



Realtime Log

Natural Formation Evaluation
Gamma Ray

Scale: 1:240 Measured Depth

Company: Anadarko

Well: ALVIN 2C-29HZ

Field: WELD COUNTY (UTM/TRUE NORTH)

County: Continental US State: United States

Status: Final Print

API Number: 051234220500

Surface Location:
Latitude: 40° 6' 10.946" N
Longitude: 104° 40' 46.643" W

Other Services:

SEC: 29 TWP: 2N RNG: 6SW

Directional
VSS

Permanent Datum (P.D.): Ground Level Elevation: 4905.00 ft.

Log Measured From: Rig Floor 16.00 ft. Above P.D.

Depth Reference: Driller's Depth

Elevations:
KB: N/A
DF: 4925.00 ft.
GL: 4905.00 ft.

Interval Logged Dates Magnetic Field Reference

Top: 6000 ft. Date From: 11/Dec/15 Dip Angle: 66.75 ° Azi Reference North: True
Bottom: 12970 ft. Date To: 15/Dec/15 Total Mag to Reference
Spud Date: 11/Dec/15 Field Strength: 52650.0 nT North Correction: 8.10 °

Borehole Record

Casing Record

| Hole Size | From | To | Size | Weight | From | To |
|-----------|----------|-----------|-----------|-------------|--------|----------|
| 8.500 in. | 1920 ft. | 13009 ft. | 9.625 in. | 35.00 lb/ft | 16 ft. | 1920 ft. |
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Mud Record

Deviation Record

| Type | From | To | Hole Size | Interval | Inc / Az (Start) | Inc / Az (End) |
|---------------|----------|-----------|-----------|-----------|------------------|------------------|
| Oil Based Mud | 1930 ft. | 13009 ft. | 8.500 in. | 11089 ft. | 18.5 ° / 235.9 ° | 89.7 ° / 359.4 ° |
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Acquisition System Software Version

Other

| | | | | |
|-----------|----------|------------------|-----------|--------------------|
| Advantage | 2.20U4 | Rig: | Xtreme 24 | / Advance Drilling |
| PATS | 6.4.1.34 | Job No: | 7682512 | |
| | | District / Unit: | RMA | / D&E |

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Log Run Summary

| LWD Run No. | BHA Run No. | Bit Run No. | Bit Size (in.) | Bit Type | Bit Gauge Length (in.) | Assembly Type | Logged Interval | | Bit Depth Interval | | Date / Time | | Circ. Time (hrs.) |
|-------------|-------------|-------------|----------------|----------|------------------------|---------------|-----------------|--------------|--------------------|----------|-------------------|-------------------|-------------------|
| | | | | | | | Top (ft.) | Bottom (ft.) | From (ft.) | To (ft.) | Start | End | |
| 1 | 1 | 1 | 8.500 | PDC | 2.000 | Steerable | 6000 | 12970 | 1930 | 13008 | 11/Dec/2015 22:15 | 15/Dec/2015 02:00 | 47.5 |

Crew

| Name | Arrive | Depart | Name | Arrive | Depart | Name | Arrive | Depart |
|-----------------|-------------|-------------|------------------|-------------|-------------|-------------|-------------|-------------|
| | Wellsite | Wellsite | | Wellsite | Wellsite | | Wellsite | Wellsite |
| Matthew Leopold | 12/Dec/2015 | 15/Dec/2015 | Mauricio Garcias | 12/Dec/2015 | 15/Dec/2015 | Adam Harris | 12/Dec/2015 | 15/Dec/2015 |
| Ryan Kielian | 12/Dec/2015 | 15/Dec/2015 | | | | | | |

Mud Properties Record

| Date / Time | LWD Run No. | Measured Depth (ft.) | Mud Type | Density (ppg) | Viscosity (cp) | pH | Fluid Loss (cc) | Oil / Water | Source | Total Chlorides (ppm) | K+ |
|-------------------|----------------|----------------------------|-------------|------------------|-------------------|-----|-----------------------|----------------|----------------|-----------------------------|-----|
| 11/Dec/2015 05:09 | 1 | 1930 | Oil Based | 9.1 | 14 | N/A | 7.1 | 63 / 28 | Active Mud Pit | 46000 | N/A |
| 12/Dec/2015 05:09 | 1 | 4917 | Oil Based | 9.2 | 14 | N/A | 7.6 | 62 / 28 | Active Mud Pit | 49000 | N/A |
| 13/Dec/2015 18:00 | 1 | 7500 | Oil Based | 9.2 | 15 | N/A | 8.3 | 63 / 28 | Active Mud Pit | 39000 | N/A |

| Mnemonics | | |
|-----------|-------------------------------------|----------|
| Curve | Description | Units |
| GRAX | Gamma Ray Apparent, 0.5 ft. Avg. | API |
| GRTX | Gamma Ray Time Since Drilled | Min. |
| GRIX | Gamma Ray Data Density | Unitless |
| GRSI | Gamma Ray Slide Indicator | Unitless |
| ROPA | Rate of Penetration, 3.0 ft. Avg. | Ft./Hr. |
| TCDX | Downhole Temperature | Deg. F. |
| TVD | True Vertical Depth | Ft. |
| WOBA | Surface Weight on Bit, 1.0 ft. Avg. | K. lbs. |
| | | |

| Equipment and Service Data | | | | | | |
|----------------------------|----------|------------------|-------------|-----------------------|----------------------|----------------------|
| LWD Run No. | Tool | Serial Number | Measurement | Bit Offset (ft) | Max O.D. (in.) | Min I.D. (in.) |
| 1 | CS | 10184803 | - | 71.11 | 7.000 | 2.250 |
| 1 | BCPM | 11702109 | Telemetry | 60.87 | 7.000 | 2.250 |
| 1 | FLEX SUB | 13598919 | - | 53.71 | 6.000 | 2.250 |
| 1 | OTK | 12563098 | Directional | 48.98 | 7.000 | 2.250 |
| 1 | OTK | 12563098 | Resistivity | 43.17 | 7.000 | 2.250 |
| 1 | OTK | 12563098 | Gamma | 39.14 | 7.000 | 2.250 |
| 1 | OTK | 12563098 | Pressure | 38.25 | 7.000 | 2.250 |
| 1 | CS | 13270819 | - | 34.90 | 7.000 | 2.250 |

| Service and Tool Mnemonics | | |
|----------------------------|-------------|--|
| Mnemonic | Name | Description |
| BCPM | BCPM | Mud pulse telemetry and downhole tool power module |
| FLEX SUB | Flex Sub | Flexible sub connection |
| OTK | OnTrak | Propagation resistivity, propagation conductivity, gamma ray, directional, annular pressure, system memory and VSS |
| CS | Closure Sub | BHA power ring isolator allowing insertion of inert sub into electrically powered BHA |

| Comments |
|---|
| <p>Depth measurements obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes INTEQ logging engineers, depth calibration and measurements could not be independently verified.</p> <p>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 1930 to 13010 feet MD (1889 to 7267 feet TVD).</p> <p>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</p> |

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 onset to correspond with Gamma Ray data acquired while sliding.

Remarks

| Number | Measured Depth (ft) | Hole Section (in.) | LWD Run No. | Remark |
|--------|---------------------------|--------------------------|----------------|---|
| 1 | 5995 | 8.500 | 1 | The interval from Surface to 6000 feet MD (16 to 5745 feet TVD) was not logged due to directional only services required in the vertical section. |
| 2 | | 8.500 | 1 | The interval from 12970 to 13010 feet MD (7267 feet TVD) has no GRAX, GRIX or GRTX due to the Gamma Ray sensor offset to bit. |



Company : Anadarko

Well : ALVIN 2C-29HZ

Interval : 5986.00 - 13020.00 feet

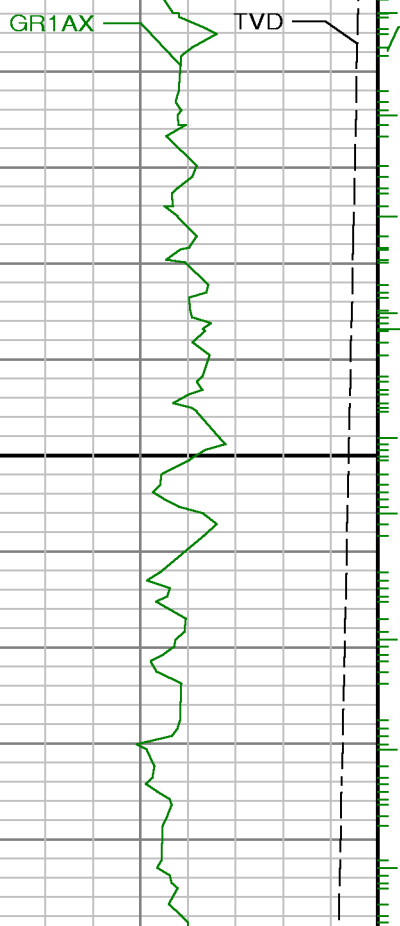
Created : 14/Dec/2015 3:13:17 PM

Gamma Ray Apparent 0.5 ft Avg GR1AX
0 200
API
True Vertical Depth TVD
8000 5650
ft

MD feet 1:240

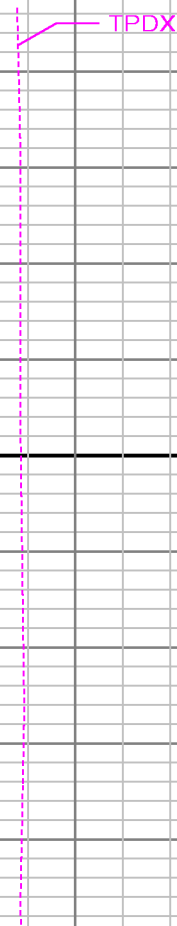
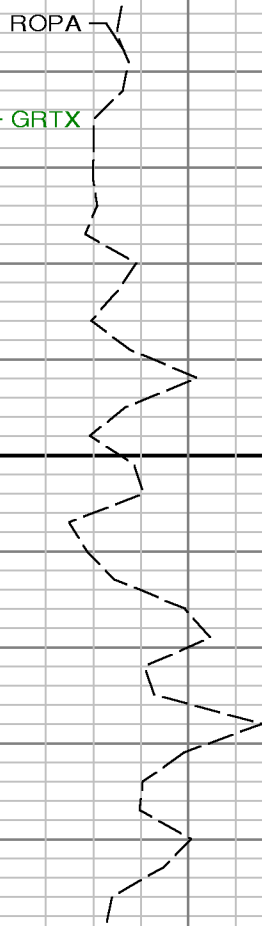
Rate of Penetration 3.0 ft Avg ROPA
800 0
ft/hr
Gamma Time Since Drilled GRTX
0 600
min

