



PHOENIX SURVEYS, INC.

**COMPENSATED DENSITY
COMPENSATED NEUTRON
DUAL INDUCTION**

6801706807 MHELED

Company		Petroleum Development Corporation	
Well		State 12-4	
Field		Wattenberg	
County		Weld	State Colorado
Location		1940' FNL & 652' FWL SW NW Sec - 4, Twp - 5N, Rge - 63W	
Other Services		None	
Elevation		Elevation 4760	
KB 4770 D.F. 4769 G.L. 4760			
Measurement Datum		GL	
Measured From		KB	
Measuring Measured From		KB	
Date		August 29, 2003	
Number		1	
Driller		7007	
Logger		7007	
Log Interval		7007	
Casing		409	
Drilling Driller		409	
Drilling Logger		7-7/8"	
Fluid in Hole		Chem Gel	
Viscosity / Viscosity		9.2 / 8.0	
Fluid Loss		9.0 / 8.0	
Source of Sample		Flowline	
Meas. Temp		3.30 @ 82° F	
Meas. Temp		2.47 @ 82° F	
Meas. Temp		4.12 @ 82° F	
Meas. Temp		Meas / Calc	
Meas. Temp		1.36 @ 199° F	
Circulation Stopped		1300	
Logger on Bottom		2100	
Minimum Recorded Temperature		22° F	
Instrument Number		4057	
Location		Brighton, CO	
Recorded By		Reynolds/Schuman	
Checked By		Dik Olsen	

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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.

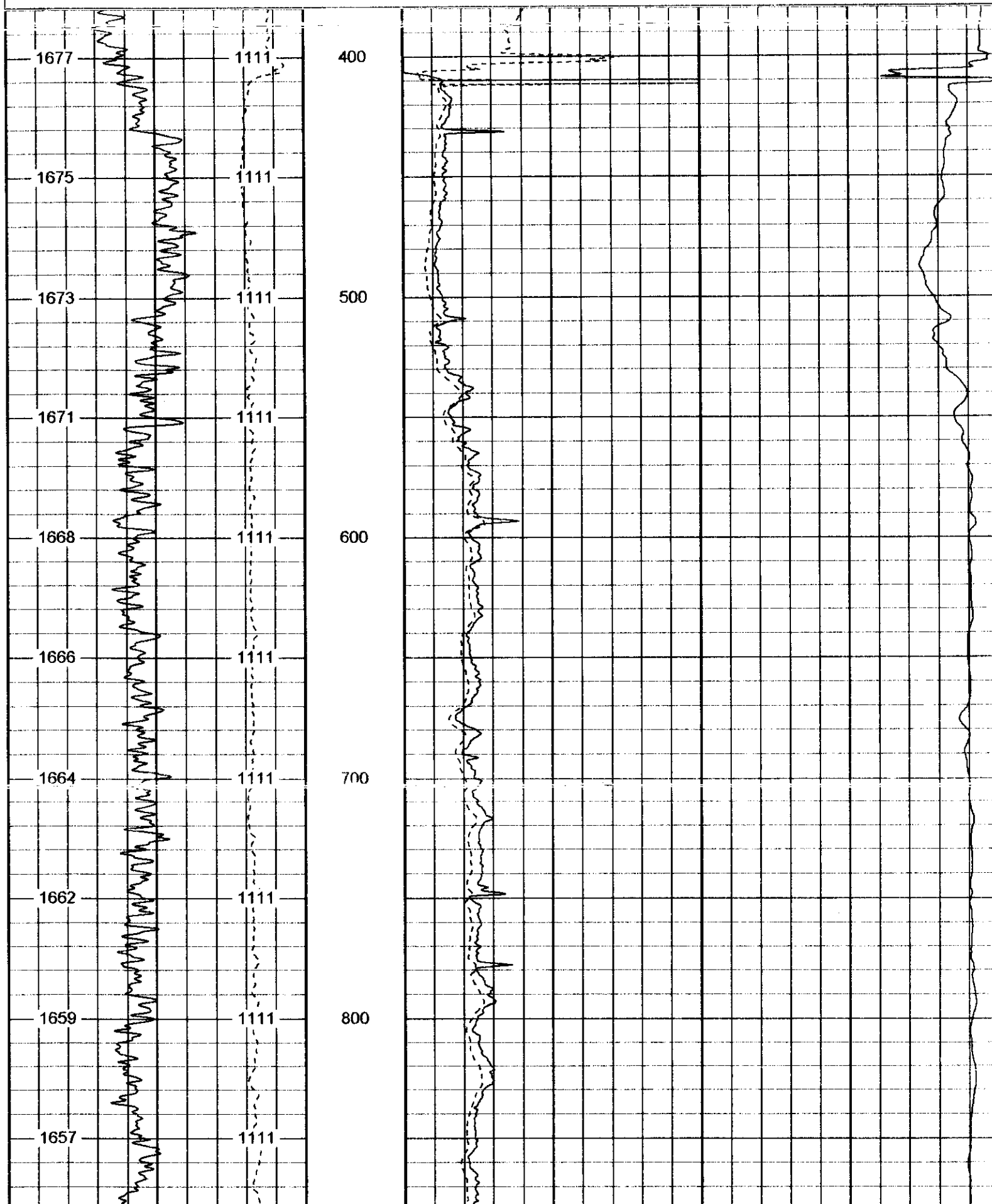
Comments

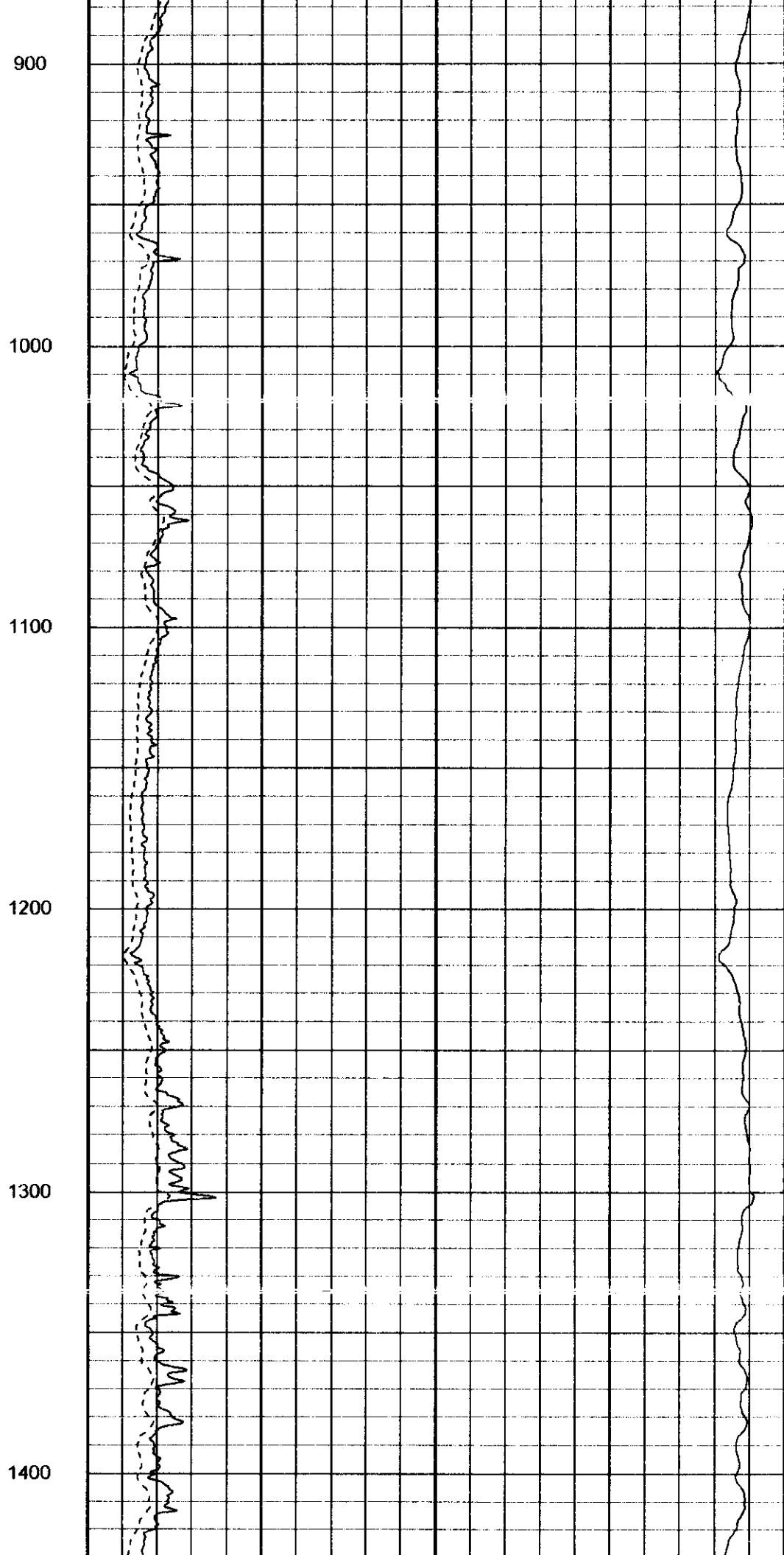
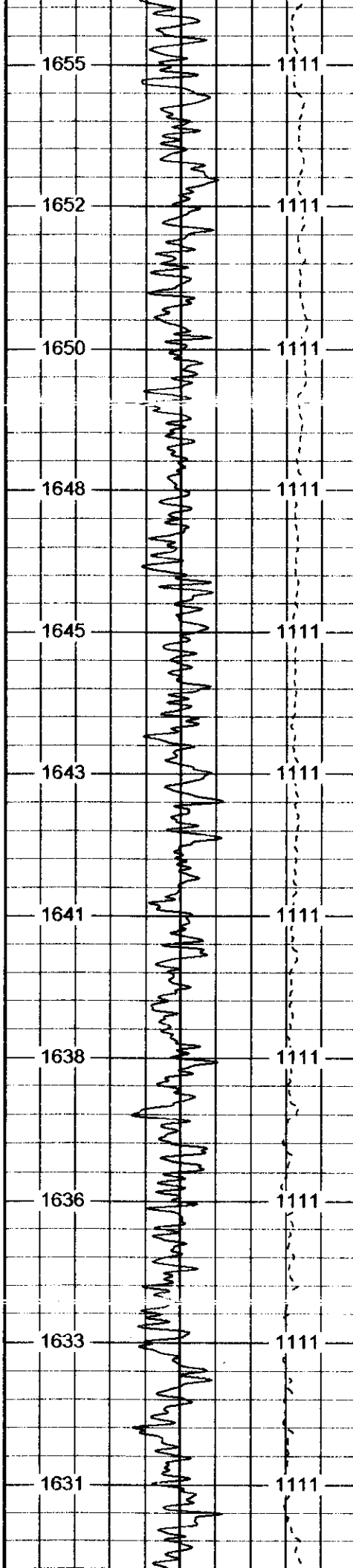
Annular volume is calculated for 4-1/2" casing.
Caza Drilling Rig 17.
Thank you for using Phoenix Surveys.
API 05-123-20927-00

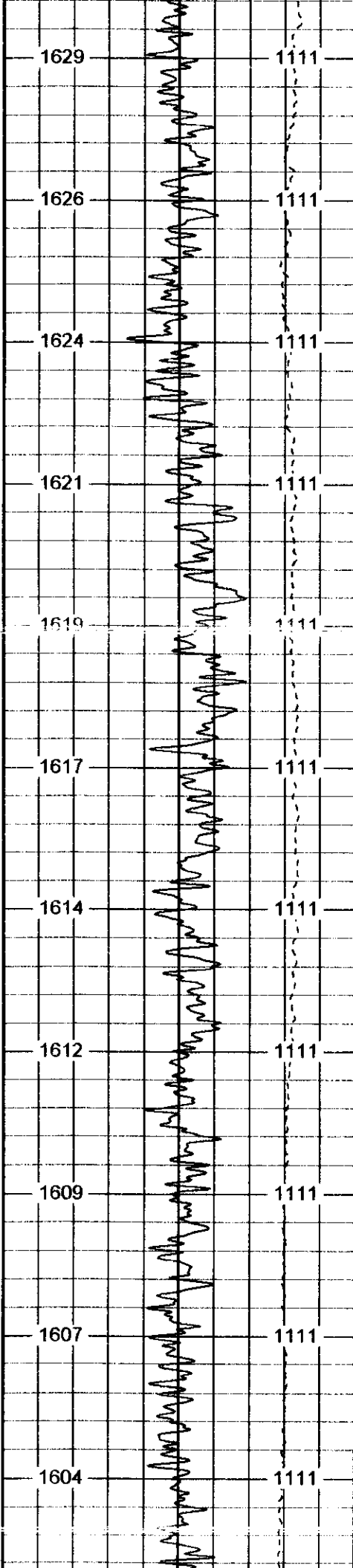
Charted by: Depth in Feet scaled 1:665

0	Gamma Ray (GAPI)	200
6	Caliper (in)	16
0	Spontaneous Potential (mV)	200

0	Deep Resistivity (Ohm-m)	50	1000	CILD (mmho-m)	0
0	Shallow Resistivity (Ohm-m)	50			







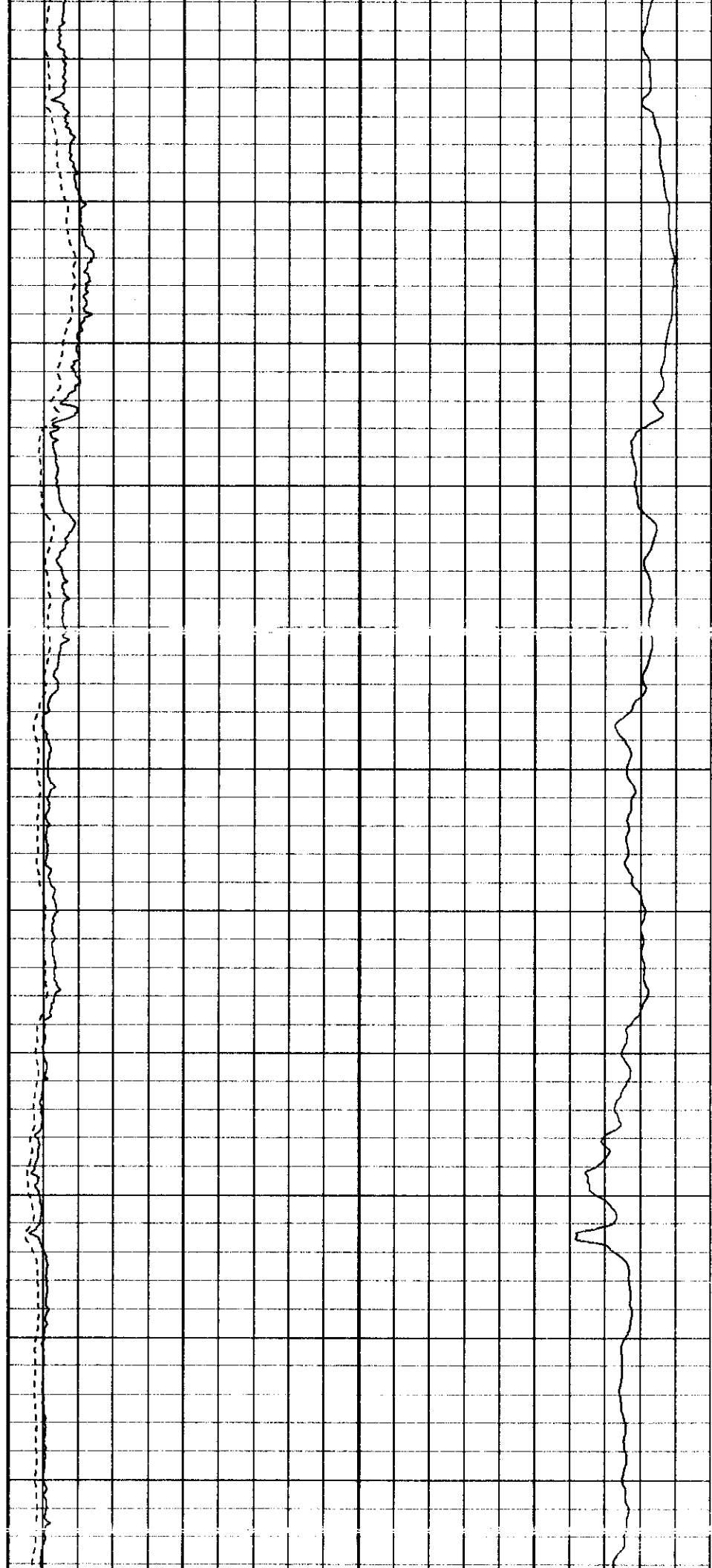
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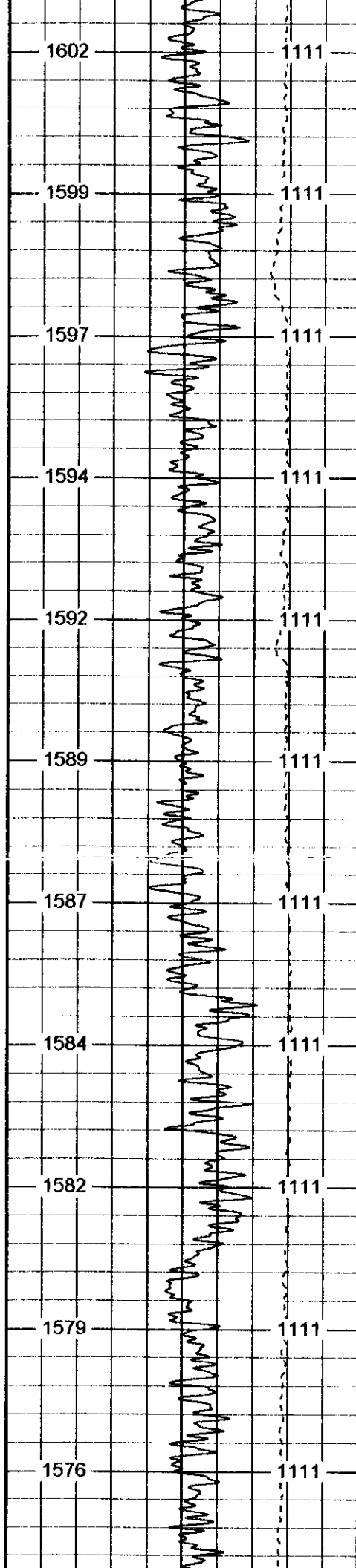
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1700

