

DUAL INDUCTION LOG

Company	IA OPERATING, INC.		
Well	KELLER #28-1		
Field	CROMB SOUTH		
County	ELLIS	State	KANSAS
Location:	AP1 # : 15-051-26941-00-00		Other Services CDL/CNL MEL
SEC 28 TWP 11S RGE 20W		422' FNL & 1607' FEL	
Permanent Datum	GROUND LEVEL	Elevation	2131
Log Measured From	KELLY BUSHING 8' A.G.L.	K.B. 2139	
Drilling Measured From	KELLY BUSHING	D.F. 2137	
		G.L. 2131	
Date	12/01/18		
Run Number	ONE		
Depth Driller	3850		
Depth Logger	3852		
Bottom Logged Interval	3850		
Top Log Interval	00		
Casing Driller	8 5/8" @ 221		
Casing Logger	221		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD		
Density / Viscosity	9.0/45		
pH / Fluid Loss	10.0/8.8		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	1.1@66		
Rmt @ Meas. Temp	.83@66		
Rmc @ Meas. Temp	1.32@66		
Source of Rmt / Rmc	MEASURED		
Rm @ BHT	.63@115		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom	///		
Maximum Recorded Temperature	115F		
Equipment Number	1523		
Location	HAYS, KANSAS		
Recorded By	GUS PFANENSTIEL		
Witnessed By	JEFF LAWLER		

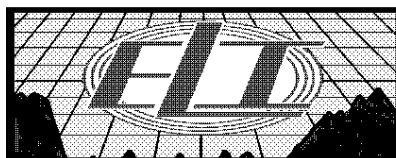
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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on 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

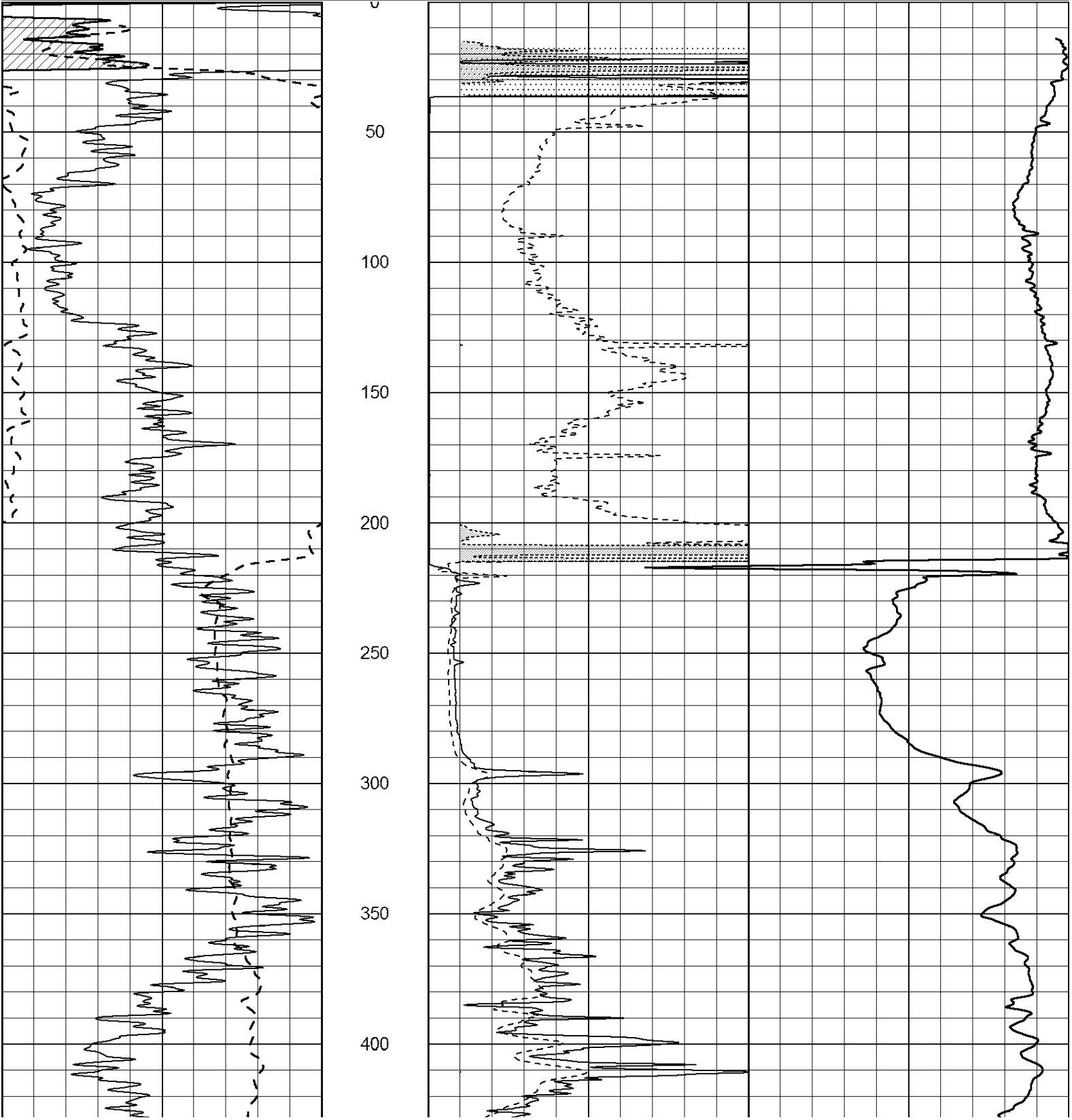
DIRECTIONS
NORTH OF ELLIS TO WILES RD. 1/4 WEST,
SOUTH INTO.



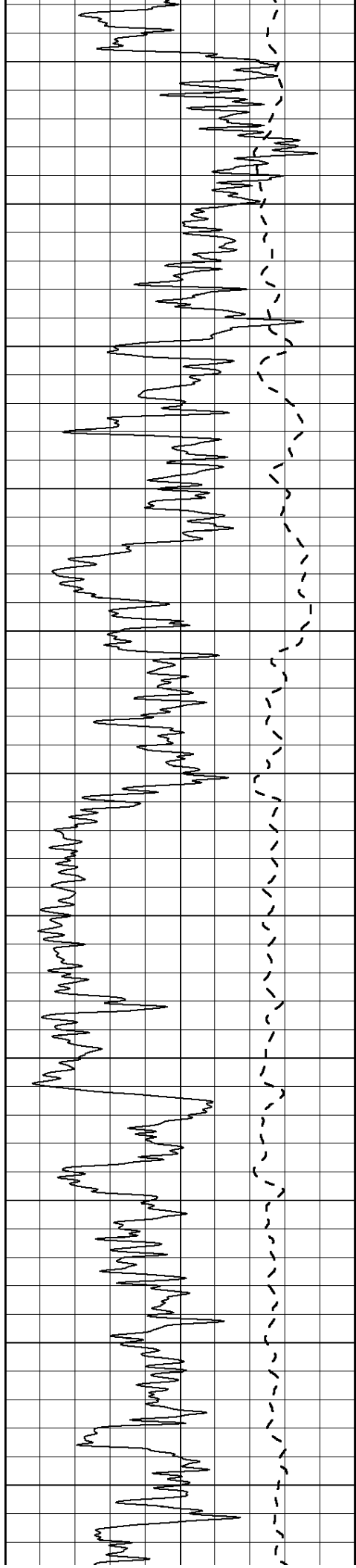
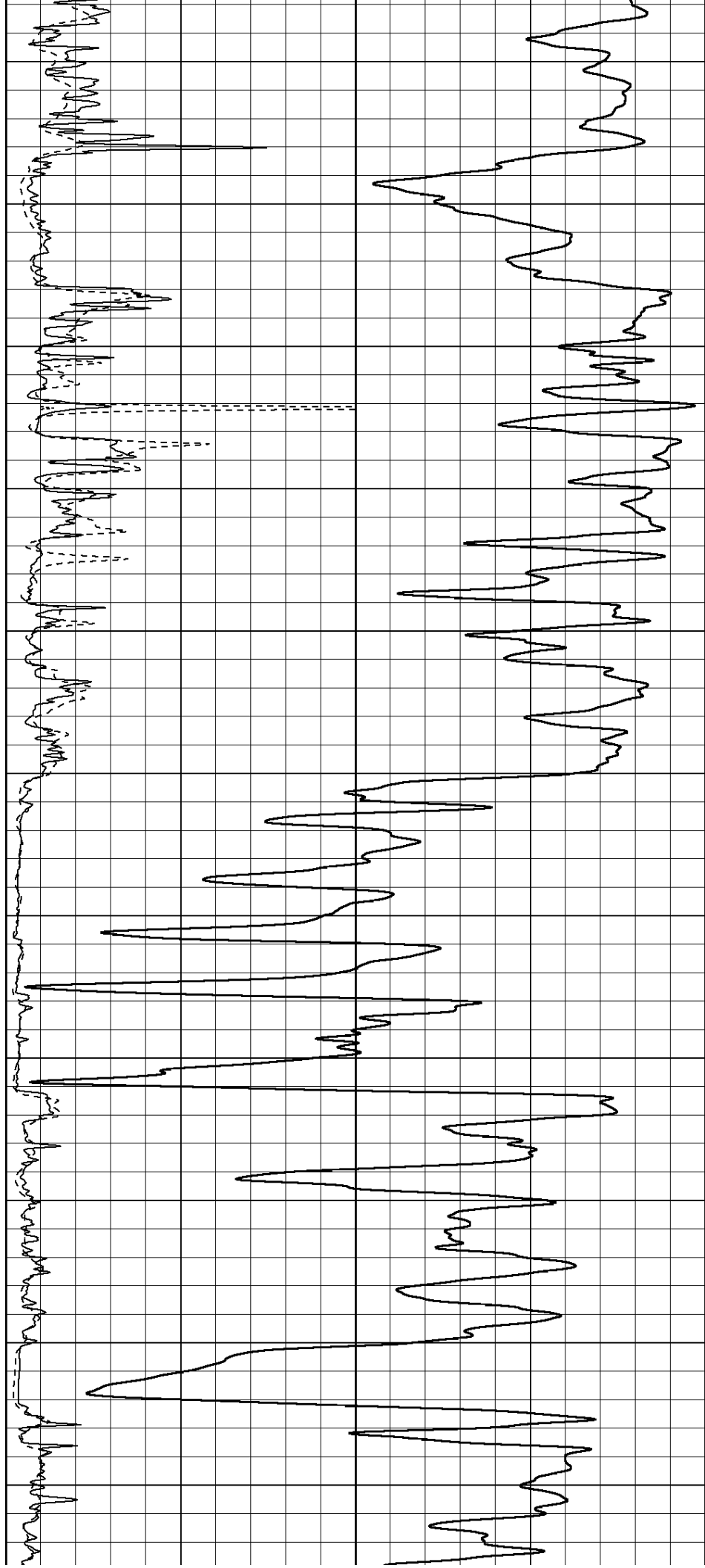
MAIN PASS

