



**COMPLETION
& PRODUCTION
SERVICES CO.**

**DUAL
INDUCTION
LOG**

Company	MULL DRILLING COMPANY, INC.	Company	MULL DRILLING COMPANY, INC.
Well	#1-5 SOMY	Well	#1-5 SOMY
Field		Field	
County	NESS	County	NESS
State	KANSAS	State	KANSAS
Location:	600' FSL & 2310' FWL	AP1 # :	15-135-25640-0000
Permanent Datum	GROUND LEVEL	Elevation	2465
Log Measured From	KELLY BUSHING 5' A.G.L.		
Drilling Measured From	KELLY BUSHING	Other Services	CDL/CNL PE/ME/SON
	SEC 5 TWP 17S RGE 24W	Elevation	K.B. 2470 D.F. 2468 G.L. 2465

Date	8/29/13
Run Number	ONE
Depth Driller	4570
Depth Logger	4568
Bottom Logged Interval	4566
Top Log Interval	0
Casing Driller	8 5/8" @ 215'
Casing Logger	213'
Bit Size	7 7/8"
Type Fluid in Hole	CHEMICAL MUD
Density / Viscosity	8.9 / 47
pH / Fluid Loss	11.0 / 7.8
Source of Sample	FLOWLINE
Rm @ Meas. Temp	0.90 @ 88F
Rmt @ Meas. Temp	0.68 @ 88F
Rmc @ Meas. Temp	1.08 @ 88F
Source of Rmf / Rmc	MEASUREMENT
Rm @ BHT	0.65 @ 121F
Time Circulation Stopped	2 HOURS
Time Logger on Bottom	
Maximum Recorded Temperature	121F
Equipment Number	4010
Location	HAYS, KANSAS
Recorded By	JEFF GRONEWEG
Witnessed By	KEVIN KESSLER

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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

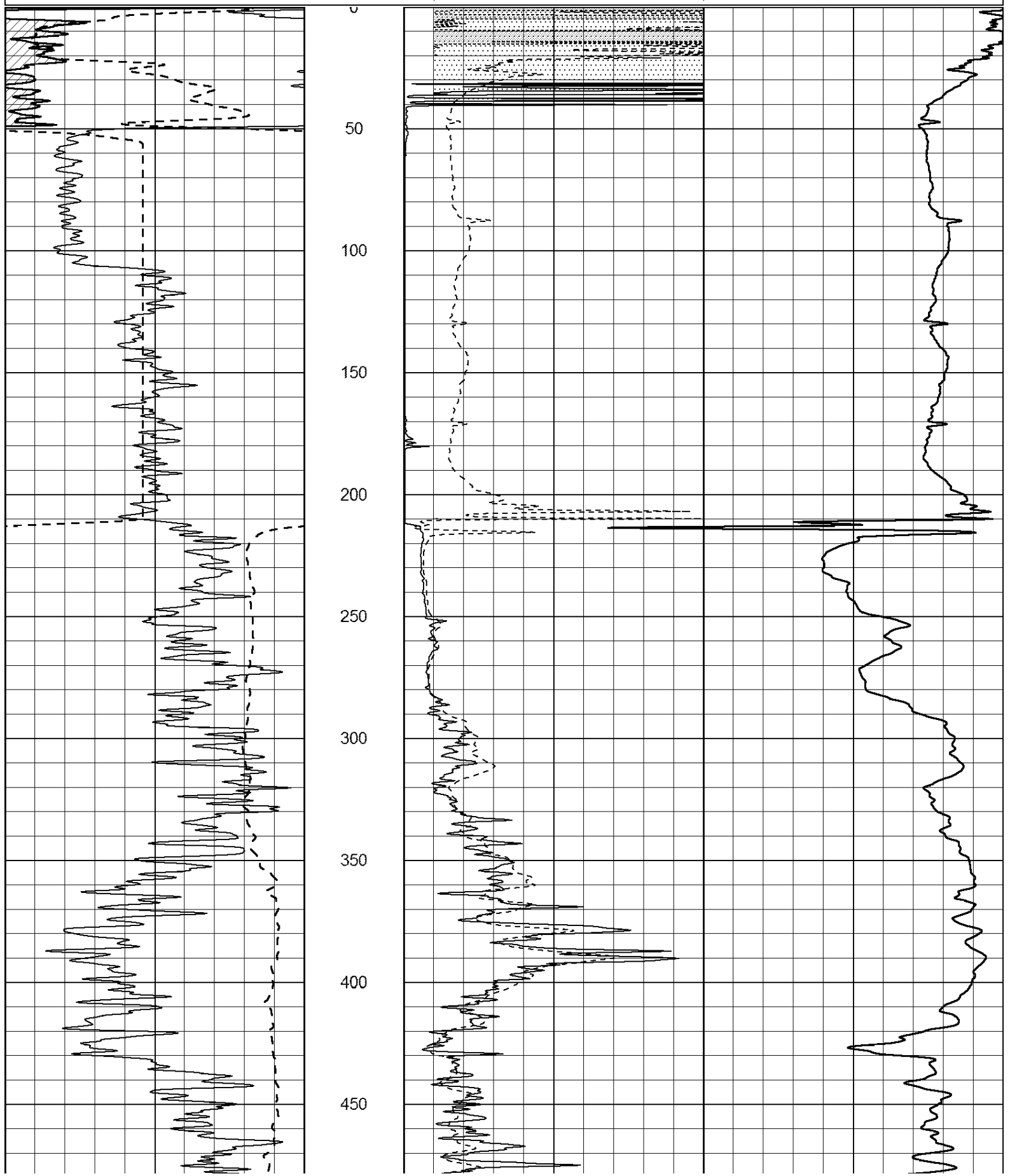
THANK YOU FOR USING NABORS, HAYS, KS. (785) 628-6395
 DIRECTIONS:
 INTERSECTION OF HWYS 283 & 4 - 3 MILES SOUTH TO RD 230 - 4 1/2 MILES WEST
 NORTH INTO

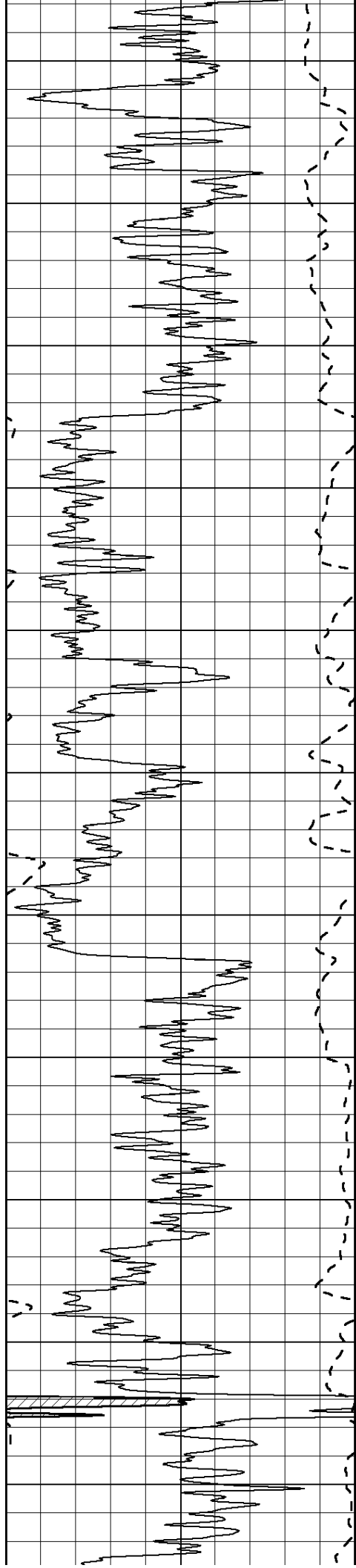
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-100	SP (mV)	100

