


LWD MEMORY LOG											
<div>BAKER HUGHES a GE company</div> <div></div>				Gamma Ray							
Scale:				Company: Anadarko							
1:240 MD				Well: Castle Pines 19-10HZ							
Depth Reference:				Field: Weld County							
Driller's Depth				County: Weld County Country: United States							
State: Colorado				Other Services:							
Status: Final Print		Surface Location:				Latitude: 040° 07' 03.644" N Longitude: 104° 48' 51.059" W Directional					
API No: 051234771000		Job ID: 109461927		SEC: 19 TWN: 2N RGE: 66W		Elev. KB: 4902.00 ft Elev. DF: 4876.00 ft Elev. GL:		N/A			
Permanent Datum (P.D.): Mean Sea Level				Elevation: Above P.D.		0.00 ft 4902.00 ft					
Log Measured From: Rig Floor						4902.00 ft					
Dates				Interval Drilled				Magnetic Field Reference			
Date From: 2018-12-11		Top: (ft) 1864.00		Date To: 2018-12-16		Bottom: (ft) 18778.00		Azi Reference North: True		Dip Angle: (deg) 66.55	
Spud Date: 2018-12-11								Total Magnetic Field Strength: (nT) 52404			
								Mag to Reference North Correction: (deg) 8.16			
Borehole Record				Casing Record							
Hole Size (in)		From (ft)		To (ft)		Size (in)		Weight (lb/ft)		From (ft) To (ft)	
8.500		1864.00		18778.00		9.625		32.00		26.00 1854.00	
Mud Record				Deviation Record							
Type		From (ft)		To (ft)		Hole Size (in)		Interval (ft)		Inc Az (Start) Inc Az (End)	
Oil Based Mud		1864.00		18778.00		8.500		16914.00		18.86 332.80 90.98 179.44	
Acquisition System				Software Version				Other			
Baker Hughes Cadence		RT 4.2		4.2.8155.1		Rig: Precision 564		Contractor: Precision Drilling		District: RMD Unit: D&E	
Plot Studio											

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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	AutoTrak Curve	1851.00	17318.00	1864.00	17331.00	2018-12-11 16:41	2018-12-15 04:38	80.17
2	2	8.500	PDC	3.00	AutoTrak Curve	17318.00	18765.00	17331.00	18778.00	2018-12-15 22:45	2018-12-16 06:50	11.62

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Doug Rusco	2018-12-11	2018-12-16	Matt Ytule	2018-12-11	2018-12-16			

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+ (%)
2018-12-12 06:00	1	6541.00	Oil Based Mud	9.1	18	N/A	6.1	72/28	Active Pit	30000	0.00
2018-12-13 06:00	1	10210.00	Oil Based Mud	9.2	19	N/A	5.0	73/27	Active Pit	30000	0.00
2018-12-14 06:00	1	14100.00	Oil Based Mud	9.3	19	N/A	5.5	73/27	Active Pit	30000	0.00
2018-12-15 16:00	2	17330.00	Oil Based Mud	9.4	20	N/A	5.5	73/27	Active Pit	30000	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	14367830	Near Bit Inclination	5.93	6.83	7.000	4.330
1	ATC_SU	14367830	Near Bit VSS	5.93	6.83	7.000	4.330
1	ATC_MWD	12656433	Gamma (single)	2.76	13.00	7.000	3.250
1	ATC_MWD	12656433	Directional (mag)	12.27	22.51	7.000	3.250
2	ATC_SU	12606361	Near Bit VSS	5.93	6.83	7.000	4.330
2	ATC_SU	12606361	Near Bit Inclination	5.93	6.83	7.000	4.330
2	ATC_MWD	12706130	Gamma (single)	2.20	12.43	7.000	3.250
2	ATC_MWD	12706130	Directional (mag)	12.27	22.50	7.000	3.250

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 LWD logging engineers, depth calibrations and measurements could not be independently verified and the unverified depths as supplied to Baker Hughes are being used to present logging data.
- 2
- Baker Hughes run 1 and 2 utilized a 7 inch AutoTrak Curve service (Gamma Ray and Directional) behind an 8 1/2 inch bit and rotary steerable assembly from 1864 to 18778 feet MD (1842 to 7487 feet TVD).

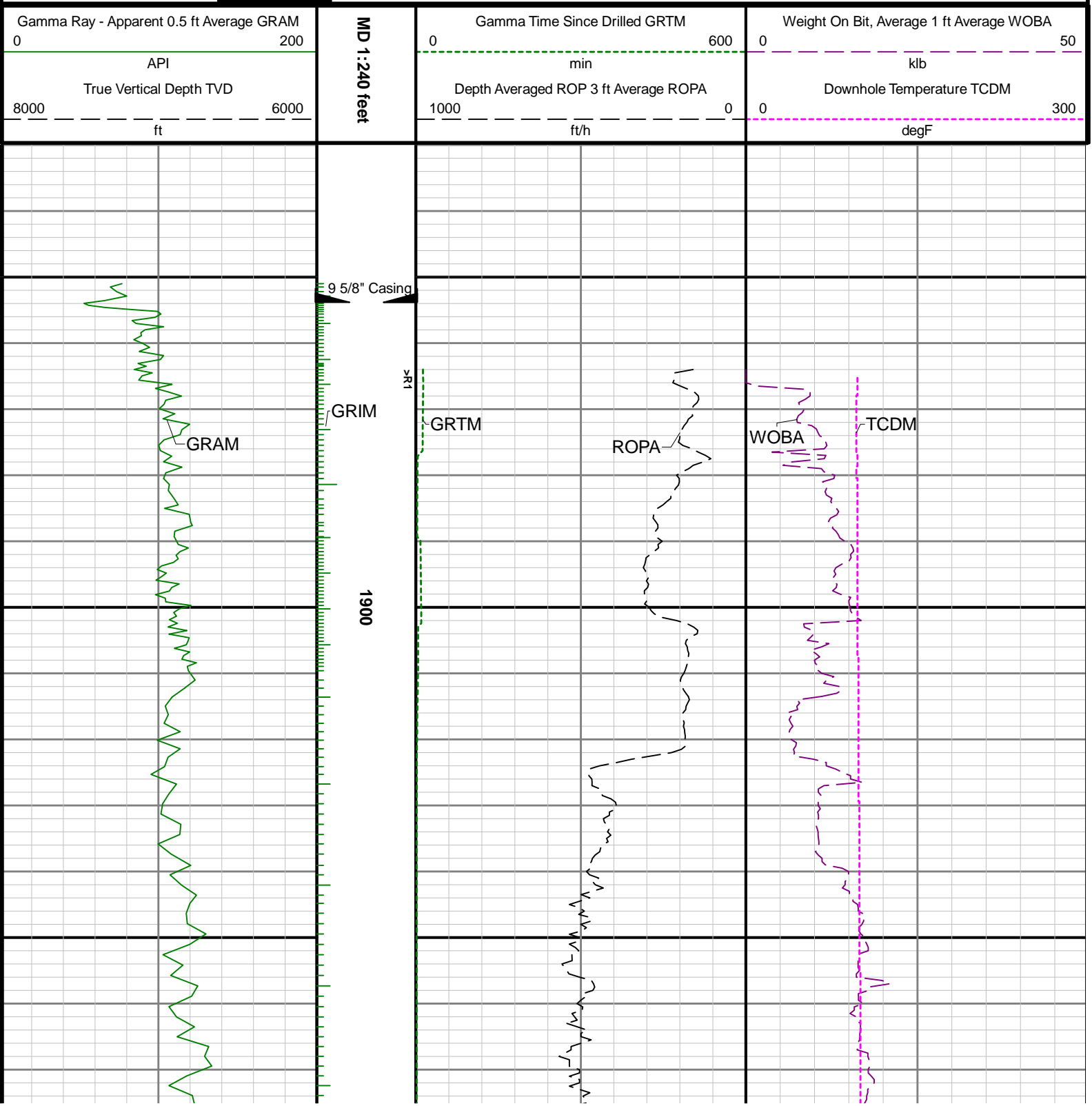
Remarks

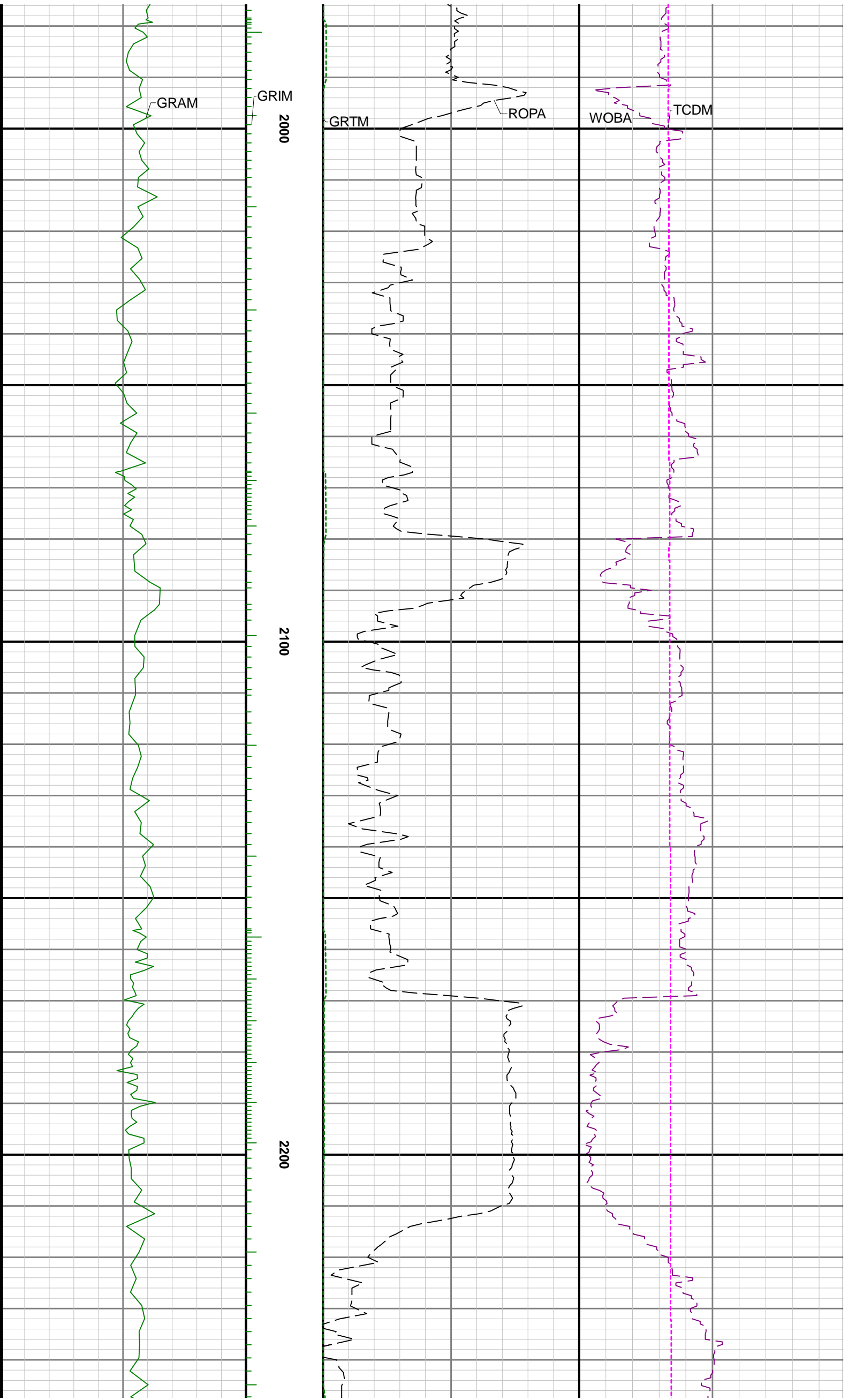
Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	17331.00	8.500	2	The interval from 17318 to 17331 feet (7501 feet TVD) was logged up to 18 hours after being drilled due to trip out to change BHA after tool failure.
2	18778.00	8.500	2	The interval from 18765 to 18778 feet (7487 feet TVD) was not logged due to sensor to bit offset at TD.

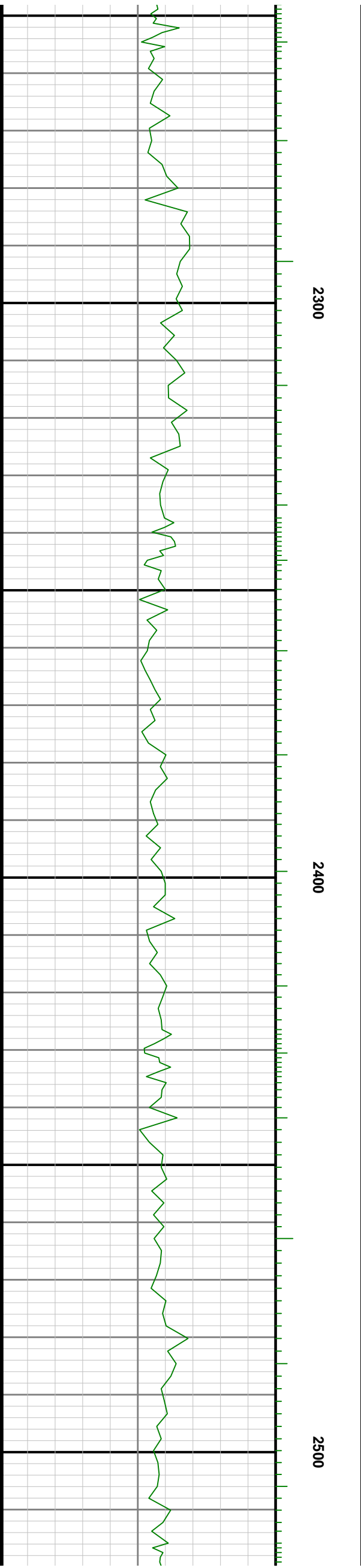
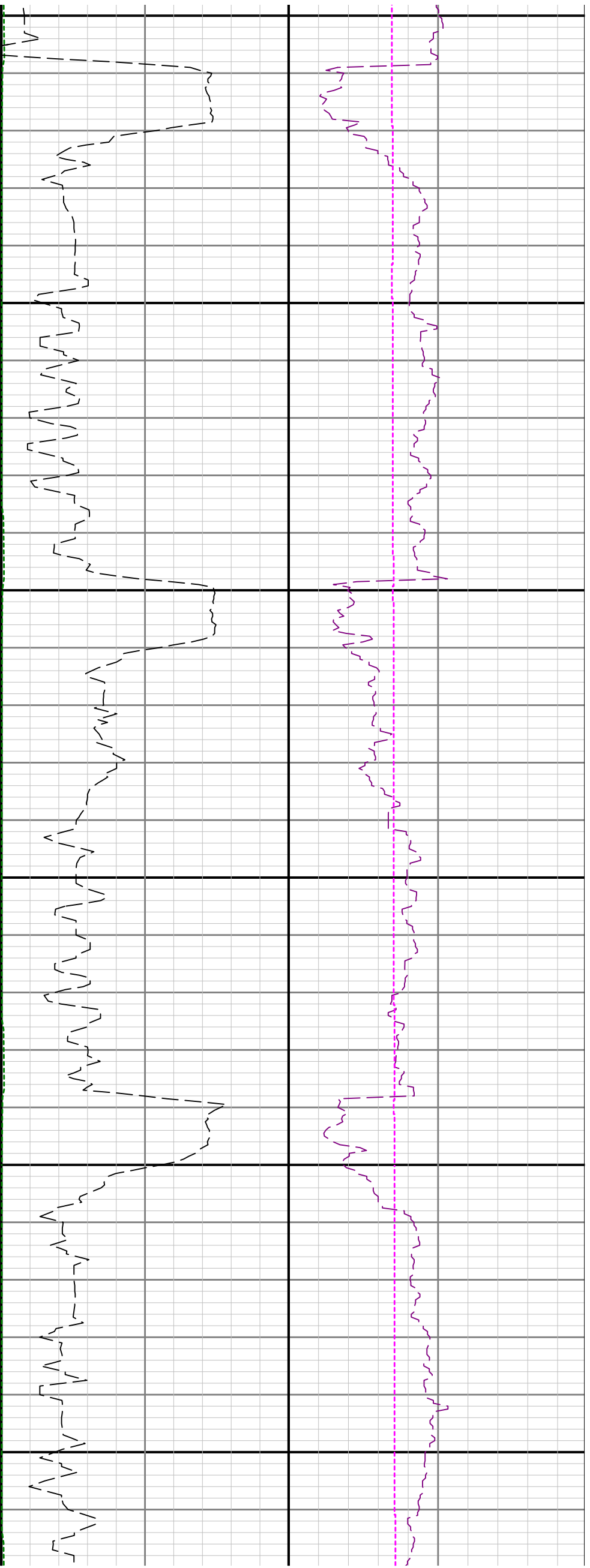
Curve Mnemonics

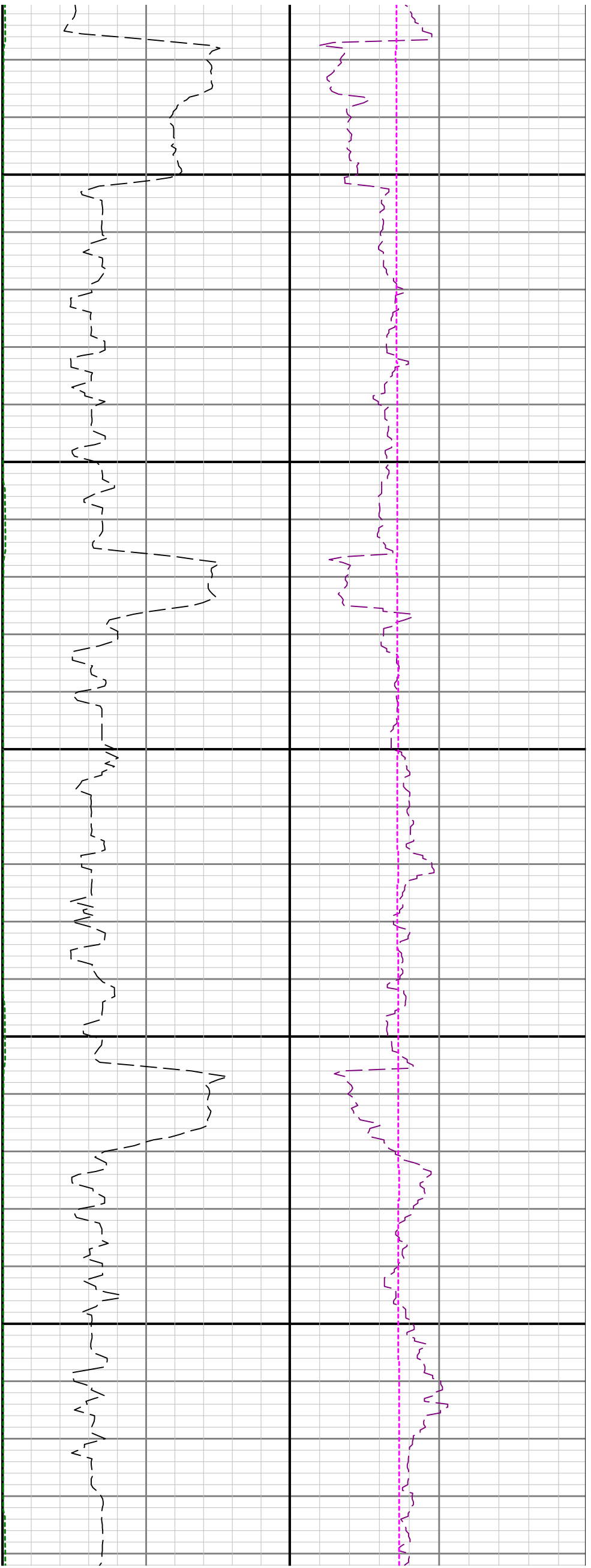
Presented Curves	Description	Units
ROPA	Depth Averaged ROP 3 ft Average	ft/h
TVD	True Vertical Depth	ft
WOBA	Weight On Bit, Average 1 ft Average	klb
GRAM	Gamma Ray - Apparent - Memory 0.5 ft Average	API
GRIM	Gamma Ray - Data Point Indicator - Memory	unitless
GRTM	Gamma Ray - Time Since Drilled - Memory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

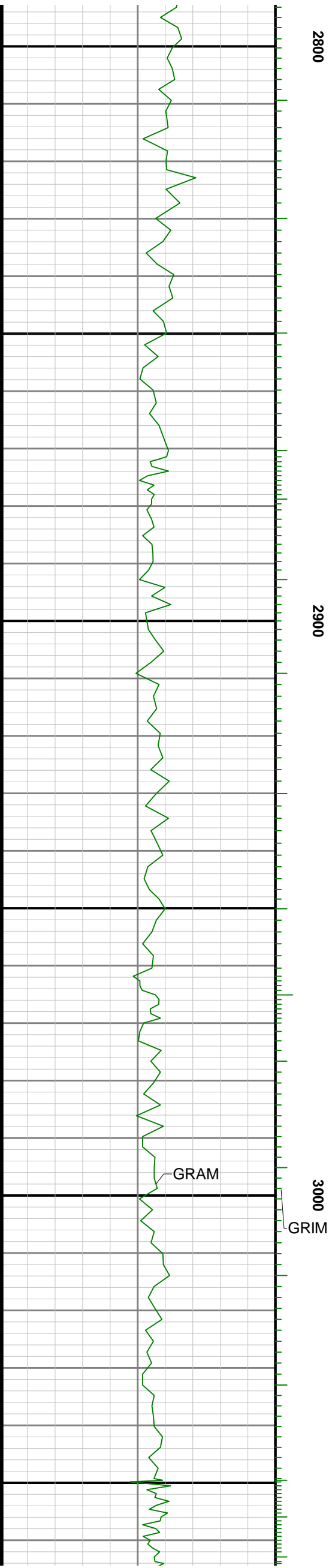
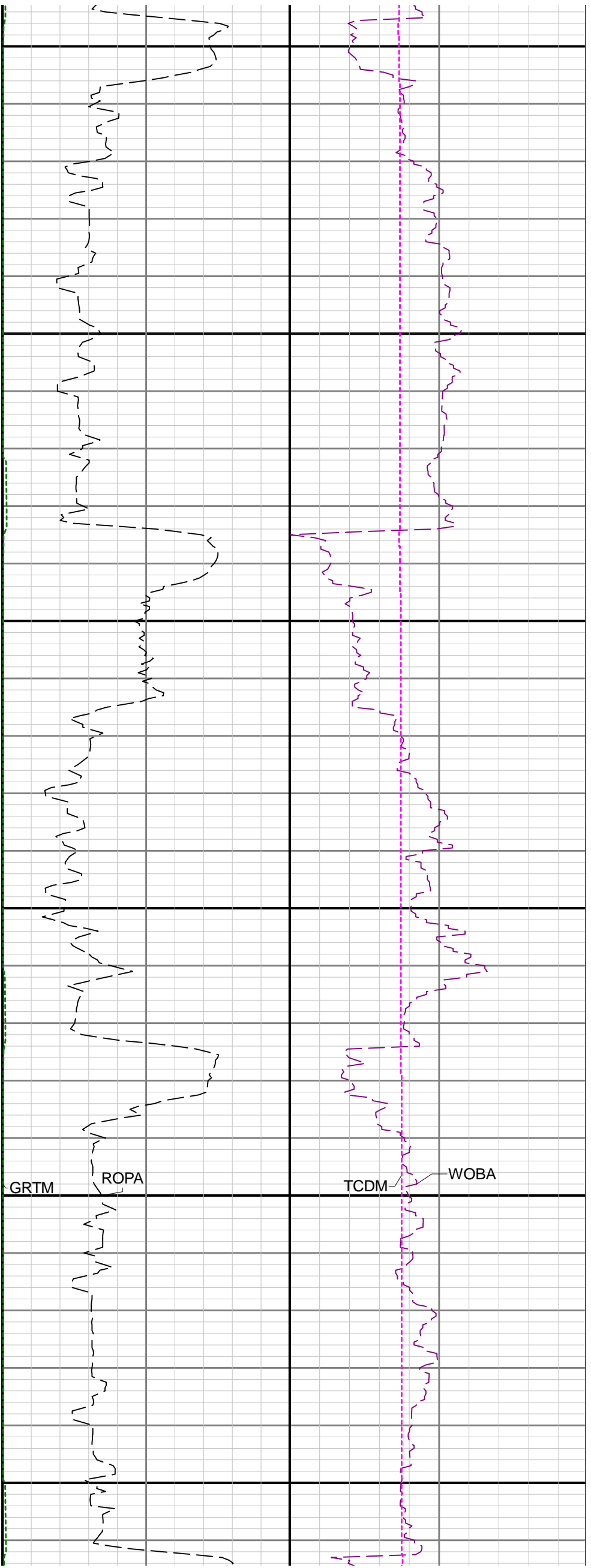
<div><div>BAKER HUGHES</div><div>a GE company</div></div> <div></div>	Company	Anadarko			
	Well	Castle Pines 19-10HZ			
	Interval	Date From:	2018-12-11 15:23	Top:	1864.00 ft
		Date To:	2018-12-16 21:06	Bottom:	18778.00 ft
	Created	2018-12-16 21:20:24			

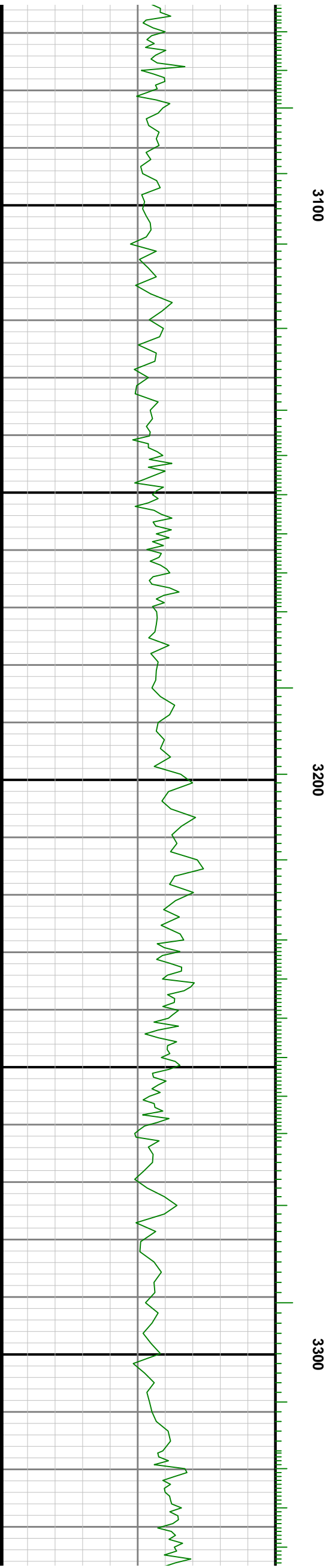
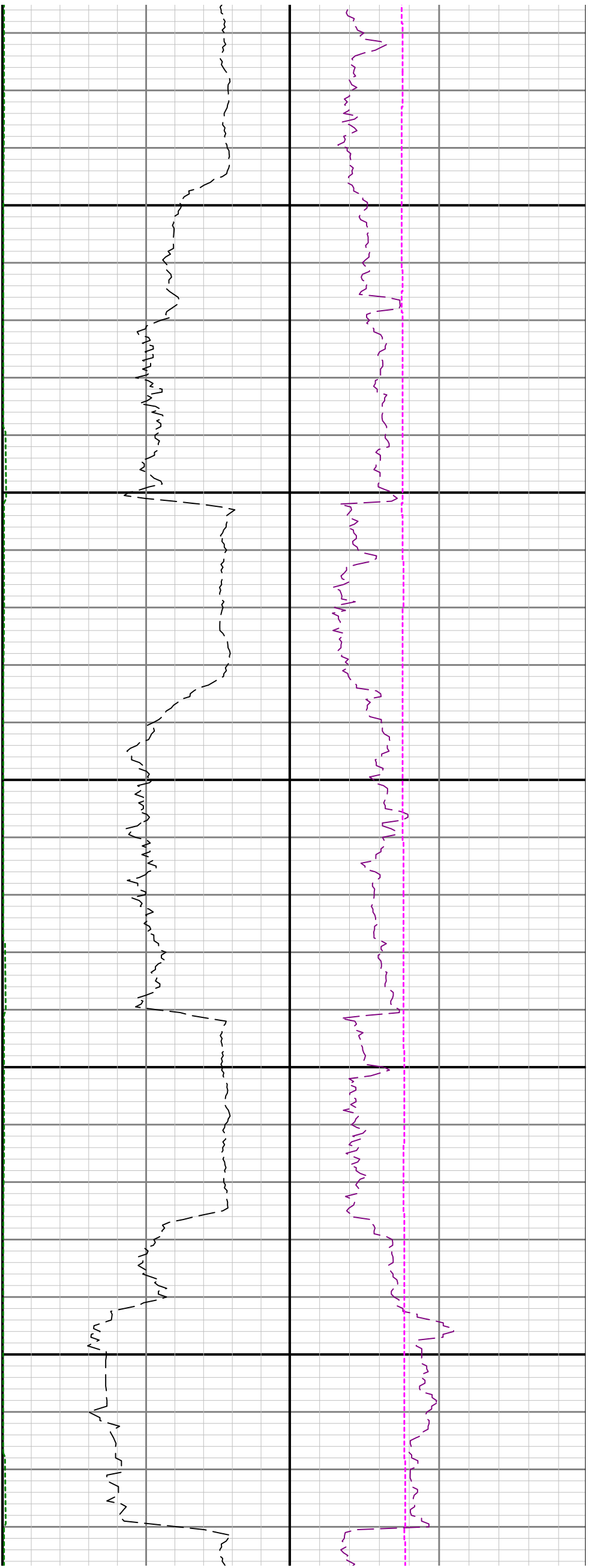


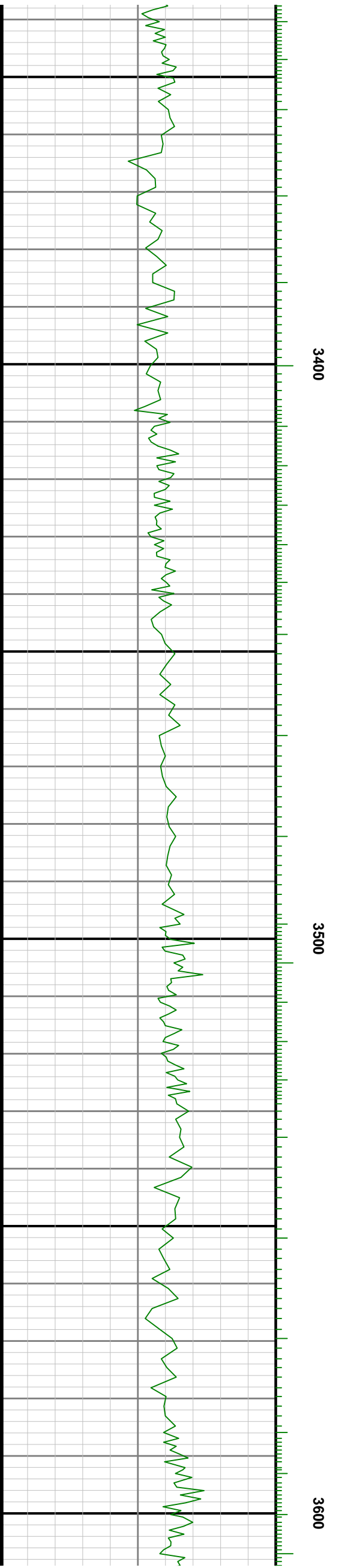
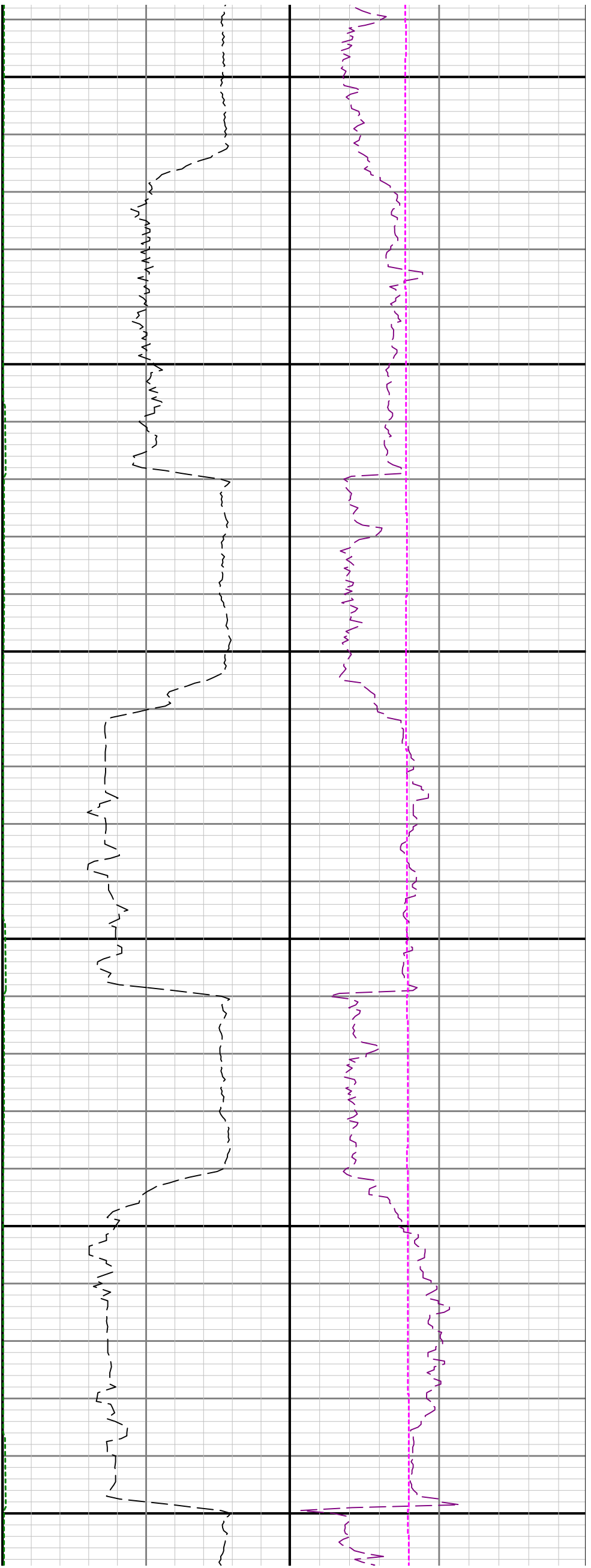


