

<div><div><div><div><div></div><div>BAKER HUGHES</div></div></div><div><div>Gamma Ray</div></div></div></div>				LWD MEMORY LOG			
Scale:		Company: Noble Energy					
1:240 MD		Well: Kona A19-636					
Depth Reference:		Field: Wattenberg					
Driller's Depth		County: Weld County		State: Colorado			
Status:	Surface Location:		Other Services:				
Final Print	Latitude:		040° 28' 00.408" N				
API No: 05-123-44577-00	Longitude:		104° 33' 38.988" W				
Job ID: 8528937	UTM: N/A		Directional				
SEC: 21		TWN: 6N		RGE: 64W			
Permanent Datum (P.D.): Ground Level		Elevation:		4723.00 ft			
Log Measured From: Rig Floor		Above P.D.		30.00 ft			
				KB: N/A			
				DF: 4753.00 ft			
				GL: 4723.00 ft			
Dates		Interval Logged		Magnetic Field Reference			
Date From: 2017-06-02	Top: (ft) 1940.00		Azi Reference North: 67.01				
Date To: 2017-06-04	Bottom: (ft) 18395.00		Total Magnetic Field Strength: (nT) 52367				
Spud Date: 2017-06-01			Mag to Reference North Correction: (deg) 7.38 E				
Borehole Record		Casing Record					
Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)	
13.500	30.00	1940.00	9.625	36.00	30.00	1930.00	
8.500	1940.00	18395.00					
Mud Record		Deviation Record					
Type	From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Inc Az (Start)	Inc Az (End)	
Oil Based Mud	1940.00	18395.00	8.500	16455.00	0.15 16.72	89.78 274.62	
Acquisition System		Software Version		Other			
Baker Hughes Cadence		RT4.1		Rig: H&P 517			
Plot Studio		4.0.7570.8		Contractor: Helmerich & Payne Drilling Co			
				District: RMA			
				Unit: D&E			

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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	
1	1	8.500	PDC	3.00	Rotary Steerable	1927.00	18382.00	1940.00	18395.00	2017-06-02 03:23	2017-06-04 23:33	62.03

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Adam Schlenz	2017-06-01	2017-06-05	Alberto Cova	2017-06-01	2017-06-05			

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+ (%)
2017-06-02 02:30	1	1940.00	Oil Based Mud	9.2	10	N/A	16.0	76/14	Active Pit	22000	0.00
2017-06-02 12:30	1	4057.00	Oil Based Mud	8.9	9	N/A	15.8	74/16	Active Pit	22000	0.00
2017-06-03 02:30	1	7481.00	Oil Based Mud	9.1	9	N/A	16.8	73/18	Active Pit	22500	0.00
2017-06-03 13:00	1	9732.00	Oil Based Mud	9.1	10	N/A	18.0	73/18	Active Pit	23000	0.00
2017-06-04 02:30	1	10208.00	Oil Based Mud	9.1	8	N/A	21.2	76/14	Active Pit	21500	0.00

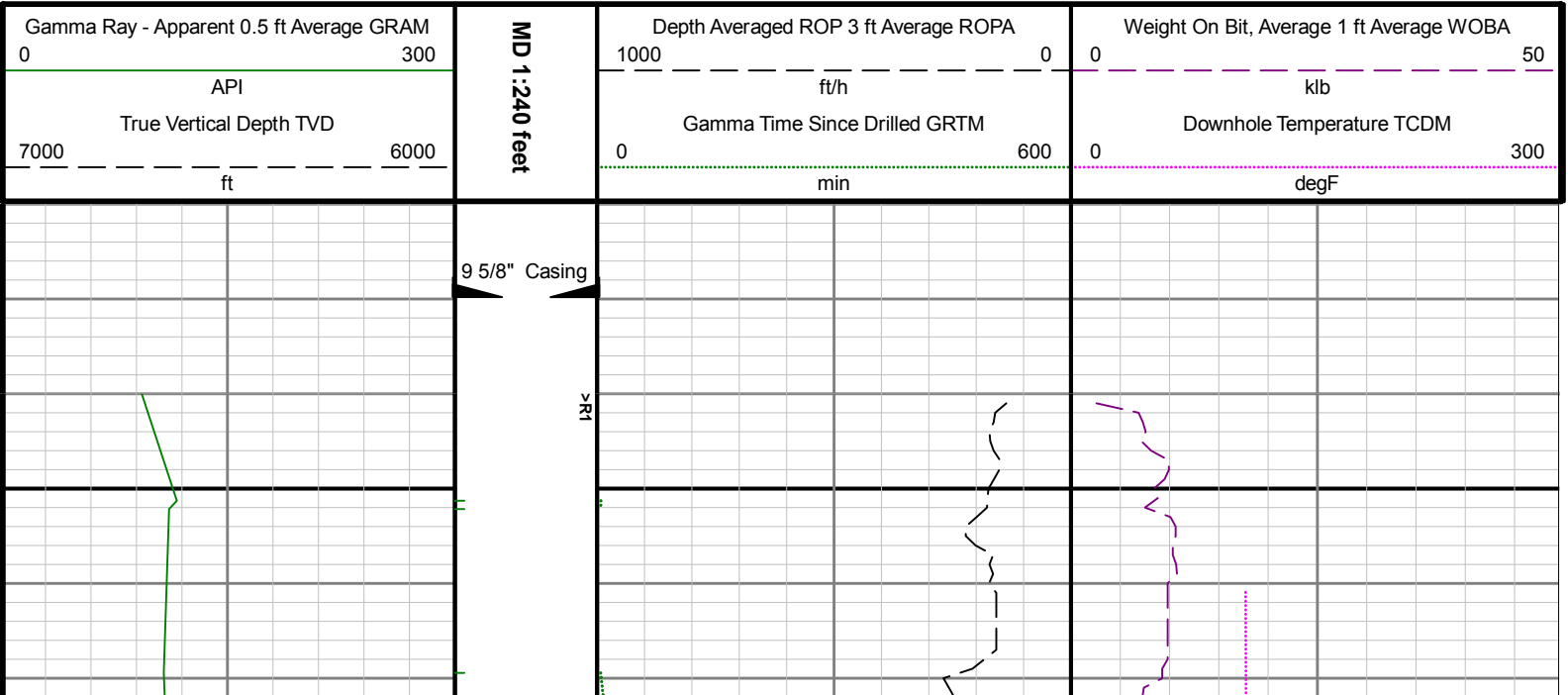
2017-06-04 13:00	1	15874.00	Oil Based Mud	9.1	10	N/A	19.2	76/14	Active Pit	21500	0.00
Equipment and Service Data											
Run No.	Tool	Serial Number	Measurement	Sensor Offset (ft)	Bit Offset (ft)	Max O.D. (in)	Min I.D. (in)				
1	ATC_SU	14186735	Near Bit Inclination	5.93	6.73	7.000	2.250				
1	ATC_SU	14186735	Near Bit VSS	5.93	6.73	7.000	2.250				
1	ATC_MWD	12154241	Gamma (single)	2.74	12.90	7.000	2.250				
1	ATC_MWD	12154241	Directional (mag)	12.26	22.42	7.000	2.250				

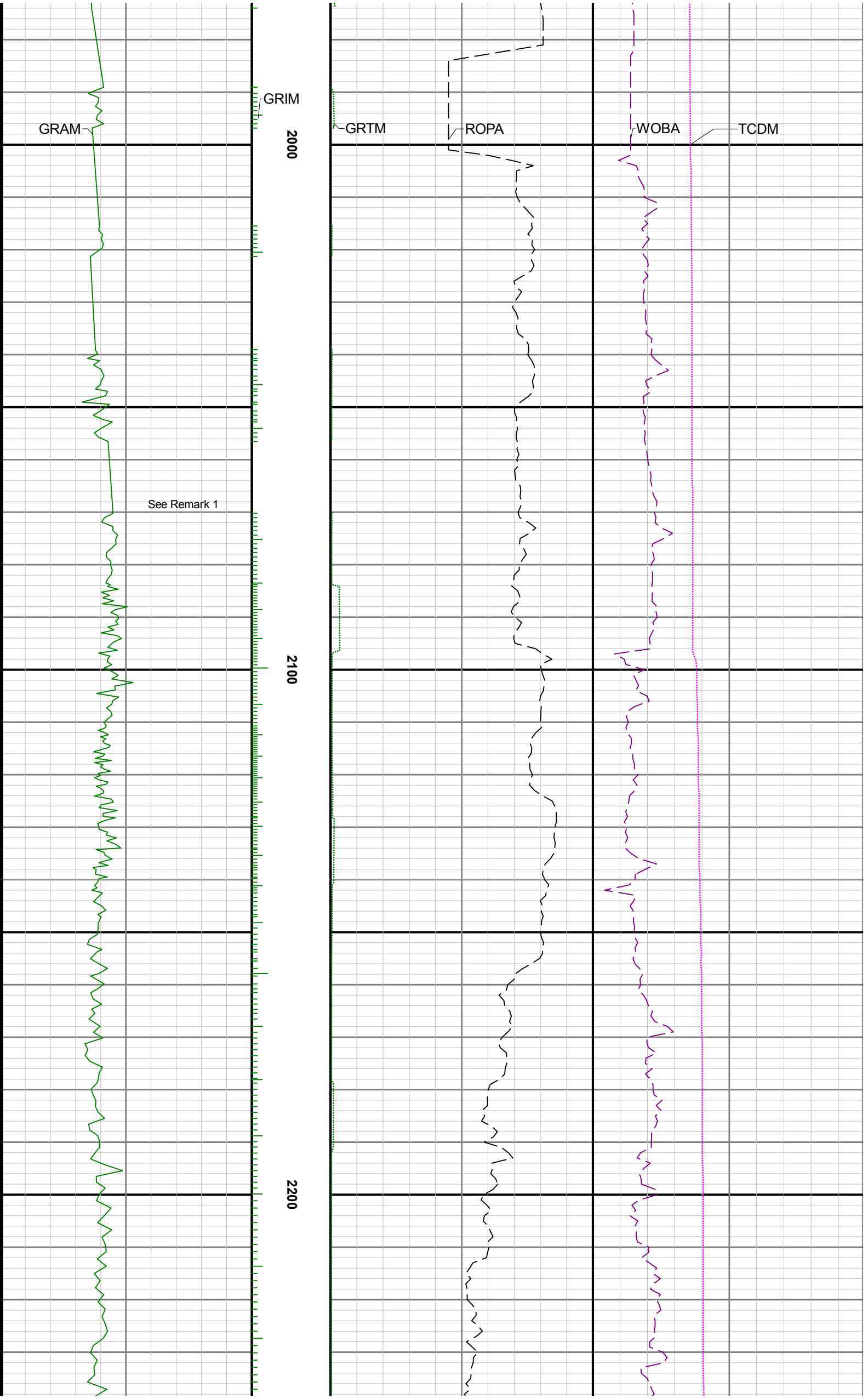
Service and Tool Mnemonics		
Mnemonic	Name	Description
ATC_SU	ATC_SU	Auto Trak Curve Steering Unit
ATC_MWD	ATC_MWD	Auto Trak Curve MWD
ATC_LCPM	ATC_LCPM	Auto Trak Curve LCPM

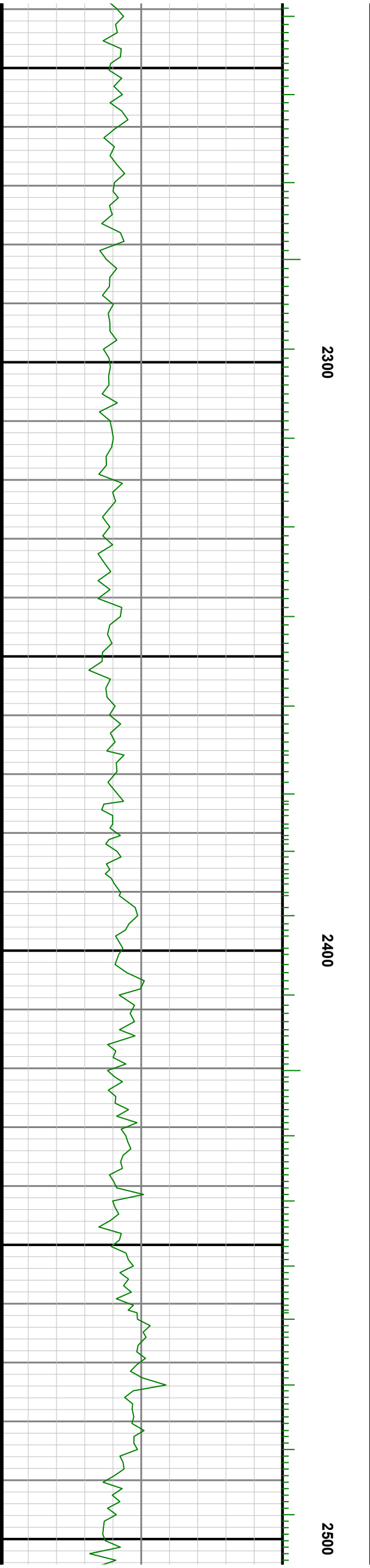
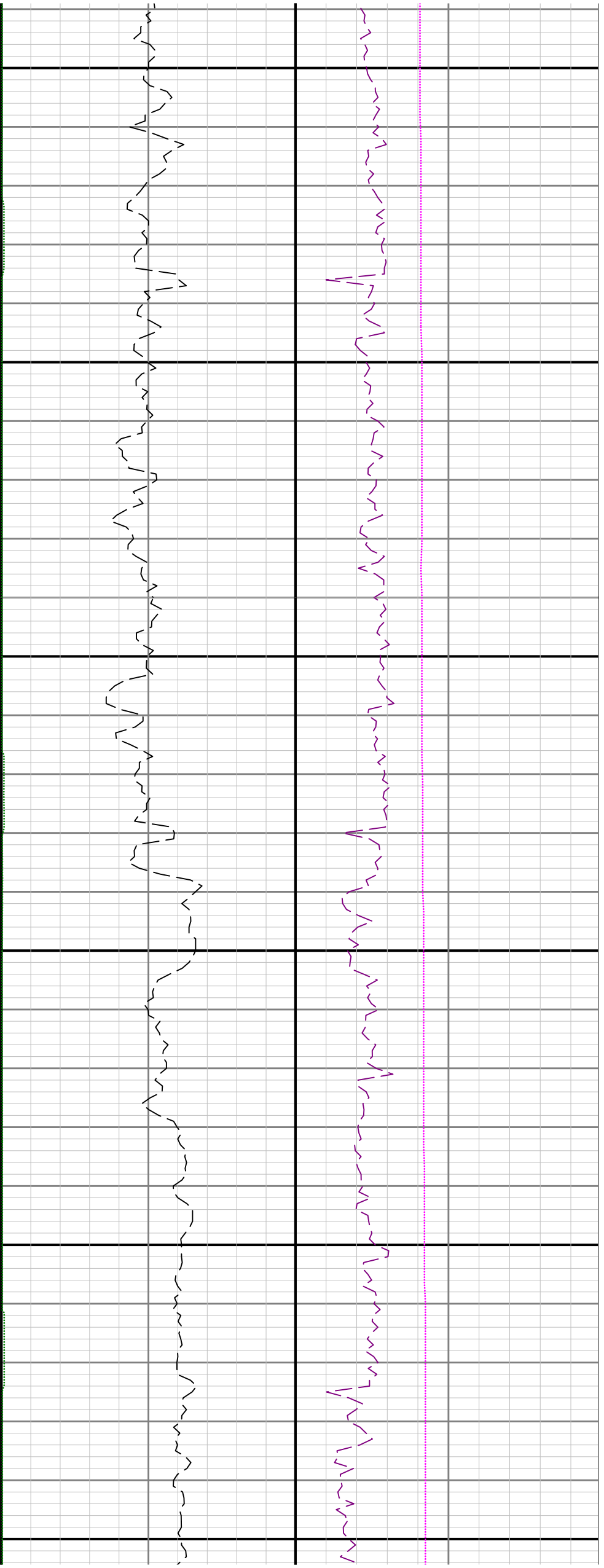
Comments	
1	Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to the lack of control by Baker Hughes, depth calibrations and measurements could not be independently verified.
2	Baker Hughes LWD run 1 utilized a 6.75 inch NaviGamma services (Directional and Gamma Ray) behind a 8.5 inch bit and rotary steerable assembly from 1940 to 18395 feet MD (1940 to 6863 feet TVD).
3	Per the customer's request, Gamma Ray Apparent (GRAM) data is presented 0 to 300 API.

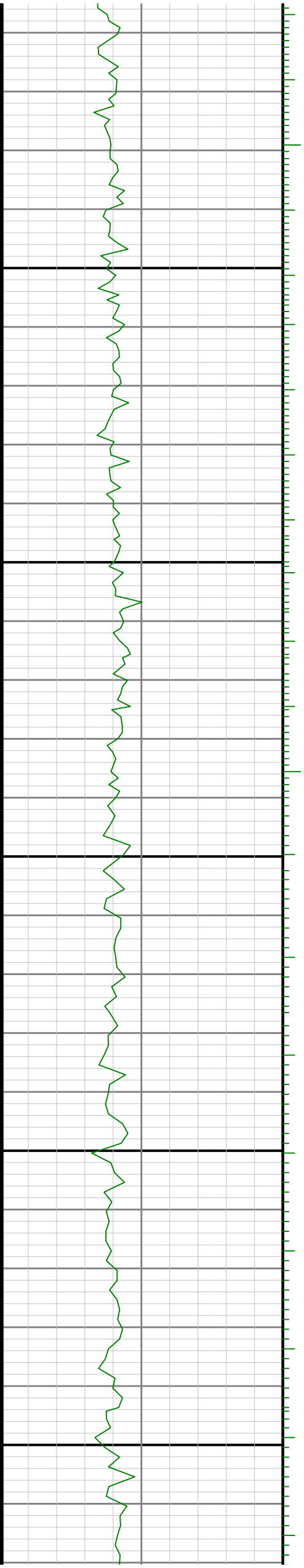
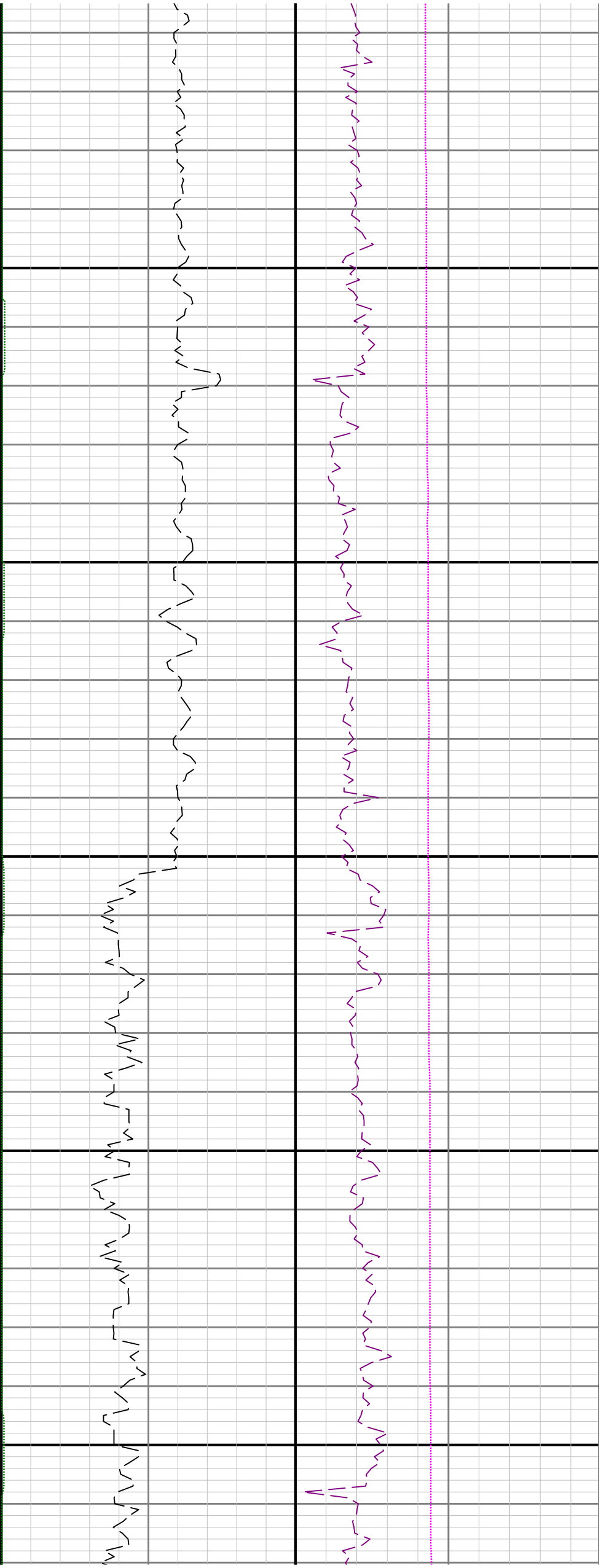
Remarks				
Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	2070.00	8.500	1	The interval from 1927 to 2070 feet MD (1927 to 2070 feet TVD) has gaps in gamma ray (GRAM) data due to, the mud flow was not high enough to power the MWD tool.
2	17788.00	8.500	1	The interval from 17788 to 18395 feet MD (6860 to 6863 feet TVD) does not contain temperature (TCDM) data due to, an unknown issue.
3	18395.00	8.500	1	The interval from 18382 to 18395 feet MD (6863 feet TVD) was not logged after being drilled due to sensor to bit offset at well TD.

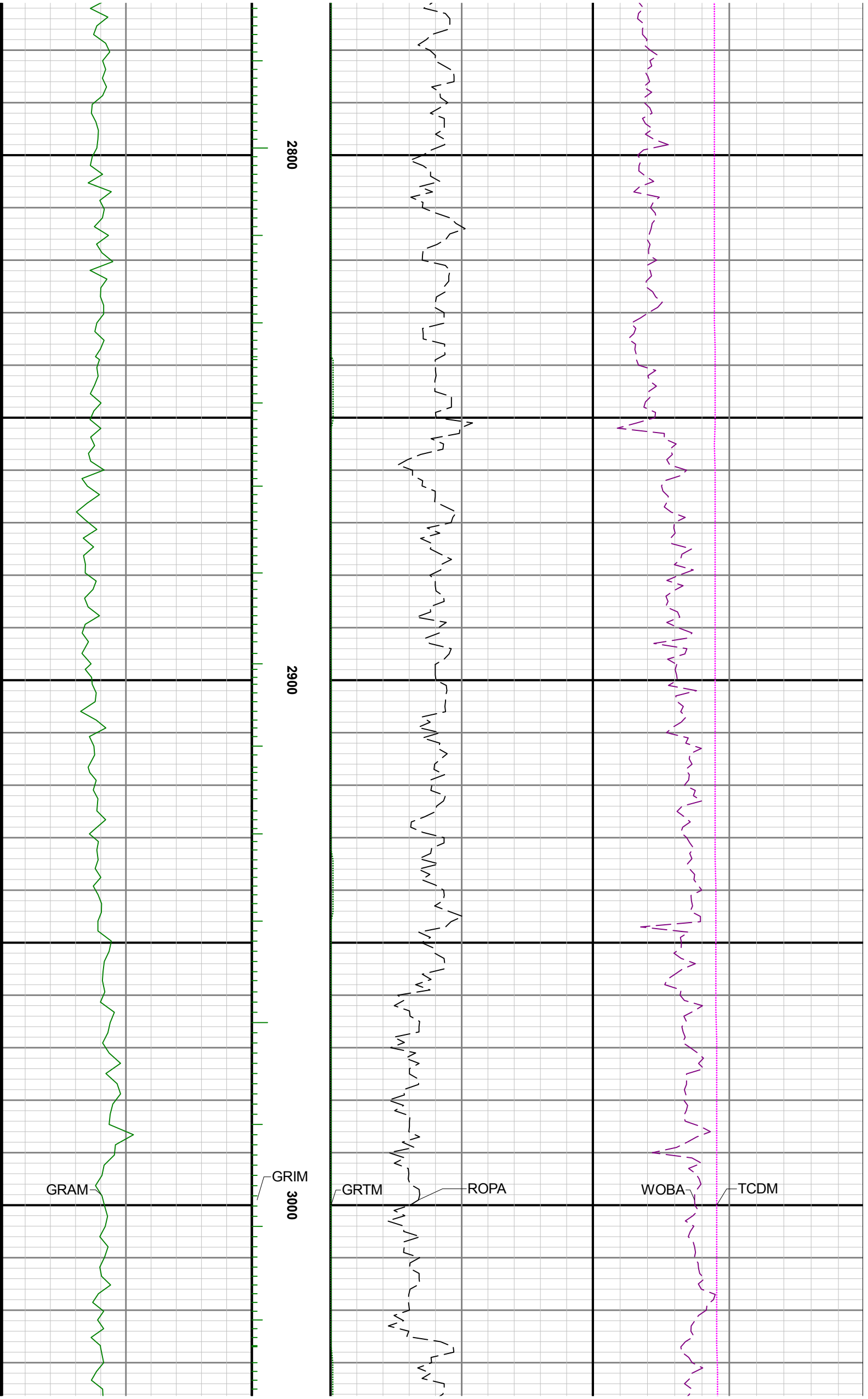
Curve Mnemonics		
Presented Curves	Description	Units
ROPA	Depth Averaged ROP 3 ft Average	ft/h
TVD	True Vertical Depth	ft
WOBA	Weight On Bit, Average 1 ft Average	klb
GRAM	Gamma Ray - Apparent 0.5 ft Average	API
GRIM	Gamma Ray Data Point Indicator	unitless
GRTM	Gamma Time Since Drilled	min
TCDM	Downhole Temperature	degF

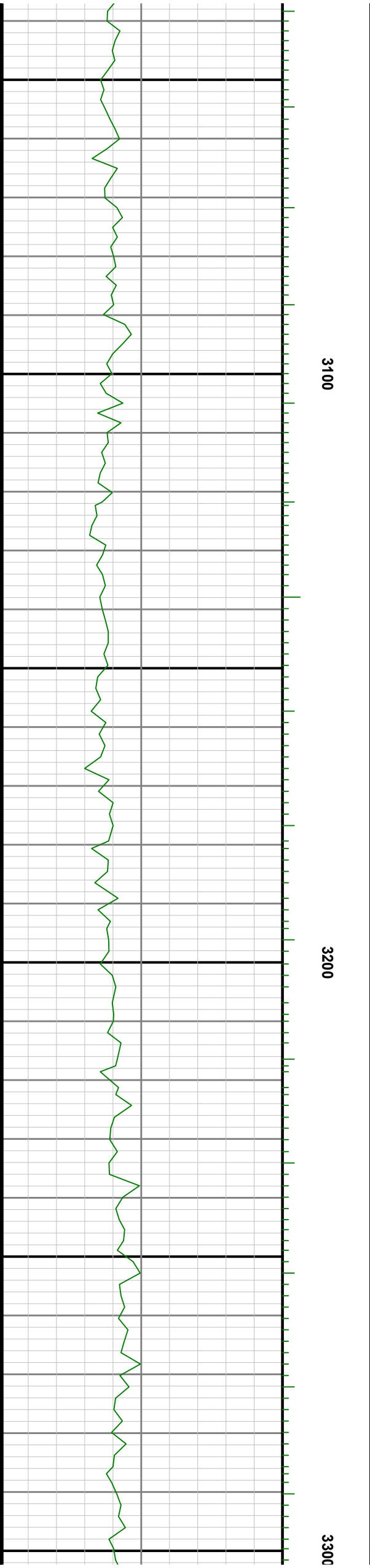
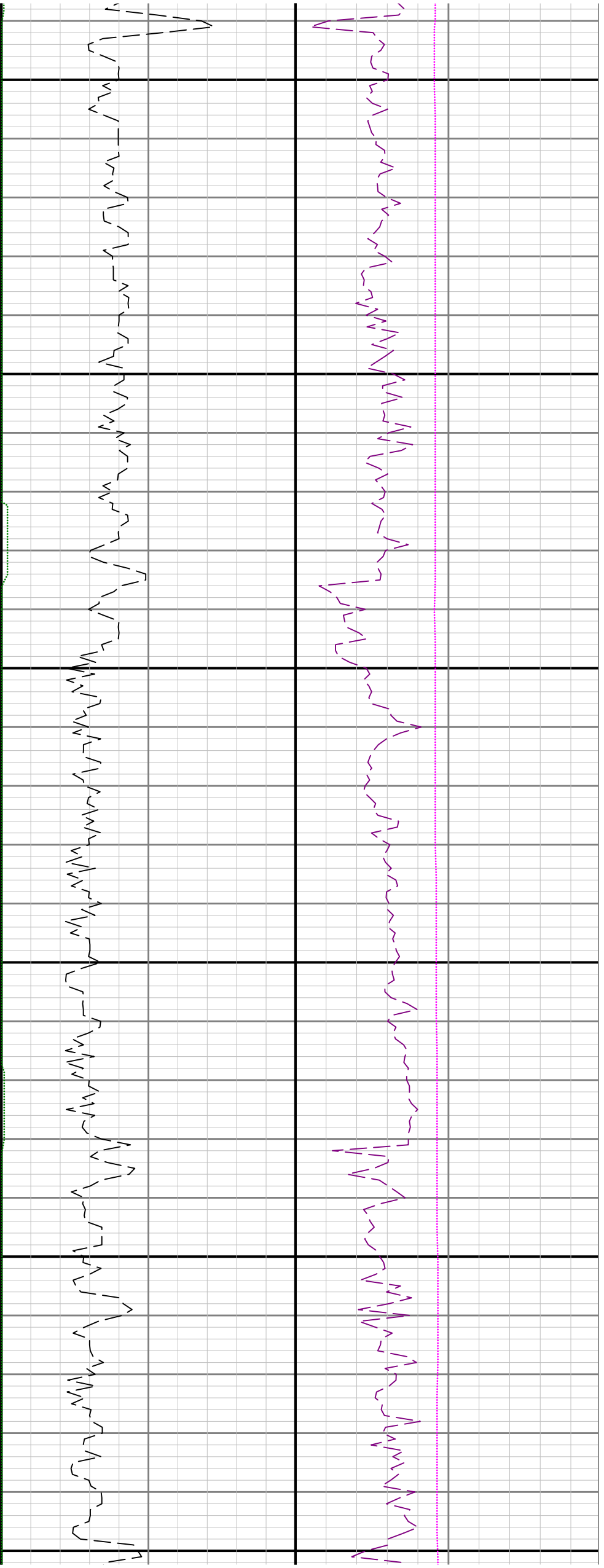