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





500

550

600

650

700

750

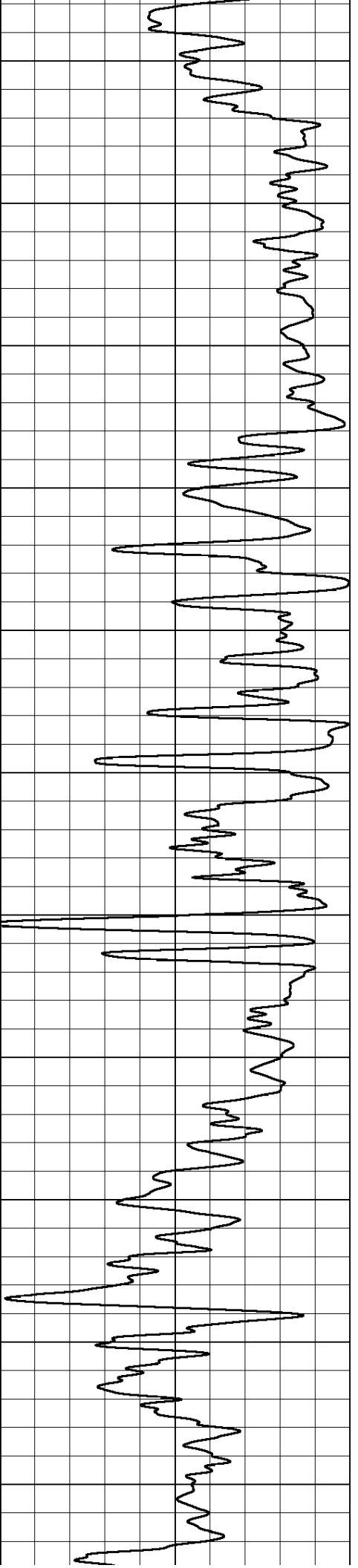
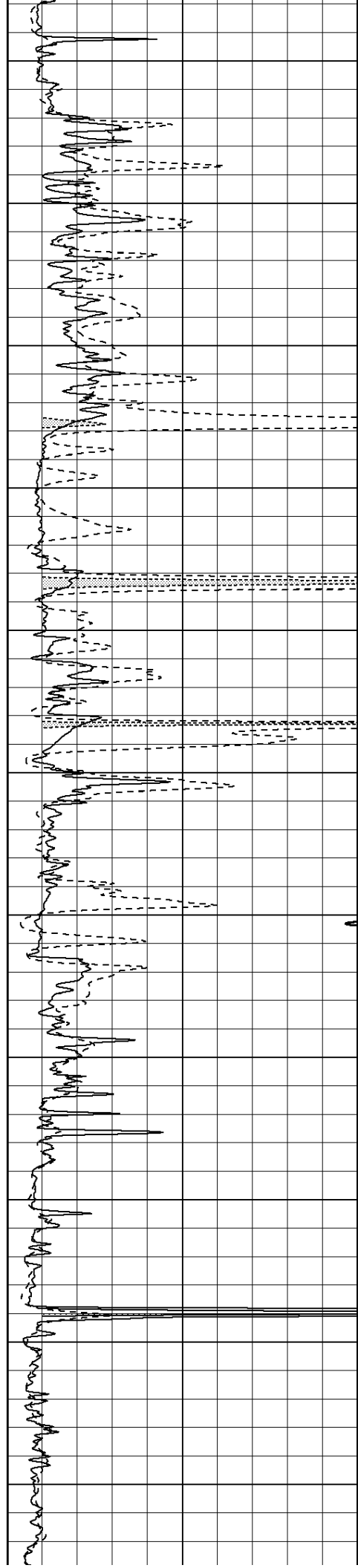
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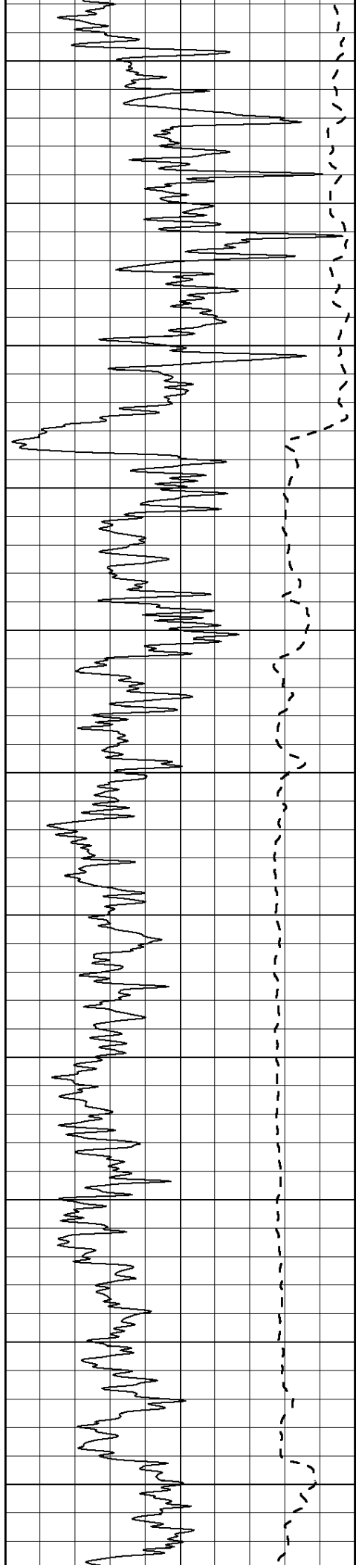
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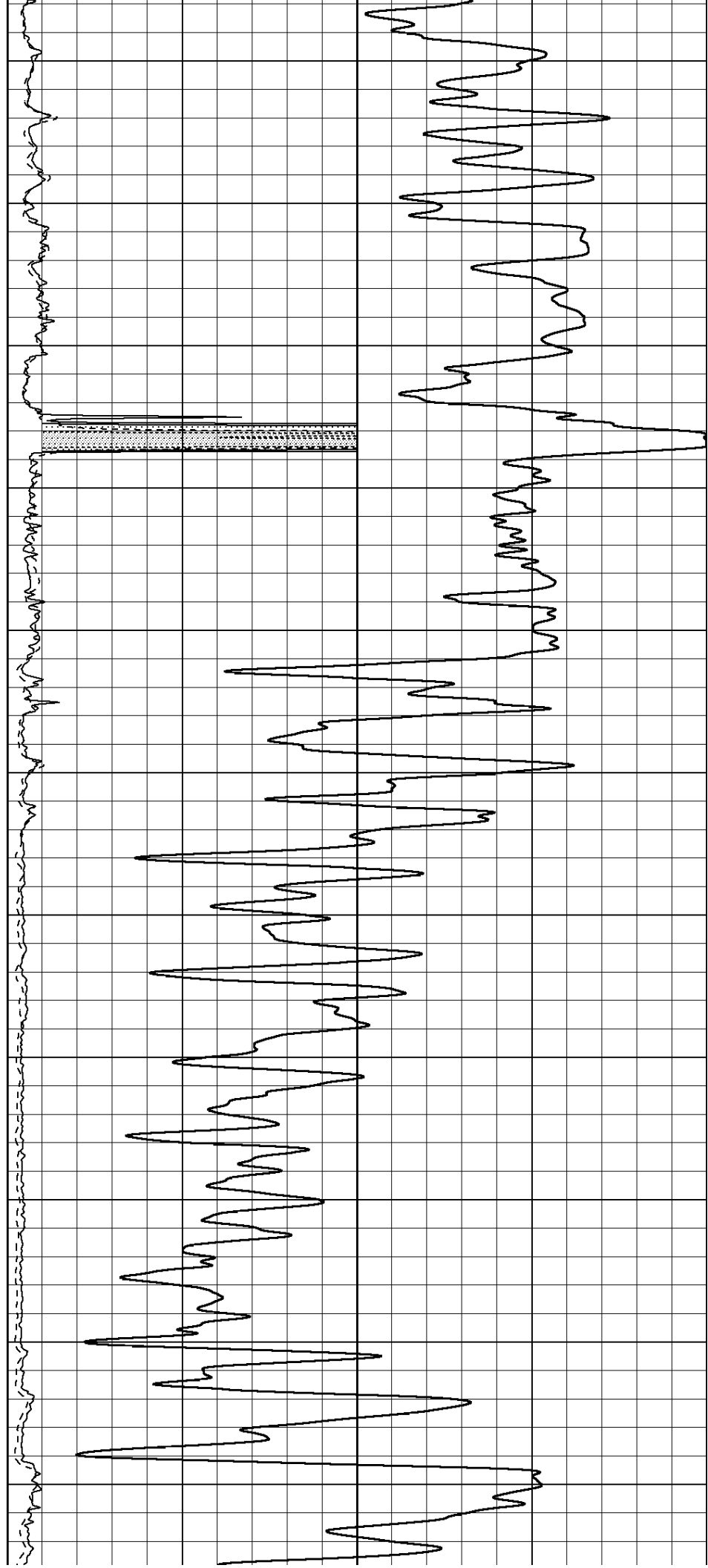
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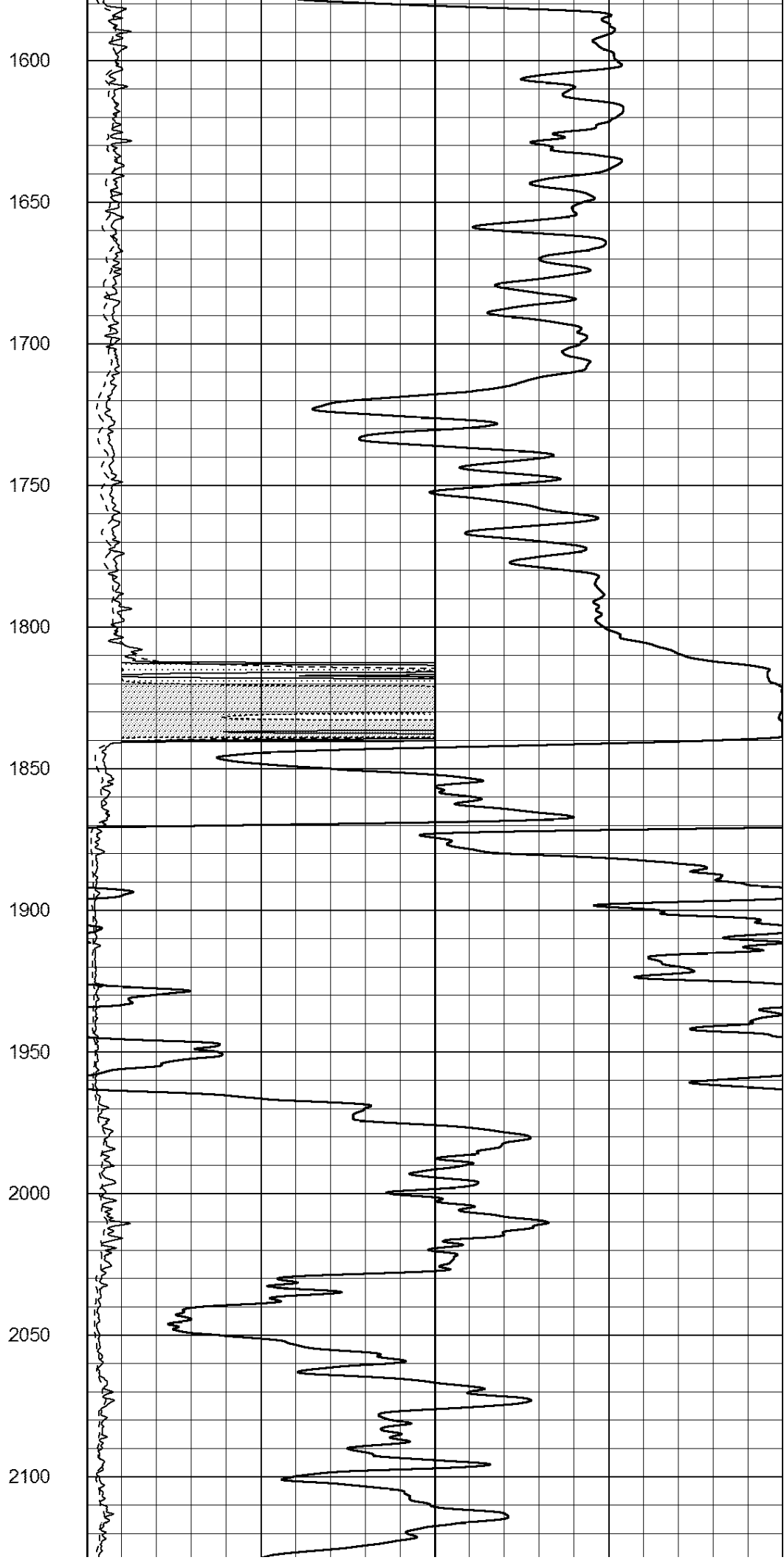
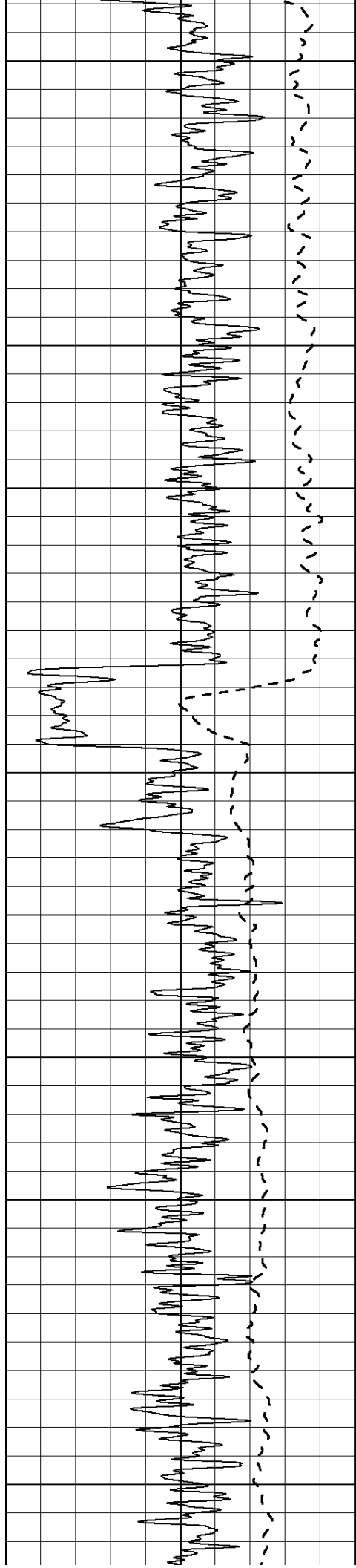
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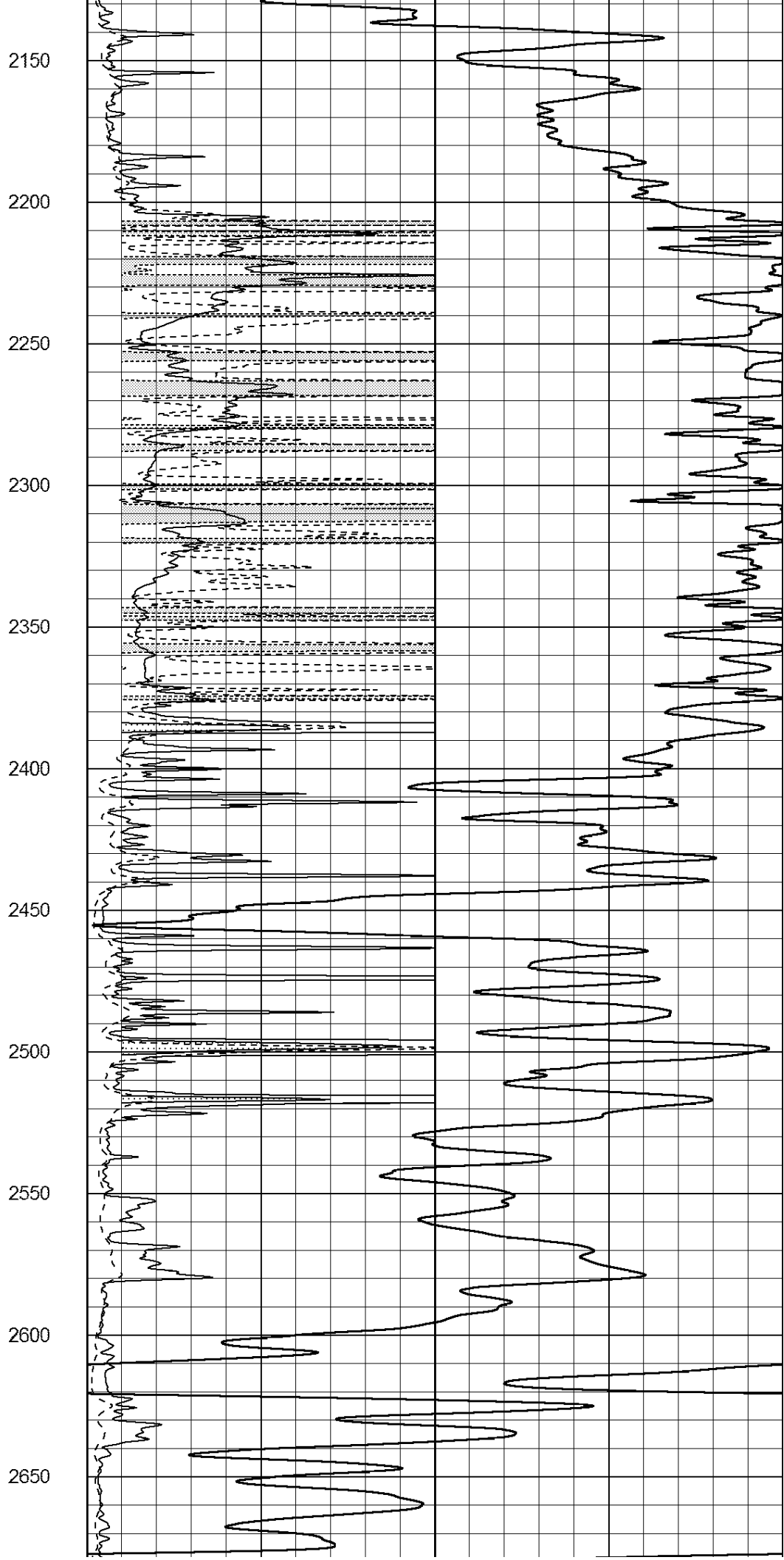
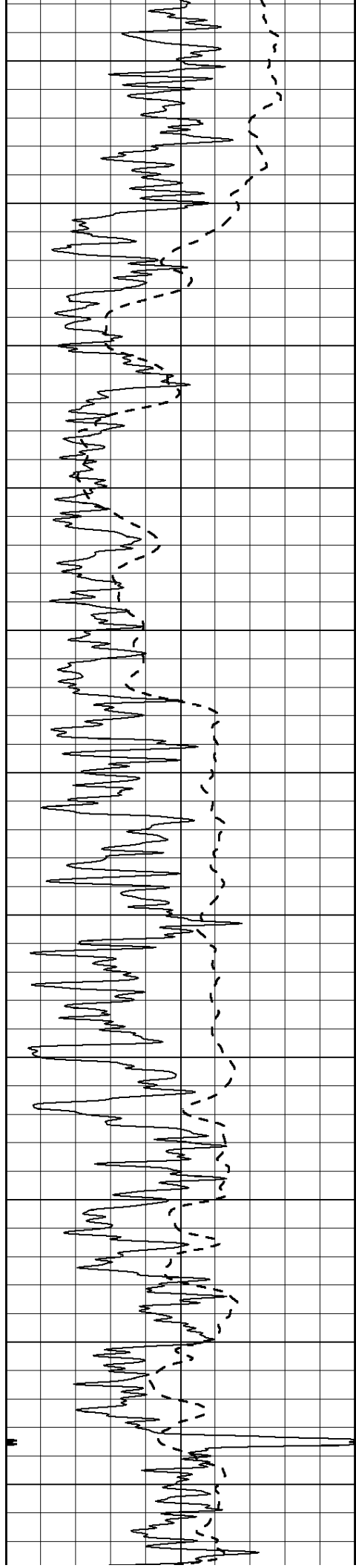