1800

1900





2000

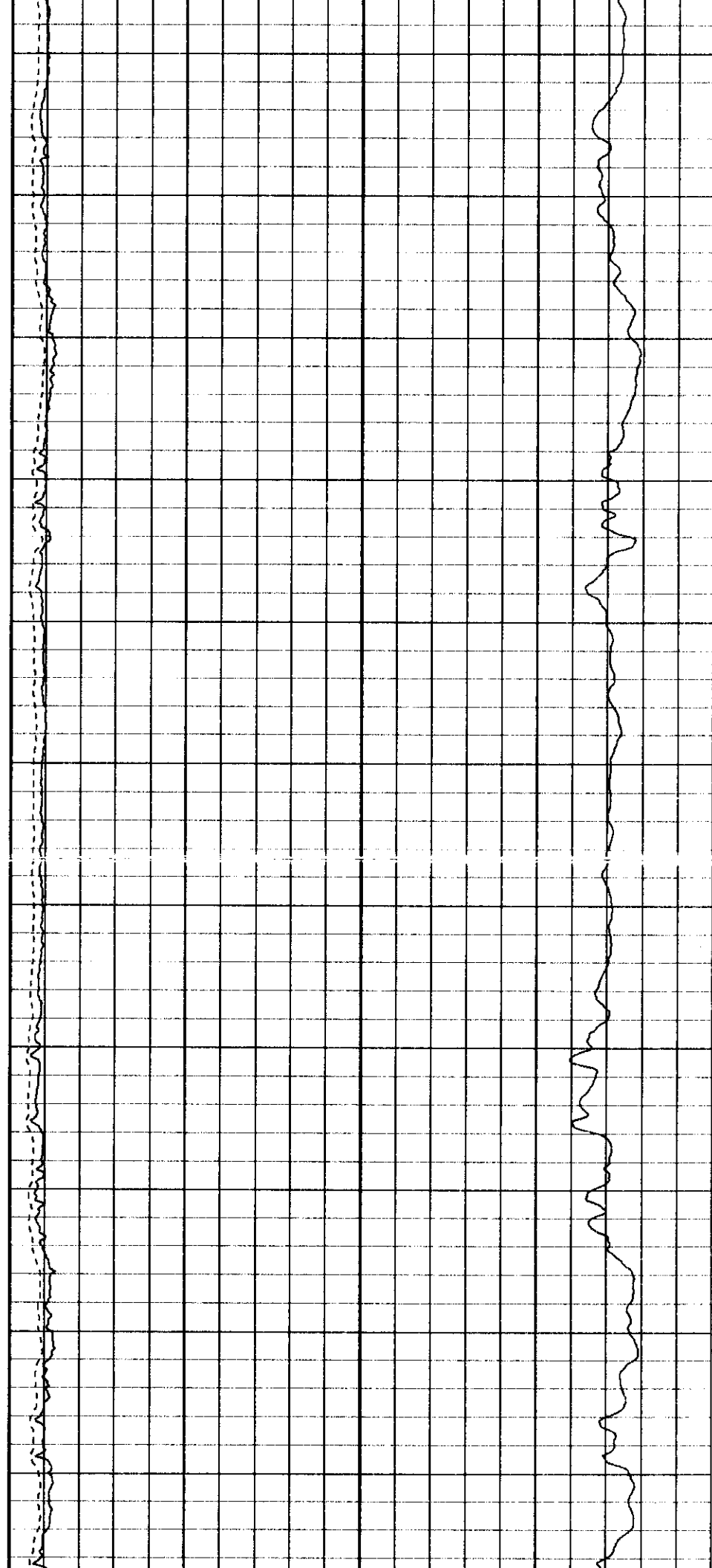
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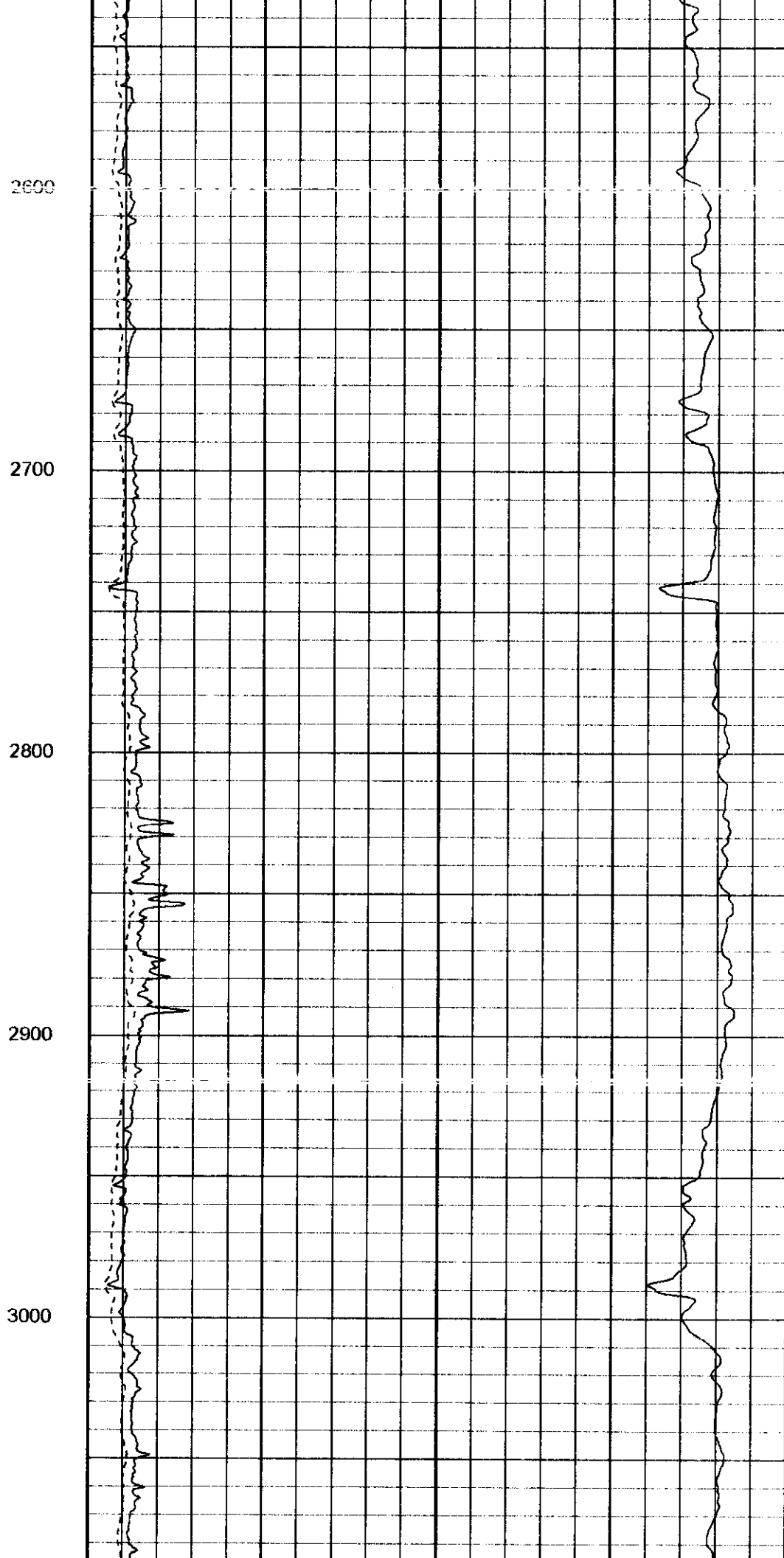
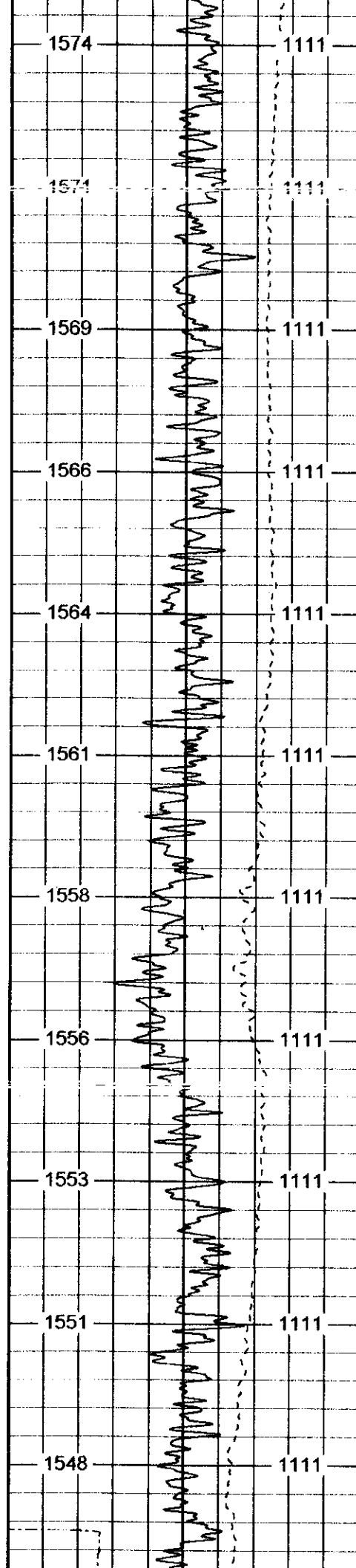
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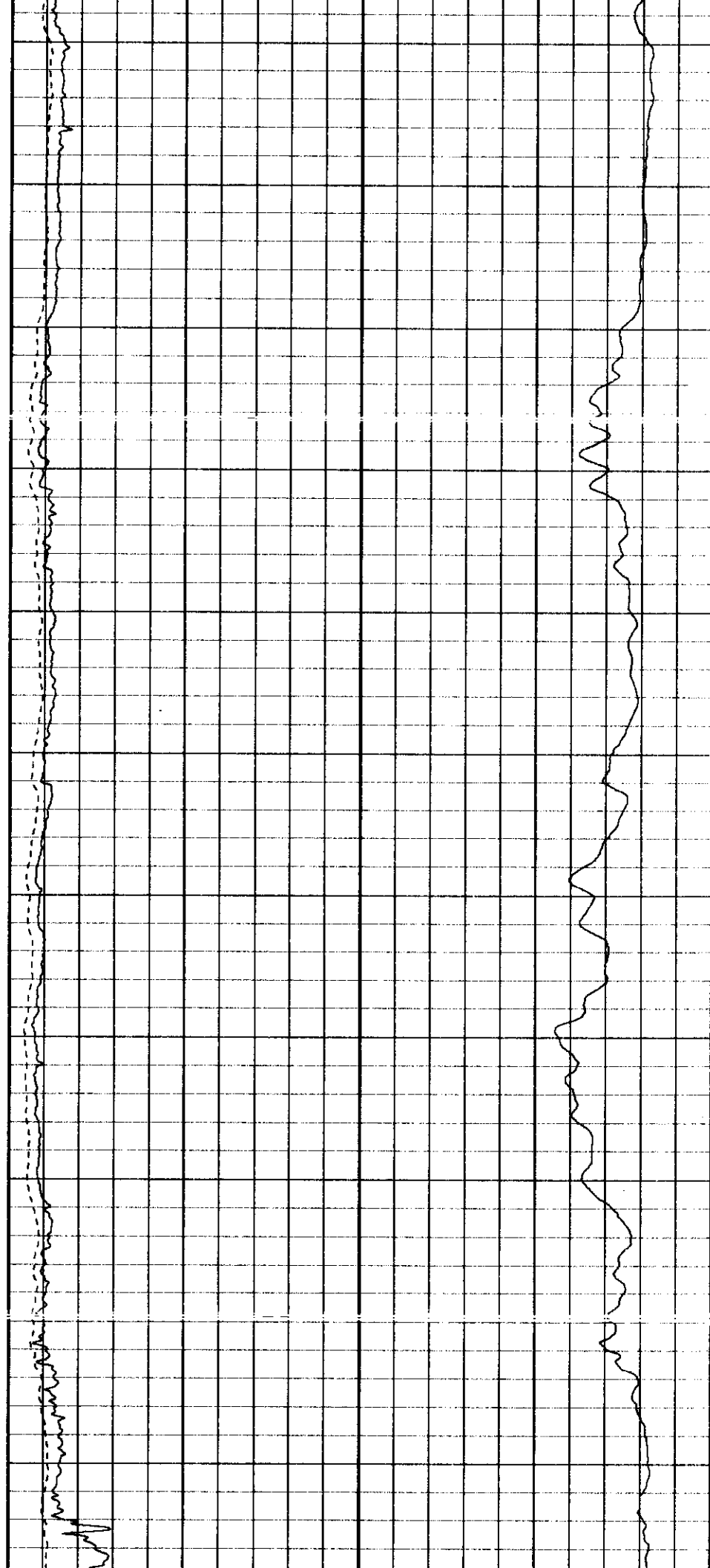
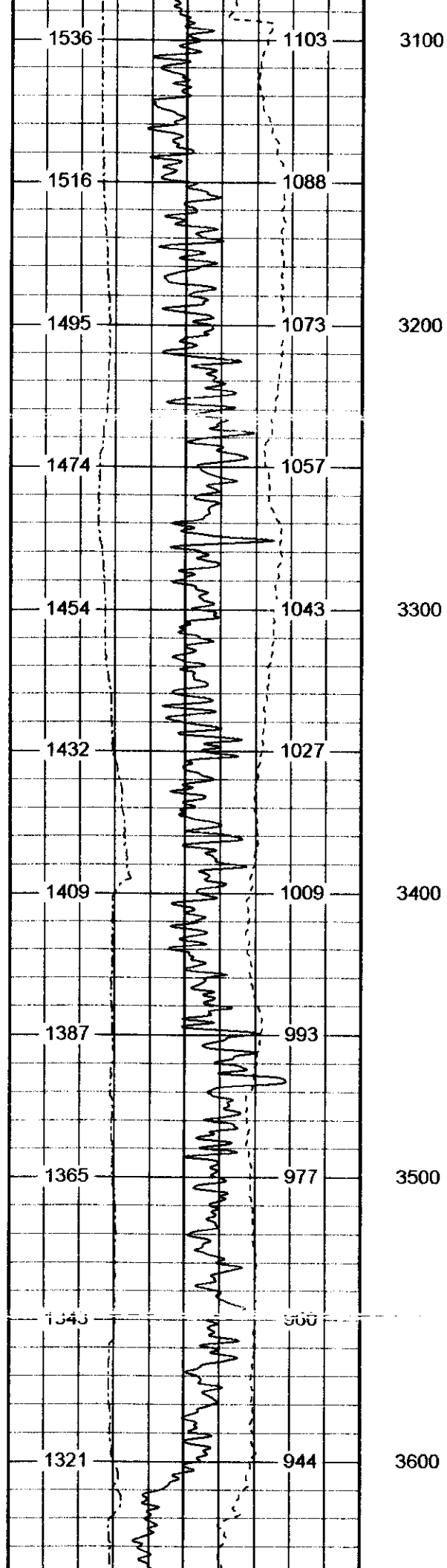
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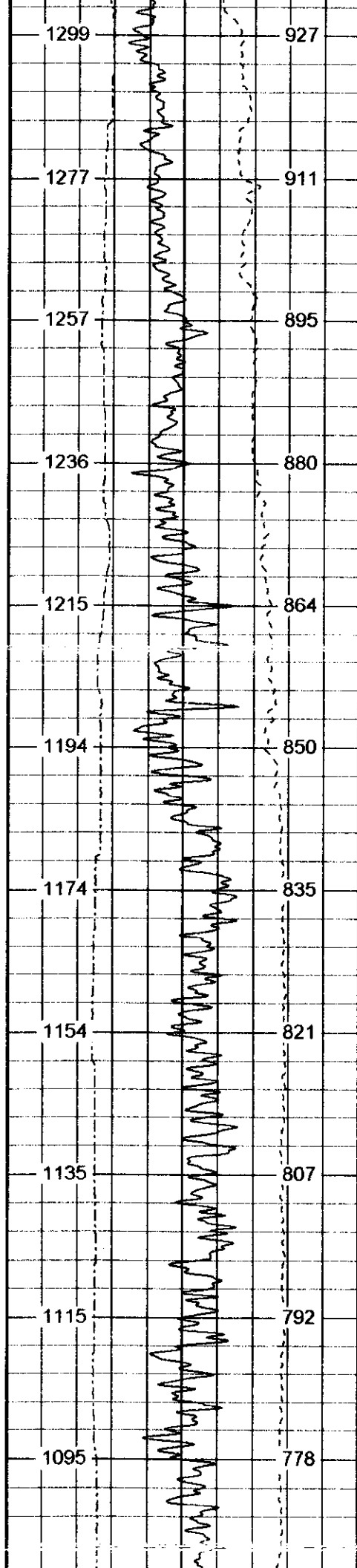
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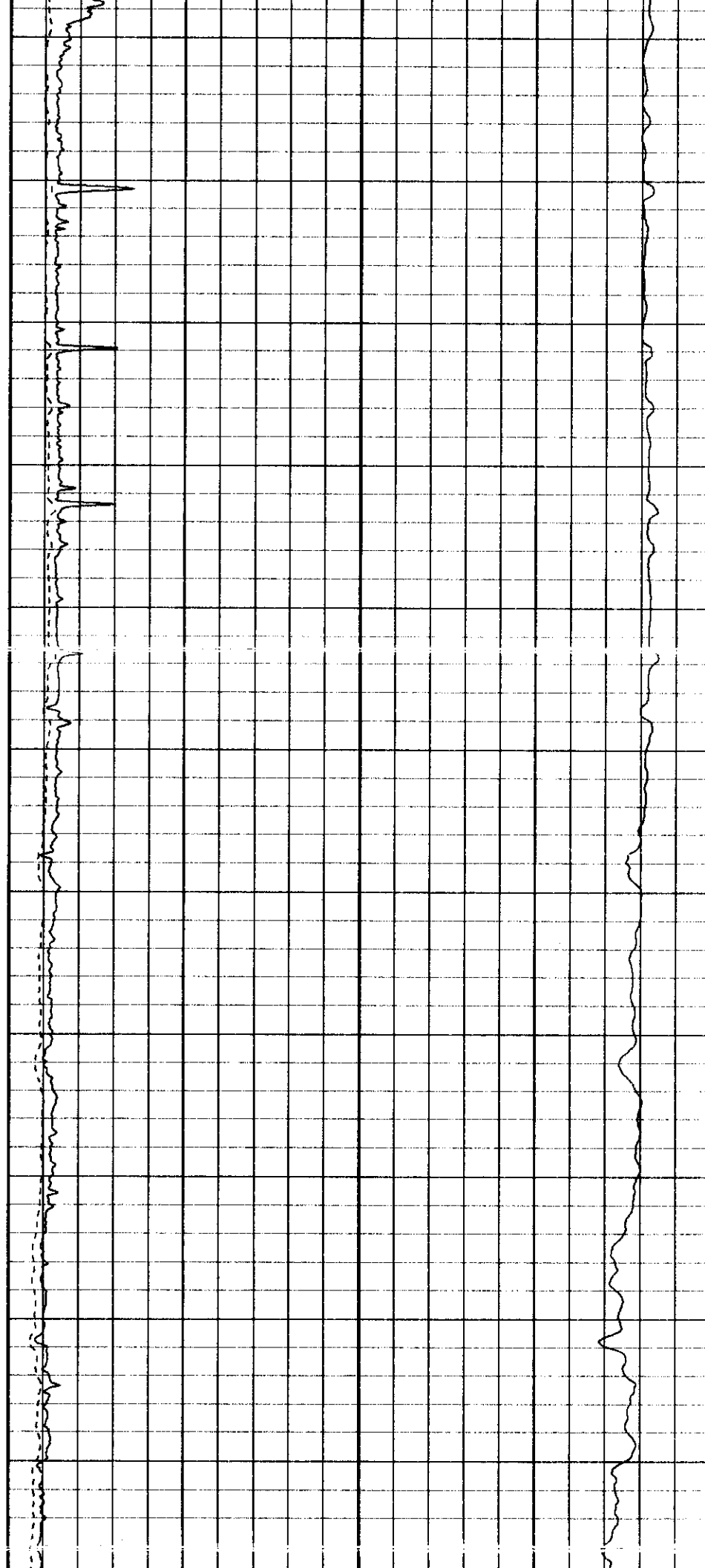
