

LWD MEMORY LOG



Multiple Propagation Resistivity  
Gamma Ray

Scale: Company: Verdad Resources

1:600 Well: TIMBRO 9-59 8B-9-1

Measured Depth Field: Wattenberg

Depth Reference: County: Weld Country: United States

Driller's Depth State: Colorado

Status: Surface Location: Other Services:

Final Print Latitude: 040° 45' 42.102" N Longitude: 104° 00' 34.286" W

API No: 05-123-47568-00 SEC: 8 TWN: 9N RGE: 59W Wellbore Survey

Job ID: 109815551 Elevation: 0.00 ft Elev. KB: 24.00 ft

Permanent Datum (P.D.): Mean Sea Level Above P.D. 5028.00 ft Elev. DF: 5028.00 ft

Log Measured From: Rig Floor 5028.00 ft Elev. GL: 5004.00 ft

Dates Interval Drilled Magnetic Field Reference

Date From: 2019-05-25 Top: (ft) 1877.00 Azi Reference North: True Dip Angle: (deg) 67.19

Date To: 2019-05-29 Bottom: (ft) 16378.00 Total Magnetic Field Strength: (nT) 52484

Spud Date: 2019-05-24 Mag to Reference North Correction: (deg) 7.78

Borehole Record

Casing Record

Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)
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13.500	80.00	1877.00	16.000	42.00	24.00	80.00
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8.500	1877.00	16378.00	9.625	36.00	80.00	1867.00
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Mud Record

Deviation Record

Type	From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Inc   Az (Start)	Inc   Az (End)
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Synthetic Based Mud	1877.00	16378.00	13.500	1797.00	0.37   287.77	18.54   333.52
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			8.500	14501.00	18.54   333.52	90.25   90.05
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Acquisition System Software Version

Other

Baker Hughes Cadence RT 5.0 H&P290

Pilot Studio 5.0.8260.3 Contractor: Helmerich & Payne Drilling Co Unit: RMA District: RMD

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Log Run Summary

Run No	Bit Run No.	Bit Size (in)	Bit Type	Bit Gauge Length (in)	Assembly Type	Logged Interval		Bit Depth Interval		Date / Time		Circ. Hours (h)
						Top (ft)	Bottom (ft)	From (ft)	To (ft)	Start Logging	End Logging	
2	2	8.500	PDC	3.00	AutoTrak Curve	1877.00	6041.00	1877.00	16378.00	2019-05-25 19:57	2019-05-28 22:11	69.71

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Emuobosan Onosu	2019-05-24	2019-05-29						

Mud Properties Record

Date / Time	Run No.	Measured Depth (ft)	Mud Type	Density (ppg)	Viscosity (cP)	pH	Fluid Loss (cm3)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
2019-05-25 14:00	2	1877.00	Synthetic Based Mud	9.4	59	N/A	N/A	70/30	Active Pit	35000	0.00
2019-05-26 05:02	2	3592.00	Synthetic Based Mud	9.3	64	N/A	N/A	71/29	Active Pit	45000	0.00
2019-05-26 08:33	2	4077.00	Synthetic Based Mud	9.4	55	N/A	N/A	70/30	Active Pit	49000	0.00
2019-05-26 20:00	2	6800.00	Synthetic Based Mud	9.4	51	N/A	N/A	69/31	Active Pit	49000	0.00
2019-05-27 08:19	2	9380.00	Synthetic Based Mud	9.7	47	N/A	N/A	70/30	Active Pit	45000	0.00
2019-05-27 20:00	2	11591.00	Synthetic Based Mud	9.8	50	N/A	N/A	70/30	Active Pit	45000	0.00

2019-05-28 09:27	2	14321.00	Synthetic Based Mud	9.9	47	N/A	N/A	69/31	Active Pit	44000	0.00
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Mud Resistivity Record

				Surface				Downhole		
Date / Time	Run No.	Measured Depth (ft)	Surface Temp (degF)	Rm (ohm.m)	Rmf (ohm.m)	Rmc (ohm.m)	BHCT (degF)	Rm @ BHCT (ohm.m)	Rmf @ BHCT (ohm.m)	Rmc @ BHCT (ohm.m)
2019-05-27 05:58	2	1877.00	150.0	100.000	100.000	100.000	200.0	100.000	100.000	100.000
2019-05-28 05:59	2	6051.00	200.0	100.000	100.000	100.000	250.0	100.000	100.000	100.000

Equipment and Service Data

Run No.	Tool	Serial Number	Measurement	Sensor Offset (ft)	Bit Offset (ft)	Max O.D. (in)	Min I.D. (in)
2	AutoTrak Curve Steering Unit	14178991	Near Bit Inclination	5.93	6.74	7.000	4.330
2	AutoTrak Curve Steering Unit	14178991	Near Bit VSS	5.93	6.74	7.000	4.330
2	AutoTrak Curve MWD	14179563	Gamma (single)	2.76	12.91	7.000	3.250
2	AutoTrak Curve MWD	14179563	Directional (mag)	12.27	22.42	7.000	3.250
2	OnTrak	11768343	Pressure	1.19	10336.20	6.750	3.250
2	OnTrak	11768343	Gamma (double)	2.08	10337.09	6.750	3.250
2	OnTrak	11768343	Resistivity (4tx)	6.12	10341.13	6.750	3.250
2	OnTrak	11768343	Directional (mag)	11.91	10346.92	6.750	3.250

Service and Tool Mnemonics

Mnemonic	Name	Description
ATC SU	AutoTrak Curve SU	Auto Trak Curve Steering Unit
ATC MWD	AutoTrak Curve MWD	Auto Trak Curve MWD
ATC LCPM	AutoTrak Curve LCPM	Auto Trak Curve LCPM
OTK	OnTrak	Sensor Sub (Inc, Azi, Temp, Azimuthal GR, Res, AP, VSS), OnTrak Platform
BCPM	BCPM	Bi-Directional Communication and Power Module, OnTrak Platform

Comments

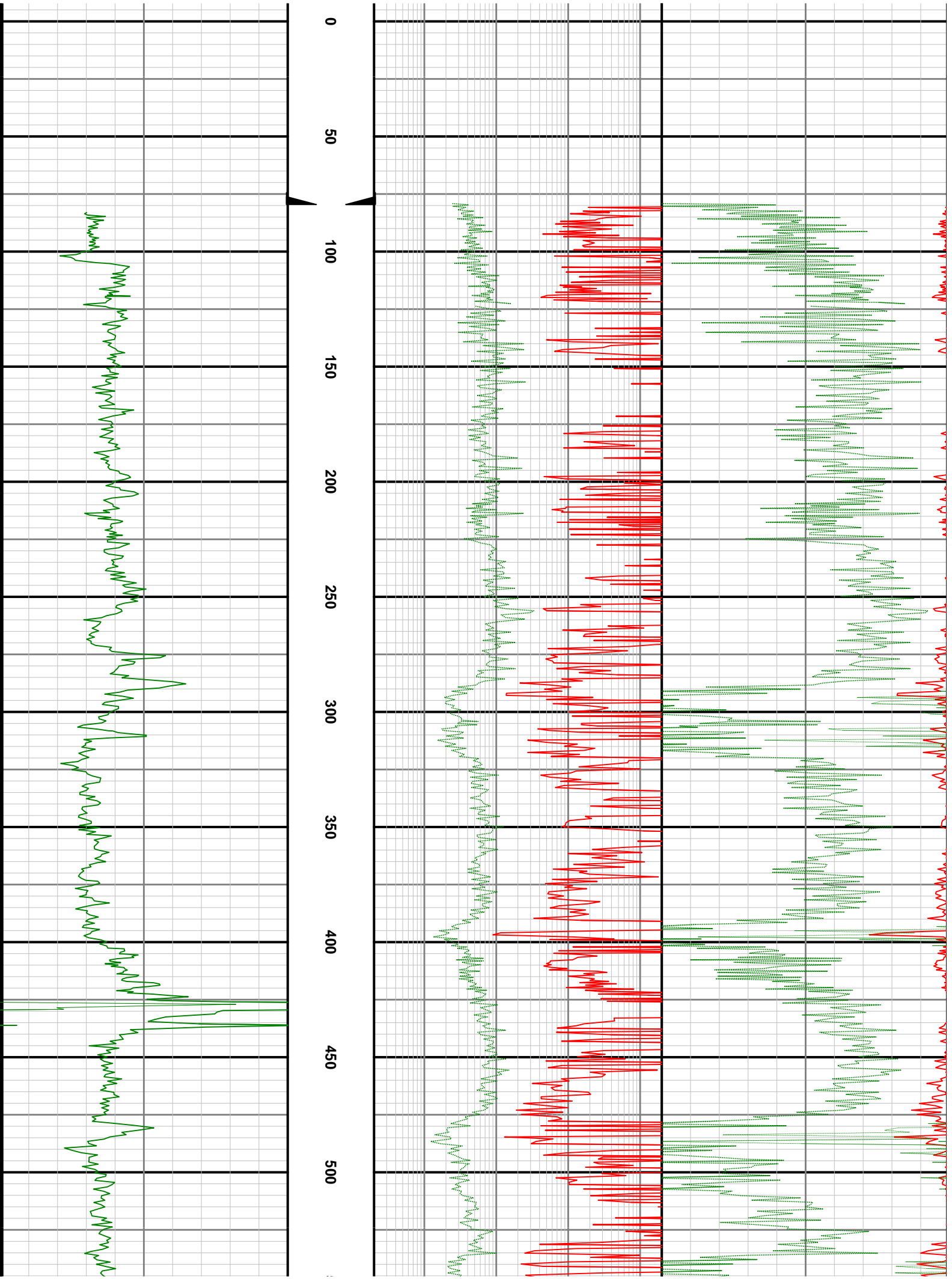
1	Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
2	Baker Hughes Run 2 utilized 6 3/4 inch OnTrak services (Multiple Propagation Resistivity, Gamma Ray and Directional) to log the interval from 1877 to 6041 feet MD (1826 to 5824 feet TVD).

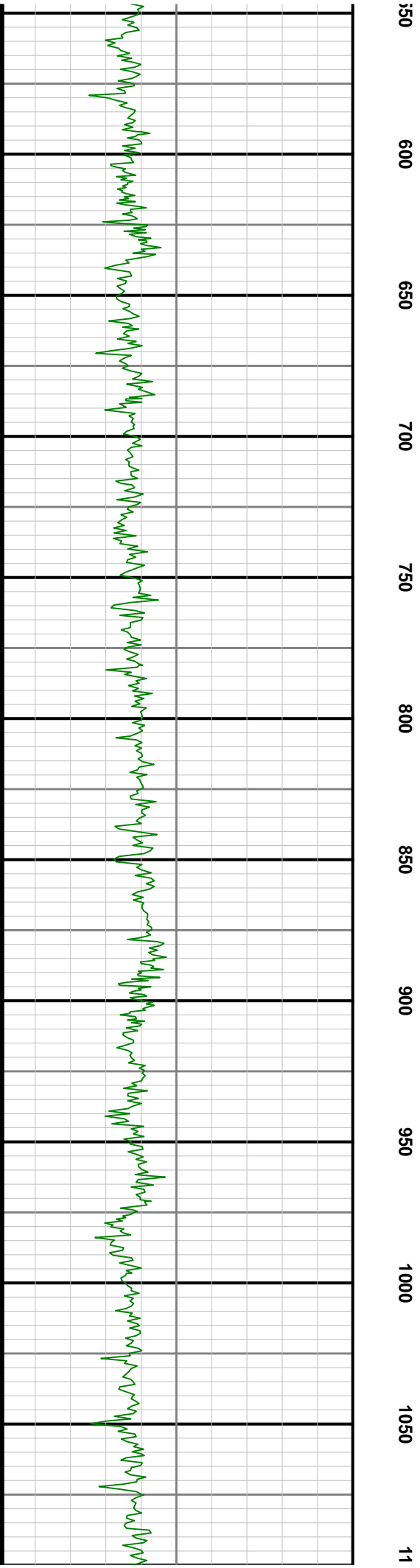
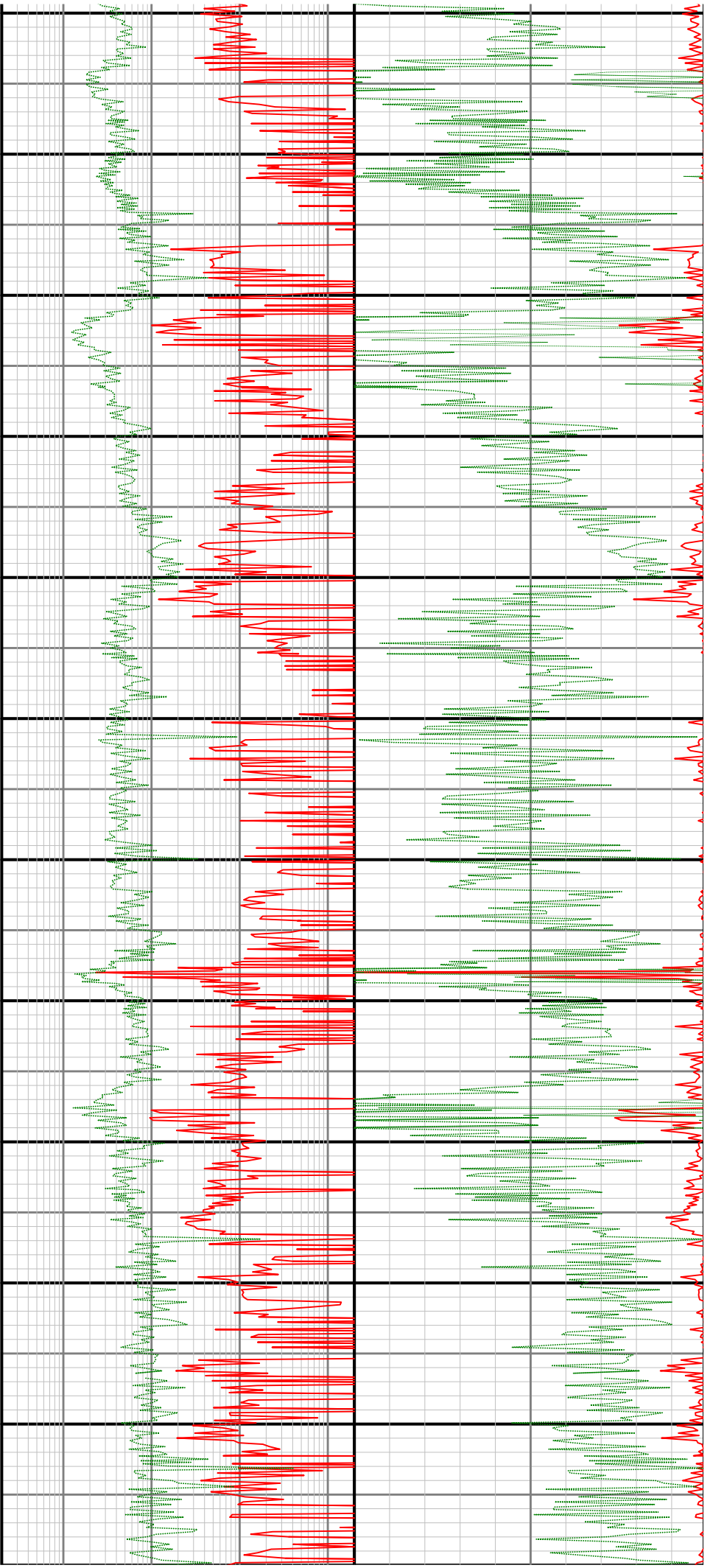
Remarks

