



LWD MEMORY LOG

Gamma Ray

Scale:		Company: SRC Energy				
1:240 MD		Well: Falken 33N-9C-L				
Depth Reference:		Field: Weld County				
Driller's Depth		County: Weld County				
State: Colorado		Country: United States				
Status:	Surface Location:		Other Services:			
Final Print		Latitude: 40° 46' 00" N Longitude: 105° 00' 00" W				
API No: 05-123-45114		Directional				
Job ID: 8728231		SEC: 11	TWN: 6N RGE: 66W			
Permanent Datum (P.D.): Ground Level		Elevation: 4810.00 ft	Elev. KB: N/A			
Log Measured From: Rig Floor		Above P.D. 25.00 ft	Elev. DF: 4835.00 ft Elev. GL: 4810.00 ft			
Dates		Magnetic Field Reference				
Interval Logged		Azimuth Reference North: True				
Date From: 2017-11-10		Top: (ft) 1804.00				
Date To: 2017-11-15		Bottom: (ft) 18994.00				
Spud Date: 2017-09-11		Total Magnetic Field Strength: (nT) 52672				
		Mag to Reference North Correction: (deg) 7.43 E				
Borehole Record						
Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)
13.500	25.00	1820.00	9.625	36.00	25.00	1804.00
8.500	1820.00	18994.00				
Mud Record						
Type	From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Incl. Az (Start)	Incl. Az (End)
Oil Based Mud	1804.00	18994.00	13.500	1820.79	0.36 110.56	13.03 123.44
			8.500	17194.23	13.03 123.44	90.46 267.48
Deviation Record						
Mud Record						
Acquisition System						
Software Version			Other			
Baker Hughes Cadence			RT 4.1			
PlotStudio			4.1.7763.3			
Rig: PD 562			Unit: D&E			
Contractor: Precision Drilling			District: RMA			

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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	Bottom	From	To	Start Logging	End Logging	
						(ft)	(ft)	(ft)	(ft)			
2	2	8.500	PDC	3.00	AutoTrak Curve	1804.00	15618.00	1804.00	15631.00	2017-11-10 14:05	2017-11-13 05:15	55.06
3	3	8.500	PDC	3.00	AutoTrak Curve	15618.00	16702.00	15631.00	16715.00	2017-11-14 02:55	2017-11-14 09:45	8.37
4	4	8.500	PDC	3.00	AutoTrak Curve	16702.00	18981.00	16715.00	18994.00	2017-11-15 08:48	2017-11-16 01:35	24.32

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Garrett Gerdson	2017-11-10	2017-11-16						

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+ (%)
2017-11-10 04:00	2	1820.00	Oil Based Mud	10.3	50	N/A	10.0	72/28	Active Pit	43000	0.00
2017-11-11 04:00	2	6158.00	Oil Based Mud	10.3	52	N/A	10.0	70/30	Active Pit	42000	0.00
2017-11-11 16:00	2	8350.00	Oil Based Mud	10.2	50	N/A	9.6	70/30	Active Pit	44000	0.00
2017-11-12 04:00	2	10580.00	Oil Based Mud	10.2	51	N/A	9.6	70/30	Active Pit	45000	0.00
2017-11-12 16:00	2	13170.00	Oil Based Mud	10.3	50	N/A	9.6	70/30	Active Pit	45000	0.00
2017-11-14 04:00	3	15857.00	Oil Based Mud	10.3	71	N/A	9.8	71/29	Active Pit	44000	0.00

2017-11-15 11:00	4	16716.00	Oil Based Mud	10.3	53	N/A	10.4	71/29	Active Pit	45000	0.00
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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	ATC_SU	12406997	Near Bit Inclination	5.93	6.73	7.000	4.330
2	ATC_SU	12406997	Near Bit VSS	5.93	6.73	7.000	4.330
2	ATC_MWD	14313851	Gamma (single)	2.75	12.90	7.000	3.250
2	ATC_MWD	14313851	Directional (mag)	12.27	22.42	7.000	3.250
3	ATC_SU	12406997	Near Bit Inclination	5.93	6.73	7.000	4.330
3	ATC_SU	12406997	Near Bit VSS	5.93	6.73	7.000	4.330
3	ATC_MWD	14313851	Gamma (single)	2.75	12.90	7.000	3.250
3	ATC_MWD	14313851	Directional (mag)	12.27	22.42	7.000	3.250
4	ATC_SU	12406997	Near Bit Inclination	5.93	6.73	7.000	4.330
4	ATC_SU	12406997	Near Bit VSS	5.93	6.73	7.000	4.330
4	ATC_MWD	14313851	Gamma (single)	2.75	12.90	7.000	3.250
4	ATC_MWD	14313851	Directional (mag)	12.27	22.42	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 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 LWD Run 1 utilized 8 inch NaviTrak service (Directional only) behind a 13 1/2 inch bit and steerable assembly from surface to 1820 feet MD (surface to 1788 feet TVD). No logging data was acquired during this run.
- 3 Baker Hughes LWD Runs 2, 3 and 4 utilized 6 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 8 1/2 inch bit and rotary steerable assembly from 1820 to 18994 feet MD (1788 to 7166 feet TVD).
- 4 Gamma Ray Curve (GRAM) is presented 0 to 300 API per customer request.

Remarks

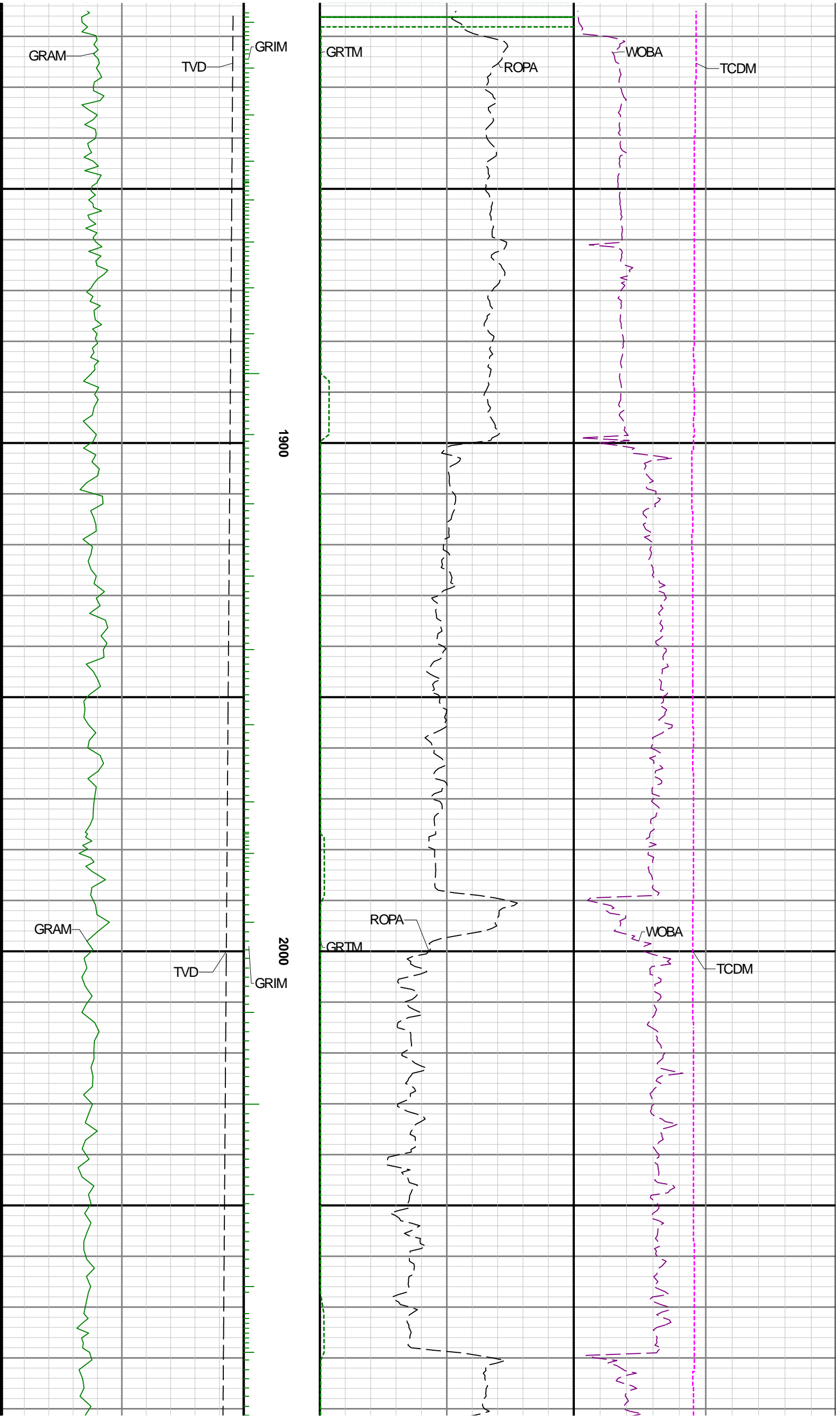
Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	15622.00	8.500	4	The interval from 15619 to 15632 feet MD (7183 feet TVD) was logged up to 22 hours after being drilled due to a trip out of the hole due to a tool failure.
2	16710.00	8.500	4	The interval from 16715 to 16702 feet MD (7181 feet TVD) was logged up to 23 hours after being drilled due to a trip out of the hole due to a tool failure.
3	18990.00	8.500	4	The interval from 18981 to 18994 feet MD (7166 feet TVD) was not logged due to sensor to bit offset at well TD.

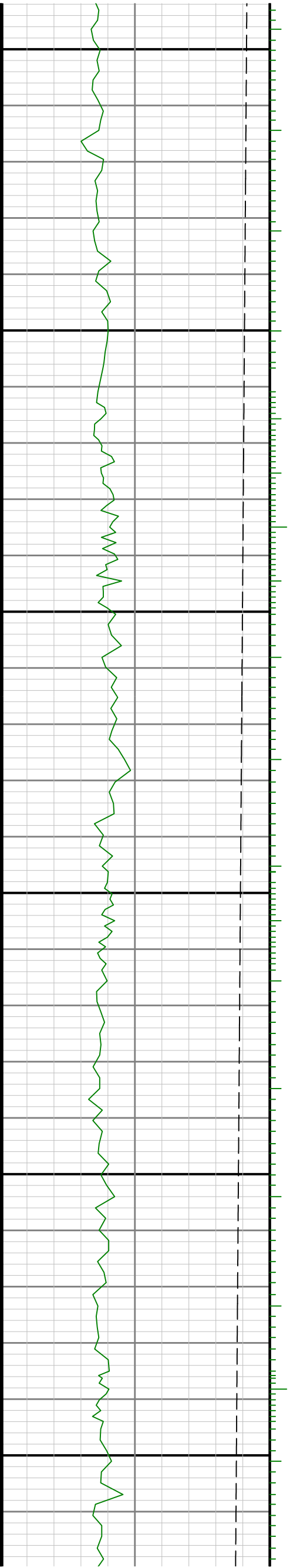
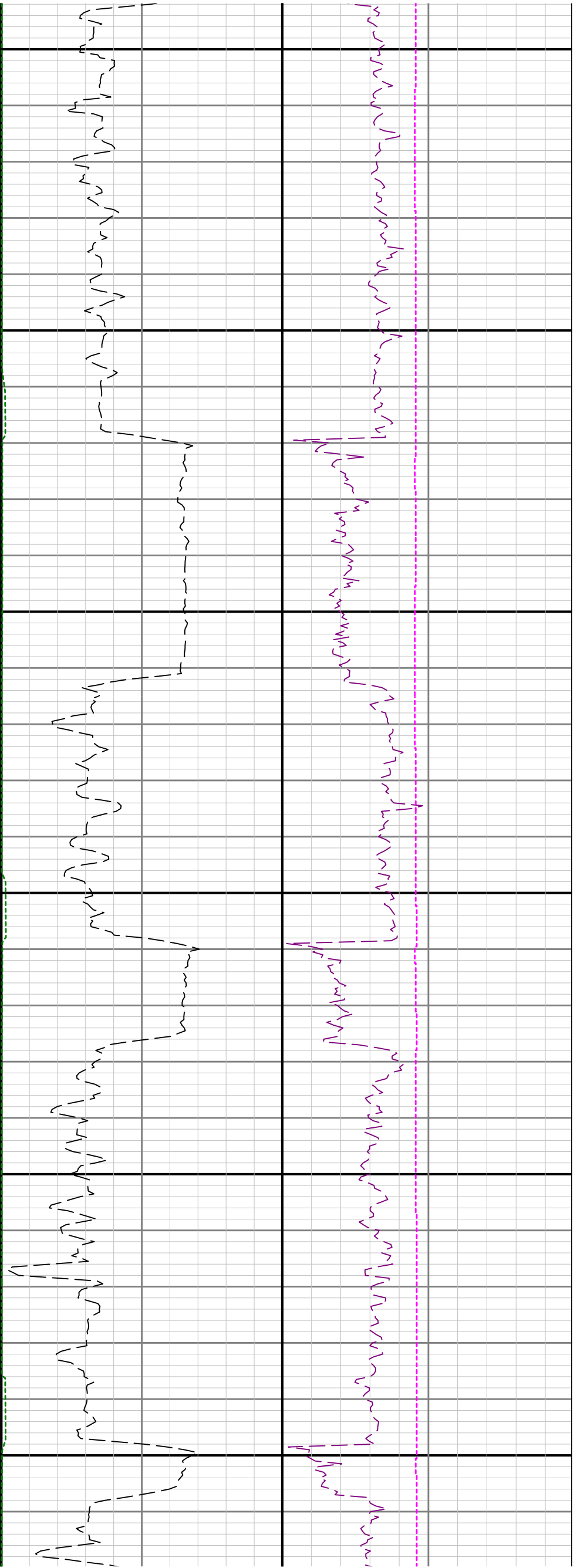
Curve Mnemonics

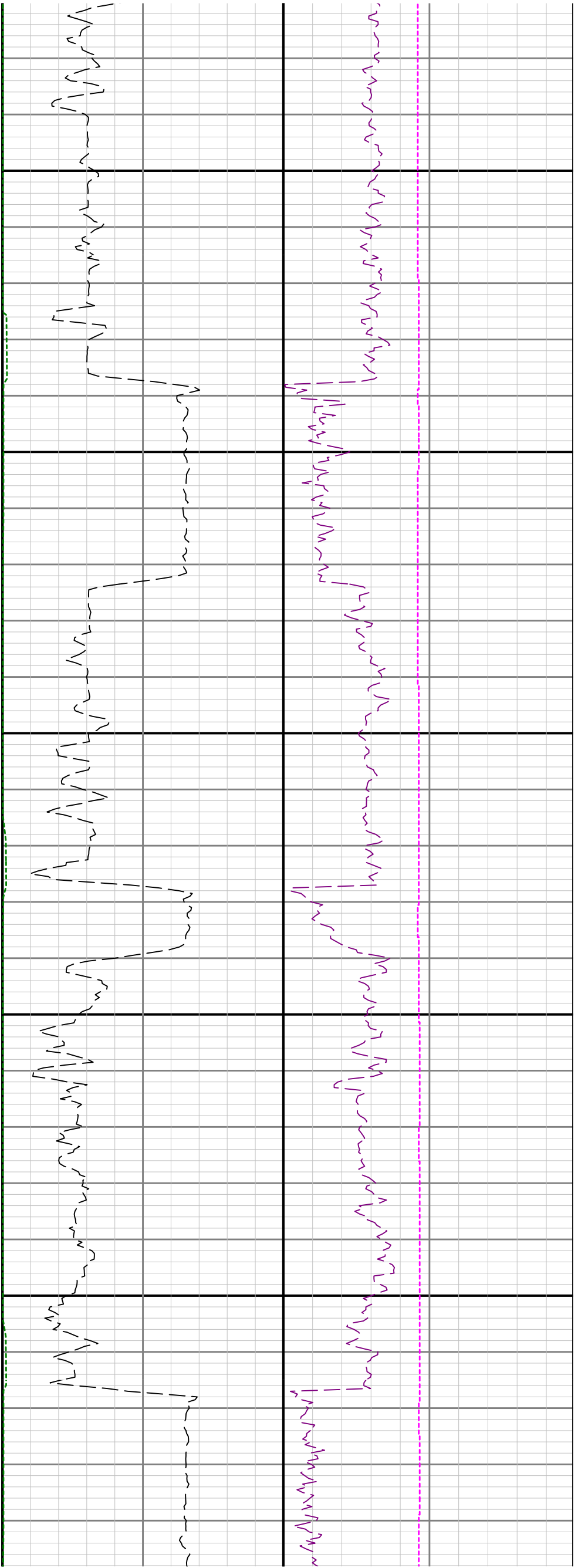
Presented Curves	Description	Units
ROPA	Depth Averaged ROP 3 ft Average	ft/h
TVD	True Vertical Depth	ft
WOBA	Weight On Bit, Average 1 ft Average	klb
GRAM	OnTrak - Gamma Ray - Apparent - Memory 0.5 ft Average	API
GRIM	OnTrak - Gamma Ray - Data Point Indicator - Memory	unitless
GRTM	OnTrak - Gamma Ray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

	Company	SRC Energy		
	Well	Falken 33N-9C-L		
	Interval	Date From:	2017-11-10 07:17:10	Top: 1815.00
	Created	Date To:	2017-11-15 18:35:52	Bottom: 18998.00
			2017-11-17 18:05:07	

Gamma Ray - Apparent 0.5 ft Average GRAM	MD 1:240 feet	Gamma Time Since Drilled GRTM	Weight On Bit, Average 1 ft Average WOBA
0 300		0 600	0 50
API		min	klb
True Vertical Depth TVD		Depth Averaged ROP 3 ft Average ROPA	Downhole Temperature TCDM
8000 1500		1000 0	0 275
ft		ft/h	degF
	1800 9 5/8" Casing $\frac{V}{2d}$		



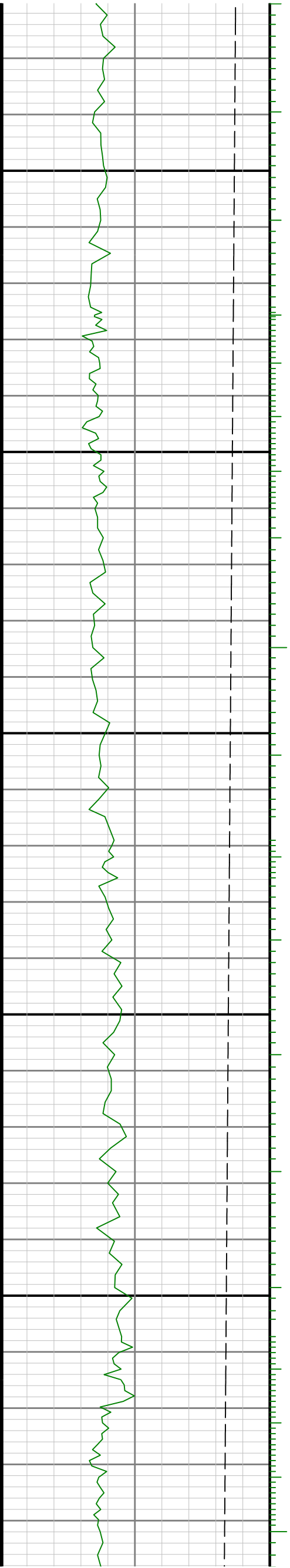


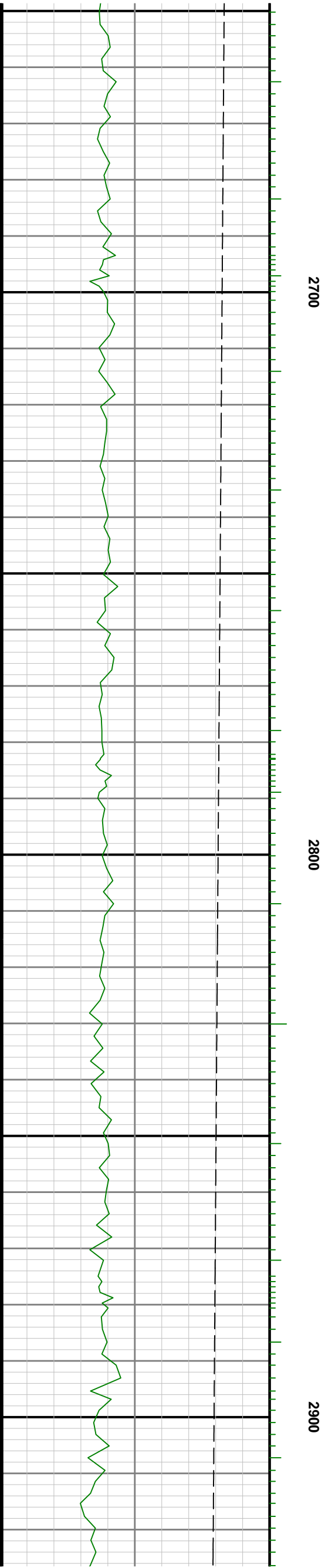
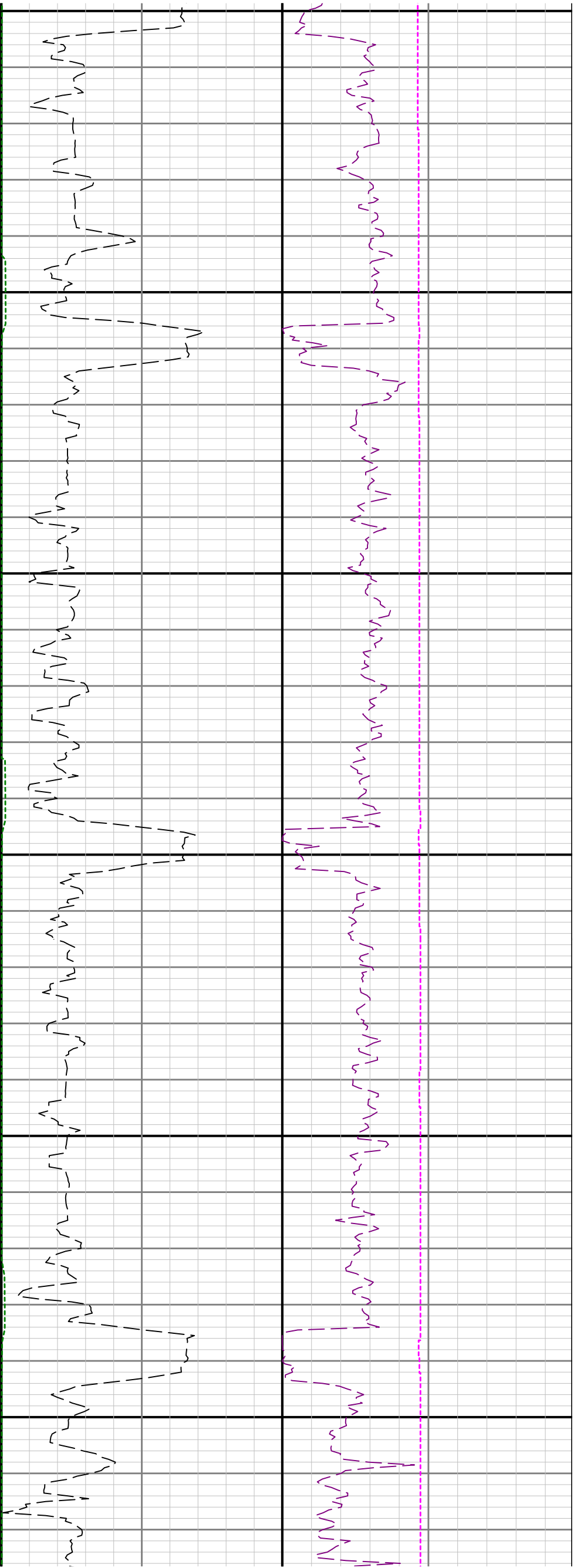


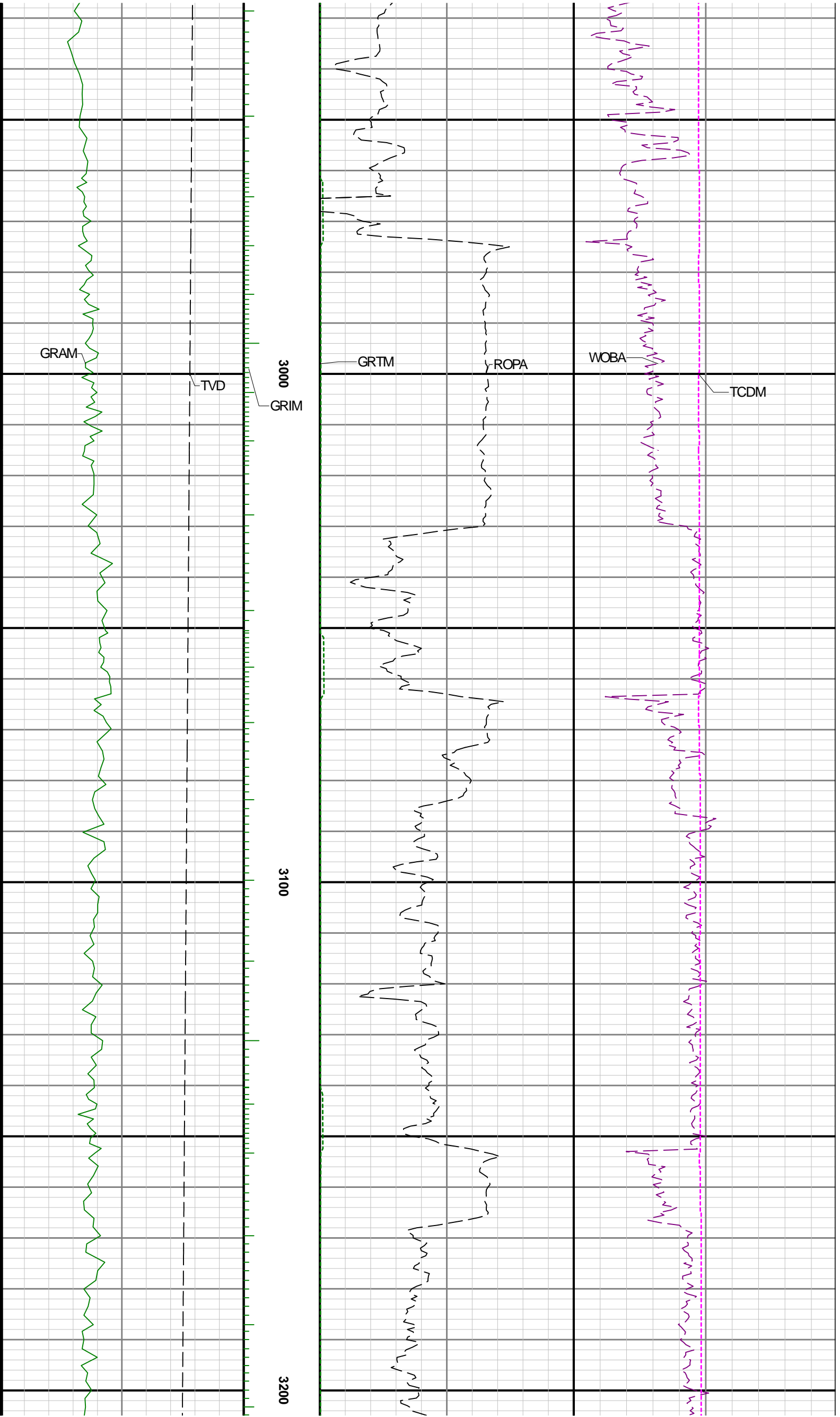
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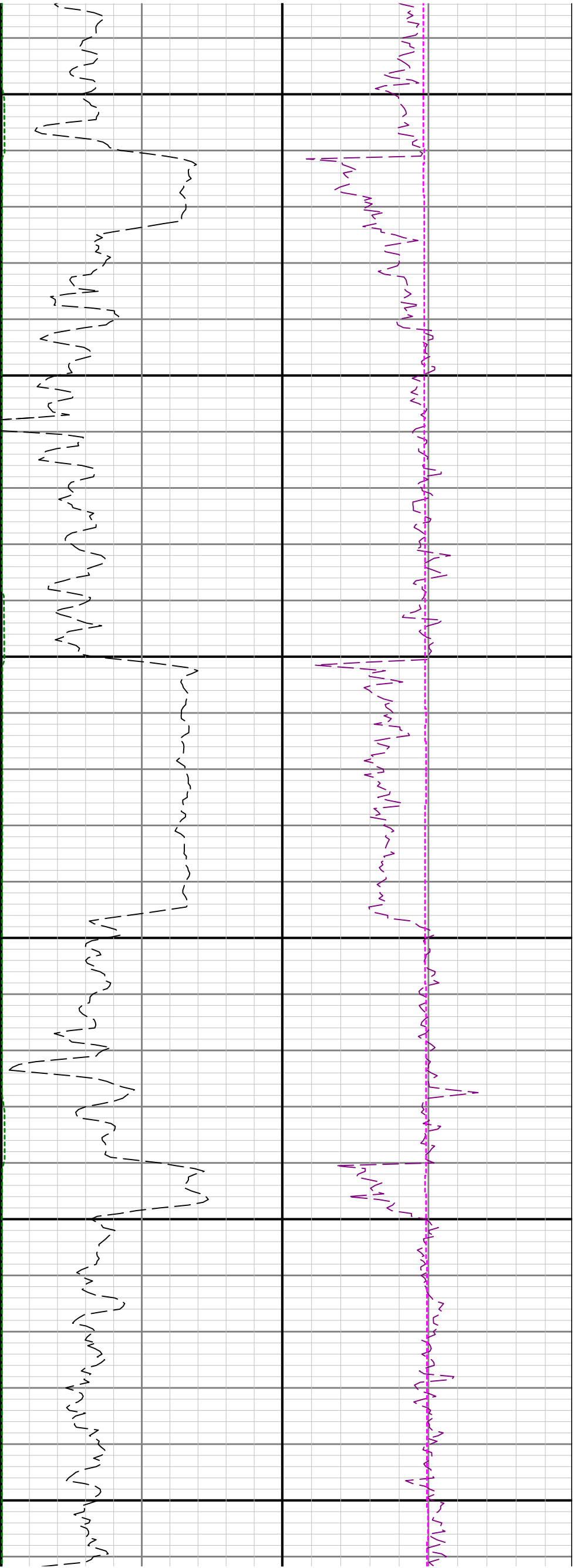
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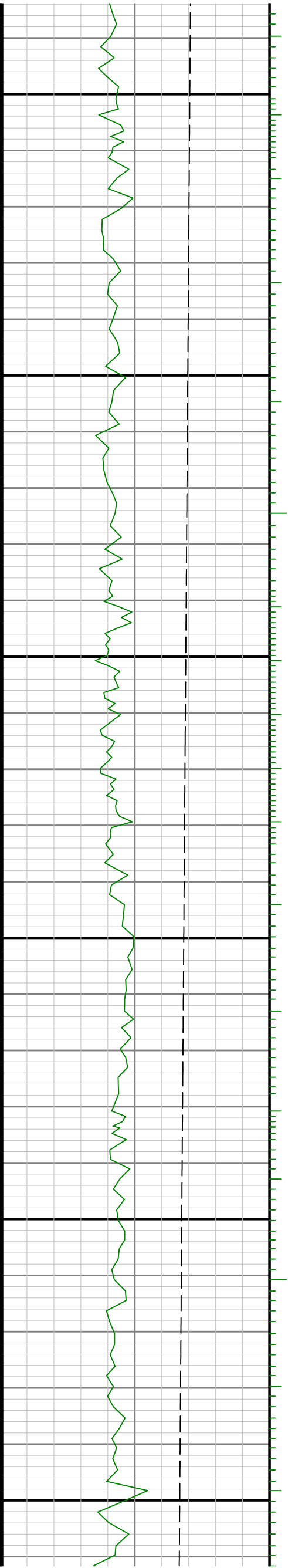