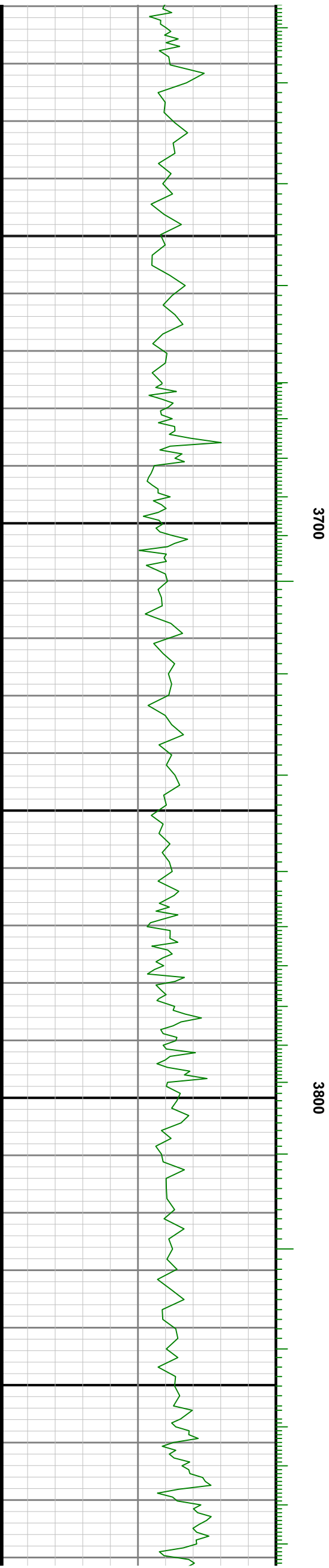
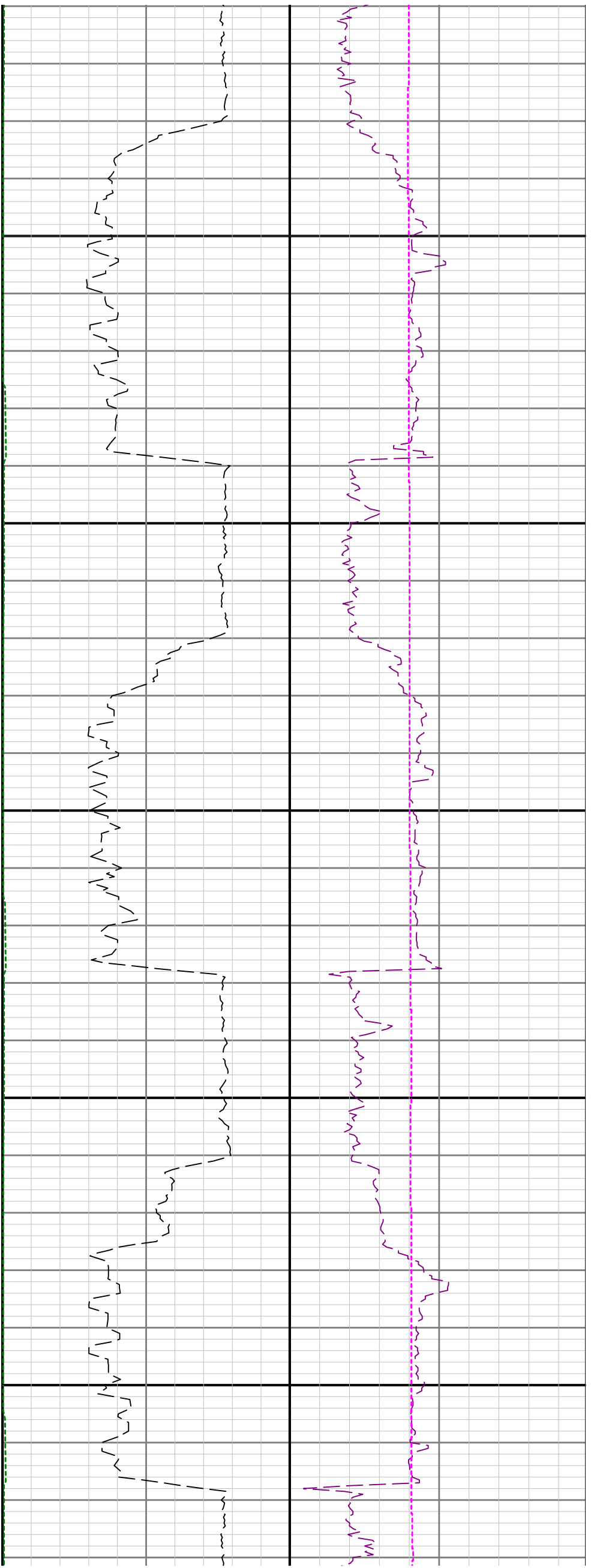


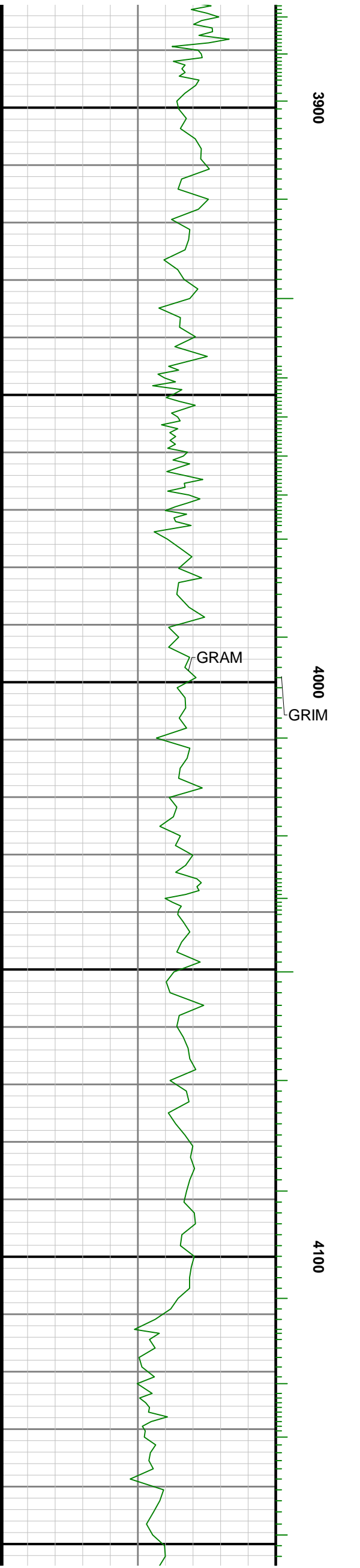
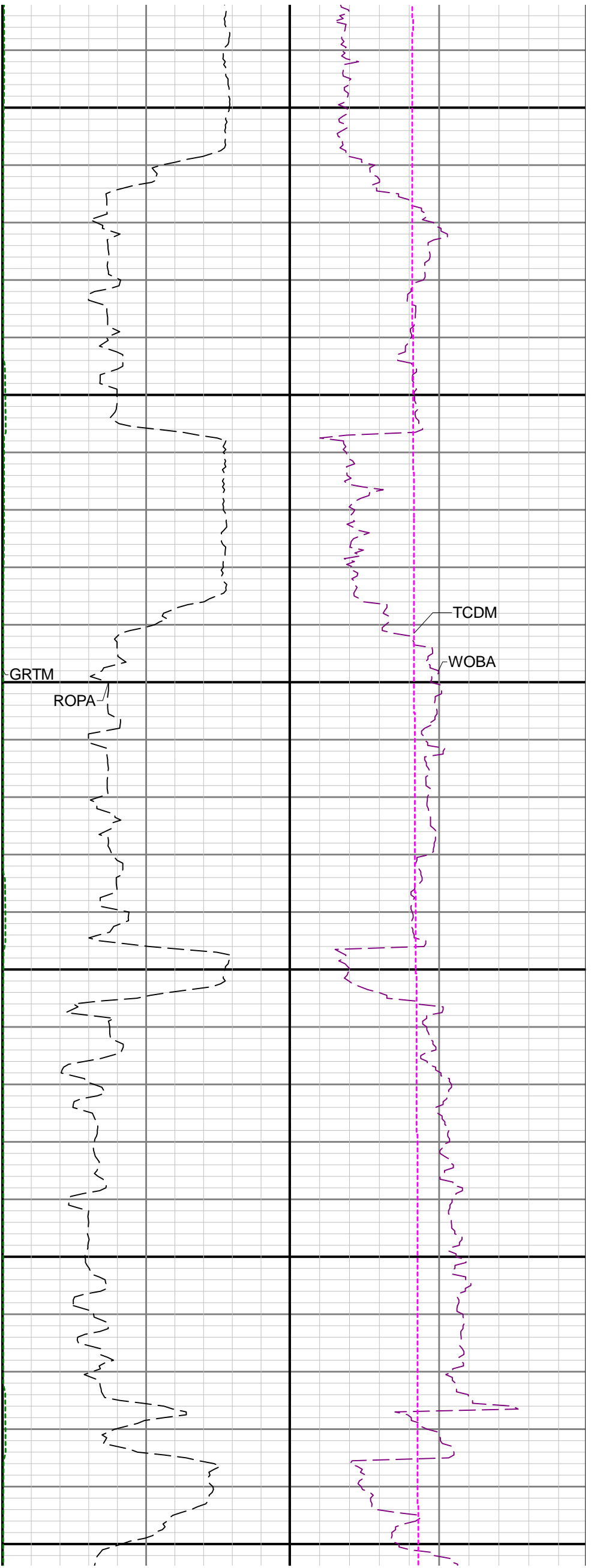


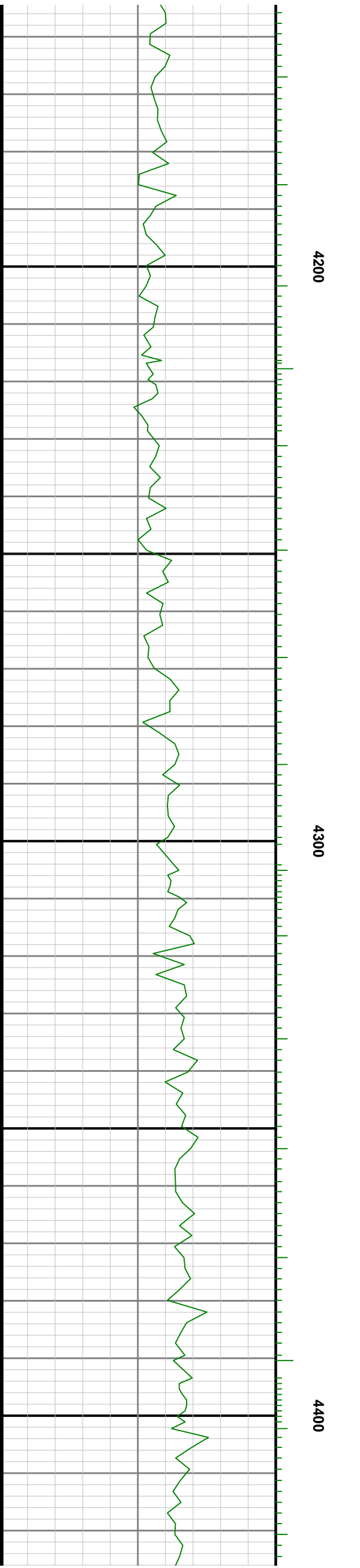


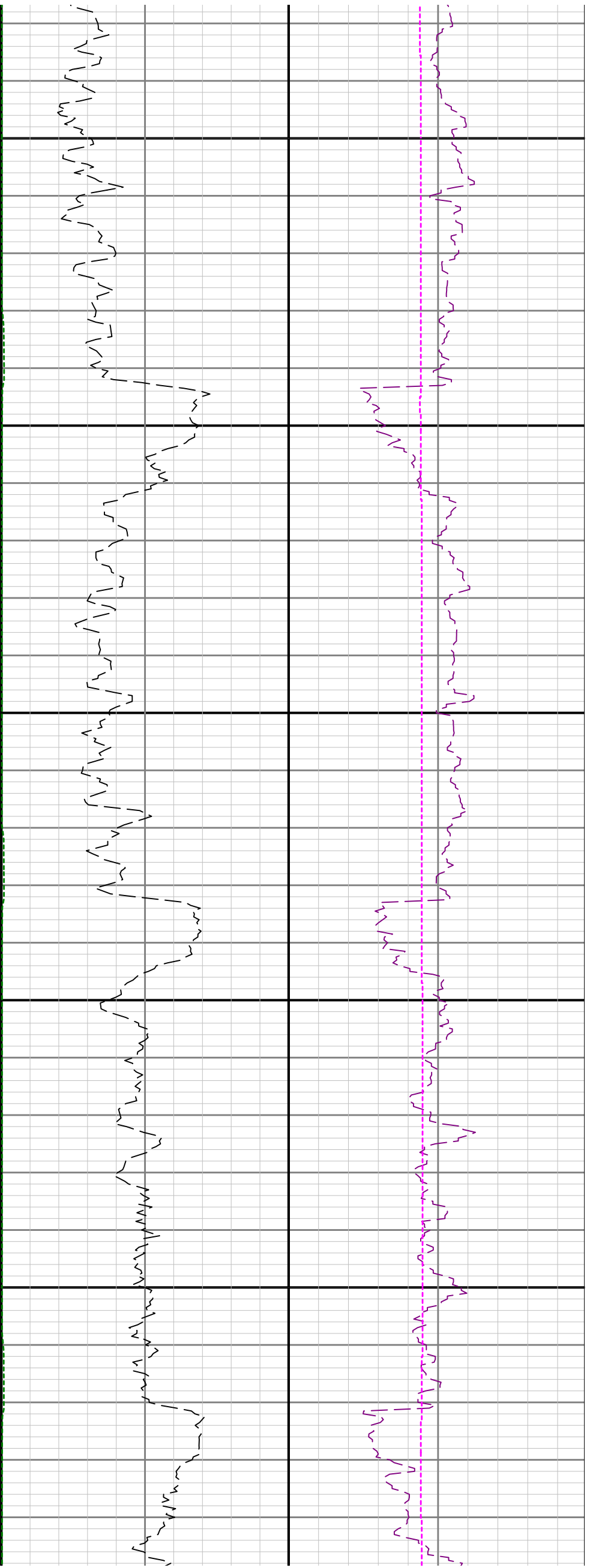








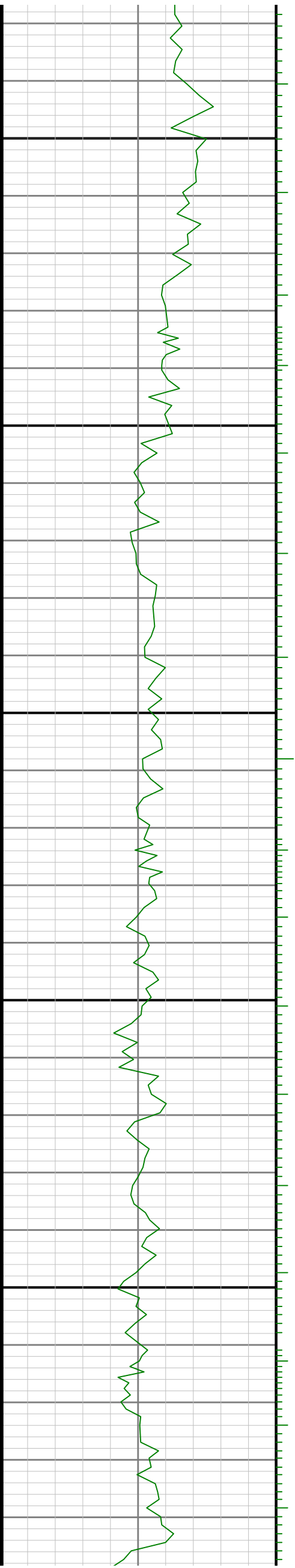


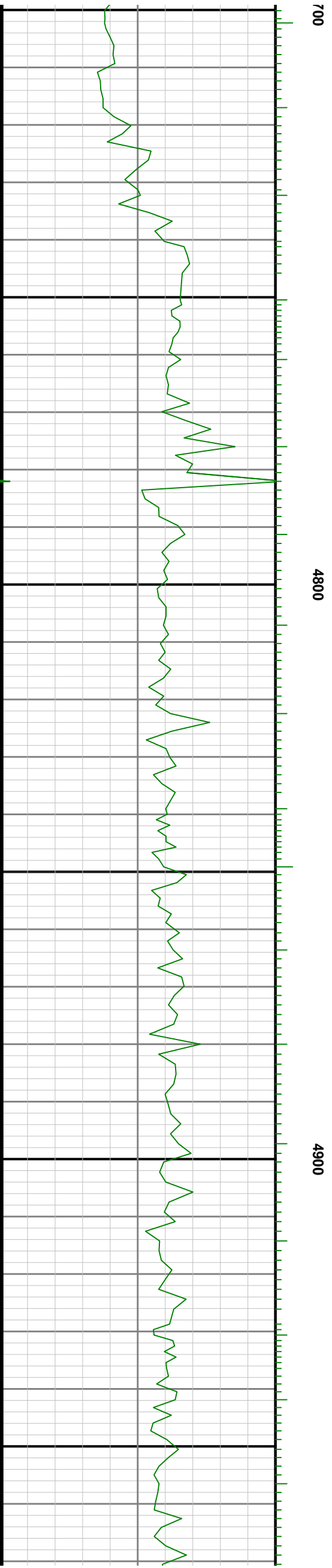
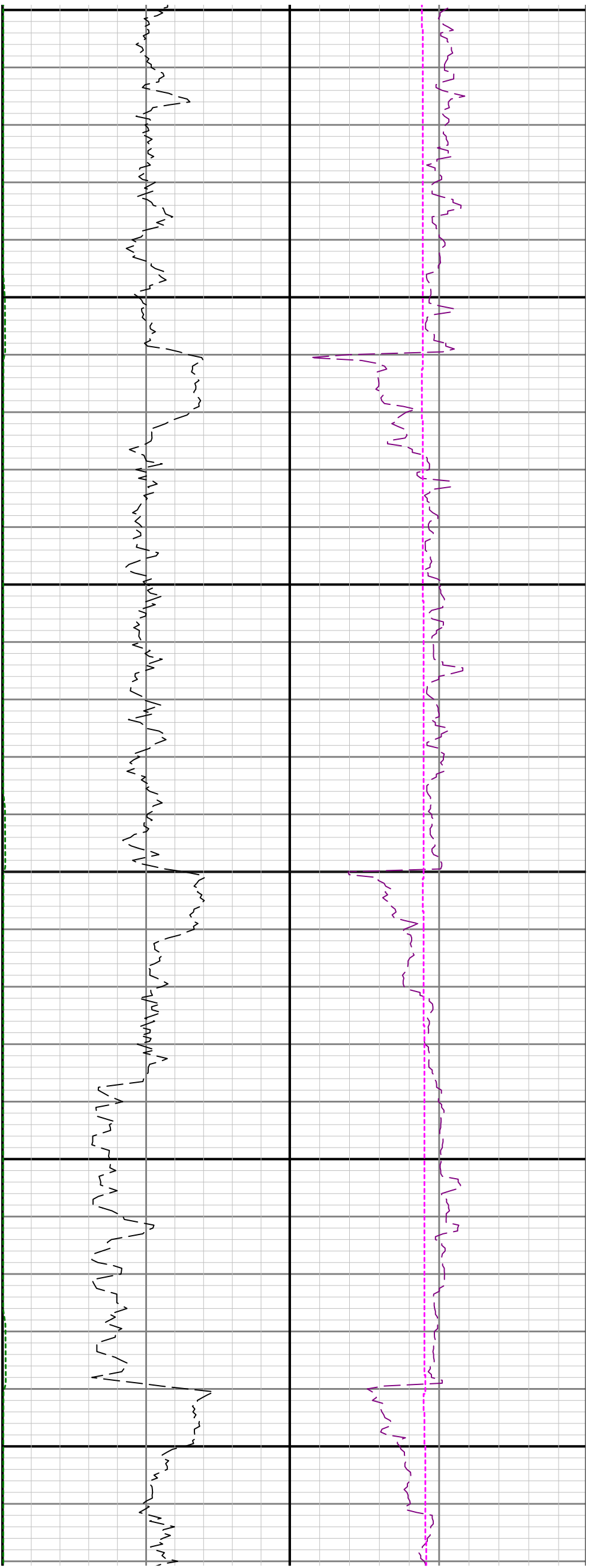


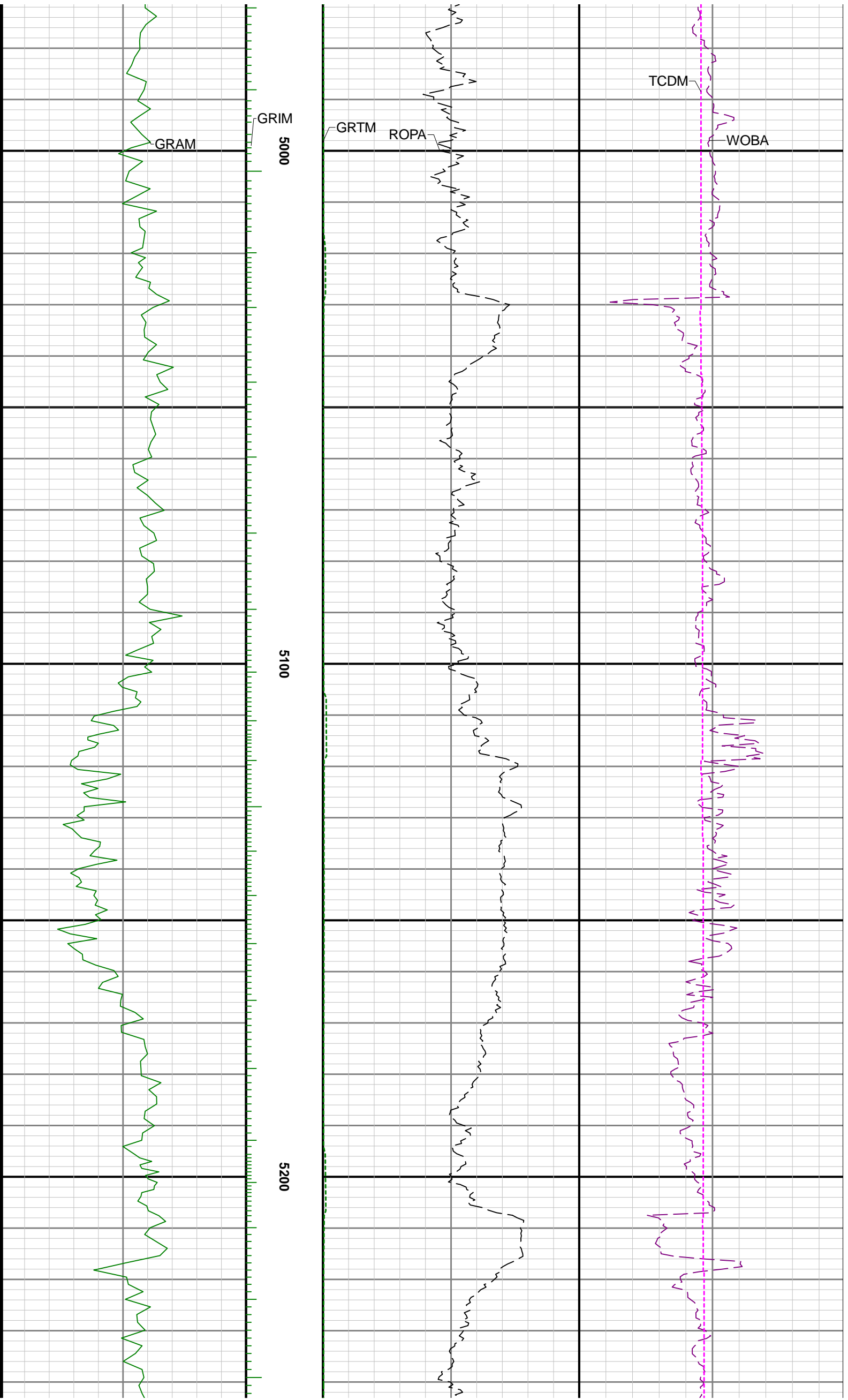
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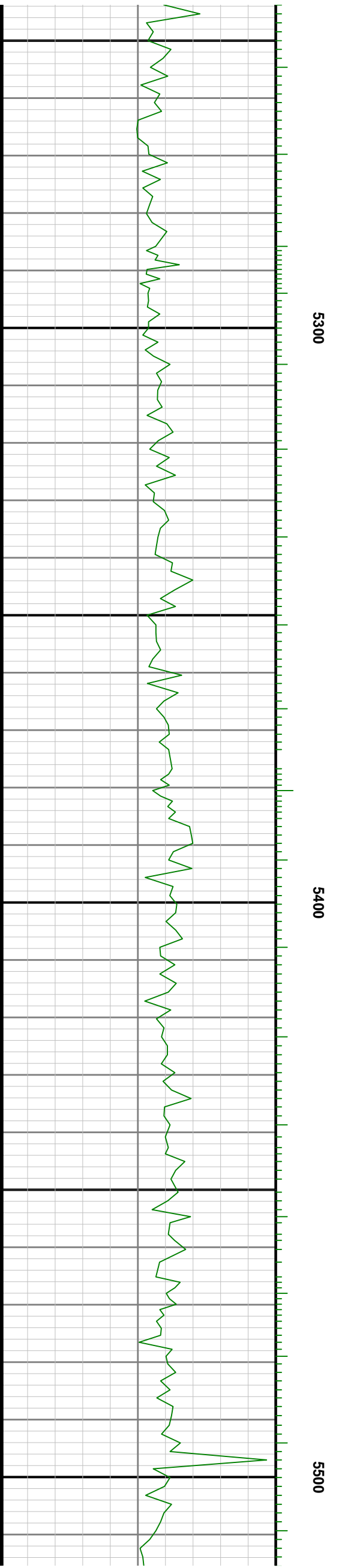
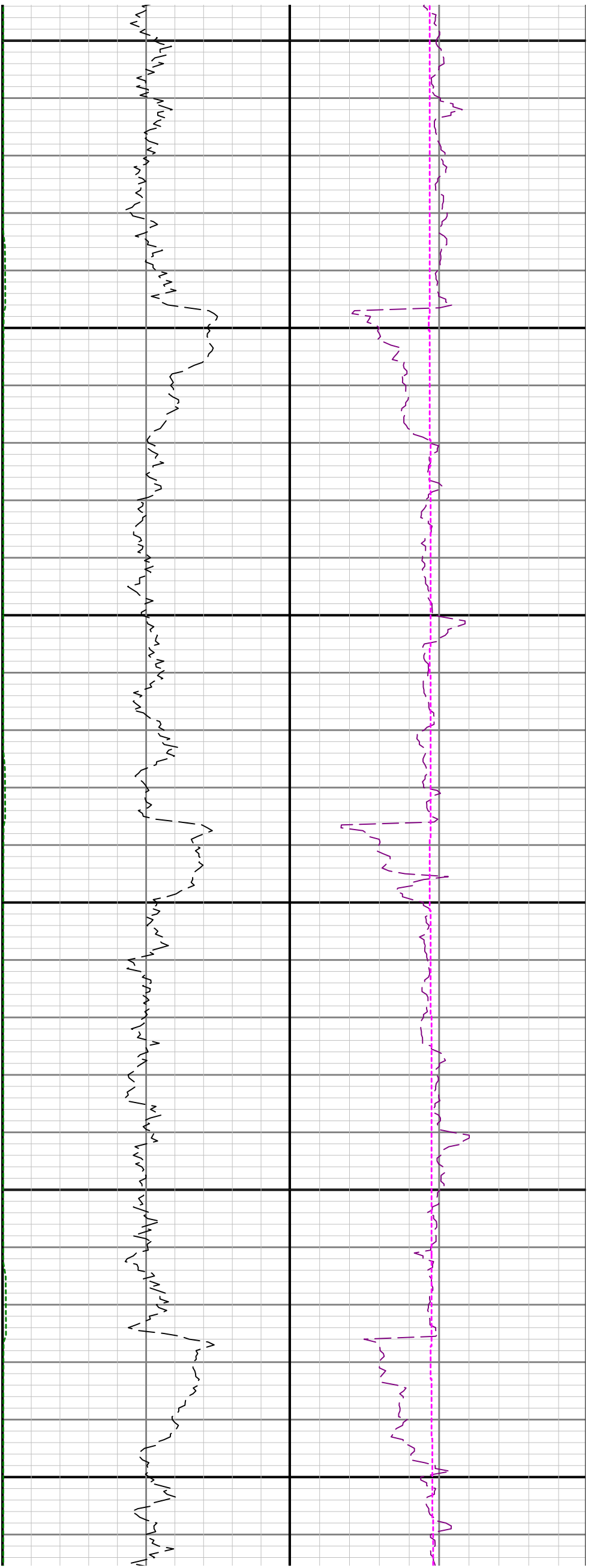
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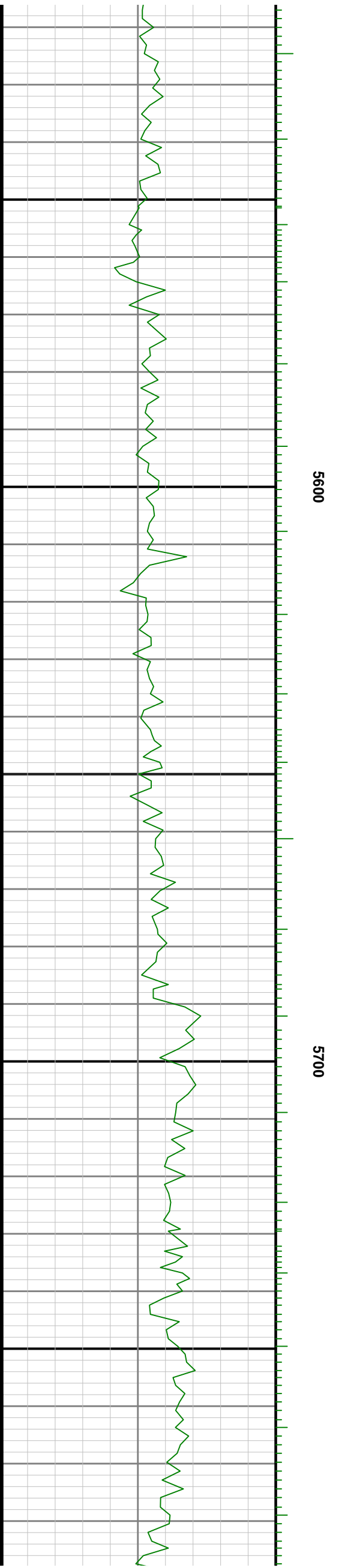
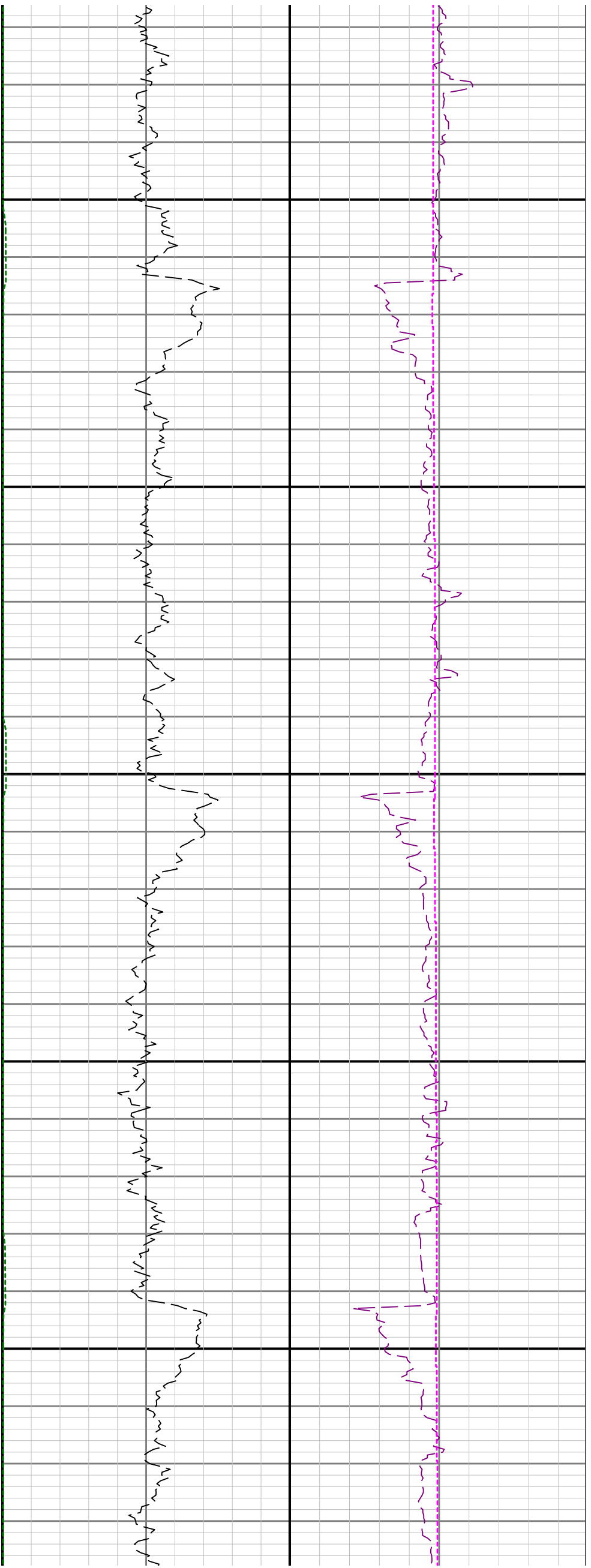
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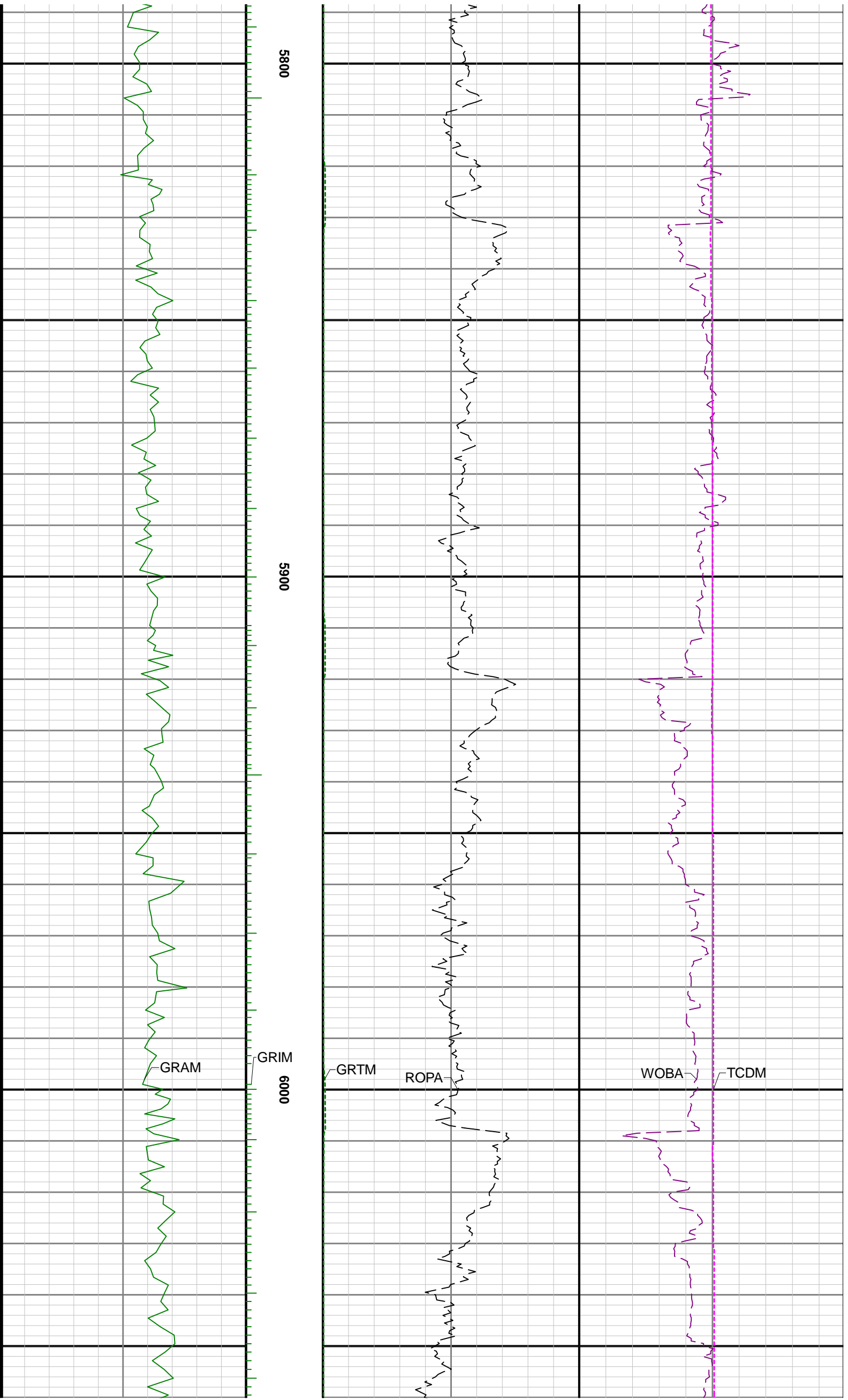


