



Weatherford®

**COMPENSATED DENSITY
COMPENSATED NEUTRON
LOG (TVD)**

KINDER MORGAN C02 Co. L.P

YG-1

McELMO DOME

MONTEZUMA

U.S.A. / COLORADO

SHL: 1796' FNL & 1915' FEL

SEC 14	TWP 37N	RGE 18W	Other Services MDL/MMR		CMI CXD
API Number		05-033-06697		SGS	
Permit Number					
Permanent Datum GL, Elevation 6661 feet					Elevations: feet
Log Measured From KB					KB 6686.00
Drilling Measured From KB					DF 6686.00
					GL 6661.00
Date	29-SEP-2012				
Run Number	1				
Depth Driller	8200.00				feet
Depth Logger	8200.00				feet
First Reading	8197.00				feet
Last Reading	8026.00				feet
Casing Driller	8045.00				feet
Casing Logger	8026.00				feet
Bit Size	6.000				inches
Hole Fluid Type	H2O				
Density / Viscosity	8.30		g/cc		
PH / Fluid Loss	8.70				
Sample Source	PIT				
Rm @ Measured Temp	4.71 @ 62.0		ohm-m		
Rmf @ Measured Temp	3.76 @ 62.0		ohm-m		
Rmc @ Measured Temp	5.65 @ 61.0		ohm-m		
Source Rmf / Rmc	CAL		CAL		
Rm @ BHT	2.02 @148.0		ohm-m		
Time Since Circulation	8 HOURS				
Max Recorded Temp	148.00		deg F		
Equipment Name	COMPACT				
Equipment / Base	13038		GJ/CO		
Recorded By	M.RICHINS				
Witnessed By	E.NUCKOLS				GEOLOGIST
COMPANY REP	D.RYAN				

BOREHOLE RECORD

Last Edited: 30-SEP-2012 14:52

Bit Size inches	Depth From feet	Depth To feet
6.000	8026.00	8200.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
INTERMEA	7.000	0.00	8026.00	29.00

REMARKS

TOOLS RAN IN FOUR SEPERATE RUNS:

1ST RUN: MBE, MBE, SHA, MCG, MUG, MLE, MMR

2ND RUN: SHA, MCG, SGS, MIS-D, MDN, MPD

3ND RUN: SHA, MCG, MIM, MIE

4RD RUN: SHA, MCG, MBN, MDM, MRD, MTD

TRUE VERTICAL DEPTH VALUES AQIRED FROM BOTH SCIENTIFIC DRILLING AND WEATHERFORD WIRELINE DIRECTIONAL SURVEYS.

SCIENTIFIC DRILLING DIRECTIONAL DATA USED FROM 6511 FEET TO 8009 FEET (MEASURED DEPTH).

WEATHERFORD WIRELINE DIRECTIONAL DATA USED FROM 8026 FEET TO 8179 FEET (MEASURED DEPTH).

NO DIRECTIONAL DATA AVIALABLE FORM 8009 FEET TO 8026 FEET (MEASURED DEPTH).

HARDWARE: MDN: DUAL NEUTRON BOWSPRING USED.

MPD: 8 INCH PROFILE PLATE USED.

MDL: TWO 1 INCH STANDOFFS USED.

2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY

API 0.00 DENSITY MATRIX USED TO CALCULATE POROSITY.

GAMMA, SPECTRAL GAMMA AND COMPENSATED NEUTRON LOGGED TO SURFACE.

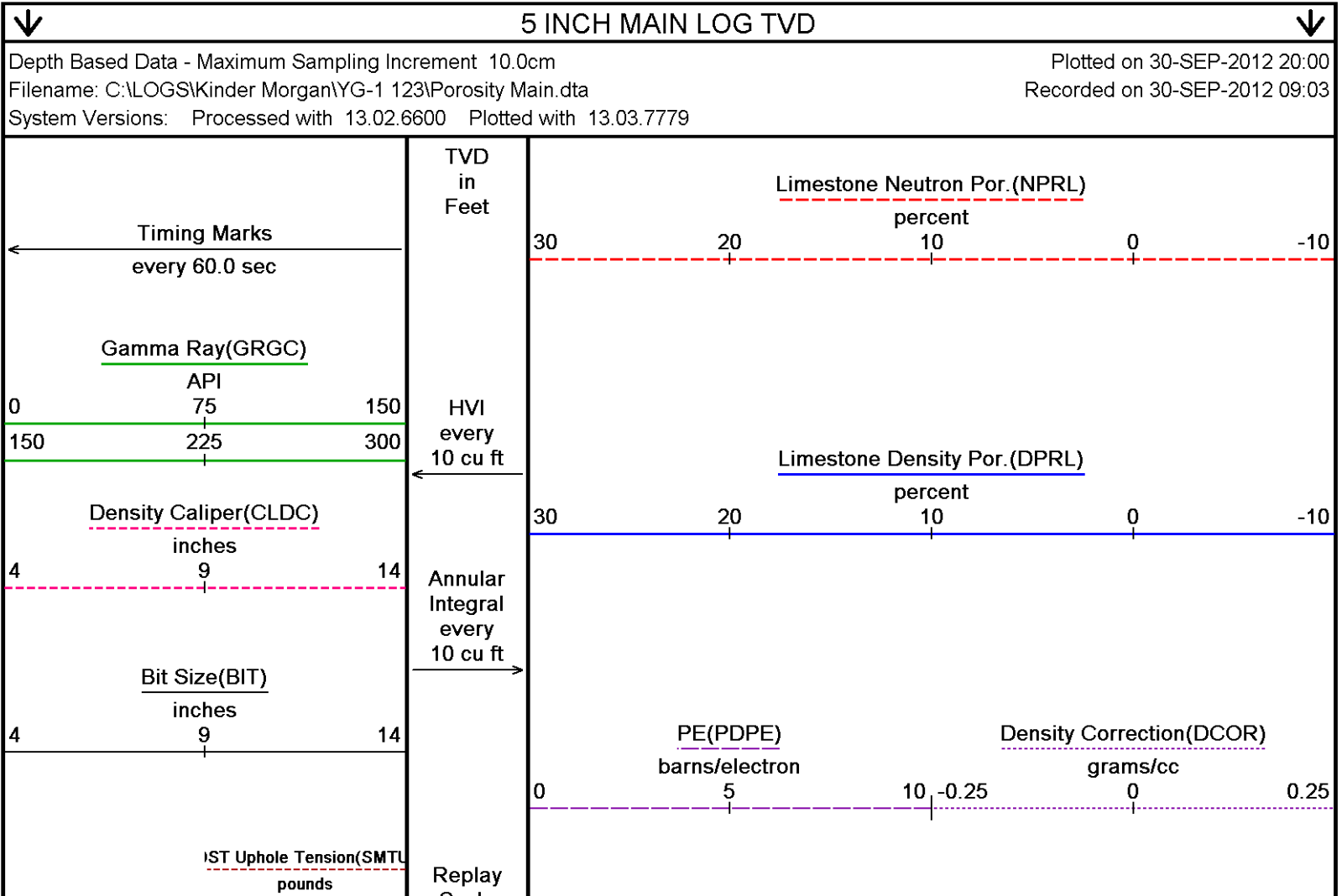
TIGHT PULLS, BOREHOLE SIZE AND RUGOSITY WILL AFFECT DATA QUALITY.

SERVICE ORDER # 3524844

RIG: NABORS 405

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 interpretations, and we shall not, except in the case of gross or wilful 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 in our price schedule.

TVD TABLE					
Last Edited: 30-SEP-2012 19:24					
Logged Depth feet	True Depth feet	Logged Depth feet	True Depth feet	Logged Depth feet	True Depth feet
6511.00	6505.11	7747.00	7739.79	8066.00	8058.79
6606.00	6599.85	7778.00	7770.79	8076.00	8068.79
6700.00	6693.59	7809.00	7801.79	8086.00	8078.79
6795.00	6788.37	7904.00	7896.79	8096.00	8088.79
6890.00	6883.18	7936.00	7928.79	8106.00	8098.79
6984.00	6977.03	7967.00	7959.79	8116.00	8108.79
7080.00	7072.93	7999.00	7991.79	8126.00	8118.79
7175.00	7167.89	8009.00	8001.79	8136.00	8128.79
7269.00	7261.87	8026.00	8018.79	8146.00	8138.79
7364.00	7356.84	8036.00	8028.79	8156.00	8148.79
7456.00	7448.82	8046.00	8038.79	8166.00	8158.79
7651.00	7643.79	8056.00	8048.79	8176.00	8168.79



5000 0

Scale
1:240

210
TVD

250
TVD

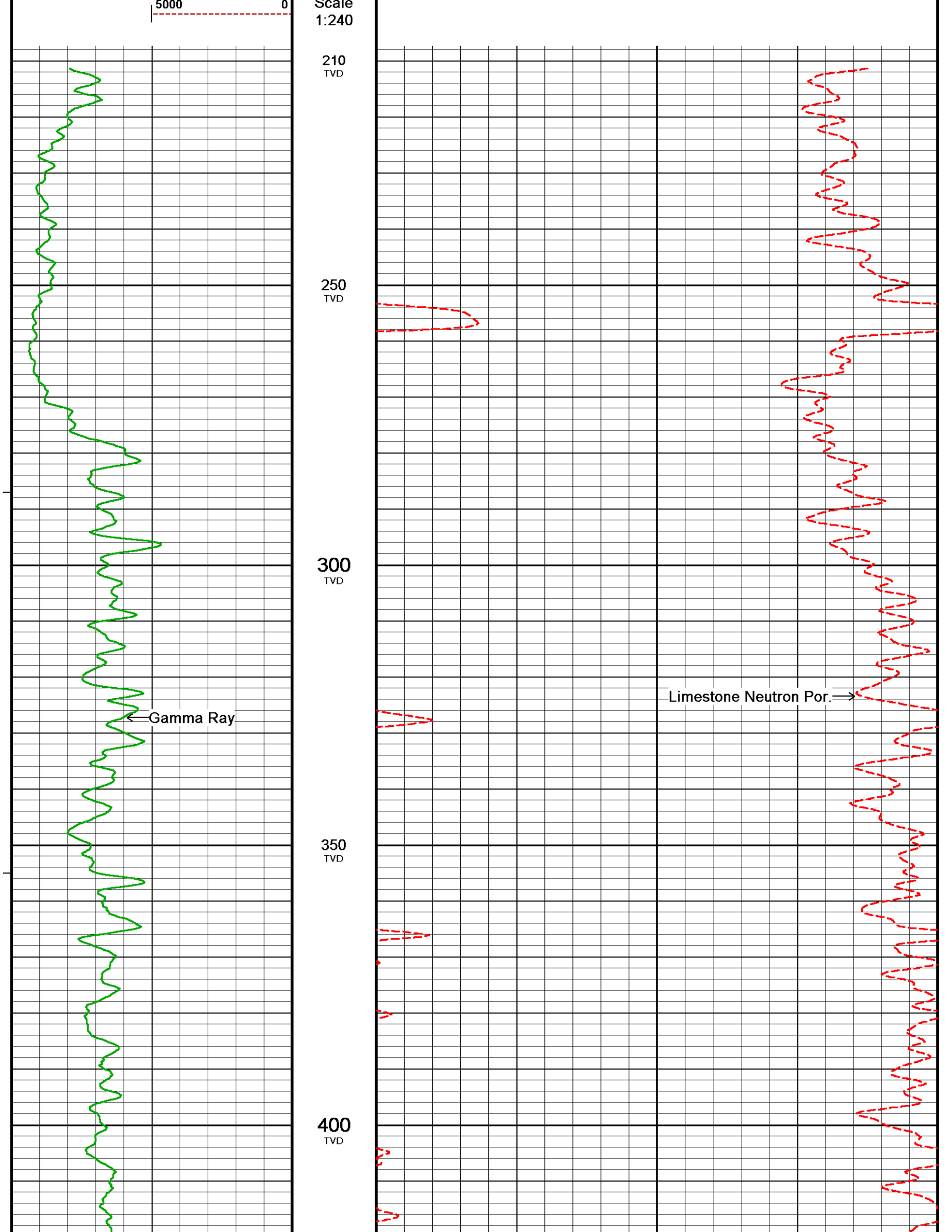
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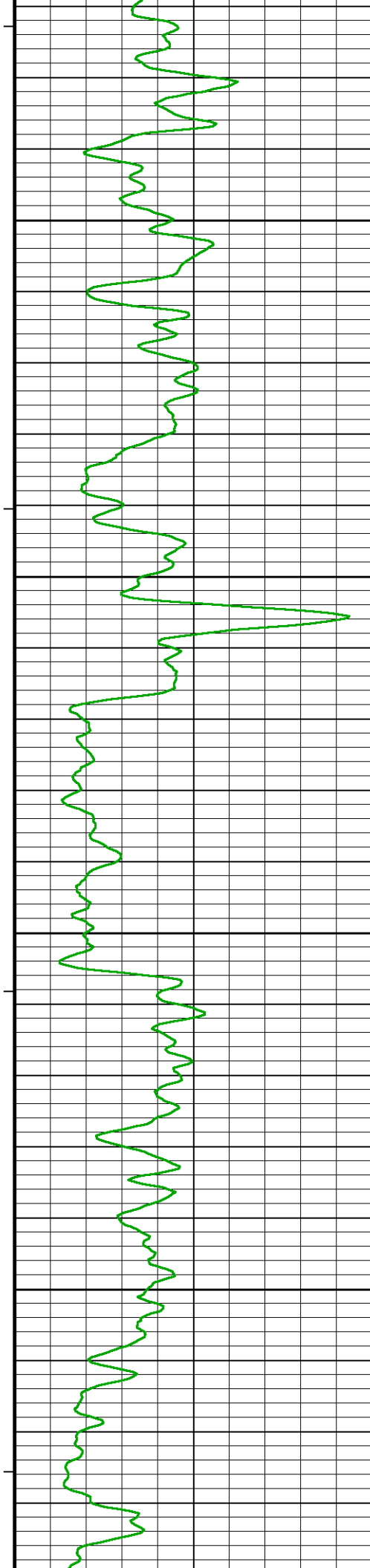
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← Gamma Ray

Limestone Neutron Por. →



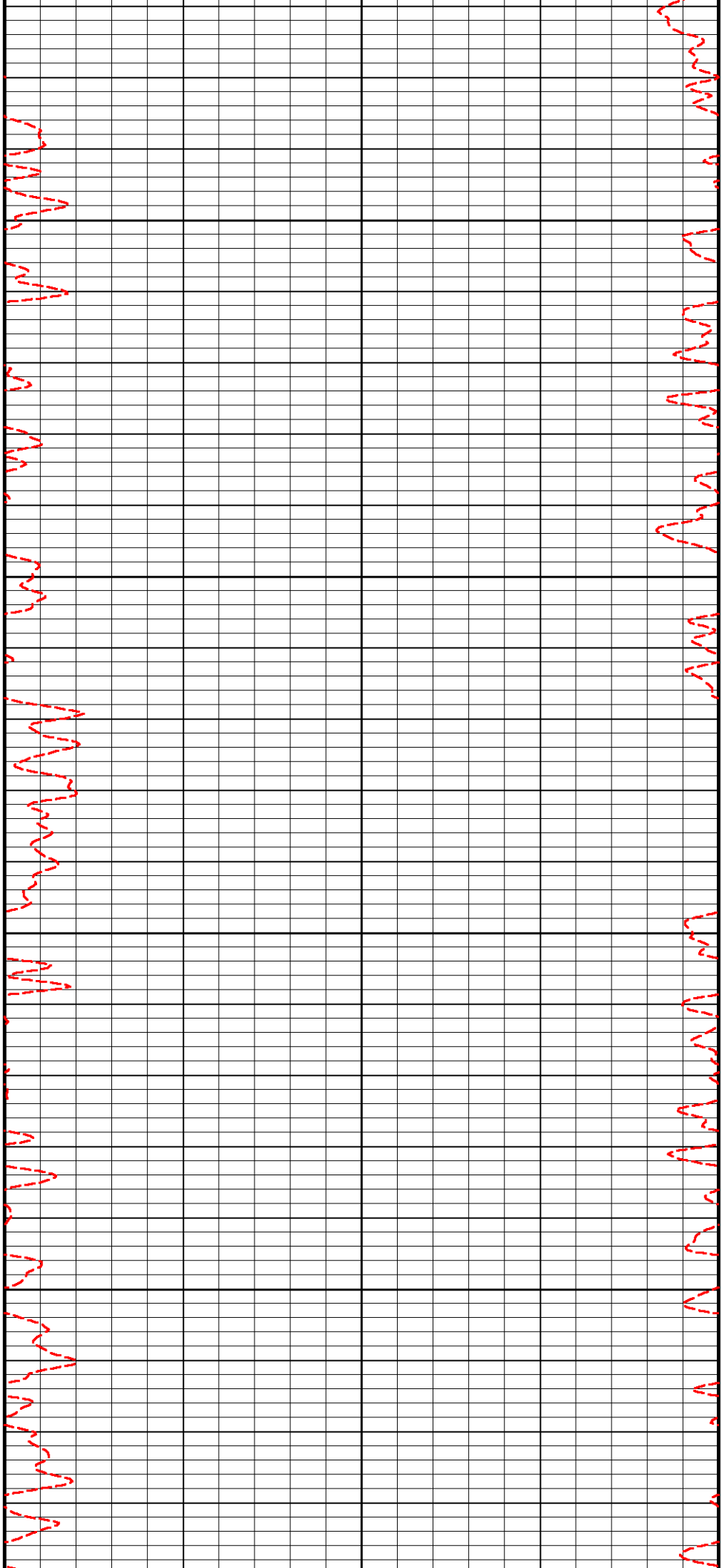


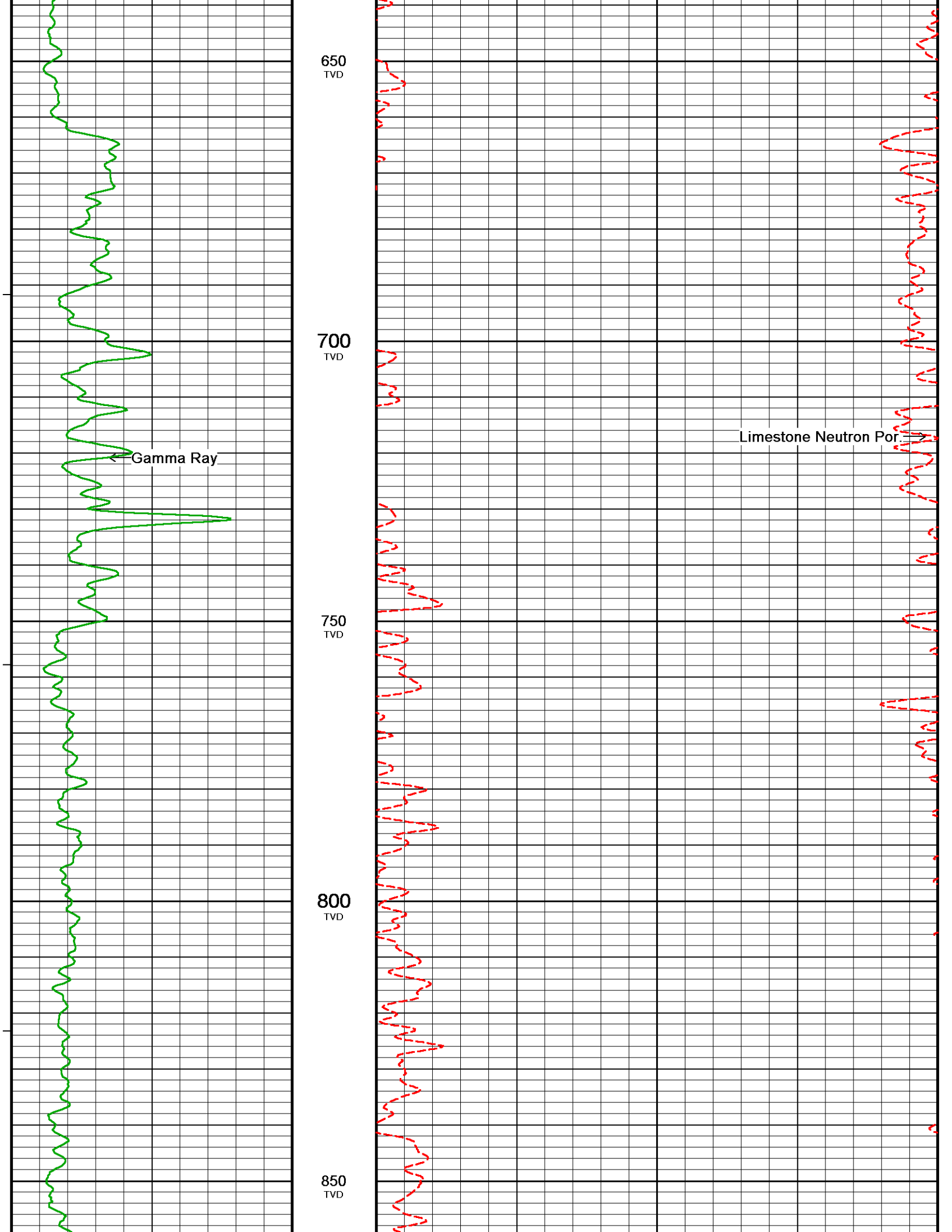
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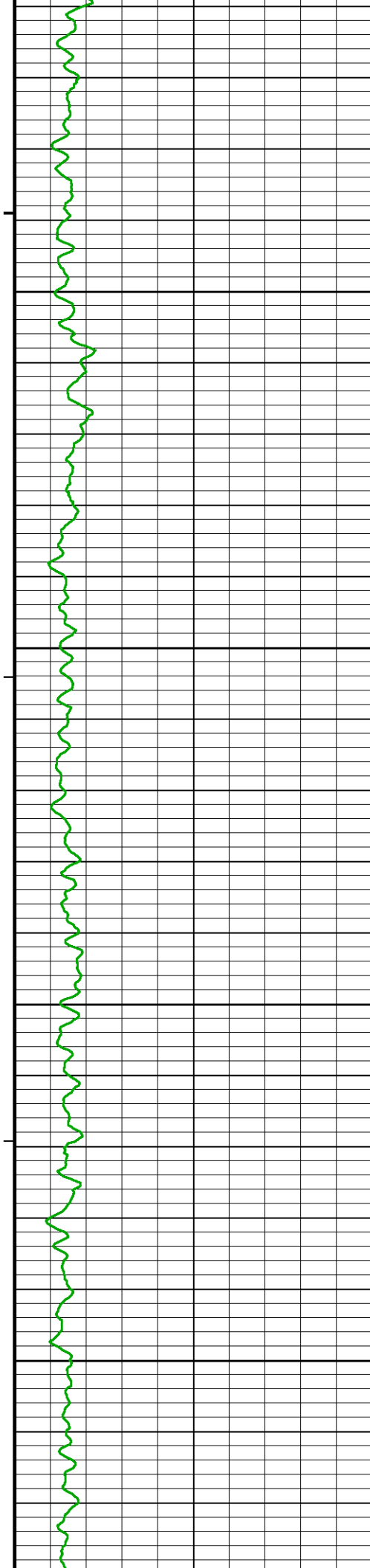
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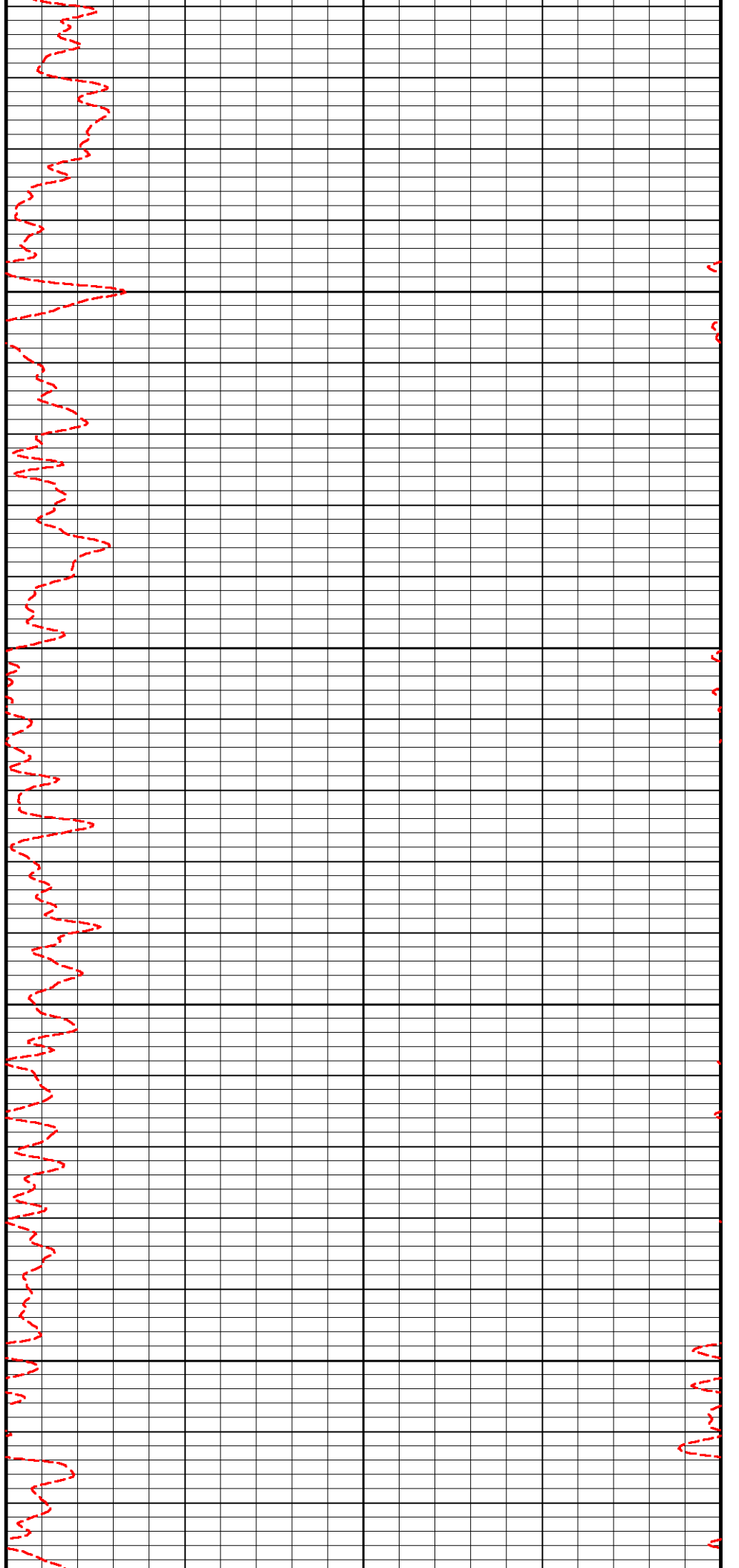


