



Gamma Ray

LWD MEMORY LOG

Scale:

Company: Noble Energy

Well: Roth A32-770

Field: Wattenberg

County: Weld Country: United States

State: Colorado

Country: United States

Status:

Final Print

Surface Location: Latitude: 40° 27' 41.364" N Longitude: 104° 35' 04.776" W

Other Services:

API No: 05-123-51333-00

Job ID: 111055134

SEC: 30 TWN: 6N RGE: 64W

Permanent Datum (P.D.): Mean Sea Level

Elevation: 0.00 ft

Above P.D.:

Elev. KB: 4728.00 ft Elev. DF: 4698.00 ft Elev. GL:

Log Measured From: Rig Floor

Dates

From: 2021-10-24 To: 2021-10-26 Spud: 2021-10-01

Borehole Record

Hole Size (in) From (ft) To (ft) Size (in) Weight (lb/ft) From (ft) To (ft)

13.500 30.00 1964.00 9.625 36.00 30.00 1954.00

8.500 1964.00 17374.00 36.00 30.00 1954.00

8.500 1964.00 17374.00 36.00 30.00 1954.00

8.500 1964.00 17374.00 36.00 30.00 1954.00

8.500 1964.00 17374.00 36.00 30.00 1954.00

8.500 1964.00 17374.00 36.00 30.00 1954.00

8.500 1964.00 17374.00 36.00 30.00 1954.00

8.500 1964.00 17374.00 36.00 30.00 1954.00

8.500 1964.00 17374.00 36.00 30.00 1954.00

8.500 1964.00 17374.00 36.00 30.00 1954.00

8.500 1964.00 17374.00 36.00 30.00 1954.00

8.500 1964.00 17374.00 36.00 30.00 1954.00

8.500 1964.00 17374.00 36.00 30.00 1954.00

8.500 1964.00 17374.00 36.00 30.00 1954.00

(C) 2021 Baker Hughes Company - All rights reserved. Baker Hughes and its affiliates provides this information on an "as is" basis for general information purposes and believes it to be accurate as of the date of publication. Baker Hughes does not make any representation as to the accuracy or completeness of the information and makes no warranties of any kind, specific, implied or oral, to the fullest extent permissible by law, including those of merchantability and fitness for a particular purpose or use. Baker Hughes hereby disclaims any and all liability for any direct, indirect, consequential or special damages, claims for lost profits, or third party claims arising from the use of the information, whether a claim is asserted in contract, tort, or otherwise. The Baker Hughes logo is a trademark of Baker Hughes Company.

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	1964.00	17360.00	1964.00	17374.00	2021-10-24 09:02	2021-10-26 16:35	51.43

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Chris Campbell	2021-10-23	2021-10-27	Jeremiah Samson	2021-10-23	2021-10-27	Marcos Favela	2021-10-23	2021-10-27
Tien Bui	2021-10-23	2021-10-27	Tony Russo	2021-10-23	2021-10-25	Tyler Bench	2021-10-25	2021-10-27

Witness

Name	Run
Jim Turner	1

Mud Properties Record

Date / Time	Run No.	Depth (ft)	Mud Type	Density (ppg)	Viscosity (cP)	pH	Fluid Loss (cm3)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
2021-10-23 11:42	1	1964.00	Oil Based Mud	9.7	10	N/A	19.8	70.8/16.2	Active Pit	23500	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	AutoTrak Curve Steering Unit	14367829	Near Bit Inclination	5.93	6.76	7.000	4.330
1	AutoTrak Curve Steering Unit	14367829	Near Bit VSS	5.93	6.76	7.000	4.330
1	AutoTrak Curve MWD	12118937	Gamma (single)	2.80	12.93	7.000	3.250

1	AutoTrak Curve MWD	12118937	Directional (mag)	12.27	22.40	7.000	3.250
---	--------------------	----------	-------------------	-------	-------	-------	-------

Service and Tool Mnemonics

Mnemonic	Name	Description
ATC SU	AutoTrak Curve SU	Auto Trak Curve Steering Unit
ATC MWD	AutoTrak Curve MWD	Auto Trak Curve MWD
ATC LCPM	AutoTrak Curve LCPM	Auto Trak Curve LCPM

Comments

- 1

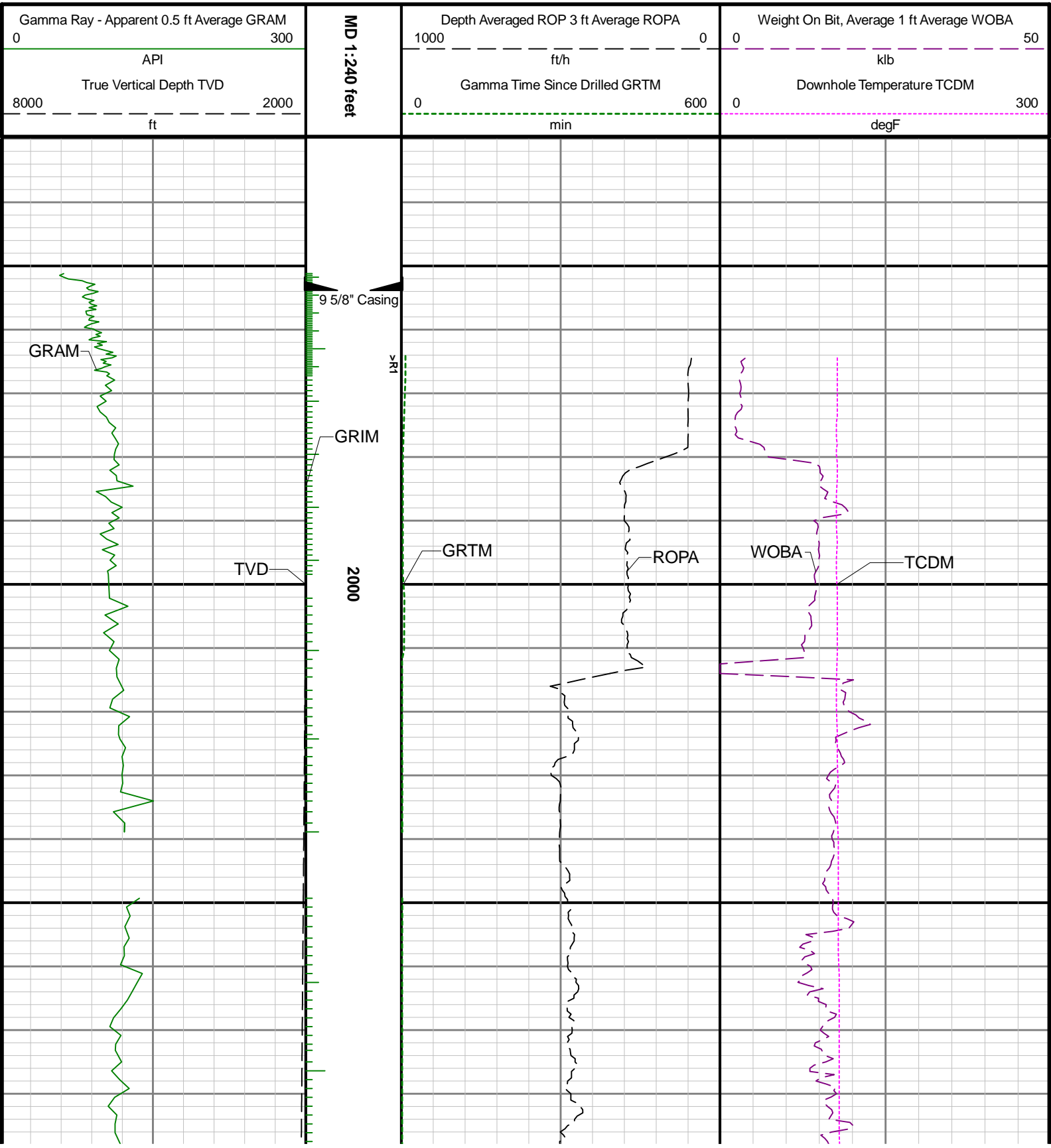
Baker Hughes Company Run 1 utilized 6 ¾ inch NaviGamma services (Gamma Ray and Directional) behind an 8 ½ inch PDC bit and rotary steerable assembly from 1964 to 17374 feet MD (1964 to 6876 feet TVD).
- 2

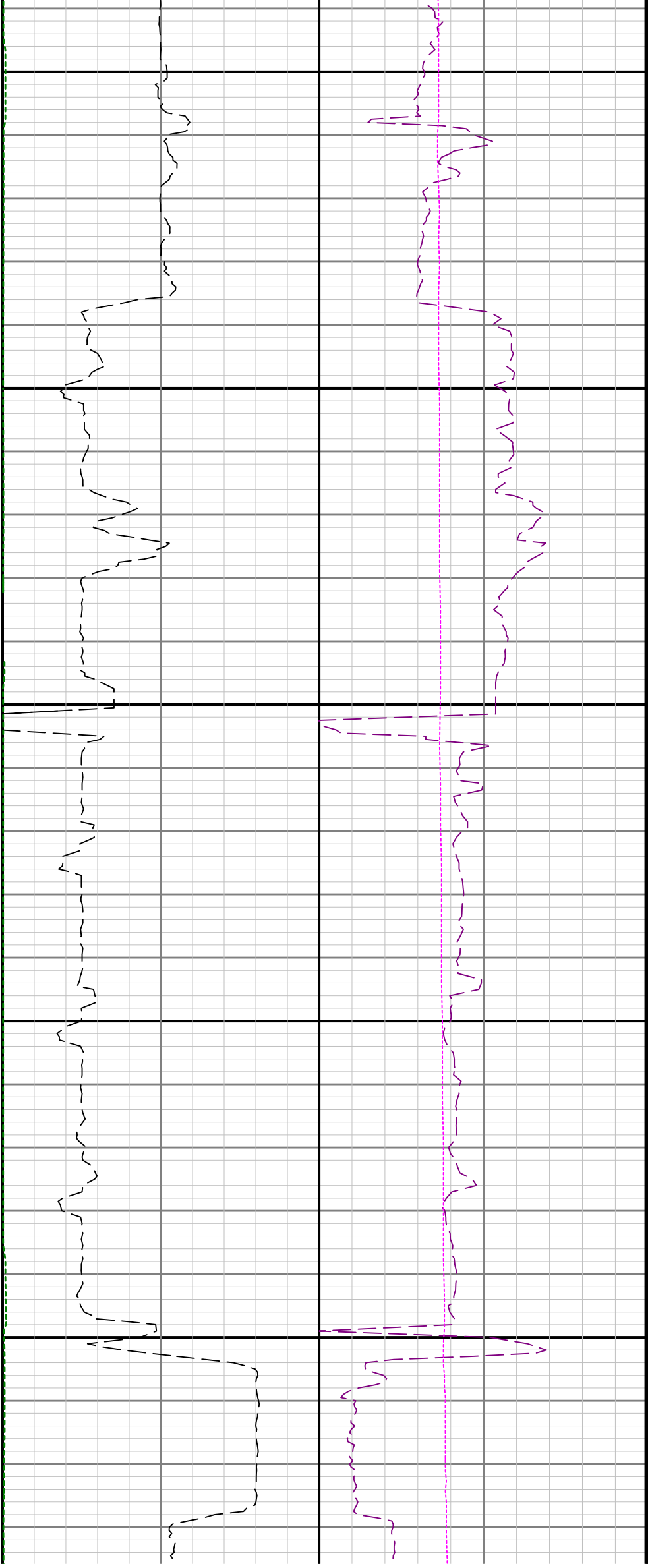
Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes Company. Due to a lack of control by Baker Hughes Company logging engineers, depth calibrations and measurements could not be independently verified and the unverified depths as supplied to Baker Hughes Company are being used to present logging data.
- 3

The Gamma Ray Apparent (GRAM) data is presented 0 to 300 API per the customer's request.

Remarks

Number	Depth (ft)	Hole Section (in)	Run No.	Remark
1	17360.00	8.500	1	The interval from 17360 to 17374 feet MD (6876 to 6876 feet TVD) was not logged due to sensor to bit offset at well TD.

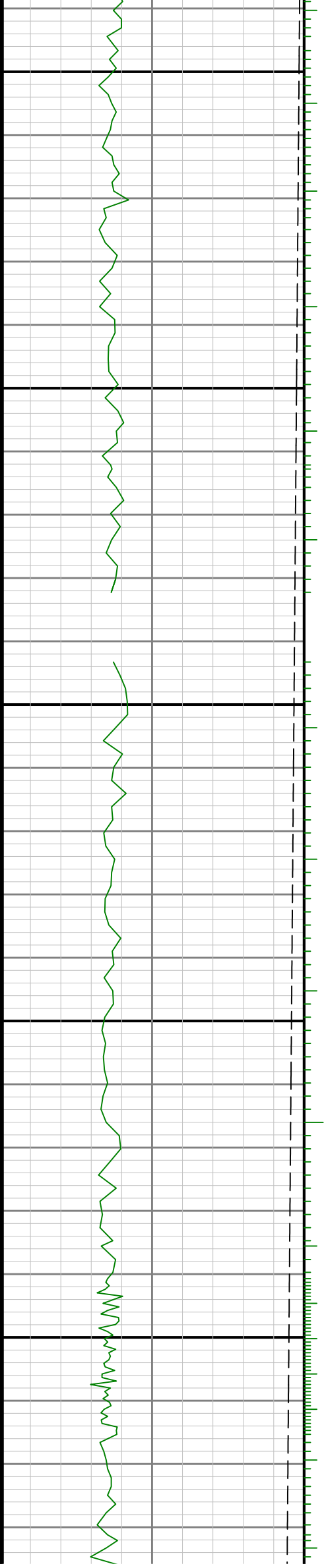




2100

2200

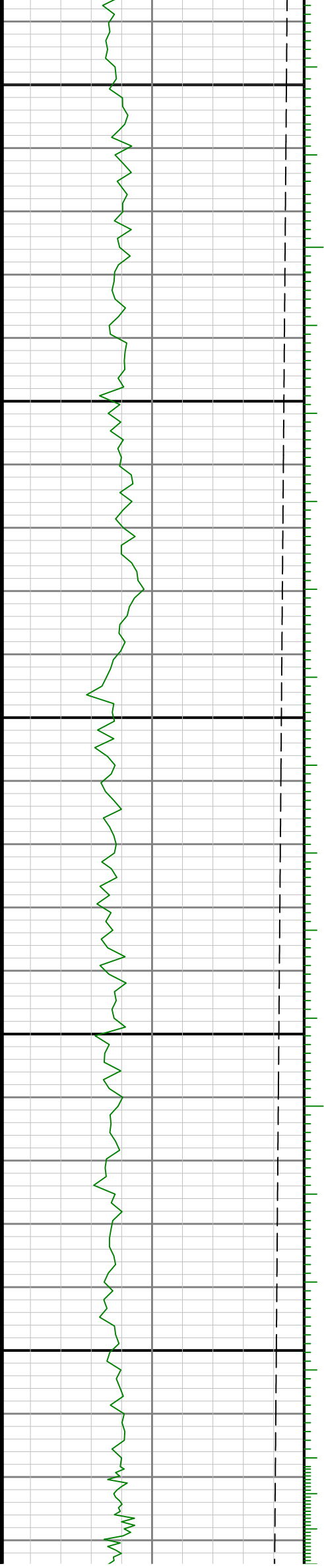
2300

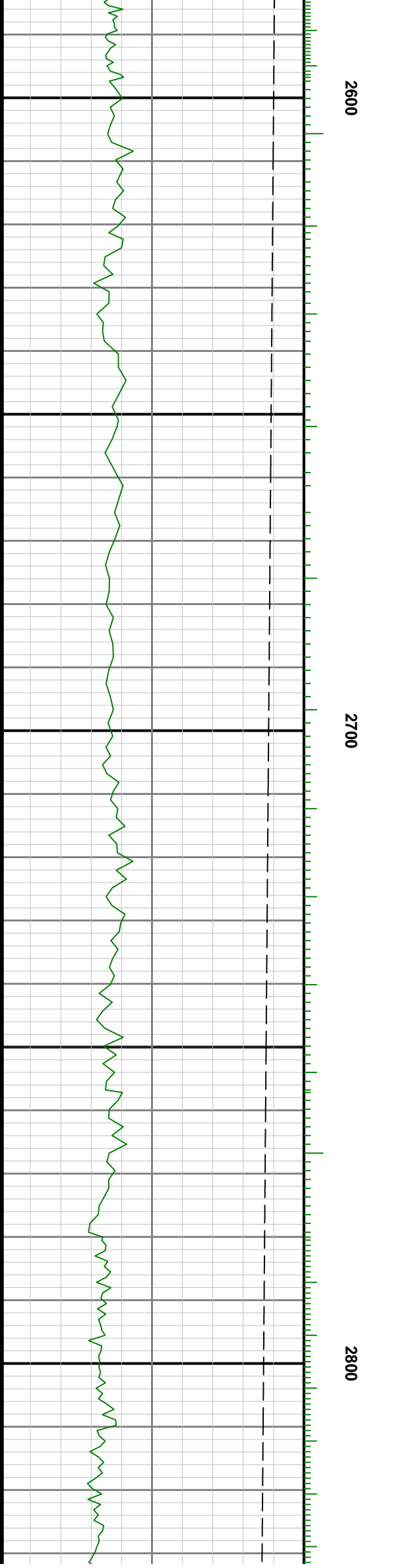
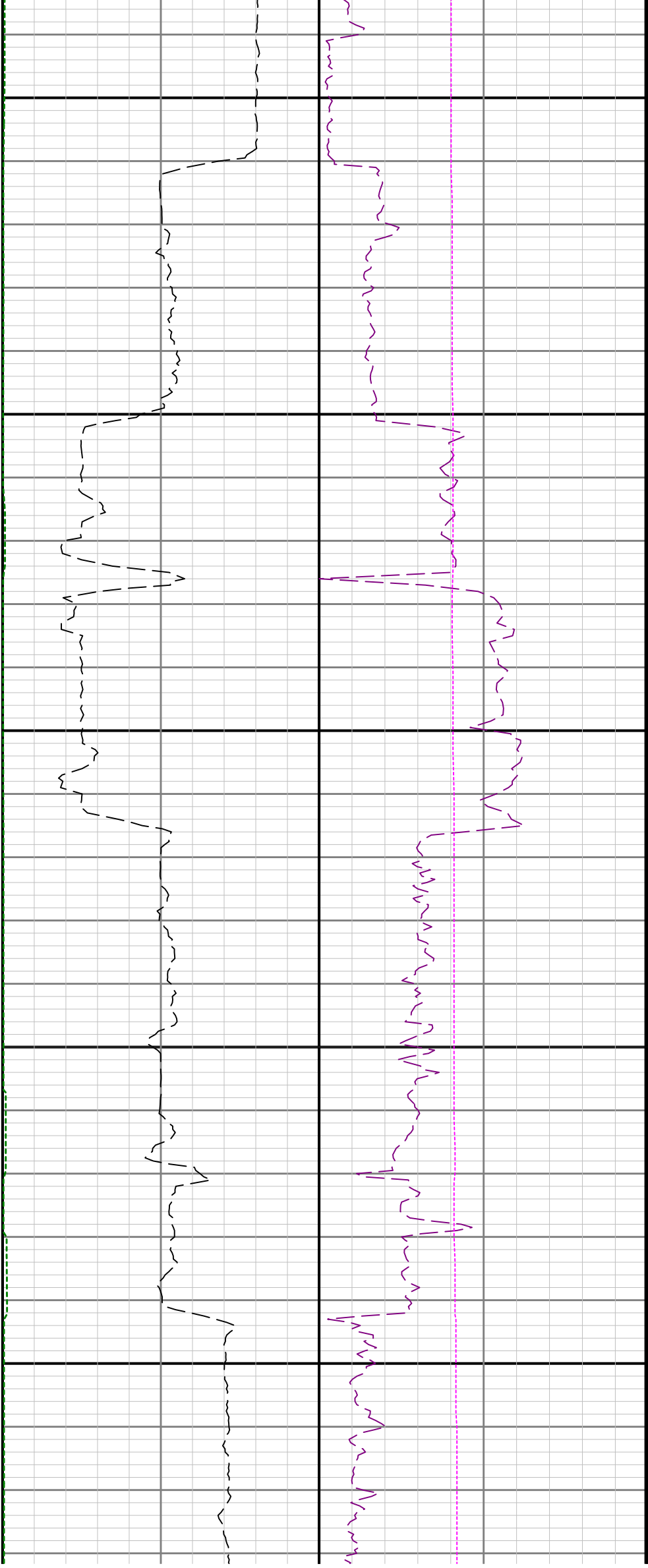


