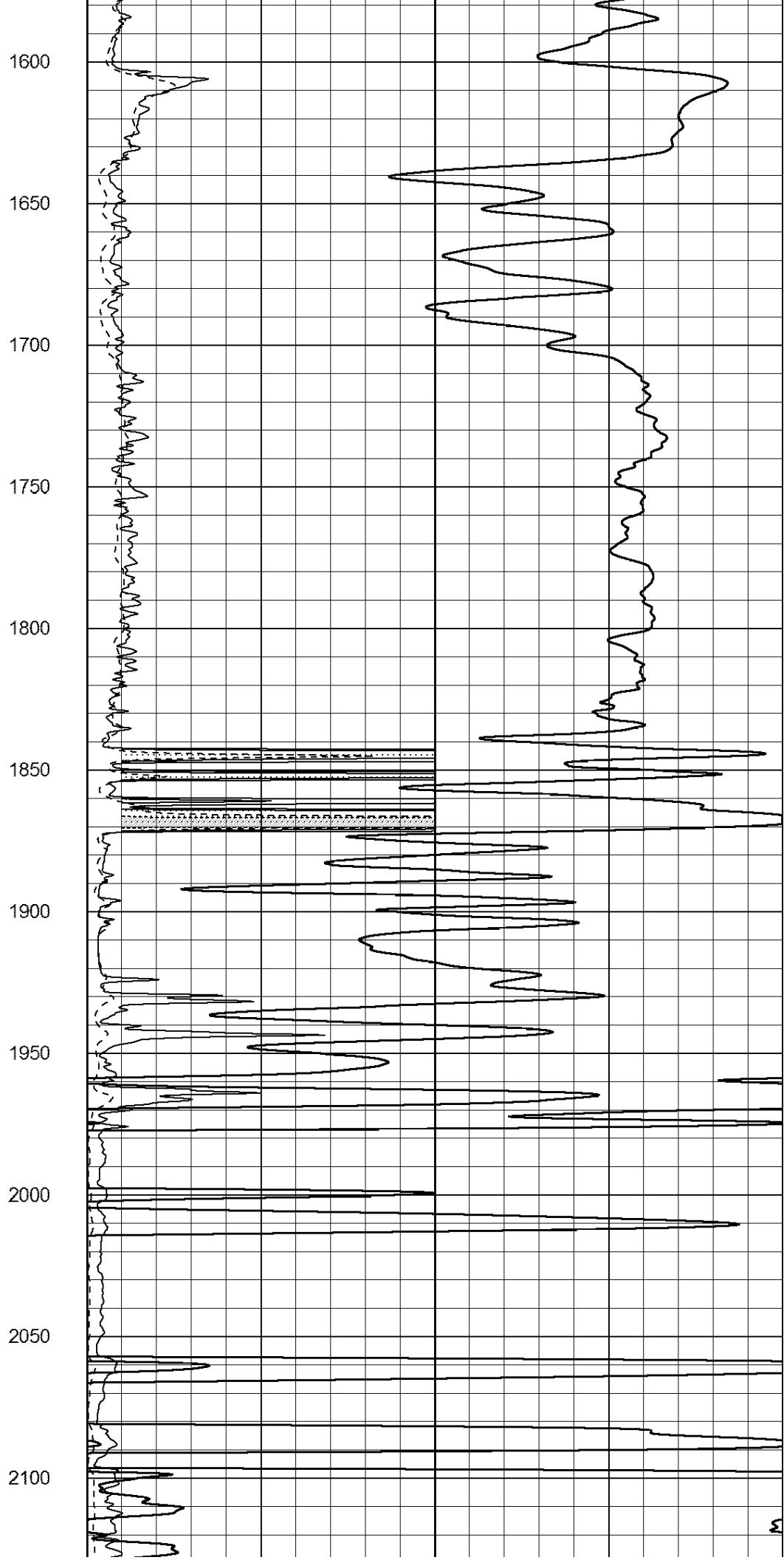
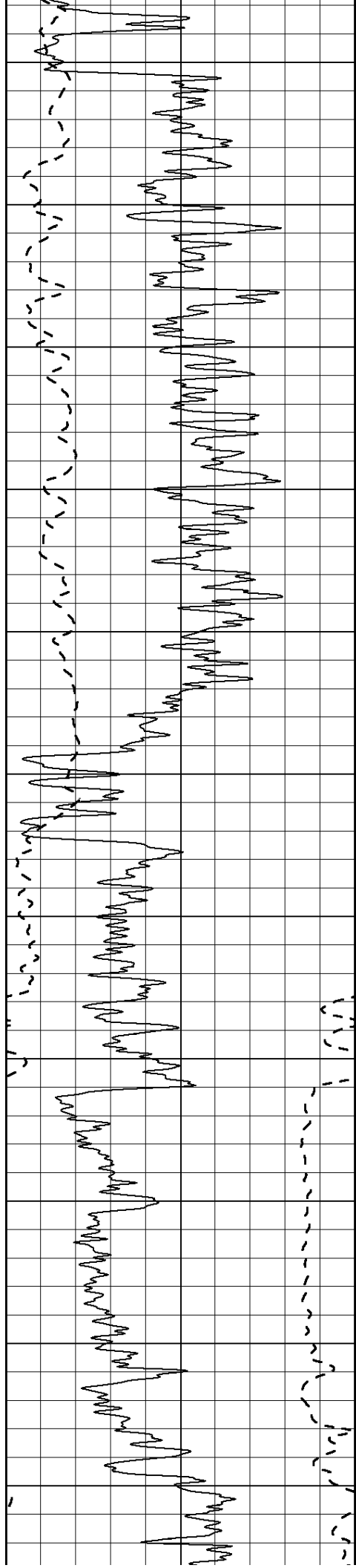
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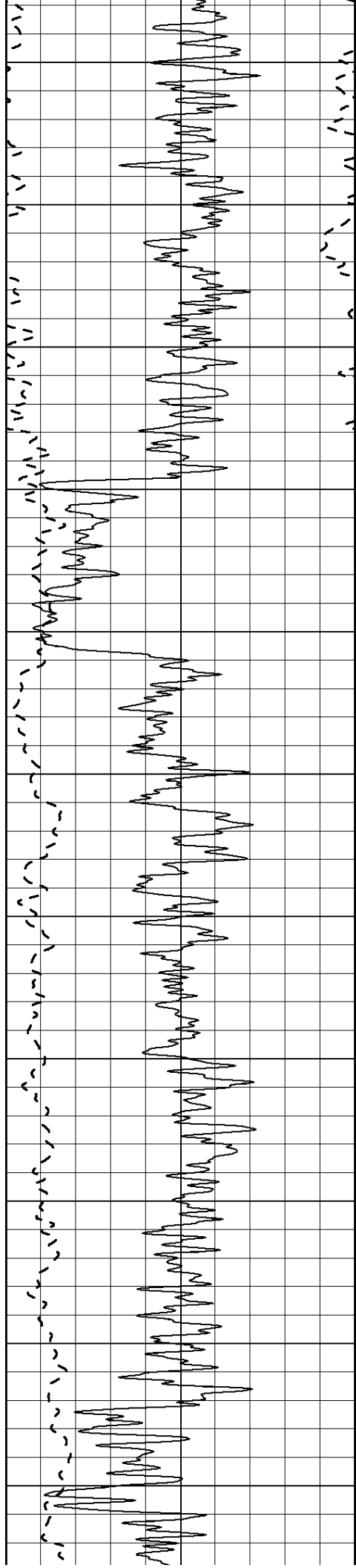
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1500