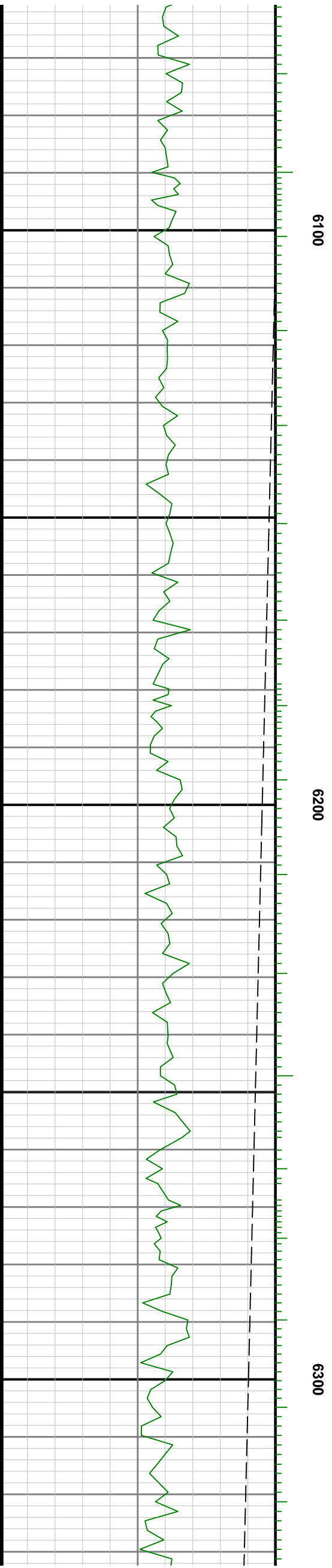


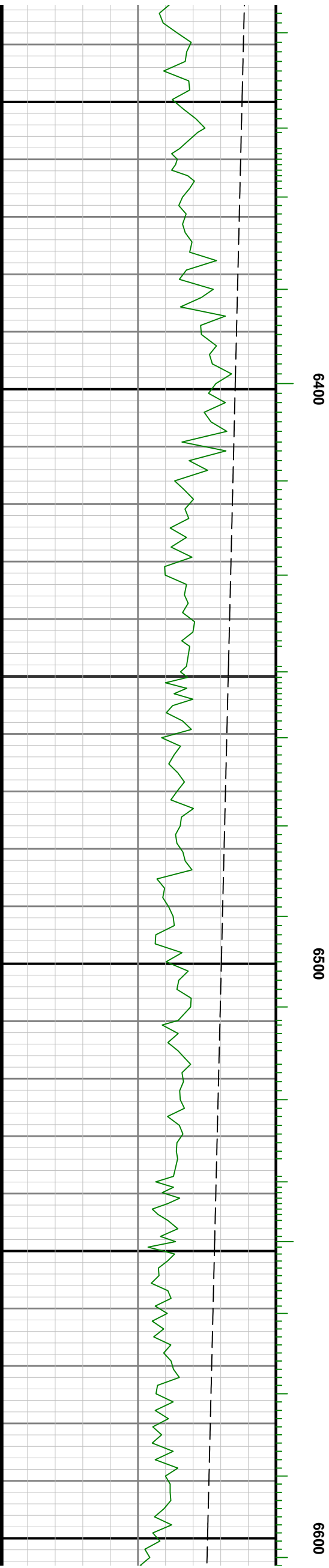
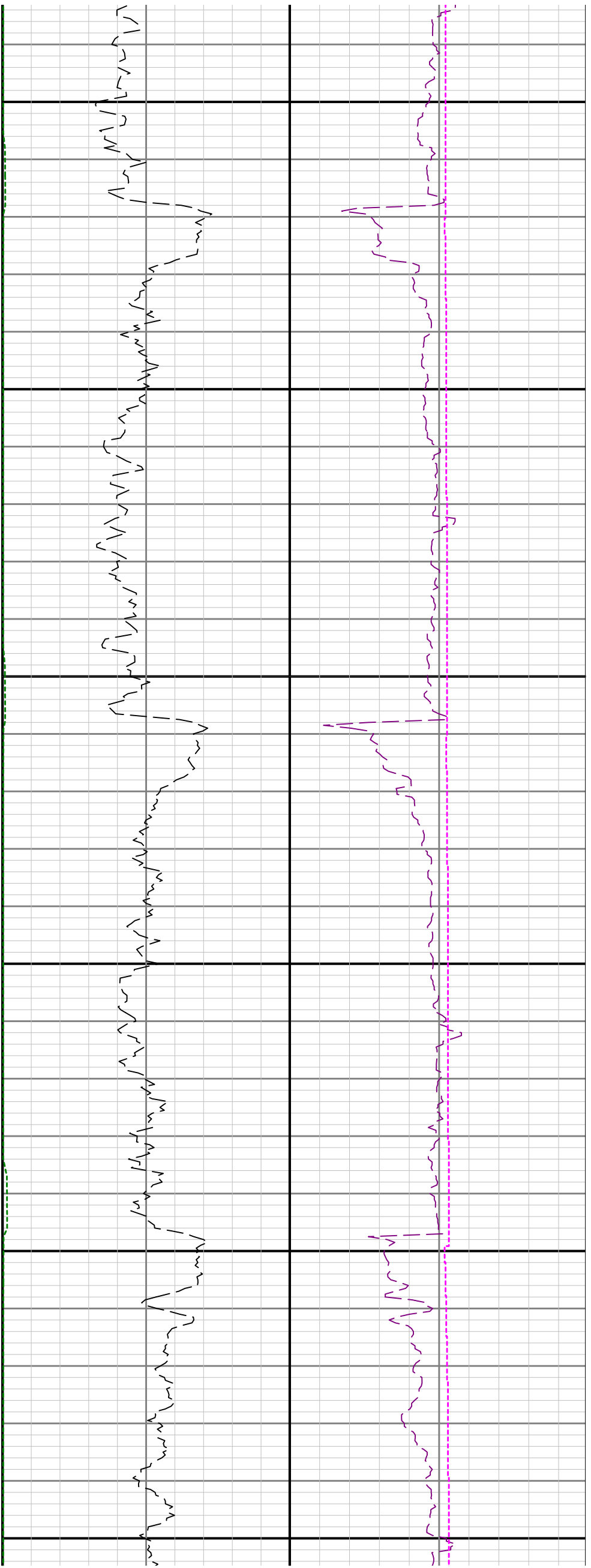


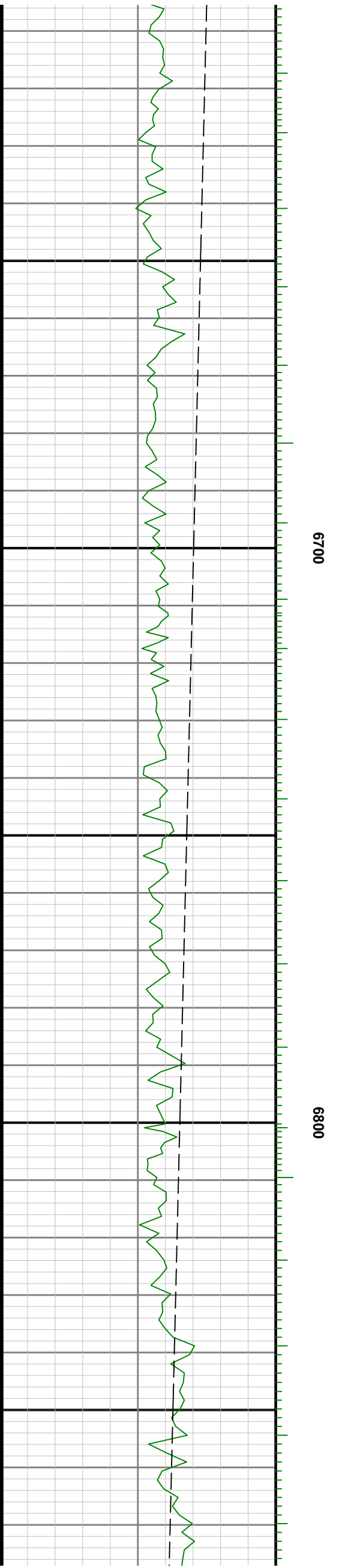
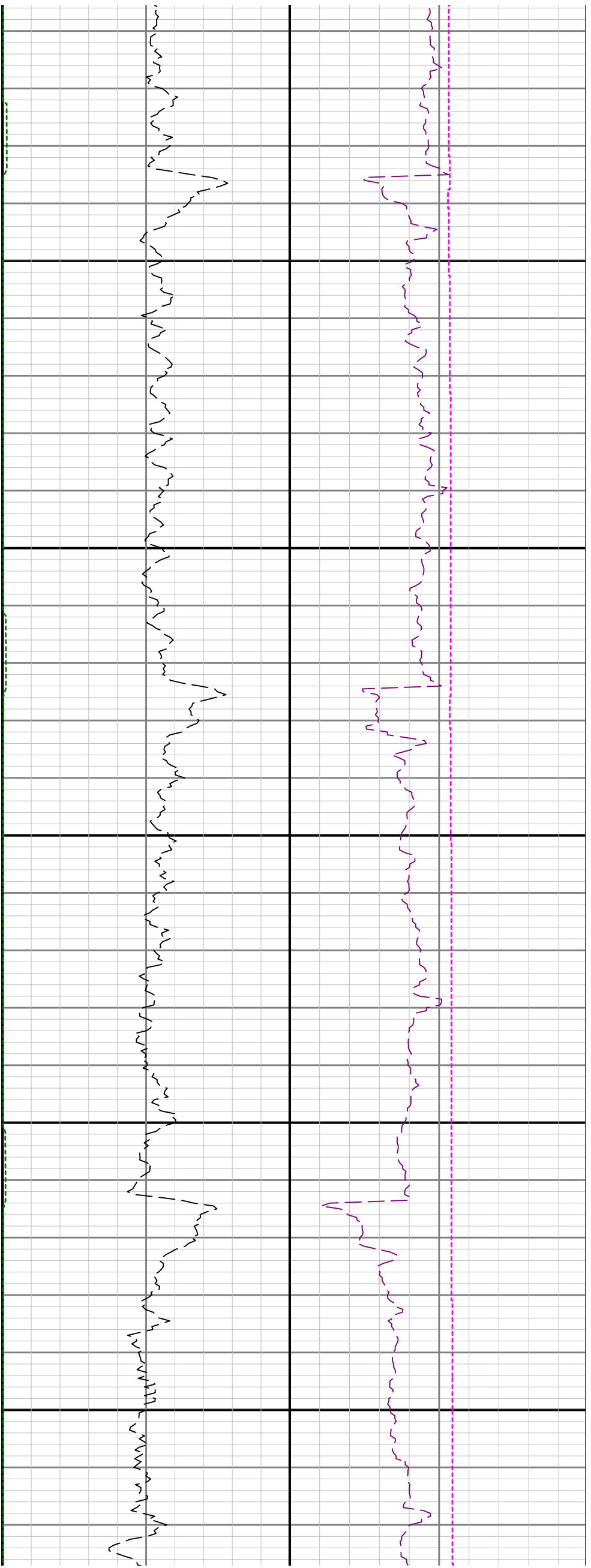


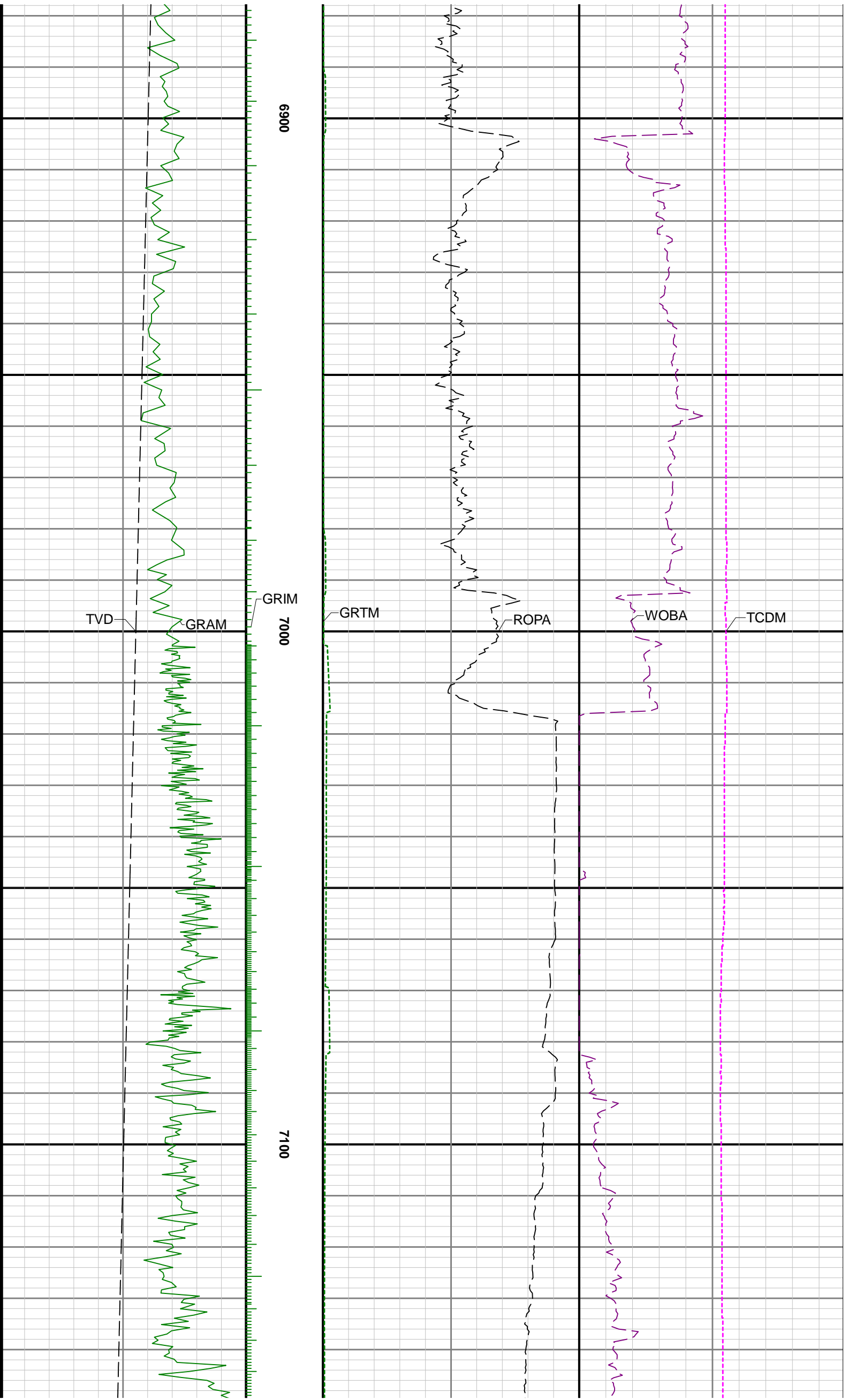


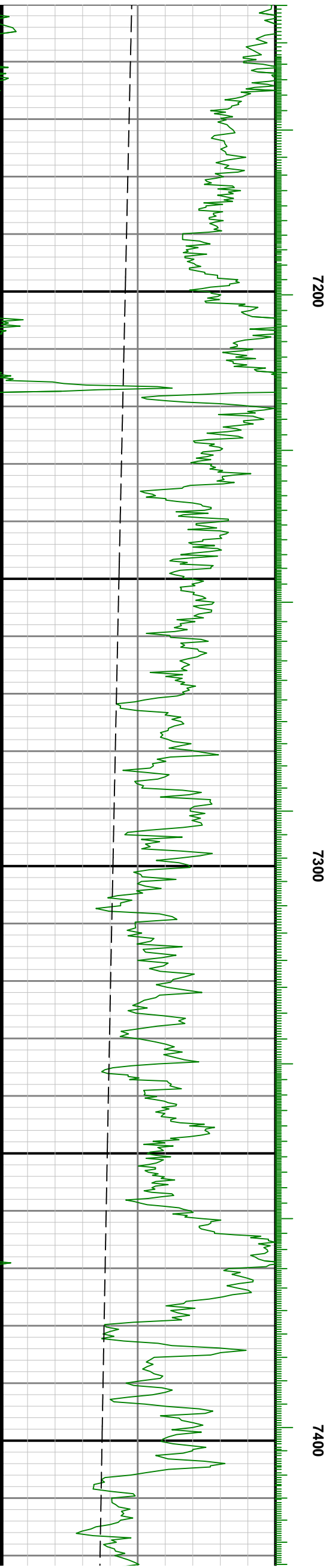
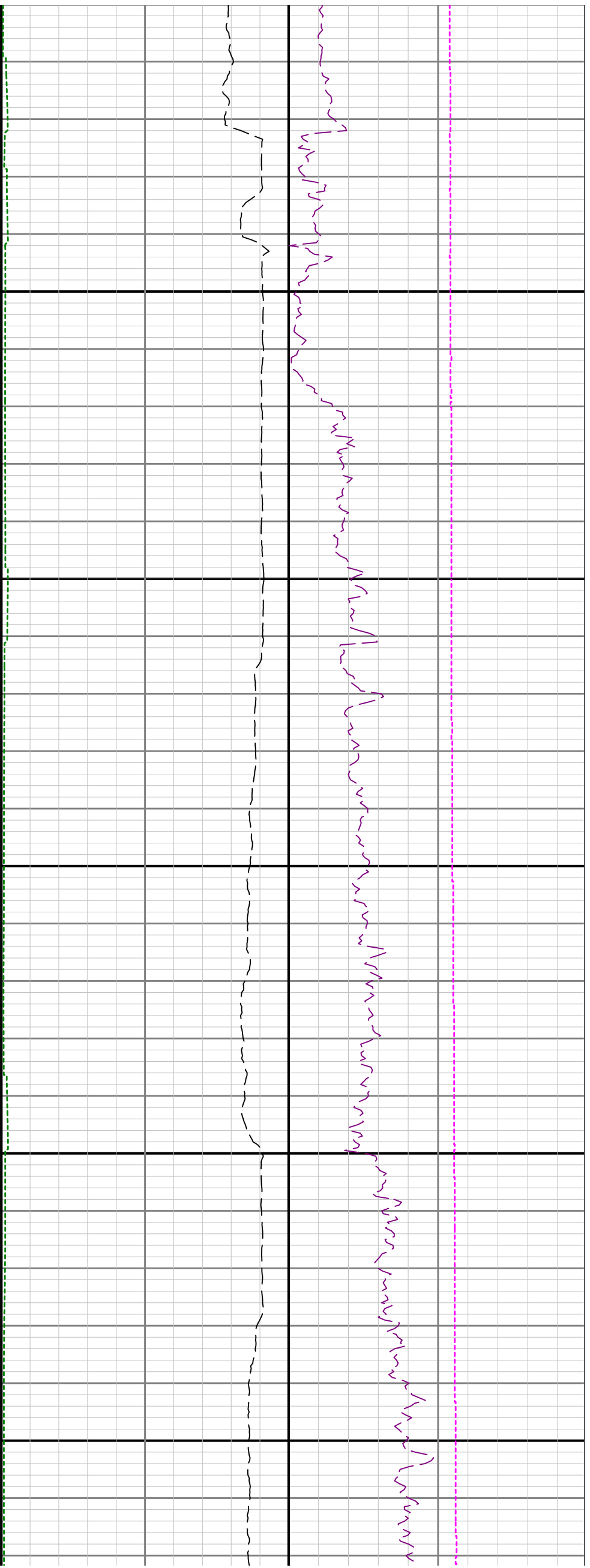


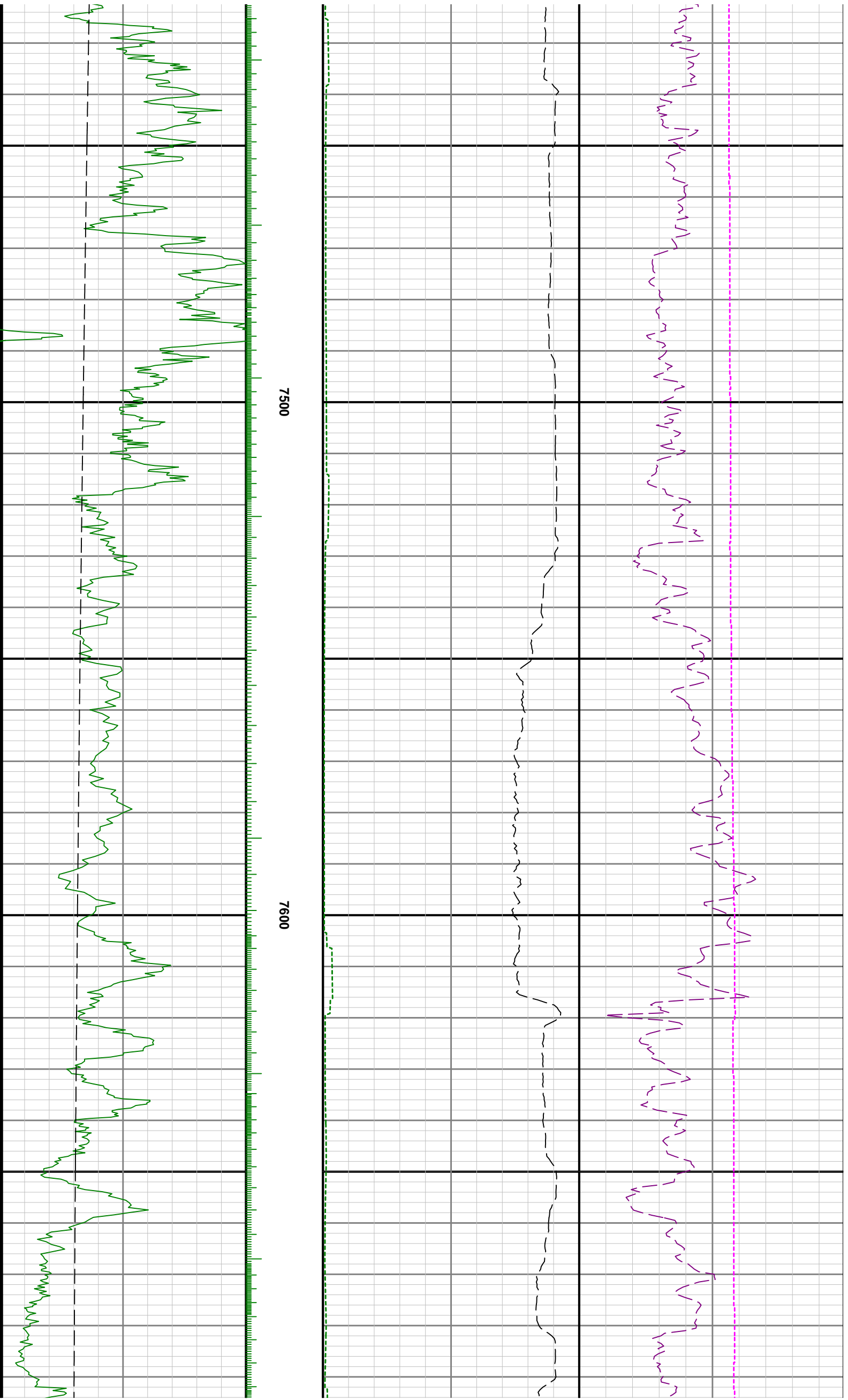


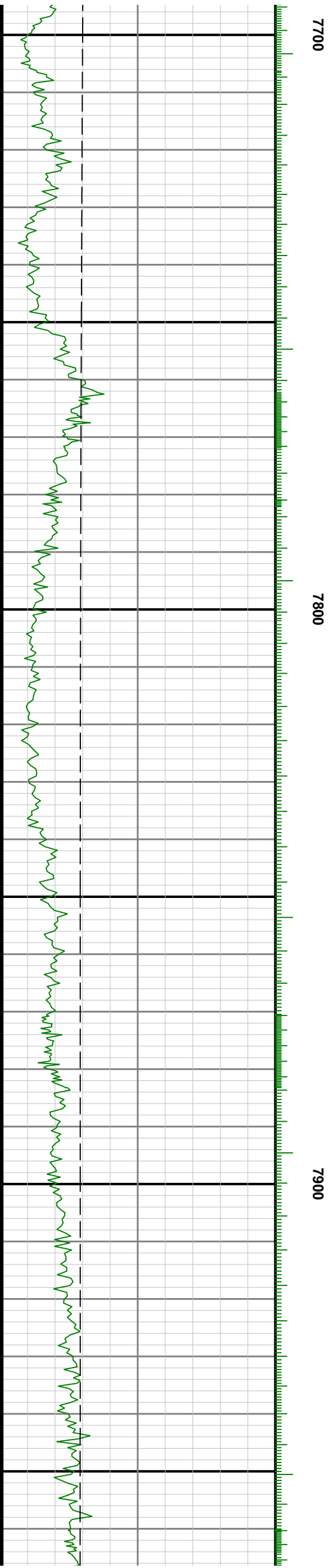
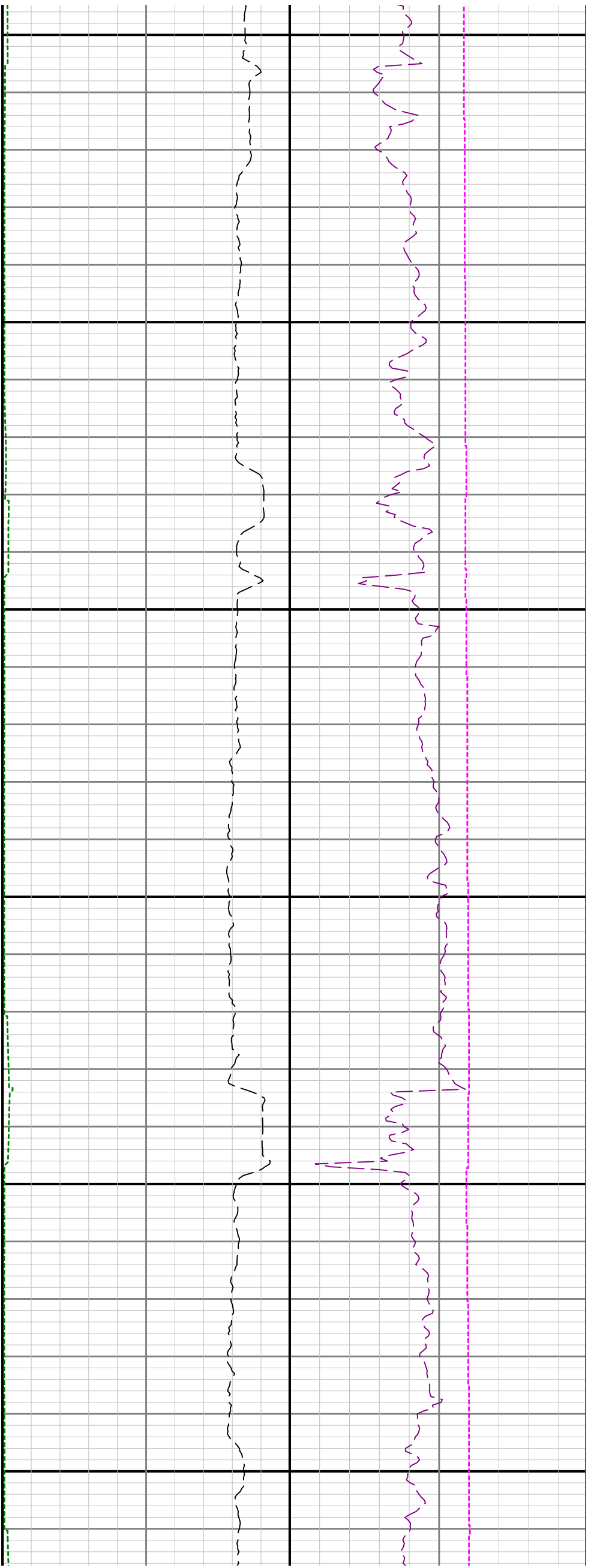