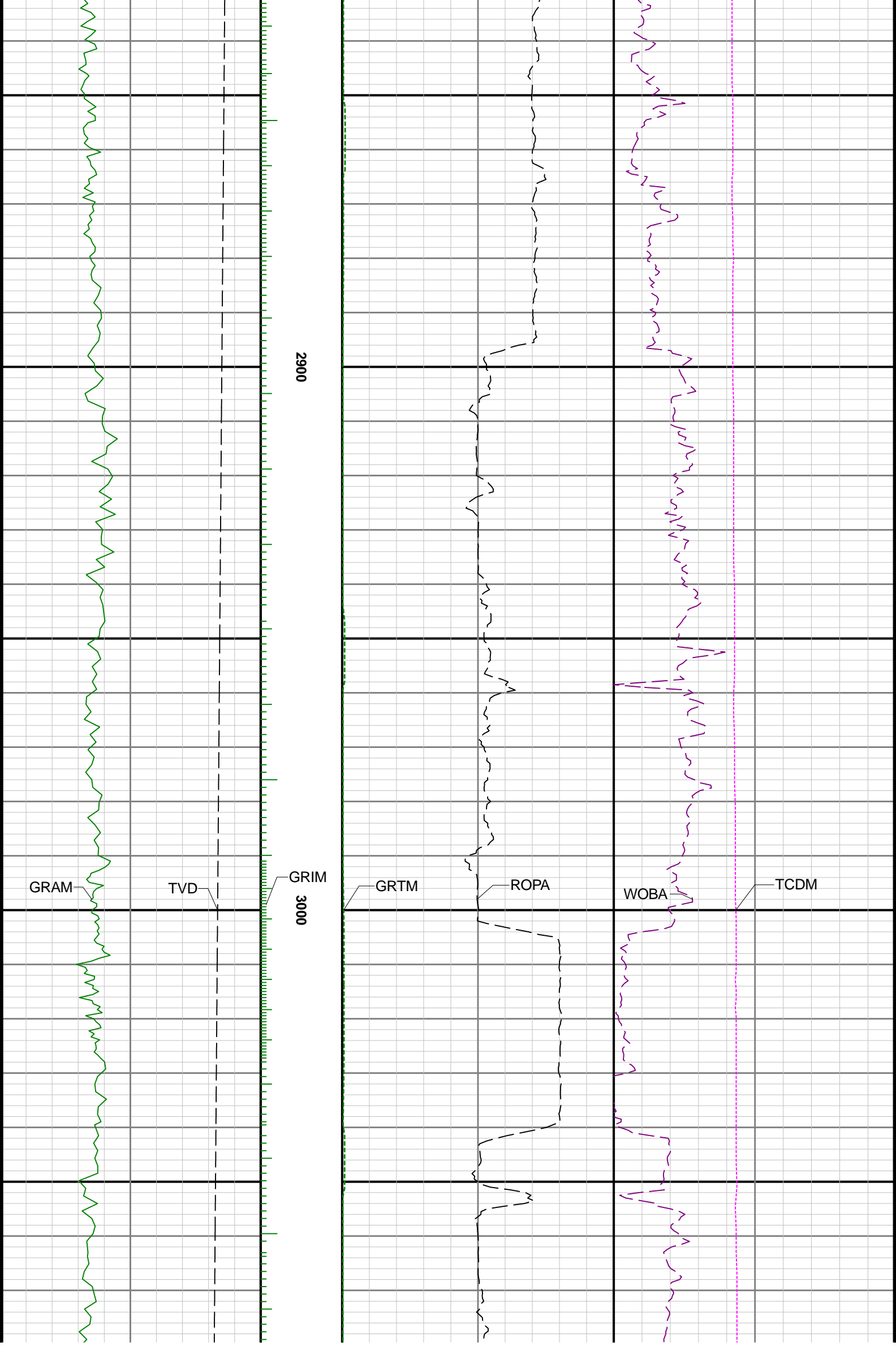


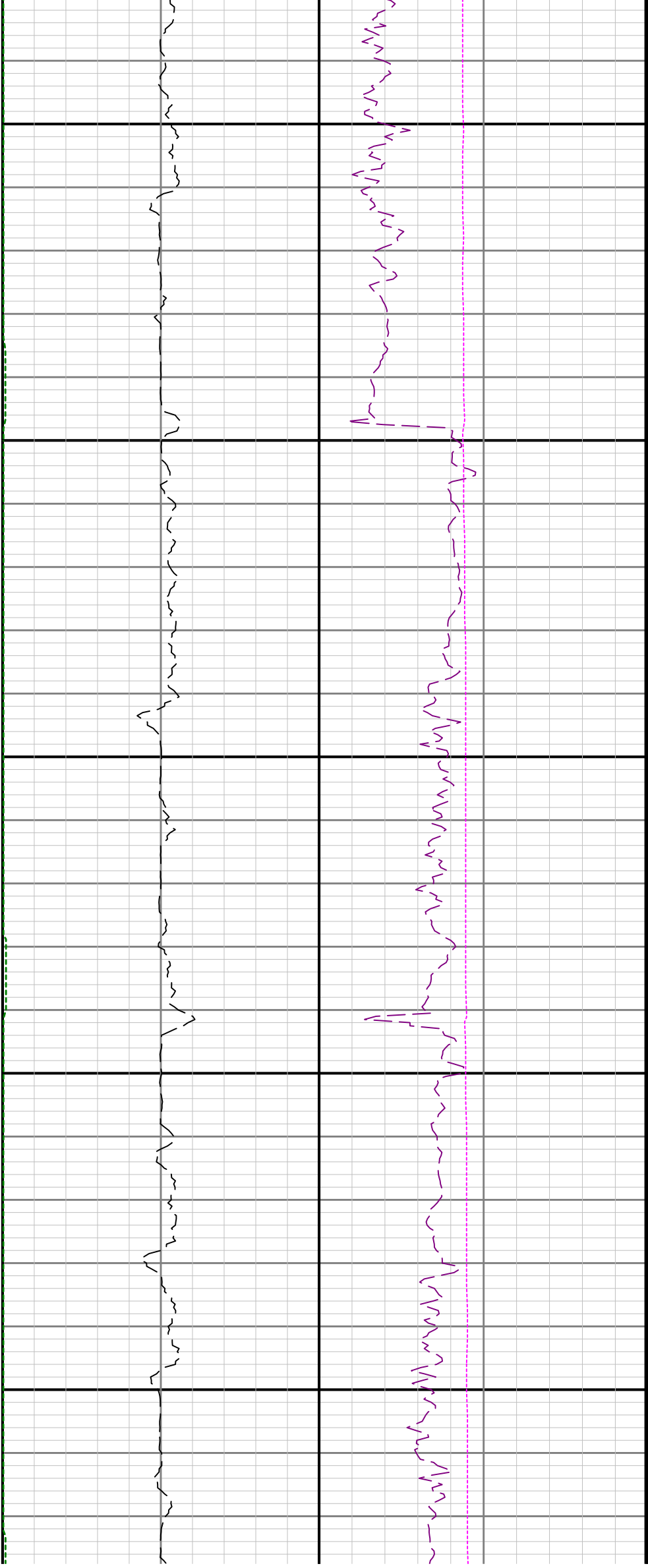
2400

2500





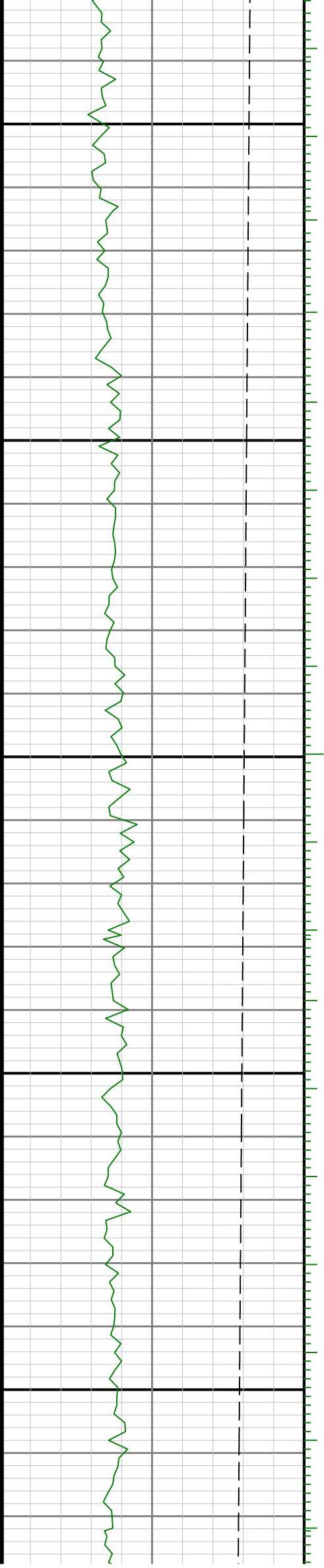


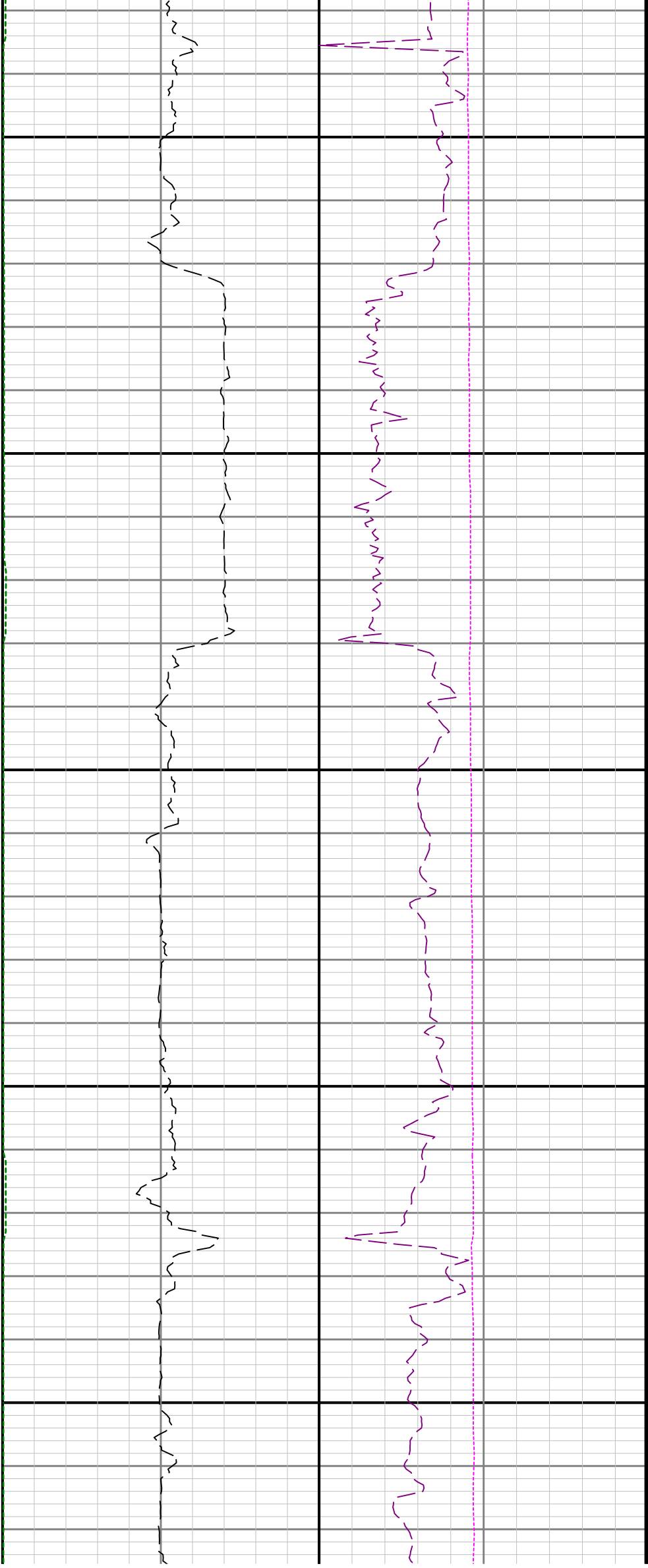


3100

3200

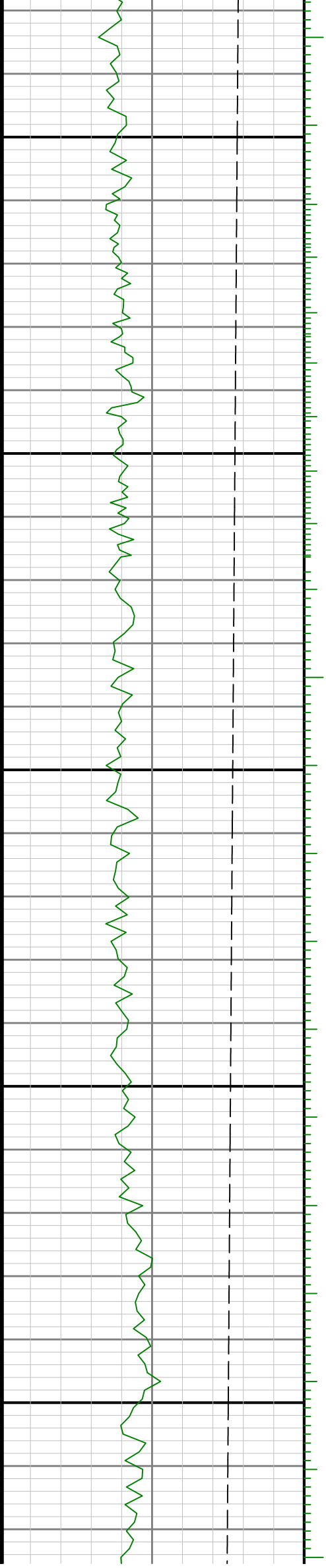
3300

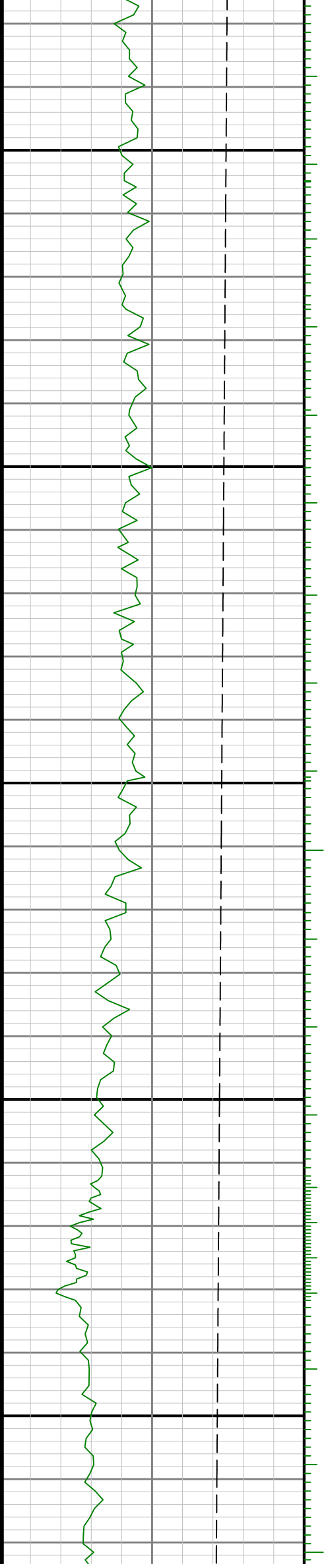
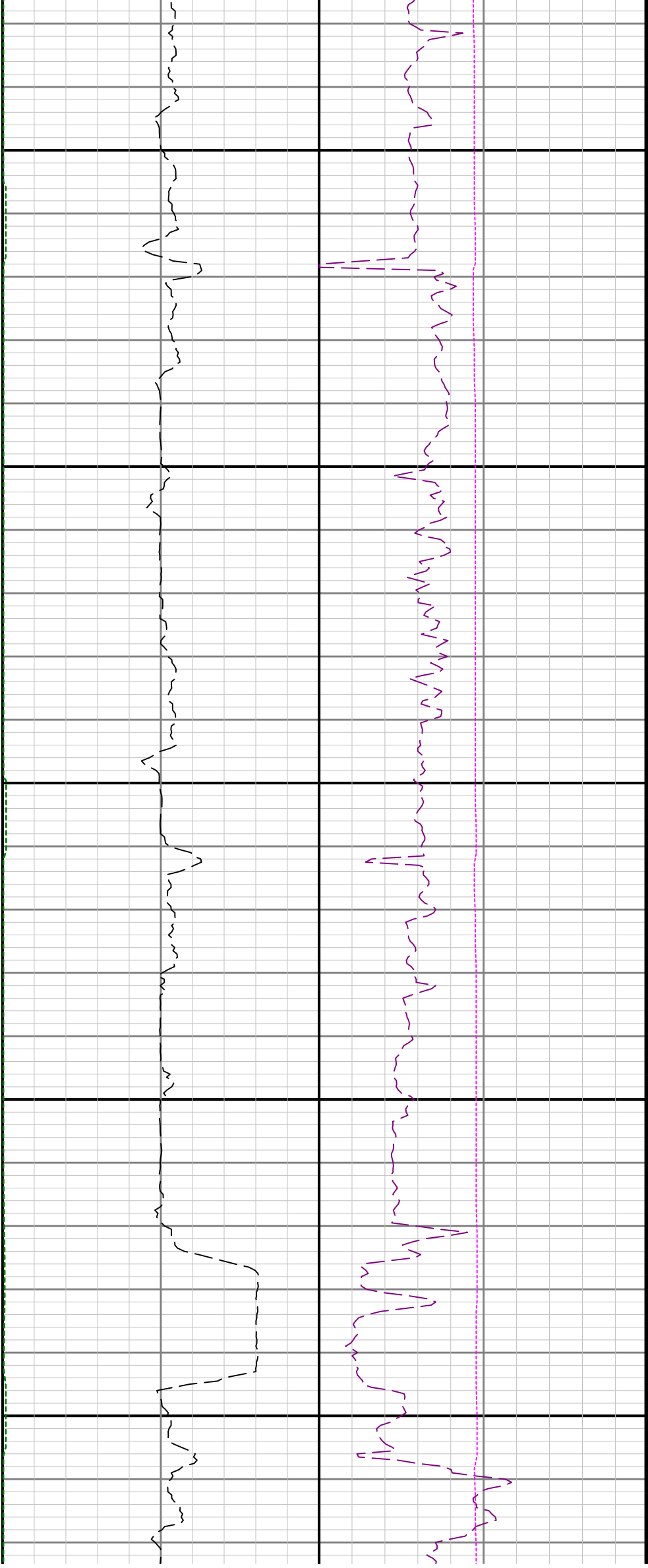


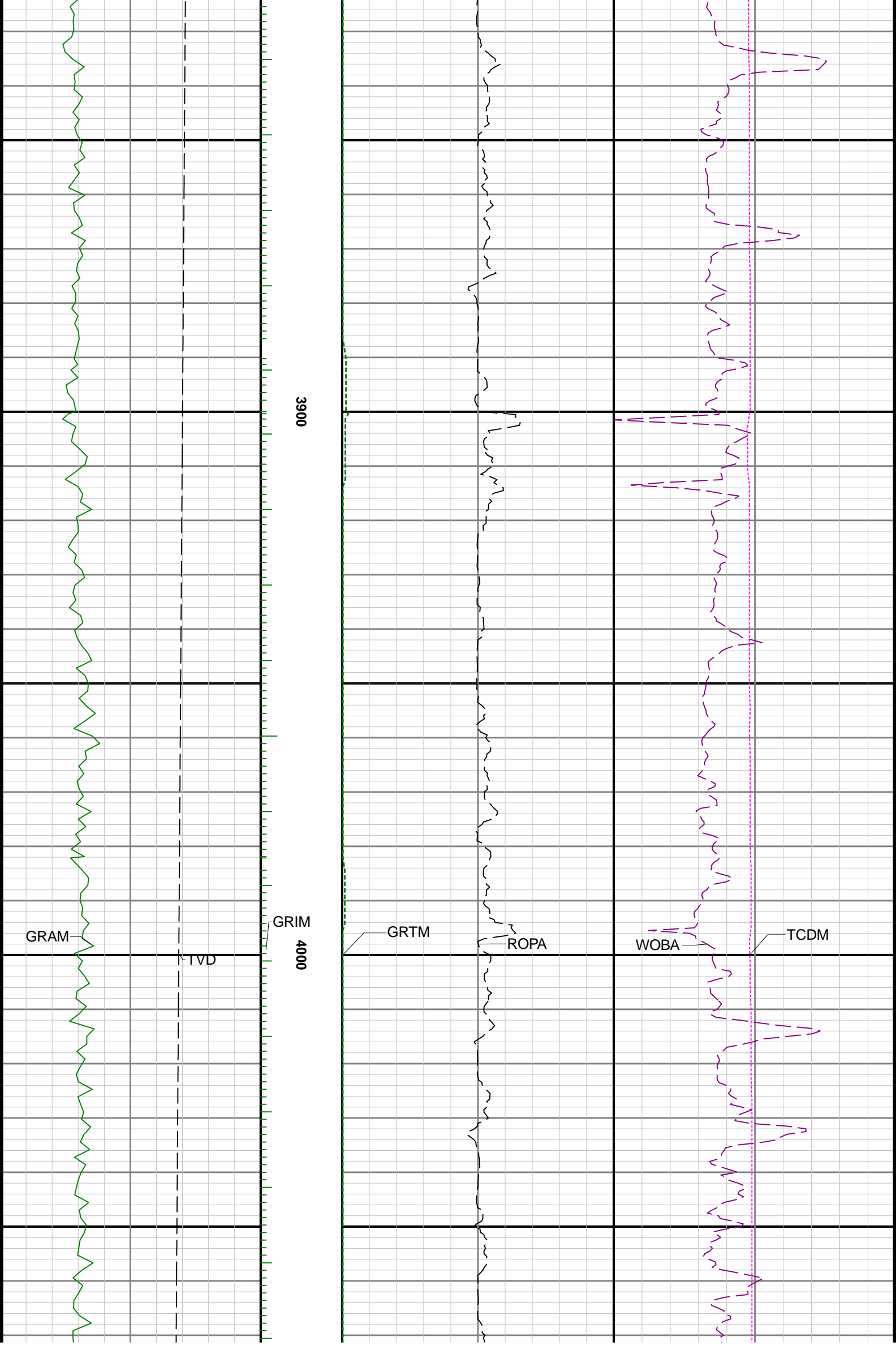


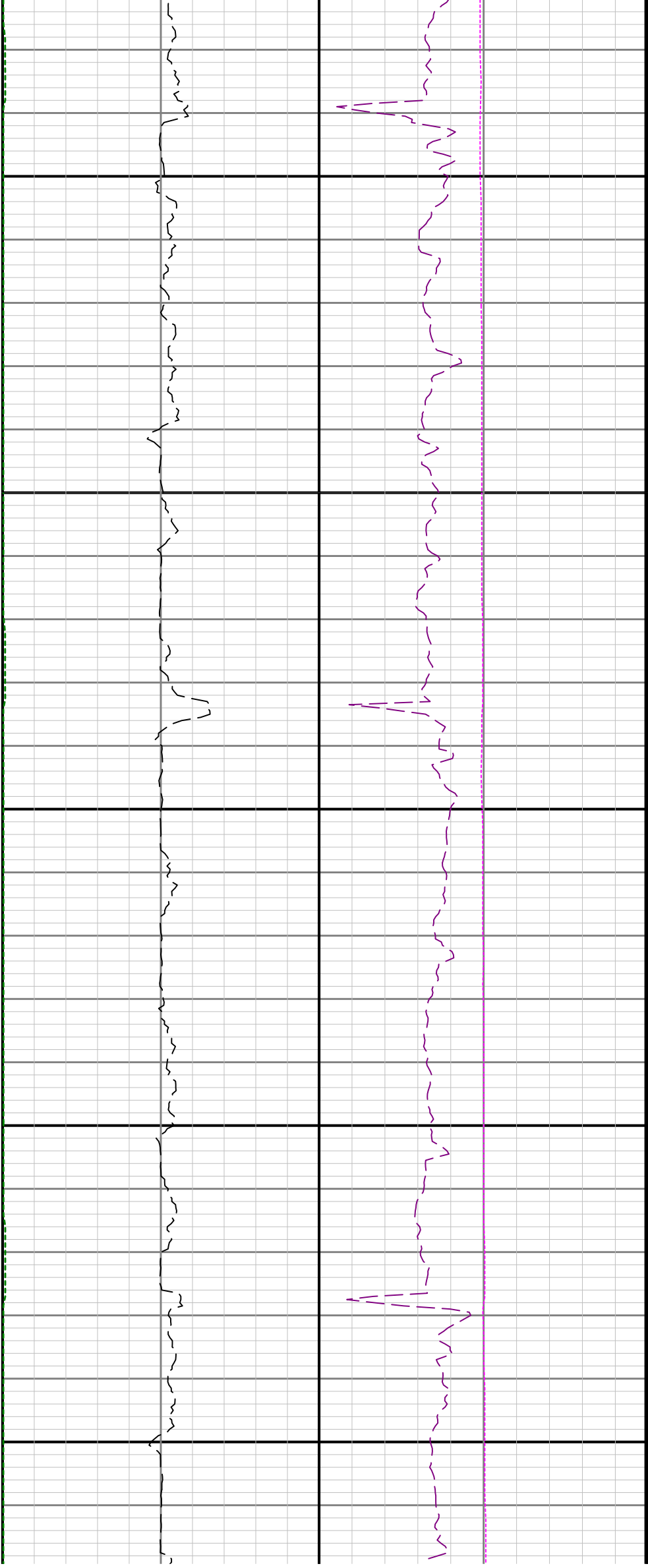
3400

3500





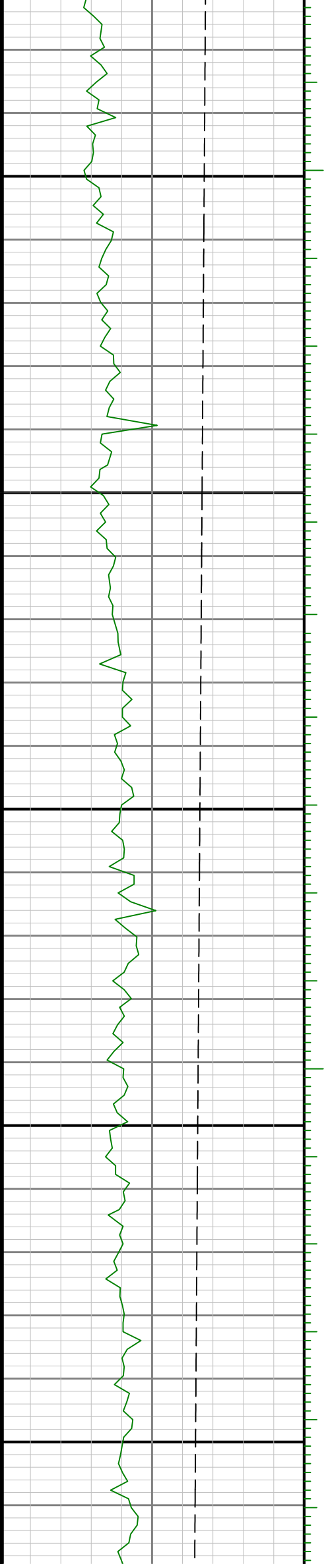


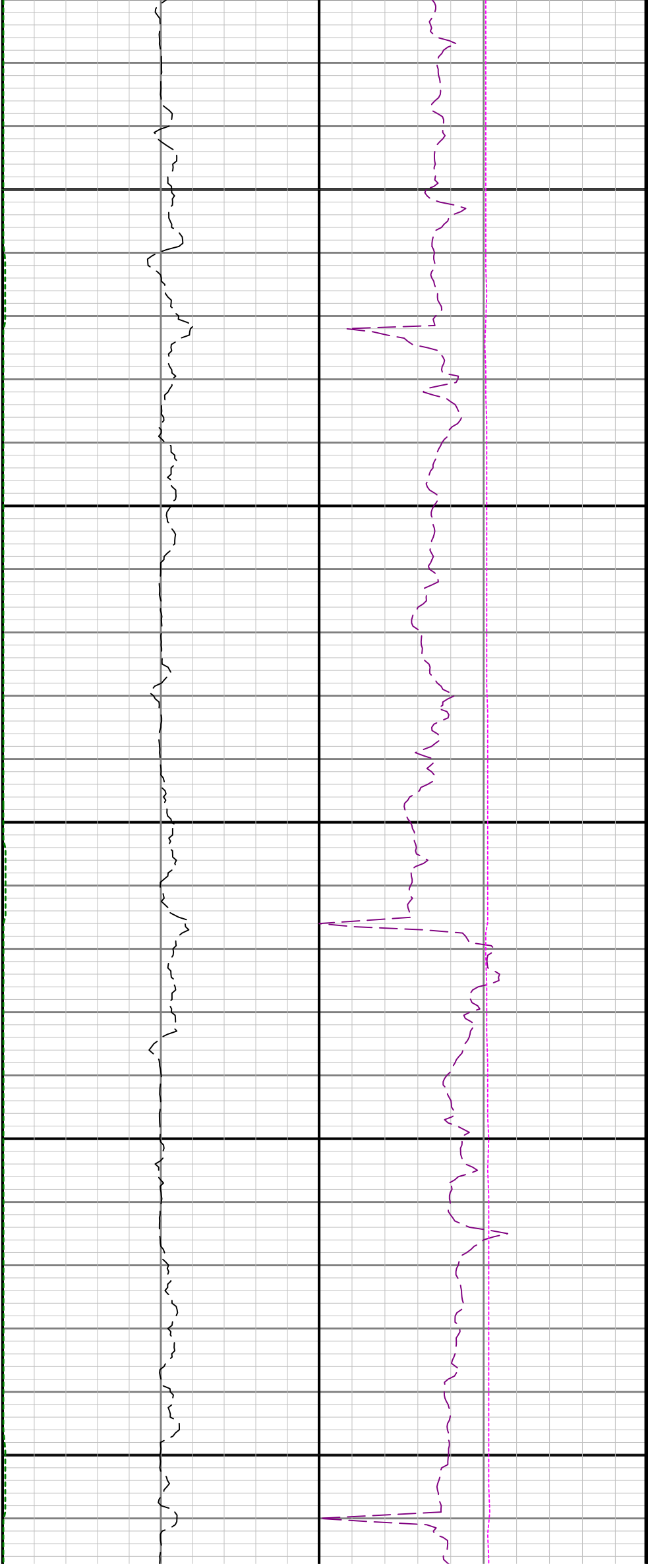


4100

4200

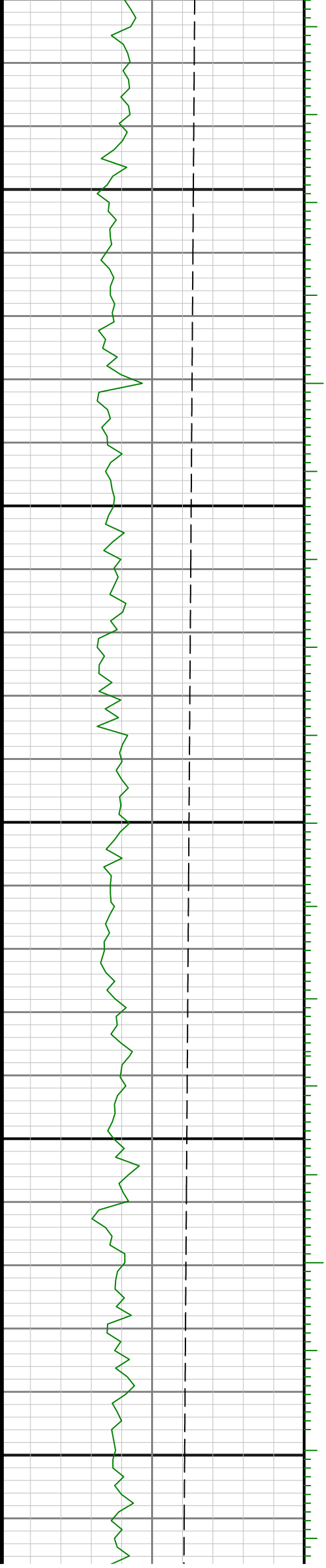
4300

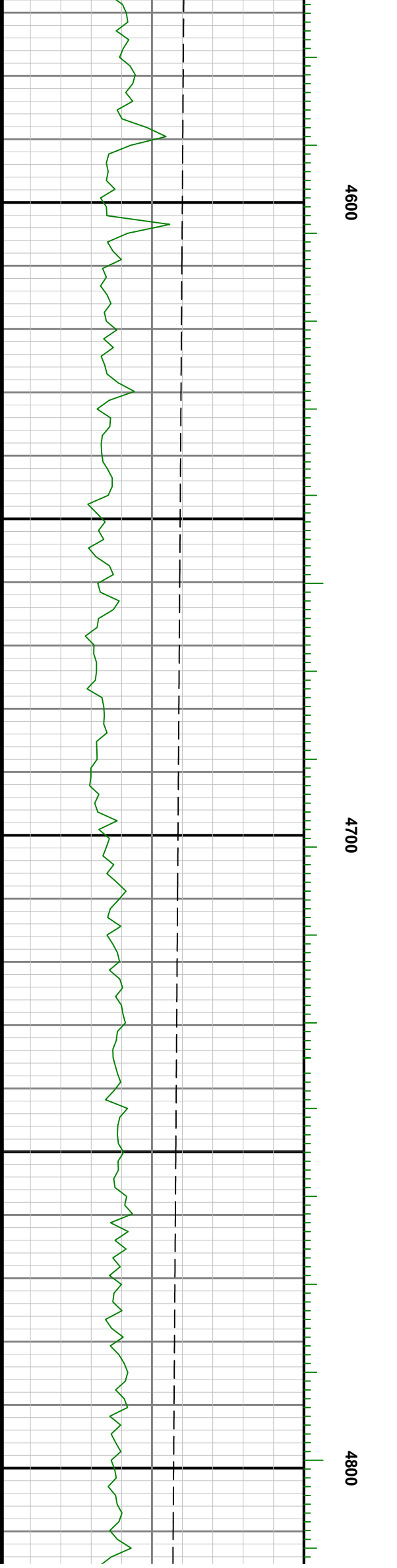


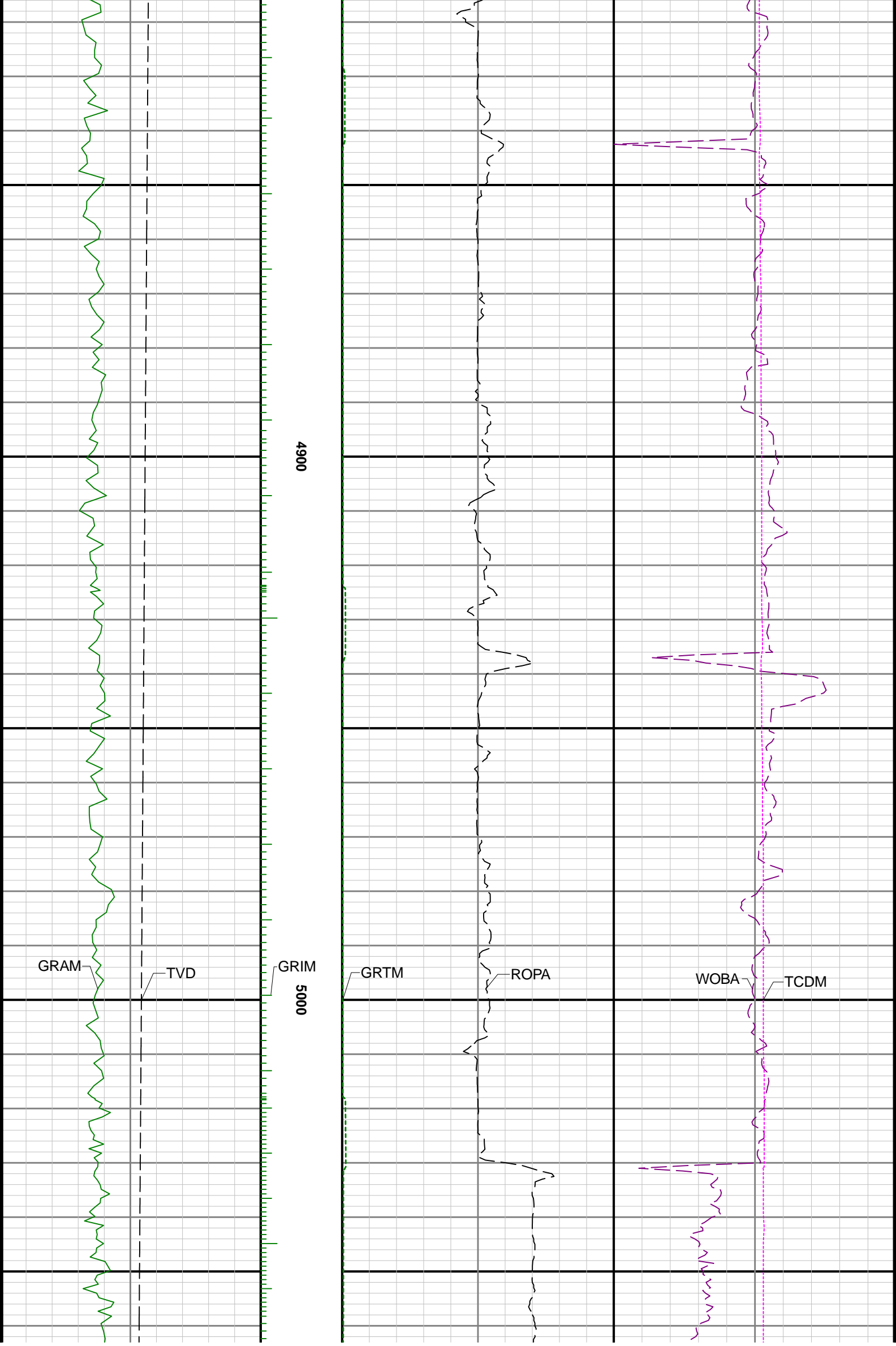


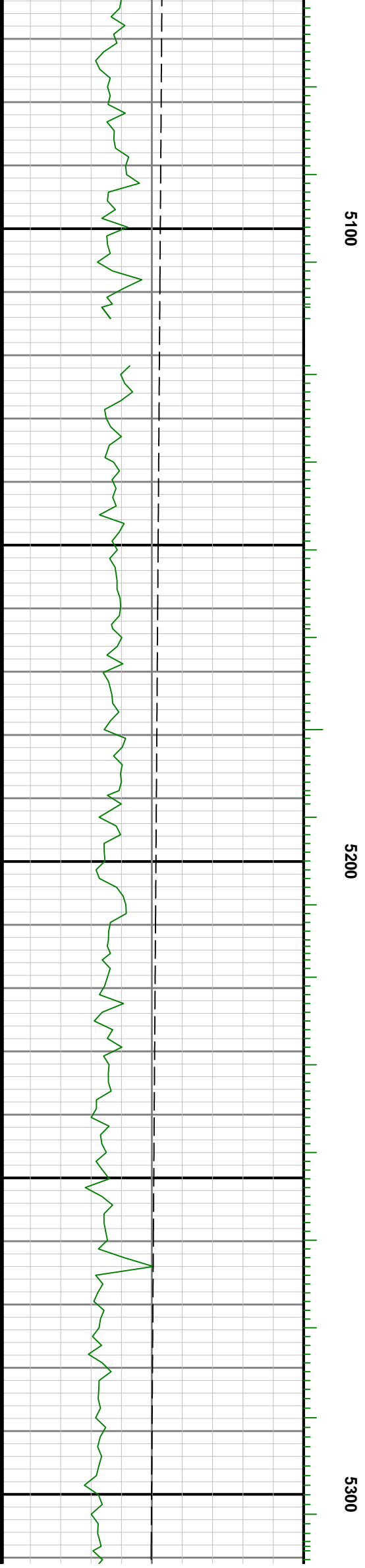
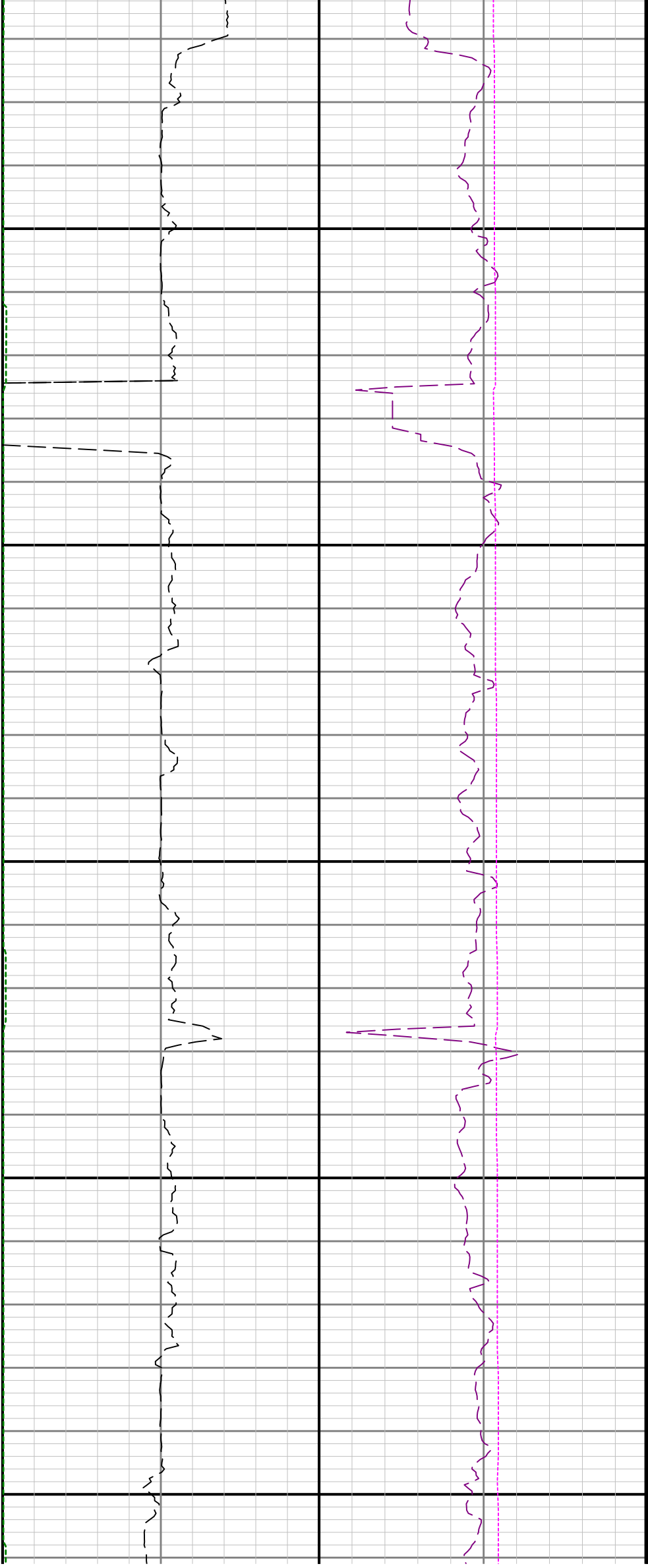
4400

