

LWD Composite Log



Natural Formation Evaluation  
Gamma Ray

Scale:

1:240 MD

Company: Noble Energy

Well: Moser H22-735

Depth Reference:

Field: Weld County

Driller's Depth

County: Weld State: Colorado

Status:

Final Print

Surface Location:

Latitude:

040° 12' 9.720" N

Other Services:

API No: 05-123-40884-00

Longitude:

104° 38' 49.524" W

Job ID: 7610839

SEC: 27

TWN: 3N

RGE: 65W

Permanent Datum (P.D.): Ground Level

Elevation: 4811.00 ft

KB: 0.00 ft

Log Measured From: Rig Floor

Above P.D.

DF: 4841.00 ft

GL: 4811.00 ft

Dates

Interval Logged

Magnetic Field Reference

Date From: 2015-12-10 Top: (ft) 78.00

Azi Reference North: Grid Dip Angle: (deg) 66.82

Date To: 2015-12-14 Bottom: (ft) 14162.00

Total Magnetic Field Strength: (nT) 52490

Spud Date: 2015-12-10

Mag to Reference North Correction: (deg) 7.89 E

Borehole Record

Casing Record

Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)
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13.500	133.00	1860.00	9.625	36.00	0.00	1850.00
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8.500	1860.00	14162.00				
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Mud Record

Deviation Record

Type	From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Inc   Az (Start)	Inc   Az (End)
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Water Based Mud	133.00	1860.00	13.500	1727.00	0.49   176.77	0.30   260.02
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Diesel-Oil Based Mud	1860.00	14162.00	8.500	12302.26	0.30   260.02	87.94   359.27
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Acquisition System Software Version

Other

Baker Hughes Cadence

G3.1

Pilot Studio

3.1.7162.3

Rig: H&P 321

Contractor: Helmerich & Payne Drilling Co

District:

RMD

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	Bottom	From	To	Start Logging	End Logging	
						(ft)	(ft)	(ft)	(ft)			
1	1	13.500	PDC	3.00	Motor	72.24	1799.77	133.00	1860.53	2015-12-10 15:48	2015-12-10 21:55	5.71
2	2	8.500	PDC	2.00	AutoTrak Curve	1847.81	14156.29	1860.00	14162.26	2015-12-11 16:44	2015-12-14 00:29	51.77

Crew

Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite
David Browning		2015-12-09	2015-12-11	Dustin Zink		2015-12-09	2015-12-14	Matthew Delmore		2015-12-09	2015-12-14
Michael Gurnsey		2015-12-09	2015-12-14	Garrett Gerdson		2015-12-11	2015-12-14				

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+ (%)
2015-12-10 16:00		1	206.00	Water Based Mud	8.5	2	11.4@75	48.0	0/98.7	Active Pit	1900	0.00
2015-12-12 02:30		2	4771.00	Diesel-Oil Based Mud	9.9	28	N/A	9.8	56/31.5	Active Pit	39000	0.00
2015-12-12 13:30		2	6970.00	Diesel-Oil Based Mud	9.8	19	N/A	10.0	60/28	Active Pit	52000	0.00
2015-12-13 02:30		2	9840.00	Diesel-Oil Based Mud	10.1	19	N/A	10.5	60/25.5	Active Pit	40000	0.00
2015-12-13 13:30		2	11831.00	Diesel-Oil Based Mud	10.4	27	N/A	11.5	58.5/25	Active Pit	40000	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	NaviGamma	462	Gamma (single)	10.20	60.76	6.750	2.938
1	NaviGamma	462	Directional (mag)	13.61	64.17	6.750	2.938
1	NaviGamma	462	VSS	13.61	64.17	6.750	2.938
2	ATC_SU	12161973	Near Bit Inclination	5.33	5.97	7.000	4.330
2	ATC_MWD	12118955	Gamma (single)	2.21	12.19	7.000	3.250
2	ATC_MWD	12118955	Directional (mag)	12.28	22.26	7.000	3.250

Comments

1	Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified and the unverified depths as supplied to Baker Hughes are being used to
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engineers, depth calibrations and measurements could not be independently verified and the unverified depths as supplied to Baker Hughes are being used to represent logging data.

- 2 Baker Hughes Run 1 utilized a 6 3/4 inch NaviGamma (Directional and Gamma Ray) tool behind a 13 1/2 inch bit and steerable assembly from surface to 1860 feet MD (1859.93 feet TVD).
- 3 Baker Hughes Runs 2 and 3 utilized a 6 3/4 inch AutoTrak Curve (Directional and Gamma Ray) tool behind an 8 1/2 inch bit and rotary steerable assembly from 1860 feet MD (1859.93 feet TVD) to 14162 feet MD (6976.82 feet TVD).

Remarks

Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	4420.00	8.500	2	The interval from 4409 feet MD (4388.18 feet TVD) to 4430' MD (4408.99 feet TVD) has a gap in Realtime and Memory Gamma data due to a depth jump caused by the Pason around this interval.

Curve Mnemonics

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



Company

Well

Interval

Created

Noble Energy

Moser H22-735

Date From: 2015-12-10 15:48

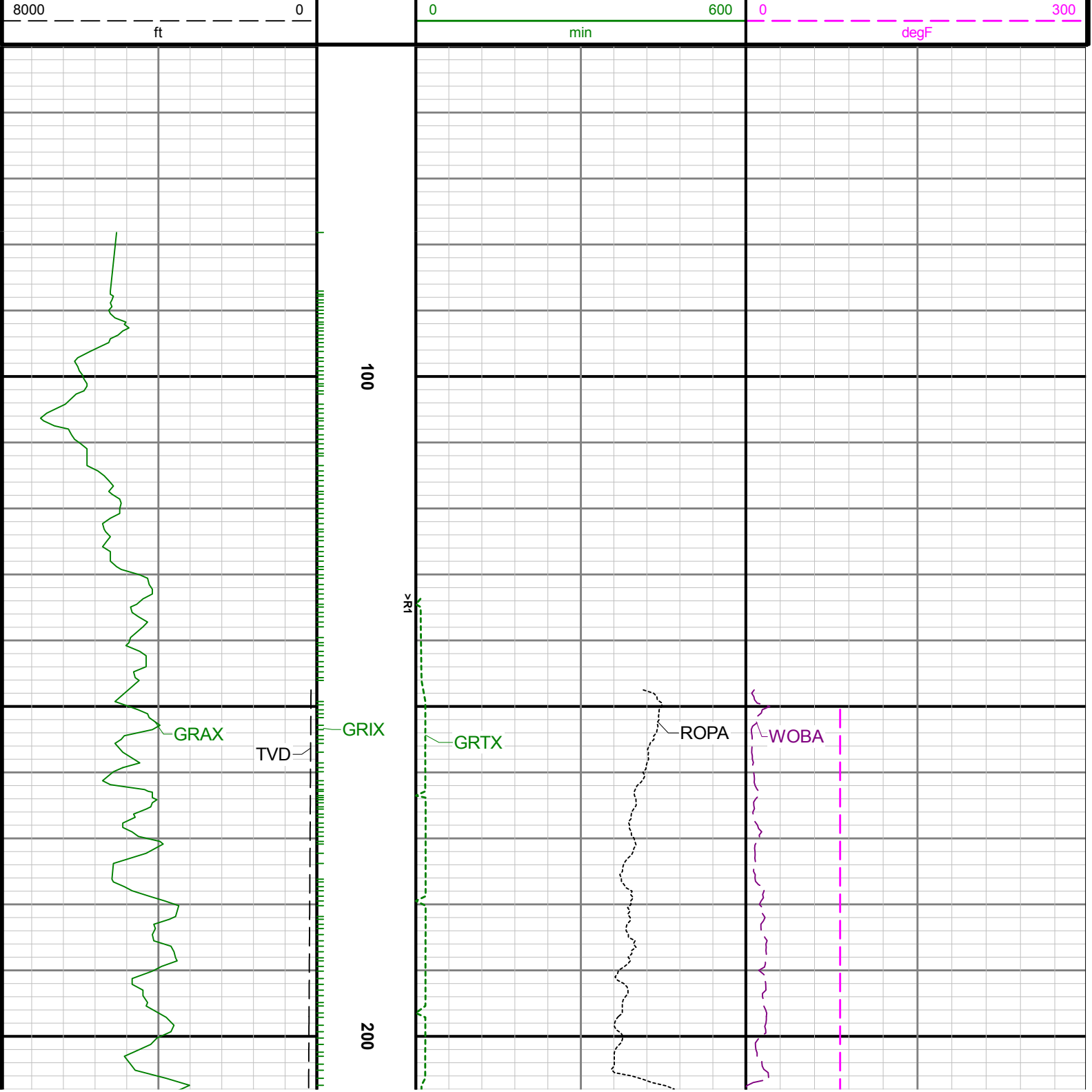
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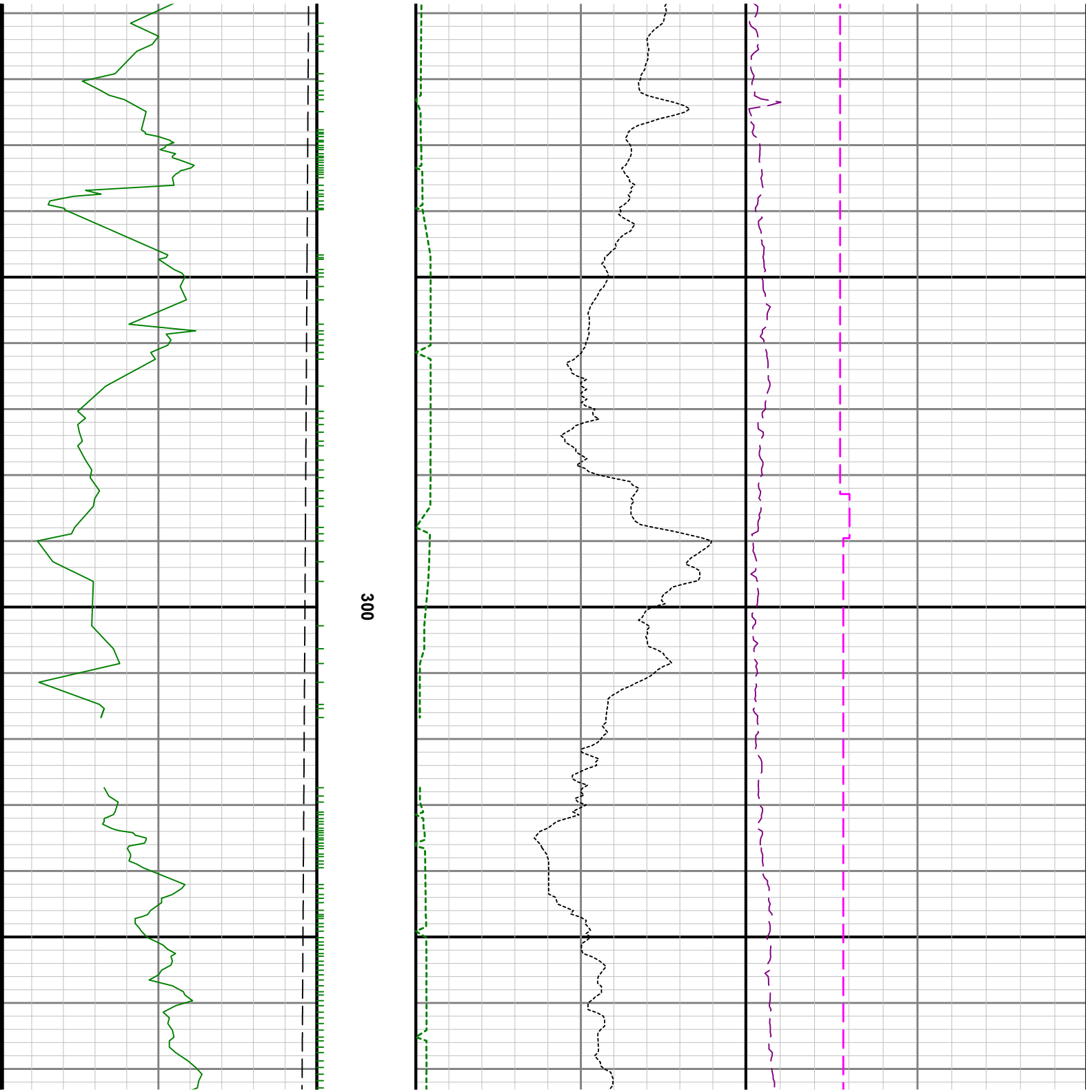
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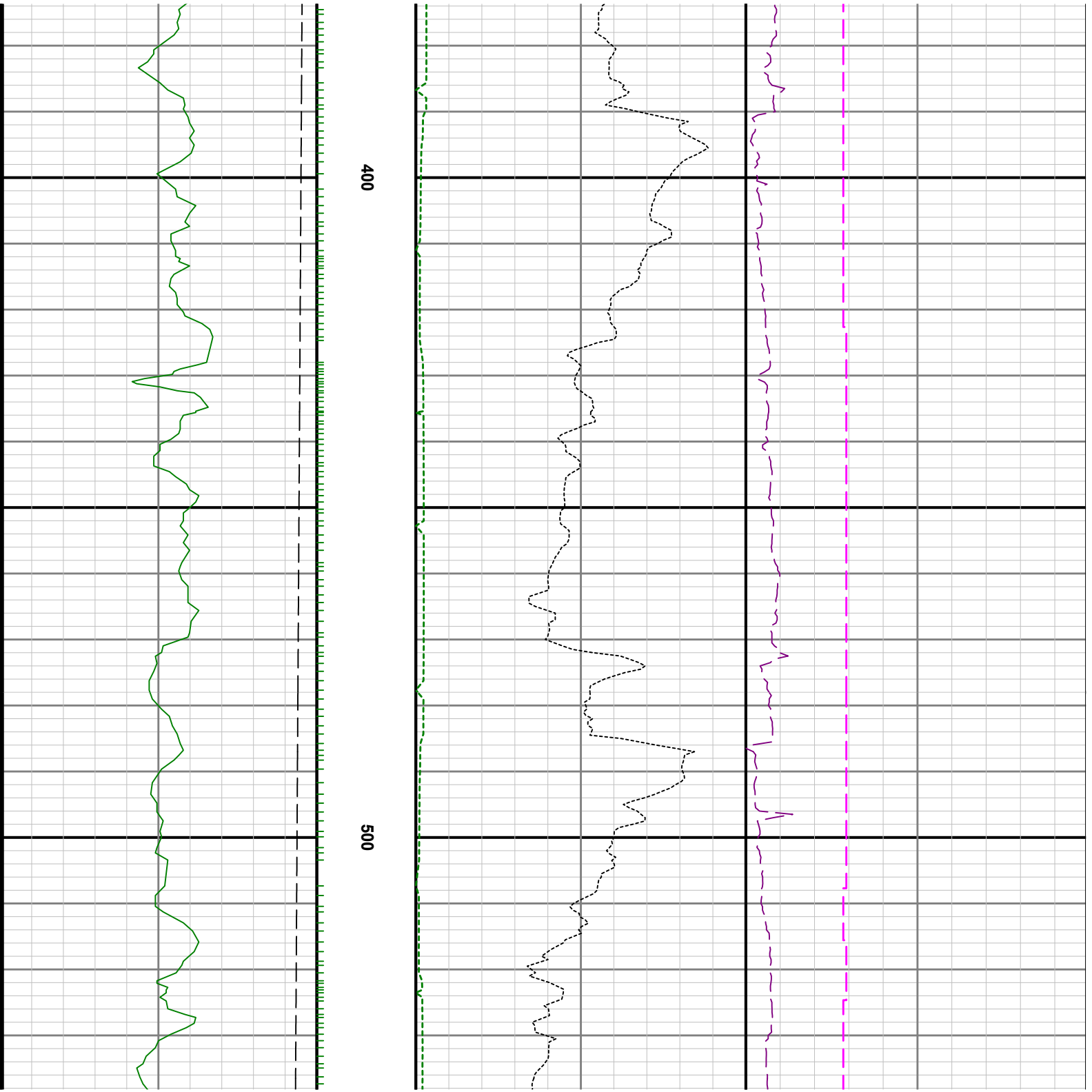
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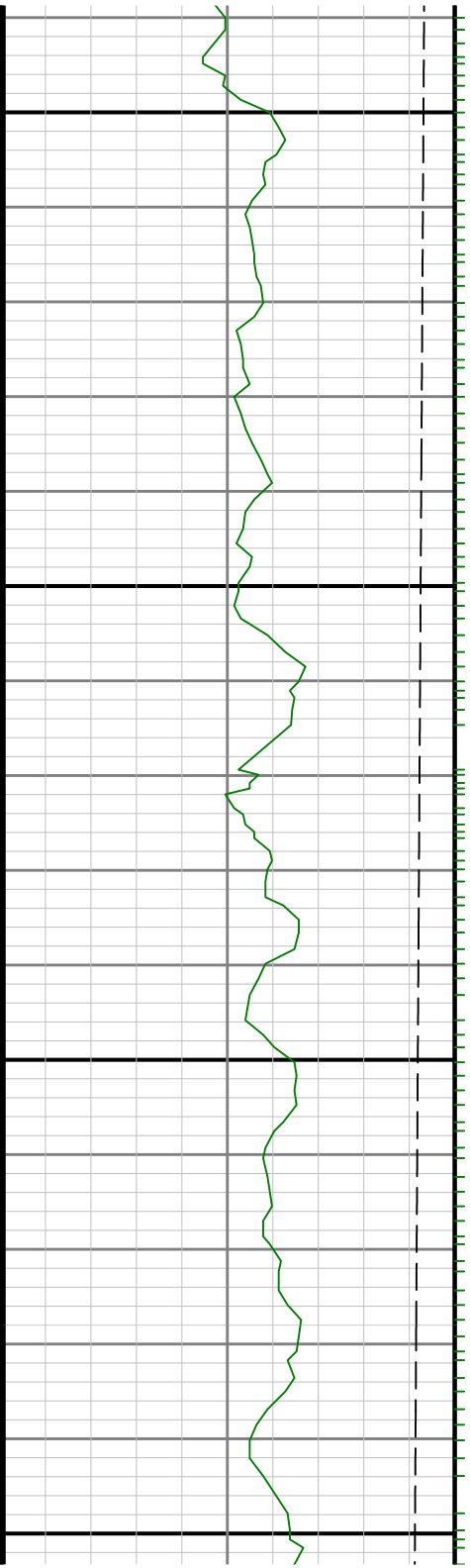
Bottom: 14162.00

Gamma Ray Apparent 0.5 ft Average GRAX	MD 1:240 feet	Rate of Penetration 3 ft Average ROPA	Surface Weight On Bit 1 ft Average WOBA
0 150		1000 0	0 100
API		ft/h	klb
Gamma Ray - Apparent 0.5 ft Average GRAM		Gamma Ray Time Since Drilled GRTX	Downhole Temperature TCDX
0 150		0 600	0 300
API		min	degF
True Vertical Depth TVD		Gamma Time Since Drilled GRTM	Downhole Temperature TCDM



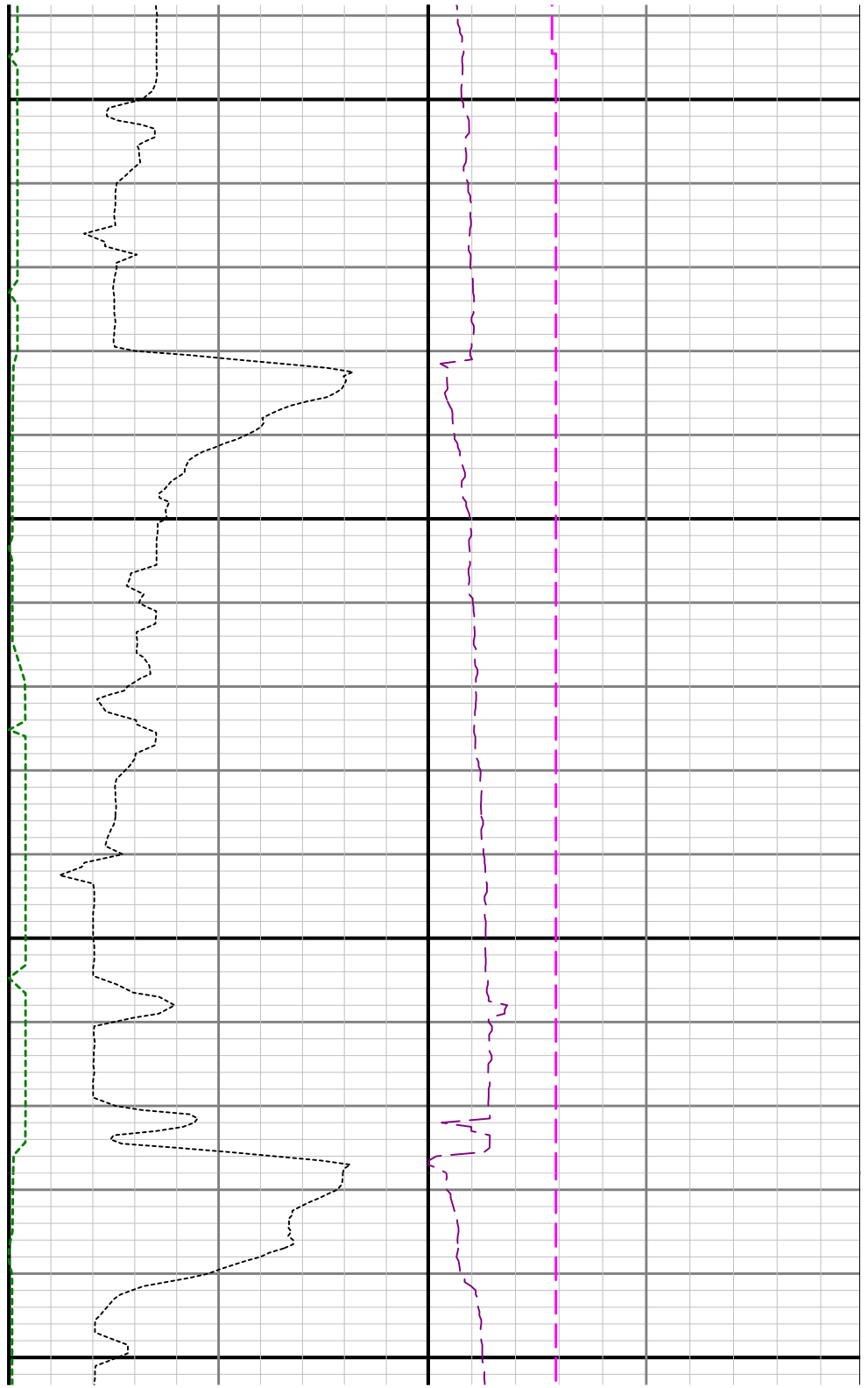


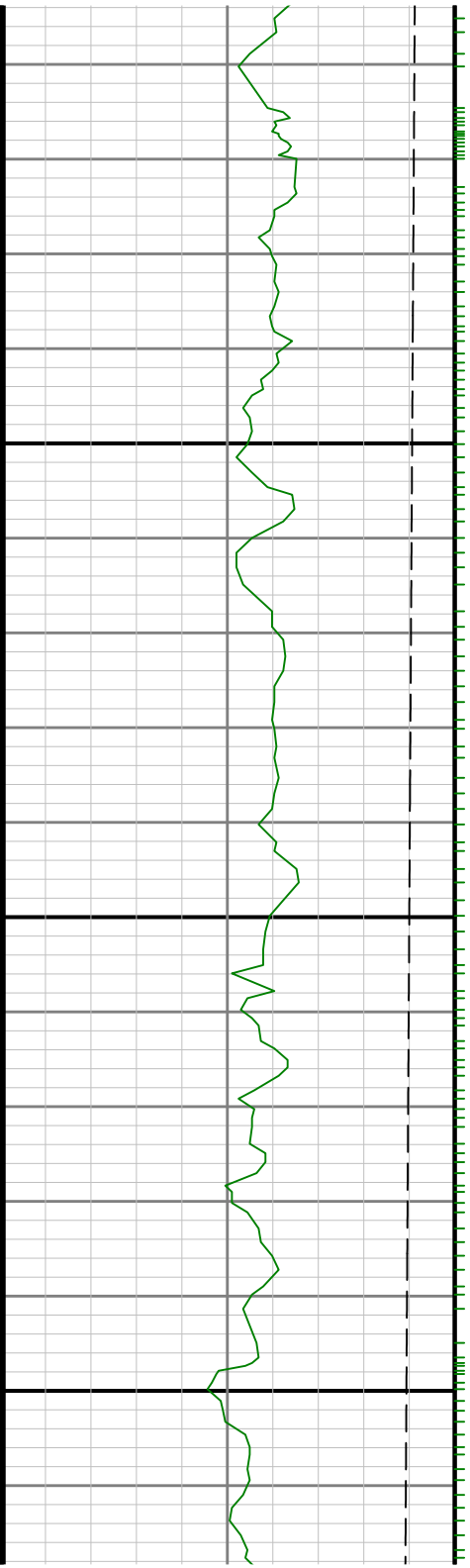




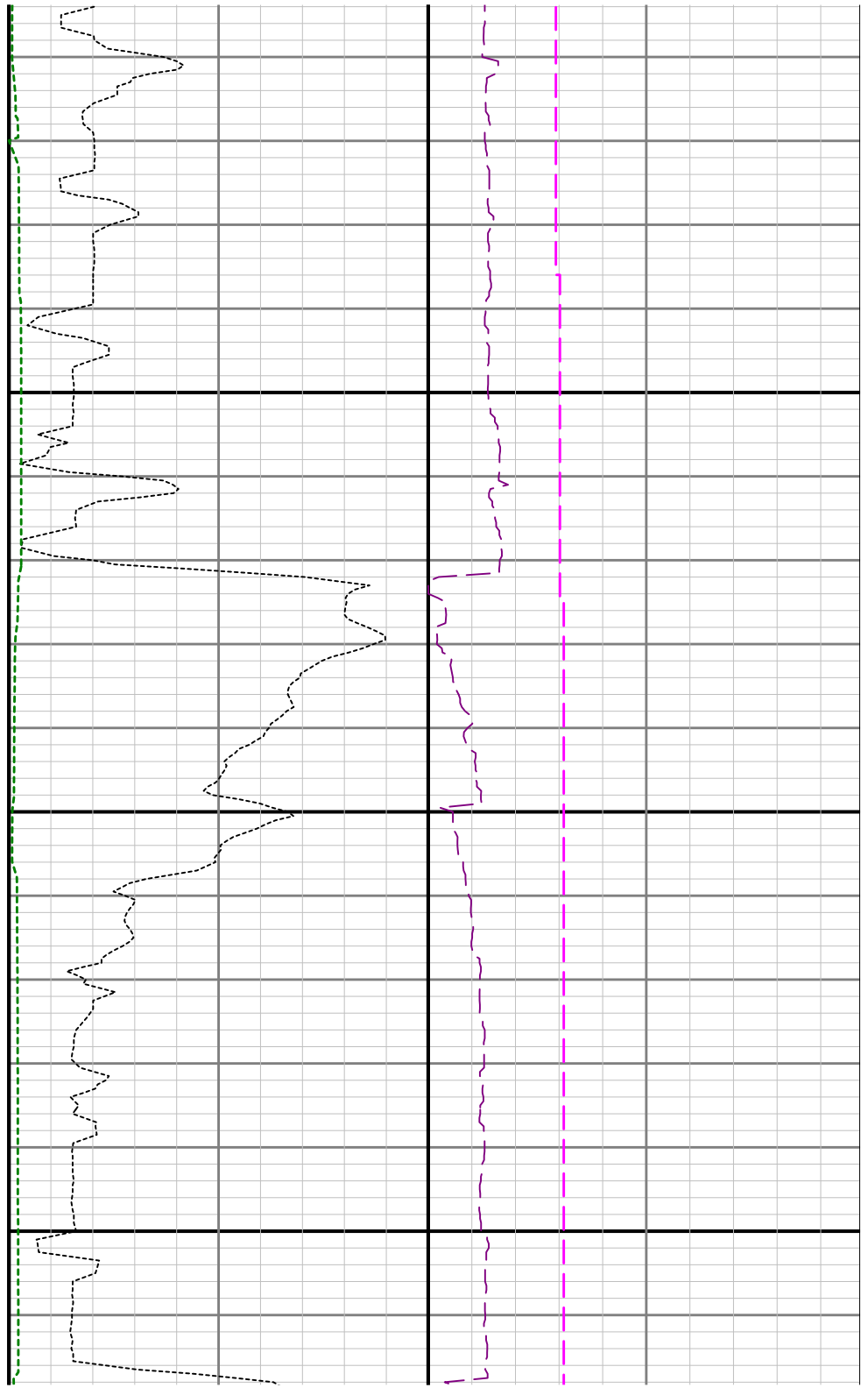
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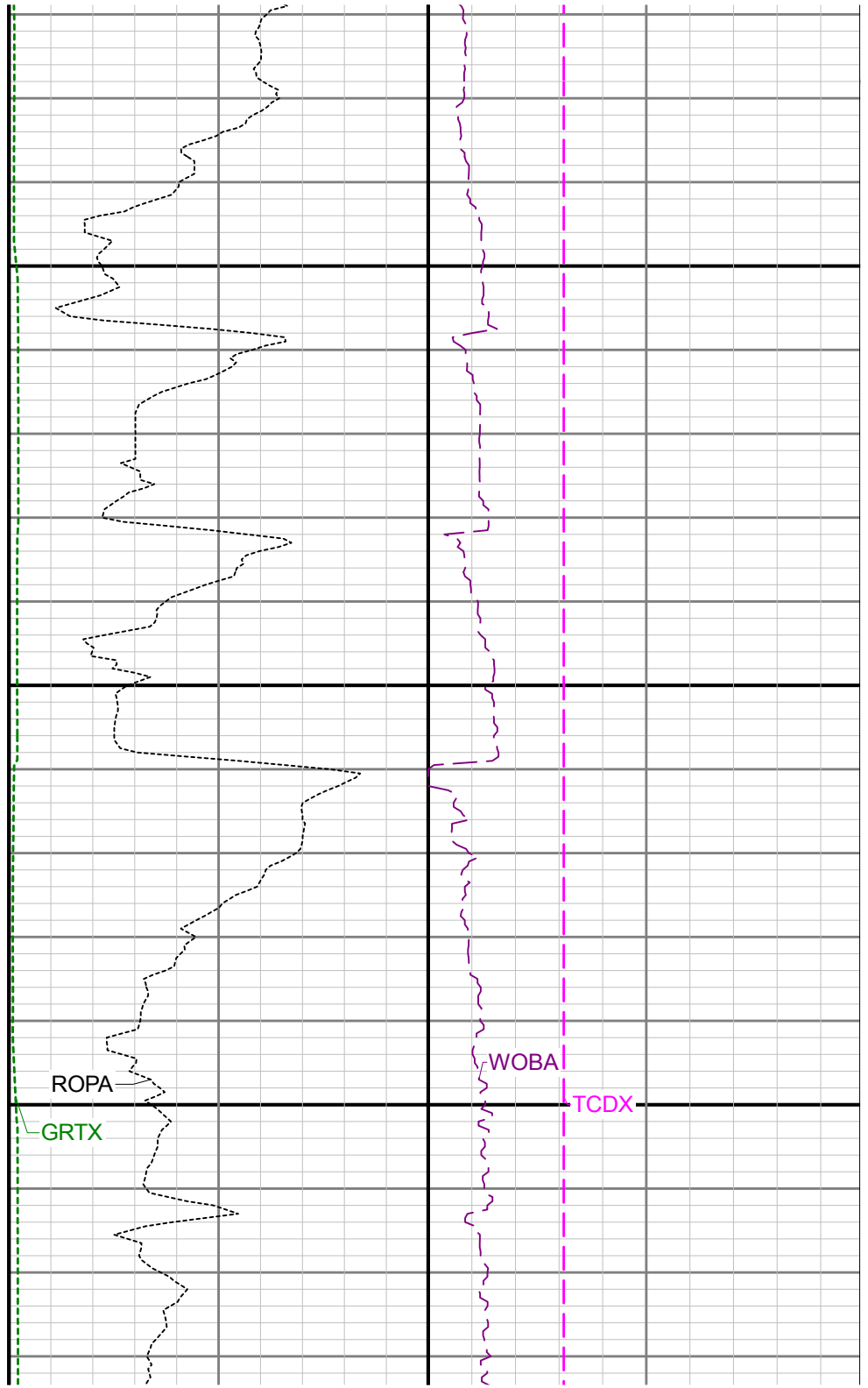
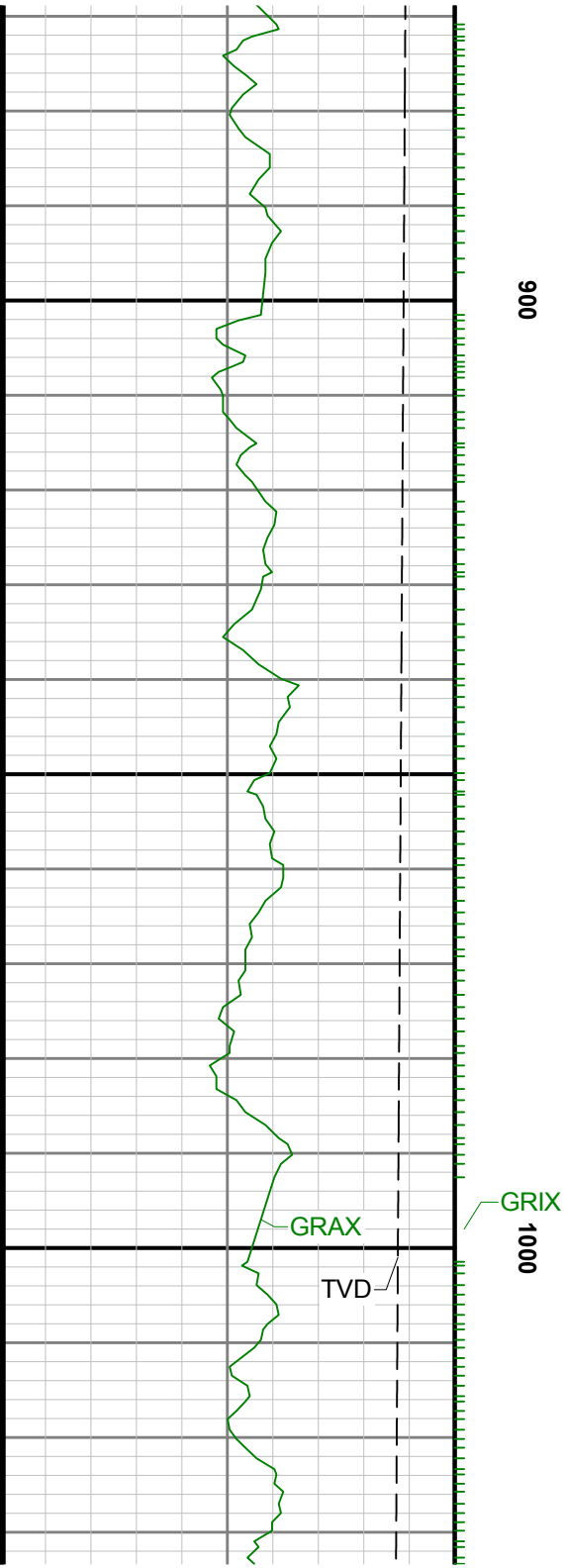


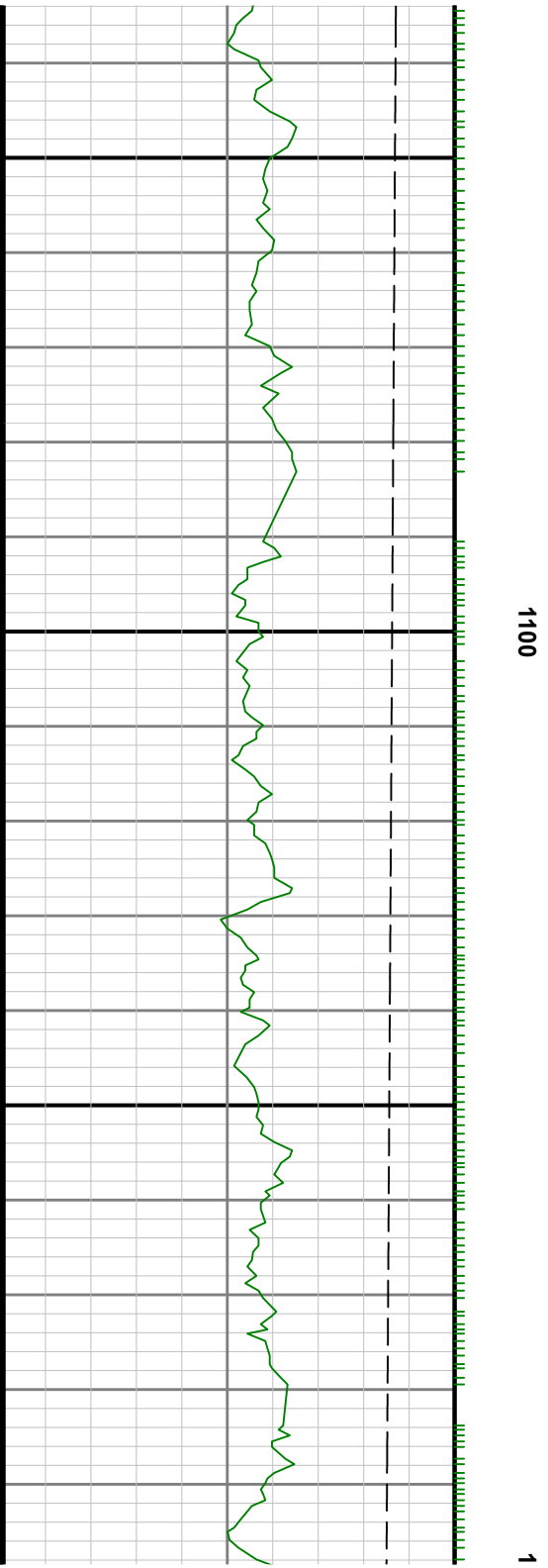
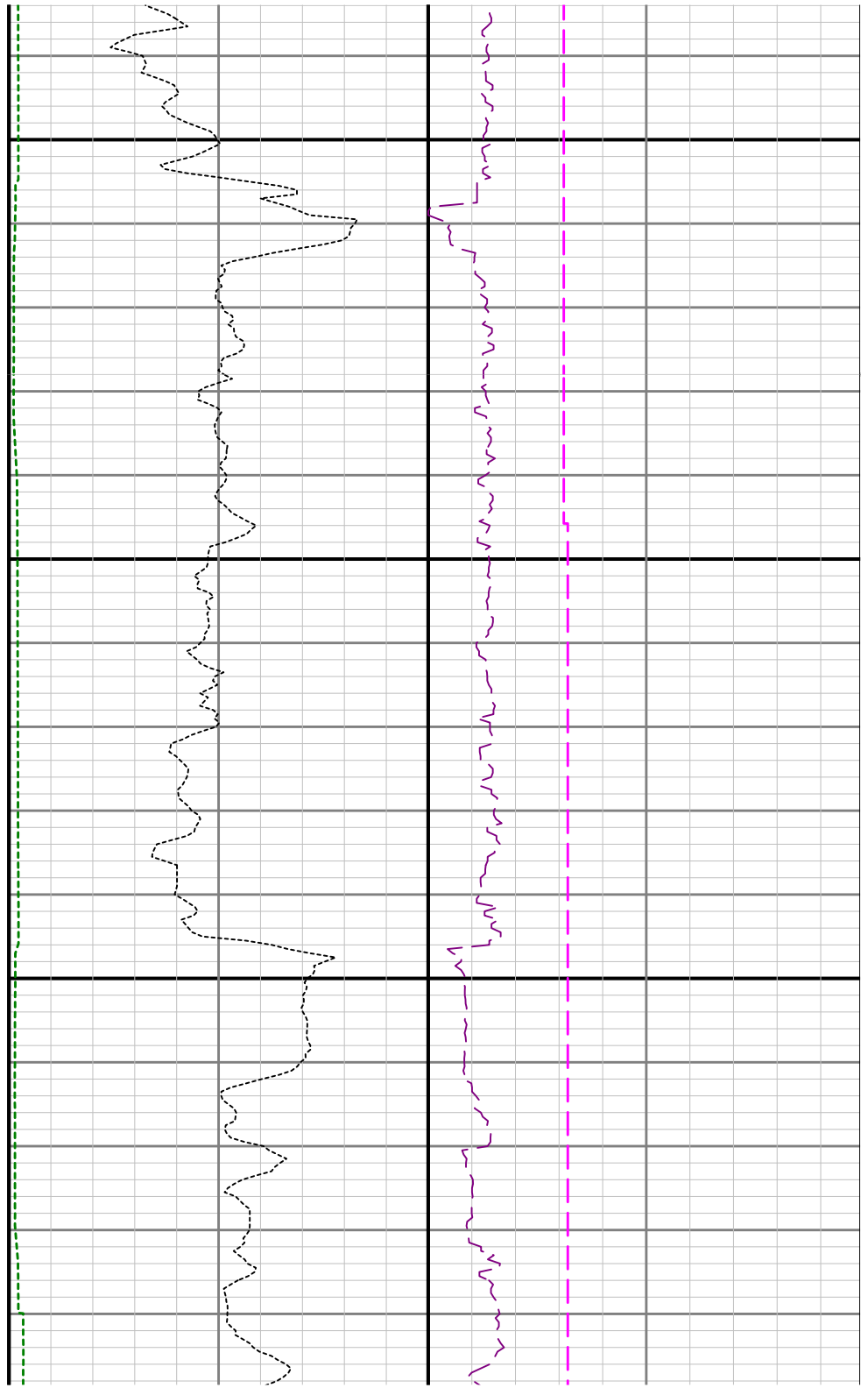


