



GAMMA RAY NEUTRON LOG

Comp. PDC ENERGY INC. Well THORNTON 15Y-414 Field WATTENBERG Co. WELD State COLORADO	Company PDC ENERGY INC.			
	Well THORNTON 15Y-414			
	Field WATTENBERG			
	County WELD		State COLORADO	
	Location: API # : 05-123-37997			
1115' FSL & 466' FEL SE / SE		Other Services CNL		
SEC 15 TWP 7N RGE 66W				
Permanent Datum GL		Elevation 4921'		
Log Measured From KB 15'		Above Perm. Datum		
Drilling Measured From KB		Elevation K.B. 4936' D.F. N/A G.L. 4921'		
Date of Service		23 JULY 2019		
Run Number		ONE		
Depth Driller or PBTD		6900'		
Depth Logger		NA		
Bottom Log Interval		6856		
Top Log Interval		SURFACE		
Open Hole Size		8.75"		
Type Fluid		WATER		
Fluid Level		FULL		
Fluid Density		N/A		
Max. Recorded Temperature		N/A		
Max. Wellhead Pressure		ZERO		
Wellhead Connection		7 1/16 5K		
Estimated Cement Top		N/A		
Unit Number		P-57		
Wireline Size		9/32"		
Location		FORT MORGAN CO		
Recorded By		SCHOENROGGE		
Witnessed By		MR. TERRAZAS		
	Size	Wt/Ft	Top	Bottom
Tubing Record				
Surface Casing	9.625"	36#	SURFACE	NA
Production Casing	7"	26"	SURFACE	NA
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.
CORRELATED AT 6834' TO NABORS CBL RAN ON 01 DECEMBER 2014

THANK YOU FOR USING PIONEER ENERGY SERVICES!

Your Pioneer Energy Services Crew

Tool Data - Services

Serial Number

Engineer: SCHOENROGGE

Operator: MICK

Operator: BOND

Operator:

SEE DIAGRAM

Log Variables

DatabaseC:\ProgramData\Warrior\Data\pdc_thornton_05123_20190723_cnl.db
Dataset field/well/run1/pass5/_vars_


Top - Bottom


BOREID in 8.75	BOTTEMP degF 200	CASED? Yes	CASEOD in 7	CASETHCK in 0.362	CMNTTHCK in 0.785	CMTTKCOR Off
CSTKCOR Off	NPORSEL Limestone	PERFS 0	SRFTEMP degF 50	SZCOR Off	TDEPTH ft 6900	


Variable Description

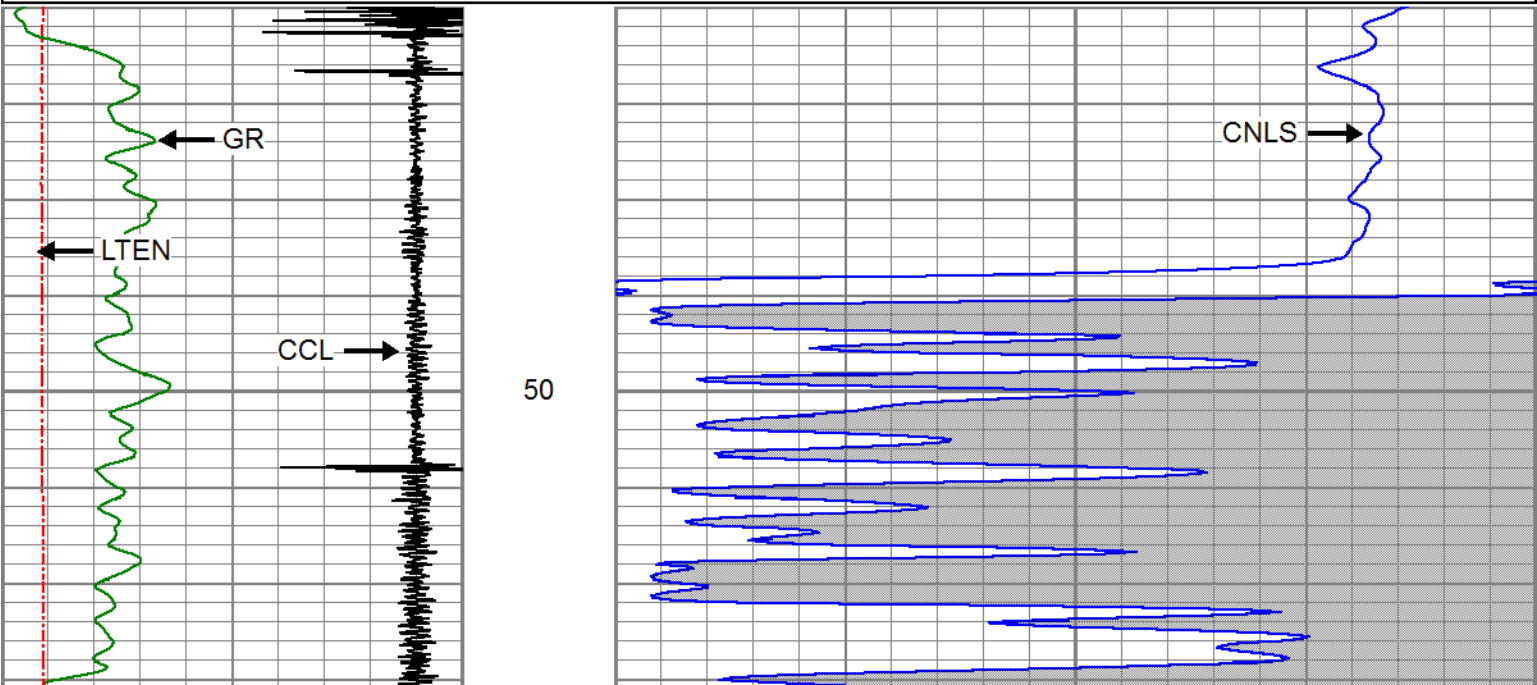
BOREID : Borehole I.D.
BOTTEMP : Bottom Hole Temperature
CASED? : Cased hole ?
CASEOD : Casing O.D.
CASETHCK : Casing Thickness
CMNTTHCK : Cement Thickness
CMTTKCOR : CN CemThk. Cor. ?

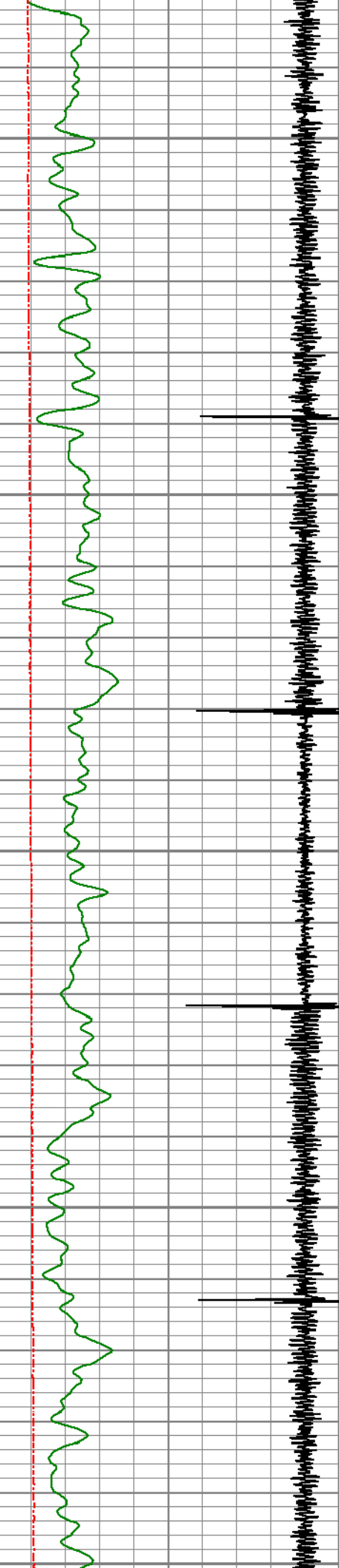
CSTKCOR : CN CasThk. Cor. ?
NPORSEL : Neutron Porosity Curve Select
PERFS : Perforation Flag
SRFTEMP : Surface Temperature
SZCOR : CN Size Cor. ?
TDEPTH : Total Depth

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
CCL	8.83		Cable Head-Titan_144 1 7/16" Titan Cable Head	1.03	1.44	2.00
GR	7.50		PROBE-GR/CCL-DIGITAL-275_6-PIN (1204.83) Probe 2 3/4" Gamma CCL 6-pin Bottom for CNT	1204.83	2.75	50.00

CNLSC	2.11		PROBE-CNT-DIGITAL-PRB_DIG (120508) 4.58 Probe 2.75 Digital CNT		2.75	69.00
CNSSC	1.70					
			Bullnose-PROBE Probe Go Pin Pressure Cap	0.33	1.38	1.00
		Dataset: pdc_thornton_05123_20190723_cnl.db: field/well/run1/pass5 Total length: 10.78 ft Total weight: 122.00 lb O.D.: 2.75 in				

		MAIN LOG			
Database File	pdc_thornton_05123_20190723_cnl.db				
Dataset Pathname	pass5				
Presentation Format	pinr_cnl_co				
Dataset Creation	Tue Jul 23 14:03:25 2019				
Charted by	Depth in Feet scaled 1:240				
0	Gamma Ray (GAPI)	150	40	CNPOR (pu)	0
-9	Collars	1	80	CNPOR (pu)	40
150	Gamma Ray (GAPI)	300			
0	LineTension (lb)	2000			





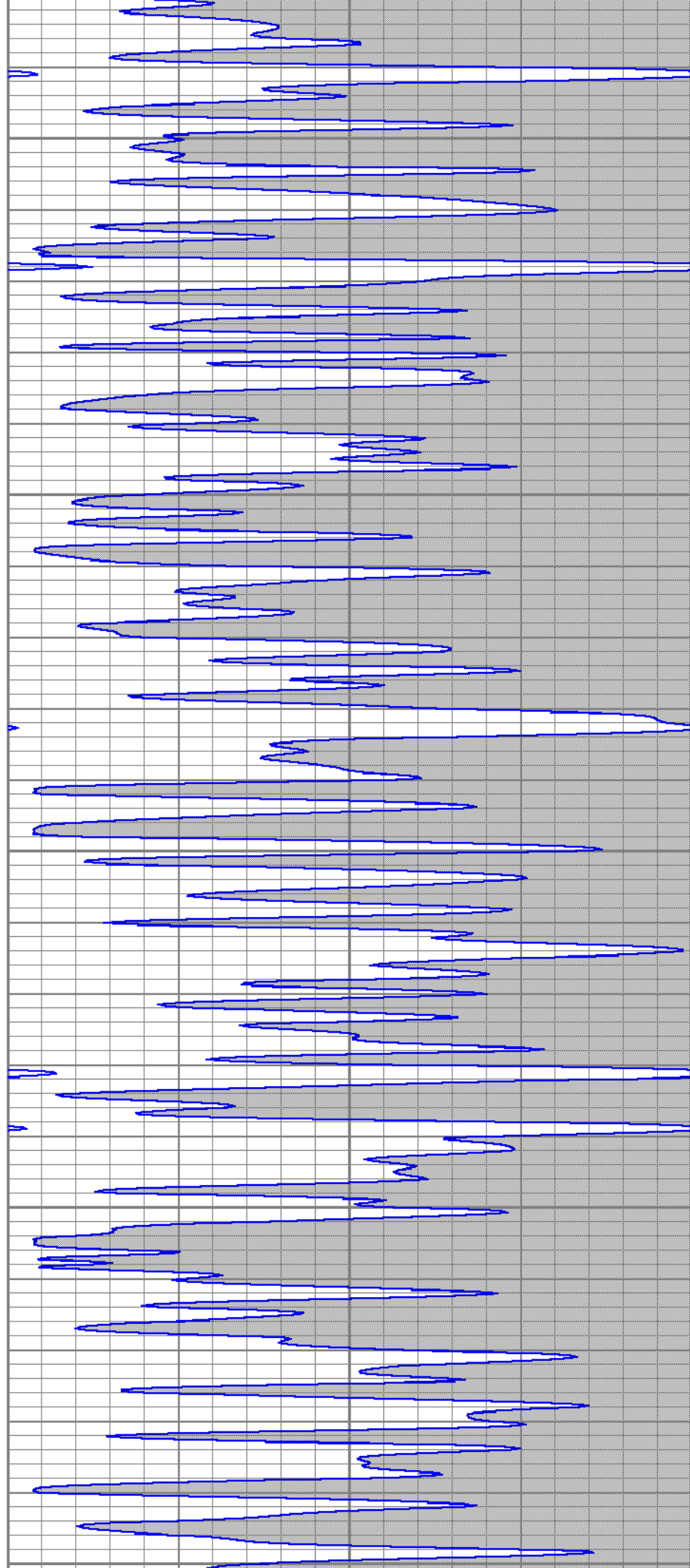
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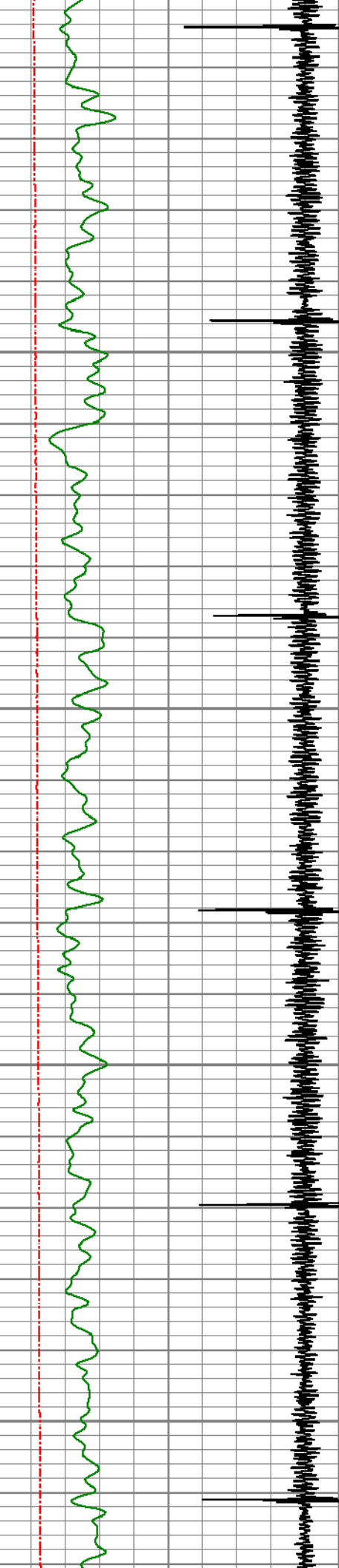
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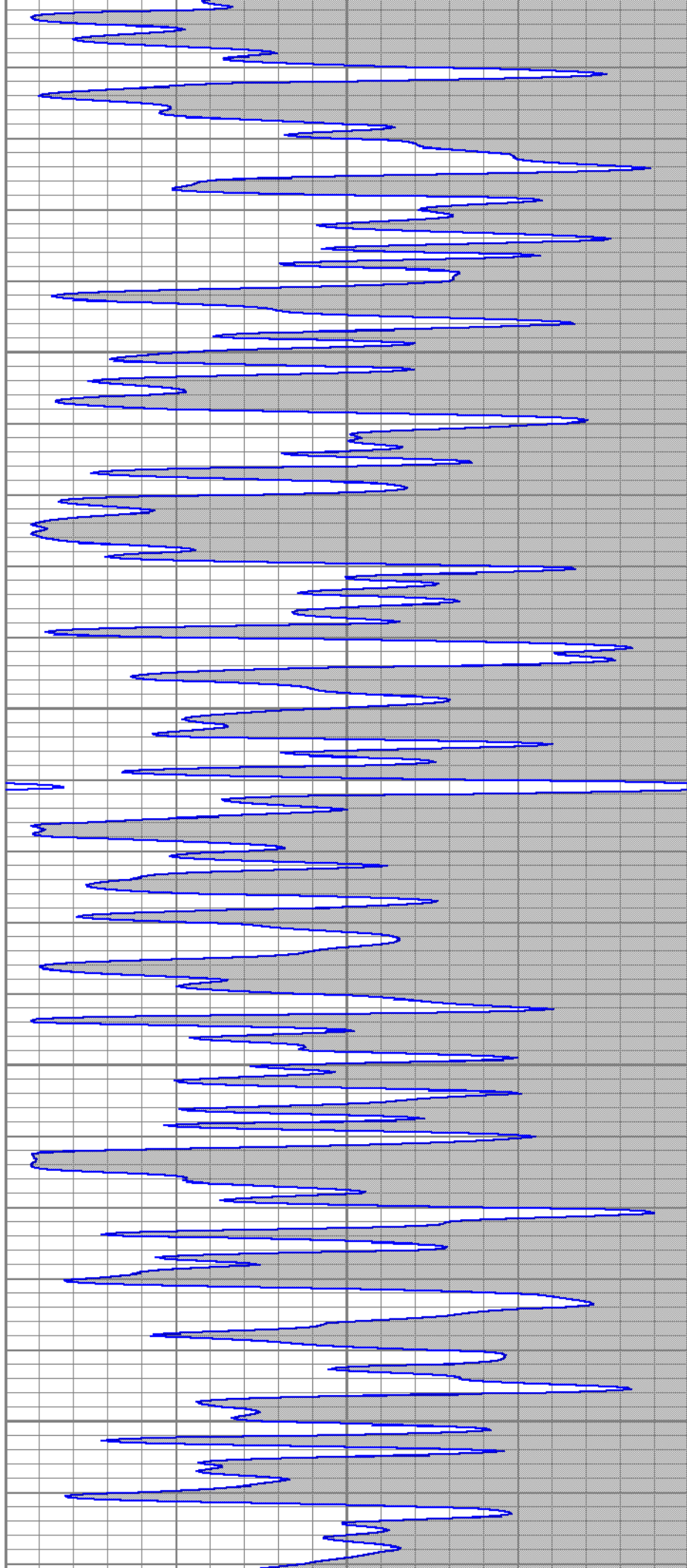
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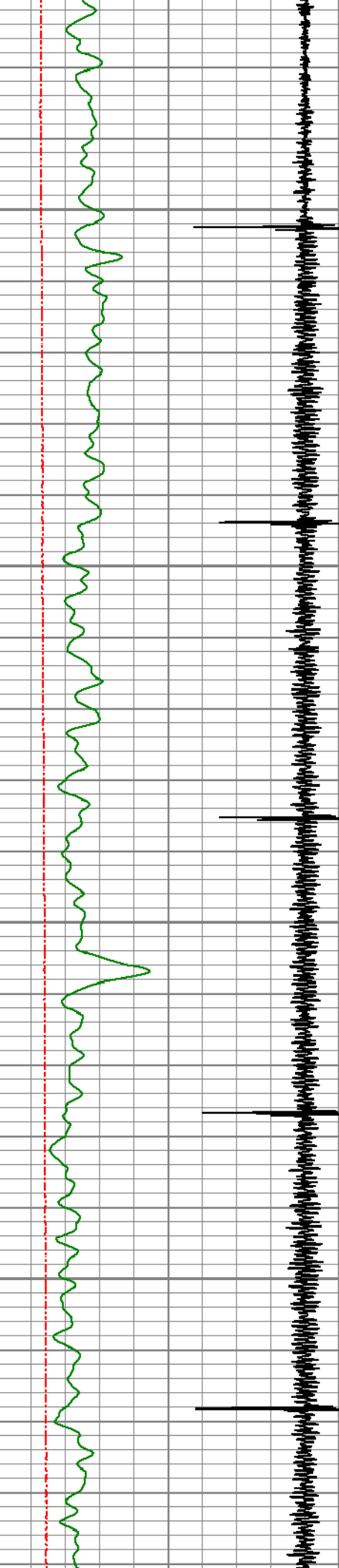
300