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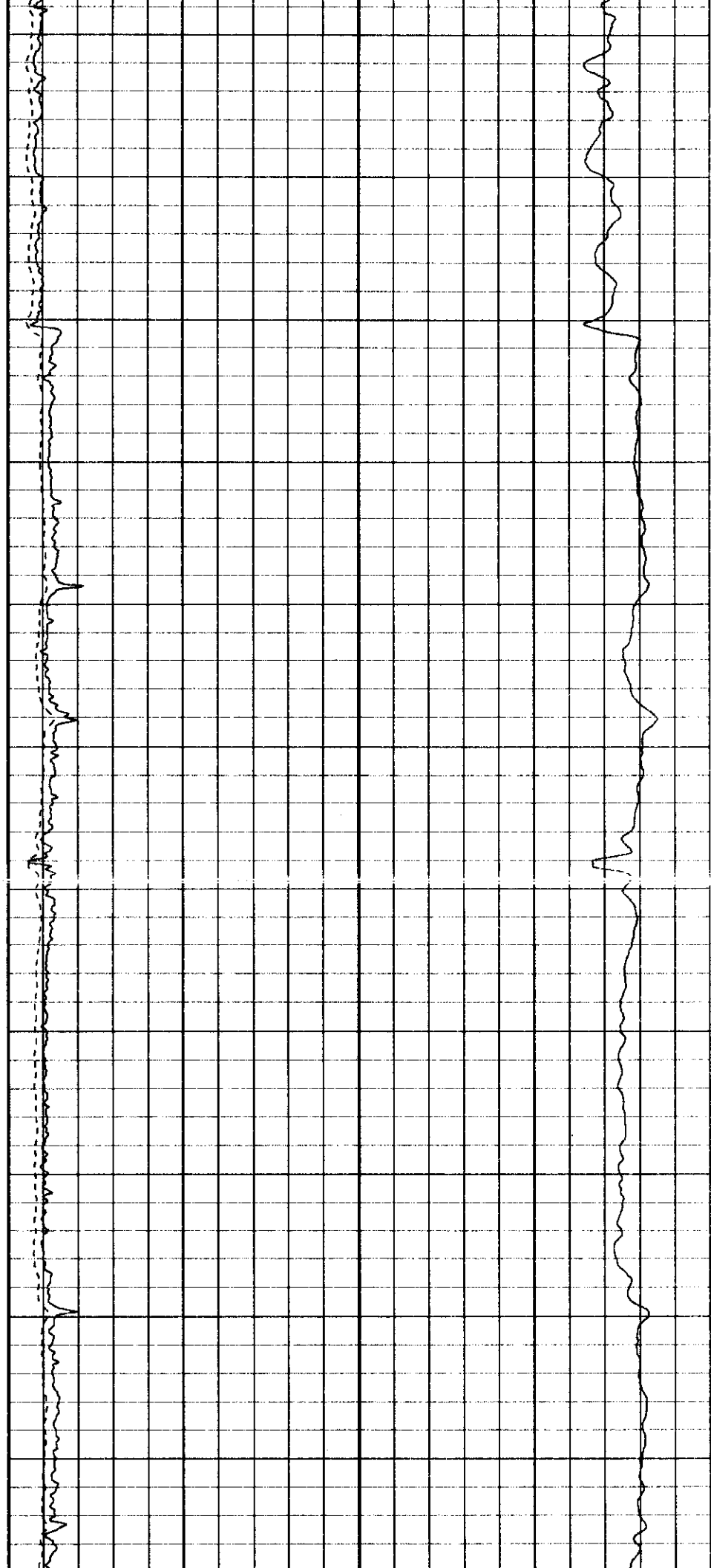
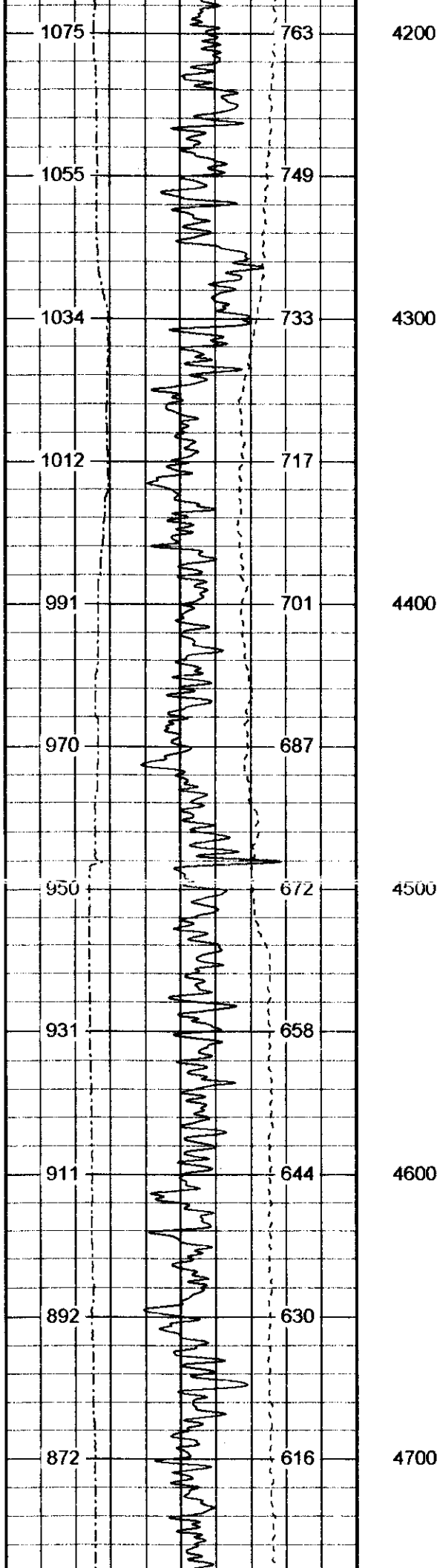
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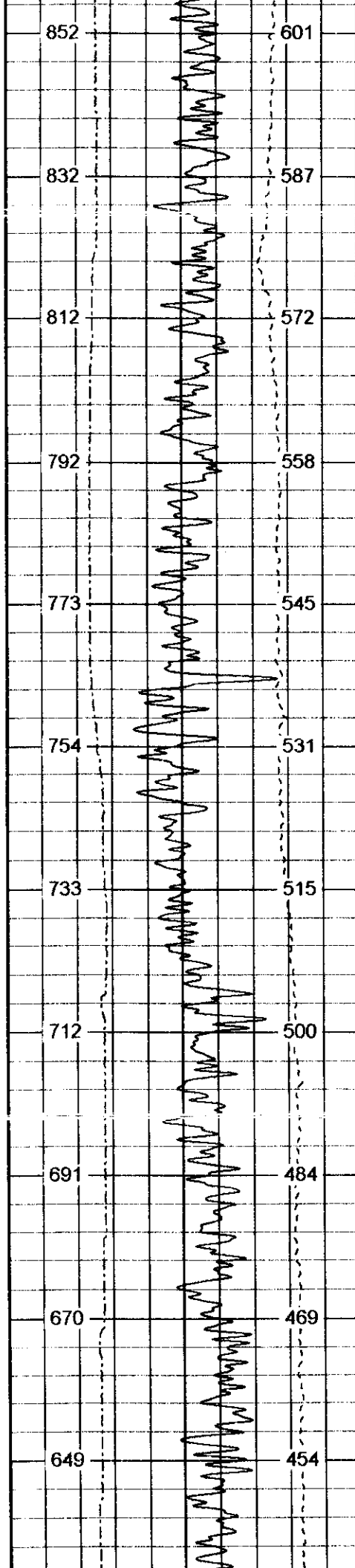
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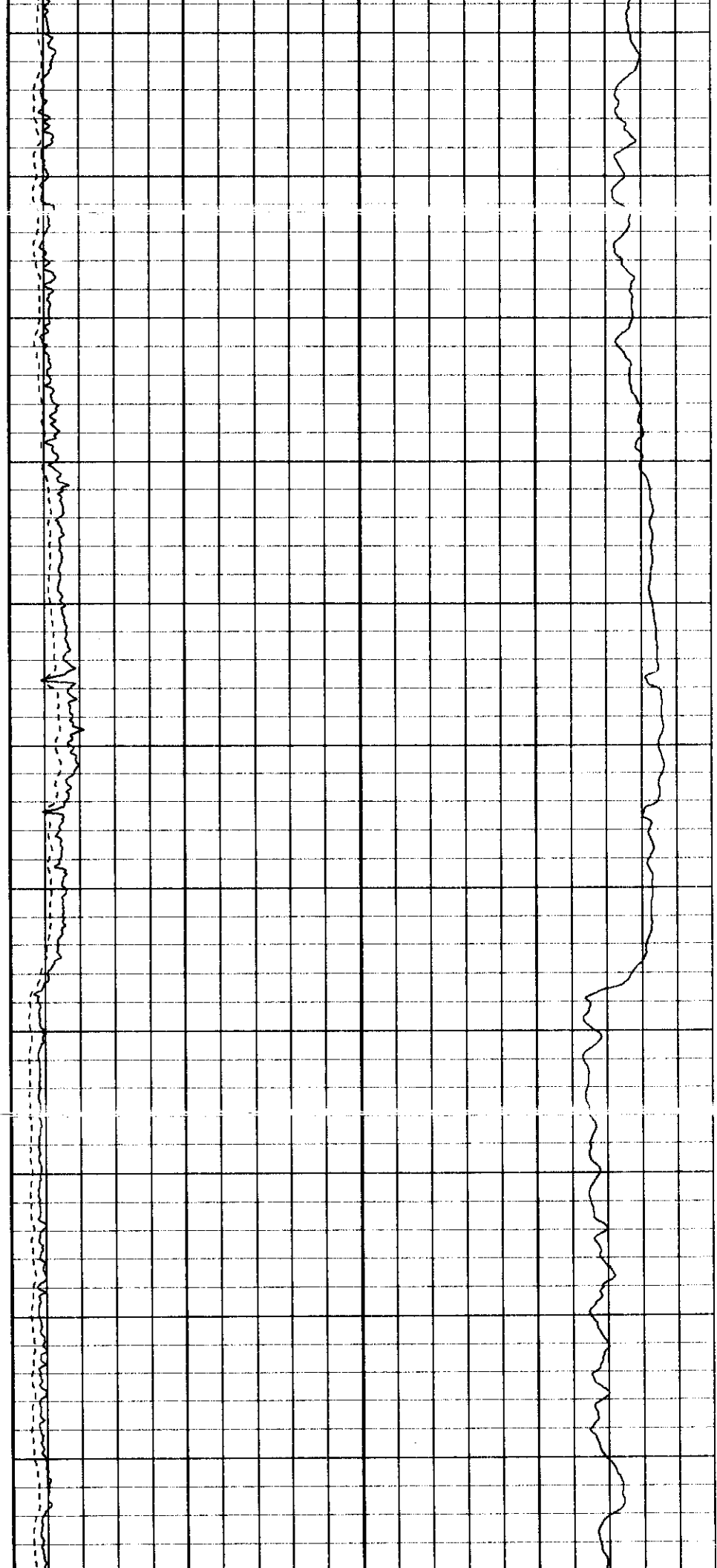
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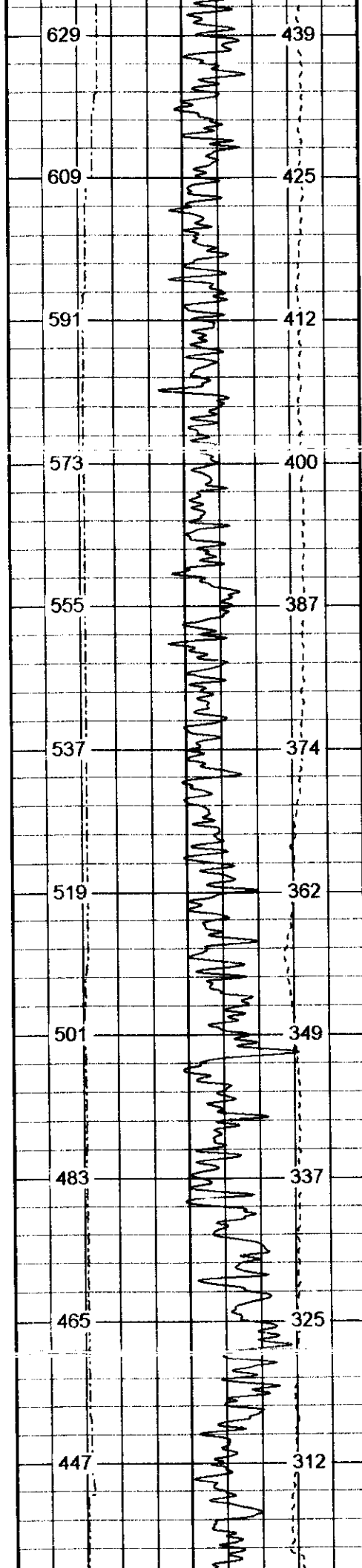
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5000

