



NABORS

**COMPLETION
& PRODUCTION
SERVICES CO.**

**DUAL
INDUCTION
LOG**

Company		STRAND ENERGY, L.C.	
Well	HASTINGS #23-1		
Field	DON		
County	HODGEMAN	State	KANSAS
Location:	API # : 15-083-21858-0000 600' FSL & 350' FEL NW - SE - SE - SE		Other Services CDL/CNL PE
Permanent Datum	GROUND LEVEL	Elevation	2391
Log Measured From	KELLY BUSHING 10' A.G.L.		
Drilling Measured From	KELLY BUSHING		
SEC 23 TWP 23S RGE 24W			
Date	12/1/12		
Run Number	ONE		
Depth Driller	4800		
Depth Logger	4801		
Bottom Logged Interval	4799		
Top Log Interval	0		
Casing Driller	8 5/8"@388'		
Casing Logger	389'		
Bit Size	7 7/8"		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 3,200 PPM	
Density / Viscosity	9.3/49		
pH / Fluid Loss	10.5/6.4		
Source of Sample	FLOWLINE		
Rin @ Meas. Temp	1.10@90F		
Rinf @ Meas. Temp	0.83@90F		
Rmc @ Meas. Temp	1.32@90F		
Source of Rinf / Rmc	MEASUREMENT		
Rin @ BHT	0.80@123F		
Time Circulation Stopped	2 HOURS		
Time Logger on Bottom			
Maximum Recorded Temperature	123F		
Equipment Number	4854		
Location	HAYS, KANSAS		
Recorded By	JEFF GRONEMEG		
Witnessed By	EDWARD BREAUX		

<<< Fold Here >>>

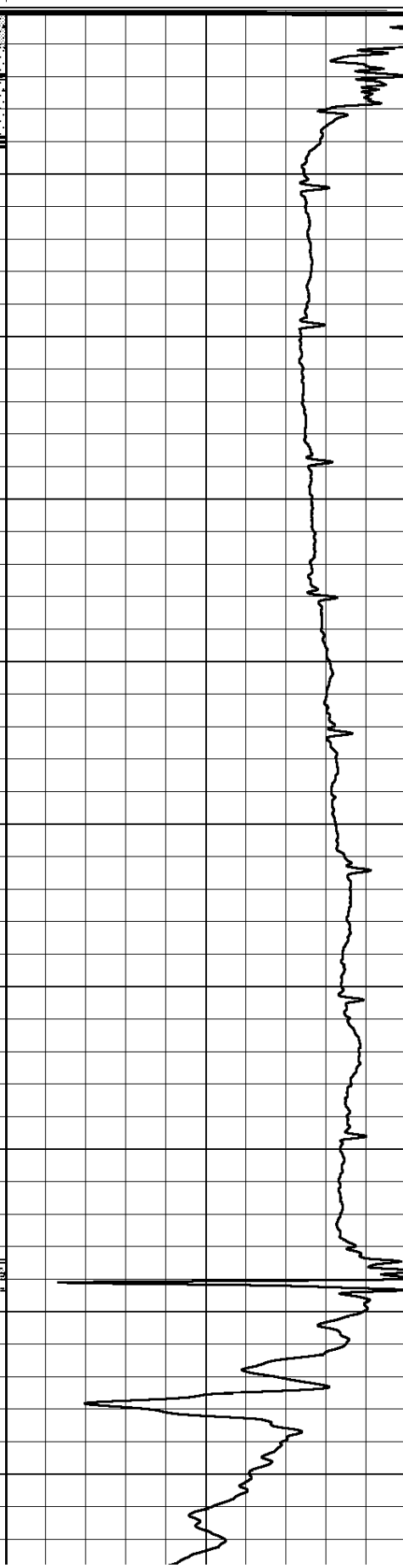
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs,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

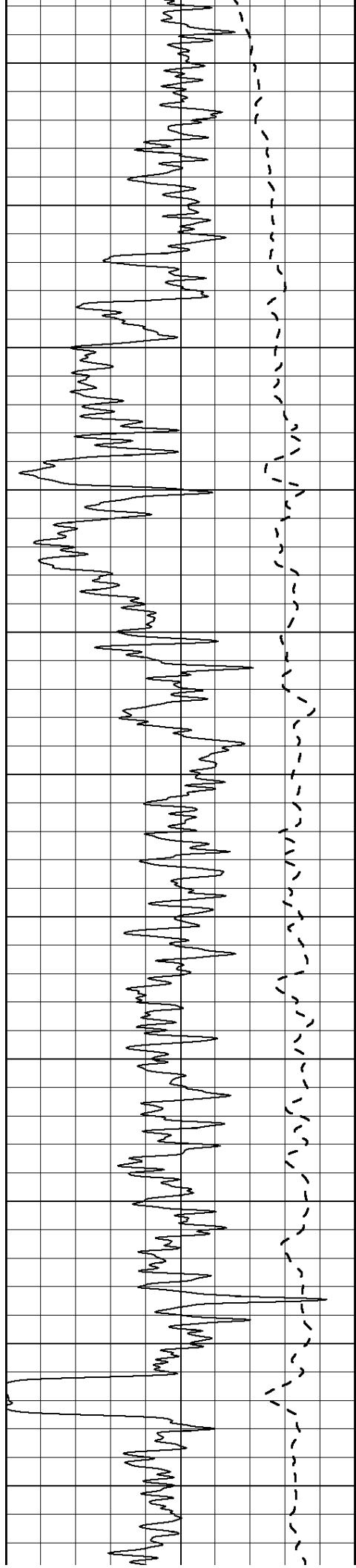
Comments

THANK YOU FOR USING "NABORS" HAYS, KANSAS (785)628-6395
 DIRECTIONS
 JETMORE, KS - 3 MILES SOUTH - 1 MILE WEST - WEST & NORTH INTO

Database File: 010024pe.db
 Dataset Pathname: pass3.2
 Presentation Format: _dil2
 Dataset Creation: Sat Dec 01 09:01:59 2012 by Calc SOC 120430
 Charted by: Depth in Feet scaled 1:600