300
350
400
450
500



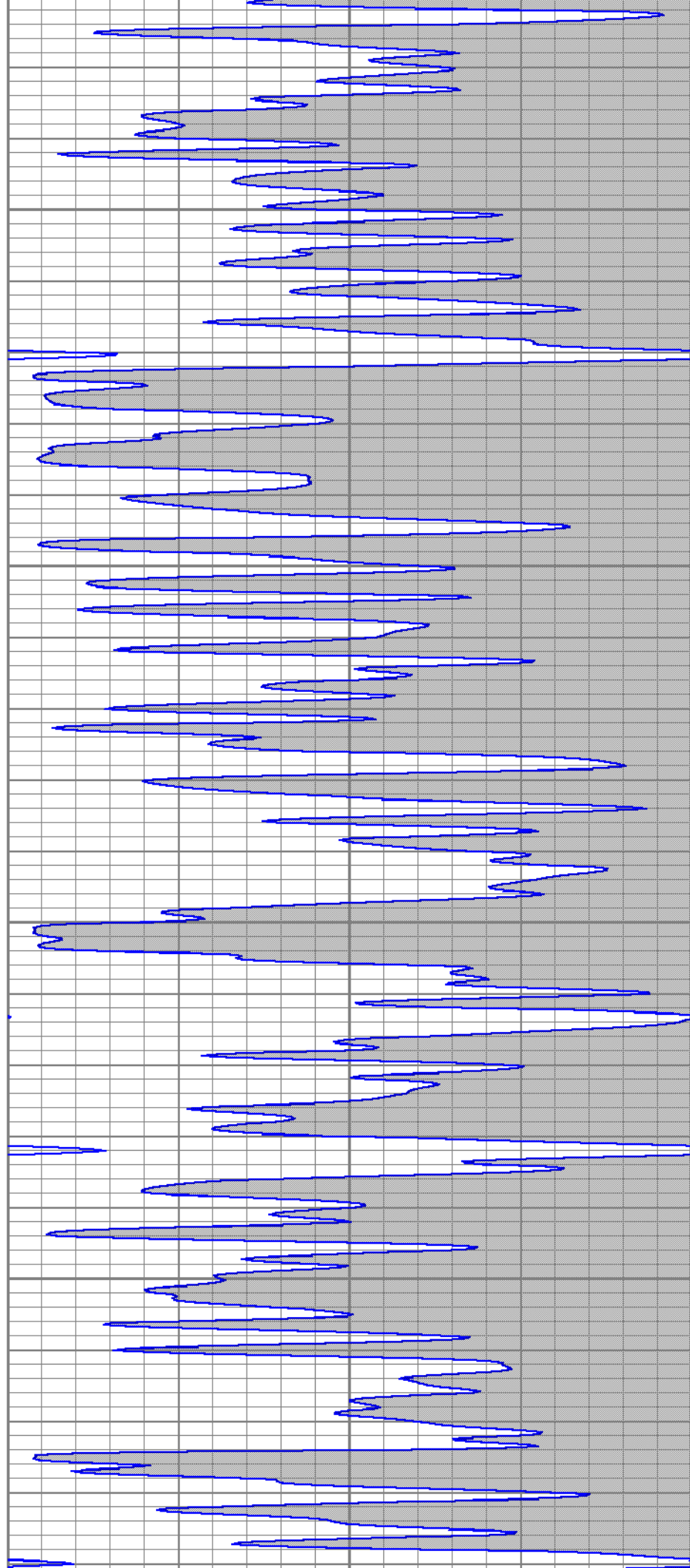


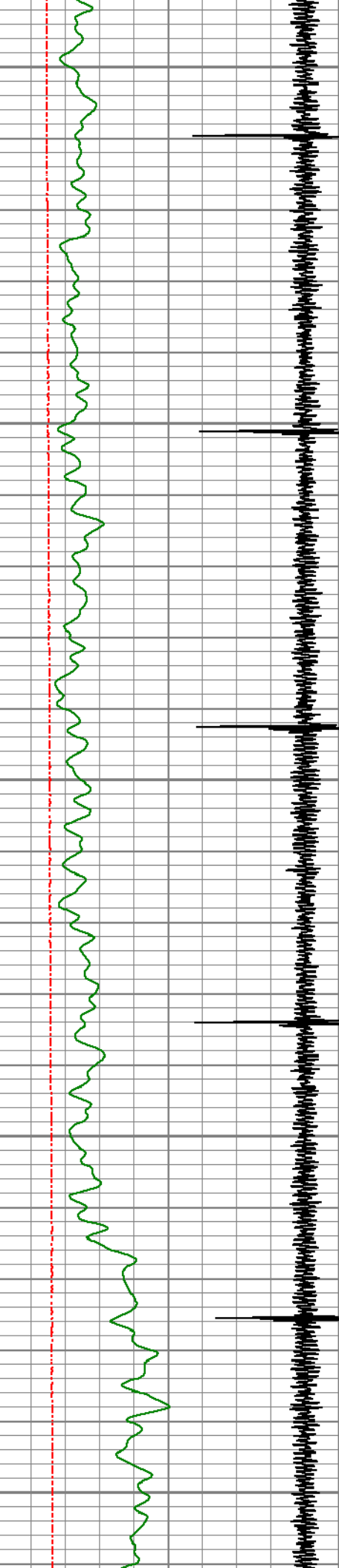
550

600

650

700





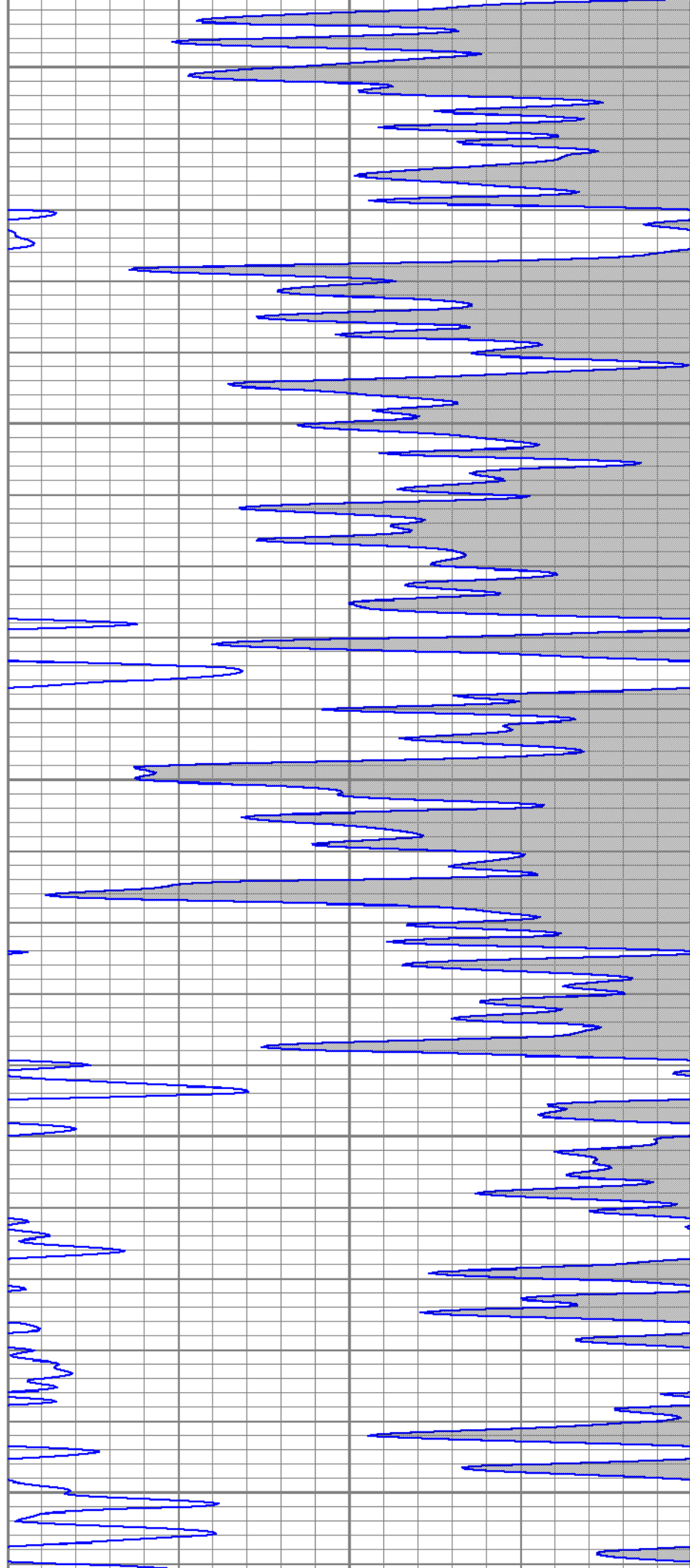
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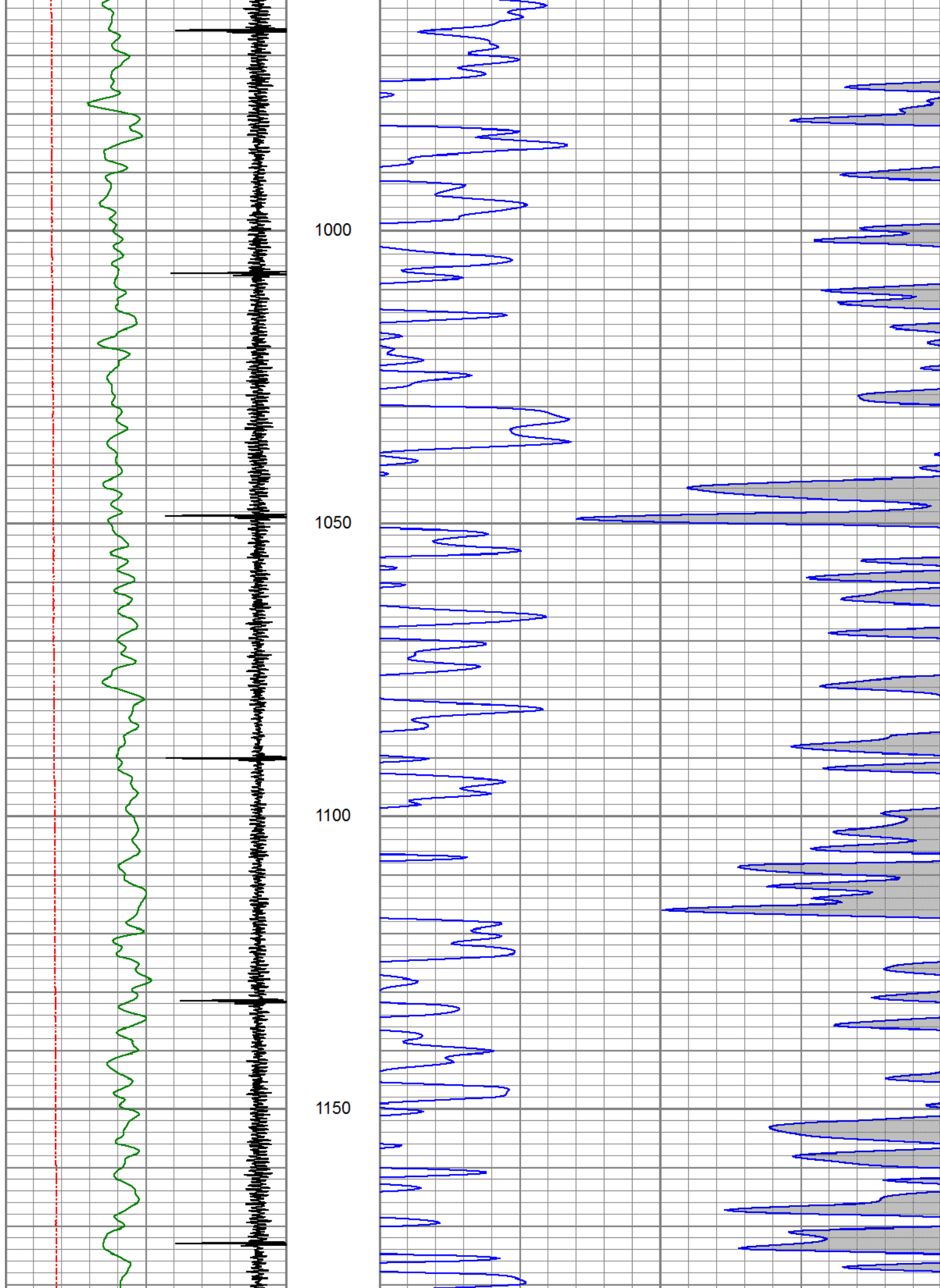
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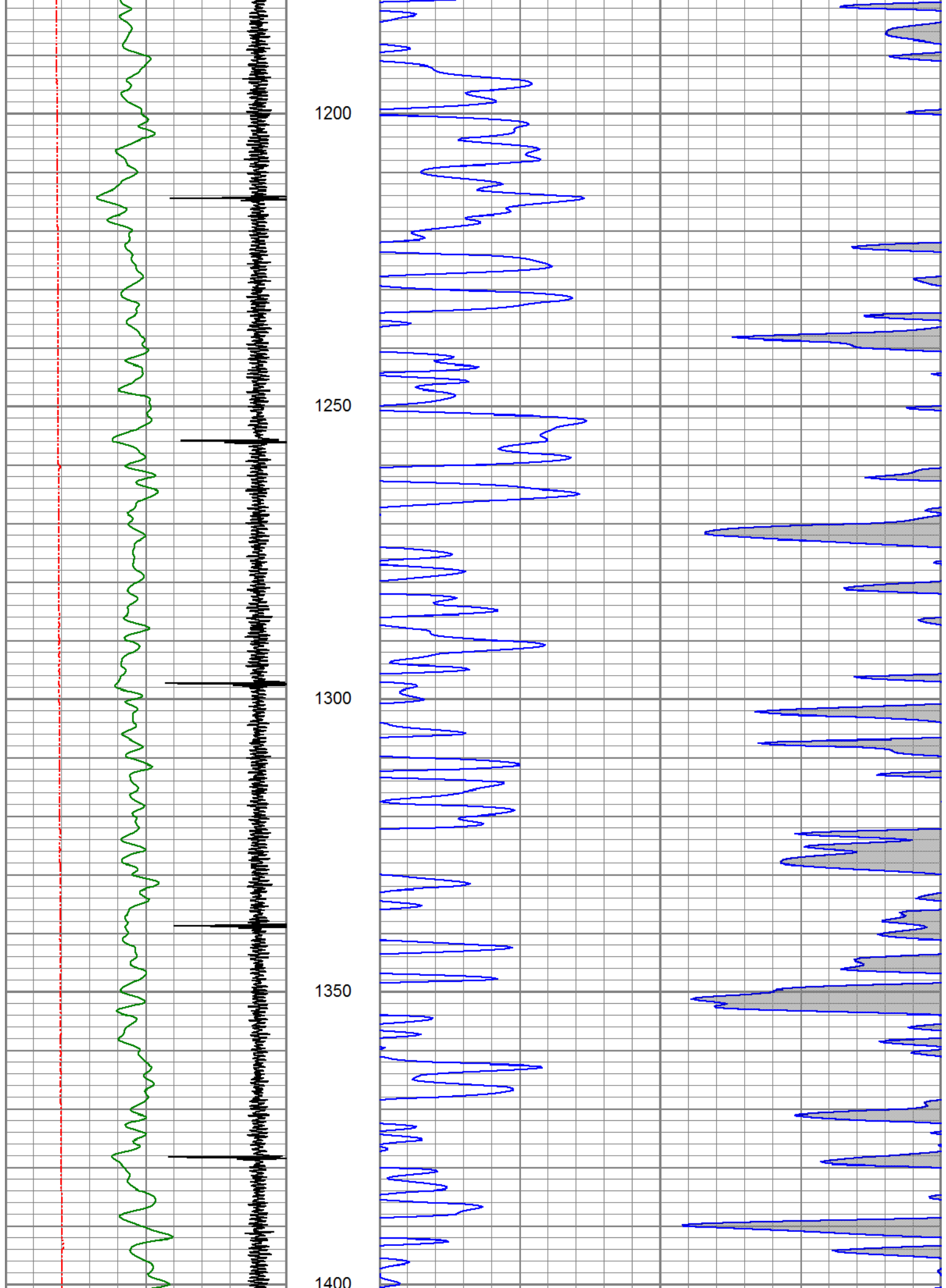
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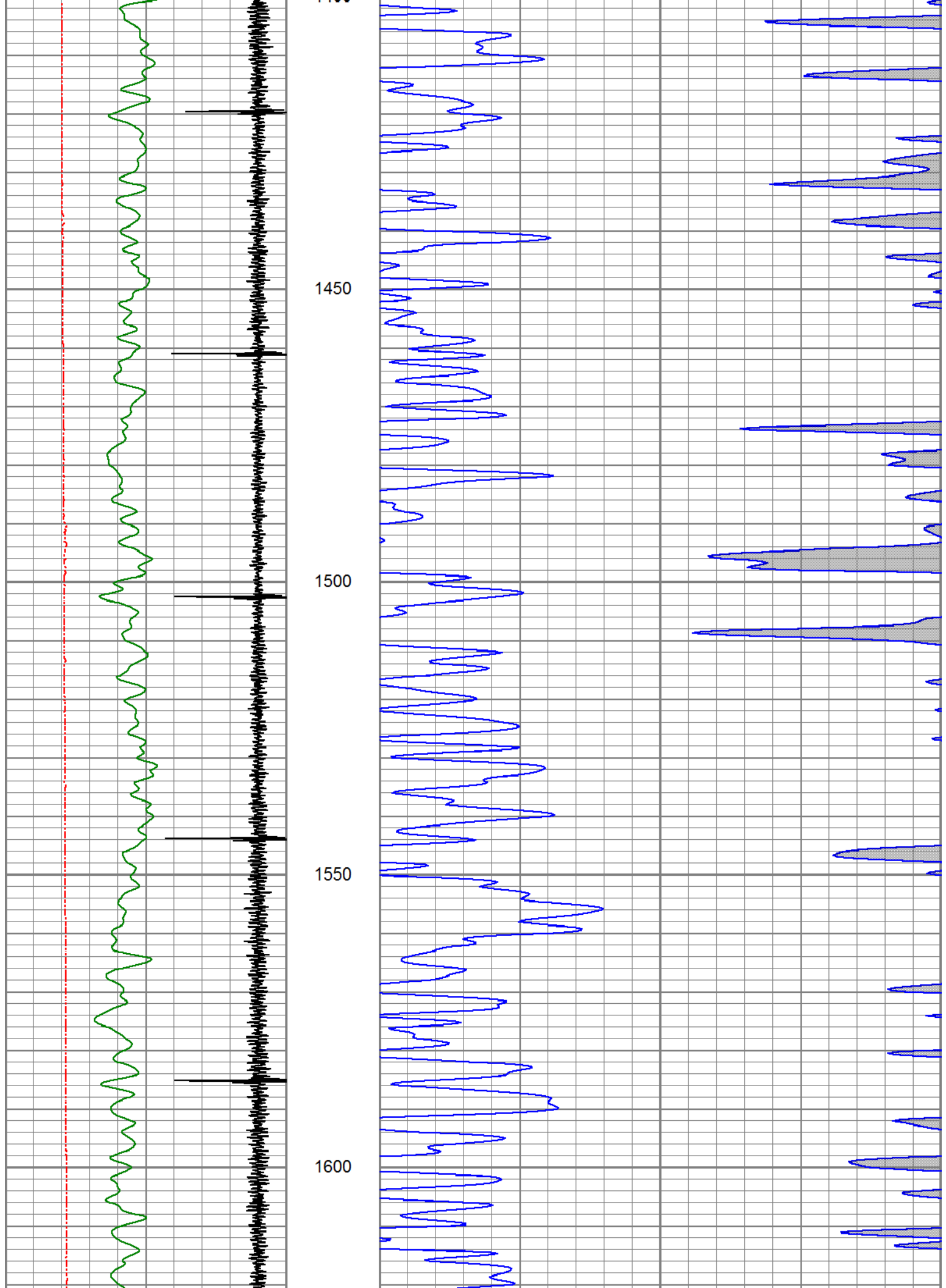
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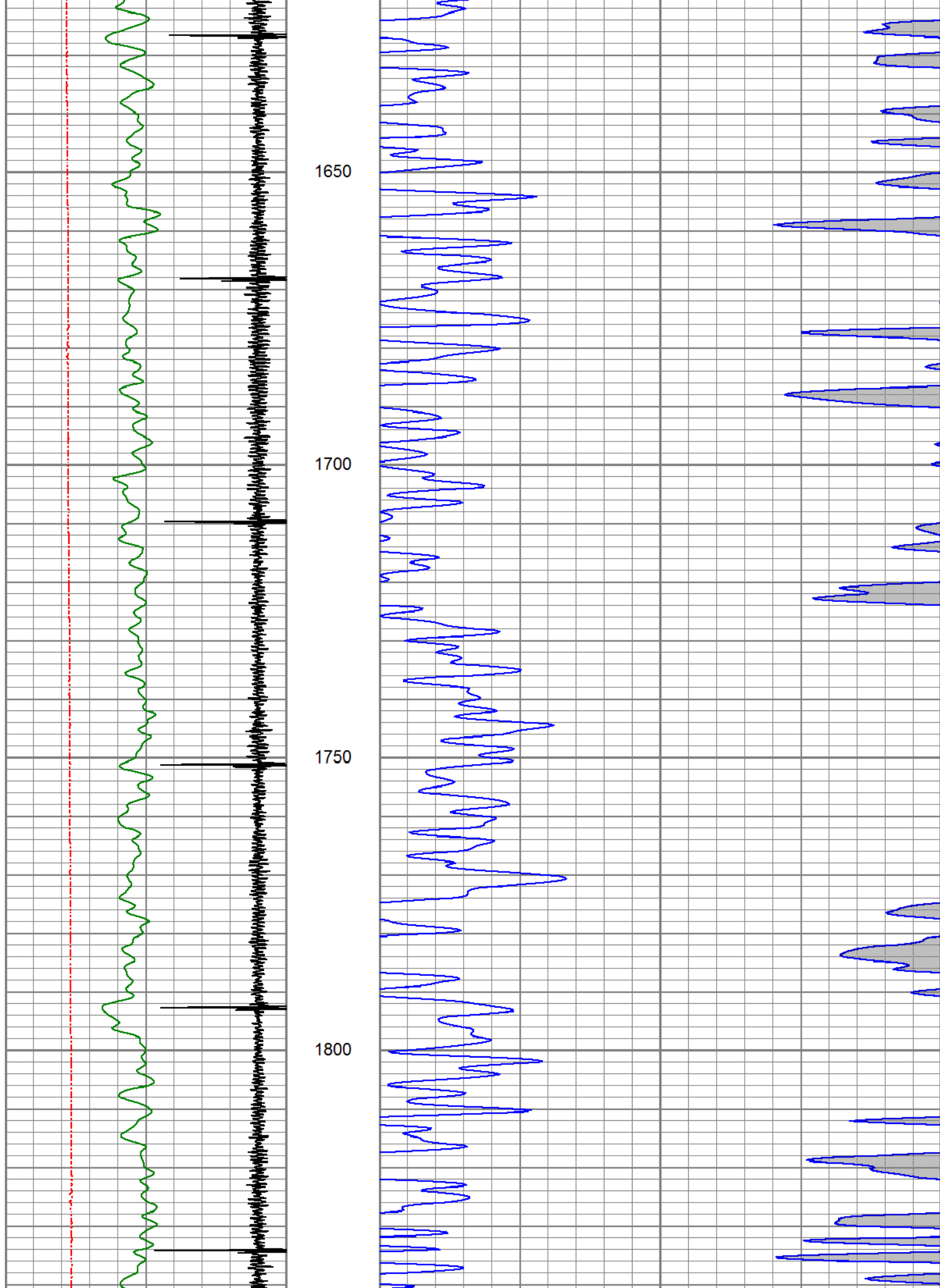
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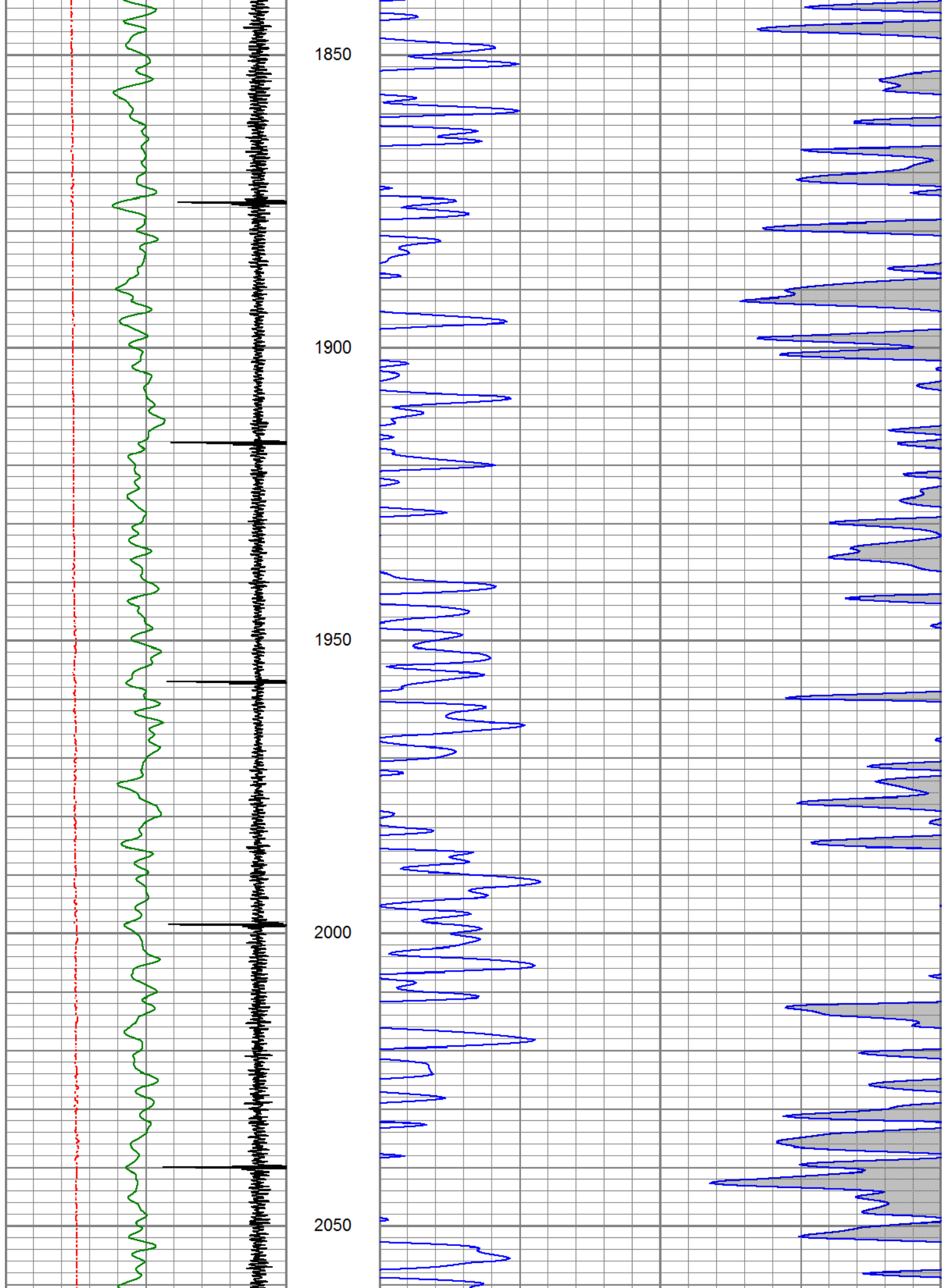