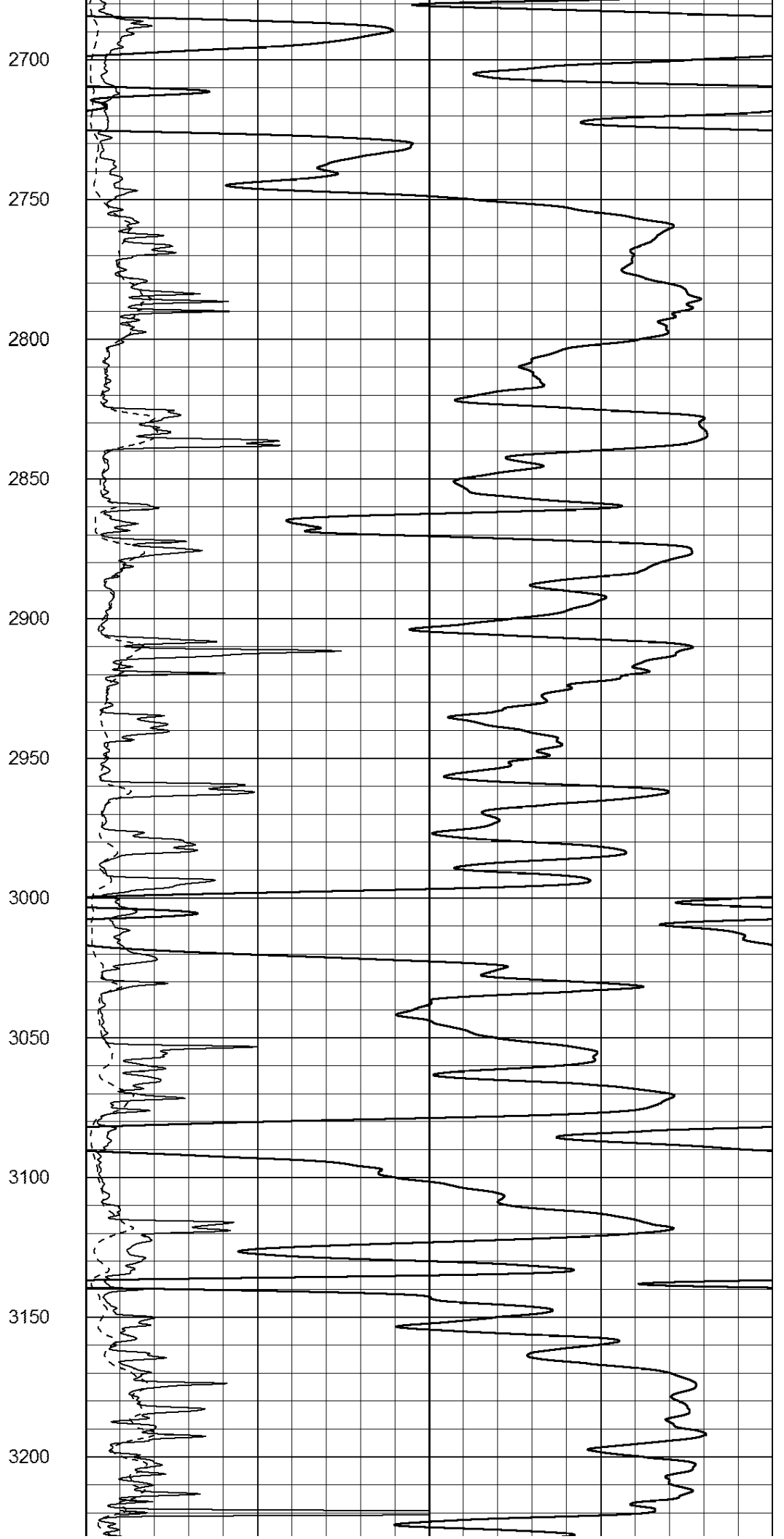
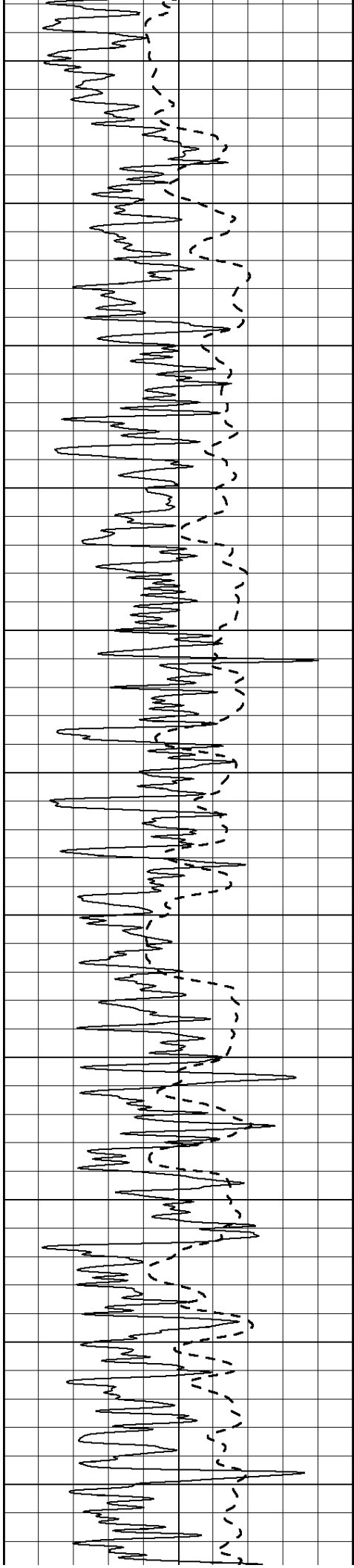