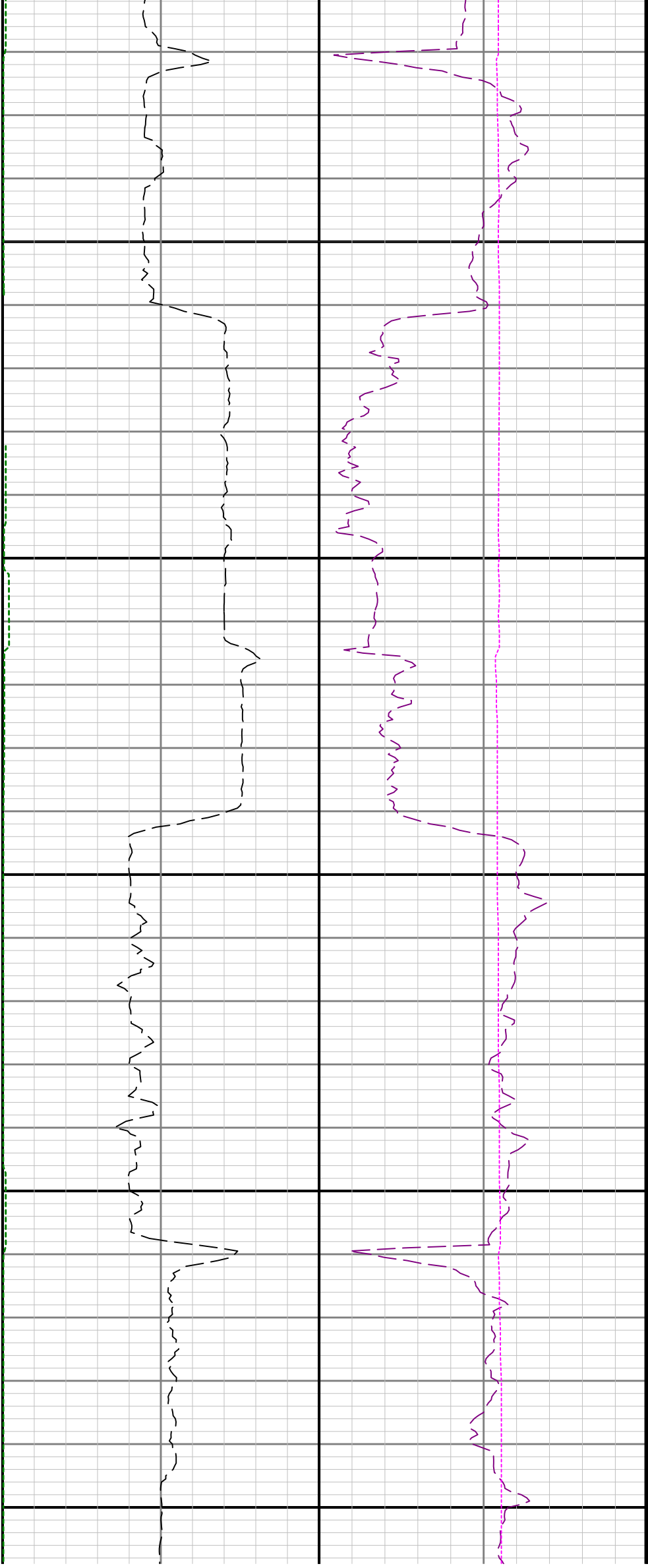
4500





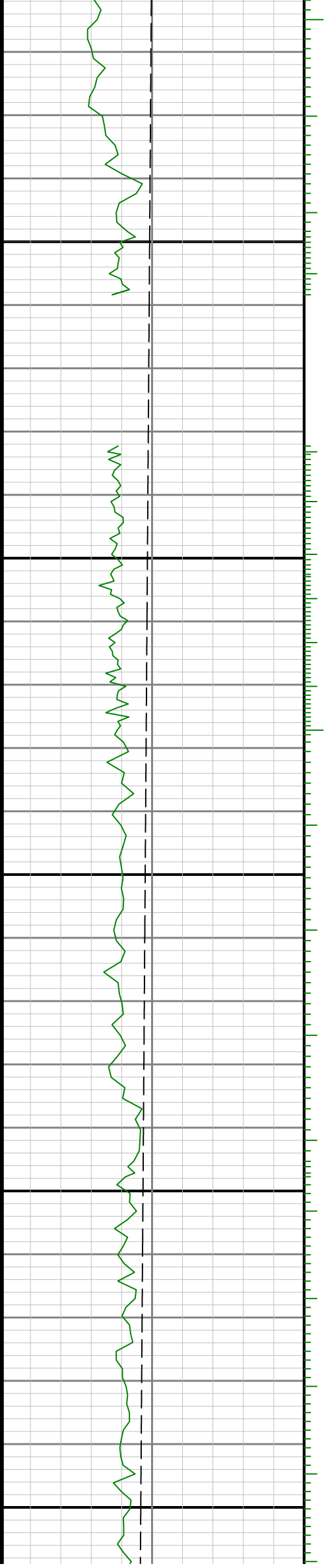


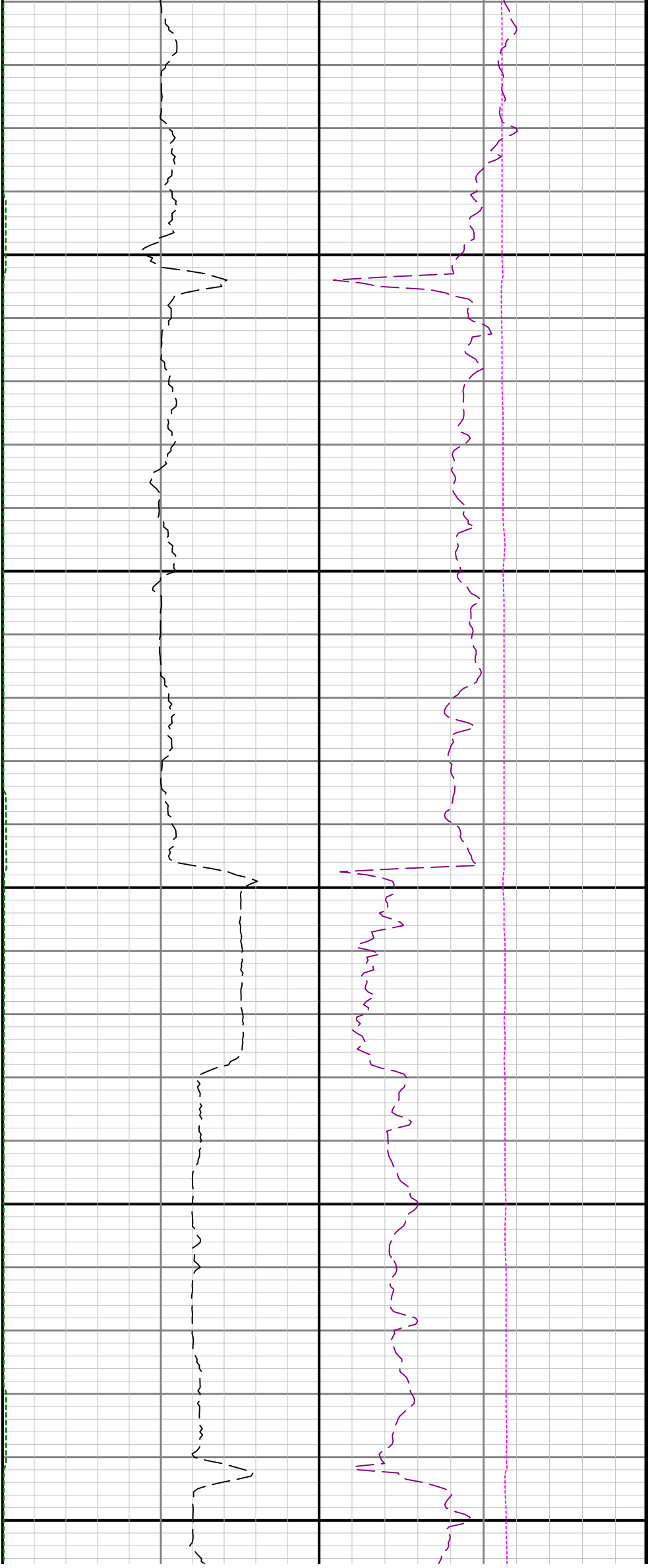




5400

5500

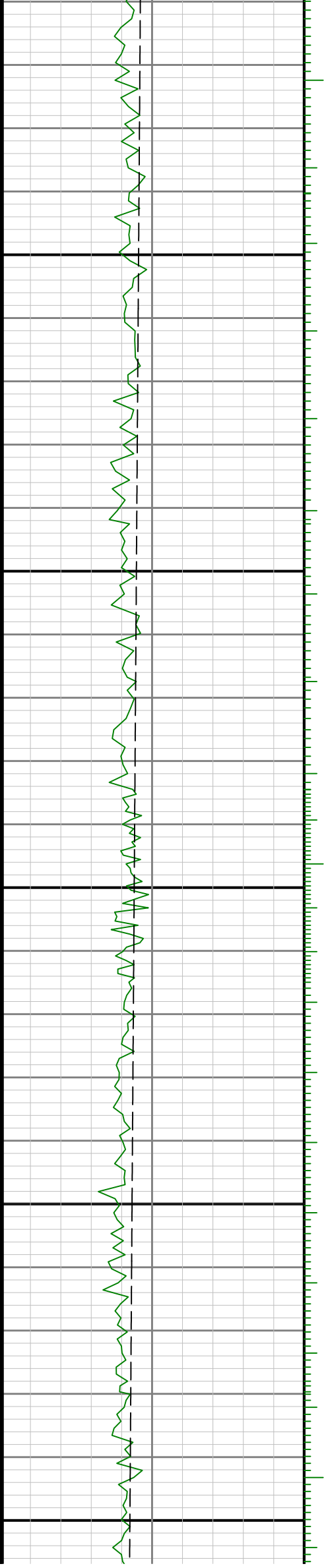


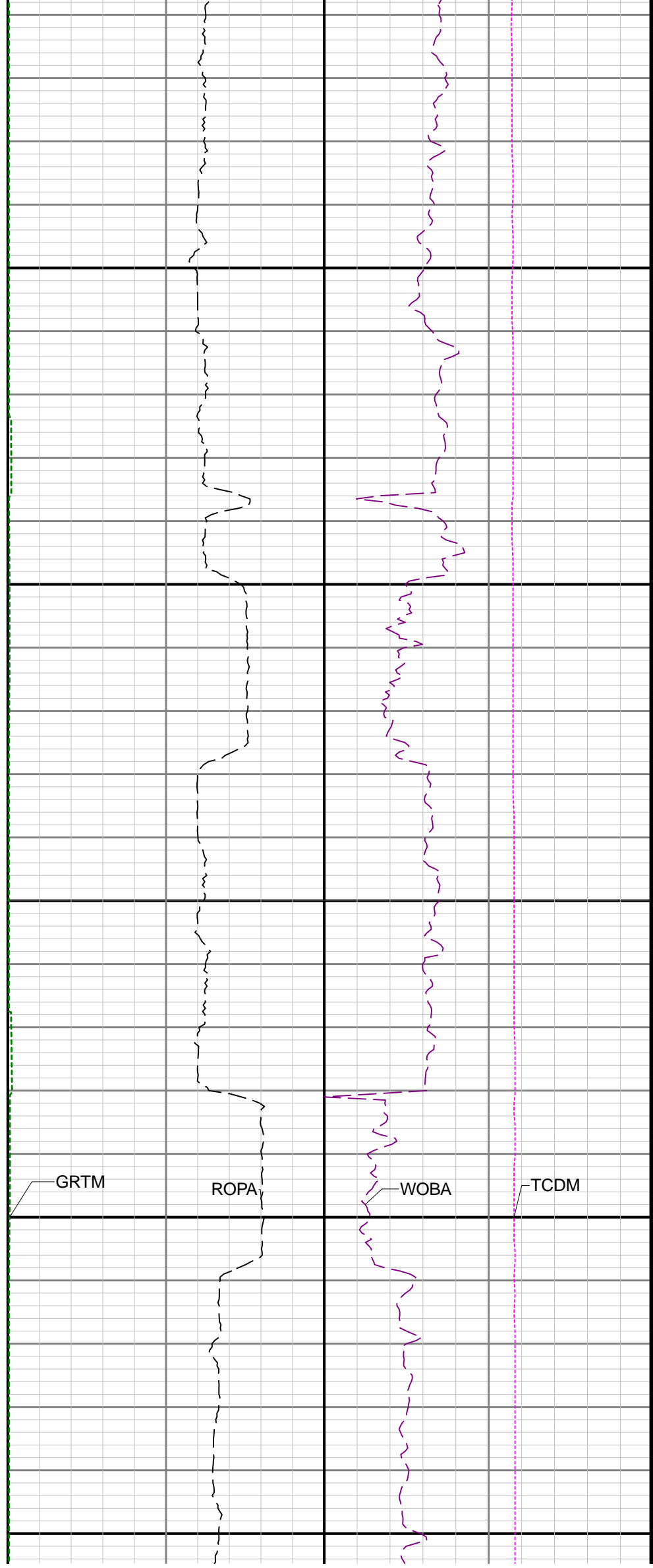
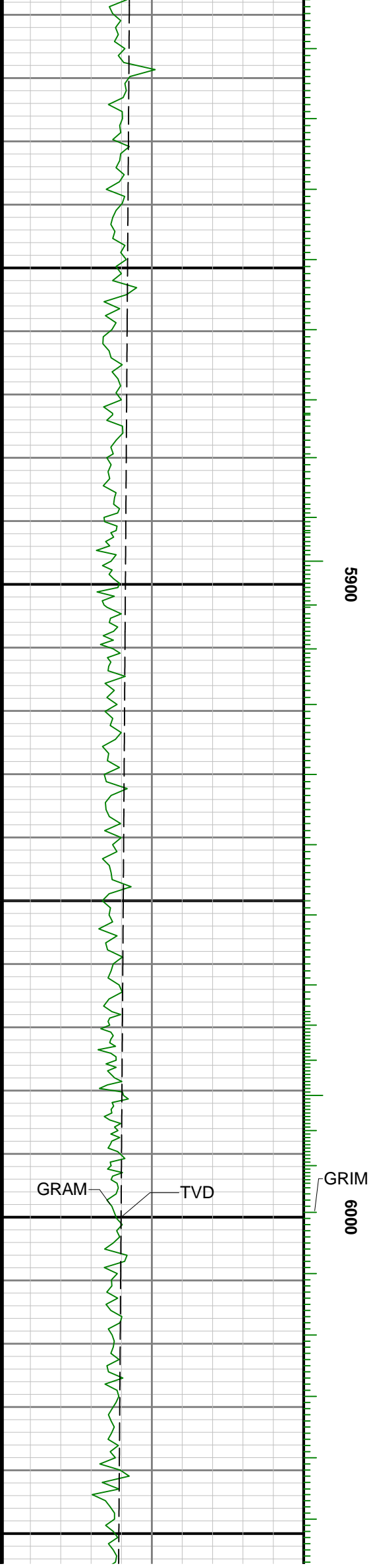


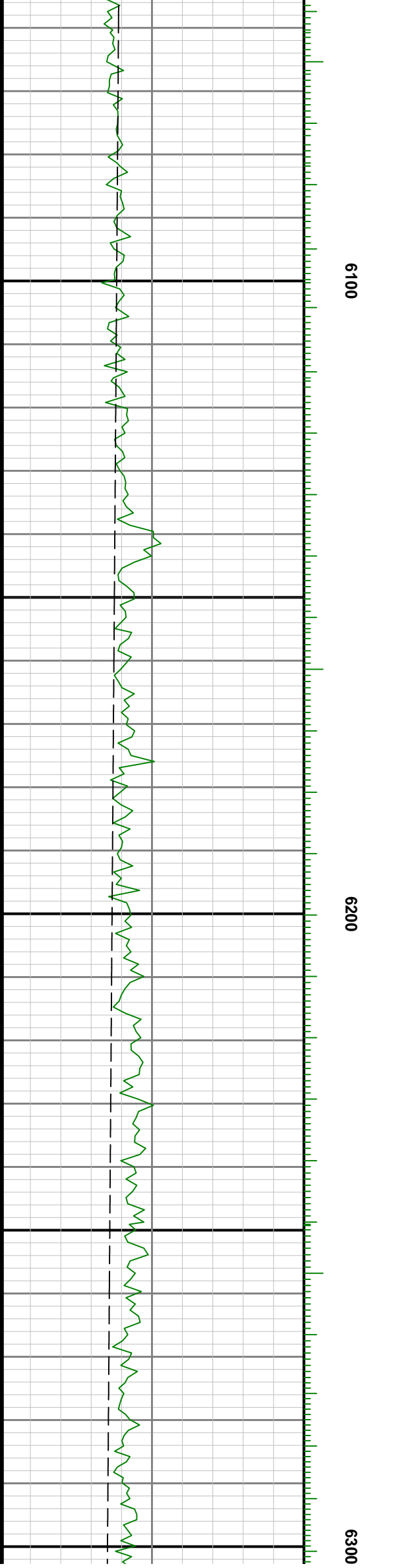
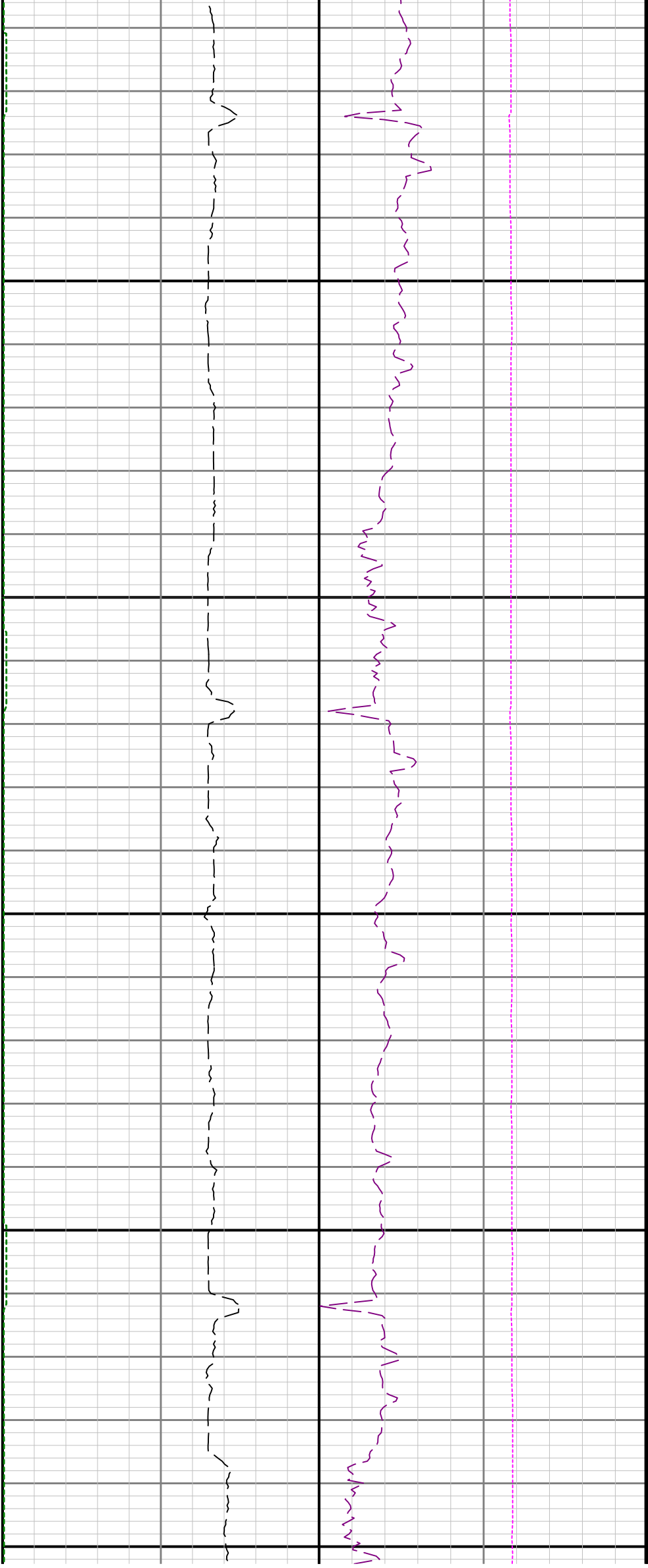
5600