5100

5200





5300

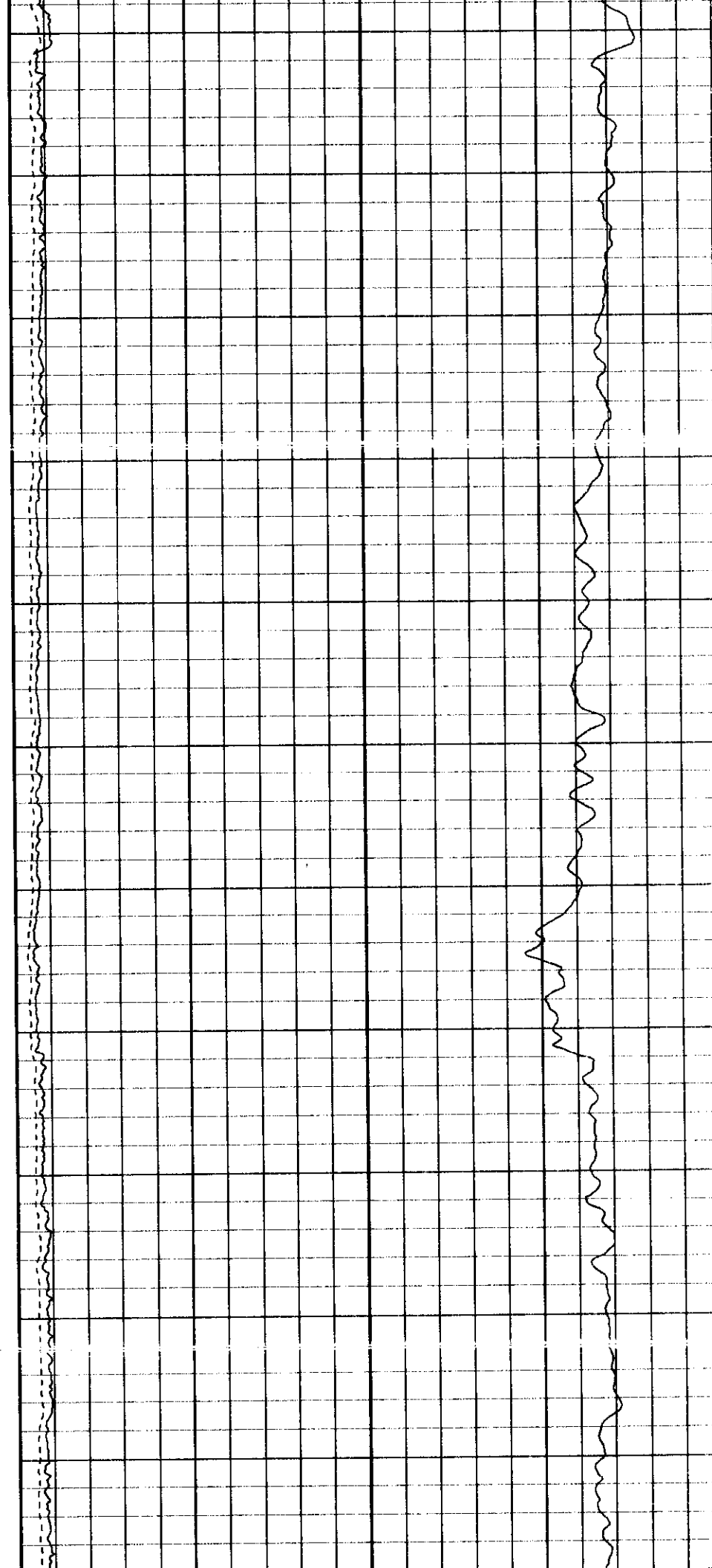
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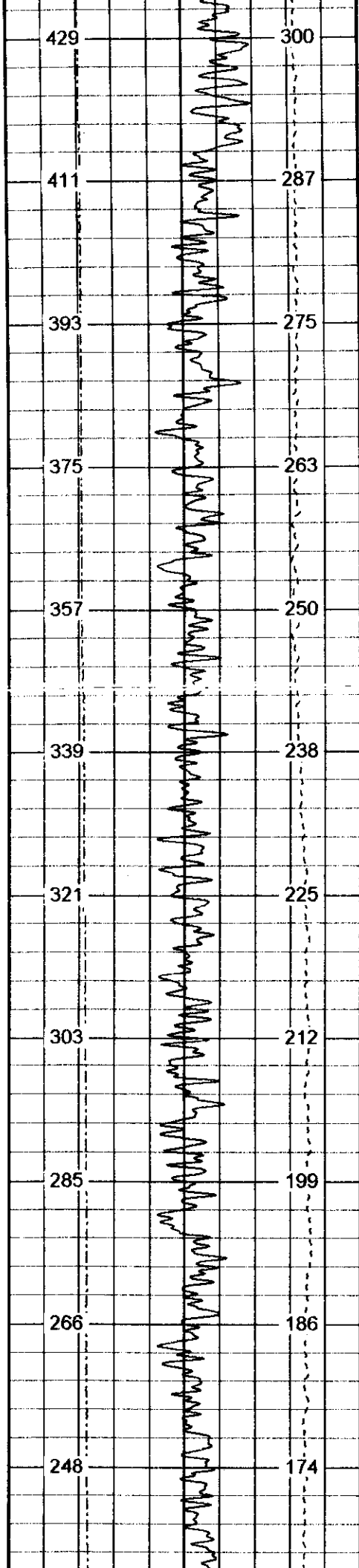
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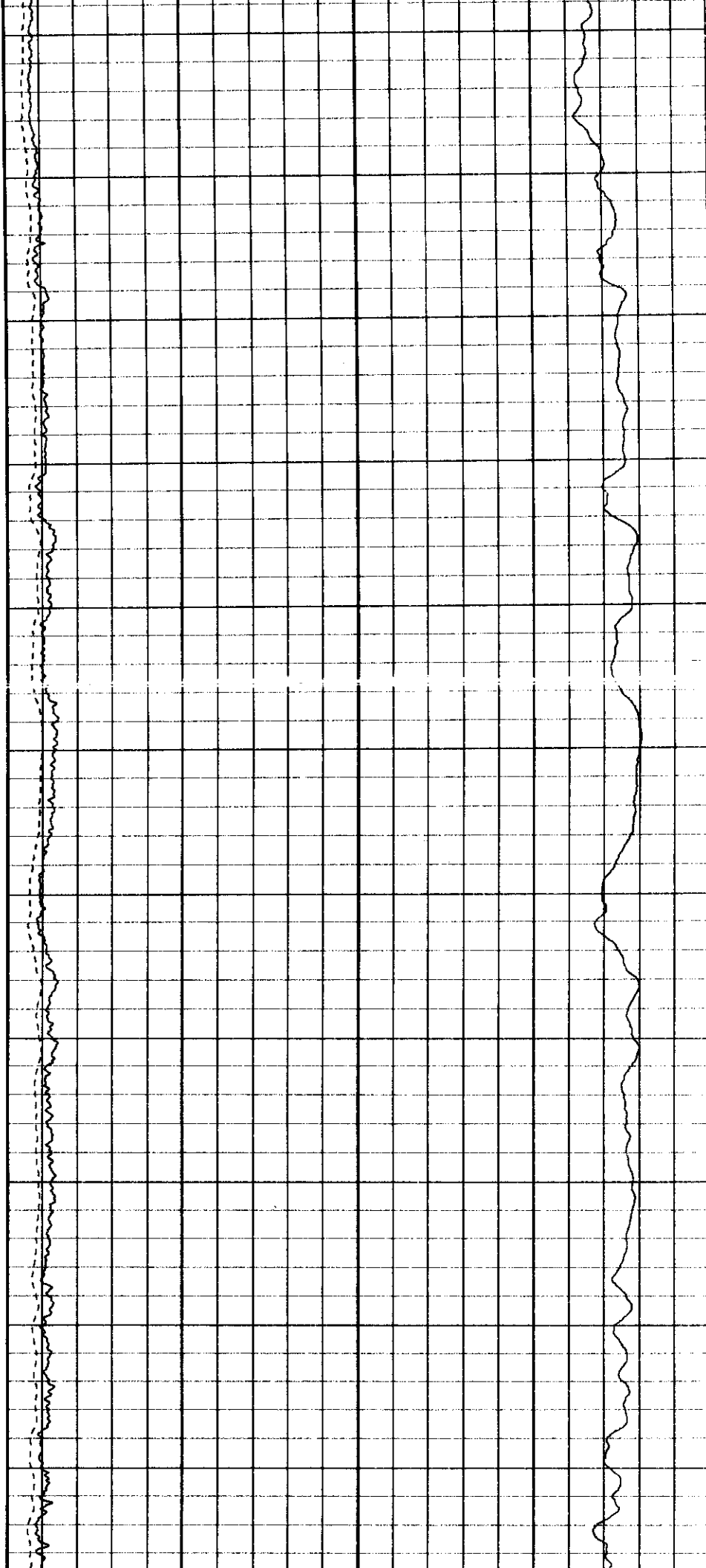
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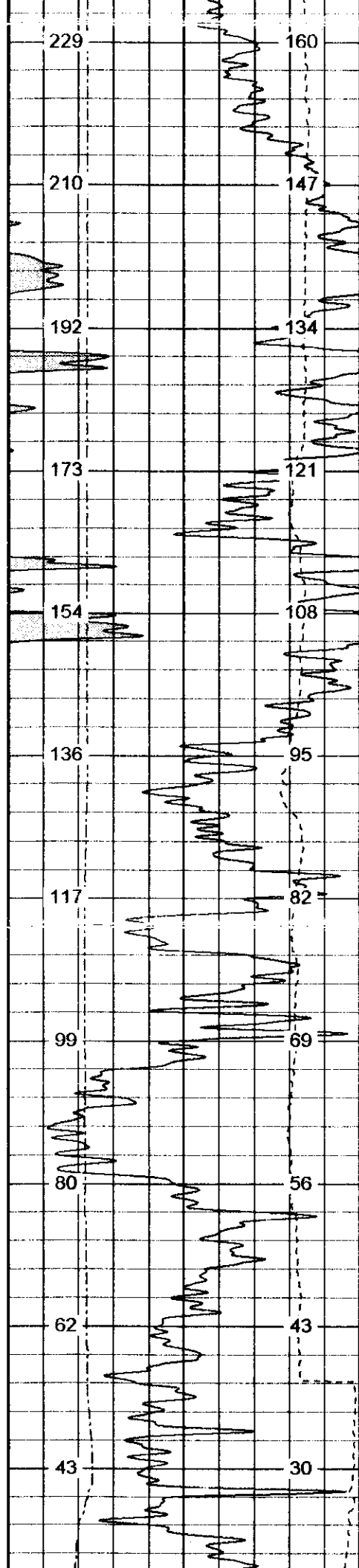
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6100

6200

6300





6400

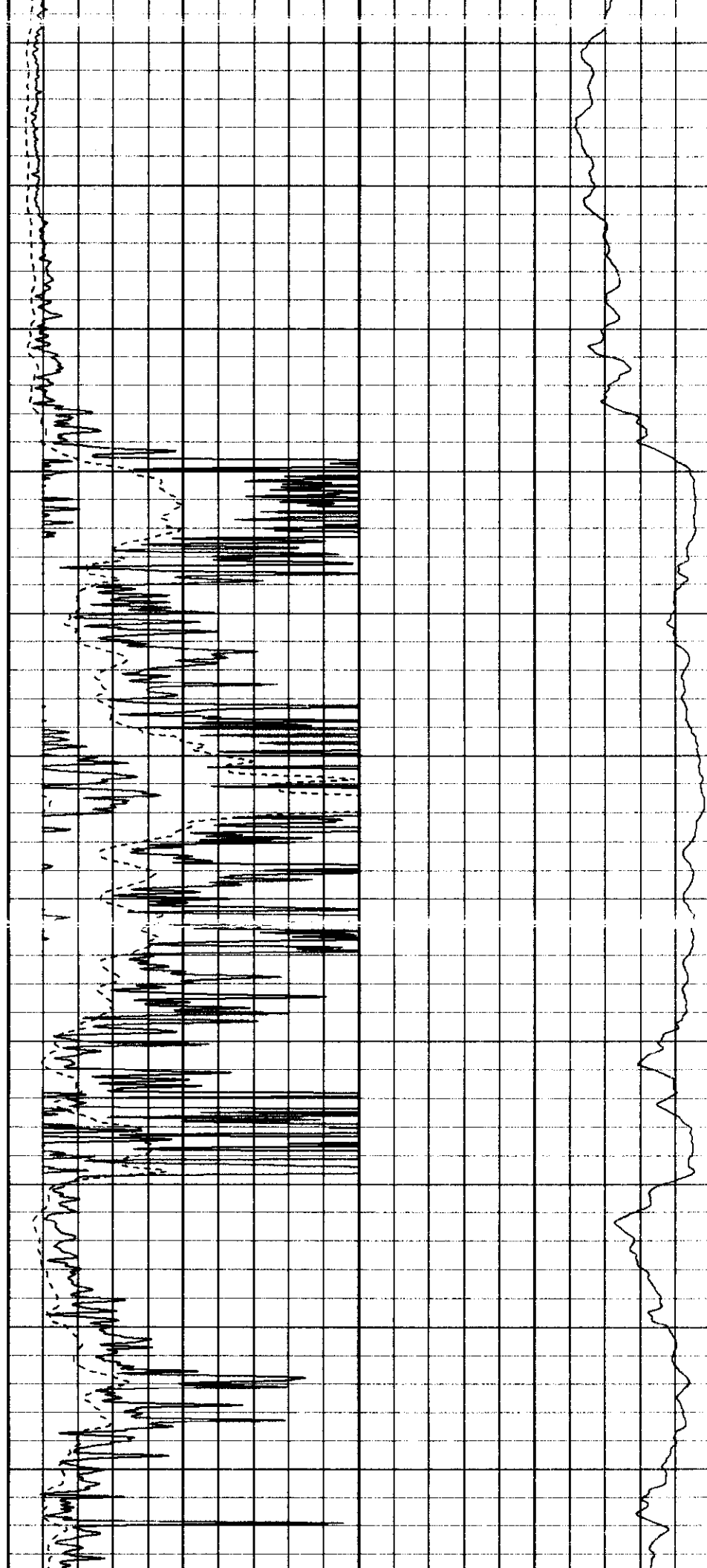
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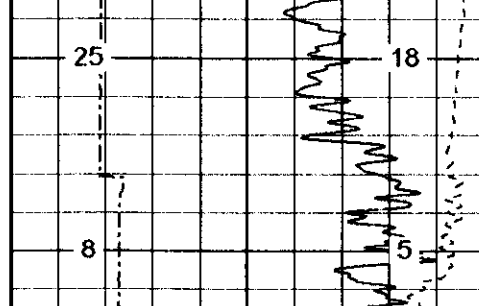
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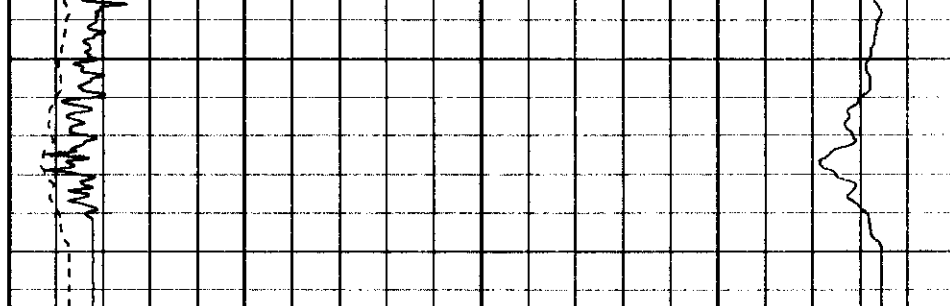
6900





