



# Gamma Ray

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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
						Top	Bottom	From	To	Start Logging	End Logging	
						(ft)	(ft)	(ft)	(ft)			
1	1	13.500	PDC	4.50	Motor	20.00	1530.00	20.00	1530.00	2017-07-18 04:20	2017-07-18 10:56	6.35
2	2	8.500	PDC	3.00	AutoTrak Curve	1530.00	12154.00	1530.00	12167.00	2017-08-23 19:57	2017-08-25 09:22	32.90

Crew

Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite
Andrew Clancy		2017-07-17	2017-08-25	Bryan Severson		2017-08-23	2017-08-25				

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+ (%)
2017-07-17 16:54	1	20.00	Water Based Mud	8.5	30	9	0.0	0/100	Active Pit	800	0.00
2017-08-24 05:22	2	4742.00	Oil Based Mud	10.2	24	0	0.0	72/28	Active Pit	21000	0.00
2017-08-25 04:29	2	10692.00	Oil Based Mud	10.0	29	0	0.0	72/28	Active Pit	22000	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	NaviTrak	11912324	VSS	13.13	49.20	8.000	0.000
1	NaviTrak	11912324	Directional (mag)	13.13	49.20	8.000	0.000
2	ATC_SU	14178990	Near Bit VSS	5.93	6.73	7.000	4.330
2	ATC_SU	14178990	Near Bit Inclination	5.93	6.73	7.000	4.330
2	ATC_MWD	12919396	Gamma (single)	2.19	12.35	7.000	3.250
2	ATC_MWD	12919396	Directional (mag)	12.26	22.42	7.000	3.250

Service and Tool Mnemonics

Mnemonic	Name	Description
NTK	NaviTrak	Probe Based Directional Module, NaviTrak Platform
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

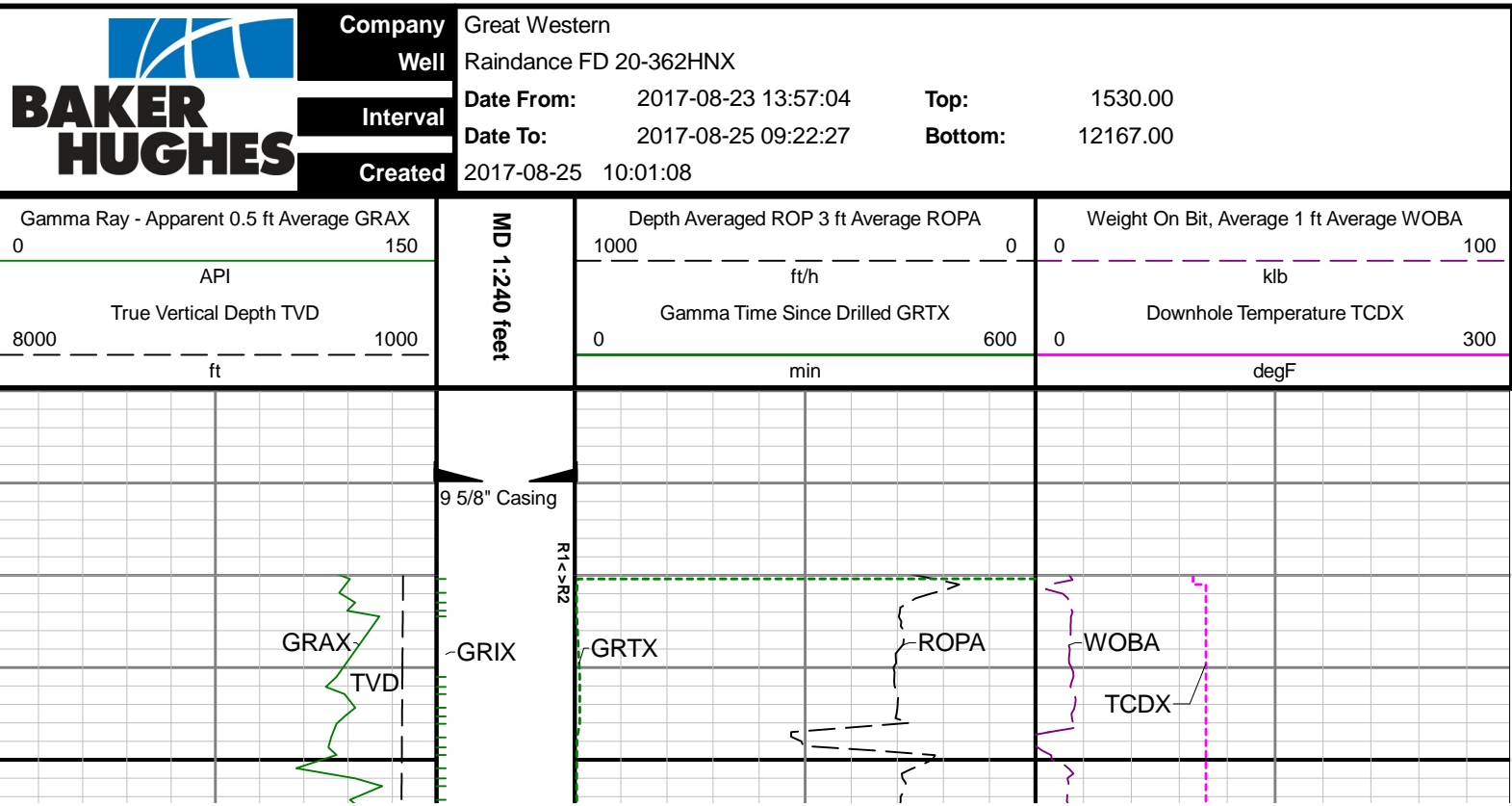
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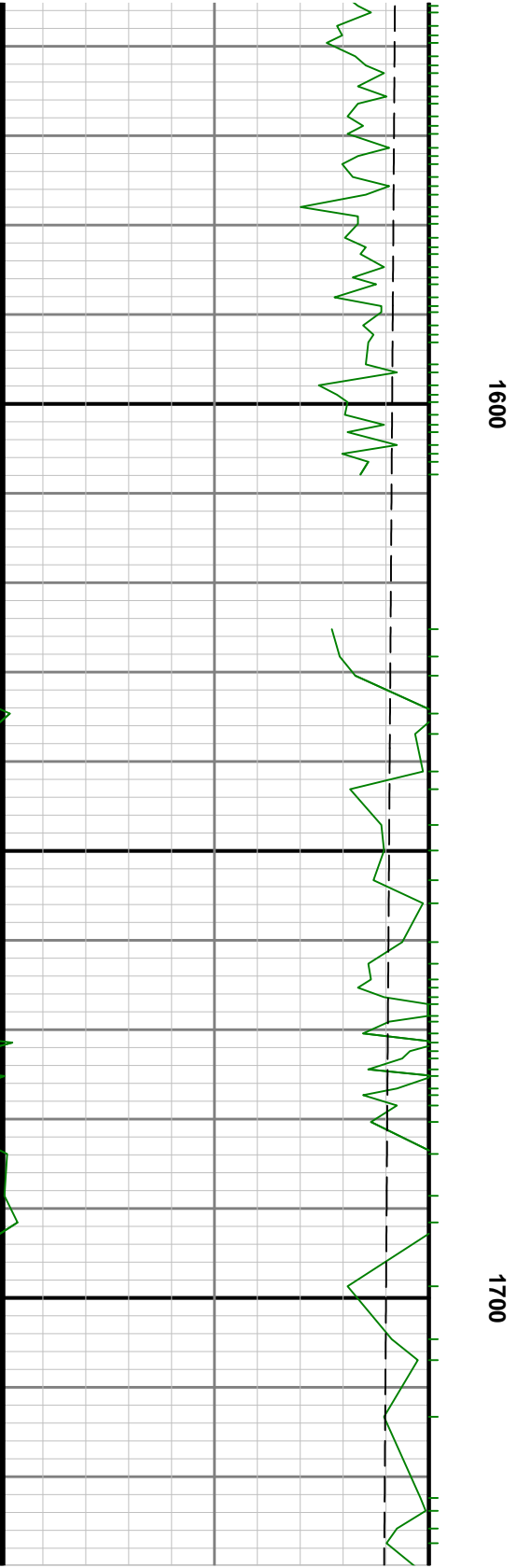
1	Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
2	On 7/18/17, the logging system was calibrated by Baker Hughes. The system was found to be accurate within 0.1 feet. The system was used for the remainder of the run.

- to 1530 feet TVD).
- 3
- to 12167 feet MD (1530 to 6882 feet TVD).
- 4
- Gaps in Gamma Ray data are present throughout the log due to downlinking while drilling ahead.

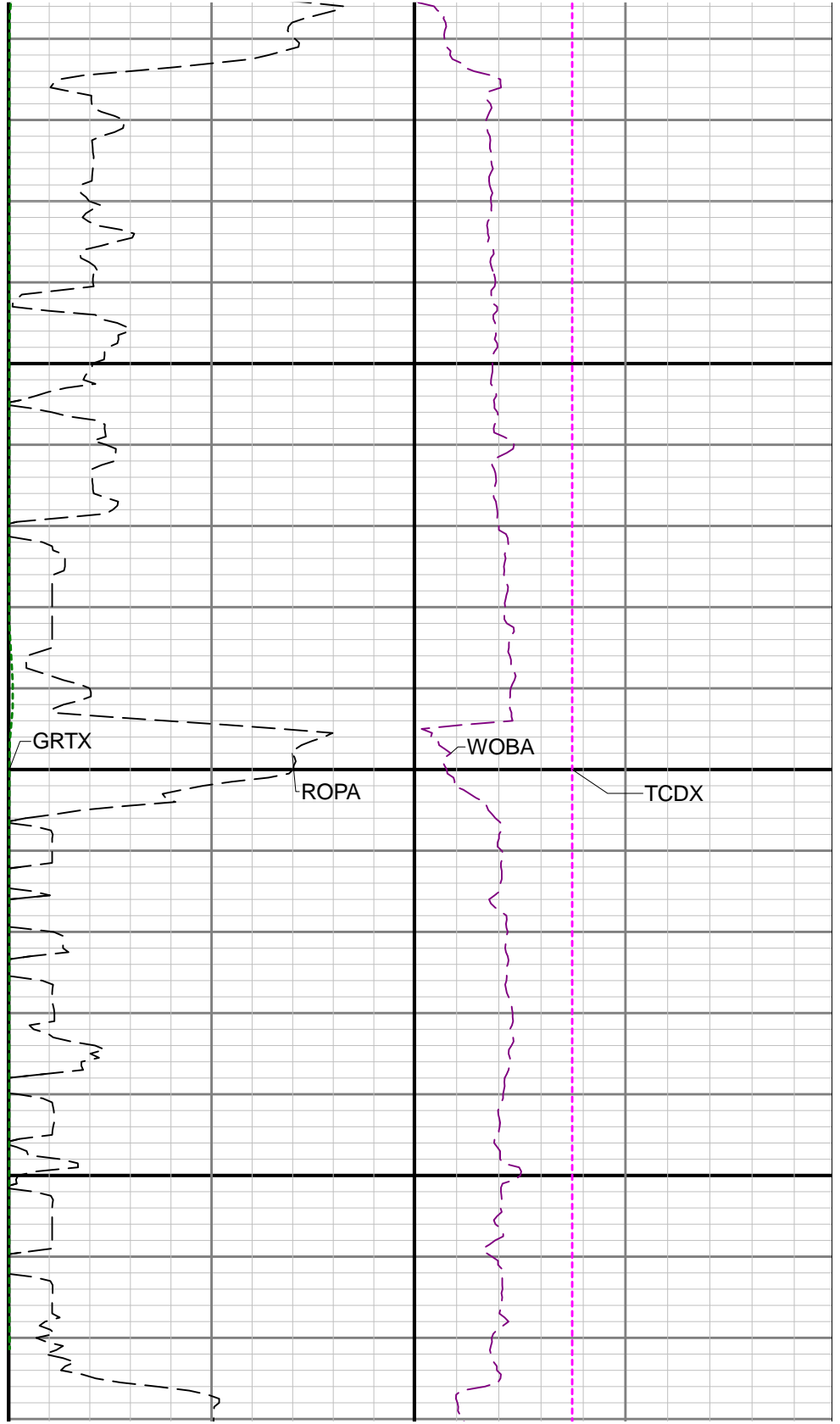
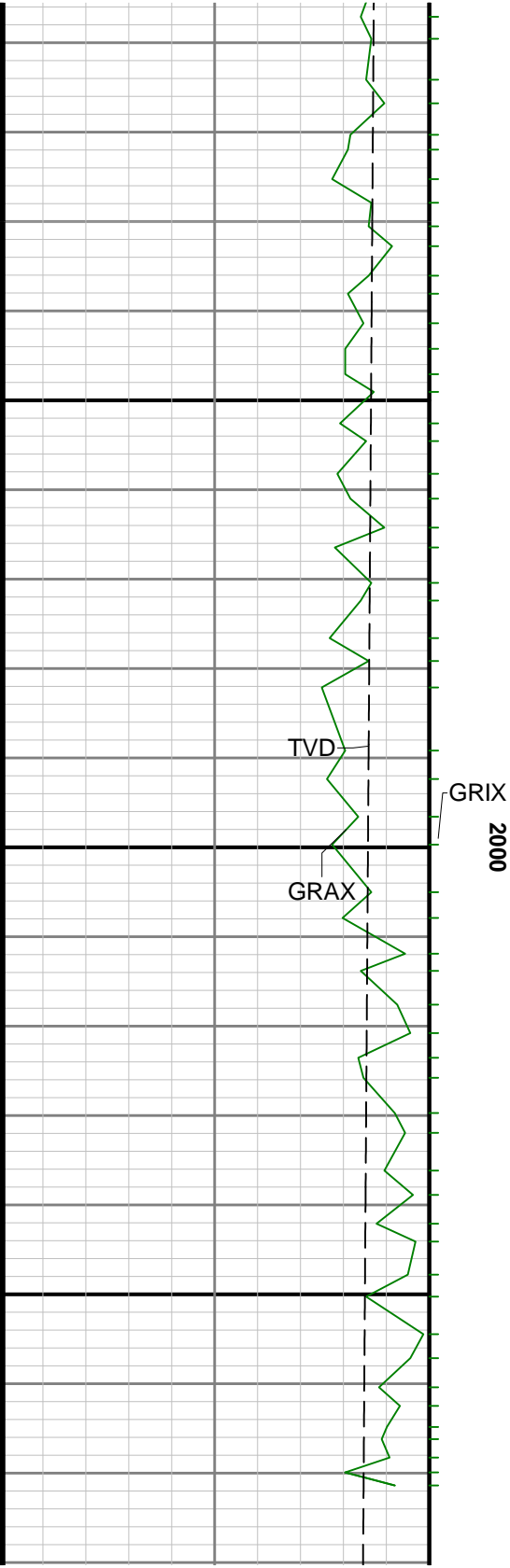
Remarks				
Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	12154.00	8.500	2	The interval from 12154 to 12167 feet MD (6882 feet TVD) was not logged due to sensor to bit offset at well TD.

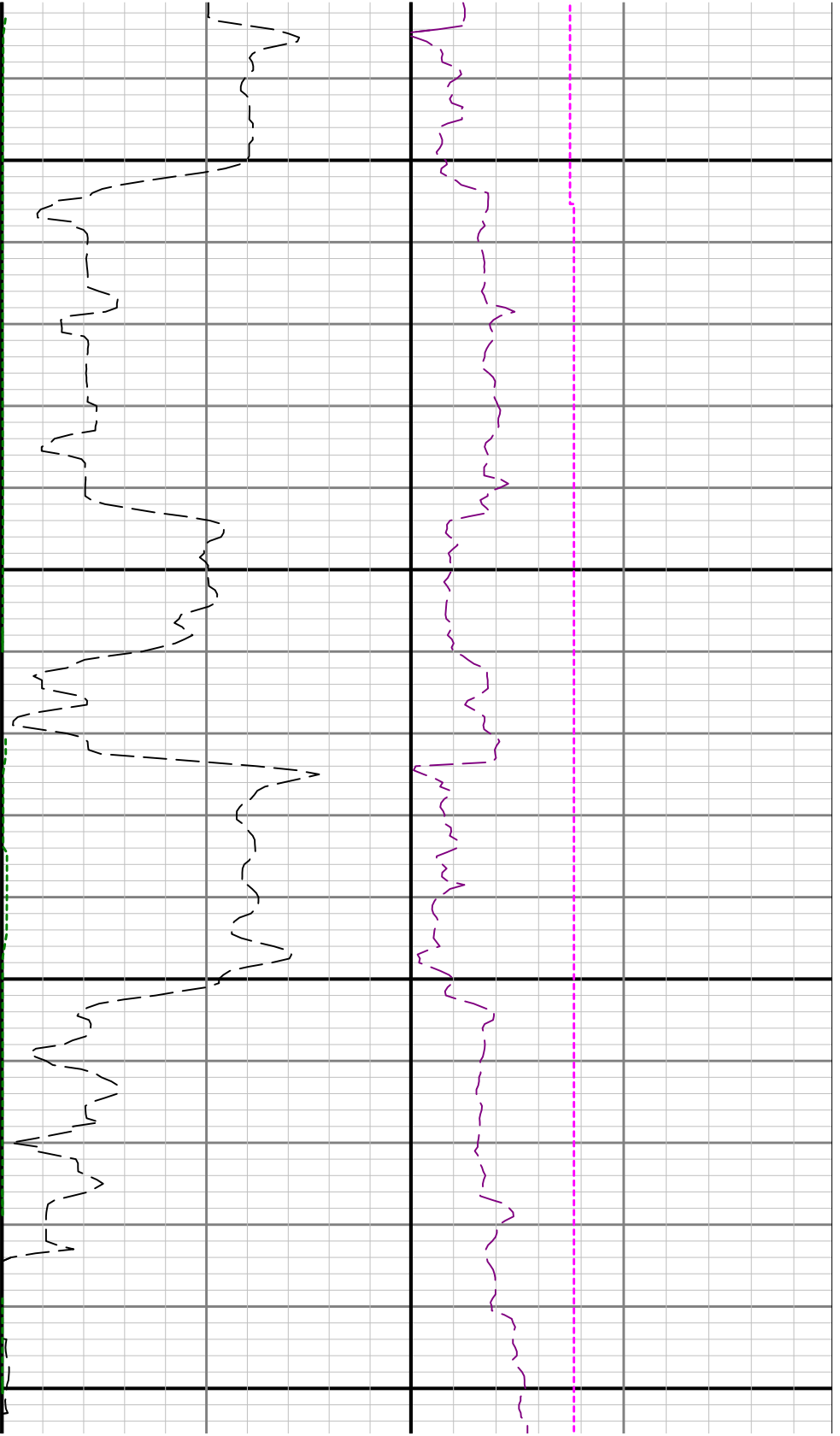
Curve Mnemonics		
Presented Curves	Description	Units
TCDX	Downhole Temperature	degF
ROPA	Depth Averaged ROP 3 ft Average	ft/h
TVD	True Vertical Depth	ft
WOBA	Weight On Bit, Average 1 ft Average	klb
GRAX	OnTrak - Gamma Ray - Apparent - Real-Time 0.5 ft Average	API
GRIX	OnTrak - Gamma Ray - Data Point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





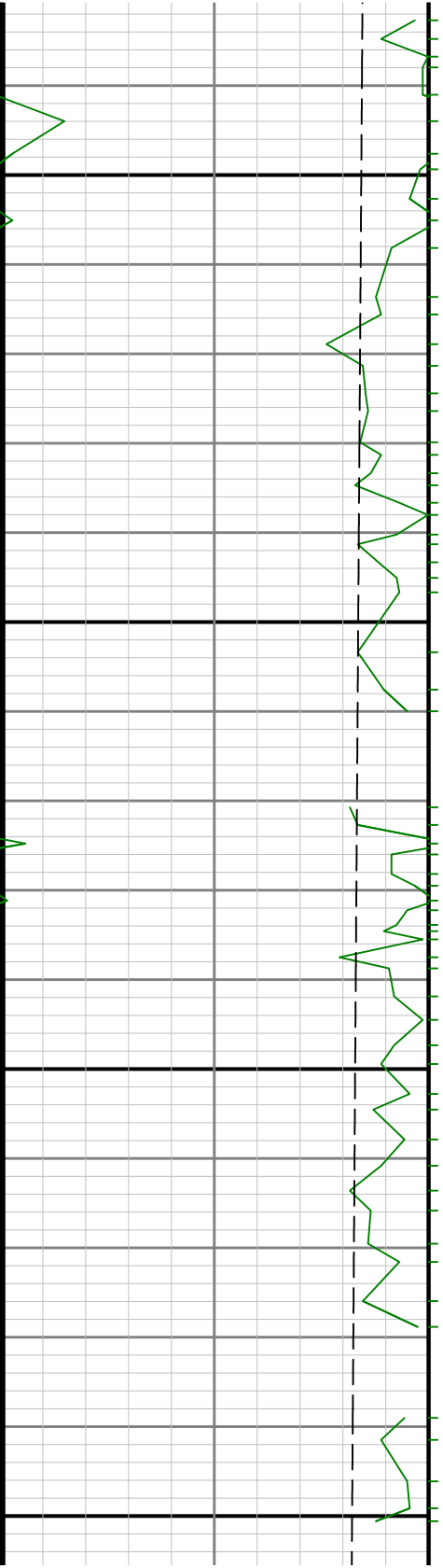


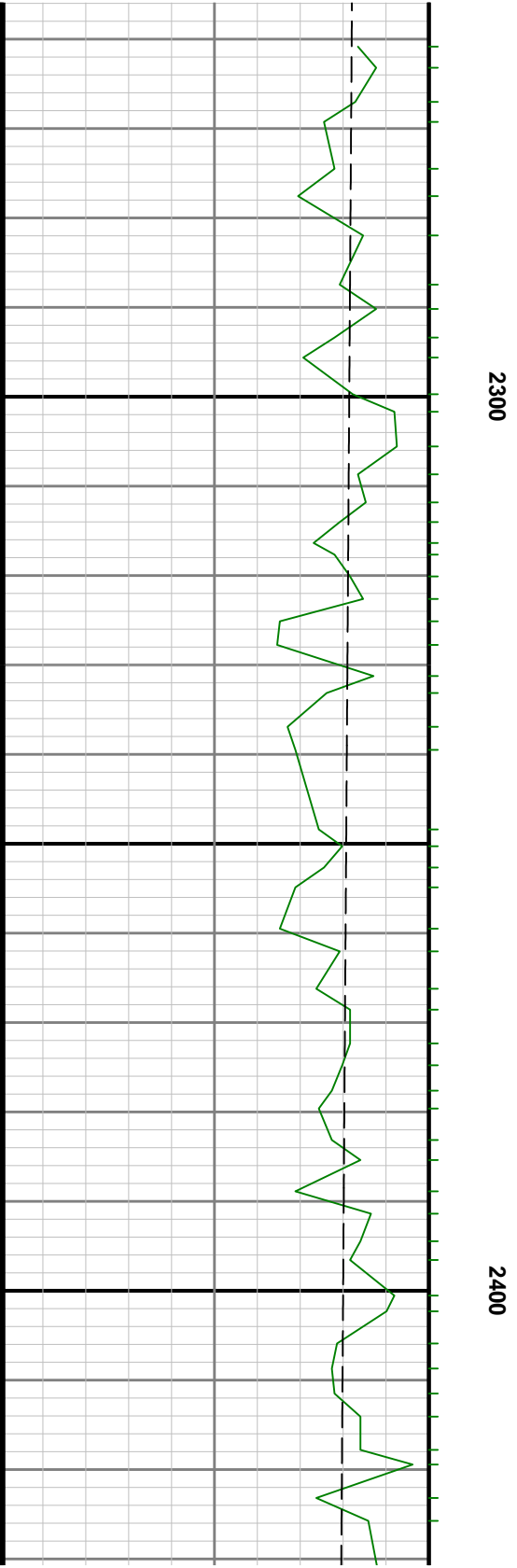
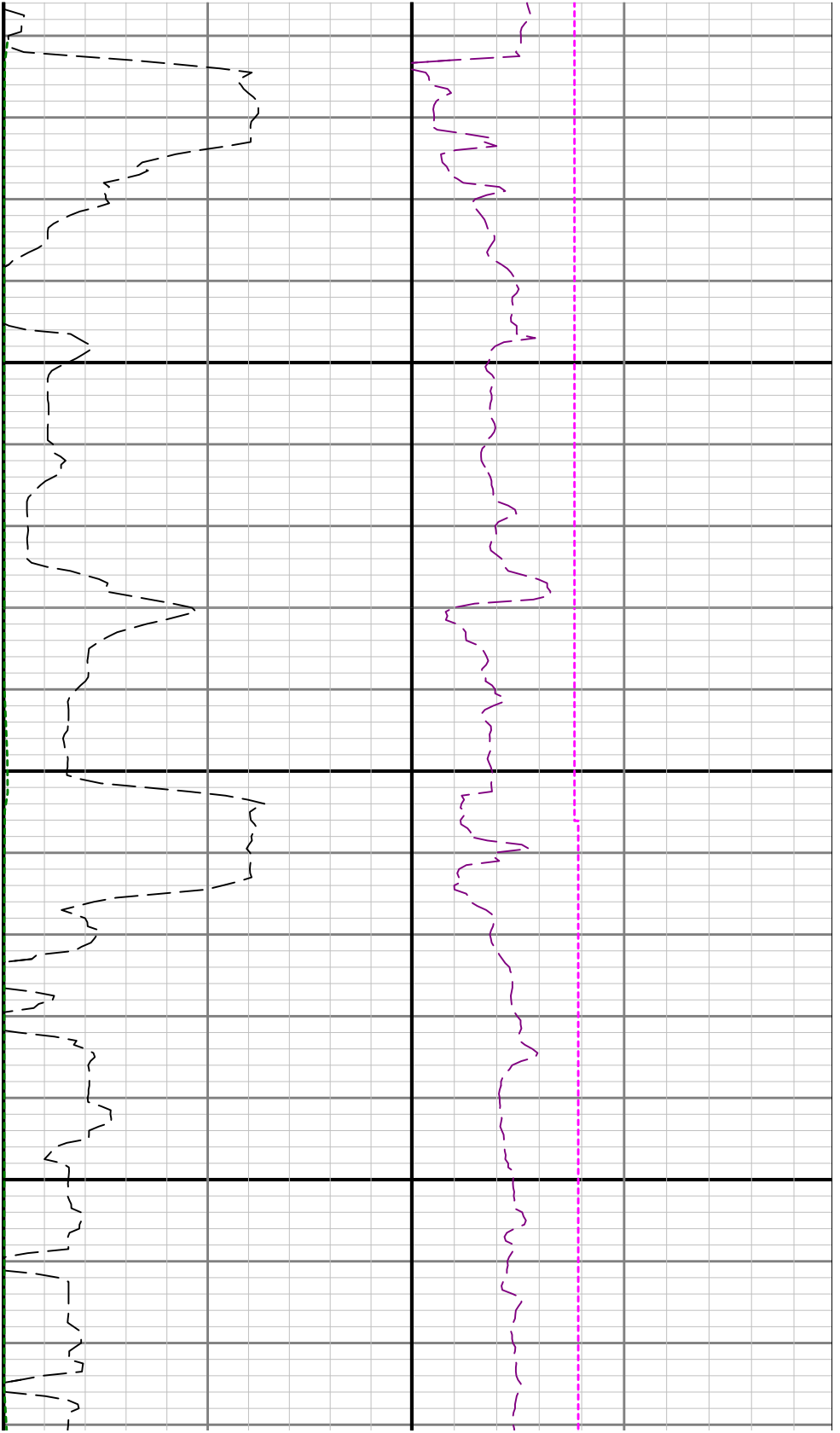




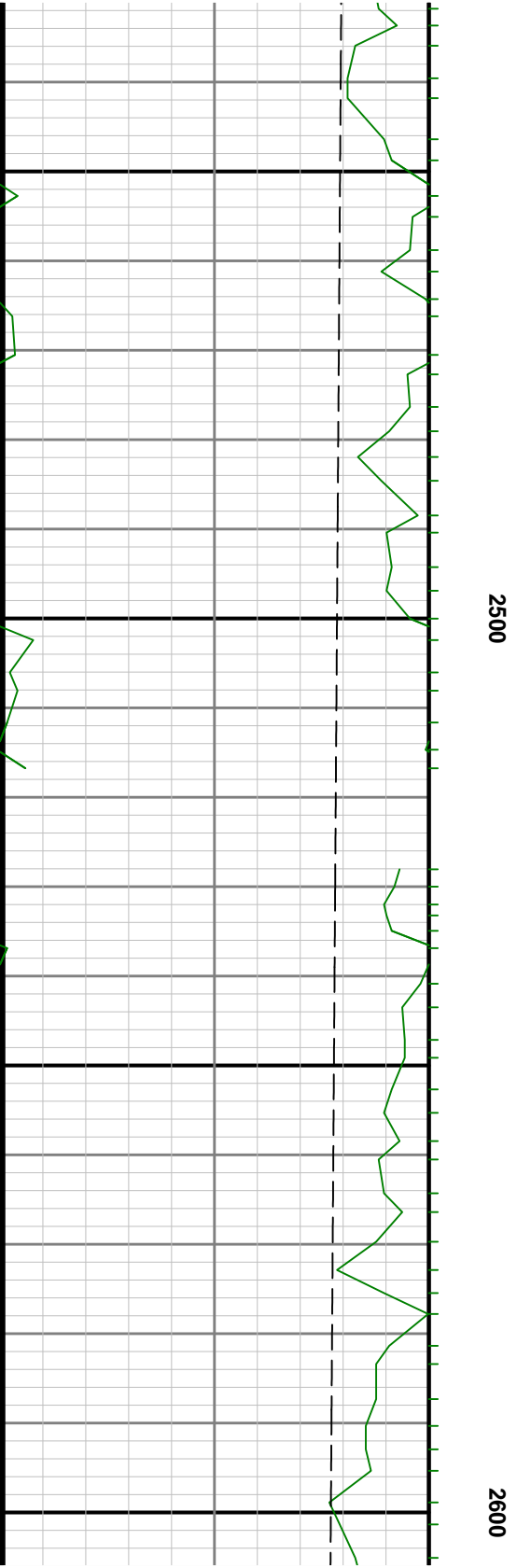
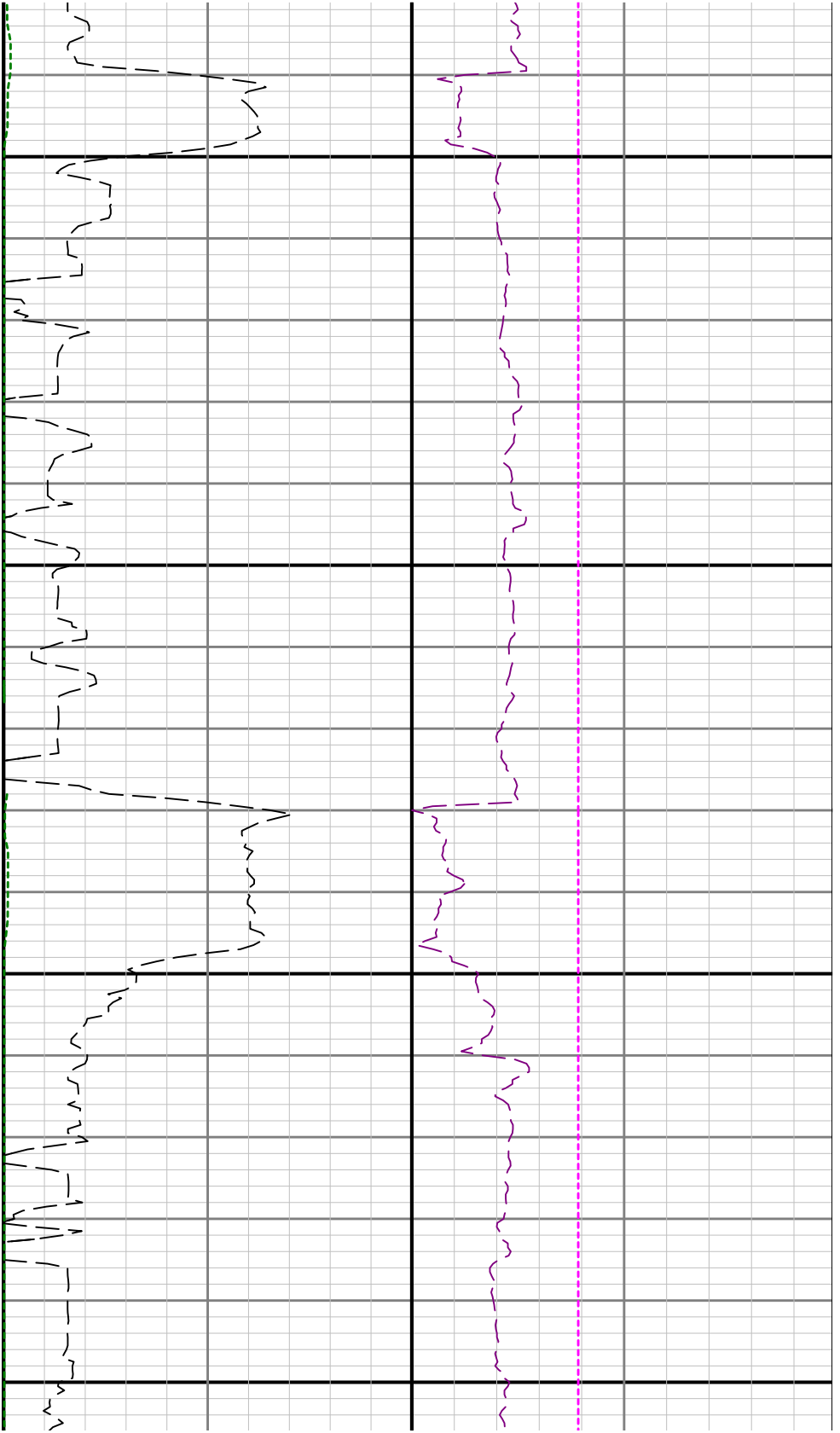
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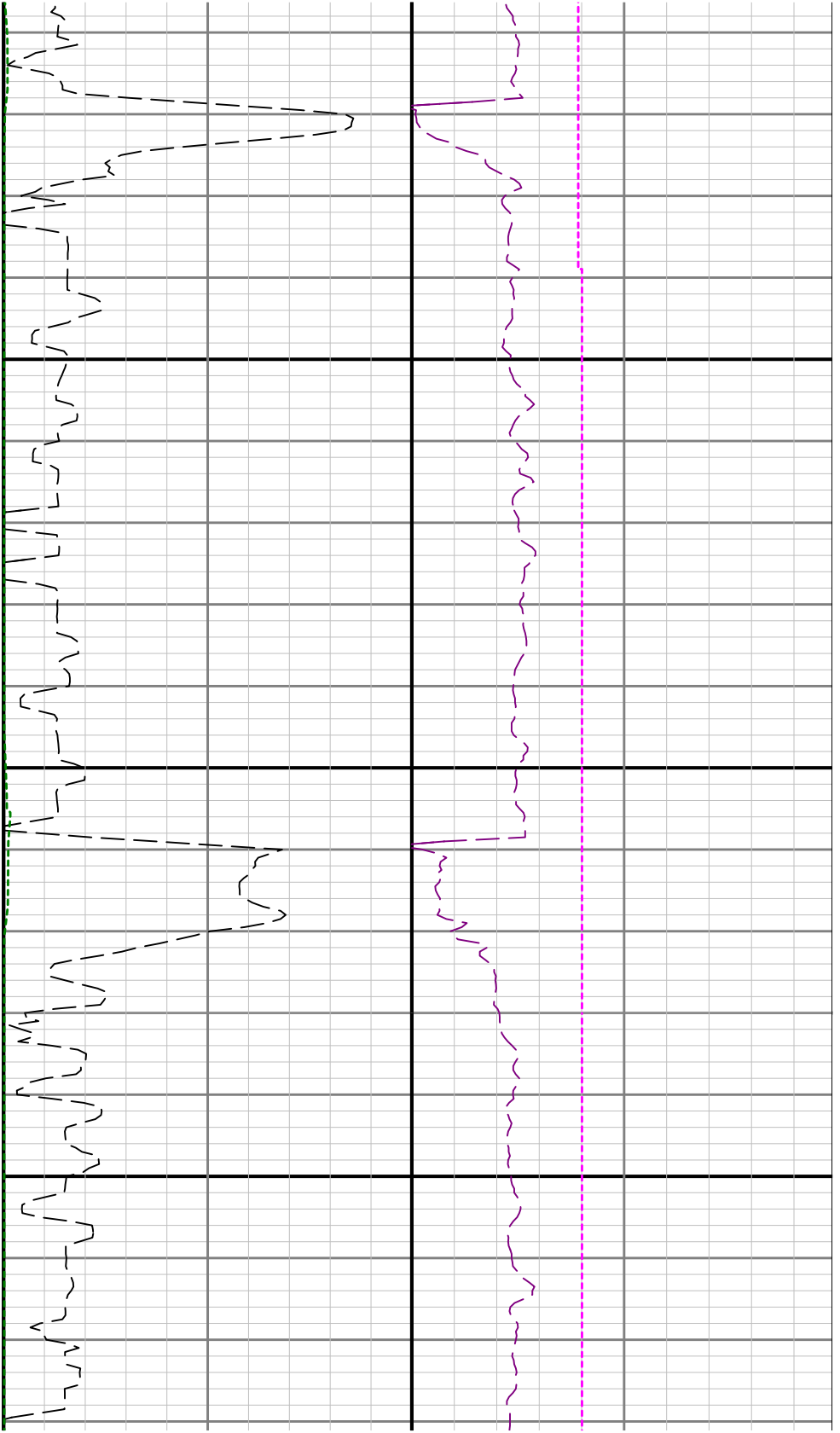
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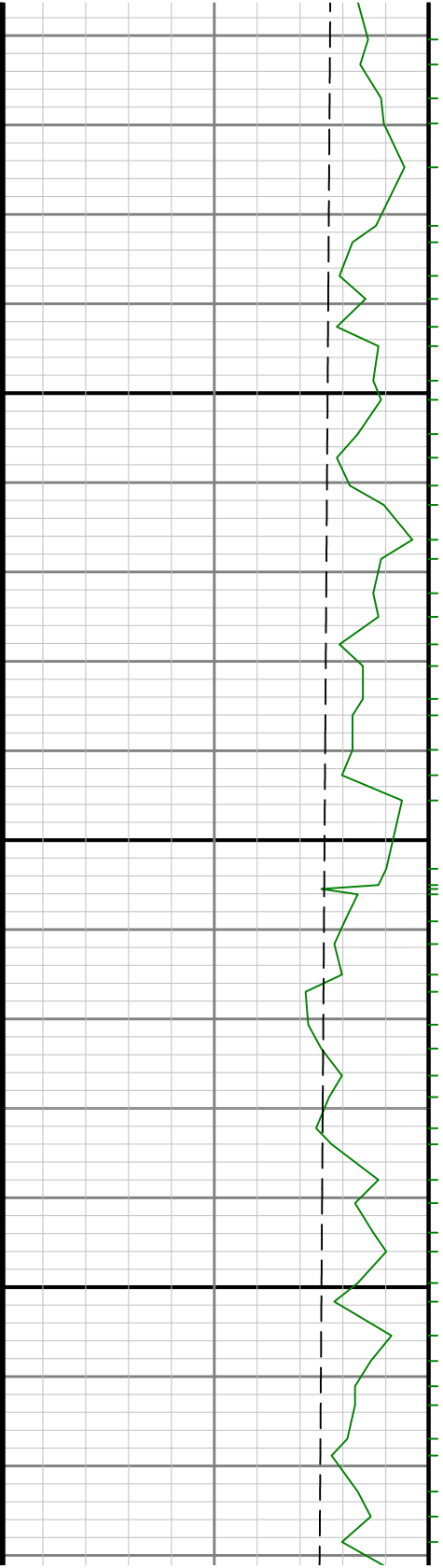