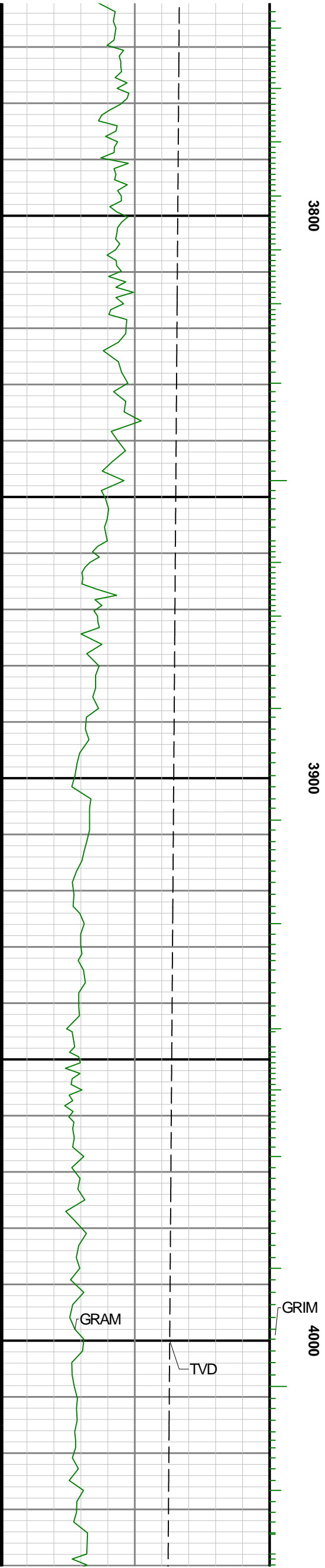
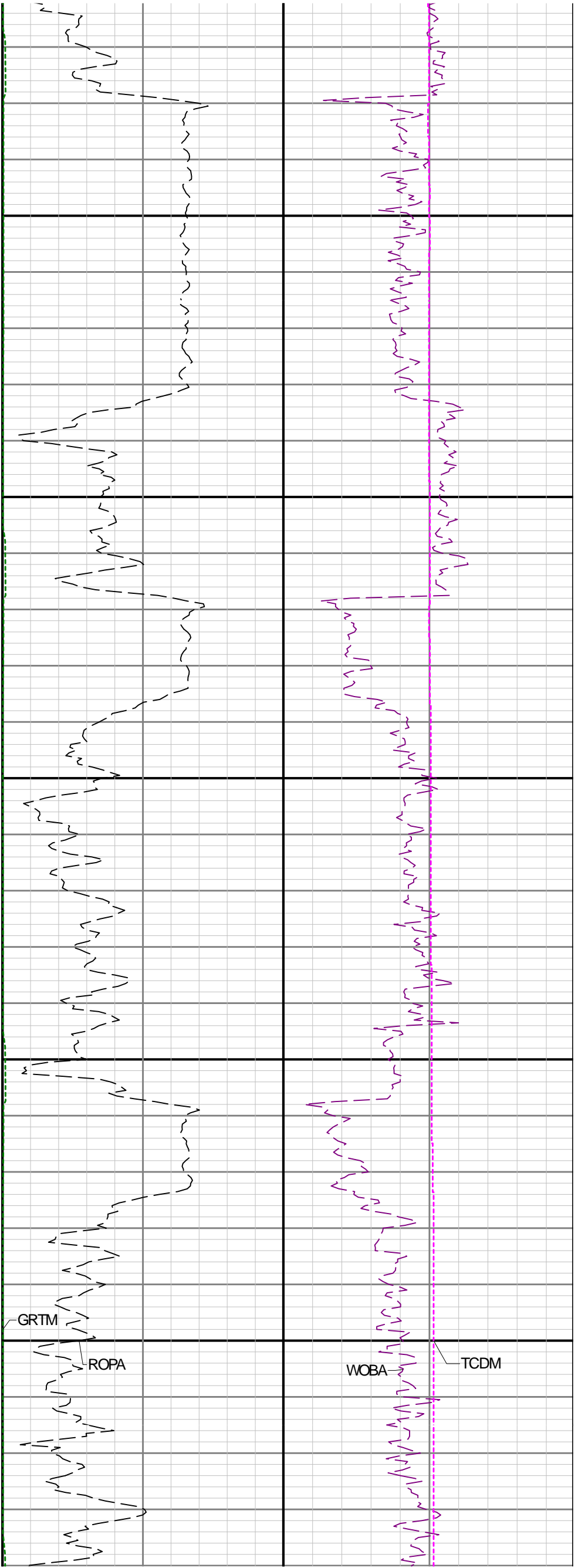


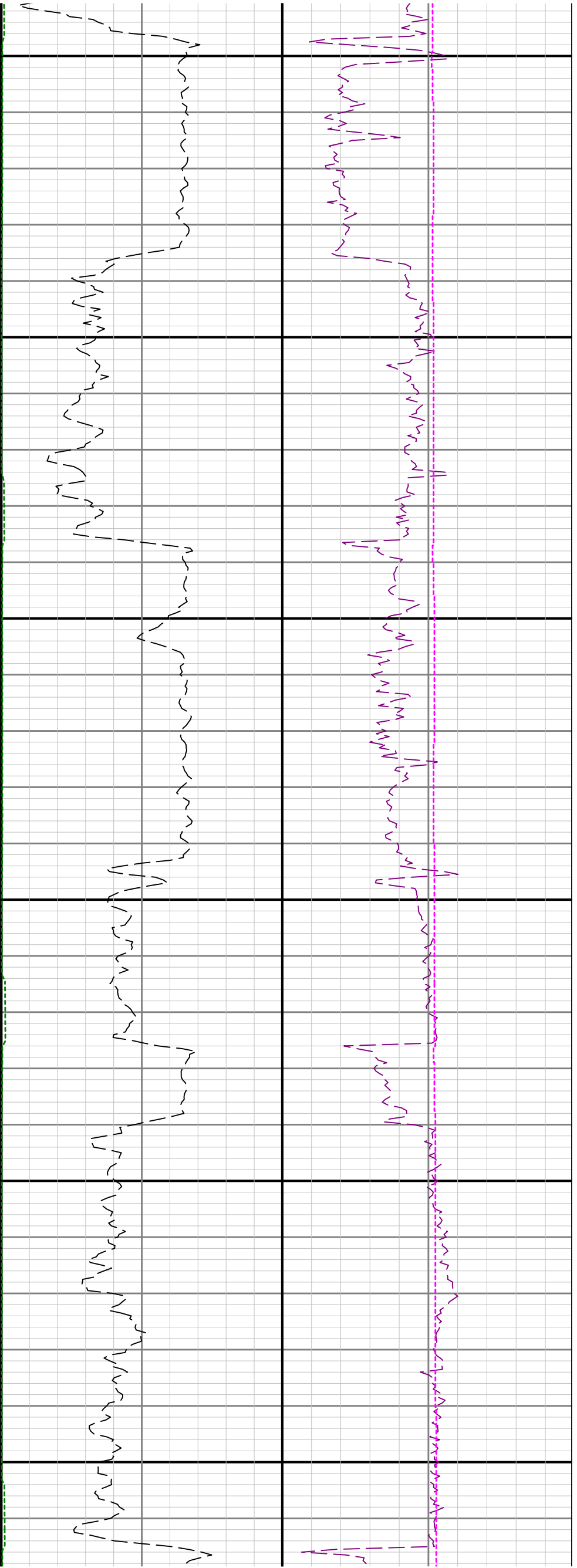




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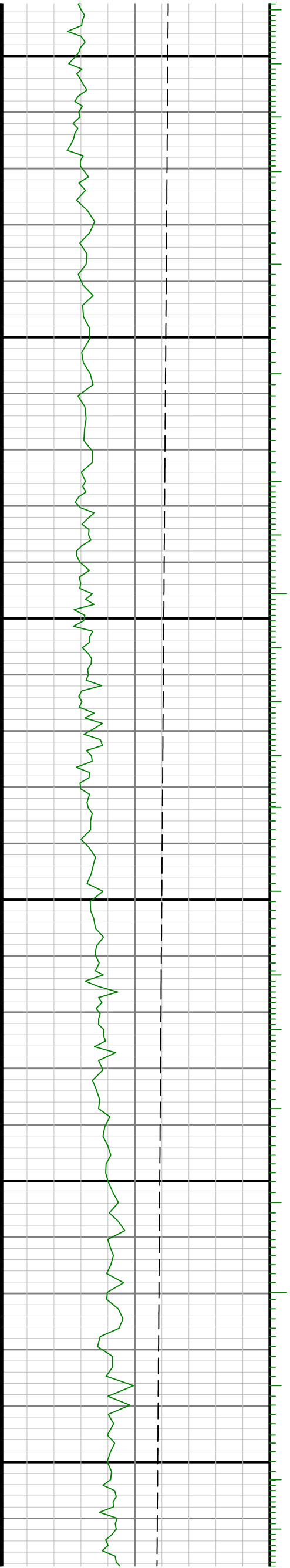


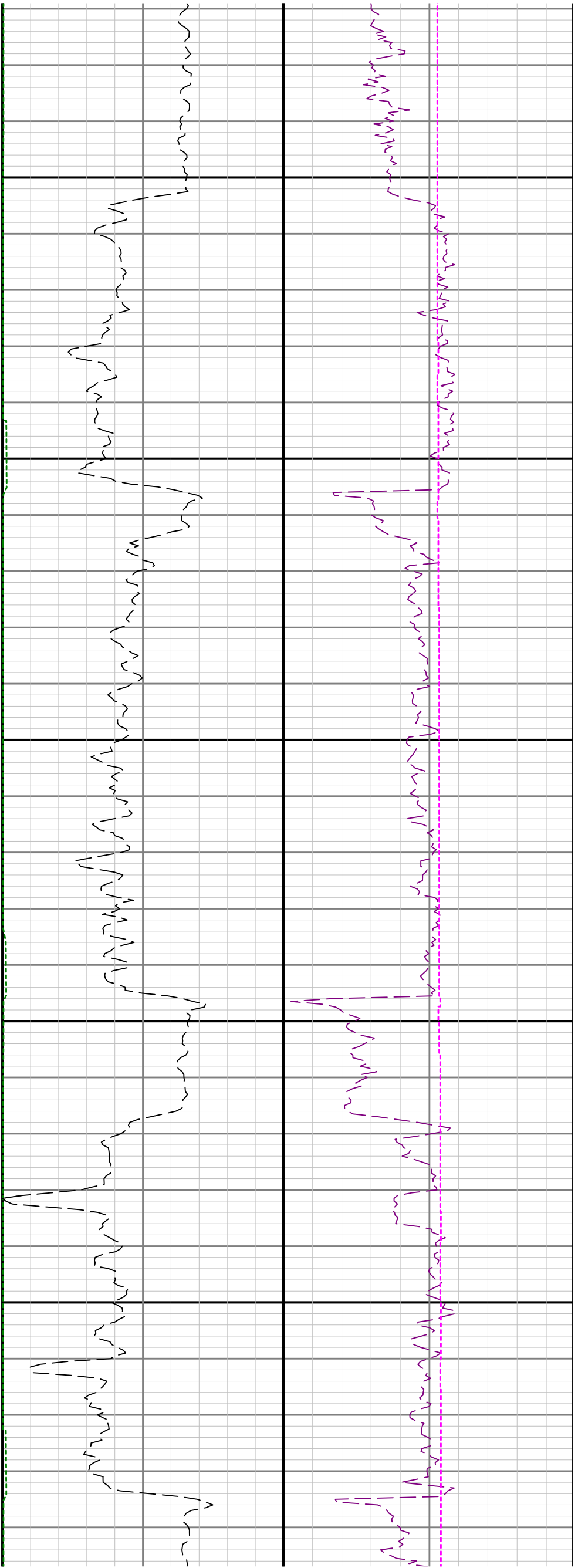


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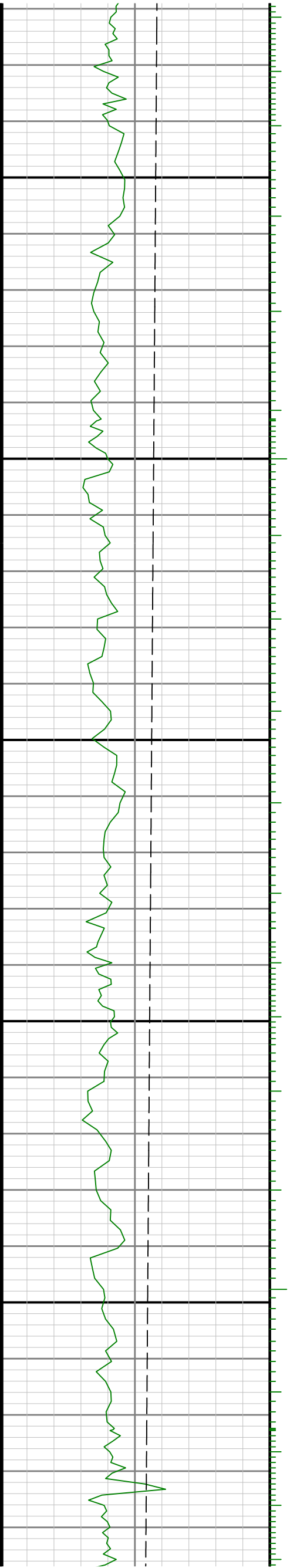
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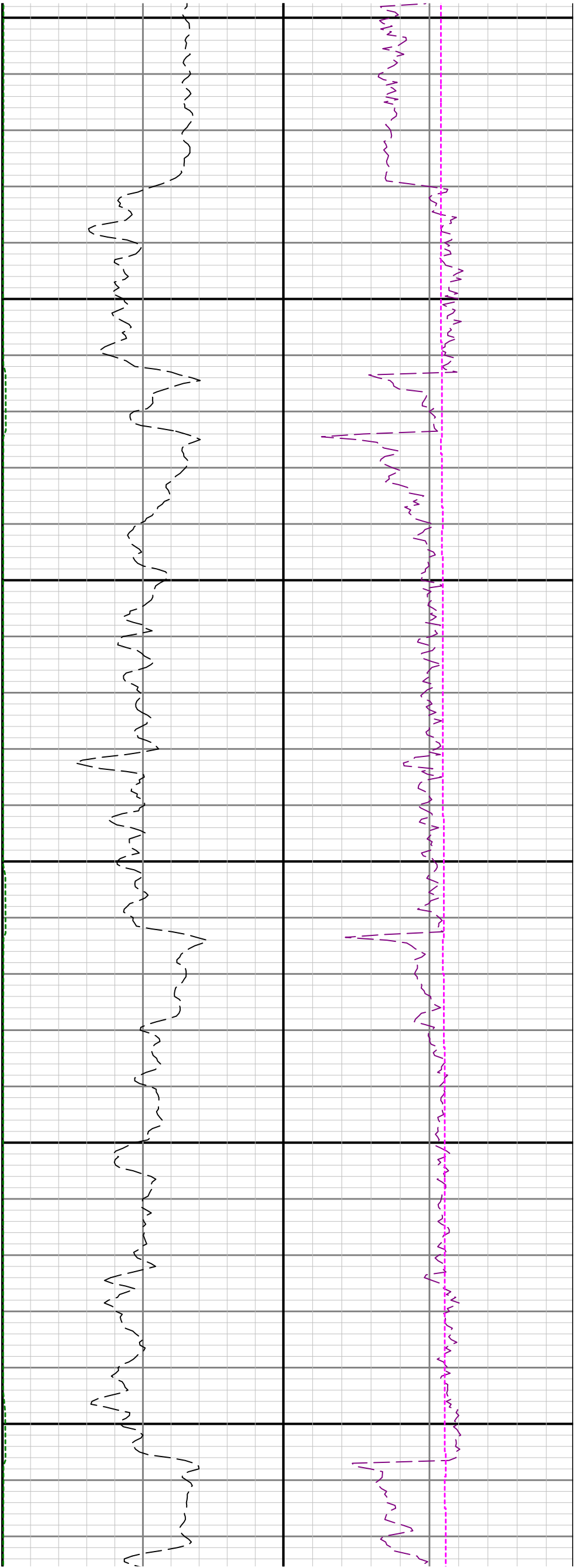




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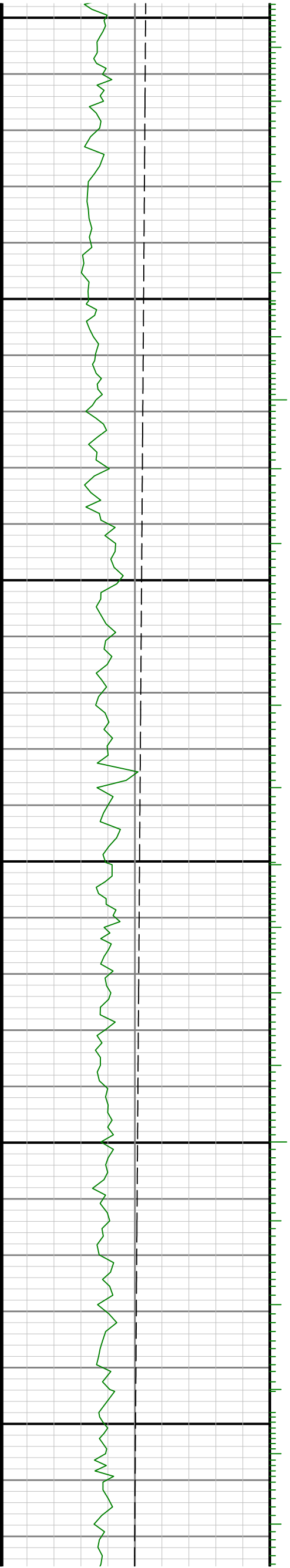


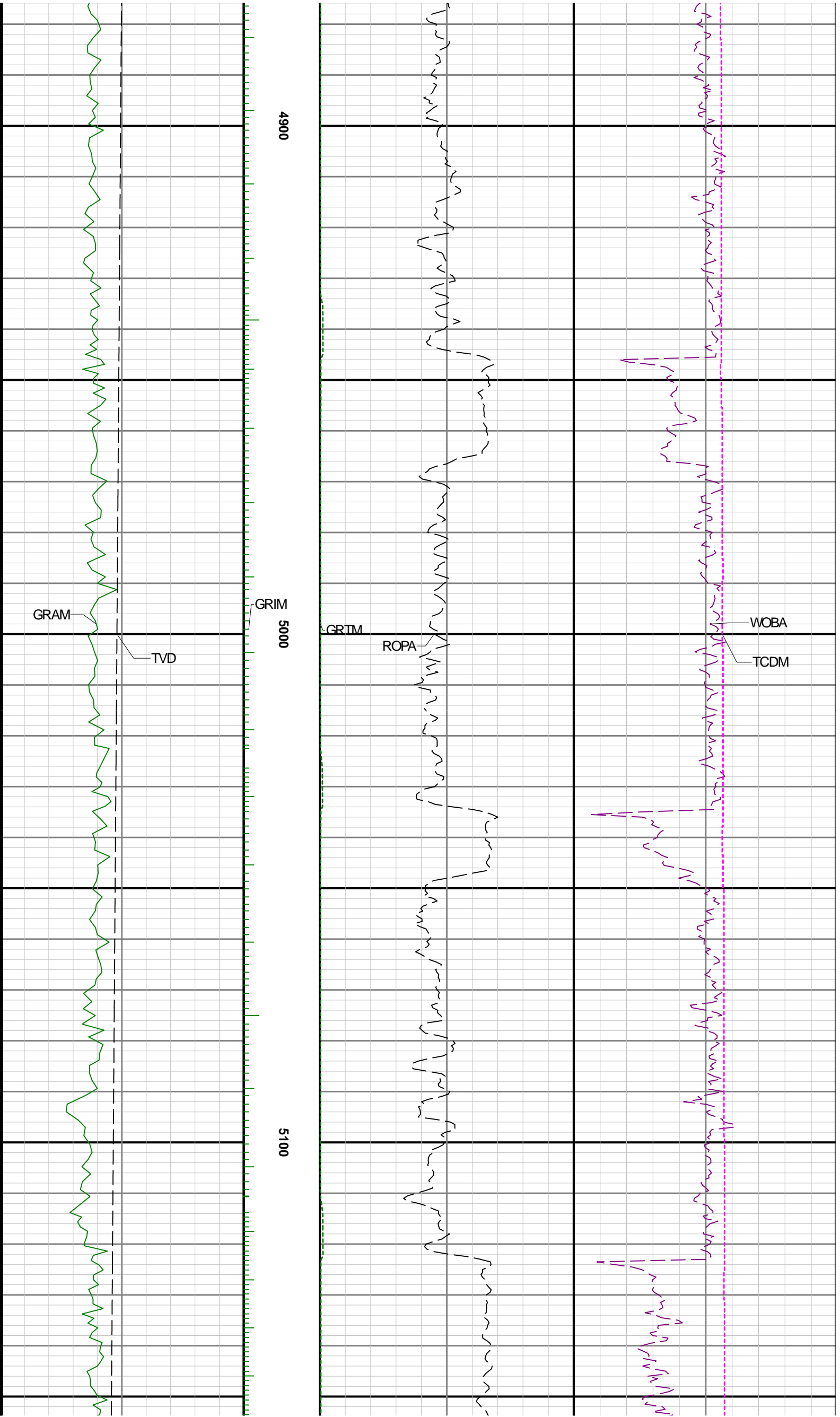


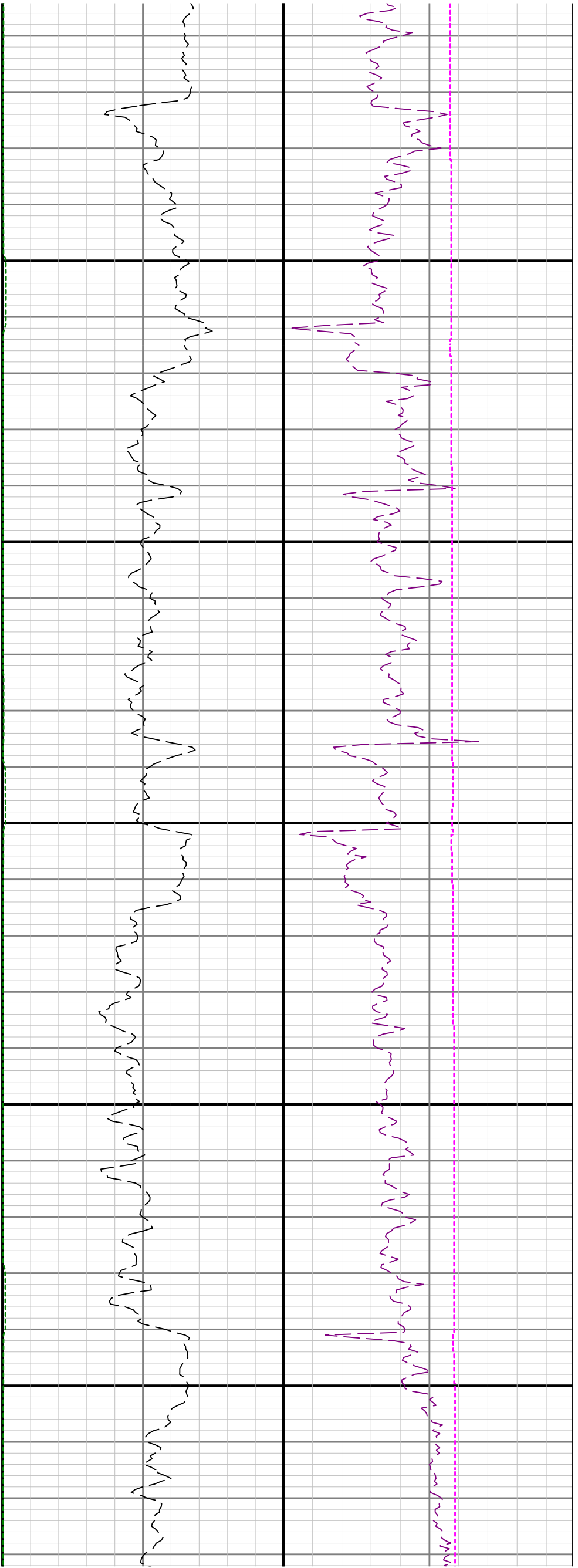
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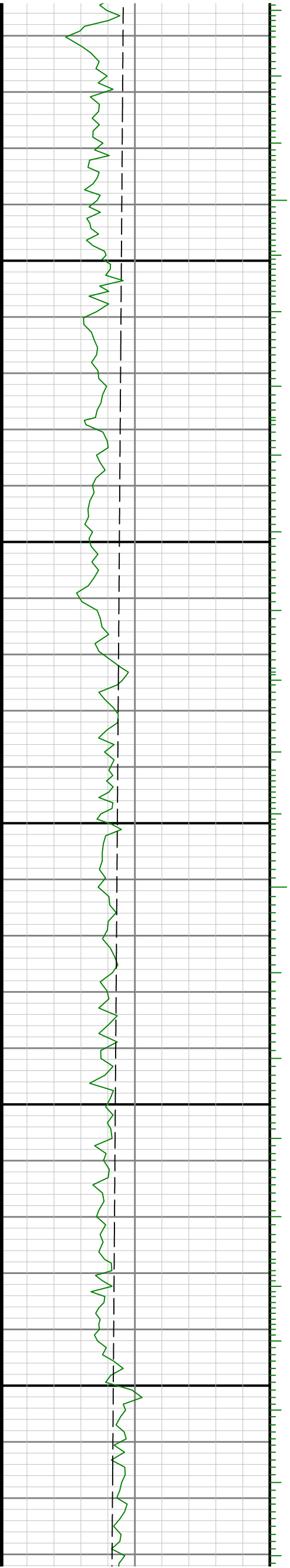


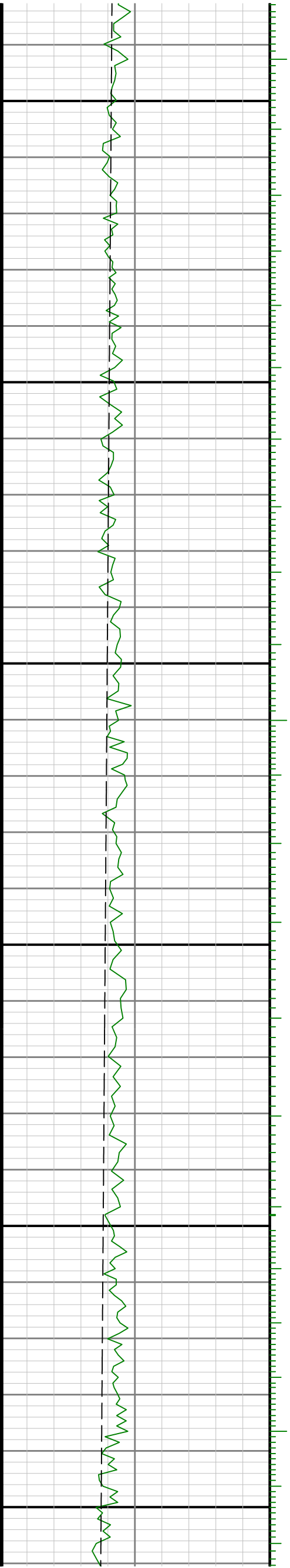
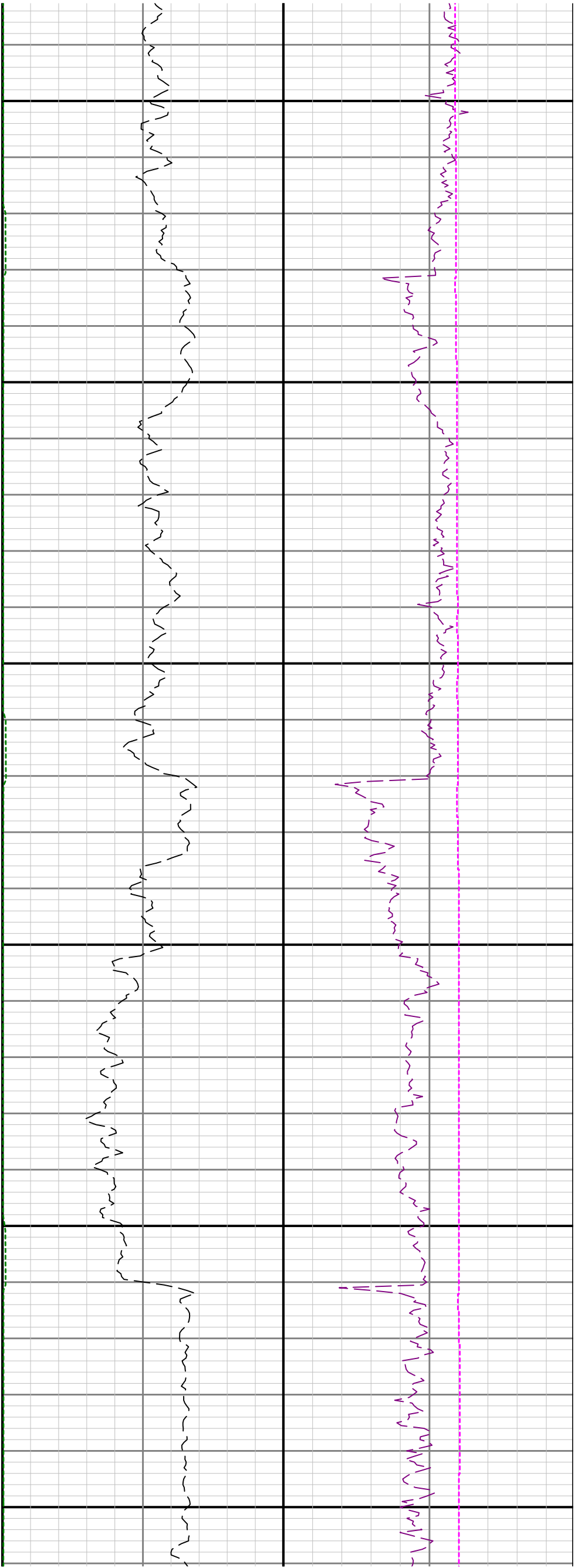