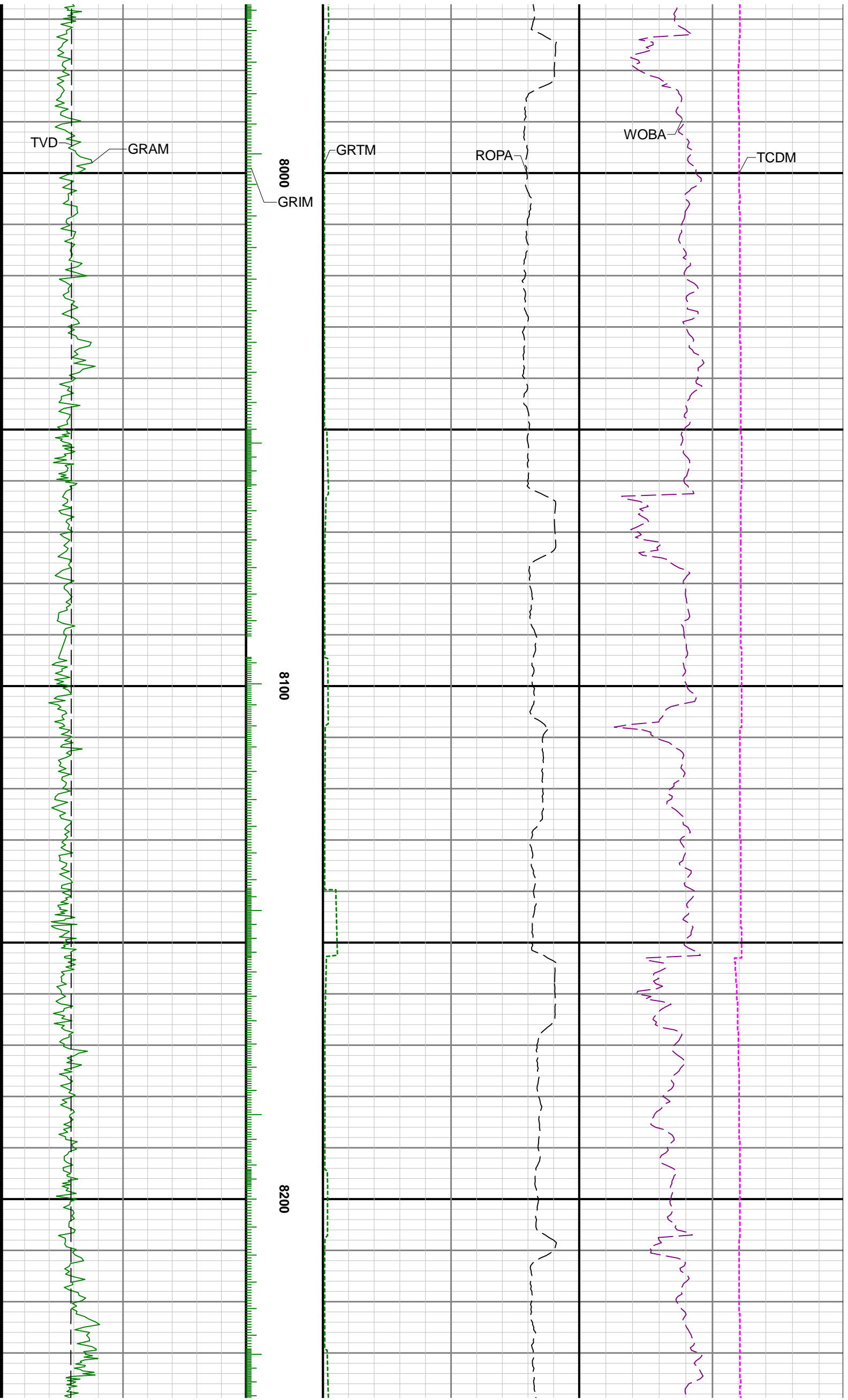


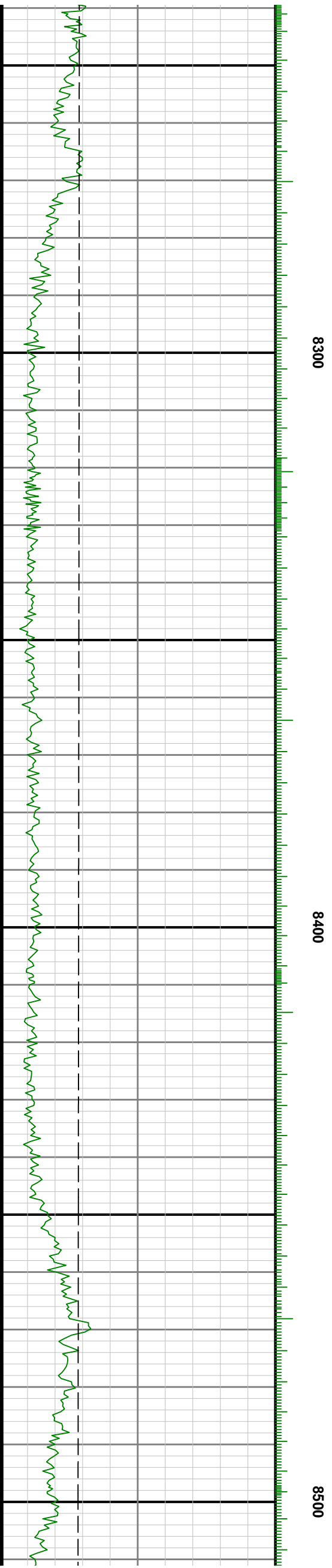
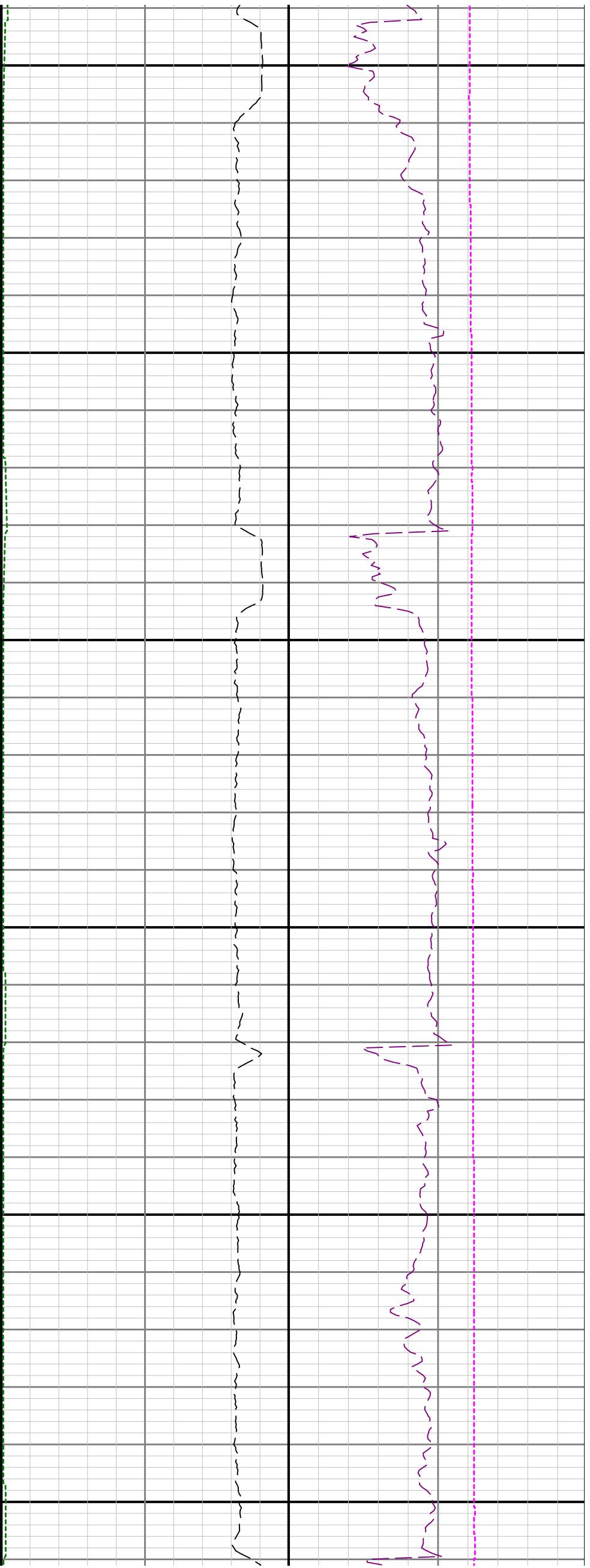


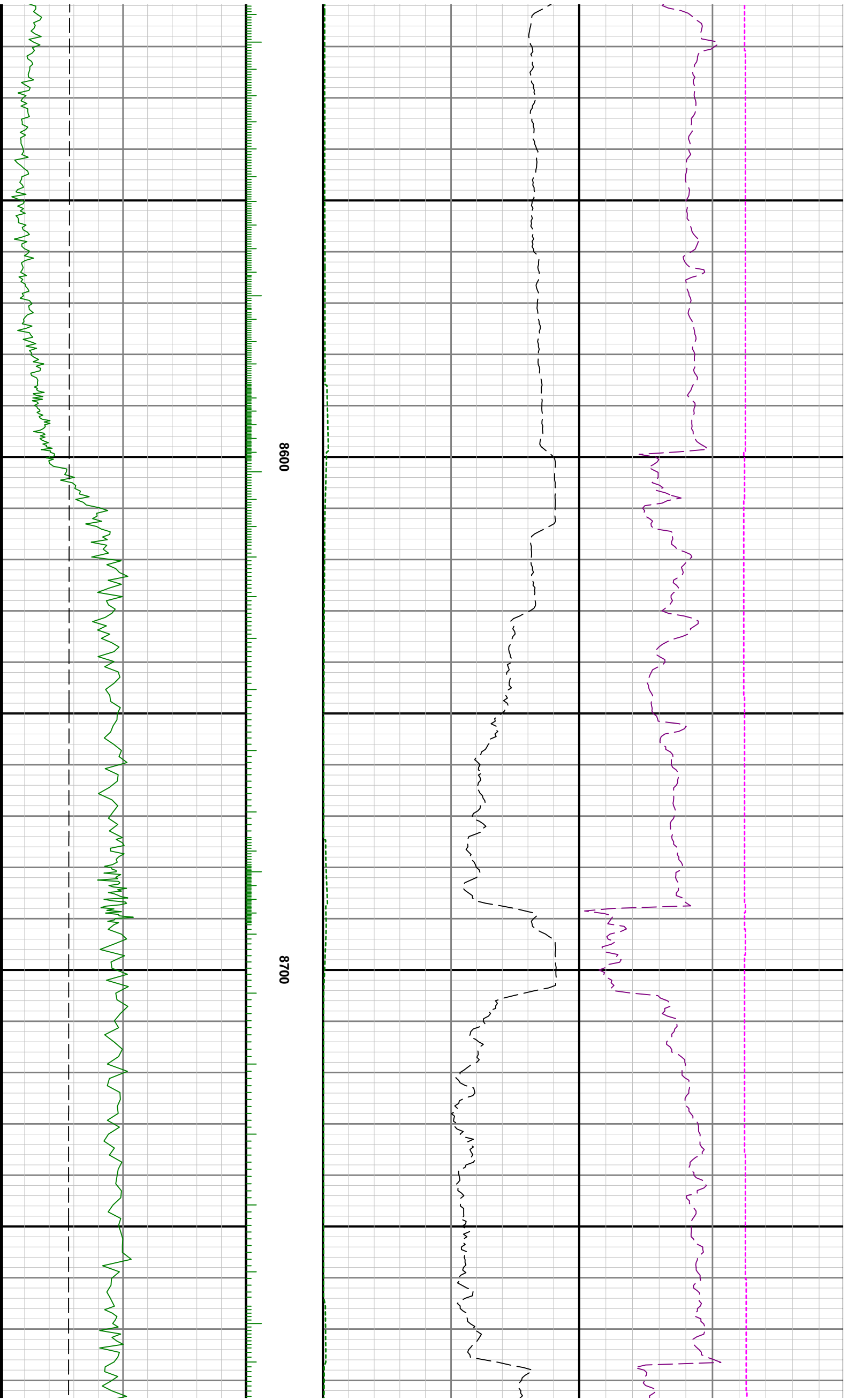


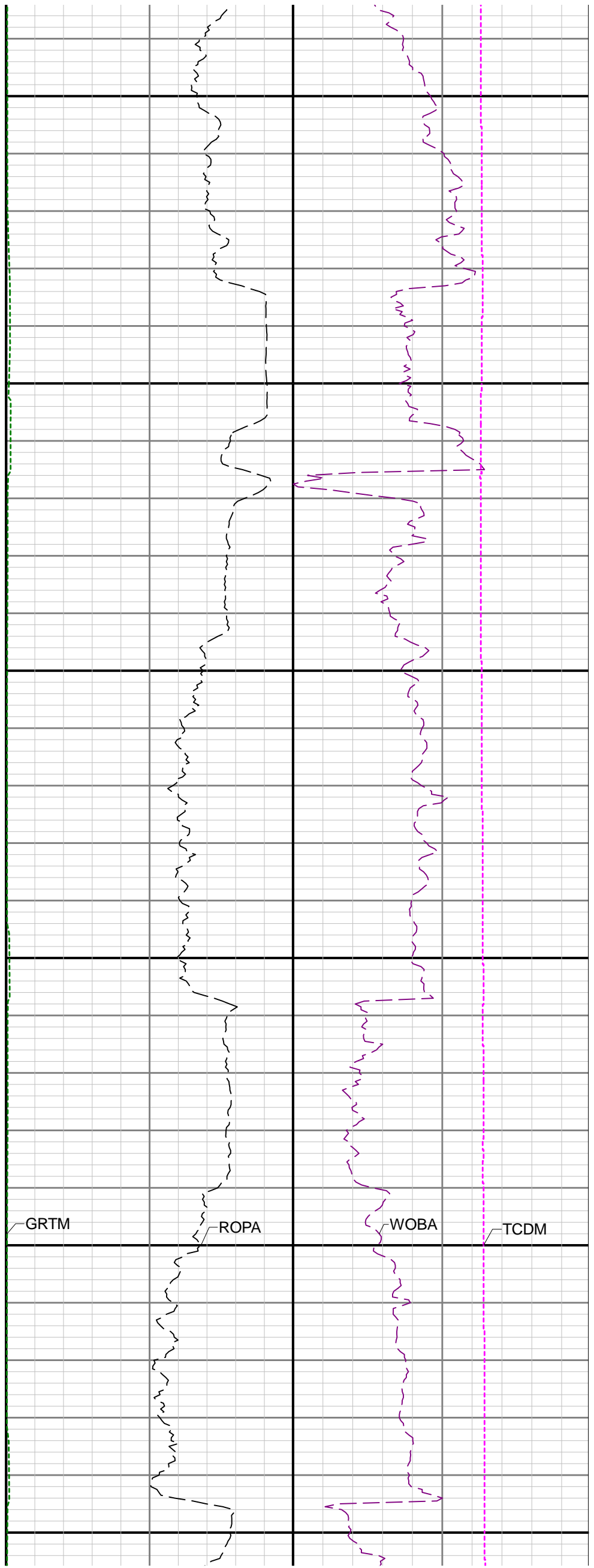
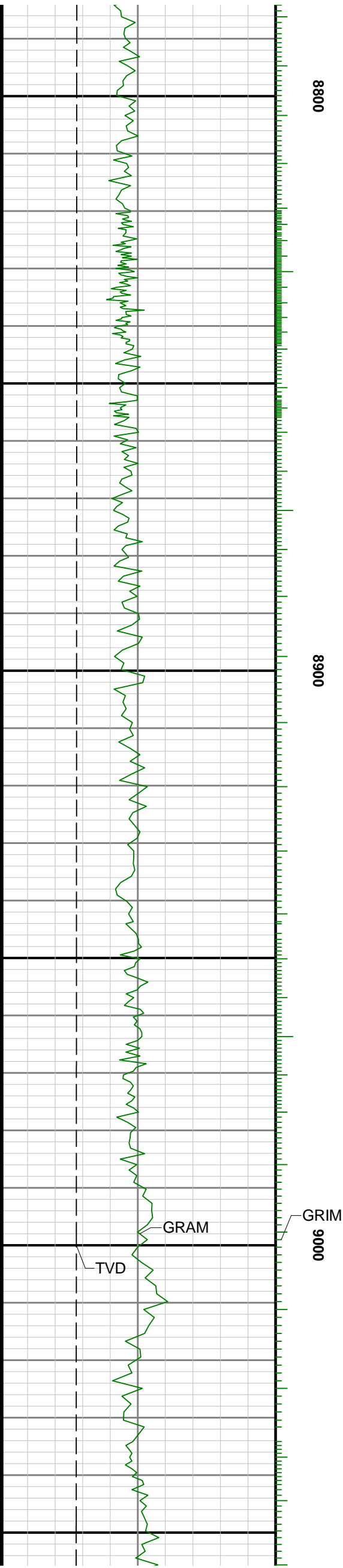


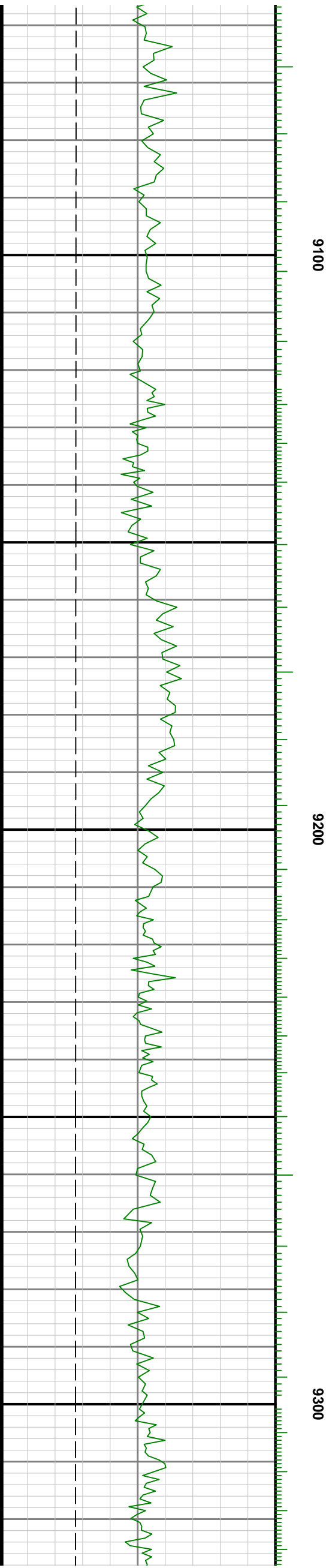


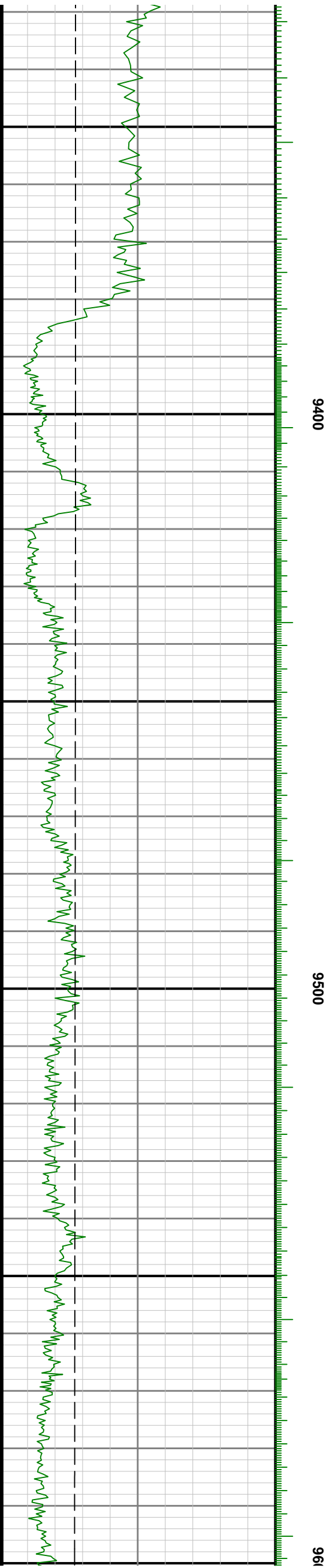
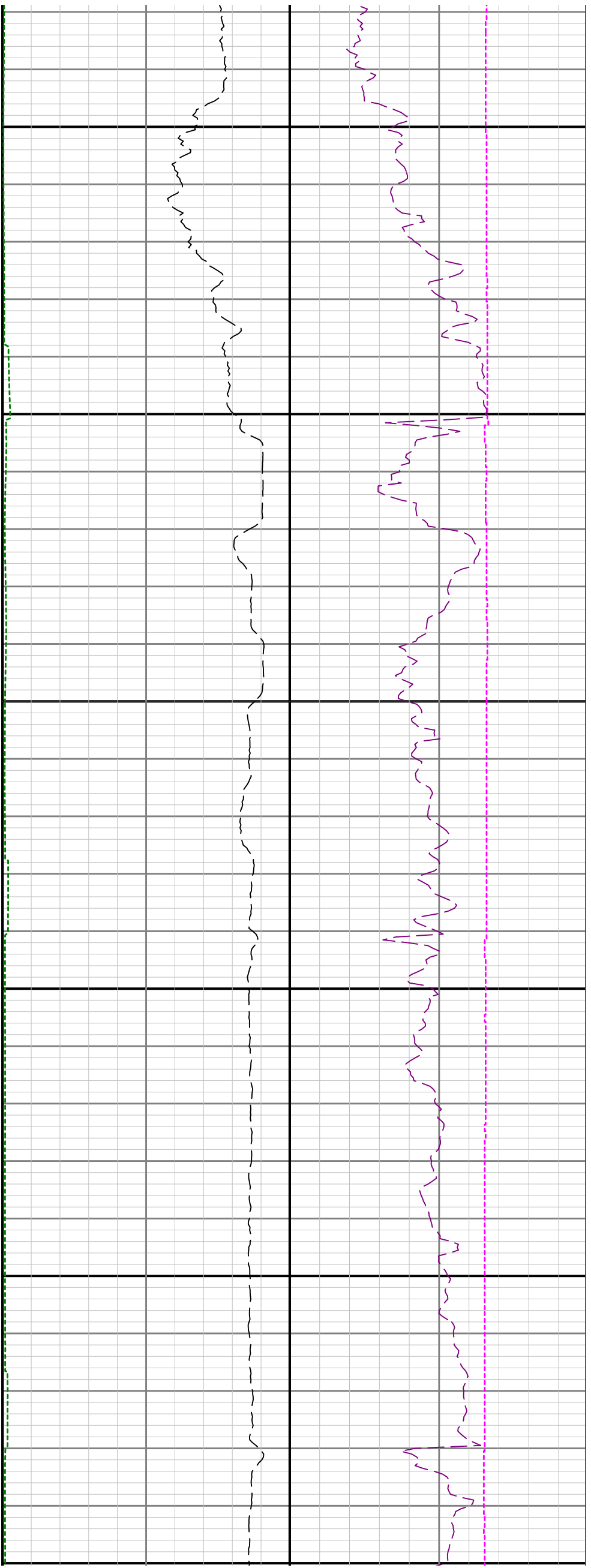


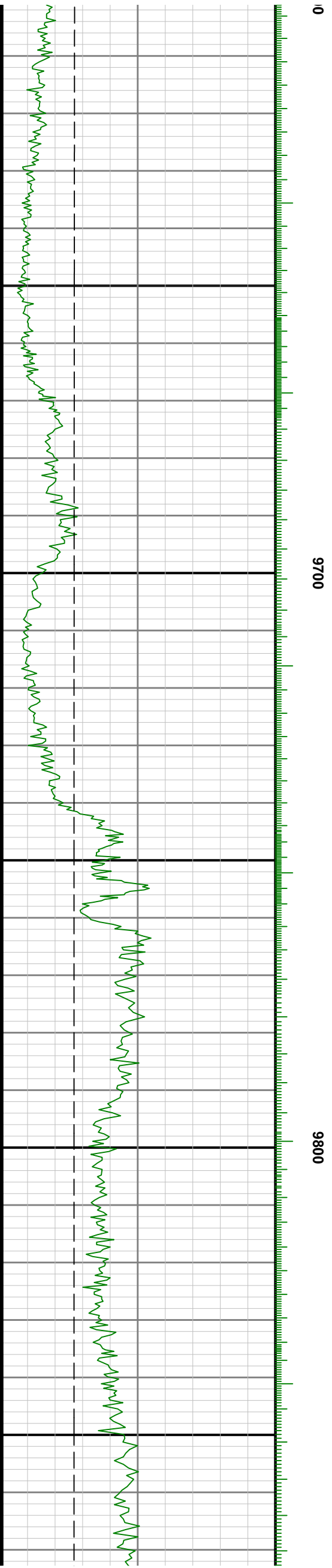
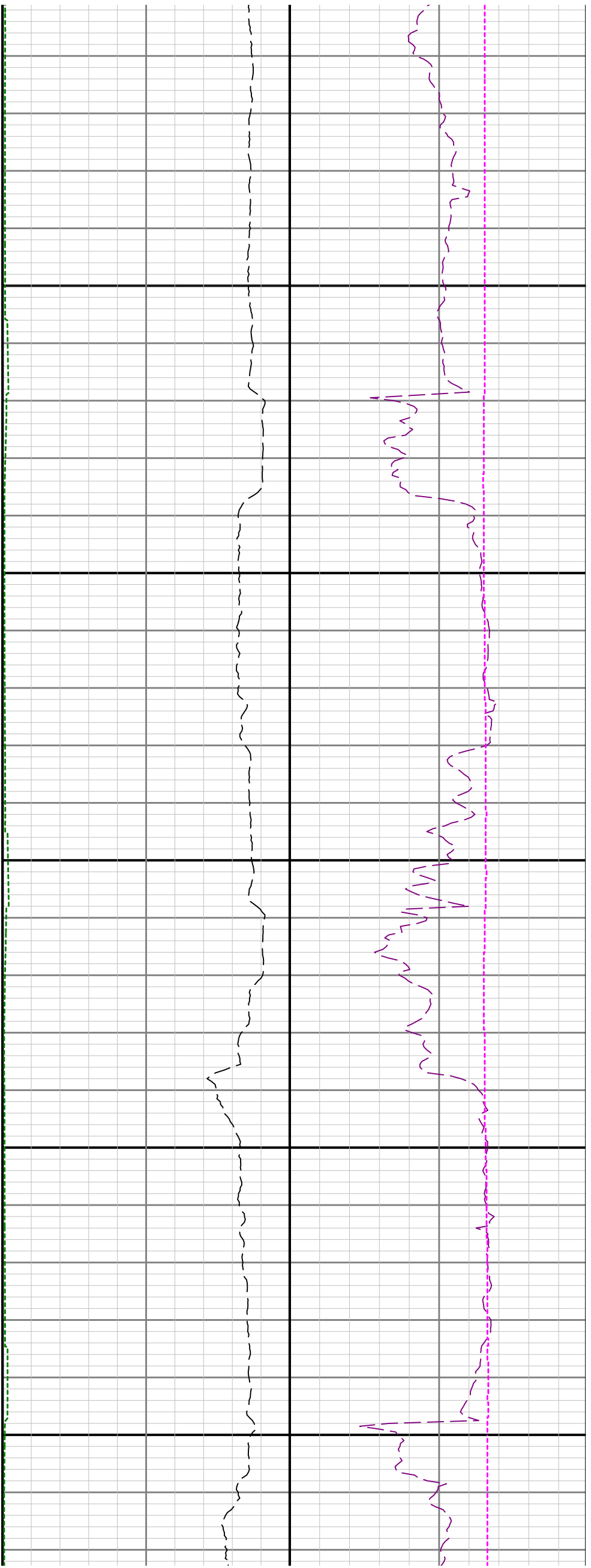