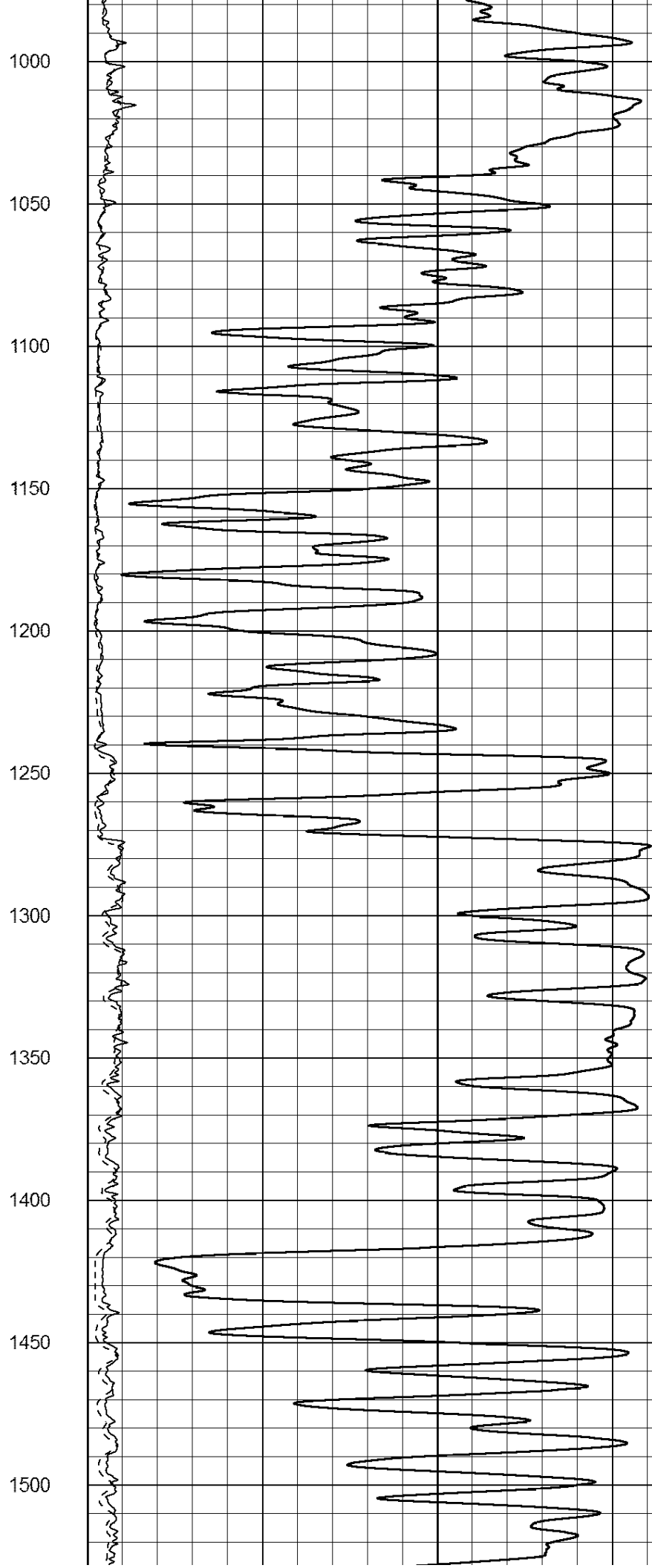
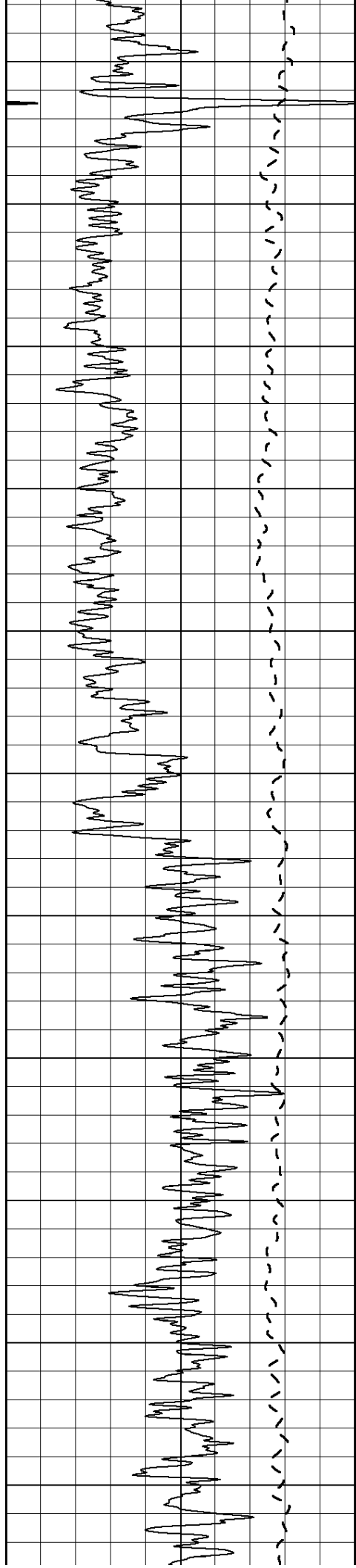
Database File: 3163pe.db
Dataset Pathname: pass3MAIN
Presentation Format: _dil2
Dataset Creation: Sat Dec 01 06:24:21 2018
Charted by: Depth in Feet scaled 1:600

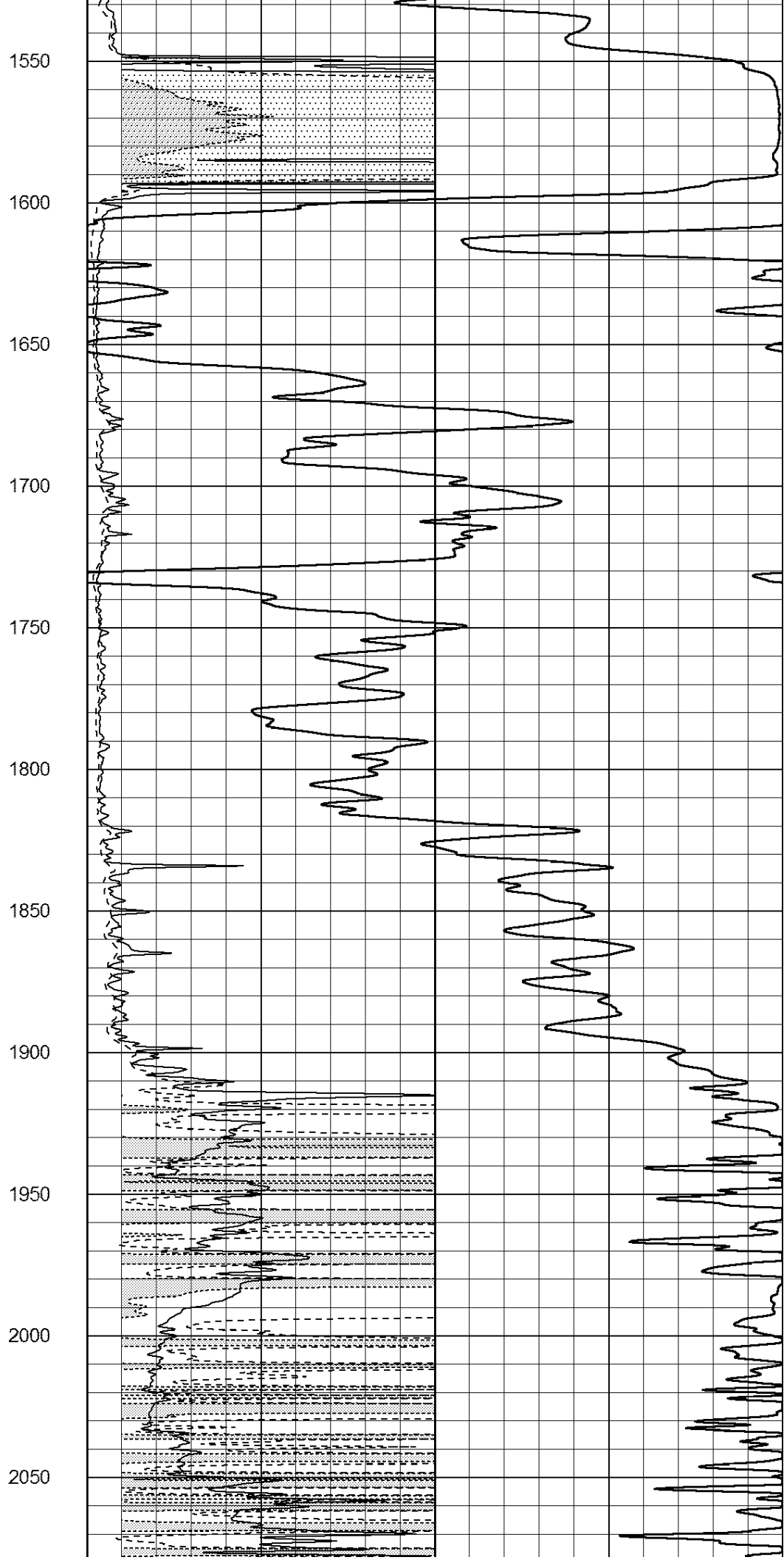
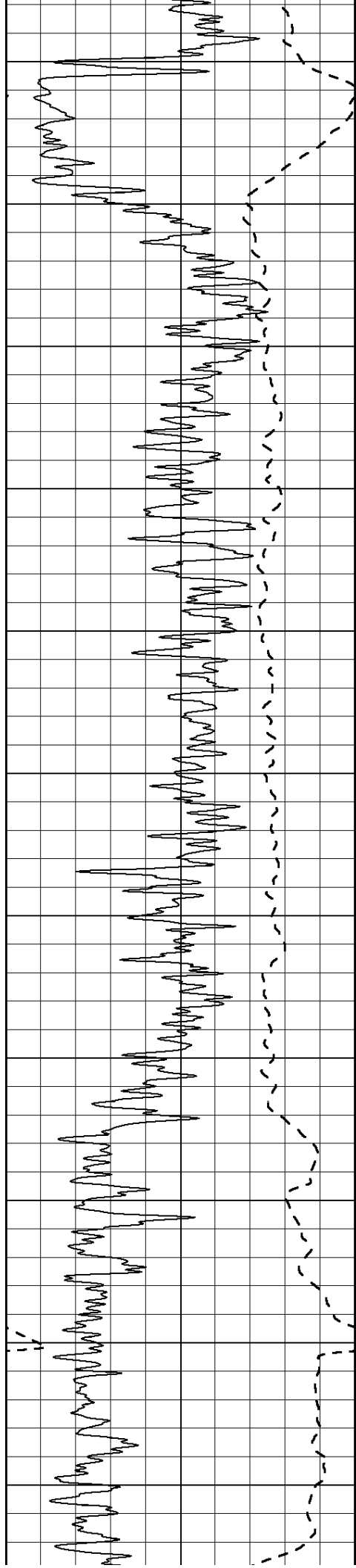
0	Gamma Ray (GAPI)	150	0	RLL3 (Ohm-m)	50
-100	SP (mV)	100	0	RILD (Ohm-m)	50
-----			1000 CILD (mmho/m) 0		
			50	RILD X10 (Ohm-m)	500
			50	RLL3 X10 (Ohm-m)	500