50	RILD X10 (Ohm-m)	500
50	RLL3 X10 (Ohm-m)	500





500

550

600

650

700

750

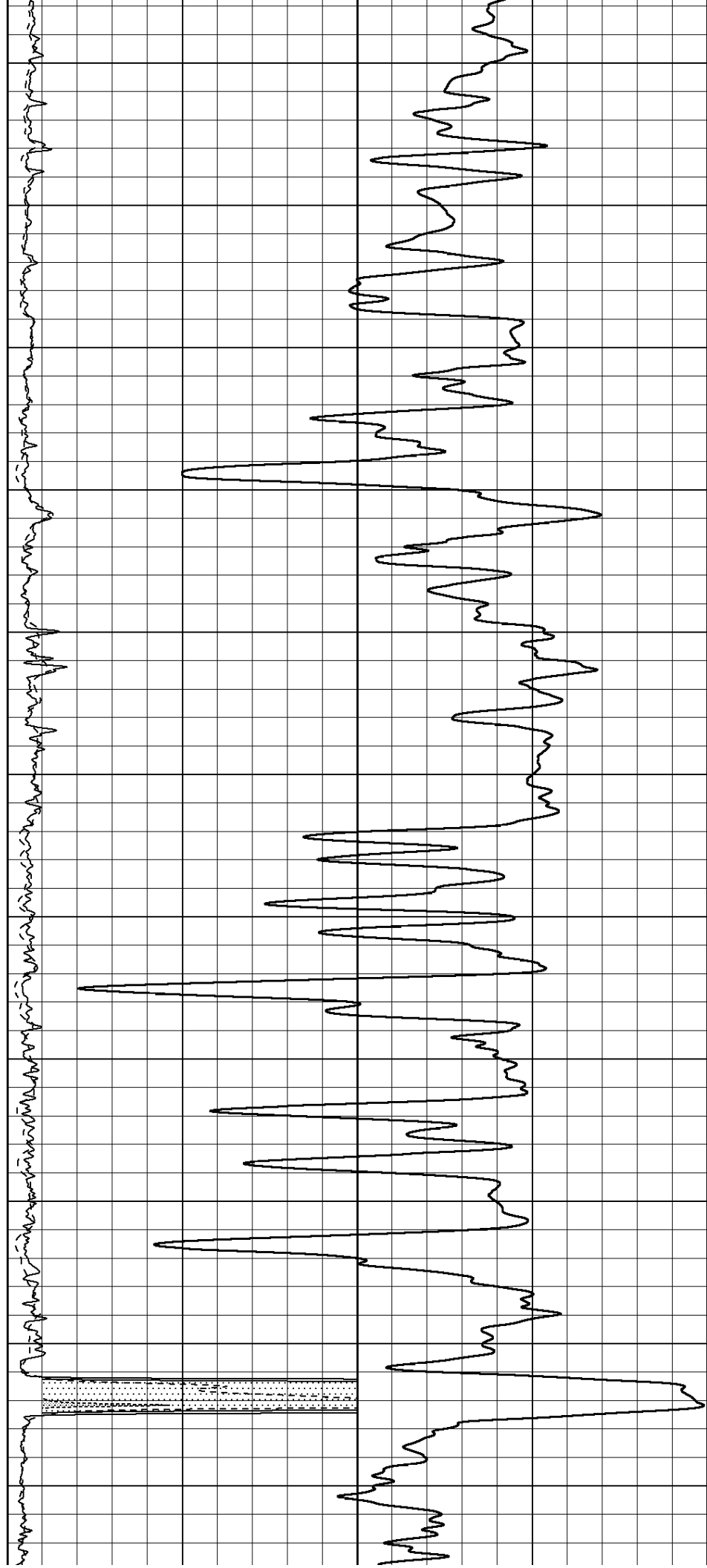
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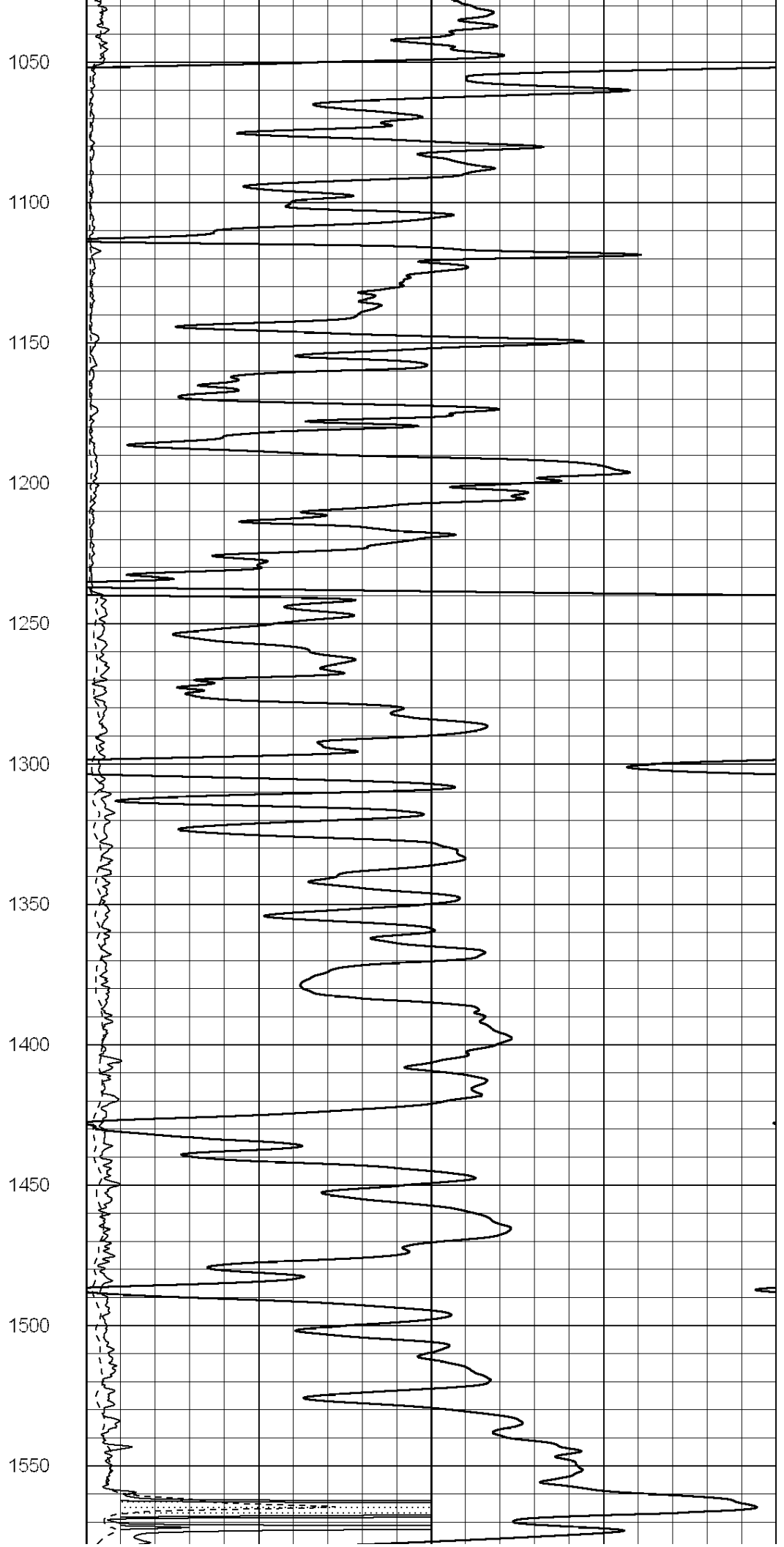
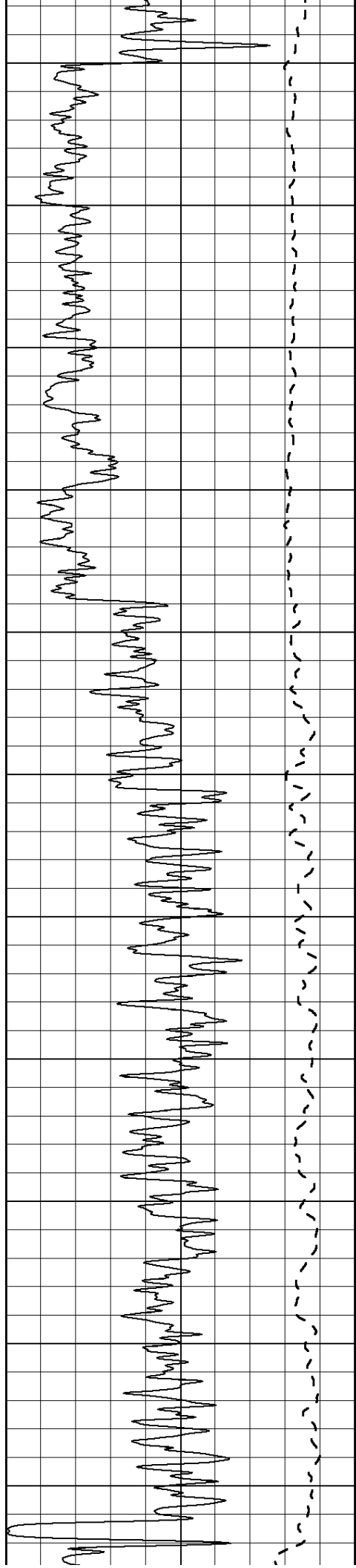
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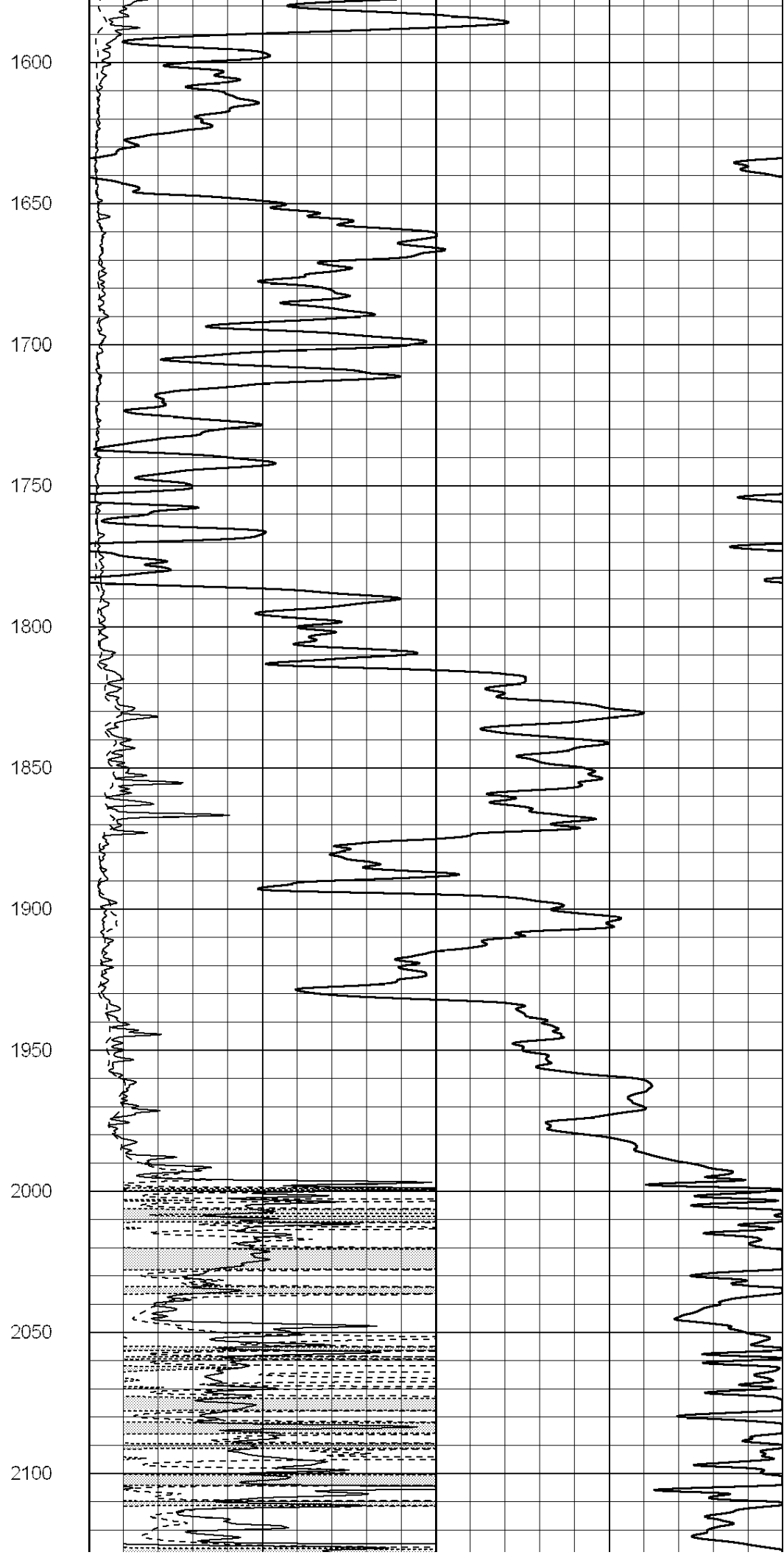
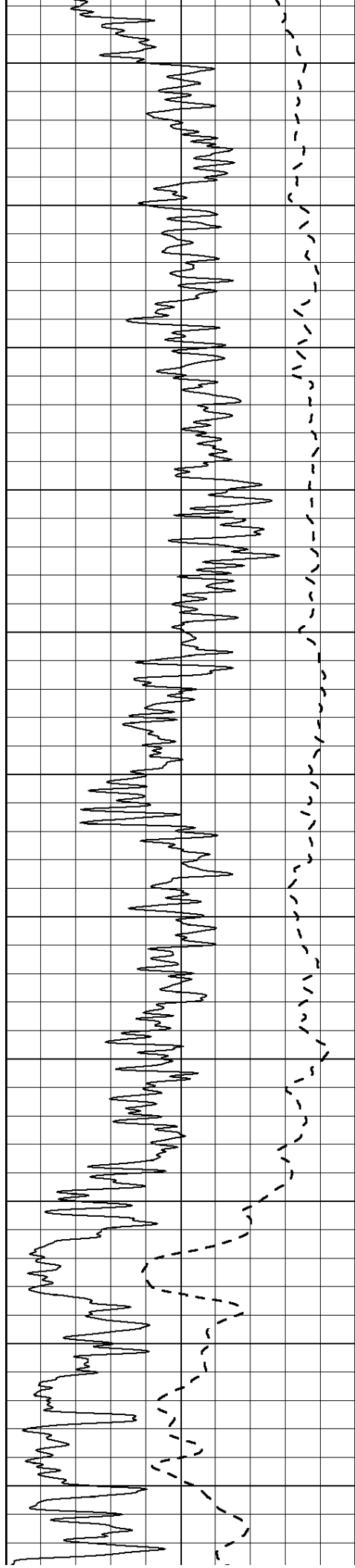
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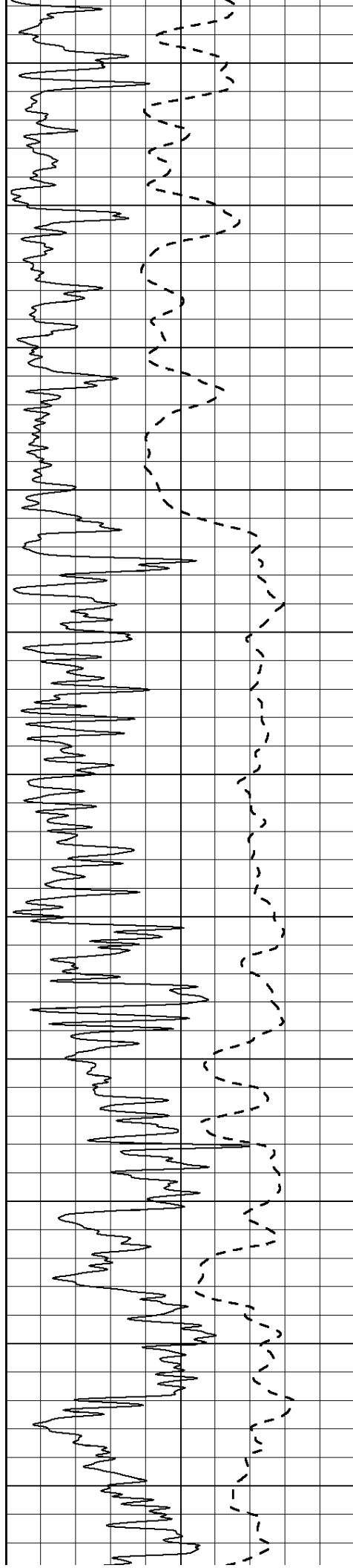
950