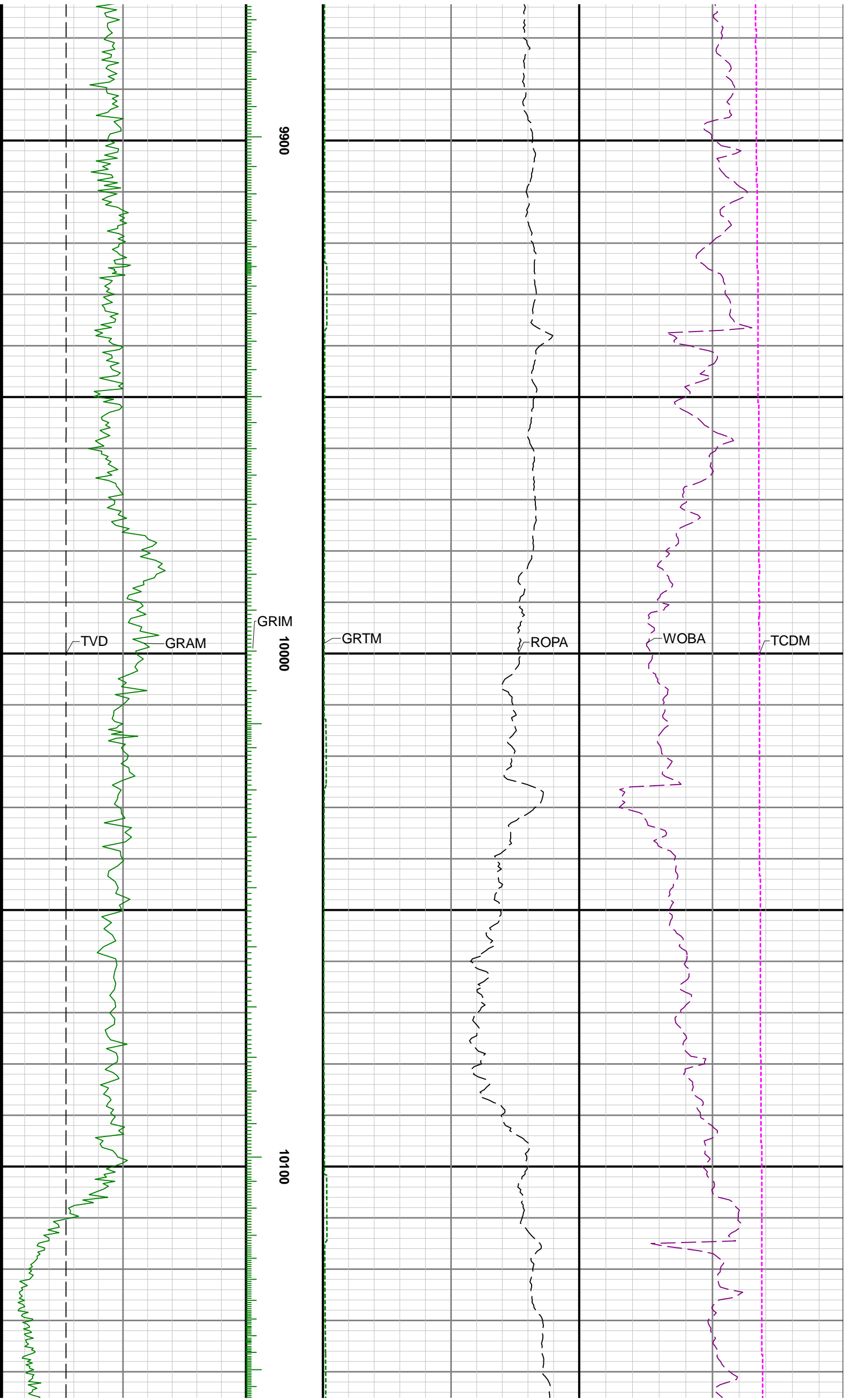


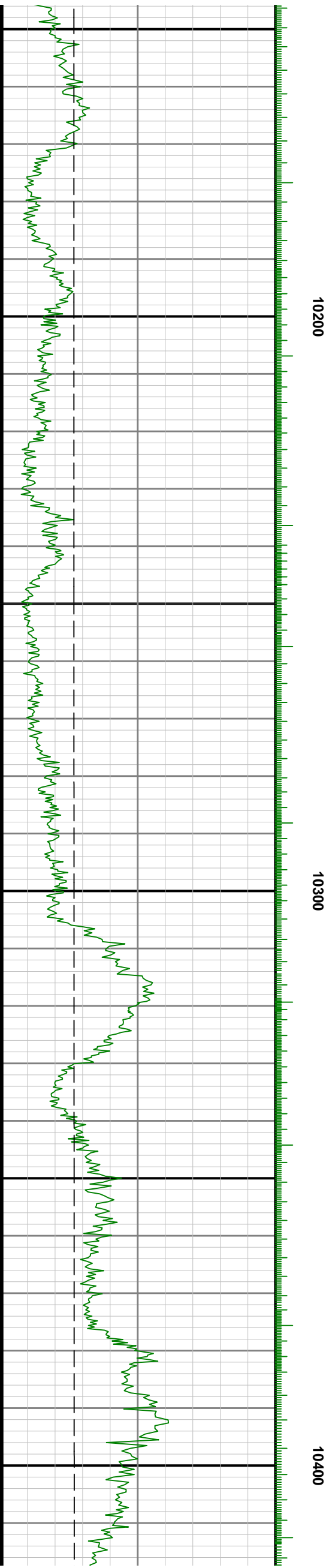
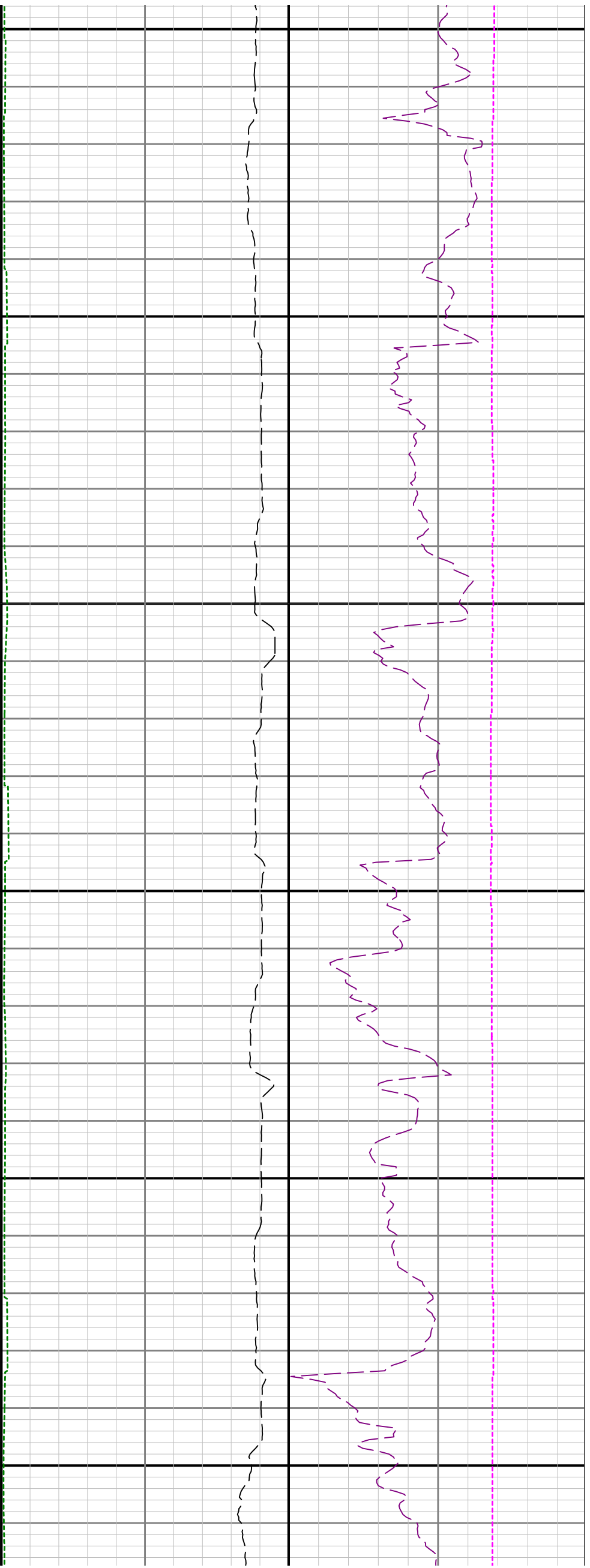


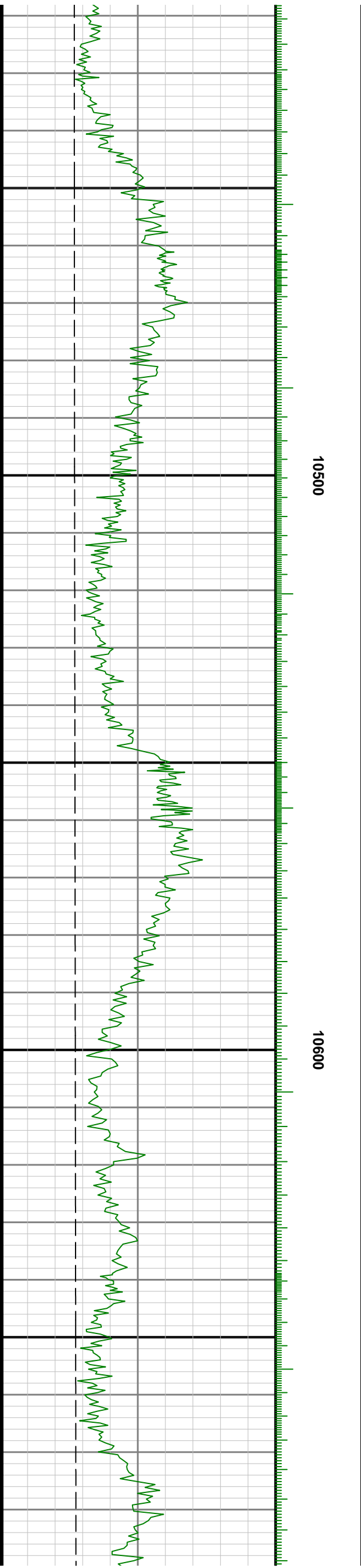


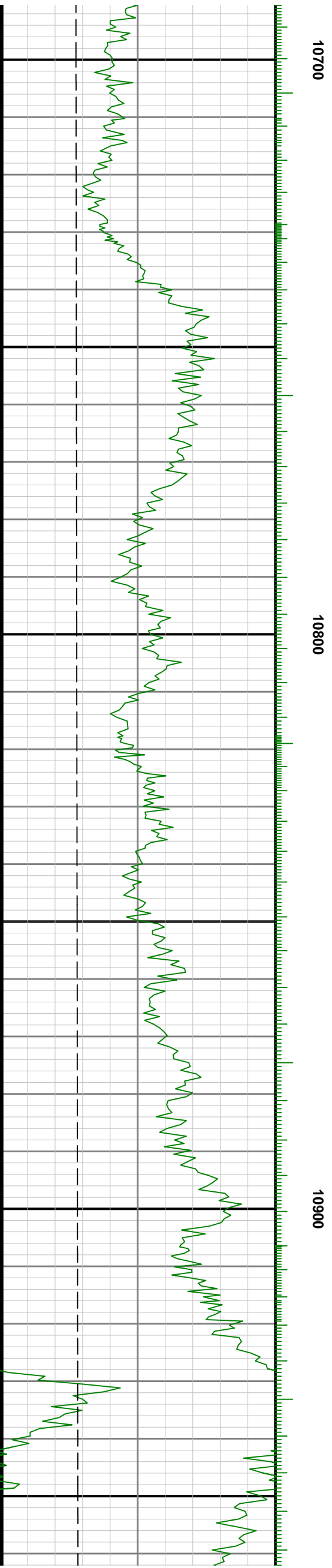
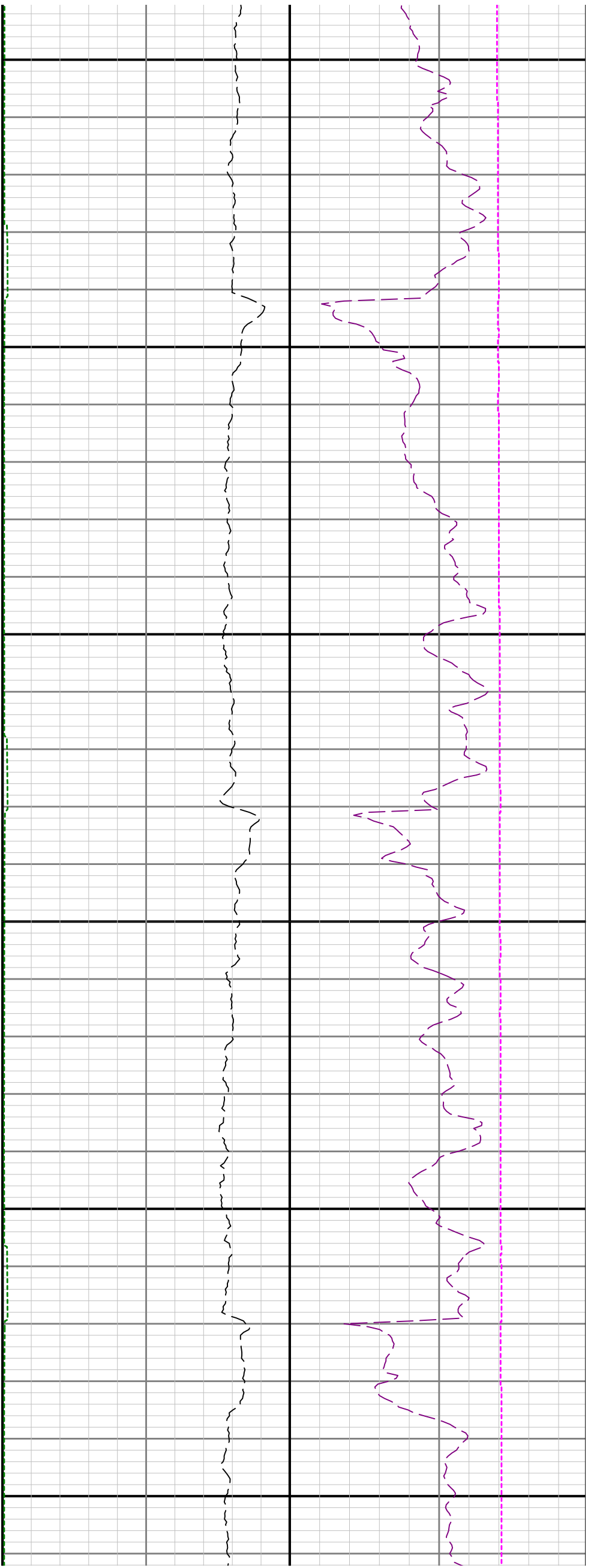


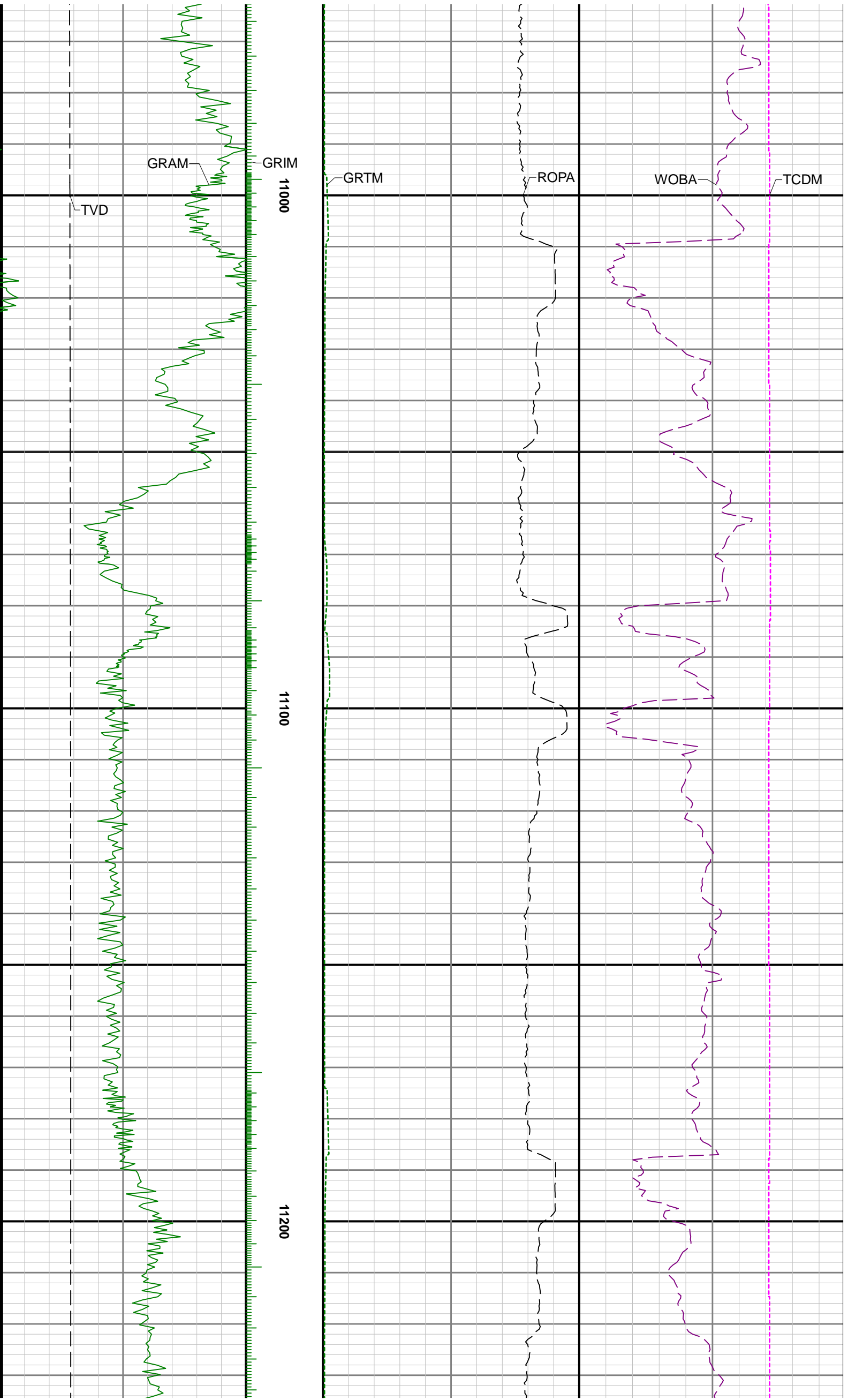


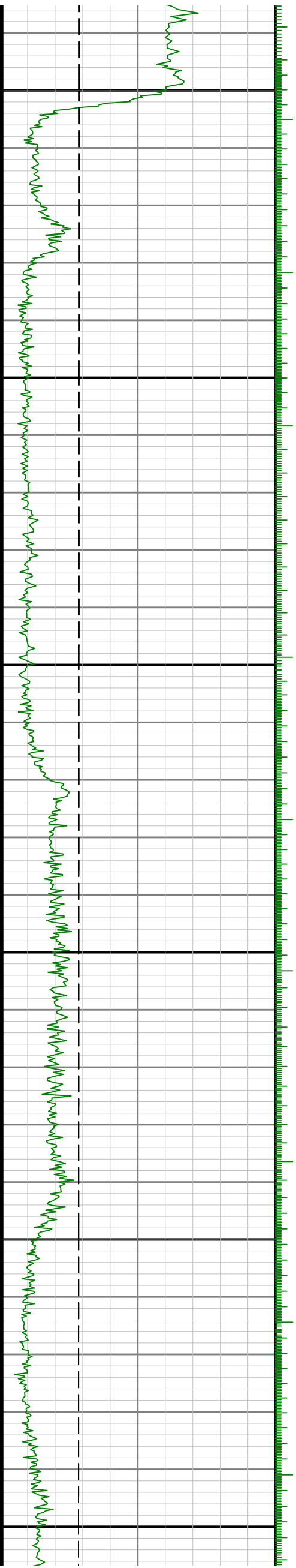
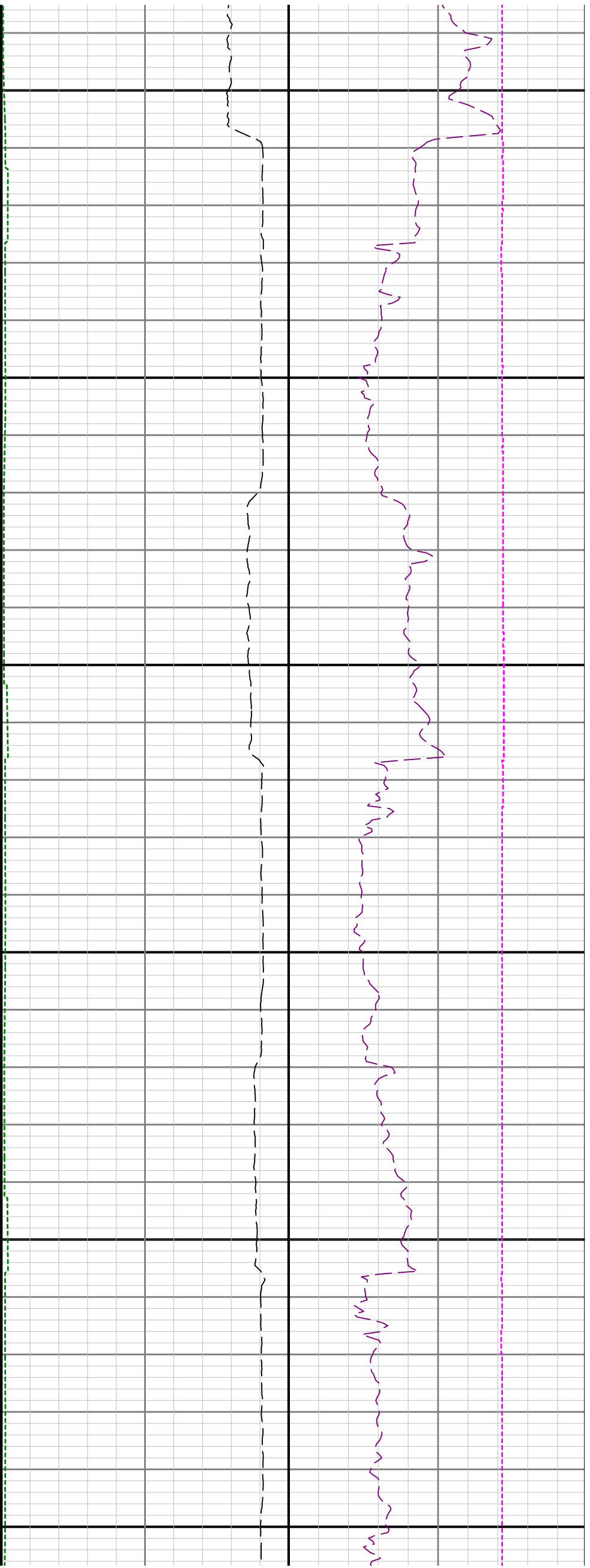


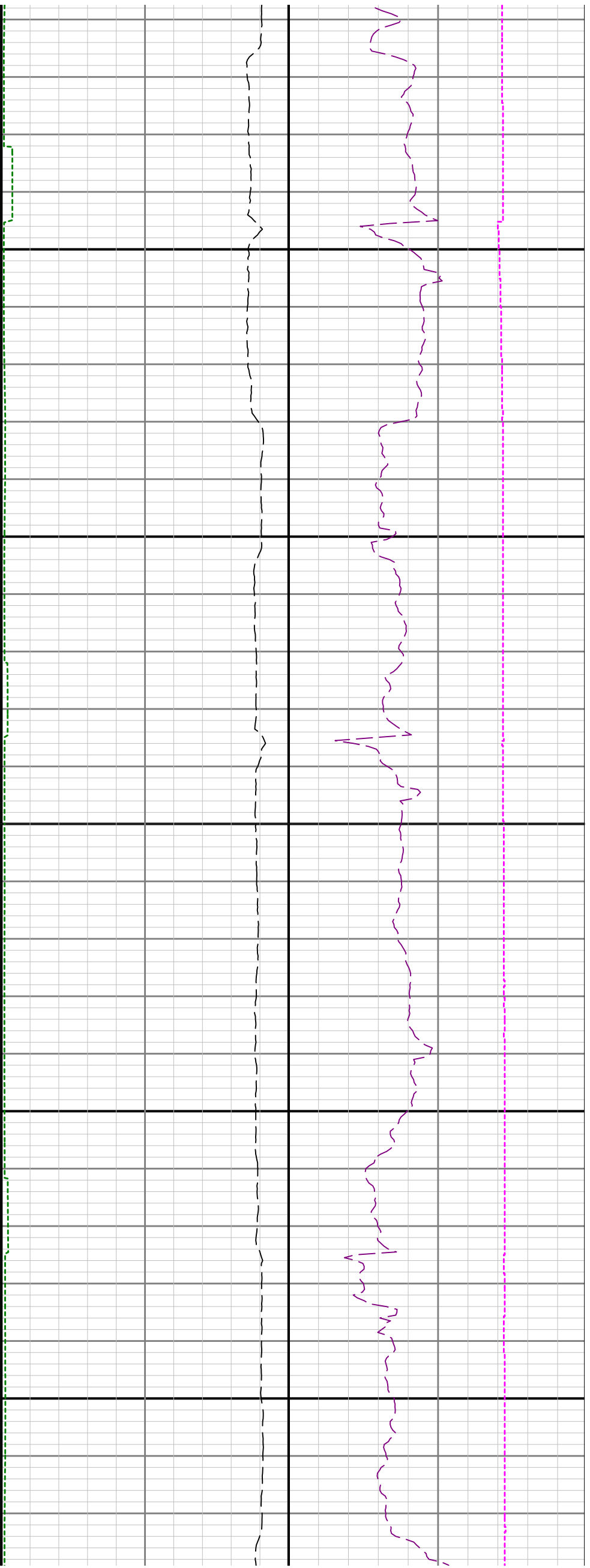






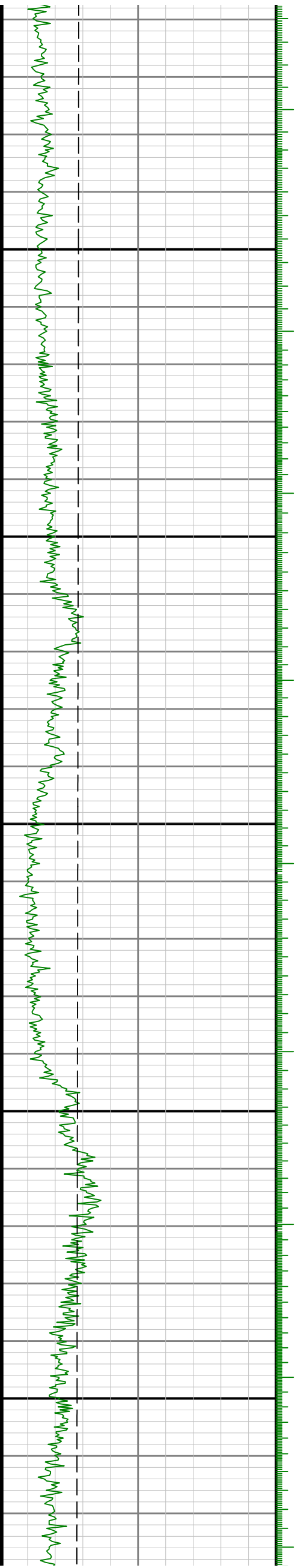


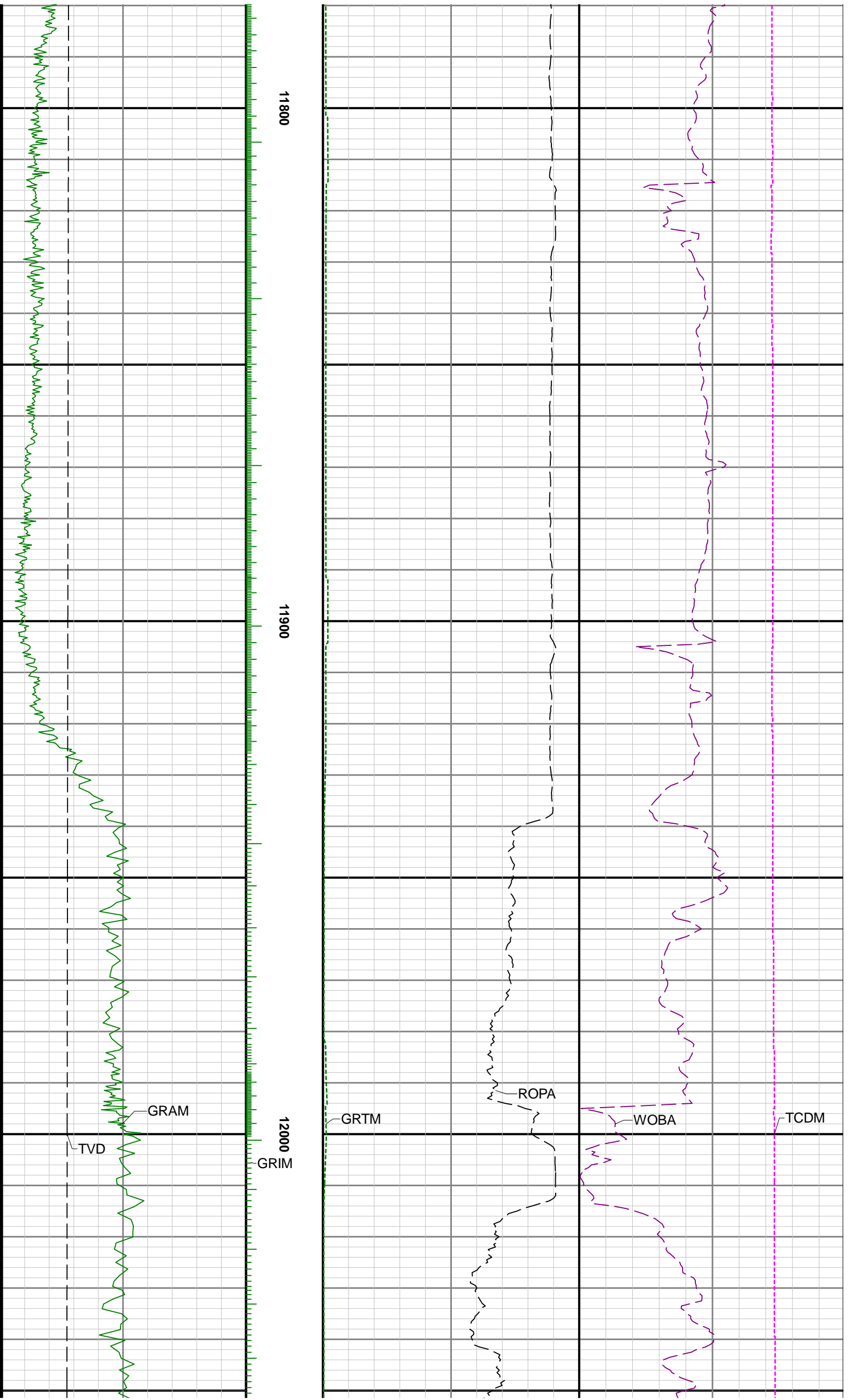


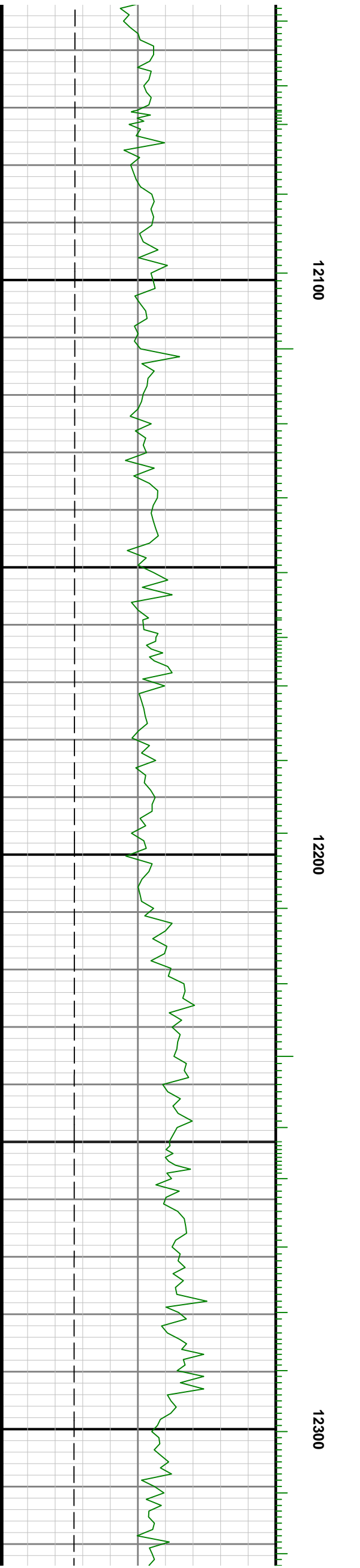
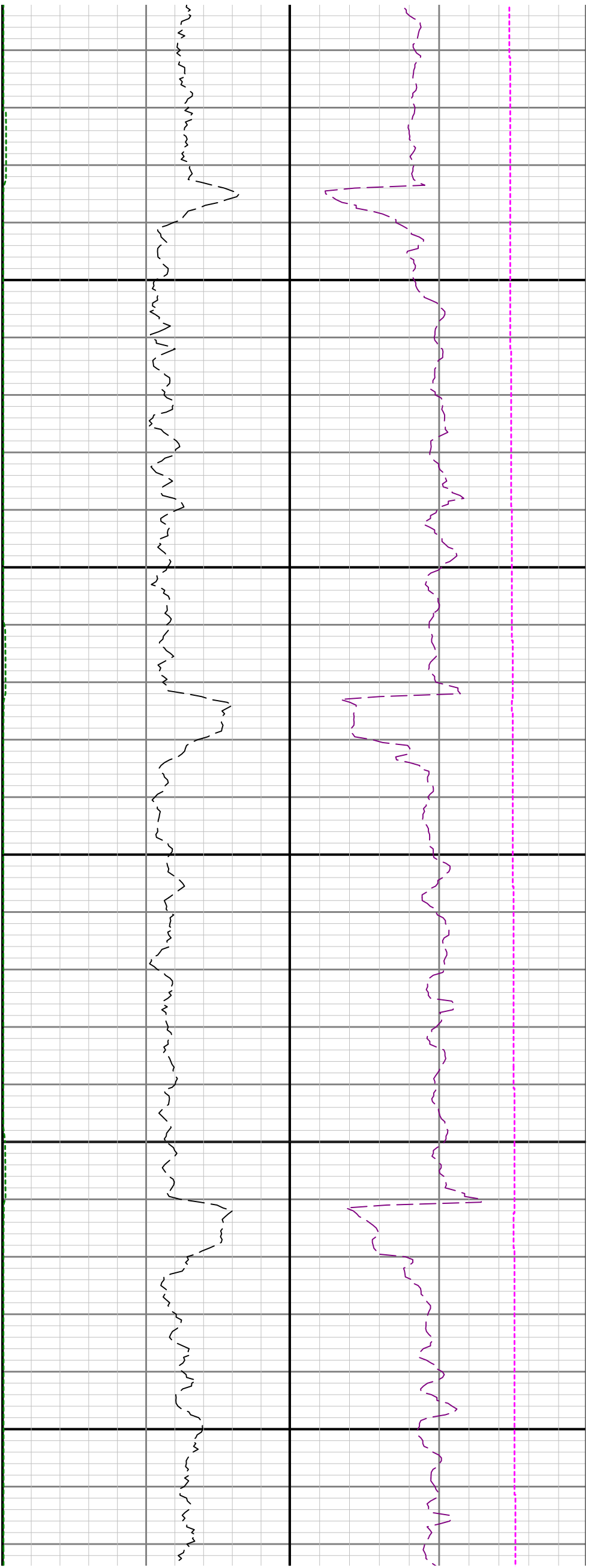