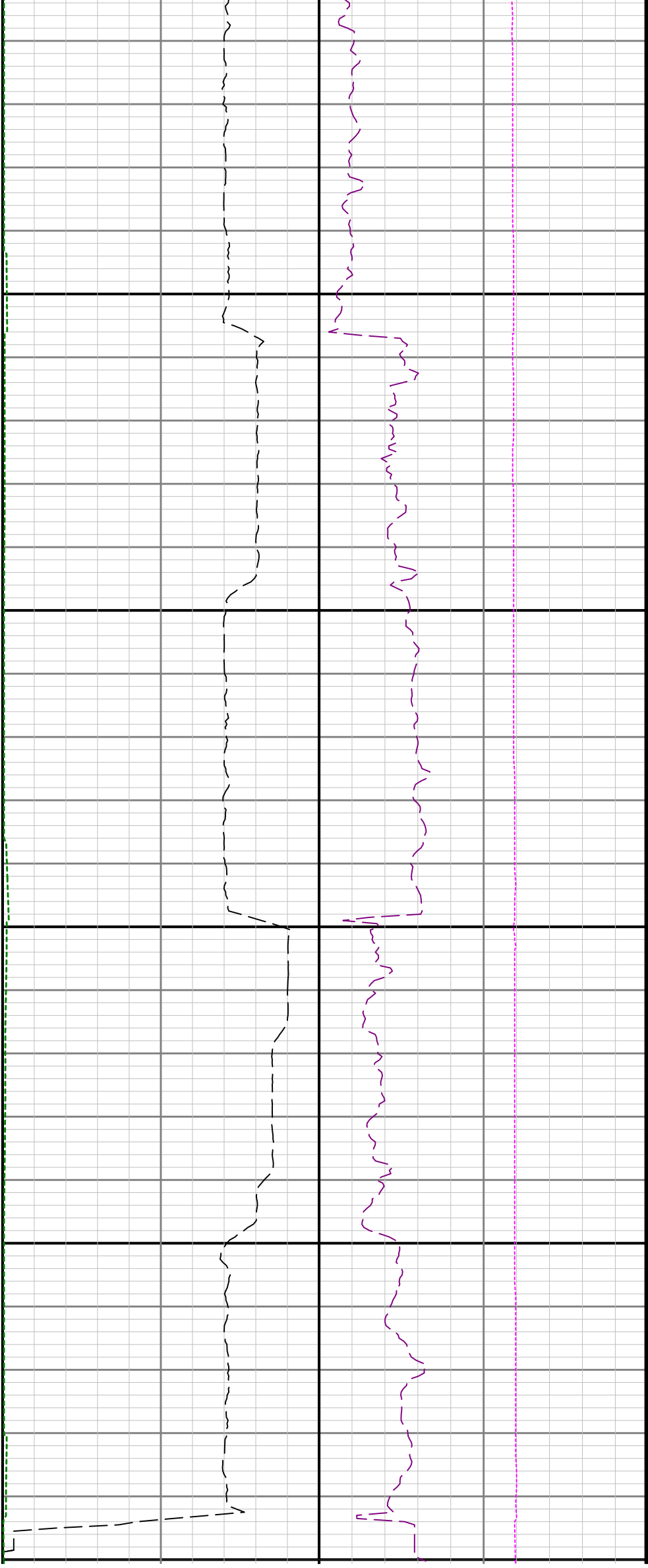
5700

5800



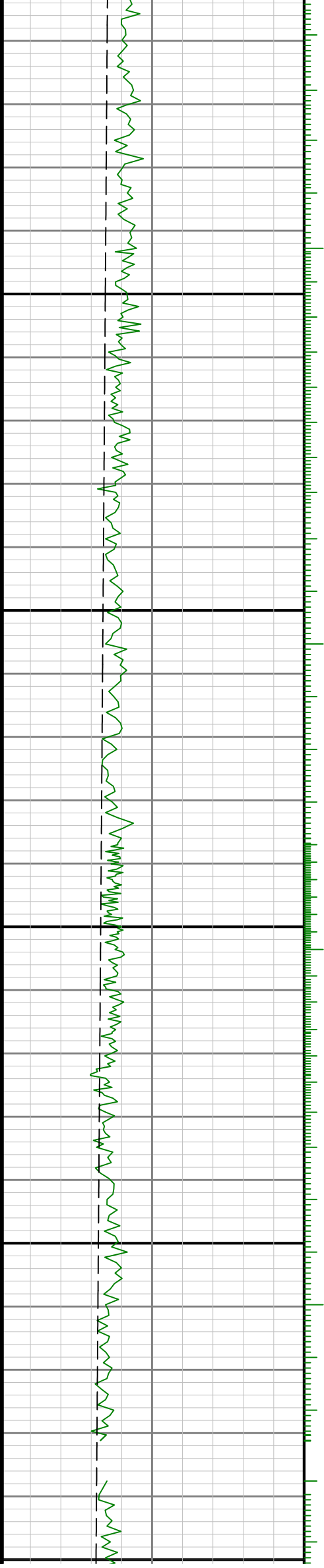


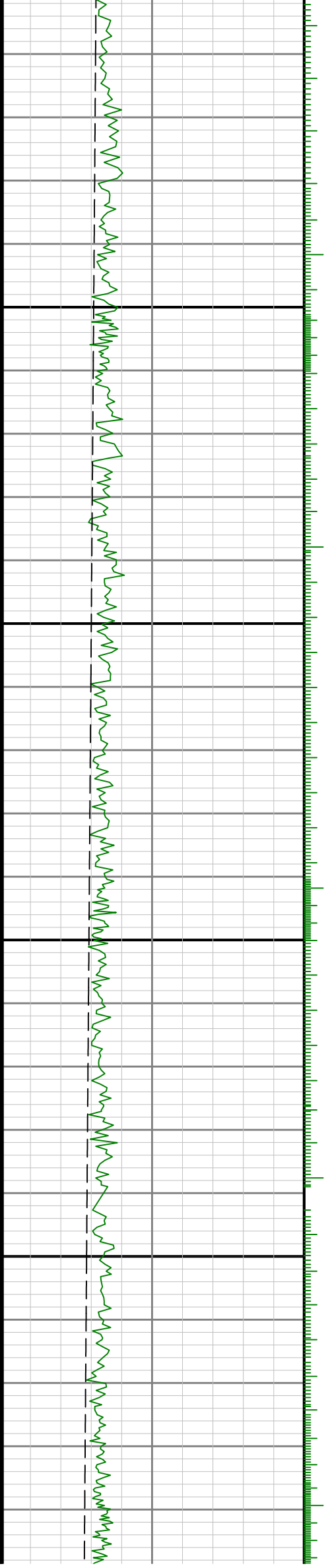




6400

6500

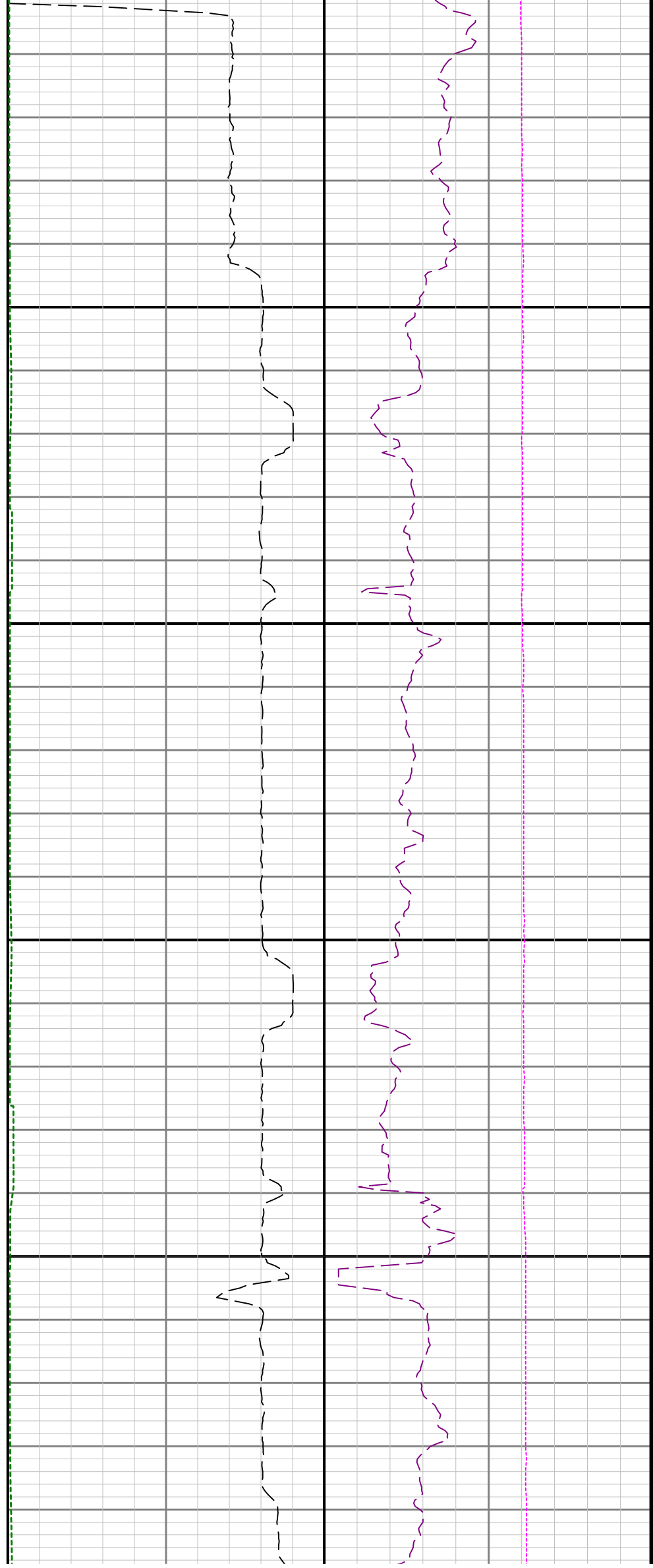


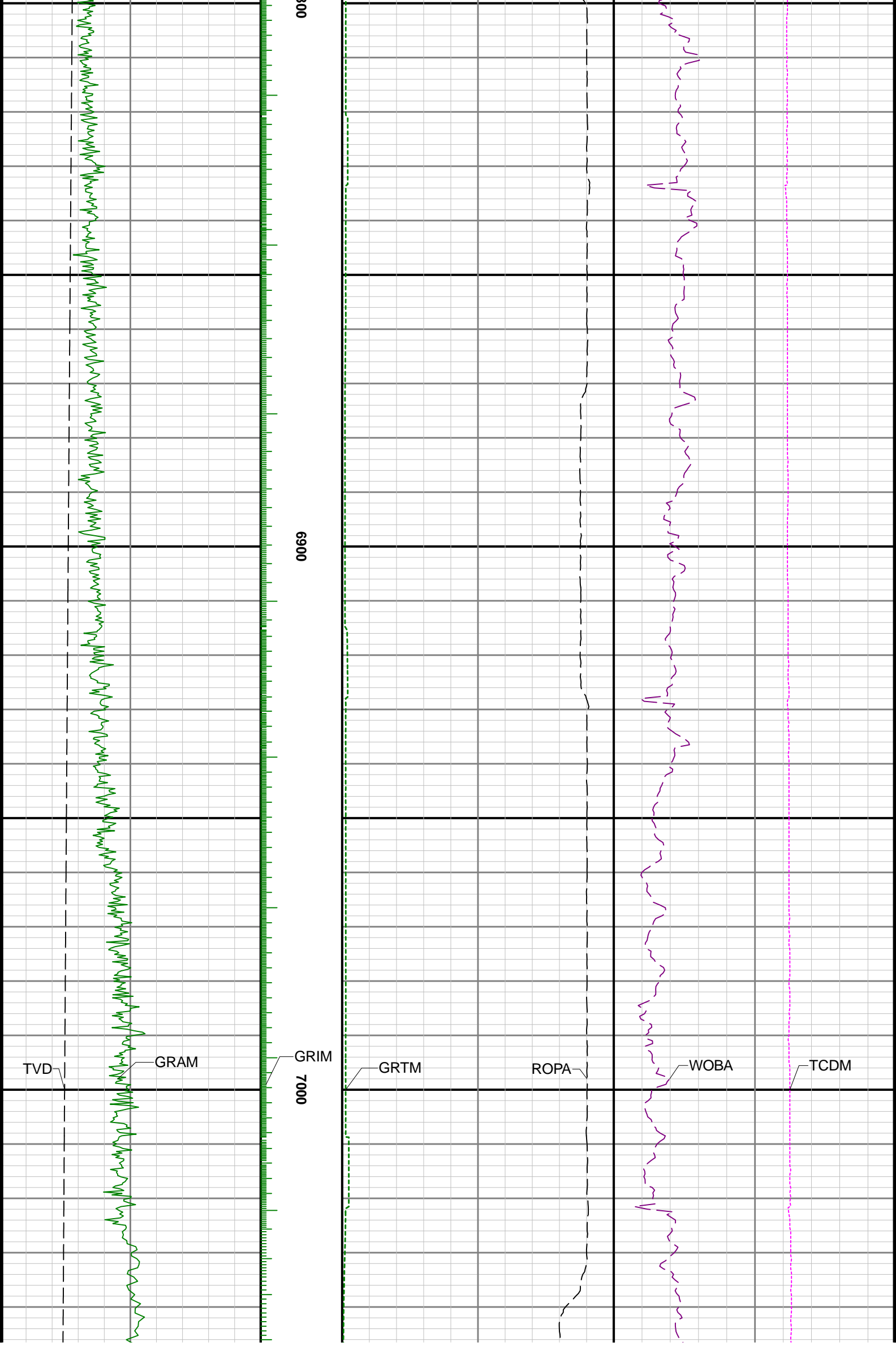


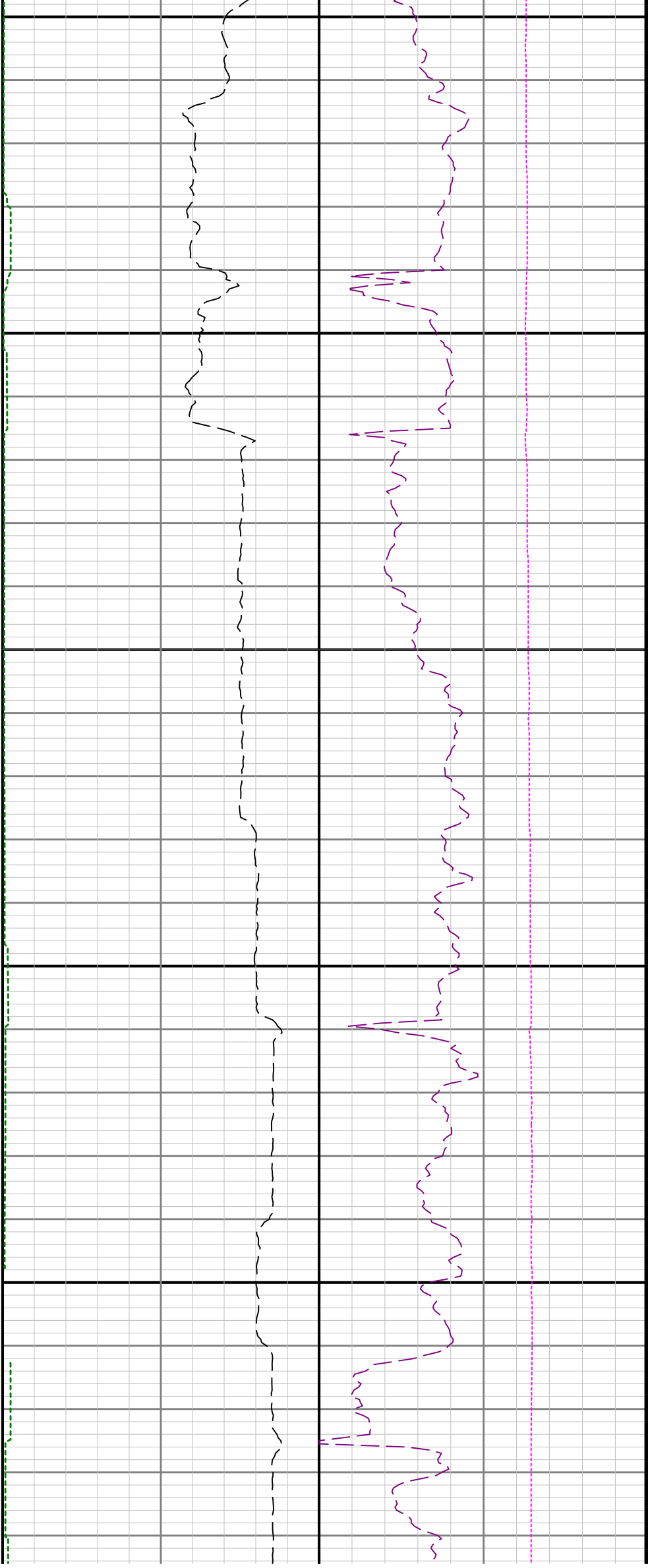
6

6700

0099

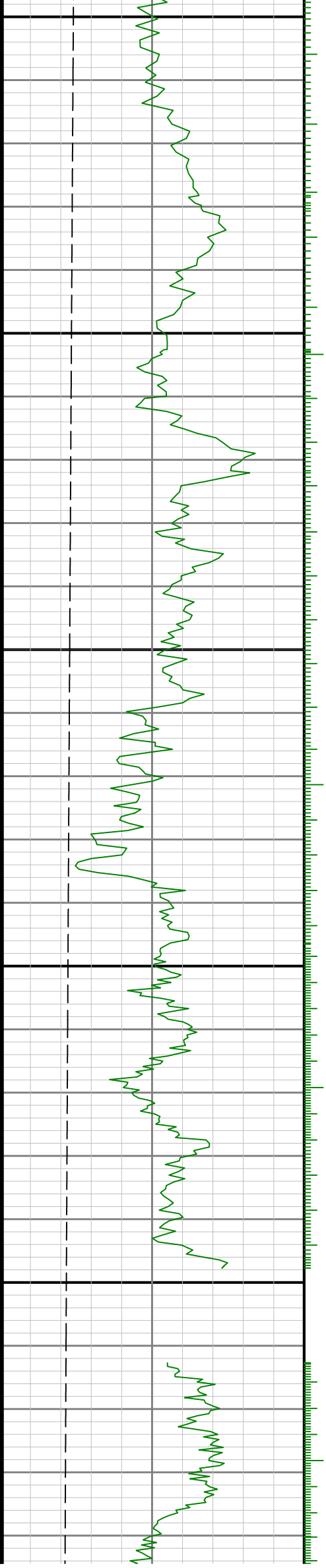


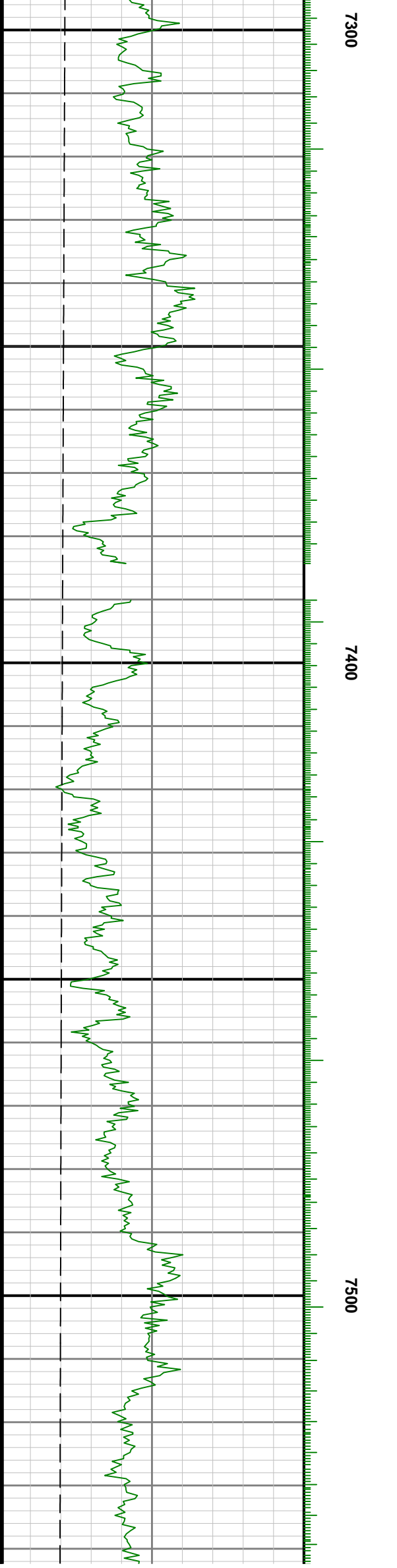
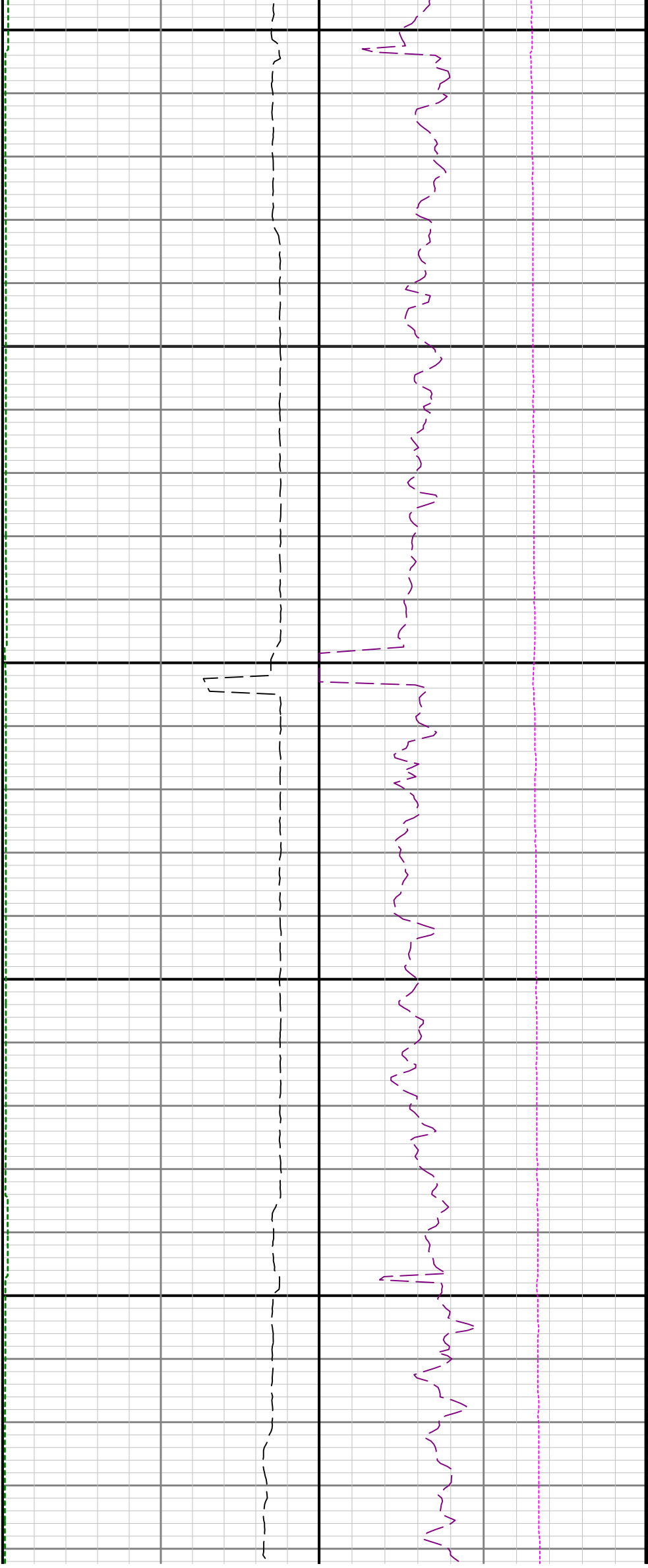


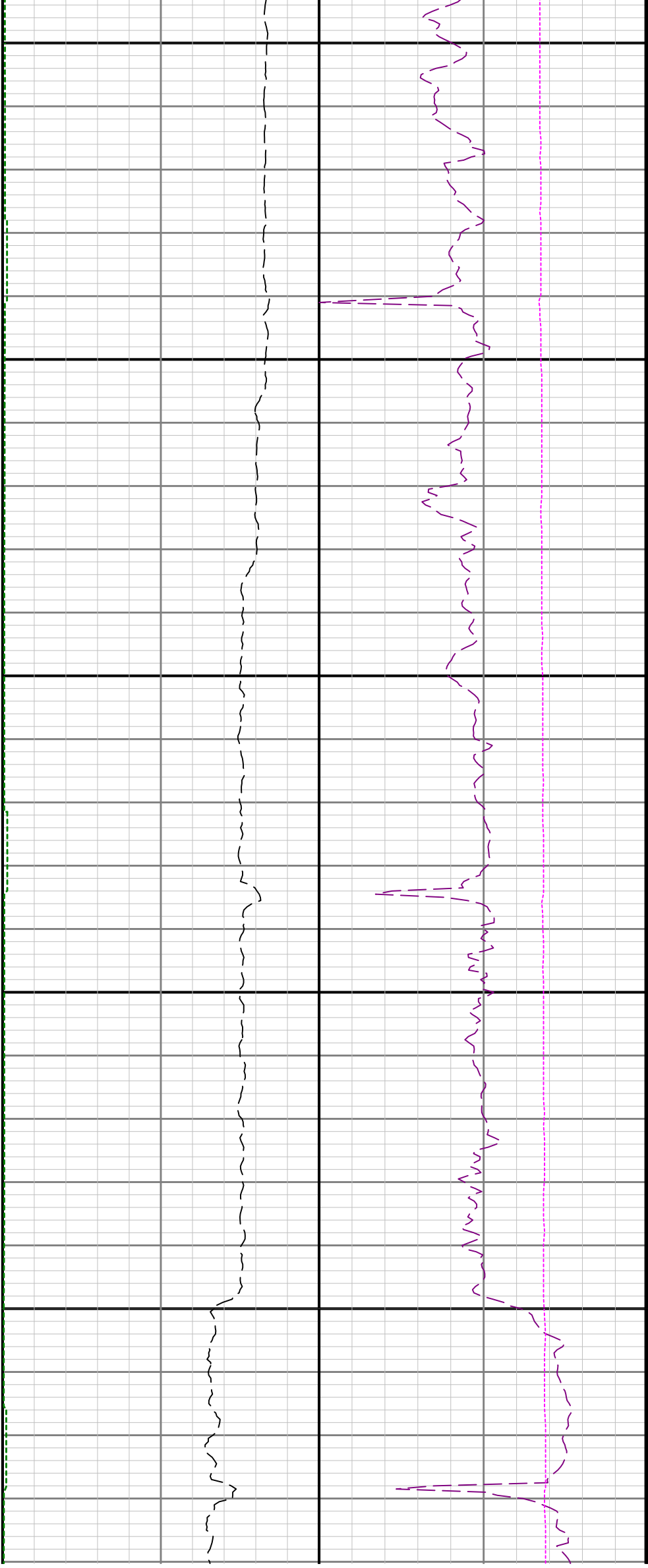


7100

7200

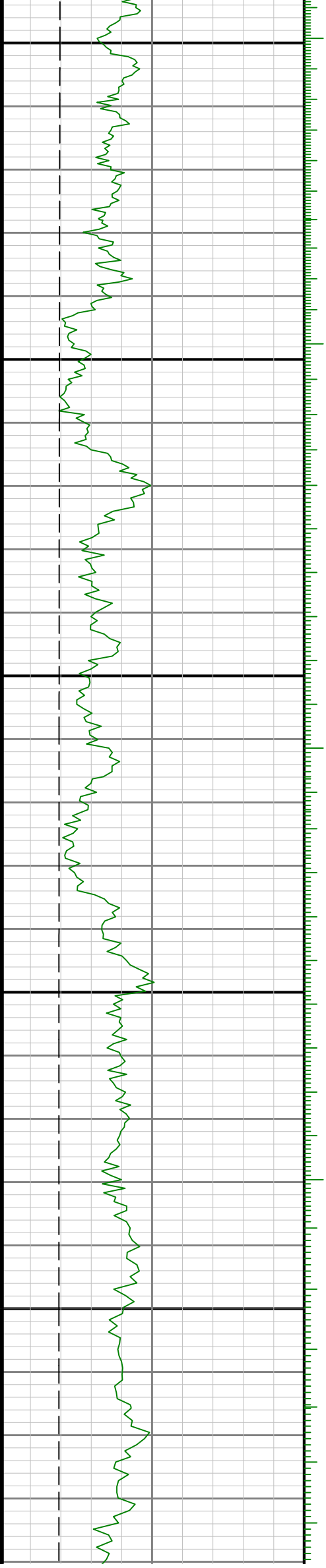


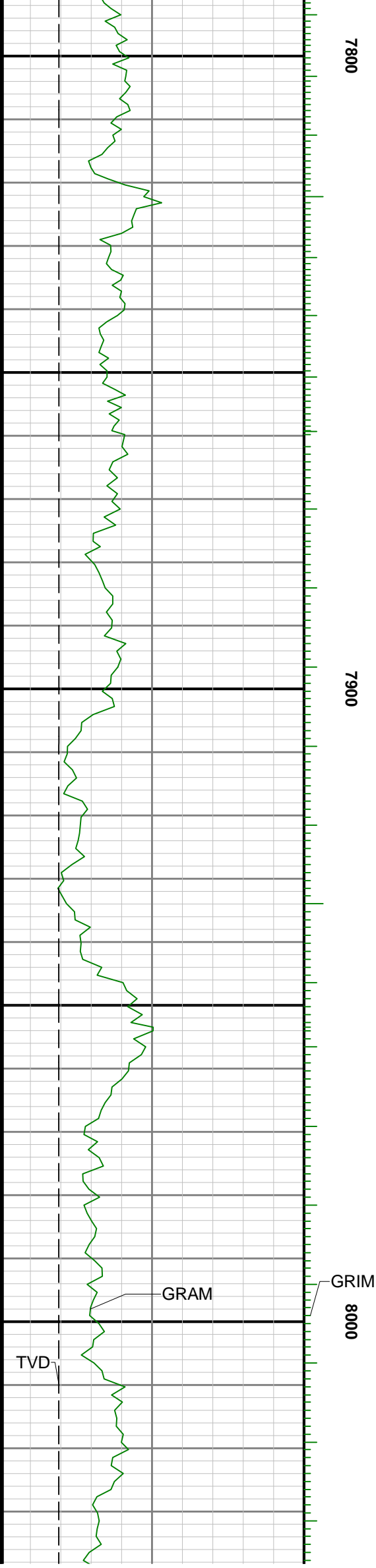


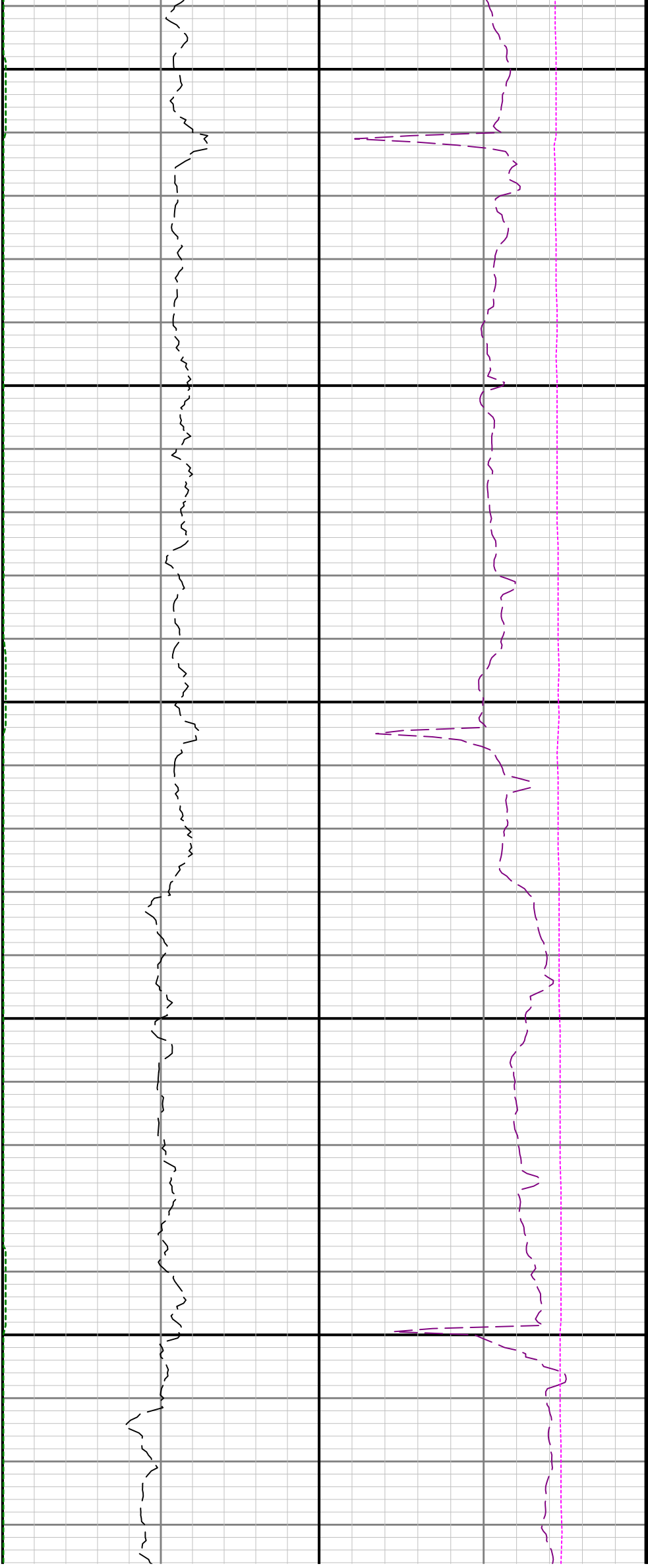


7600

7700

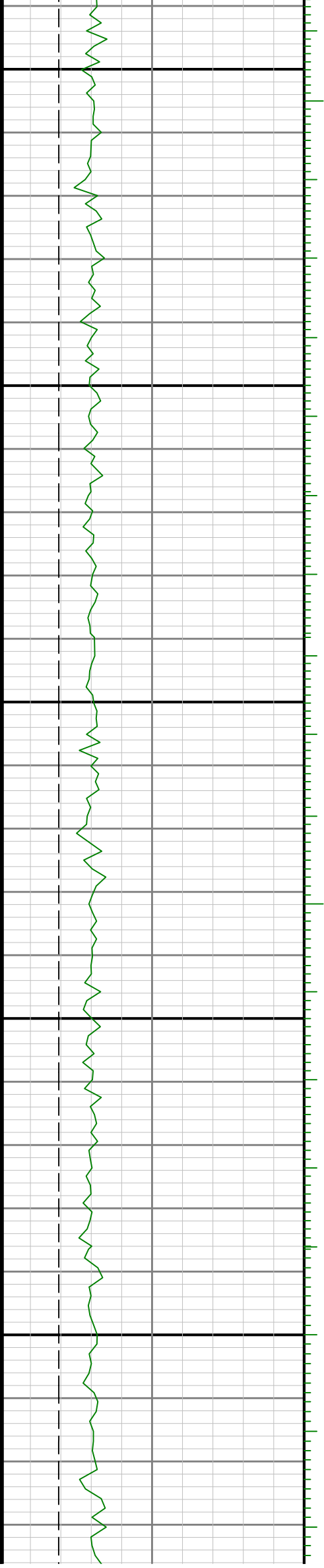


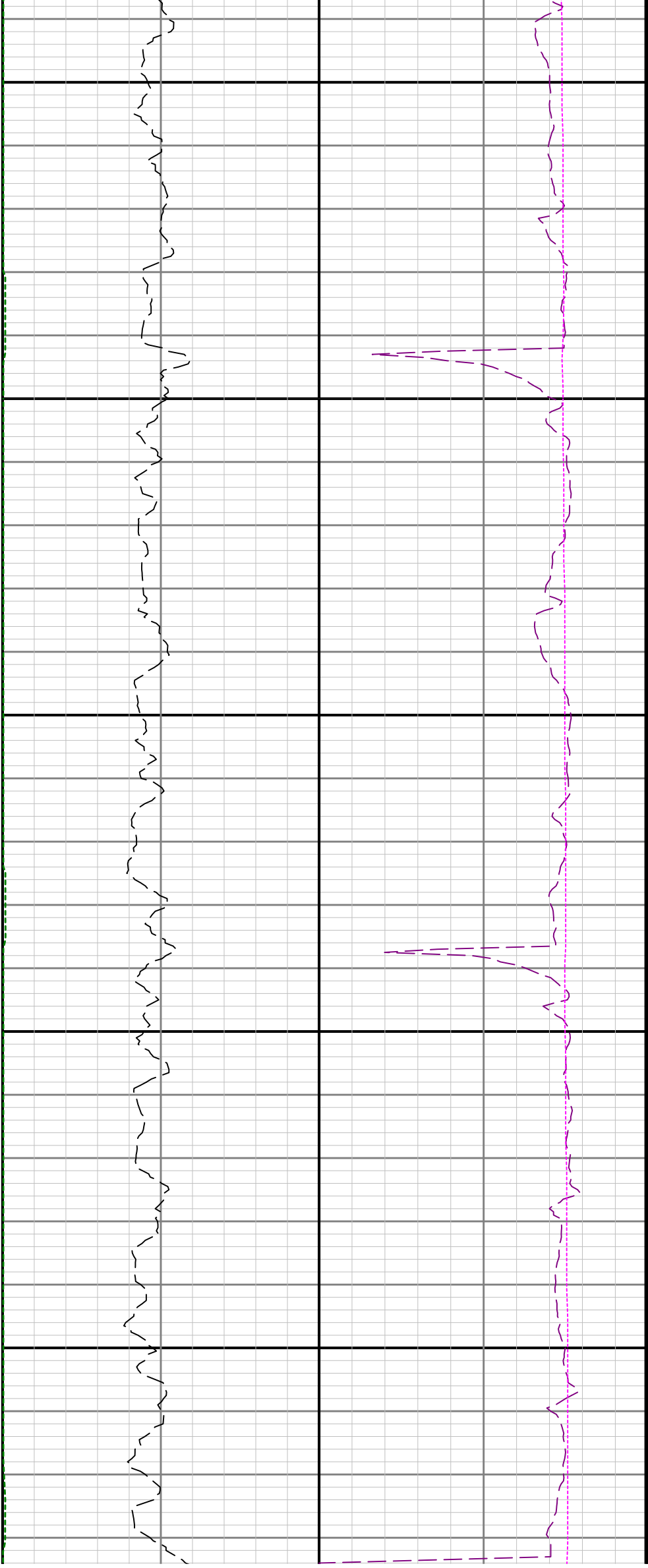




8100

8200

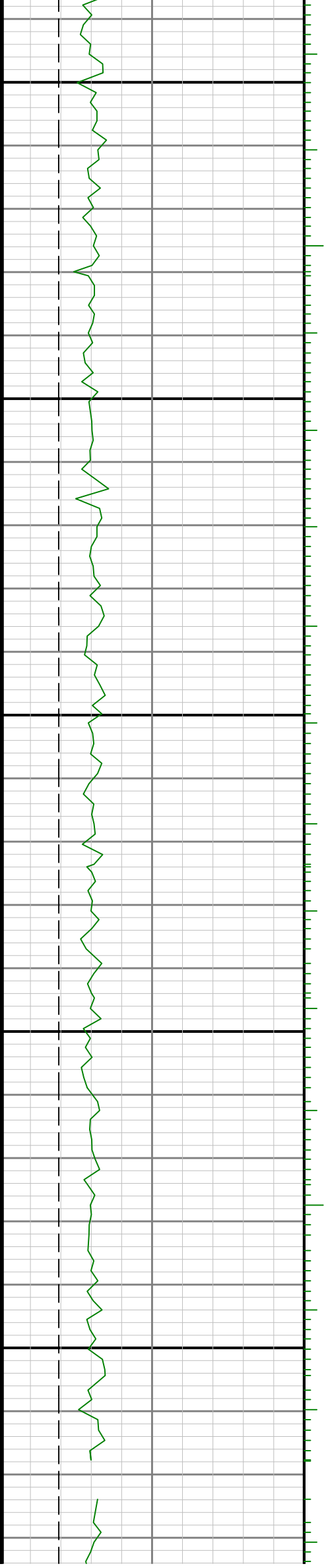


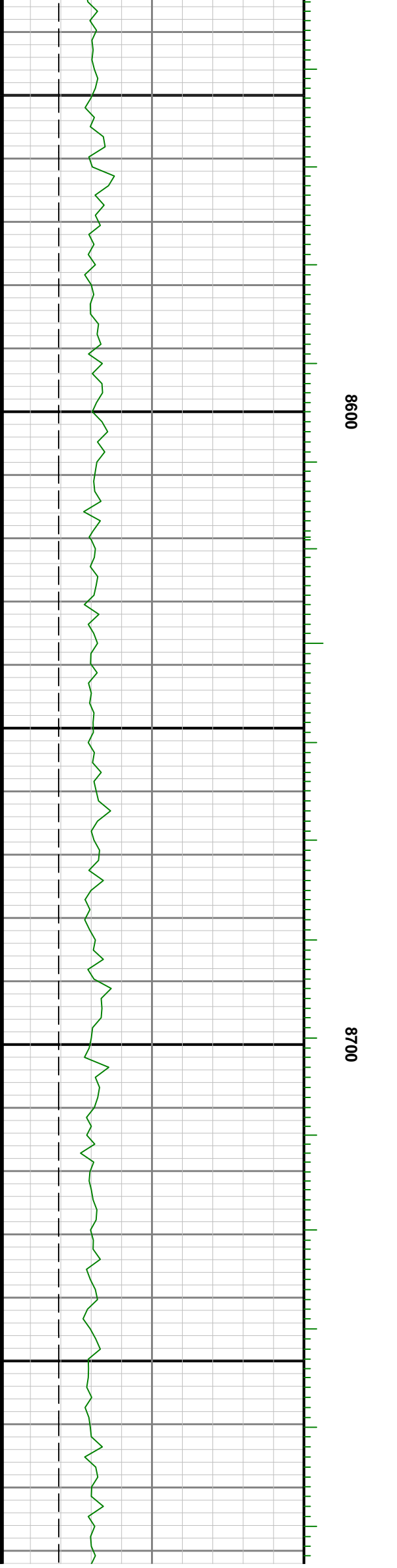
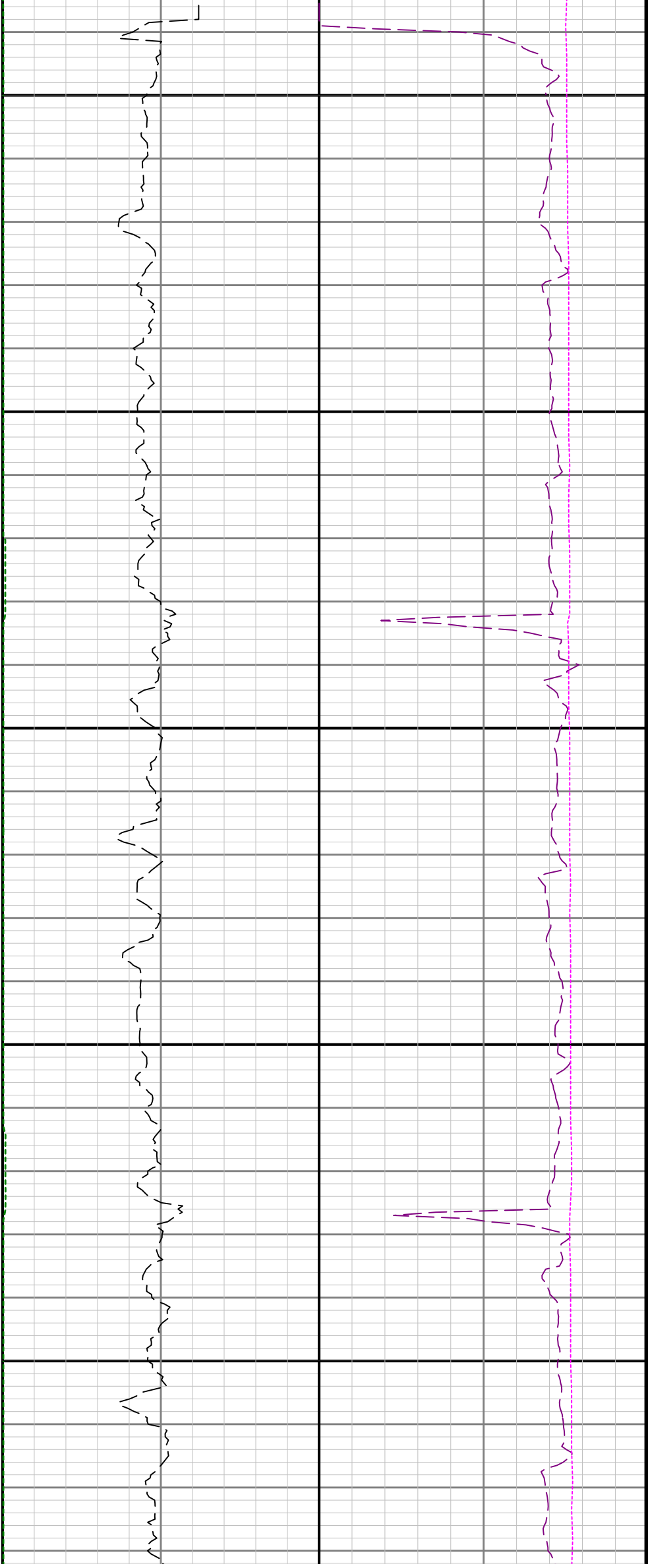