1550







2150

2200

2250

2300

2350

2400

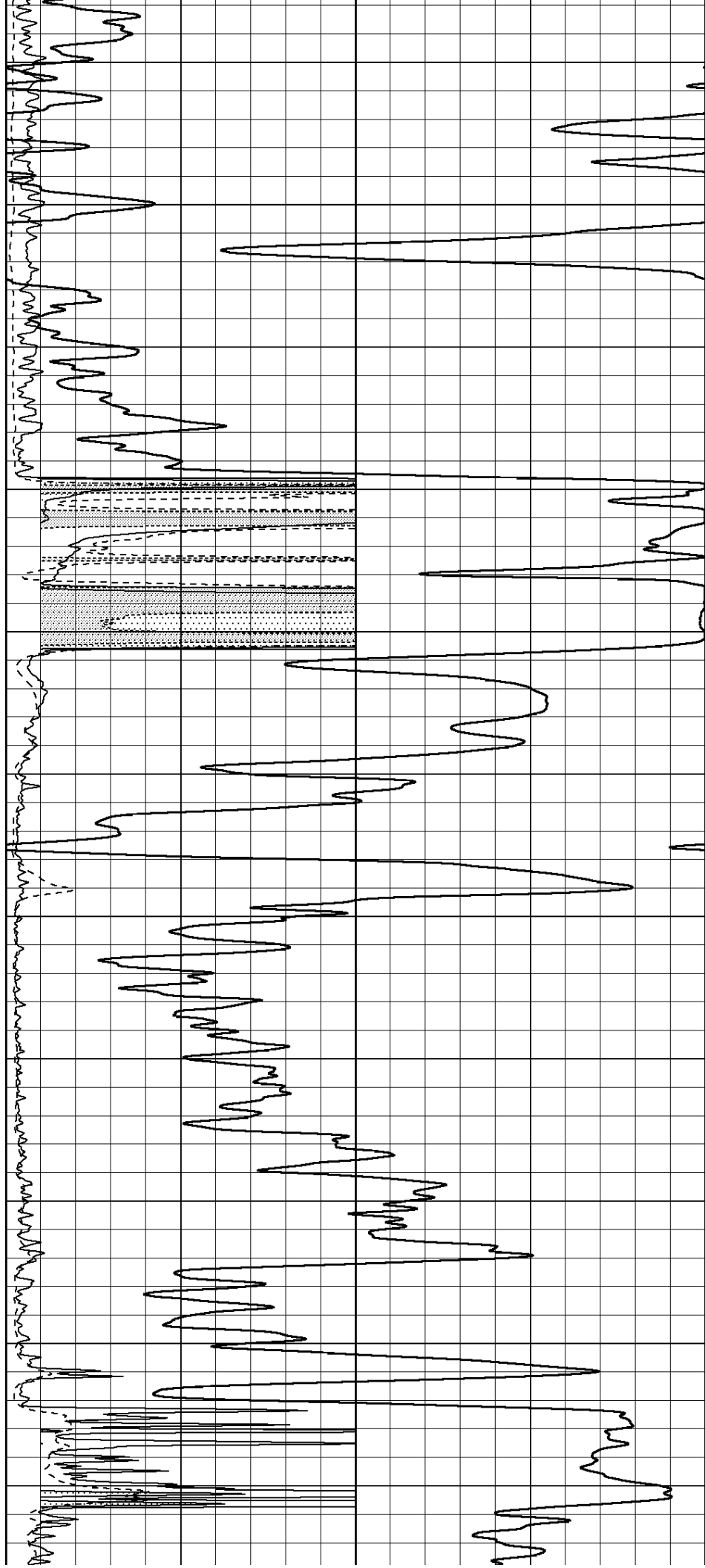
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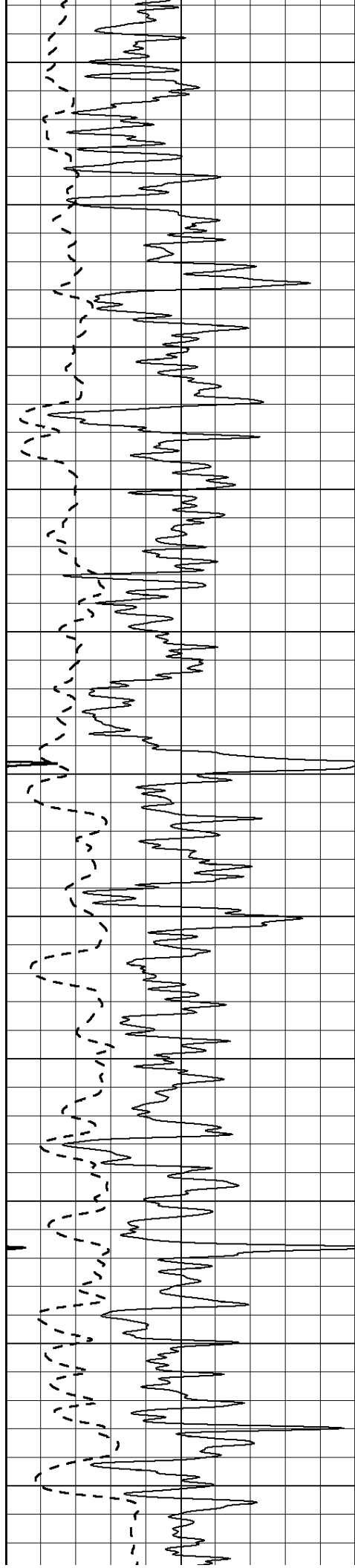
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2550

2600

2650





2700

2750

2800

2850

2900

2950

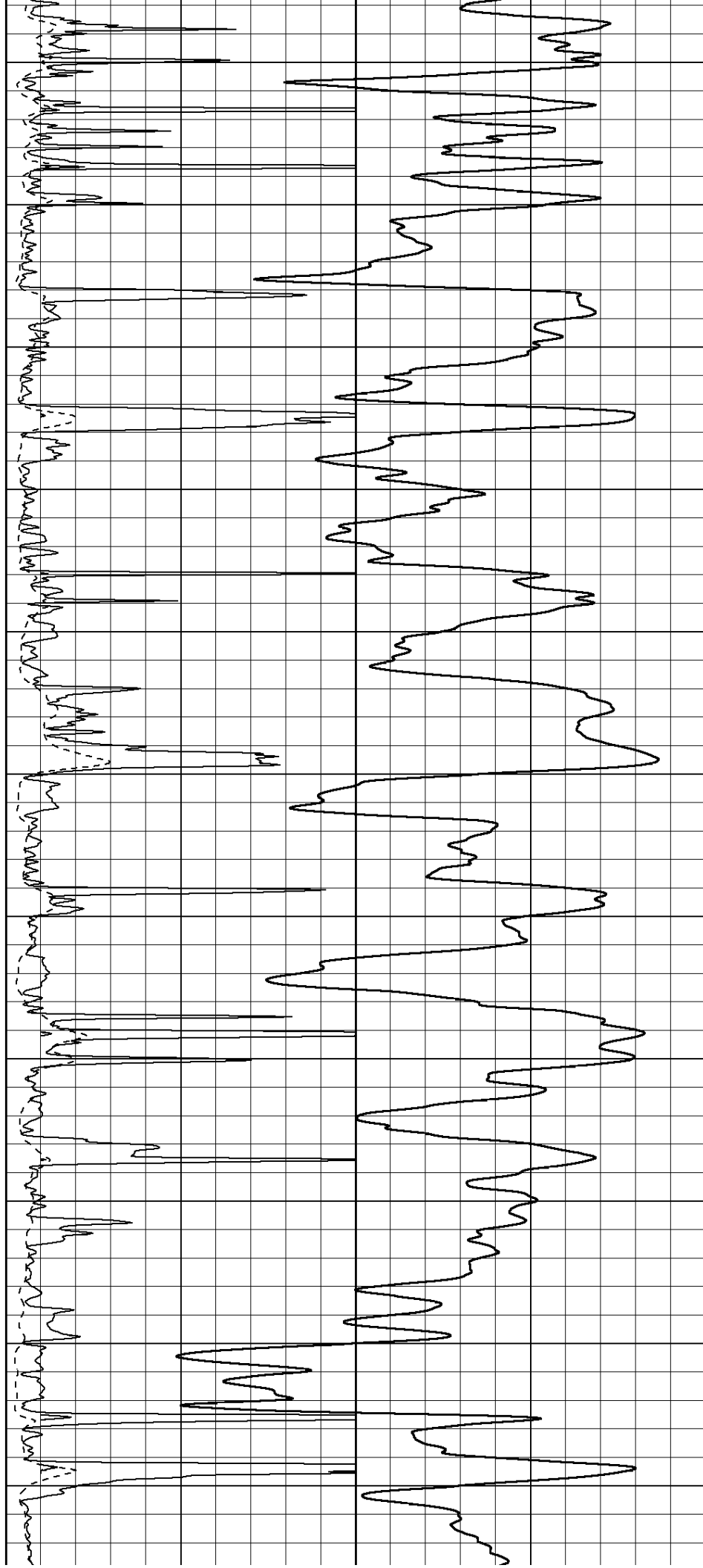
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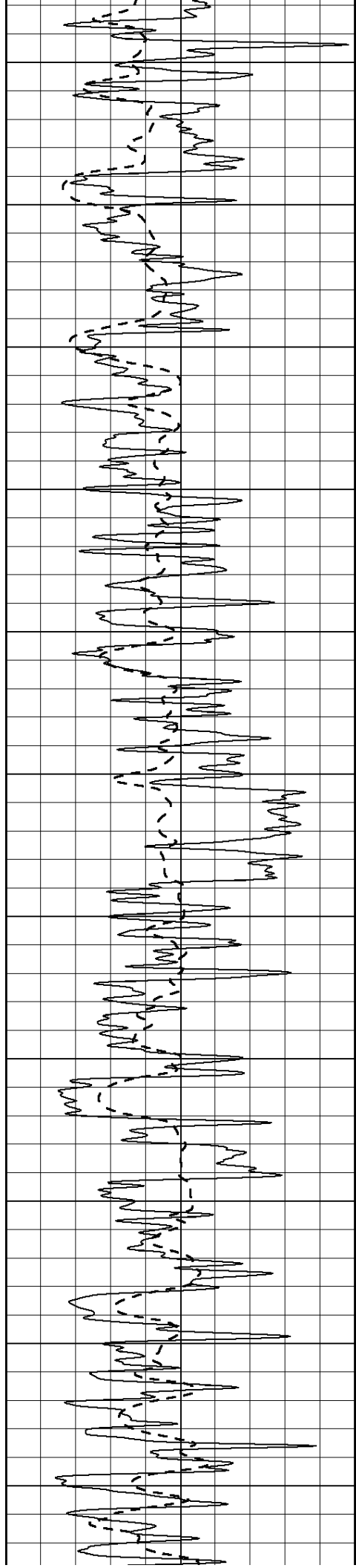
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3100