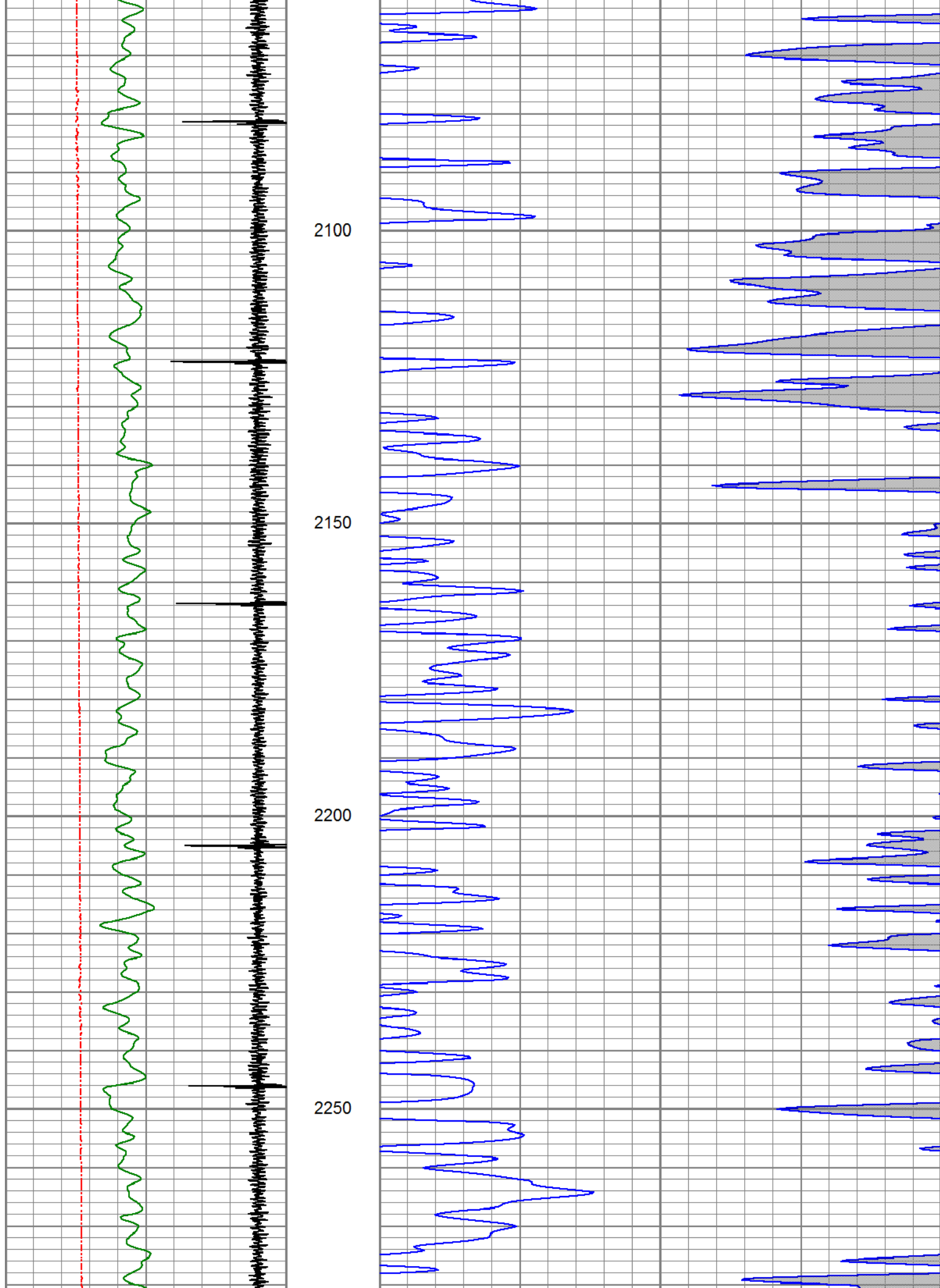


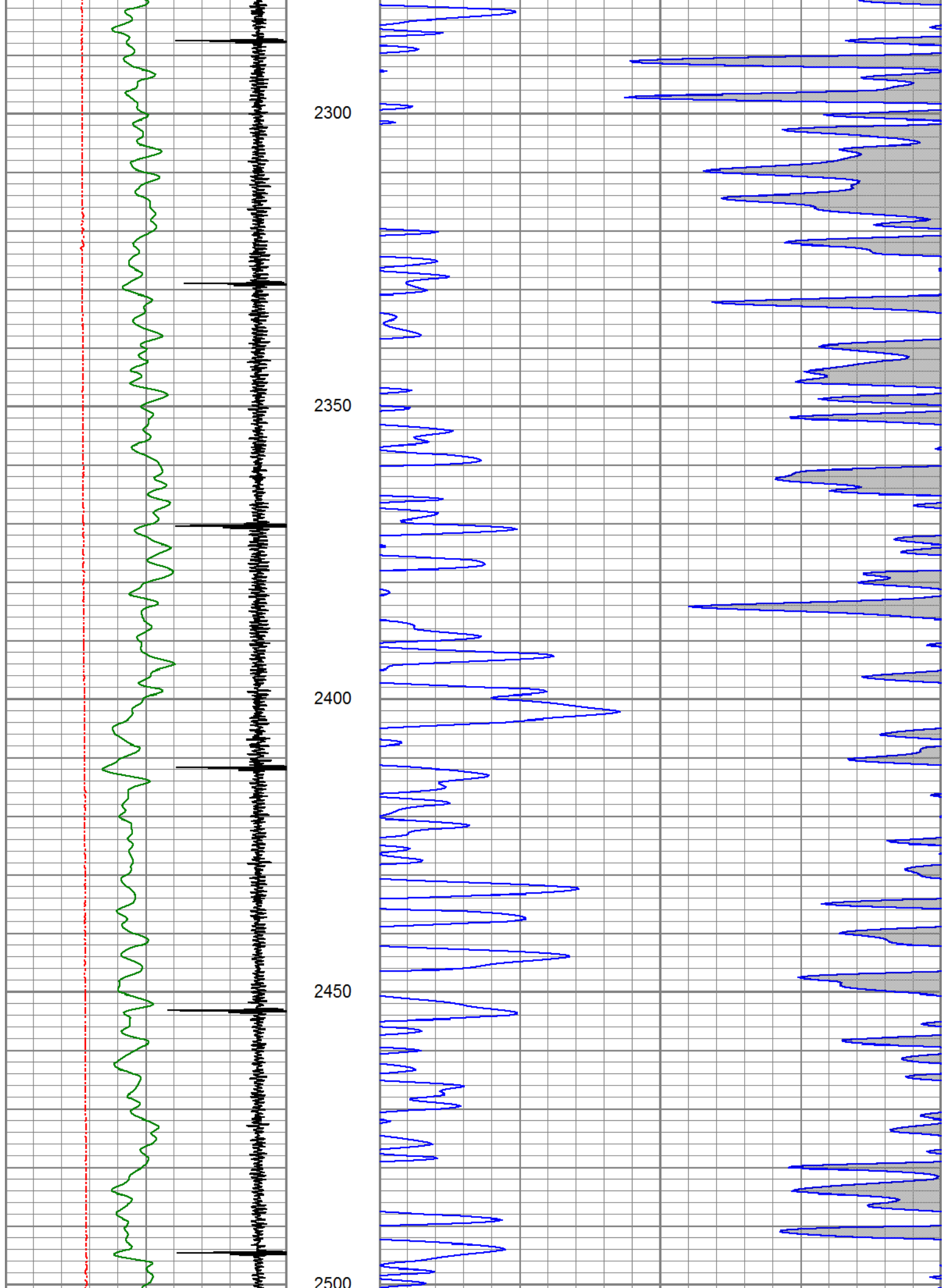


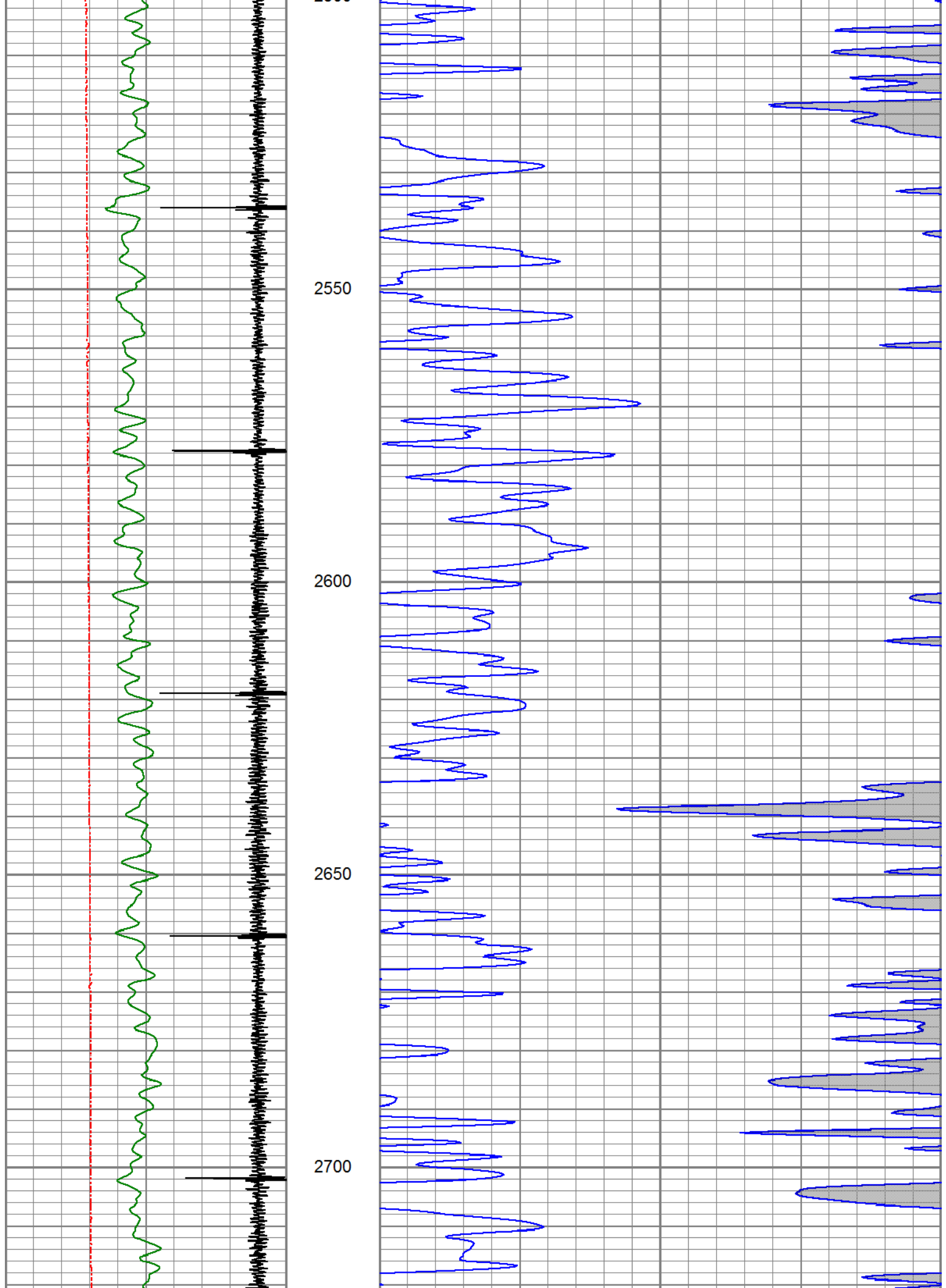


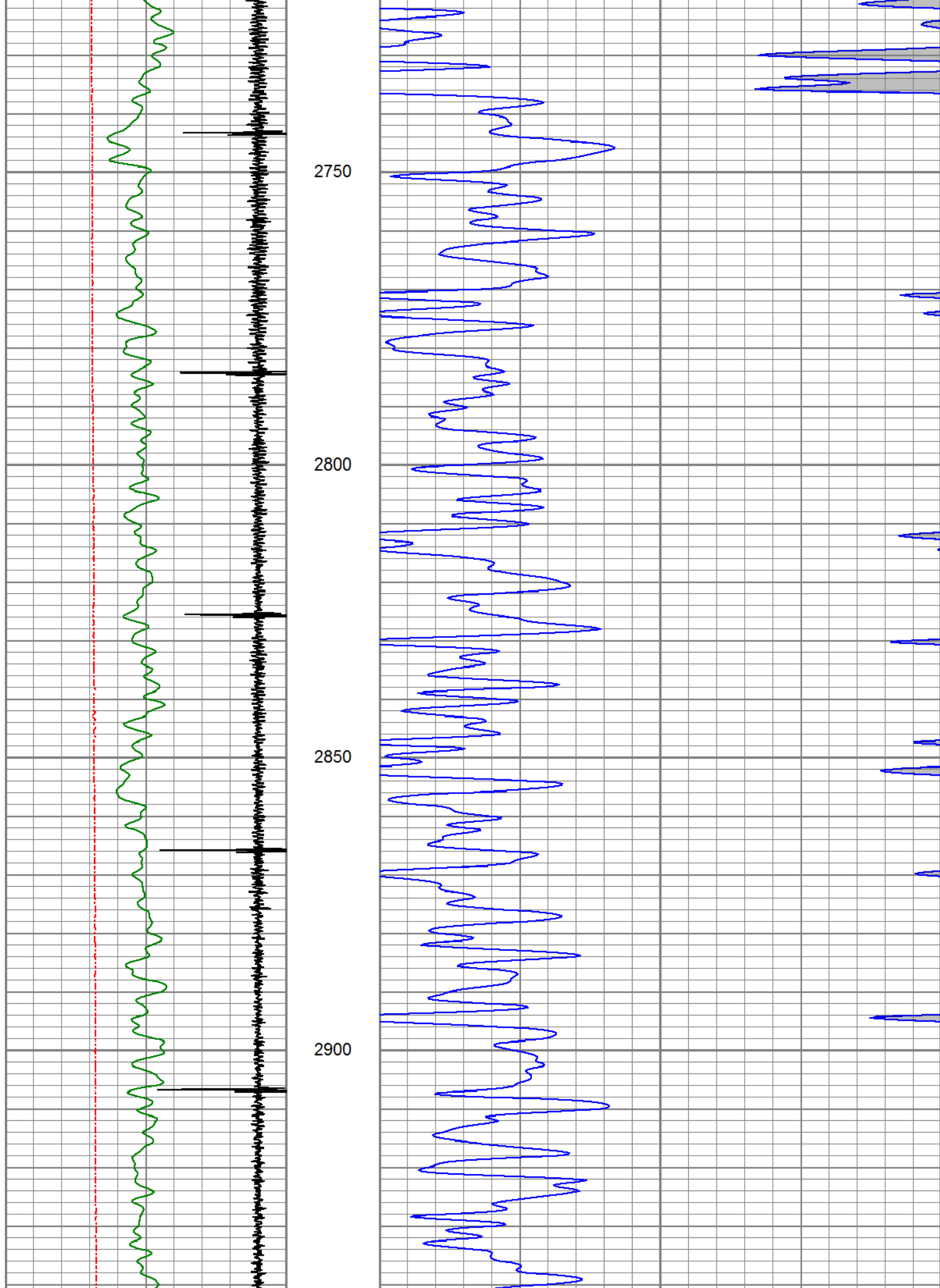


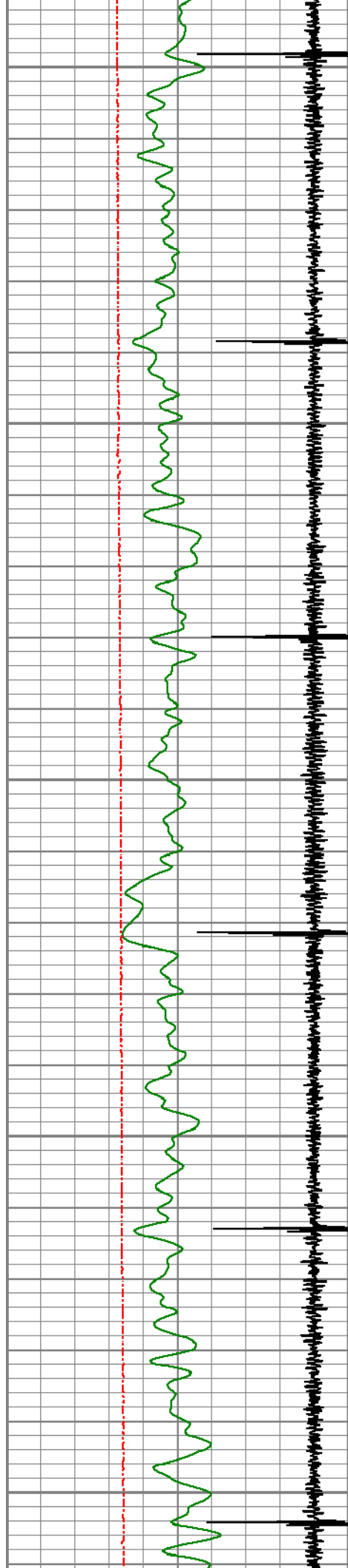












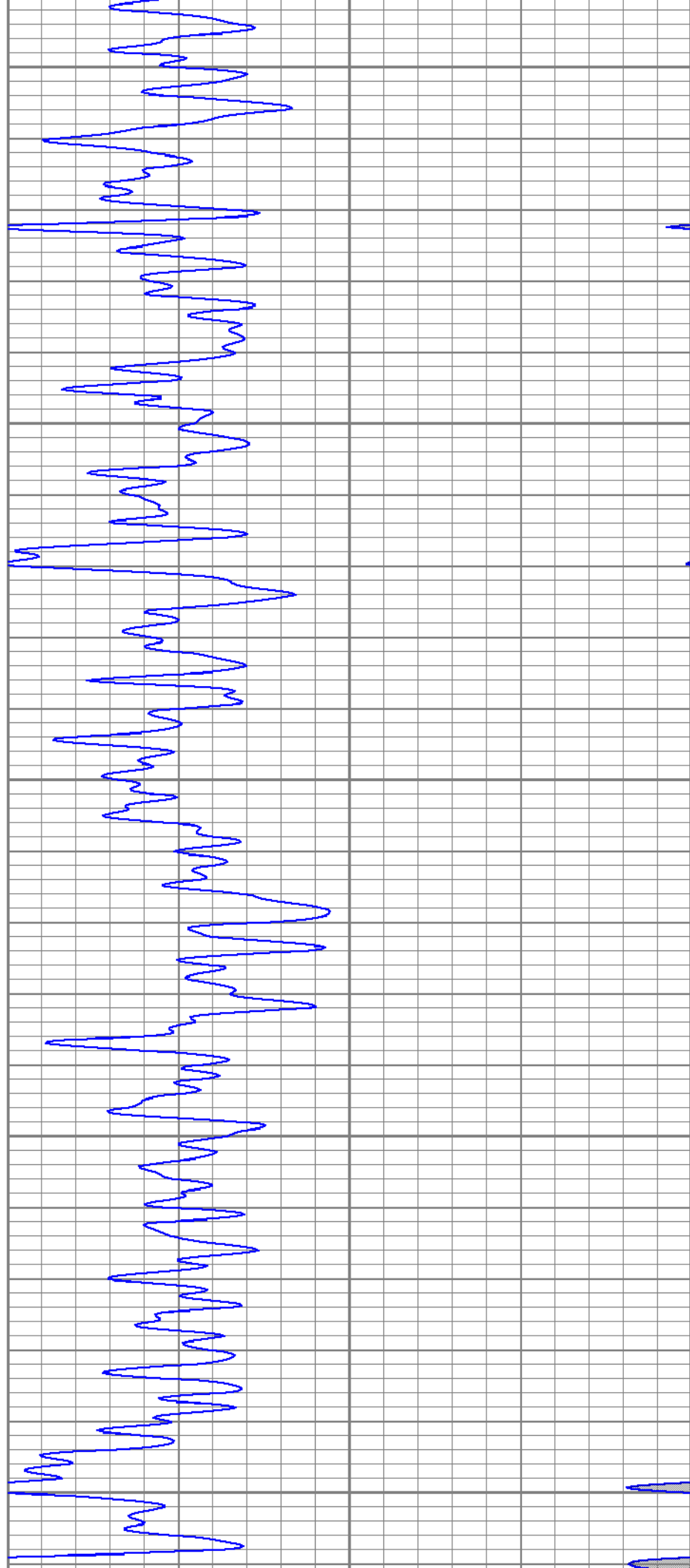
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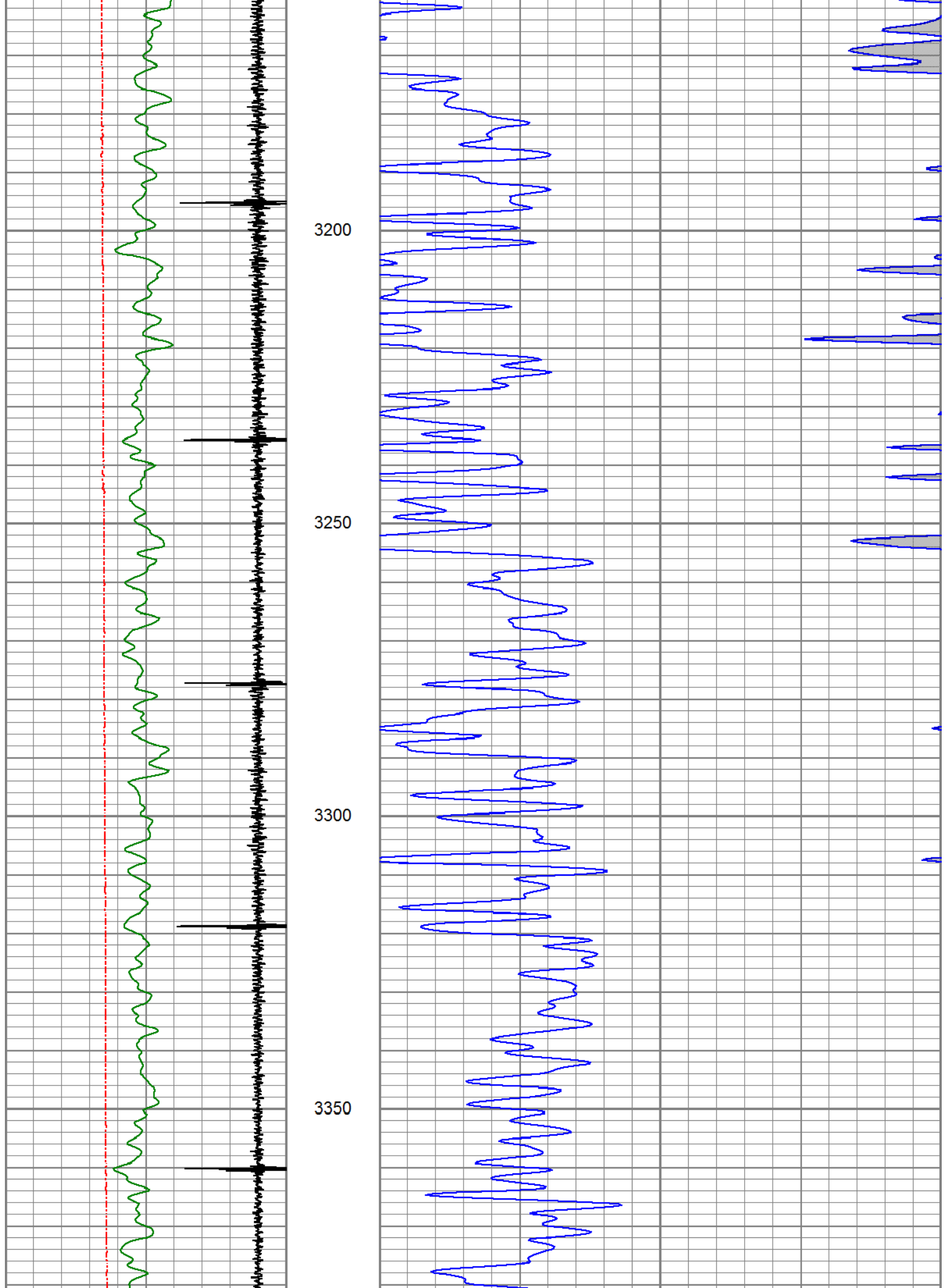