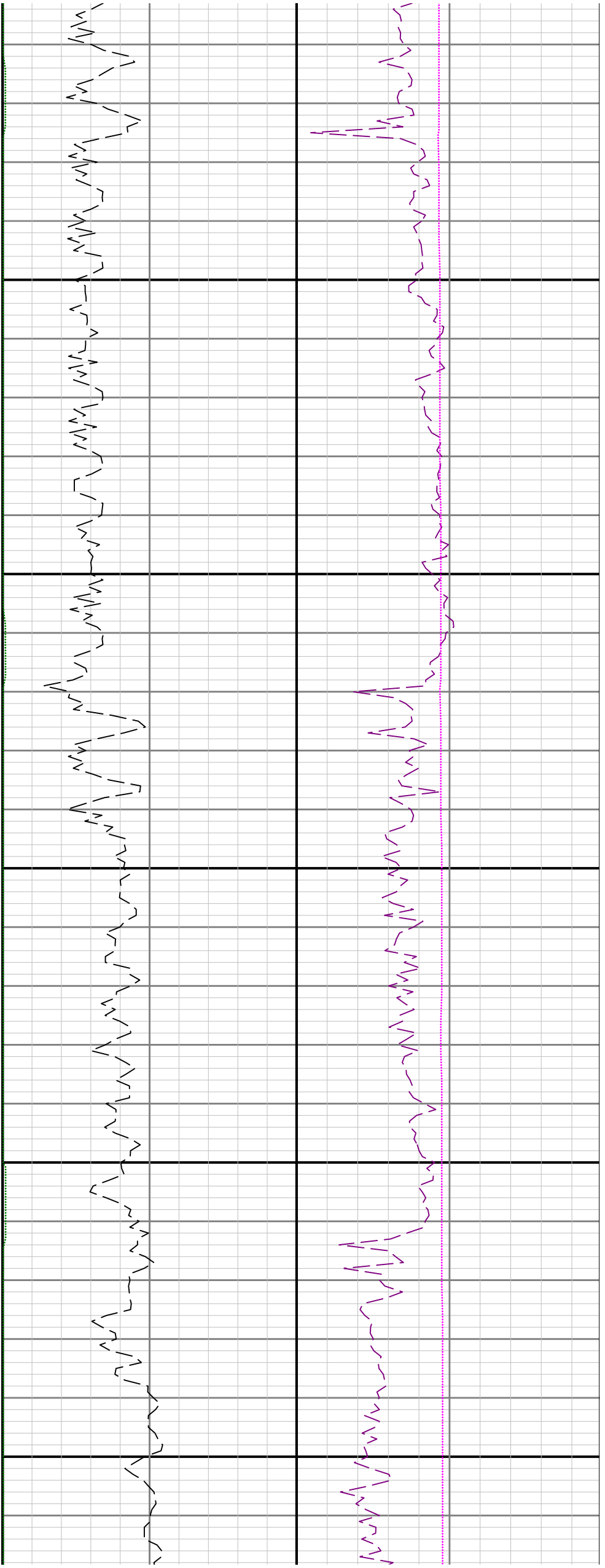






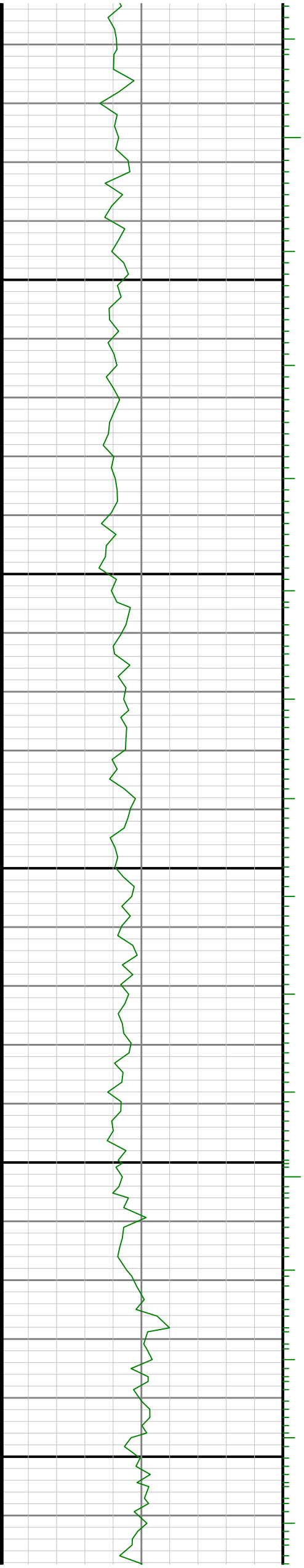


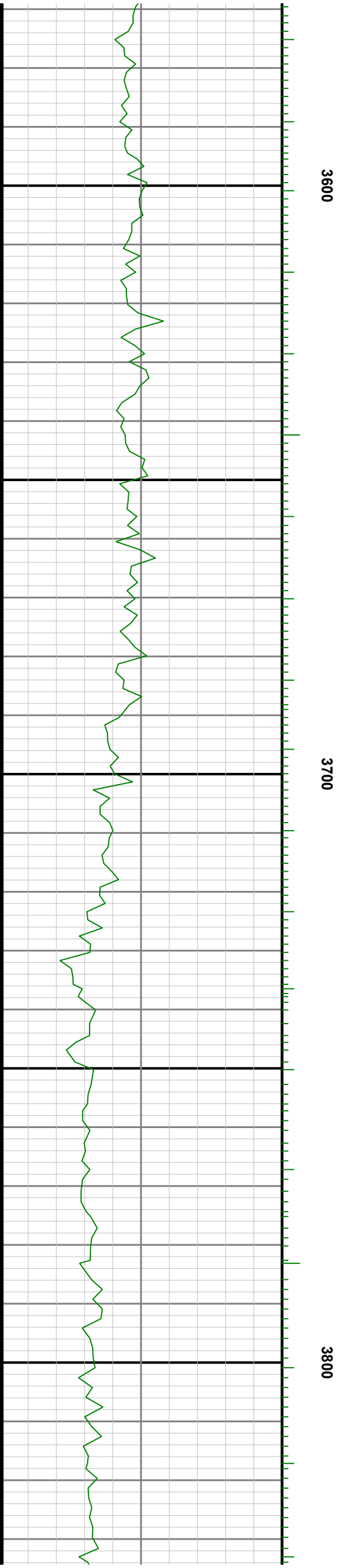
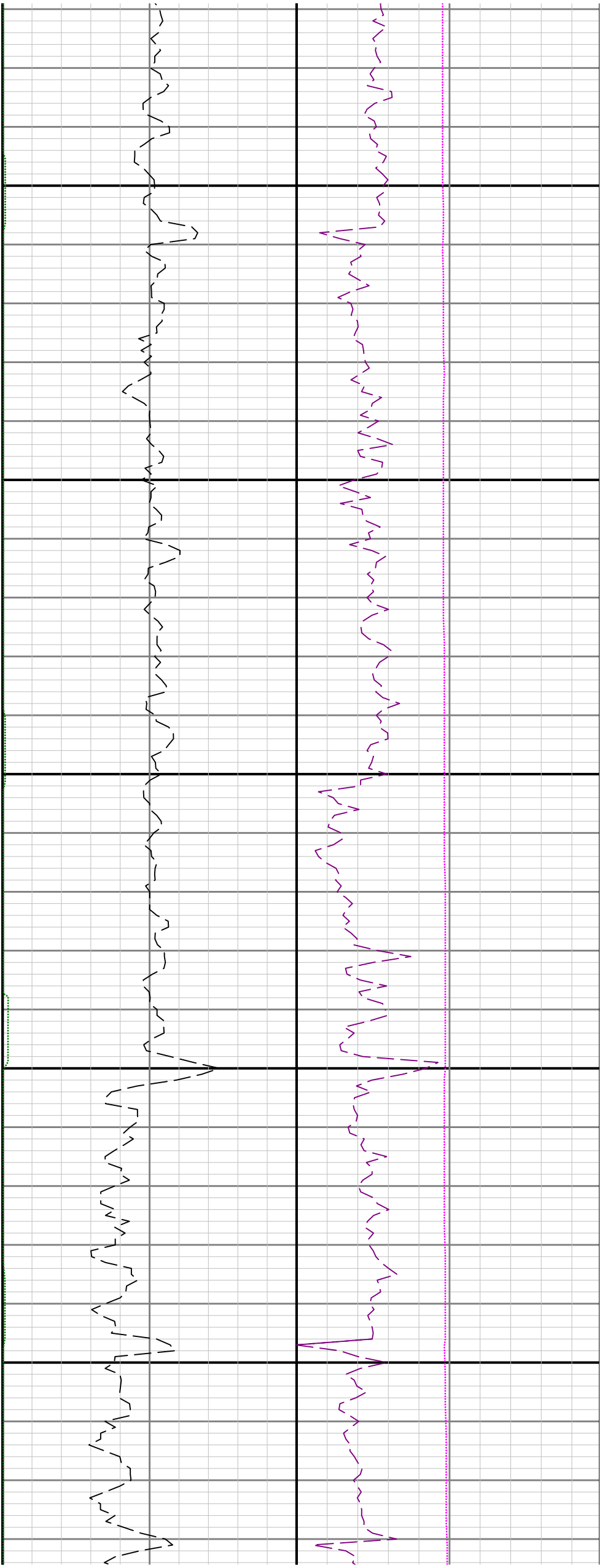


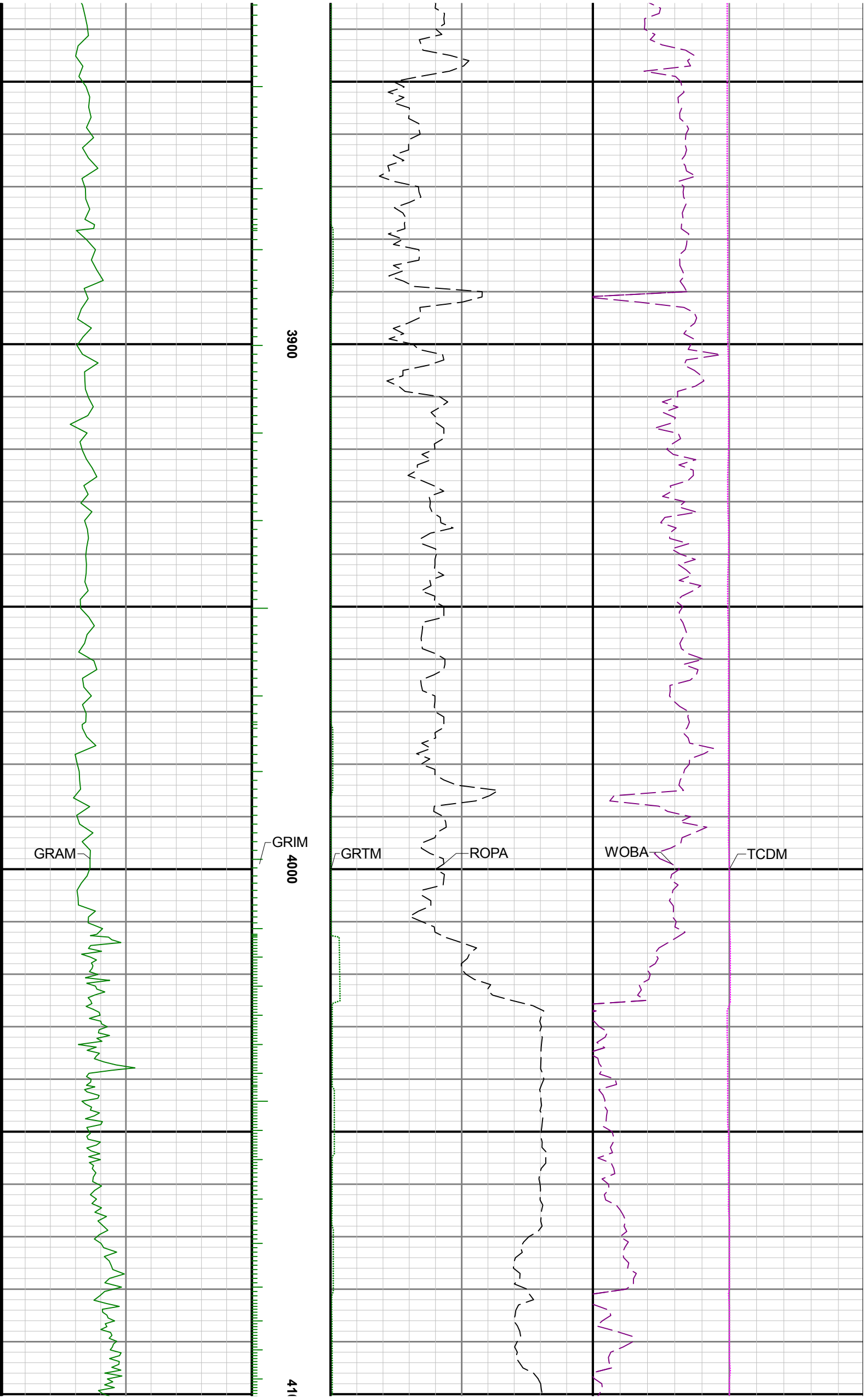


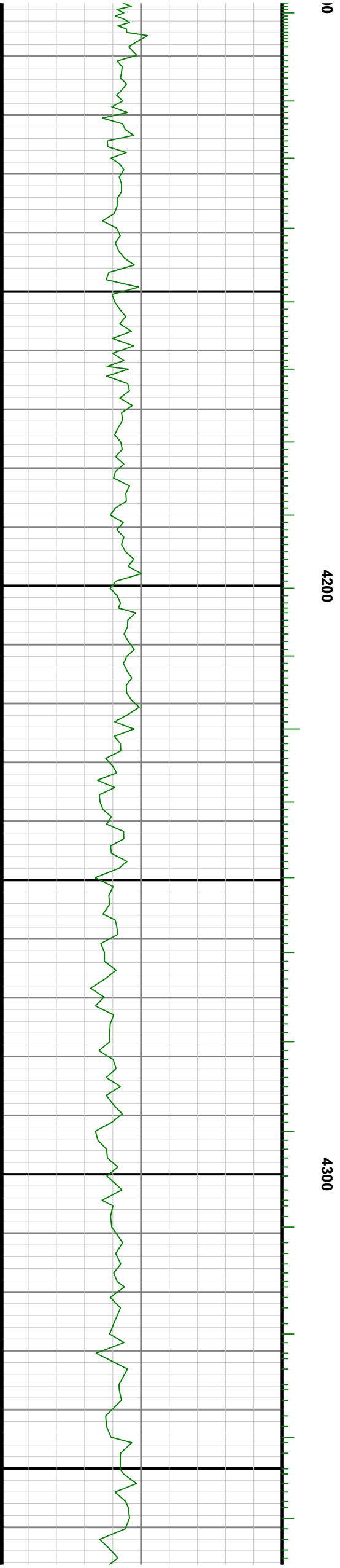
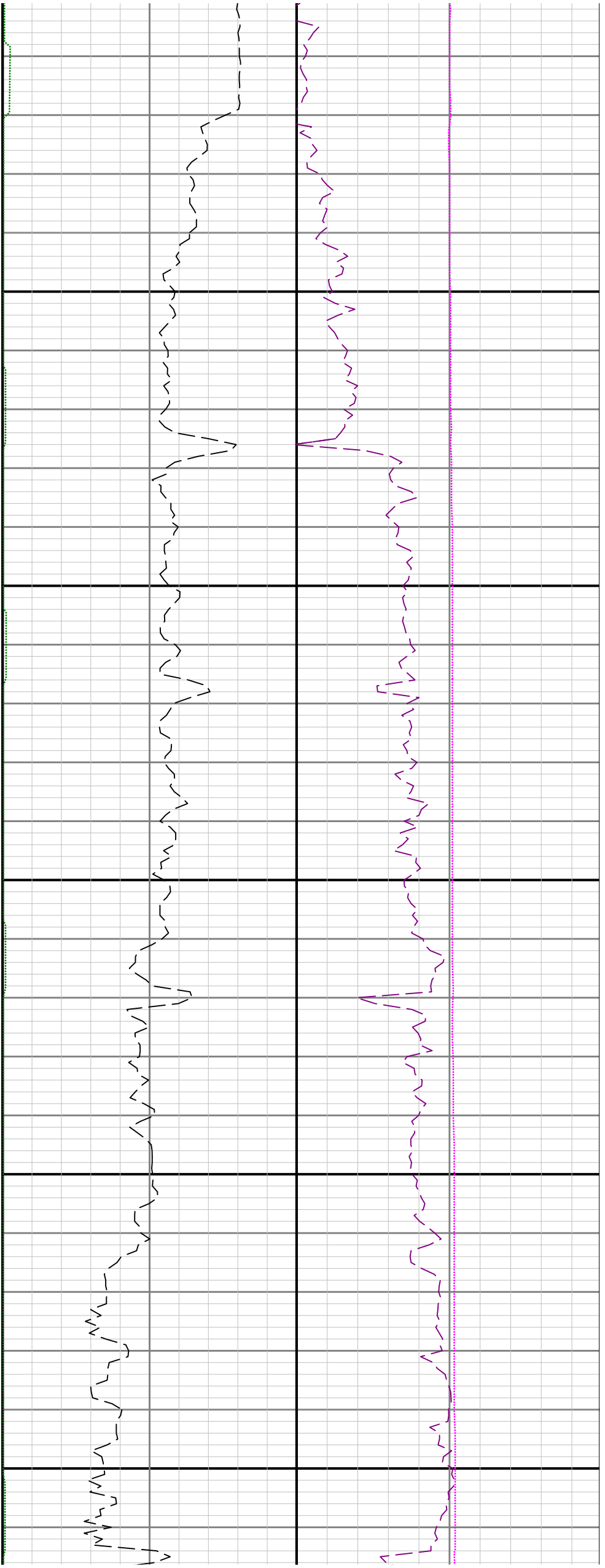
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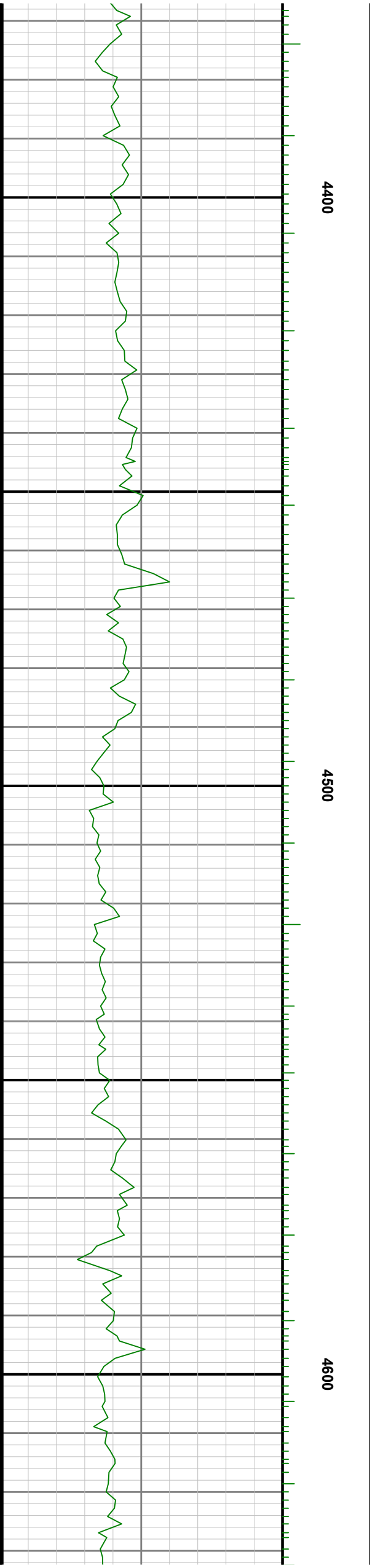
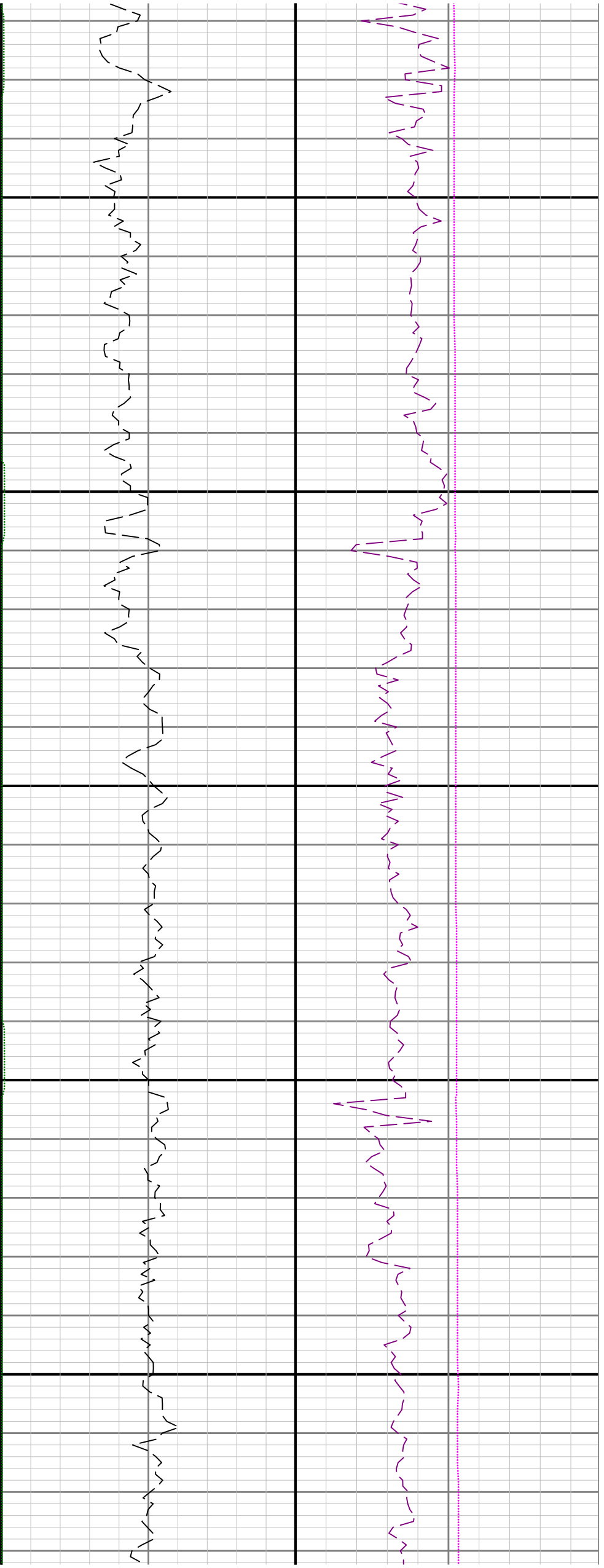
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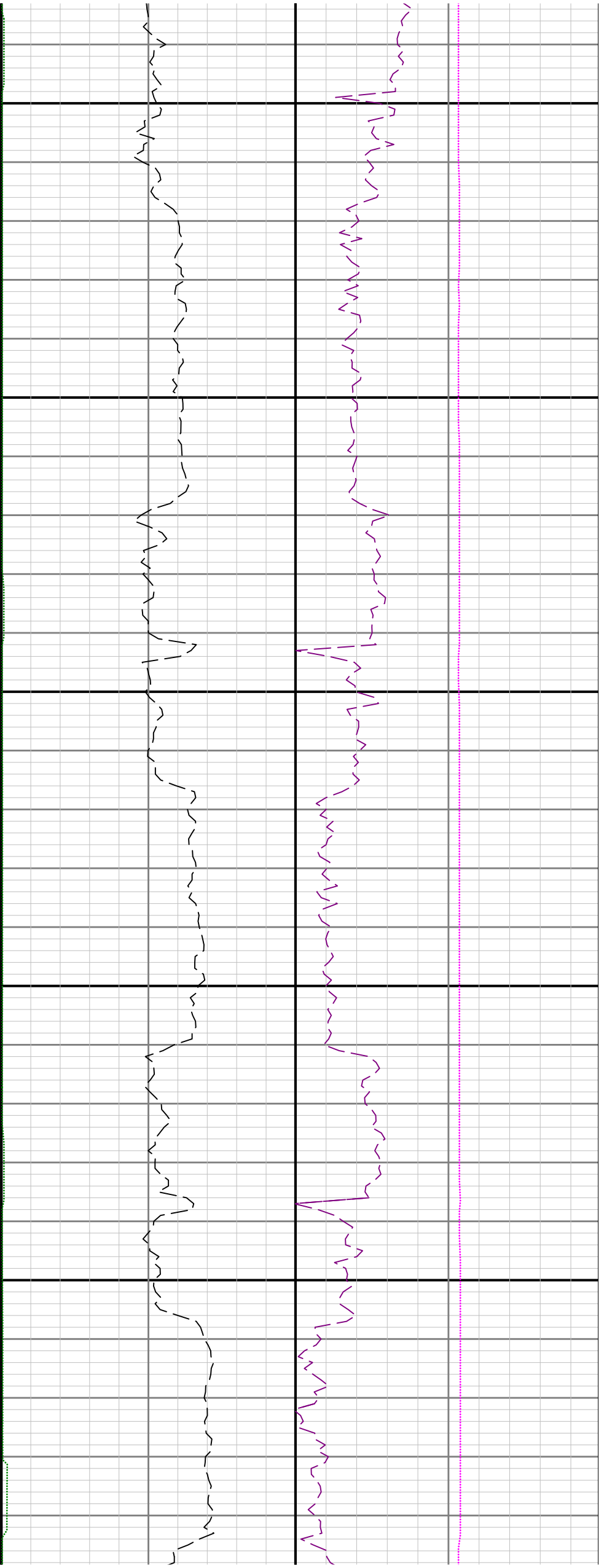








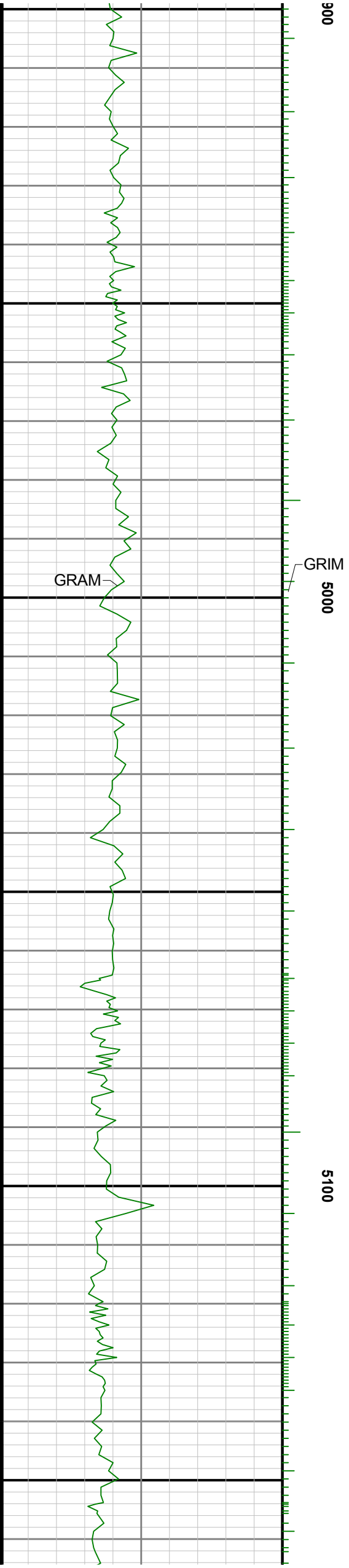
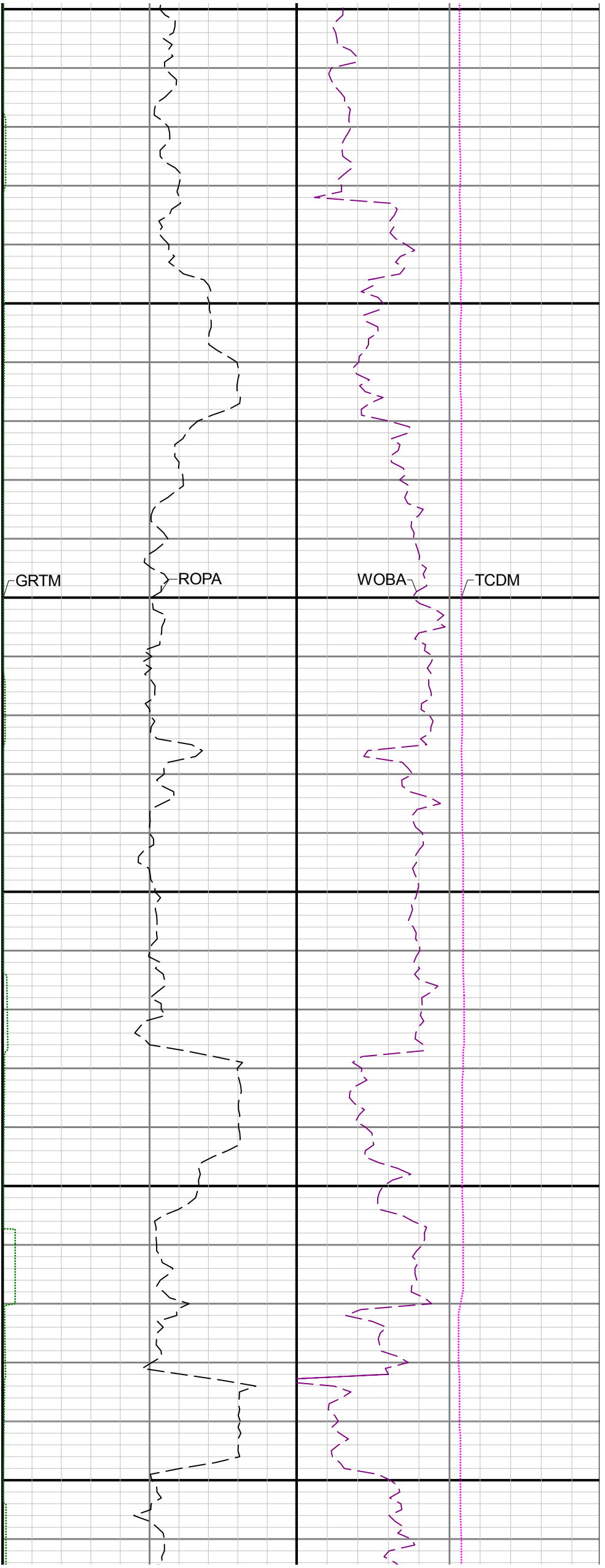