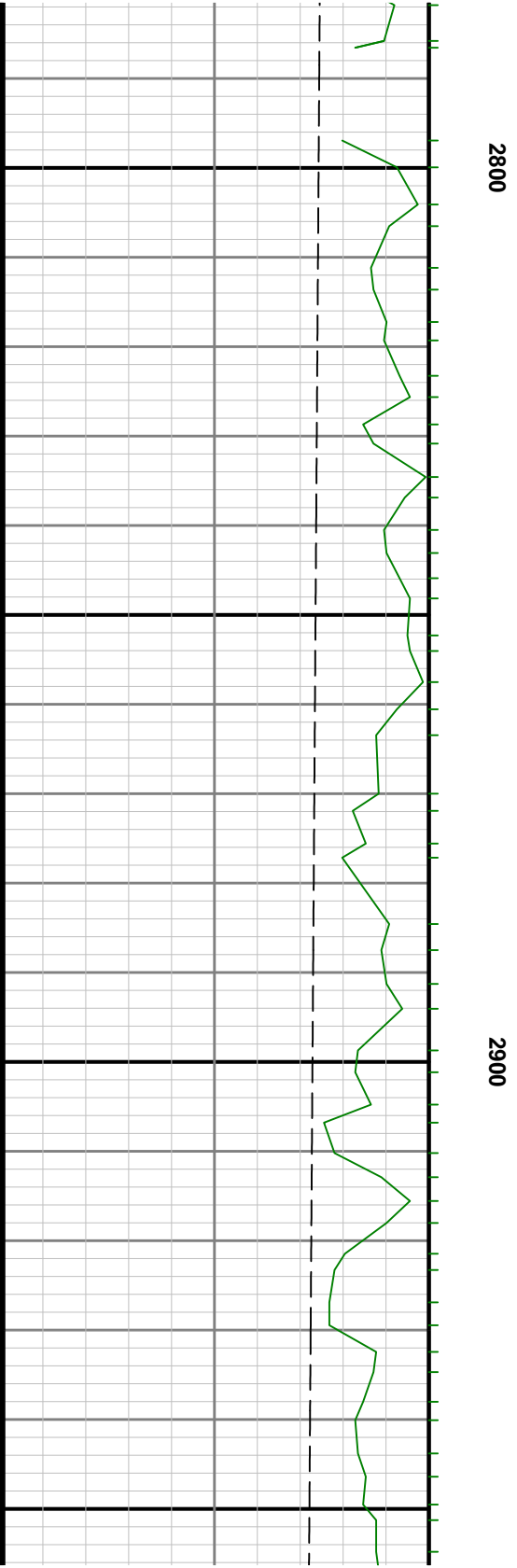
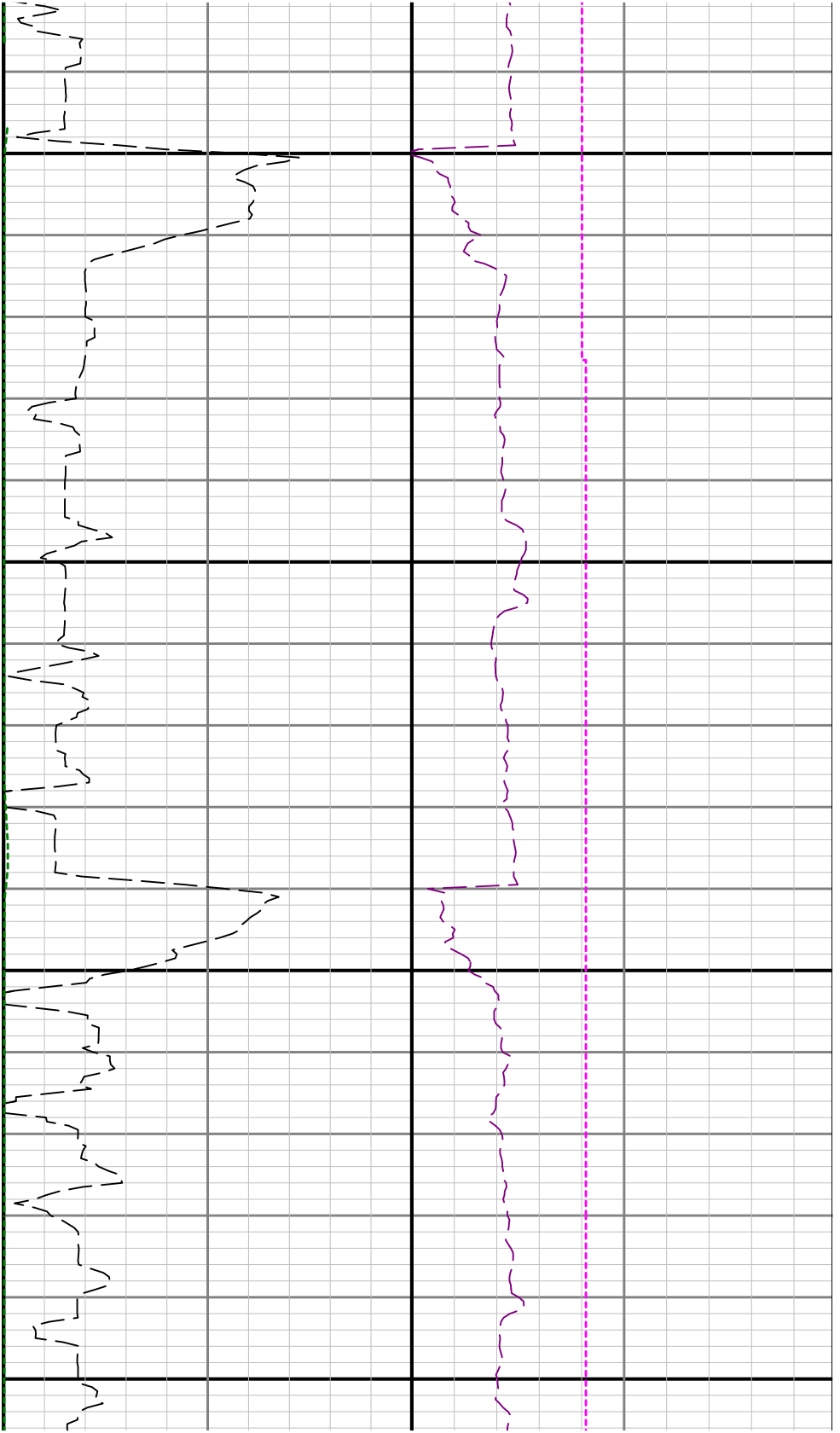


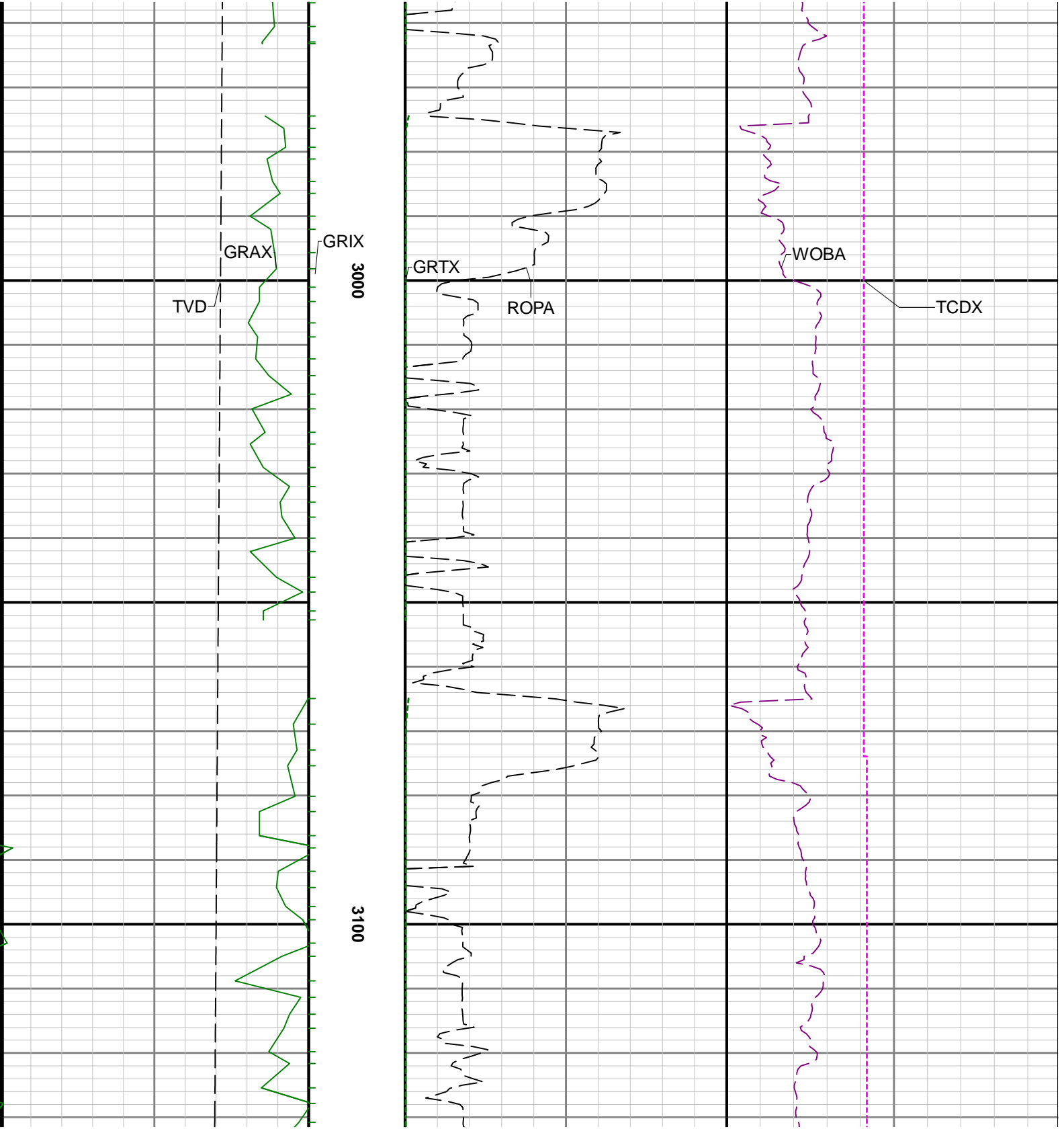


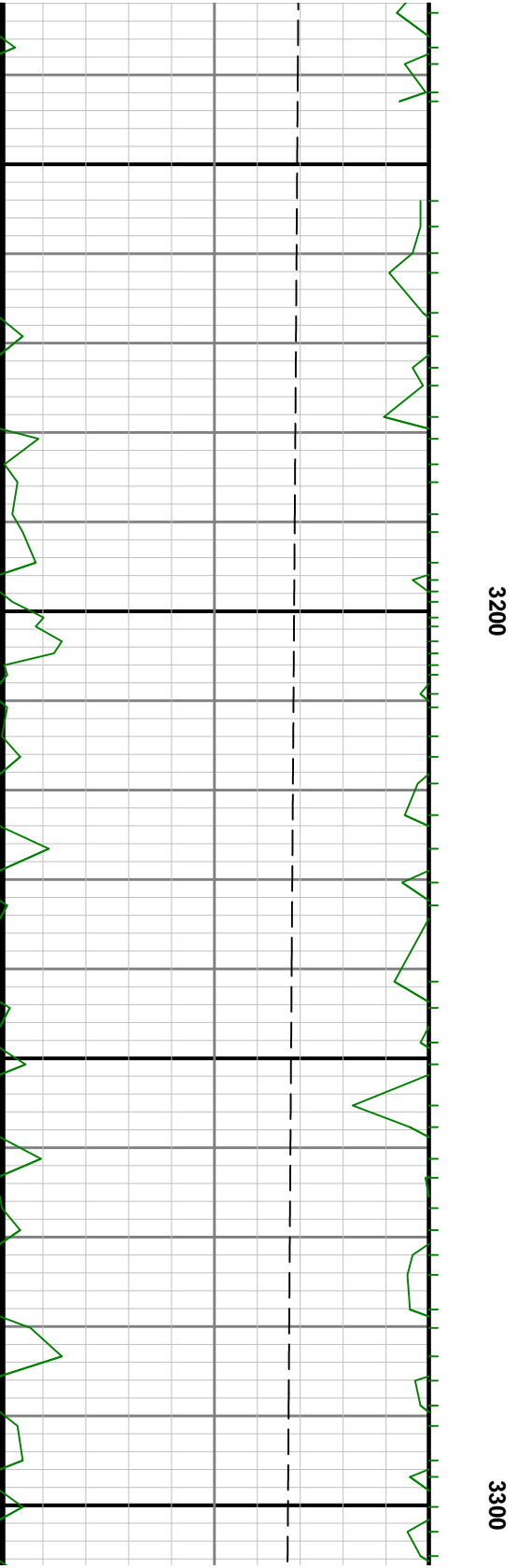
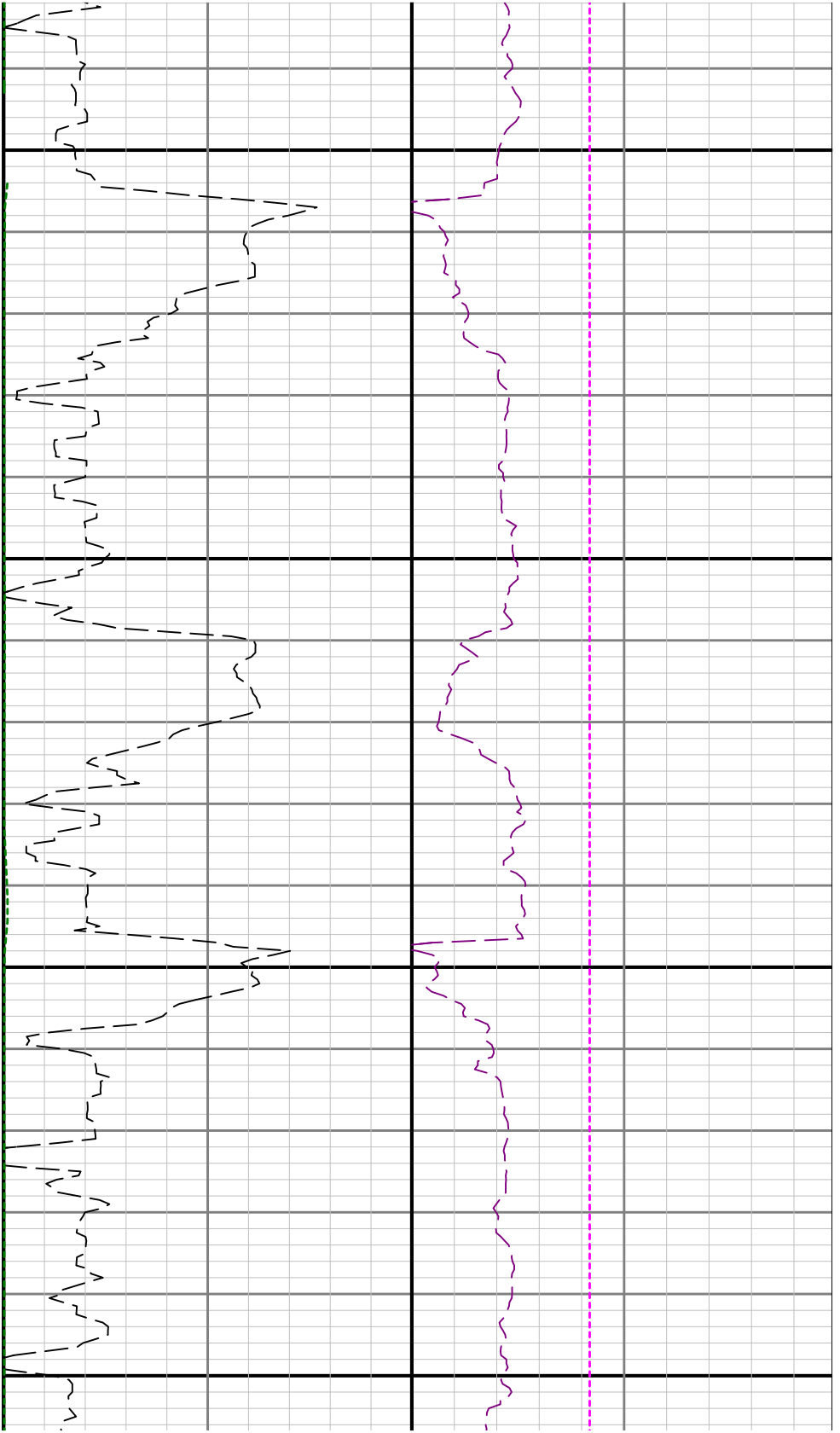


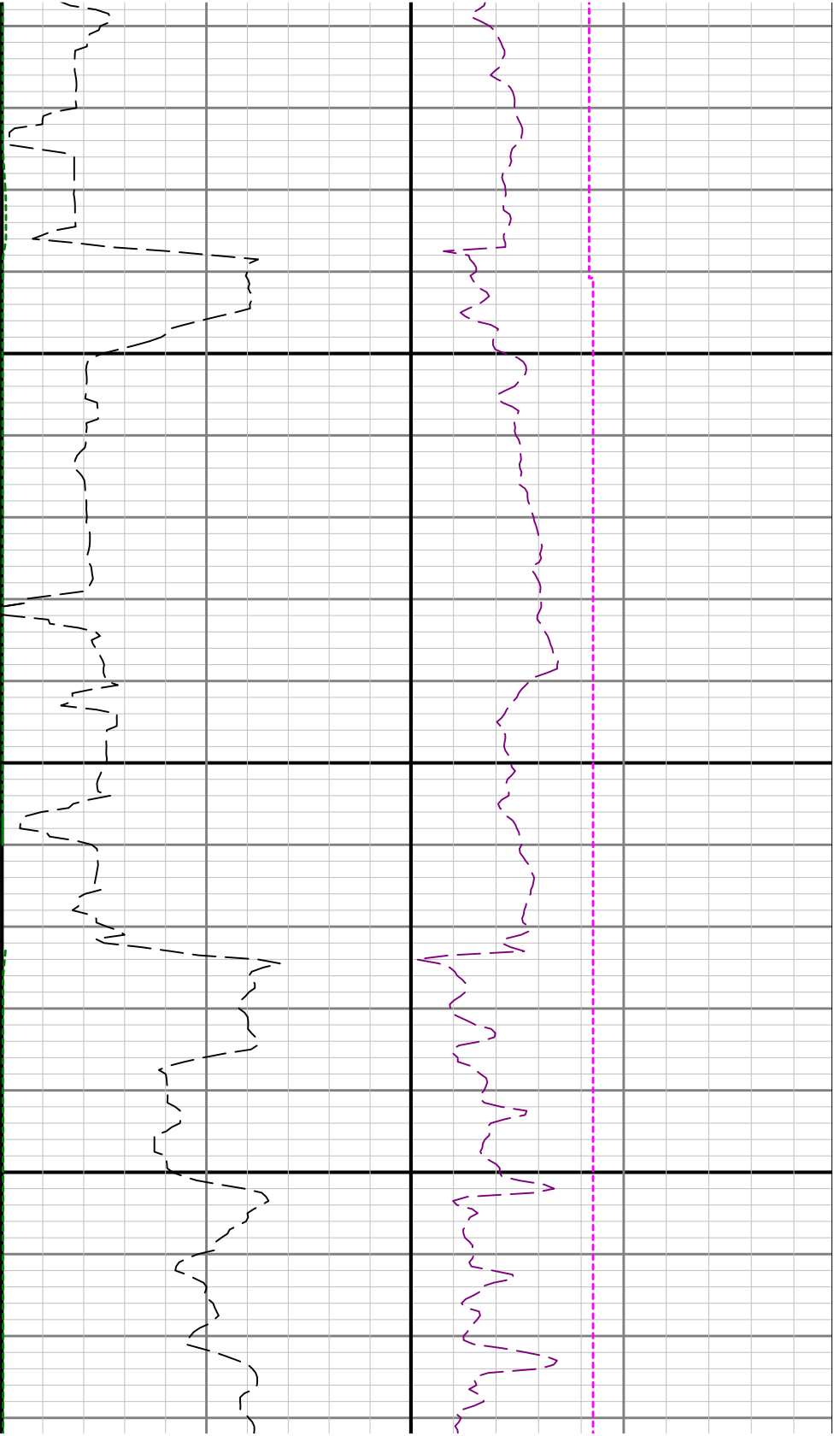
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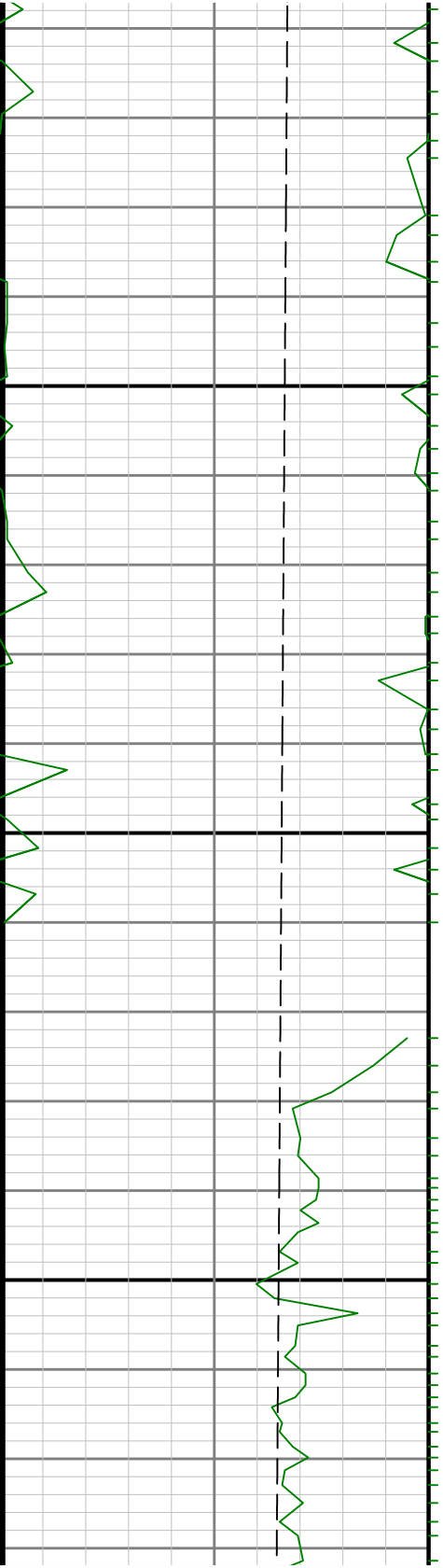


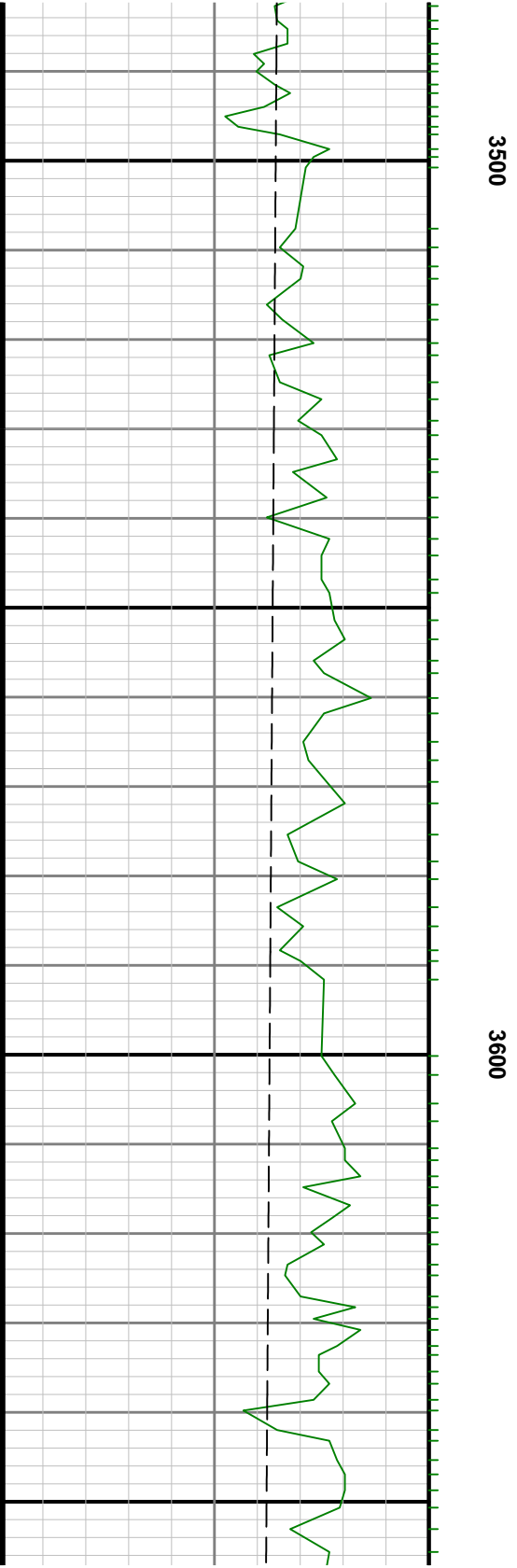
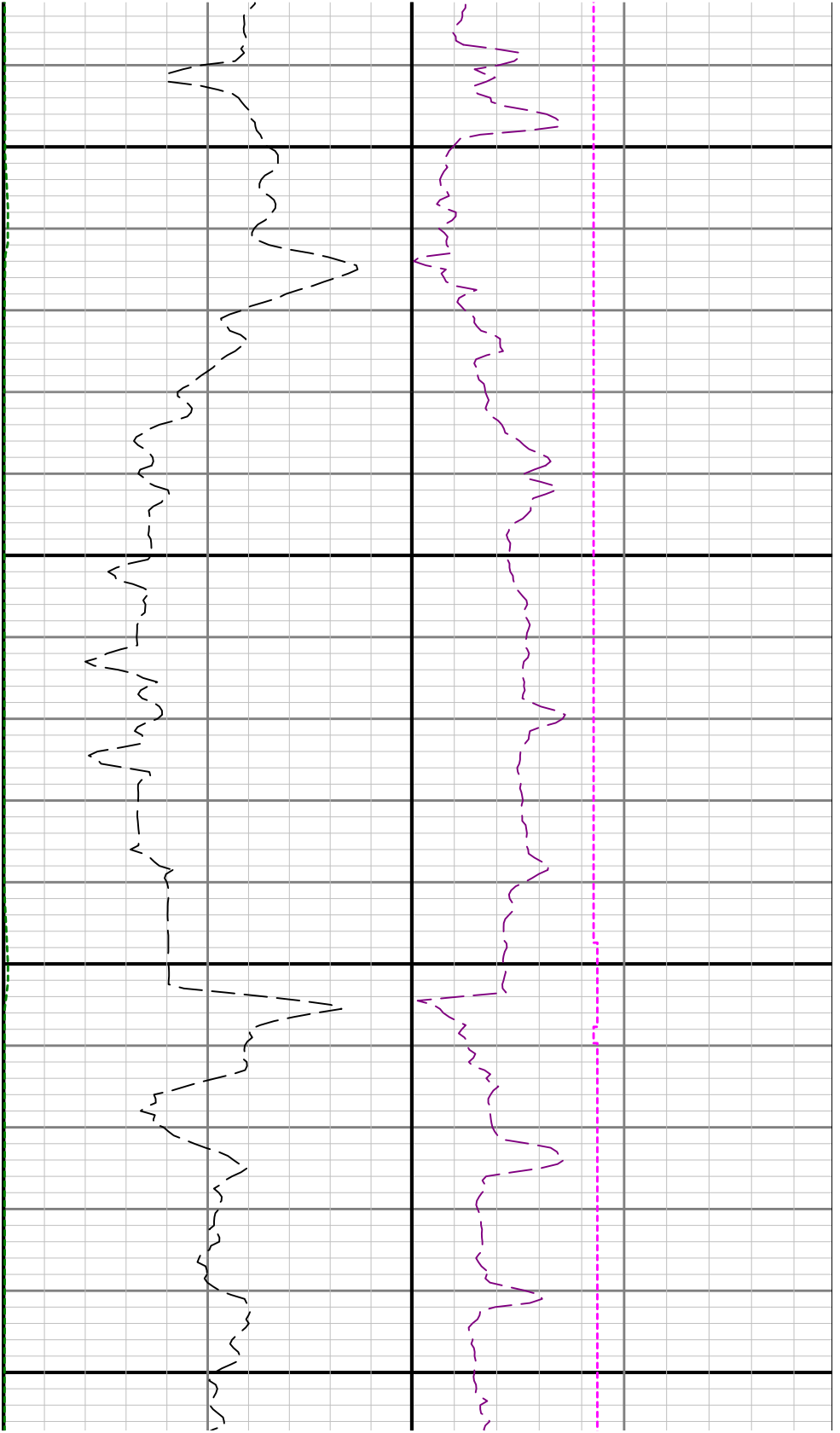


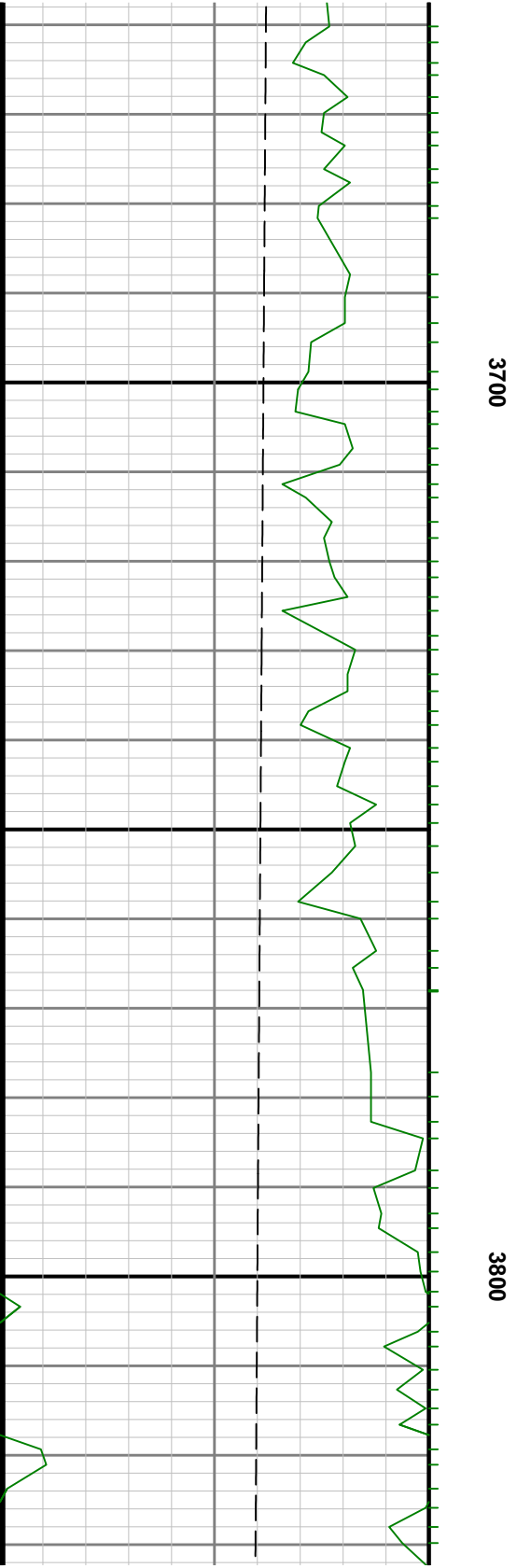
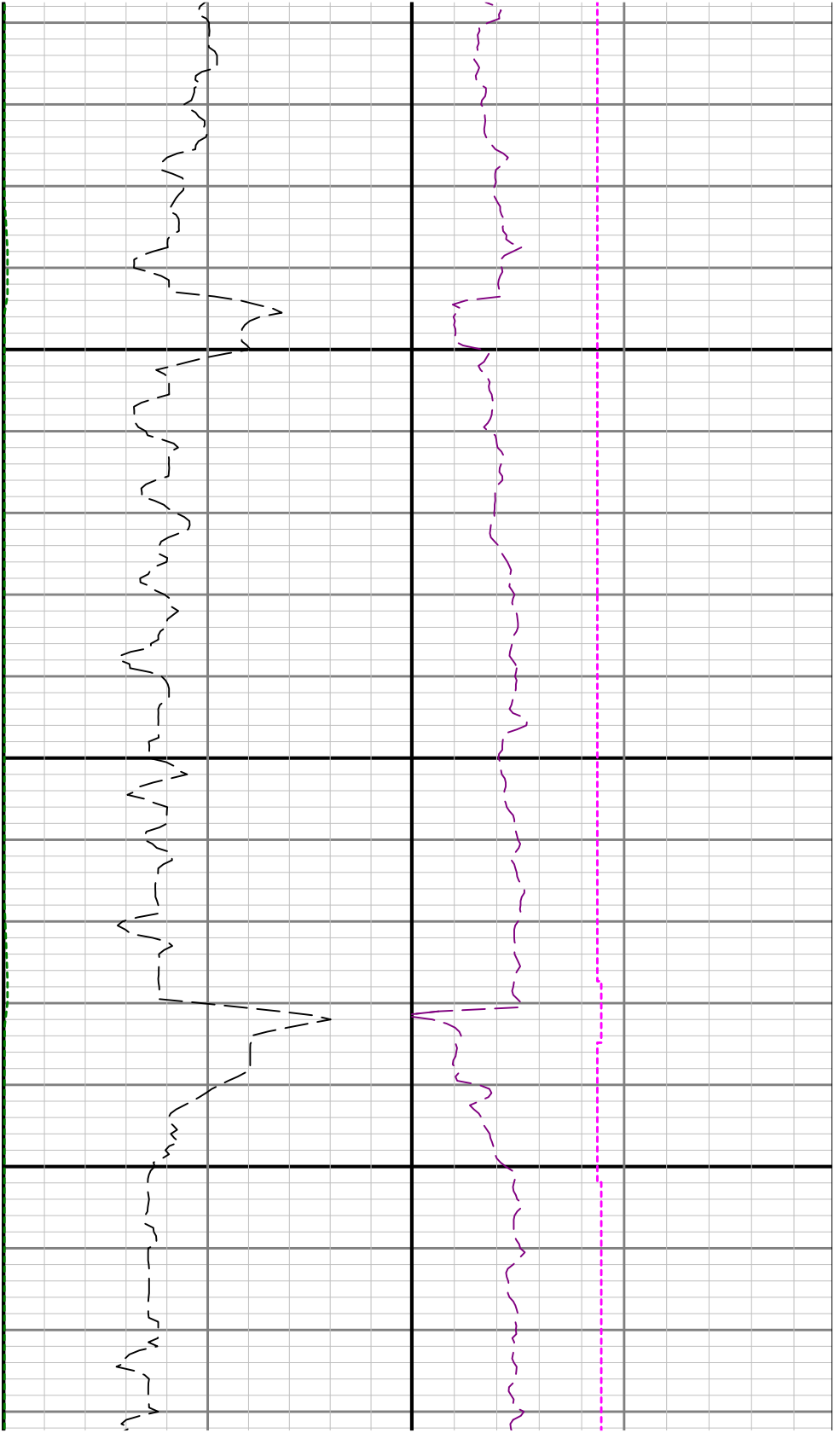




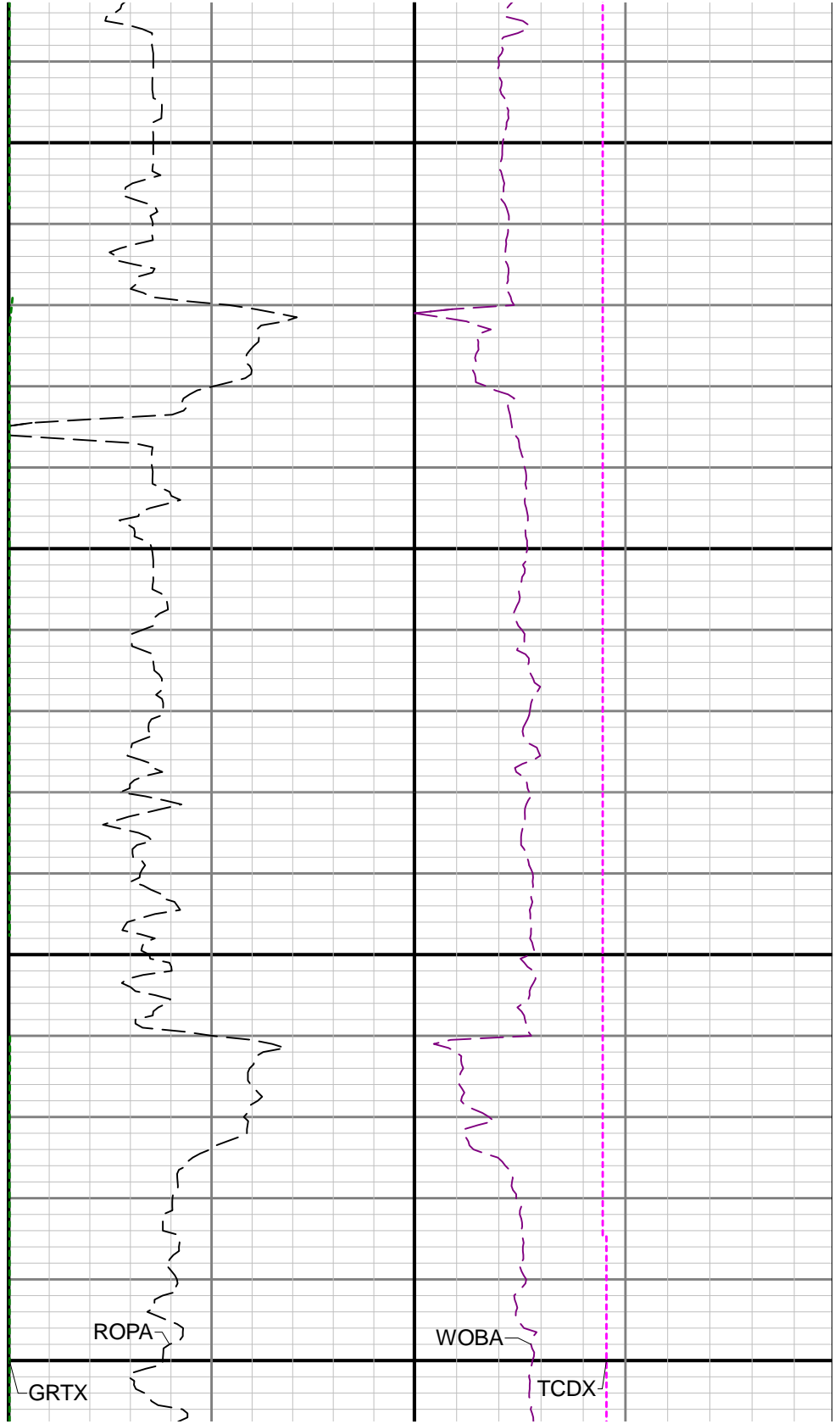
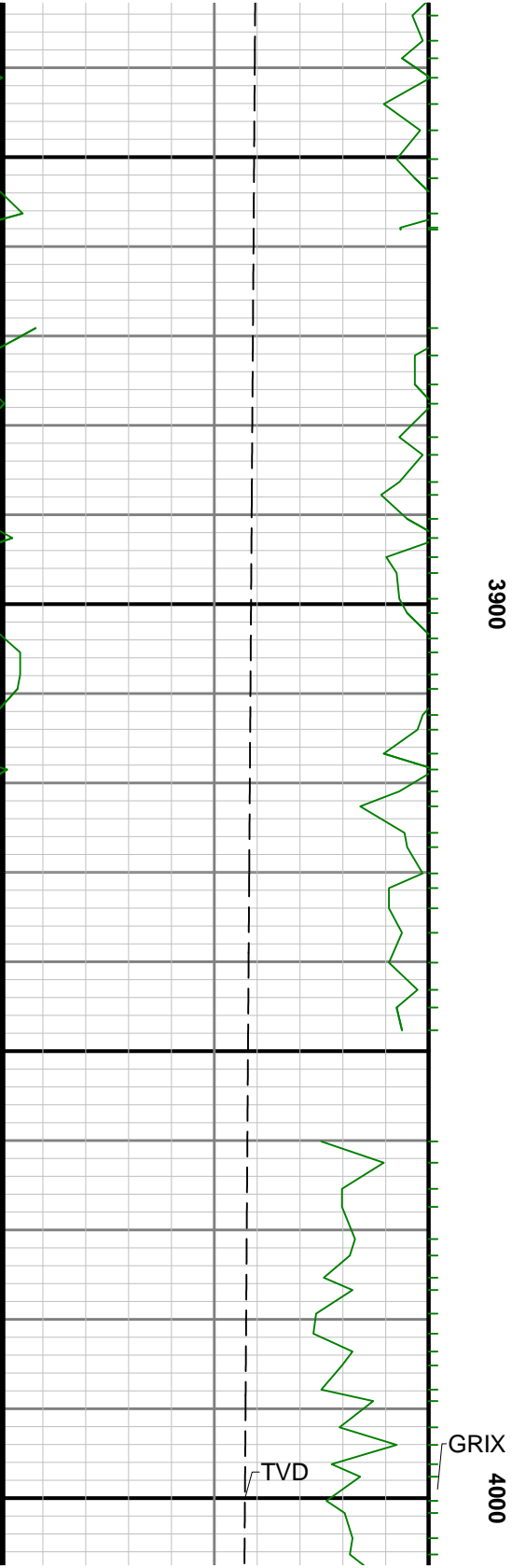
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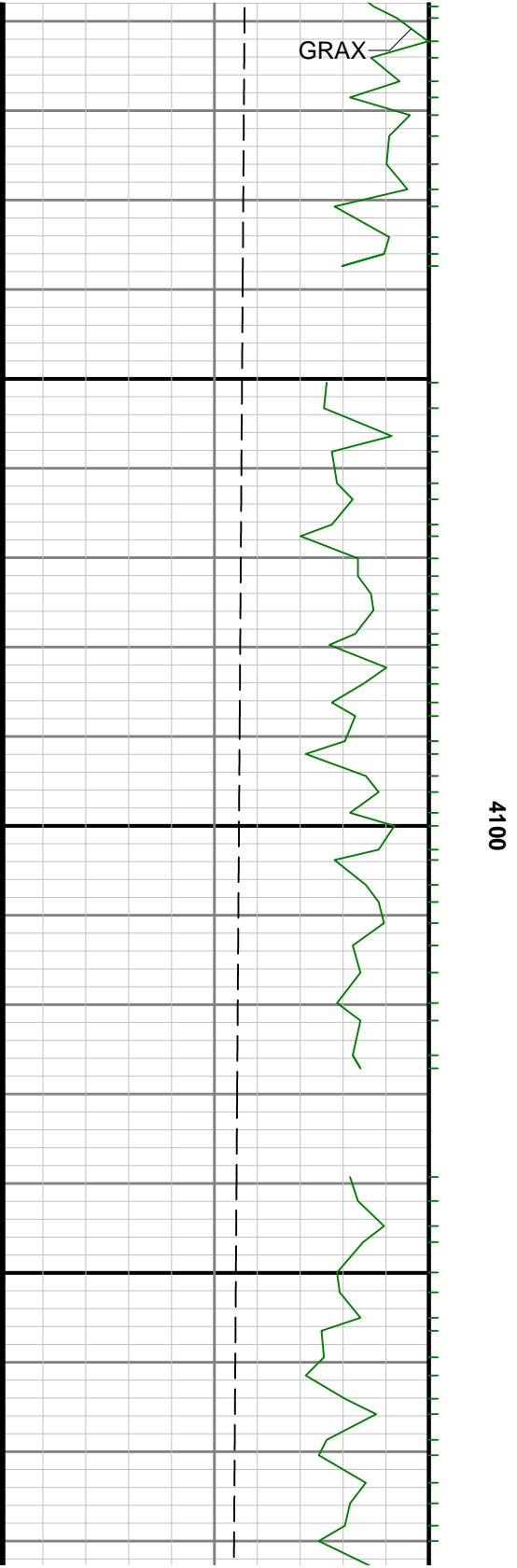