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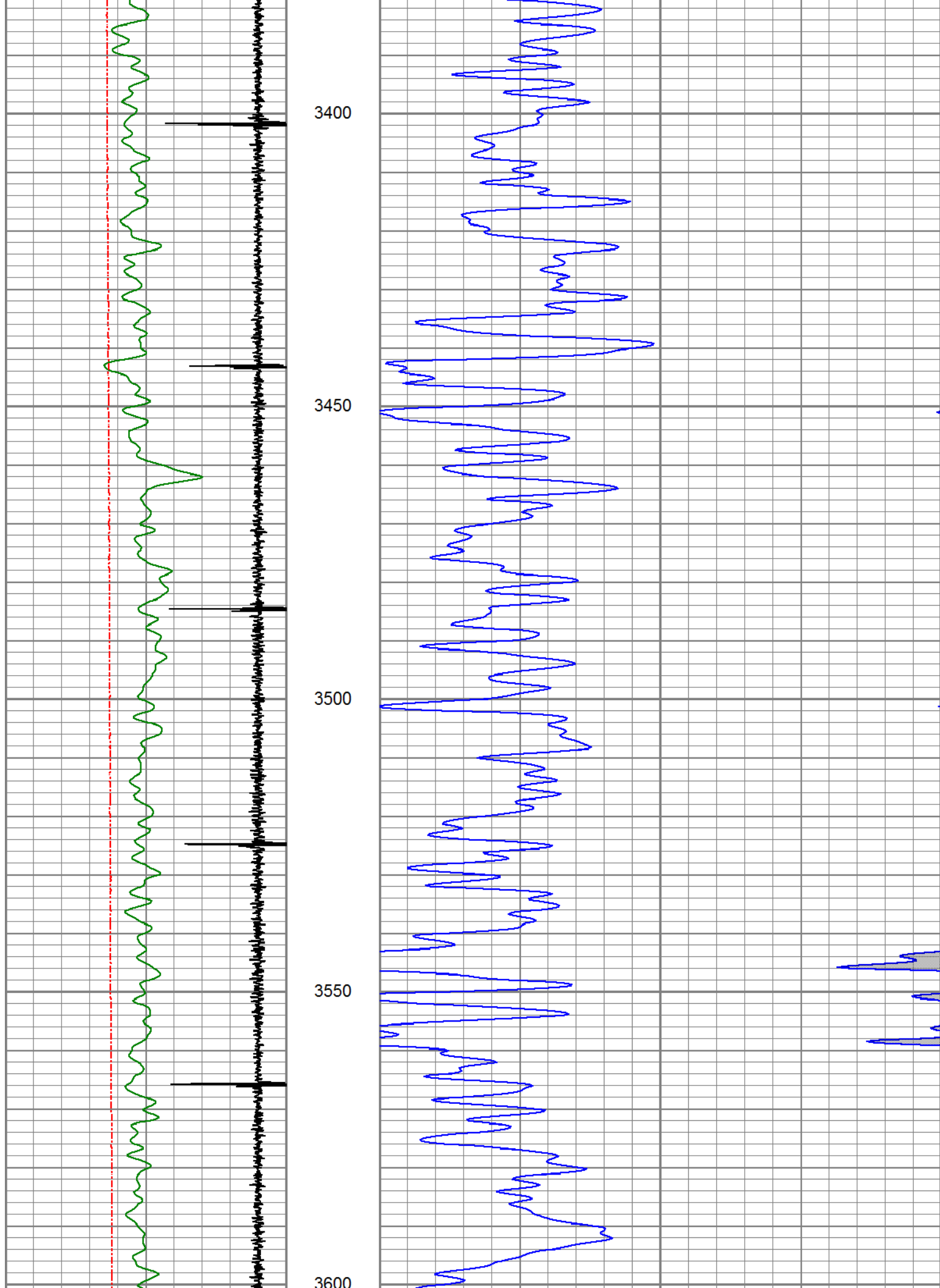
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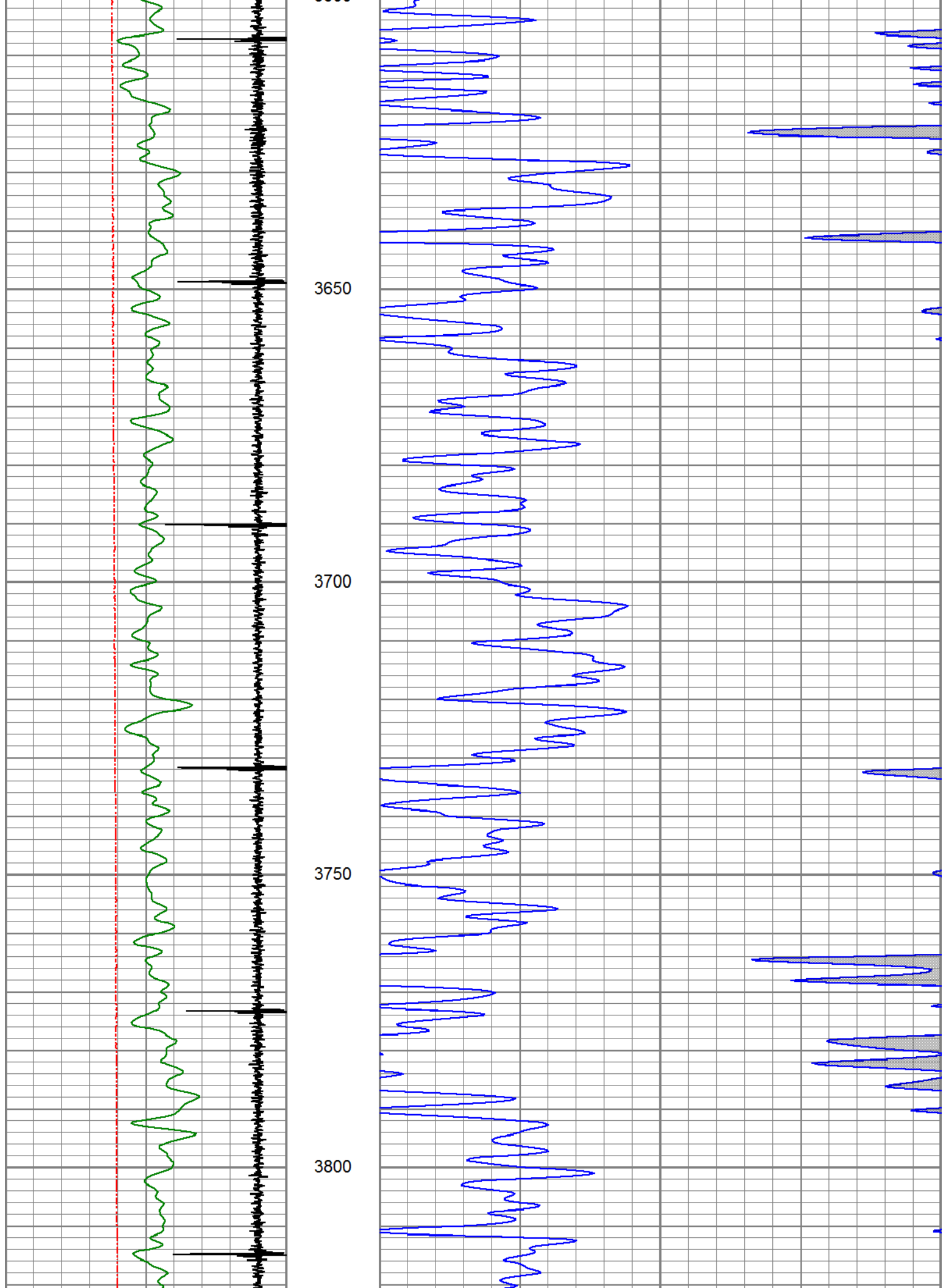
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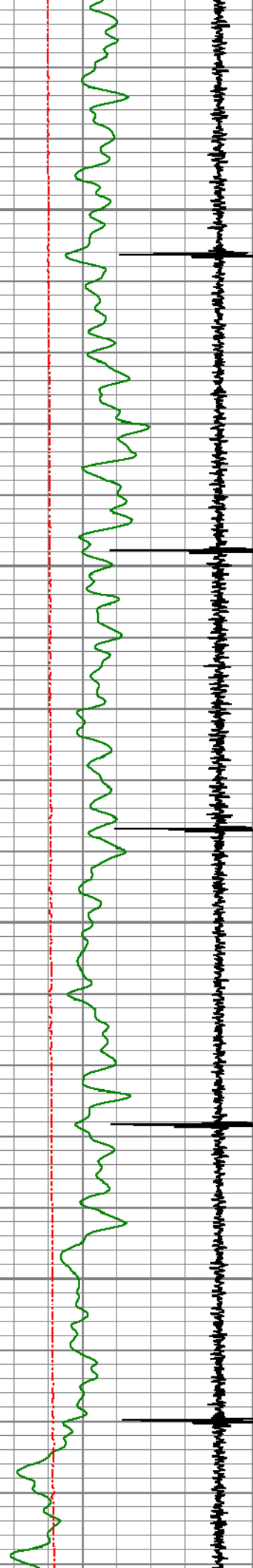
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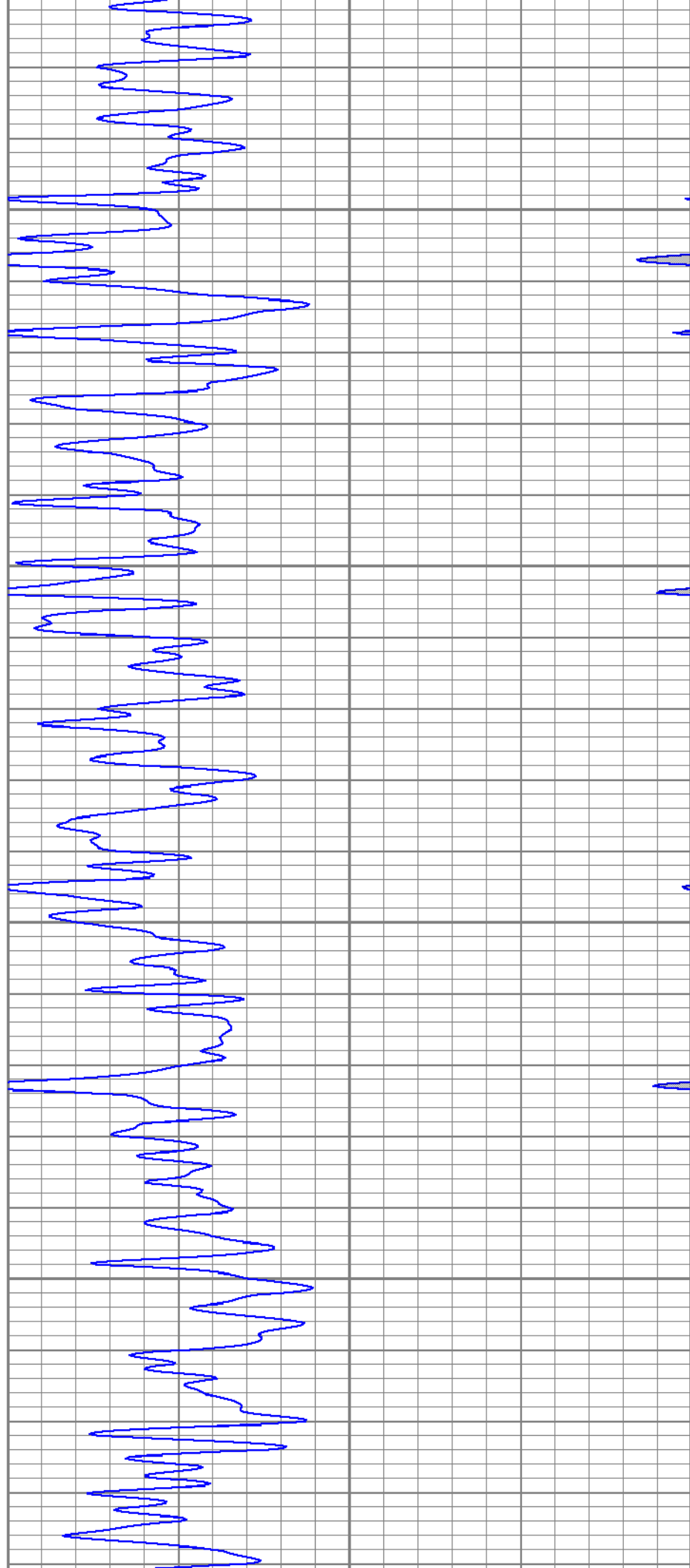