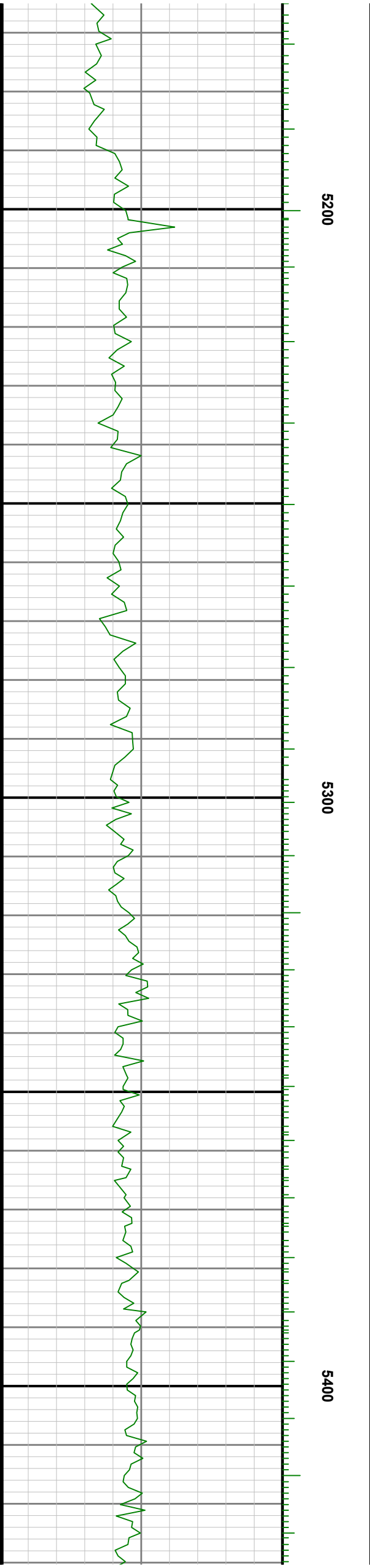
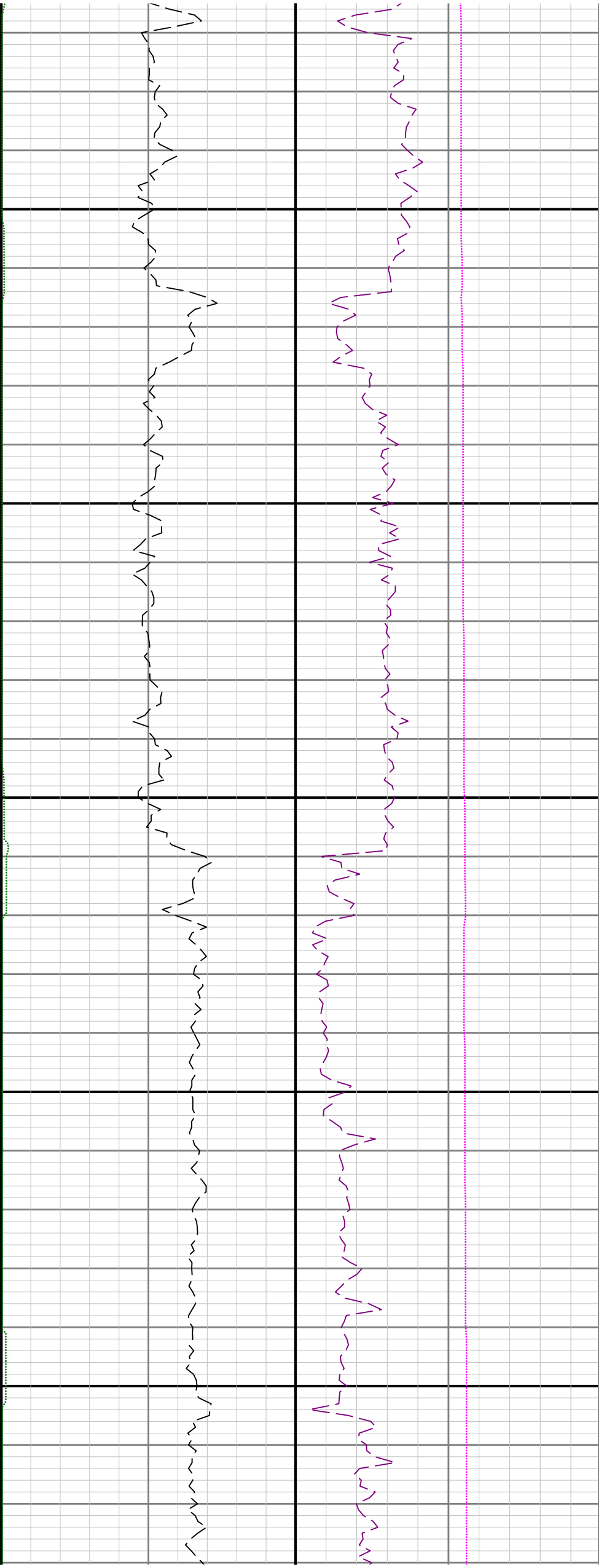


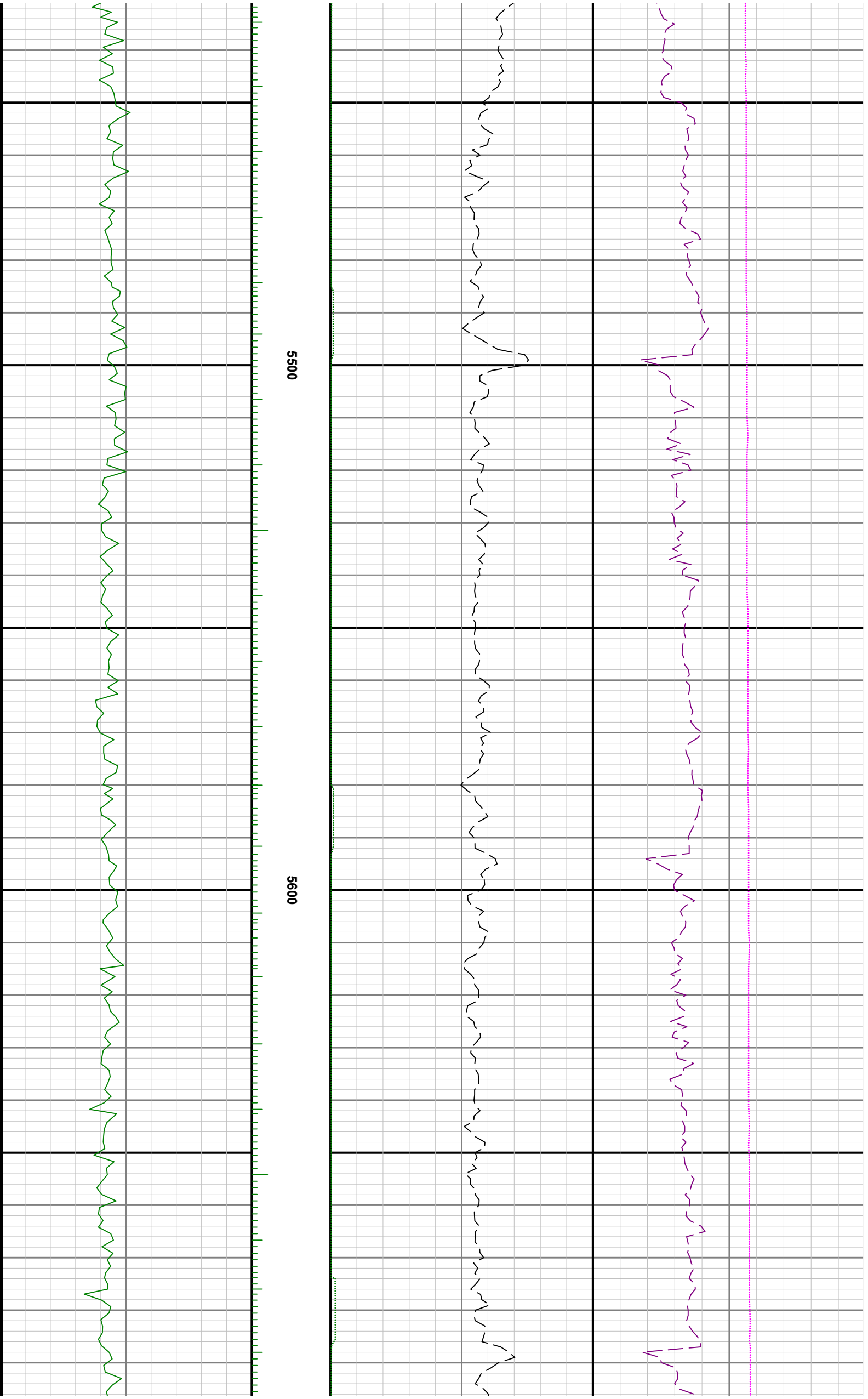
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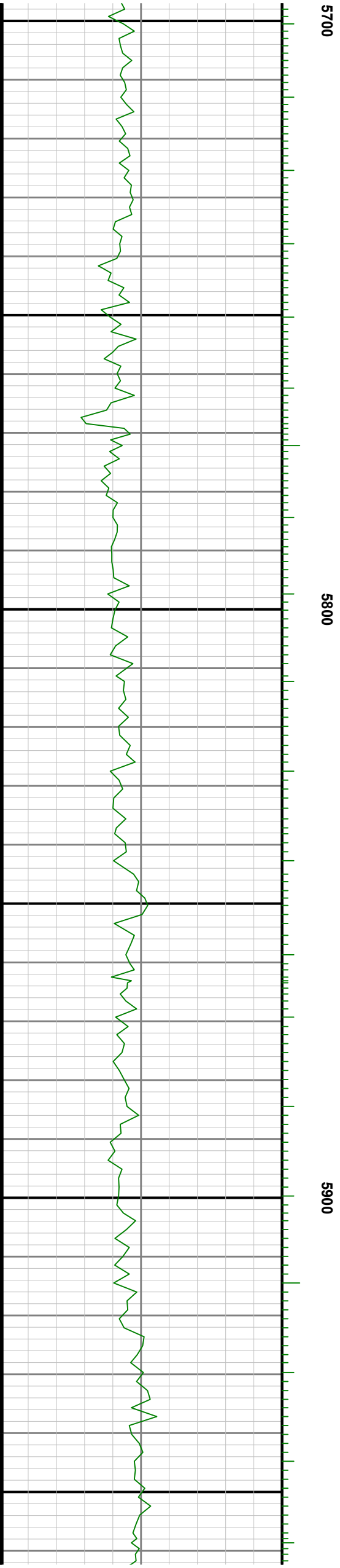
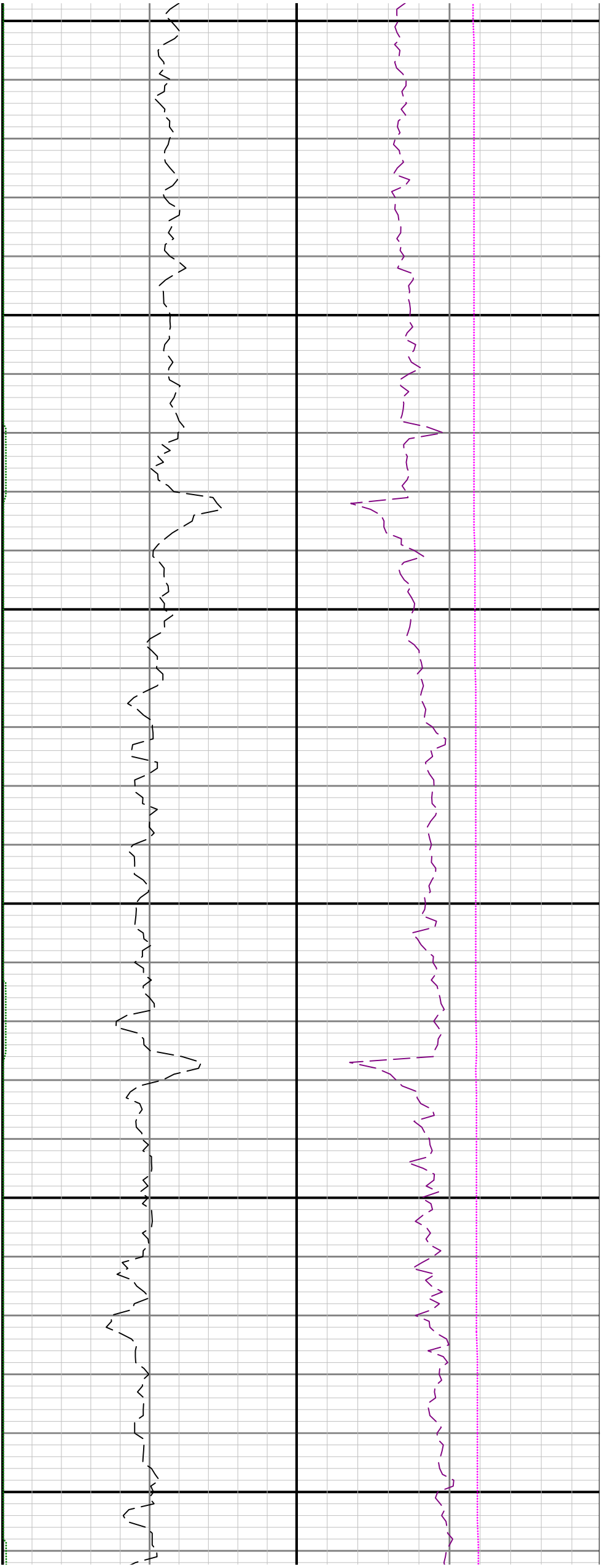
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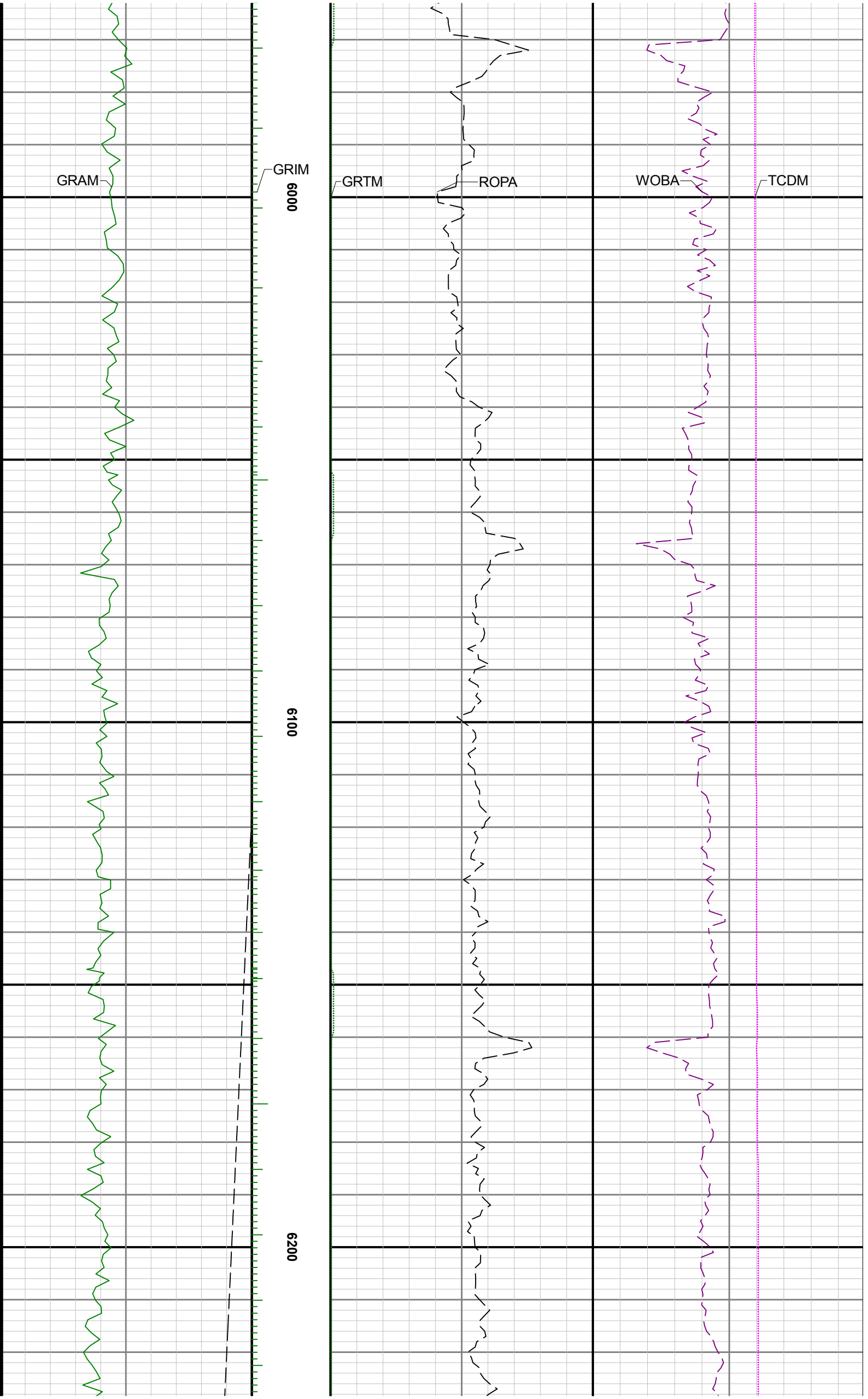
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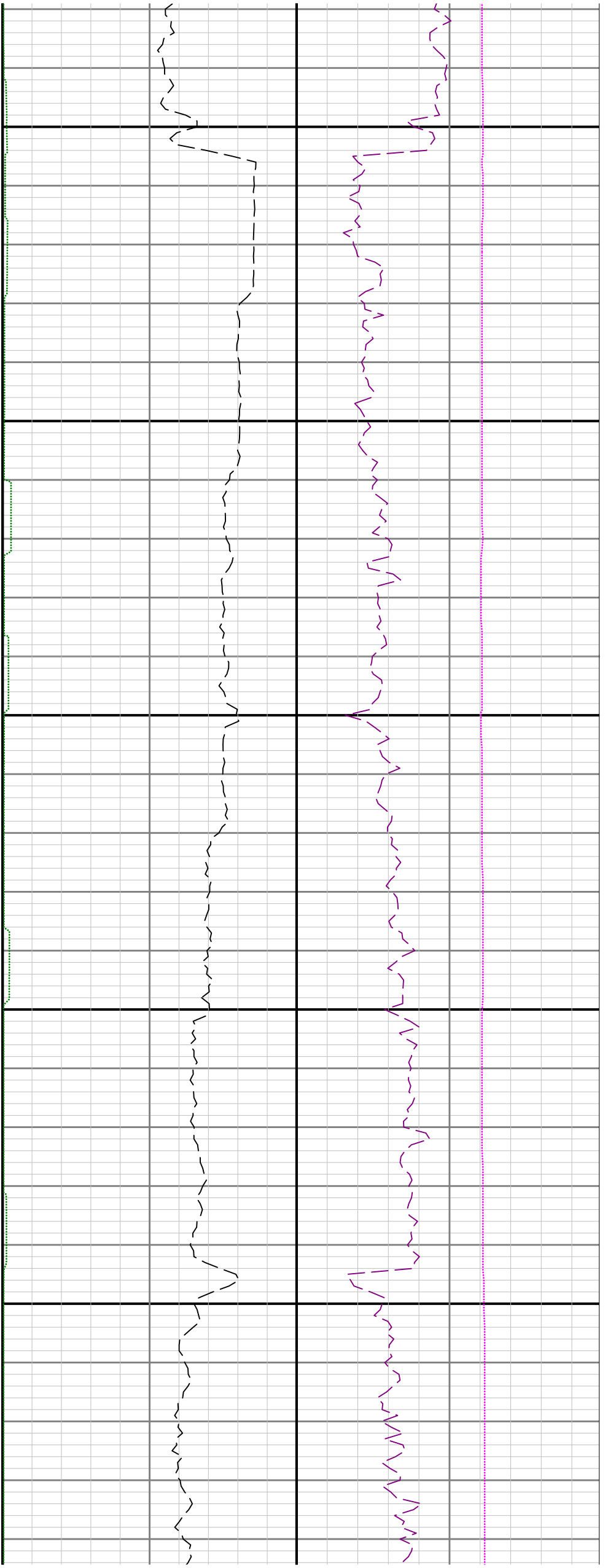






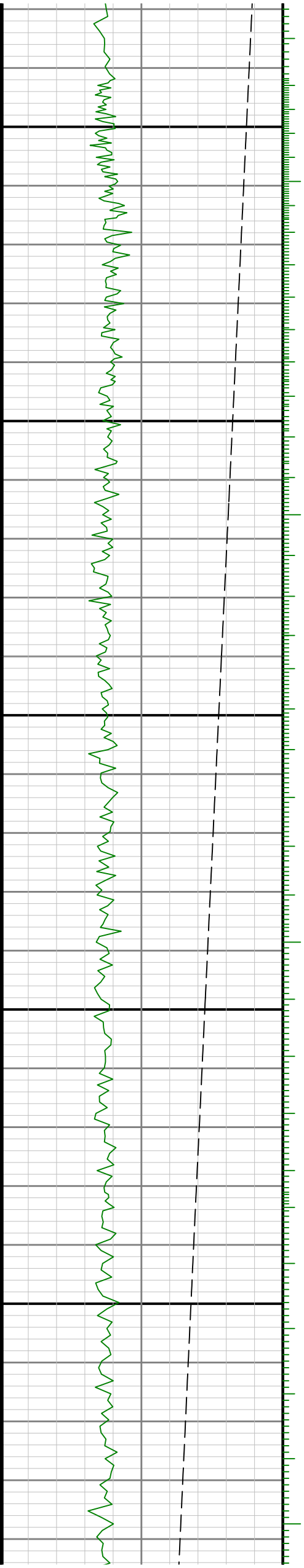


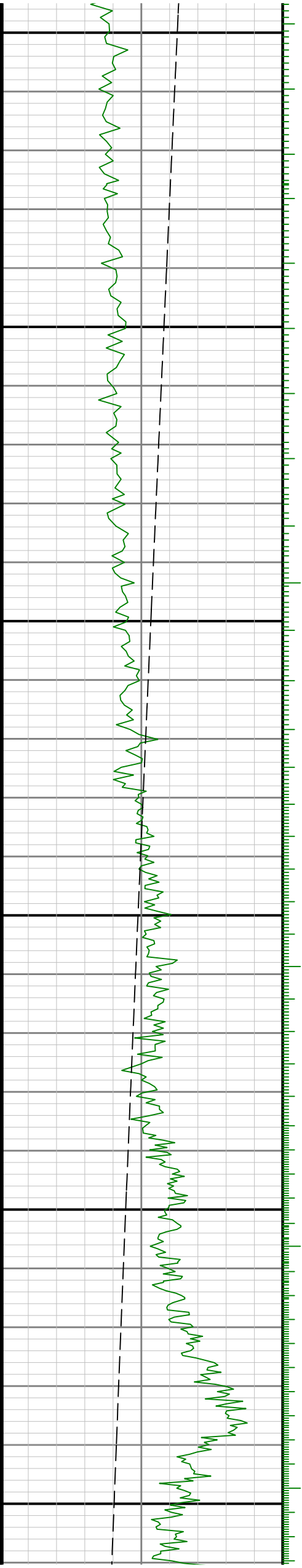




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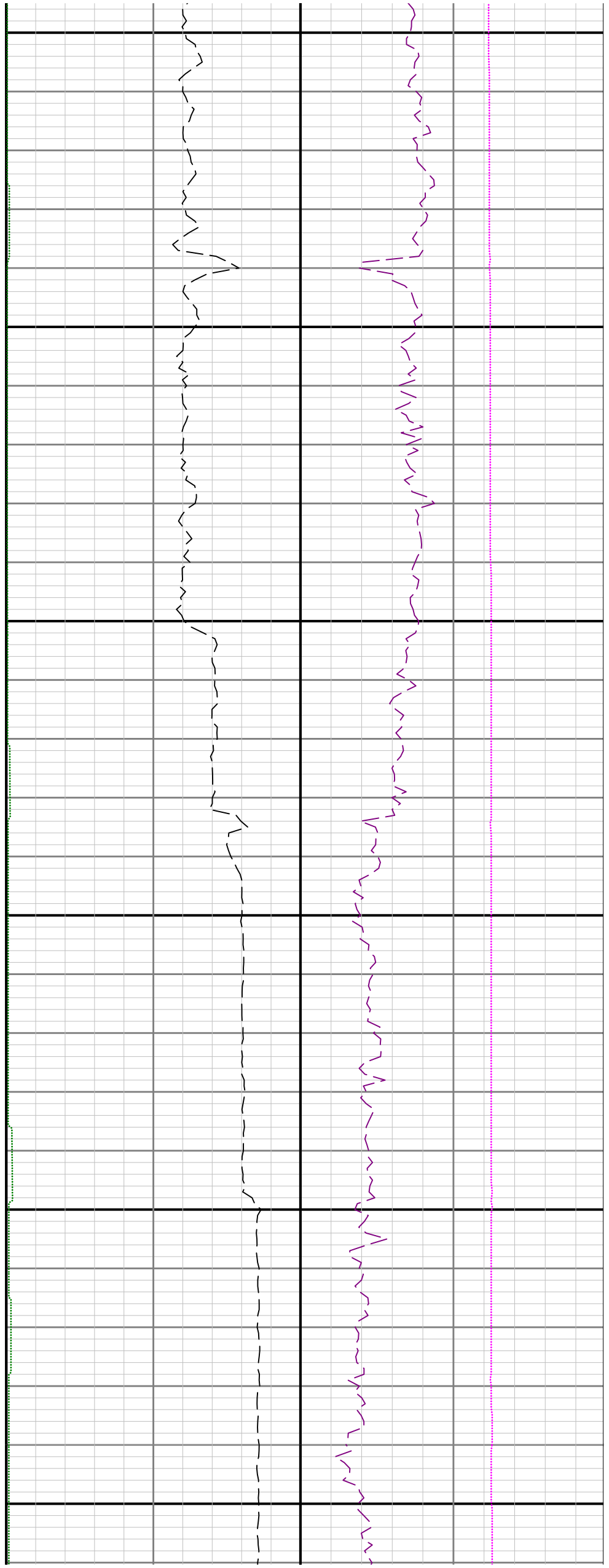


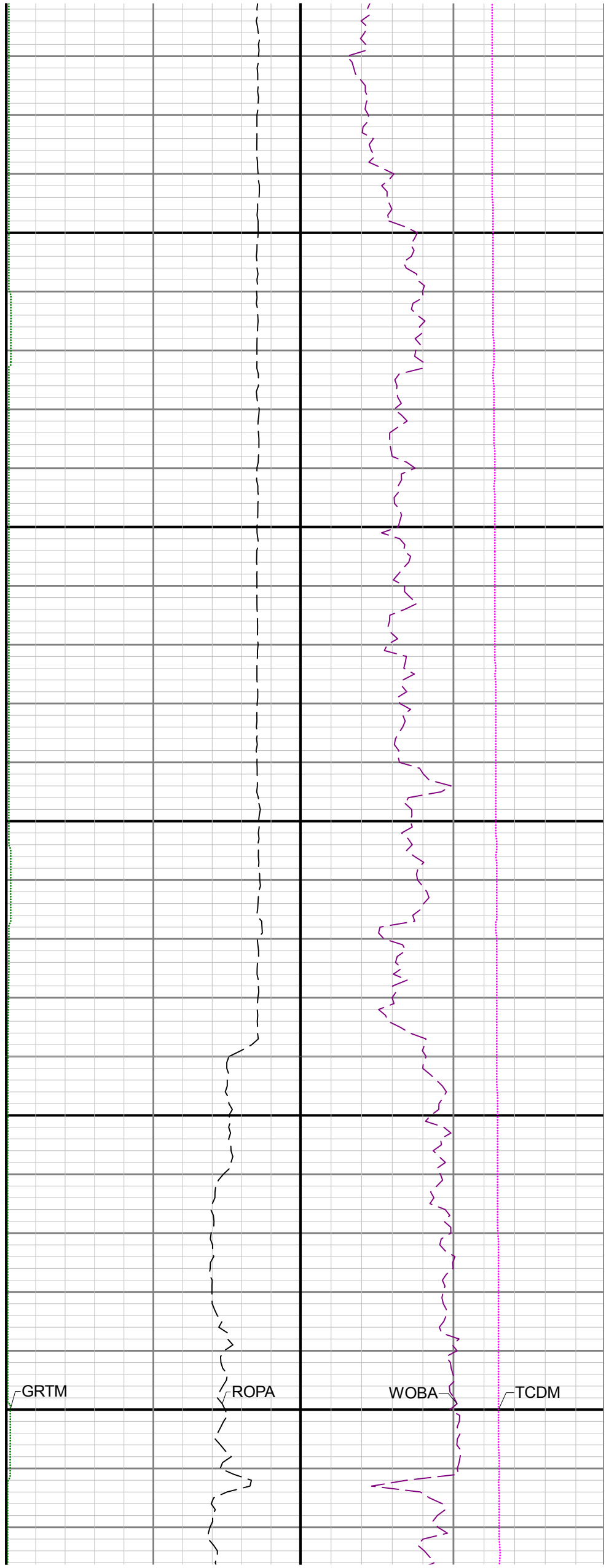
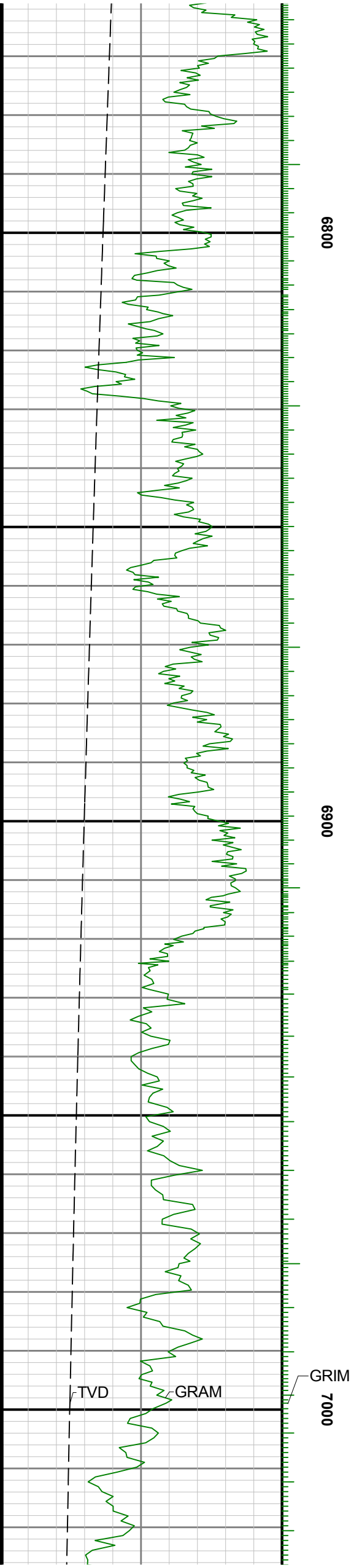