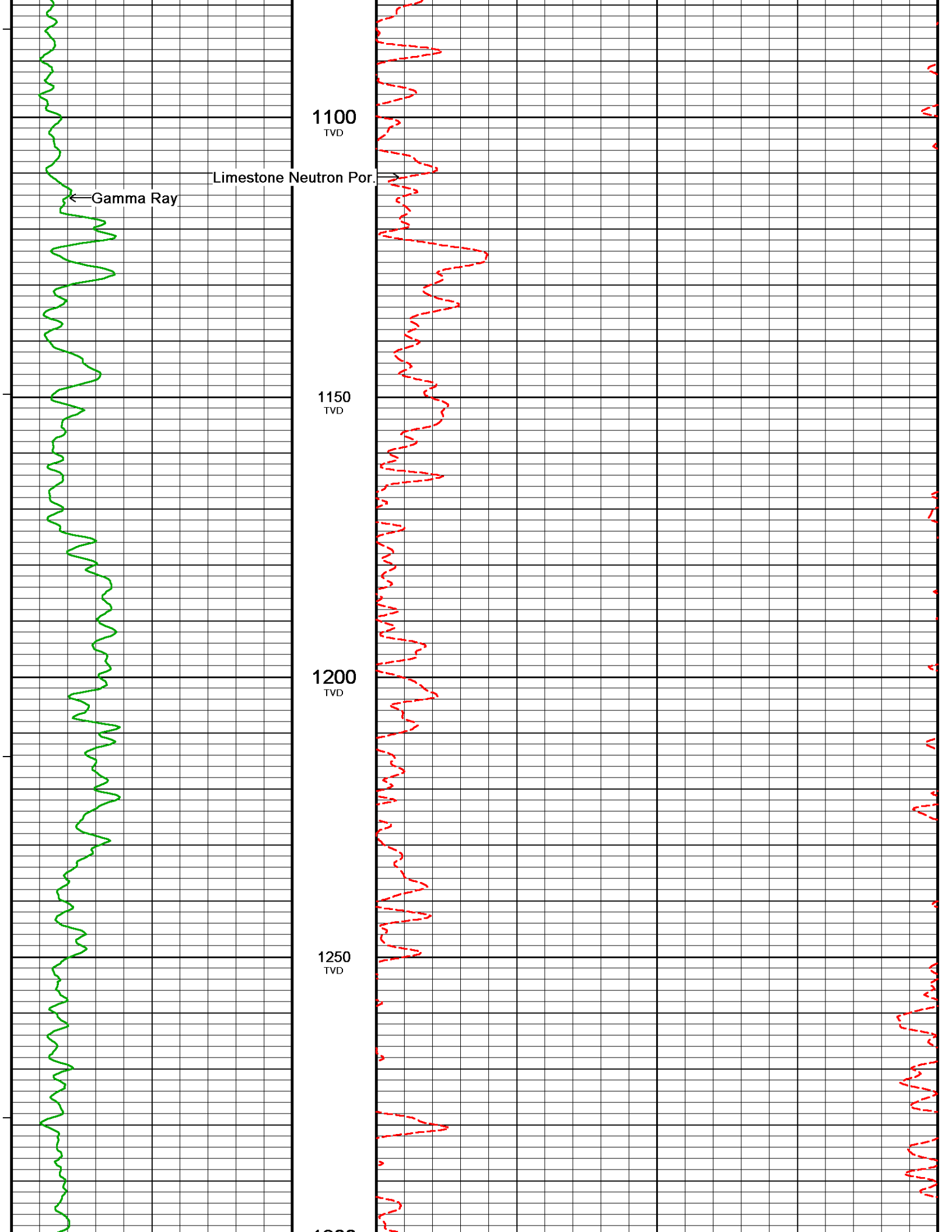
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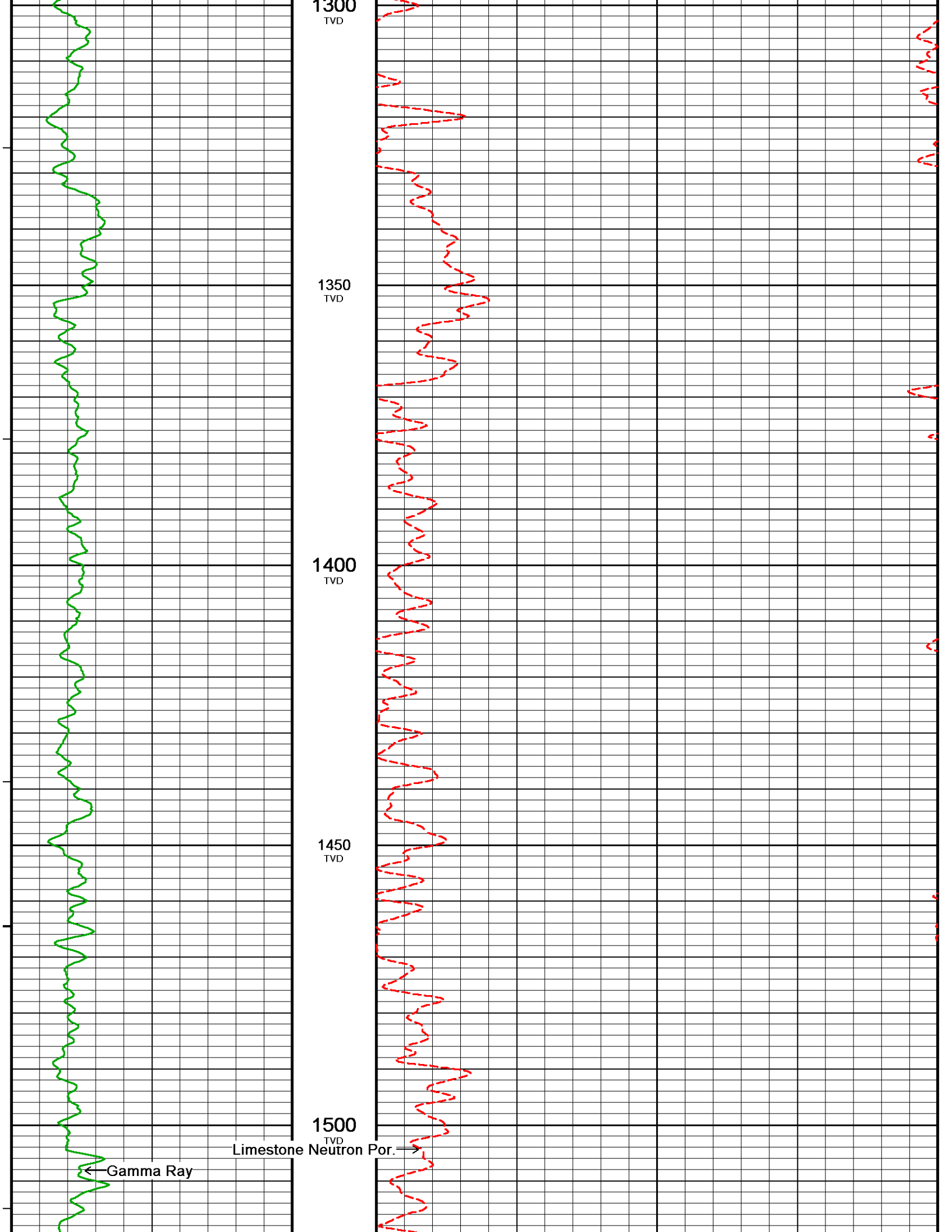
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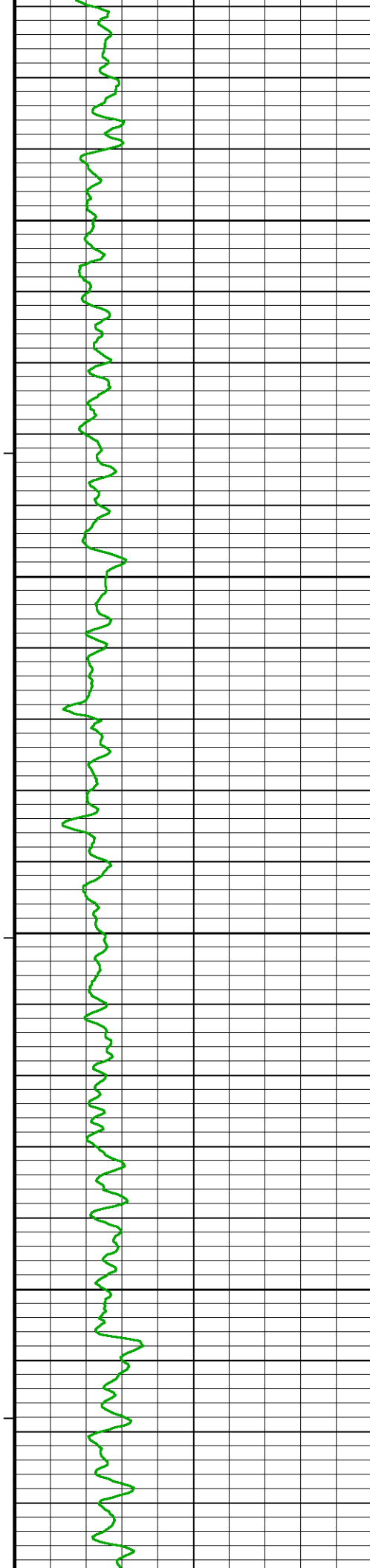
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1050
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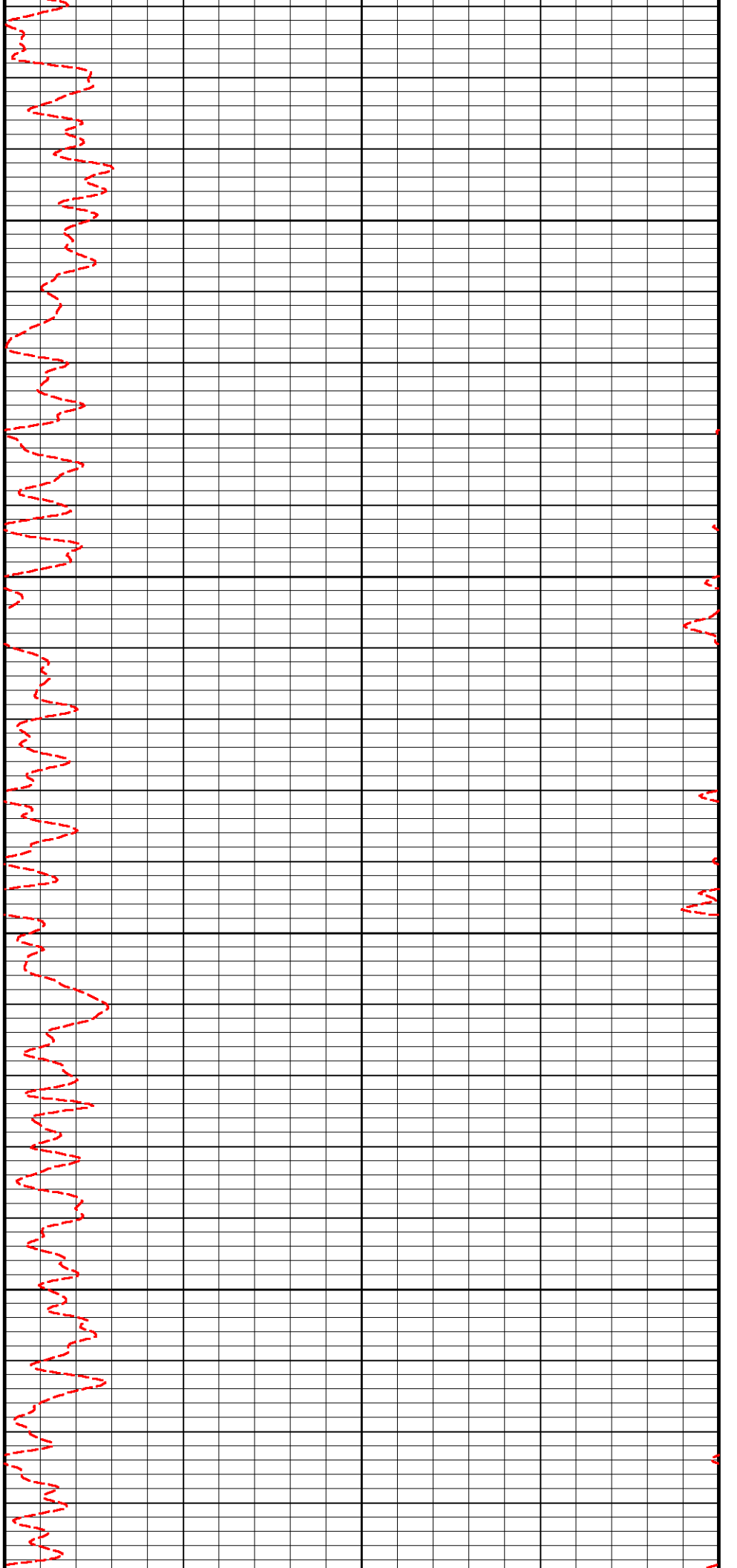


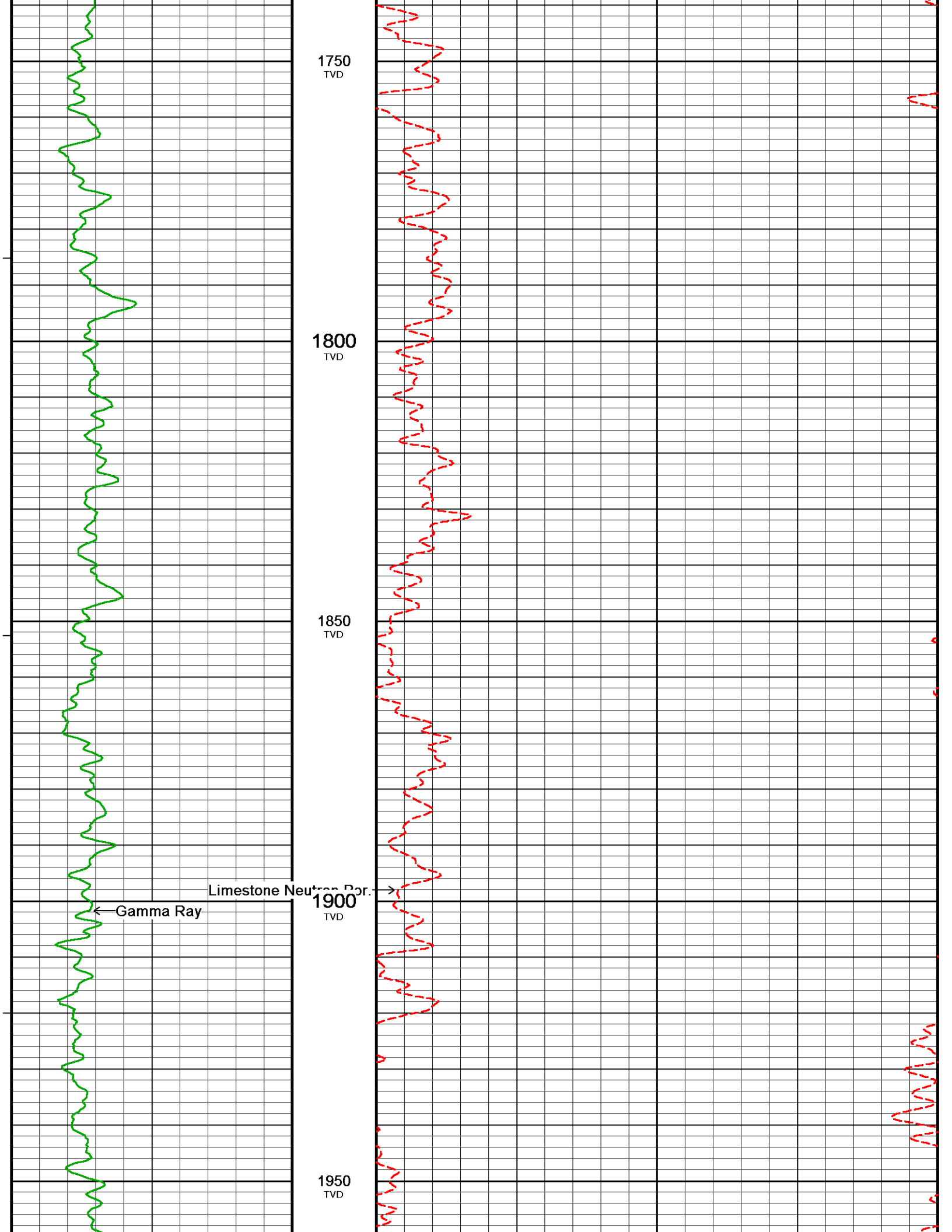
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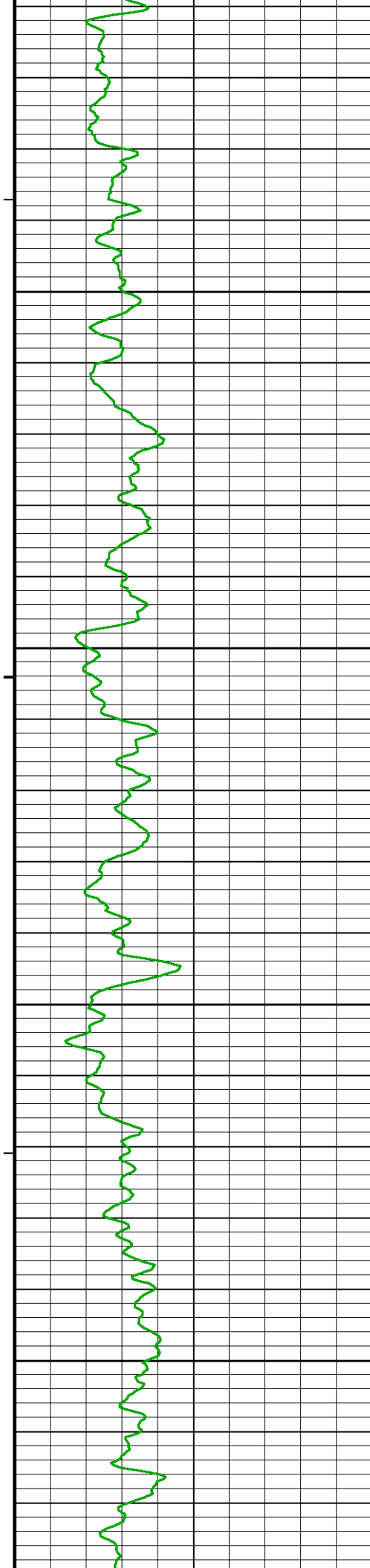
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TVD

1650
TVD

1700
TVD





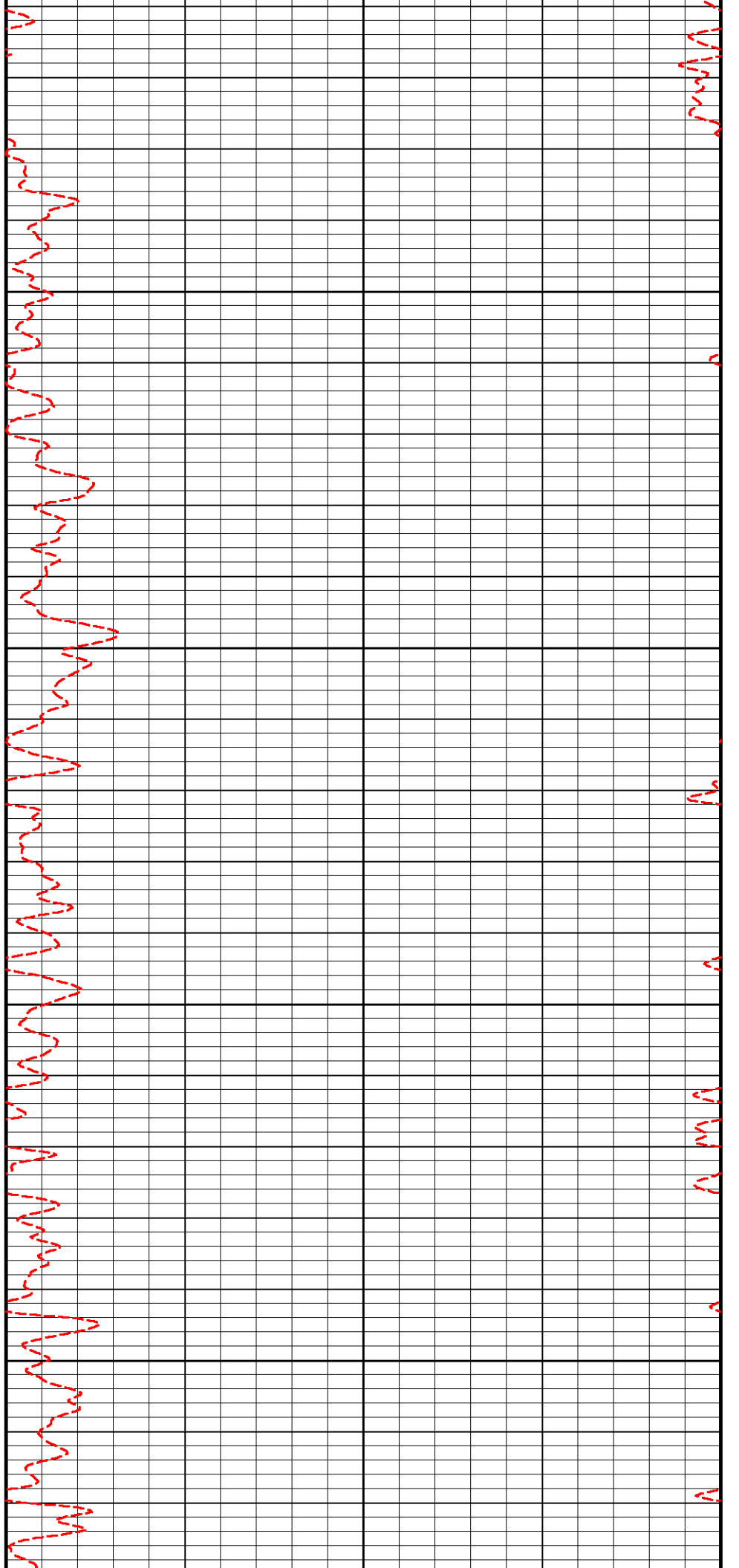


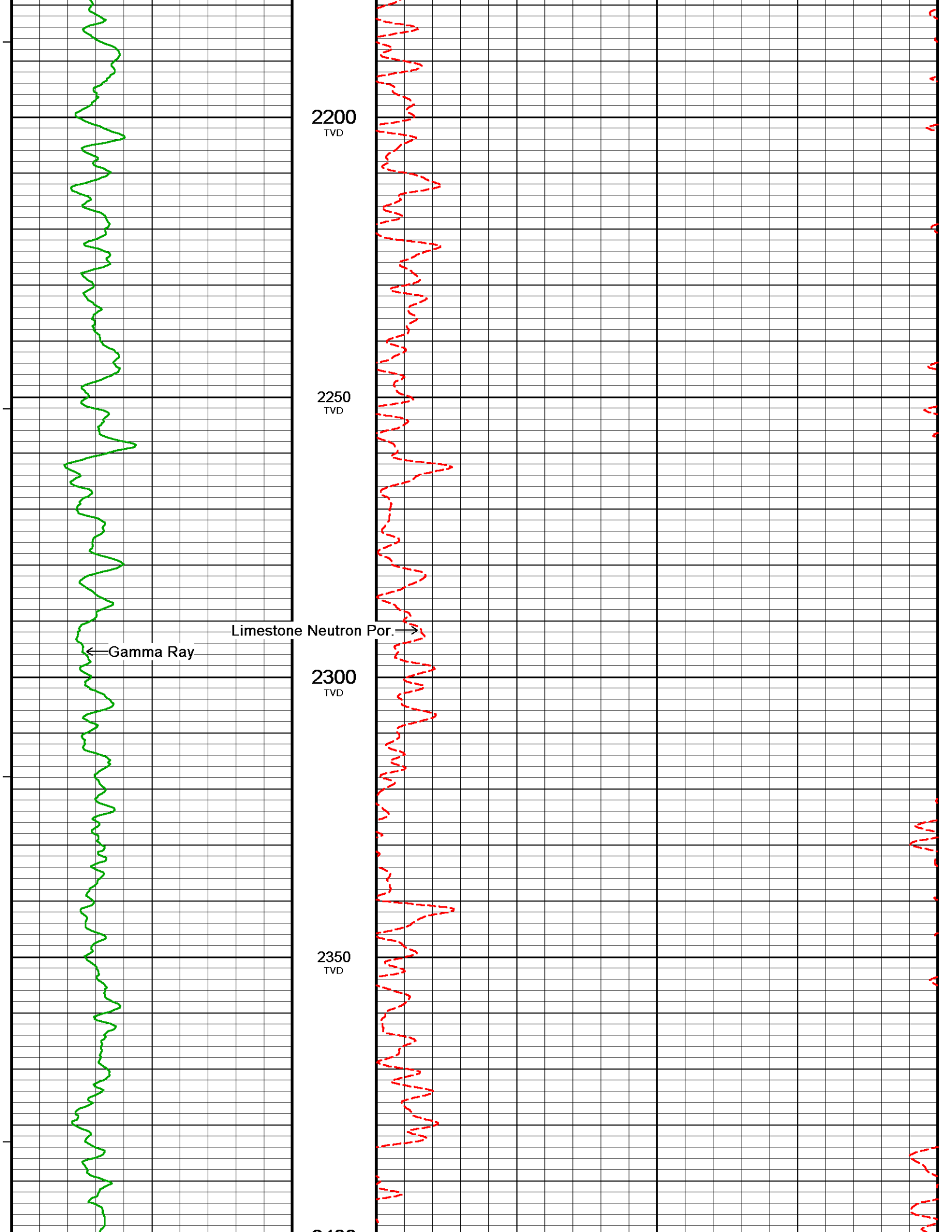
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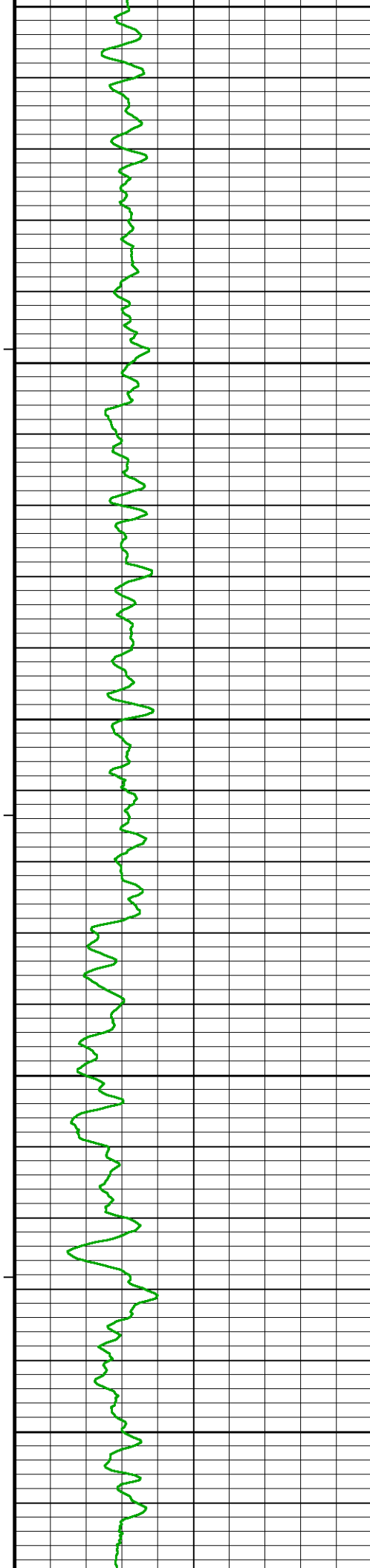
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2100
TVD