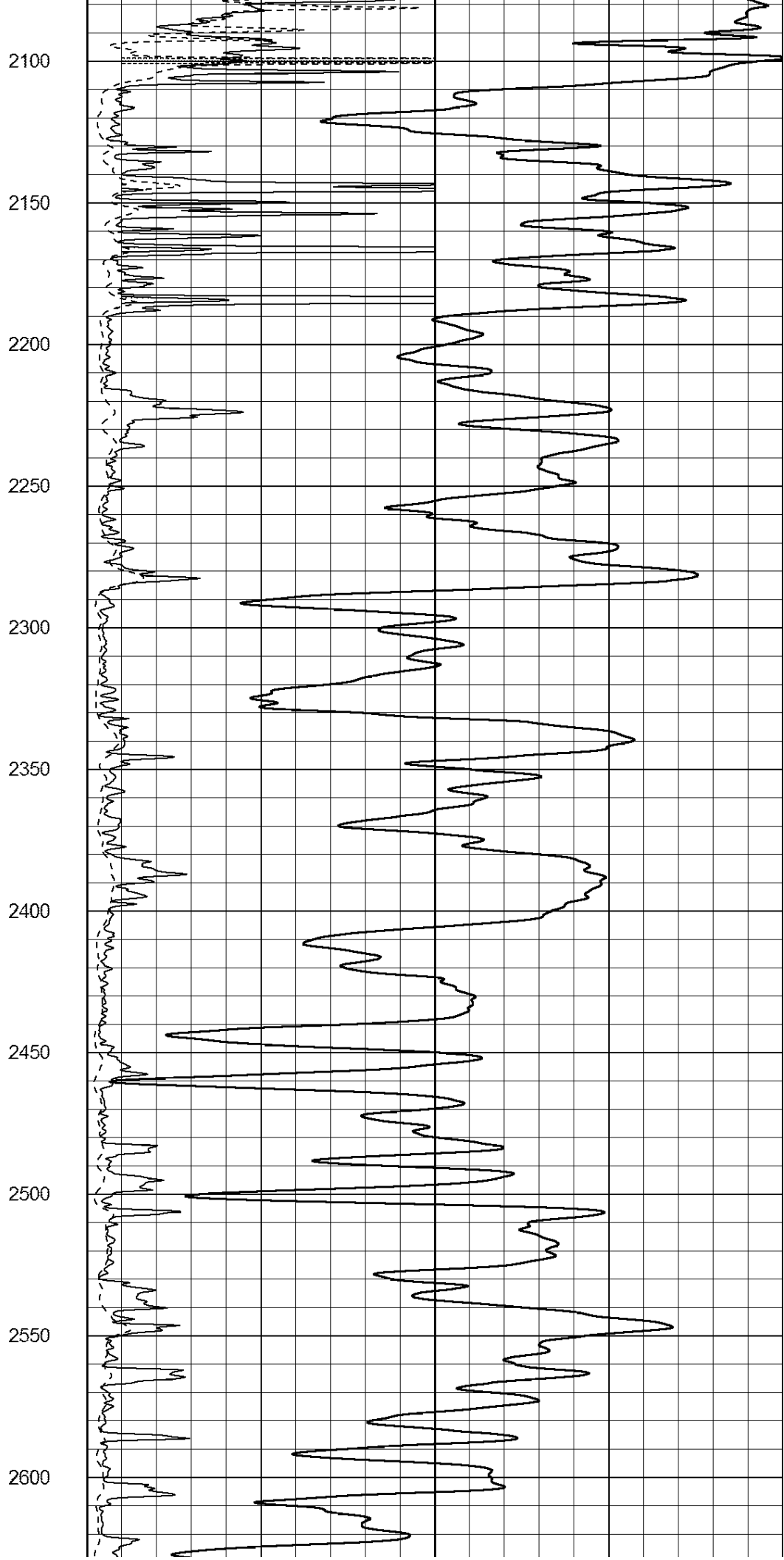
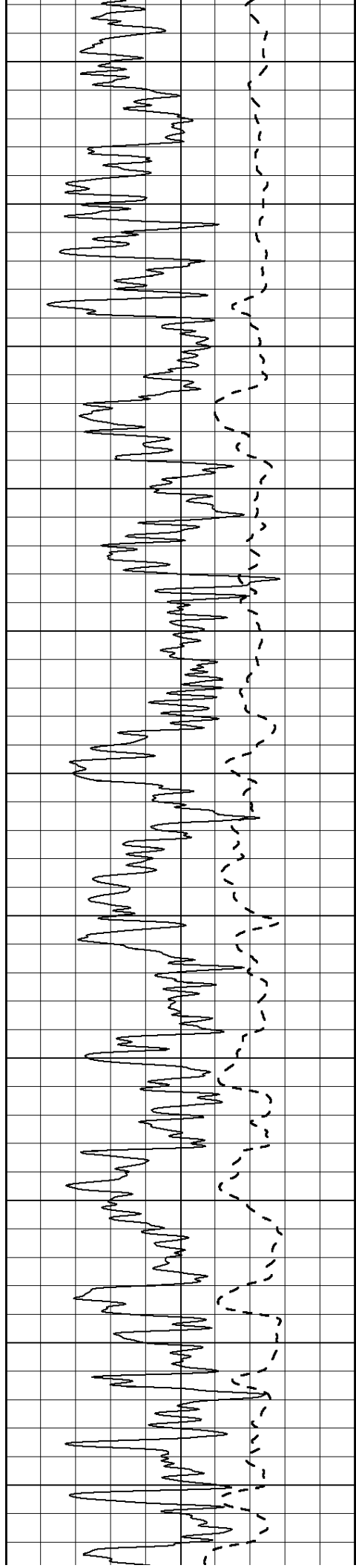


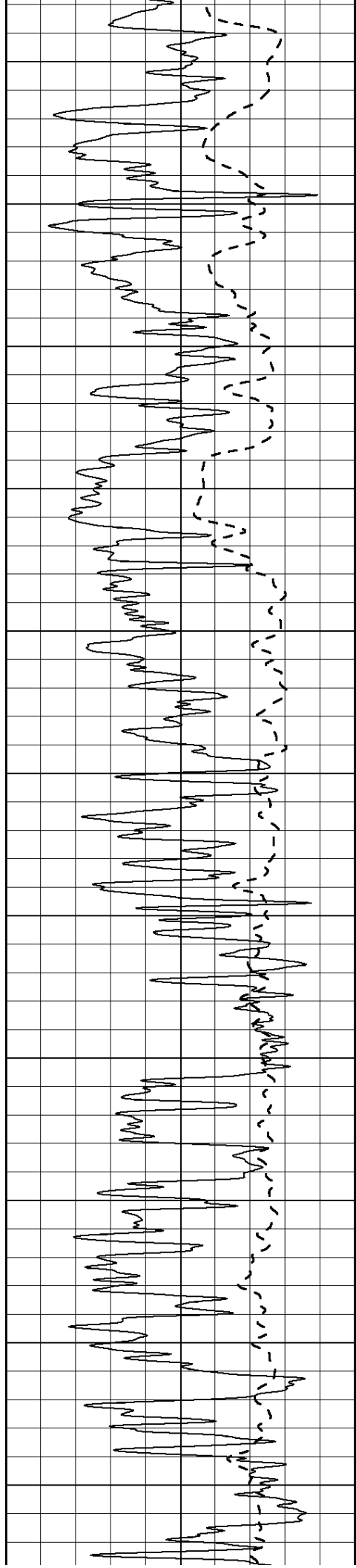
450 500 550 600 650 700 750 800 850 900 950











2650

2700

2750

2800

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2900

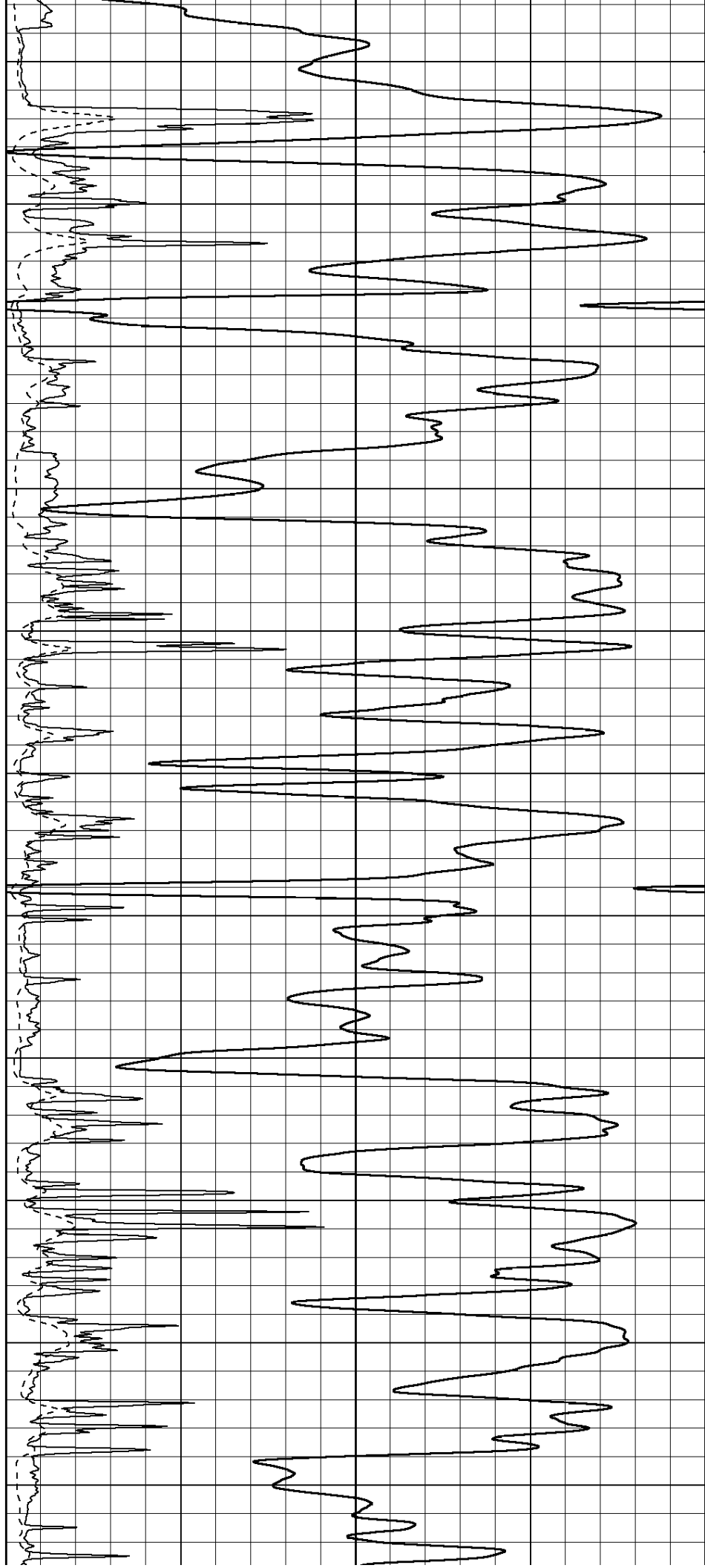
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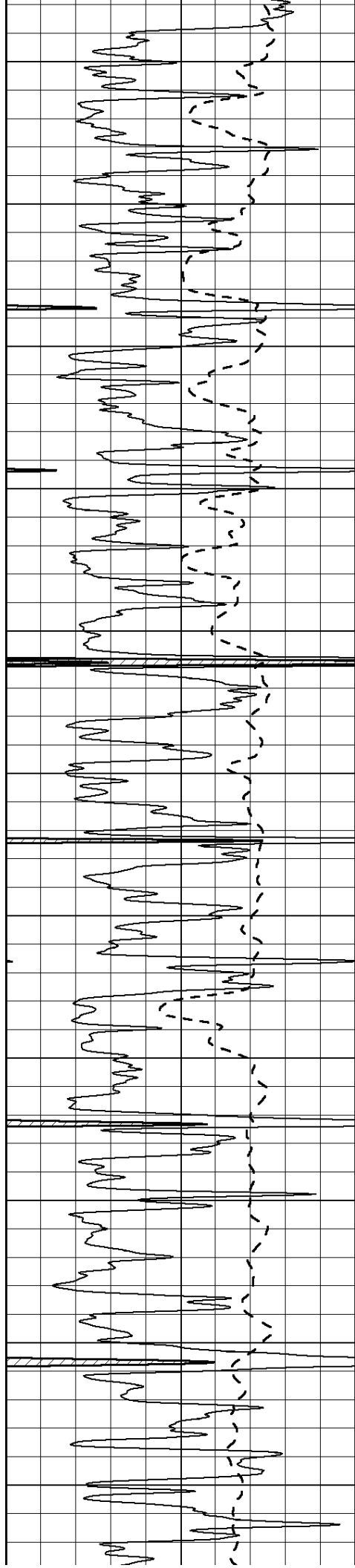
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3050