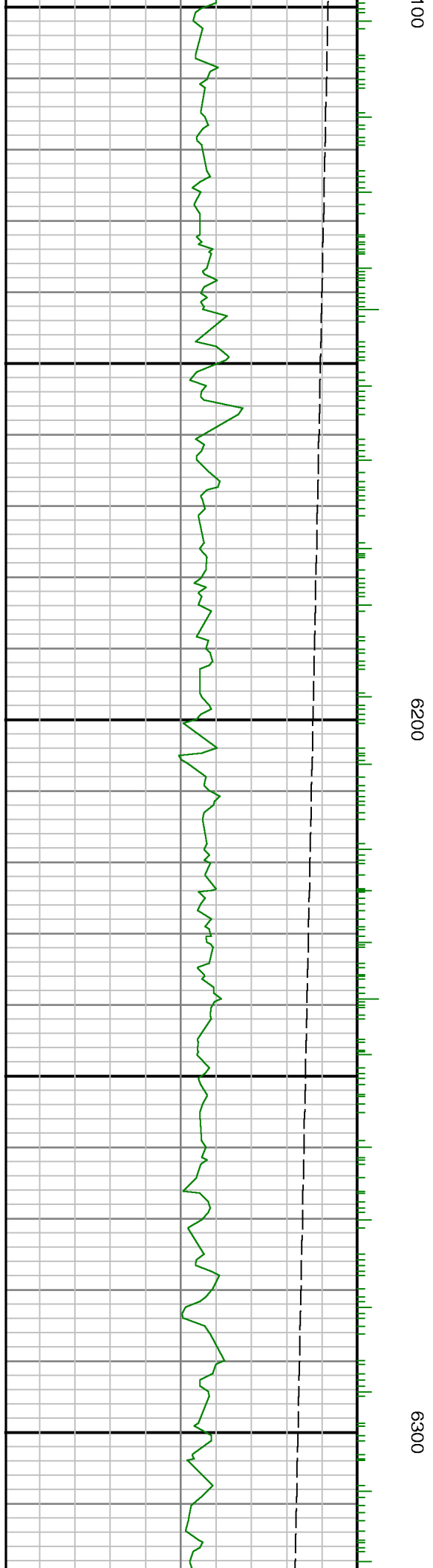
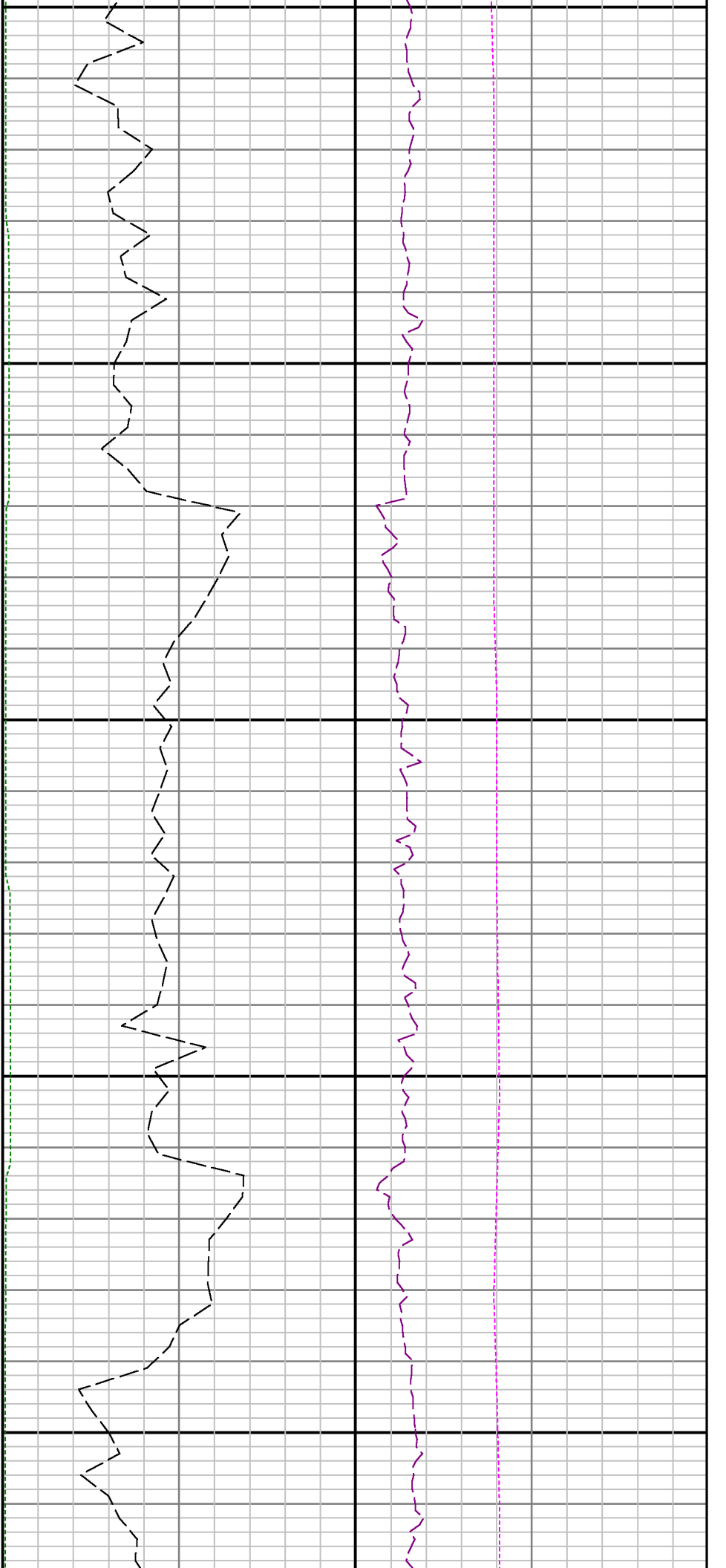
Surface Weight On Bit 1.0 ft Avg WOBA
0 100
klbf
Downhole Temperature TCDX
100 275
degF

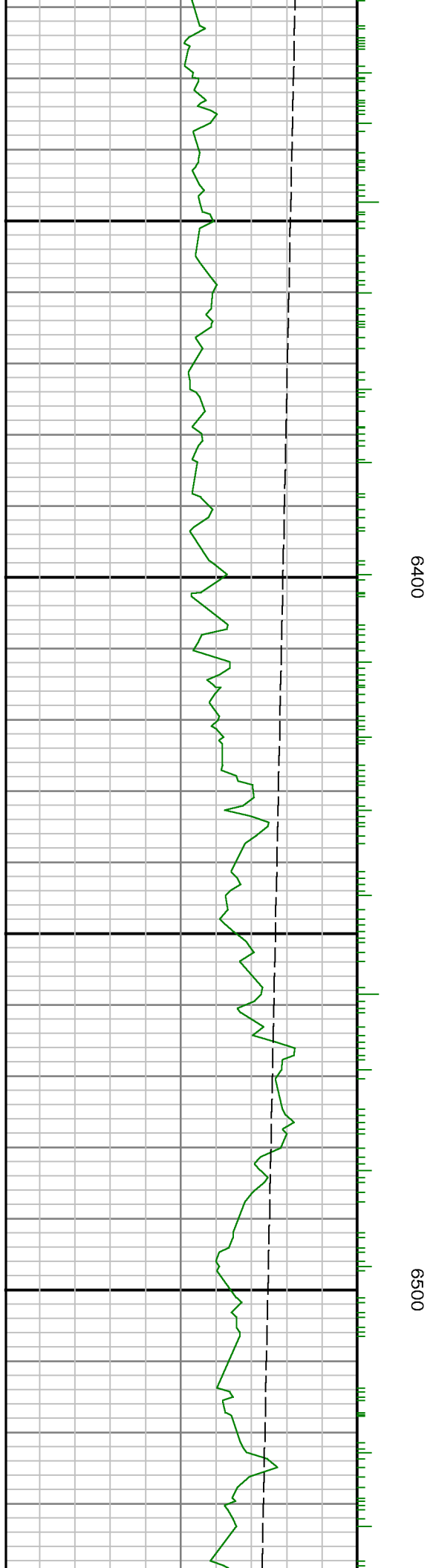
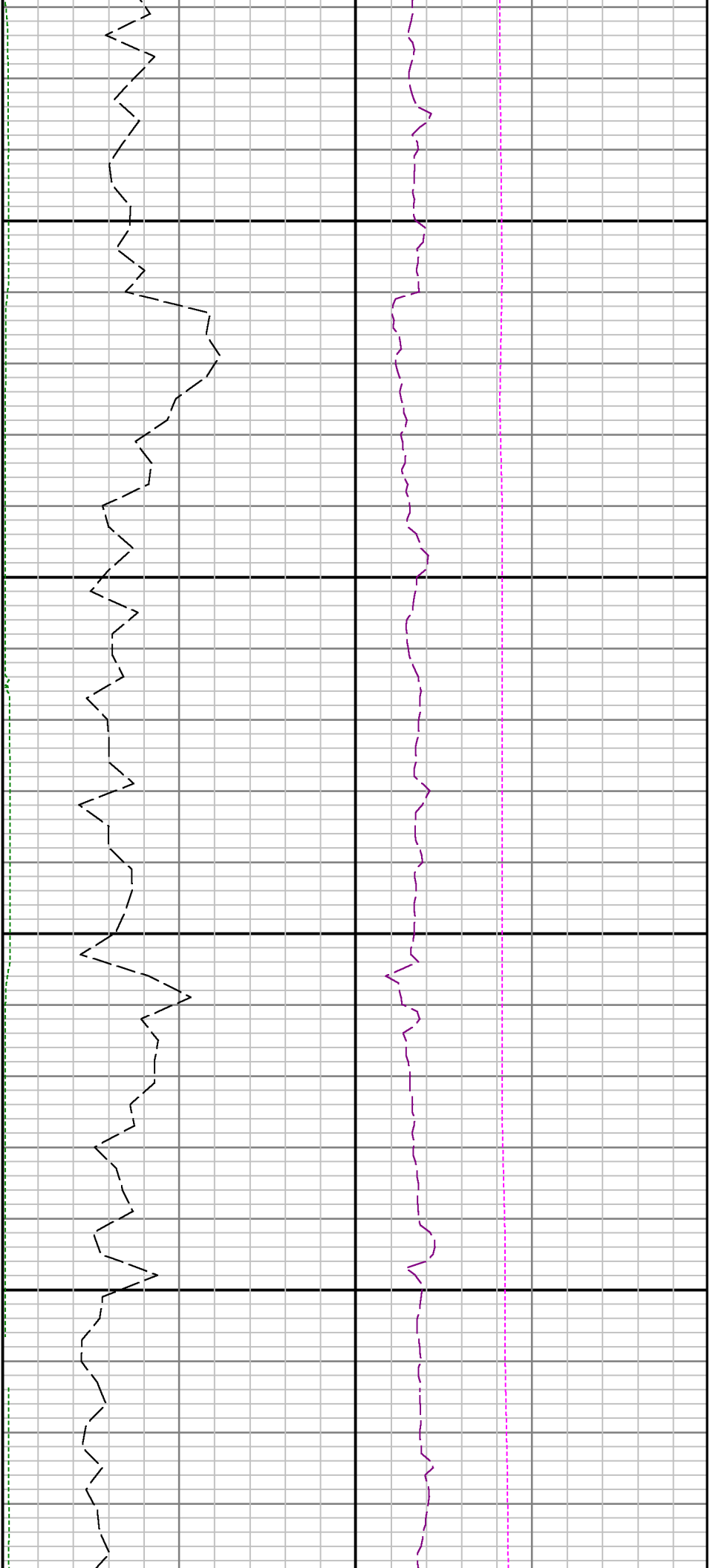


