



LWD MEMORY LOG

Gamma Ray

Scale:

1:240 MD

Depth Reference:

Driller's Depth

Company: SRC Energy

Well: Falken 4N-14A-S

Field: Weld County

County: Weld County

State: Colorado

Country: United States

Status:

Final Print

Surface Location:
Latitude:
Longitude:

Other Services:

API No: 05-123-45104

Job ID: 8728768

SEC: 11 TWN: 6N RGE: 66W

Permanent Datum (P.D.): Ground Level

Log Measured From: Rig Floor

Elevation: 4810.00 ft

Elev. KB: 4835.00 ft
Elev. DF: 4810.00 ft
Elev. GL: 4810.00 ft

Dates

Interval Logged

Magnetic Field Reference

Date From: 2017-09-06 Top: (ft) 1746.00

Date To: 2018-01-04 Bottom: (ft) 13076.00

Spud Date: 2017-09-06

Azi Reference North: True

Total Magnetic Field Strength: (nT)

Mag to Reference North Correction: (deg)

66.92

52588

7.36 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	25.00	1803.00	9.625	36.00	25.00	1787.00
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8.500	1803.00	13076.00				
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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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Diesel-Oil Based Mud	1746.00	13076.00	13.500	1804.00	0.07 208.01	22.46 148.14
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			8.500	11330.00	23.04 149.57	90.09 279.49
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Acquisition System

Software Version

Other

Baker Hughes Cadence

RT4.1

PlotStudio

4.1.7763.3

Rig: PD 562

Contractor: Precision Drilling

District: RMA

Unit: D&E

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Log Run Summary

Run	Bit	Bit	Bit	Bit	Assembly	Logged Interval	Bit Depth Interval	Date / Time	Circ.
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No	Run No.	Size (in)	Type	Gauge Length (in)	Type	Top (ft)	Bottom (ft)	From (ft)	To (ft)	Start Logging	End Logging	Hours (h)
2	2	8.500	PDC	3.00	AutoTrak Curve	1787.00	5256.00	1787.00	5269.00	2017-12-30 06:33	2017-12-31 10:15	7.87
3	3	8.500	PDC	3.00	AutoTrak Curve	5256.00	5426.00	5269.00	5439.00	2017-12-31 19:39	2017-12-31 20:36	0.01
4	3	8.500	PDC	3.00	AutoTrak Curve	5426.00	13063.00	5439.00	13076.00	2018-01-01 06:33	2018-01-04 13:23	0.00

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Garrett Gerdson	2017-12-29	2018-01-04						

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+ (%)
2017-12-30 03:00	2	1803.00	Diesel-Oil Based Mud	10.2	65	N/A	14.0	72/28	Active Pit	35000	0.00
2017-12-31 03:00	2	4527.00	Diesel-Oil Based Mud	10.2	71	N/A	14.0	72/28	Active Pit	36000	0.00
2018-01-01 03:00	3	5437.00	Diesel-Oil Based Mud	10.1	59	N/A	16.0	72/28	Active Pit	35000	0.00
2018-01-02 03:00	4	7229.00	Diesel-Oil Based Mud	10.2	56	N/A	12.0	71/29	Active Pit	38000	0.00
2018-01-03 03:00	4	8792.00	Diesel-Oil Based Mud	10.2	52	N/A	11.0	73/27	Active Pit	37000	0.00
2018-01-04 03:00	4	11413.00	Diesel-Oil Based Mud	10.3	56	N/A	14.0	72/28	Active Pit	36000	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)
2	ATC_SU	12552452	Near Bit Inclination	5.93	6.73	7.000	4.330
2	ATC_SU	12552452	Near Bit VSS	5.93	6.73	7.000	4.330
2	ATC_MWD	12049472	Gamma (single)	2.75	12.90	7.000	3.250
2	ATC_MWD	12049472	Directional (mag)	12.27	22.42	7.000	3.250
3	ATC_SU	12552452	Near Bit Inclination	5.93	6.73	7.000	4.330
3	ATC_SU	12552452	Near Bit VSS	5.93	6.73	7.000	4.330
3	ATC_MWD	12049472	Gamma (single)	2.75	12.90	7.000	3.250
3	ATC_MWD	12049472	Directional (mag)	12.27	22.42	7.000	3.250
4	ATC_SU	14236912	Near Bit Inclination	5.93	6.73	7.000	4.330
4	ATC_SU	14236912	Near Bit VSS	5.93	6.73	7.000	4.330
4	ATC_MWD	14275758	Gamma (single)	2.73	12.90	7.000	3.250
4	ATC_MWD	14275758	Directional (mag)	12.27	22.44	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 may be independently verified.
- 2


Baker Hughes LWD Run 1 utilized 8 inch APS EM Services (Directional only) behind a 13 1/2 inch bit and steerable assembly from surface to 1803 feet MD (surface to 1734 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 1803 to 13076 feet MD (1734 to 7021 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	4518.00	8.500	2	The interval from 4518 to 4531 feet MD (4227 to 4239 feet TVD) was logged up to 11 hours after being drilled due to a trip to the shoe while making rig repairs.
2	5405.00	8.500	3	The interval from 5396 to 5427 feet MD (5032 to 5061 feet TVD) was not logged due to a tool failure.
3	5428.00	8.500	4	The interval from 5426 to 5439 feet MD (5060 to 5072 feet TVD) was logged up to 10 hours after being drilled due to a trip out of the hole due to a failure.
4	13070.00	8.500	4	The interval from 13063 to 13076 feet MD (7021 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
GRADM	OnTrak - Gamma Ray - Apparent - Down Quadrant - Memory 0.5 ft Average	API
GRAUM	OnTrak - Gamma Ray - Apparent - Up Quadrant - Memory 0.5 ft Average	API
TCDM	Downhole Temperature	degF



Company

Well

Interval

Created

SRC Energy

Falken 4N-14A-S

Date From:2017-09-06 12:48:44

Date To:2018-01-04 06:23:07

2018-01-05 18:20:49

Top:1790.00

Bottom:13076.00

Gamma Ray - Apparent 0.5 ft Average GRAM

0300

API

Azimuthal Gamma Ray - Apparent - Up Quadrant 0.5 ft Average GRAUM

0300

API

Azimuthal Gamma Ray - Apparent - Down Quadrant 0.5 ft Average GRADM

0300

API

True Vertical Depth TVD

80001500

MD 1:240 feet

Gamma Time Since Drilled GRTM

0600

min

Depth Averaged ROP 3 ft Average ROPA

10000

ft/h

Weight On Bit, Average 1 ft Average WOBA

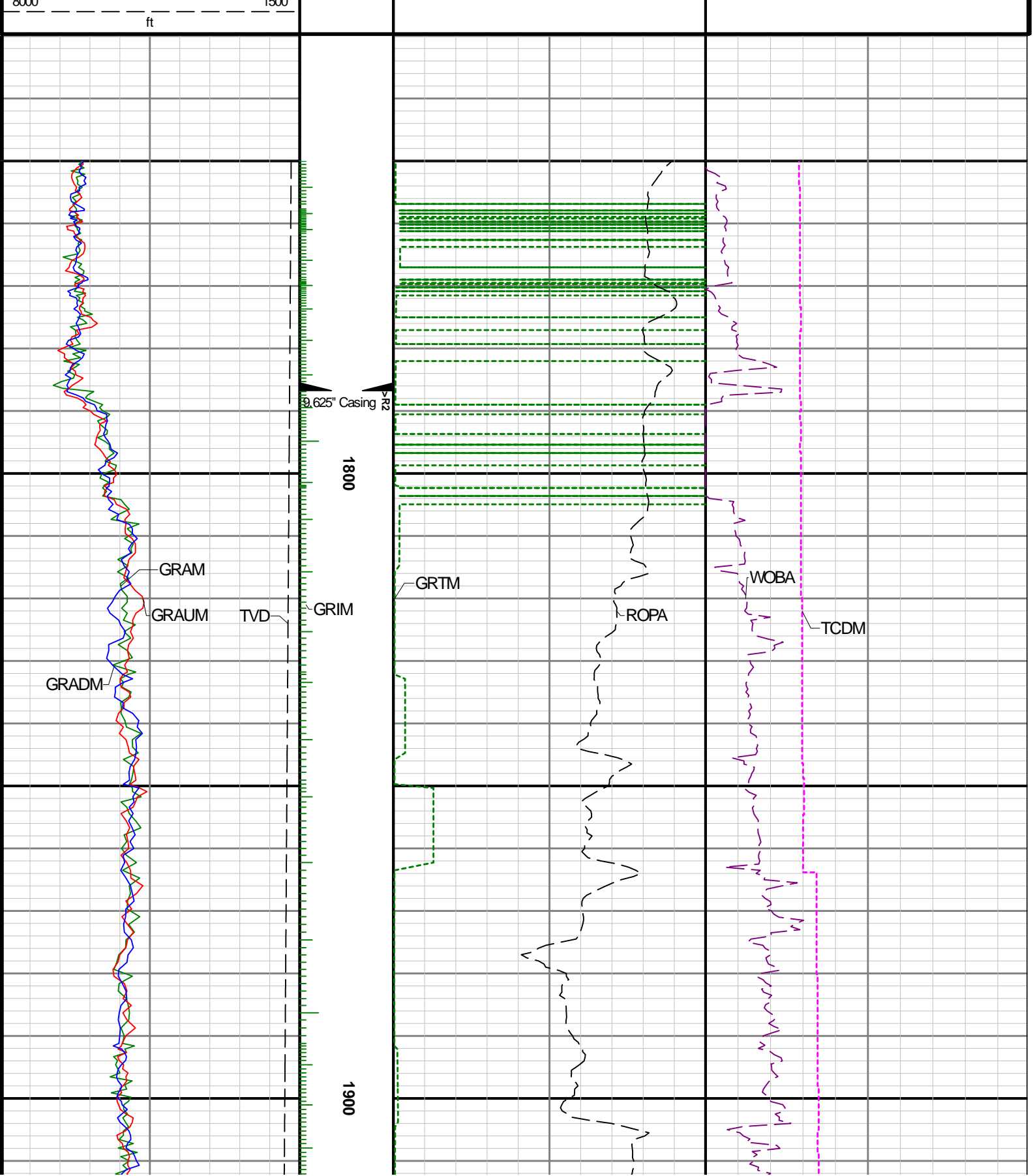
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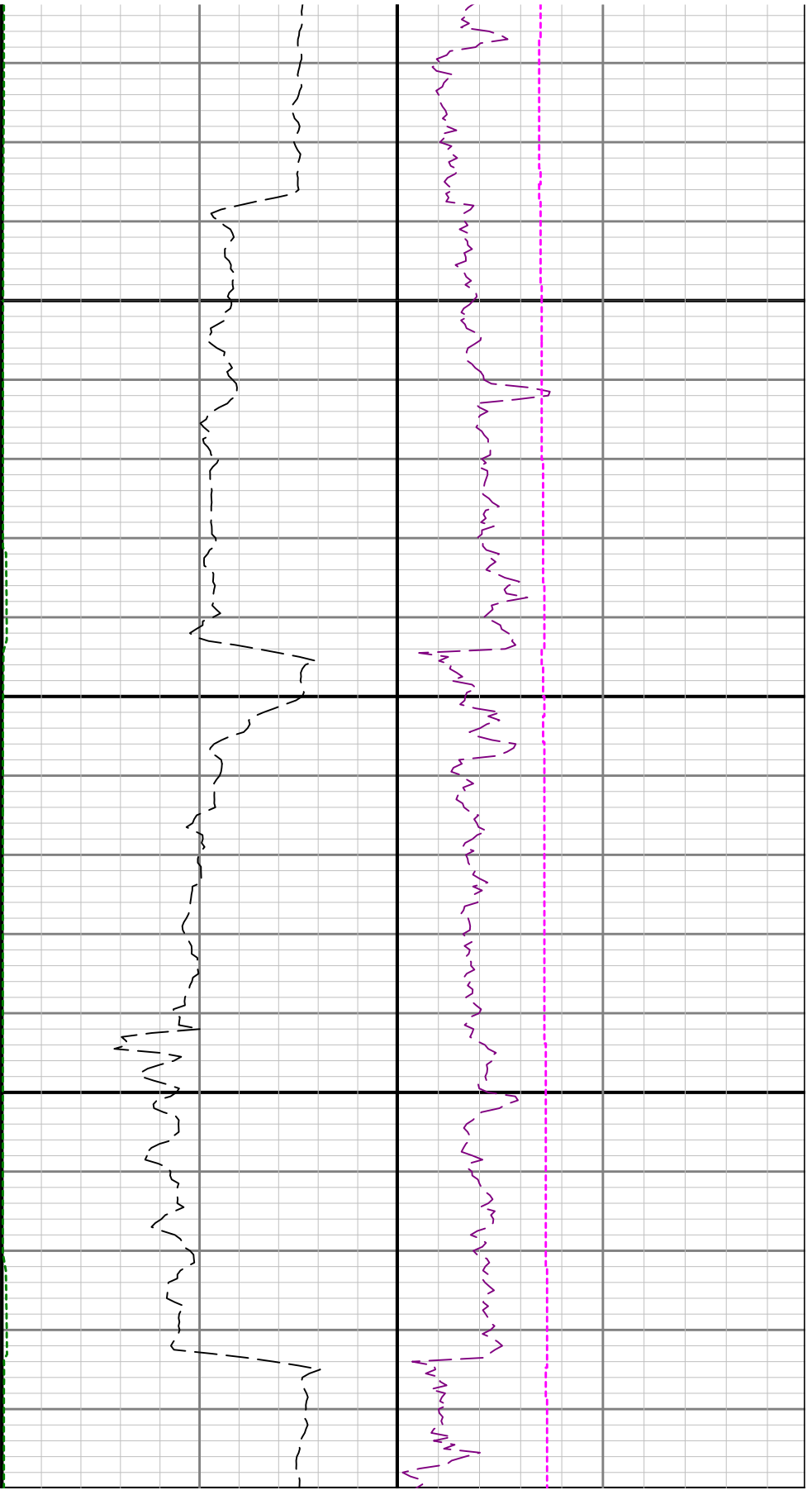
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Downhole Temperature TCDM

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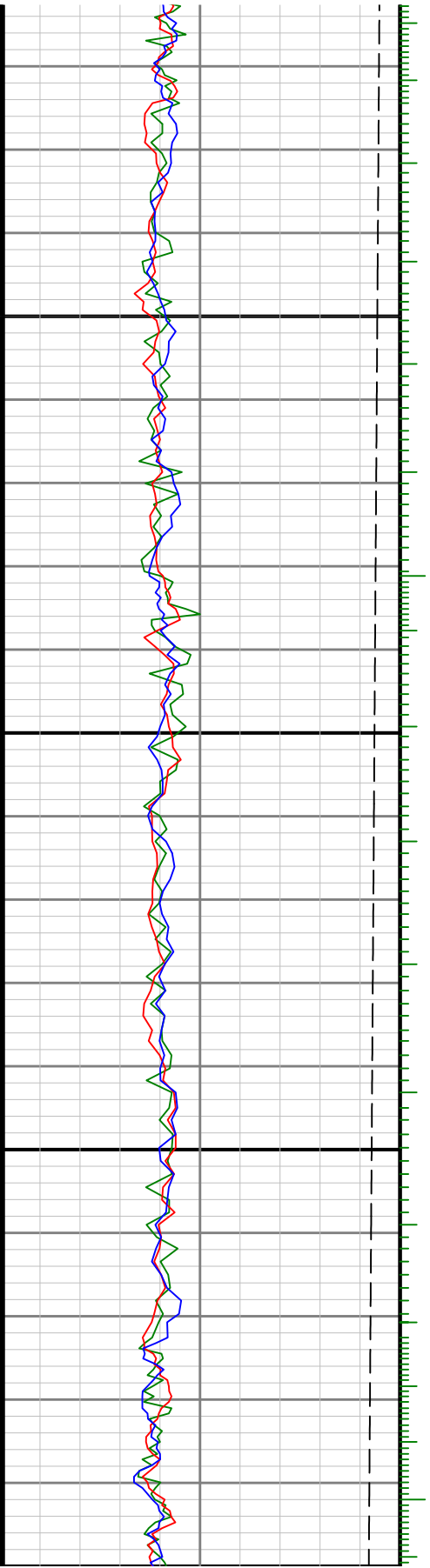
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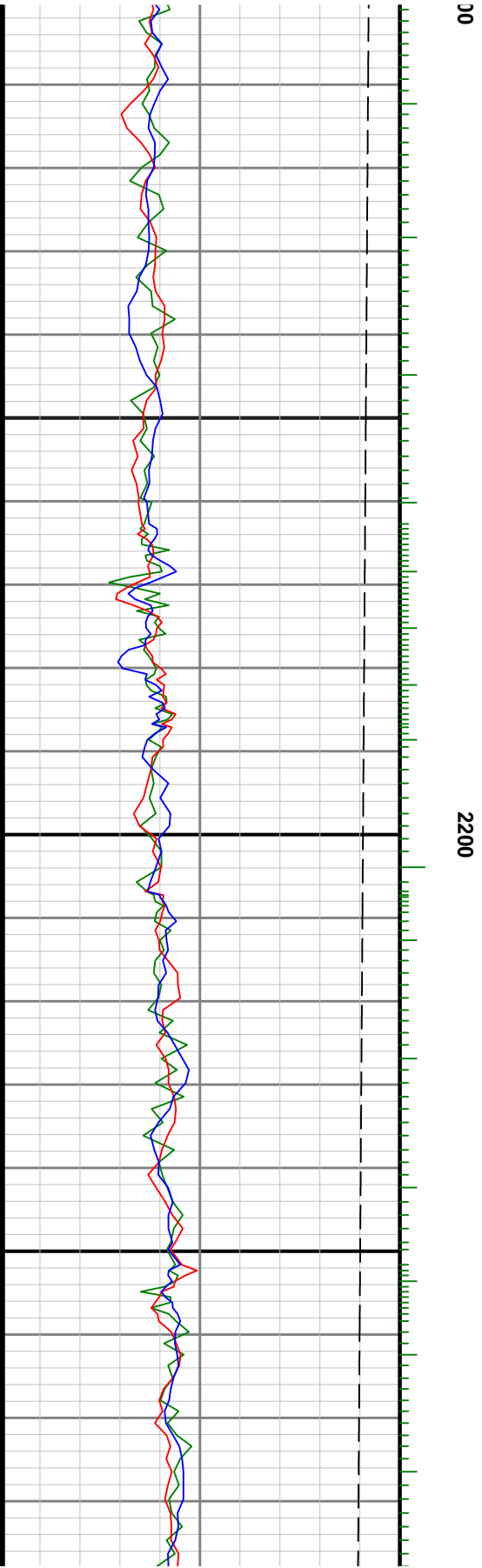
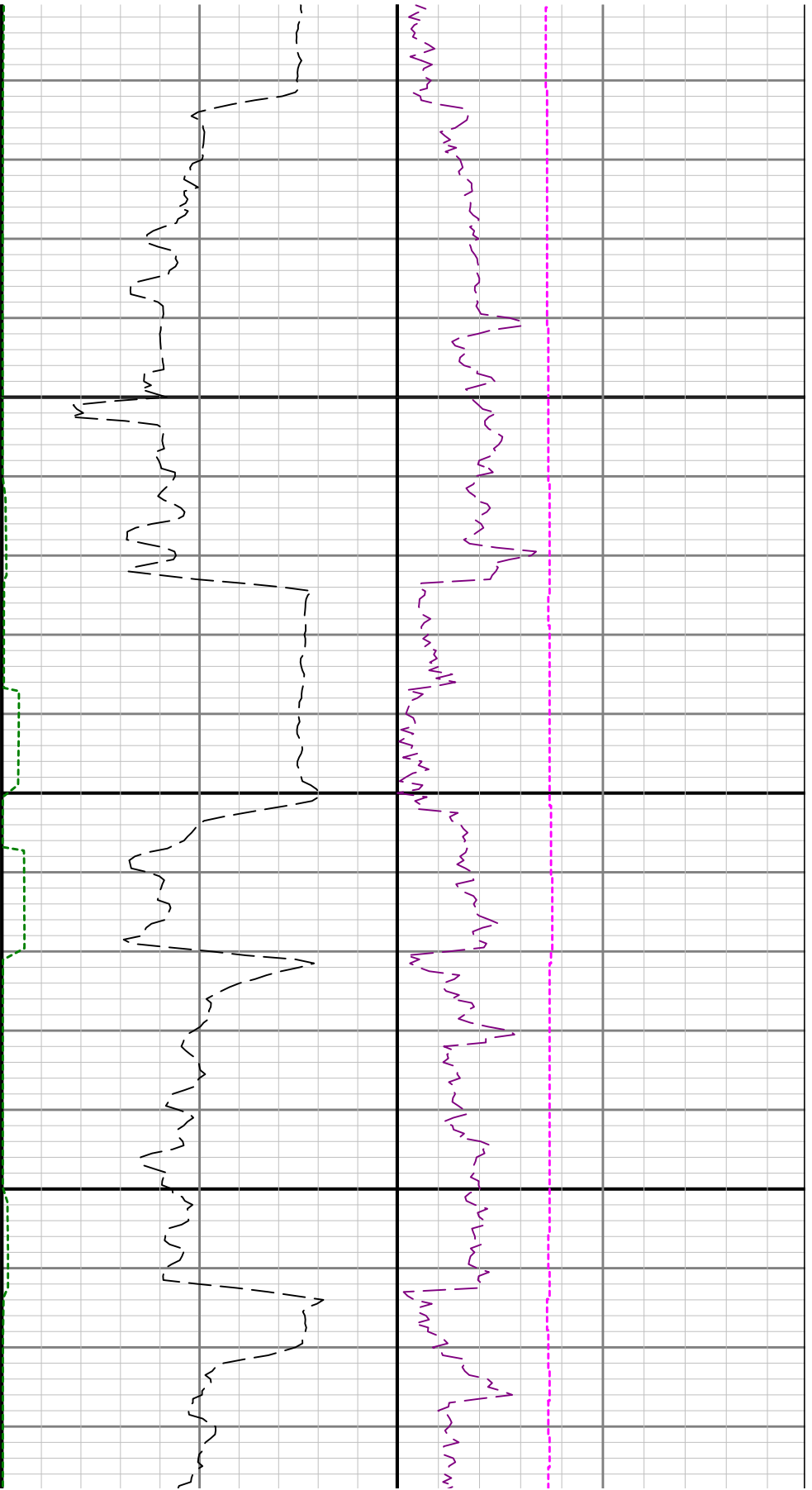


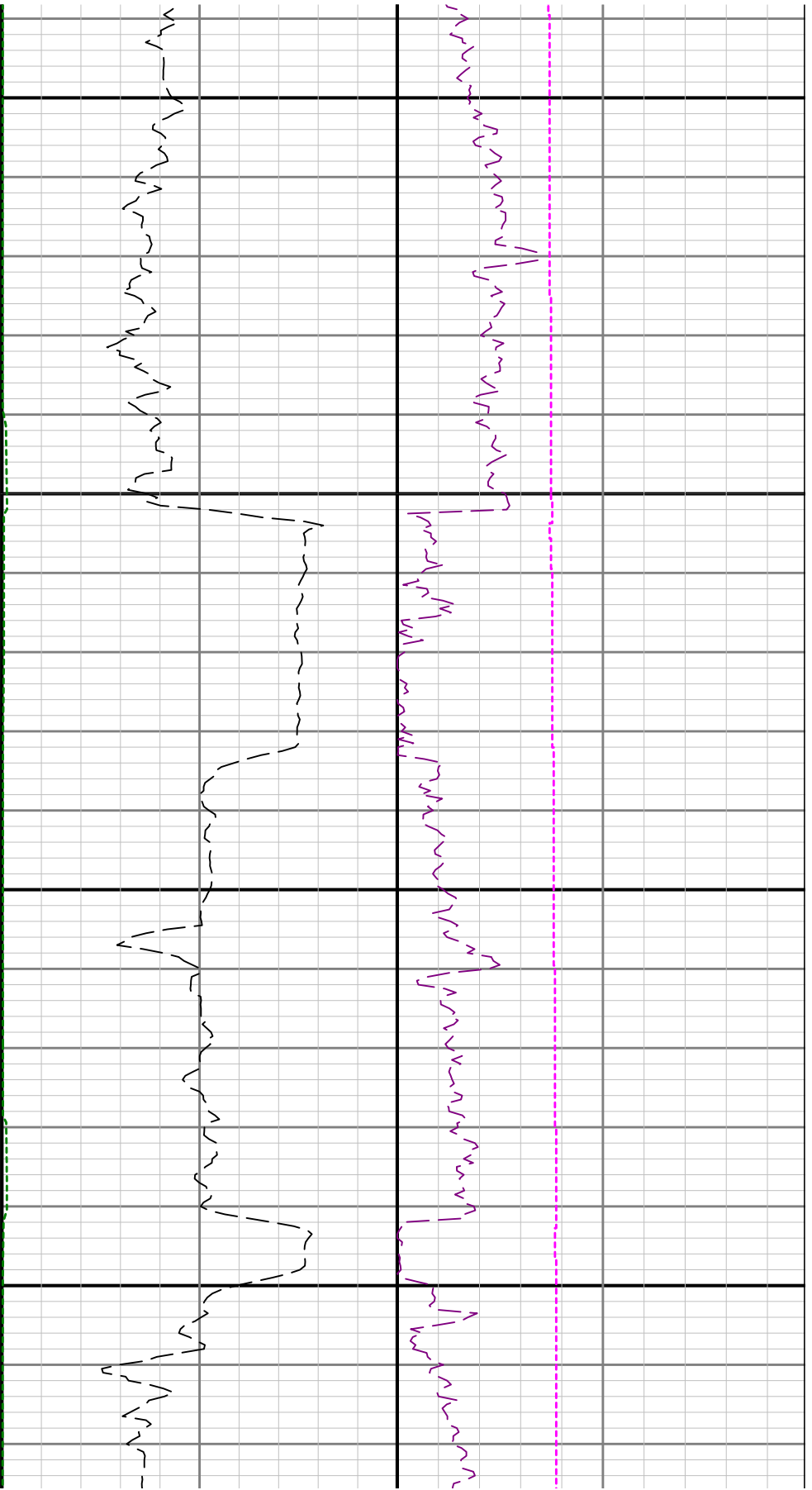


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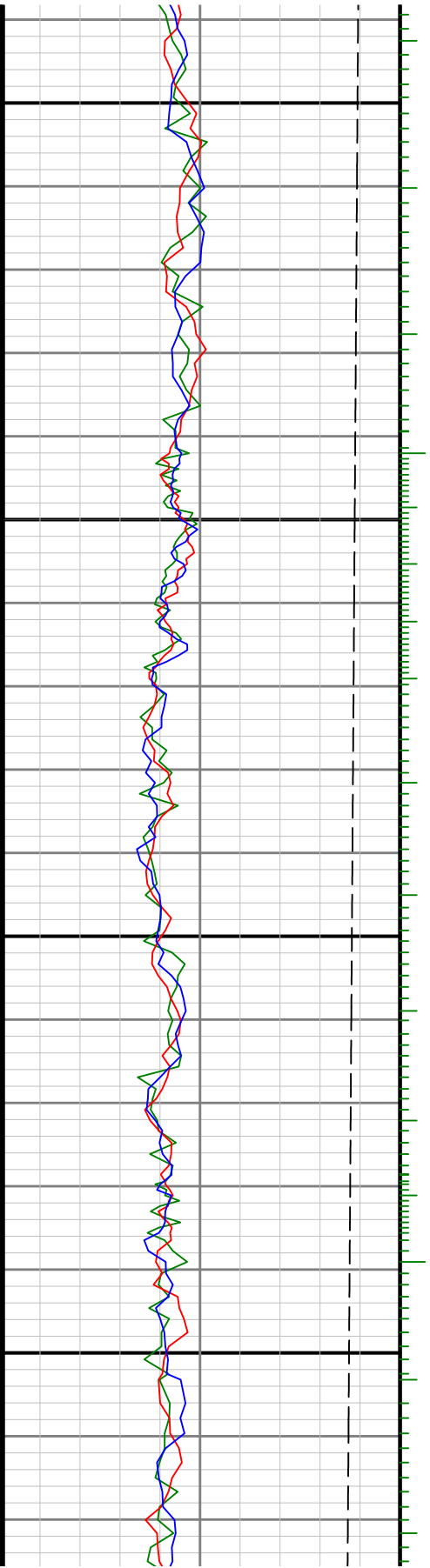


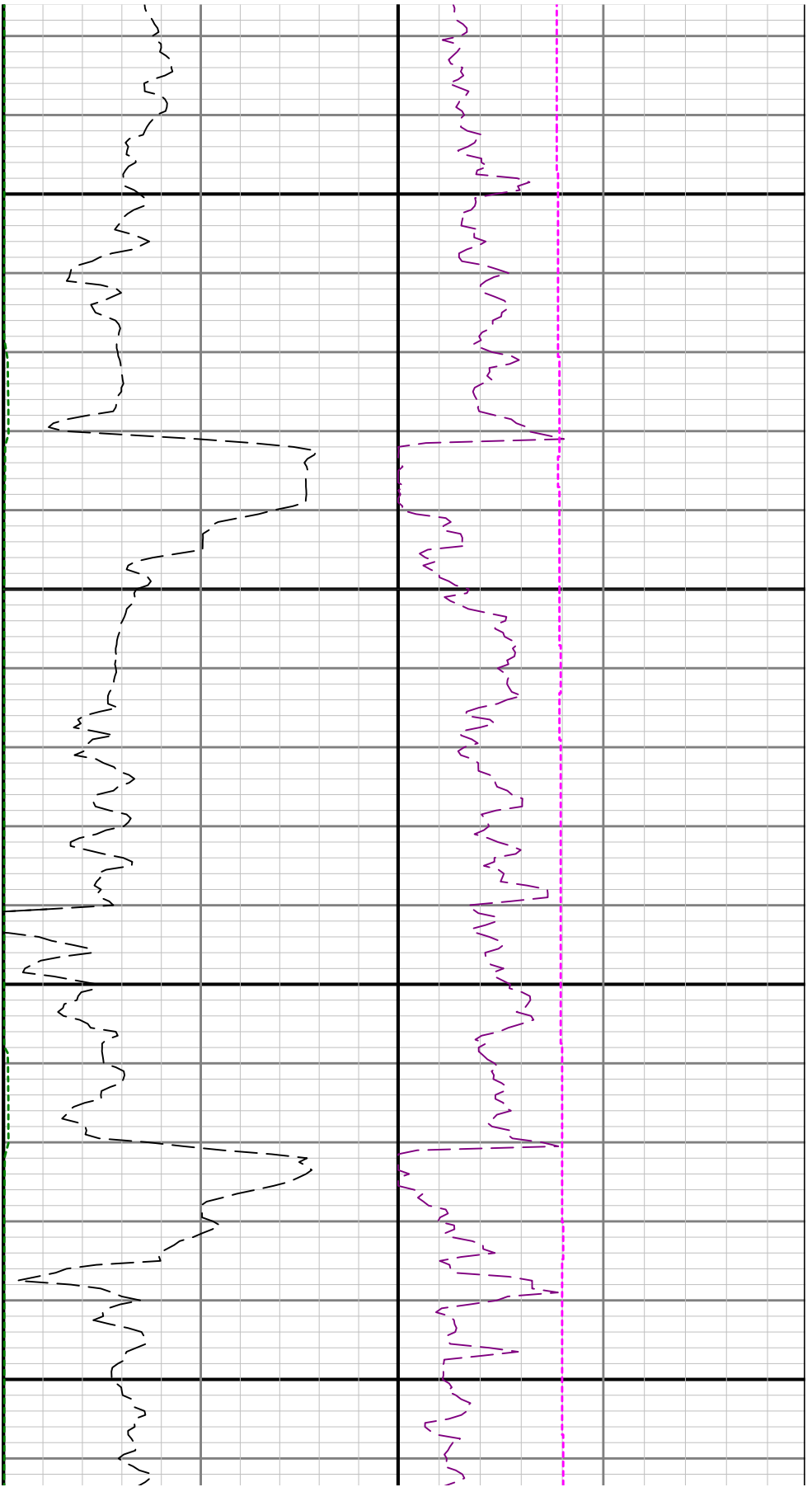




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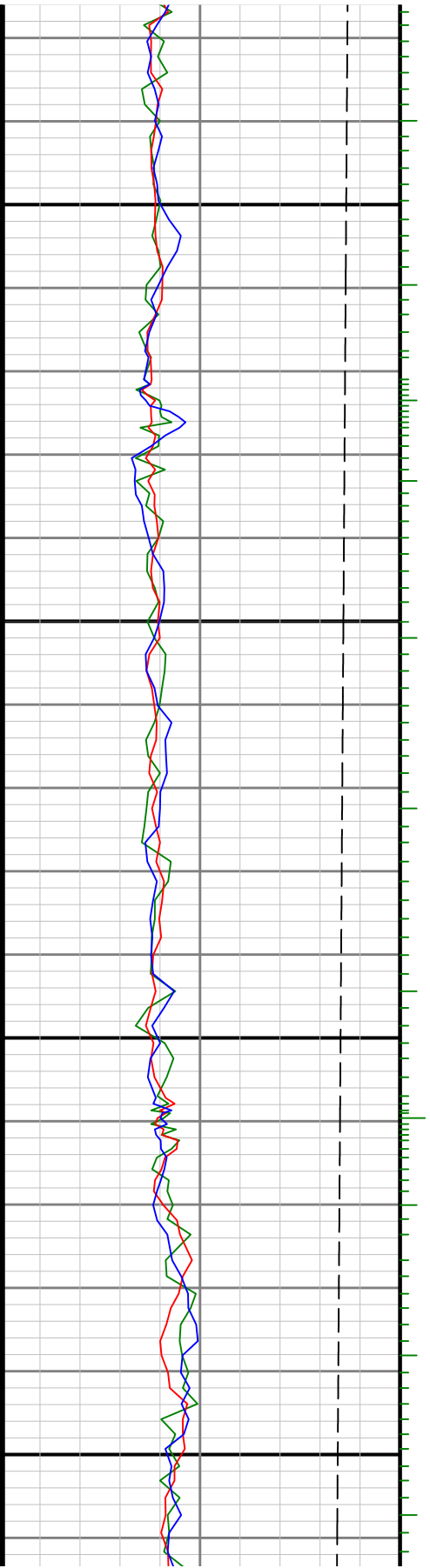
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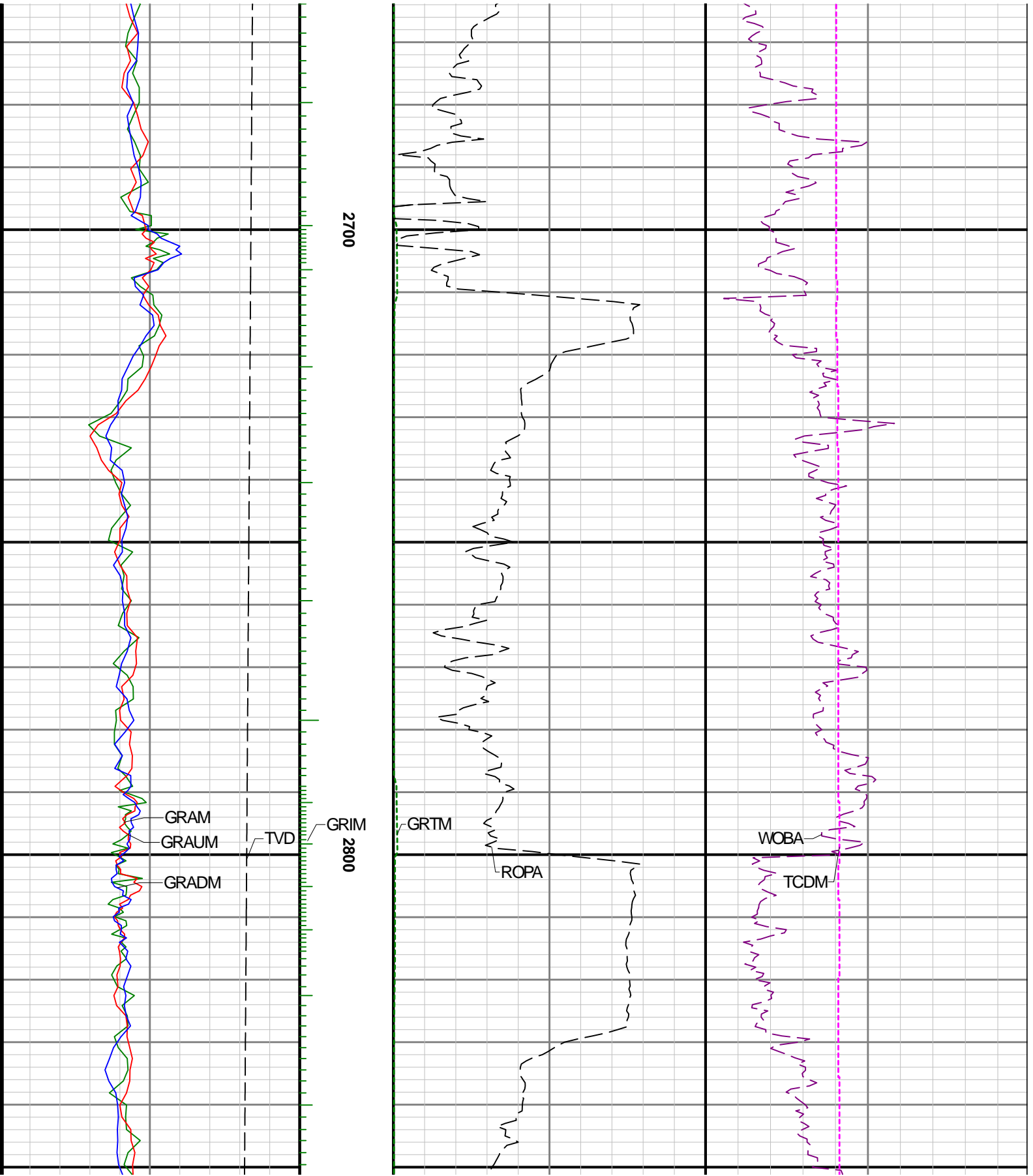


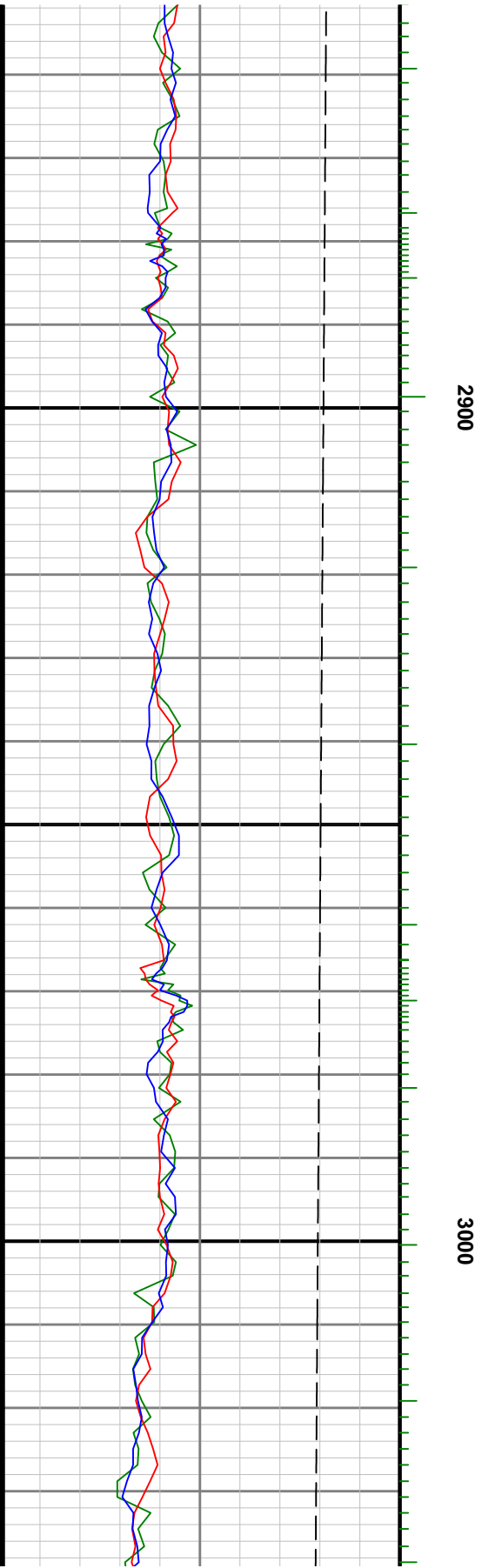
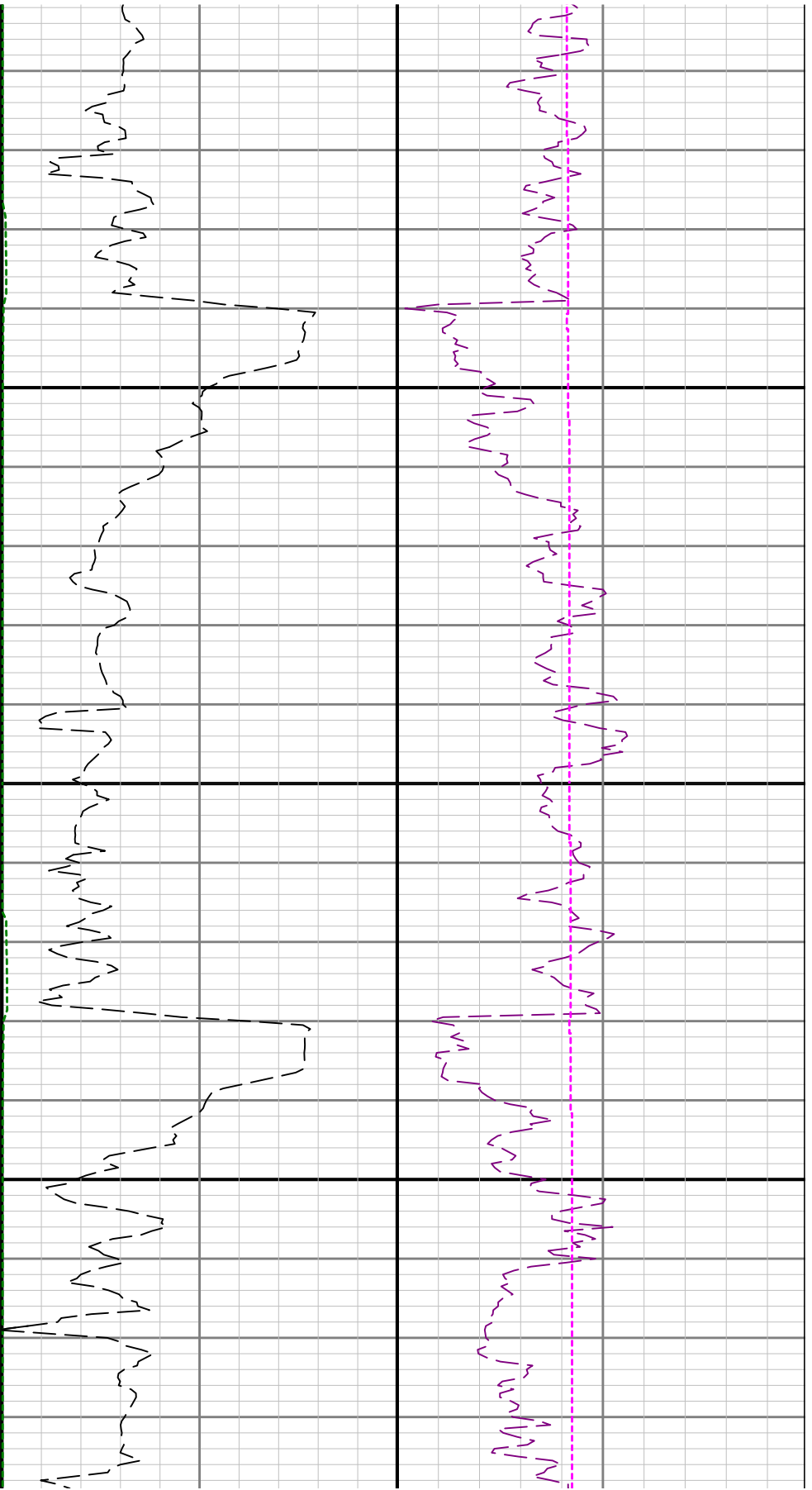