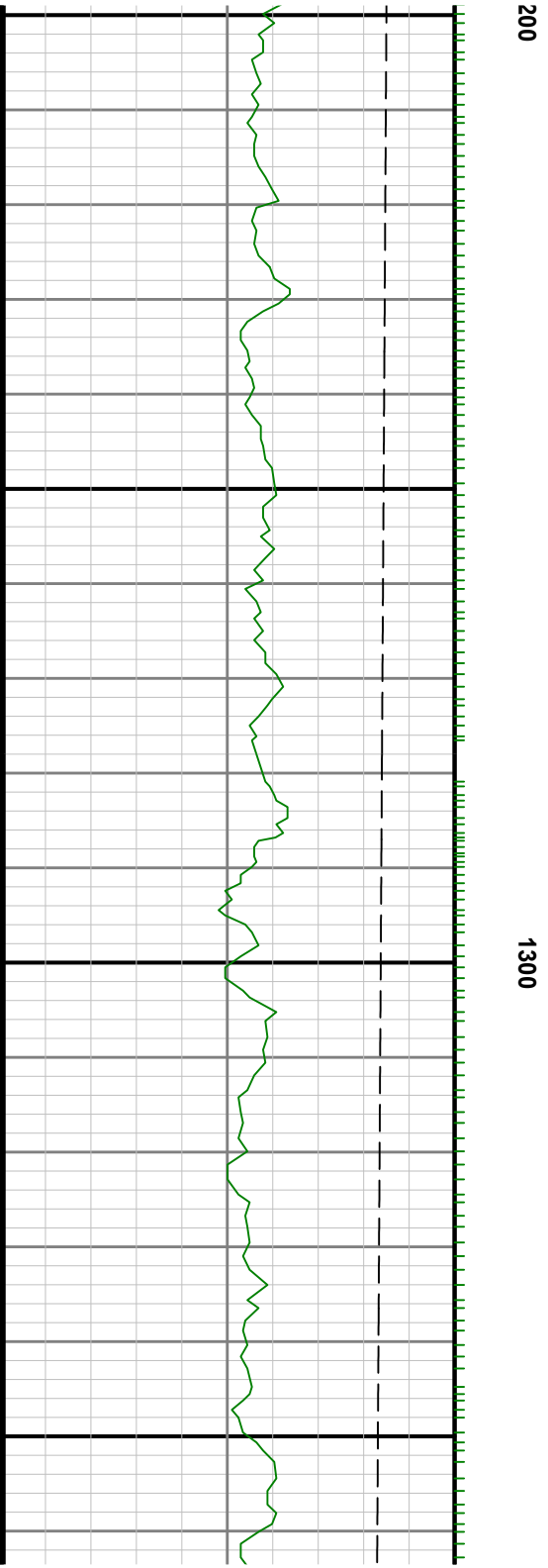
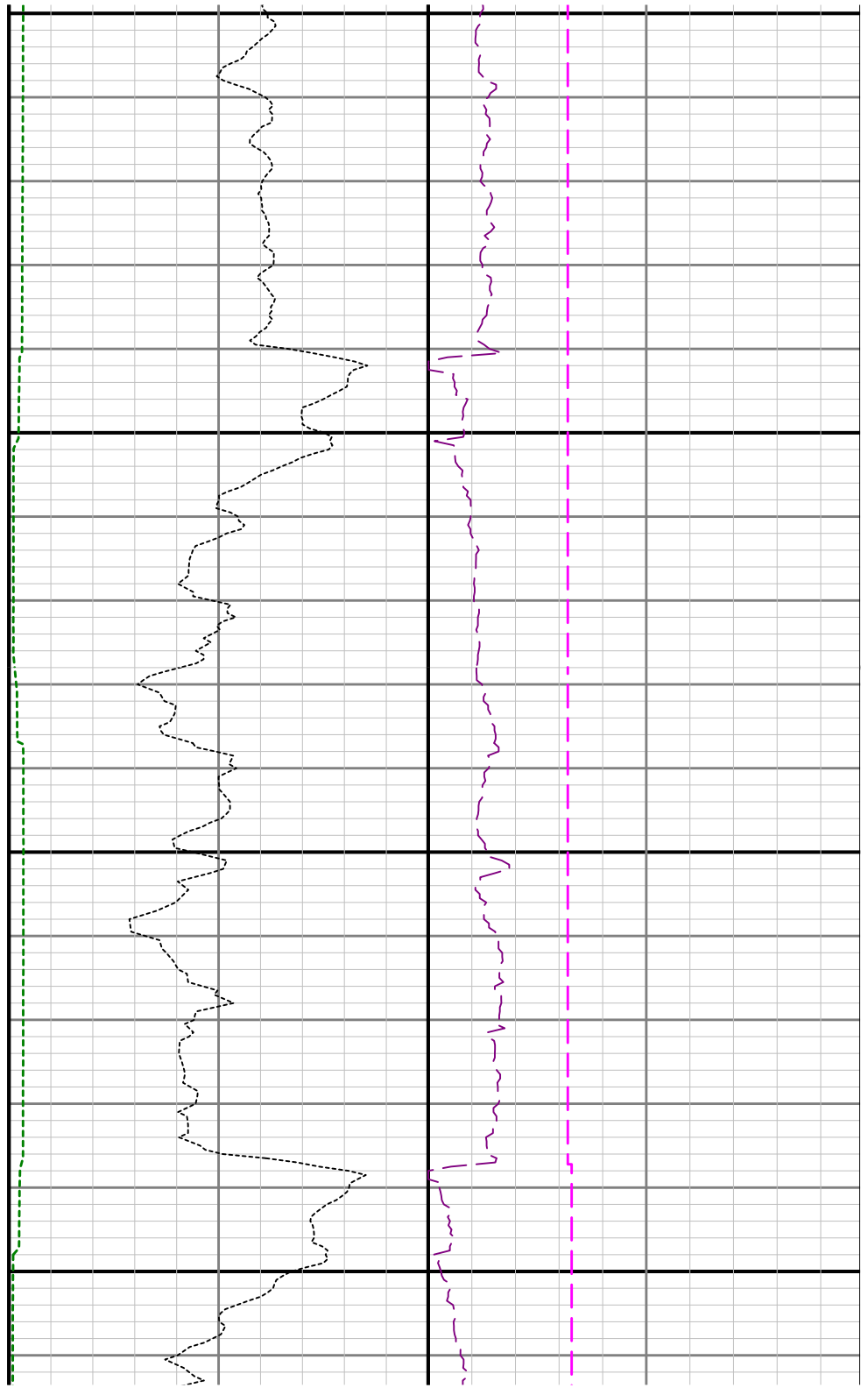
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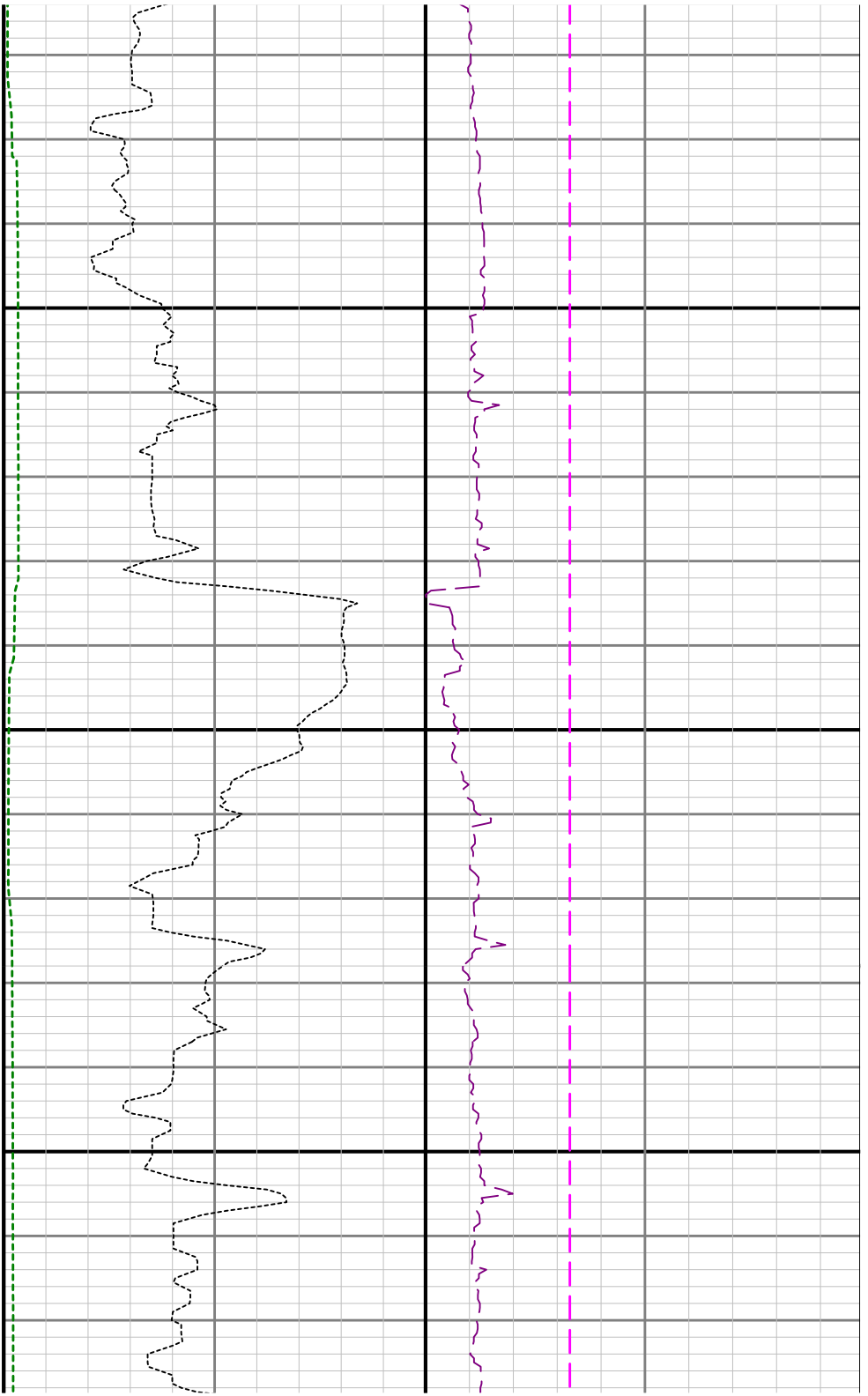






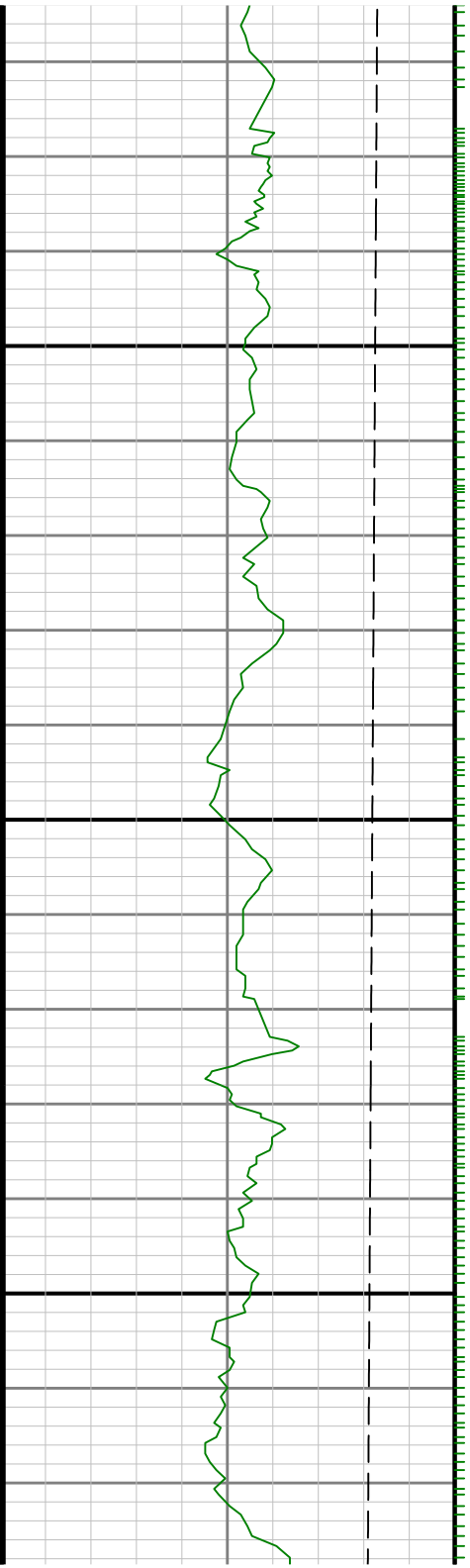


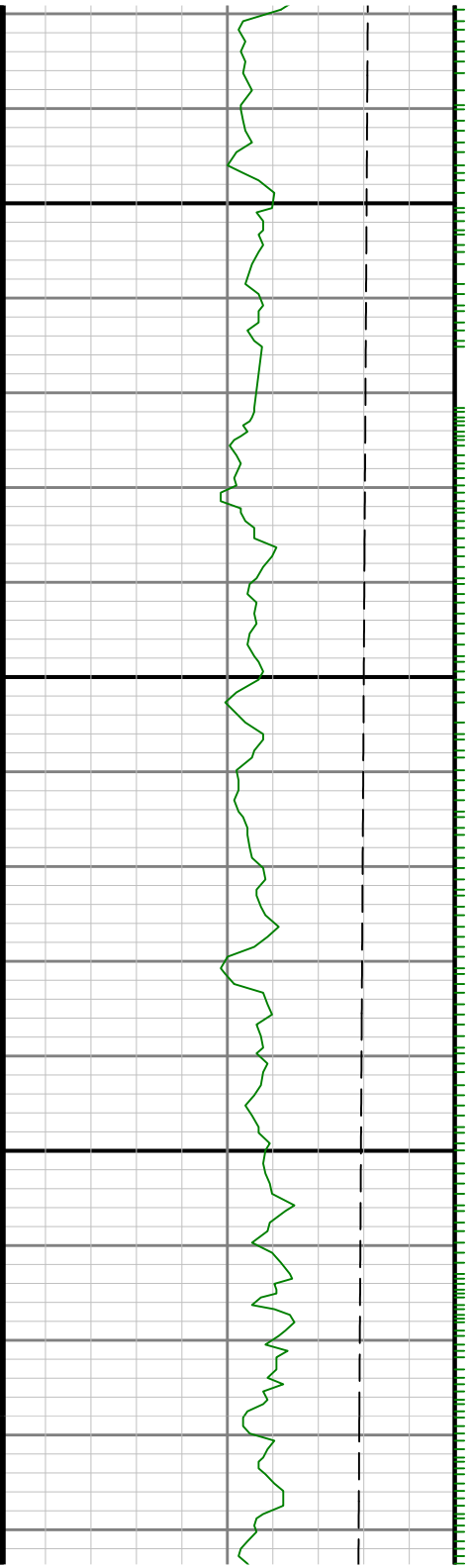




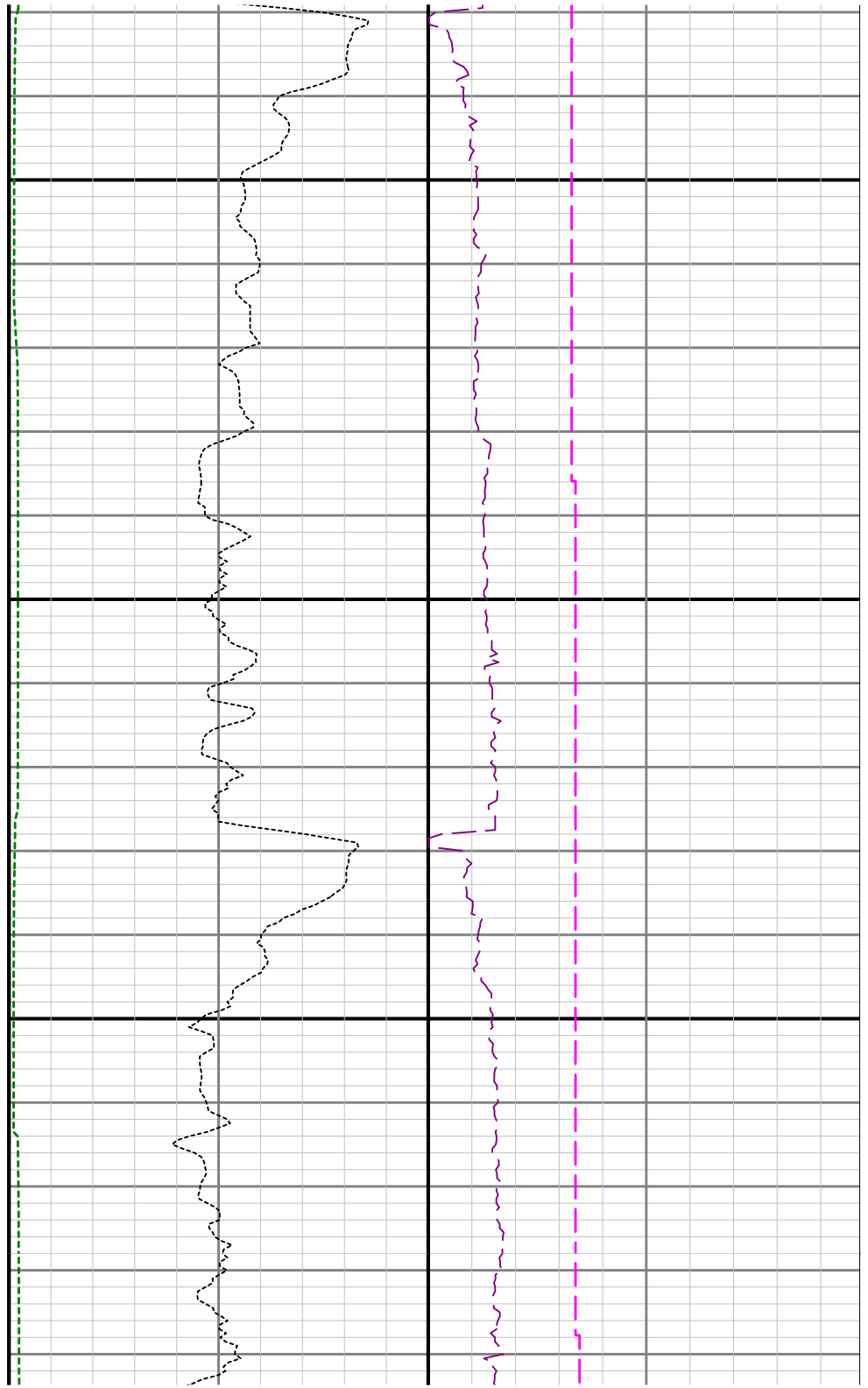
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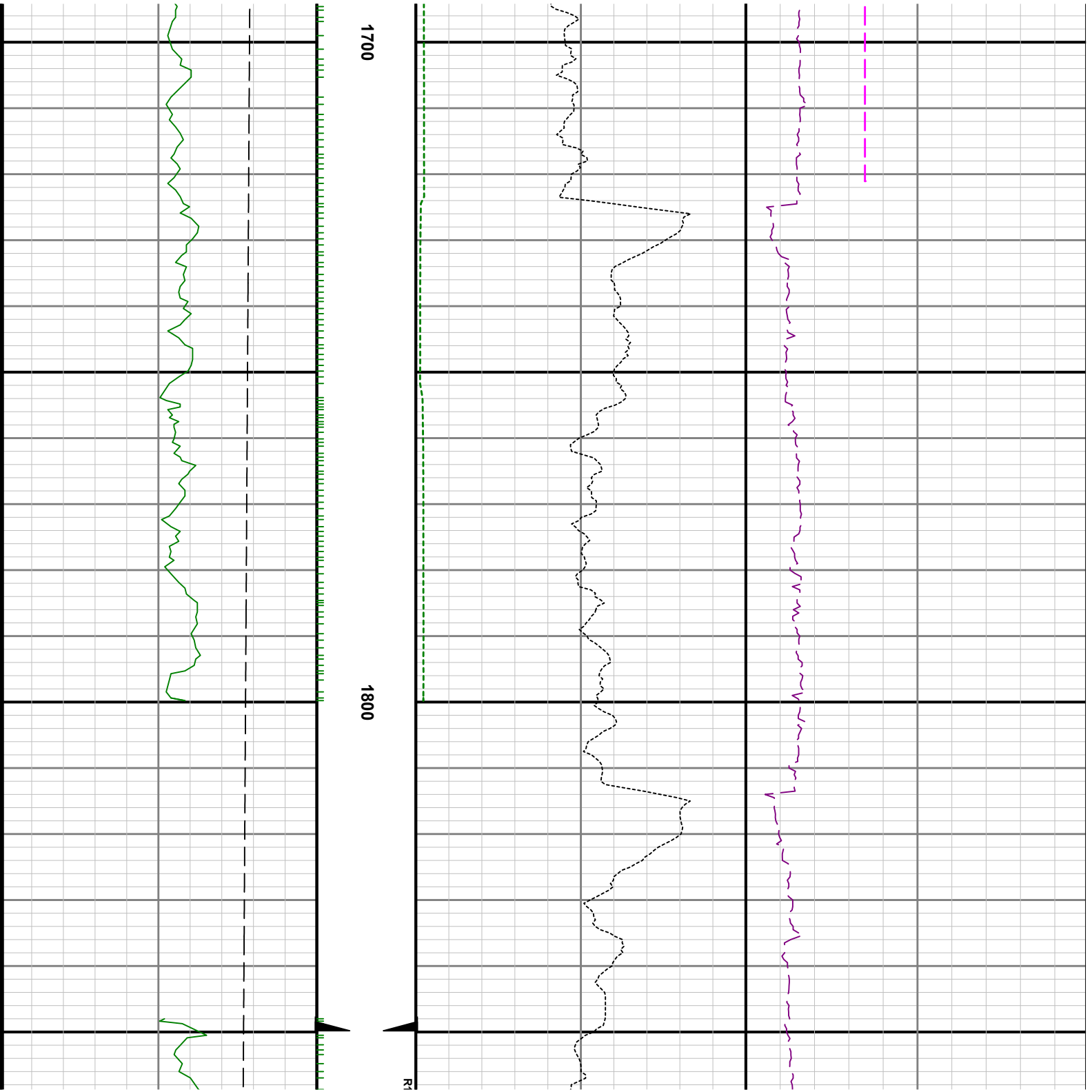
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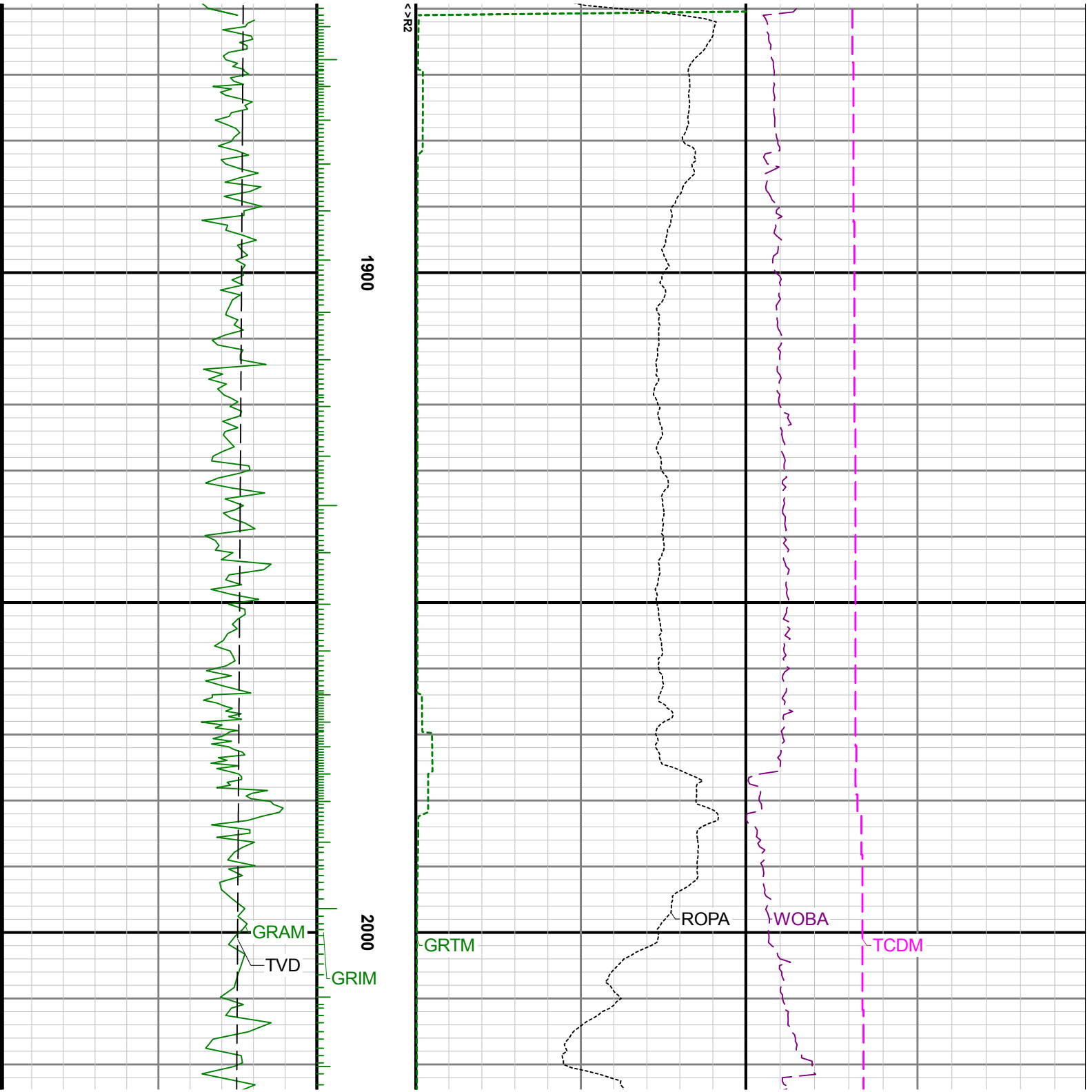


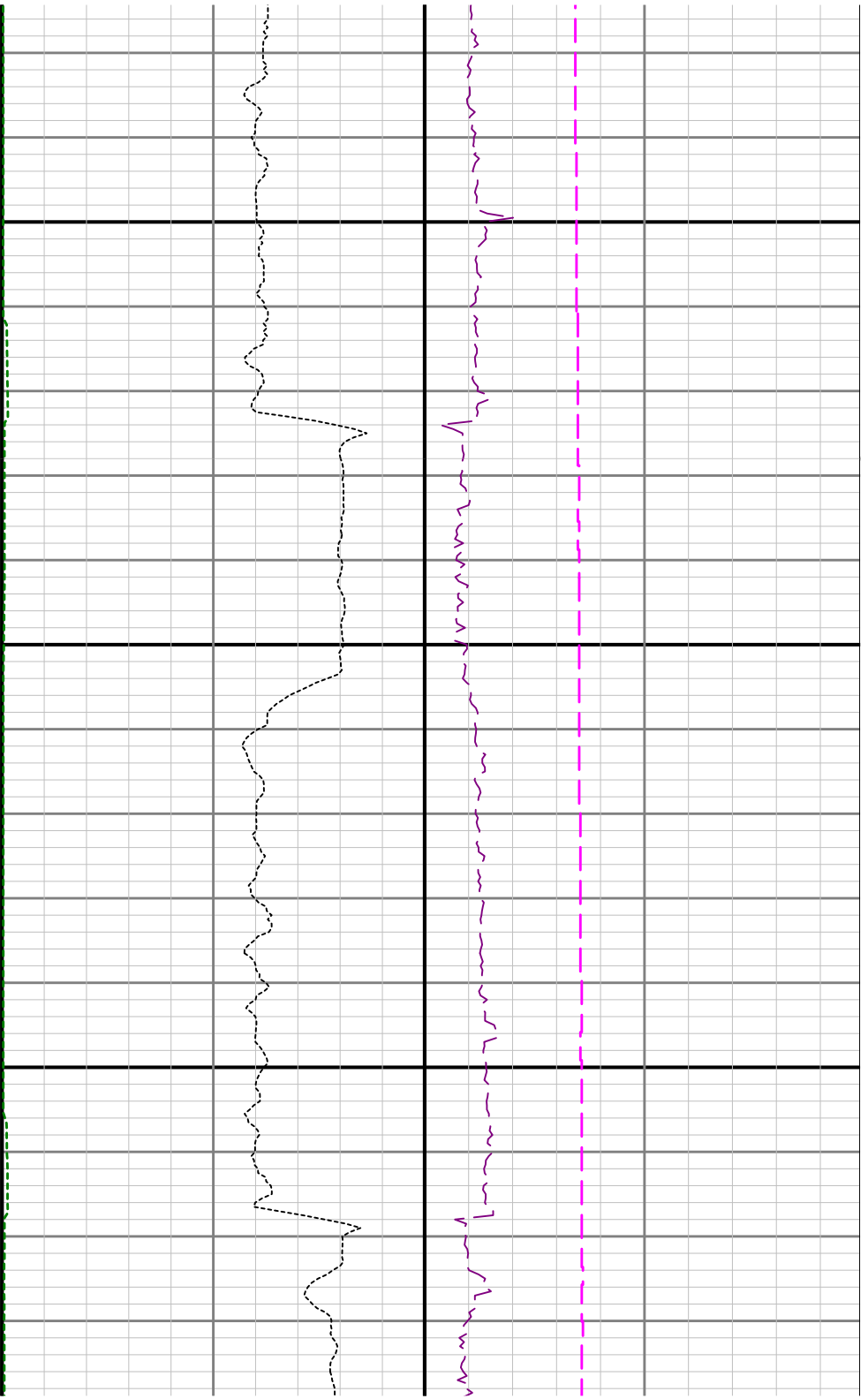


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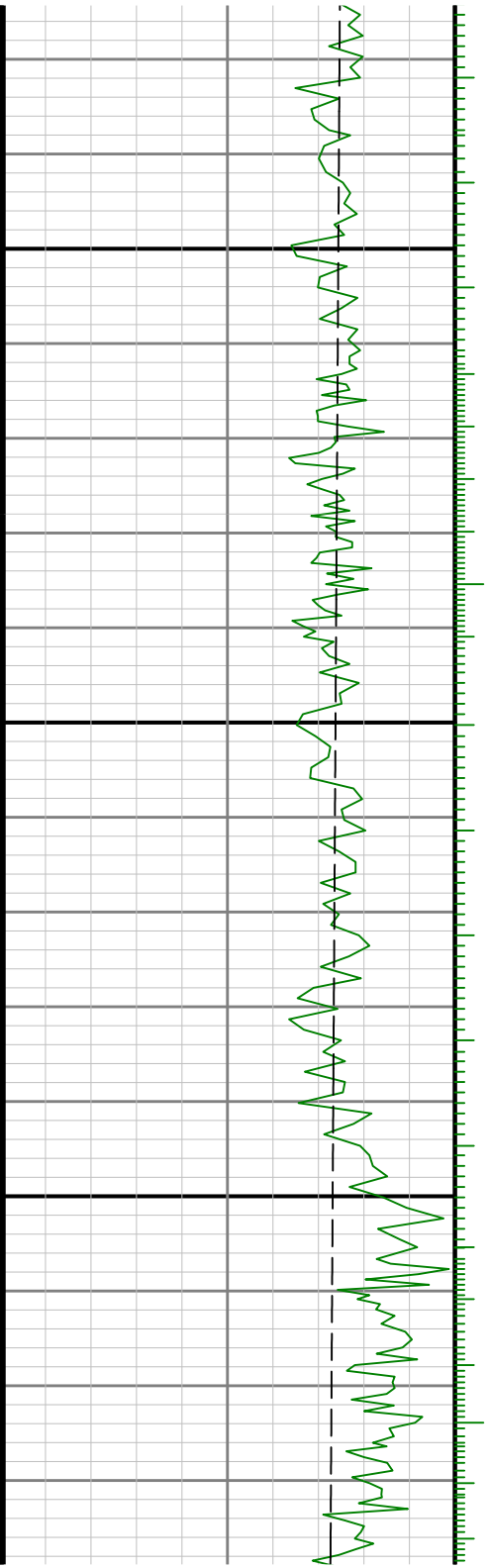




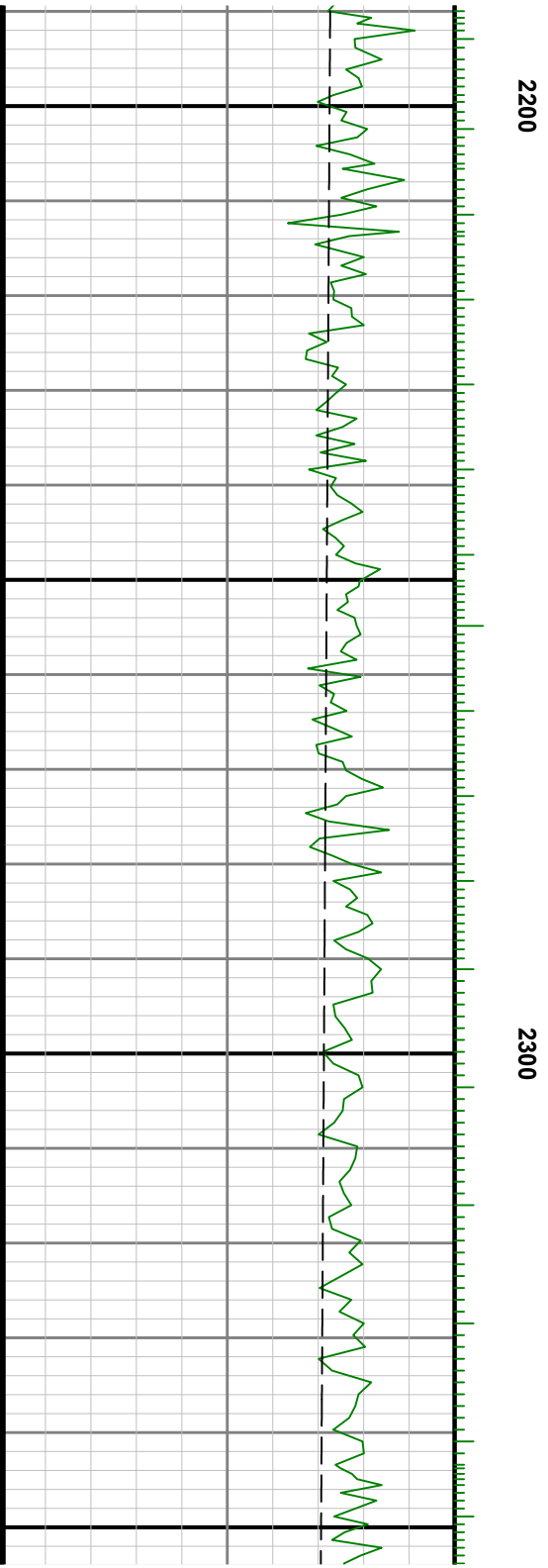
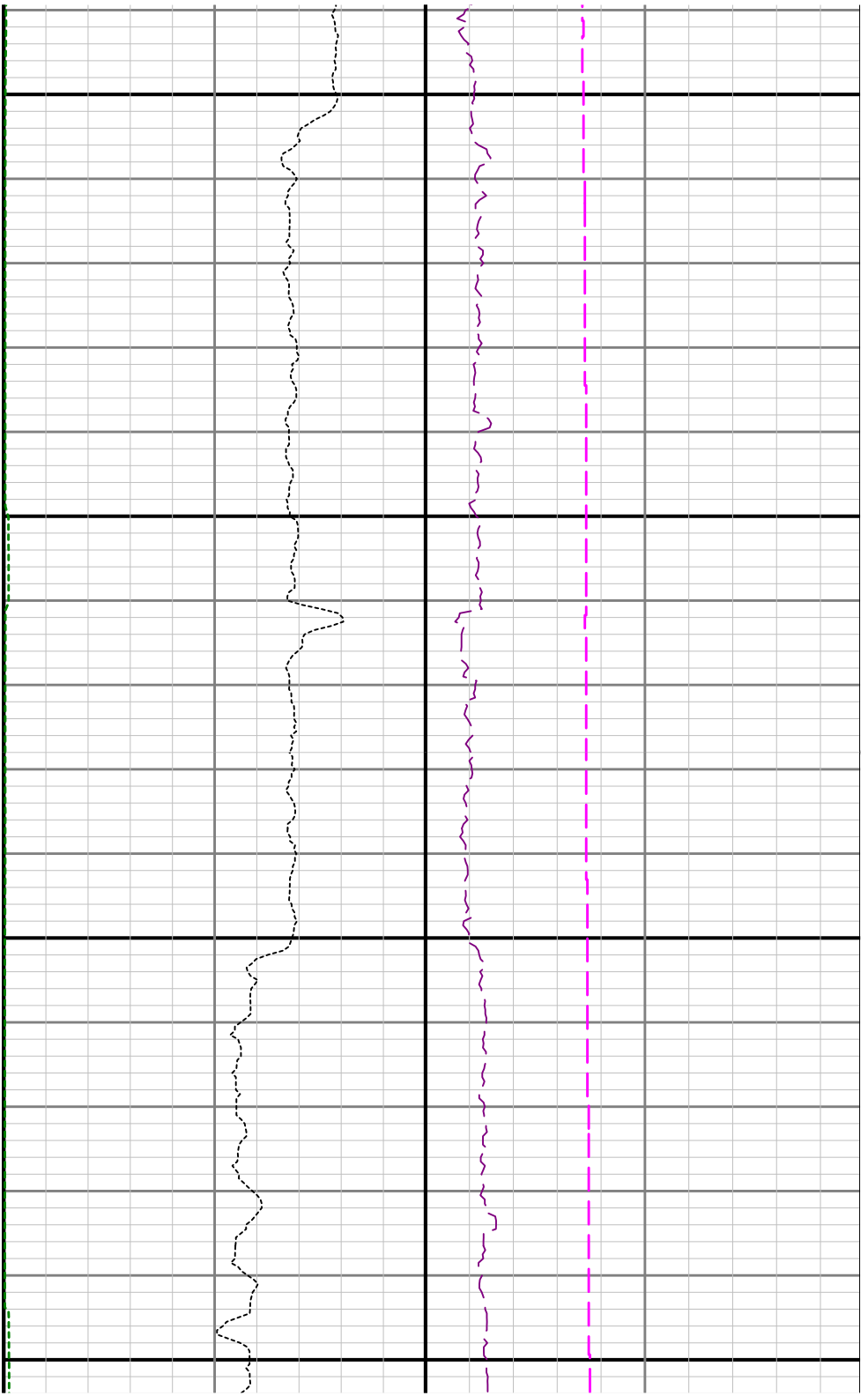


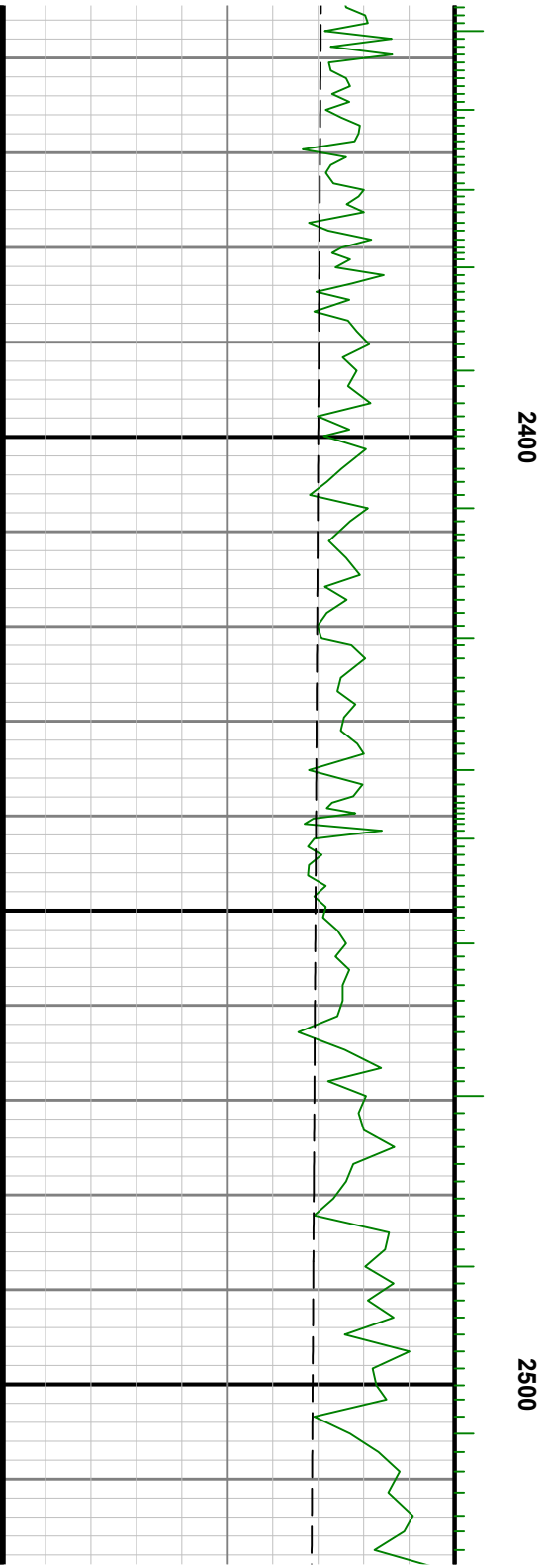


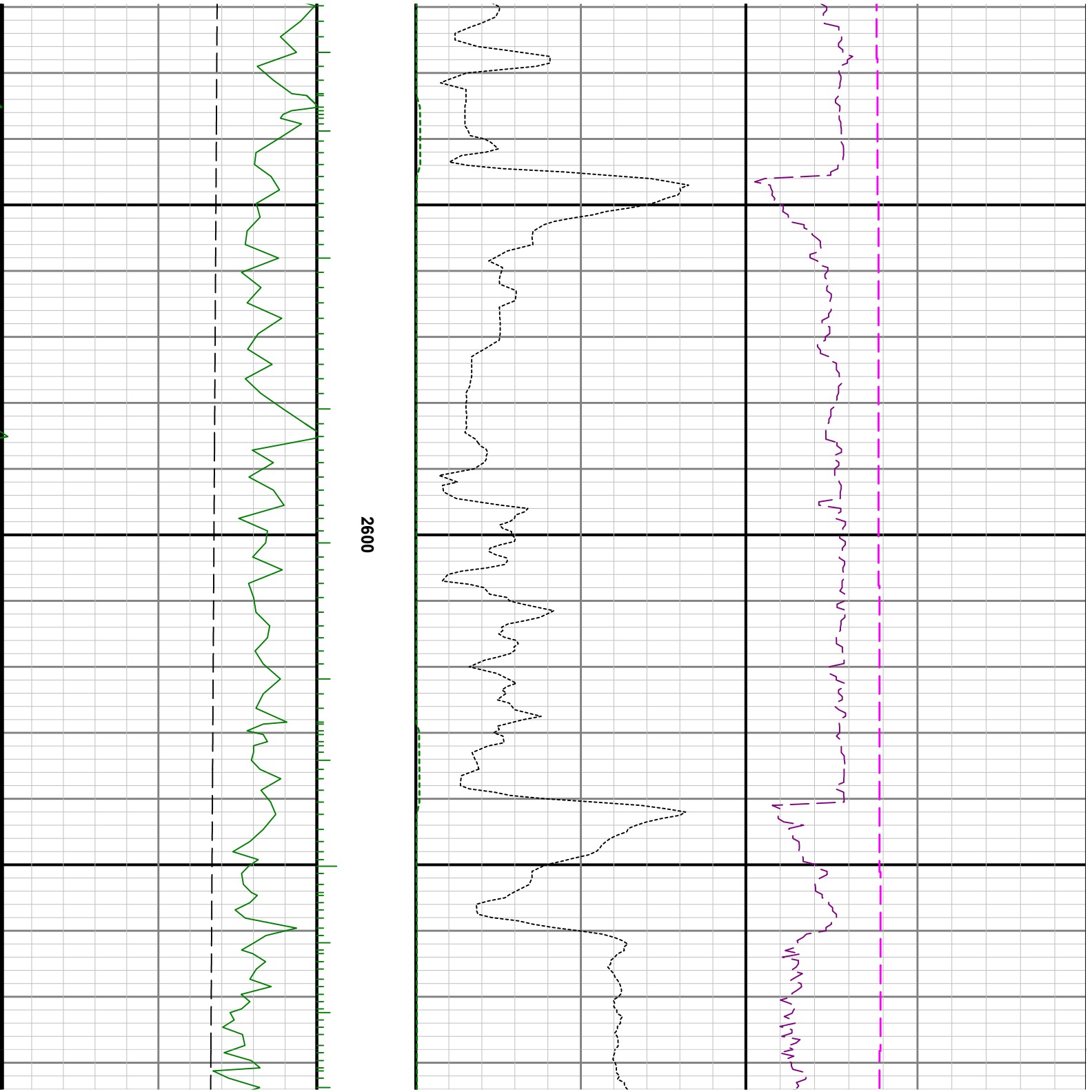
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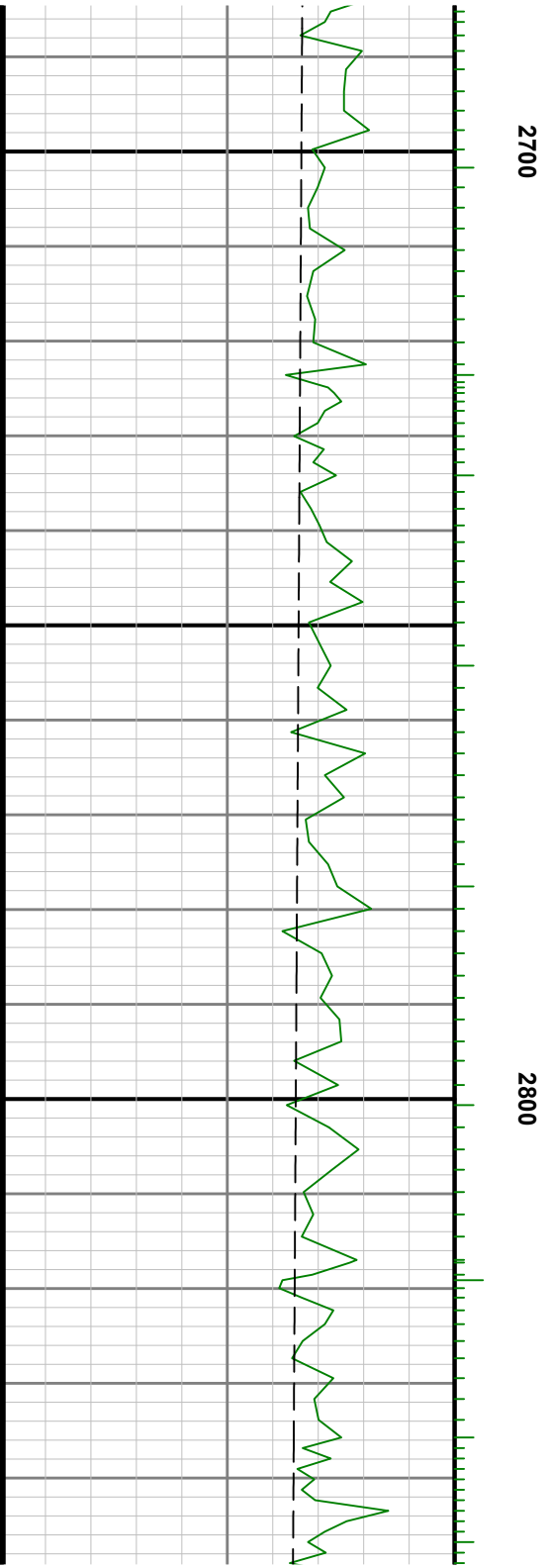
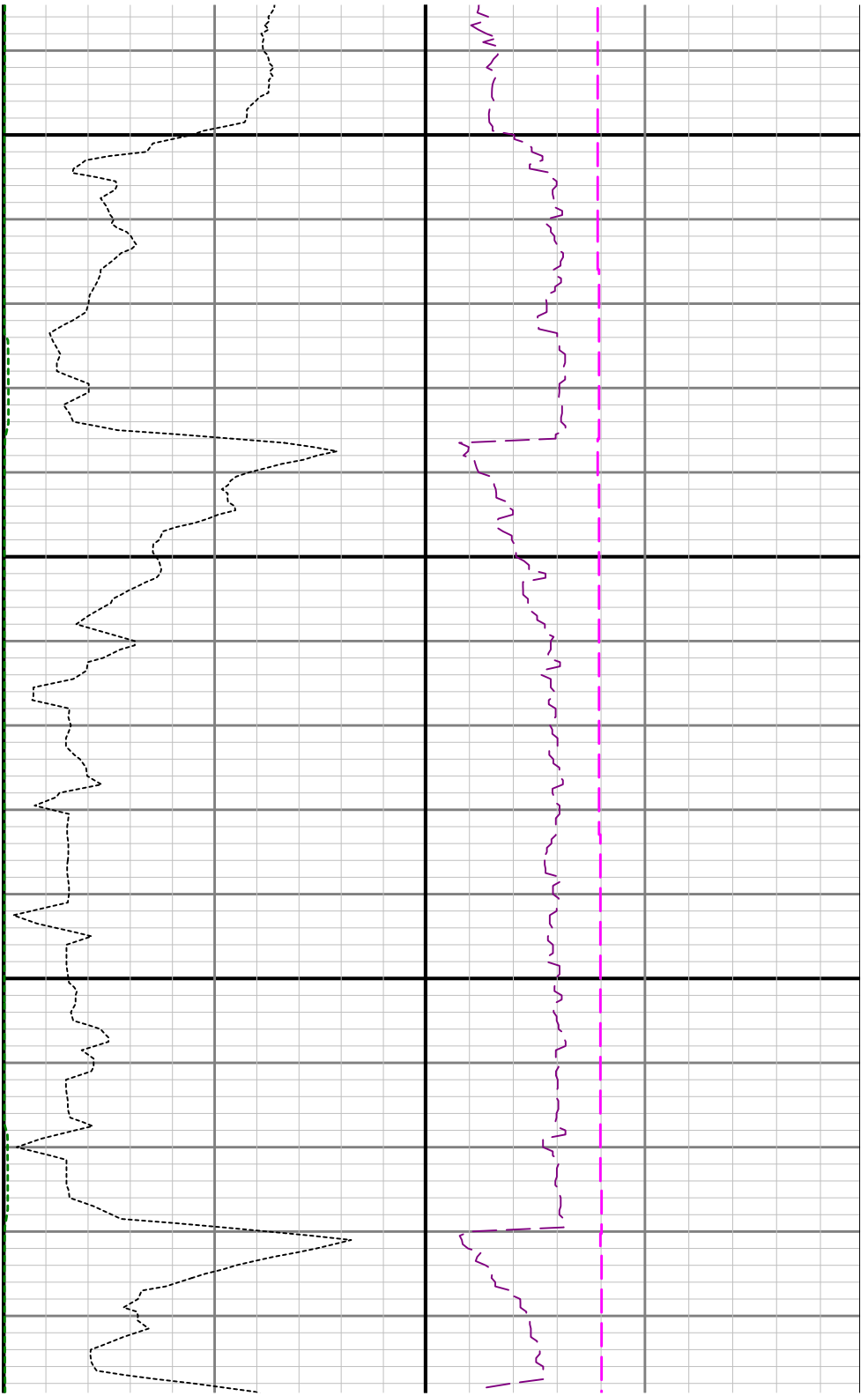