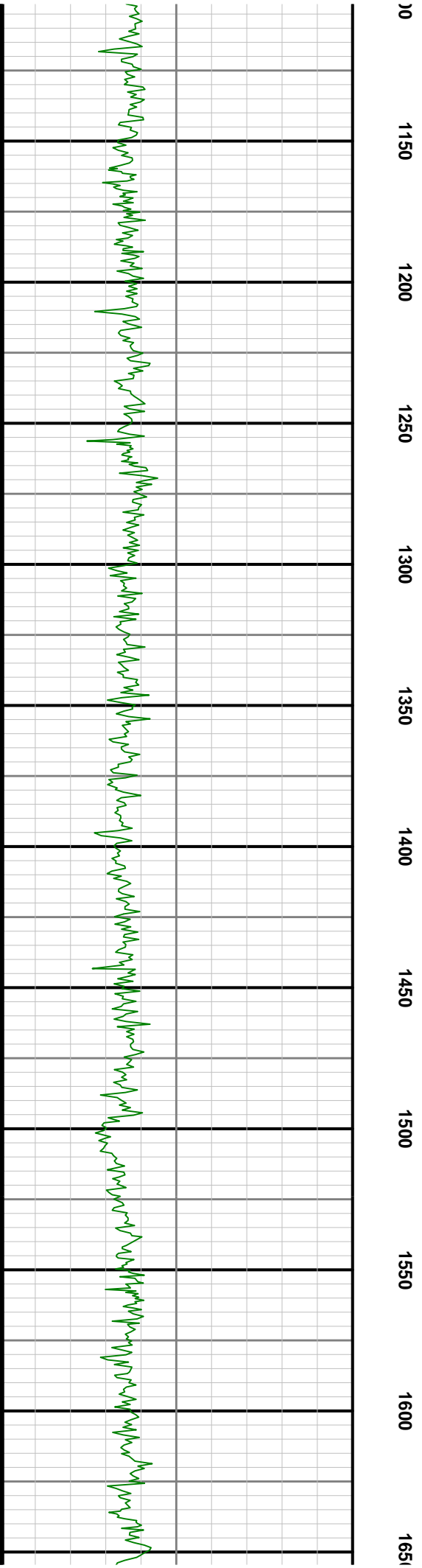
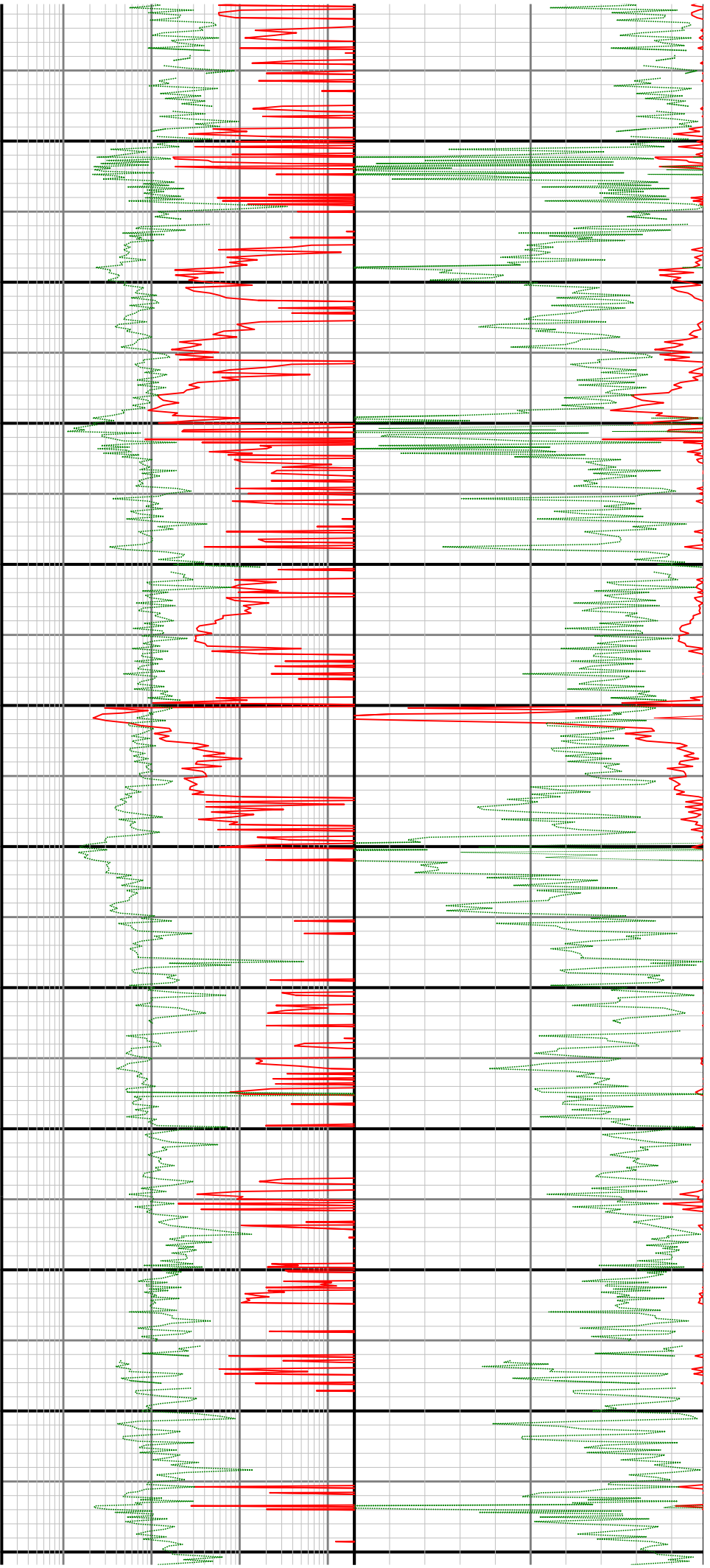
Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	6050.00	8.500	2	The interval from 6041 to 16378 feet MD (5824 to 6151 feet TVD) was not logged due to sensor to bit offset at Section TD.

<div> <div>BAKER HUGHES</div> <div>a GE company</div> </div>	Company	Verdad Resources	
	Well	TIMBRO 9-59 8B-9-1	
	Interval	Date From: 2019-05-25 08:37	Top: 1877.00 ft
	Created	Date To: 2019-05-29 05:08	Bottom: 16378.00 ft
		2019-05-29 07:56:15	

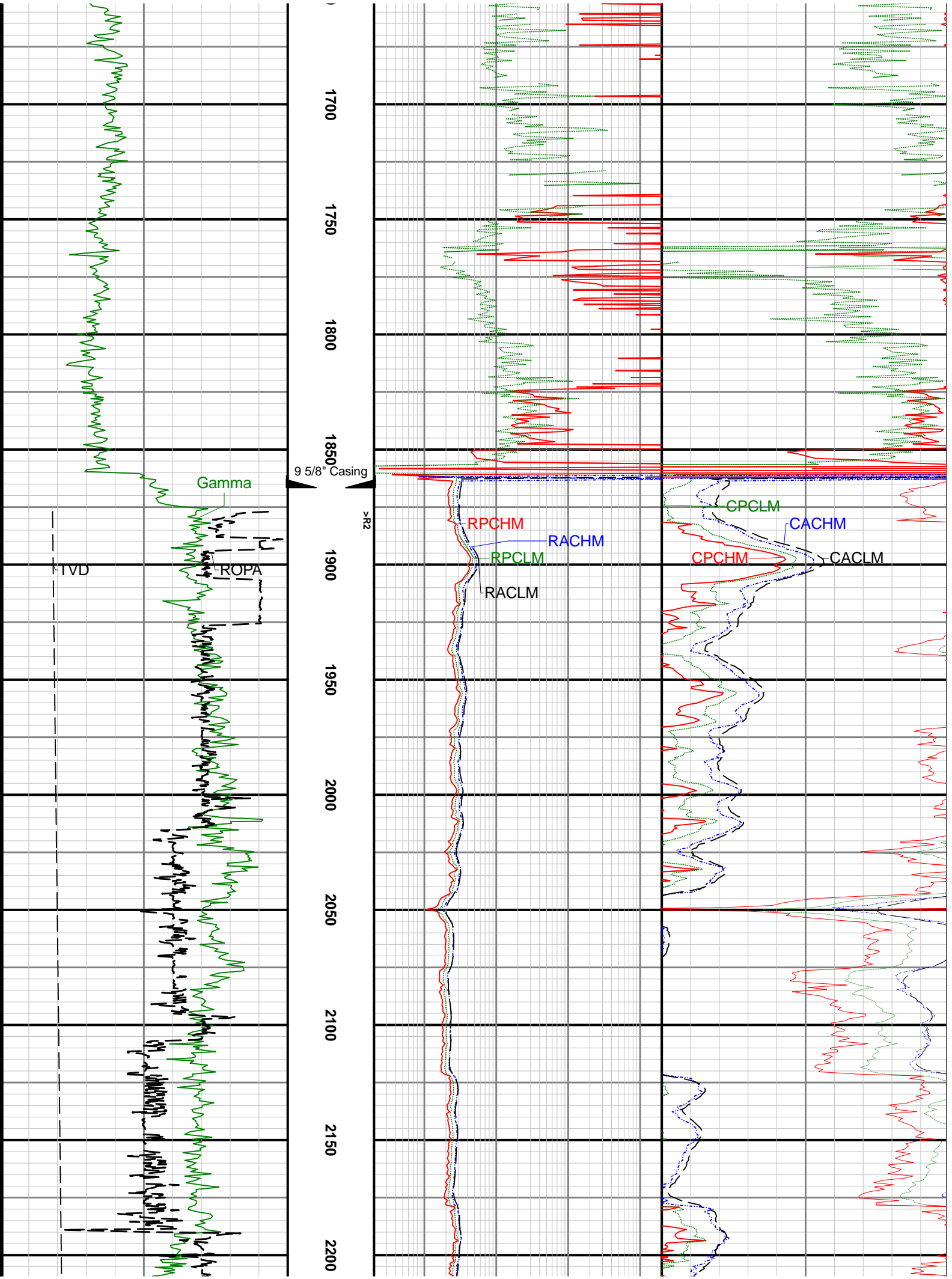
<div>Gamma Ray - Apparent - Memory</div> <div>0150</div>	MD 1:600 feet	<div>Resistivity Phase - Corrected - 2MHz</div> <div>0.22000</div>	<div>Conductivity Phase - Corrected - 2MHz</div> <div>4000</div>	
<div>API</div>		<div>ohm.m</div>	<div>mmho/m</div>	
<div>Directional Real-Time Survey Temperature</div> <div>100200</div>		<div>Resistivity Phase - Corrected - 400kHz</div> <div>0.22000</div>	<div>Conductivity Phase - Corrected - 400kHz</div> <div>4000</div>	
<div>degF</div>		<div>ohm.m</div>	<div>mmho/m</div>	
<div>Depth Averaged ROP</div> <div>10000</div>		<div>Resistivity Attenuation - Corrected - 2MHz</div> <div>0.22000</div>	<div>Conductivity Attenuation - Corrected - 2MHz</div> <div>4000</div>	
<div>ft/h</div>		<div>ohm.m</div>	<div>mmho/m</div>	
<div>True Vertical Depth</div> <div>010000</div>		<div>Resistivity Attenuation - Corrected - 400kHz</div> <div>0.22000</div>	<div>Conductivity Attenuation - Corrected - 400kHz</div> <div>4000</div>	
<div>ft</div>		<div>ohm.m</div>	<div>mmho/m</div>	

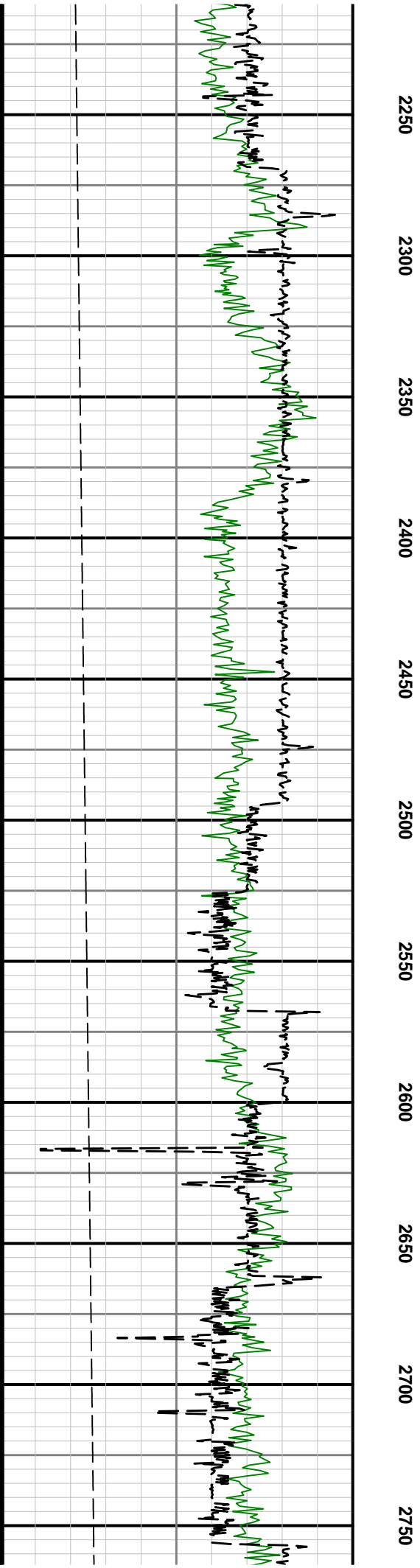
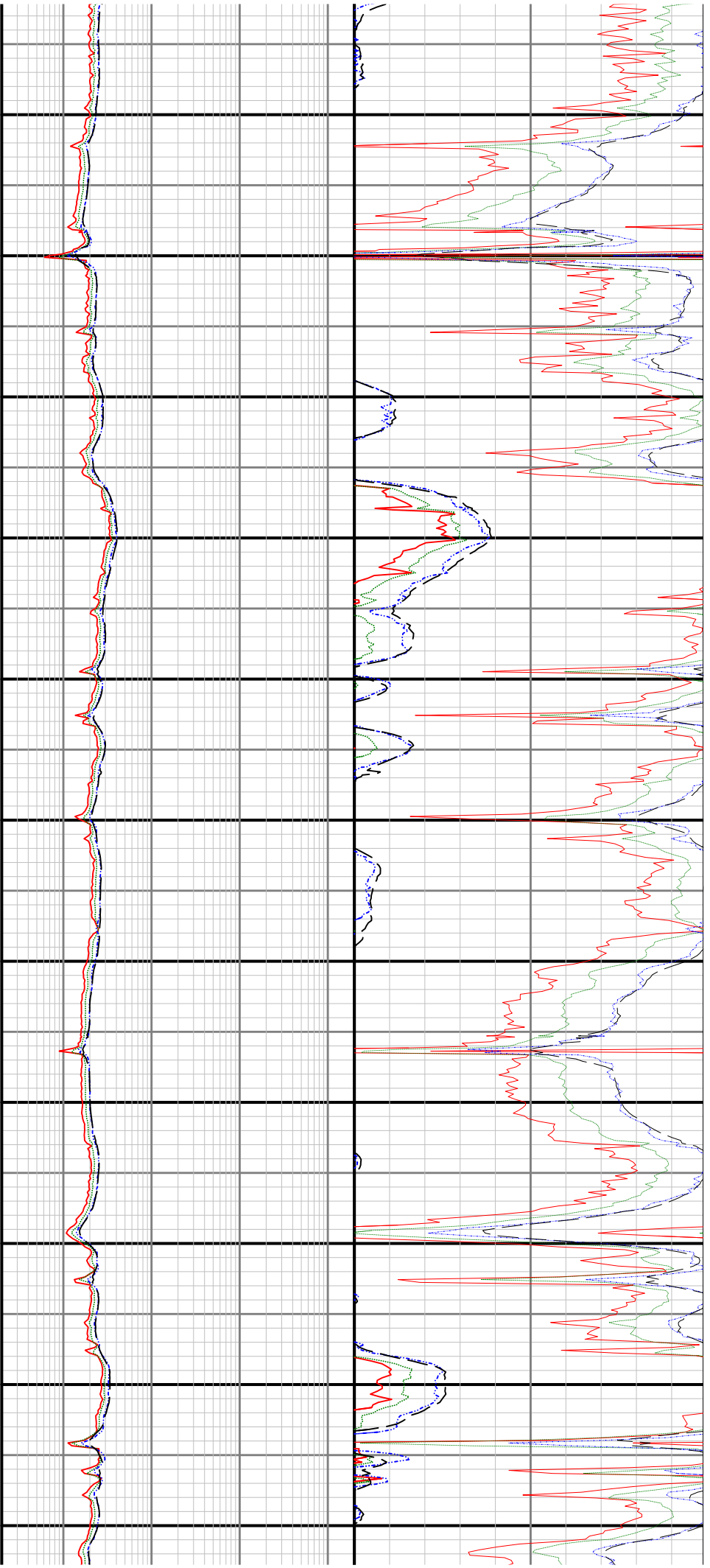


