



Drilling Dynamics

Gamma Ray

LWD REALTIME LOG

Scale:		Company: Anadarko				
1:240 MD		Well: ALVIN 1N-29HZ				
Depth Reference:		Field: WELD COUNTY (UTM/TRUE NORTH)				
Driller's Depth		County:	Weld County	State:	United States	
Status:	Surface Location:		Other Services:			
Final Print		Latitude:		040° 06' 11.588" N		
API No: 051234220800		Longitude:		104° 40' 45.843" W		
Job ID: 7693392	SEC: 29	TWN: 2N	RGE: 6SW			
Permanent Datum (P.D.): Ground Level	Elevation:	4909.00 ft		KB:	N/A	
Log Measured From: Rig Floor	Above P.D.	16.00 ft		DF:	4925.00 ft	
				GL:	4909.00 ft	
Dates		Interval Logged		Magnetic Field Reference		
Date From: 2015-12-25	Top: (ft) 6000.00	Azi Reference North: True		Dip Angle: (deg)	66.74	
Date To: 2015-12-27	Bottom: (ft) 12795.00	Total Magnetic Field Strength: (nT)			52640	
Spud Date: 2015-12-24		Mag to Reference North Correction: (deg)			8.10 E	
Borehole Record			Casing Record			
Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)
8.500	1904.00	12795.25	9.625	35.00	16.00	1692.00
Mud Record						
Type	From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Inc Az (Start)	Inc Az (End)
Oil Based Mud	1904.00	12795.25	8.500	10891.25	10.17 196.70	89.94 357.07
Deviation Record						

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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	8.500	PDC	2.00	Motor	1862.75	12754.00	1904.00	12795.25	2015-12-25 11:18	2015-12-27 11:01	42.55

Crew

Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite
Chad Hough		2015-12-24	2015-12-28	Matthew Leopold		2015-12-24	2015-12-28	Michael Cleary		2015-12-24	2015-12-28
Ryan Kielian		2015-12-24	2015-12-28								

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+ (%)
2015-12-25 06:02		1	1890.00	Oil Based Mud	9.2	22	N/A	N/A	59.0/32.0	Active Pit	54000	0.00
2015-12-26 20:51		1	10054.00	Oil Based Mud	9.6	19	N/A	N/A	61.0/27.5	Active Pit	50000	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	13022836	Gamma (single)	10.90	41.25	6.750	2.750
1	NaviGamma	13022836	Directional (mag)	14.31	44.66	6.750	2.750
1	NaviGamma	13022836	VSS	14.31	44.66	6.750	2.750

Comments

- 1 Baker Hughes run 1 utilized a 6.75 inch NaviGamma (Directional and Gamma Ray) tool ran behind an 8.5 inch bit with a steerable assembly from 1904 to 12795 feet MD (1885 to 7109 feet TVD).
- 2 A sliding indicator is shown on the left side of track 1 as a heavy line. The indicator has been shifted to the Gamma Ray sensor offset to correspond with Gamma Ray data acquired while sliding.


Remarks

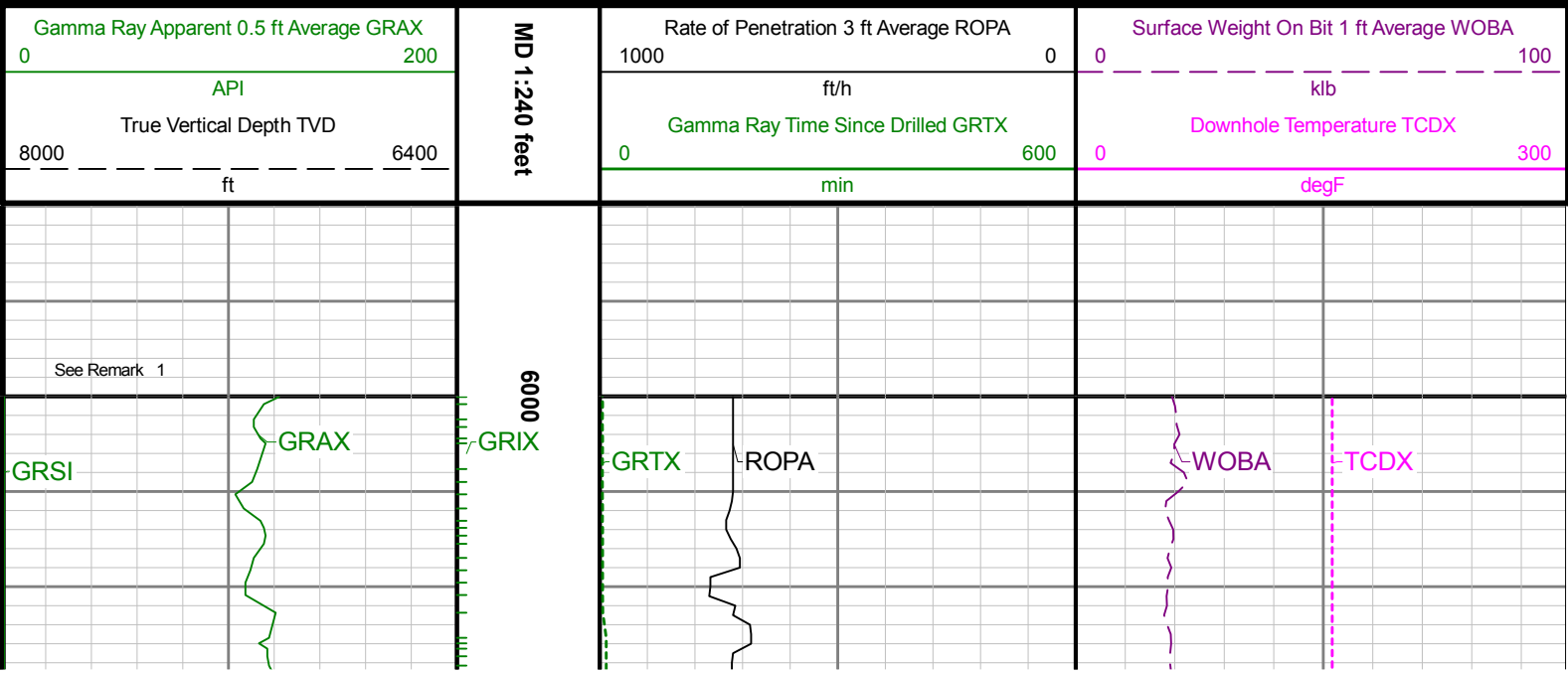
Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
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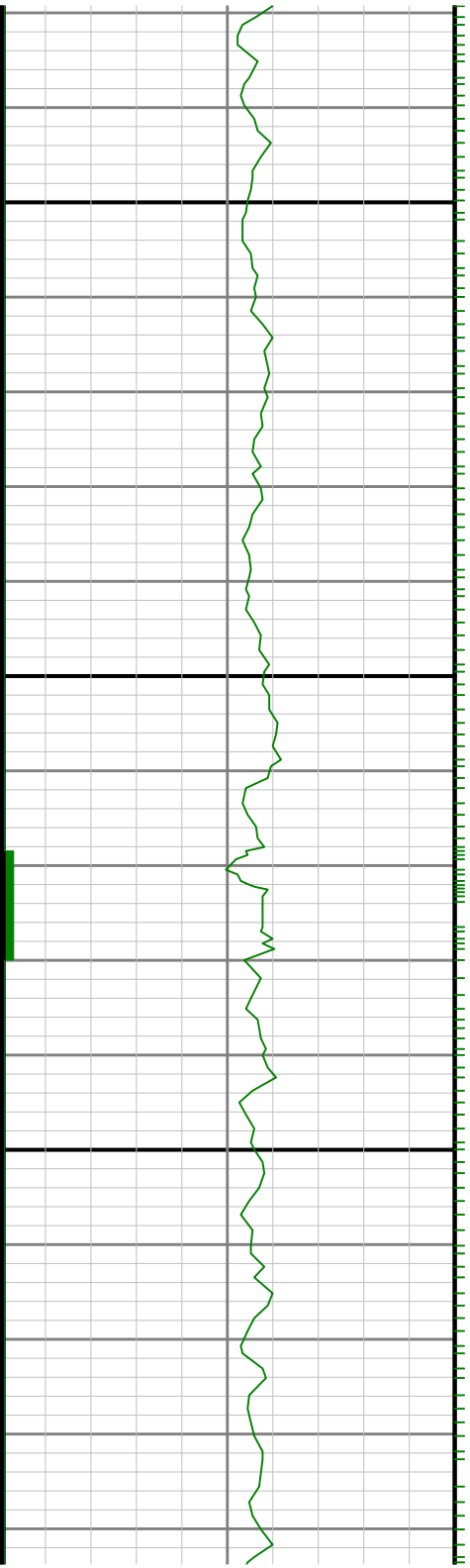
	(ft)	(in)		
1	5995.00	8.500	1	The interval from Surface to 6000 feet MD (16 to 5800 feet TVD) was not logged due to directional only services required in the vertical section.
2	12760.00	8.500	1	The interval from 12754 to 12795 feet MD (7109 feet TVD) has no GRAX, GRIX or GRTX due to the Gamma Ray sensor offset to bit.

Curve Mnemonics

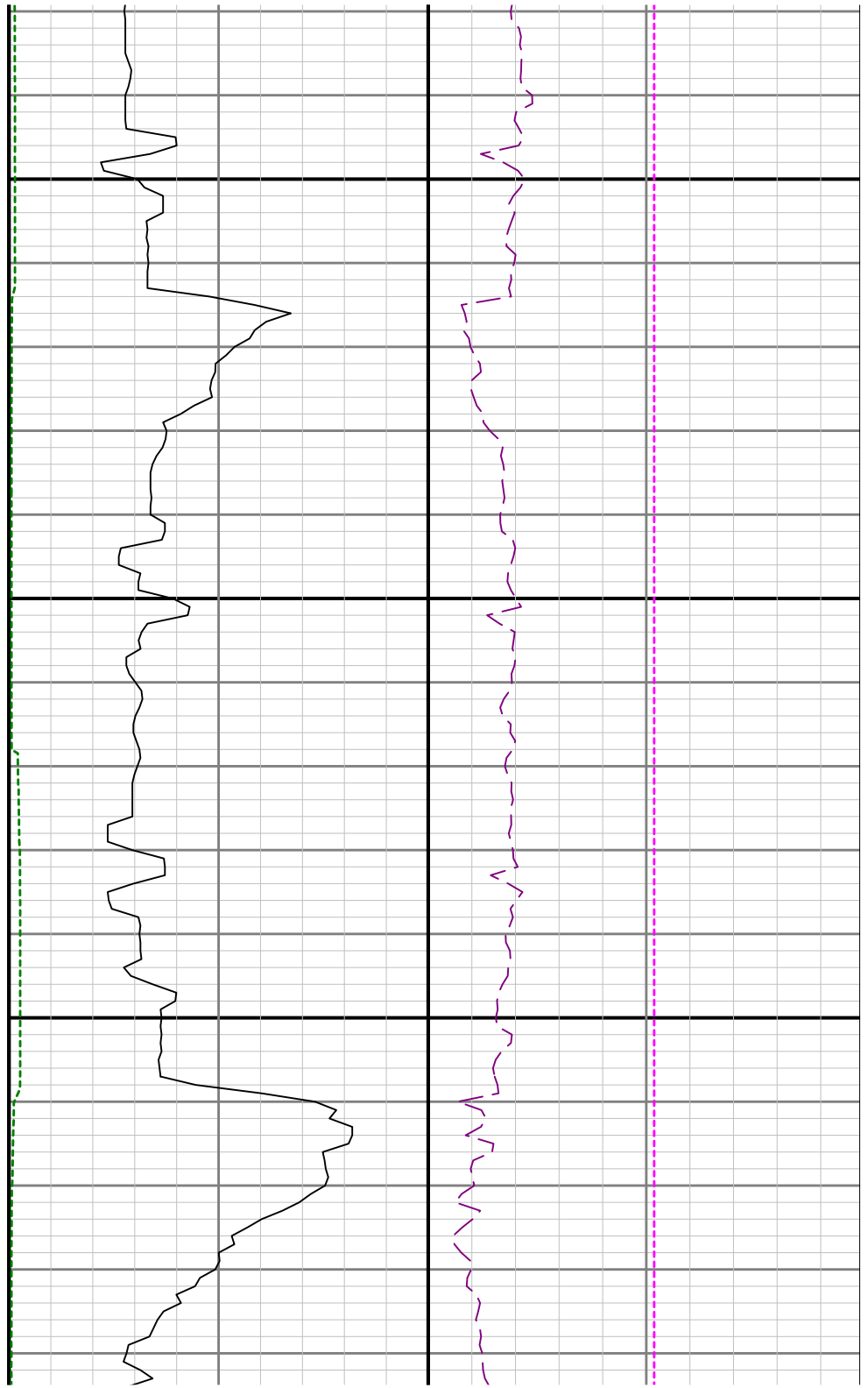
Presented Curves	Description	Units
ROPA	Depth Averaged ROP 3 ft Average	ft/h
GRAX	Gamma Ray - Apparent 0.5 ft Average	API
GRIX	Gamma Ray - Data Point Indicator	unitless
GRTX	Gamma Time Since Drilled	min
GRSI	Sliding Indicator Flag	unitless
TCDX	Downhole Temperature	degF
TVD	True Vertical Depth	ft
WOBA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

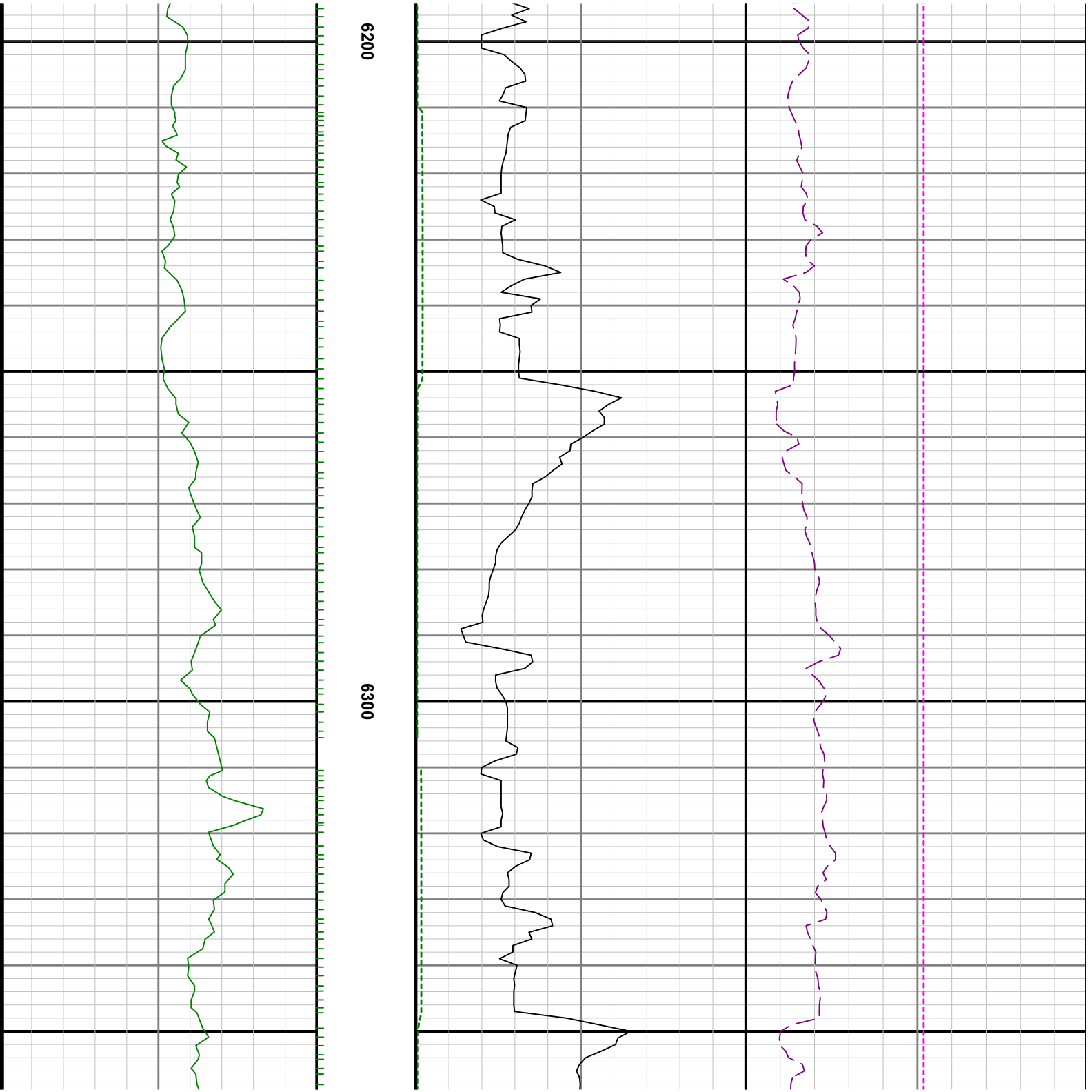
	Company	Anadarko			
	Well	ALVIN 1N-29HZ			
	Interval	Date From:	2015-12-25 22:57	Top:	6000.00
	Created	Date To:	2015-12-27 11:01	Bottom:	12795.00
		2015-12-27 11:46			