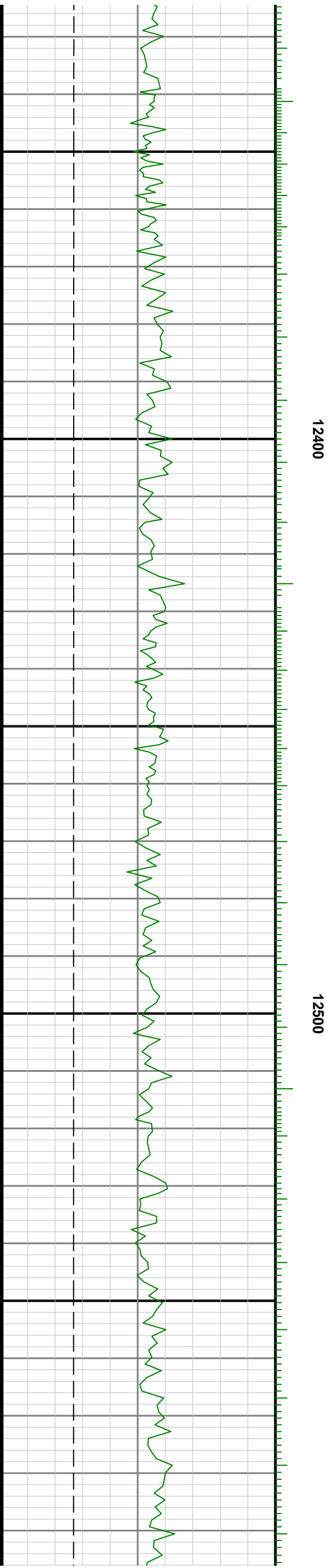
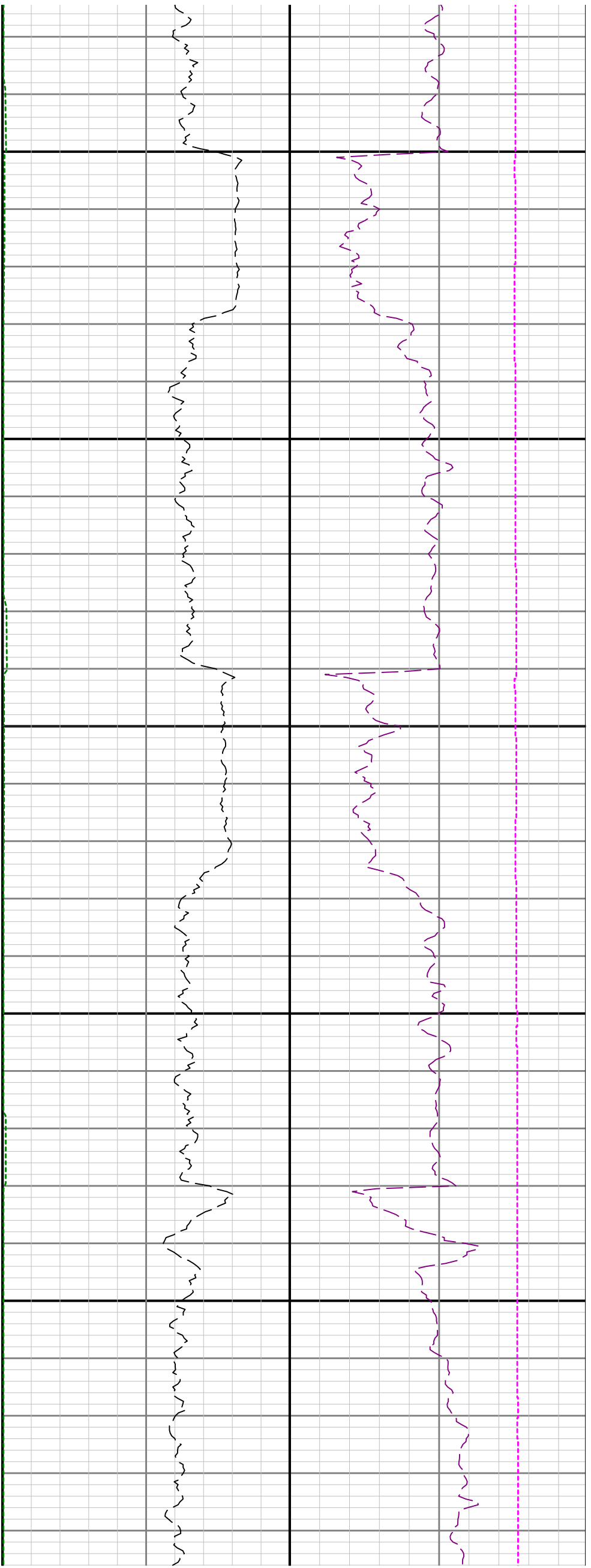
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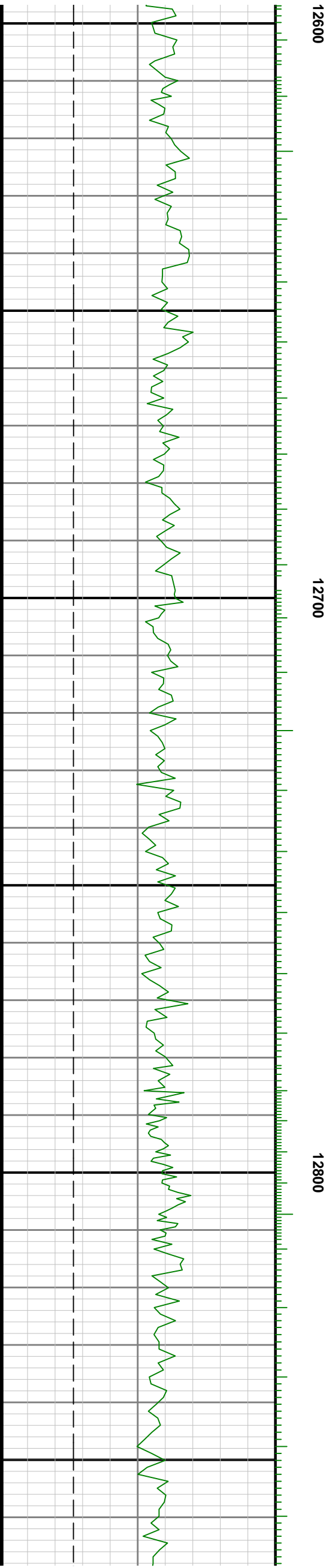
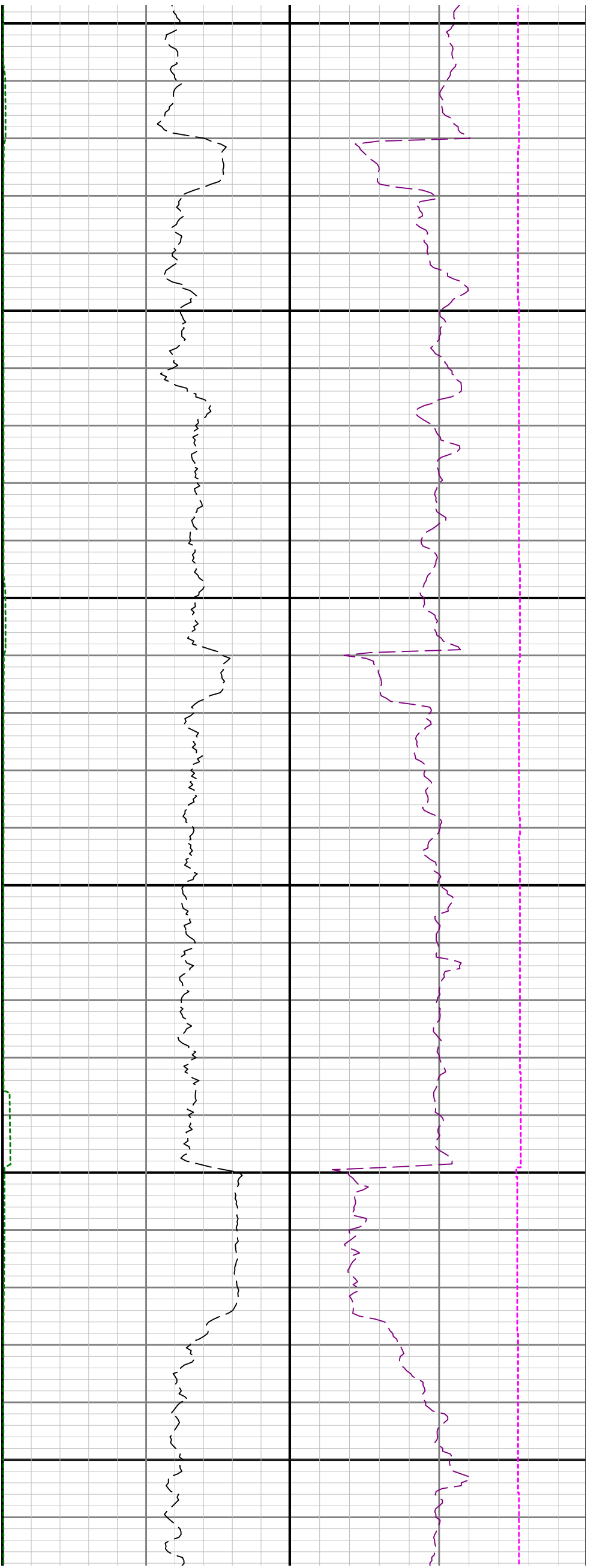
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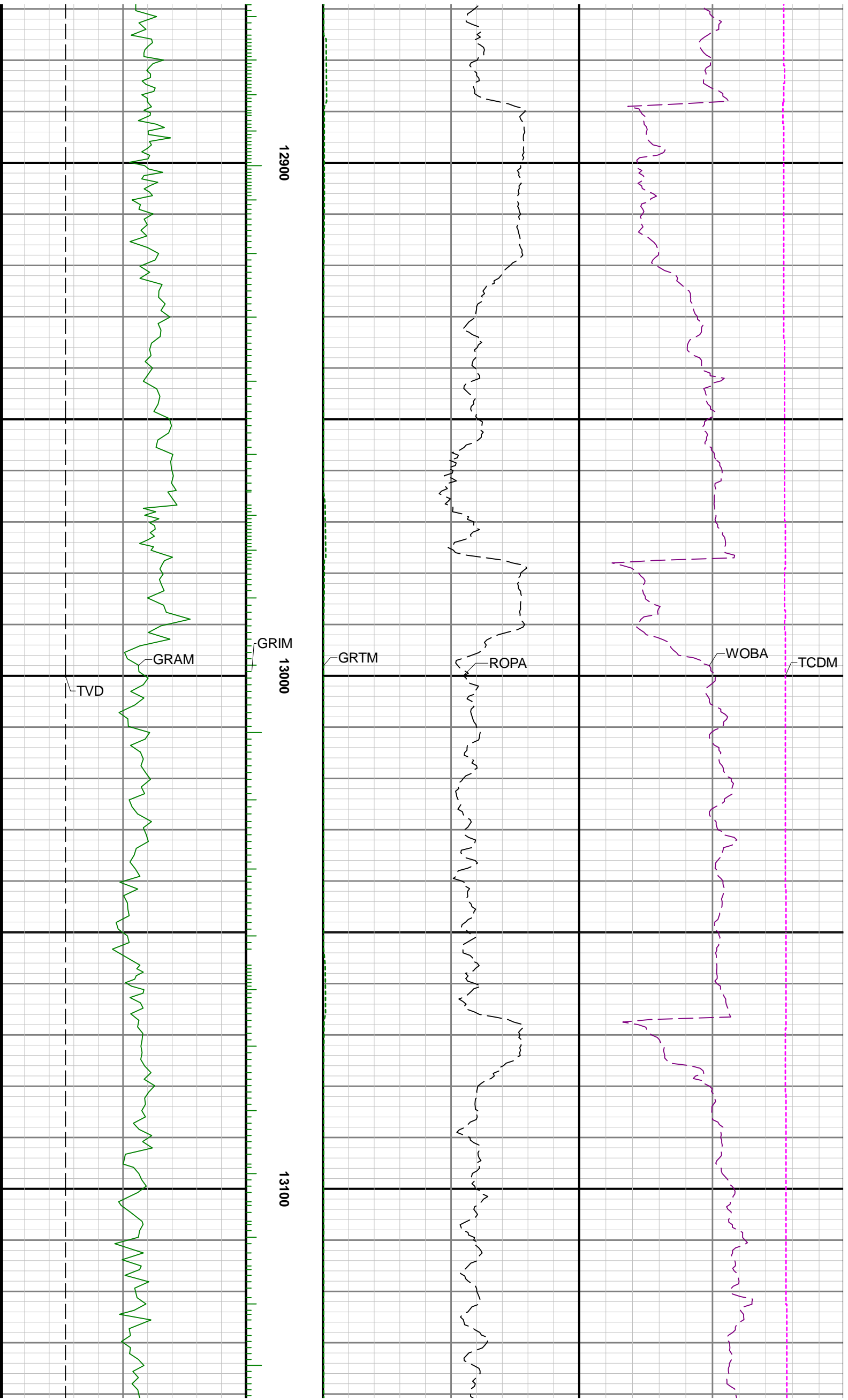


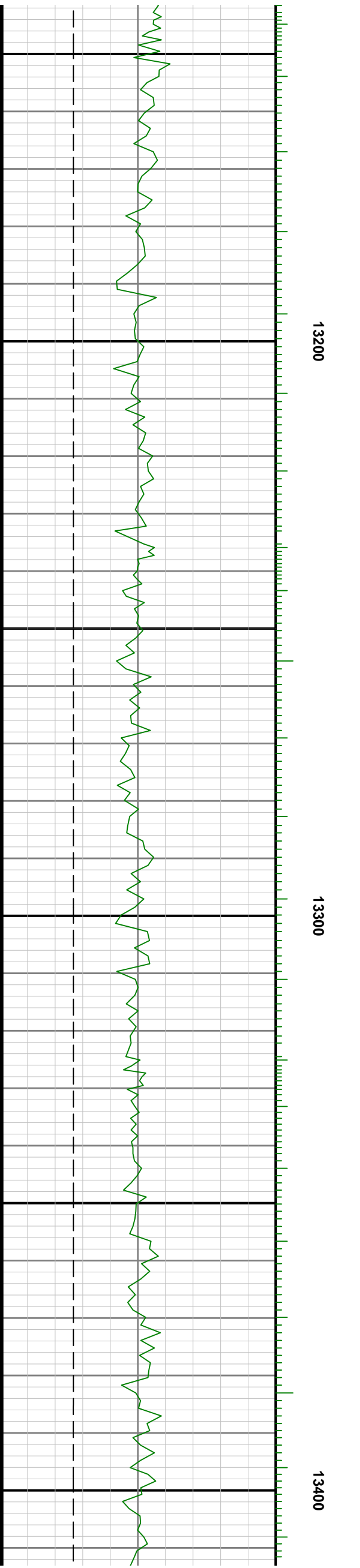
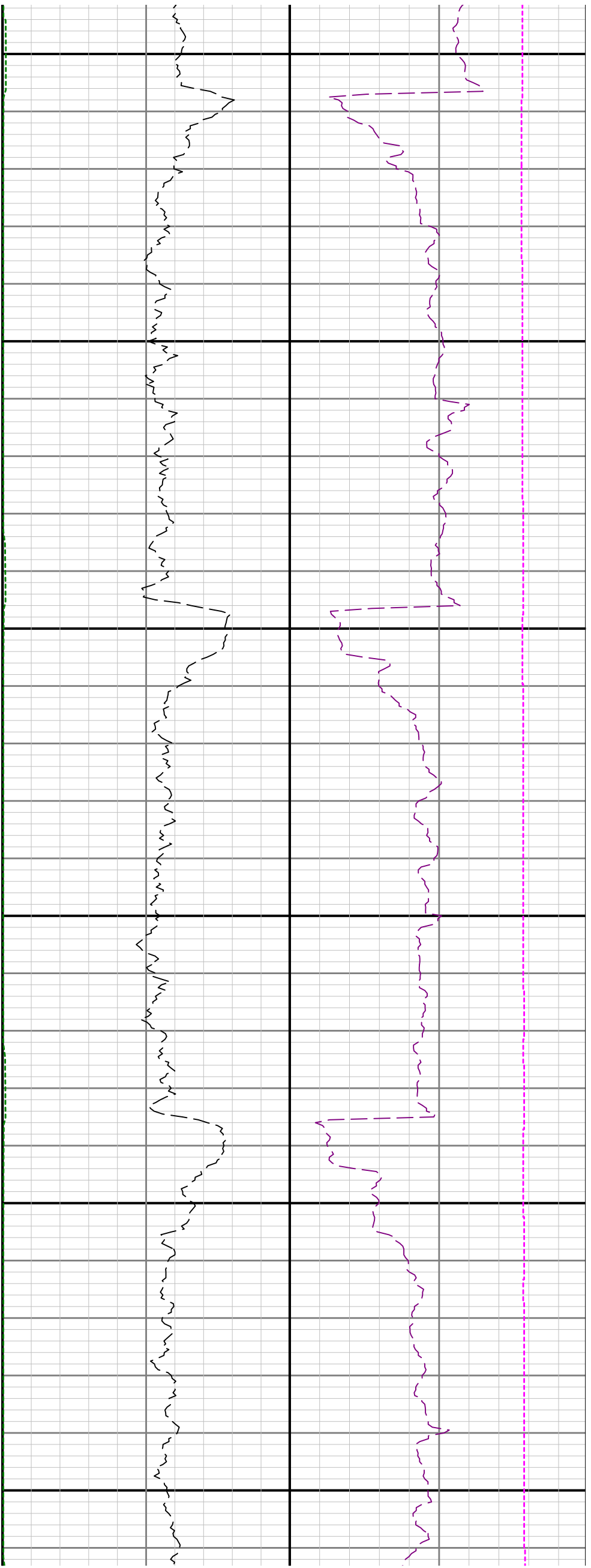


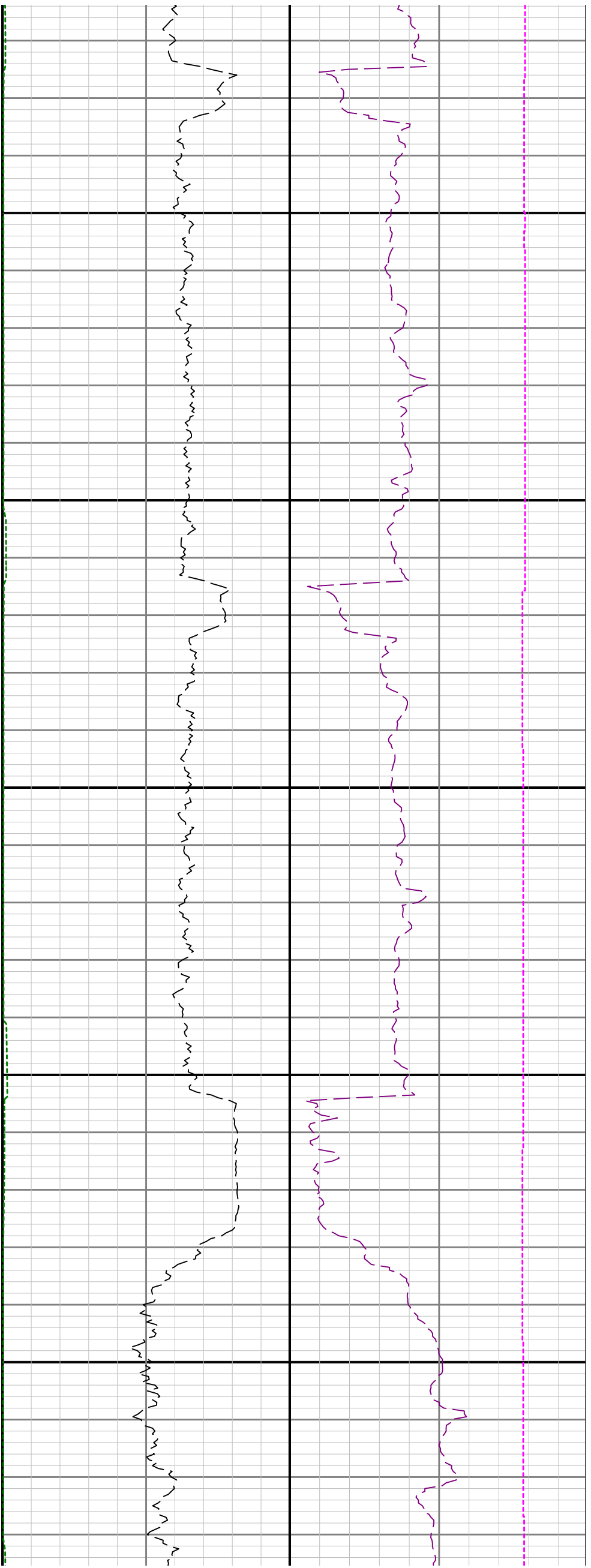






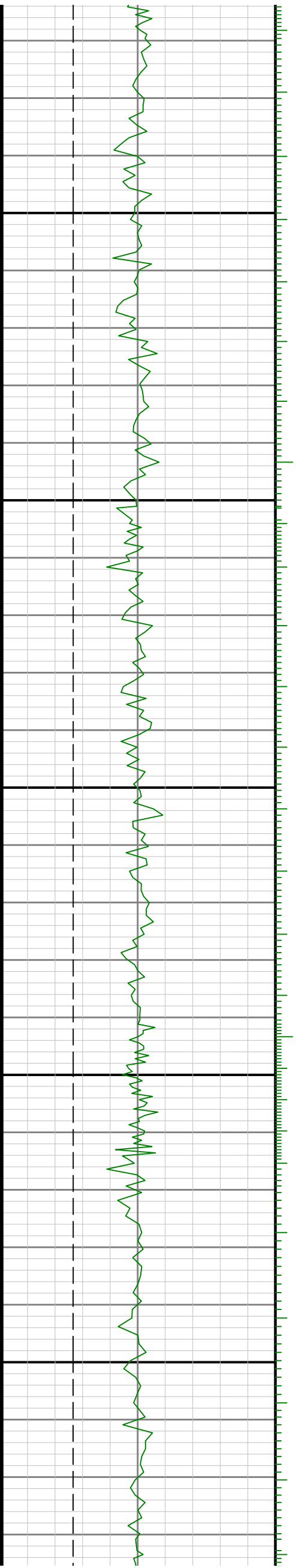


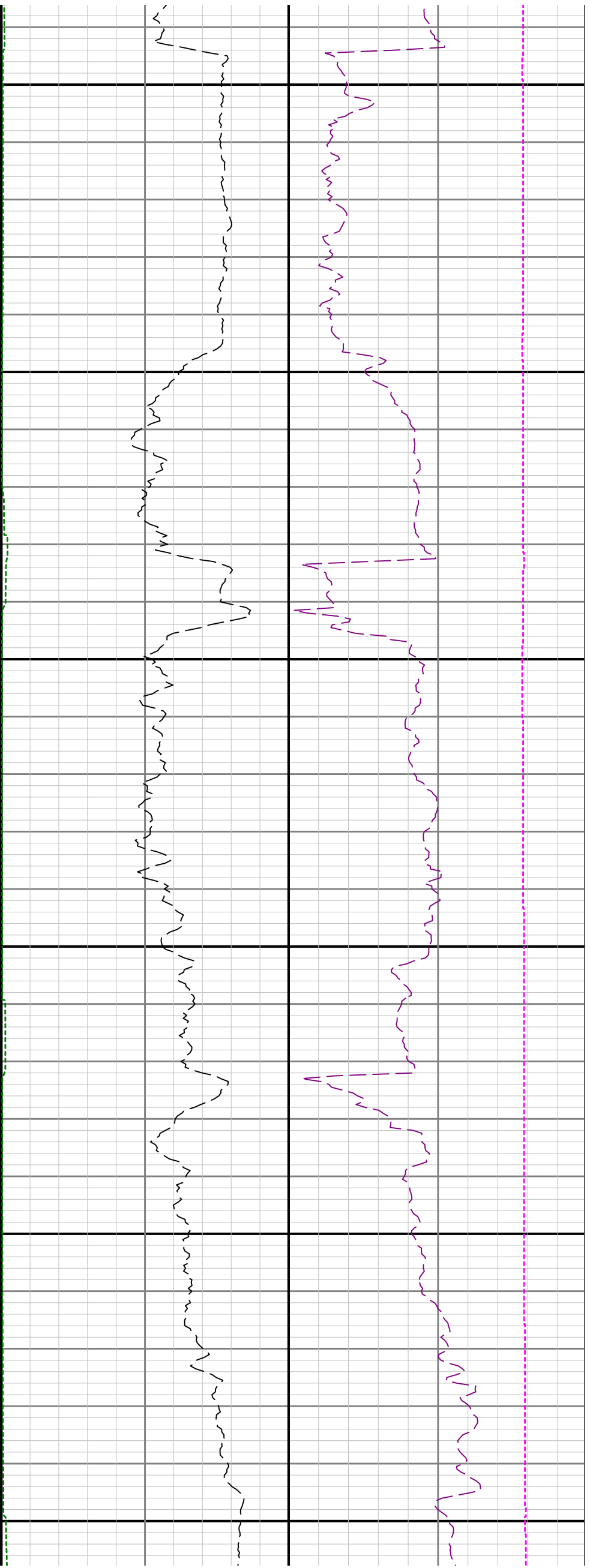




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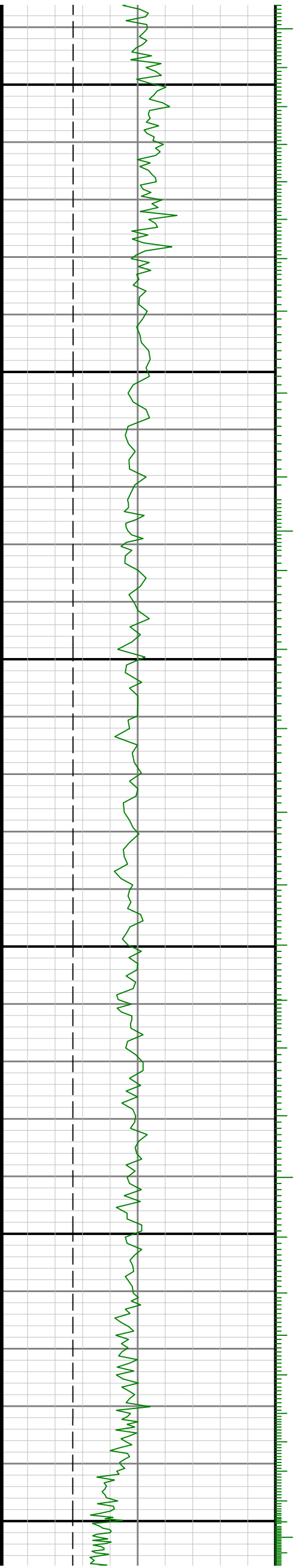