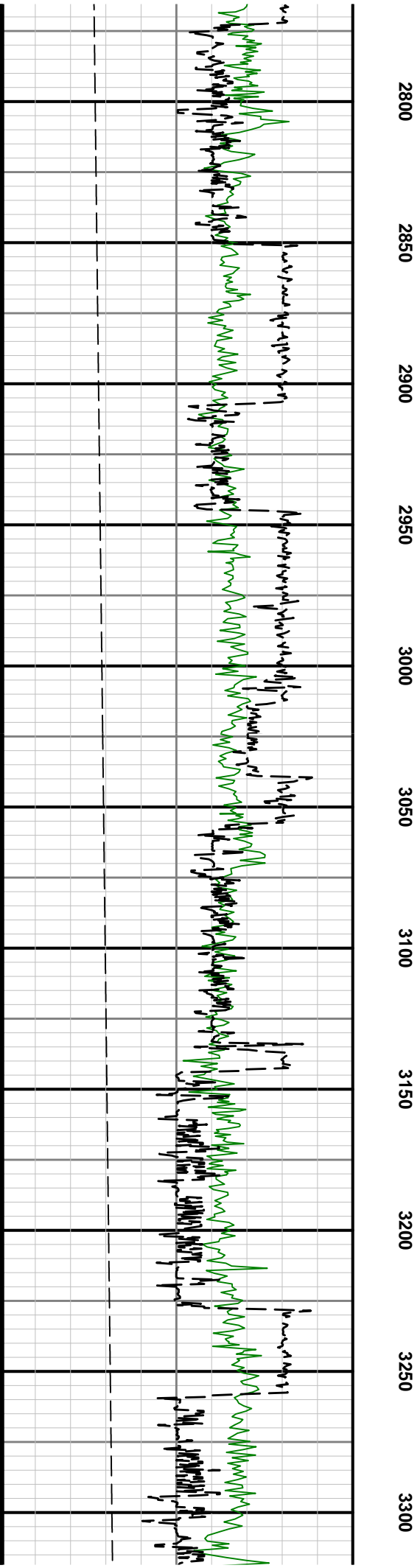
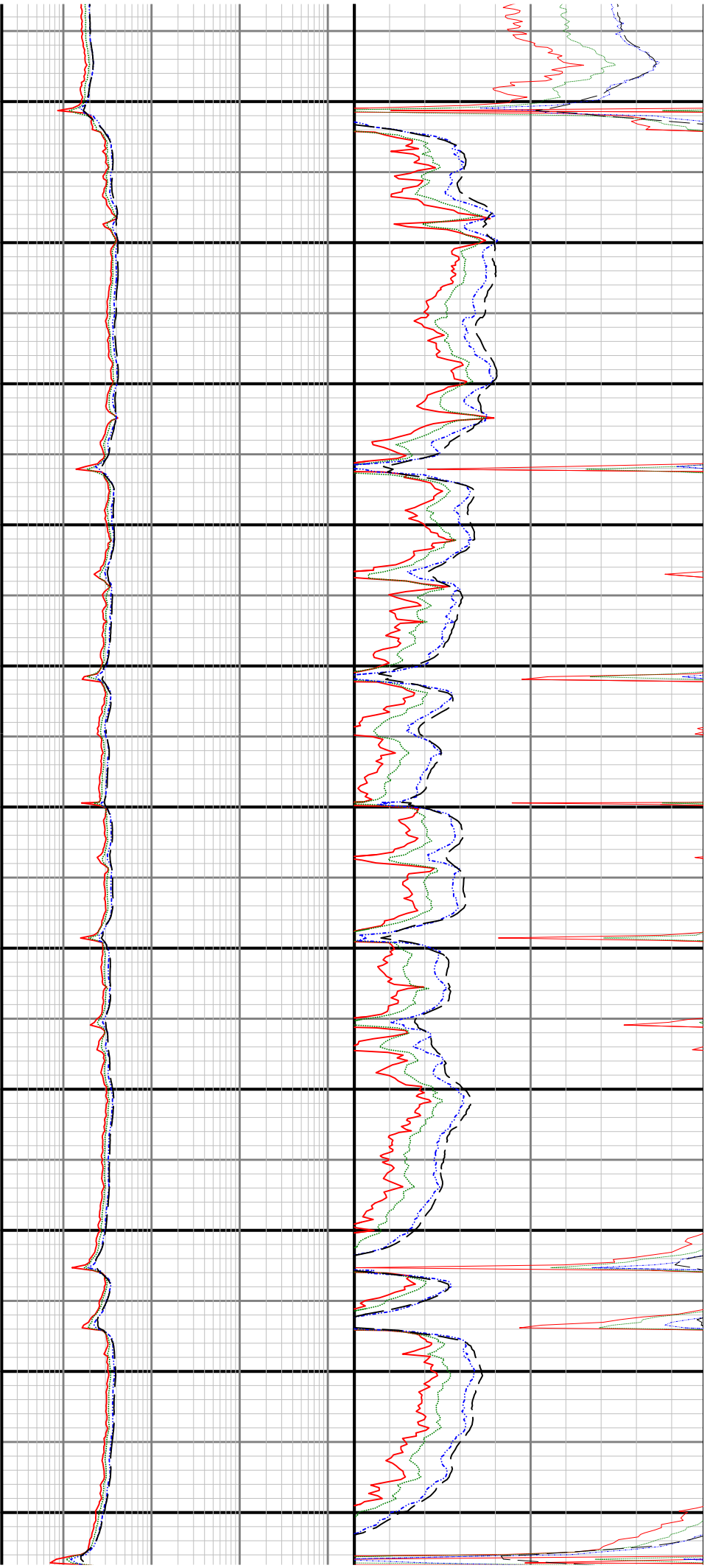




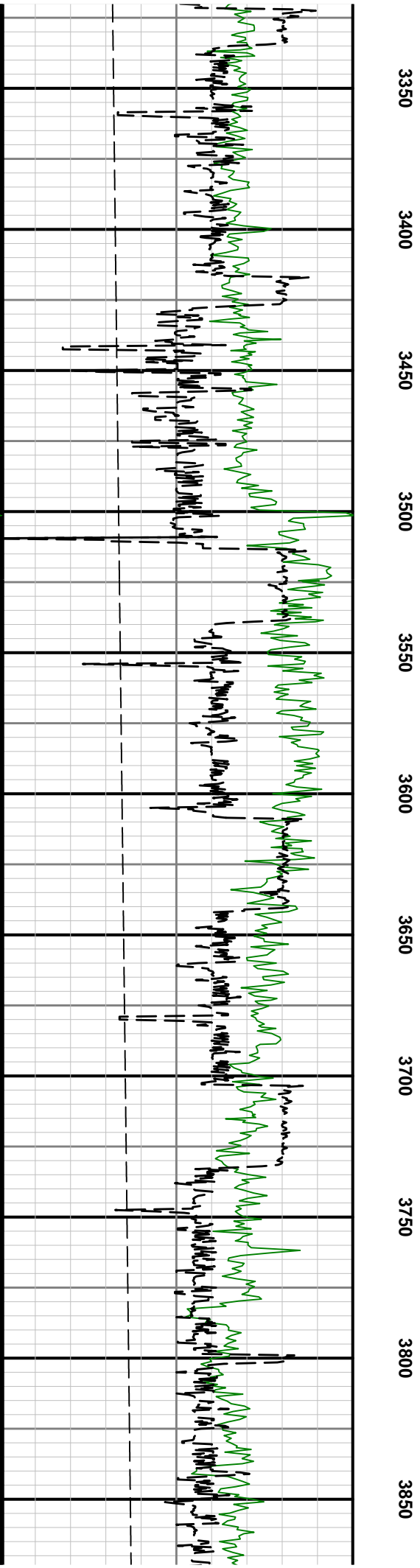
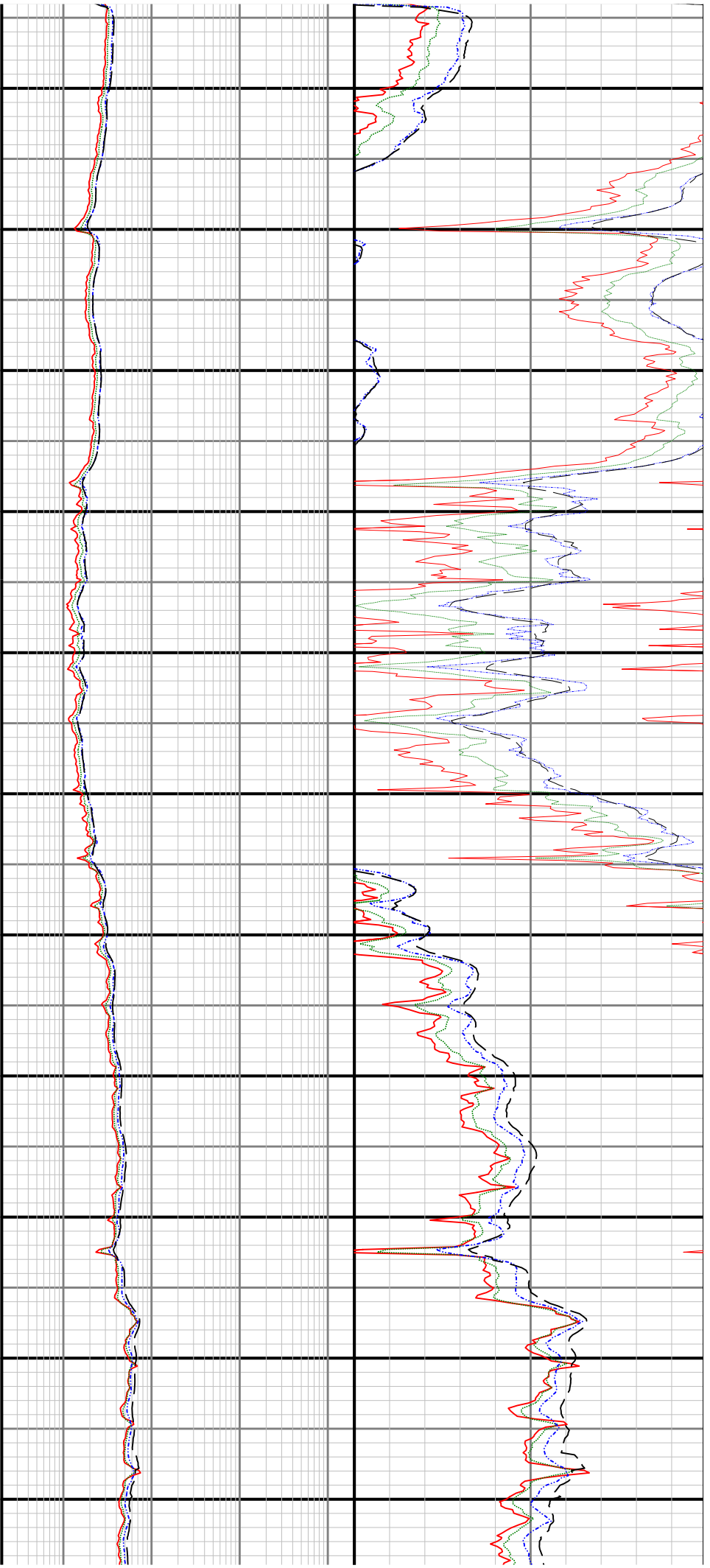


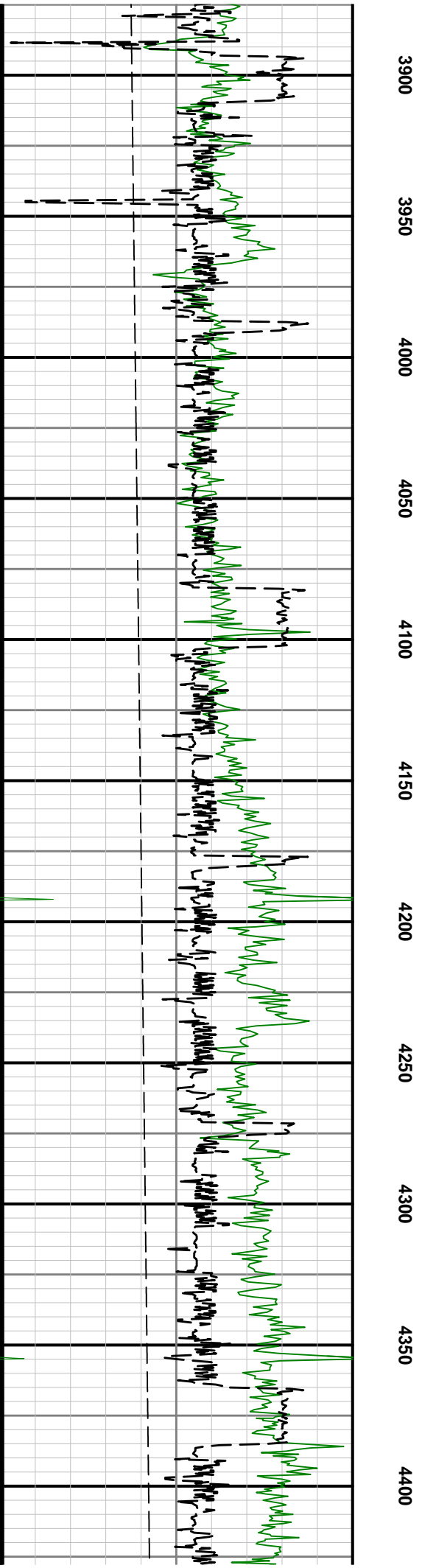
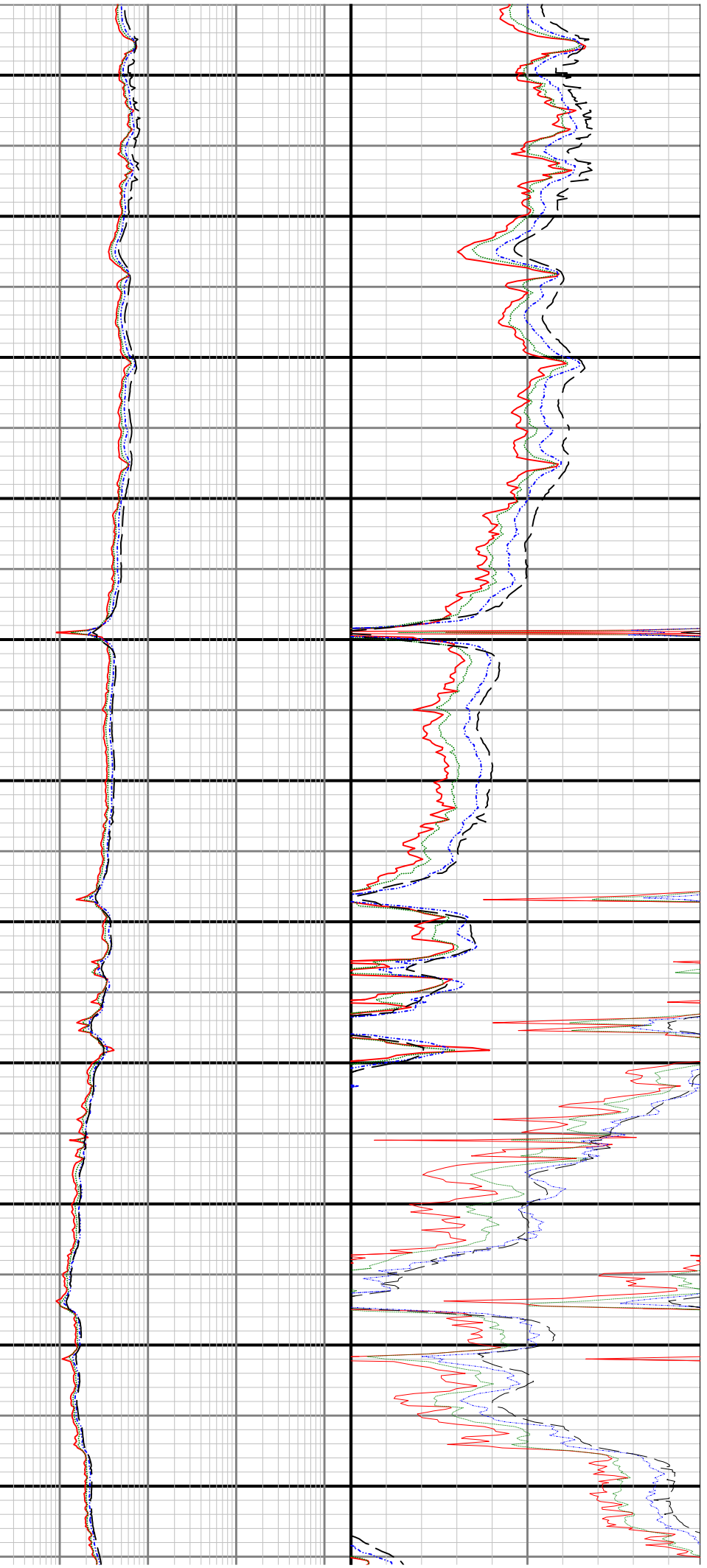