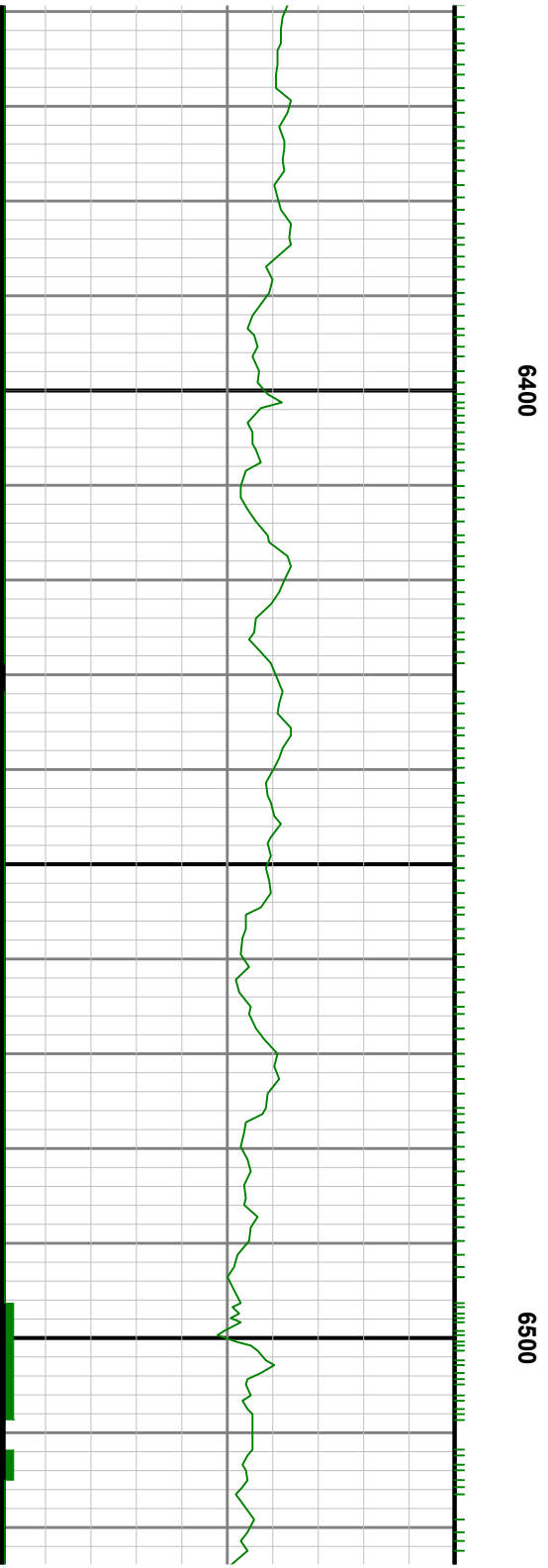


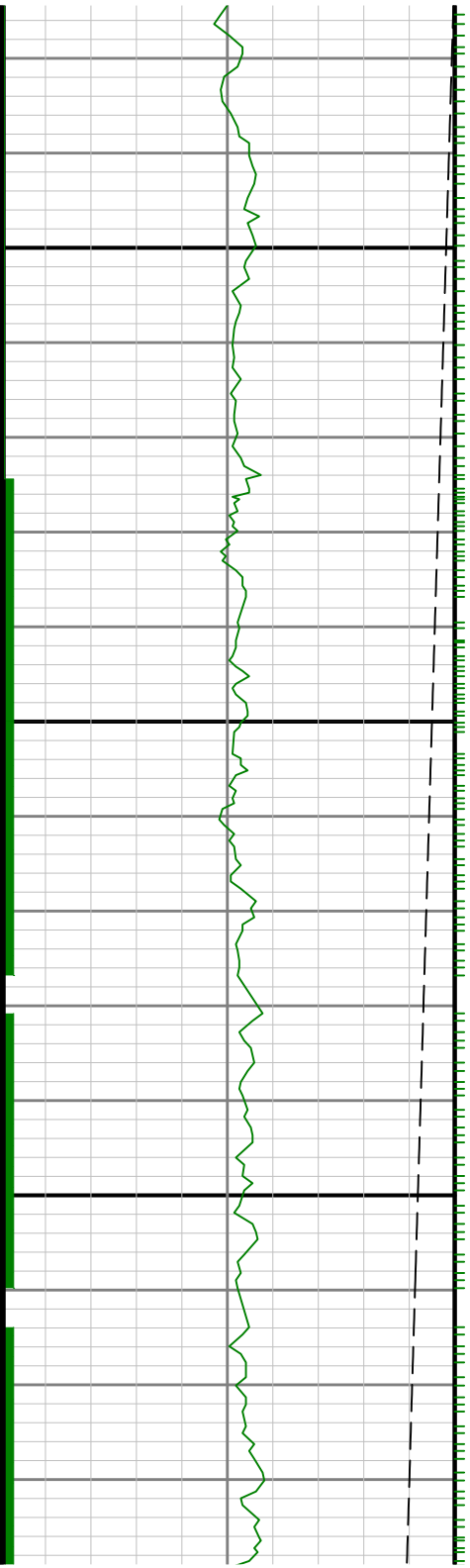


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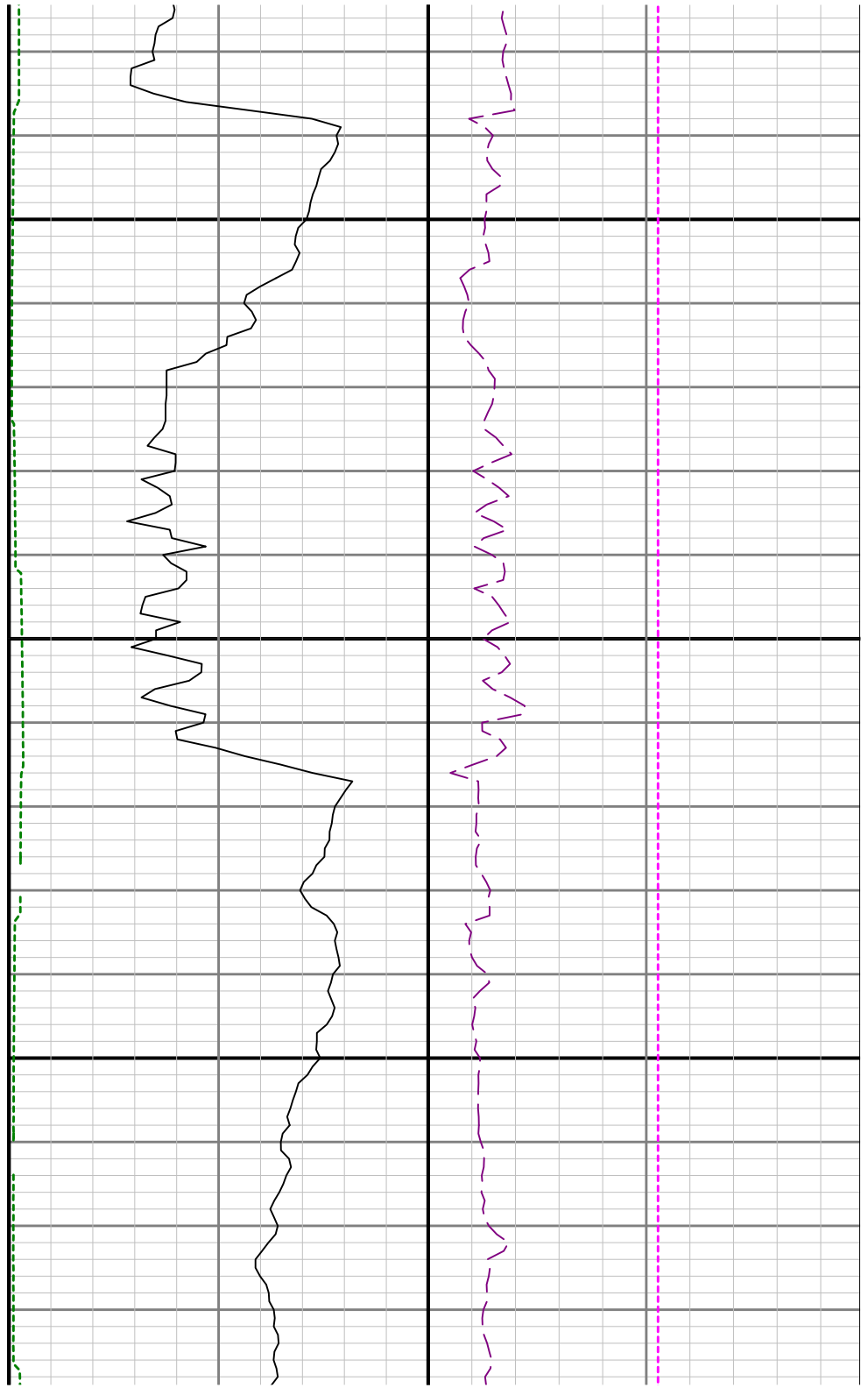


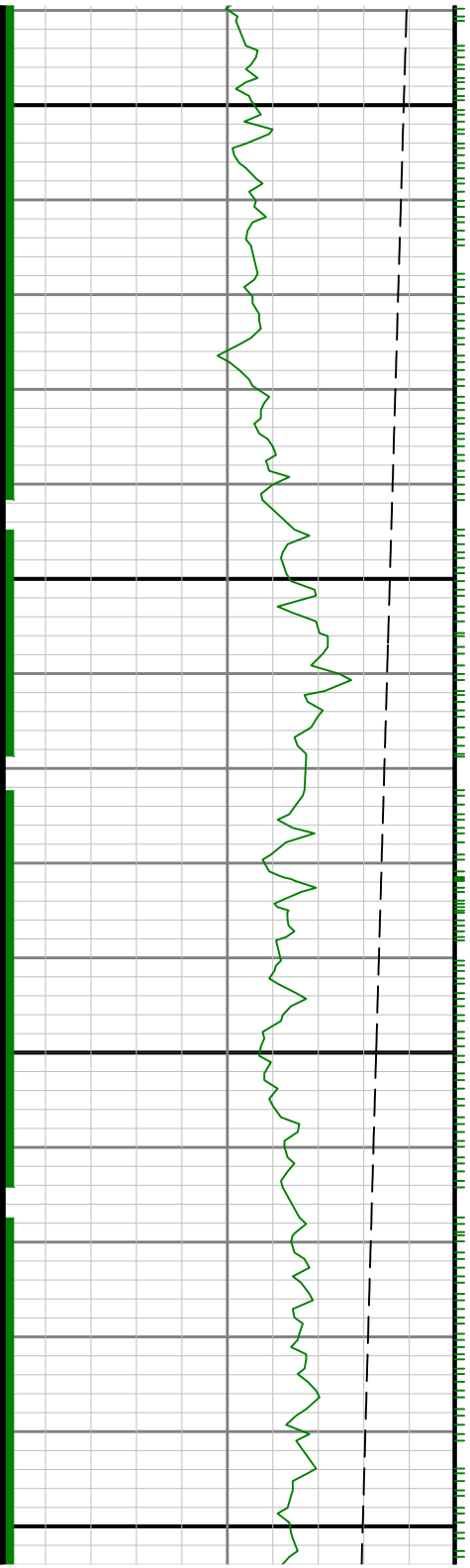






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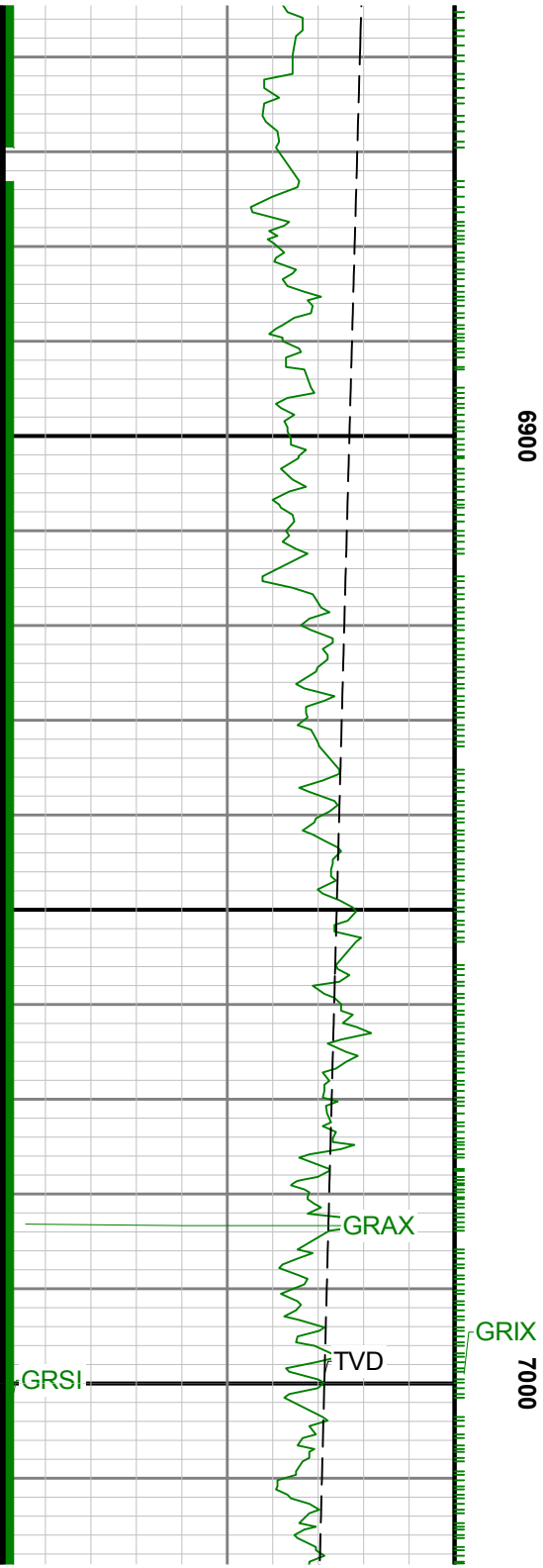




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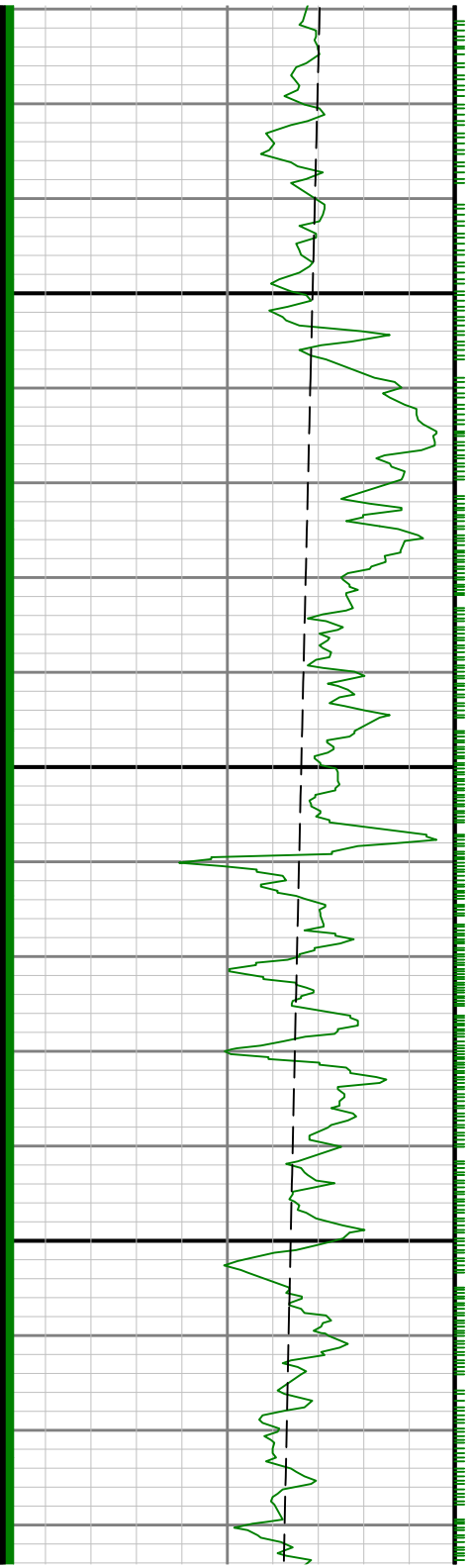
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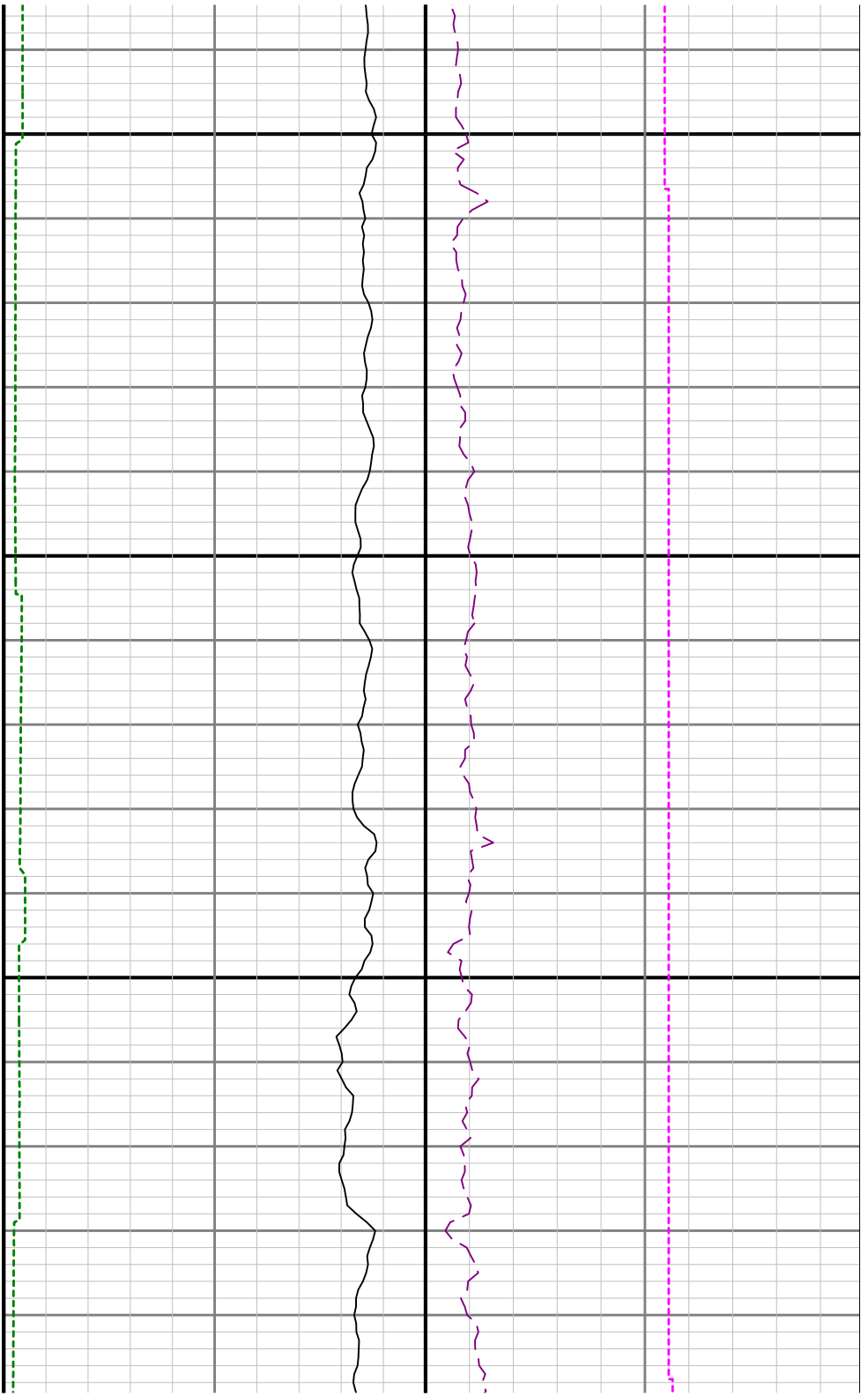






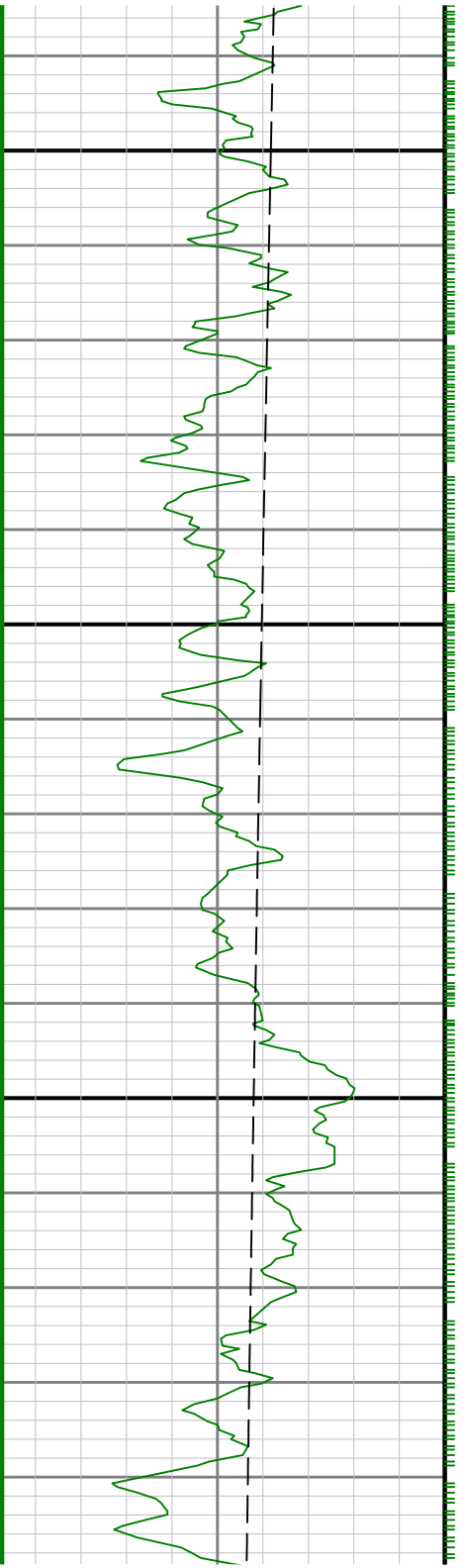
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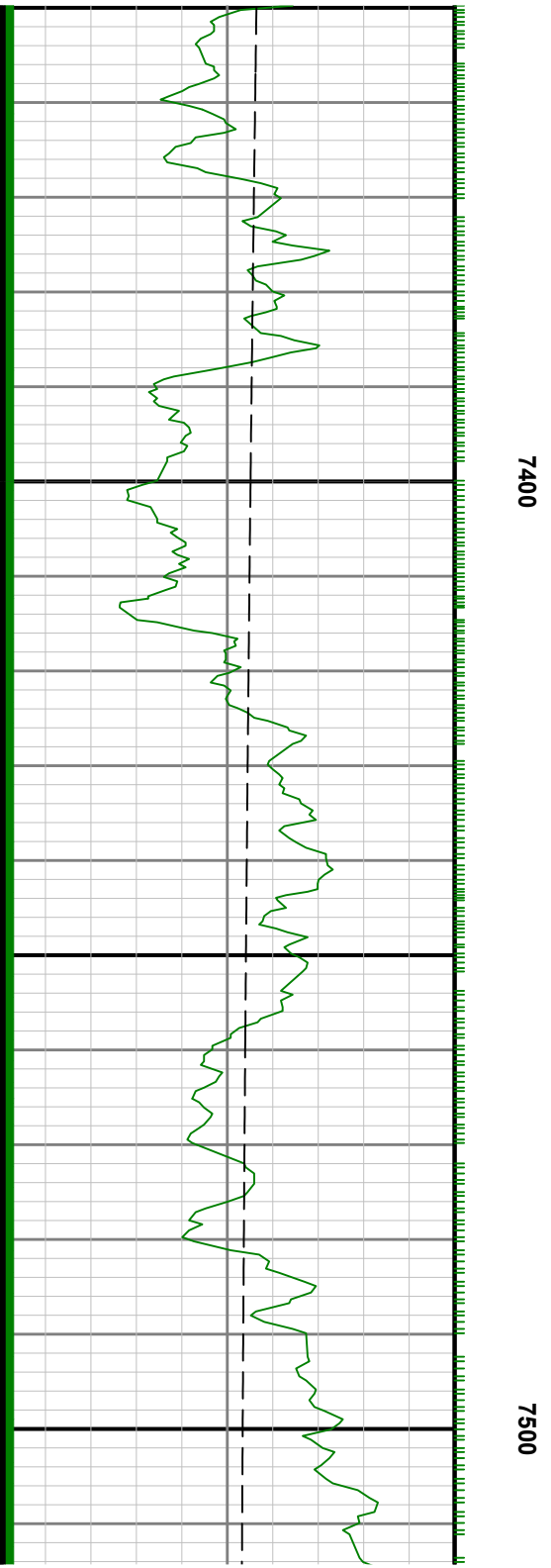