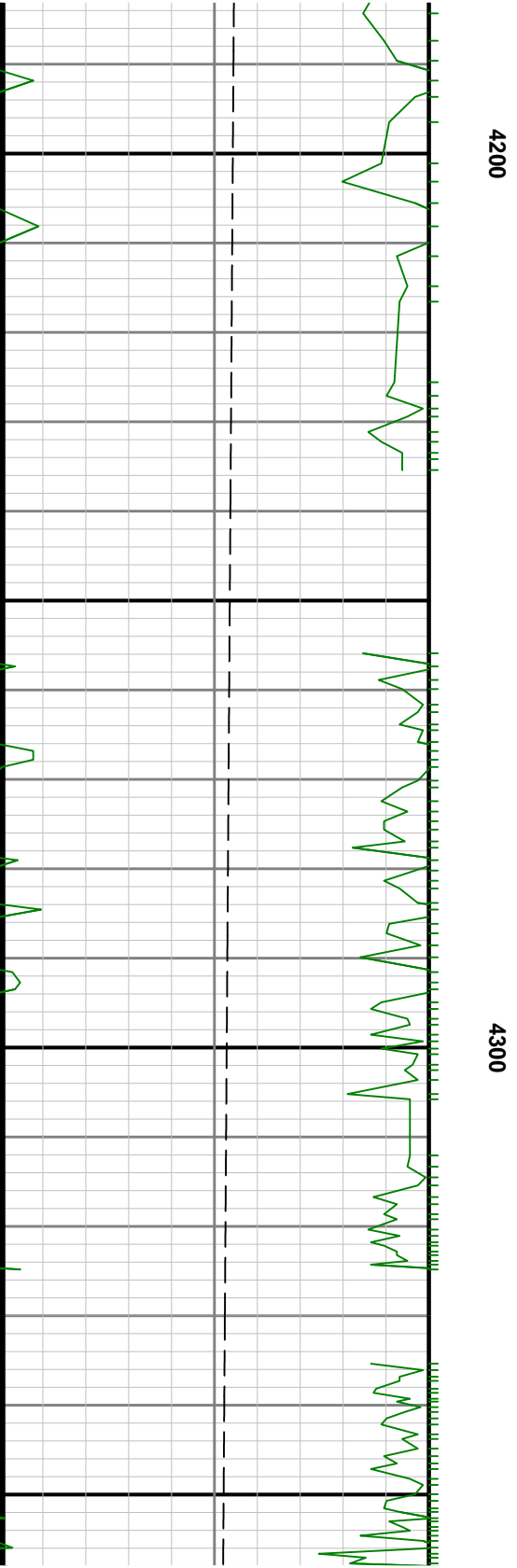


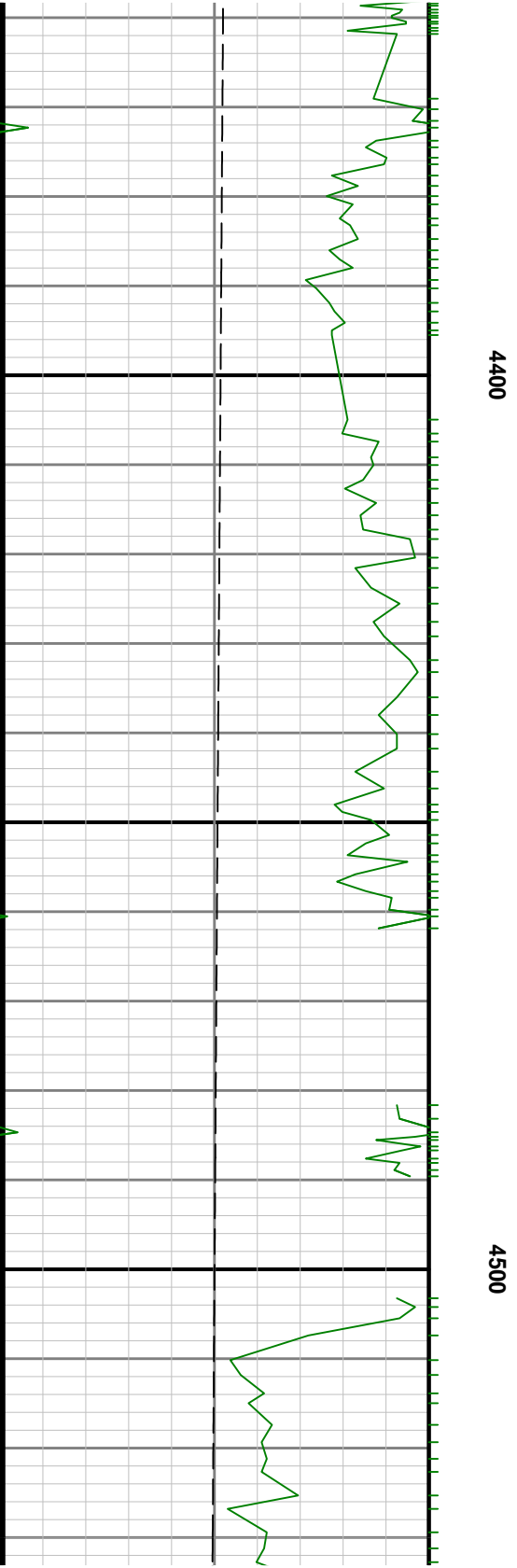
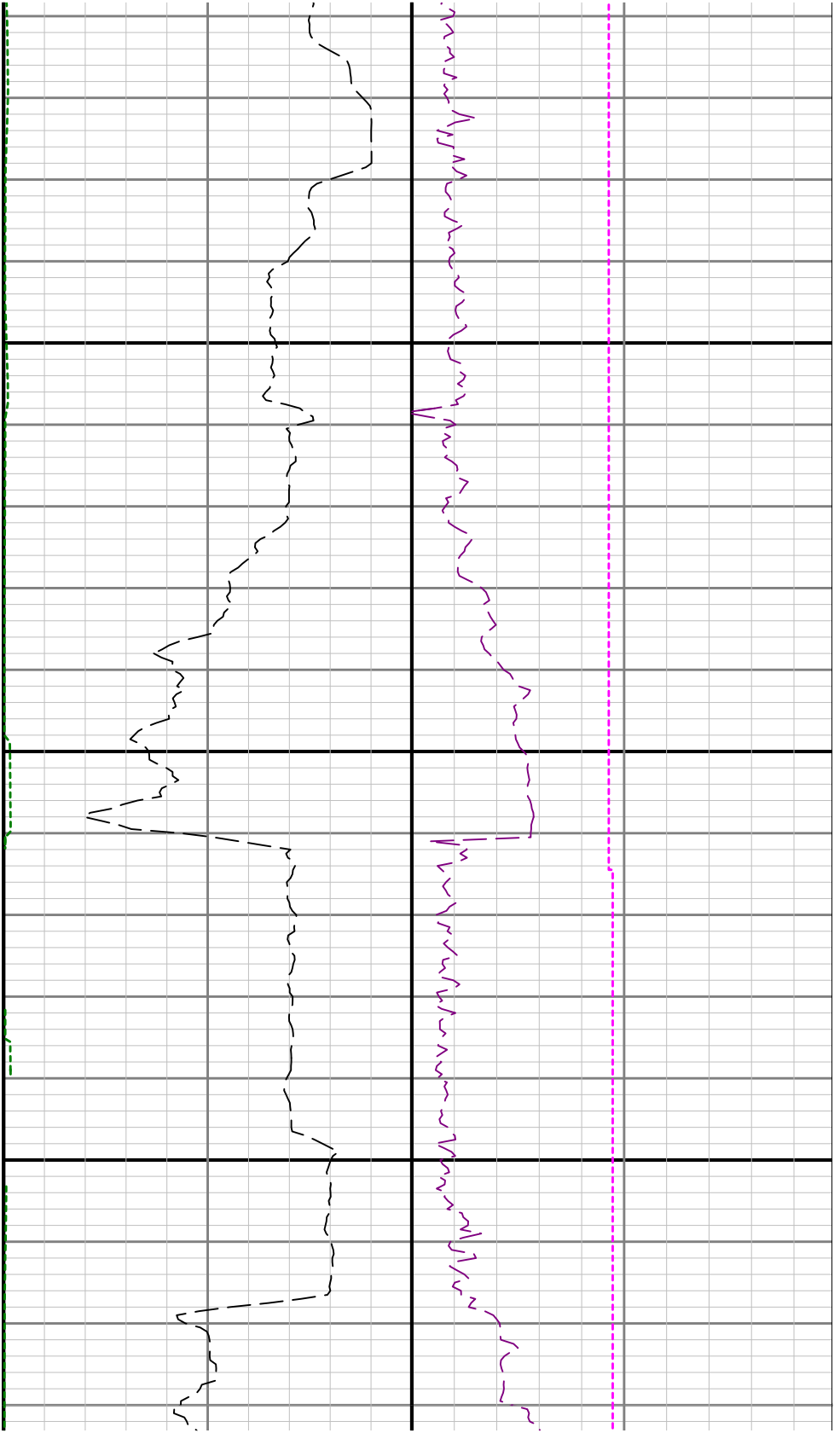


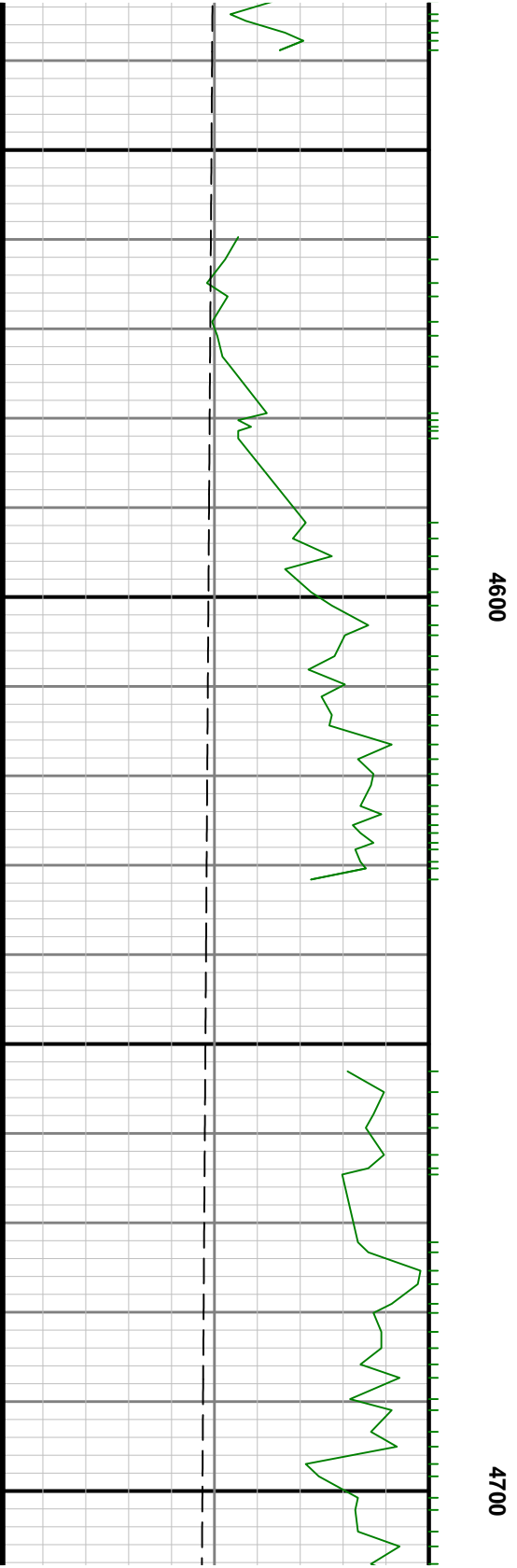
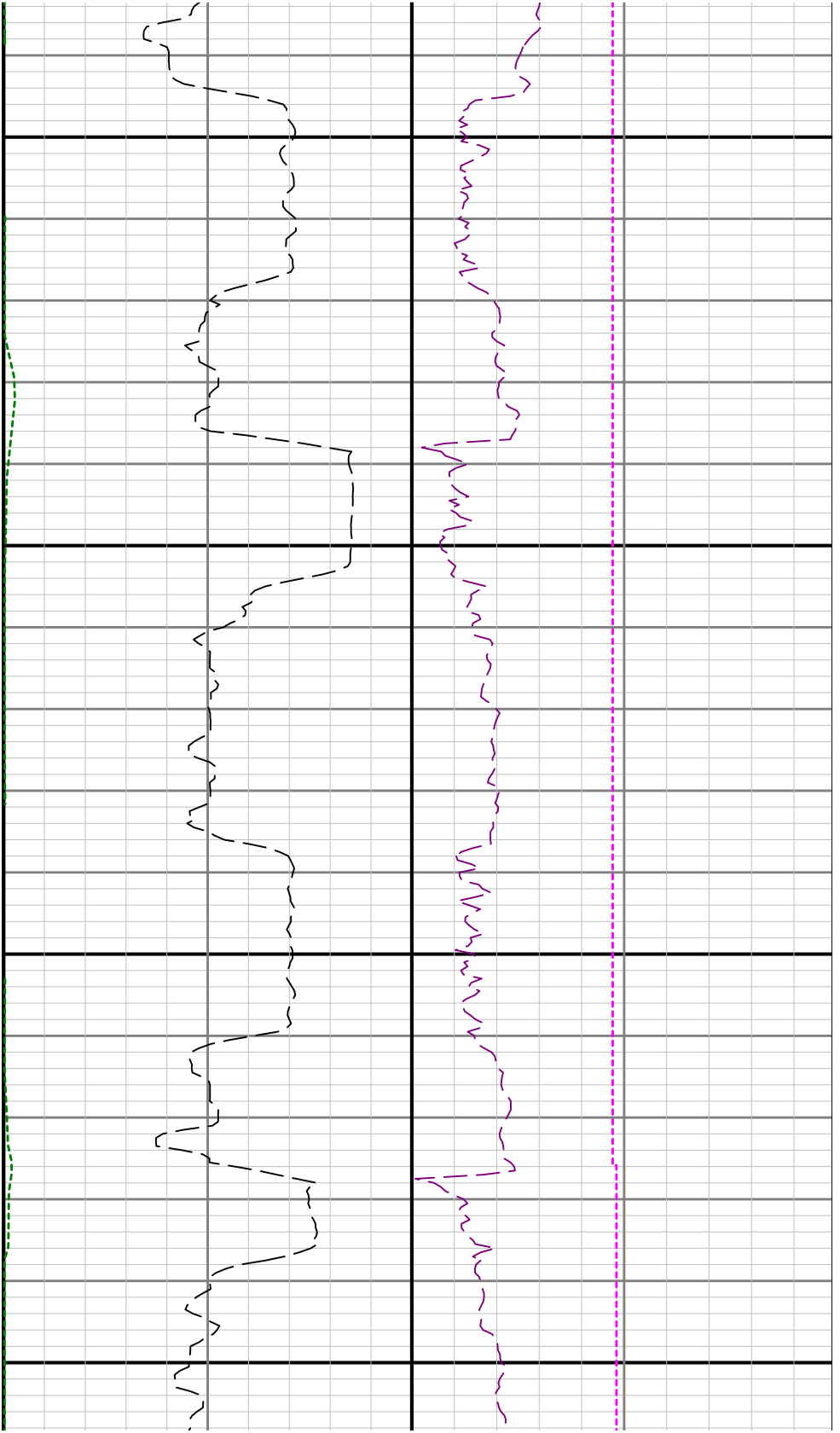


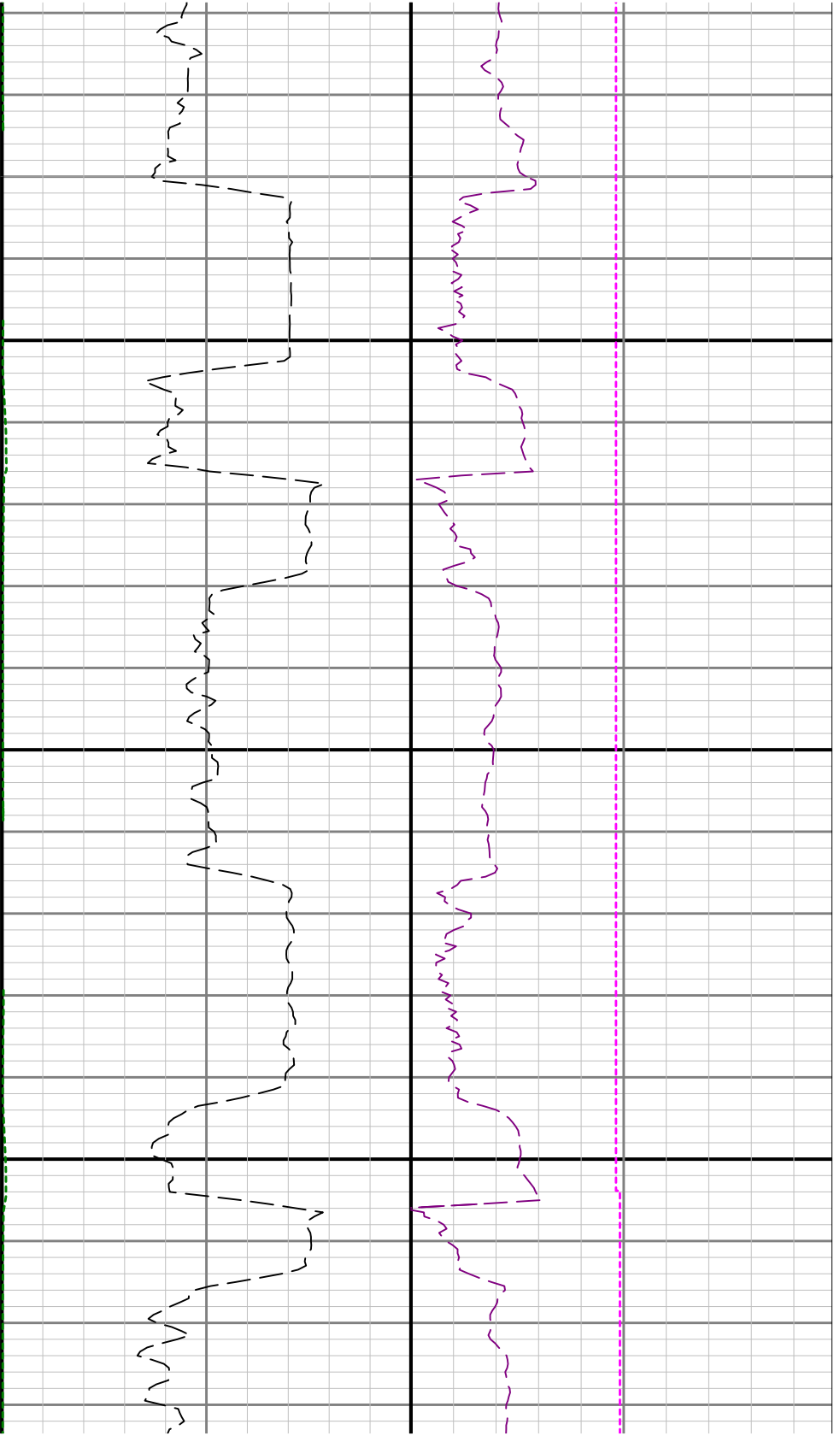




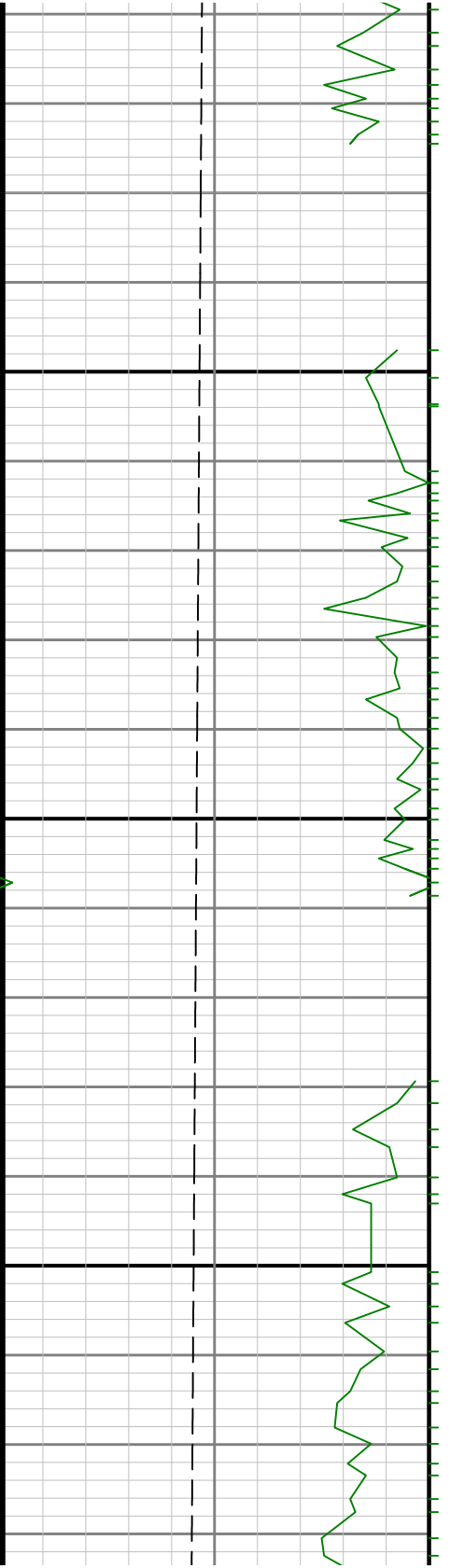


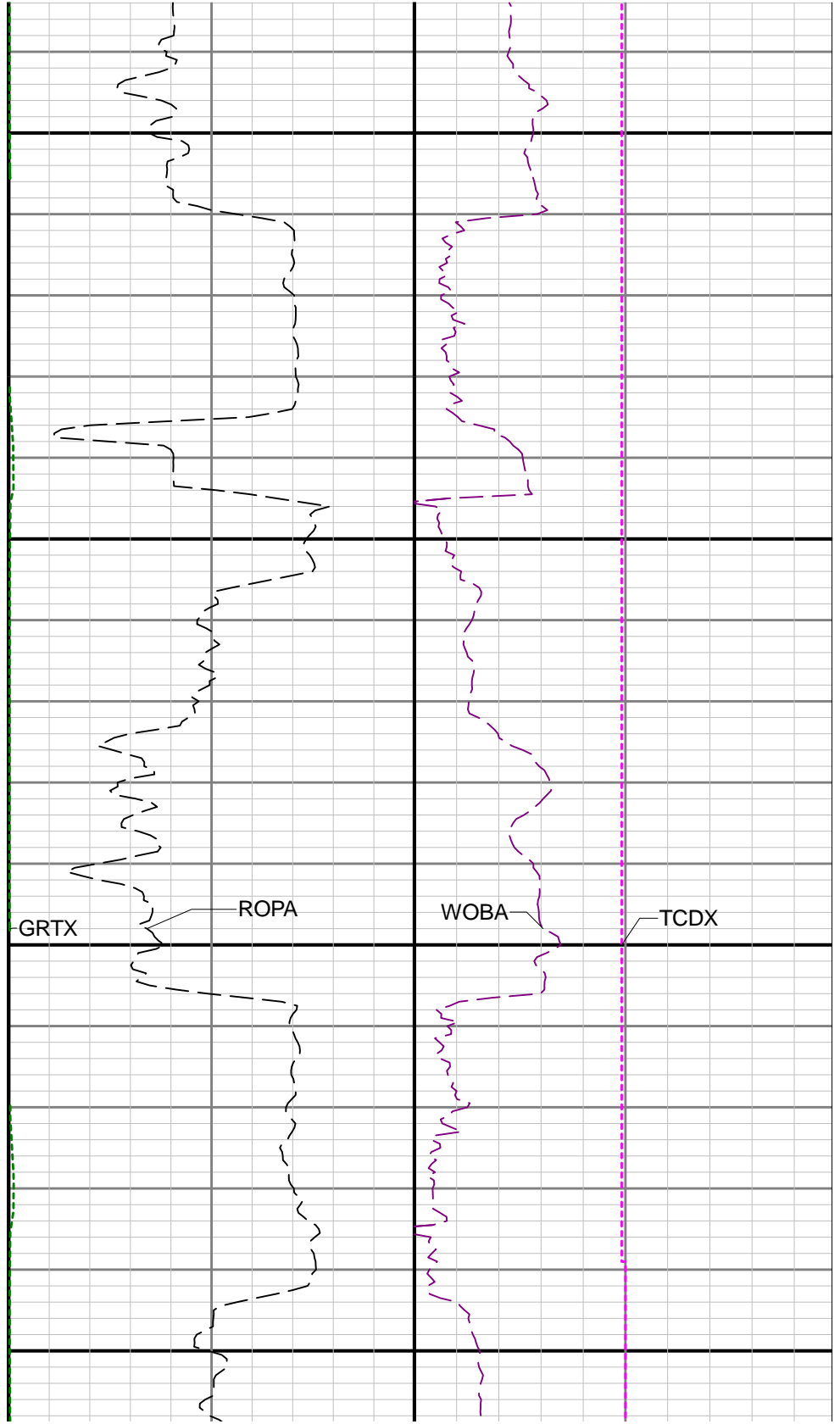
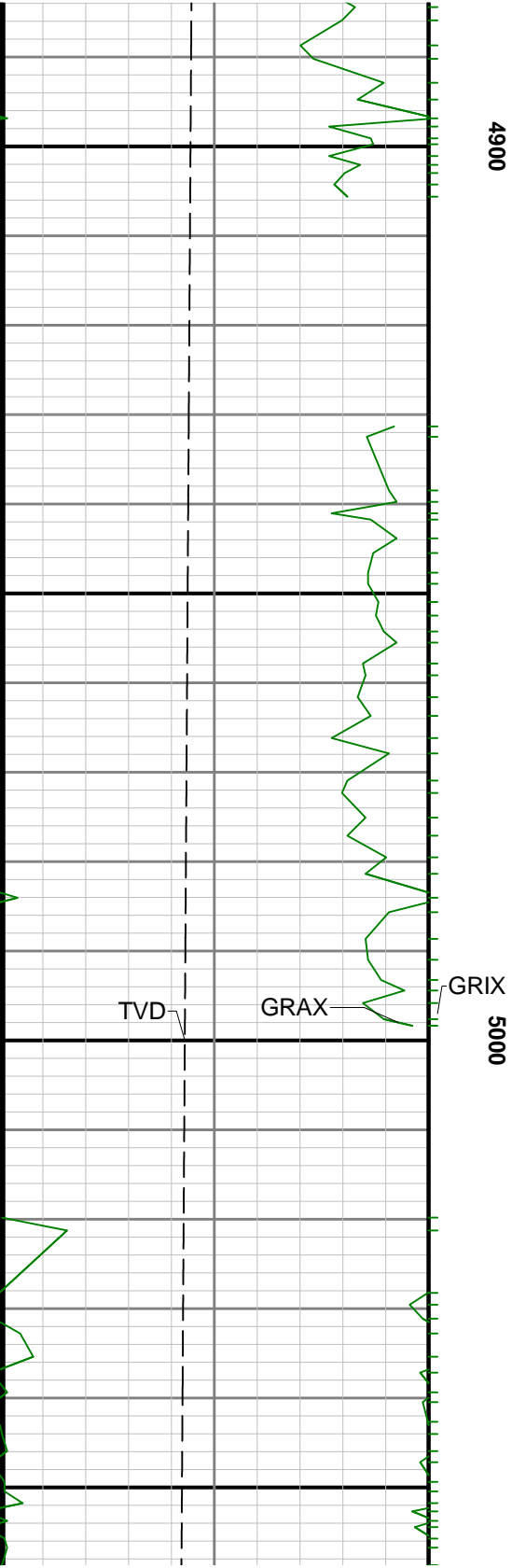


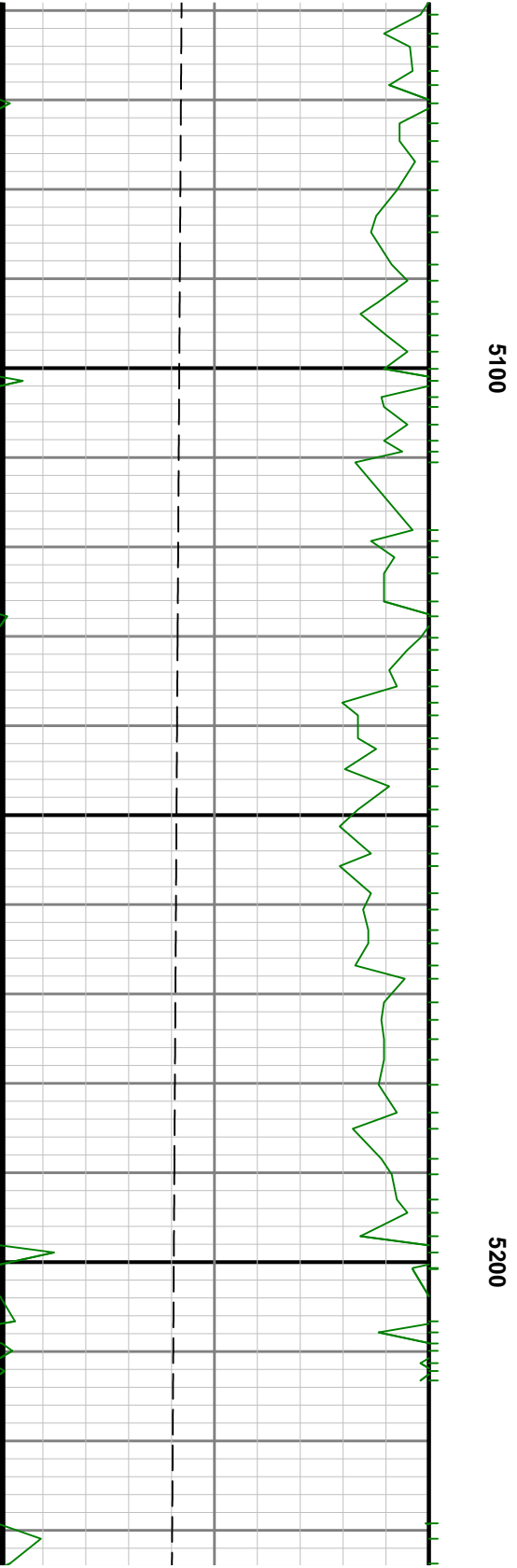
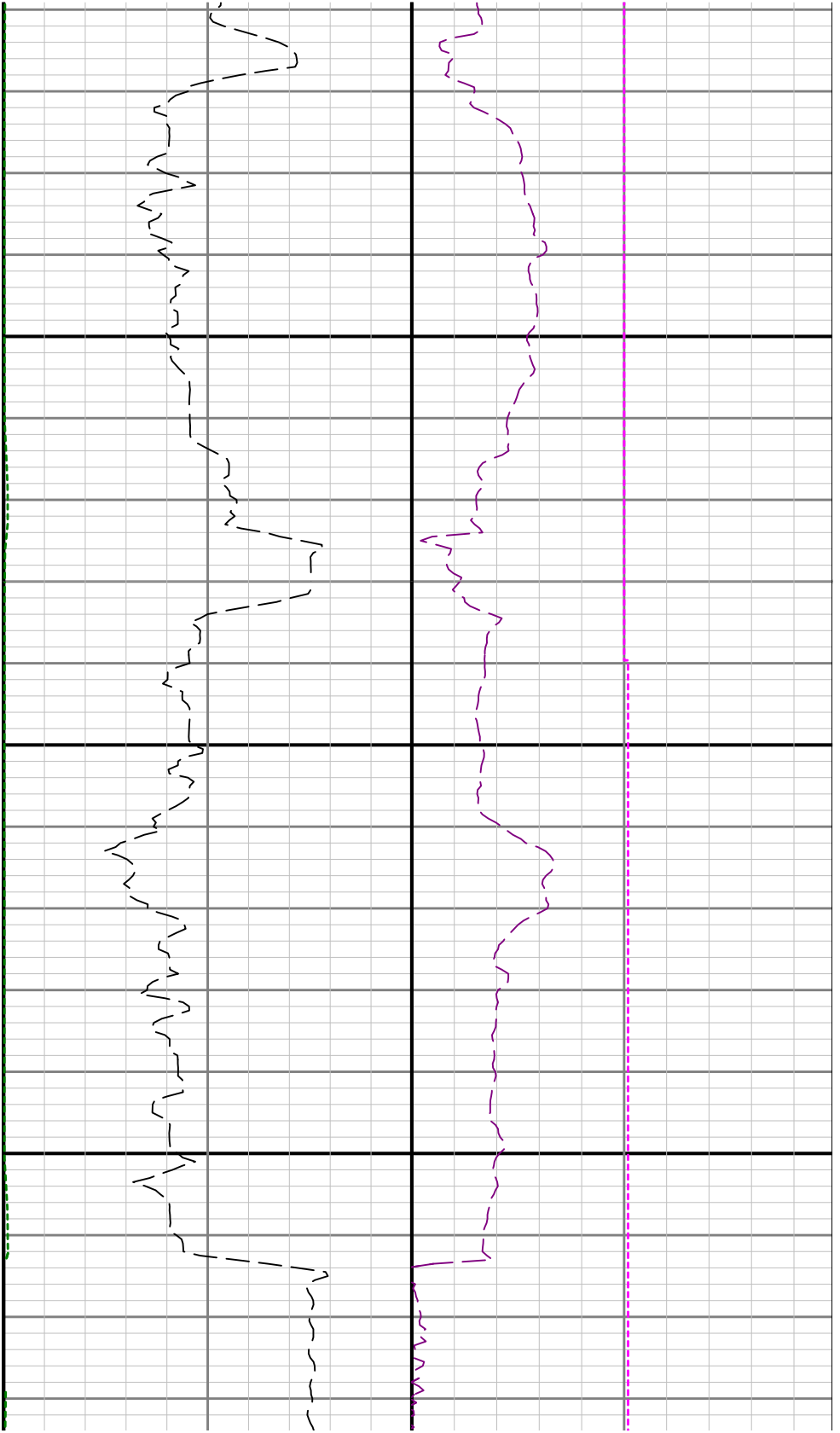




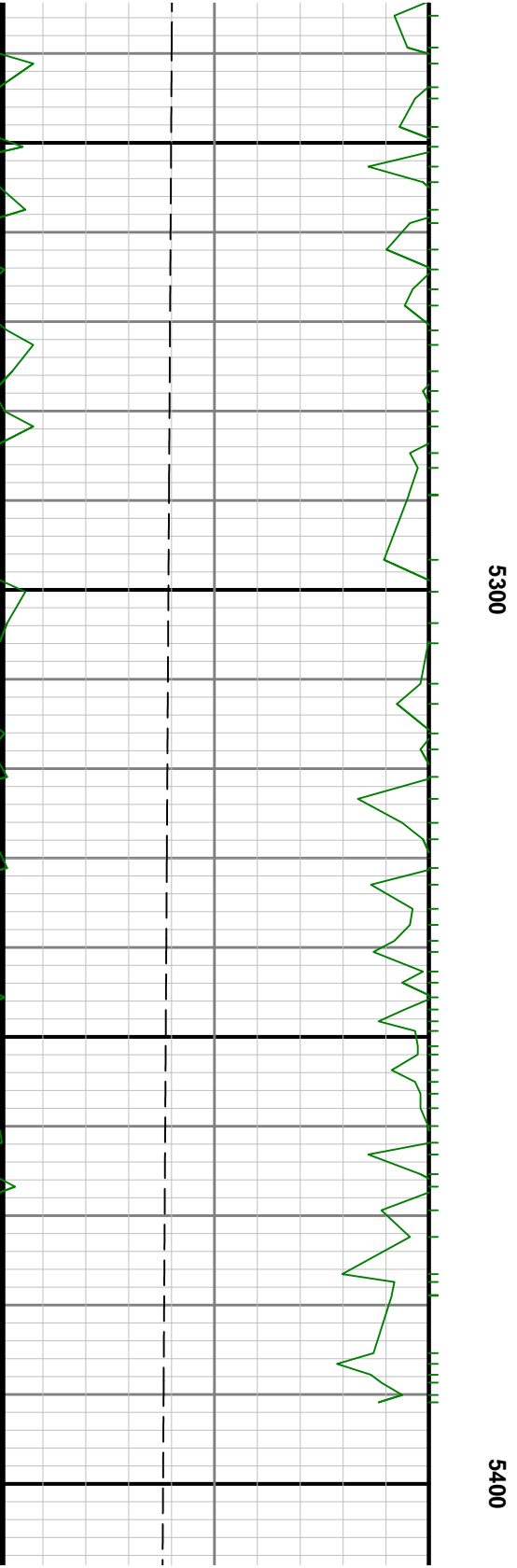
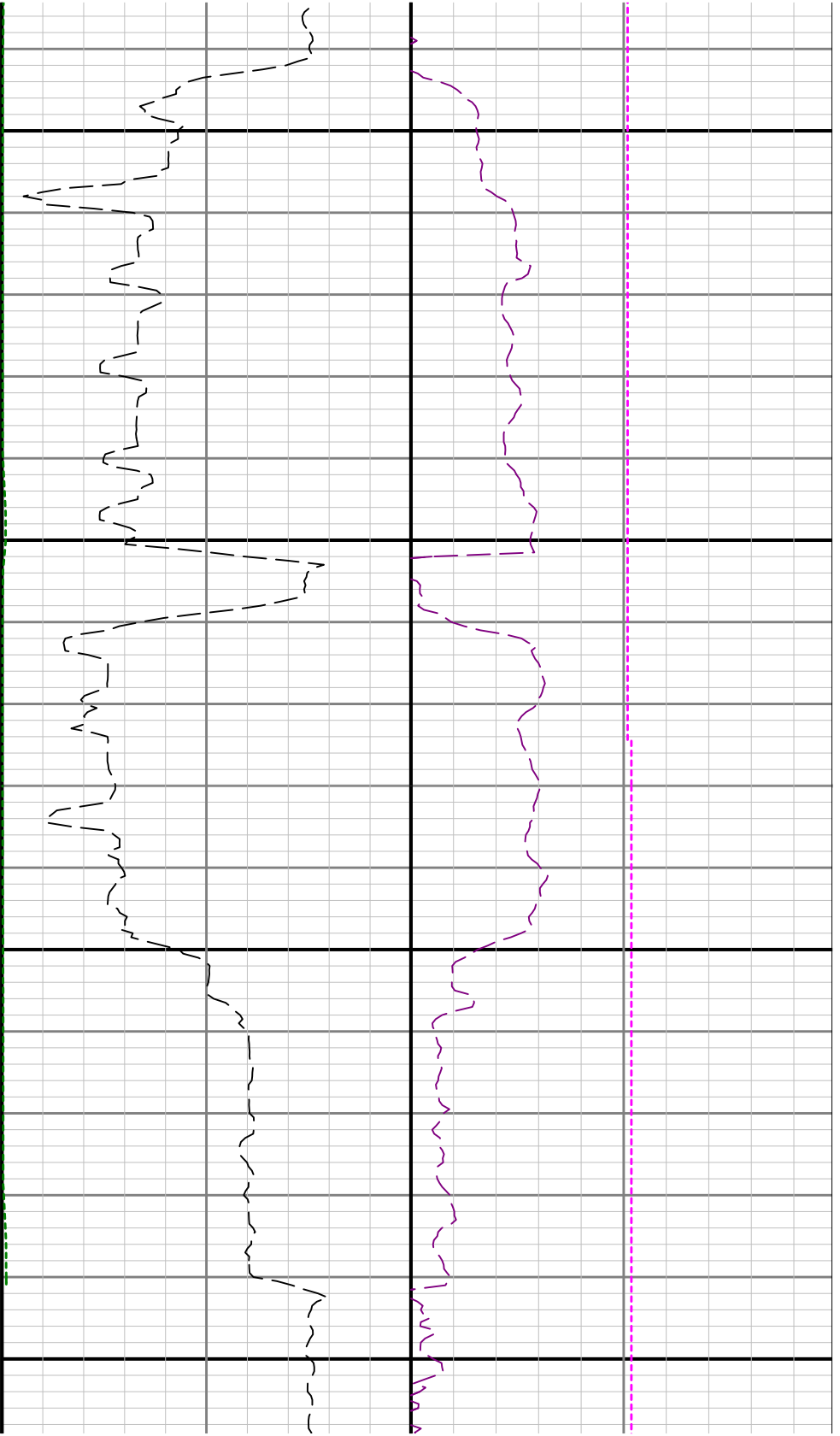
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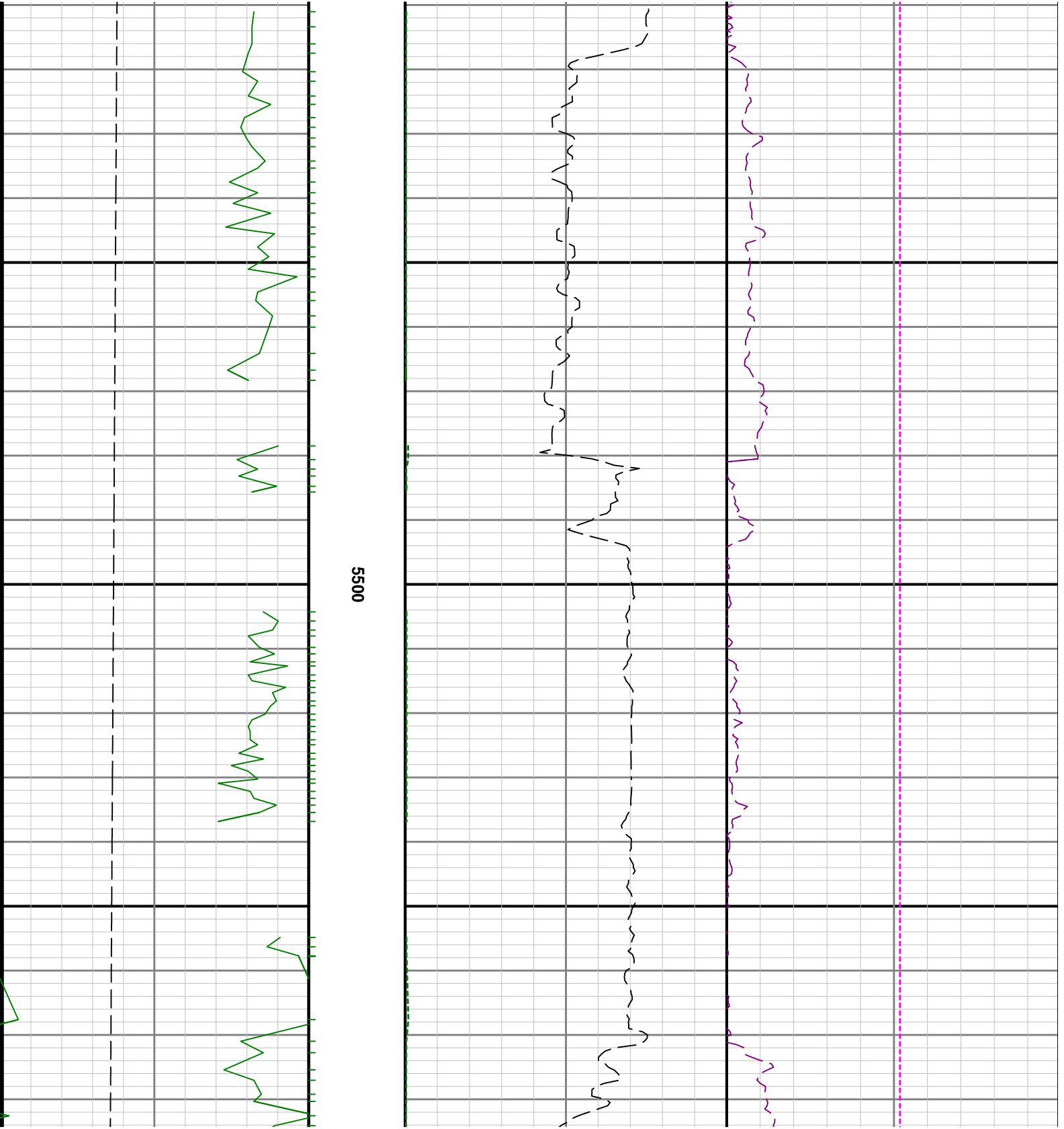