3150

3200





3250

3300

3350

3400

3450

3500

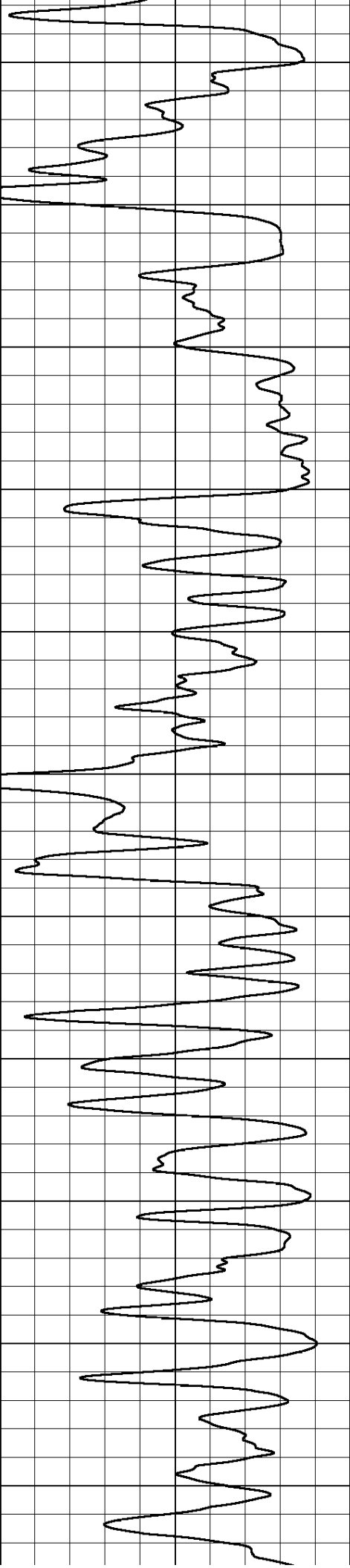
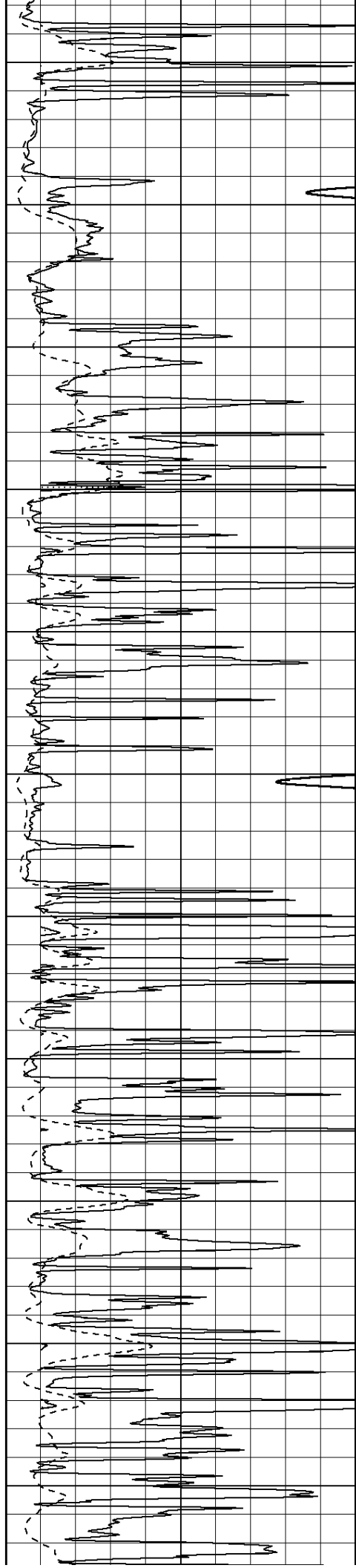
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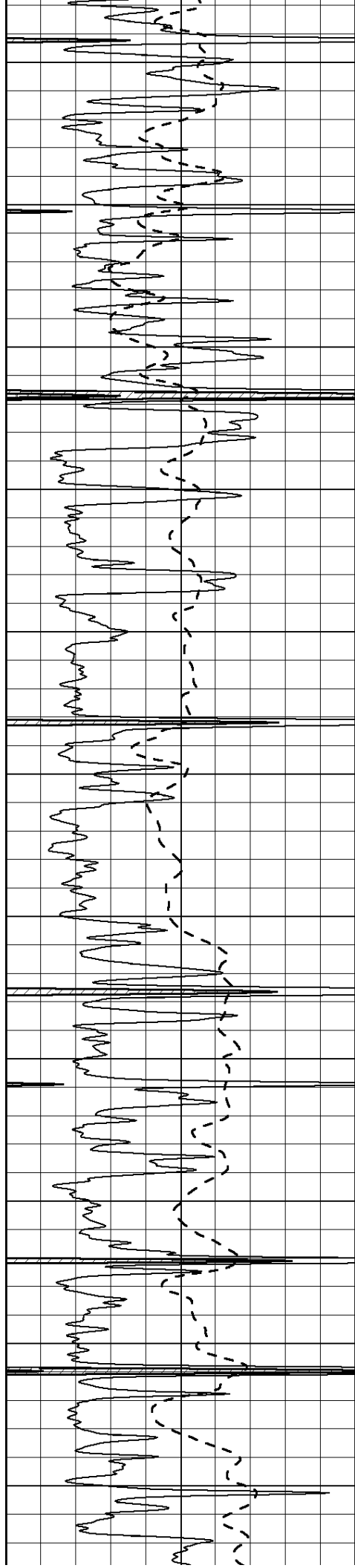
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3650

3700

3750





3800

3850

3900

3950

4000

4050

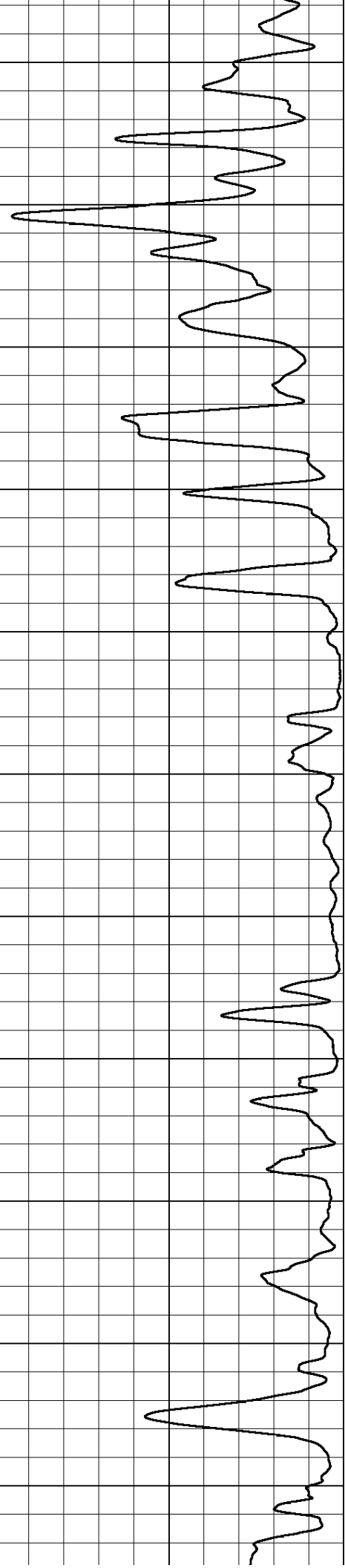
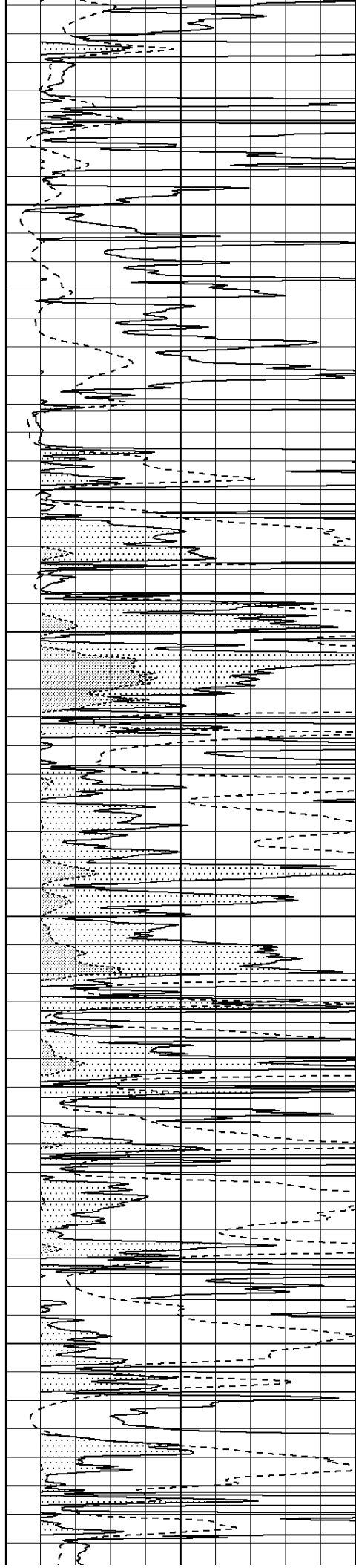
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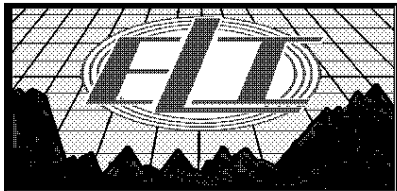
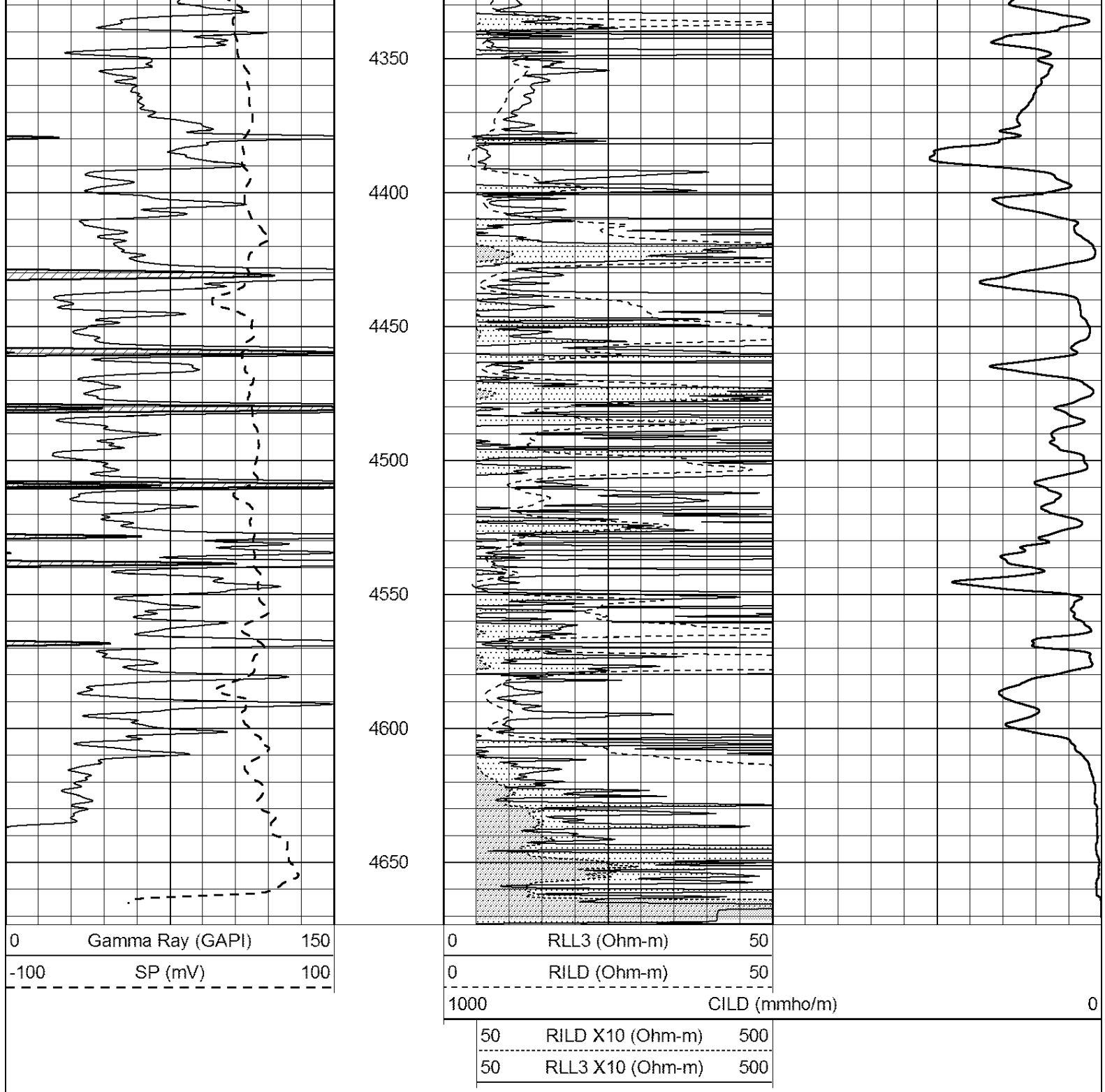
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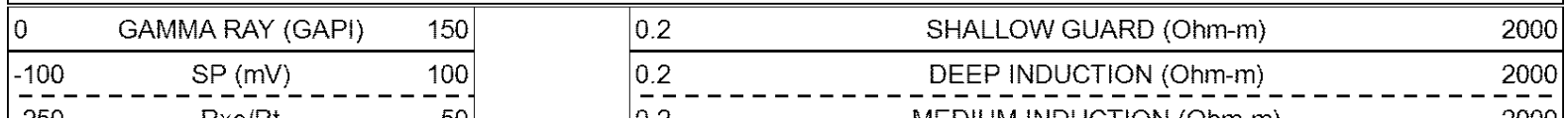
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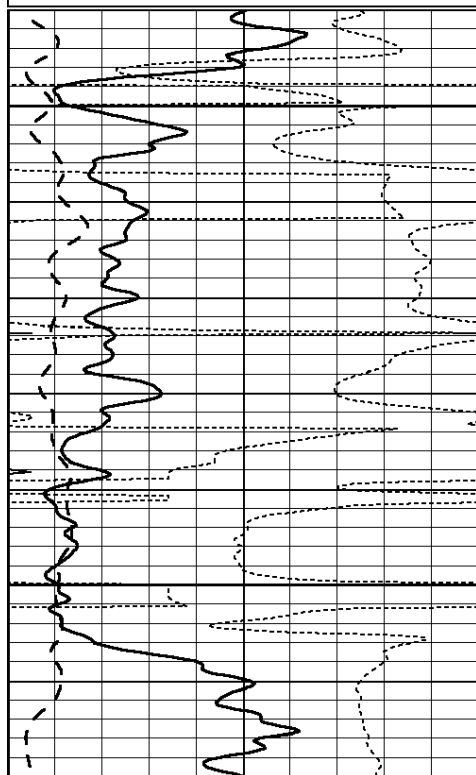