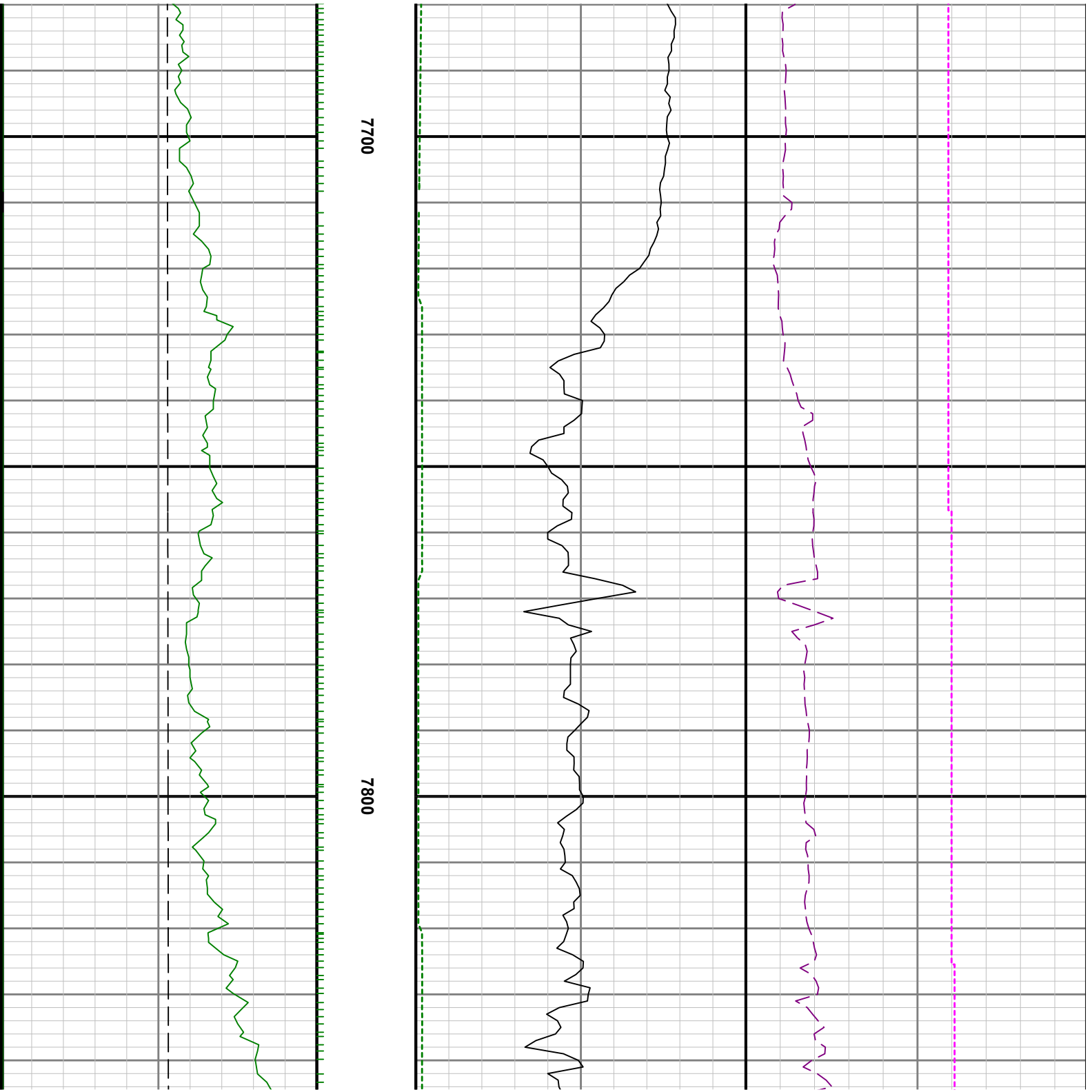


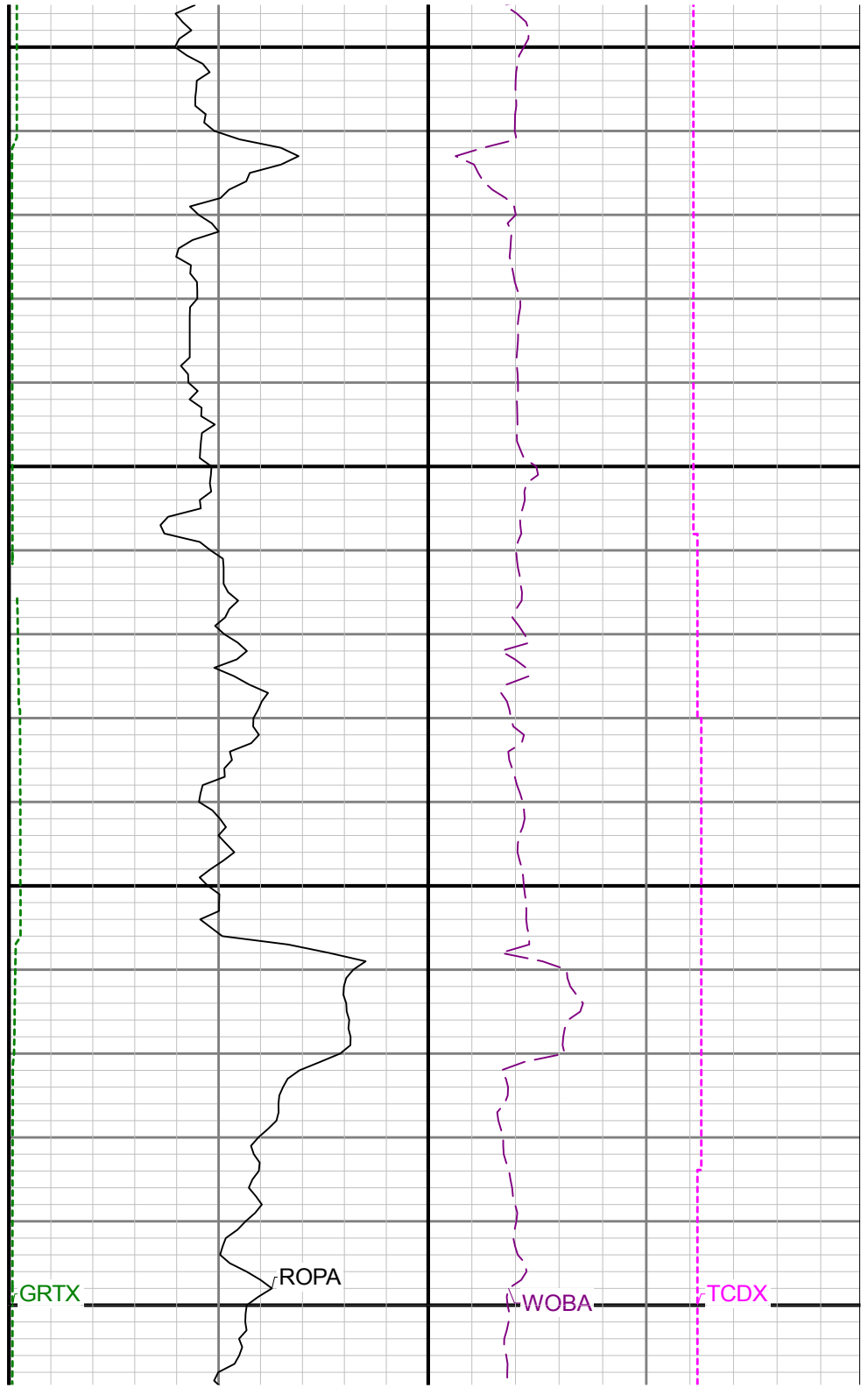
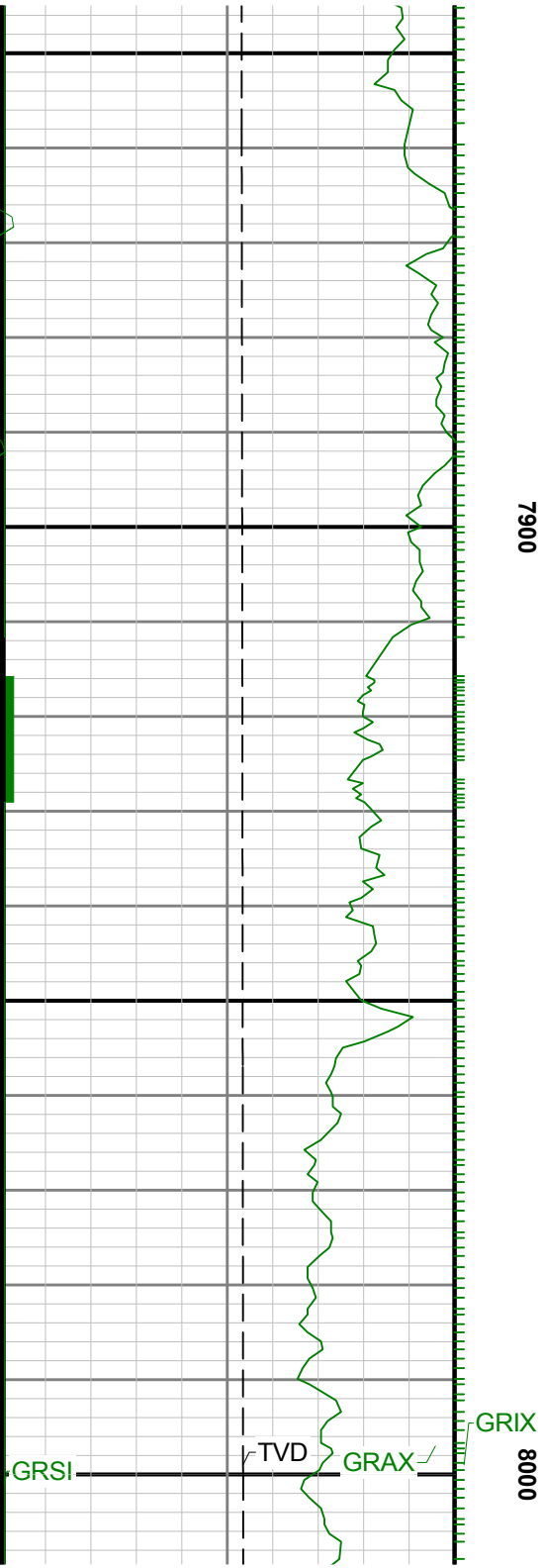
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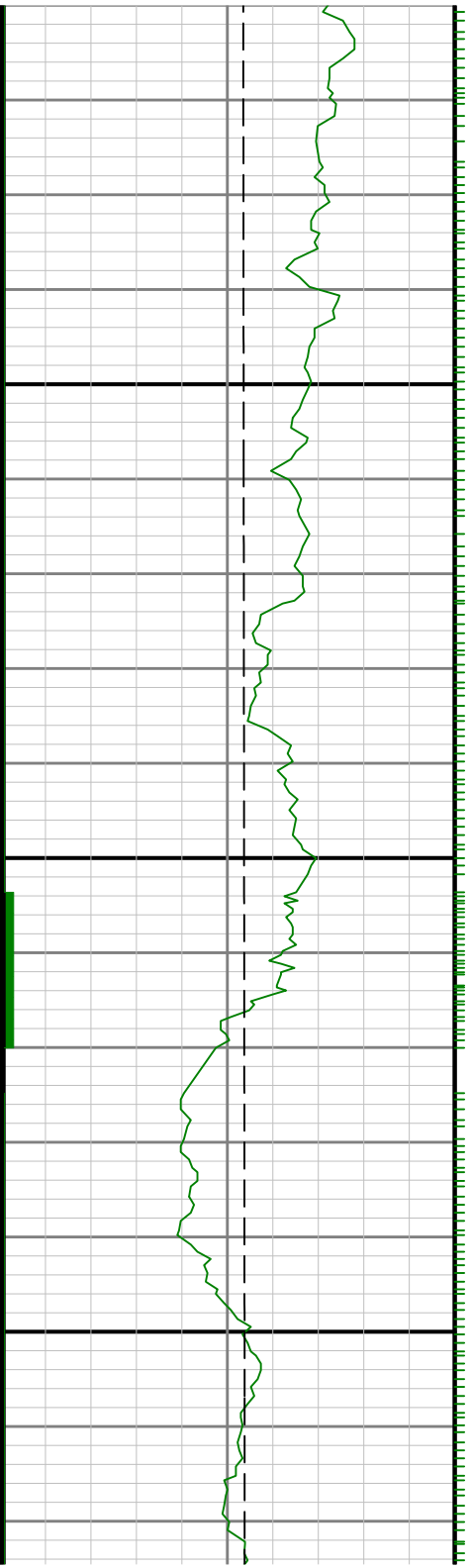
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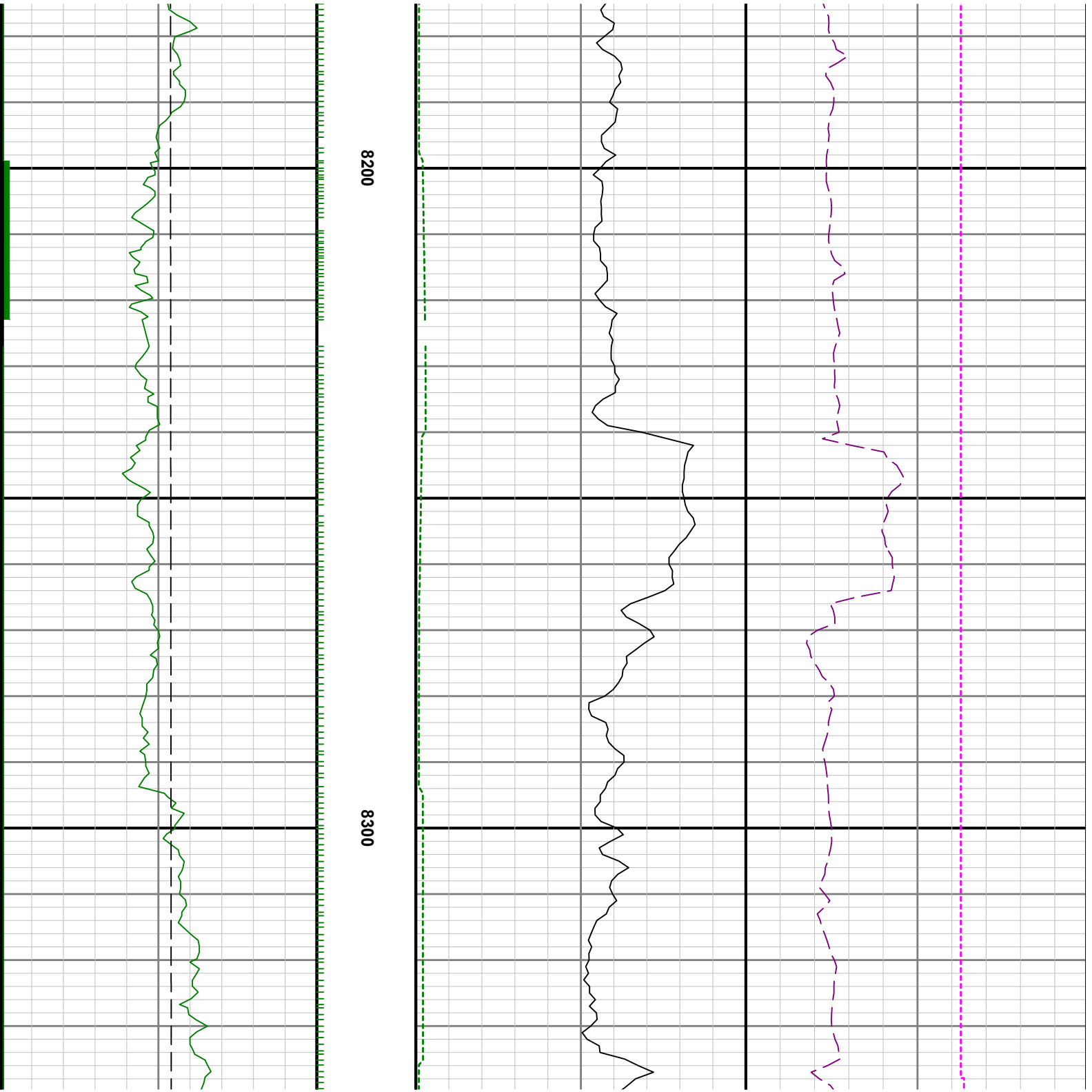


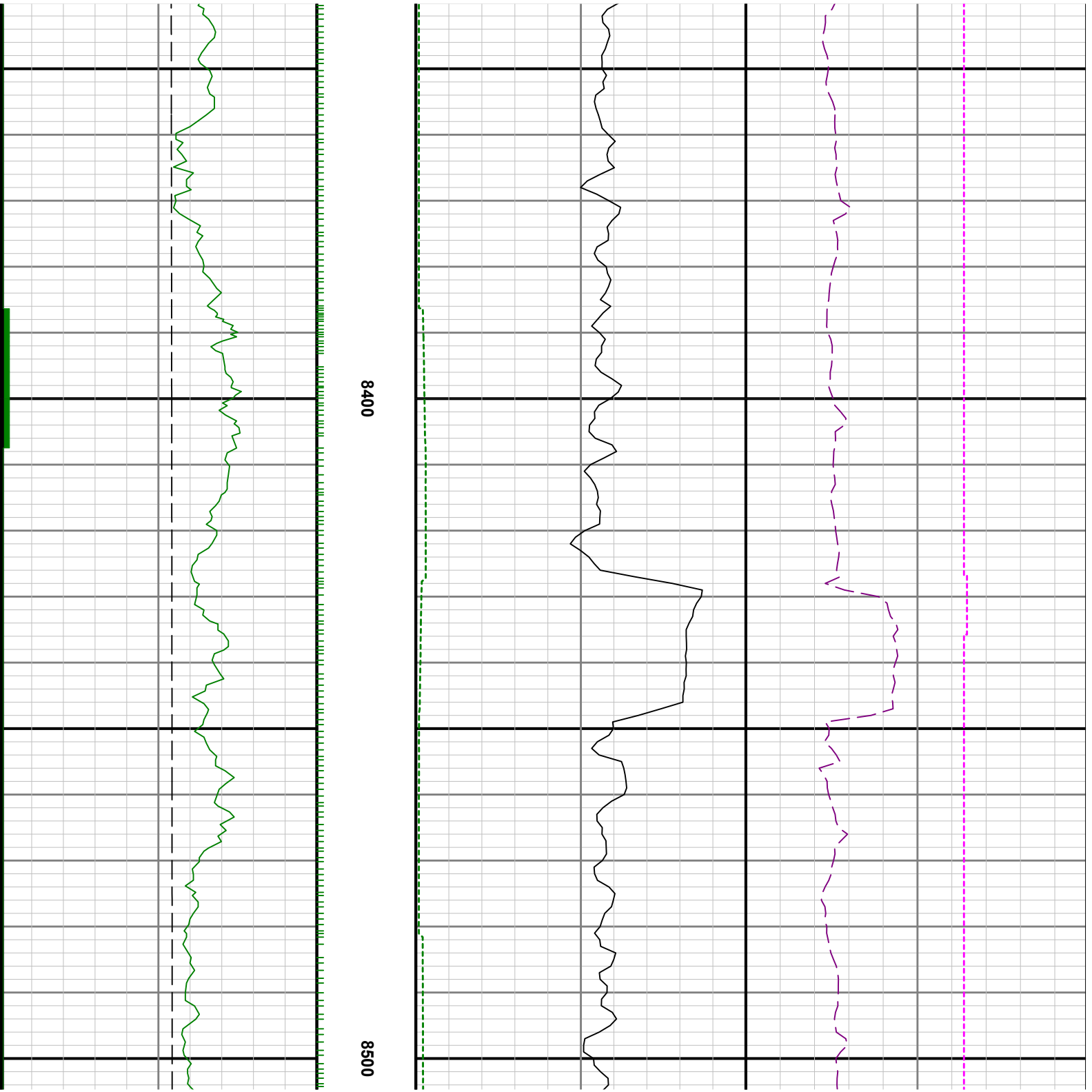


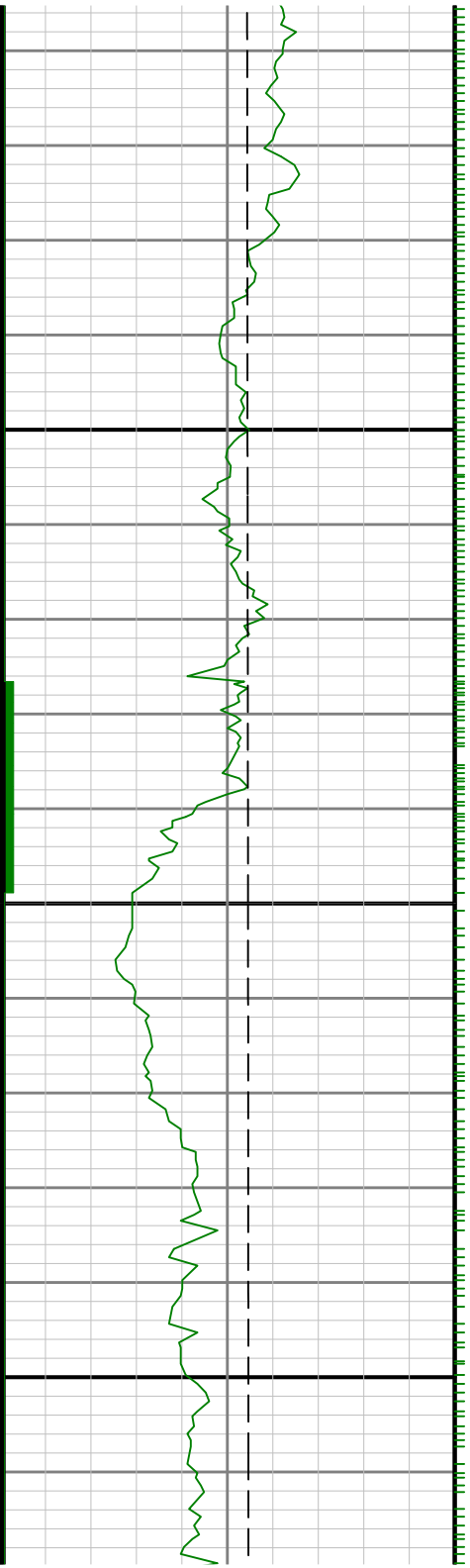


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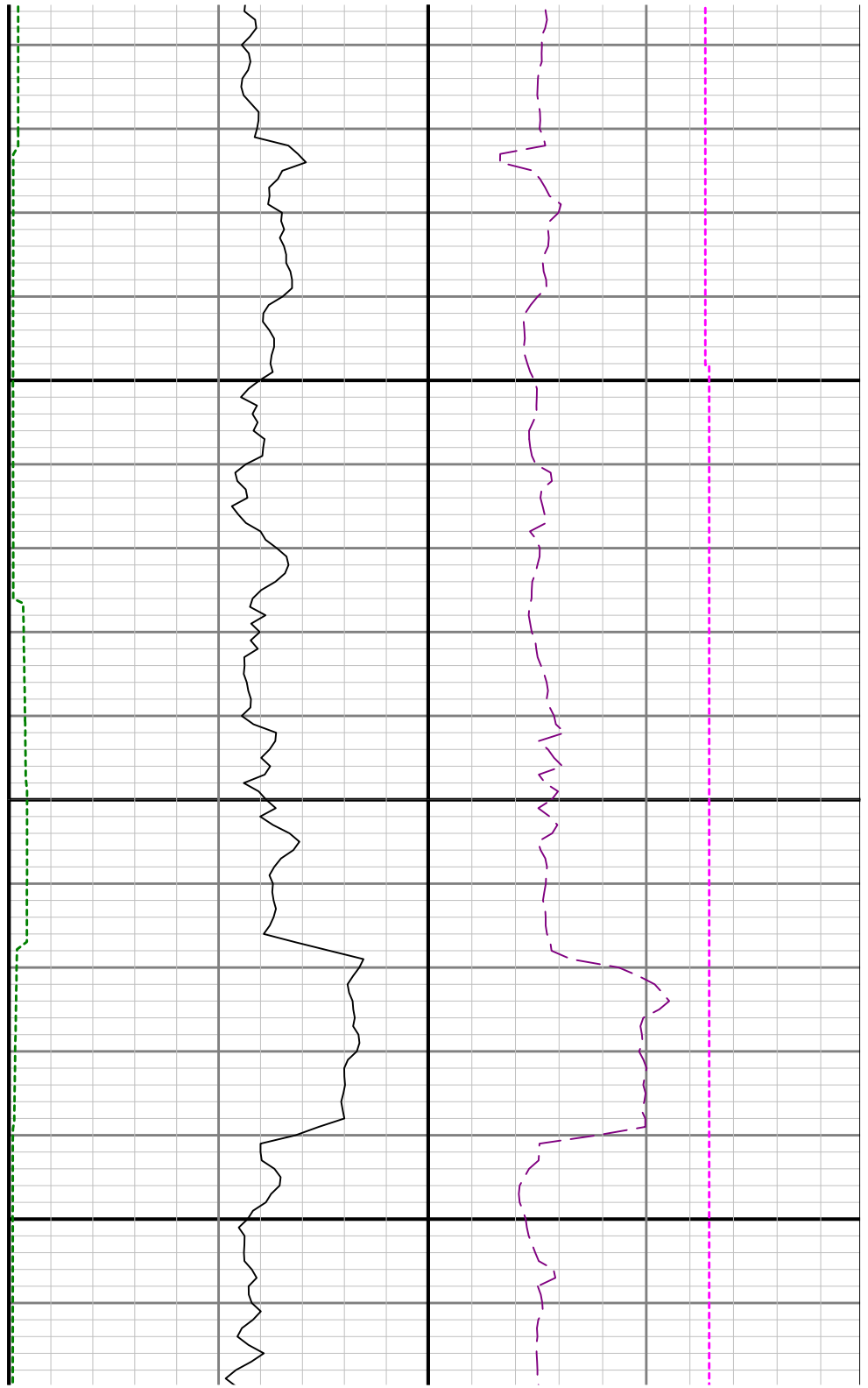




