



DUAL INDUCTION LOG

Company	PHILLIPS EXPLORATION COMPANY		
Well	ROHLEDER #1-9 SHR		
Field	COLLYER TOWNSITE		
County	TREGO		
State	KANSAS		
Location: API # : 15-195-23031-00-00			
SEC 9 TWP 12S RGE 25W			
330' FNL & 330' FWL			
Permanent Datum	GROUND LEVEL	Elevation	2582'
Log Measured From	KELLY BUSHING 5' A.G.L.		
Drilling Measured From	KELLY BUSHING		
Other Services		CDL/CNL/ML	
Date	11/05/17		
Run Number	ONE		
Depth Driller	4250		
Depth Logger	4248		
Bottom Logged Interval	4246		
Top Log Interval	00		
Casing Driller	8 5/8" @ 218		
Casing Logger	218		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD		
Density / Viscosity	9.2/51		
pH / Fluid Loss	10.5/7.2		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	1.0@55		
Rmt @ Meas. Temp	.75@55		
Rmc @ Meas. Temp	1.2@55		
Source of Rmt / Rmc	MEASURED		
Rm @ BHT	.46@118		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom	///		
Maximum Recorded Temperature	118F		
Equipment Number	4010		
Location	HAYS, KANSAS		
Recorded By	GUS PFANENSTIEL		
Witnessed By	PAT DEENIHAN		

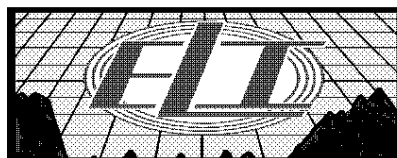
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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on 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
COLLYER EXIT OFF I70 NORTH 3/4 MILE,
EAST INTO.



MAIN PASS

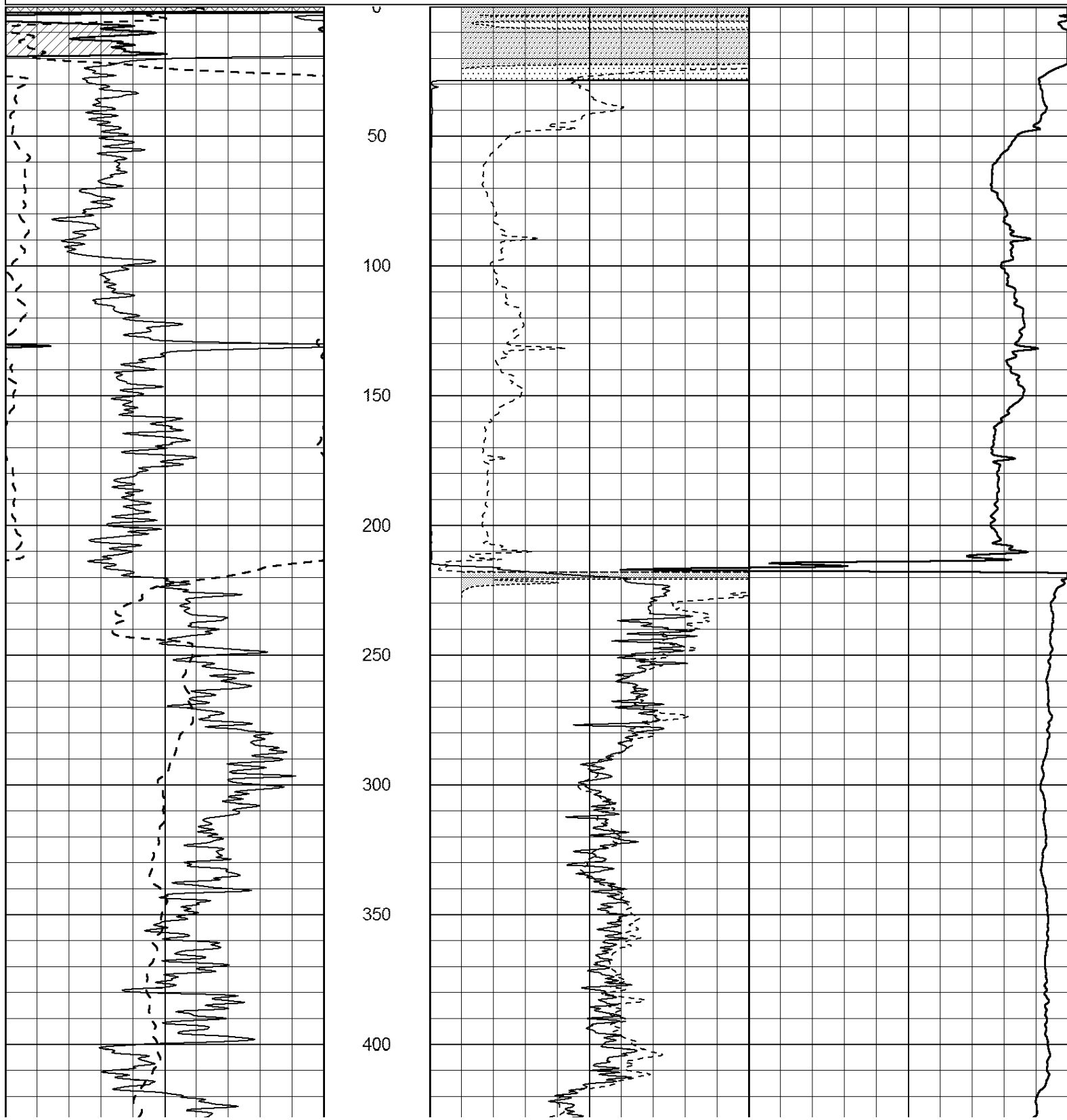
Database File: 2107ddn.db
Dataset Pathname: pass3.1
Presentation Format: _dil2
Dataset Creation: Sun Nov 05 10:16:29 2017 by Calc Open-Cased 090629
Charted by: Depth in Feet scaled 1:600