MAIN PASS

Database File: 2696pe.db
 Dataset Pathname: pass5.1
 Presentation Format: _dil
 Dataset Creation: Tue Jul 24 09:43:23 2018 by Calc Open-Cased 090629
 Charted by: Depth in Feet scaled 1:240



230	Rxo/Rt	50
0	MINMK	20

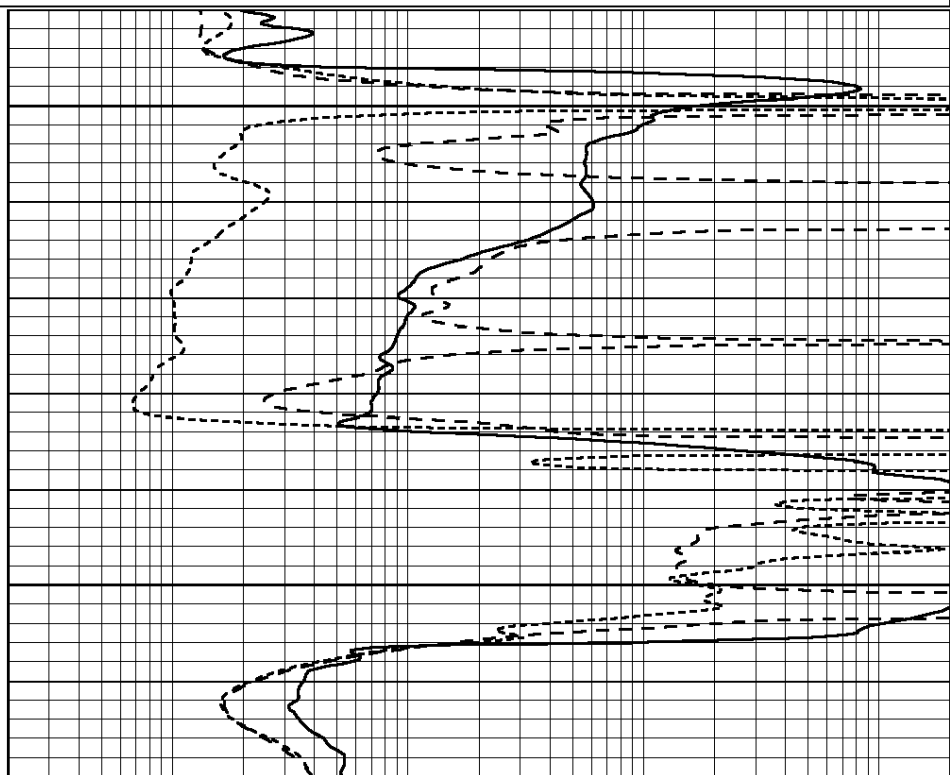


0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

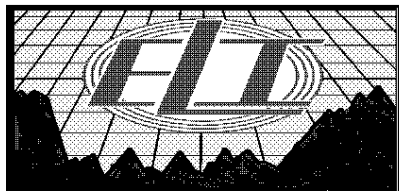
2300

2350

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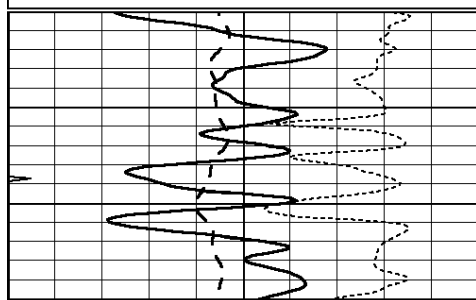
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000



MAIN PASS

Database File: 2696pe.db
Dataset Pathname: pass5.1
Presentation Format: _dil
Dataset Creation: Tue Jul 24 09:43:23 2018 by Calc Open-Cased 090629
Charted by: Depth in Feet scaled 1:240

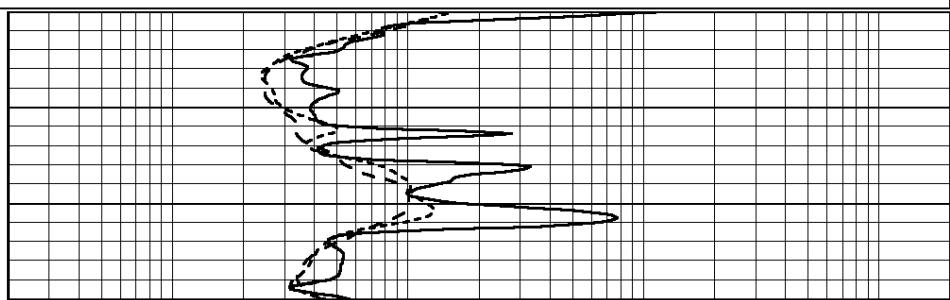
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-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