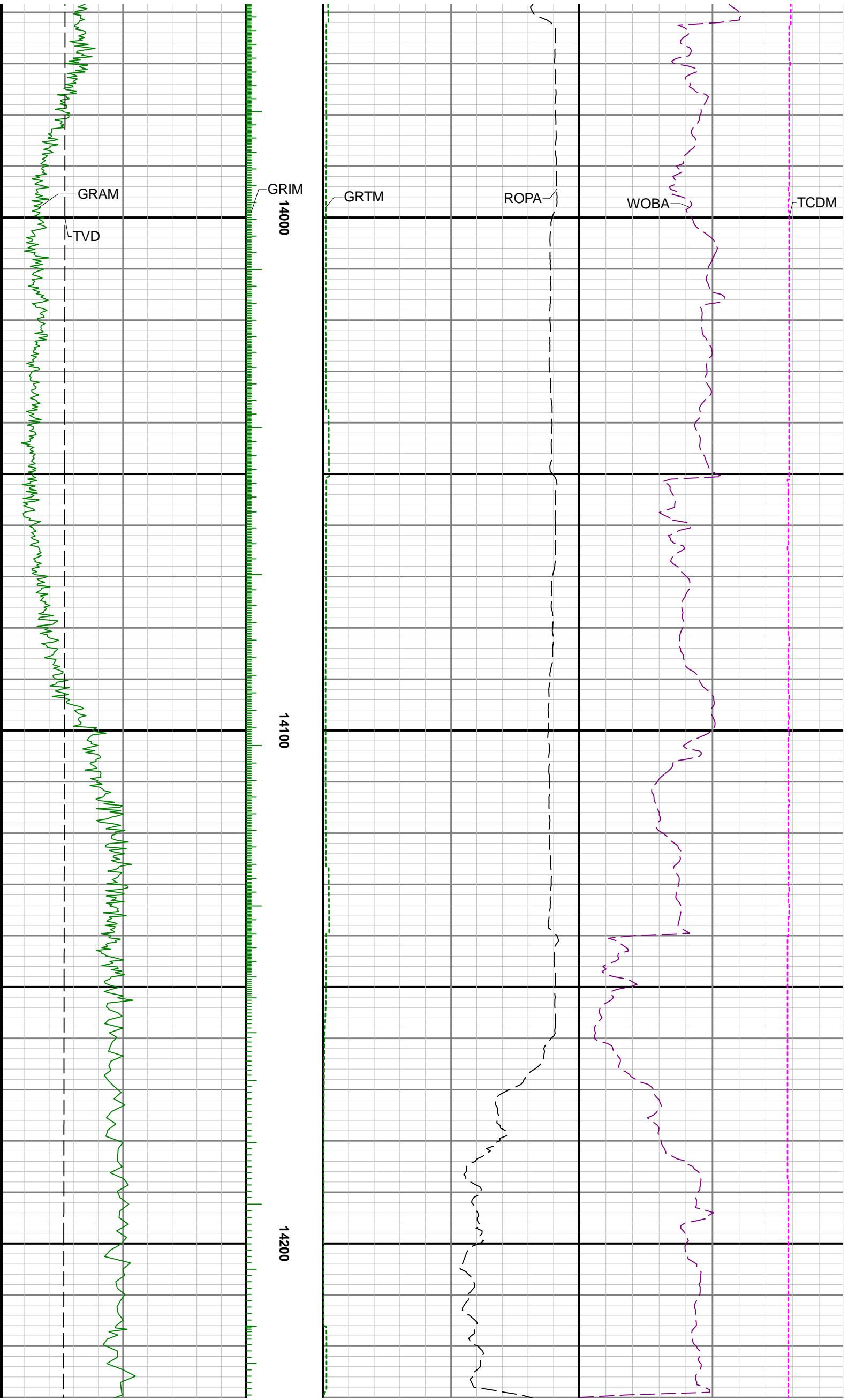


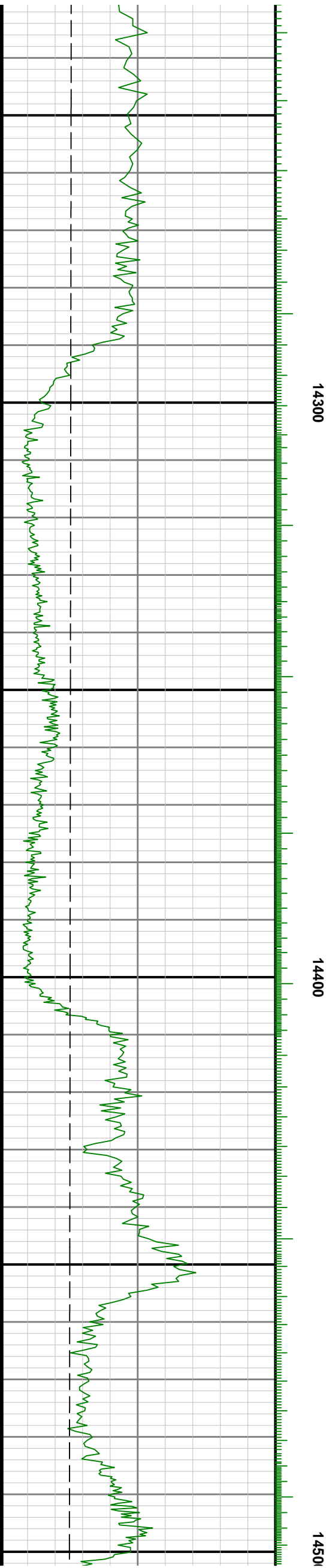
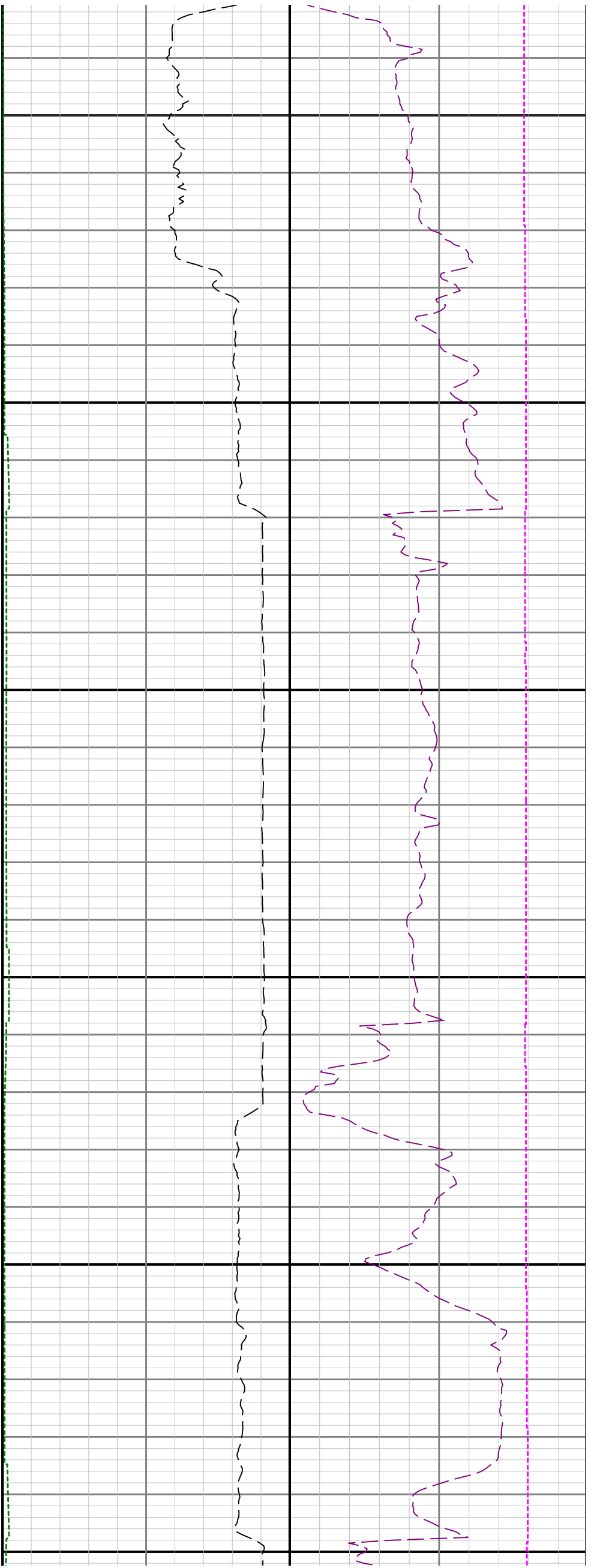
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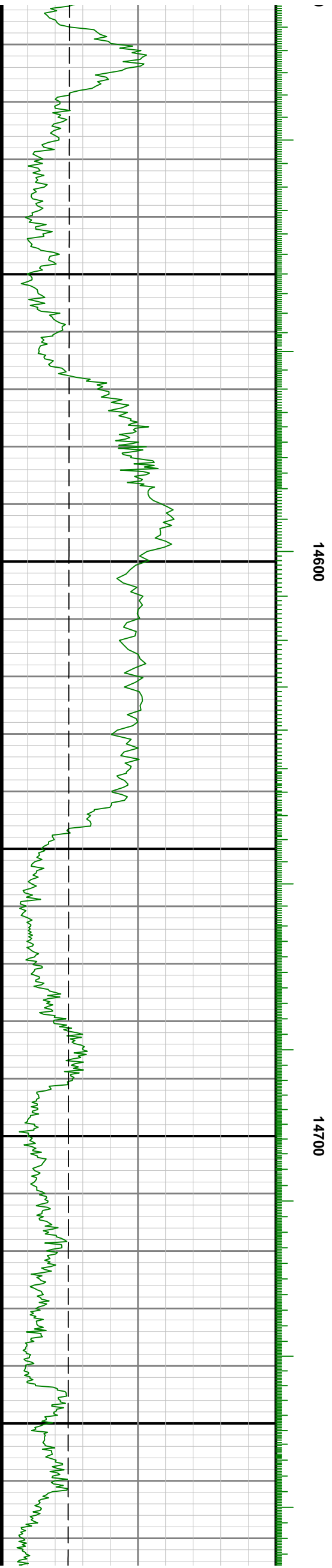
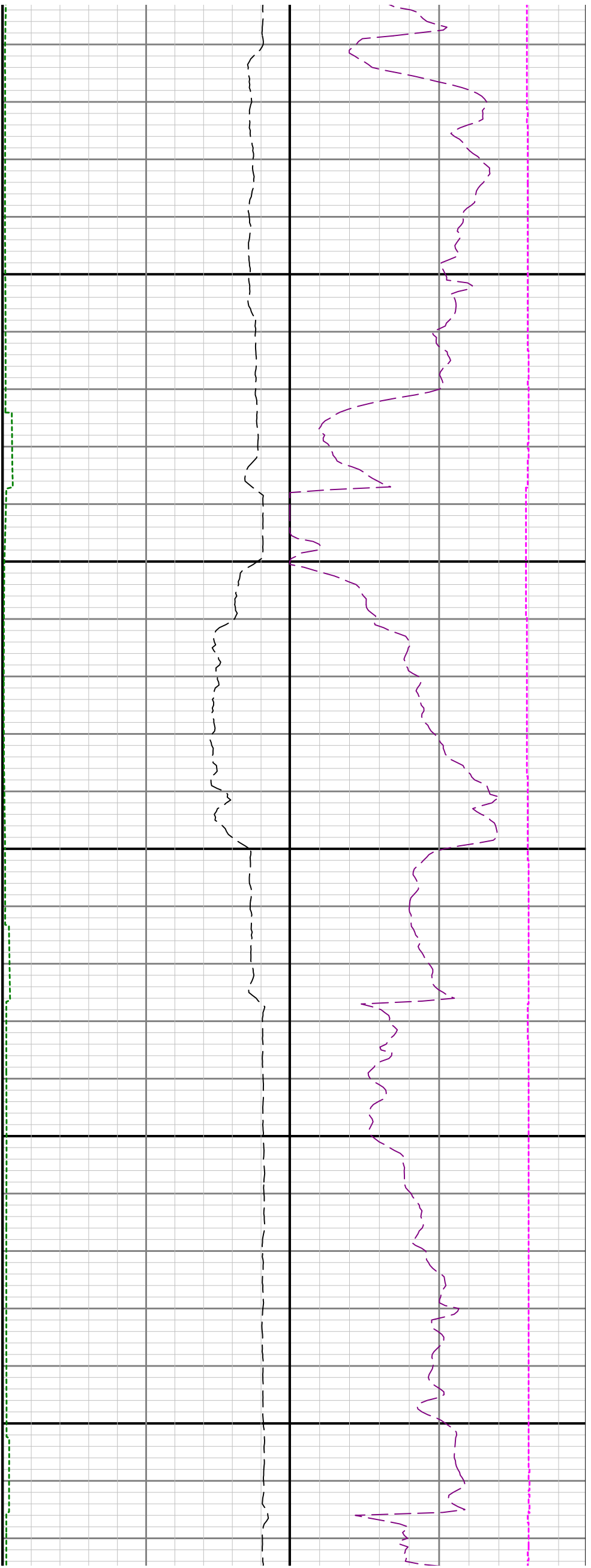
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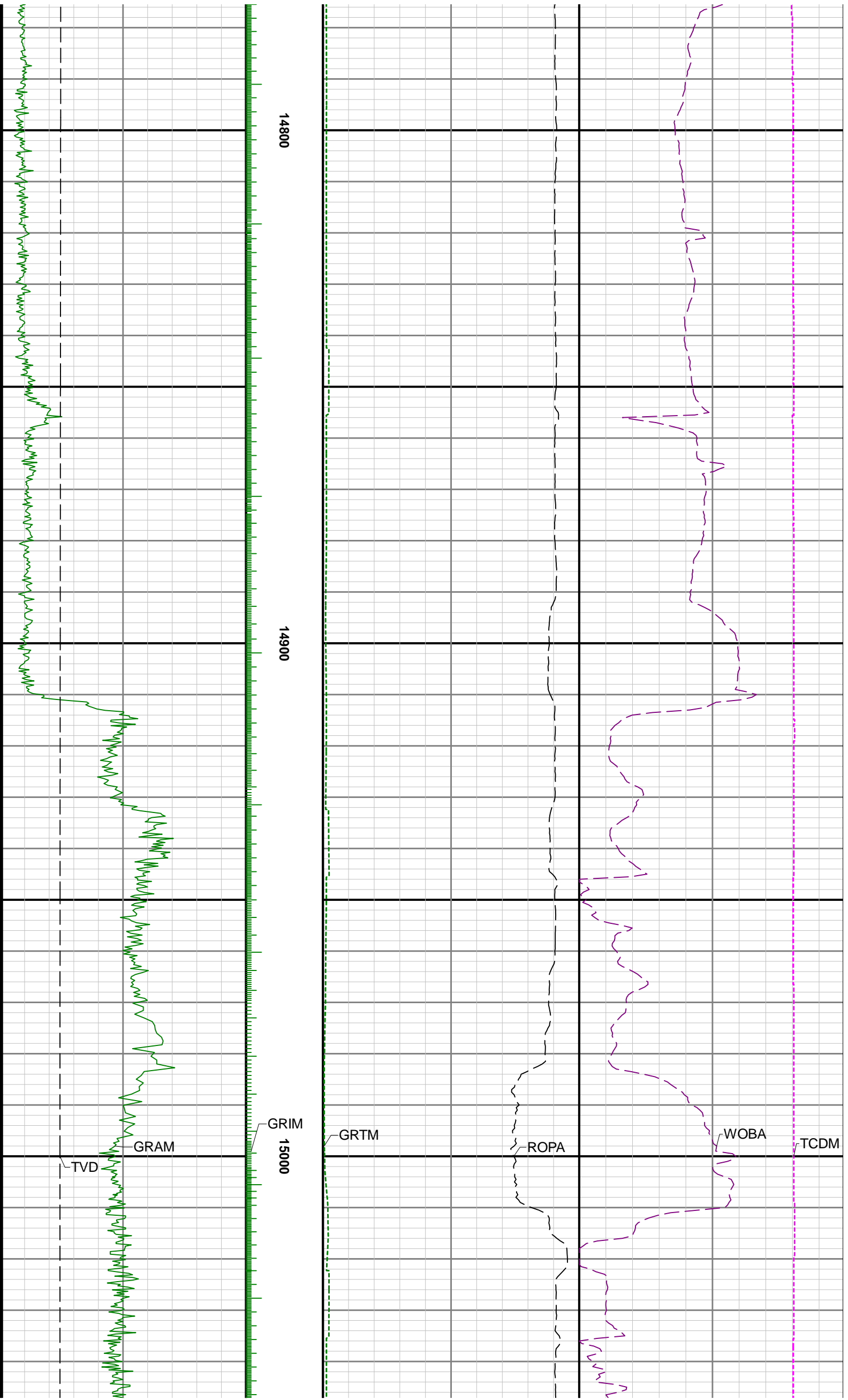
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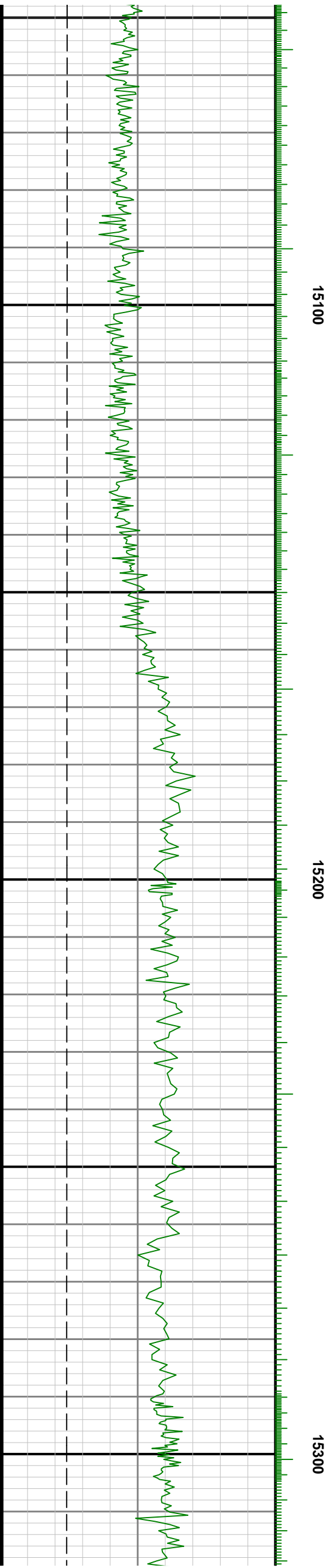
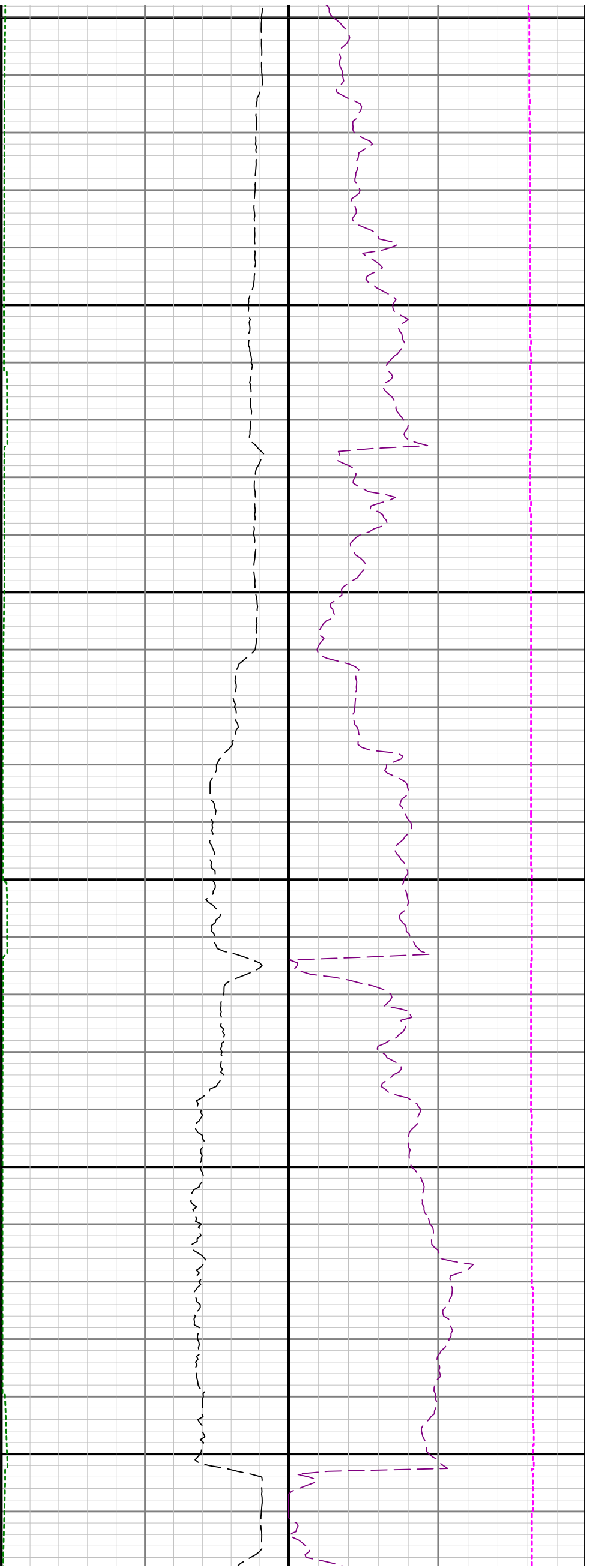


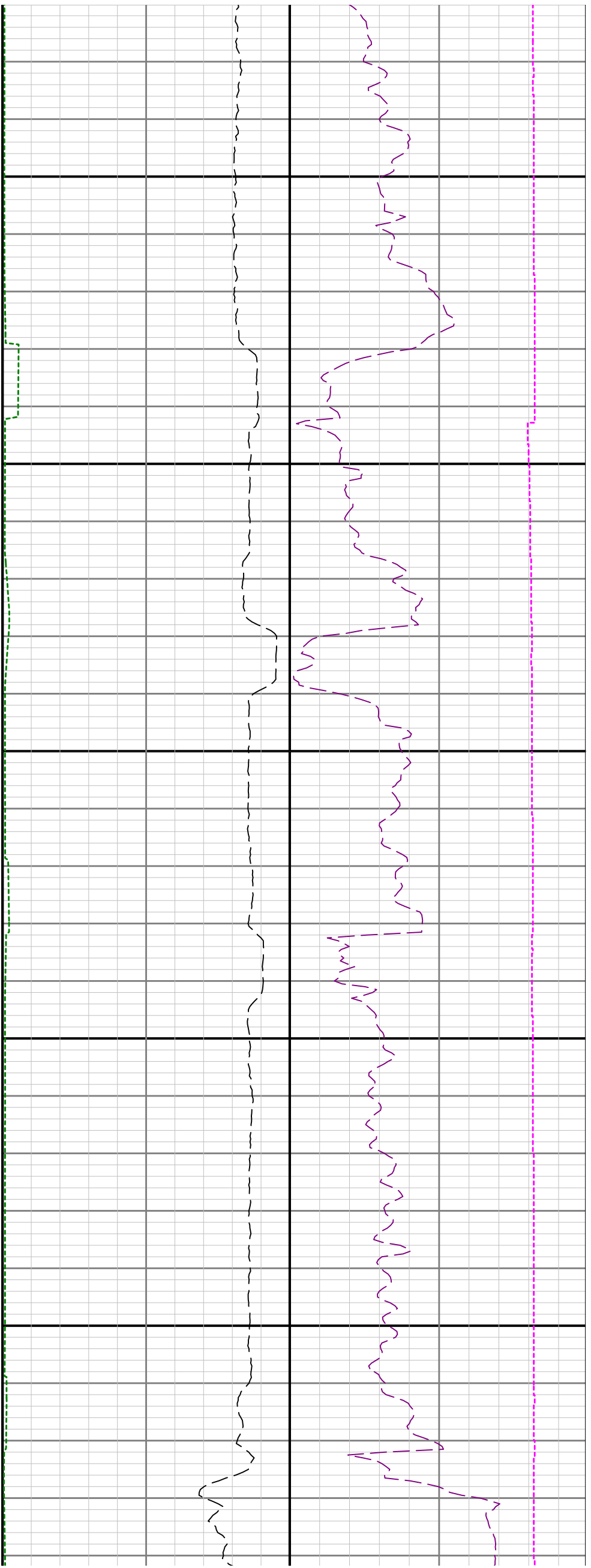






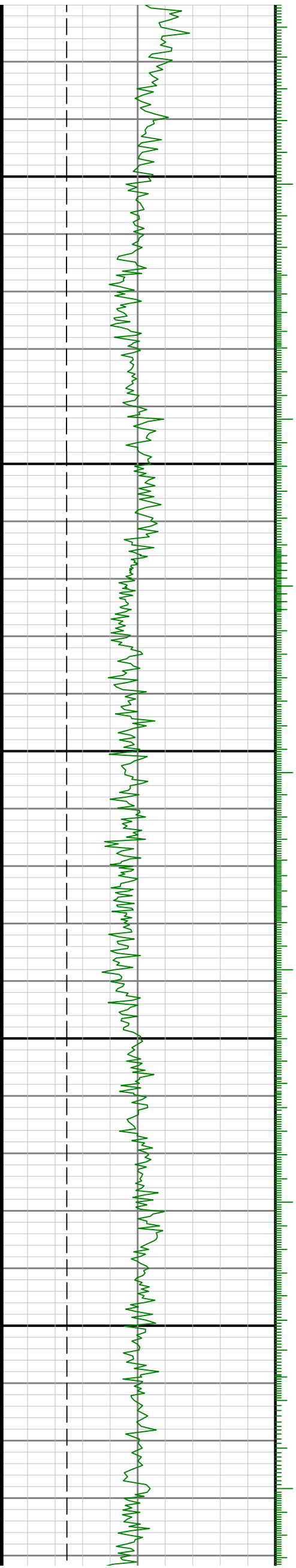


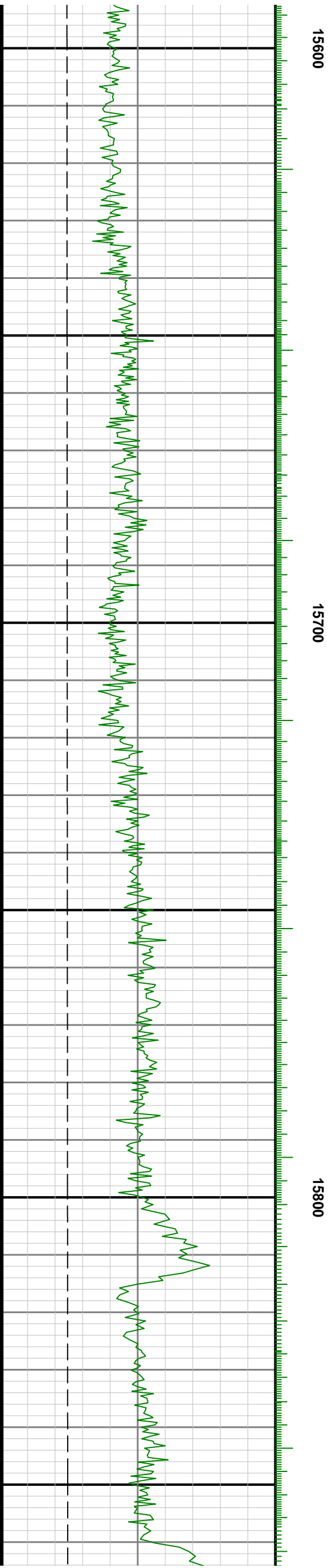
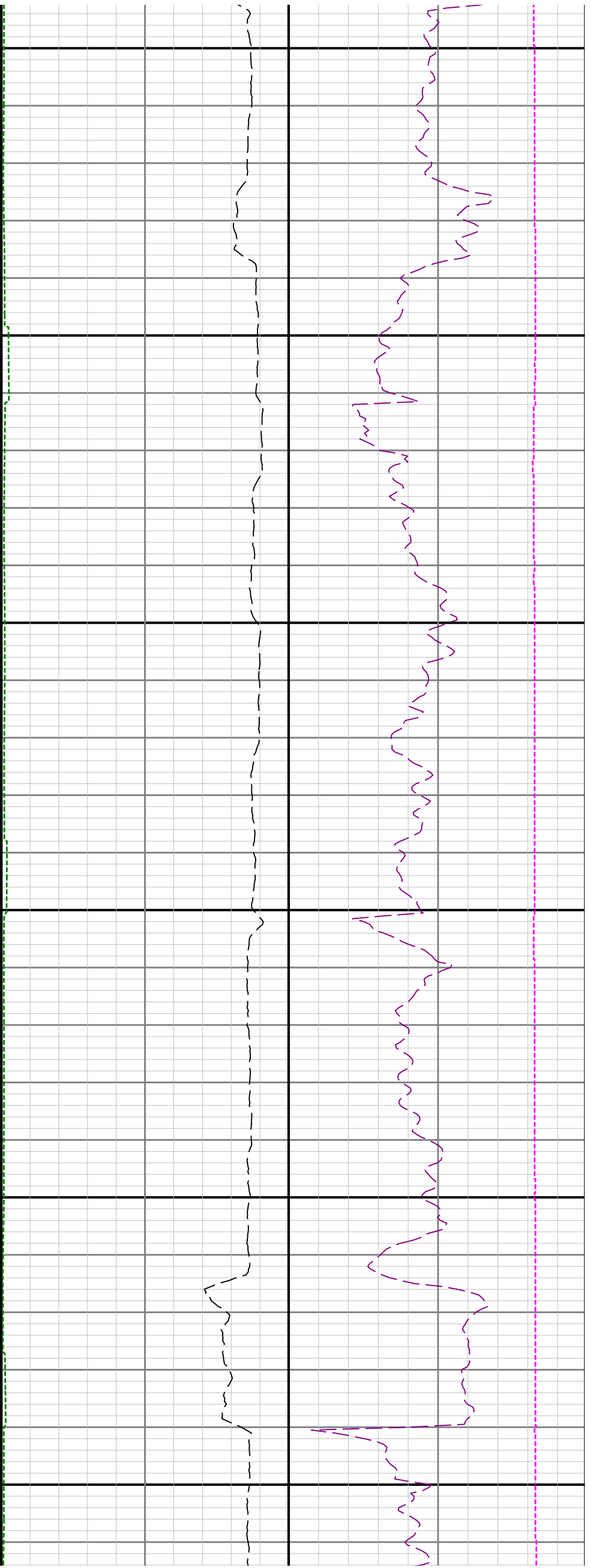