1000









2150

2200

2250

2300

2350

2400

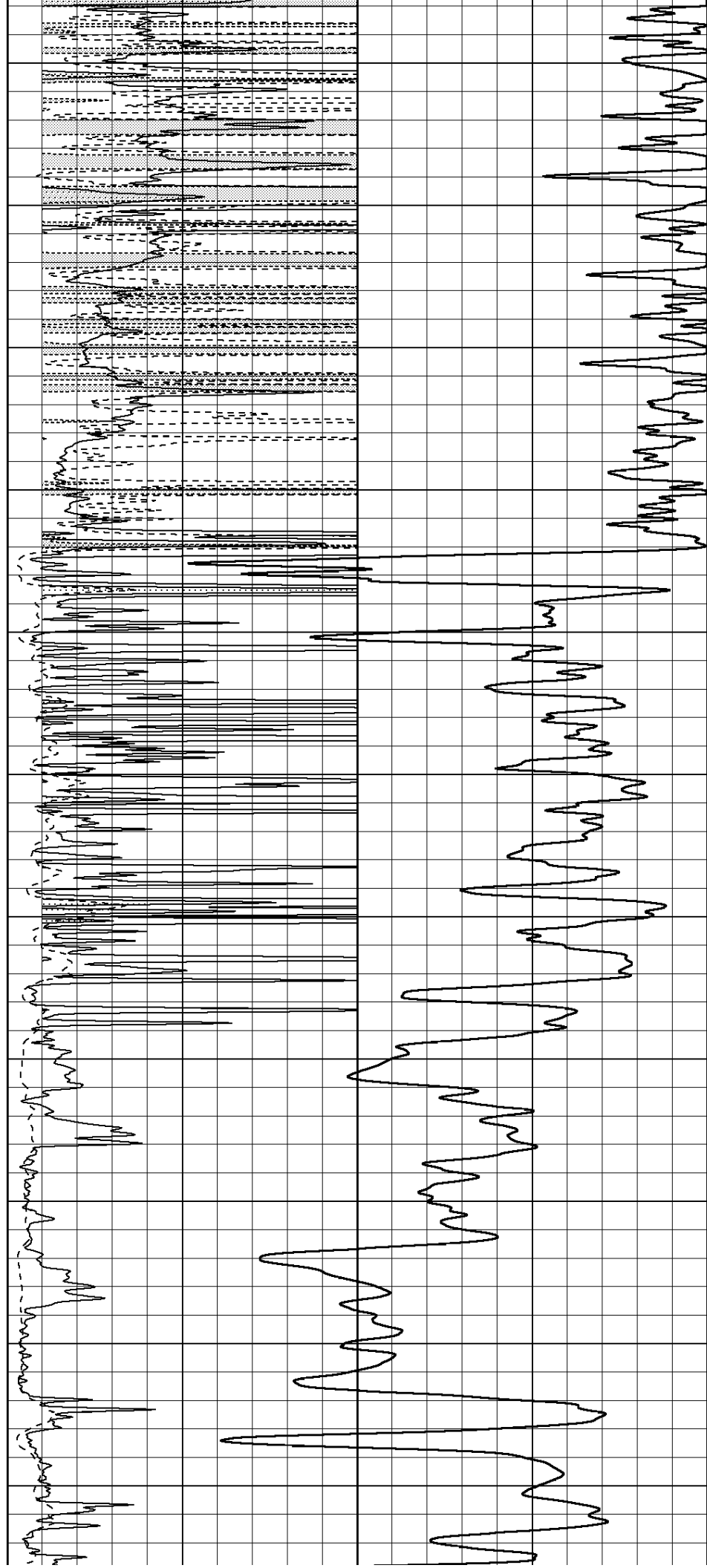
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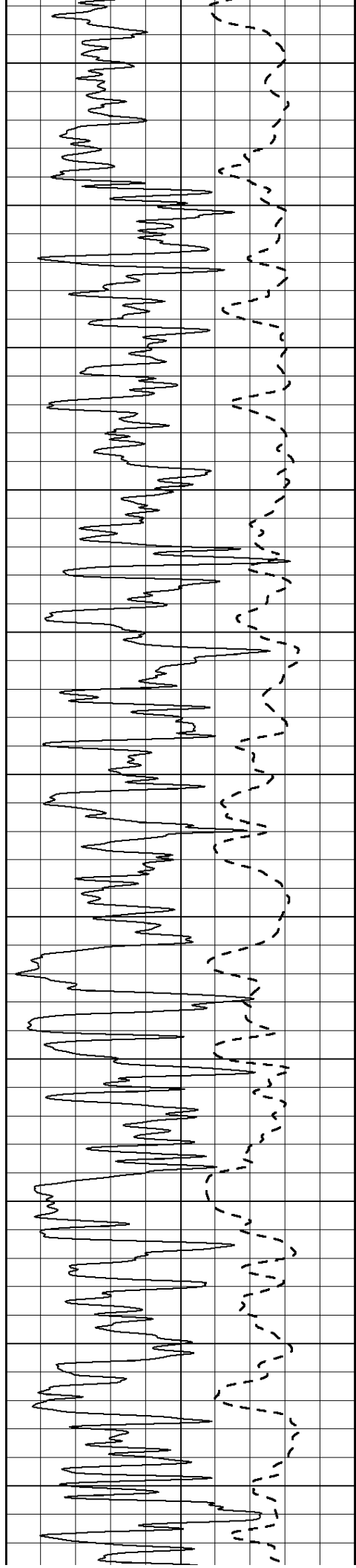
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2550

2600

2650





2700

2750

2800

2850

2900

2950

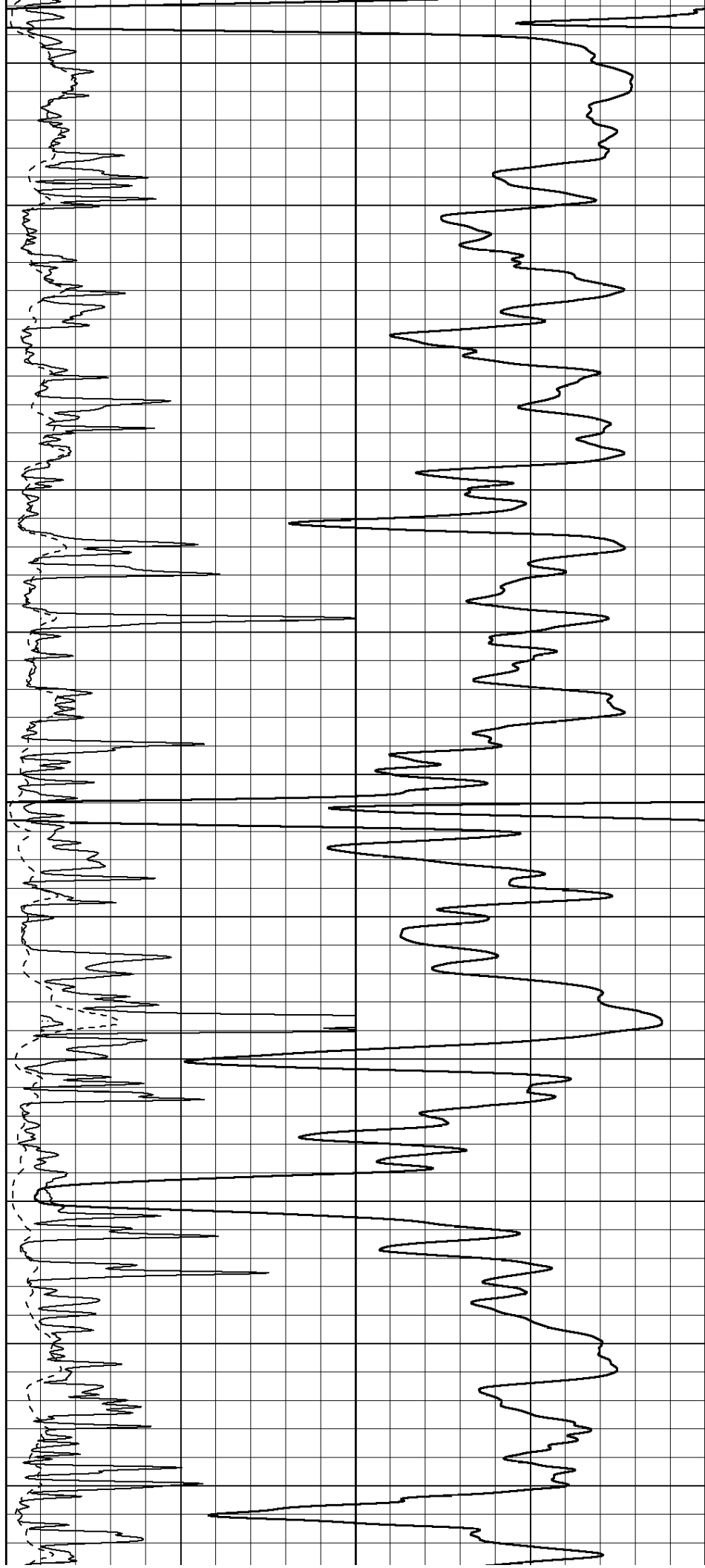
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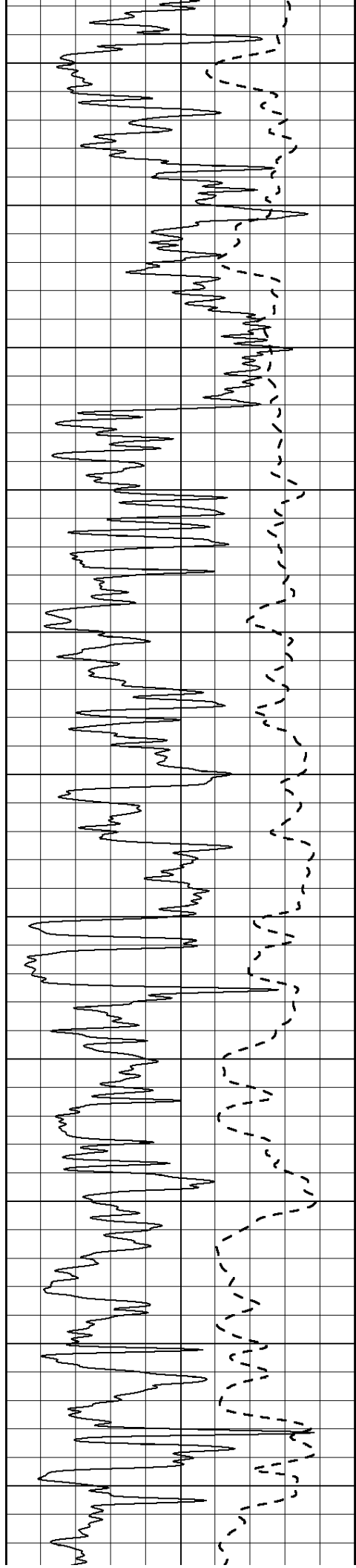
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3100