2150
TVD







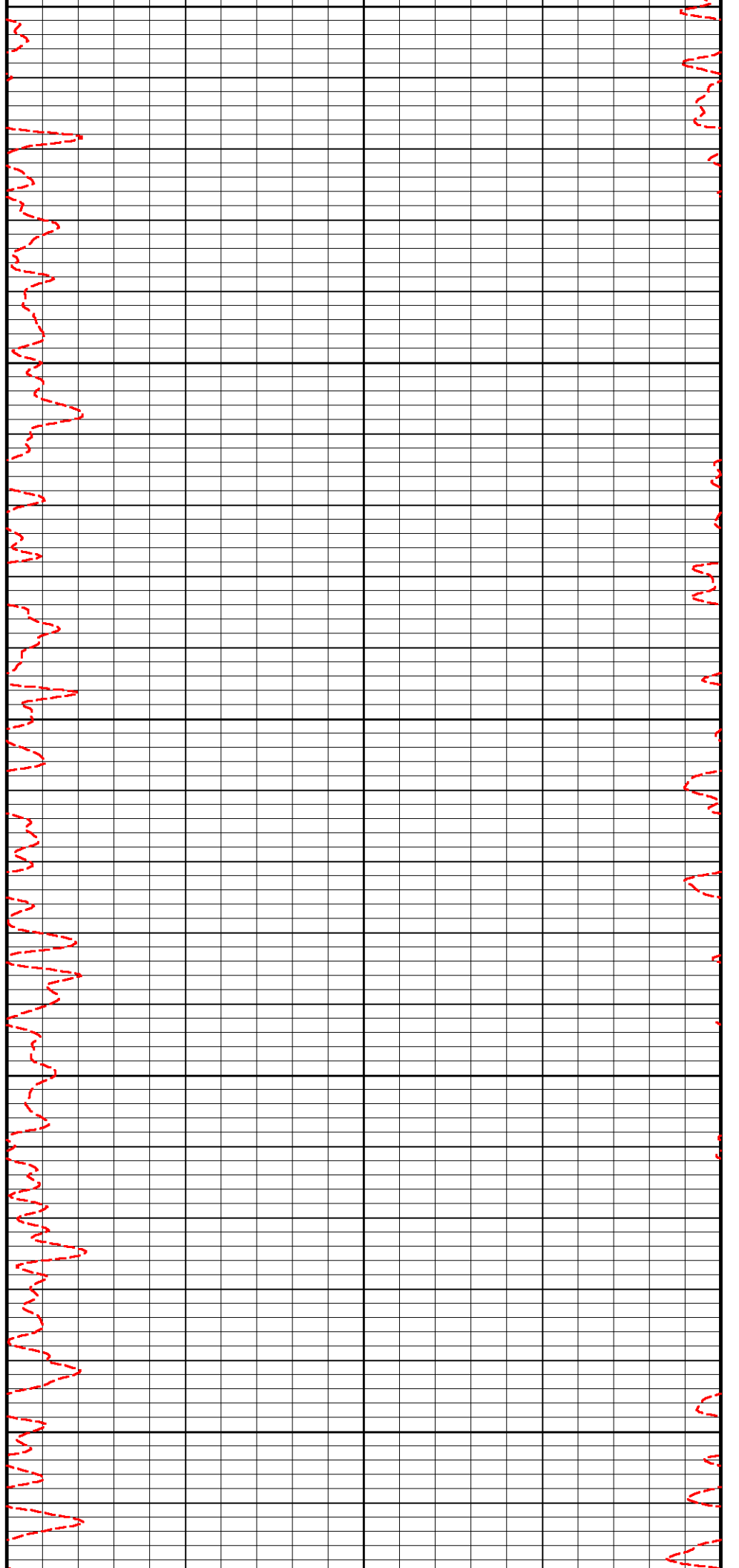
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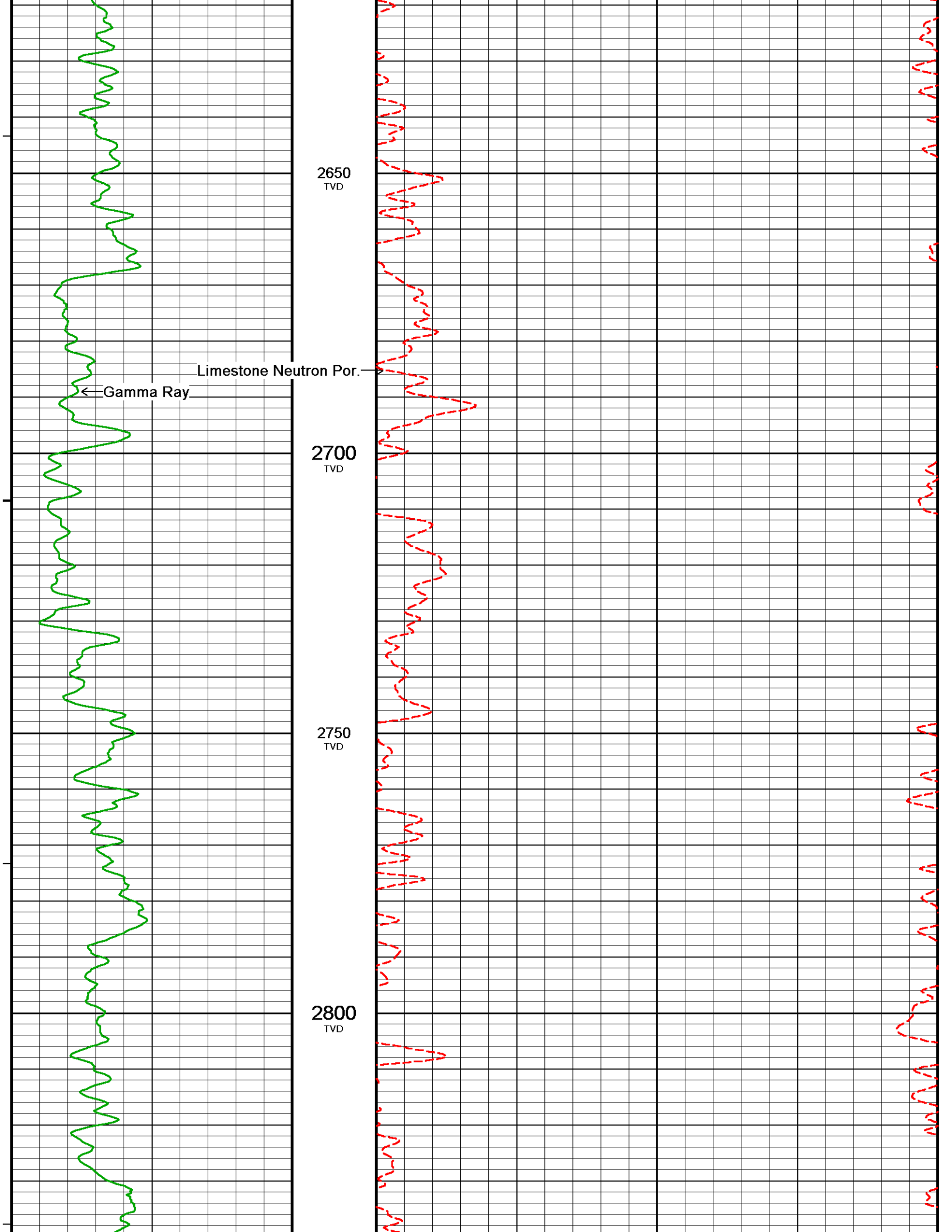
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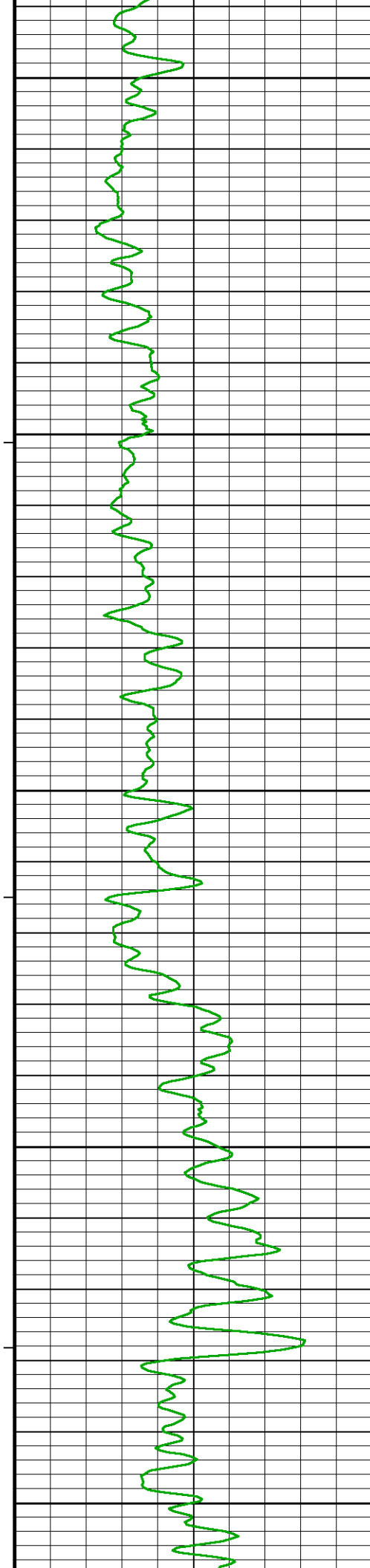
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2550
TVD

2600
TVD







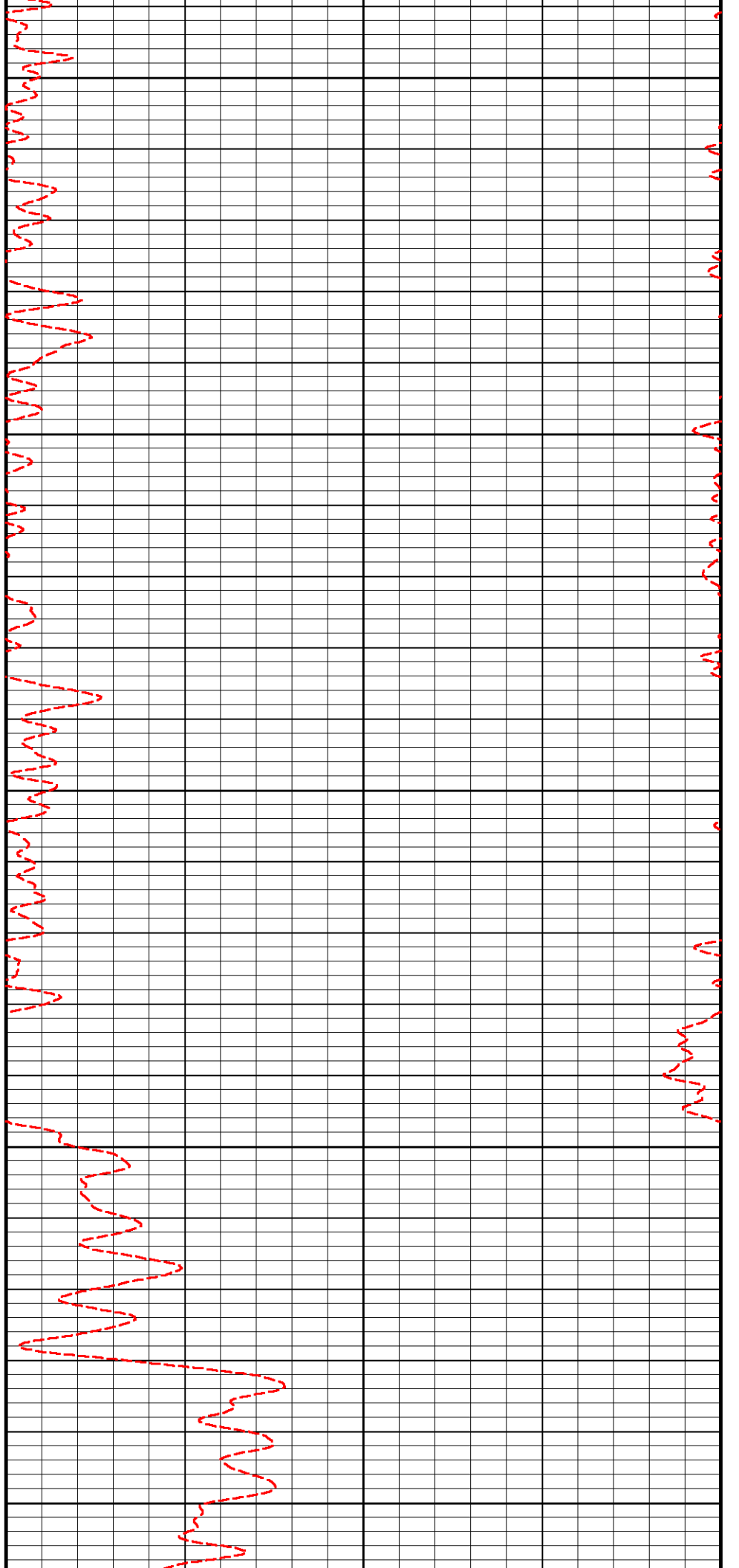
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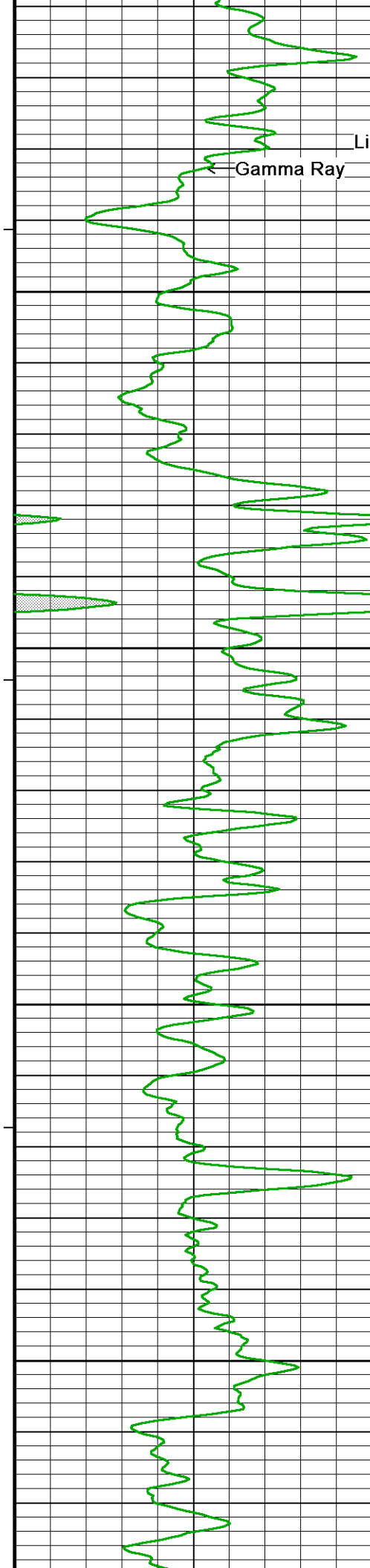
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TVD

2950
TVD

3000
TVD

3050
TVD





← Gamma Ray

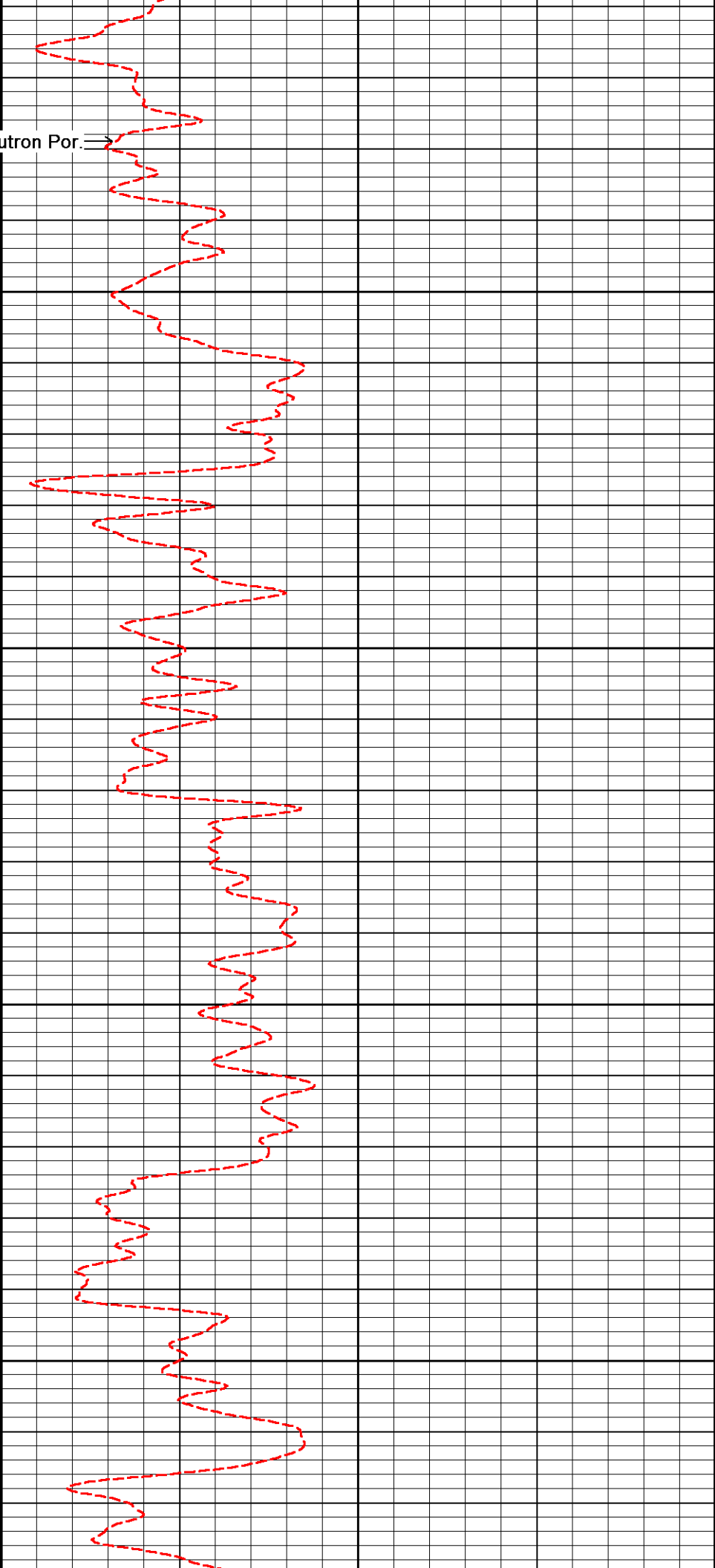
Limestone Neutron Por. →

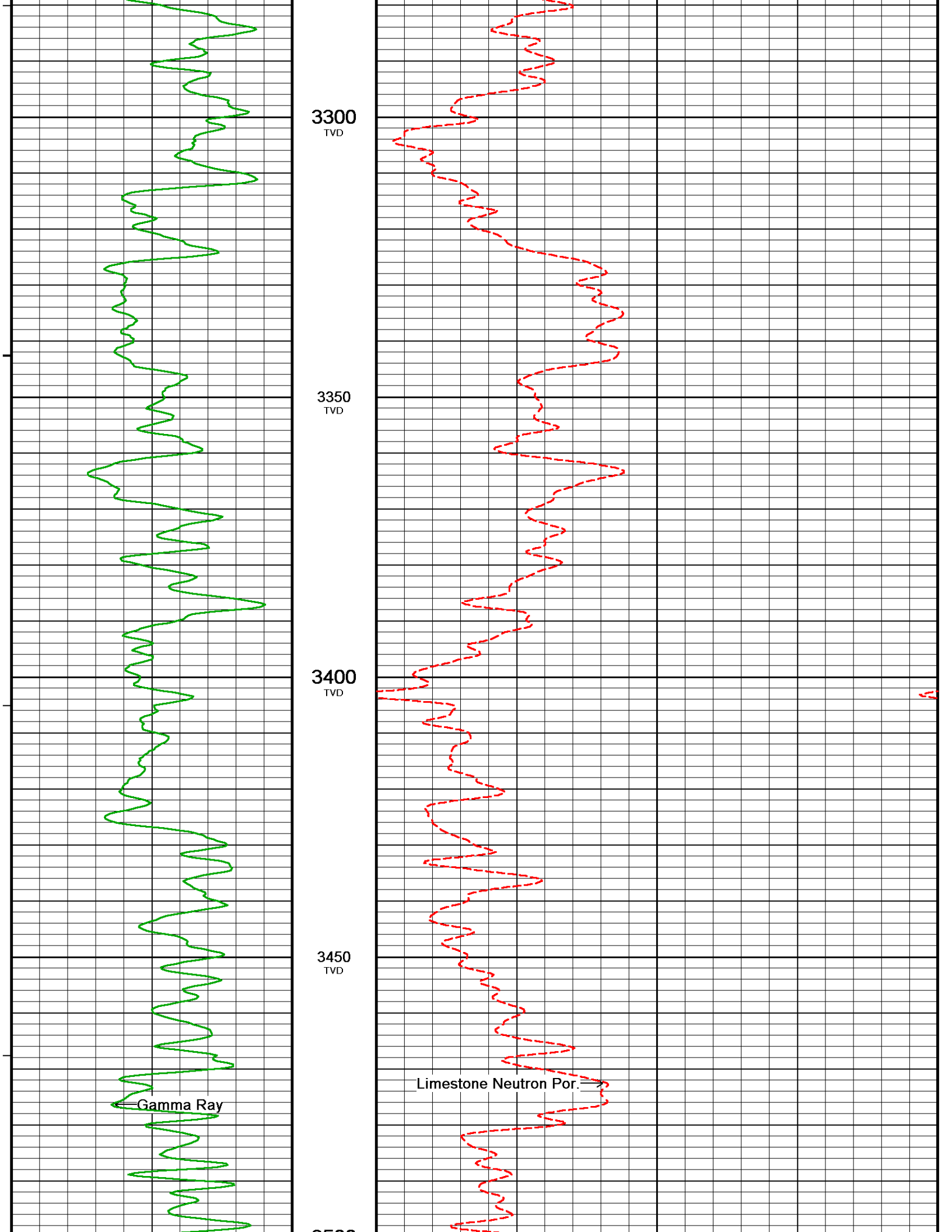
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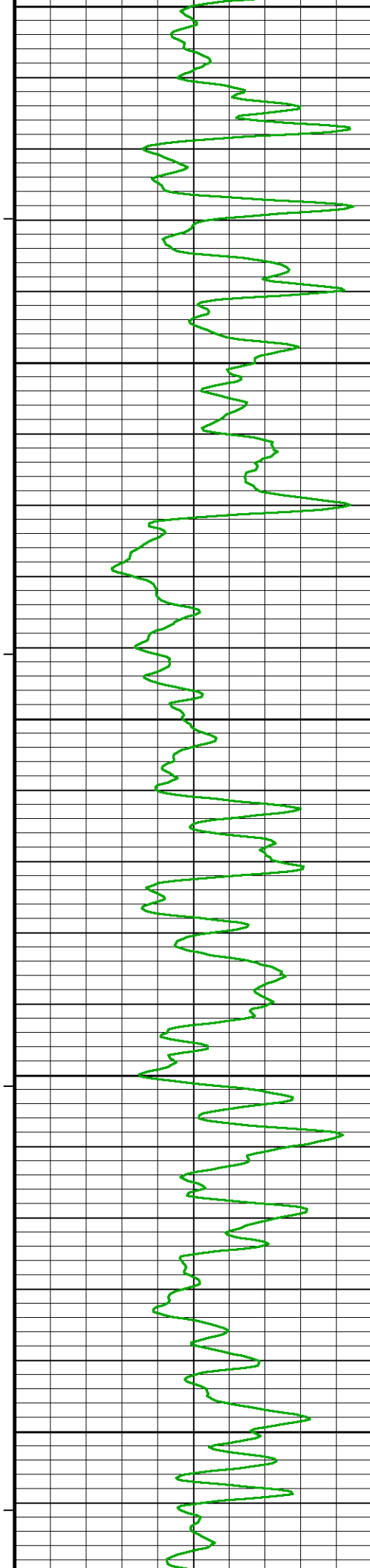
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3200
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3250
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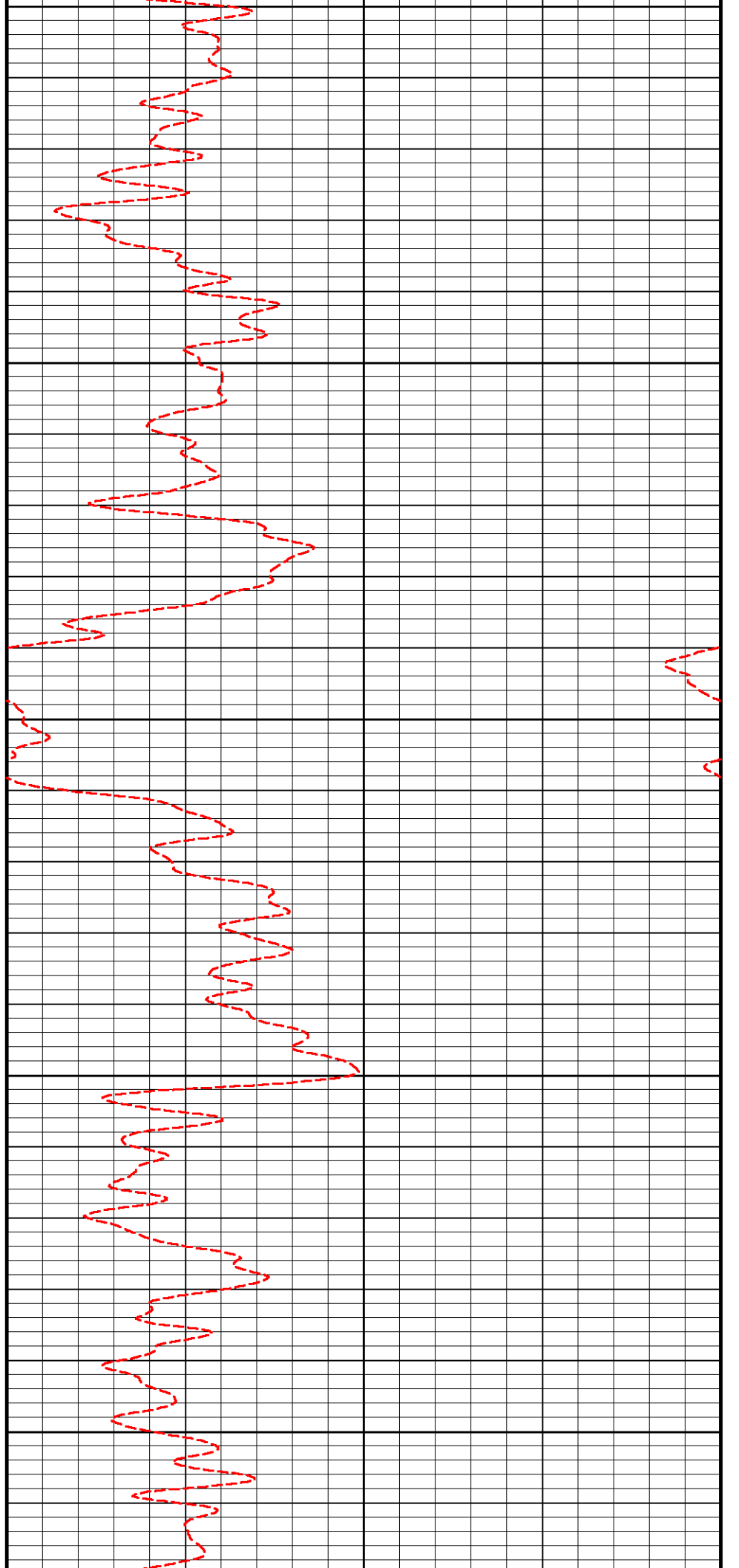
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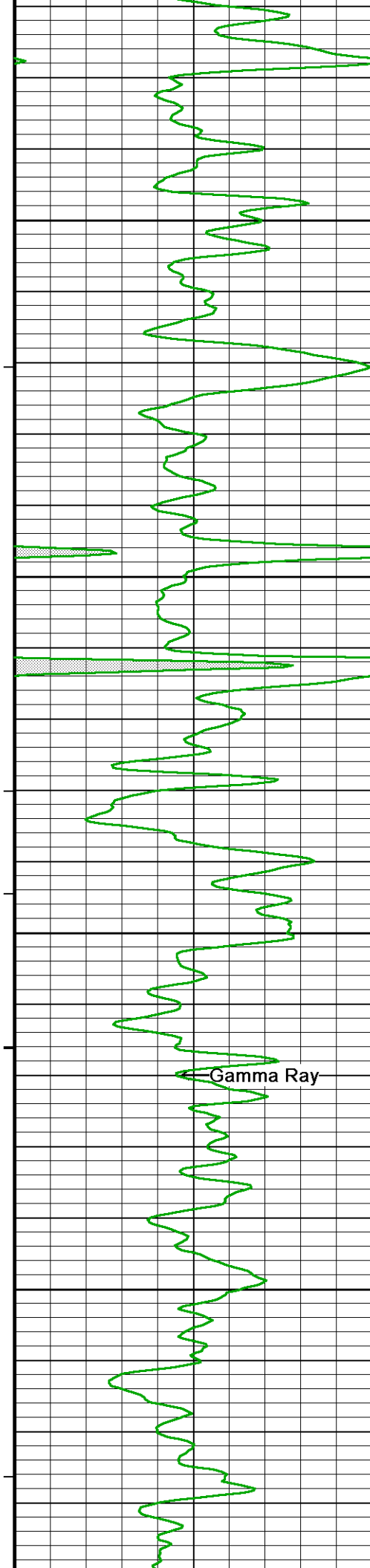
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3600
TVD