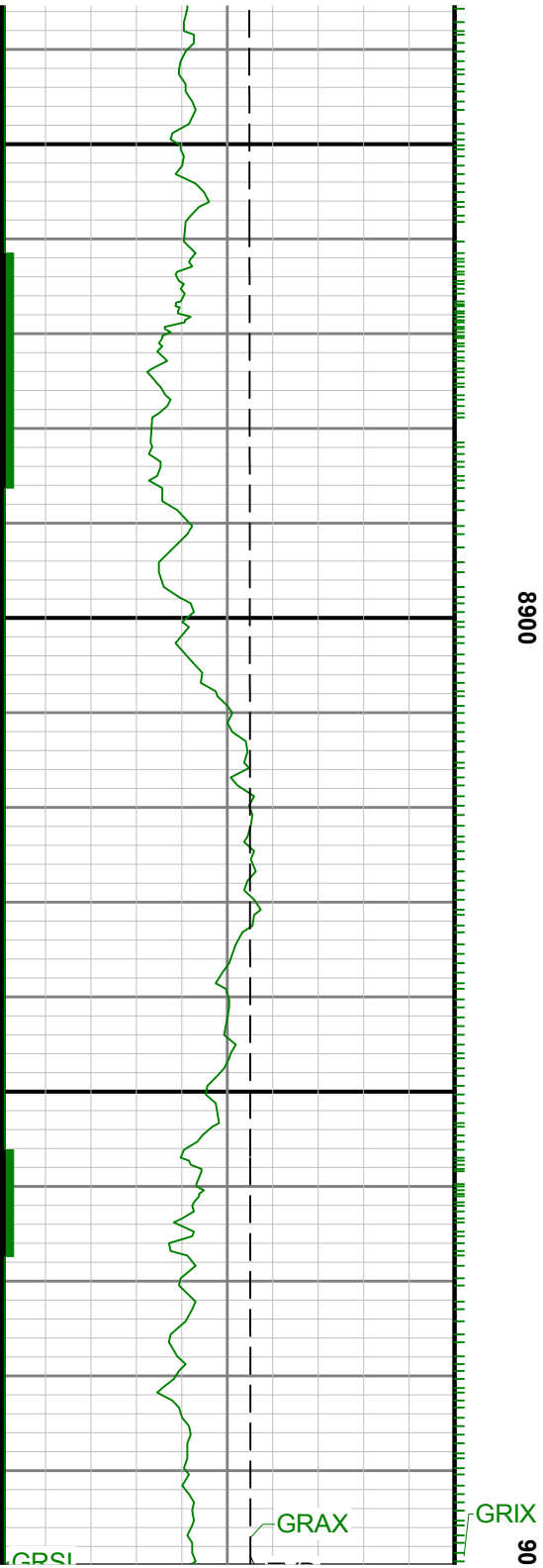


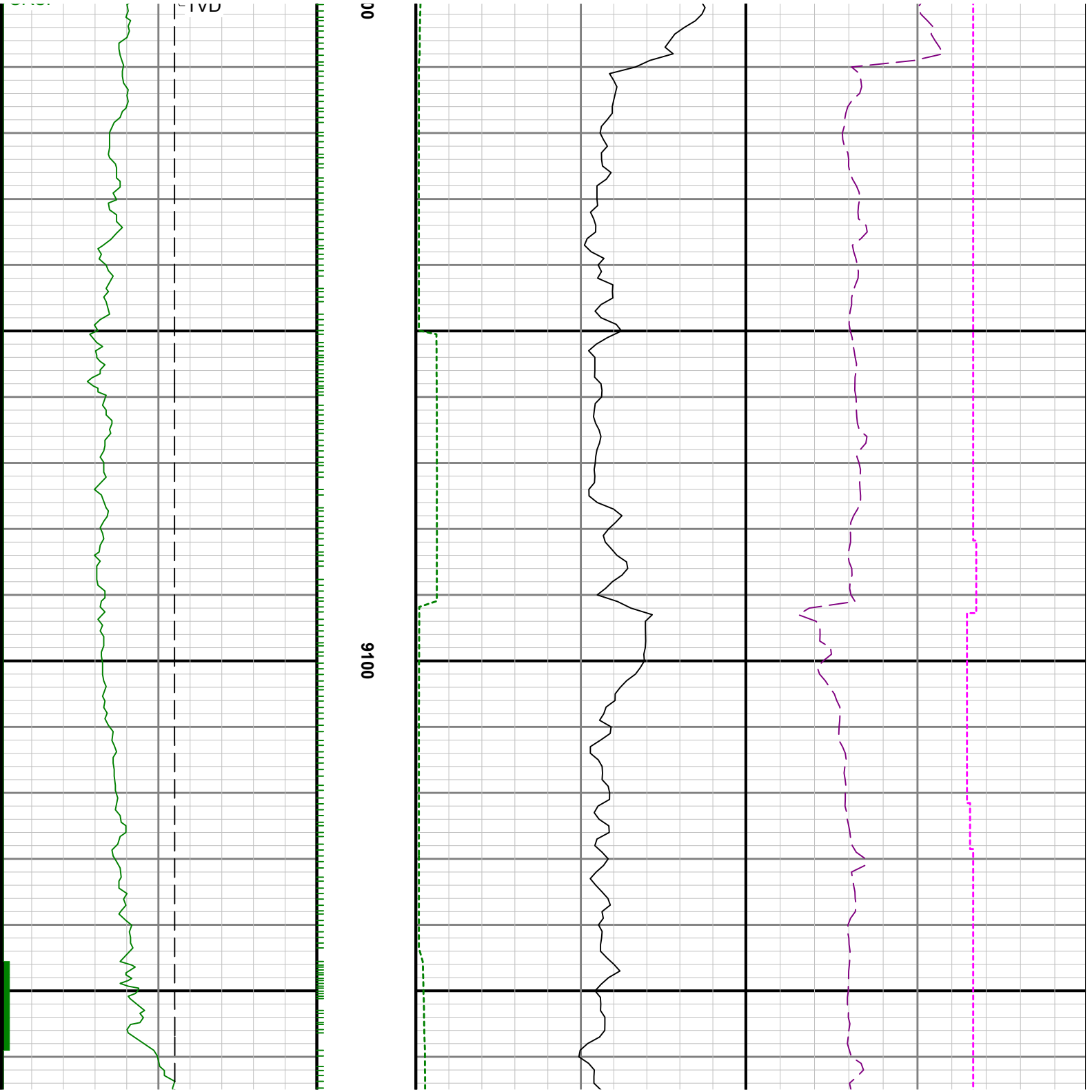


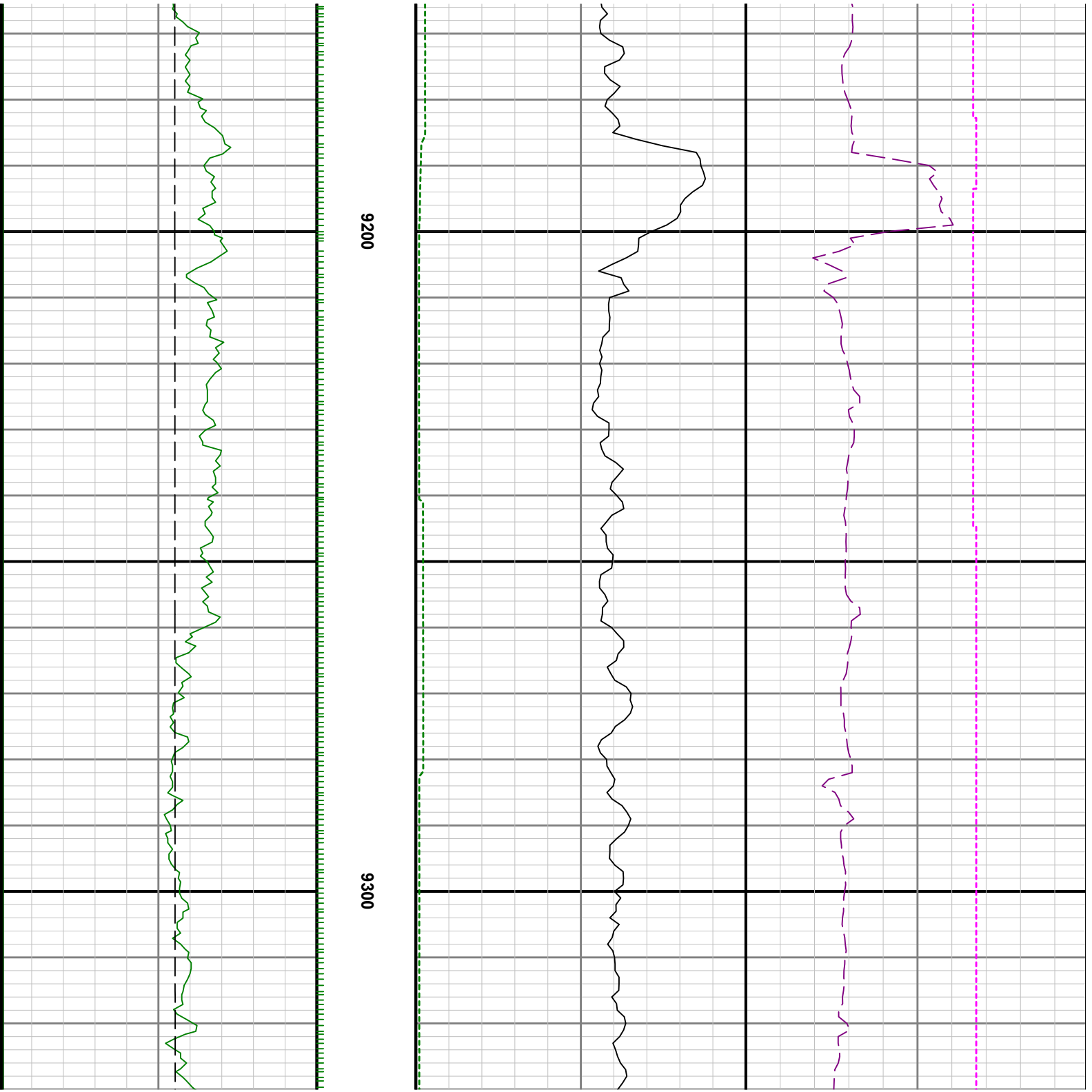
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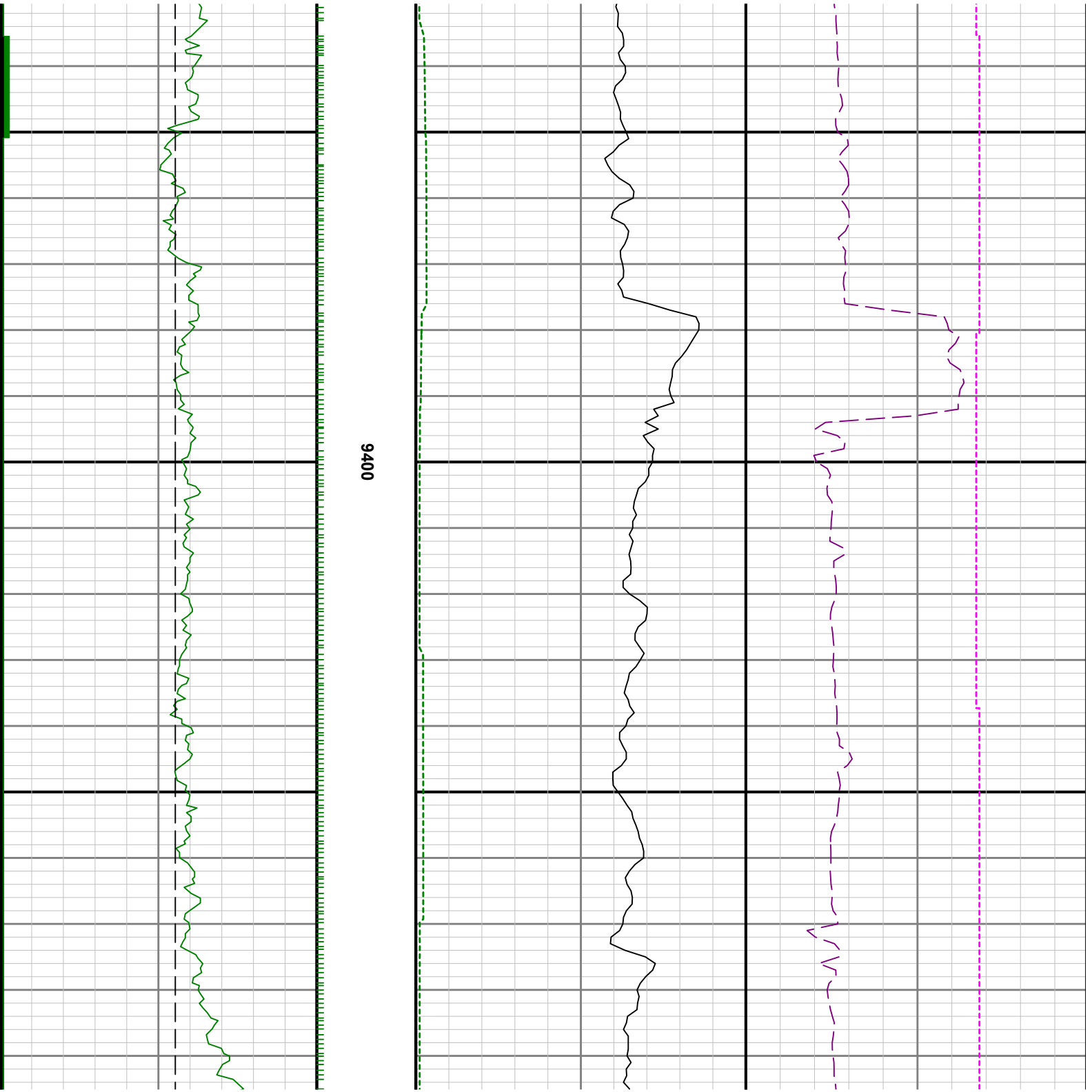


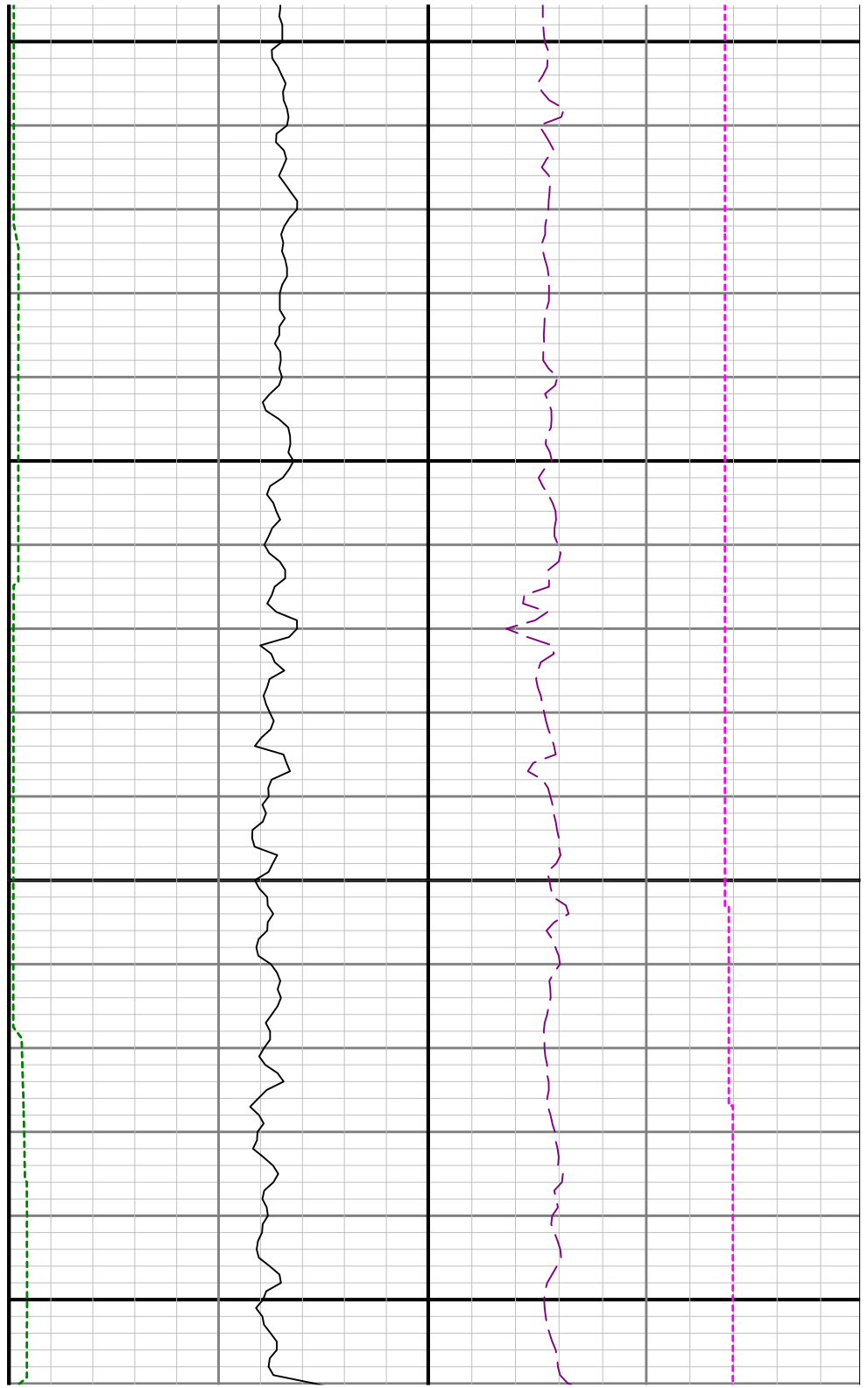
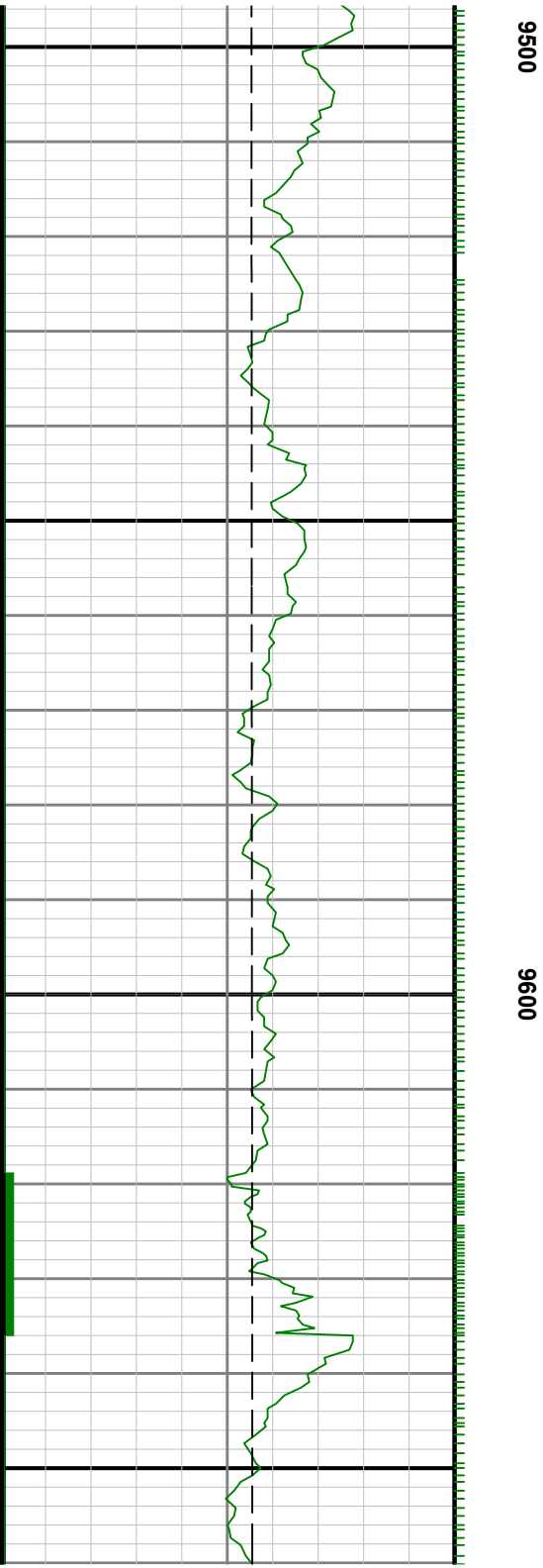