3150

3200





3250

3300

3350

3400

3450

3500

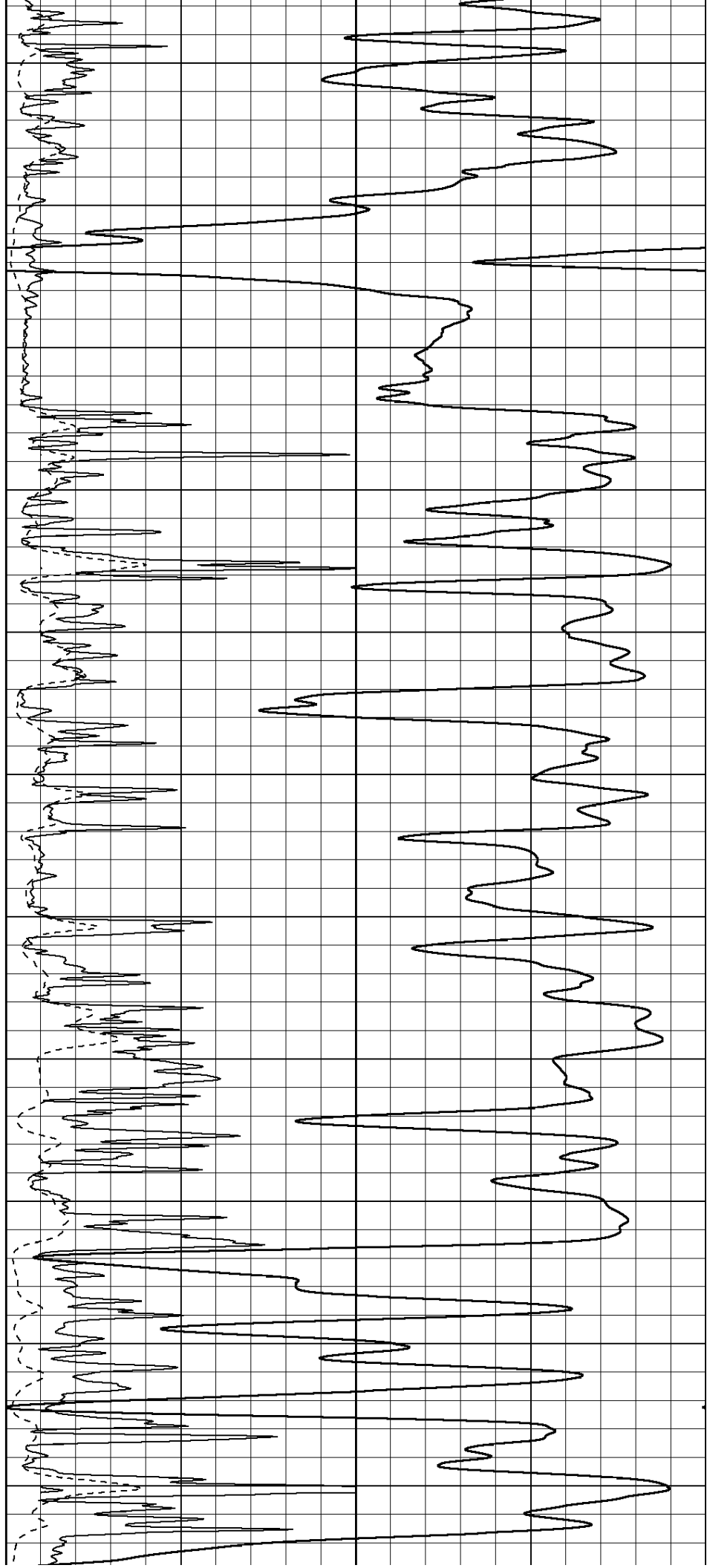
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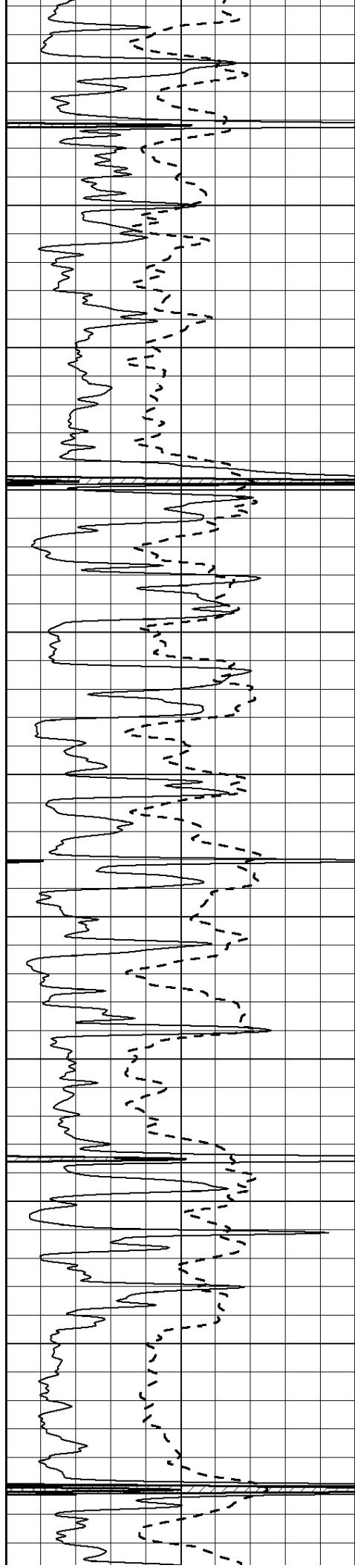
3600

3650

3700

3750





3800

3850

3900

3950

4000

4050

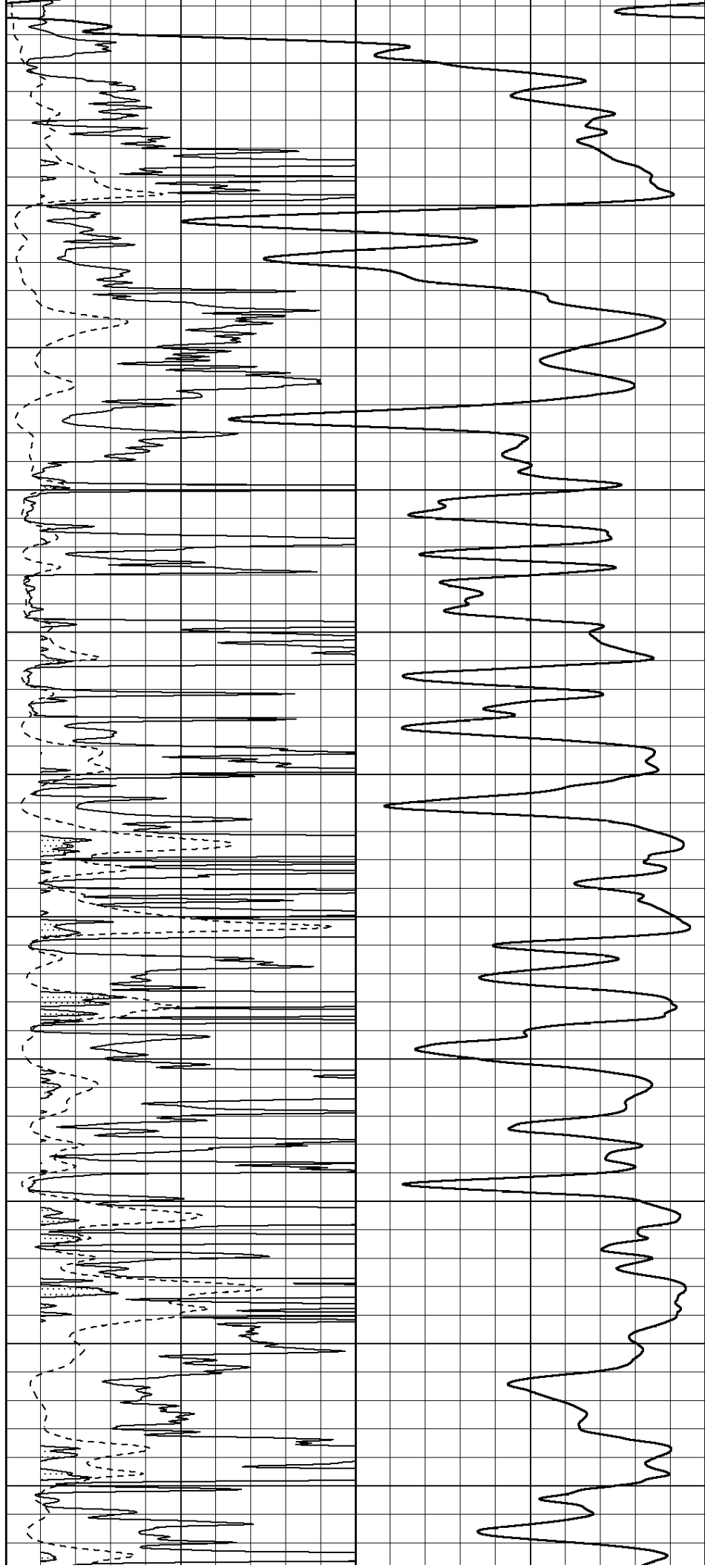
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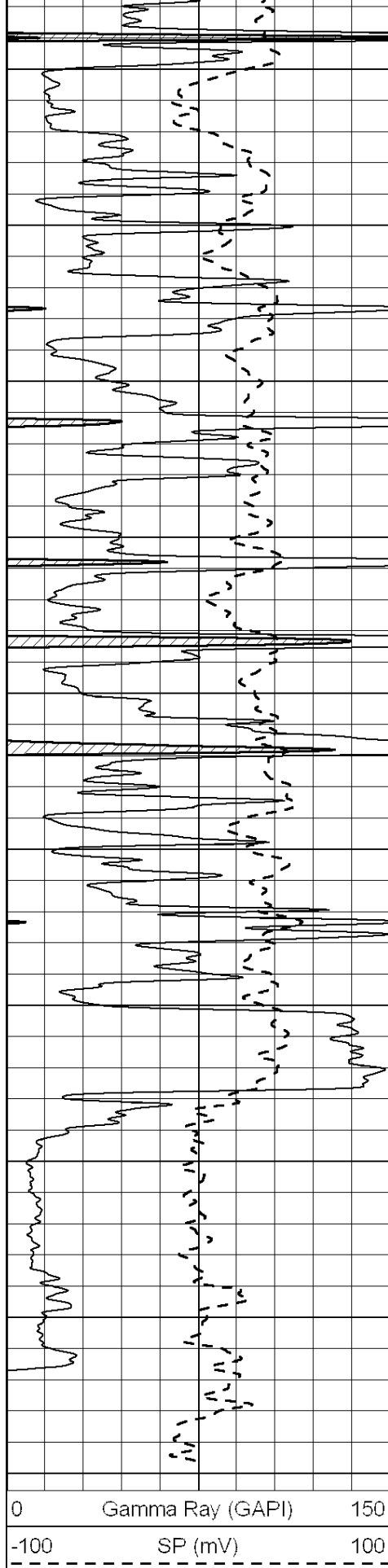
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4200

