



**GAMMA RAY  
NEUTRON  
LOG**

Company **VERDAD RESOURCES**  
Well **BRNAK 01-64-10-3H**  
Field **WATTENBERG**  
County **WELD** State **COLORADO**

Comp. VERDAD RESOURCES  
Well BRNAK 01-64-10-3H  
Field WATTENBERG  
Co. WELD  
State COLORADO

Location: API # : 05-123-44997  
SHL: 245' FNL & 1299' FWL  
NW NW  
SEC 10 TWP 1N RGE 64W  
Permanent Datum GL Elevation 5104'  
Log Measured From MH -2' Above Perm. Datum  
Drilling Measured From KB  
Other Services  
SCBL  
K.B. 5121'  
D.F. N/A  
G.L. 5104'

Date of Service	16 NOV 2017		
Run Number	ONE		
Depth Driller or P8TD	17233'		
Depth Logger	7200'		
Bottom Log Interval	7200'		
Top Log Interval	SURFACE		
Open Hole Size	8.5"		
Type Fluid	WATER		
Fluid Level	FULL		
Fluid Density	N/A		
Max. Recorded Temperature	N/A		
Max. Wellhead Pressure	ZERO		
Wellhead Connection	OPEN		
Estimated Cement Top	SURFACE		
Unit Number	P138		
Wireline Size	9/32		
Location	FORT MORGAN CO		
Recorded By	SCHOENROGGE		
Witnessed By	MR. BEECHERL		
	Size	Wt/Ft	Top
Tubing Record			Bottom
Surface Casing	9.625"	36	SURFACE
Production Casing	5.5"	20	SURFACE
Liner Record			

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All interpretations are opinions based on inferences from electrical or other measurements and Pioneer Wireline Services, LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Pioneer Wireline Services, LLC will not 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.

Comments

N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.  
LOG ZEROED AT MANDREL HANGER

K.O.P. 6590'

THANK YOU FOR USING PIONEER ENERGY SERVICES!

Your Pioneer Energy Services Crew

Tool Data - Services

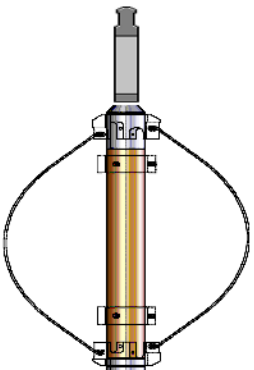

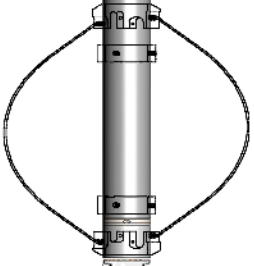
Serial Number


Engineer: SCHOENROGGE  
Operator: DAVE HOLLIS  
Operator: DUSTY SCOTT  
Operator: JUSTIN RENFRO


SEE DIAGRAM

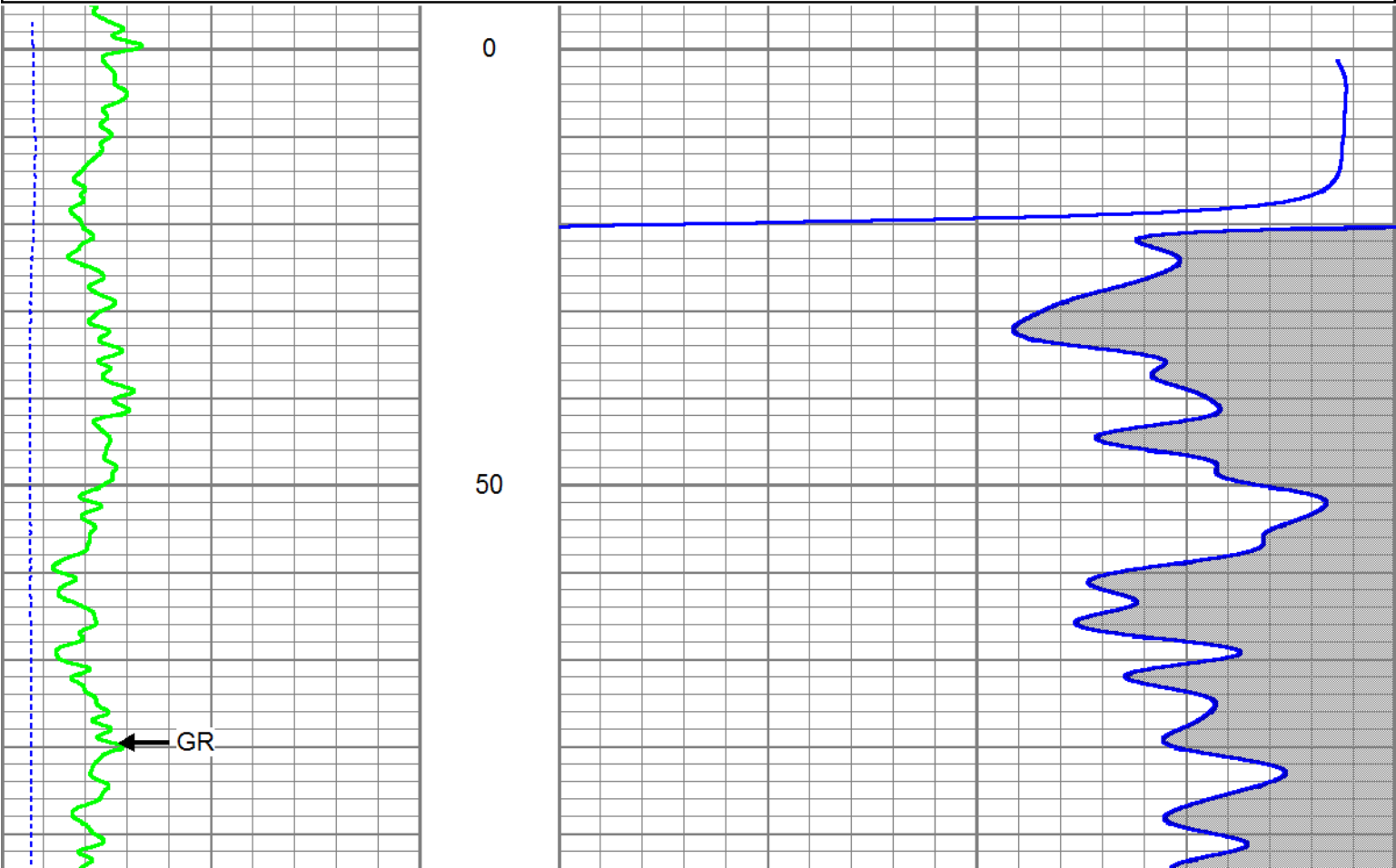
Top - Bottom

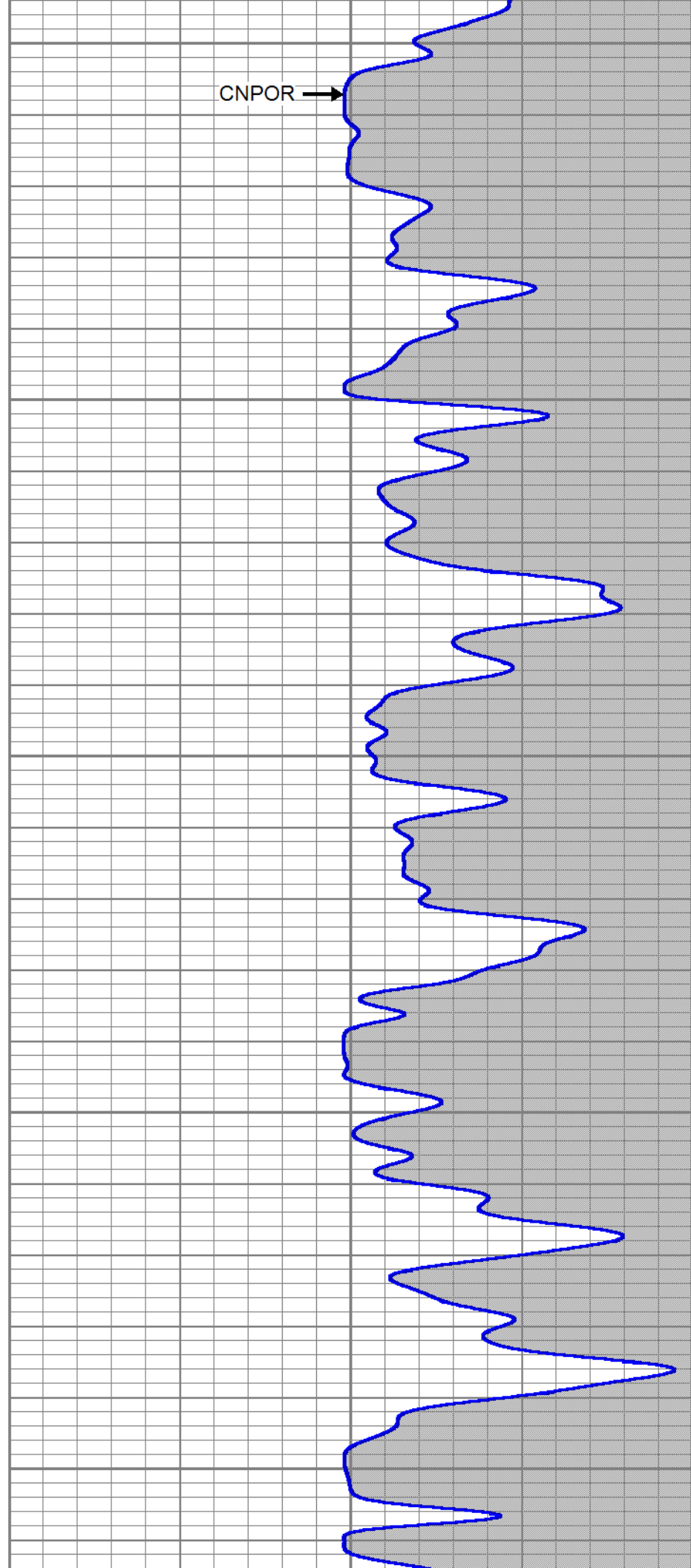
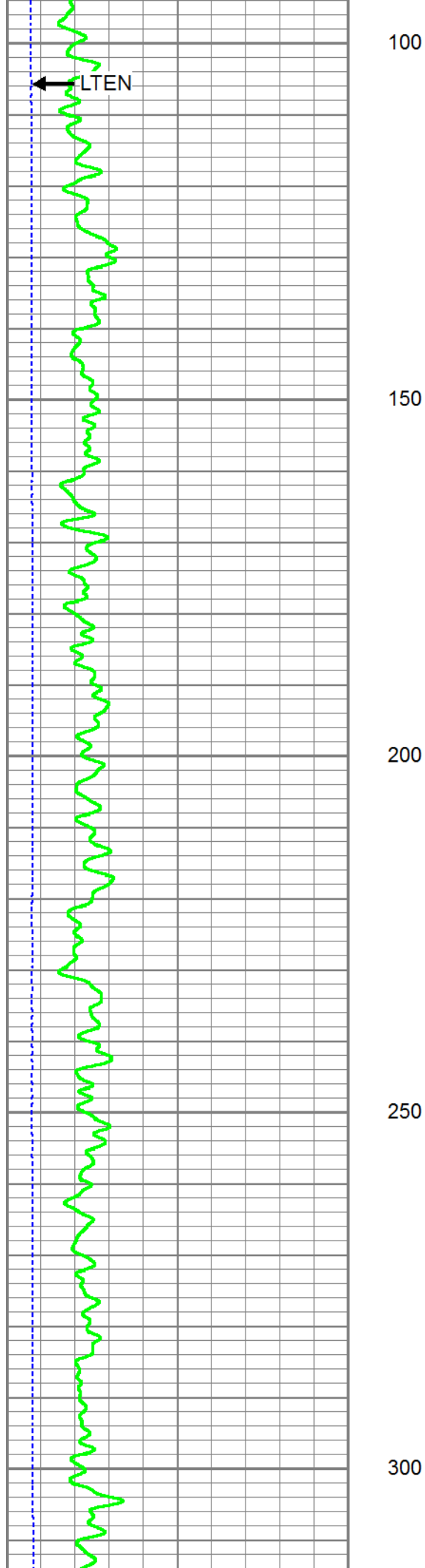
BHTEMP_Src	CMTTKCOR	CSTKCOR	SZCOR	CASED?	NPORSEL	CMNTTHCK in
TEMP	On	On	On	Yes	Limestone	1.5
PPT usec	CASEWGHT lb/ft	MAXAMPL mV	MINAMPL mV	MINATTN db/ft	SRFTEMP degF	CASETHCK in
0	20	0	1	0.08	50	0.361
CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in		
5.5	0	0	210	8.5		

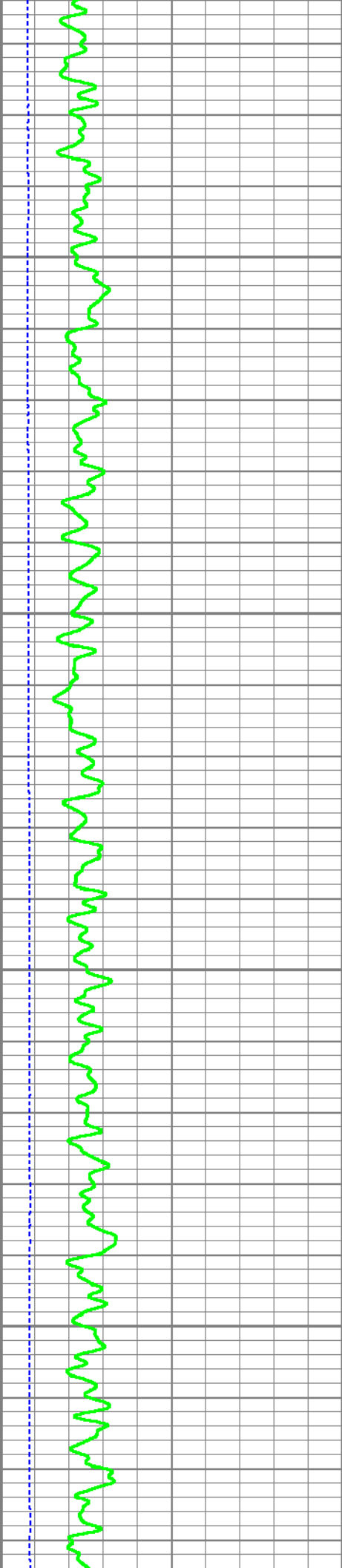
Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
TEMP	16.57		Cable Head-Titan 143 1 7/16" Titan Cable Head	1.03	1.43	2.00
			Centralizer-275 OverBody 2 3/4" Over Body Centralizer	2.73	3.75	20.00
			SCBL-275 Probe w Temp (FW1403-68) Probe Radii Bond Tool with Temperature	9.17	2.75	95.00
WVFS8	14.34					
WVFS7	14.34					
WVFS6	14.34					
WVFS5	14.34					
WVFS4	14.34					
WVFS3	14.34					
WVFS2	14.34					
WVFS1	14.34					
WVFCAL	14.34					
WVF3FT	14.34					
WVF5FT	13.34					
HEADVOLT	10.09					
CCL\$2	9.19					
CCL\$1	9.19					
GR	7.85		GR-GC_6PIN (FW1404-112) Probe 6 Pin GR275-0001 rev.1	4.82	2.75	
			Centralizer-275 OverBody 2 3/4" Over Body Centralizer	2.73	3.75	20.00

CNLSC CNSSC	2.05		CNT-275BL (120509) Probe 2.75 Digital CNT	5.00	2.75	76.00
	1.64		Bullnose-Titan GO Pin Pressure Cap	0.27	1.38	1.00
Dataset: verdad_bernak_01-64-10-3h_0512344997_20171116_scbl-cnl.db: field/well/run1/pass4 Total length: 20.29 ft Total weight: 214.00 lb O.D.: 3.75 in						

		MAIN LOG  ZERO PSI APPLIED AT SURFACE			
Database File Dataset Pathname Presentation Format Dataset Creation Charted by		verdad_bernak_01-64-10-3h_0512344997_20171116_scbl-cnl.db main cnl Thu Nov 16 12:18:55 2017 Depth in Feet scaled 1:240			
0	Gamma Ray (GAPI)	200	40	CNPOR (pu)	0
0	Tension (lb)	5000			





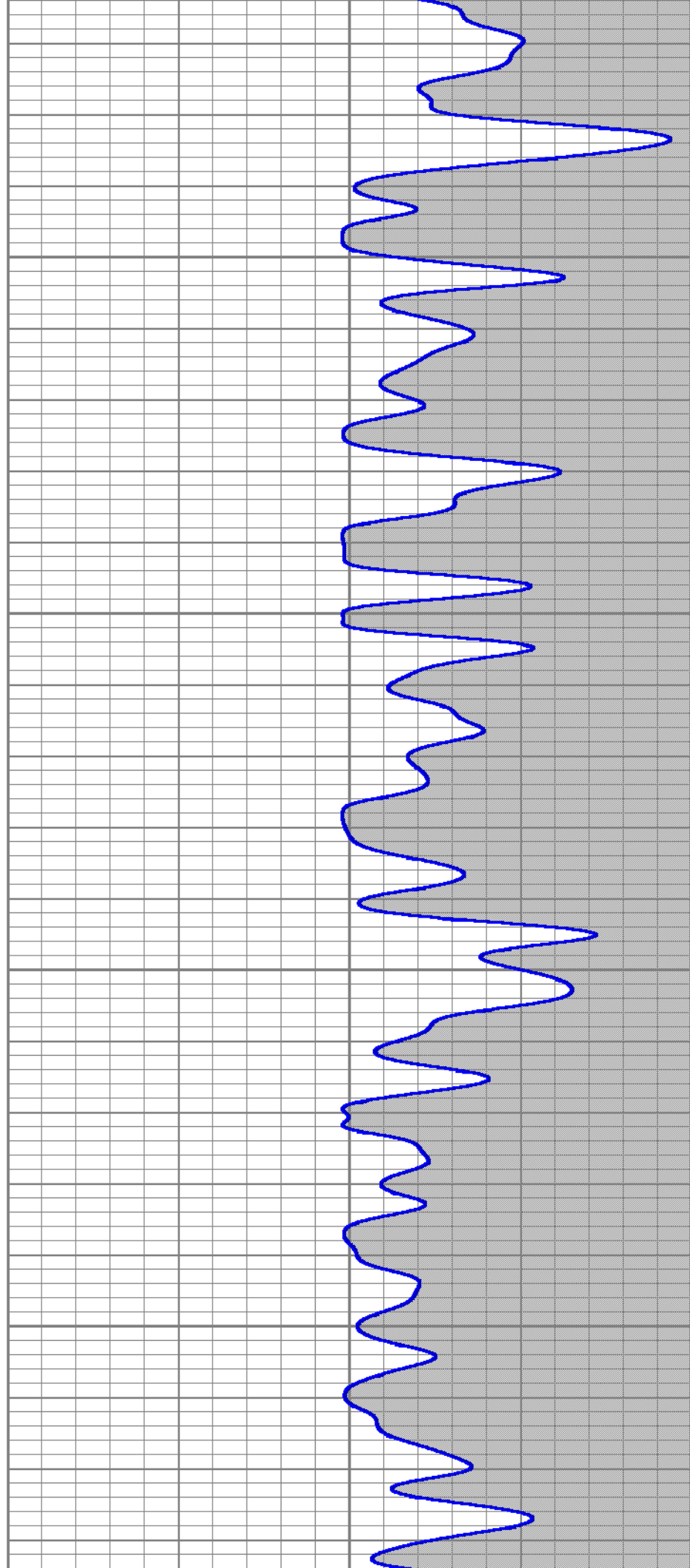


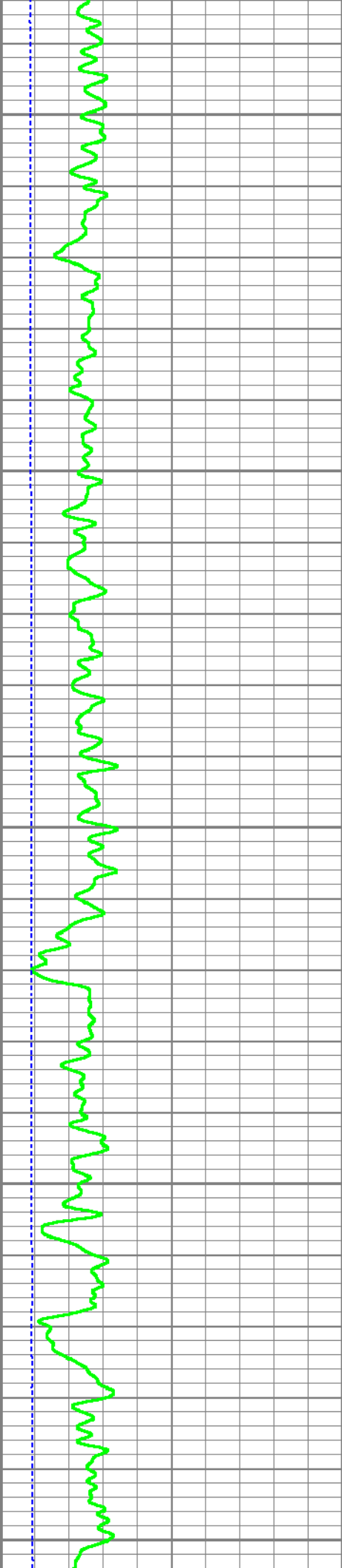
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400