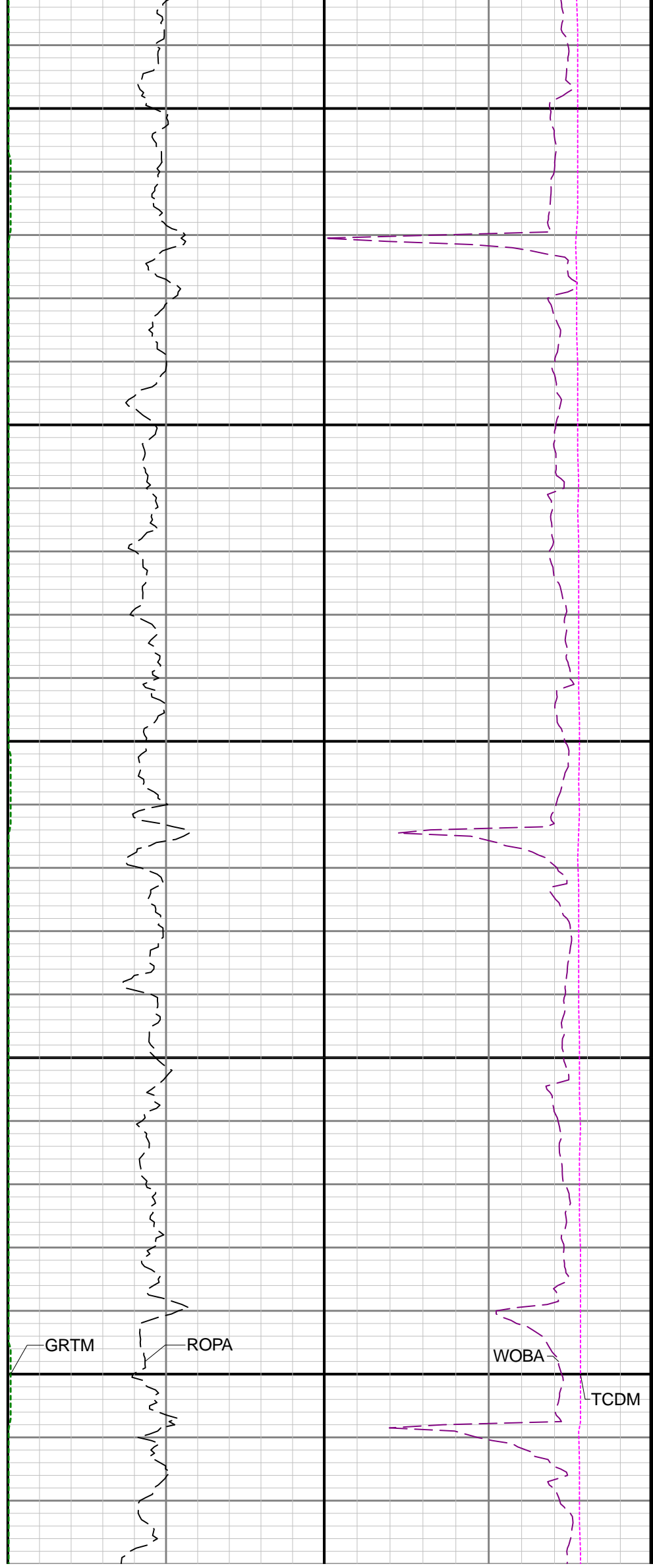
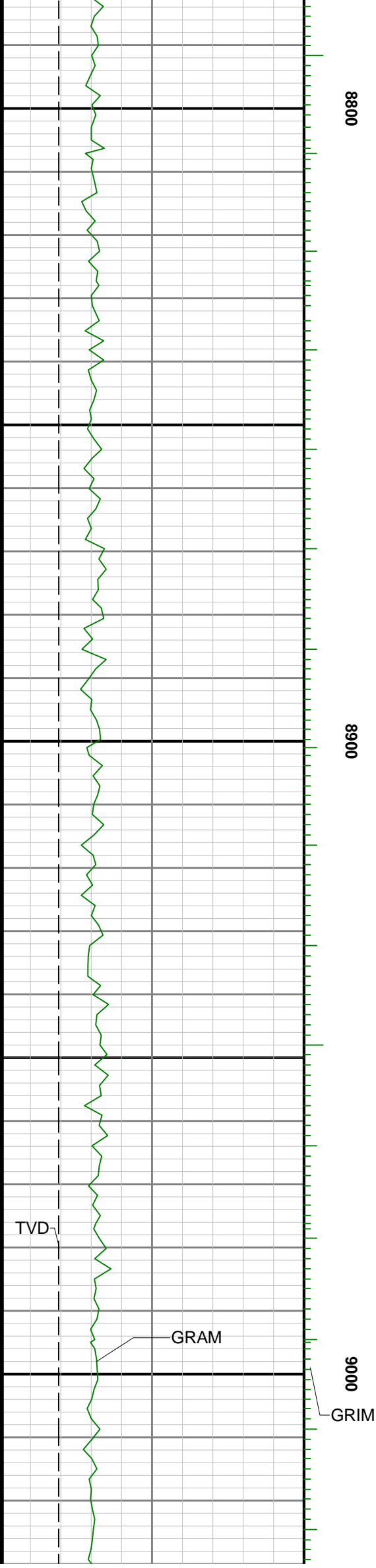
8300

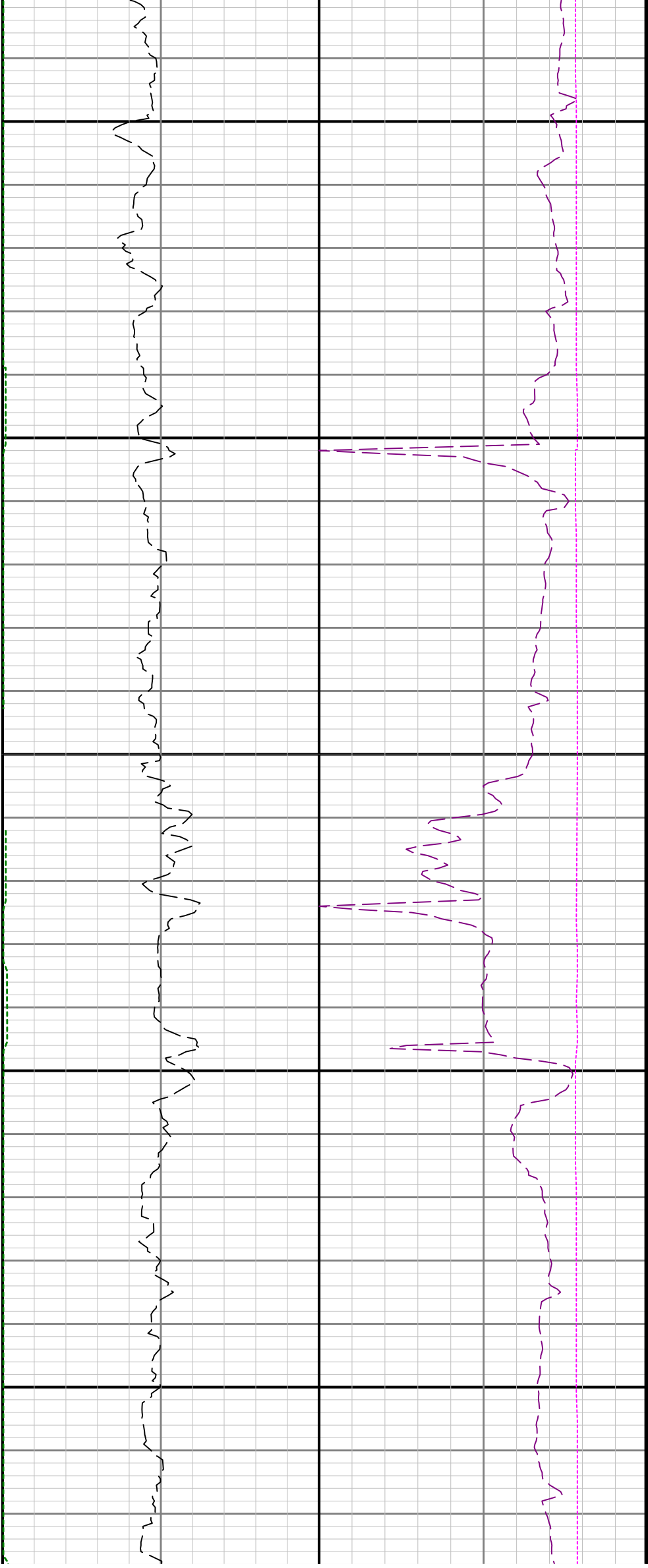
8400

8500



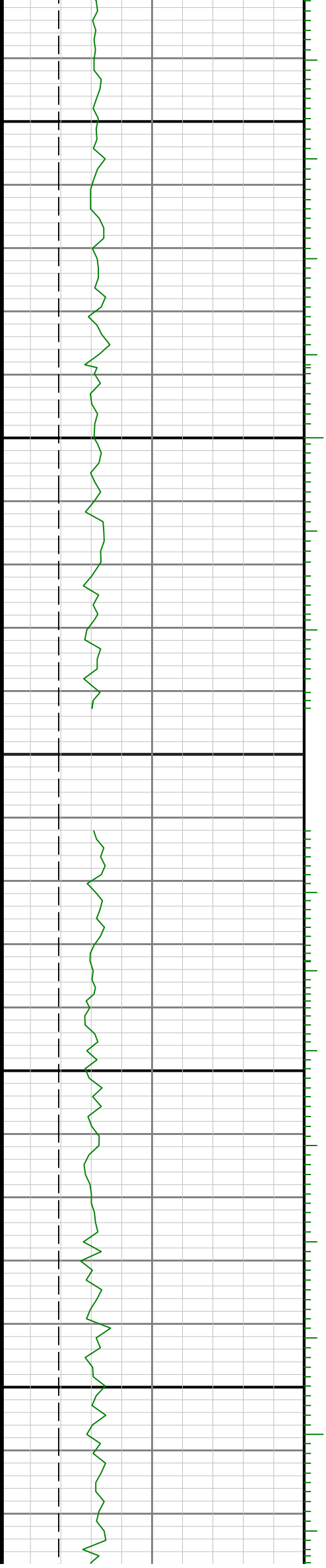


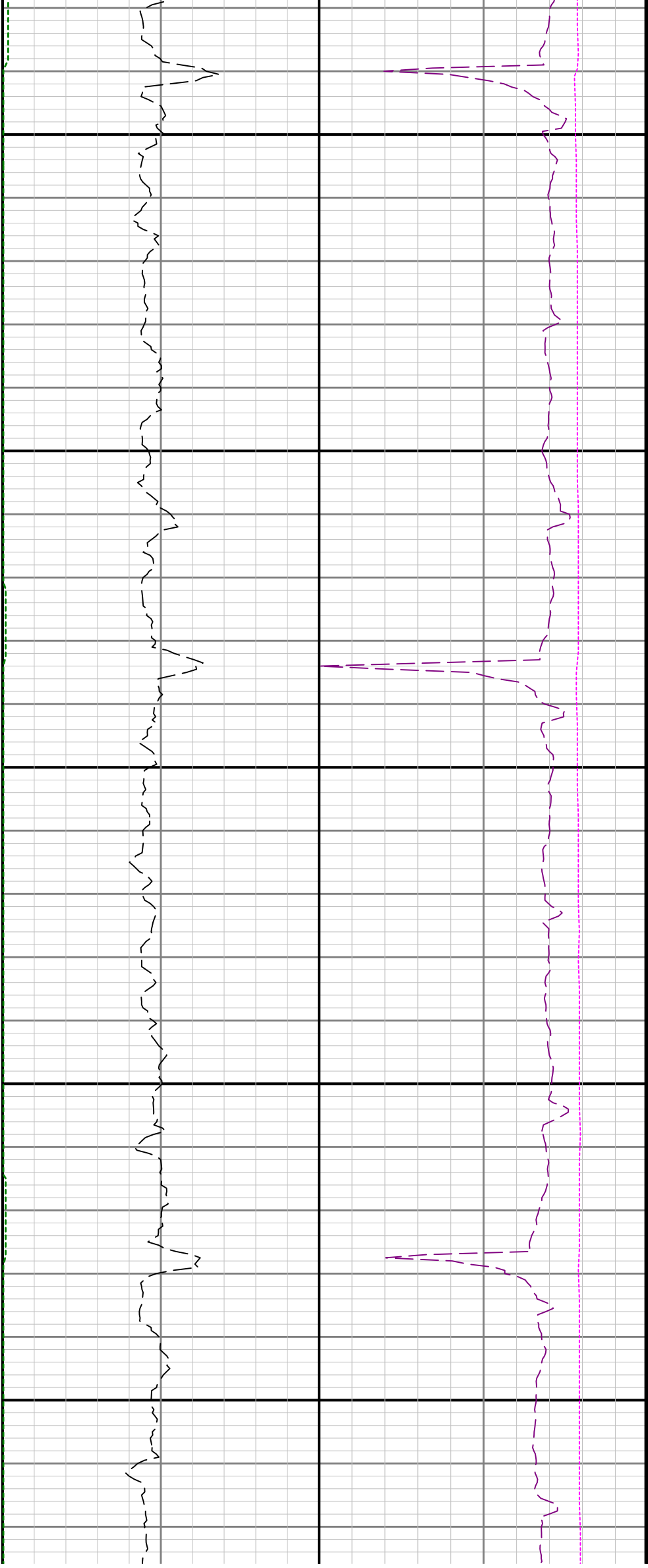




9100

9200

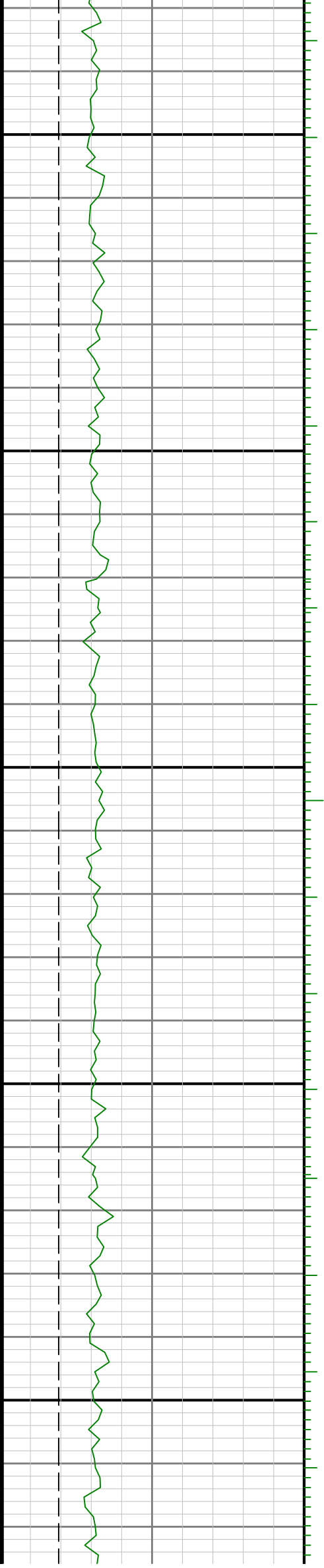


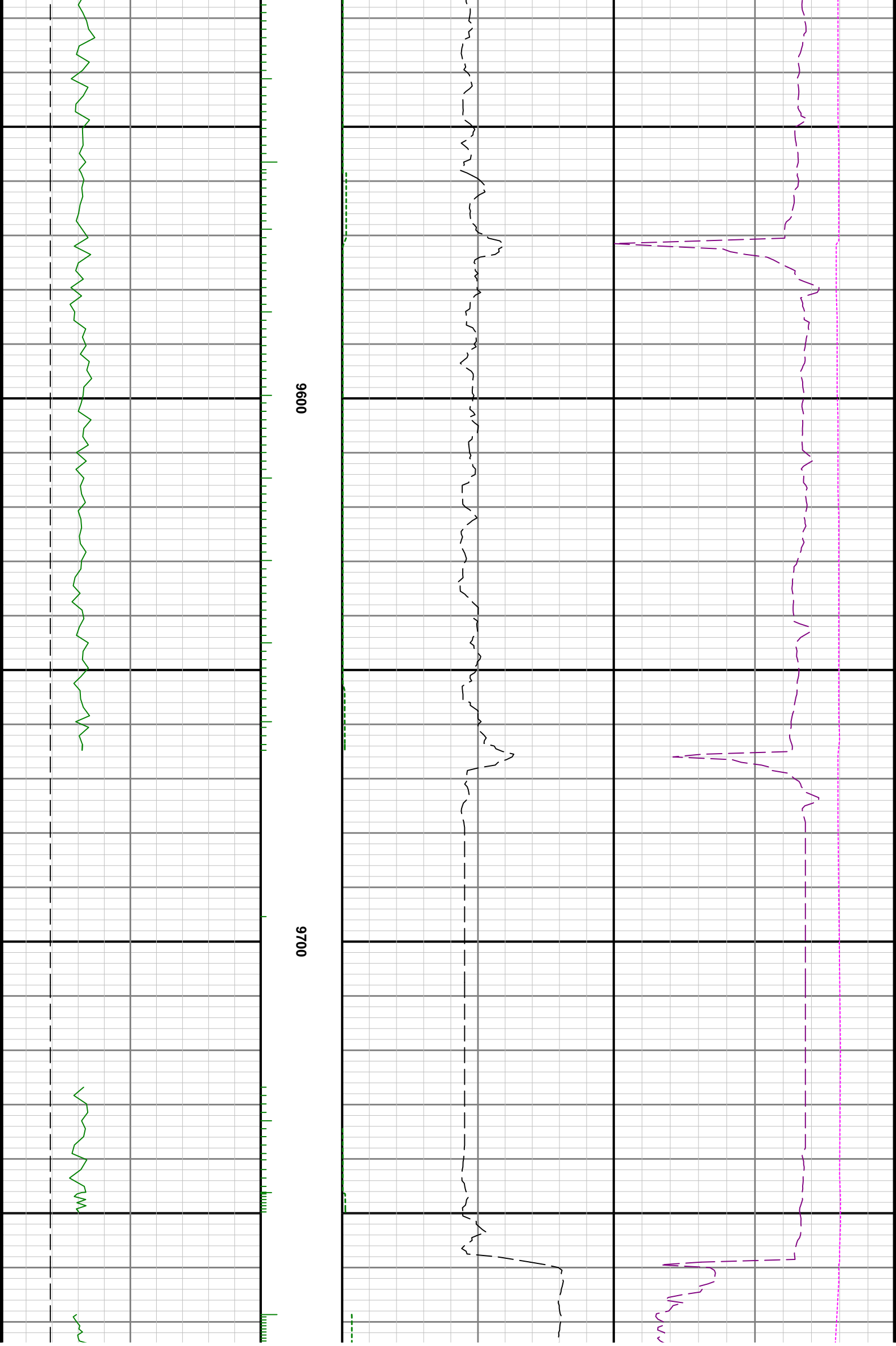


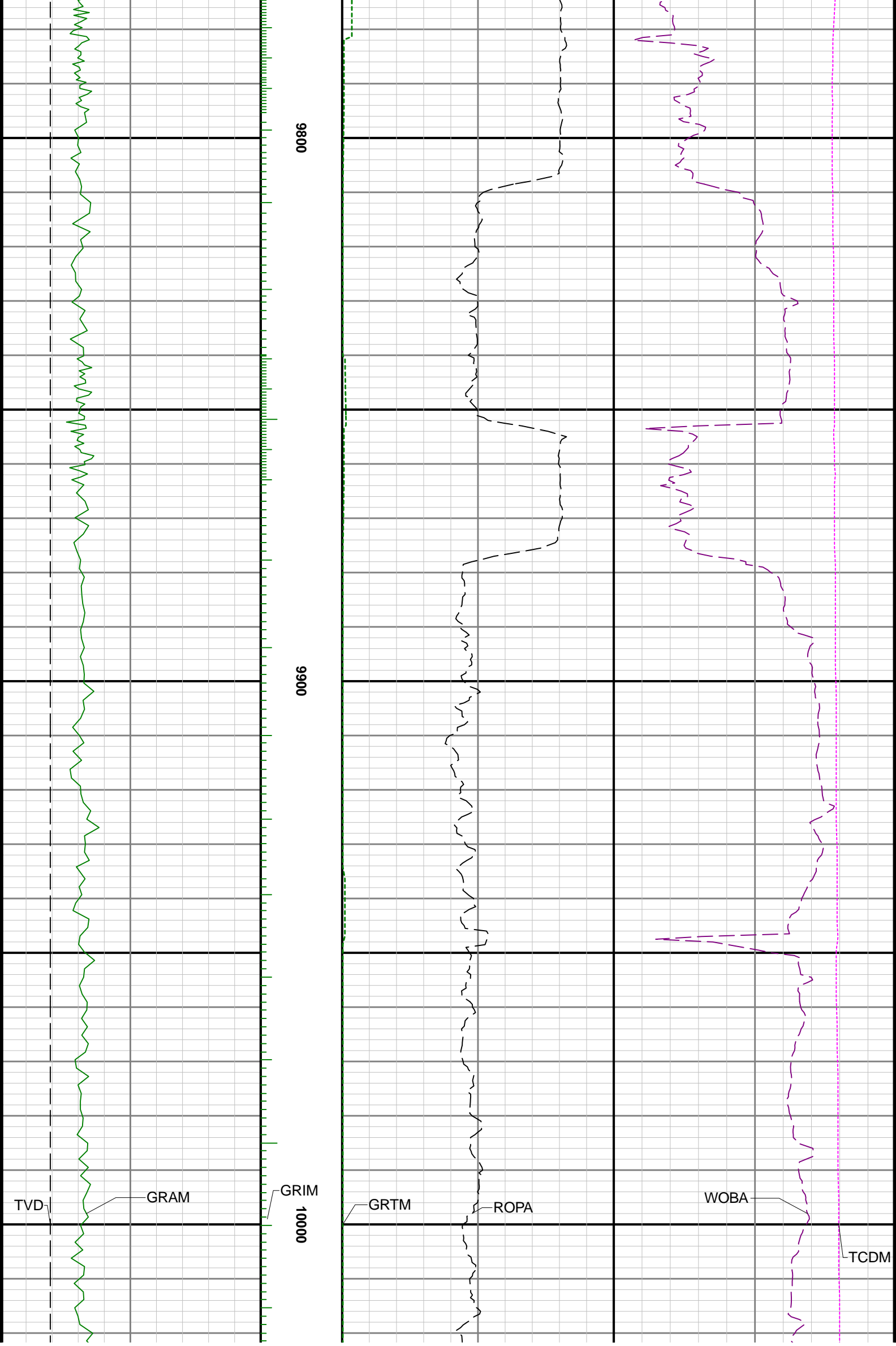
9300

9400

9500



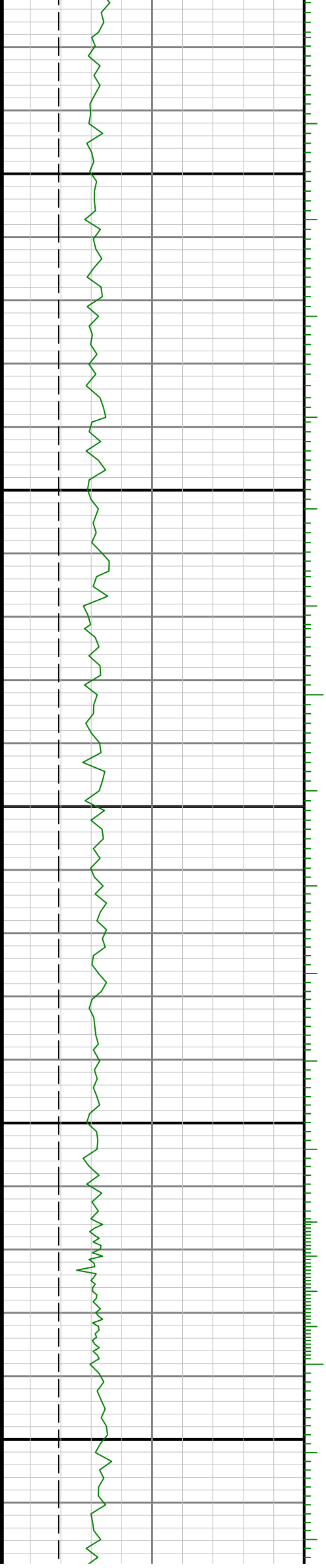


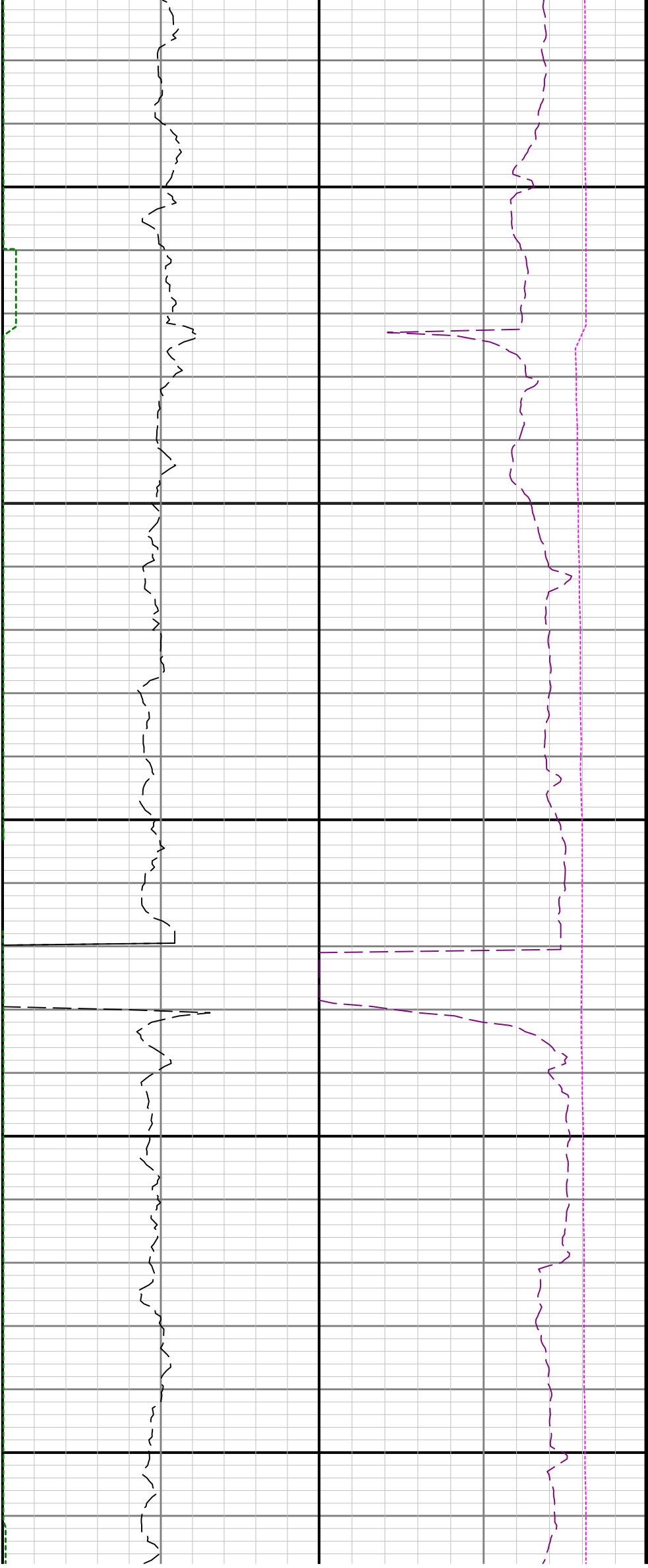




10100

10200

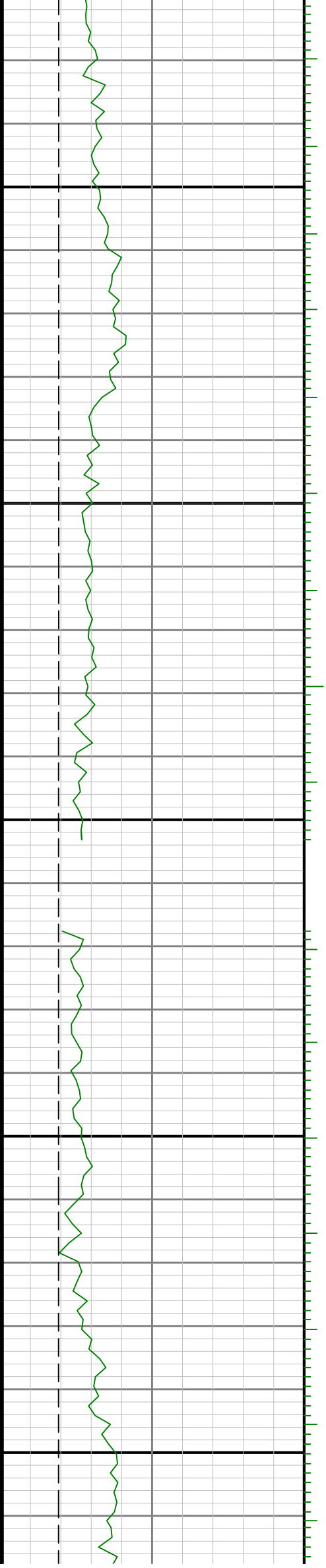


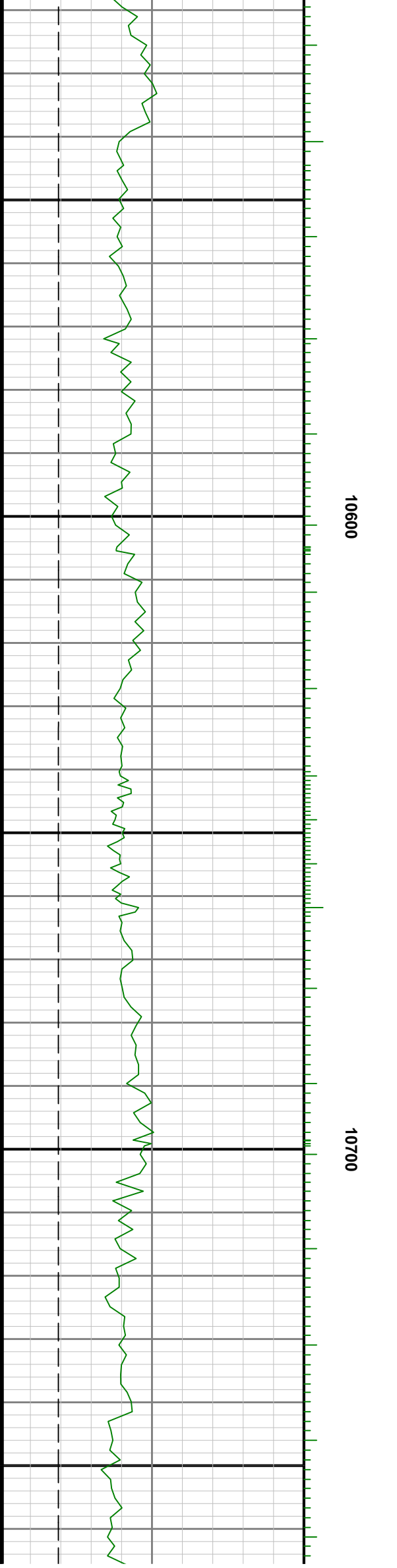
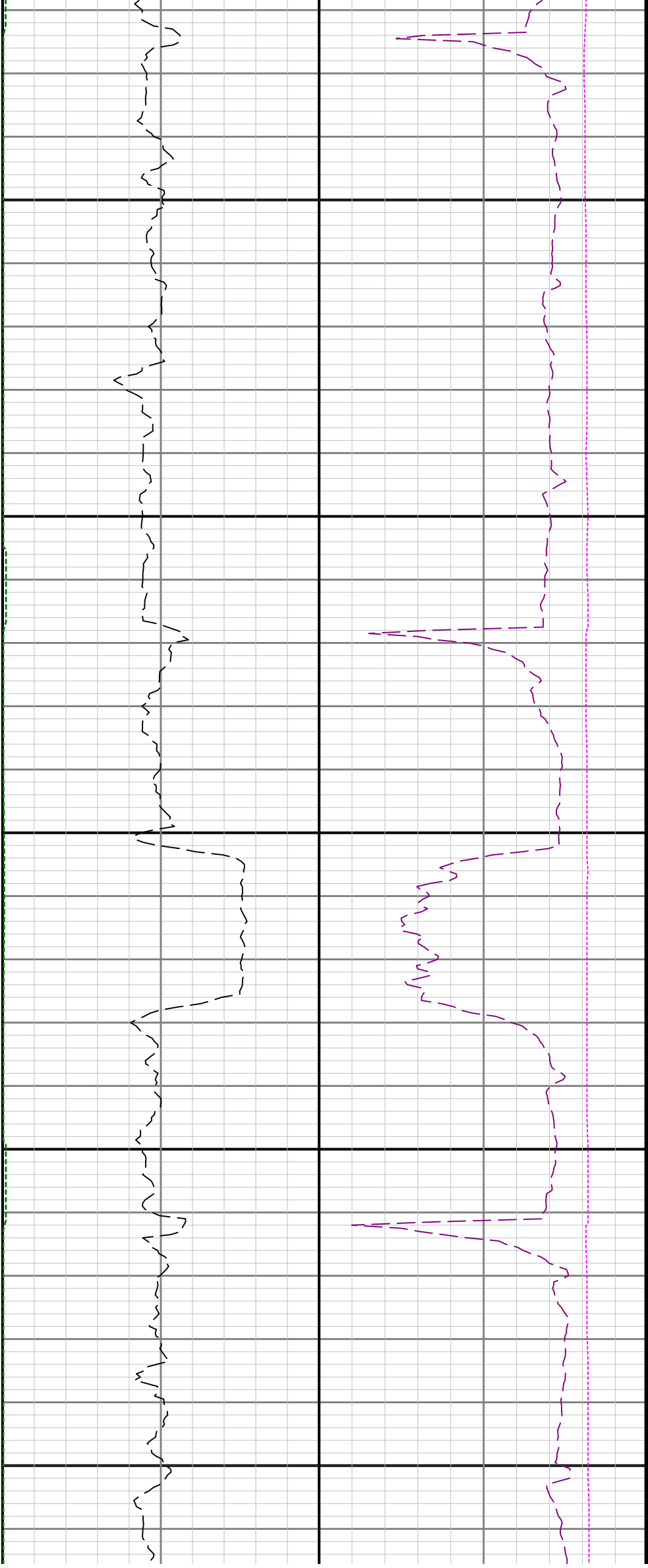