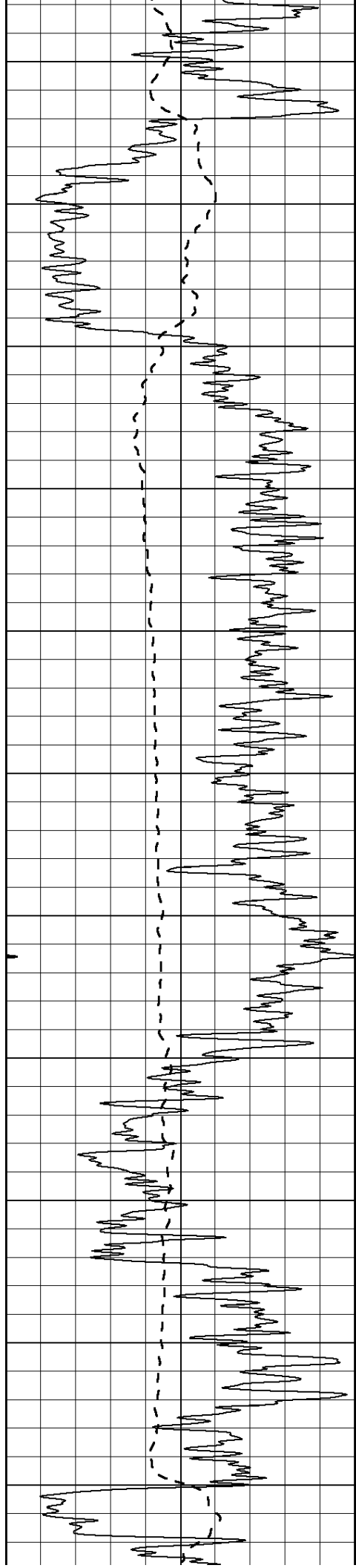
0	Gamma Ray (GAPI)	150
-100	SP (mV)	100

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

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





450

500

550

600

650

700

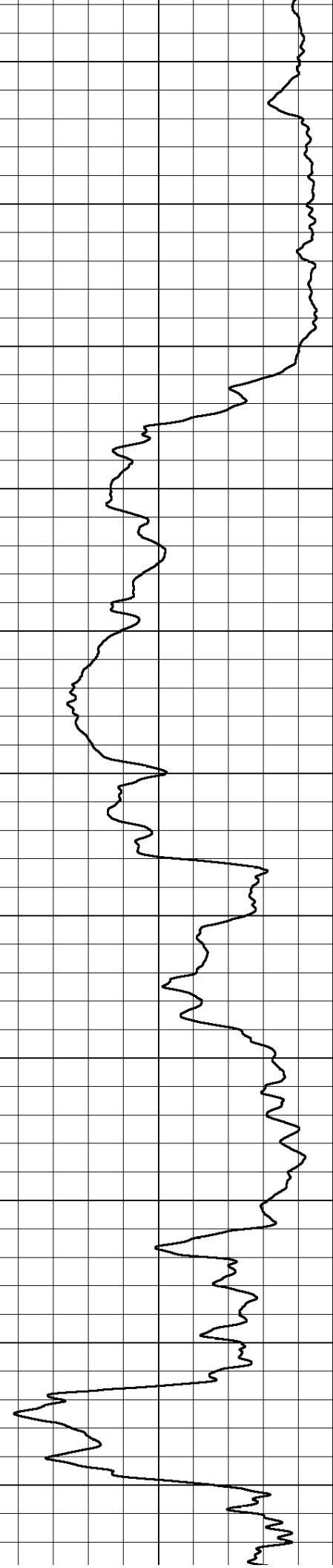
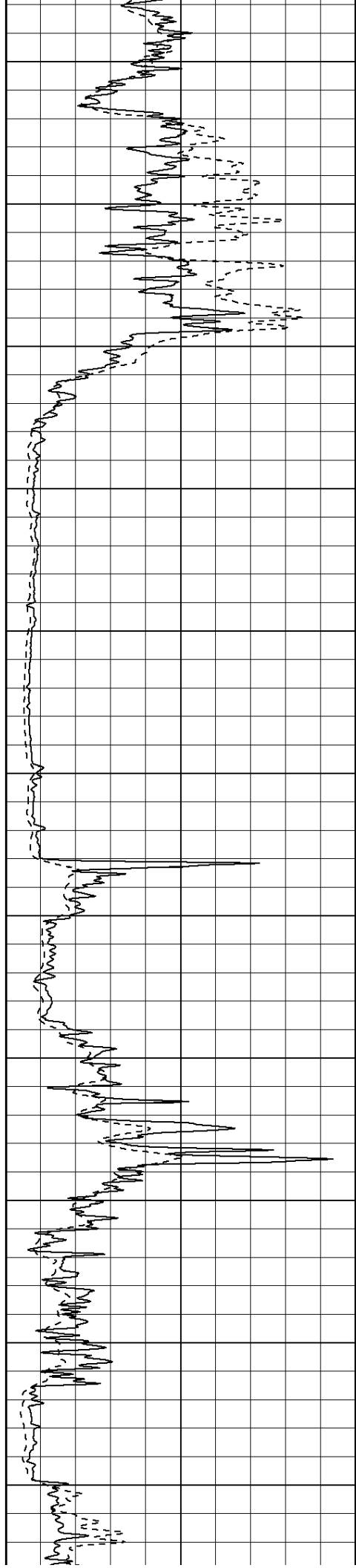
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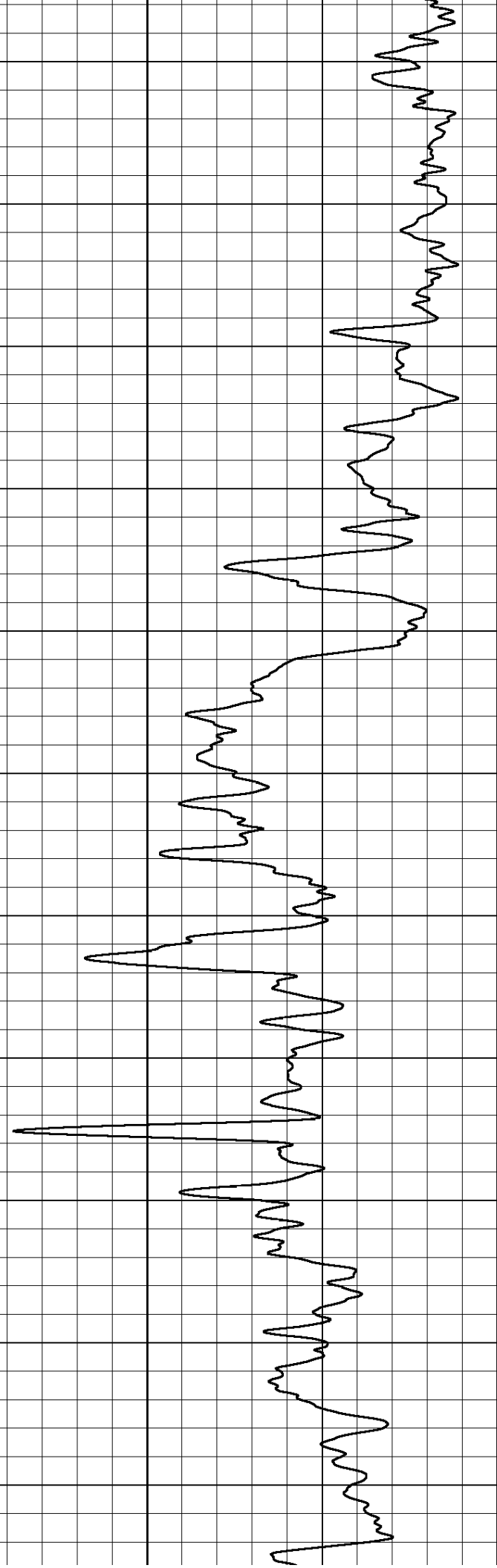
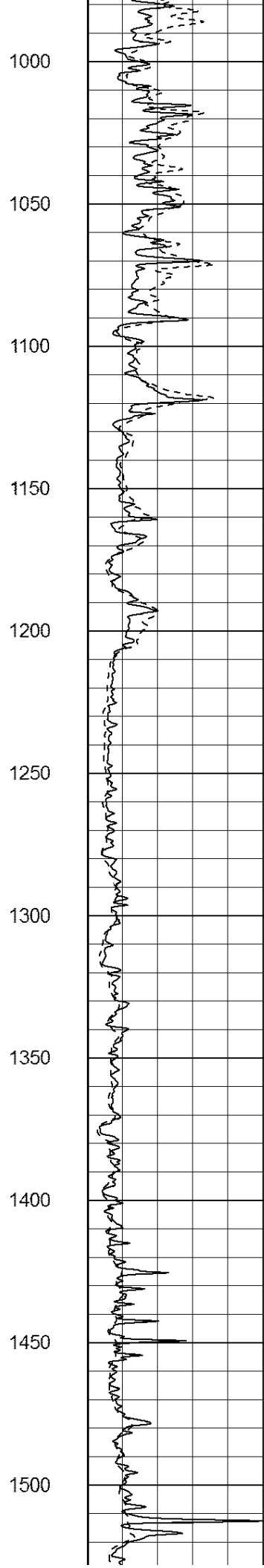
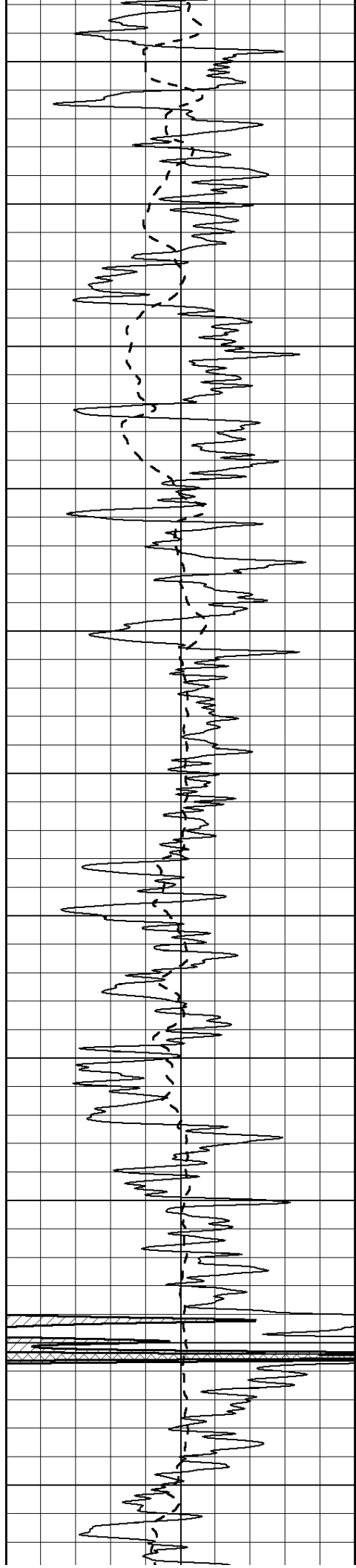
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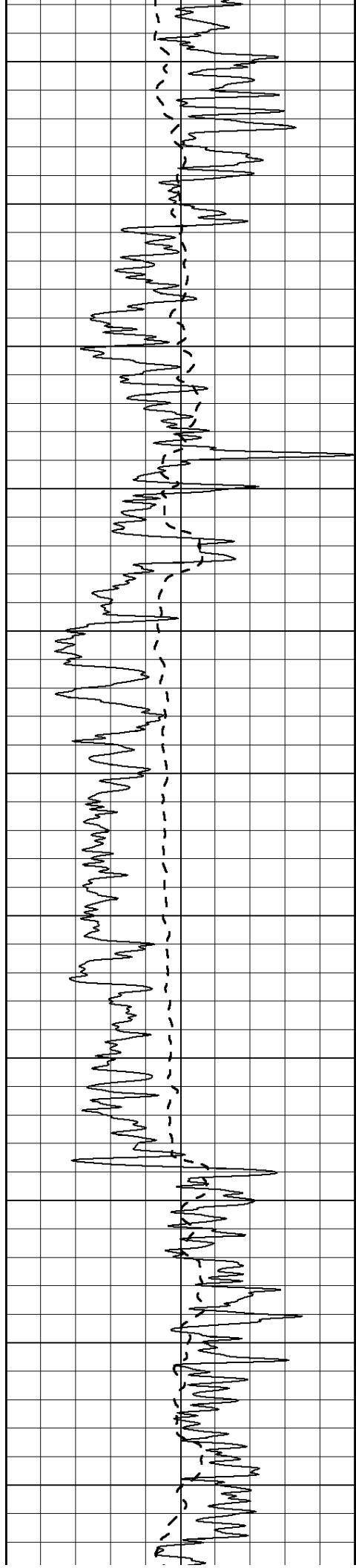
850