450

500





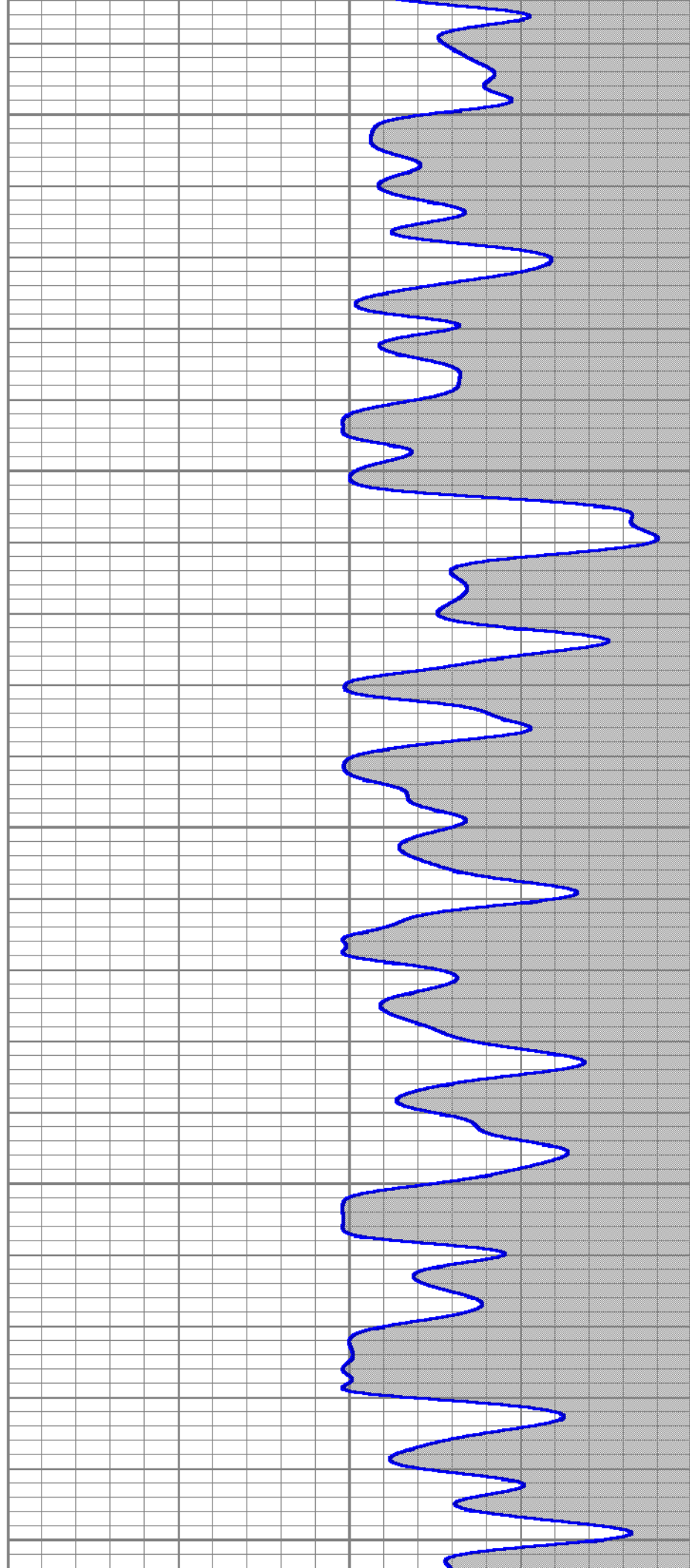
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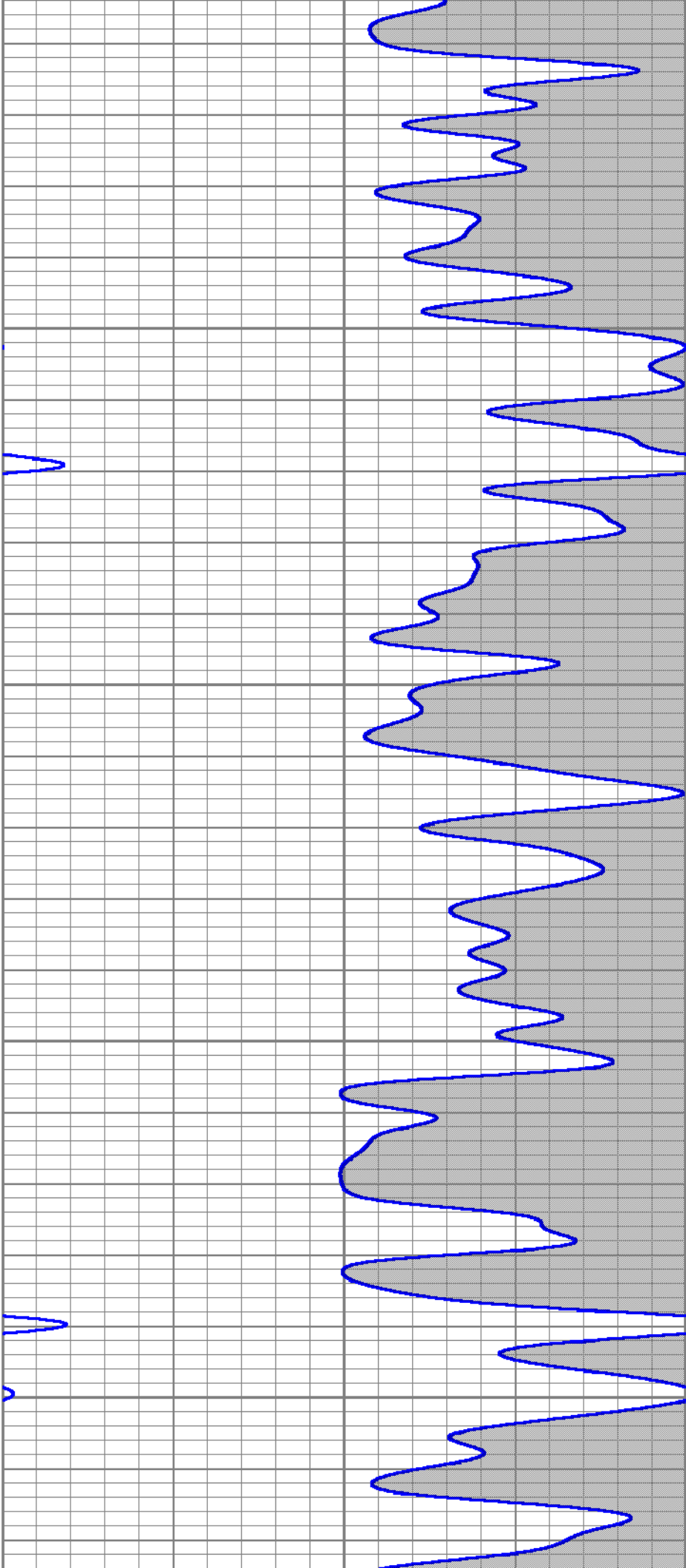


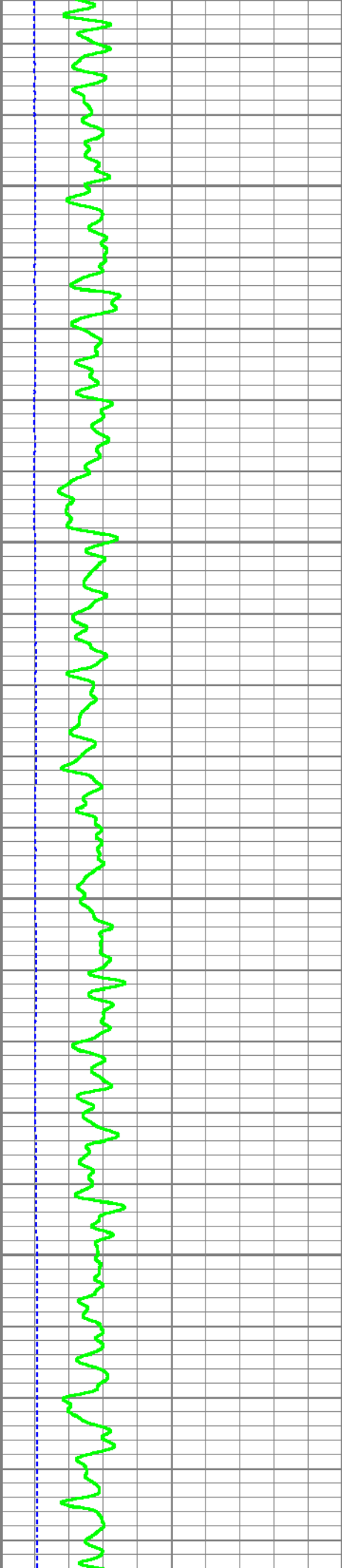
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900

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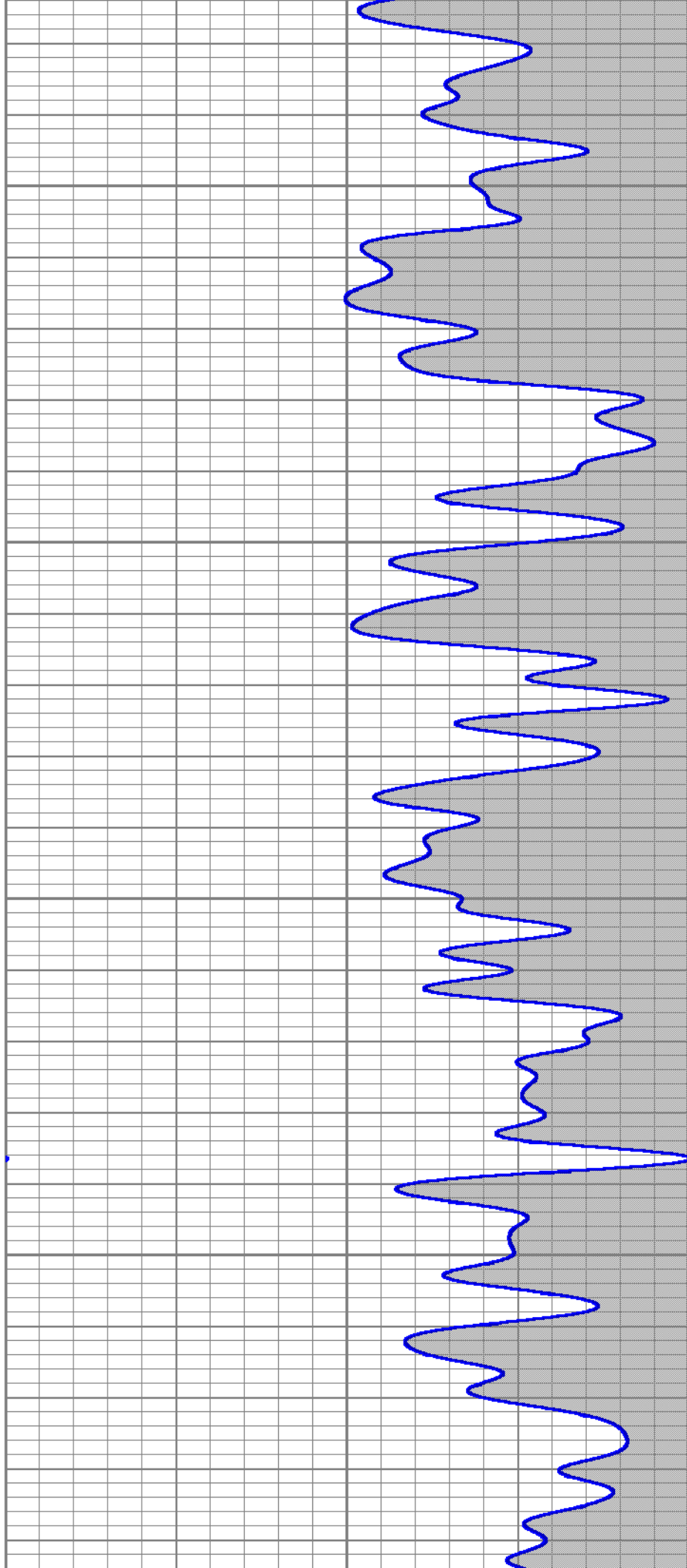


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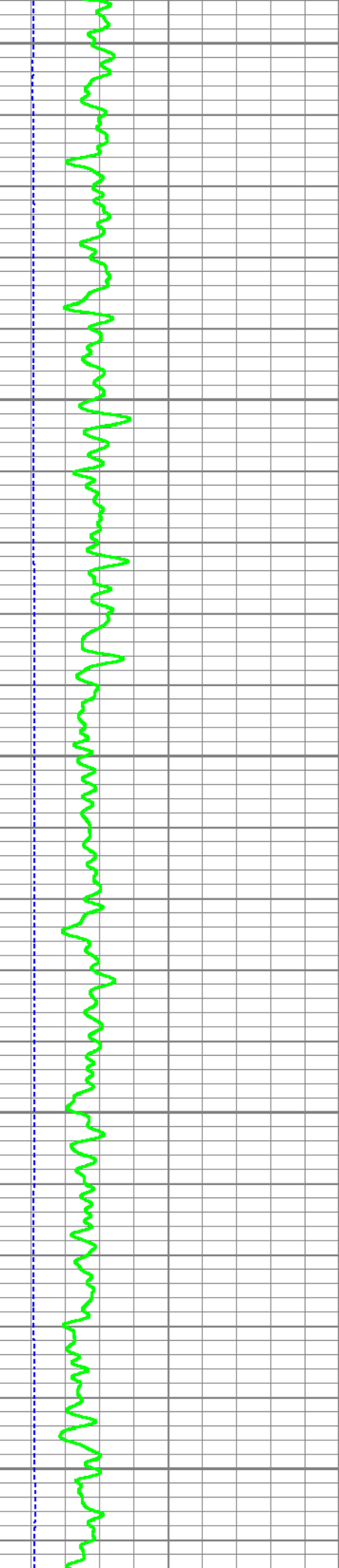
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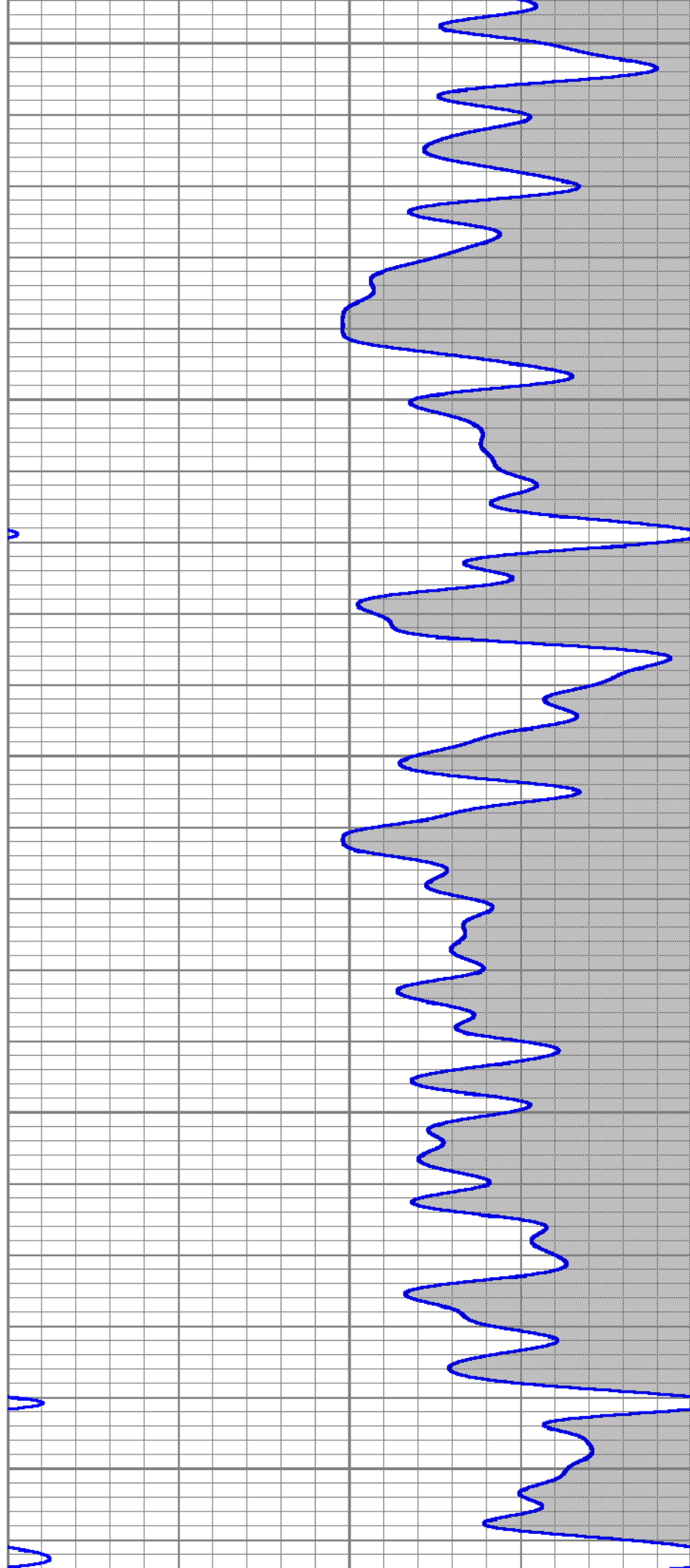
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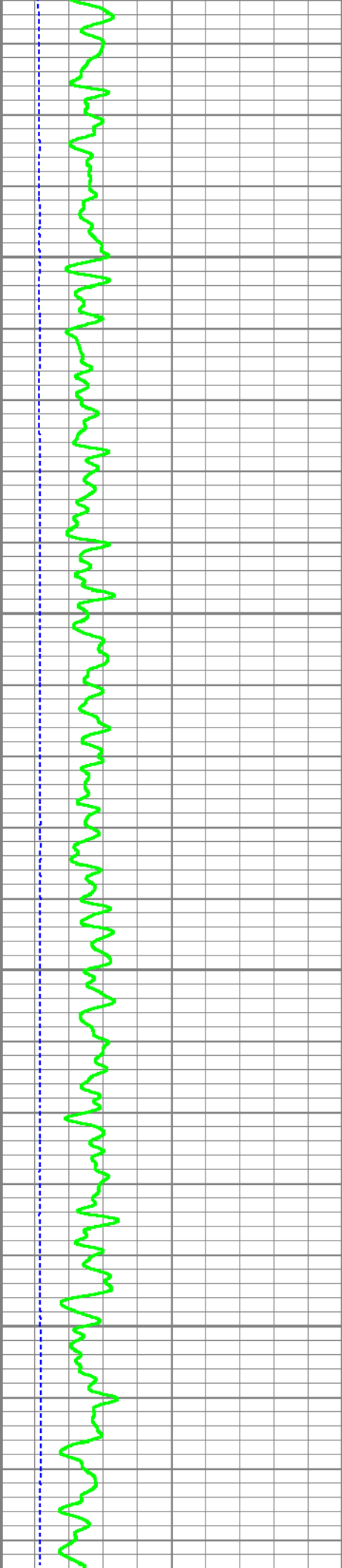
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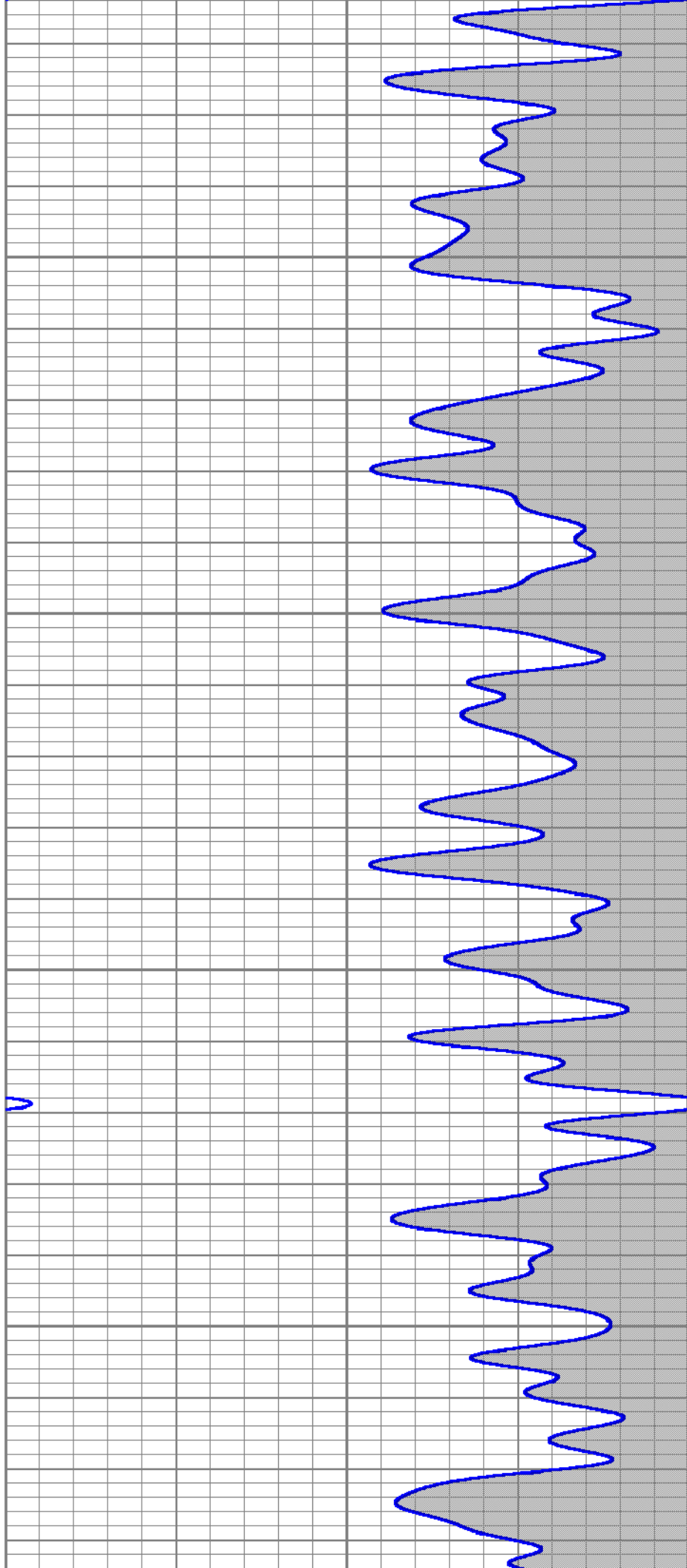