3650
TVD

3700
TVD





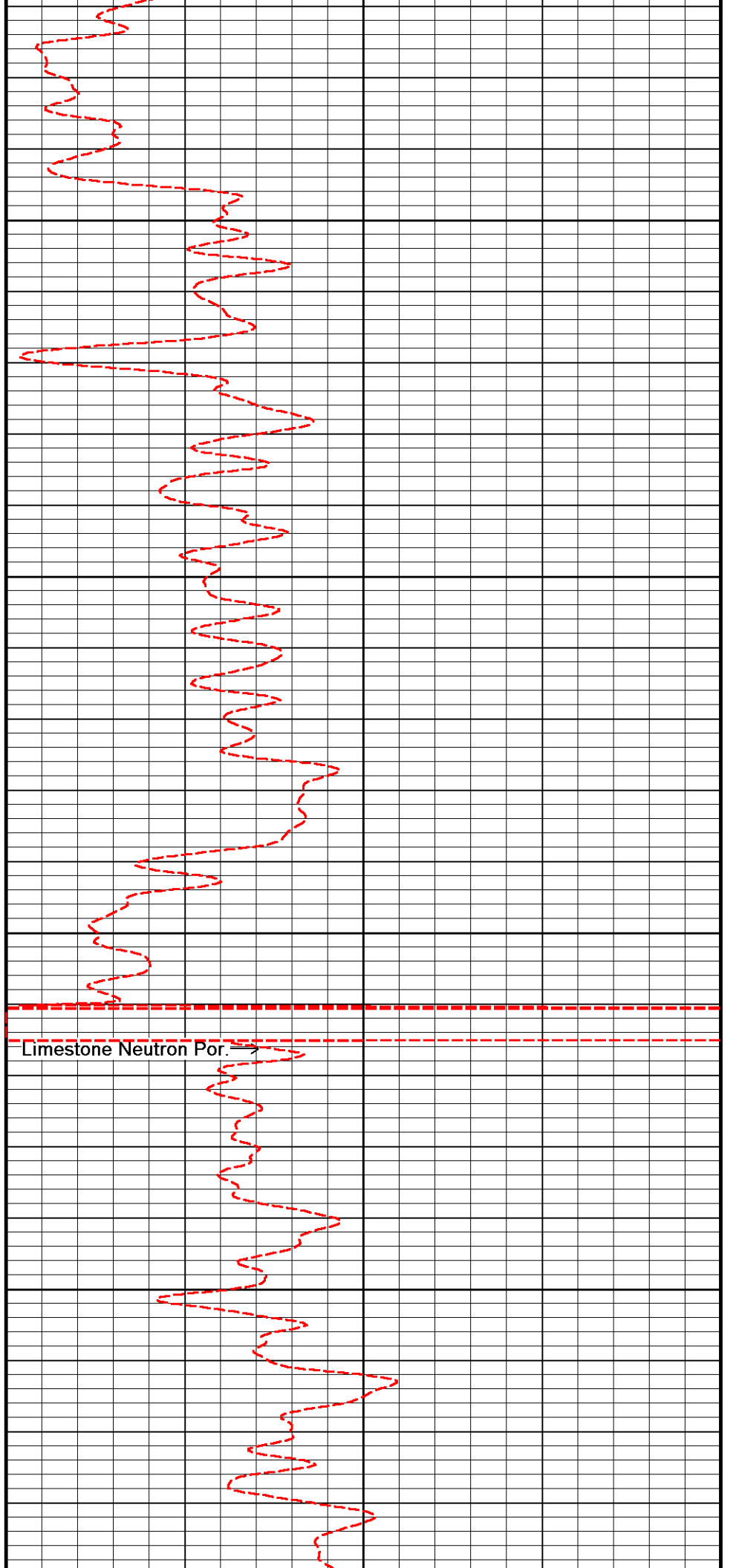
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3800
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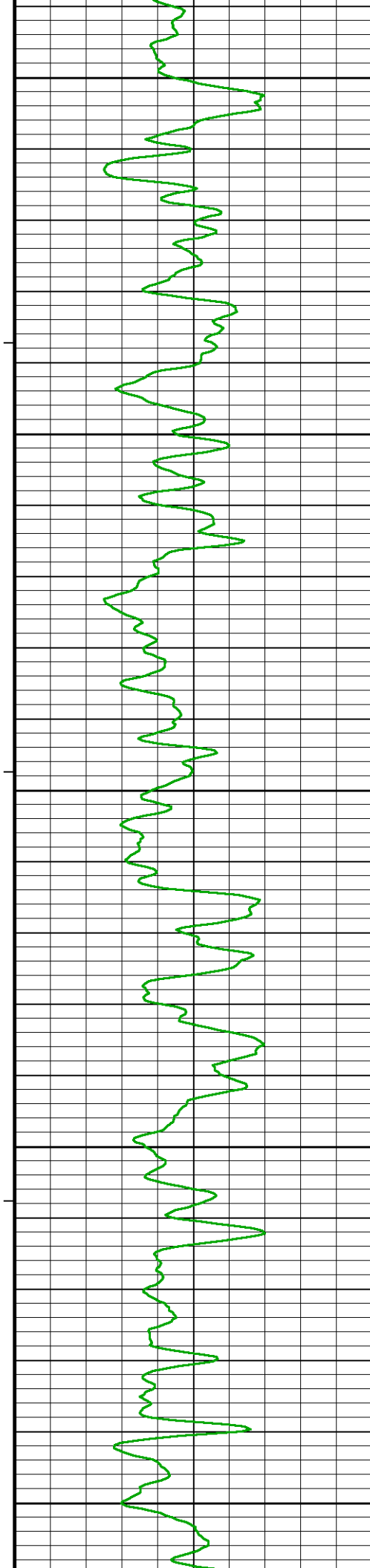
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3900
TVD

Gamma Ray



Limestone Neutron Por. →



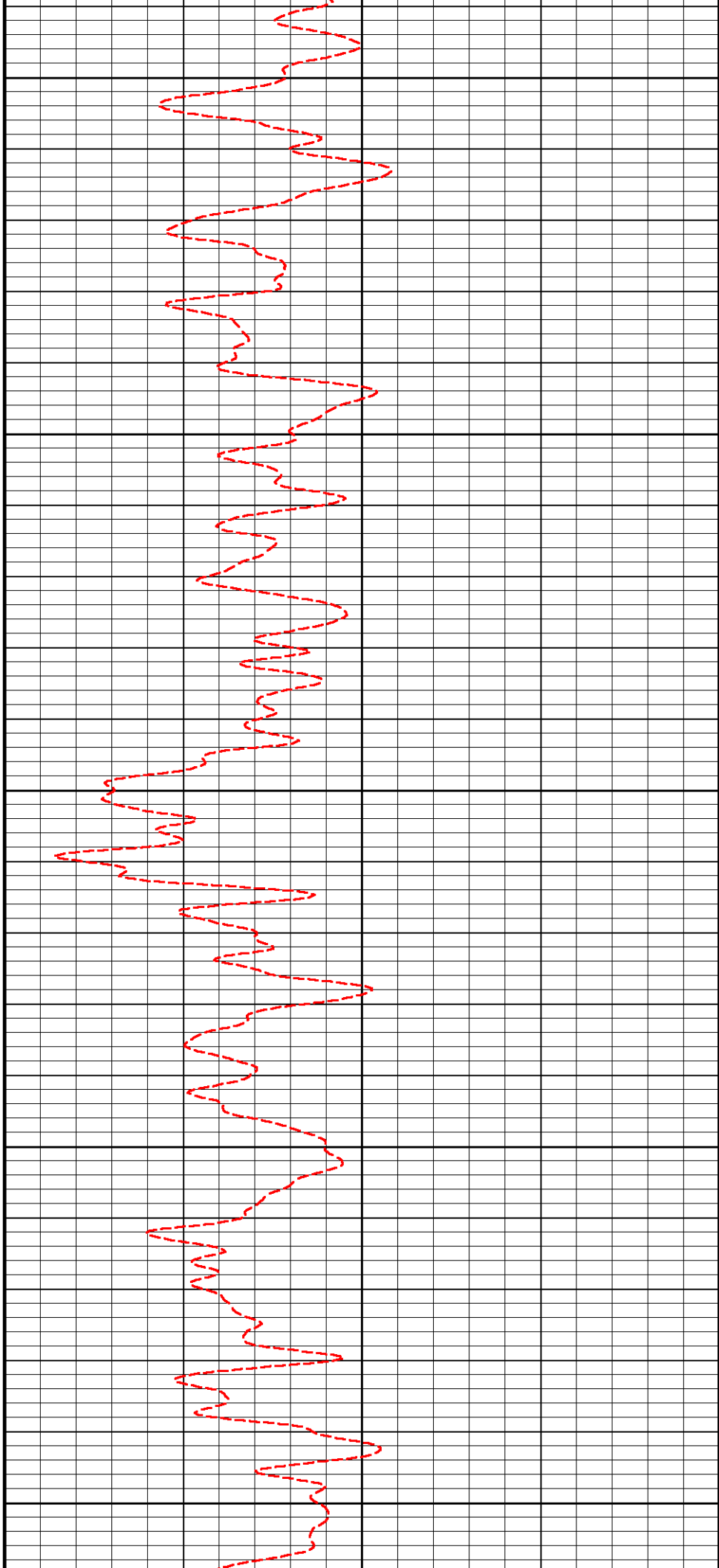
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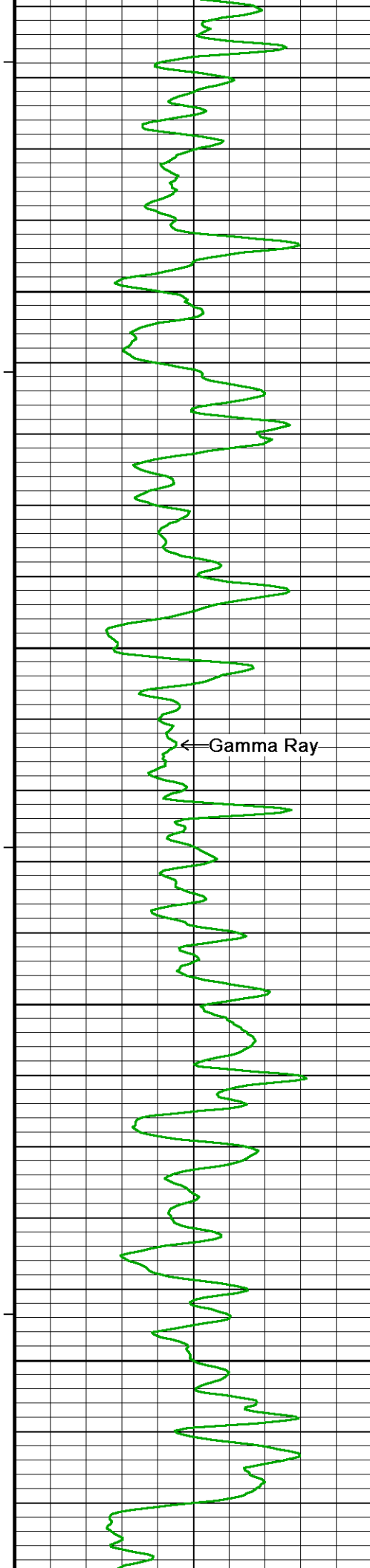
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TVD

4050
TVD

4100
TVD

4150
TVD





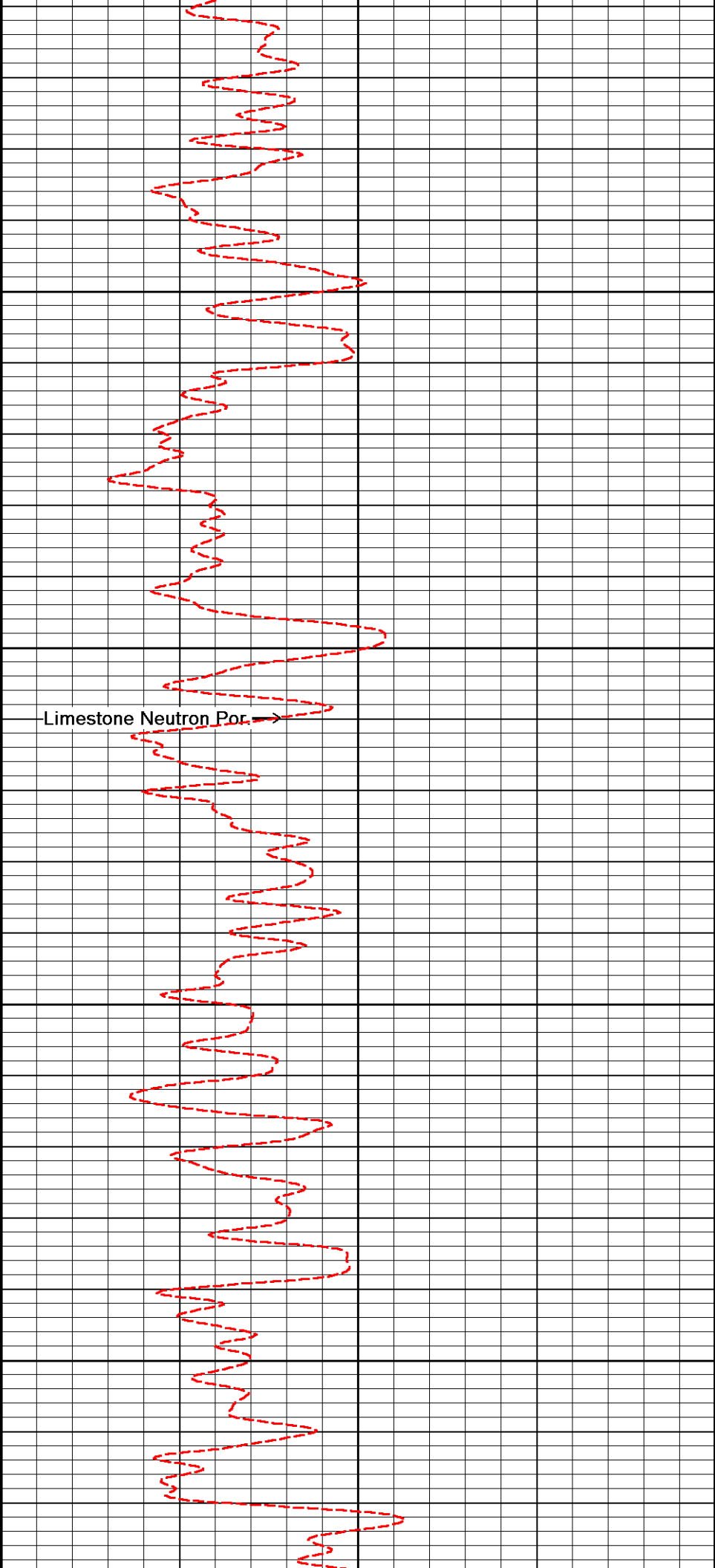
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TVD

4250
TVD

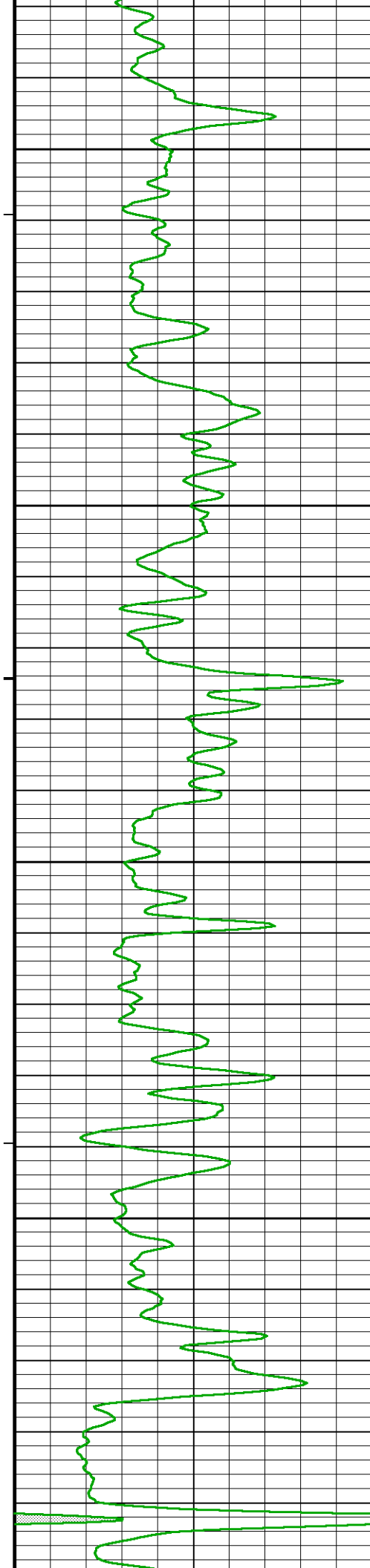
4300
TVD

4350
TVD

← Gamma Ray



Limestone Neutron Por. →



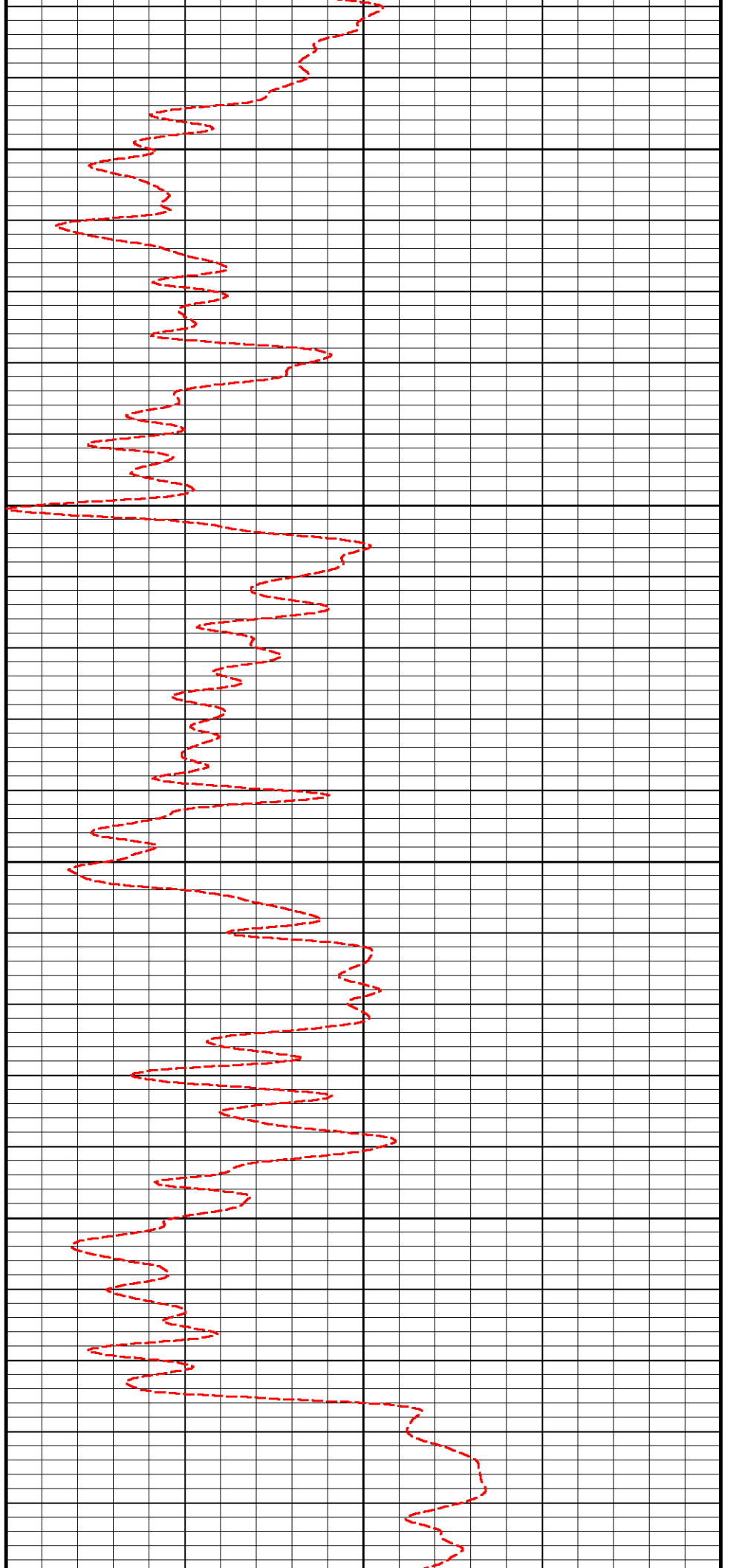
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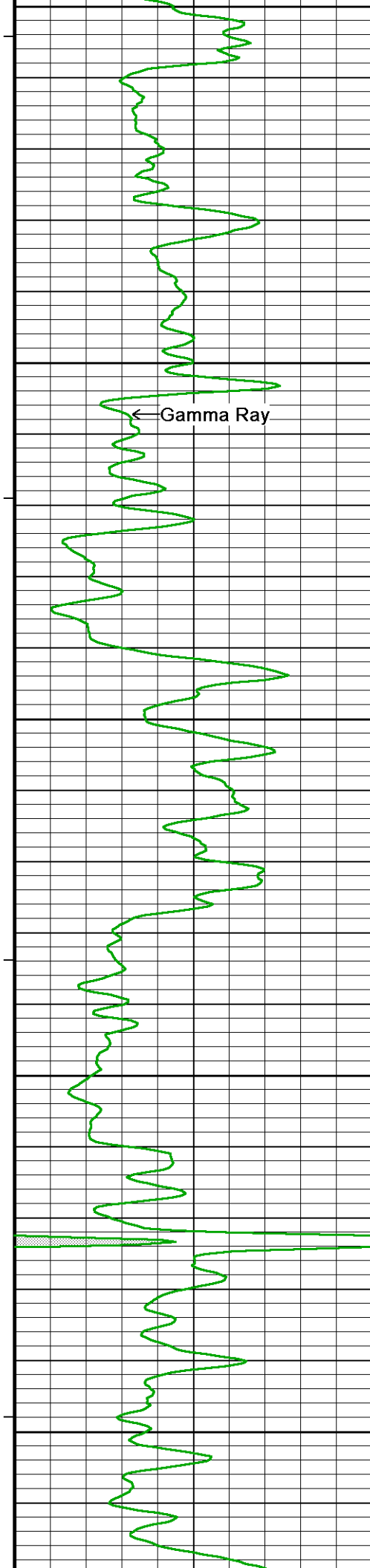
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TVD

4500
TVD

4550
TVD

4600
TVD





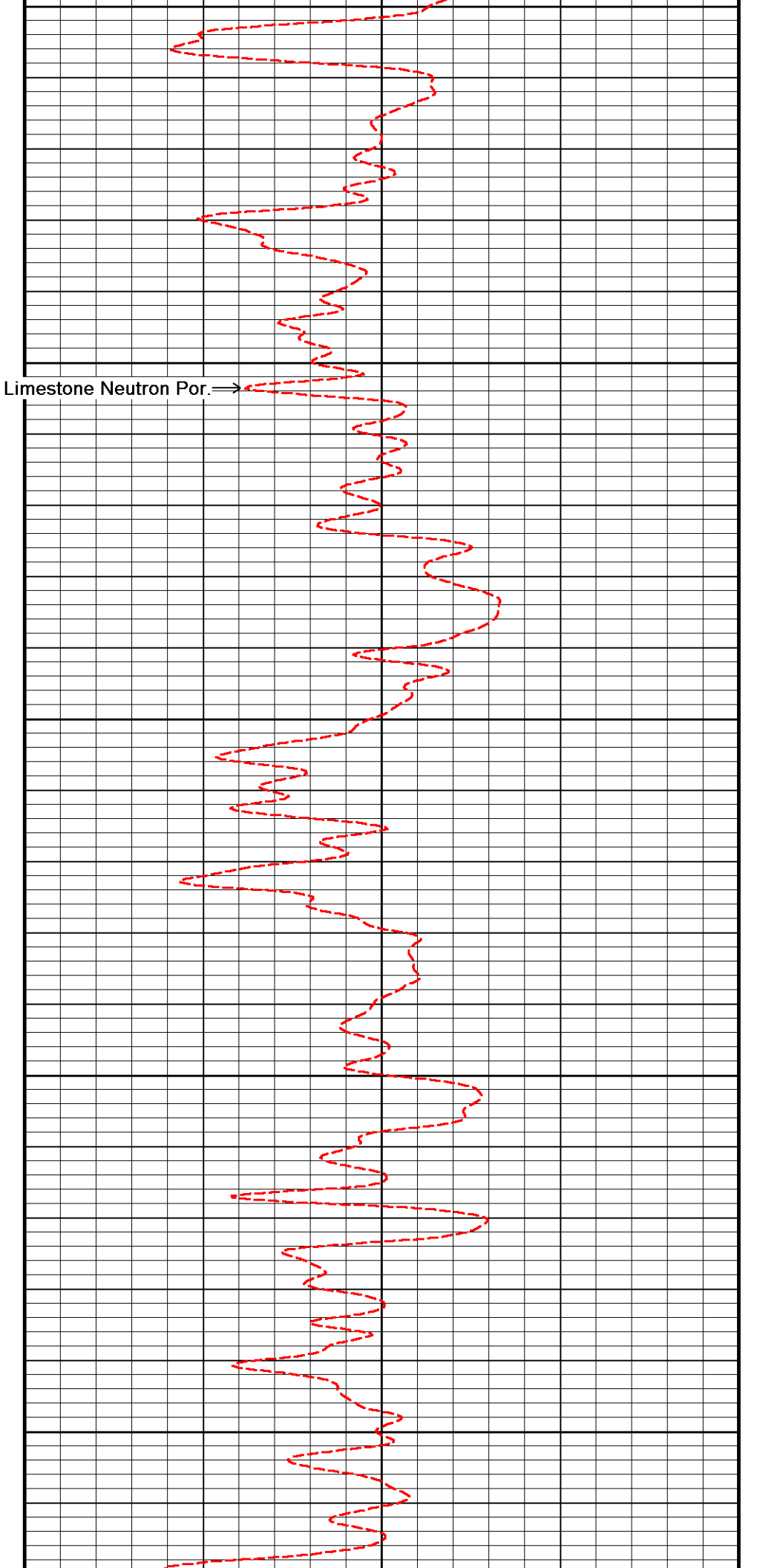
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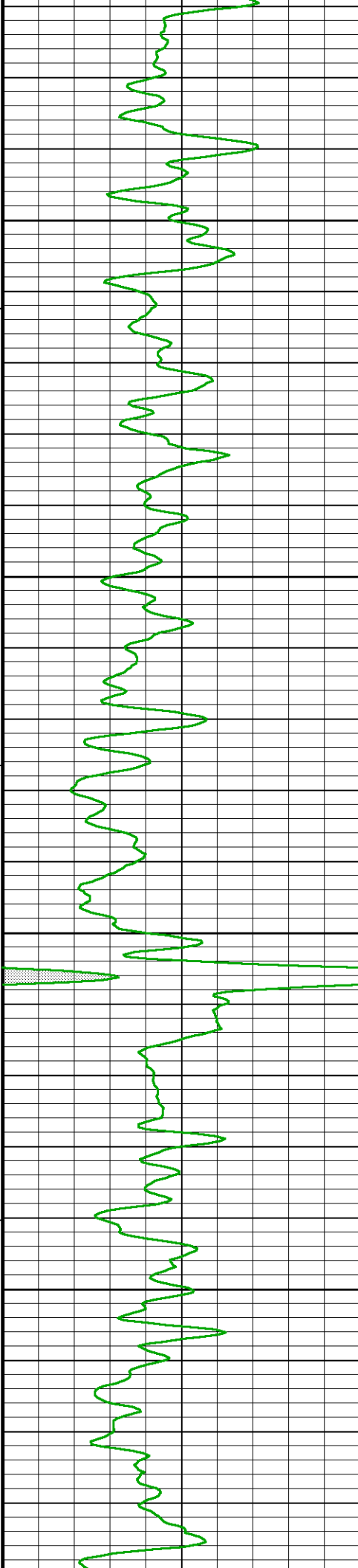
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TVD