900

950







1550

1600

1650

1700

1750

1800

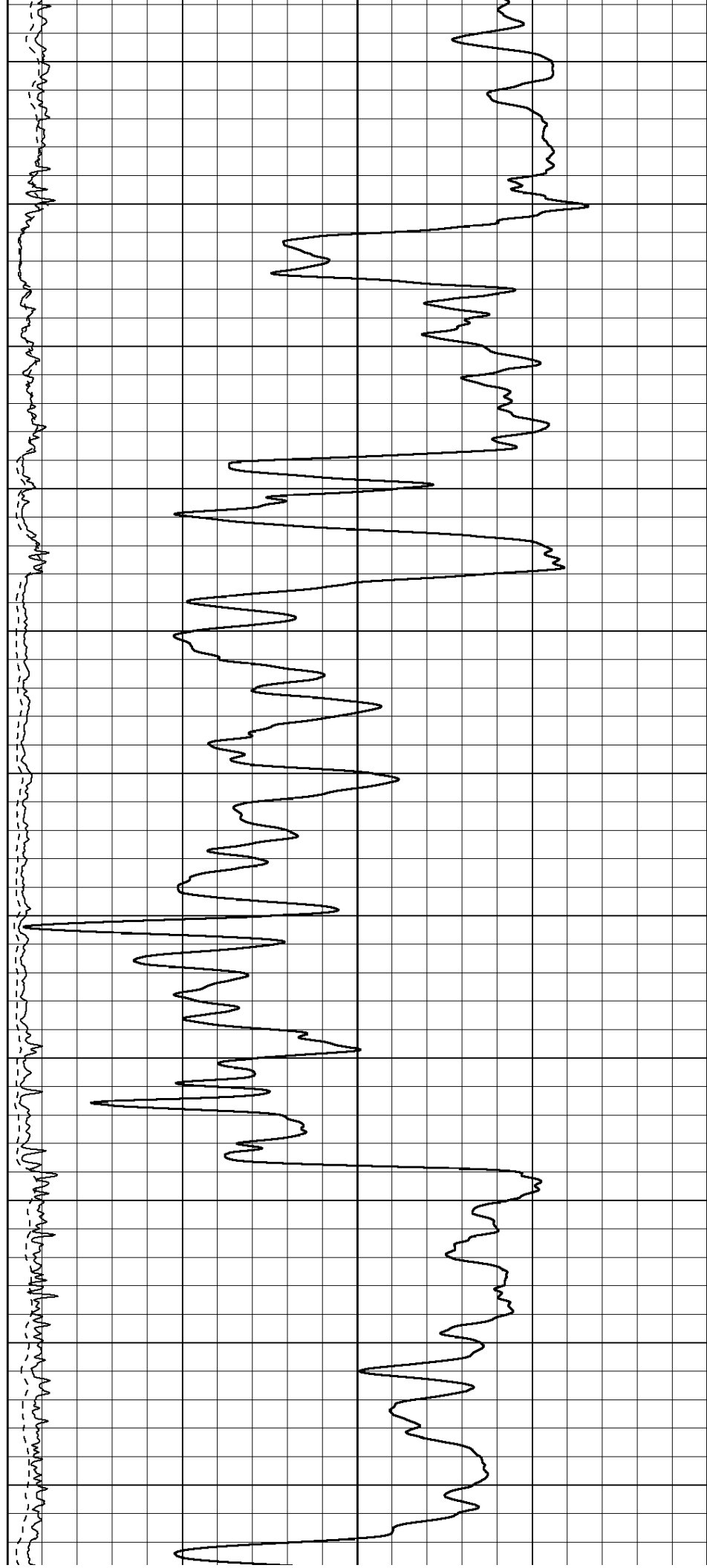
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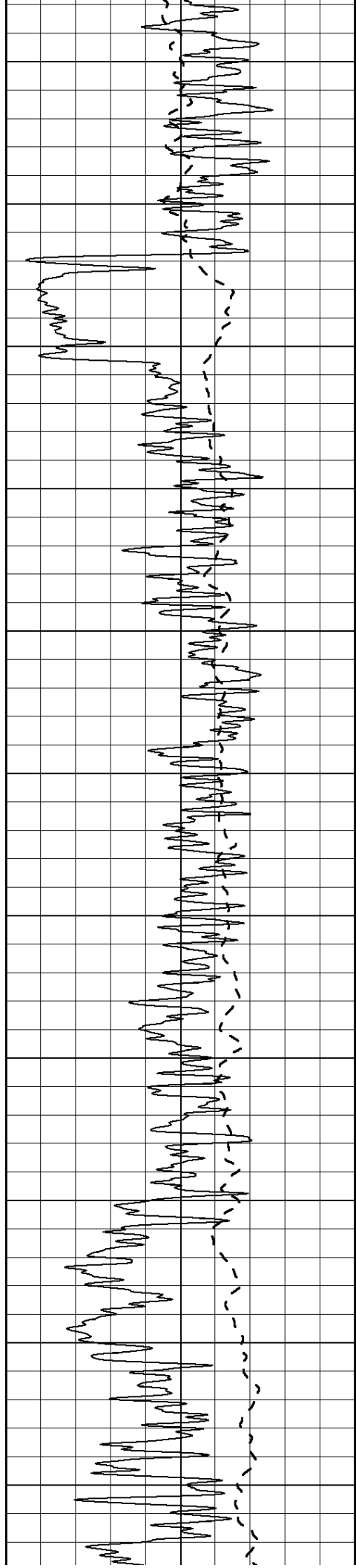
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1950

2000

2050





2100

2150

2200

2250

2300

2350

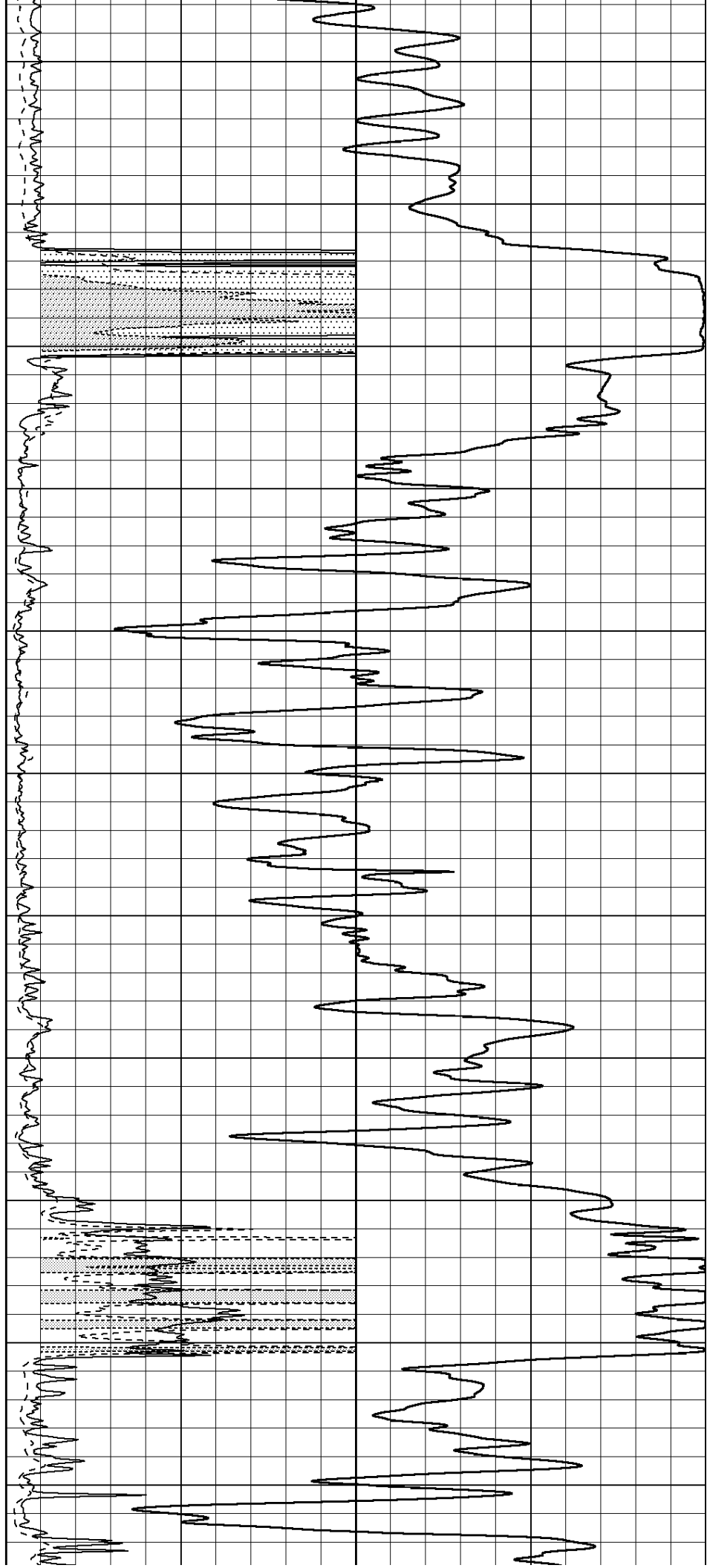
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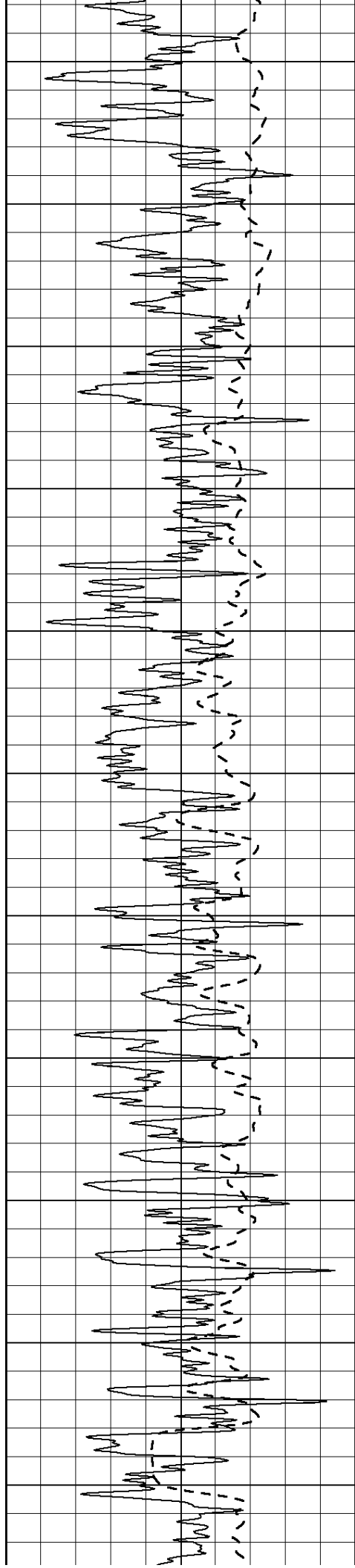
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2500