3100

3150





3200

3250

3300

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3450

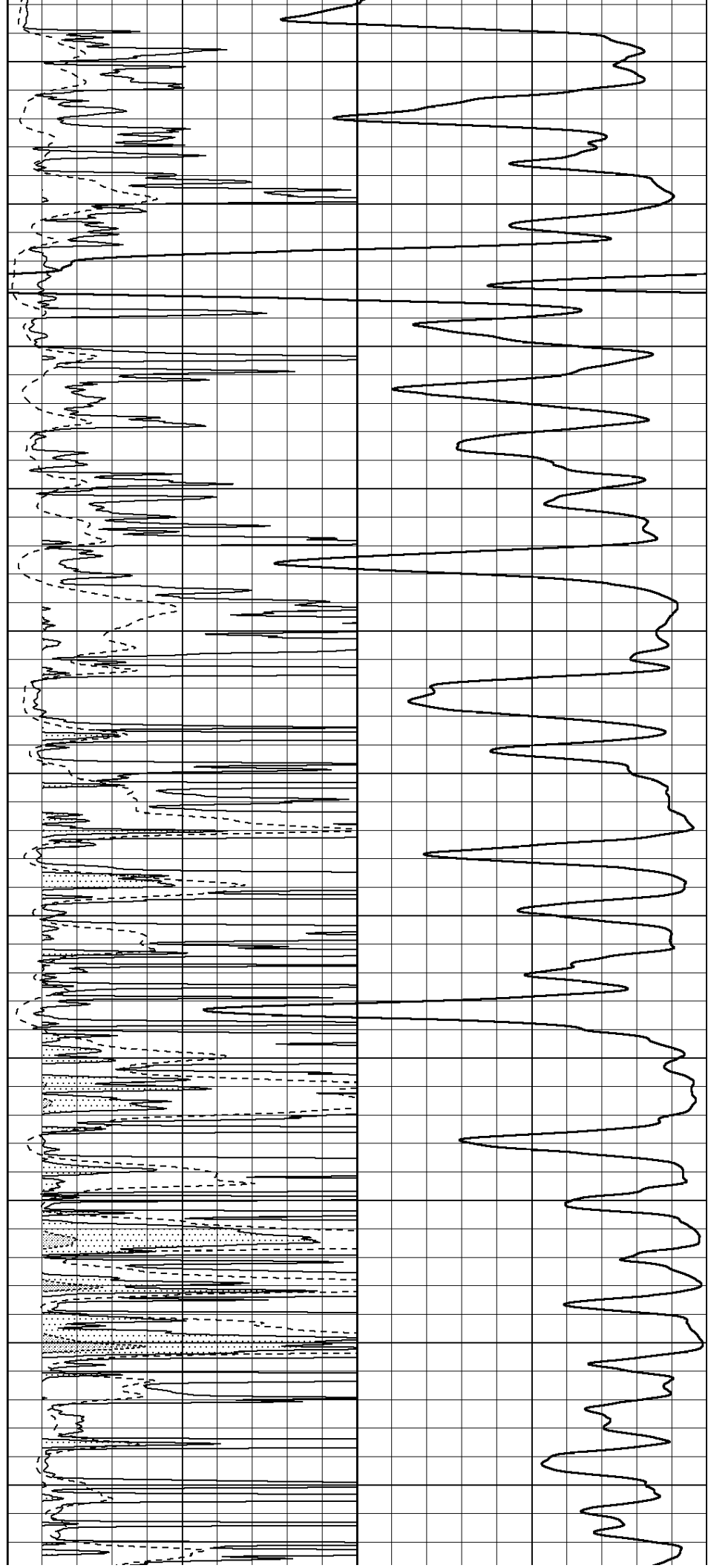
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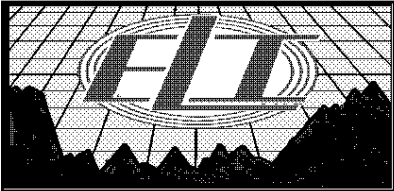
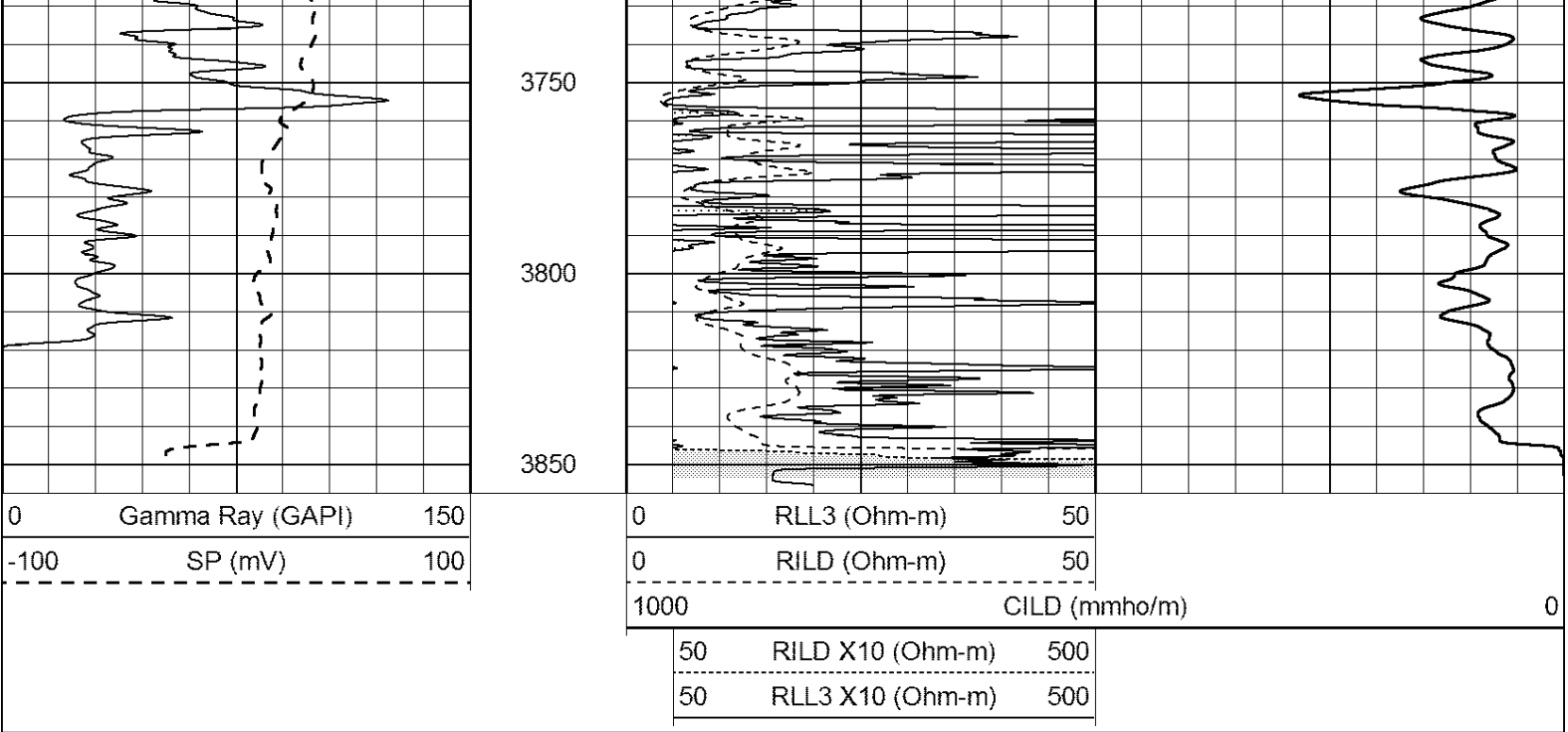
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3700

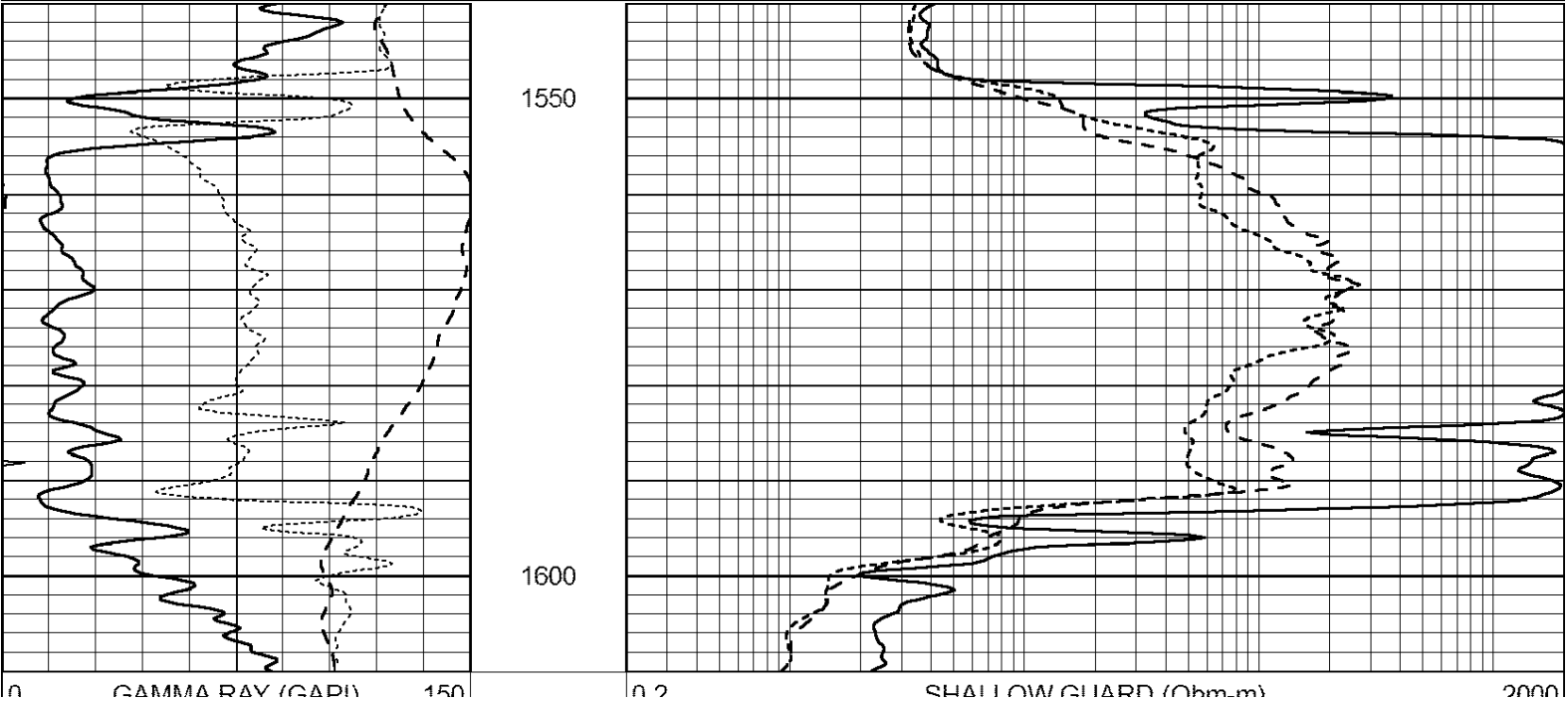




MAIN PASS

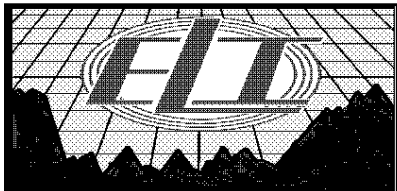
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Presentation Format: _dil
Dataset Creation: Sat Dec 01 06:24:21 2018
Charted by: Depth in Feet scaled 1:240