0 Gamma Ray (GAPI) 200
6 Caliper (in) 16
0 Spontaneous Potential (mV) 200

7000

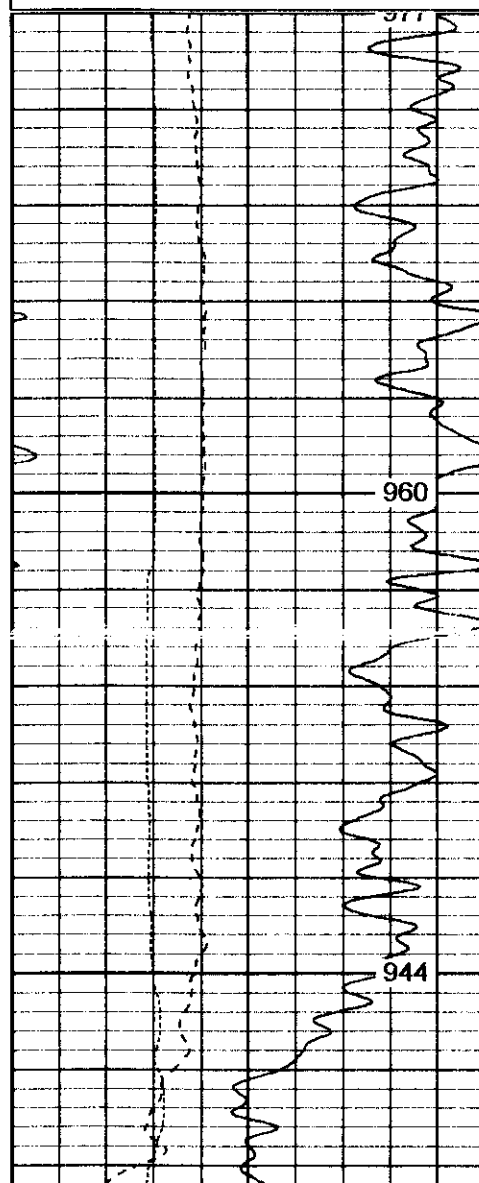


0 Deep Resistivity (Ohm-m) 50 1000
0 Shallow Resistivity (Ohm-m) 50

Database File: 3907.db
Dataset Pathname: pass3
Presentation Format: spltpdc
Dataset Creation: Fri Aug 29 21:12:23 2003 by Log 6.2_B4
Charted by: Depth in Feet scaled 1:240

6 Density Caliper (in) 16
30 Gamma Ray (GAPI) 130
0 SP (mV) 100

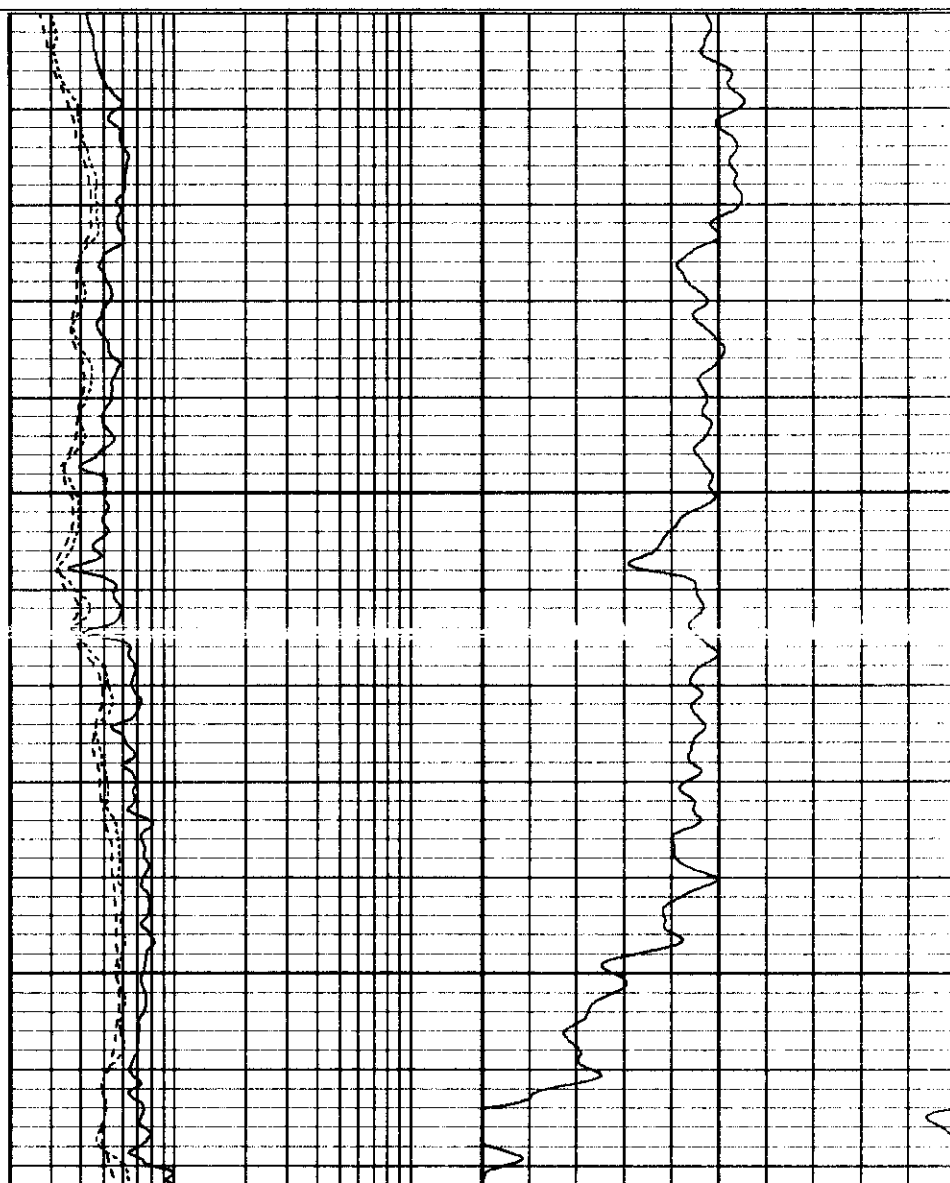
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2 Medium Resistivity (Ohm-m) 200 20 Neutron Porosity (pu) 0
2 Shallow Resistivity (Ohm-m) 200

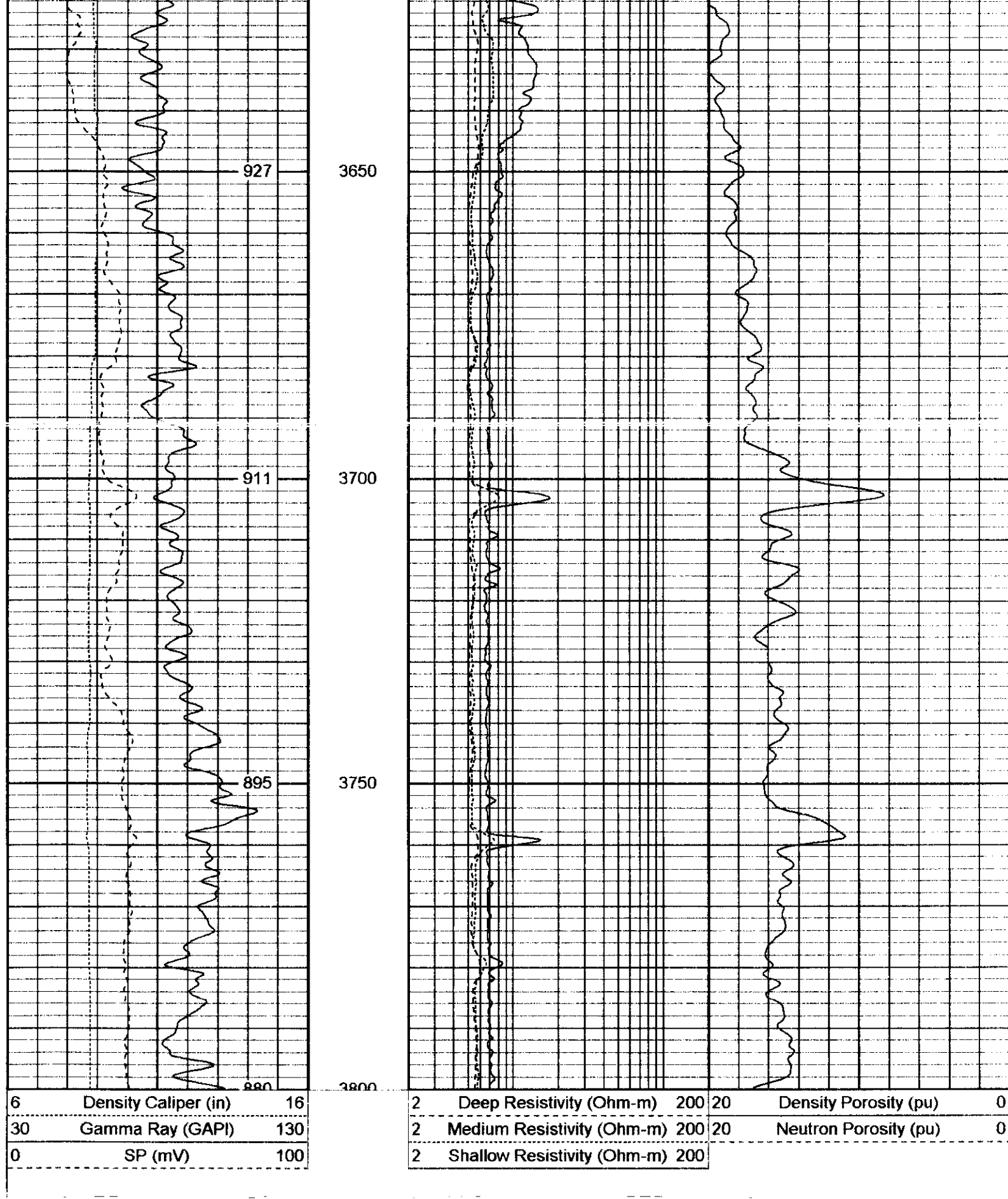


3500

3550

3600





Database File: 3907.db
 Dataset Pathname: pass3
 Presentation Format: splitpd
 Dataset Creation: Fri Aug 29 21:12:23 2003 by Log 6.2 B4

Charted by:

Depth in Feet scaled 1:240

6	Density Caliper (in)	16
0	Gamma Ray (GAPI)	200
0	SP (mV)	200

2	Deep Resistivity (Ohm-m)	200	20	Density Porosity (pu)	0
2	Medium Resistivity (Ohm-m)	200	20	CN Porosity (pu)	0
2	Shallow Resistivity (Ohm-m)	200			

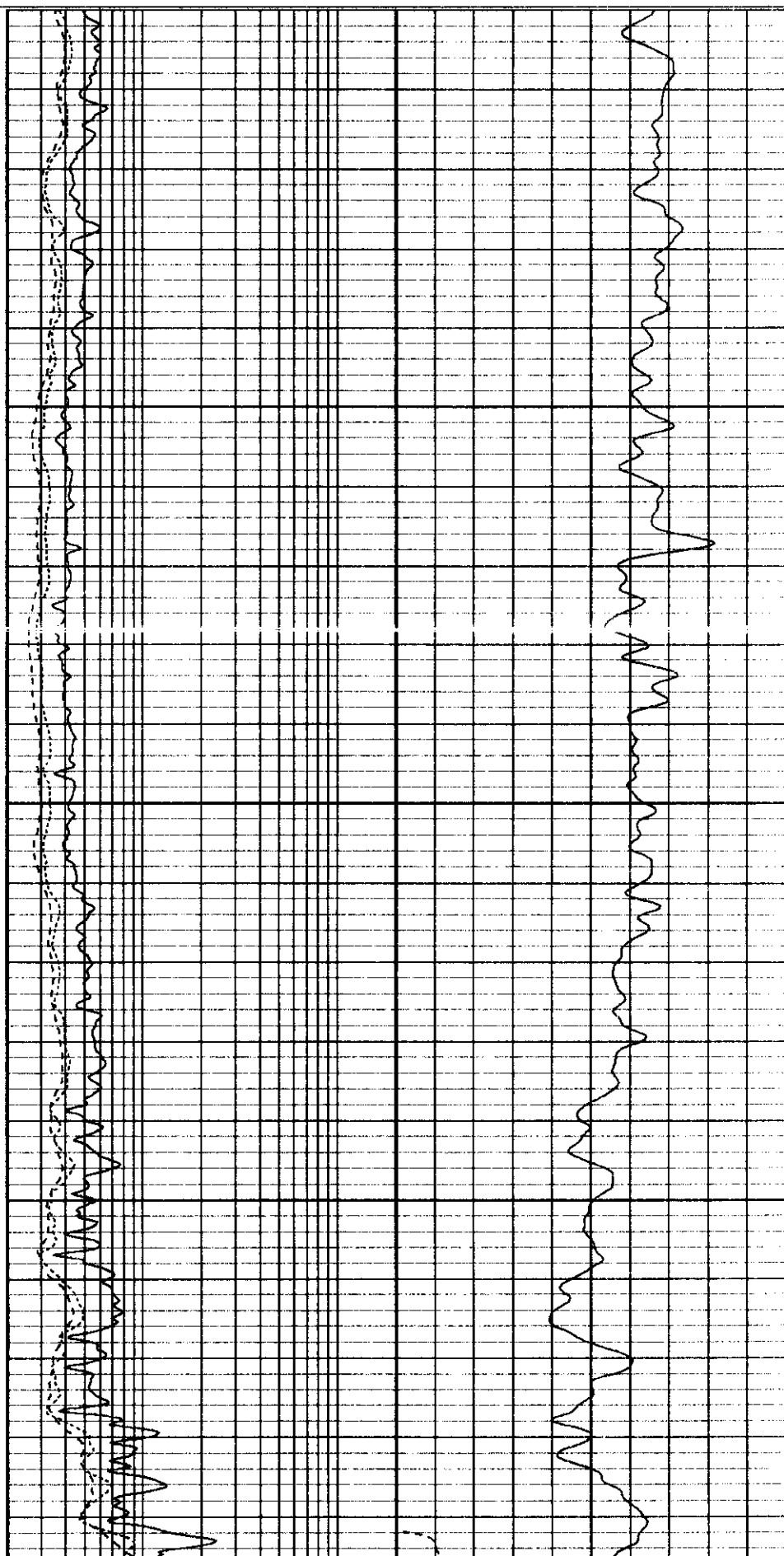


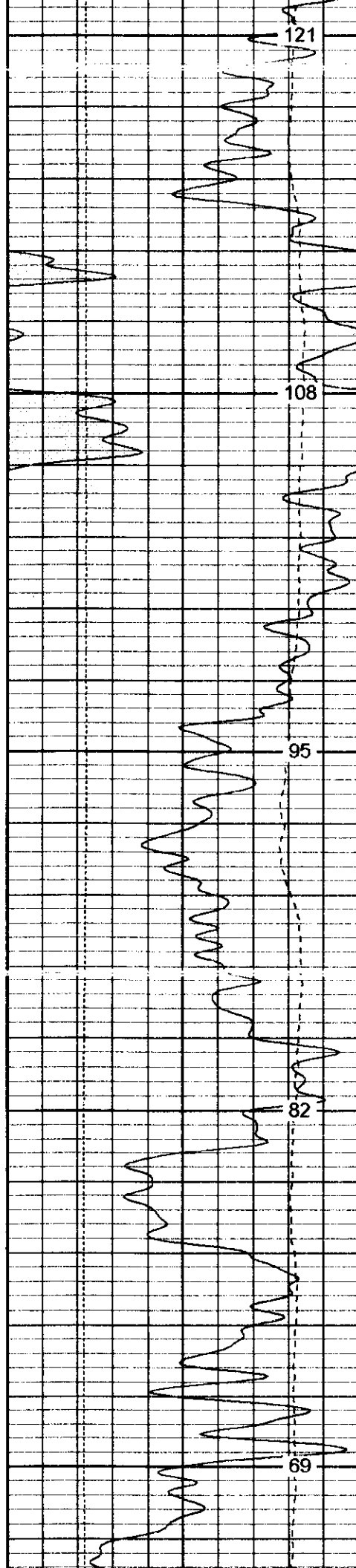
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6500