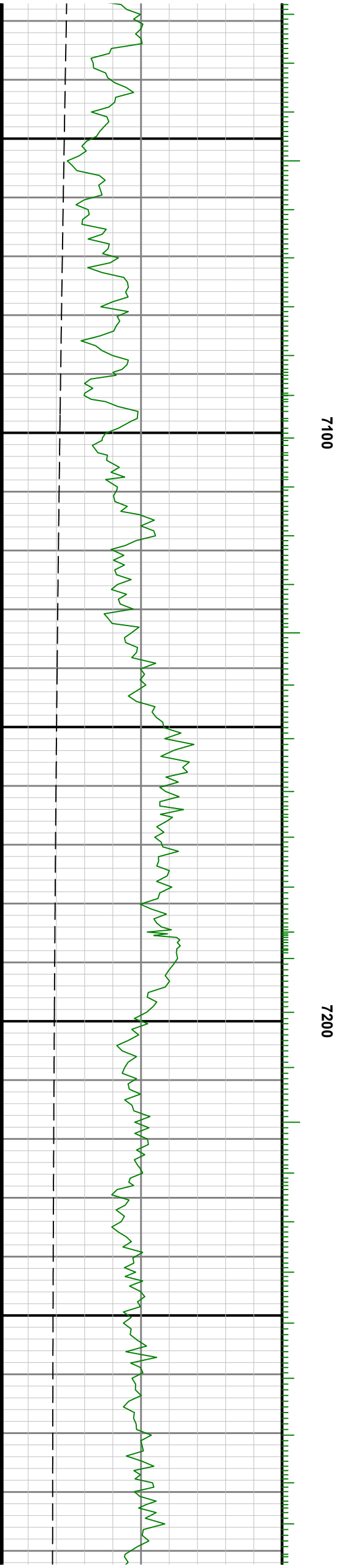
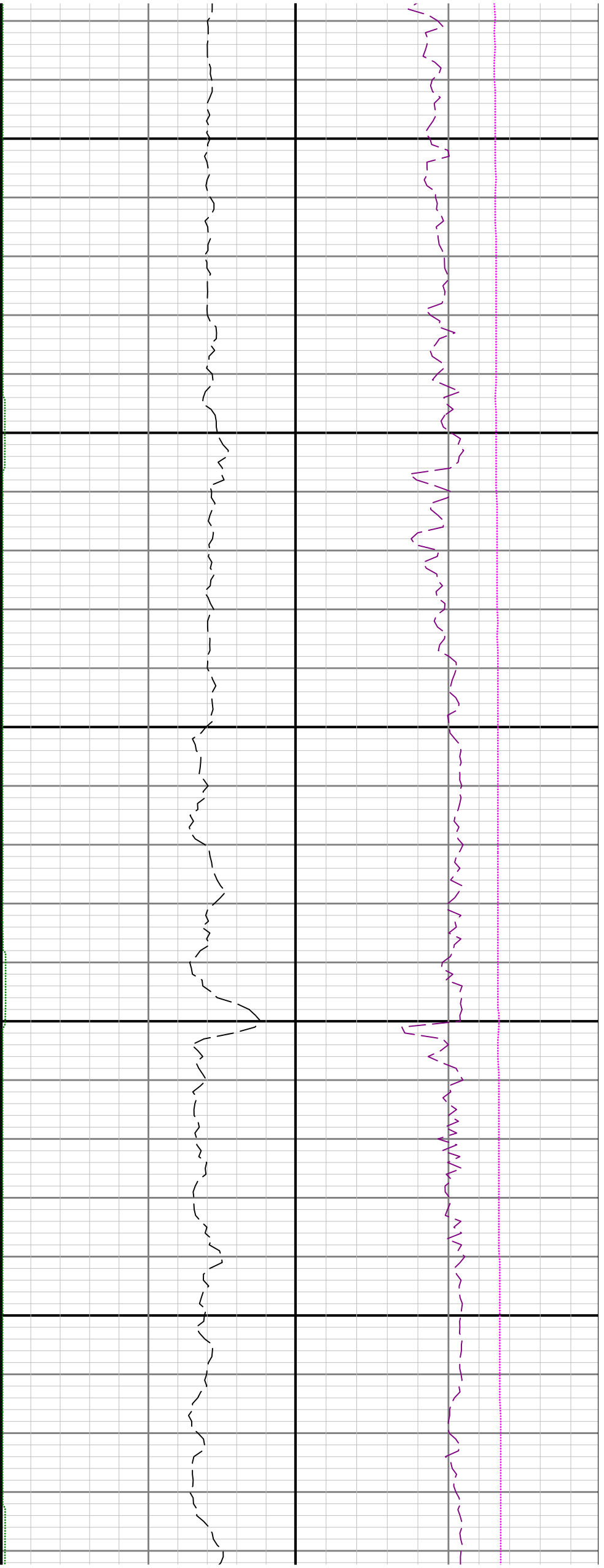
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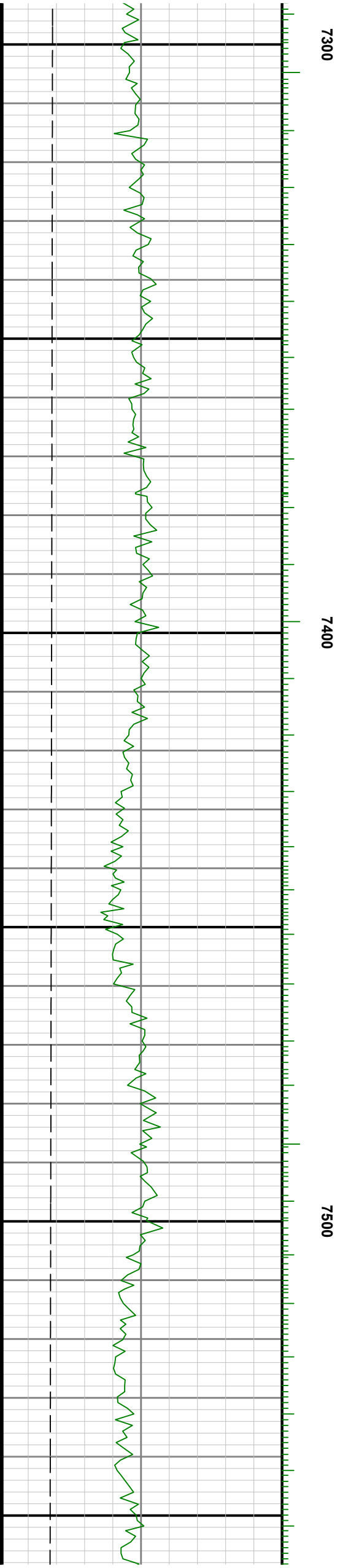
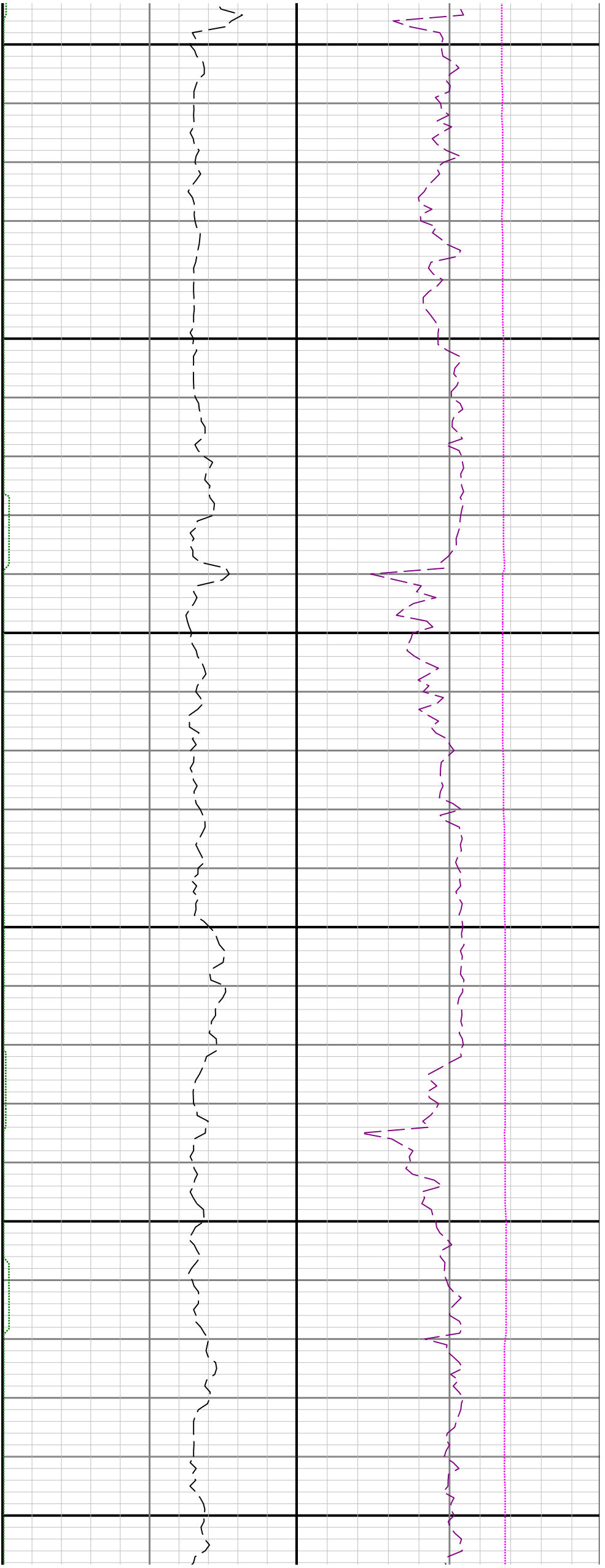
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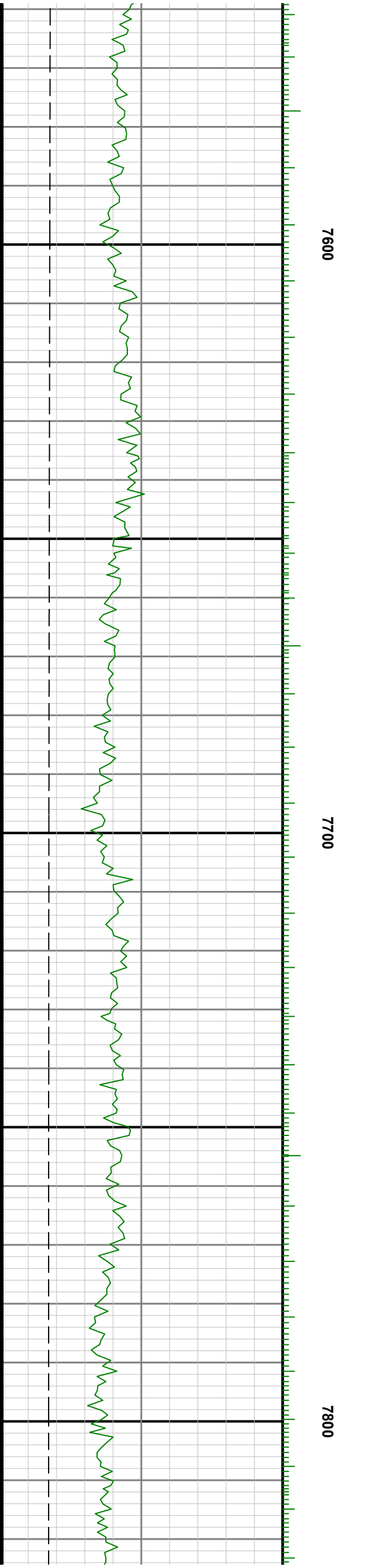
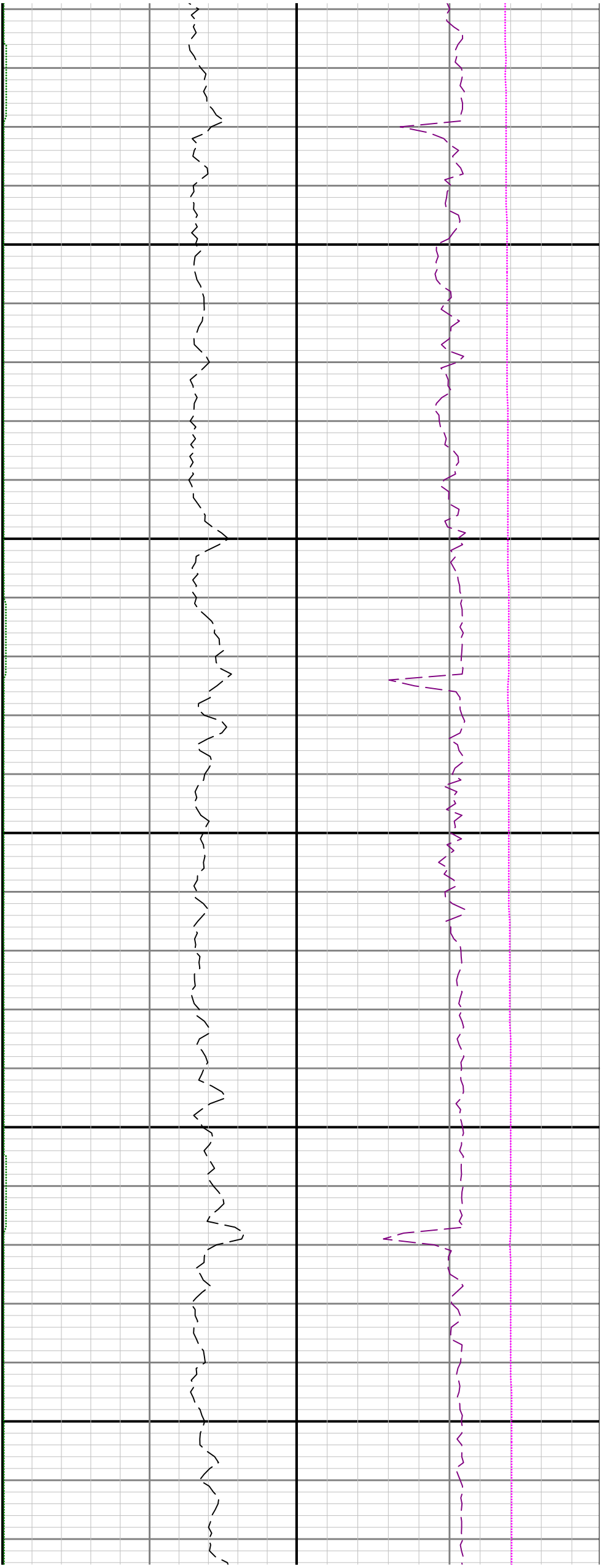
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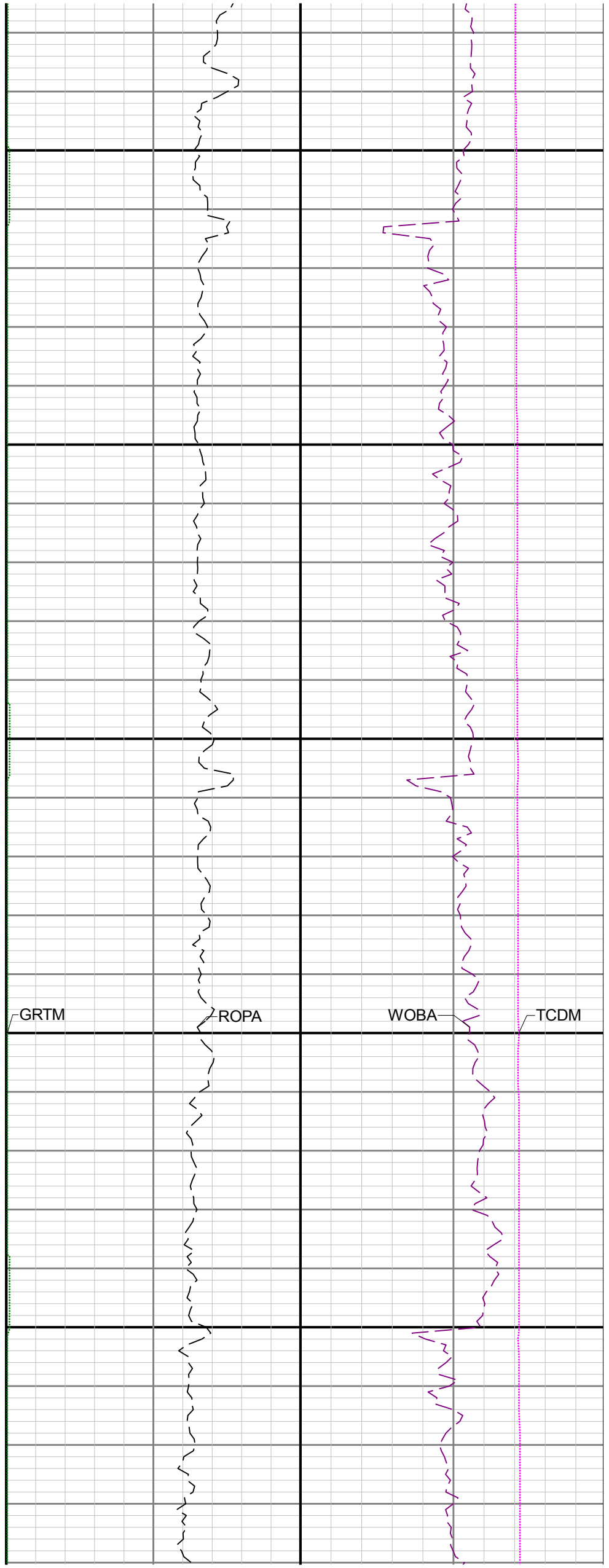
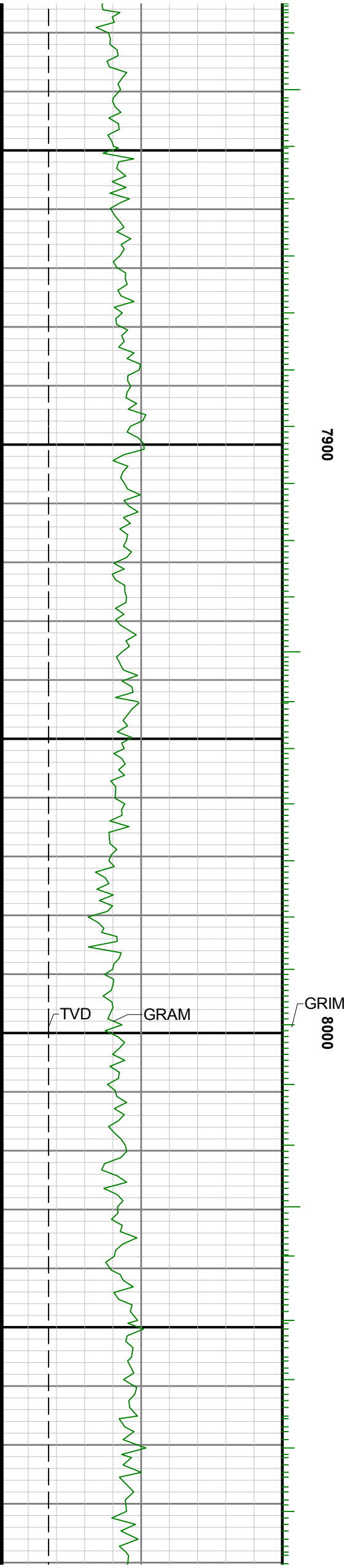


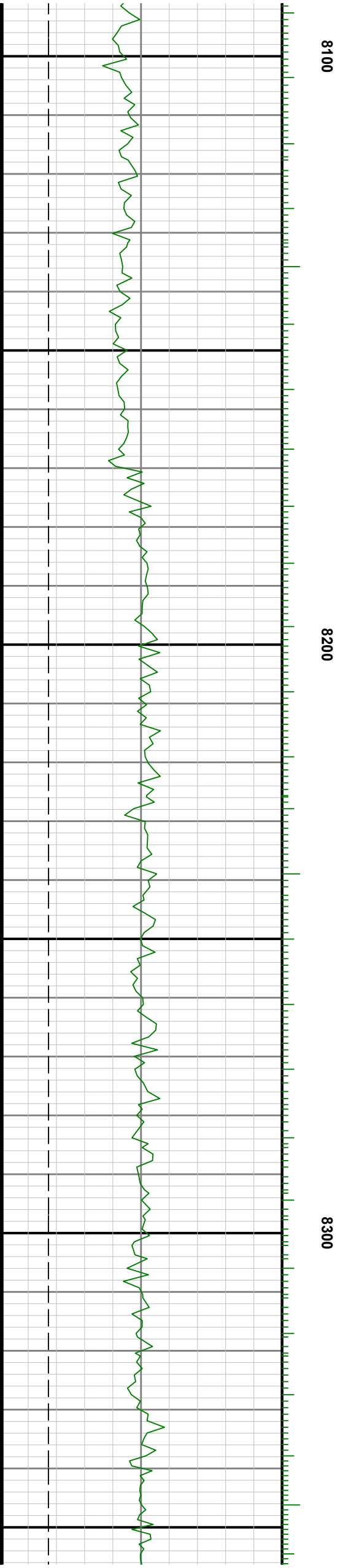
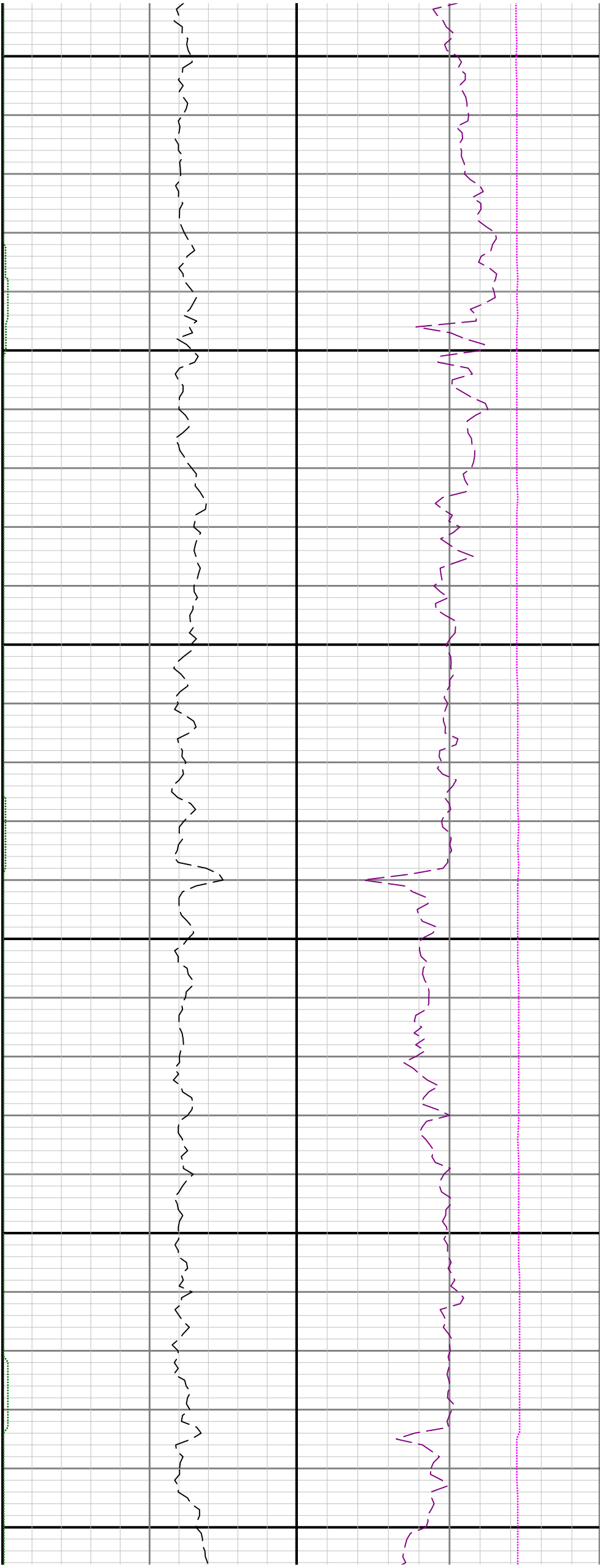


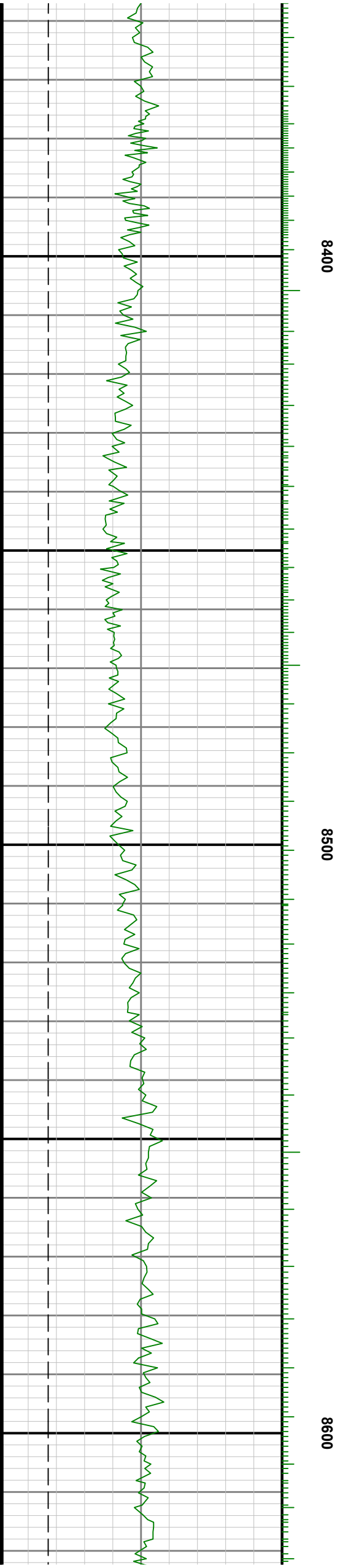
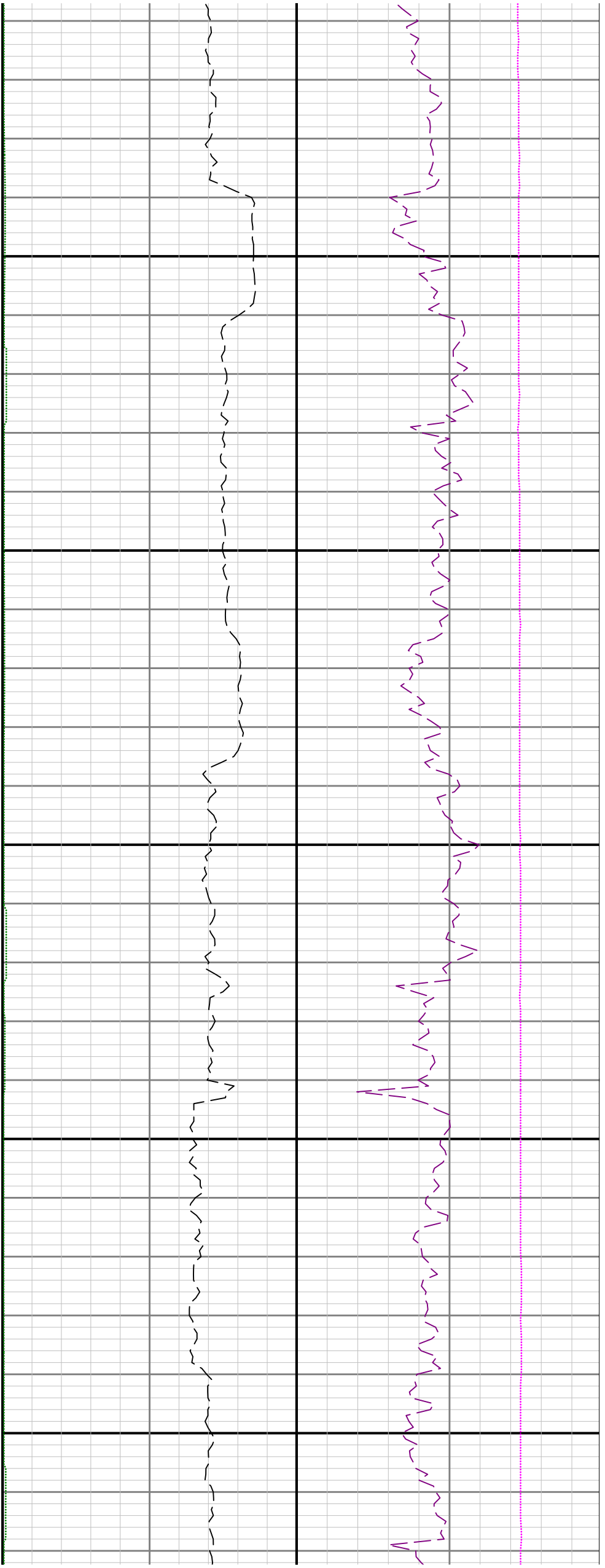