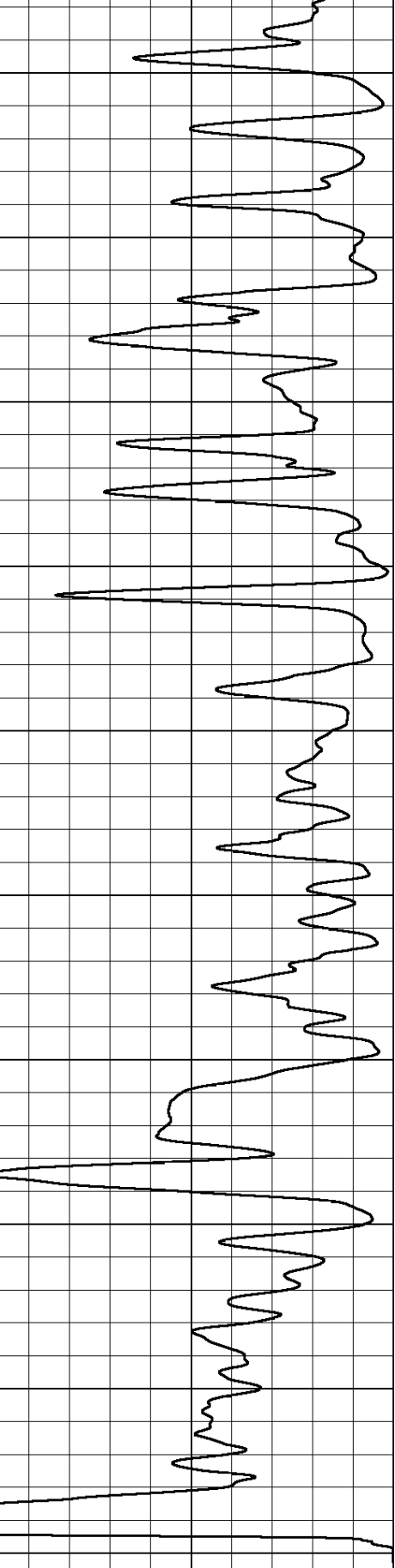
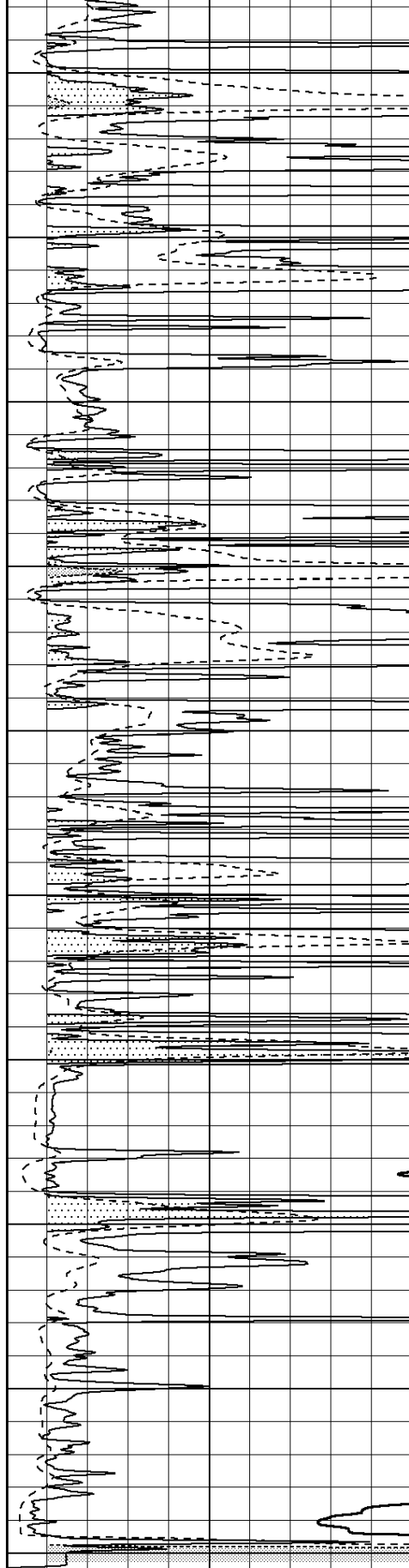
4250

4300





4350
4400
4450
4500
4550
4600
4650
4700
4750
4800



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

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

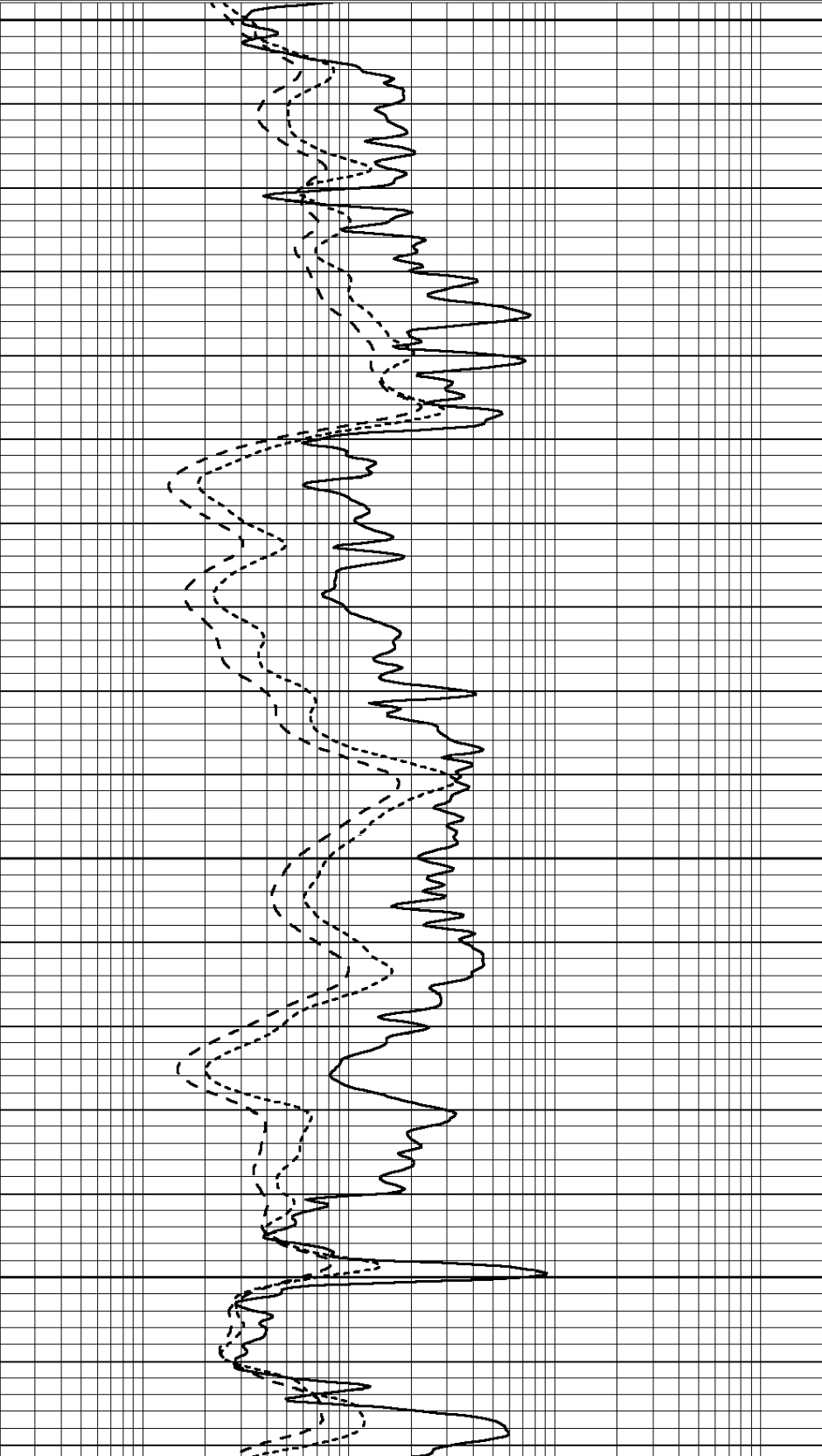
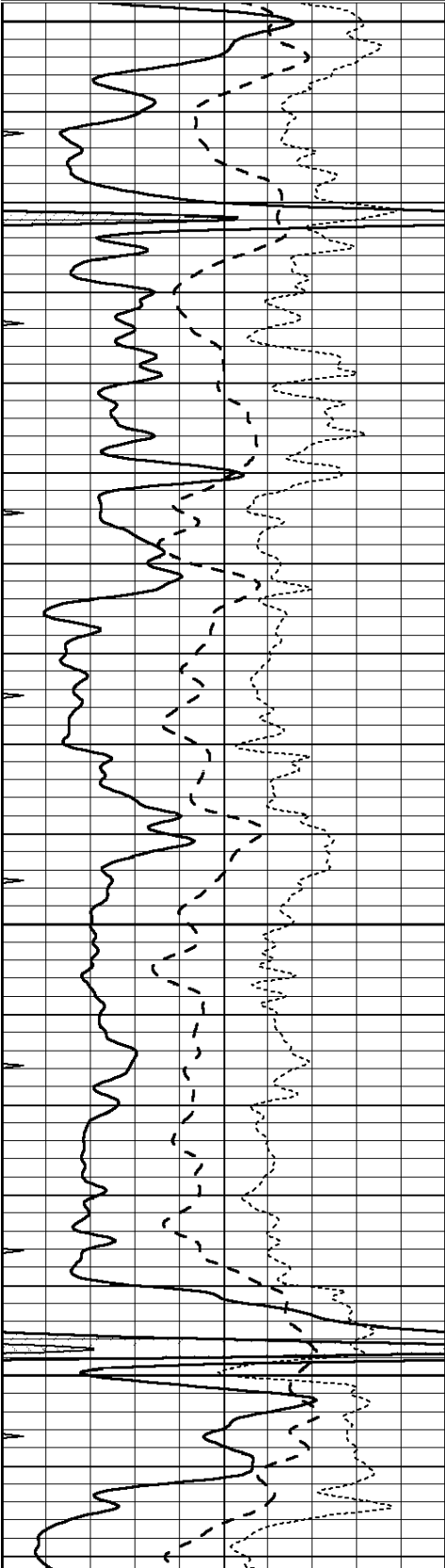
1000 CILD (mmho/m) 0