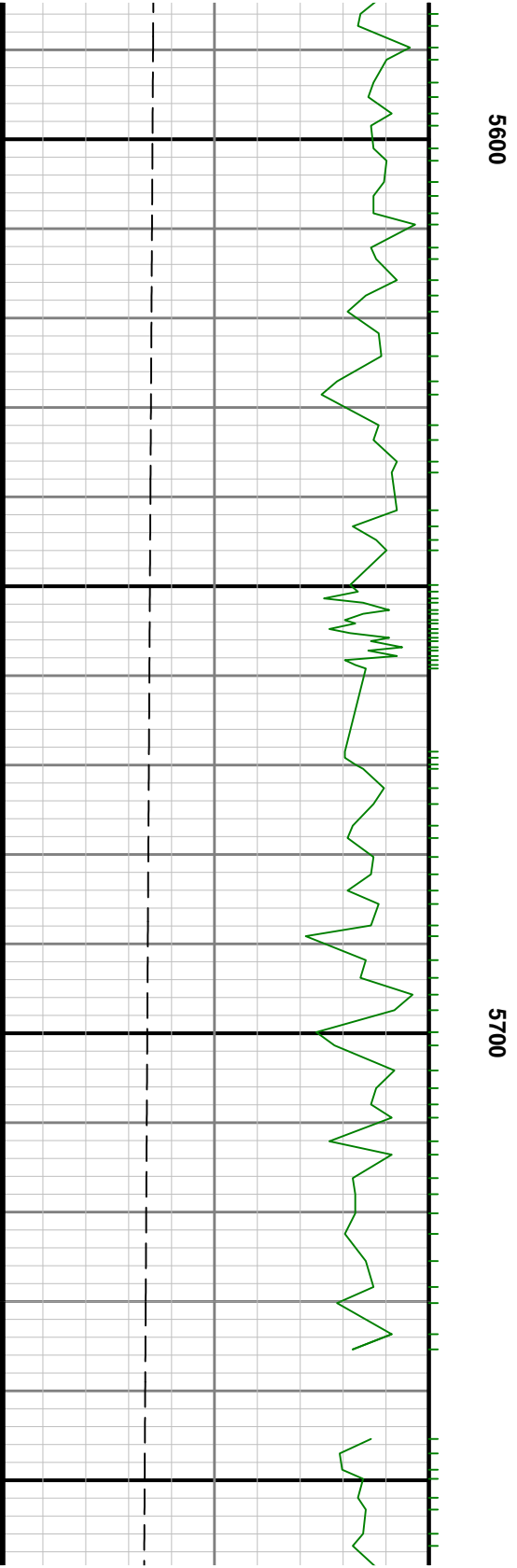
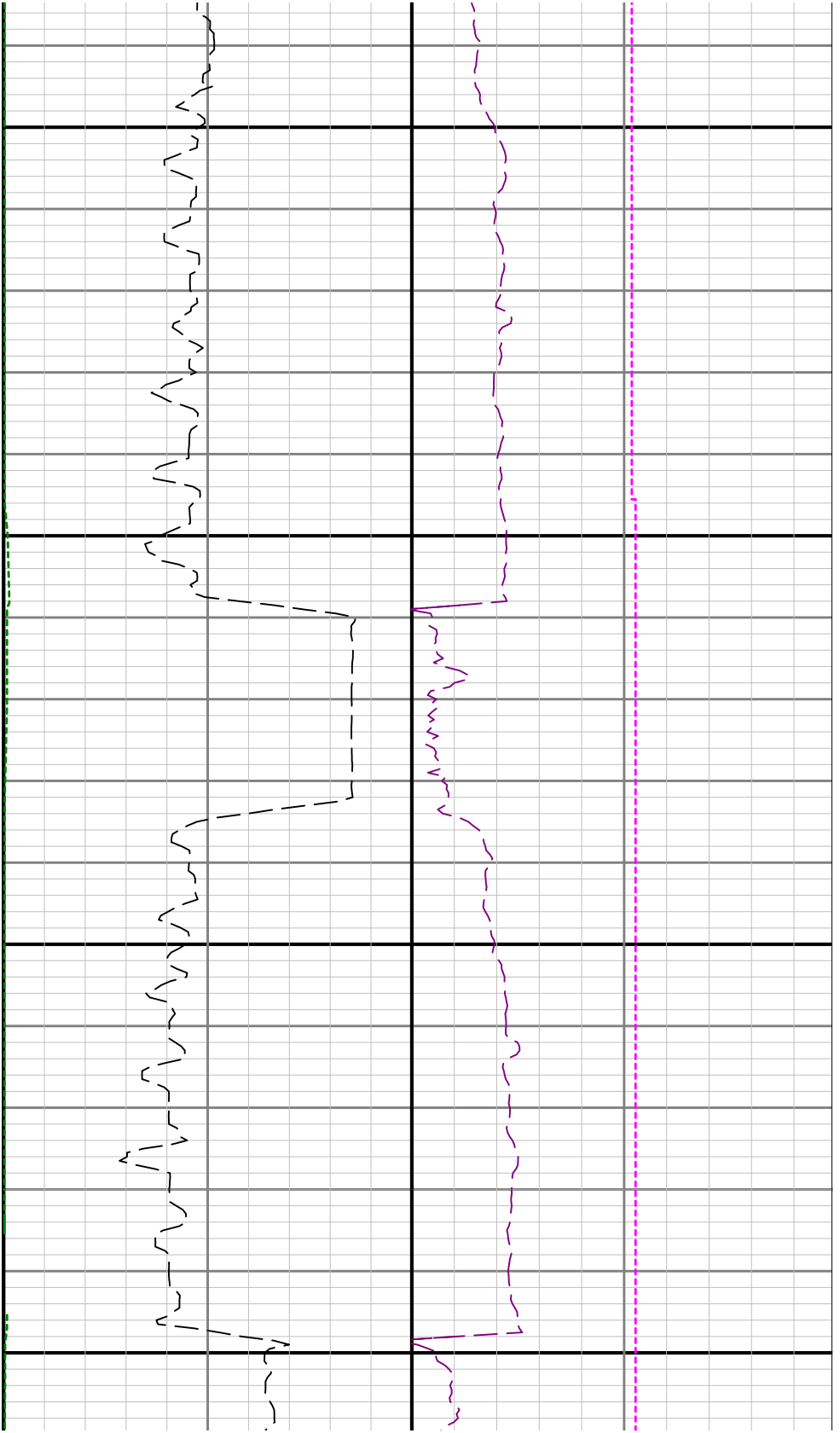


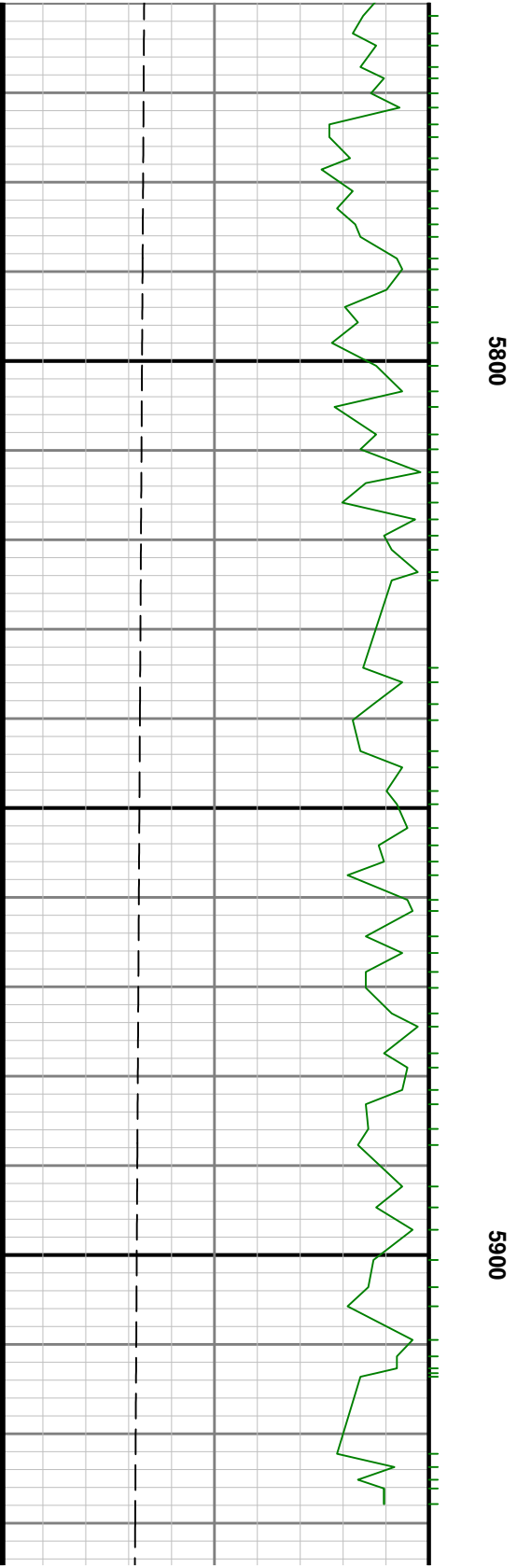
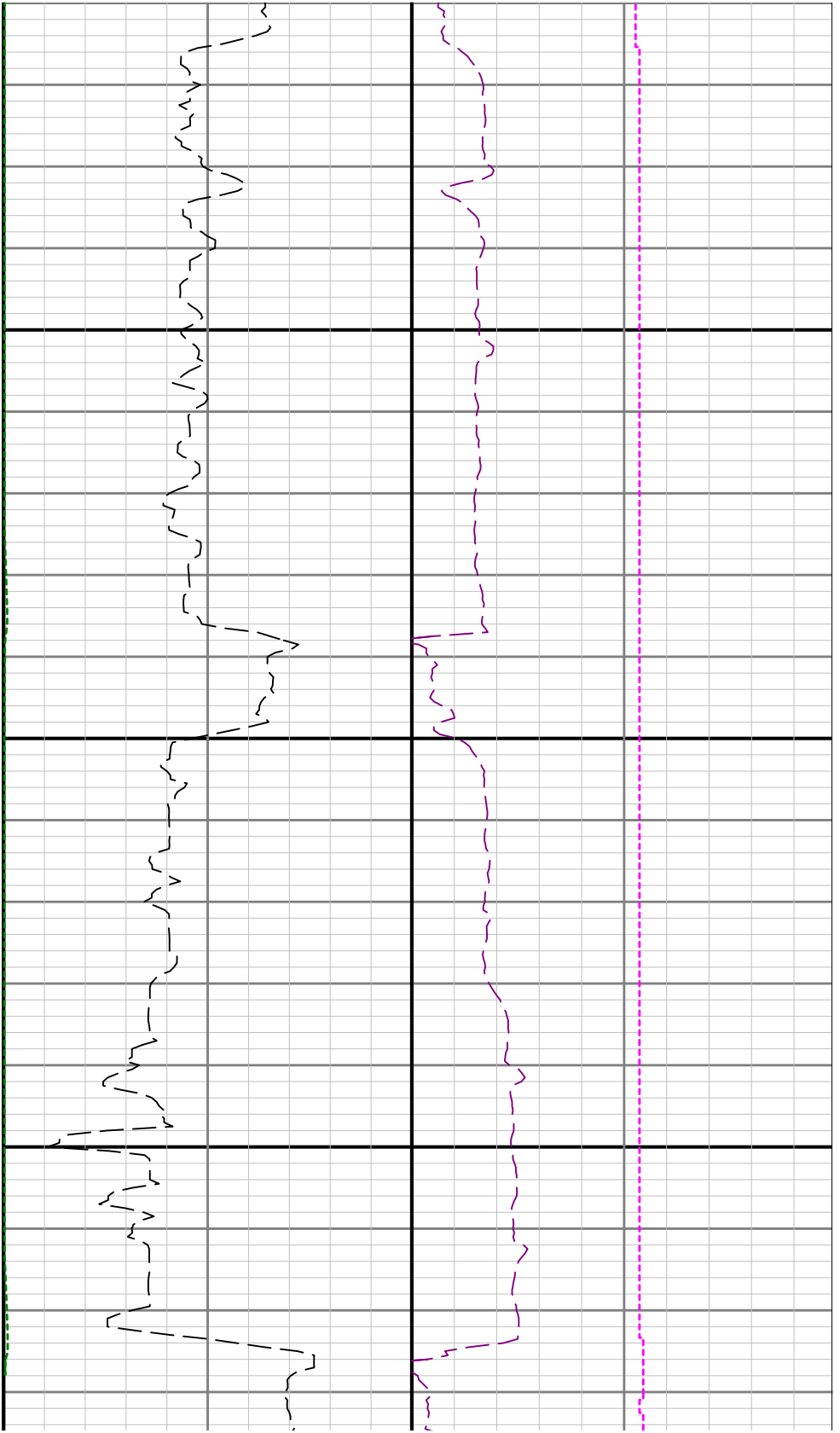


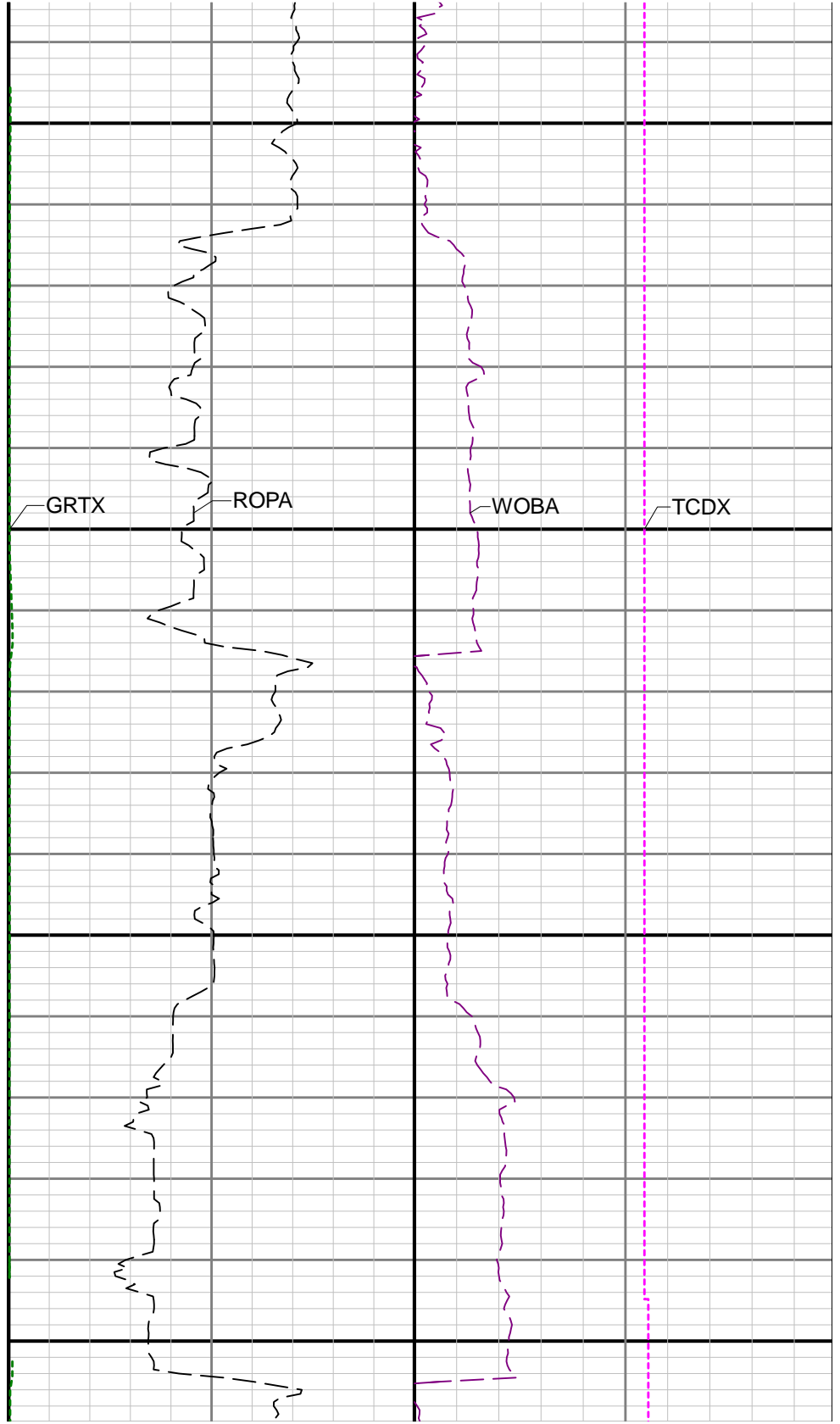
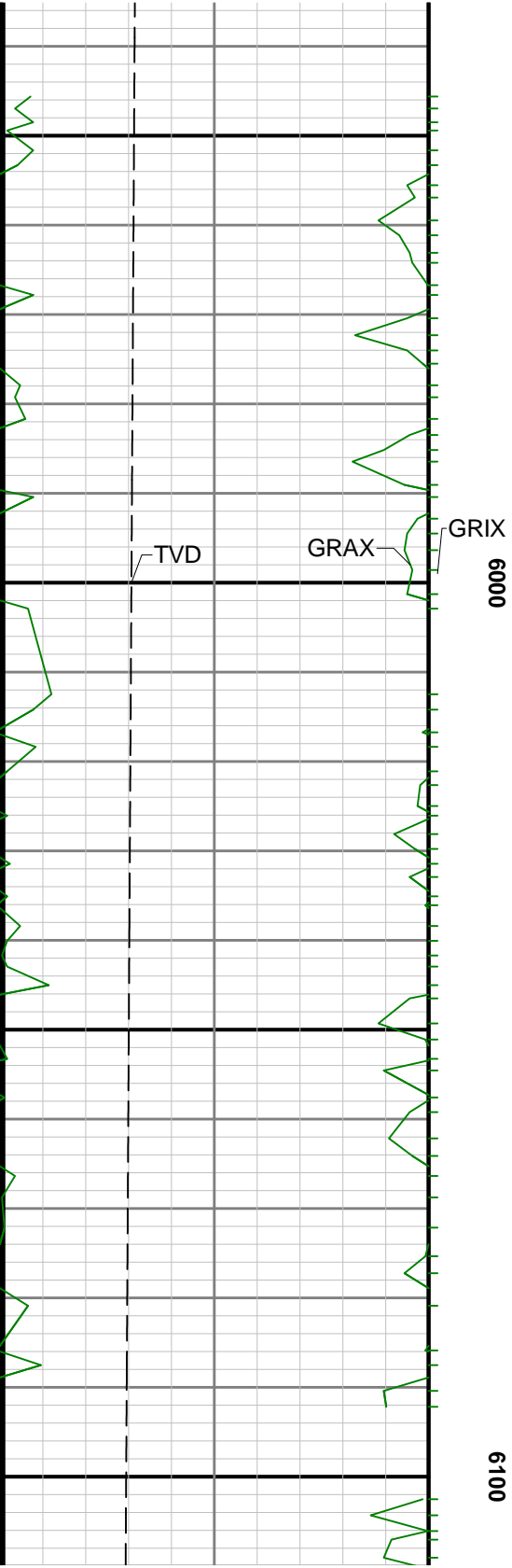


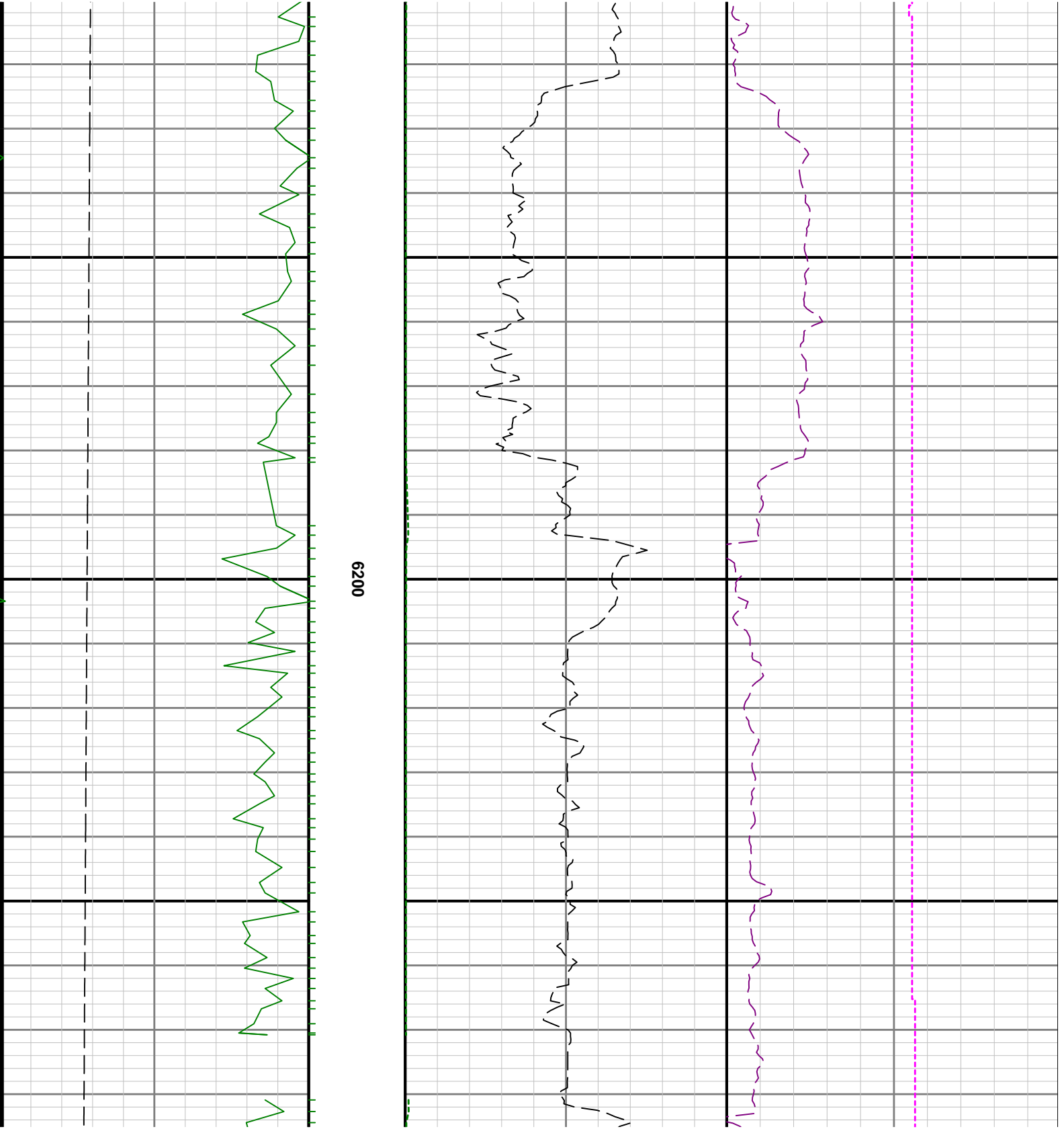


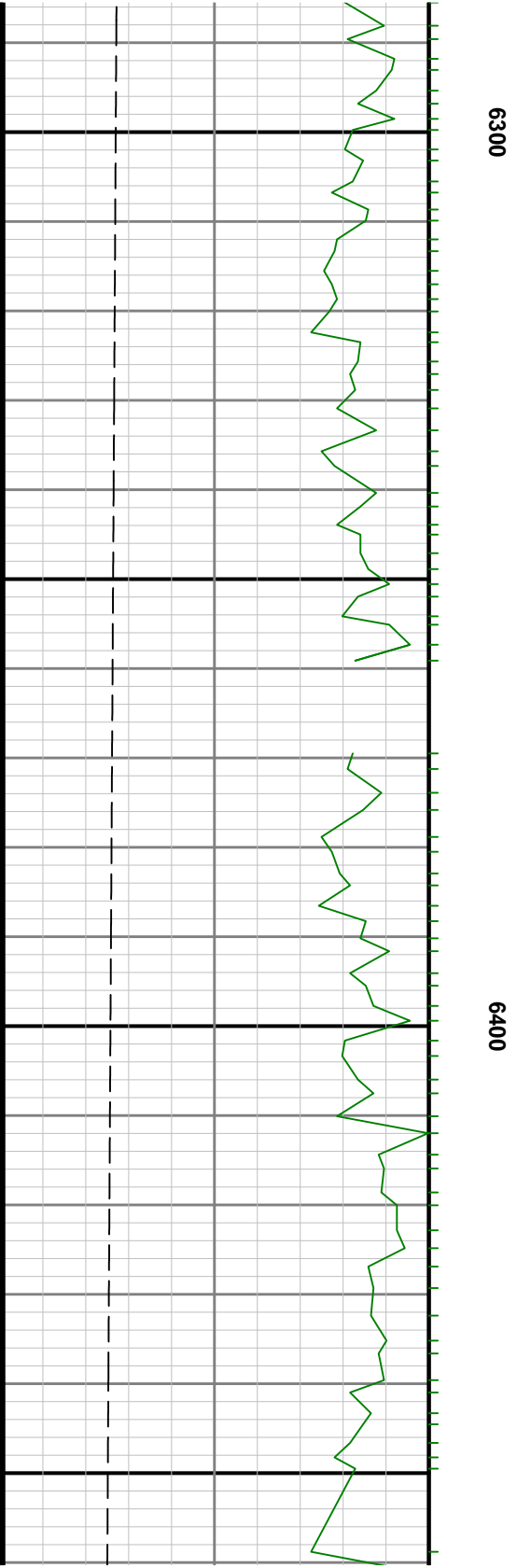
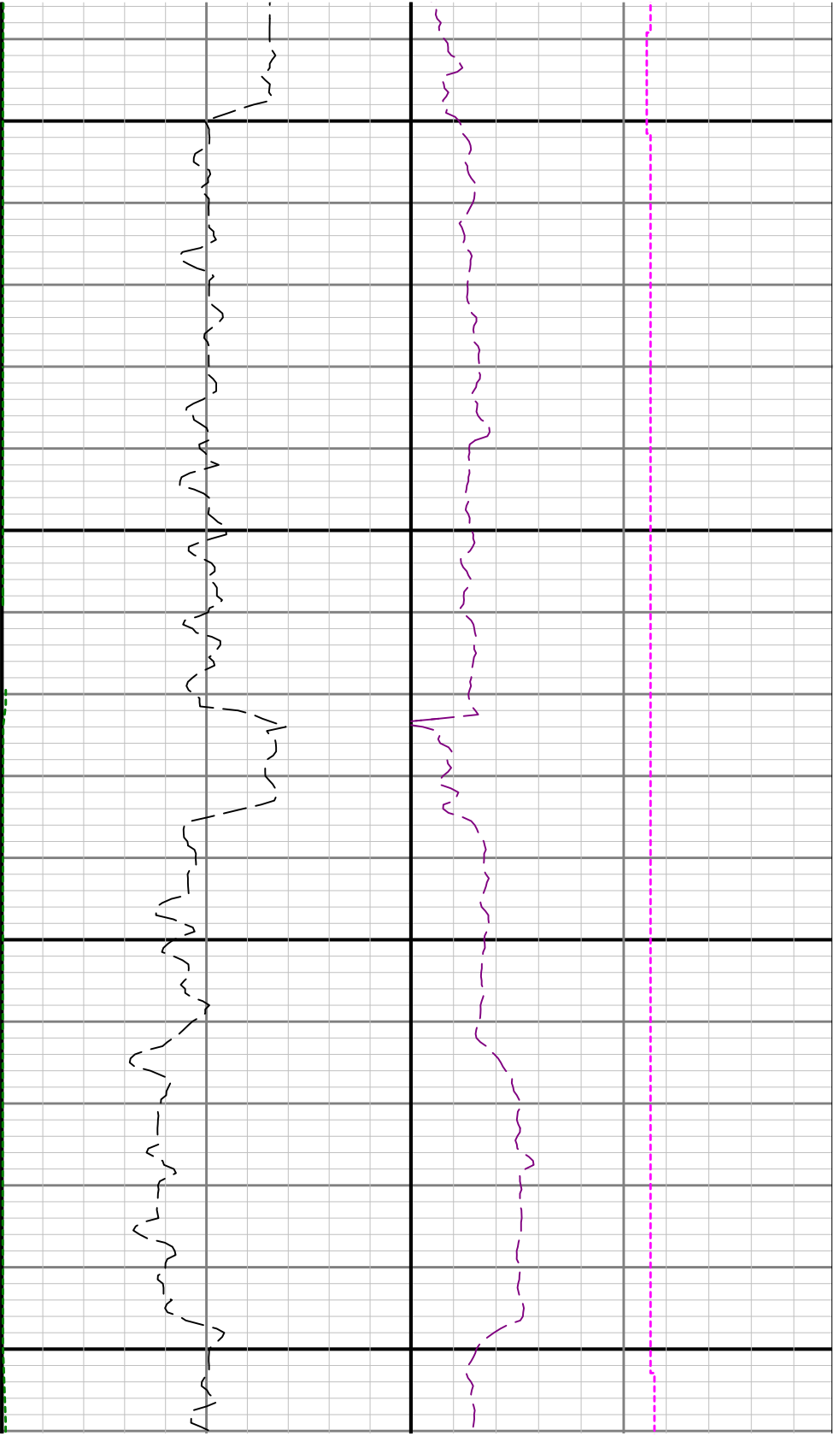


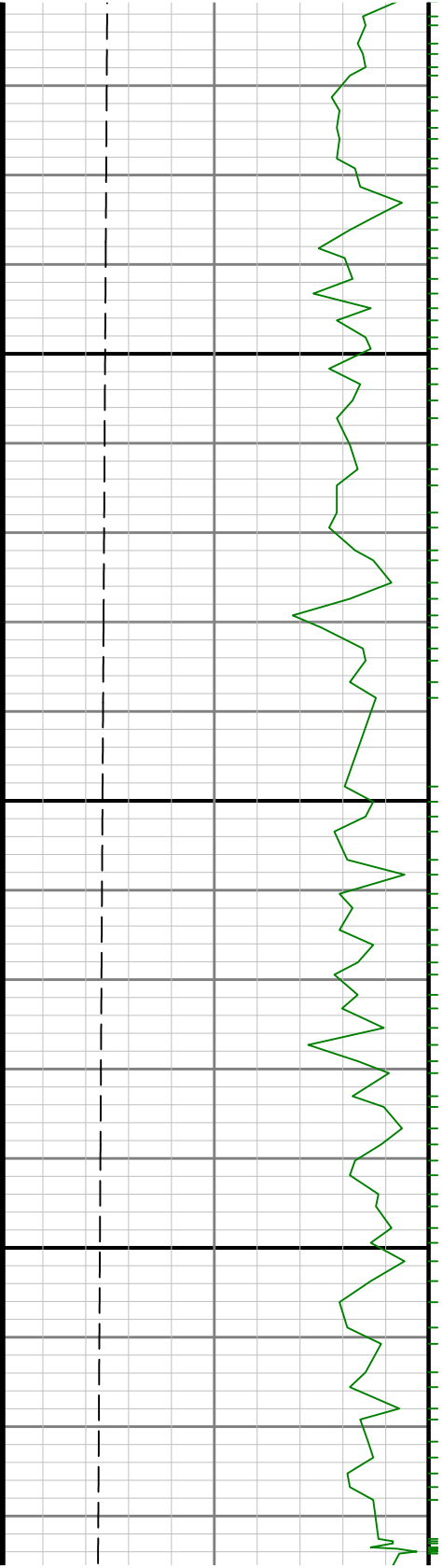






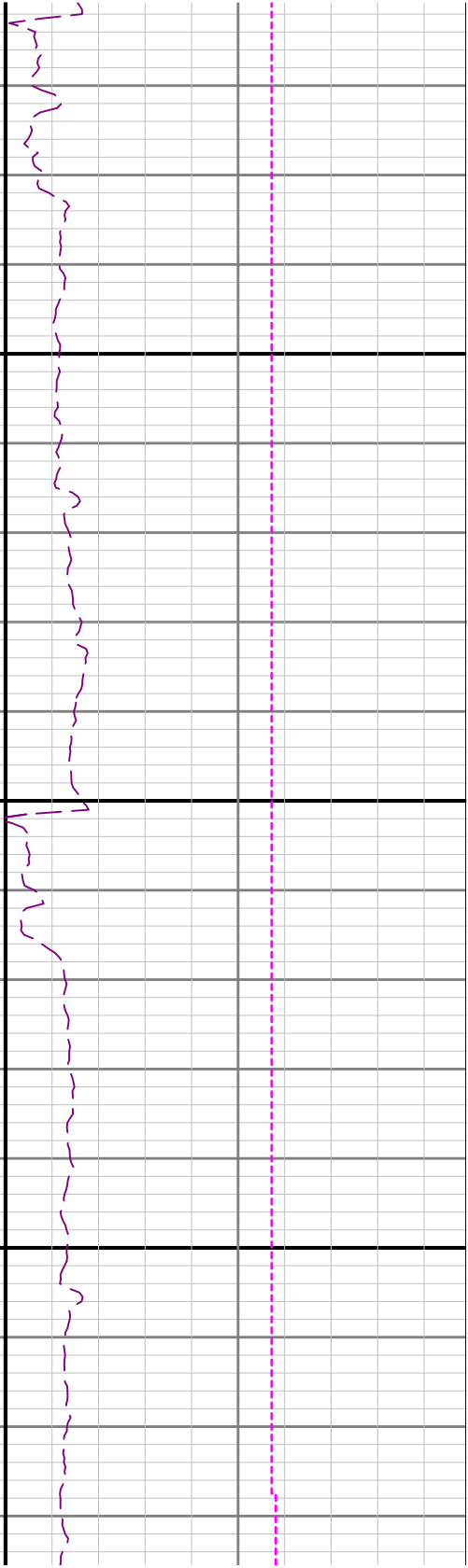




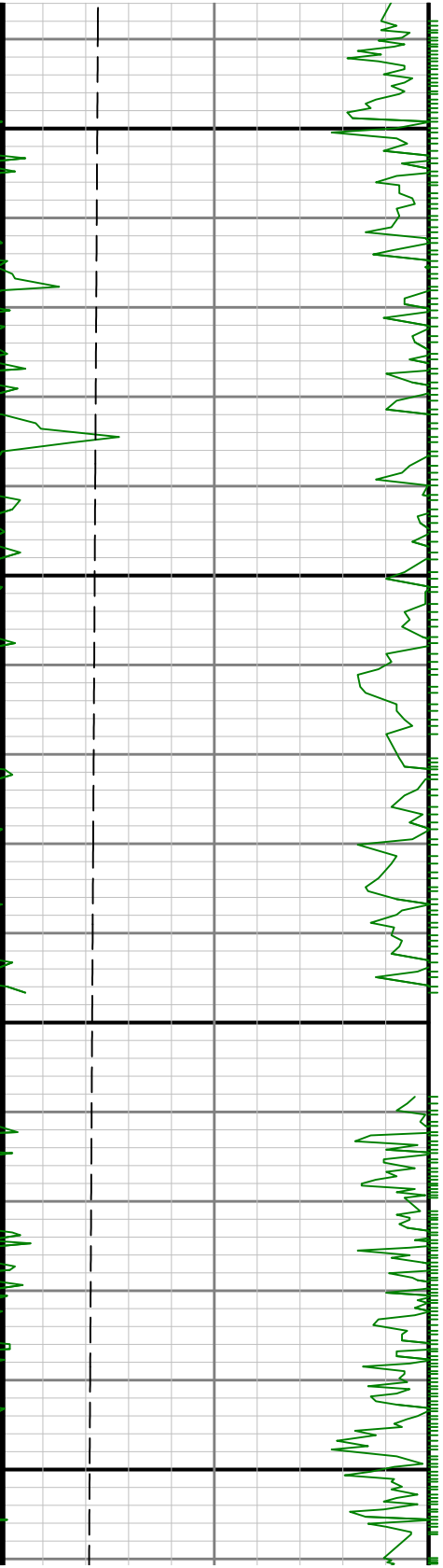


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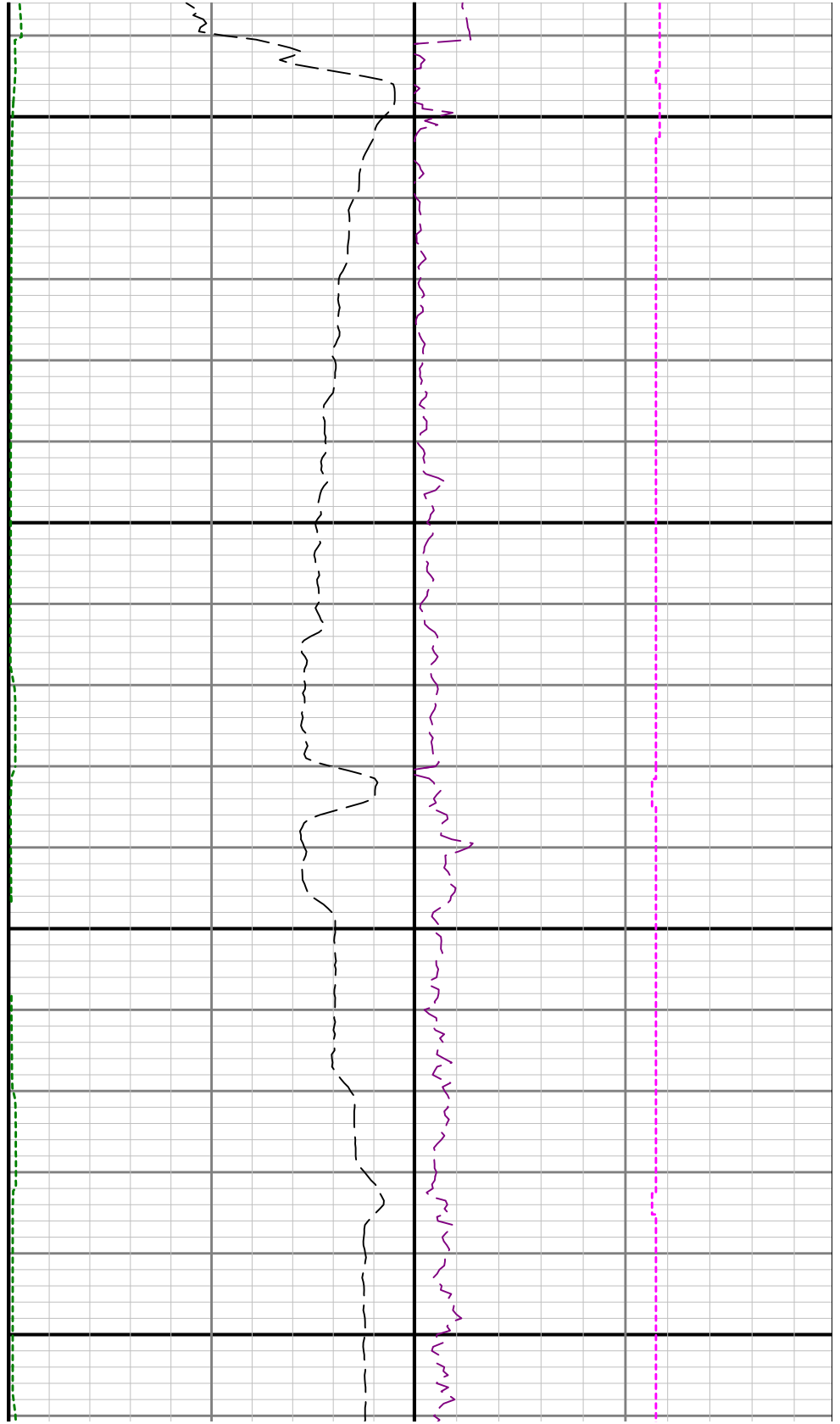