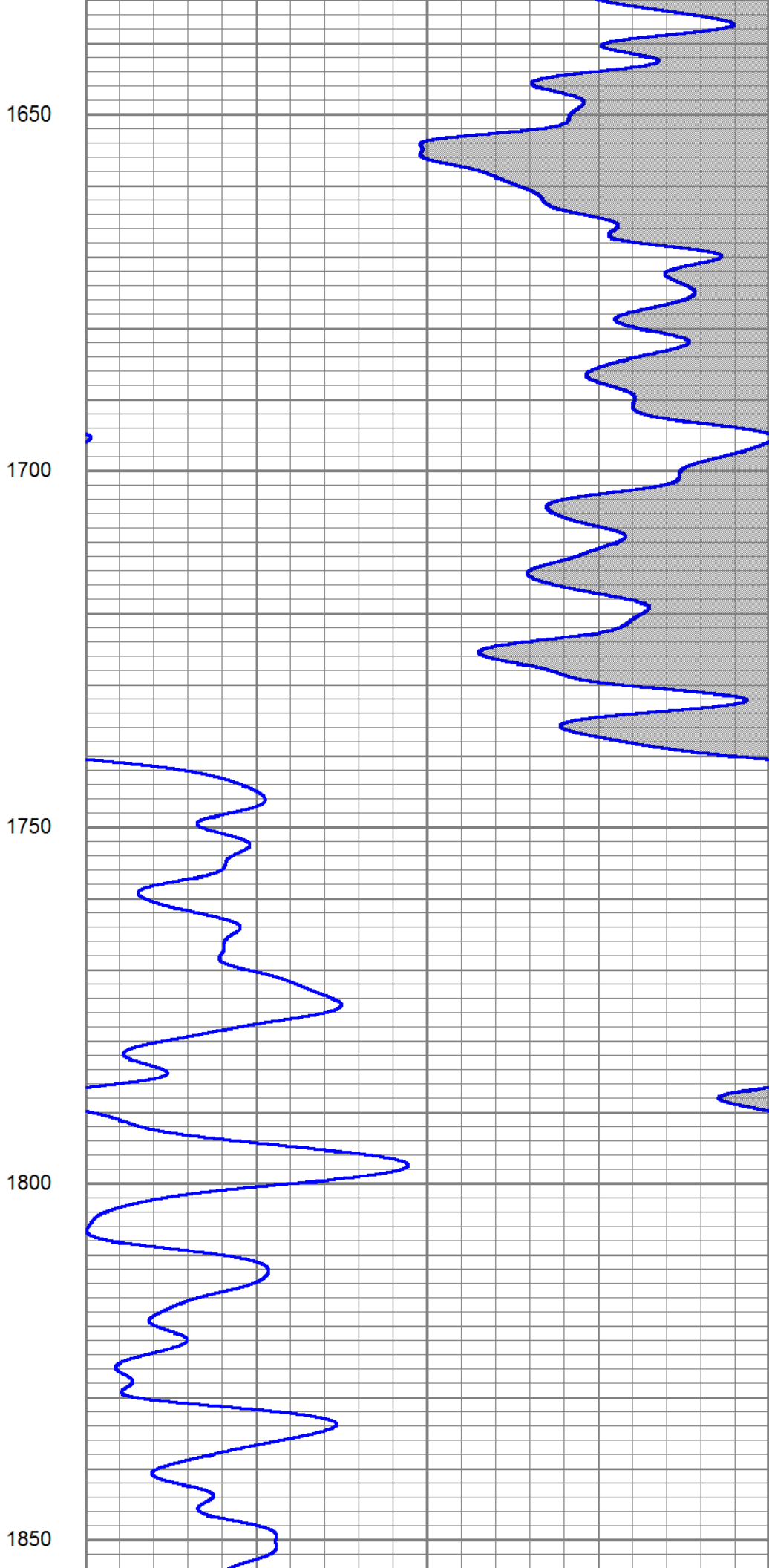
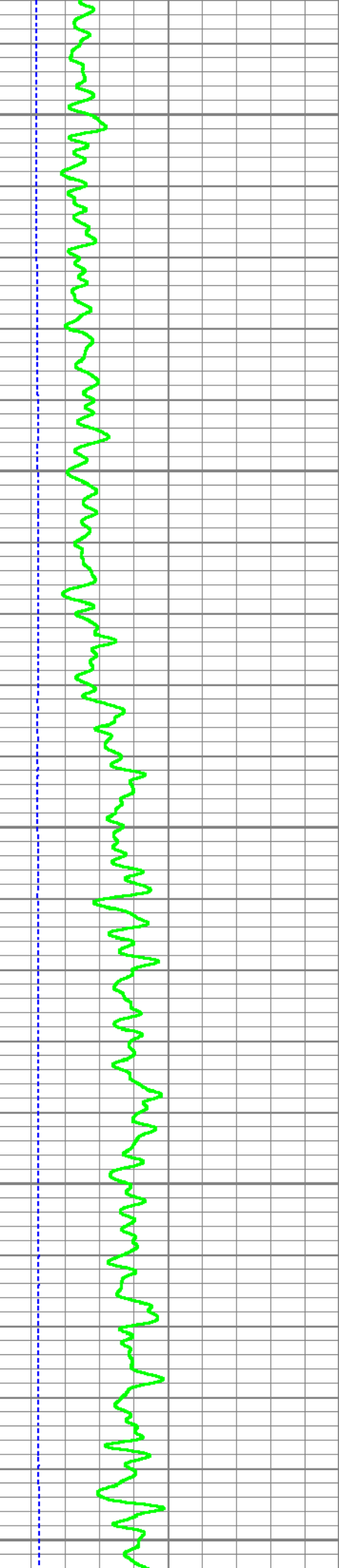
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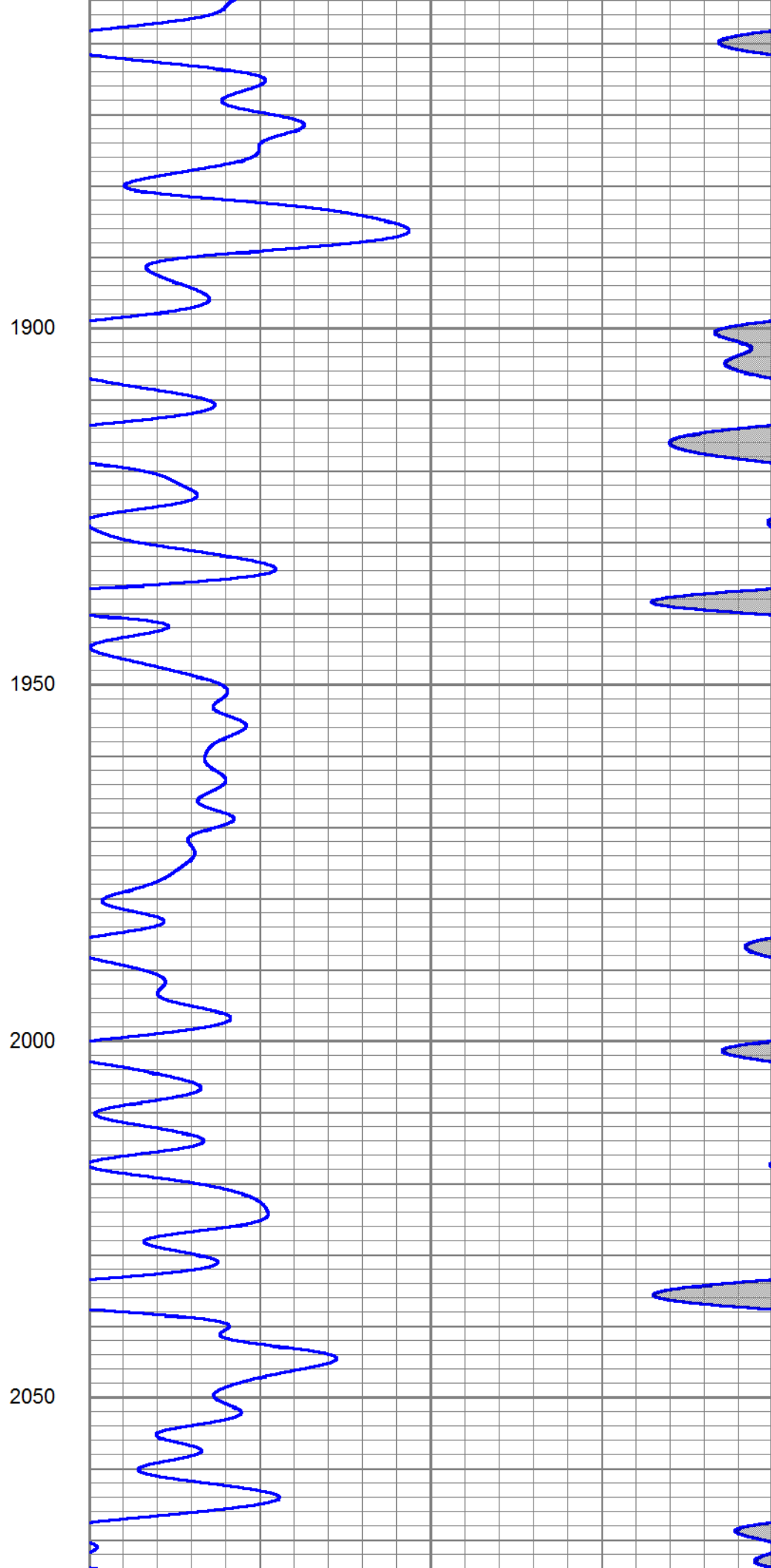
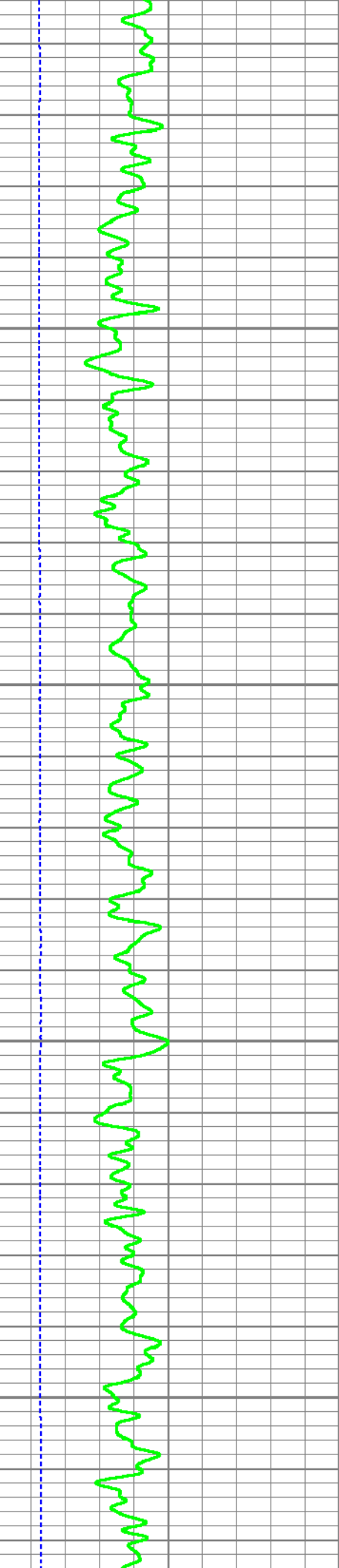
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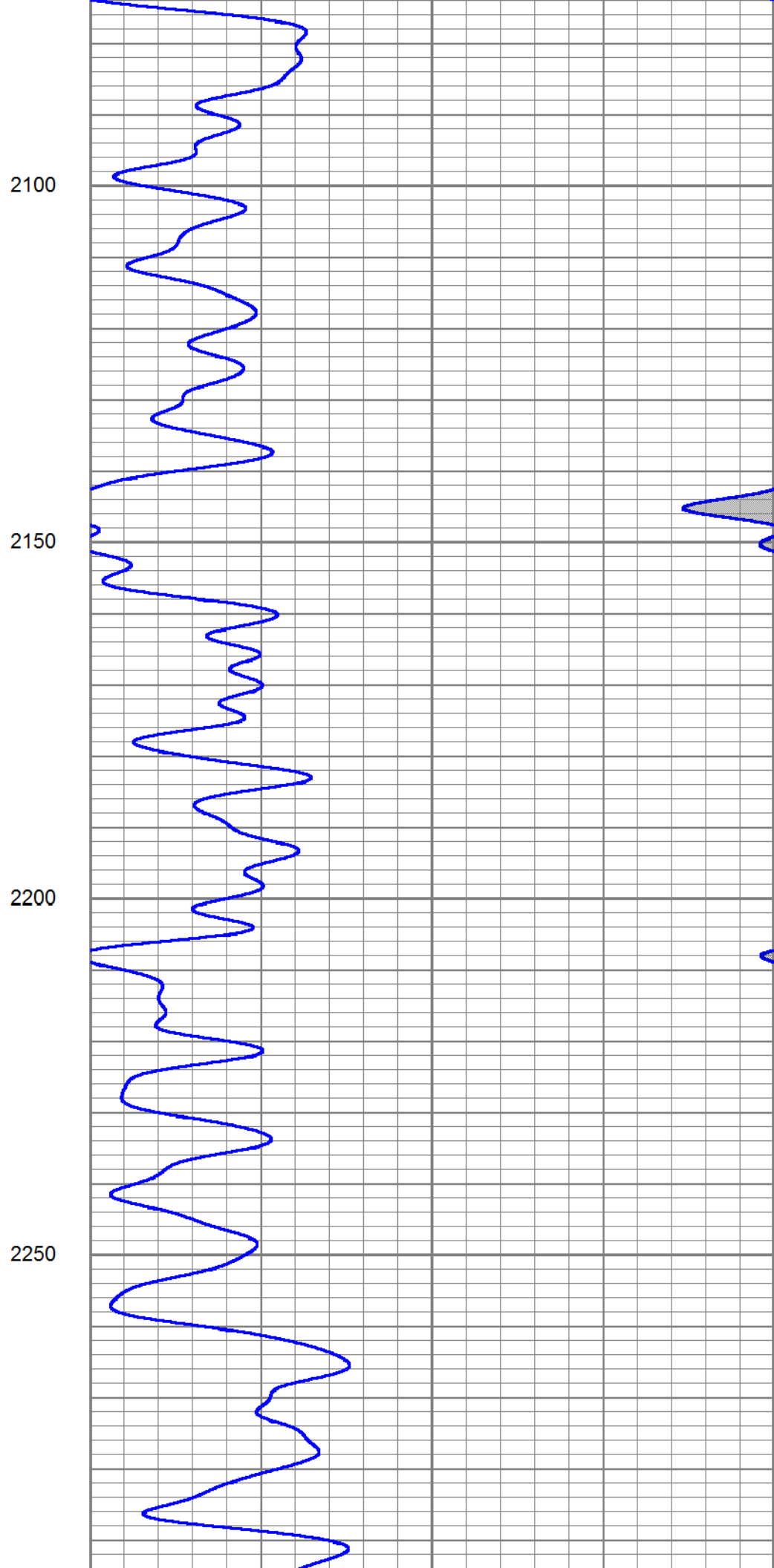
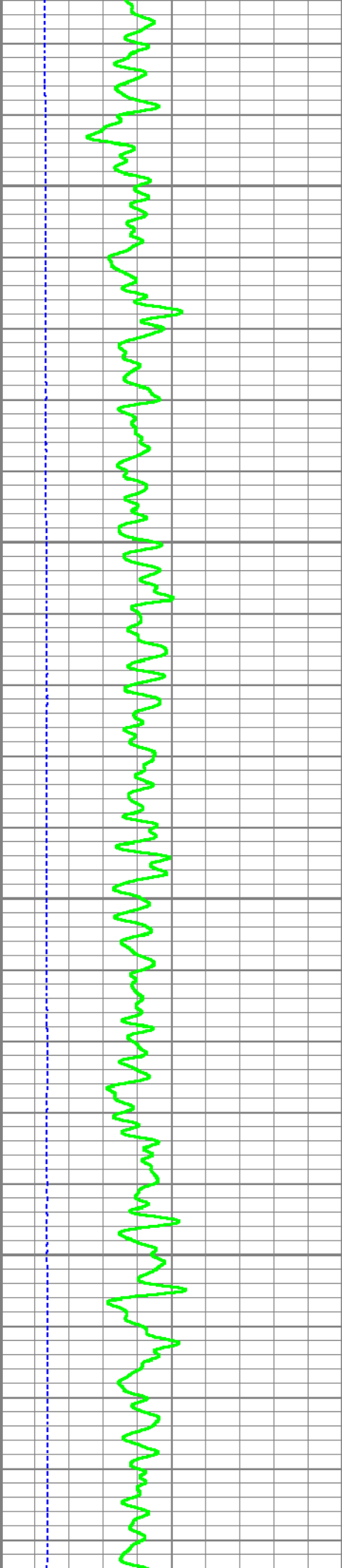
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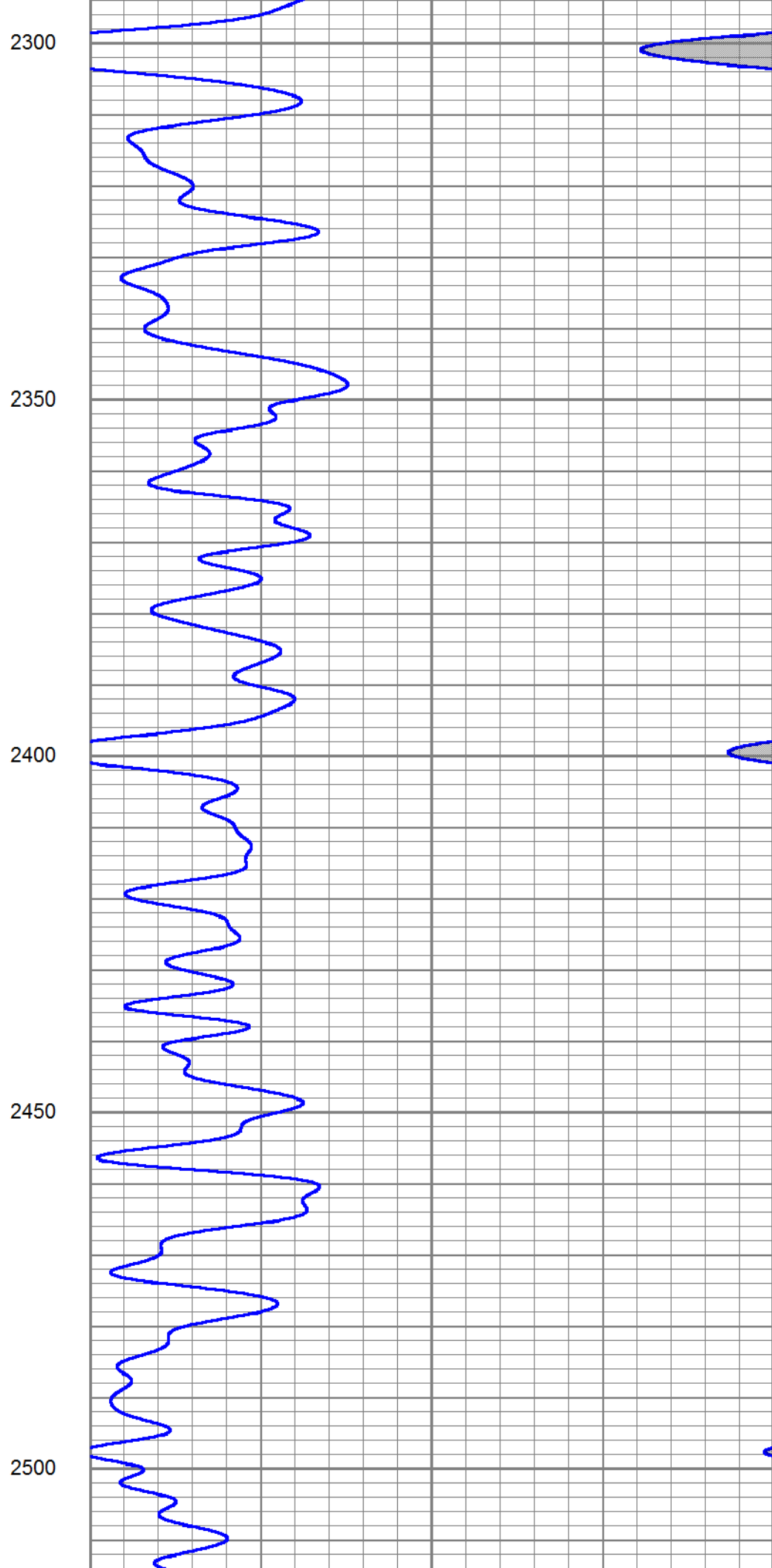
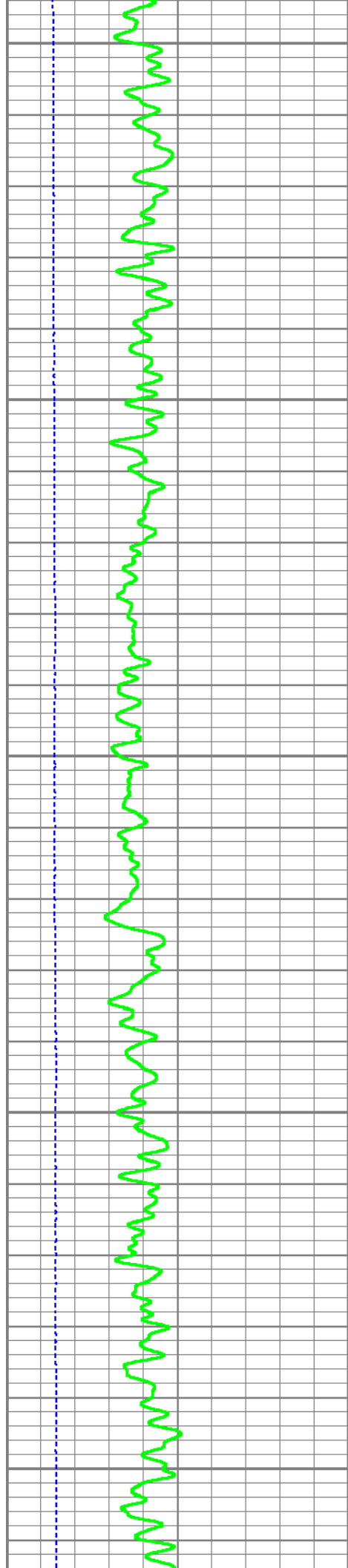