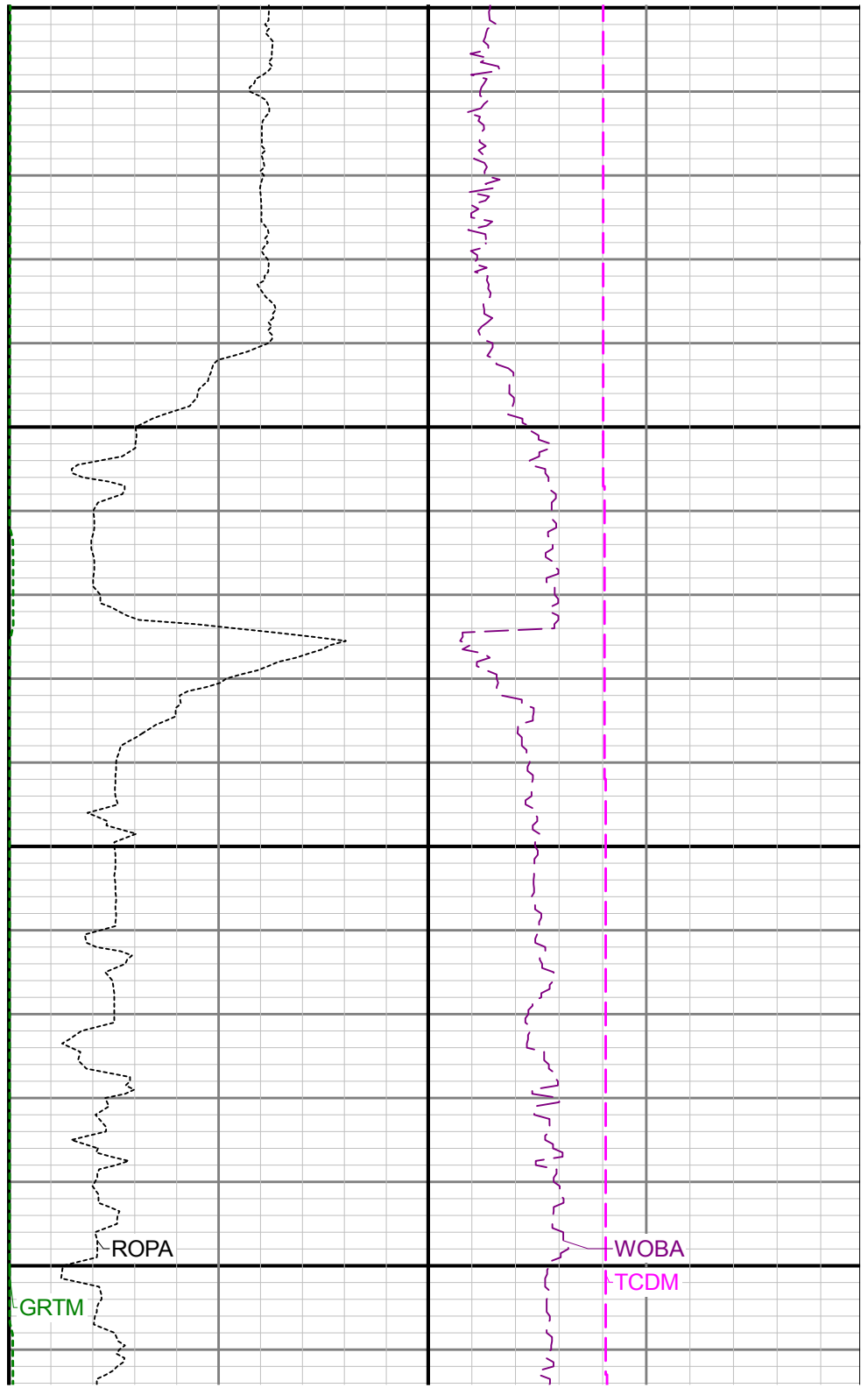
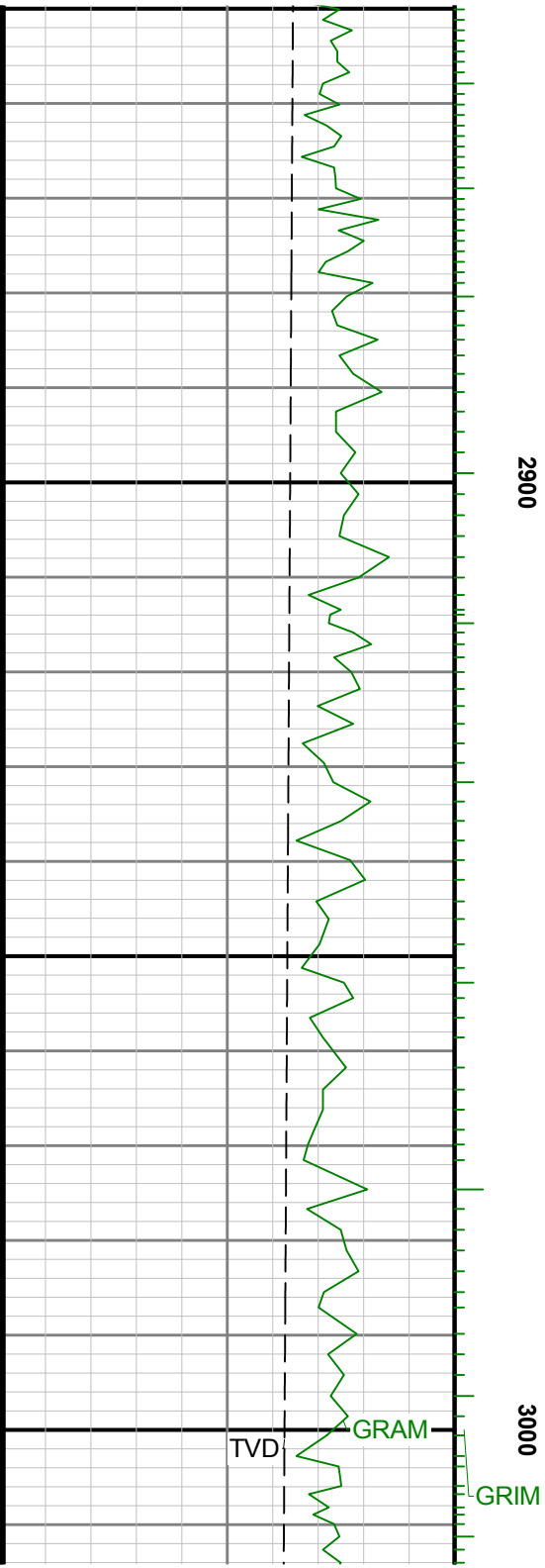


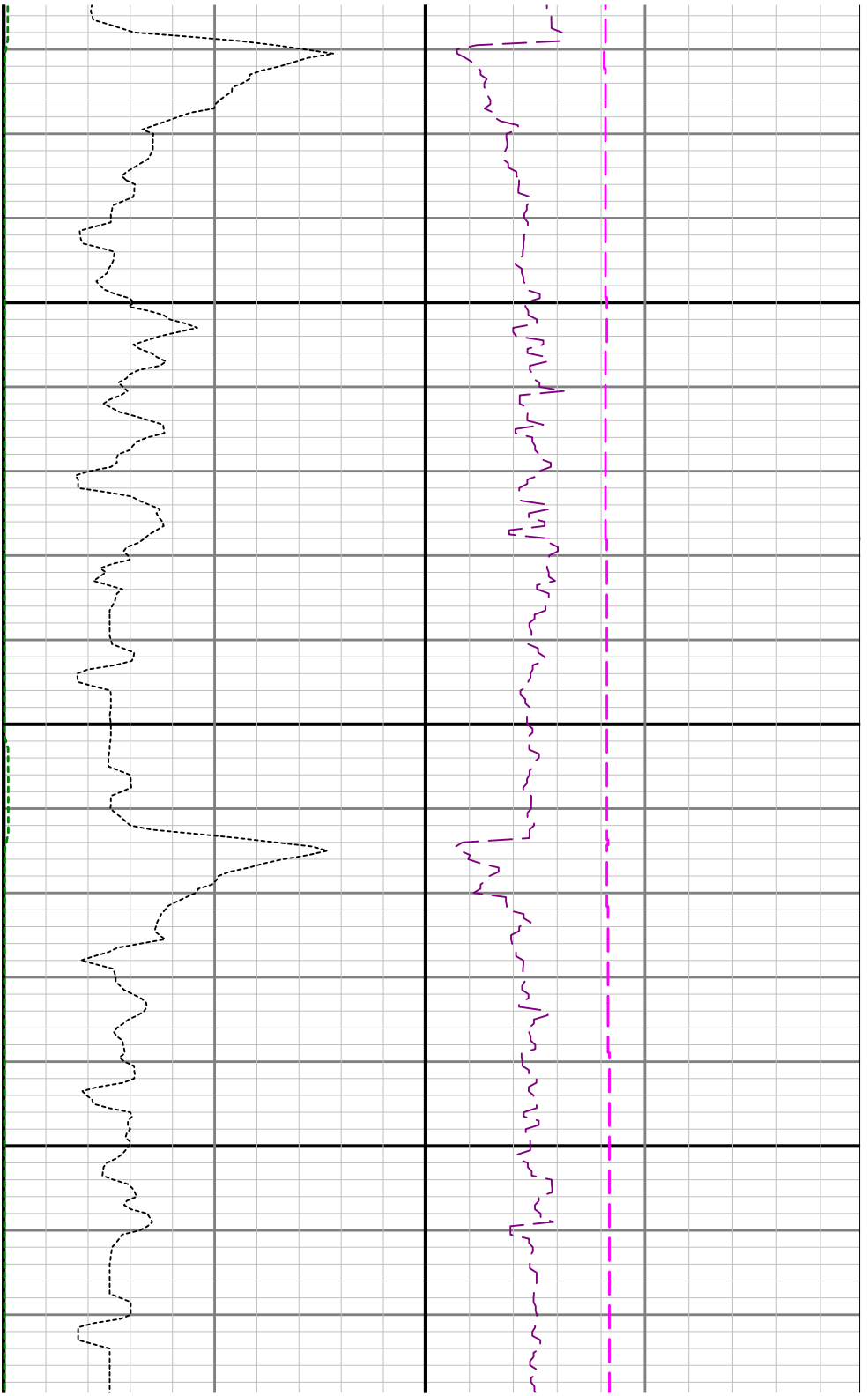




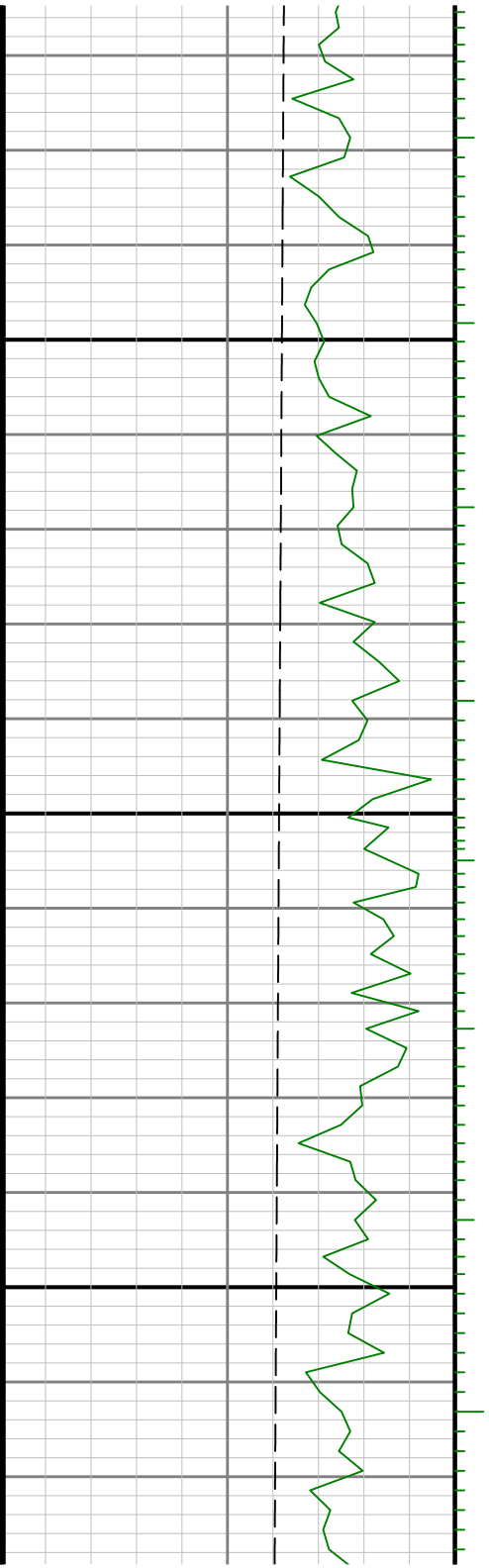


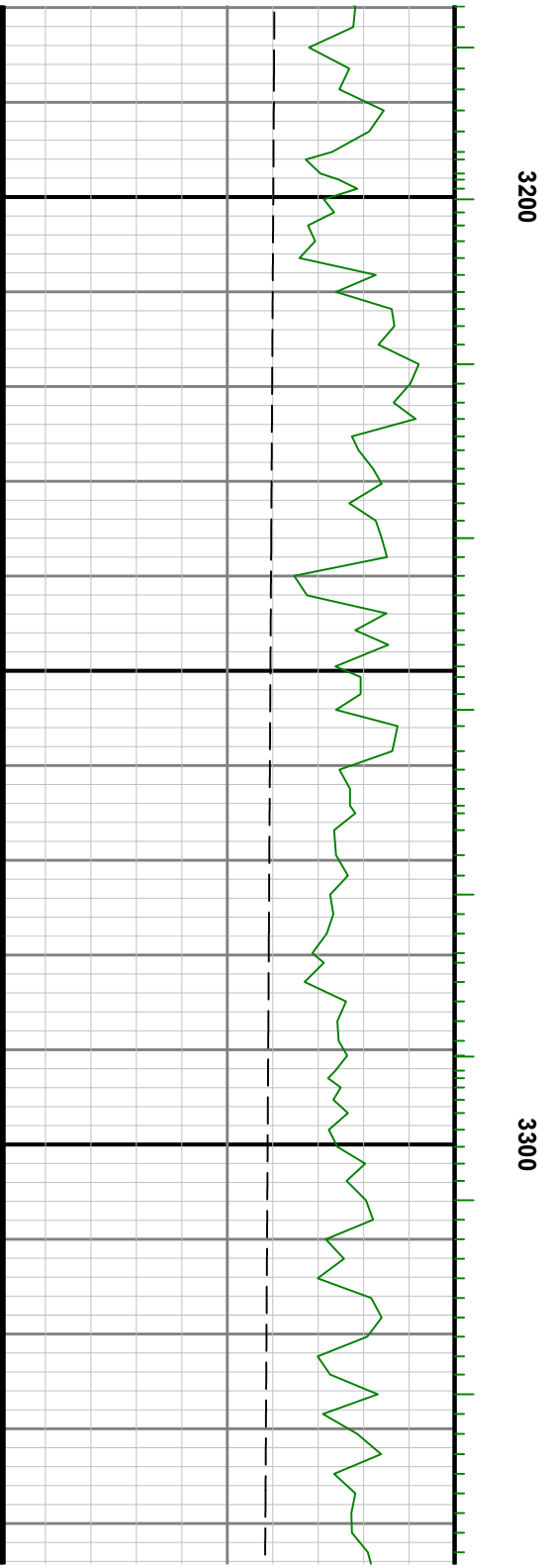
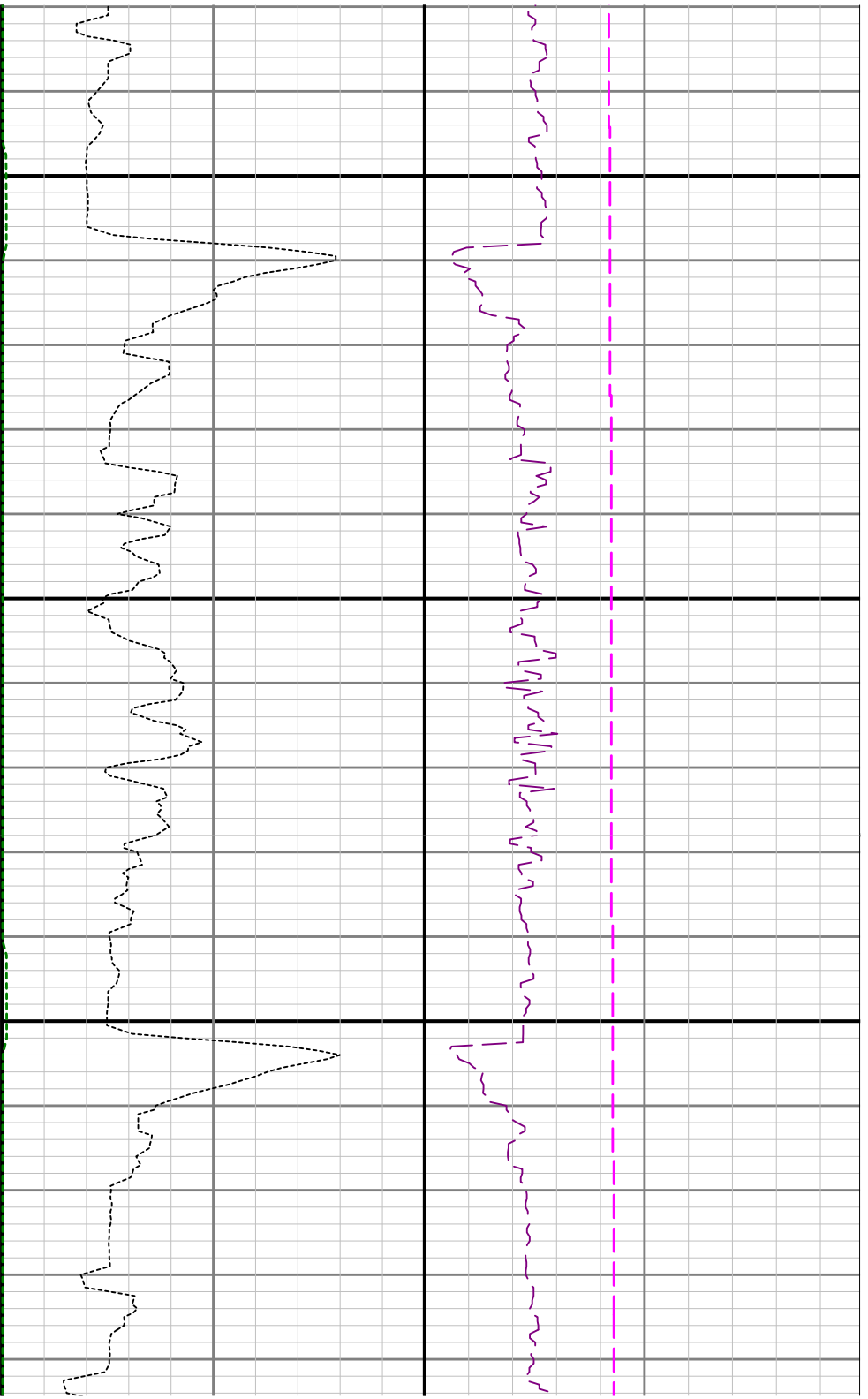


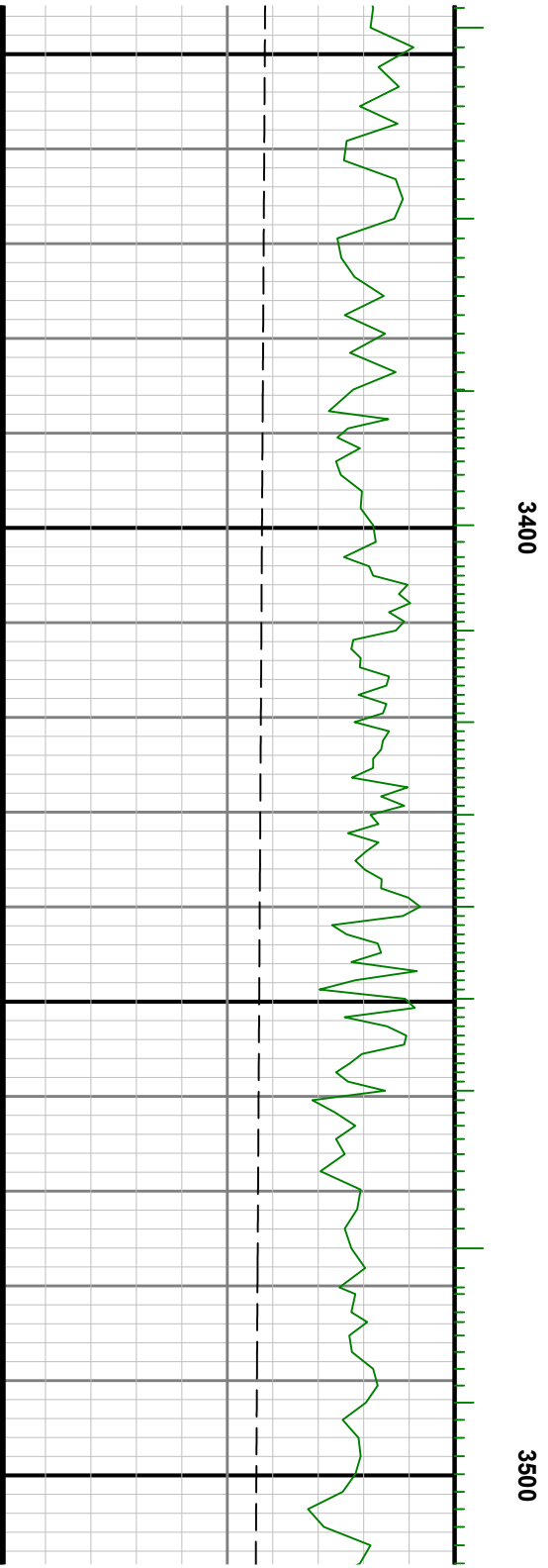
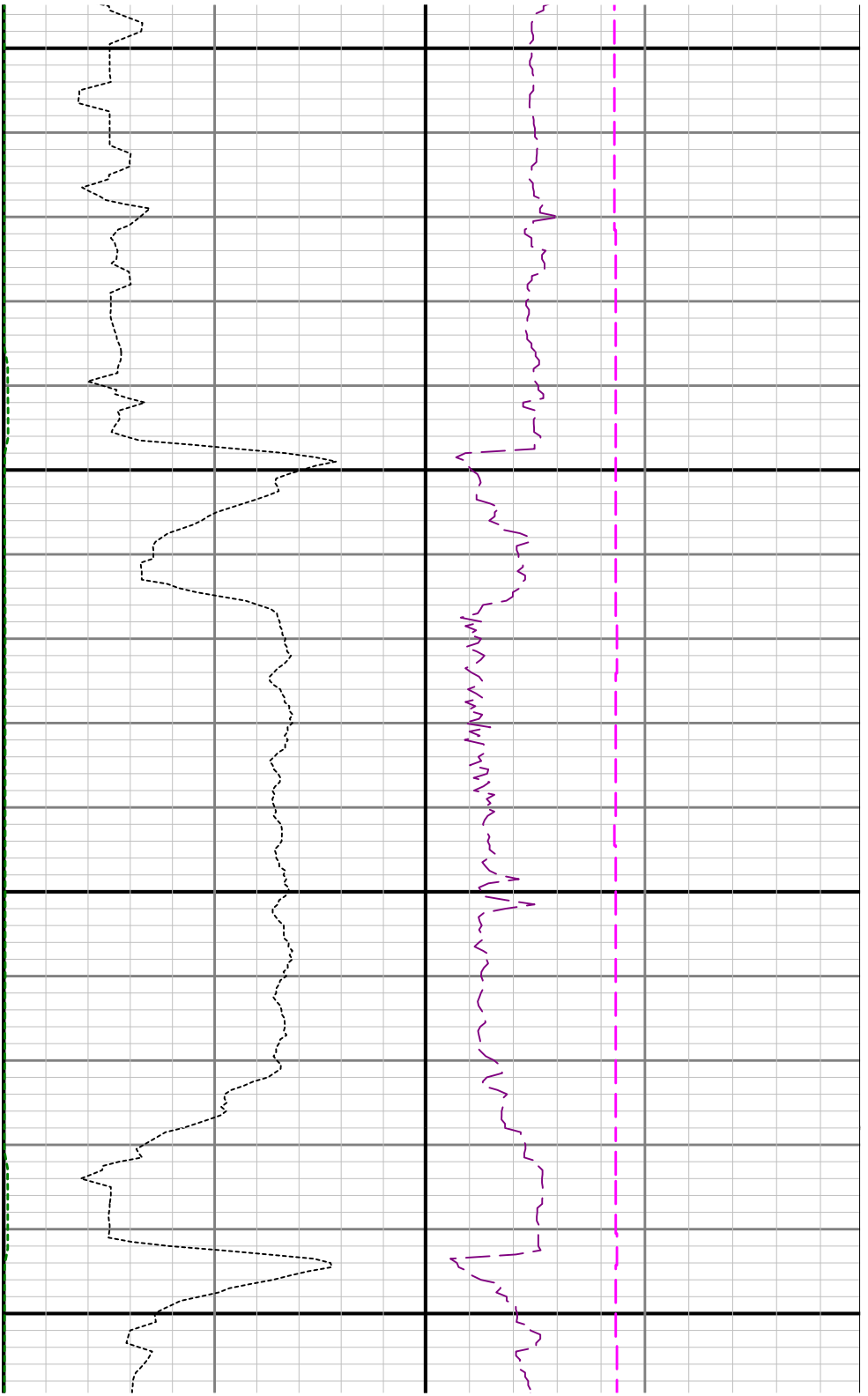




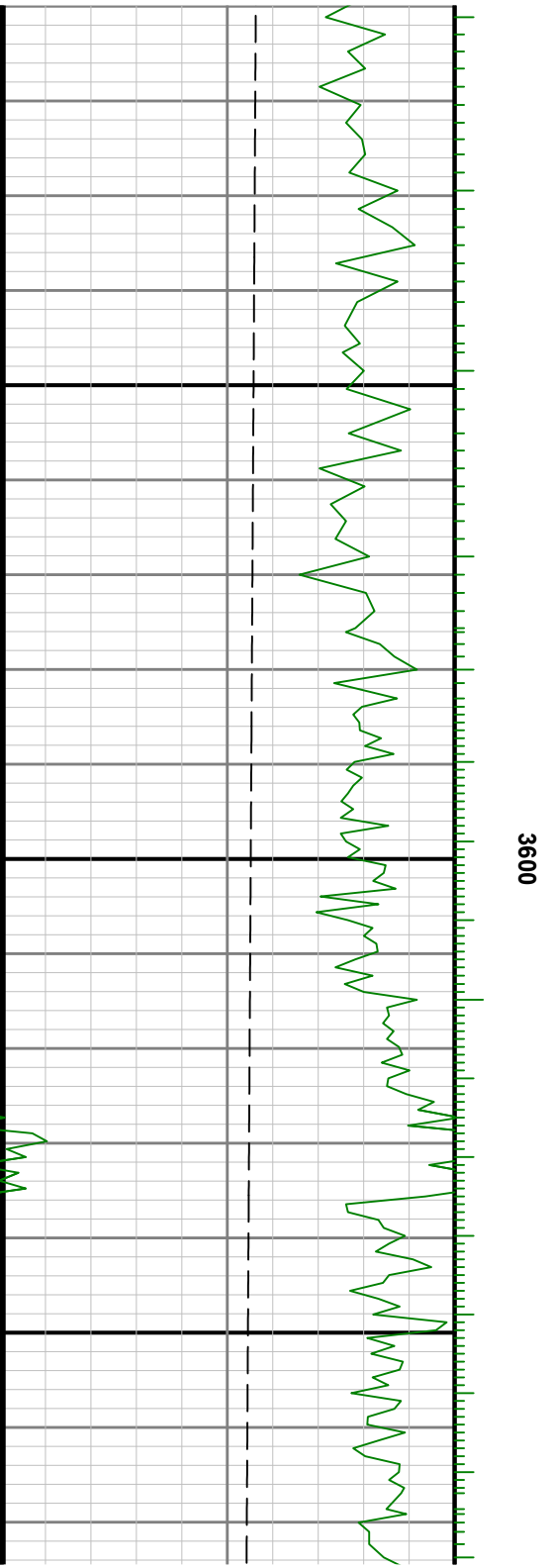
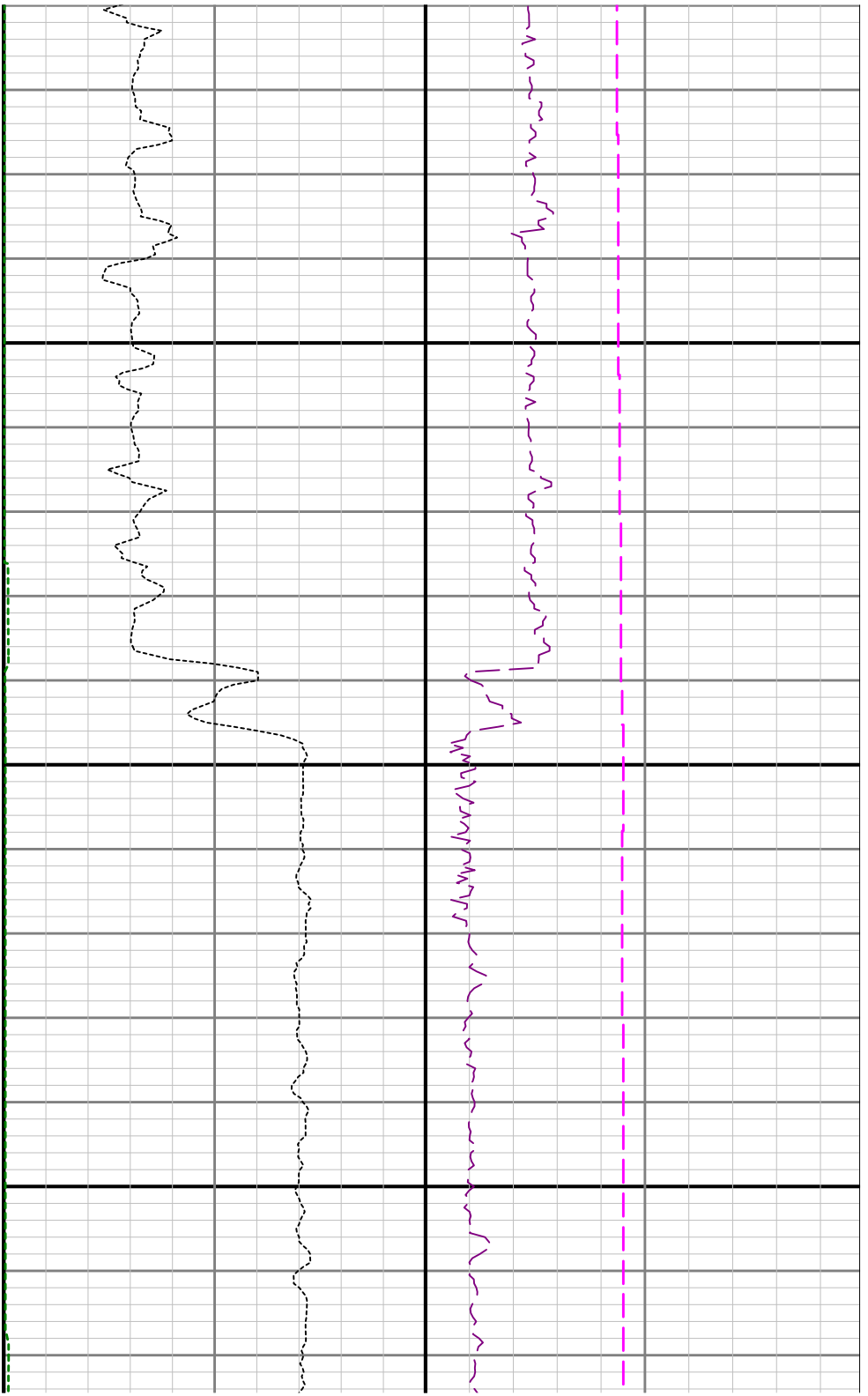
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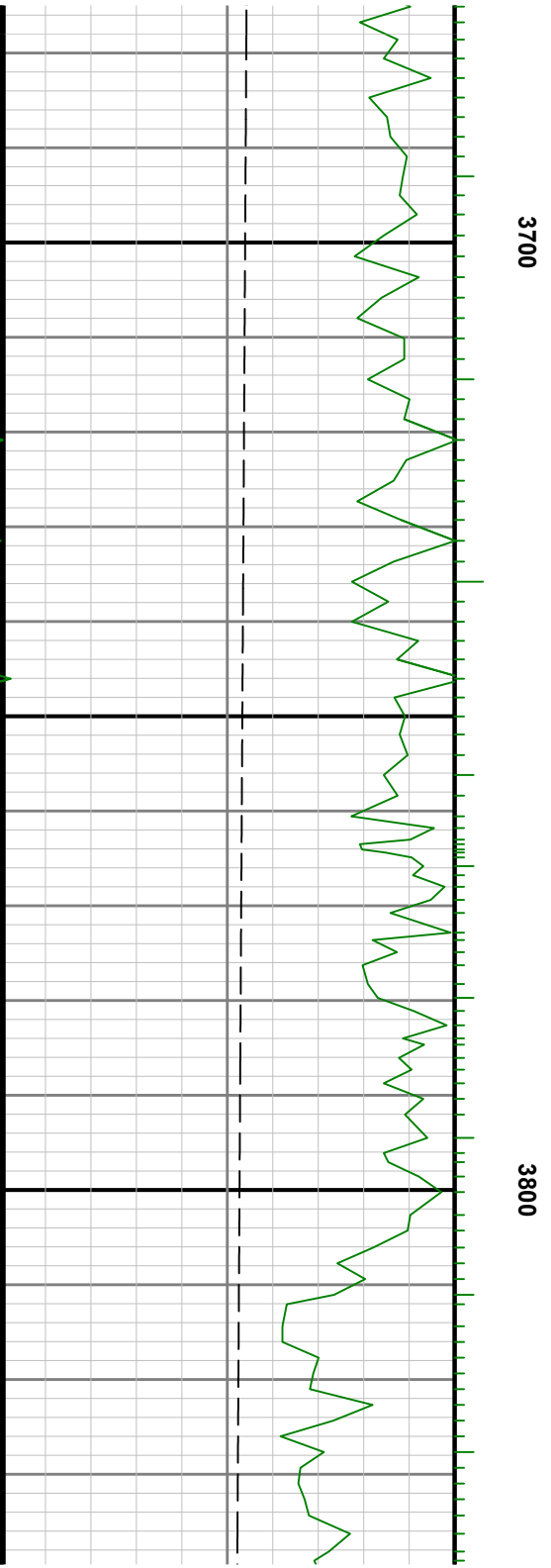
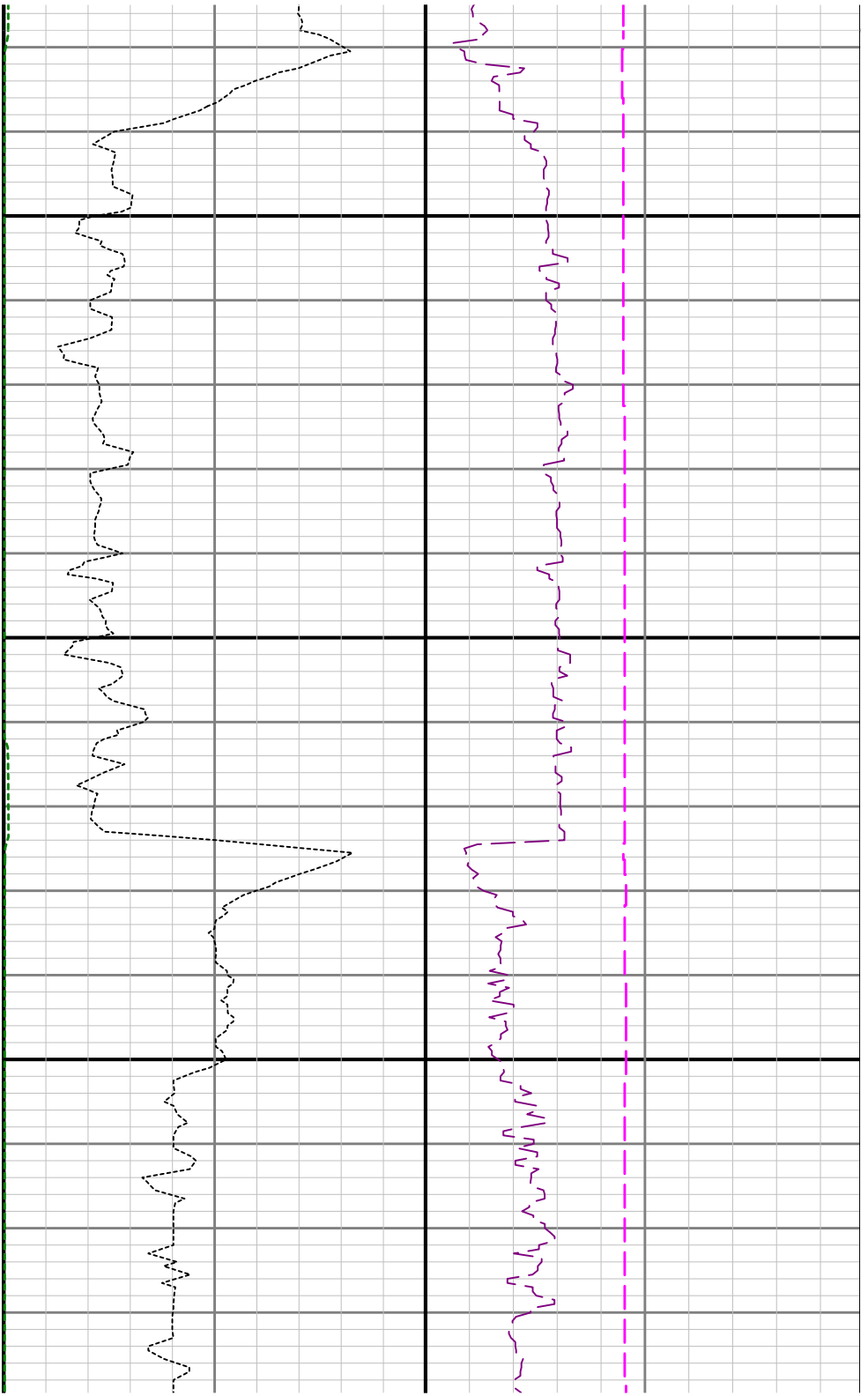


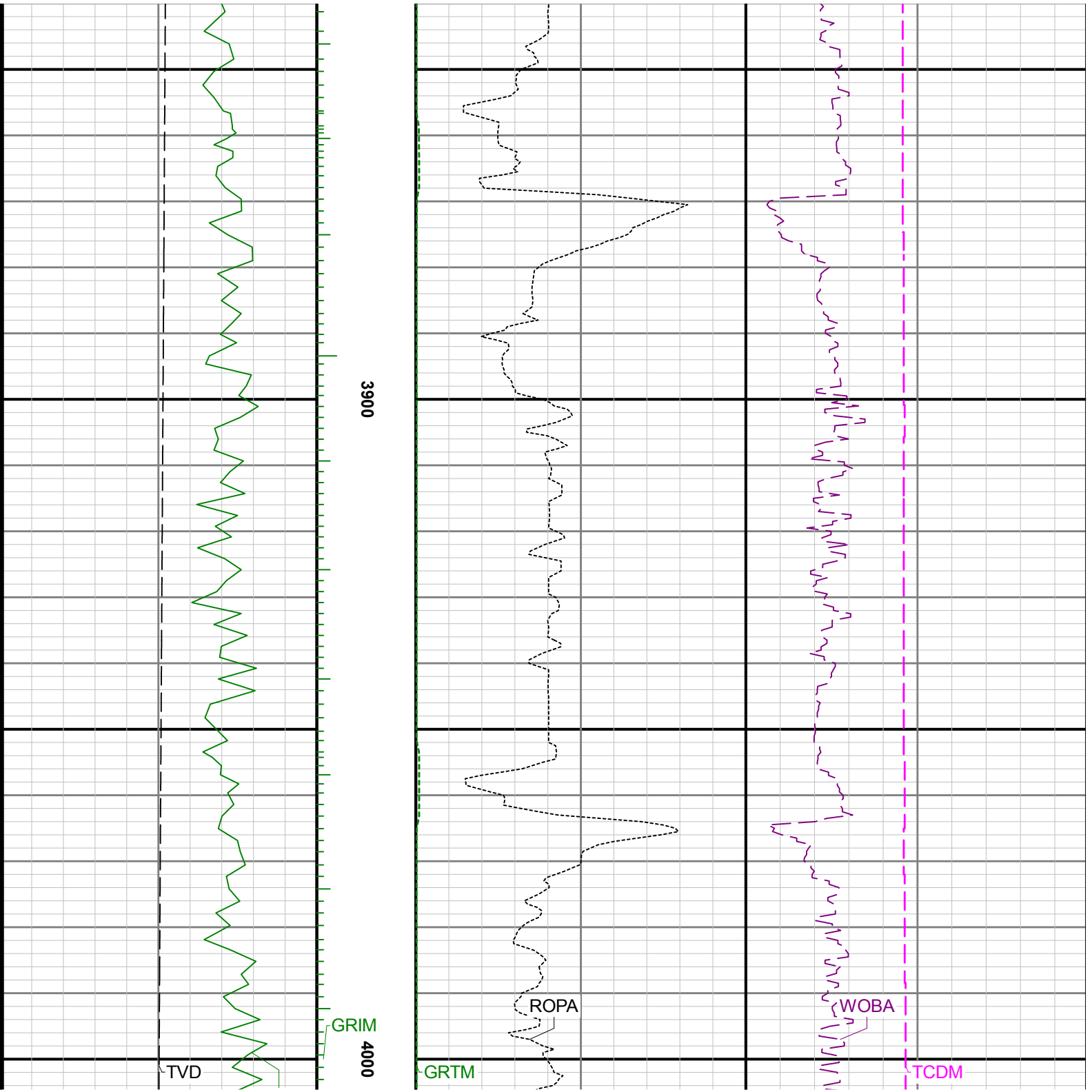


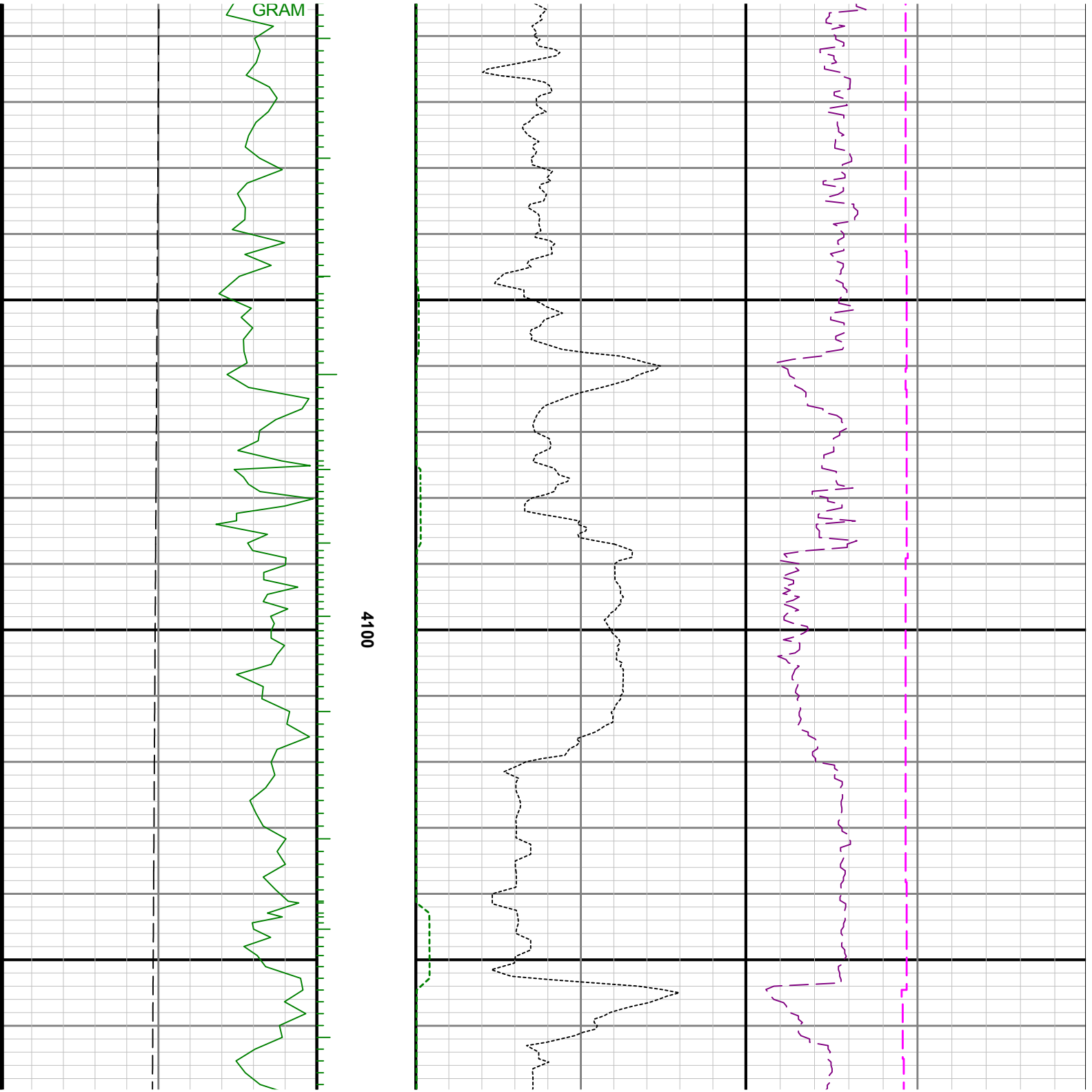


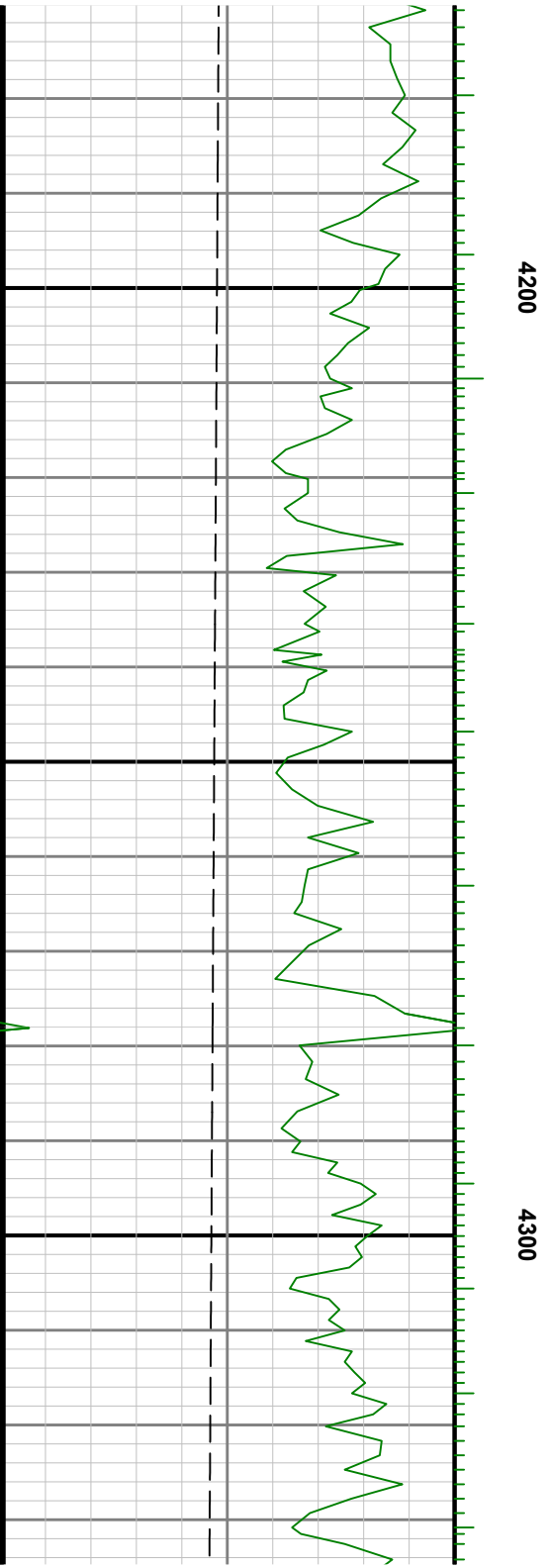
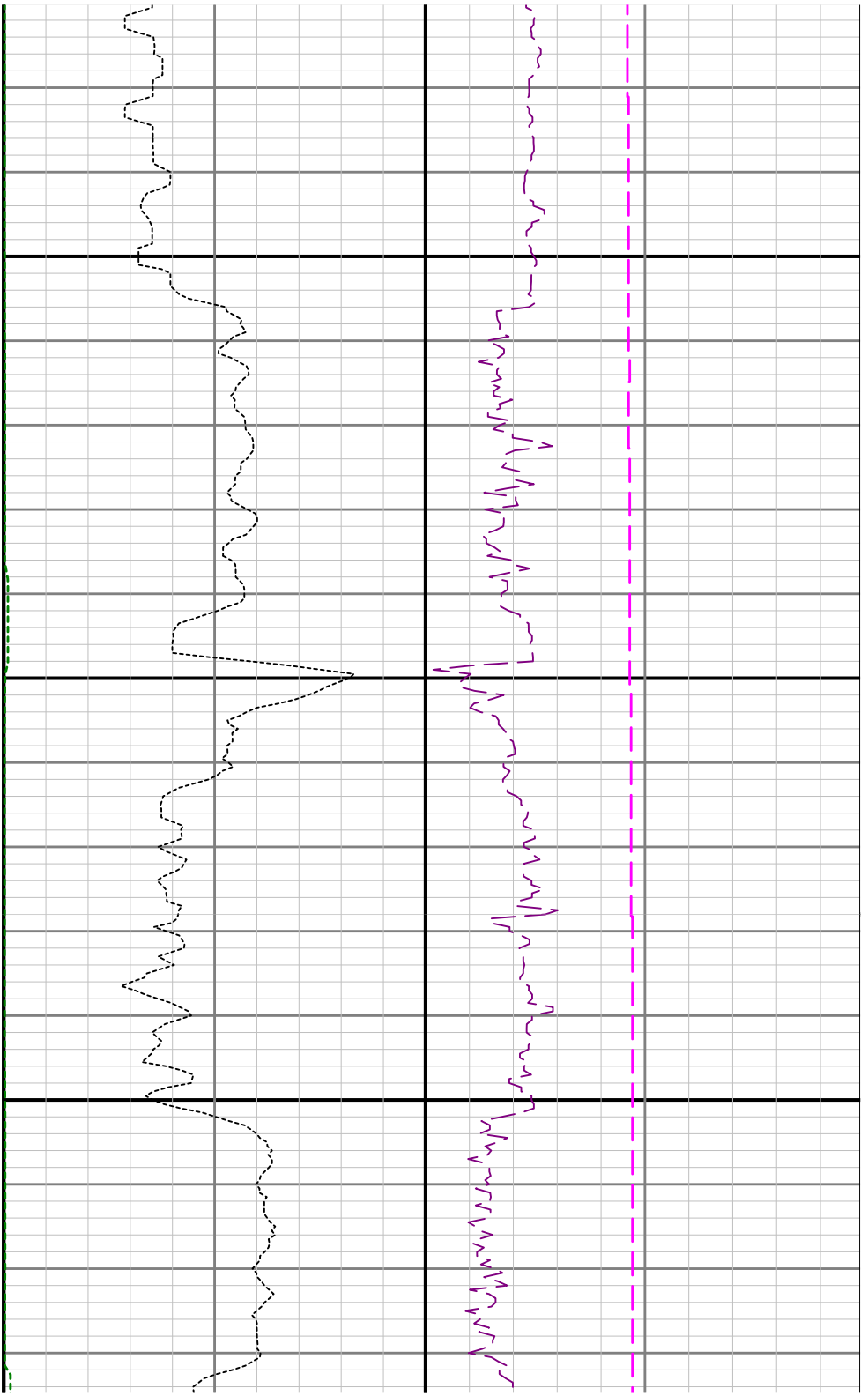