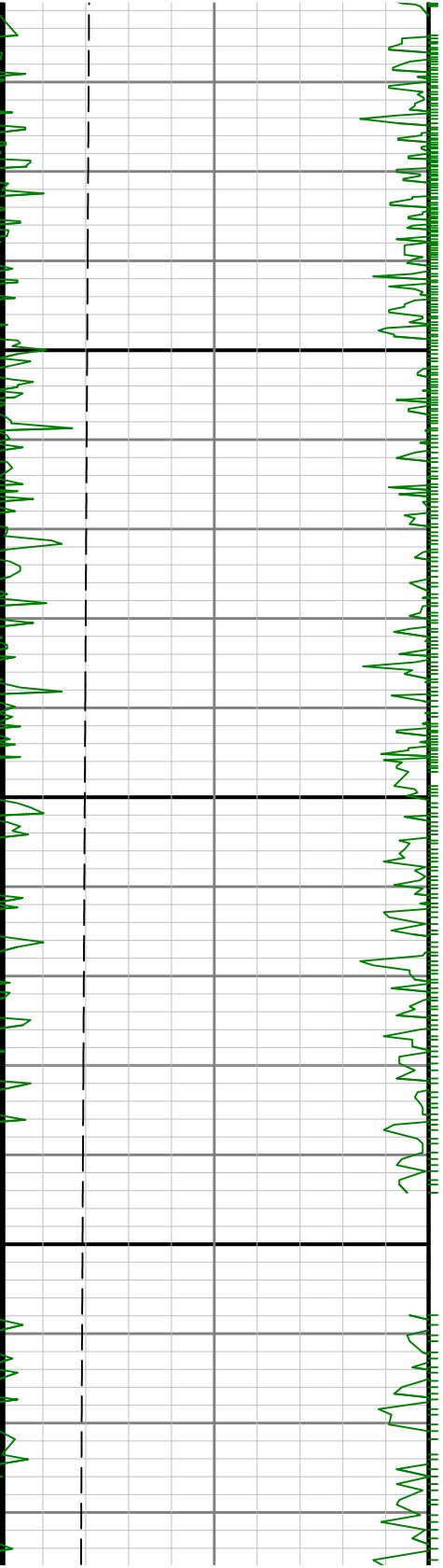




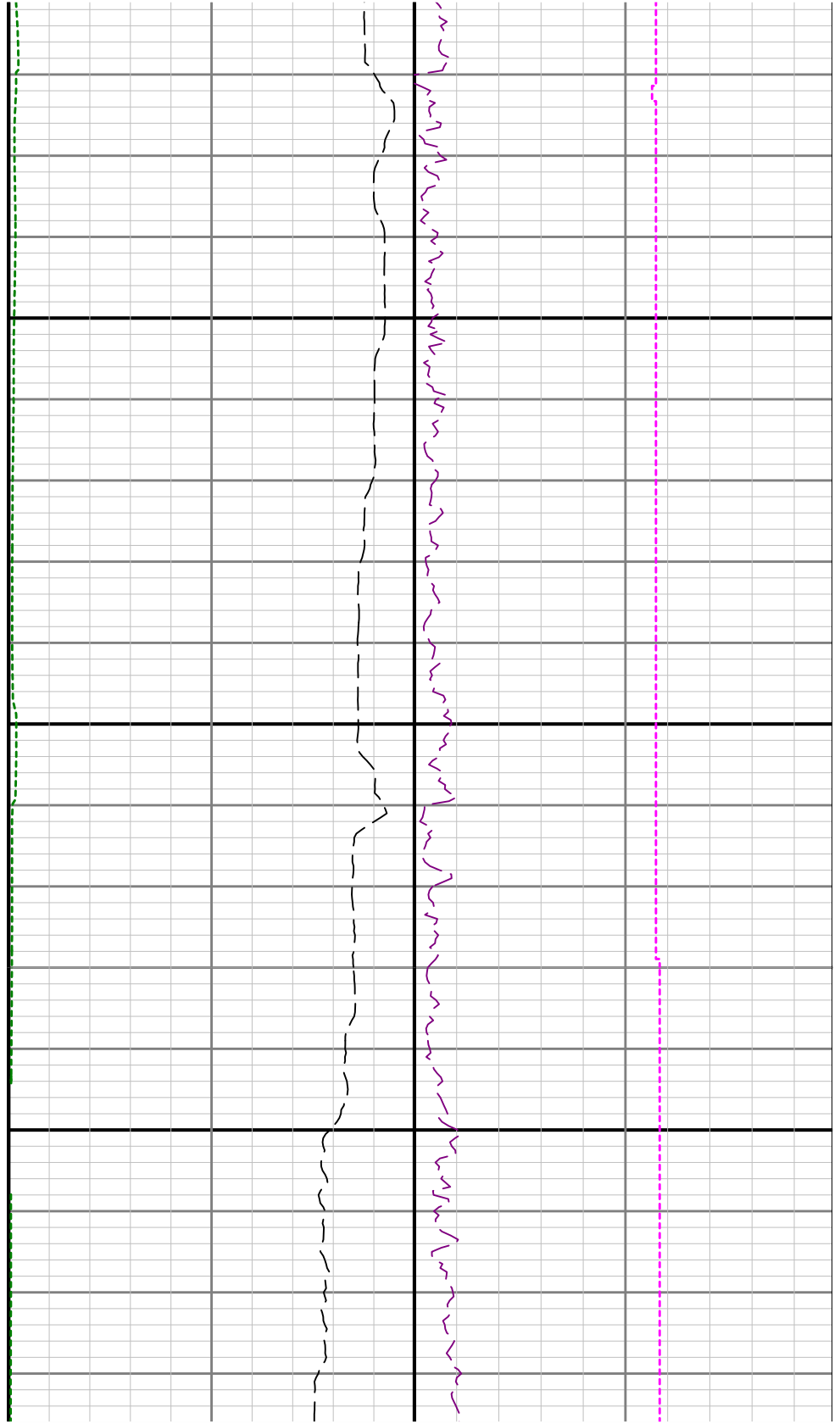
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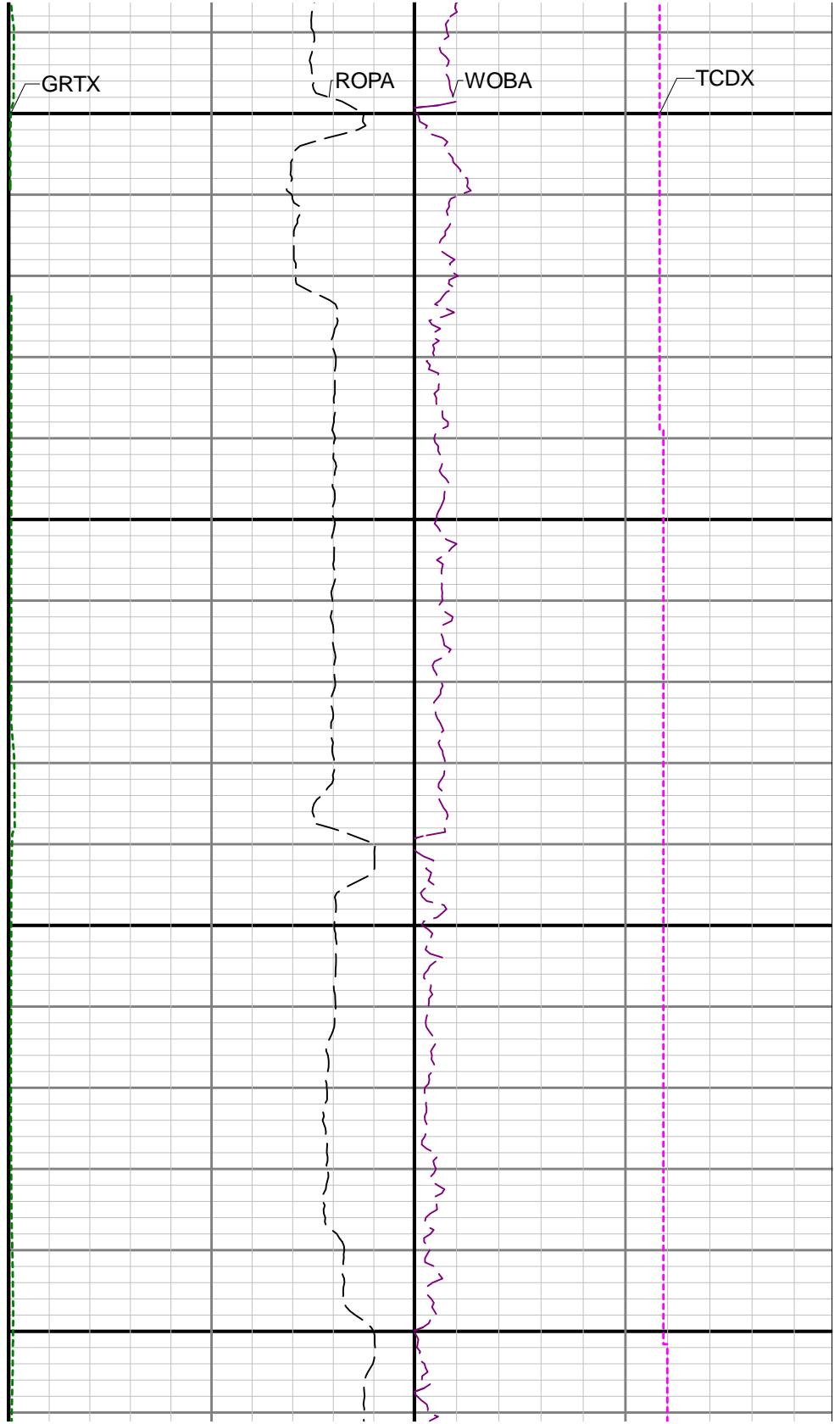
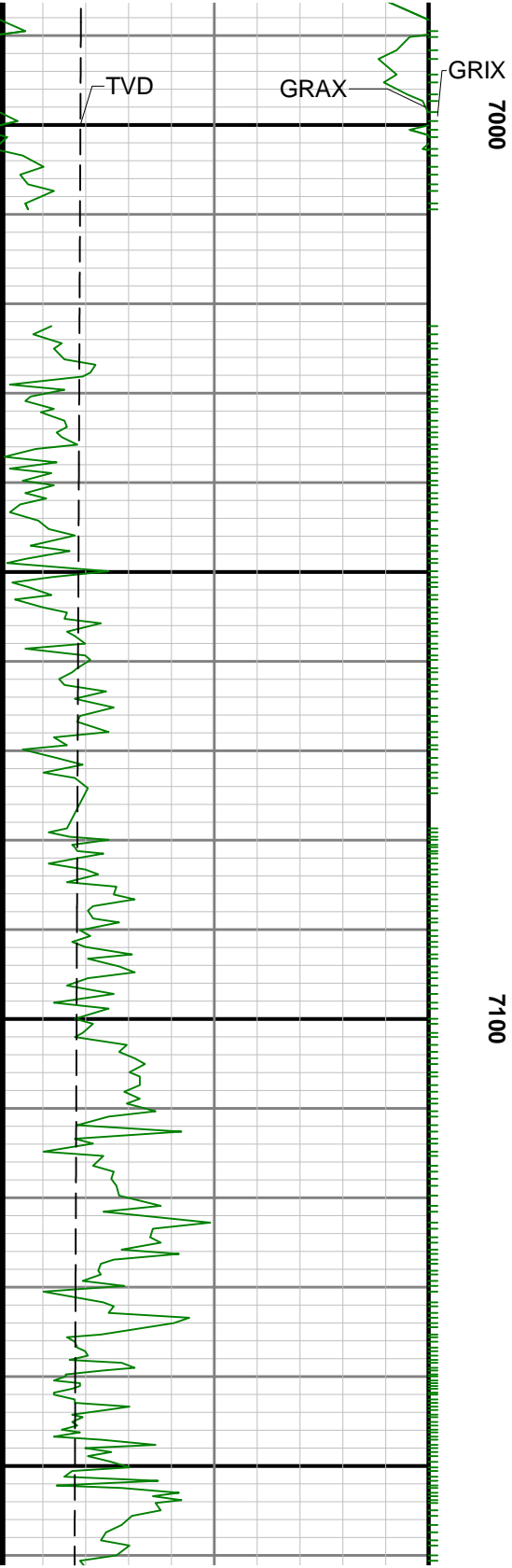
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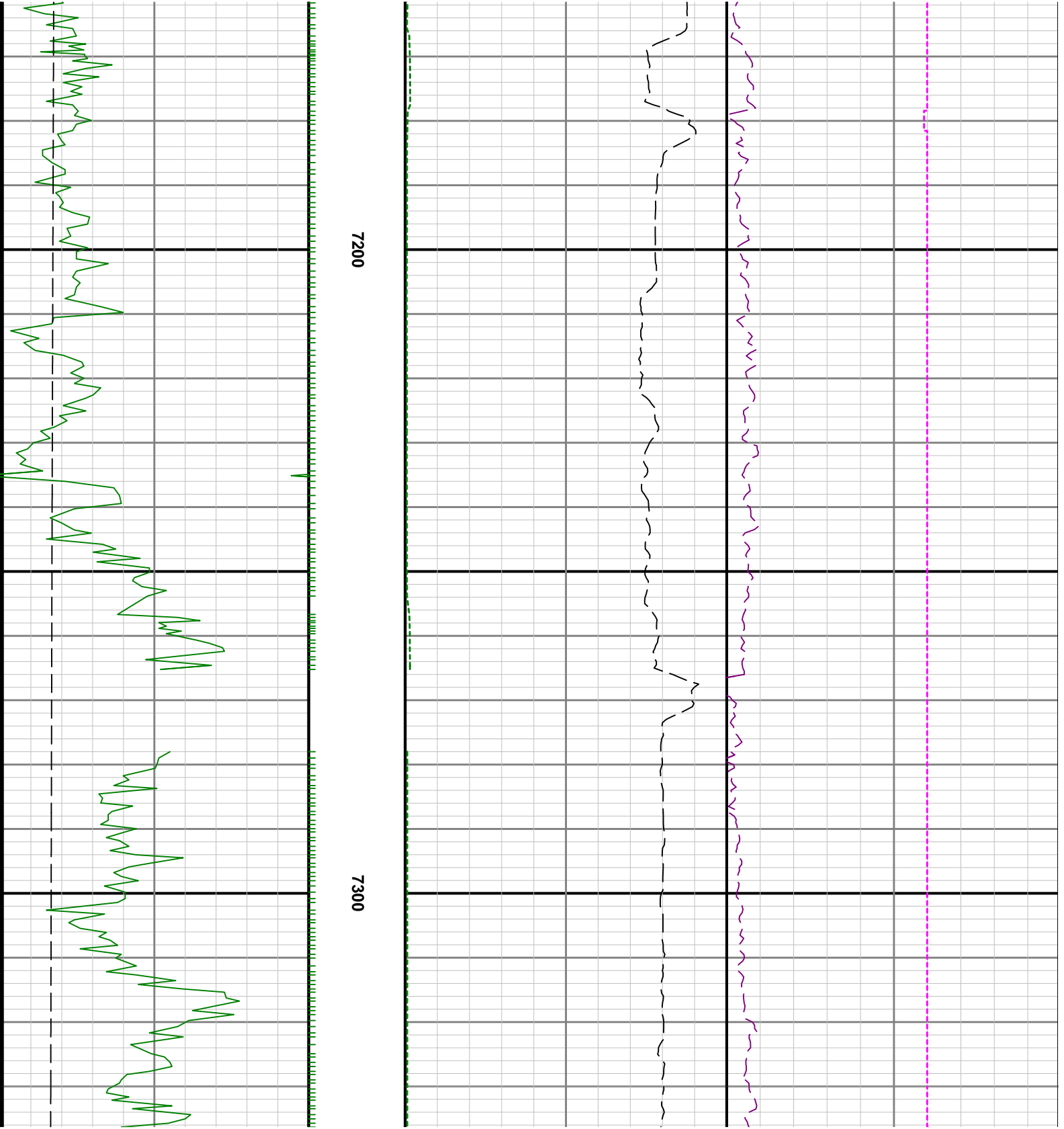


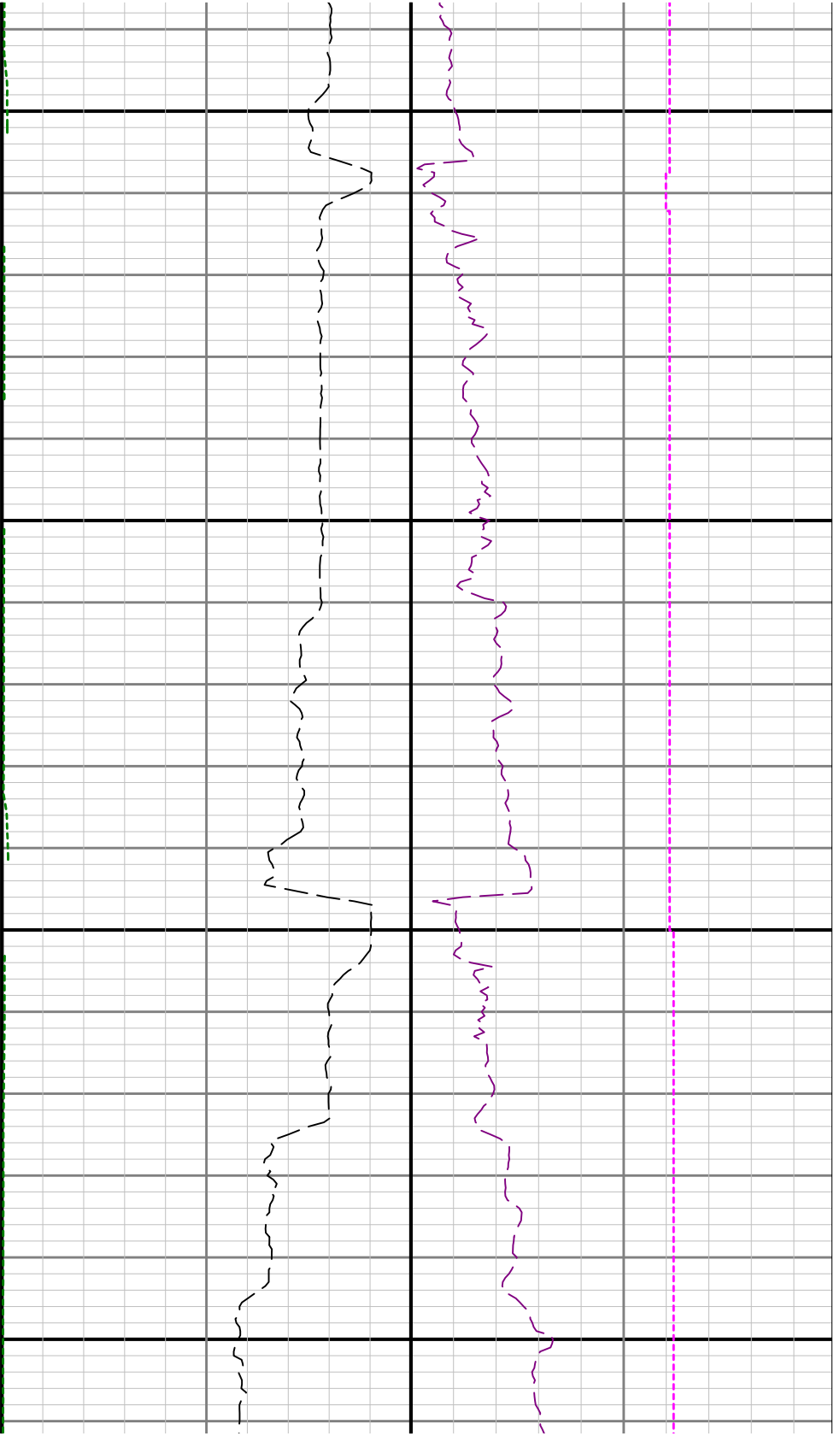


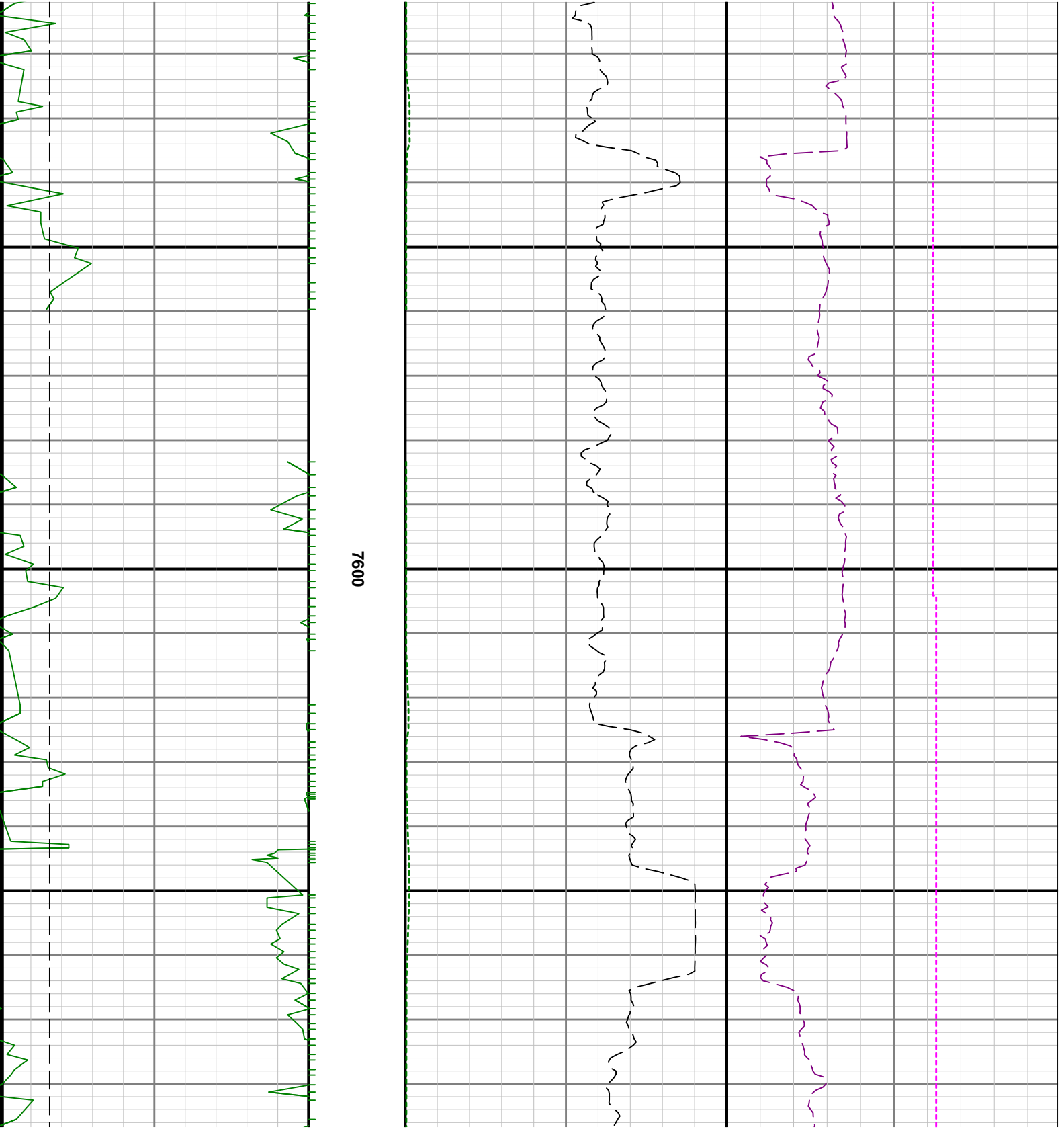
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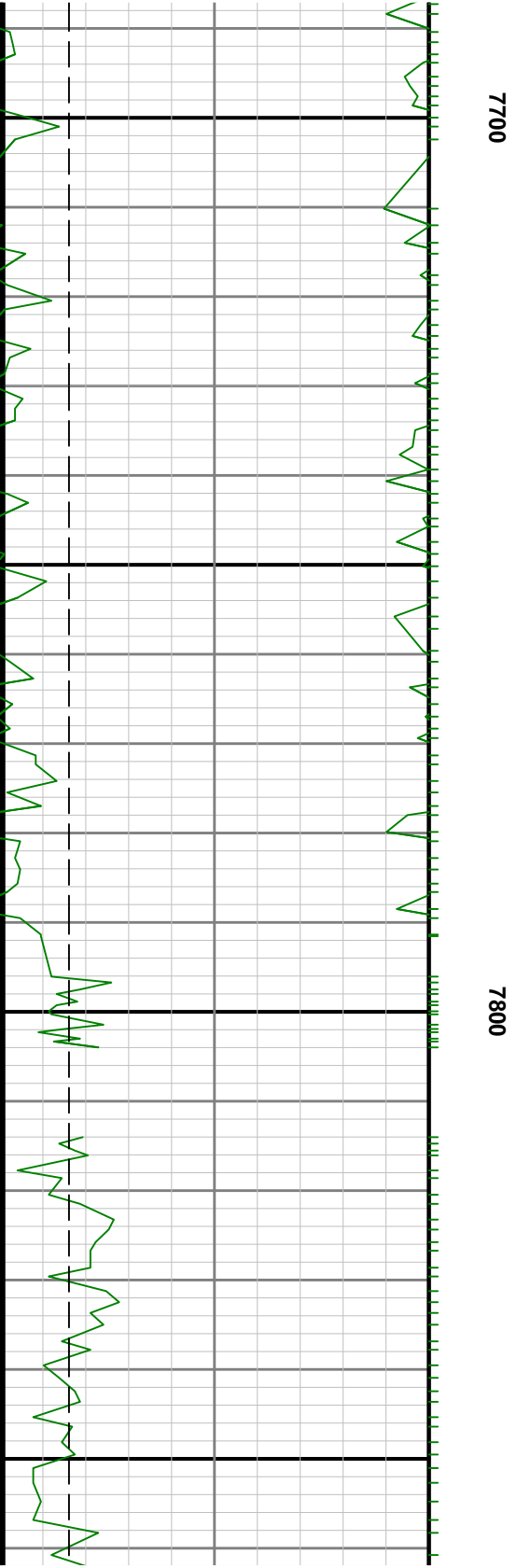
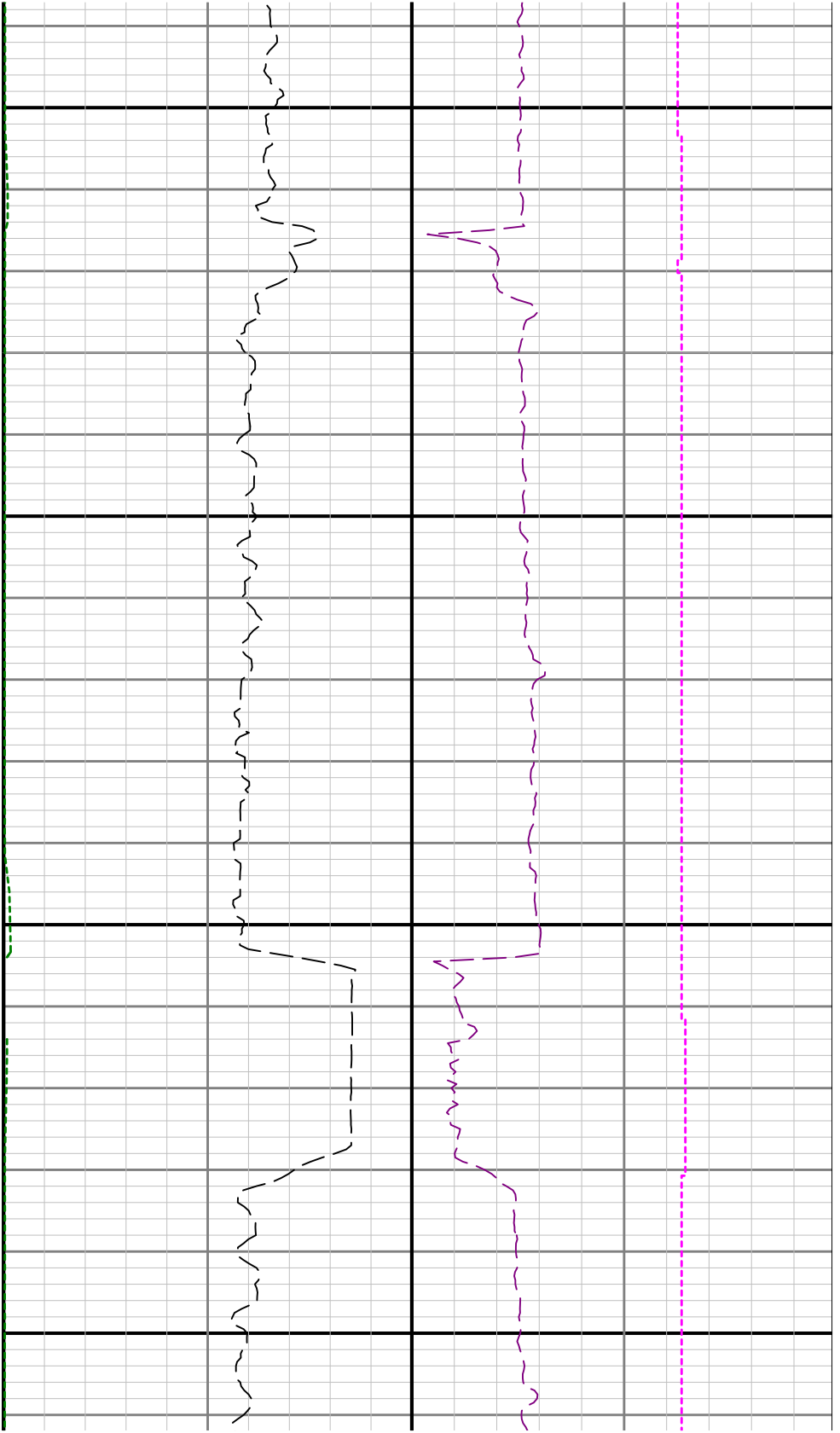


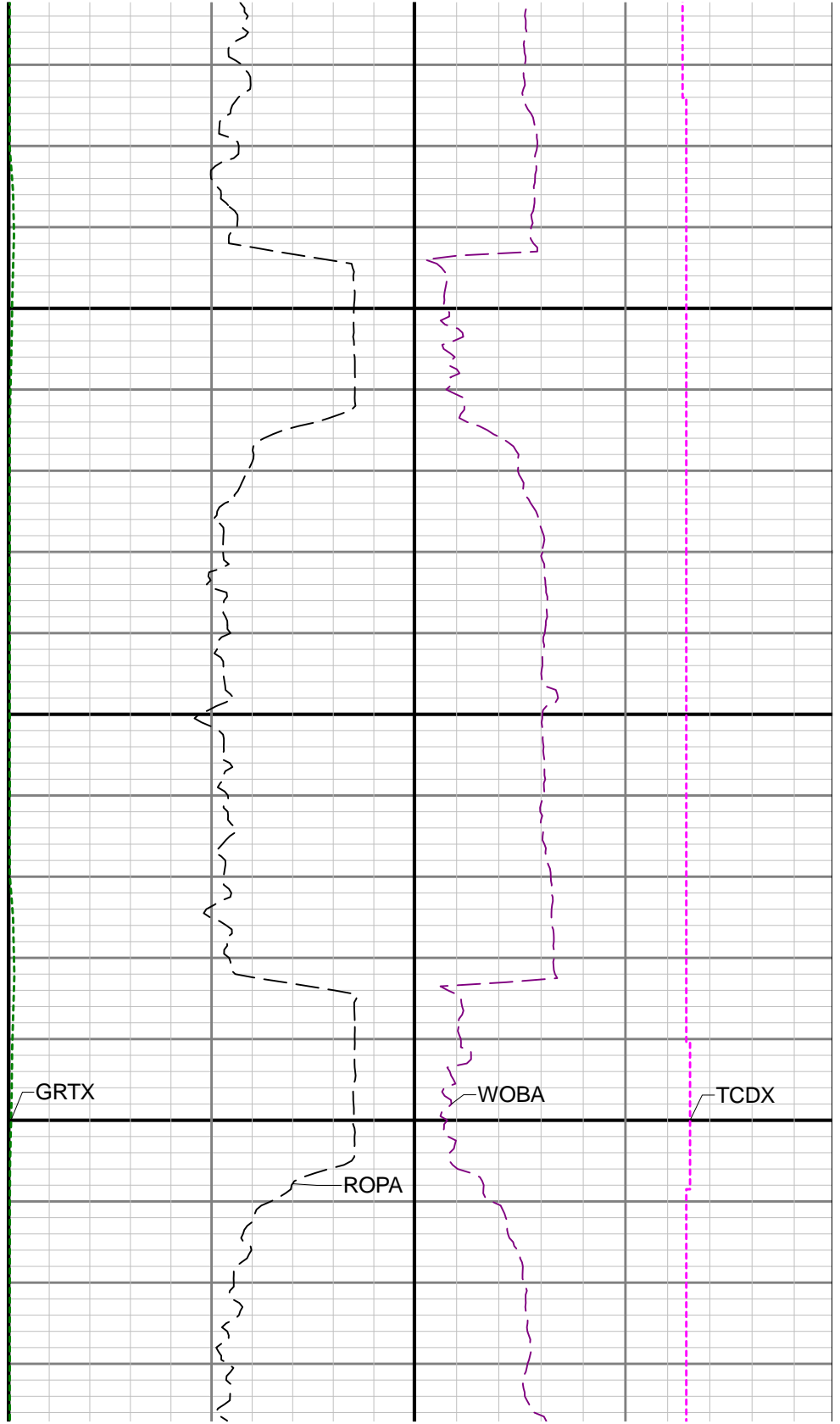
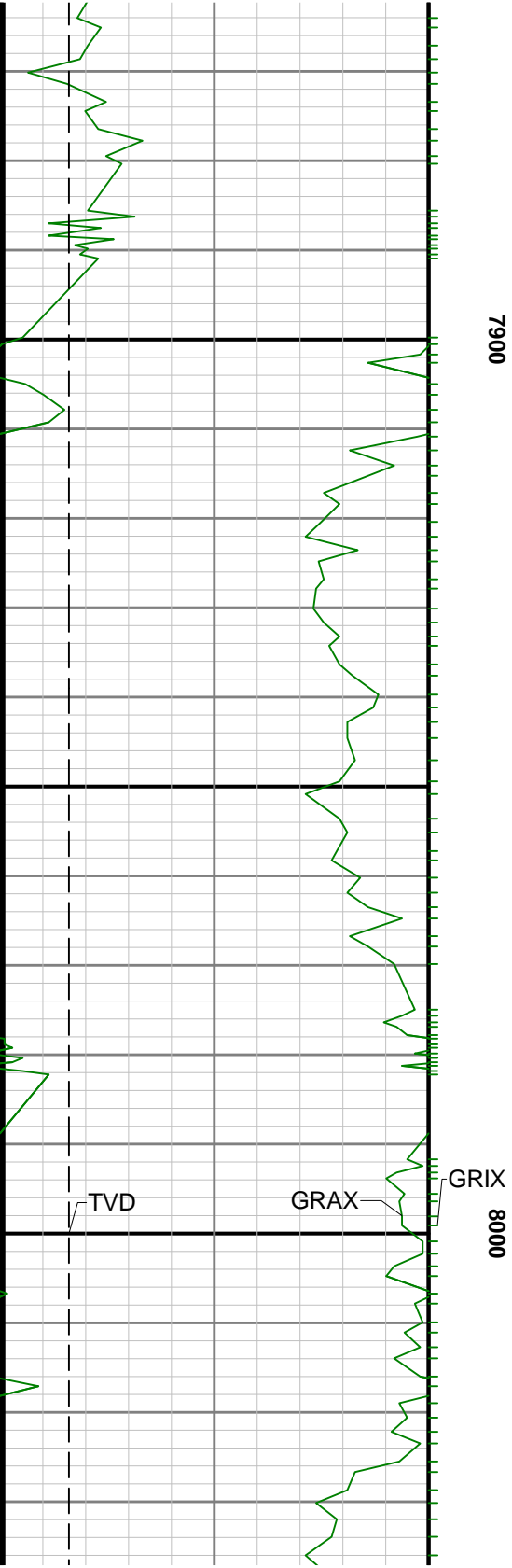