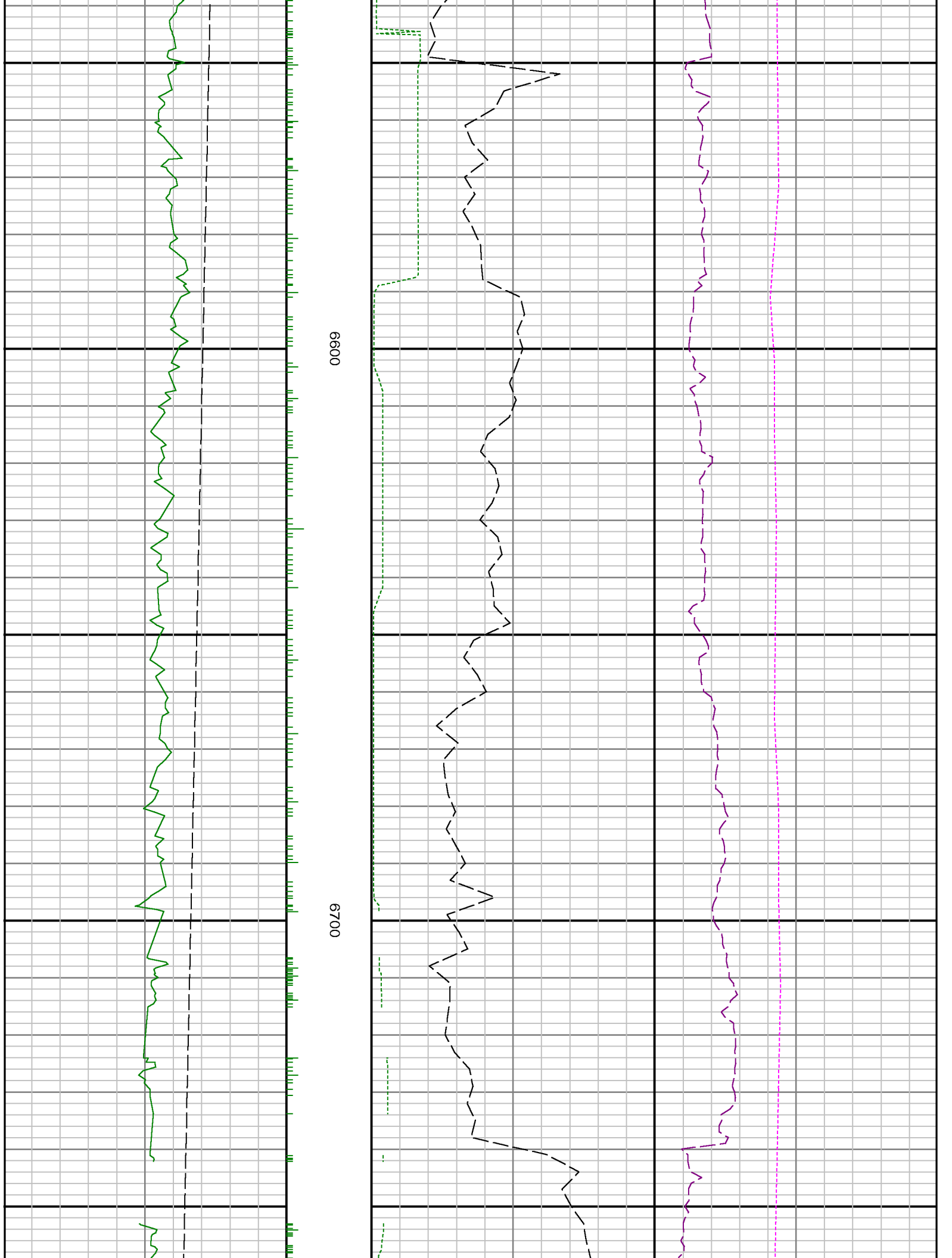
6000
> Run 1
6

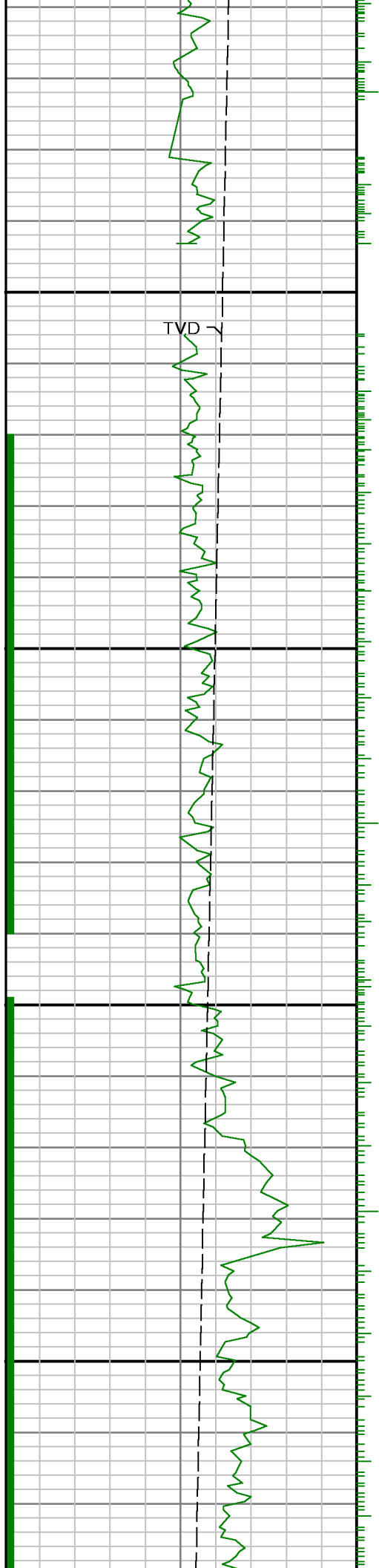
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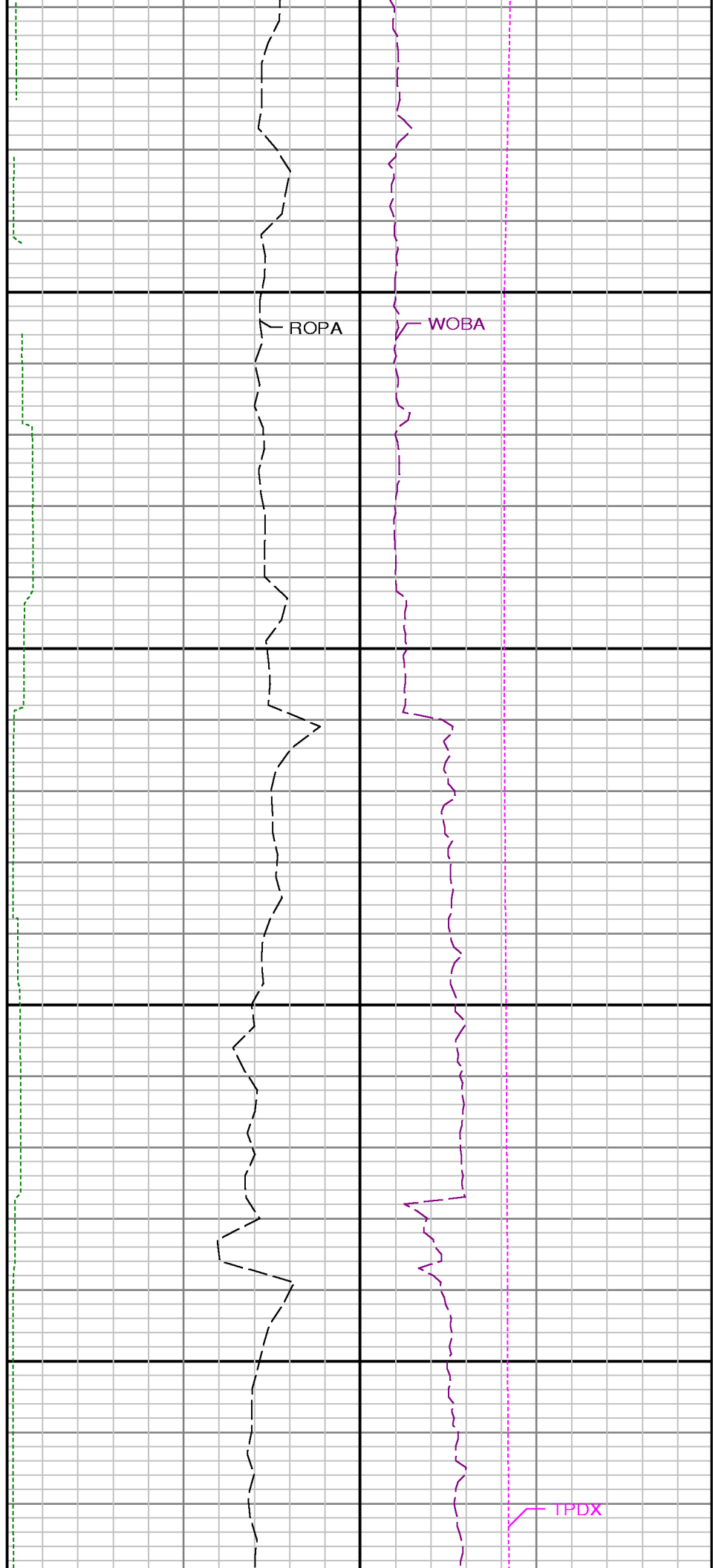