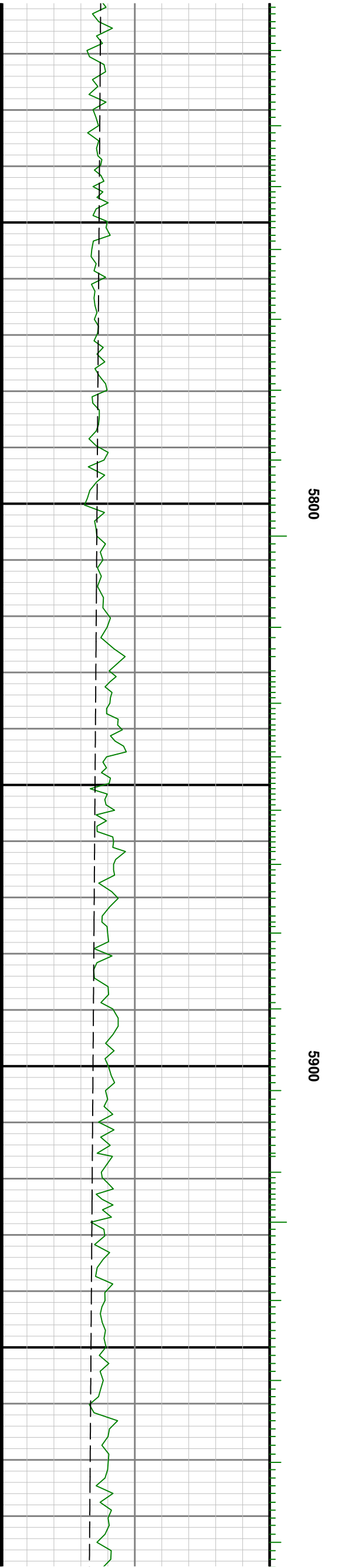
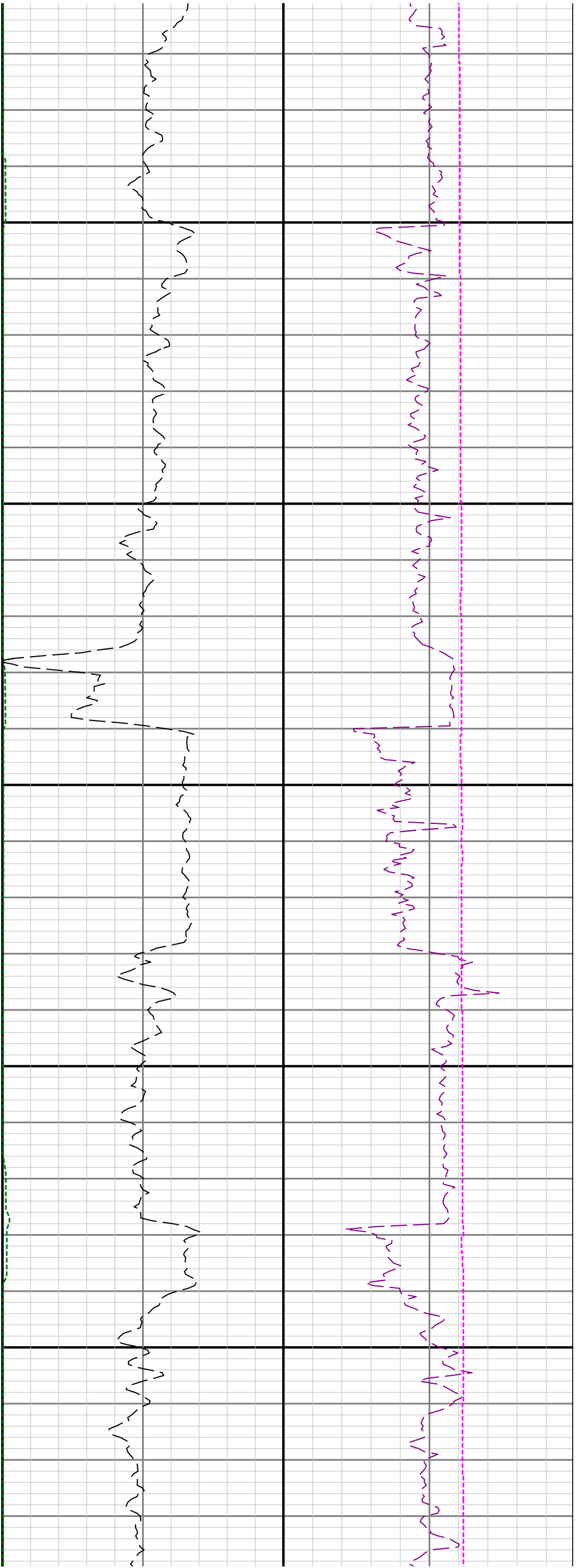
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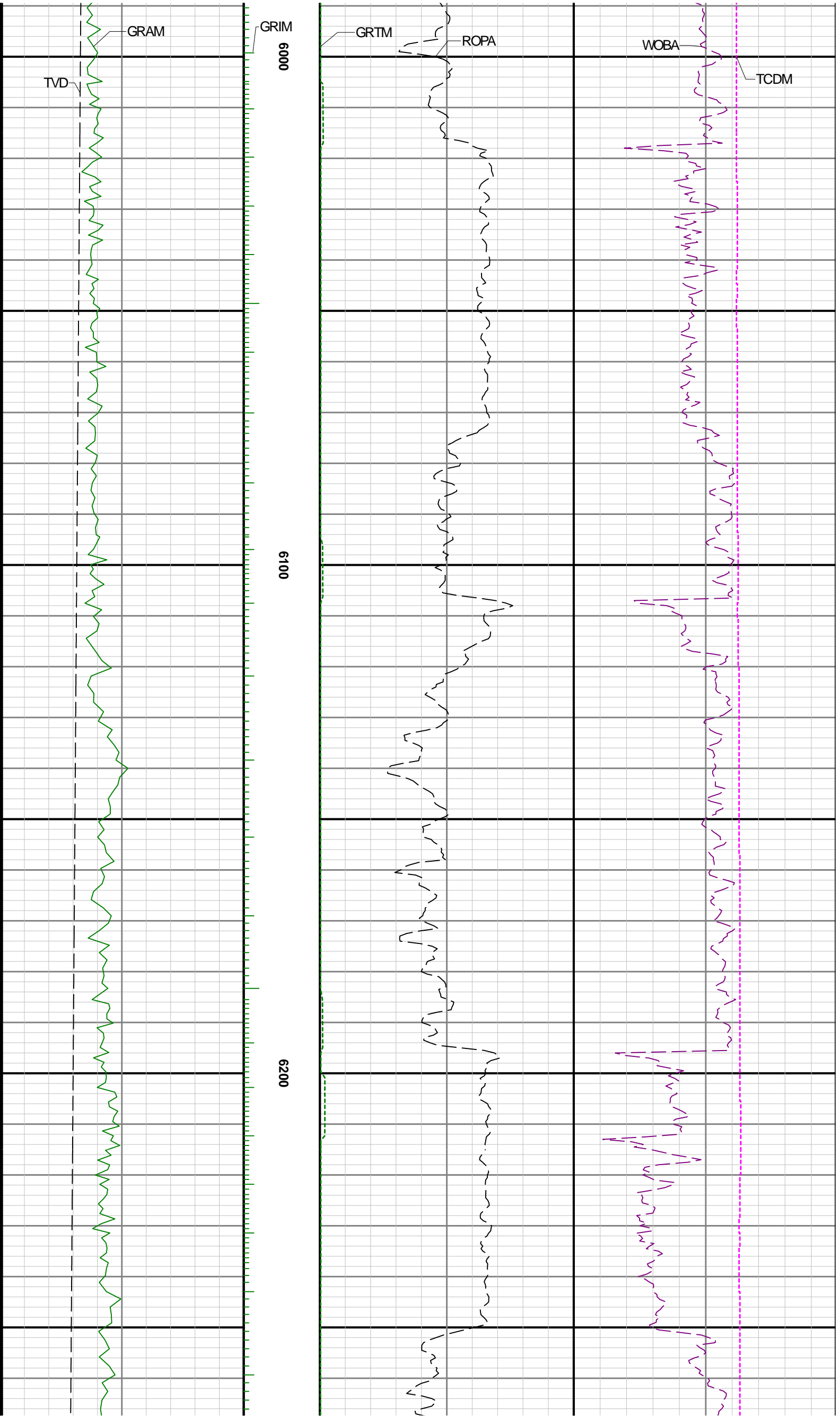
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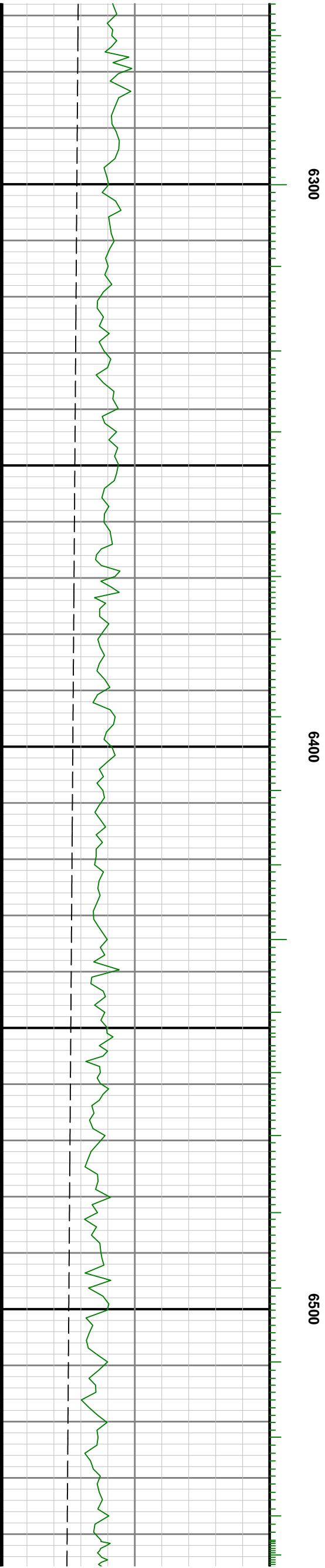
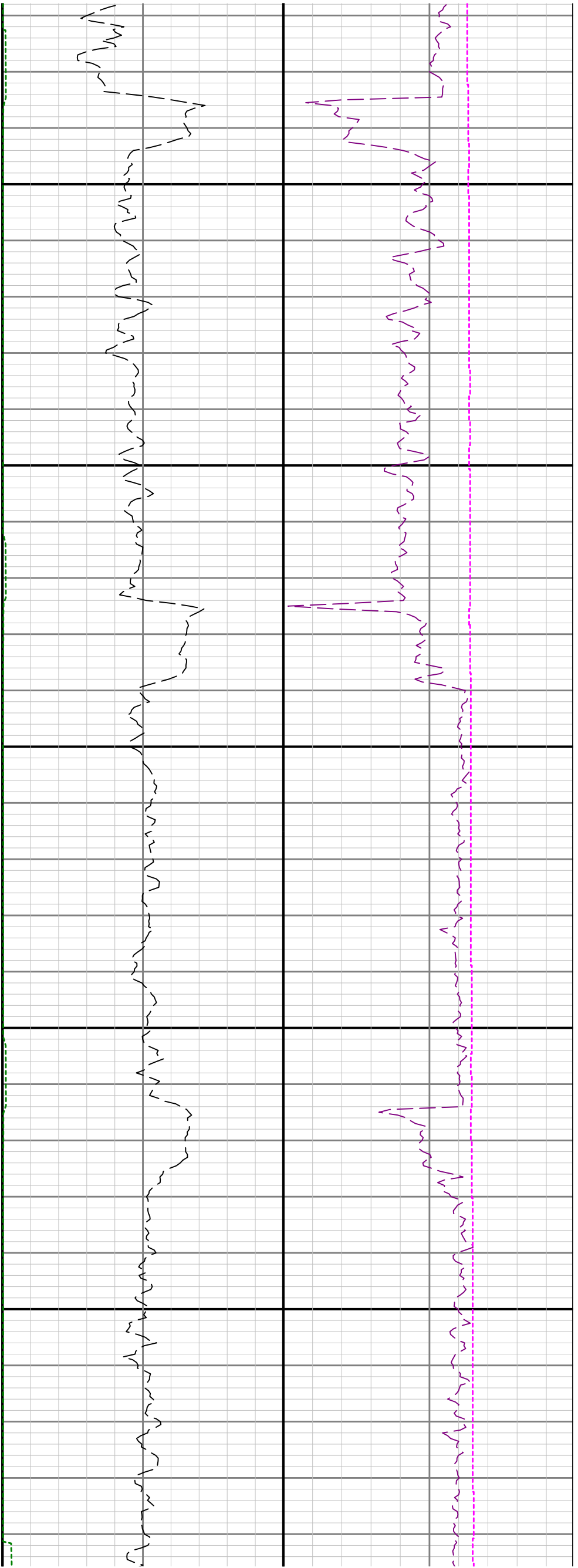
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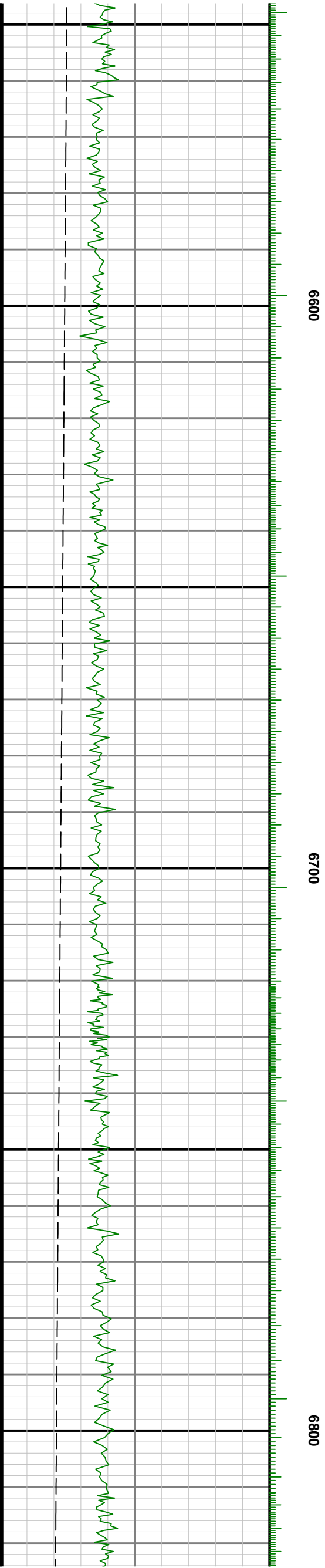


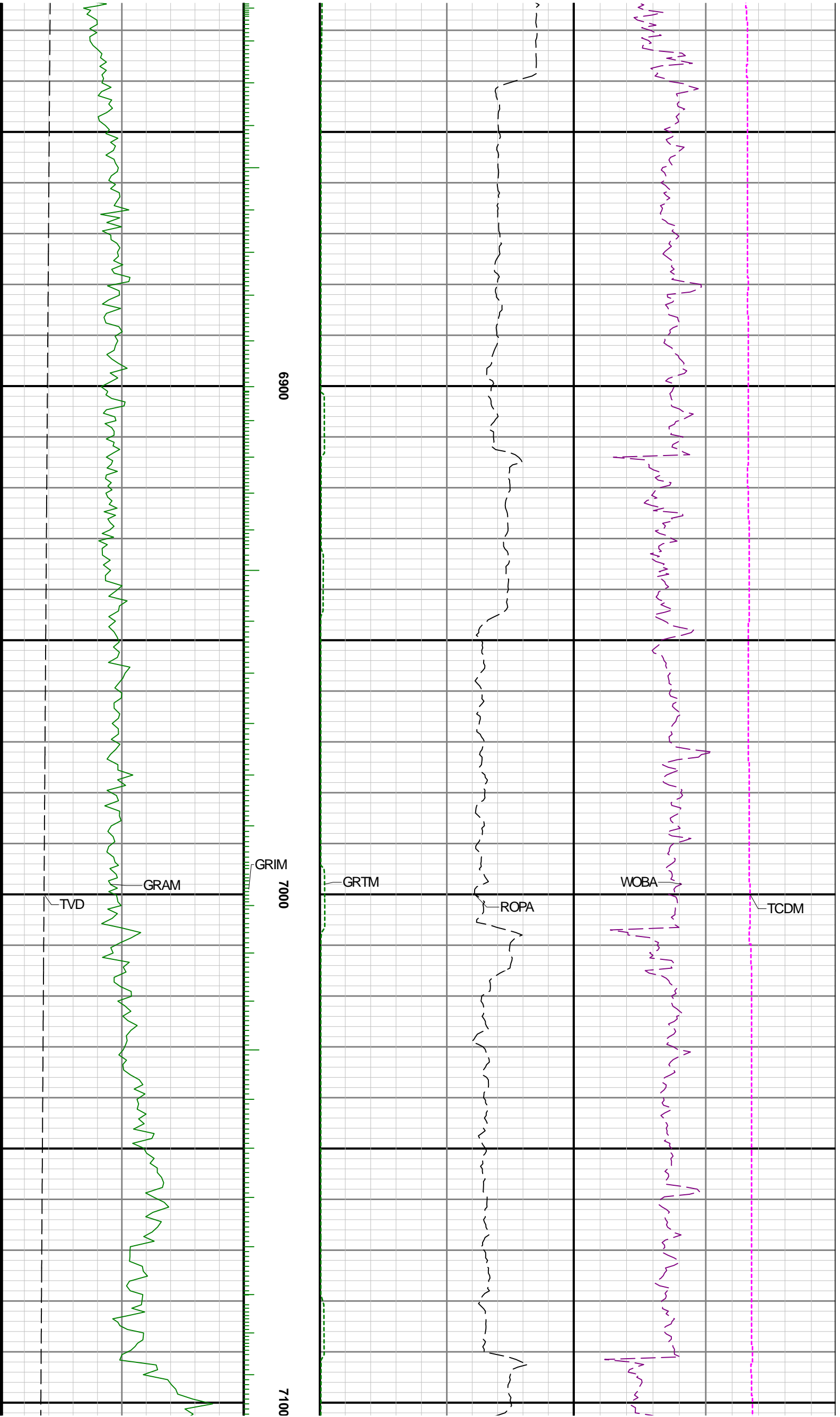


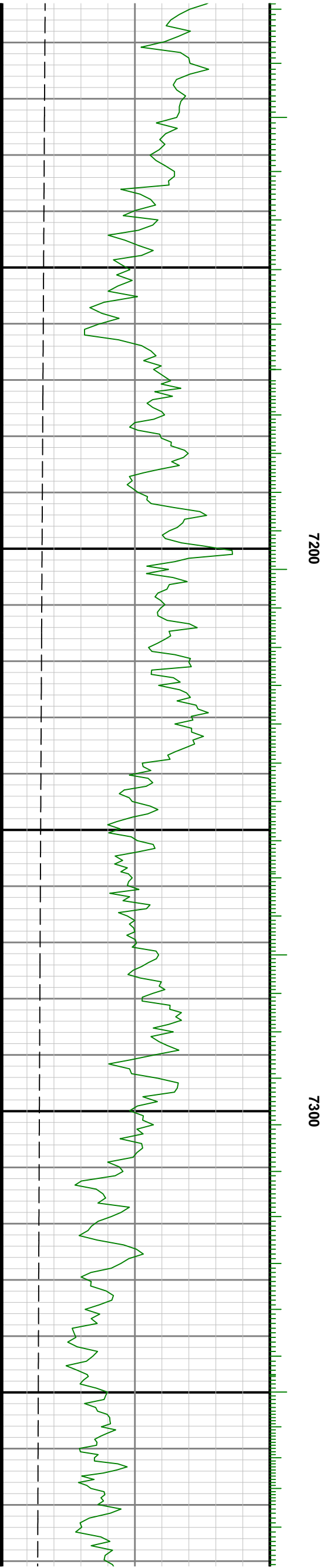
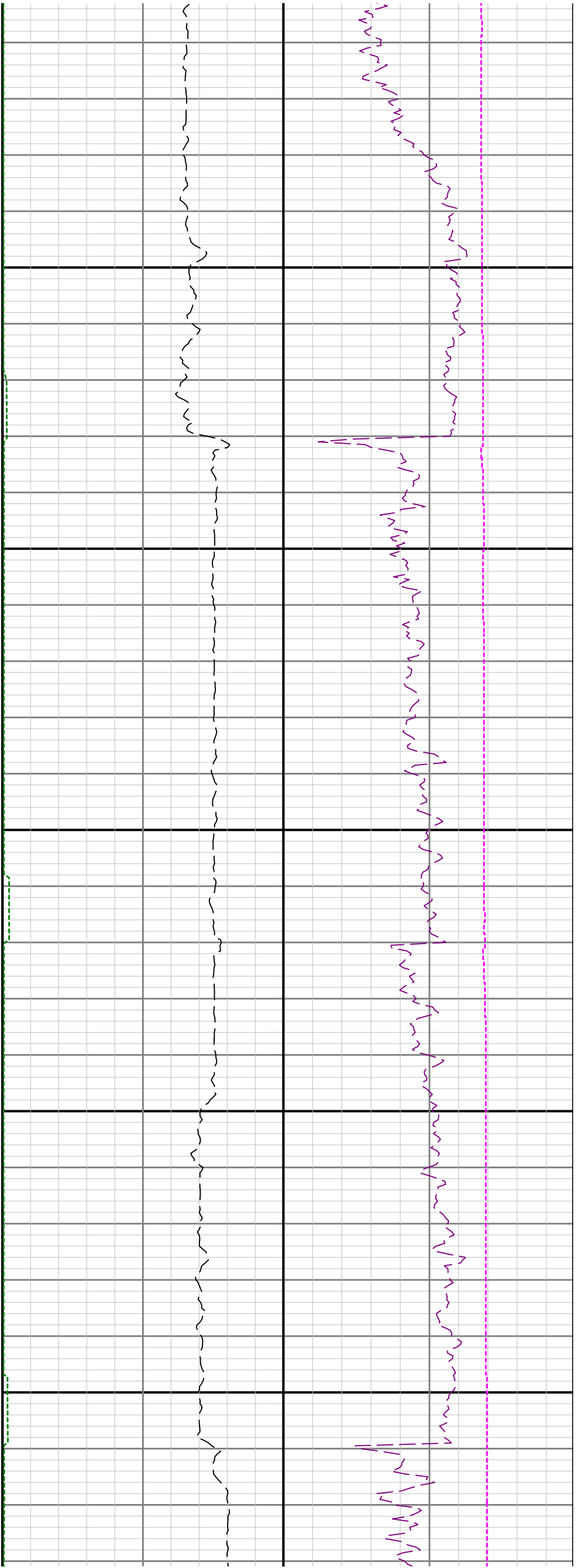


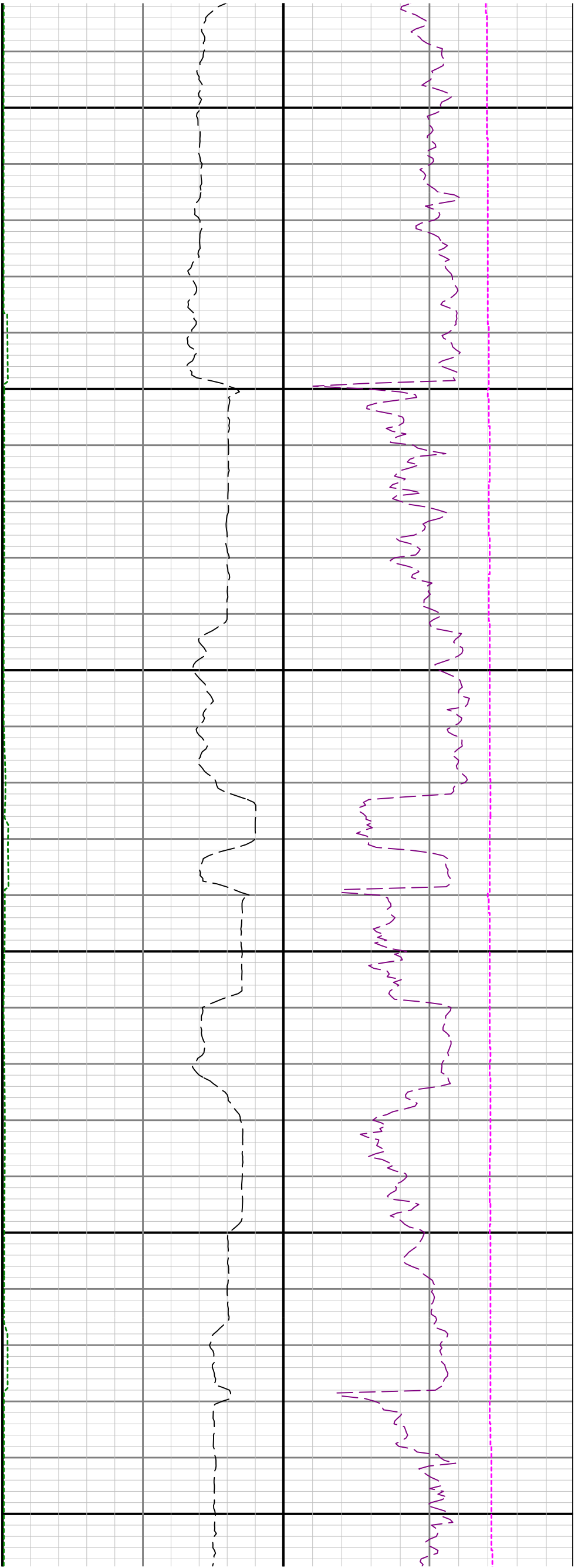








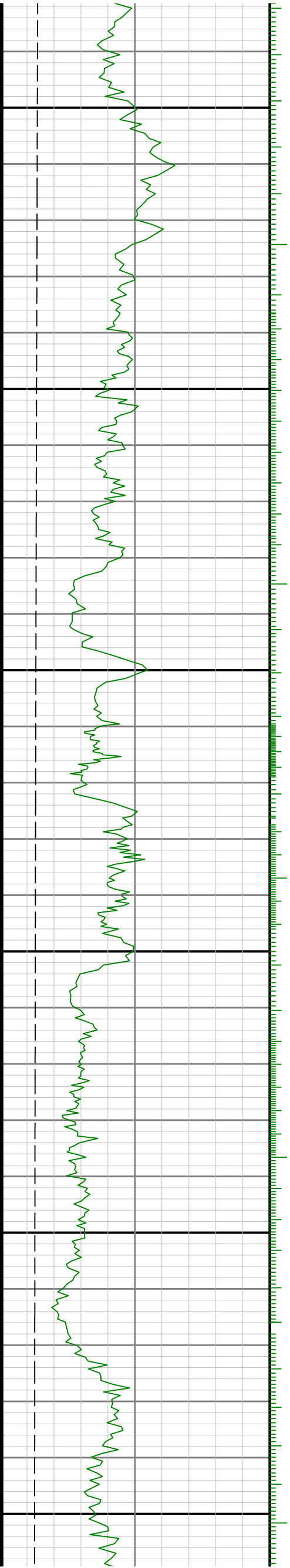


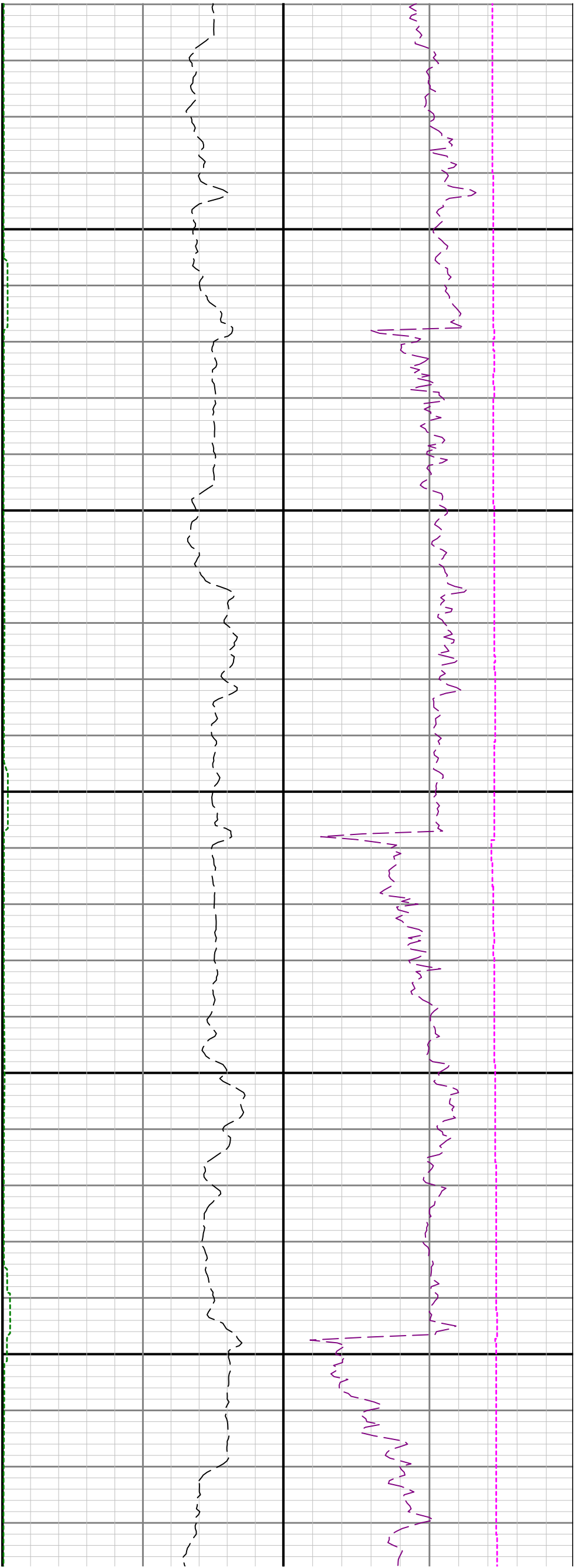


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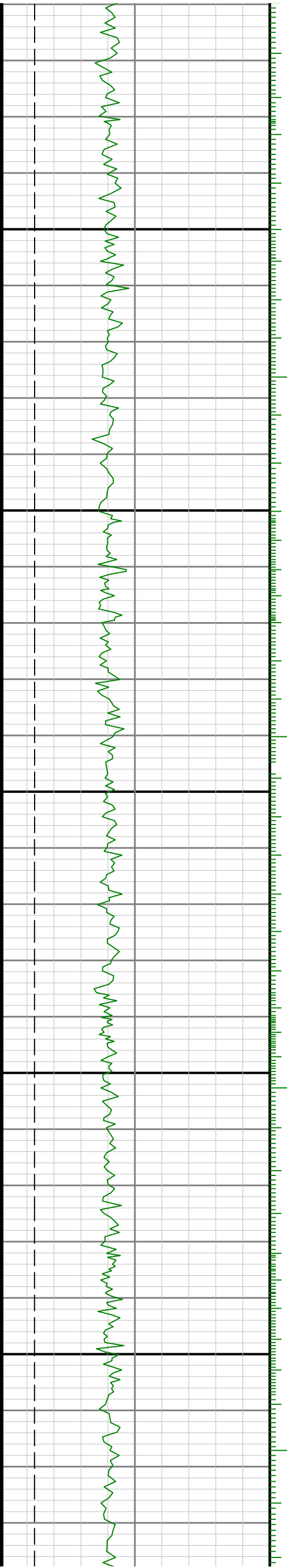