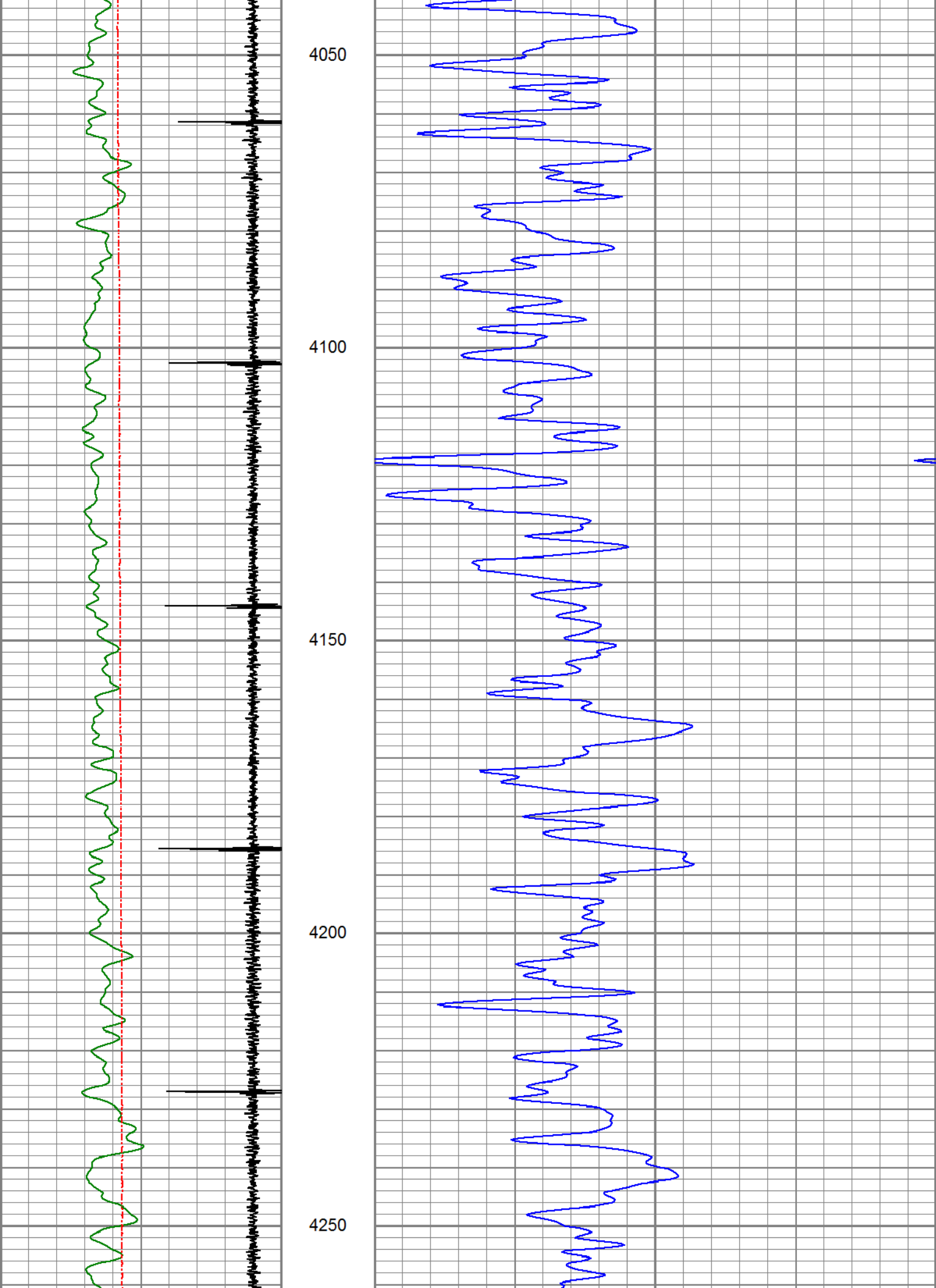
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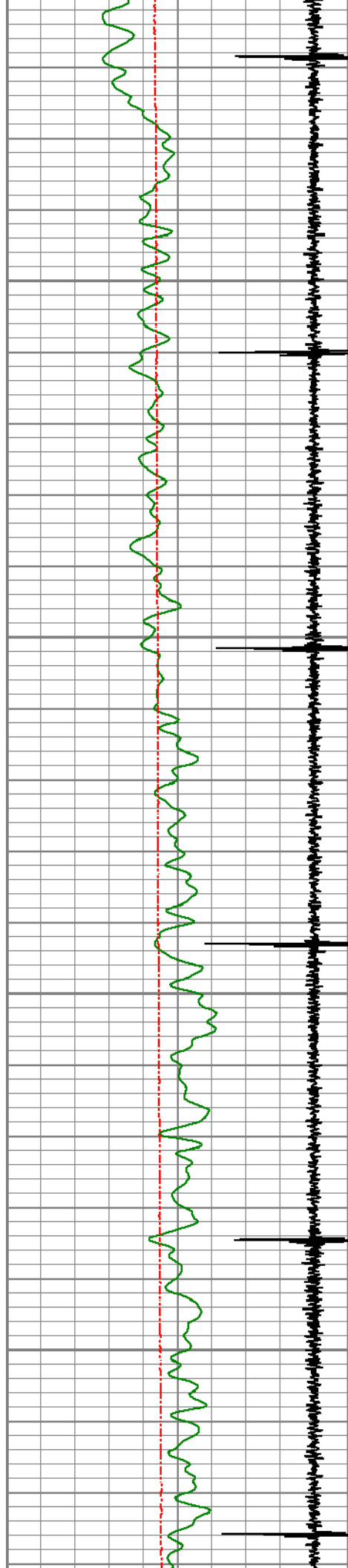
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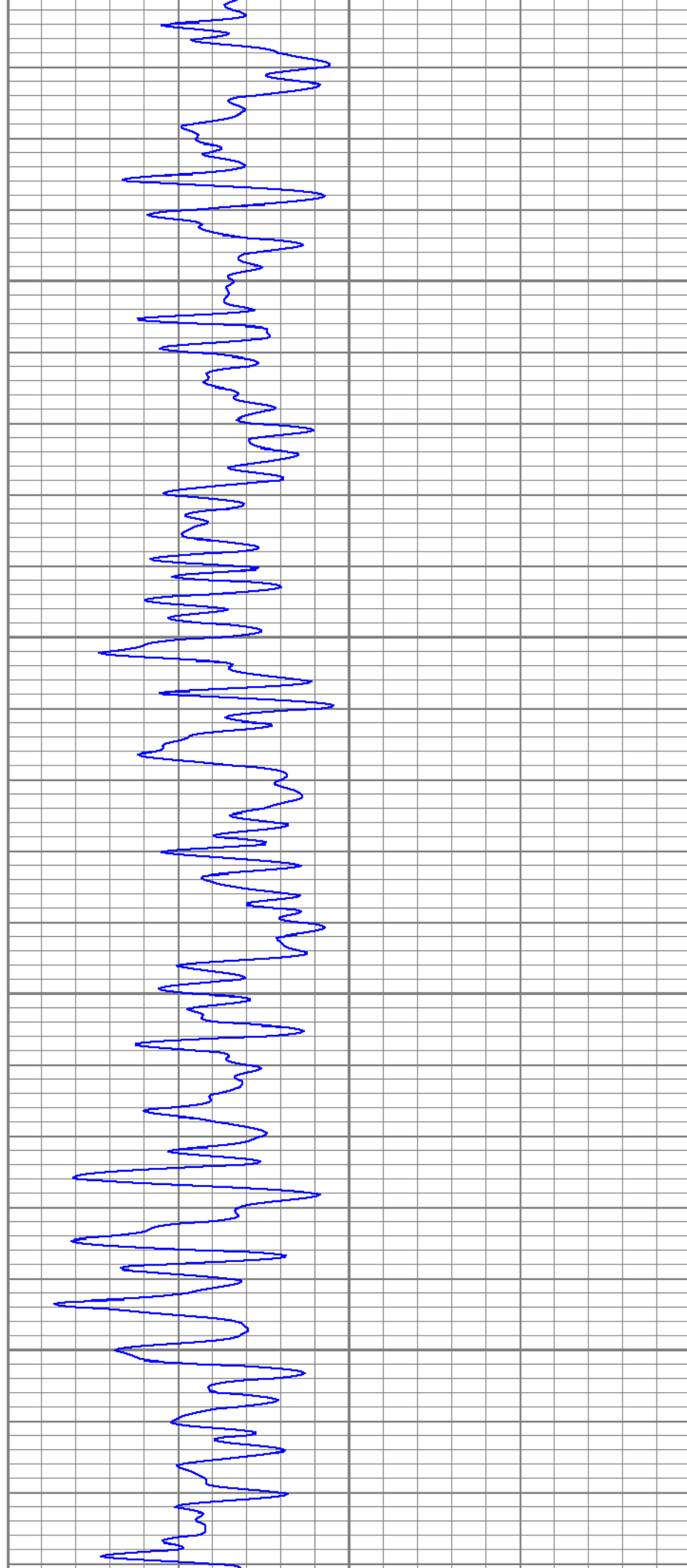