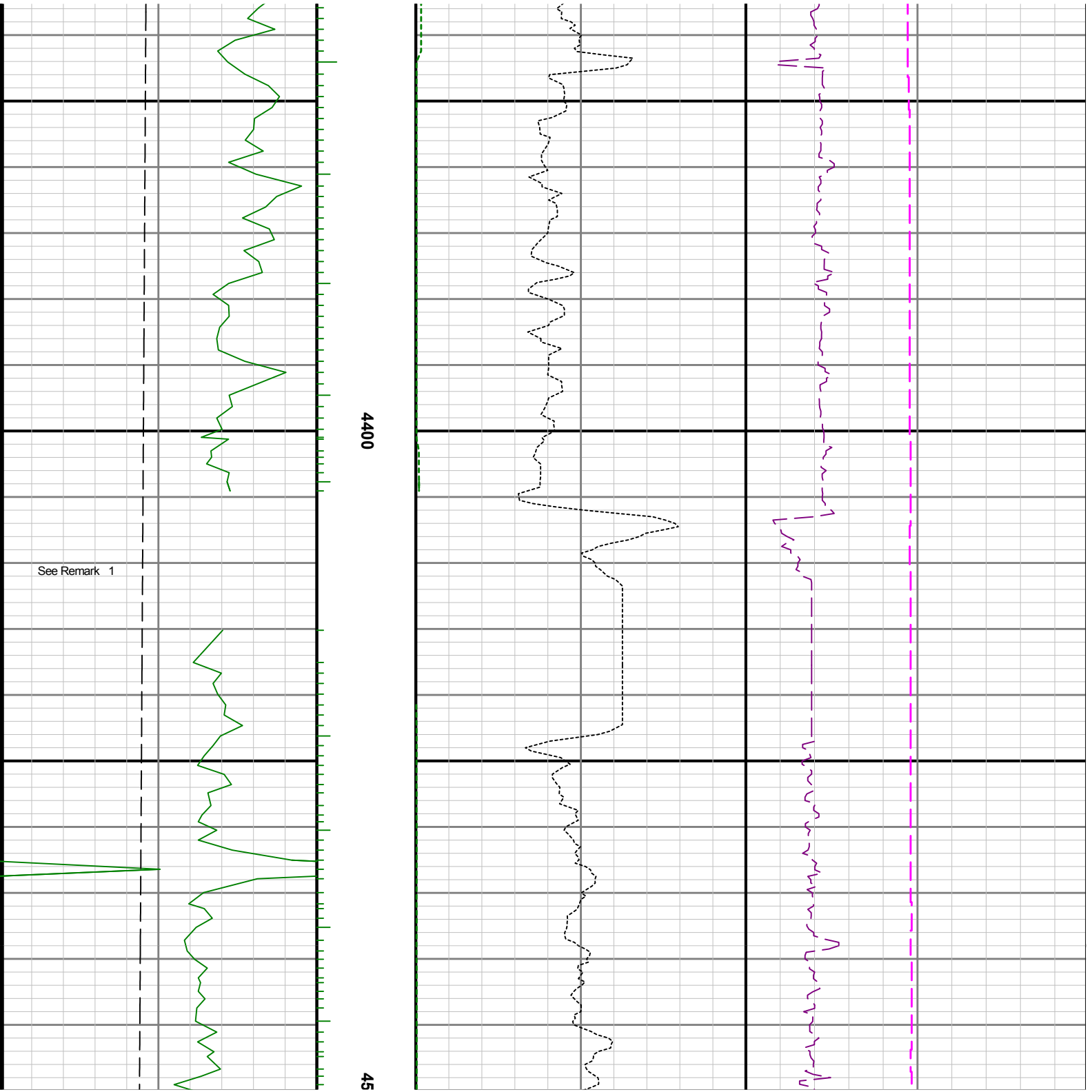


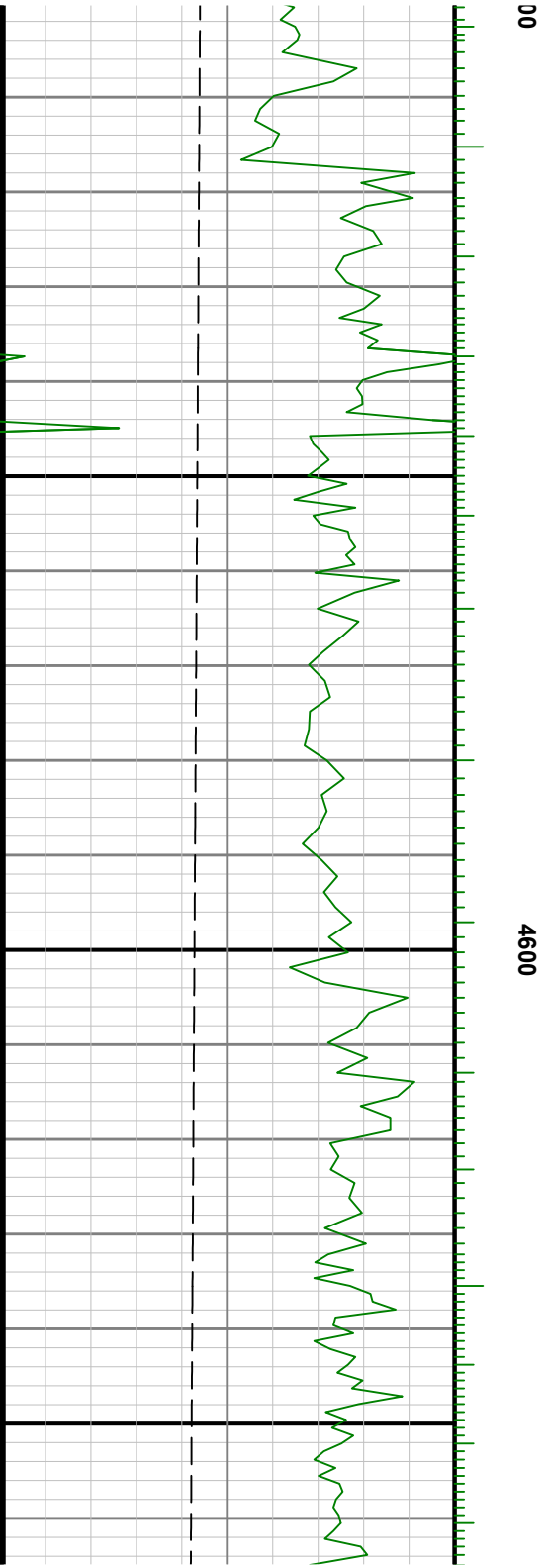
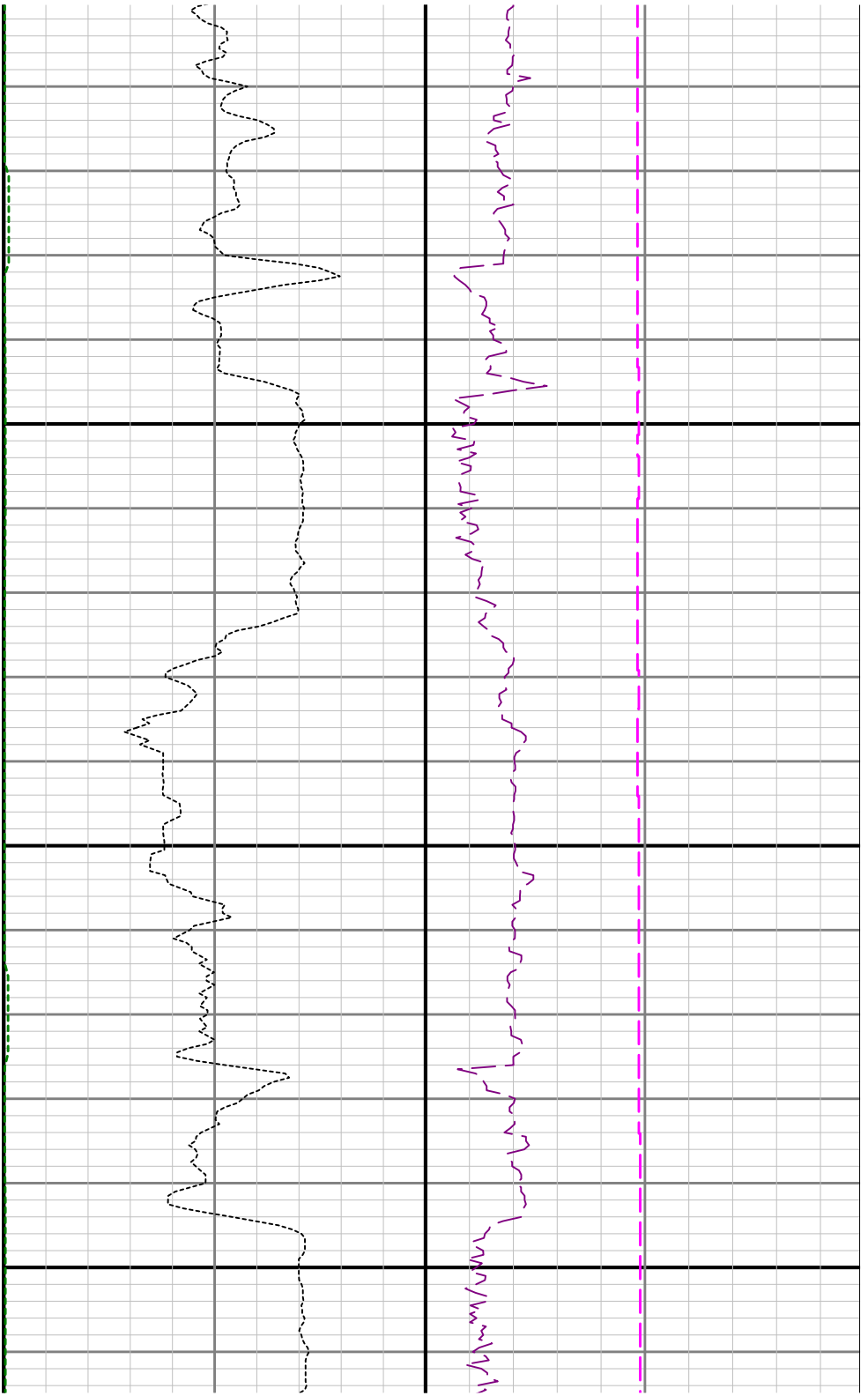


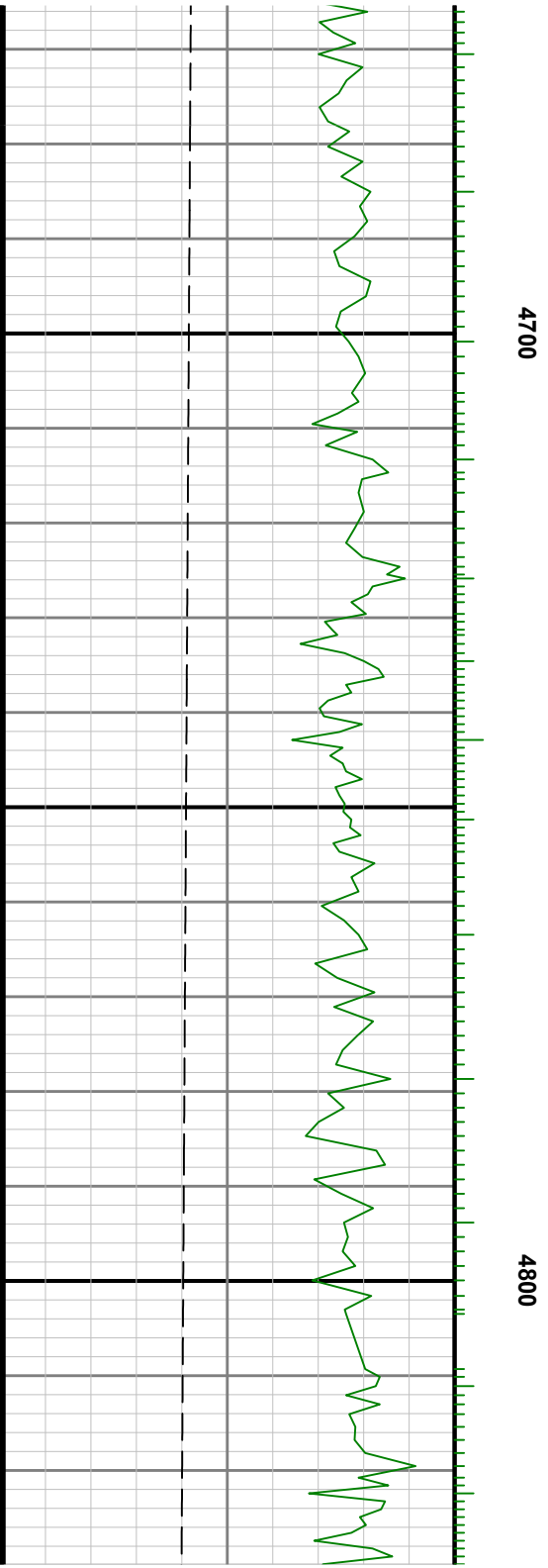
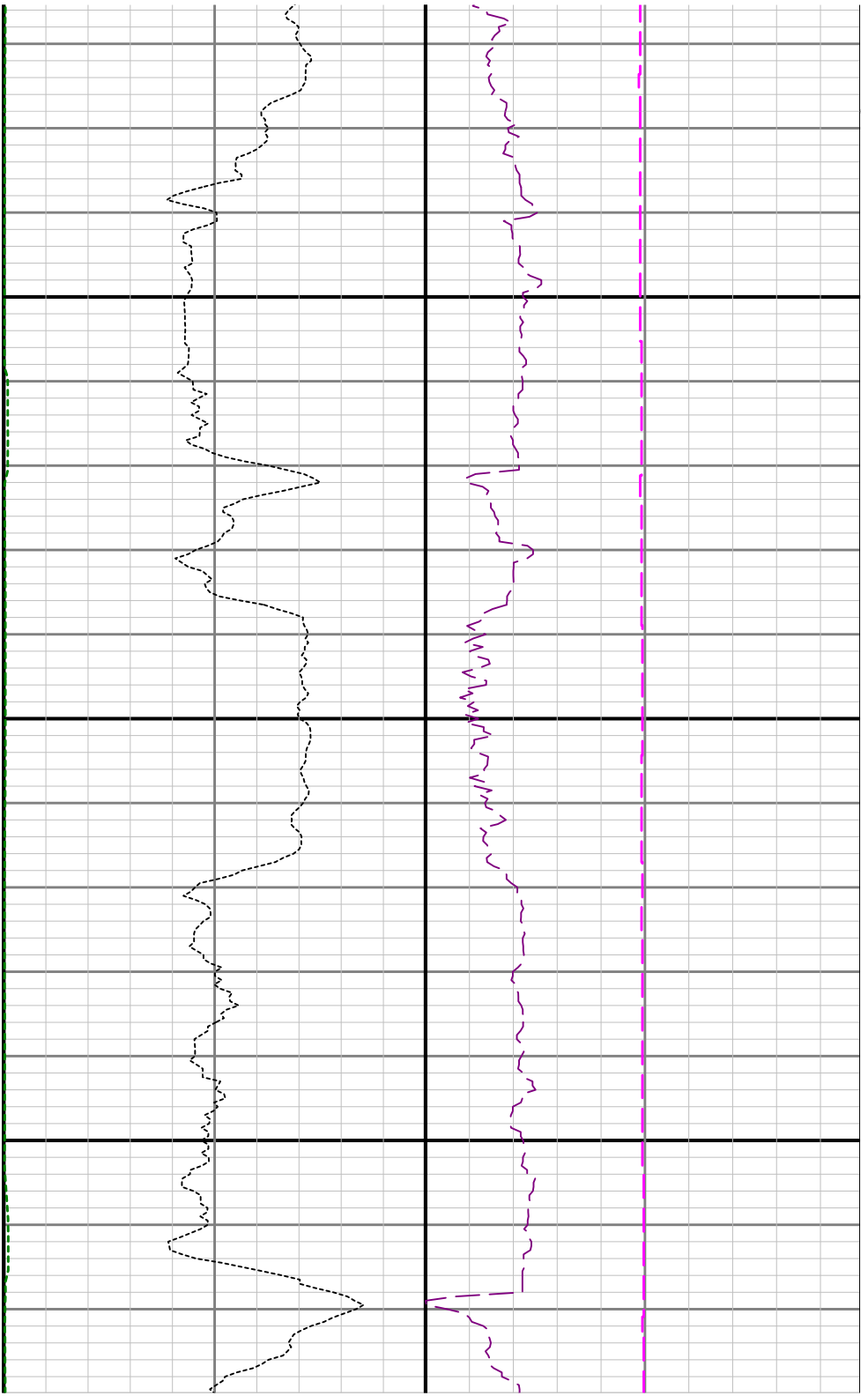




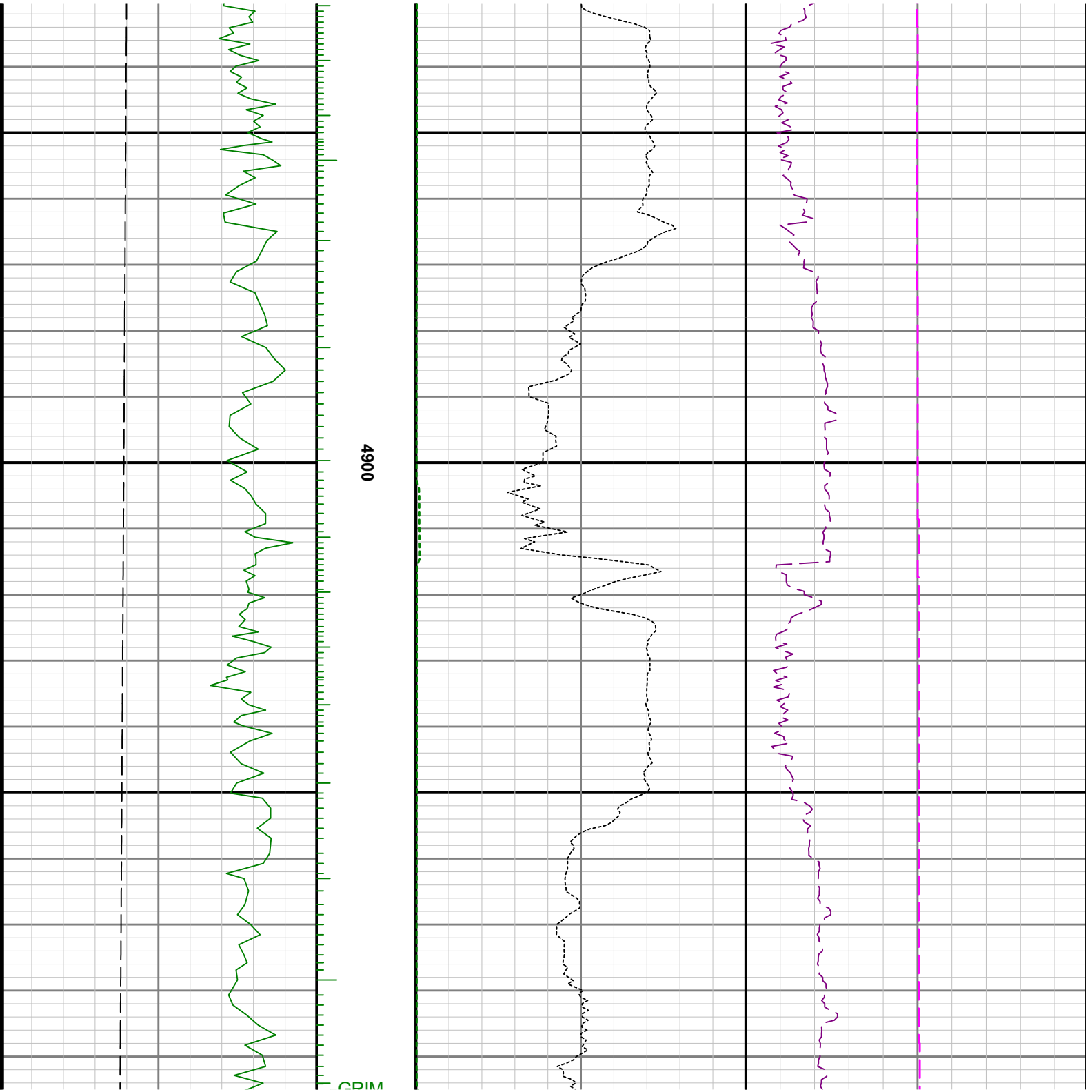


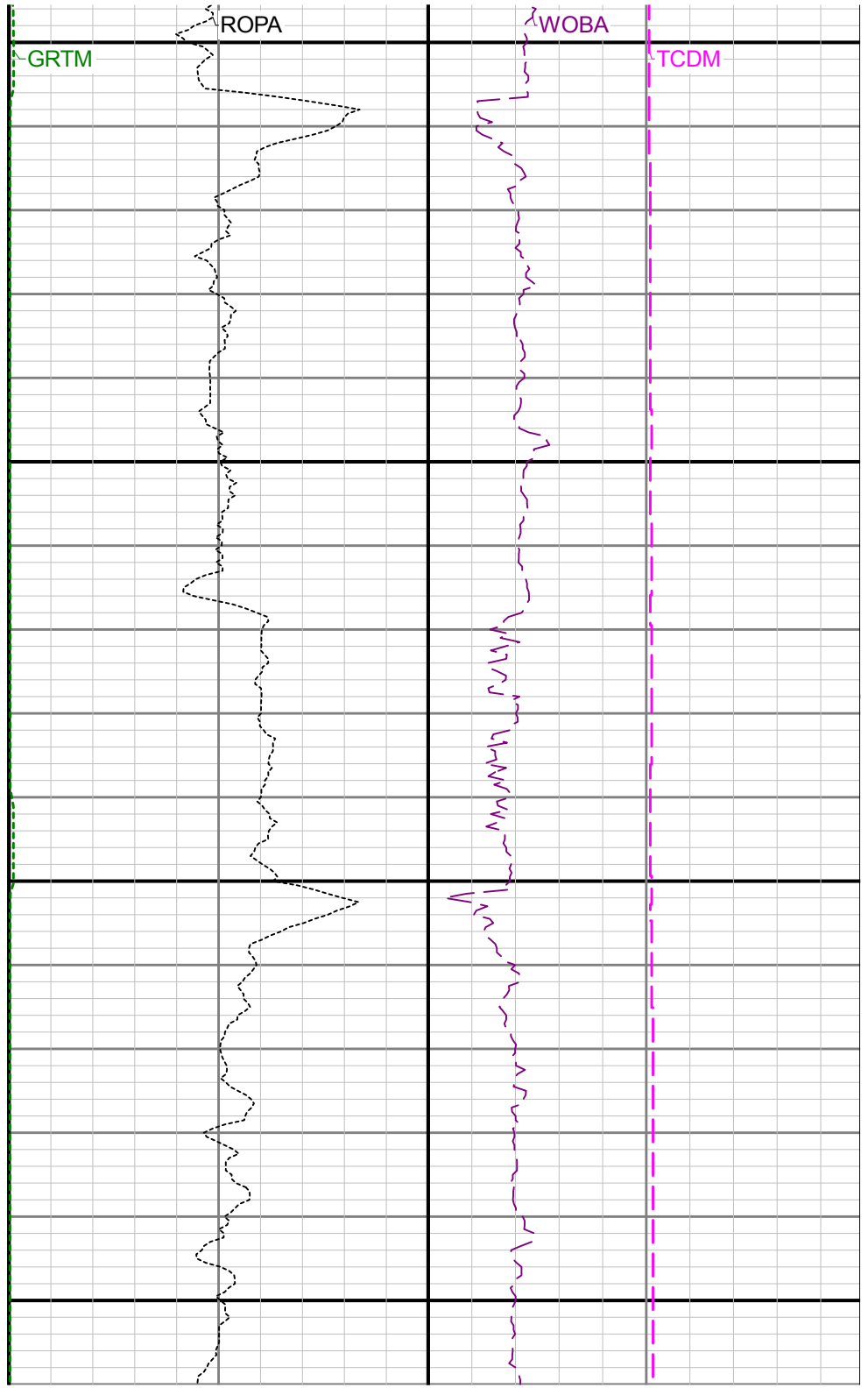
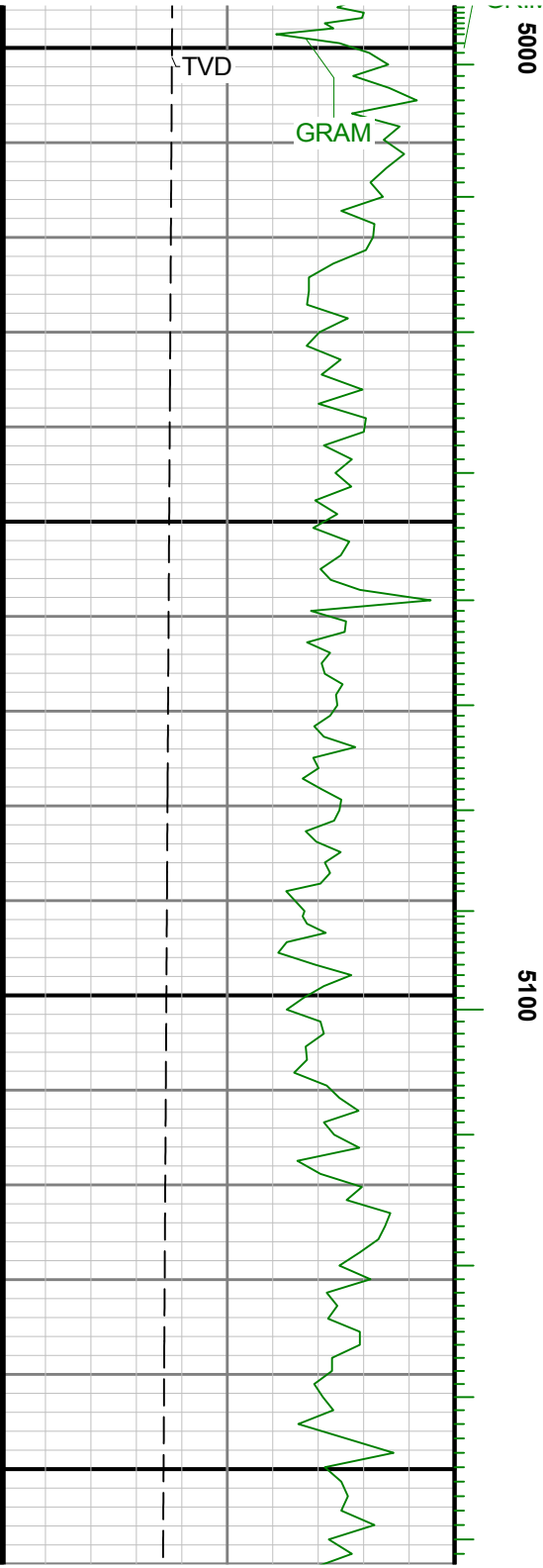


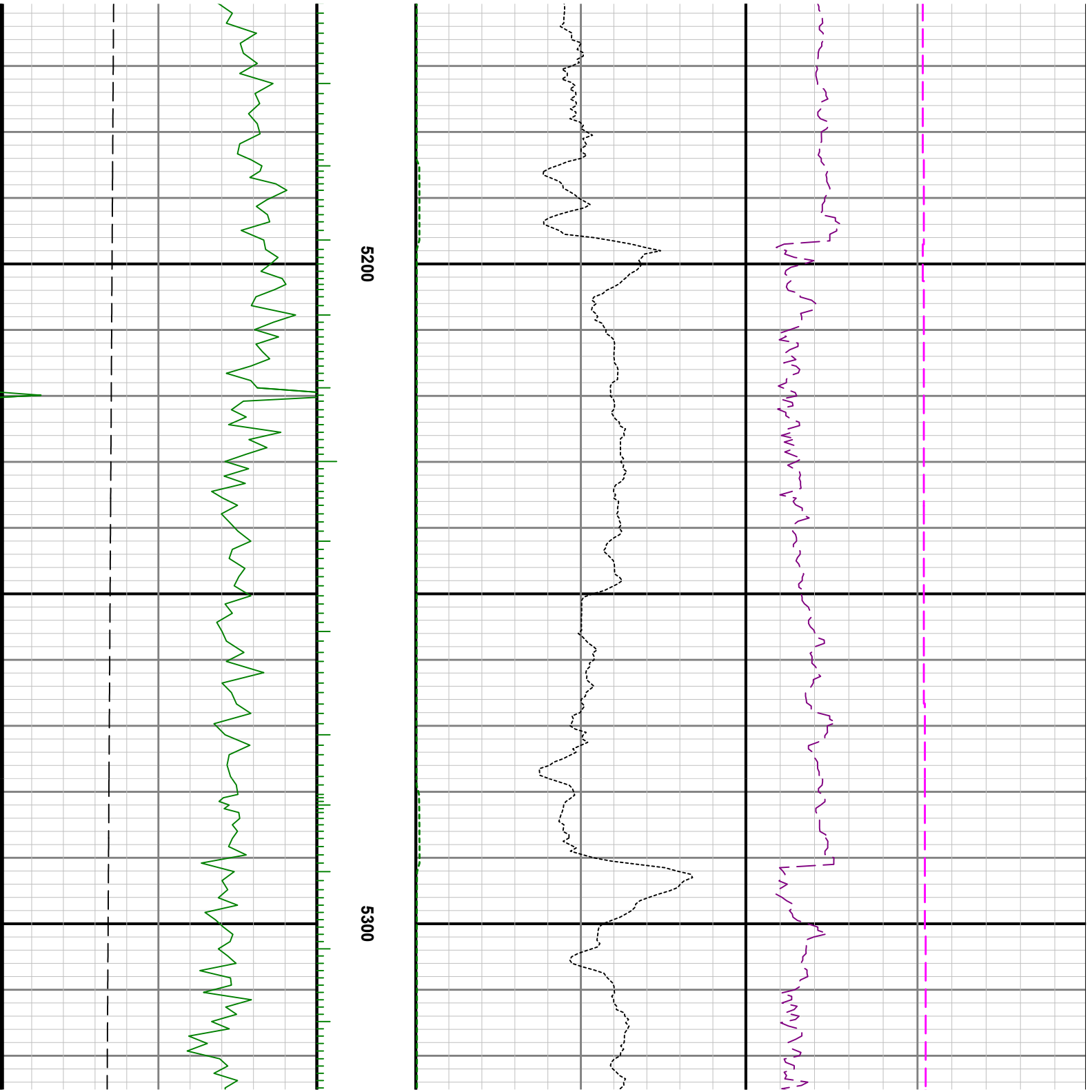


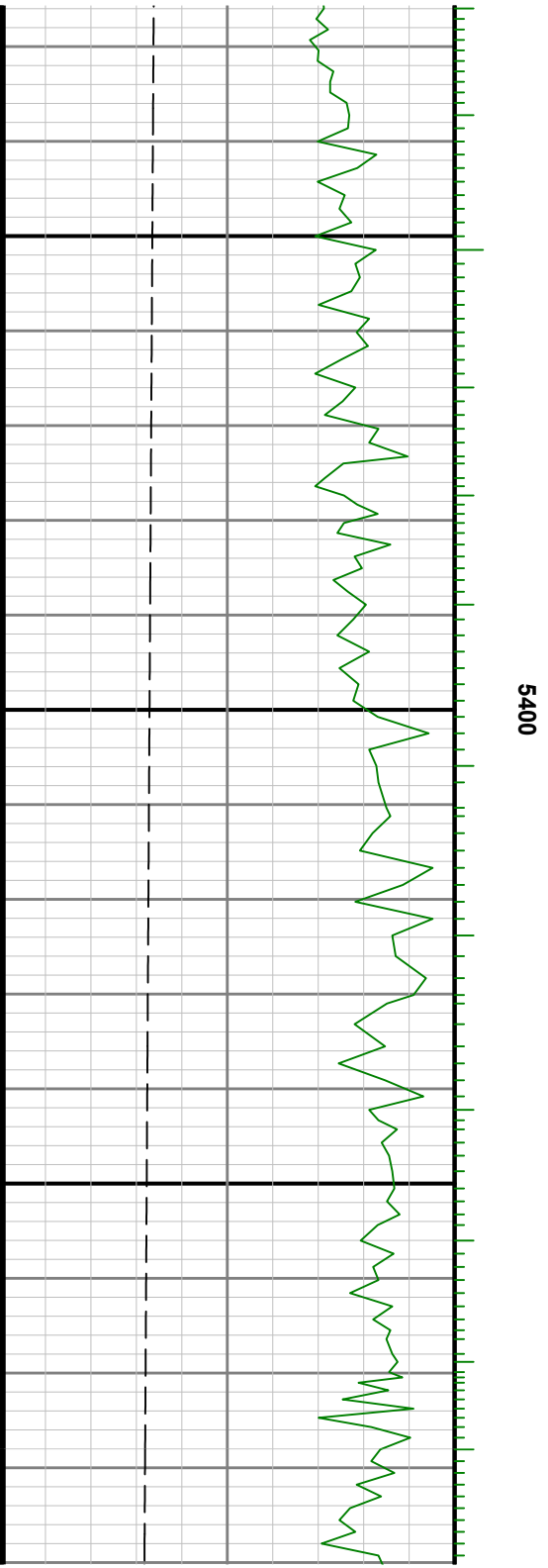
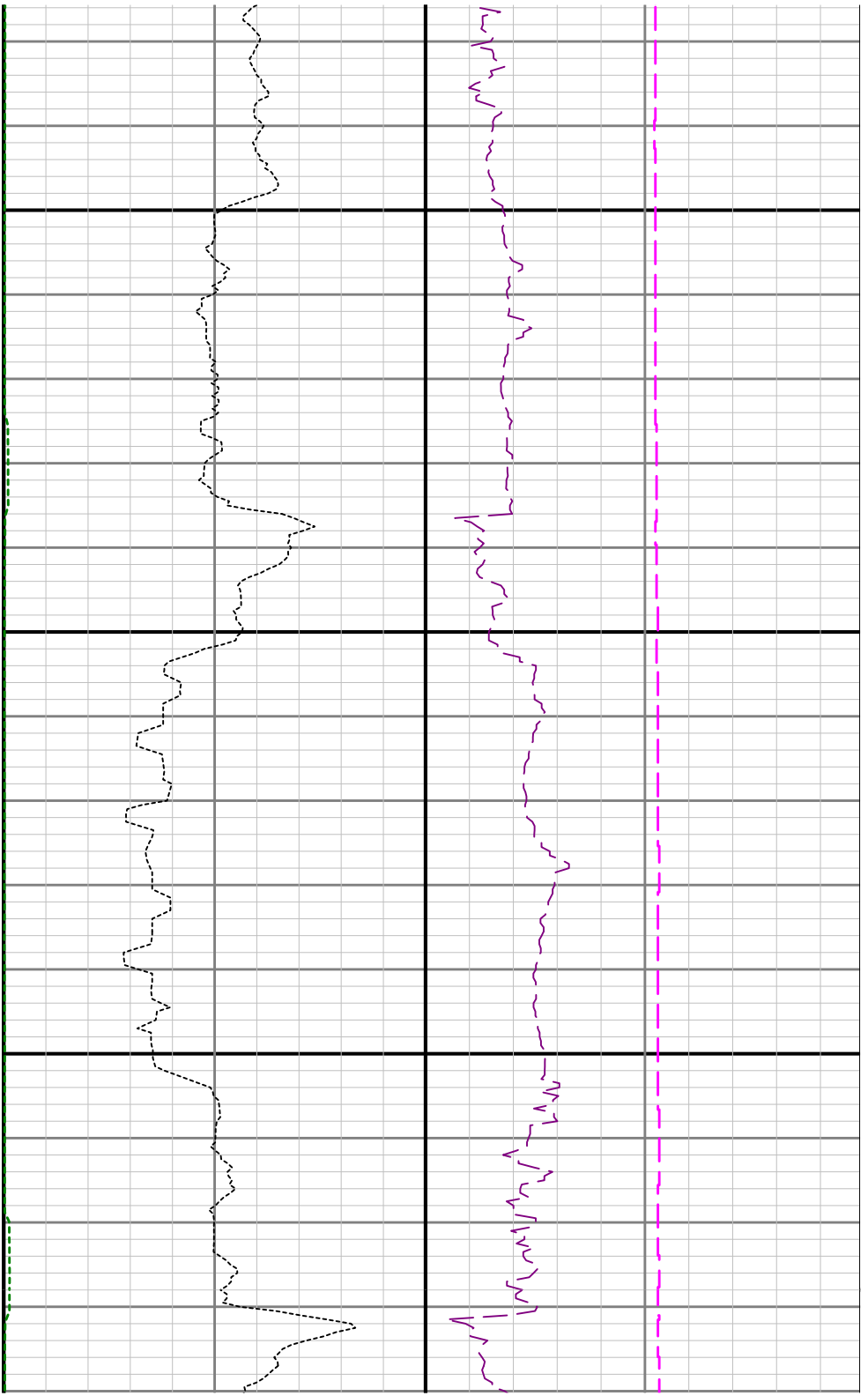