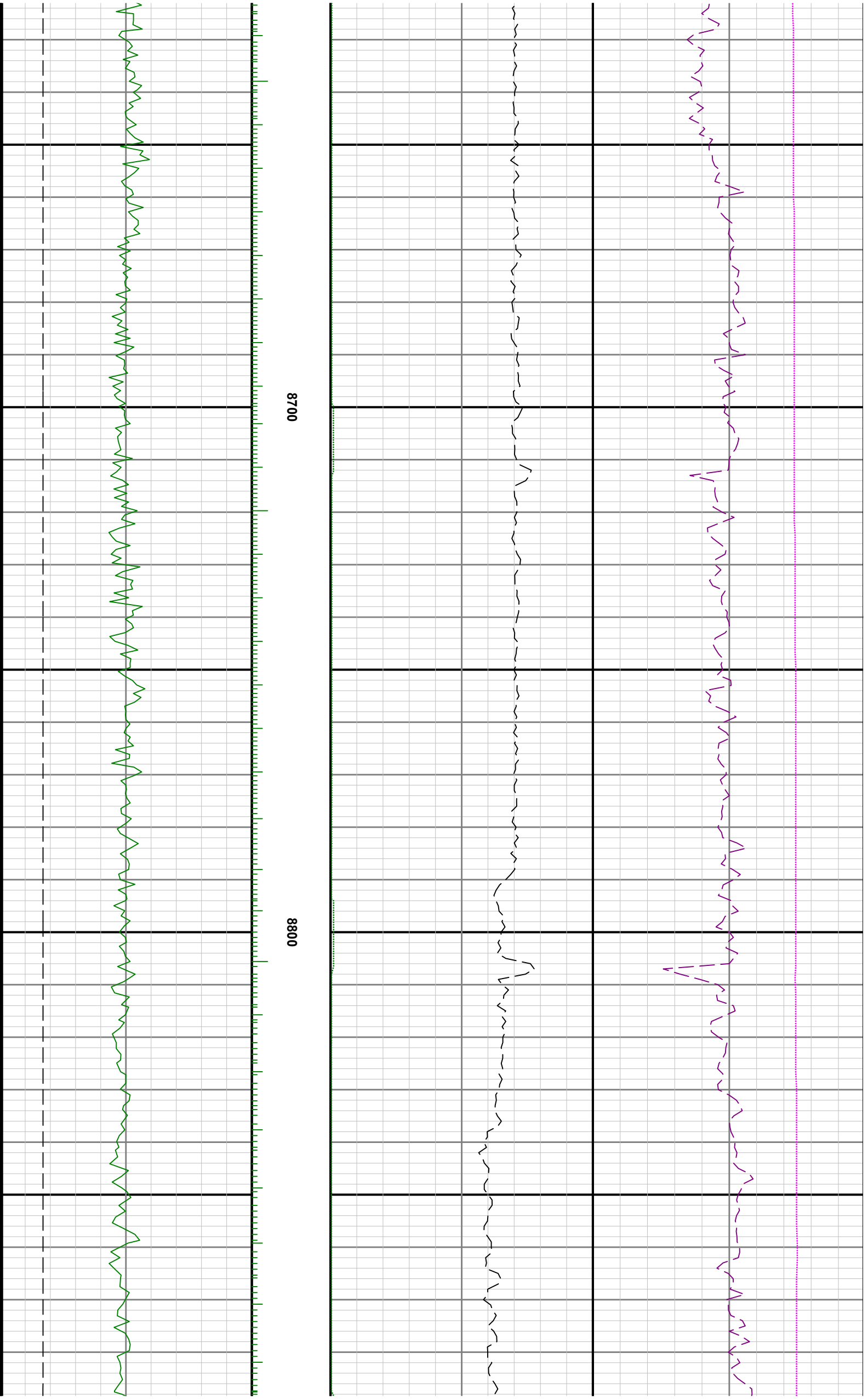


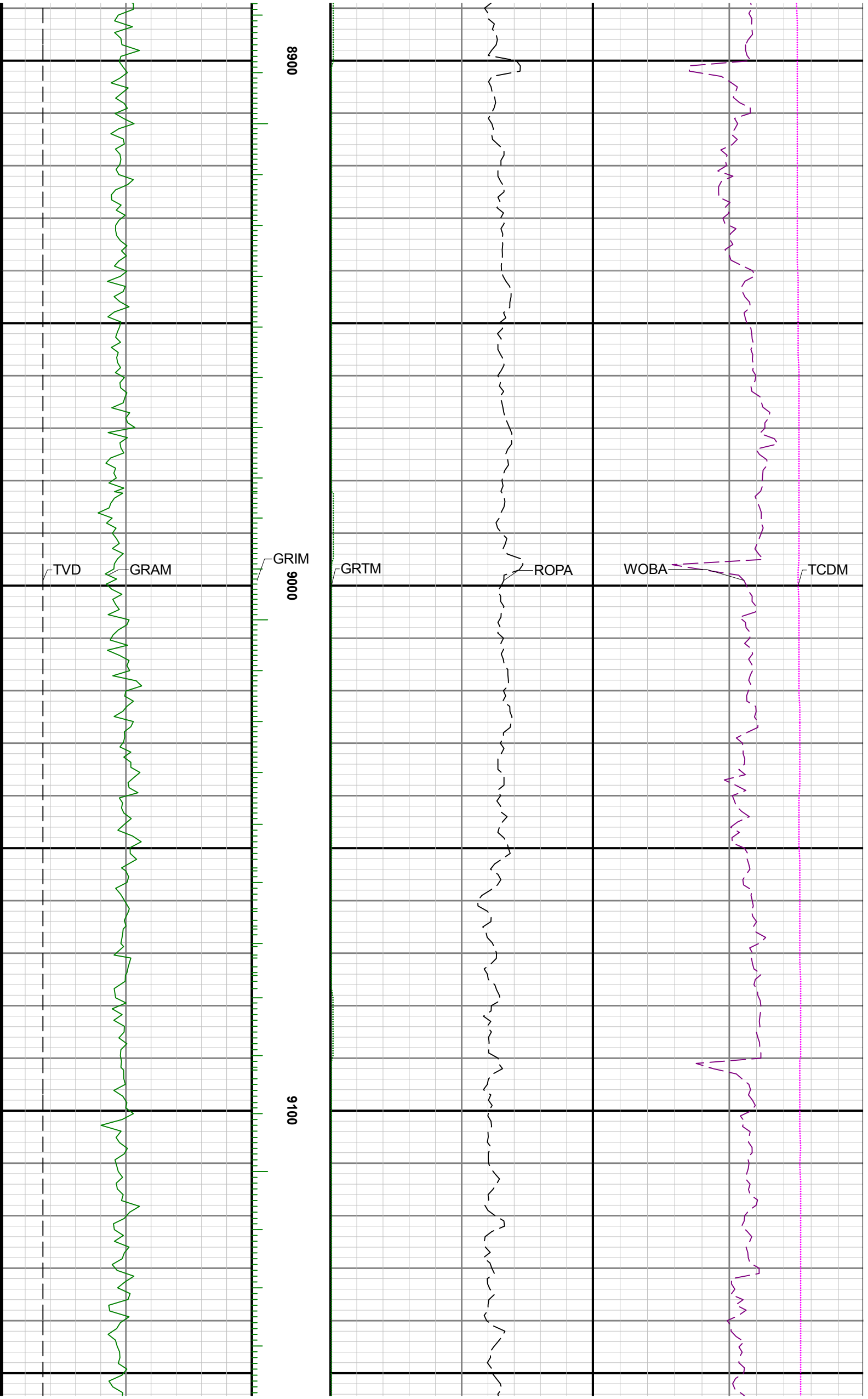


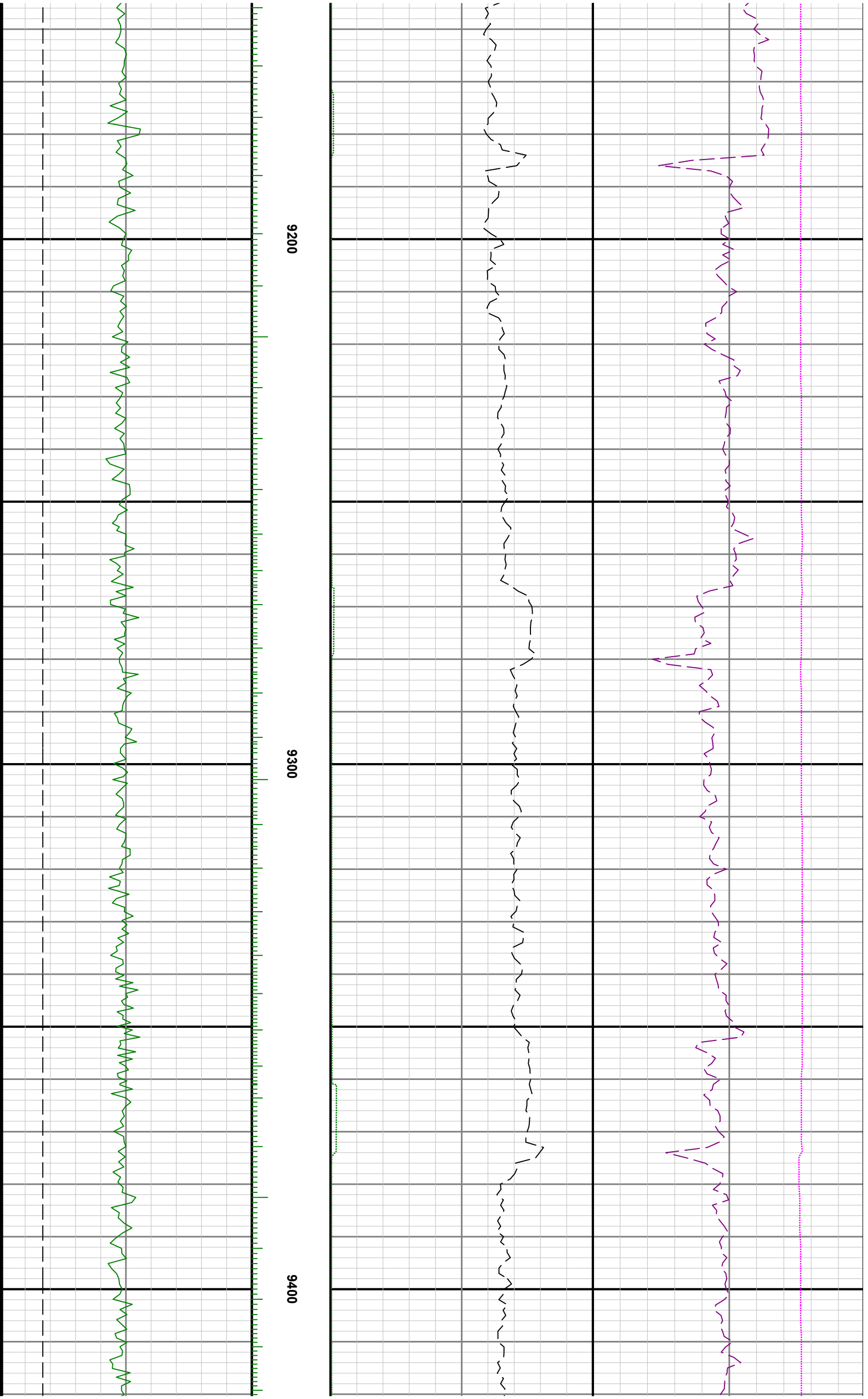


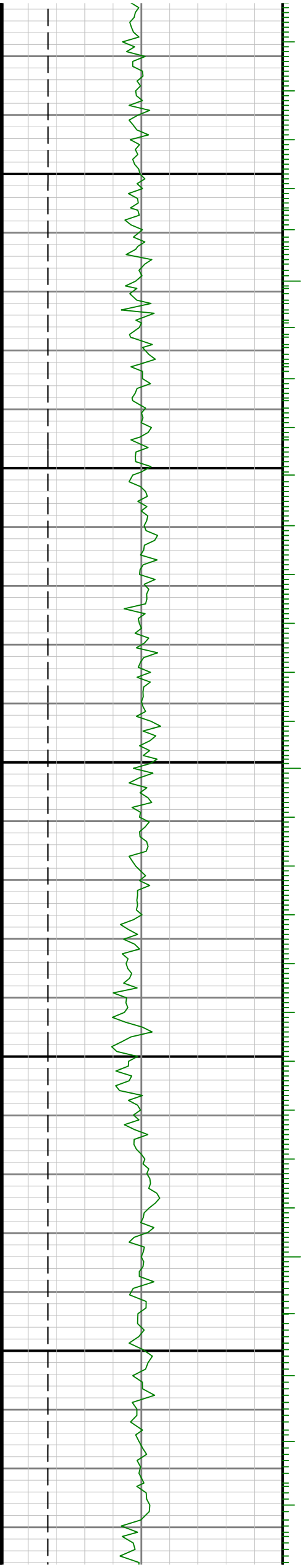






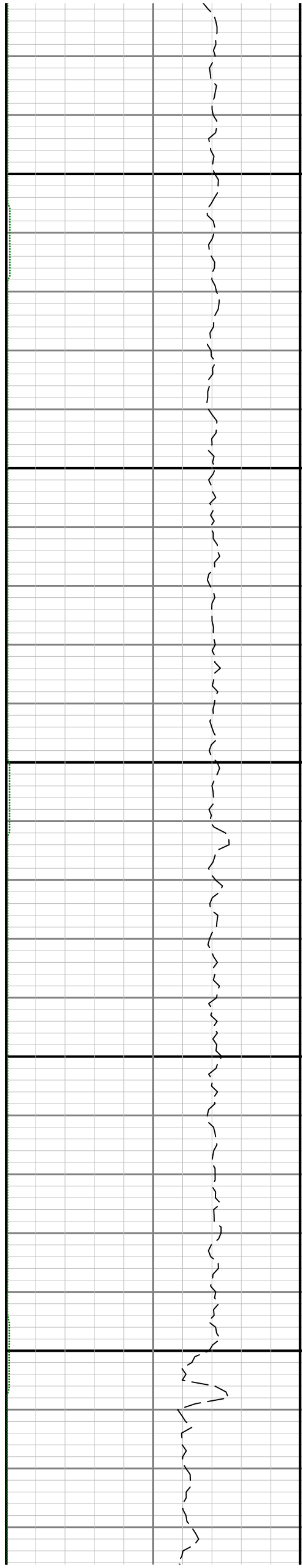


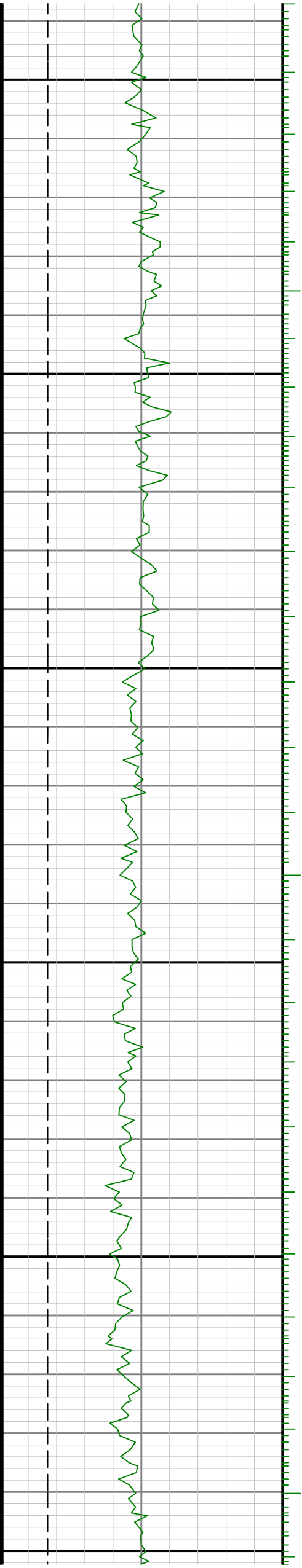




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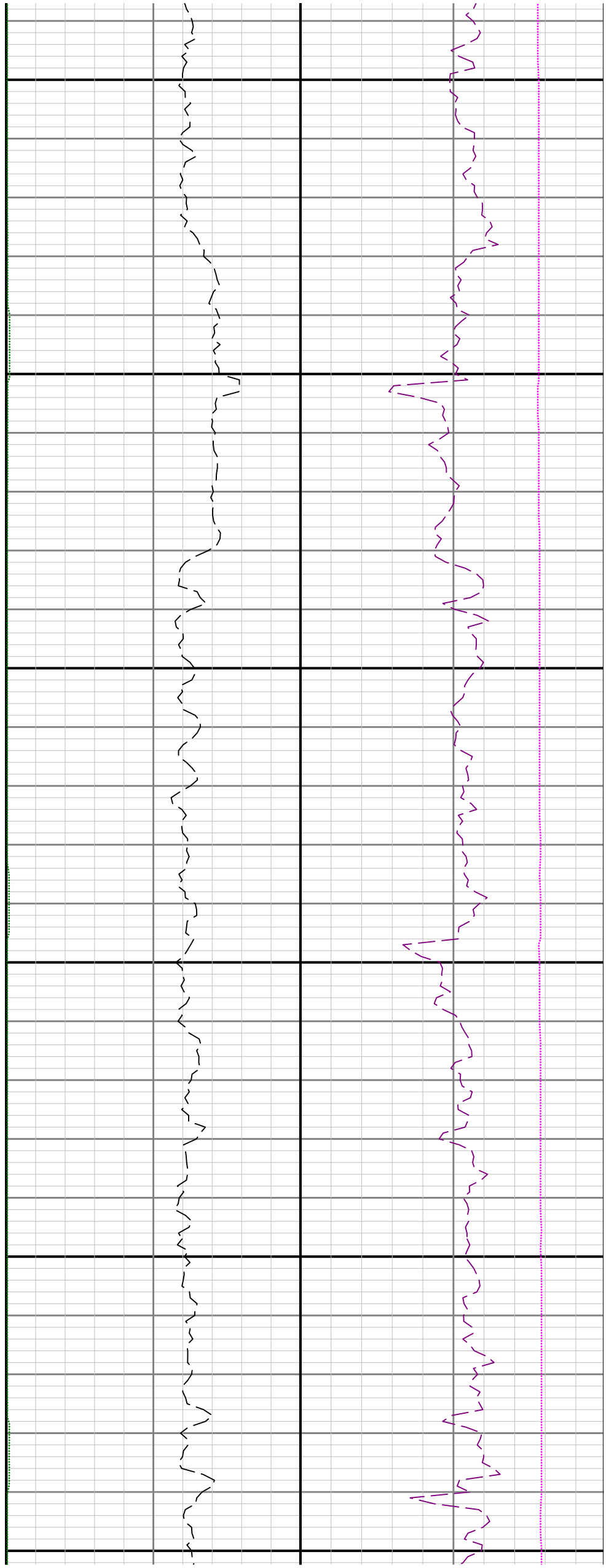