4700
TVD

4750
TVD

4800
TVD



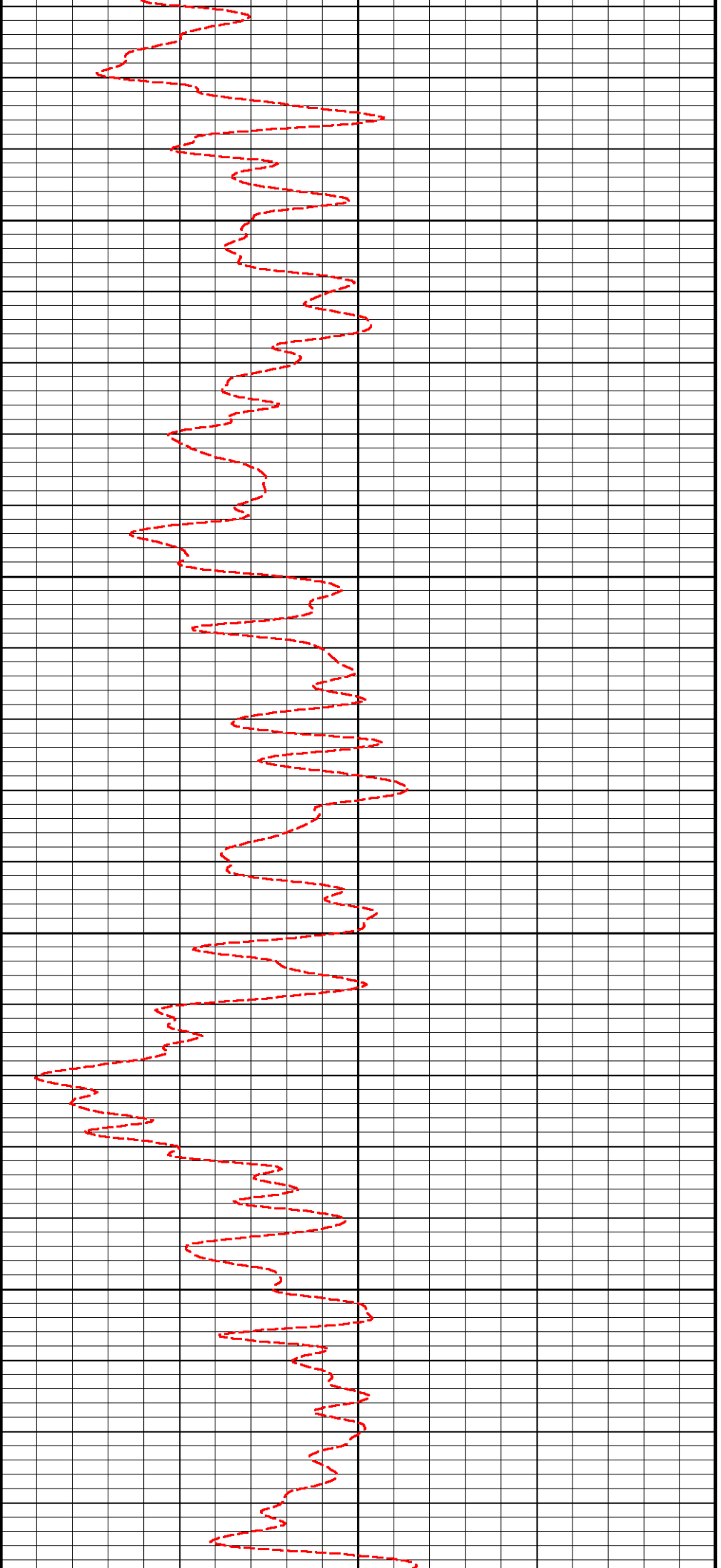


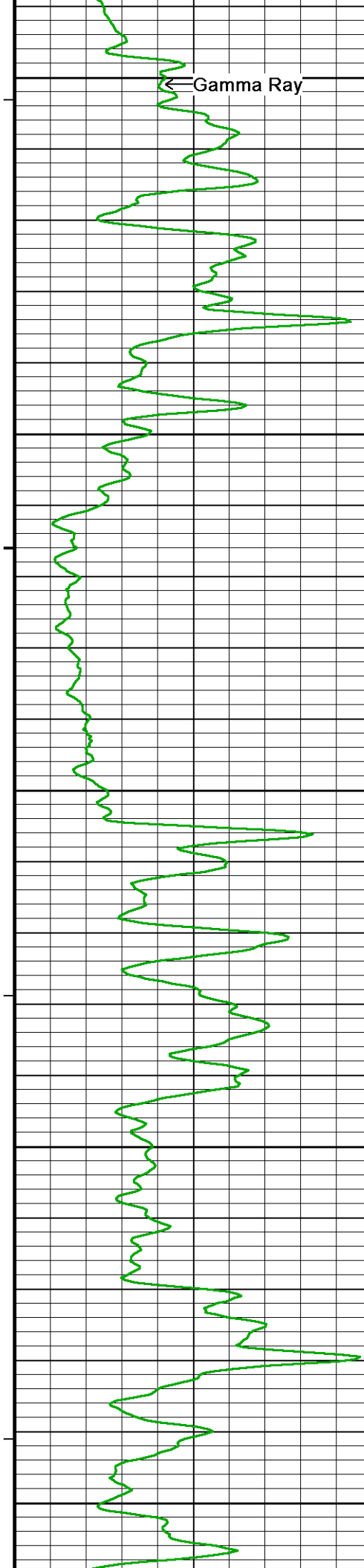
4850
TVD

4900
TVD

4950
TVD

5000
TVD





← Gamma Ray

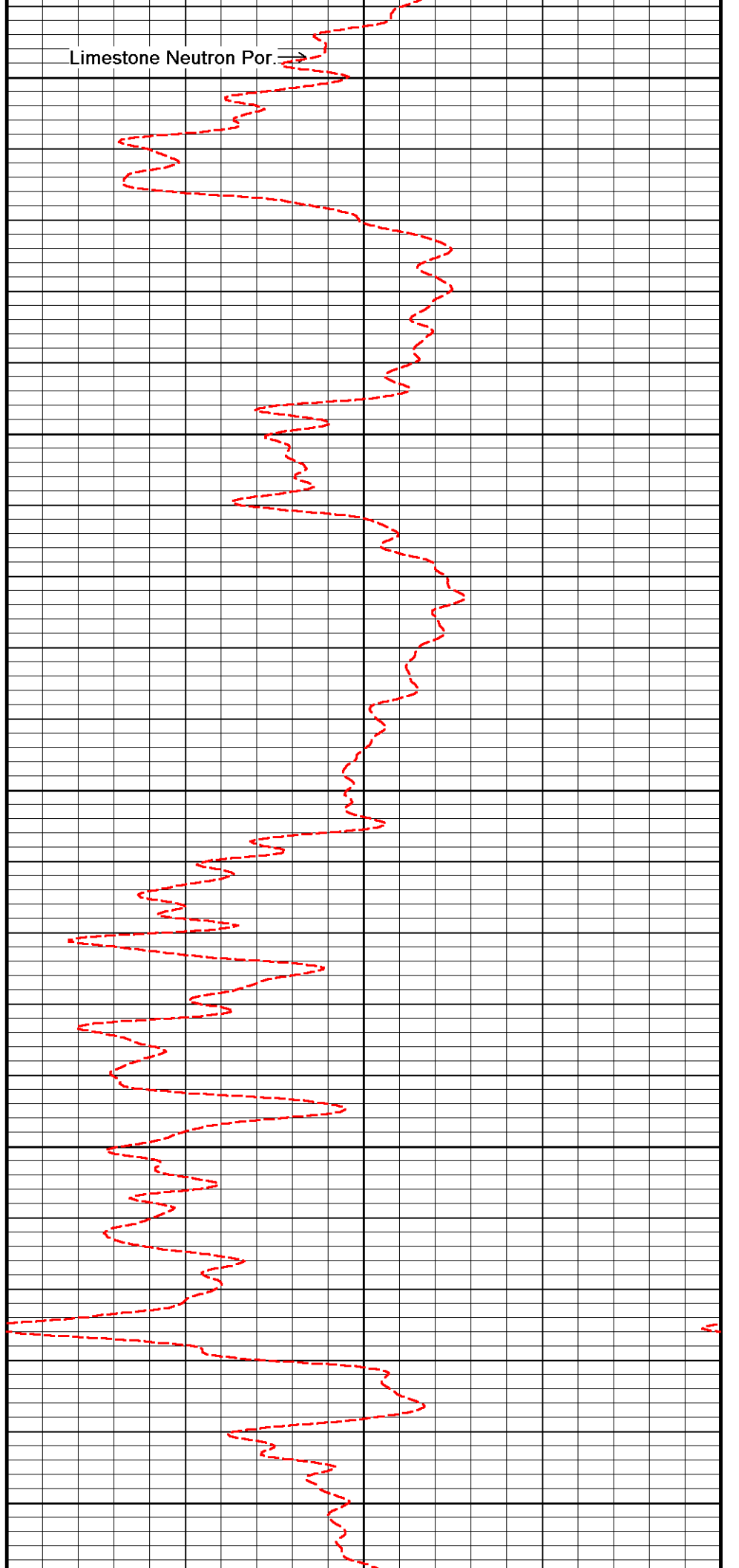
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5100
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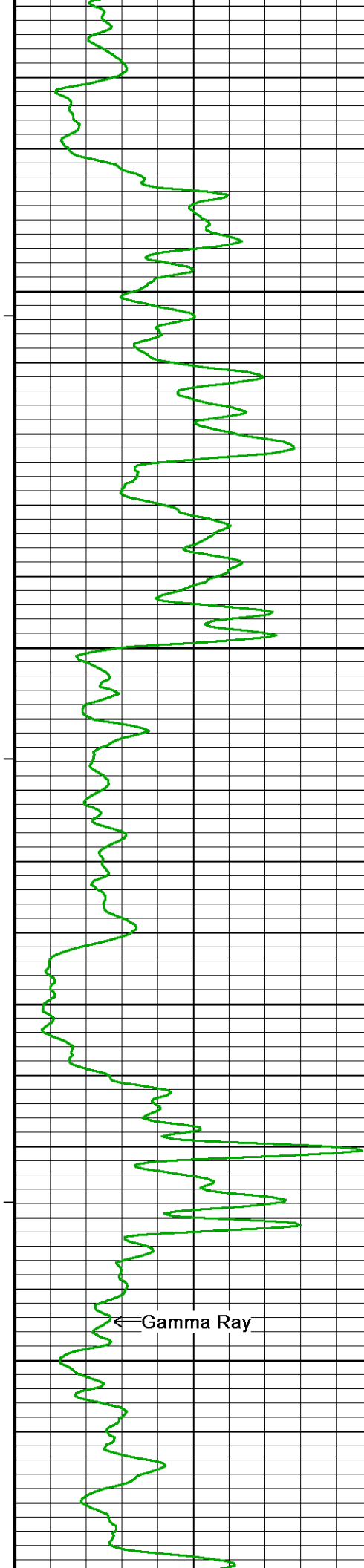
5150
TVD

5200
TVD

5250
TVD



Limestone Neutron Por. →



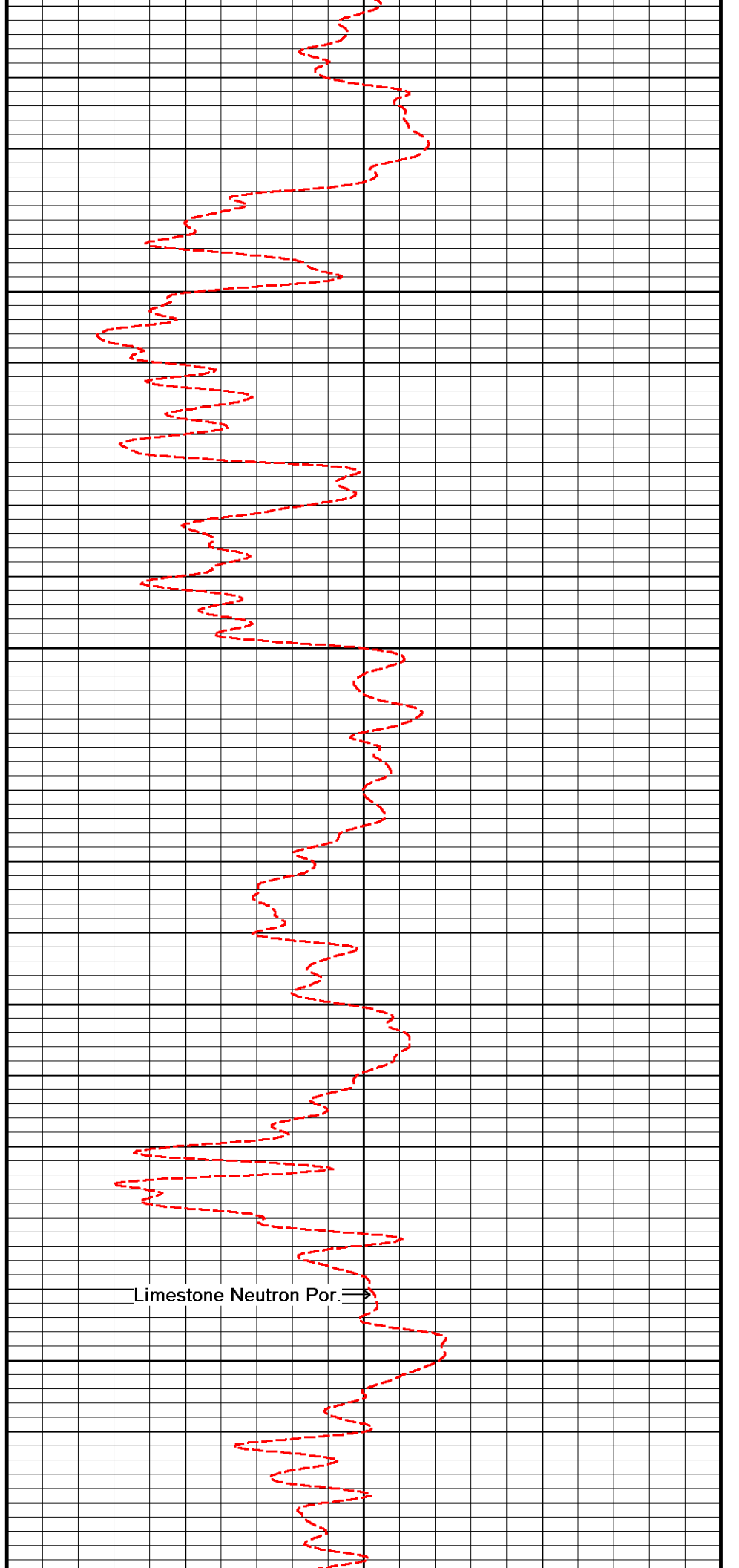
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5350
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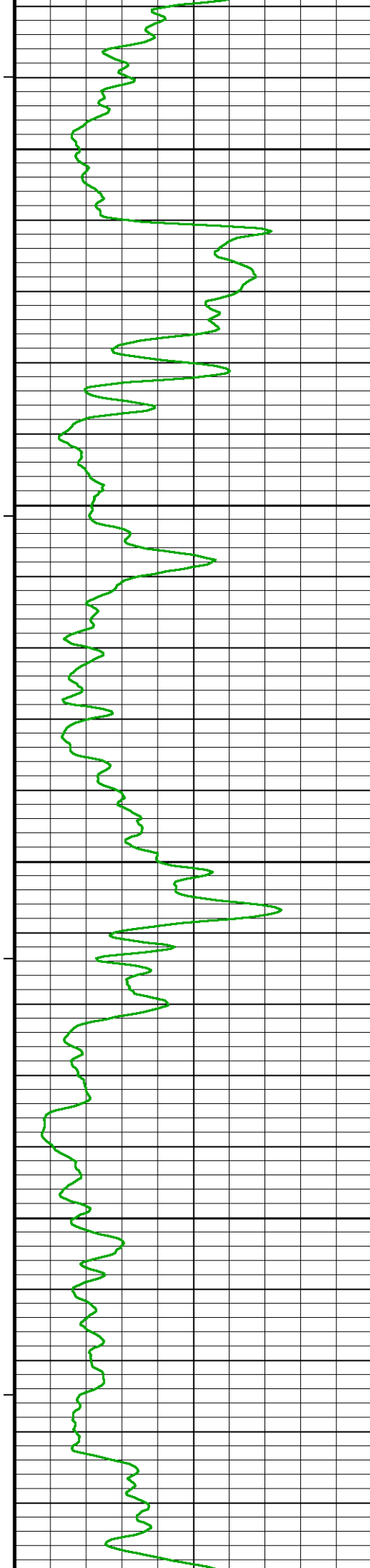
5400
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← Gamma Ray

5450
TVD



Limestone Neutron Por. →



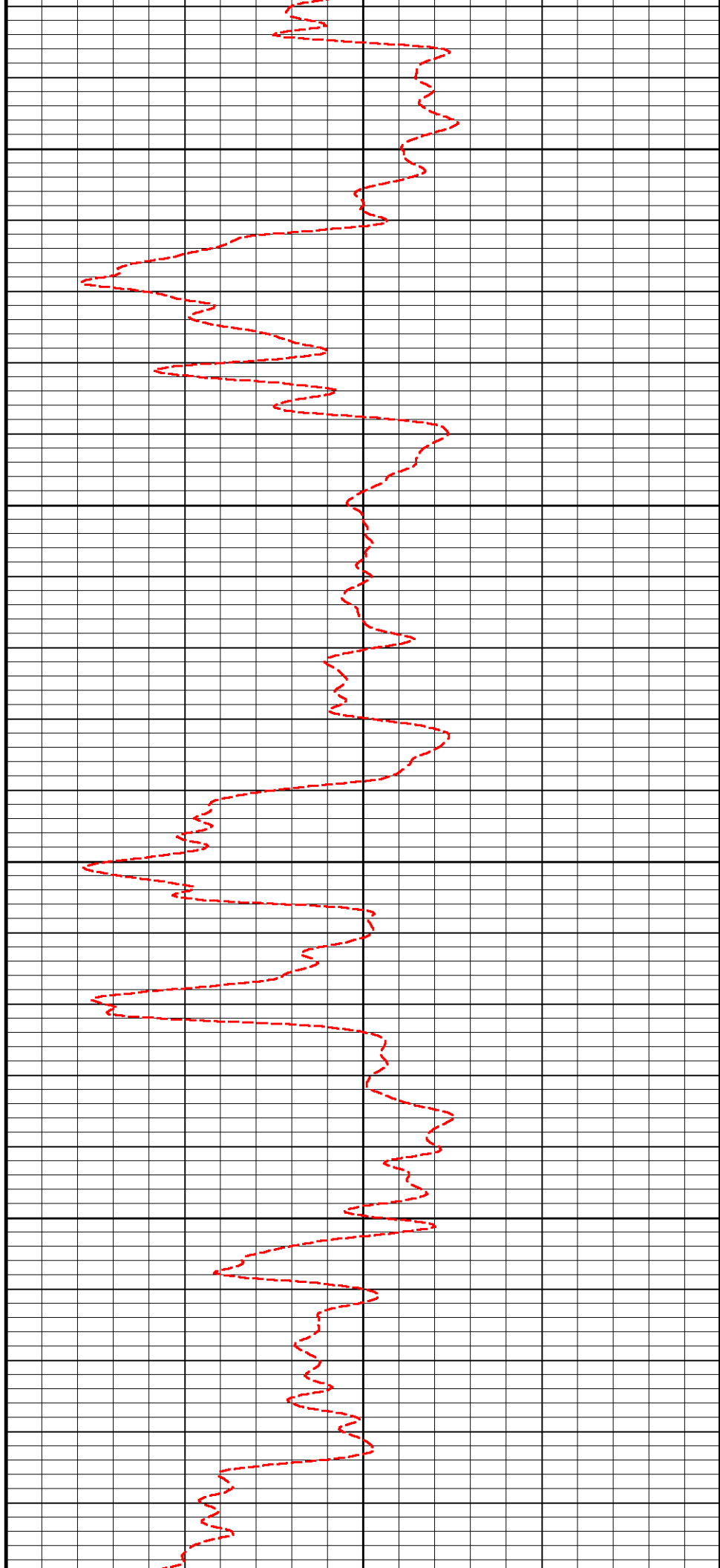
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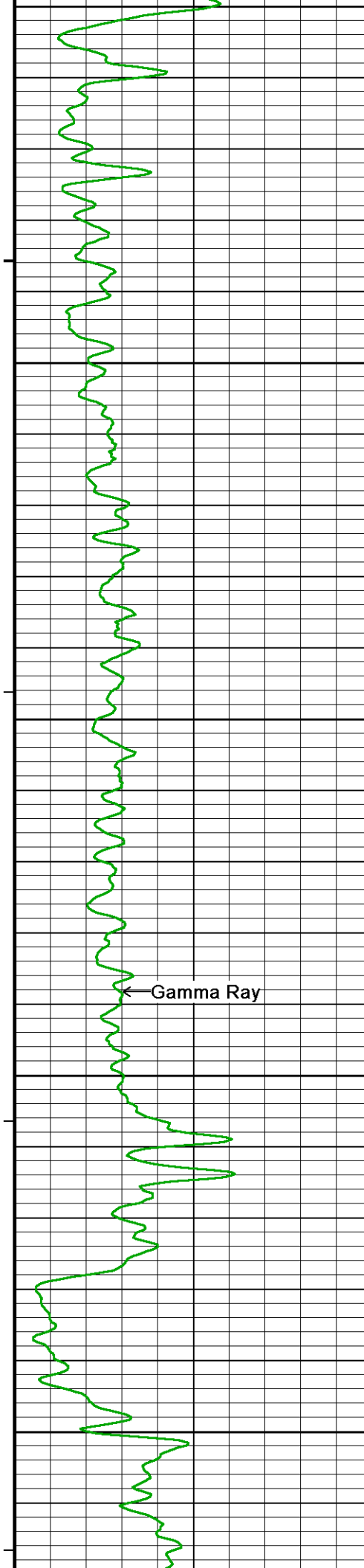
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5600
TVD

5650
TVD

5700
TVD





5700
TVD

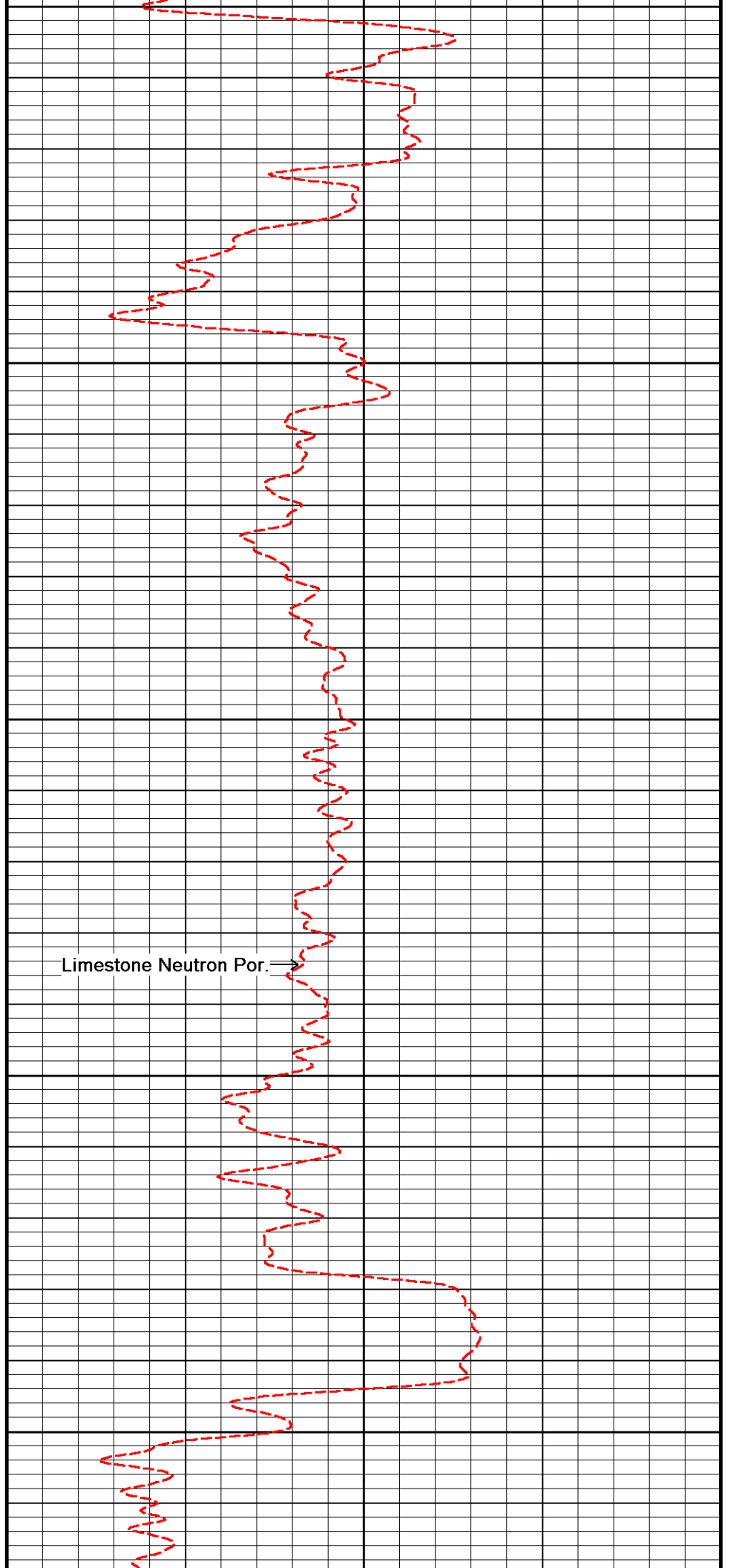
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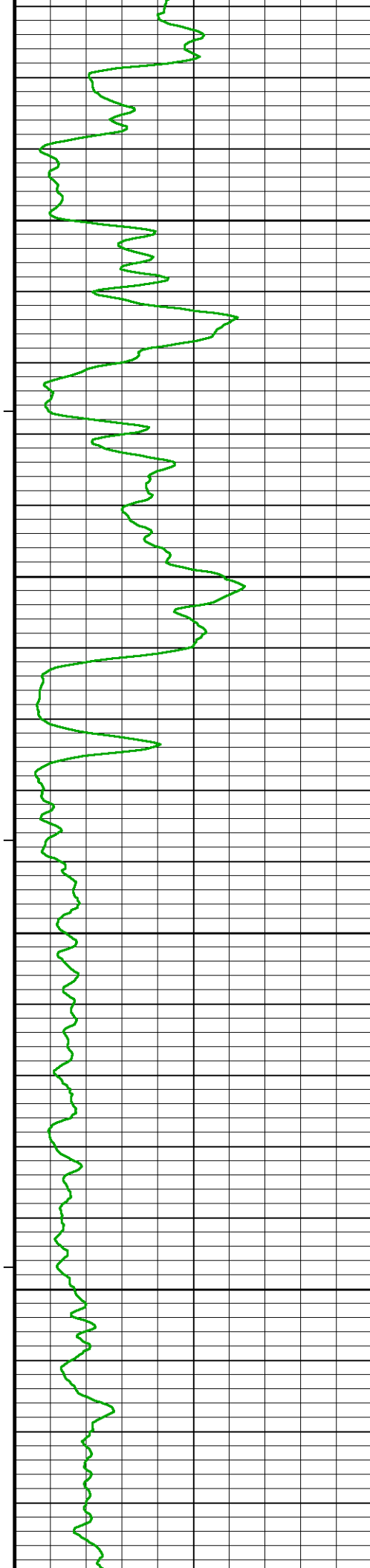
5850
TVD