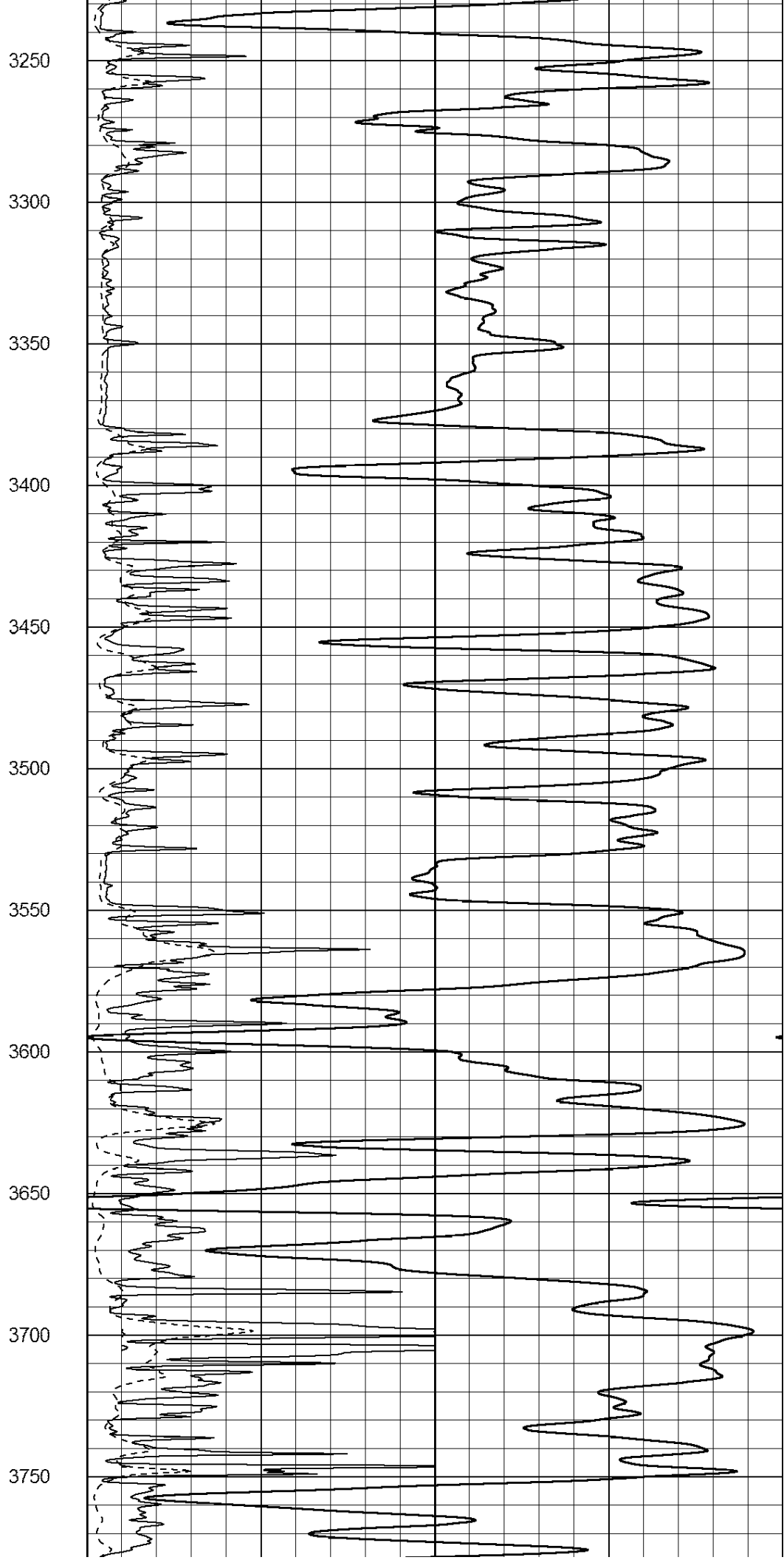
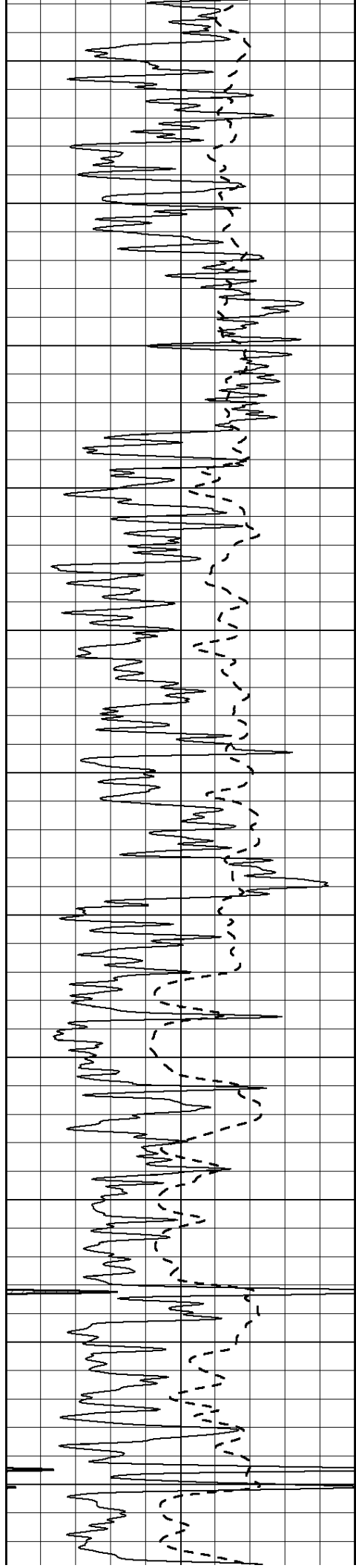
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1100
1150
1200
1250
1300
1350
1400
1450
1500
1550

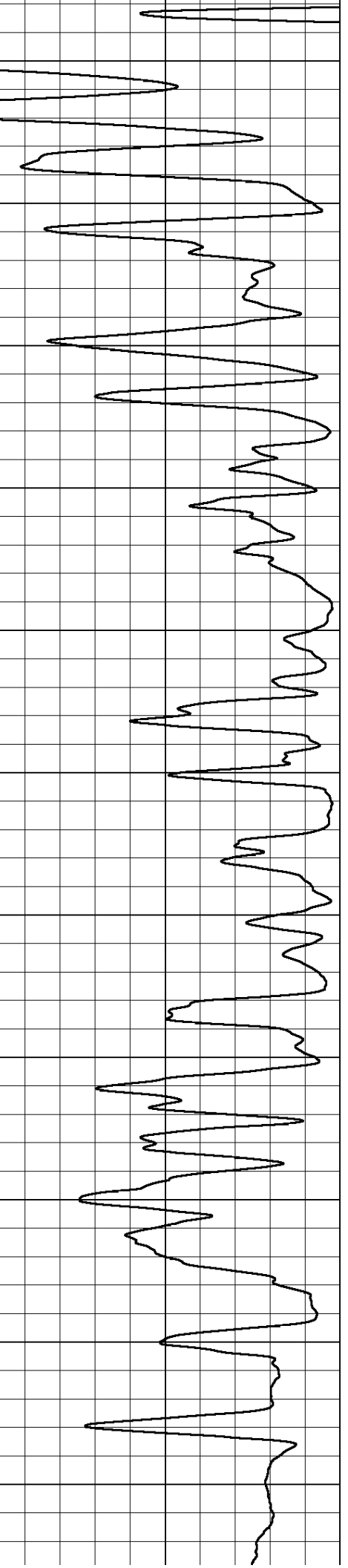
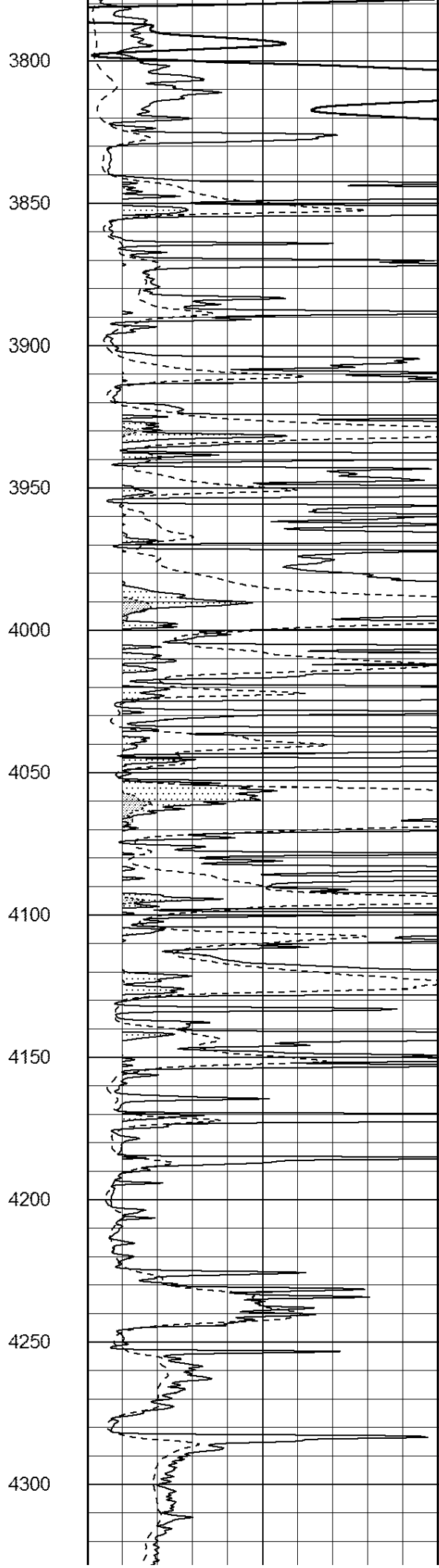
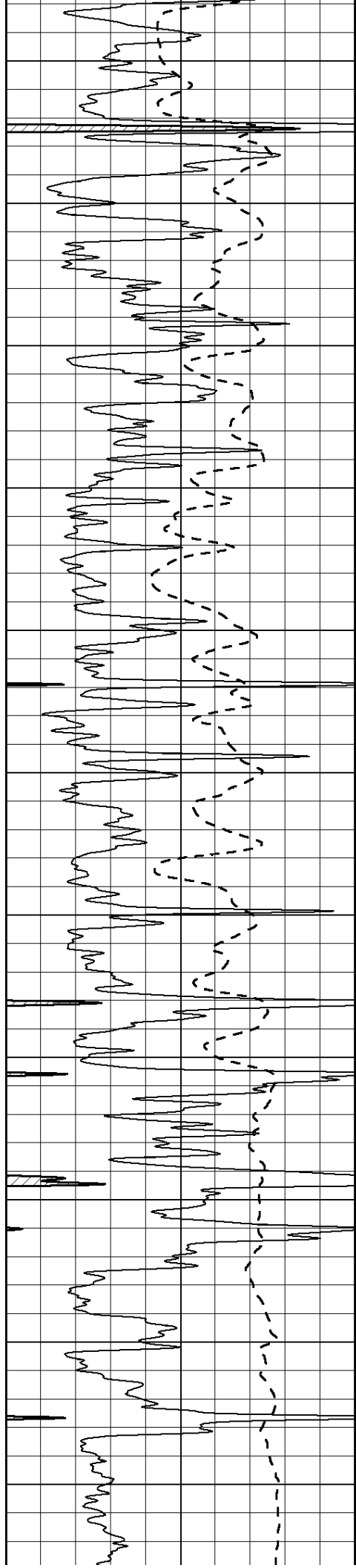