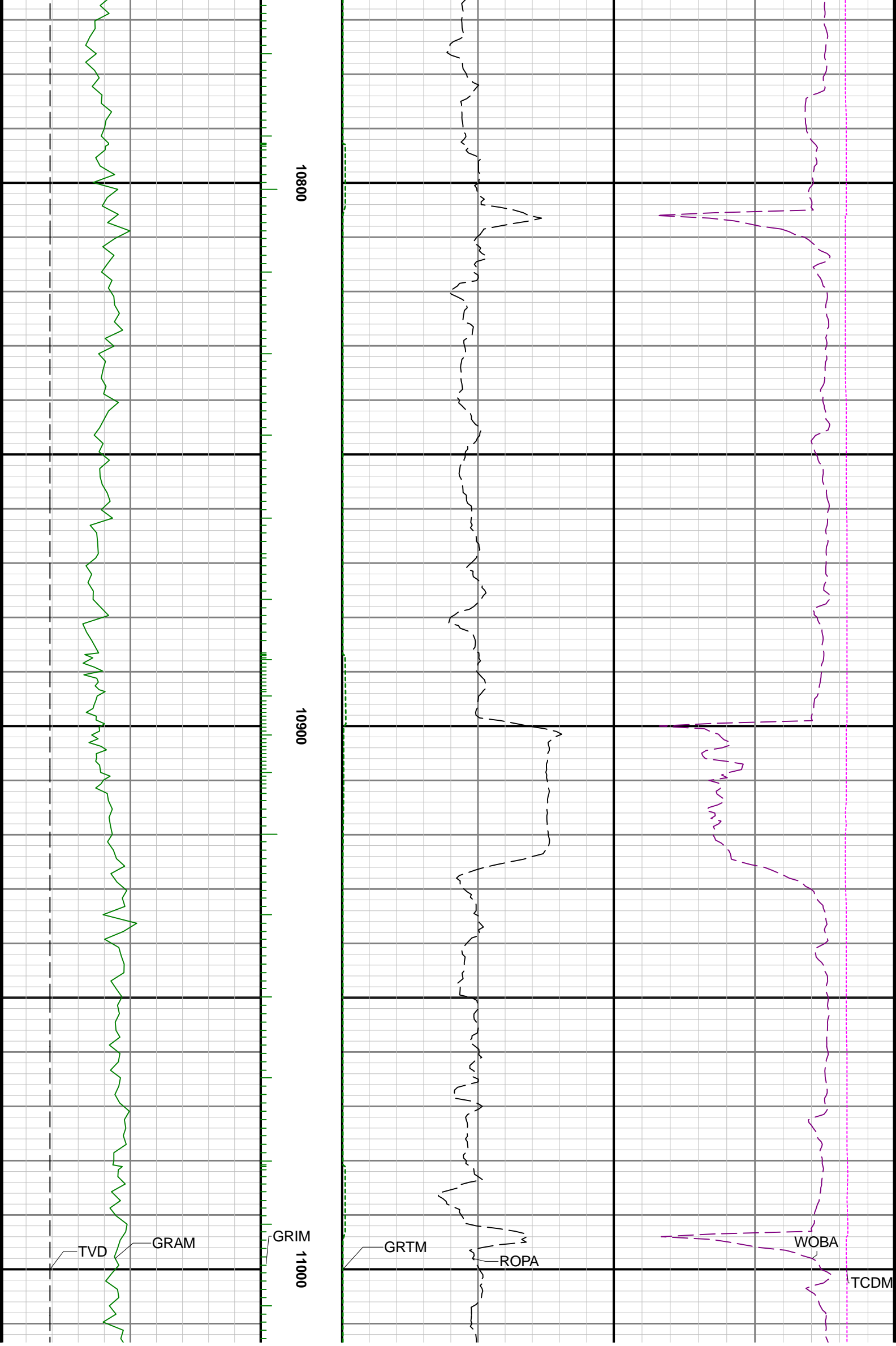
10300

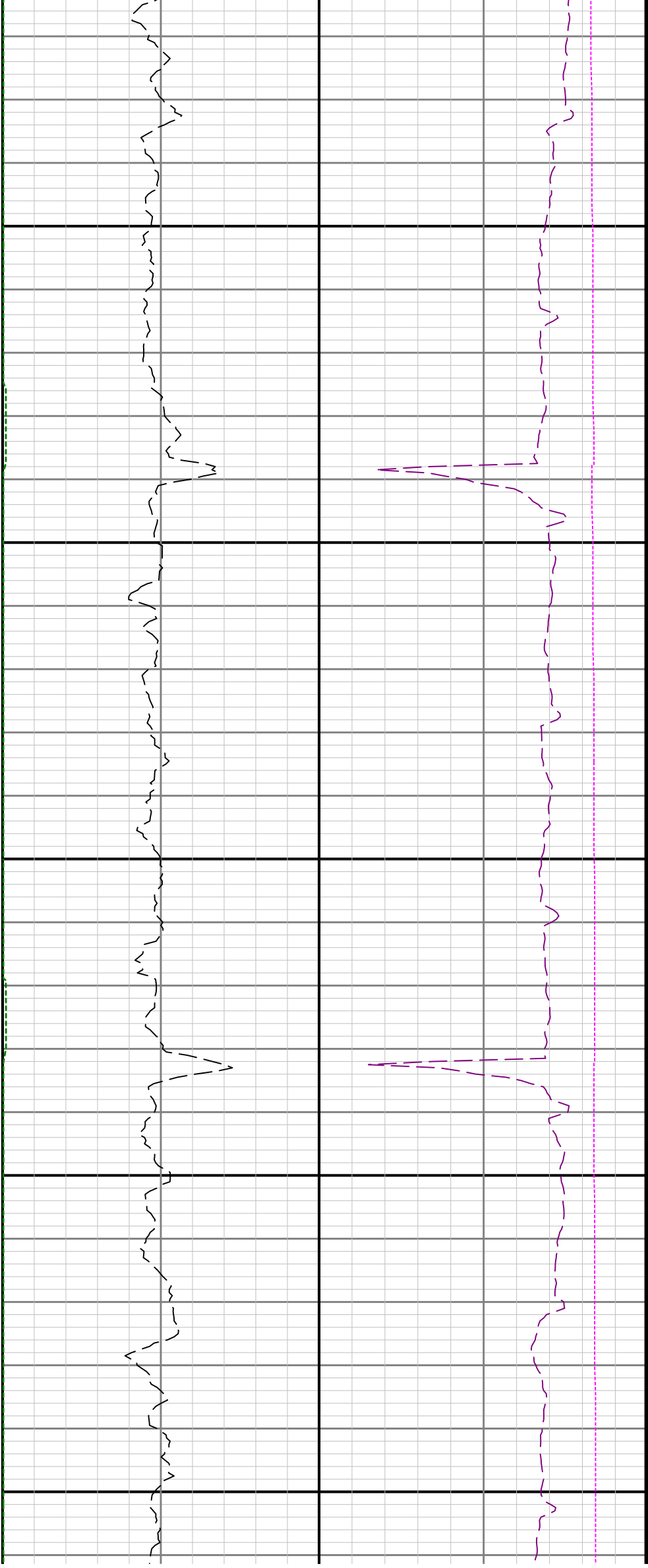
10400

10500



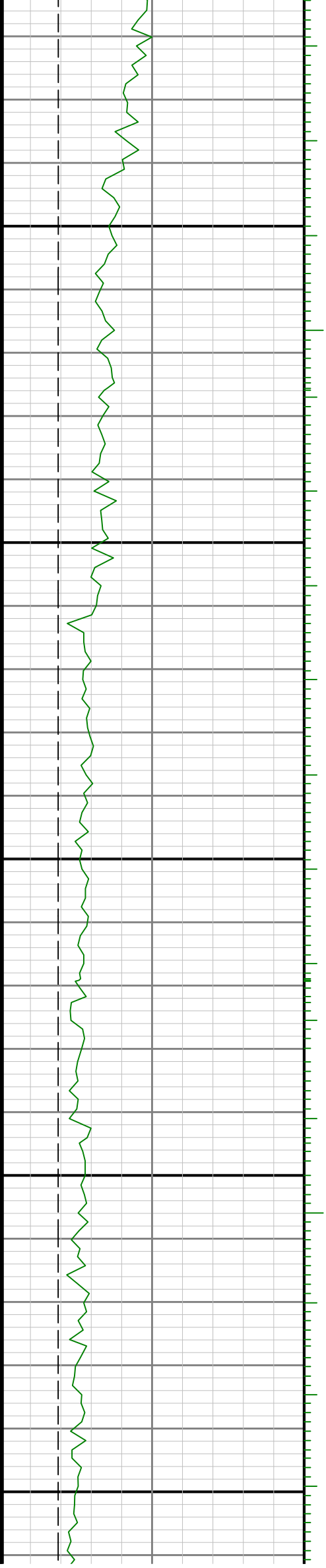


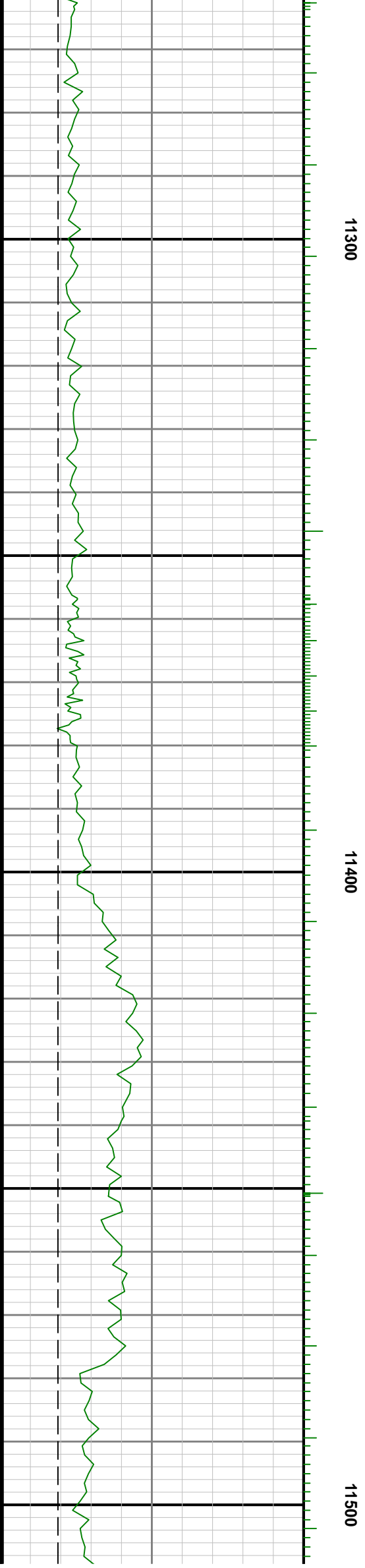
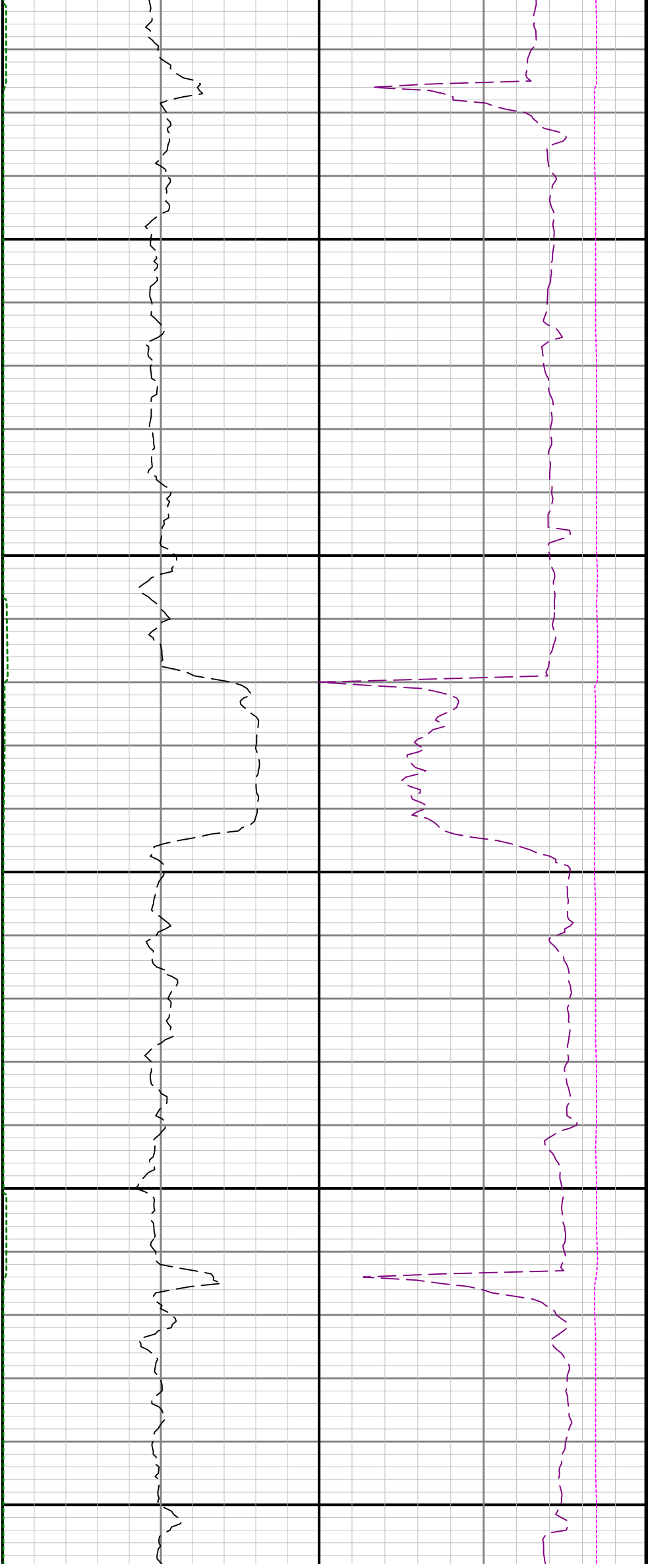