0089

0069

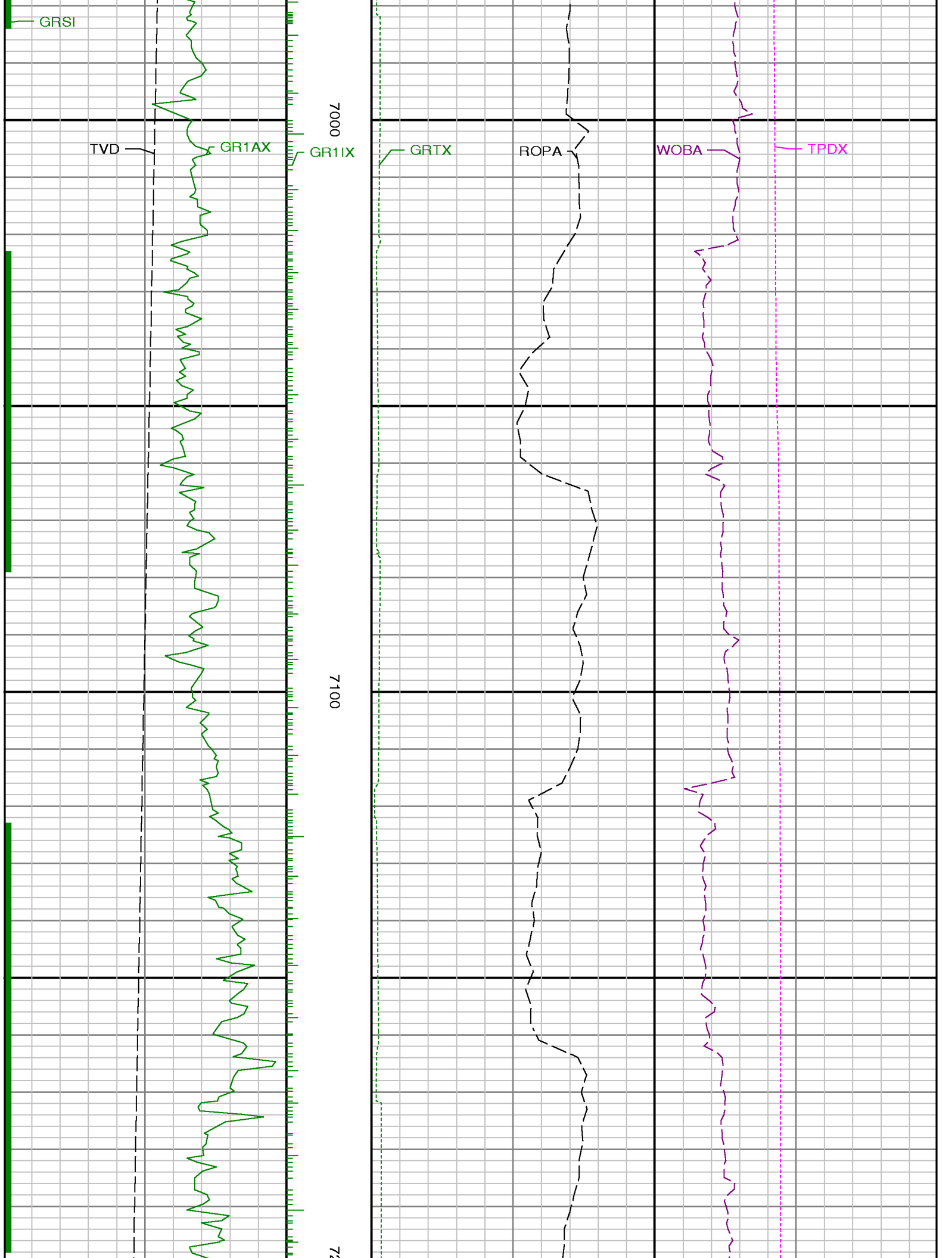
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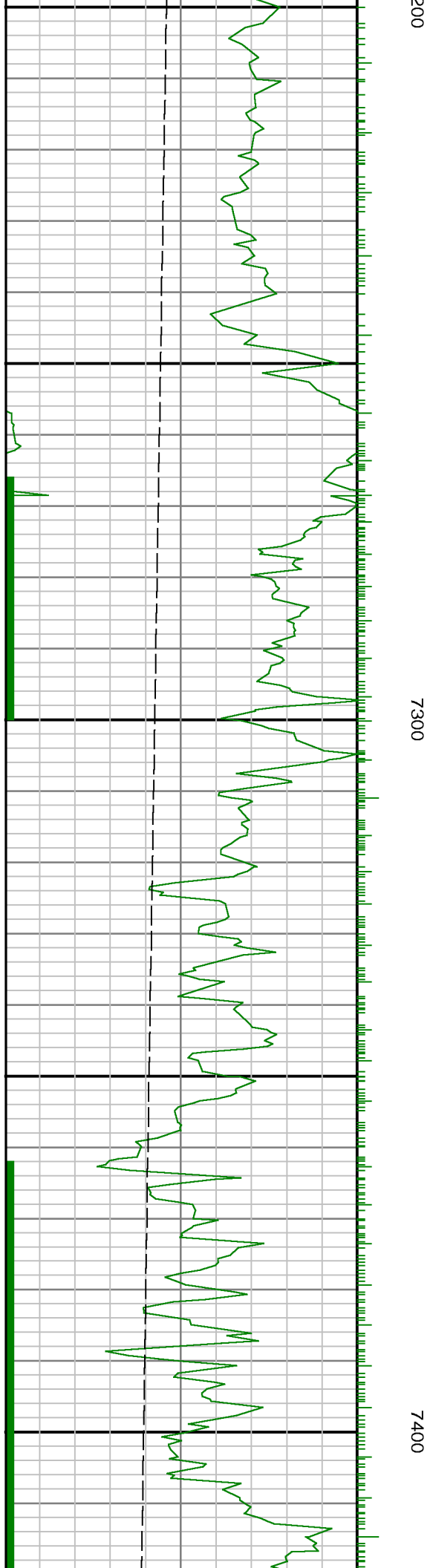
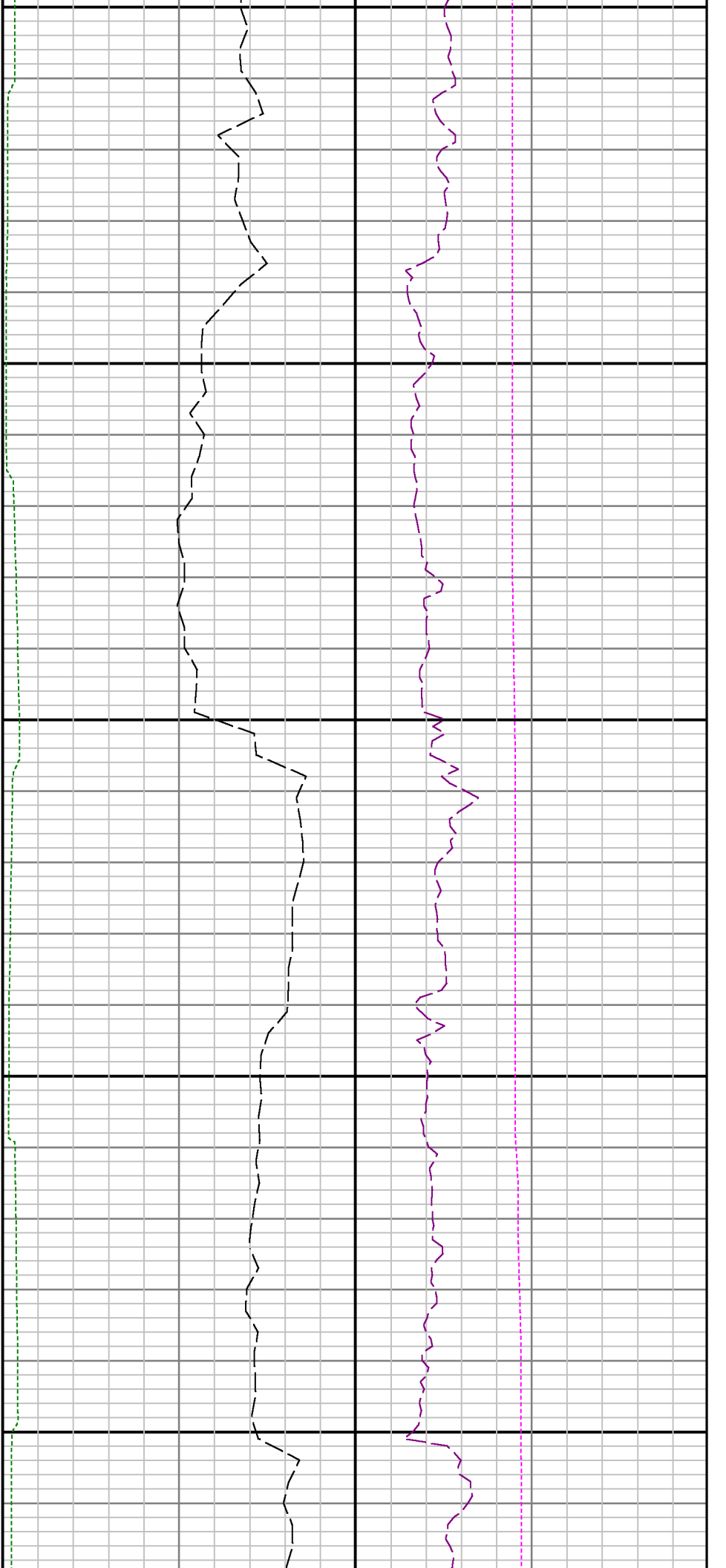