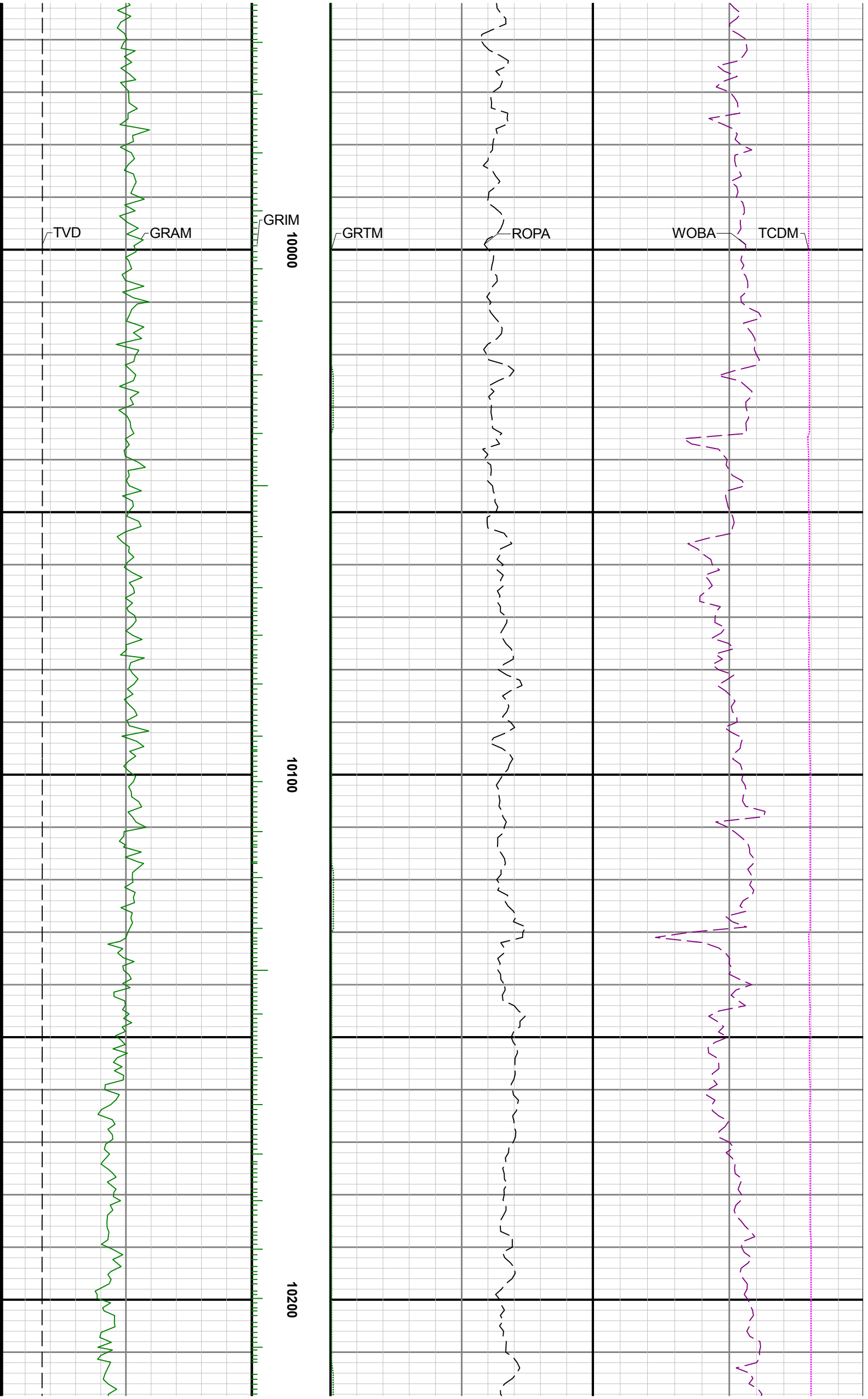


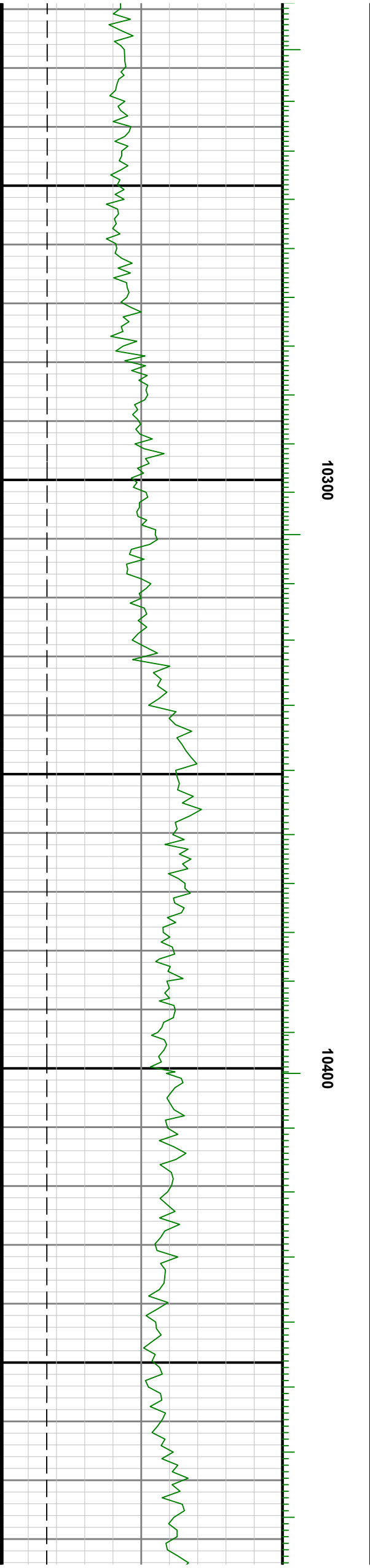
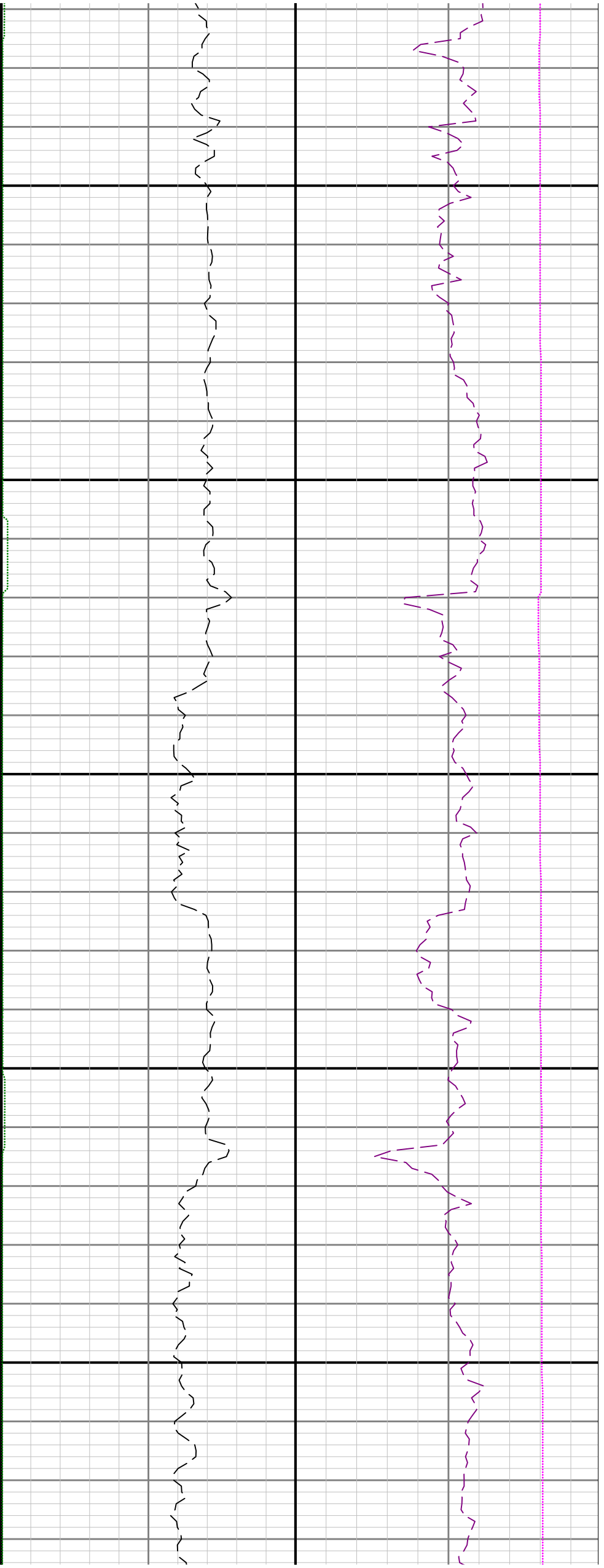
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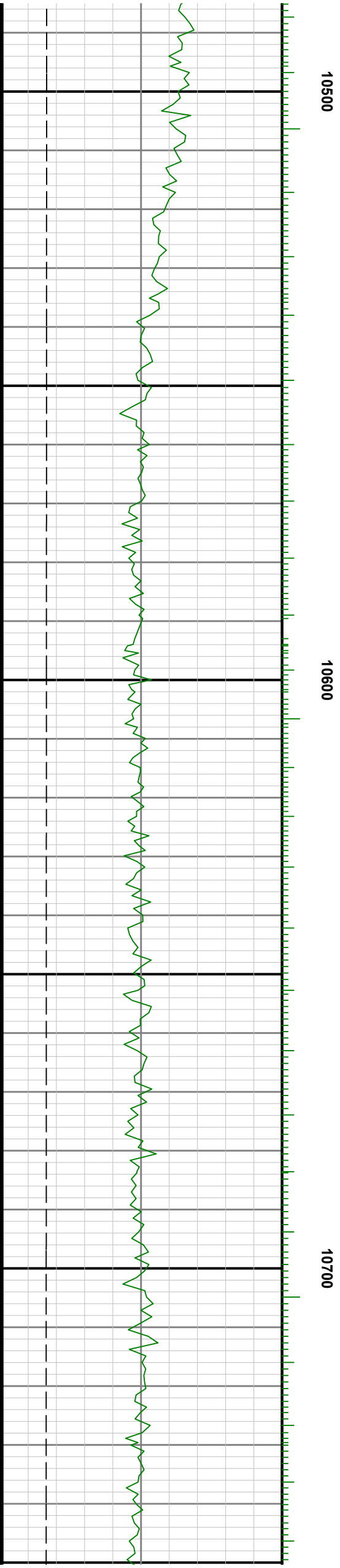
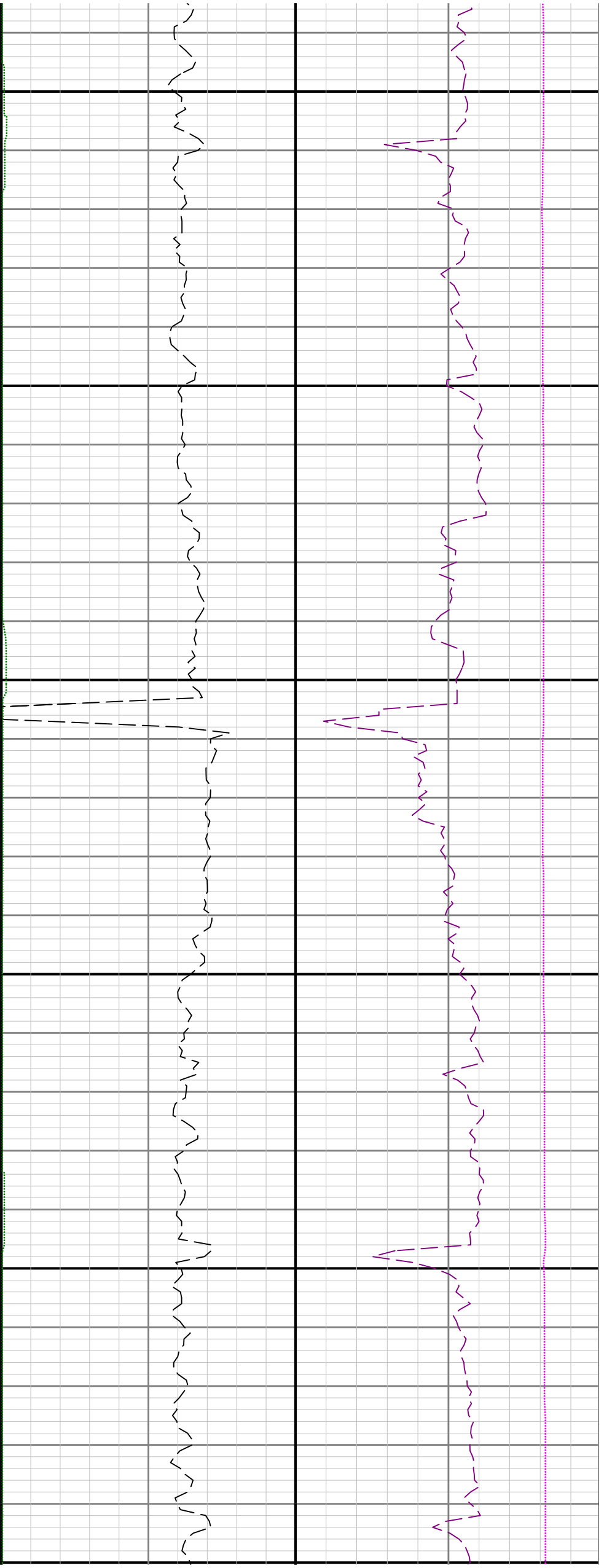
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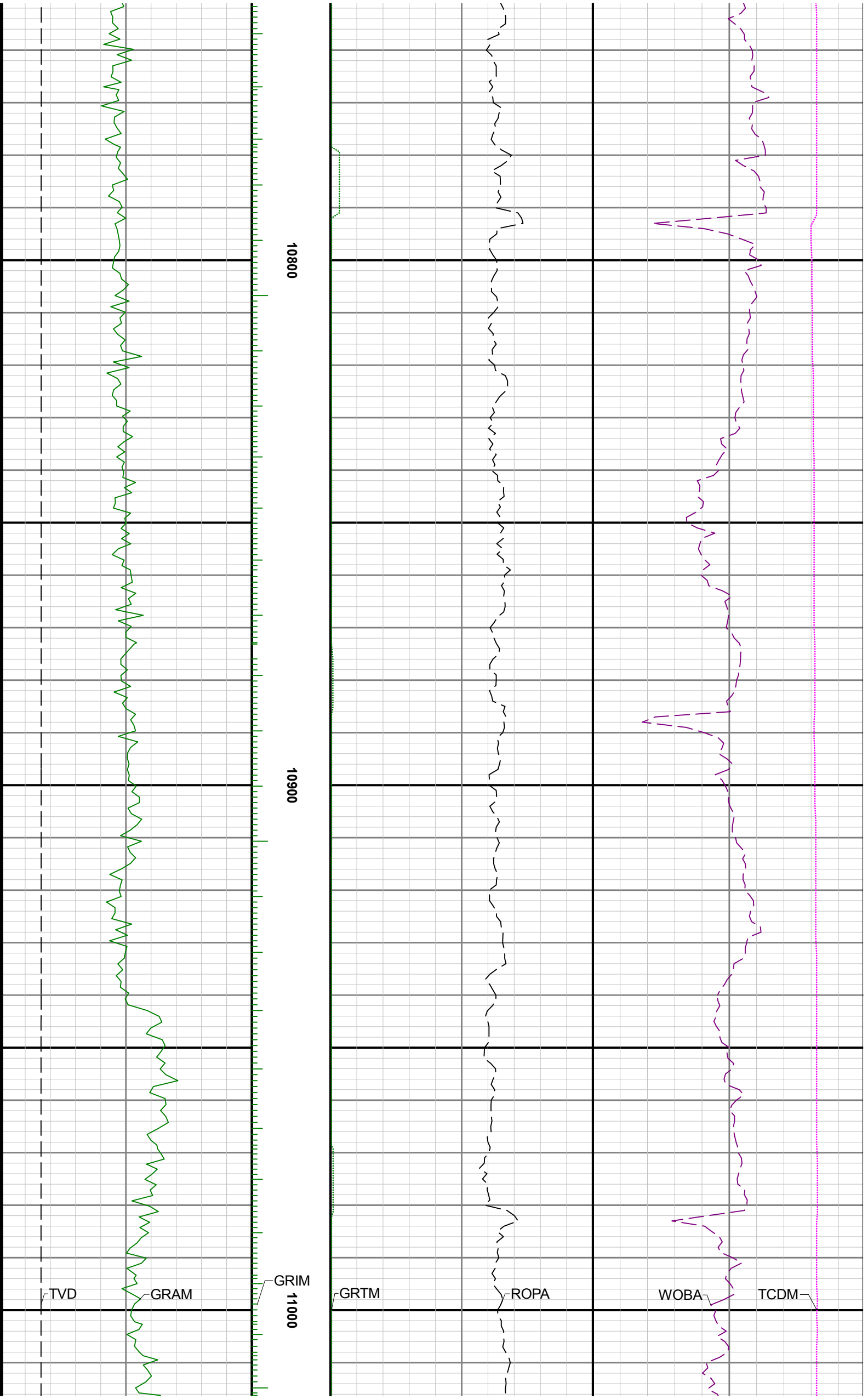
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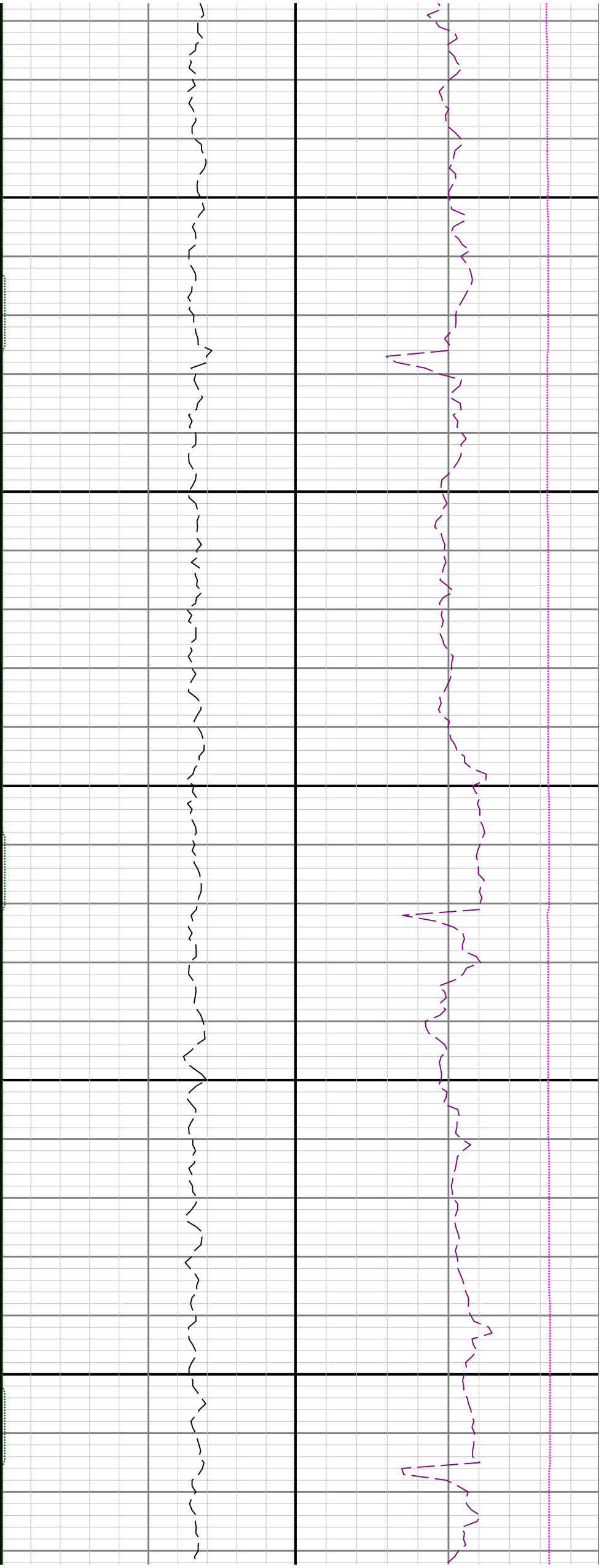






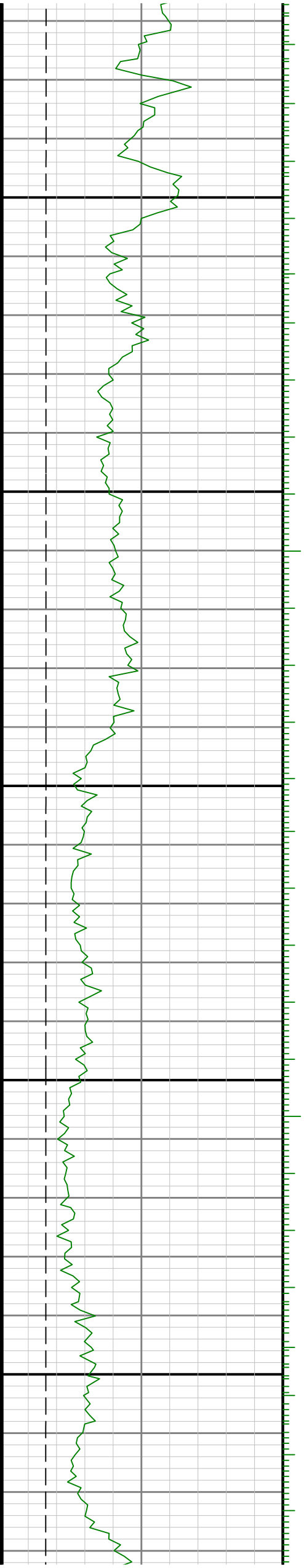


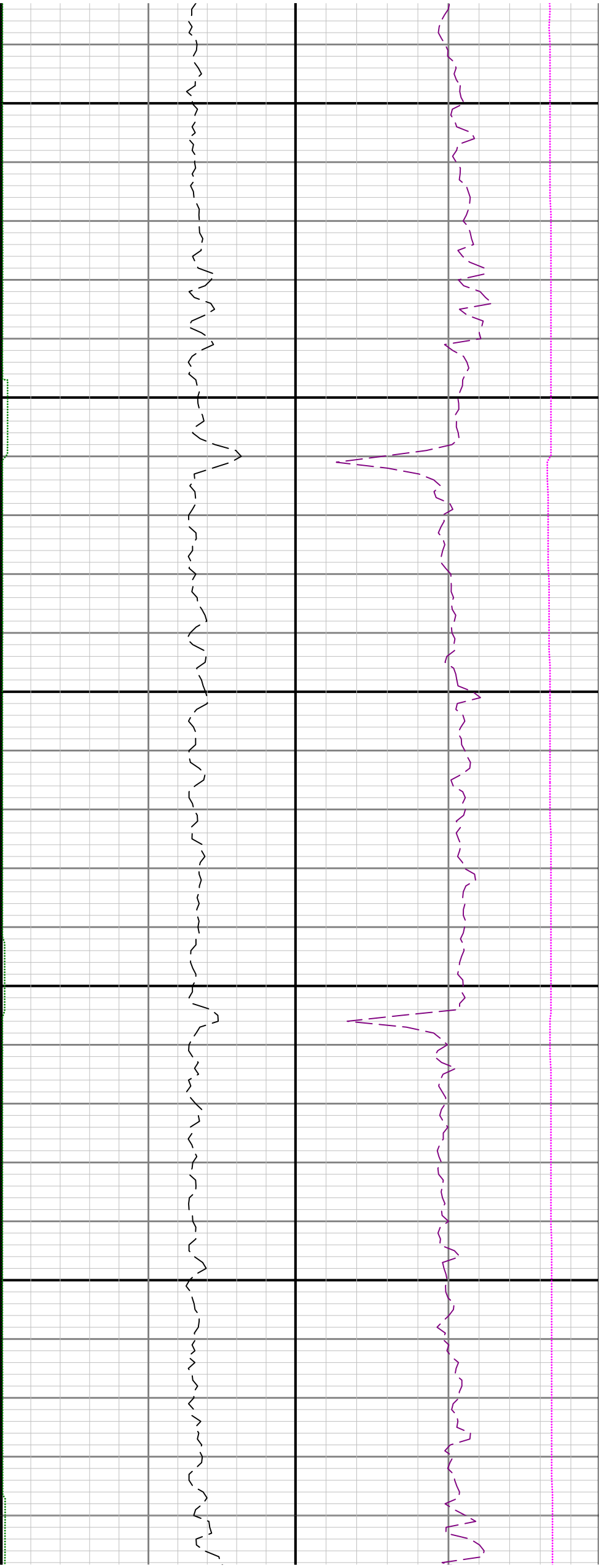




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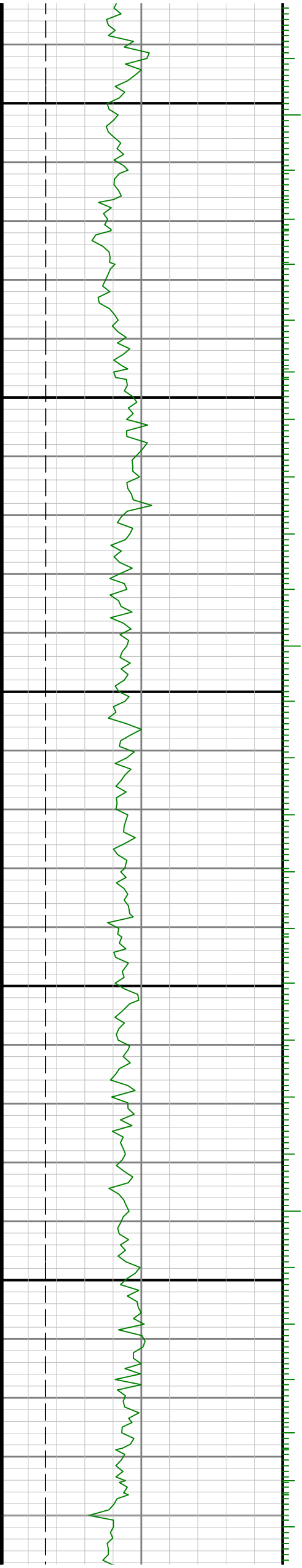


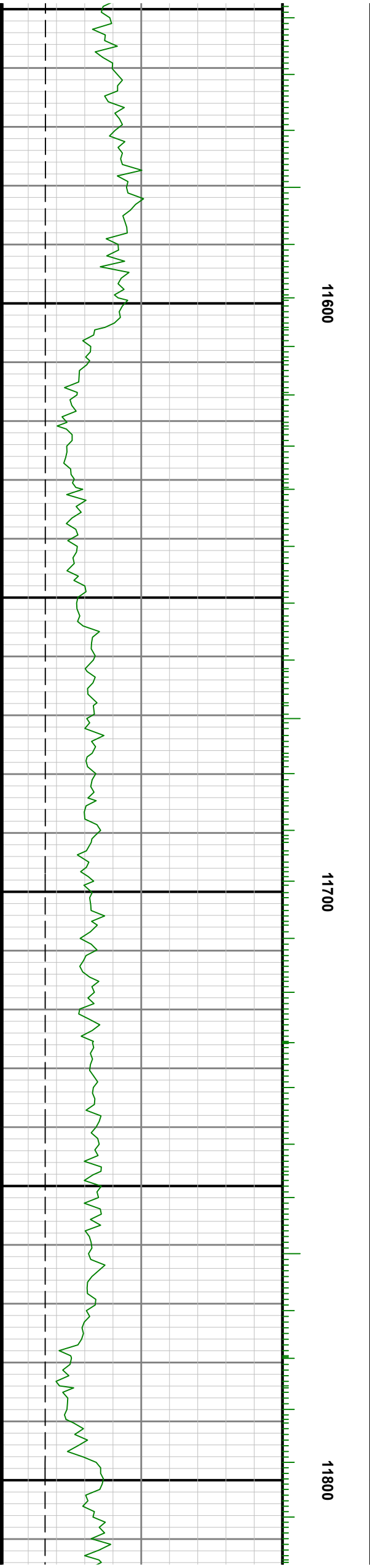
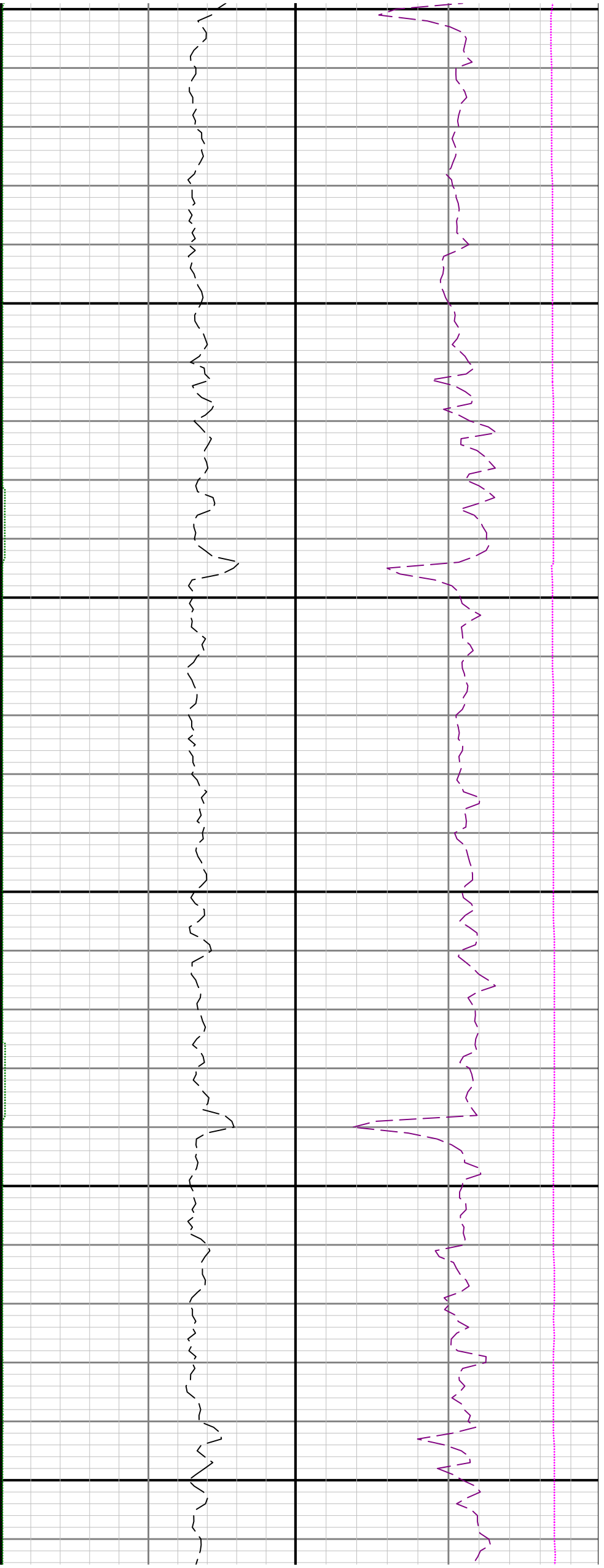


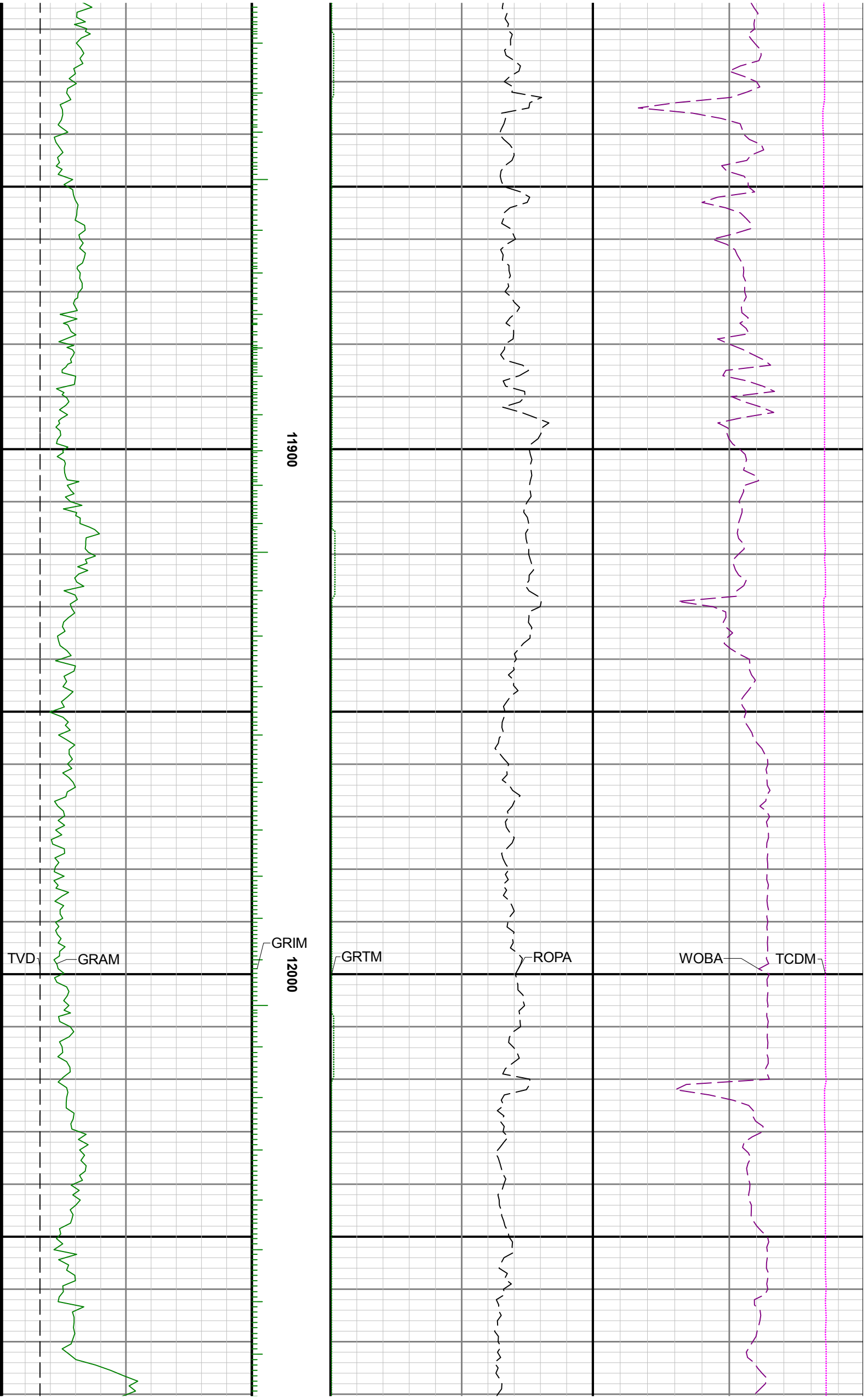
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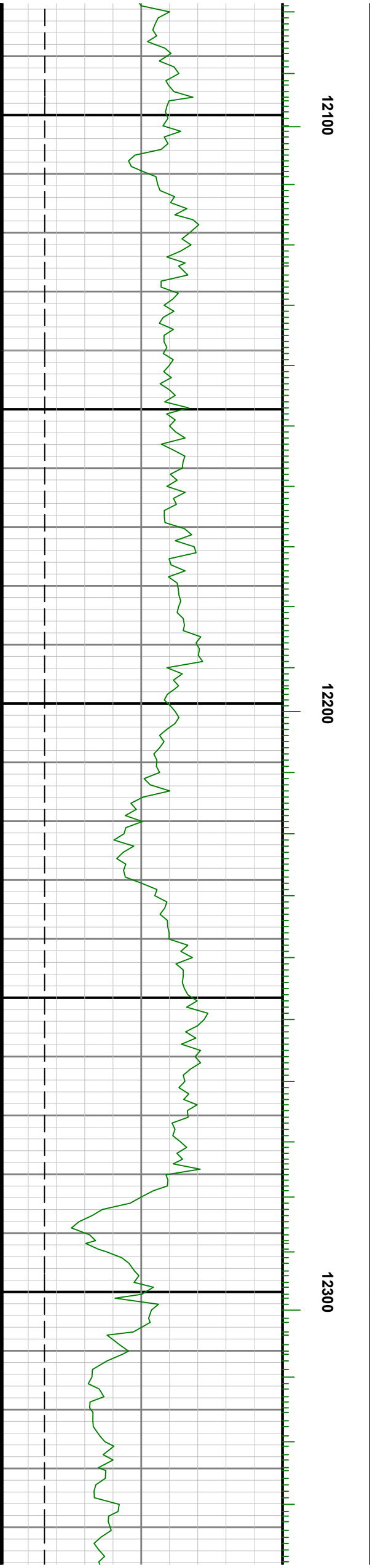
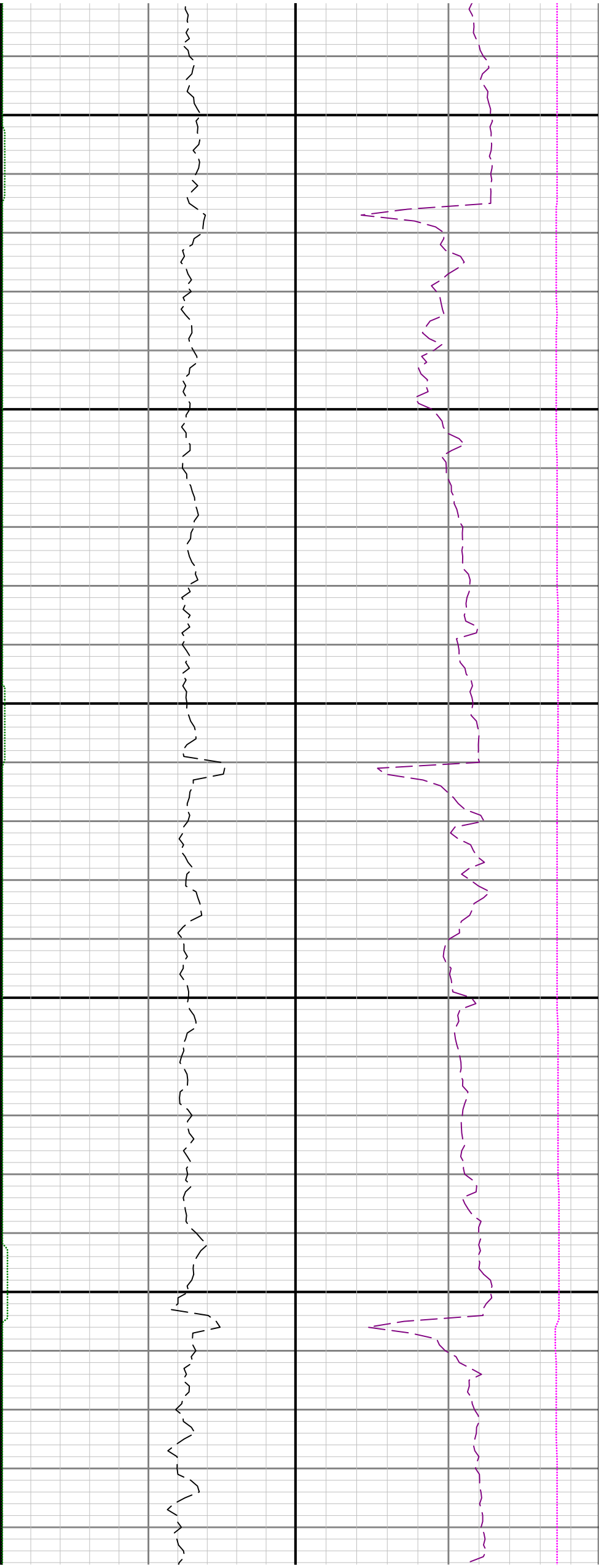
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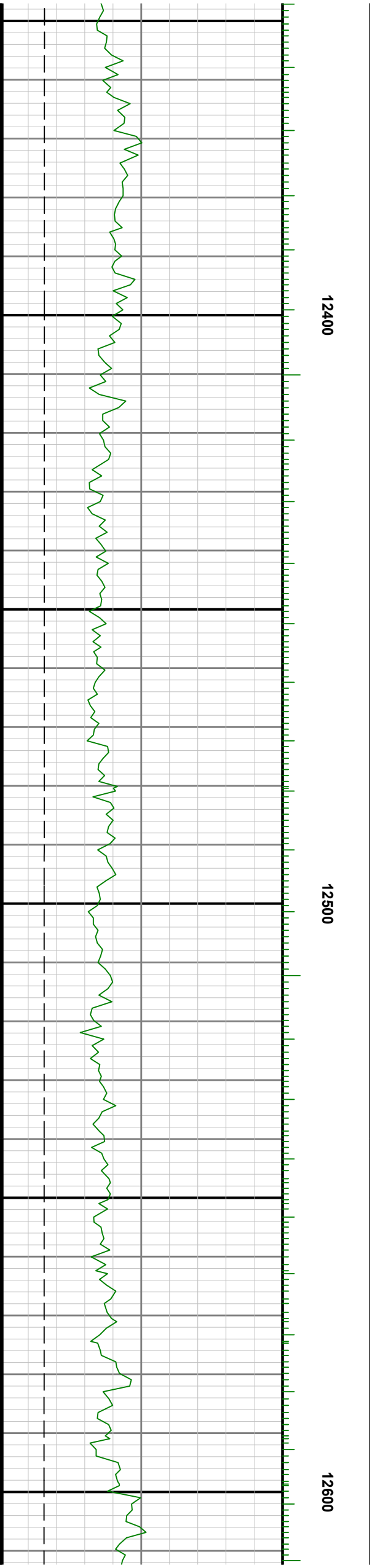
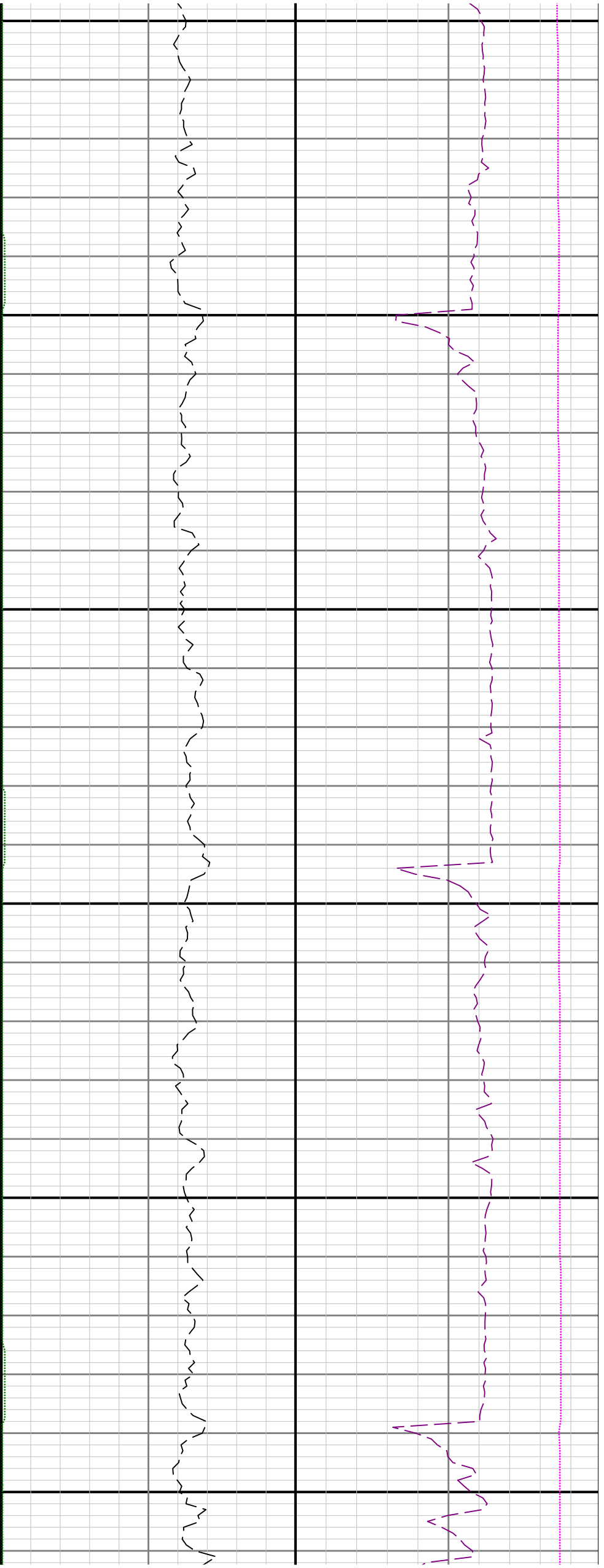
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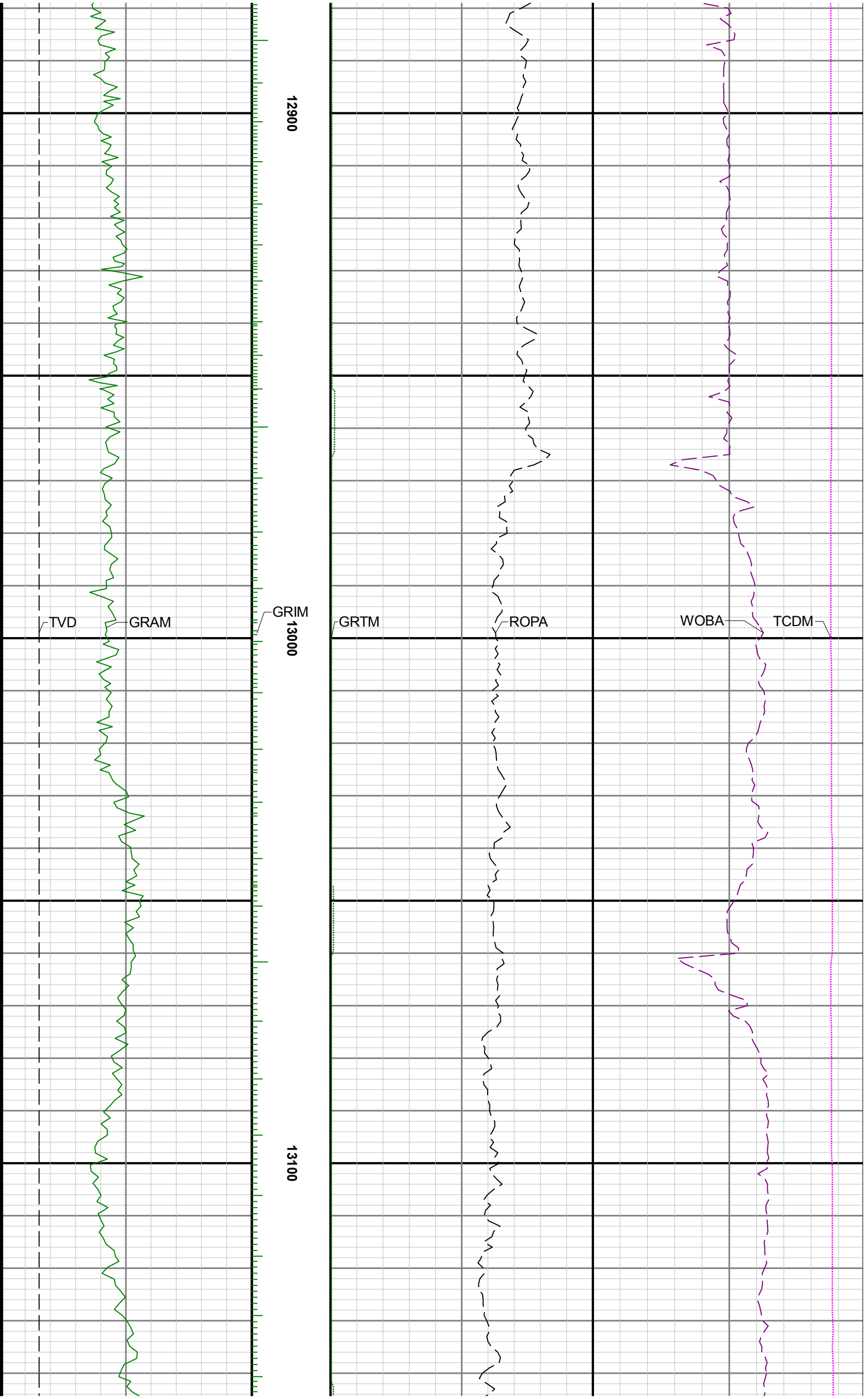