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			



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

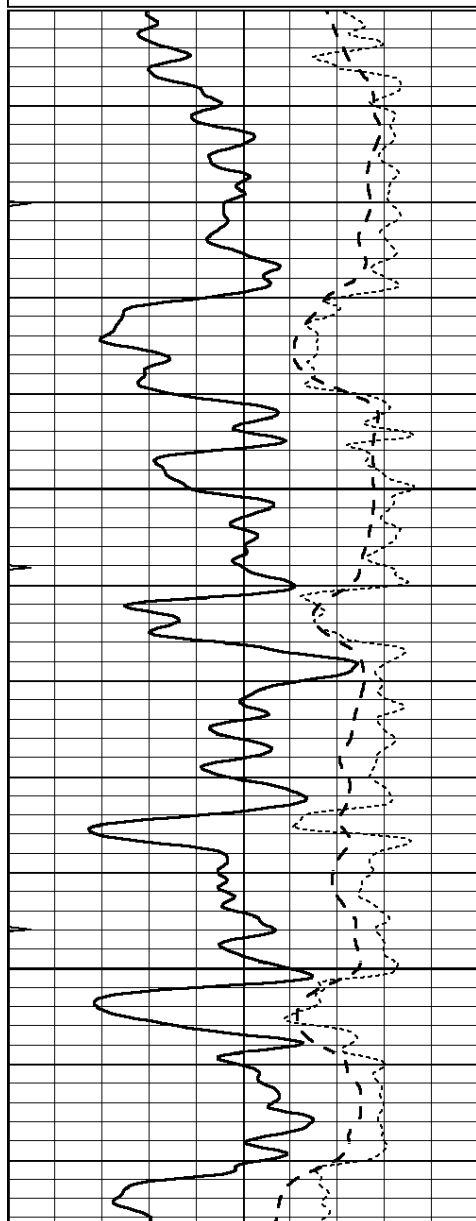


MAIN PASS

Database File: 3163pe.db
 Dataset Pathname: pass3MAIN
 Presentation Format: _dil
 Dataset Creation: Sat Dec 01 06:24:21 2018
 Charted by: Depth in Feet scaled 1:240

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

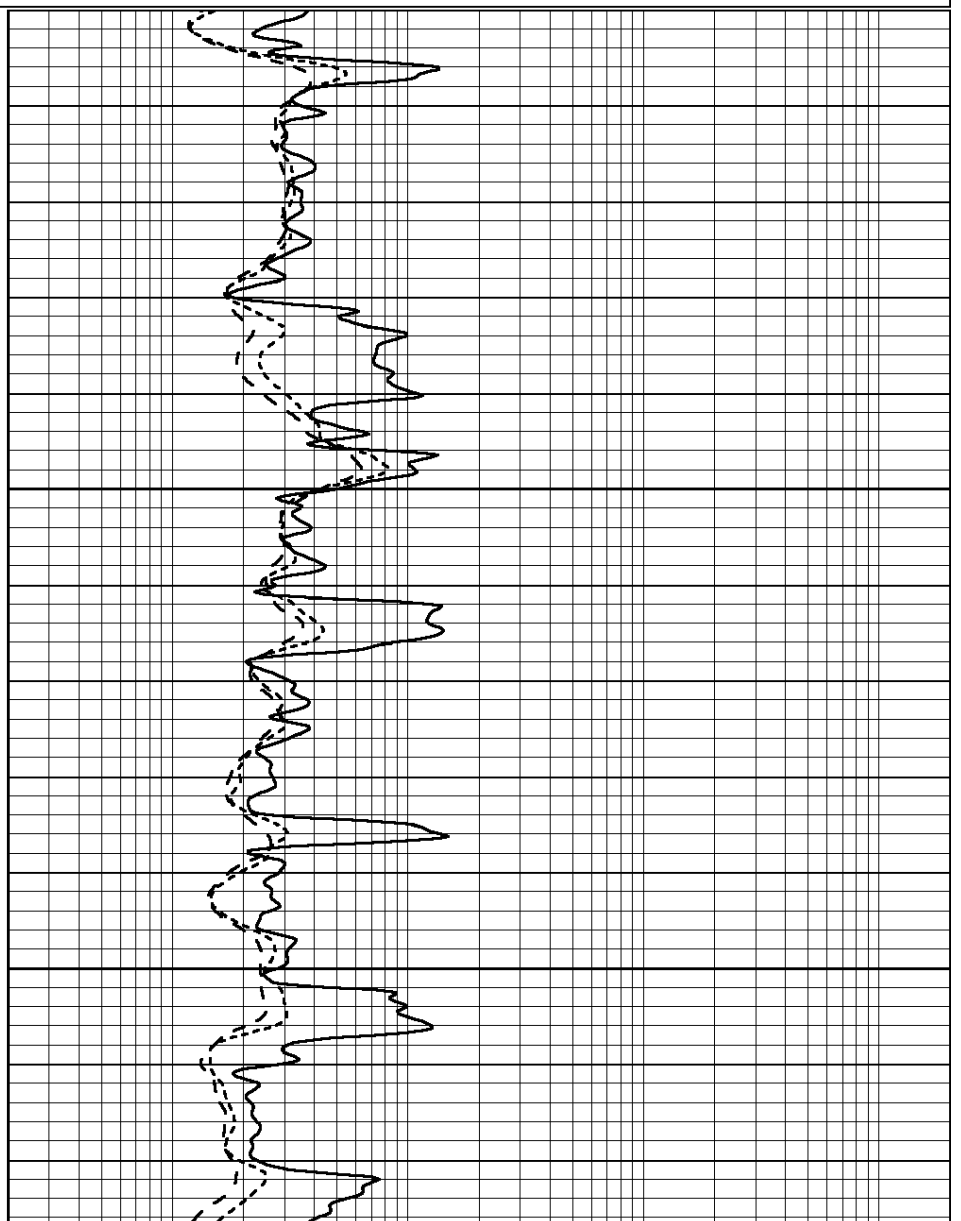
0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000

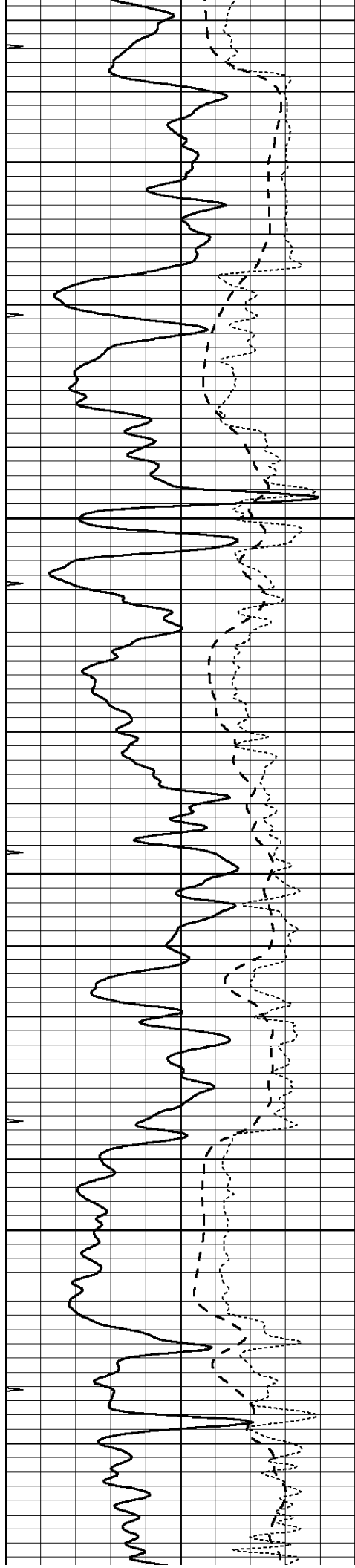


2500

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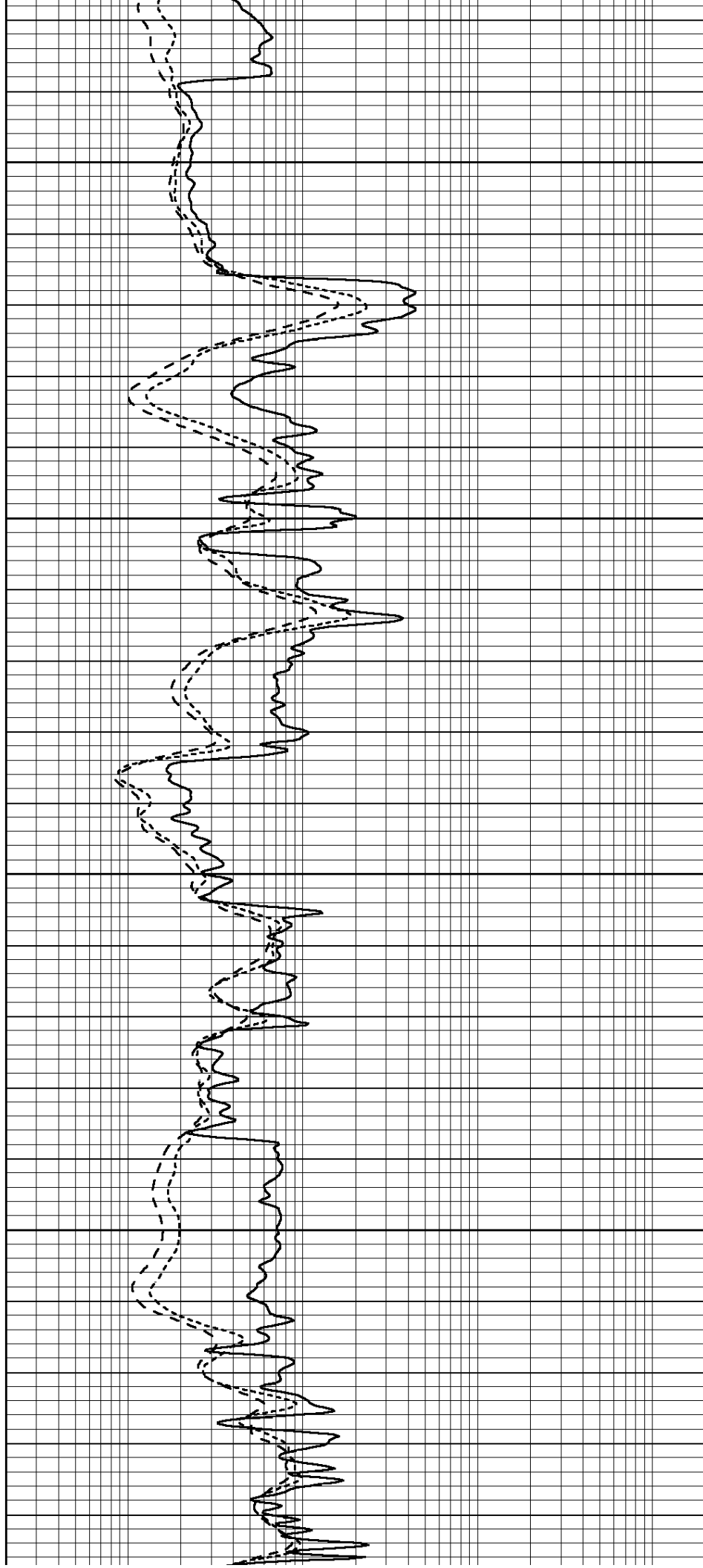


