

BAKER HUGHES				MEMORY LOG			
Scale: 1:240 MD				Company: Noble Energy			
Depth Reference:				Well: Bennett LD19-758			
Driller's Depth				Field: Weld County			
Status: Final Print				Surface Location:		Other Services:	
API No: 05-123-43493				Latitude: 040° 43' 48.720" N		Directional	
Job ID: 8173294				Longitude: 103° 54' 41.112" W			
Permanent Datum (P.D.): Mean Sea Level				SEC: 19		TWN: 9N RGE: 58W	
Log Measured From: Rig Floor				Elevation: Above P.D.		KB: 4877.00 ft DF: 4877.00 ft GL: 4847.00 ft	
Dates				Interval Logged			
Date From: 2016-10-30				Top: (ft) 1925.00			
Date To: 2016-10-31				Bottom: (ft) 10963.00			
Spud Date: 2016-10-29				Total Magnetic Field Strength: (nT) 52641			
				Mag to Reference North Correction: (deg) 6.65 E			
Borehole Record				Casing Record			
Hole Size (in)				From (ft)		To (ft)	
13.500				0.00		1937.00	
8.500				1937.00		10963.00	
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### Log Run Summary

Run No	Bit Run No.	Bit Size (in)	Bit Type	Bit Gauge Length (in)	Assembly Type	Logged Interval		Bit Depth Interval		Date / Time		Circ. Hours (h)
						Top (ft)	Bottom (ft)	From (ft)	To (ft)	Start Logging	End Logging	
1	1	8.500	PDC	3.00	AutoTrak Curve	1925.00	10950.00	1937.00	10963.00	2016-10-30 04:22	2016-10-31 21:54	36.27

### Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Alex Osborne	2016-10-28	2016-11-01	Scott Sims	2016-10-28	2016-11-01			

### 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+ (%)
2016-10-29 20:00	1	1937.00	Oil Based Mud	9.5	60	N/A	89.0	80 / 20	Active Pit	16500	N/A
2016-10-30 08:00	1	2479.00	Oil Based Mud	9.0	52	N/A	21.8	72 / 28	Active Pit	18000	N/A
2016-10-30 20:00	1	5772.00	Oil Based Mud	9.0	42	N/A	20.4	80 / 20	Active Pit	22500	N/A
2016-10-31 08:00	1	8156.00	Oil Based Mud	8.9	42	N/A	22.0	73 / 27	Active Pit	25000	N/A
2016-10-31 20:00	1	10606.00	Oil Based Mud	9.0	47	N/A	21.4	73 / 27	Active Pit	27000	N/A

### Equipment and Service Data

Run No.	Tool	Serial Number	Measurement	Sensor Offset (ft)	Bit Offset (ft)	Max O.D. (in)	Min I.D. (in)
1	ATC_SU	12022378	Near Bit Inclination	5.93	6.69	7.000	4.330
1	ATC_SU	12022378	Near Bit VSS	5.93	6.69	7.000	4.330
1	ATC_MWD	12398198	Gamma (single)	2.20	12.31	7.000	3.250
1	ATC_MWD	12398198	Directional (mag)	12.27	22.38	7.000	3.250

Comments

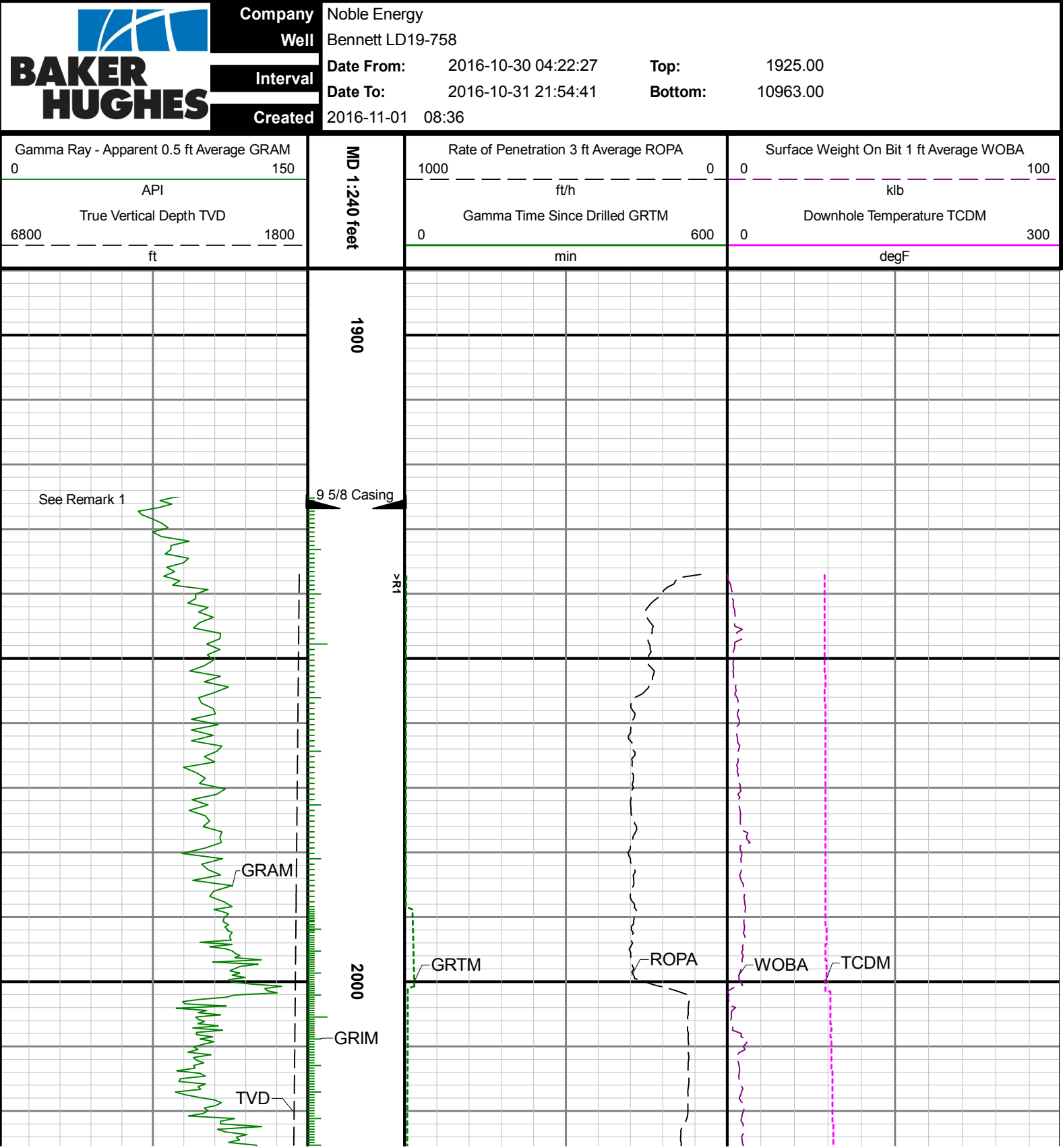
- 1
- Depth measurements obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
- 2
- Baker Hughes LWD Run 1 utilized 6 3/4 inch NaviGamma Services (Gamma Ray and Directional) behind an 8 1/2 inch bit and rotary steerable assembly from 1937 to 10963 ft MD (1937 to 5903 ft TVD).

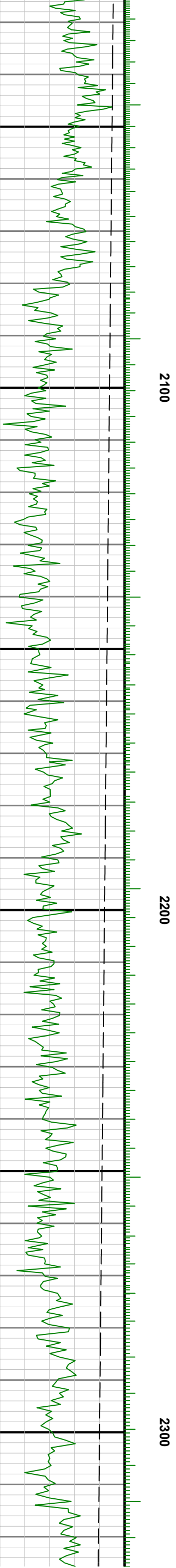
Remarks

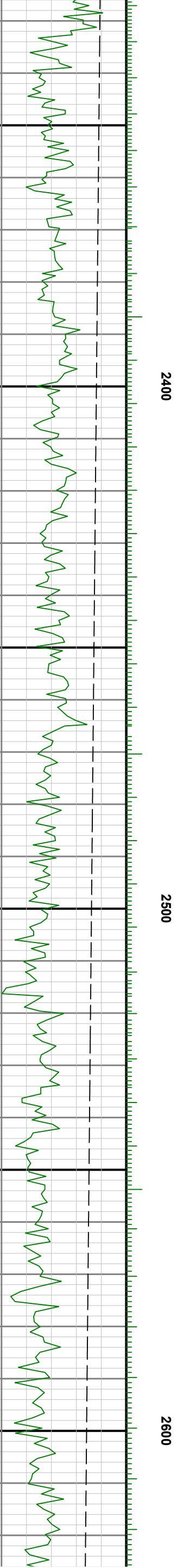
Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	1925.00	8.500	1	Gamma Ray logging operations began at 1925 feet MD (1925 feet TVD)
2	10313.00	8.500	1	Per client's instructions the interval from 10313 to 10408 feet MD (5915 feet TVD) was not logged due to tool complications resulting in tool not powered up while drilling ahead.
3	10502.00	8.500	1	Per client's instructions the interval from 10502 to 10596 feet MD (5913 to 5909 feet TVD) was not logged due to tool complications resulting in tool not powered up while drilling ahead.
4	10950.00	8.500	1	The interval from 10950 to 10963 feet MD (5903 feet TVD) was not logged due to sensor offset at well TD.