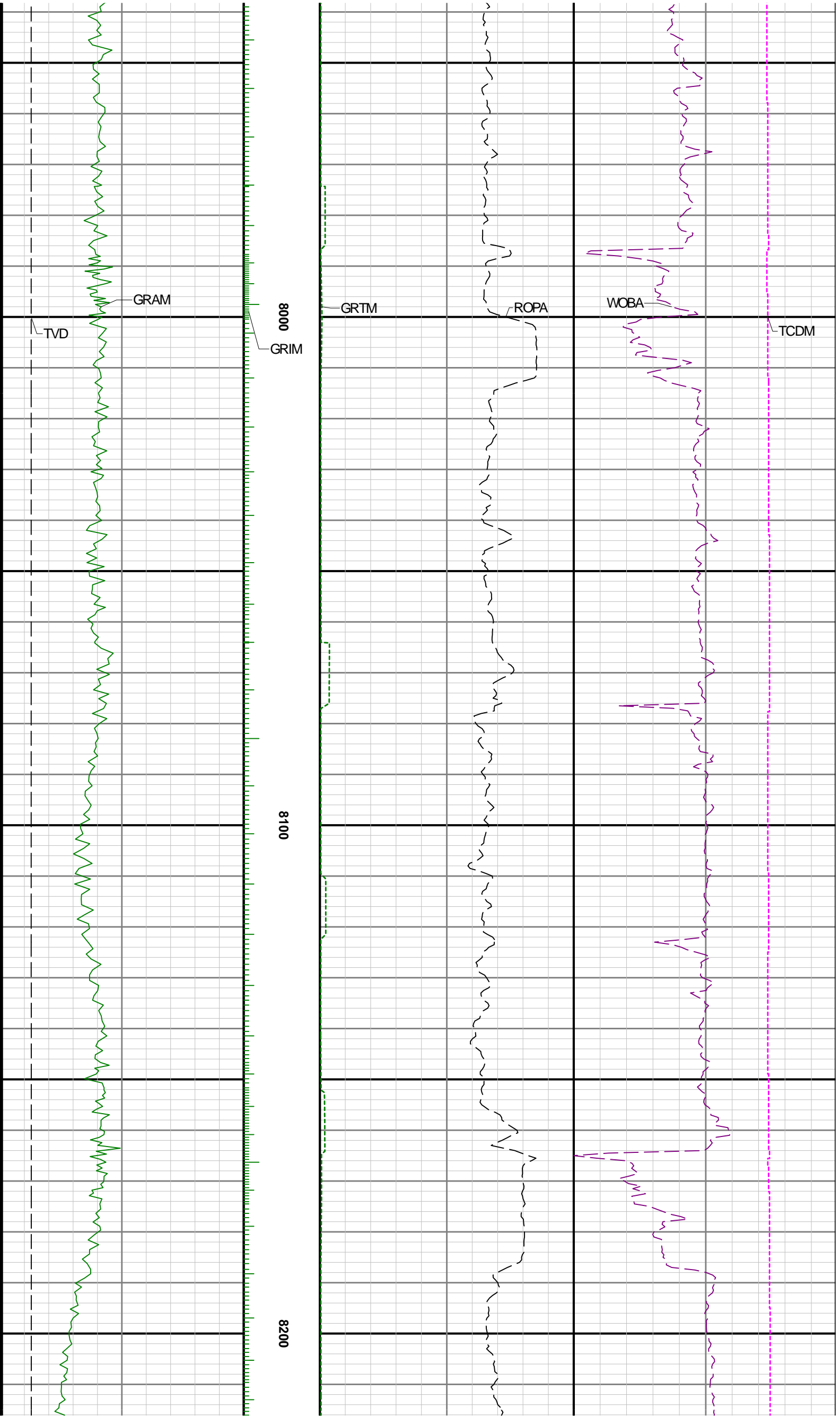


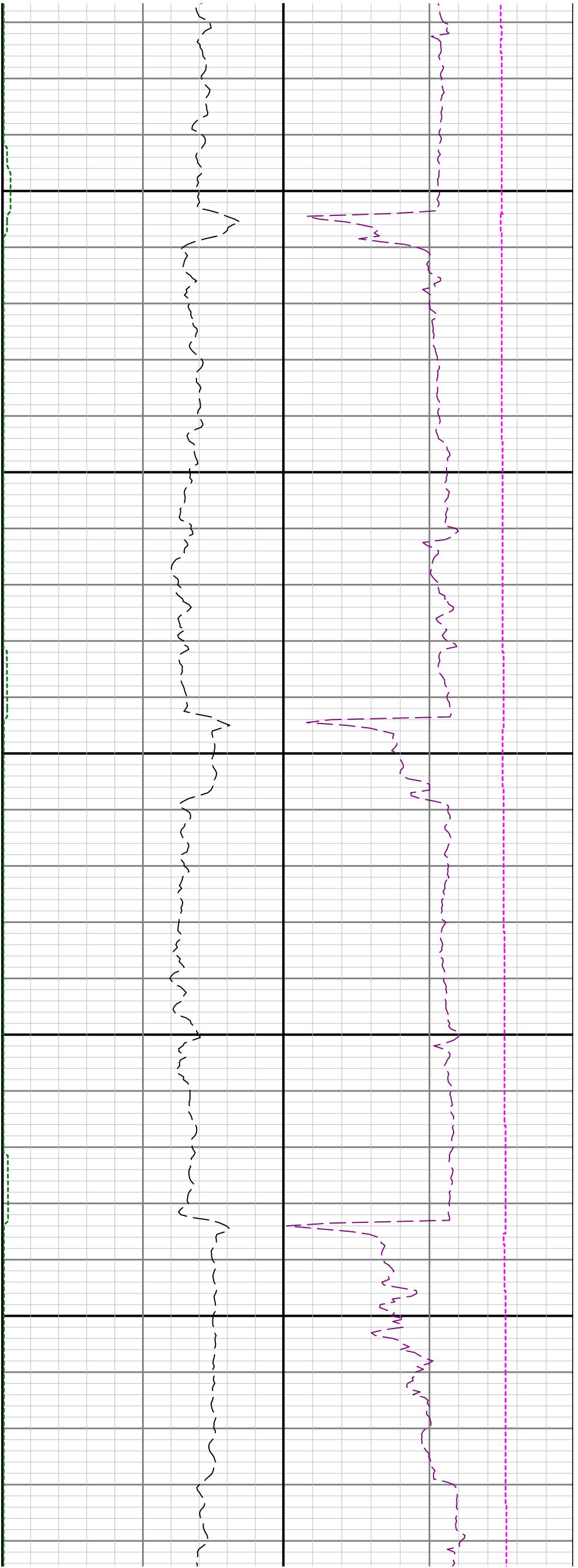
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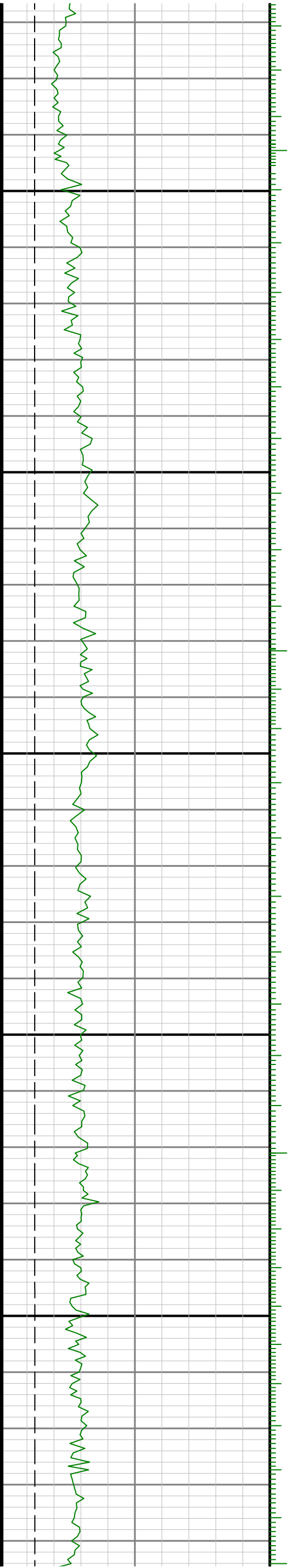


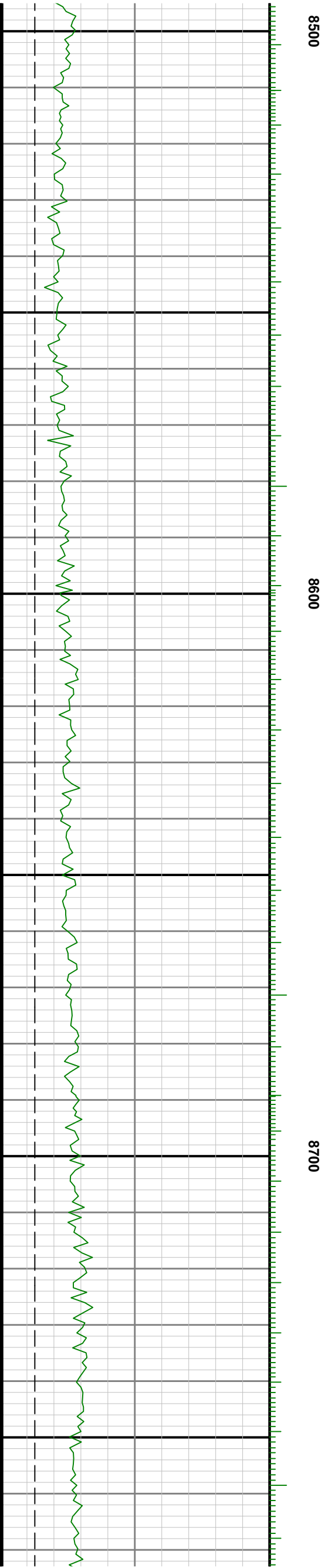
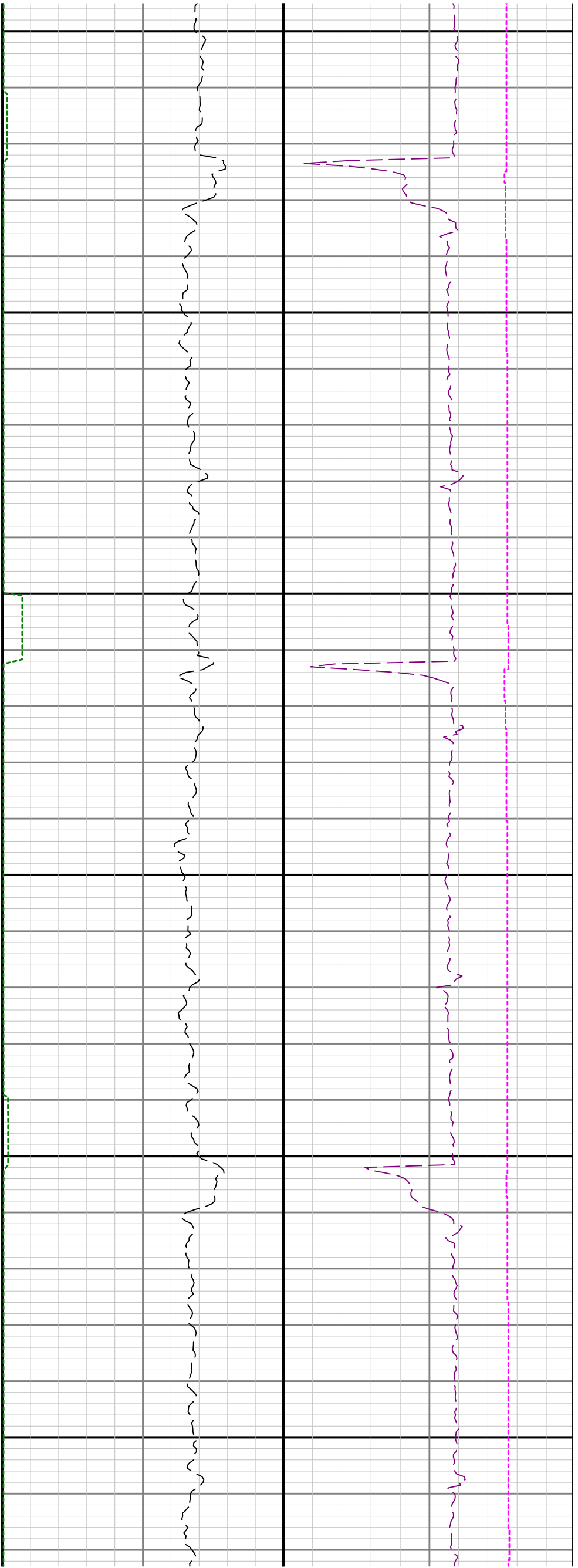


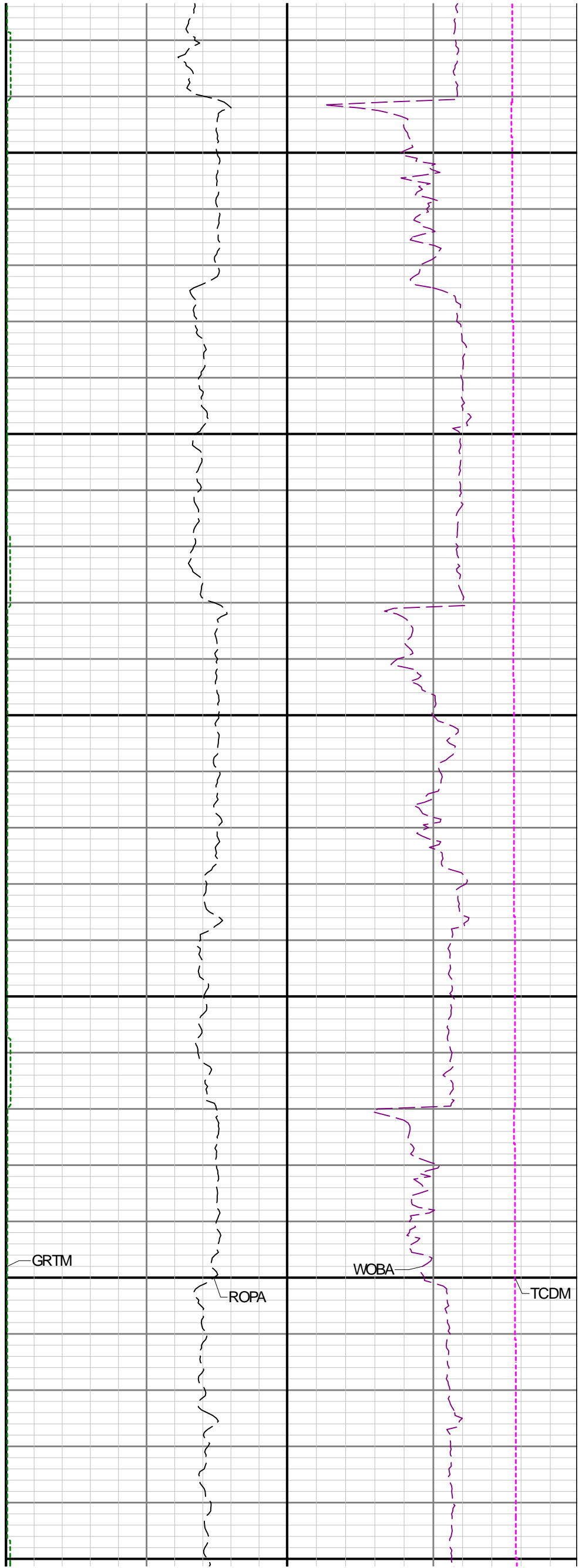
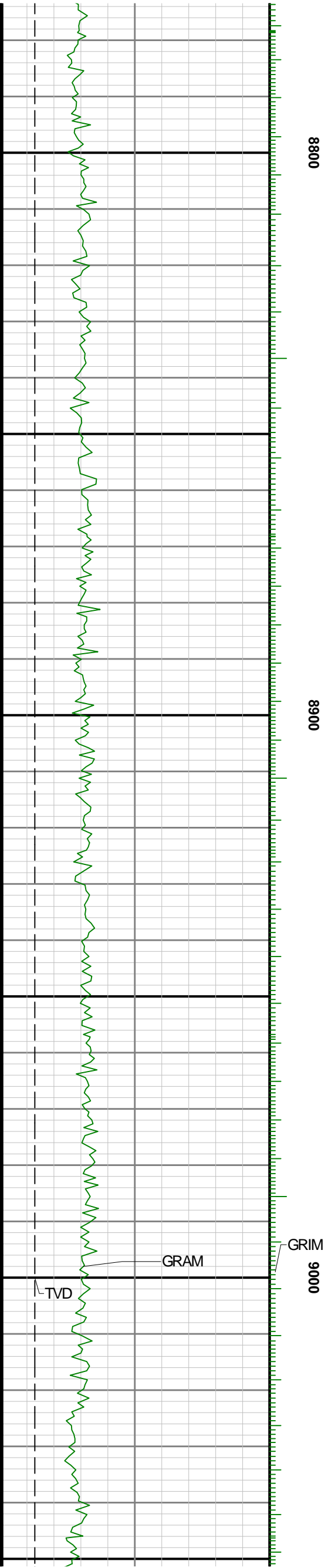


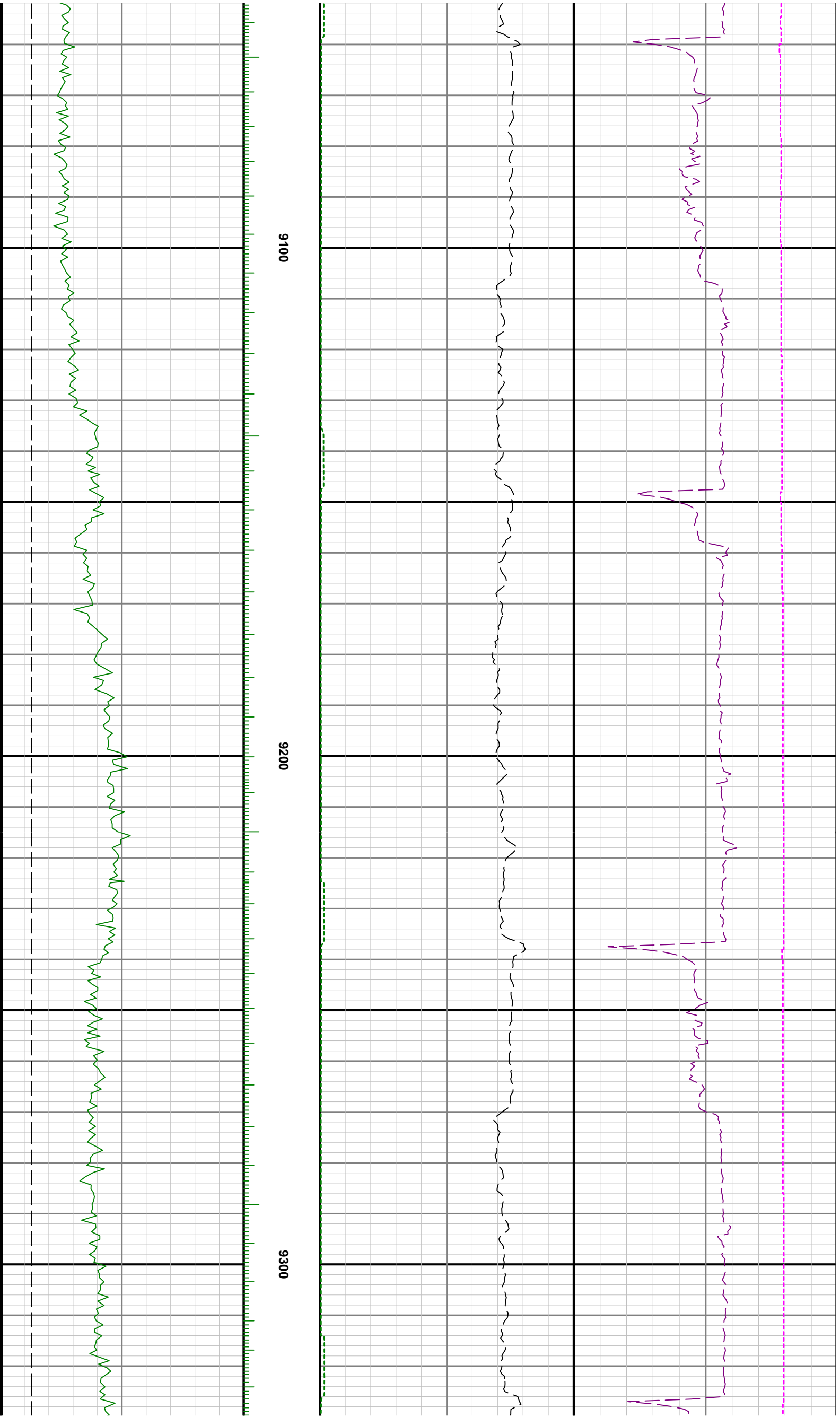
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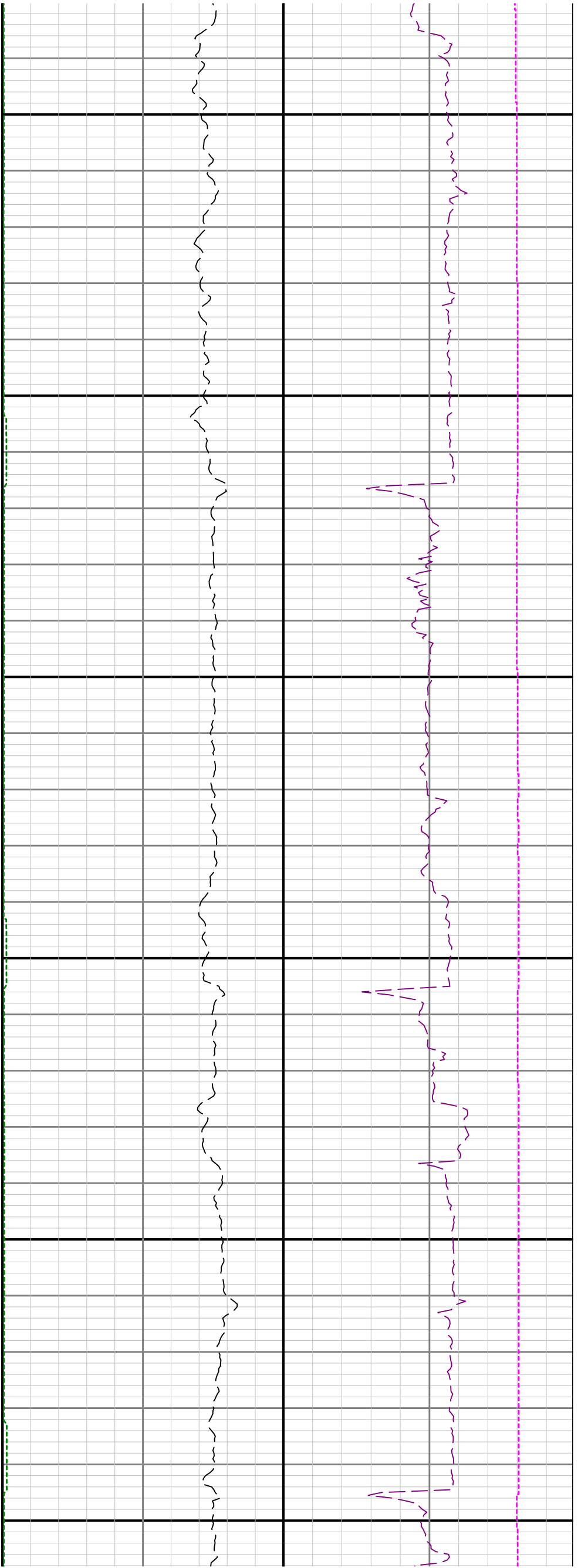
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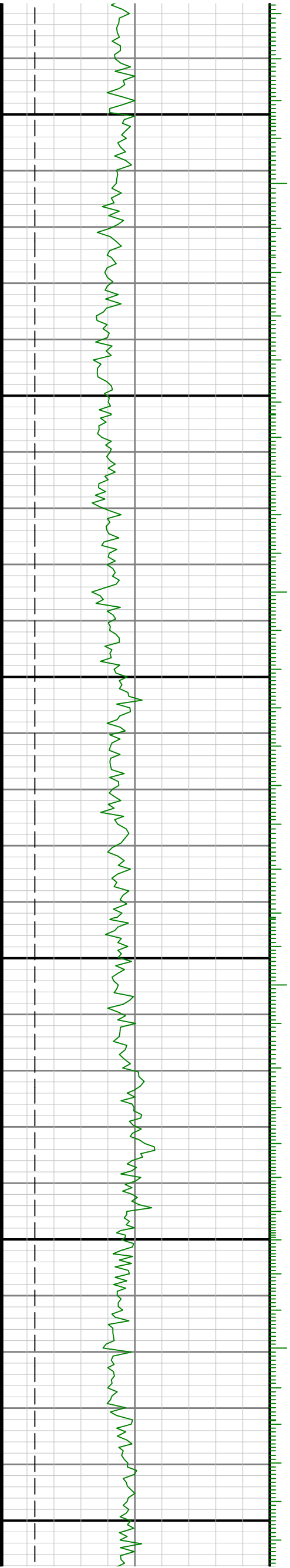


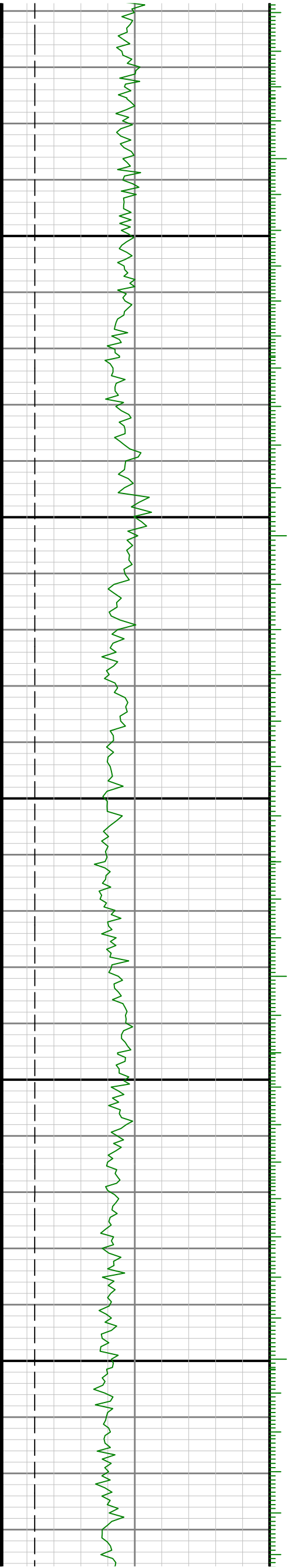


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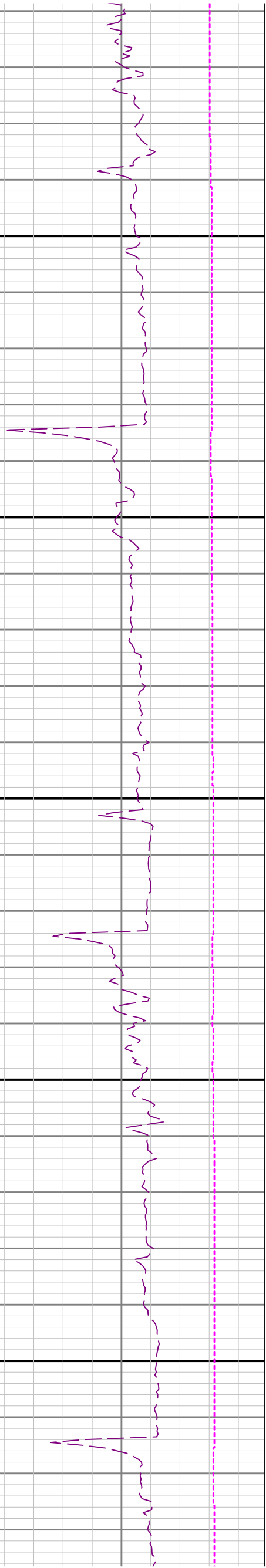
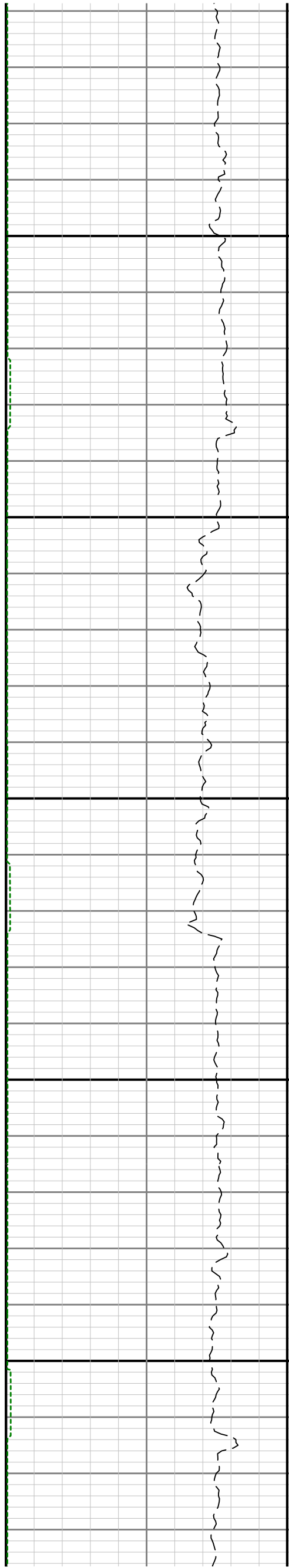
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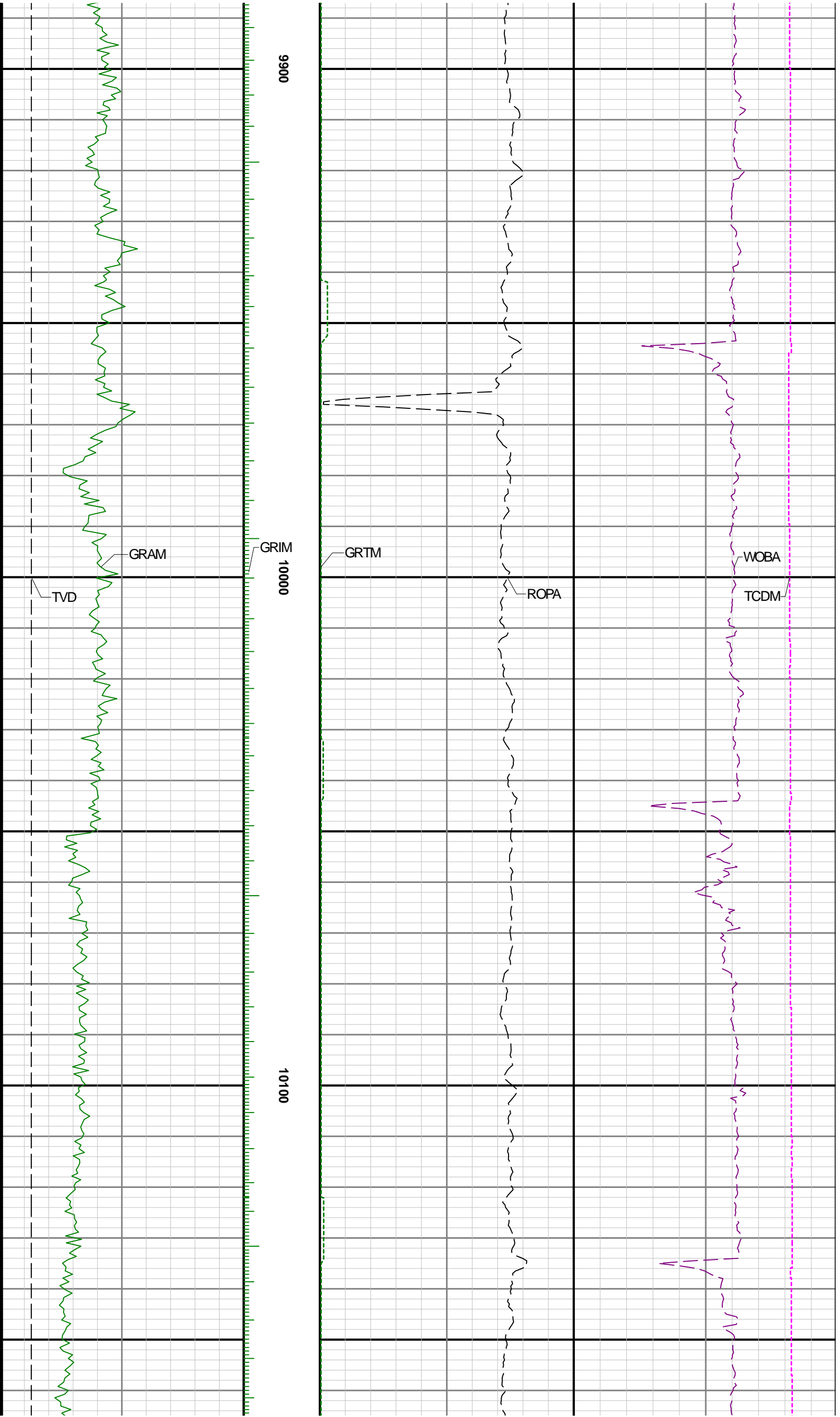