2550

2600





2650

2700

2750

2800

2850

2900

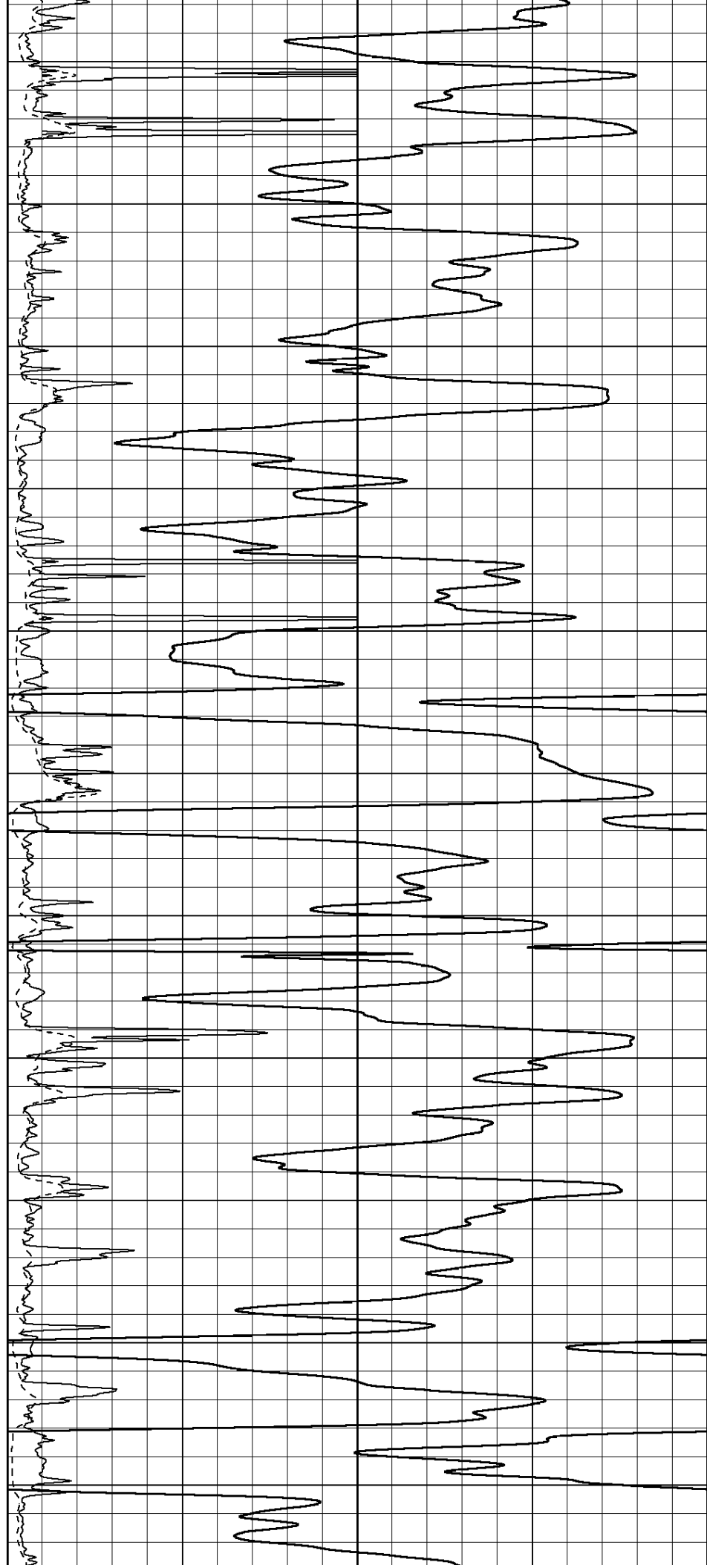
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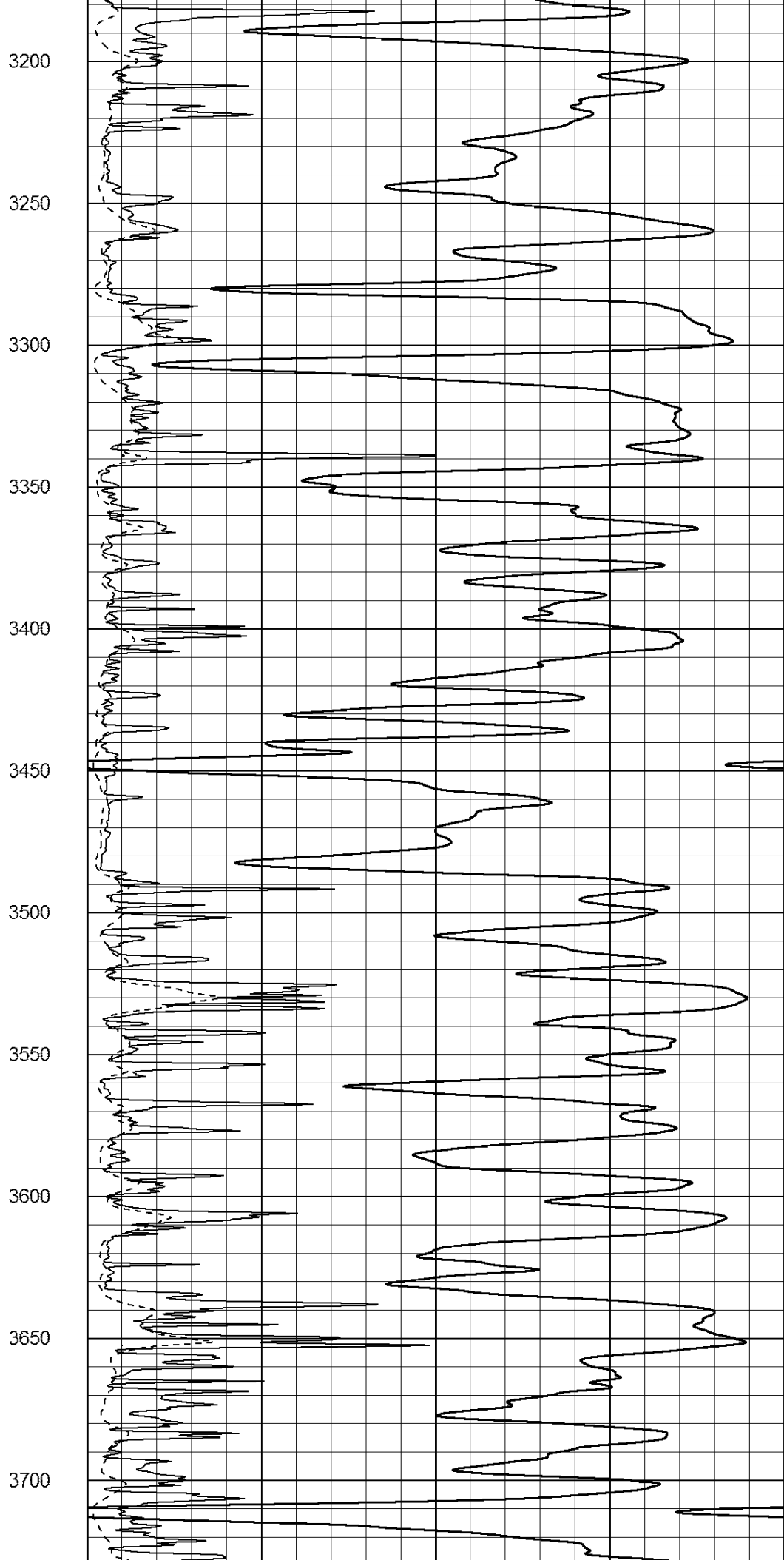
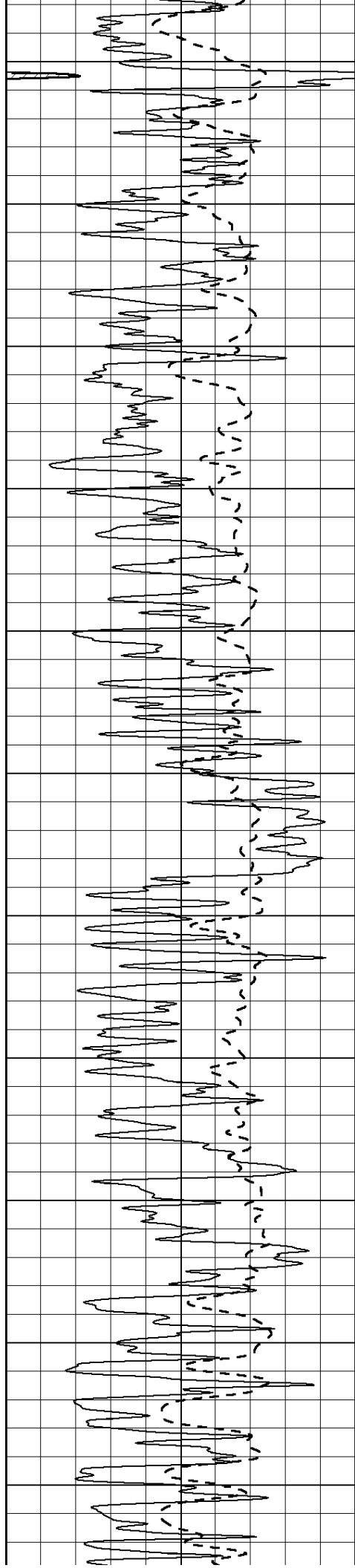
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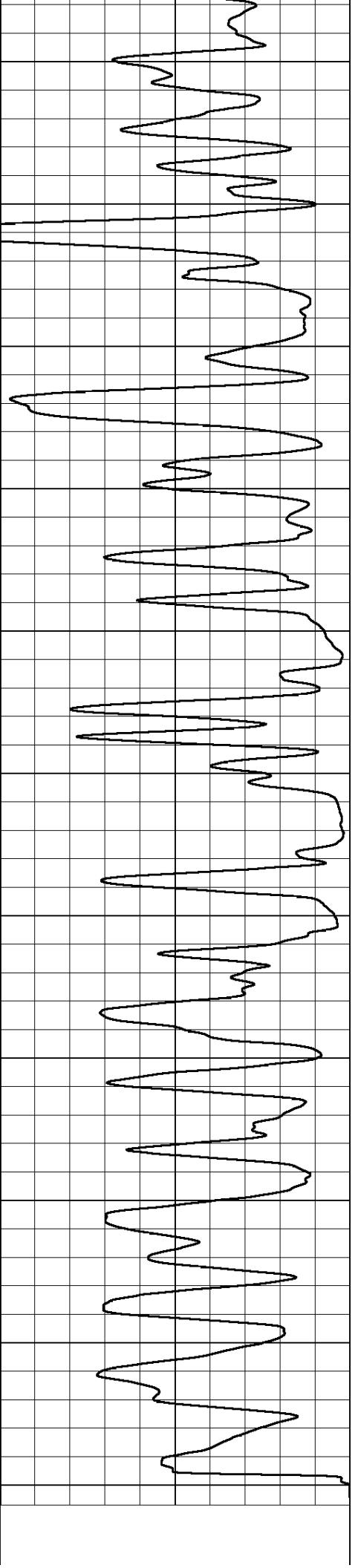
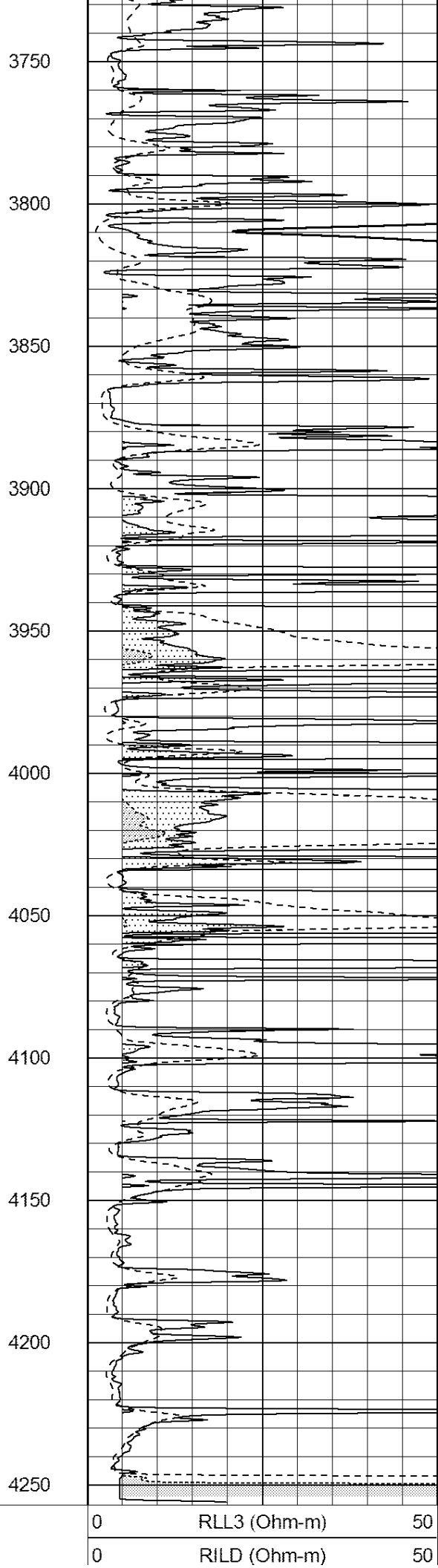
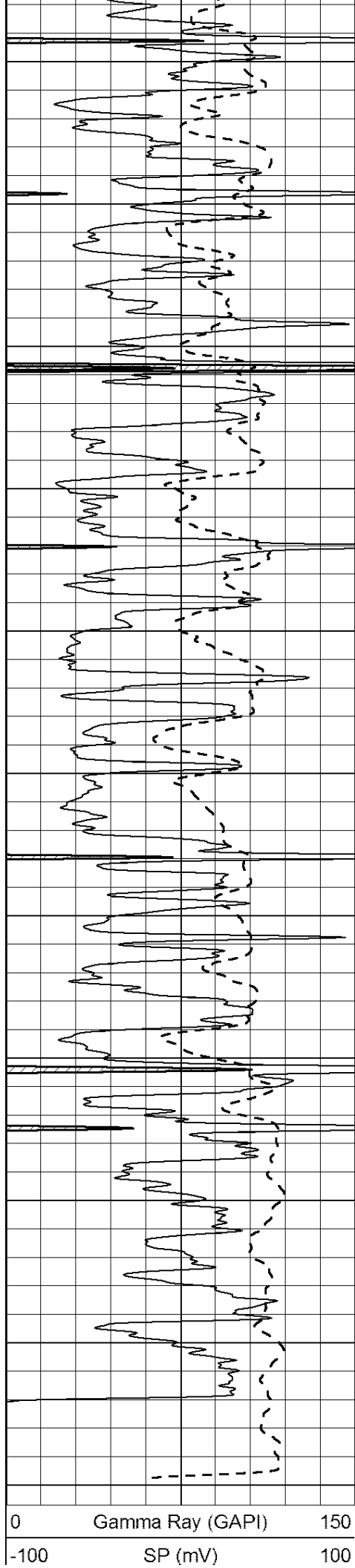
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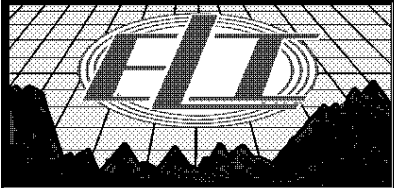
3150