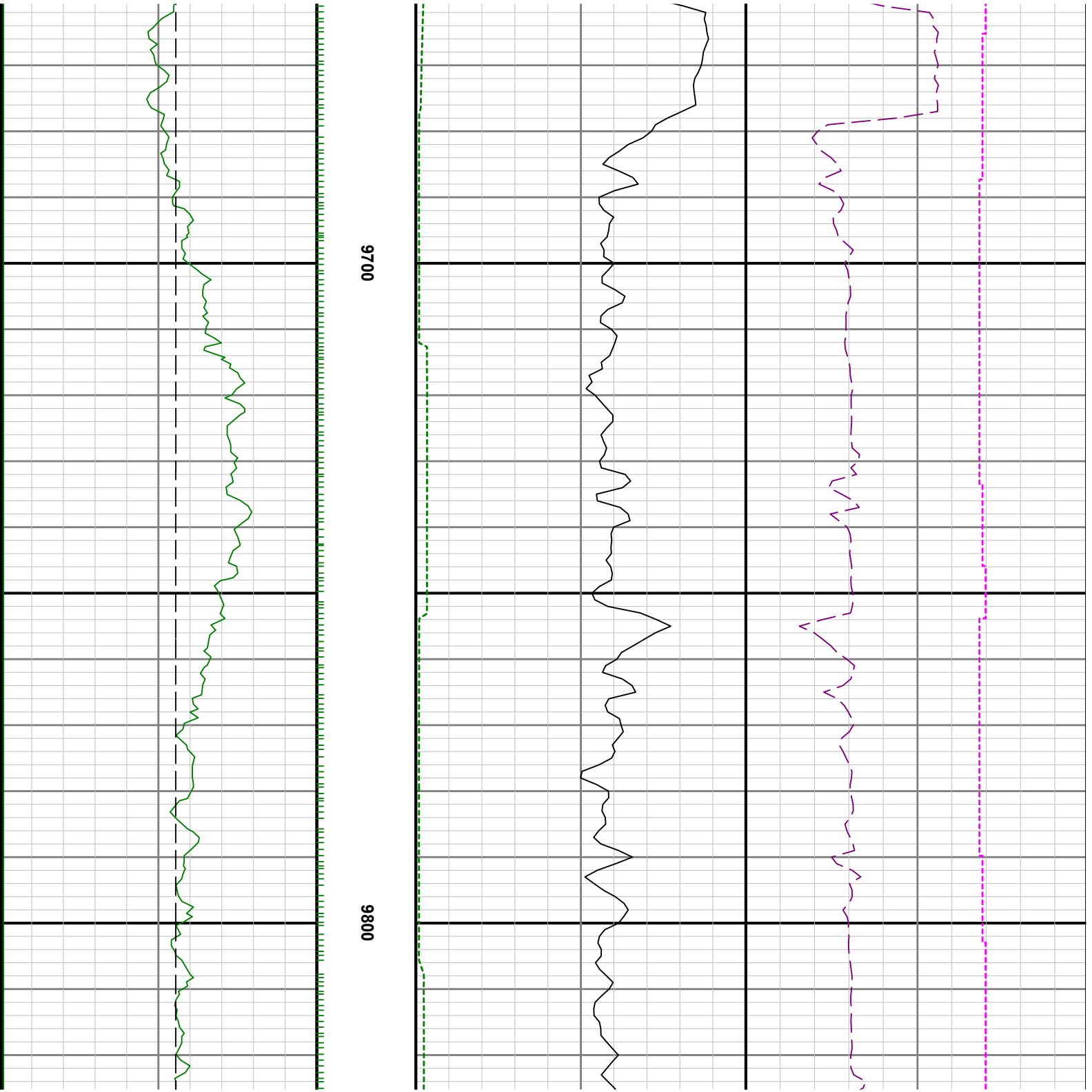


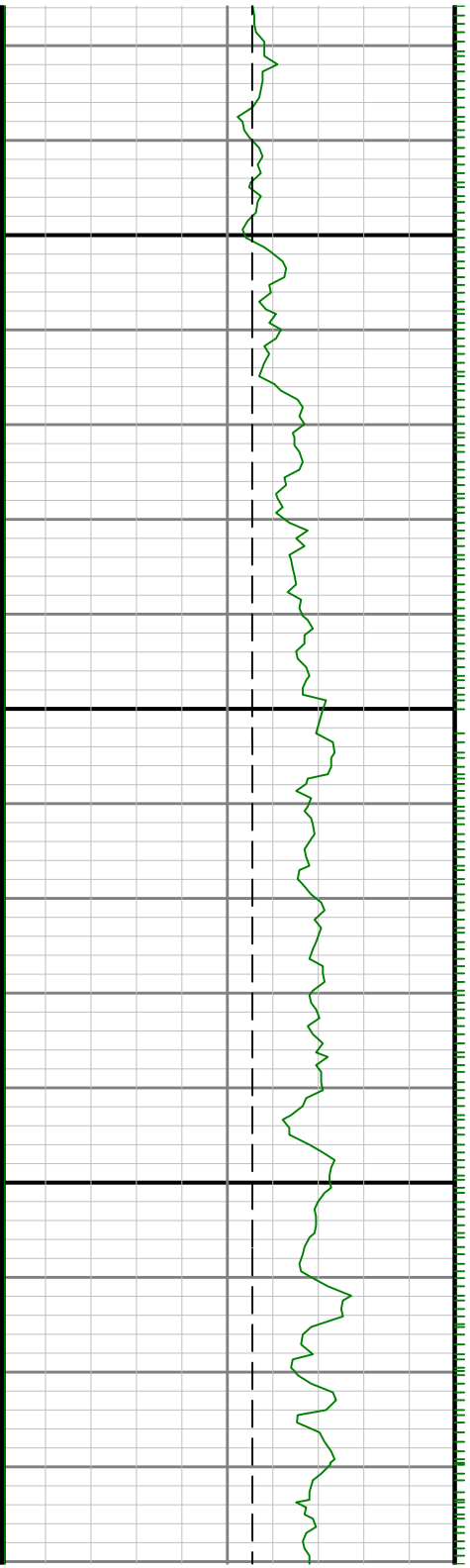






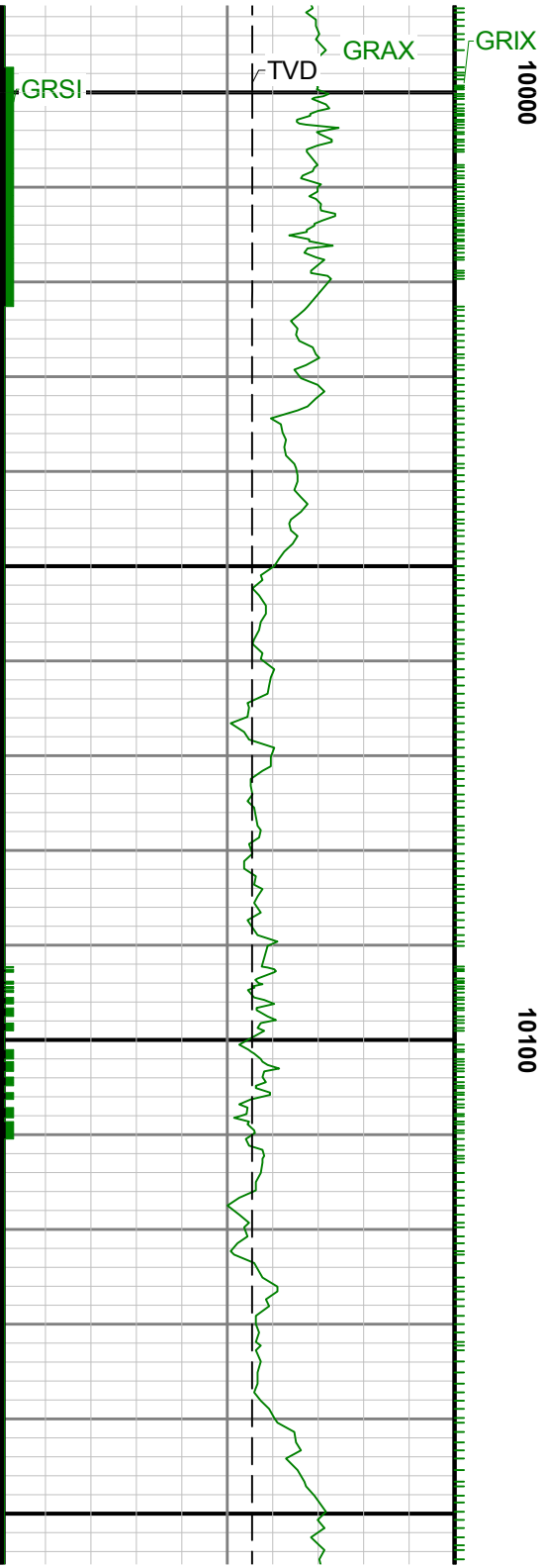


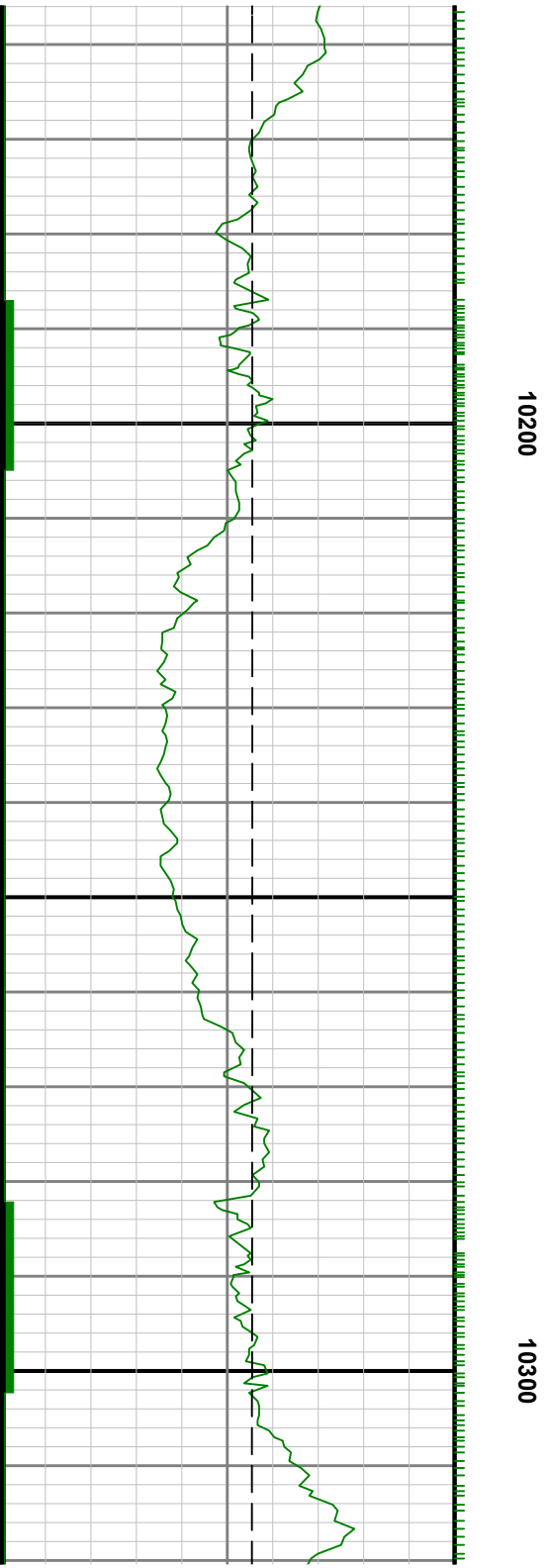
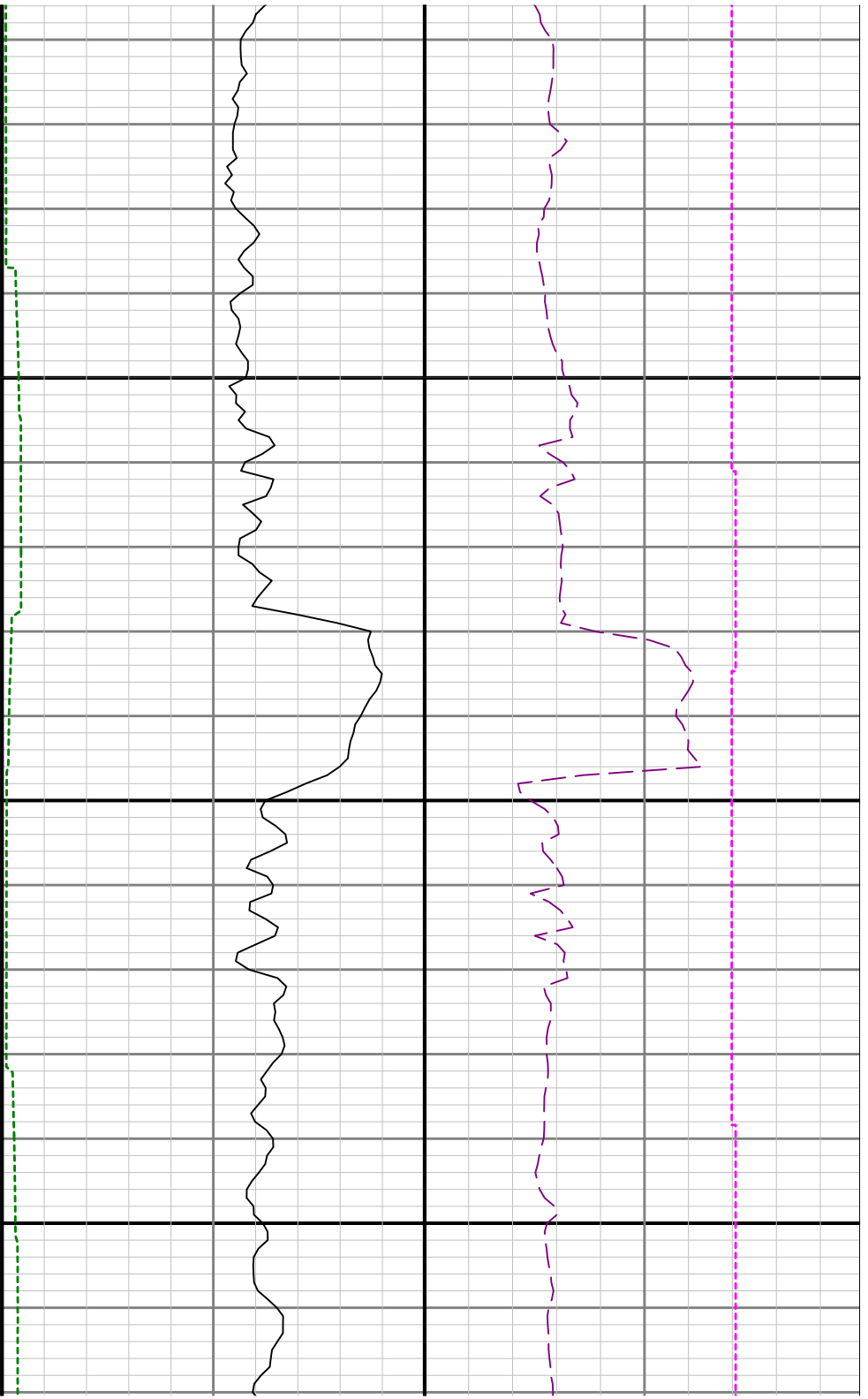


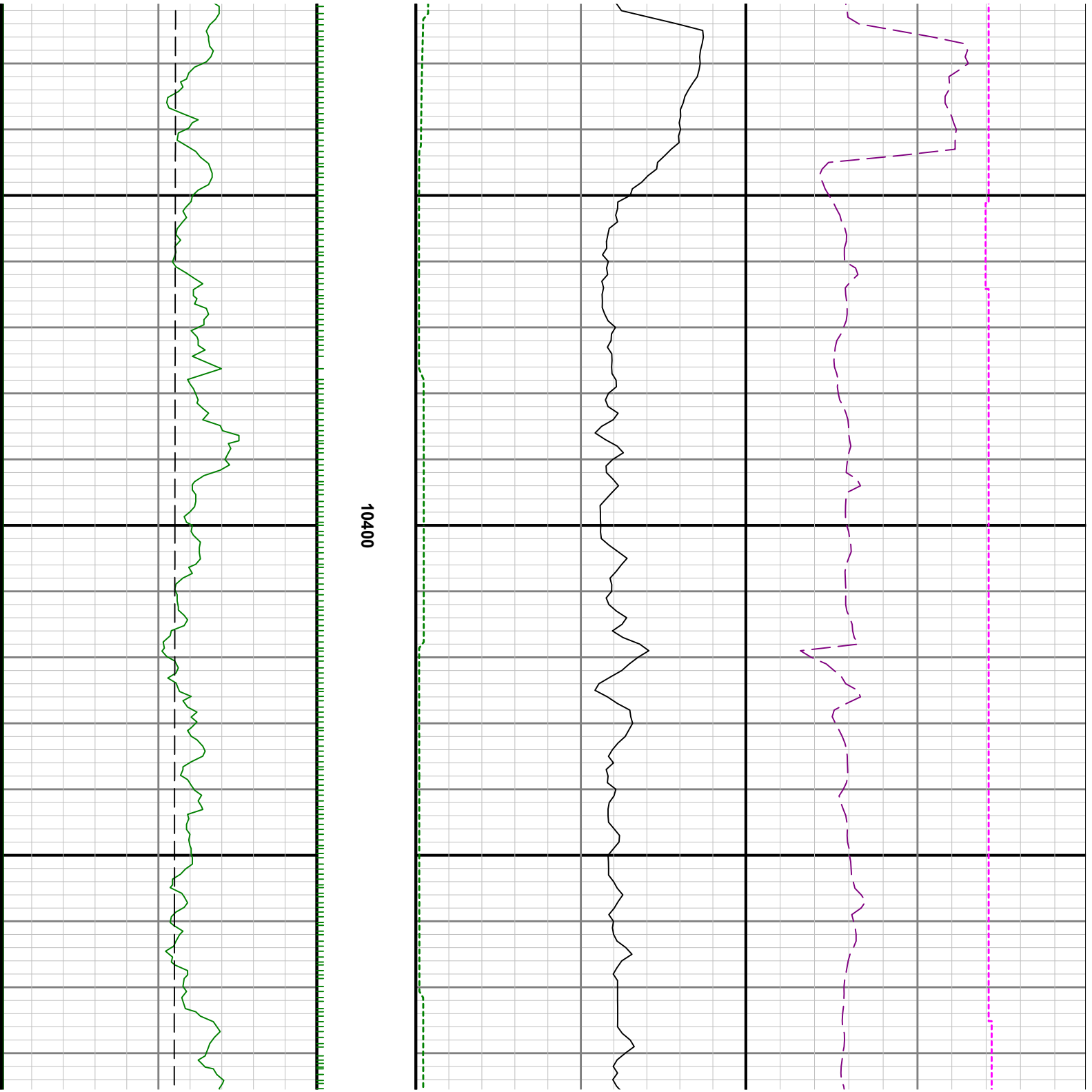


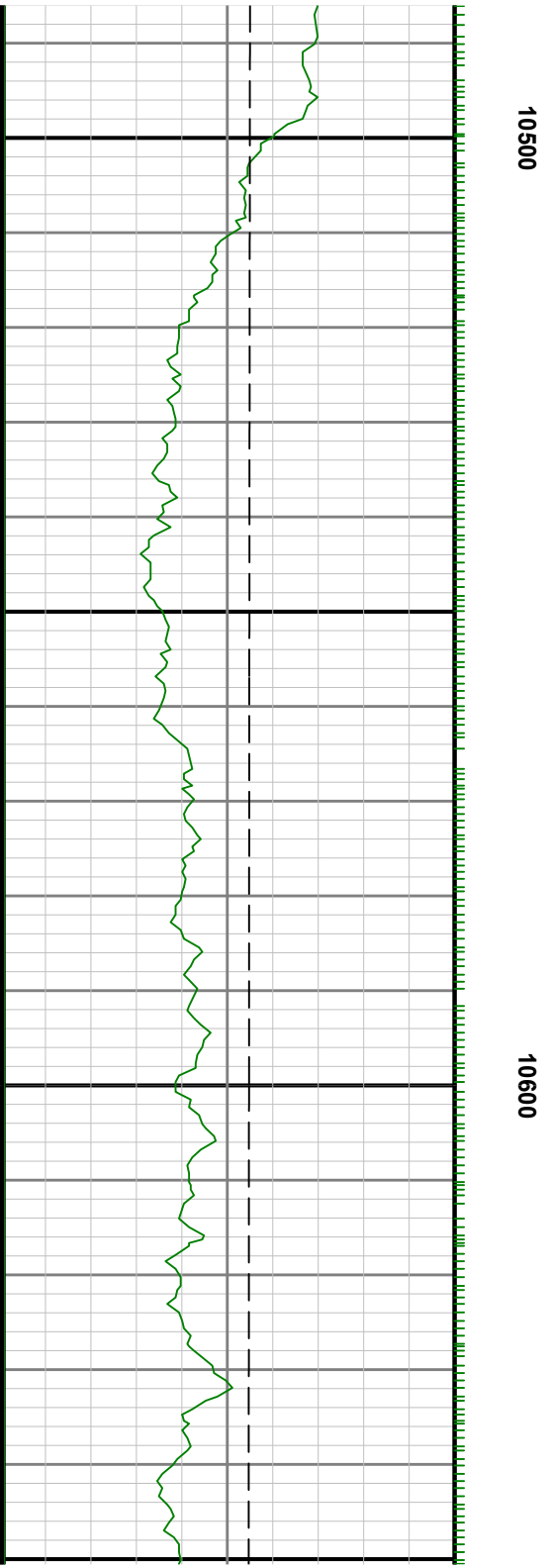
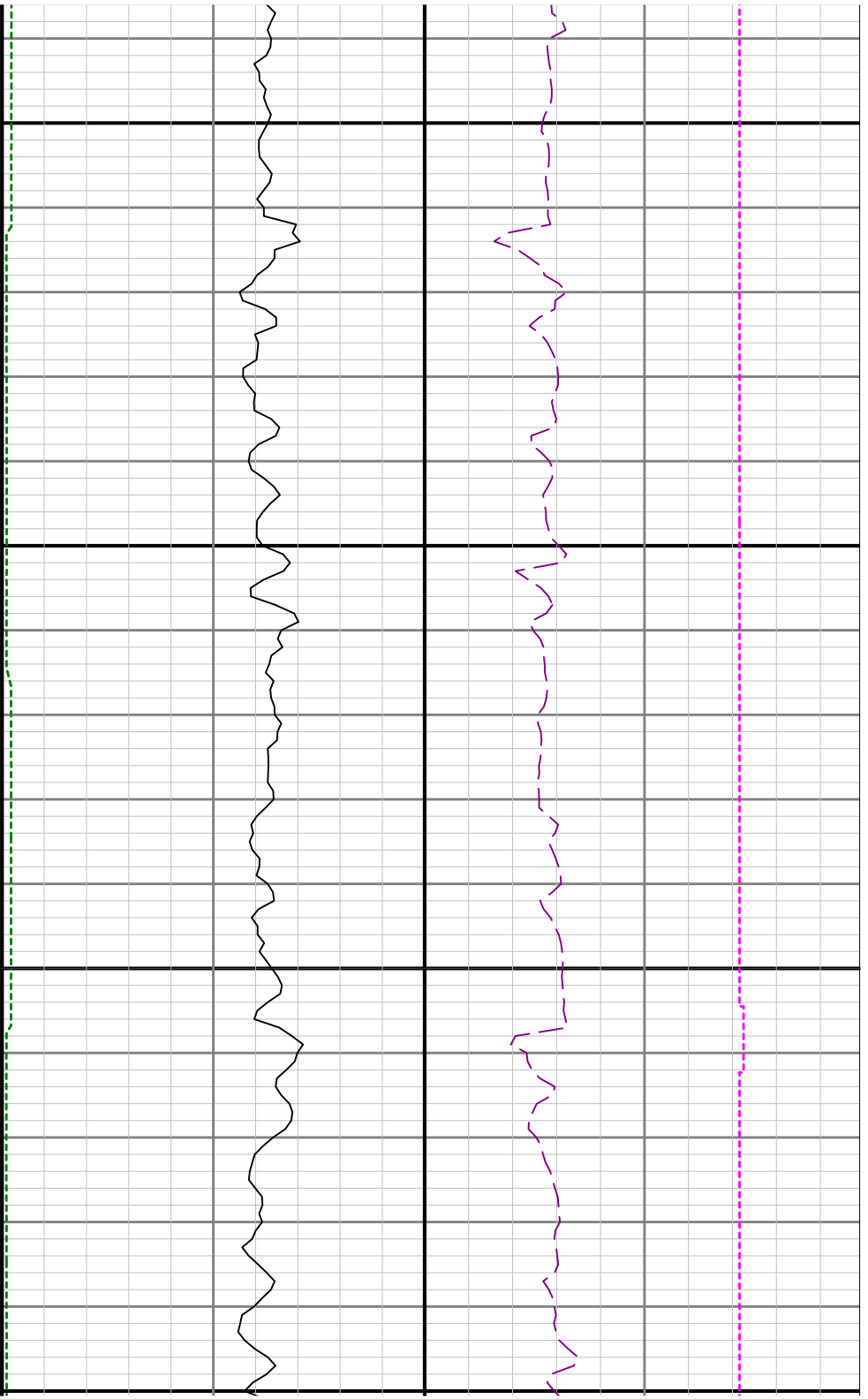
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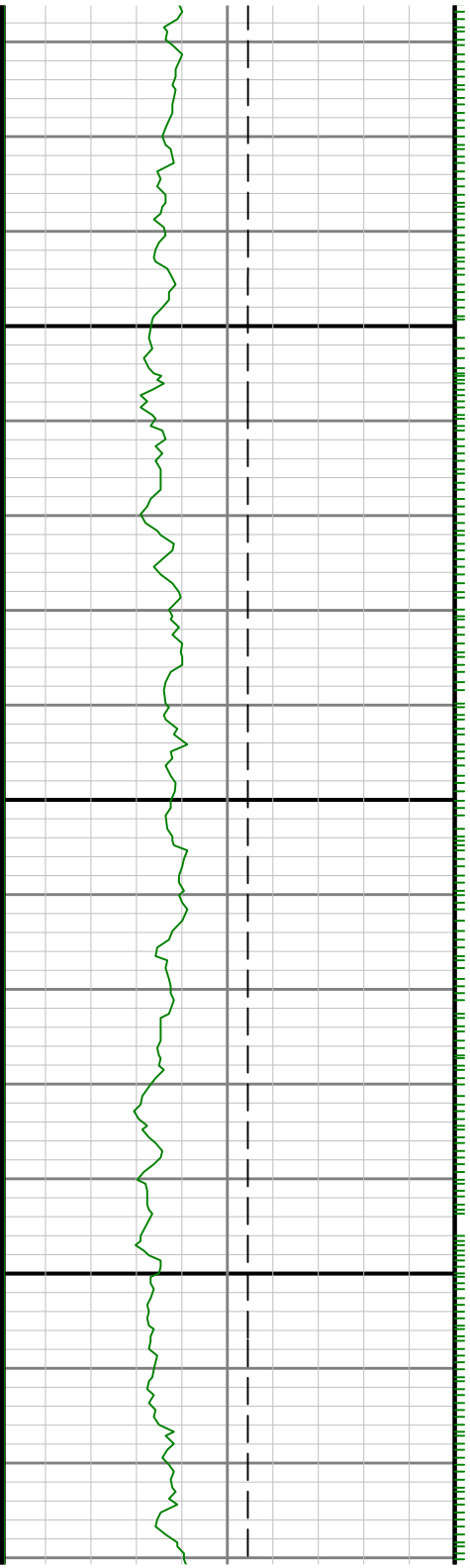