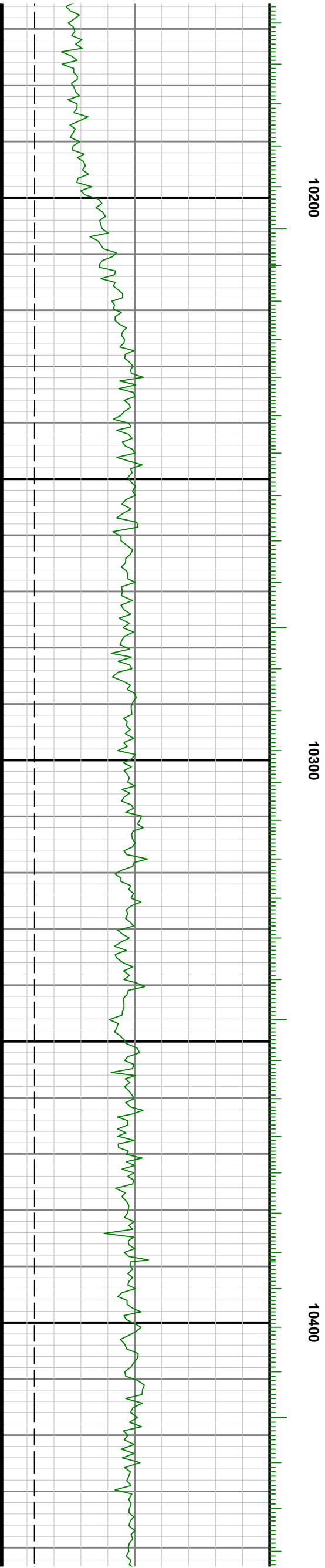
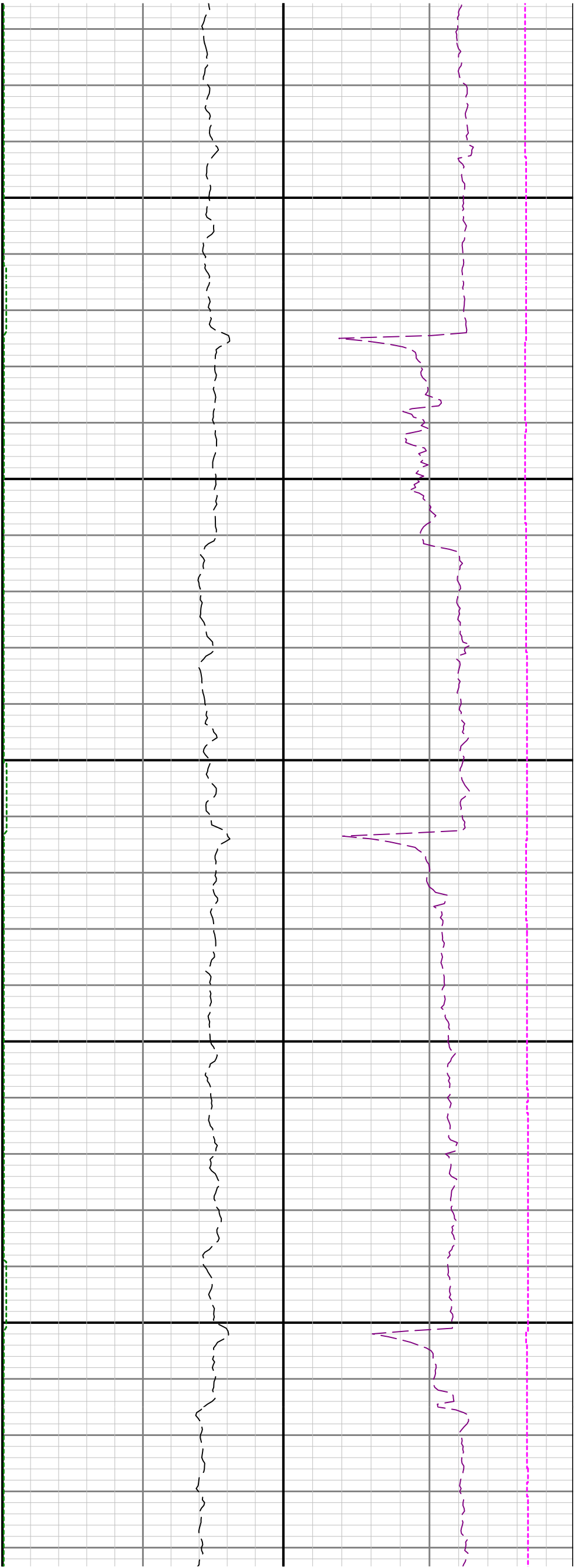


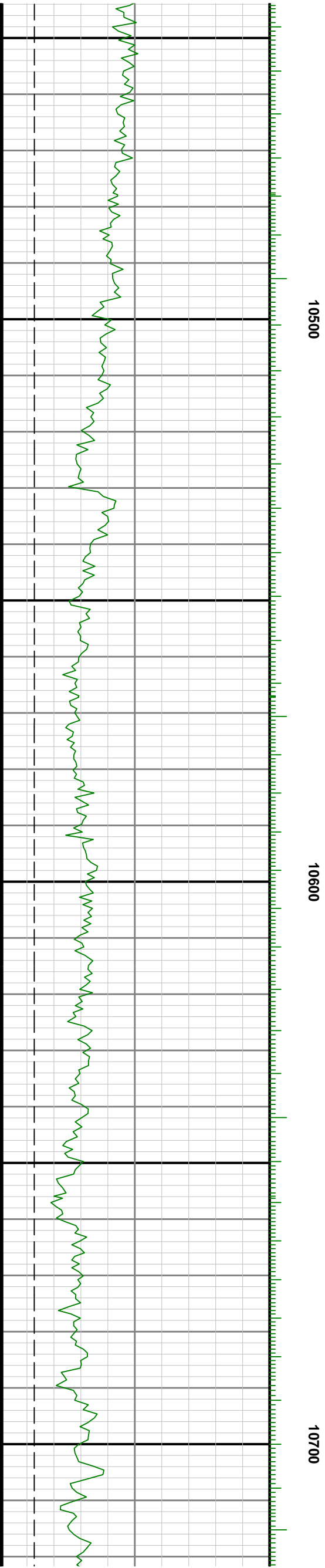
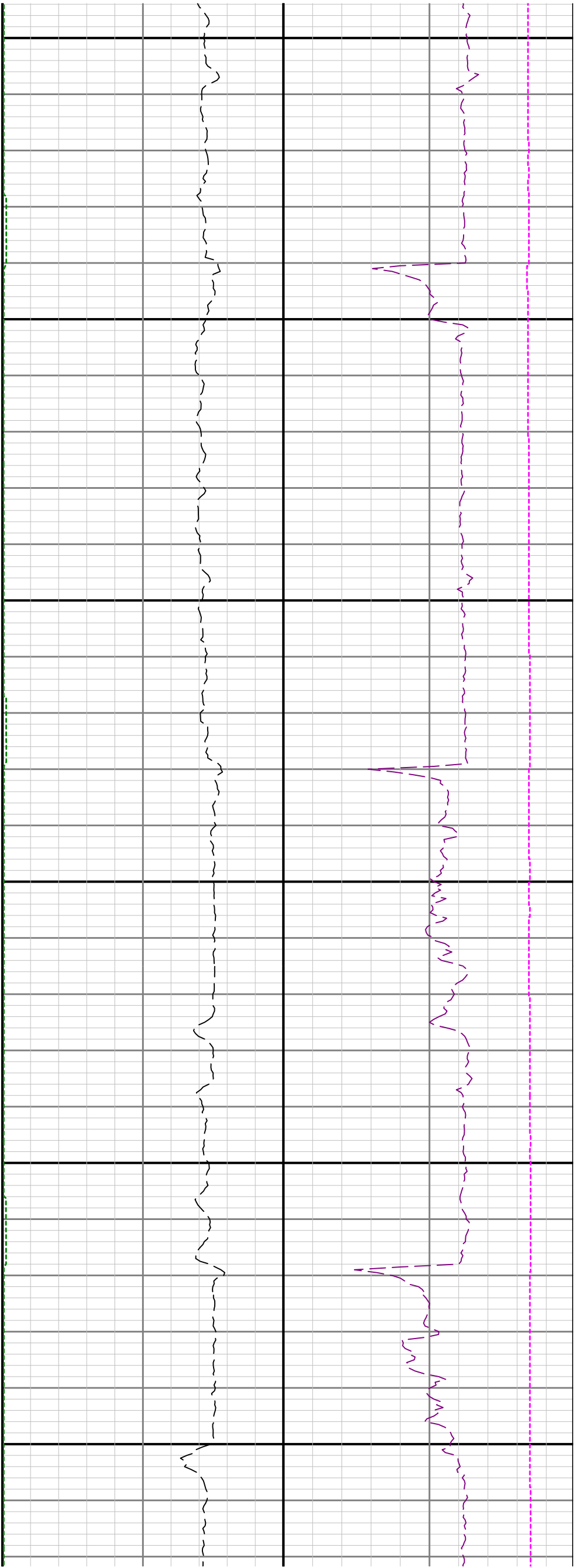
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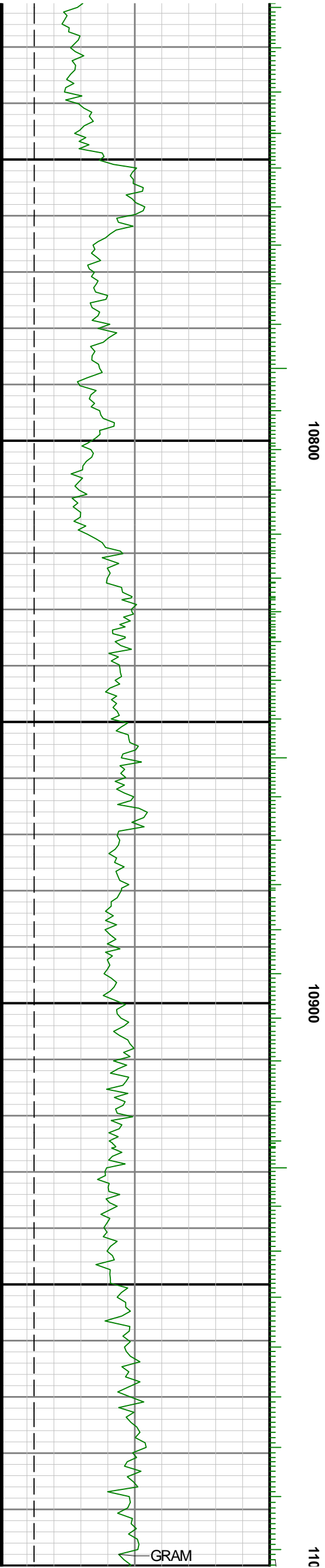
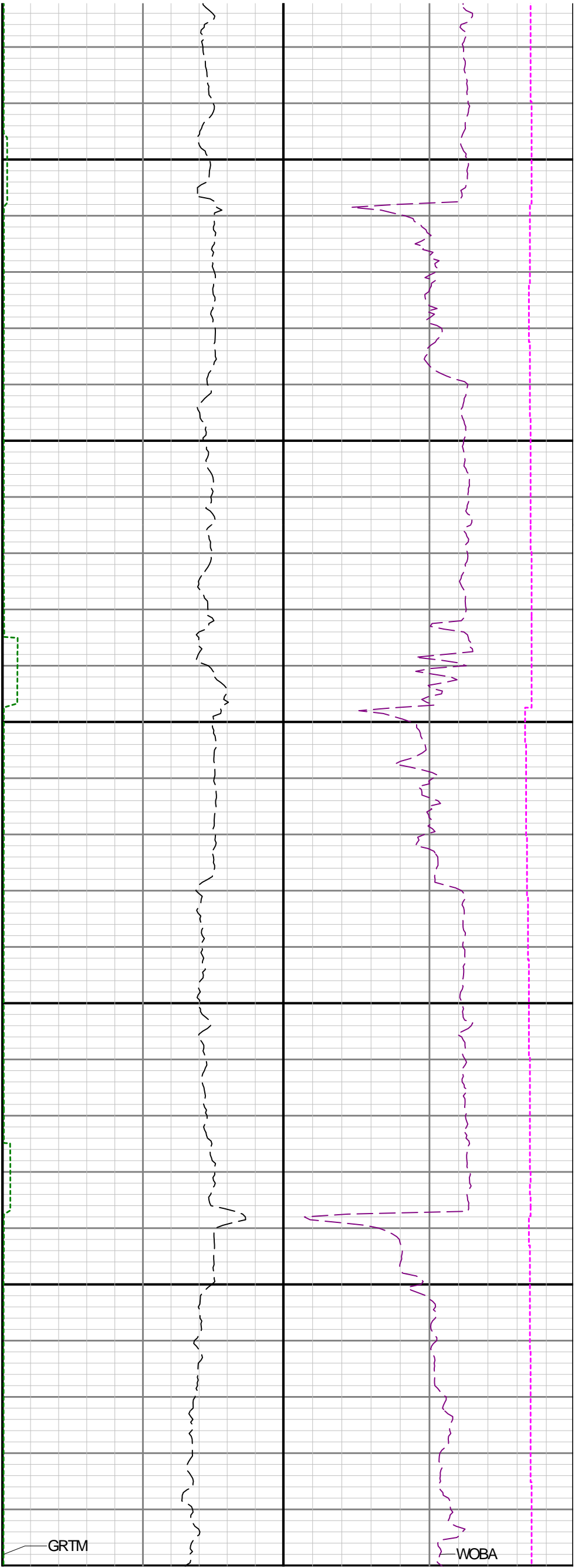
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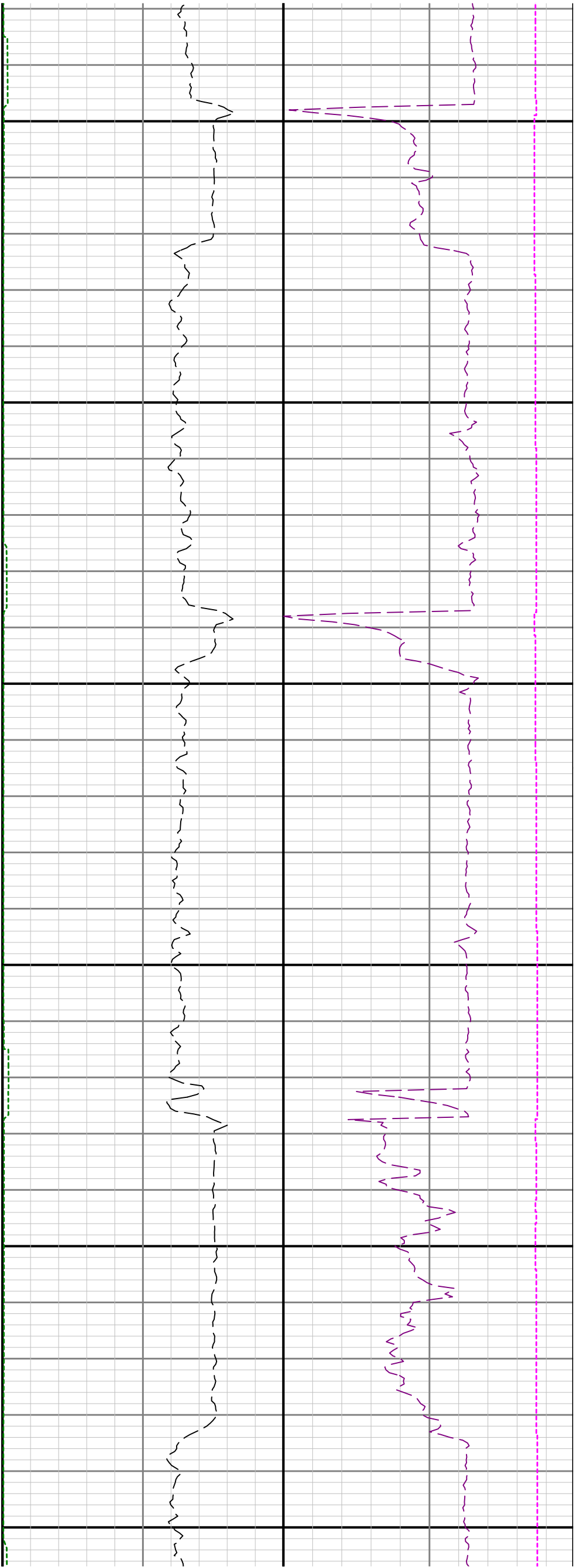








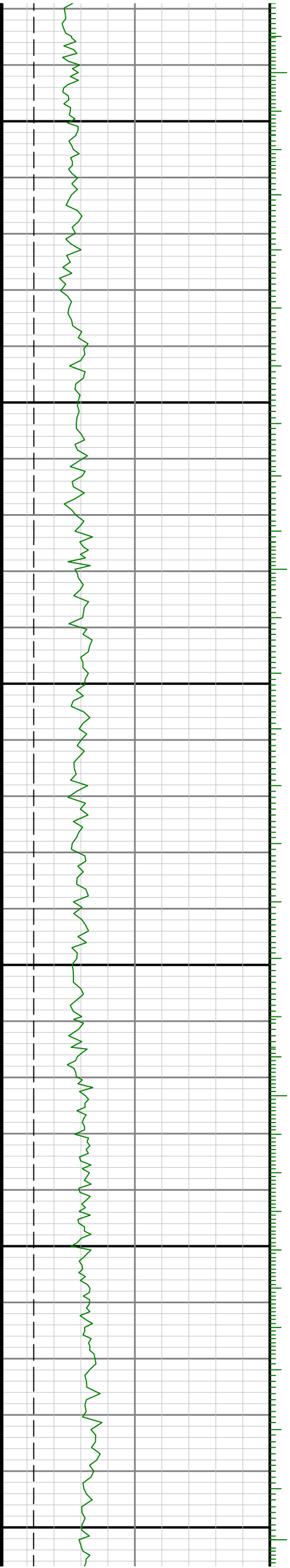


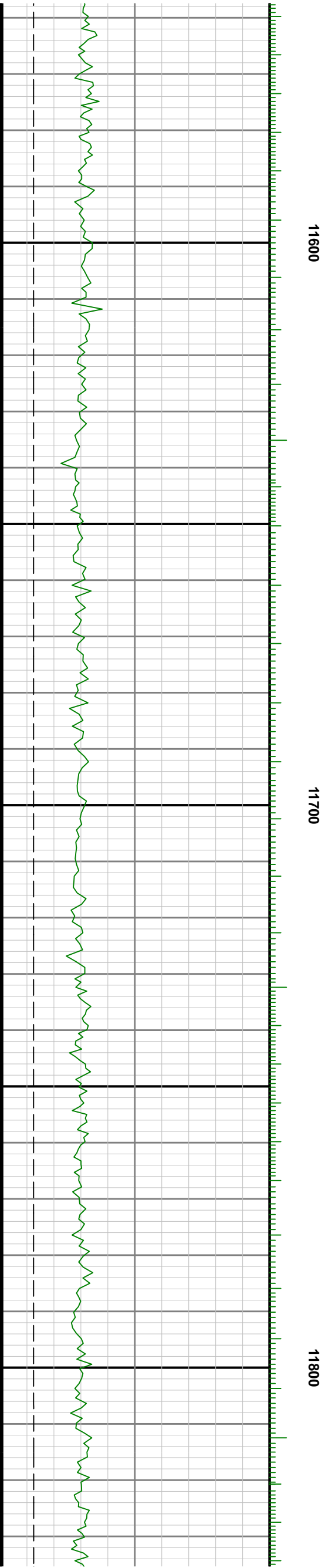
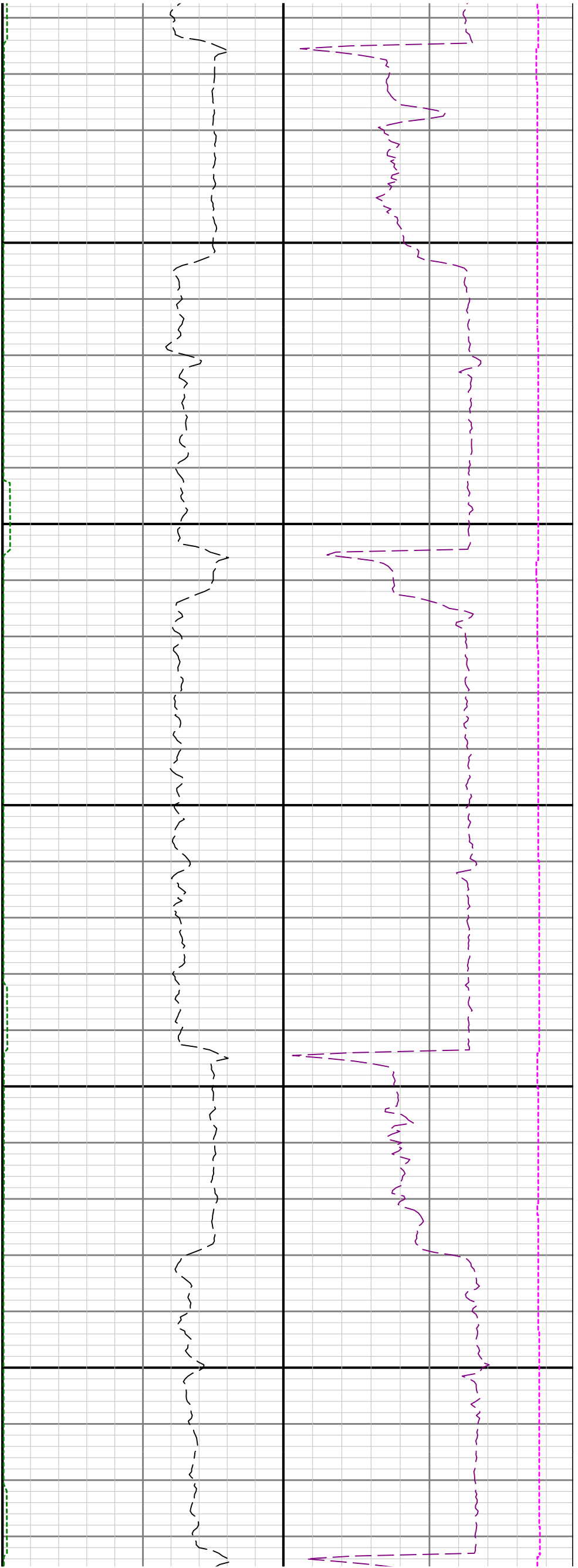


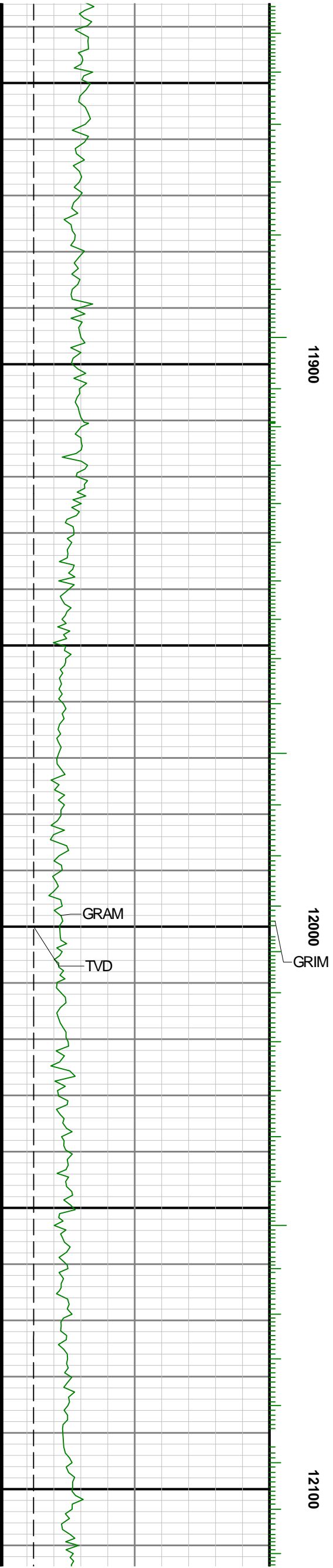
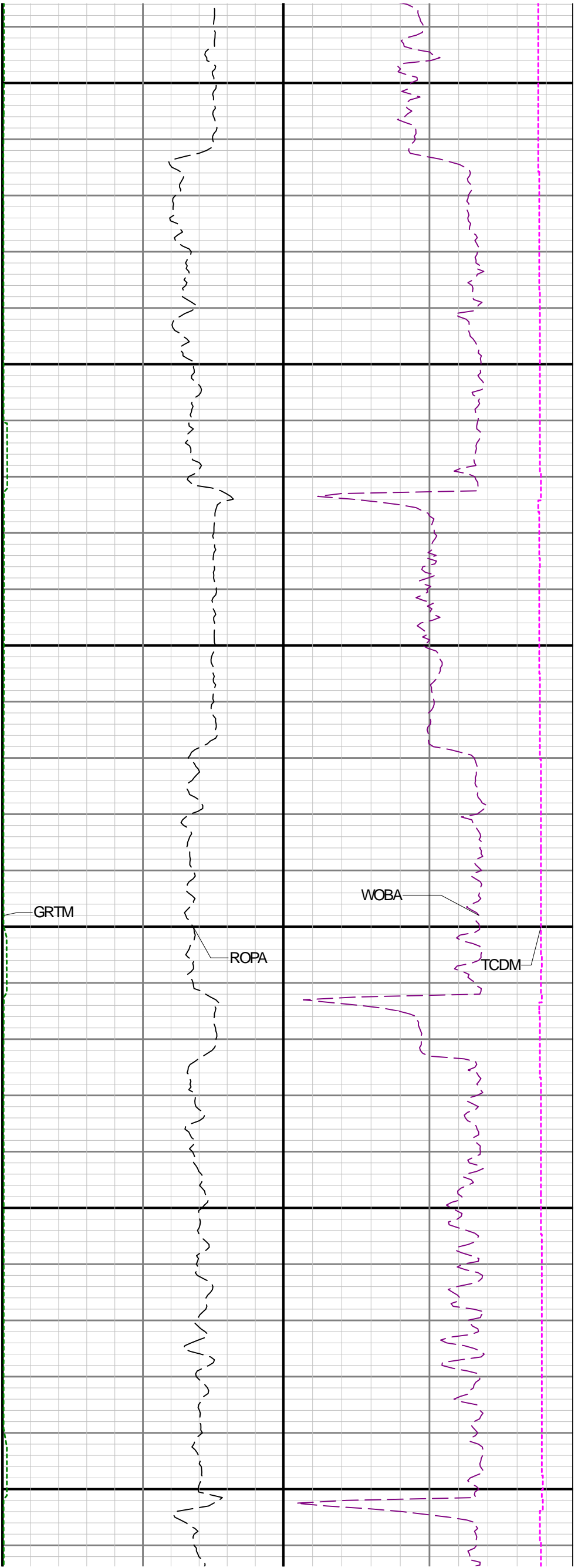
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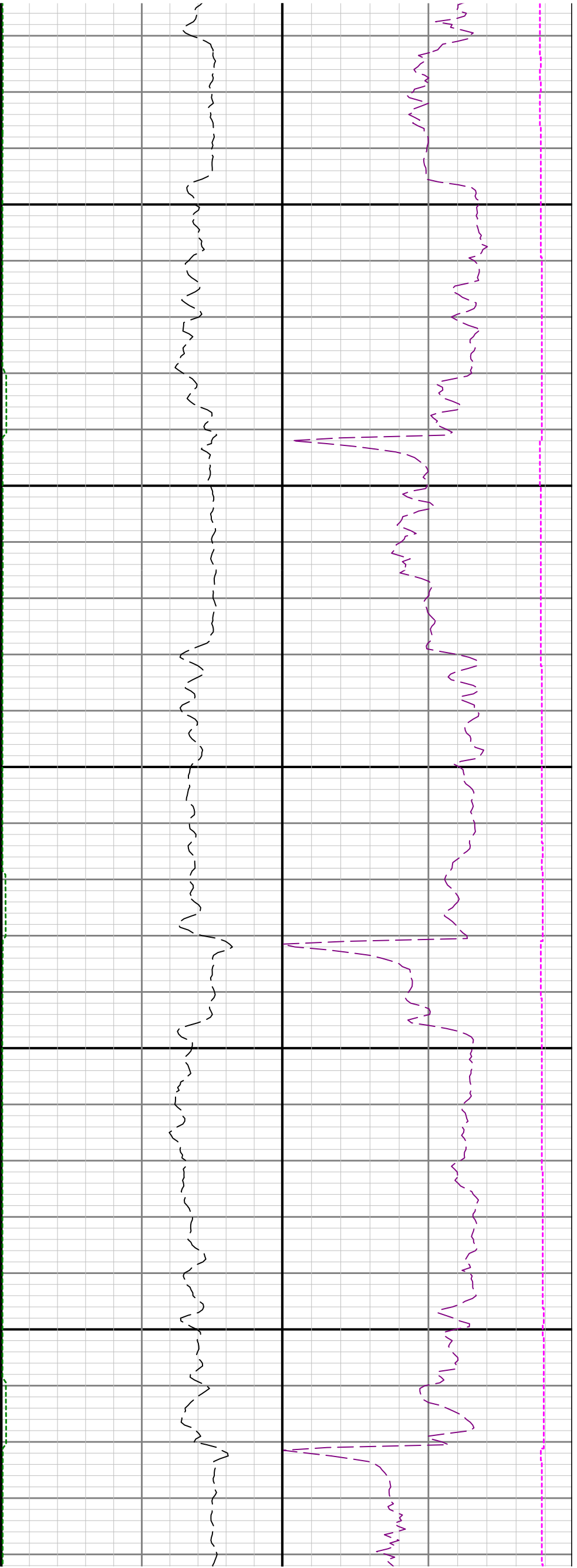
11400