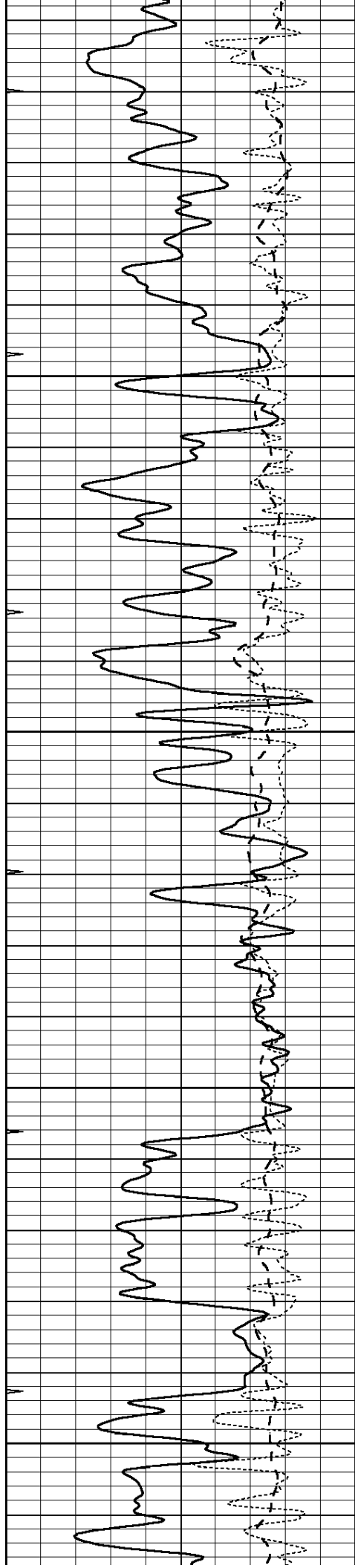
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2800





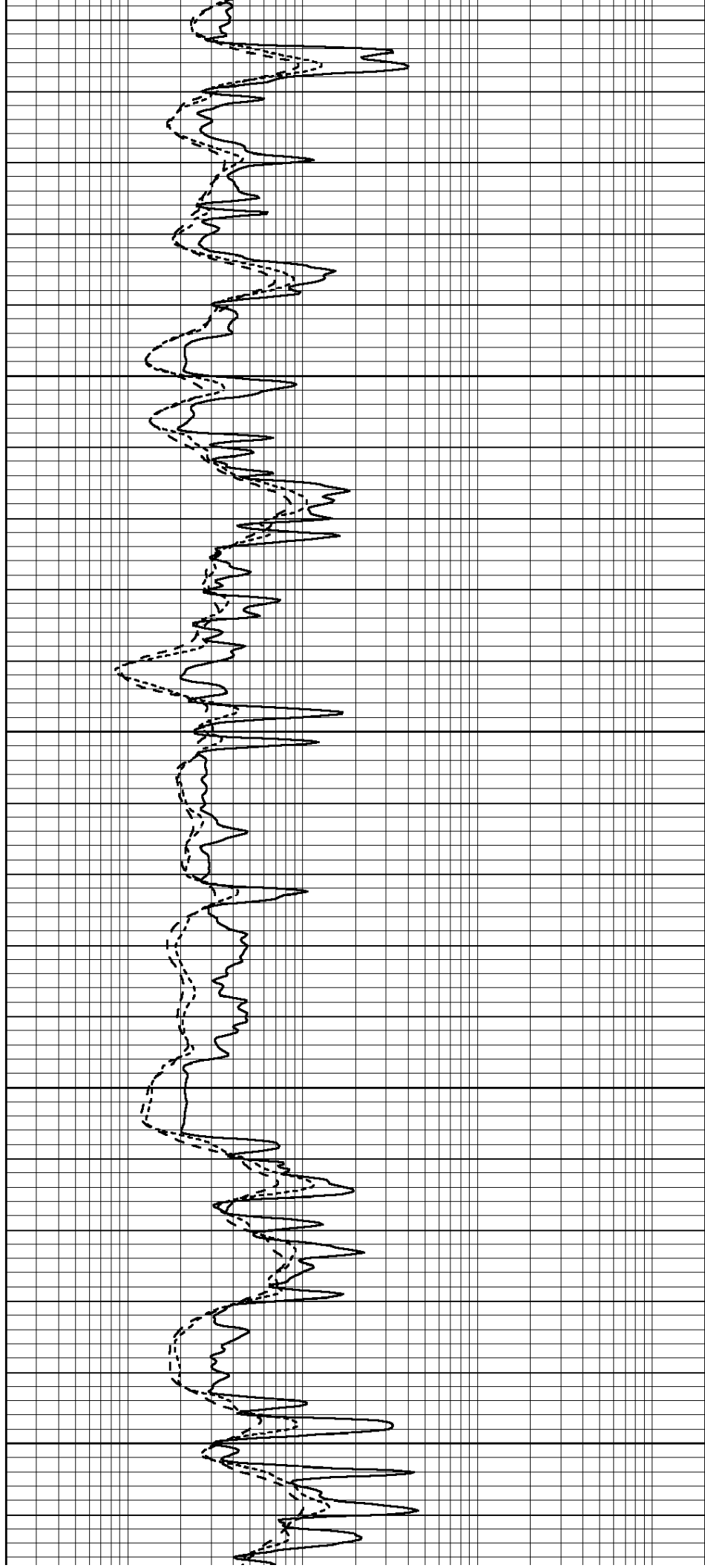
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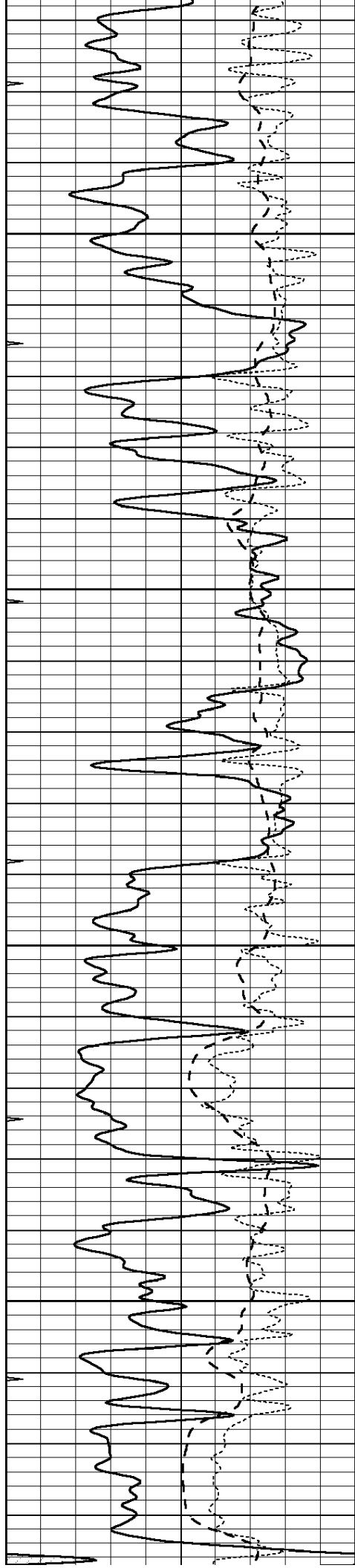
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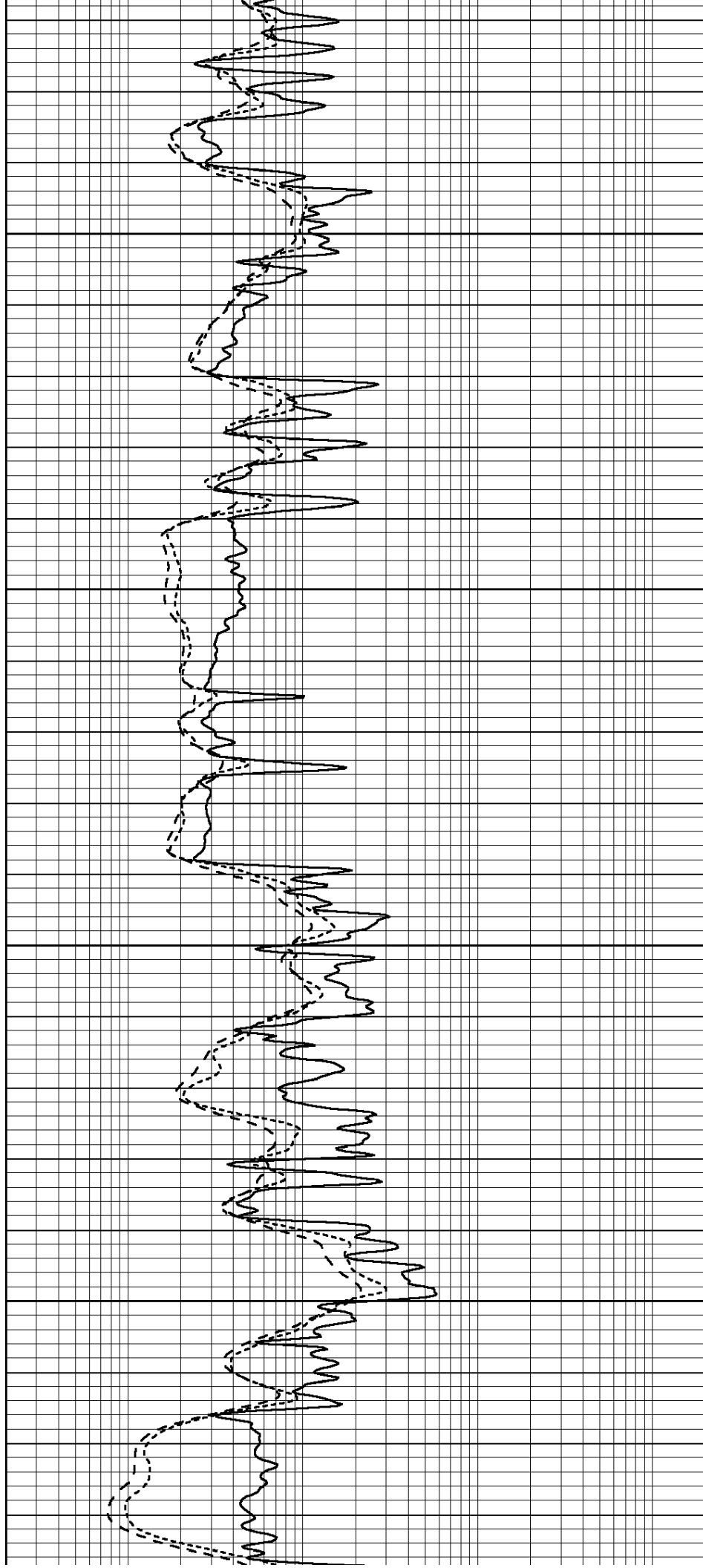