Curve Mnemonics

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





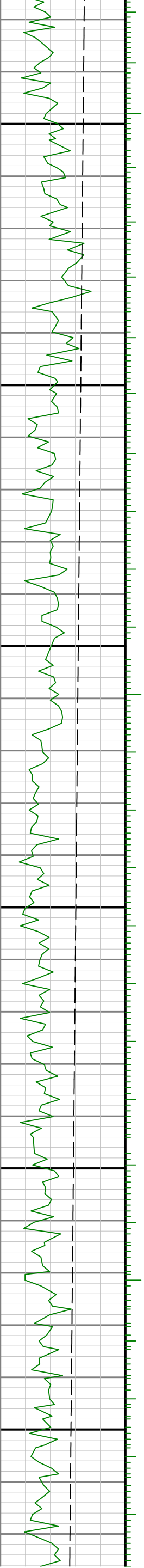


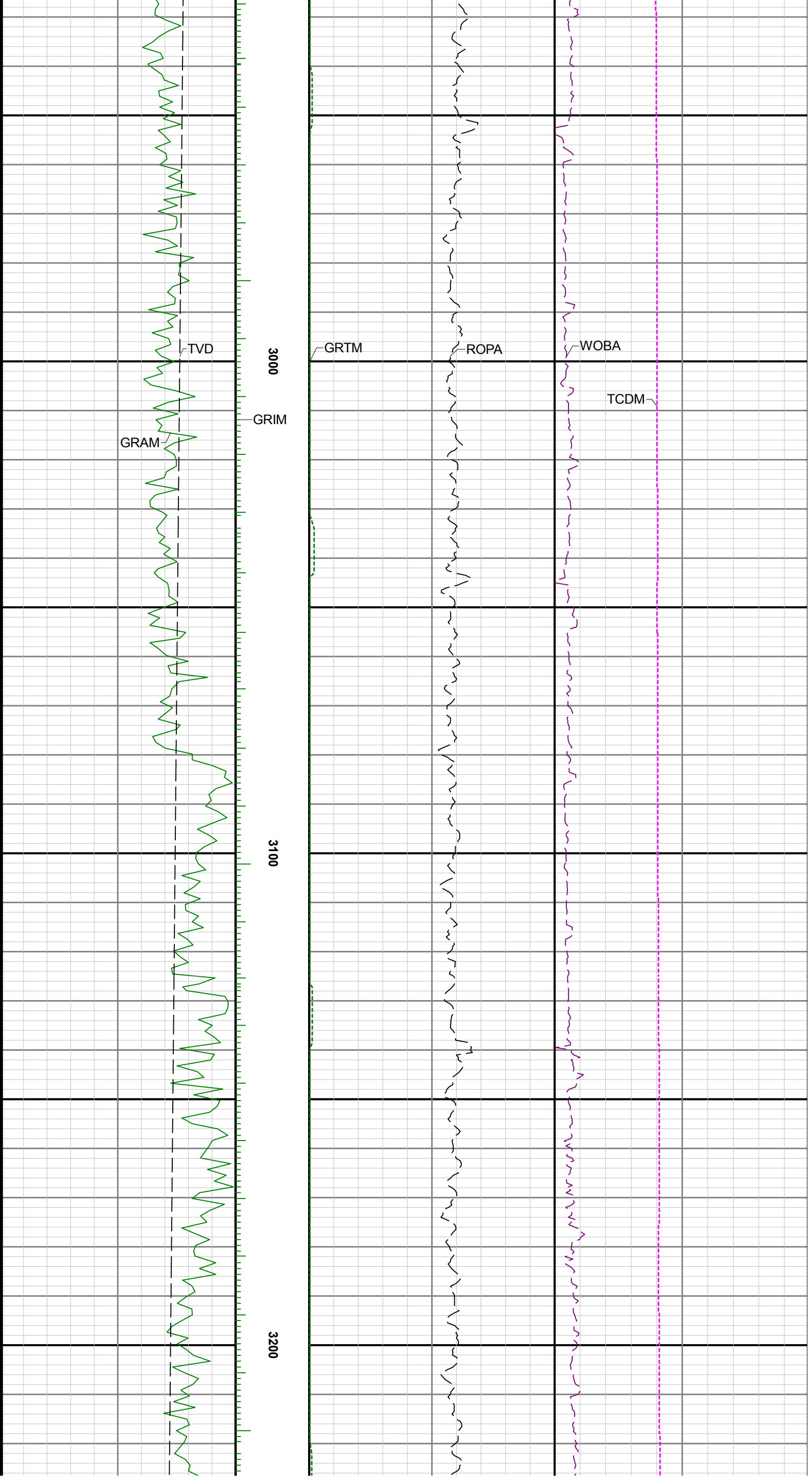


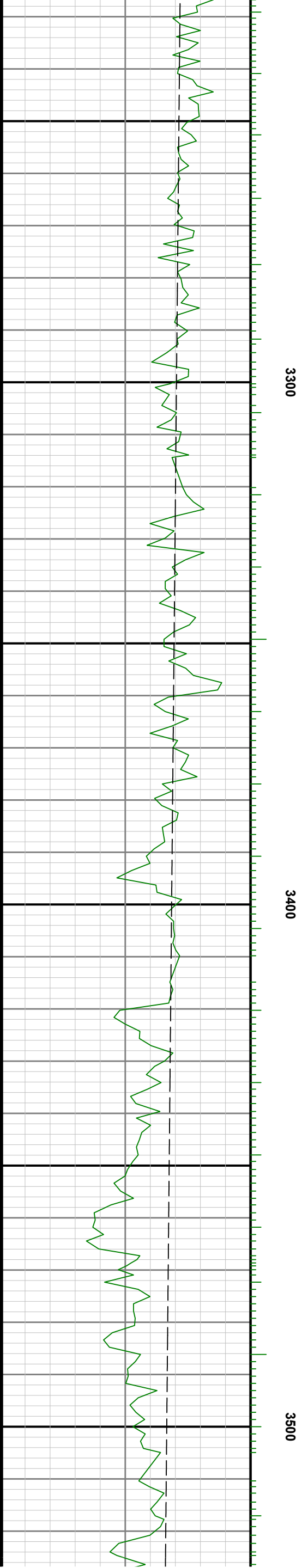
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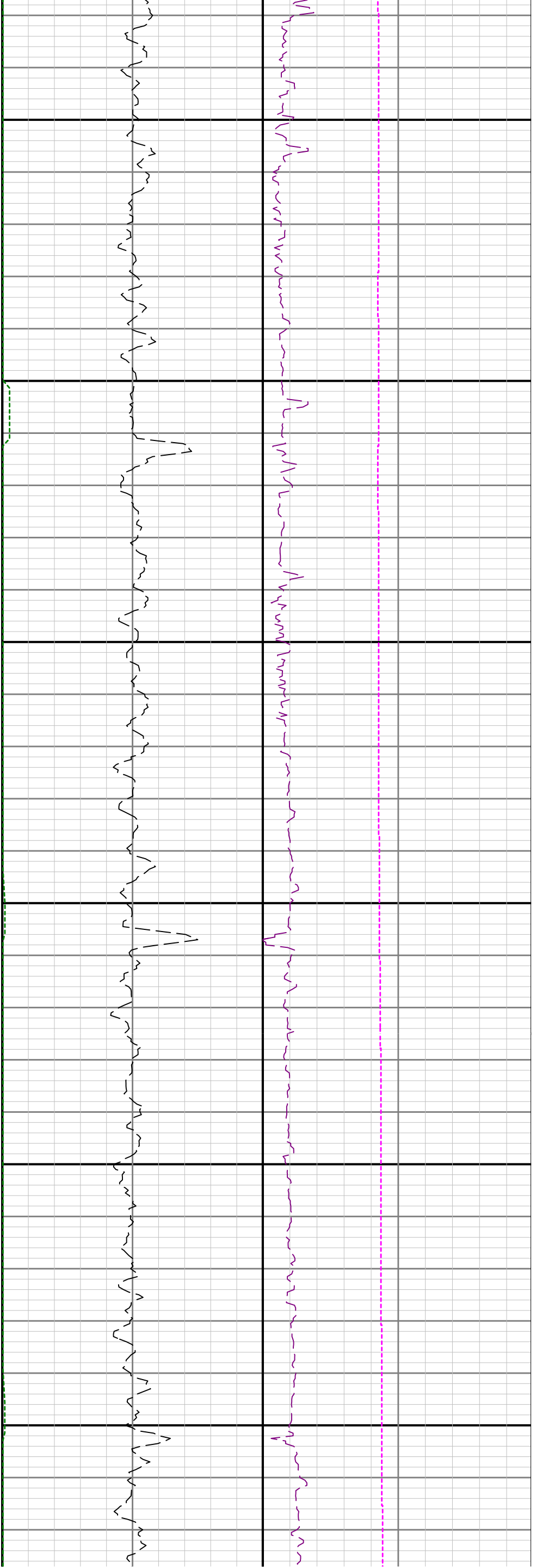
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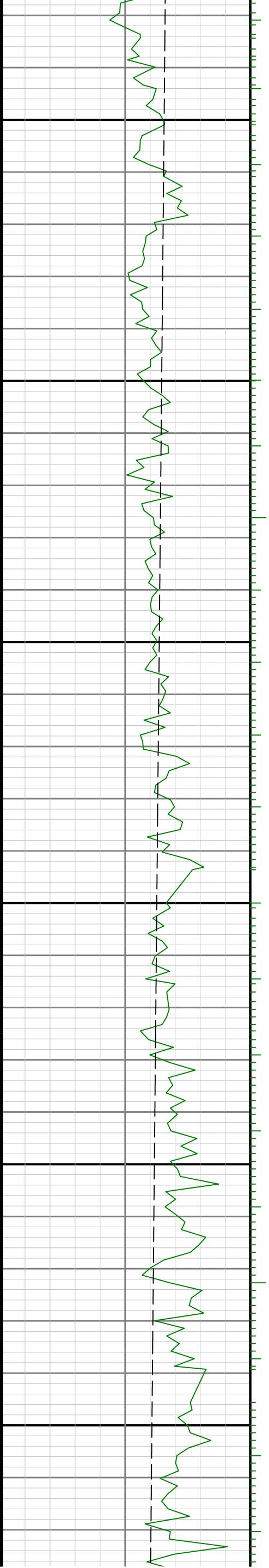