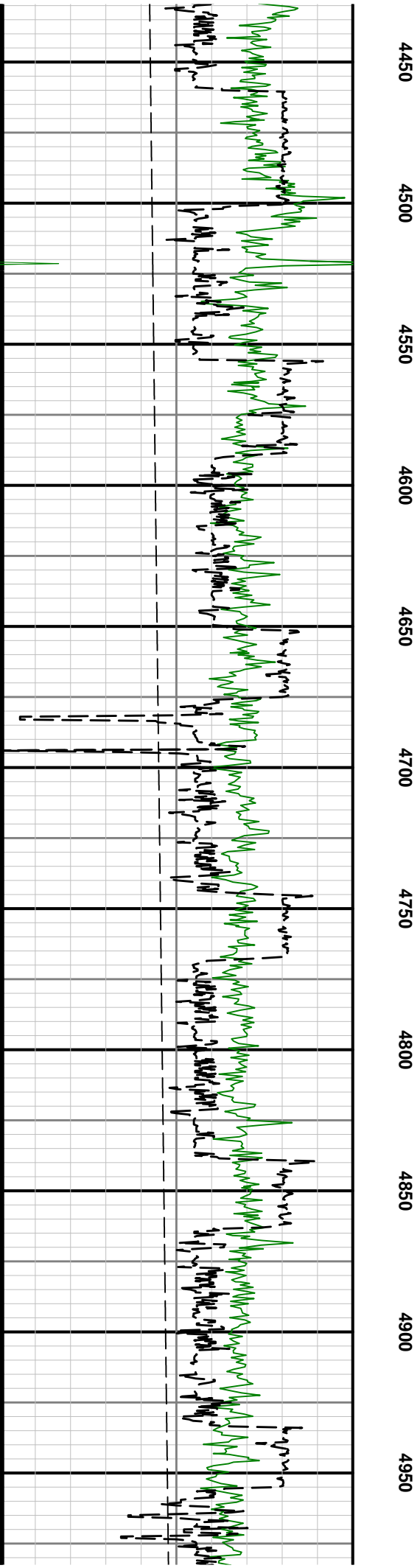
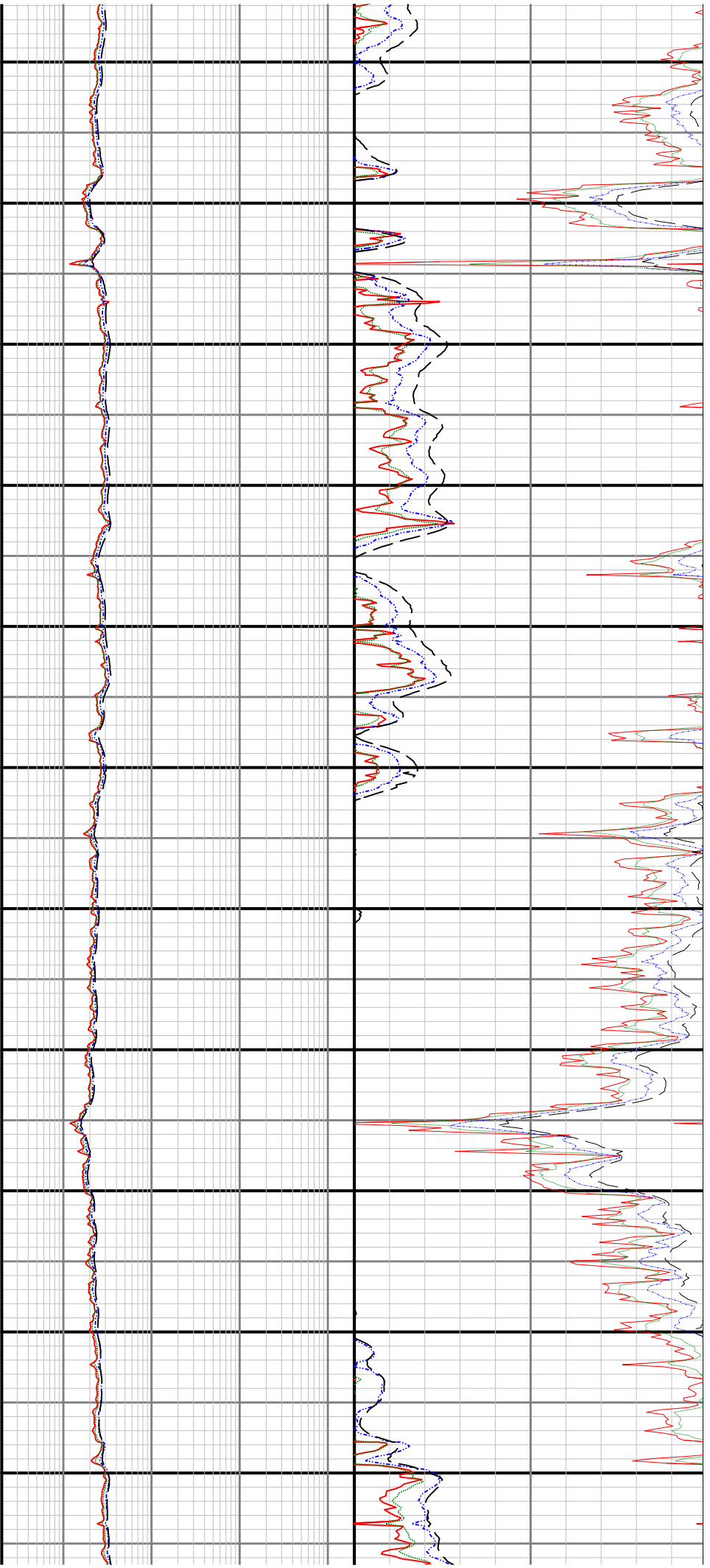


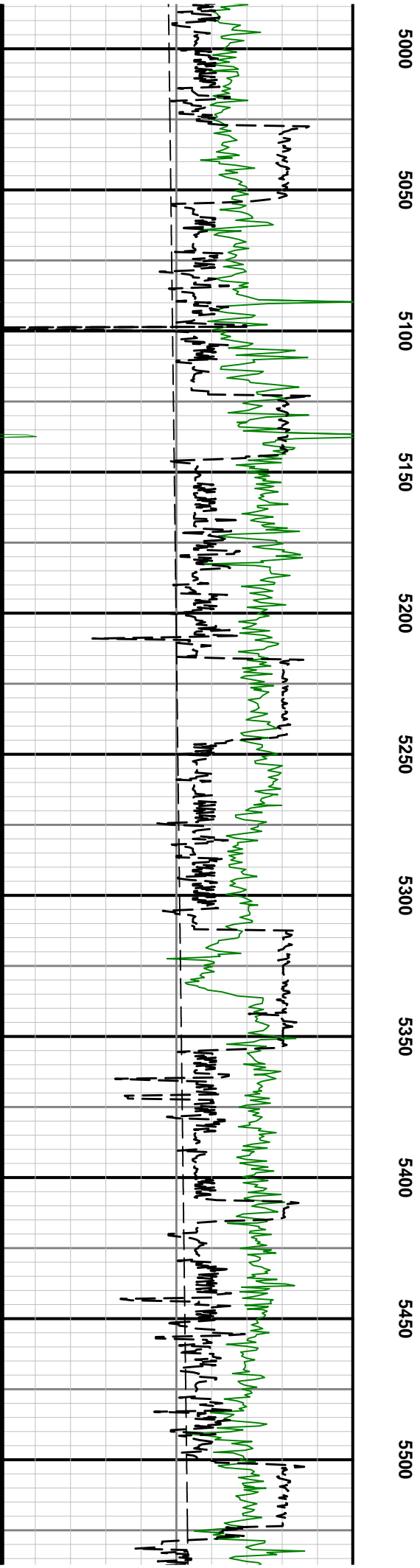
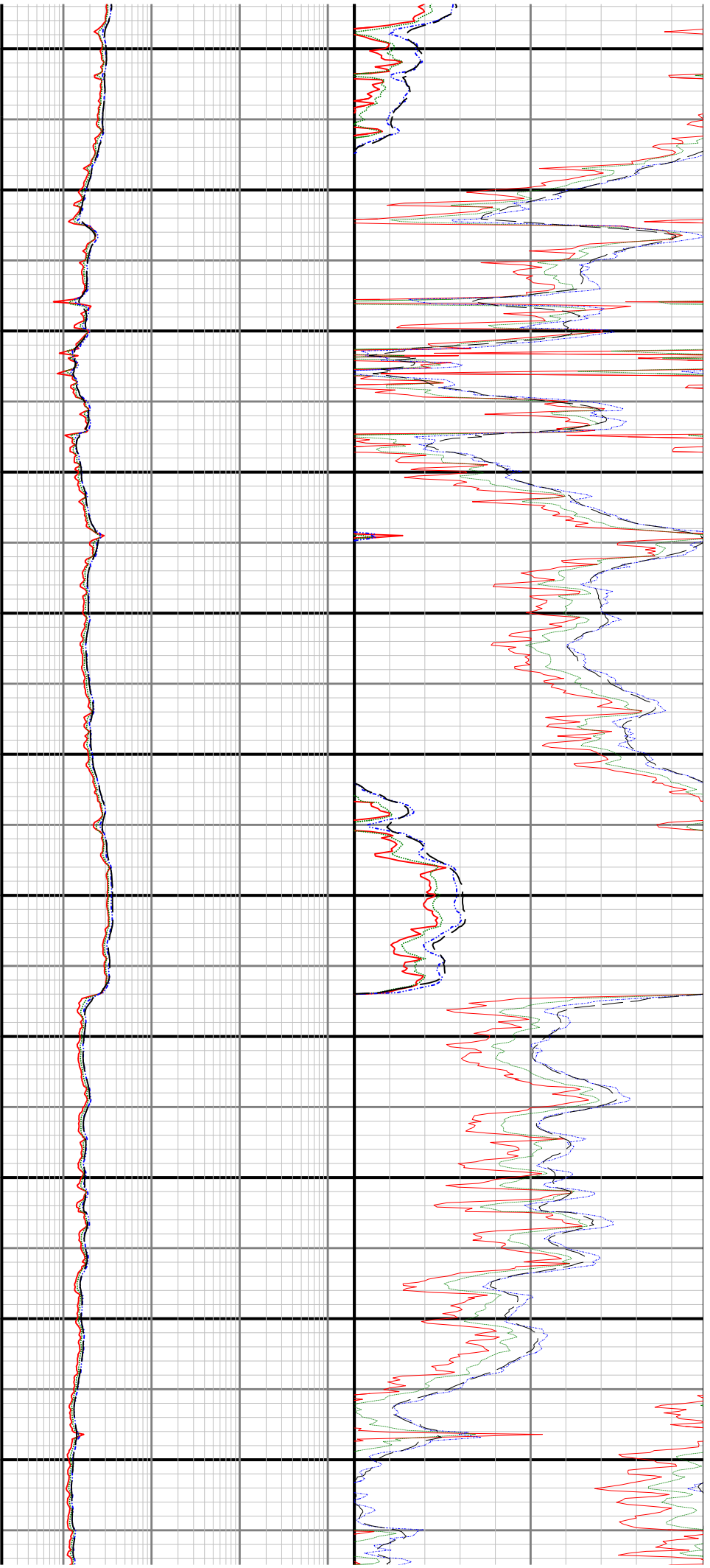


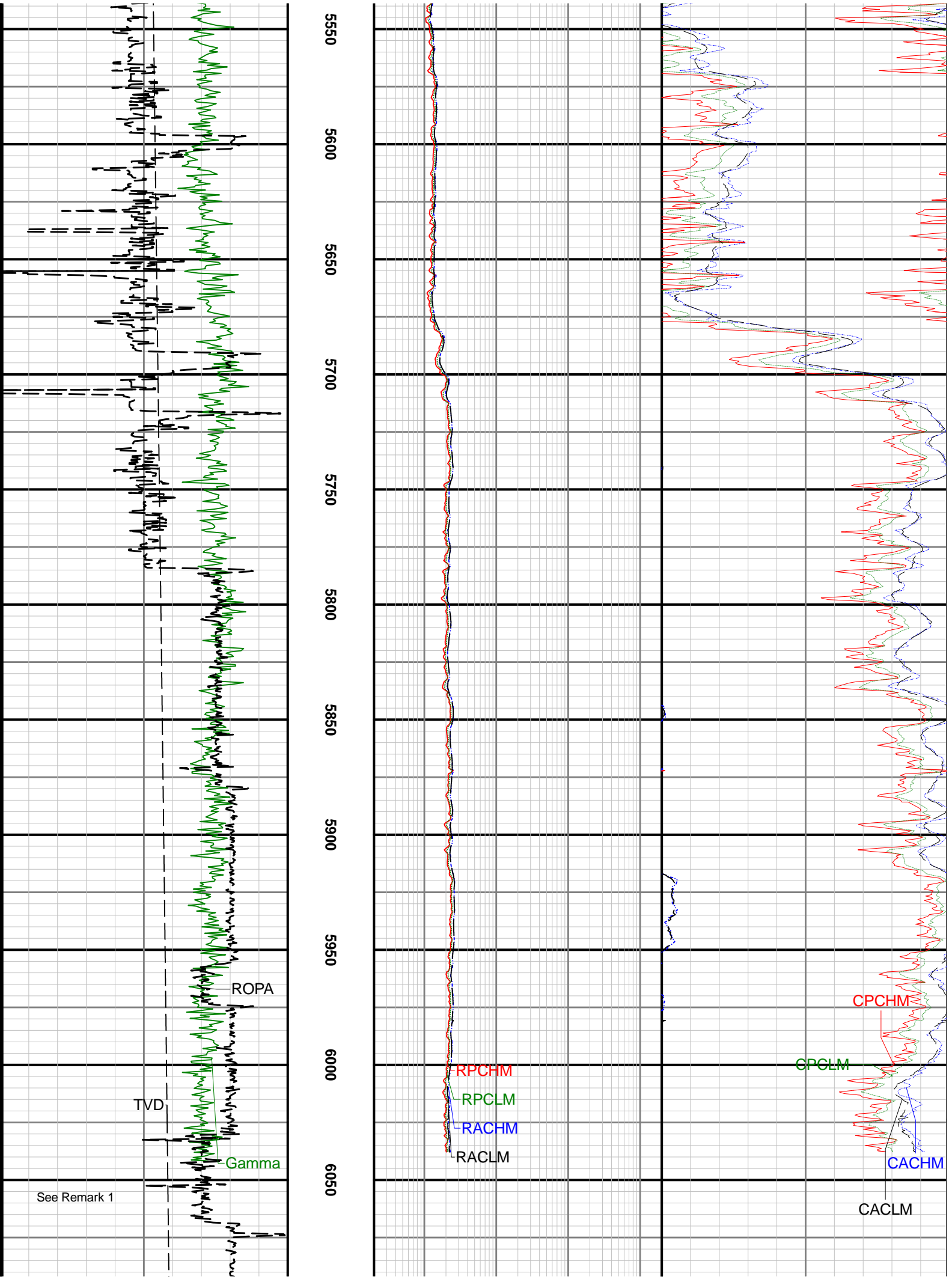






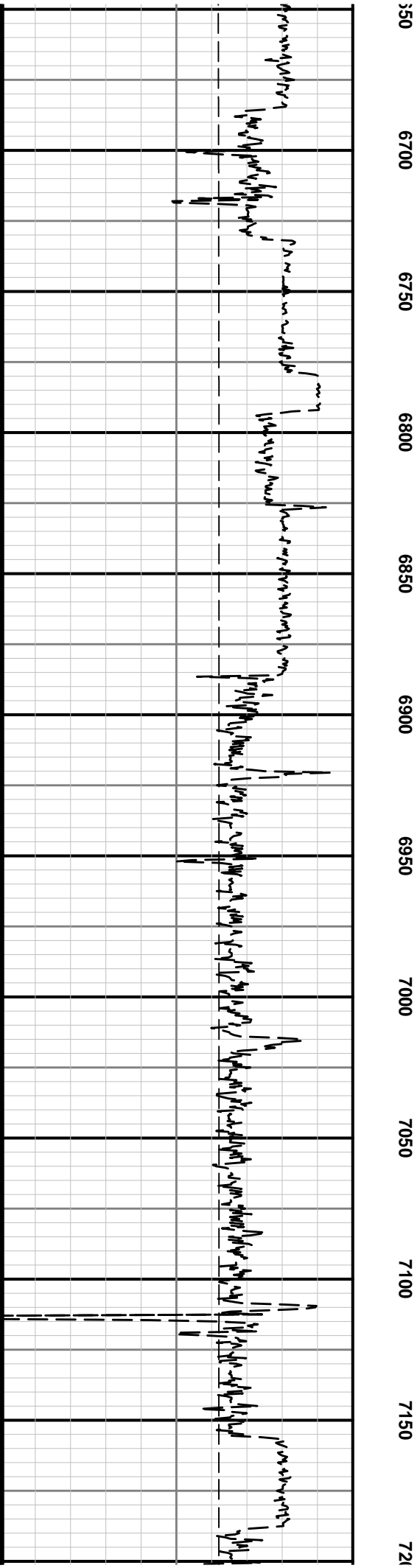
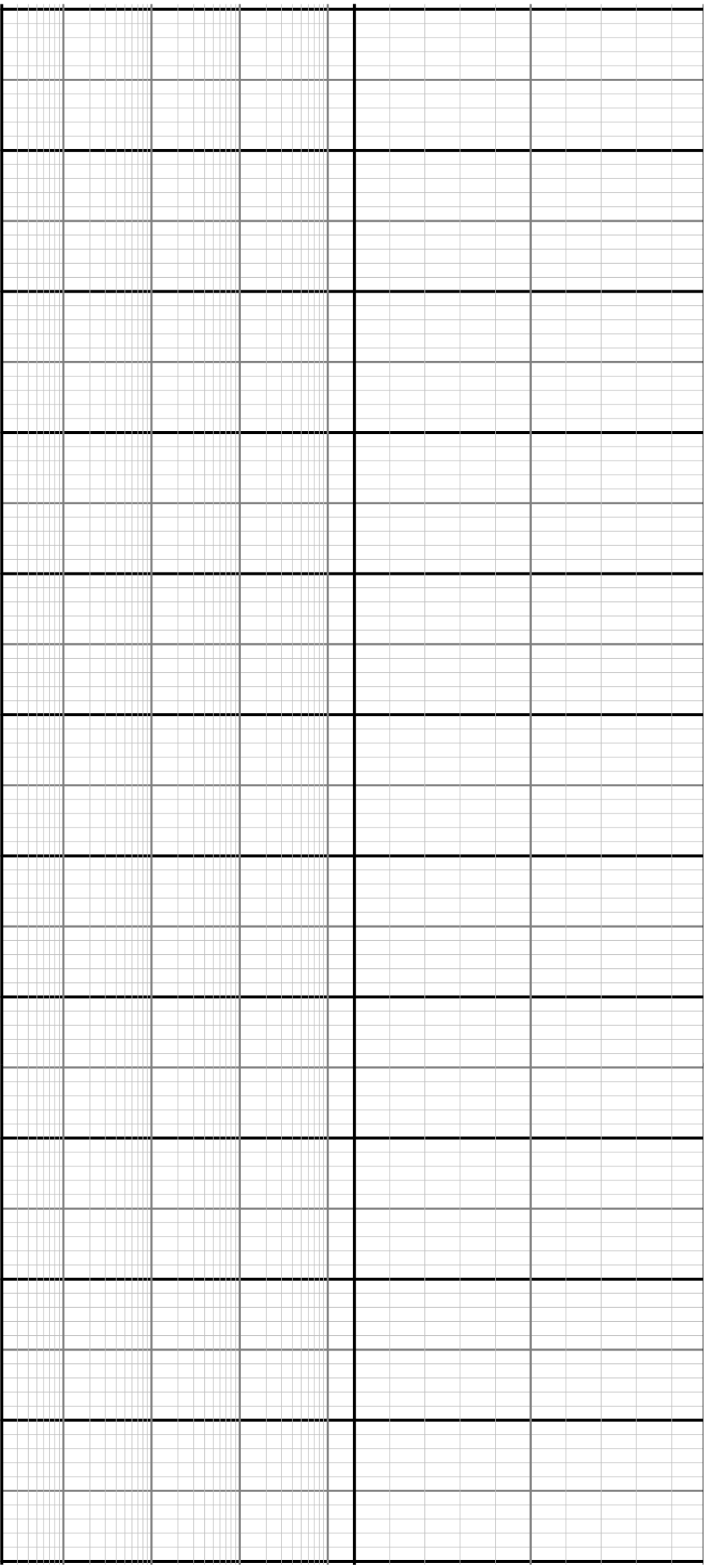