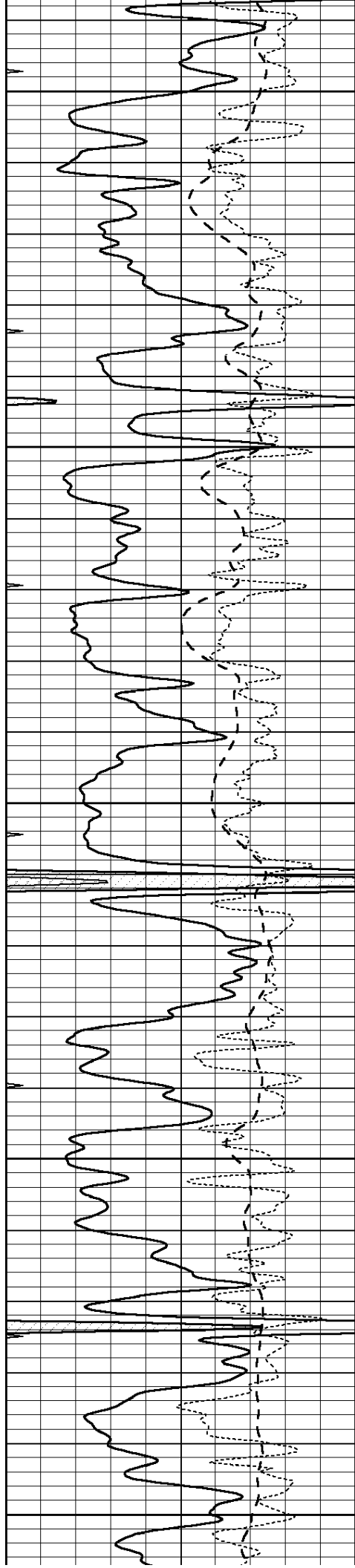
3100

3150

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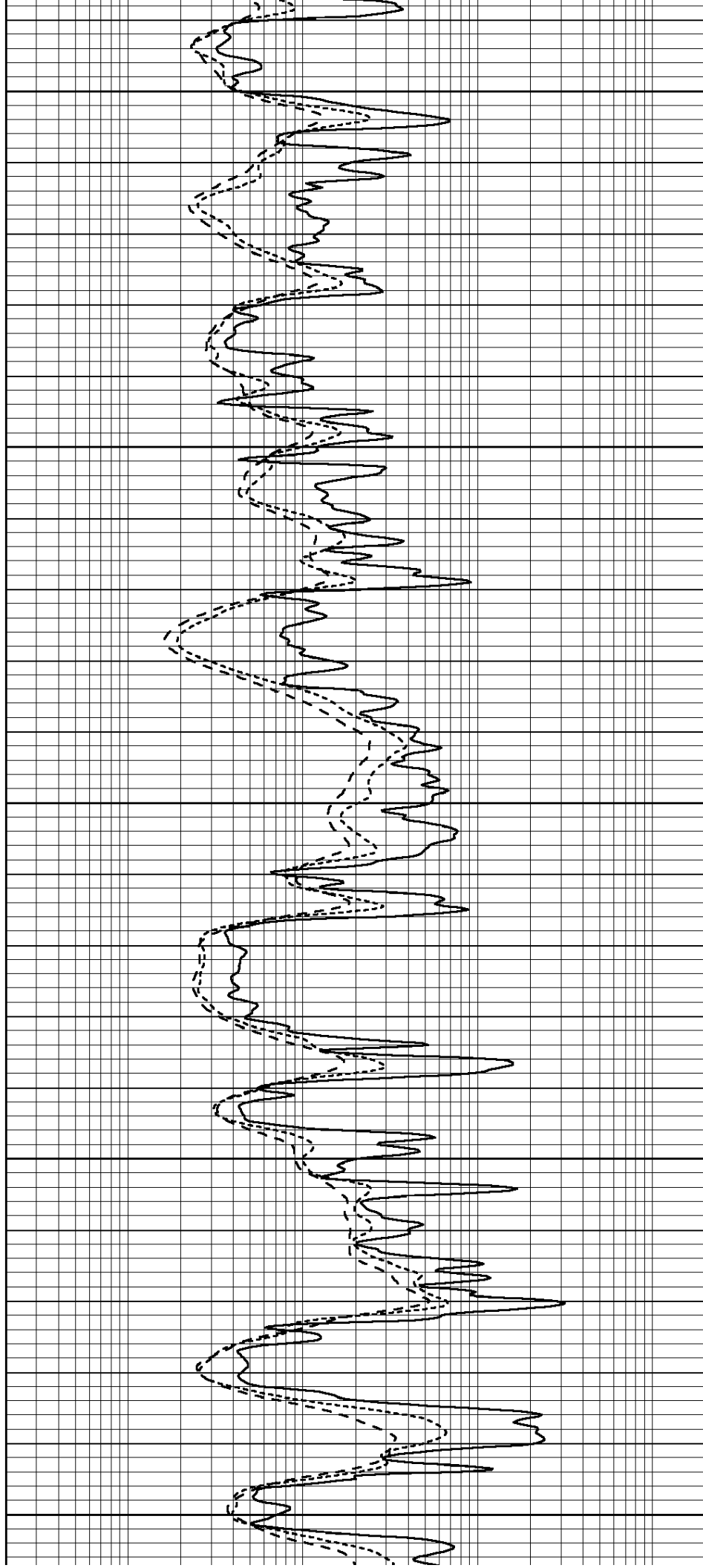
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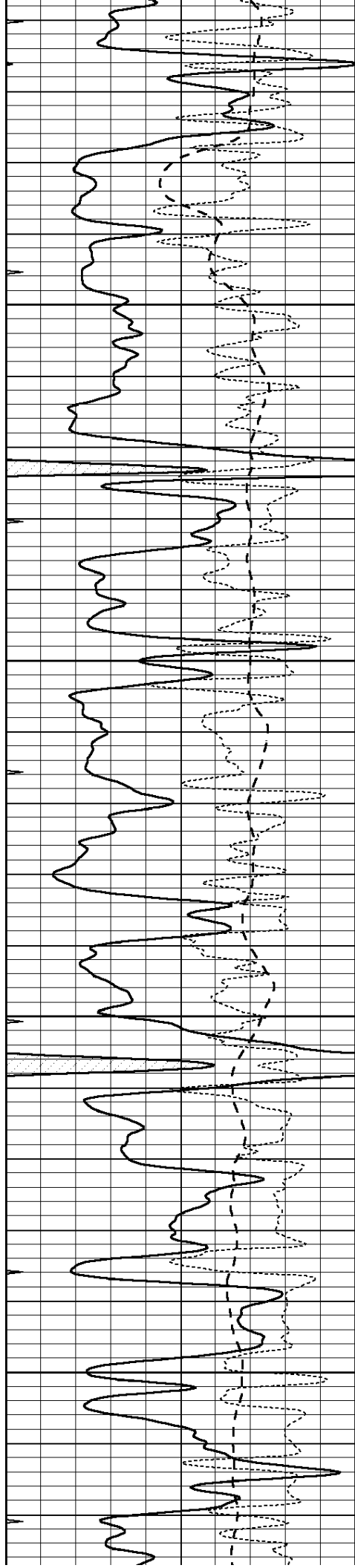
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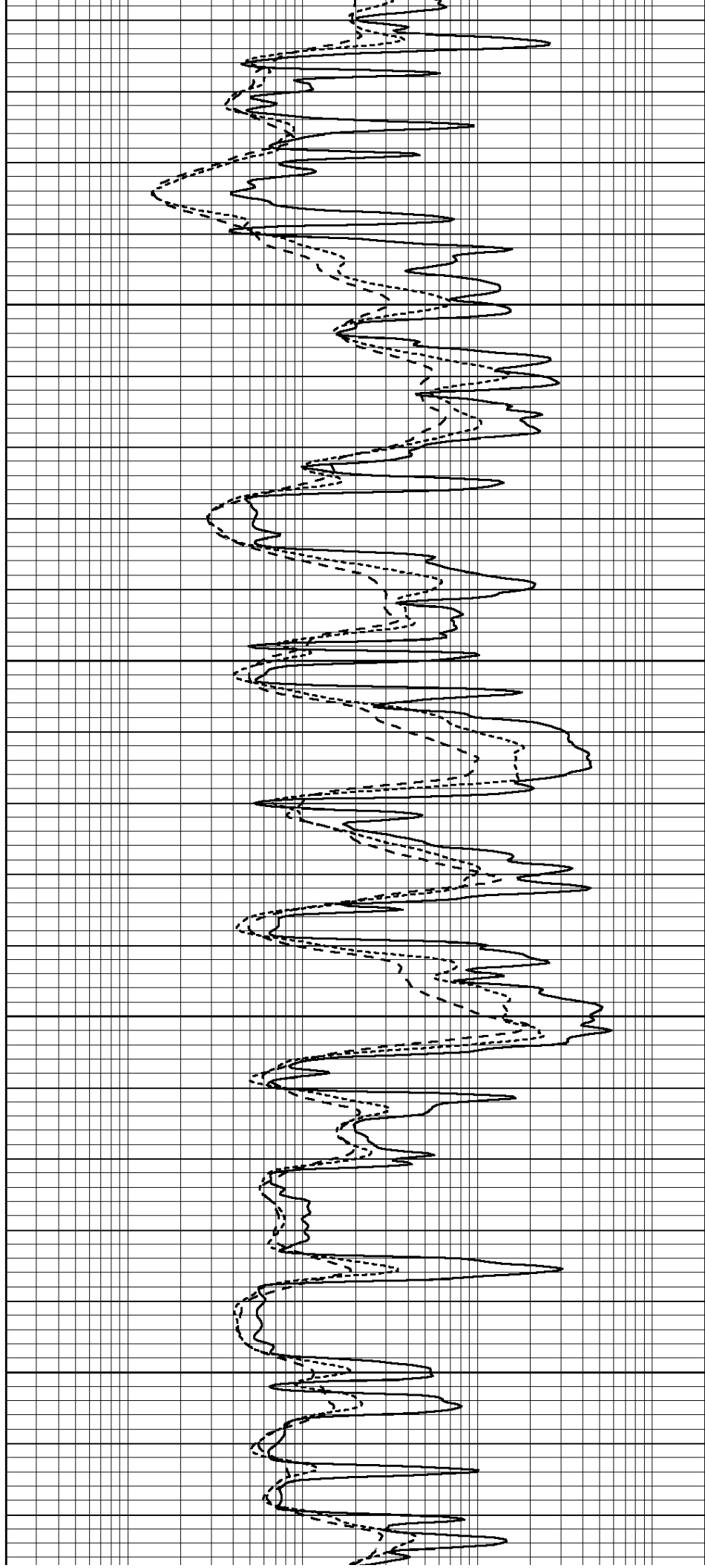