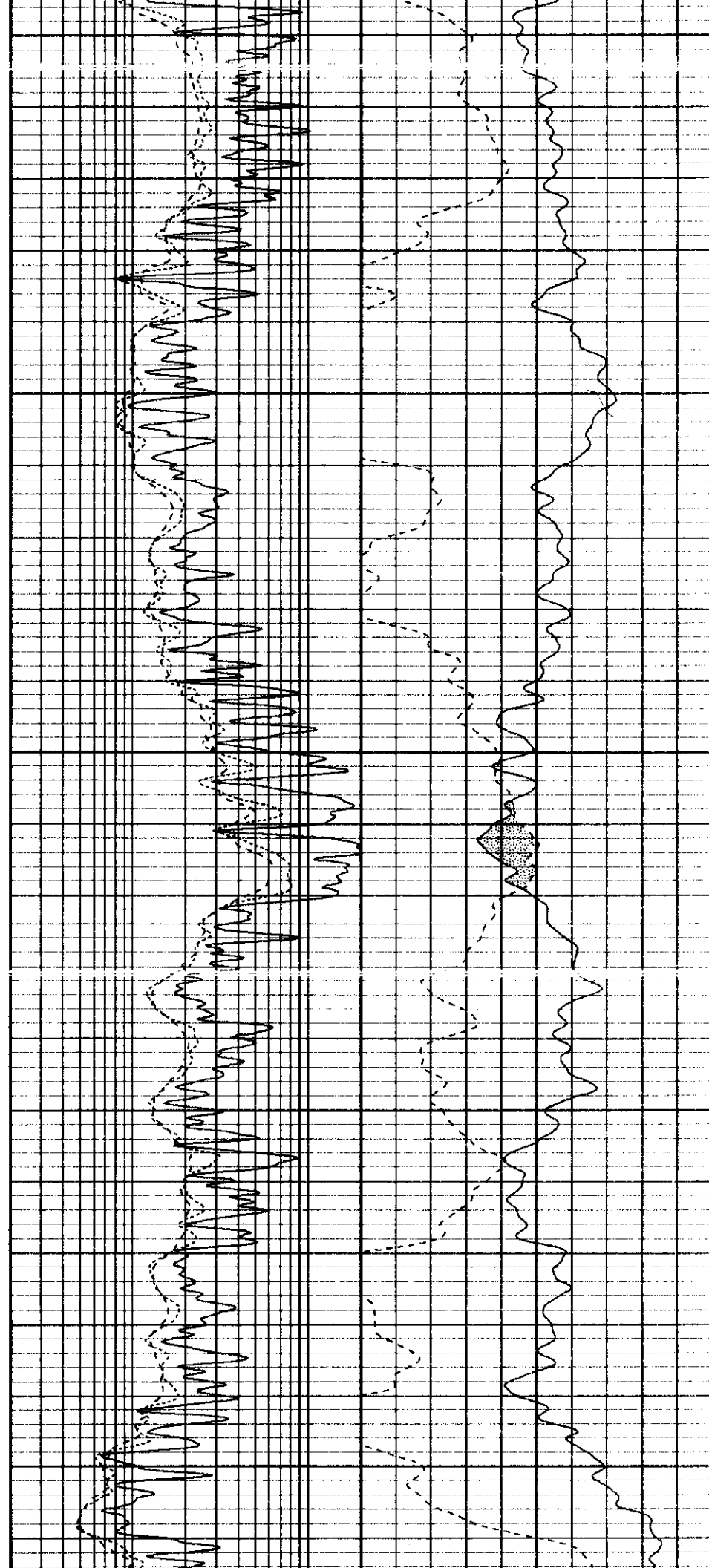
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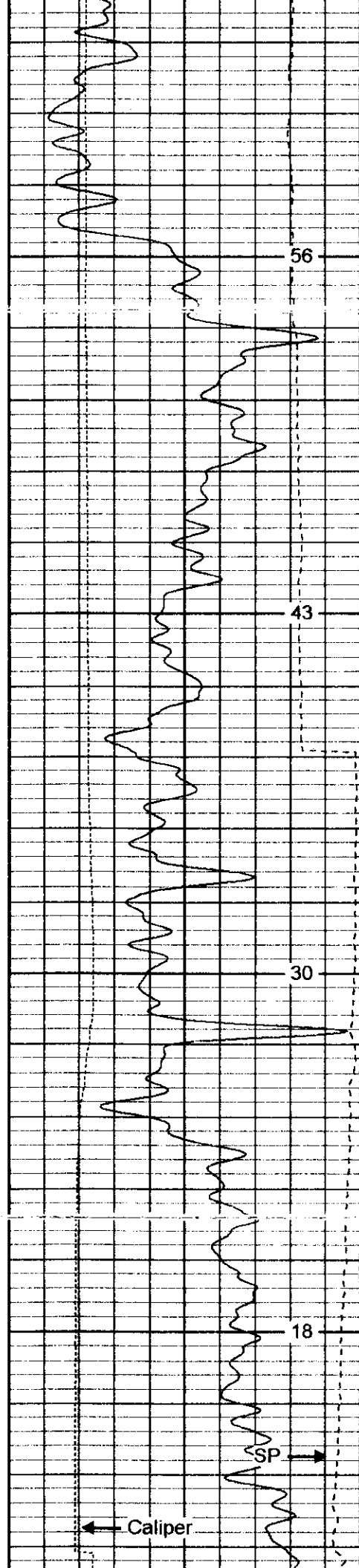
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6750





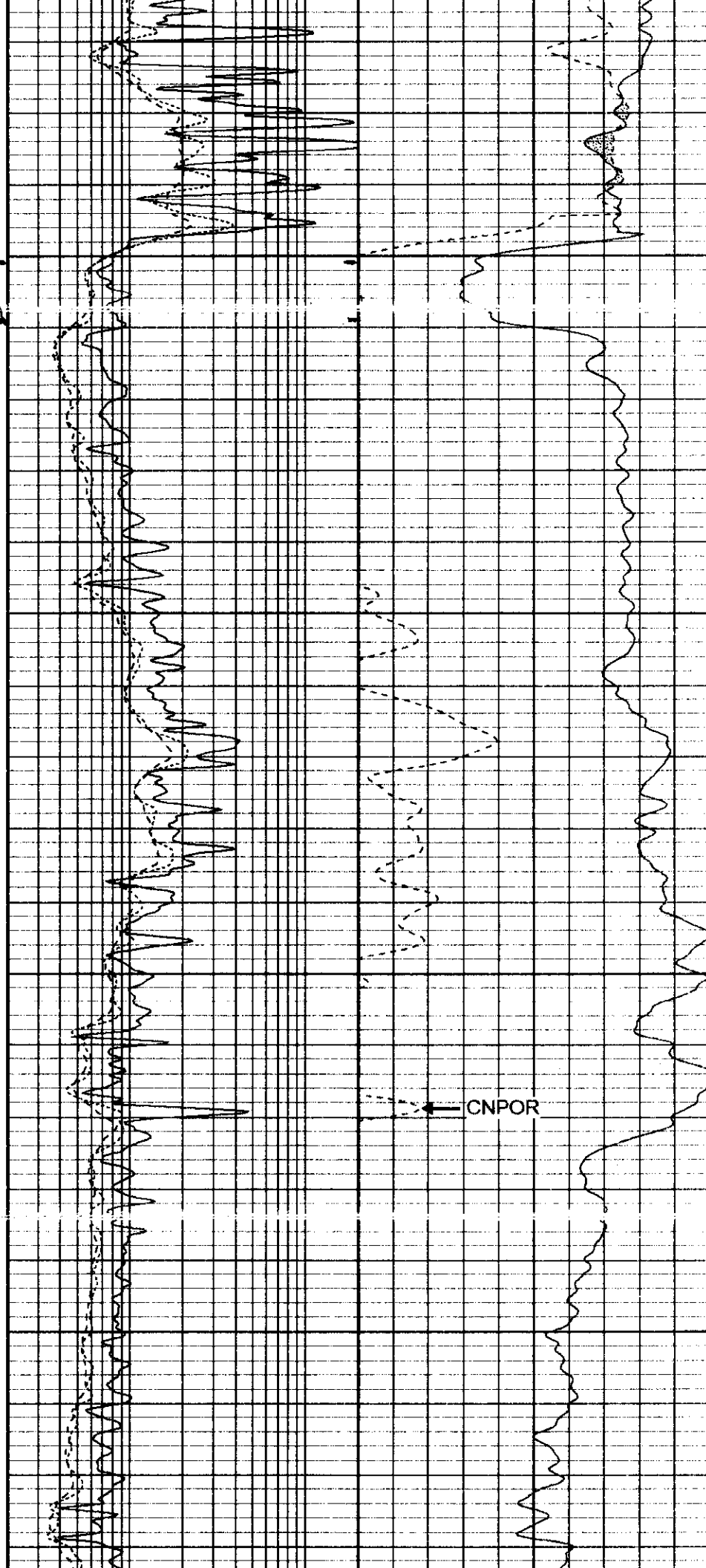
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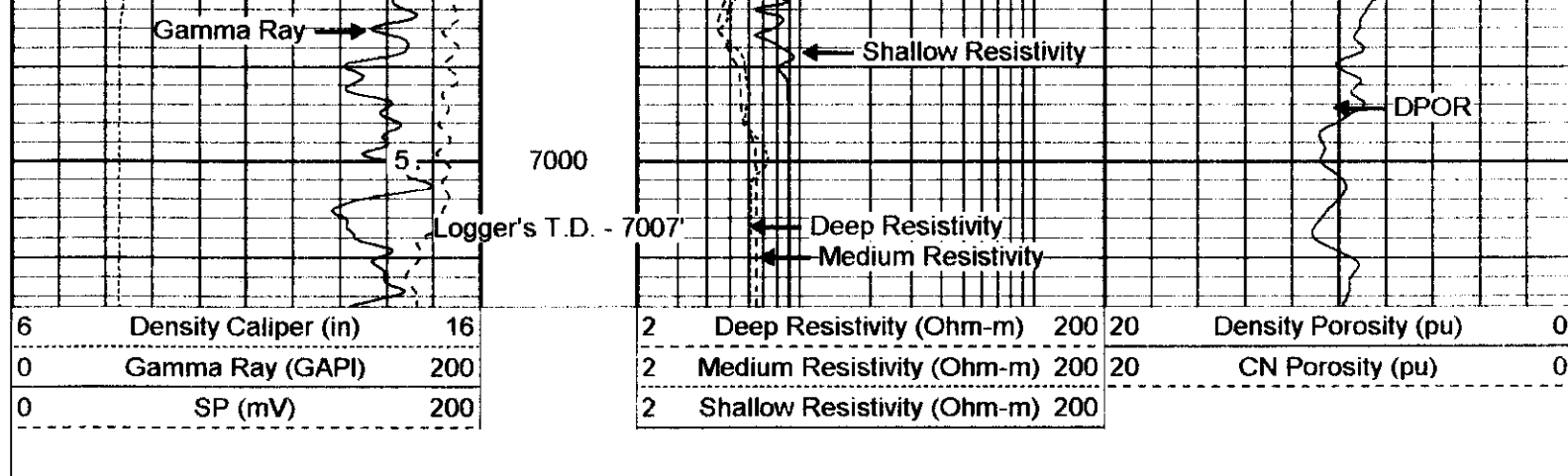
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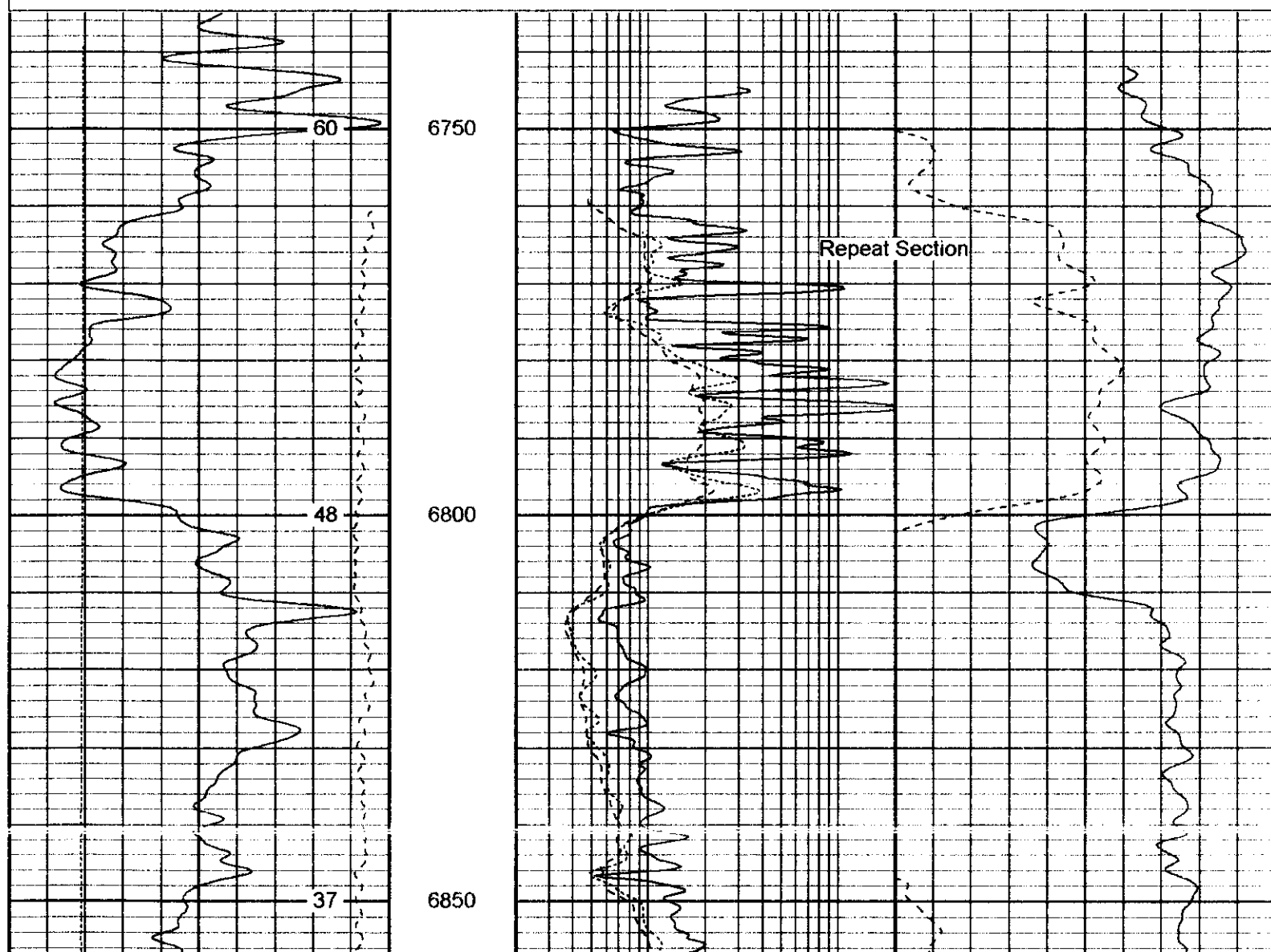
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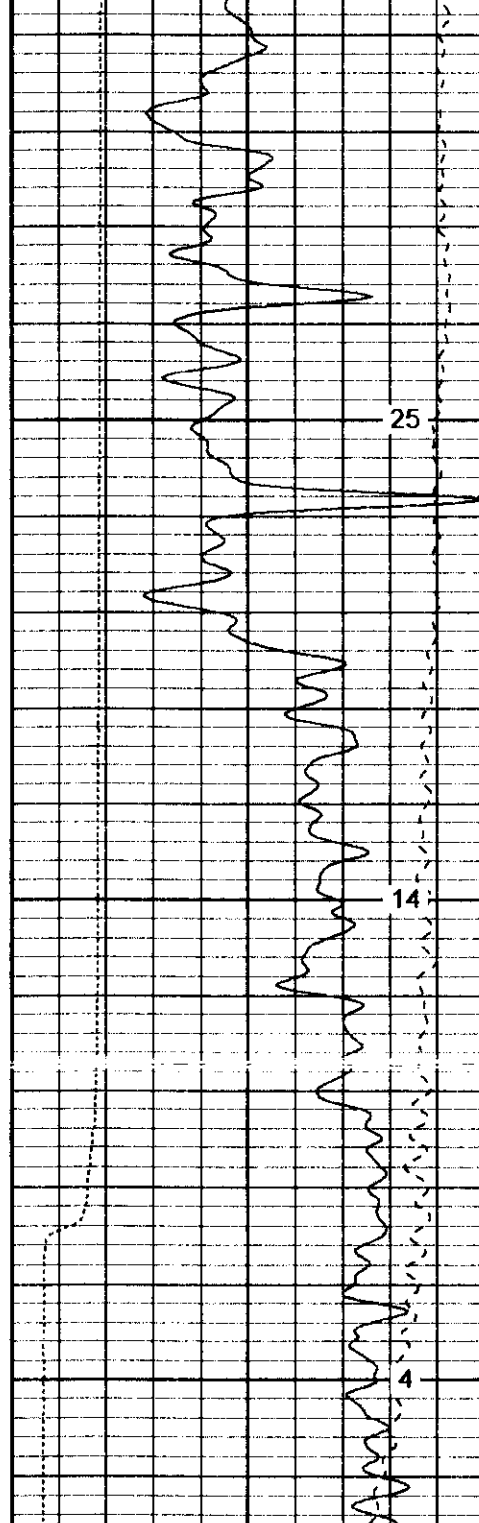