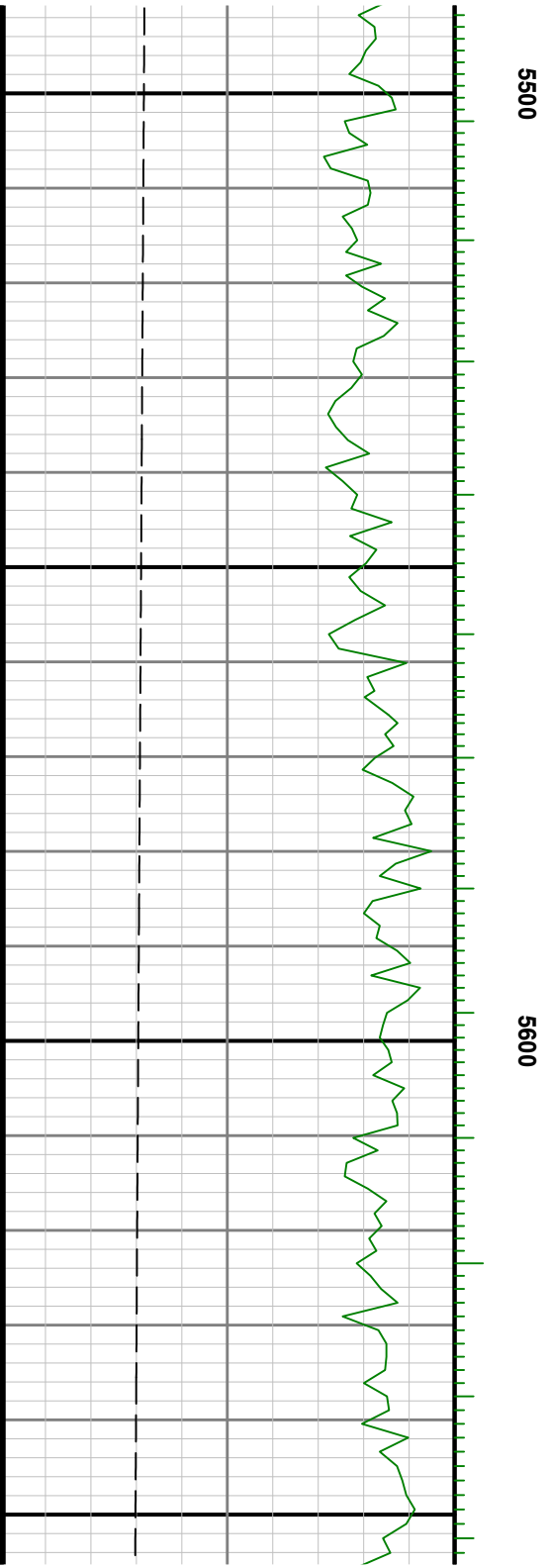
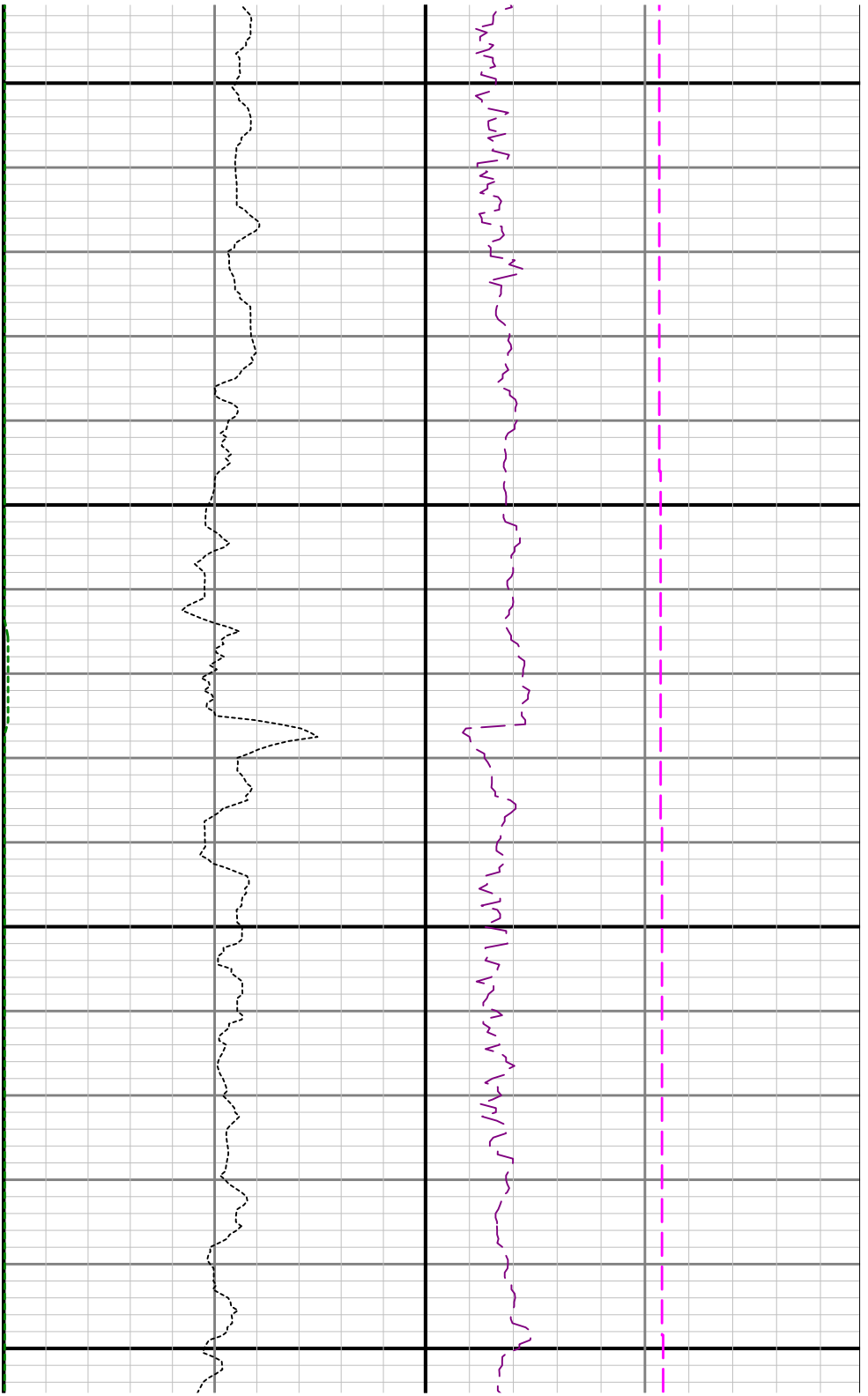


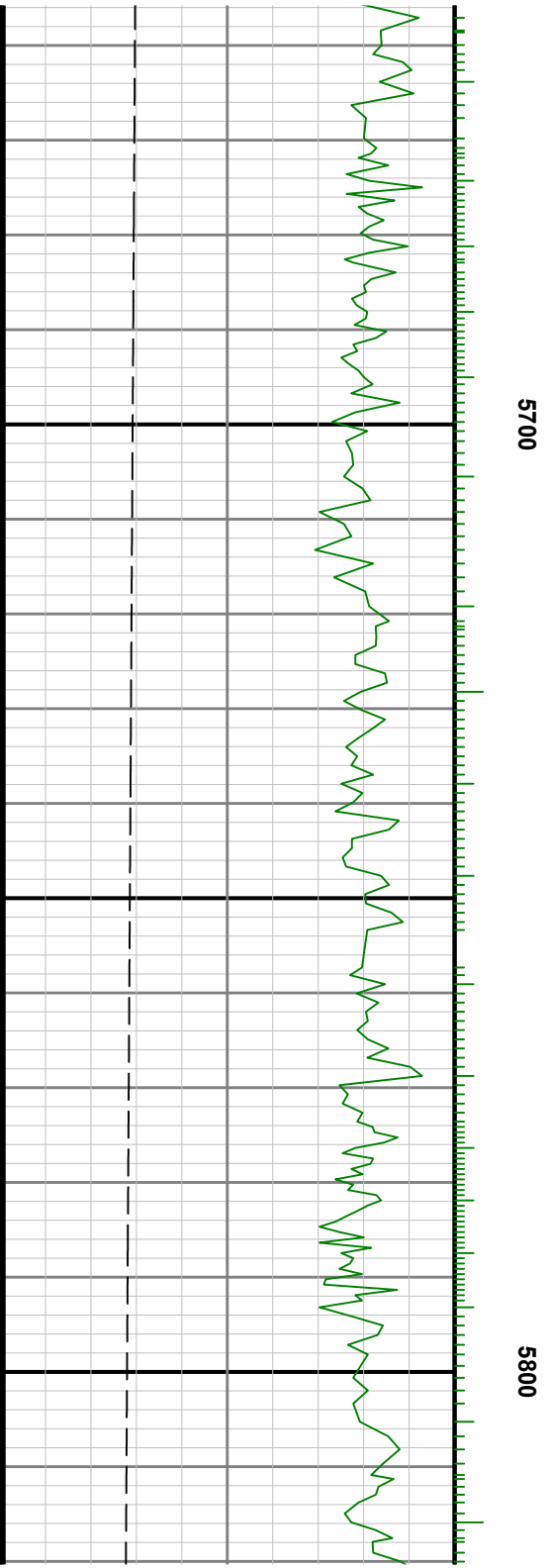
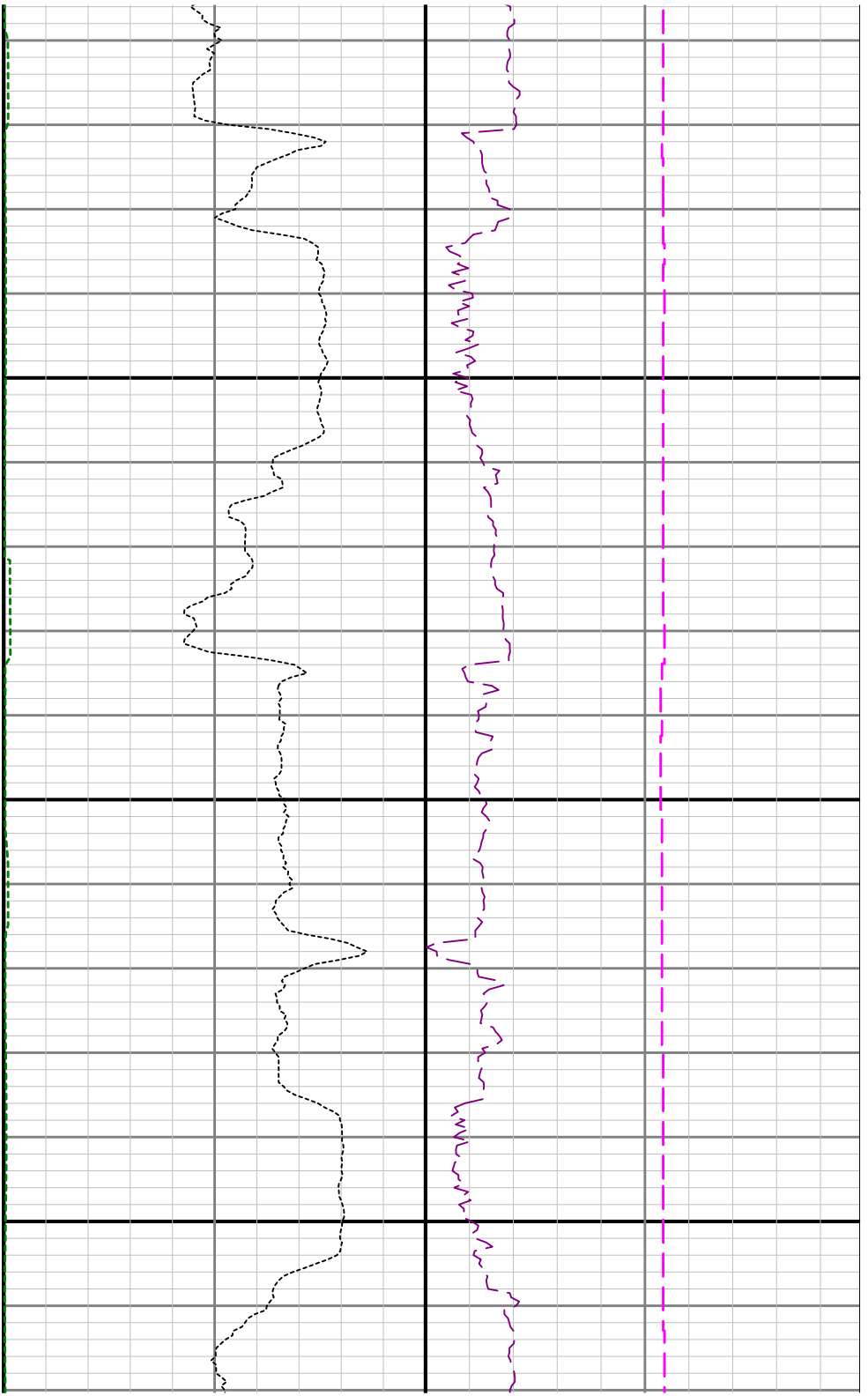


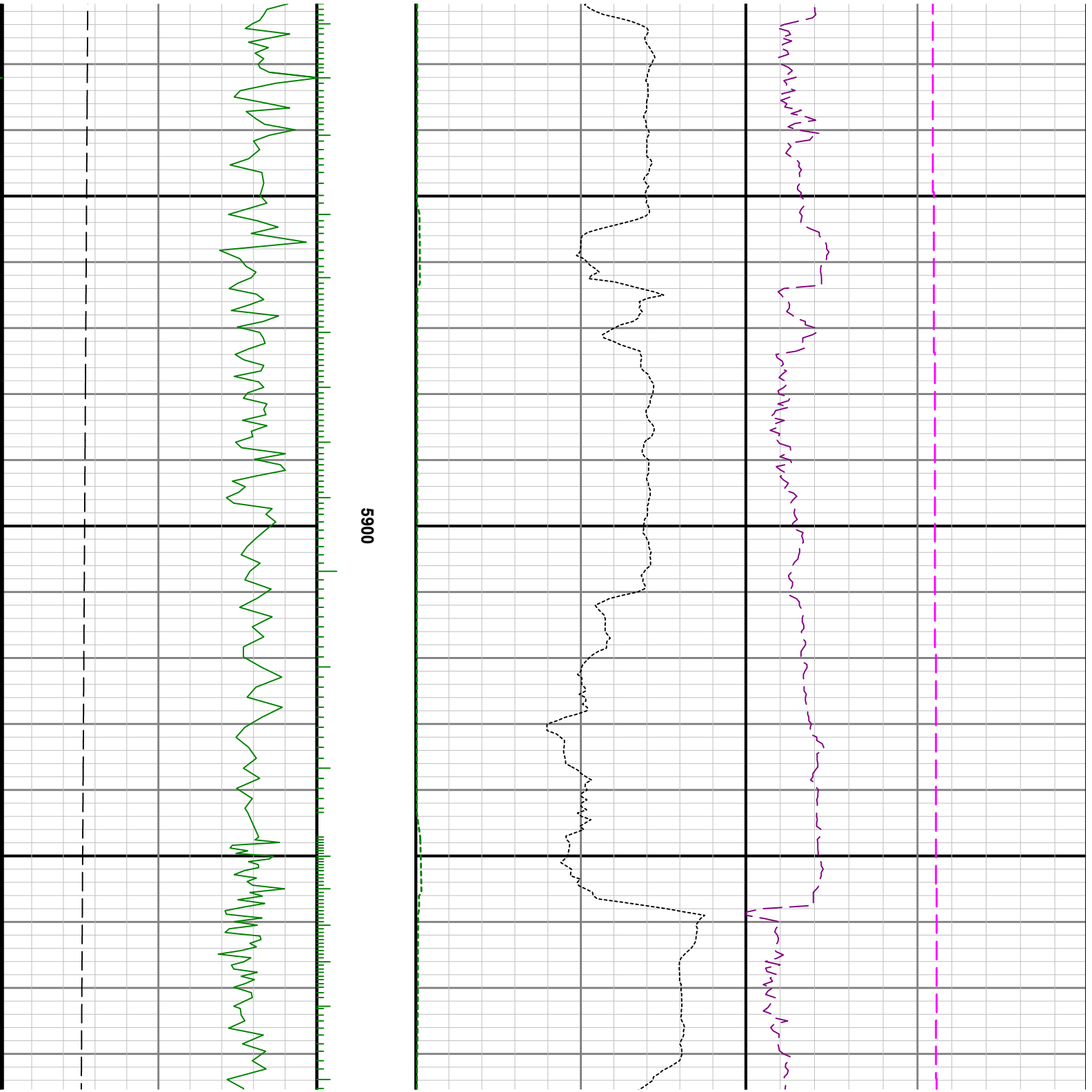


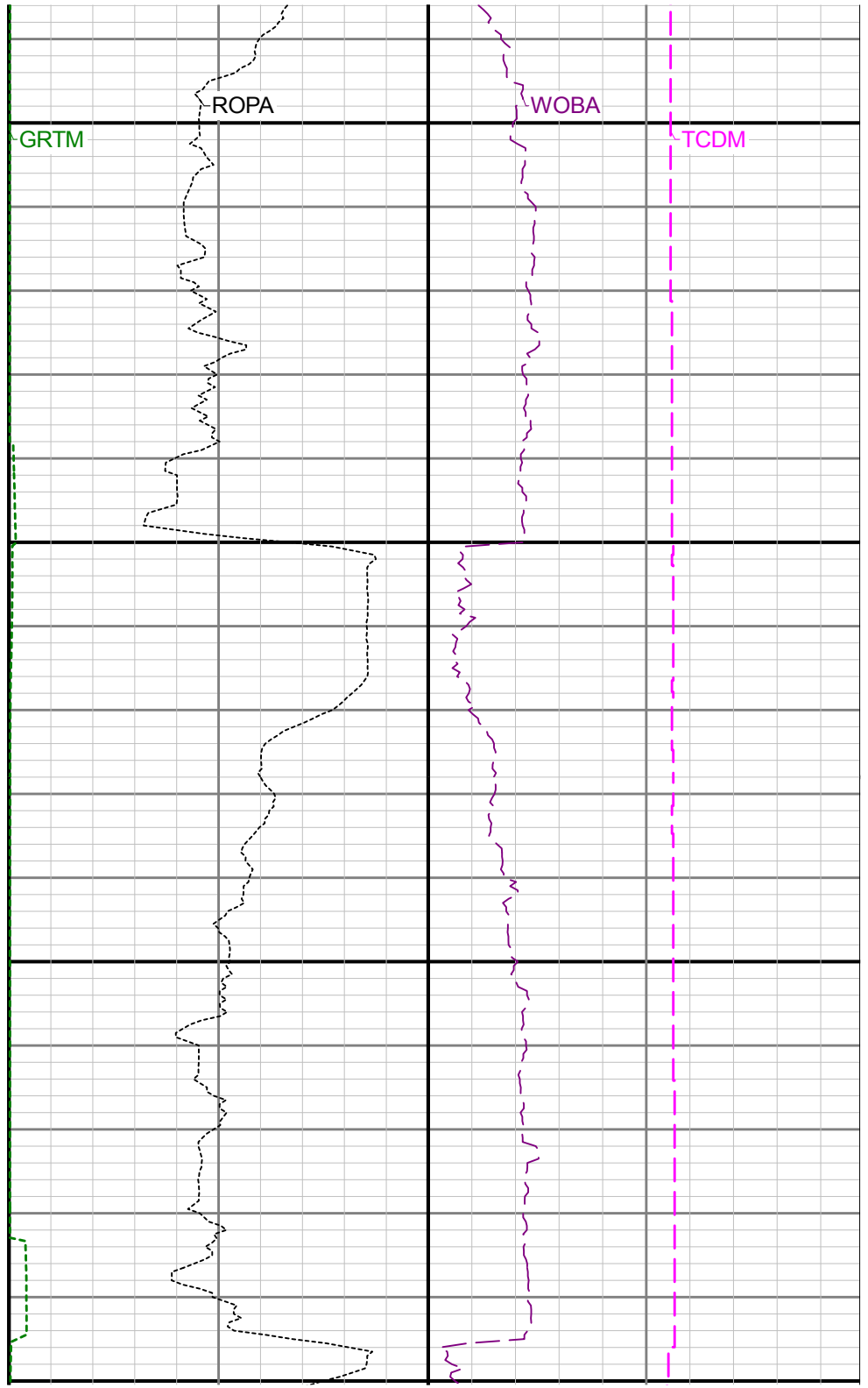
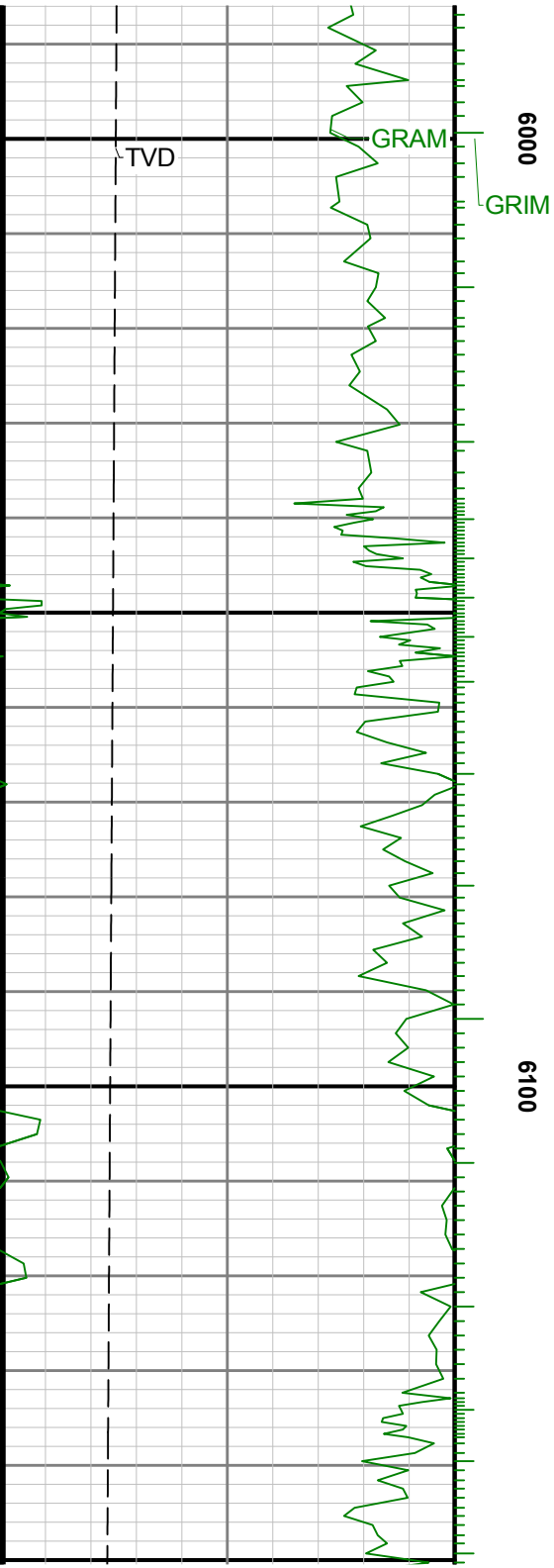




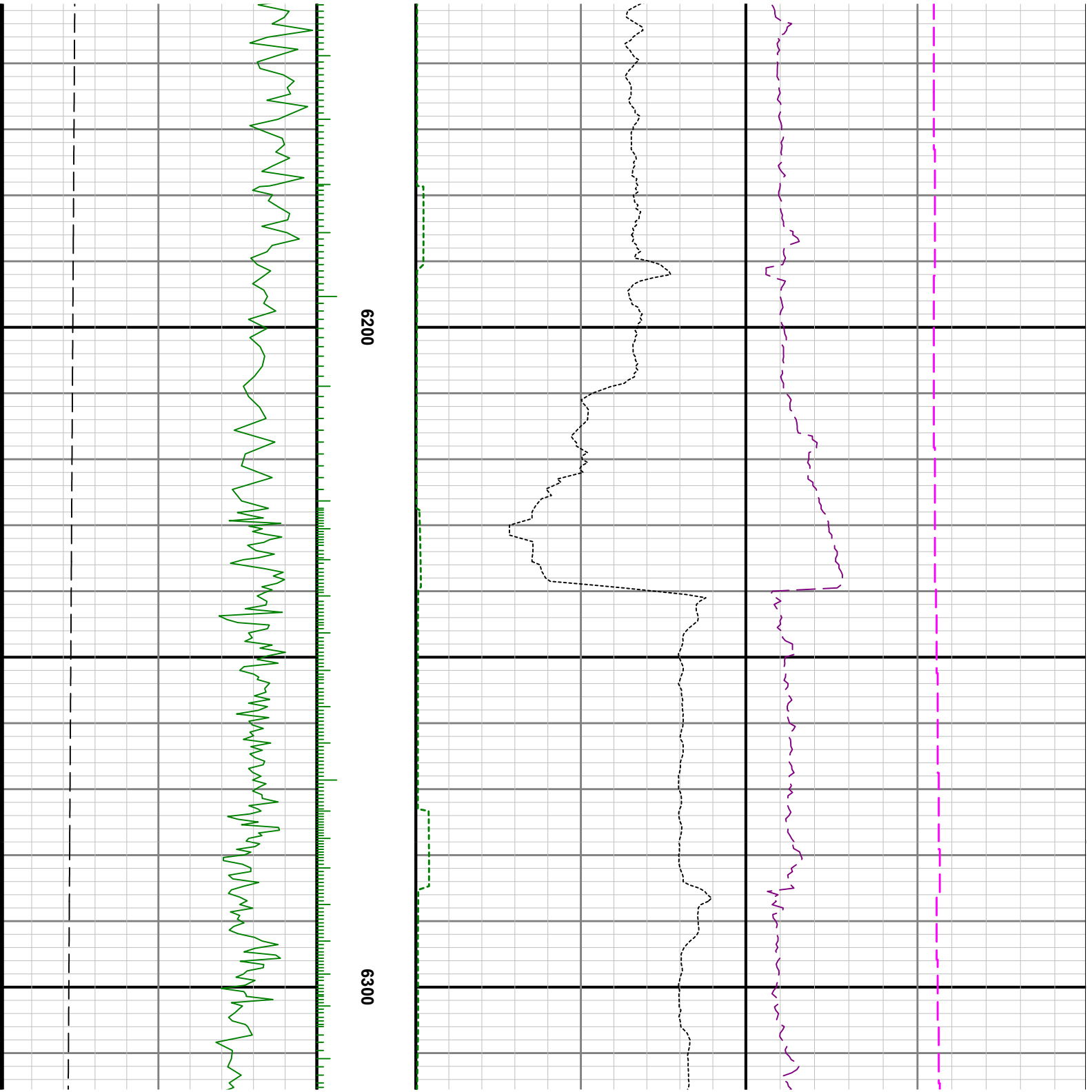


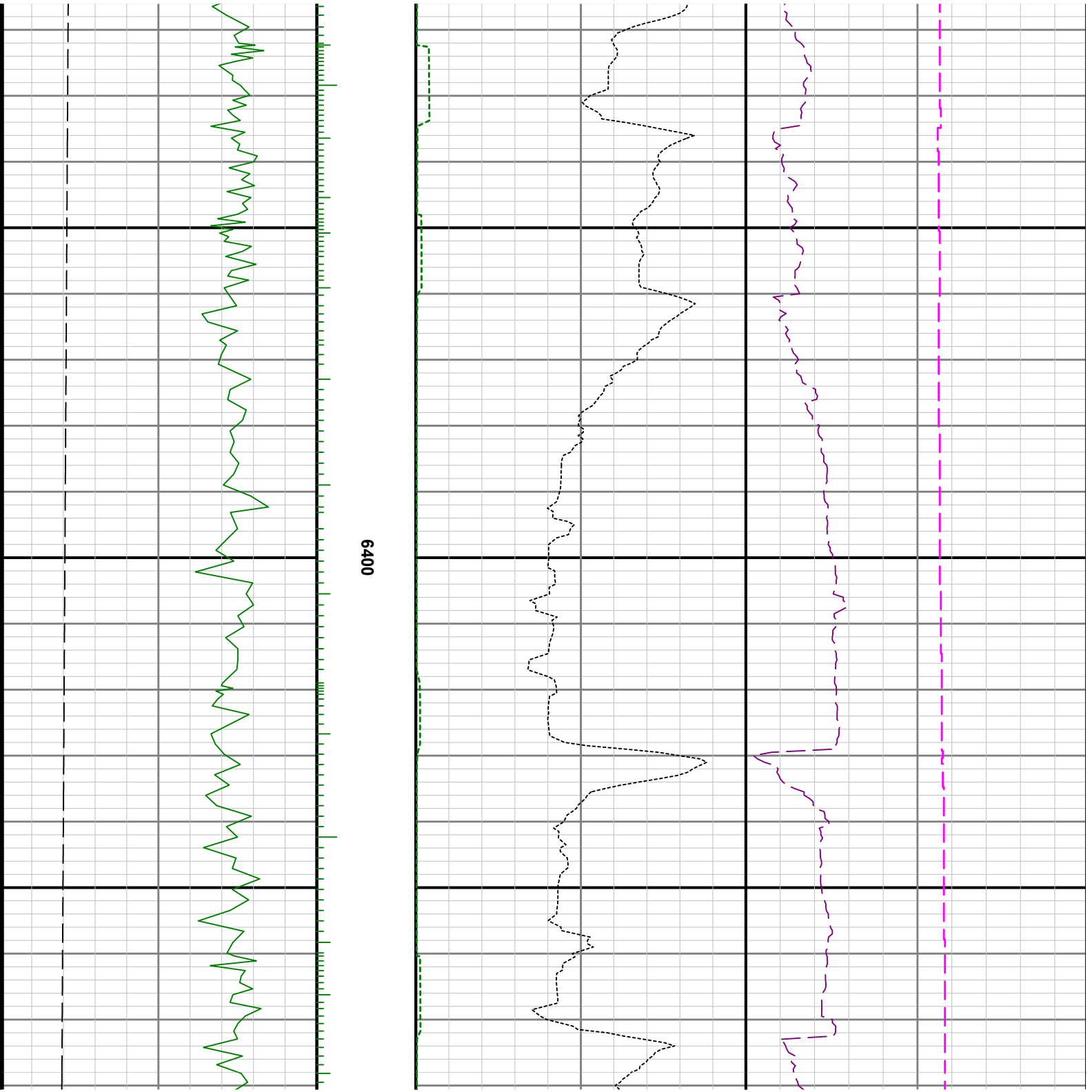


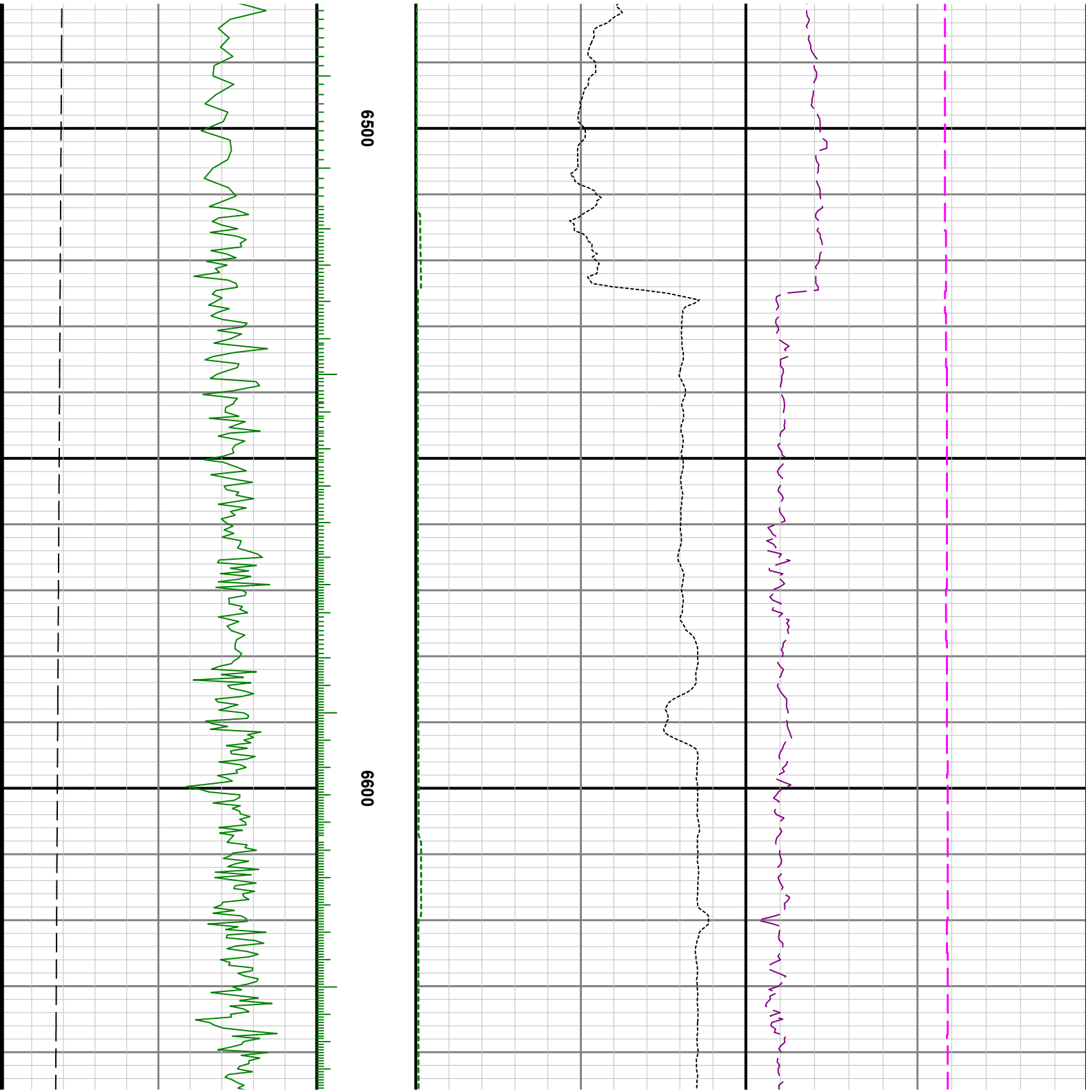


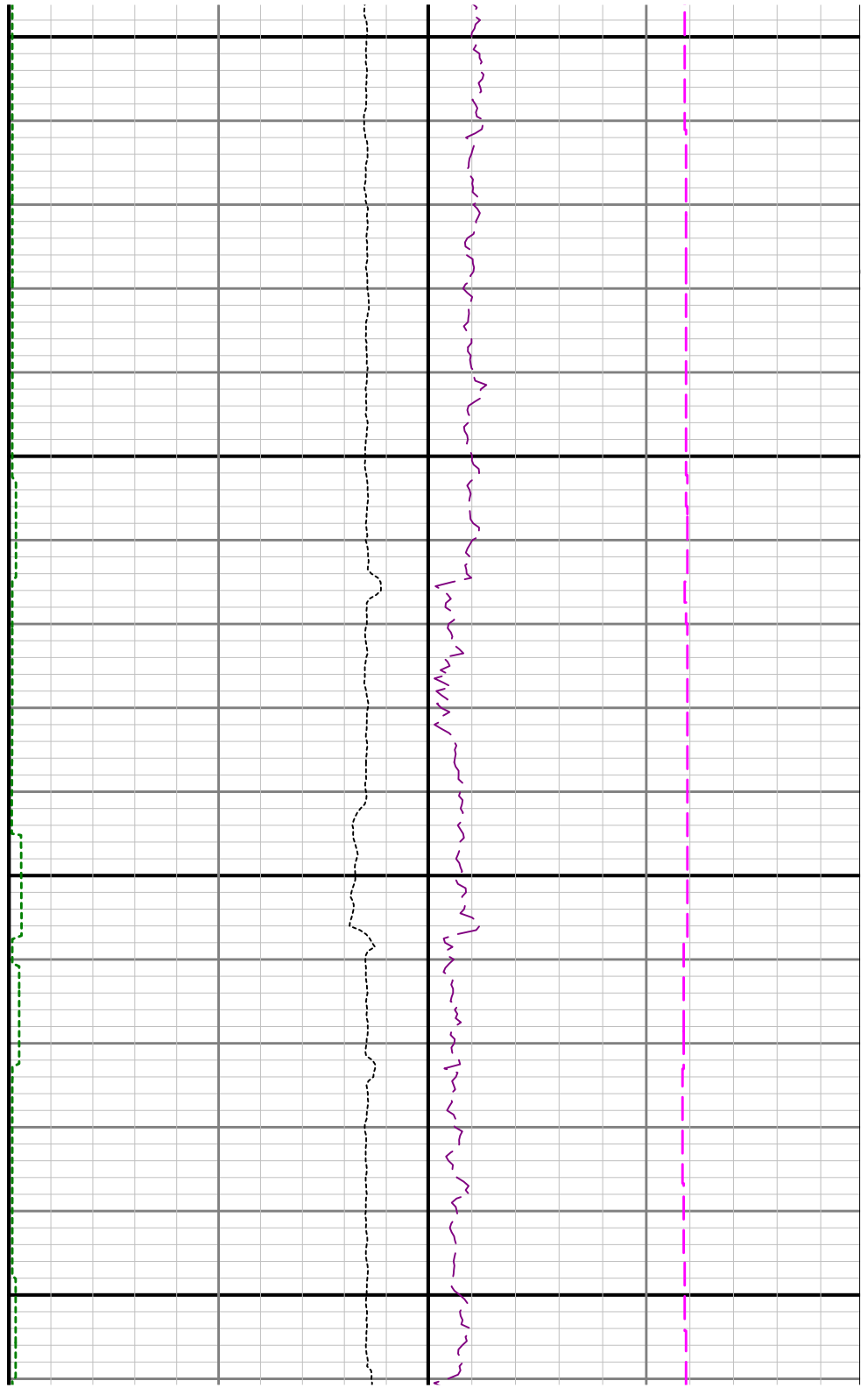
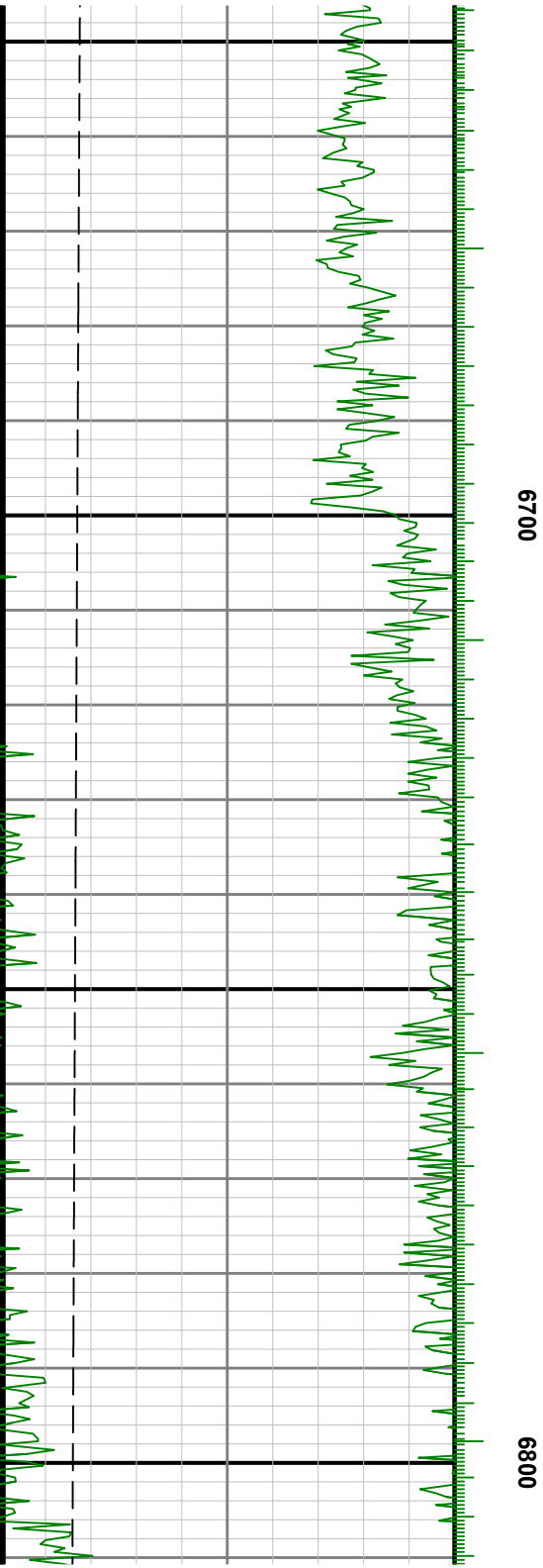


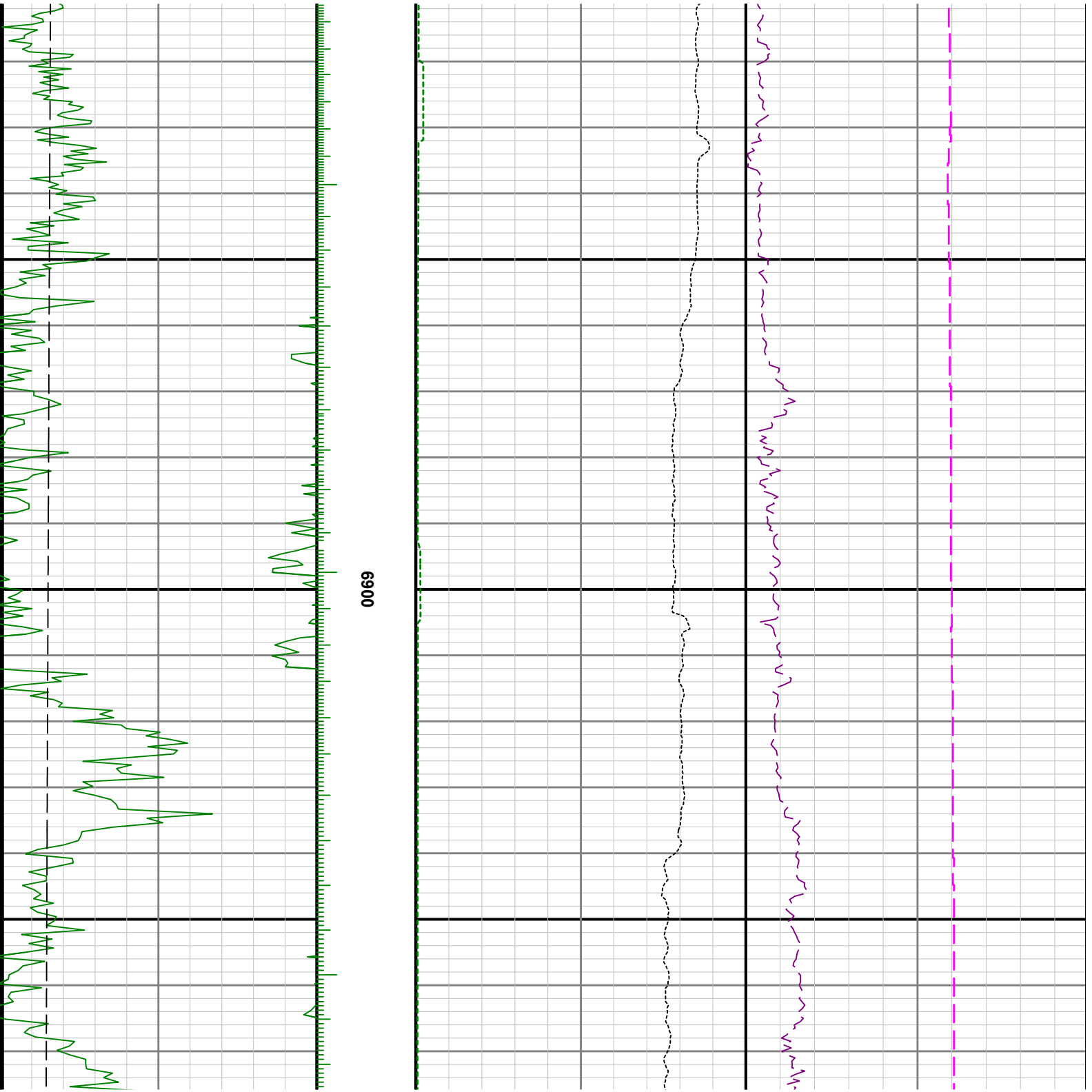


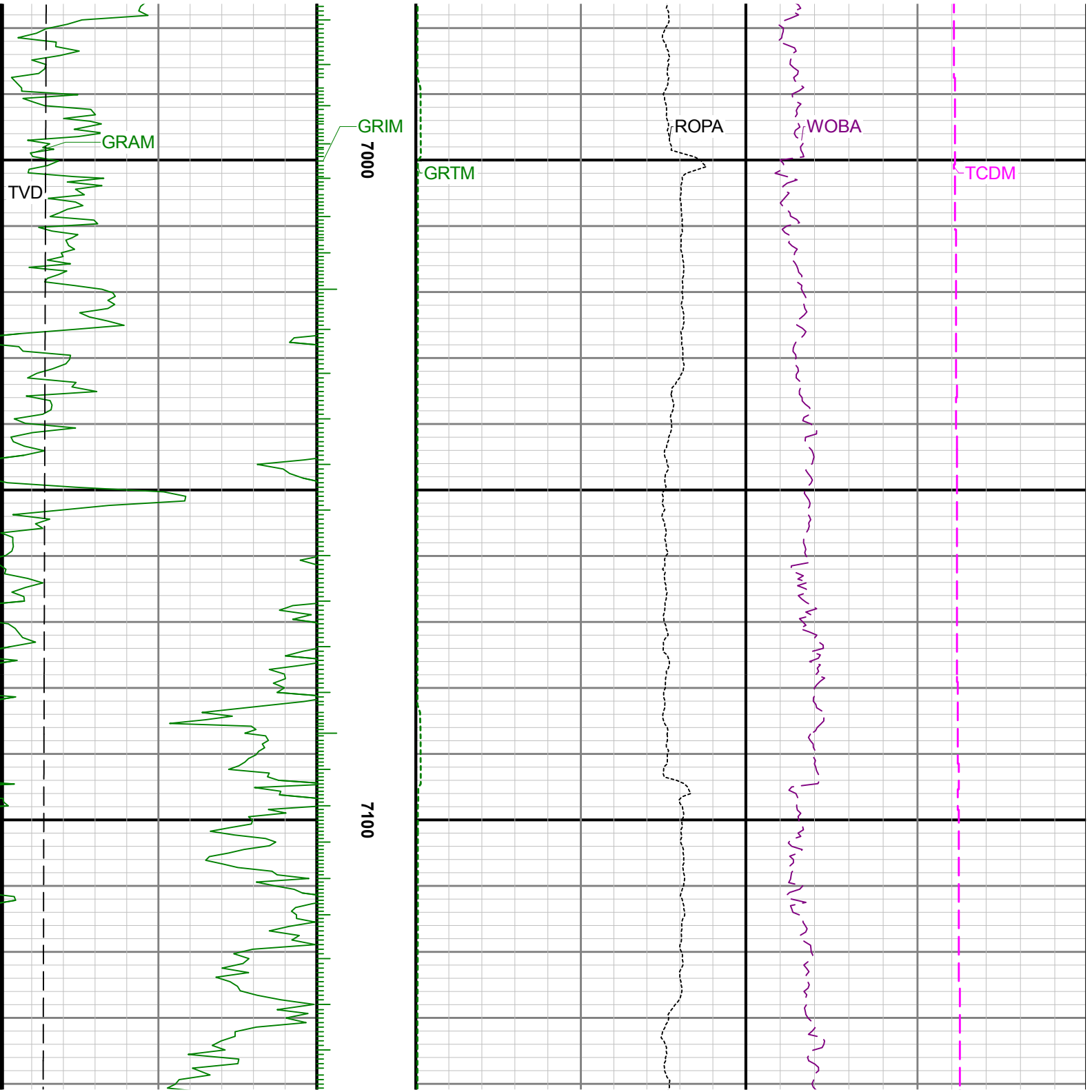


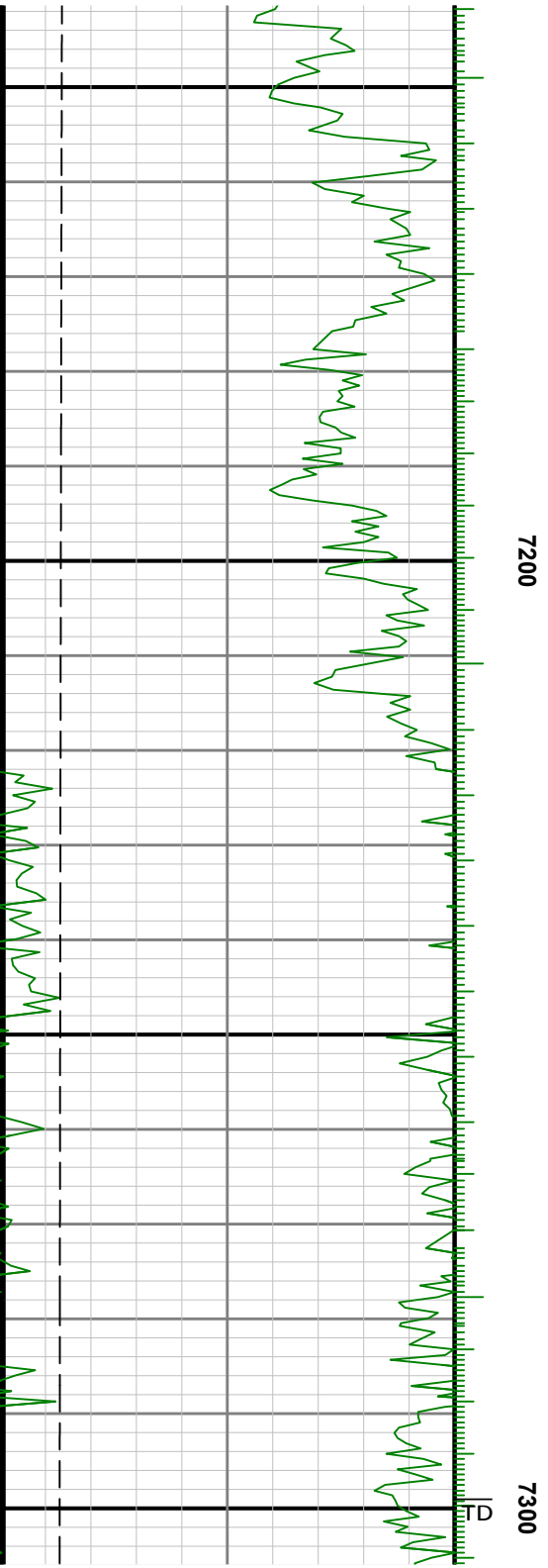
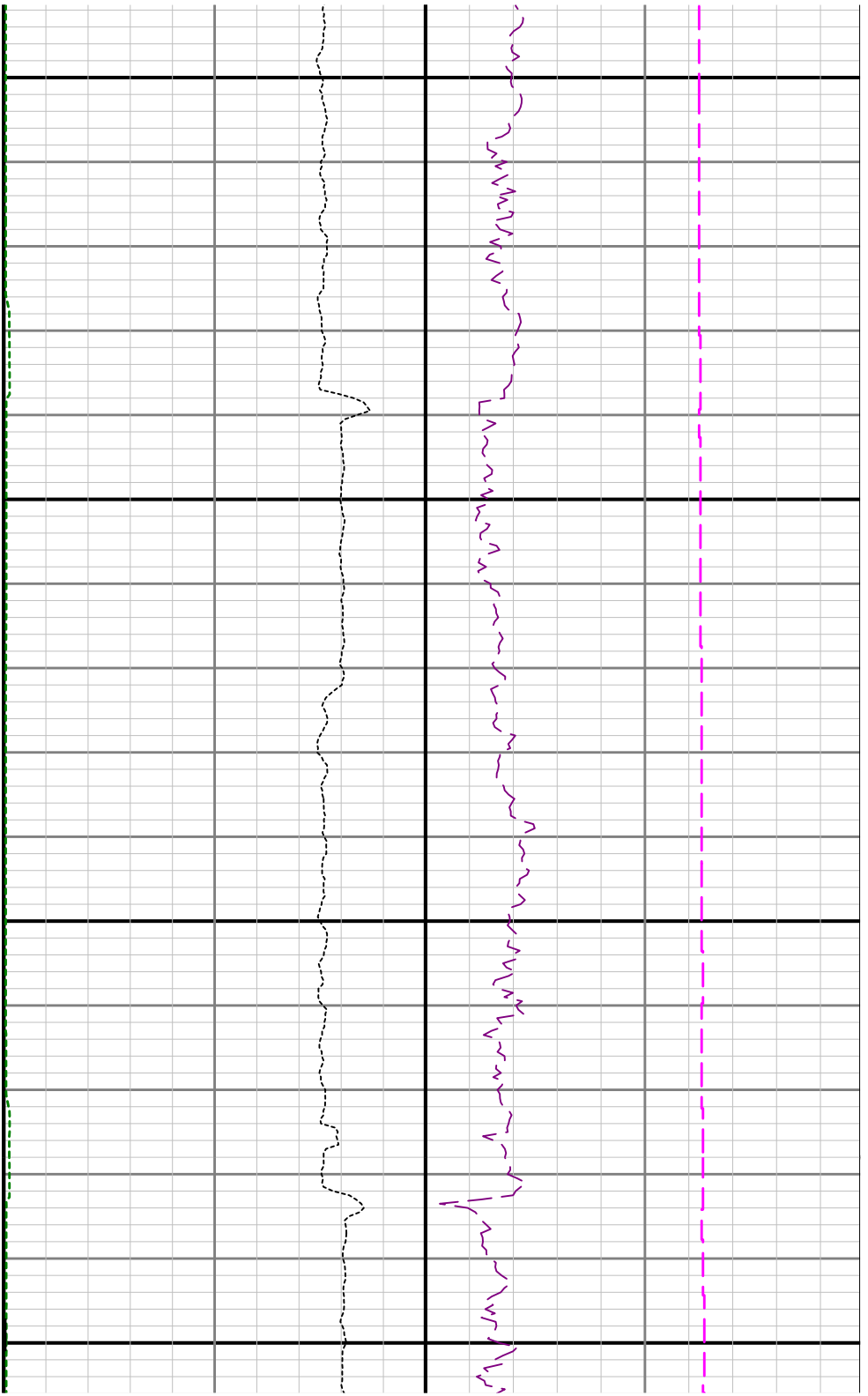