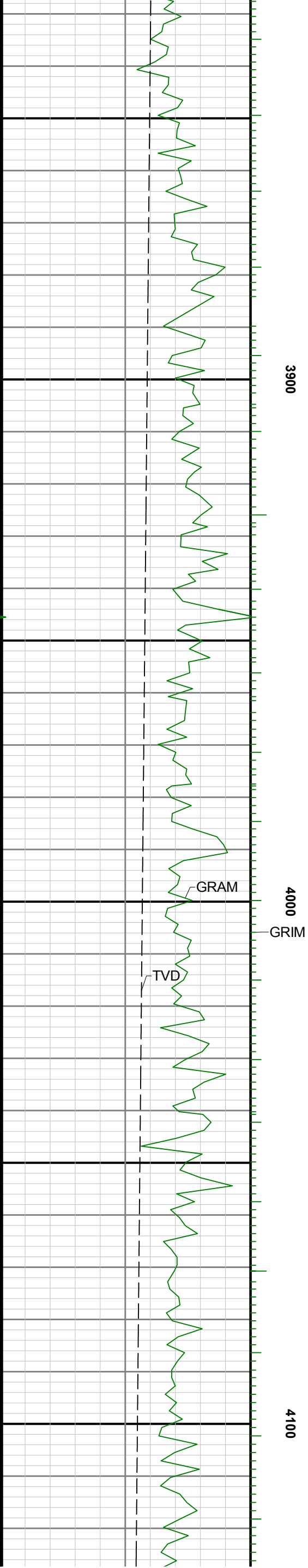
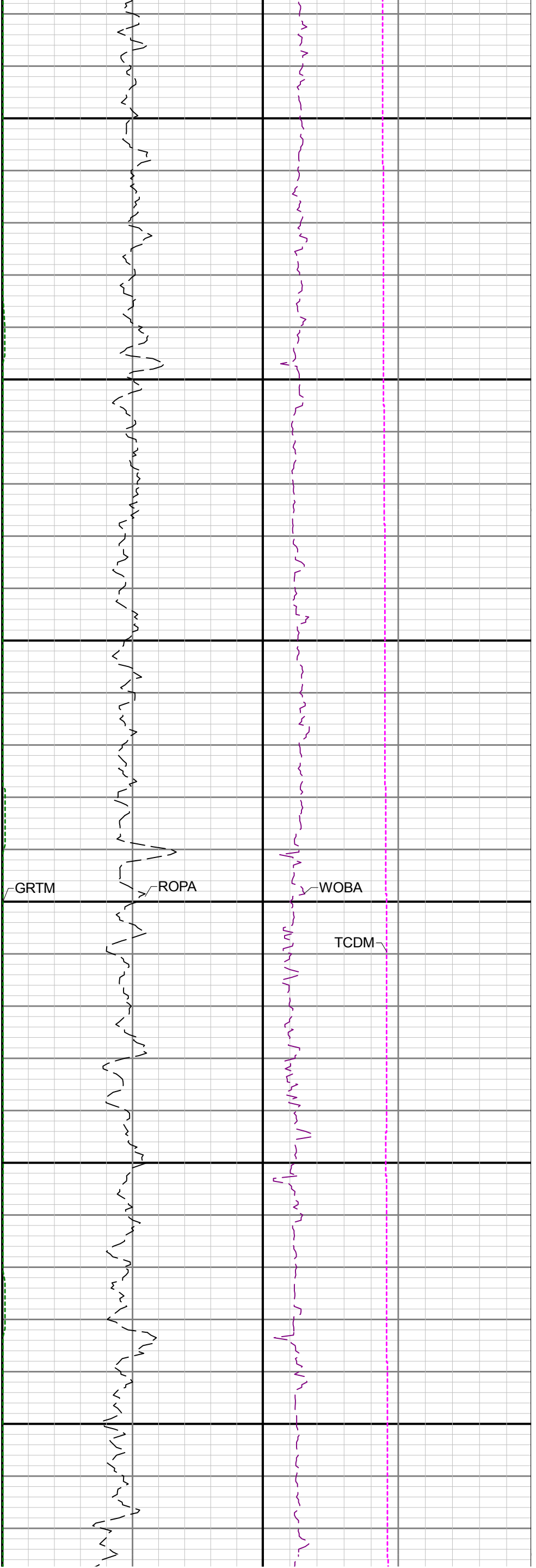
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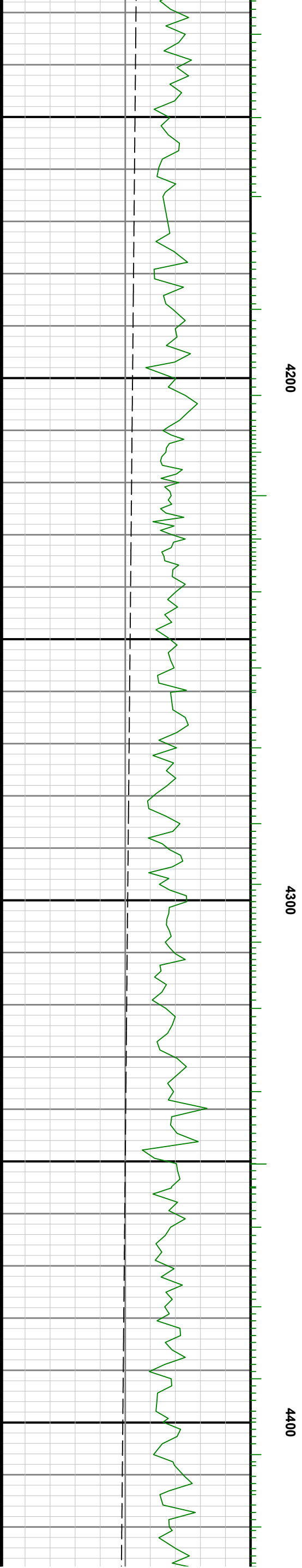
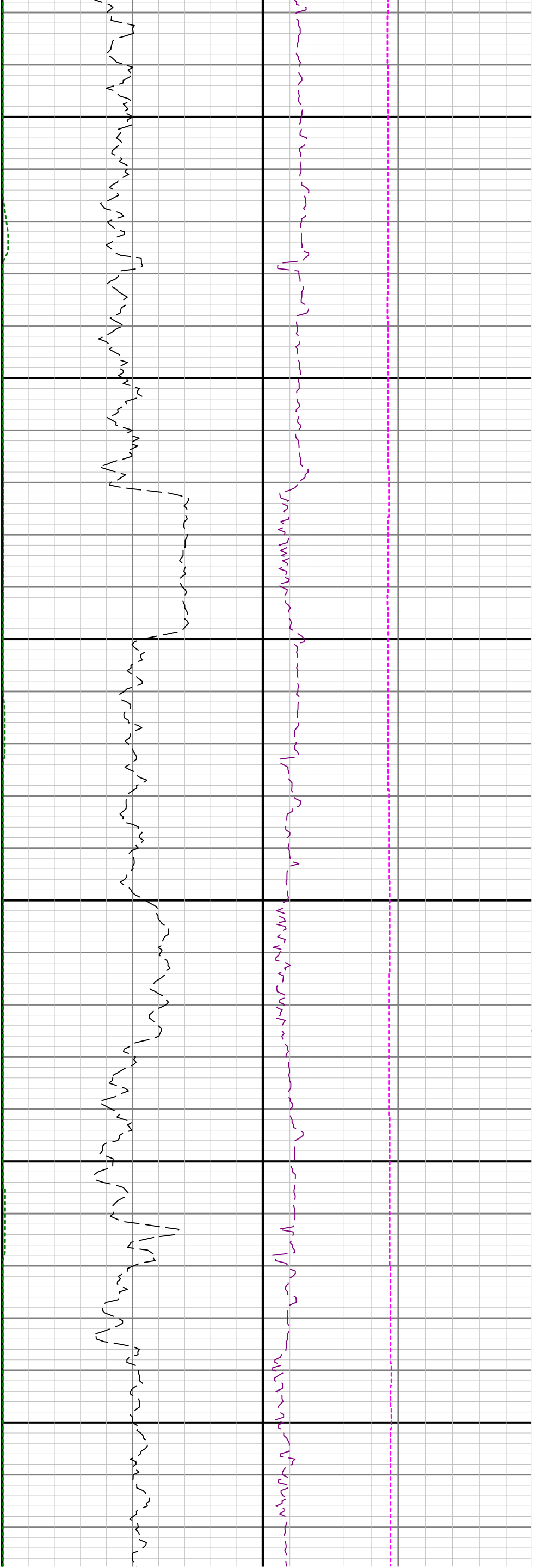
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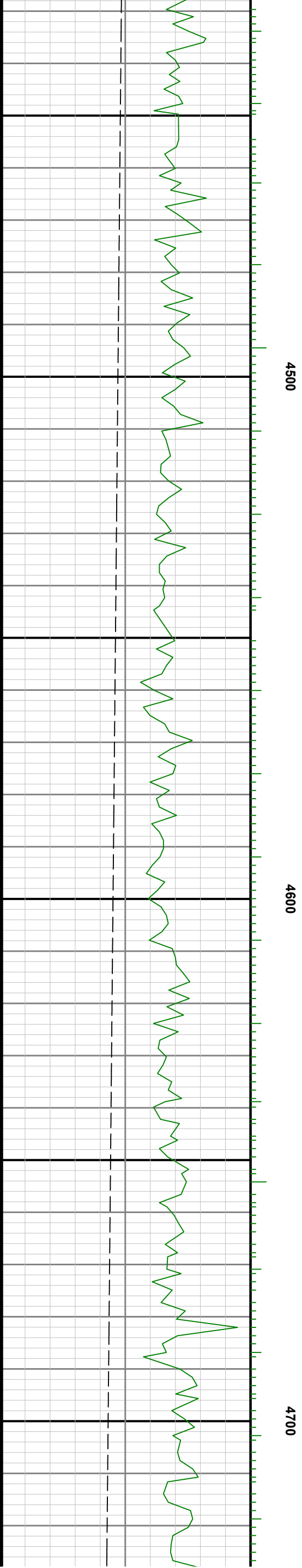
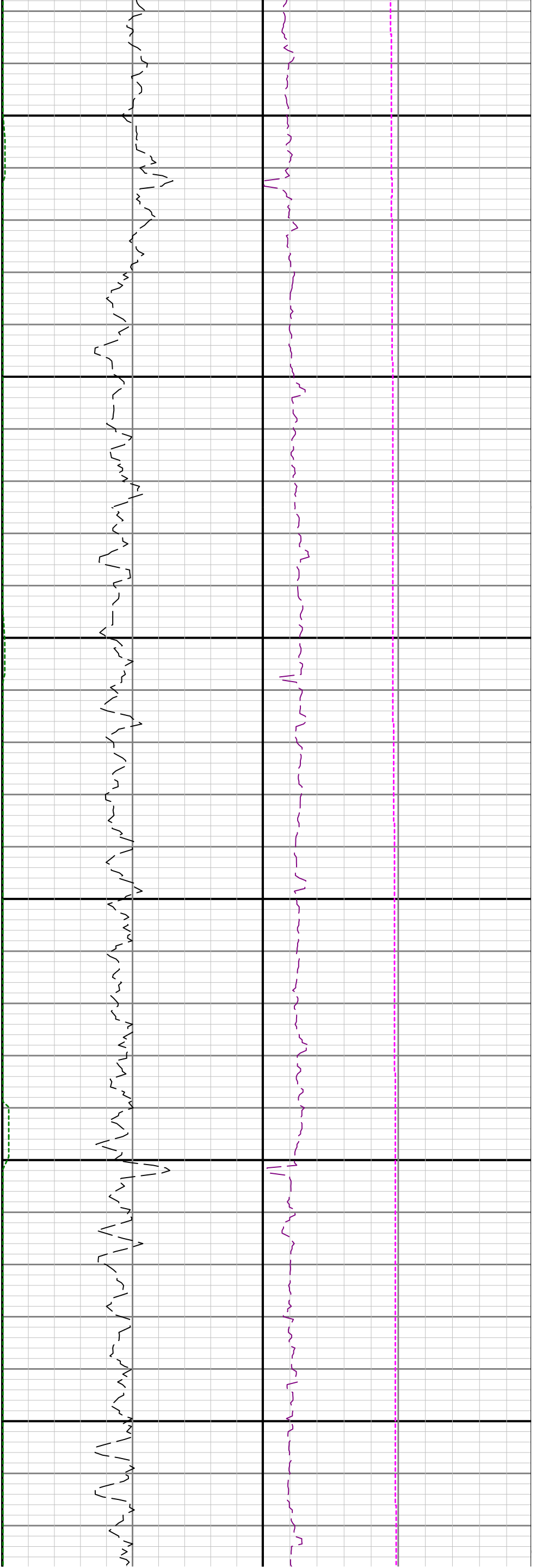
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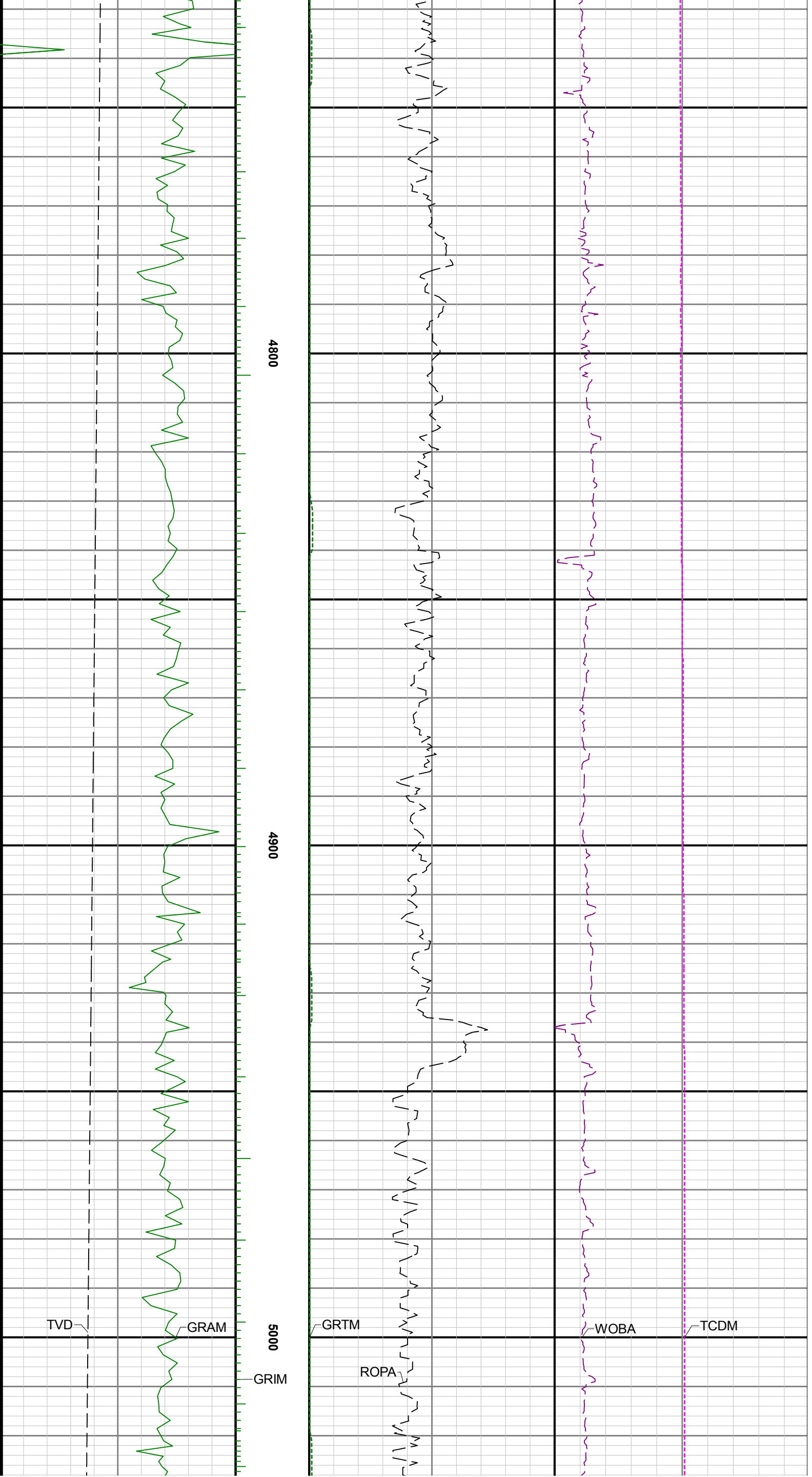


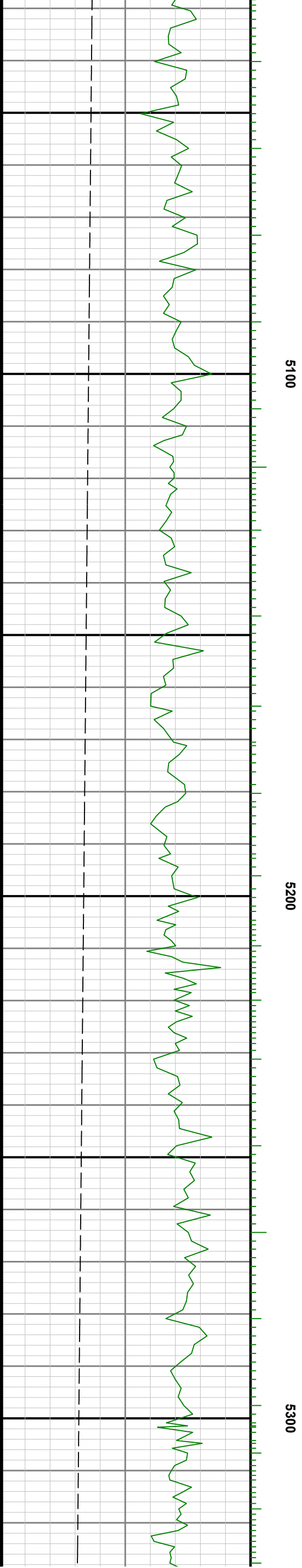
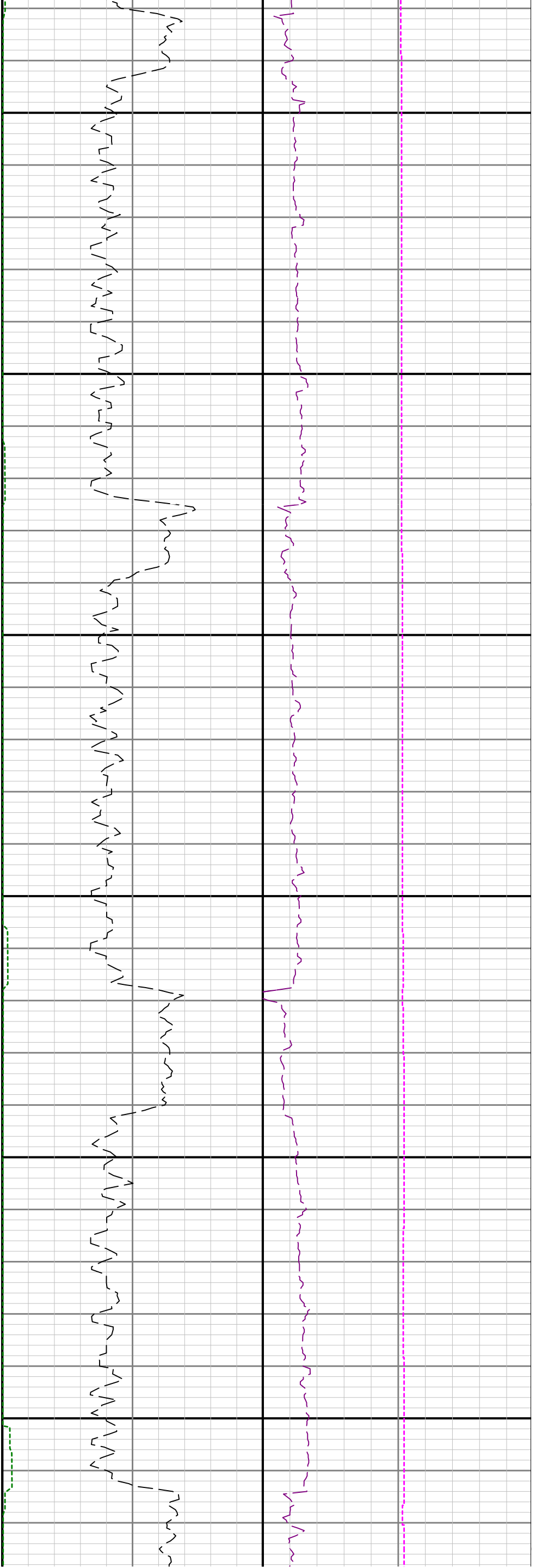