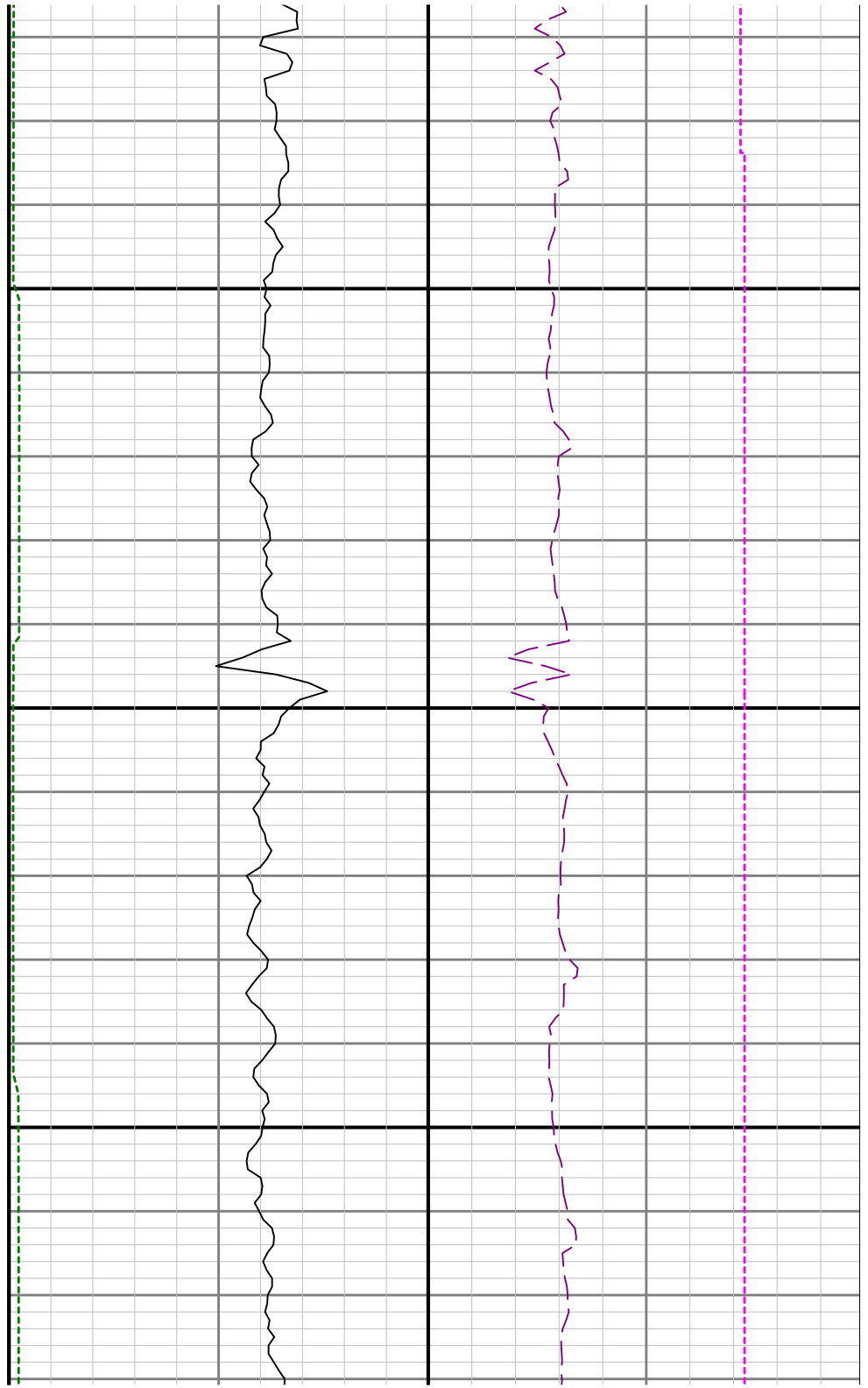


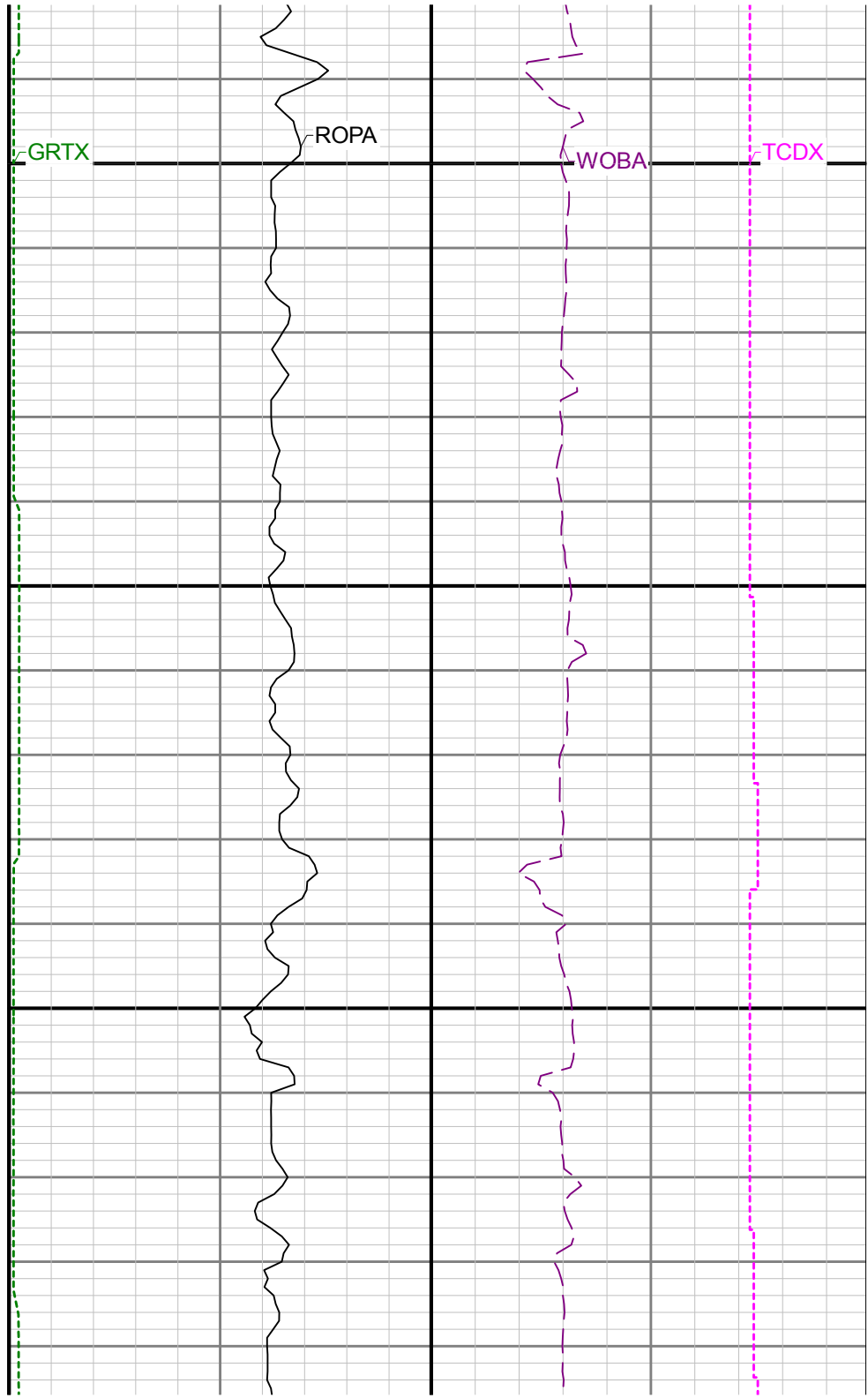
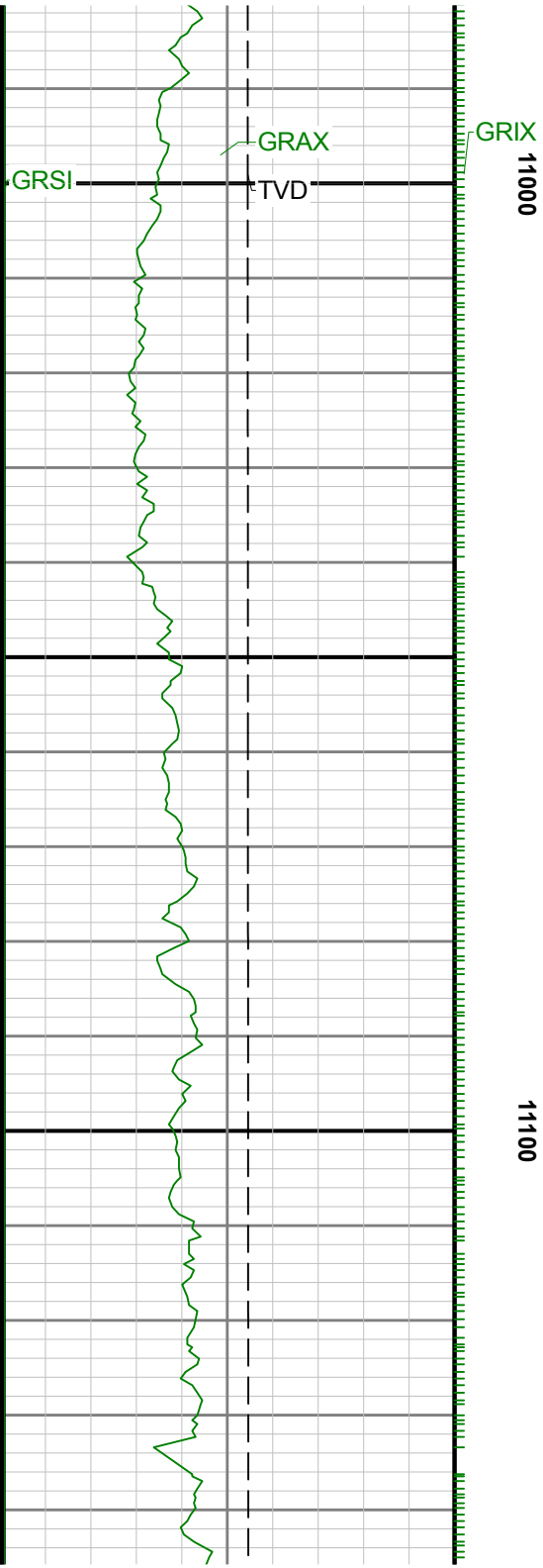


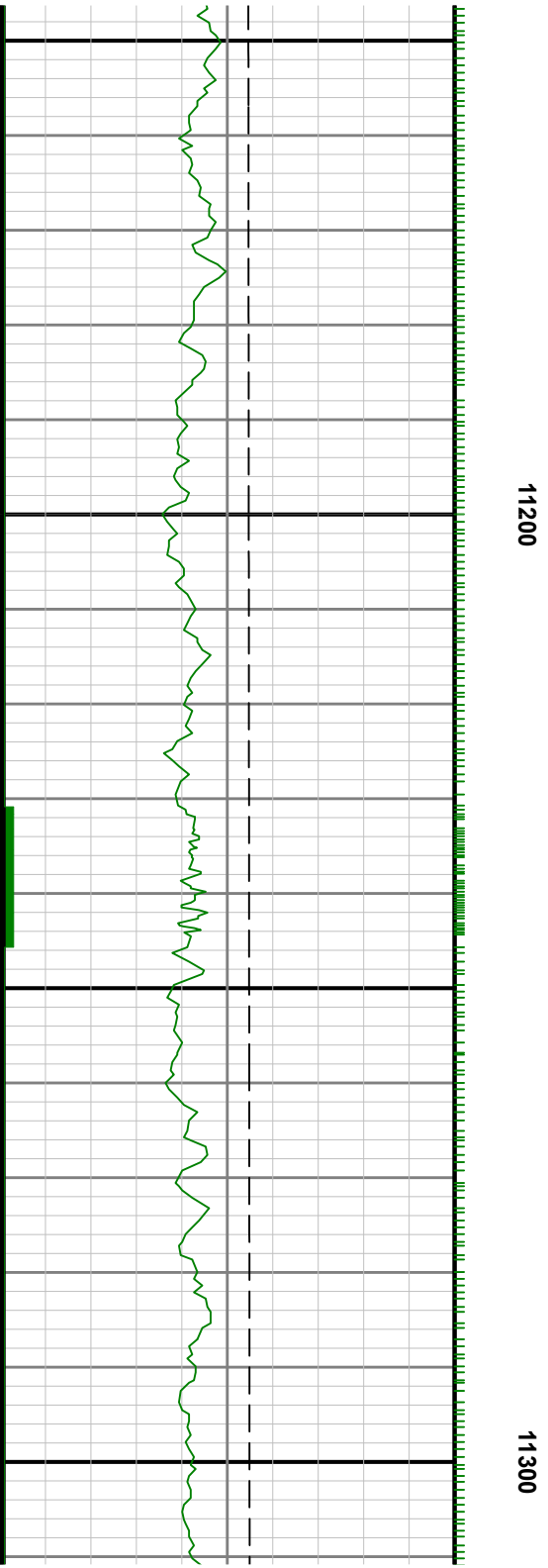
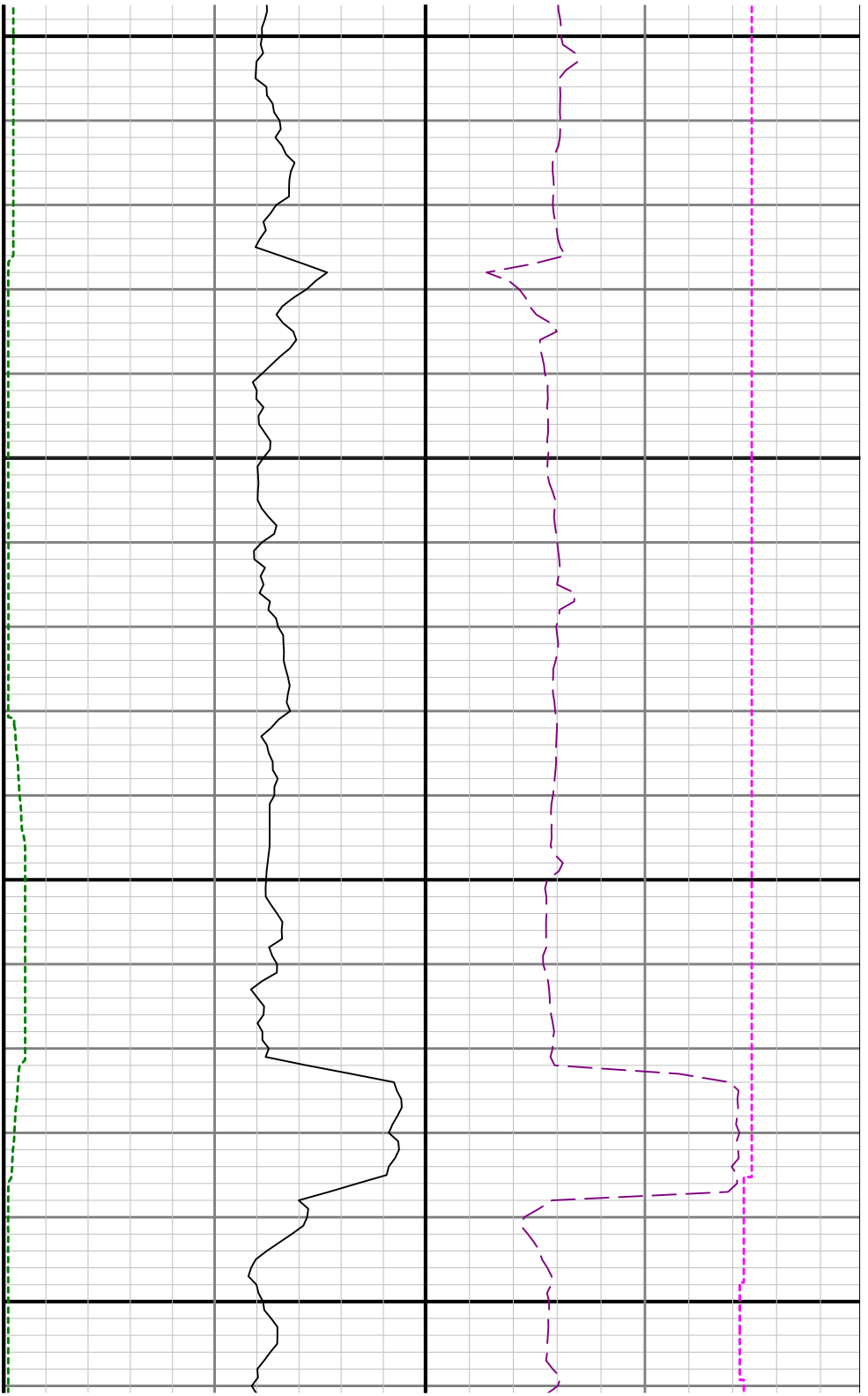