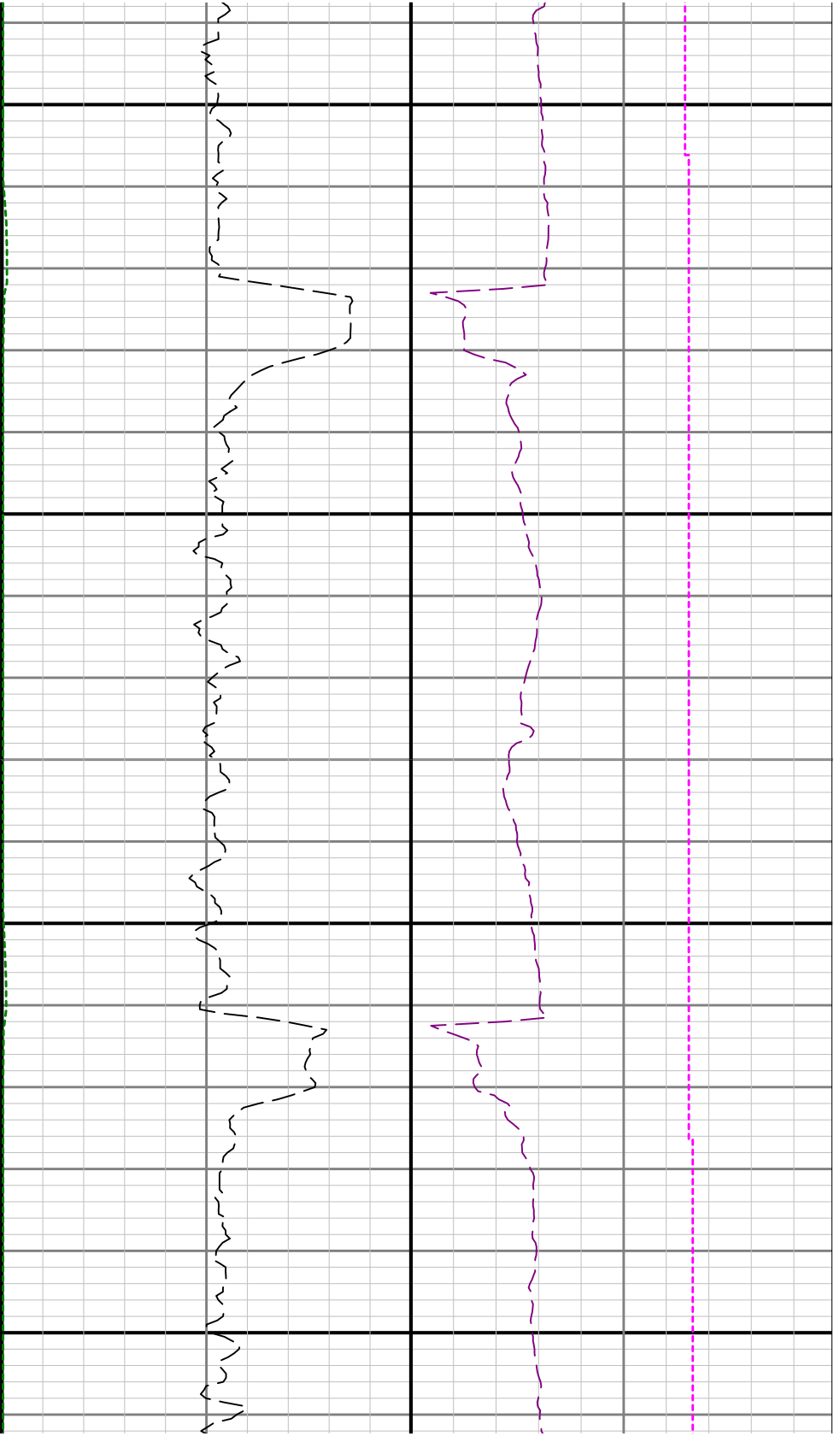






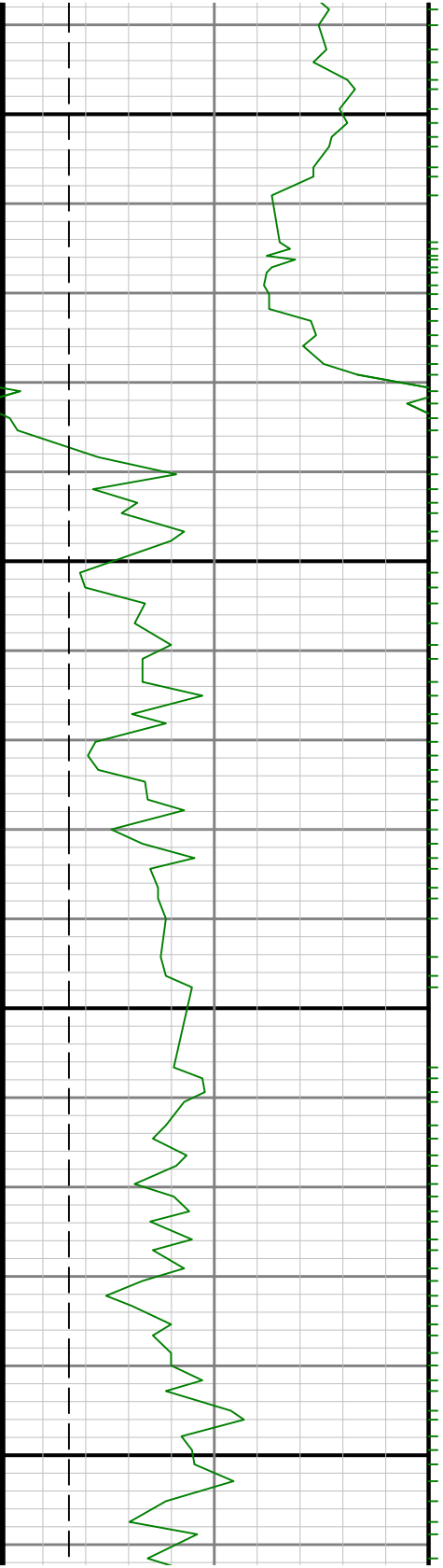


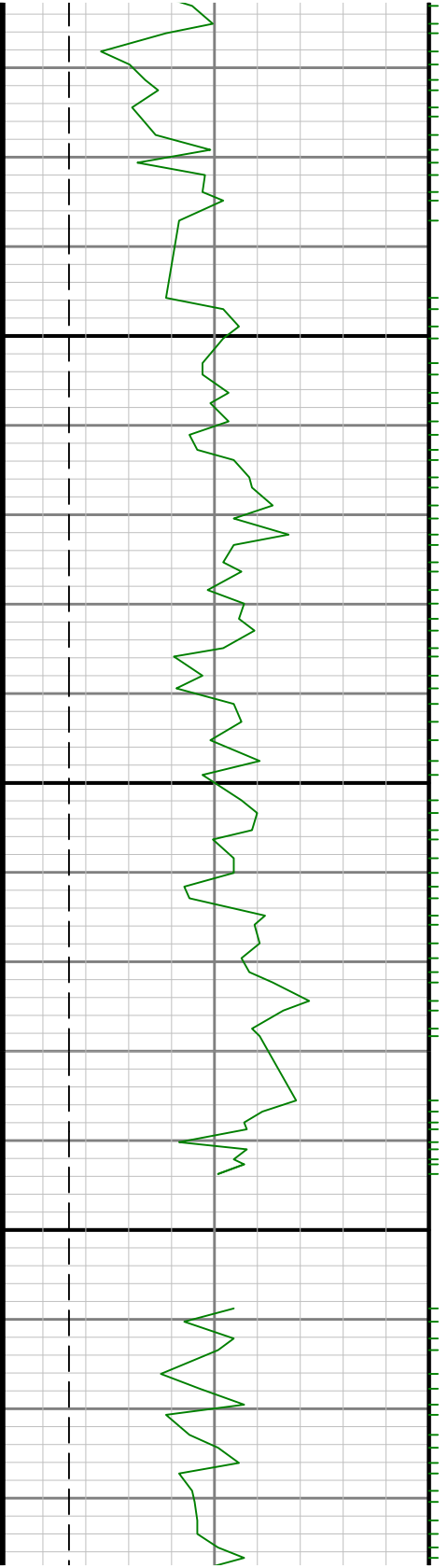
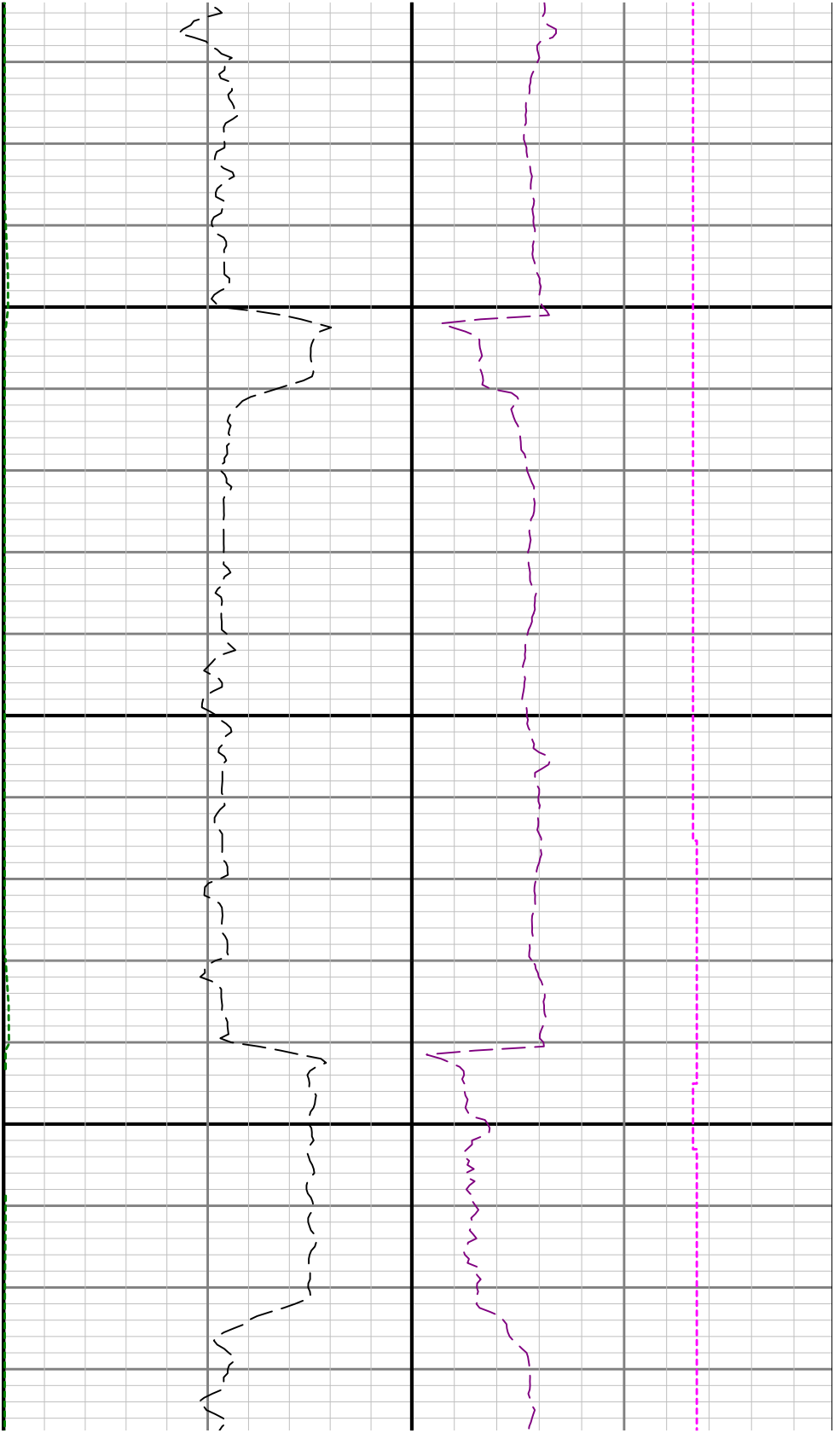


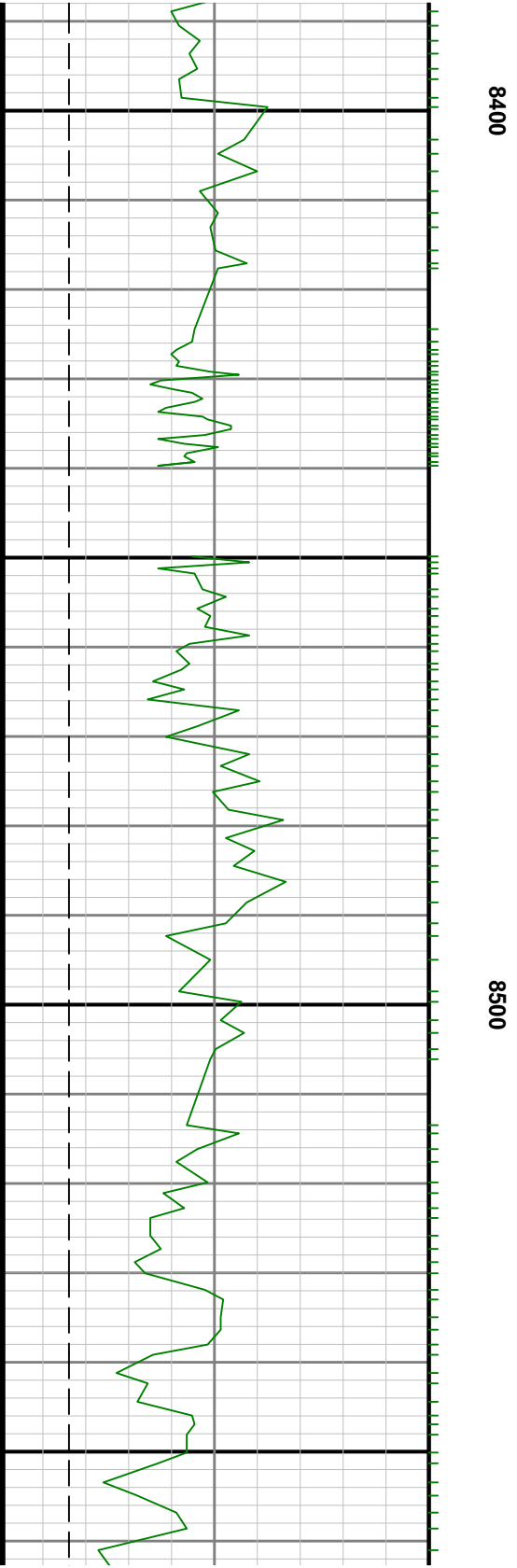
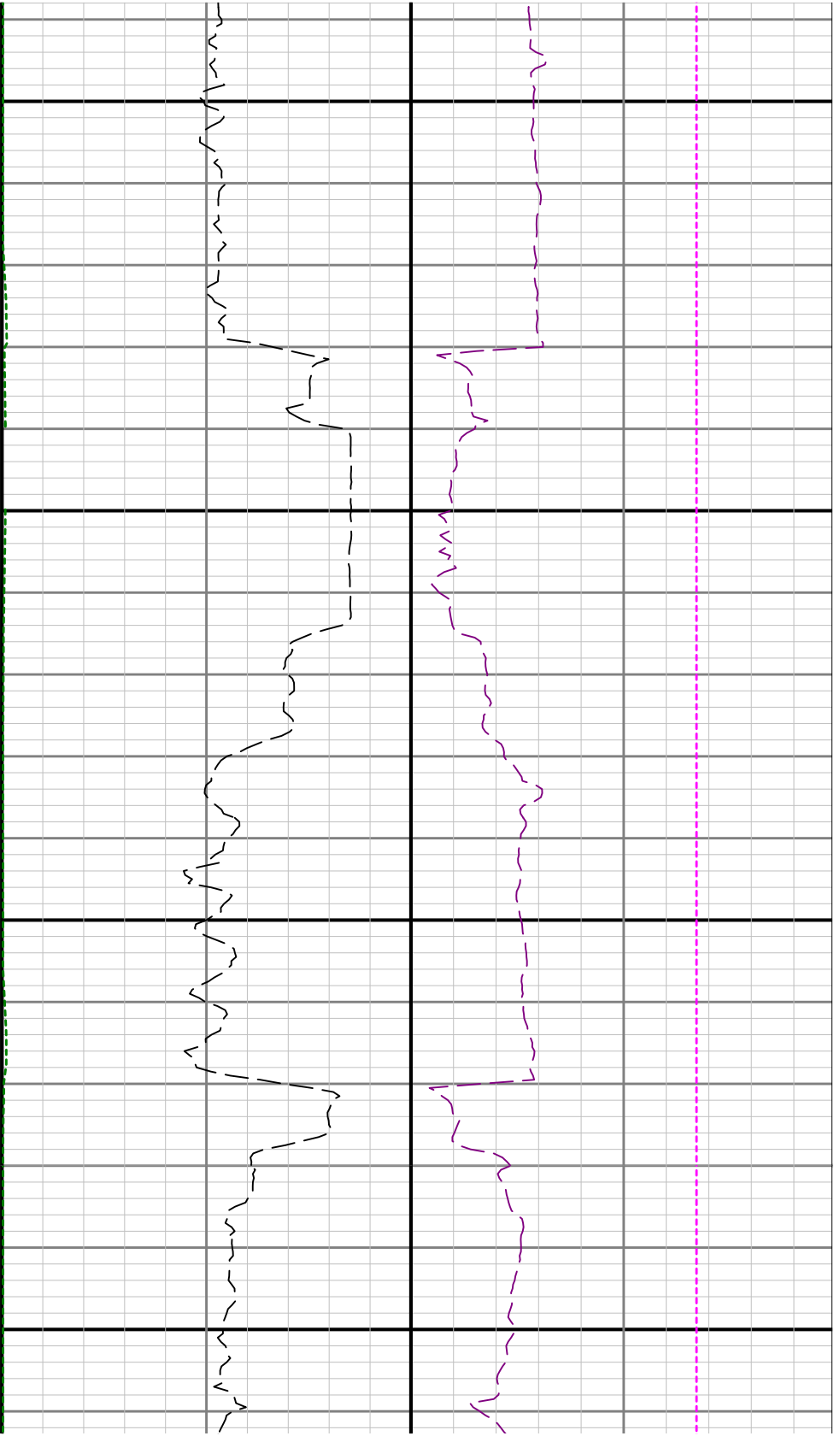


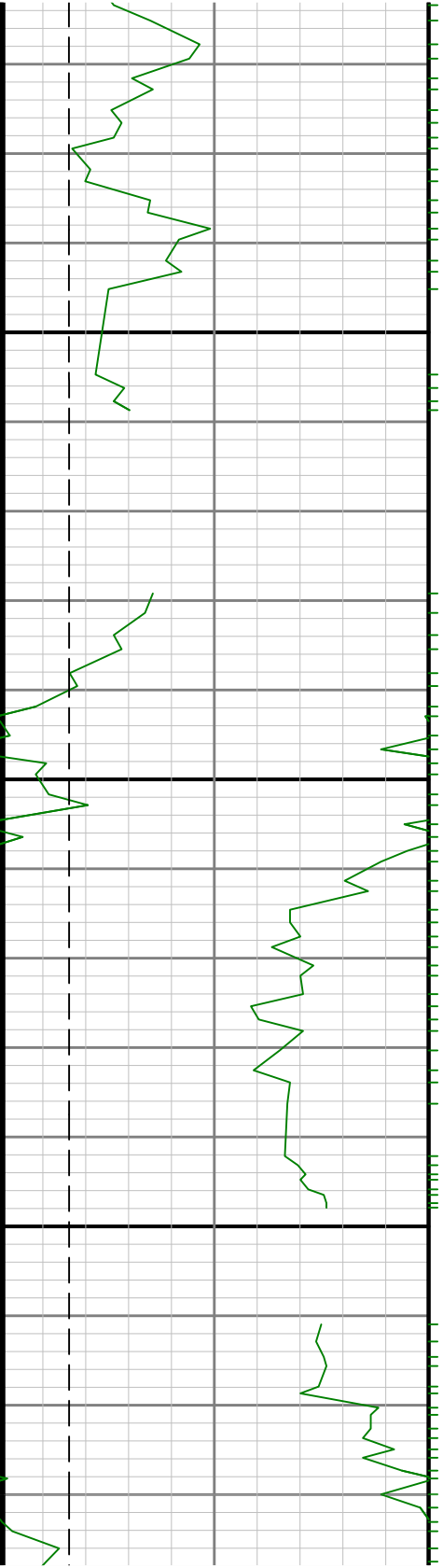
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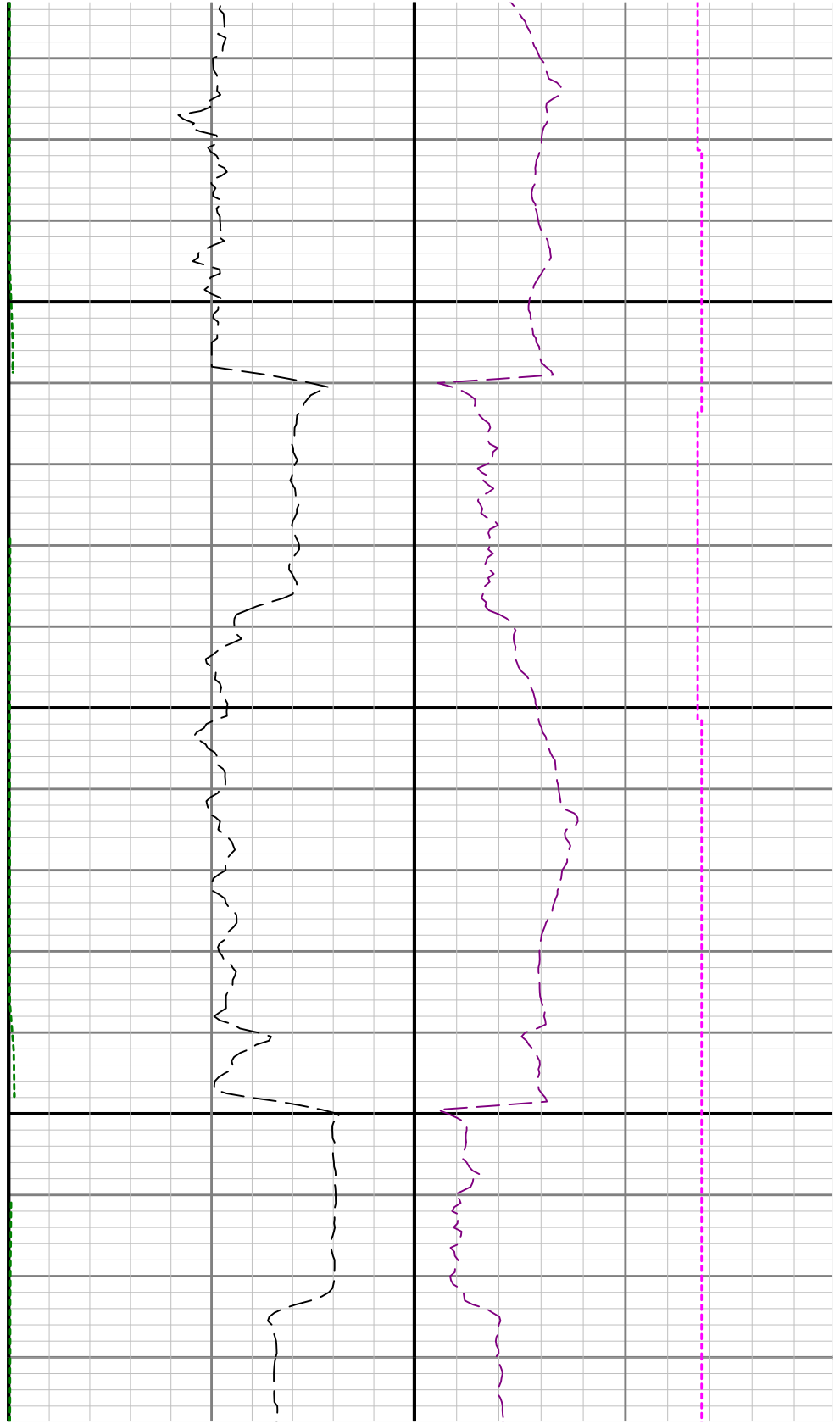


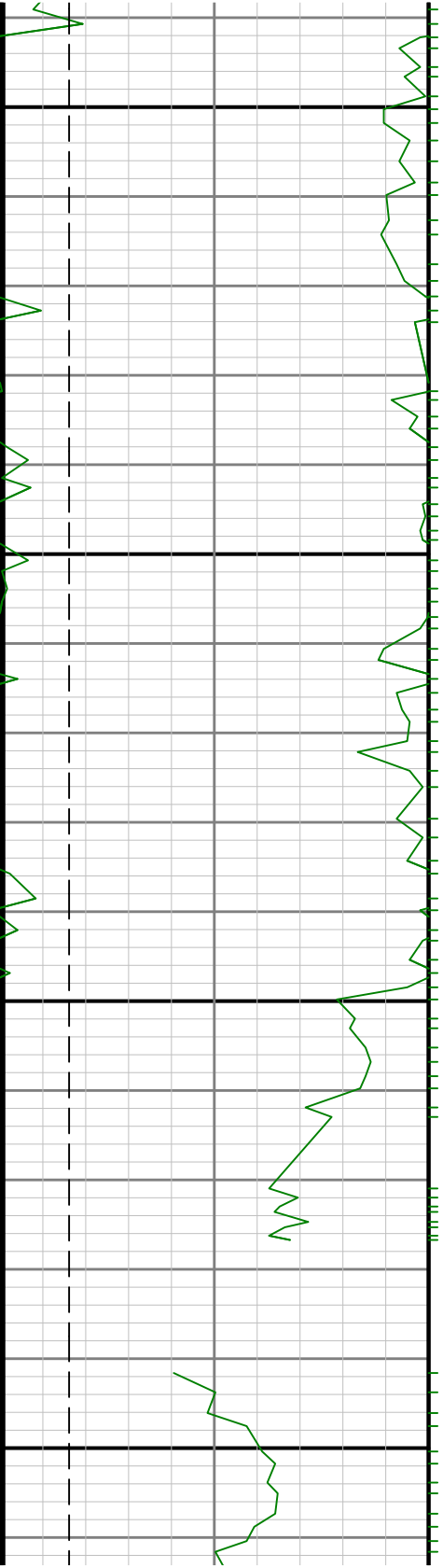




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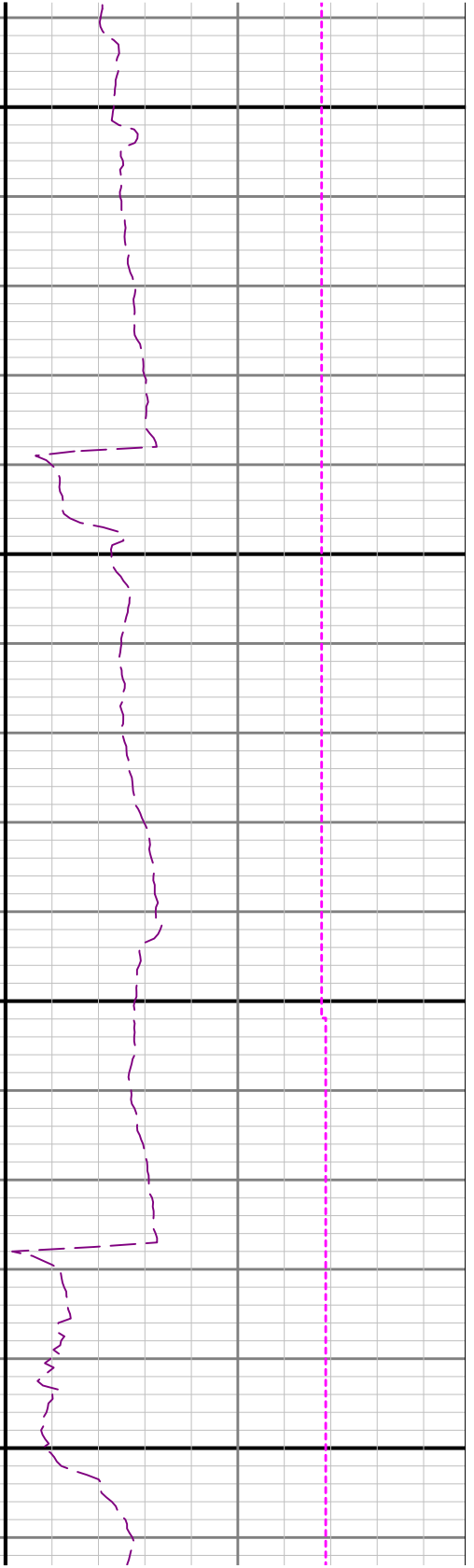
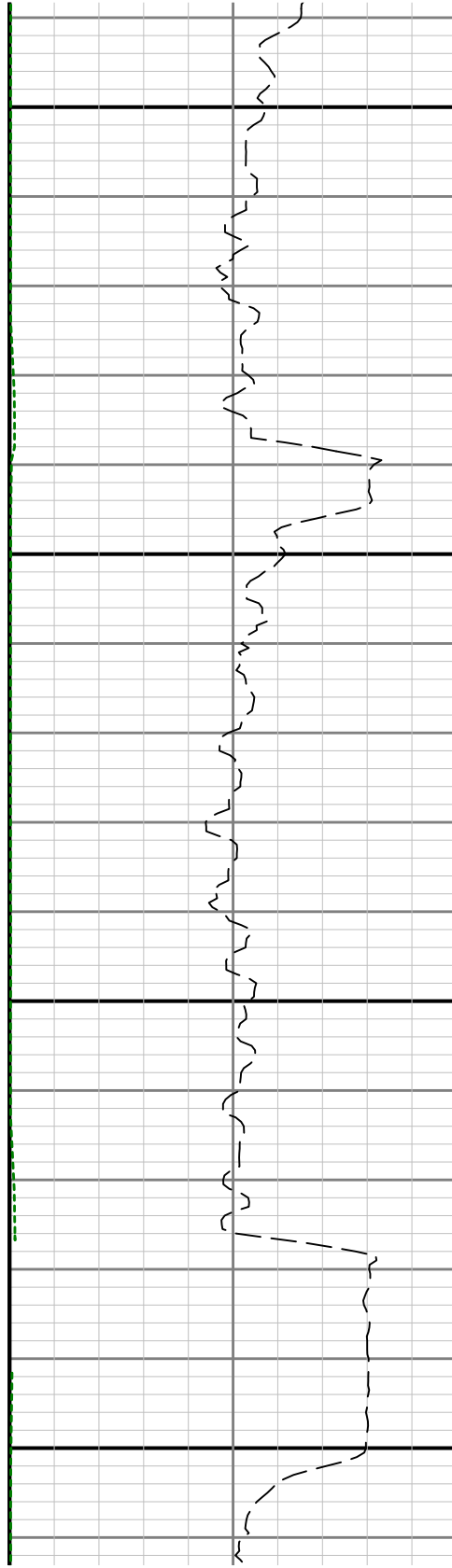
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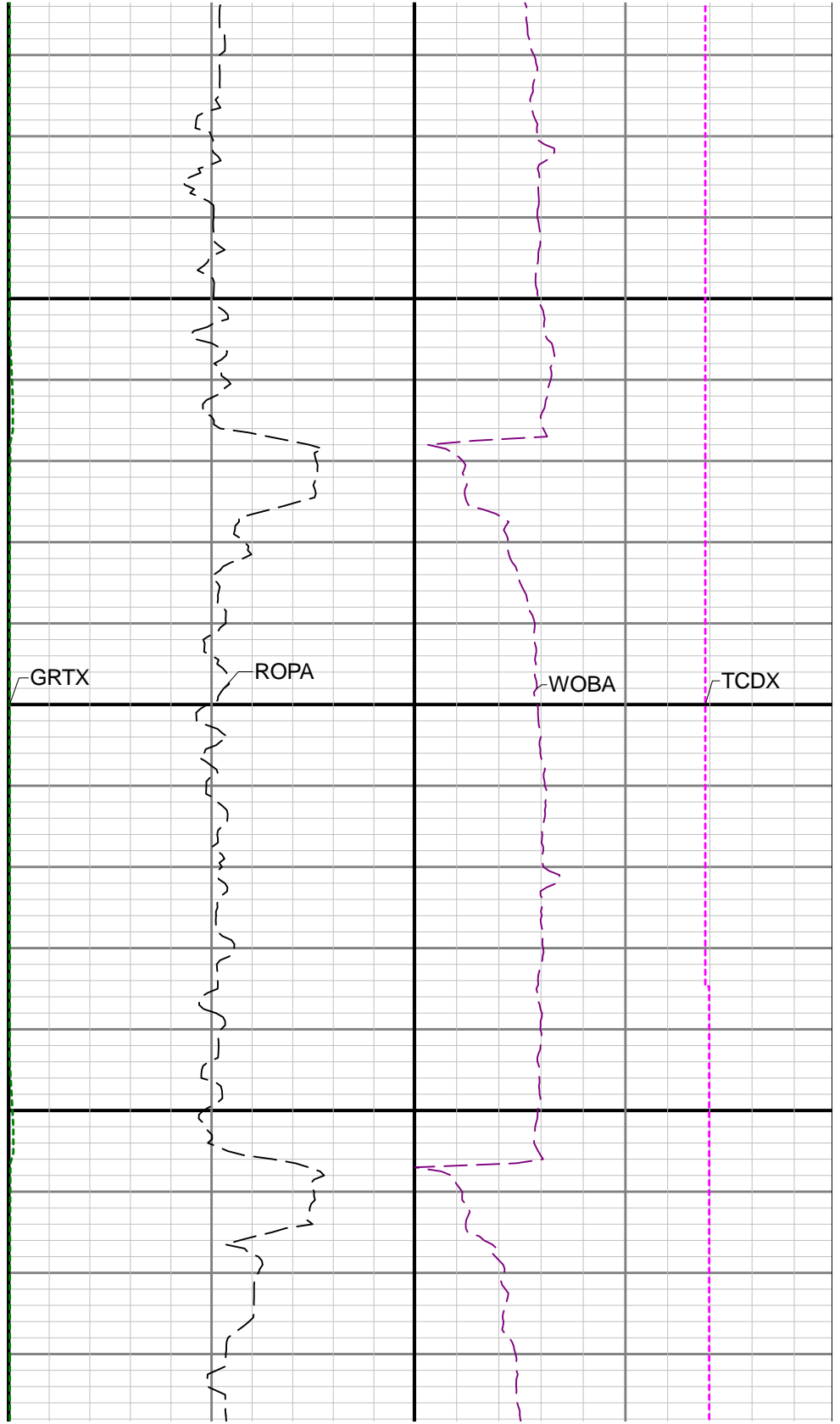
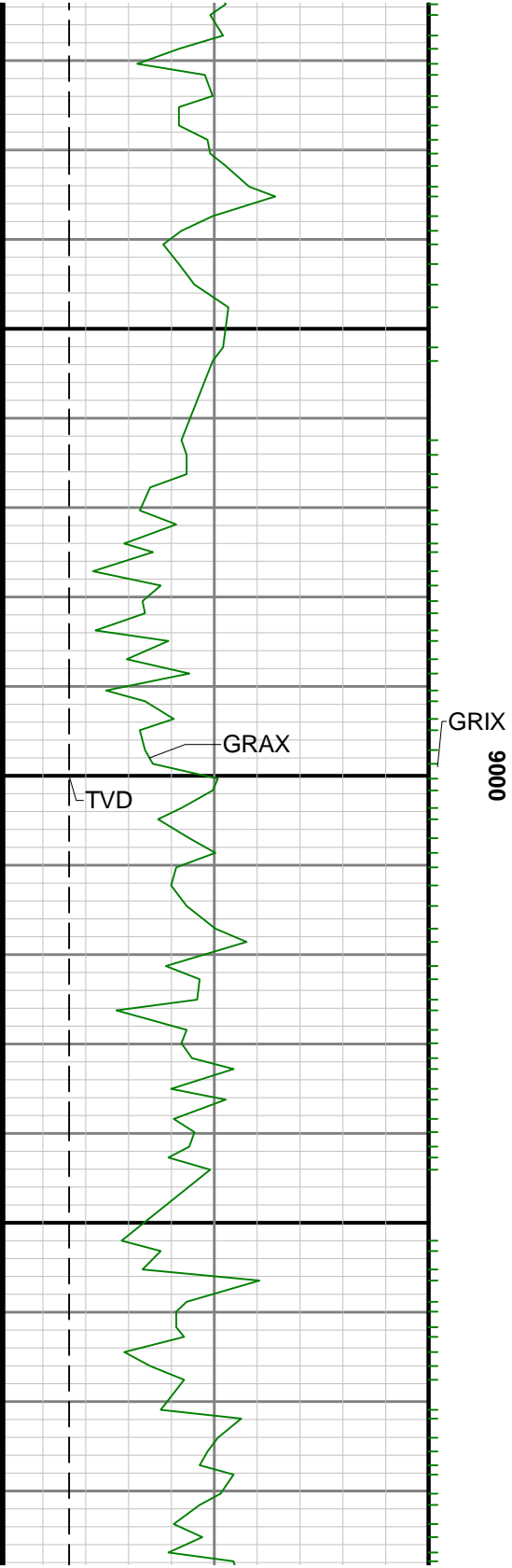


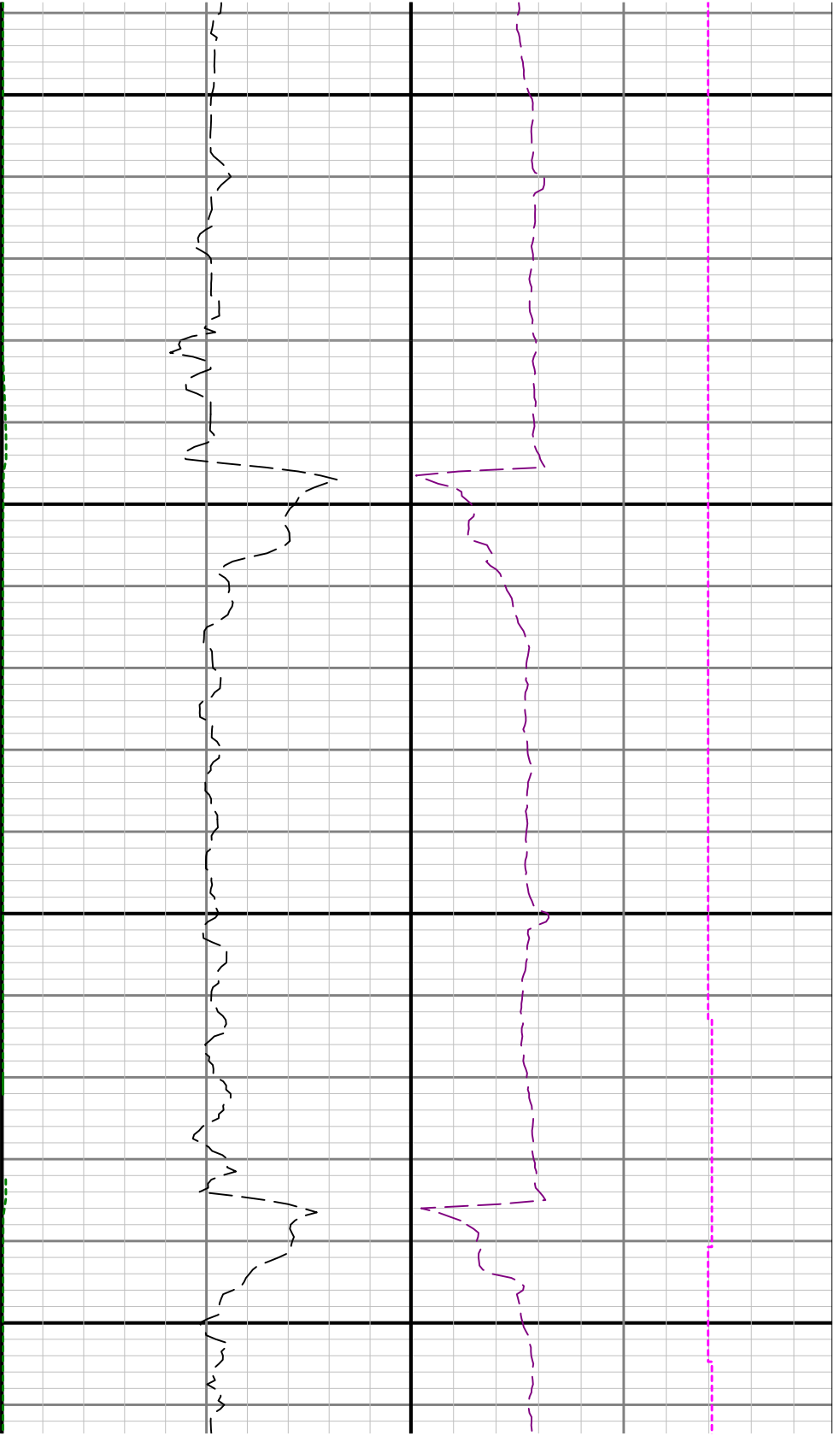


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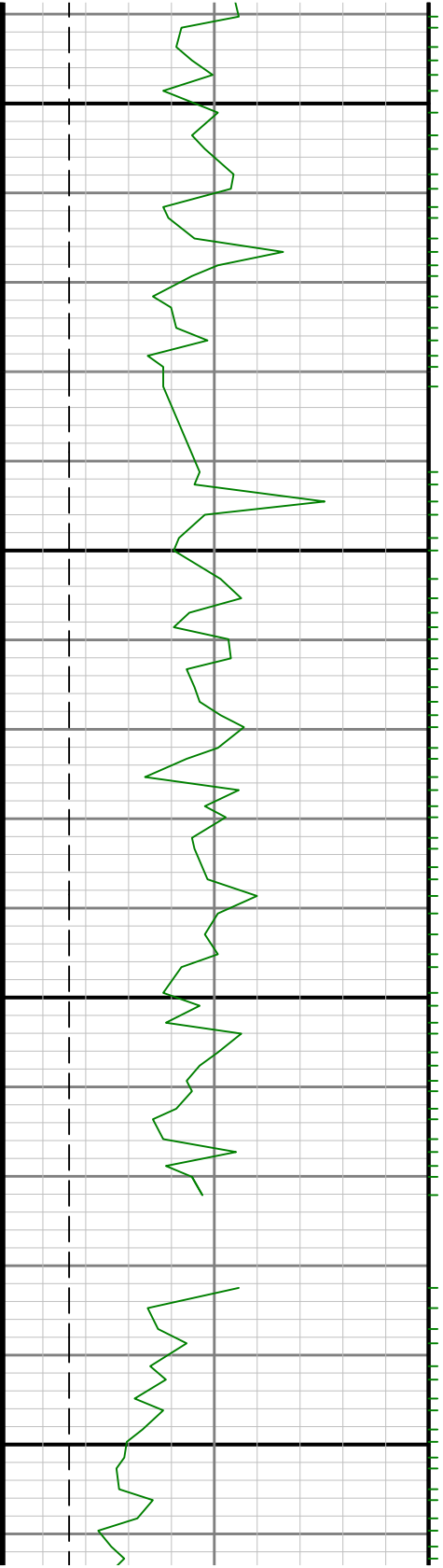