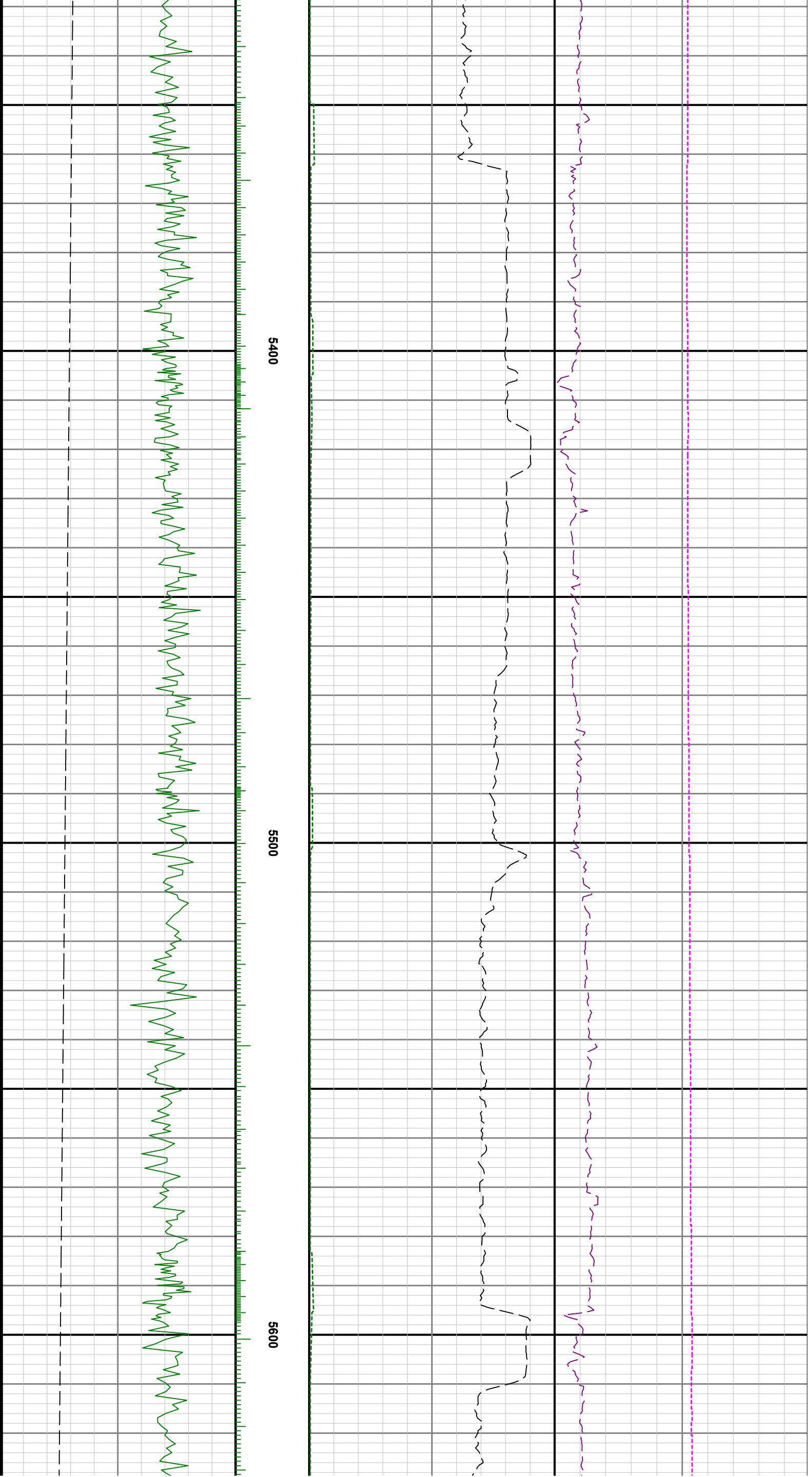


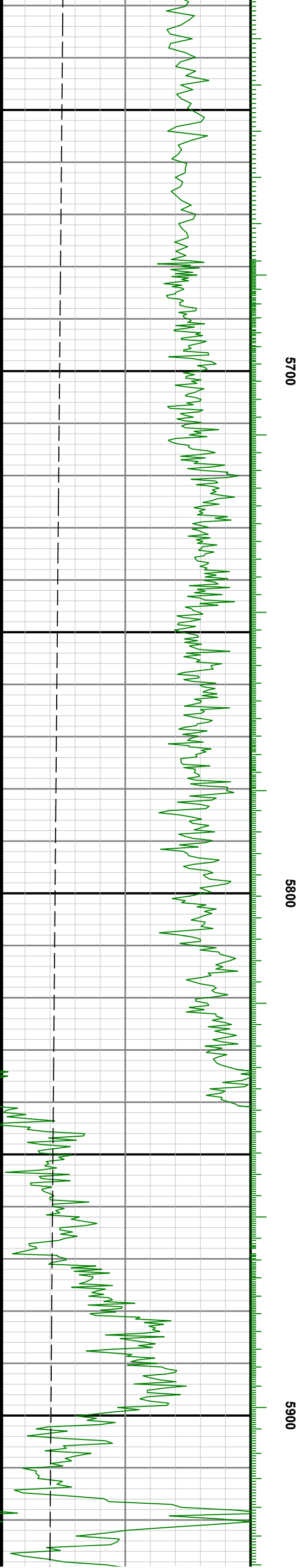
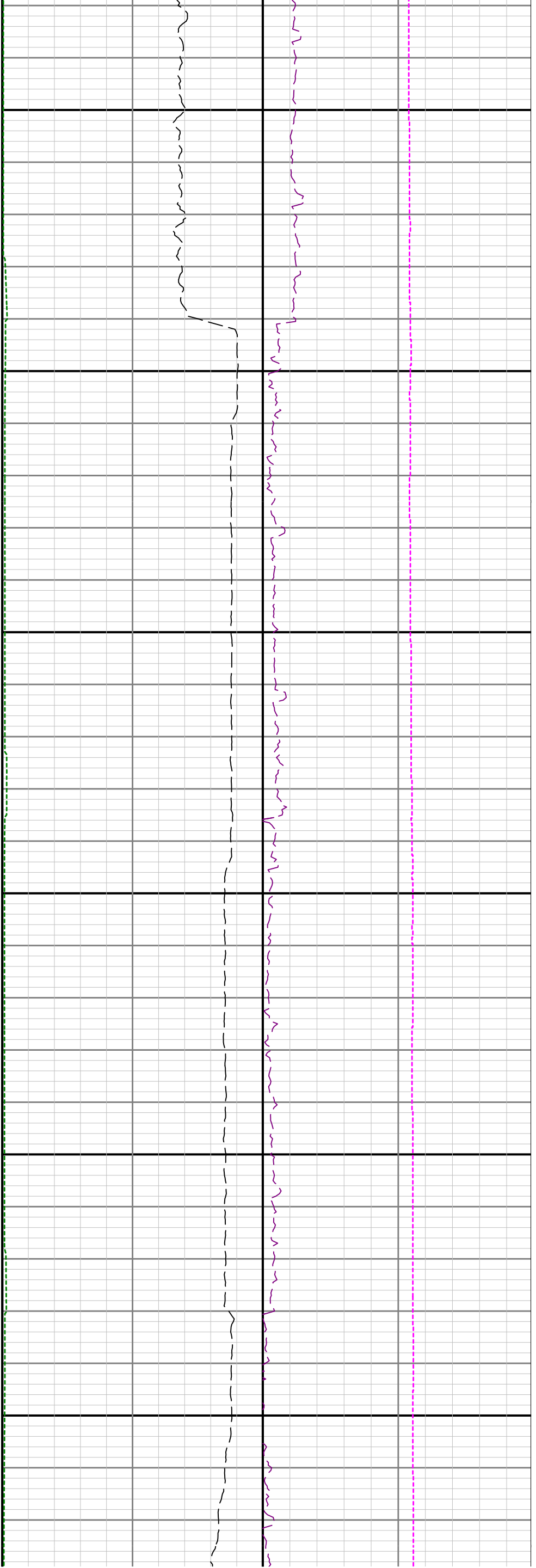