5900
TVD

← Gamma Ray



Limestone Neutron Por. →

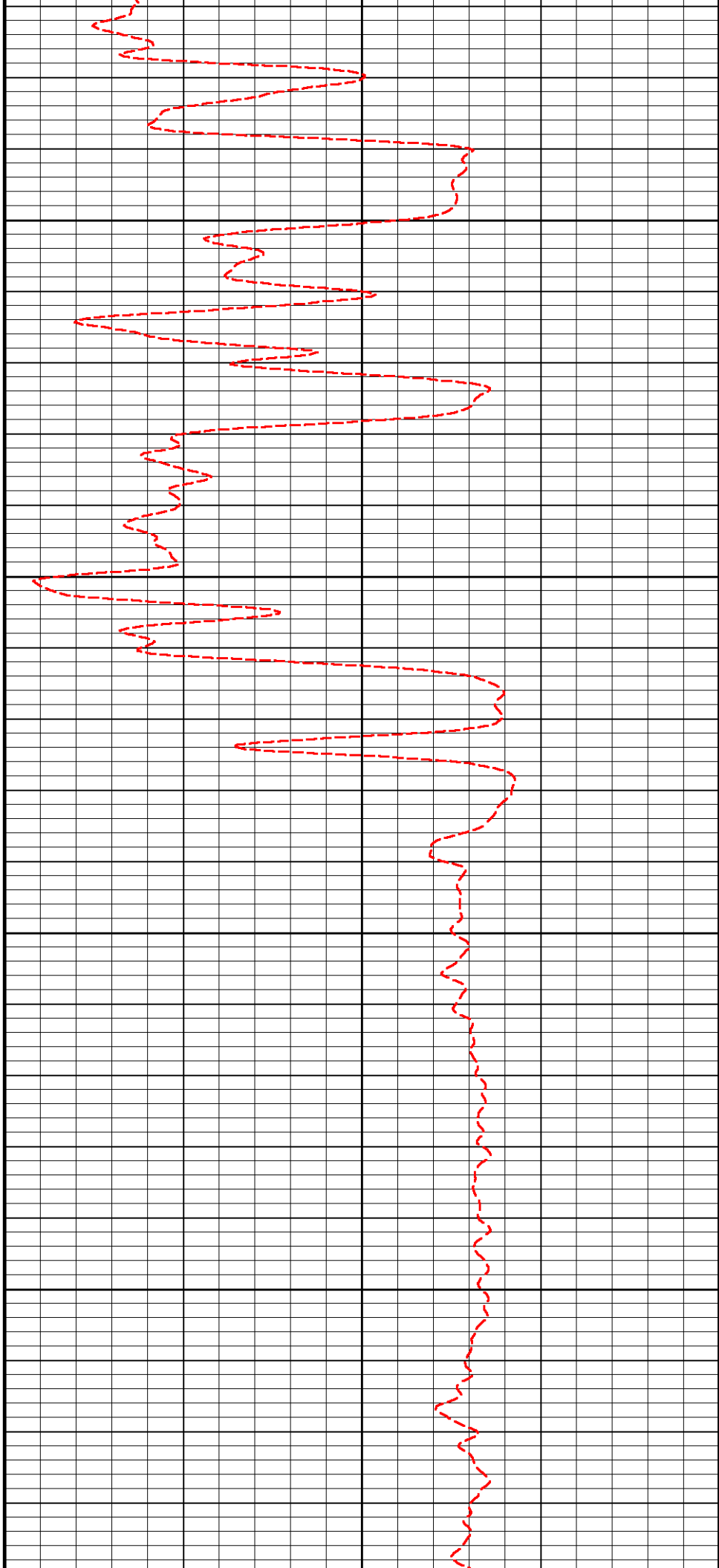


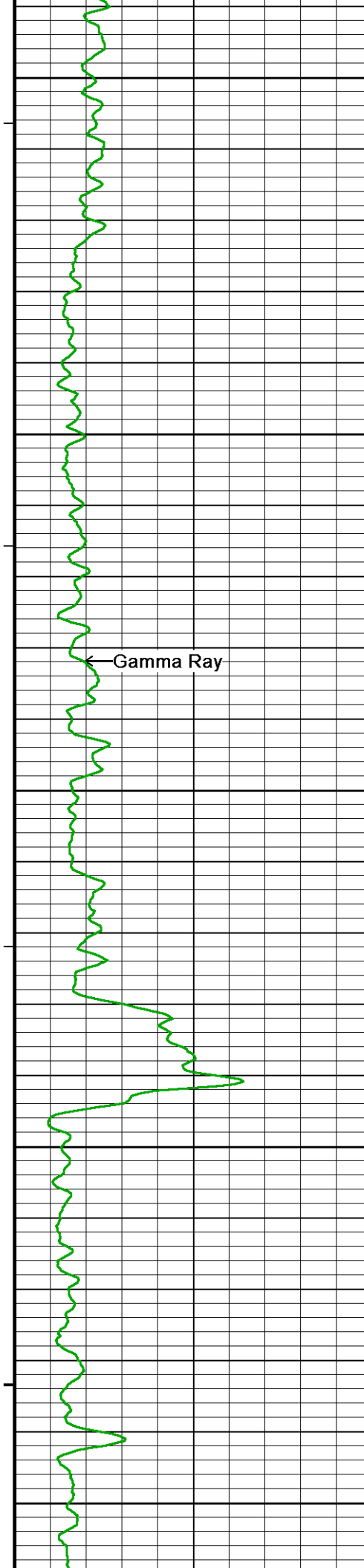
5950
TVD

6000
TVD

6050
TVD

6100
TVD





6150
TVD

6200
TVD

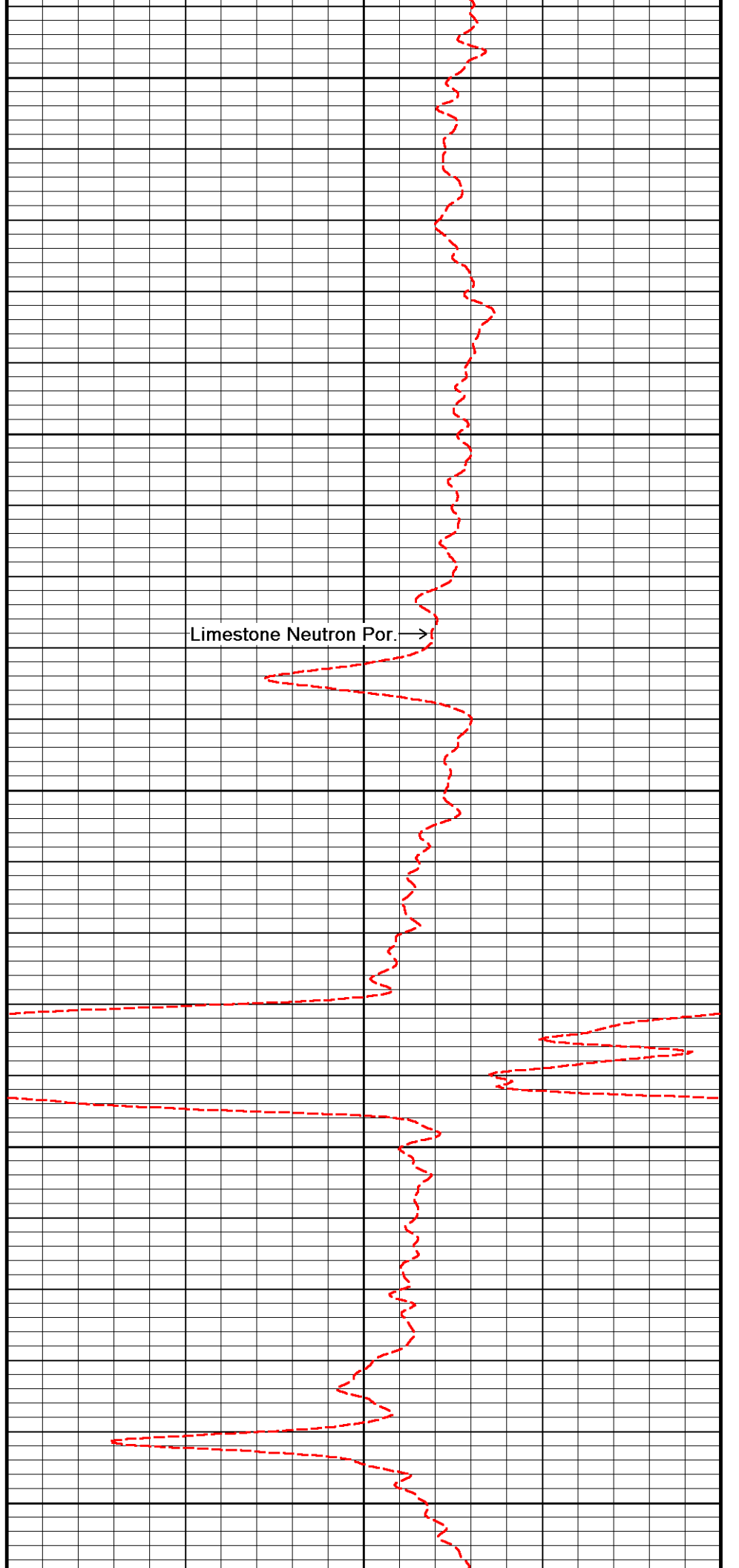
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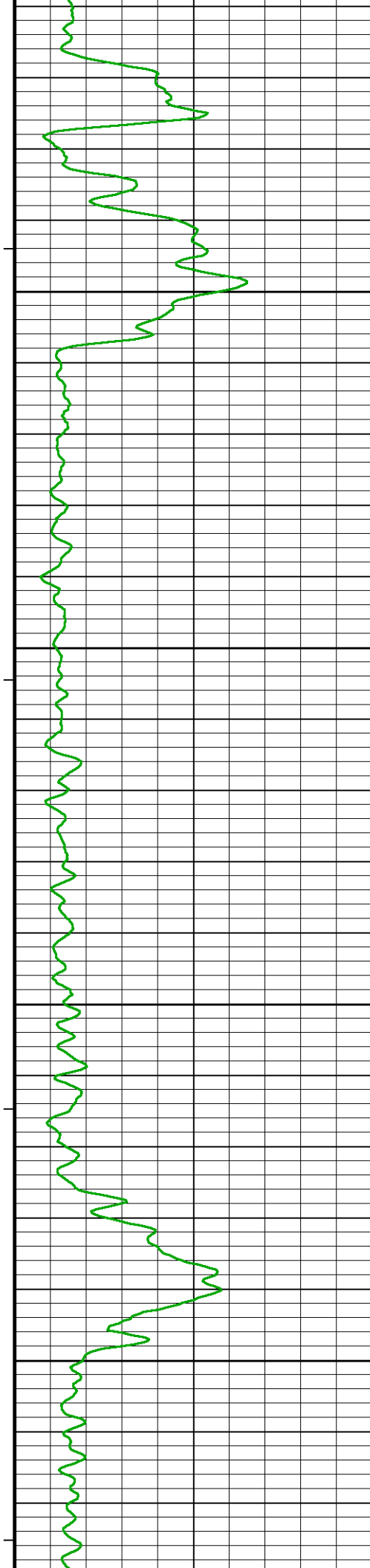
6300
TVD

6350
TVD

← Gamma Ray

Limestone Neutron Por. →



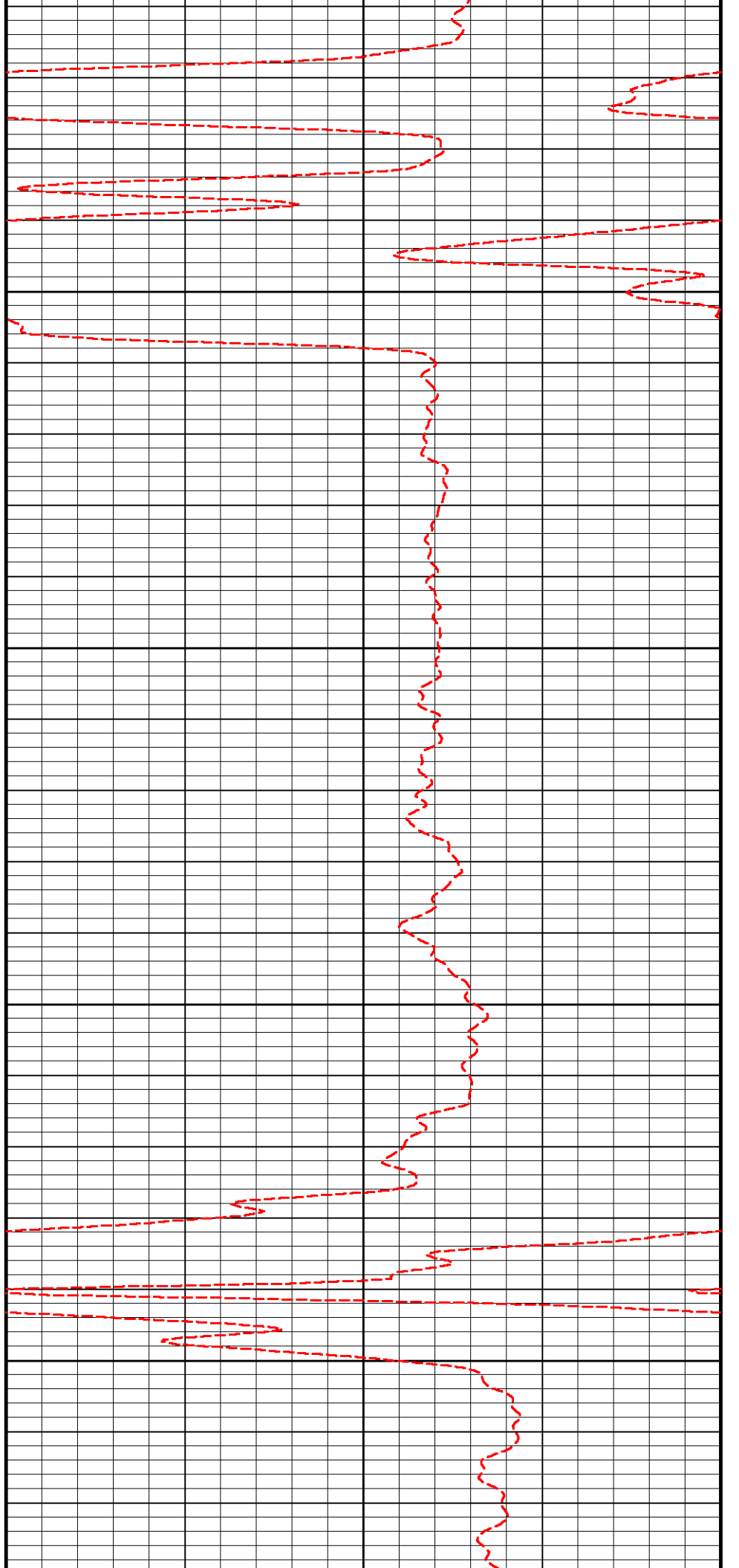


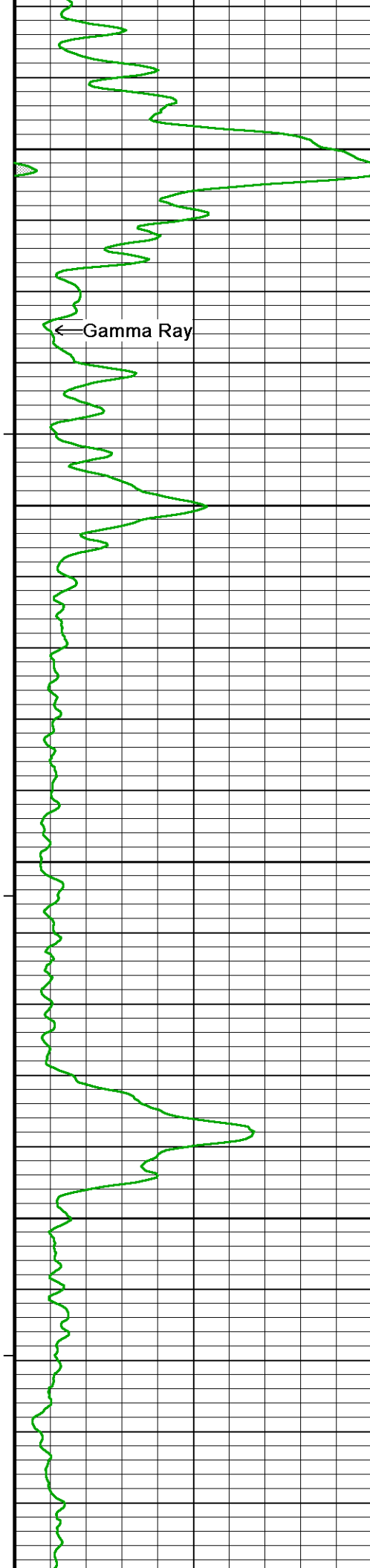
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6450
TVD

6500
TVD

6550
TVD





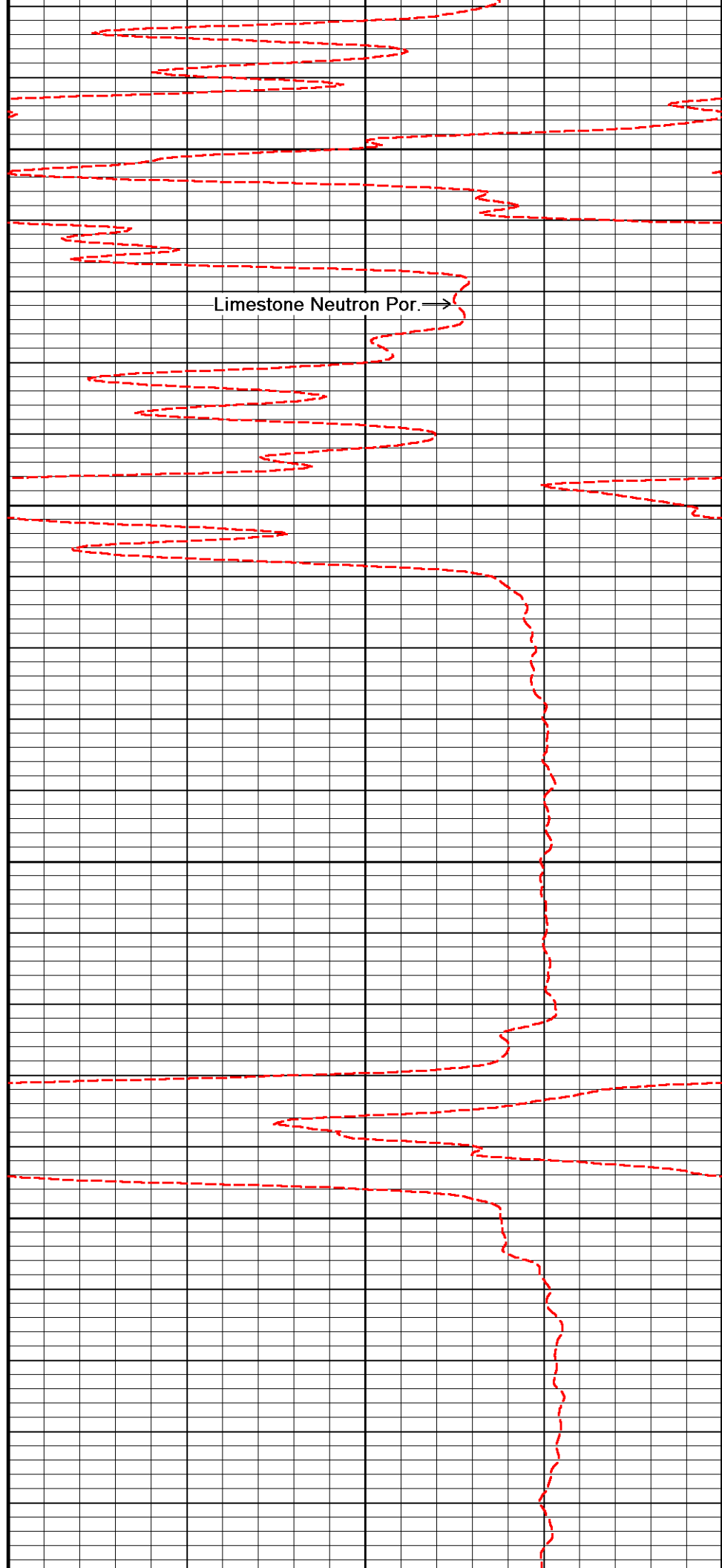
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6650
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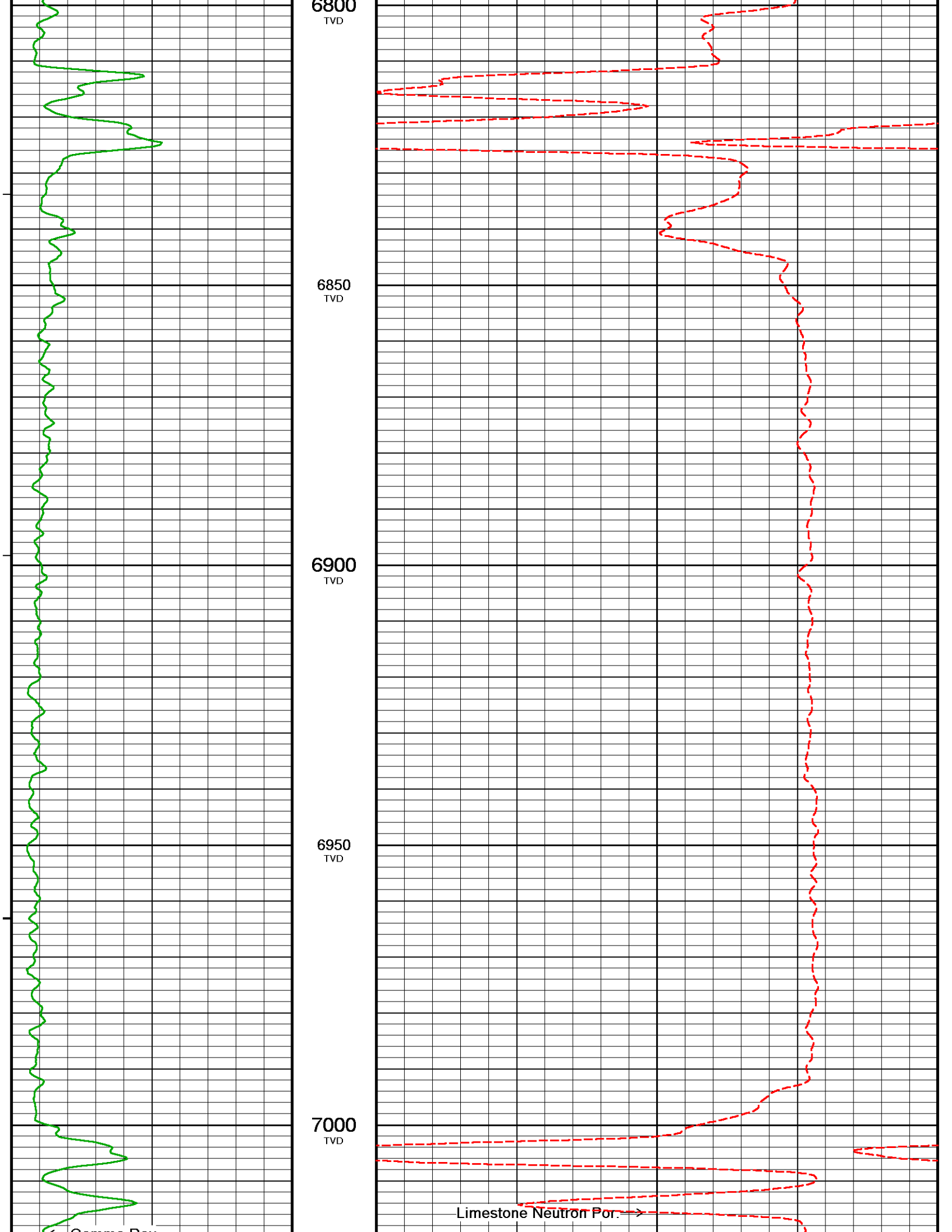
6700
TVD

6750
TVD

6800
TVD



Limestone Neutron Por. →



6800
TVD

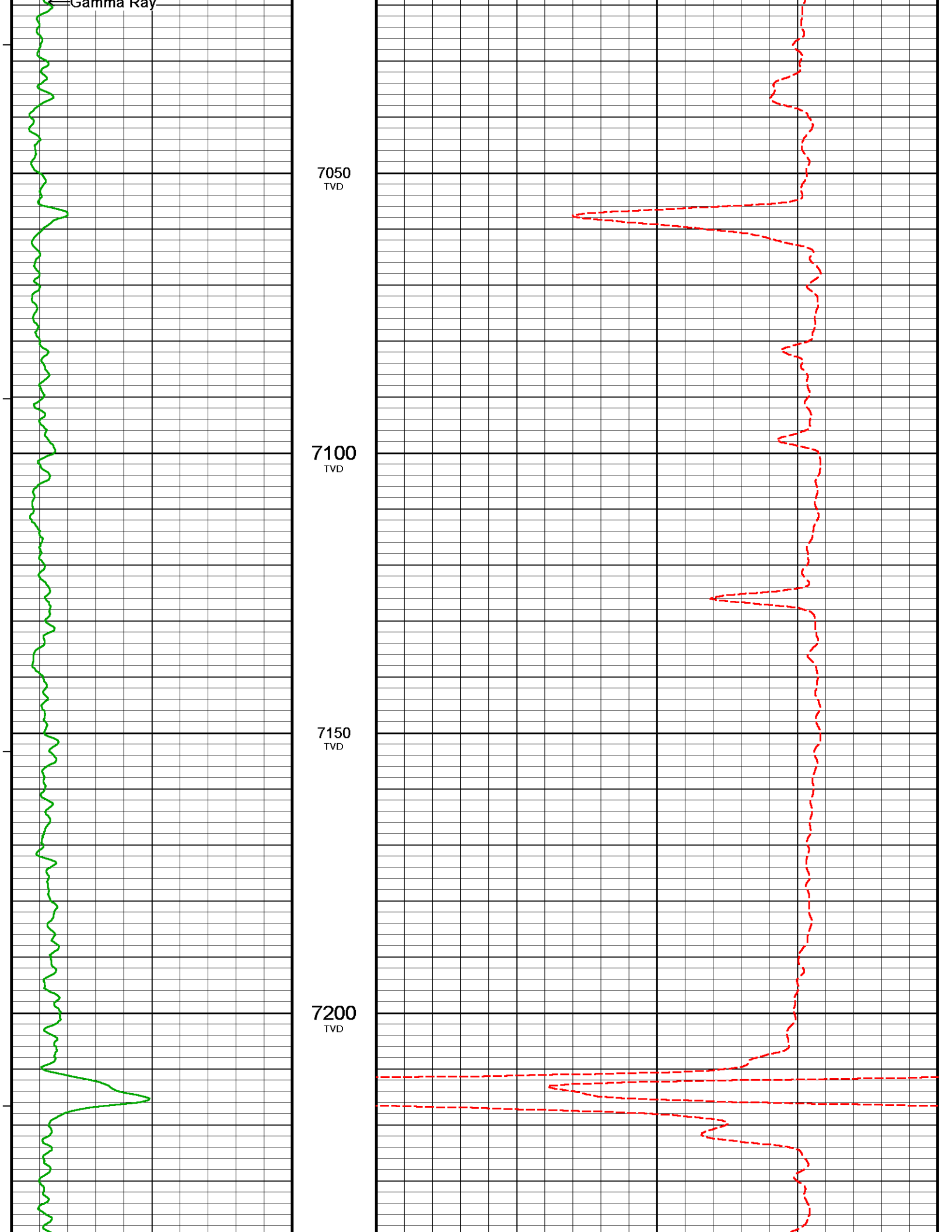
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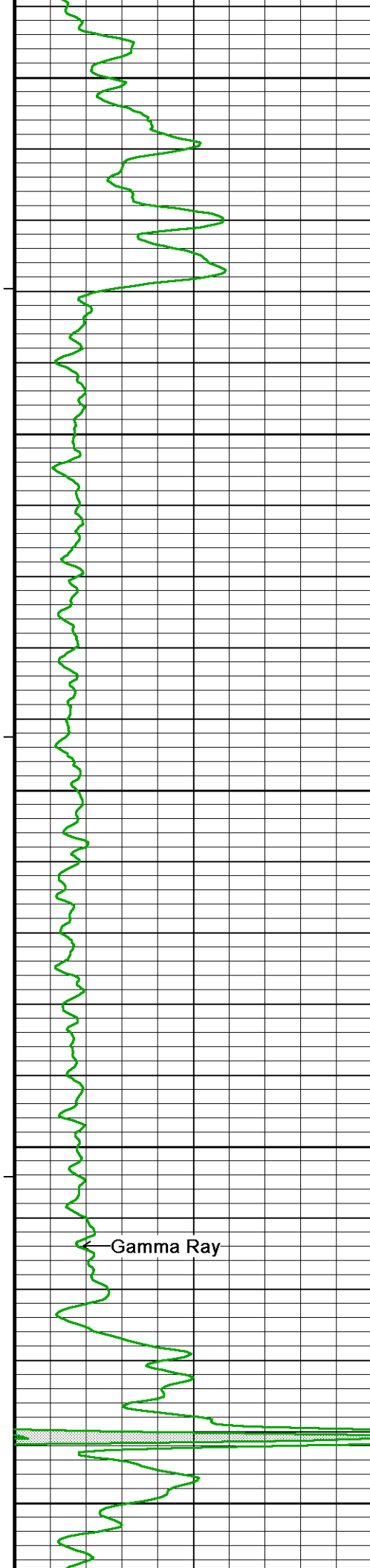
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TVD