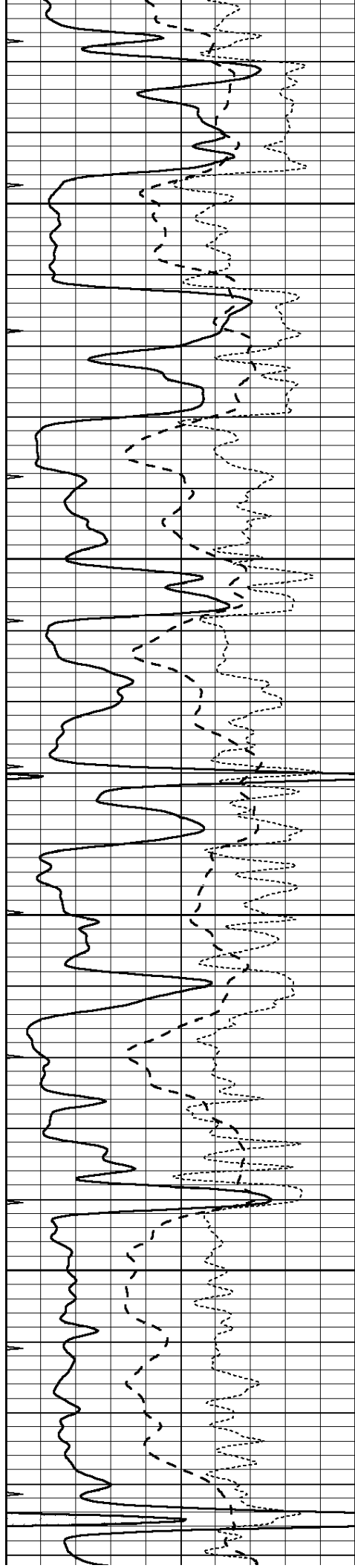
50 RILD X10 (Ohm-m) 500
50 RLL3 X10 (Ohm-m) 500

Database File: 010024pe.db
Dataset Pathname: pass3.1
Presentation Format: _dil
Dataset Creation: Sat Dec 01 08:06:34 2012 by Calc SOC 120430
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



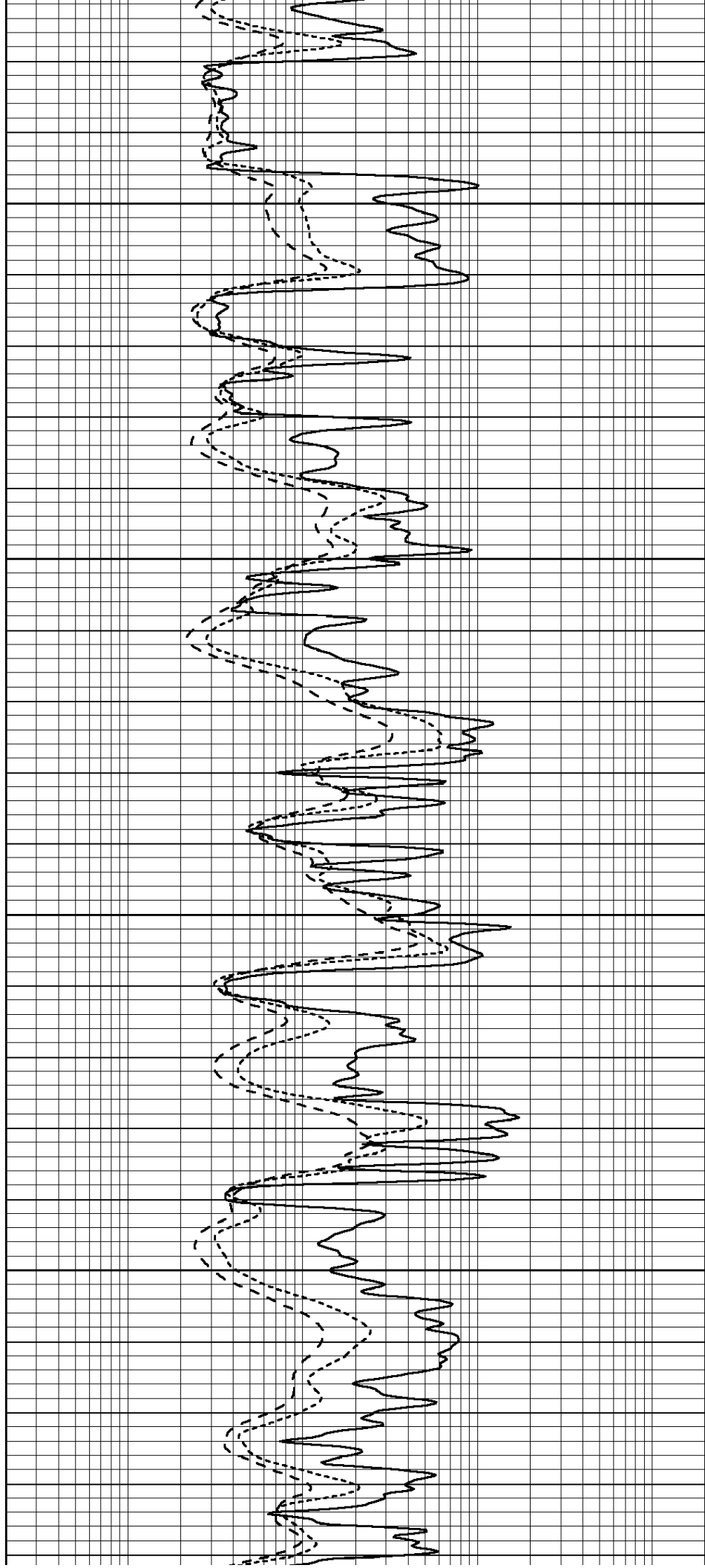


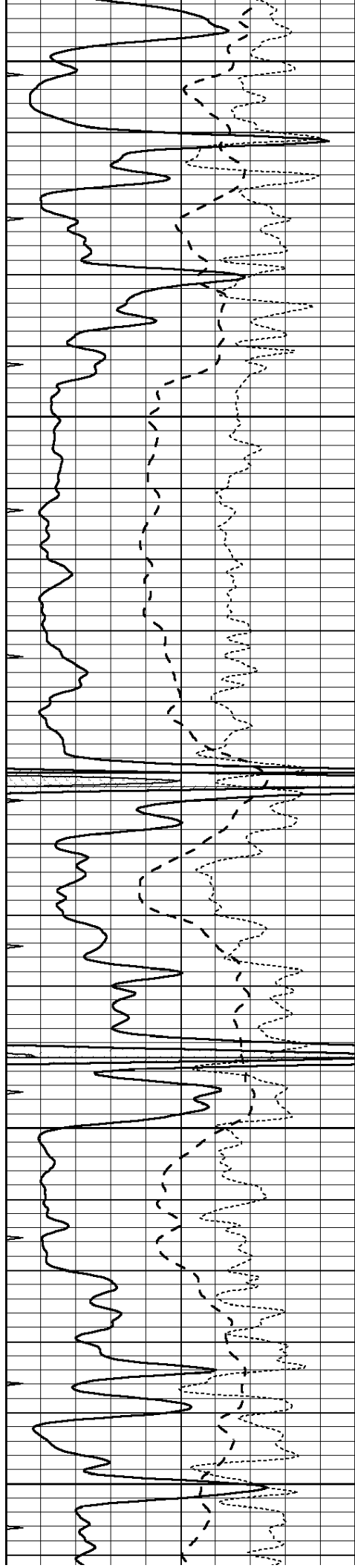
4000

4050

4100

4150





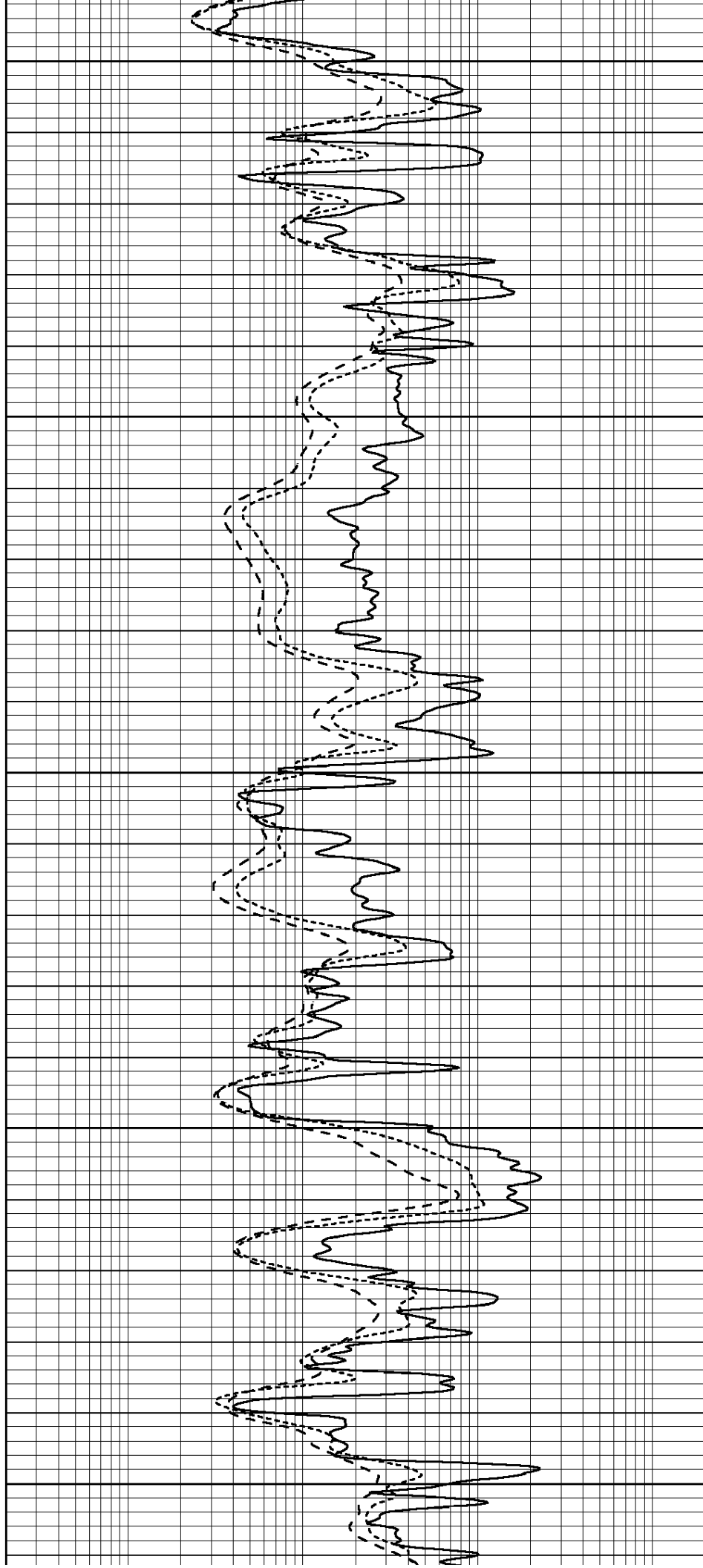
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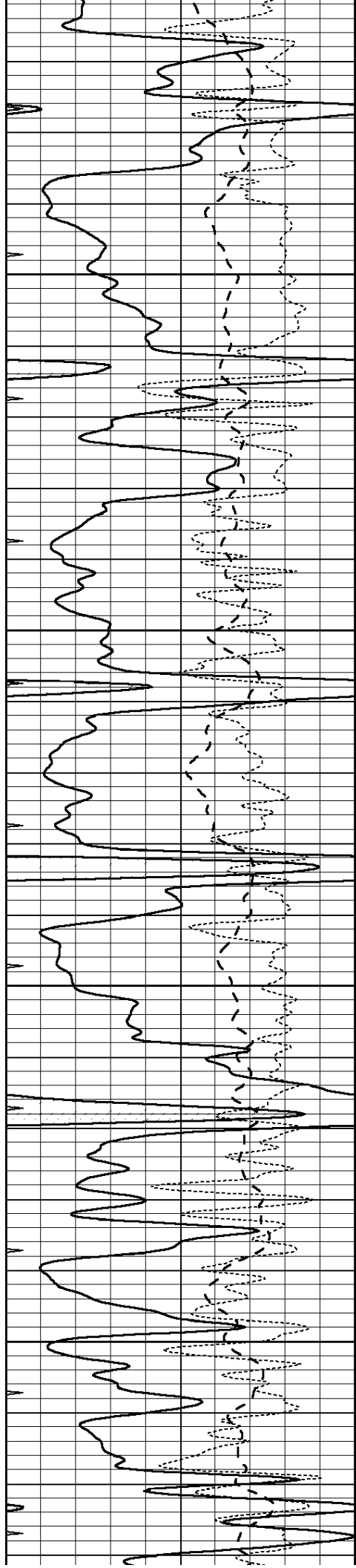
4250