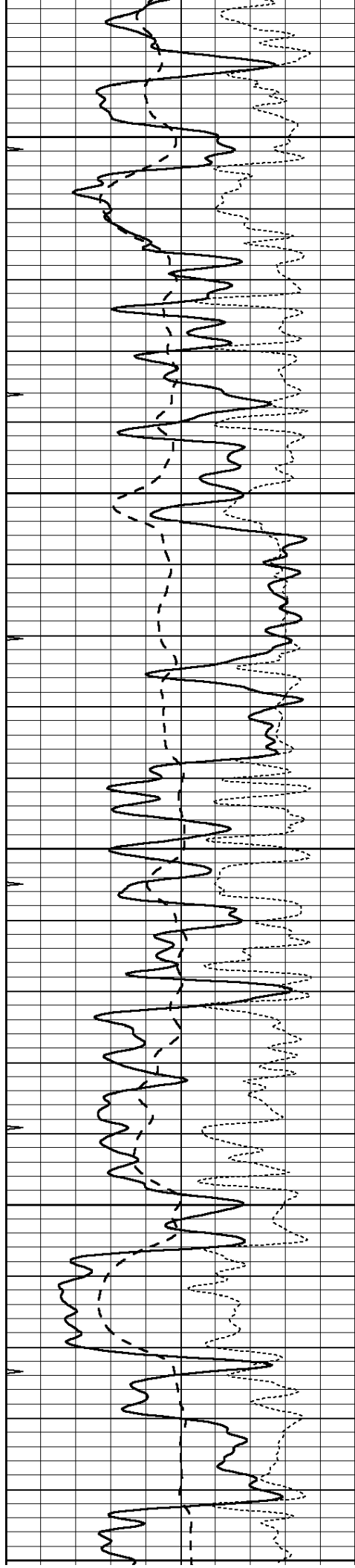


2300

2350

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





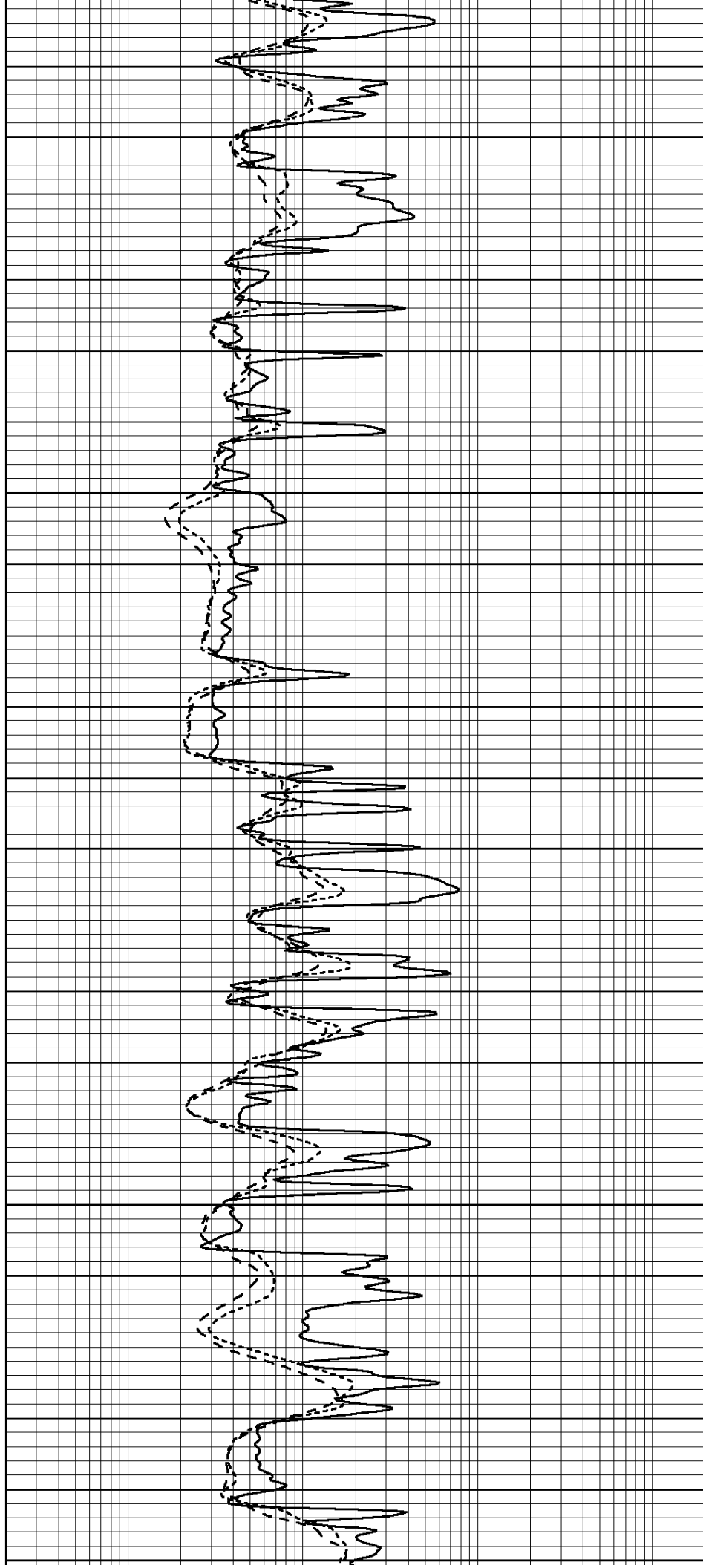
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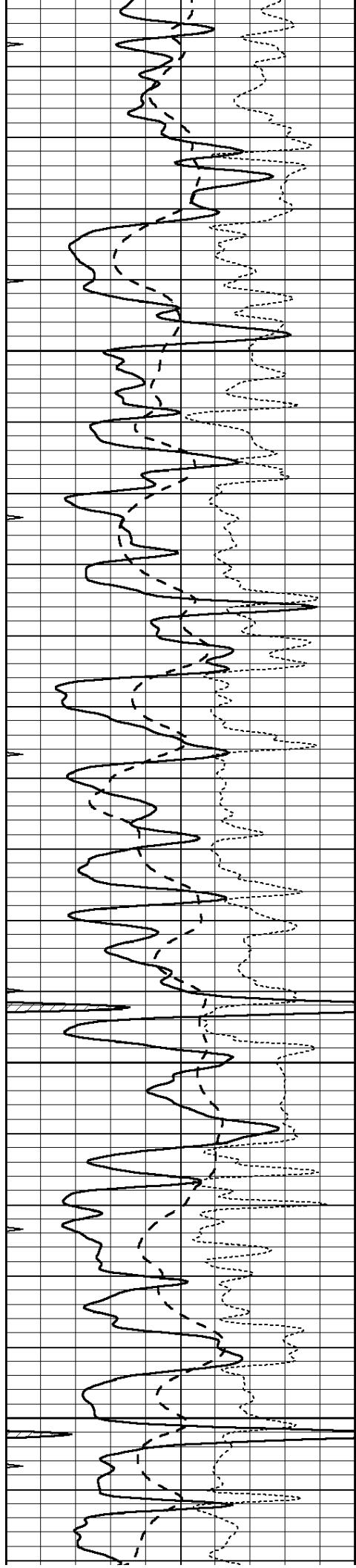
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3550