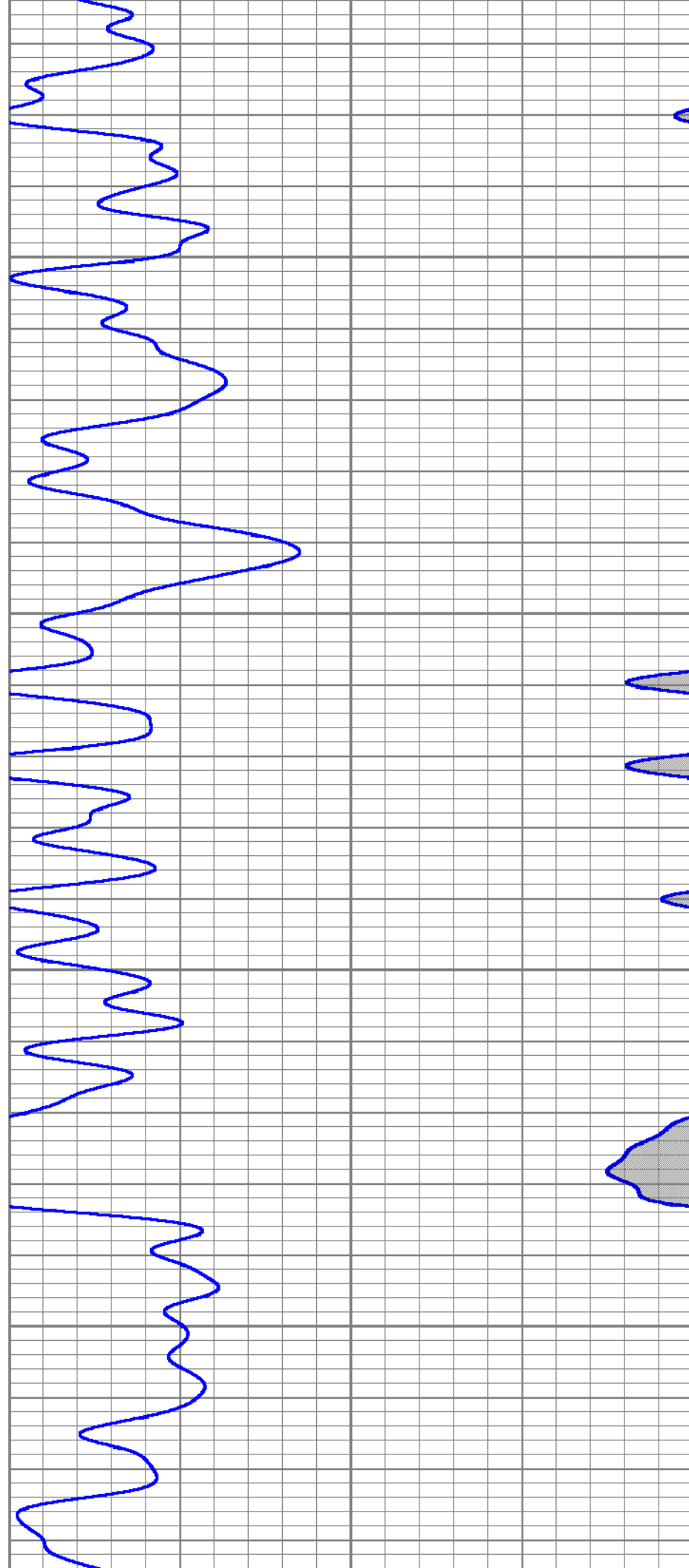


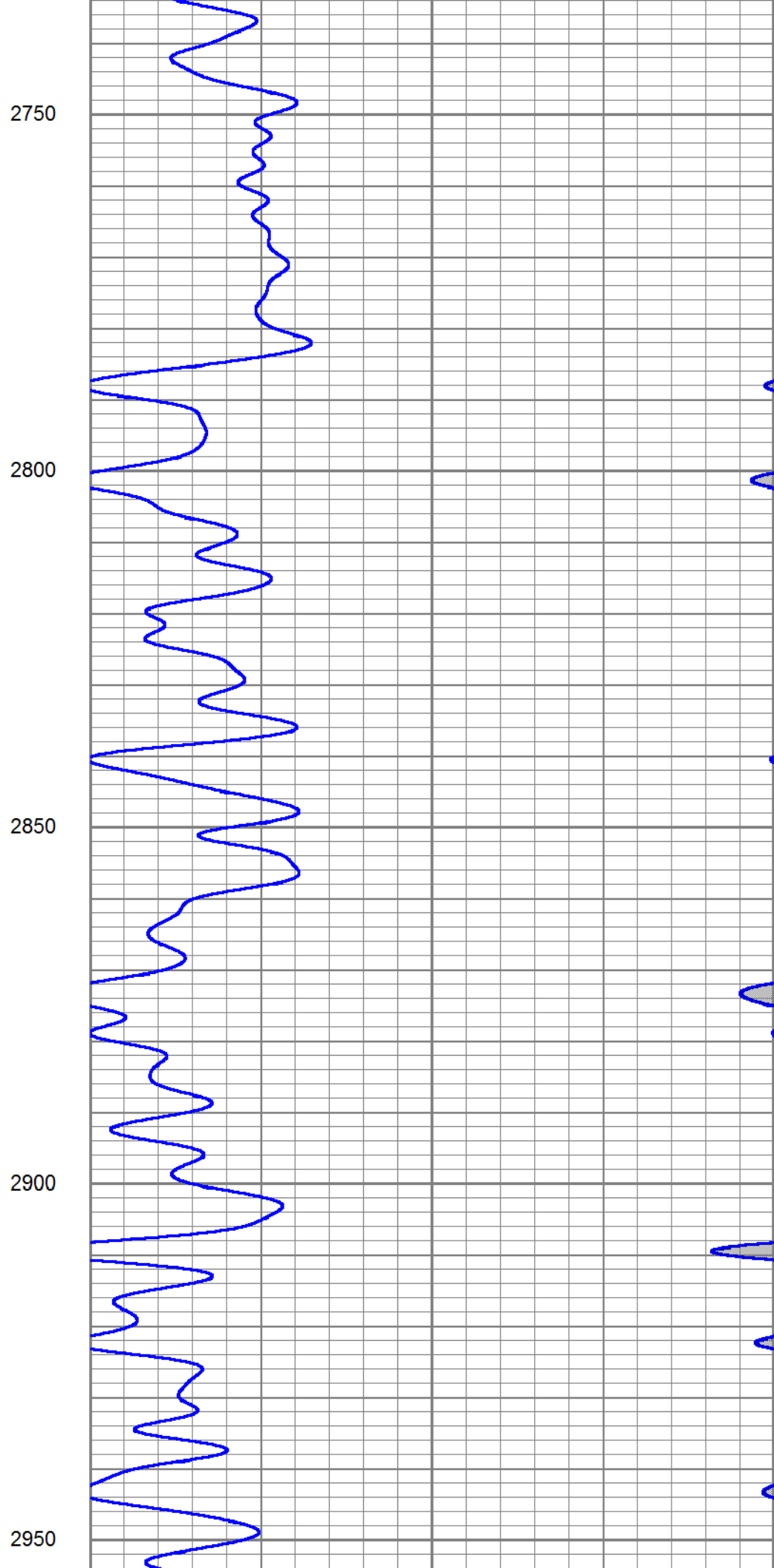
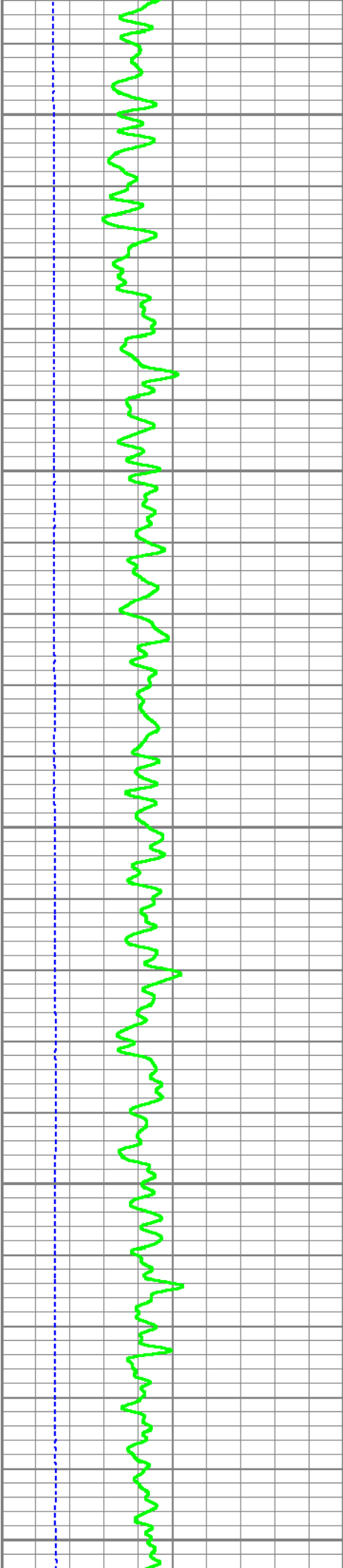
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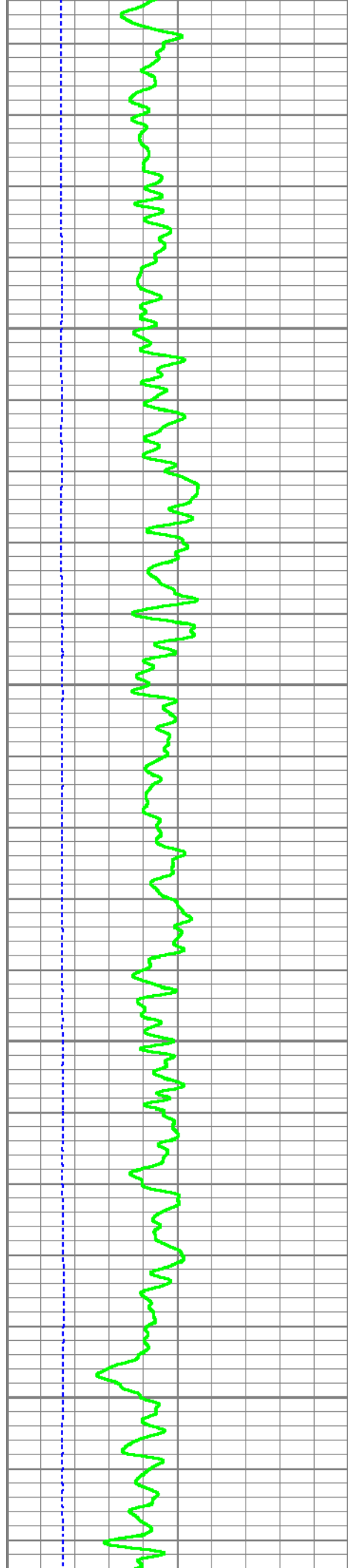
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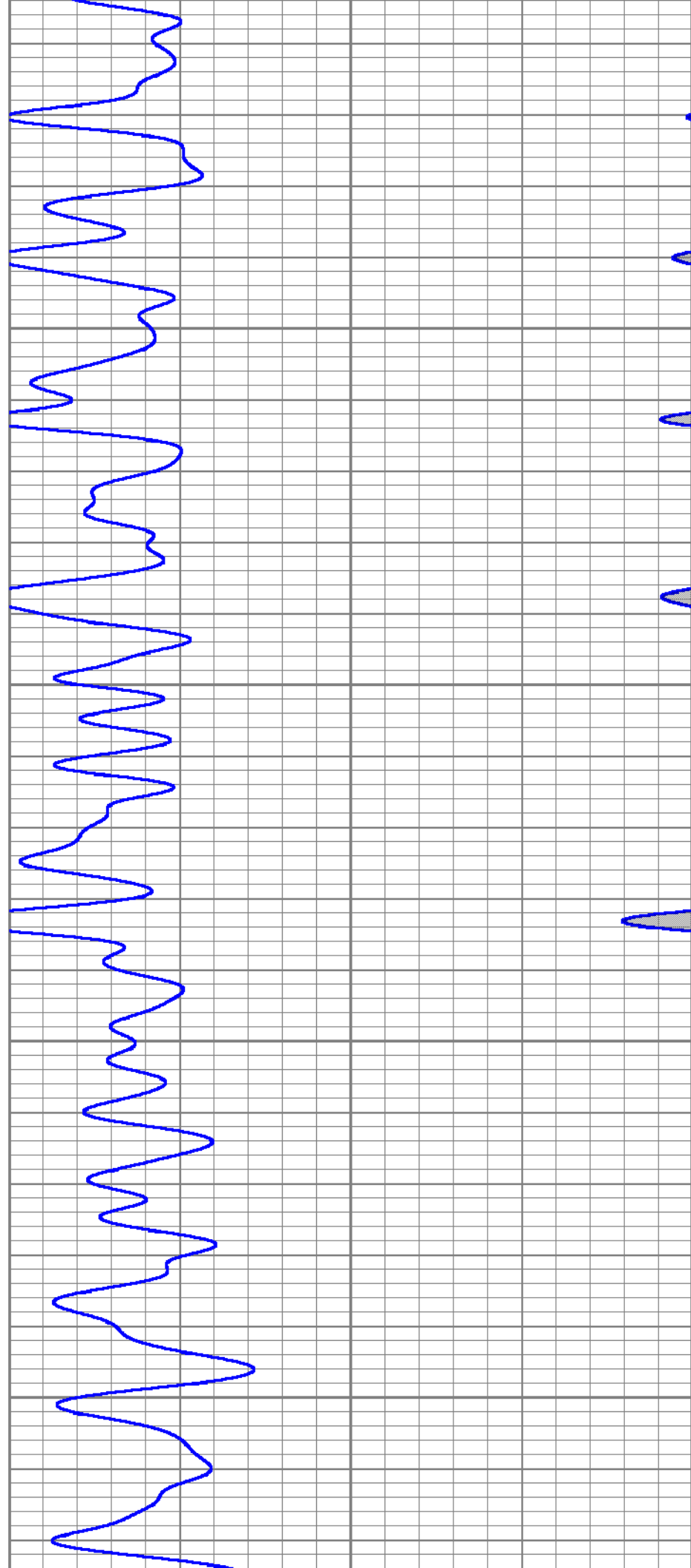


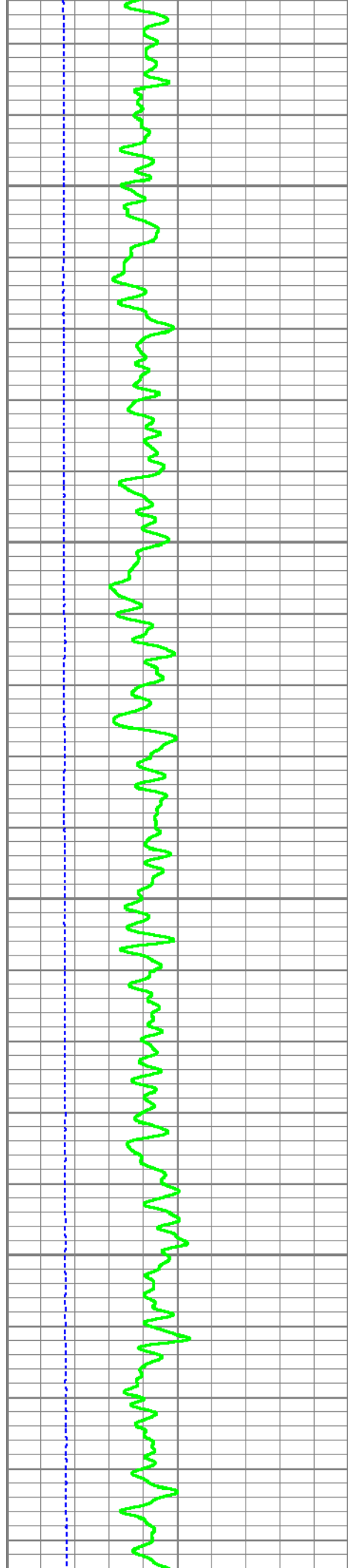
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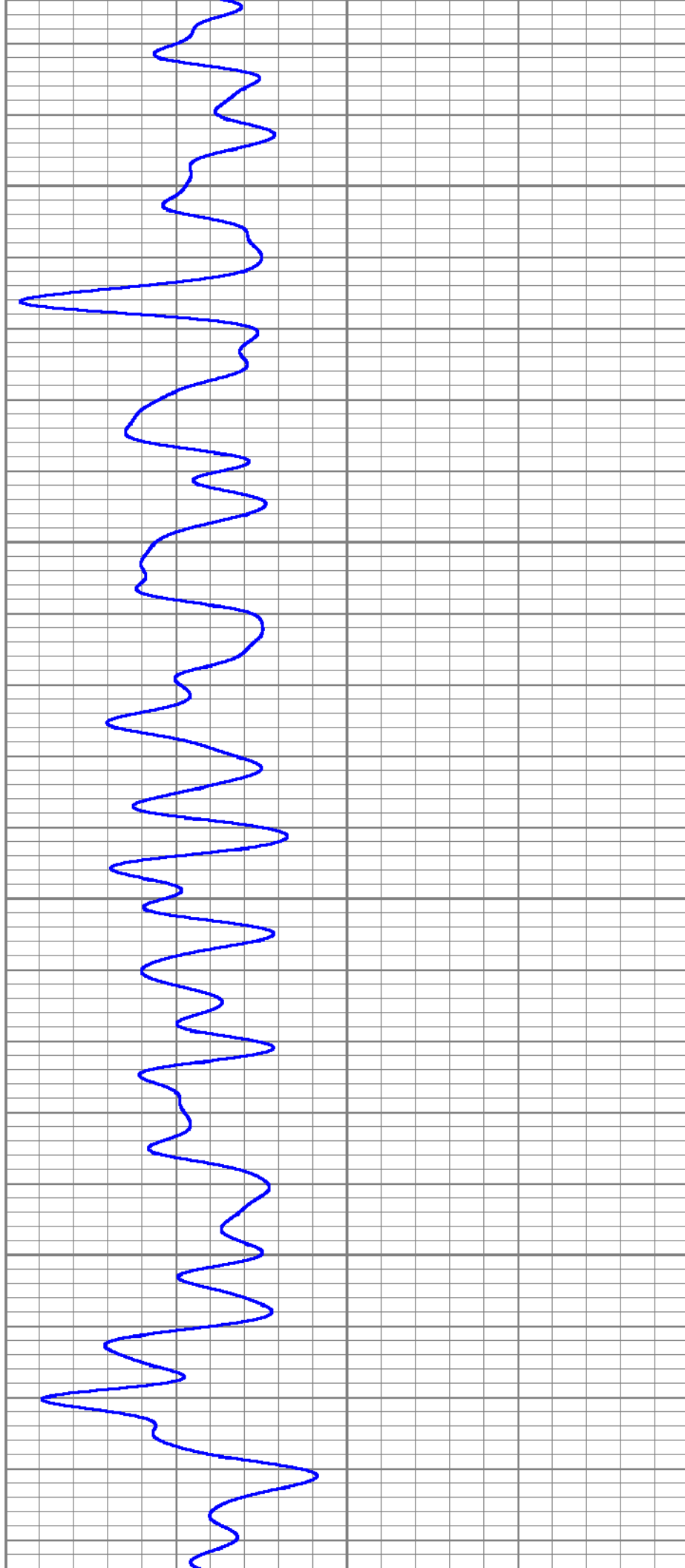


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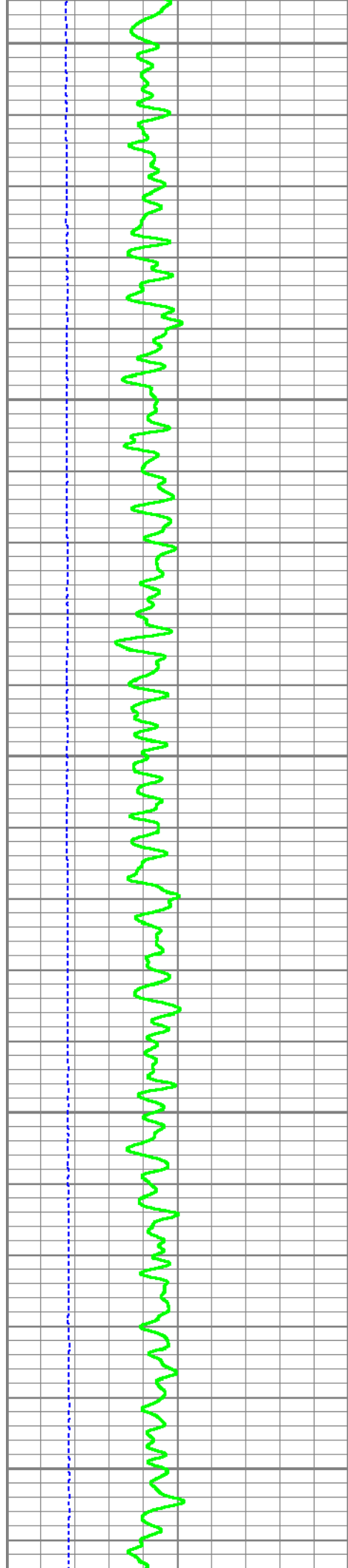
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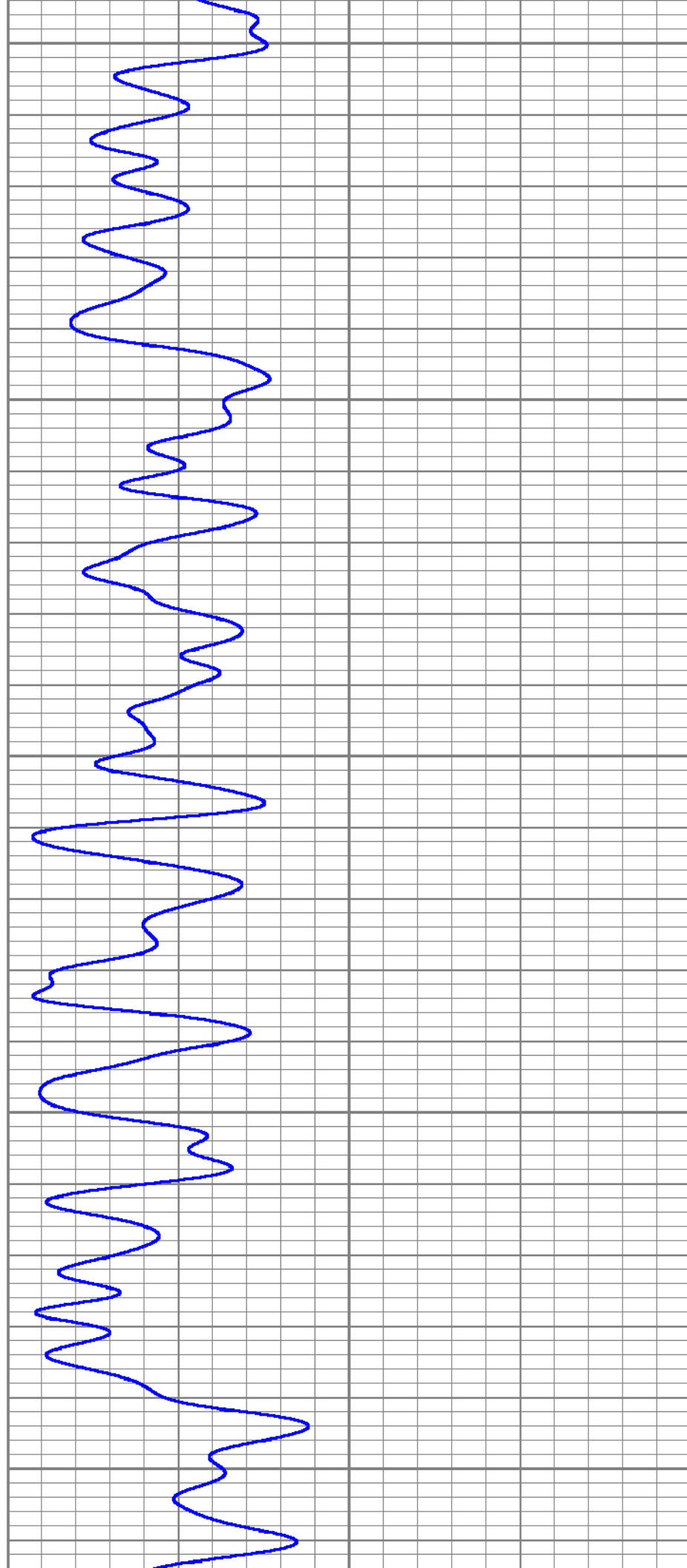
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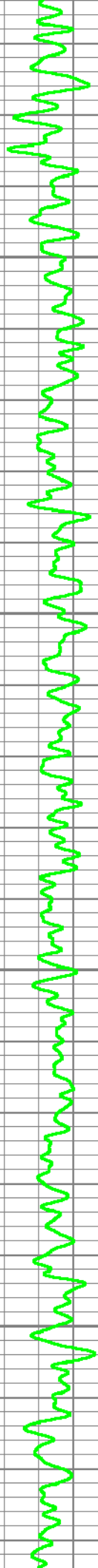
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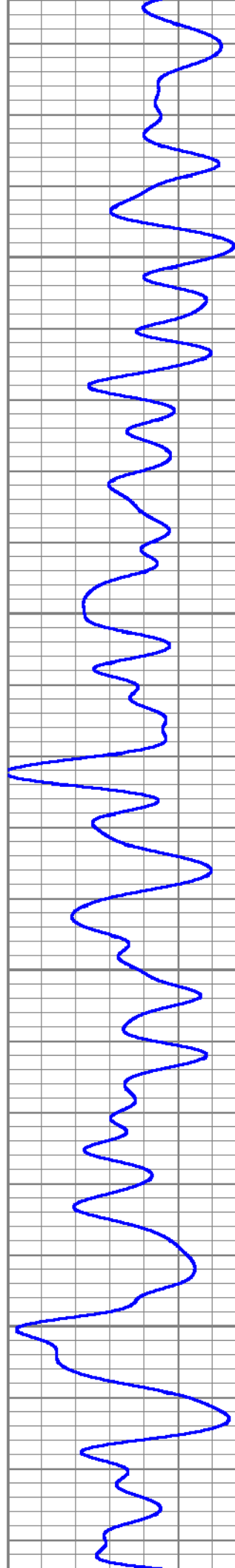