6950
TVD

7000
TVD

Limestone Neutron Por. →





7250
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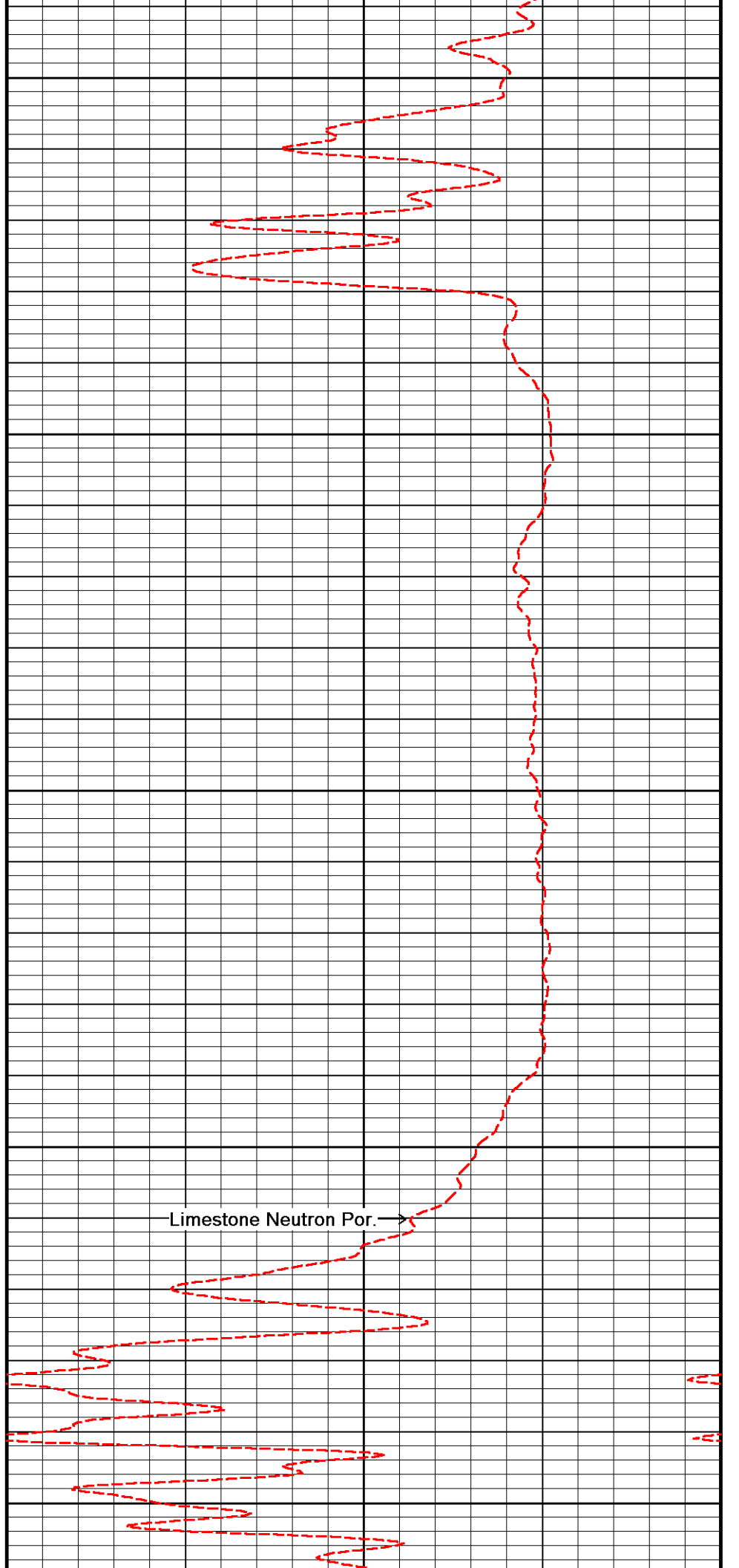
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7350
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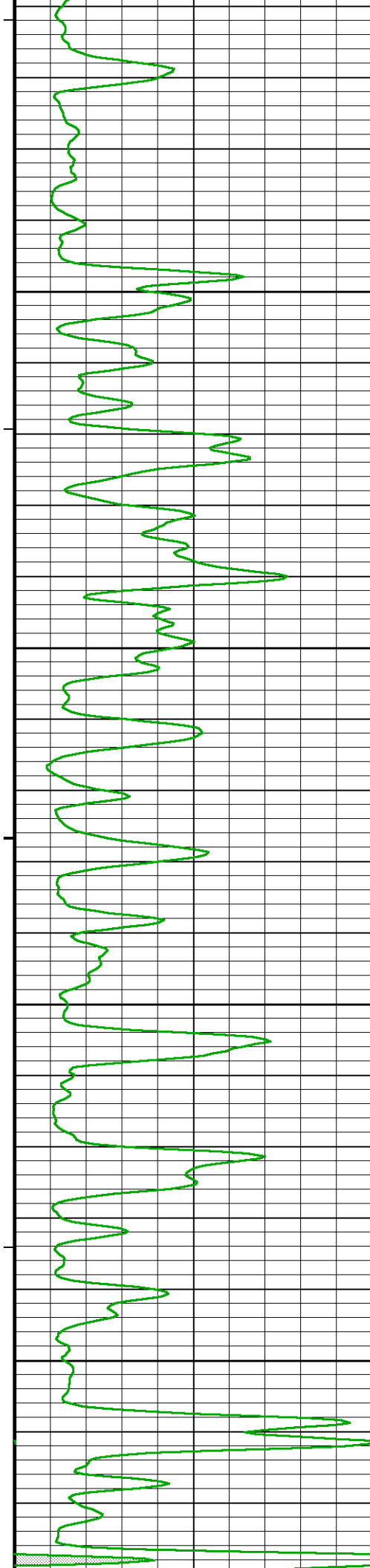
7400
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7450
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← Gamma Ray



Limestone Neutron Por. →

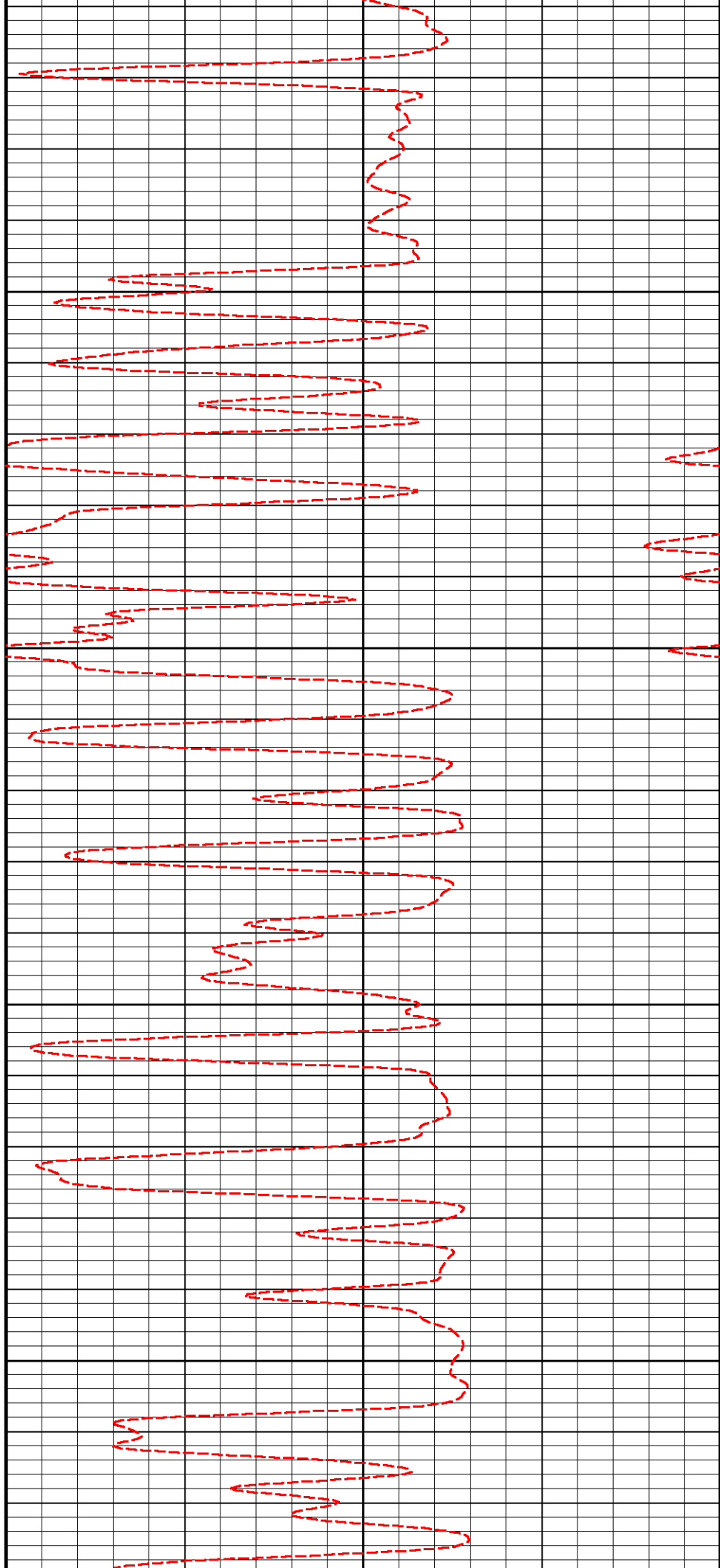


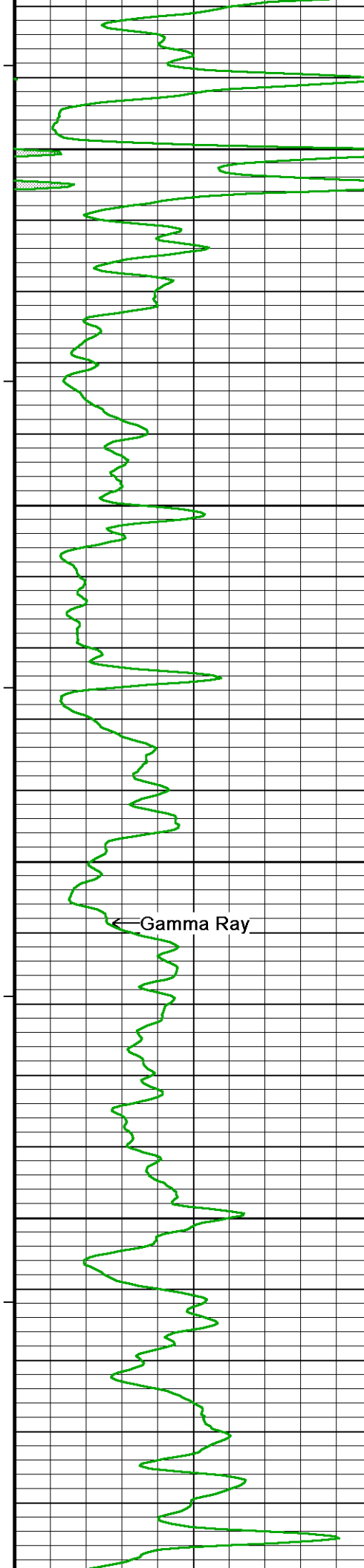
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TVD

7550
TVD

7600
TVD

7650
TVD





7700
TVD

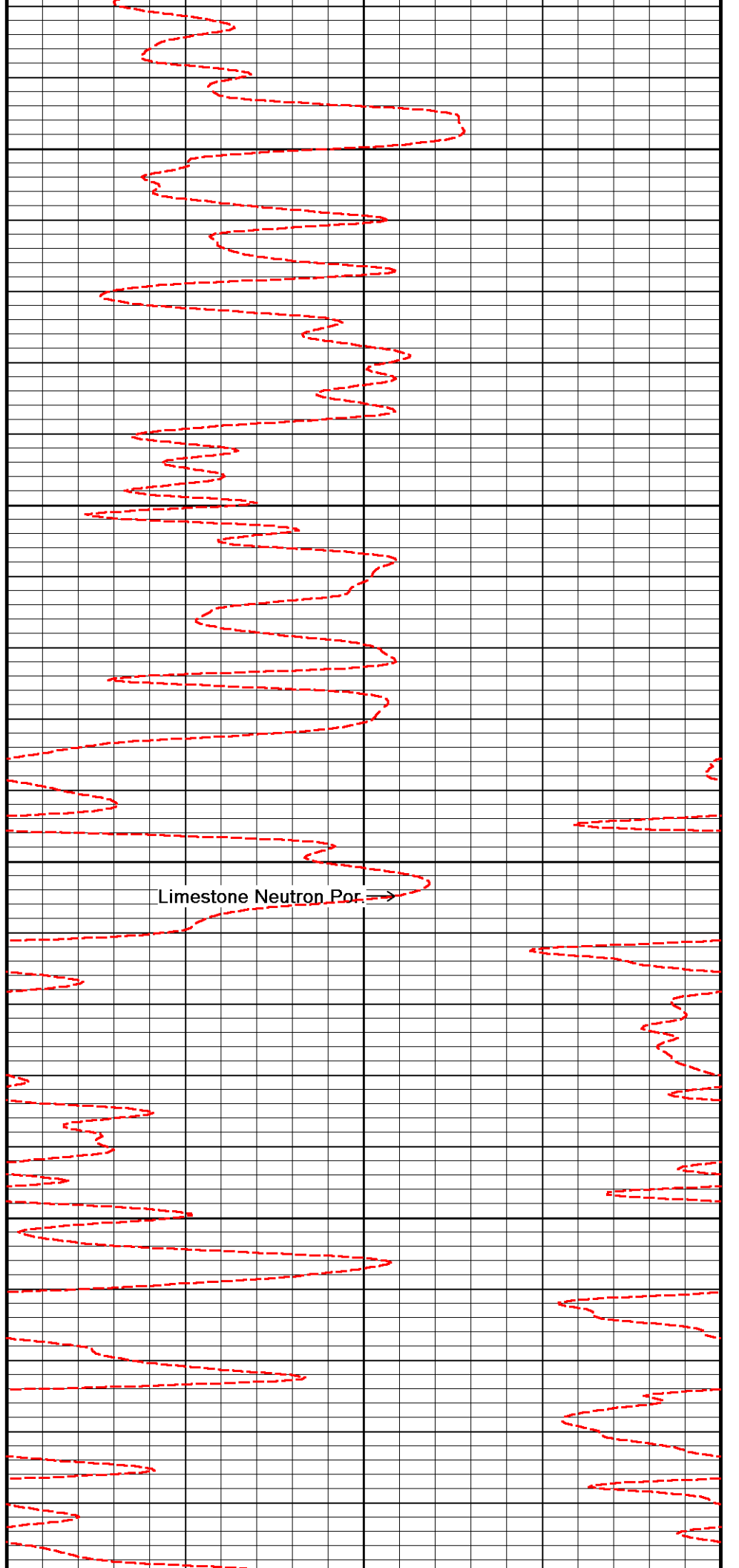
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TVD

7800
TVD

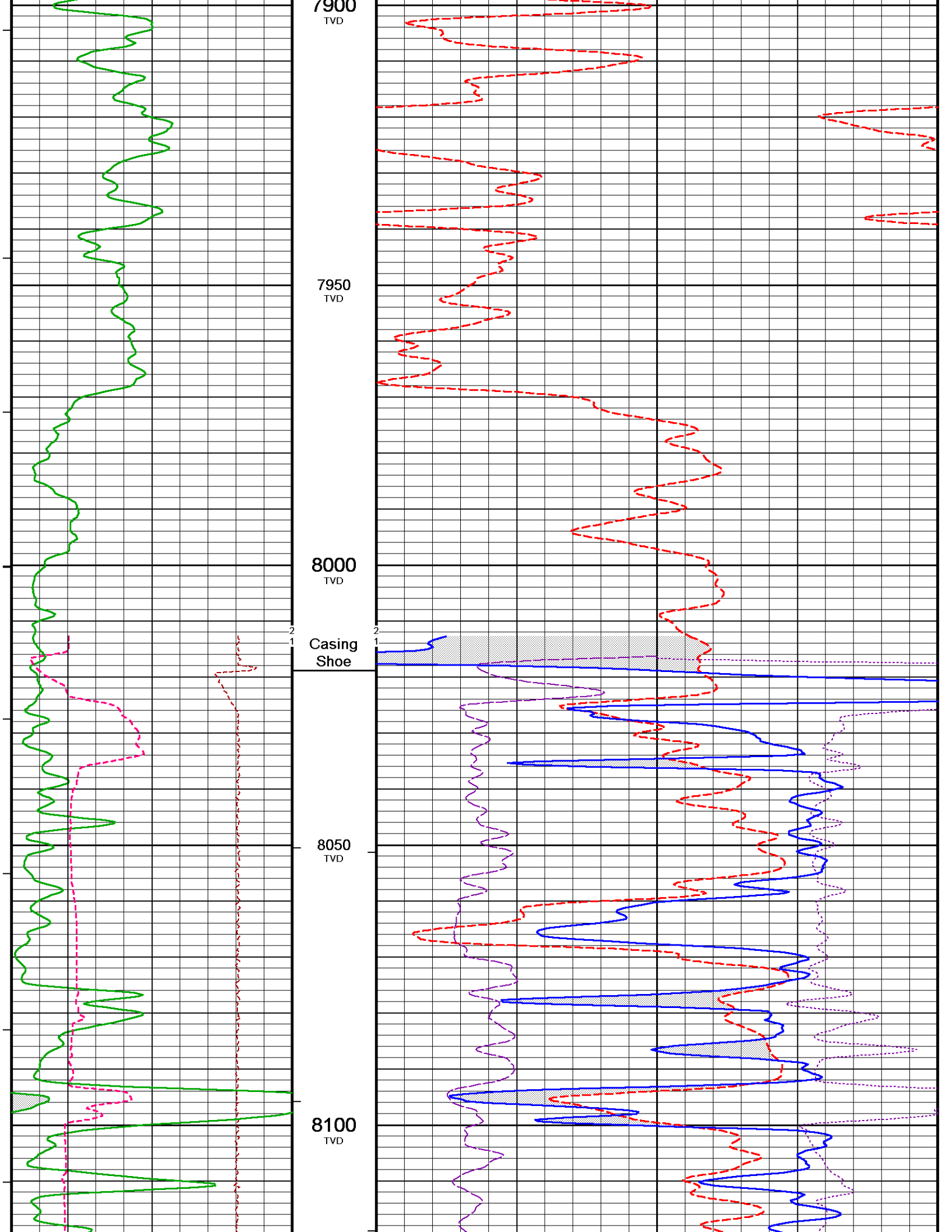
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TVD

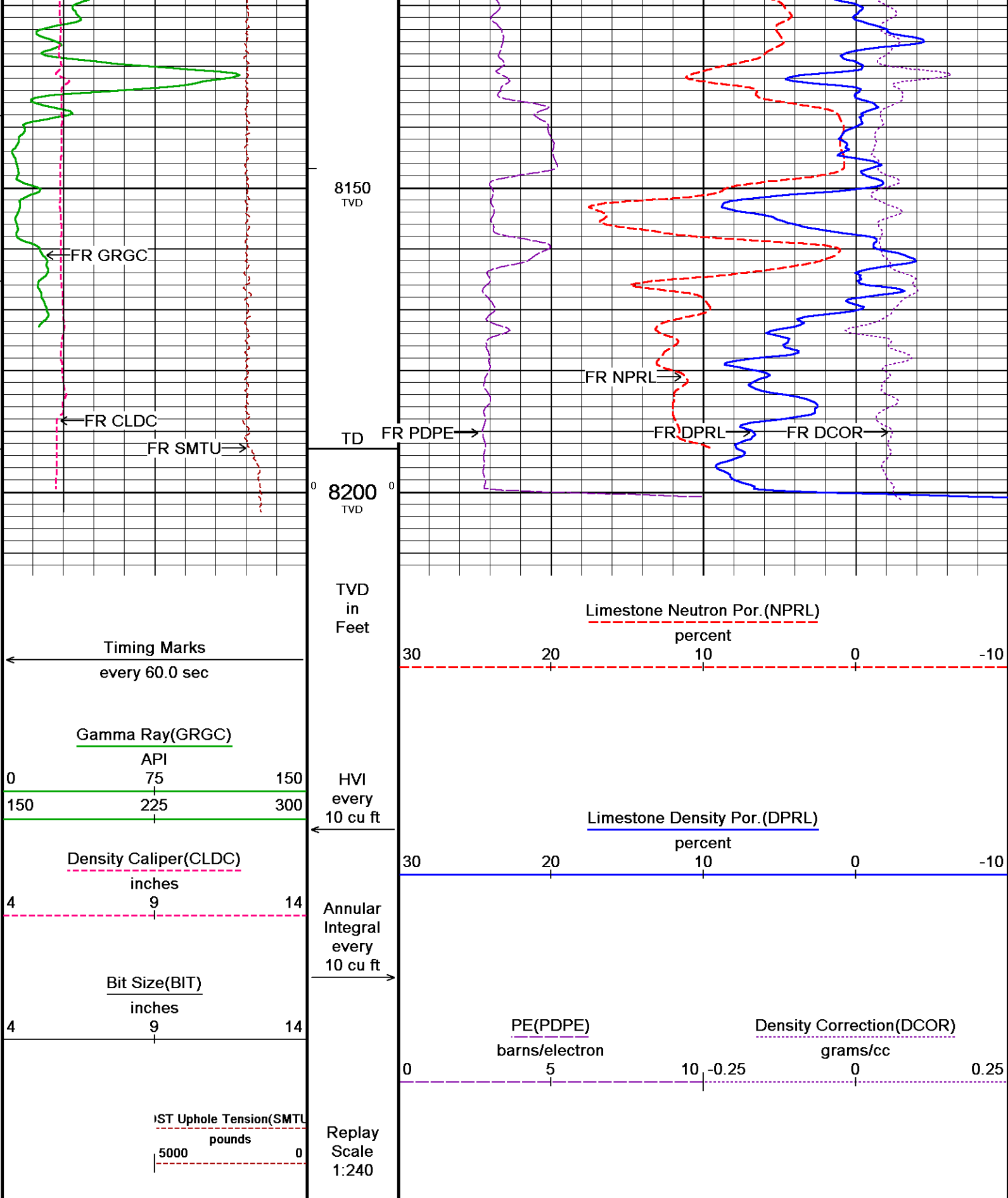
7900
TVD

← Gamma Ray



Limestone Neutron Por. →





OVERLAY 1 TVD

Depth Based Data - Maximum Sampling Increment 10.0cm

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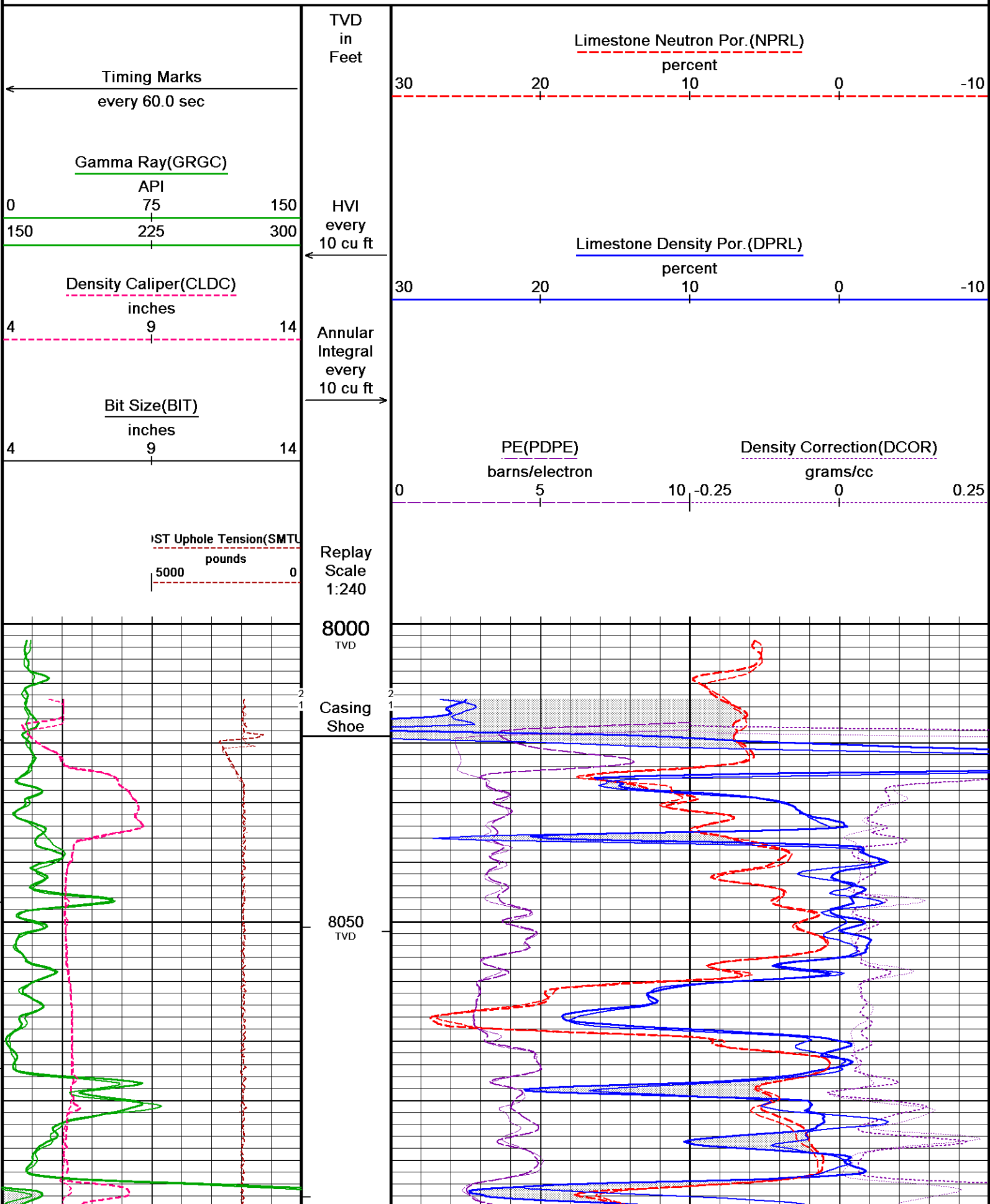
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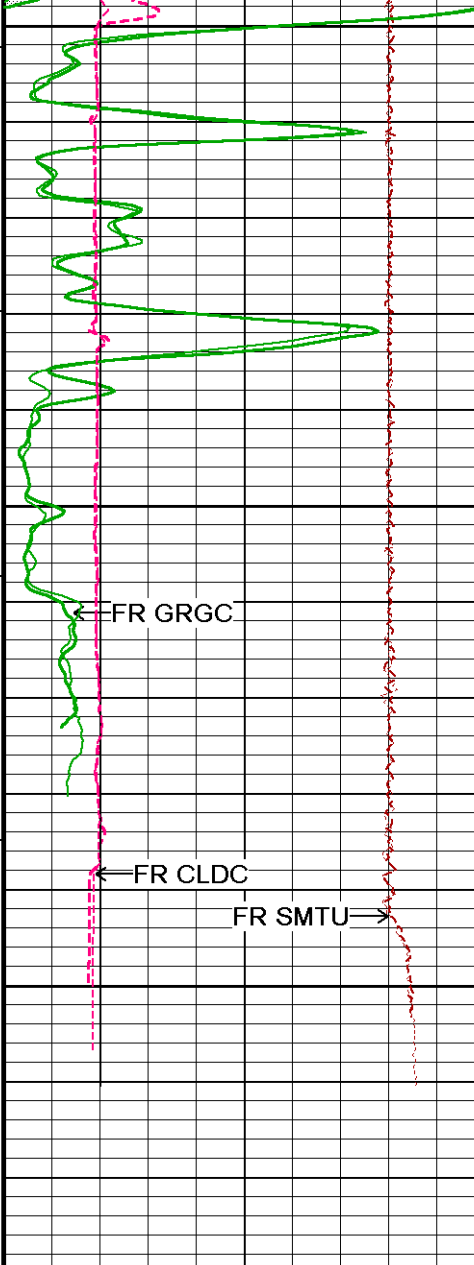
System Versions: Processed with 13.02.6600 Plotted with 13.03.7779