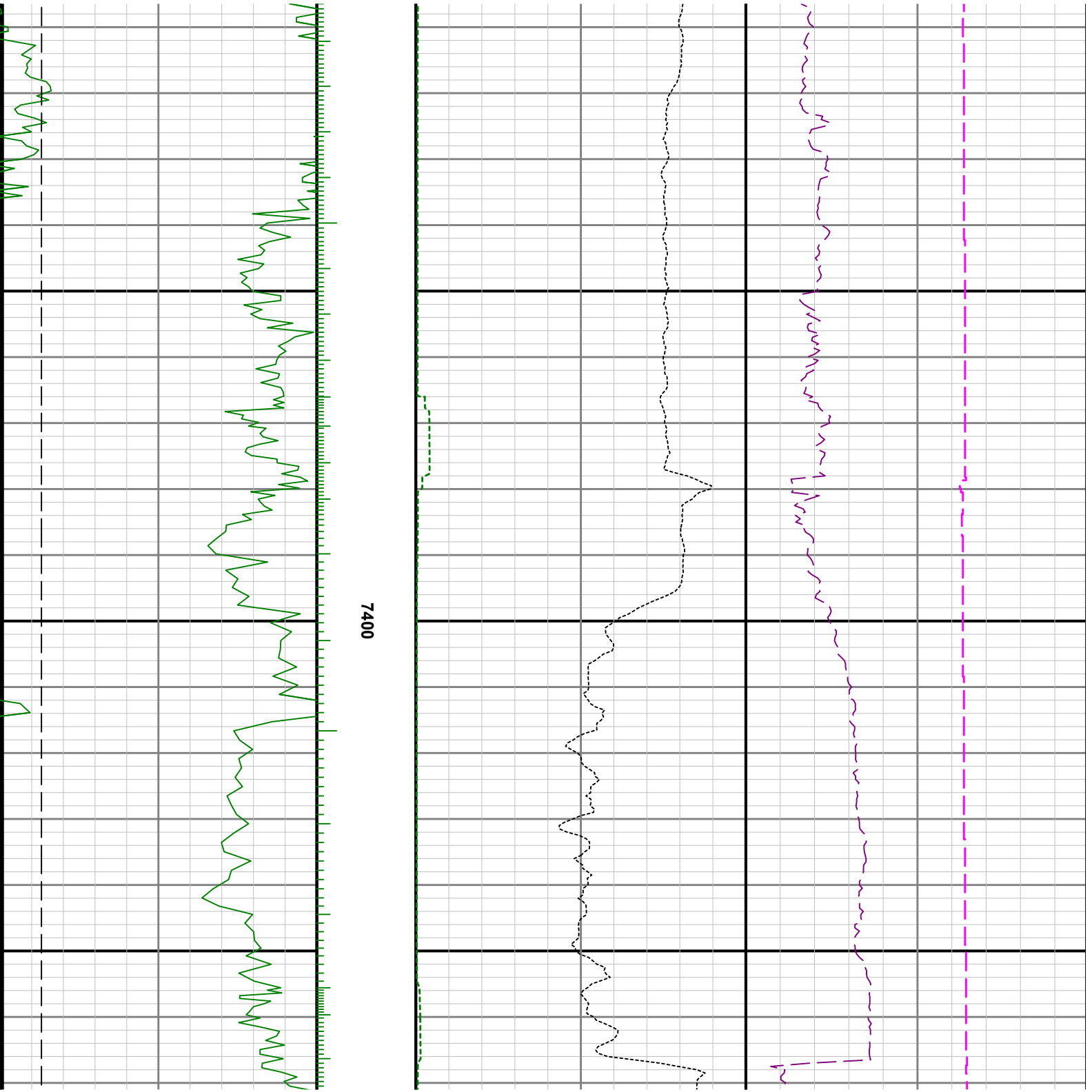




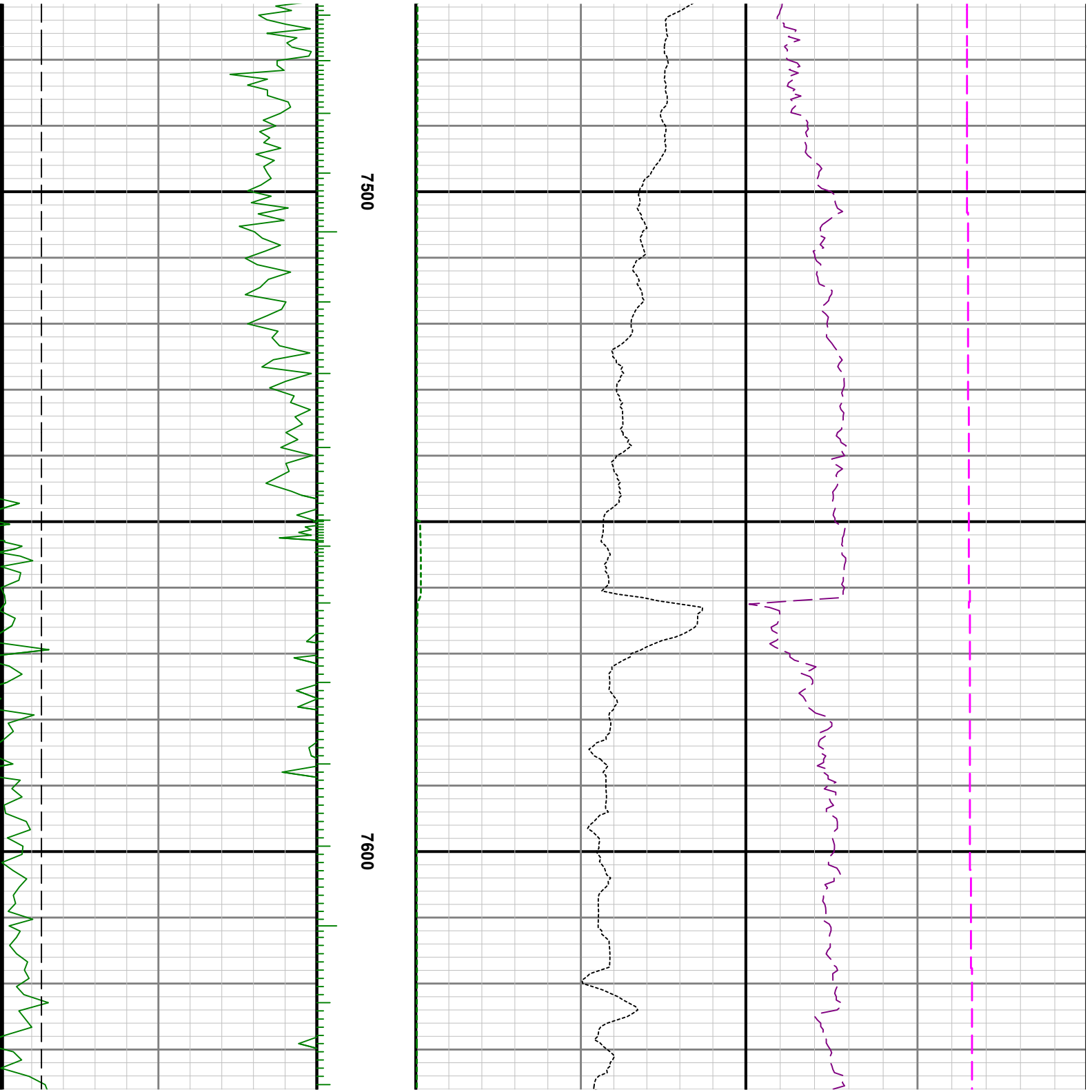


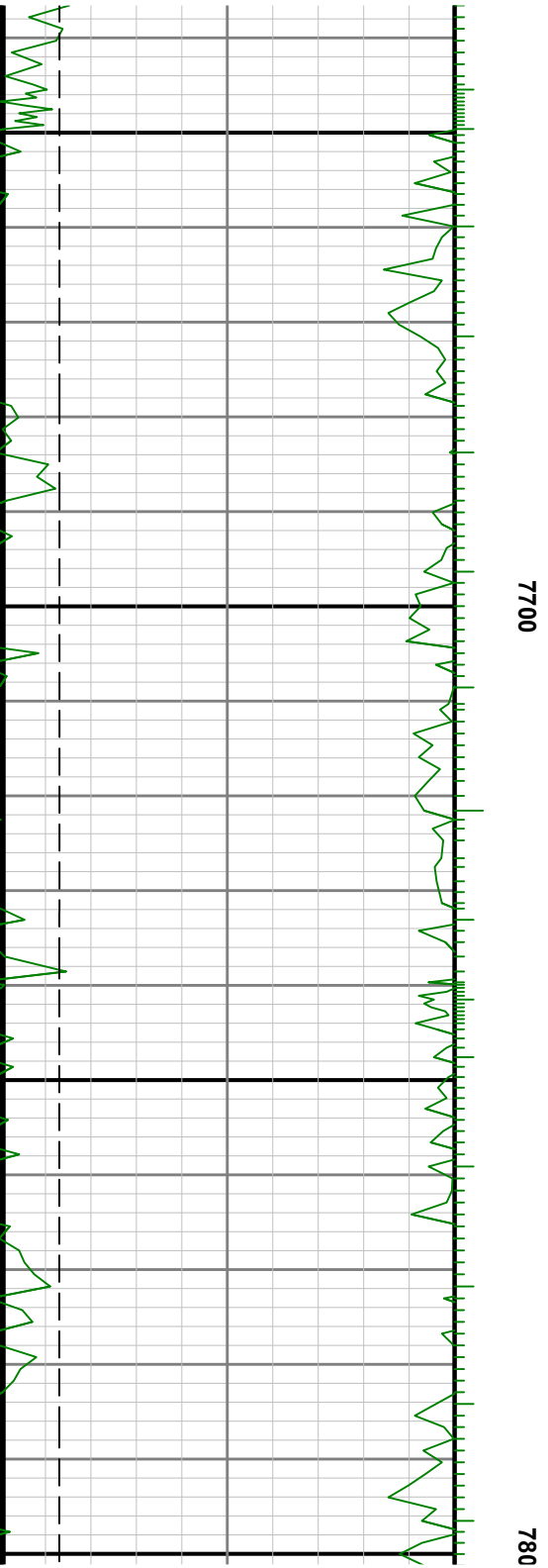
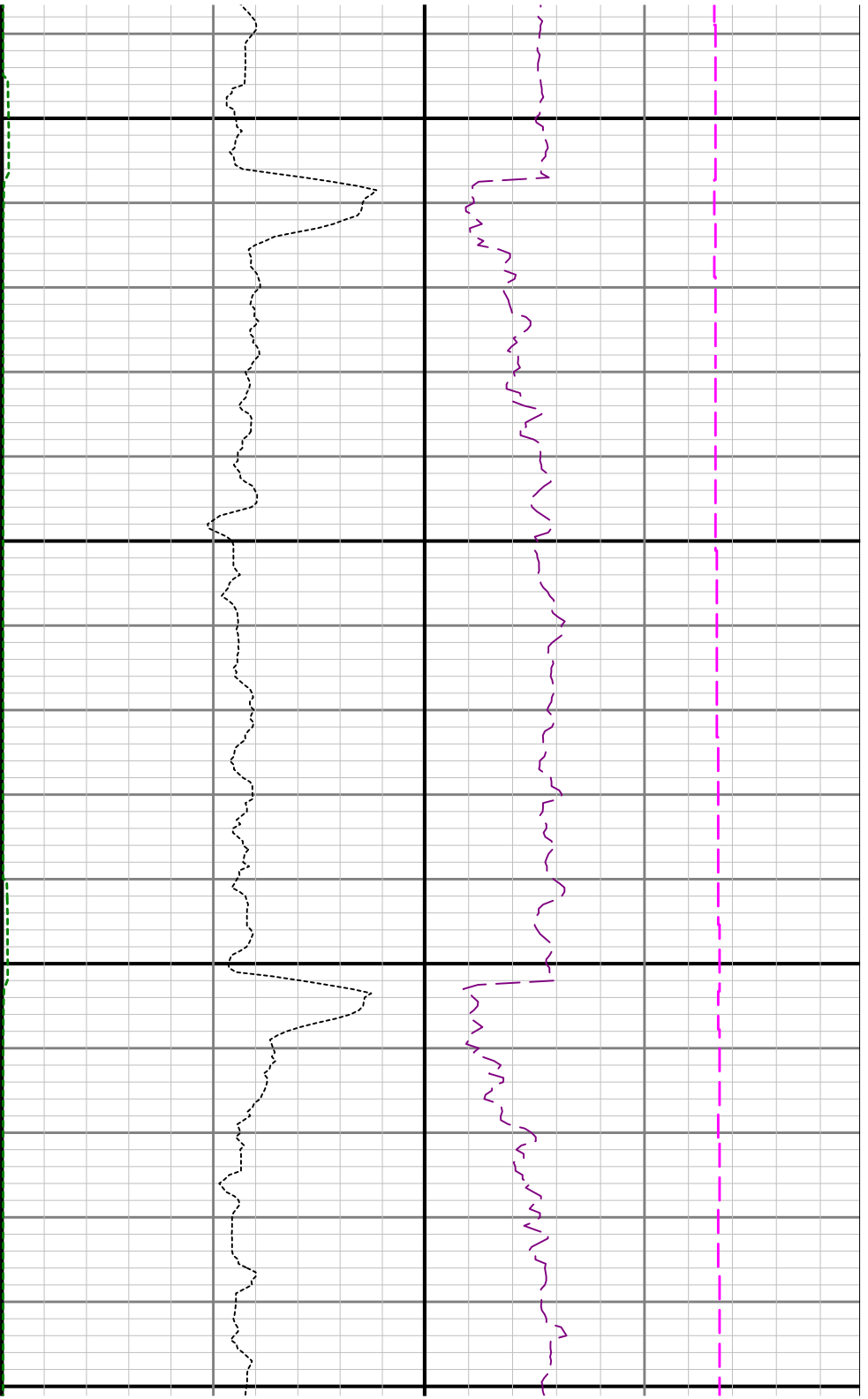


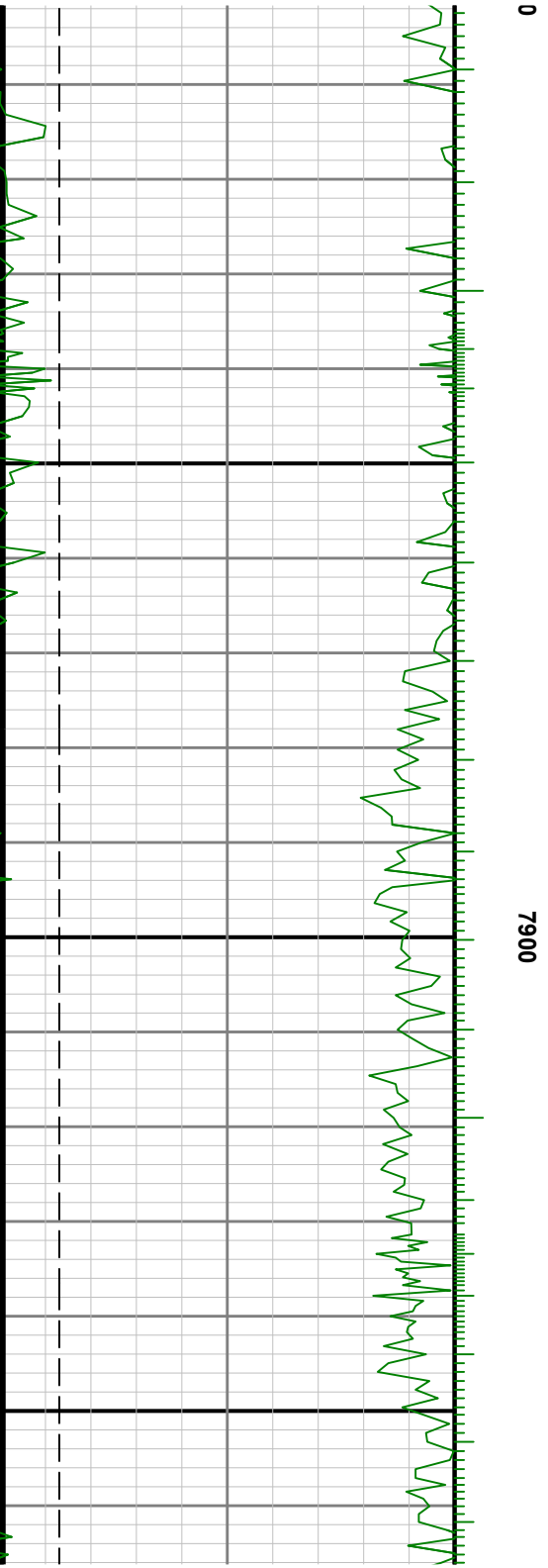
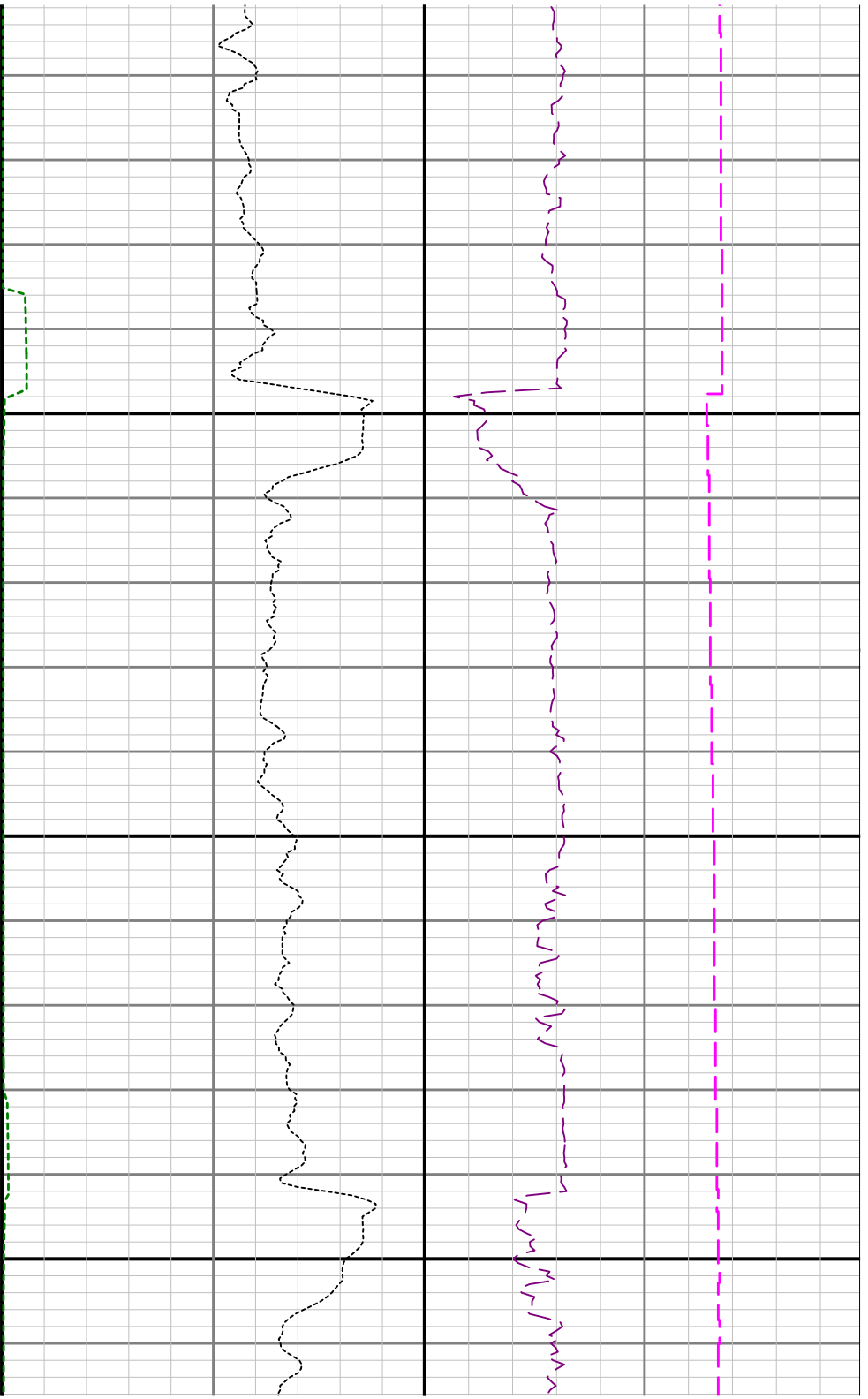


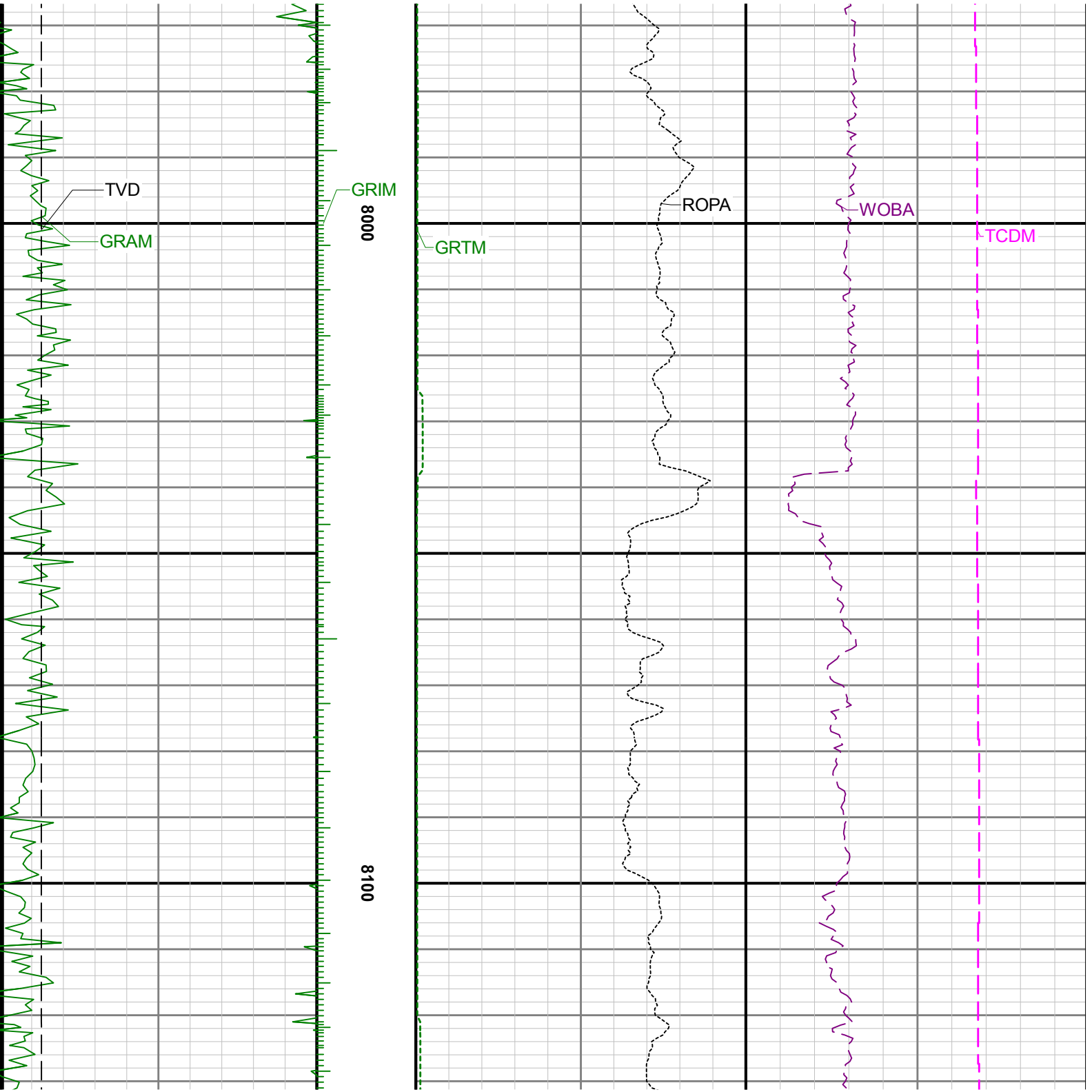


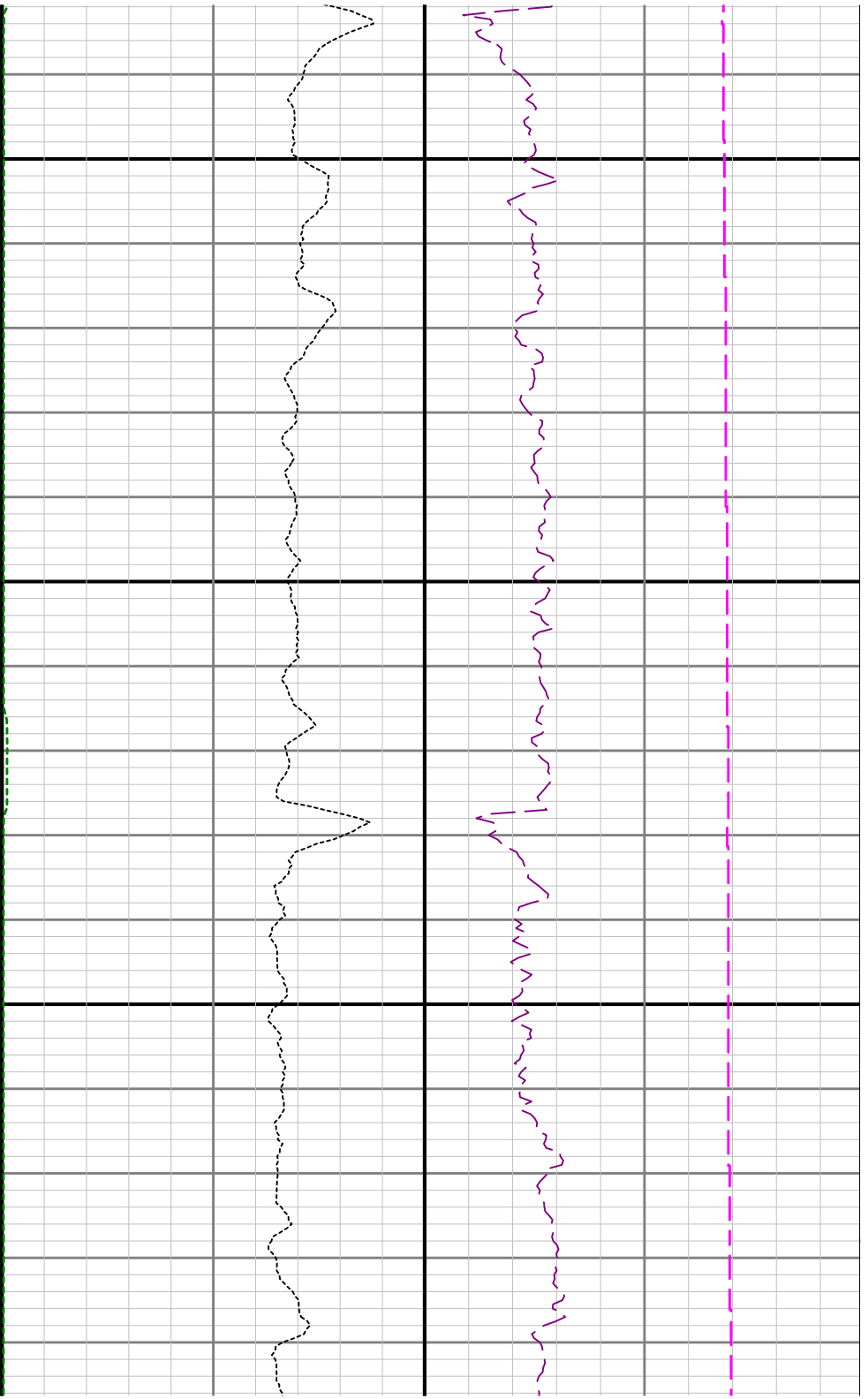




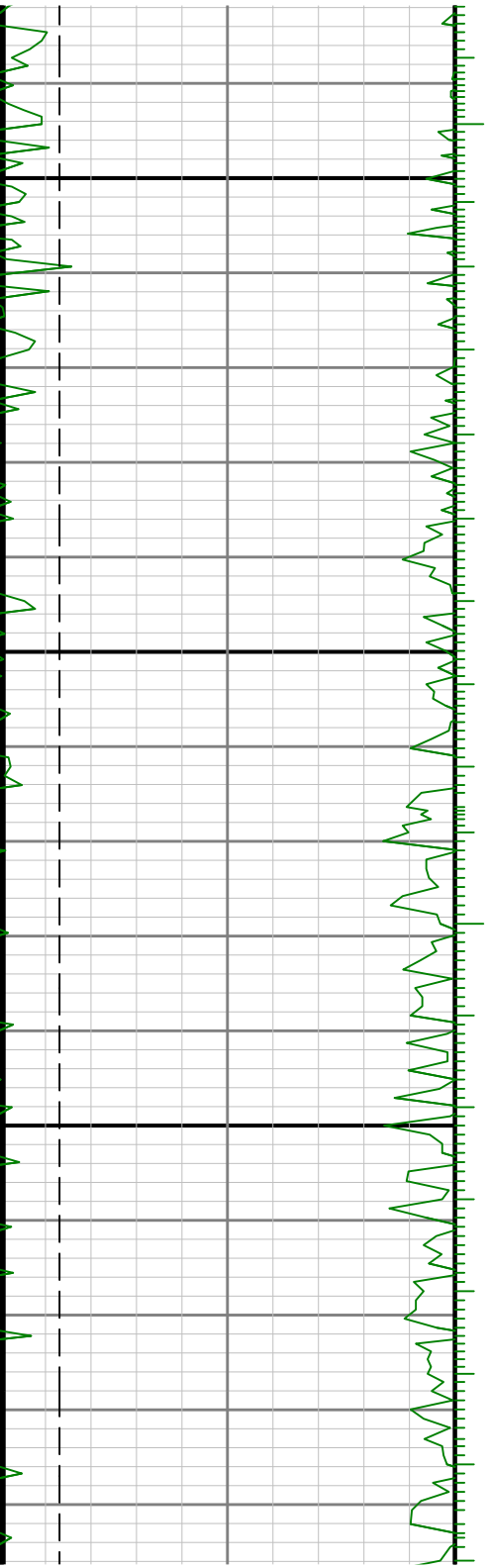


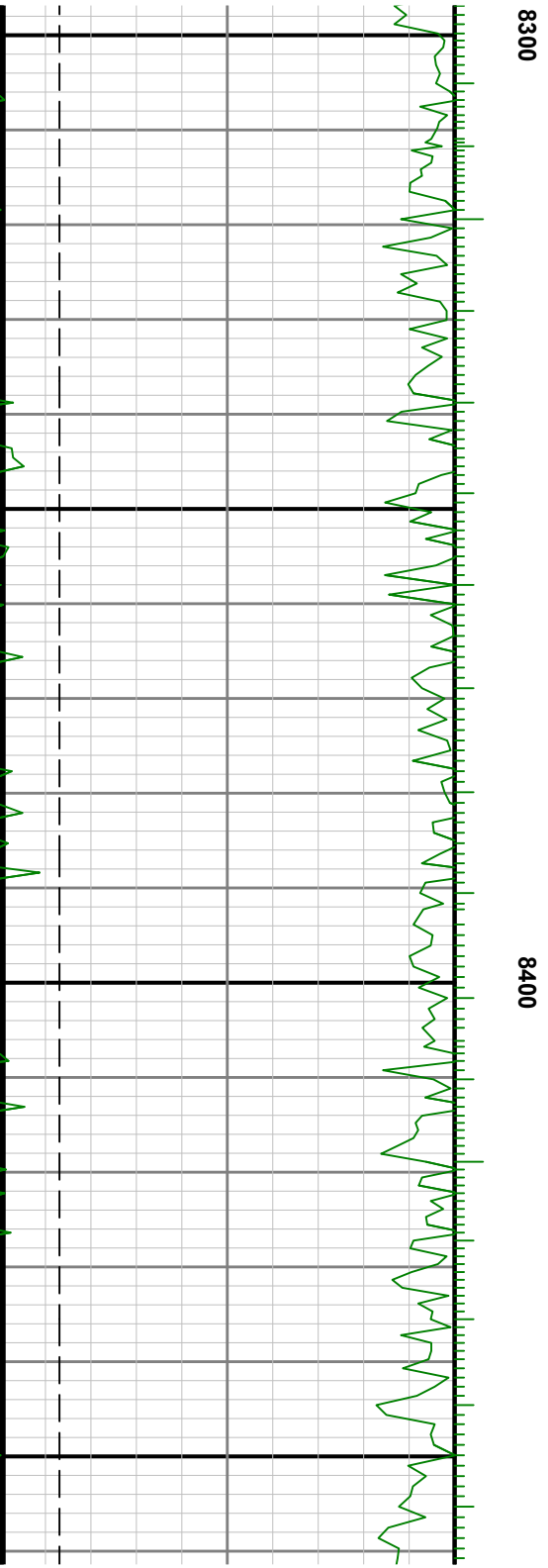
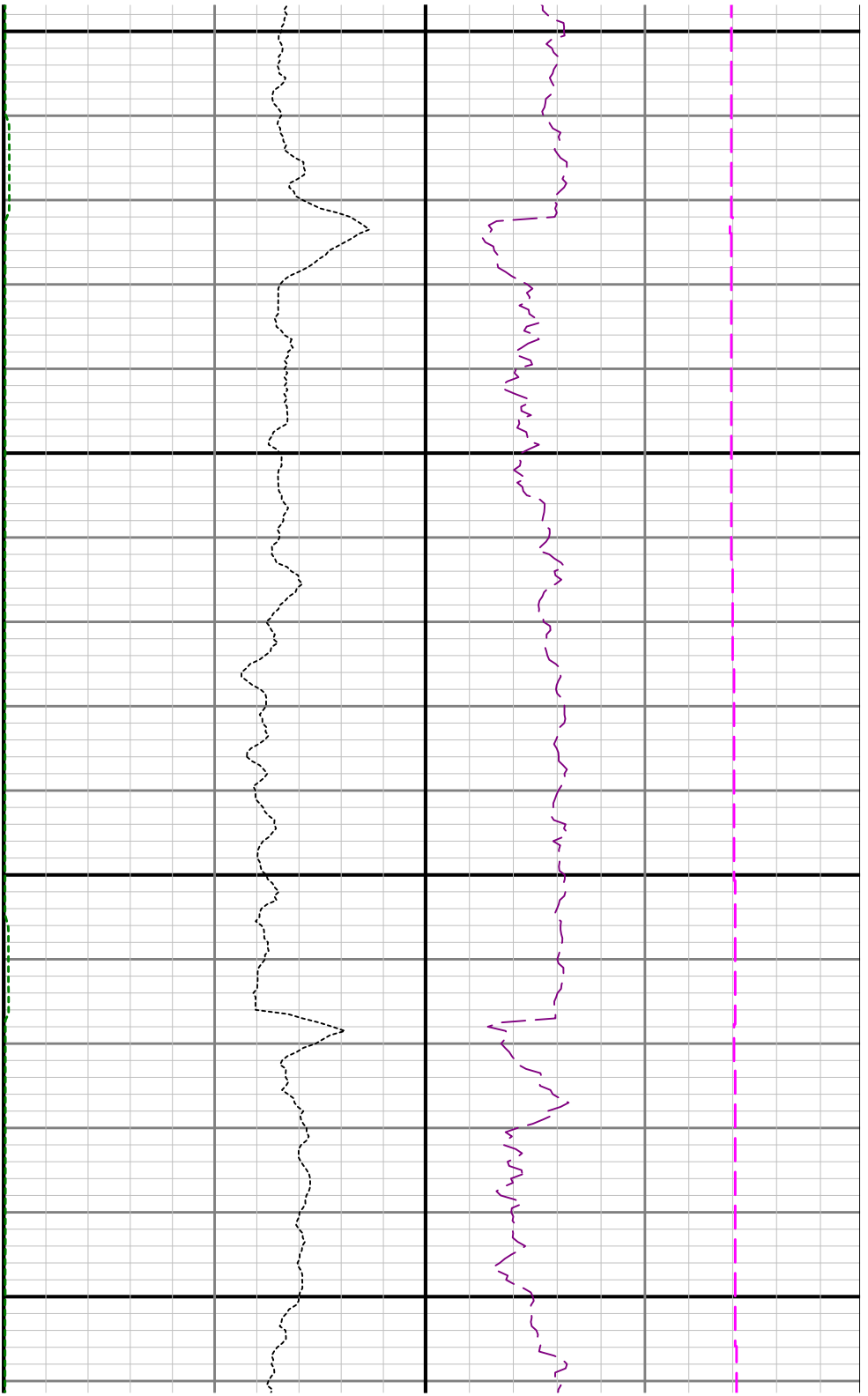


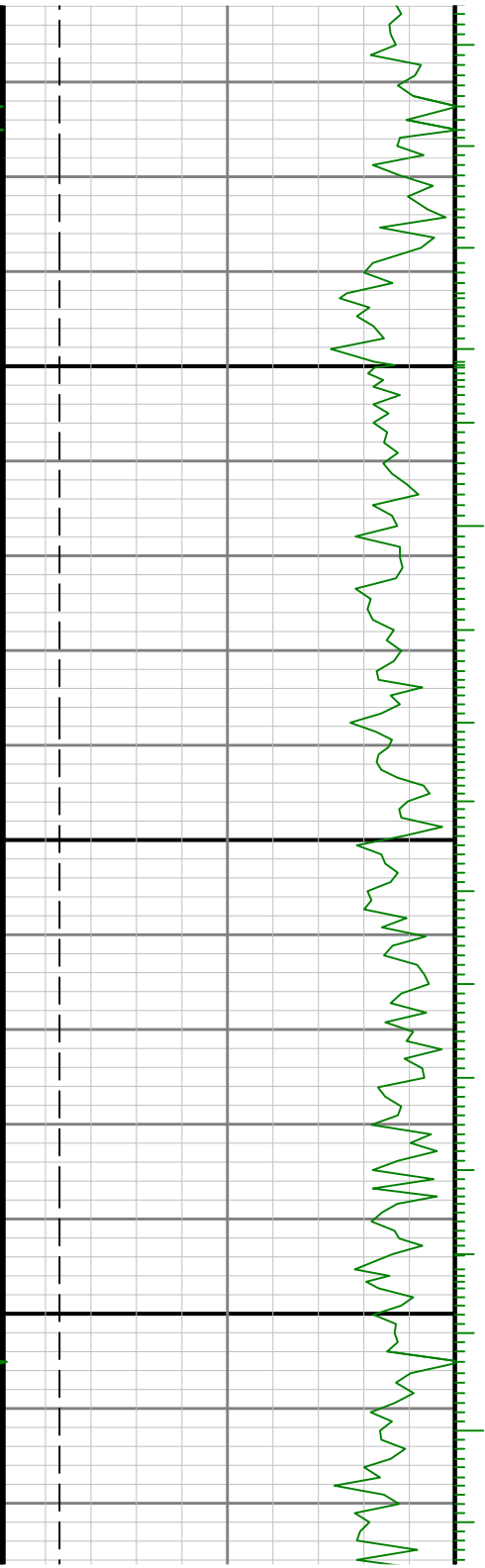




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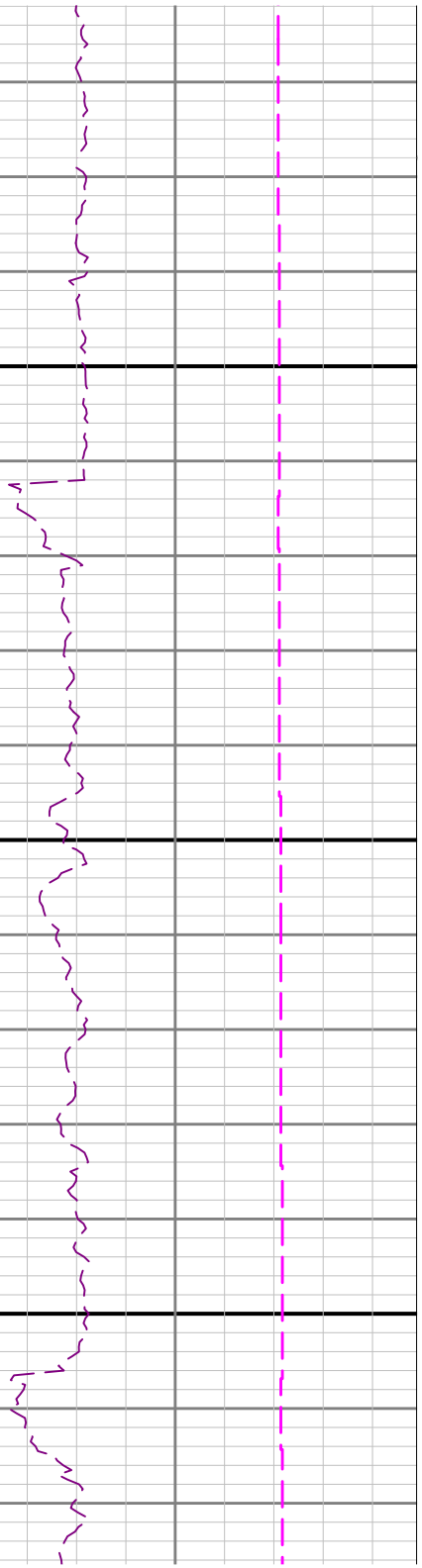
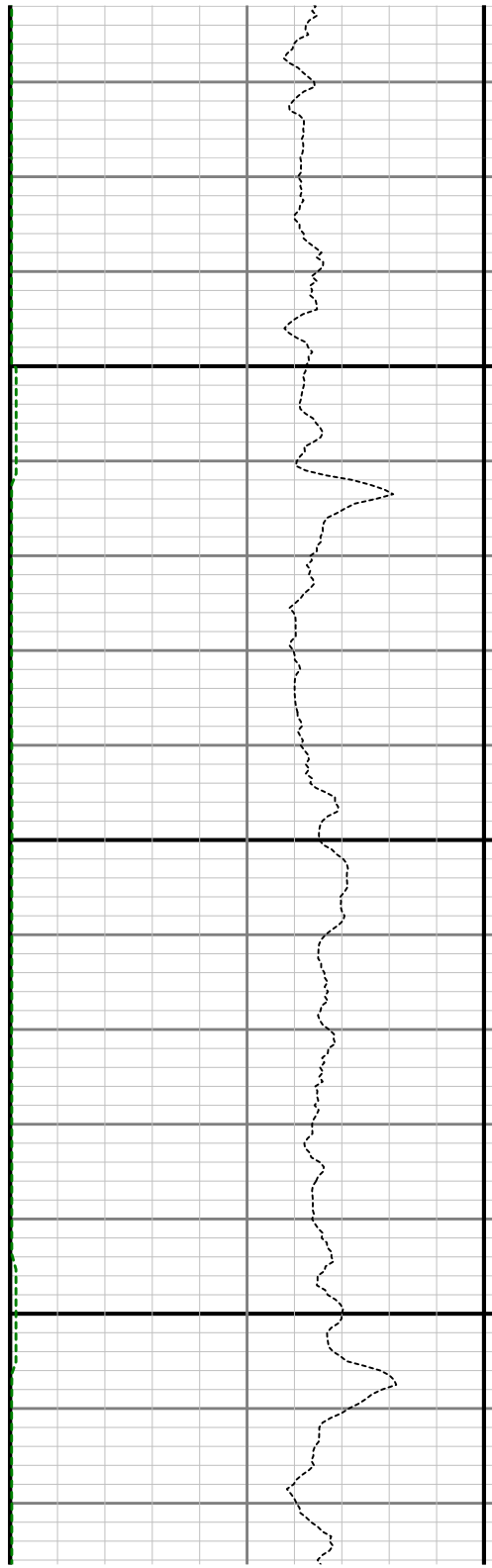