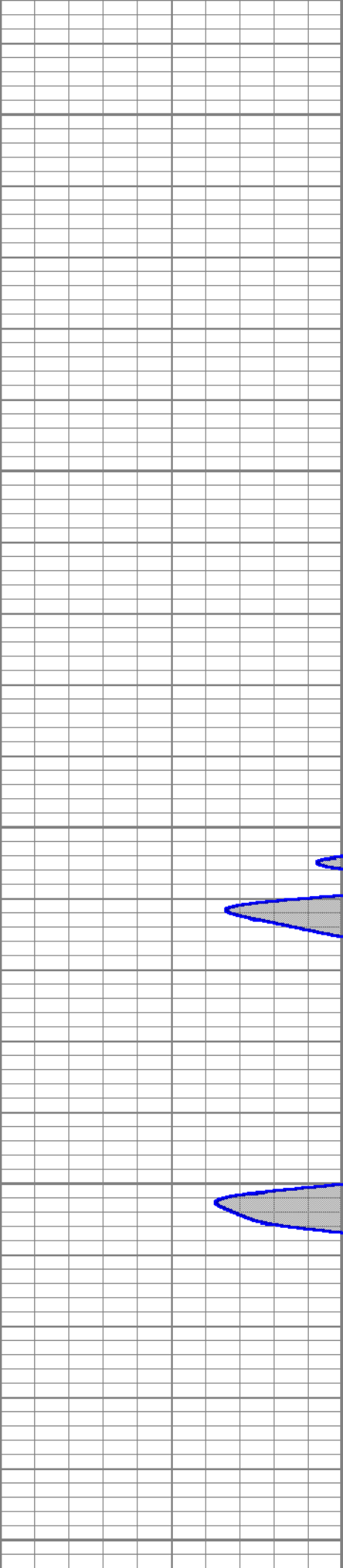
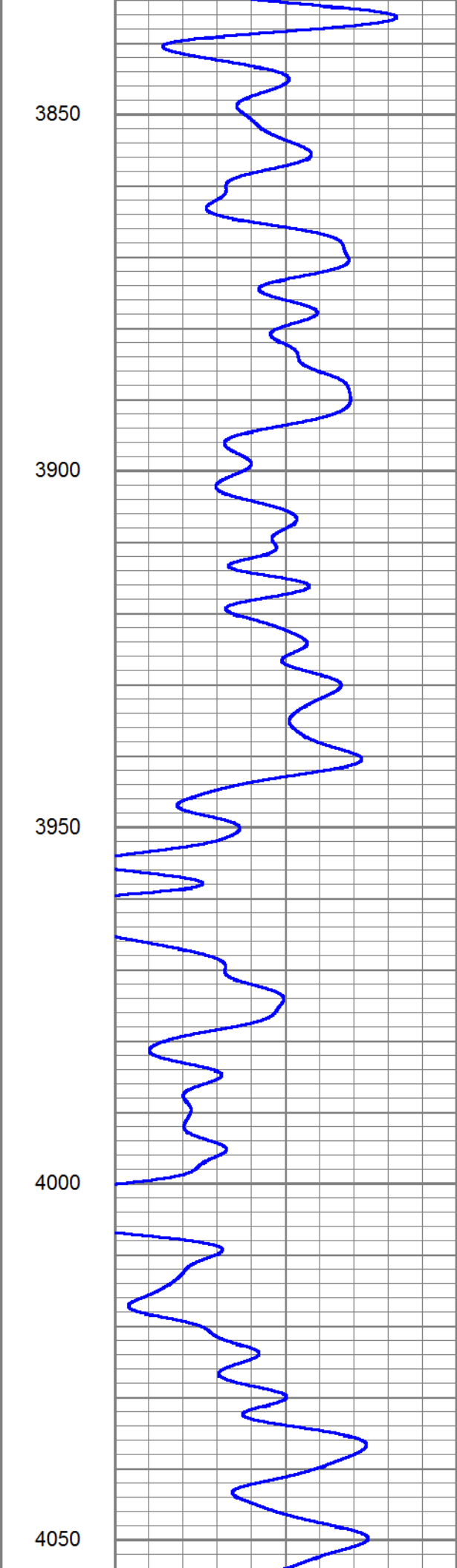
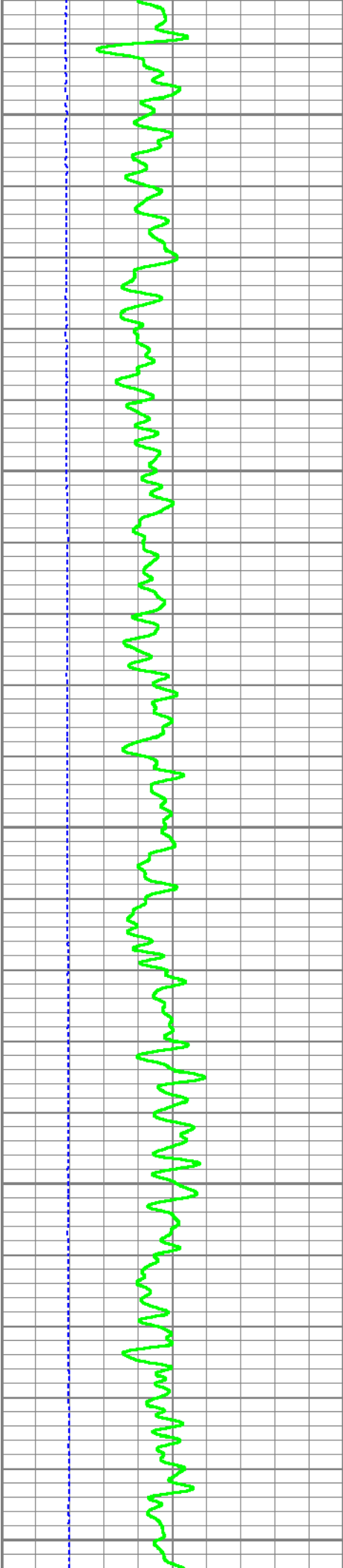
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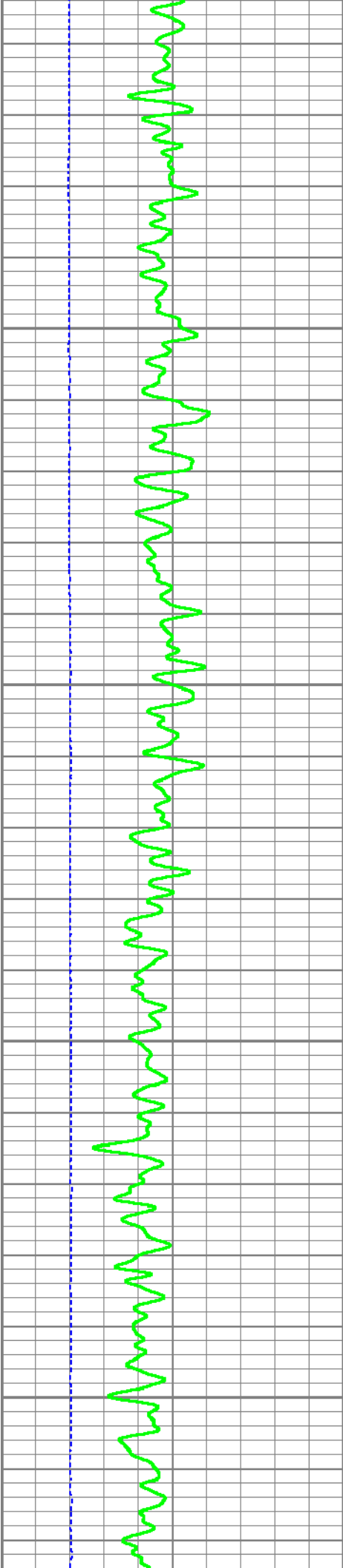
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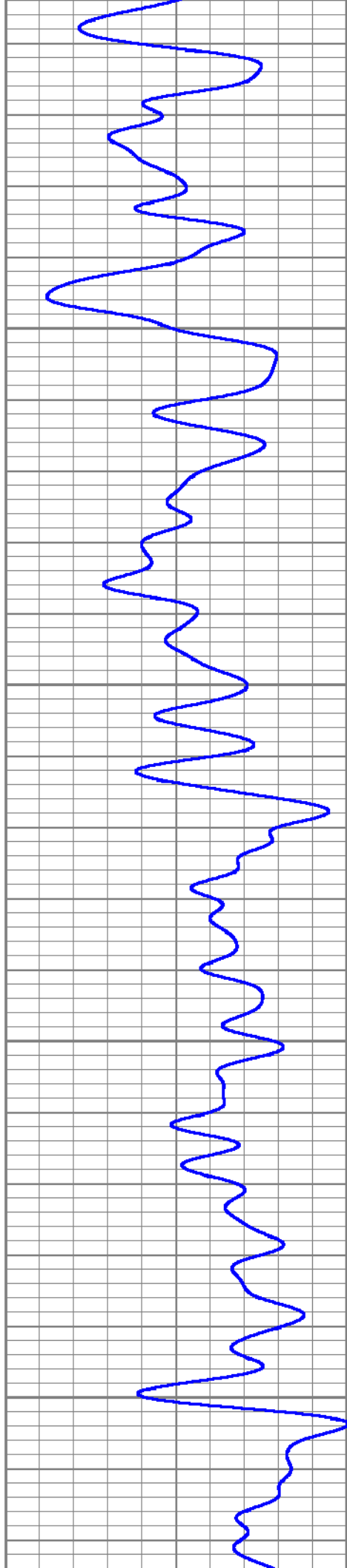


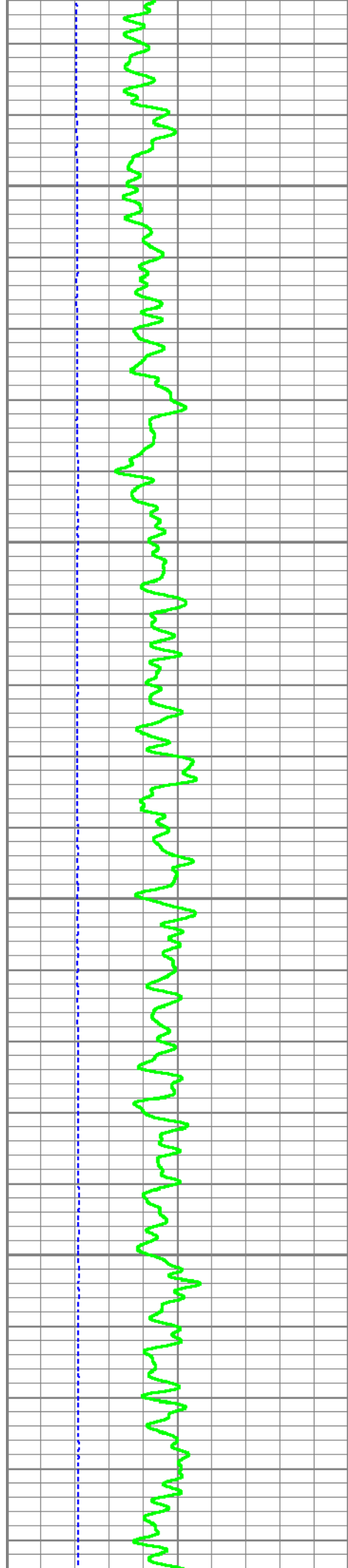
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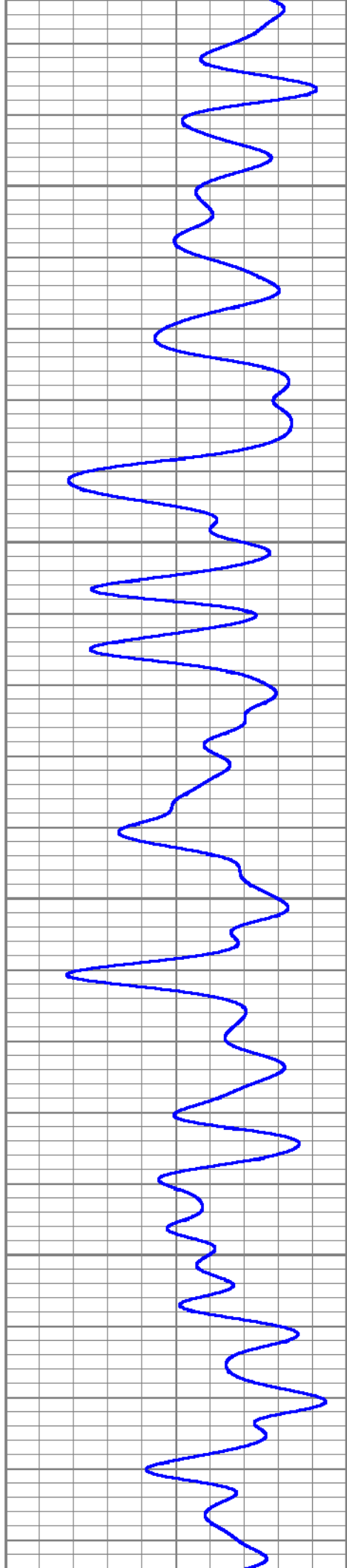


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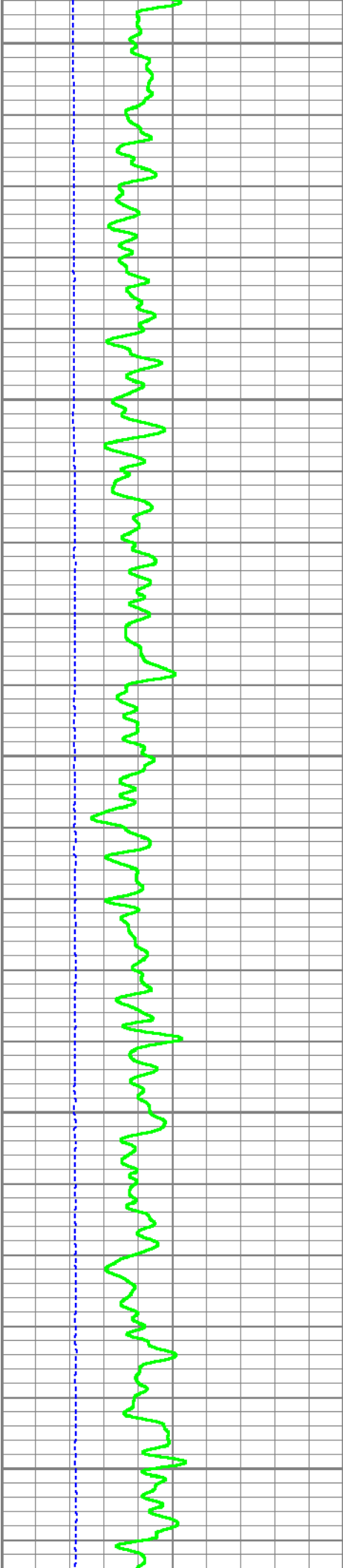
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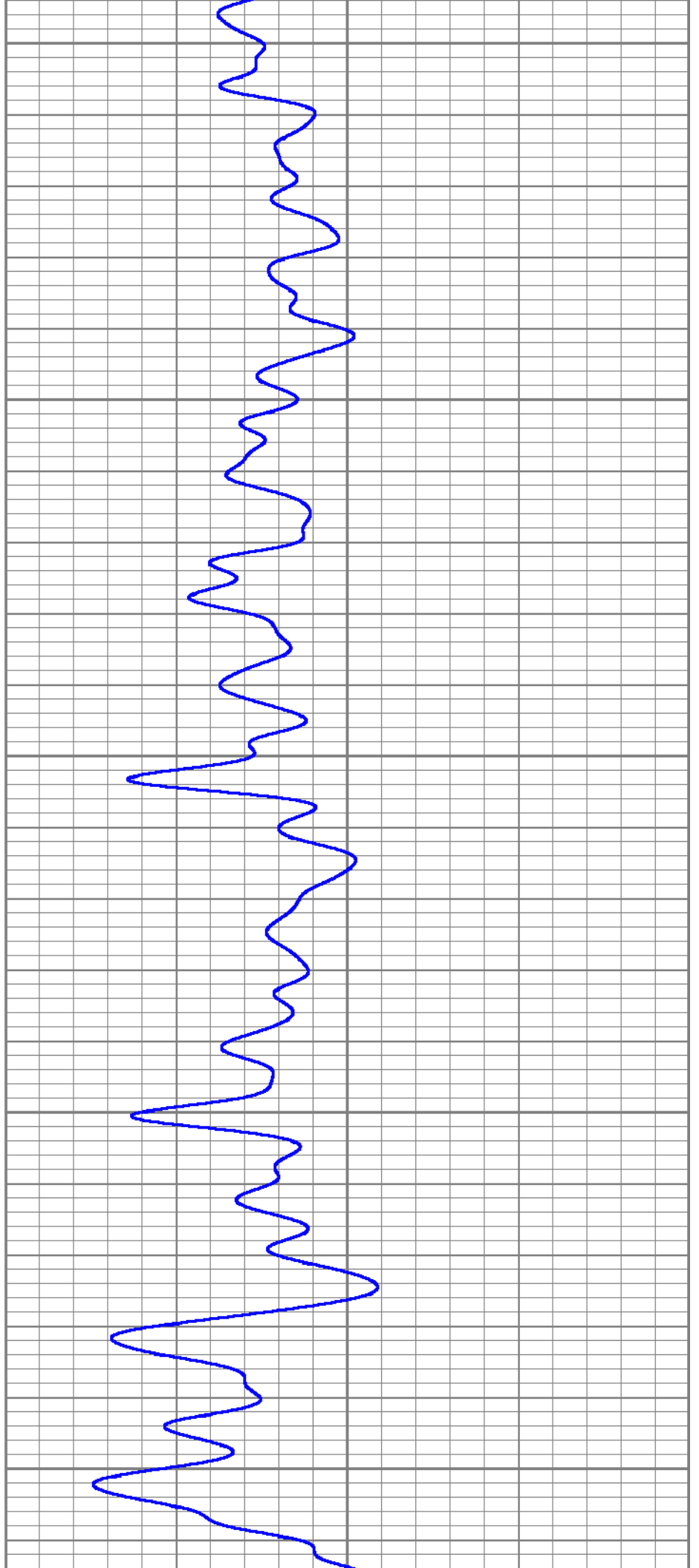
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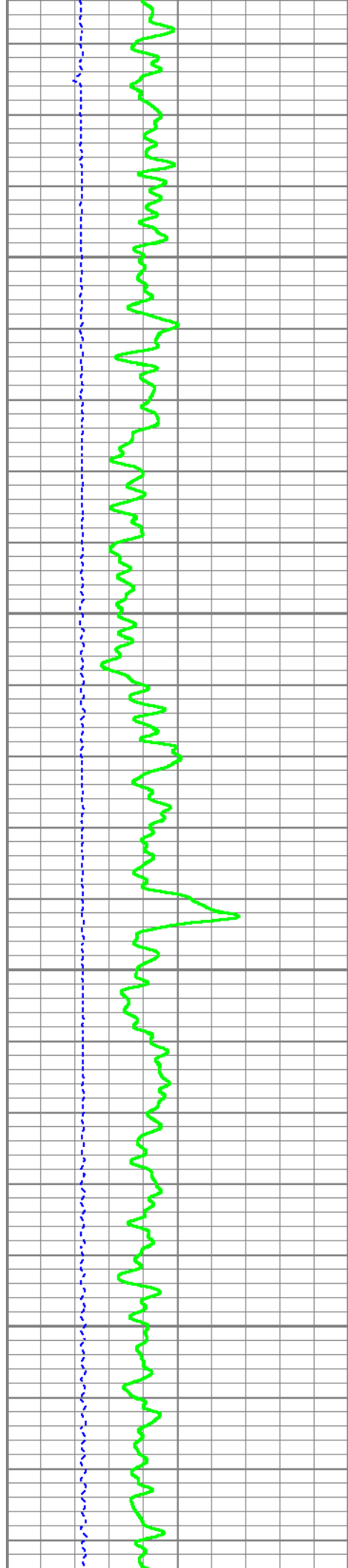
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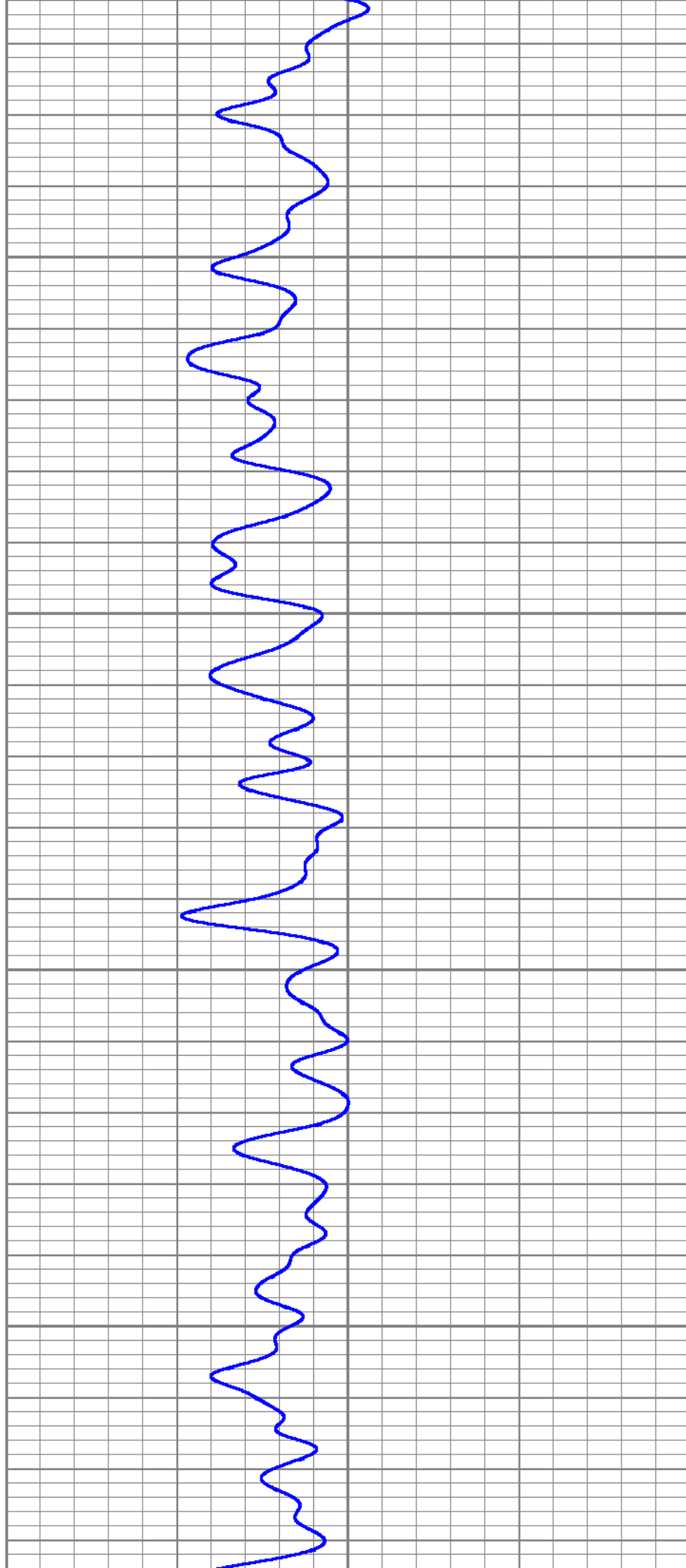