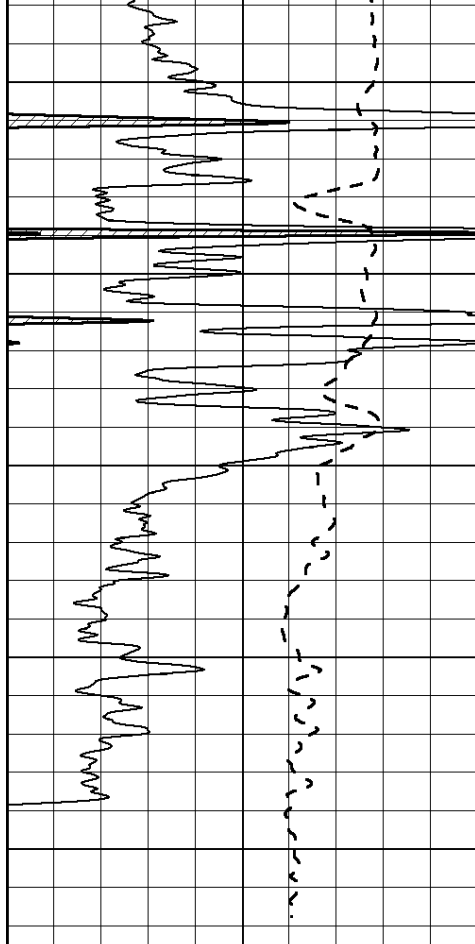






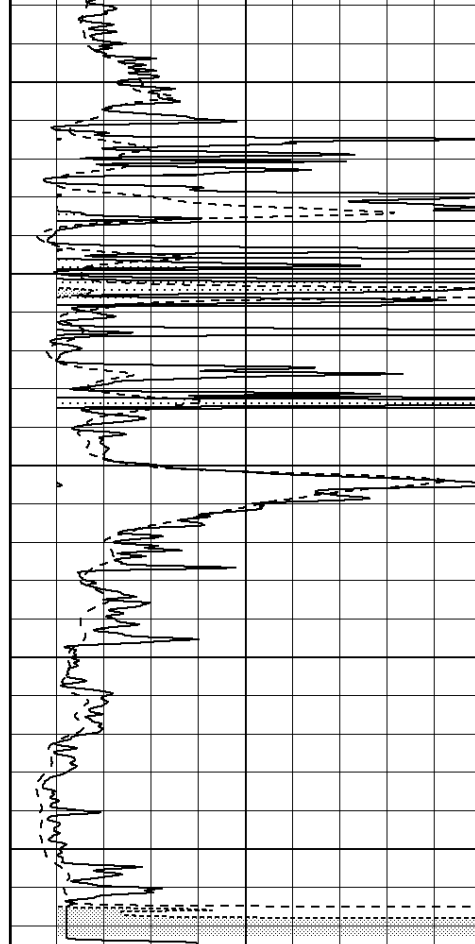




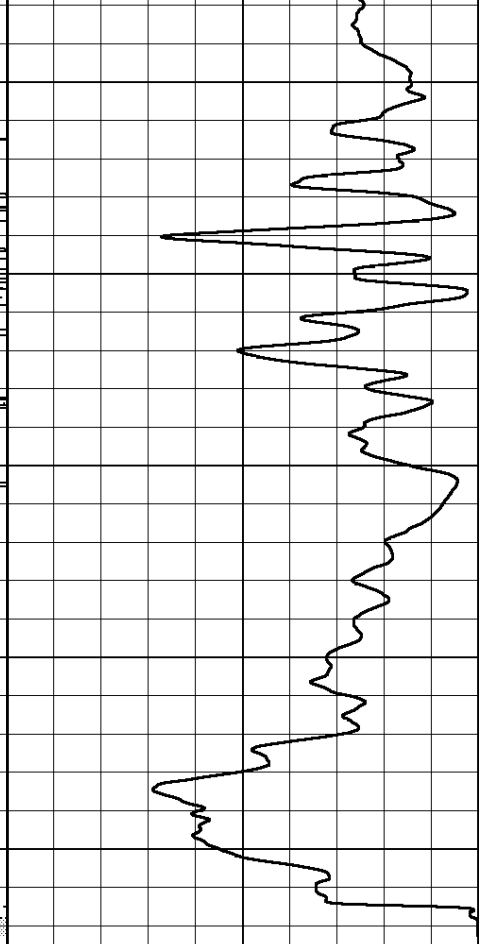


0	Gamma Ray (GAPI)	150
-100	SP (mV)	100

4350
4400
4450
4500
4550



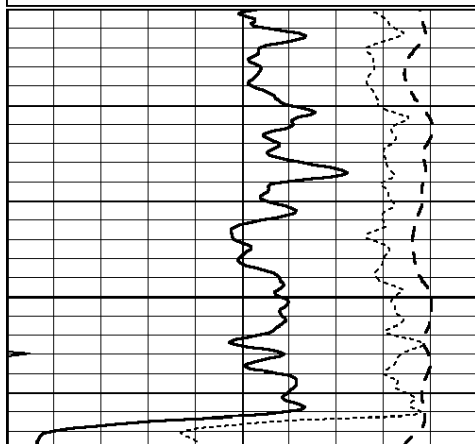
0	RLL3 (Ohm-m)	50
0	RILD (Ohm-m)	50
1000	CILD (mmho/m)	0
50	RILD X10 (Ohm-m)	500
50	RLL3 X10 (Ohm-m)	500



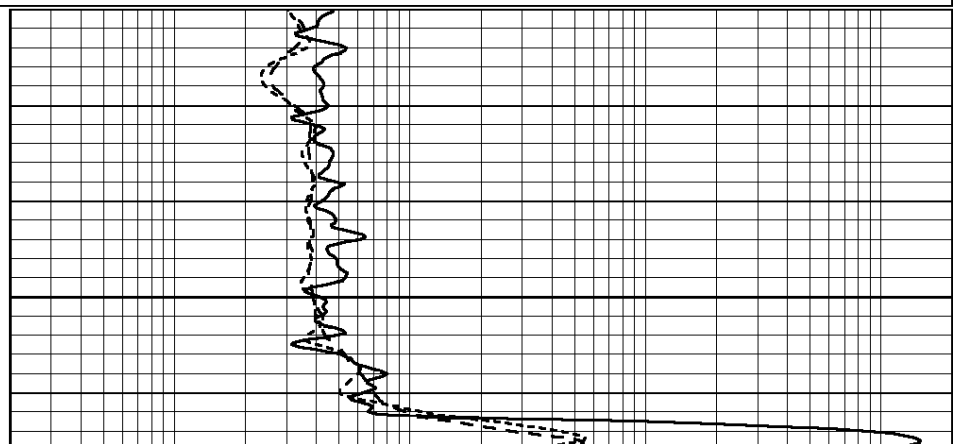
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 Presentation Format: _dil
 Dataset Creation: Fri Aug 30 01:10:35 2013 by Calc Open-Cased 090629
 Charted by: Depth in Feet scaled 1:240

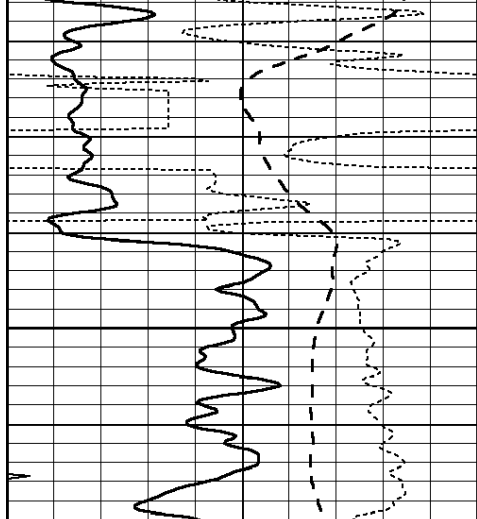
0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

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



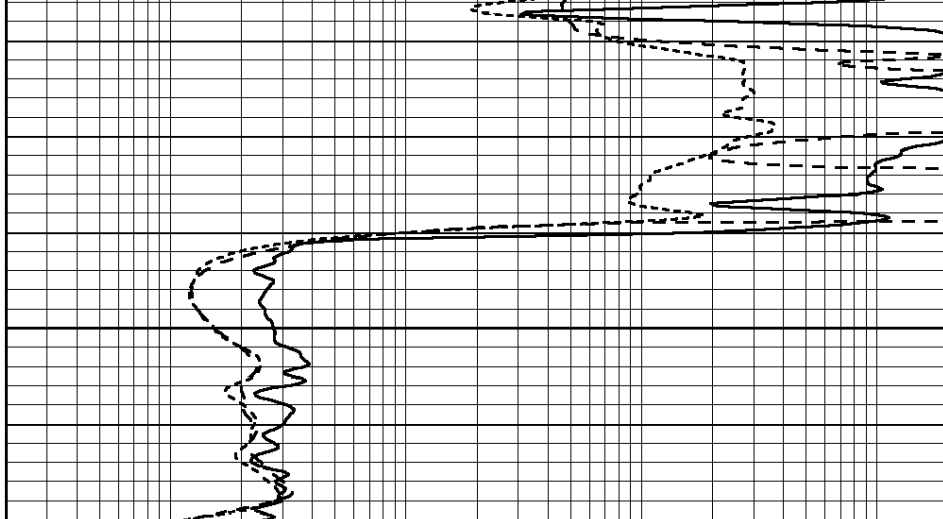
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0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