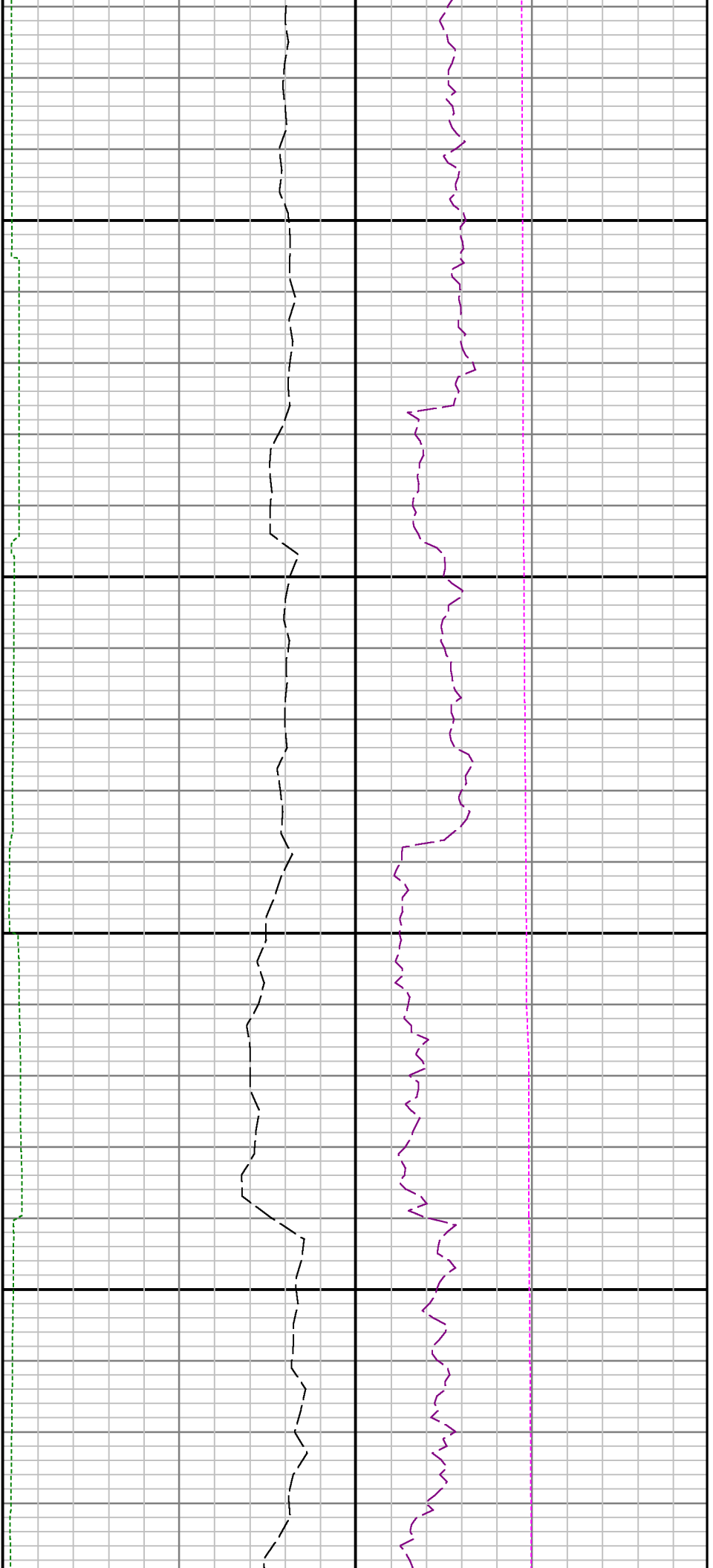
ROP

WOB

TPDX

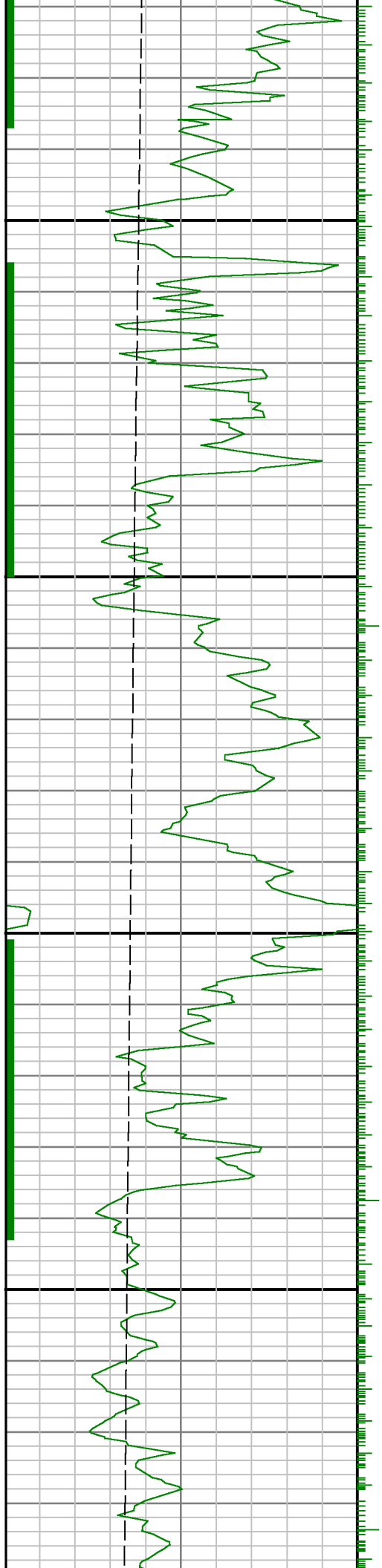


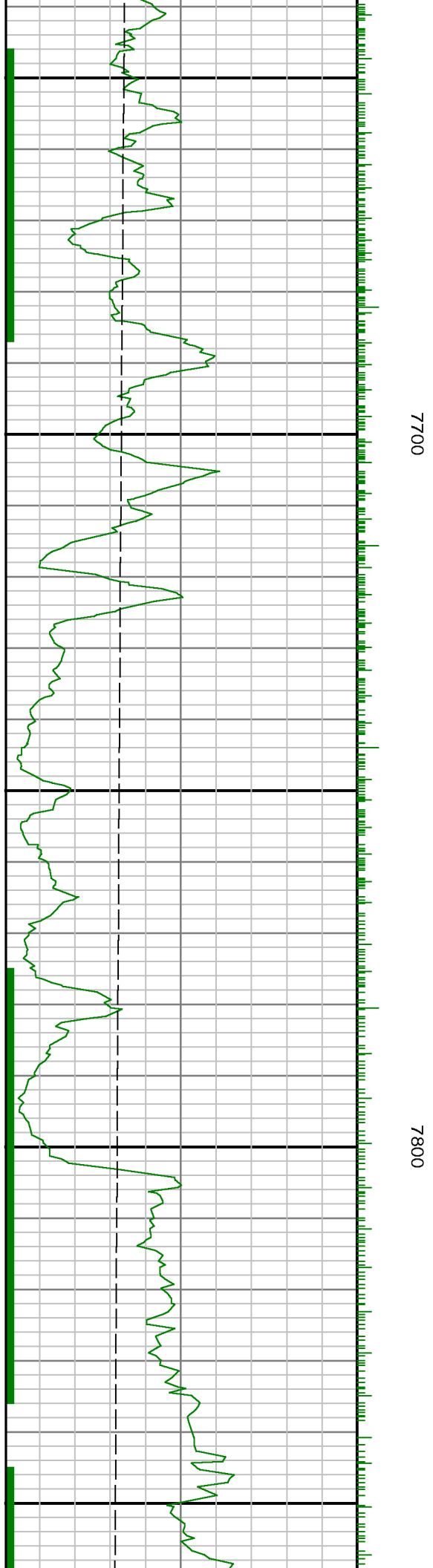


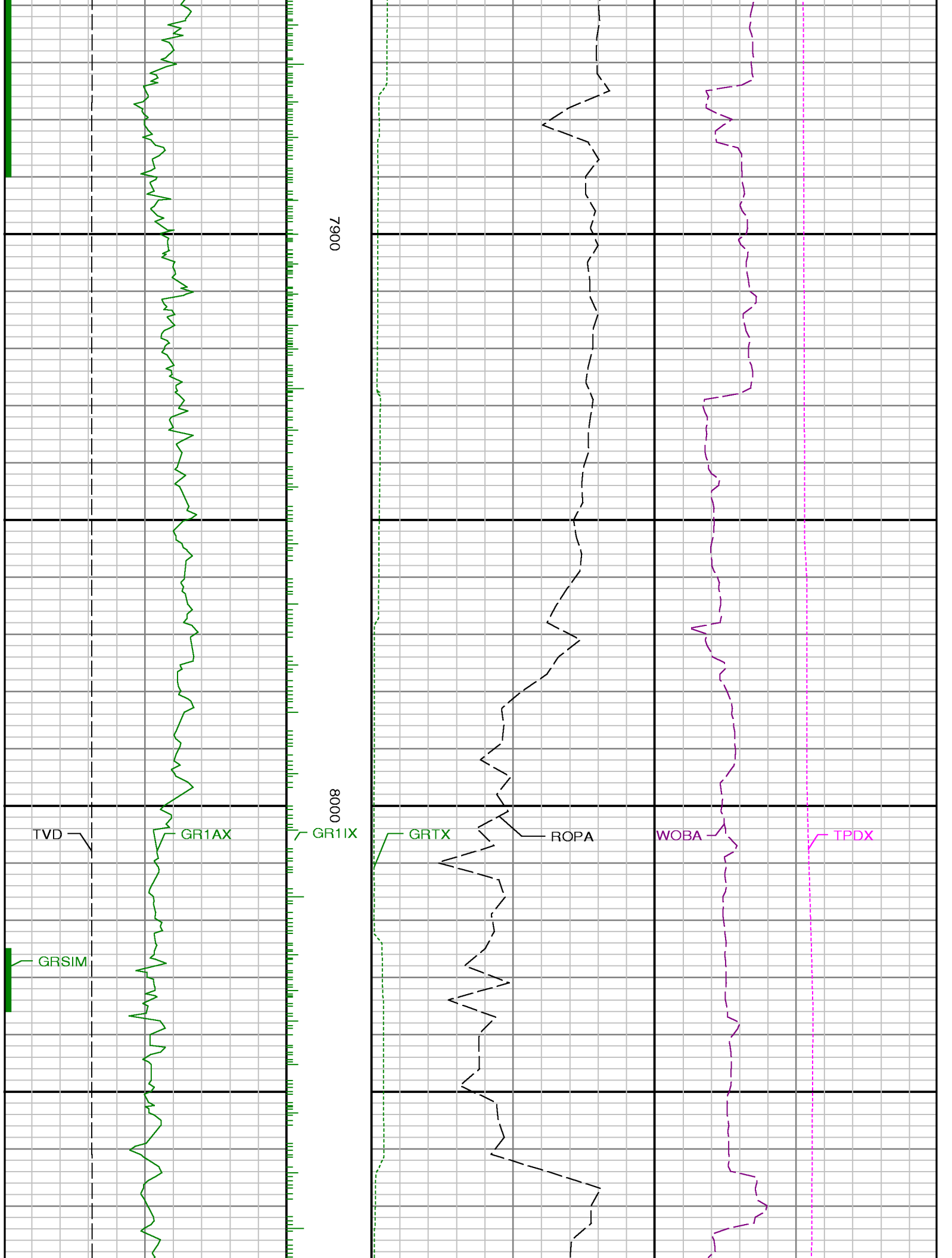


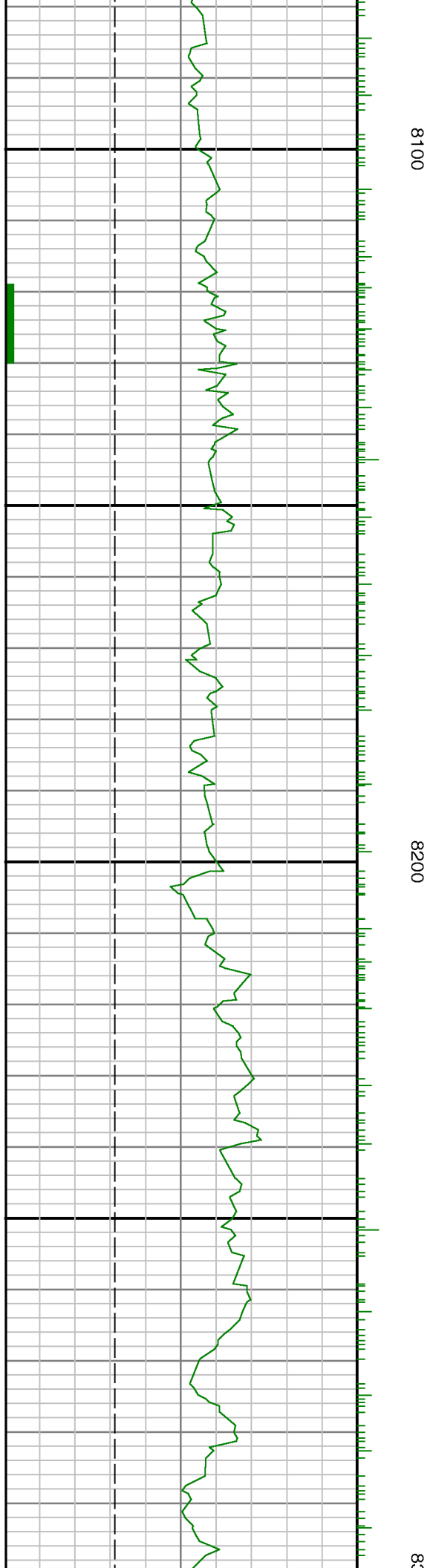
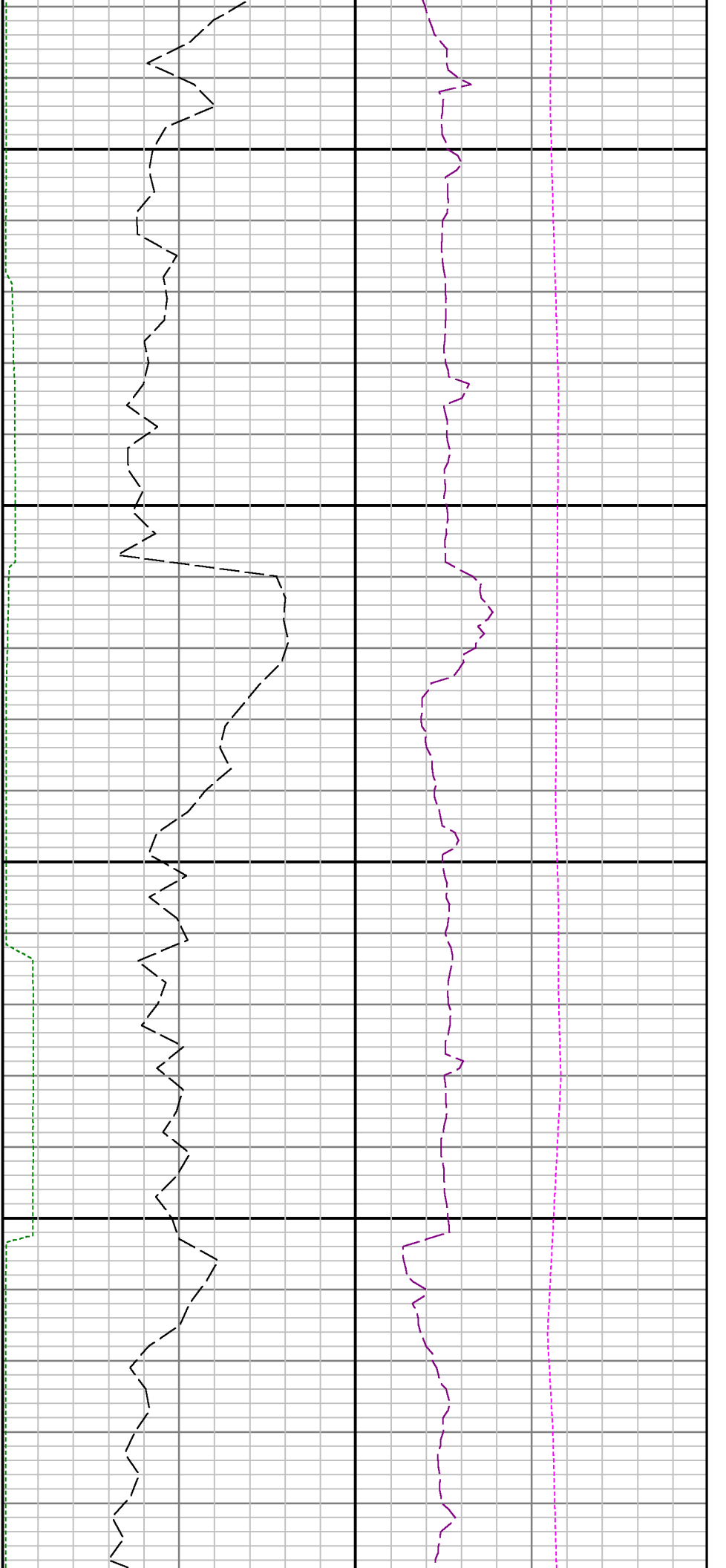