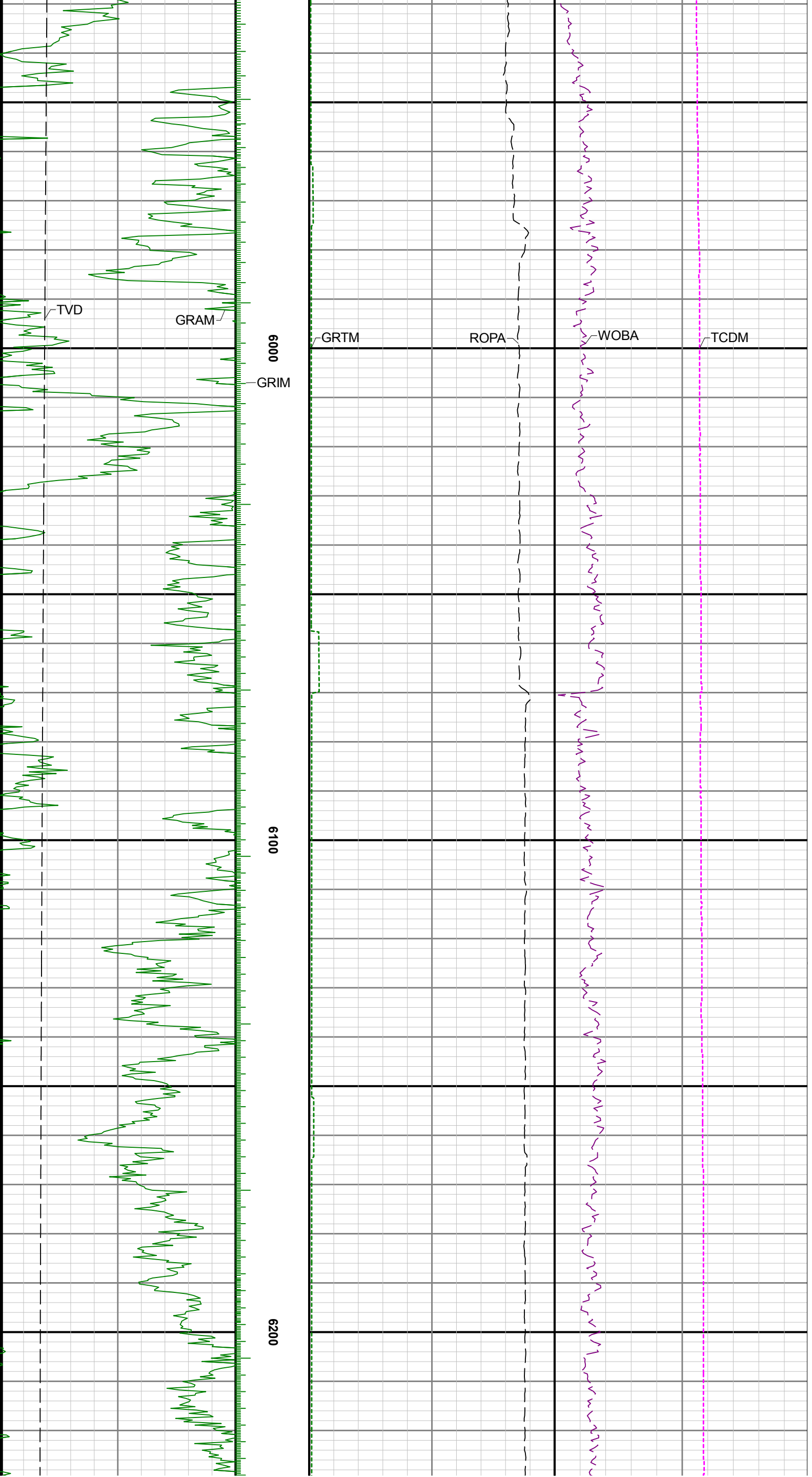




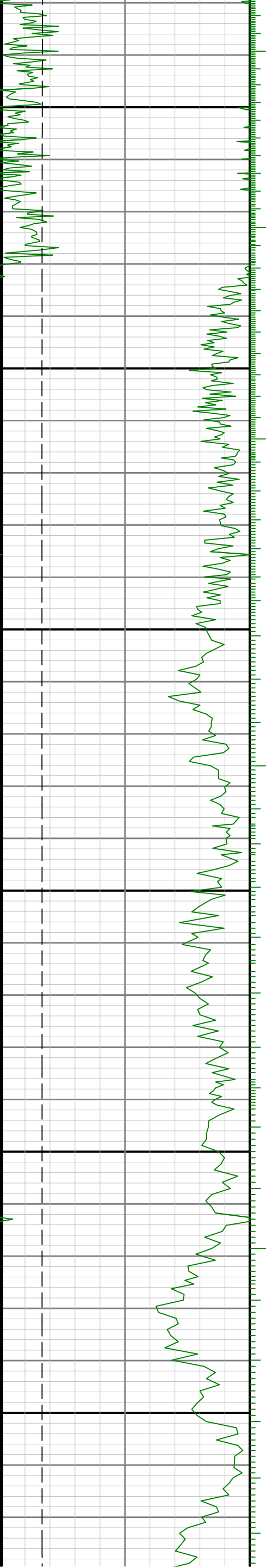
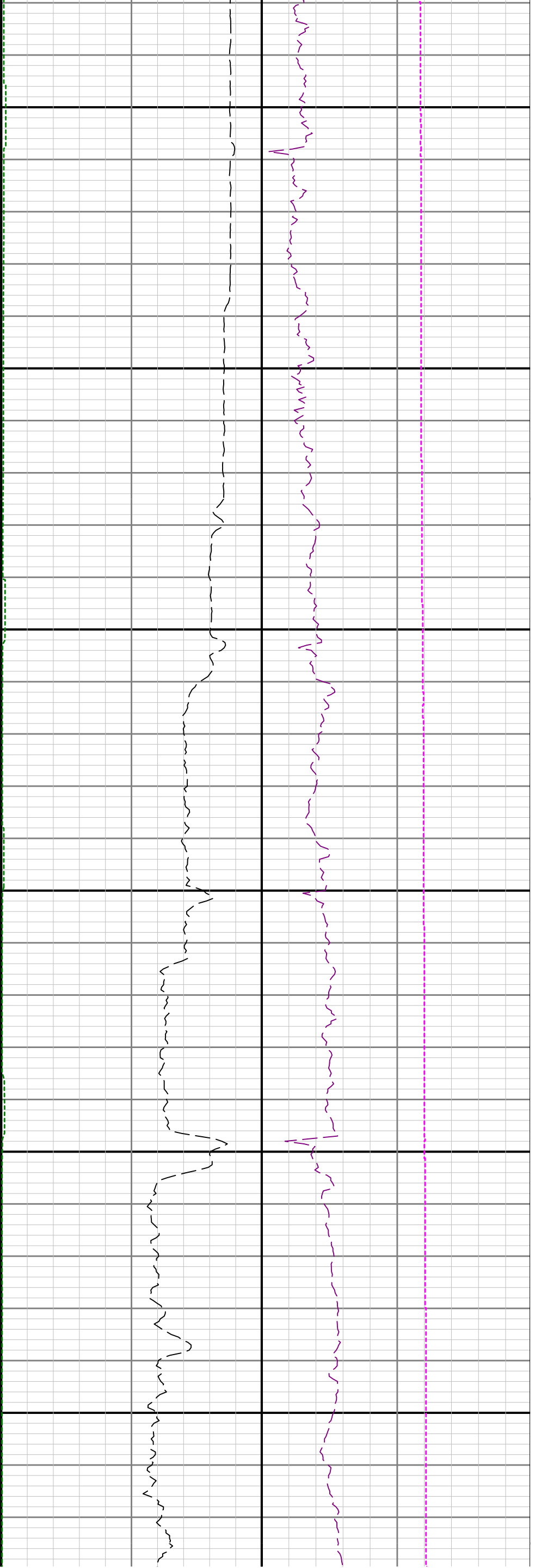