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

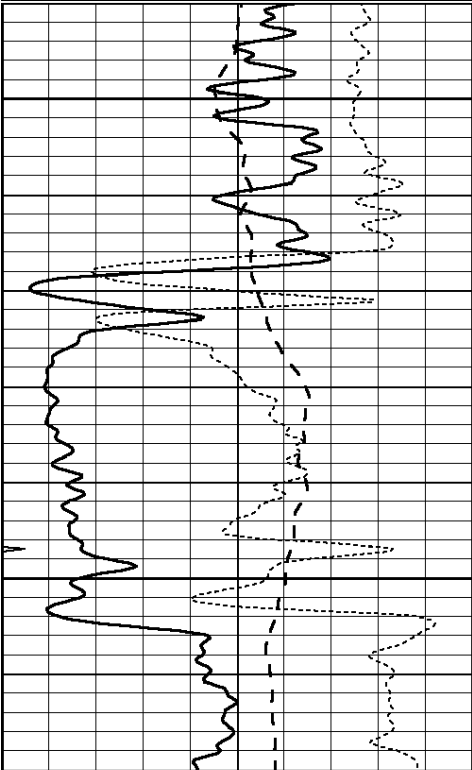


ANHYDRITE

Database File: 2107ddn.db
Dataset Pathname: pass30
Presentation Format: _dil
Dataset Creation: Sun Nov 05 10:09:13 2017 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

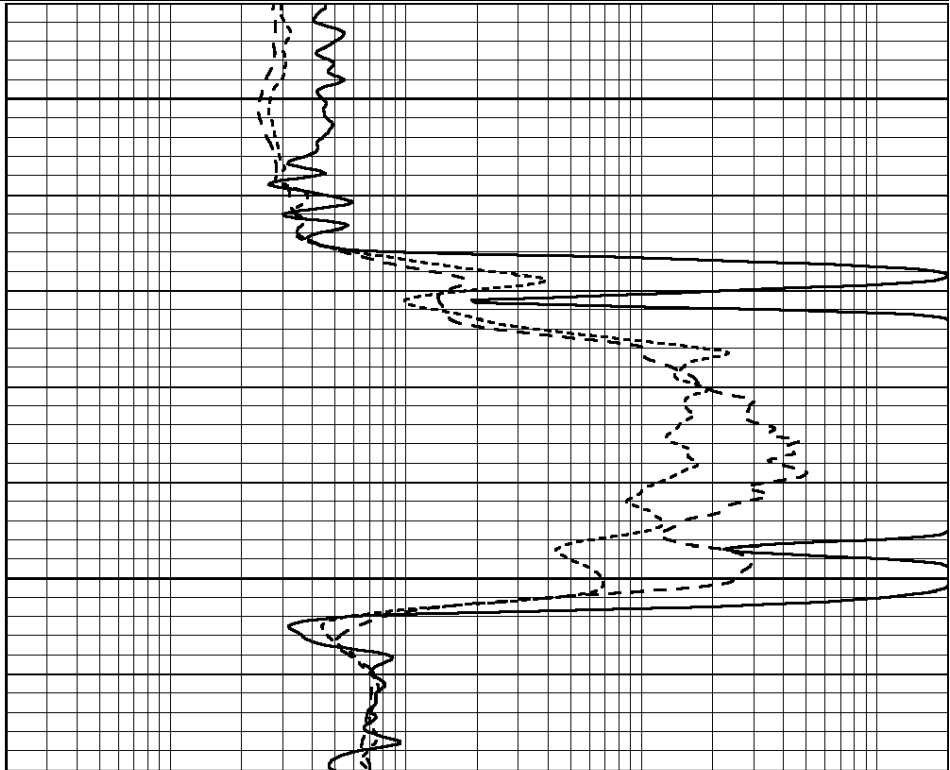
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000



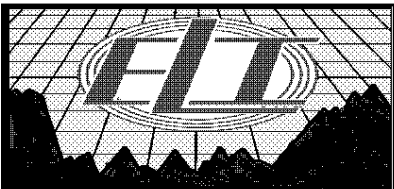
2150

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

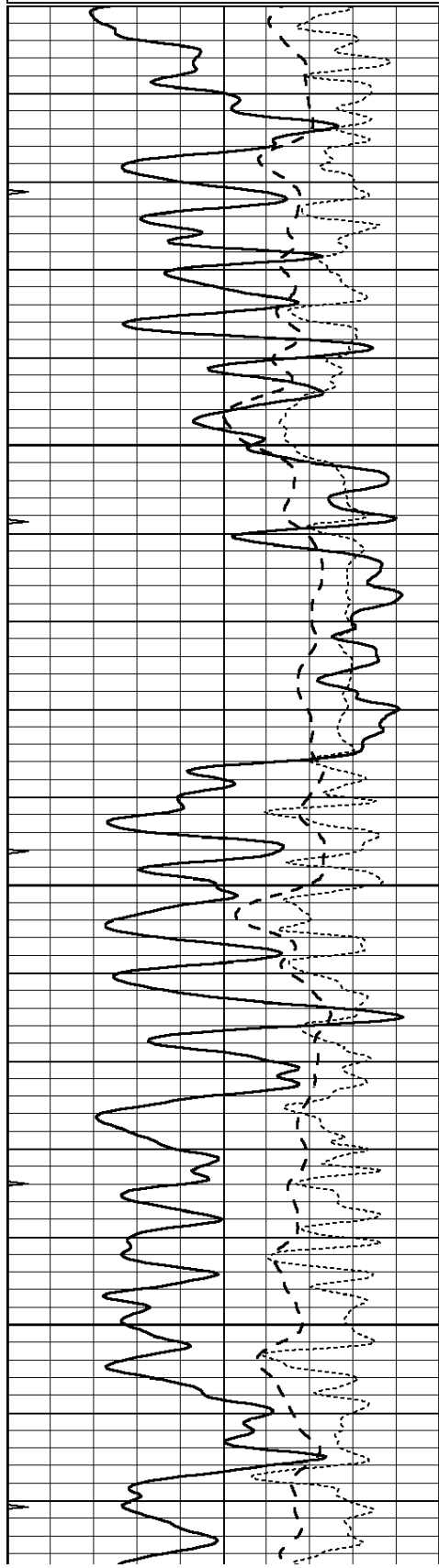


MAIN PASS

Database File: 2107ddn.db
Dataset Pathname: pass3.1
Presentation Format: _dil
Dataset Creation: Sun Nov 05 10:16:29 2017 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