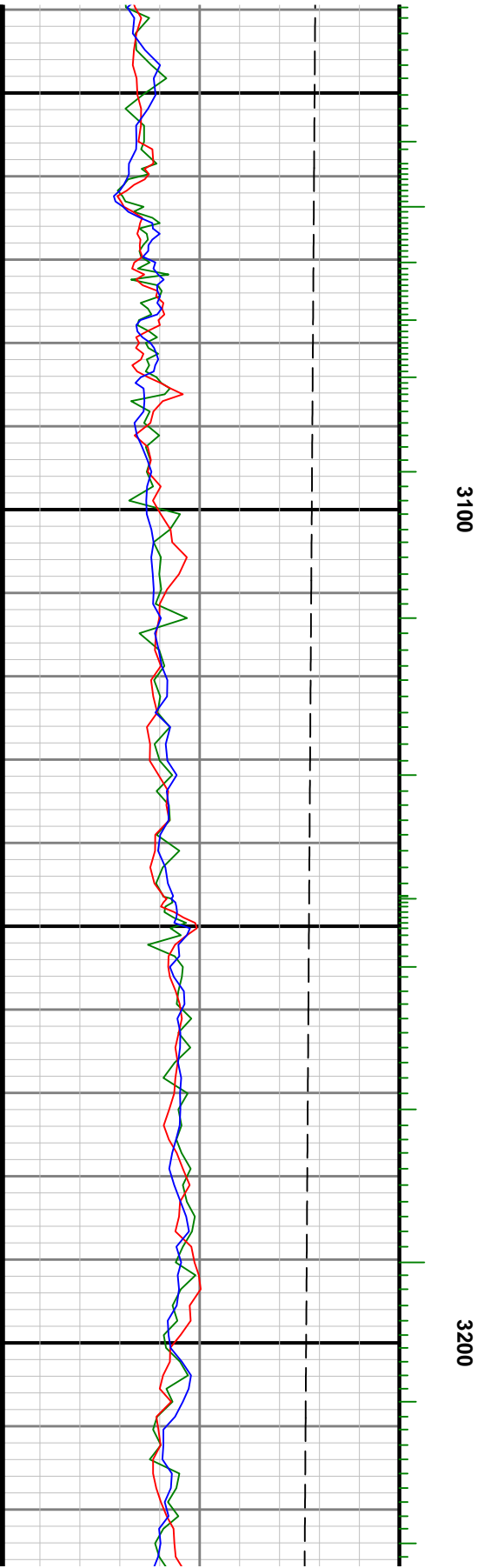
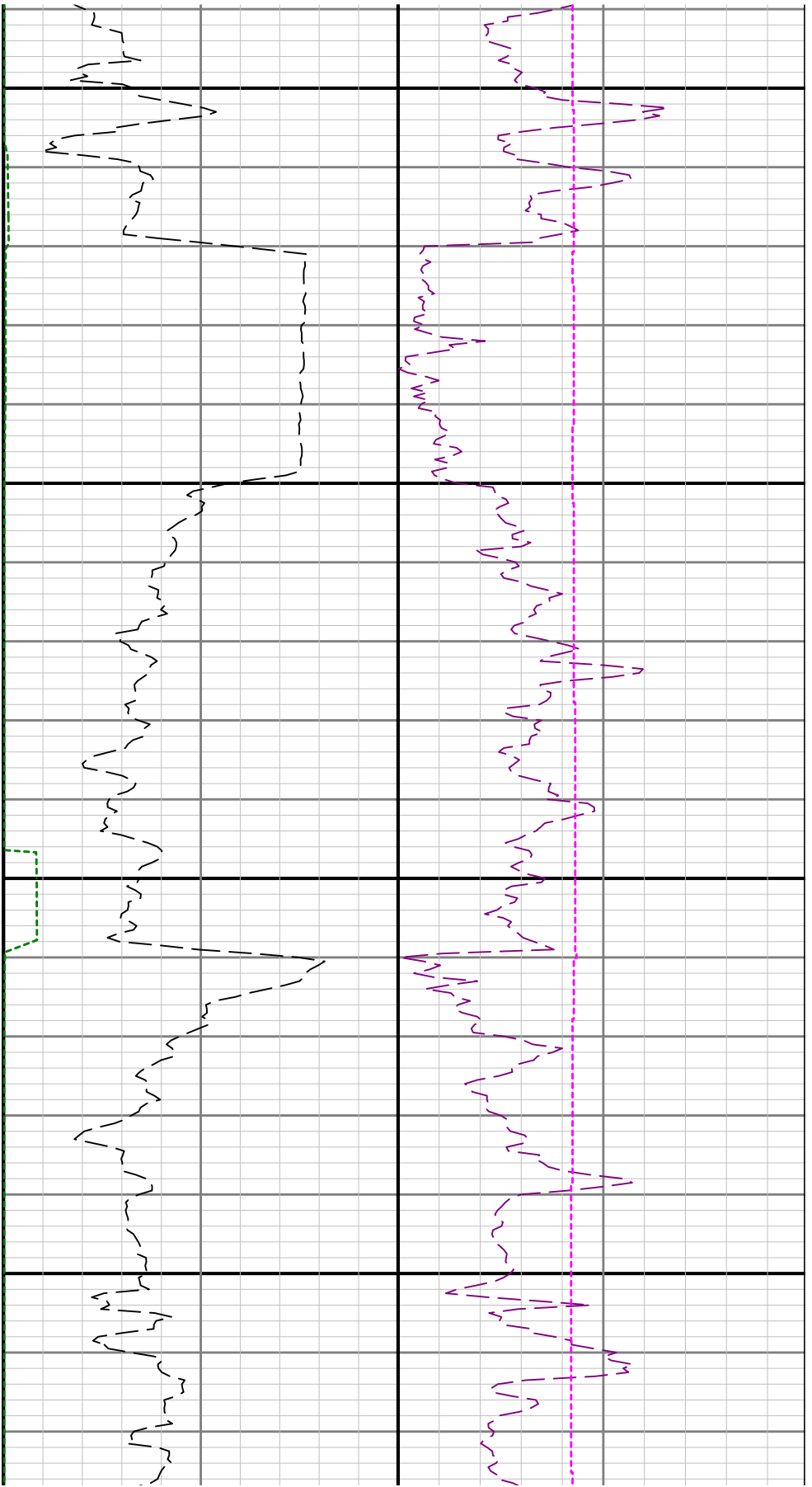
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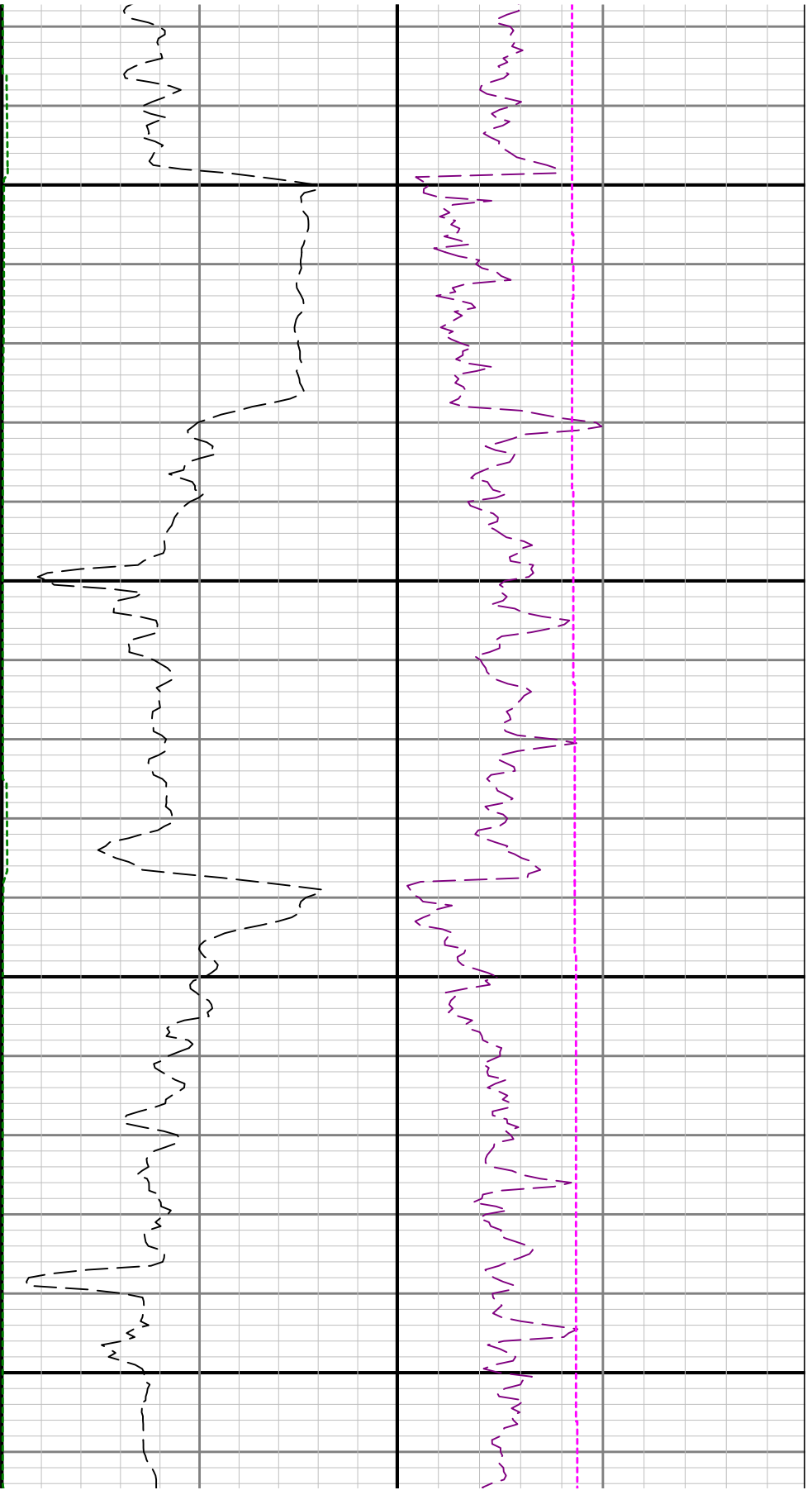
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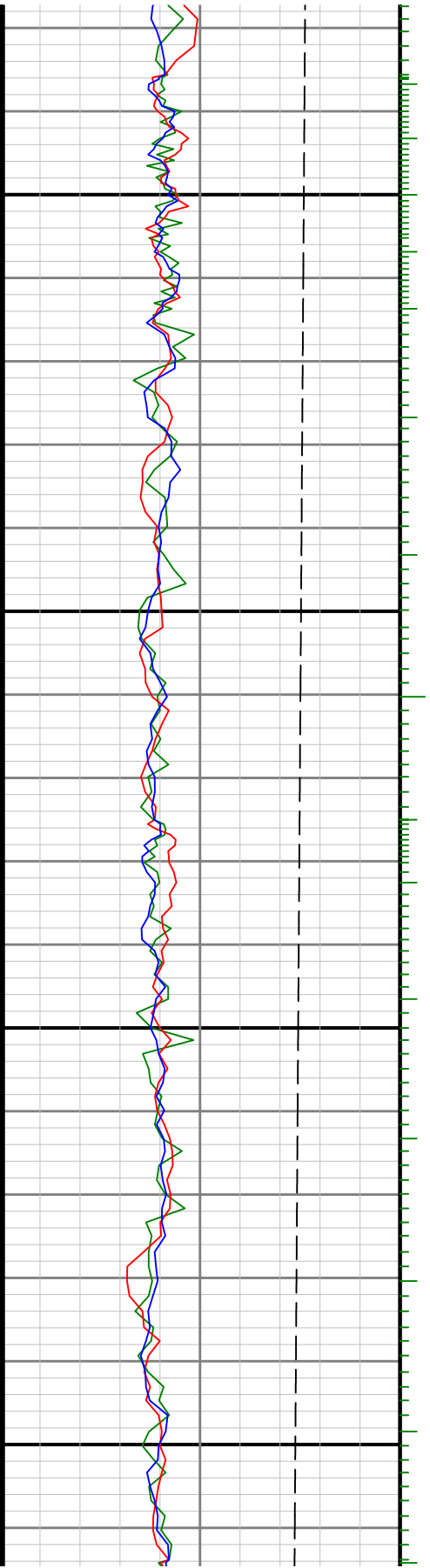


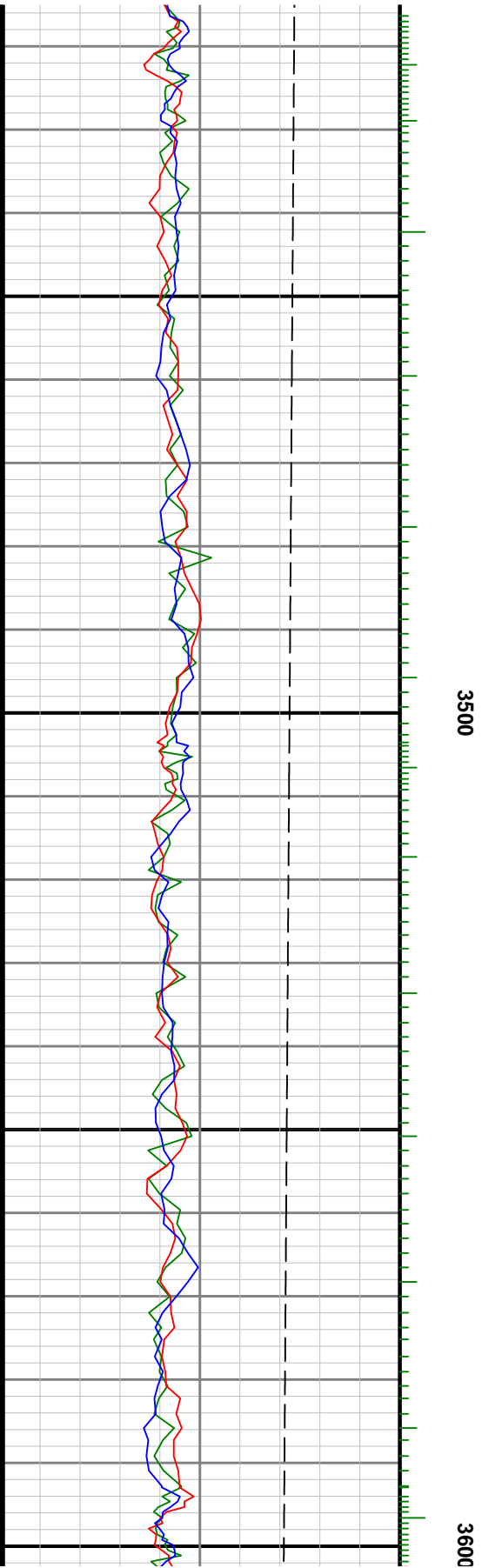
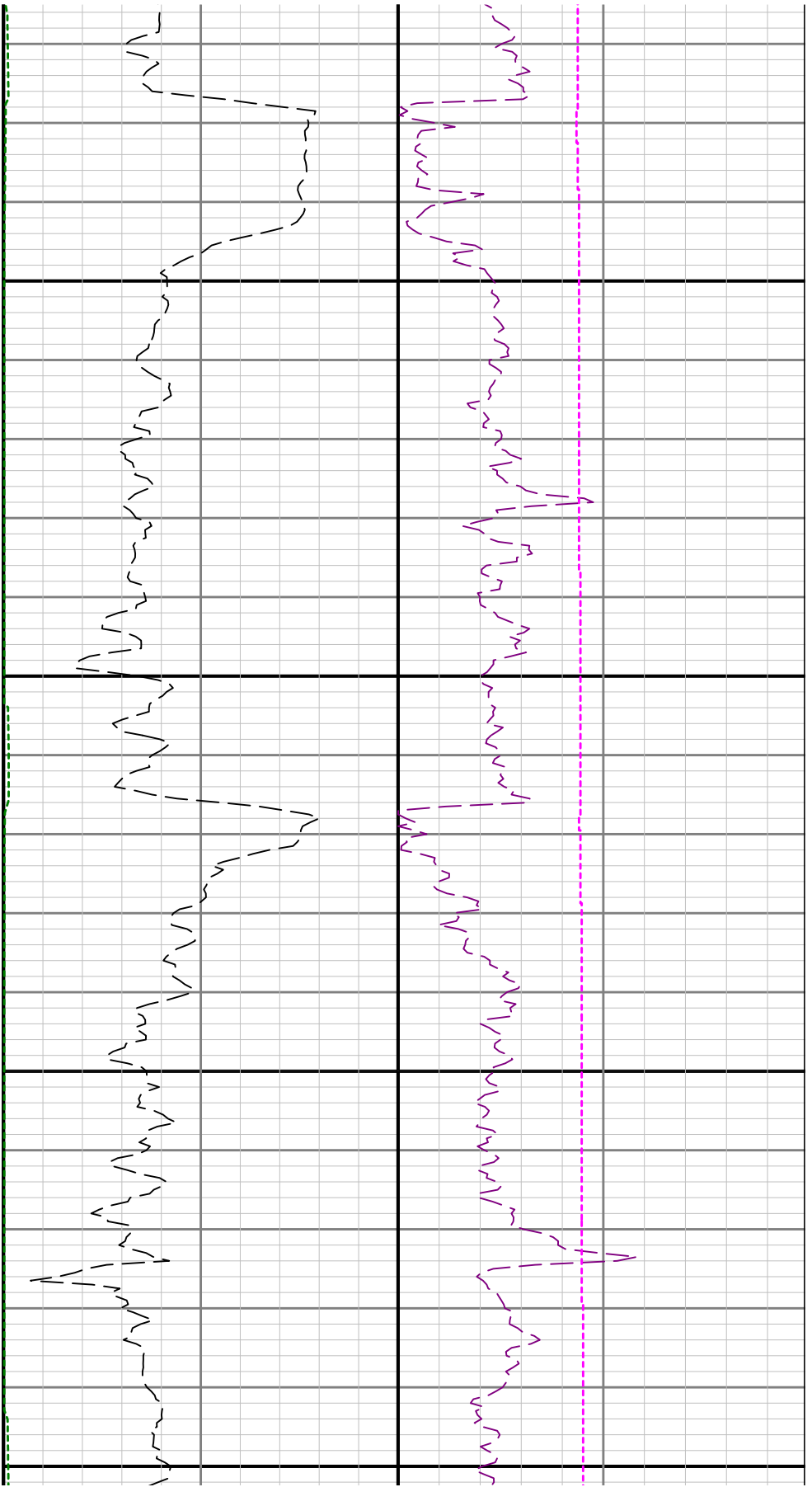


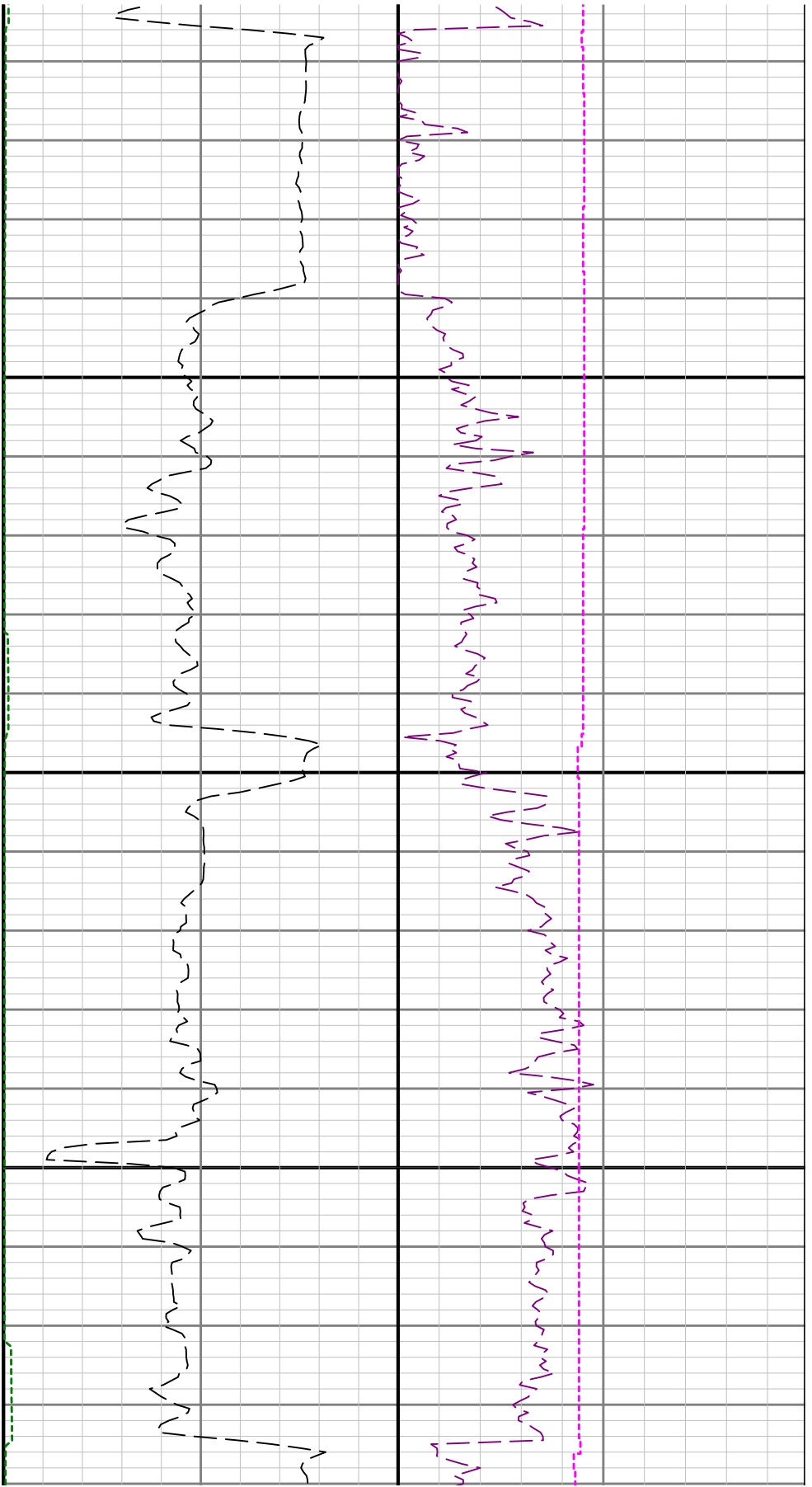


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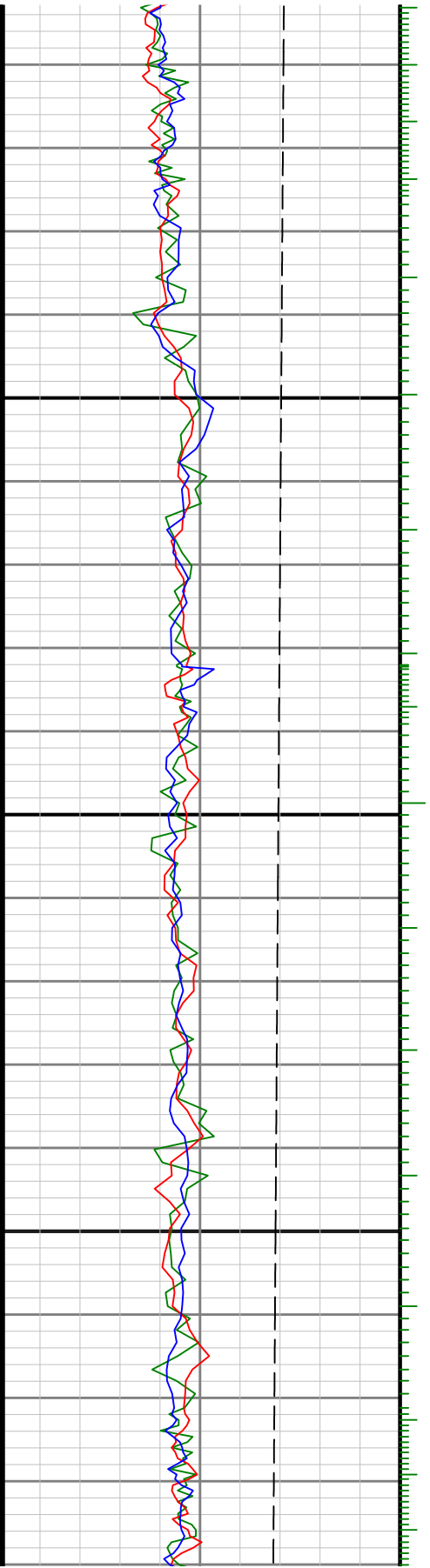
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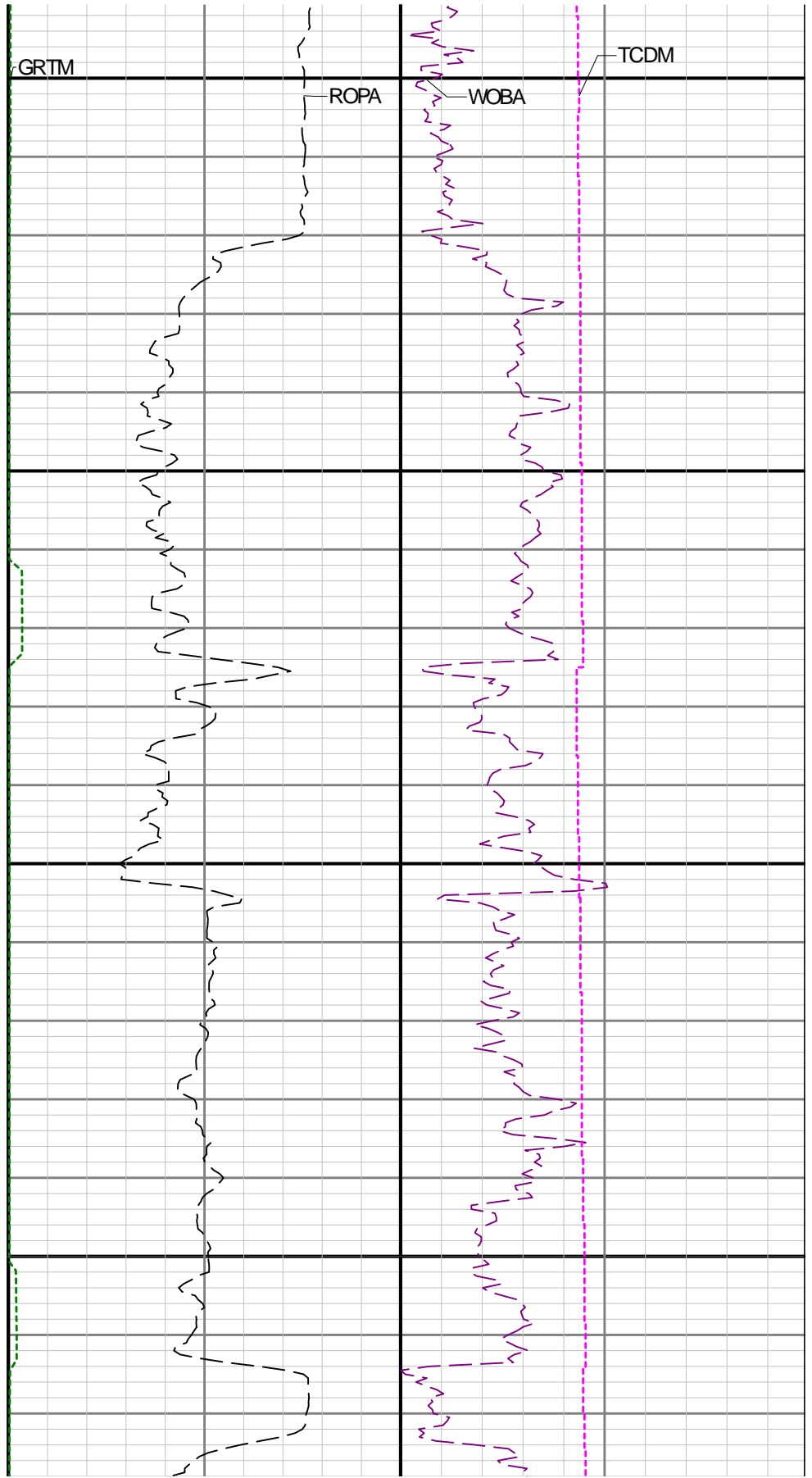
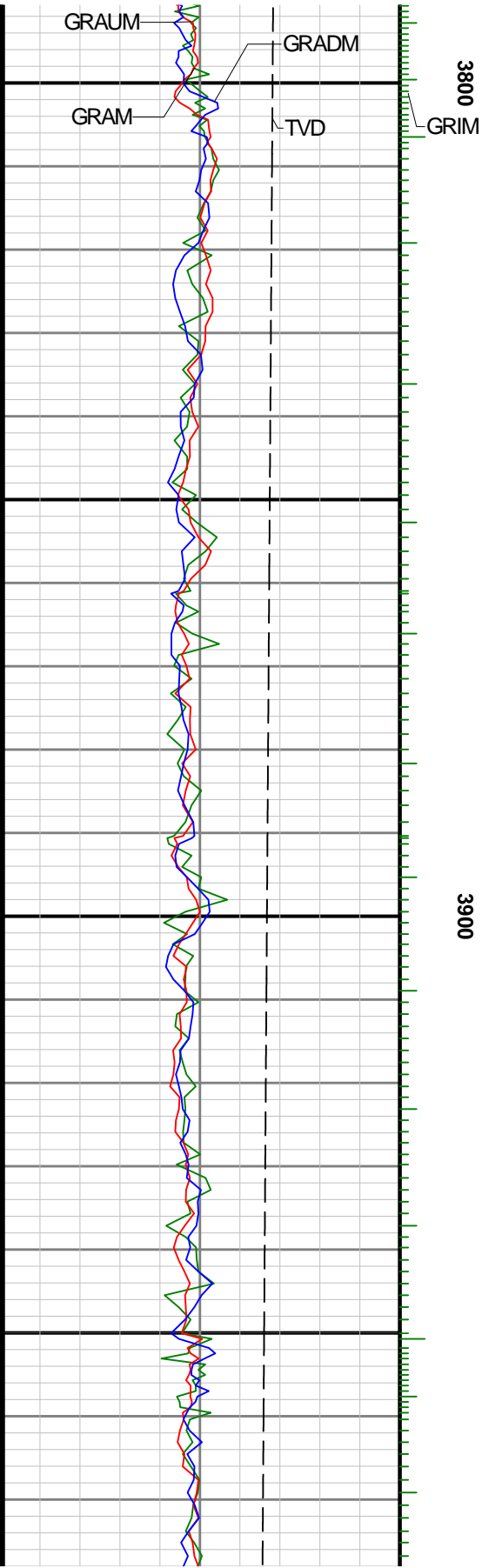


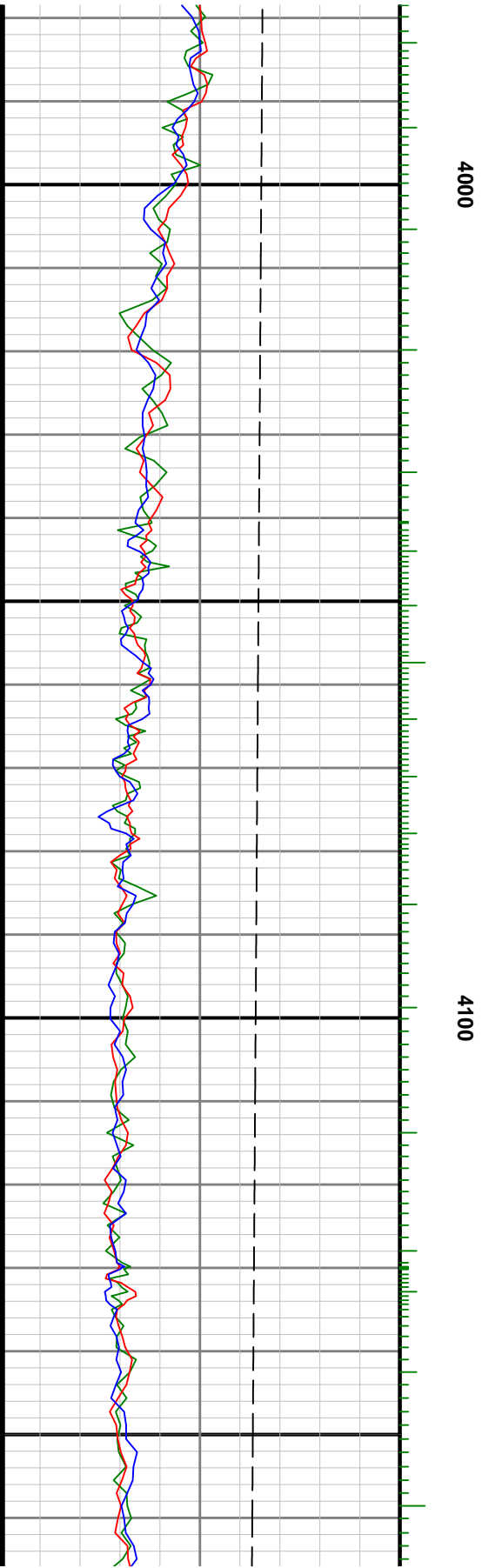
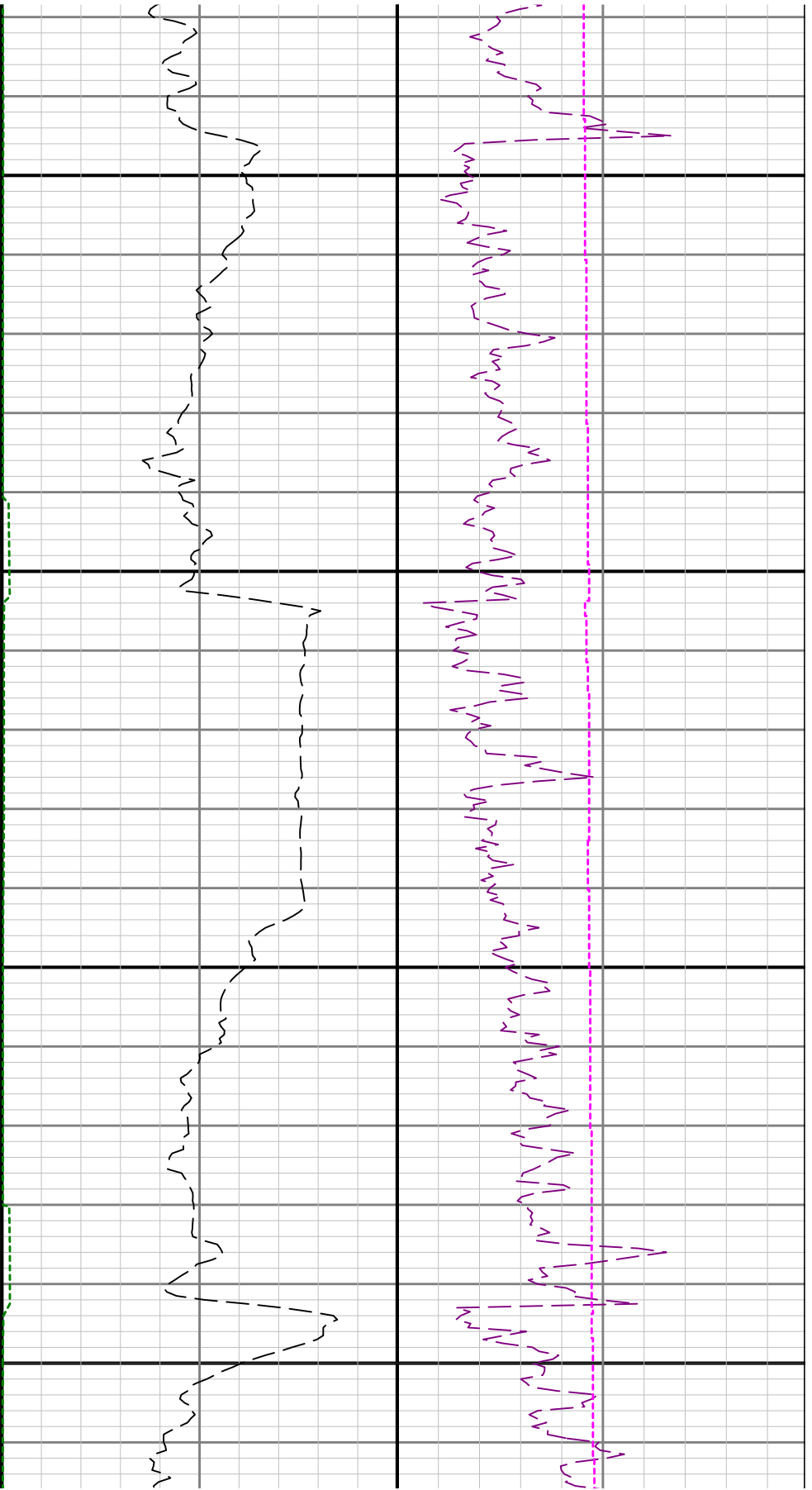


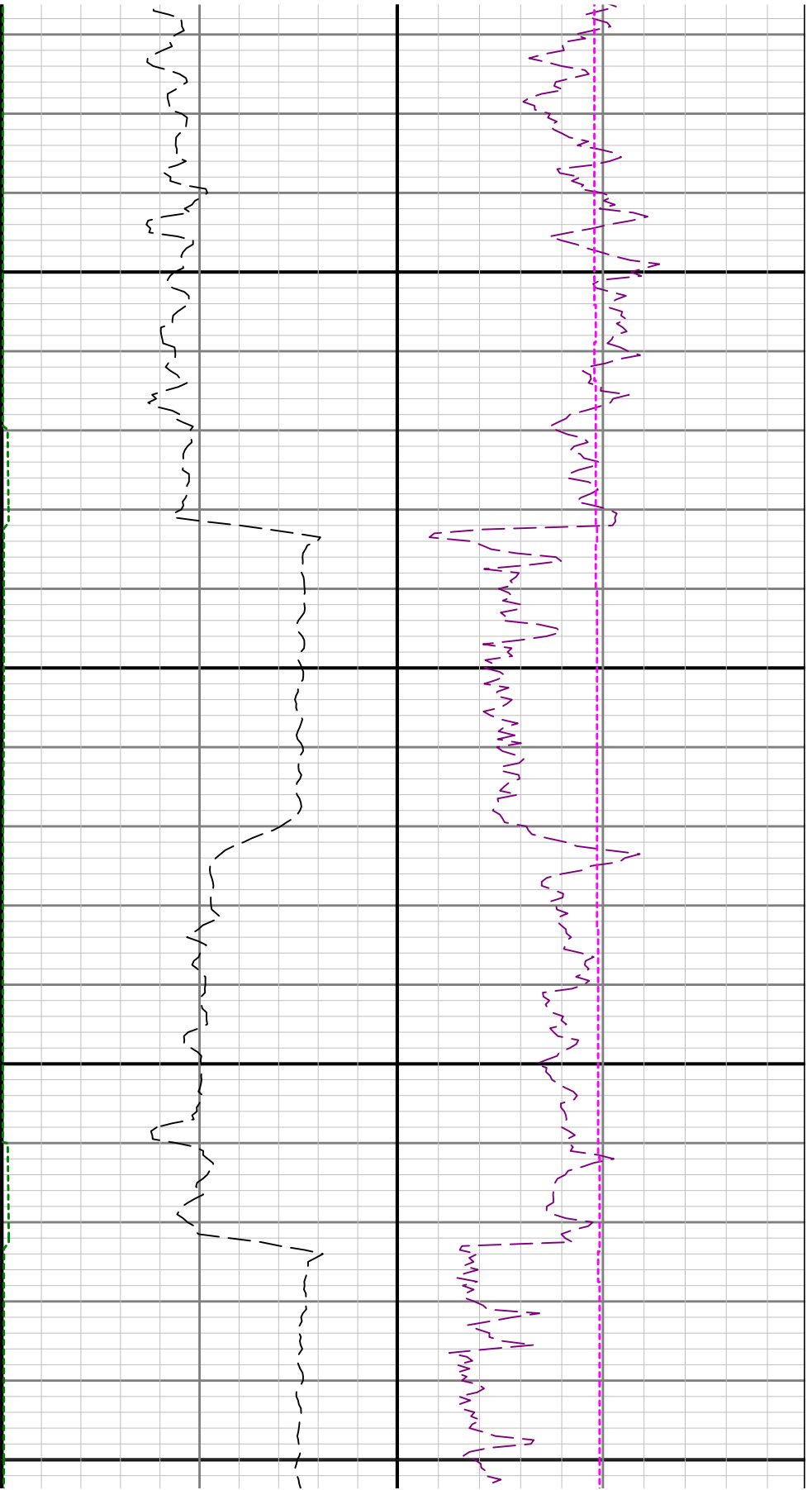


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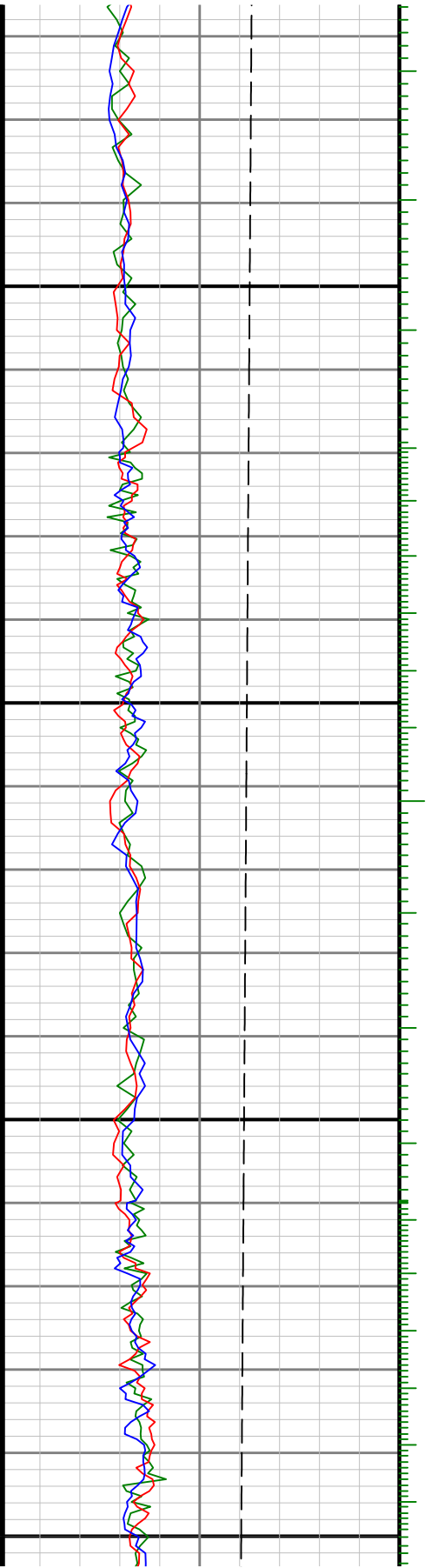