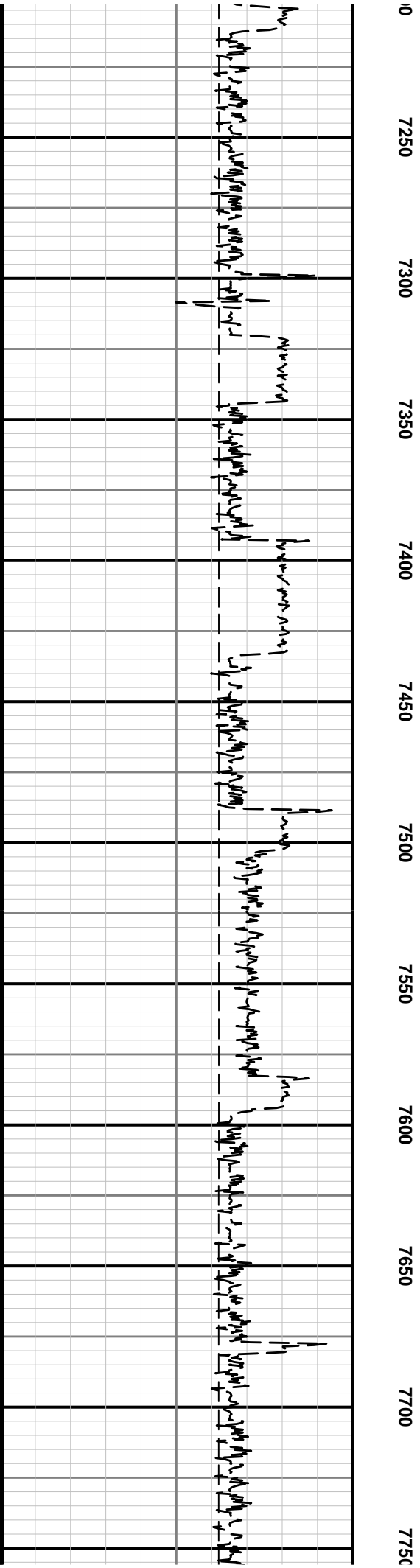
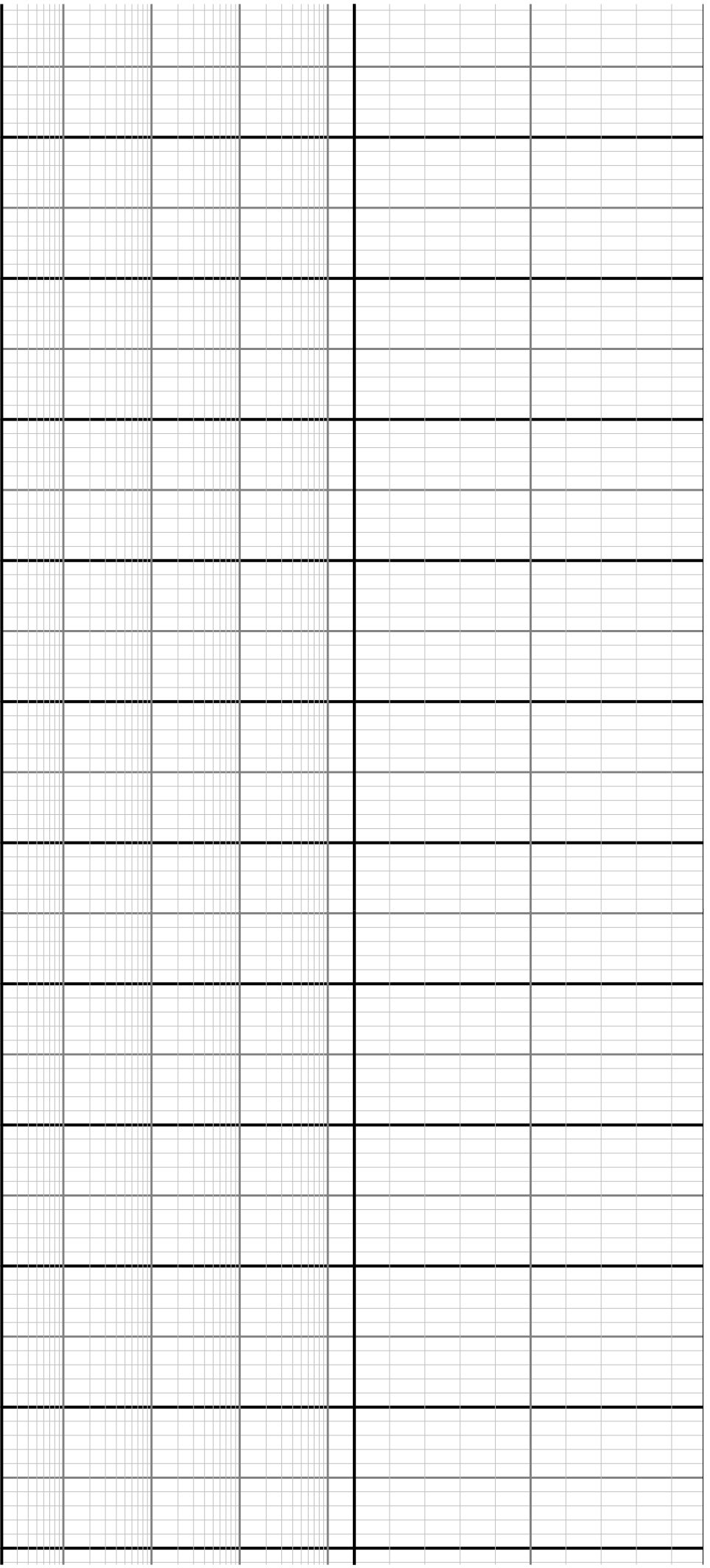


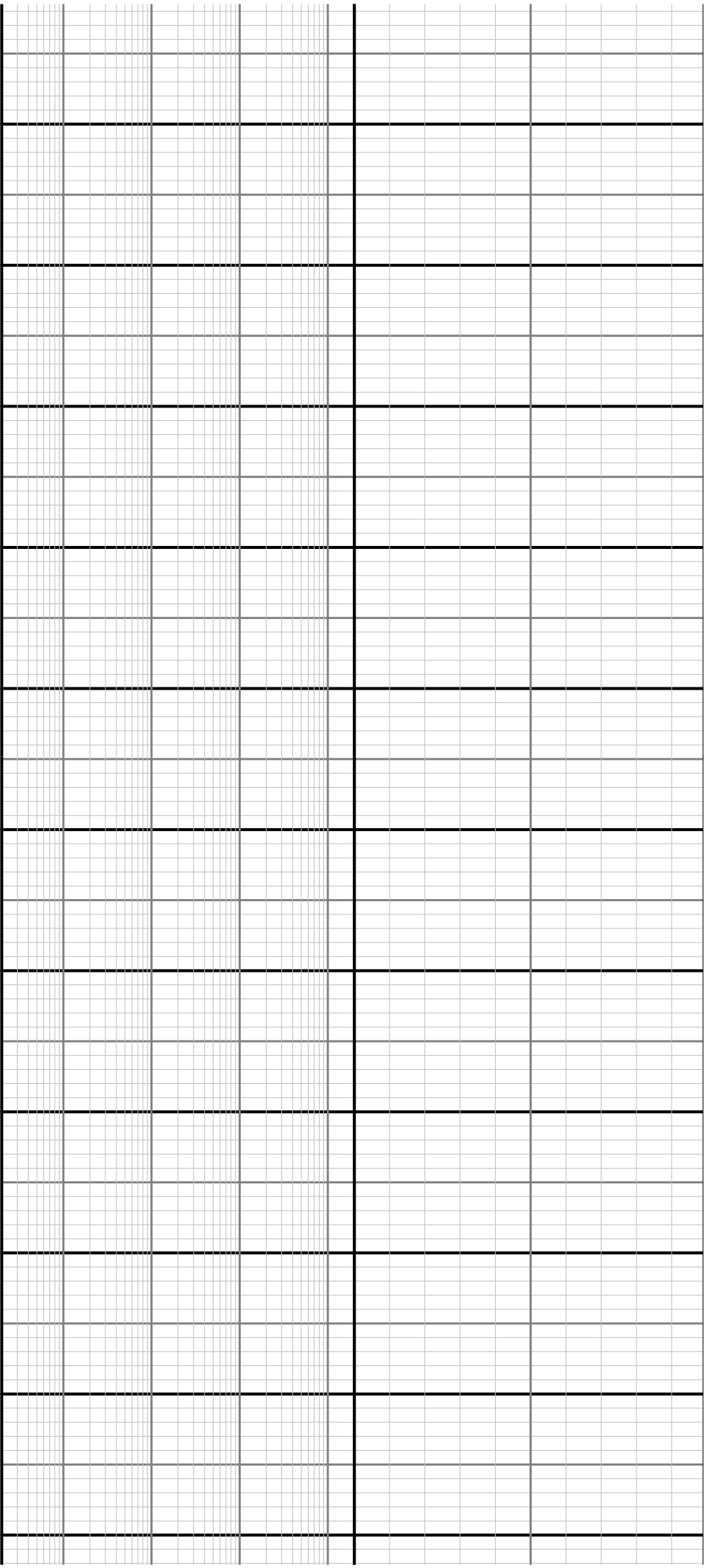




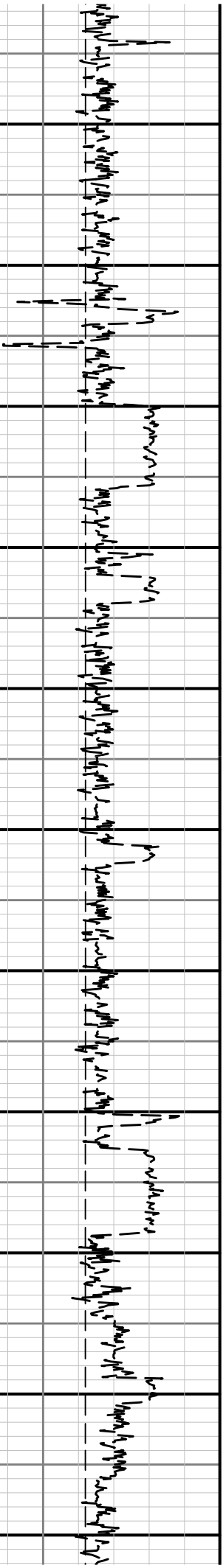








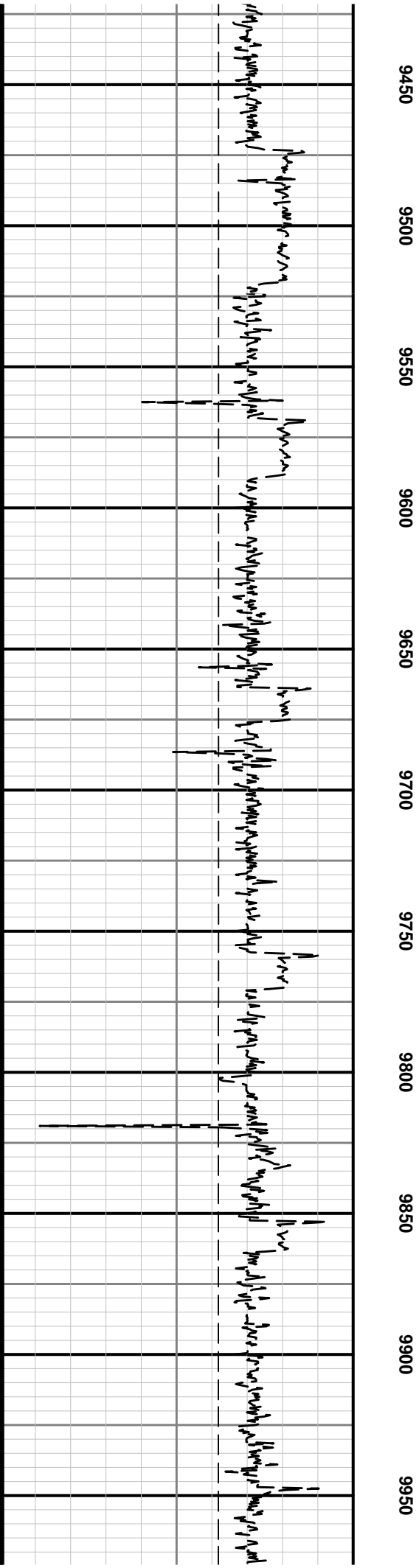
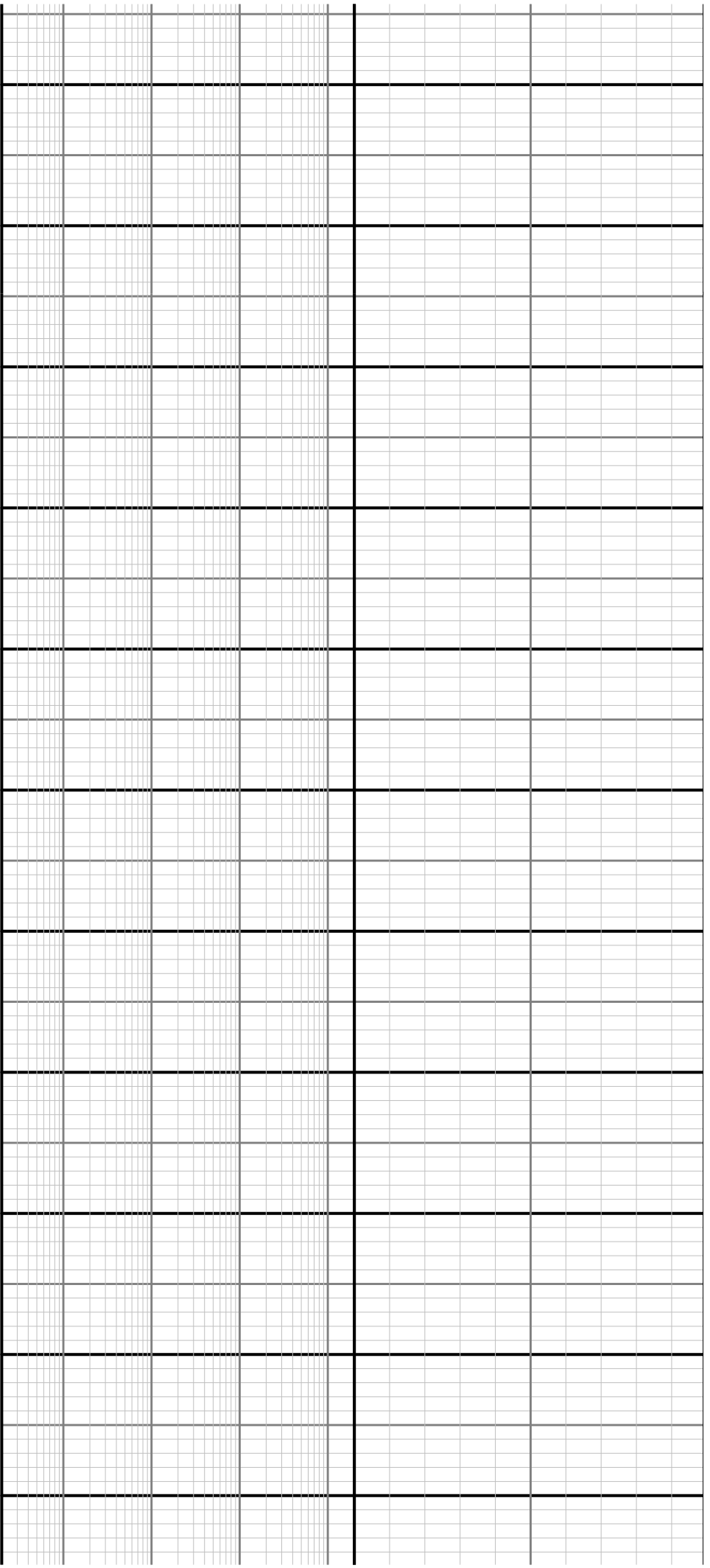
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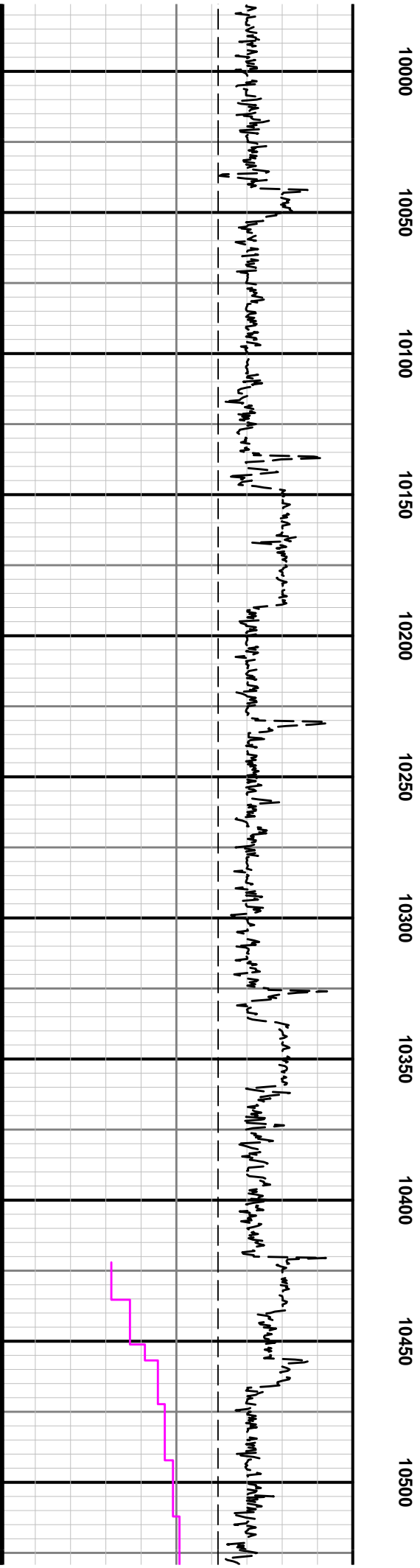
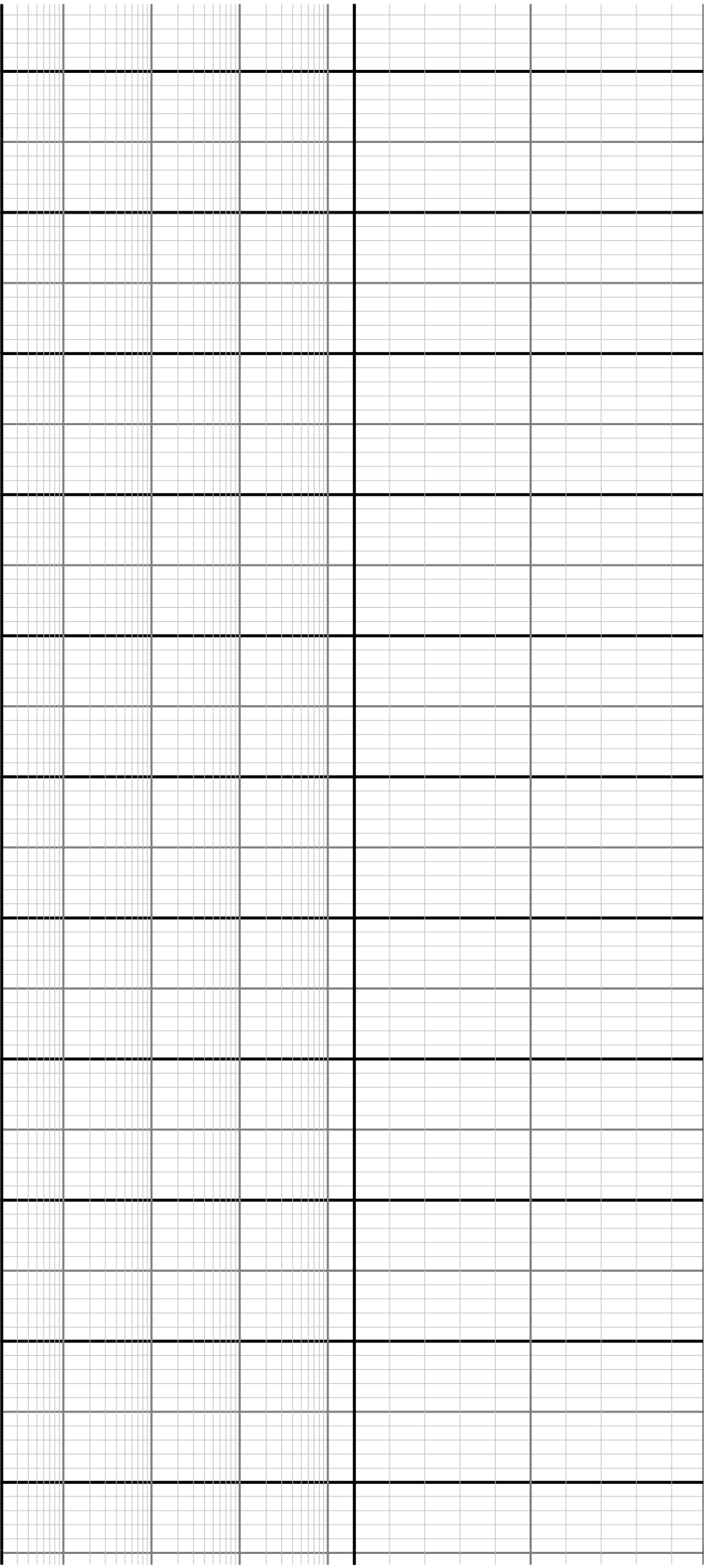