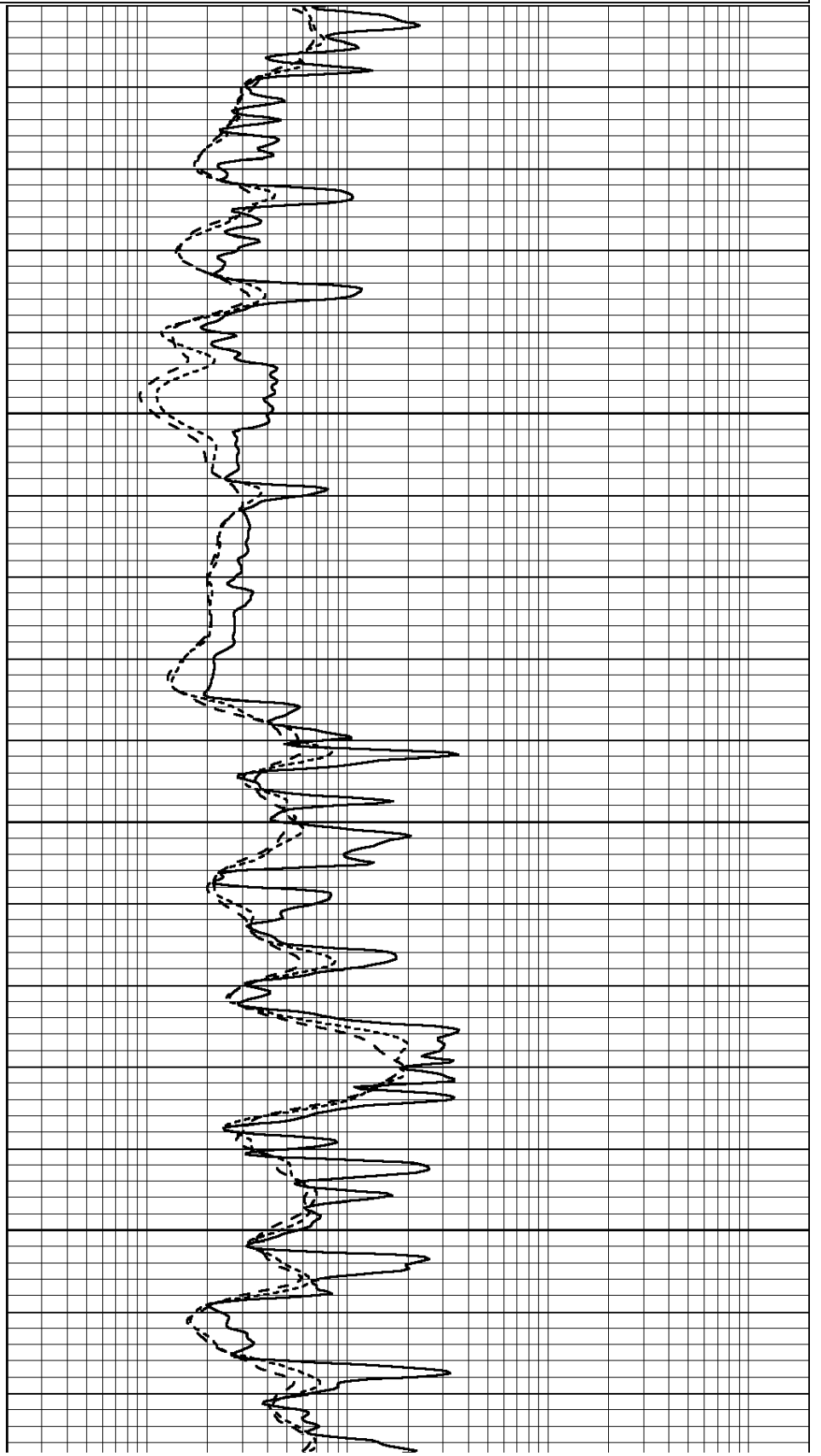


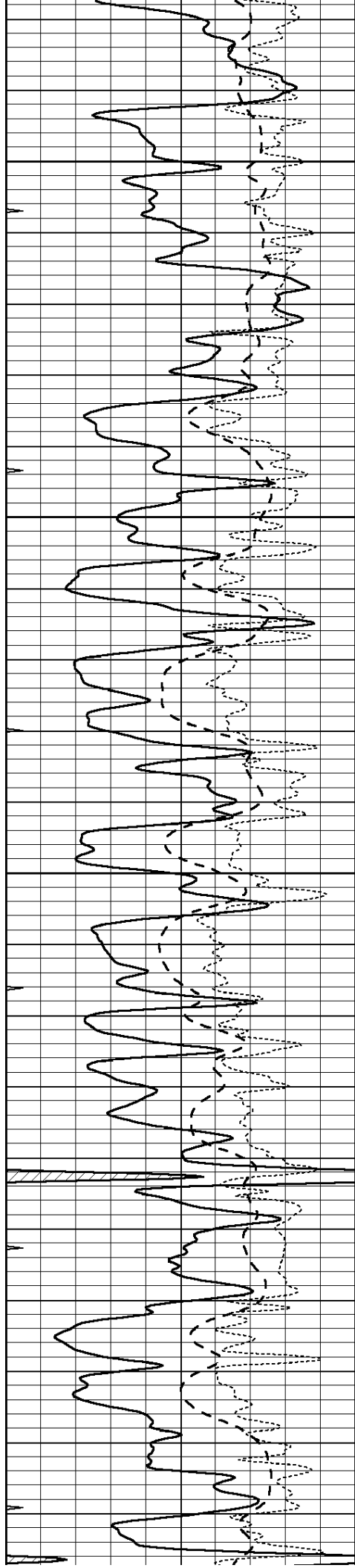
3400

3450

3500

3550



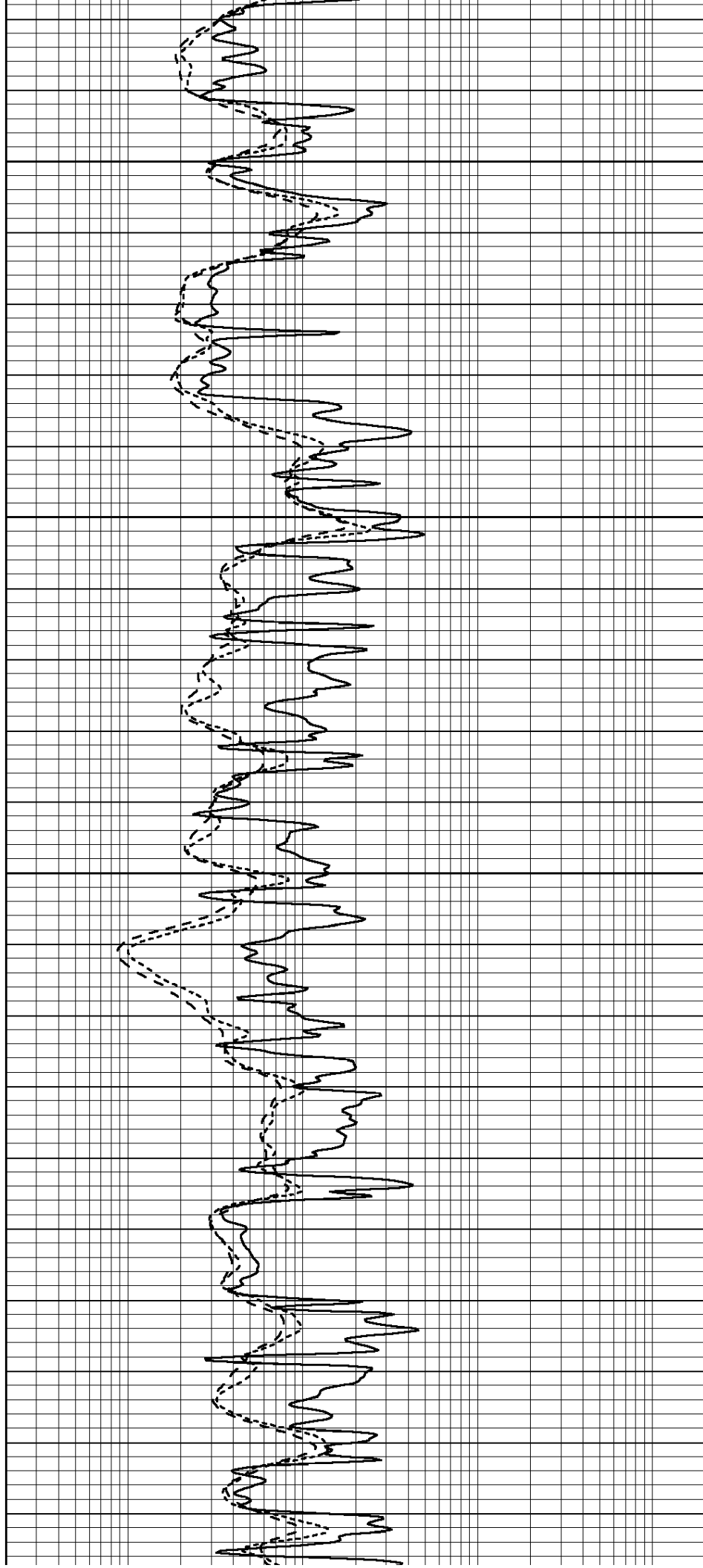


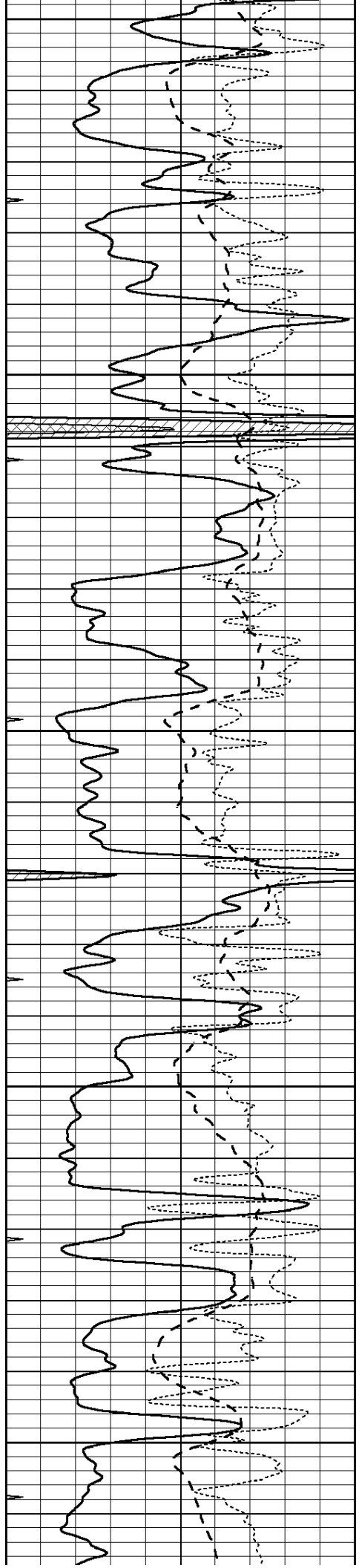
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3650