3600

3650



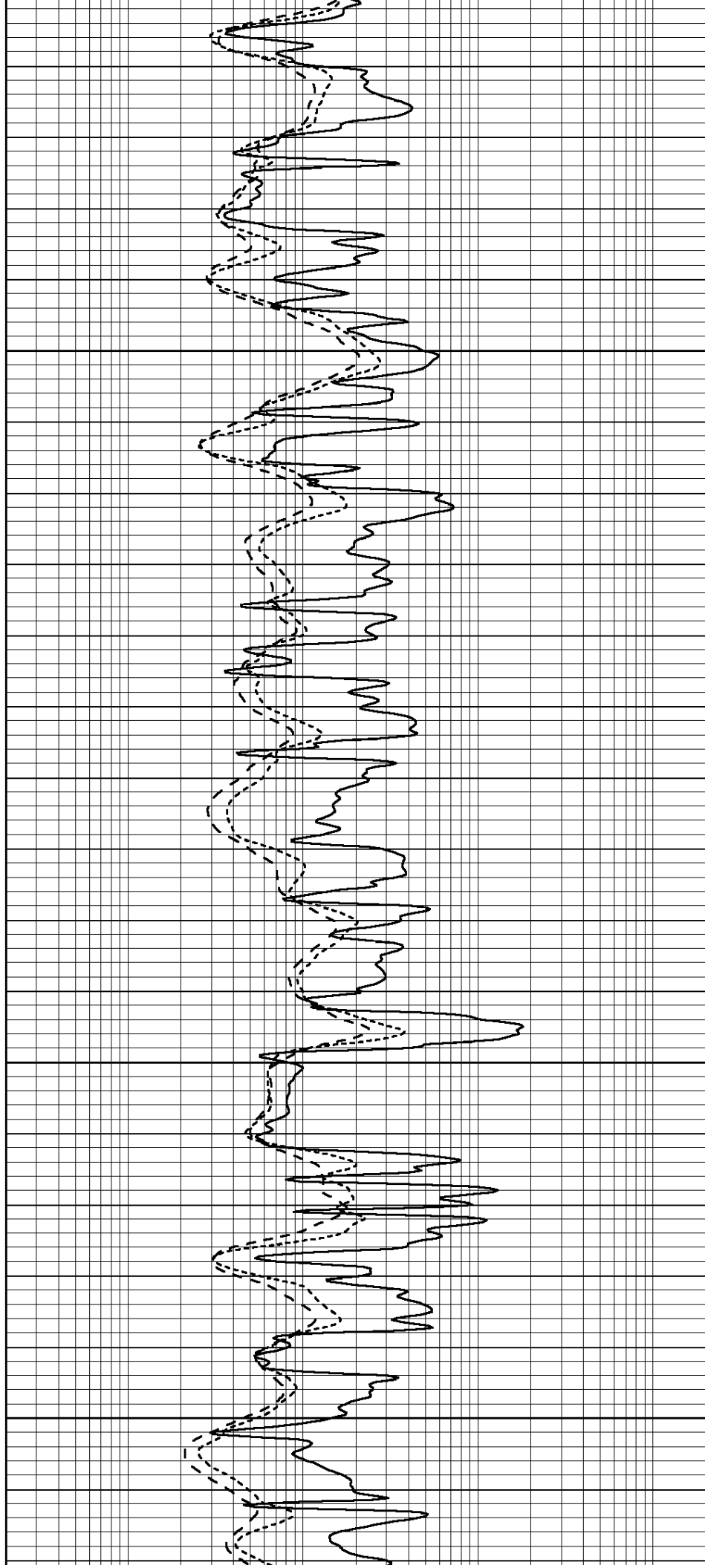


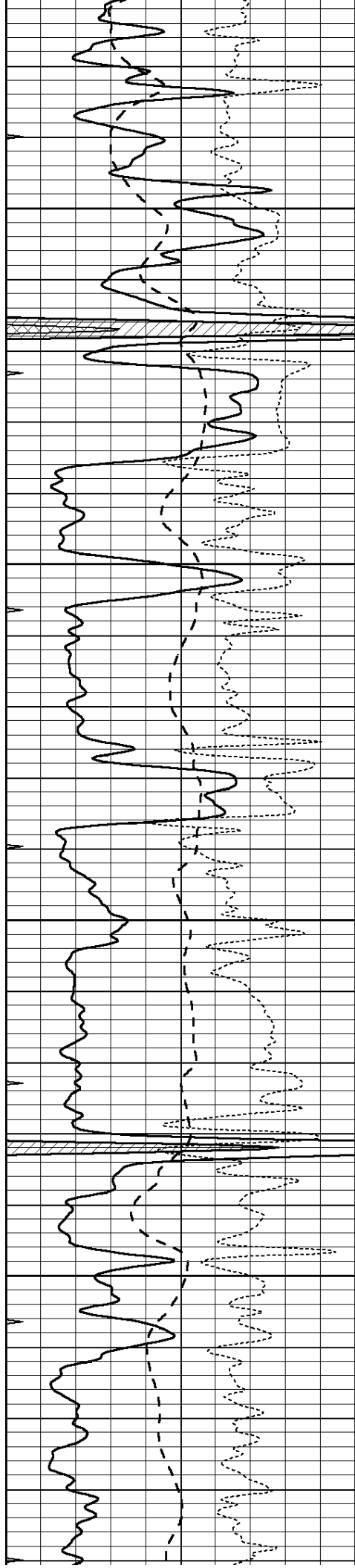
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3750

3800

3850



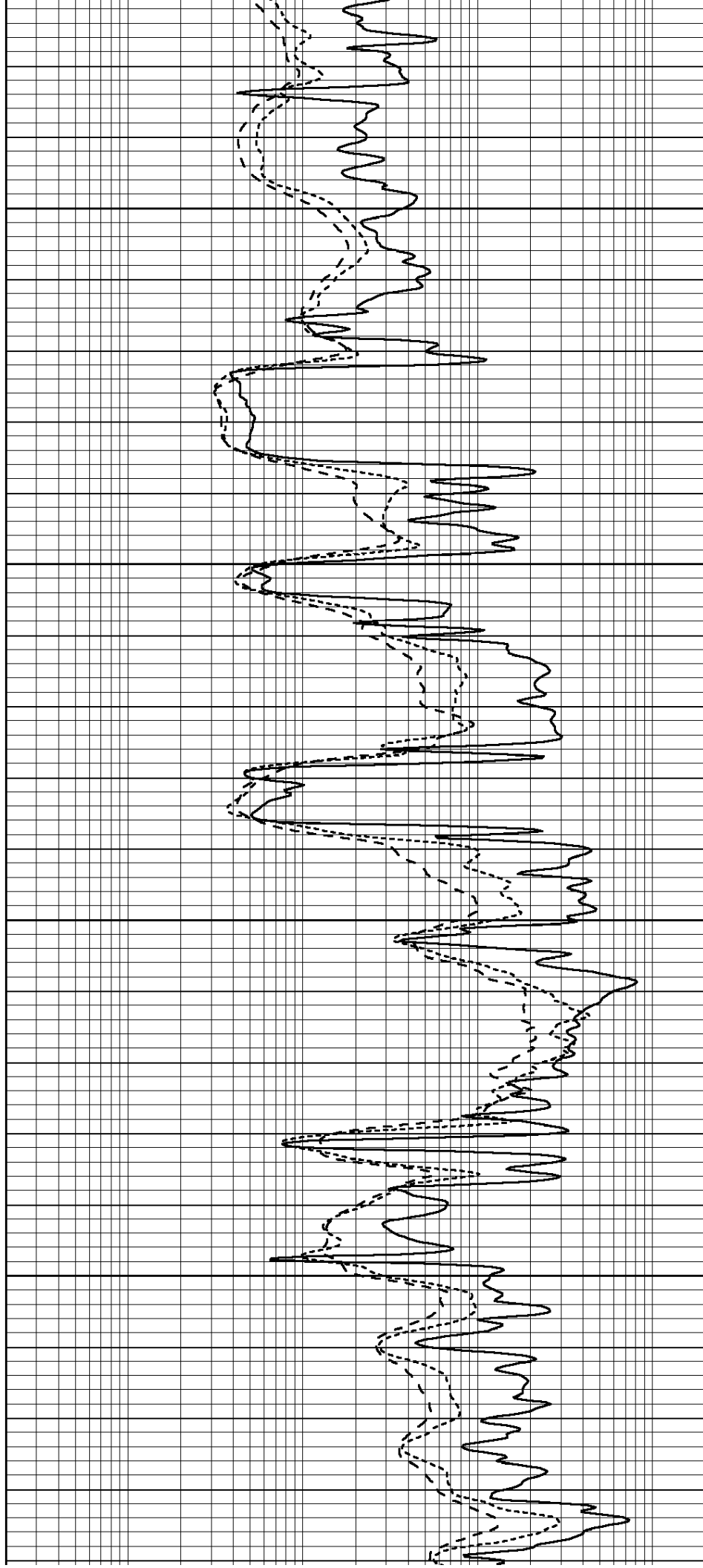


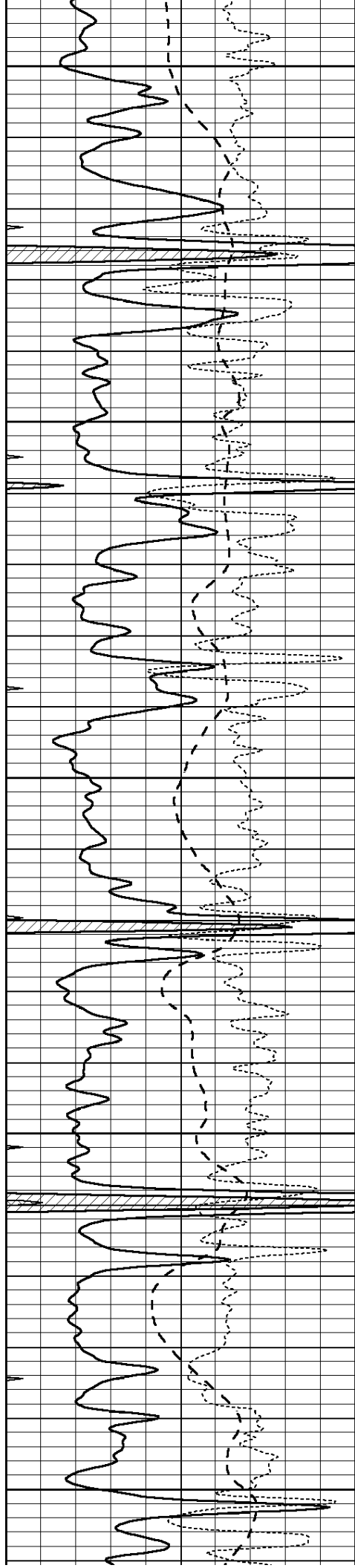
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3950