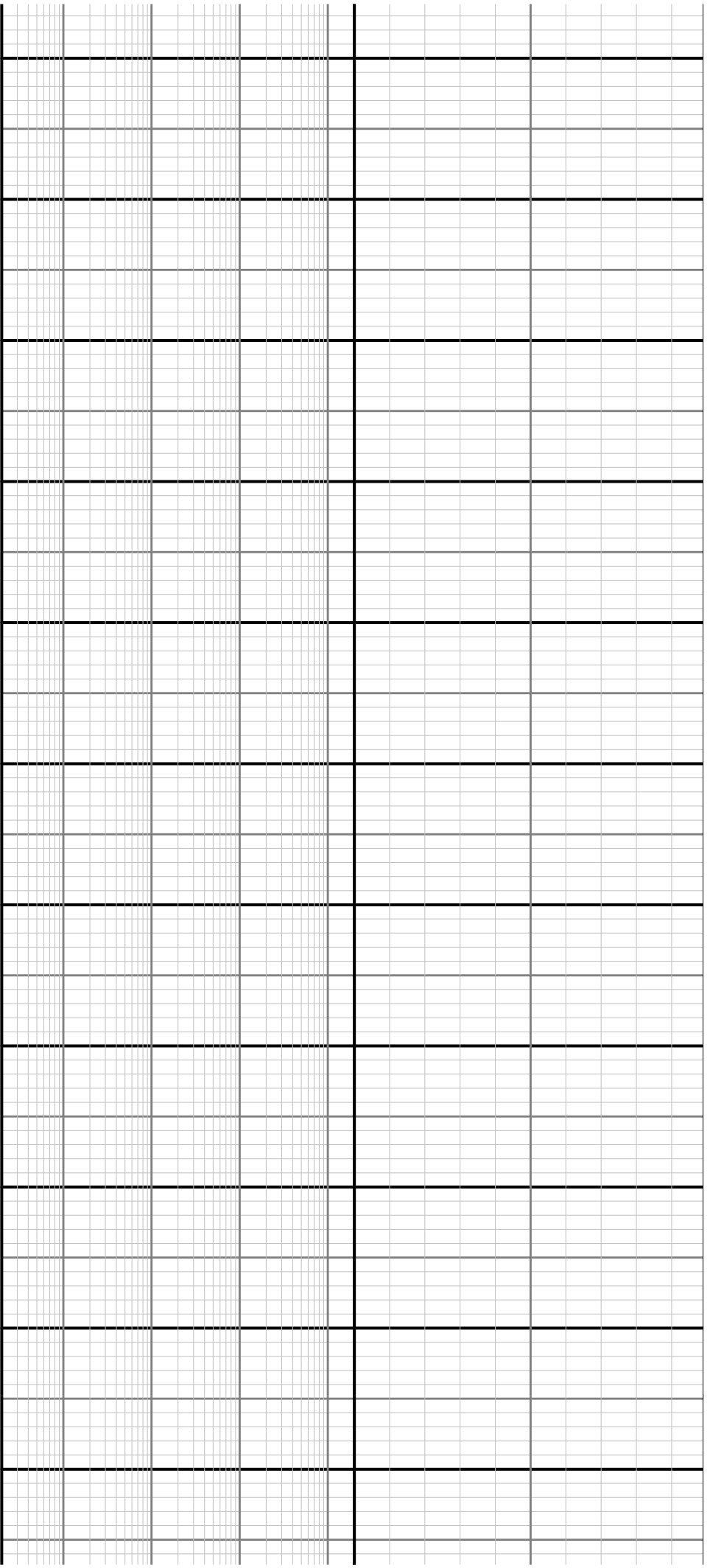












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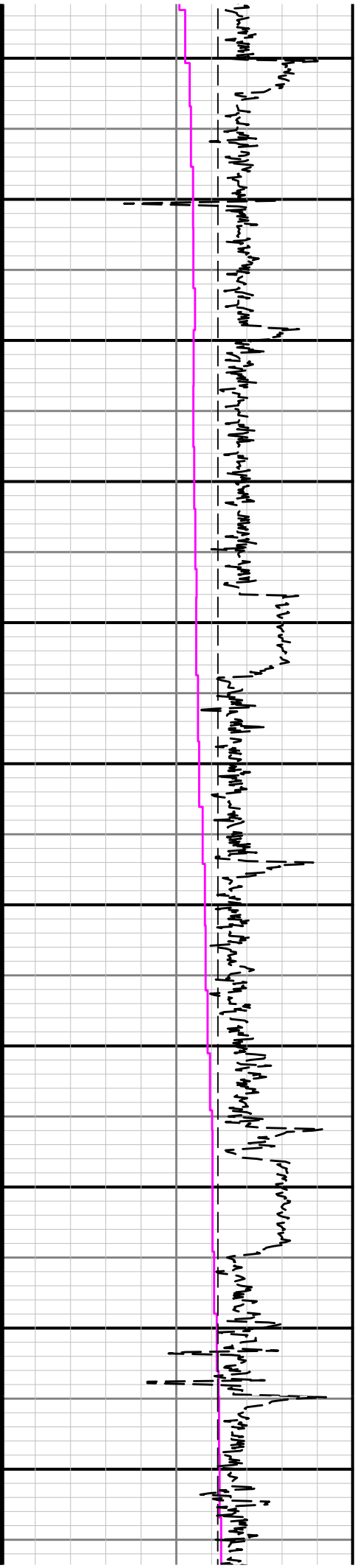
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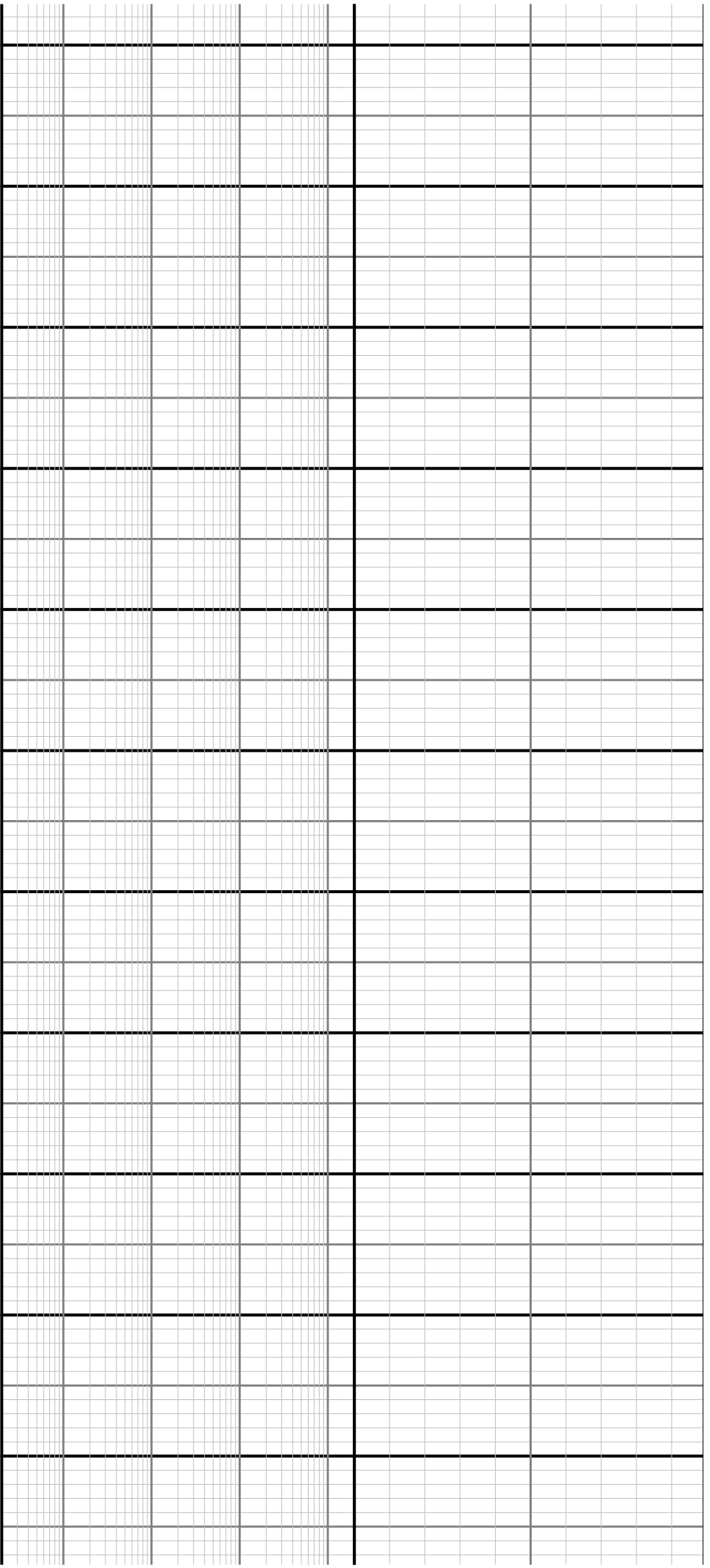
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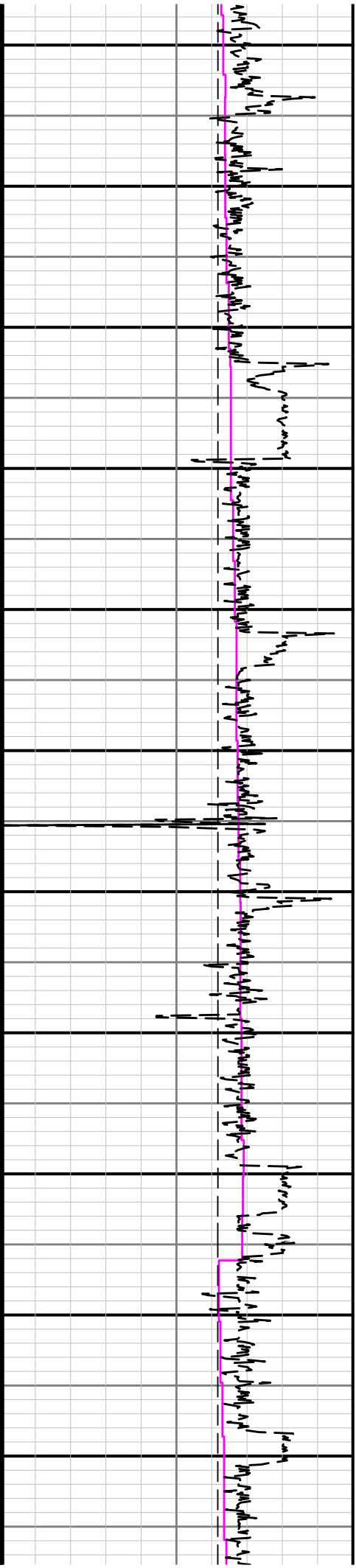