11500



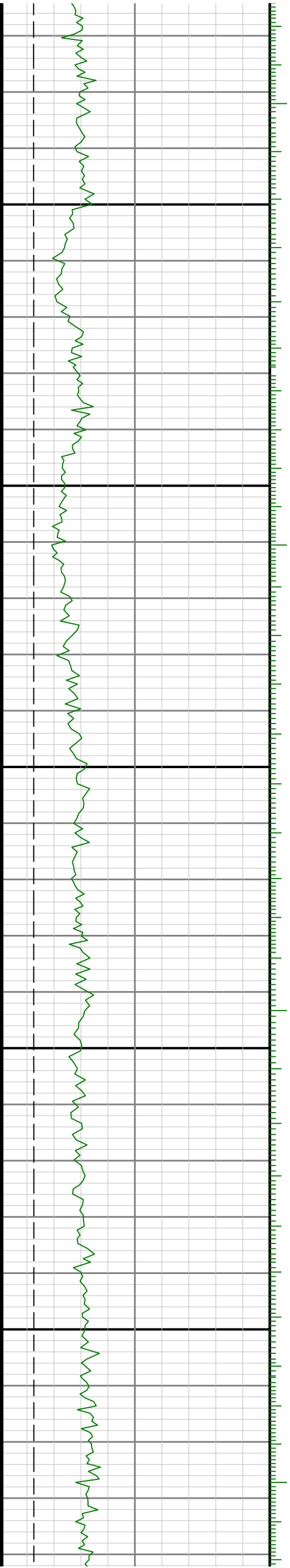


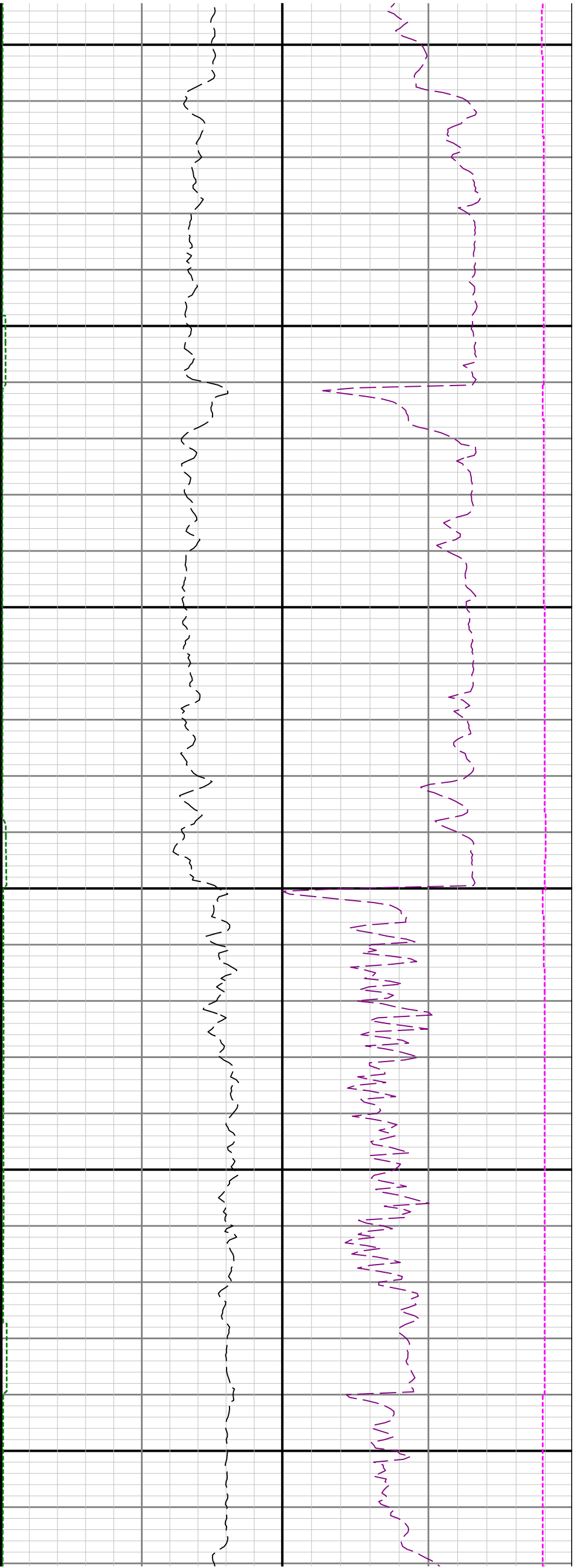




12200

12300

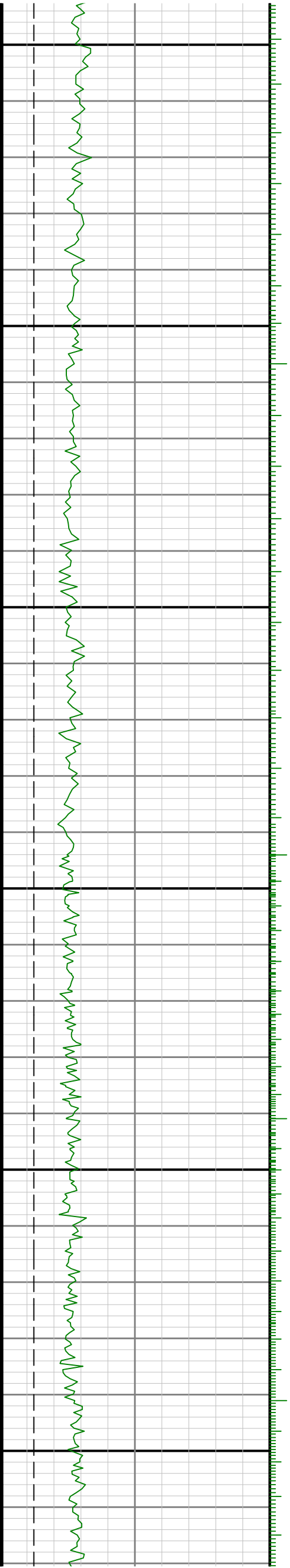


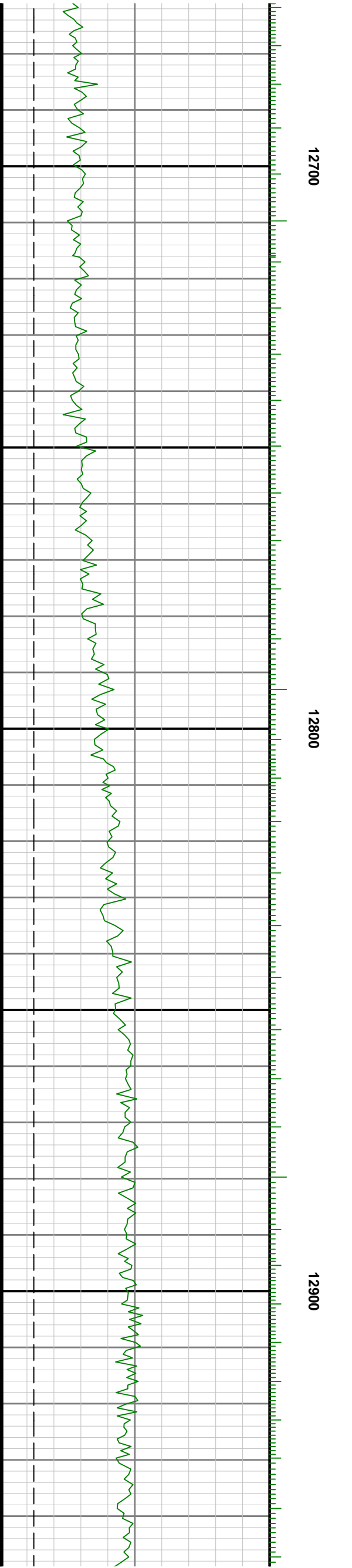
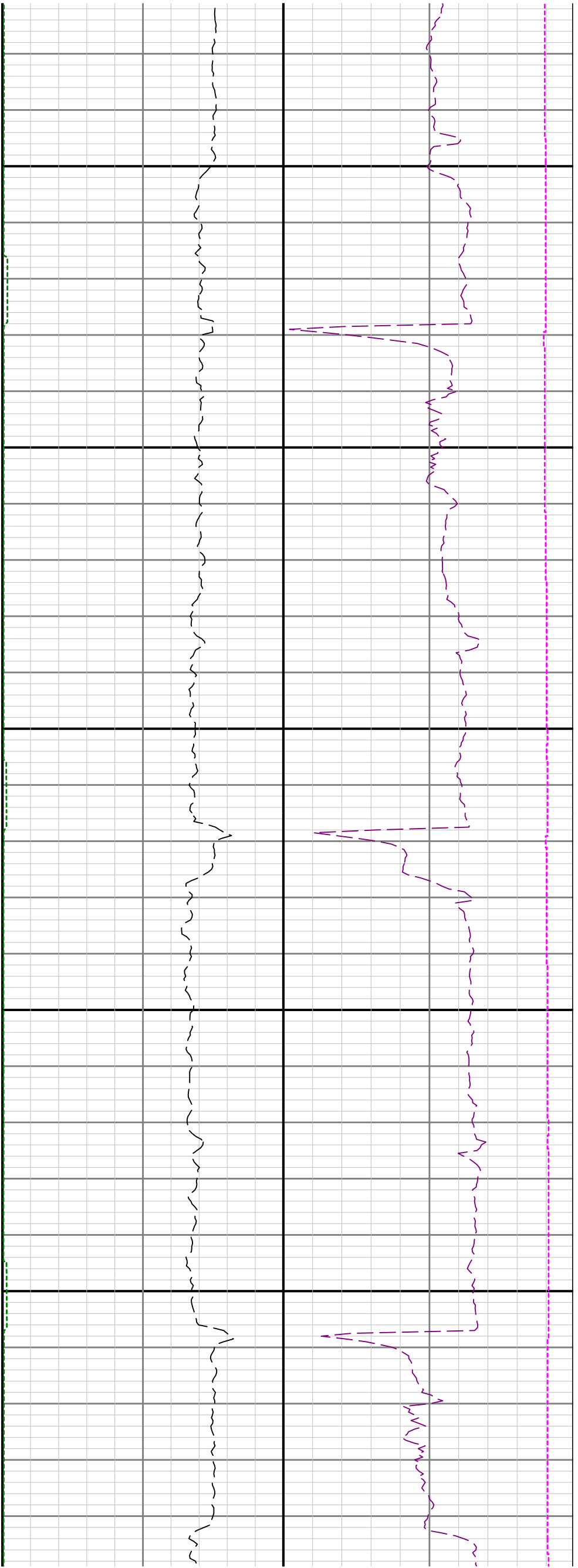


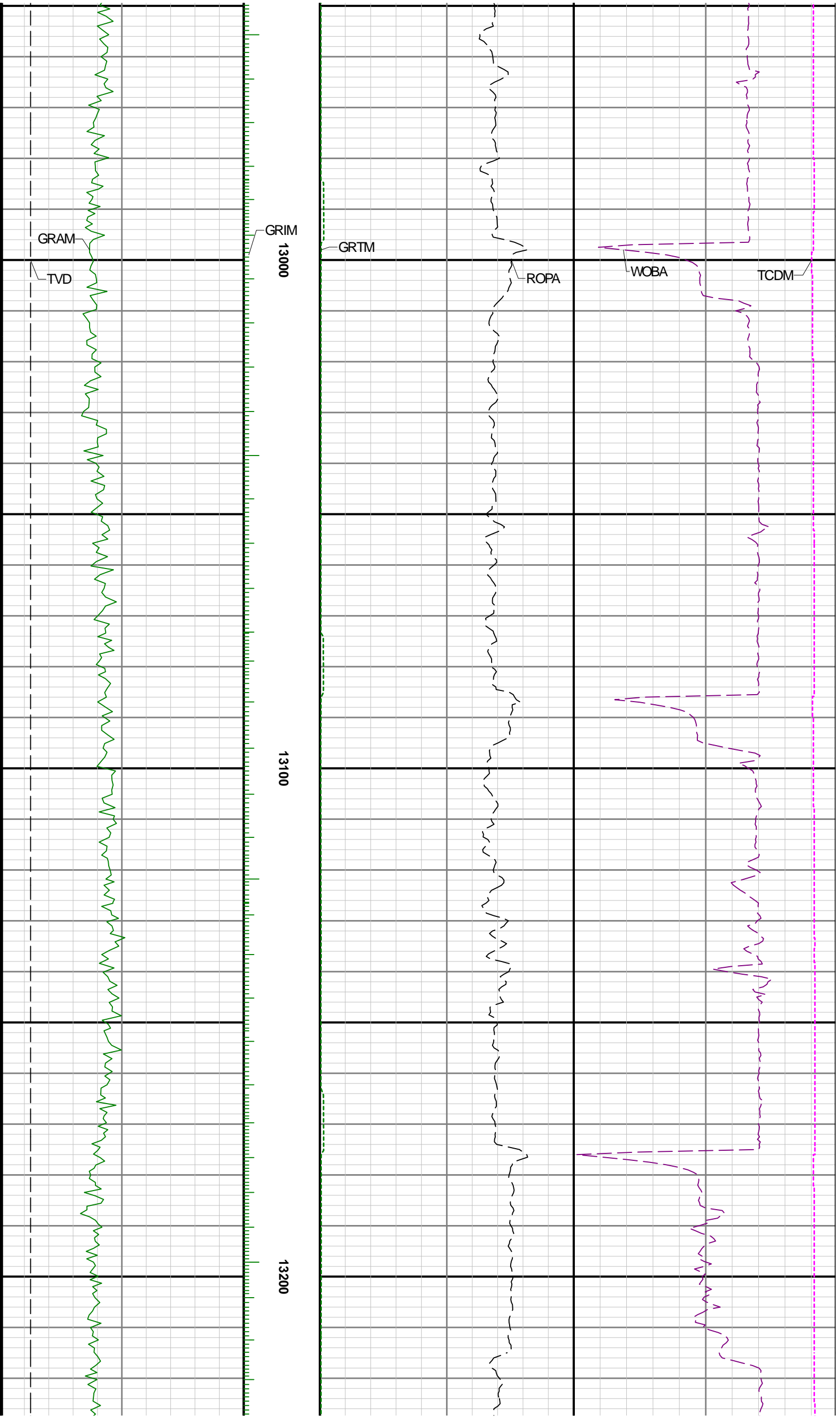
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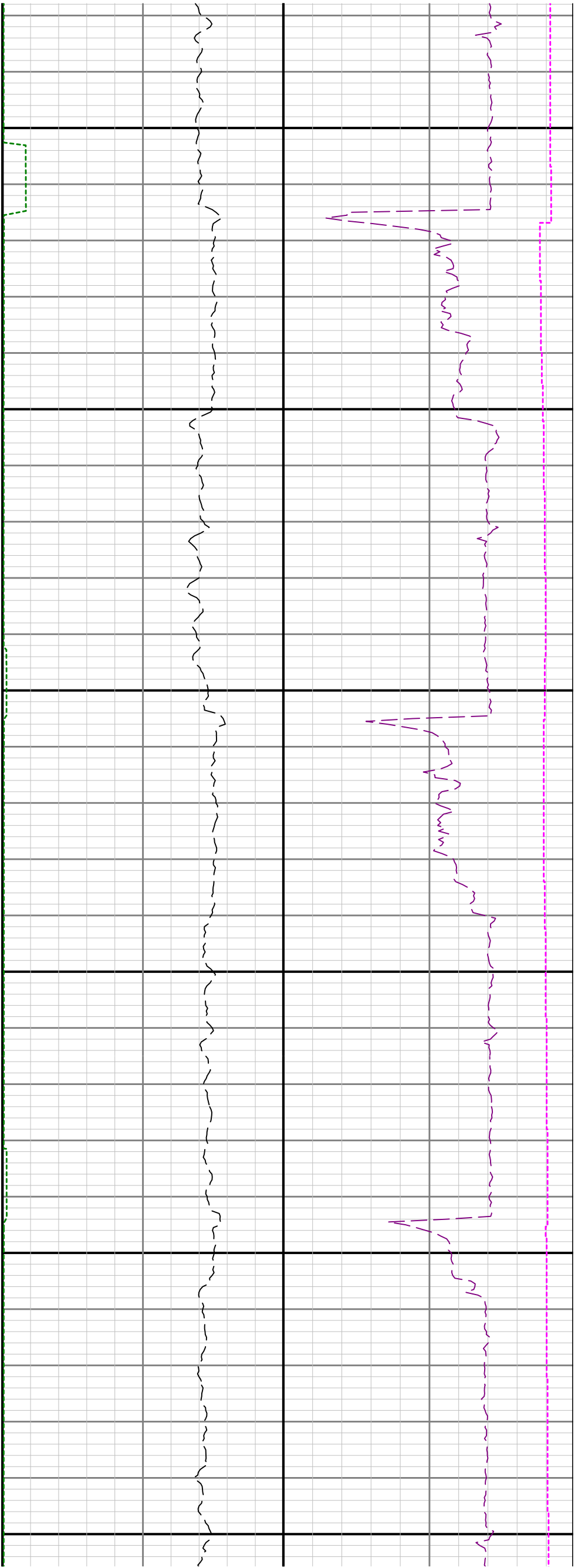
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12600





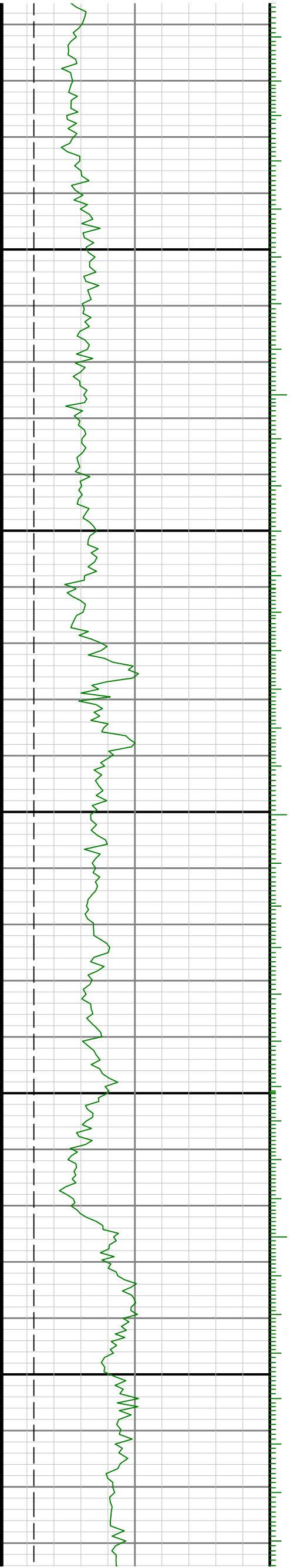
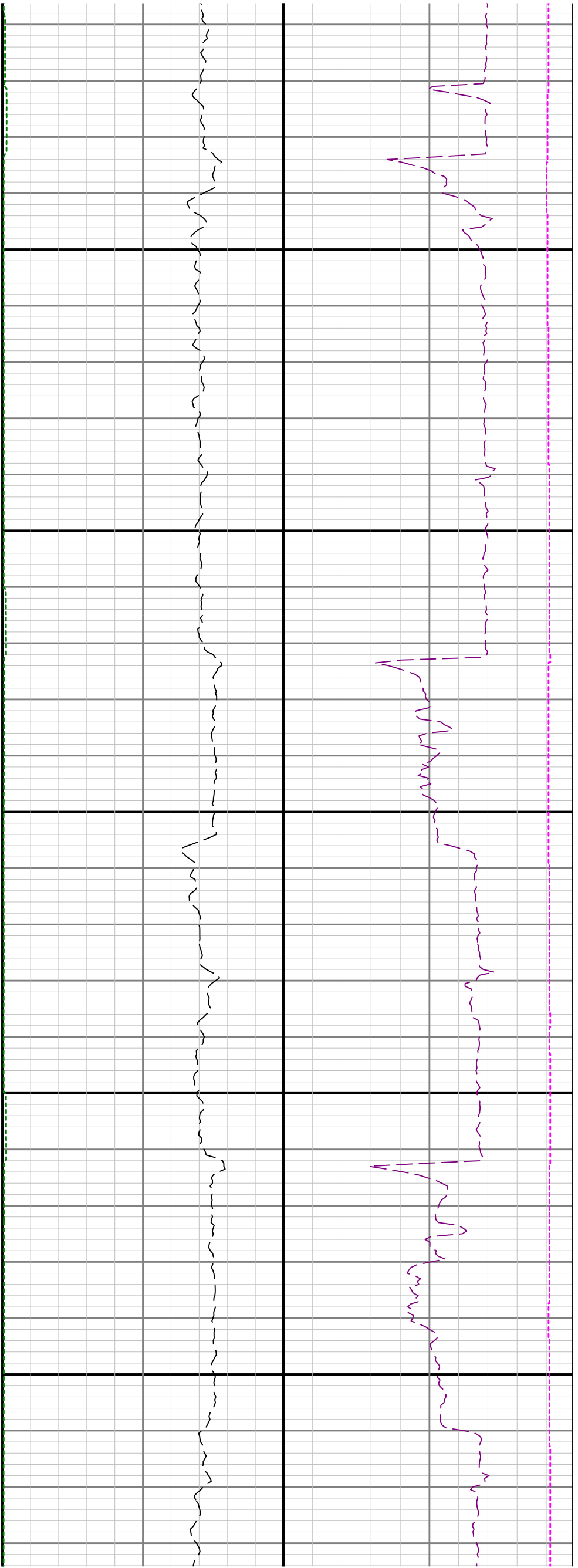


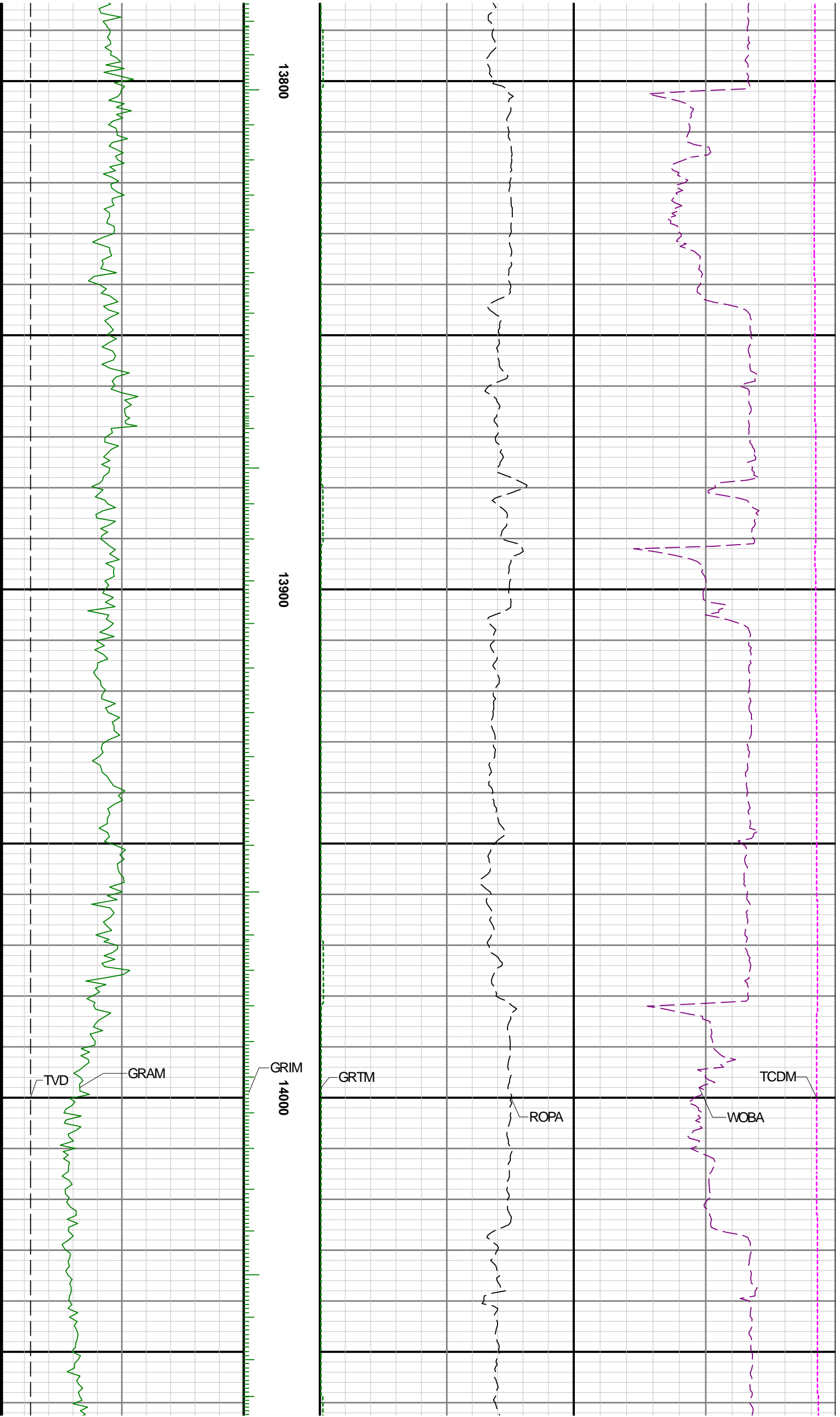


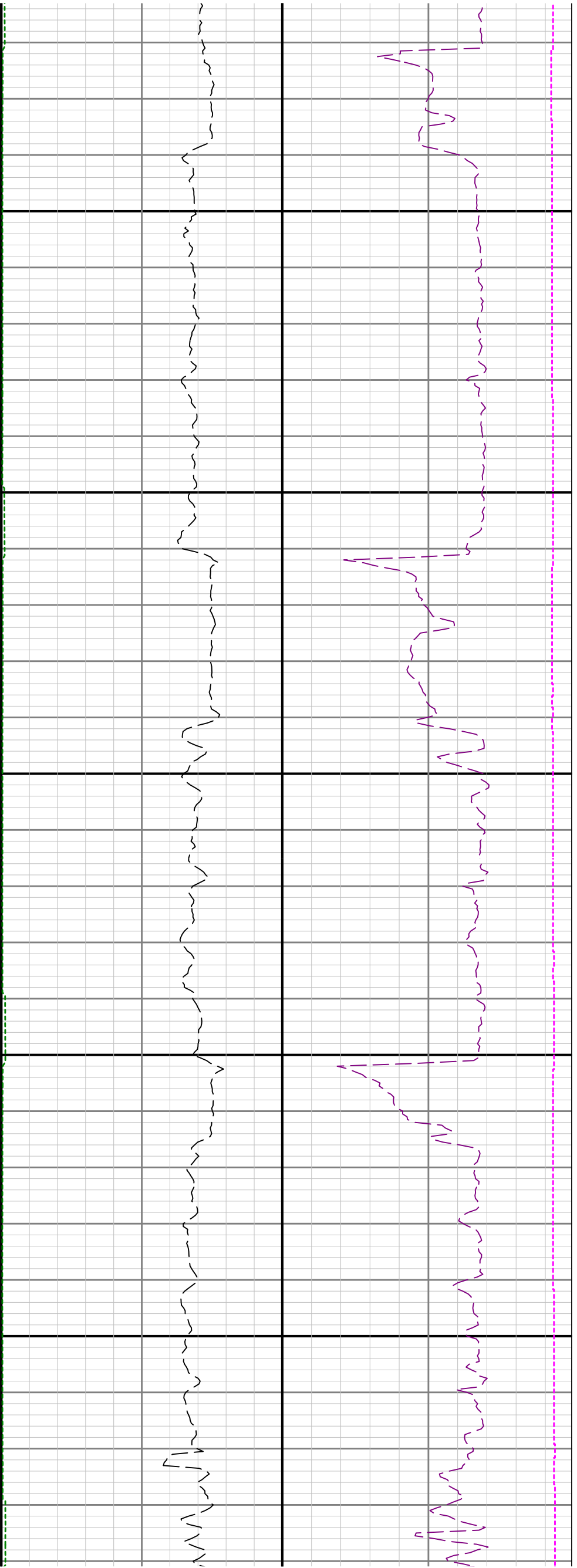
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13400