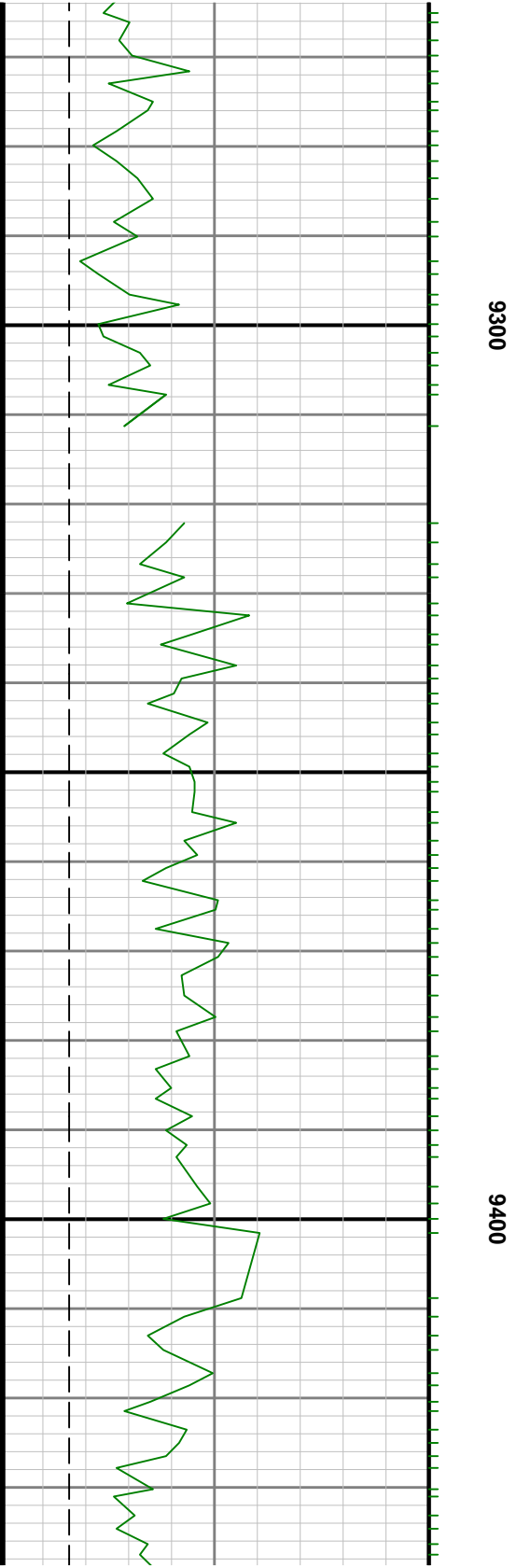
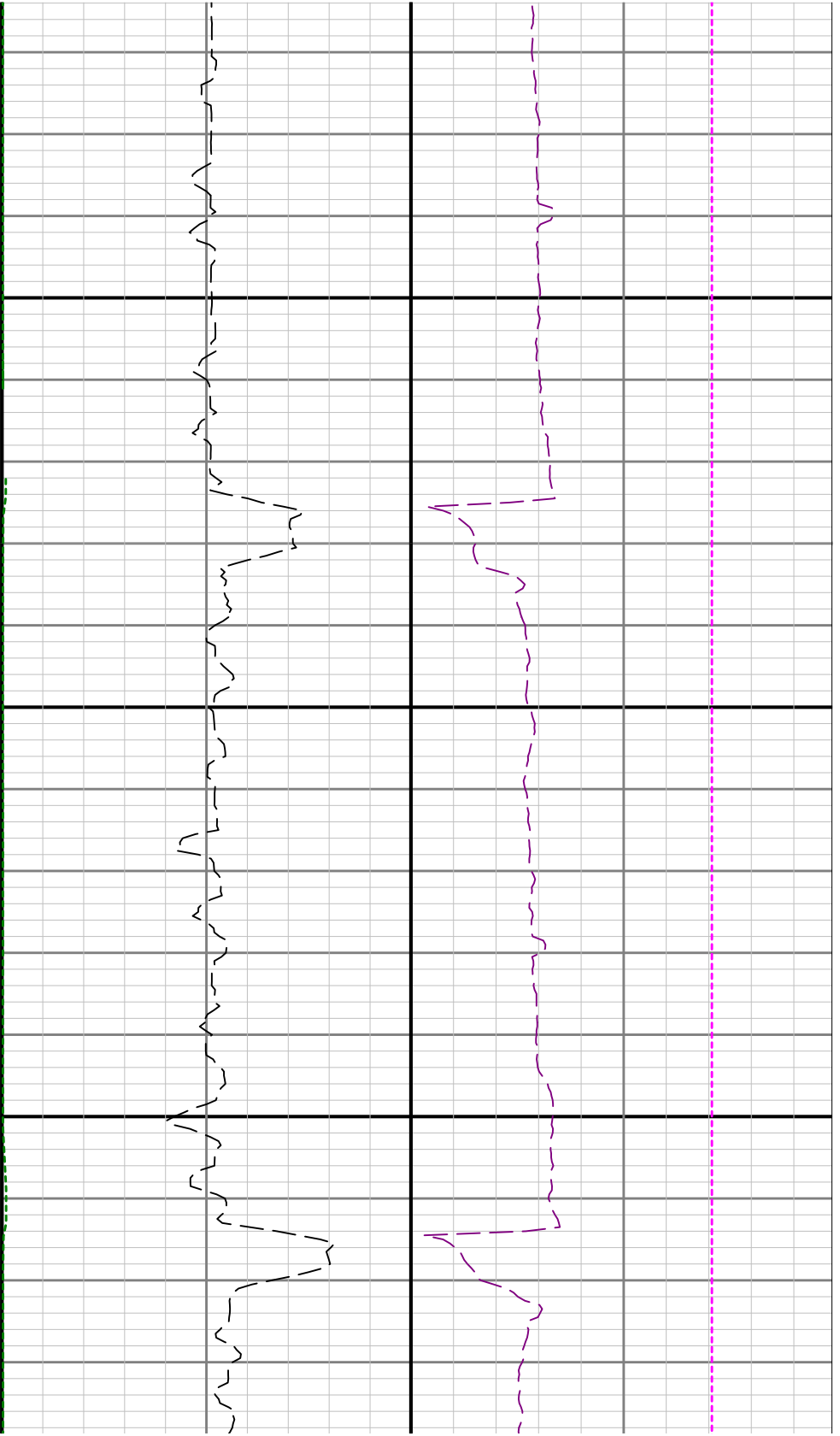




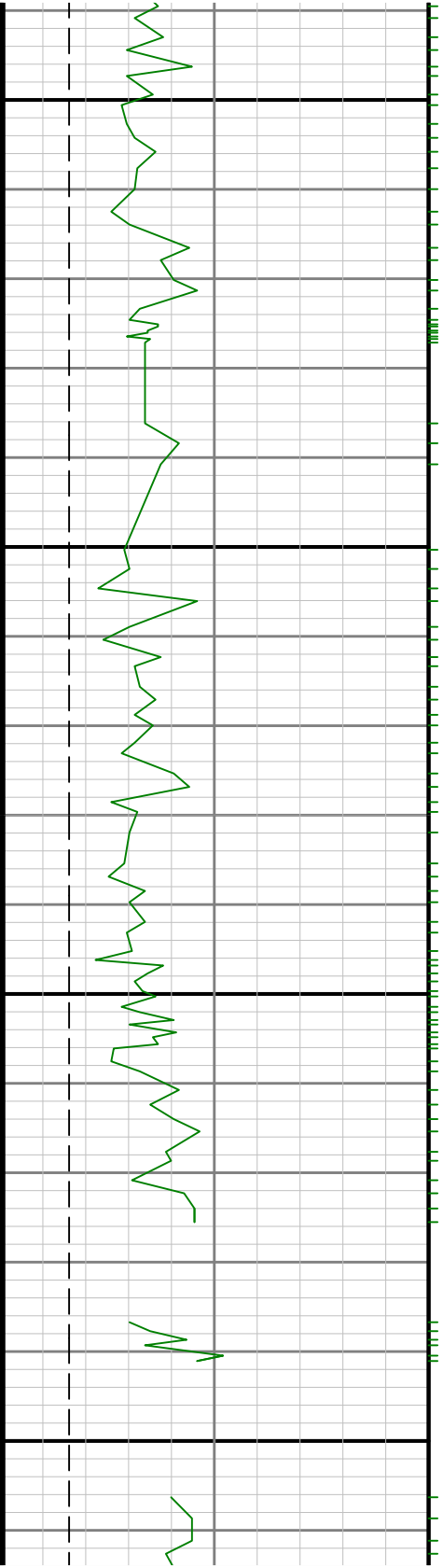
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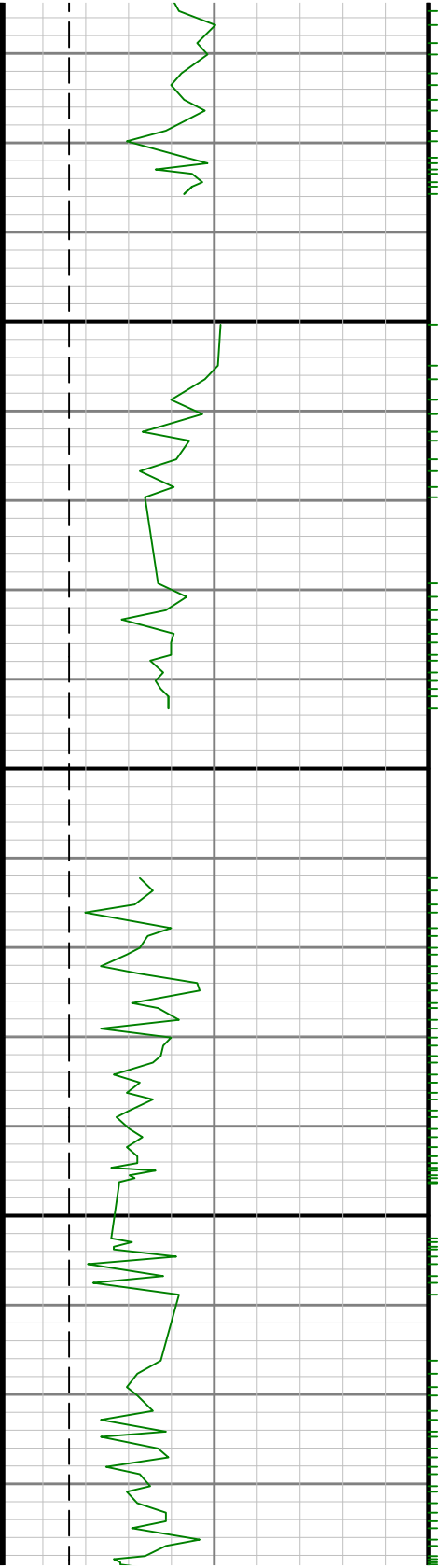




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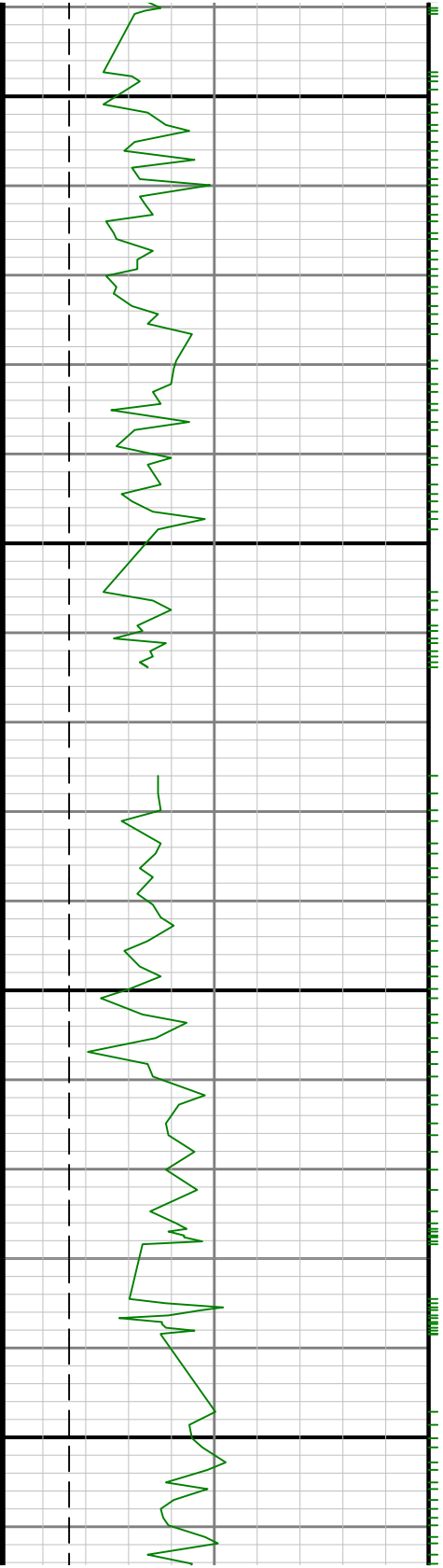
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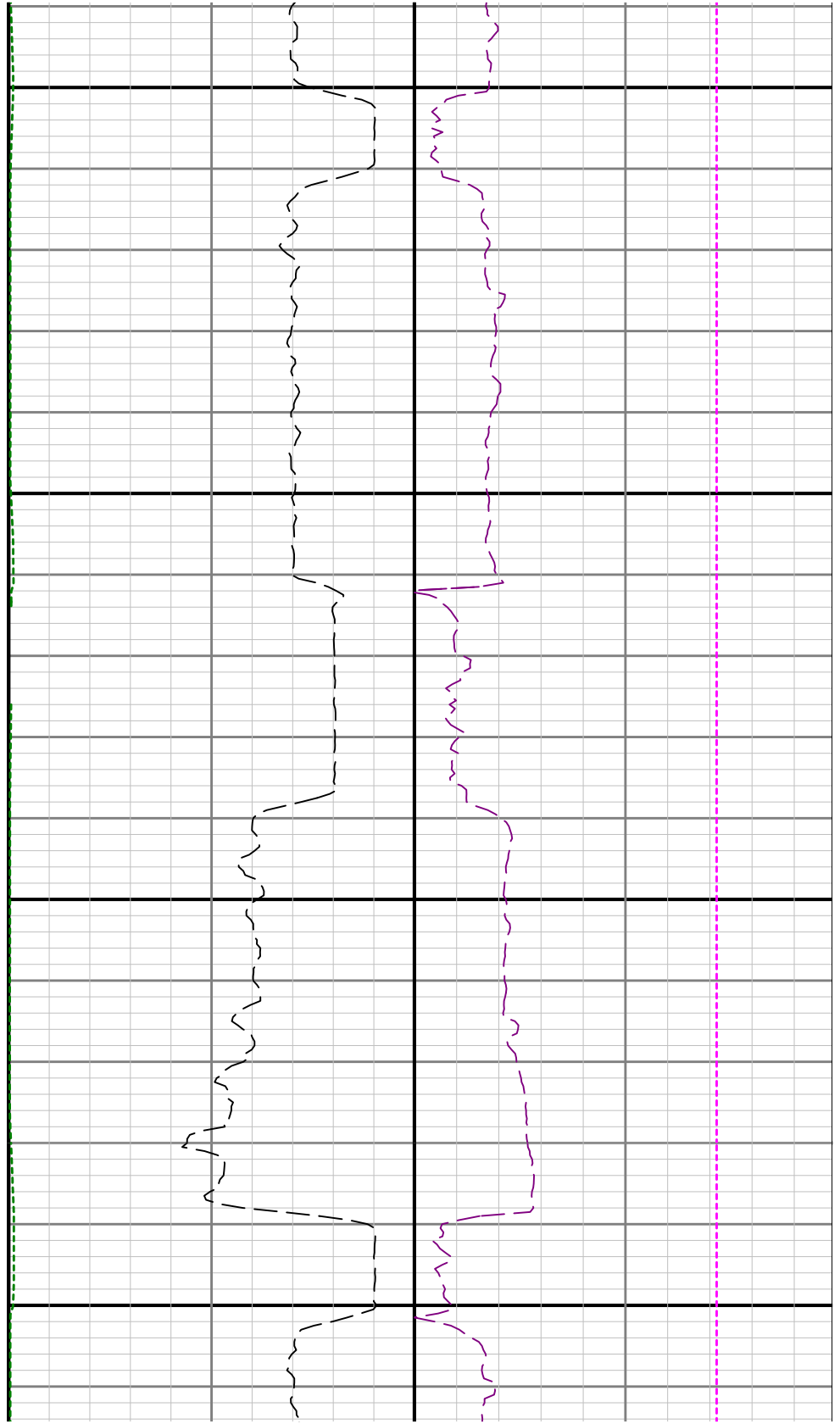
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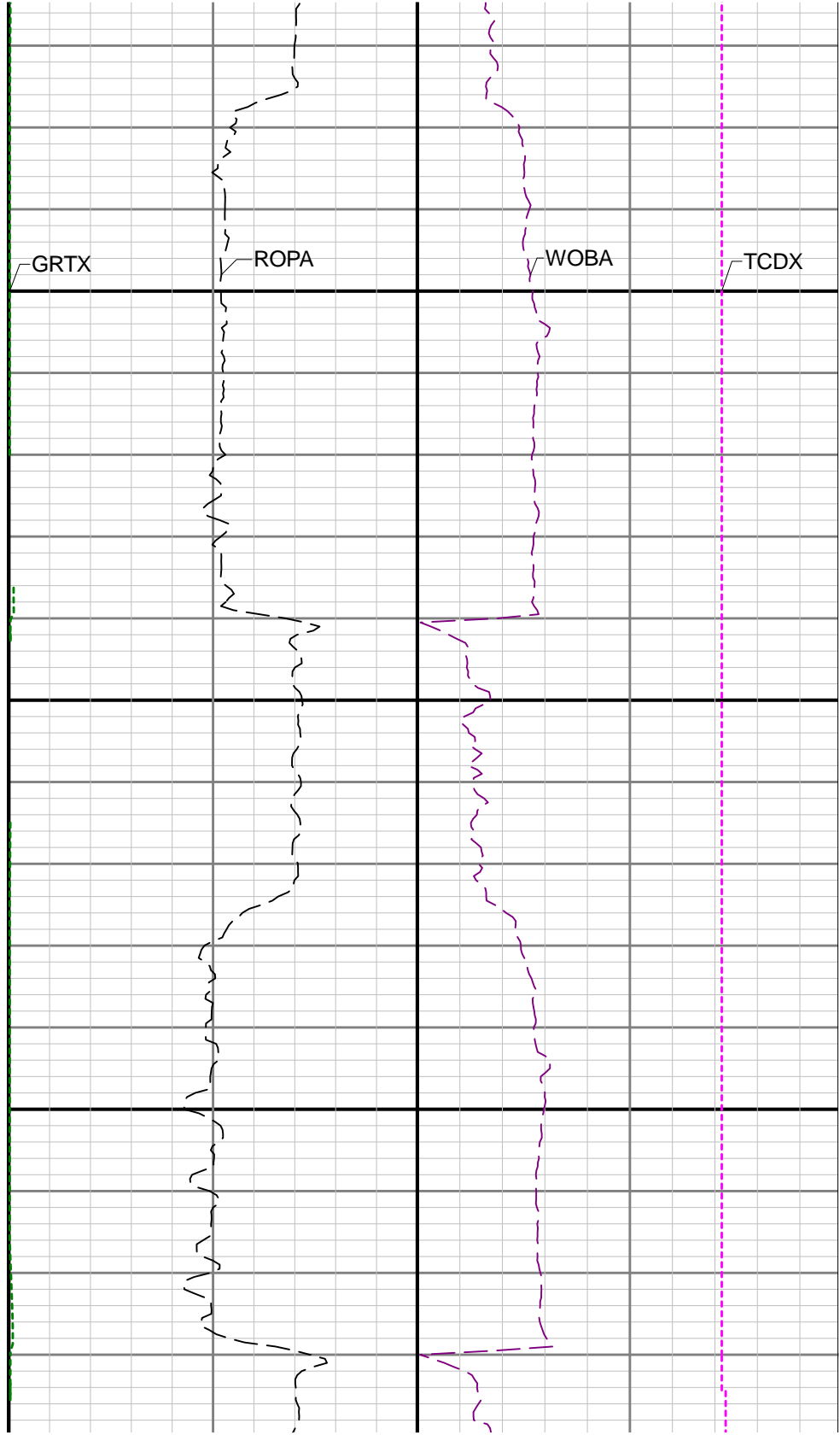
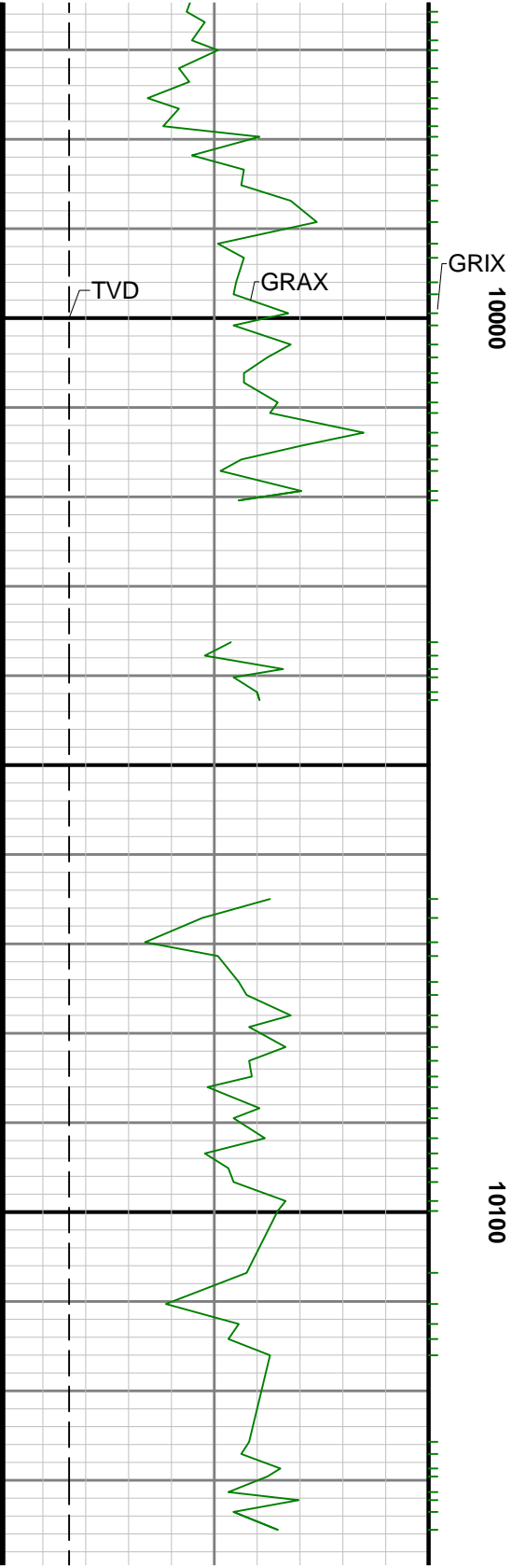


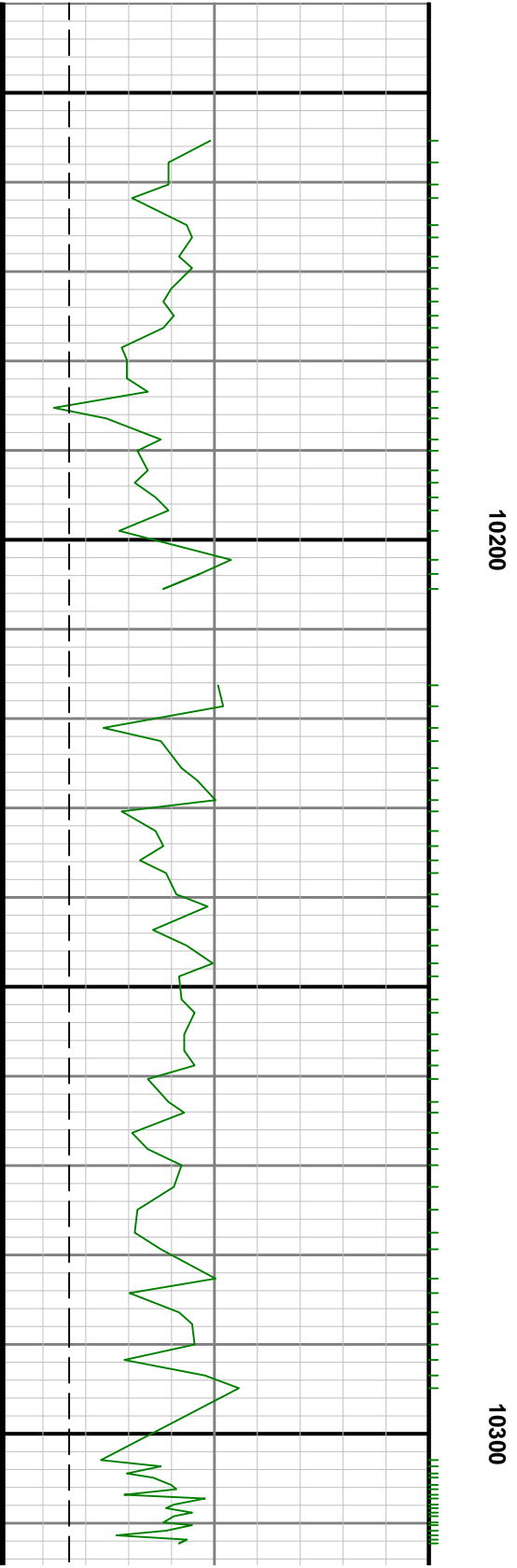
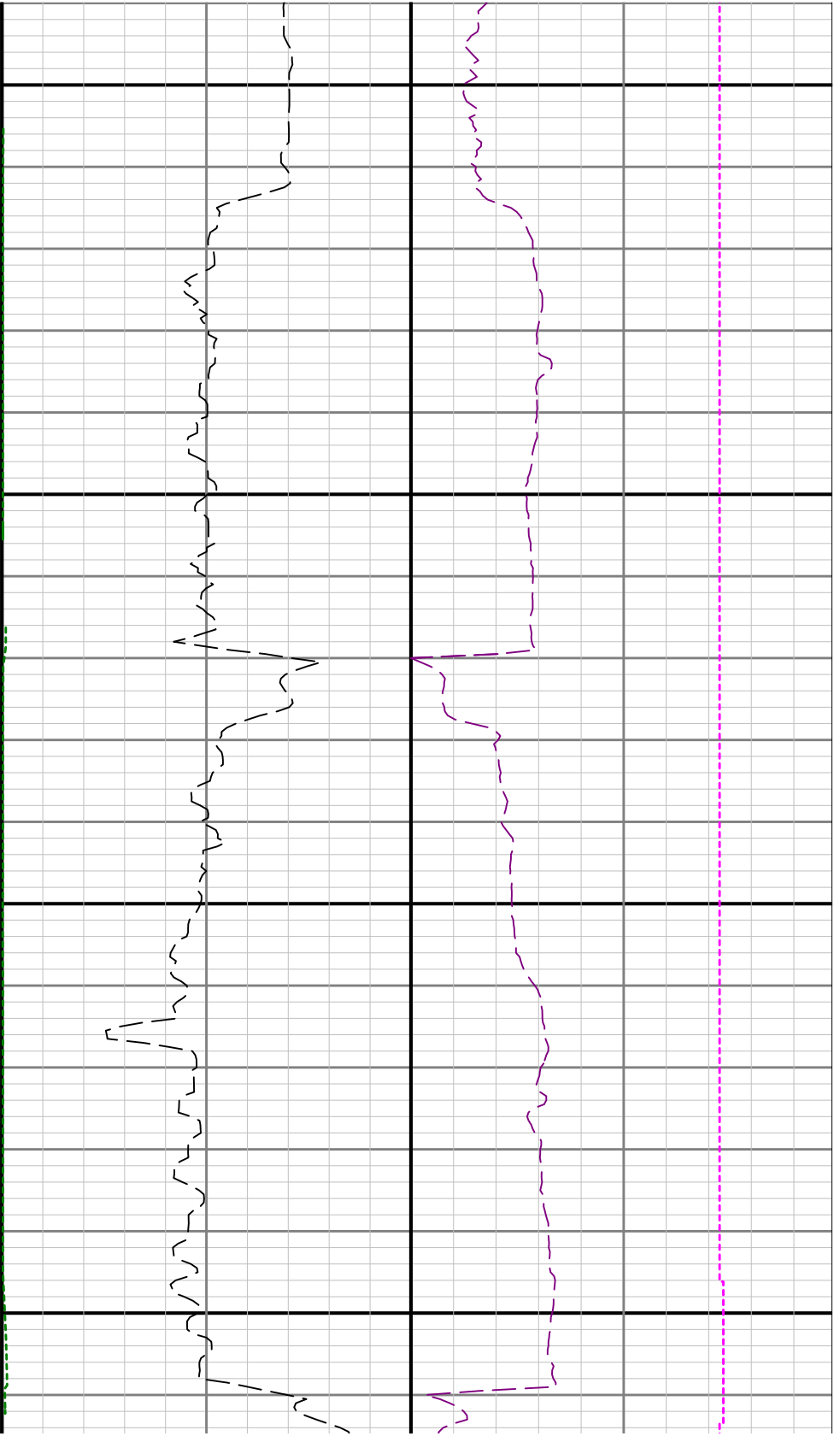


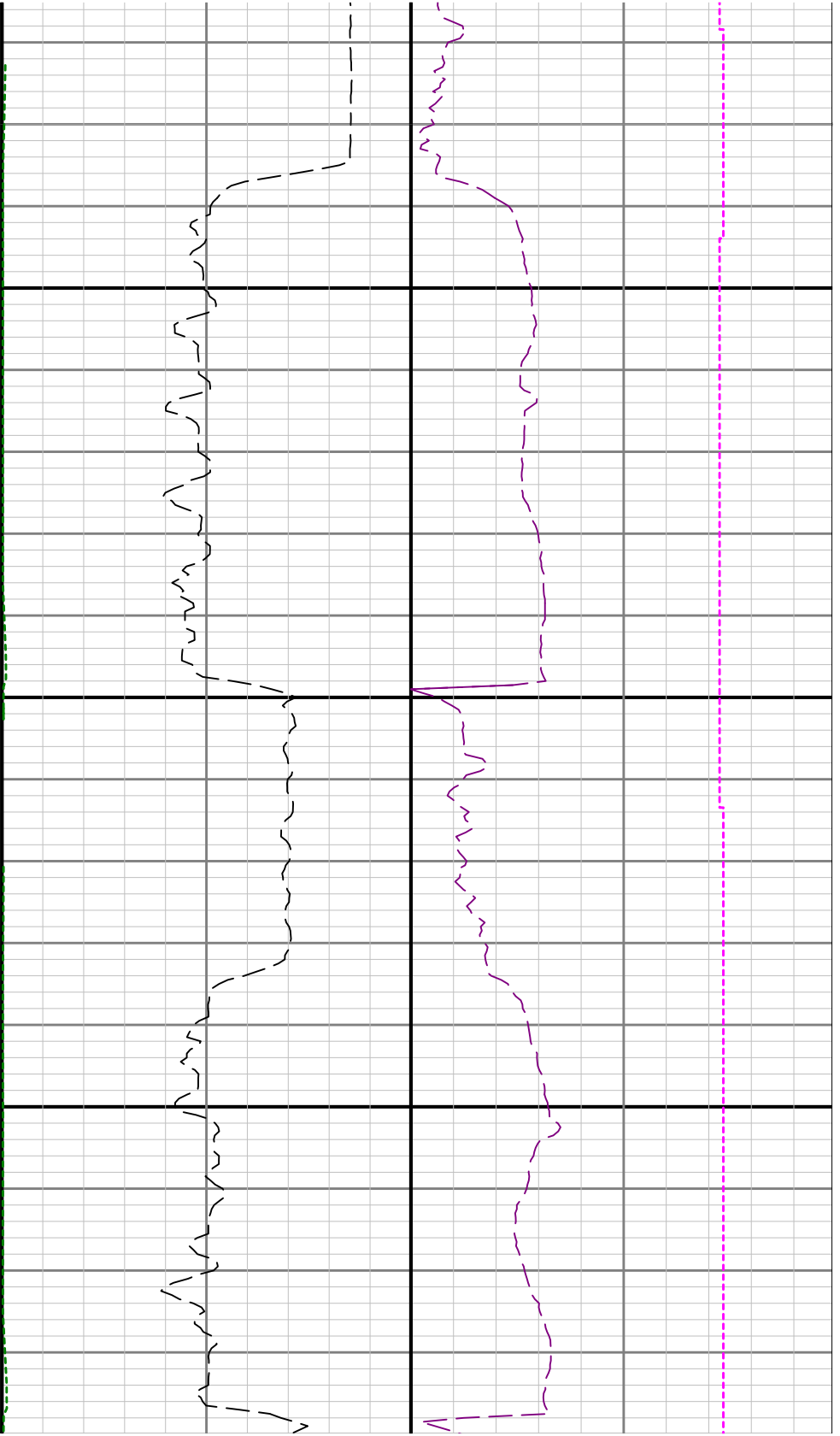
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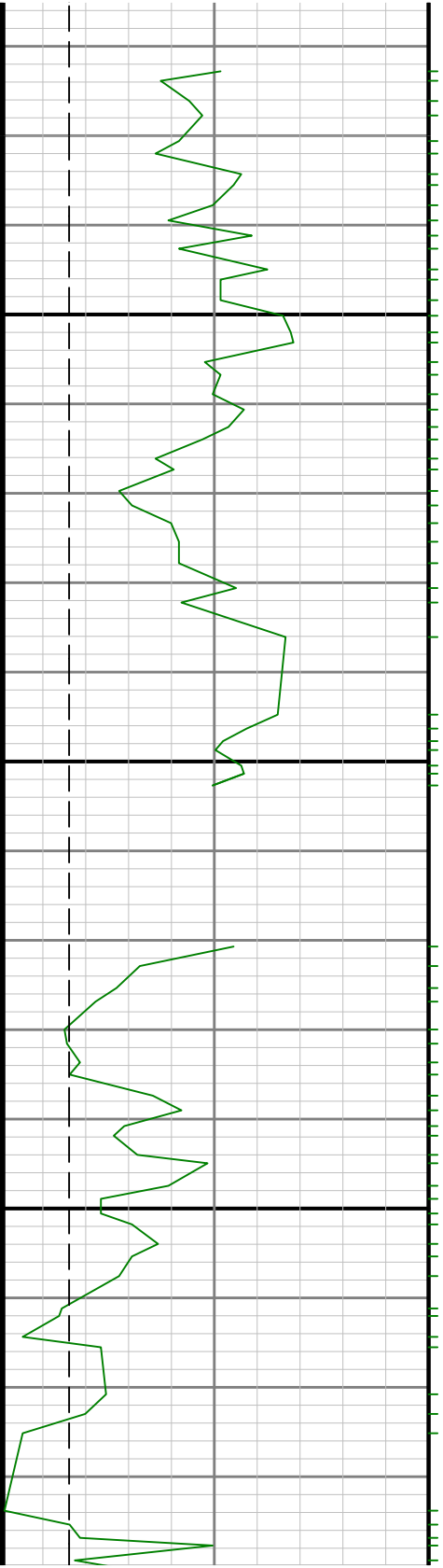


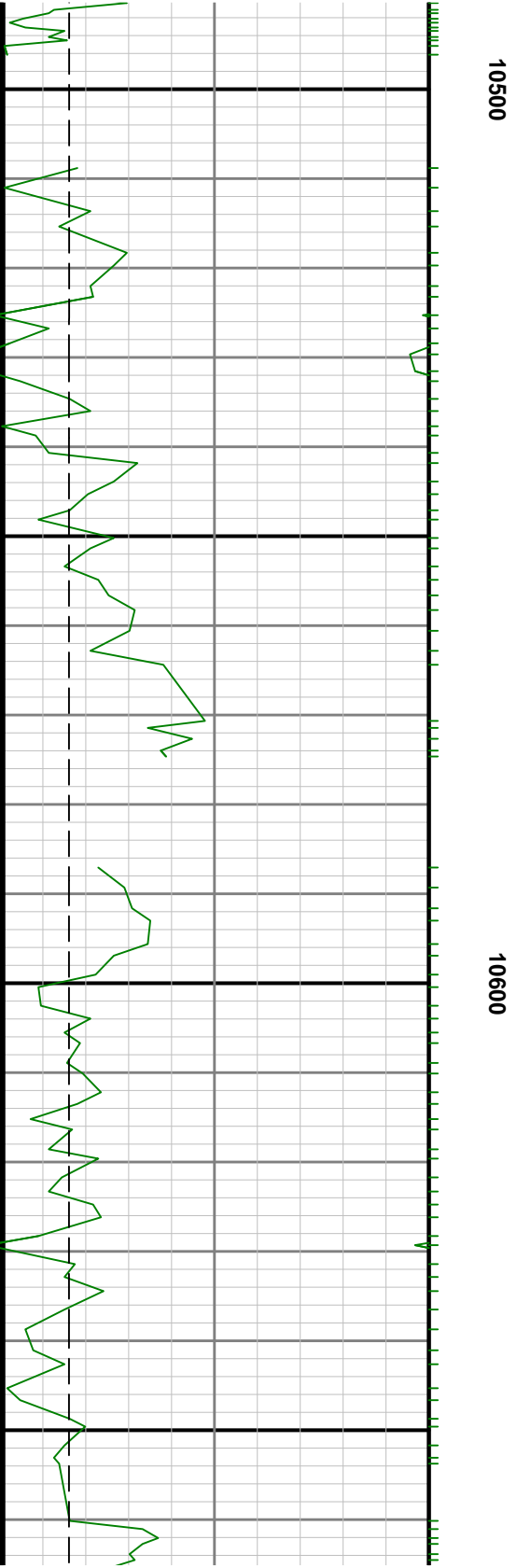
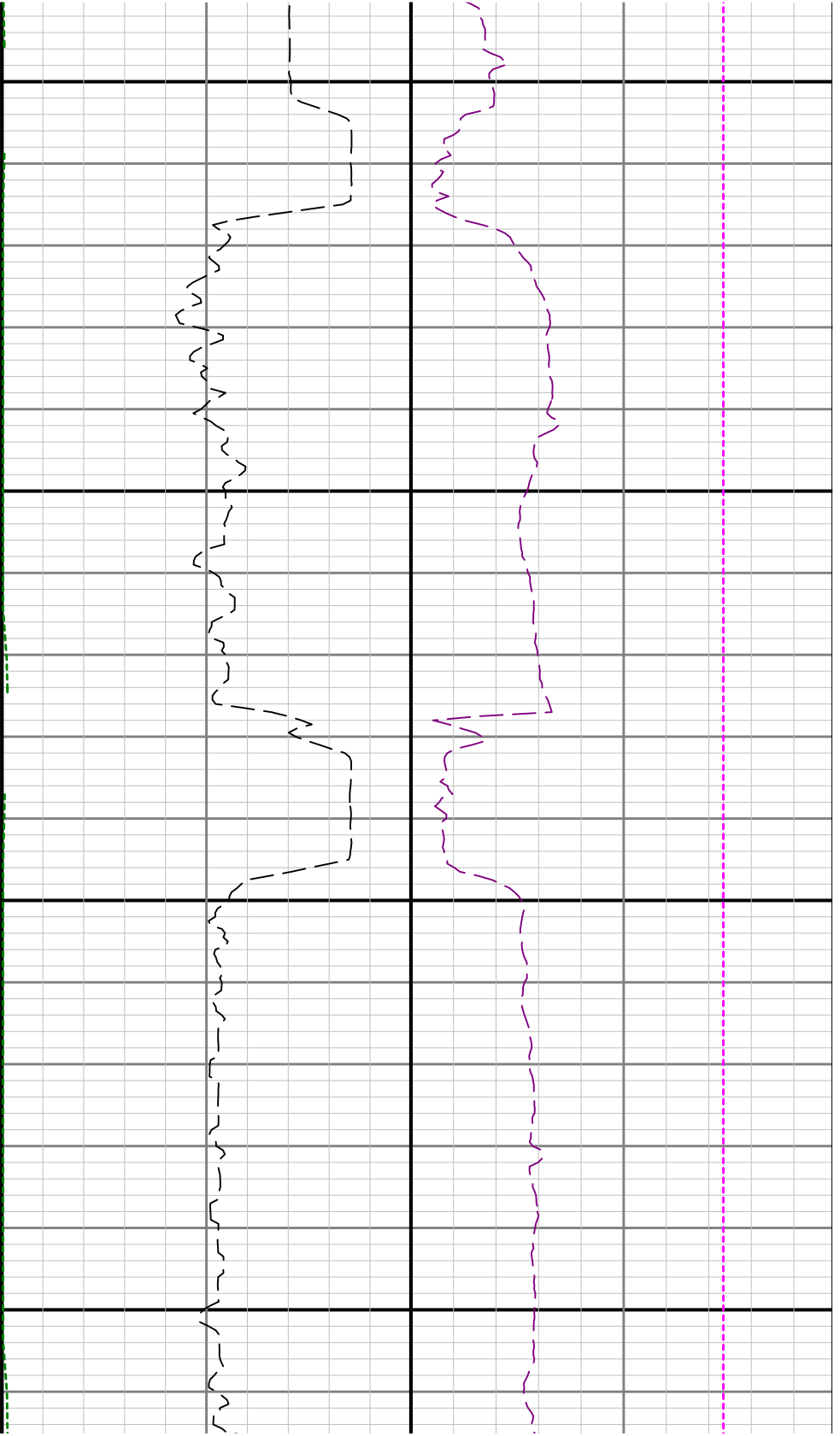