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 Dataset Pathname: pass2.3
 Presentation Format: splitpdc
 Dataset Creation: Fri Aug 29 21:23:57 2003 by Calc 6.2_B4
 Charted by: Depth in Feet scaled 1:240

6	Density Caliper (in)	16	2	Deep Resistivity (Ohm-m)	200	20	Density Porosity (pu)	0
0	Gamma Ray (GAPI)	200	2	Medium Resistivity (Ohm-m)	200	20	CN Porosity (pu)	0
0	SP (mV)	200	2	Shallow Resistivity (Ohm-m)	200			



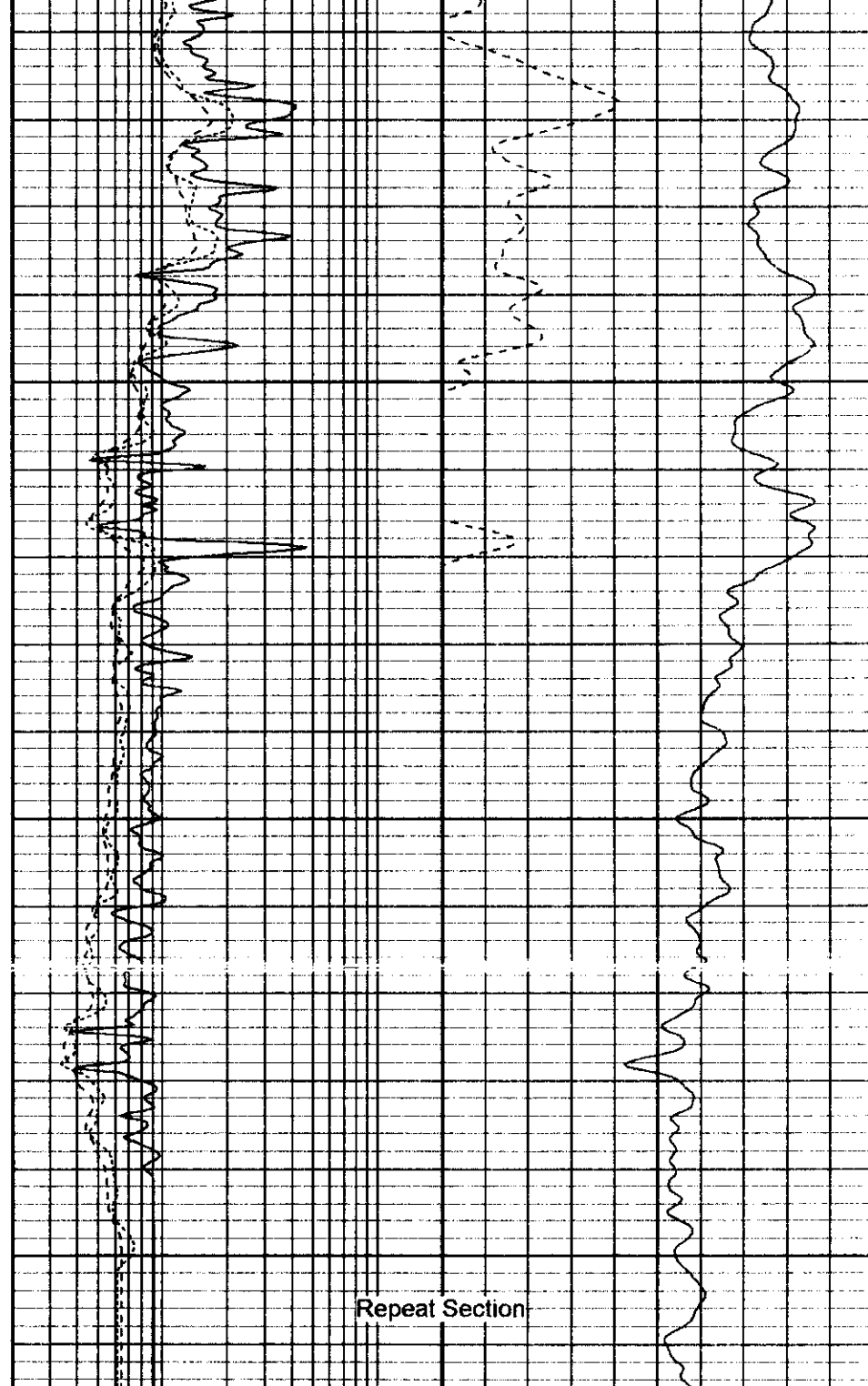


6	Density Caliper (in)	16
0	Gamma Ray (GAPI)	200
0	SP (mV)	200

6900

6950

7000



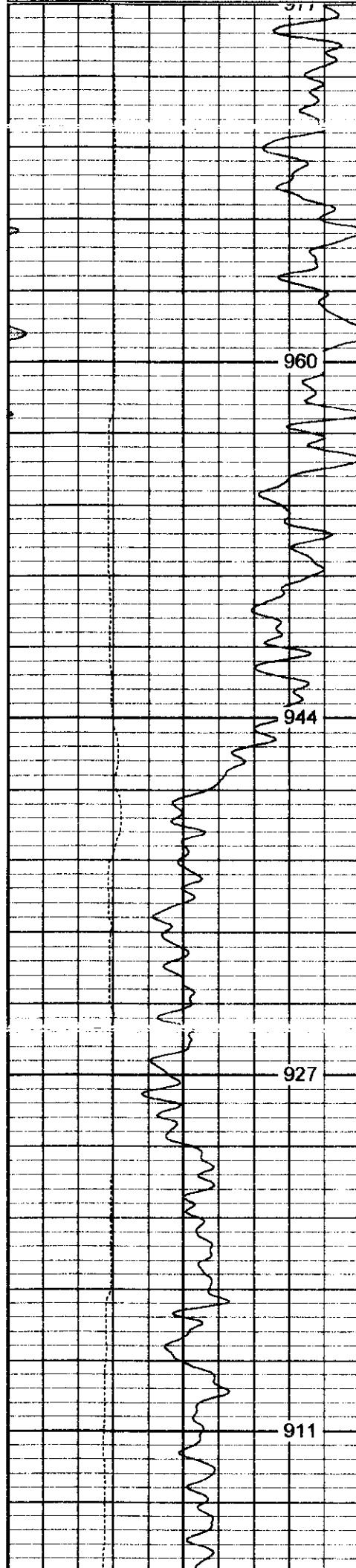
2	Deep Resistivity (Ohm-m)	200	20	Density Porosity (pu)	0
2	Medium Resistivity (Ohm-m)	200	20	CN Porosity (pu)	0
2	Shallow Resistivity (Ohm-m)	200			

Repeat Section

Database File: 3907.db
 Dataset Pathname: pass3
 Presentation Format: cdl1
 Dataset Creation: Fri Aug 29 21:12:23 2003 by Log 6.2_B4
 Charted by: Depth in Feet scaled 1:240

6	Density Caliper (in)	16
30	Gamma Ray (GAPI)	130

2	Bulk Density (g/cc)		3
30	Density Porosity (pu)		-10
	-0.5	Corr (g/cc)	0.5



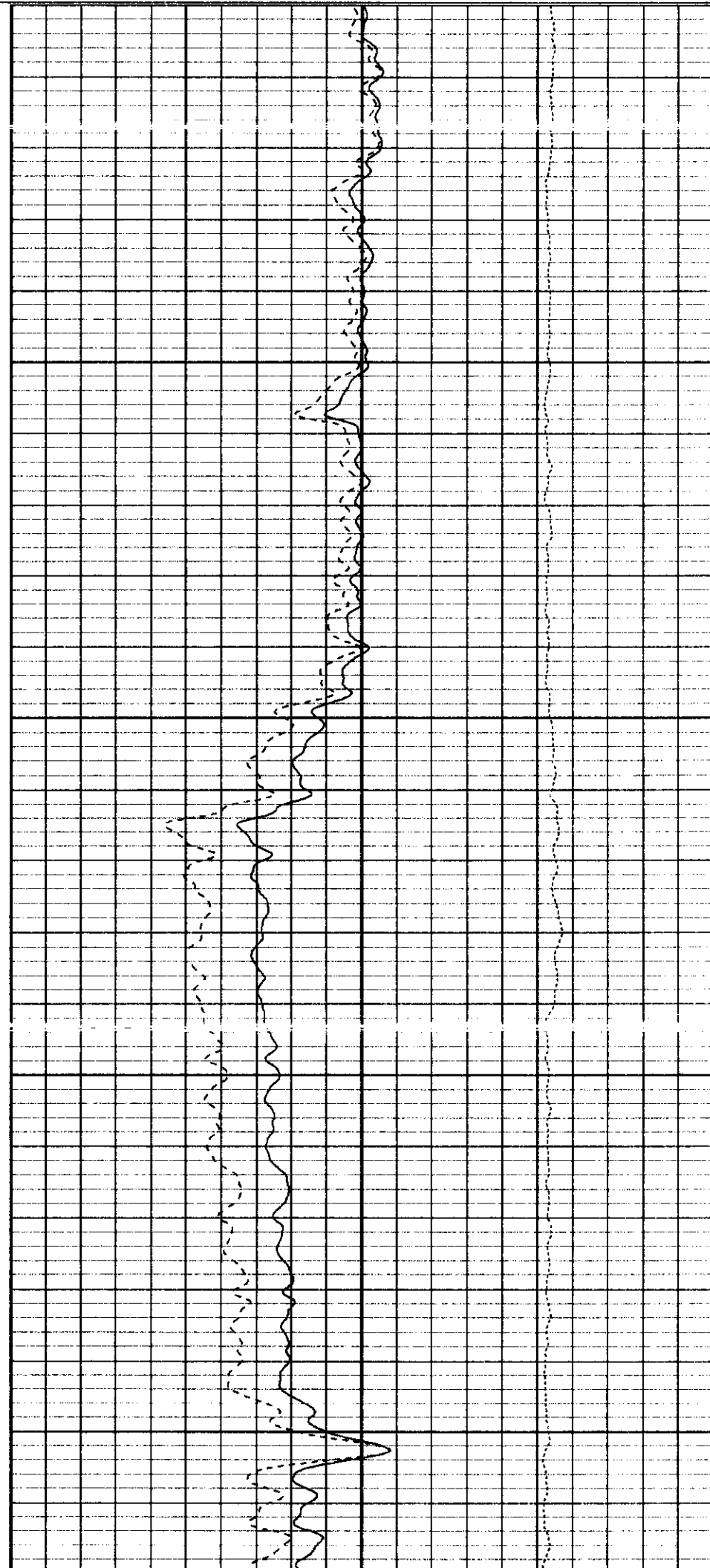
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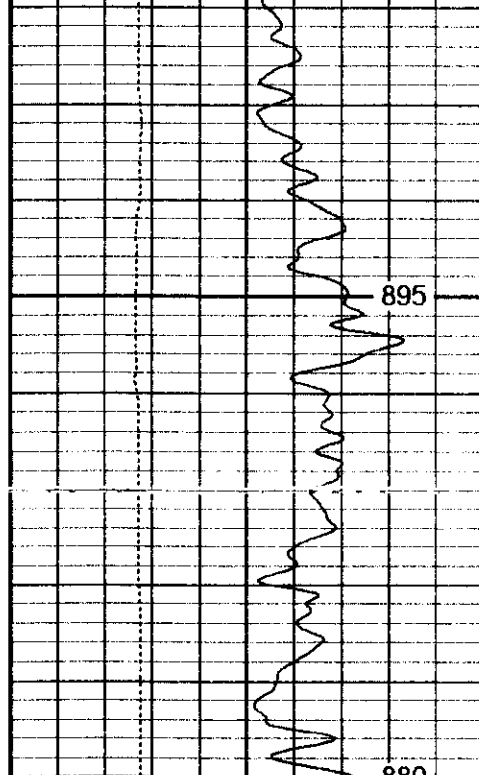
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3700





6	Density Caliper (in)	16
30	Gamma Ray (GAPI)	130

3750

3800

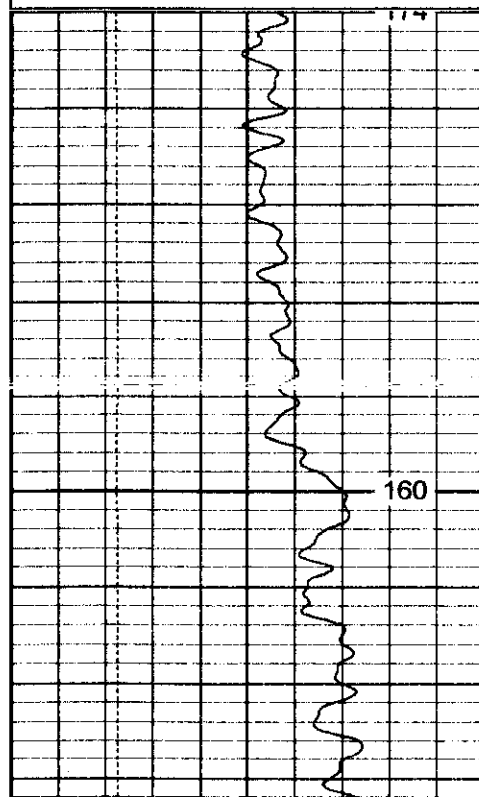


2	Bulk Density (g/cc)	3
30	Density Porosity (pu)	-10
	Corr (g/cc)	0.5

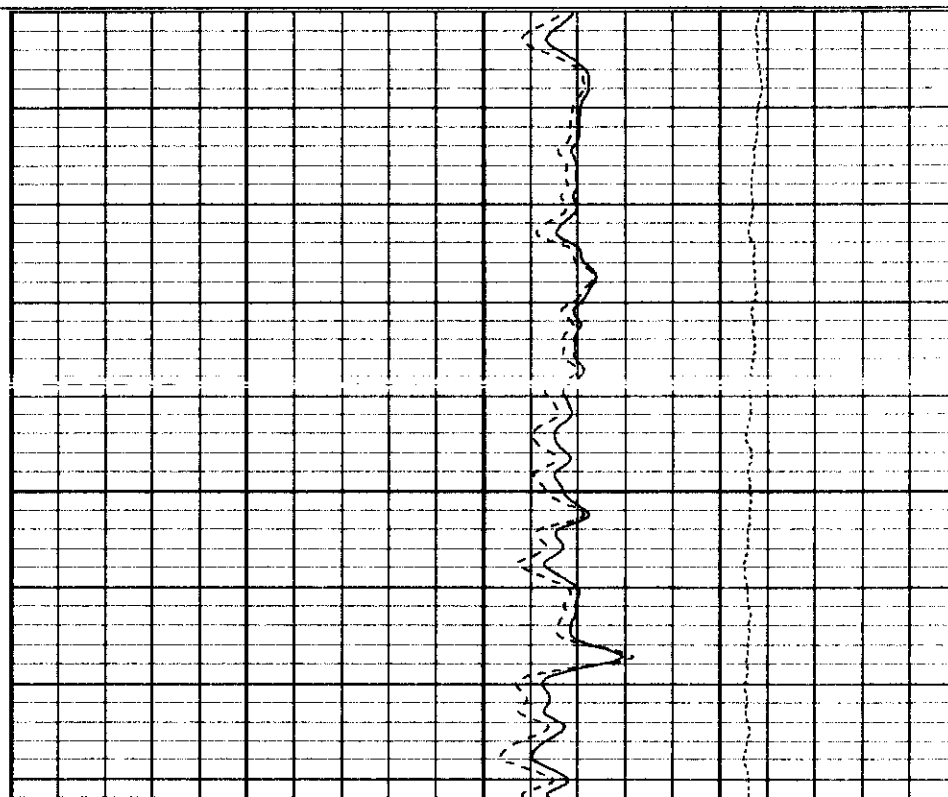
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 Charted by: Depth in Feet scaled 1:240