4000

4050





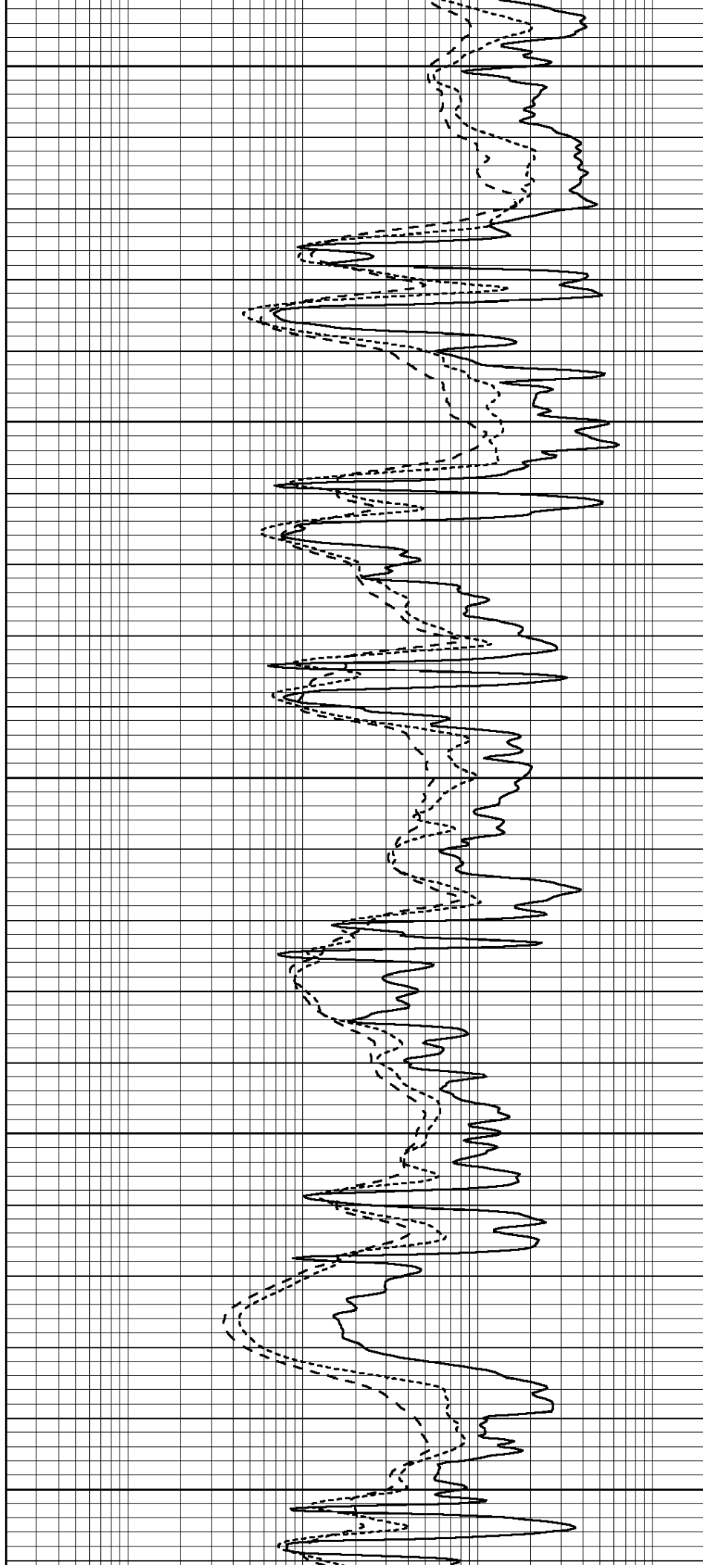
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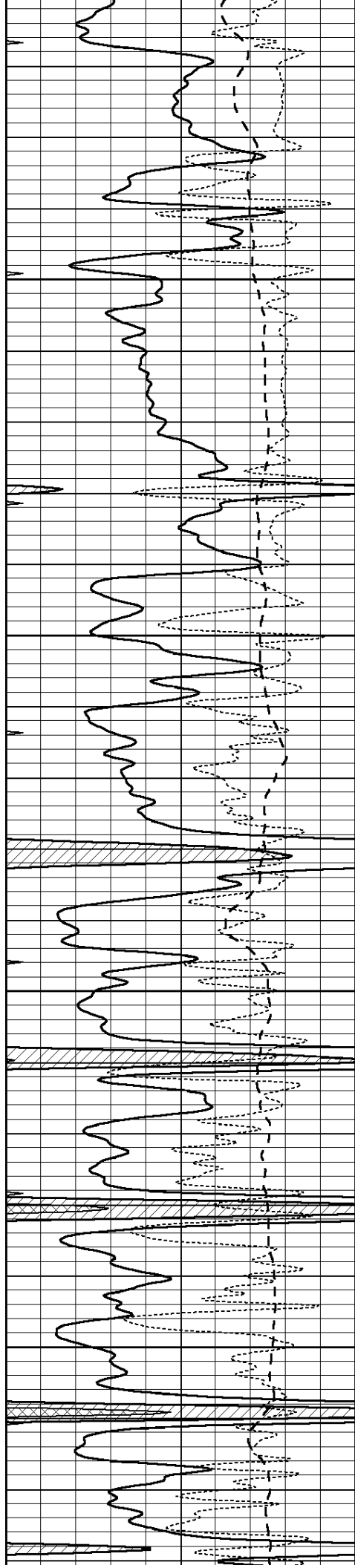
4150

4200

4250

4300



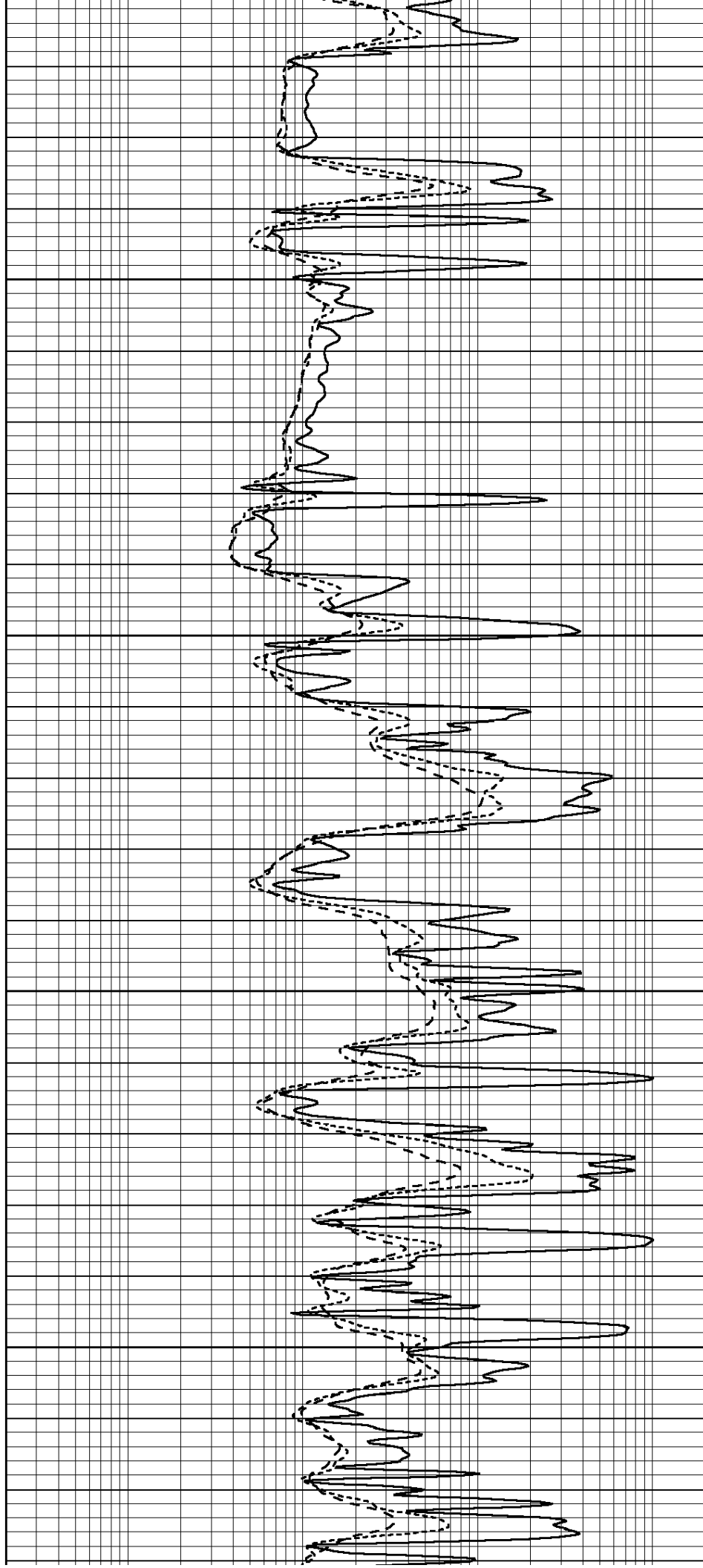


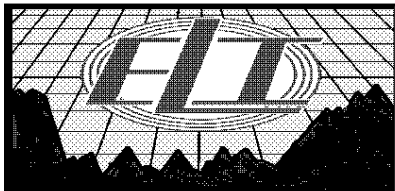
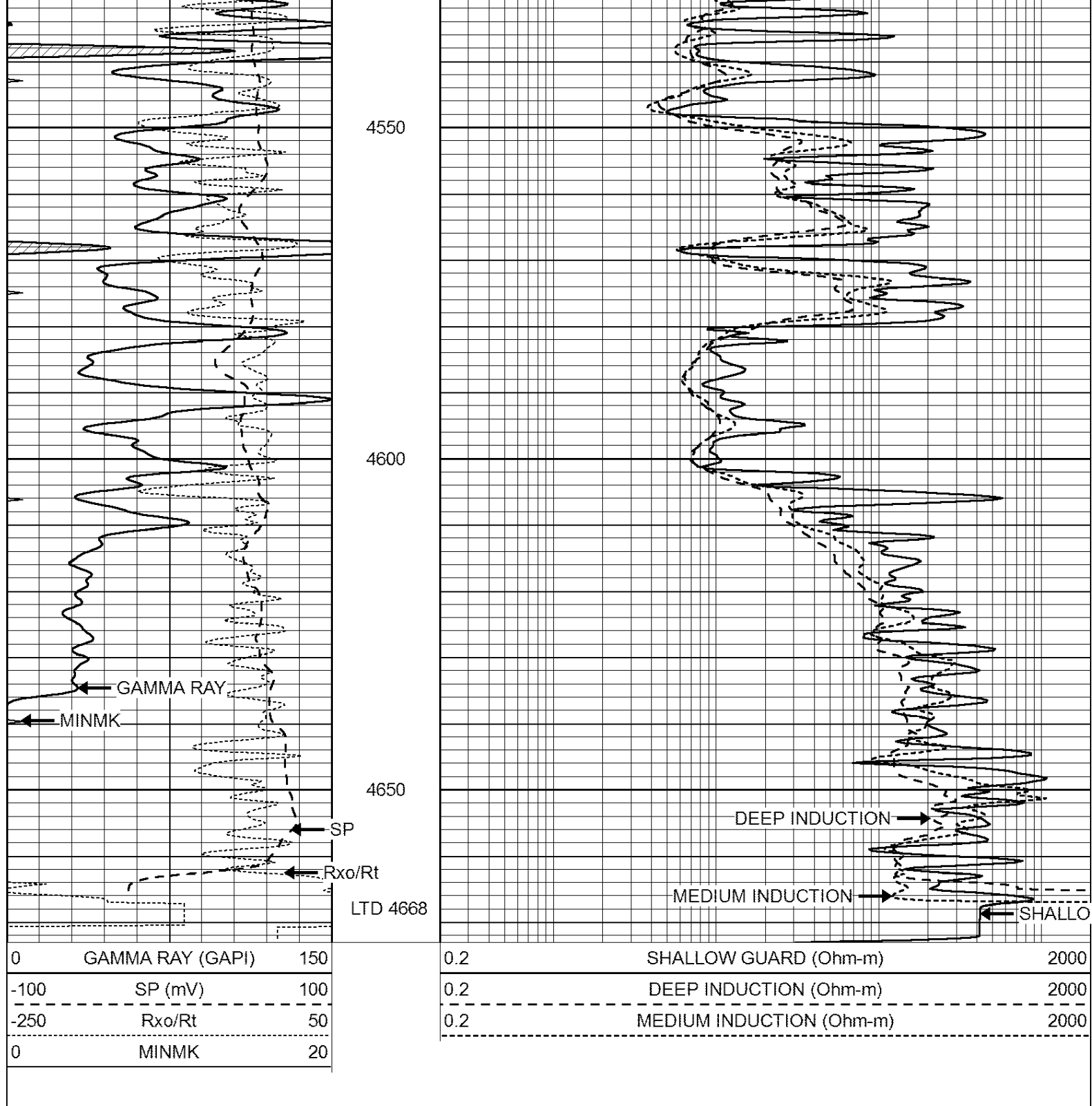
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4400