4300

4350

4400



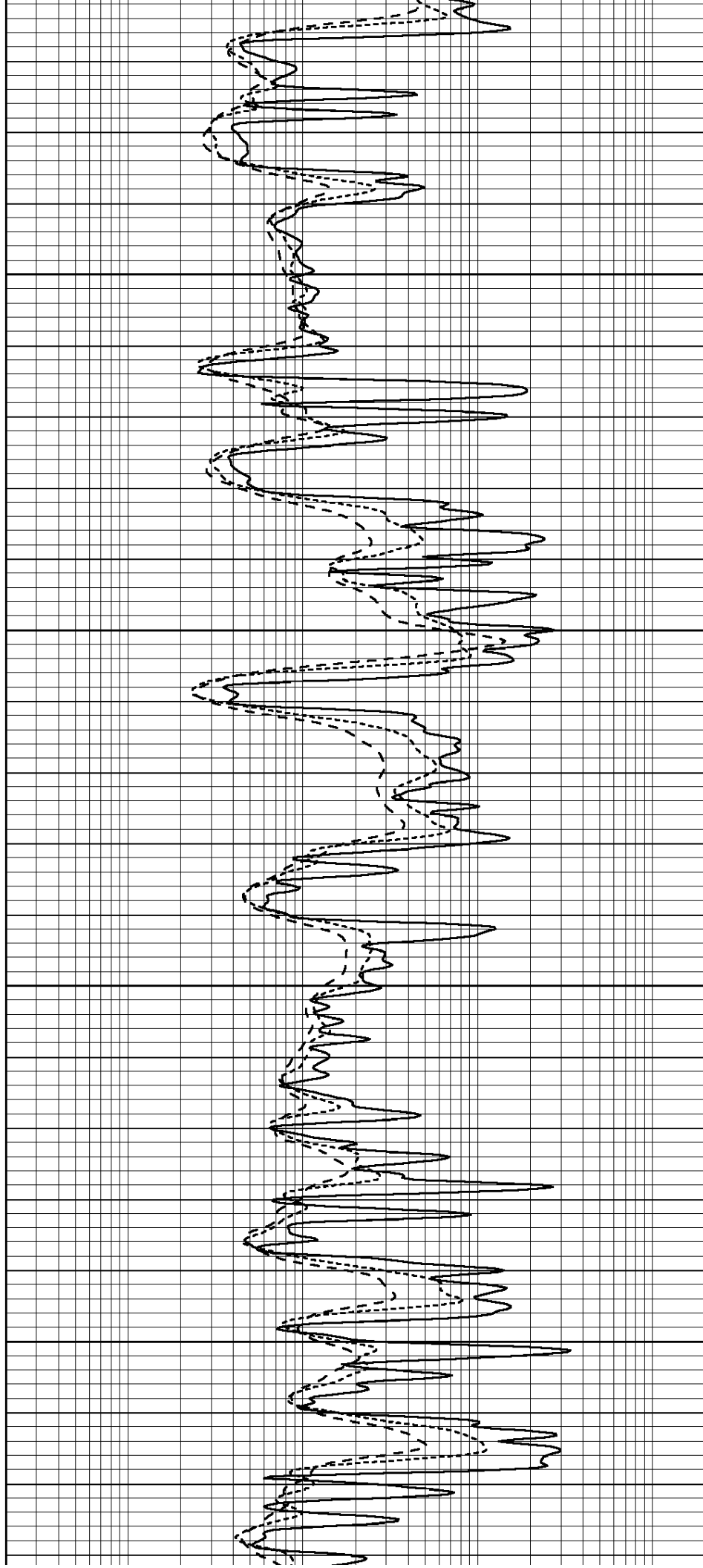


4450

4500

4550

4600





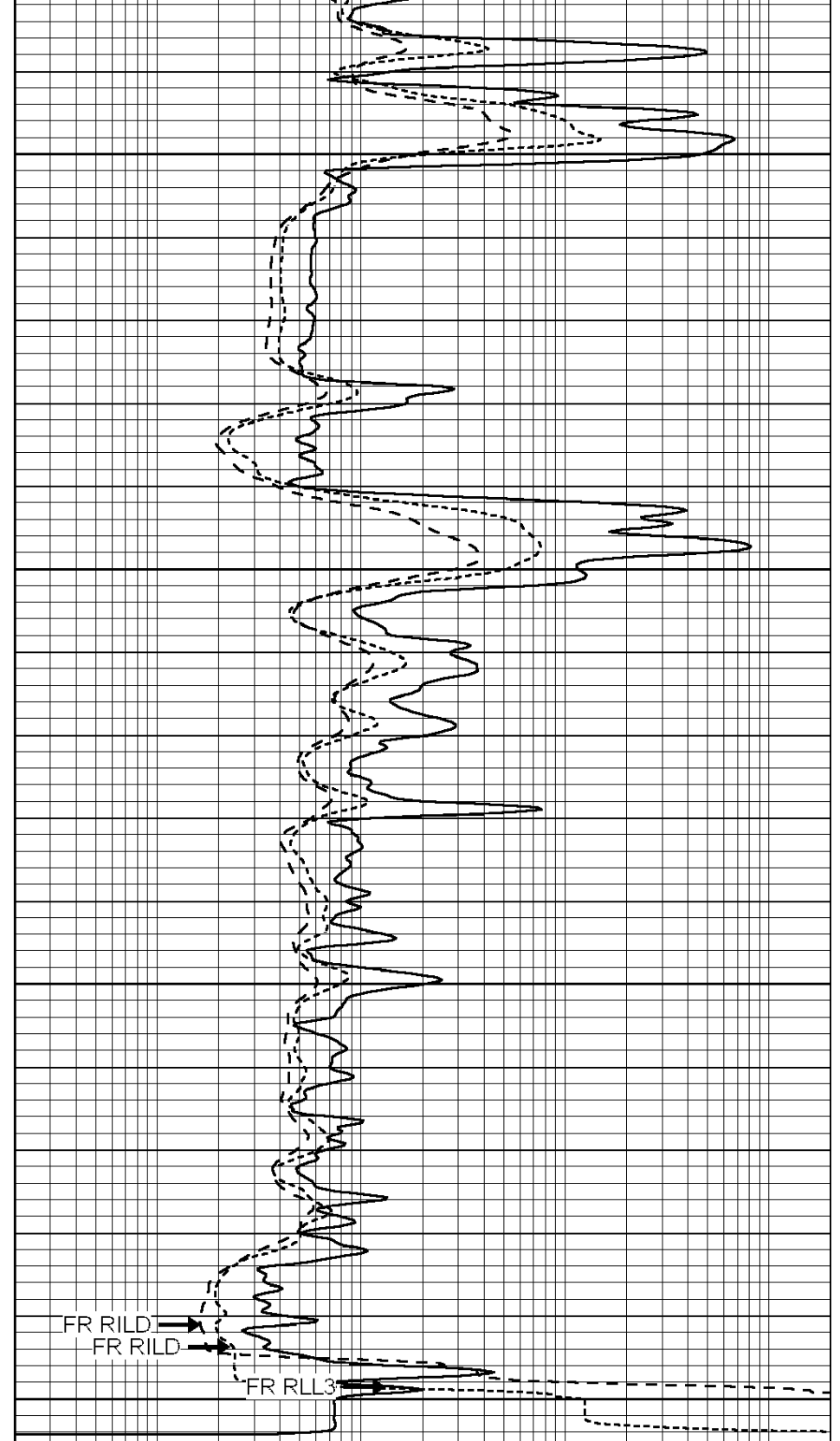
4650

4700

4750

LTD 4801

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



FR RILD

FR RILD

FR RLL3

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

SERVICES CO.