1850



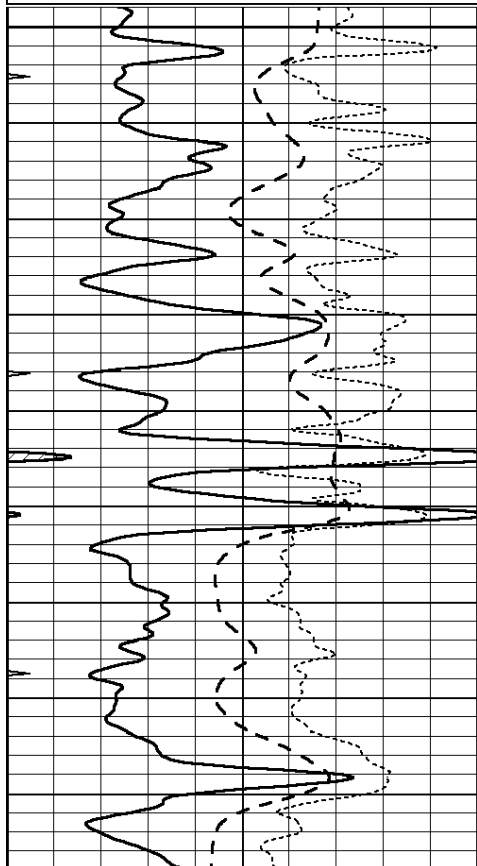
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000

Database File: 011595pe.db
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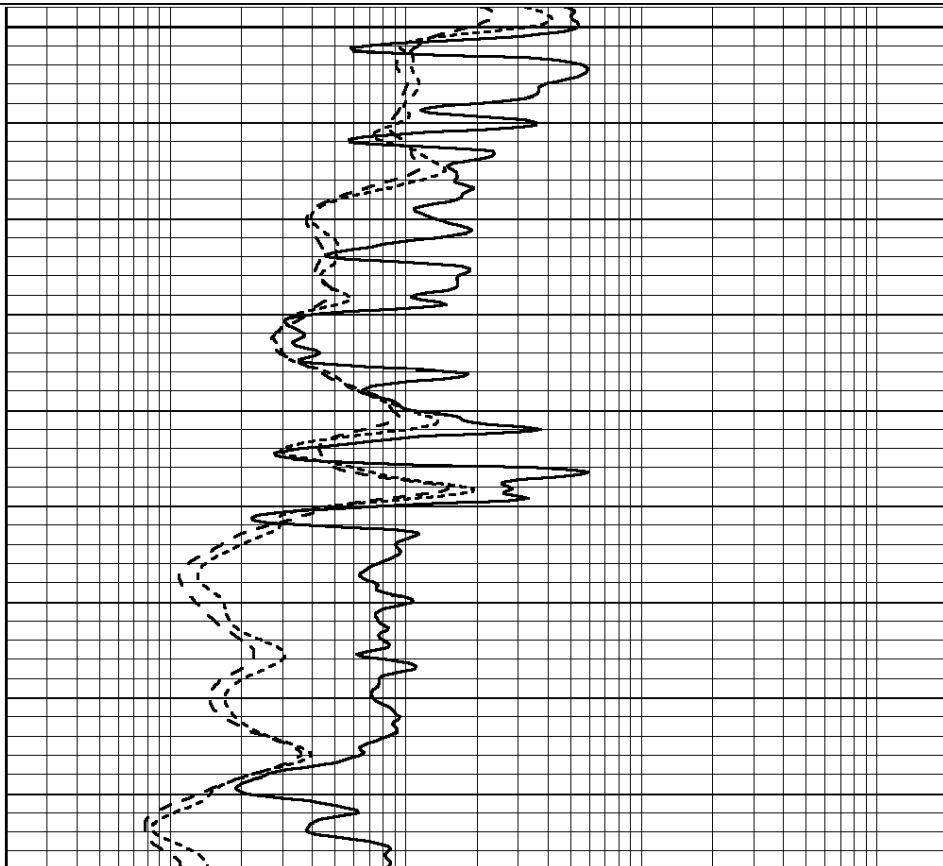
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-100	SP (mV)	100
-250	Rxo/Rt	50
0	MINMK	20

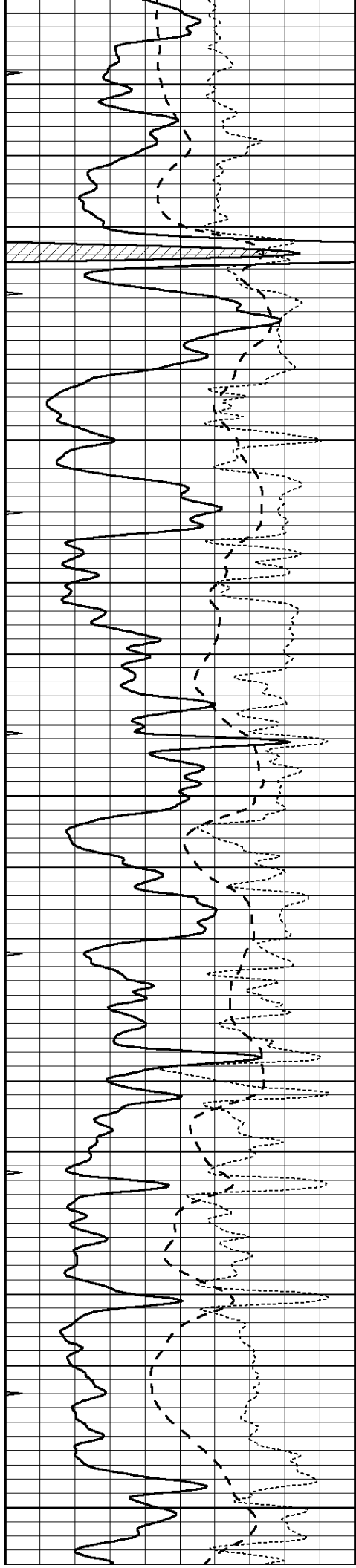
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000

3700



3750





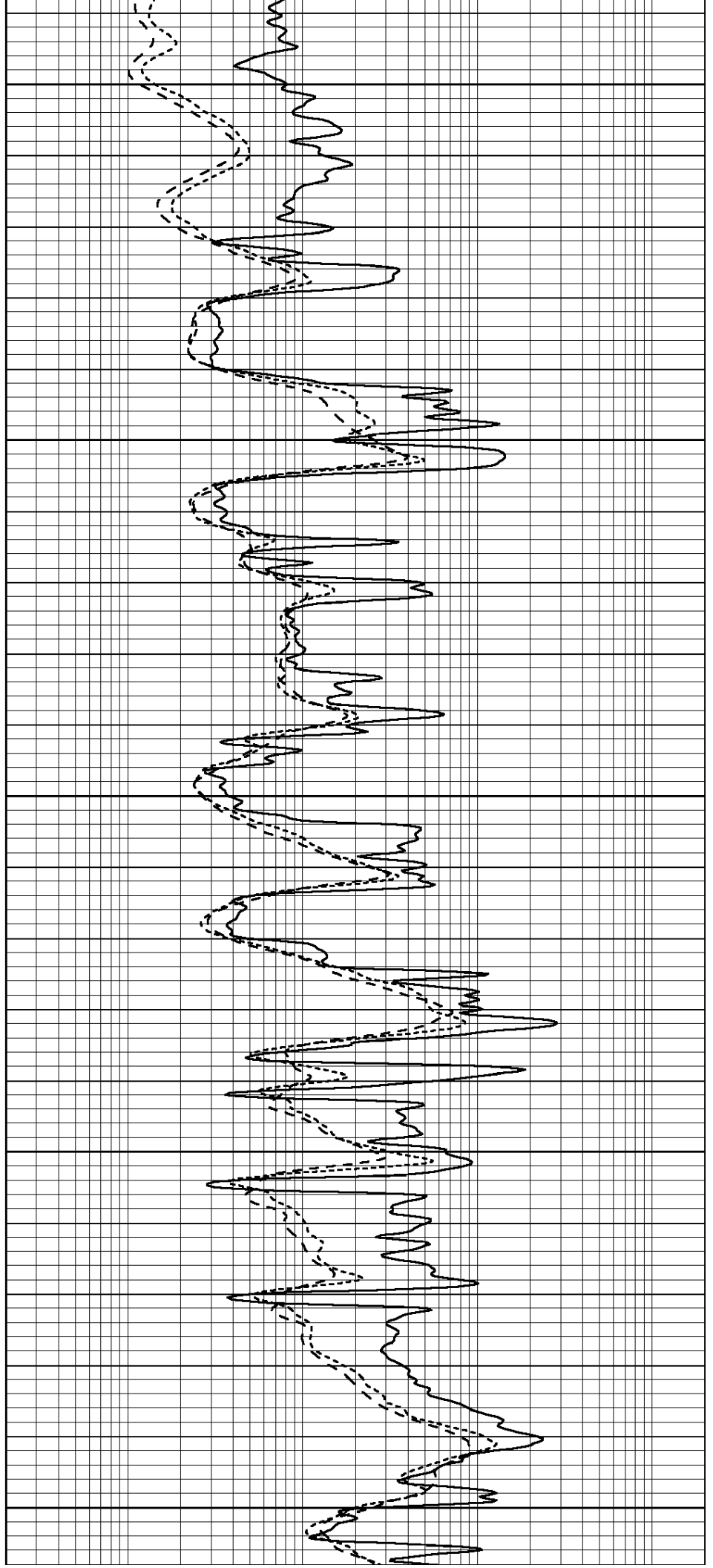
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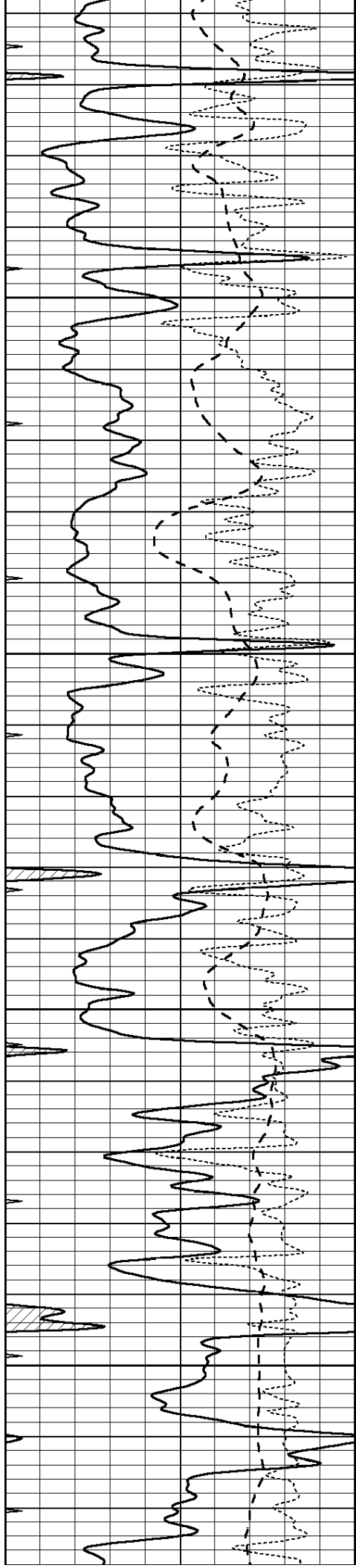
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3900