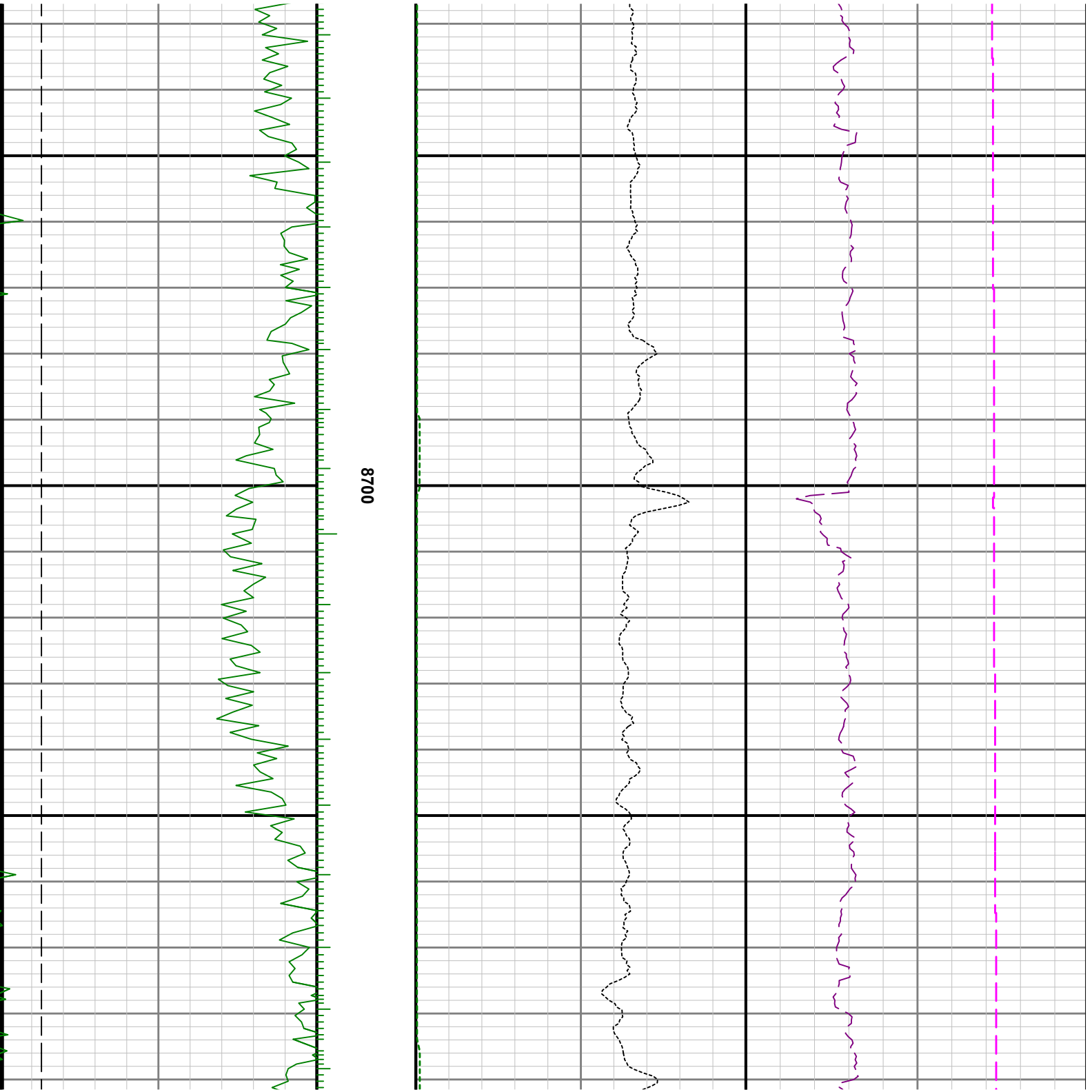




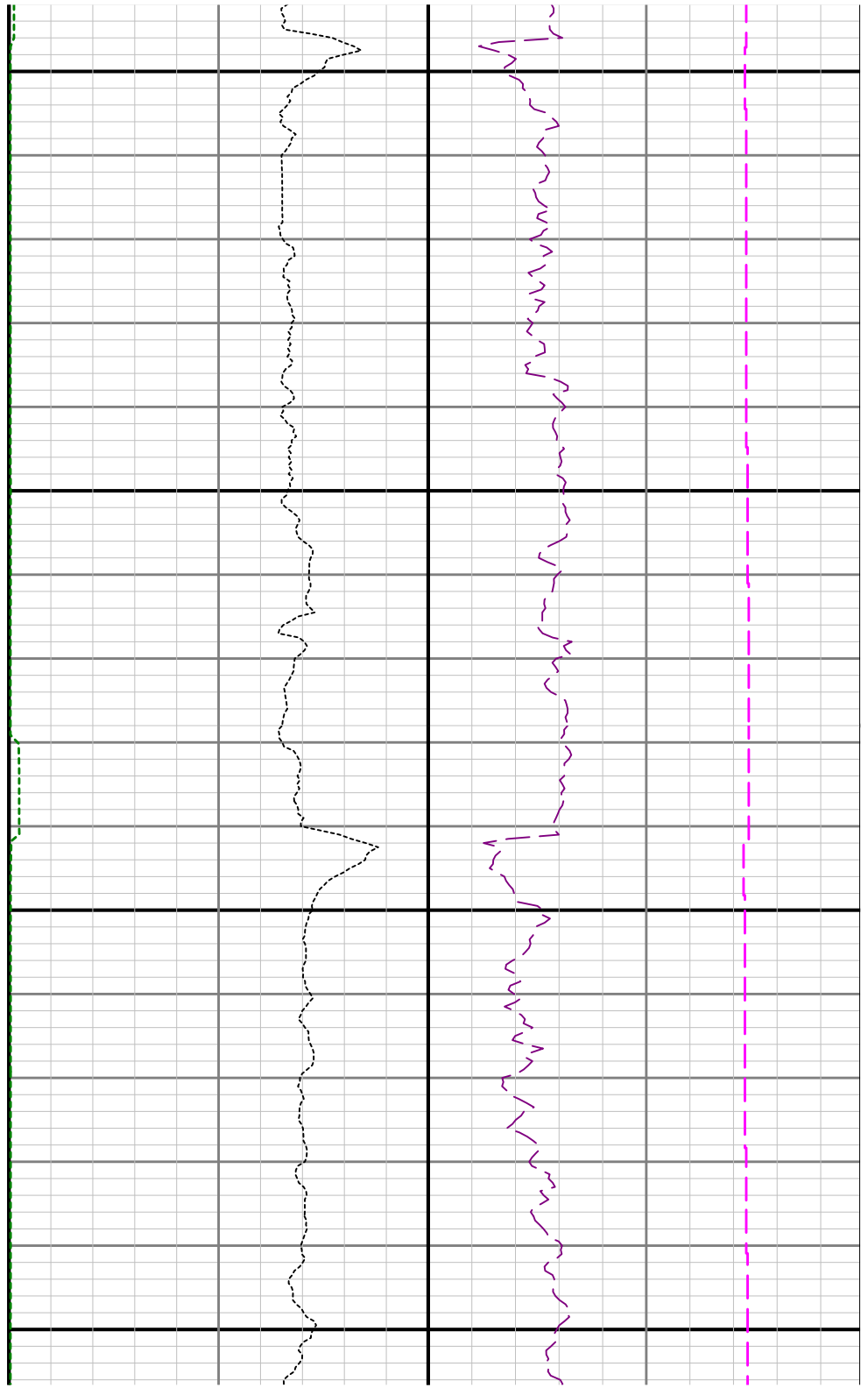
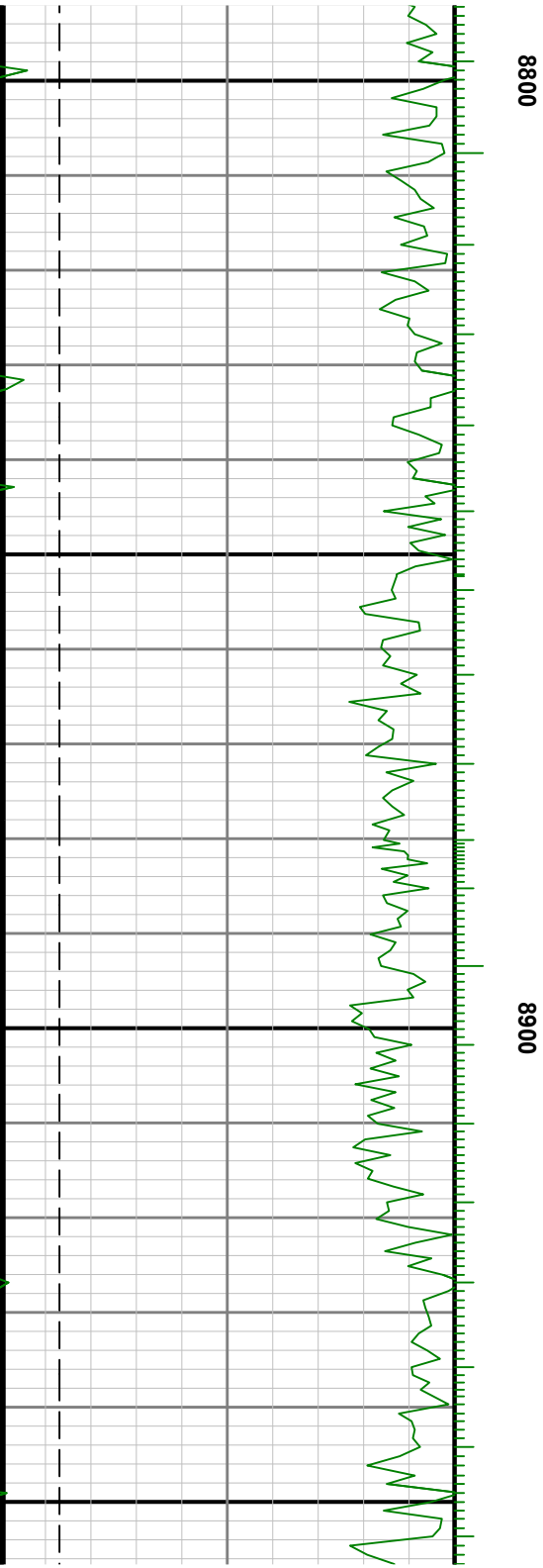
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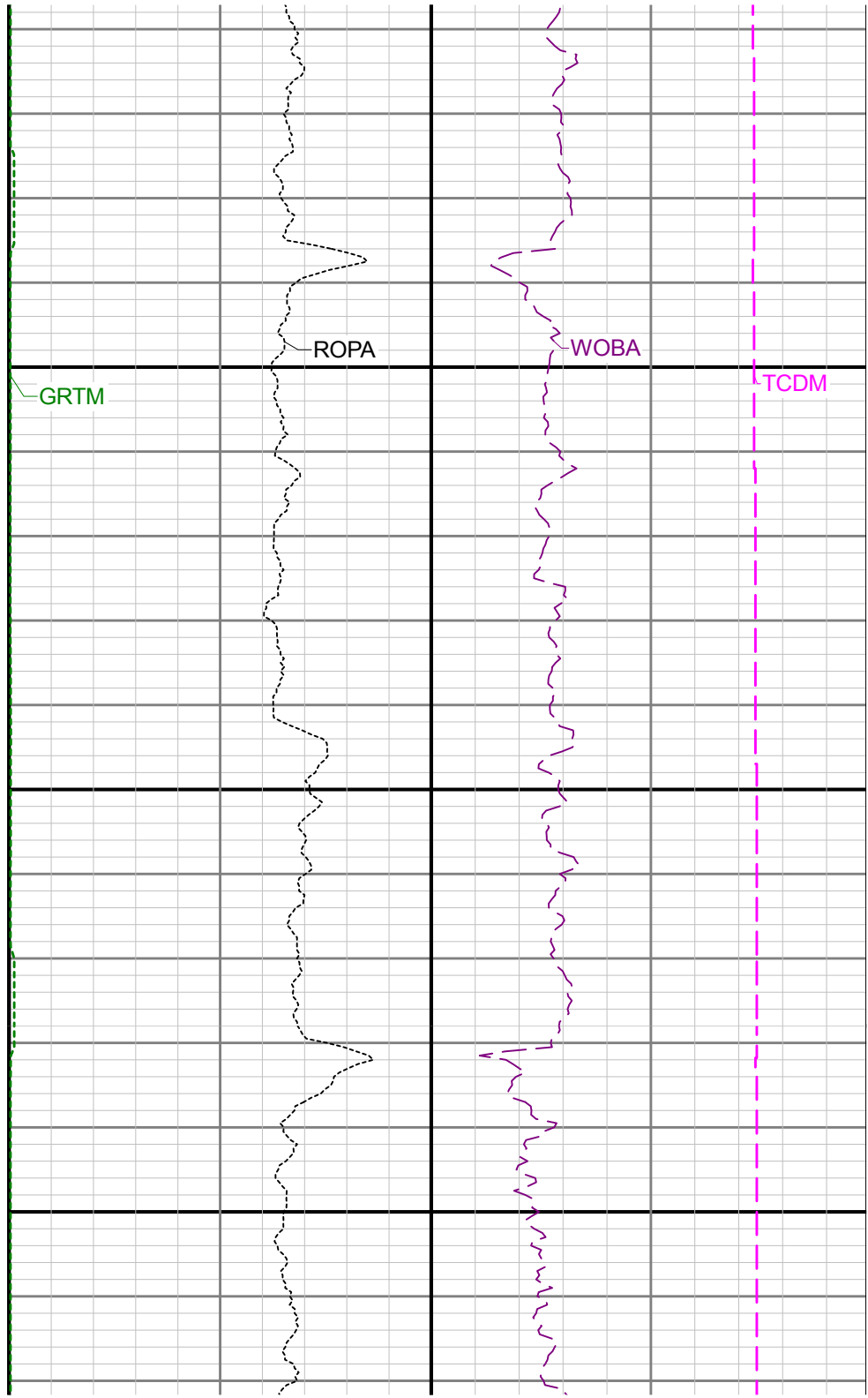
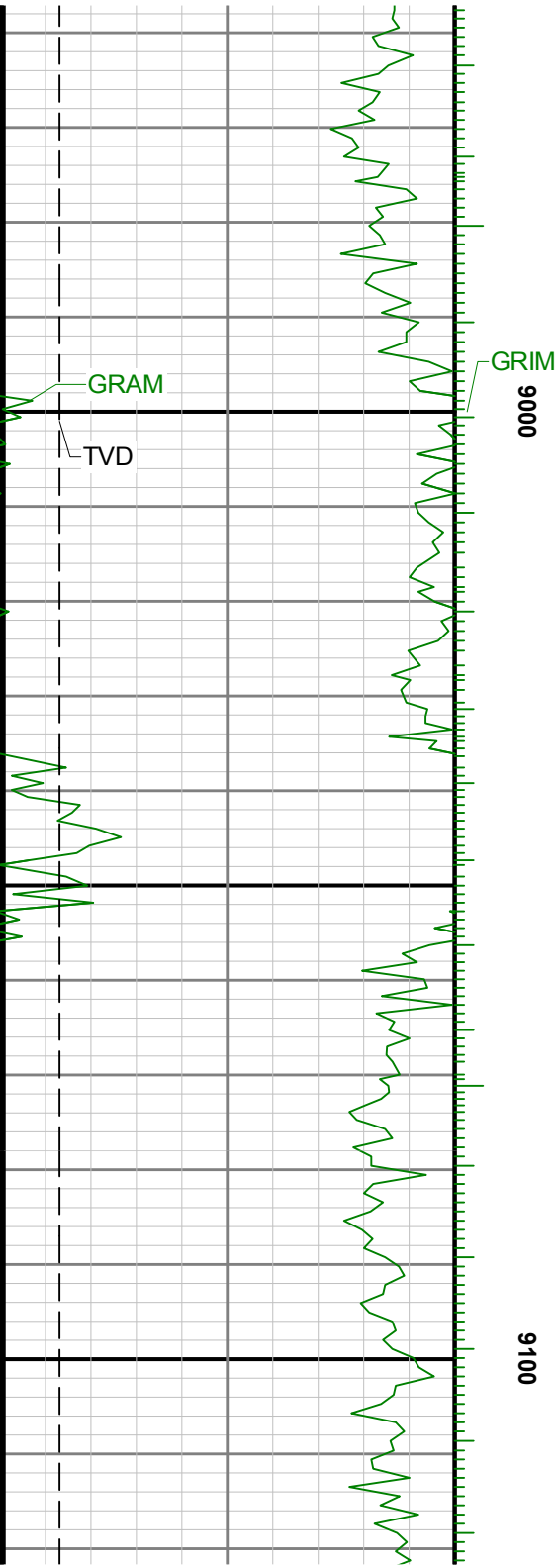
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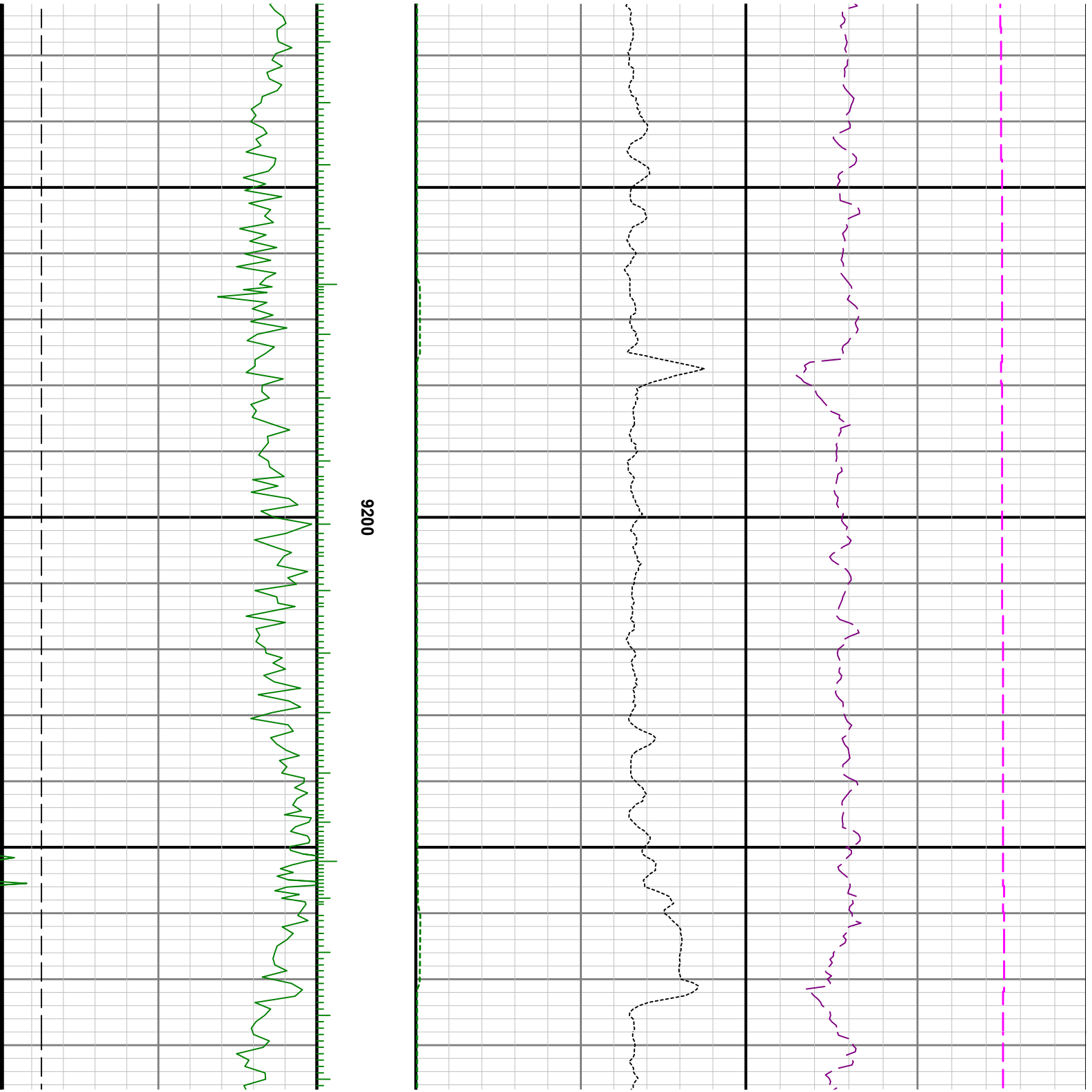


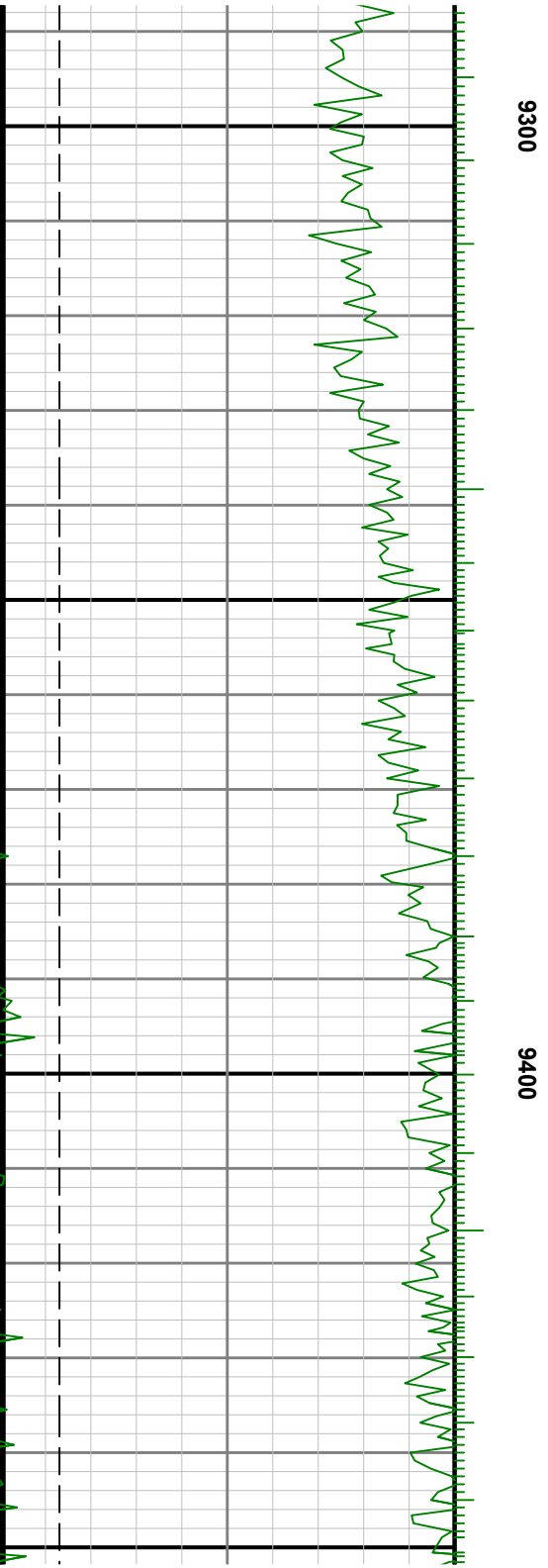
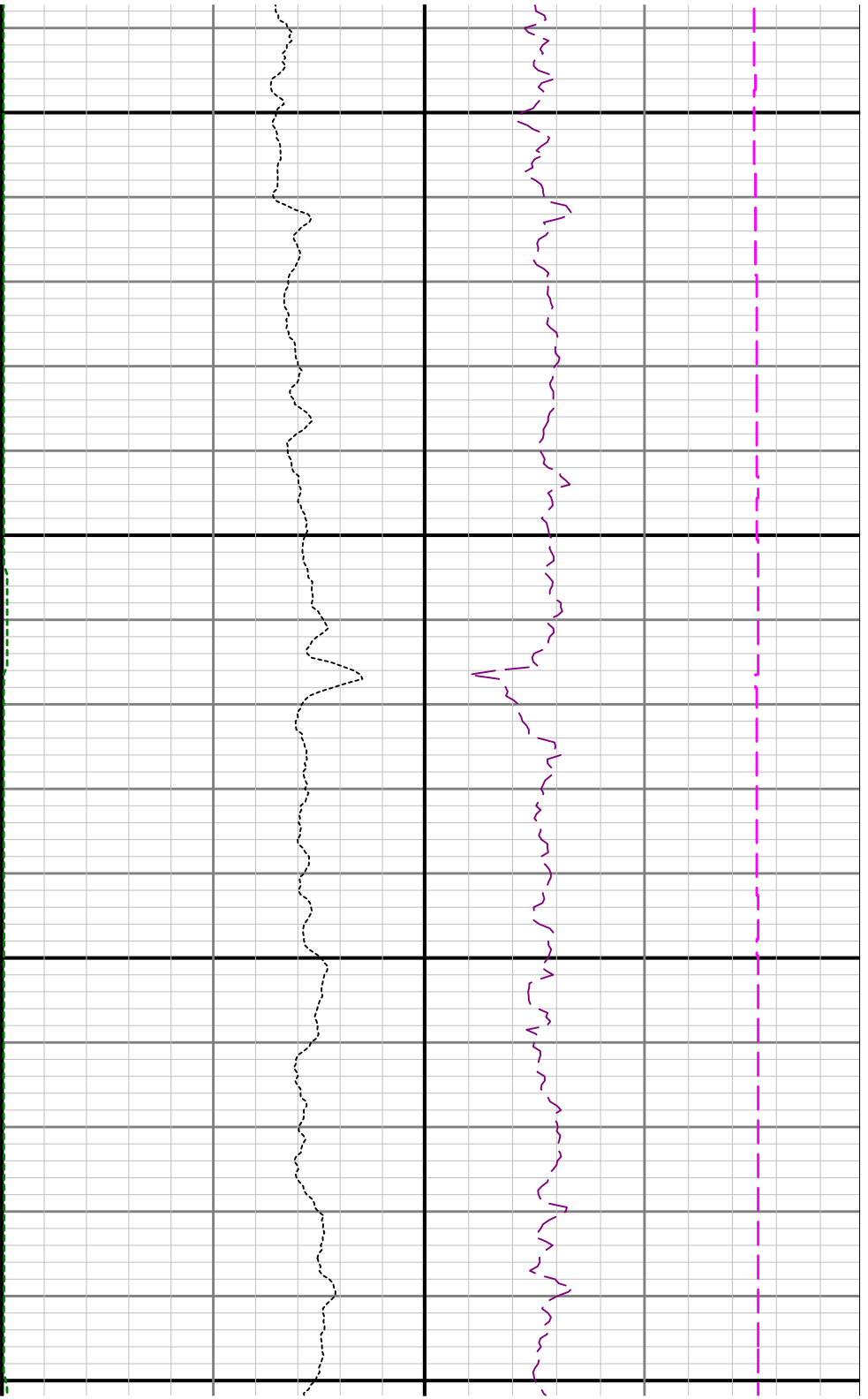


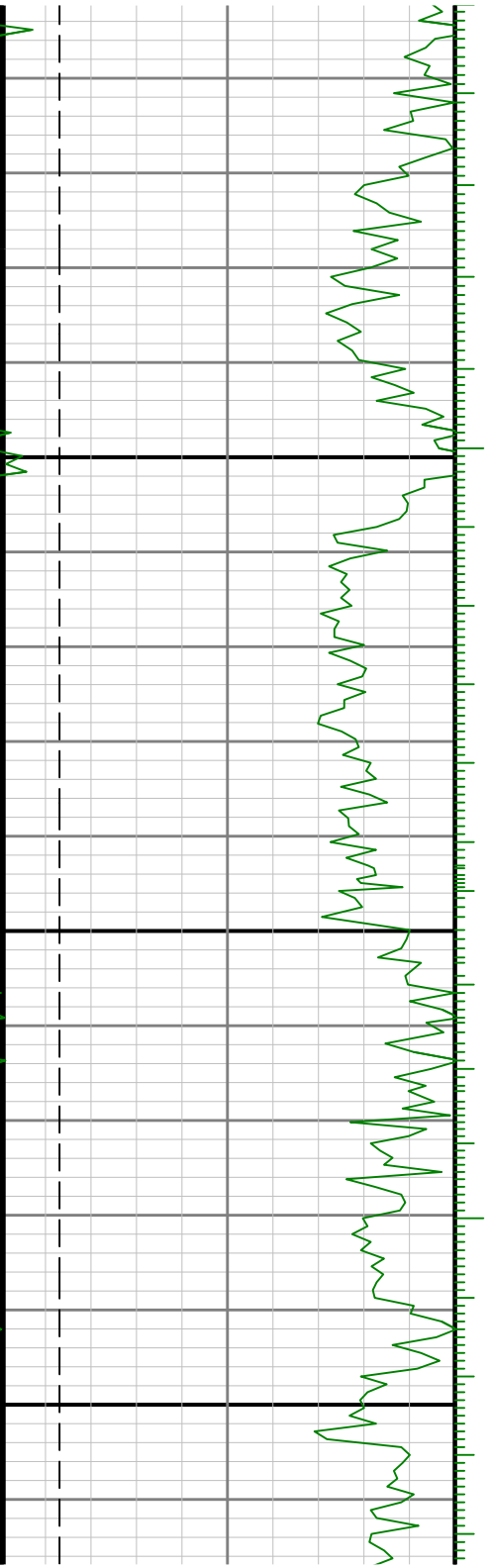






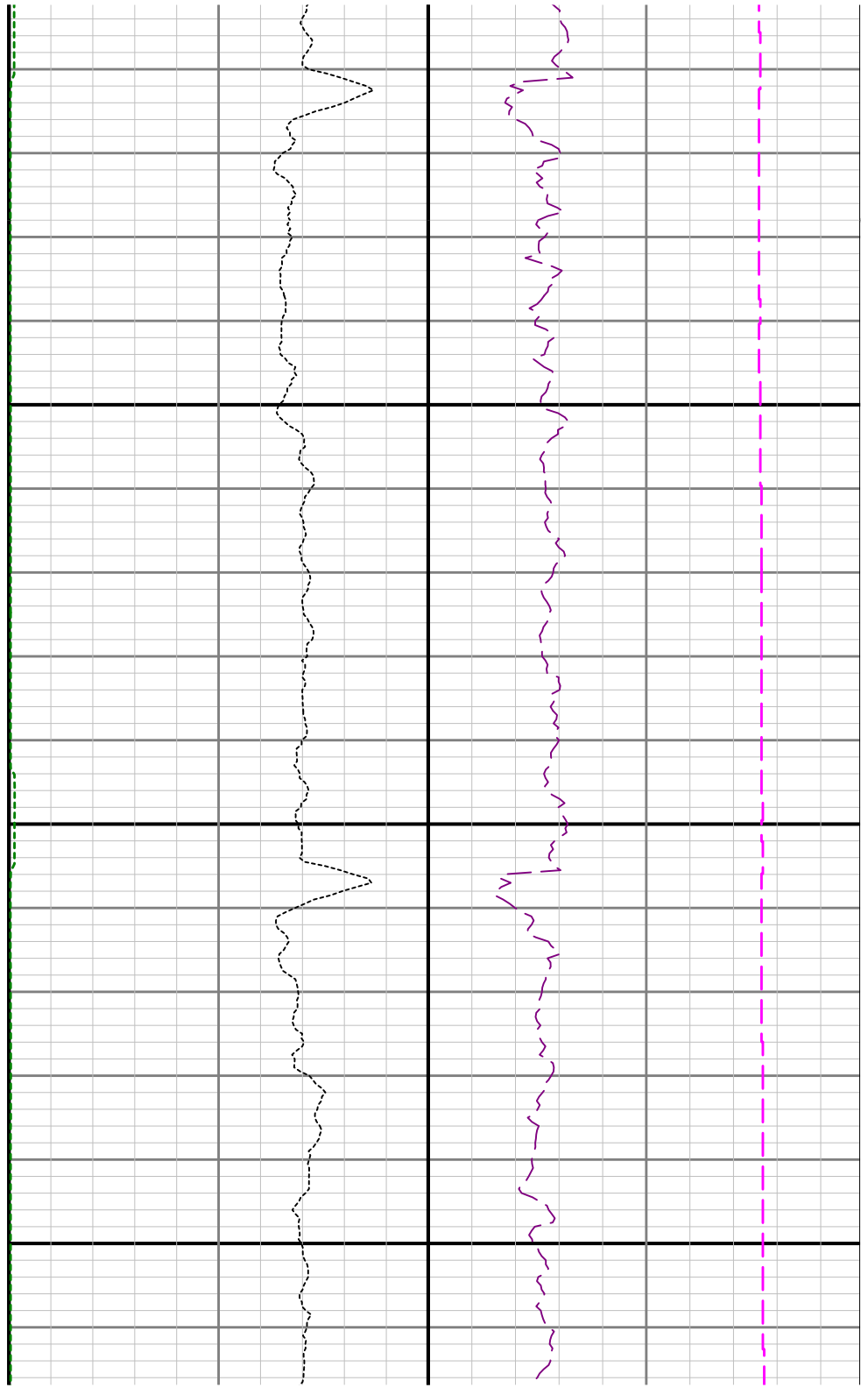


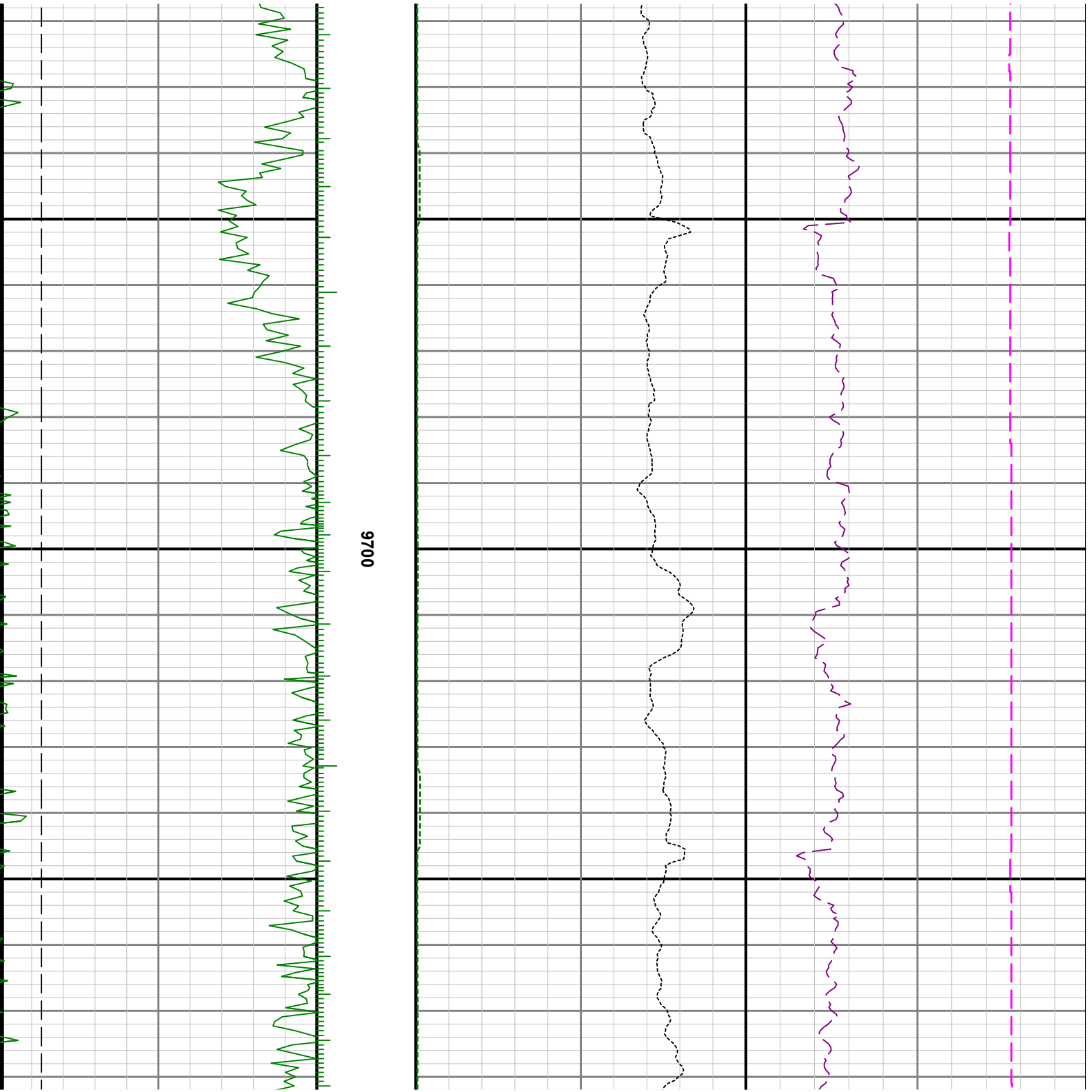


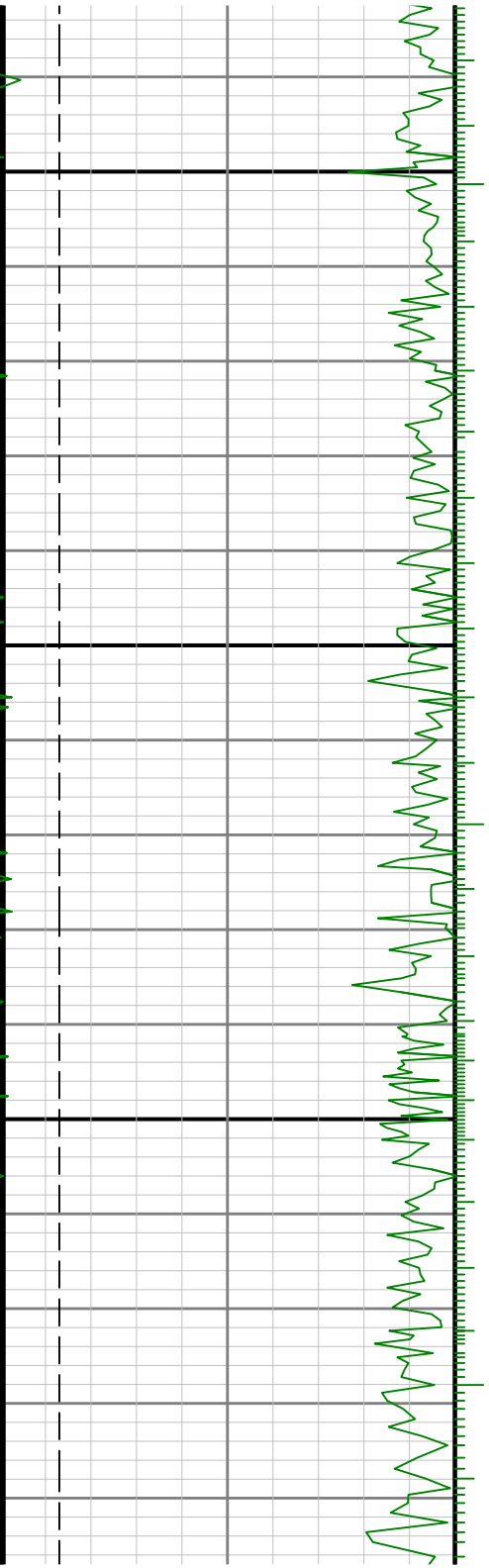


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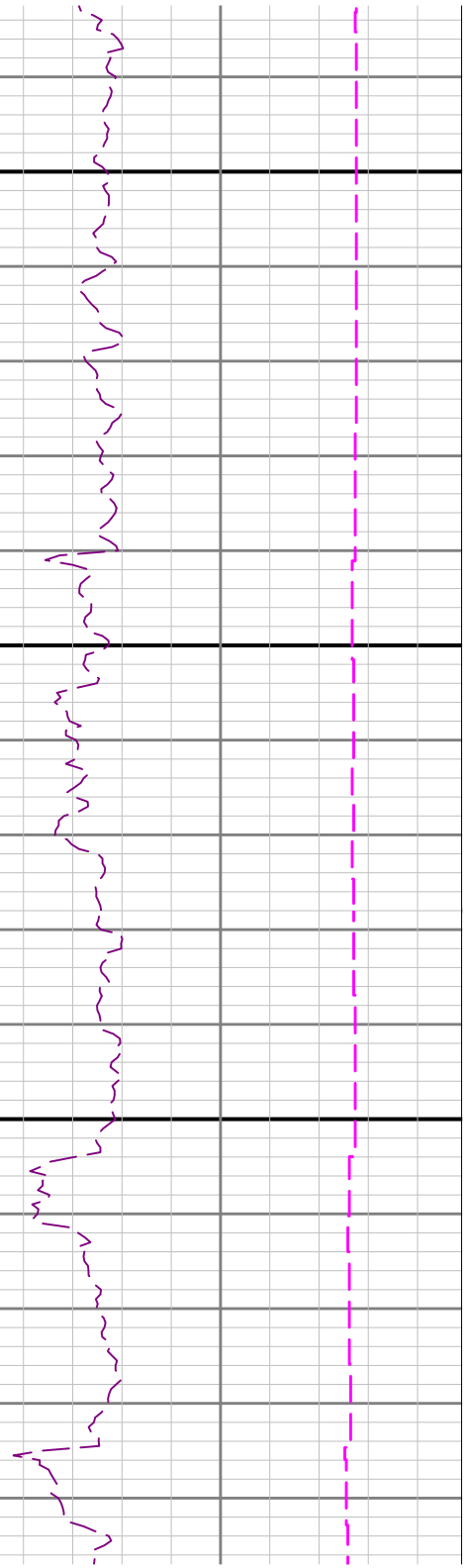
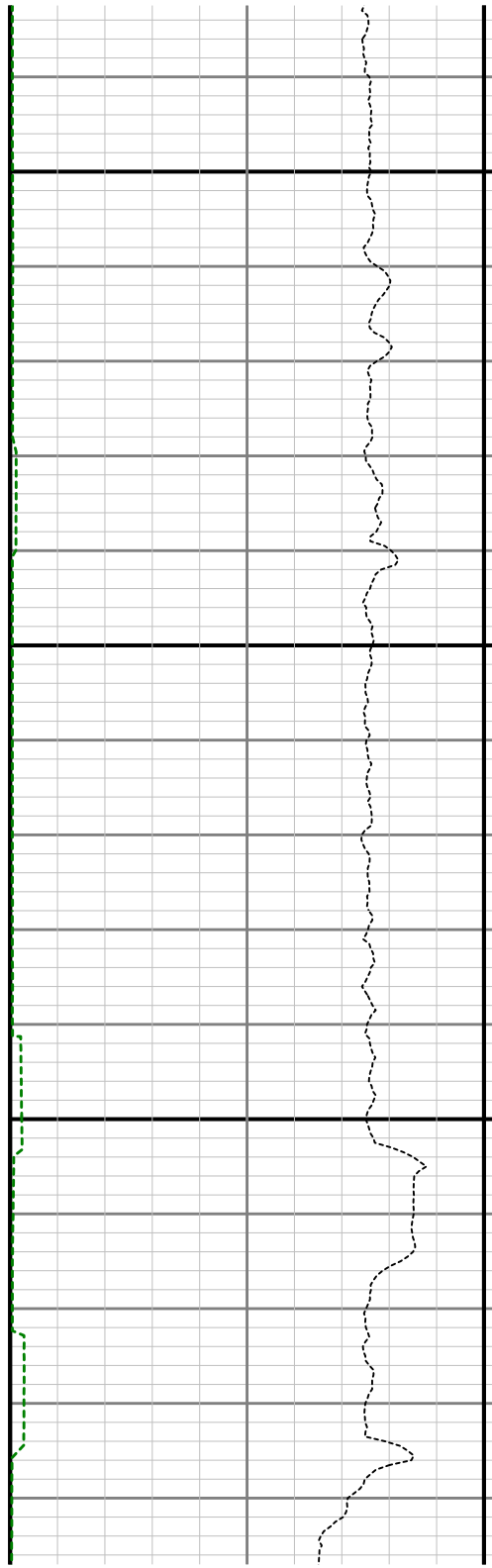