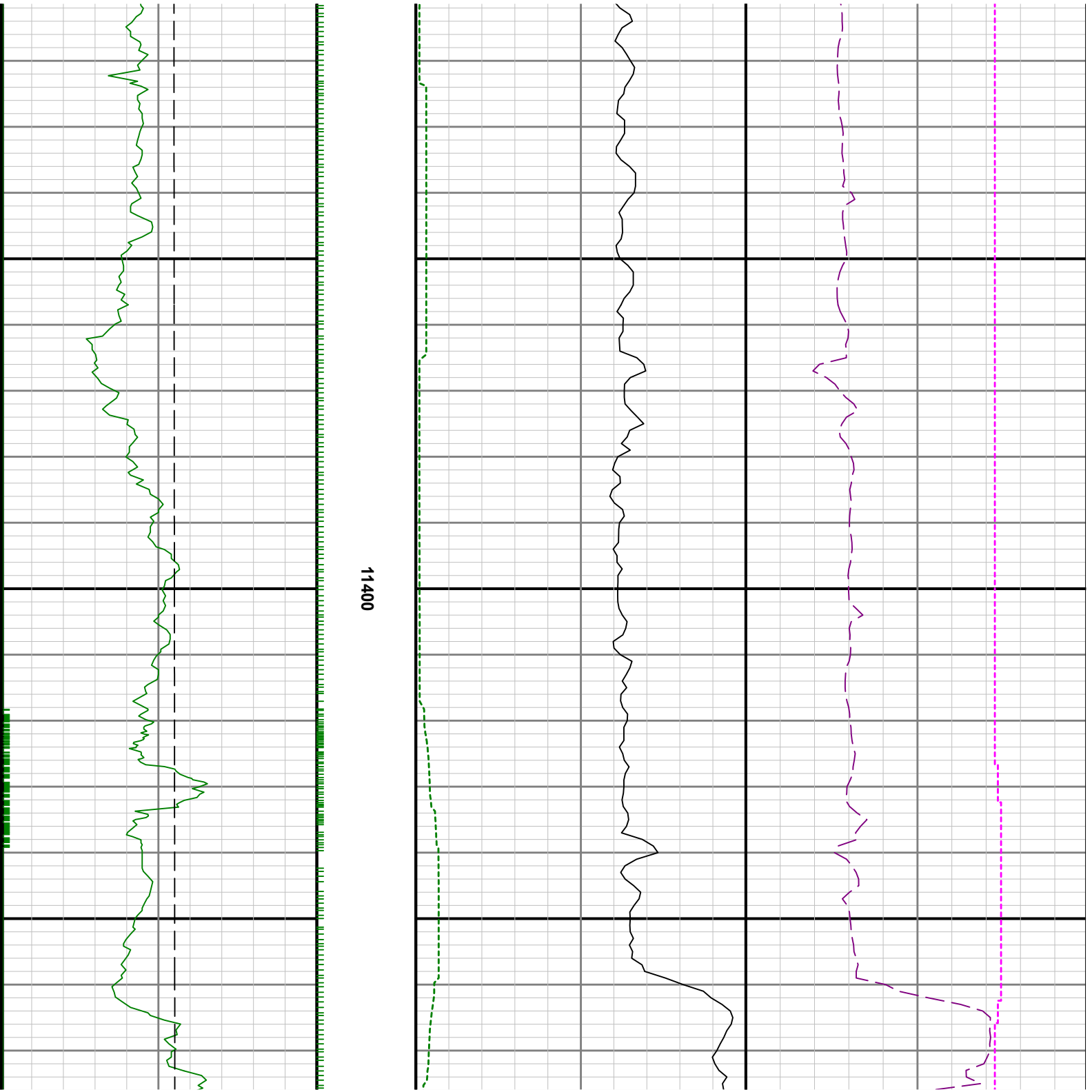


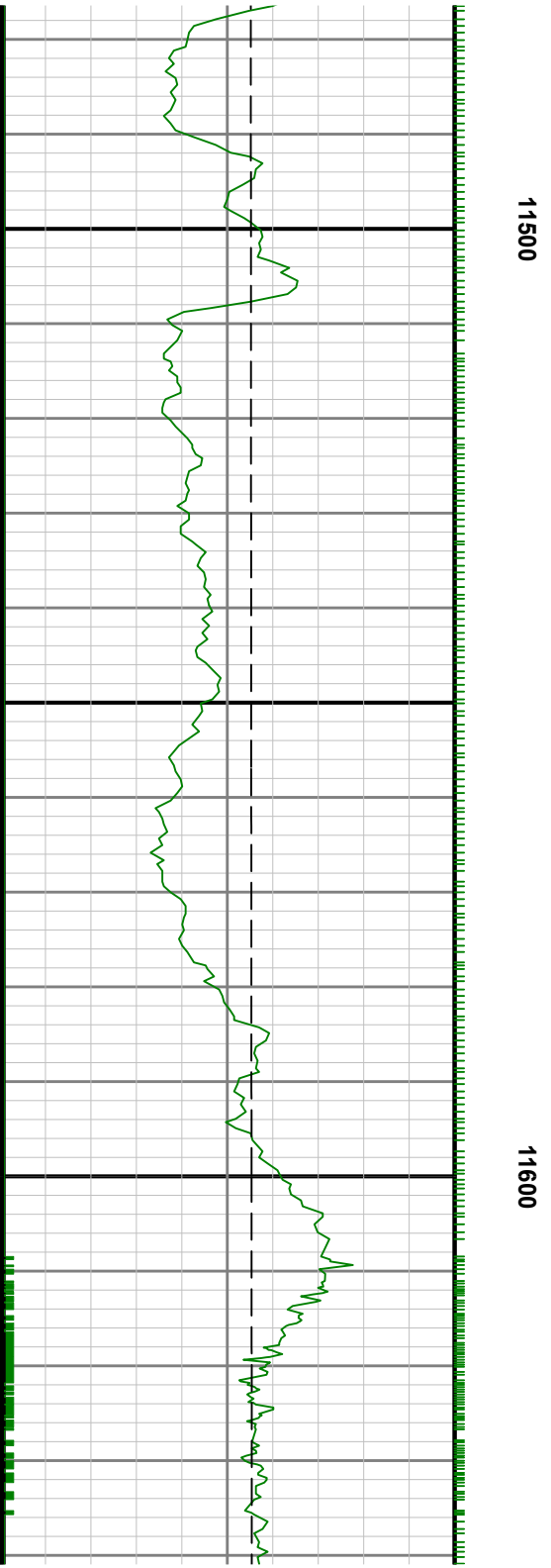
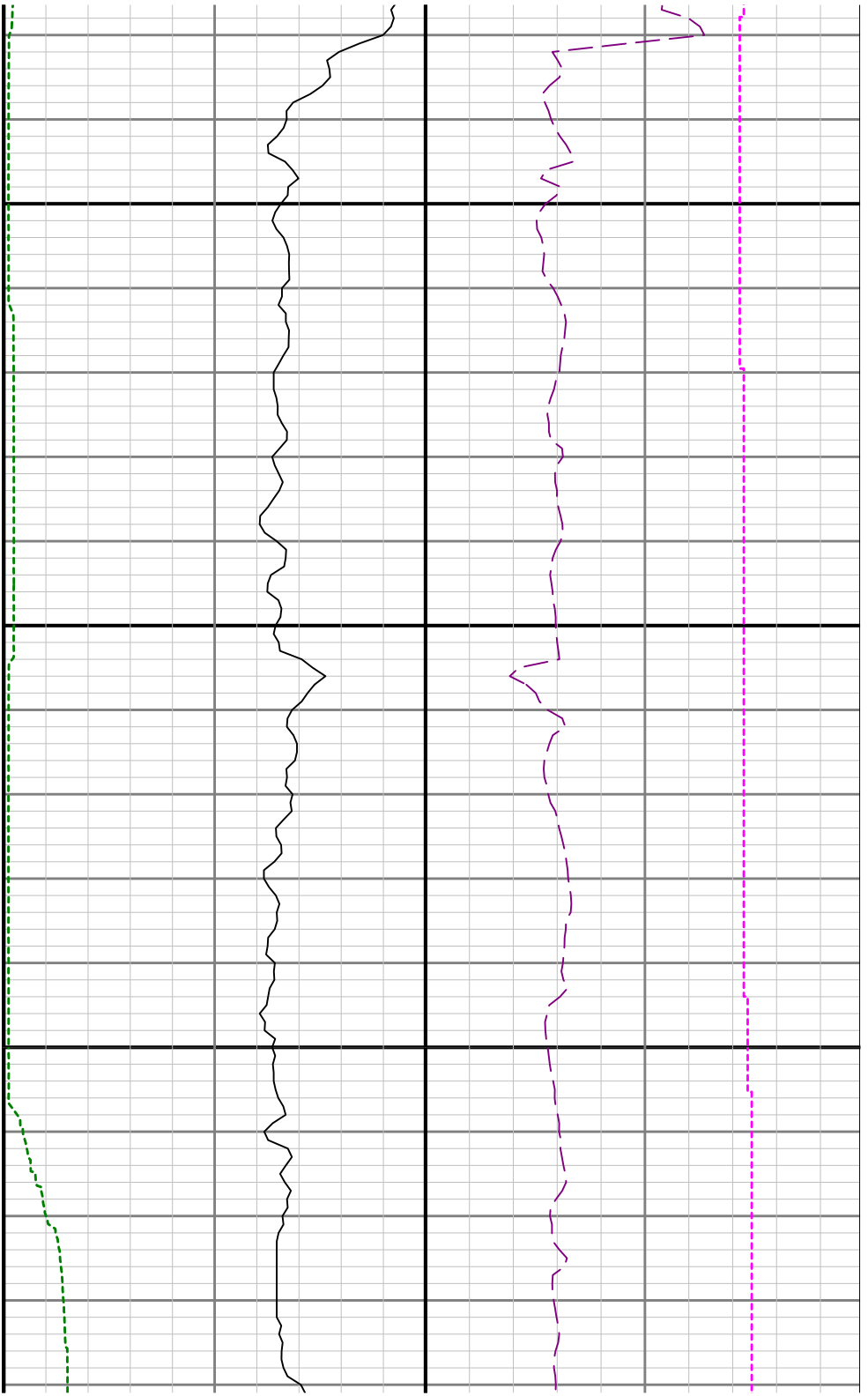
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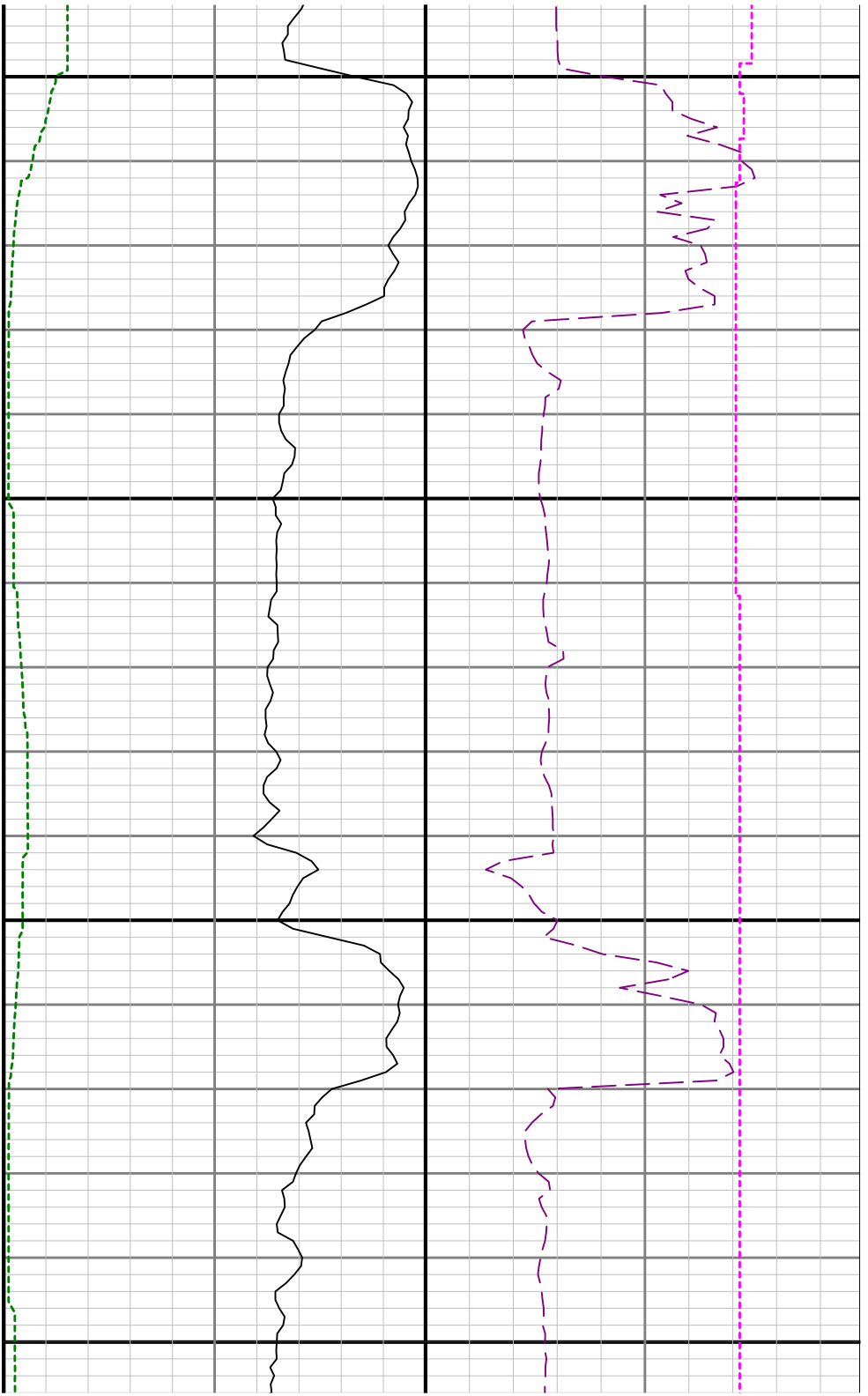






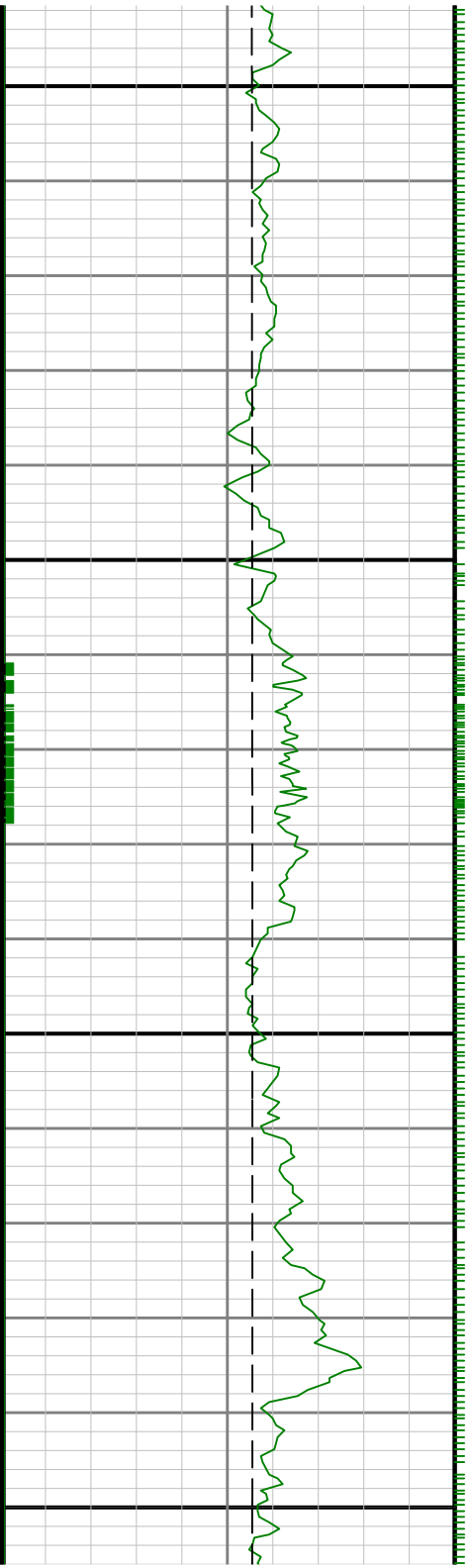


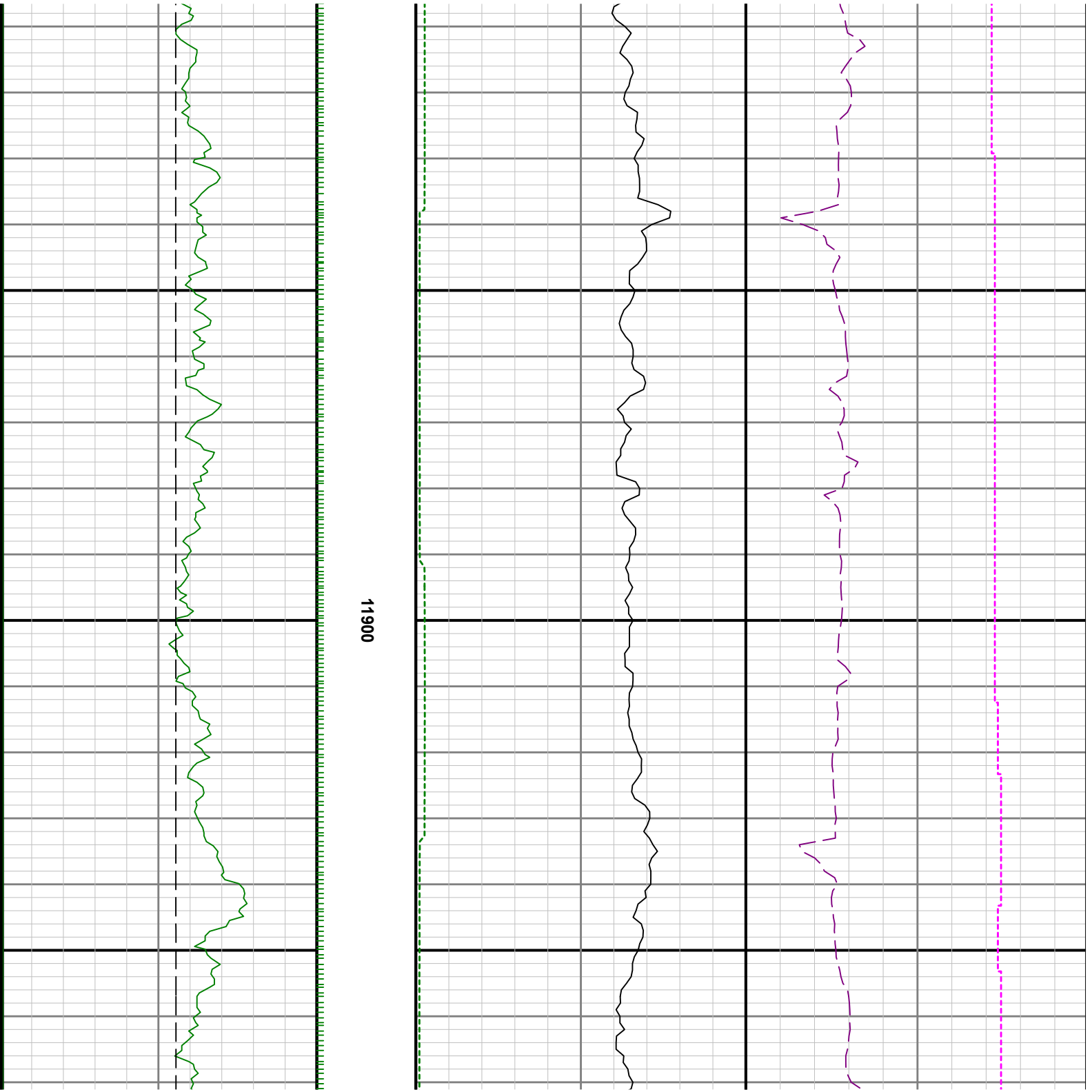


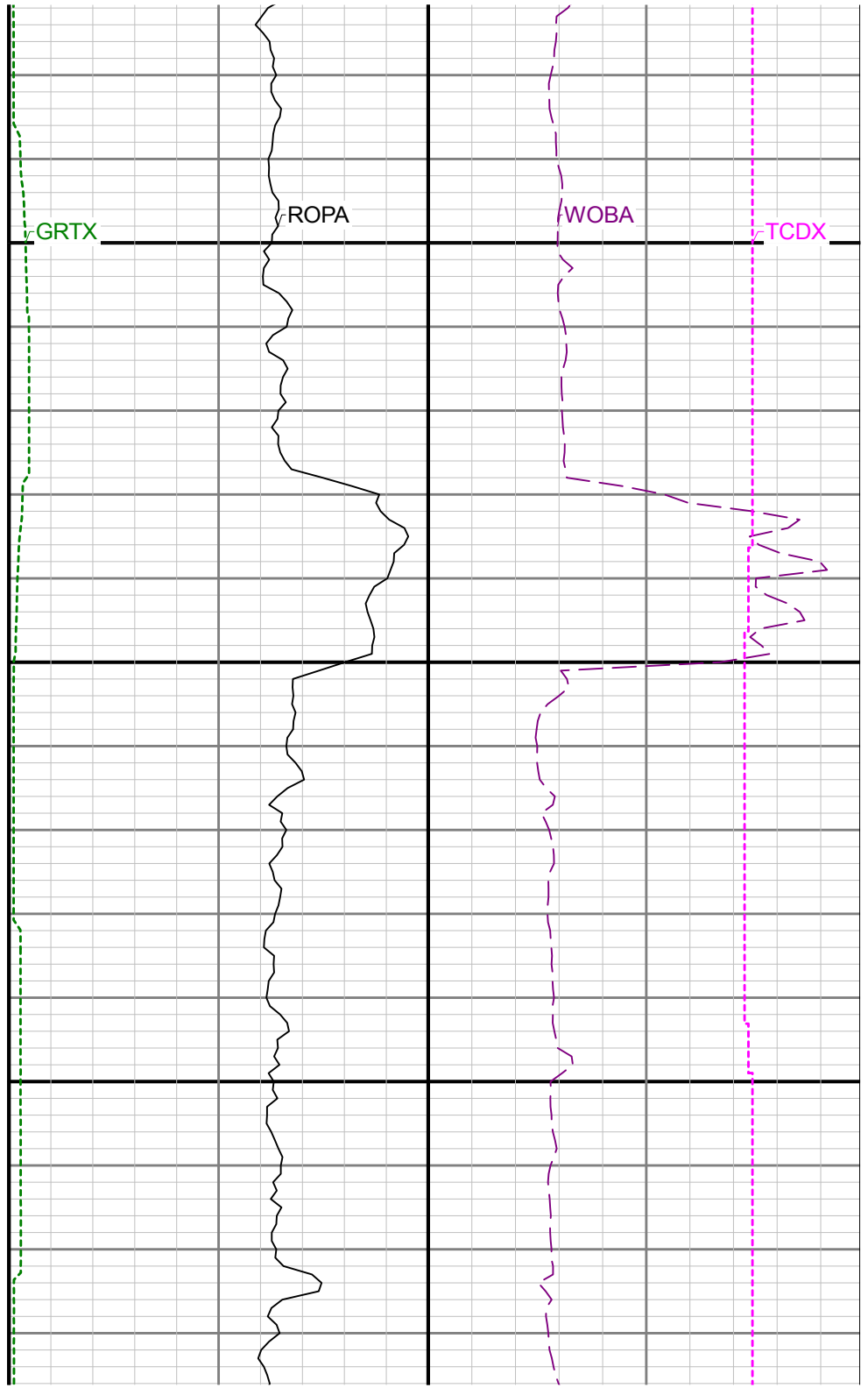
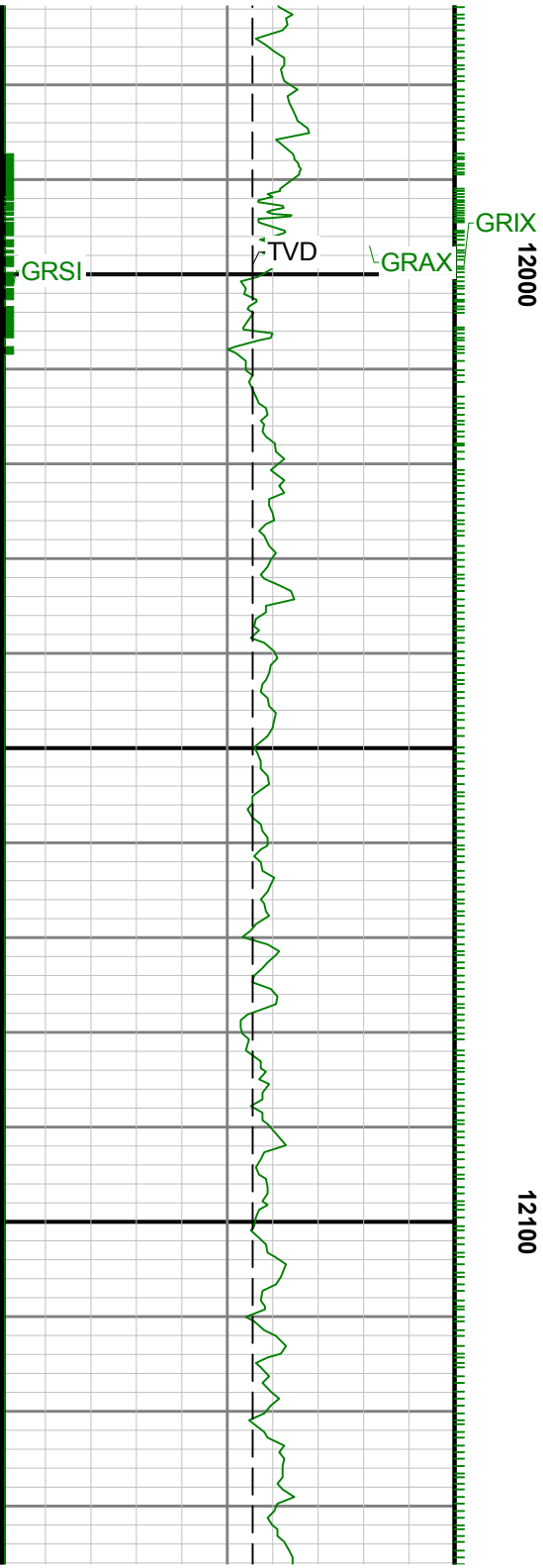