13500



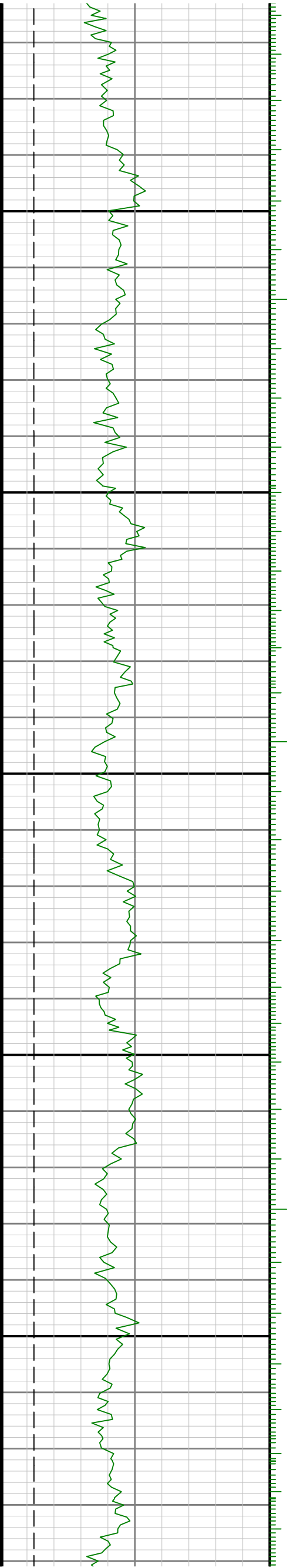


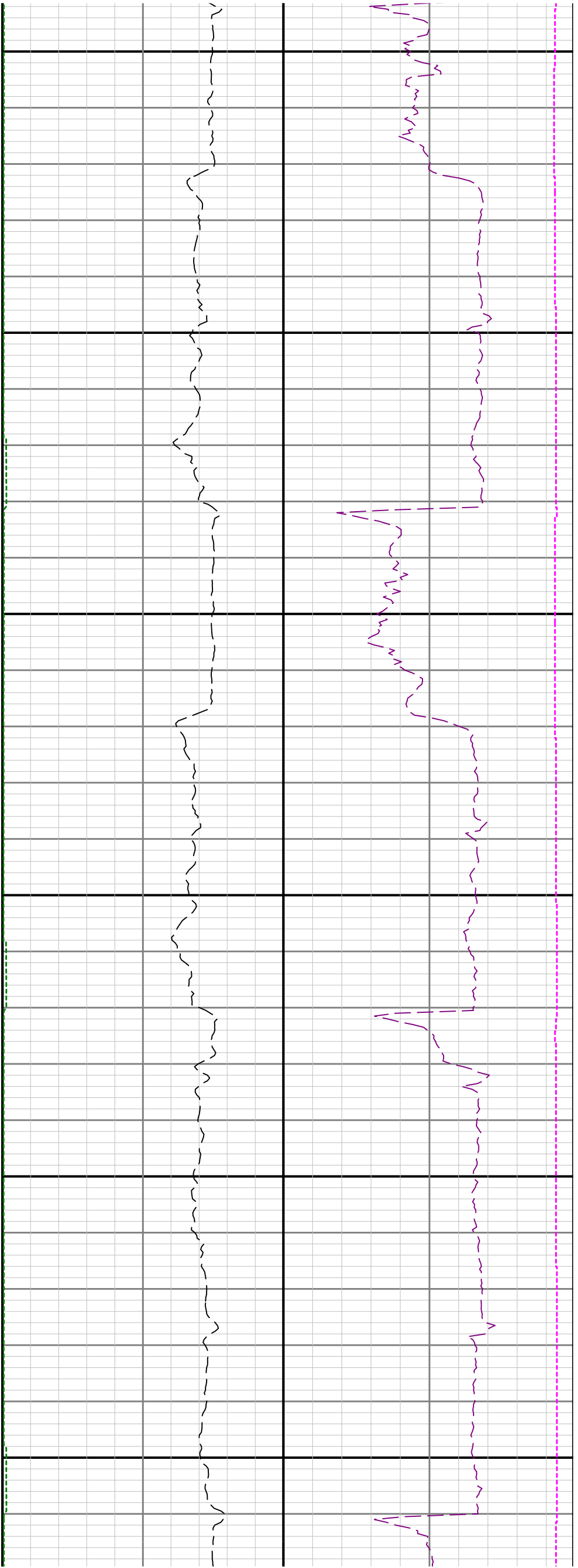


14100

14200

14300

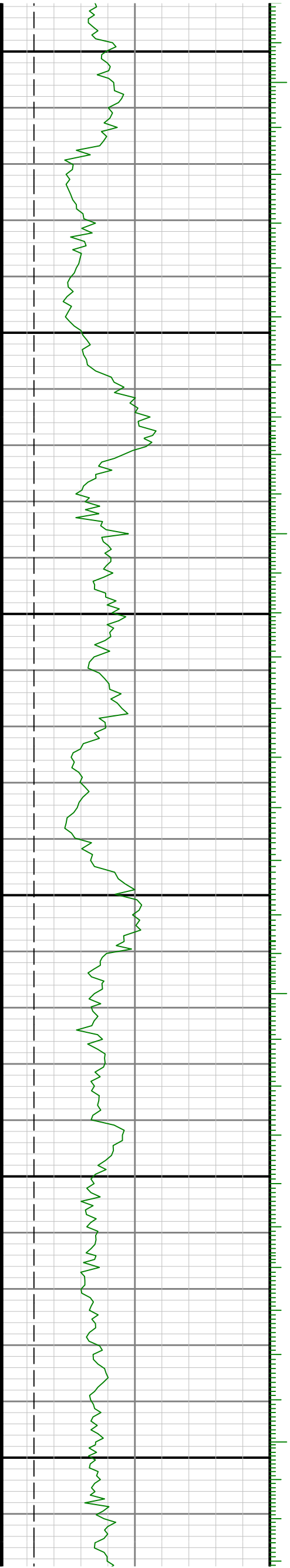


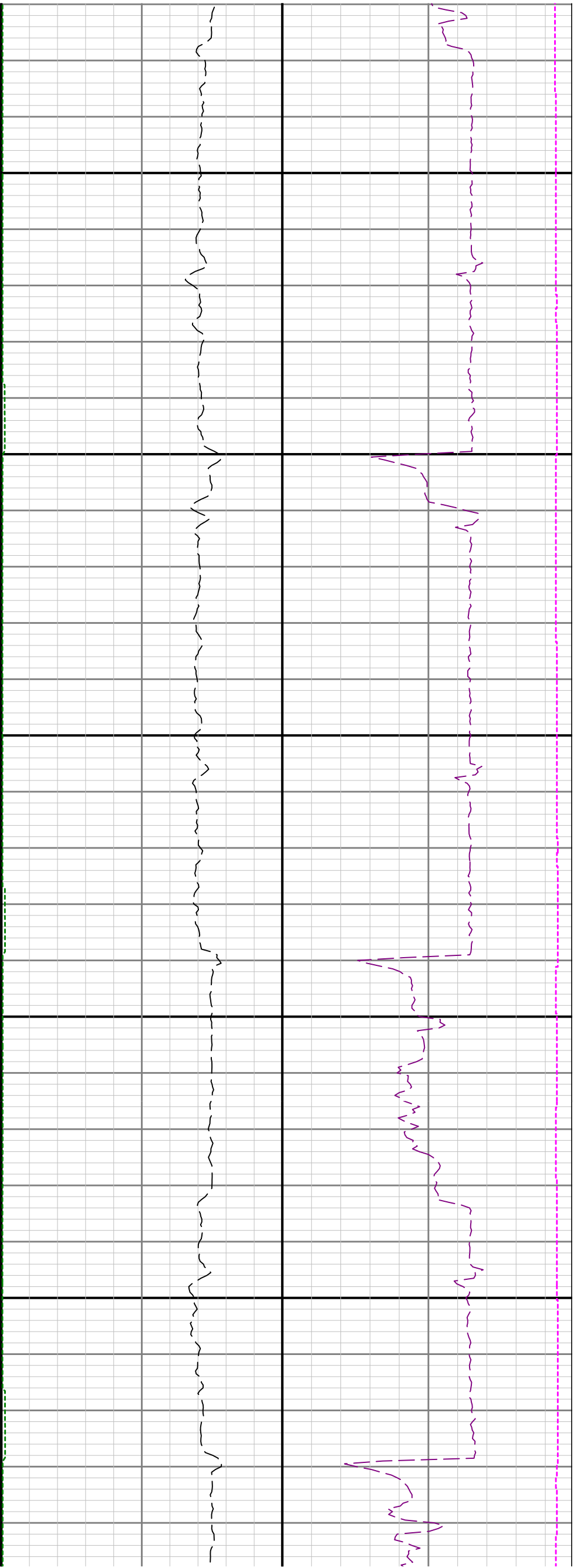


14400

14500

14600

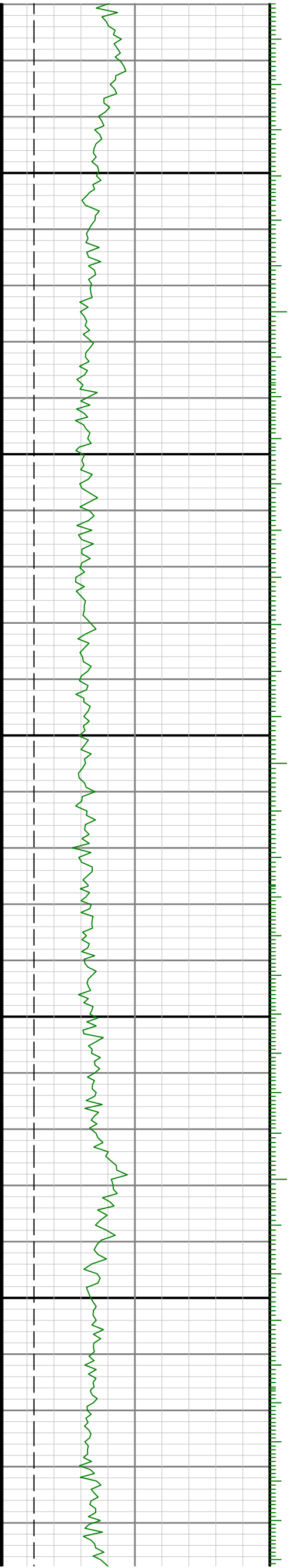


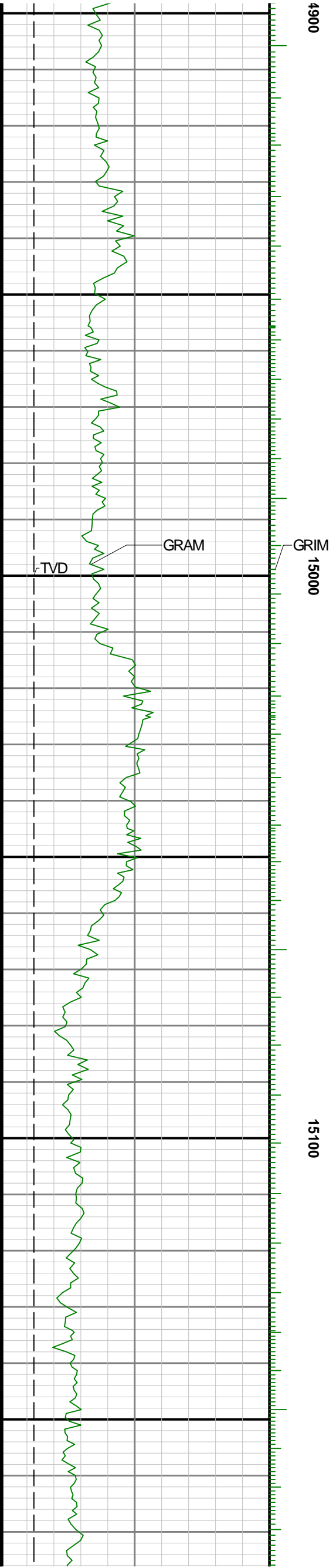
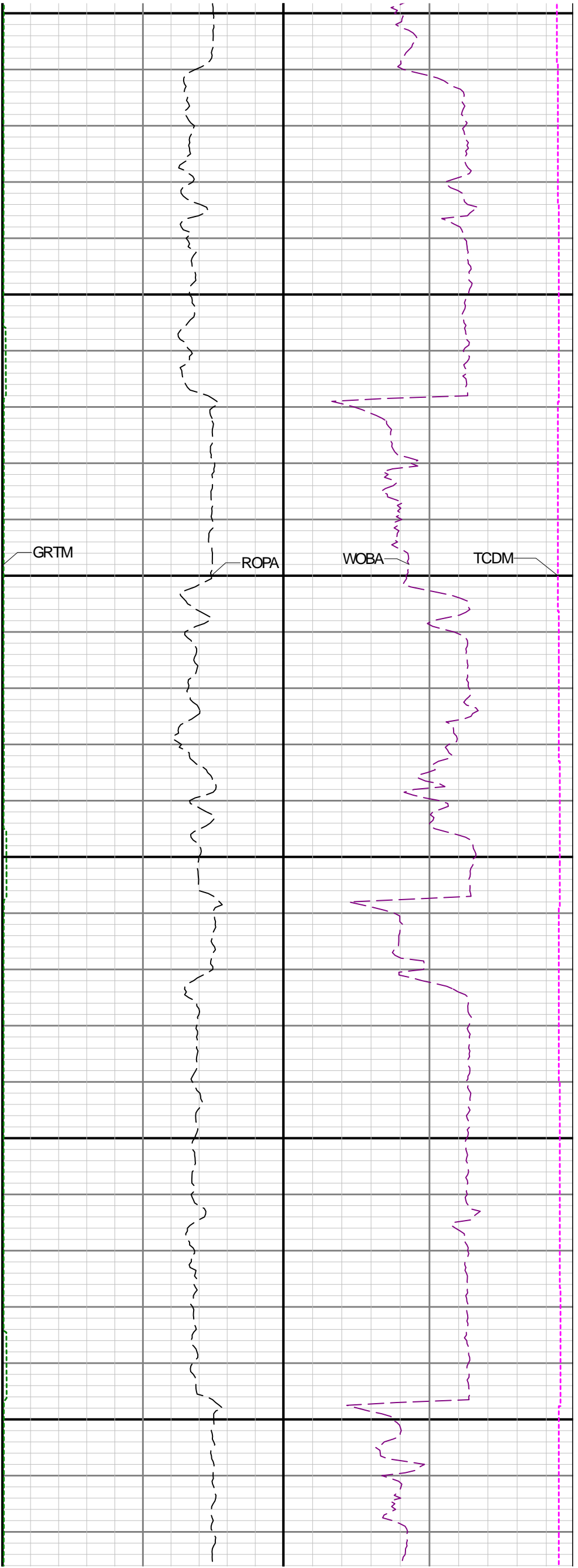


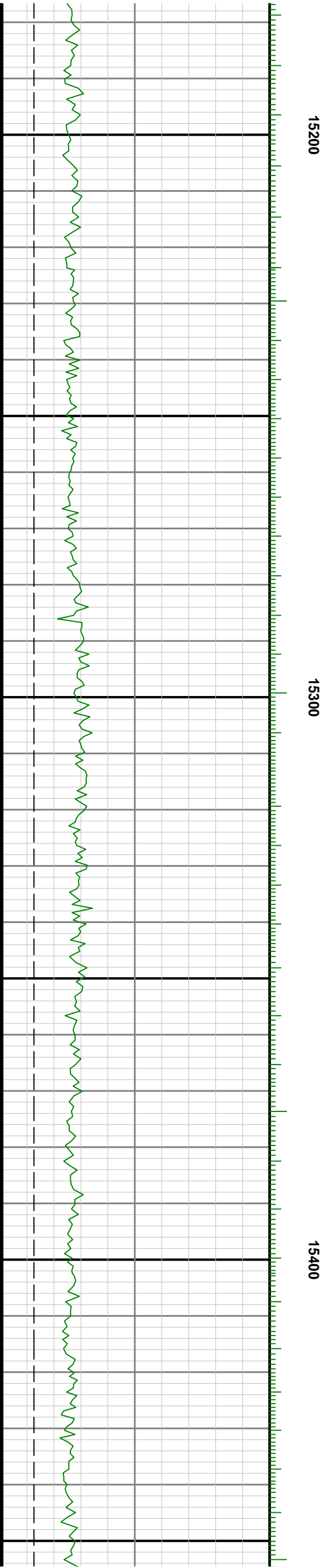
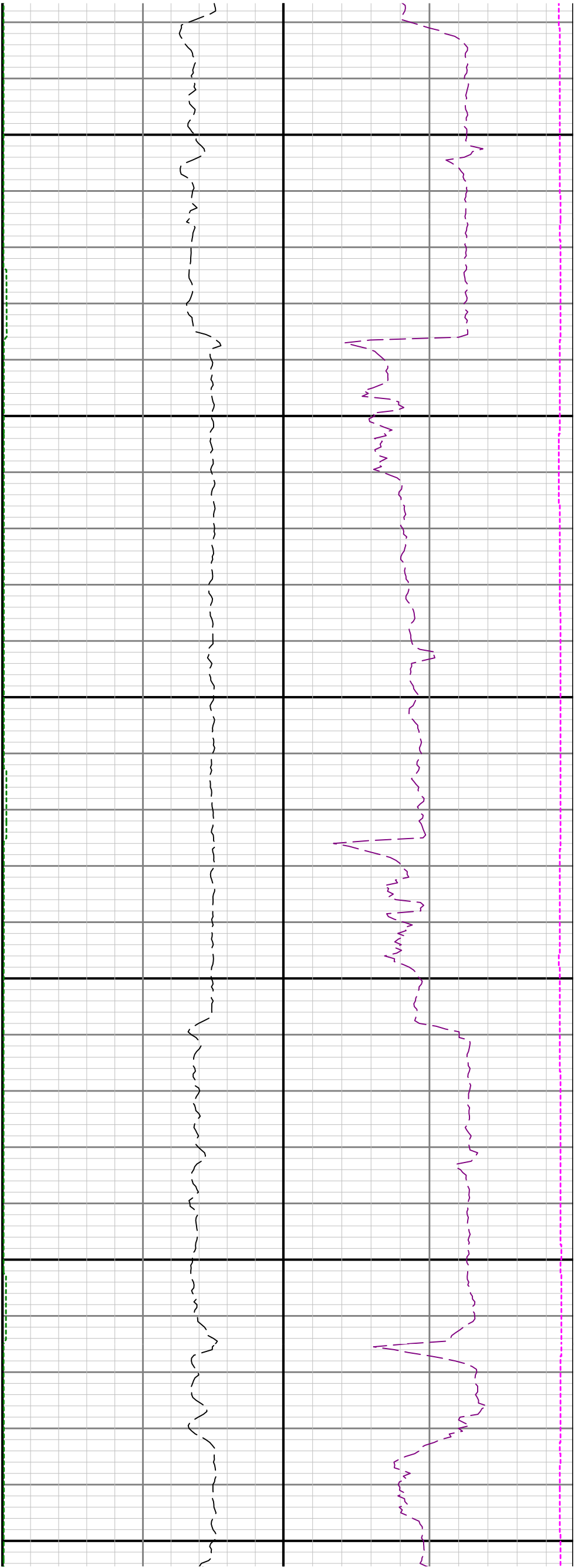
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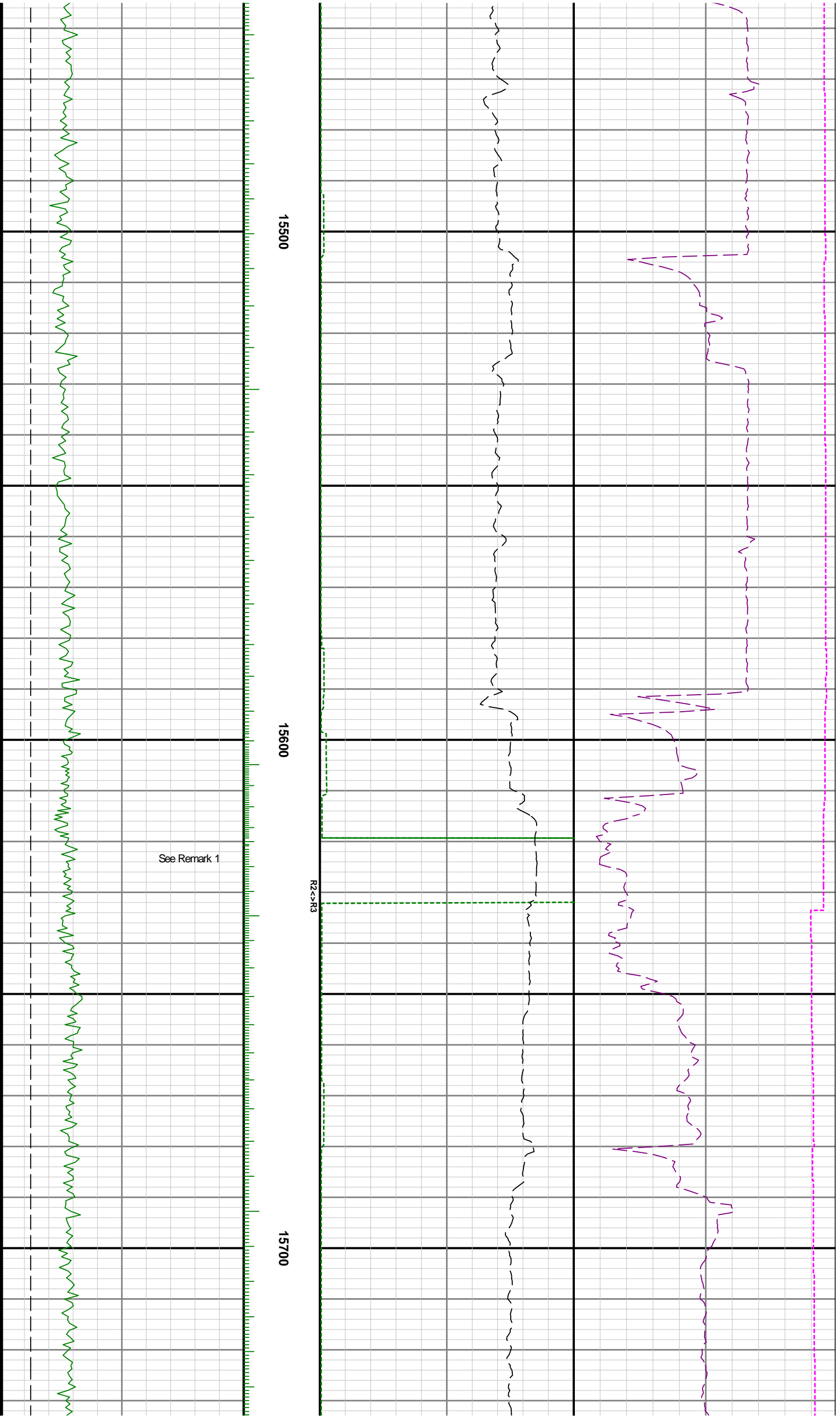
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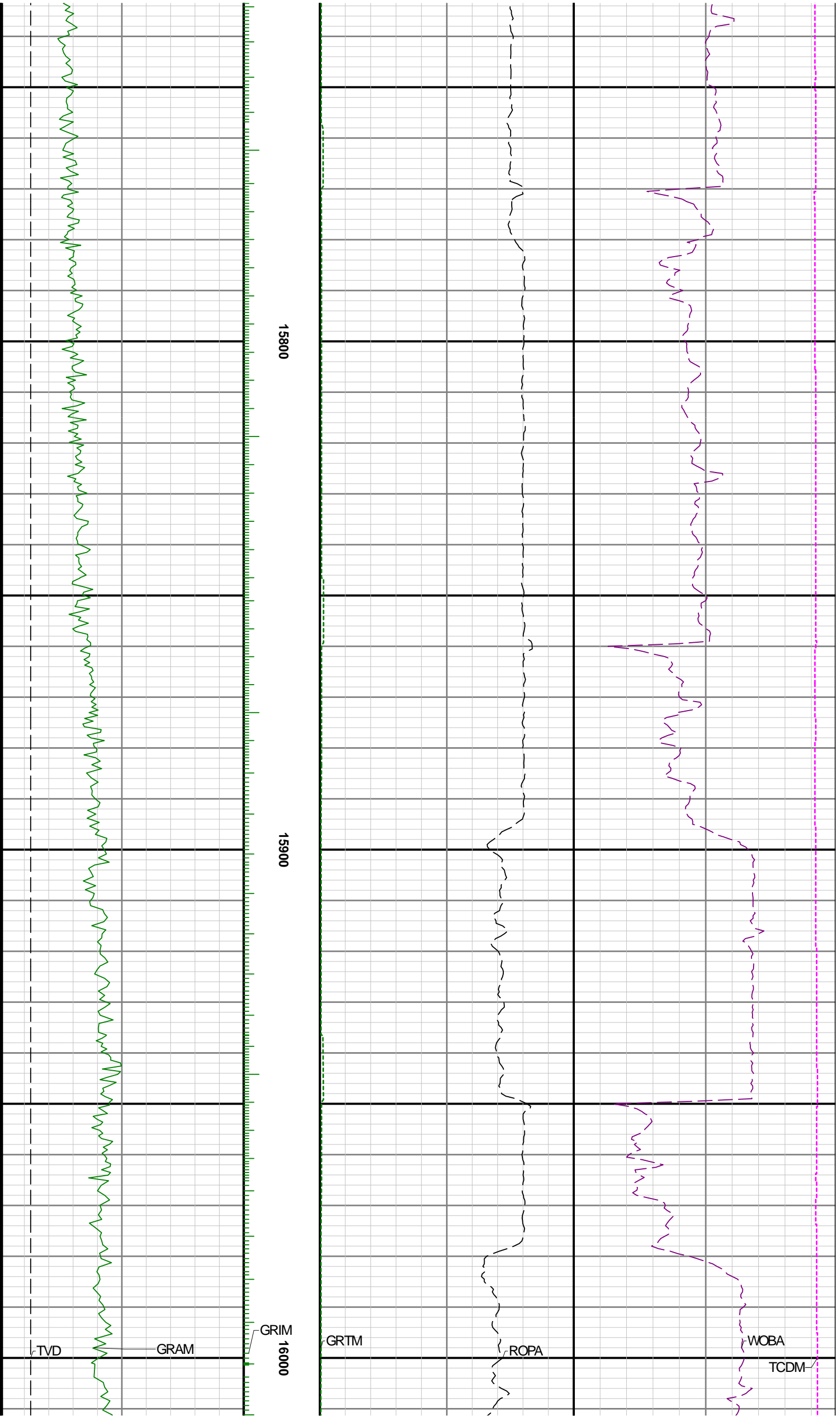
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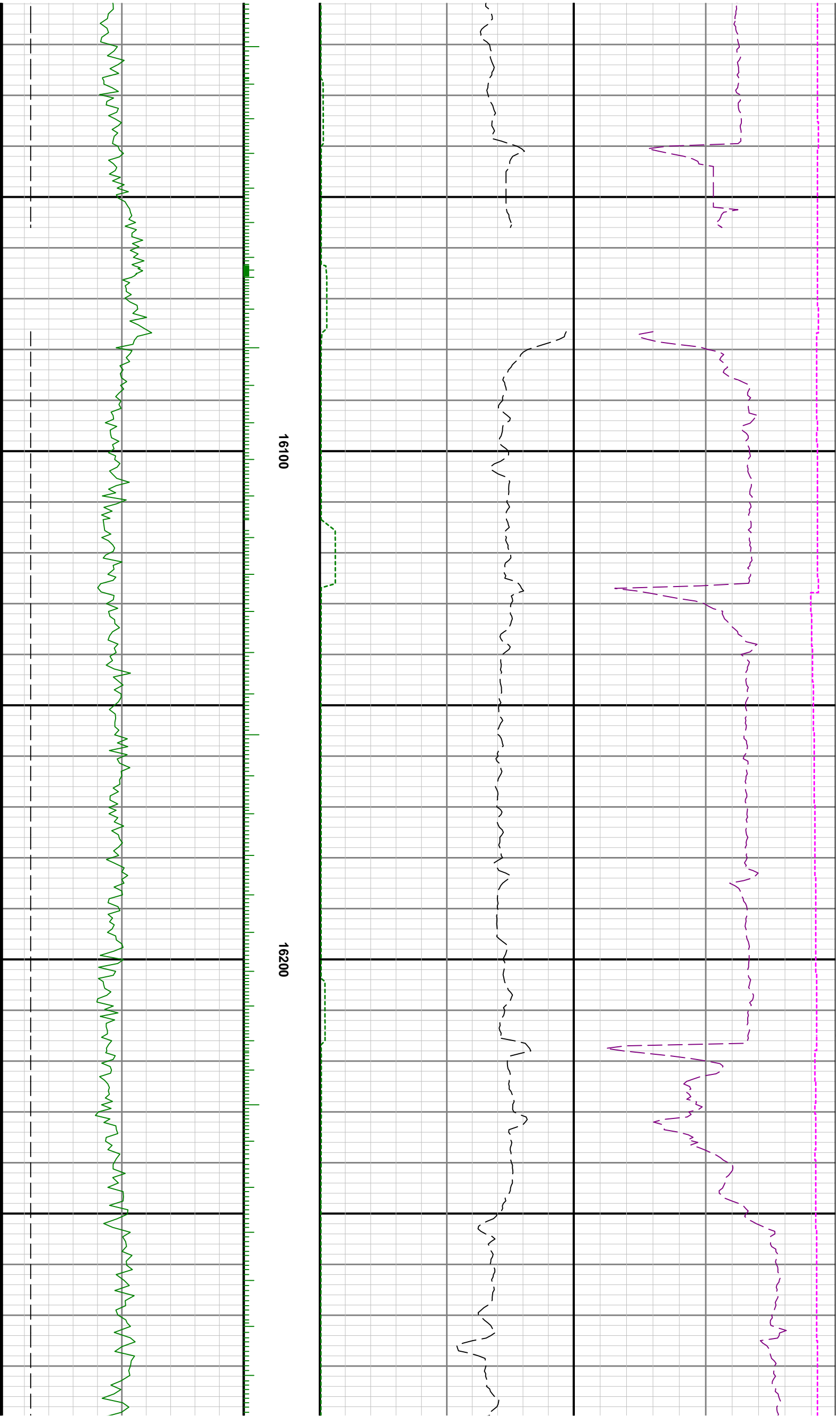


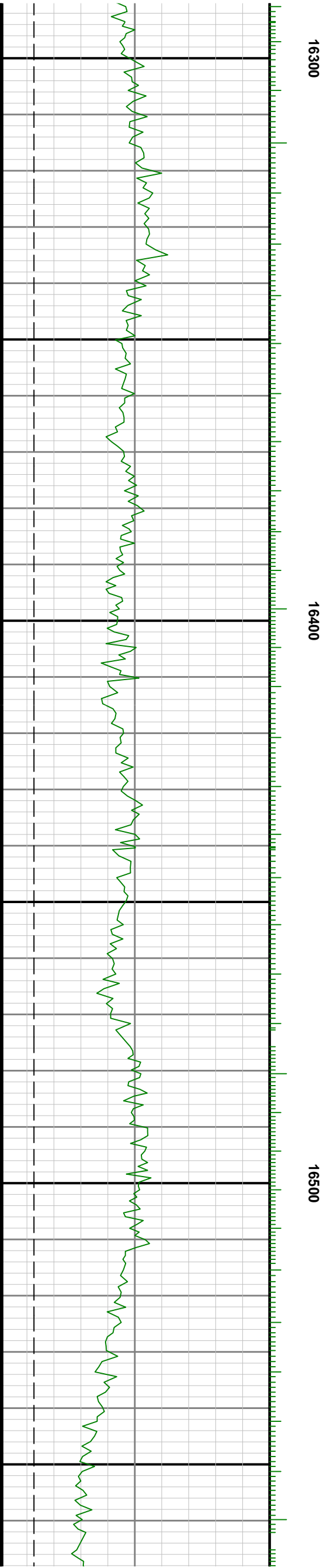
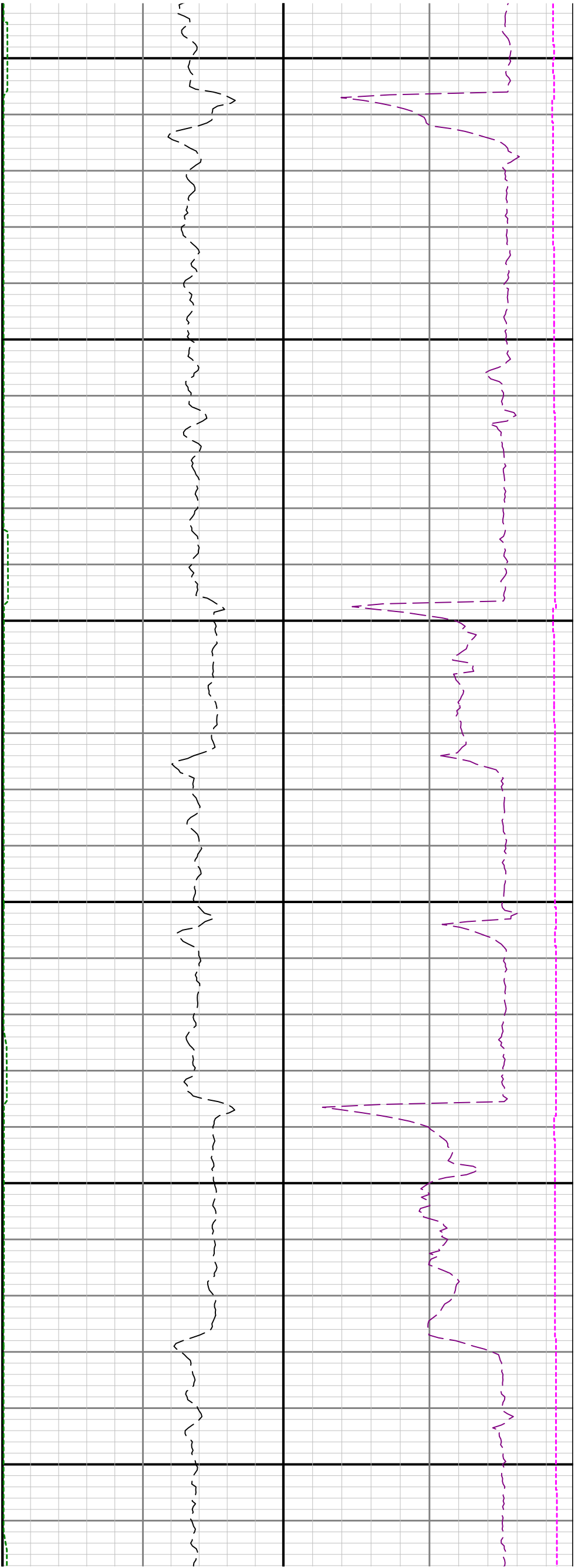