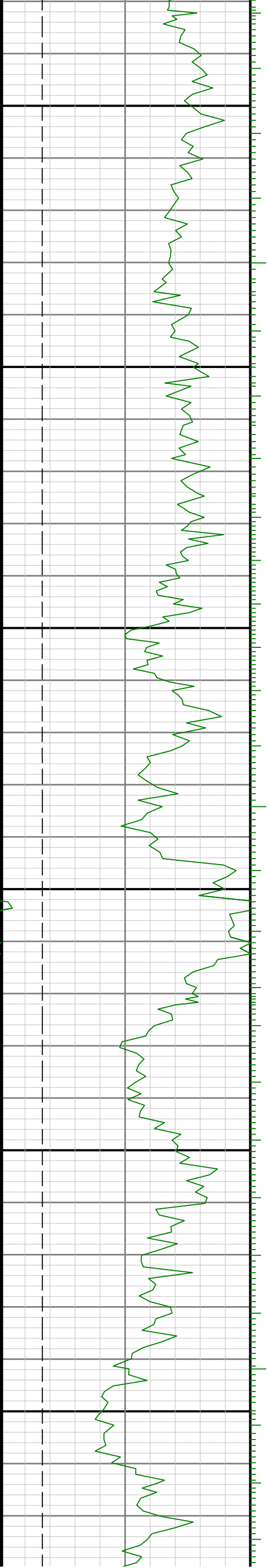








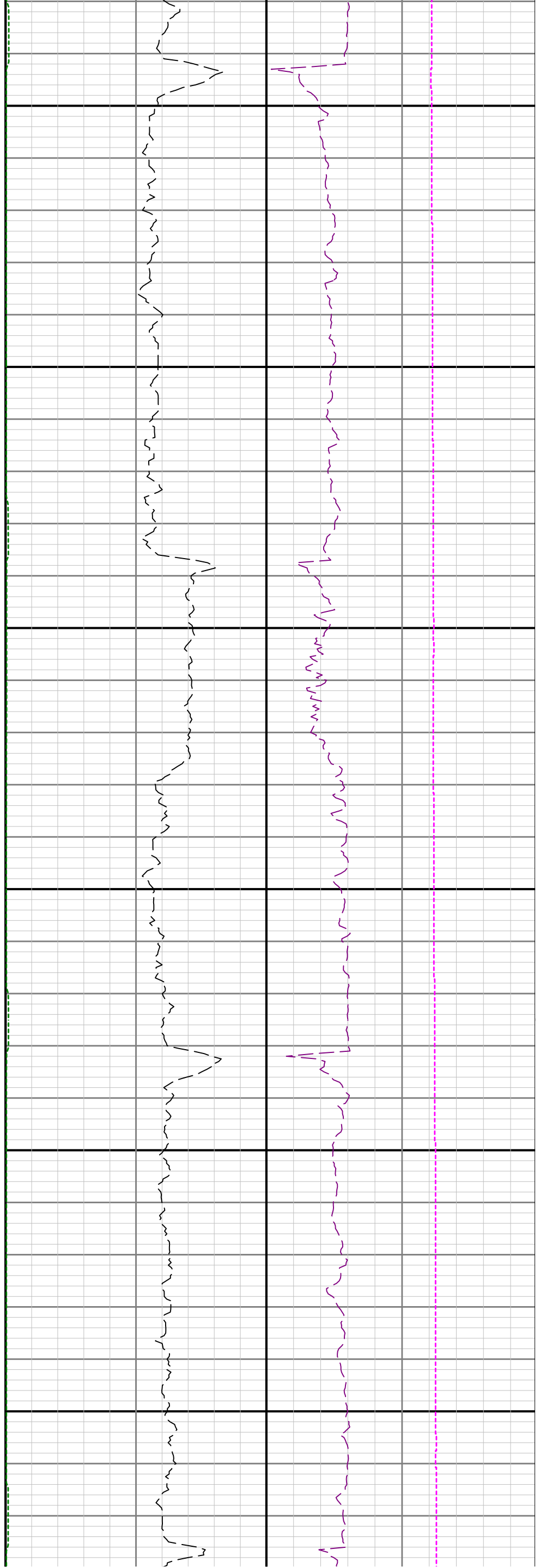


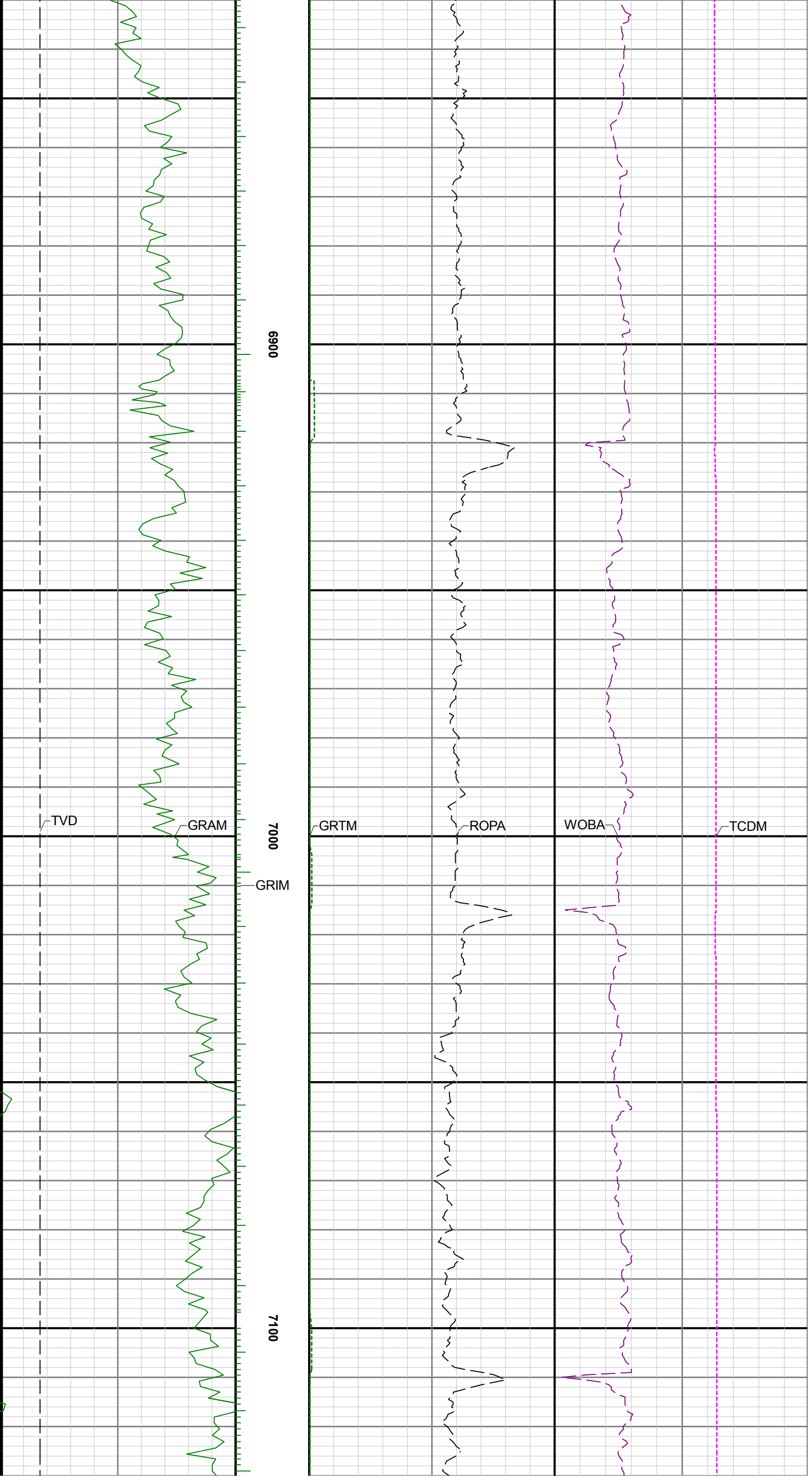


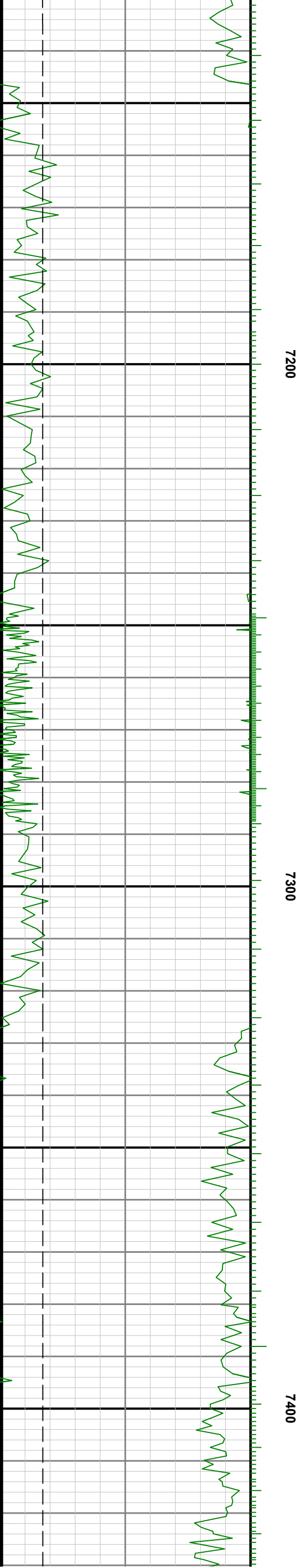
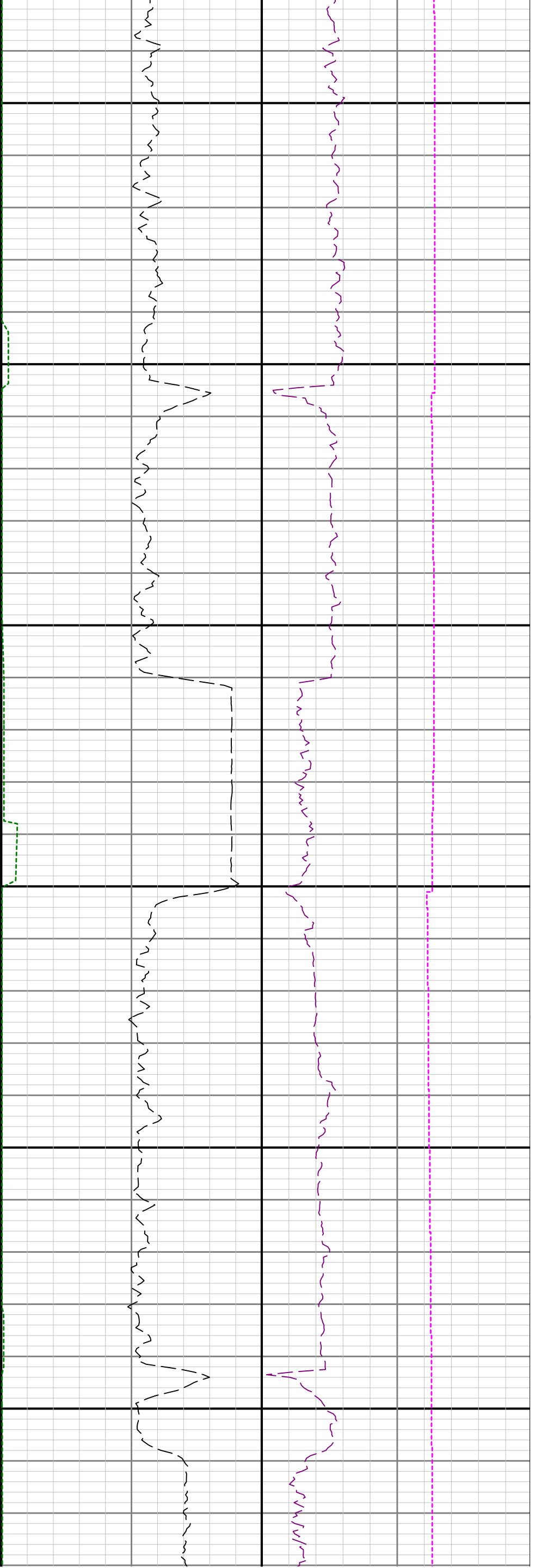
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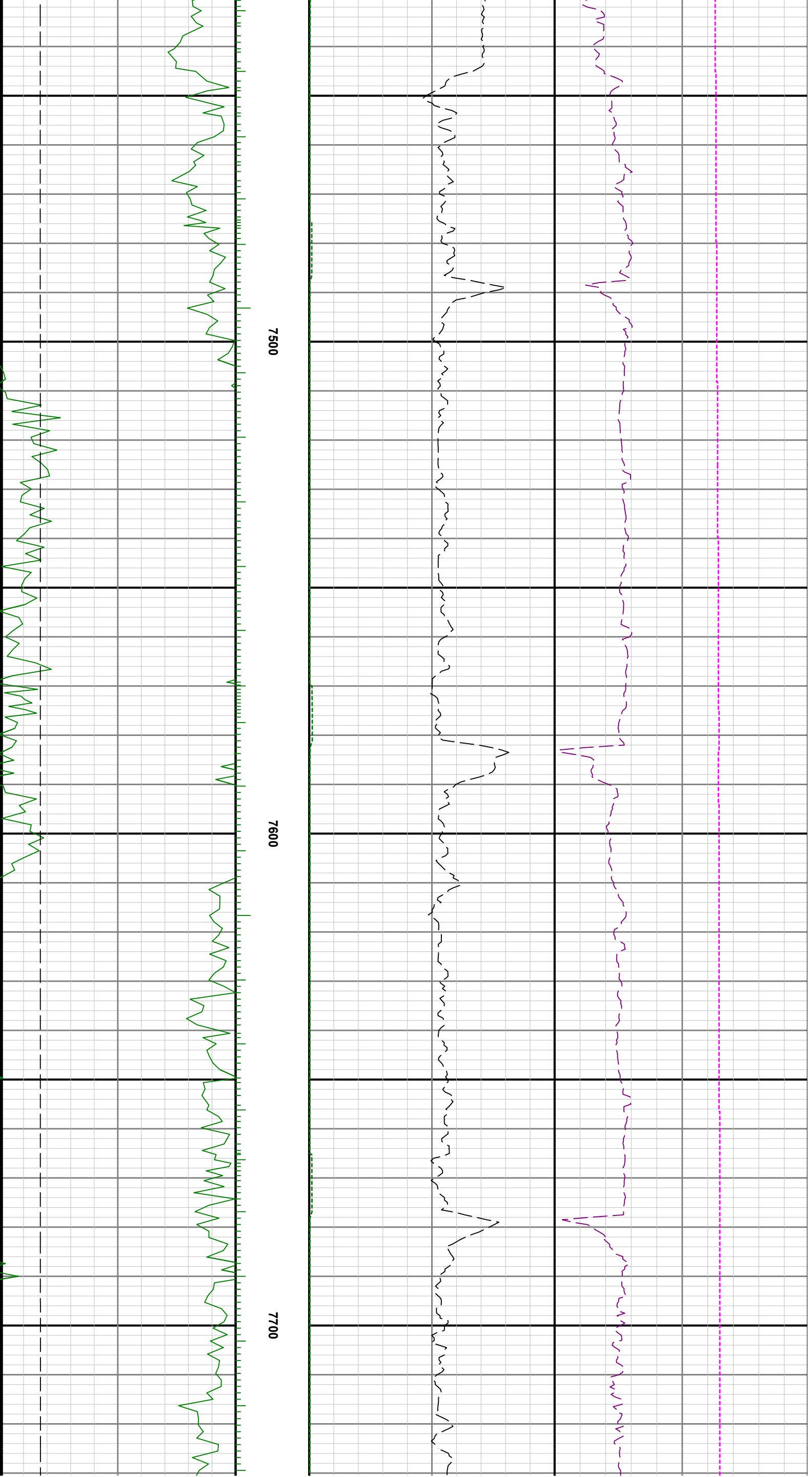