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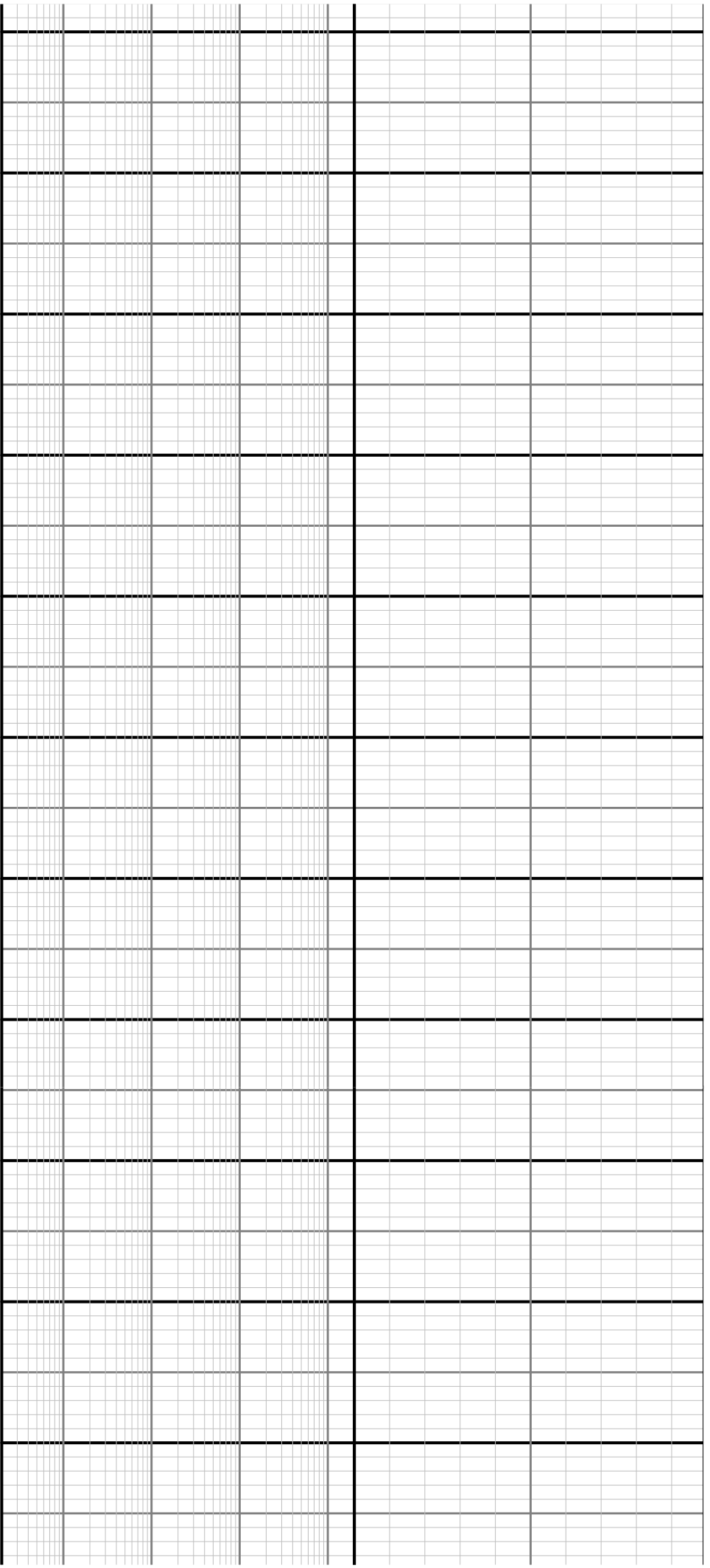
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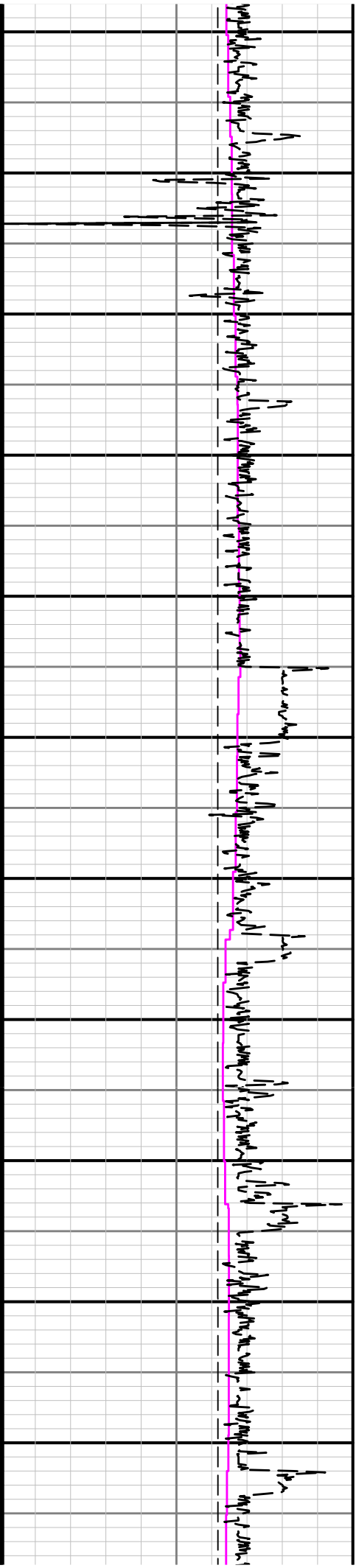
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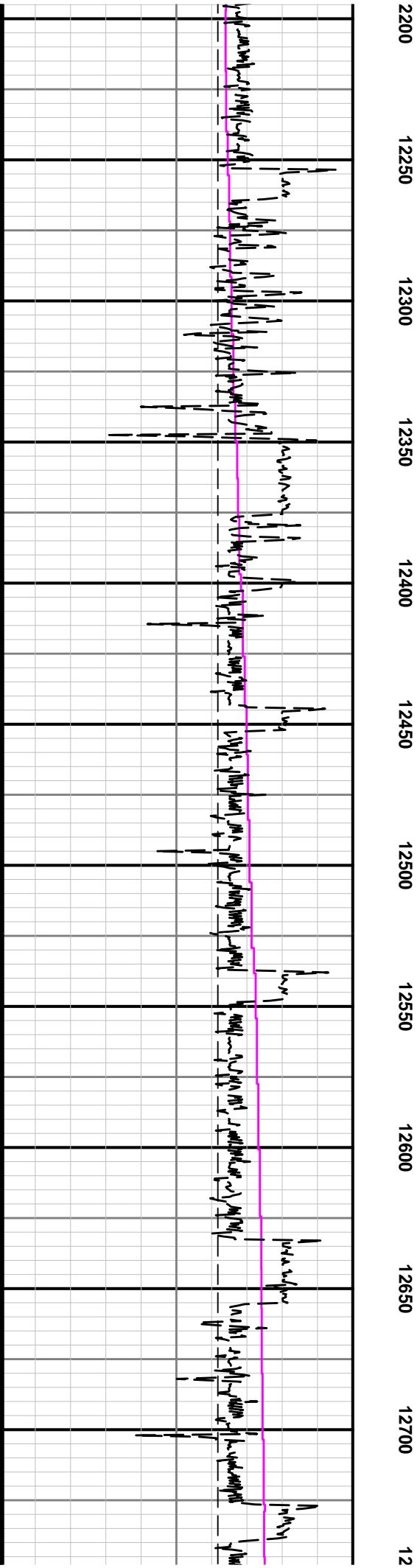
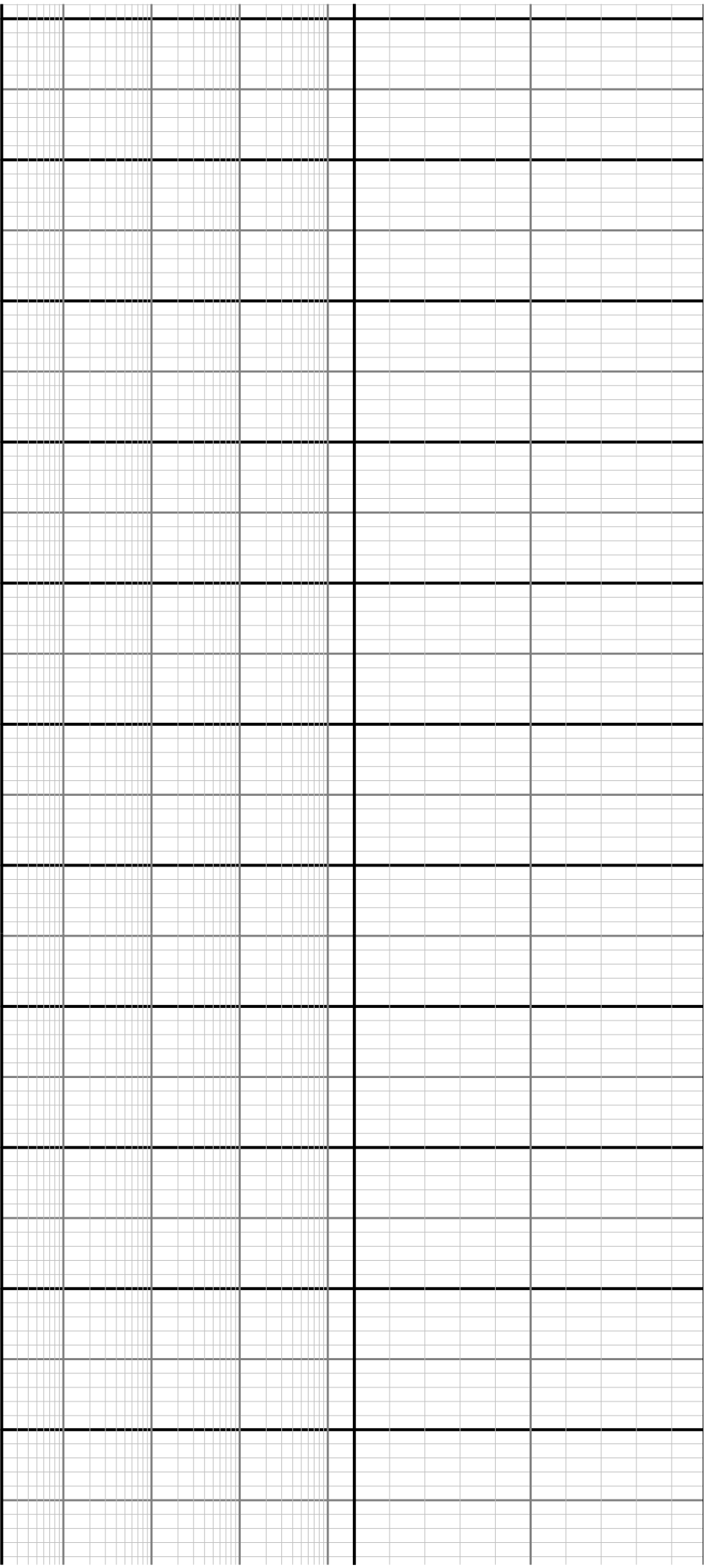


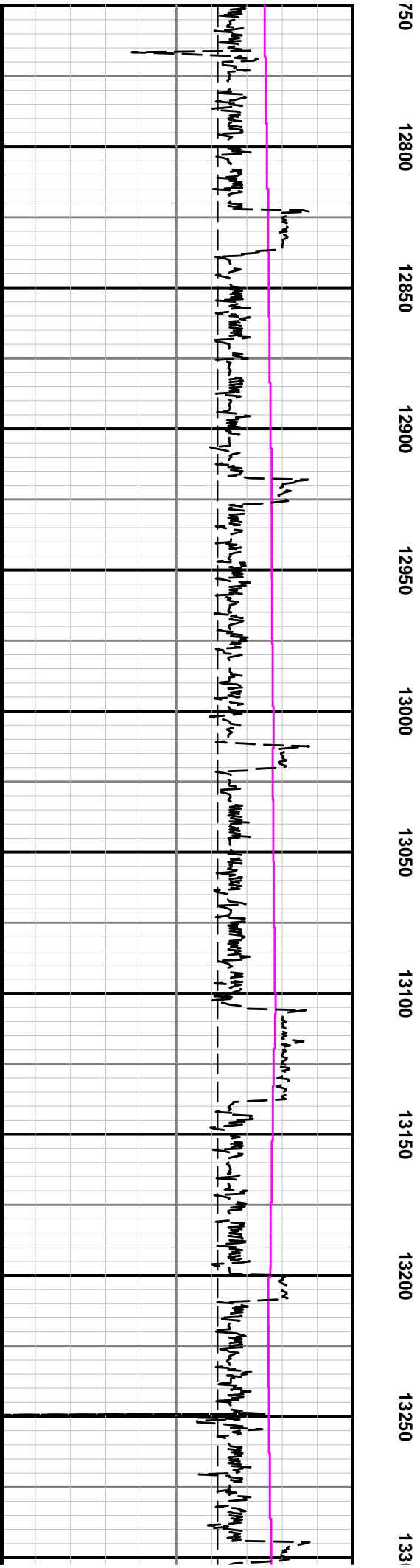
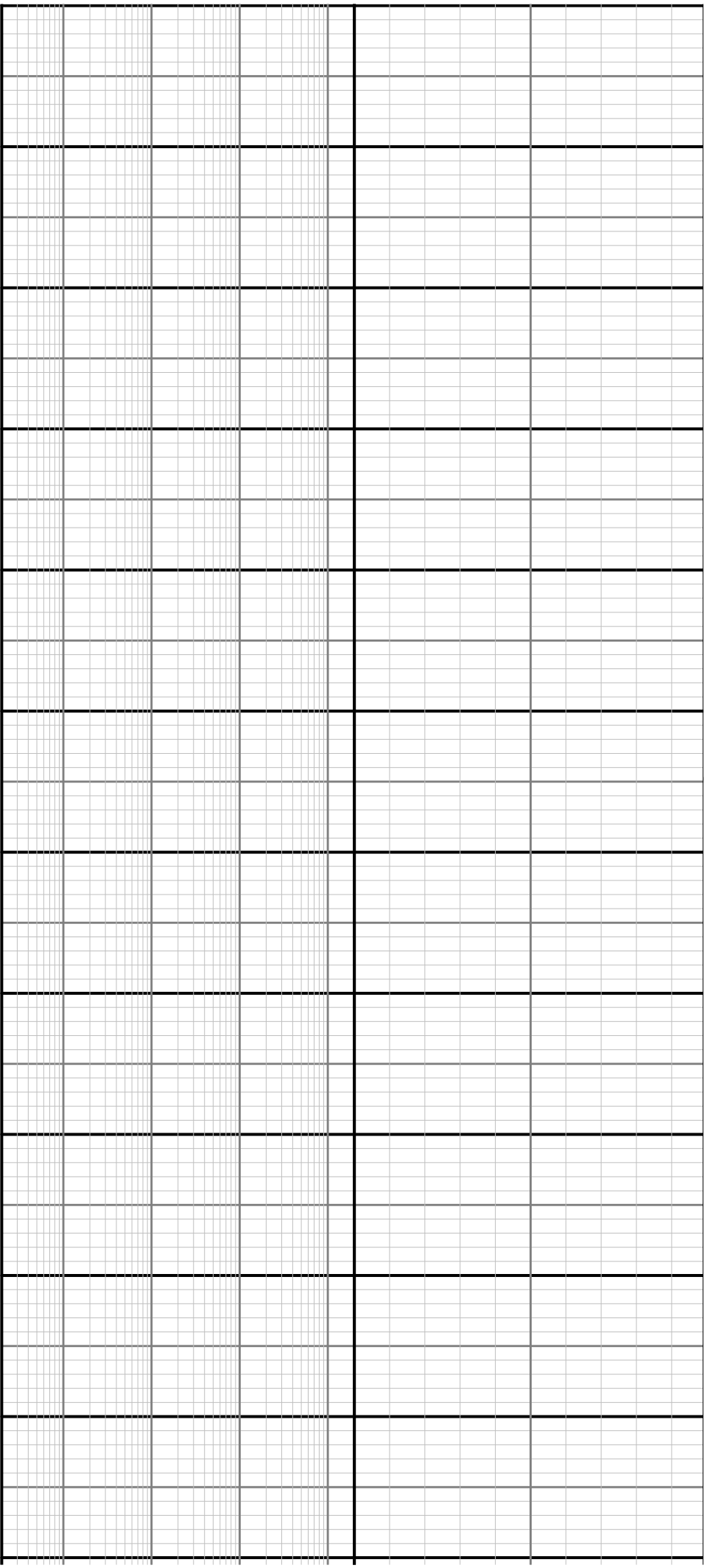