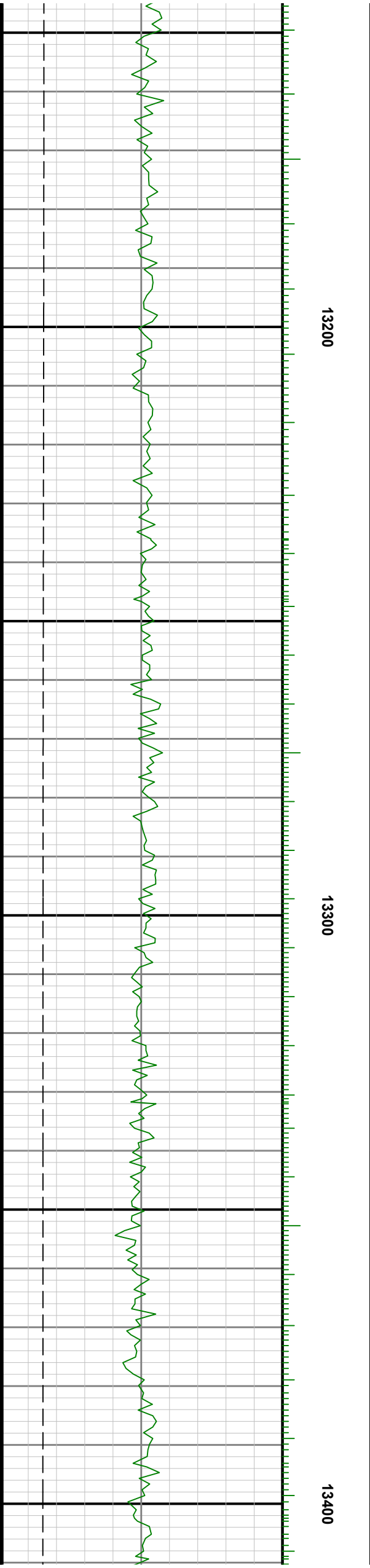


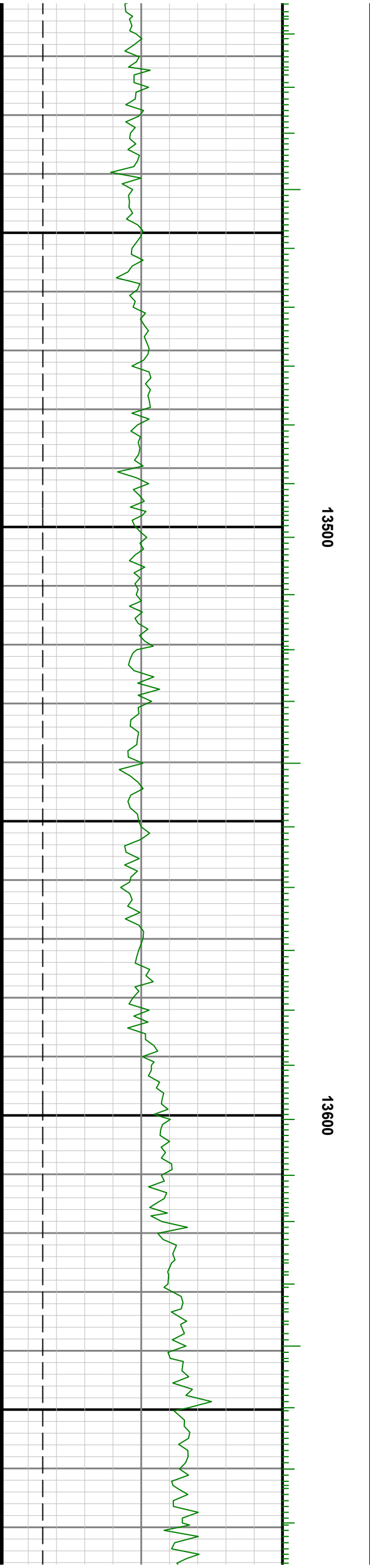
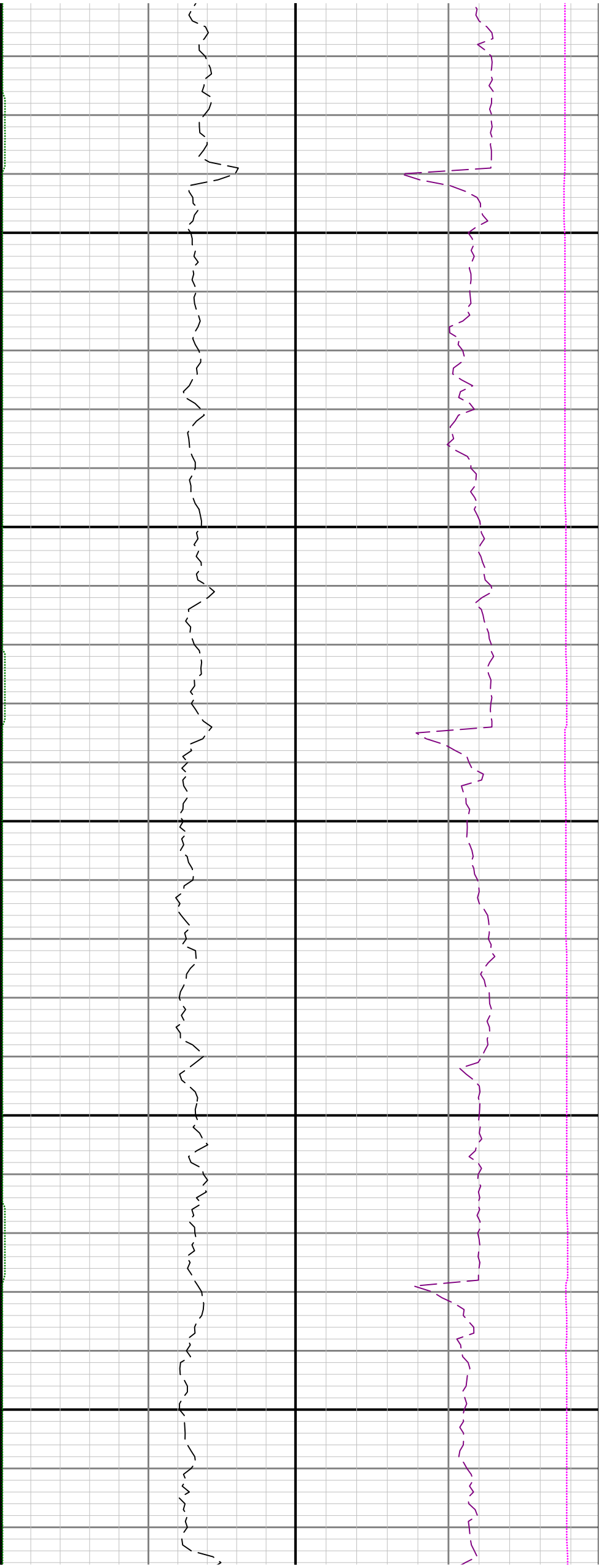


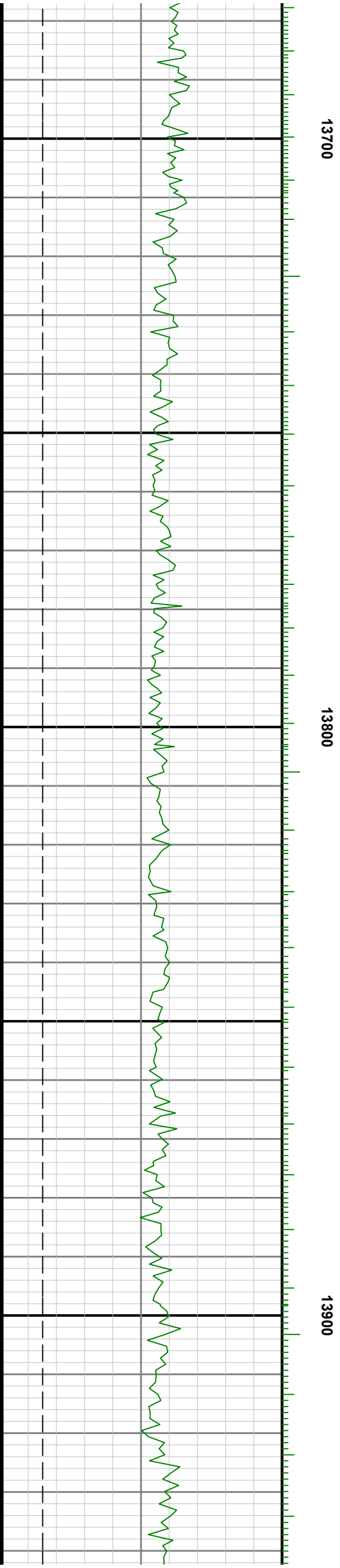
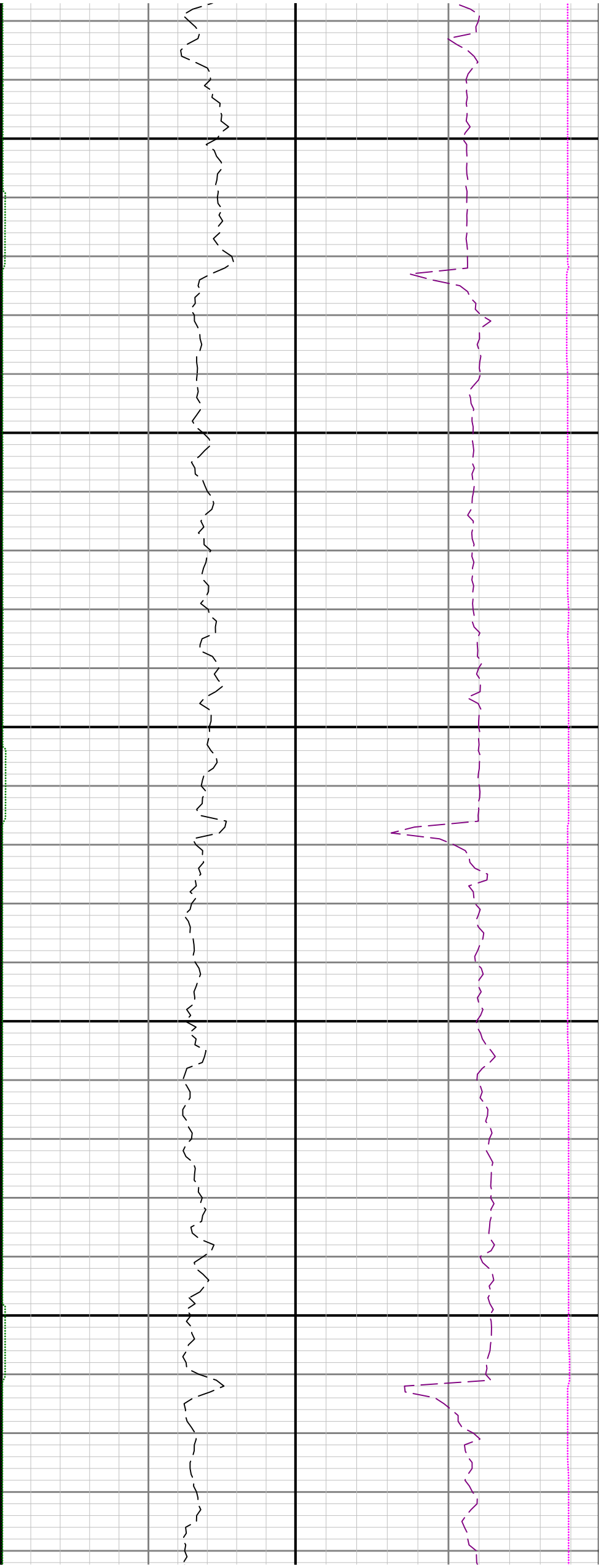


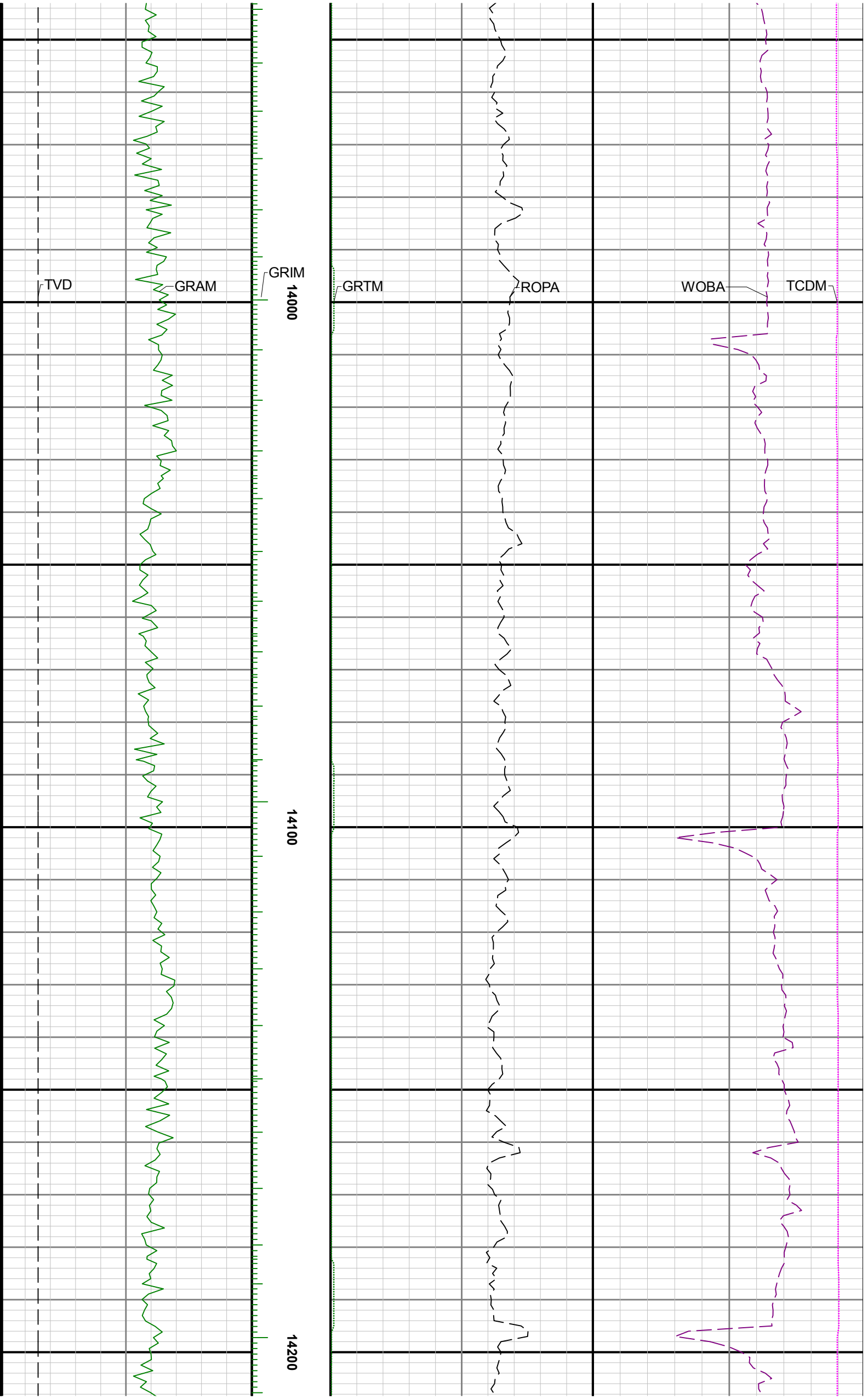


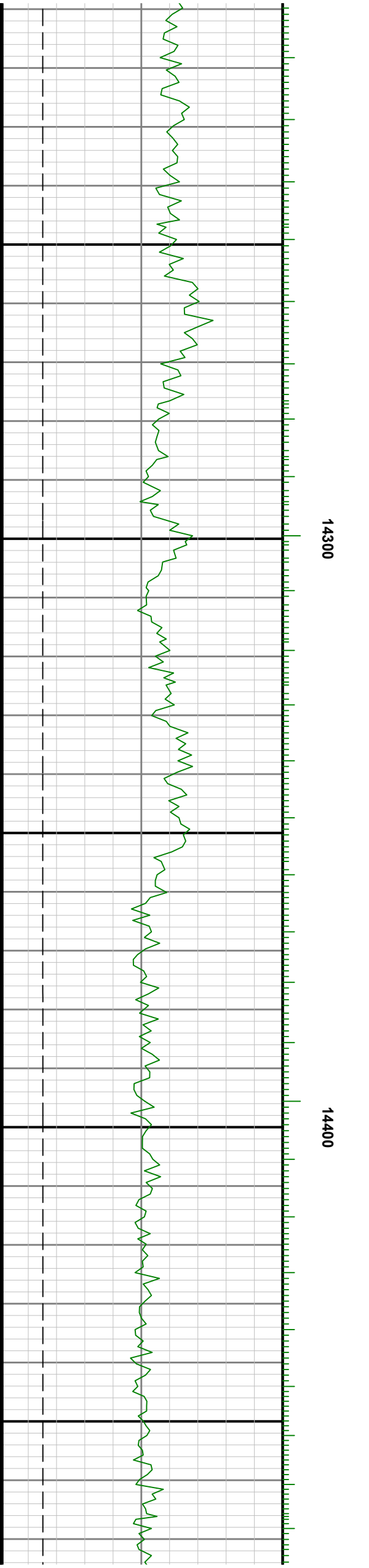
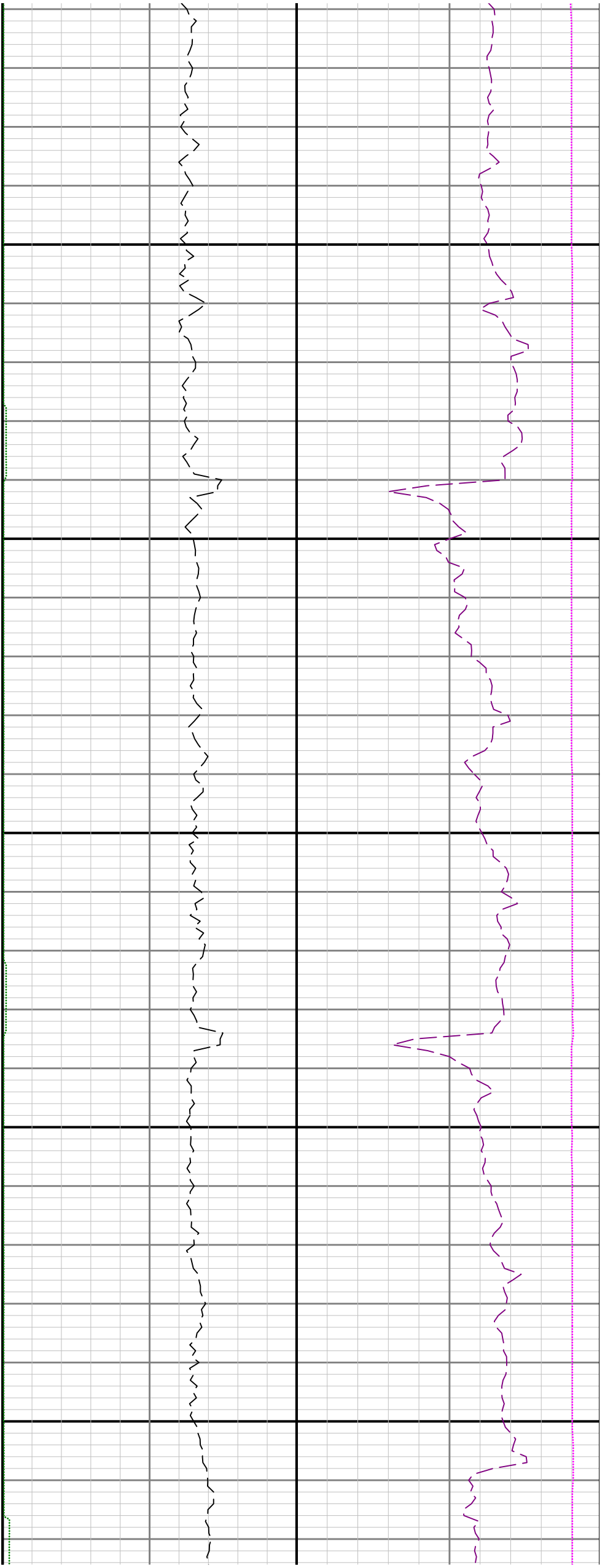