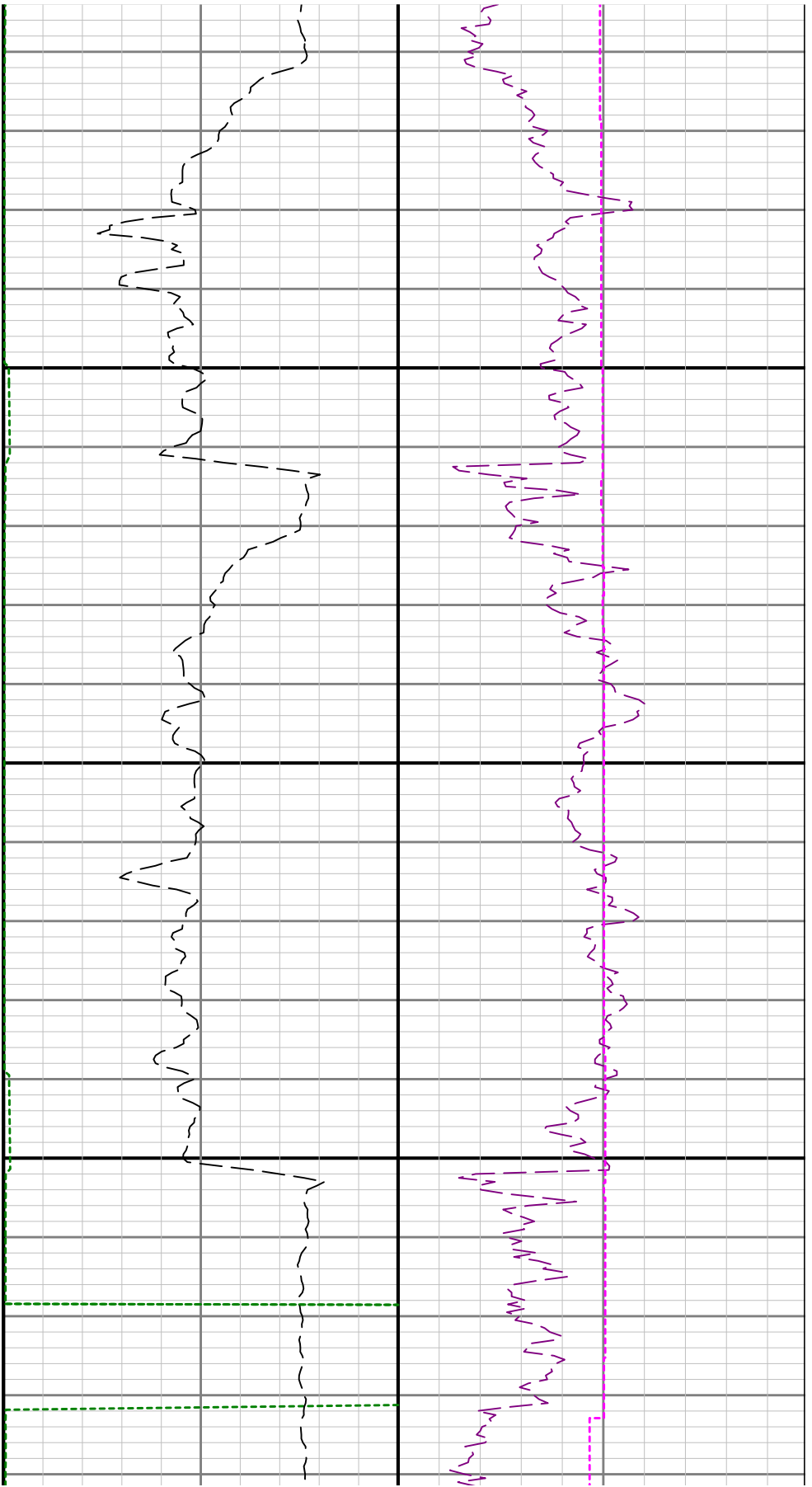




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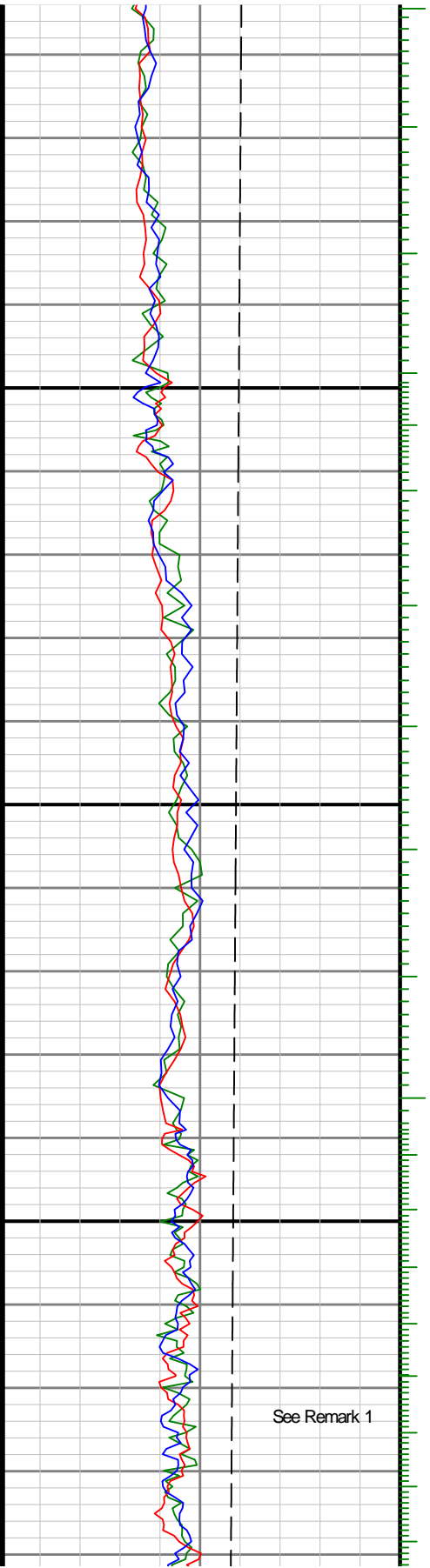


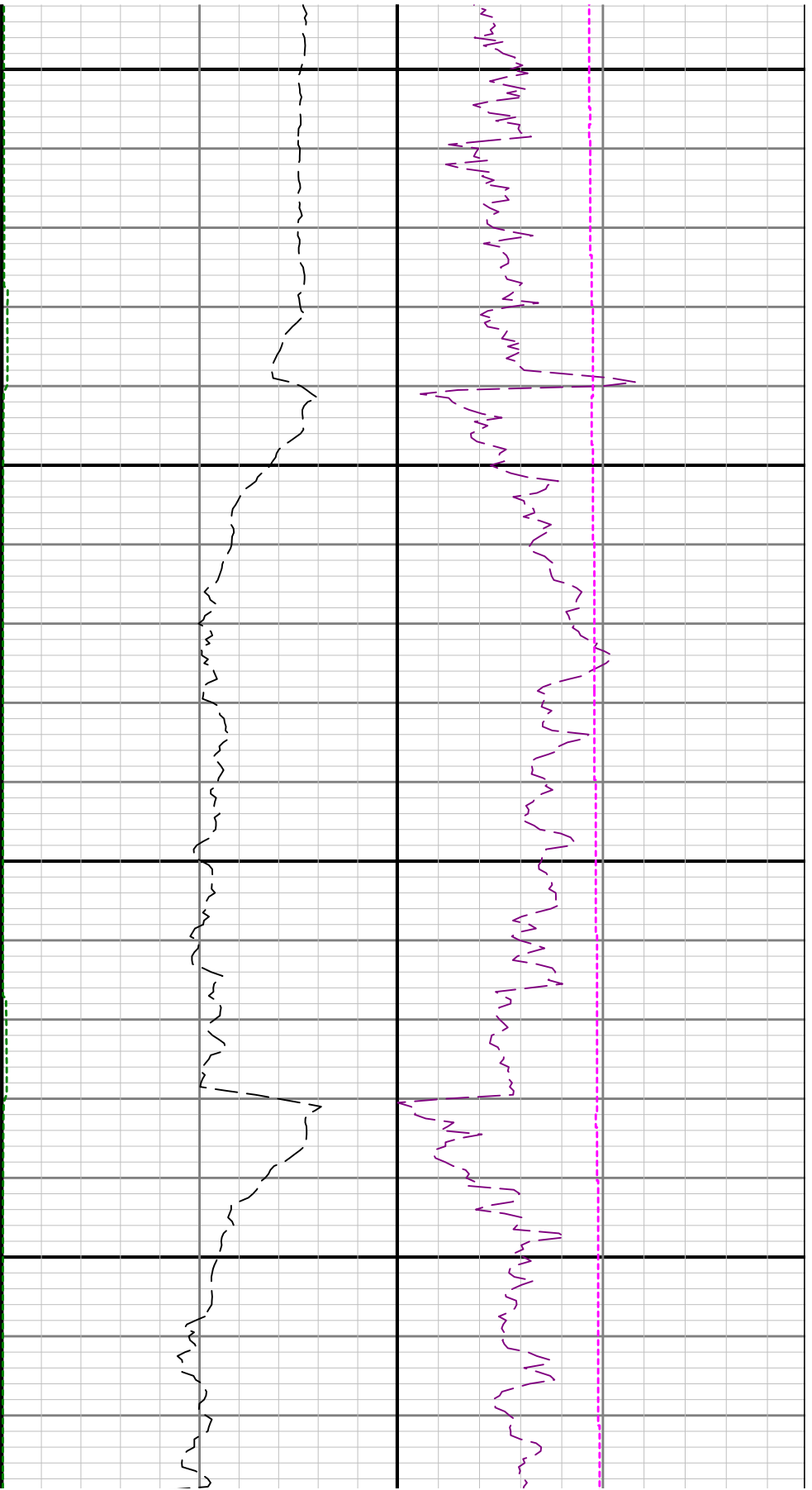


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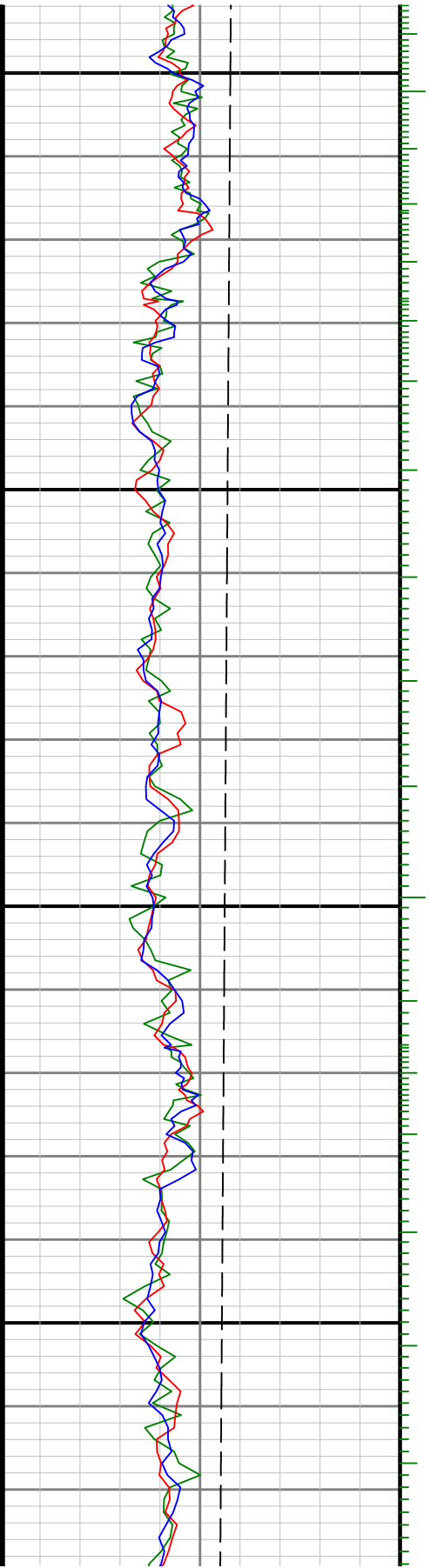
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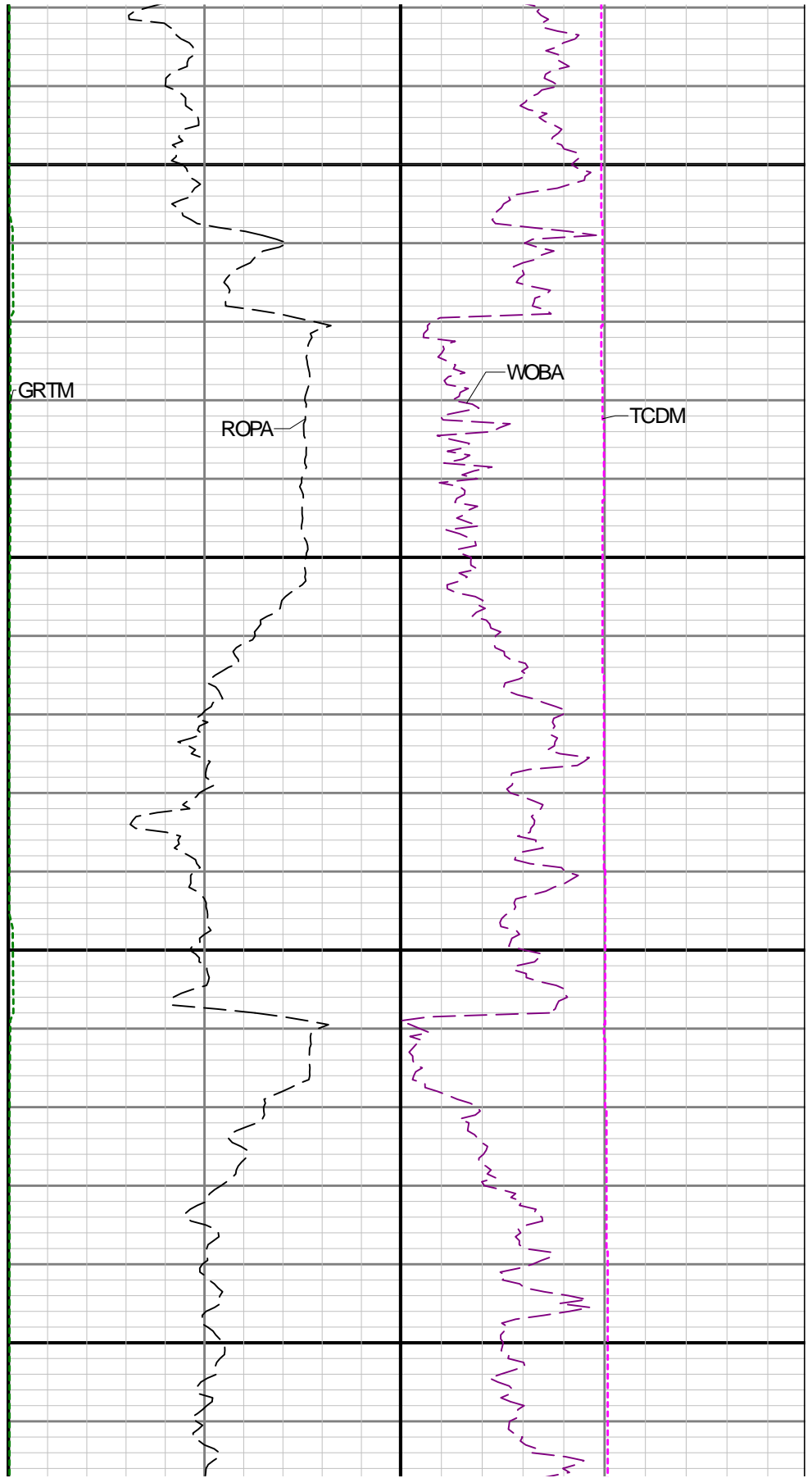
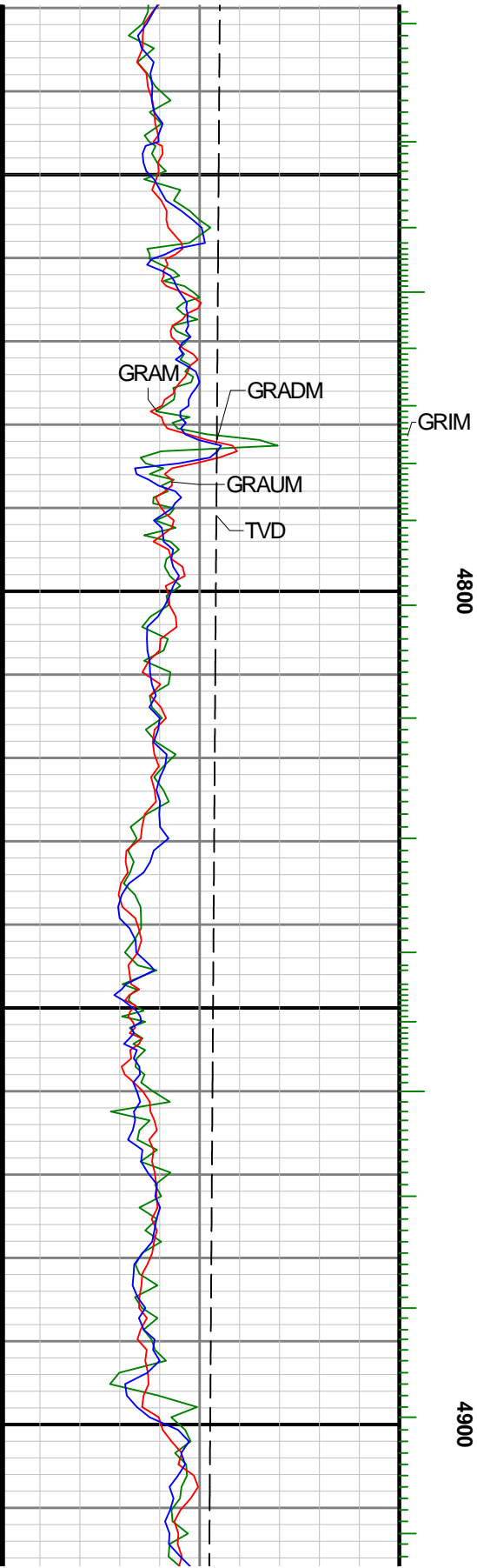


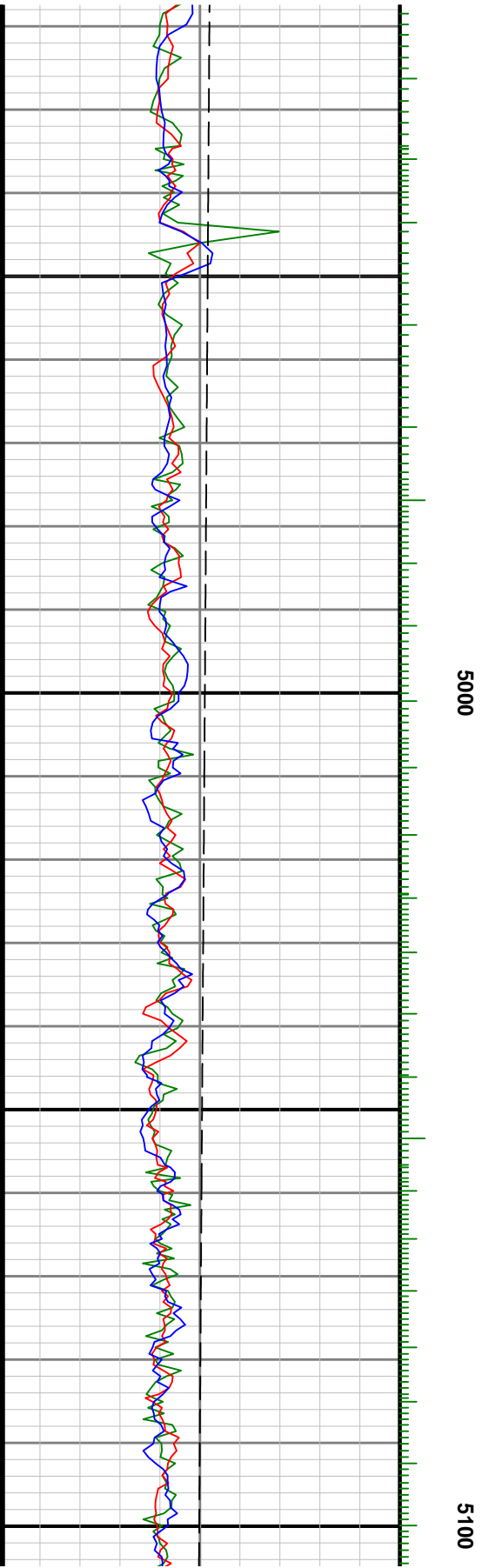
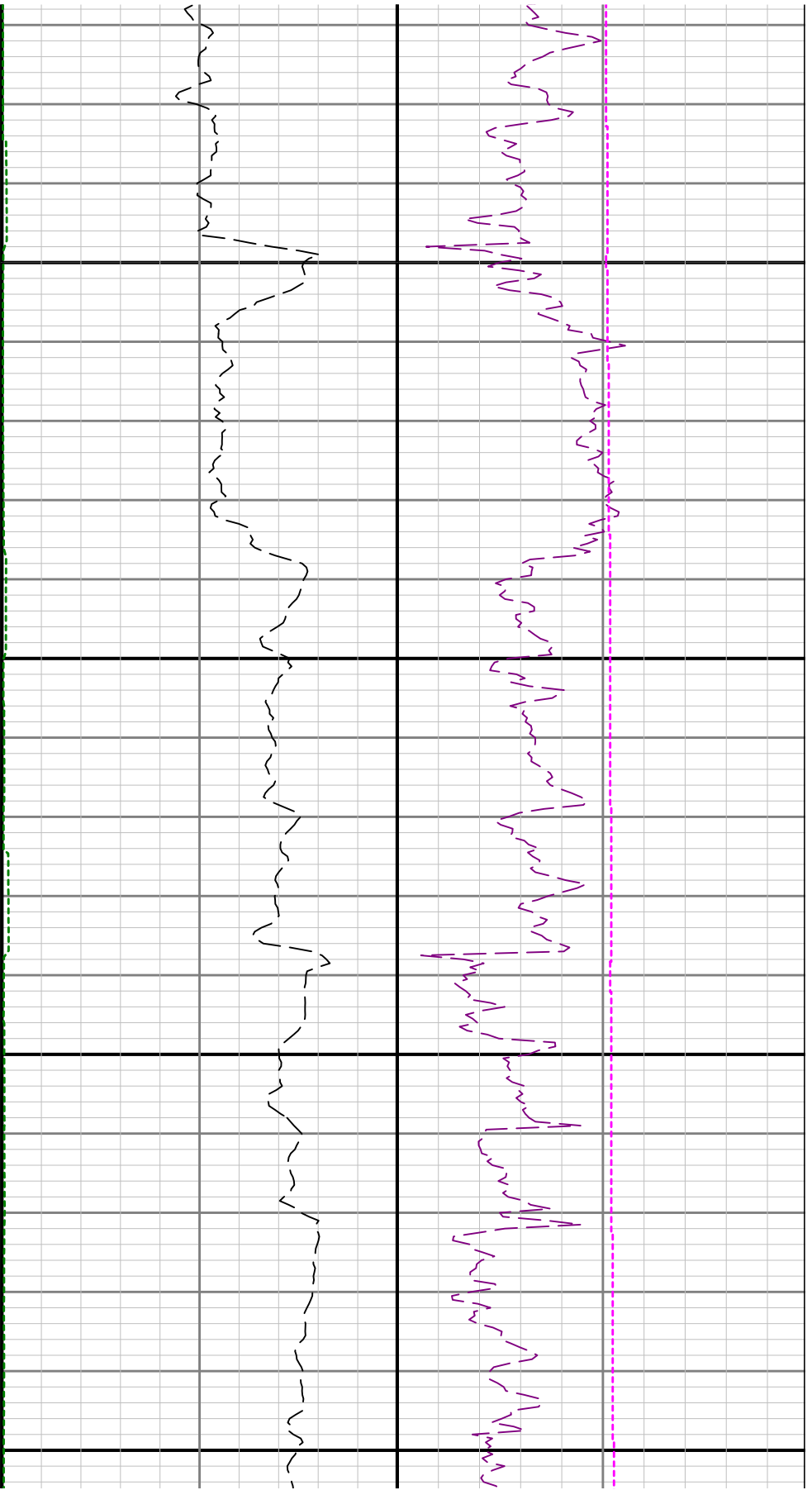


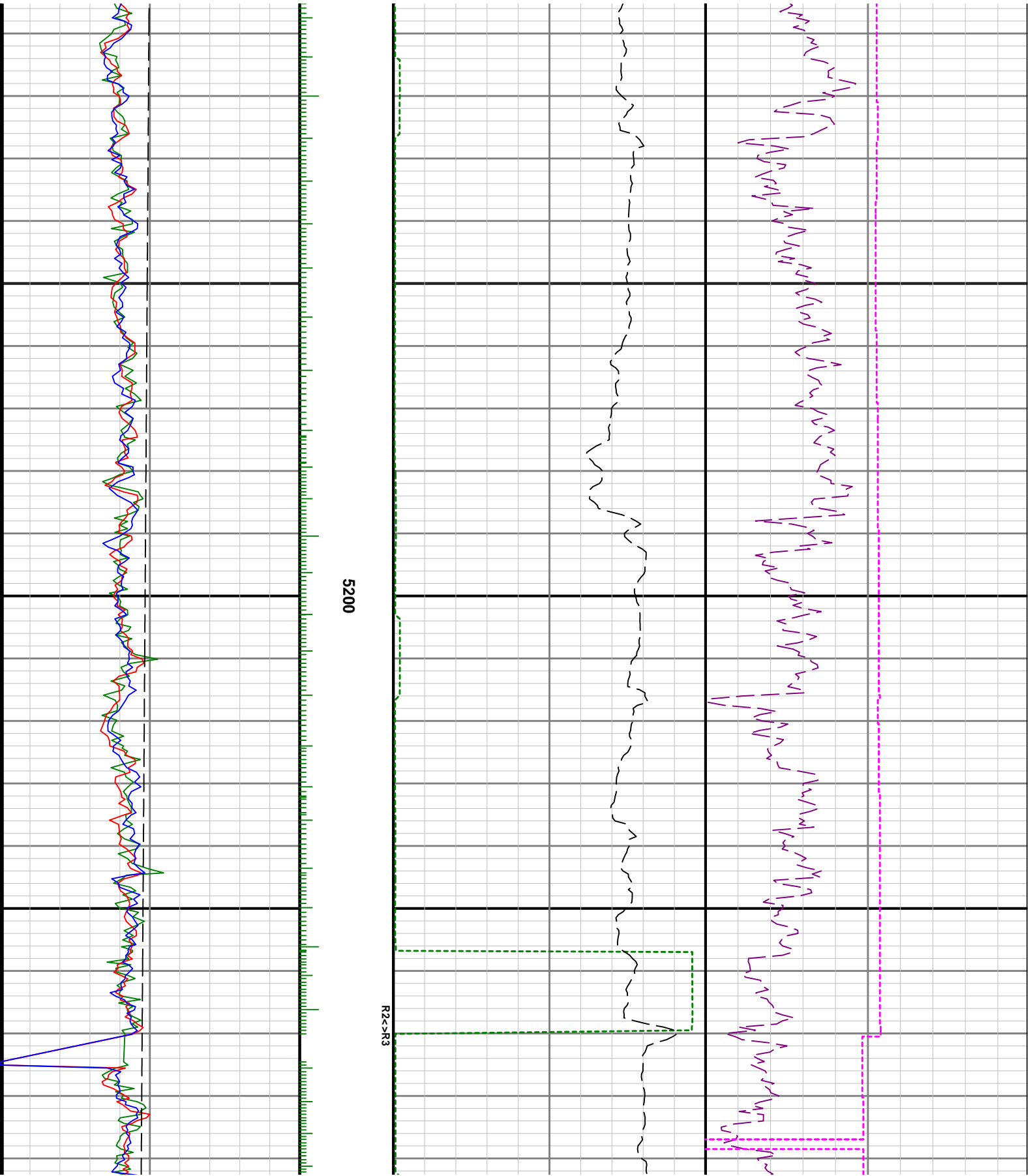
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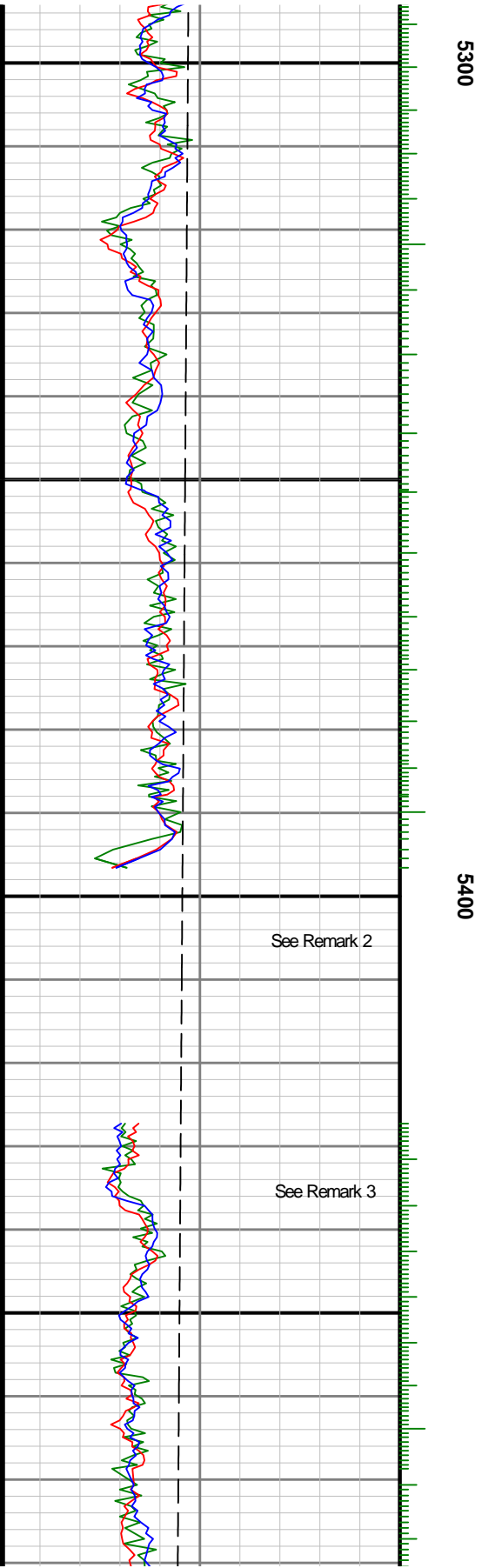
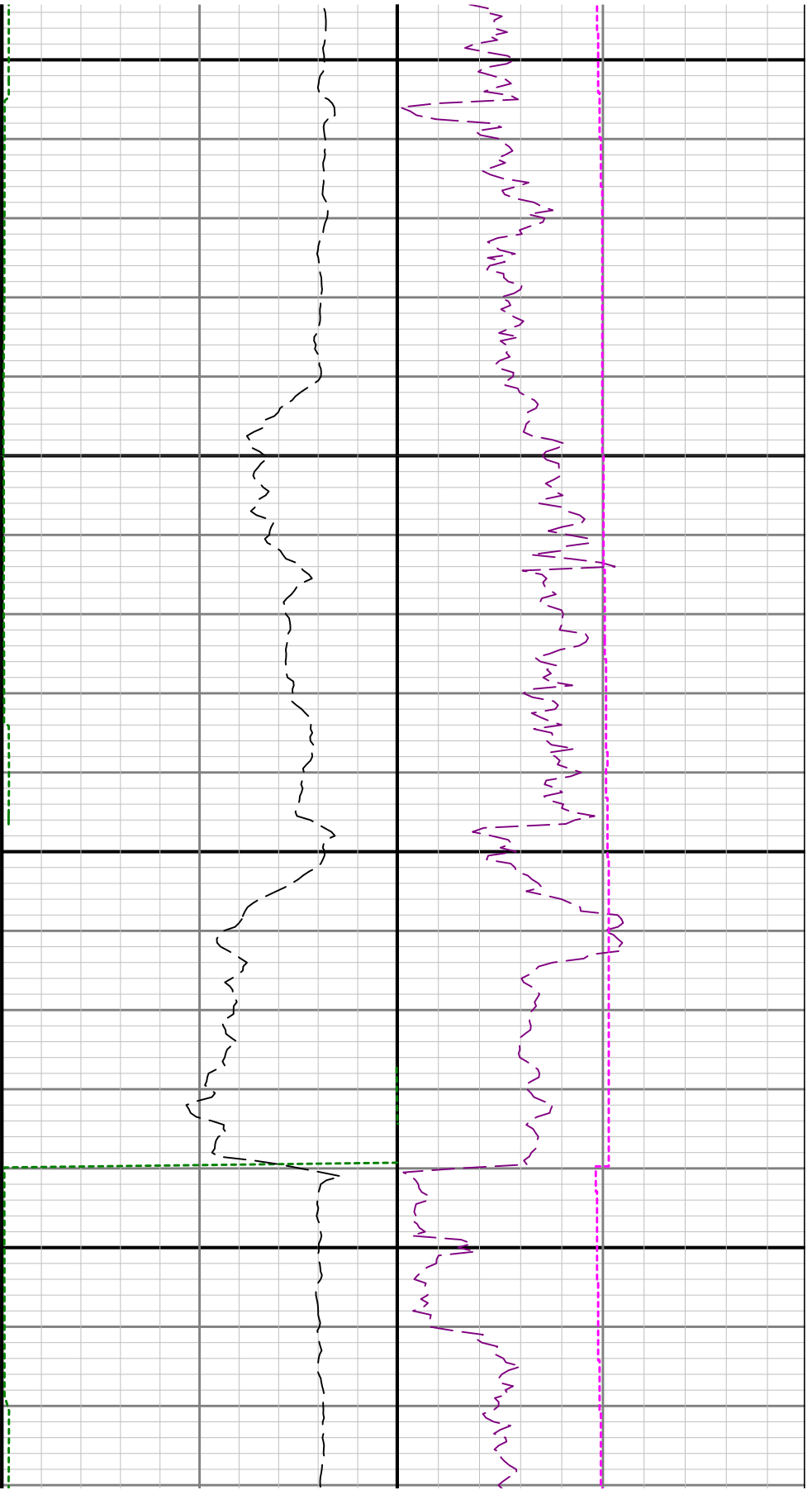
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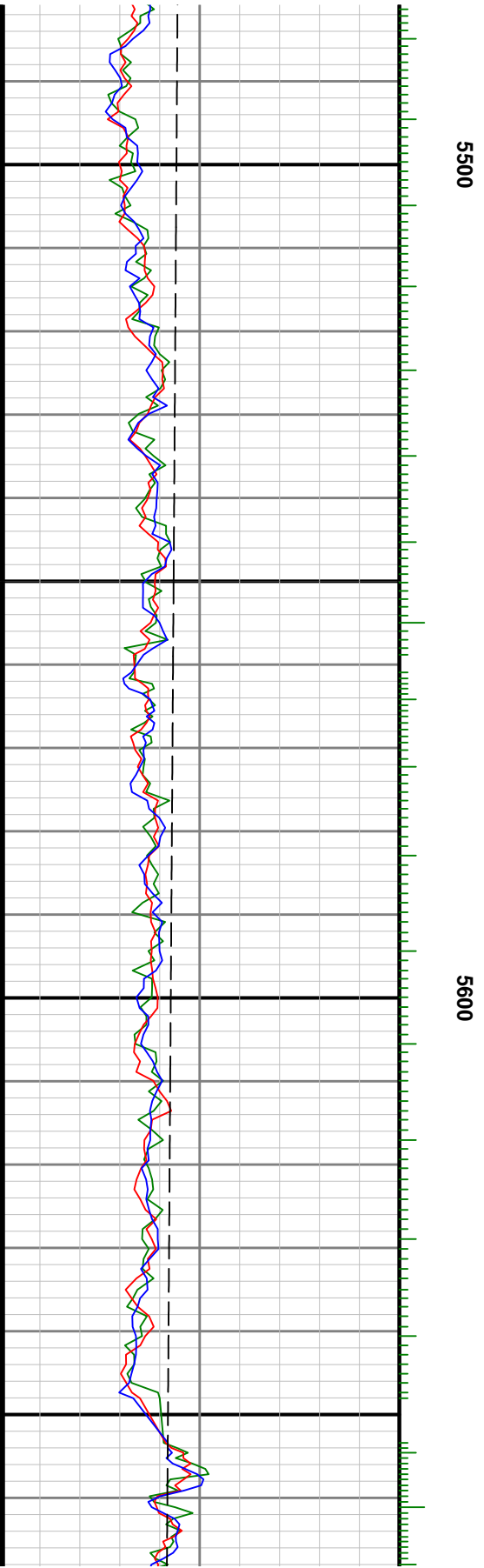
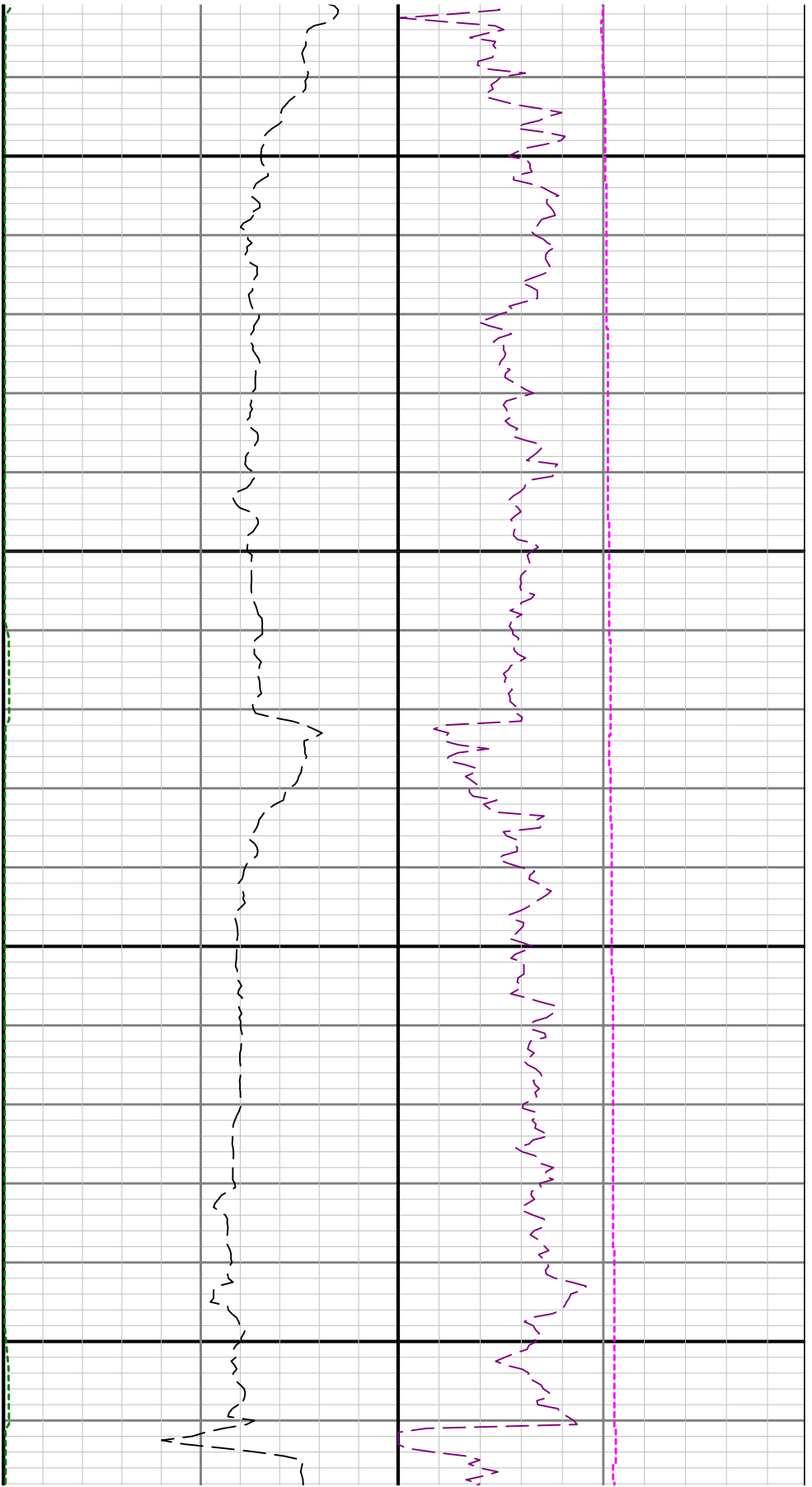