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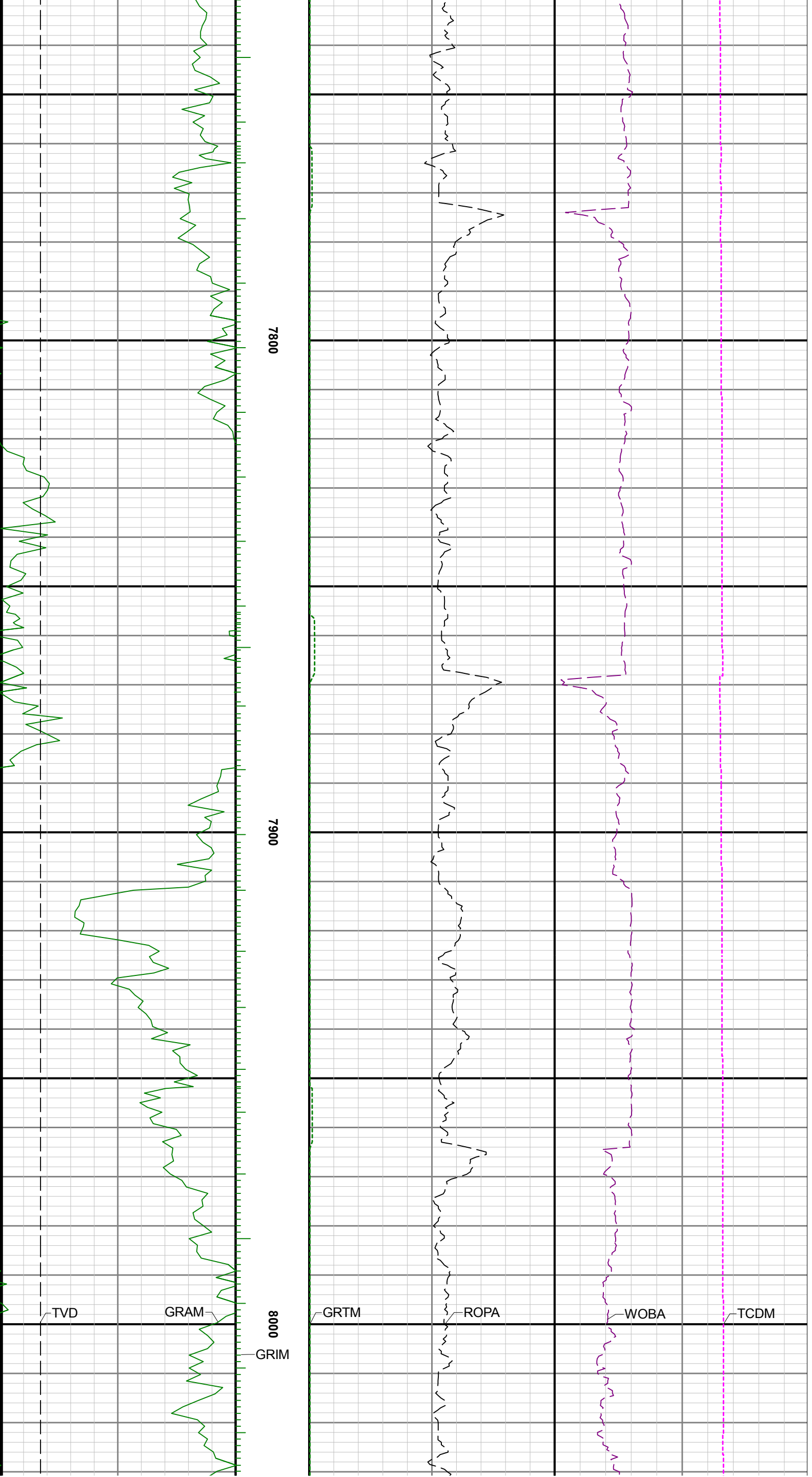
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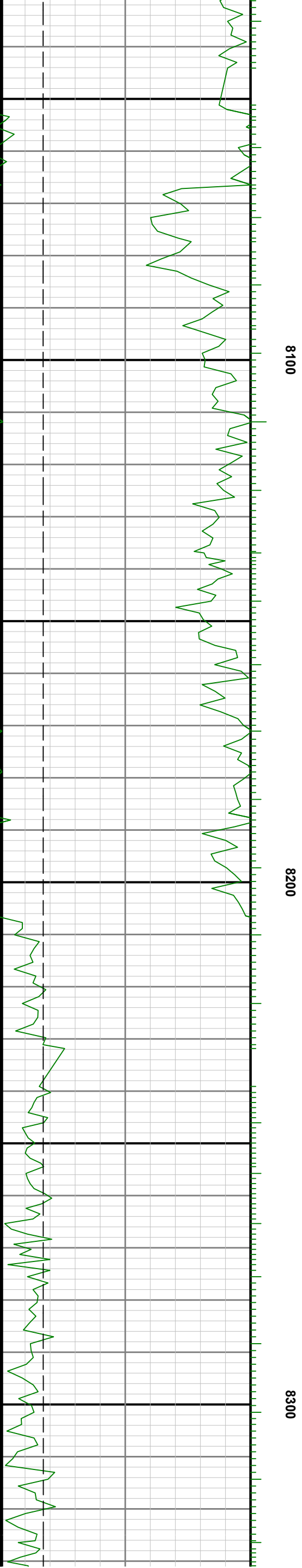
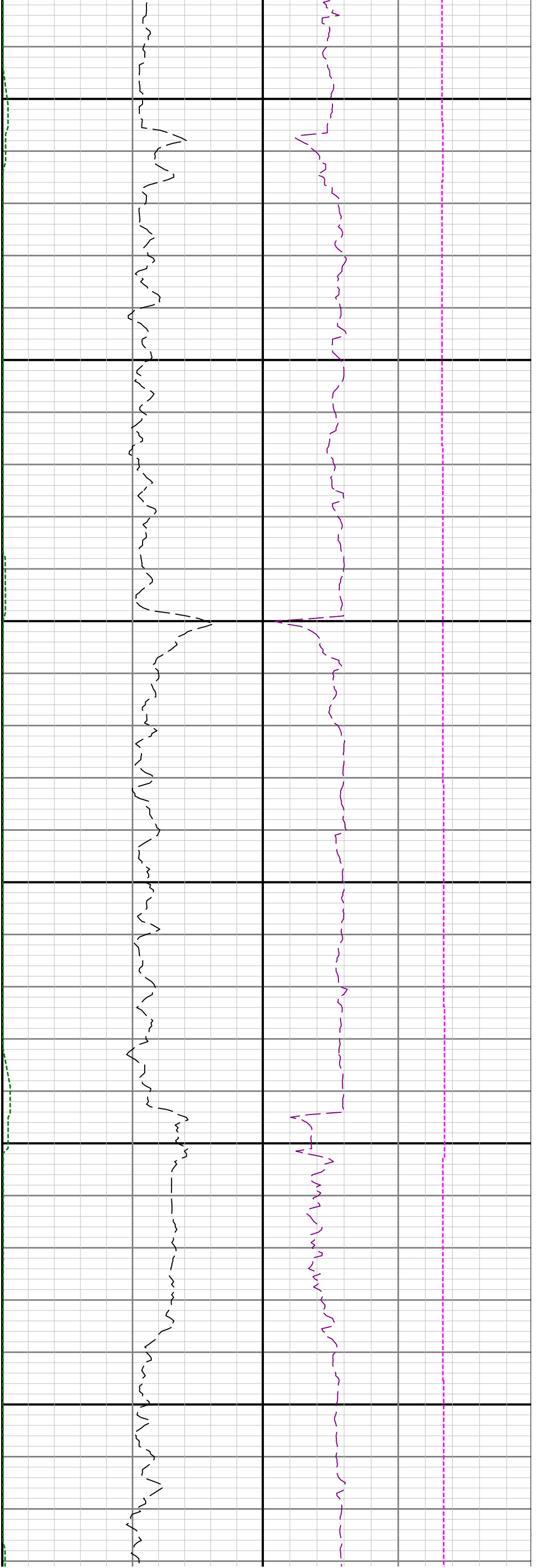