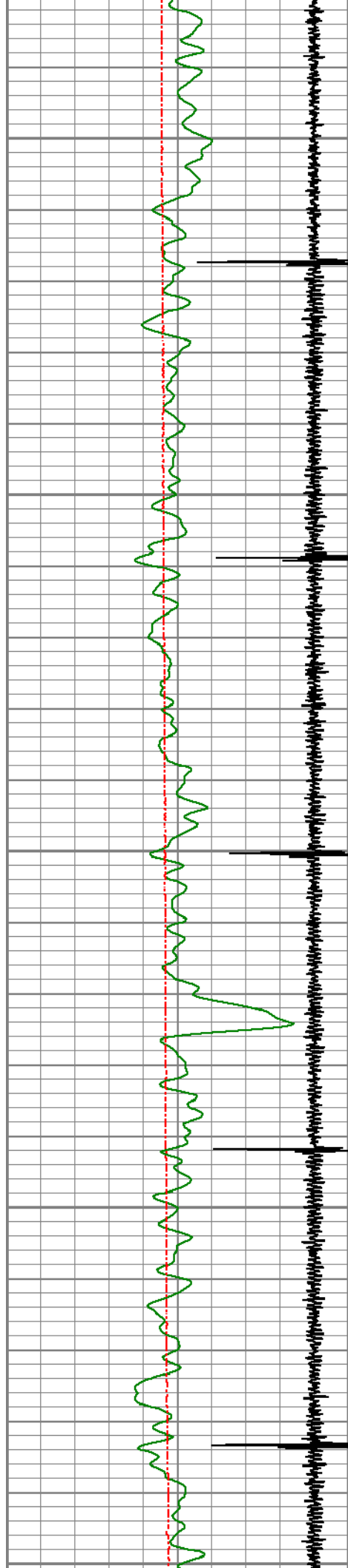
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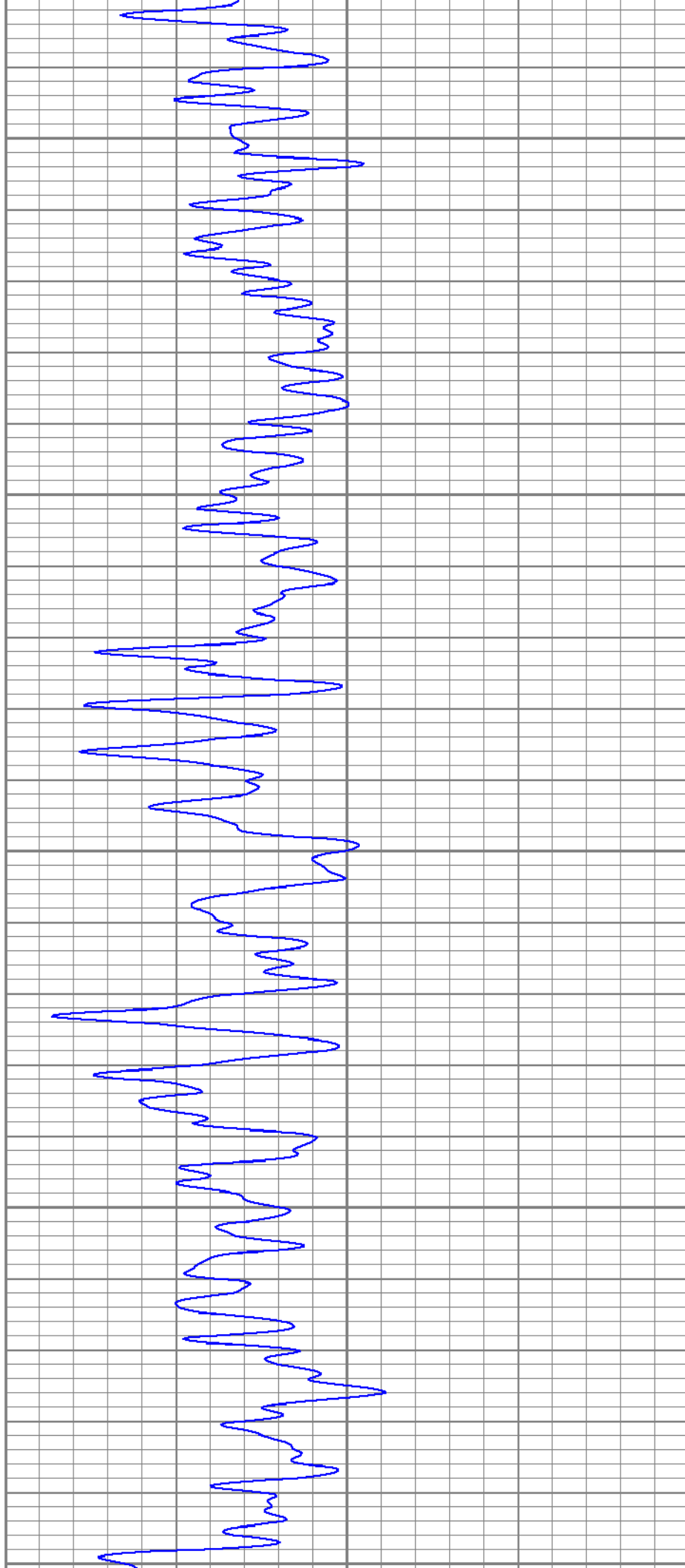
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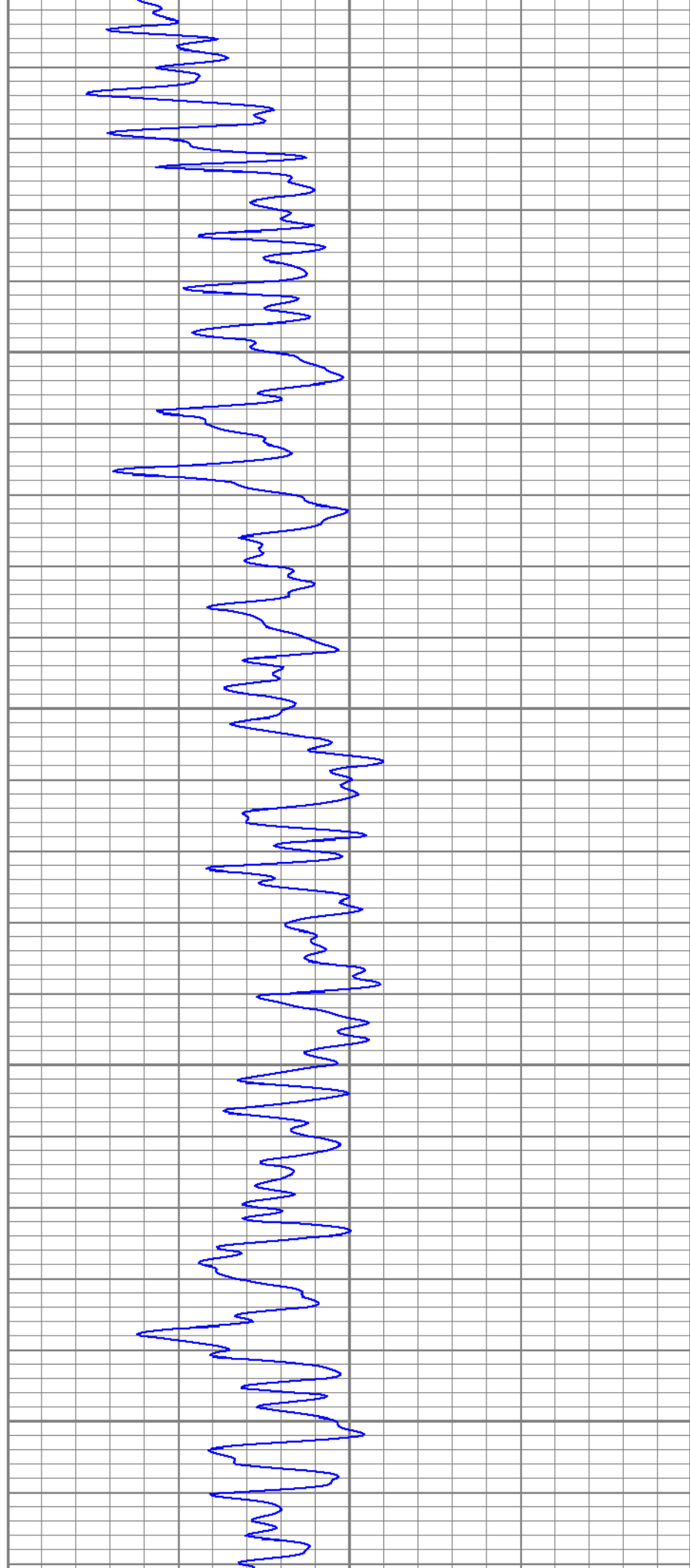
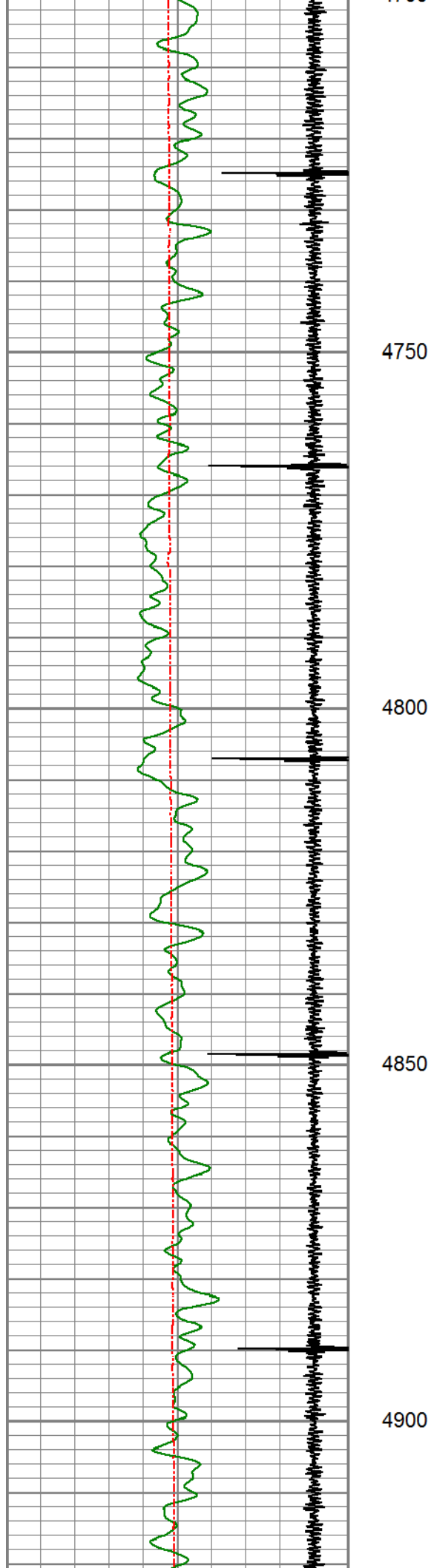
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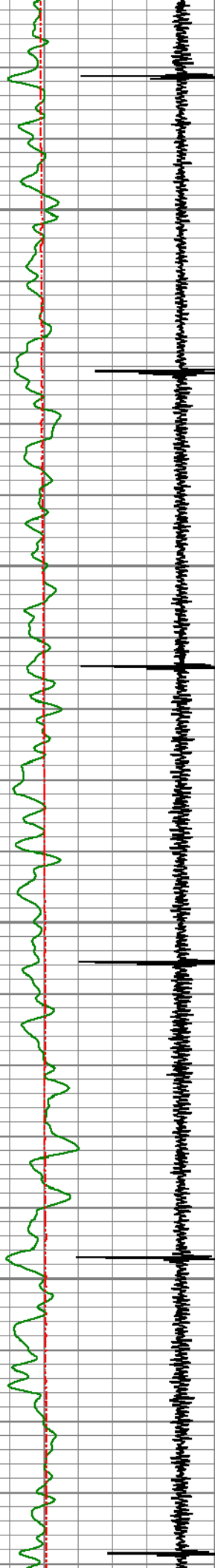
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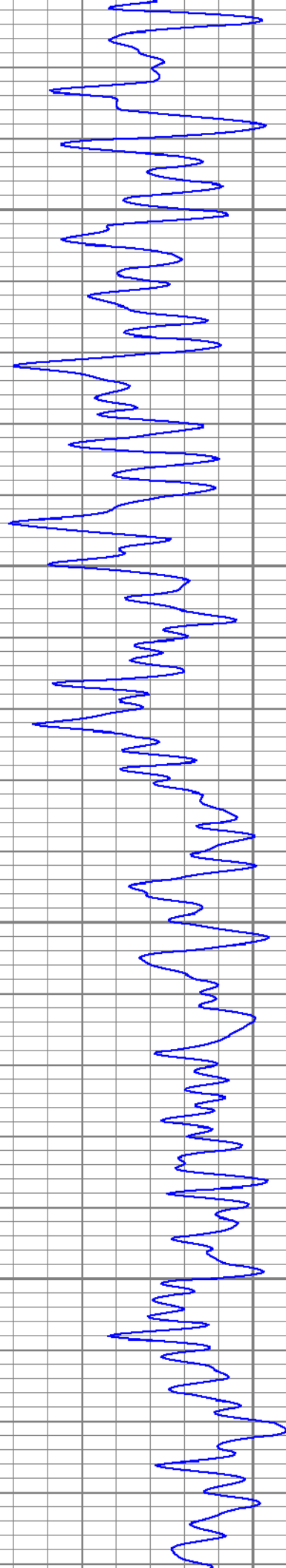


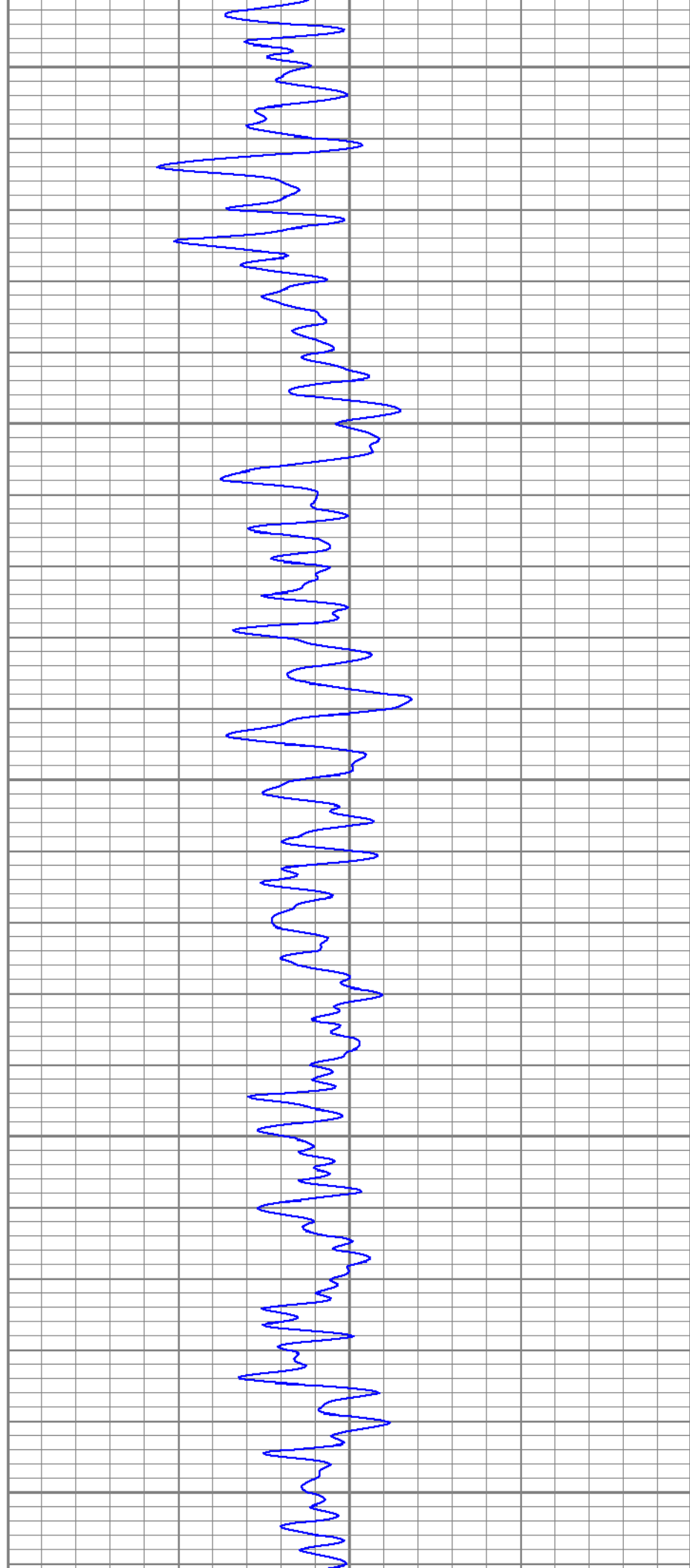
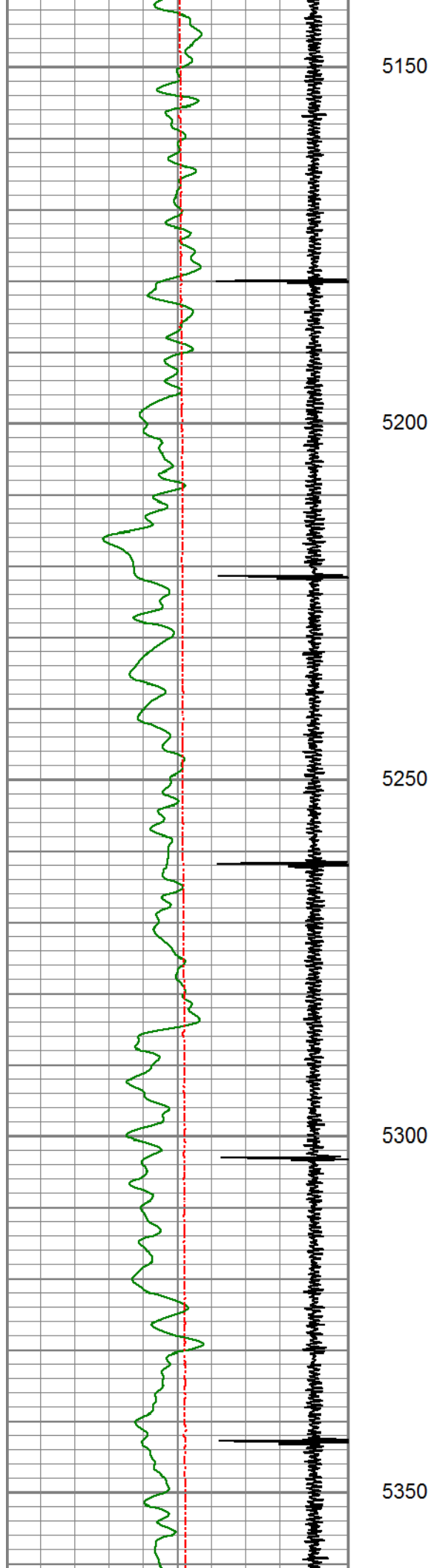
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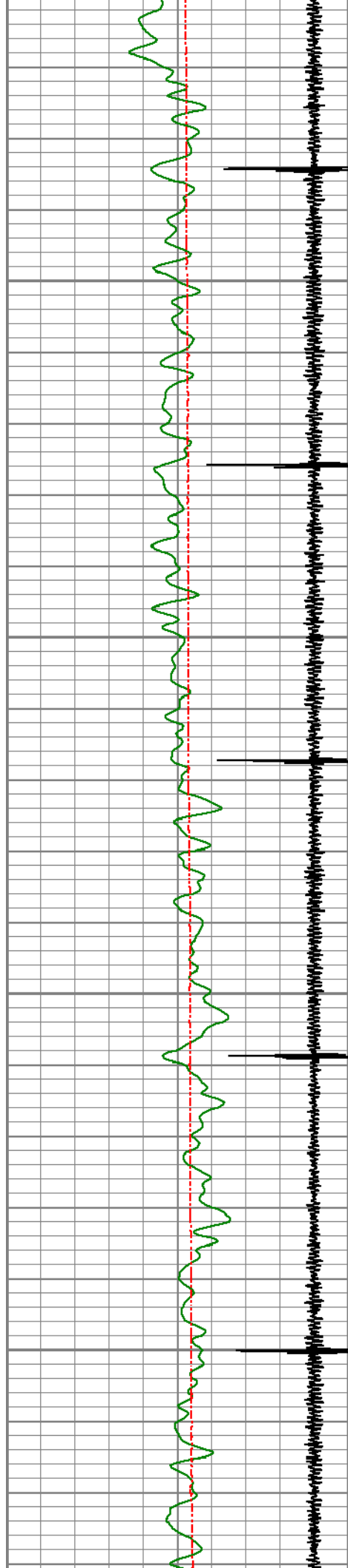
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5050