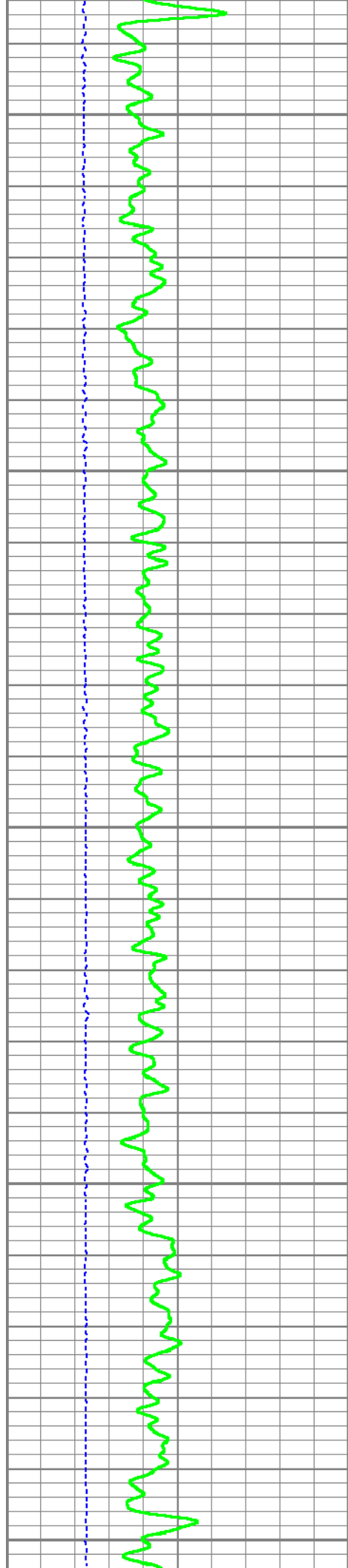
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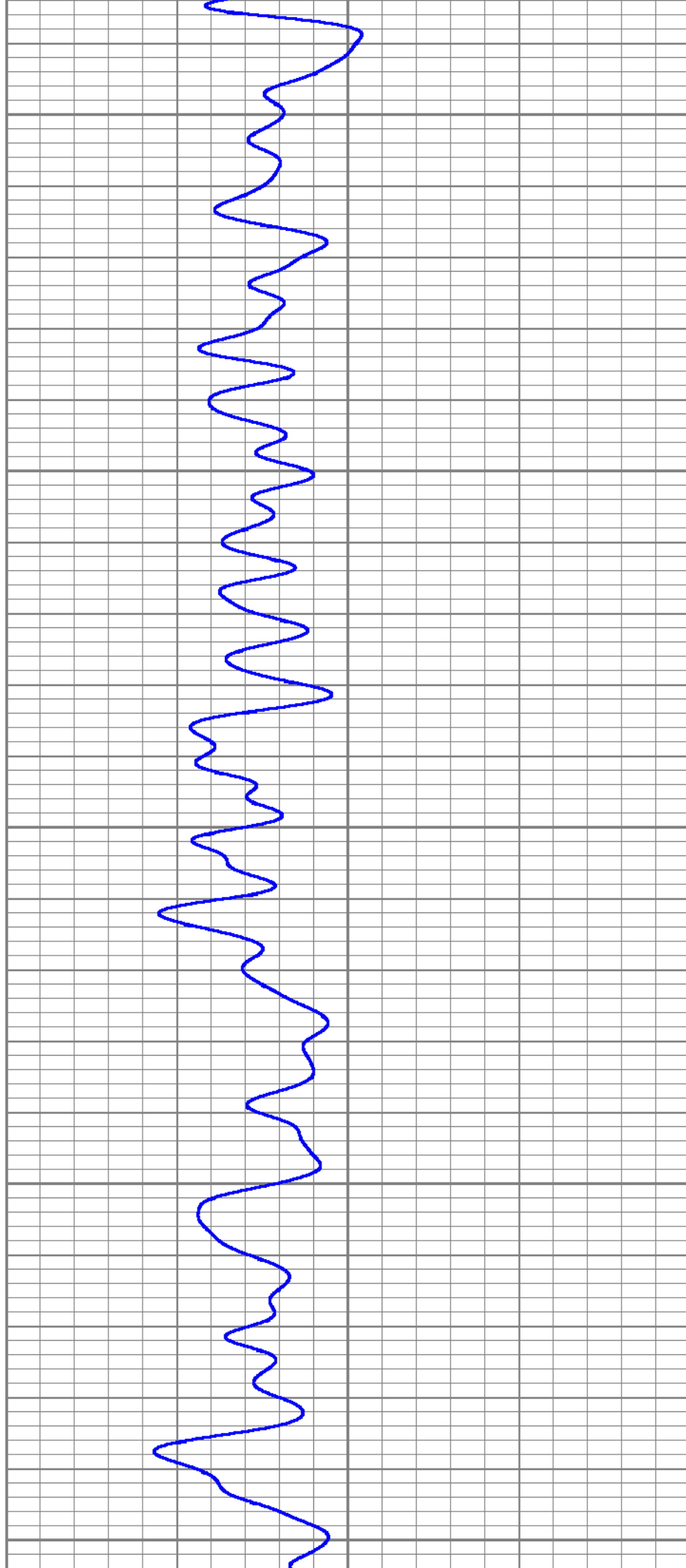
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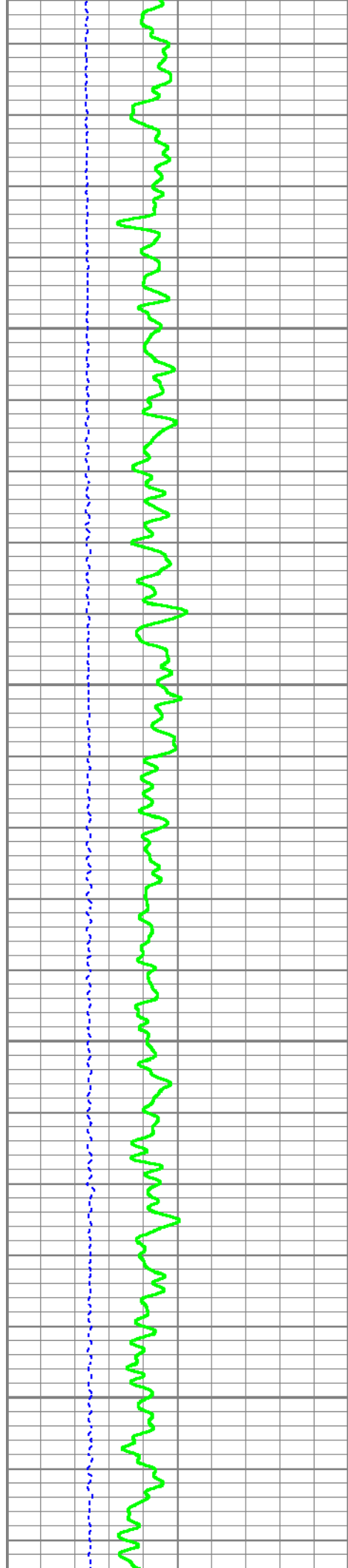
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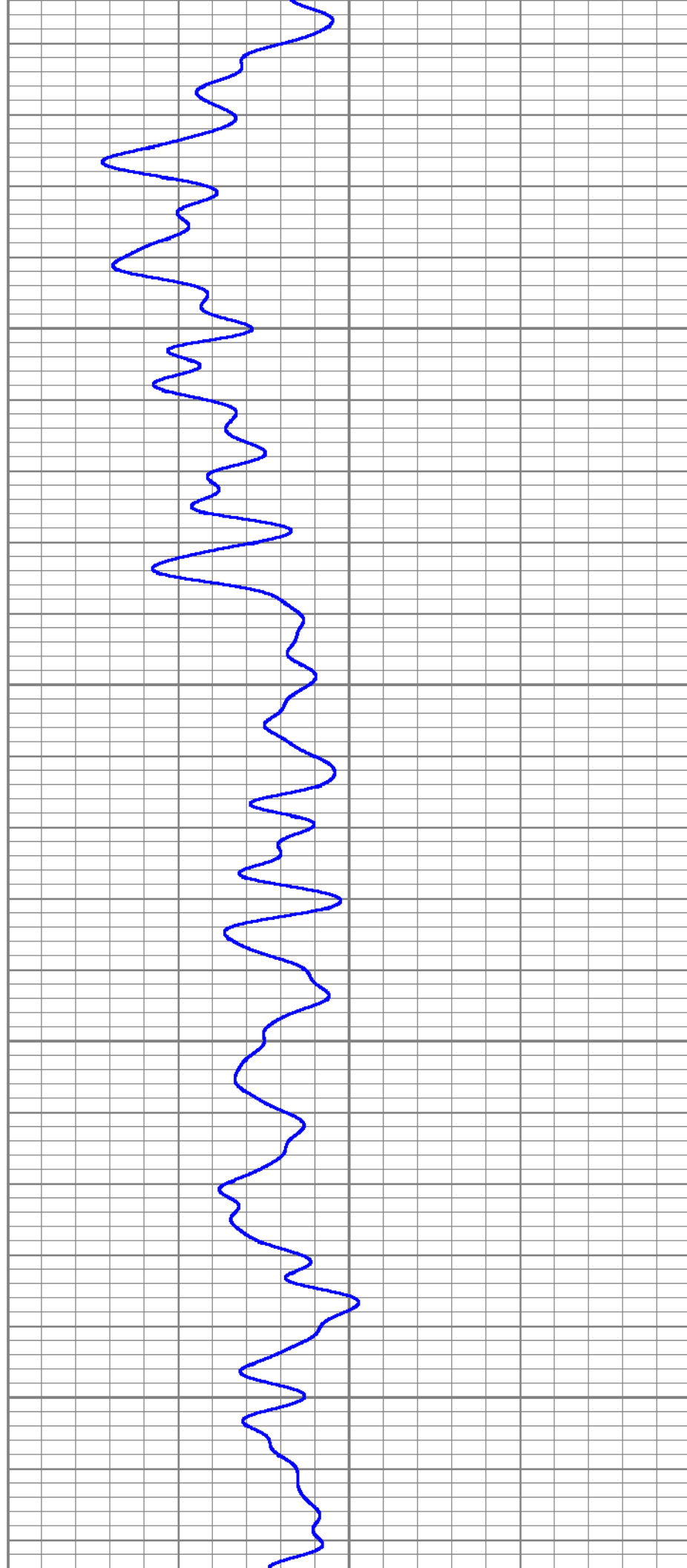


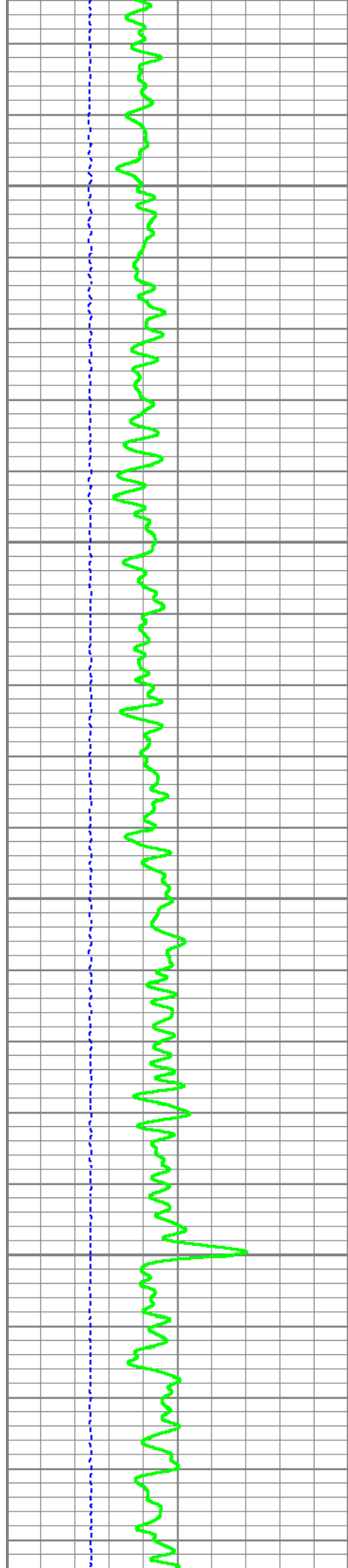
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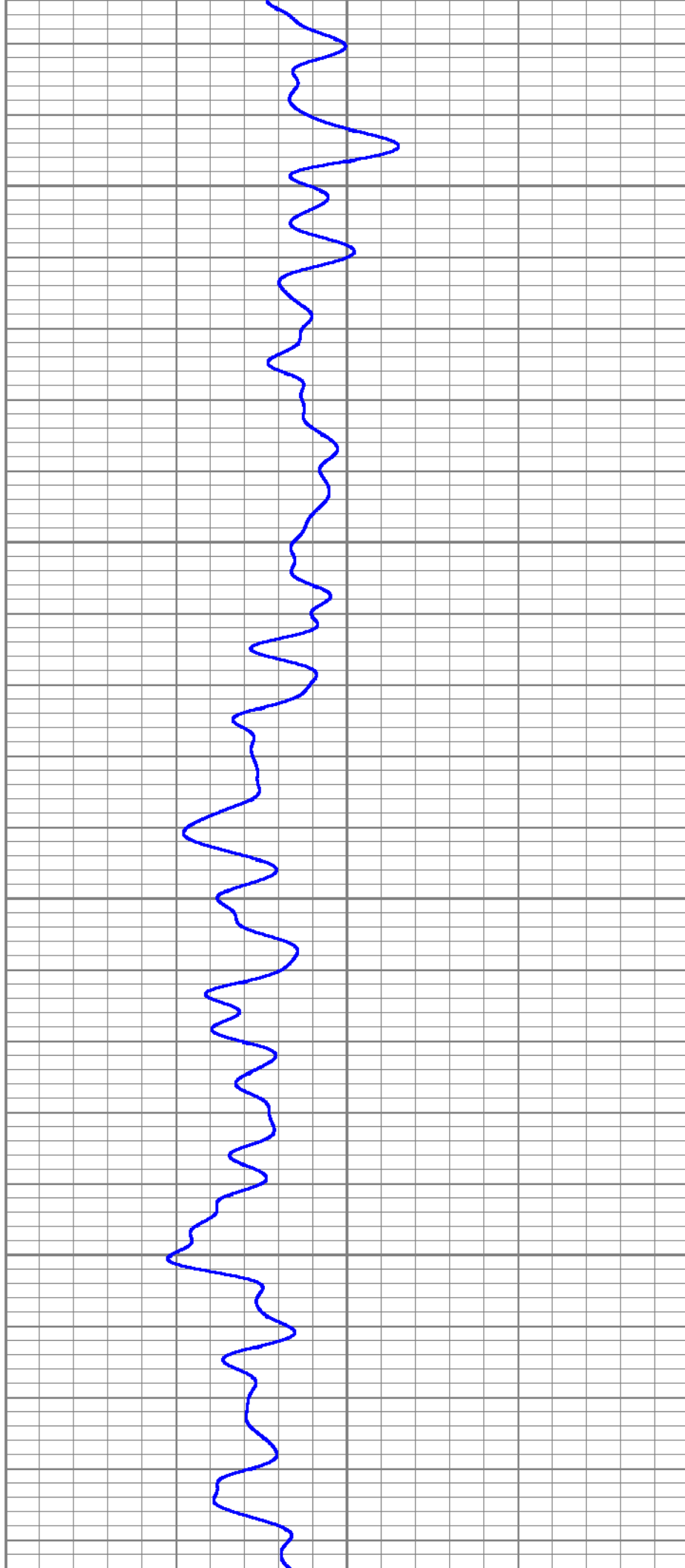