3950

4000



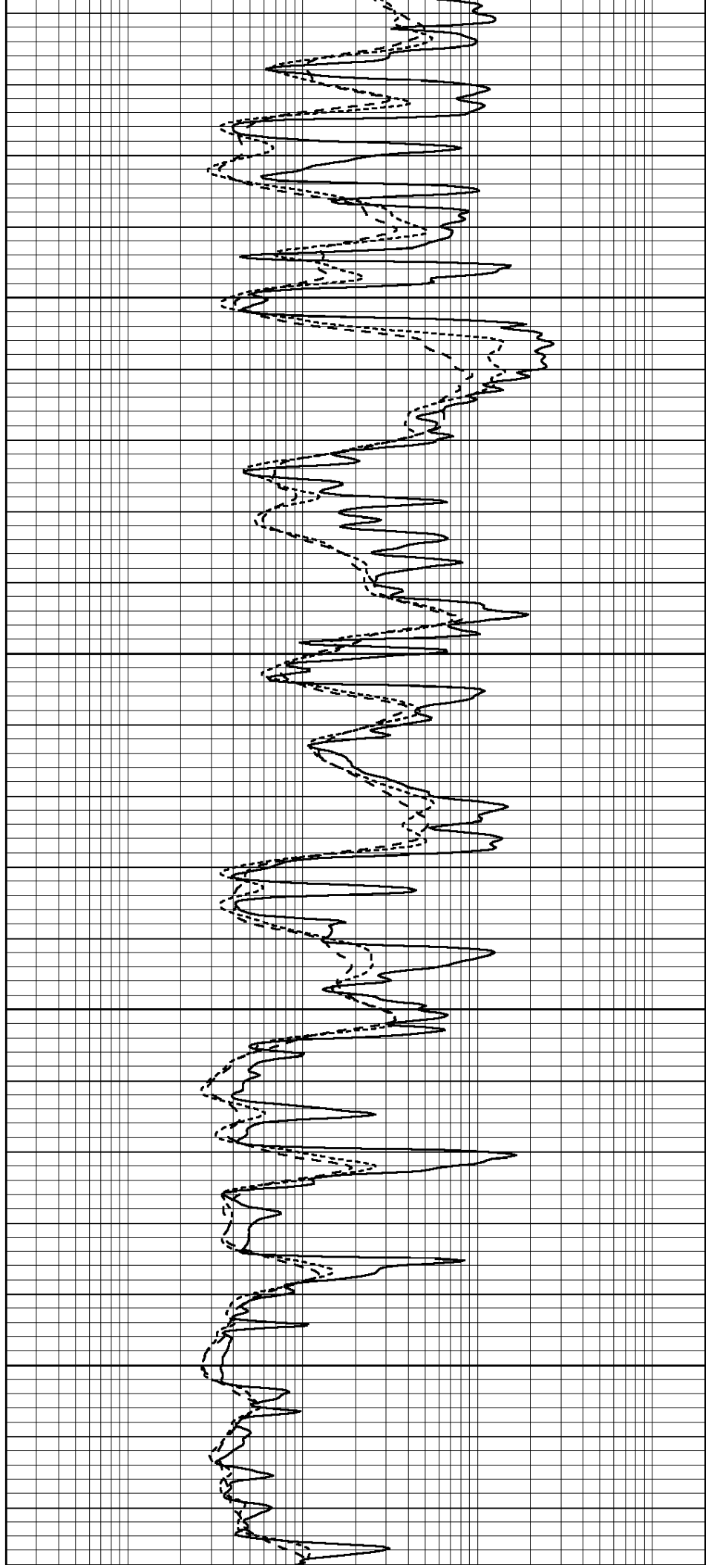


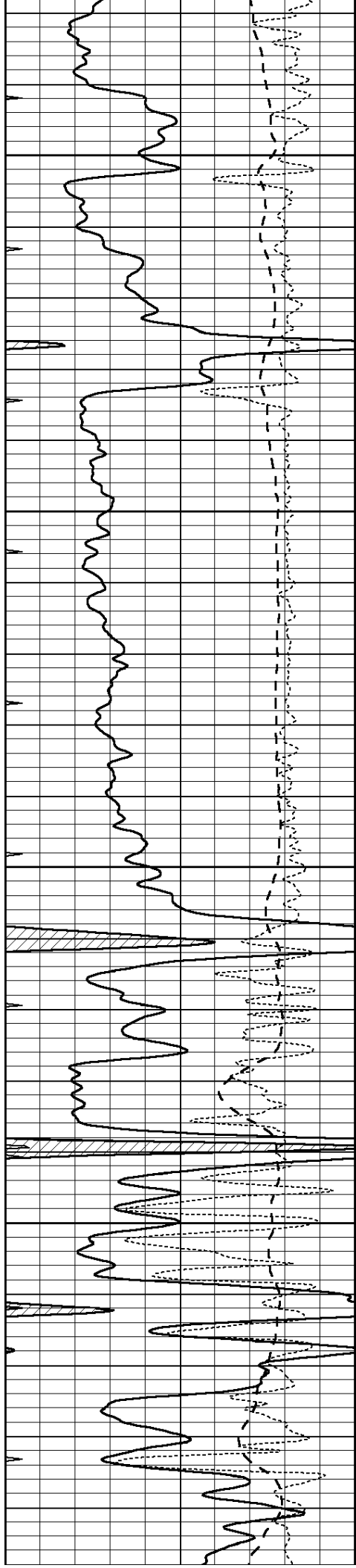
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4100

4150

4200



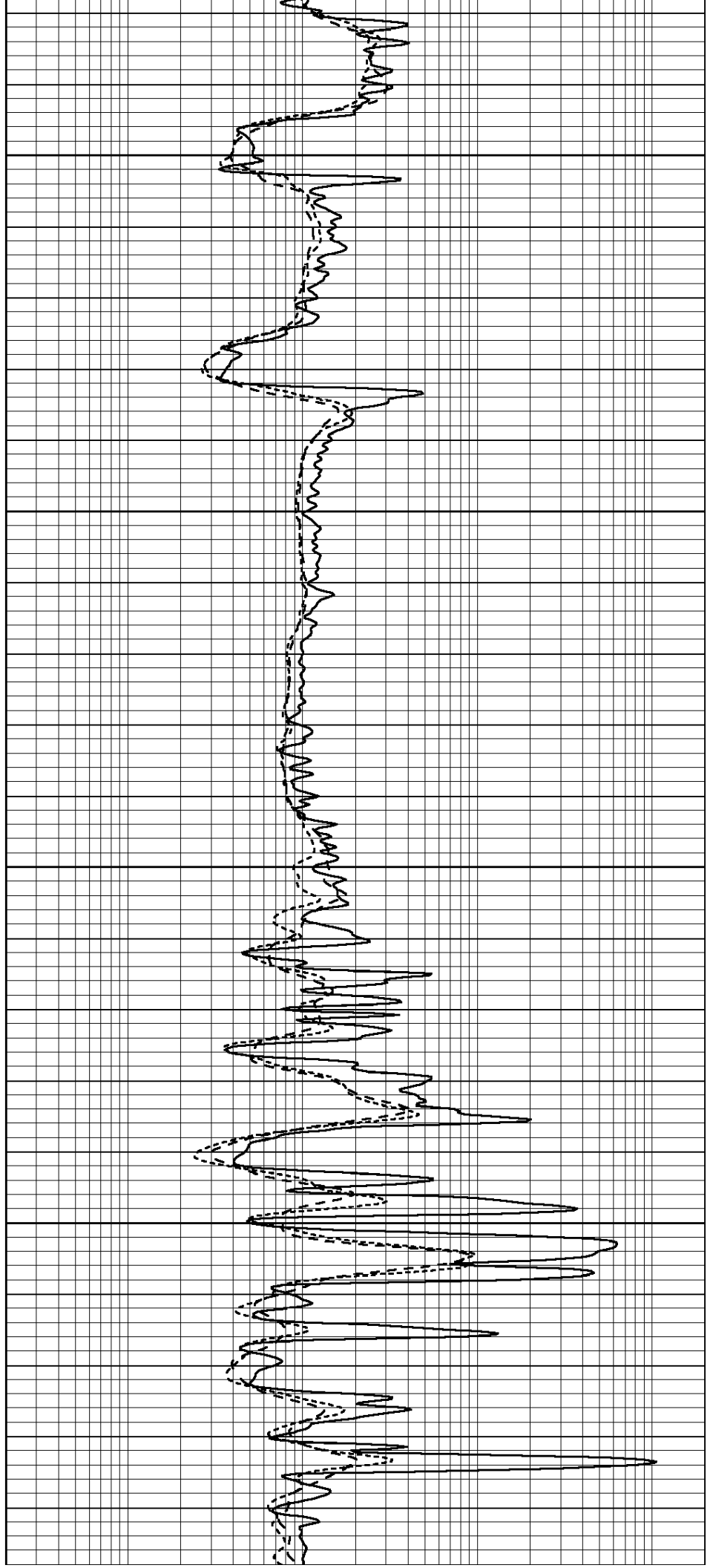


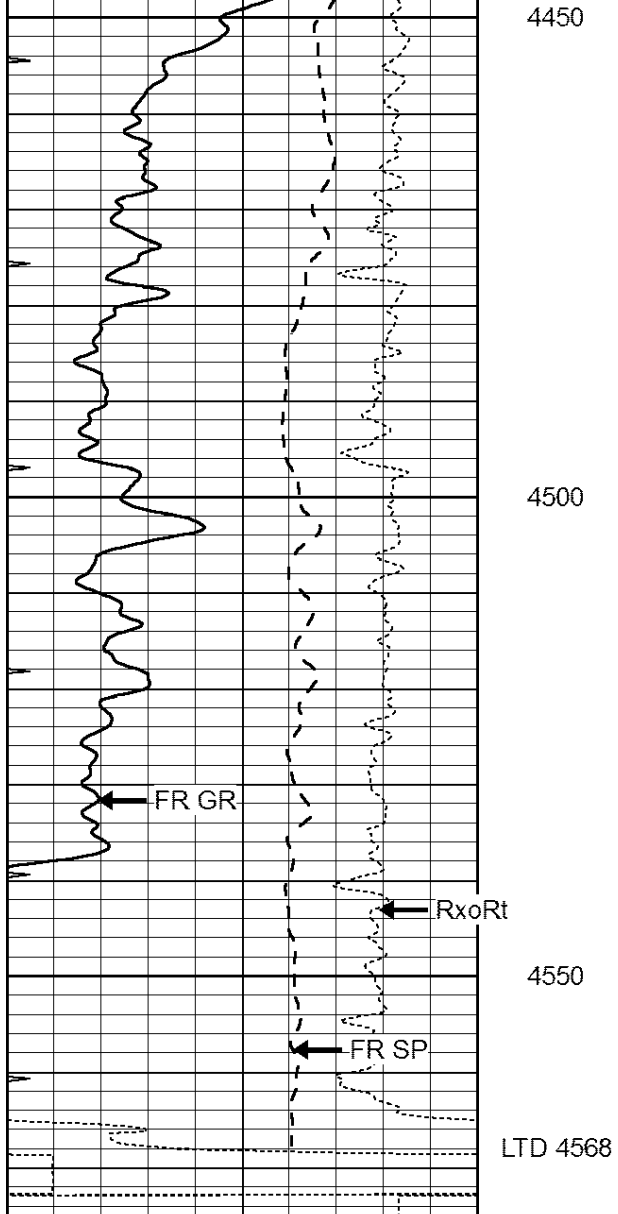
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4300