4450

4500





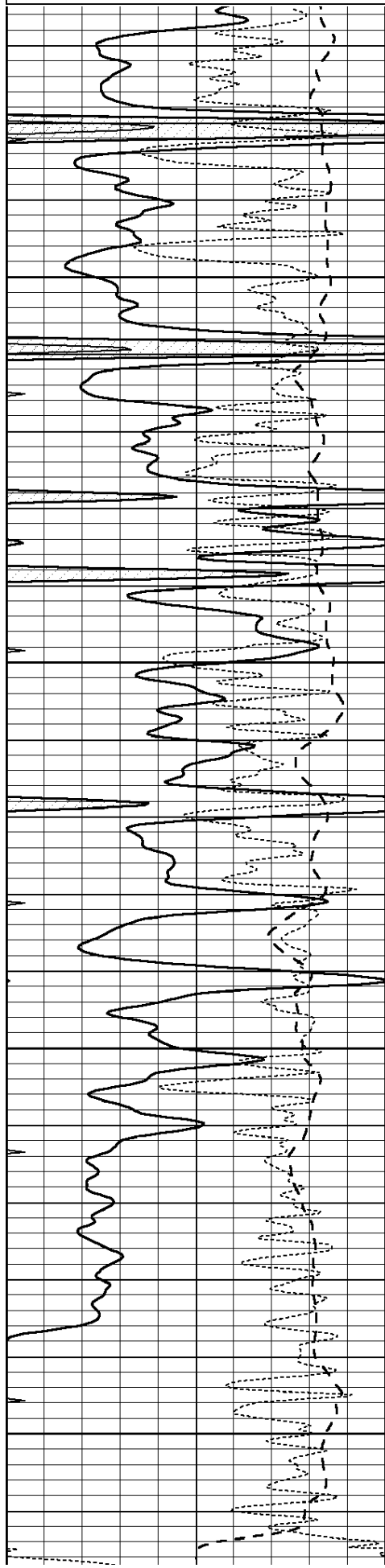
REPEAT SECTION

Database File: 2696pe.db
 Dataset Pathname: pass4.1
 Presentation Format: _dil
 Dataset Creation: Tue Jul 24 08:55:41 2018
 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			

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

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

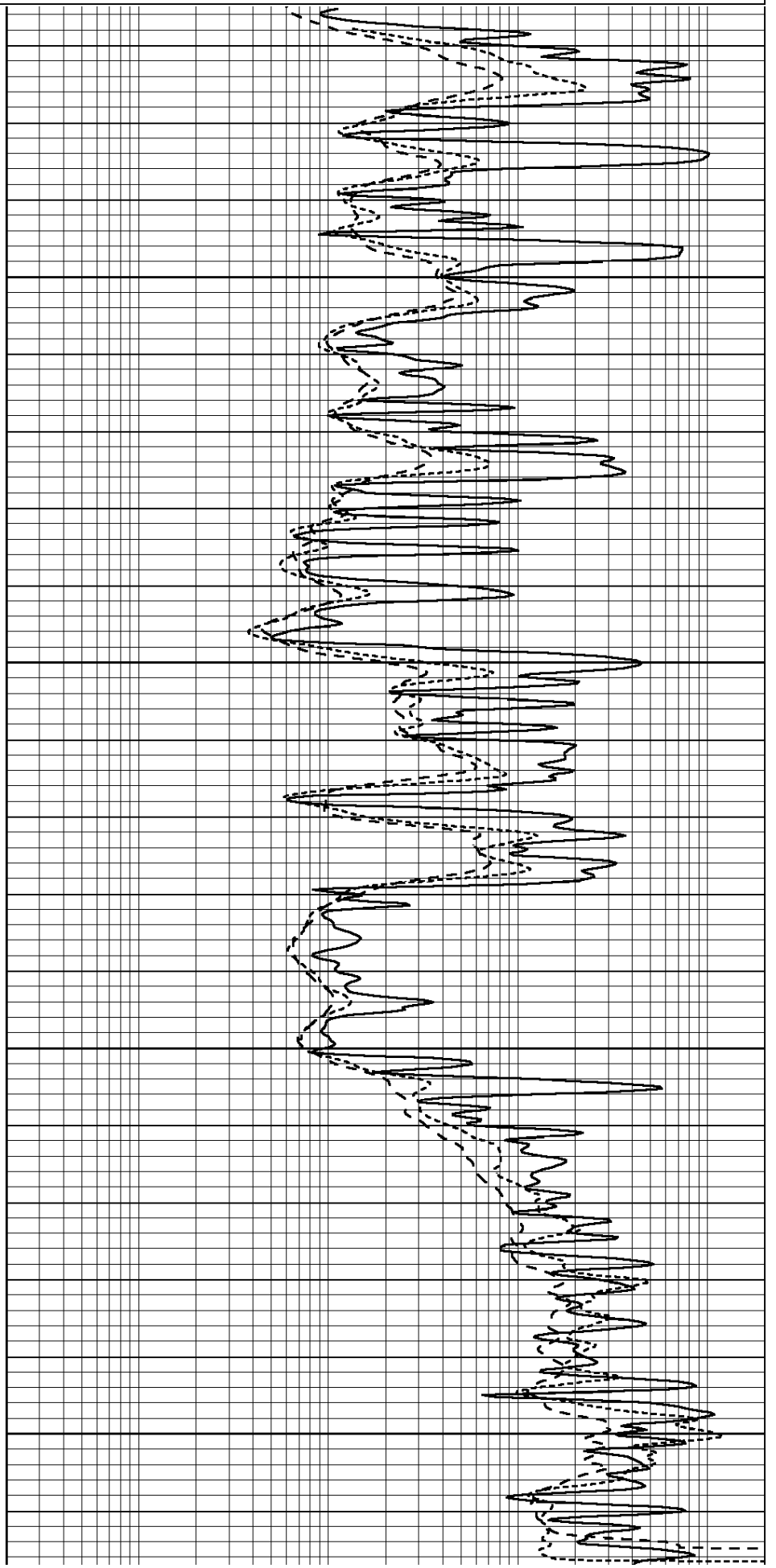


4500

4550

4600

4650



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			

Calibration Report								
Database File:	pe2.db							
Dataset Pathname:	pass2							
Dataset Creation:	Mon Aug 21 11:58:02 2017 by Log Open-Cased 090629							
Dual Induction Calibration Report								
Serial-Model:	PROBE8-DILG							
Surface Cal Performed:	Mon Aug 21 11:58:18 2017							
Downhole Cal Performed:	Mon Aug 21 11:58:21 2017							
After Survey Verification Performed:	Mon Aug 21 11:58:23 2017							
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: 002			Model: PRB		
Master Calibration			Performed Mon Aug 21 11:56:41 2017		
	Background	Magnesium	Aluminum	Sandstone	
Window 1	833.6	7394.2	2287.3	8111.8	cps
Window 2	768.9	6322.3	1995.6	6800.0	cps
Window 3	621.5	3261.9	1186.4	3380.9	cps

Window 3	021.0	0201.0	184.9	0000.0	cps
Window 4	184.2	185.7	184.8	6031.1	cps
Long Space	0.0	5553.4	1226.6	6031.1	cps
Short Space	1.2	1307.5	903.9	1387.7	cps
Rho		1.7100	2.5900	1.3800	g/cc
Pe		0.0000	2.5700	1.5500	
Rib Angle	: 46.3	Rib Slope	: 1.045	Density/Spine Ratio	: 0.566
Spine Angle	: 76.3	Spine Slope	: 4.090	Spine Intercept	: -20.7

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

Gamma Ray Calibration Report

Serial Number:	GR6	
Tool Model:	OPEN	
Performed:	Mon Aug 21 11:59:01 2017	
Calibrator Value:	150.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	276.0	cps
Sensitivity:	0.5500	GAPI/cps