5100





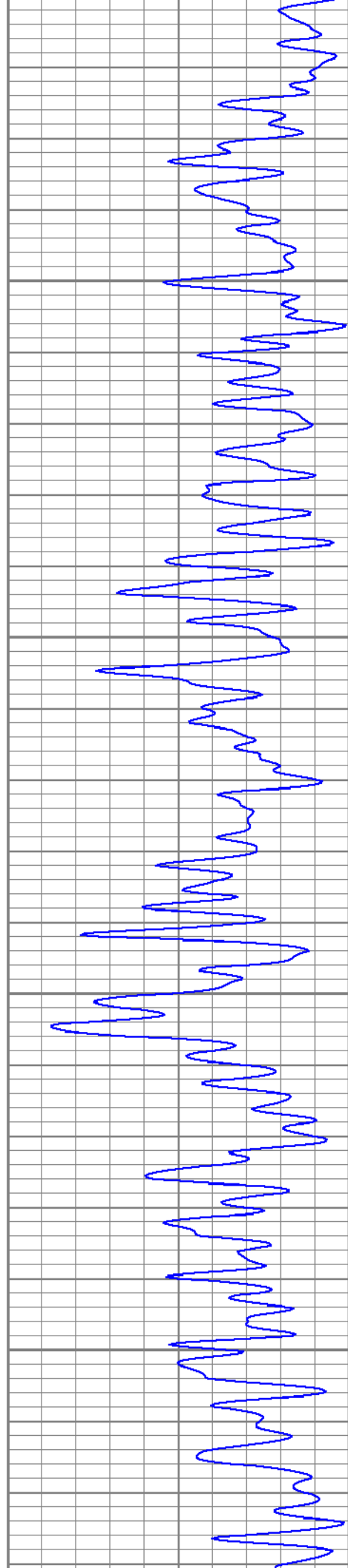


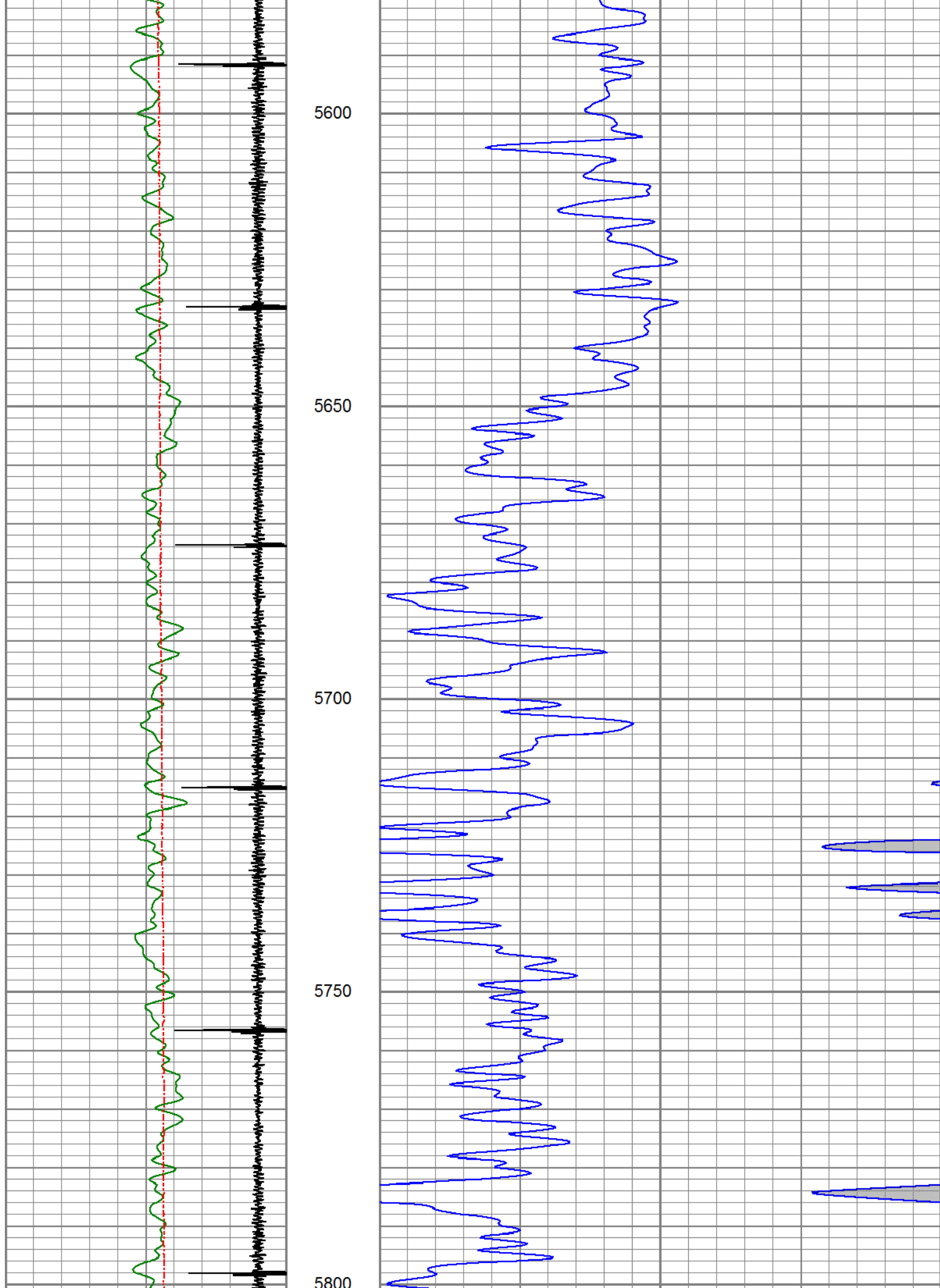
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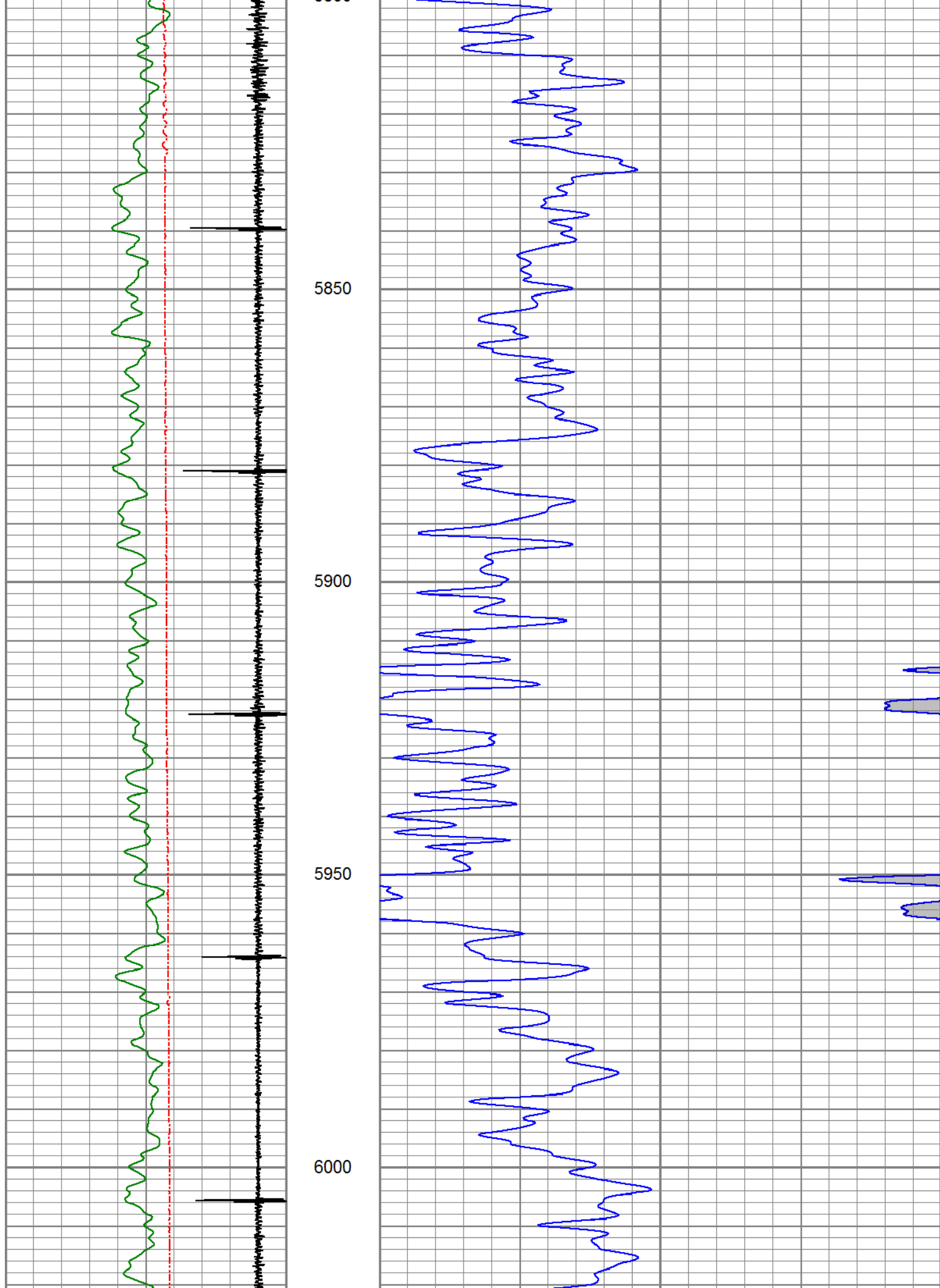
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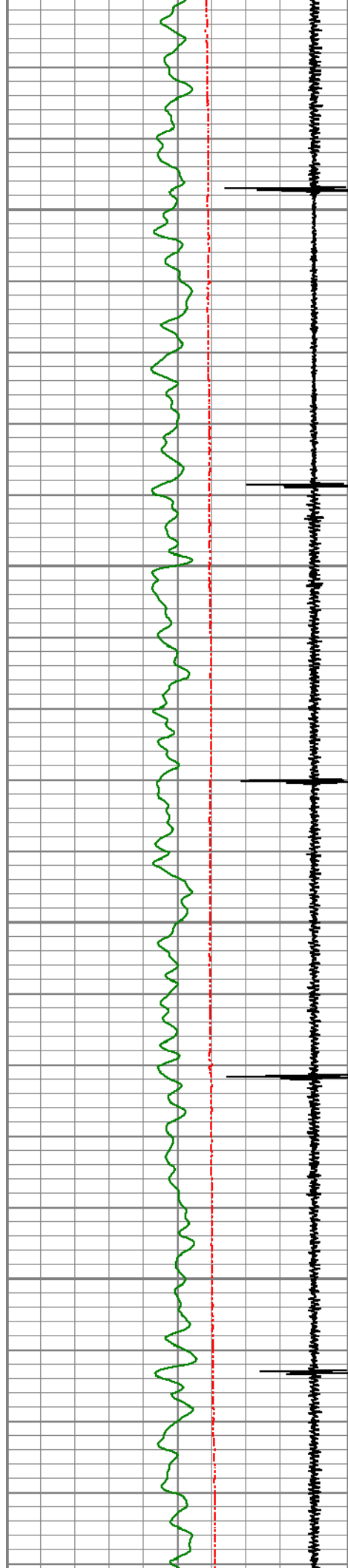
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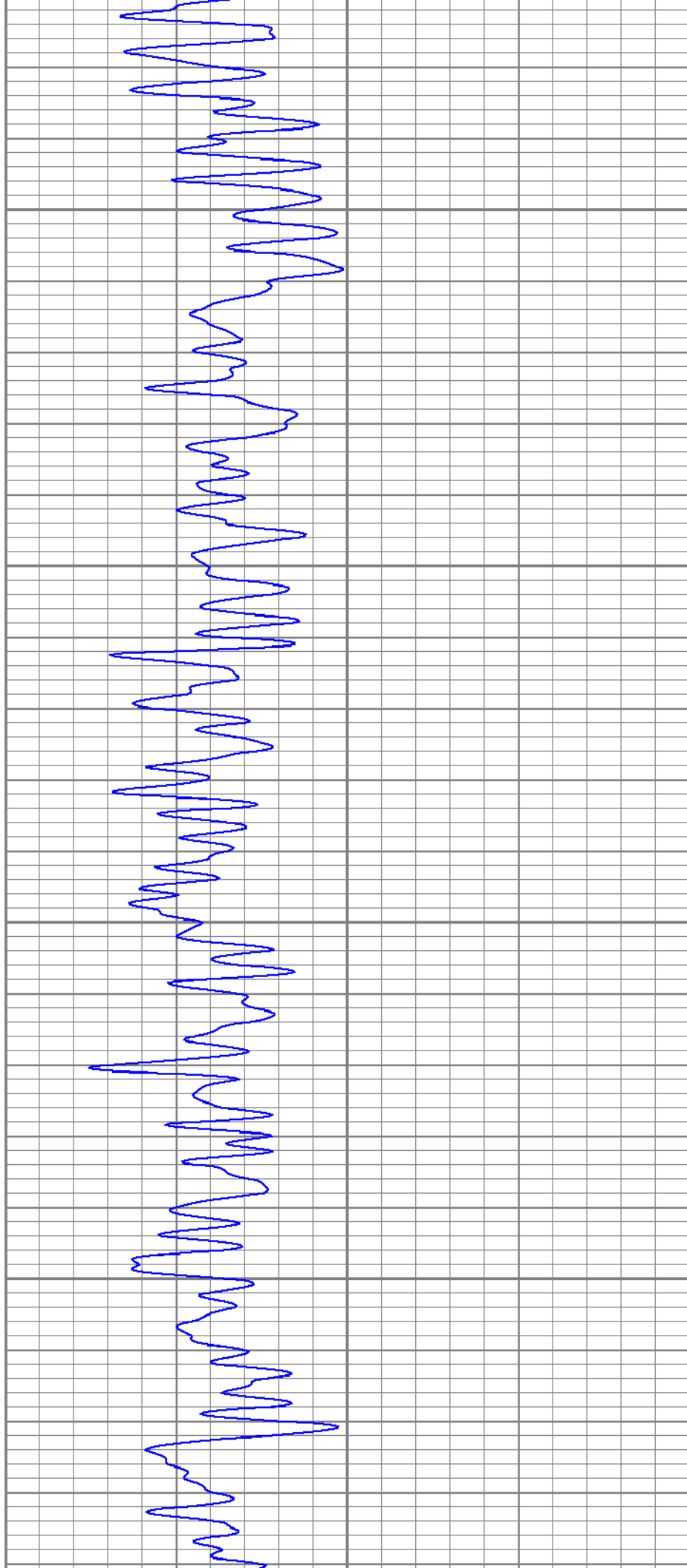