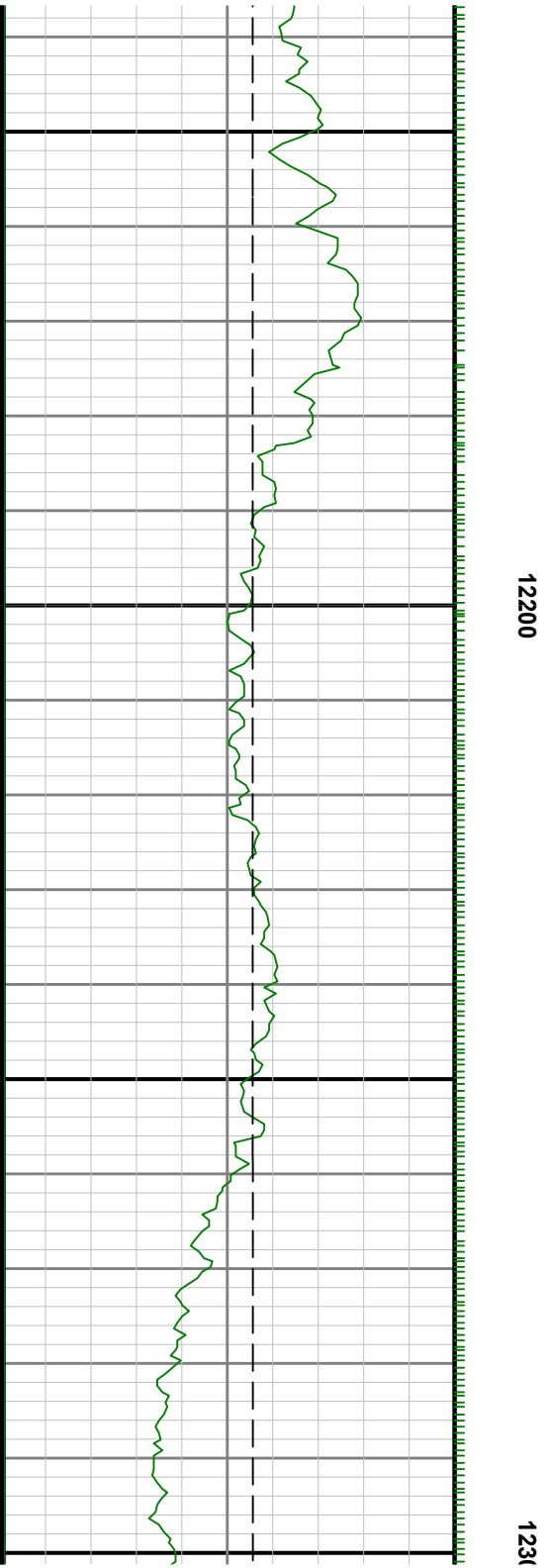
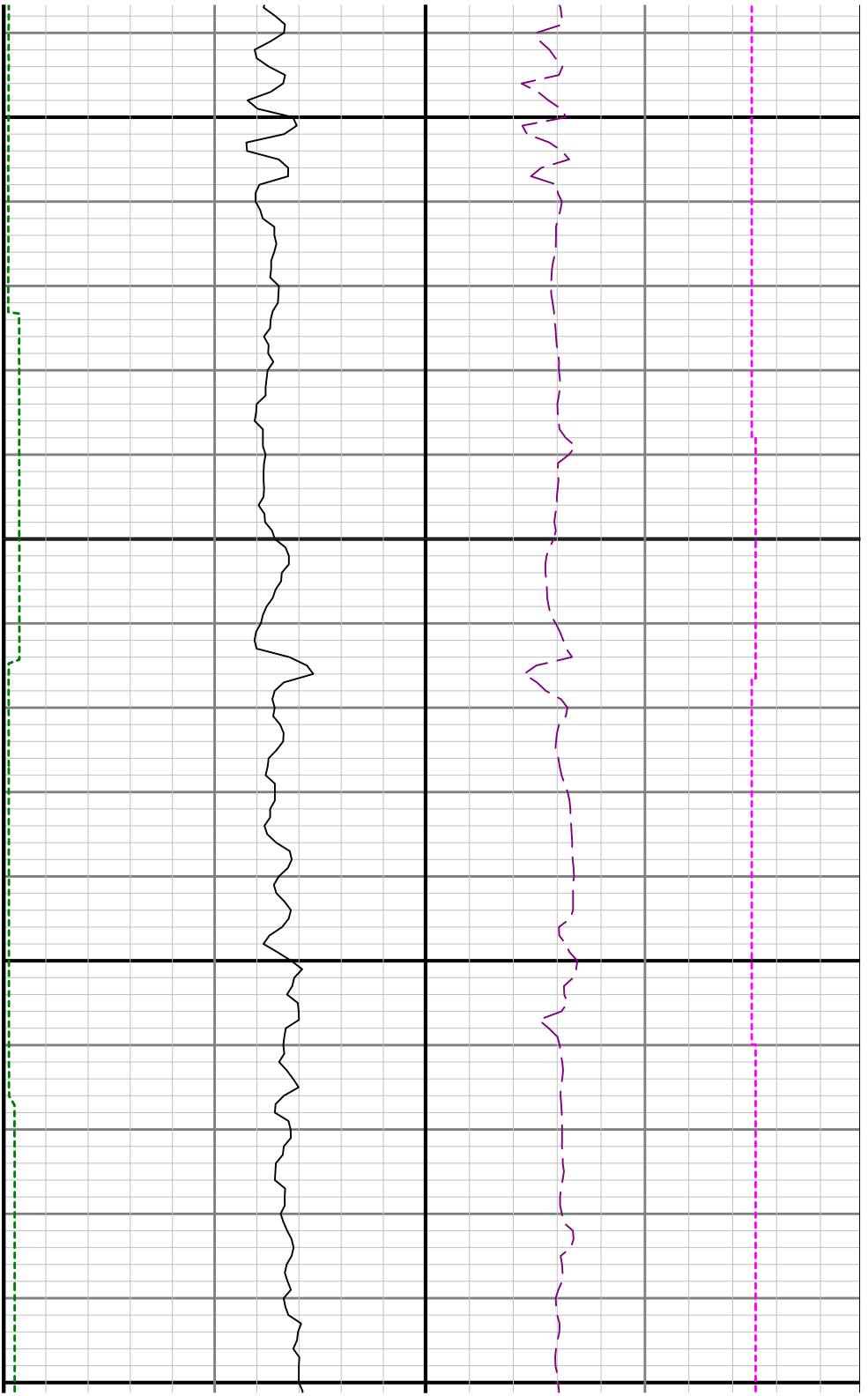
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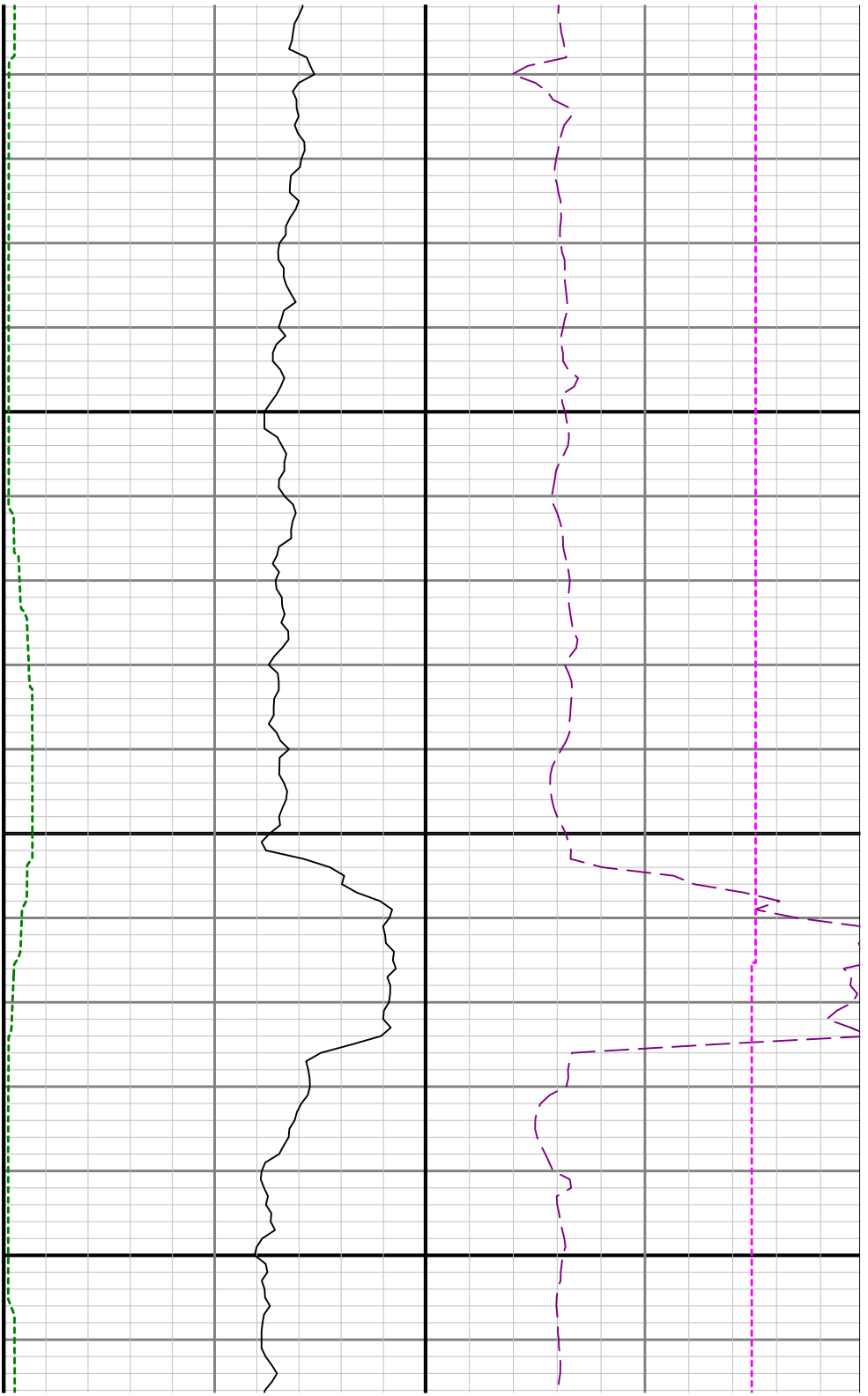
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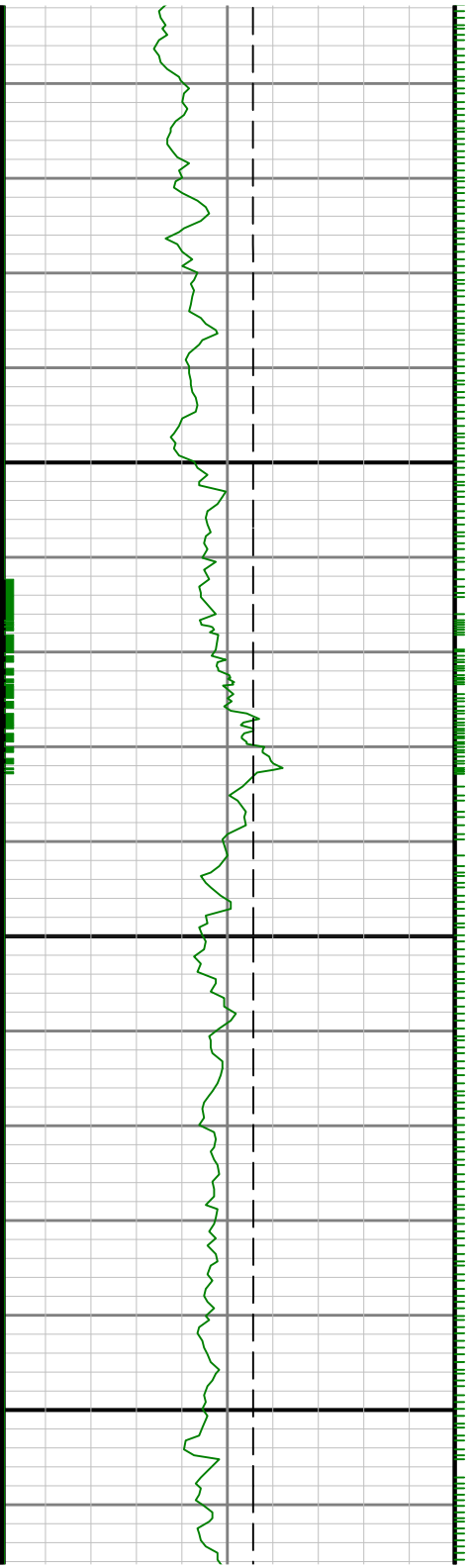




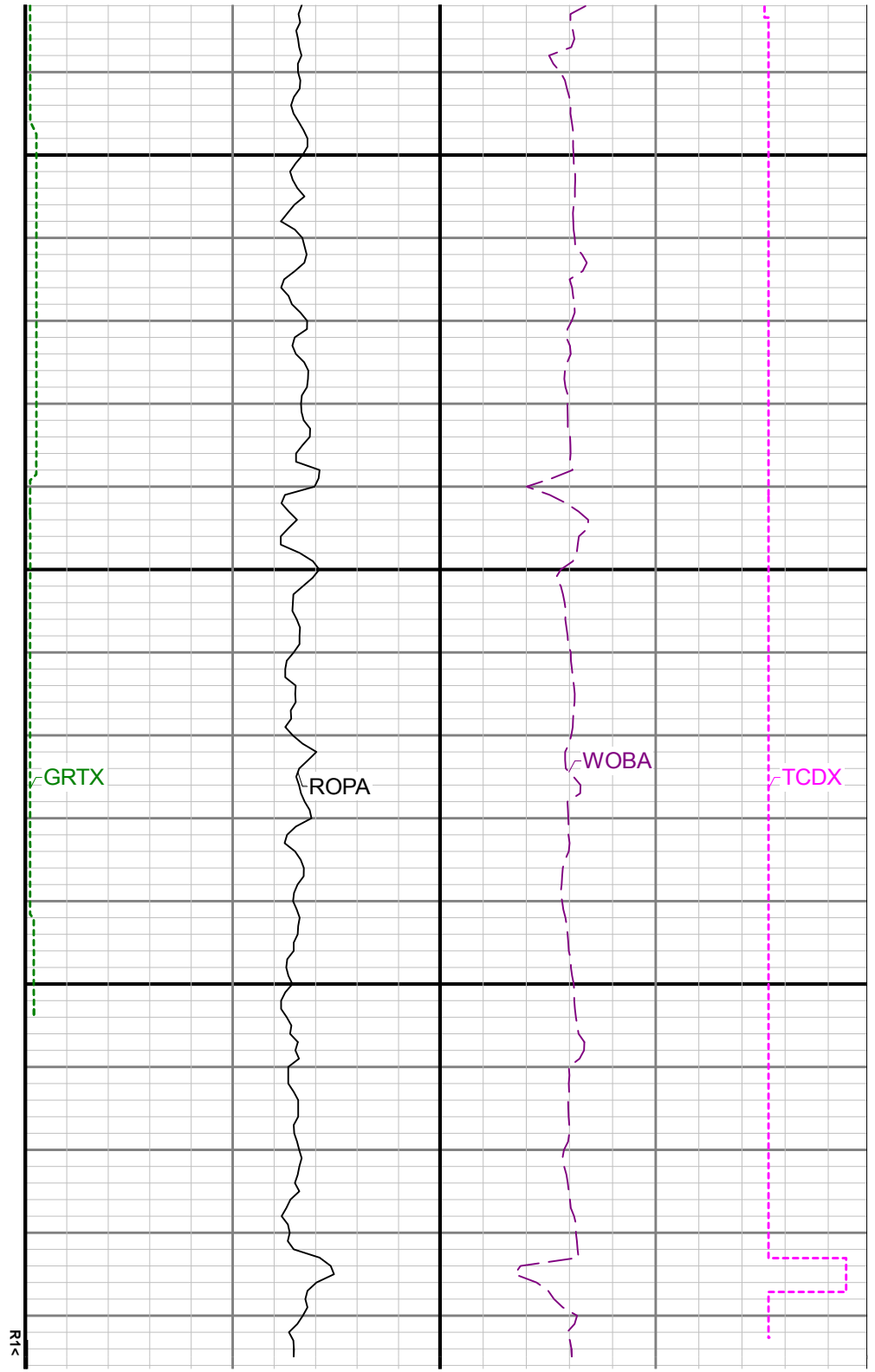
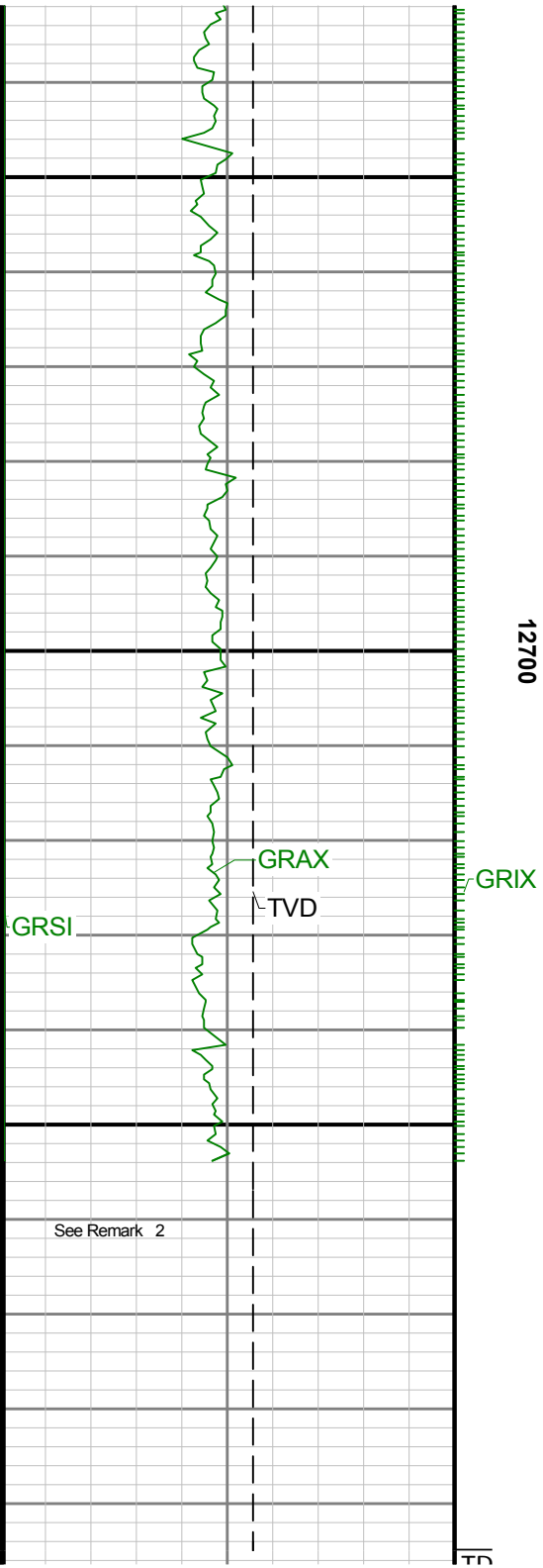


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12400







		12800				
Gamma Ray Apparent 0.5 ft Average GRAX 0 ————— 200 API		MD 1:240 feet	Rate of Penetration 3 ft Average ROPA 1000 ————— 0 ft/h		Surface Weight On Bit 1 ft Average WOBA 0 ————— 100 klb	
True Vertical Depth TVD 8000 ————— 6400 ft			Gamma Ray Time Since Drilled GRTX 0 ————— 600 min		Downhole Temperature TCDX 0 ————— 300 degF	