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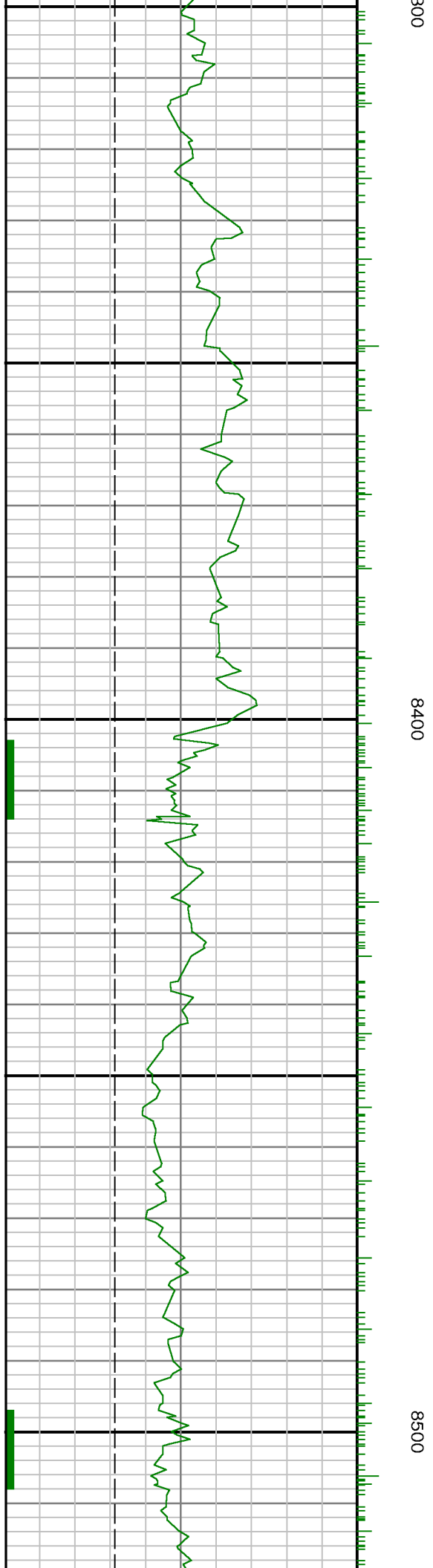
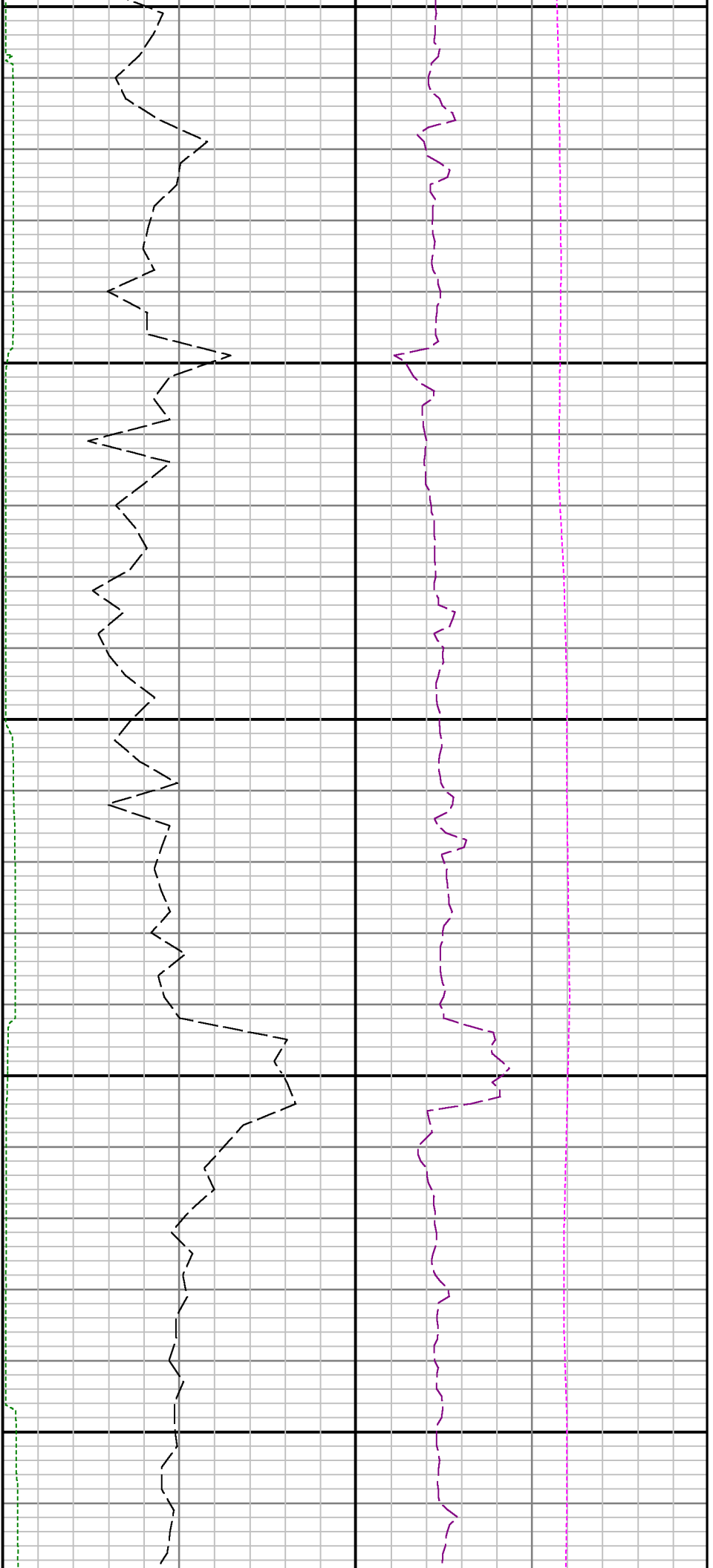
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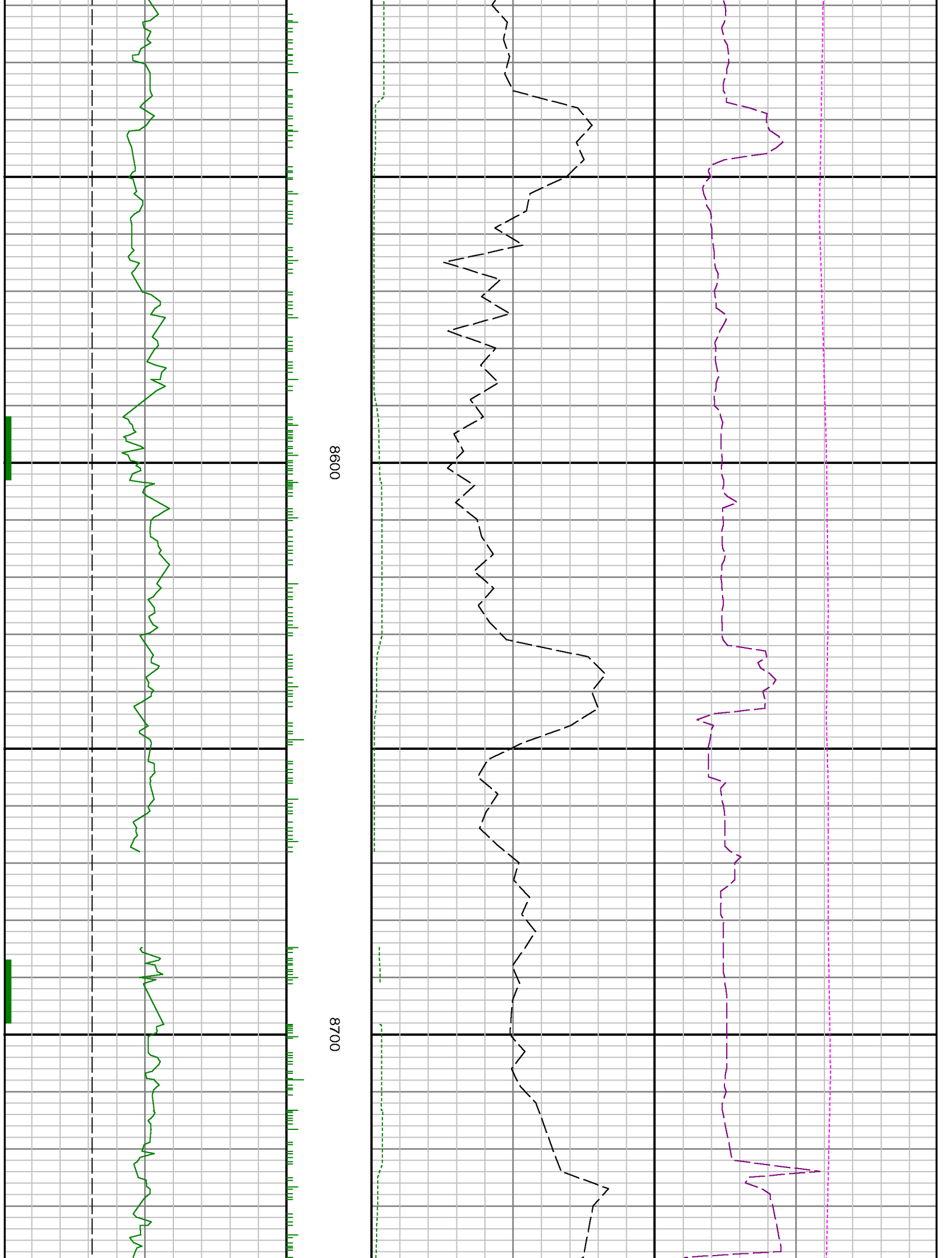