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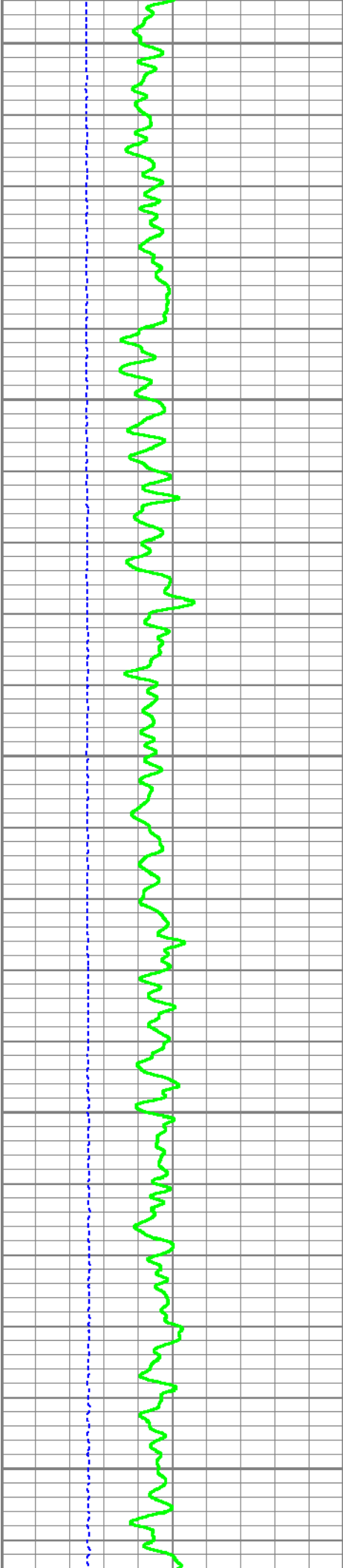
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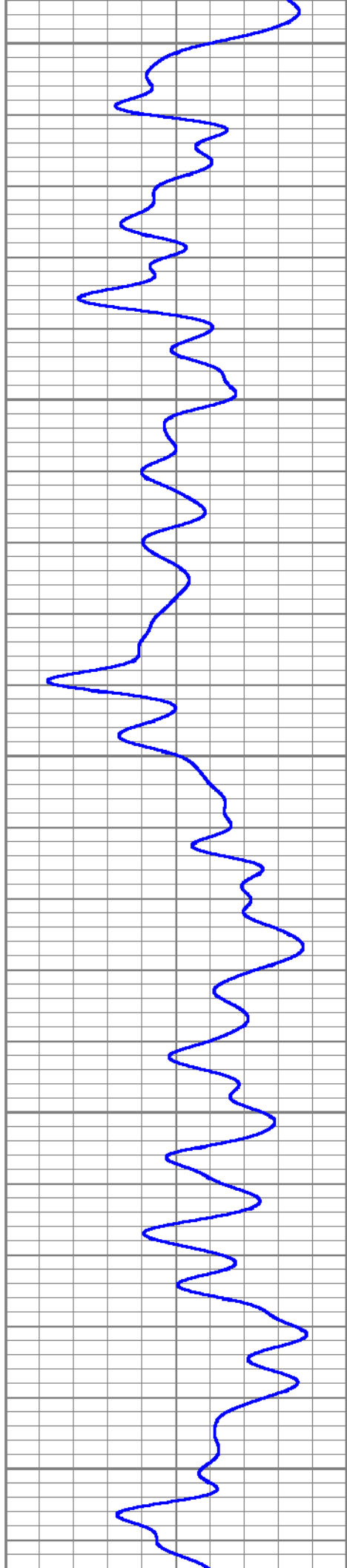
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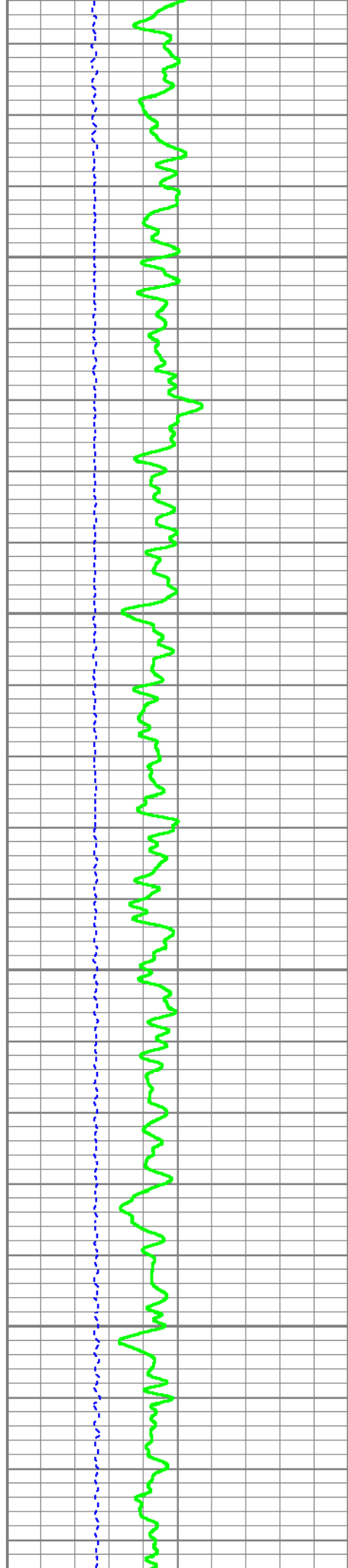
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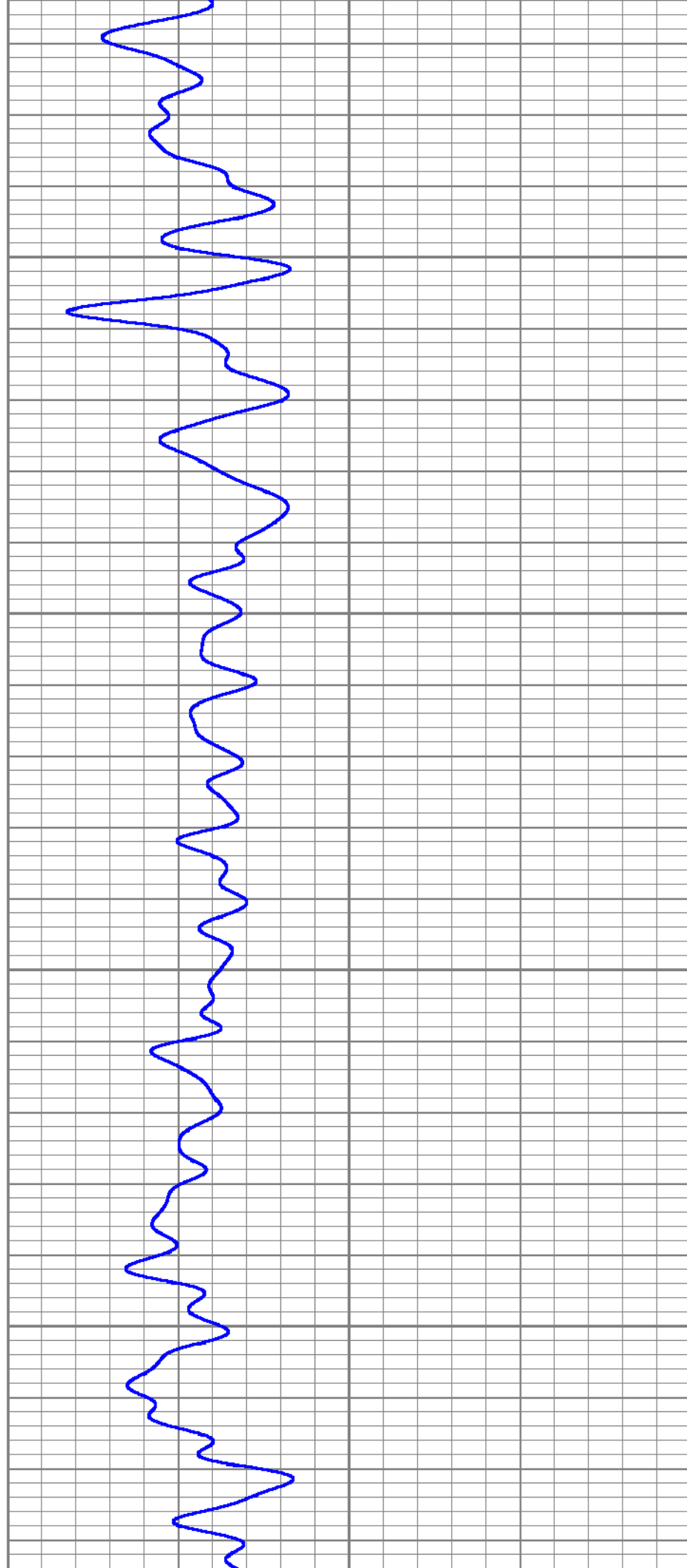


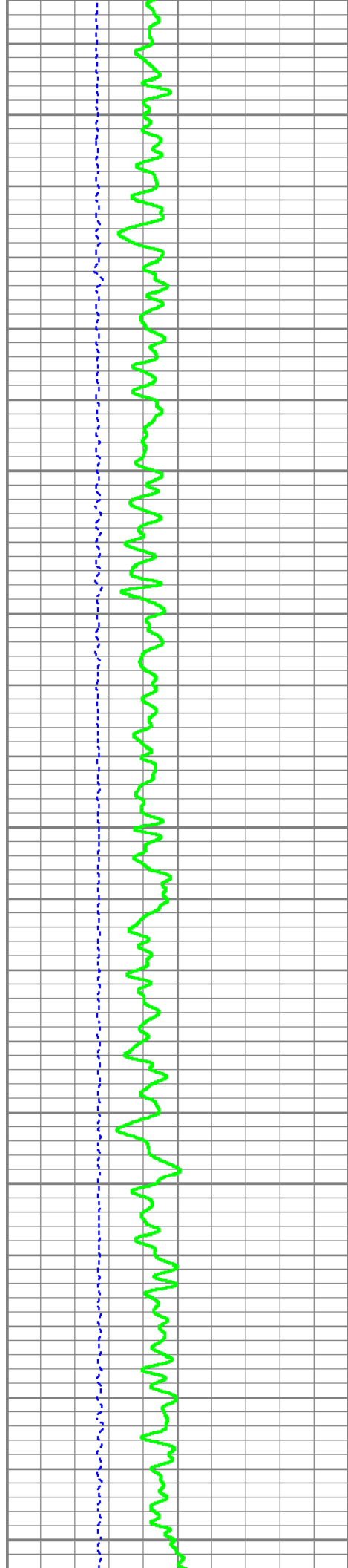
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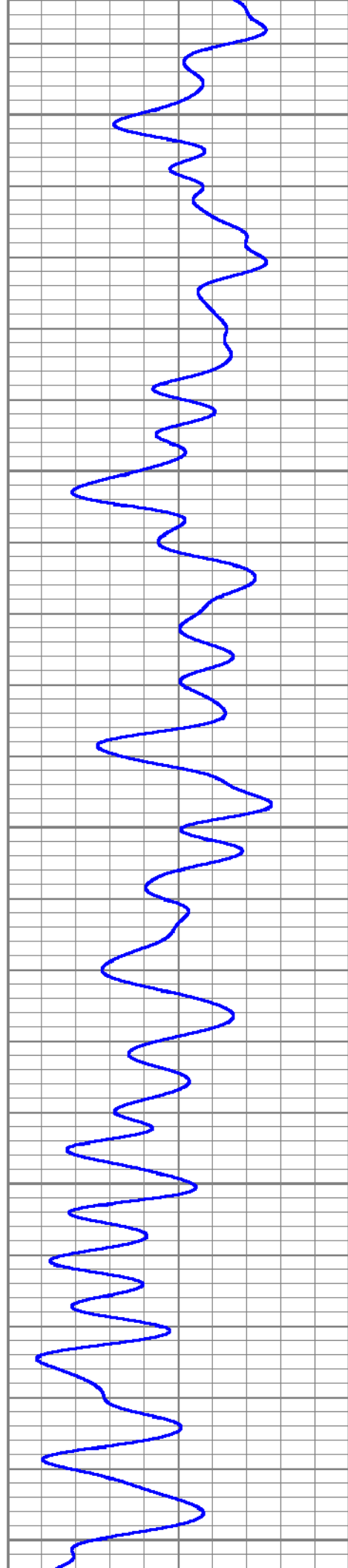
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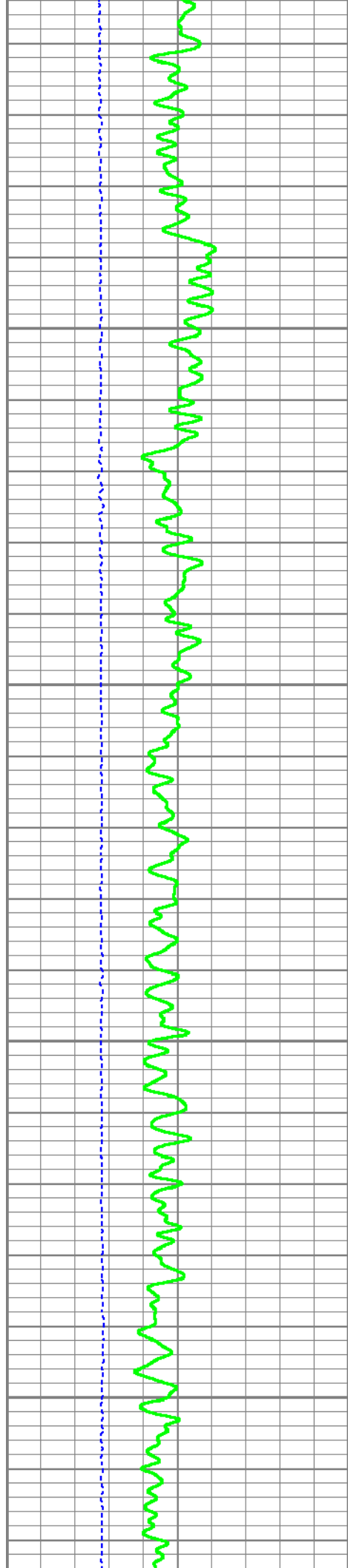
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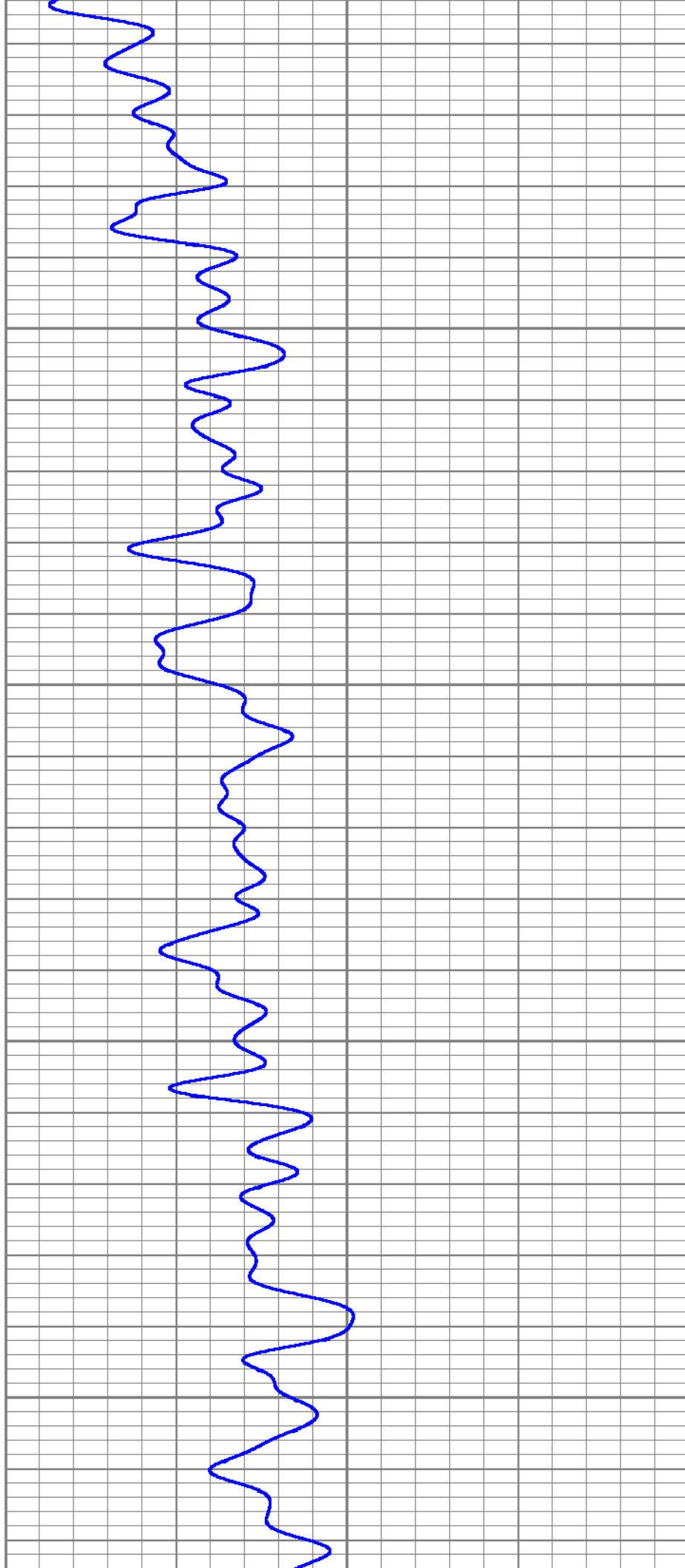


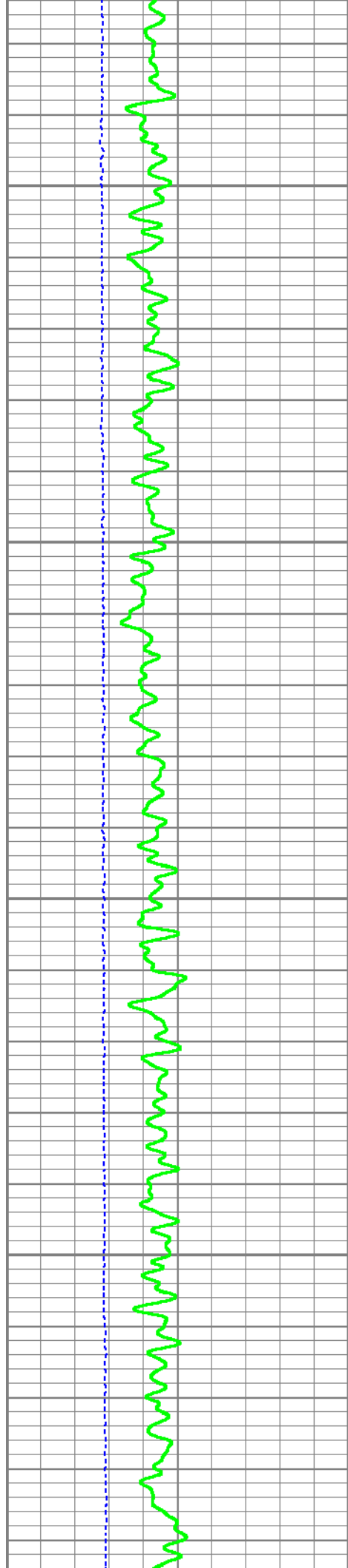
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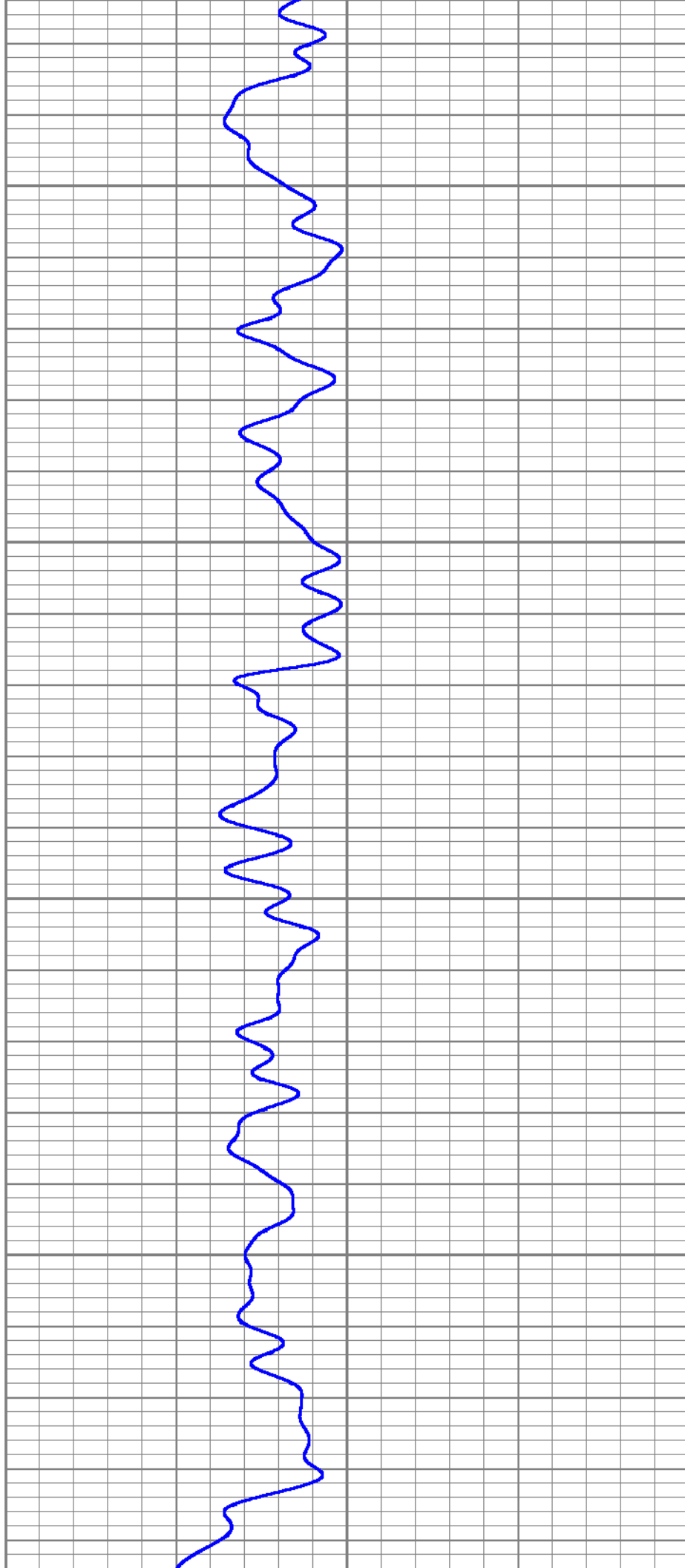