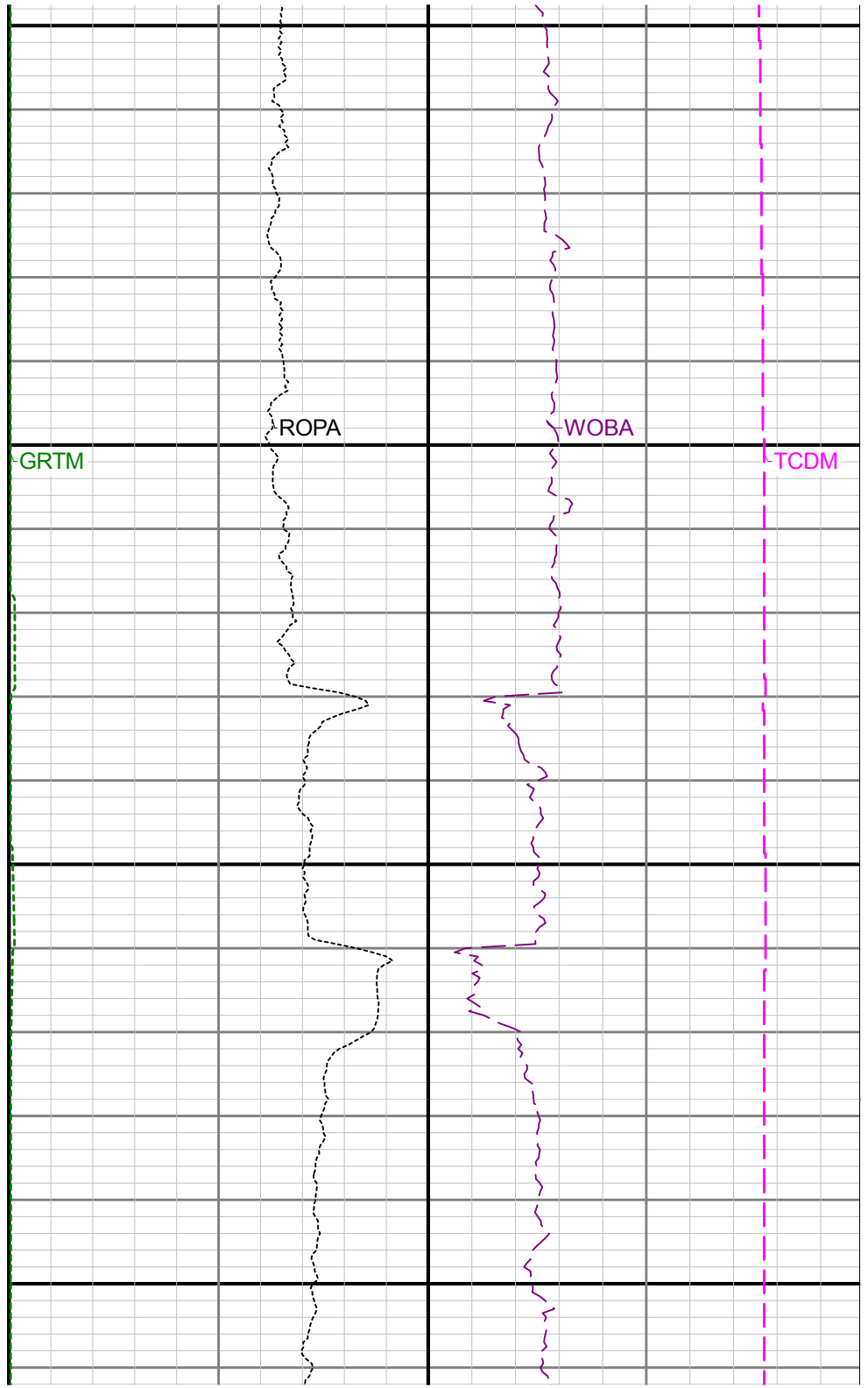
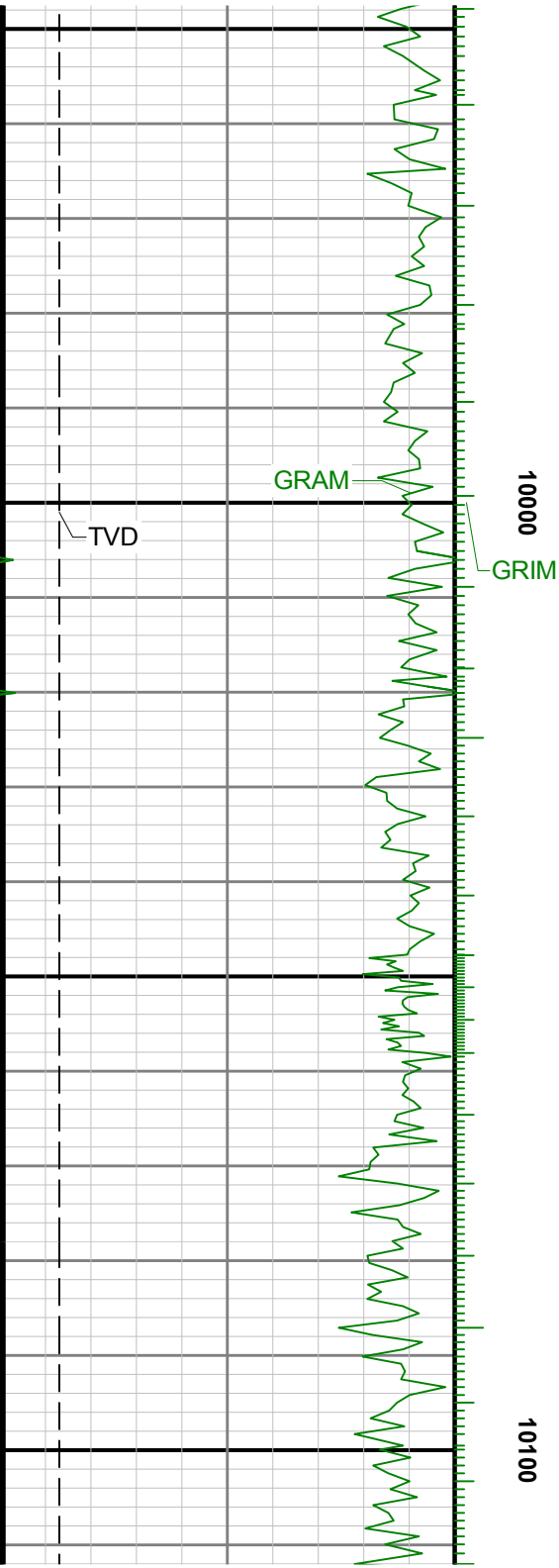




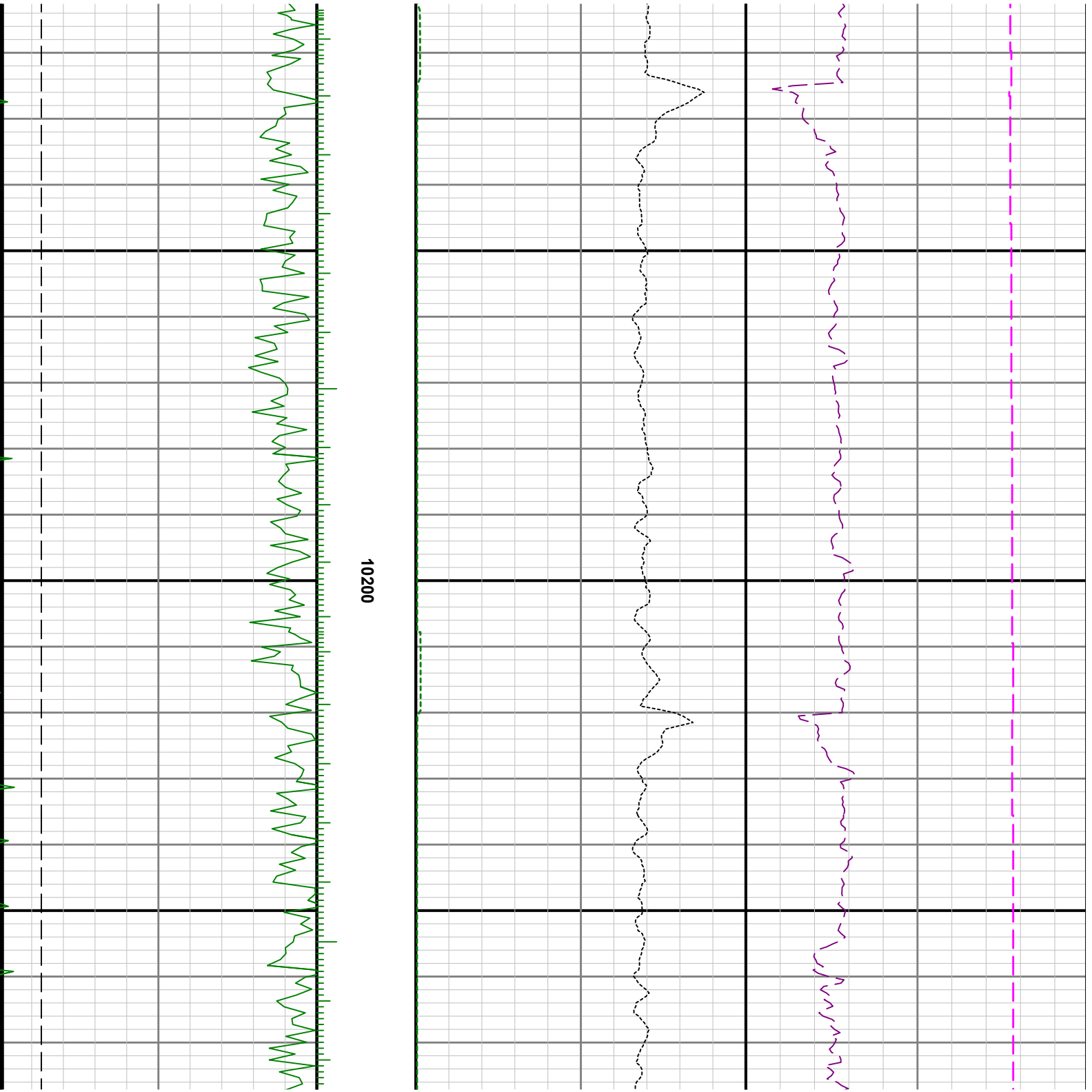
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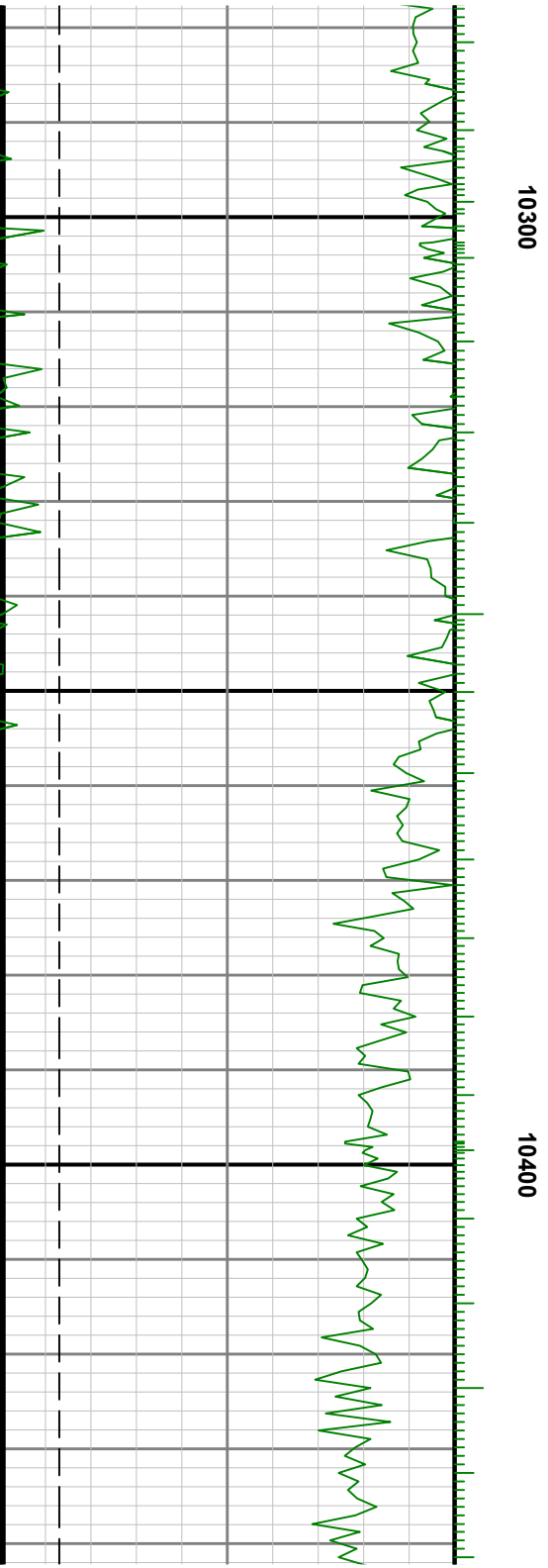
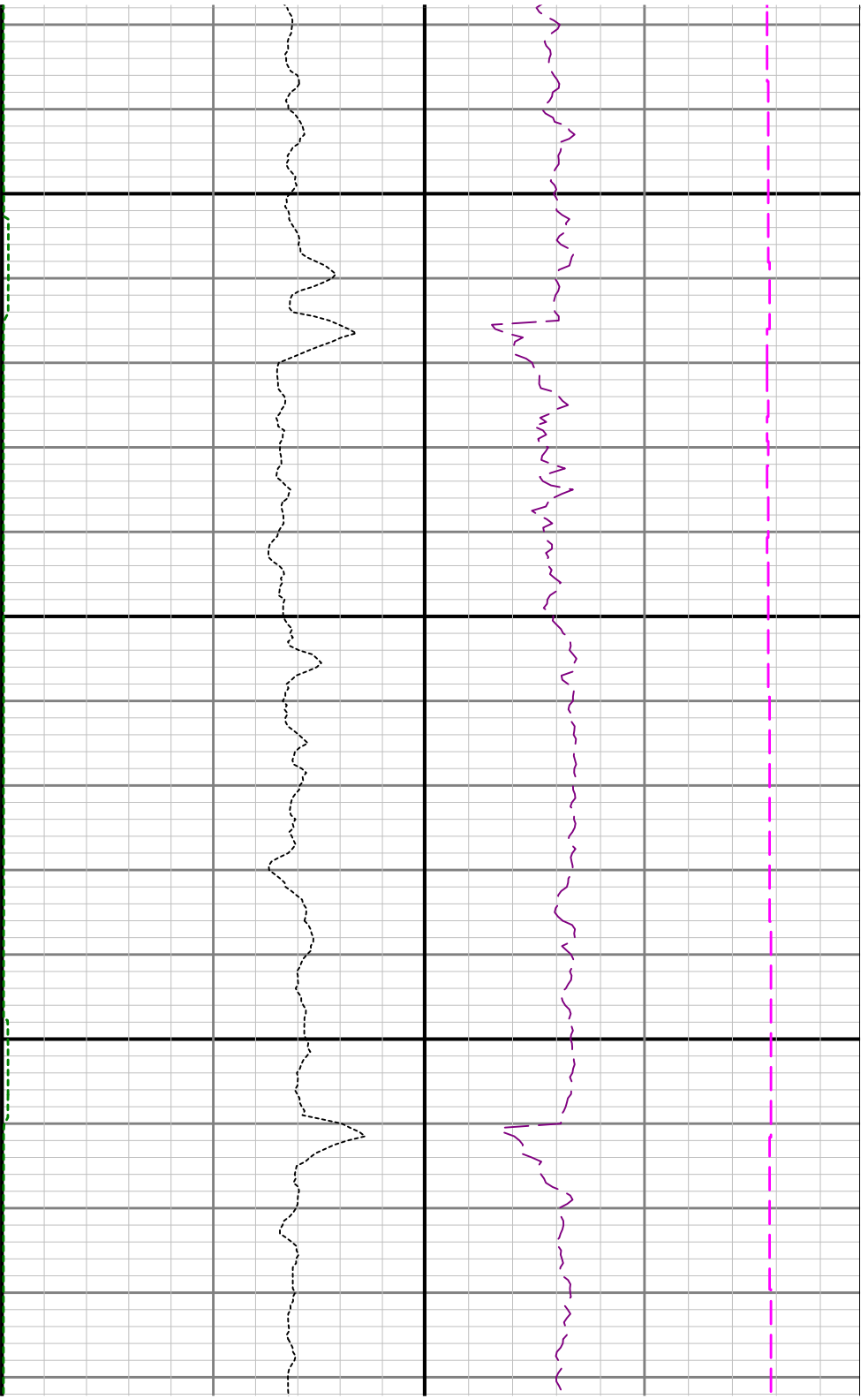
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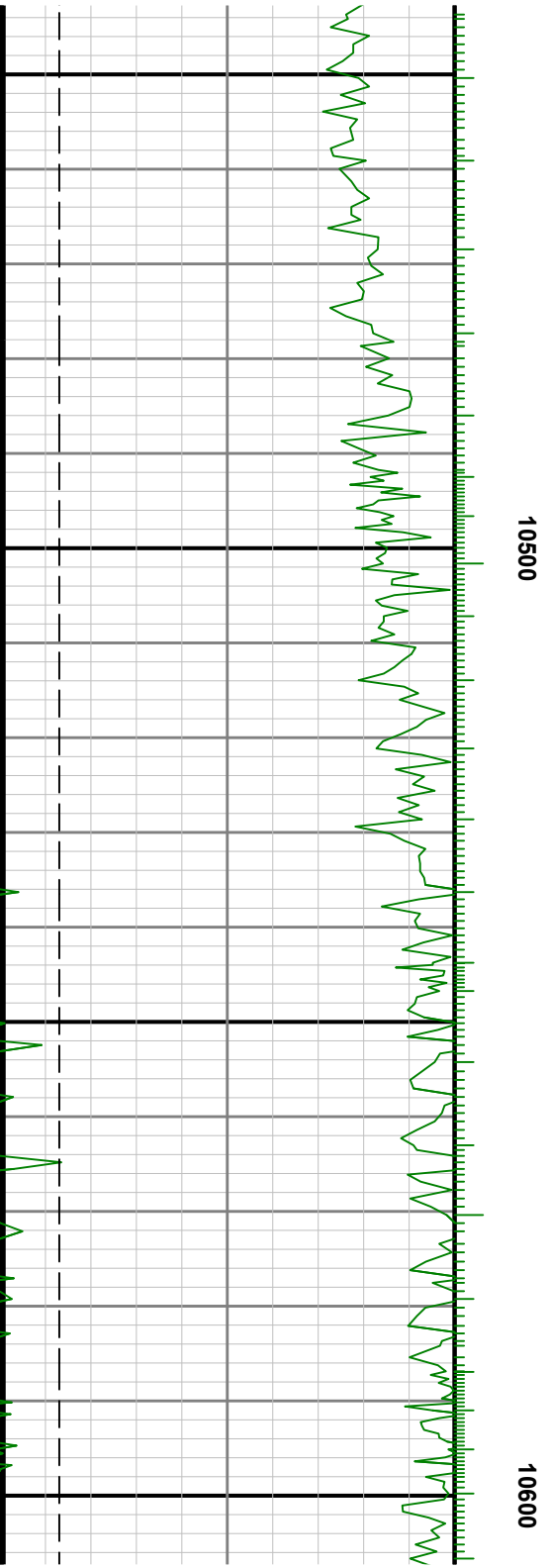
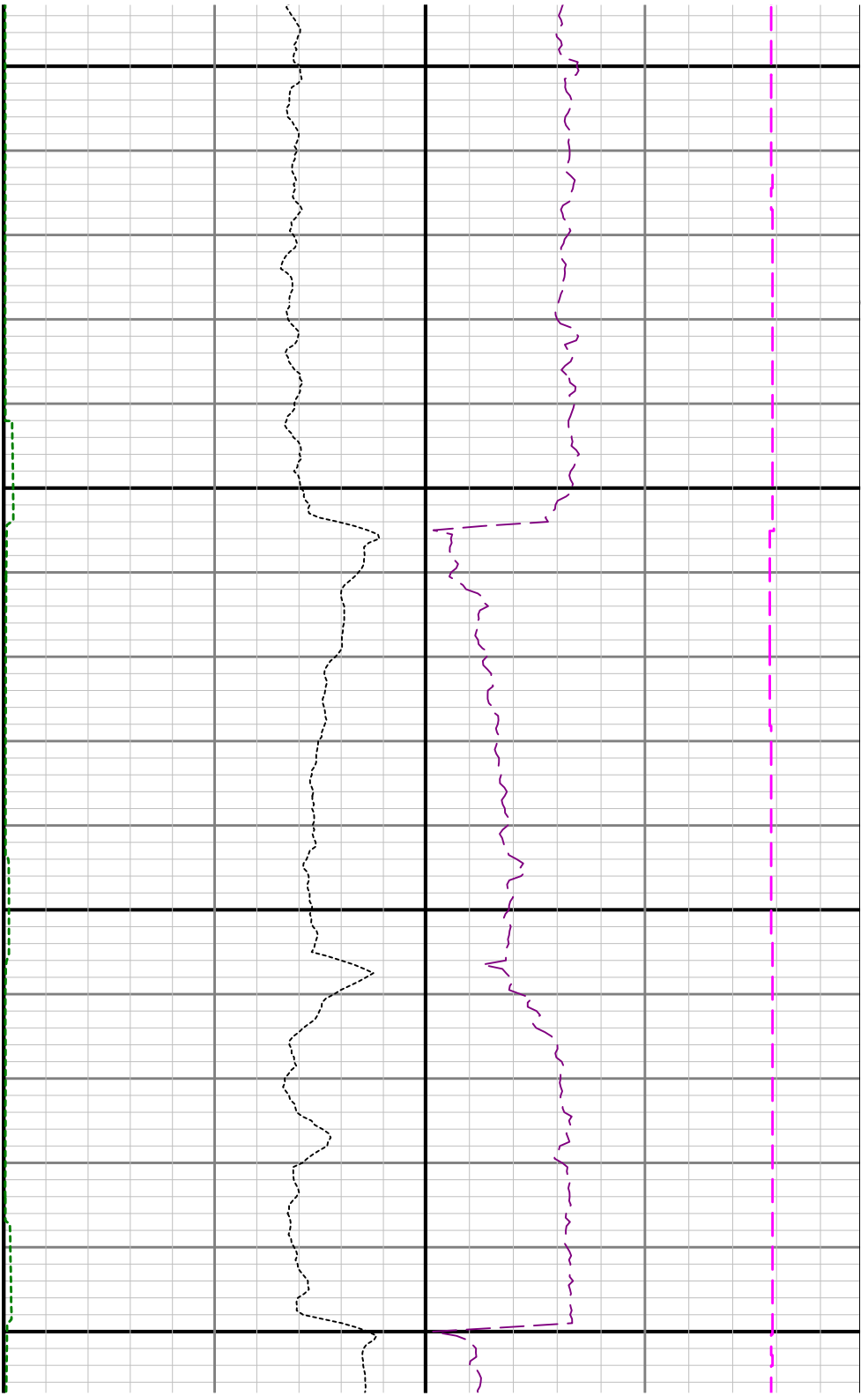


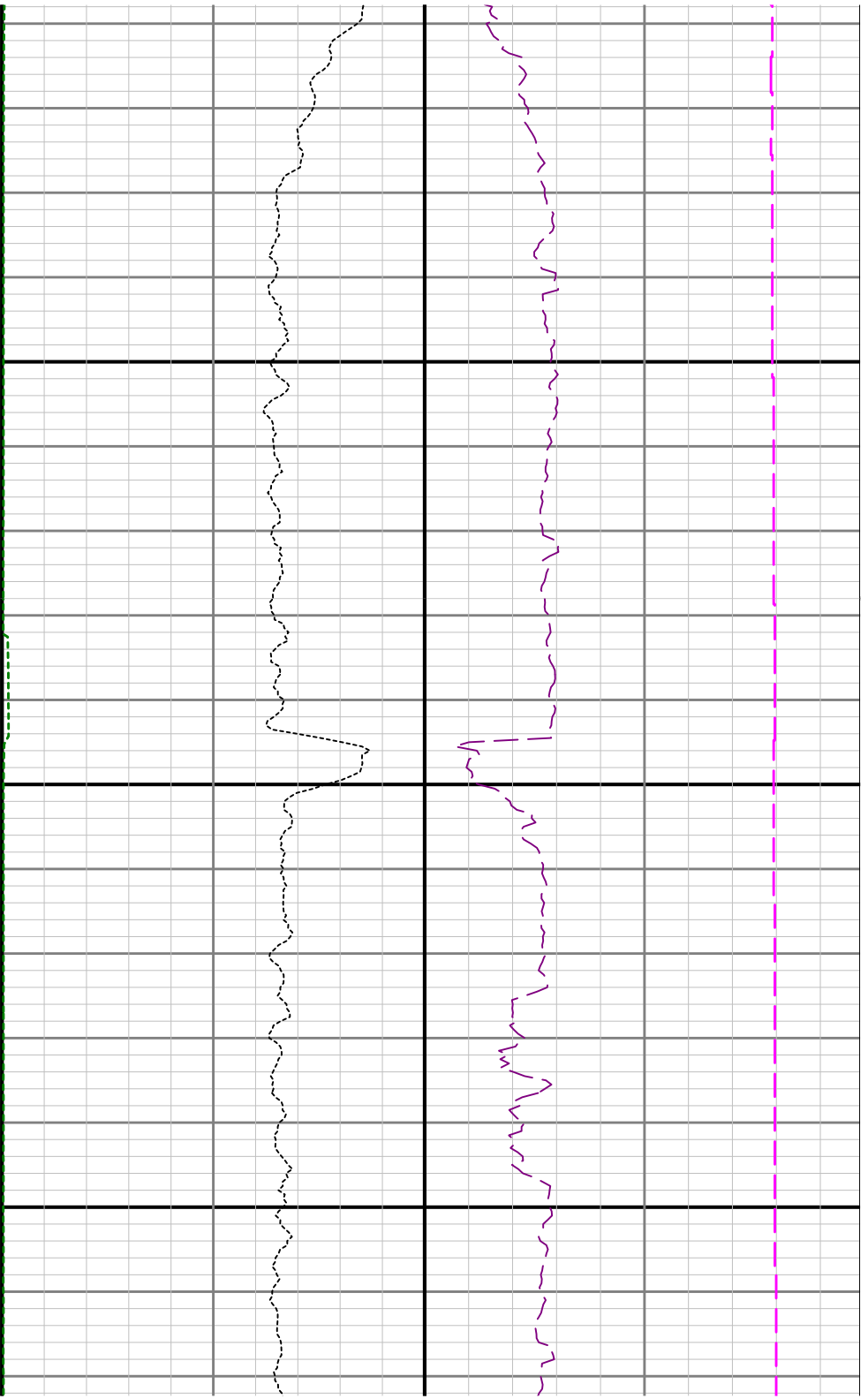




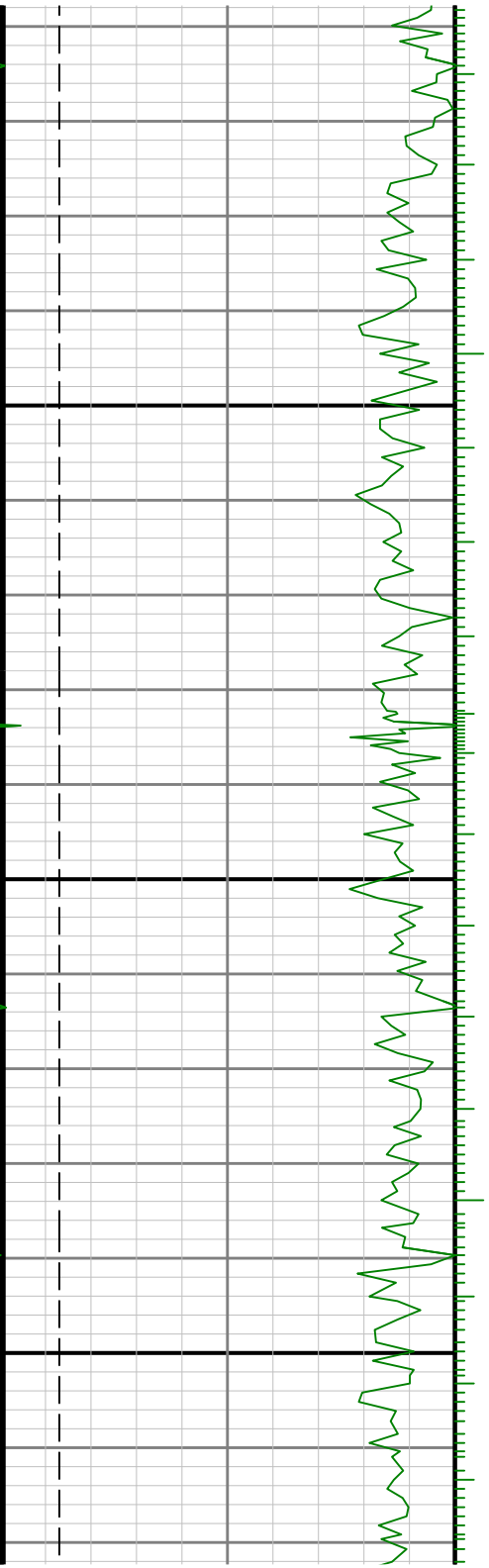


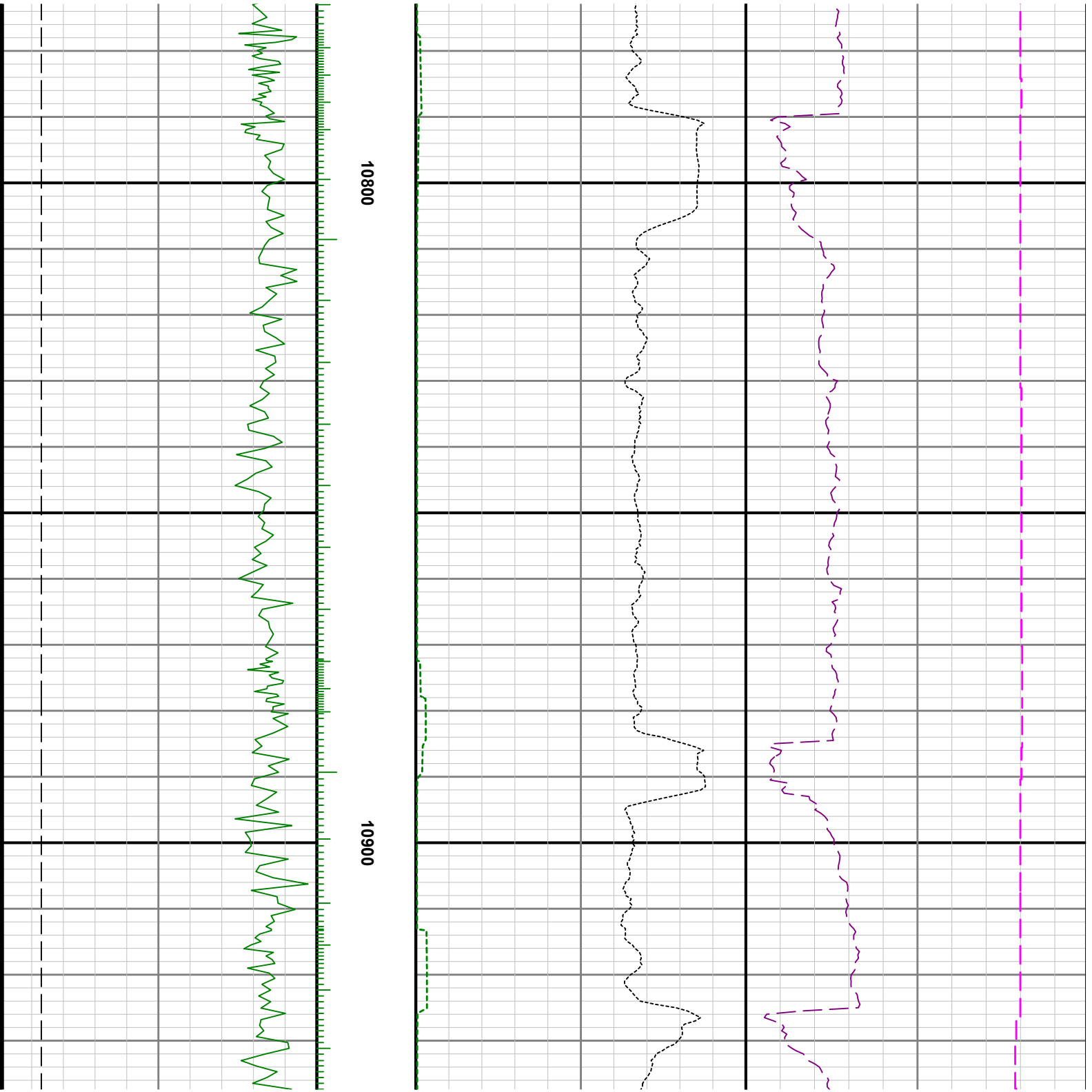


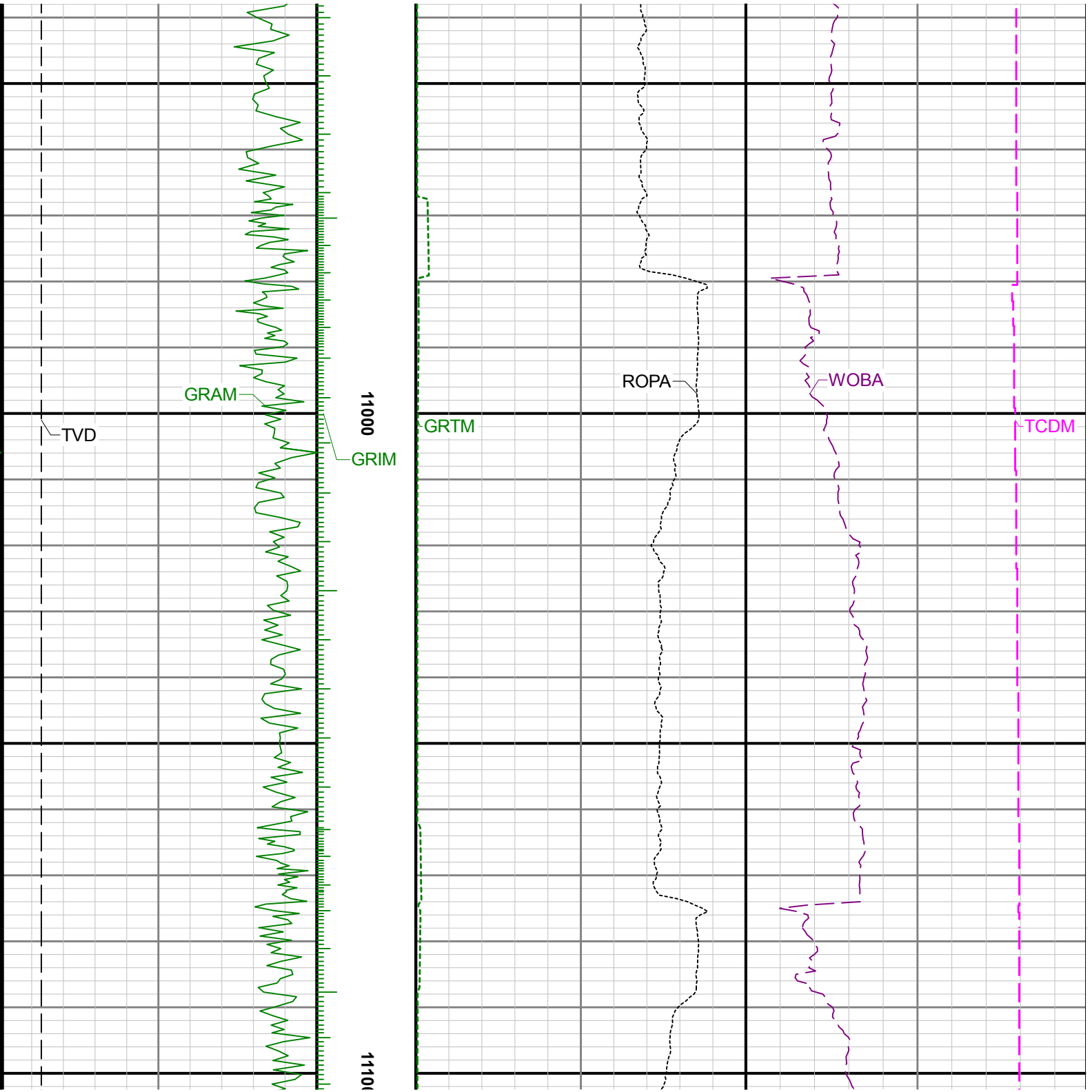


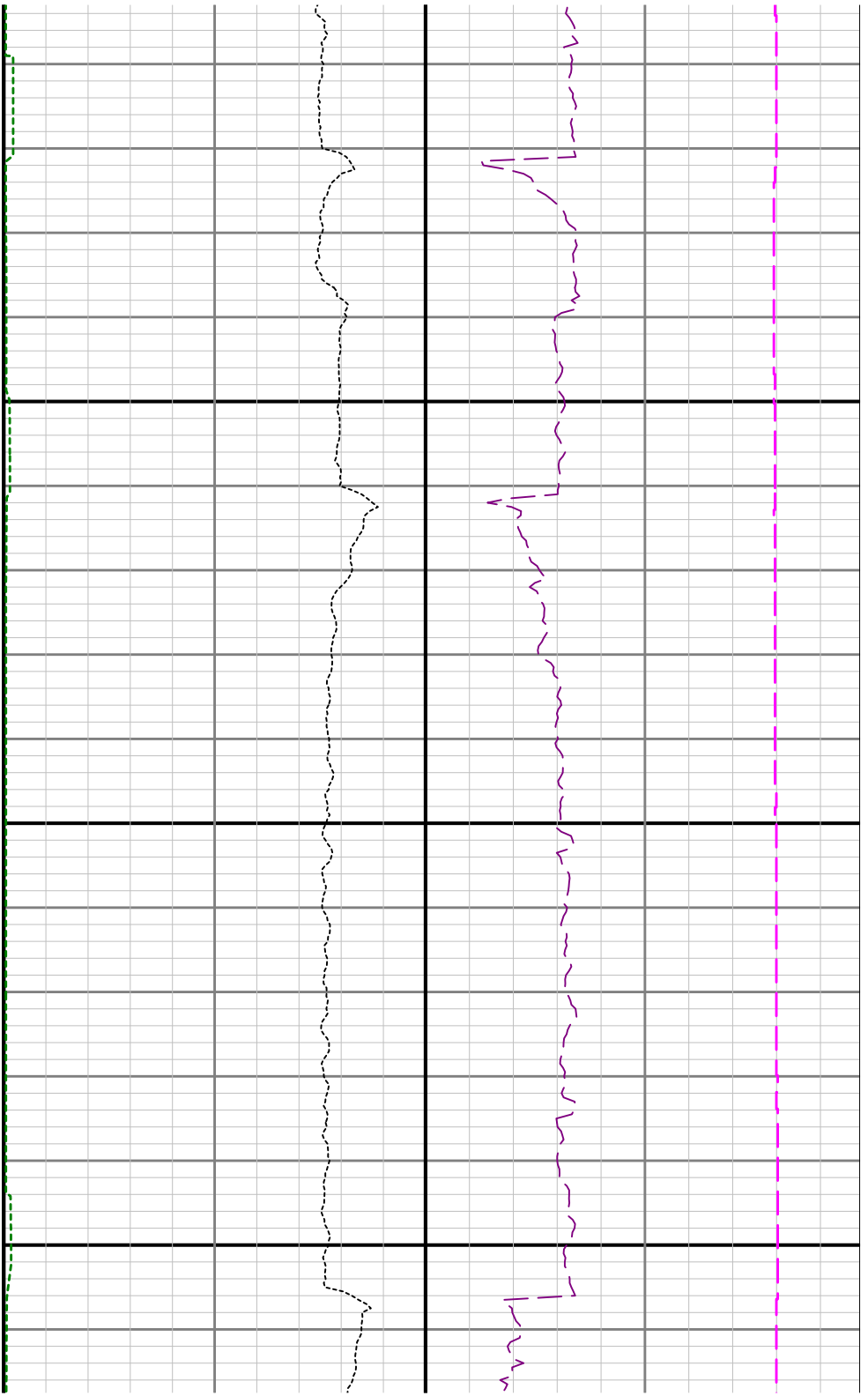


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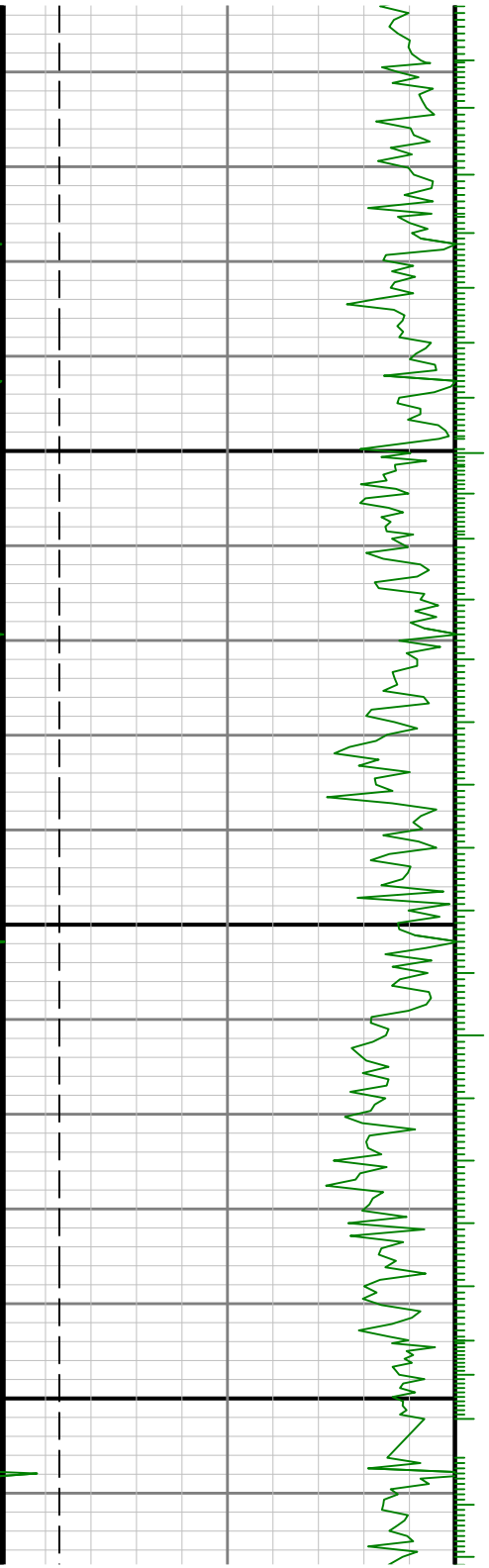


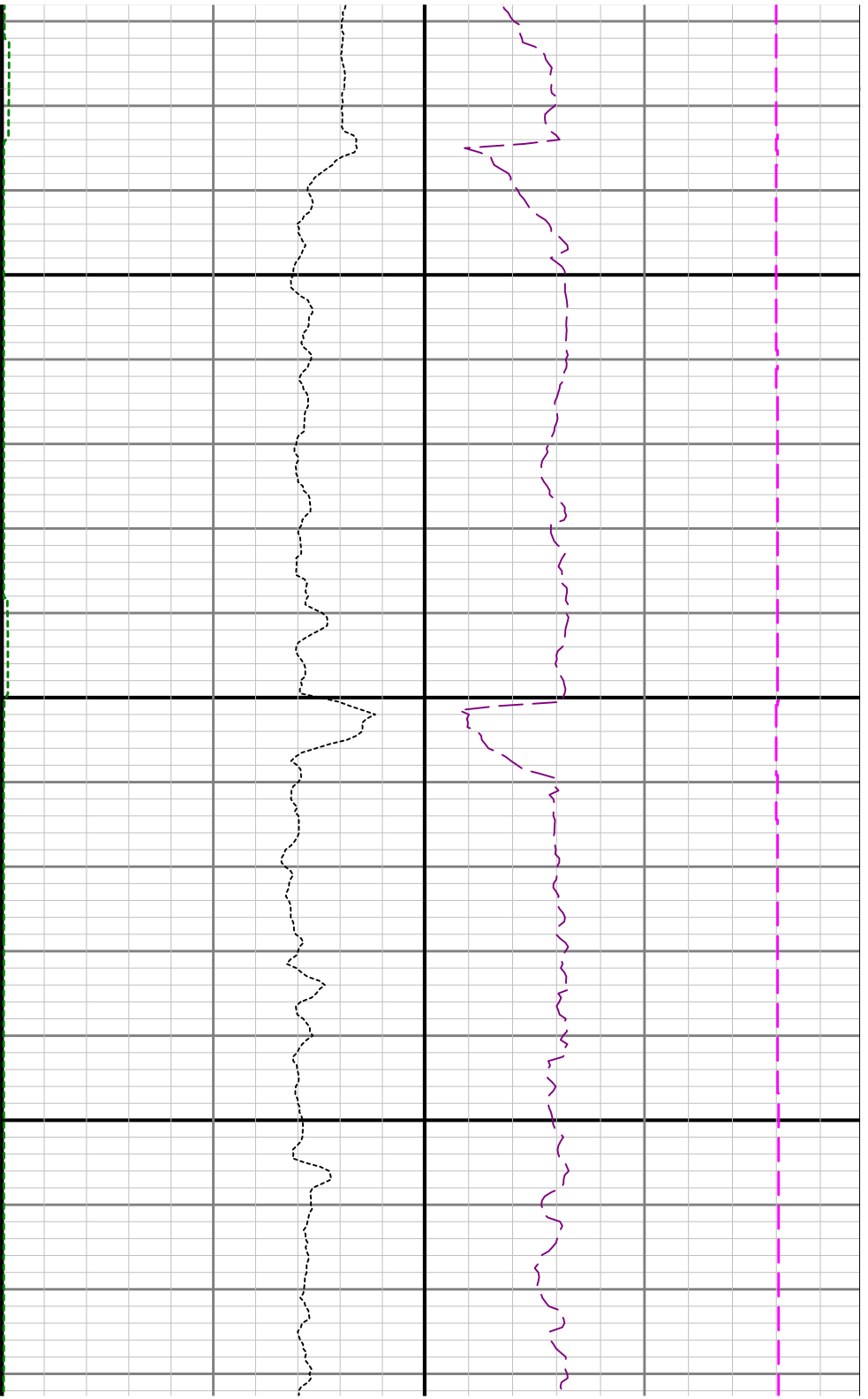






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