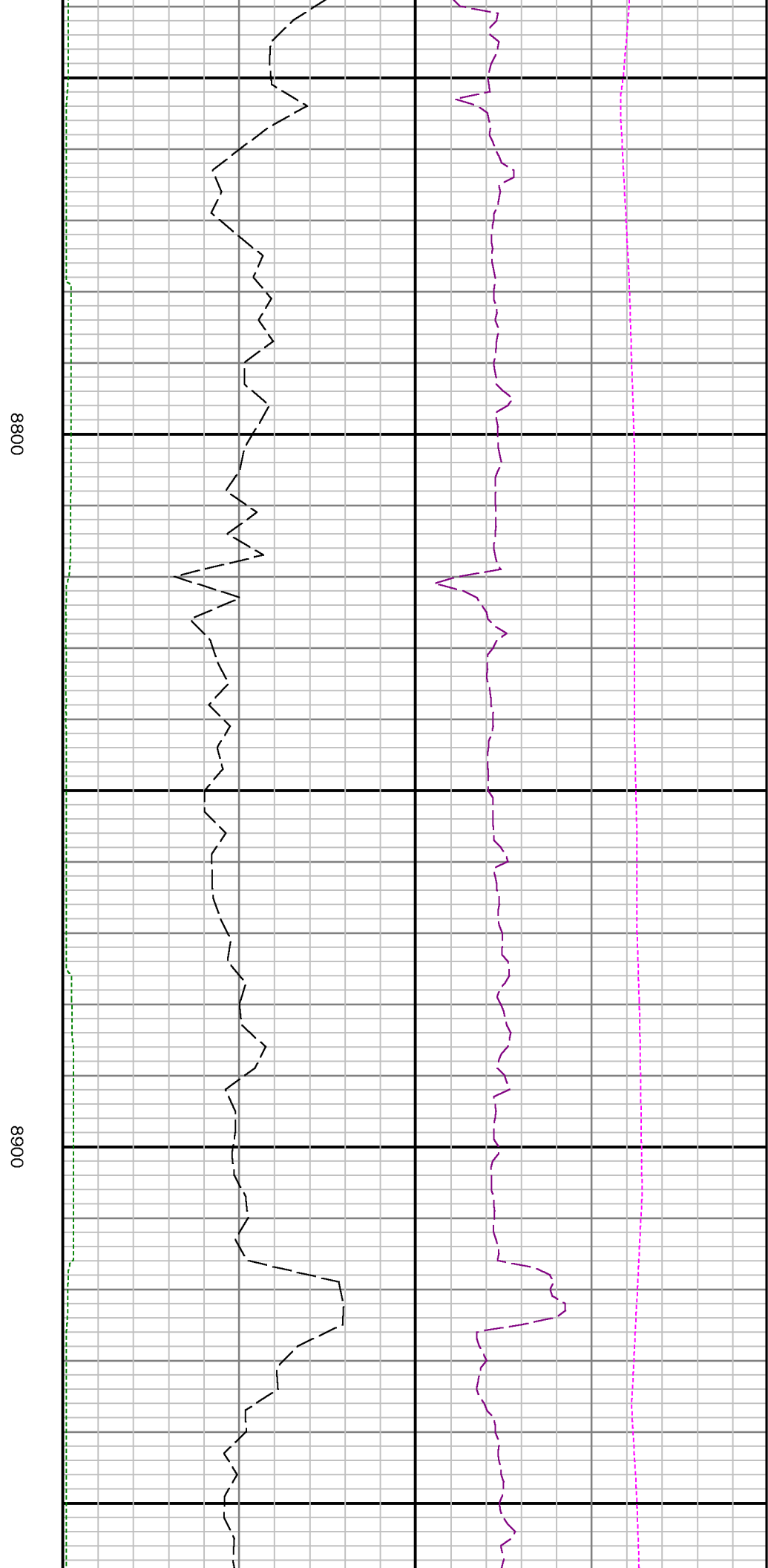
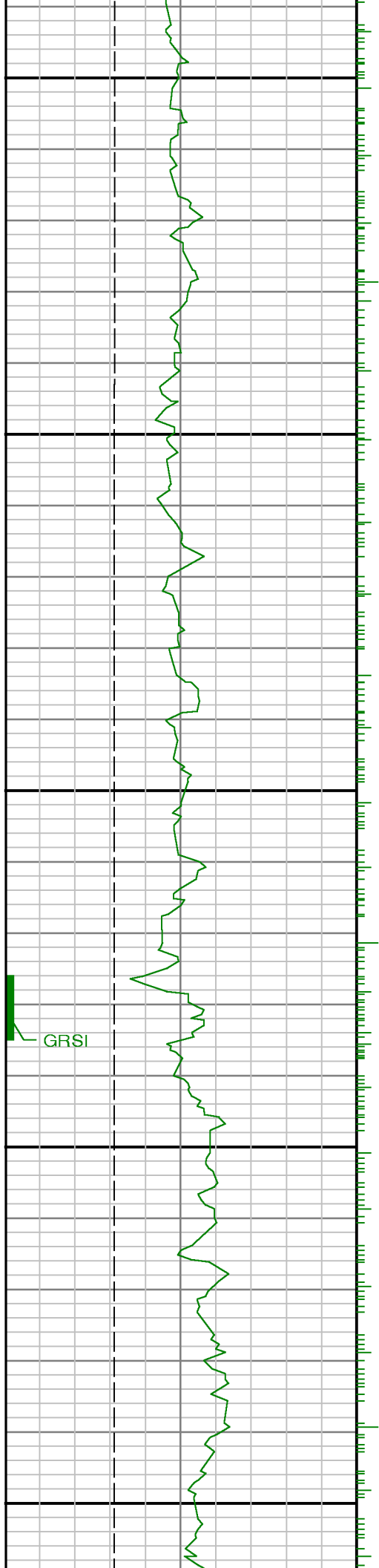