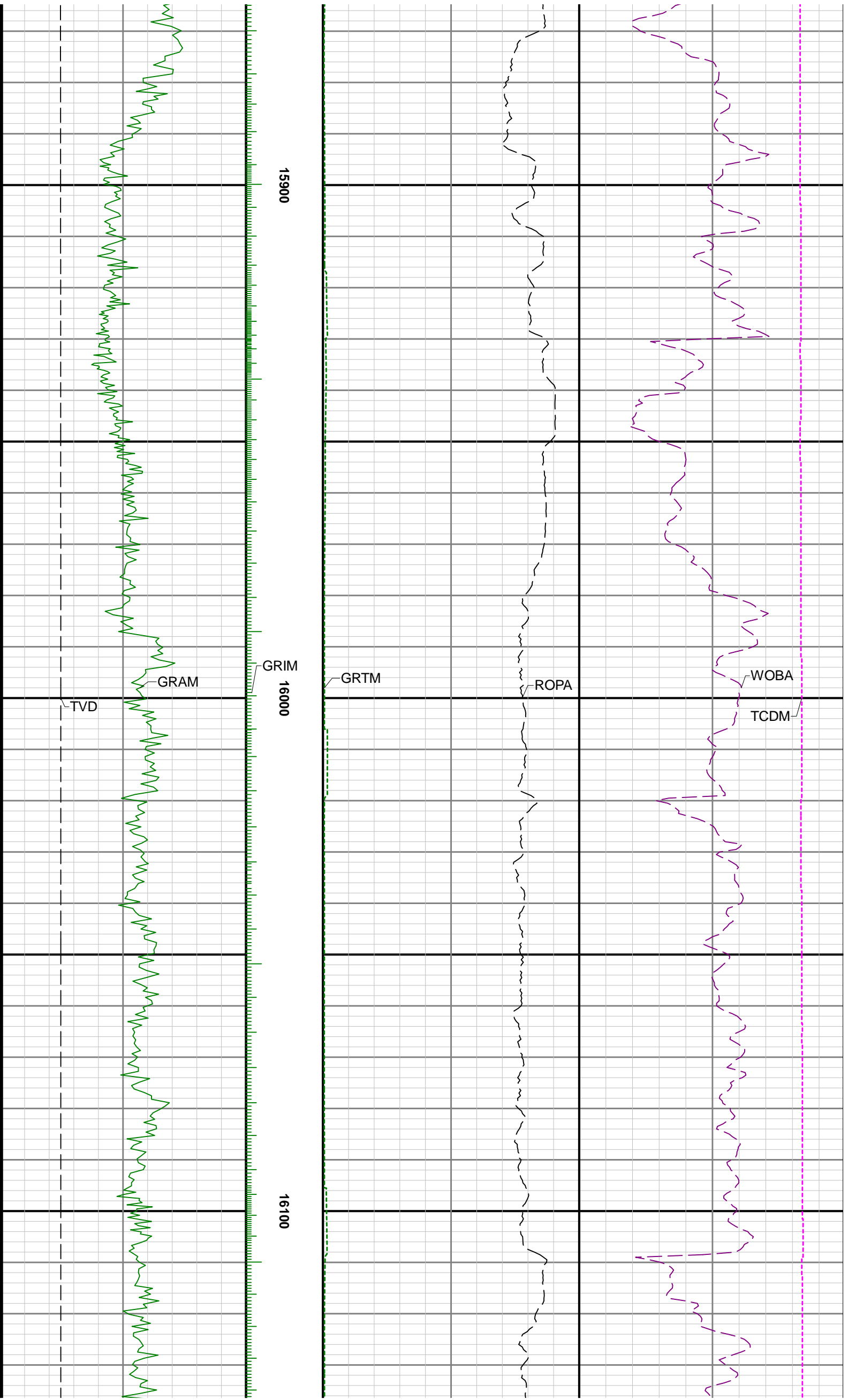


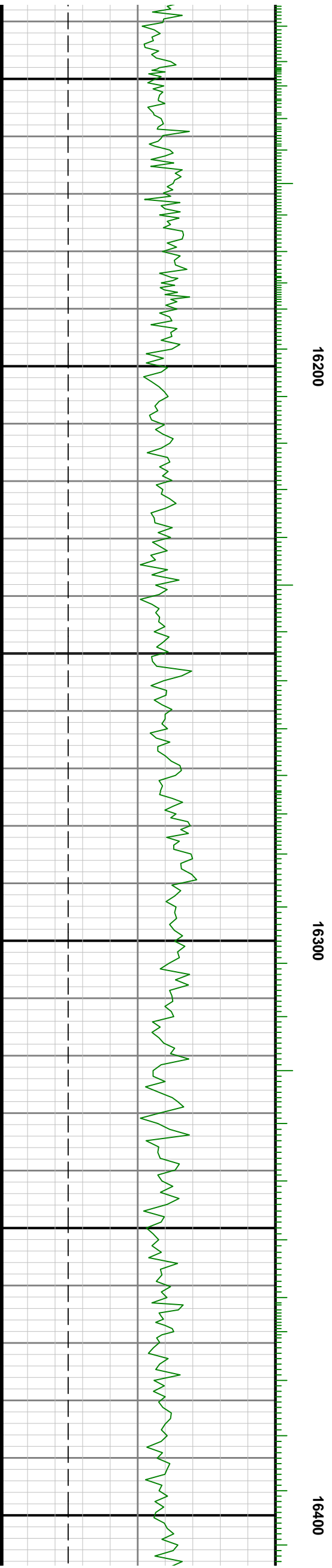
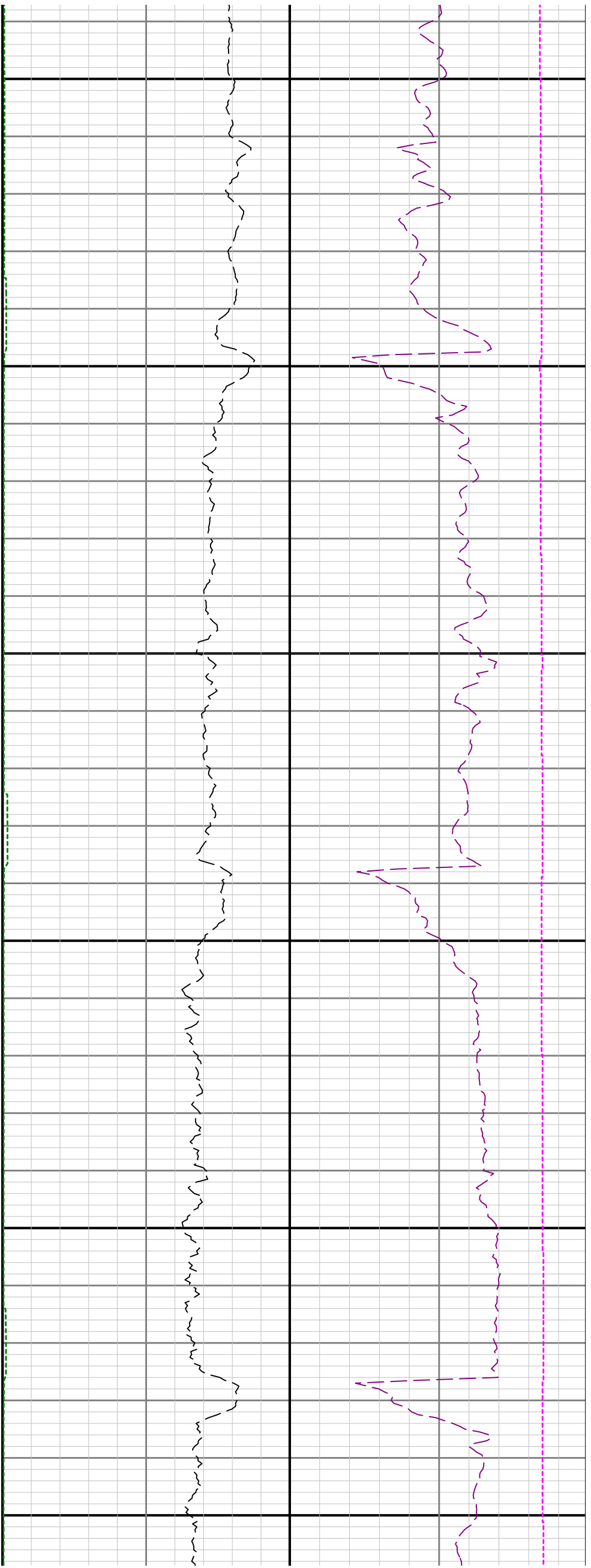
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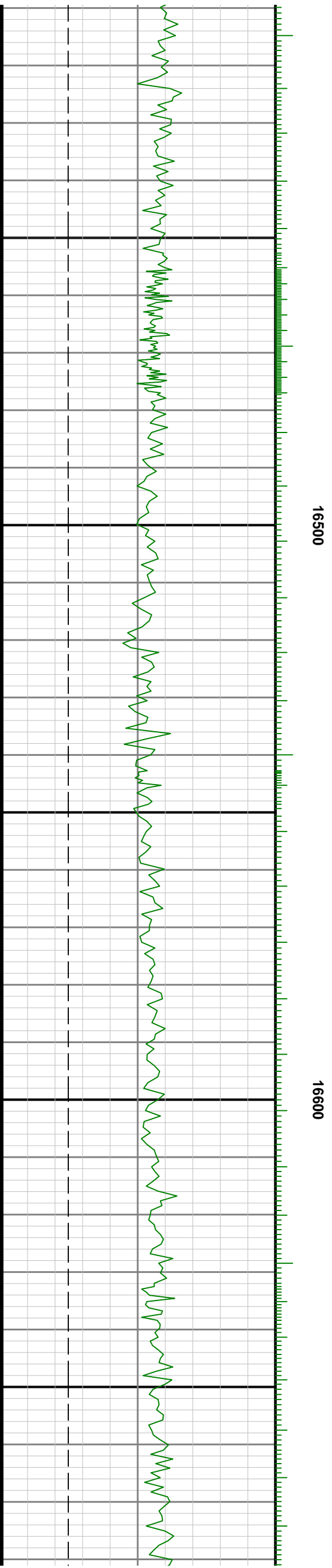
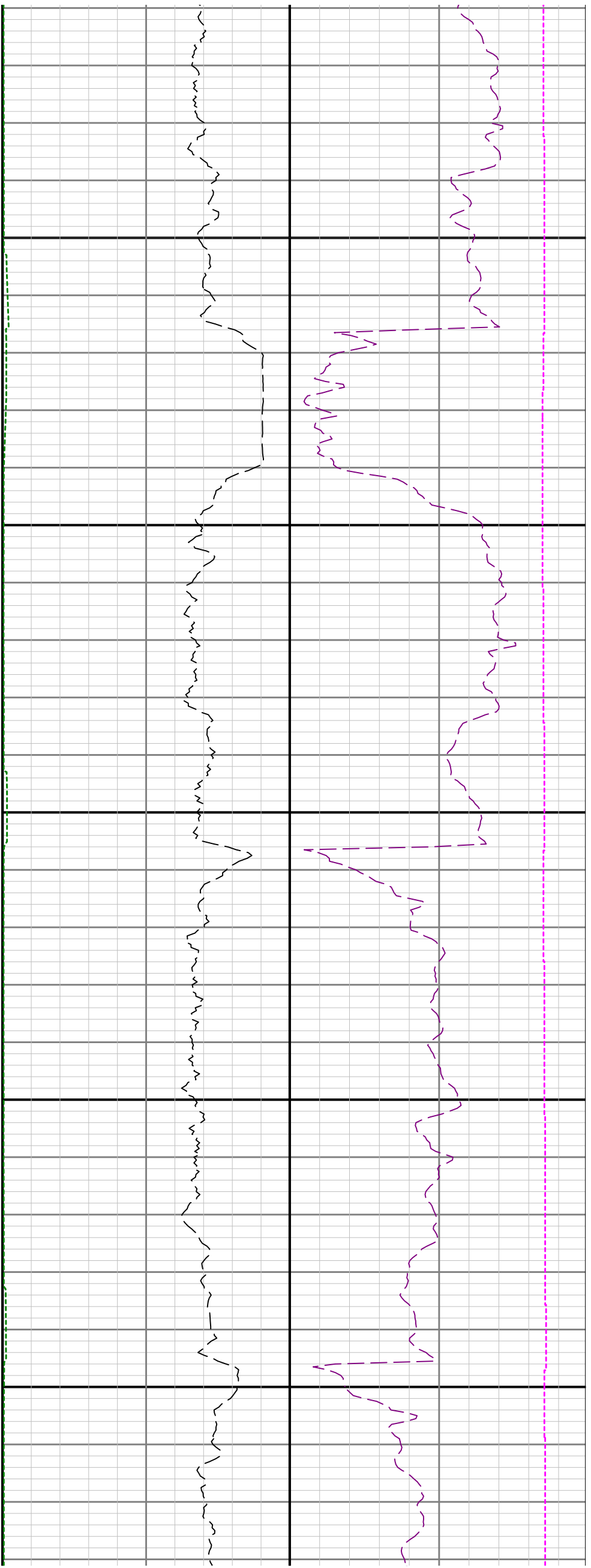
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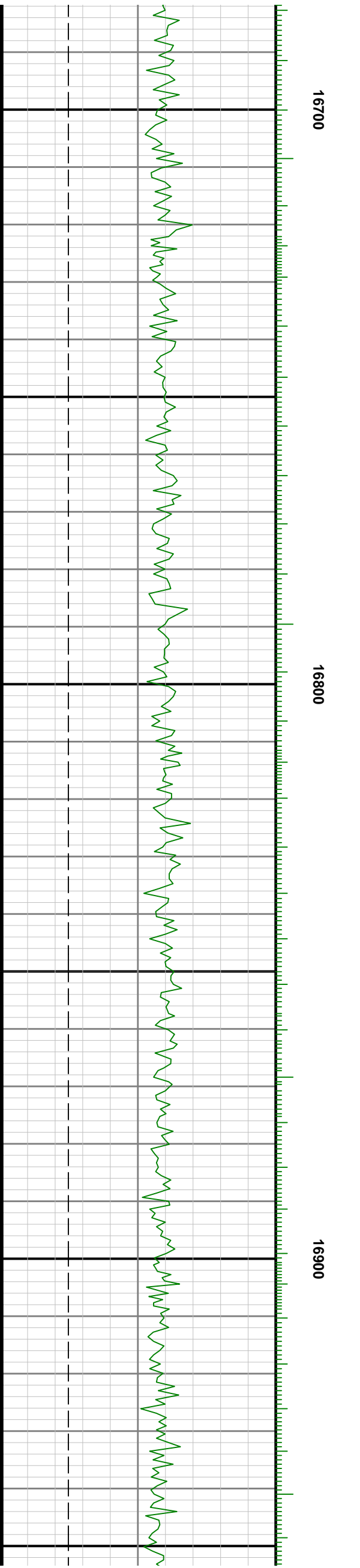
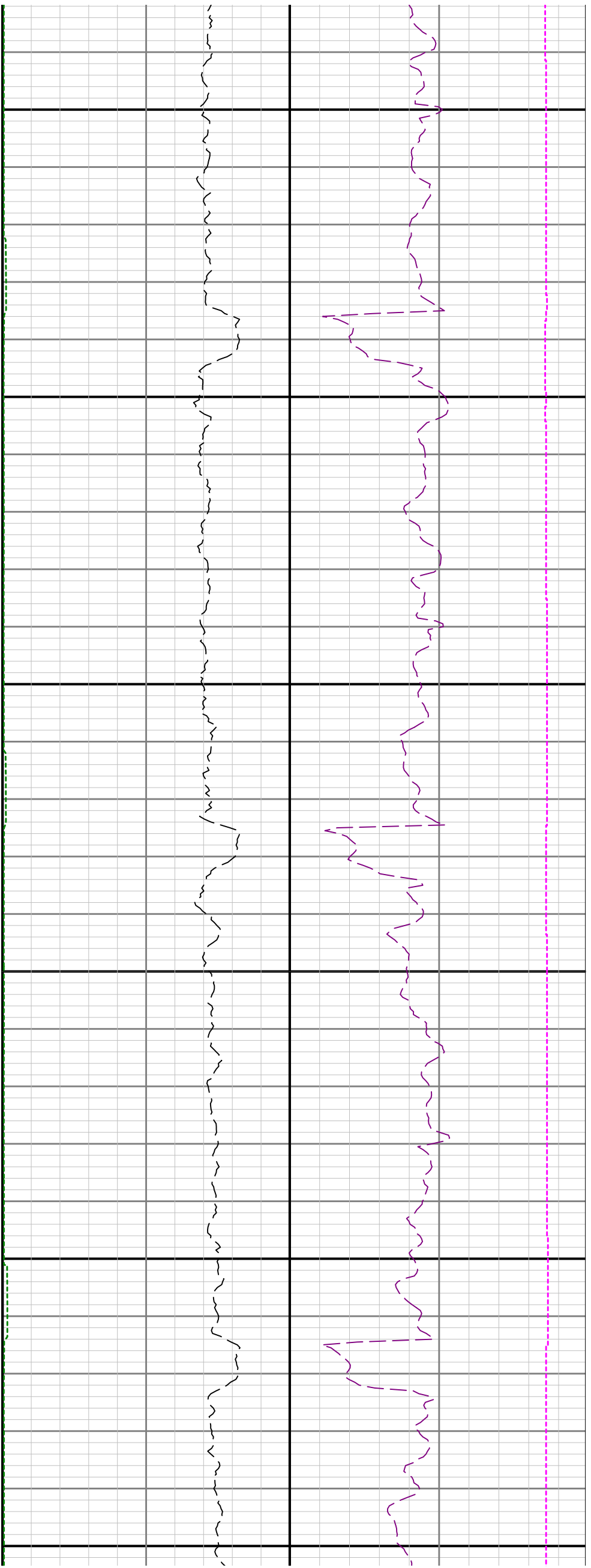


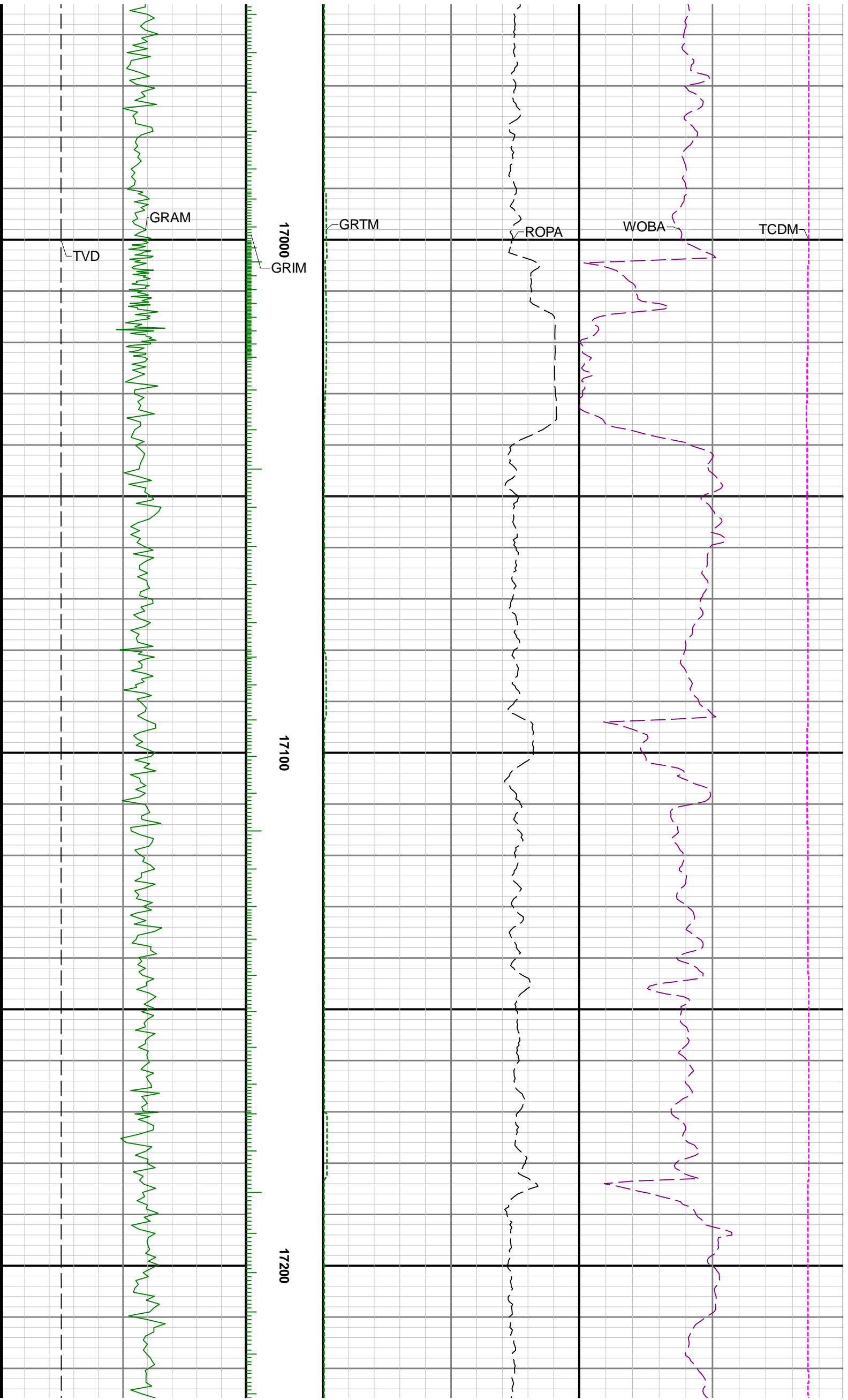


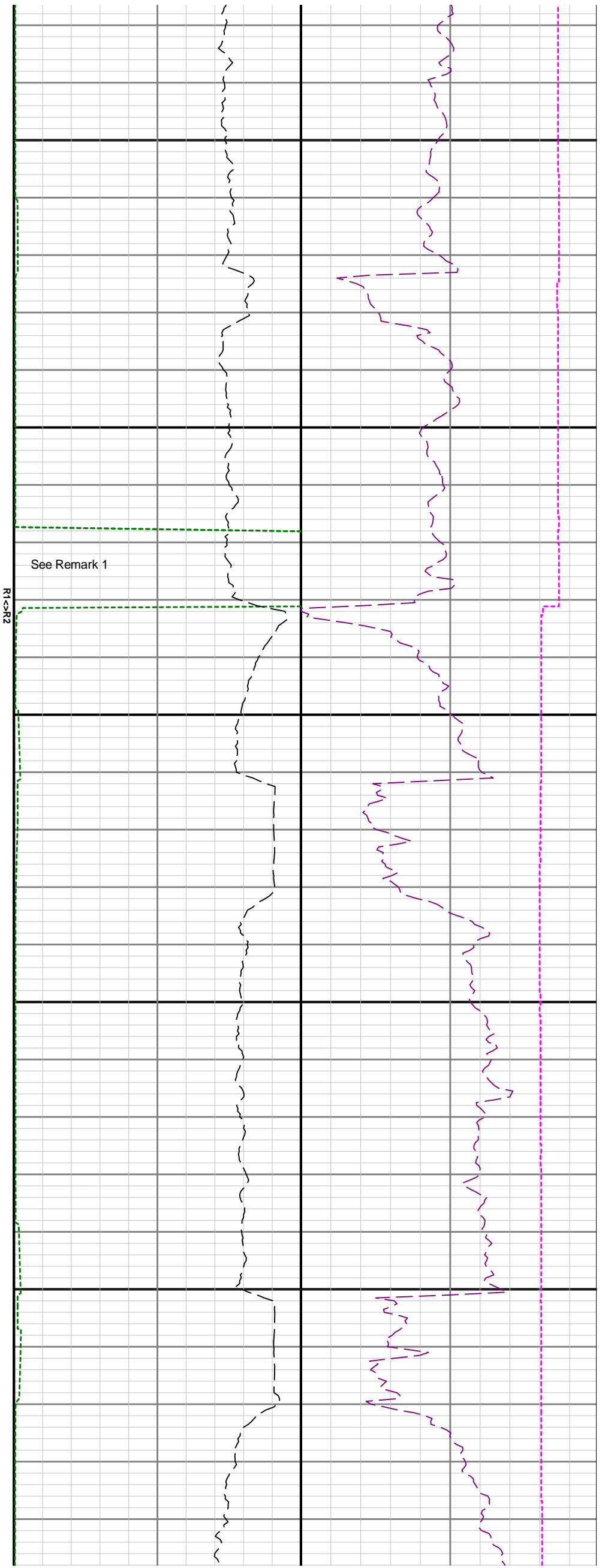








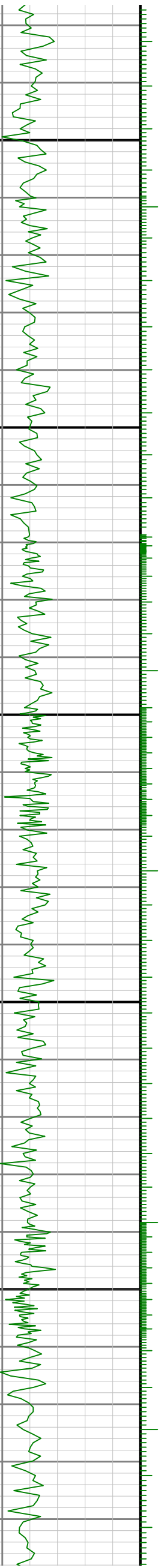


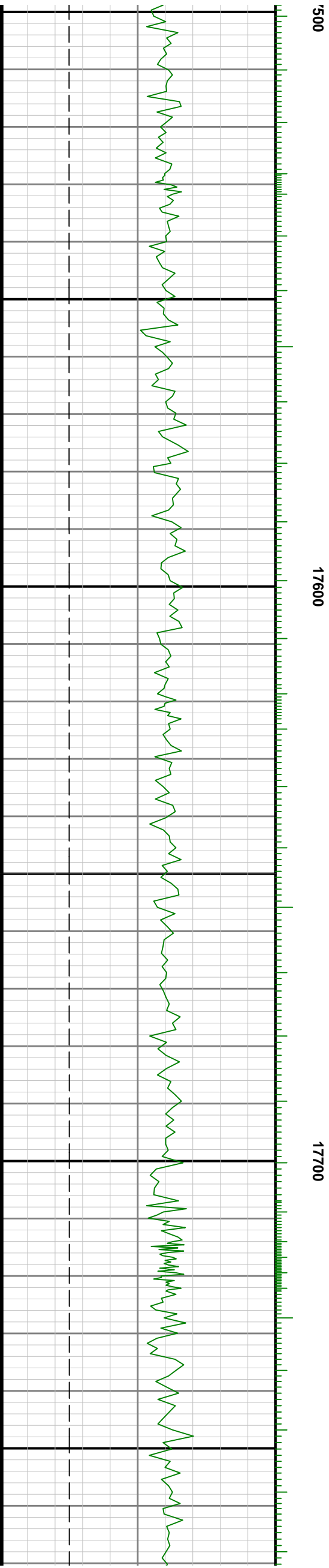
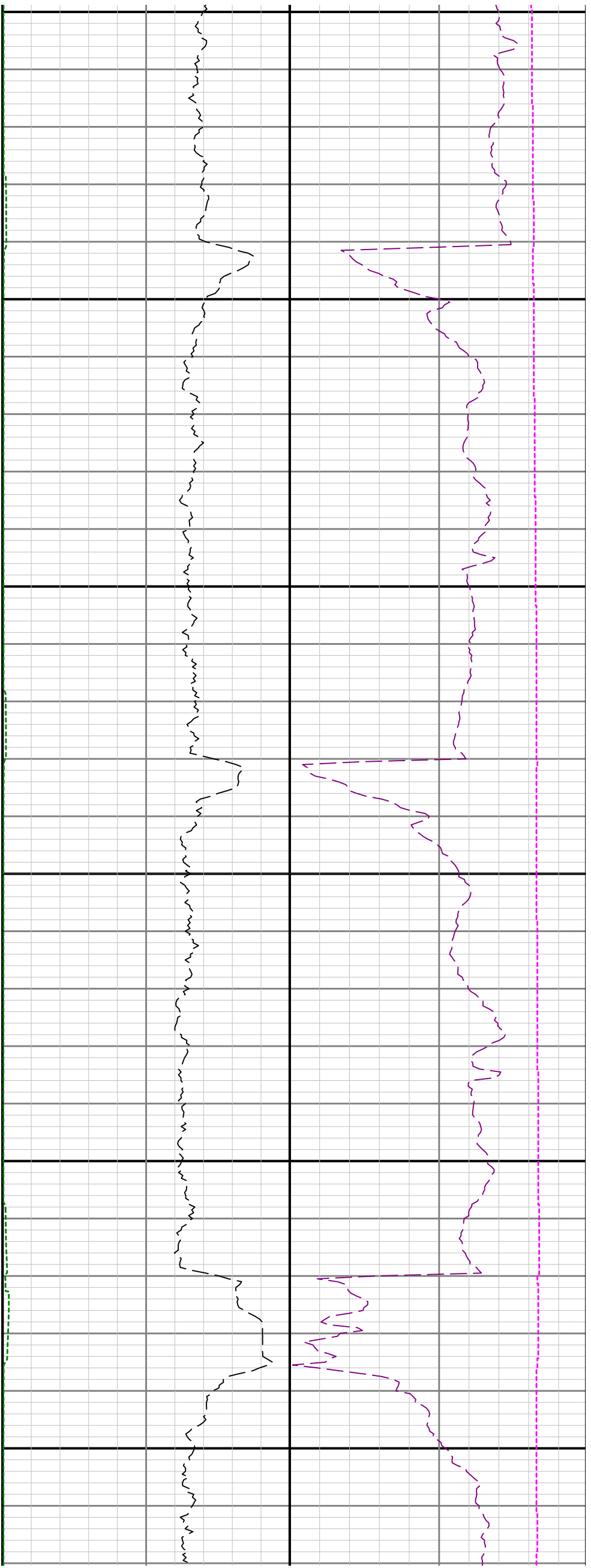


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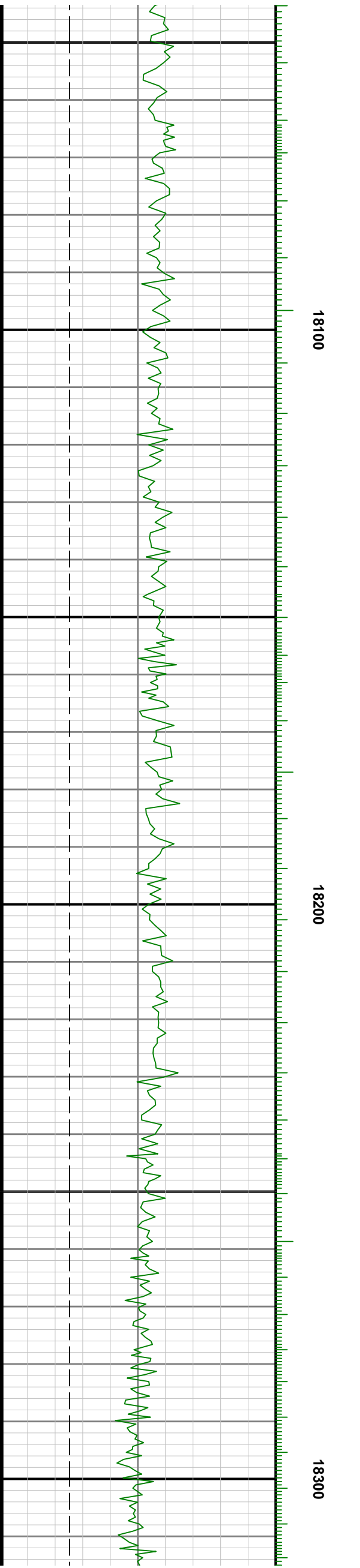
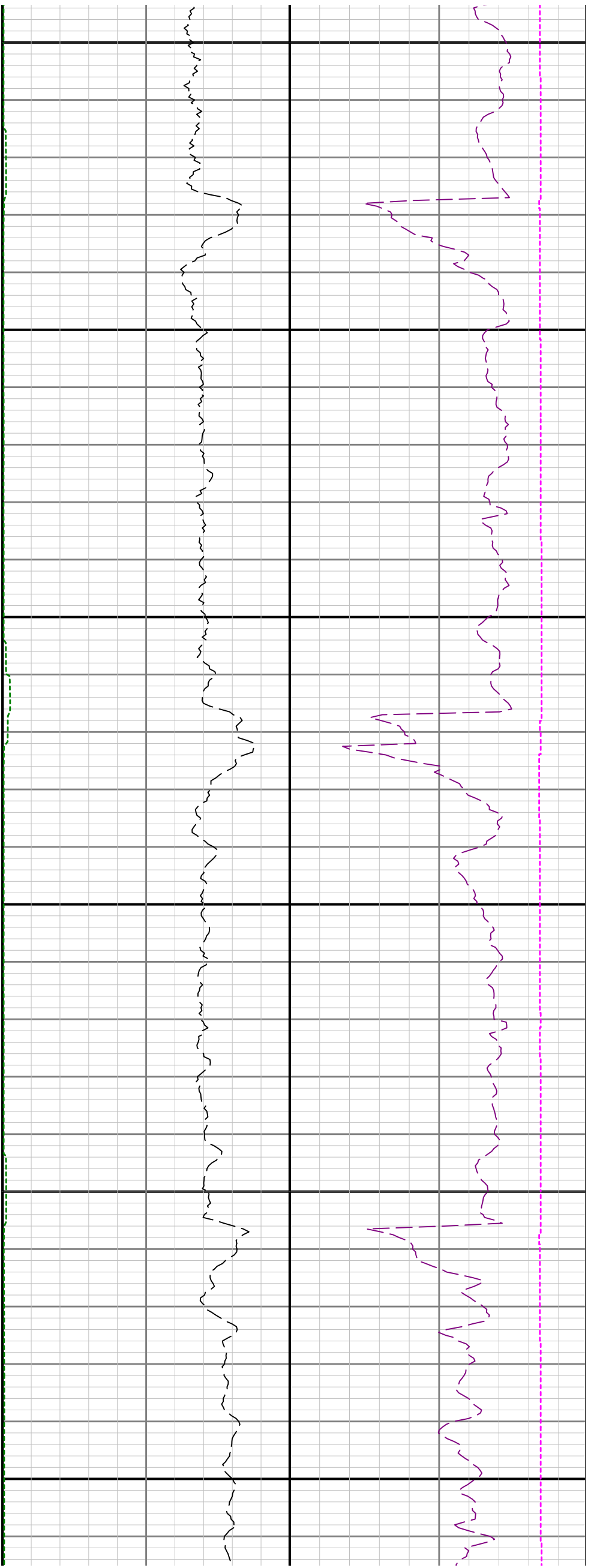
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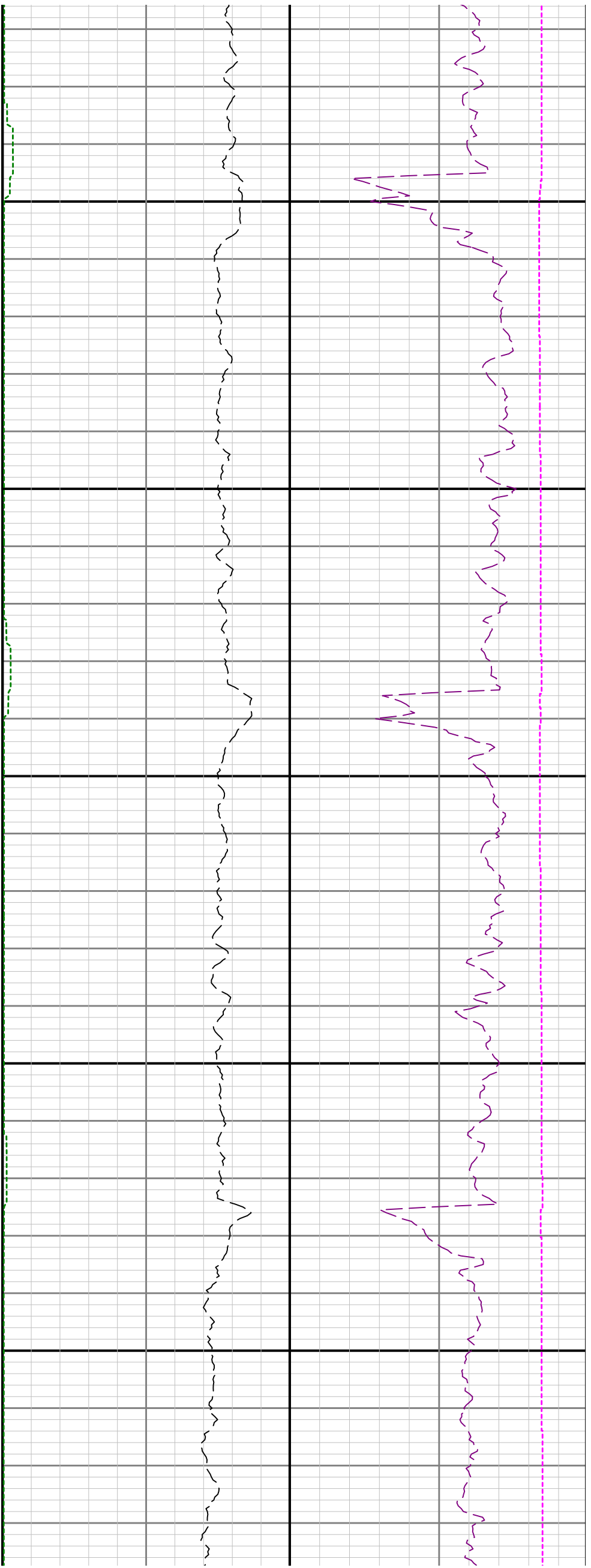
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18400

18500