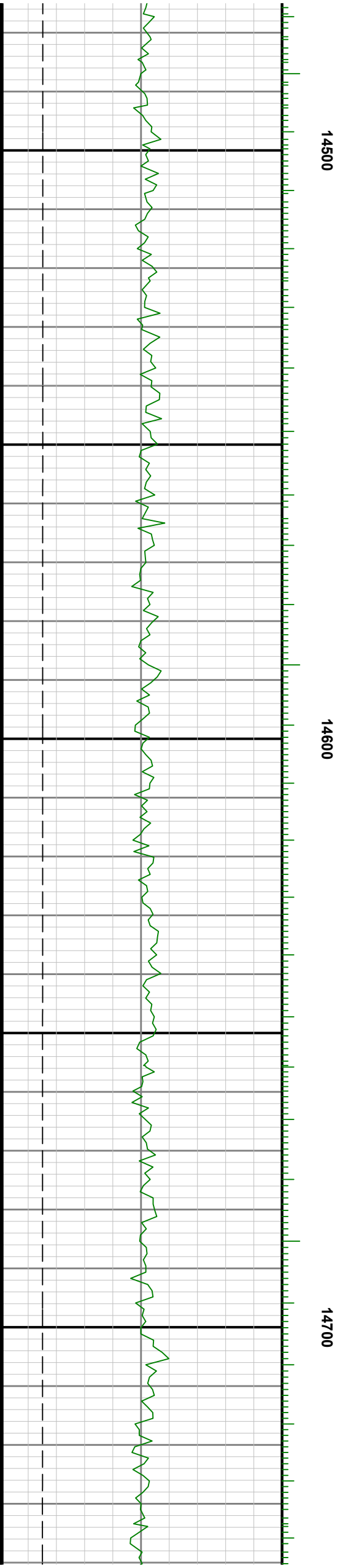
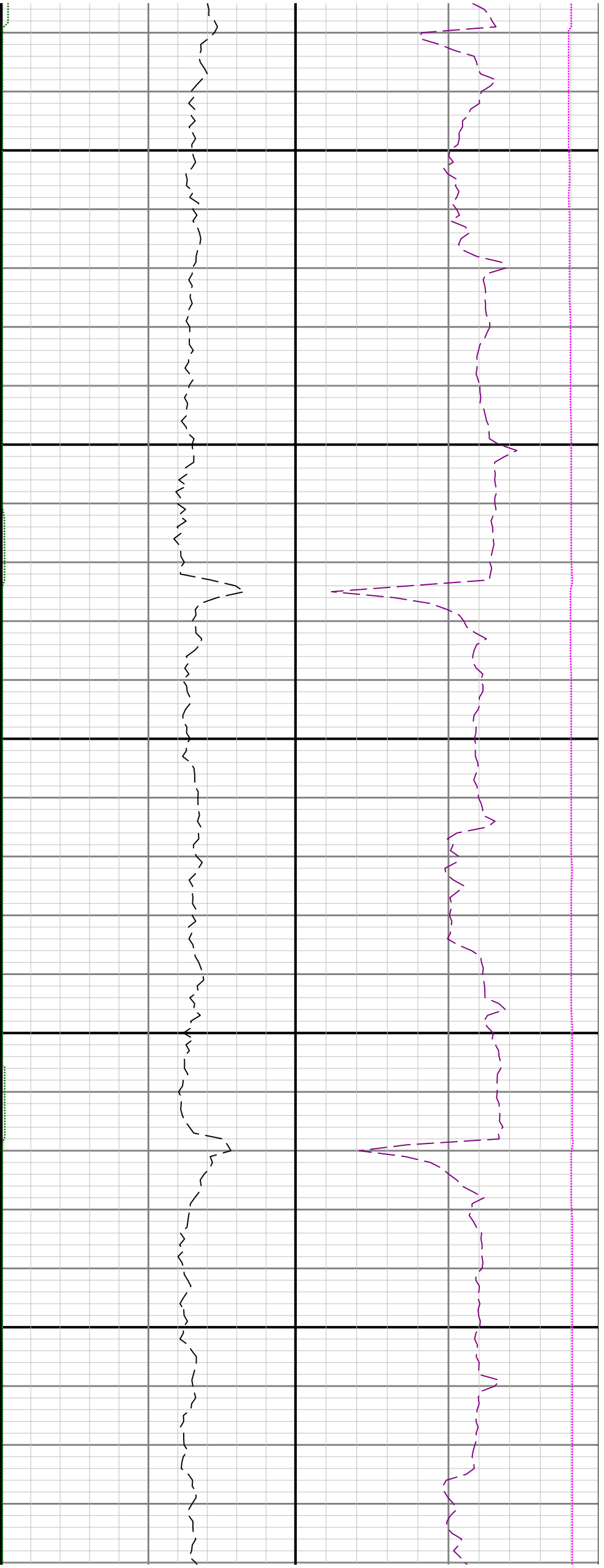


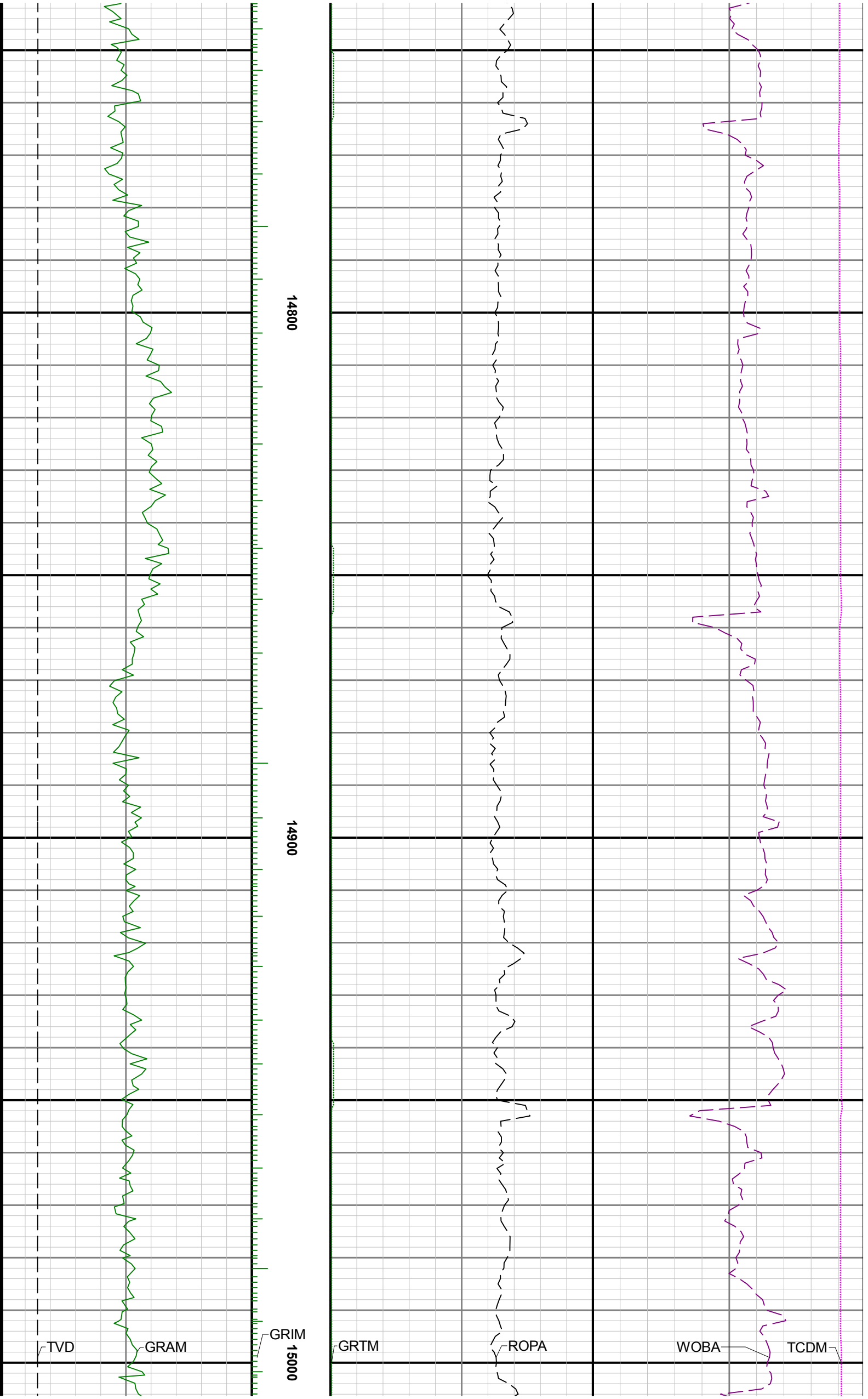


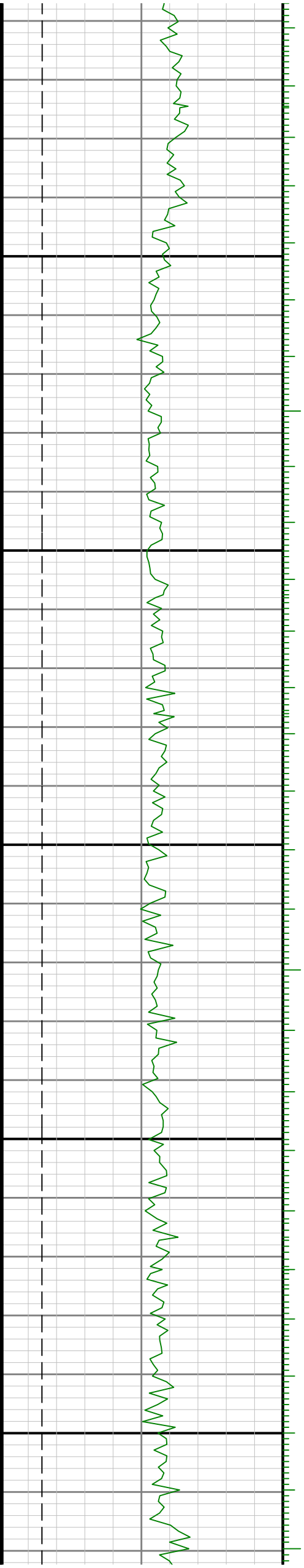
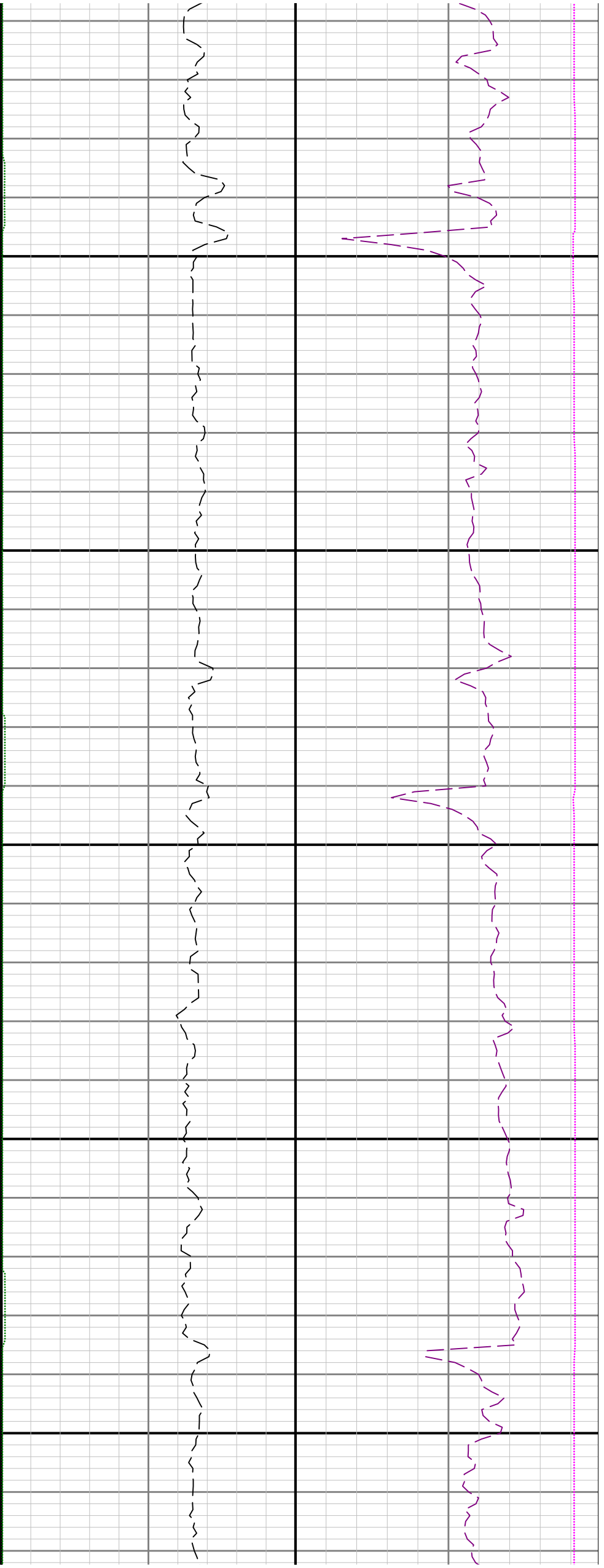


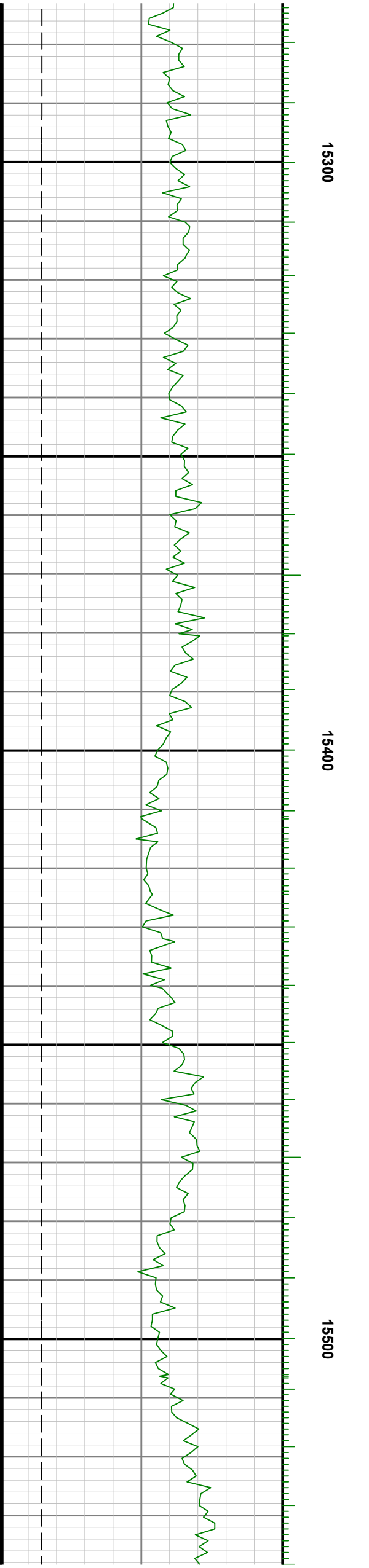
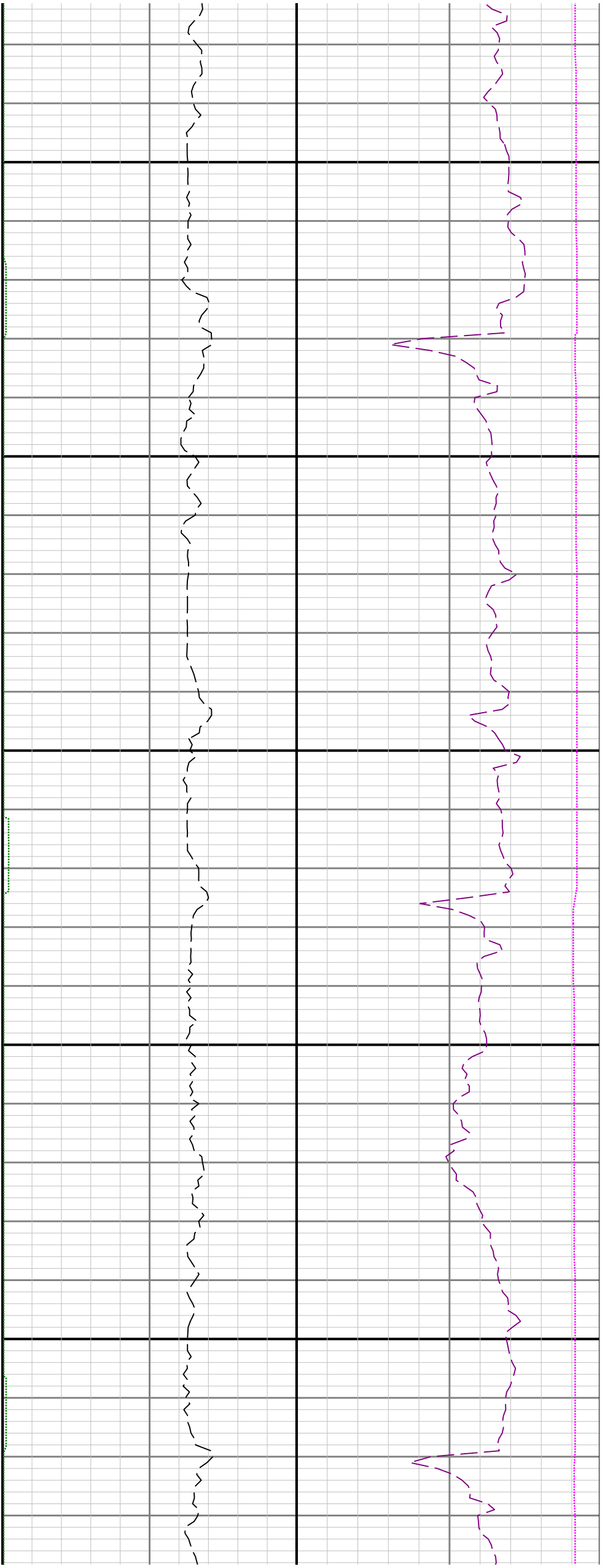


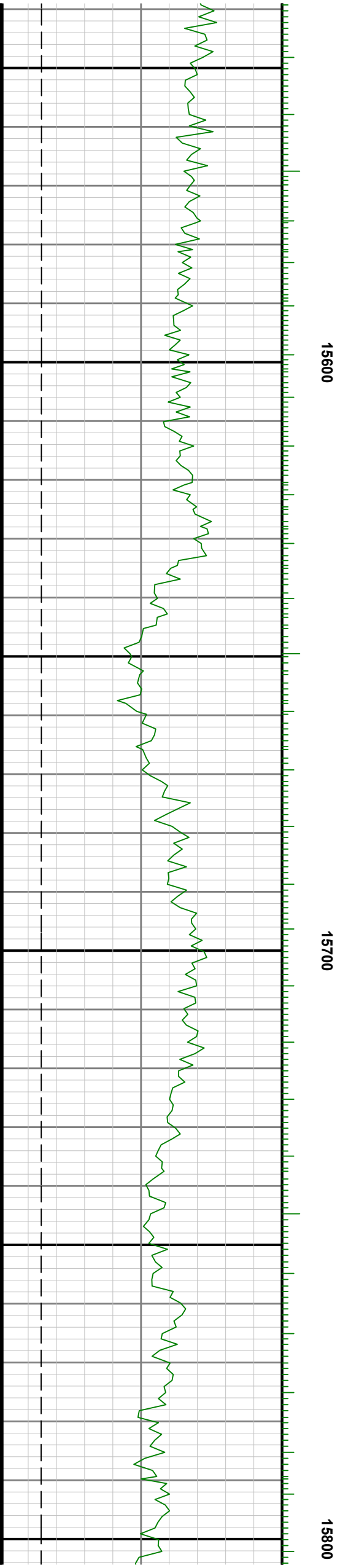


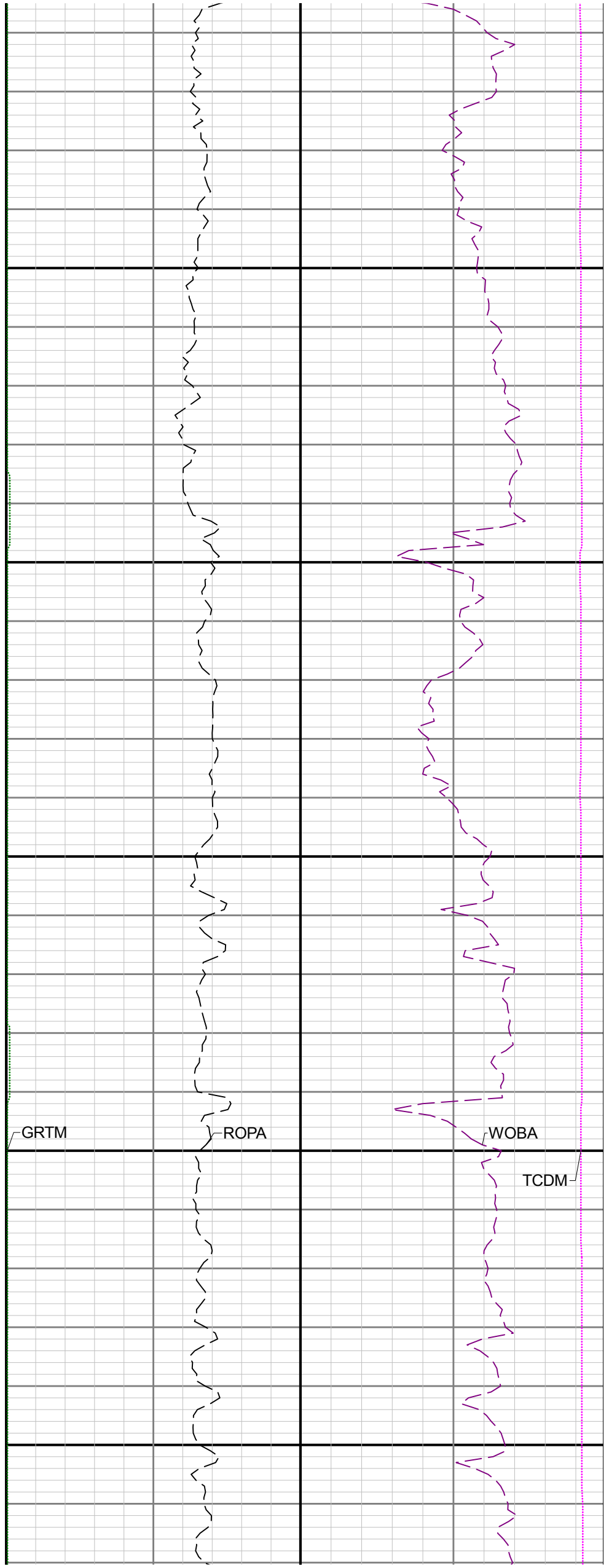
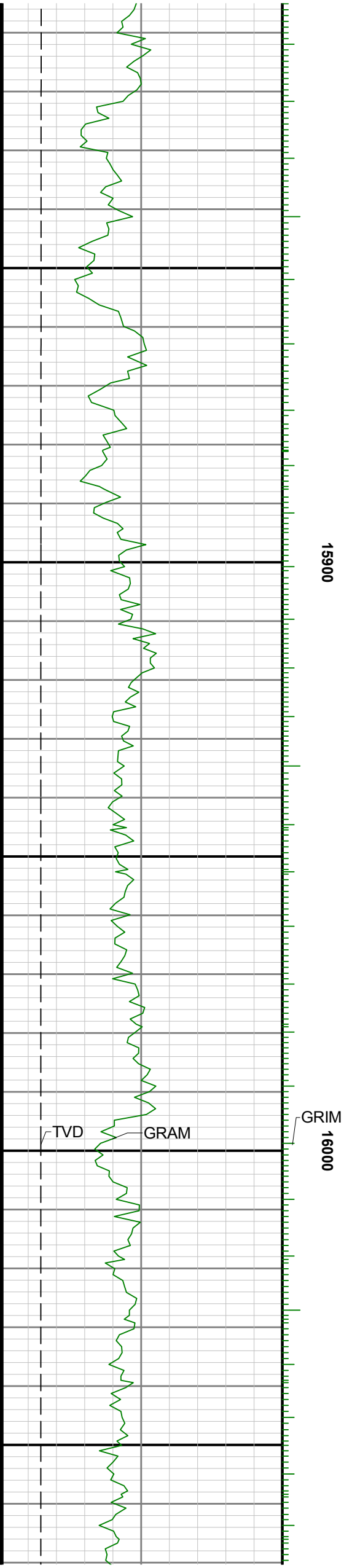


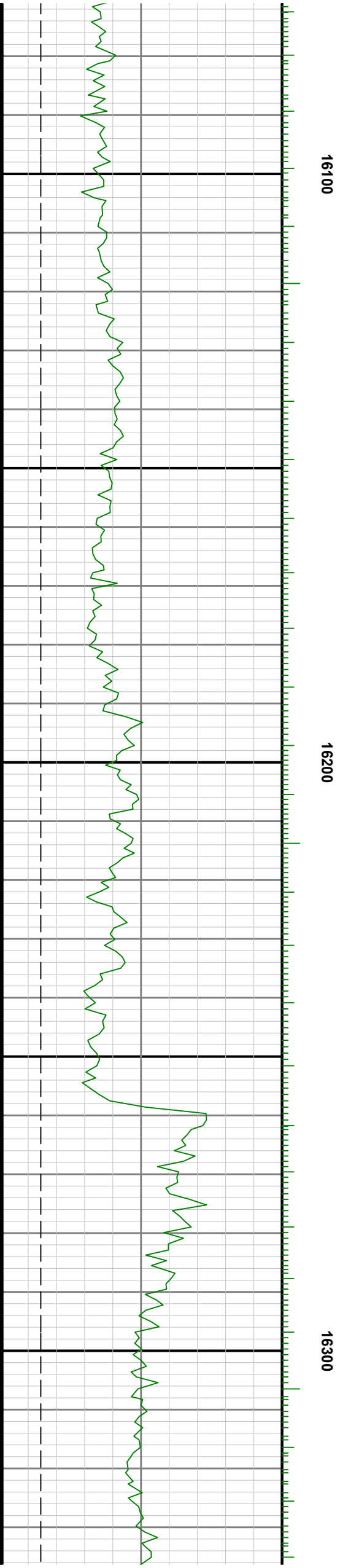
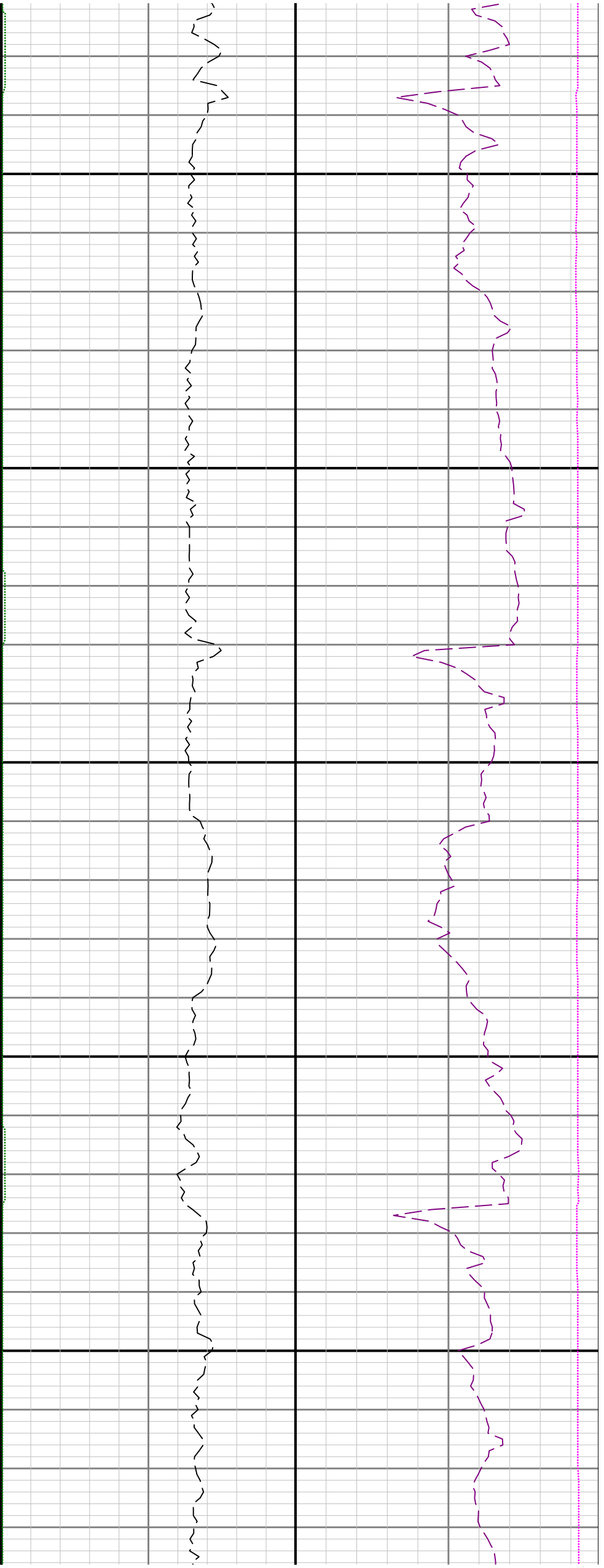


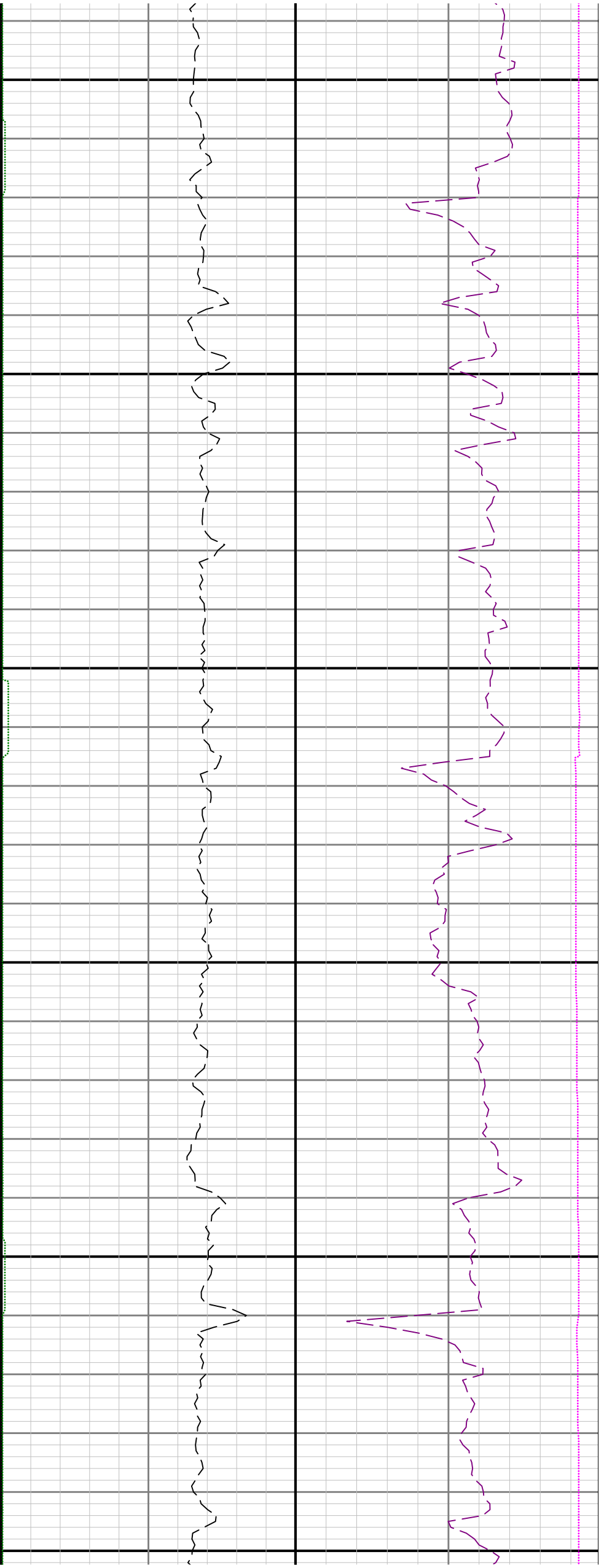












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