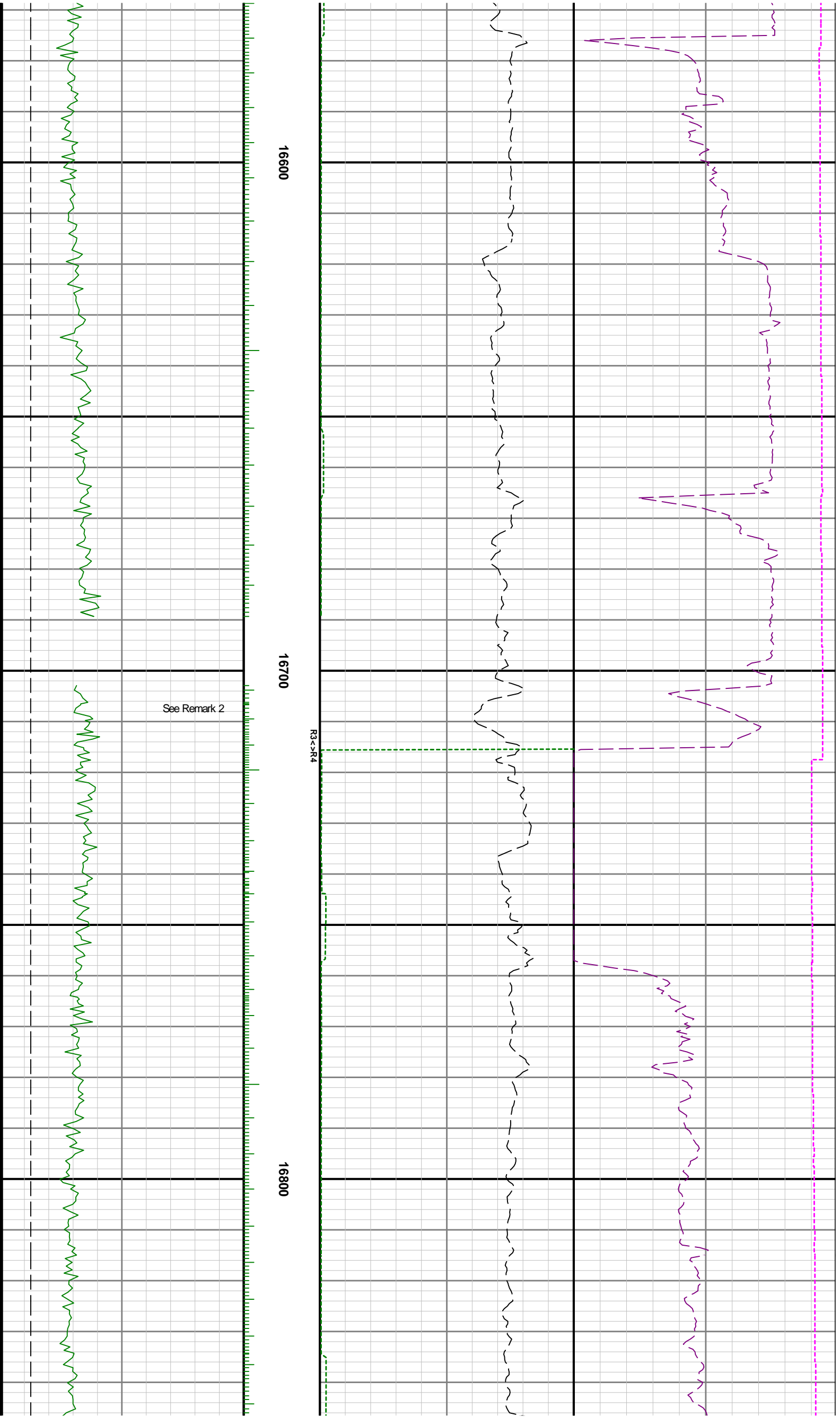






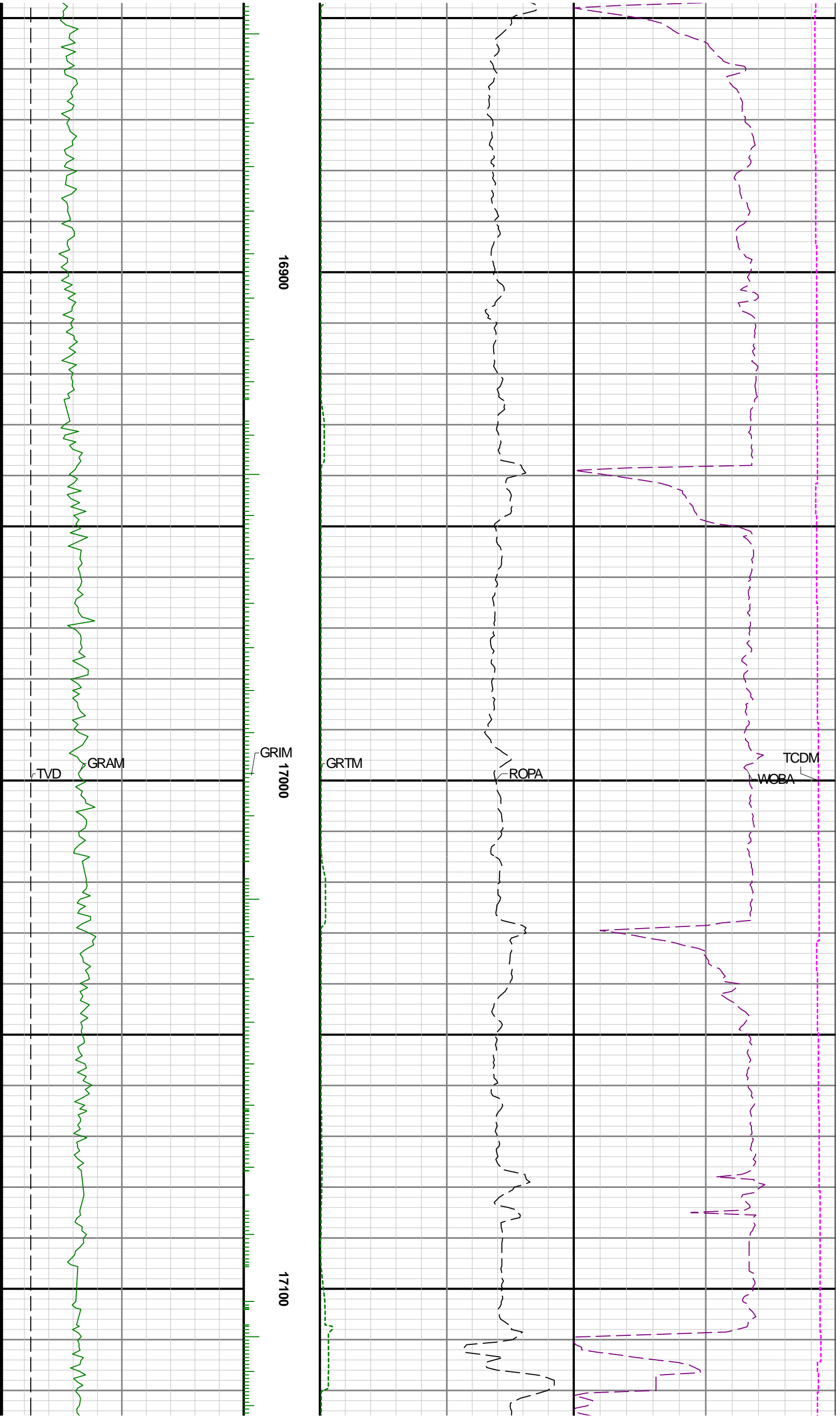


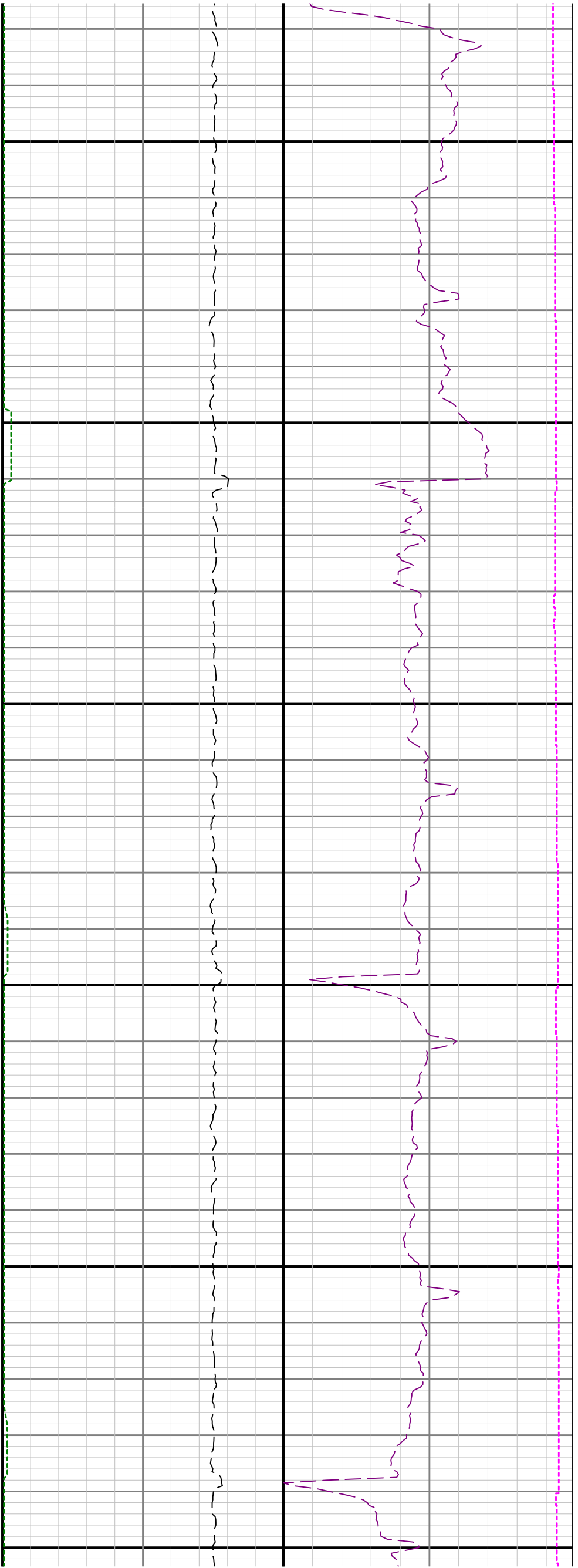




R3 < R4

See Remark 2

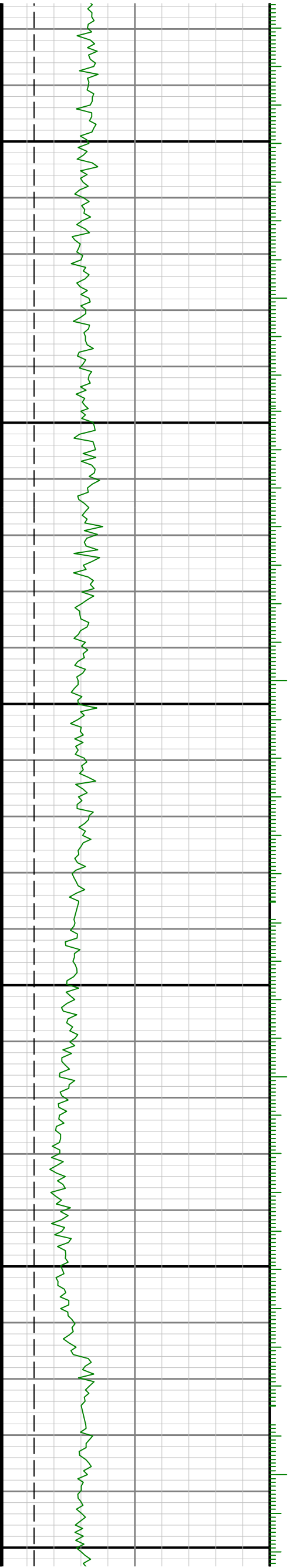


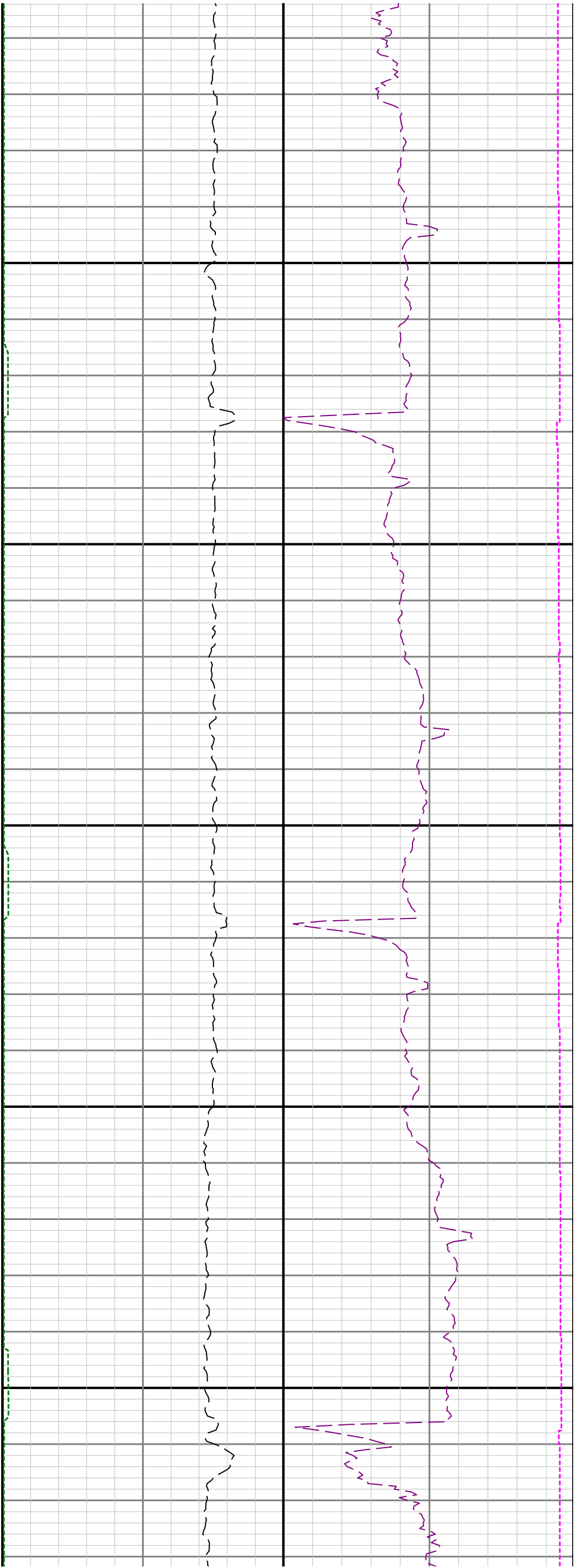


17200

17300

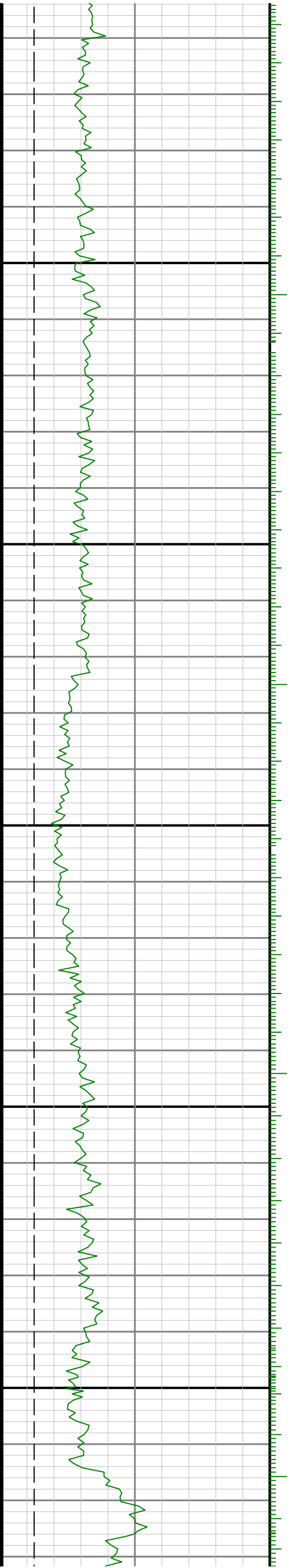
17400

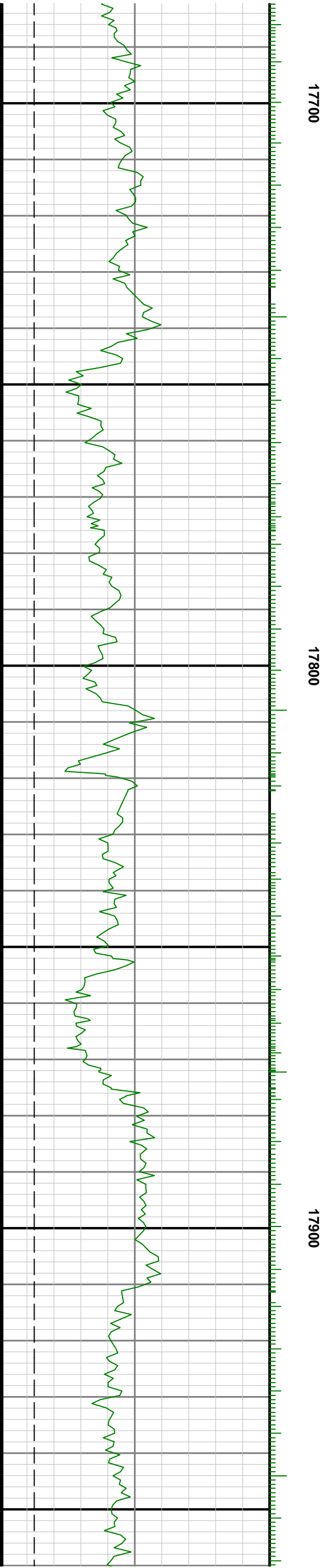
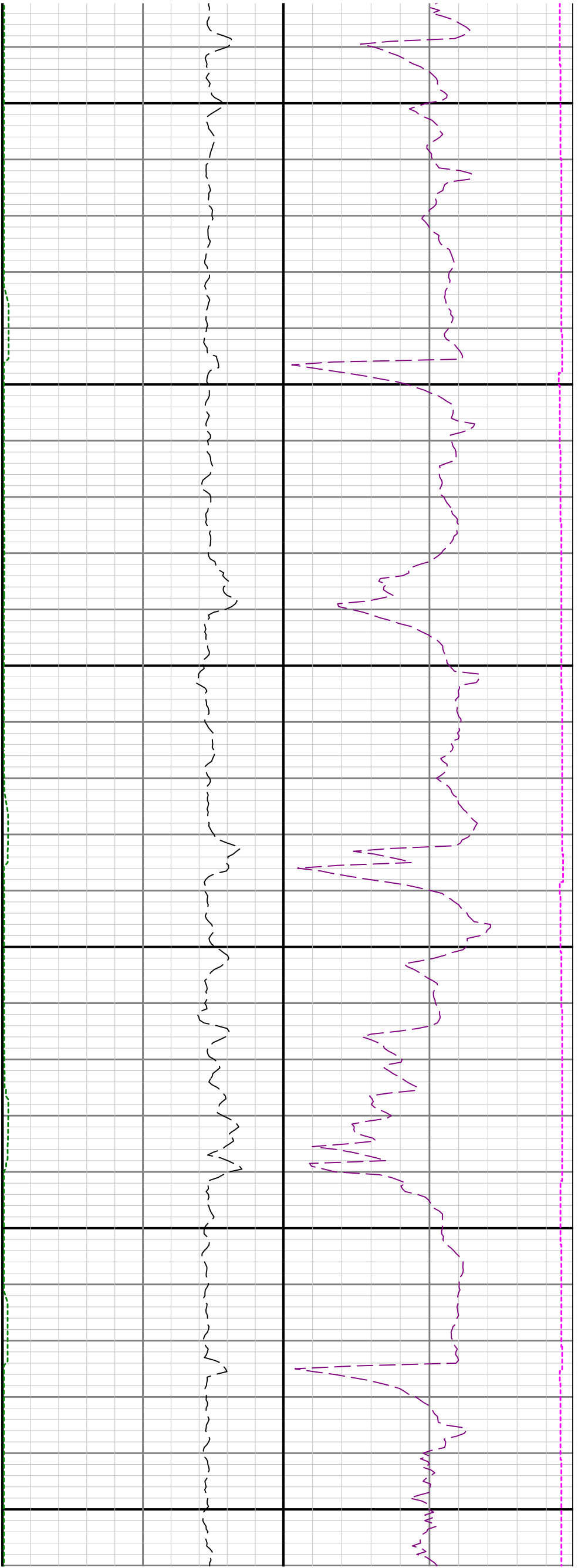


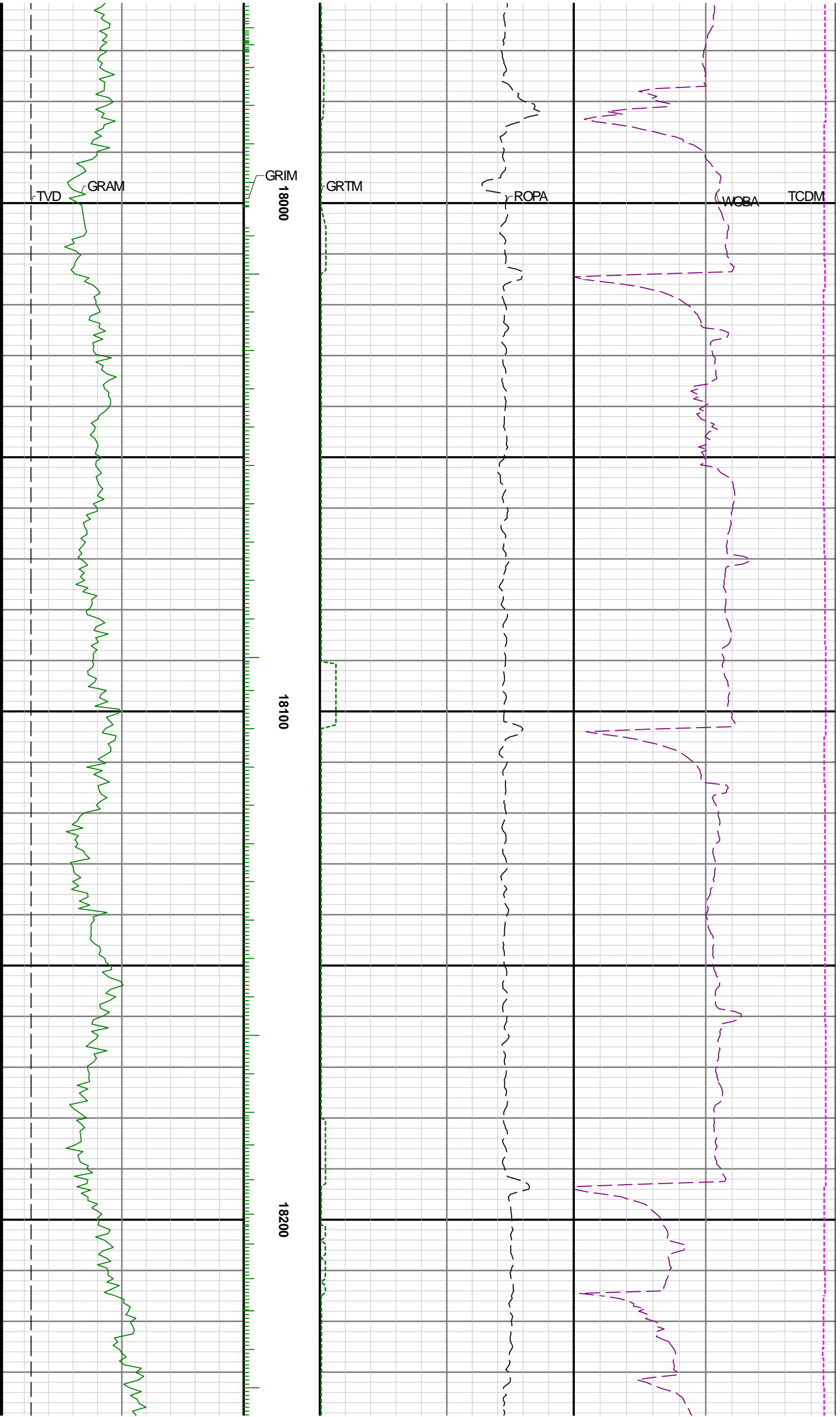


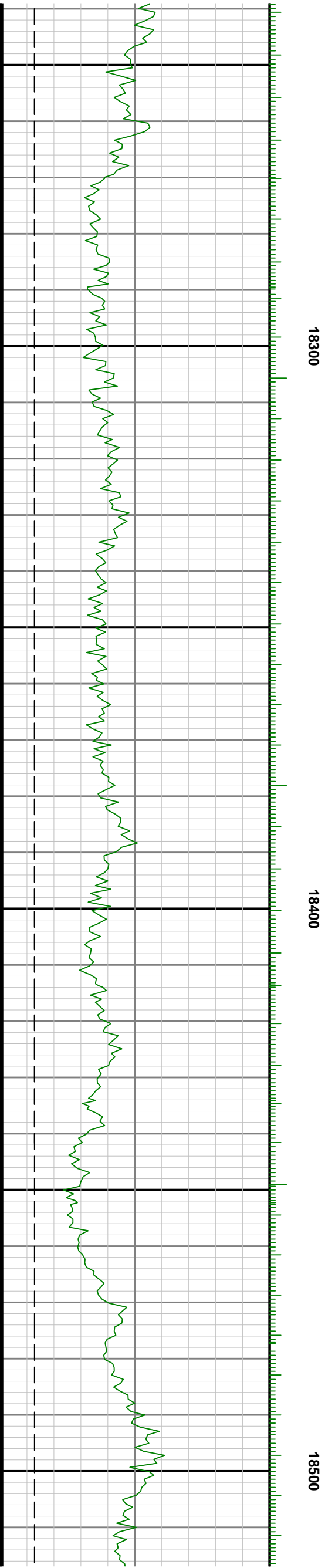
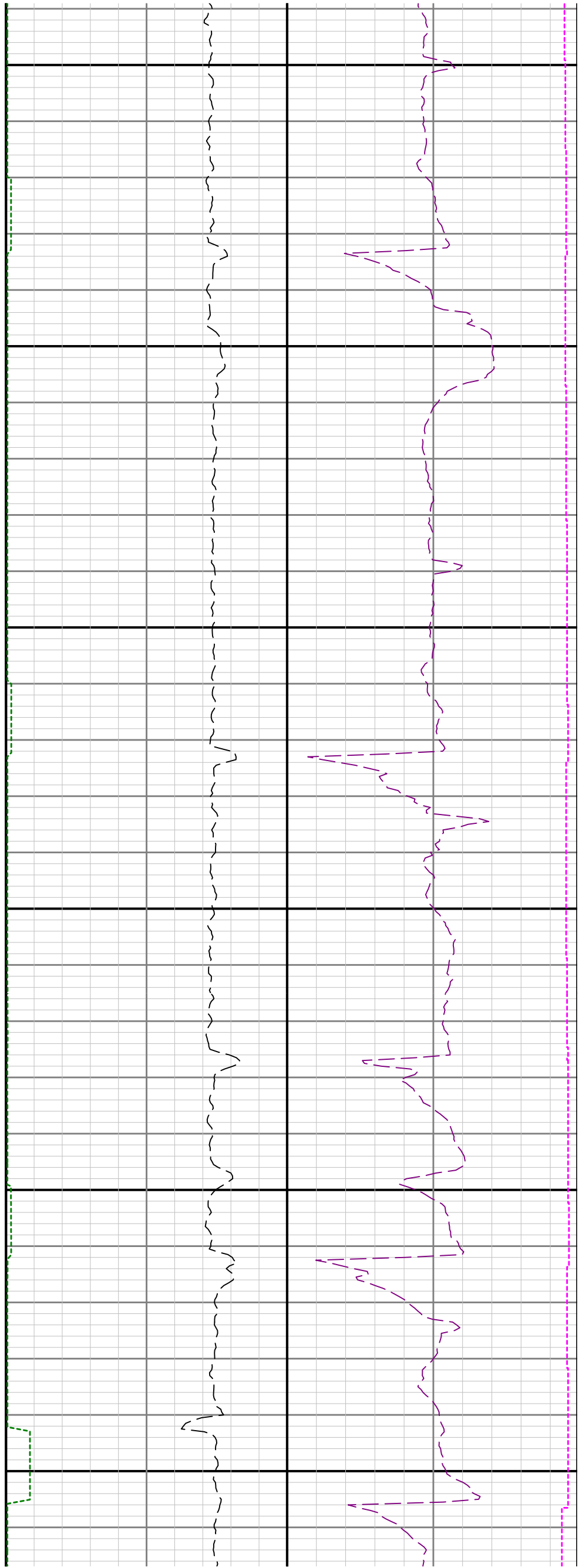
17500

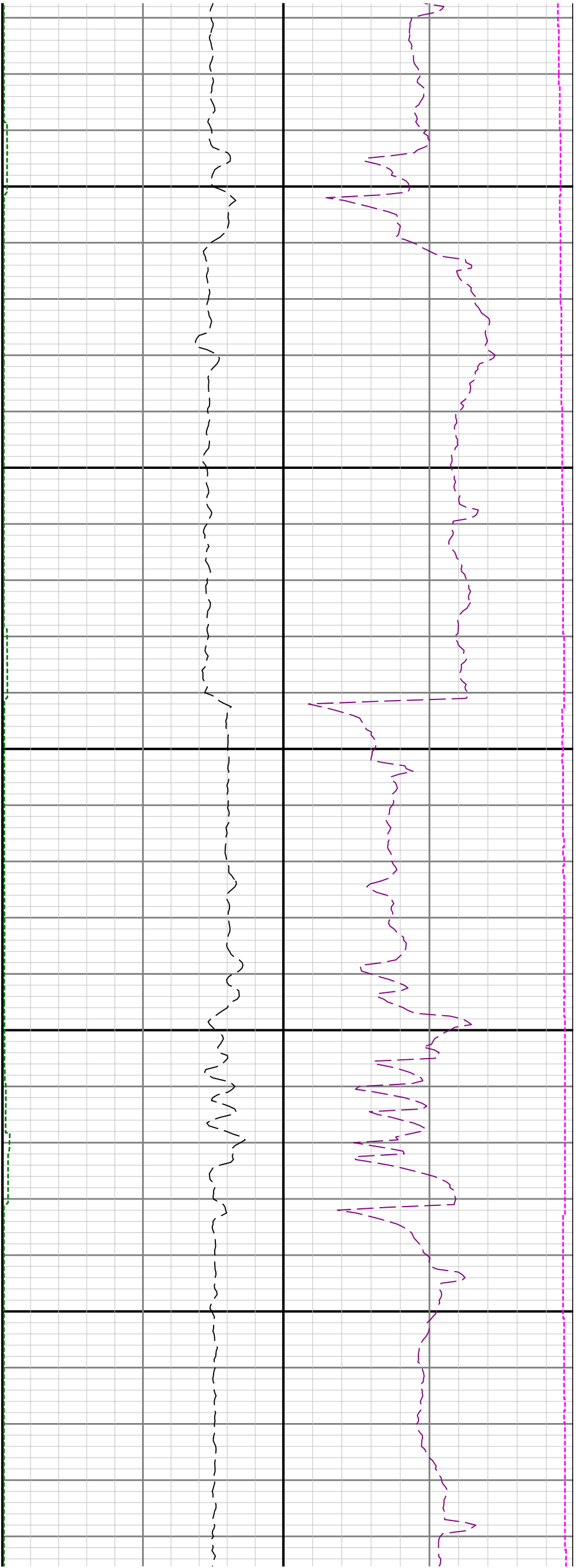
17600











18600

18700