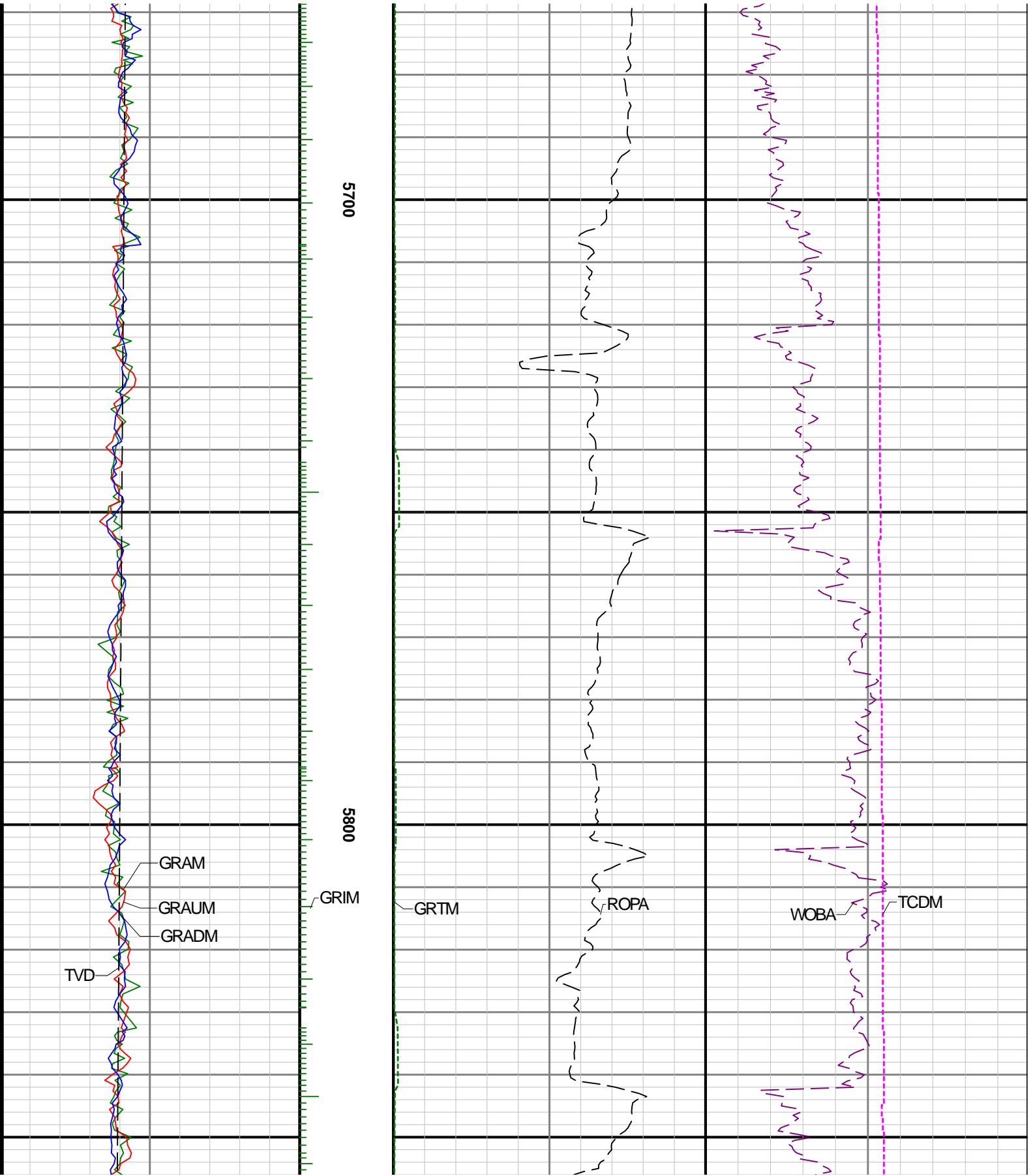


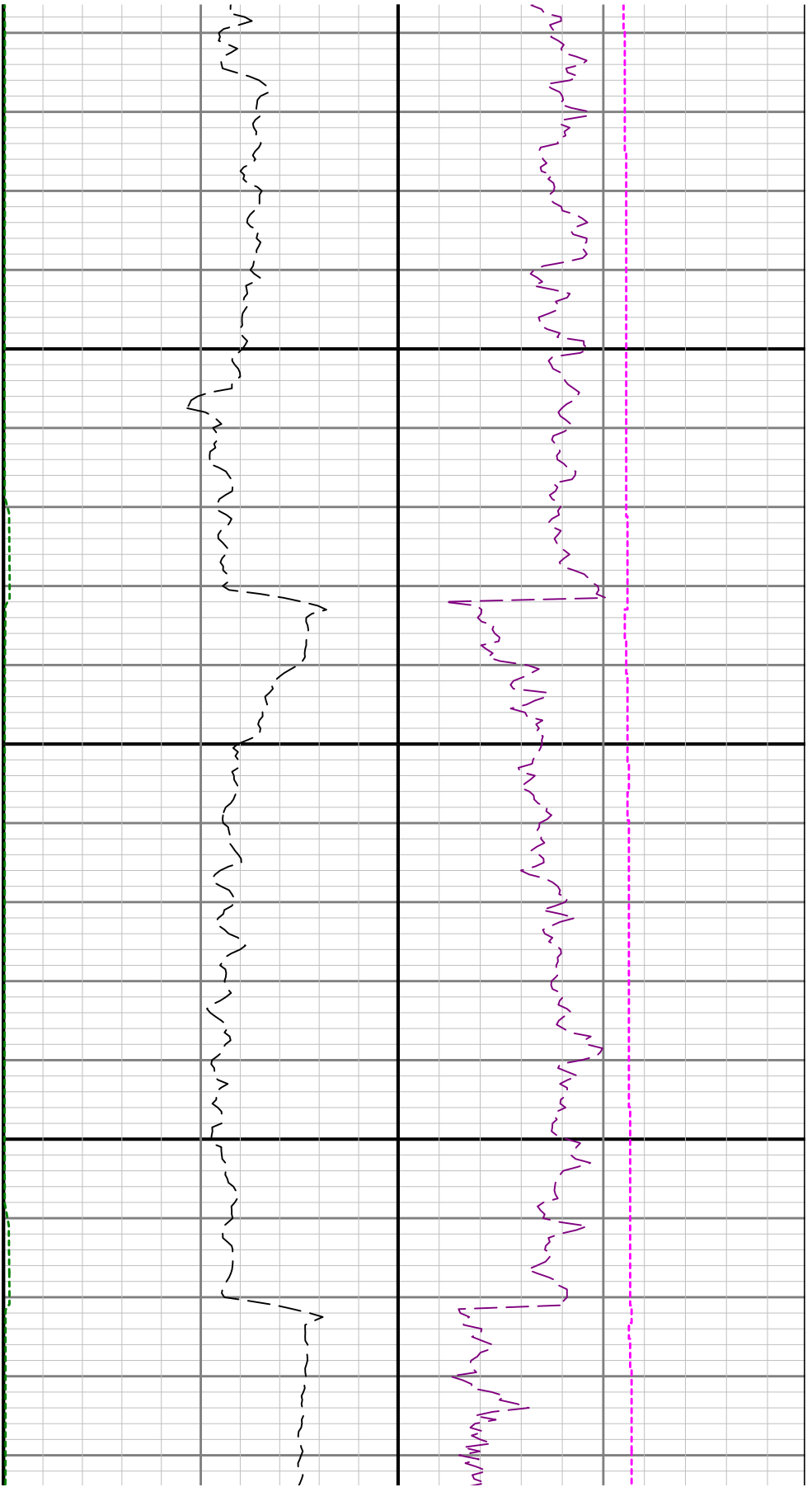






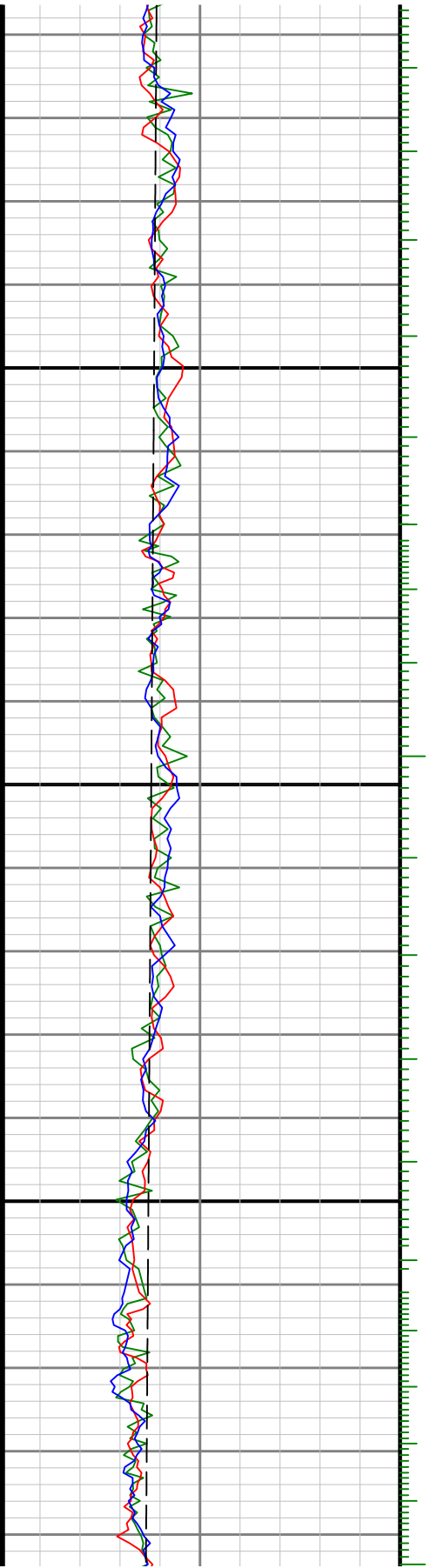


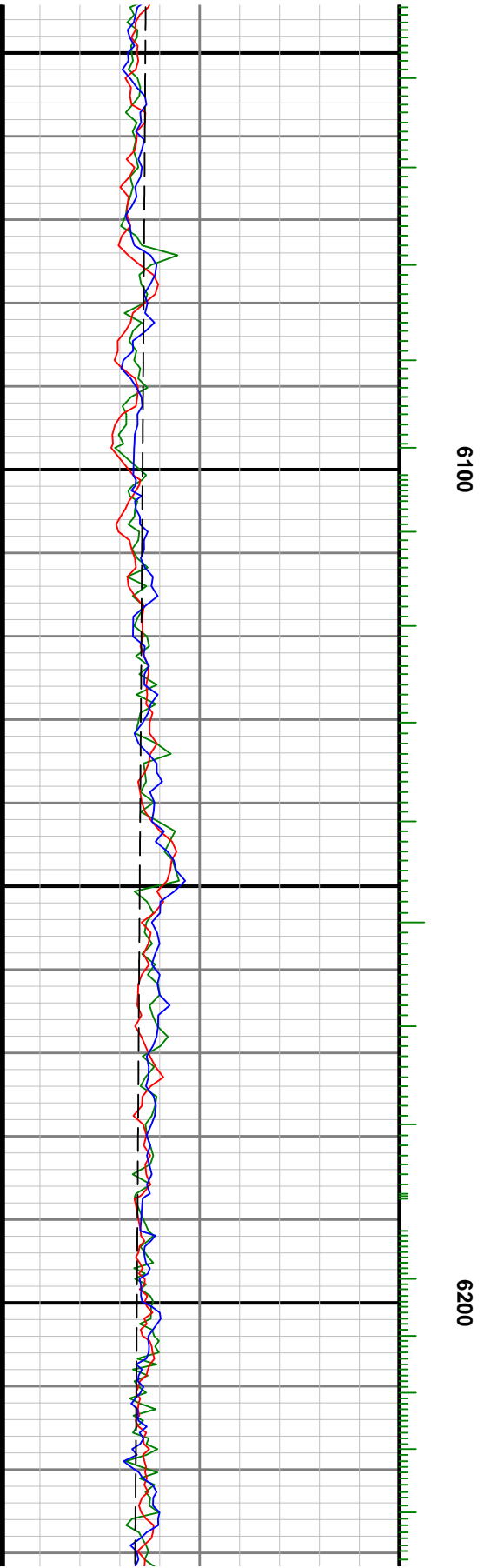
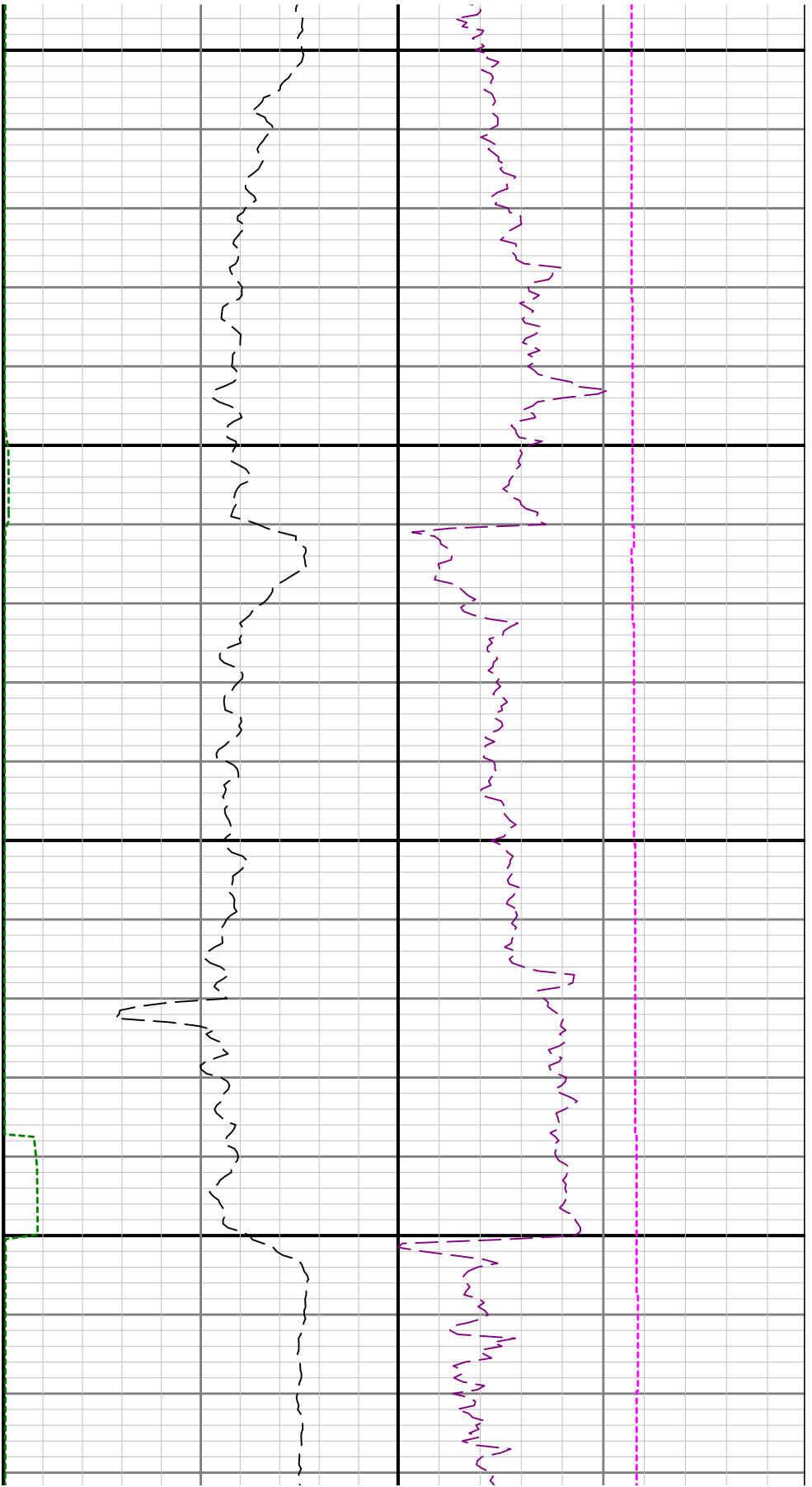


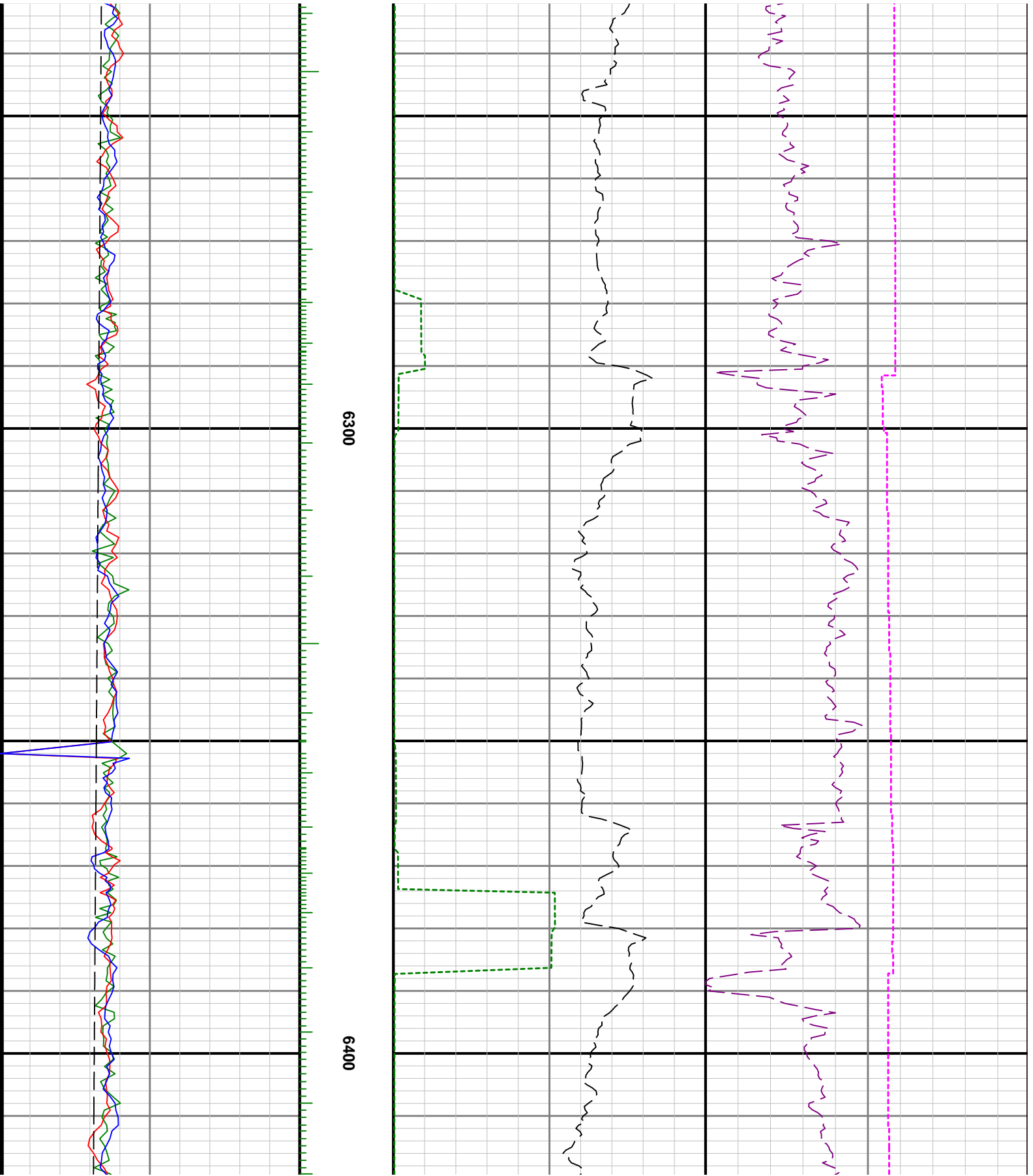


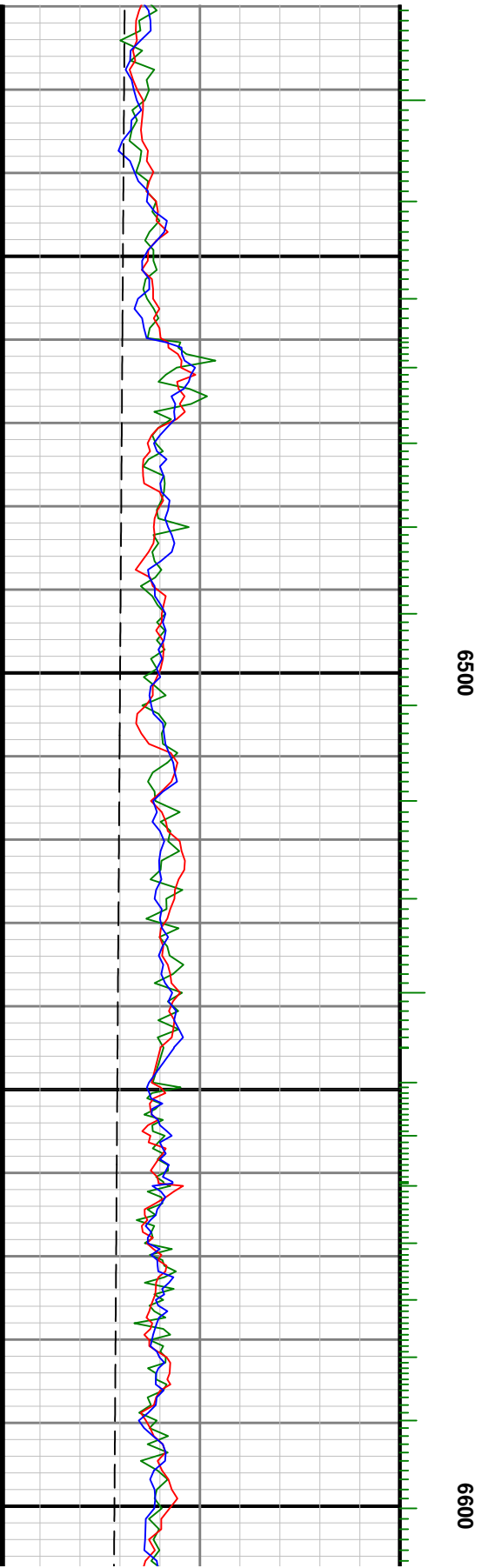
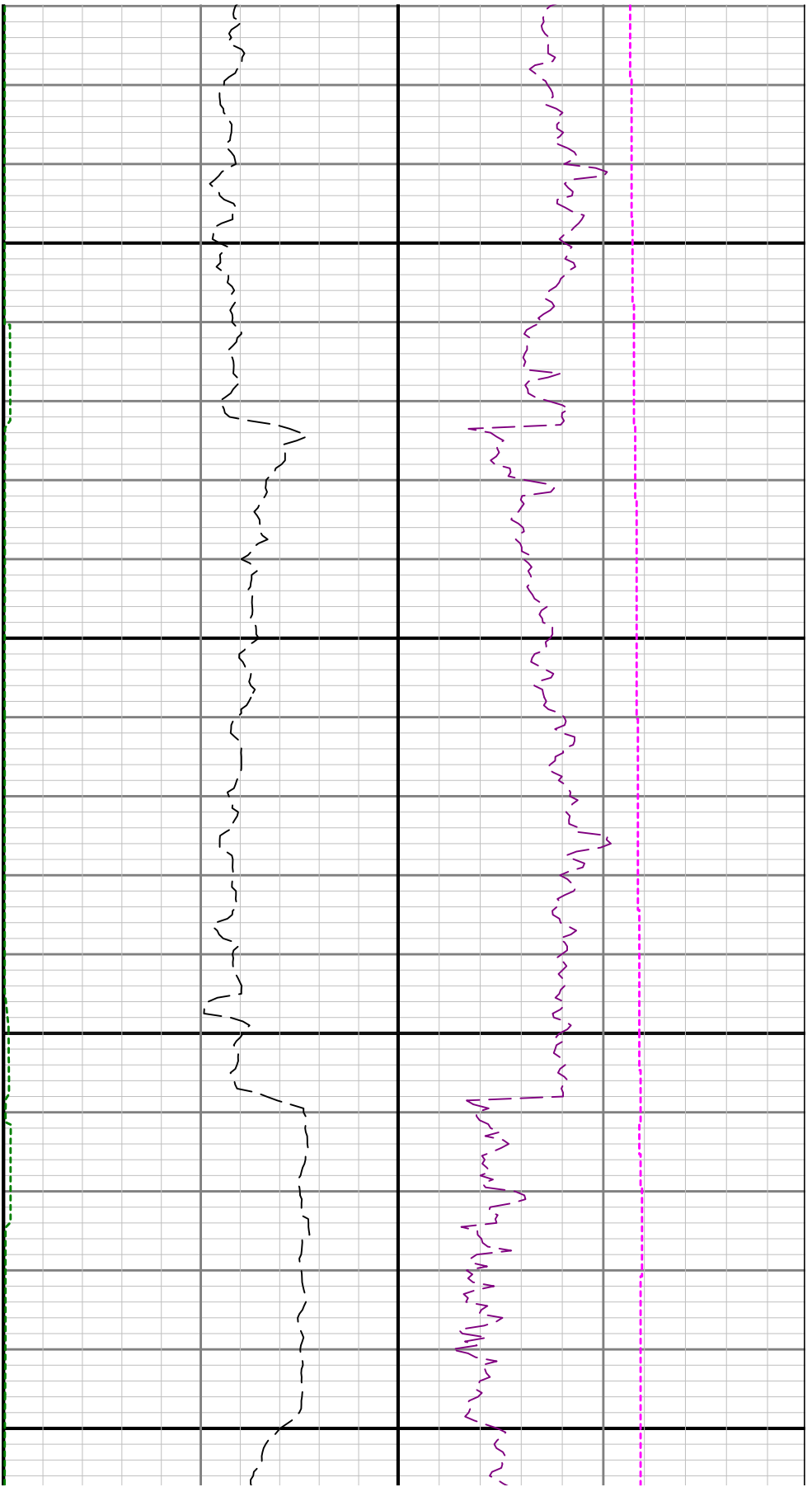
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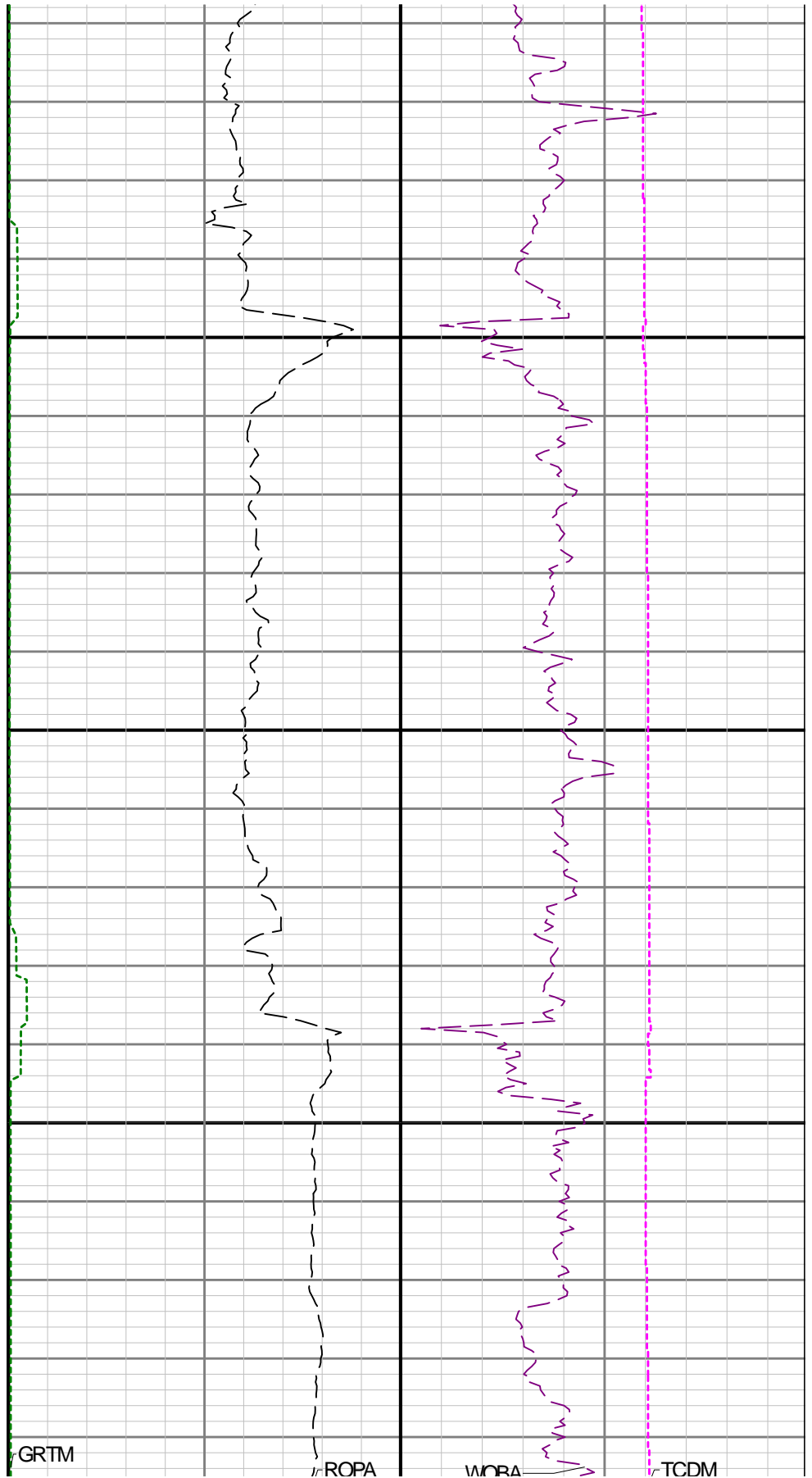
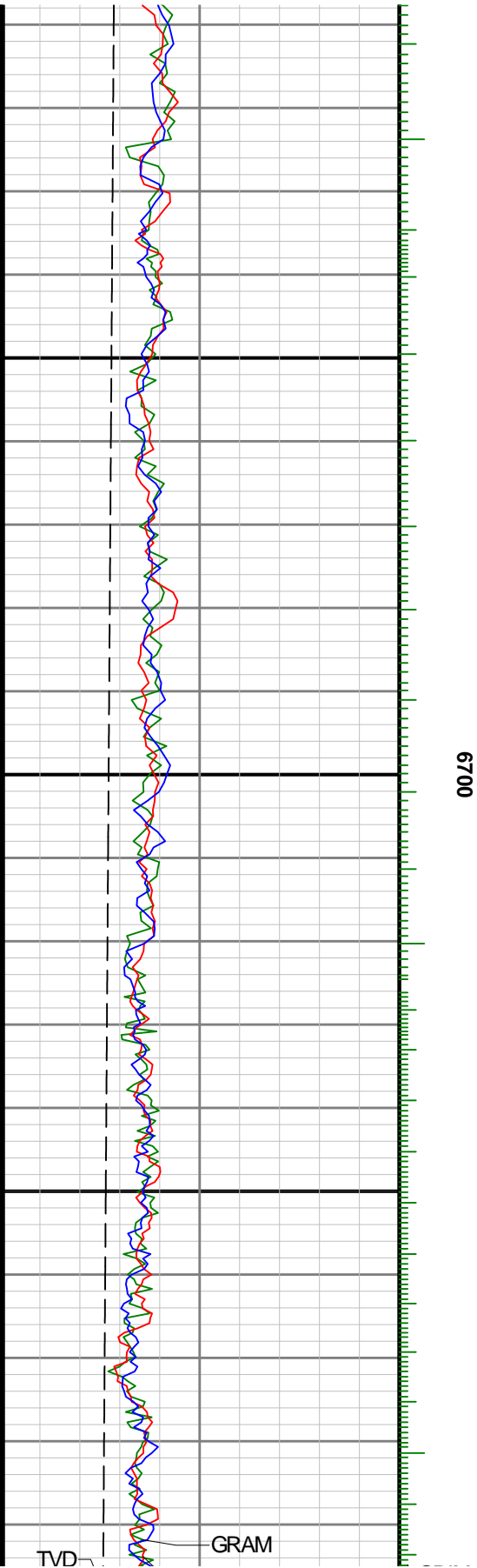
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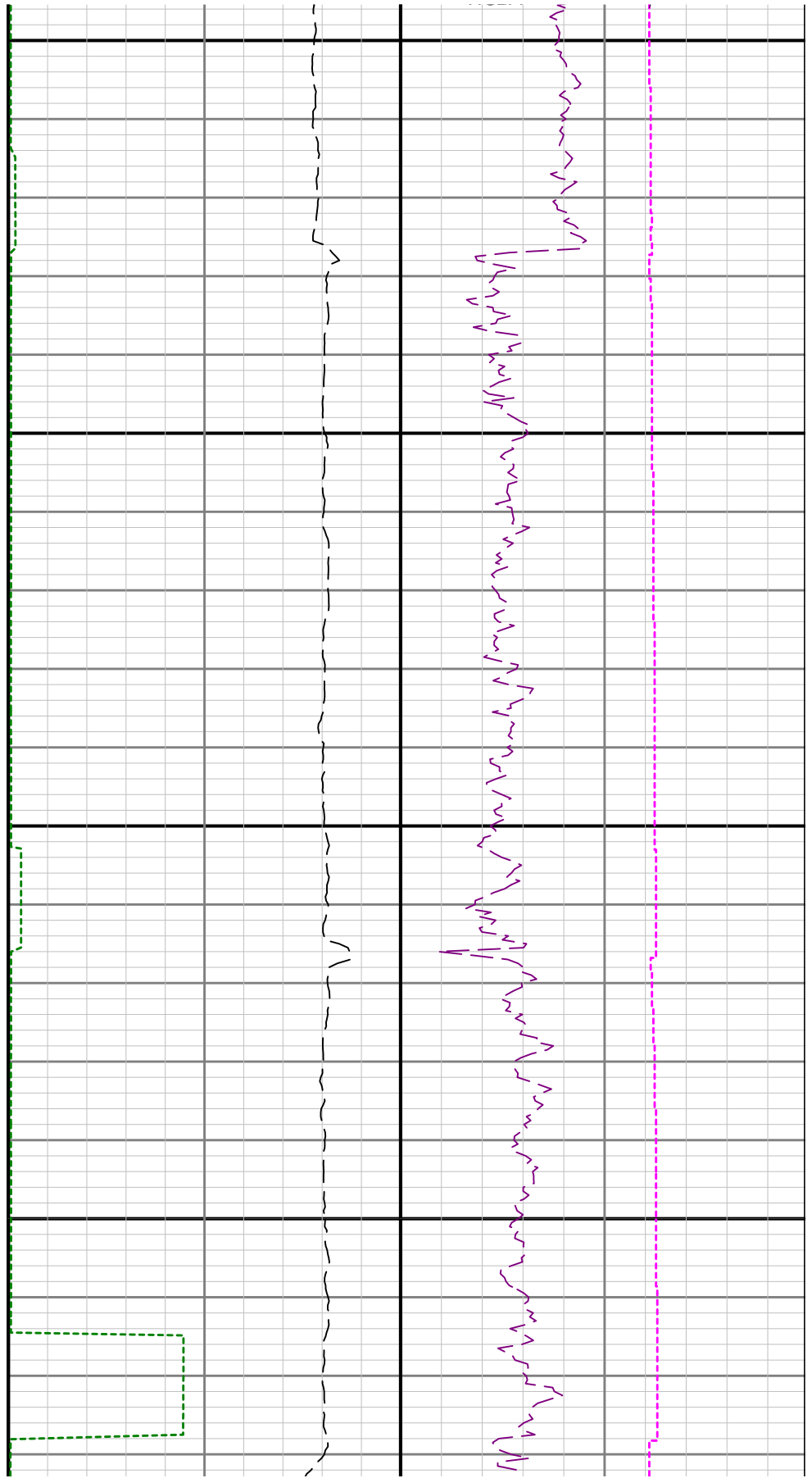
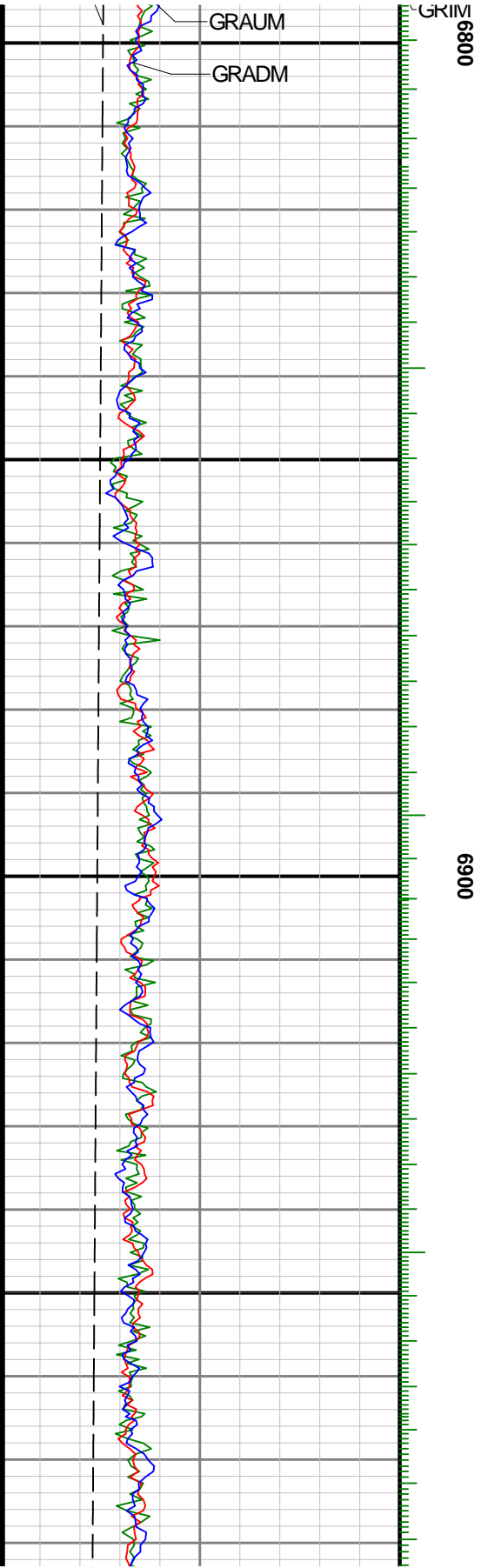