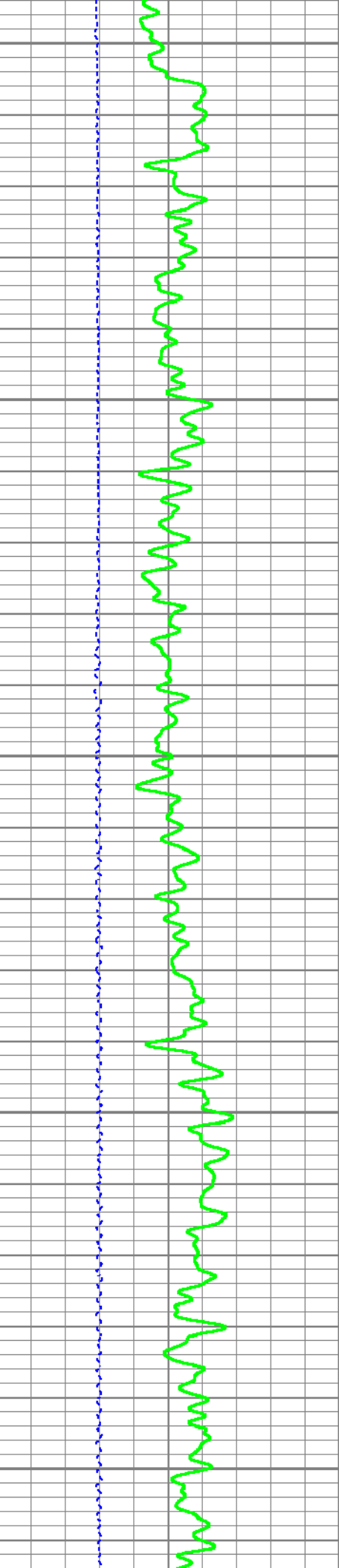
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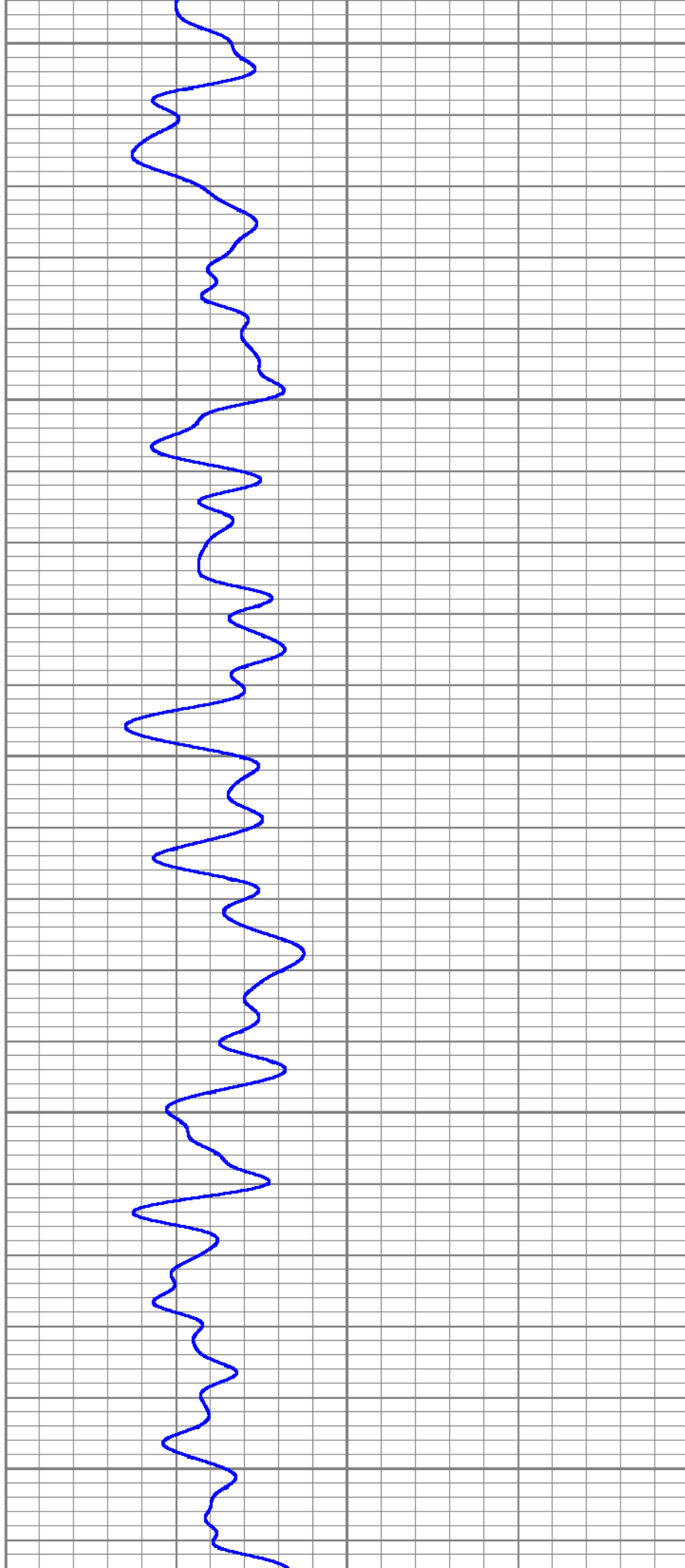
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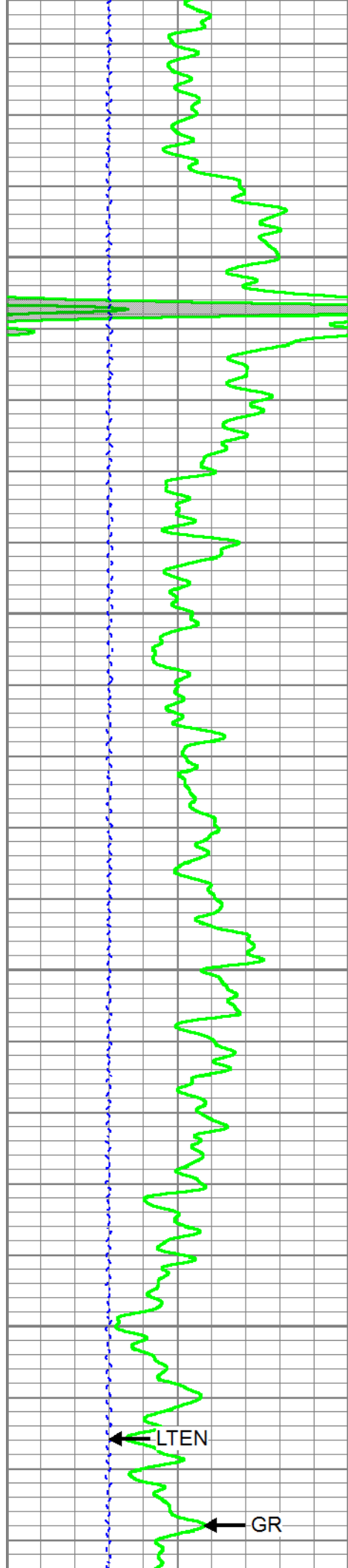
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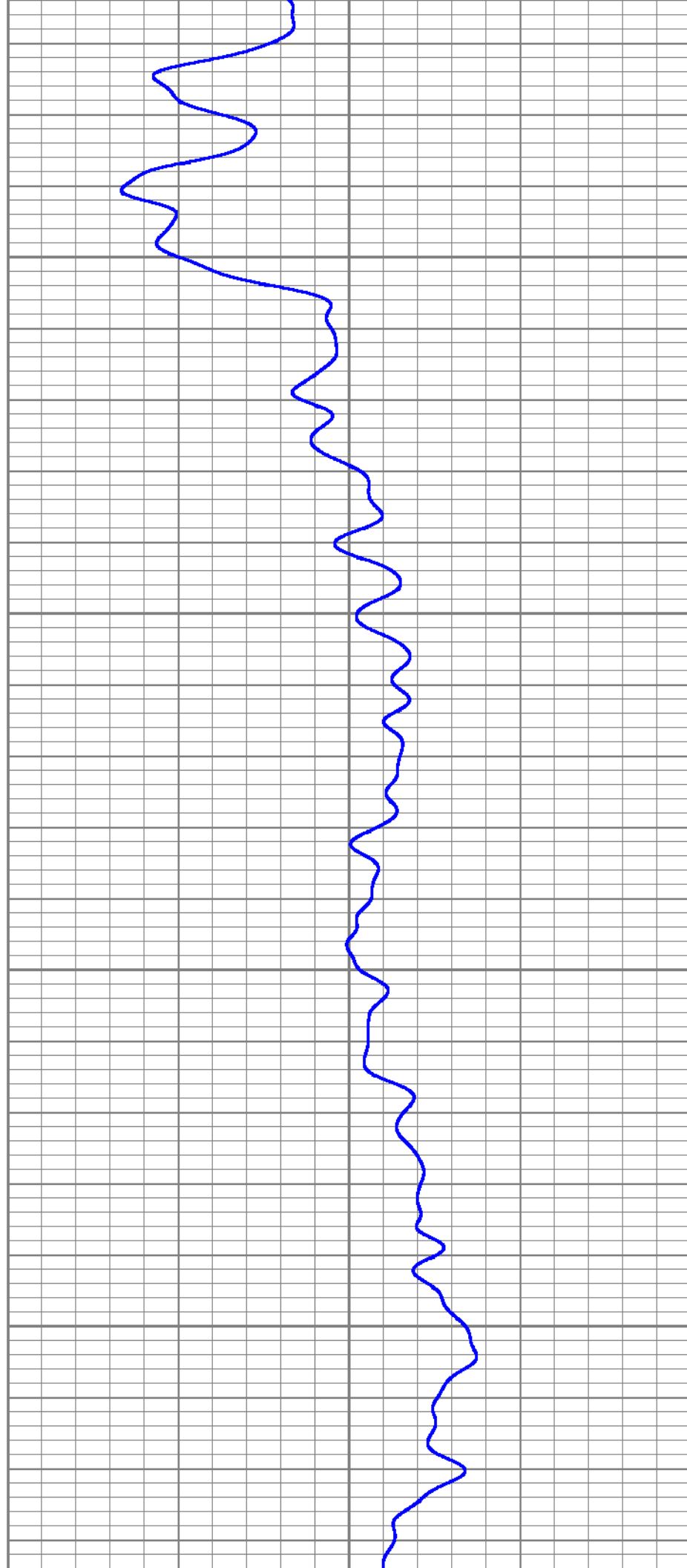
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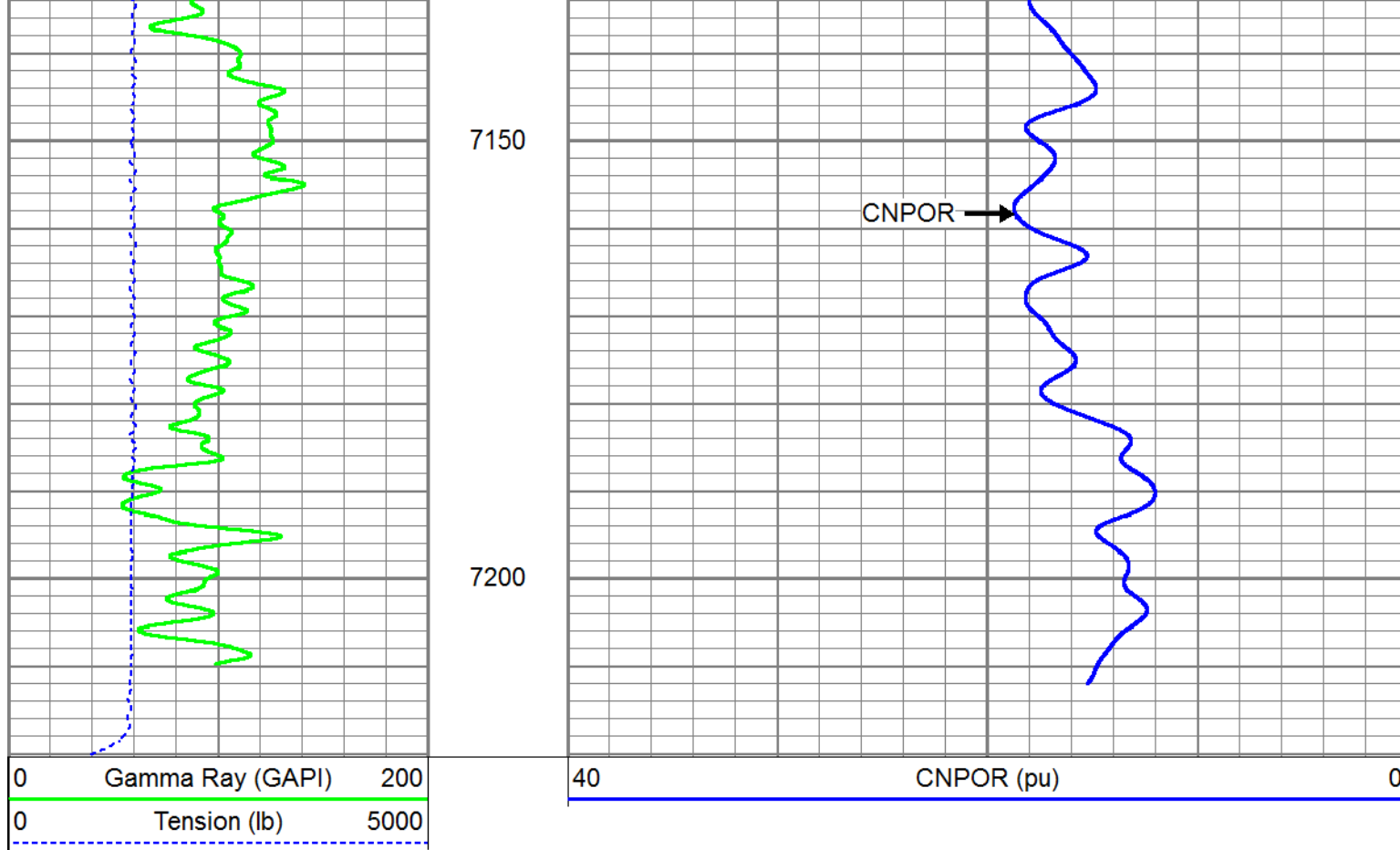
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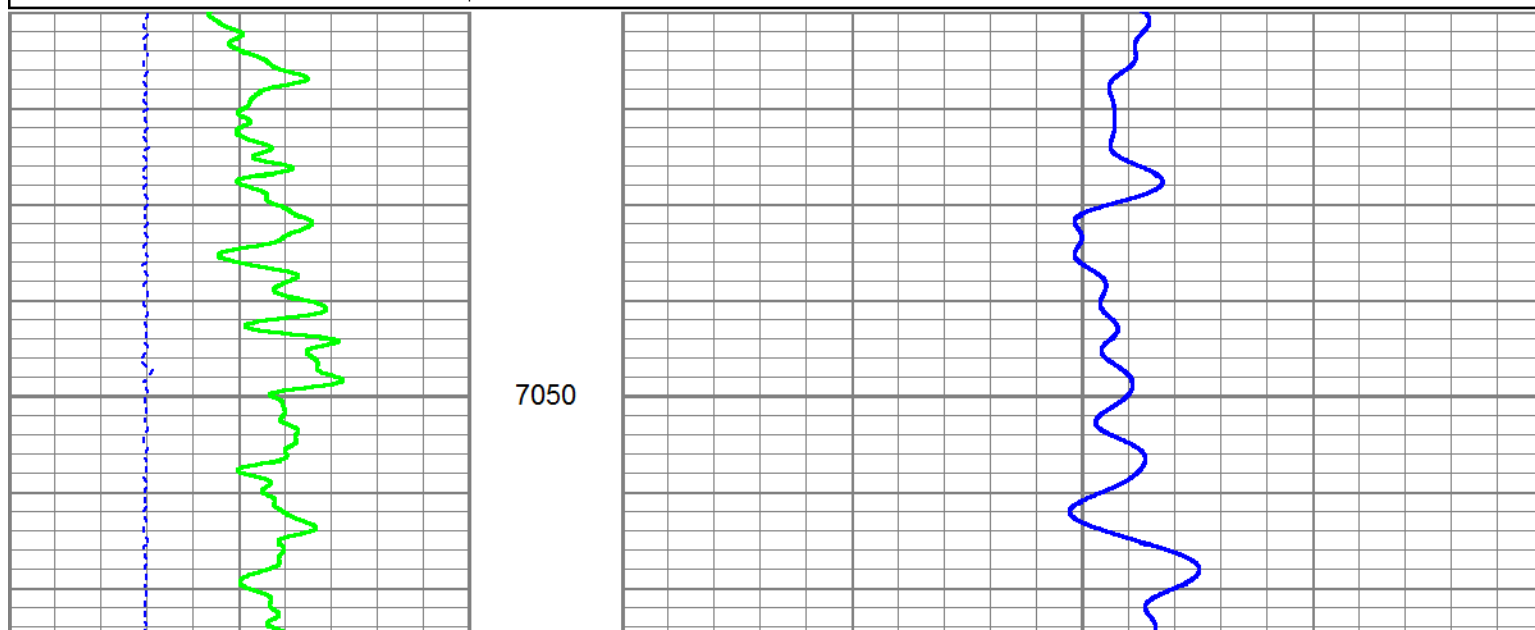
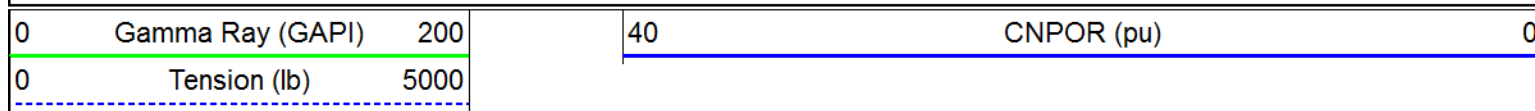


**PIONEER**

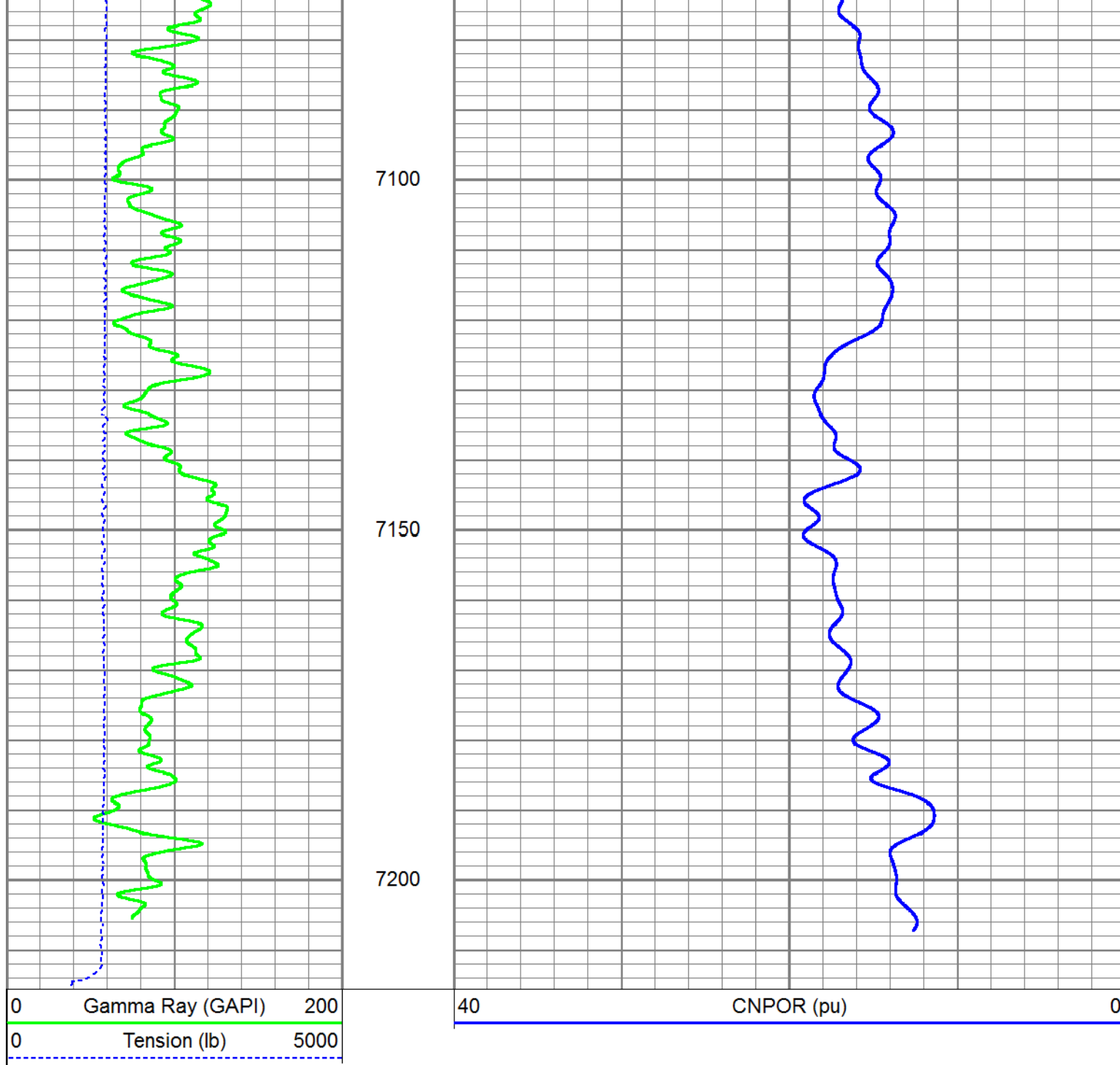
## REPEAT SECTION

### ZERO PSI APPLIED AT SURFACE

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Dataset Pathname	repeat
Presentation Format	cn1
Dataset Creation	Thu Nov 16 12:21:49 2017
Charted by	Depth in Feet scaled 1:240







Calibration Report						
Database File	verdad_bernak_01-64-10-3h_0512344997_20171116_scbl-cnI.db					
Dataset Pathname	pass4					
Dataset Creation	Thu Nov 16 09:11:13 2017					
Compensated Neutron Calibration Report						
		Serial Number:		120509		
		Tool Model:		275BL		
CALIBRATION		Thu May 03 14:25:11 2012				
Detector	Readings		Target		Normalization	
Short Space	4496.49	cps	0.00	cps	1.0000	
Long Space	780.48	cps	0.00	cps	1.0800	
PRE-SURVEY VERIFICATION						

	Detector	Readings	Measured	Target
1)	Short Space Long Space	cps cps	pu	pu
2)	Short Space Long Space	cps cps	pu	
3)	Short Space Long Space	cps cps	pu	

#### POST-SURVEY VERIFICATION

	Detector	Readings	Measured	Target
1)	Short Space Long Space	cps cps	pu	pu
2)	Short Space Long Space	cps cps	pu	pu
3)	Short Space Long Space	cps cps	pu	pu

#### Gamma Ray Calibration Report

Serial Number:	FW1404-112		
Tool Model:	GC_6PIN		
Performed:	Thu Nov 16 08:03:38 2017		
Calibrator Value:	1.0	GAPI	
Background Reading:	0.0	cps	
Calibrator Reading:	1.0	cps	
Sensitivity:	0.7400	GAPI/cps	

#### Segmented Cement Bond Log Calibration Report

Serial Number:	FW1403-68		
Tool Model:	275 Probe w Temp		
Calibration Casing Diameter:	5.500	in	
Calibration Depth:	43.383	ft	

Master Calibration, performed Thu Nov 09 09:57:21 2017:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.011	1.511	1.000	71.921	47.288	0.491
CAL	0.010	1.499				
5'	0.010	1.455	1.000	71.921	49.087	0.515
SUM						
S1	0.012	1.480	0.000	100.000	68.117	-0.786
S2	0.011	1.486	0.000	100.000	67.799	-0.761
S3	0.011	1.506	0.000	100.000	66.887	-0.707
S4	0.011	1.505	0.000	100.000	66.934	-0.734
S5	0.010	1.499	0.000	100.000	67.147	-0.675
S6	0.011	1.512	0.000	100.000	66.641	-0.732
S7	0.011	1.510	0.000	100.000	66.744	-0.767
S8	0.011	1.490	0.000	100.000	67.611	-0.712

## Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.010	1.499	1.000	0.000

## Air Zero Calibration, performed Thu Nov 09 09:17:07 2017:

	Raw (v)		Calibrated (v)		Results
	Zero		Zero		Offset
3'	0.000		0.000		0.000
5'	0.000		0.000		0.000
SUM					
S1	0.000		0.000		0.000
S2	0.000		0.000		0.000
S3	0.000		0.000		0.000
S4	0.000		0.000		0.000
S5	0.000		0.000		0.000
S6	0.000		0.000		0.000
S7	0.000		0.000		0.000
S8	0.000		0.000		0.000

## Temperature Calibration Report

Serial Number: FW1403-68  
Tool Model: 275 Probe w Temp  
Performed: Tue Jul 14 06:38:22 2015

	Reference	Reading
Low Reference:	0.00 degF	0.00 degF
High Reference:	1.00 degF	1.00 degF

Gain: 1.00  
Offset: 0.00  
Delta Spacing 1



Company VERDAD RESOURCES  
Well BRNAK 01-64-10-3H  
Field WATTENBERG  
County WELD  
State COLORADO