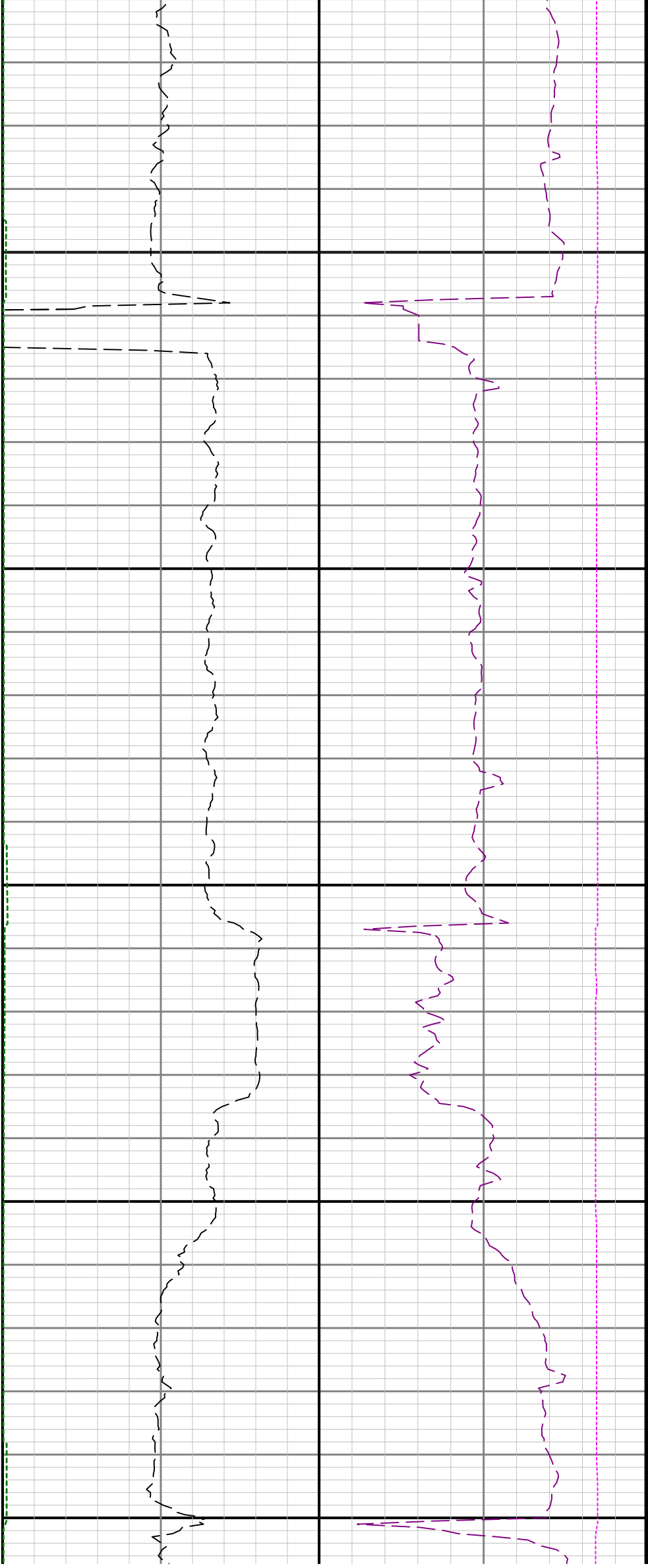


11100

11200

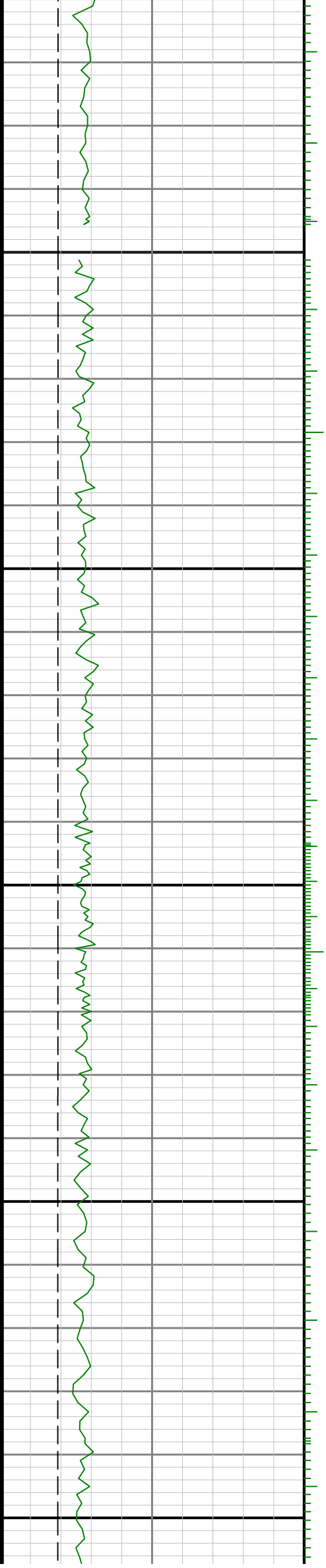




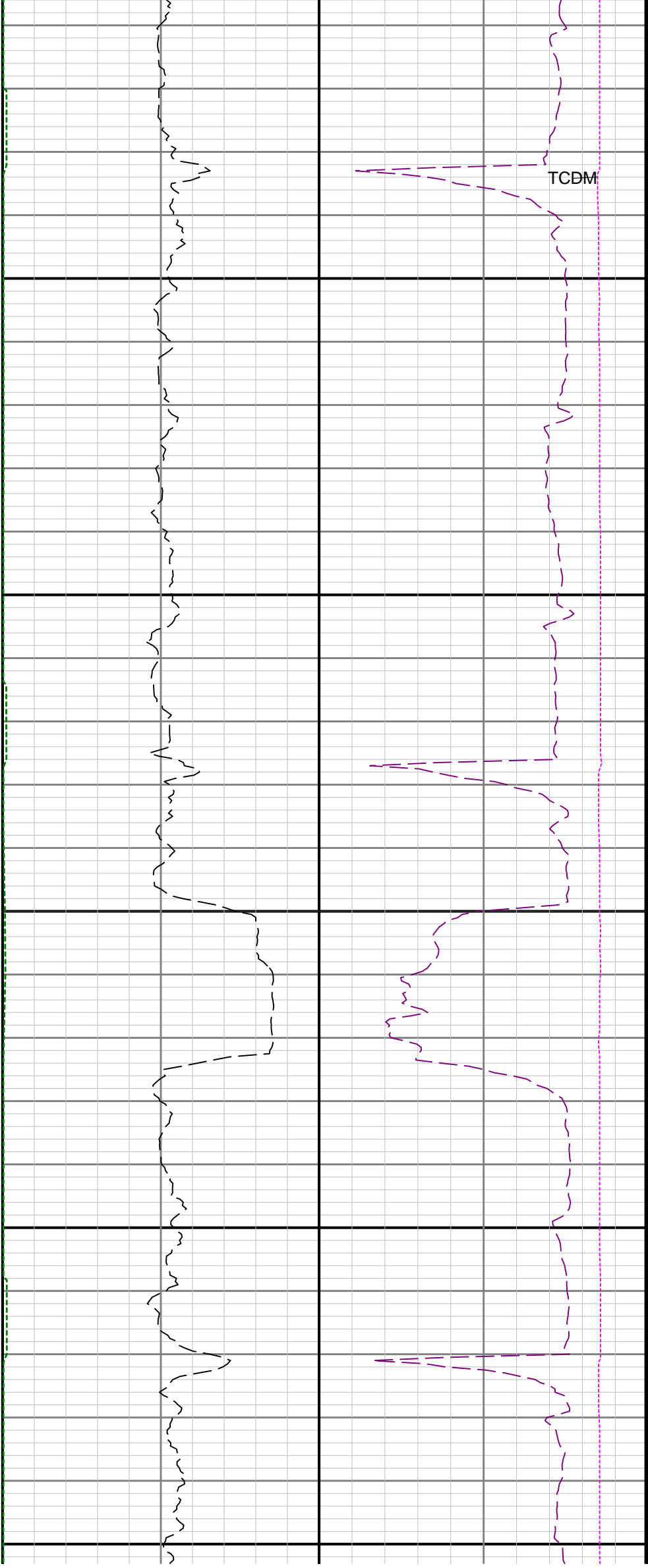


11600

11700

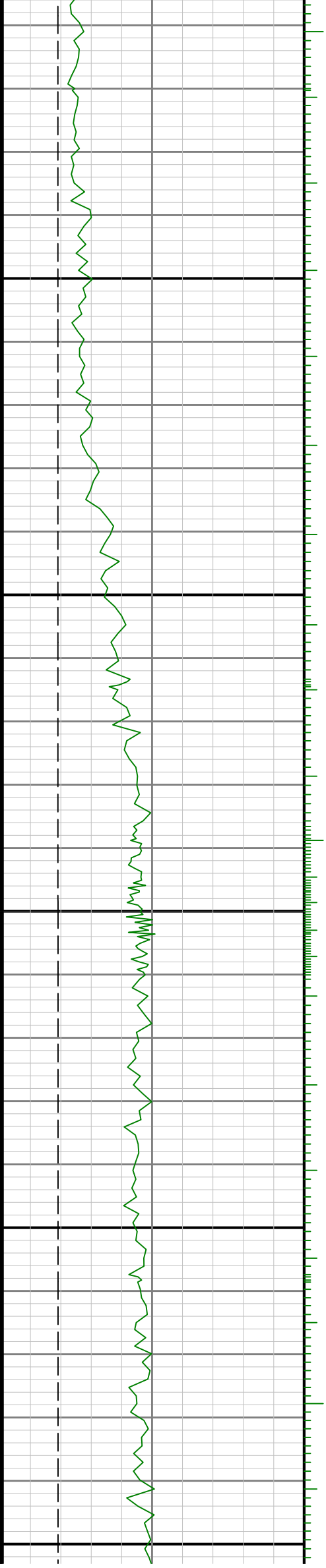


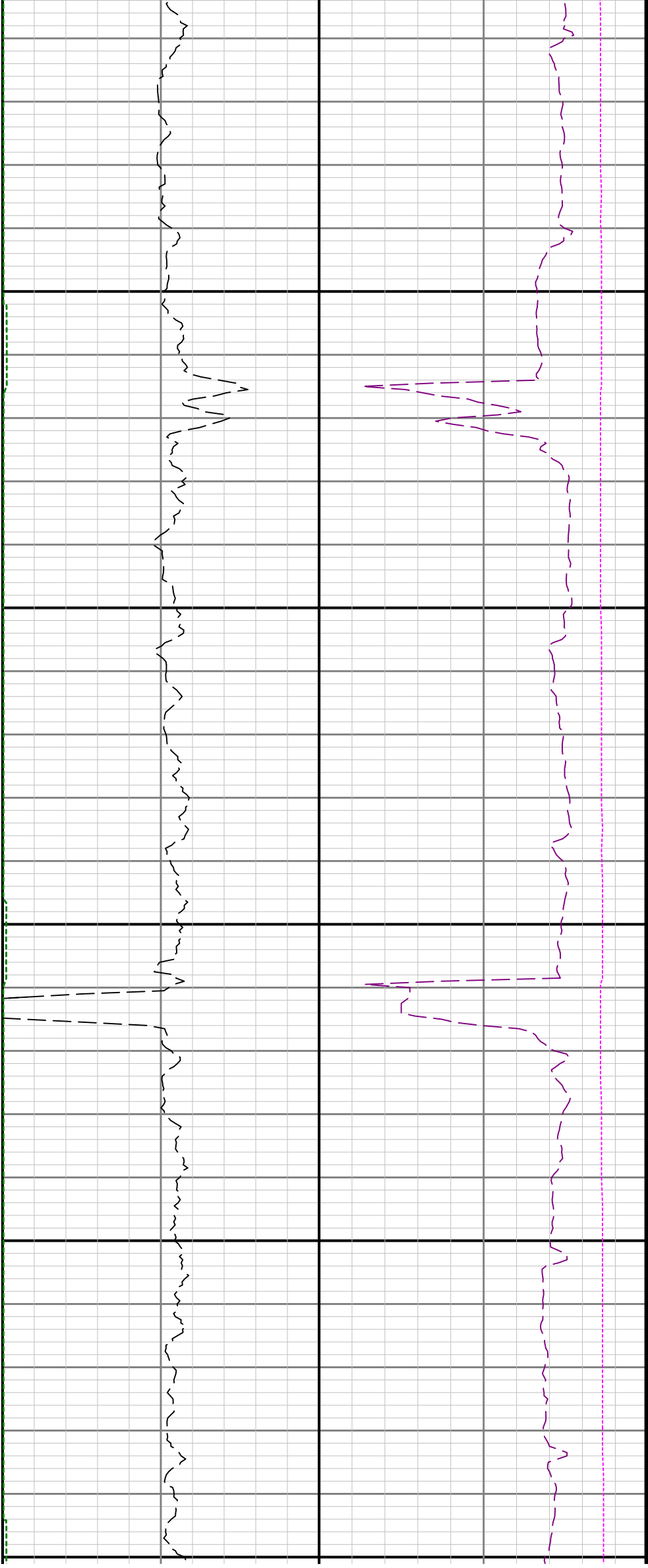




12100

12200

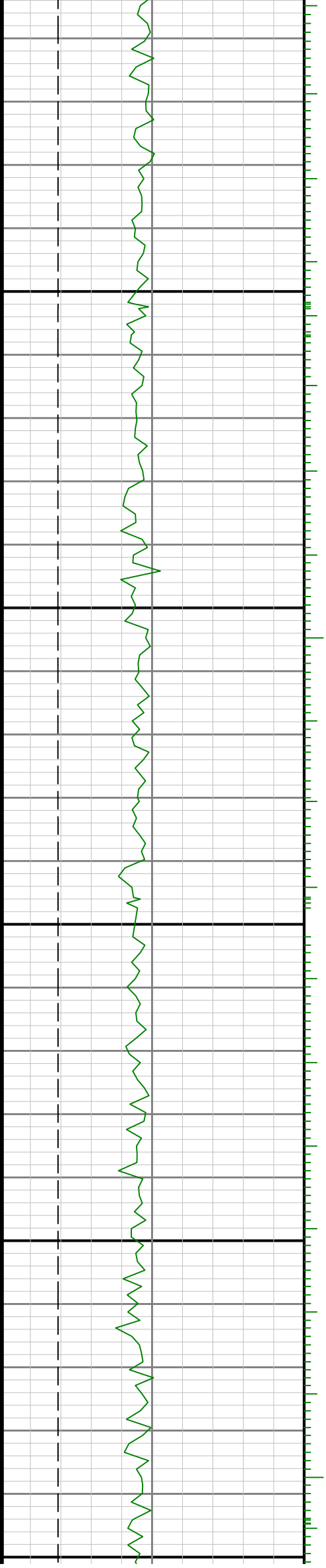


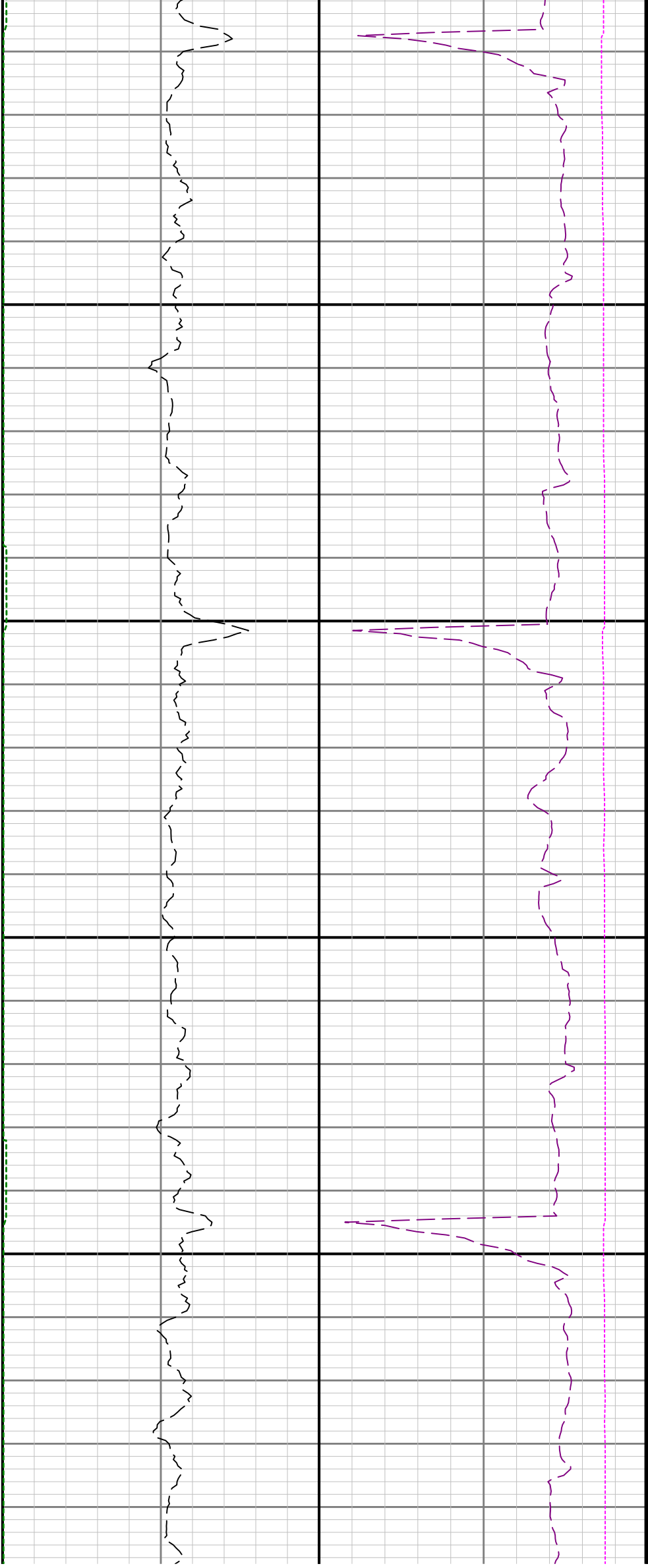


12300

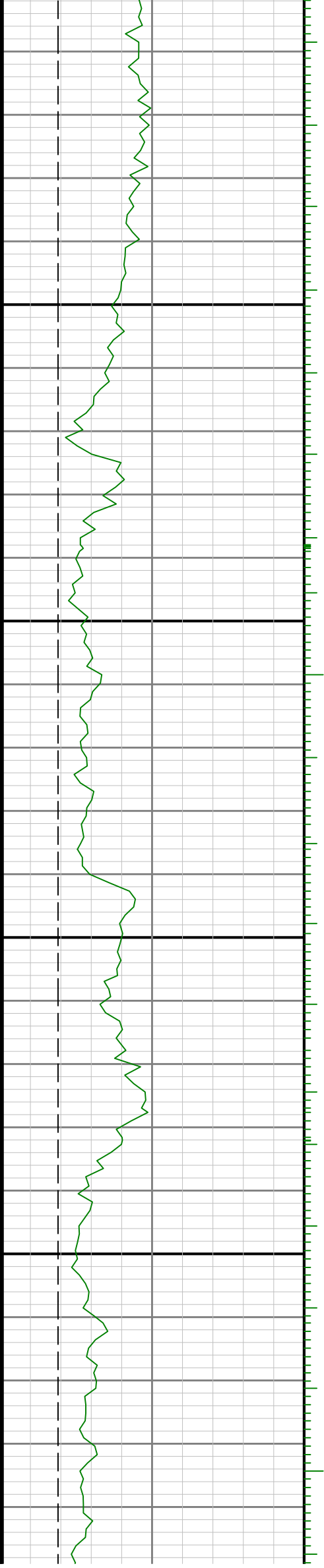
12400

12500

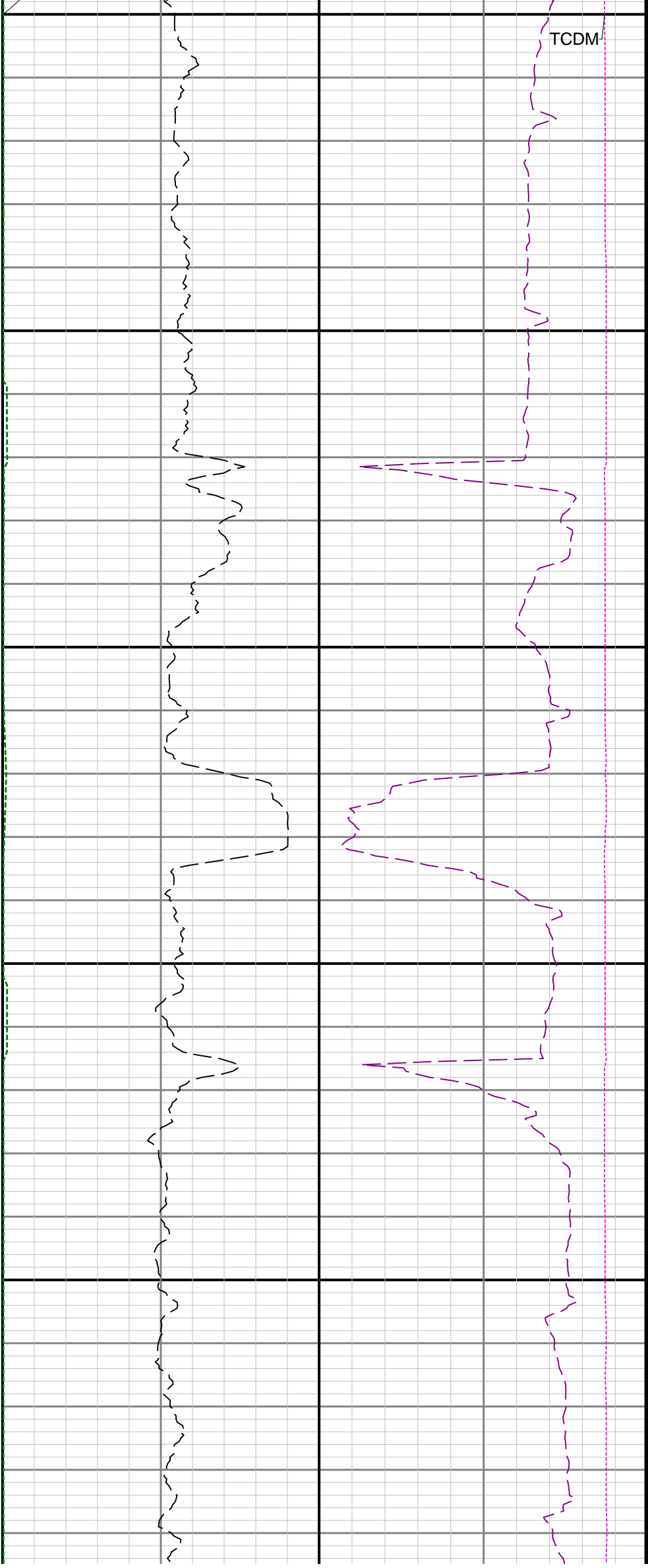




0 12600 12700



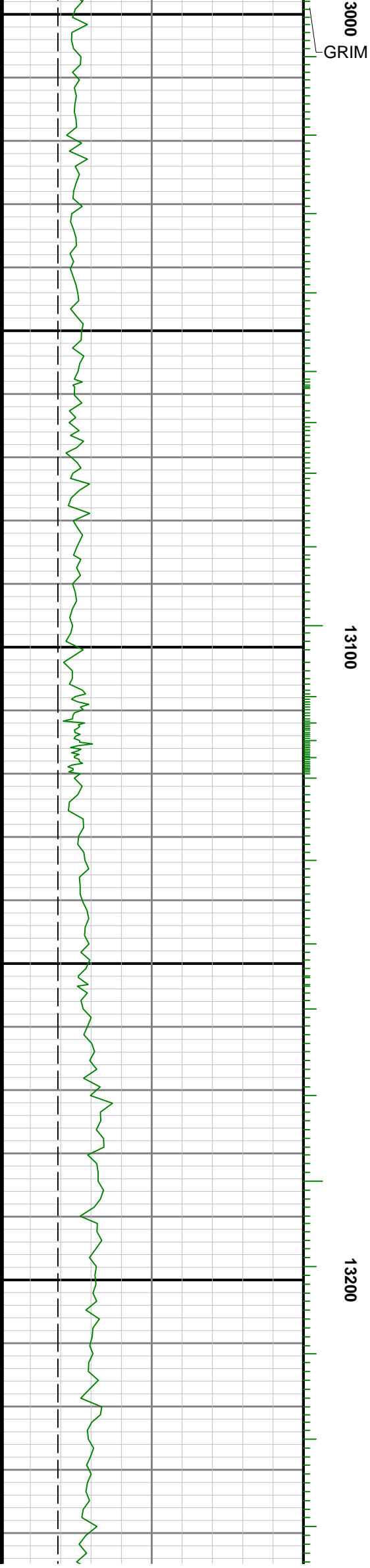




TCDM

13100

13200

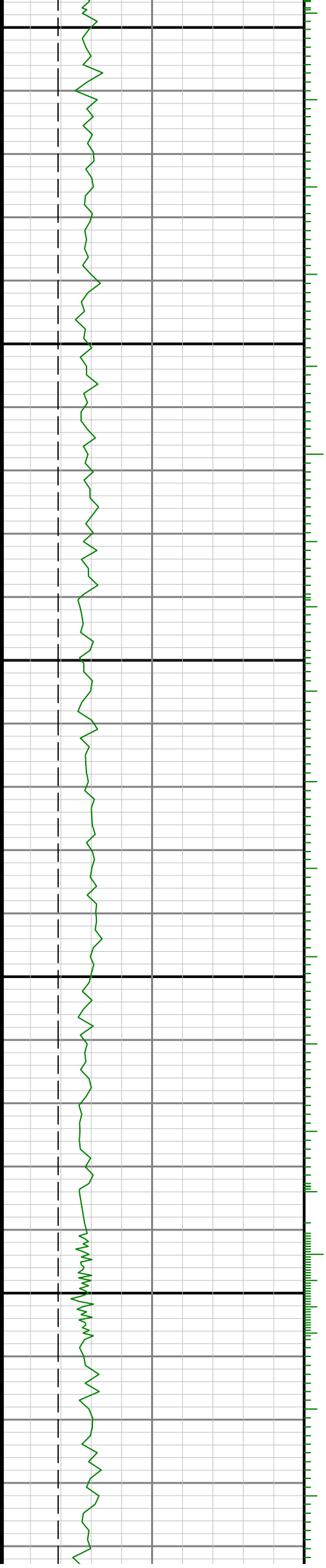


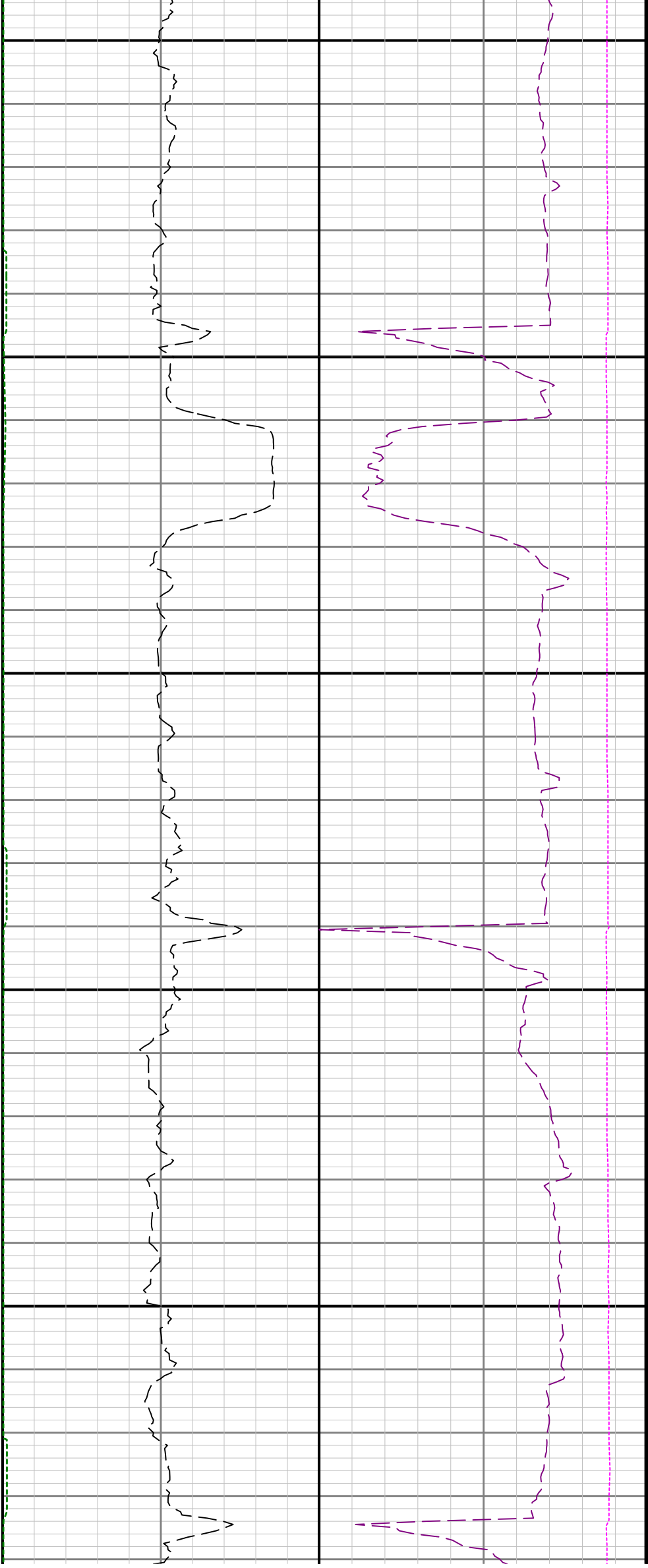
GRIM



13300

13400

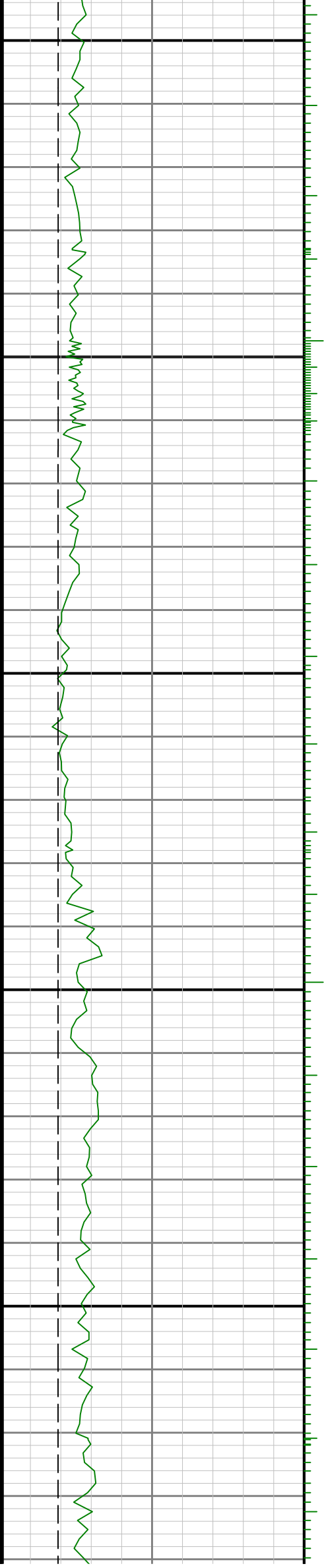


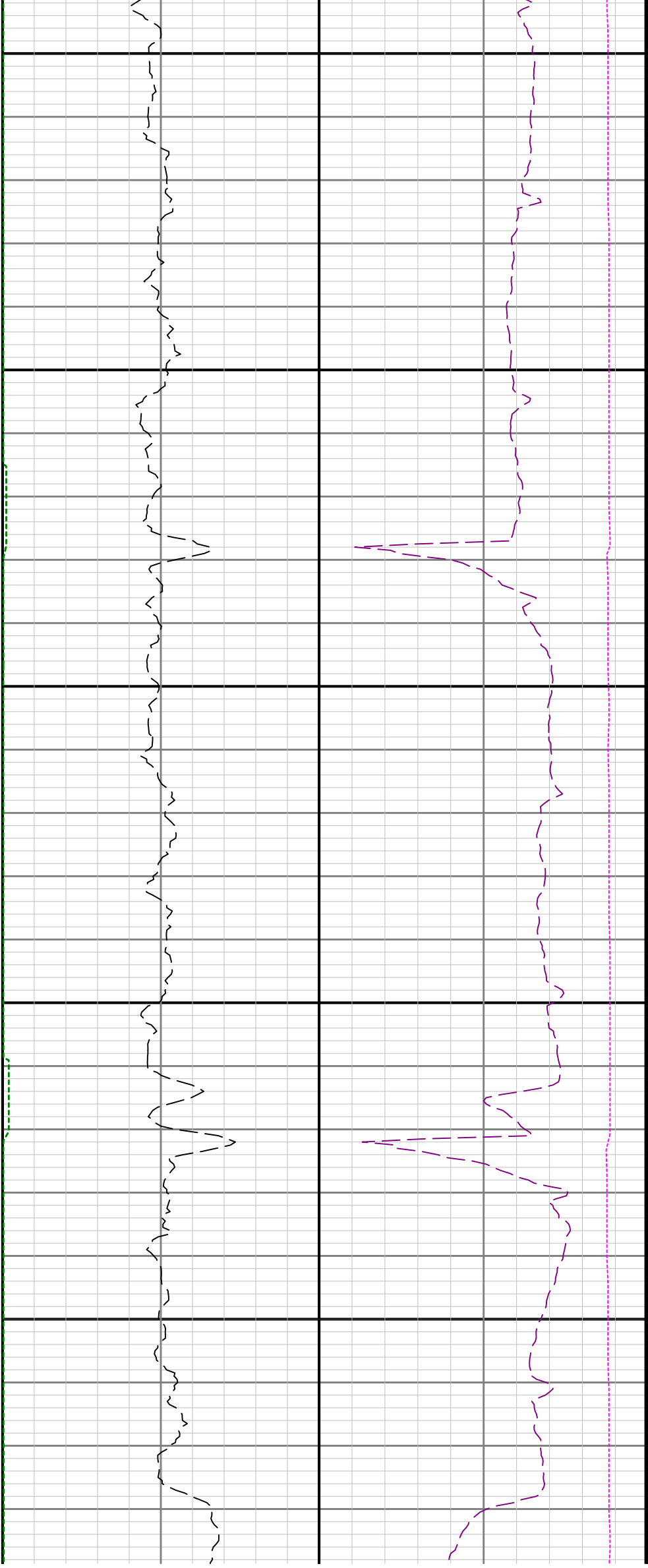


13500

13600

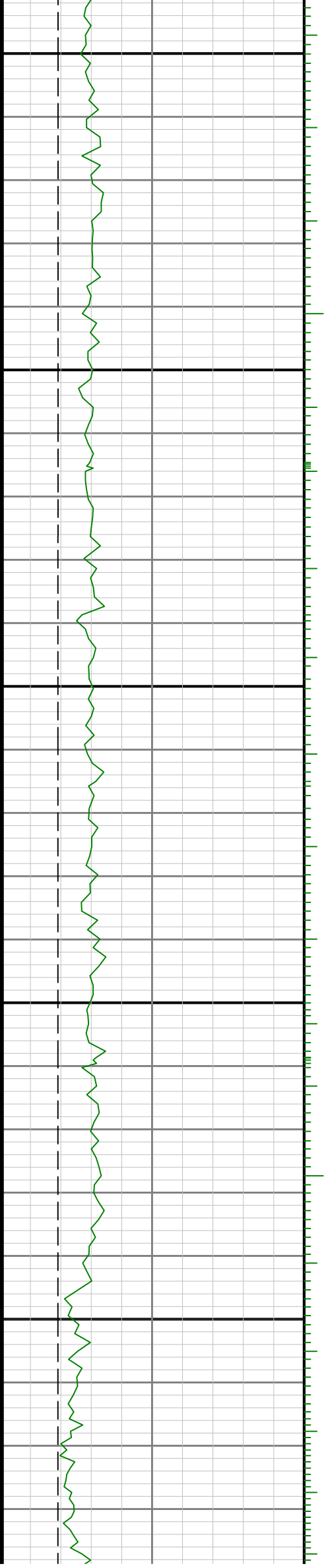
13700

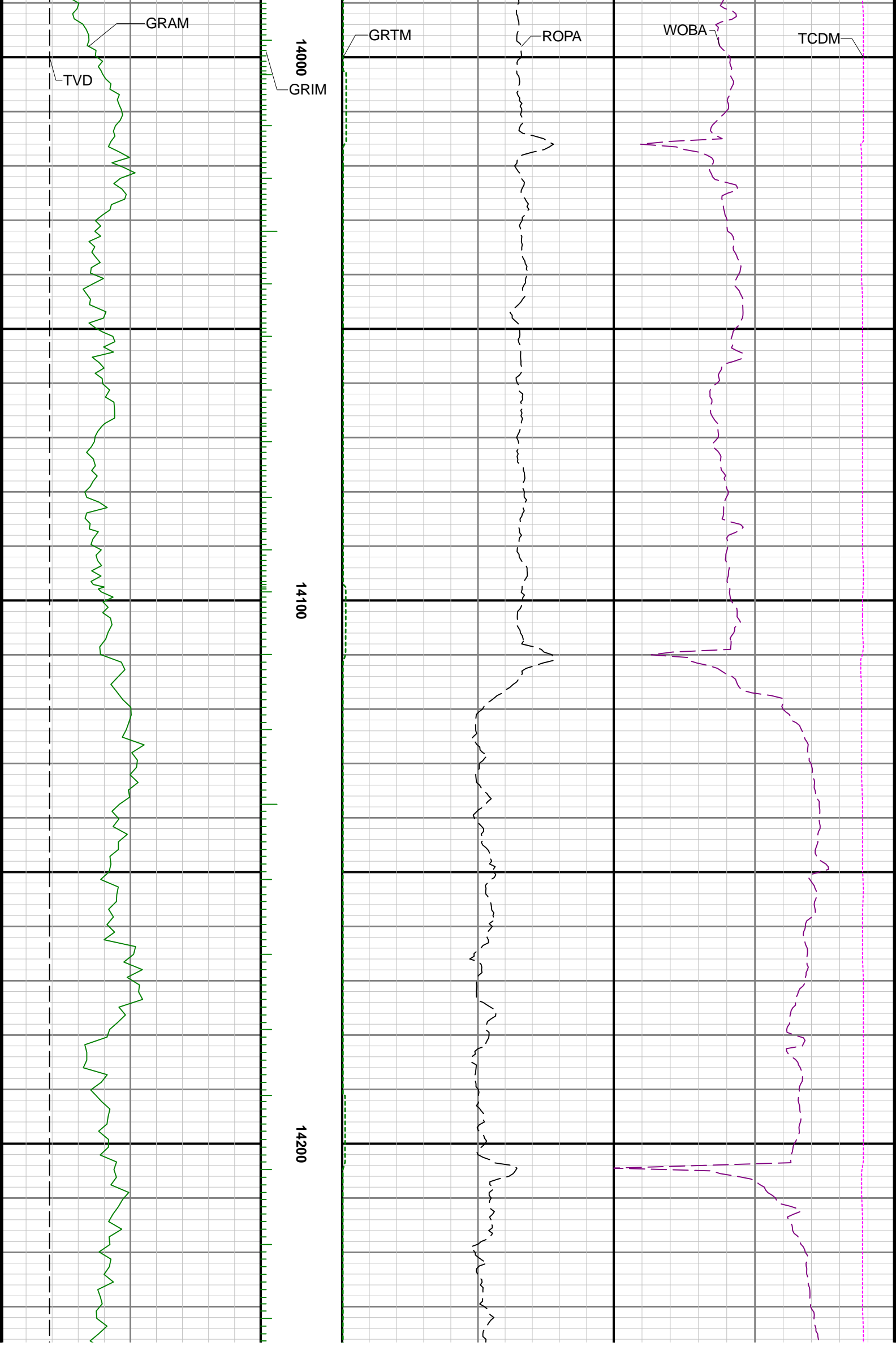


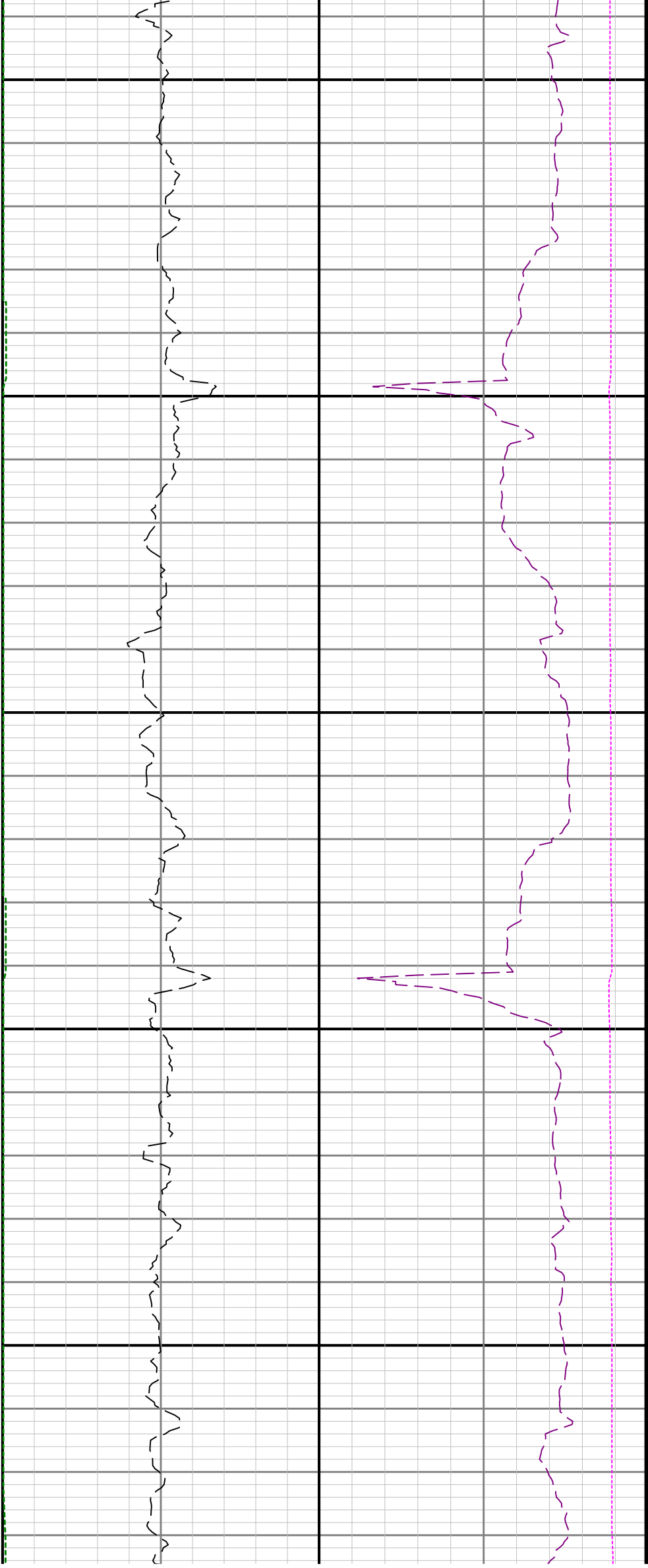


13800

13900

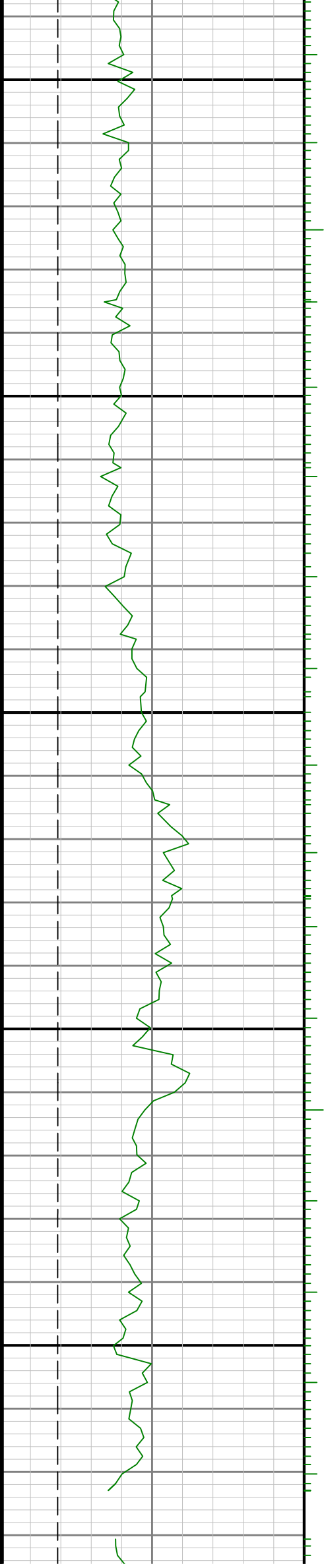


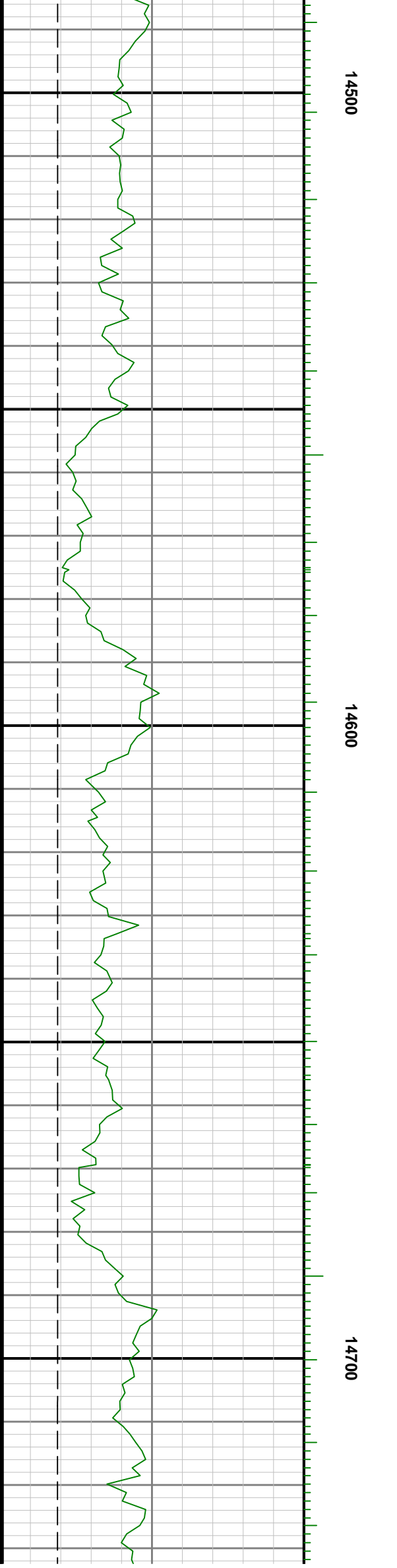
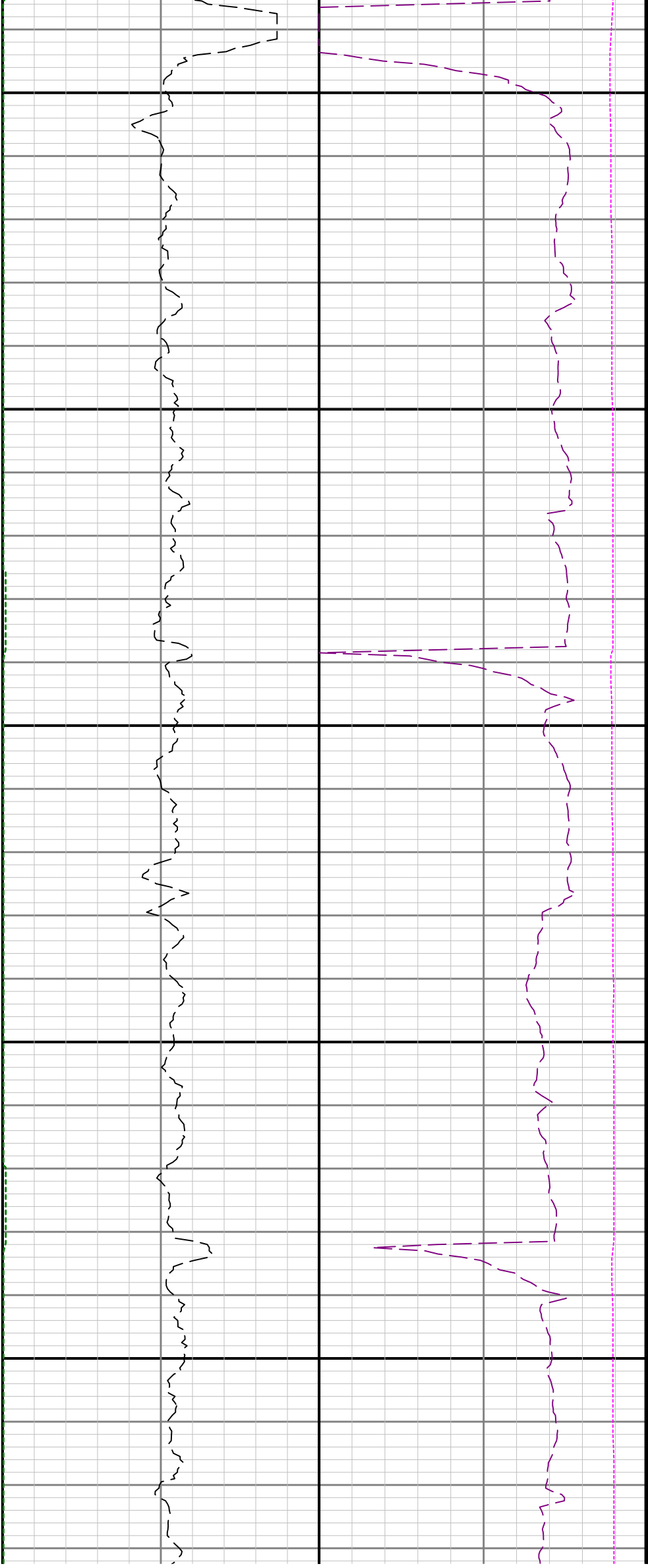