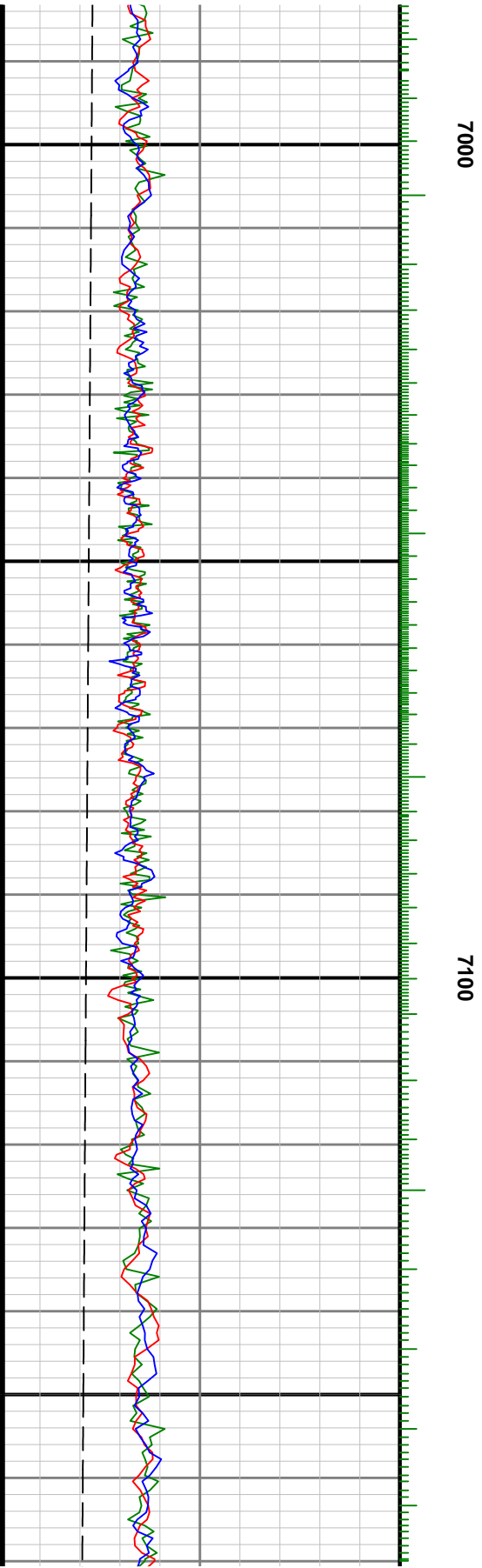
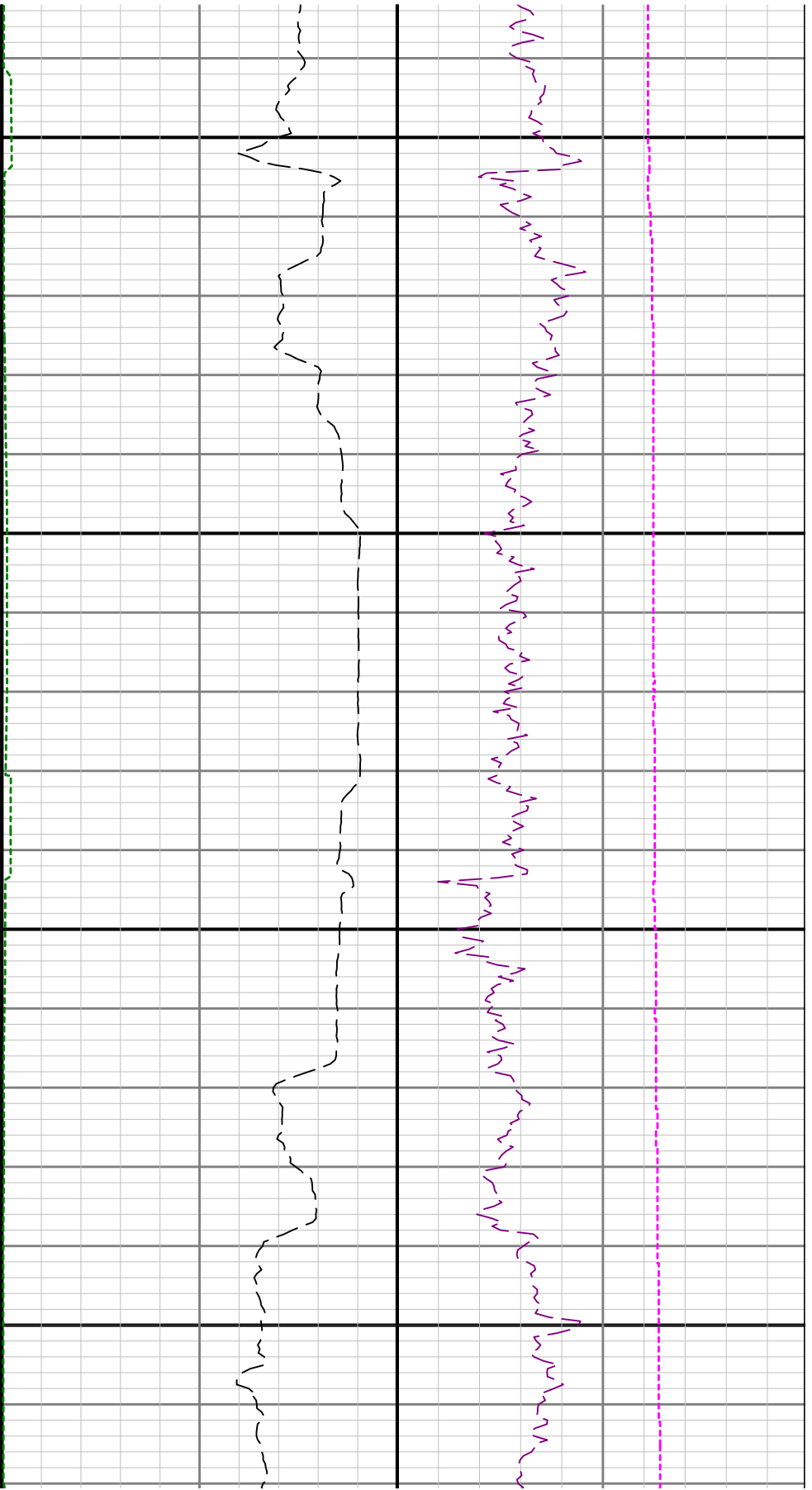


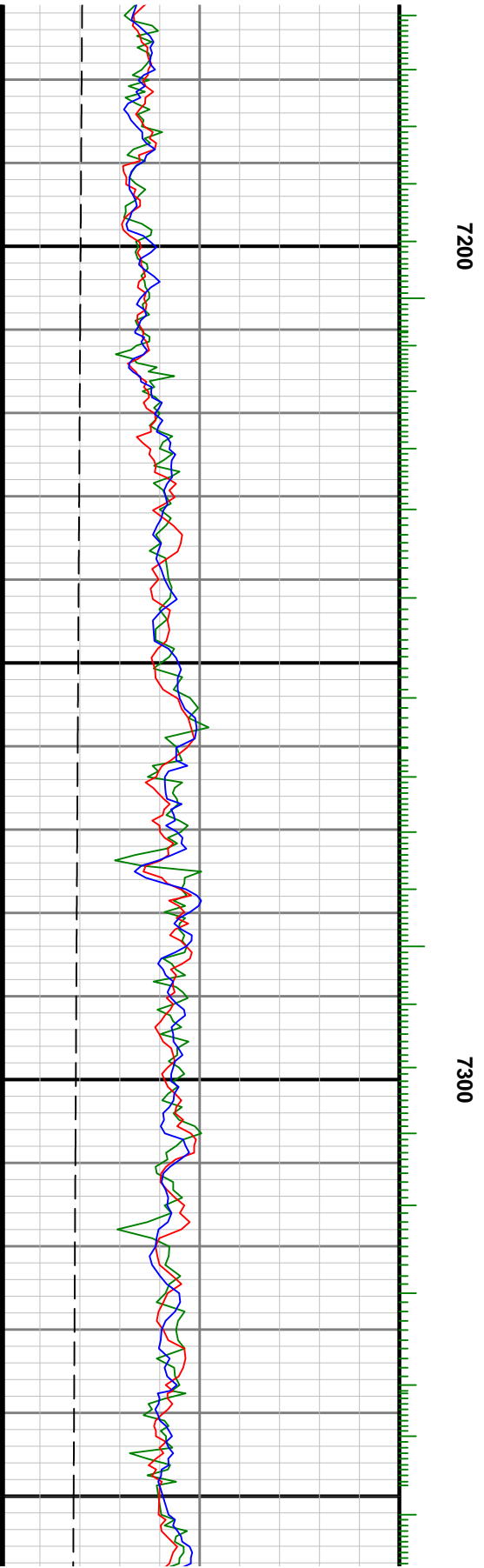
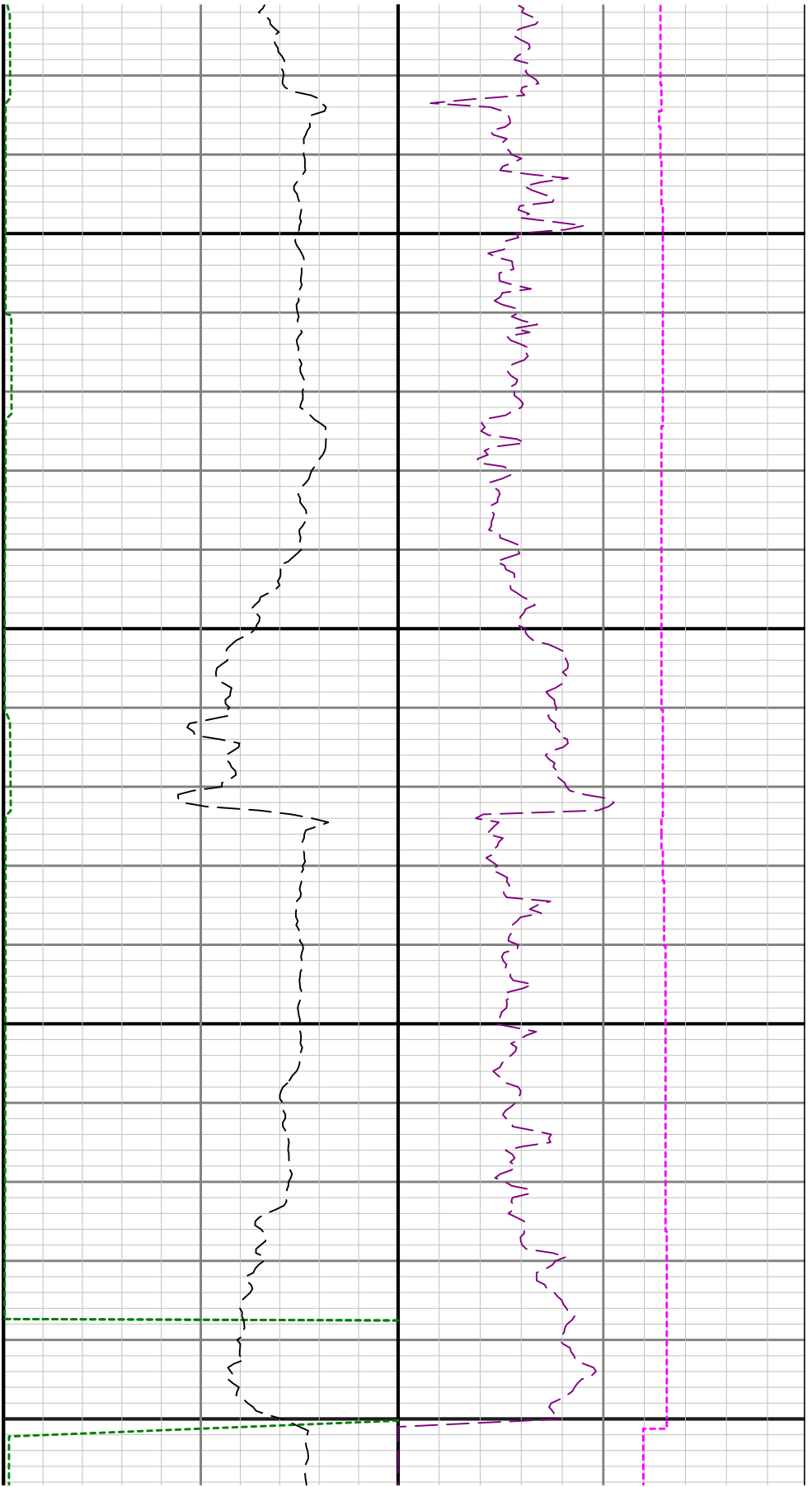


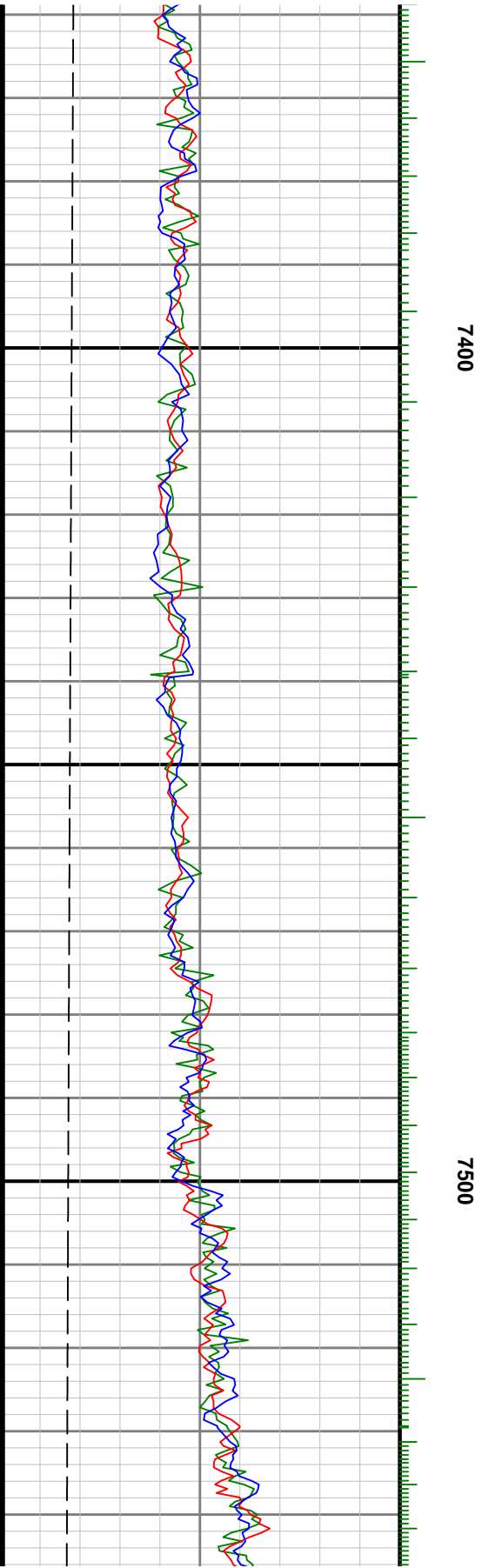
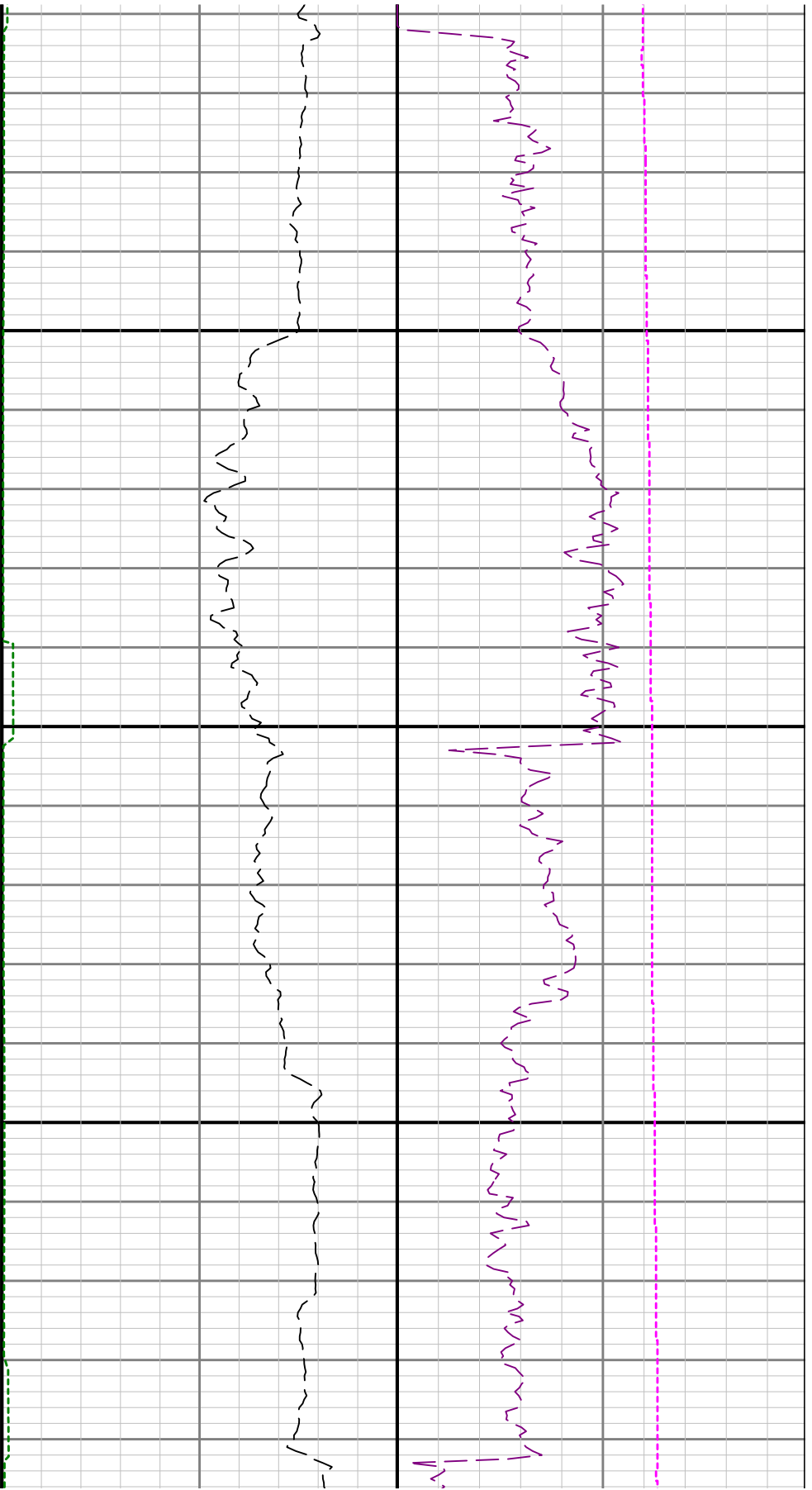


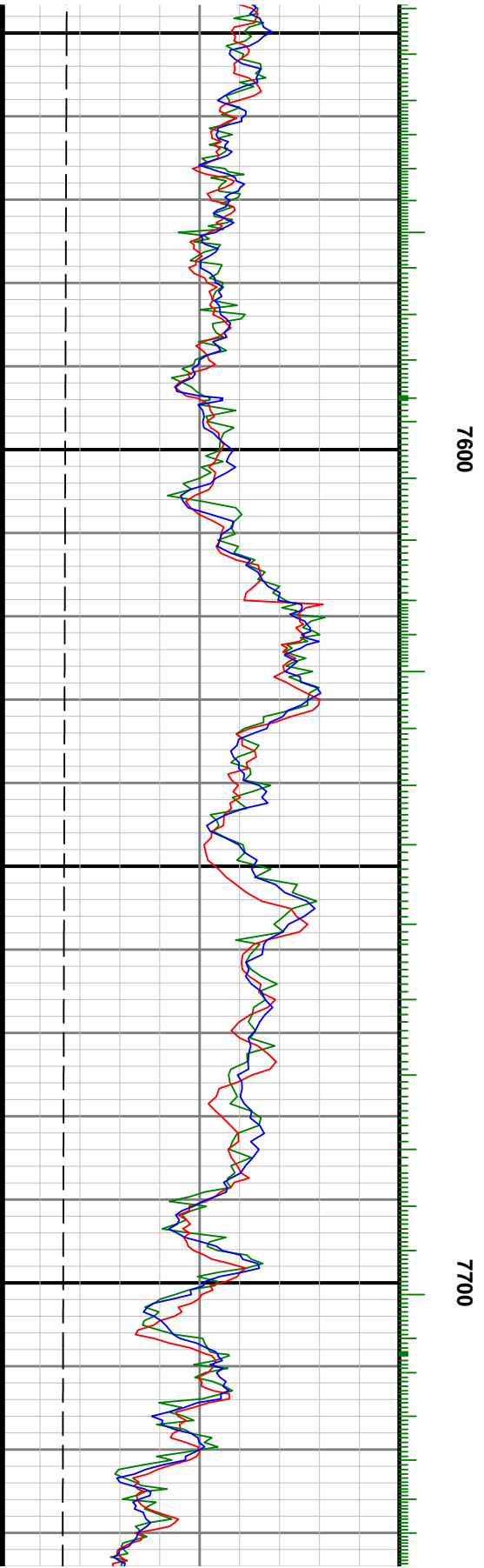


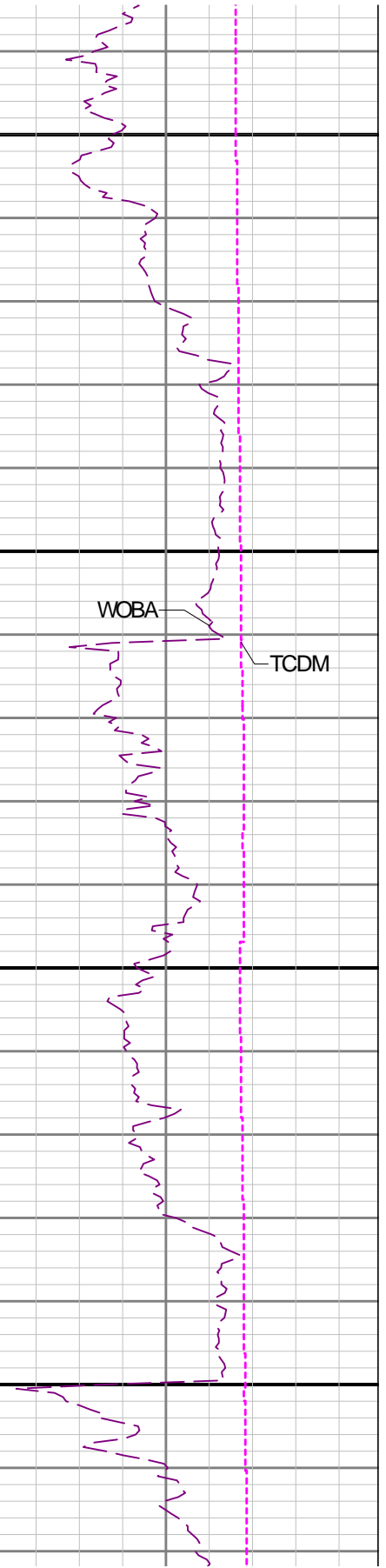
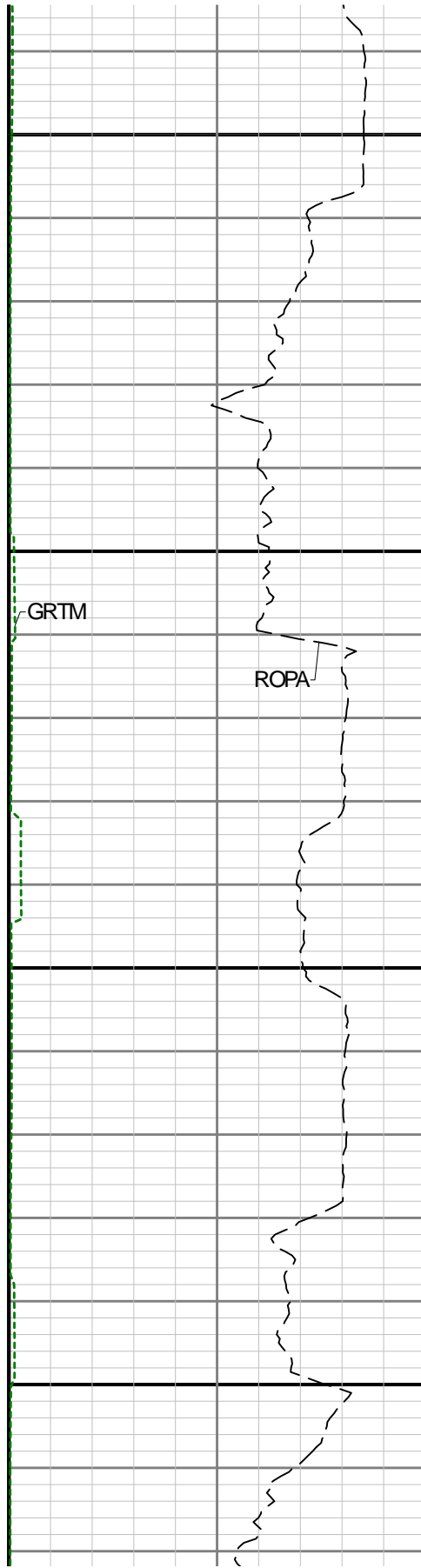
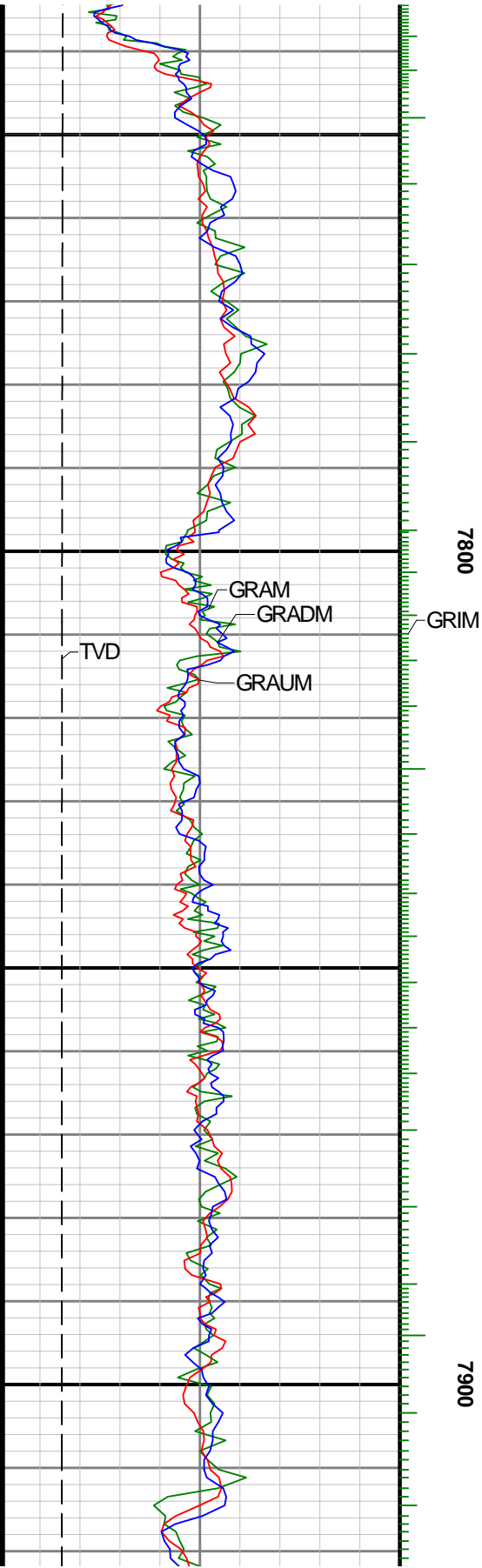


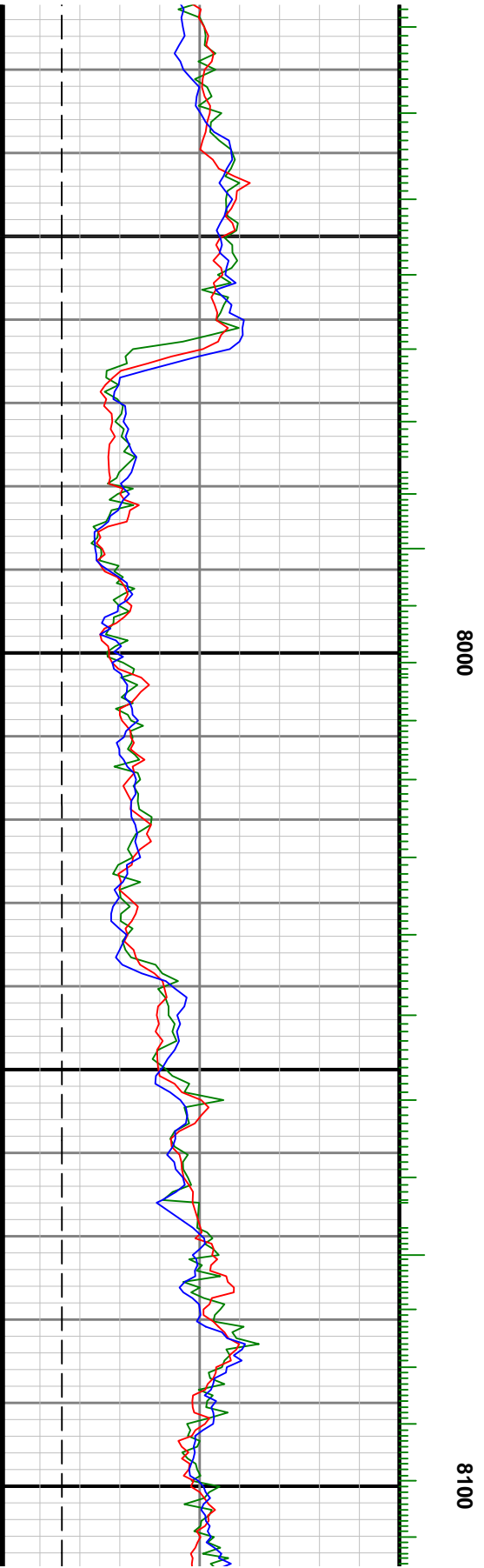
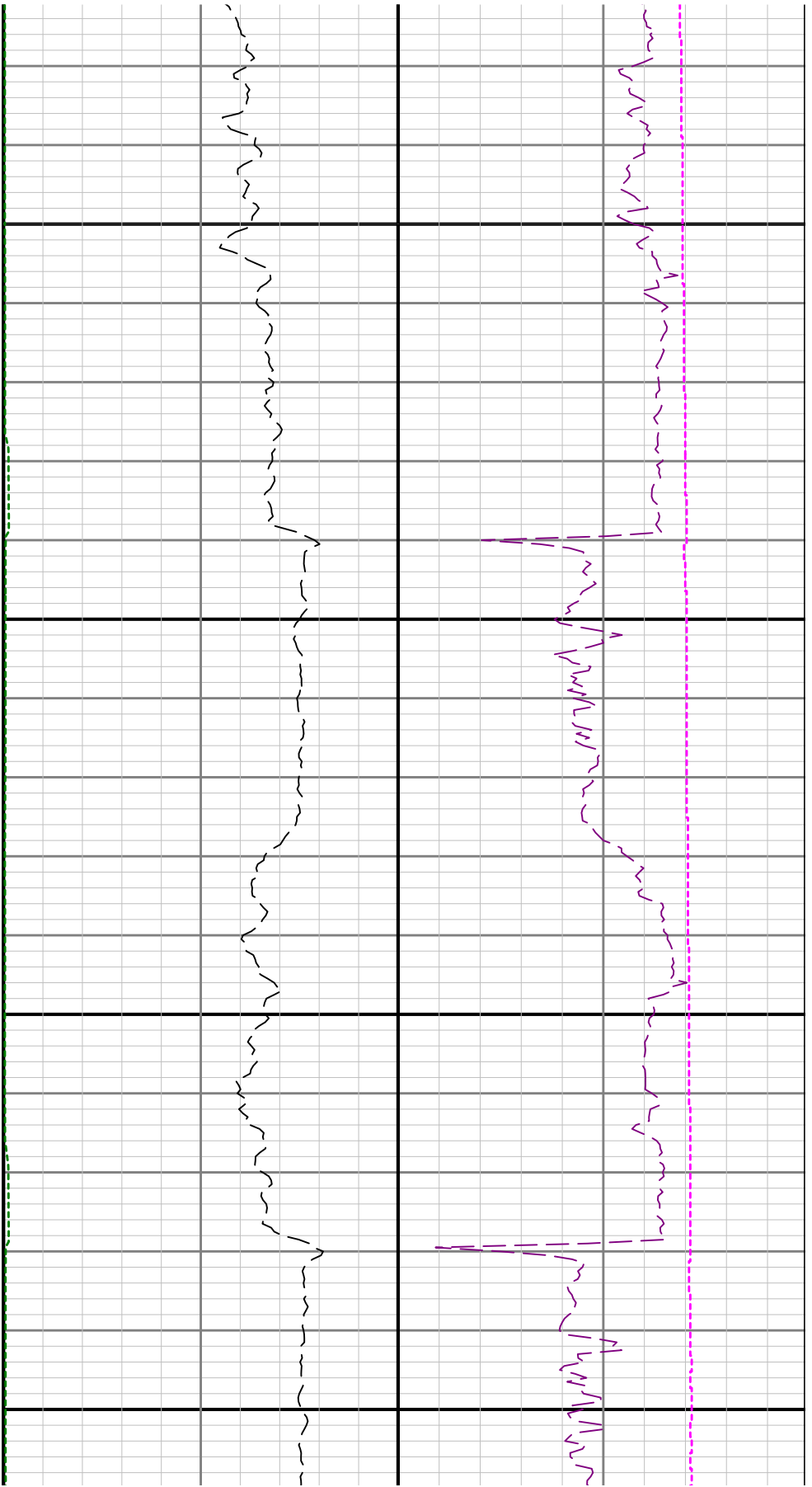


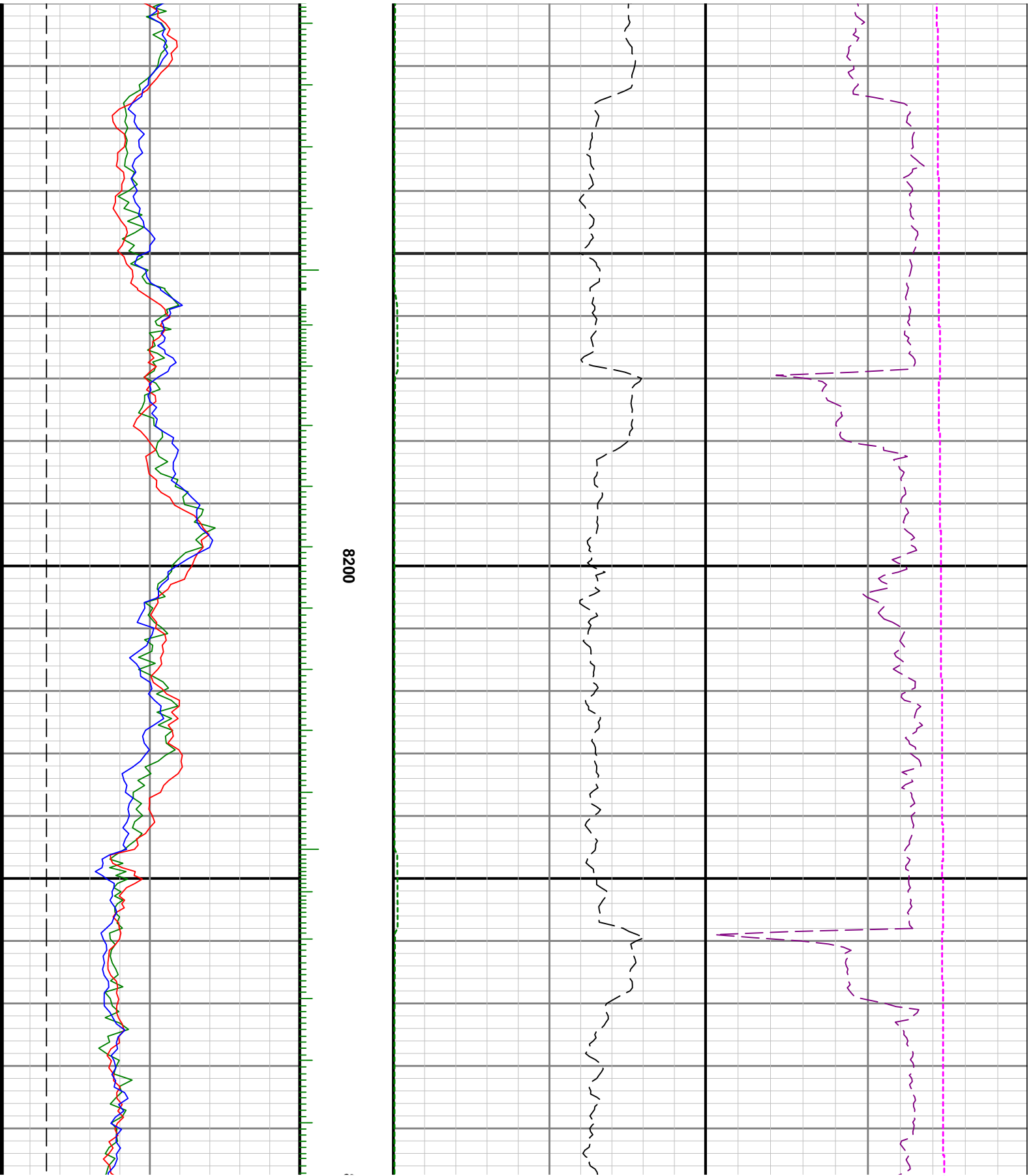


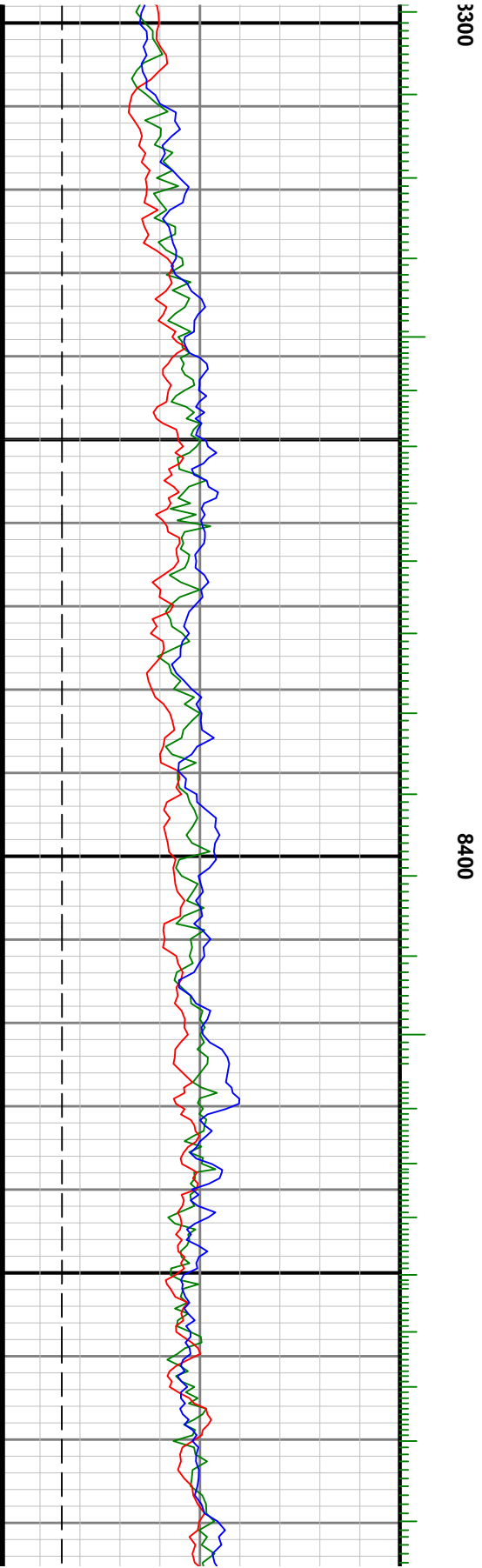


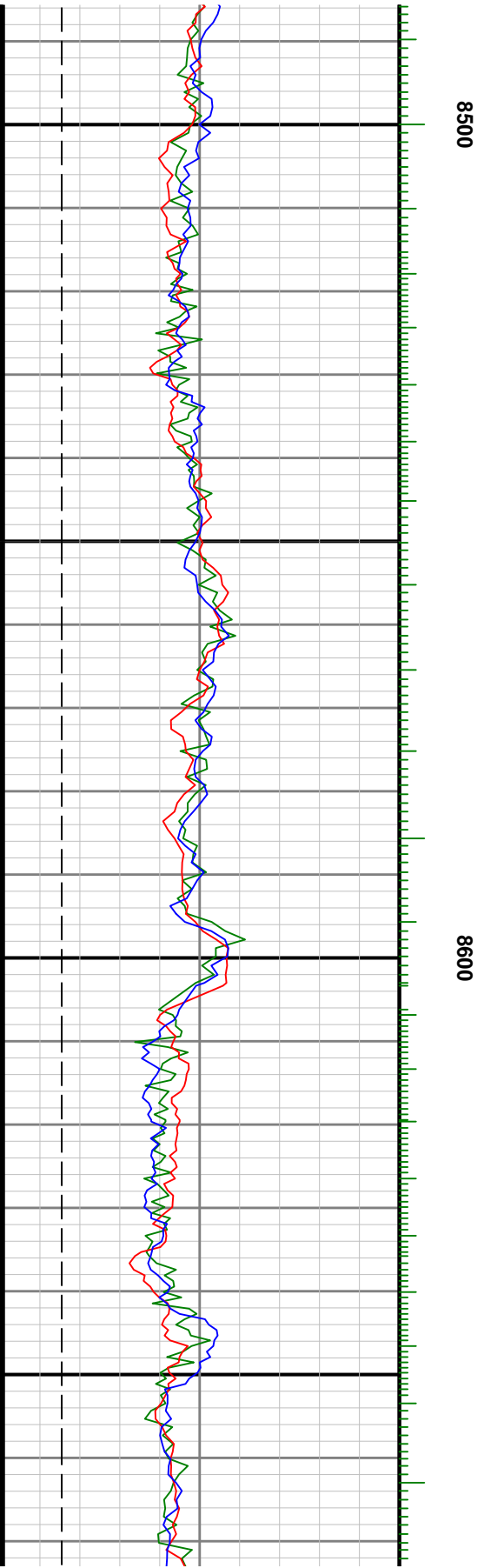
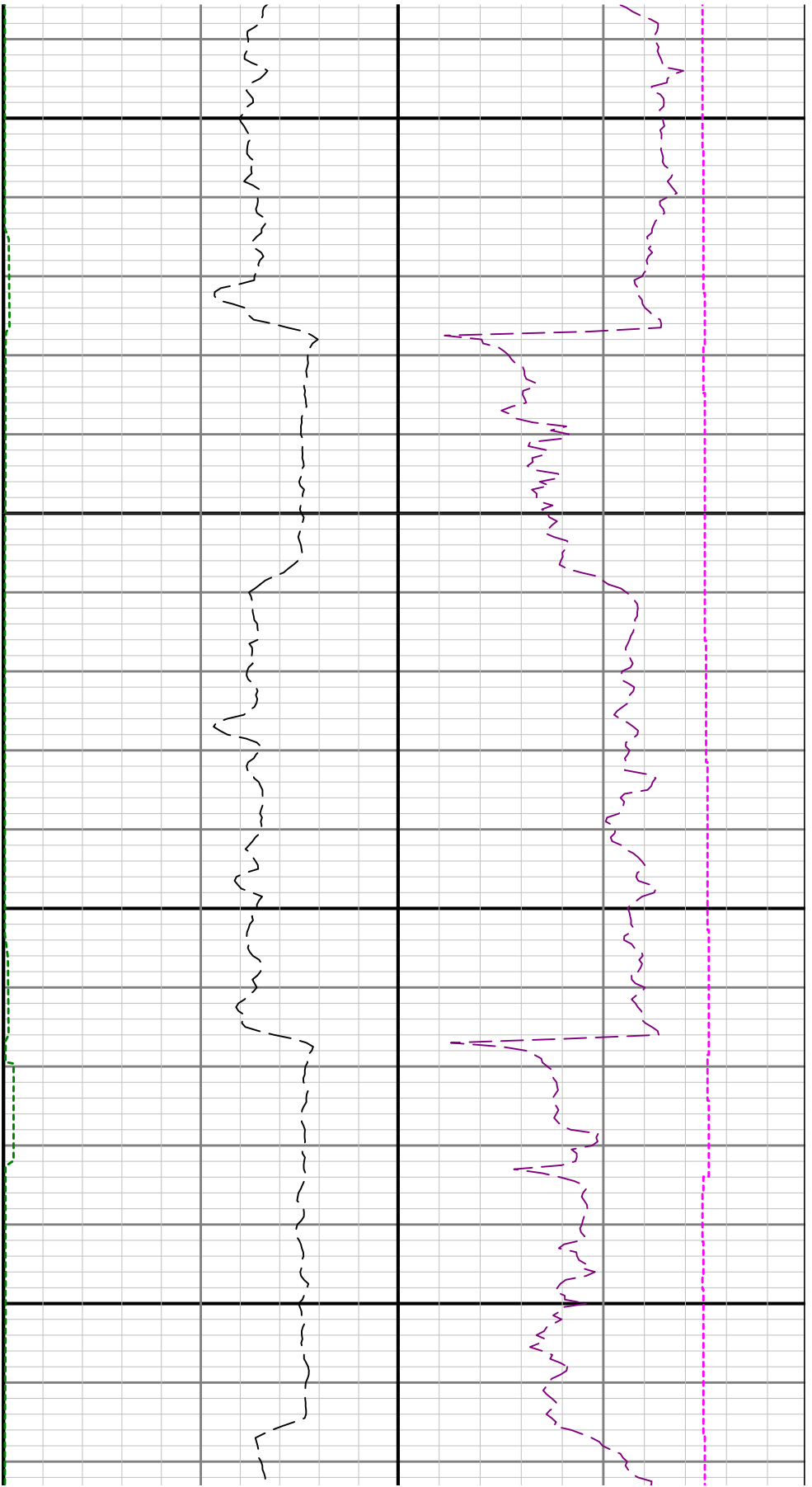