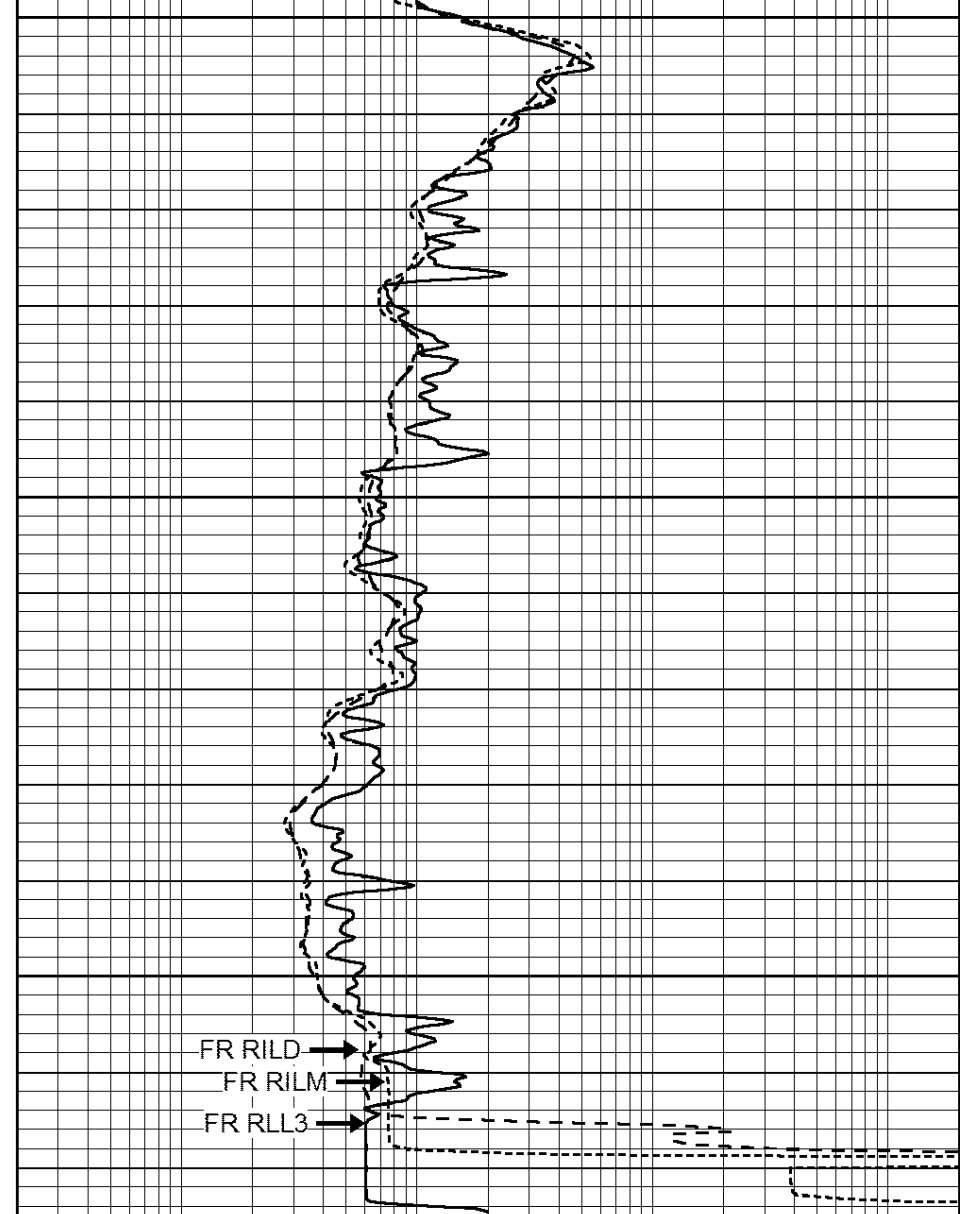
4350

4400





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

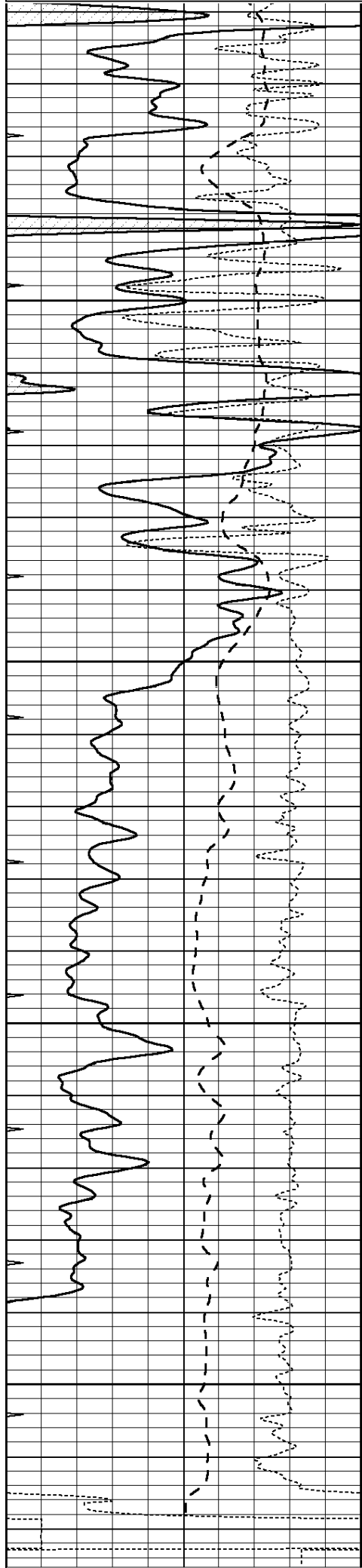


REPEAT SECTION

Database File: 011595pe.db
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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

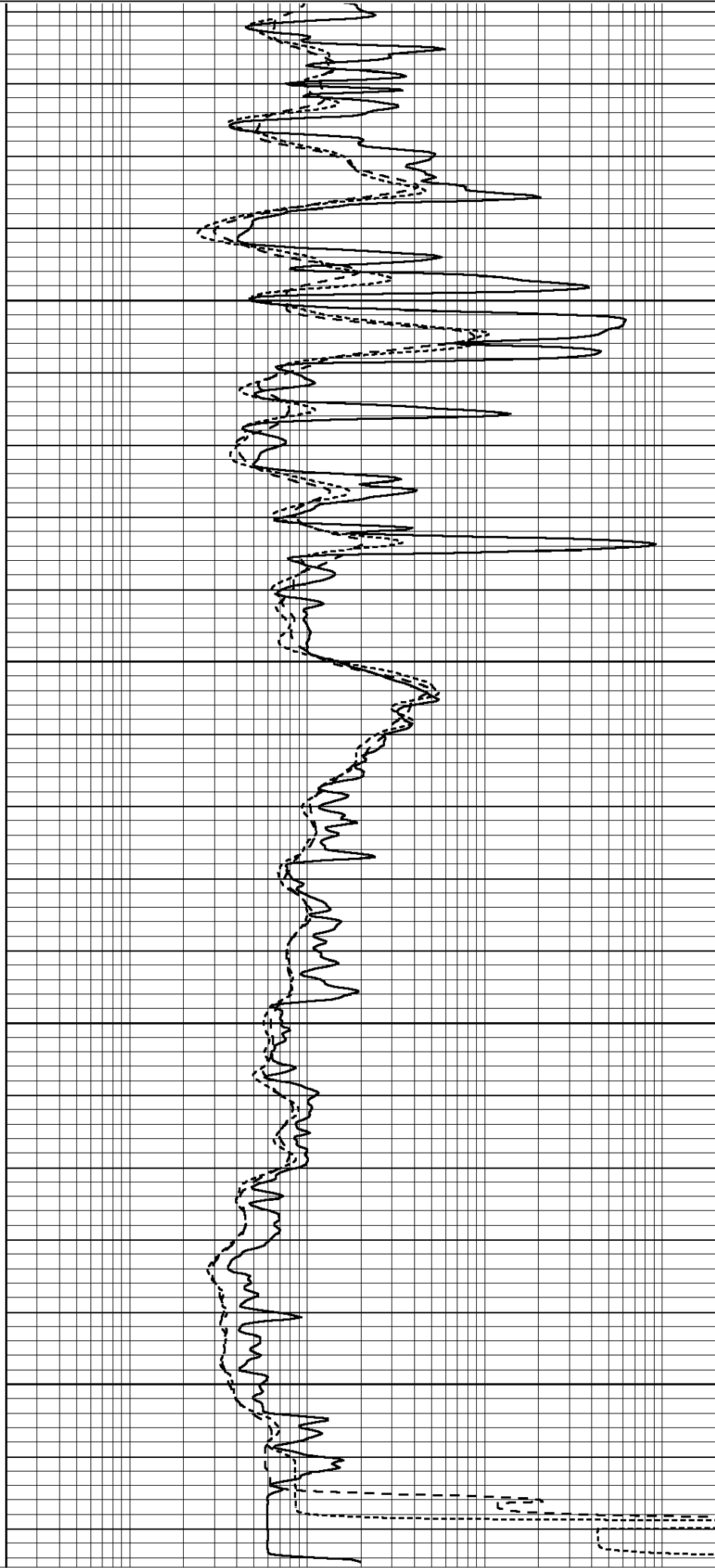


4400

4450

500

550



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: 011595pe.db
Dataset Pathname: pass3.3
Dataset Creation: Fri Aug 30 01:10:35 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				

Litho Density Calibration Report
Serial: 003 Model: PRB

Master Calibration		Performed Thu Jul 26 15:13:22 2007			
	Background	Magnesium	Aluminum	Sandstone	
Window 1	2128.0	9601.6	3737.0	10737.0	cps
Window 2	1913.5	7519.1	3114.0	8210.1	cps
Window 3	1668.2	5026.8	2370.0	5373.3	cps
Window 4	492.7	497.5	492.3	491.1	cps
Long Space	0.0	5605.6	1200.5	6296.6	cps
Short Space	2.2	2279.3	1489.7	2489.1	cps

Rho	1.7100	2.5900	1.3800	g/cc
Pe	0.0000	2.5700	1.5500	

Rib Angle	: 44.6	Rib Slope	: 0.985	Density/Spine Ratio	: 0.550
Spine Angle	: 74.6	Spine Slope	: 3.623	Spine Intercept	: -19.4

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:	#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