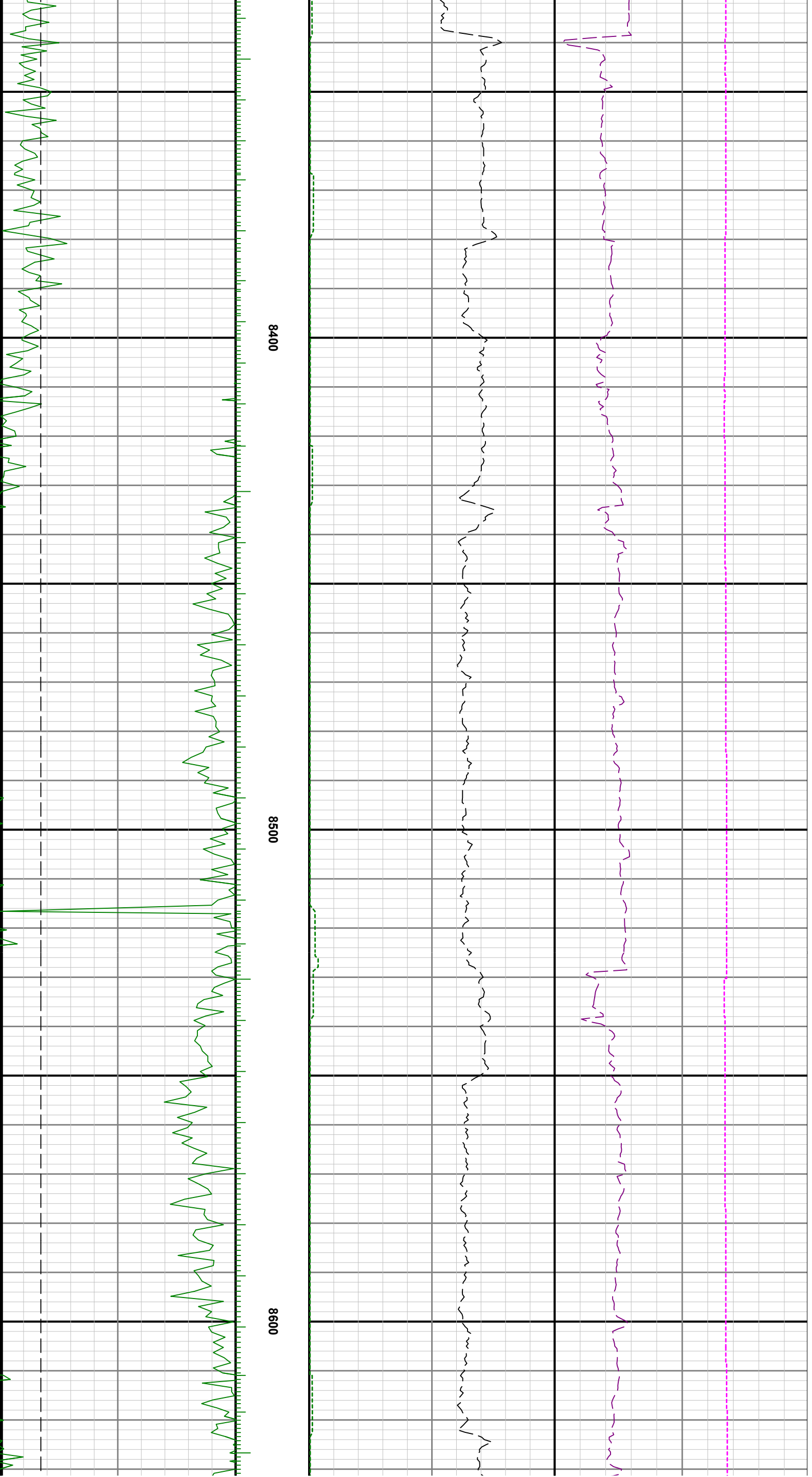




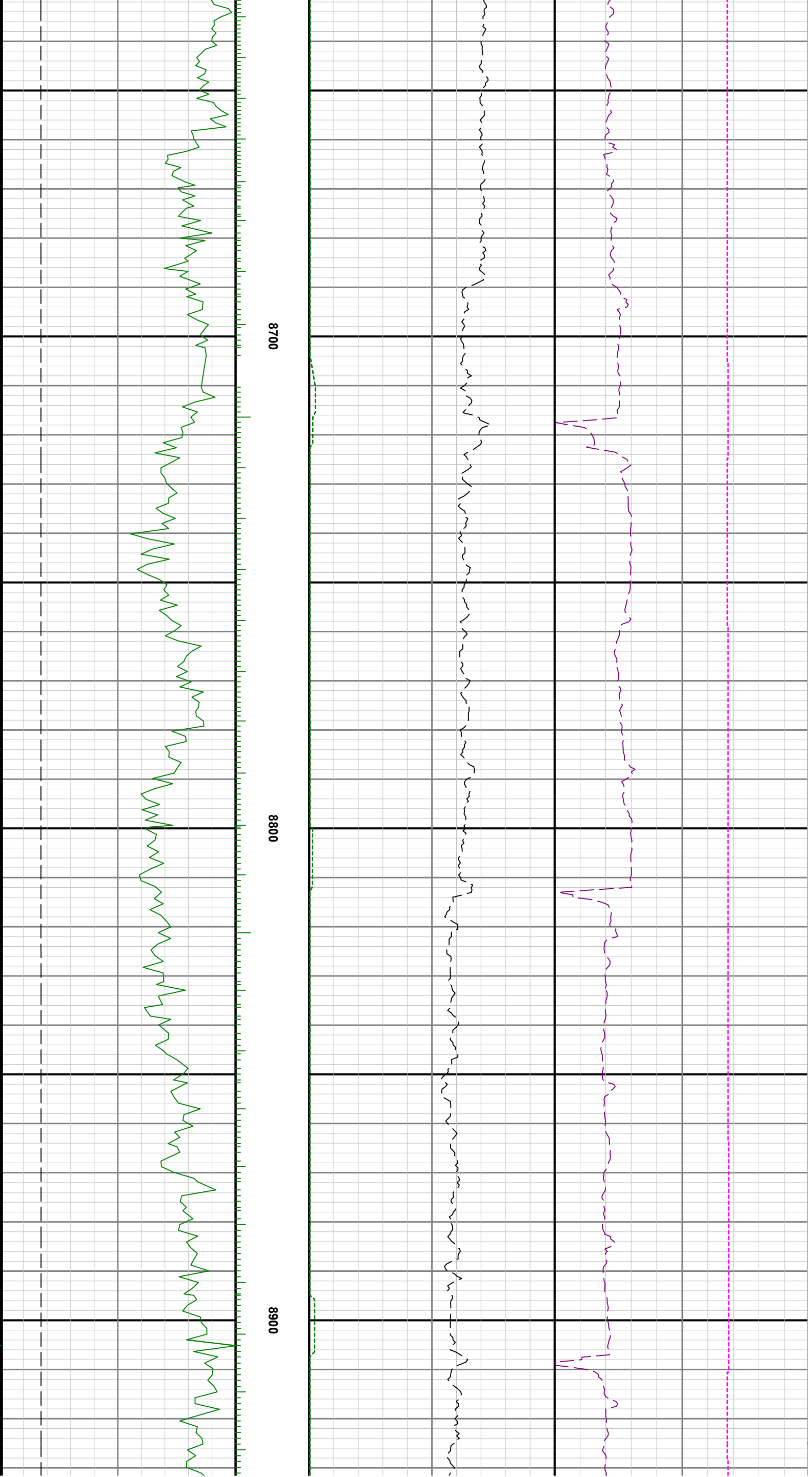


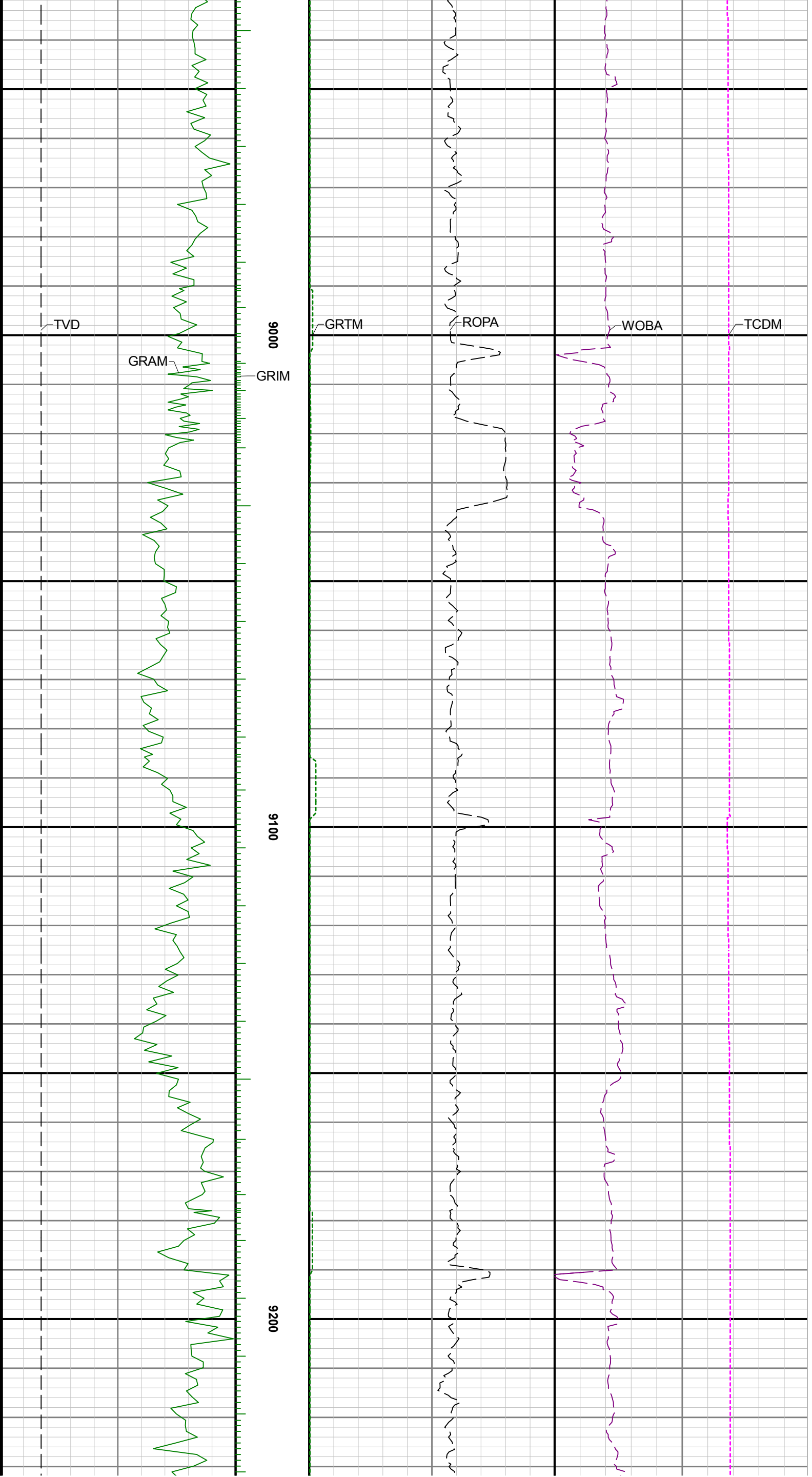


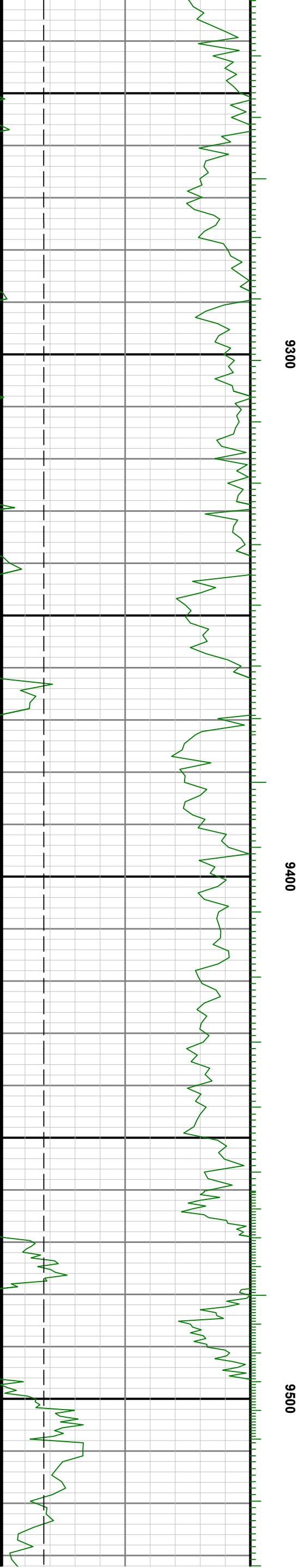


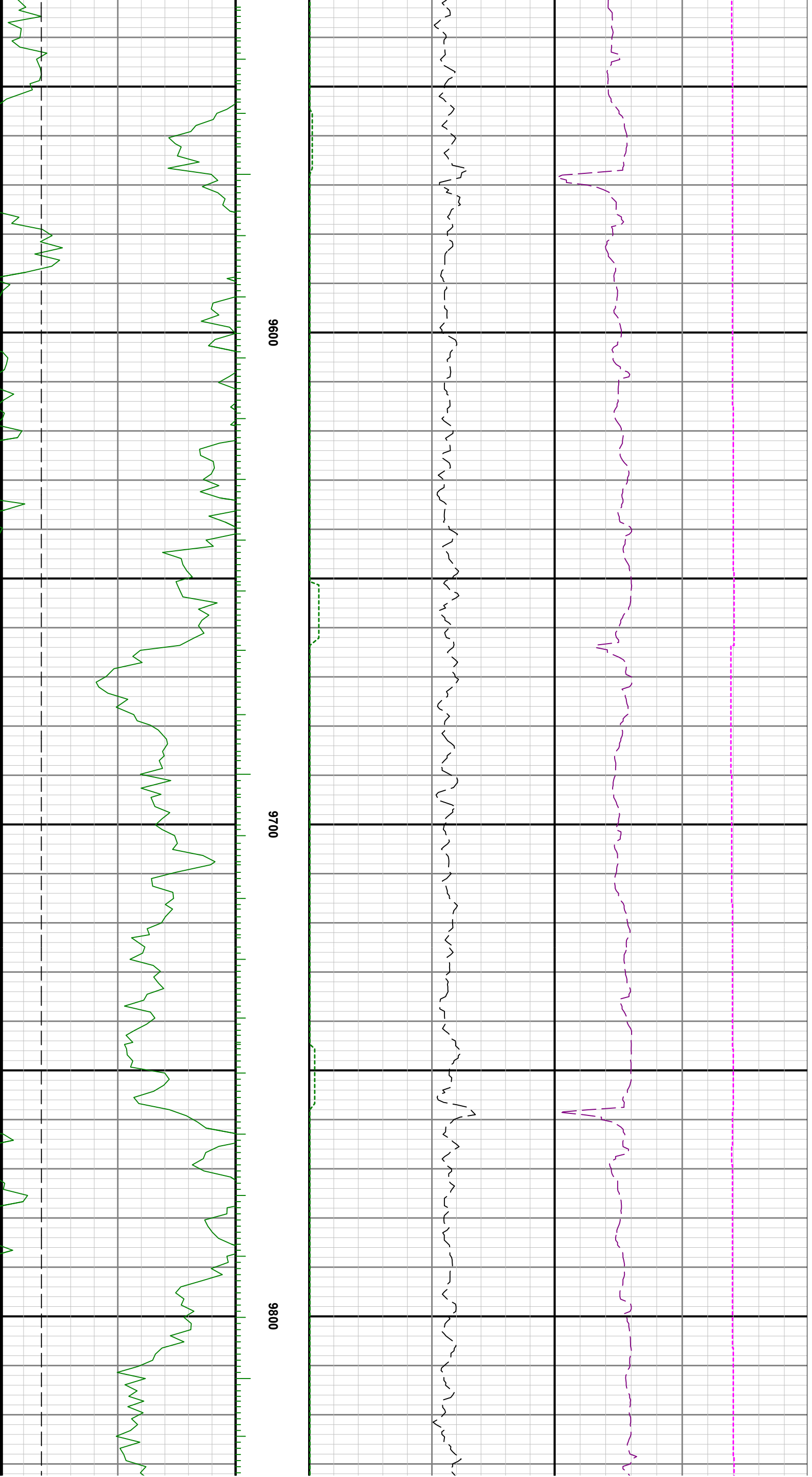


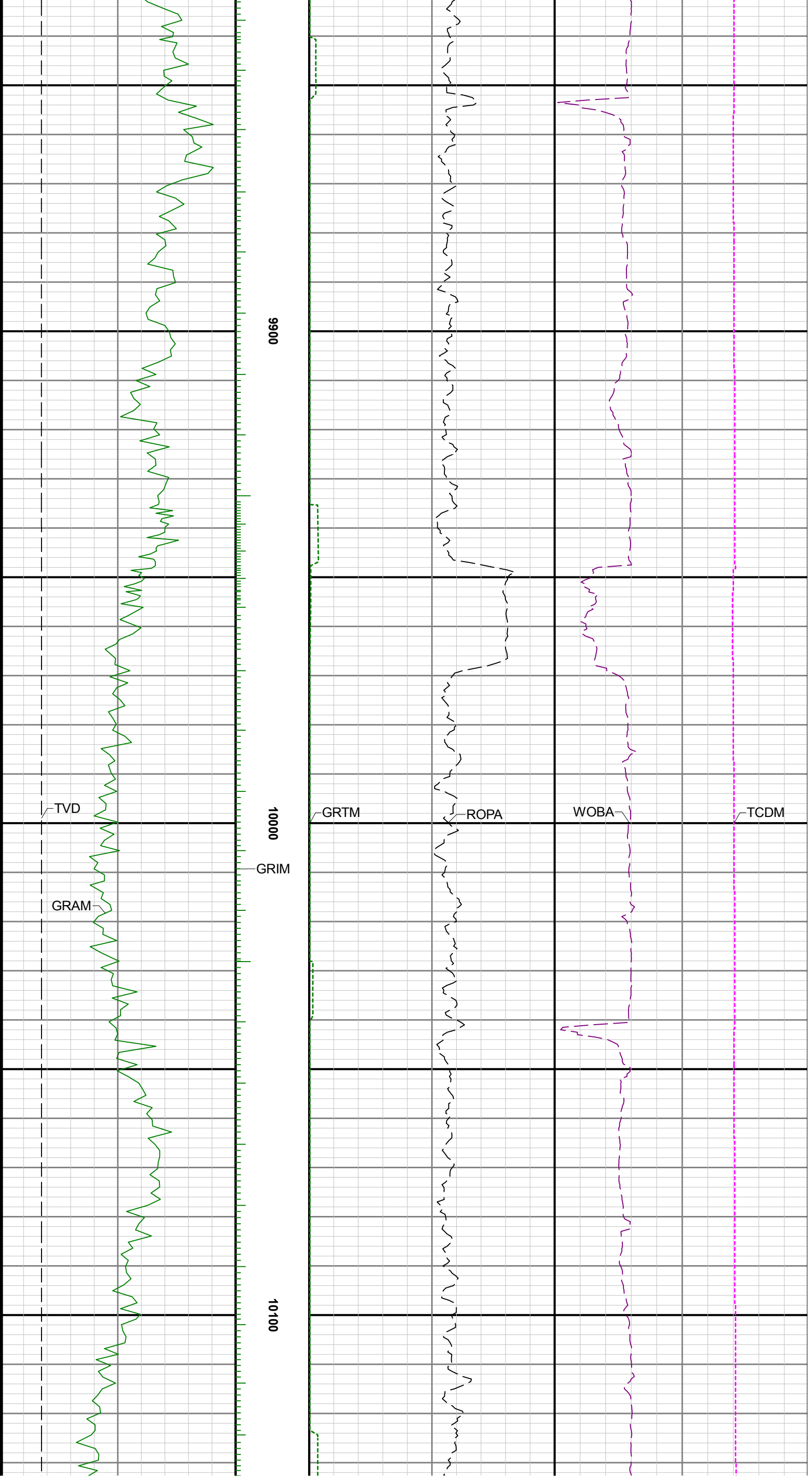


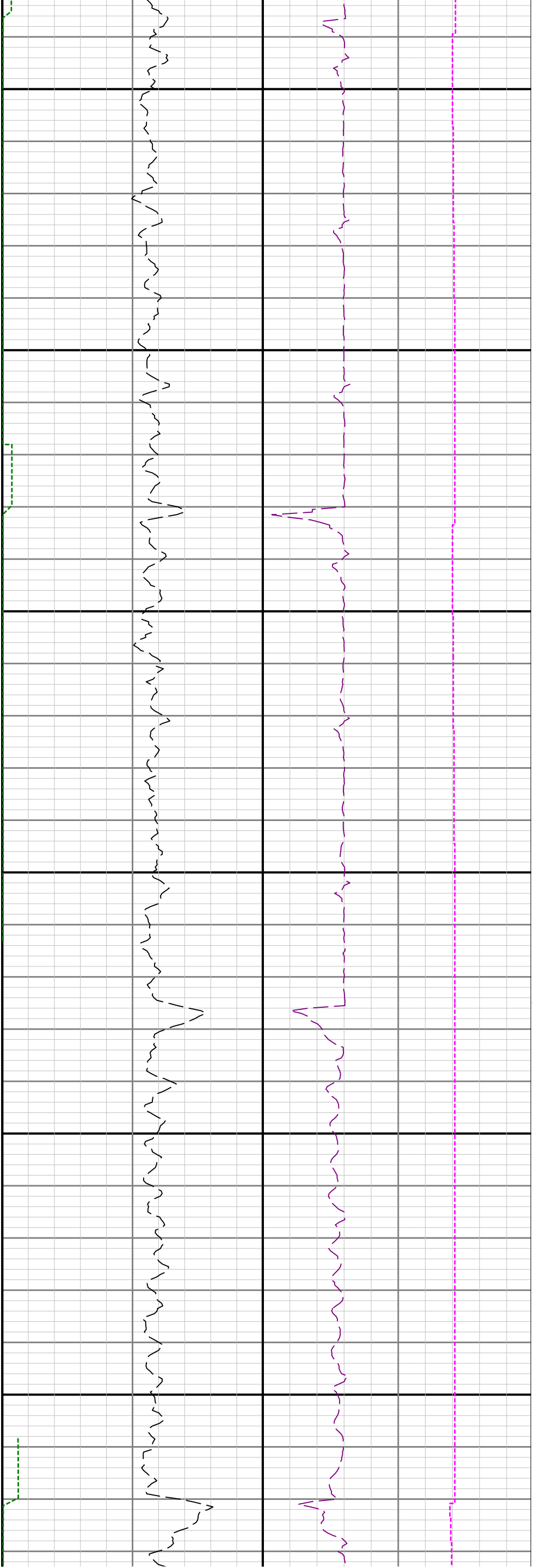












10200

10300

10400

See Remark 2