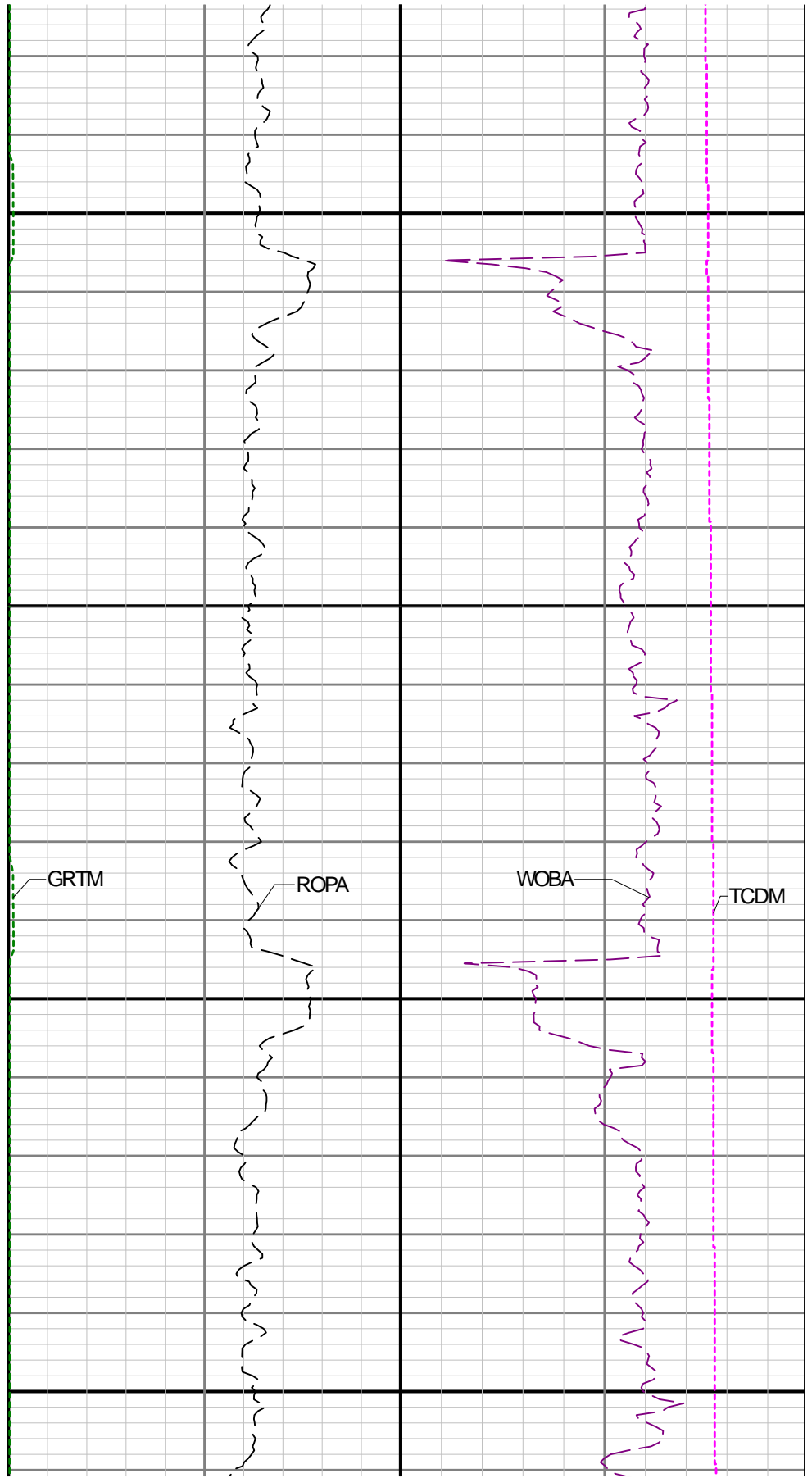
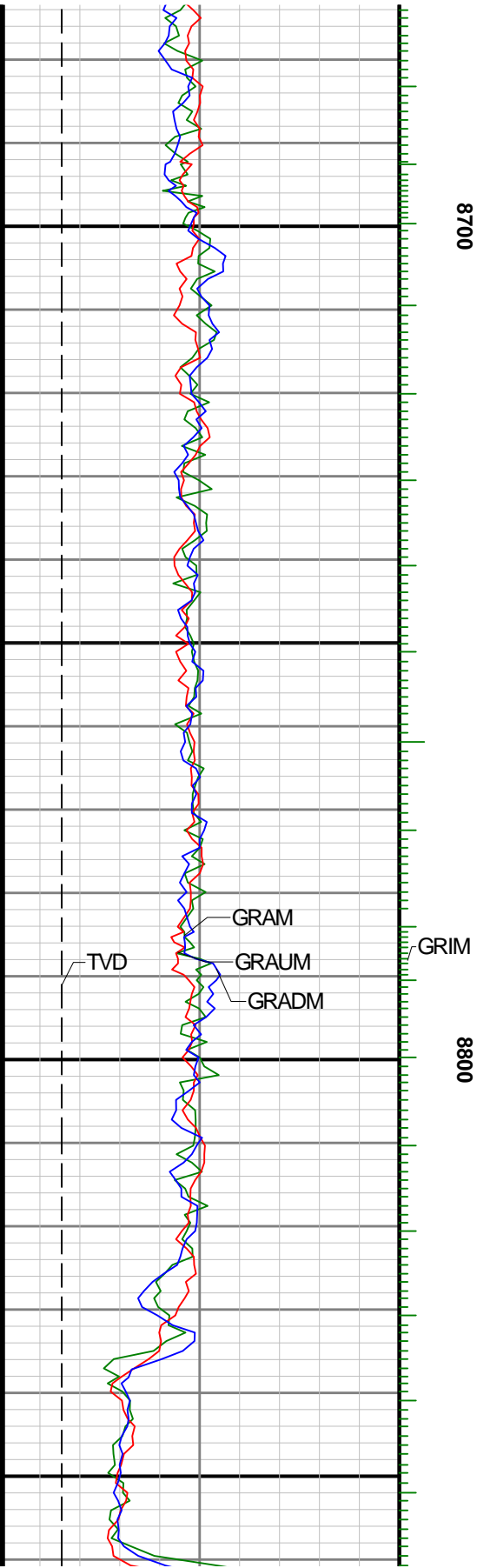


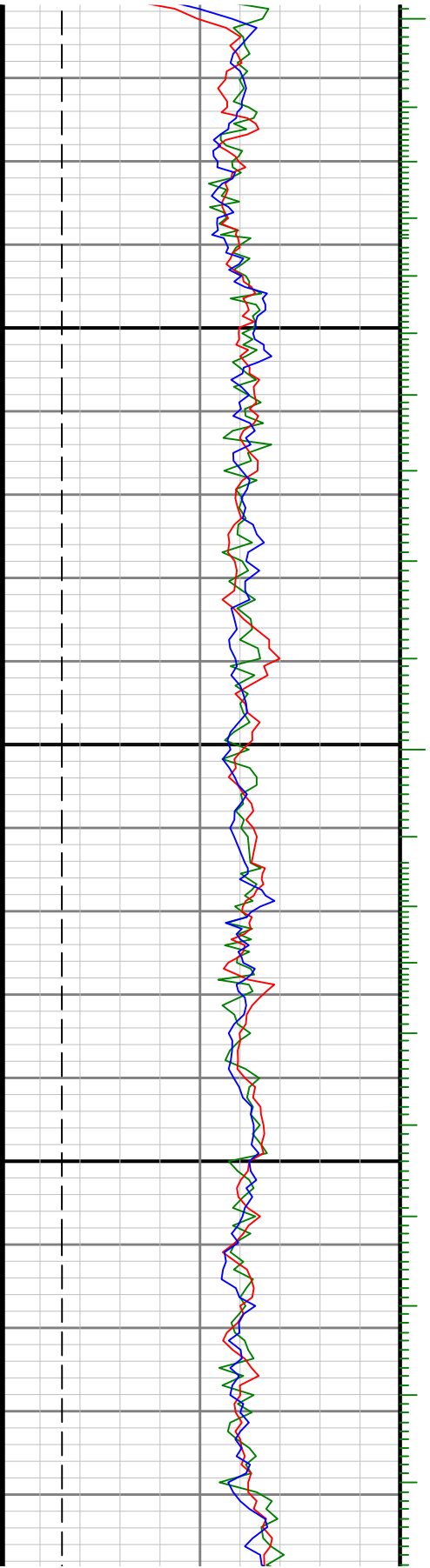






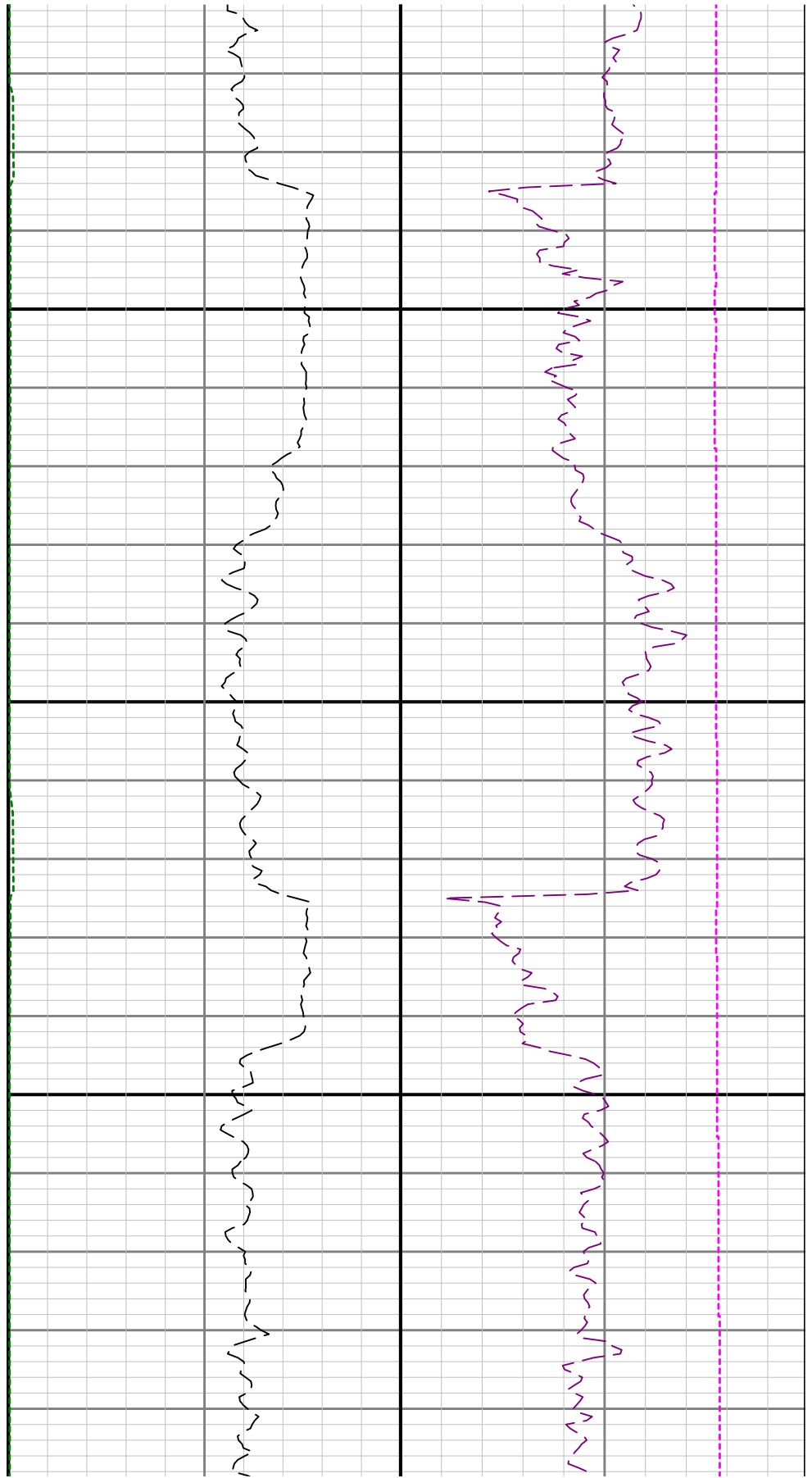


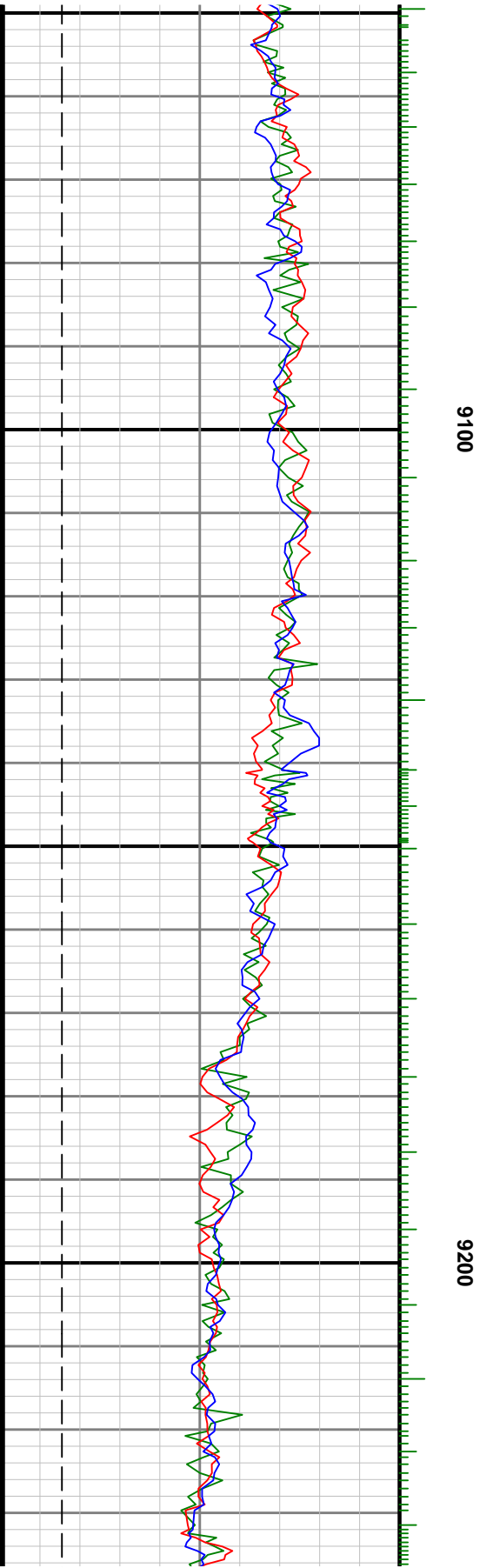
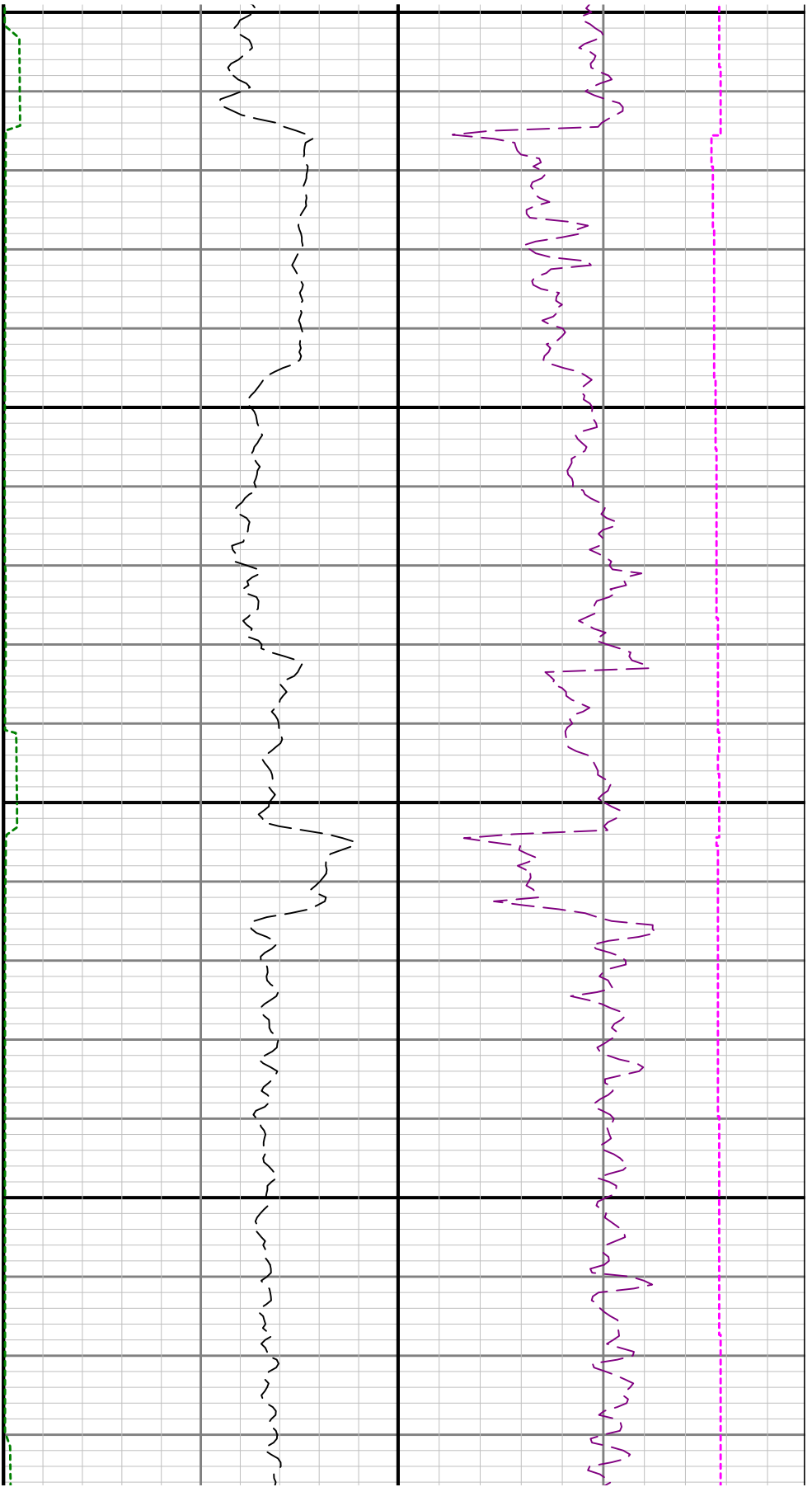


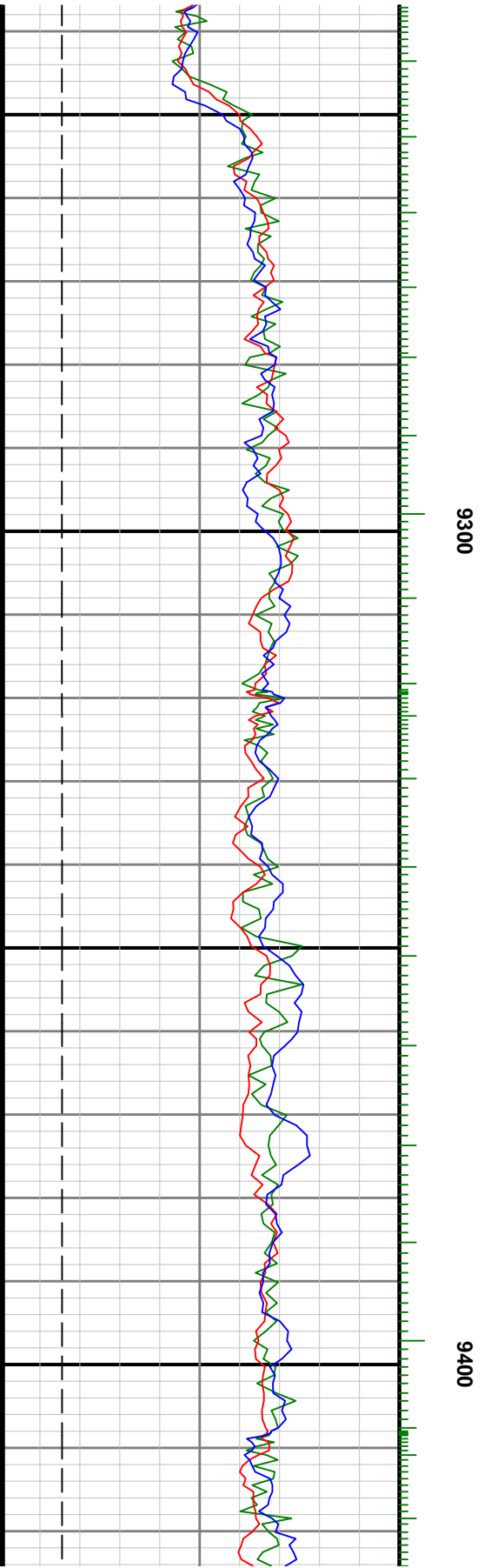
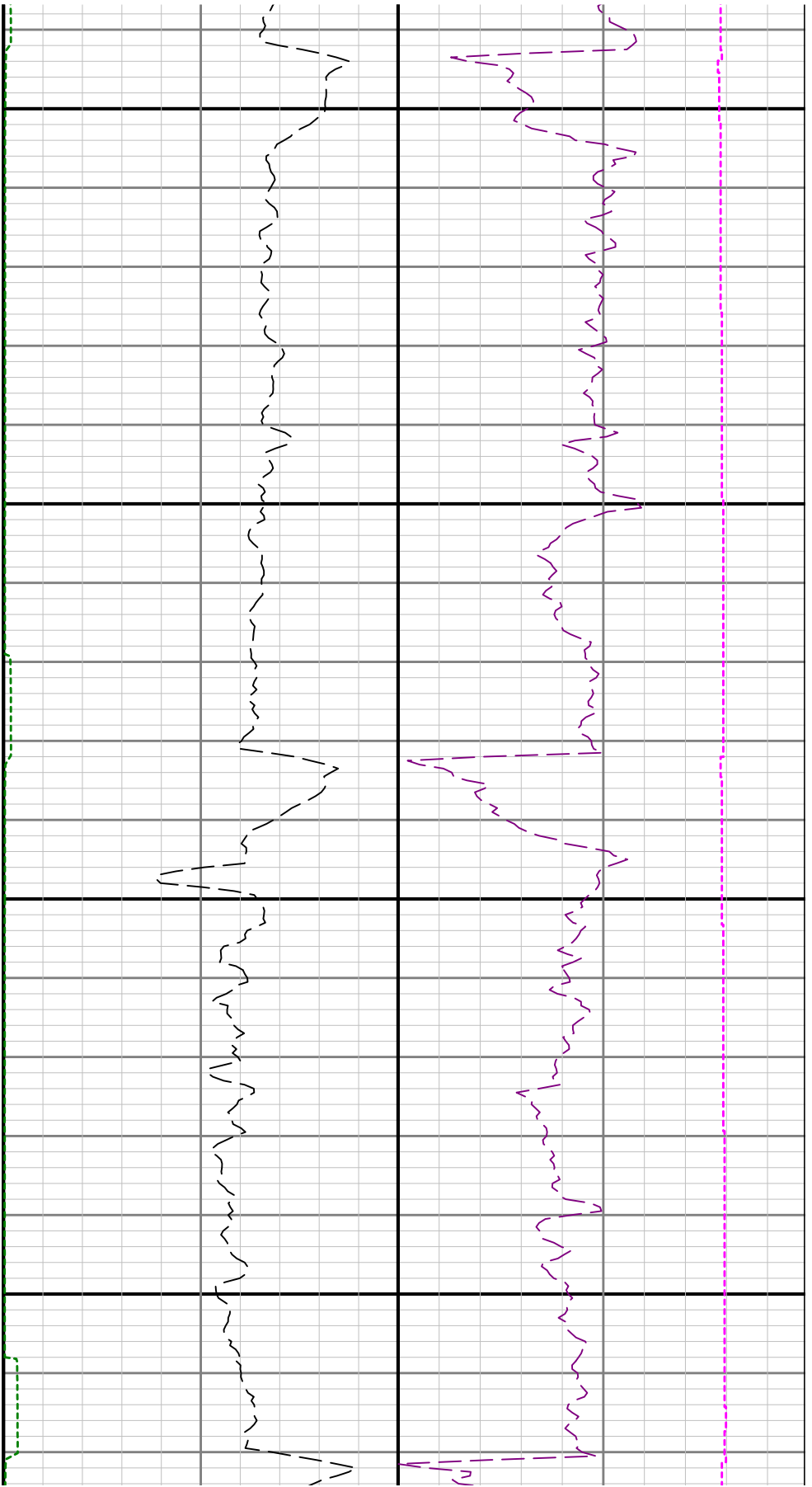


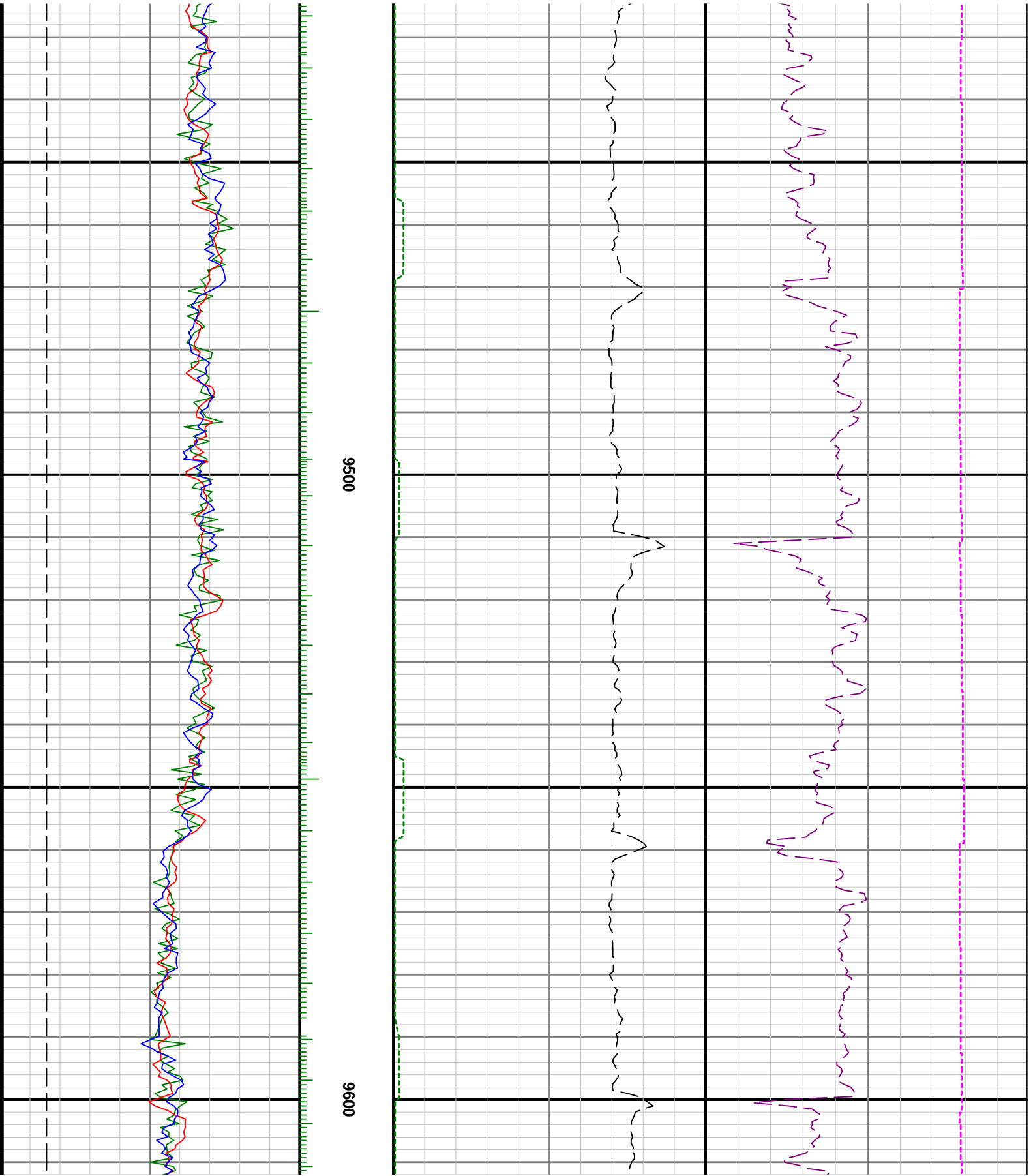
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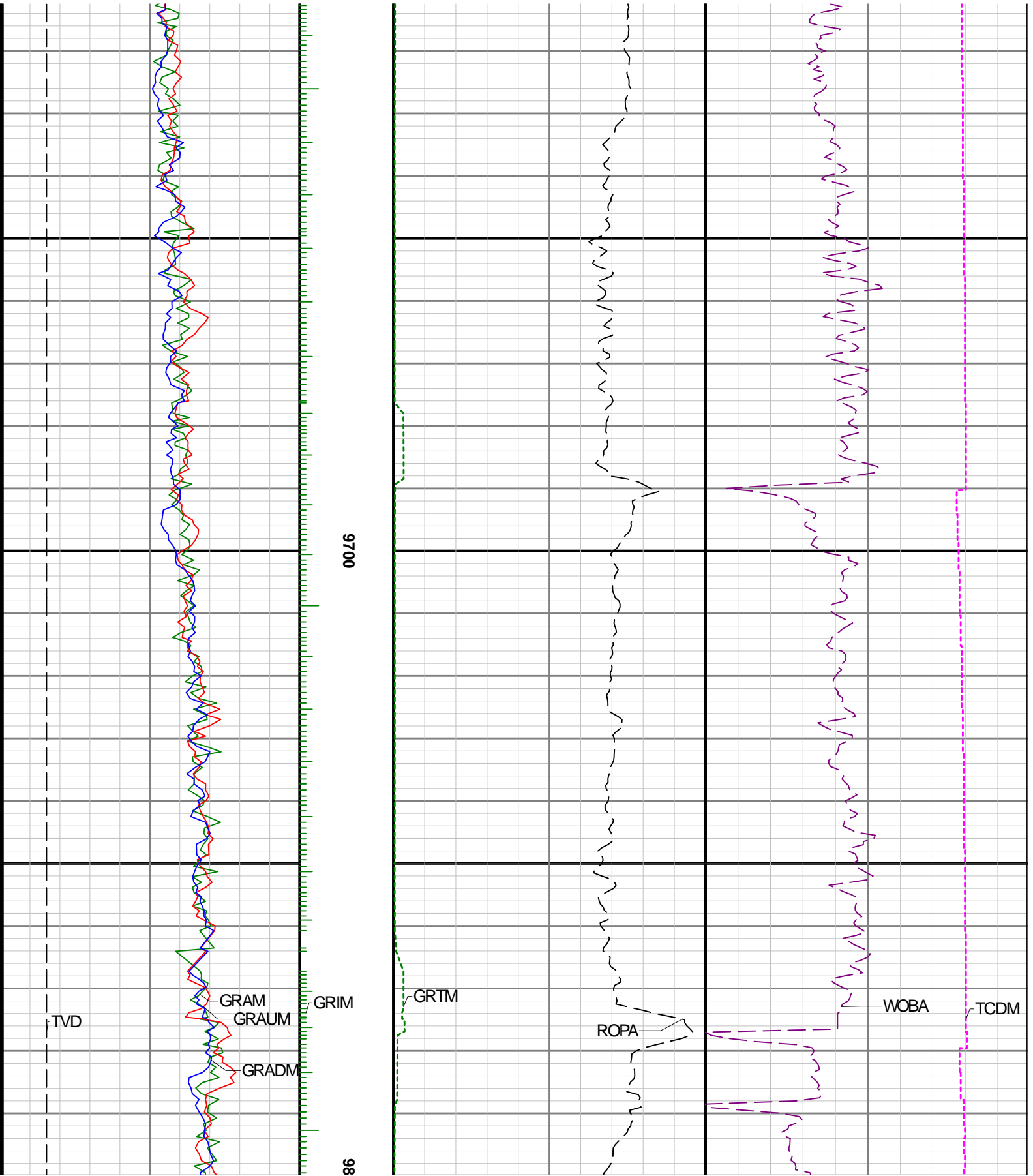
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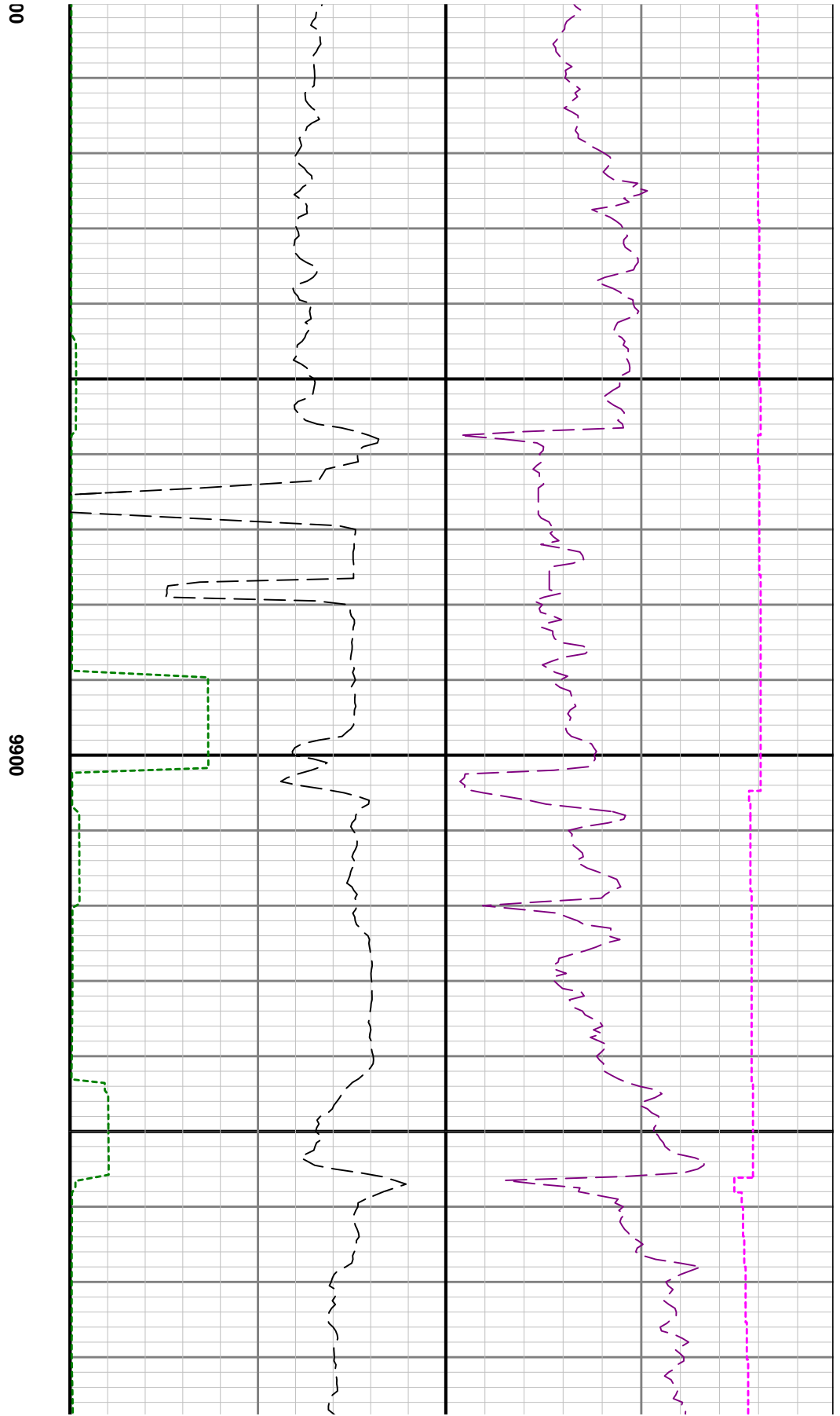
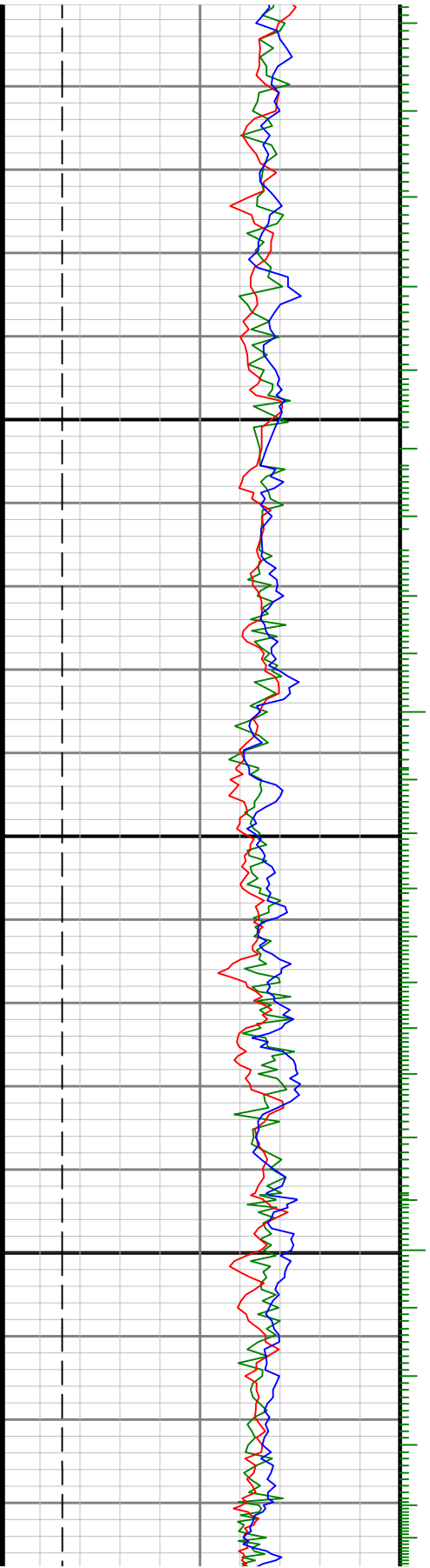