14300

14400

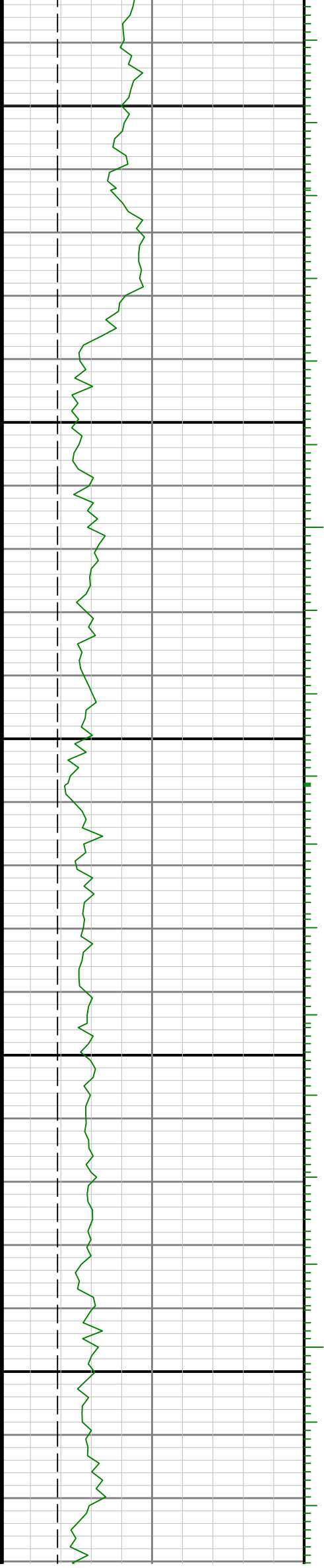


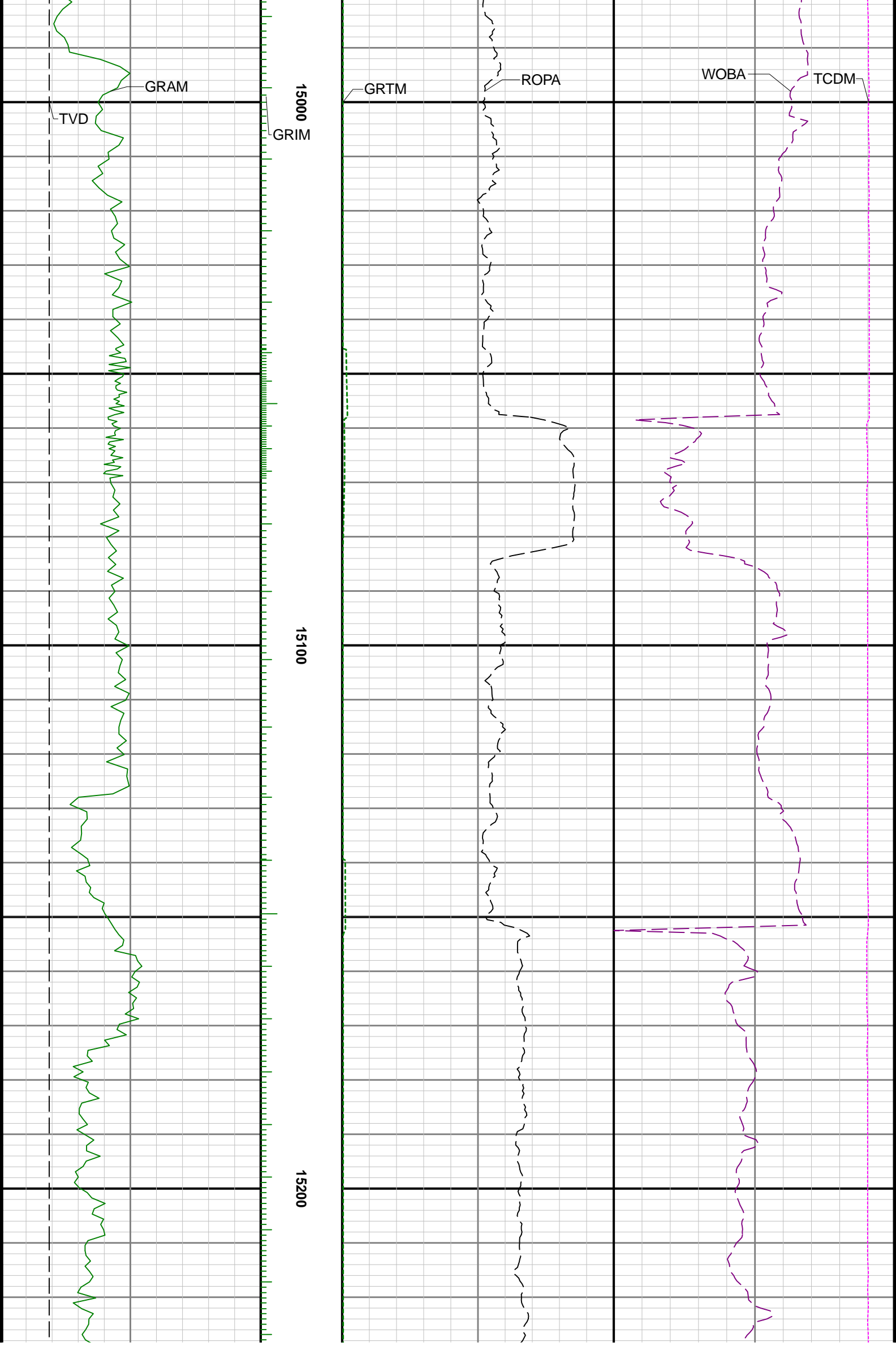


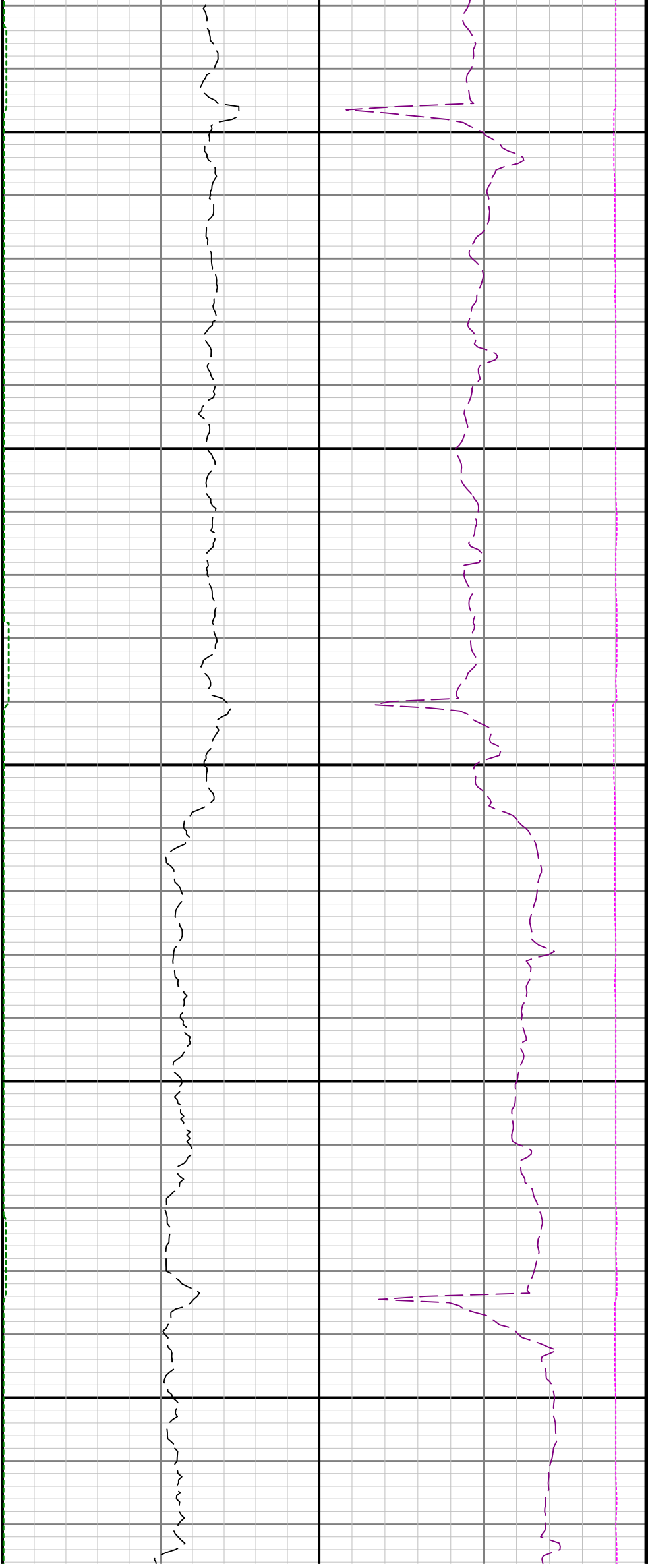


14800

14900

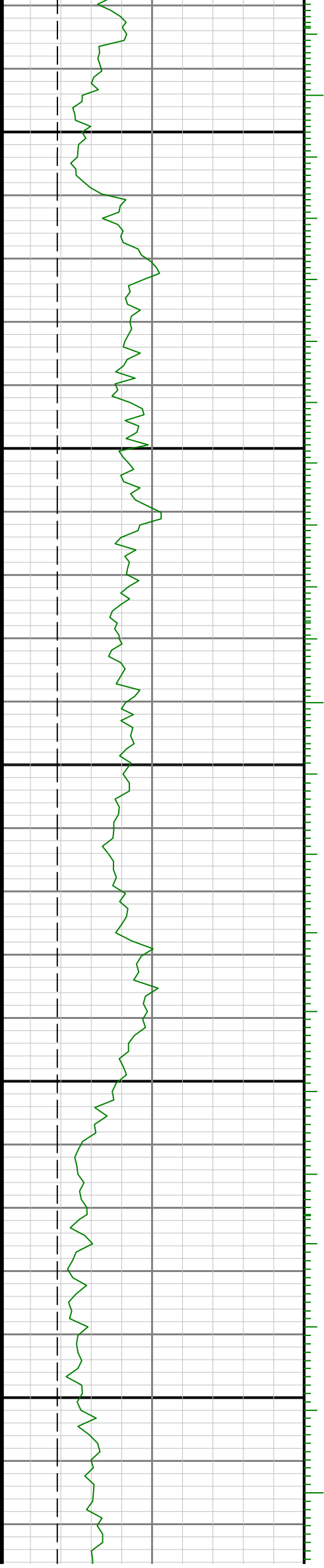


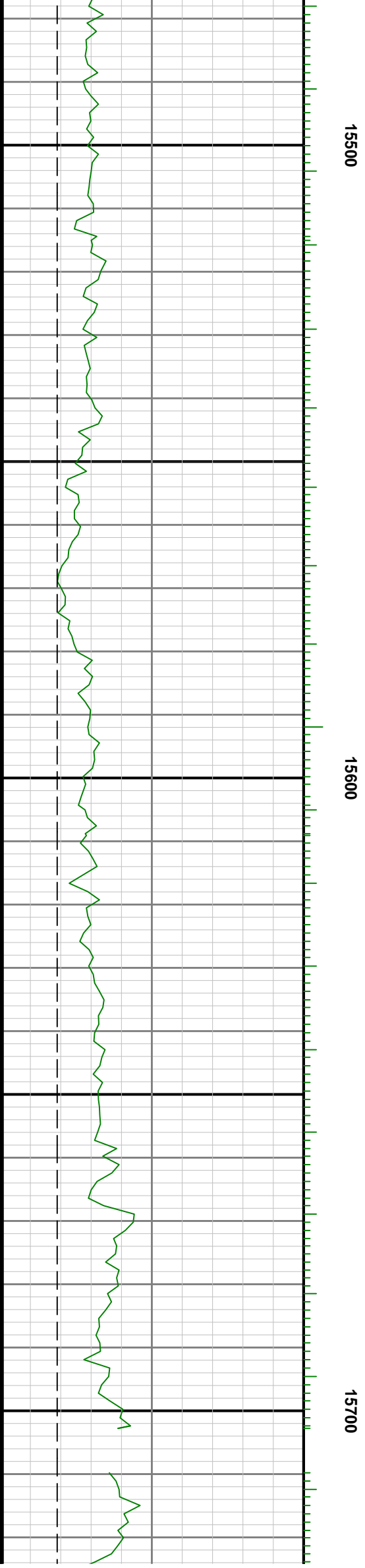
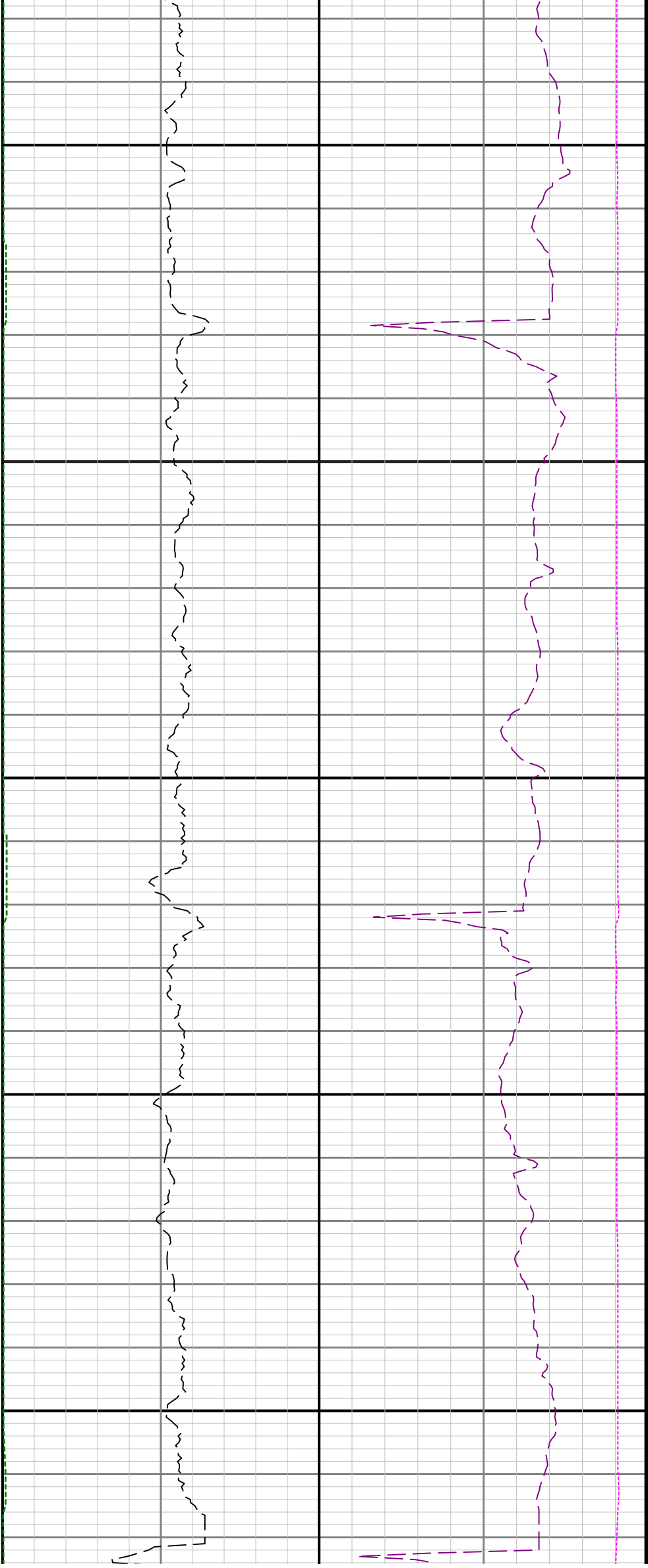


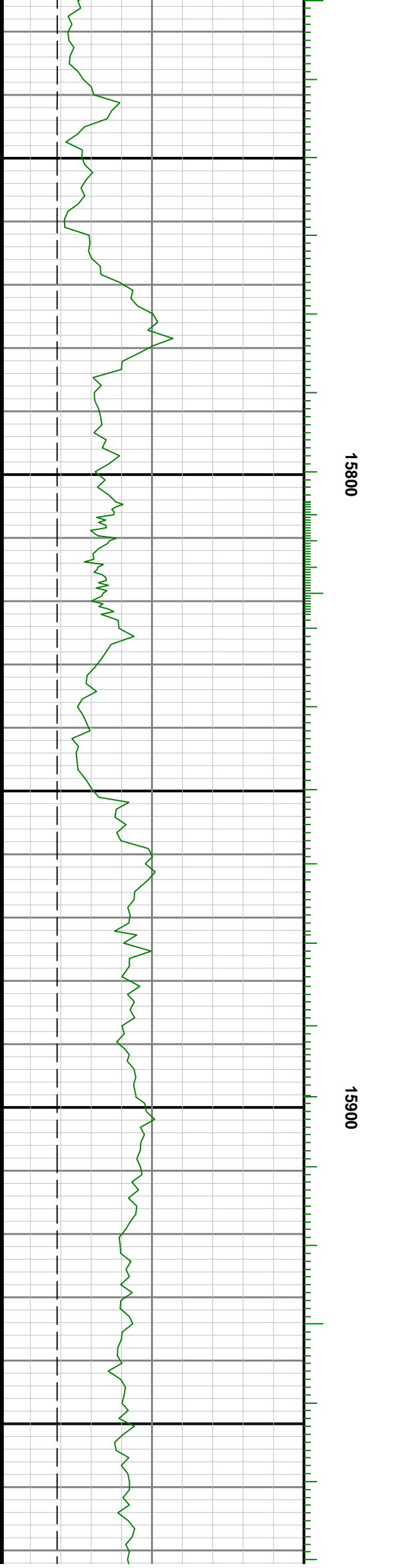
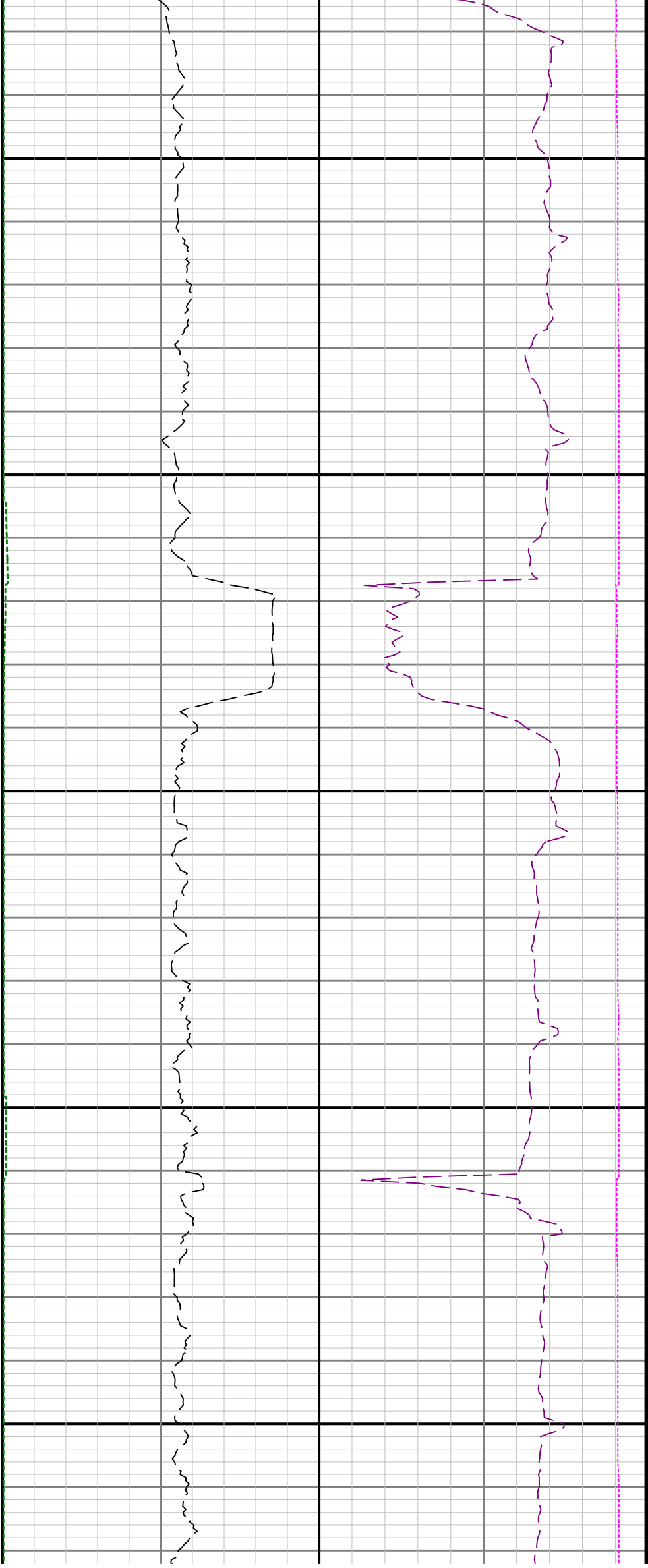


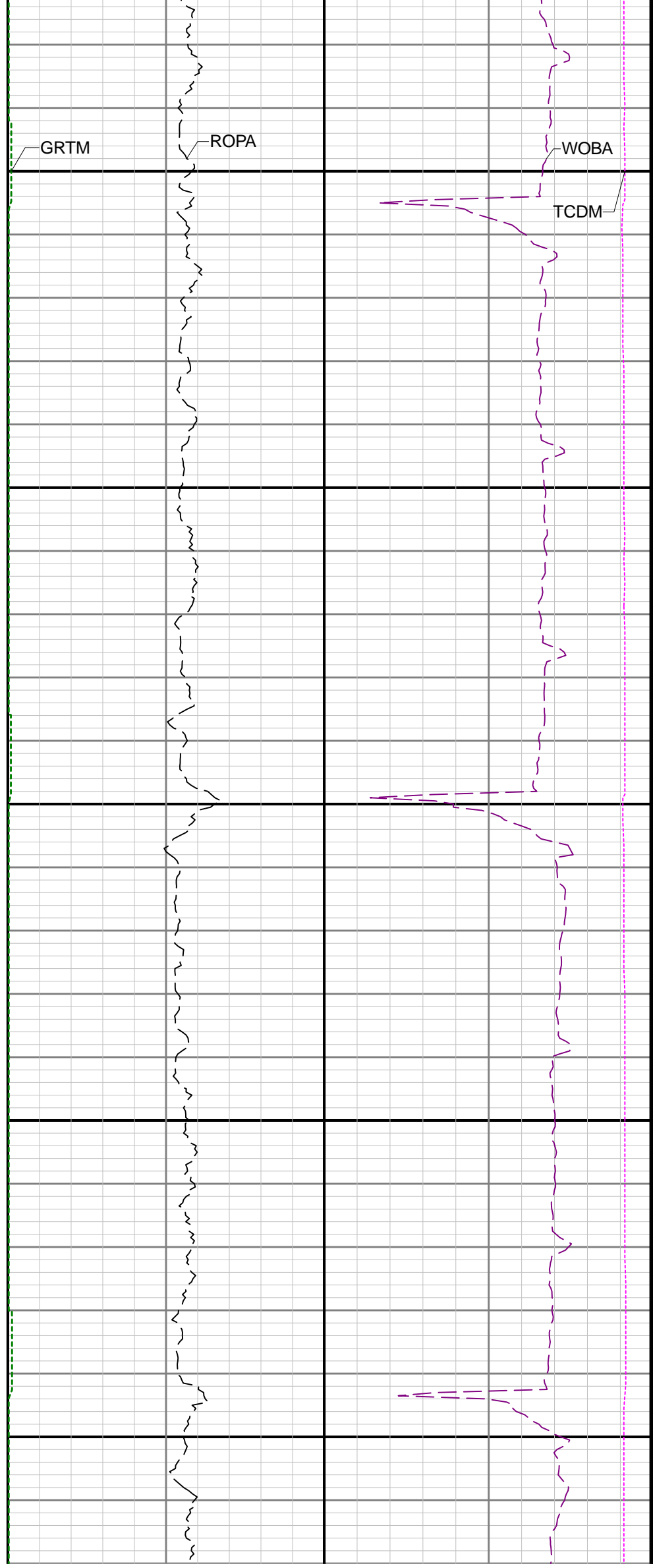
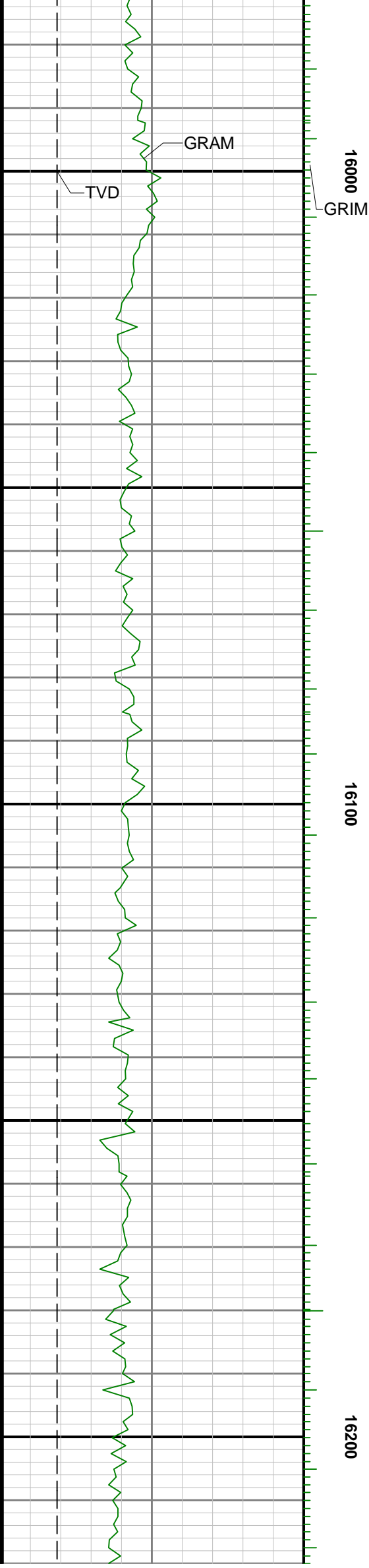
15300

15400





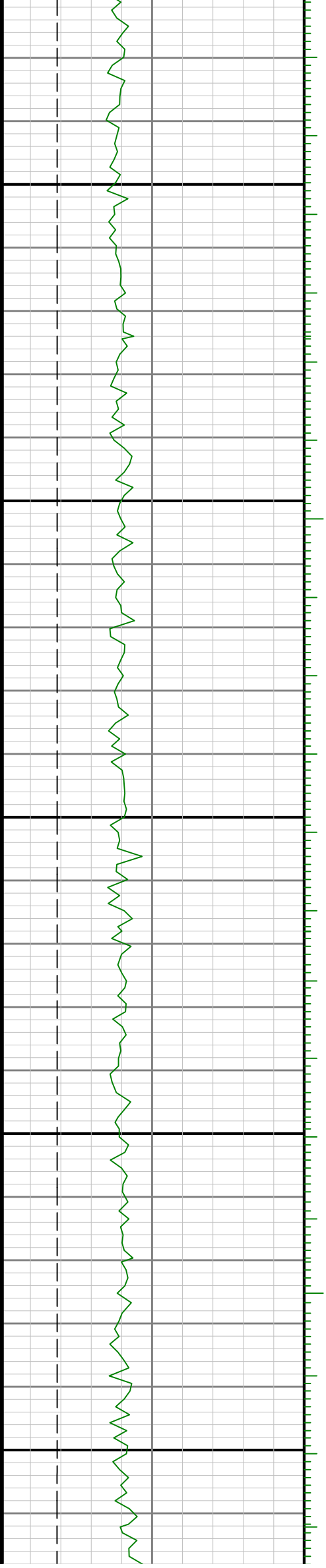


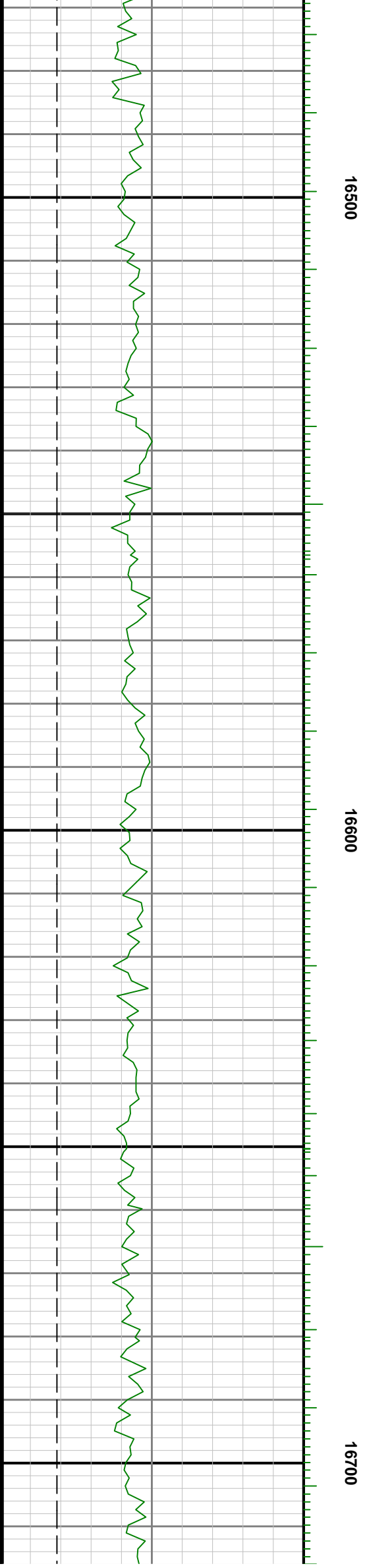


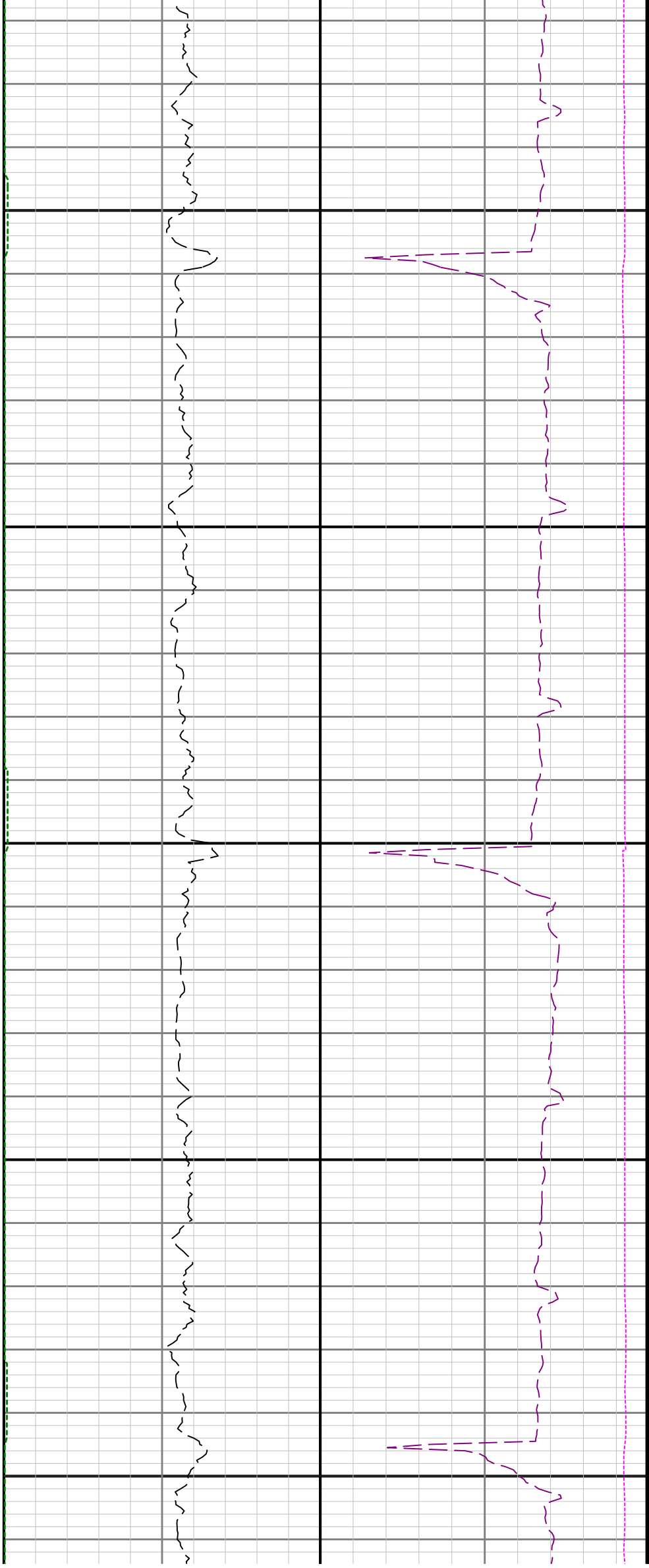


16300

16400







16800

16900