Plotted on 30-SEP-2012 20:00

Recorded on 30-SEP-2012 09:03

Recorded on 30-SEP-2012 08:31



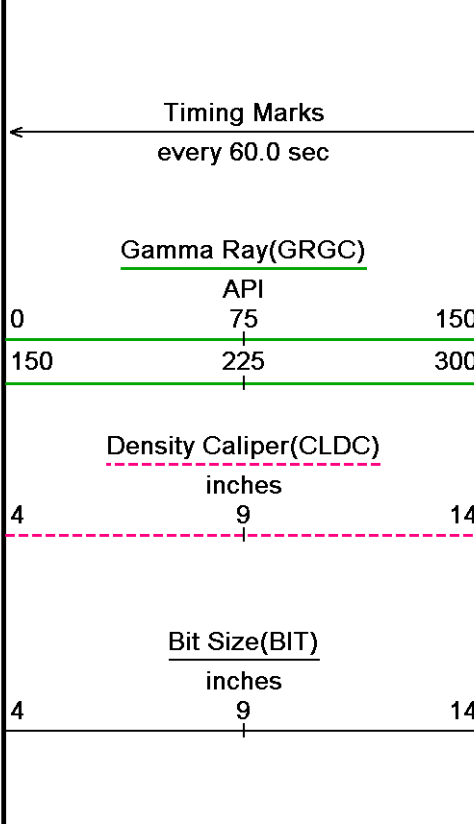
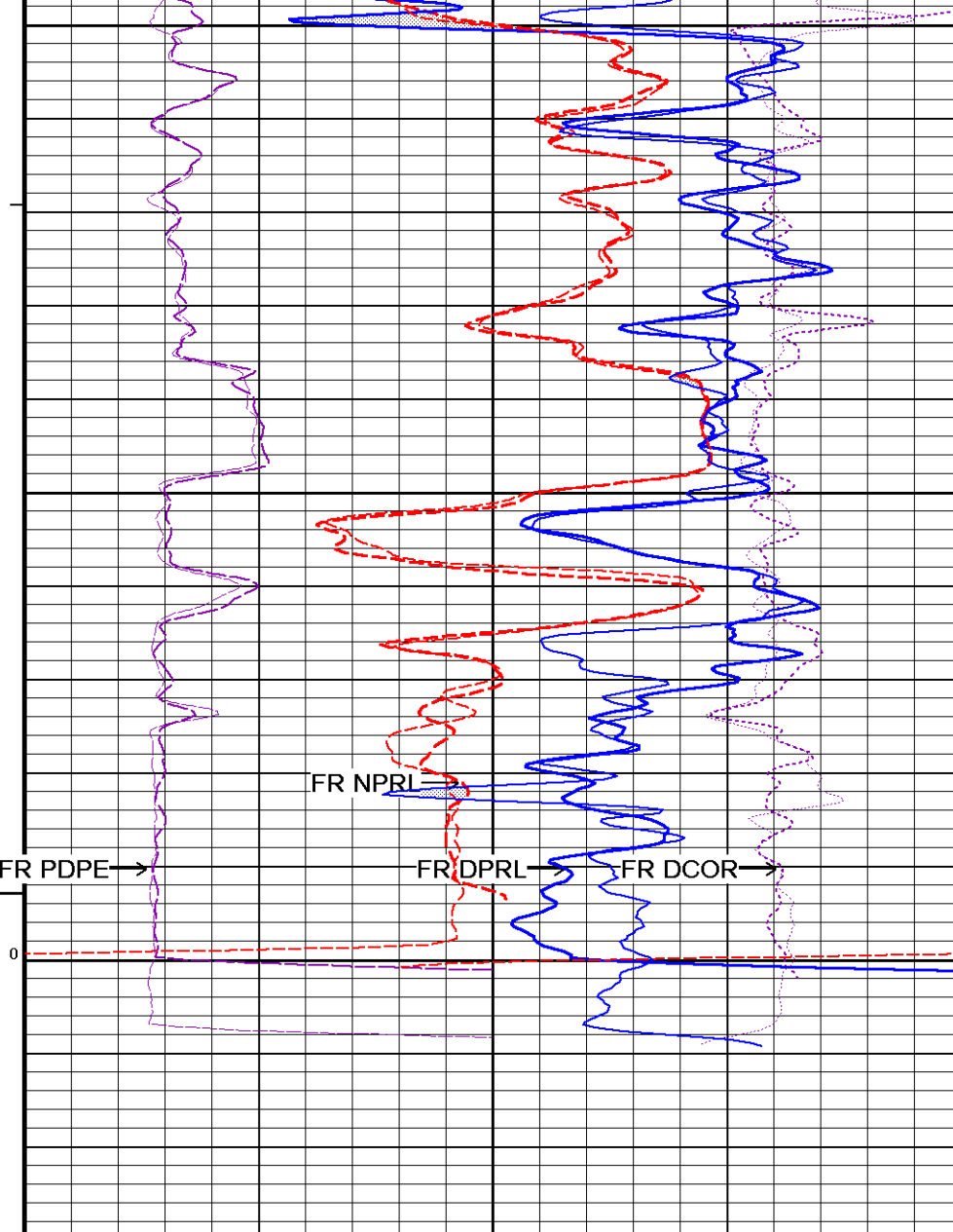


8100
TVD

8150
TVD

TD

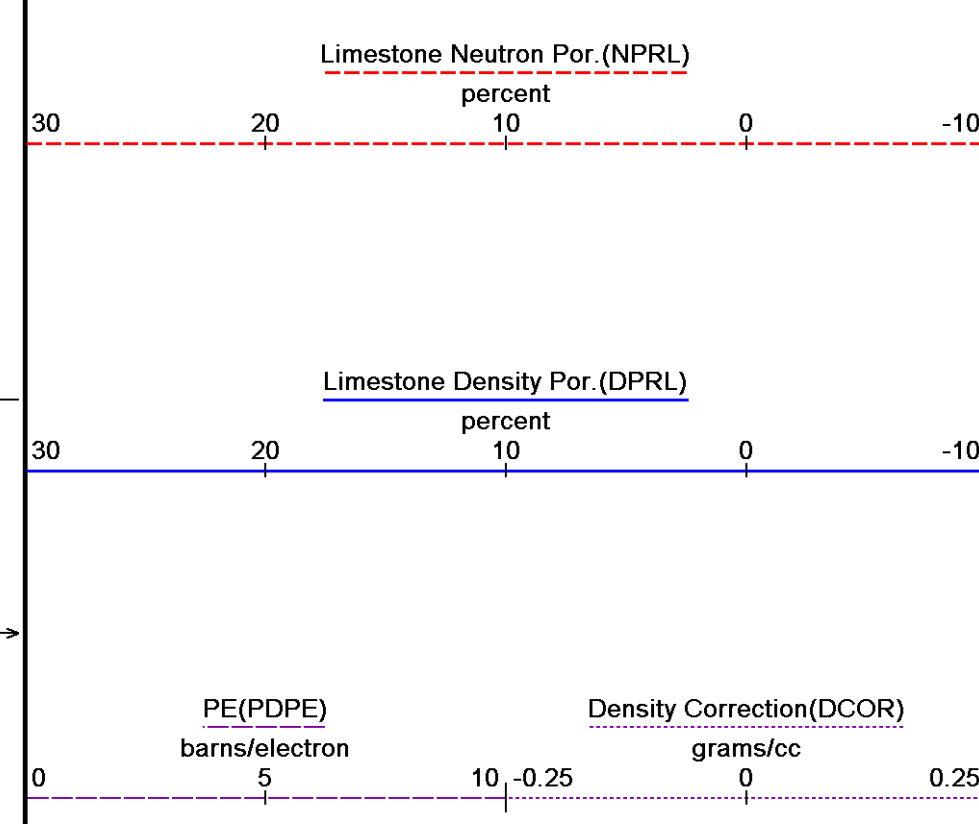
8200
TVD



TVD
in
Feet

HVI
every
10 cu ft

Annular
Integral
every
10 cu ft



IST Uphole Tension(SMTU)
pounds
5000 0

Replay
Scale
1:240

Depth Based Data - Maximum Sampling Increment 10.0cm

Filename: C:\LOGS\Kinder Morgan\YG-1 123\Porosity Main.dta

Filename: C:\LOGS\Kinder Morgan\YG-1 123\Porosity REPEAT.dta

System Versions: Processed with 13.02.6600 Plotted with 13.03.7779

Plotted on 30-SEP-2012 20:00

Recorded on 30-SEP-2012 09:03

Recorded on 30-SEP-2012 08:31



OVERLAY 1 TVD



5 INCH MAIN LOG TVD



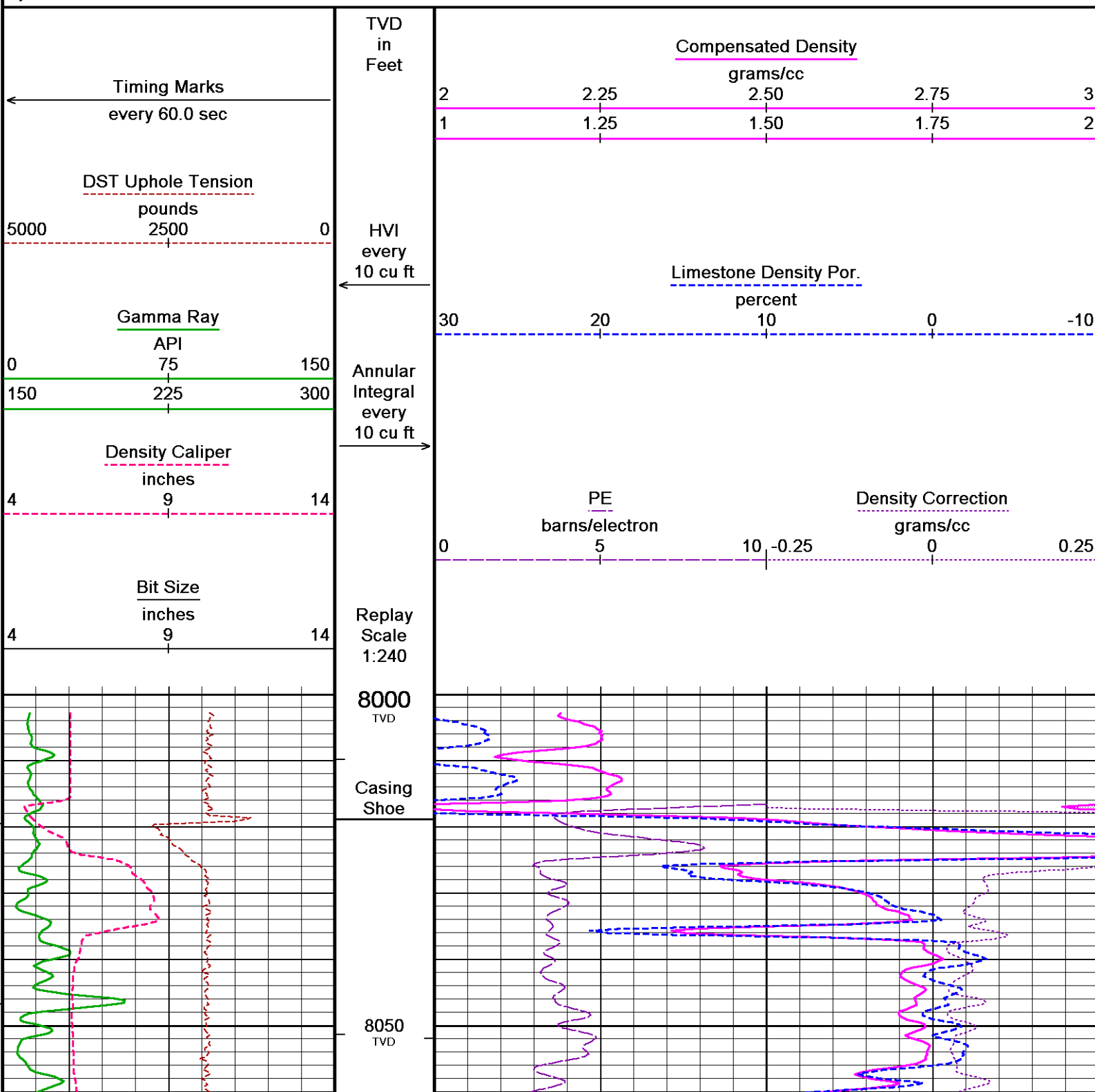
Depth Based Data - Maximum Sampling Increment 10.0cm

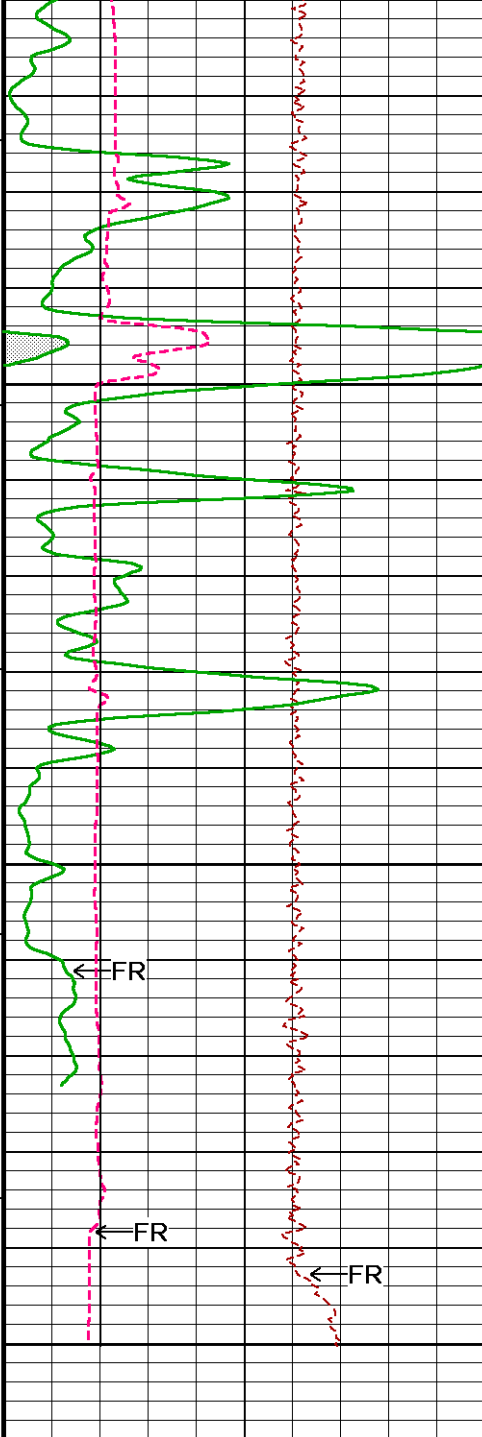
Filename: C:\LOGS\Kinder Morgan\YG-1 123\Porosity Main.dta

System Versions: Processed with 13.02.6600 Plotted with 13.03.7779

Plotted on 30-SEP-2012 20:00

Recorded on 30-SEP-2012 09:03



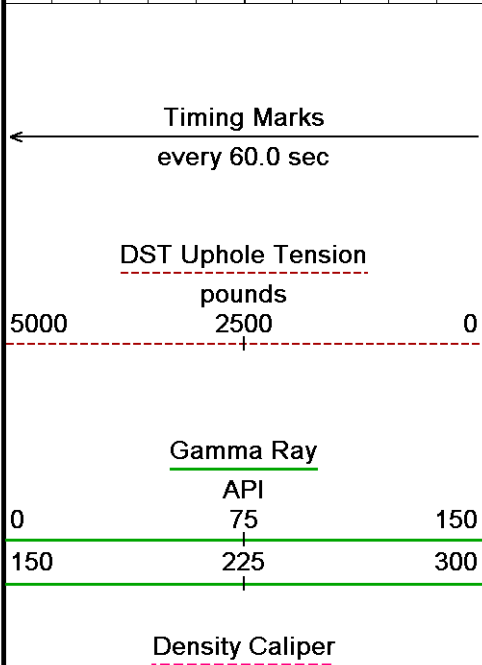


8100
TVD

8150
TVD

TD

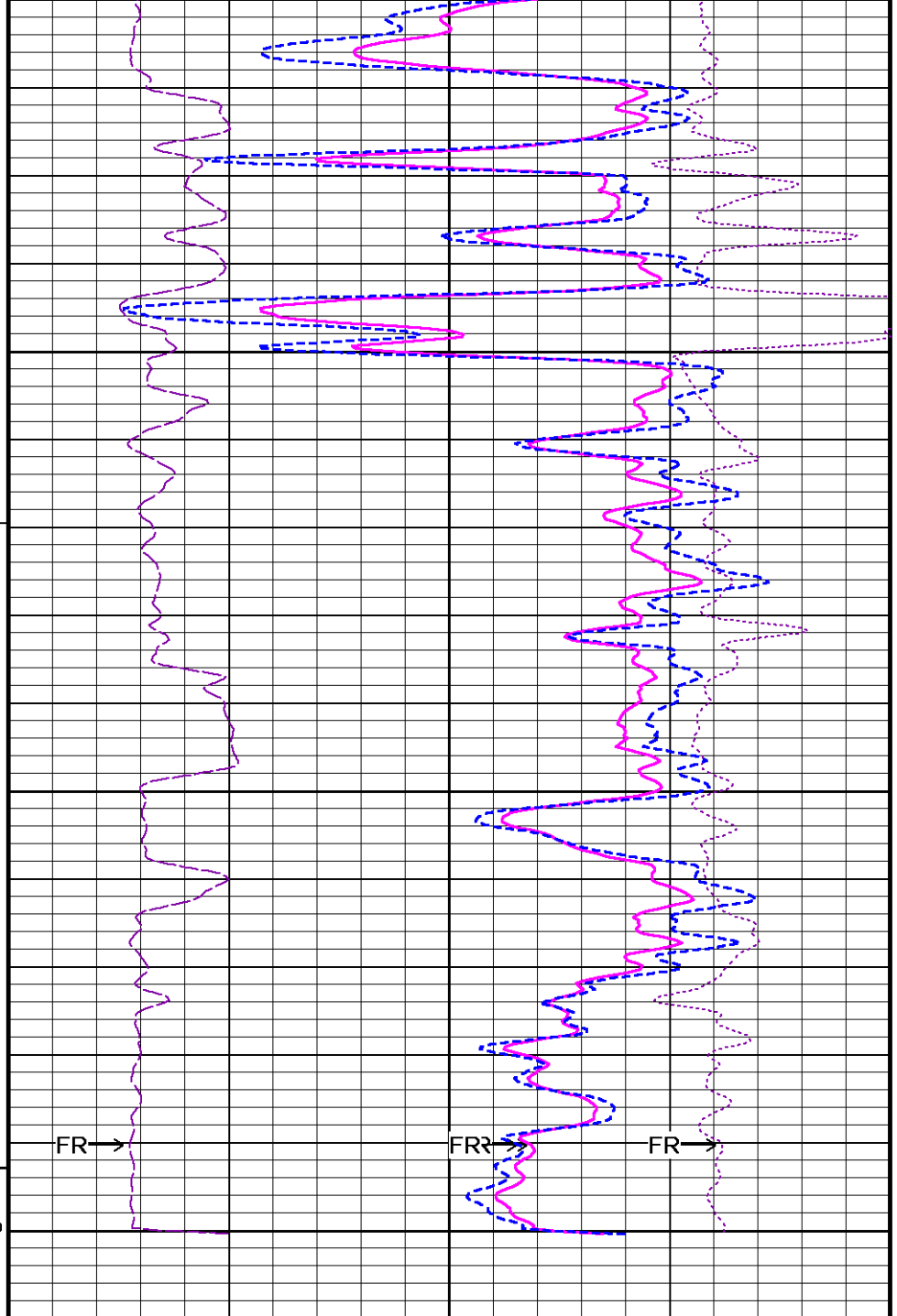
8200
TVD



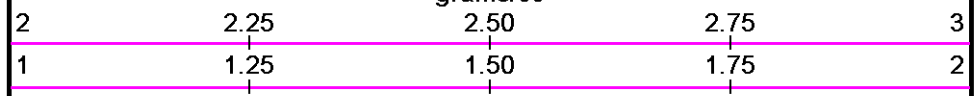
TVD
in
Feet

HVI
every
10 cu ft

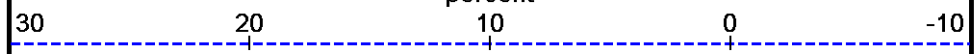
Annular
Integral
every
10 cu ft

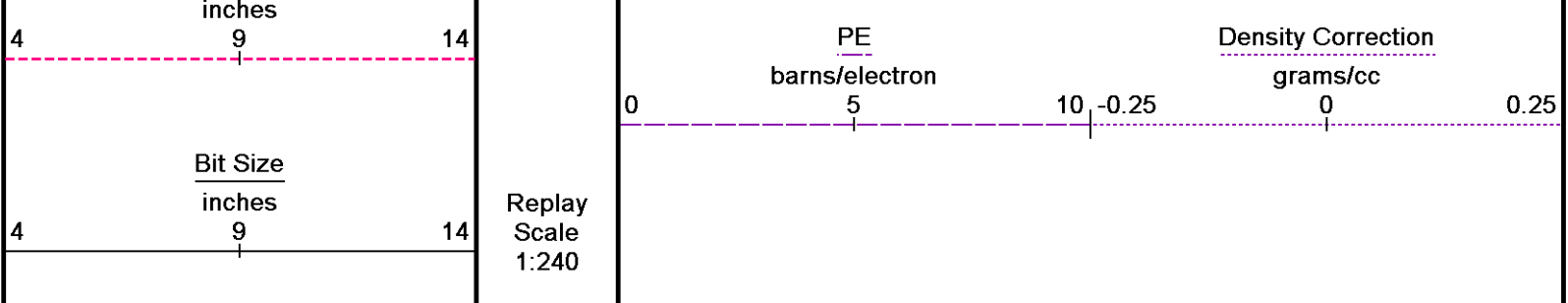


Compensated Density
grams/cc



Limestone Density Por.
percent





Depth Based Data - Maximum Sampling Increment 10.0cm Filename: C:\LOGS\Kinder Morgan\YG-1 123\Porosity Main.dta System Versions: Processed with 13.02.6600 Plotted with 13.03.7779	Plotted on 30-SEP-2012 20:00 Recorded on 30-SEP-2012 09:03
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↑
5 INCH MAIN LOG TVD
↑

BEFORE SURVEY CALIBRATION

C:\LOGS\Kinder Morgan\YG-1 123\Porosity MAIN.dta

General Constants All 000		Last Edited on 30-SEP-2012,12:02
General Parameters		
Mud Resistivity	4.710	ohm-metres
Mud Resistivity Temperature	67.000	degrees F
Water Level	3860.000	feet
Density/Neutron Processing	Water Level Switch	
Hole/Annular Volume and Differential Caliper Parameters		
HVOL Method	Single Caliper	
HVOL Caliper 1	Density Caliper	
HVOL Caliper 2	N/A	
Annular Volume Diameter	3.500	inches
Caliper for Differential Caliper	None	
Rwa Parameters		
Porosity used	N/A	
Resistivity used	N/A	
RWA Constant A	N/A	
RWA Constant M	N/A	

Gamma Calibration MCG-D.J 417		Field Calibration on 27-SEP-2012 18:29
	Measured	Calibrated (API)
Background	88	56
Calibrator (Gross)	917	583
Calibrator (Net)	829	527

Gamma Constants MCG-D.J 417		Last Edited on 27-SEP-2012,18:22
Gamma Calibrator Number	GRC-174	
Mud Density	1.00	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

Photo Density Calibration MPD-D.A 460		Base Calibration on 21-SEP-2012 17:25		Field Check on 29-SEP-2012 22:50
Density Calibration				
Base Calibration		Measured	Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	57826	27793	59720	30898
Reference 2	23140	2818	24621	2513
Field Check at Base				
	1353.9	1668.8		
Field Check				
	1329.6	1575.2		
PE Calibration				

Base Calibration	WS	Measured WH	Ratio	Calibrated Ratio
Background	263	1217		
Reference 1	25582	57611	0.449	0.370
Reference 2	7352	22987	0.326	0.271

Field Check at Base
263.0 1216.6

Field Check
254.9 1187.5

Density Constants MPD-D.A 460

Last Edited on 30-SEP-2012,11:52

Density Source Id	P44263B	
Nylon Calibrator Number	628	
Aluminium Calibrator Number	628	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.00	gm/cc
Mud Density Z/A Multiplier	1.11	
Mud Filtrate Density	1.00	gm/cc
Dry Hole Mud Filtrate Density	1.00	gm/cc
DNCT	0.00	gm/cc
CRCT	0.00	gm/cc
Density Z/A Correction	Hybrid	
Matrix Density (gm/cc)	Depth (ft)	
2.71	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	
0.00	0.00	

Caliper Calibration MPD-D.A 460

Base Calibration on 21-SEP-2012 17:33

Field Calibration on 29-SEP-2012 22:54

Base Calibration	Measured	Calibrator Size (in)
Reading No		
1	19011	3.98
2	27874	5.96
3	35560	7.97
4	43991	9.84
5	53242	11.91
6	N/A	N/A

Field Calibration	Measured Caliper (in)	Actual Caliper (in)
	5.18	5.96

DOWNHOLE EQUIPMENT

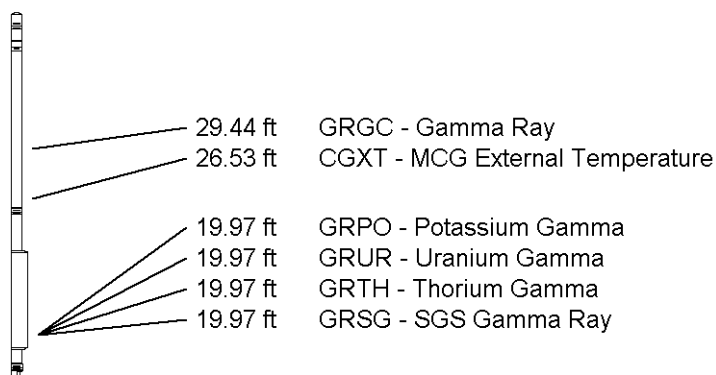
C:\LOGS\Kinder Morgan\YG-1 123\Porosity MAIN.dta

3/8" Triple Cone Cable Head (MCB C A)
MCB-C.A 5 LG: 1.58 ft WT: 15.4 lb OD: 2.24 in

Compact Comms Gamma
MCG-D.J 417 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Spectral Gamma Ray Sub
SGS-E.J 135 LG: 7.78 ft WT: 105.8 lb OD: 3.54 in

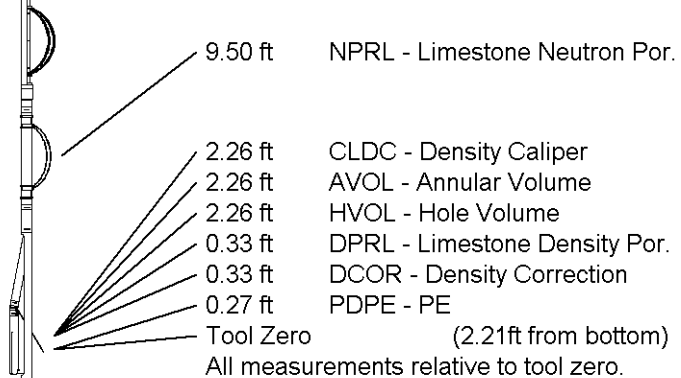
MIS-D.B Compact Inline Bowspring sub
MIS-D.B 657 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in



Compact Neutron
MDN-B.A 296 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper
MPD-D.A 460 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Total Length: 38.39 ft Weight: 359.4 lb



COMPANY KINDER MORGAN C02 Co. L.P
WELL YG-1
FIELD McELMO DOME
PROVINCE/COUNTY MONTEZUMA
COUNTRY/STATE U.S.A. / COLORADO

Elevation Kelly Bushing	6686.00	feet	First Reading	8197.00	feet
Elevation Drill Floor	6686.00	feet	Depth Driller	8200.00	feet
Elevation Ground Level	6661.00	feet	Depth Logger	8200.00	feet



Weatherford®

COMPENSATED DENSITY
COMPENSATED NEUTRON
LOG (TVD)