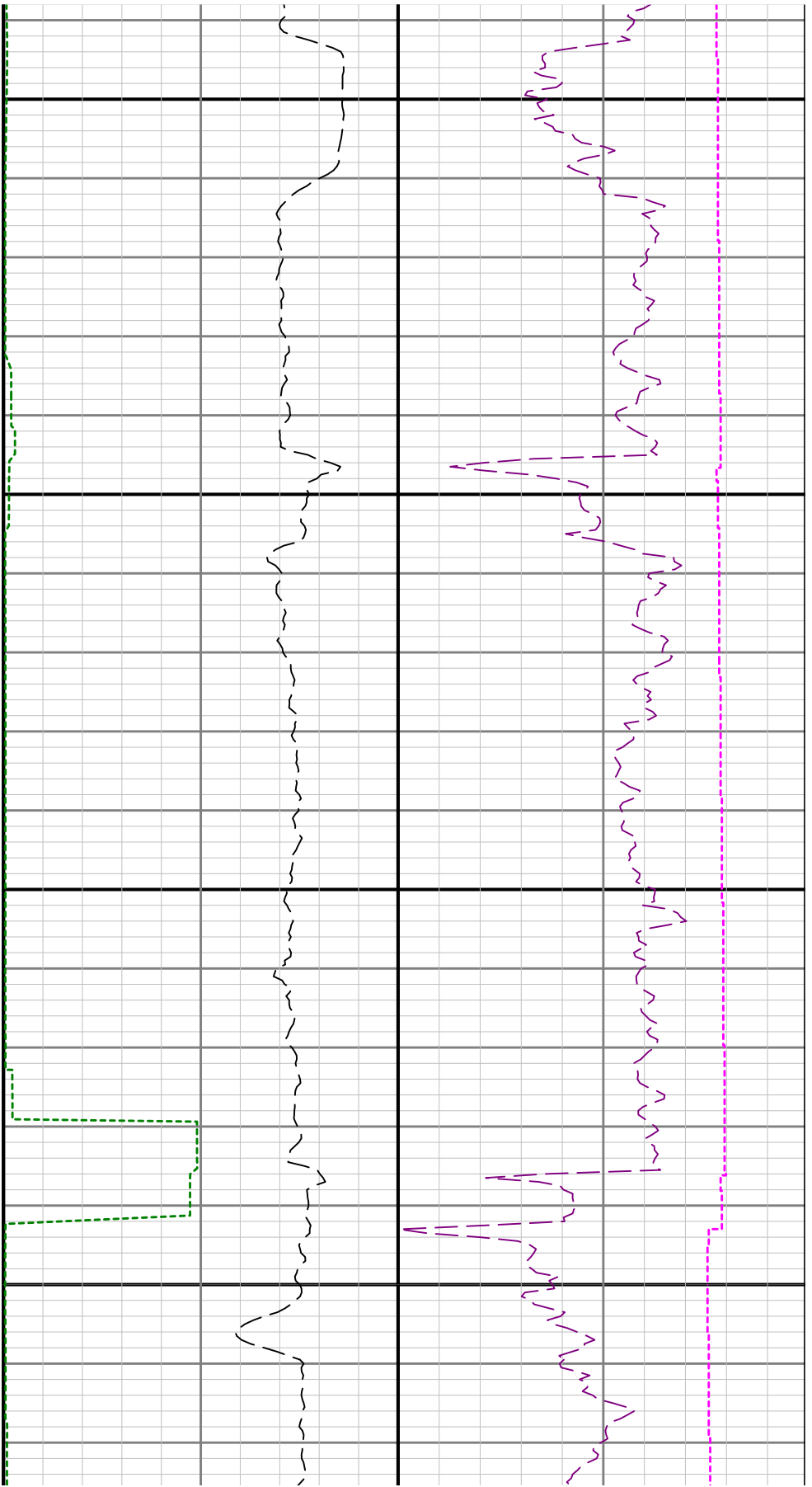






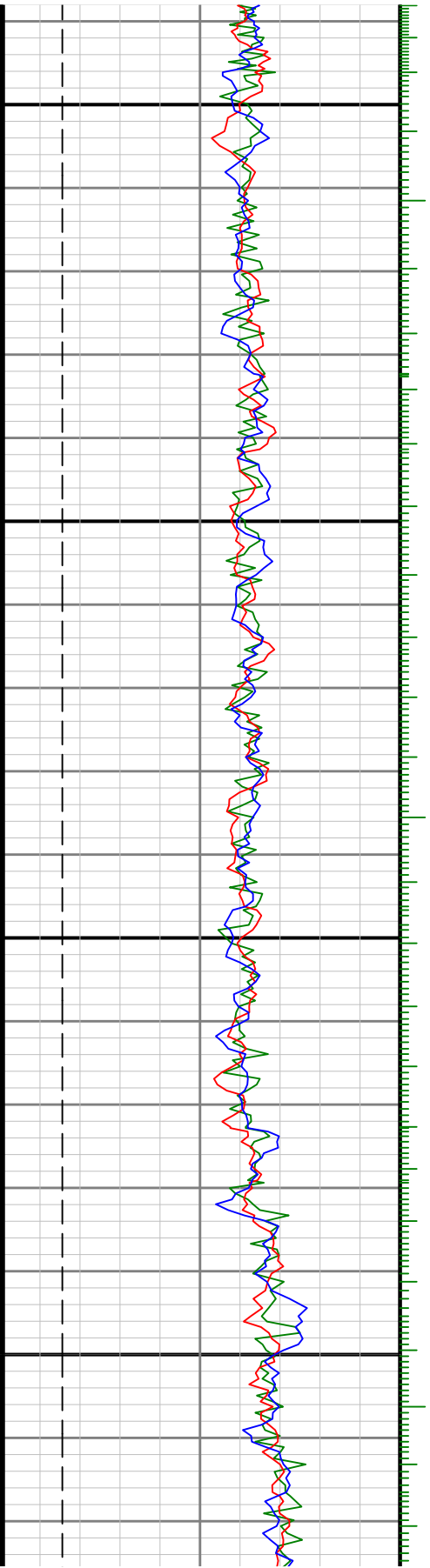


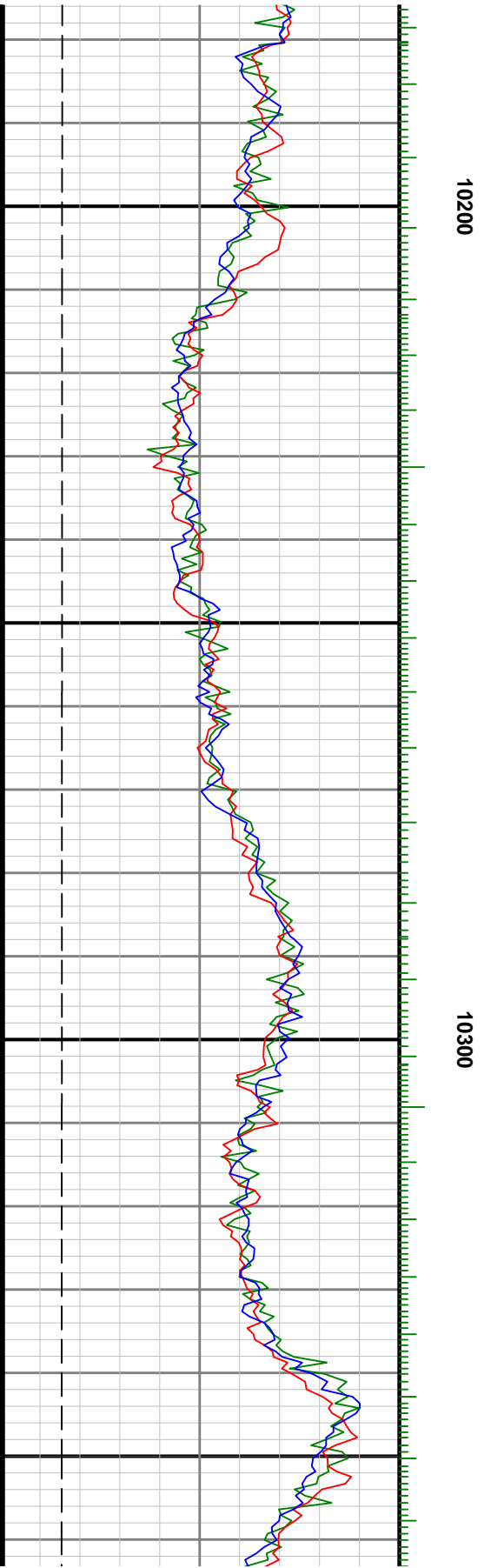
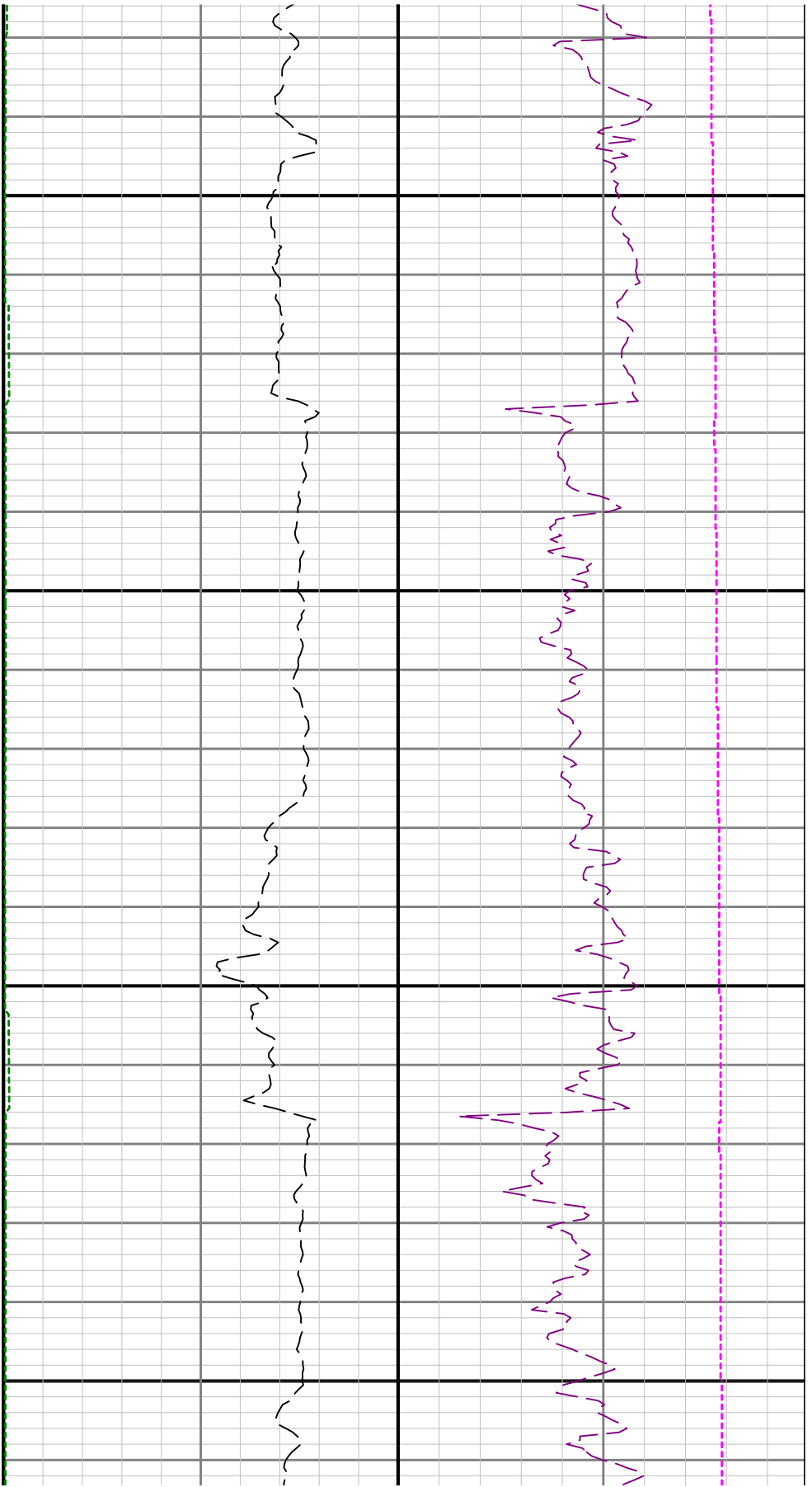


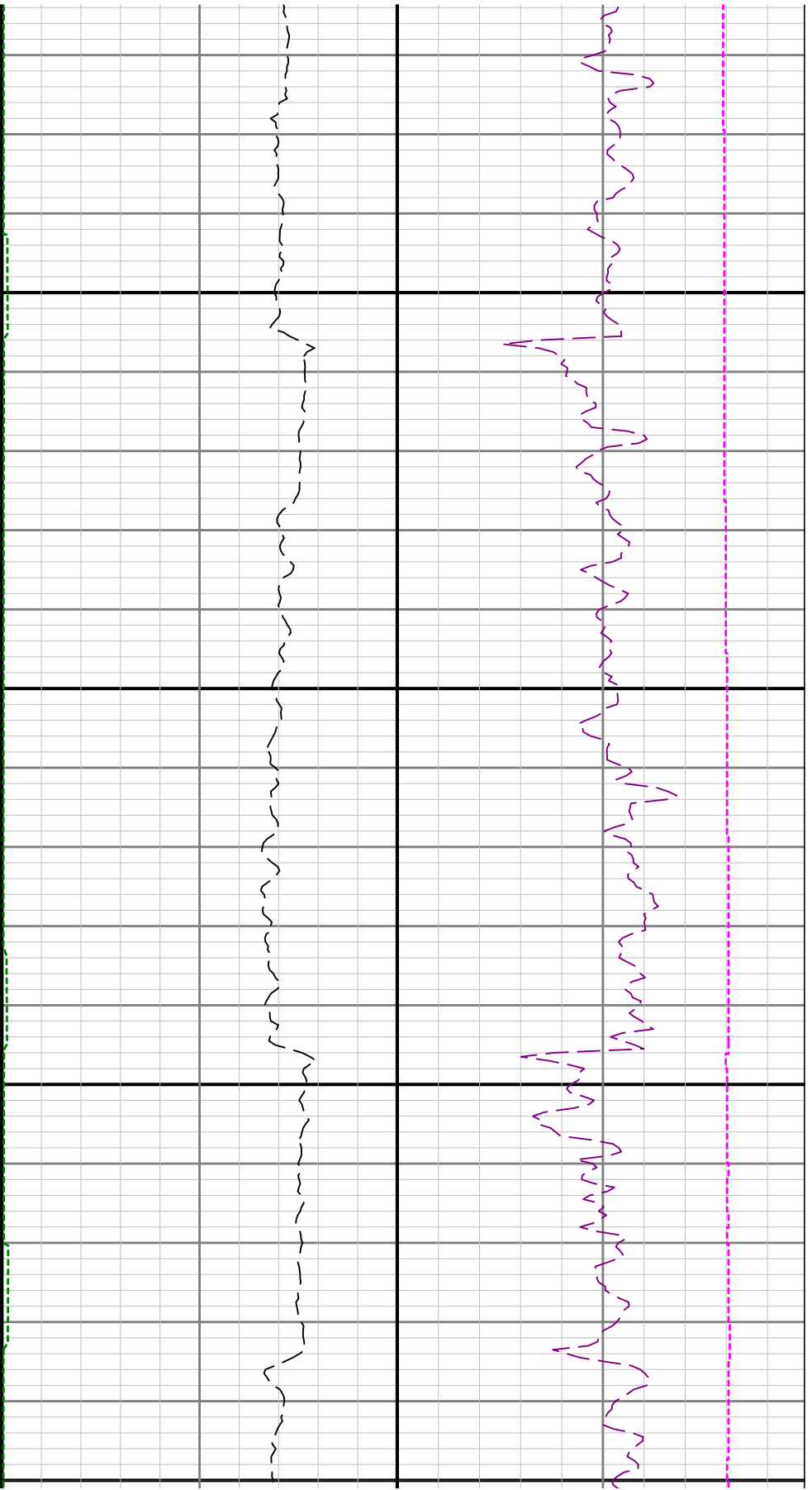


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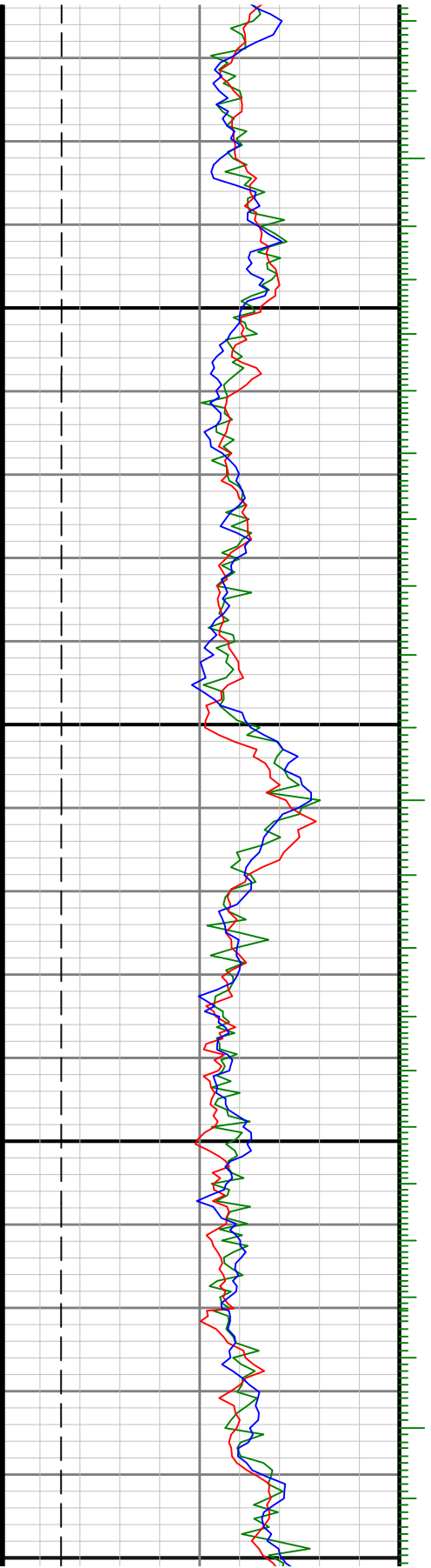


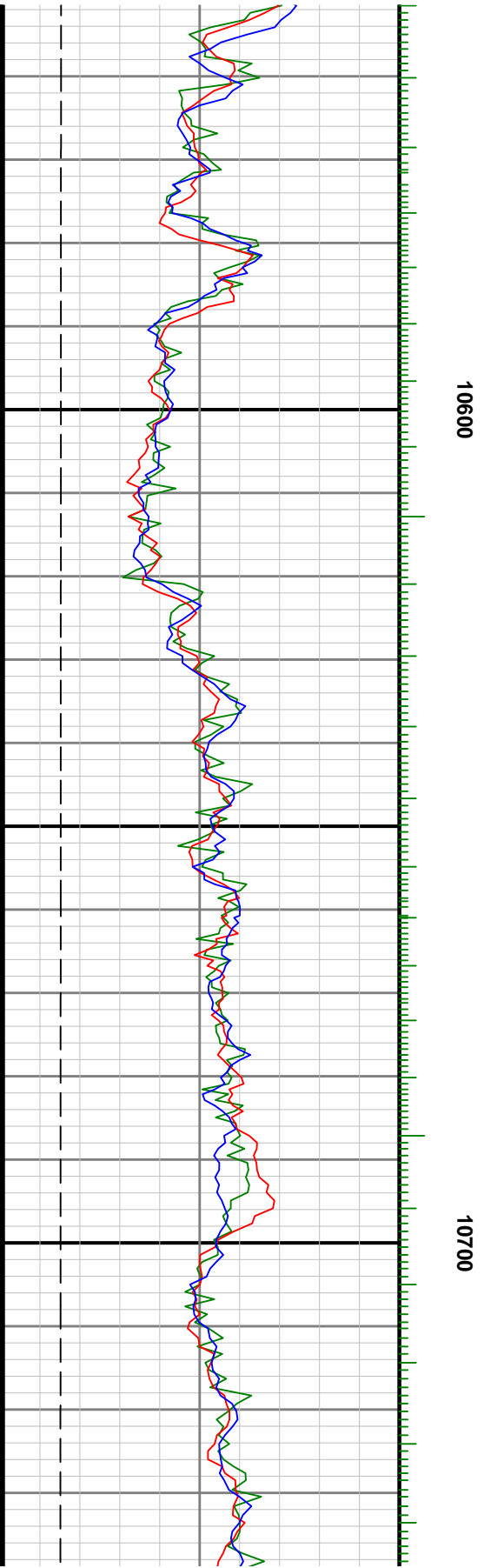
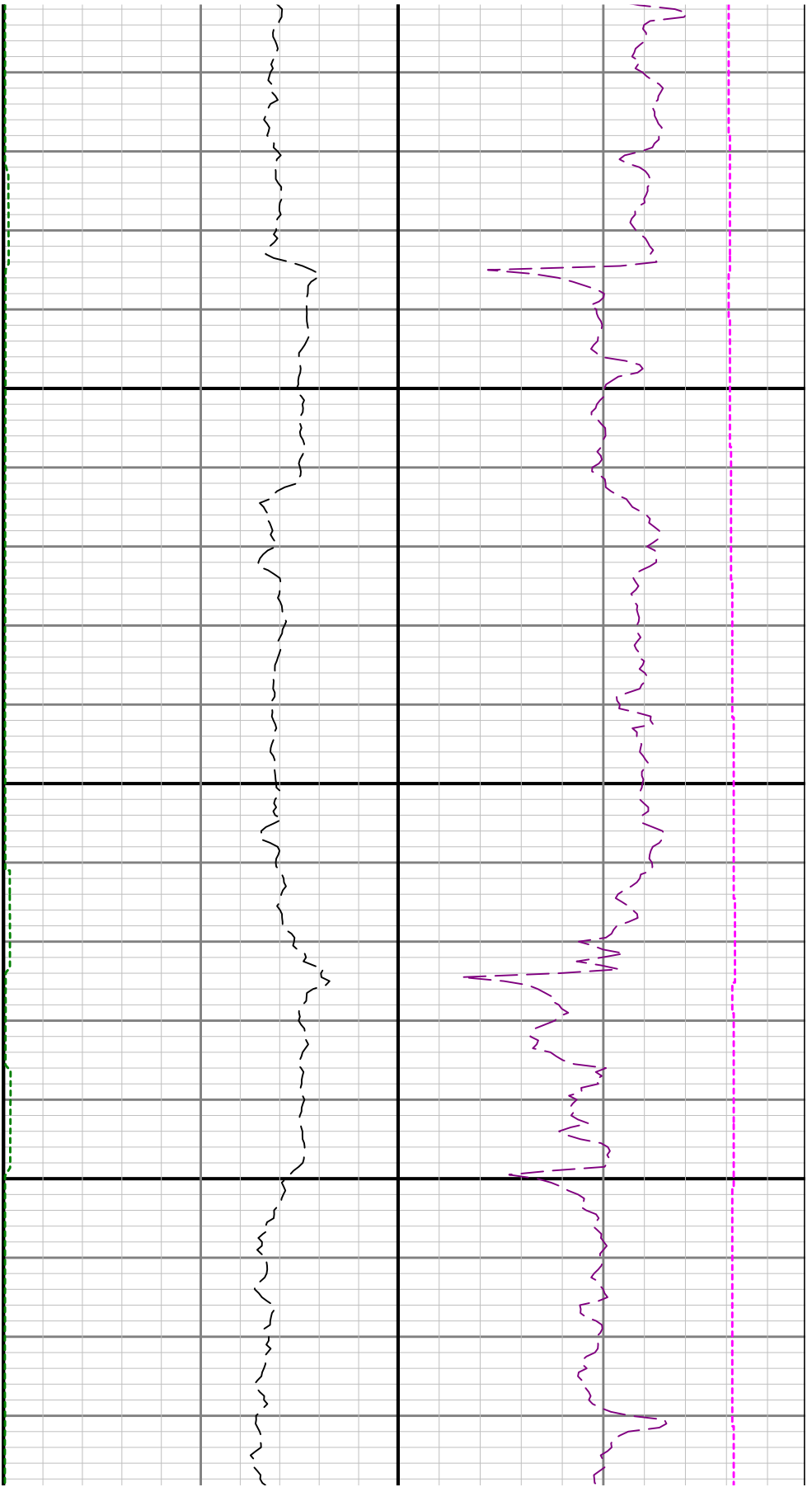


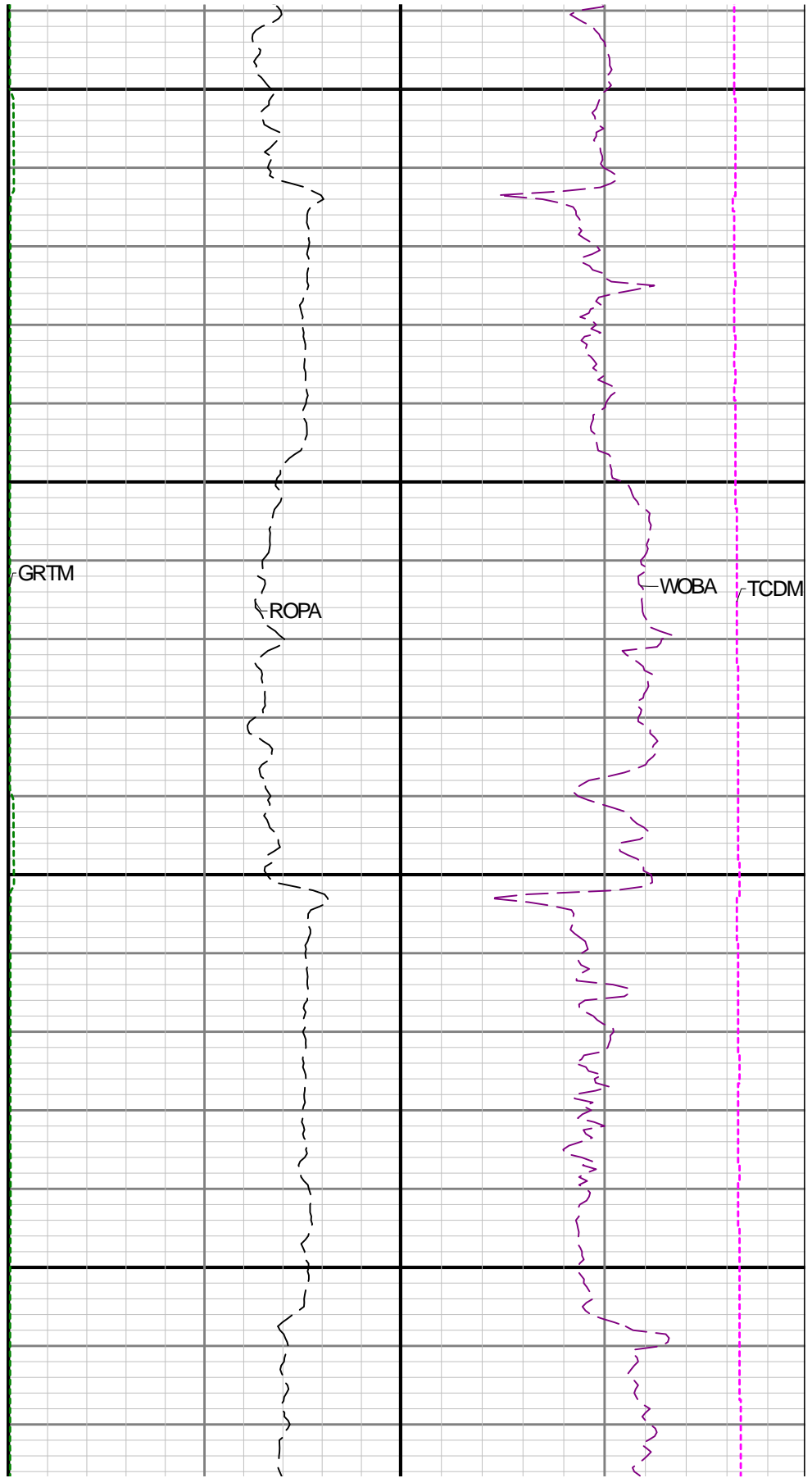
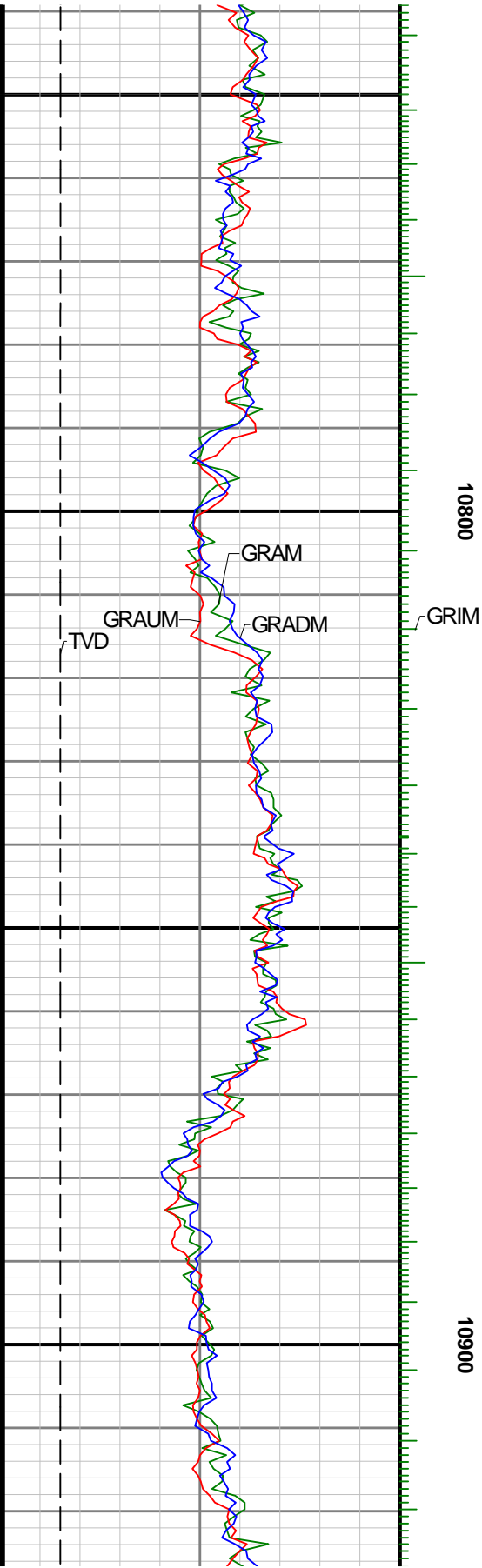


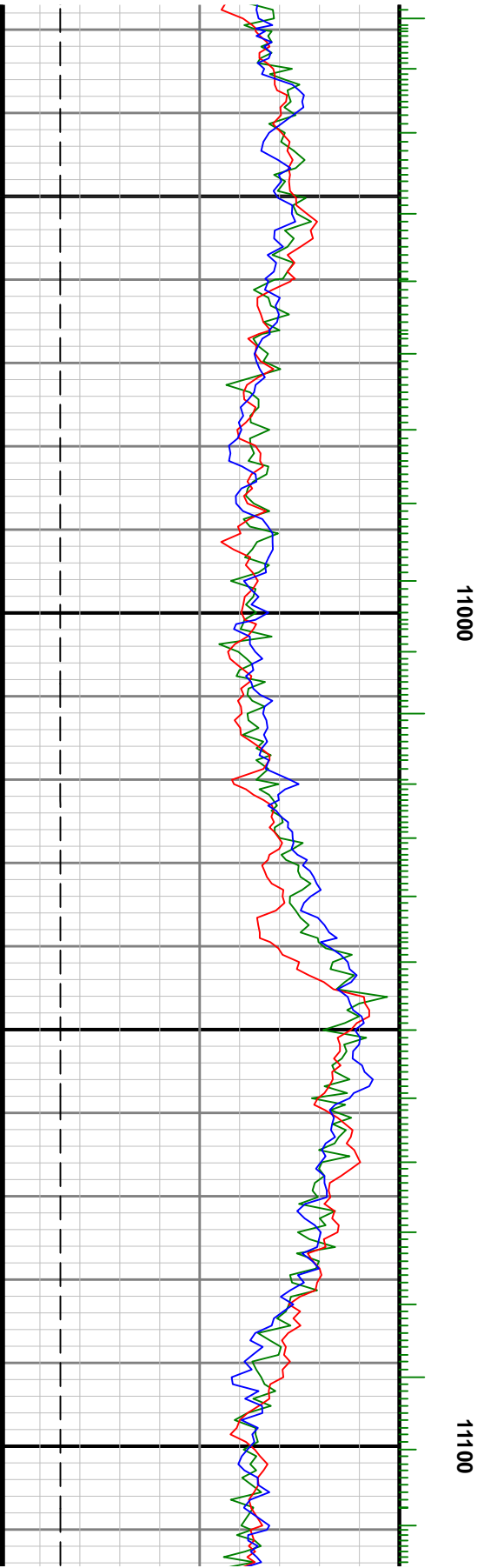
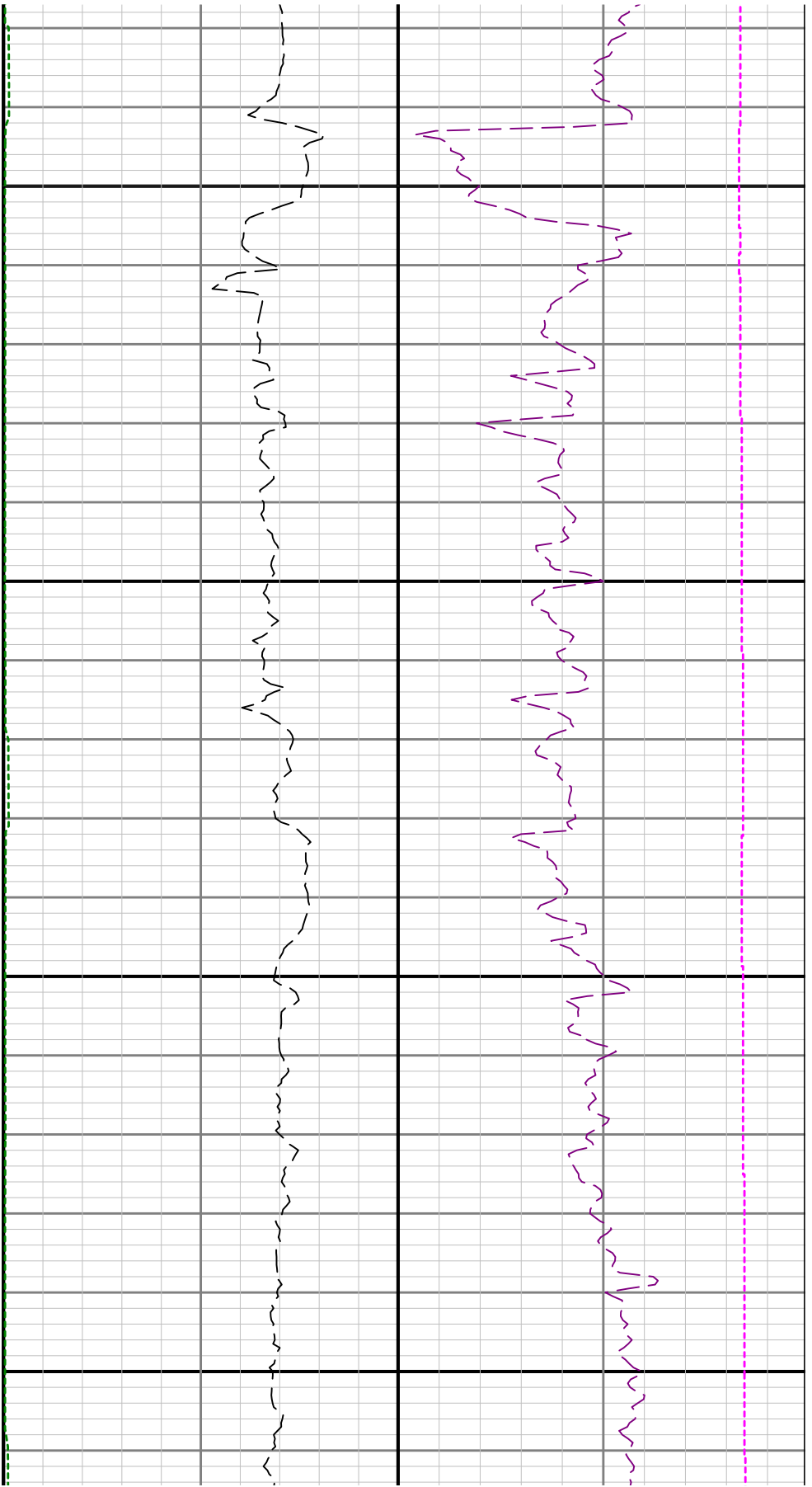
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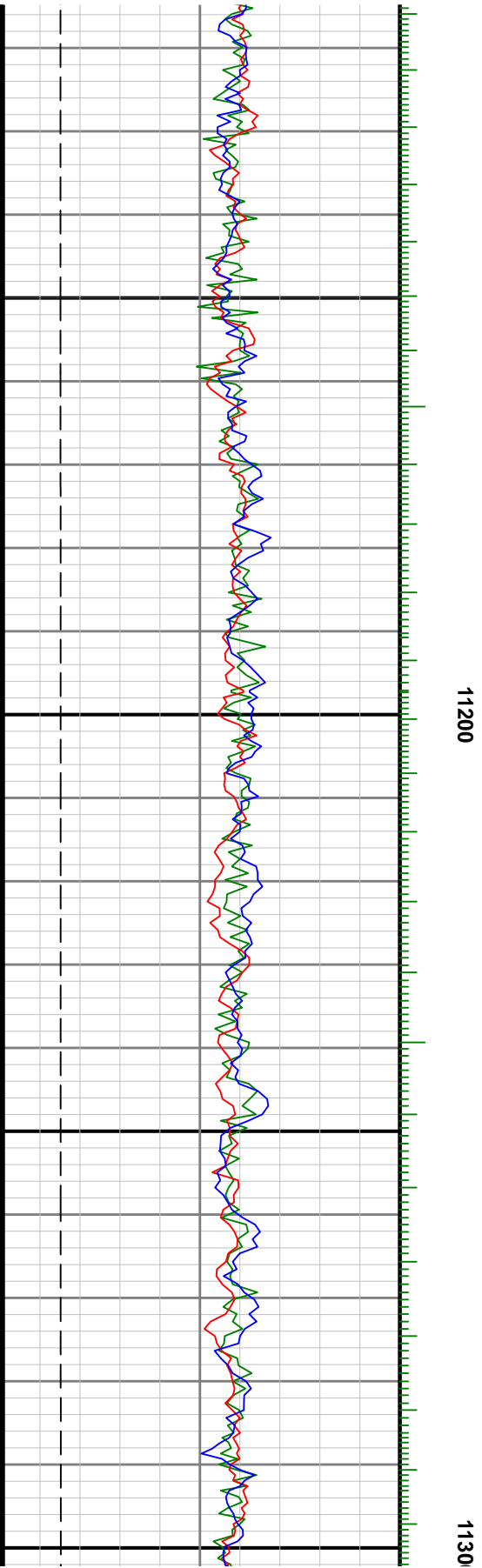
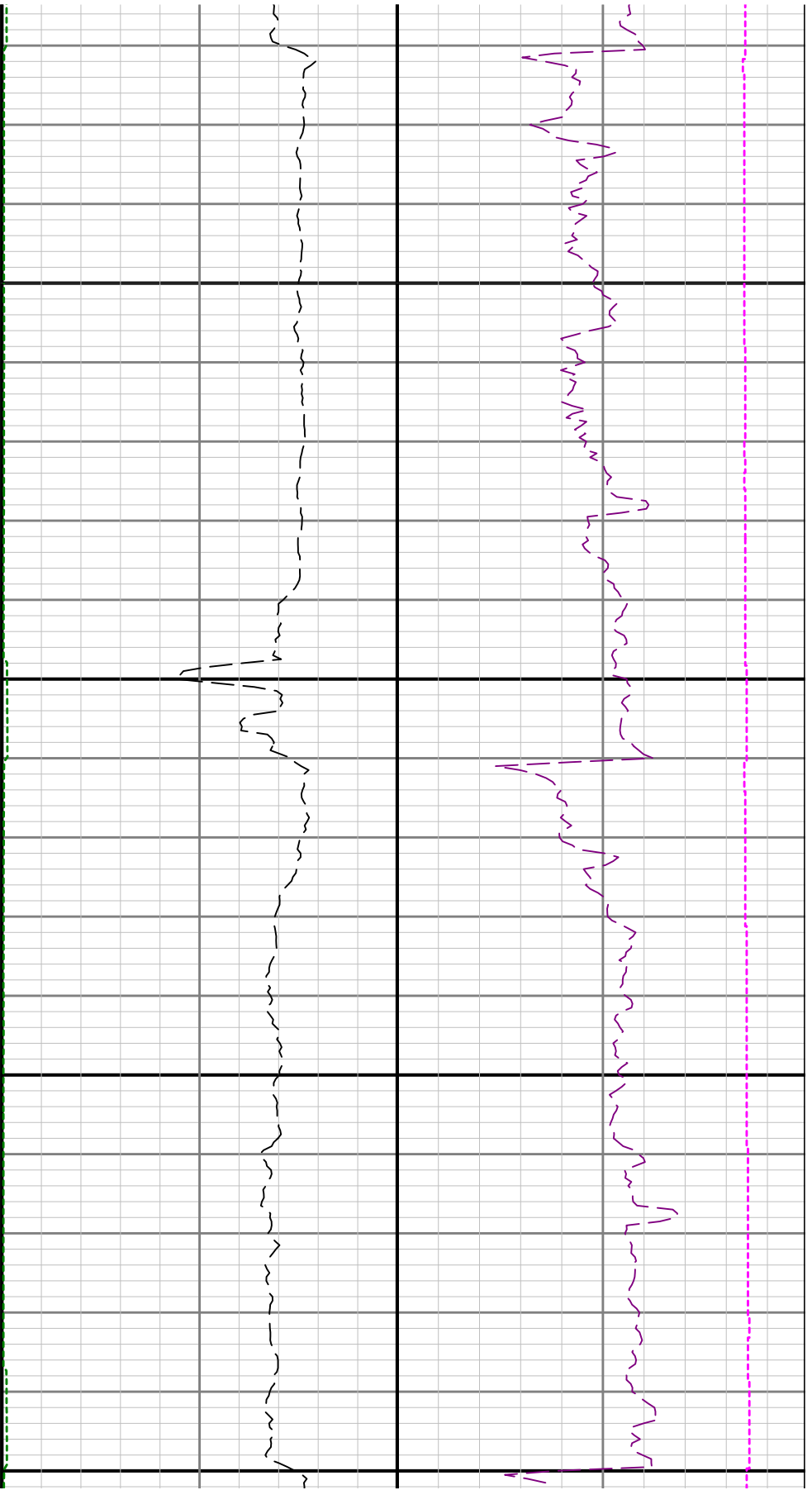
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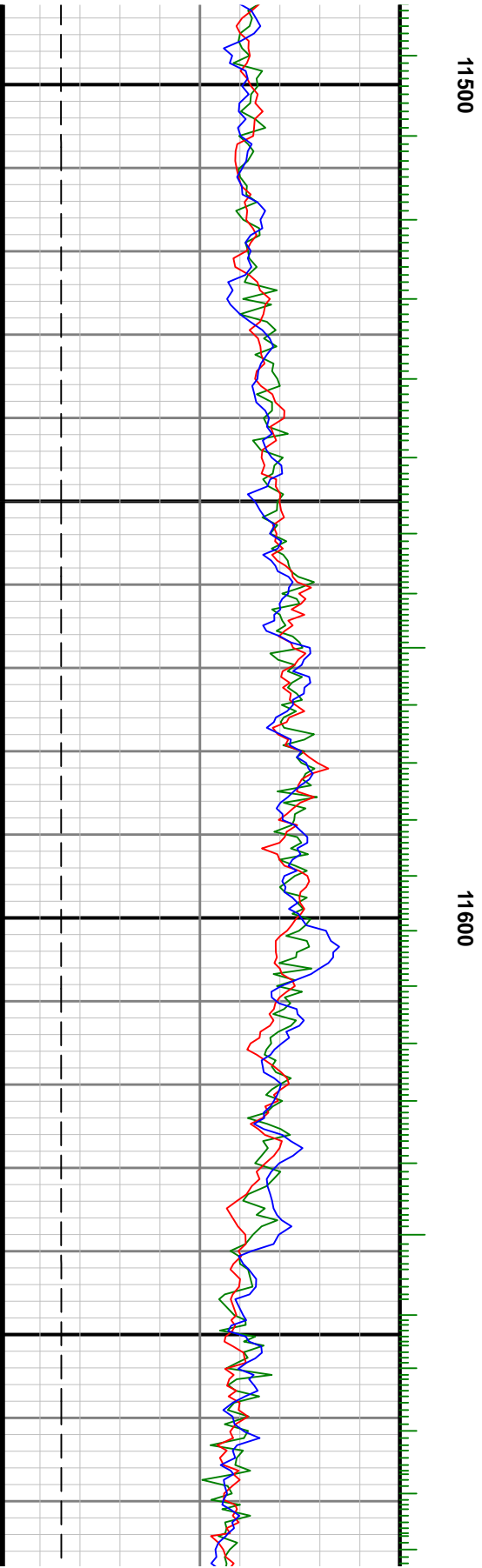
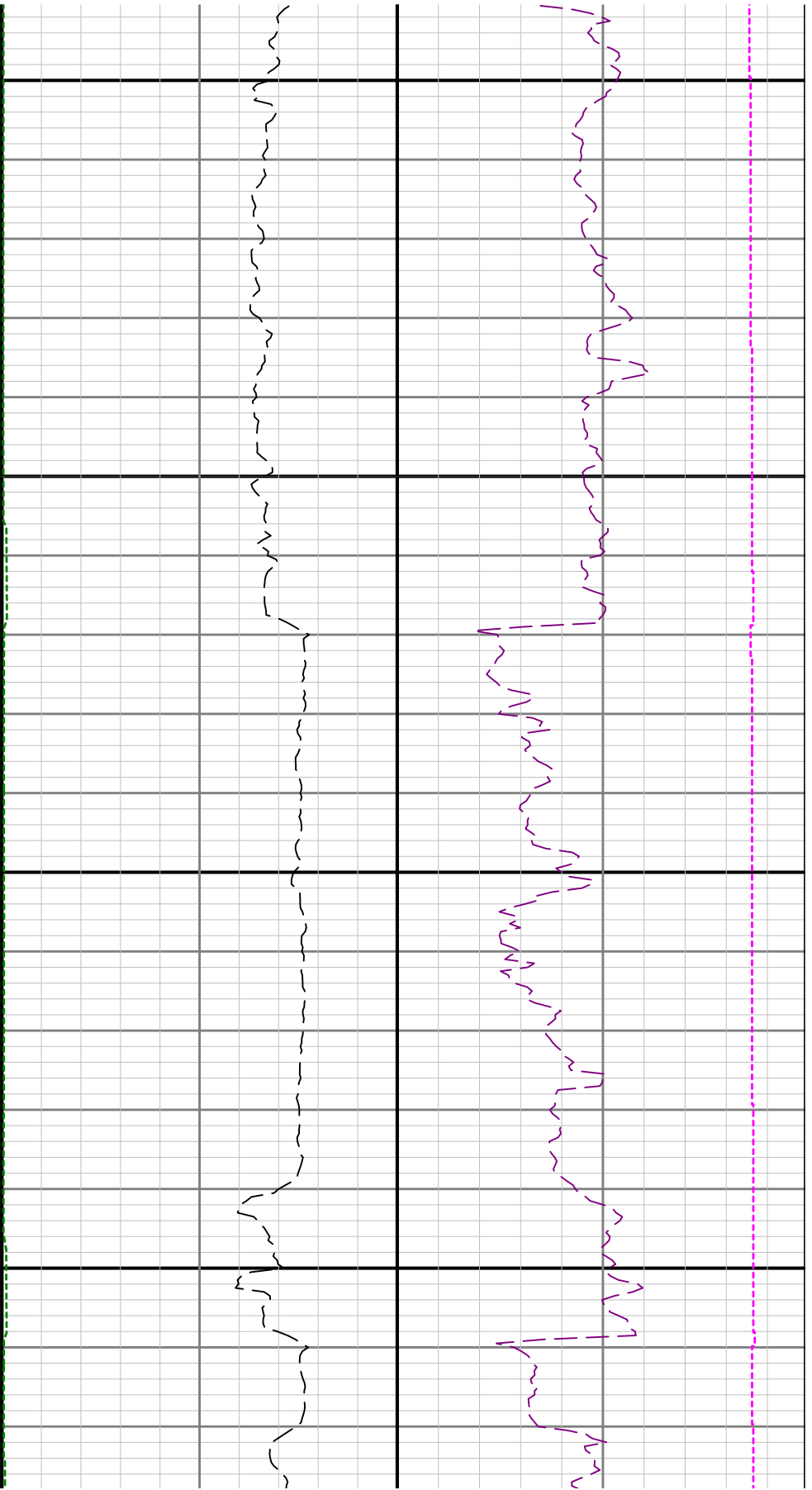