Database File:

010024pe.db

Dataset Pathname:

pass2.1

Presentation Format:

_dil

Dataset Creation:

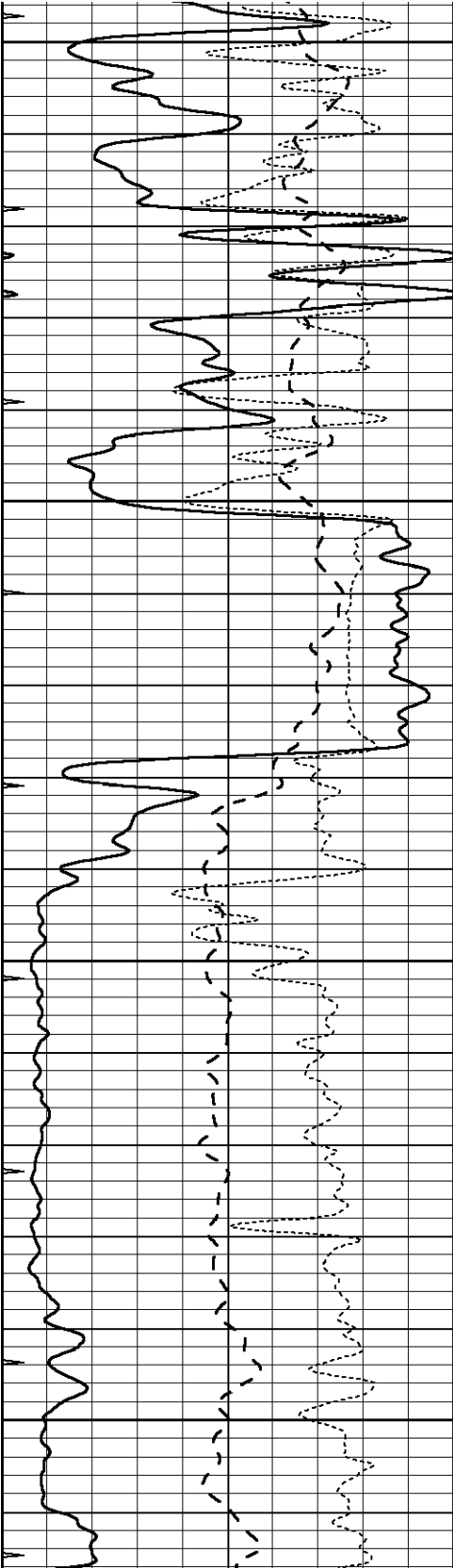
Sat Dec 01 07:13:33 2012 by Calc SOC 120430

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

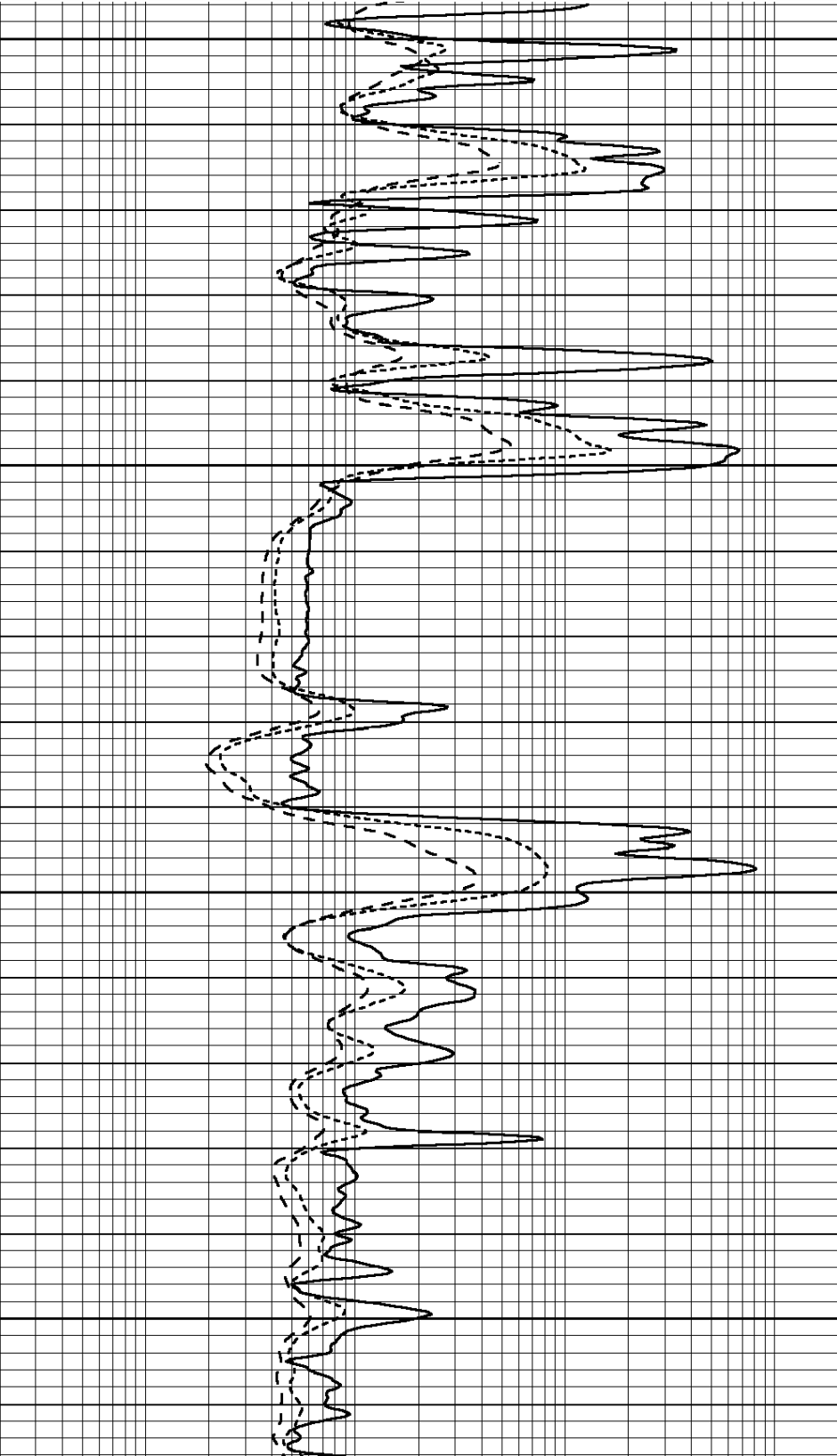


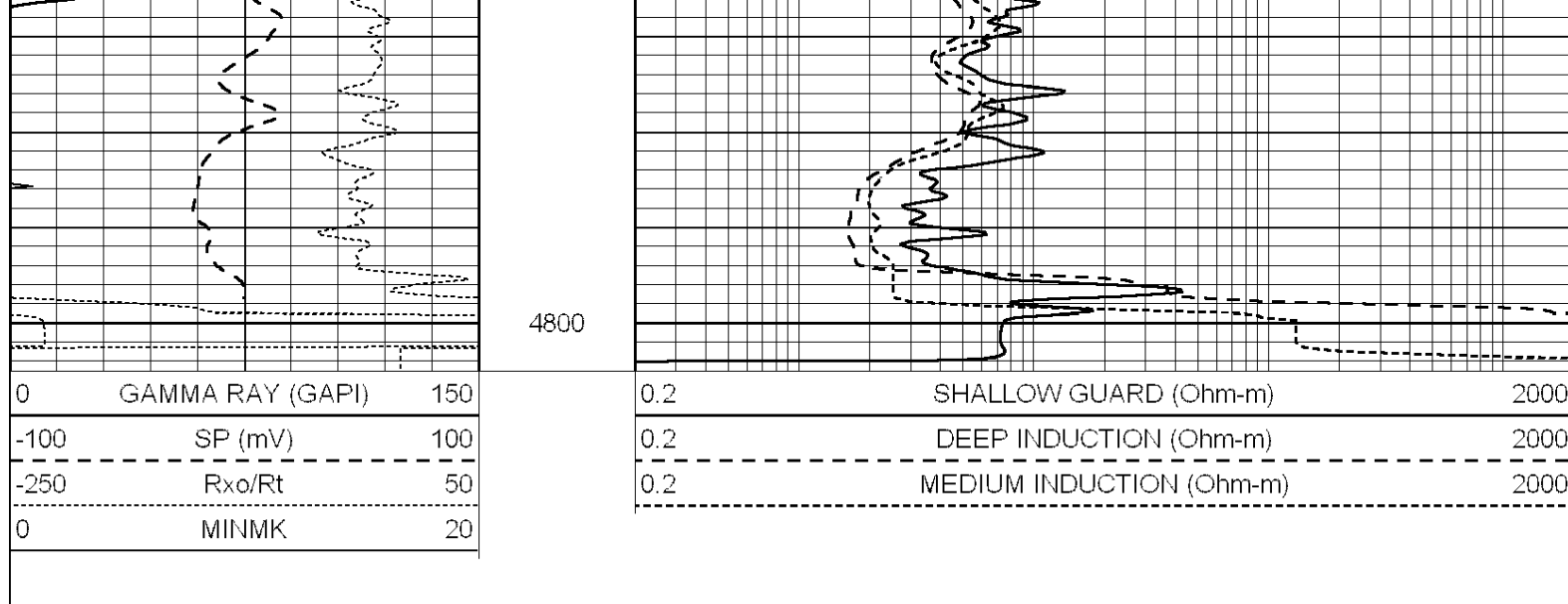
4600

4650

4700

4750





Calibration Report

Database File: 010024pe.db
 Dataset Pathname: pass3.2
 Dataset Creation: Sat Dec 01 09:01:59 2012 by Calc SOC 120430

Dual Induction Calibration Report

Serial-Model: DIL3-GEAR
 Performed: Wed Nov 28 17:31:04 2012

Readings				References			Results	
Loop:	Air	Loop		Air	Loop		m	b
Deep	0.011	0.656	V	0.000	400.000	mmho/m	640.000	10.000
Medium	0.013	0.740	V	0.000	462.500	mmho/m	700.000	3.000
Internal:	Zero	Cal		Zero	Cal		m	b
Deep	0.002	0.645	V	0.000	400.000	mmho/m	622.059	-1.071
Medium	0.007	0.740	V	0.000	462.500	mmho/m	631.393	-4.555

Litho Density Calibration Report

Serial: 006 Model: PRB
 Performed Sun Aug 15 09:48:41 2010

Litho Density Calibration

	Background	Magnesium	Aluminum	Sandstone	
Window 1	1686.6	11612.8	3932.0	12718.8	cps
Window 2	1531.4	9204.7	3267.8	9851.9	cps
Window 3	1198.3	4733.6	1952.5	4920.6	cps
Window 4	317.3	321.2	325.9	303.6	cps
Long Space	0.0	7673.3	1736.4	8320.4	cps
Short Space	1.7	2548.5	1657.2	2628.8	cps
Rho		1.7100	2.5900	1.3800	g/cc
Pe			2.5700	1.5500	
Rib Angle	: 43.8	Rib Slope	: 0.961	Density/Spine Ratio	: 0.569
Spine Angle	: 73.8	Spine Slope	: 3.453	Spine Intercept	: -18.1

Caliper

	Readings	Reference
Low Ref	3.5	6.4
High Ref	5.5	15.0

Gain: 4.5

Offset: -9.2

Compensated Neutron Calibration Report

Serial Number: 070808
Tool Model: Probe

PRE-SURVEY VERIFICATION

Detector	Readings	Measured	Target
Short Space	cps		
Long Space	cps	pu	pu

POST-SURVEY VERIFICATION

Detector	Readings	Measured	Target
Short Space	cps		
Long Space	cps	pu	pu

Gamma Ray Calibration Report

Serial Number: 070559
Tool Model: OPEN_GR
Performed: Wed Nov 28 18:32:17 2012

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 1.0 cps

Sensitivity: 0.3000 GAPI/cps