3700

3750





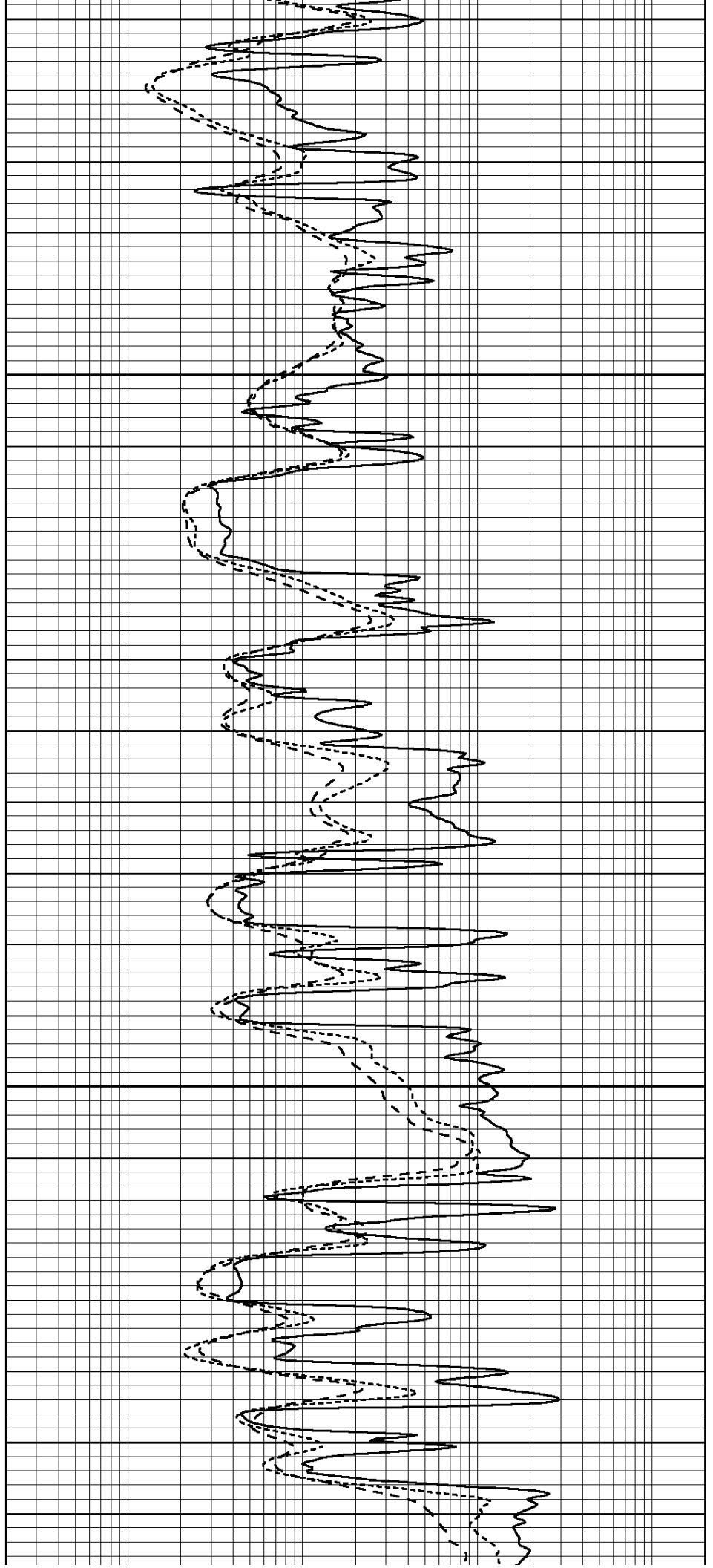
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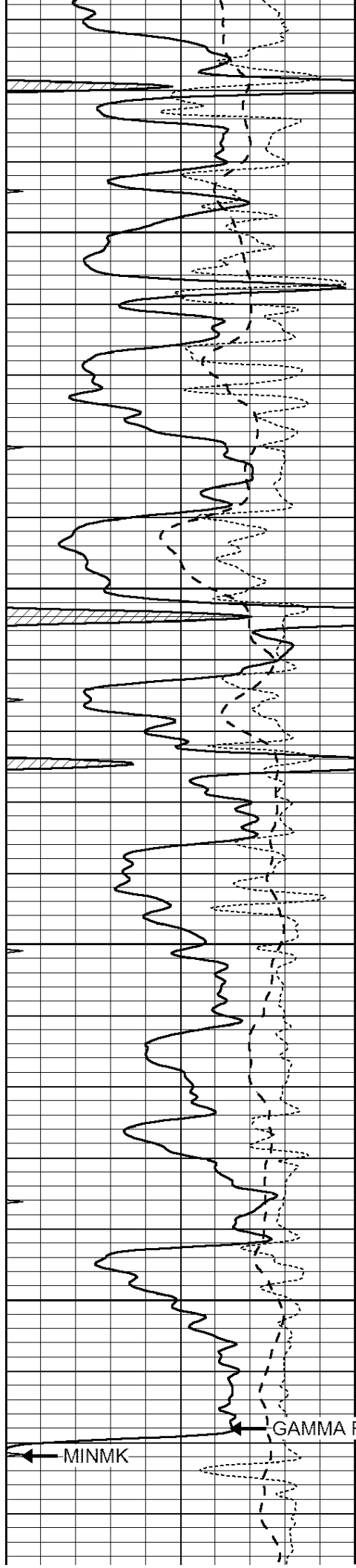
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3900

3950

4000





4050

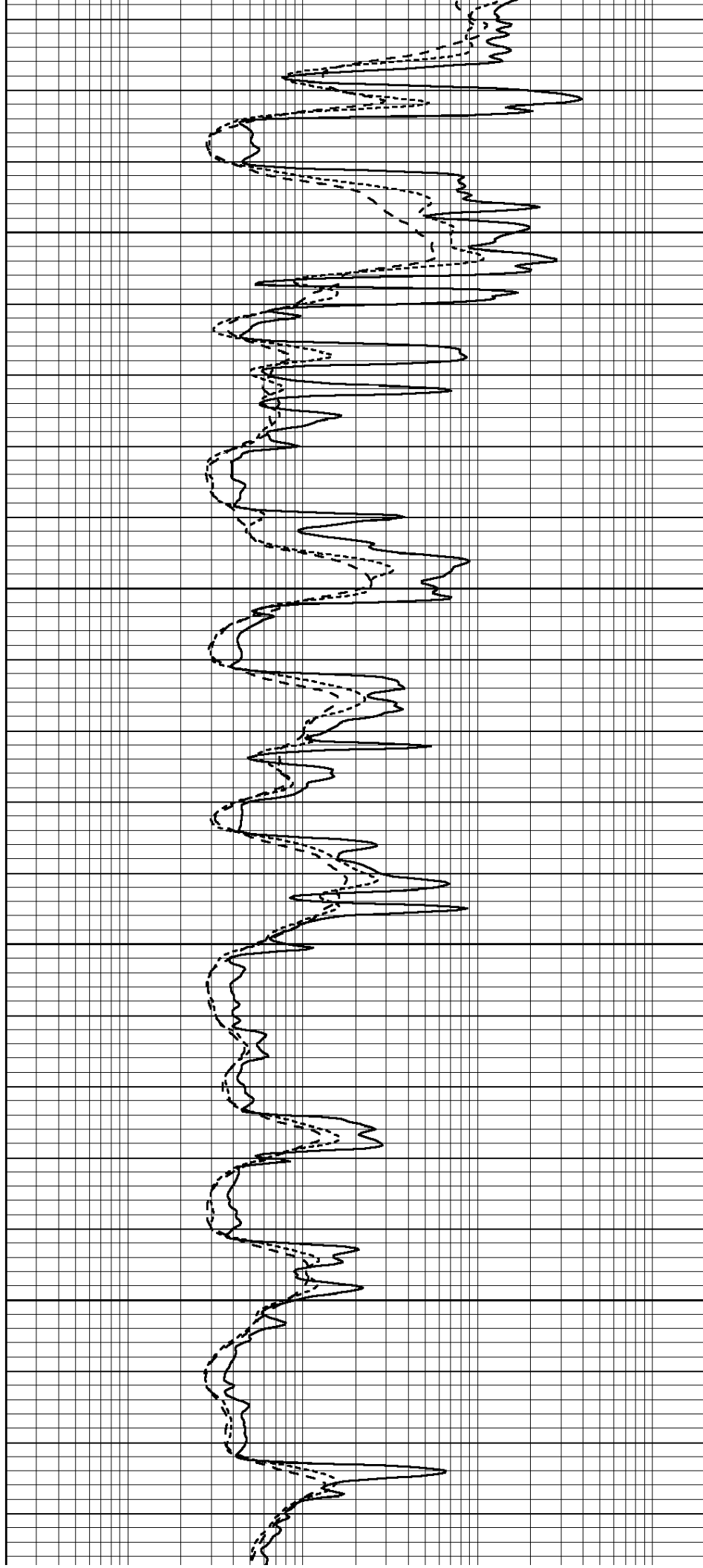
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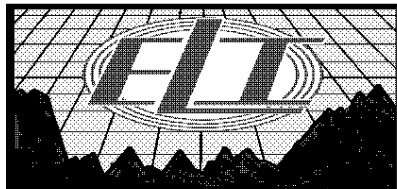
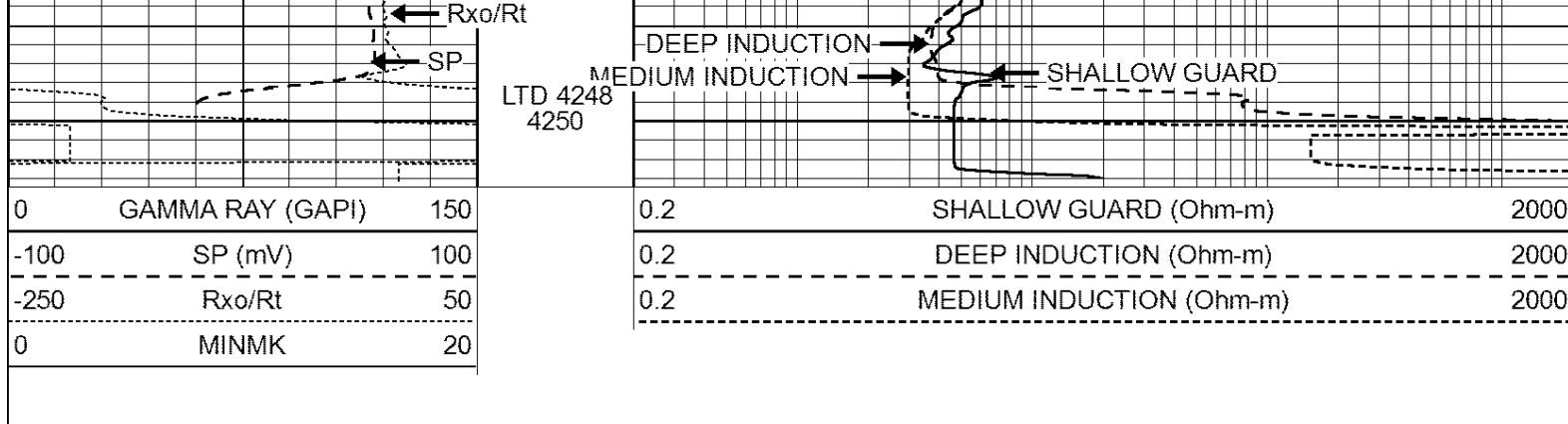
4150