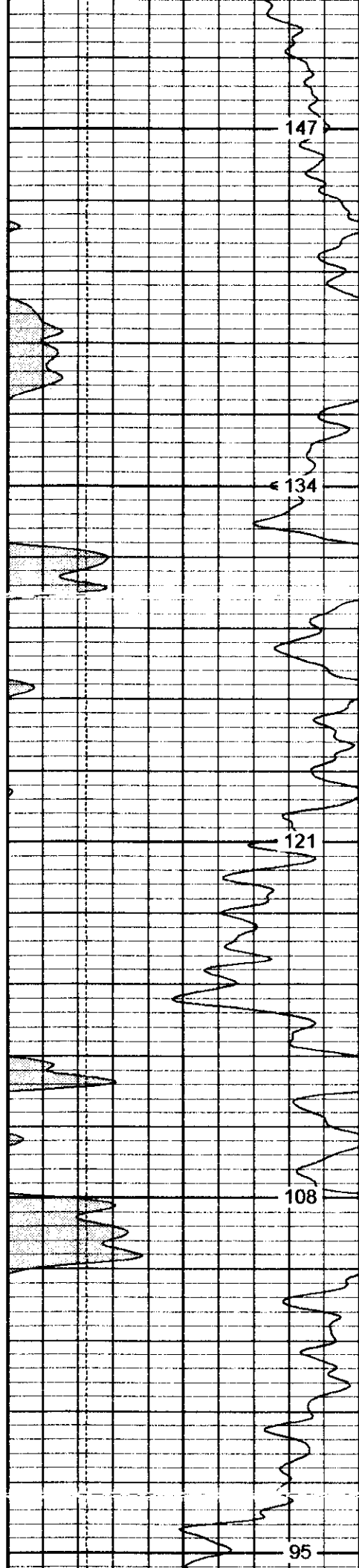
0	GR (GAPI)	200
6	Caliper (in)	16

2	Bulk Density (g/cc)	3
30	Density Porosity (pu)	-10
	Corr (g/cc)	0.5



6400





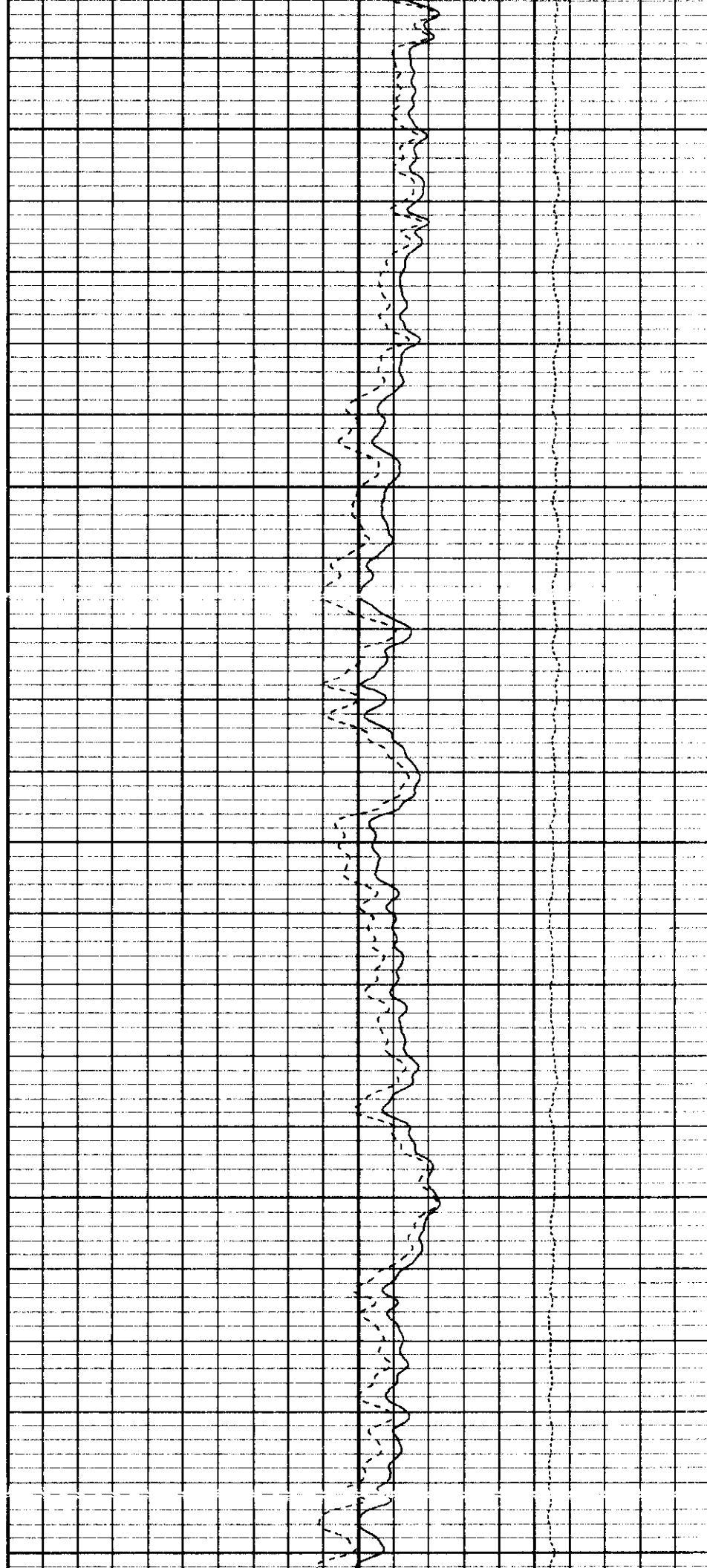
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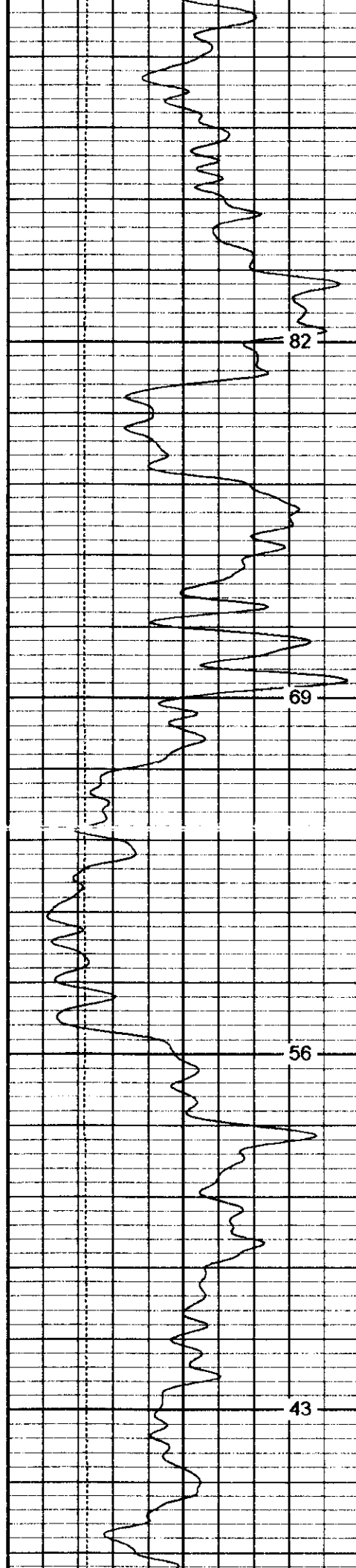
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6600

6650



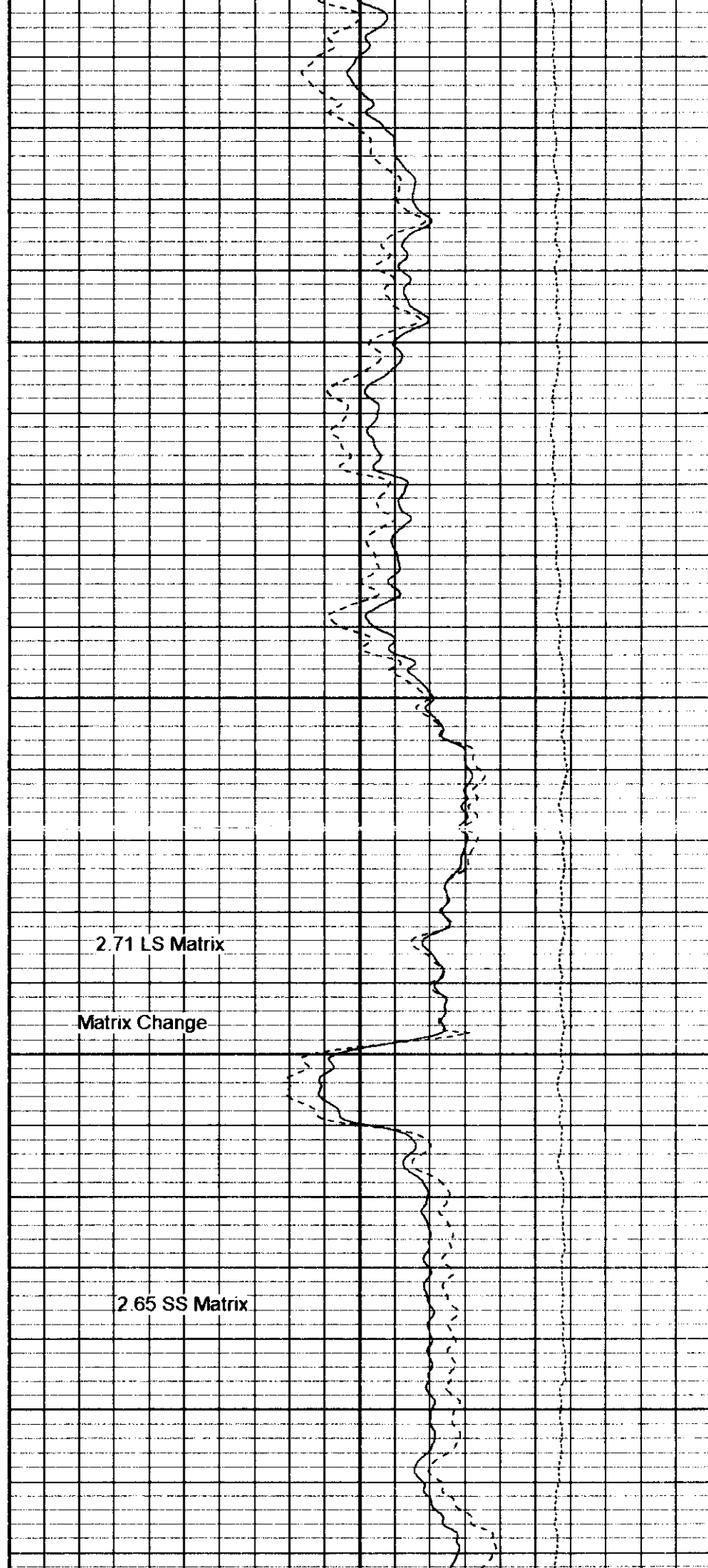


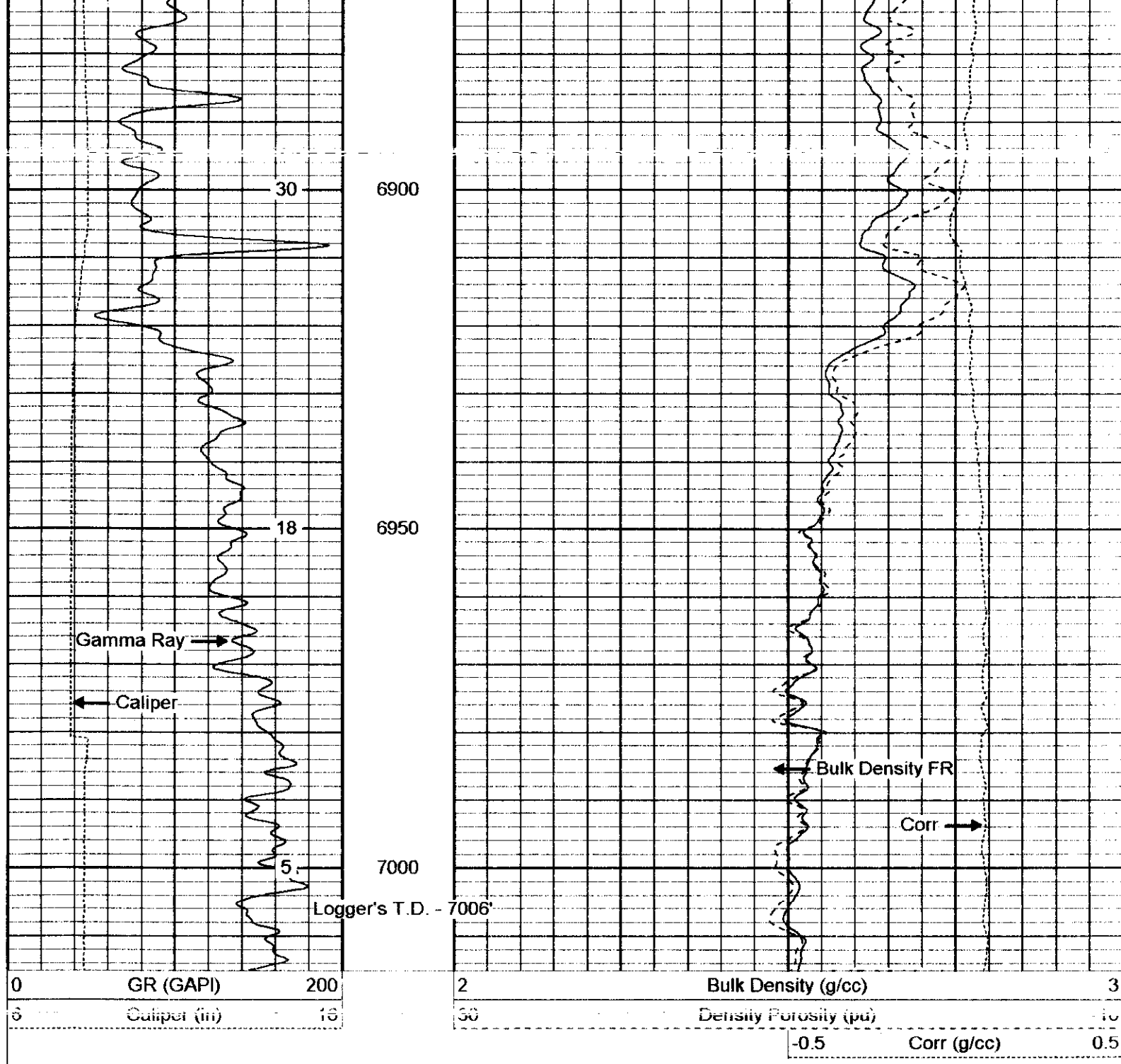
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6750

6800

6850





Dual Induction Calibration Report

Serial-Model:
Surface Cal Performed:

246-PSI

Loop:	Readings		References		Results	
	Air	Loop	Air	Loop	m	b
Deep	85.764	466.606	9.000	250.000	0.593	-32.000
Medium	77.095	459.761	9.000	110.000	0.293	-17.000

Compensated Density Calibration Report

Serial-Model:

230-PSI

Serial Model:
Master Calibration Performed:
Before Survey Verification Performed:
After Survey Verification Performed:

200 PSI
Sun Aug 24 13:36:11 2003

Master Calibration

	Density		Far Detector		Near Detector	
Magnesium	1.750	g/cc	4004.89		3466.44	cps
Aluminum	2.690	g/cc	738.13		2198.94	cps
	Size		Reading			
Small Ring	0.00	in	0.68			
Large Ring	1.00	in	0.28			

Compensated Neutron Calibration Report

Serial Number: 24
Tool Model: PSI

CALIBRATION

Detector	Readings		Target		Normalization
Short Space	1.00	cps	1.00	cps	1.8000
Long Space	1.00	cps	1.00	cps	2.1000

Gamma Ray Calibration Report

Serial Number: 12
Tool Model: PSI
Performed: Wed Aug 27 01:36:17 2003

Calibrator Value: 253 GAPI
Background Reading: 30 cps
Calibrator Reading: 390 cps
Sensitivity: 0.59 GAPI/cps