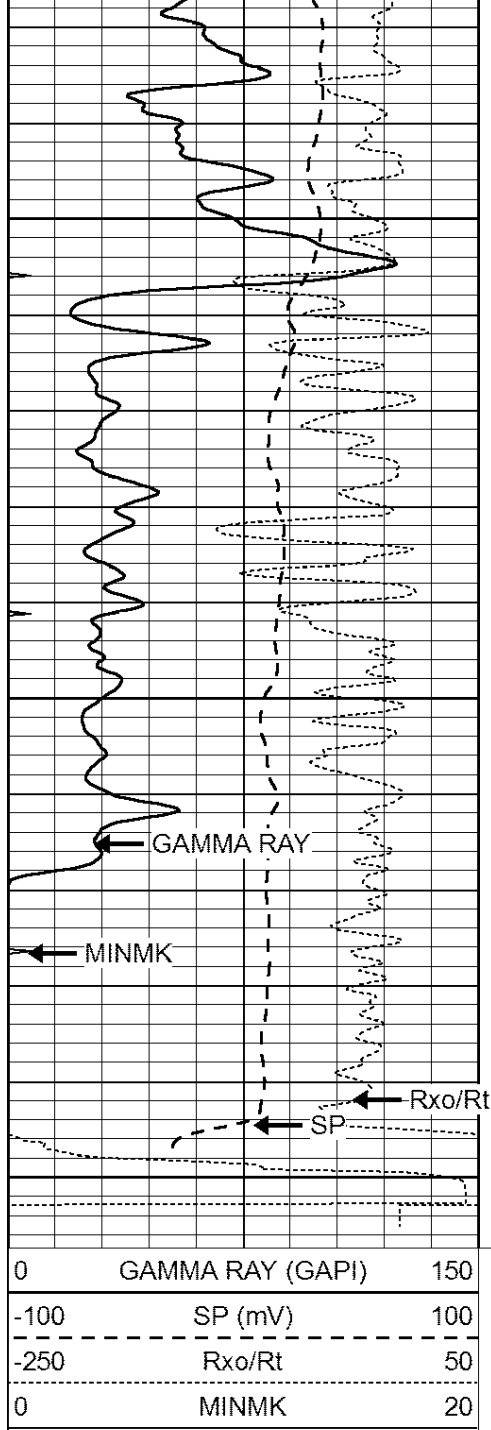
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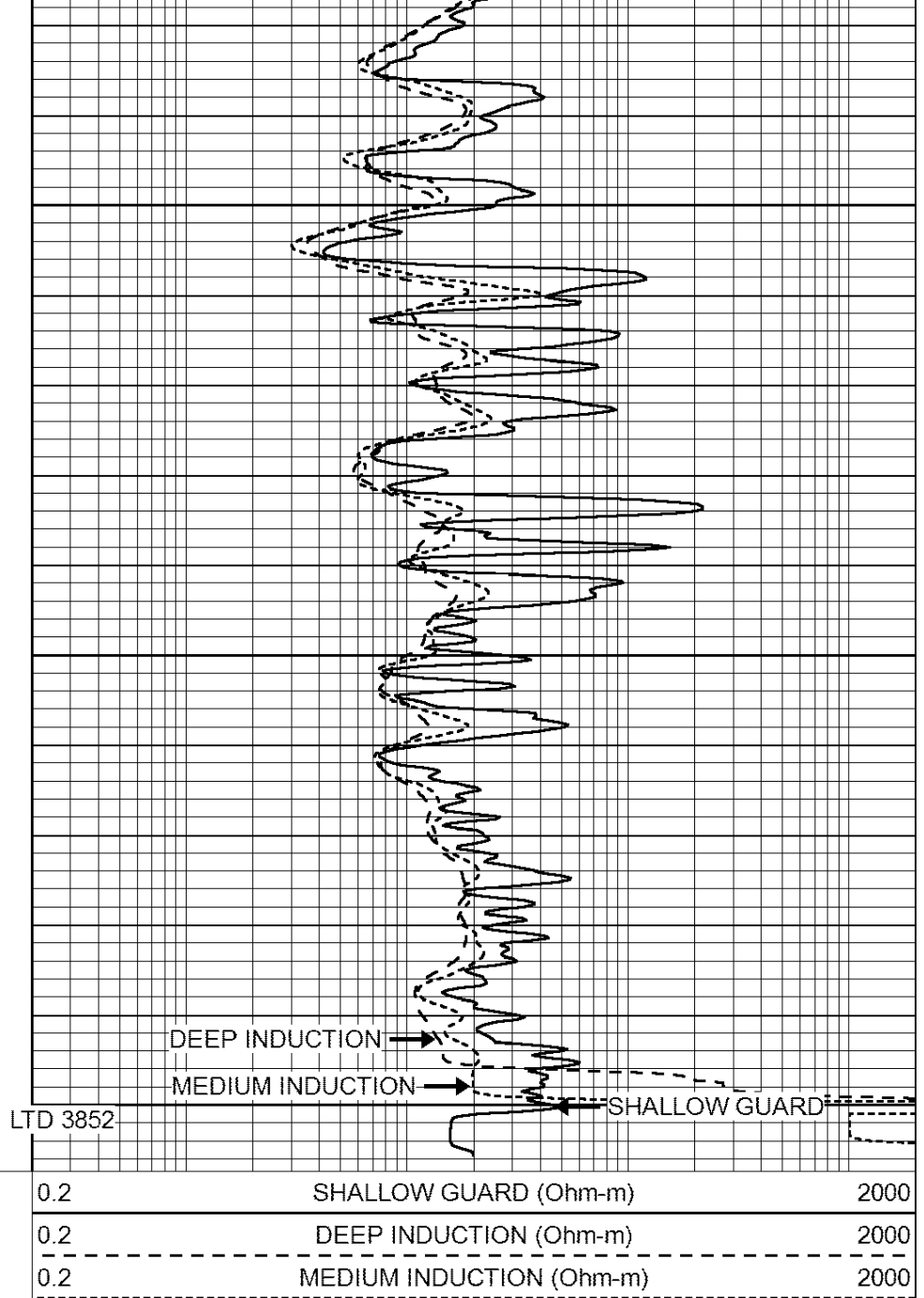




3750

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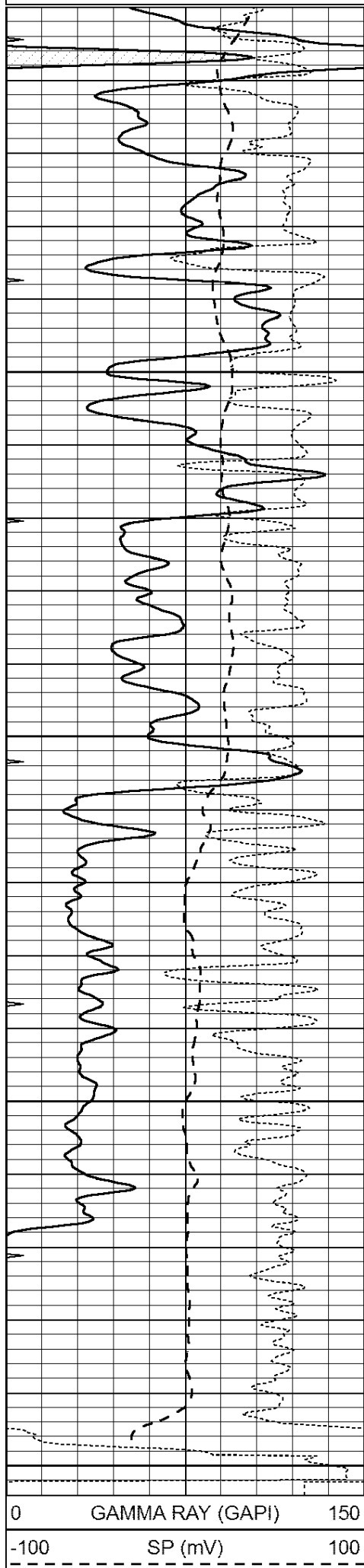


REPEAT SECTION

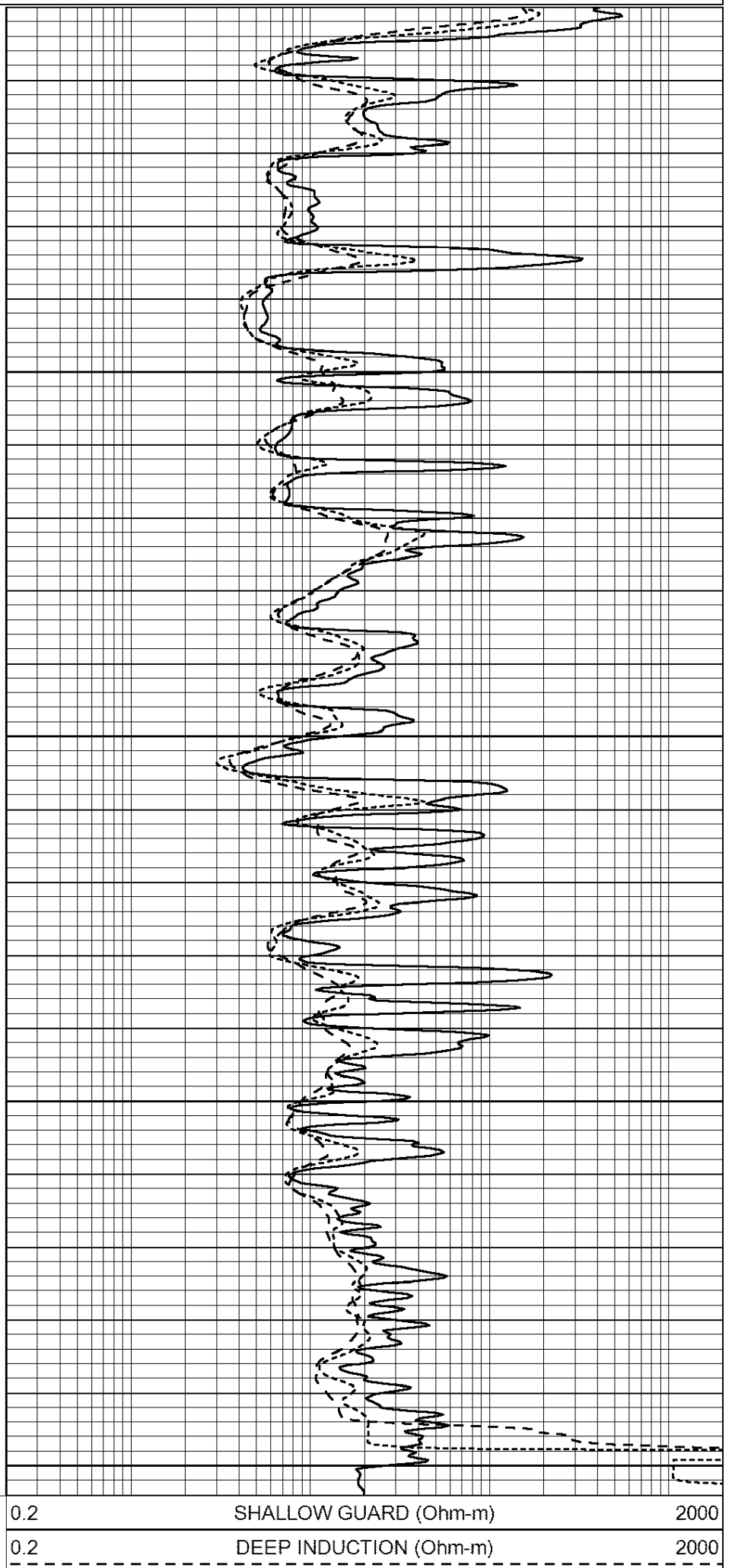
Database File: 3163pe.db
 Dataset Pathname: pass2.1
 Presentation Format: _dil
 Dataset Creation: Sat Dec 01 05:42:48 2018 by Calc Open-Cased 090629
 Charted by: Depth in Feet scaled 1:240

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



3650
3700
3750
3800
3850



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

Calibration Report					
Database File:	3163pe.db				
Dataset Pathname:	pass2.1				
Dataset Creation:	Sat Dec 01 05:42:48 2018 by Calc Open-Cased 090629				

Dual Induction Calibration Report					
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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 Thu Sep 27 12:07:11 2018					
	Background	Magnesium	Aluminum	Sandstone	
Window 1	1185.6	7077.4	2520.9	8182.4	cps
Window 2	1116.8	5910.1	2163.2	6739.4	cps
Window 3	880.1	3145.8	1325.0	3461.2	cps
Window 4	289.5	295.8	290.8	295.3	cps
Long Space	0.0	4793.3	1046.5	5622.7	cps
Short Space	2.9	1608.0	1038.9	1622.7	cps
Rho		1.7100	2.5960	1.3800	g/cc
Pe		0.0000	2.5700	1.5500	

Rib Angle	: 44.0	Rib Slope	: 0.965	Density/Spine Ratio	: 0.560
Spine Angle	: 74.0	Spine Slope	: 3.484	Spine Intercept	: -17.2

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			pu	
	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			pu	
	Long Space	cps		pu	pu	
2)	Short Space	cps				
	Long Space	cps		pu	pu	

3)	Short Space Long Space	cps cps	pu	pu
Gamma Ray Calibration Report				
	Serial Number:	GR6		
	Tool Model:	OPEN		
	Performed:	Mon Sep 10 14:29:23 2018		
	Calibrator Value:	150.0	GAPI	
	Background Reading:	0.0	cps	
	Calibrator Reading:	276.0	cps	
	Sensitivity:	0.5500	GAPI/cps	