4200

MINMK

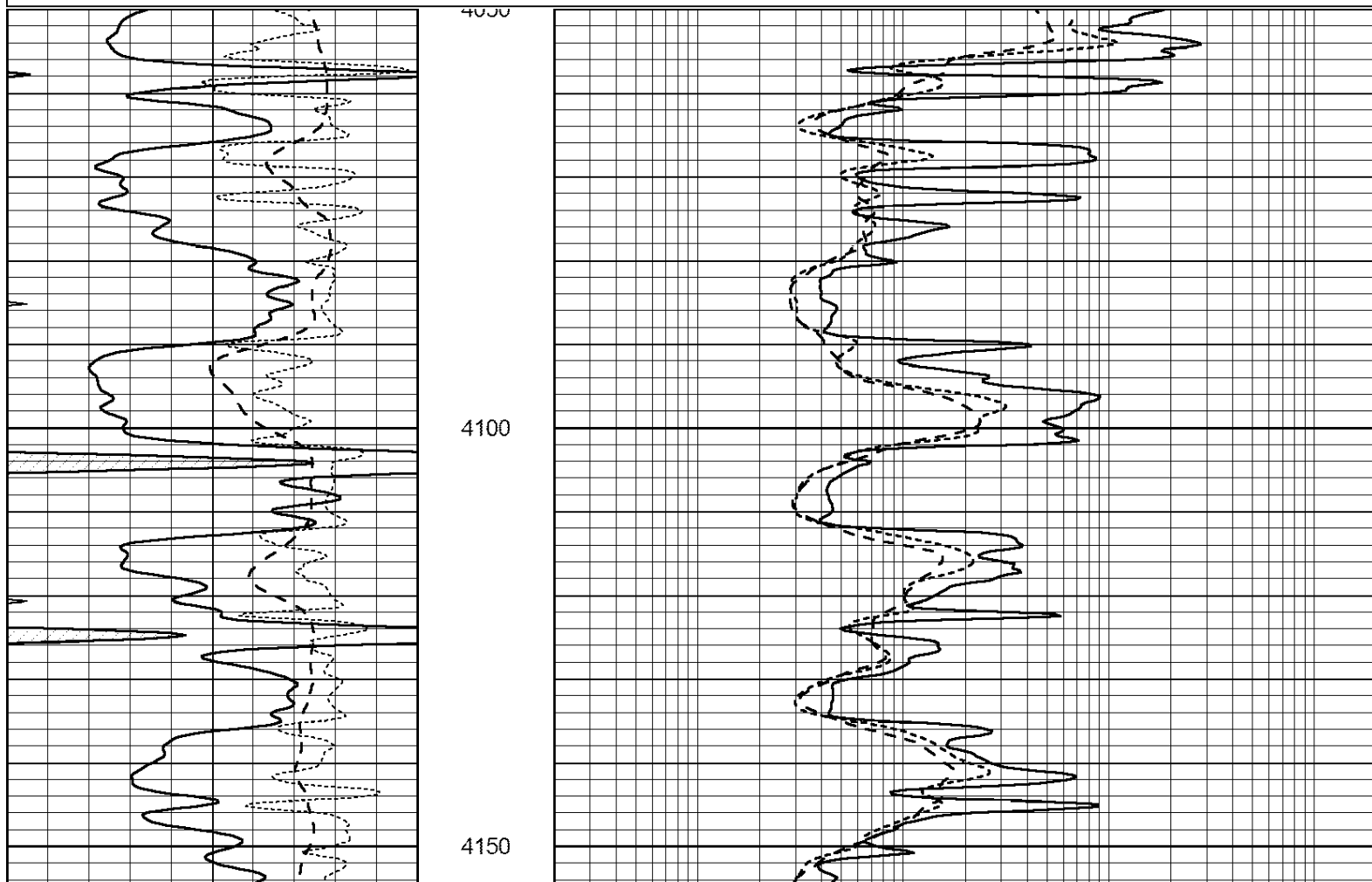
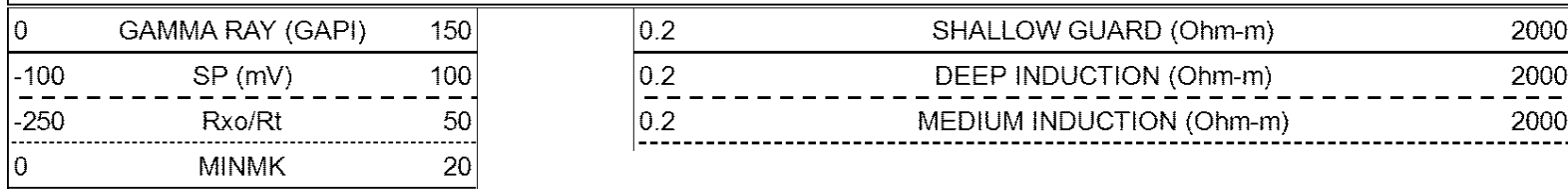
GAMMA RAY

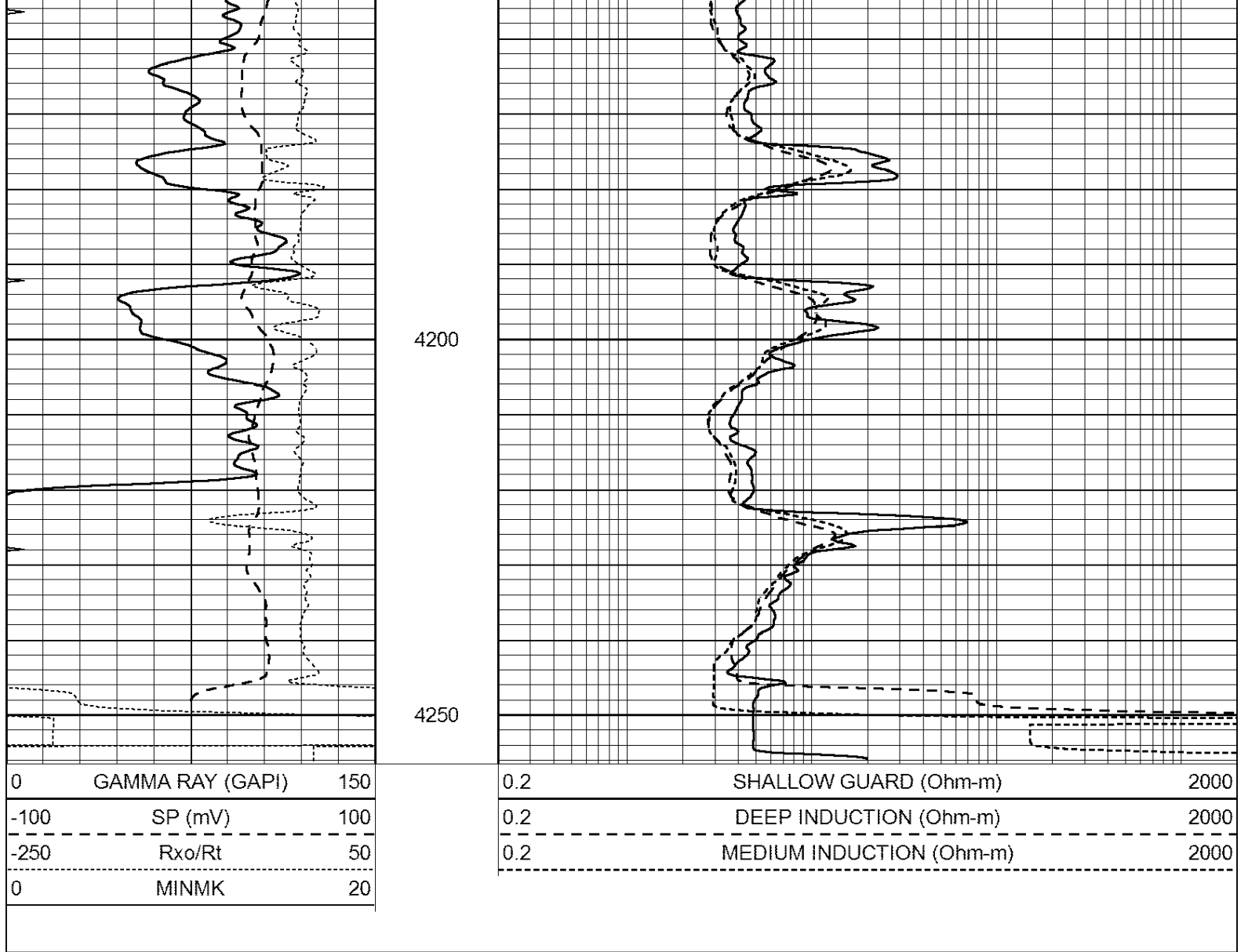




REPEAT SECTION

Database File: 2107ddn.db
 Dataset Pathname: pass2
 Presentation Format: _dil
 Dataset Creation: Sun Nov 05 09:07:05 2017 by Log Open-Cased 090629
 Charted by: Depth in Feet scaled 1:240





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 4	184.2	185.7	184.9	184.8				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		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:		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			