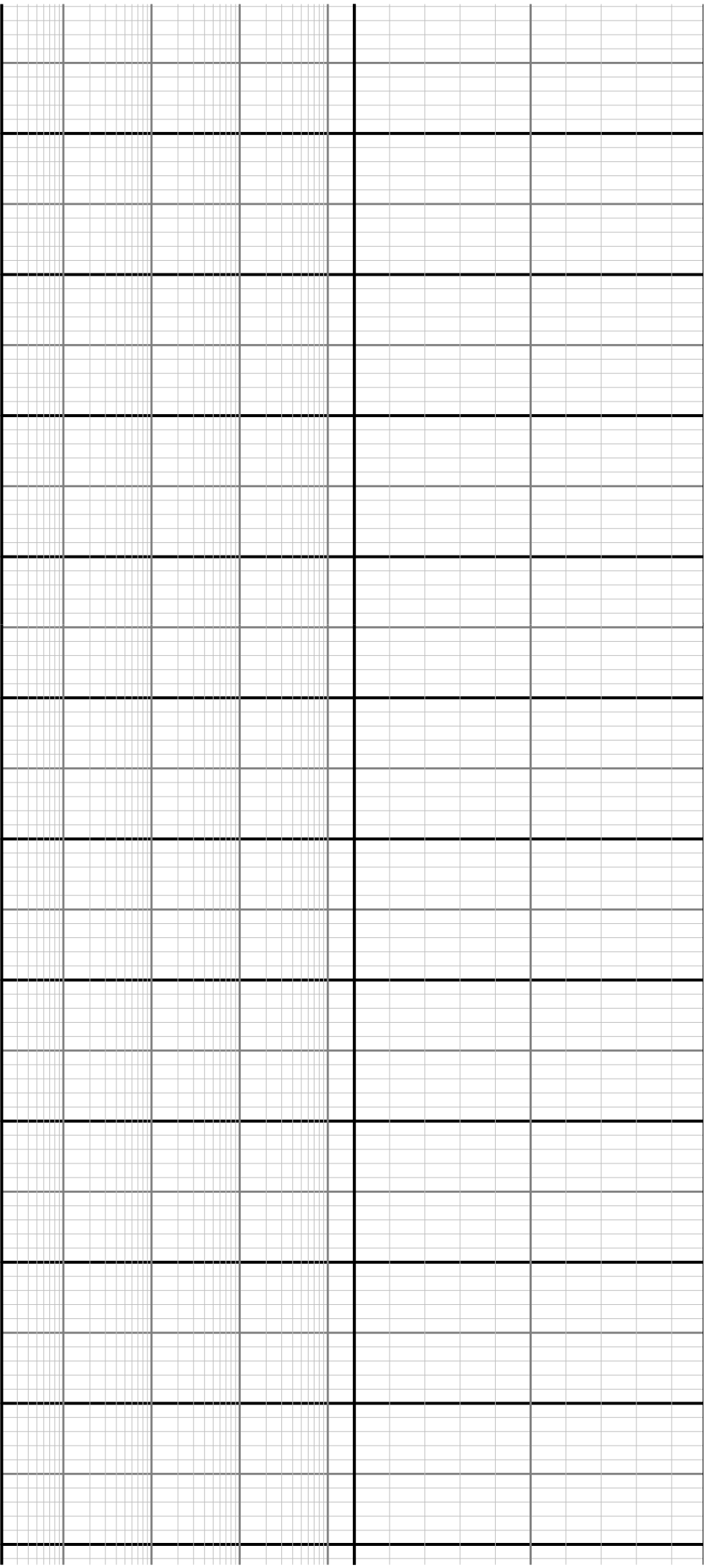


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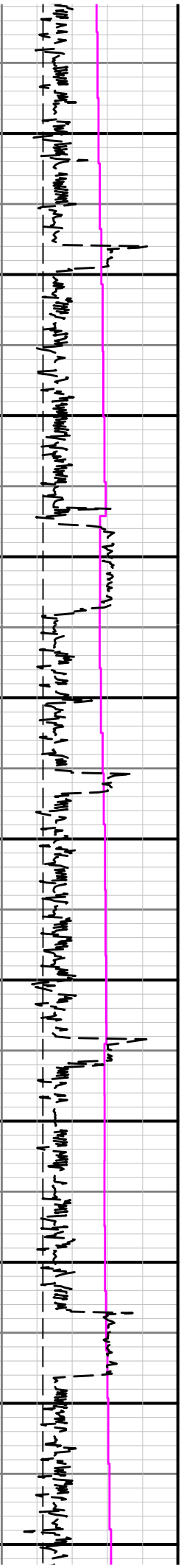




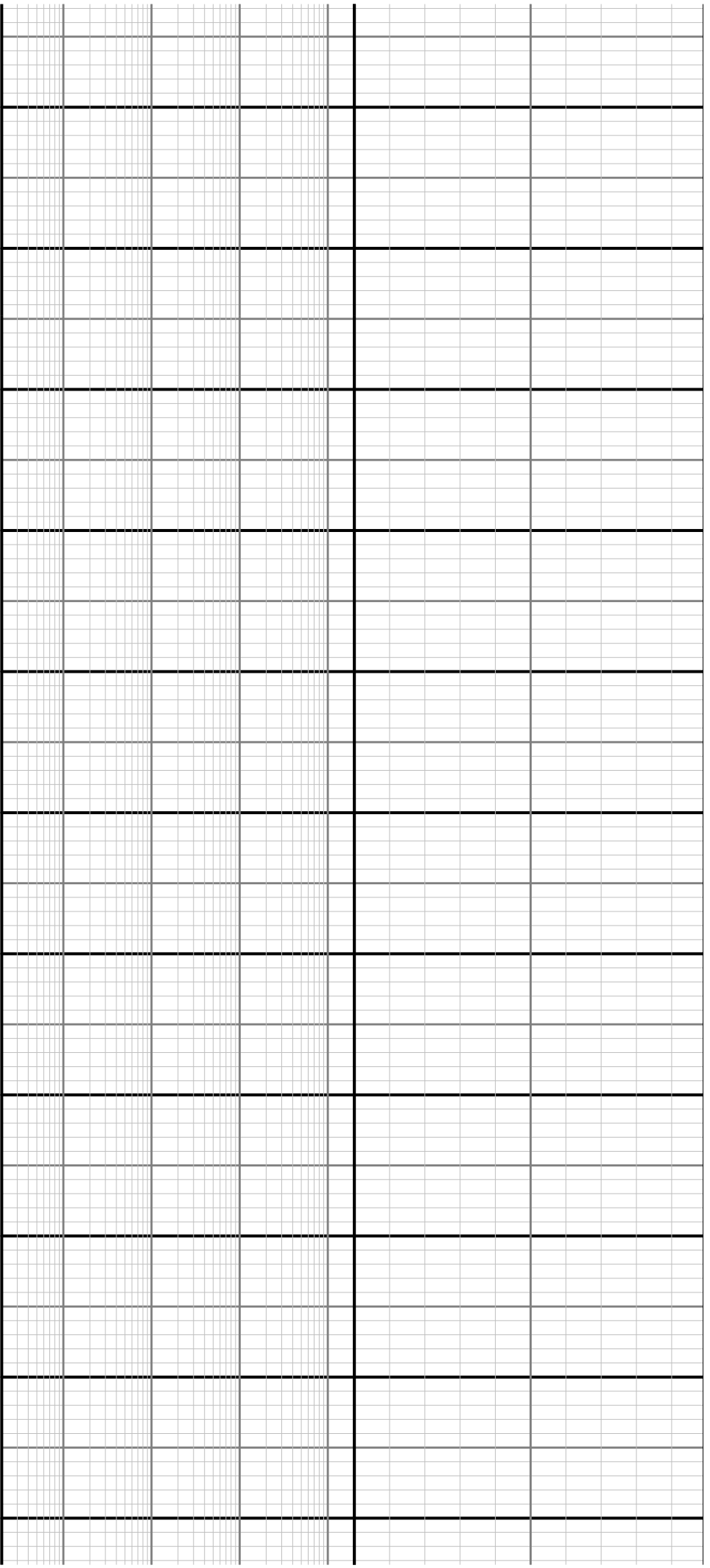




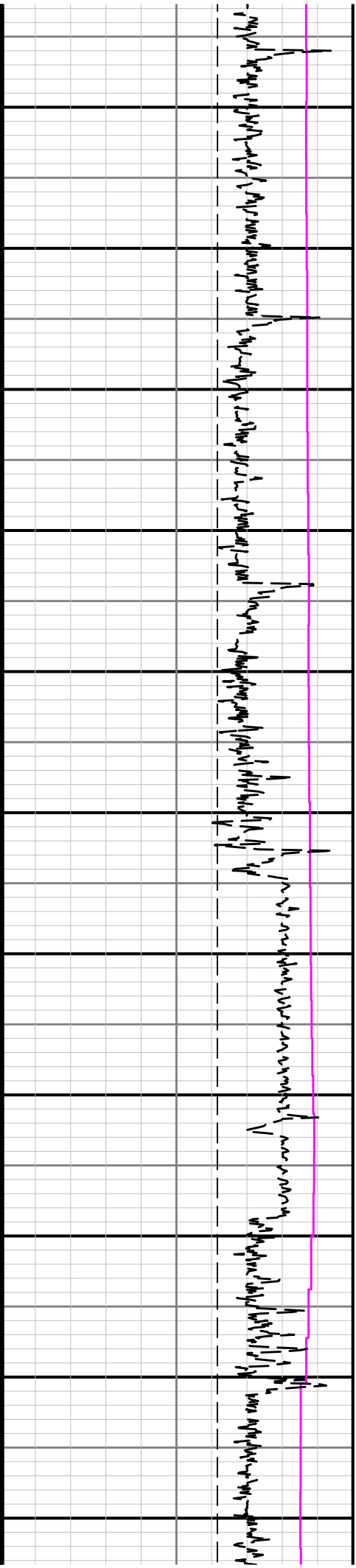
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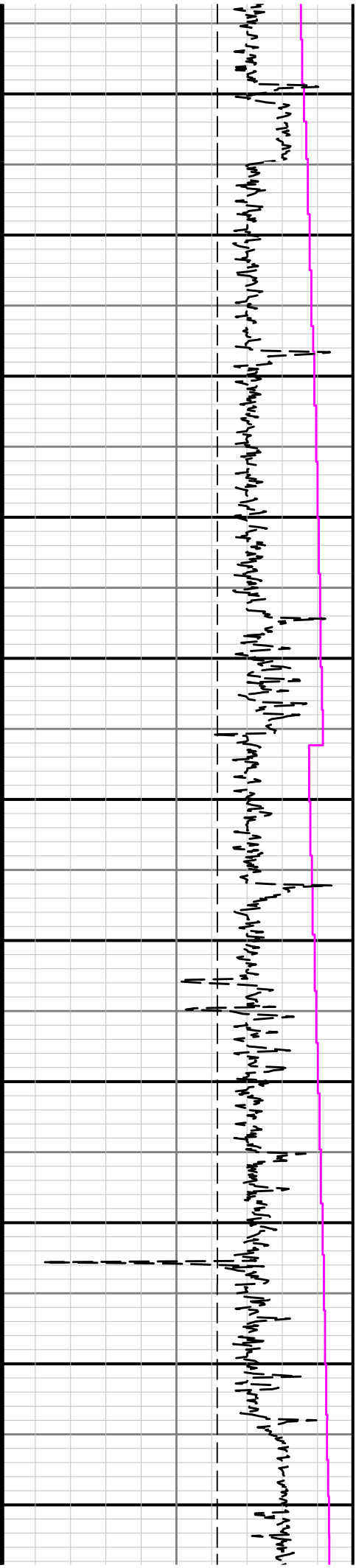
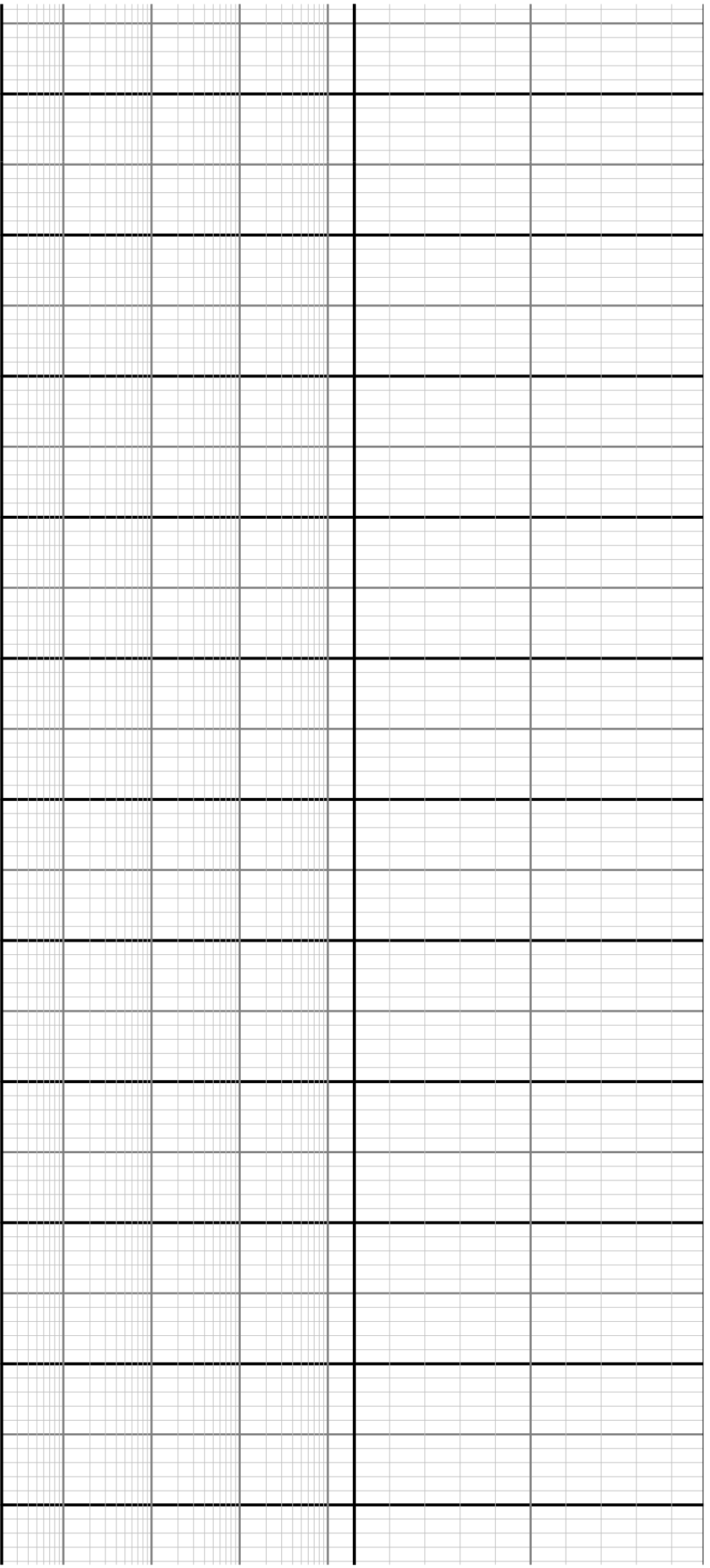


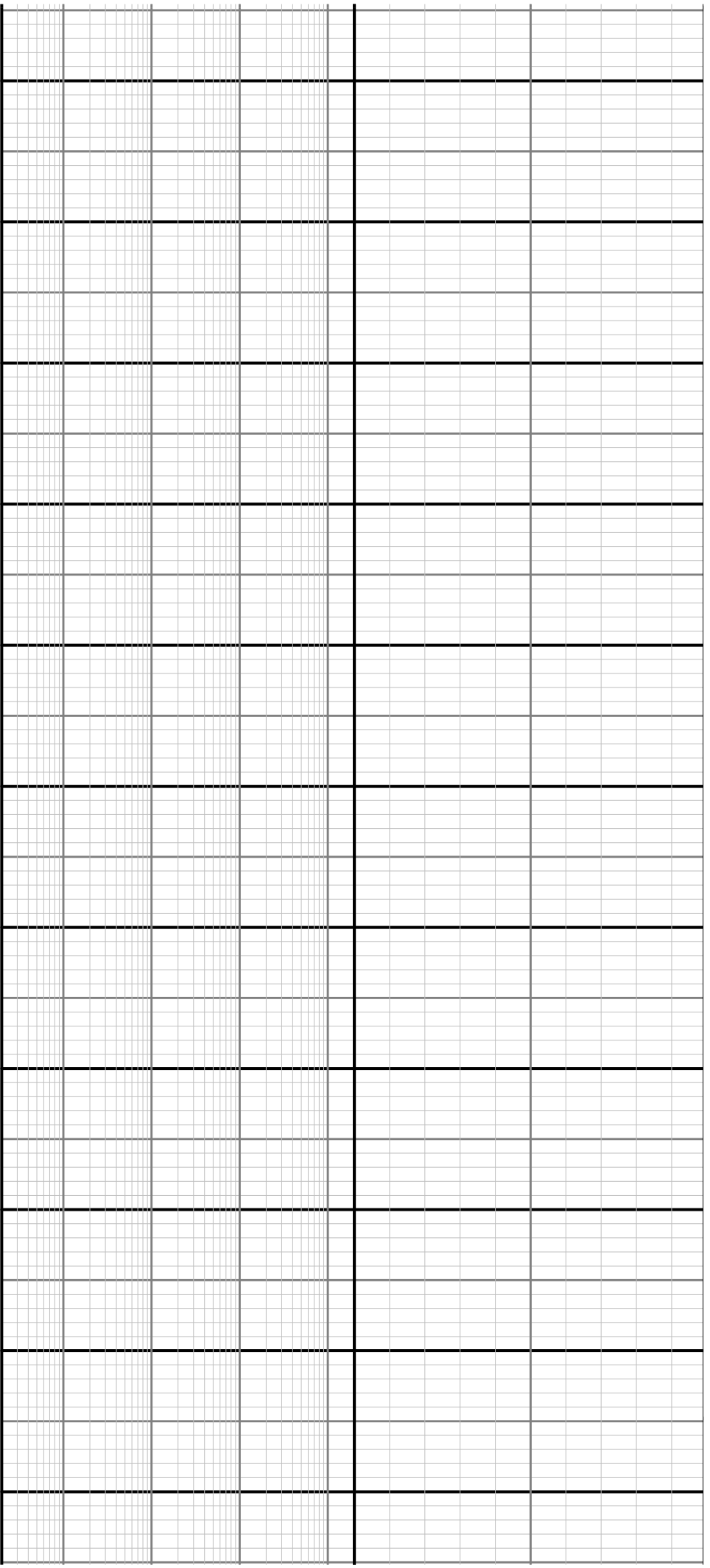




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