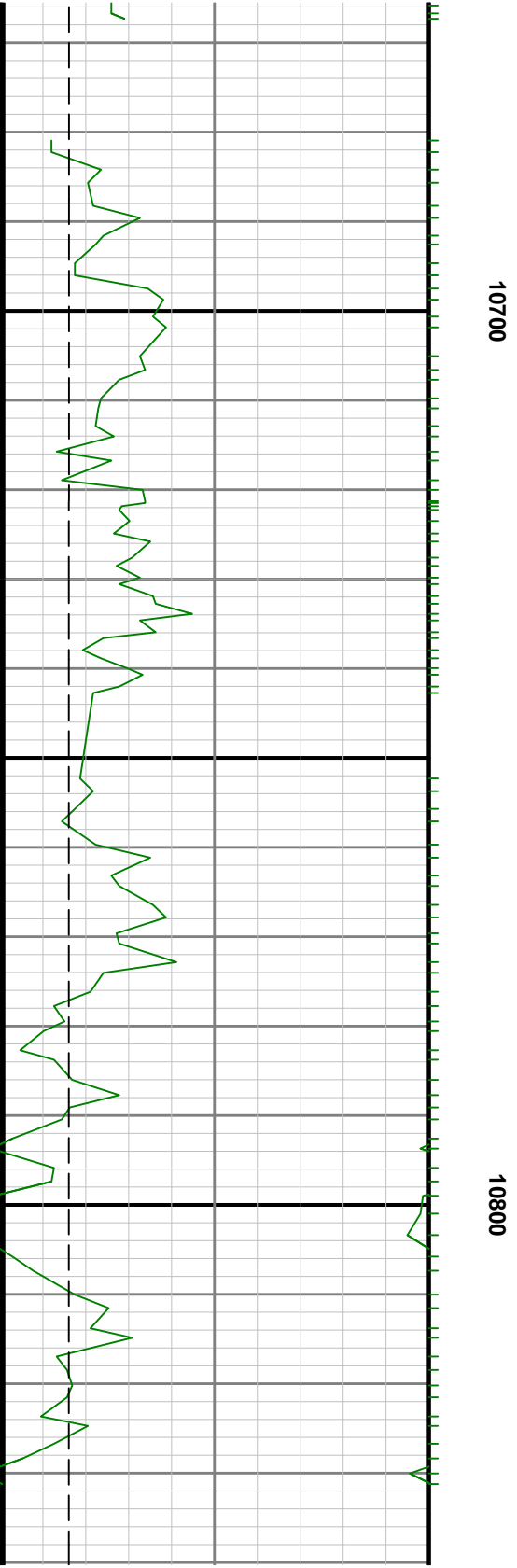
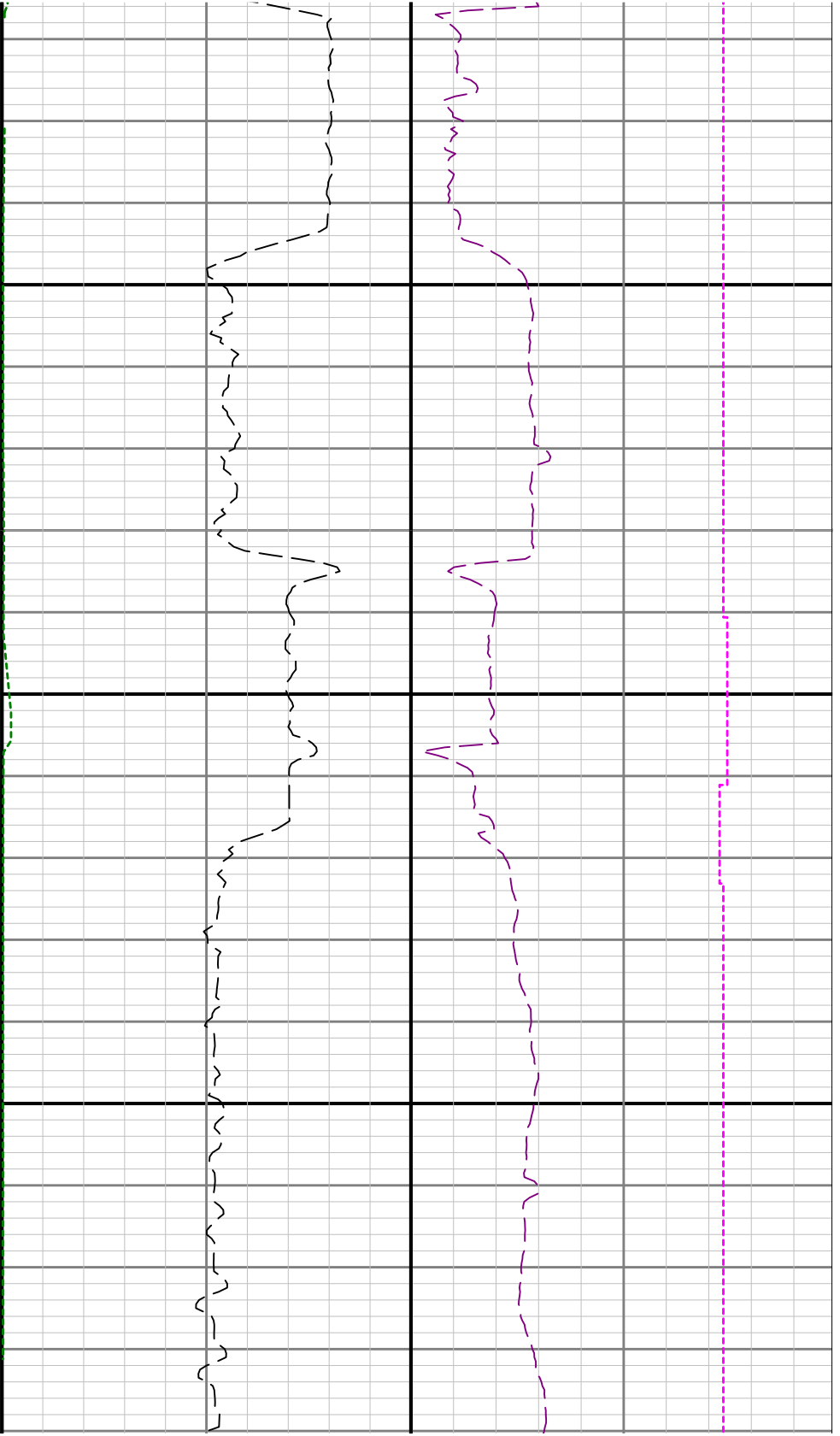




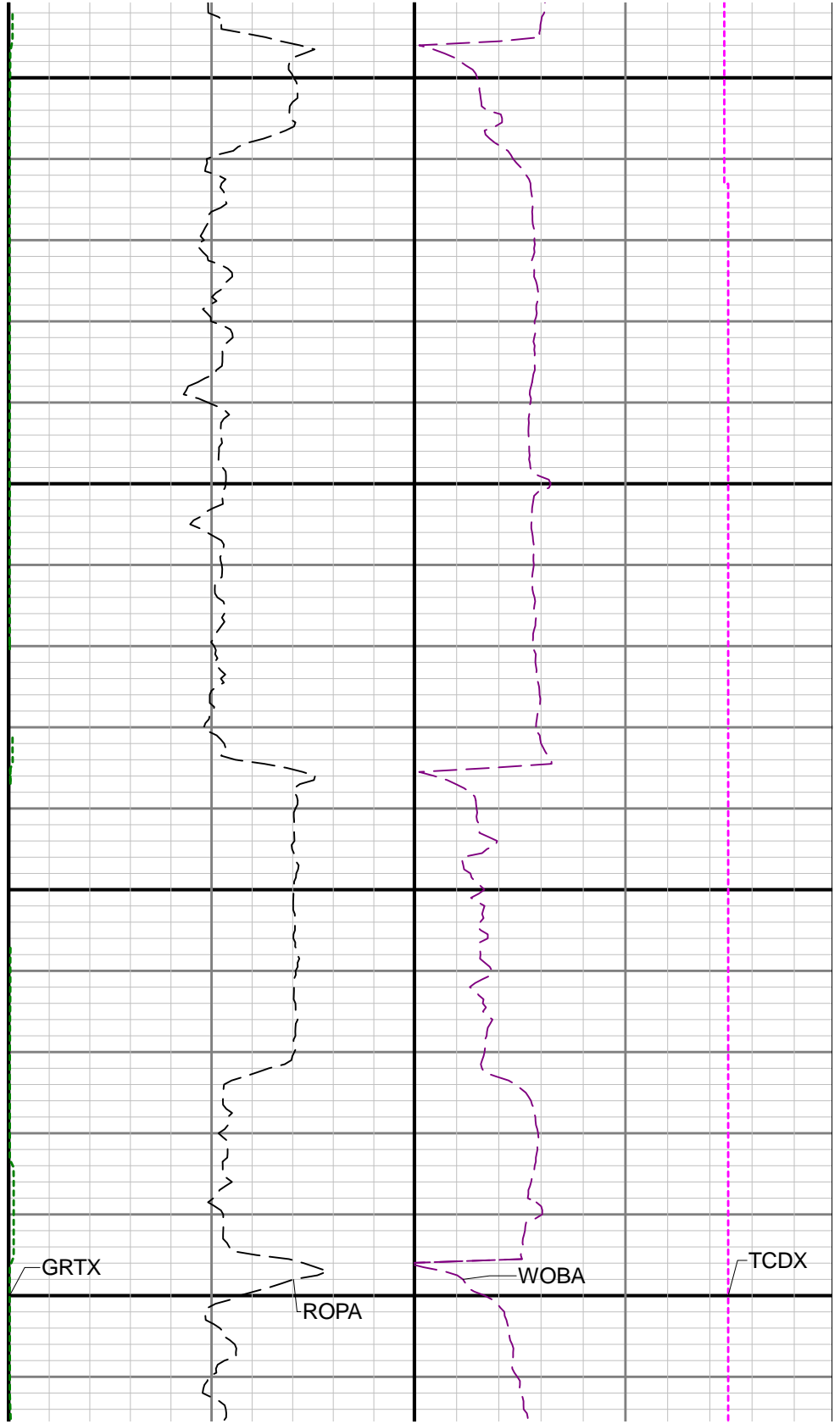
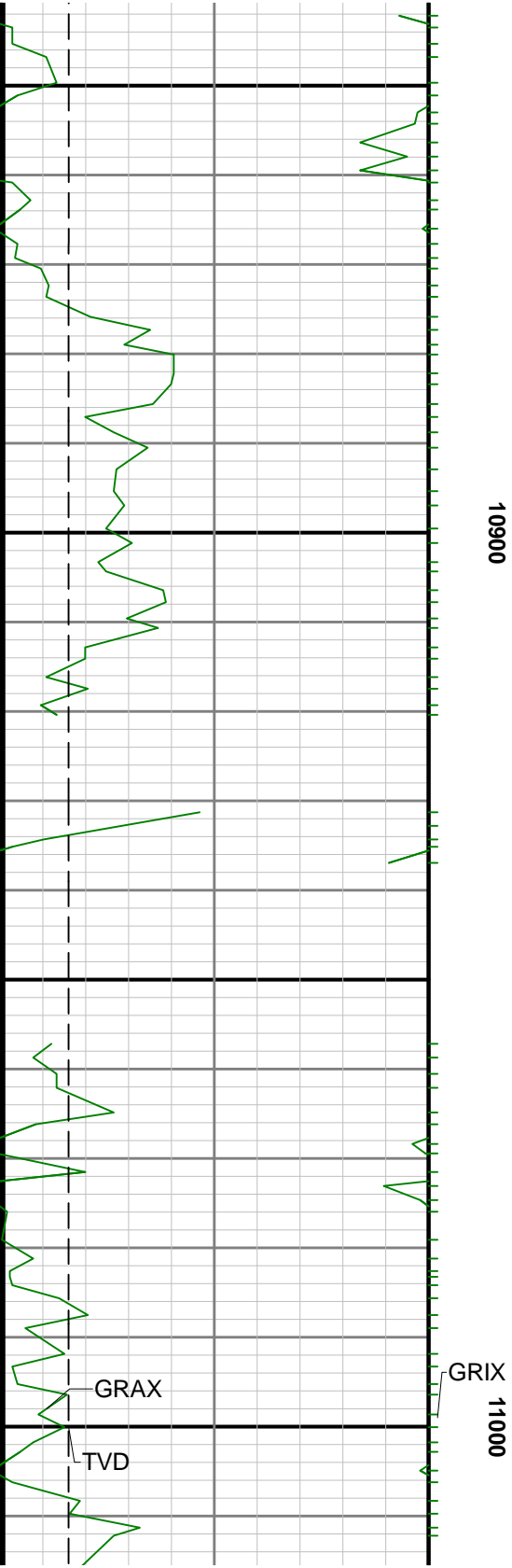
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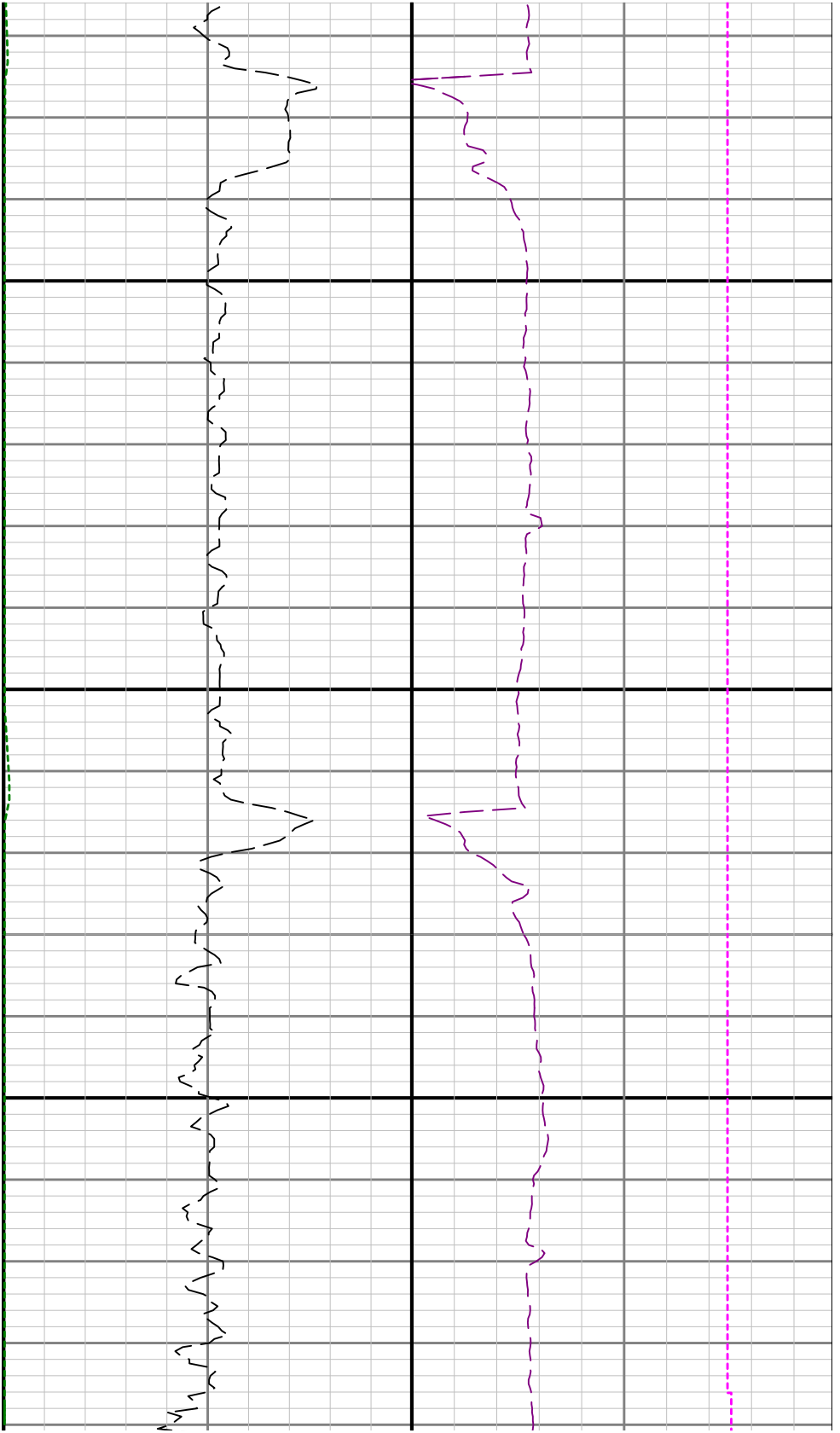




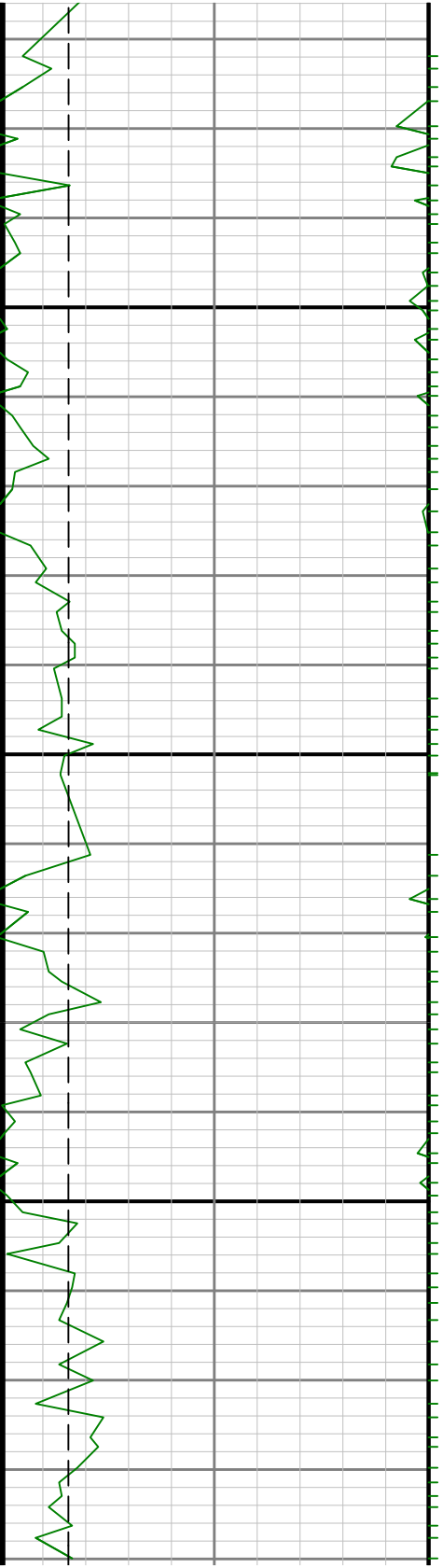


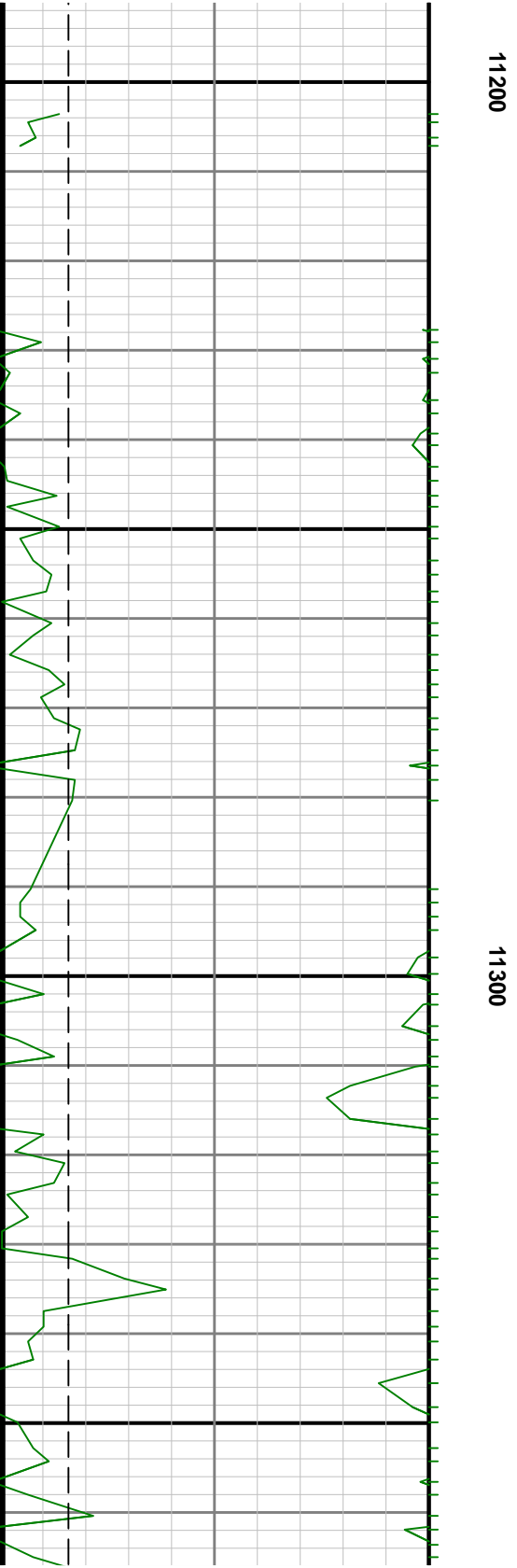
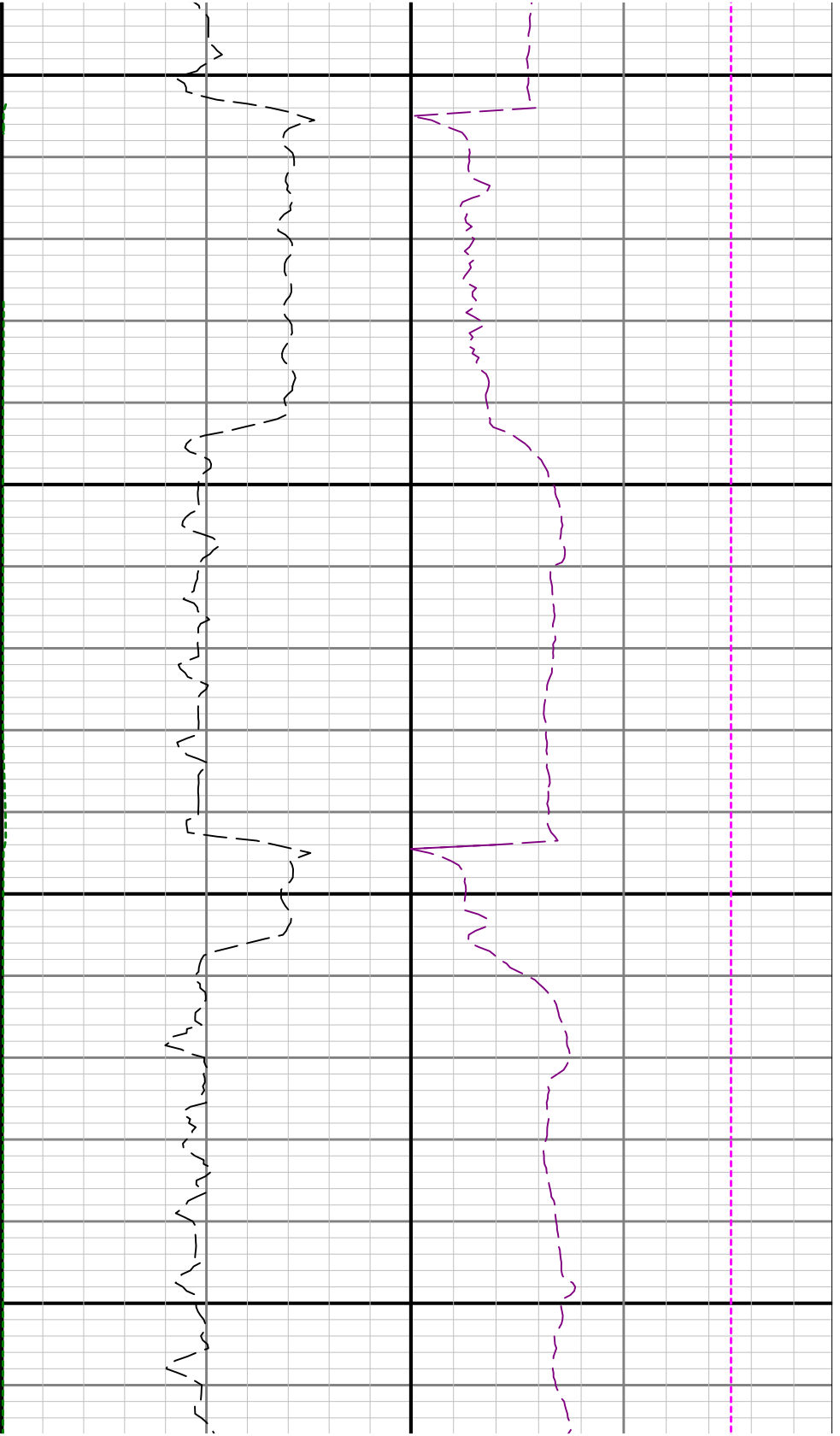


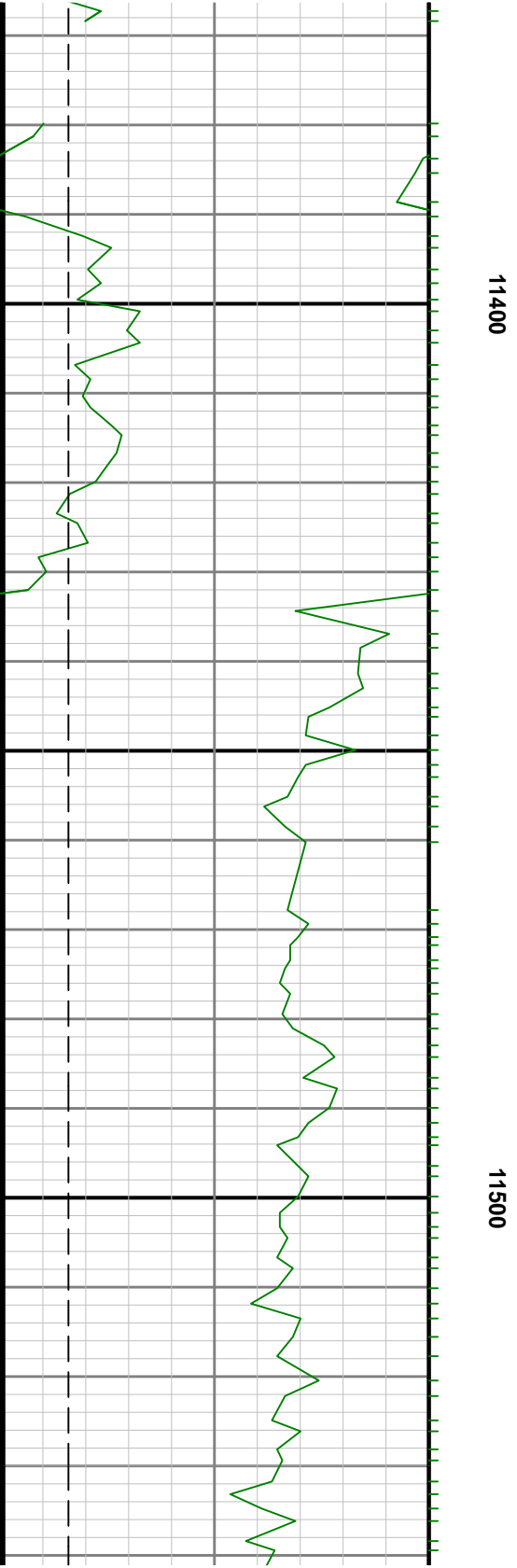
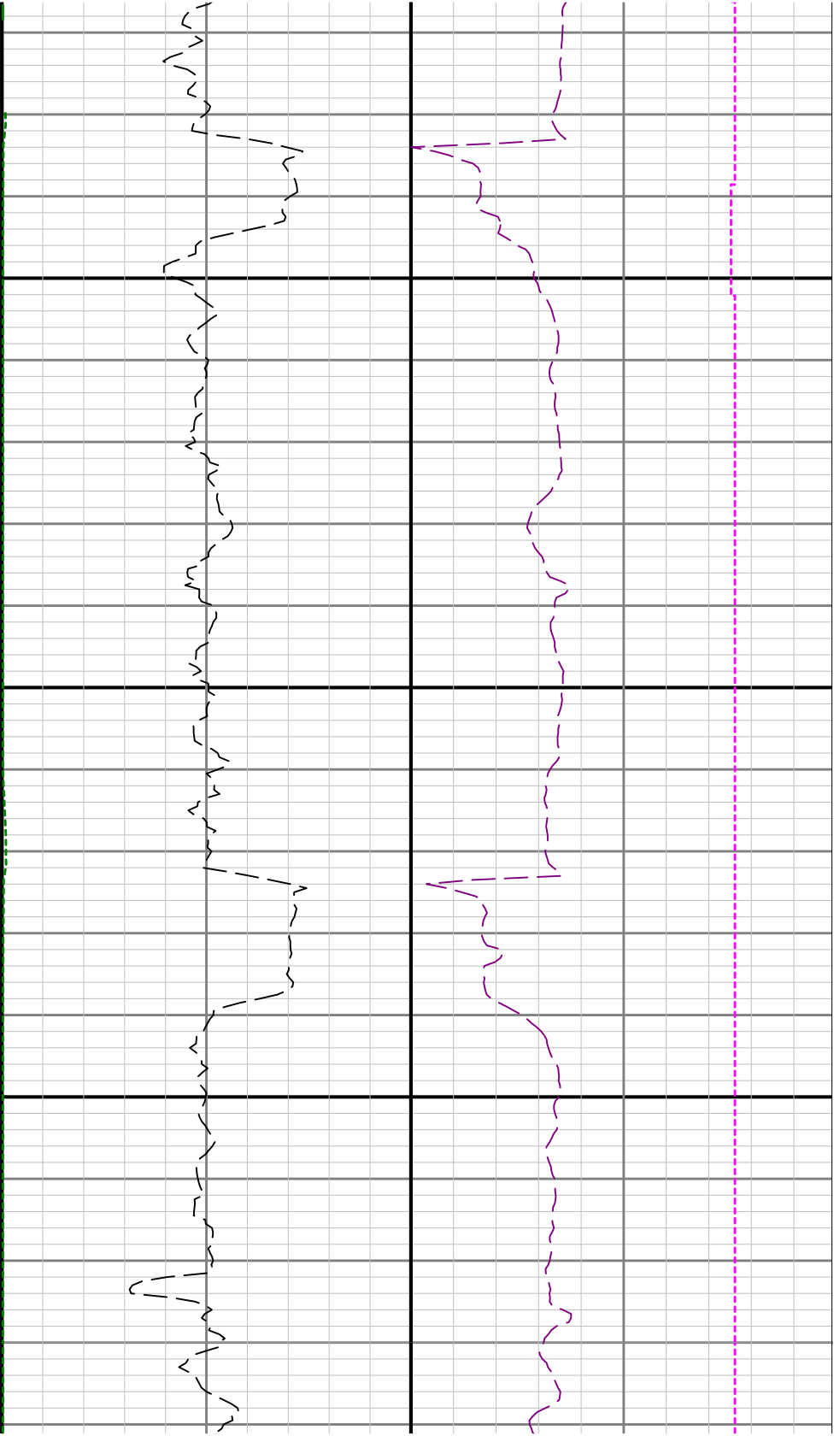


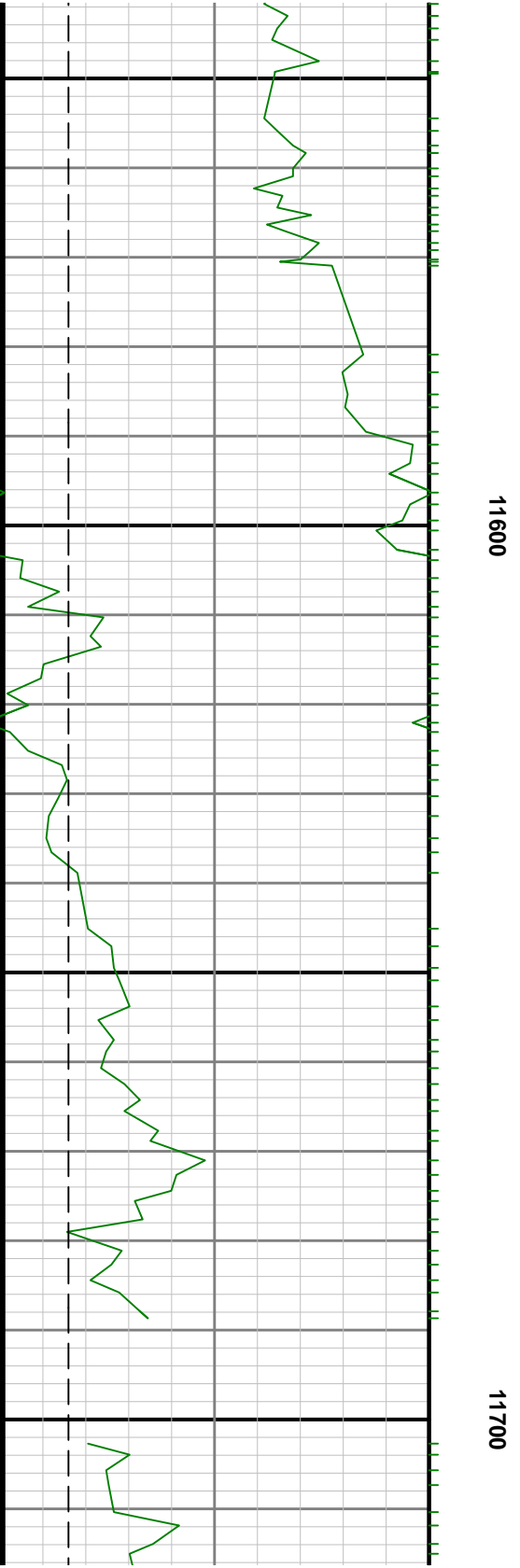
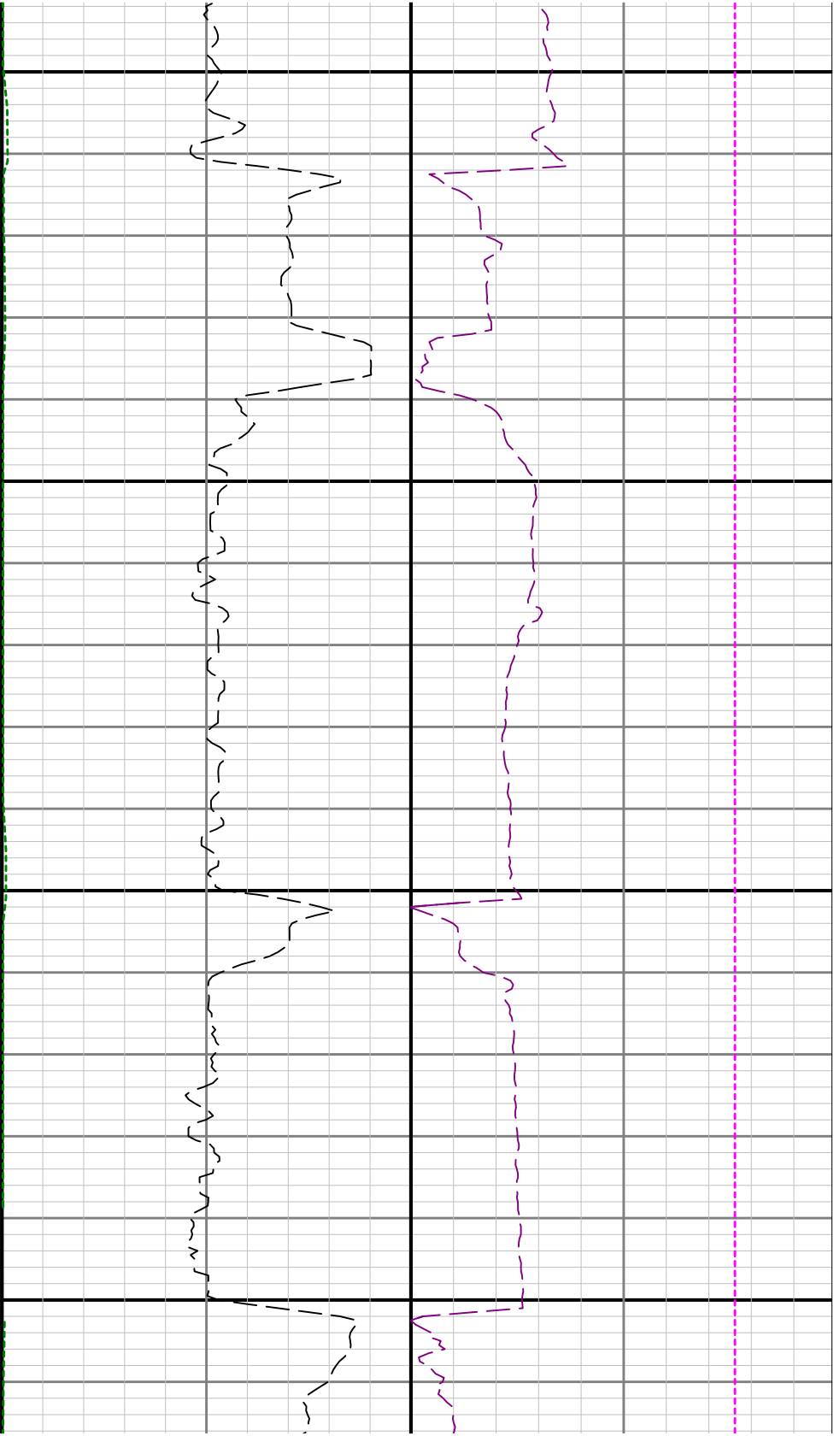


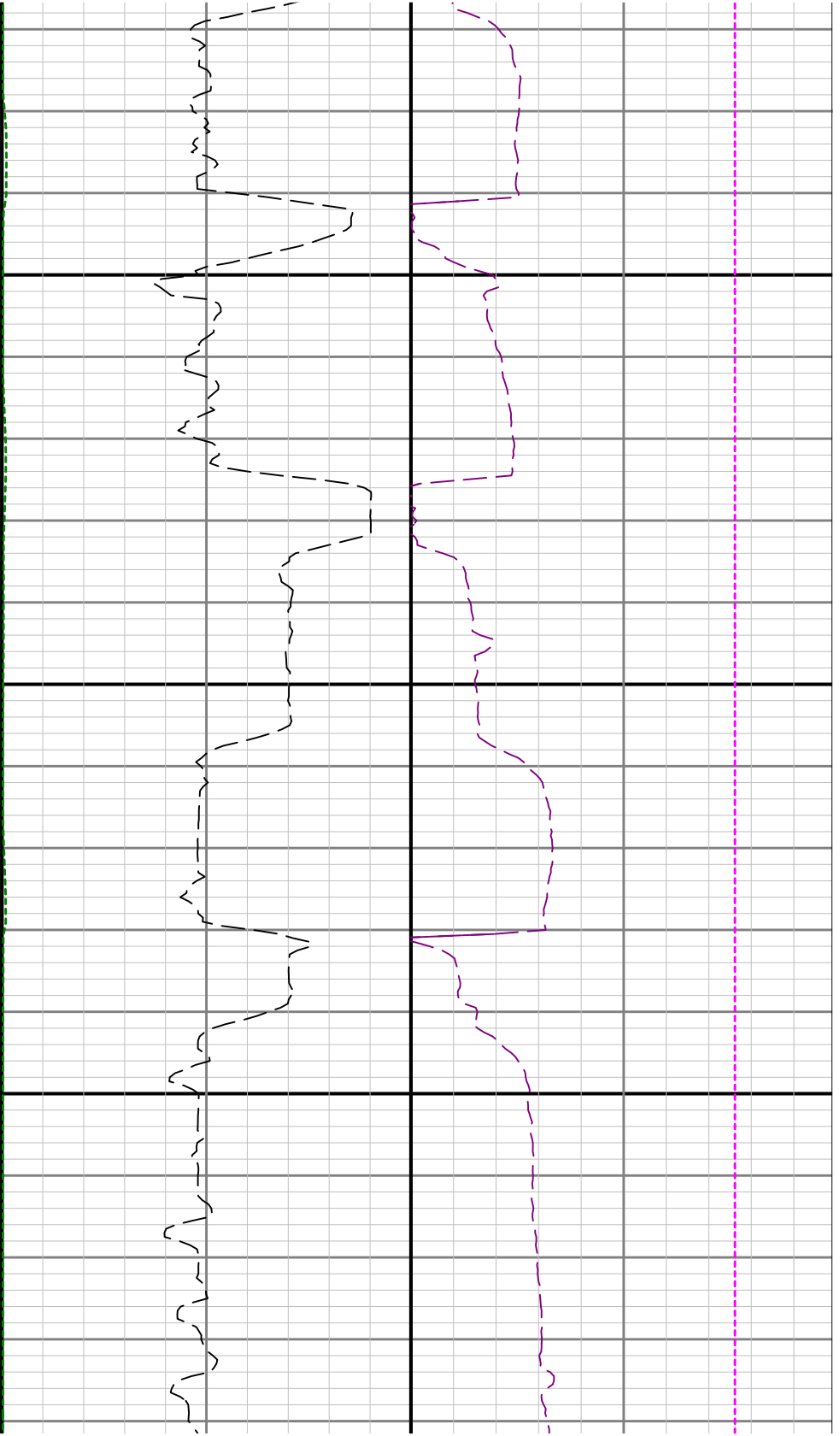
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11800