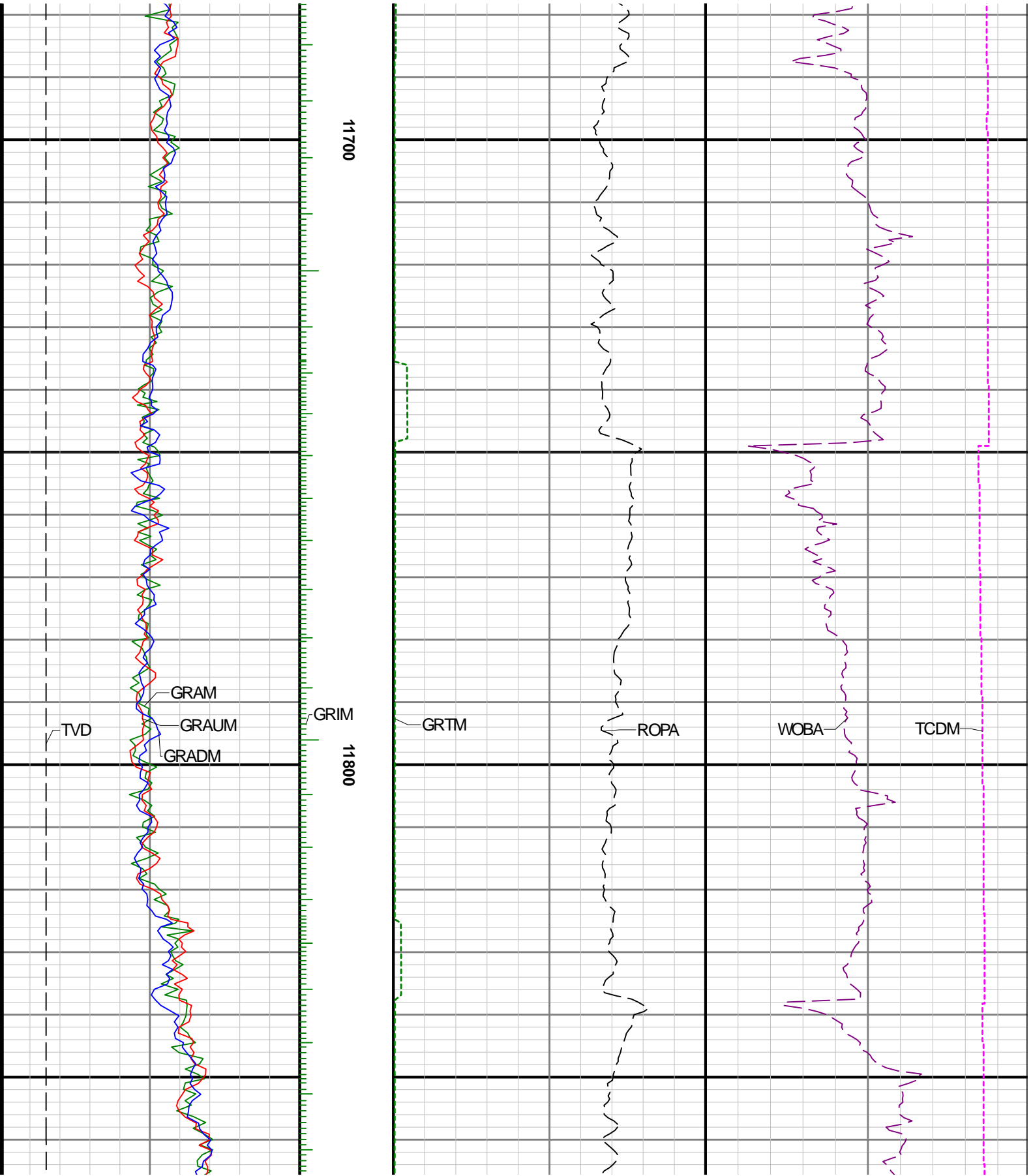


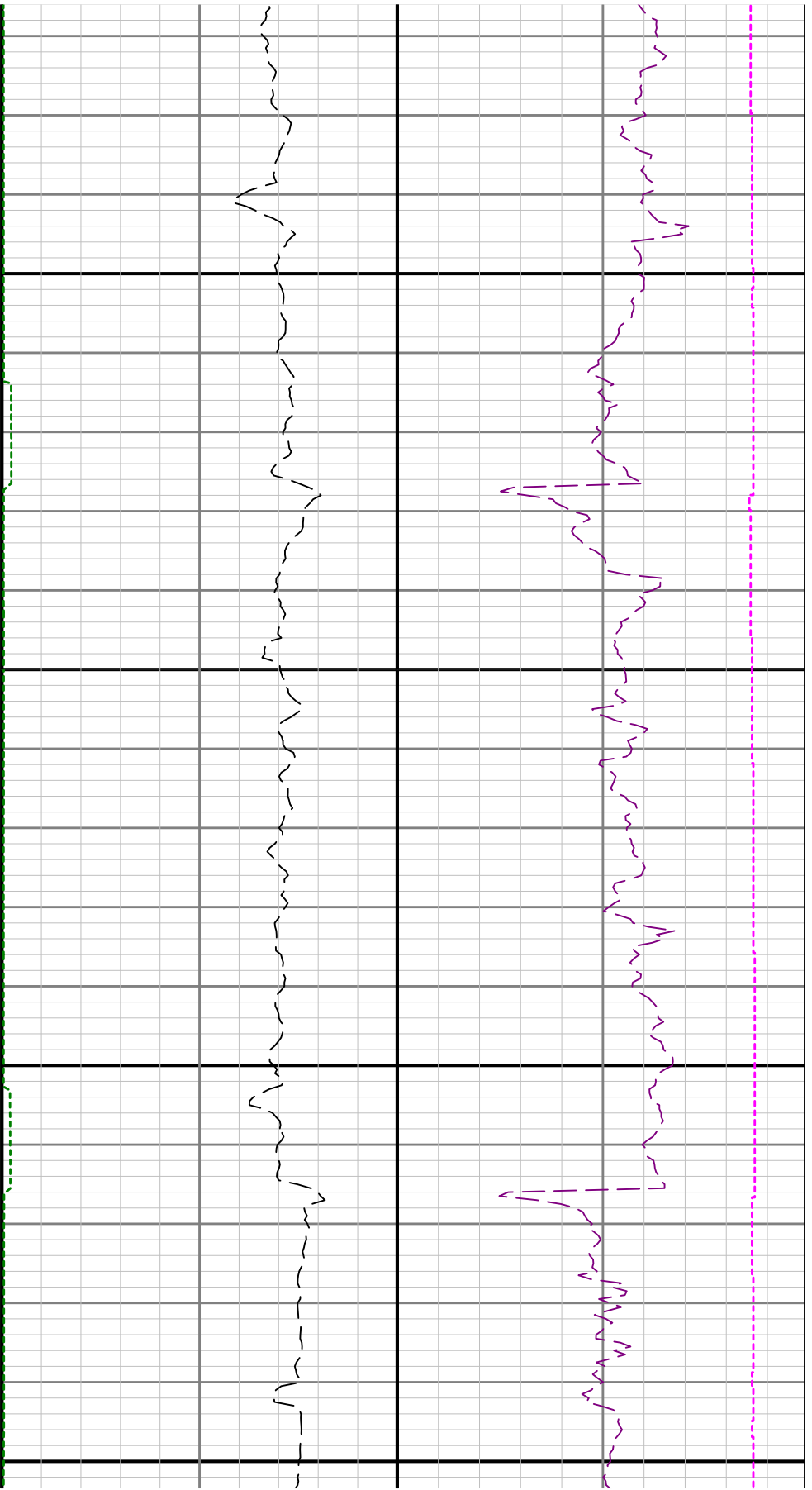






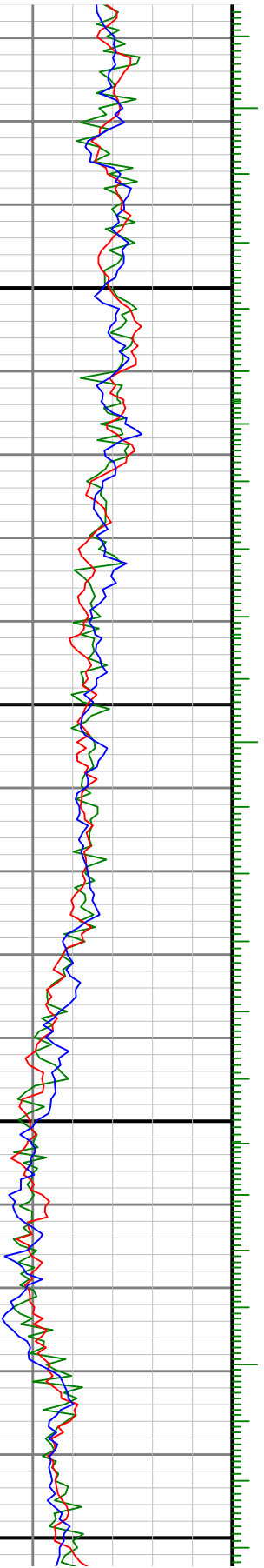


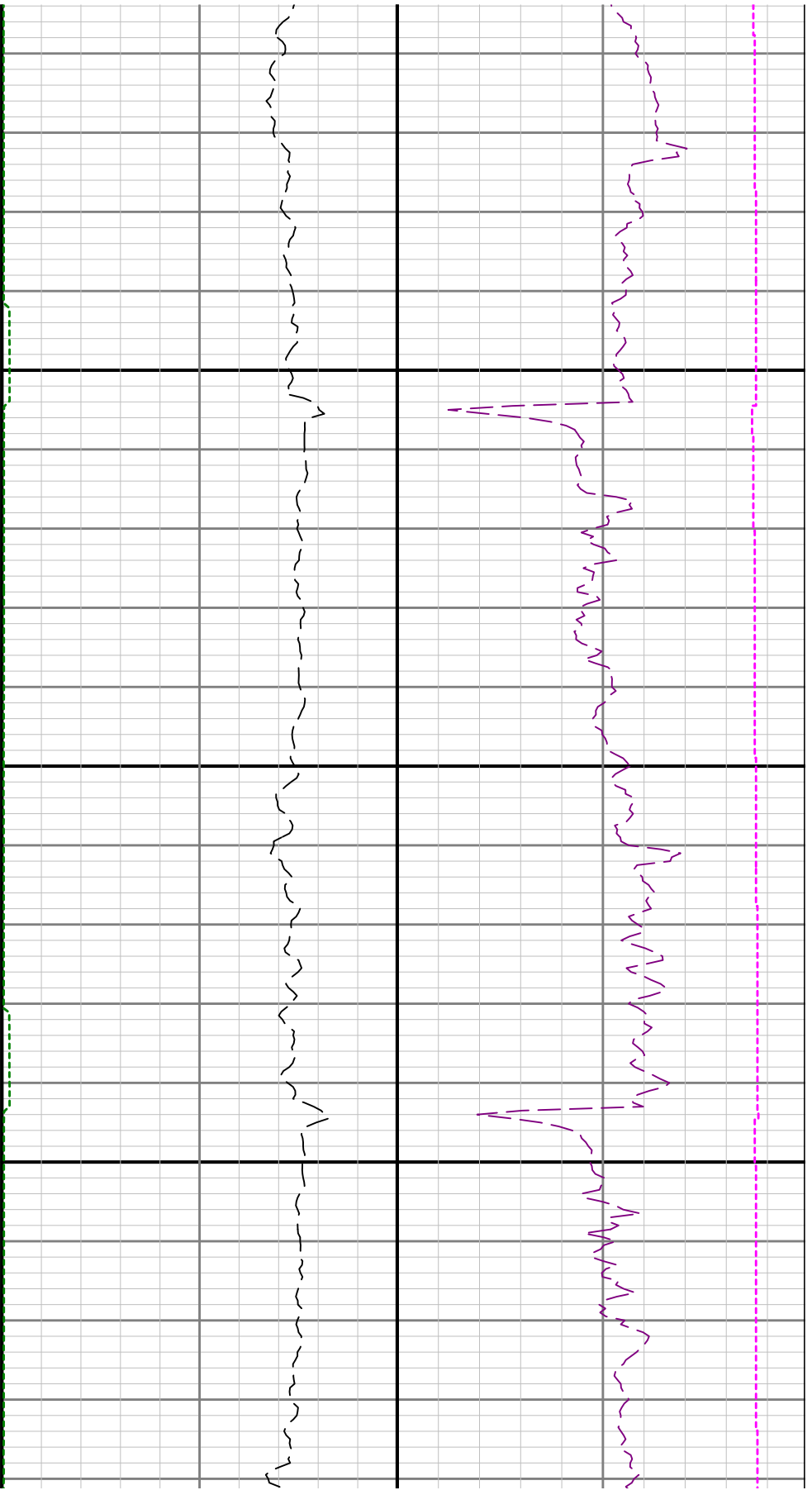




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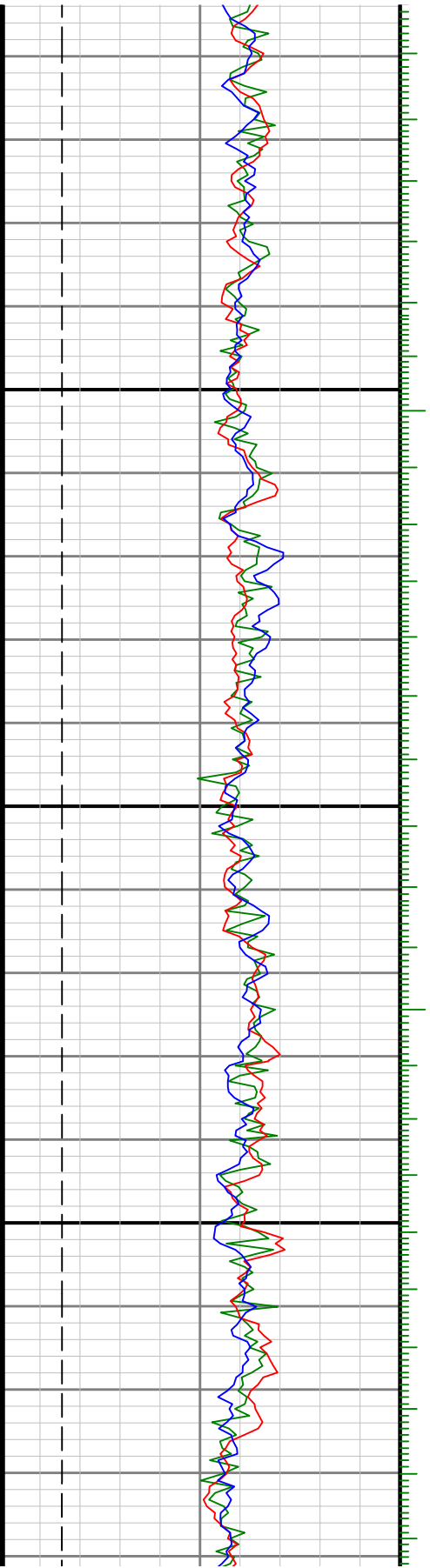
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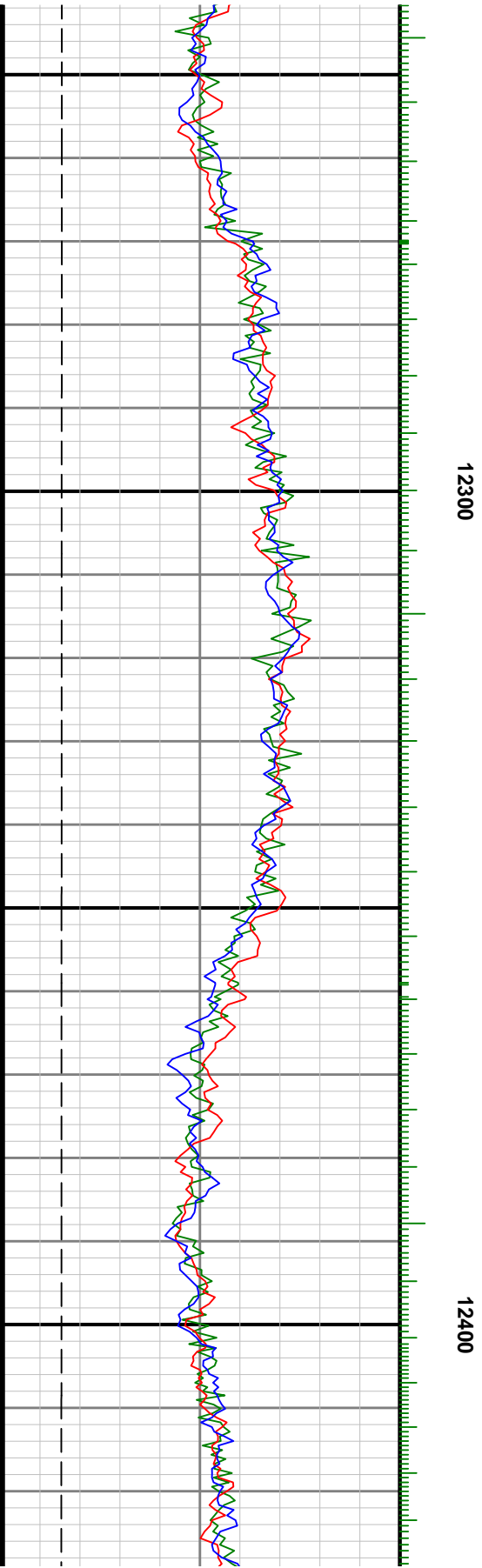
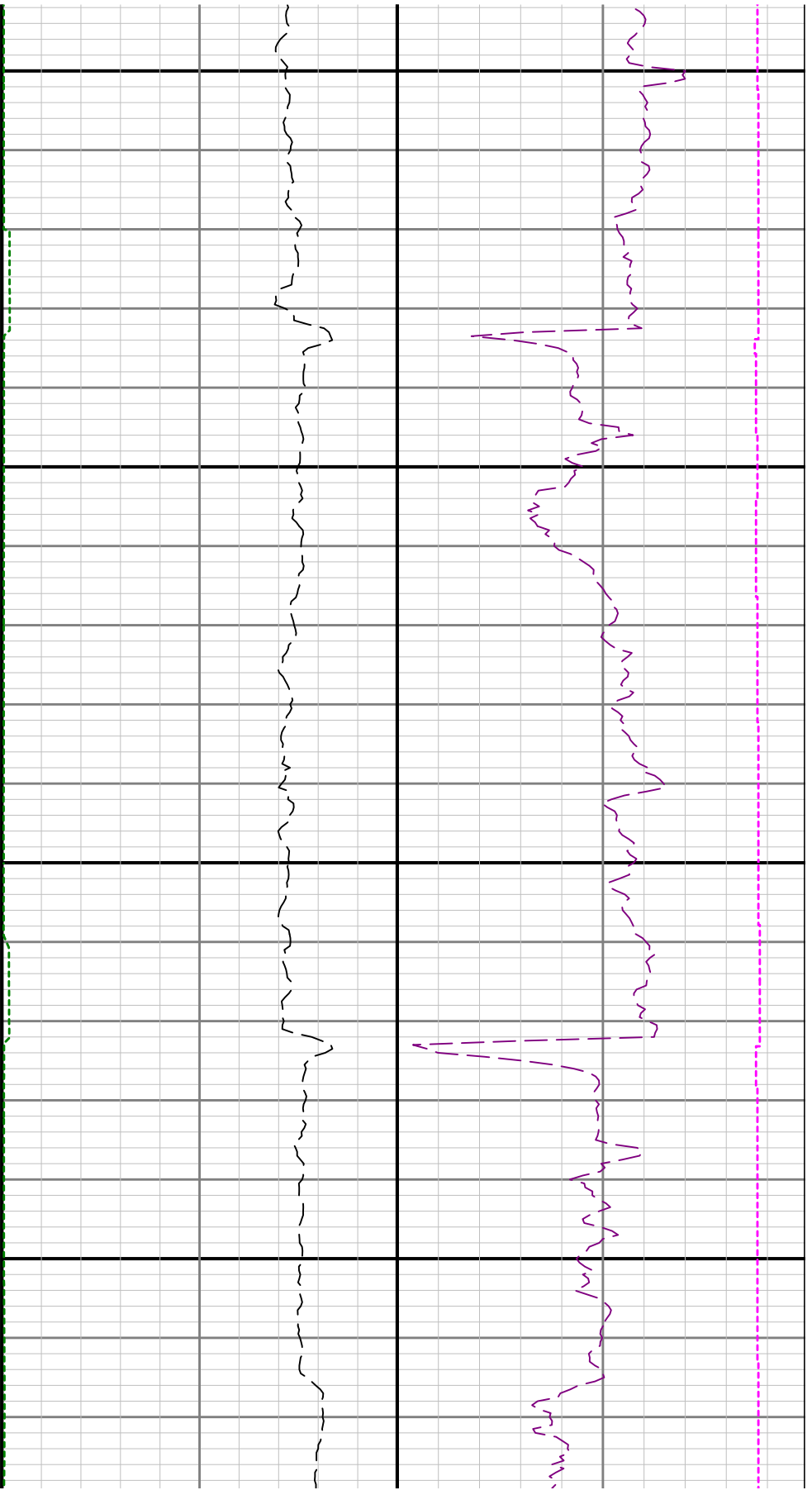


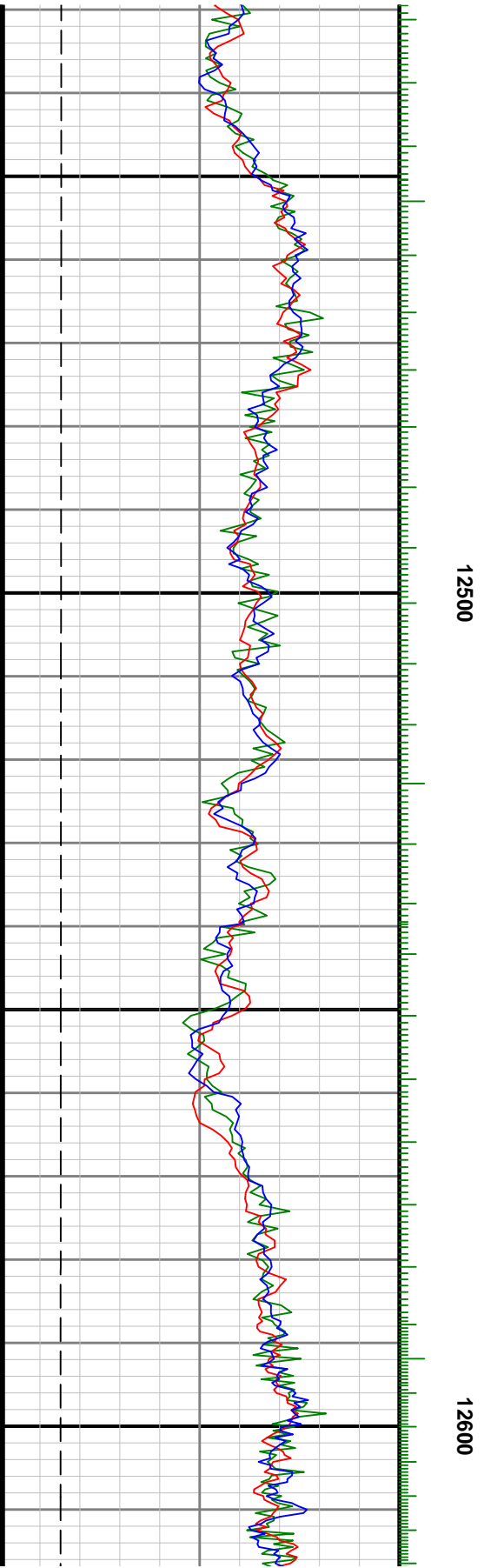
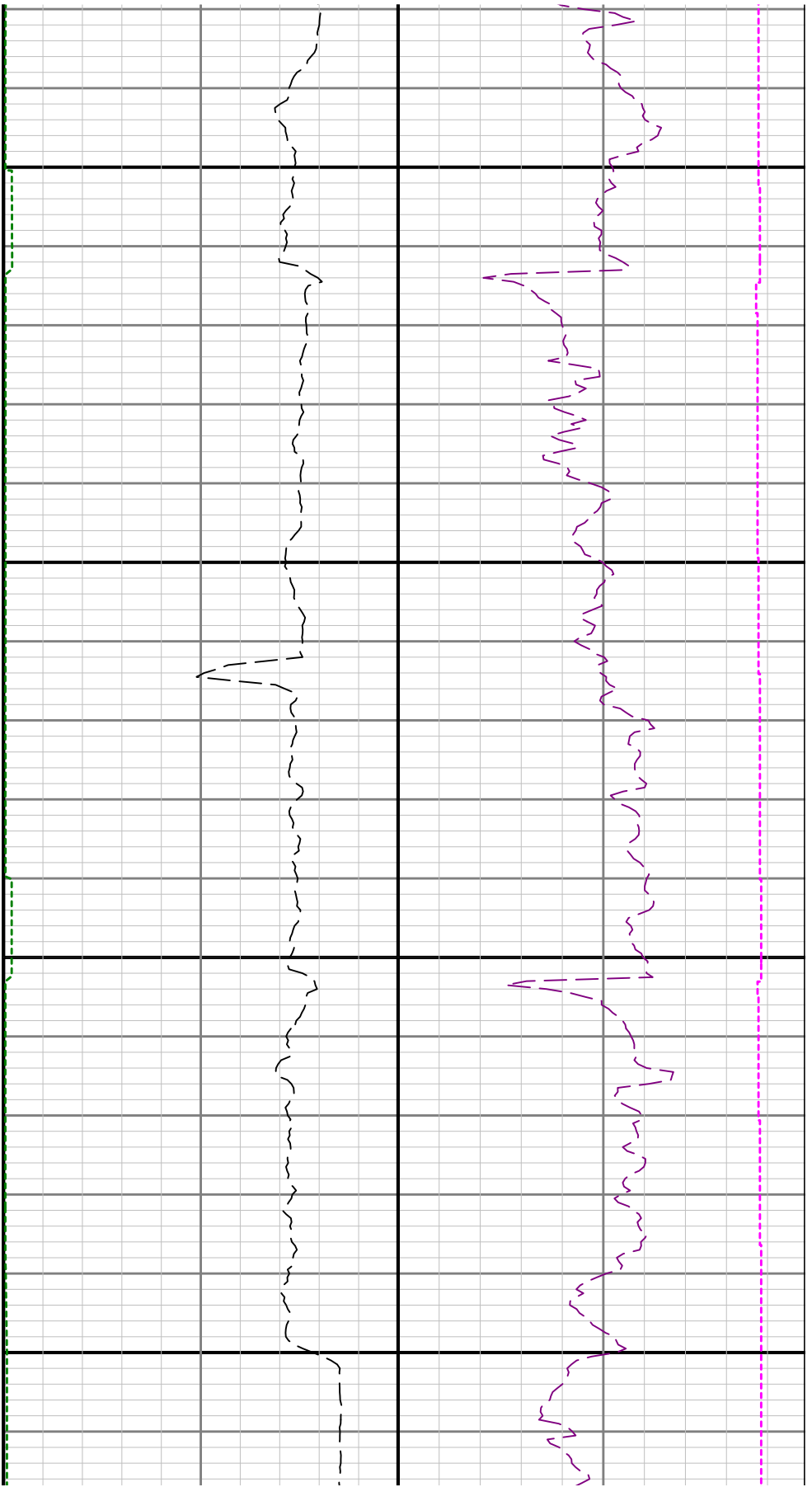


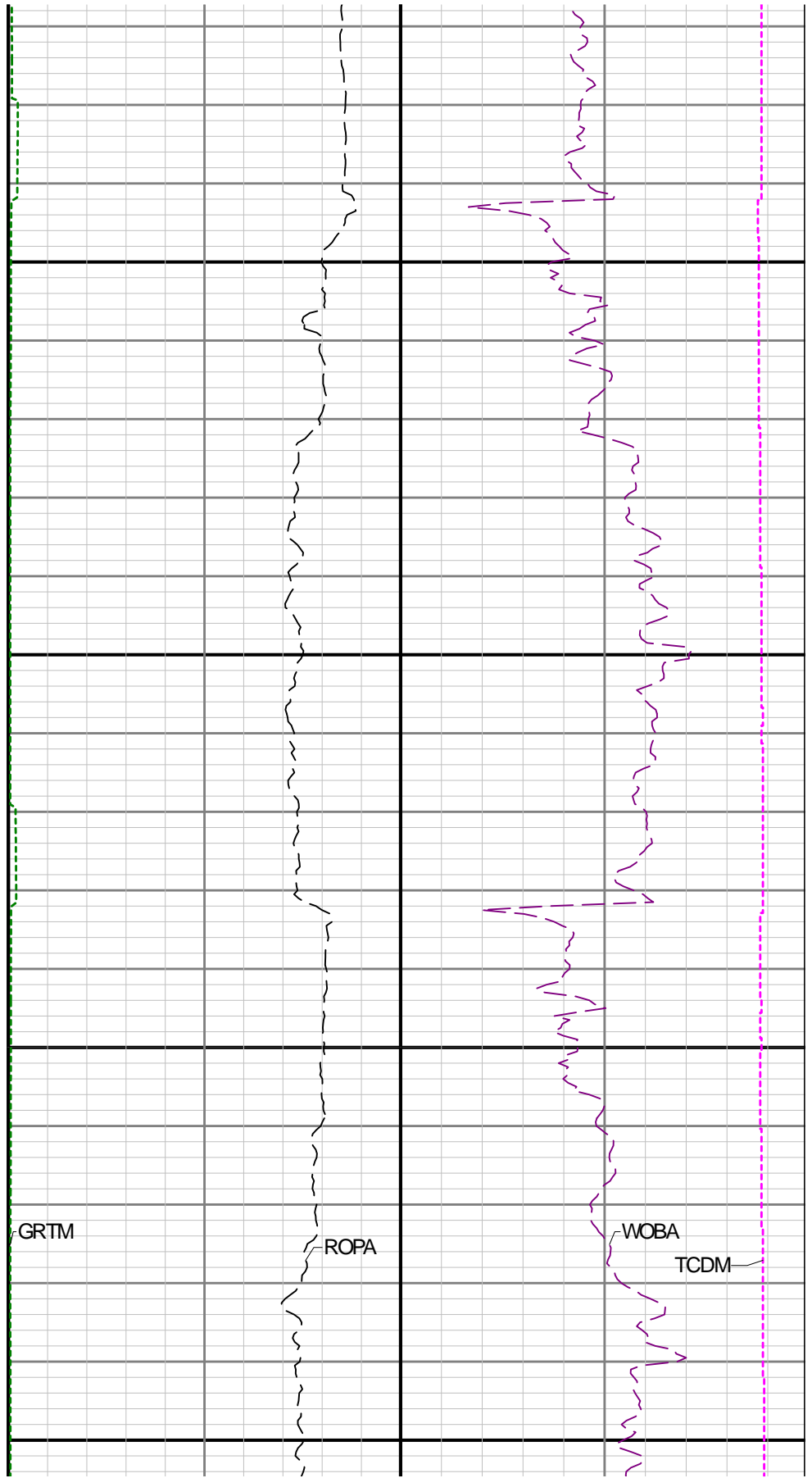
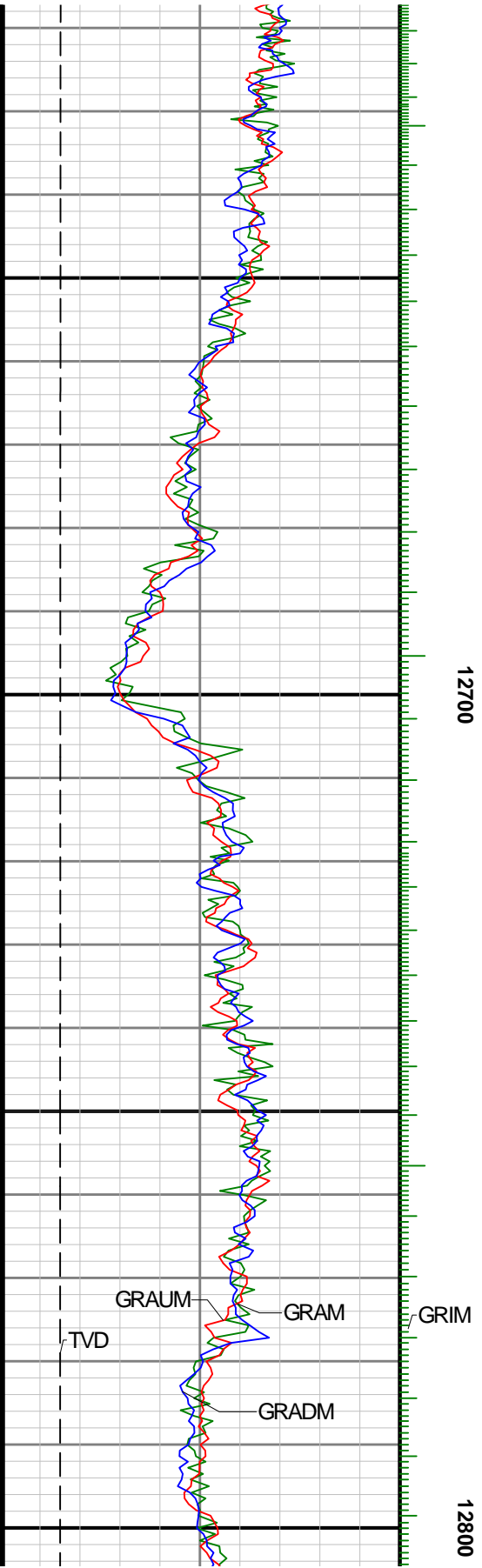
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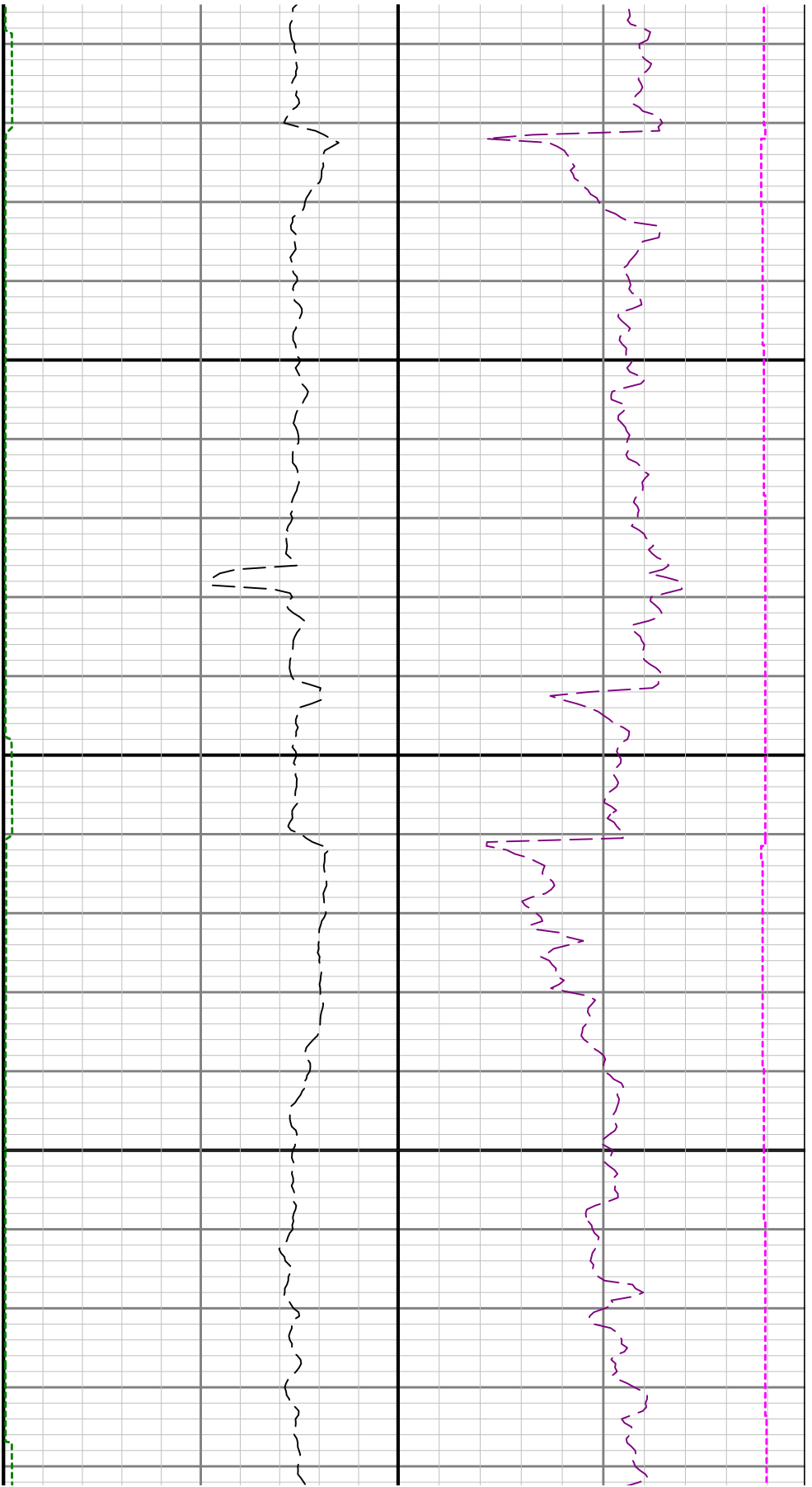
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12900