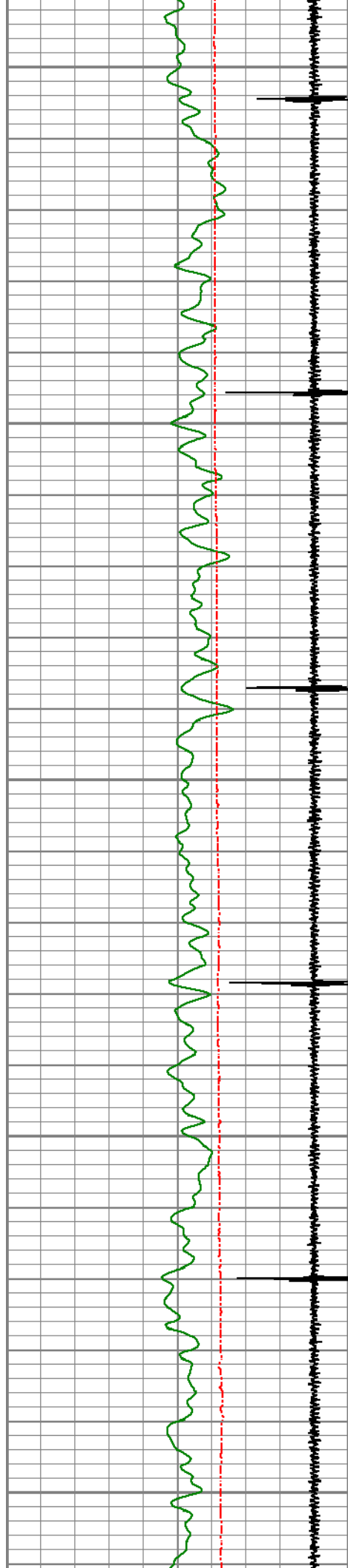
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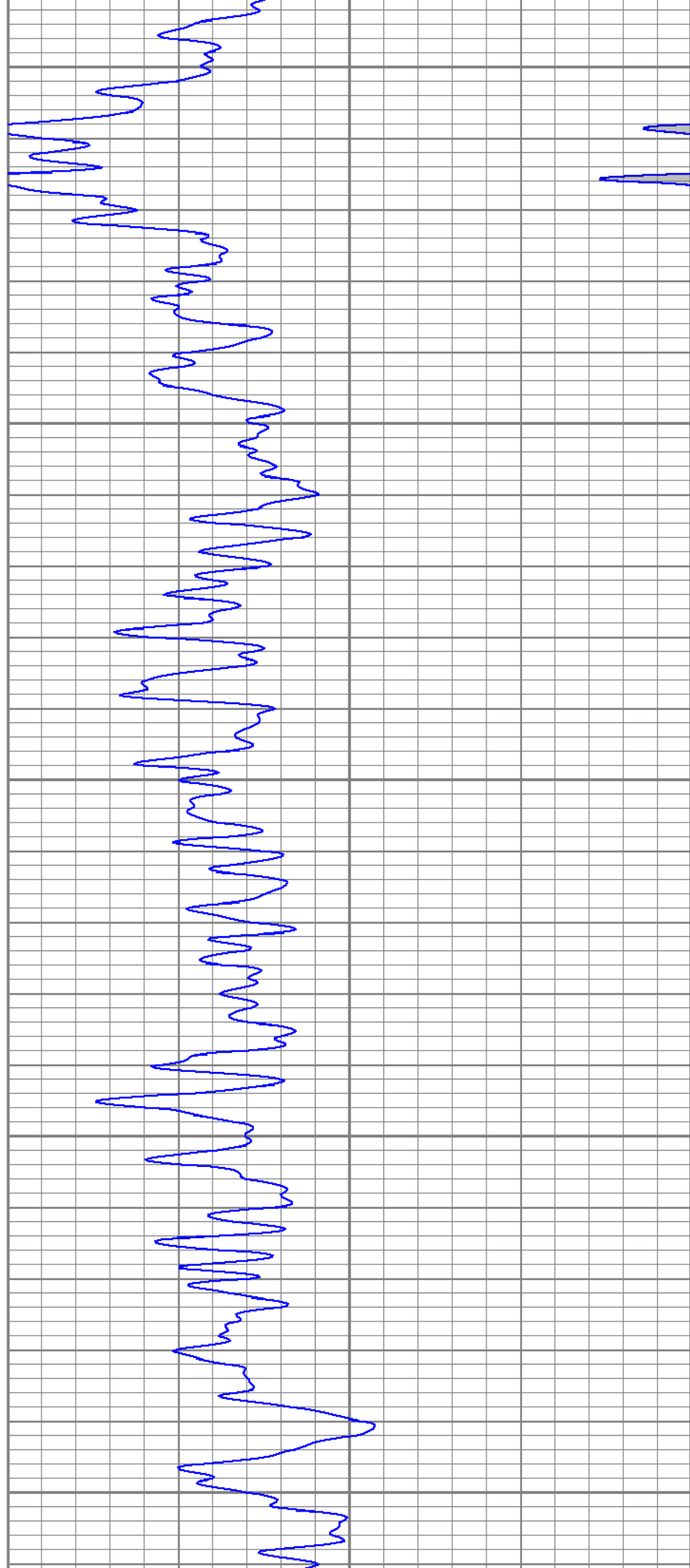
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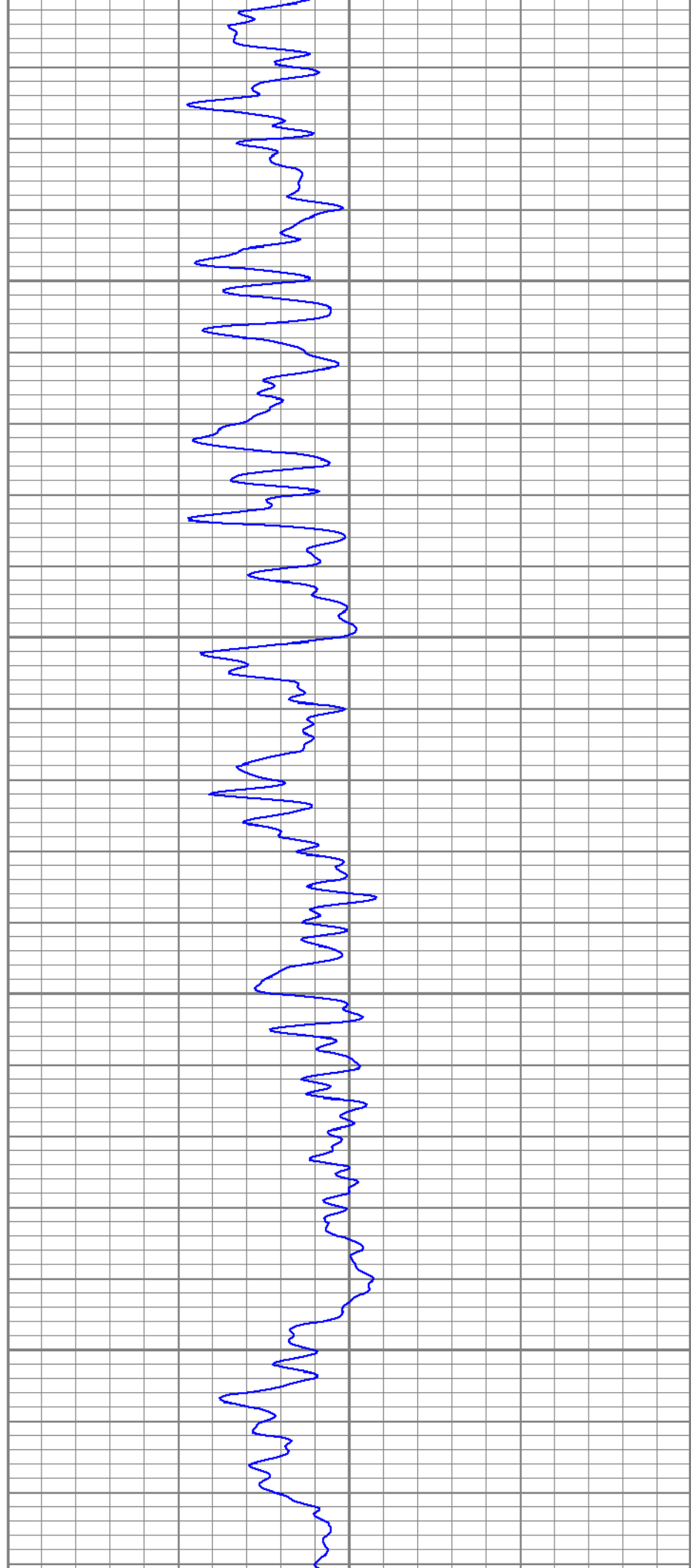
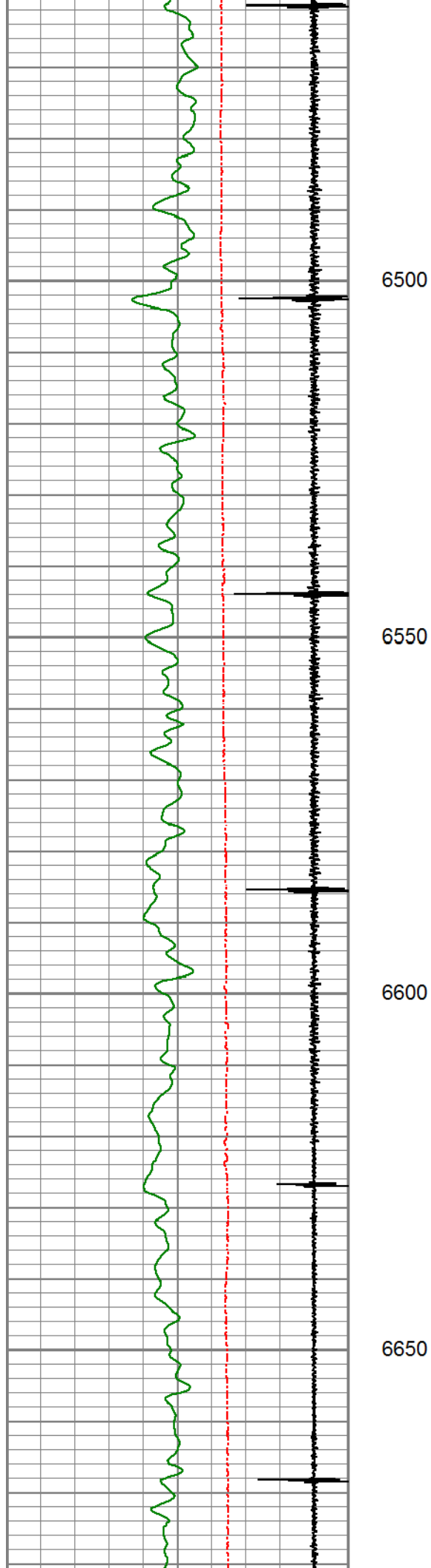
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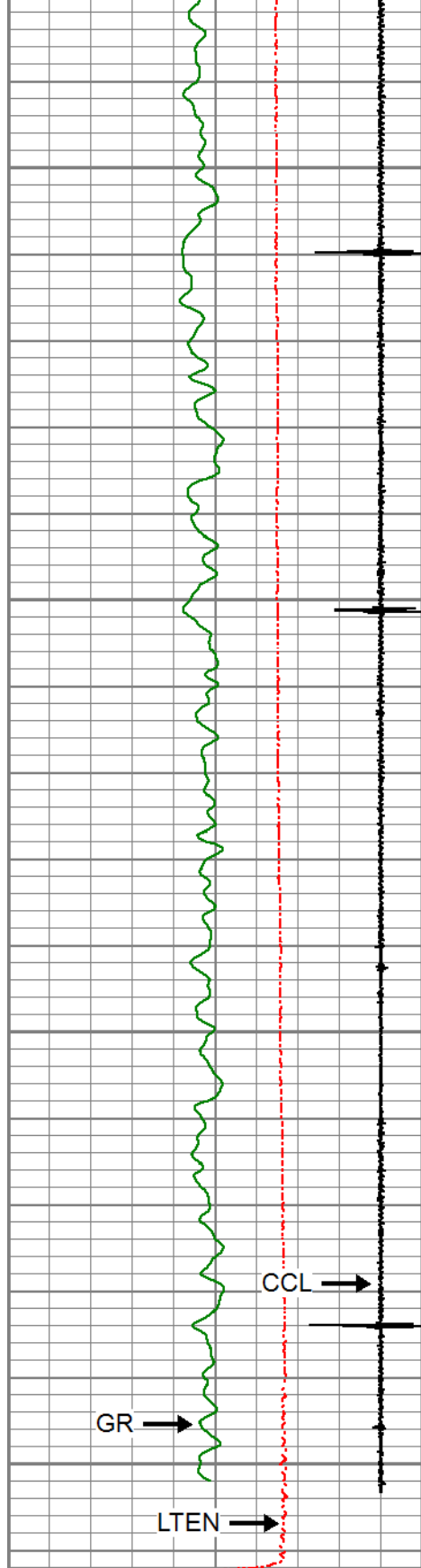
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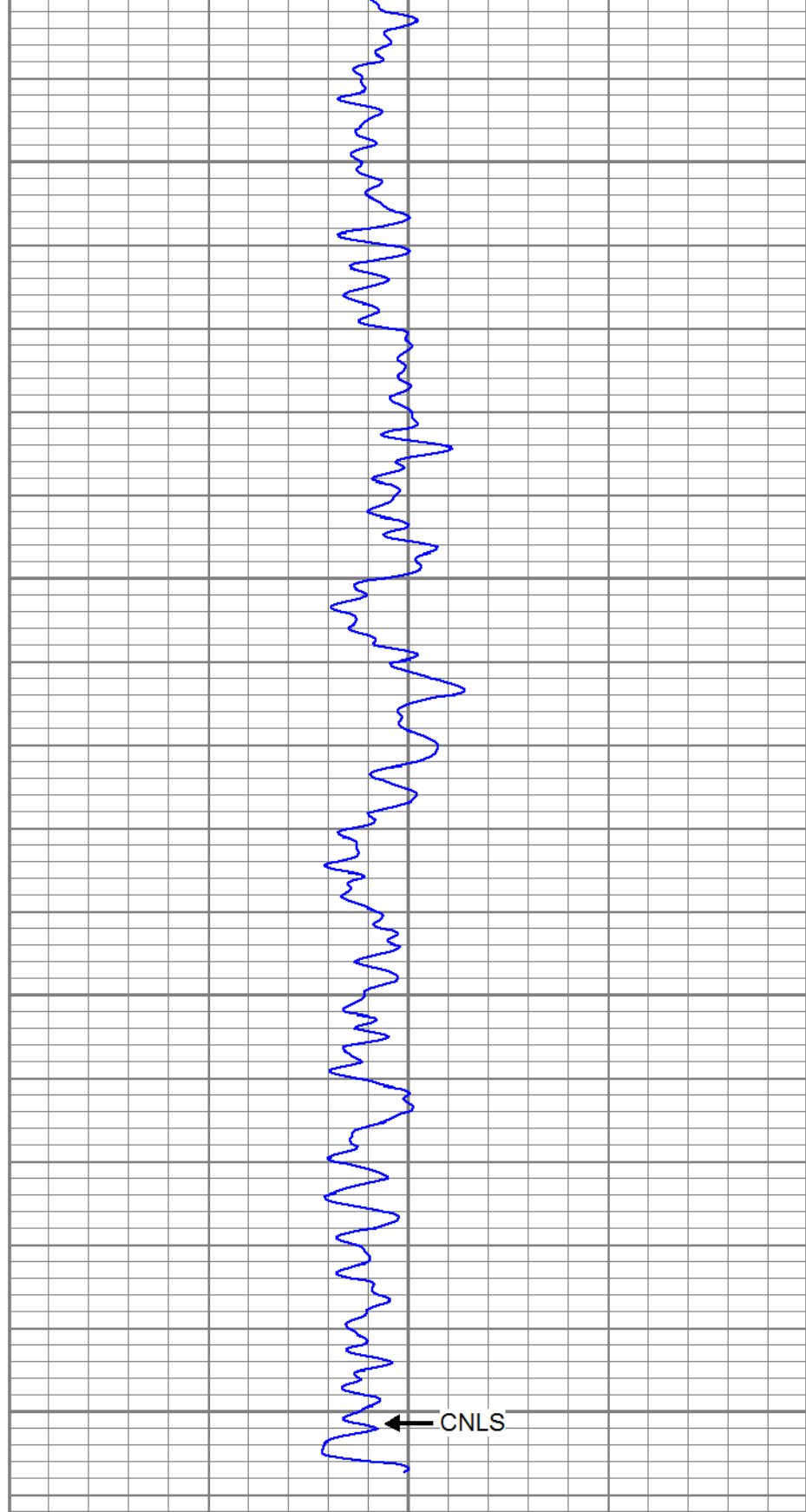
6850

GR →

LTEN →

CCL →

0	Gamma Ray (GAPI)	150
-9	Collars	1
150	Gamma Ray (GAPI)	300
0	LineTension (lb)	2000



← CNLS

40	CNPOR (pu)	0
80	CNPOR (pu)	40

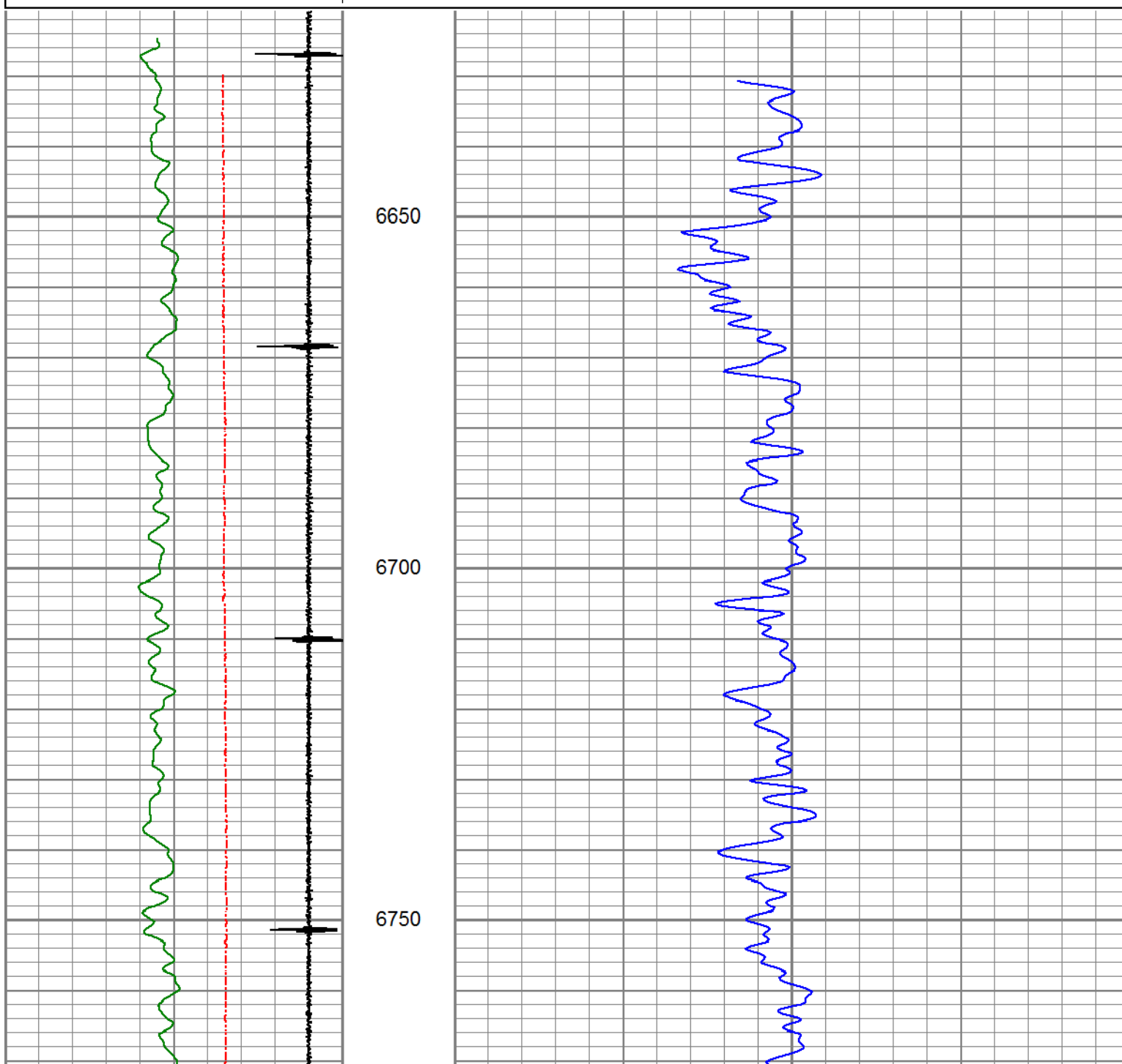


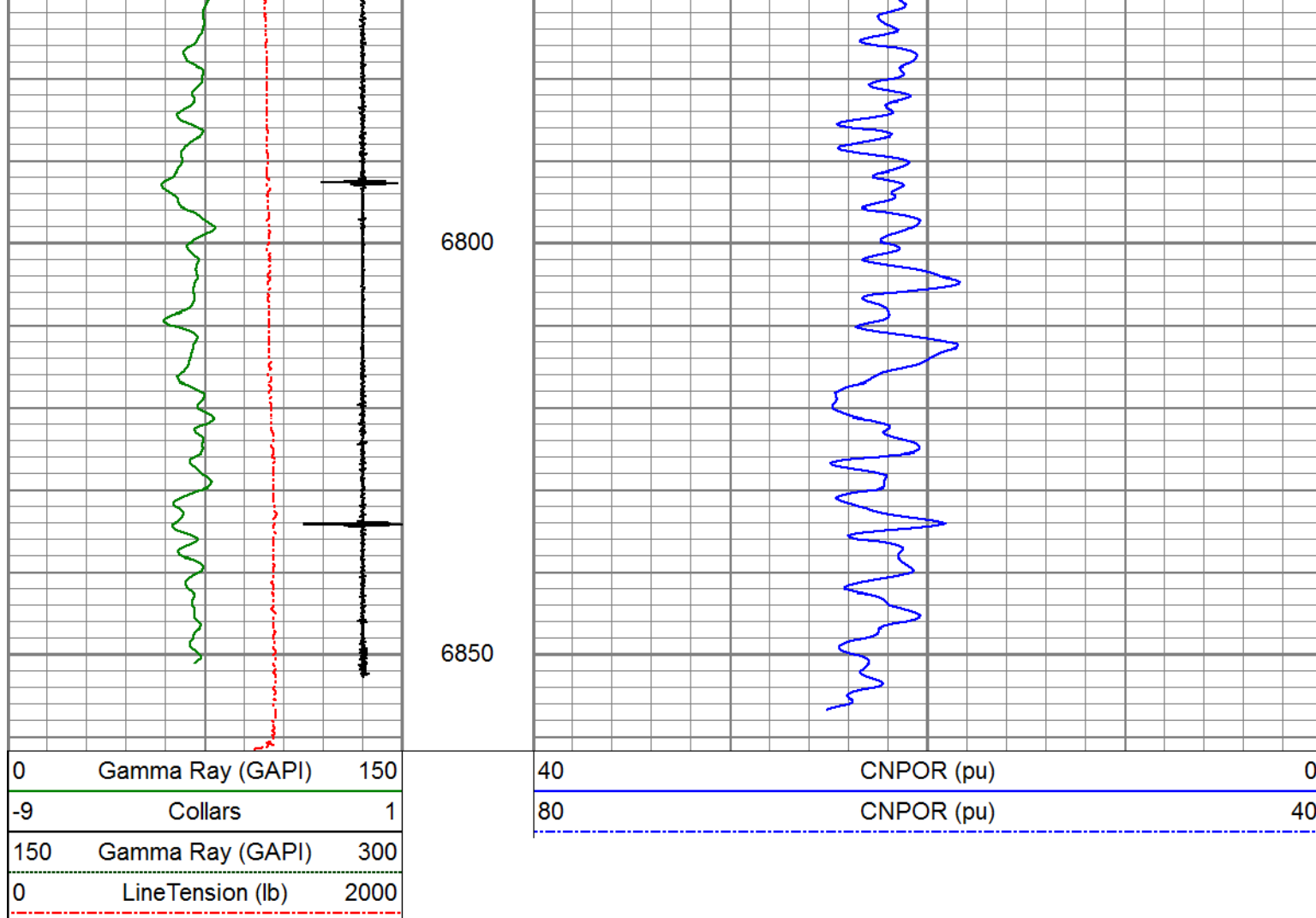
REPEAT SECTION

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Dataset Pathname pass3
Presentation Format pinr_cnl_co
Dataset Creation Tue Jul 23 13:51:43 2019
Charted by Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	150
-9	Collars	1
150	Gamma Ray (GAPI)	300
0	LineTension (lb)	2000

40	CNPOR (pu)	0
80	CNPOR (pu)	40






REPEAT SECTION

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<div> <div>Calibration Report</div> <div>Compensated Neutron Calibration Report</div> </div>				
<div> <div>Type / Serial:</div> <div>Source / Verifier:</div> <div>Temperature:</div> </div> <div> <div>PRB_DIG / 120508</div> <div>/</div> <div></div> </div>				
<div> <div>SHOP CALIBRATION</div> <div>Tue Nov 20 10:33:19 2012</div> </div>				
<div> <div>Cal Tube</div> <div>Units</div> </div>				
<div> <div>Tank Ratio</div> <div>Tank Porosity</div> <div>LS Detector</div> <div>SS Detector</div> <div>Tool Ratio</div> <div>Tool Porosity</div> </div> <div> <div>SS/LS</div> <div>pu</div> <div>cps</div> <div>cps</div> <div>SS/LS</div> <div>pu</div> </div>				
<div> <div>Tool Constant =</div> </div>				
<div> <div>Field Verifier</div> <div>SS Detector</div> <div>LS Detector</div> <div>Ratio</div> <div>Porosity</div> </div>				

PRE-SURVEY VERIFICATION				
	SS Detector	LS Detector	Ratio	Porosity
POST-SURVEY VERIFICATION				
	SS Detector	LS Detector	Ratio	Porosity
Gamma Ray Calibration Report				
Serial Number:	120926			
Tool Model:	275_6-PIN			
Performed:	Tue Jul 23 08:17:32 2019			
Calibrator Value:	1.0	GAPI		
Background Reading:	0.0	cps		
Calibrator Reading:	1.0	cps		
Sensitivity:	0.6800	GAPI/cps		

	Company	PDC ENERGY INC.
	Well	THORNTON 15Y-414
	Field	WATTENBERG
	County	WELD
	State	COLORADO