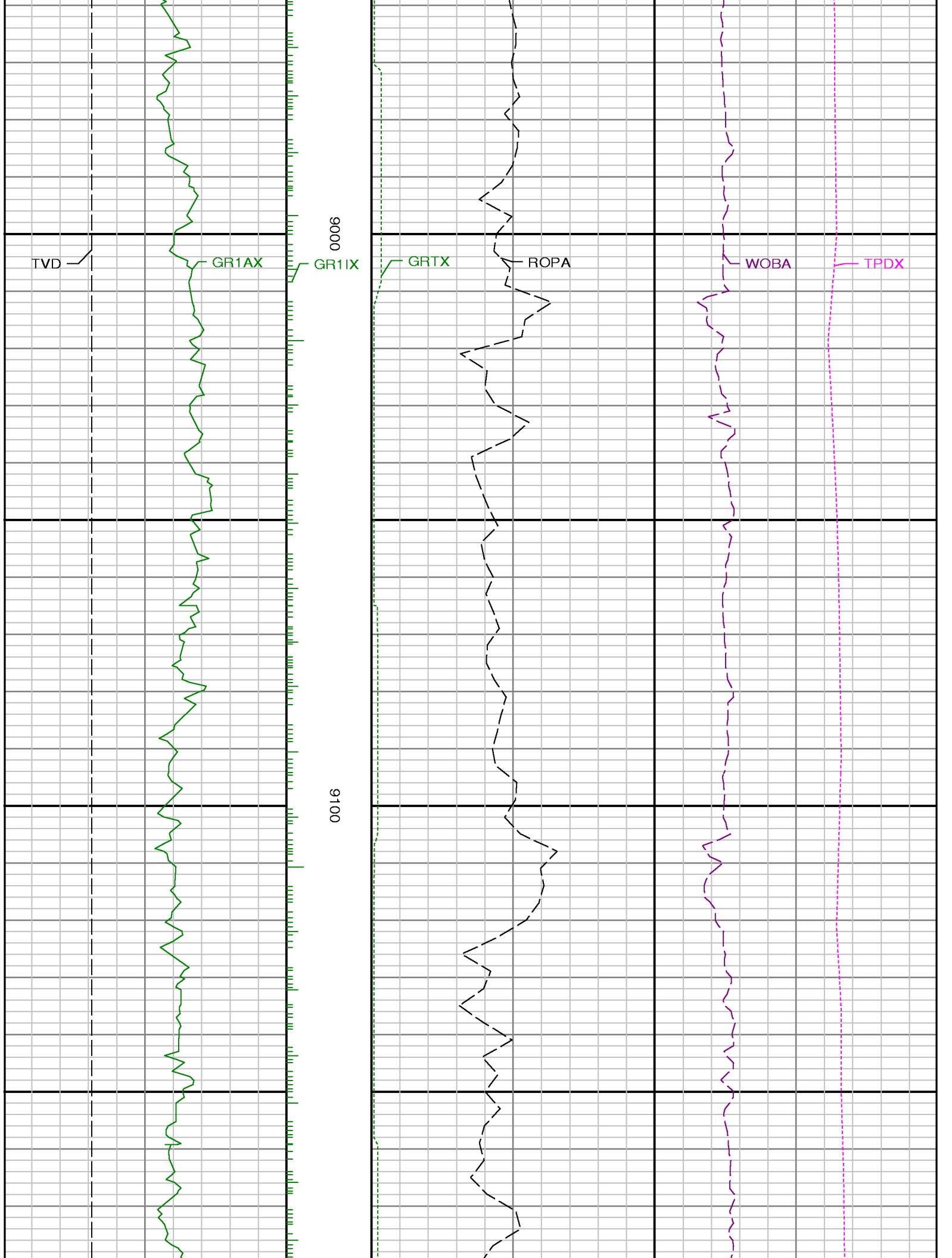


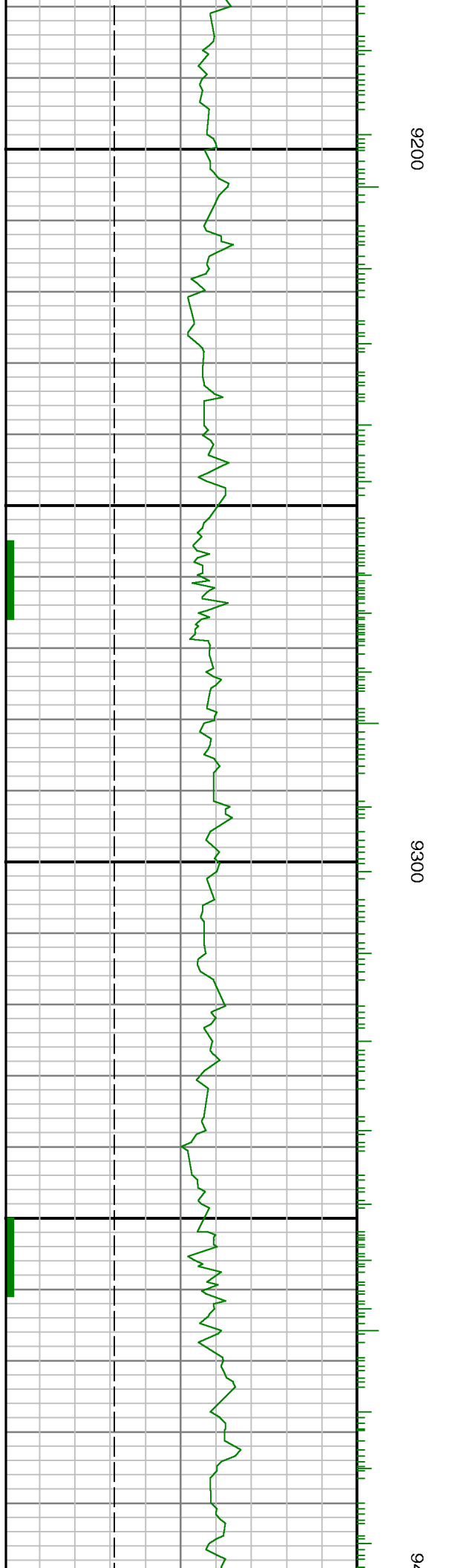
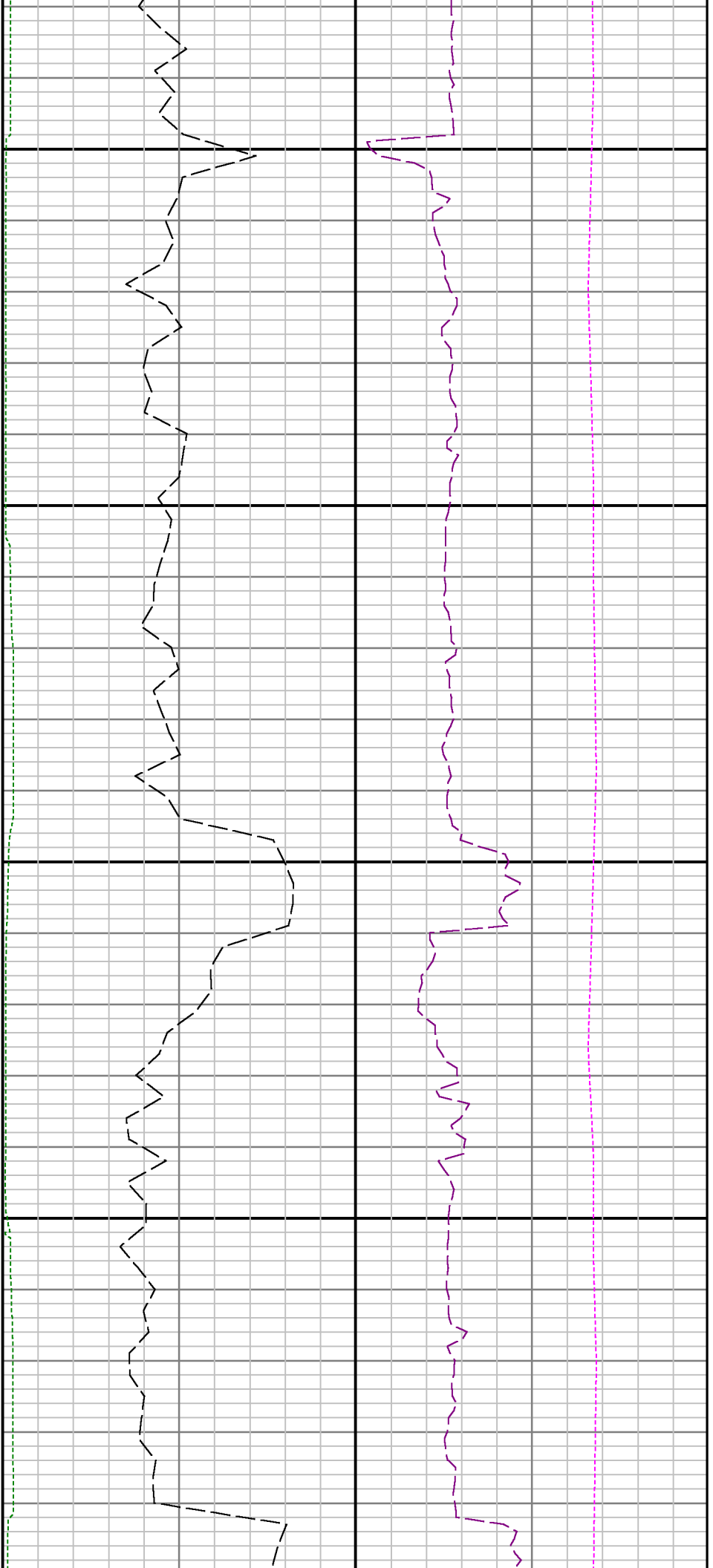


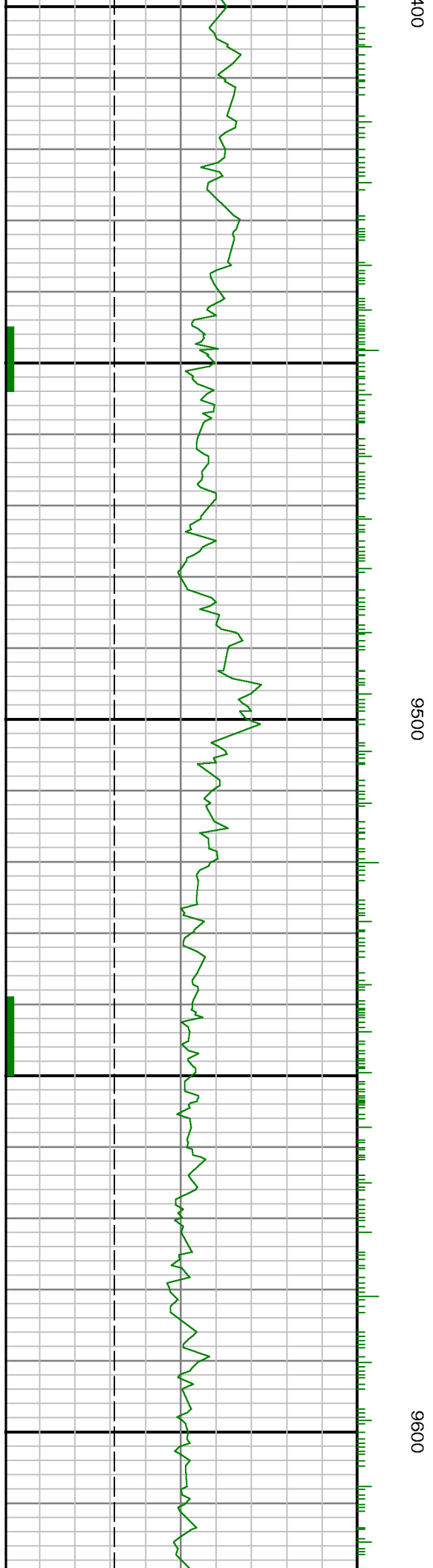
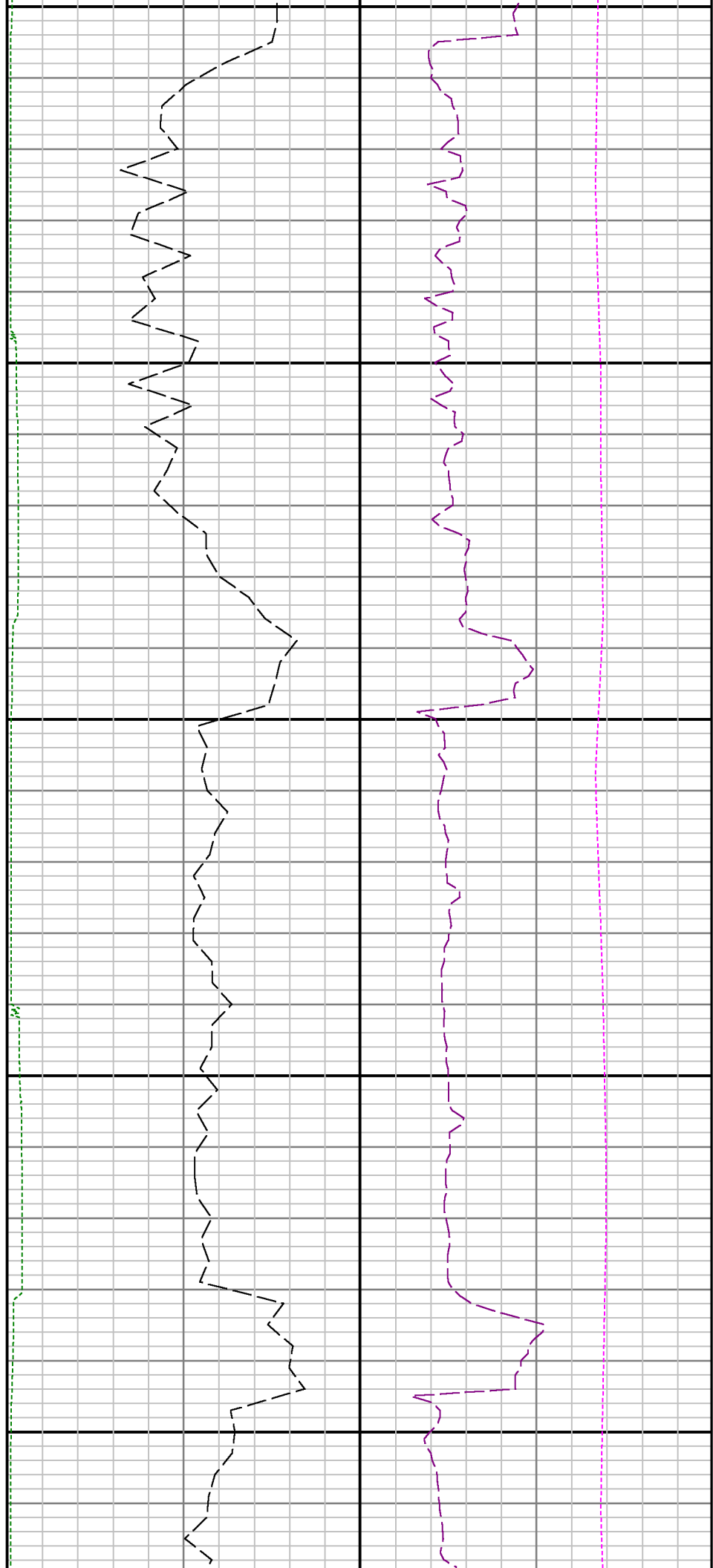


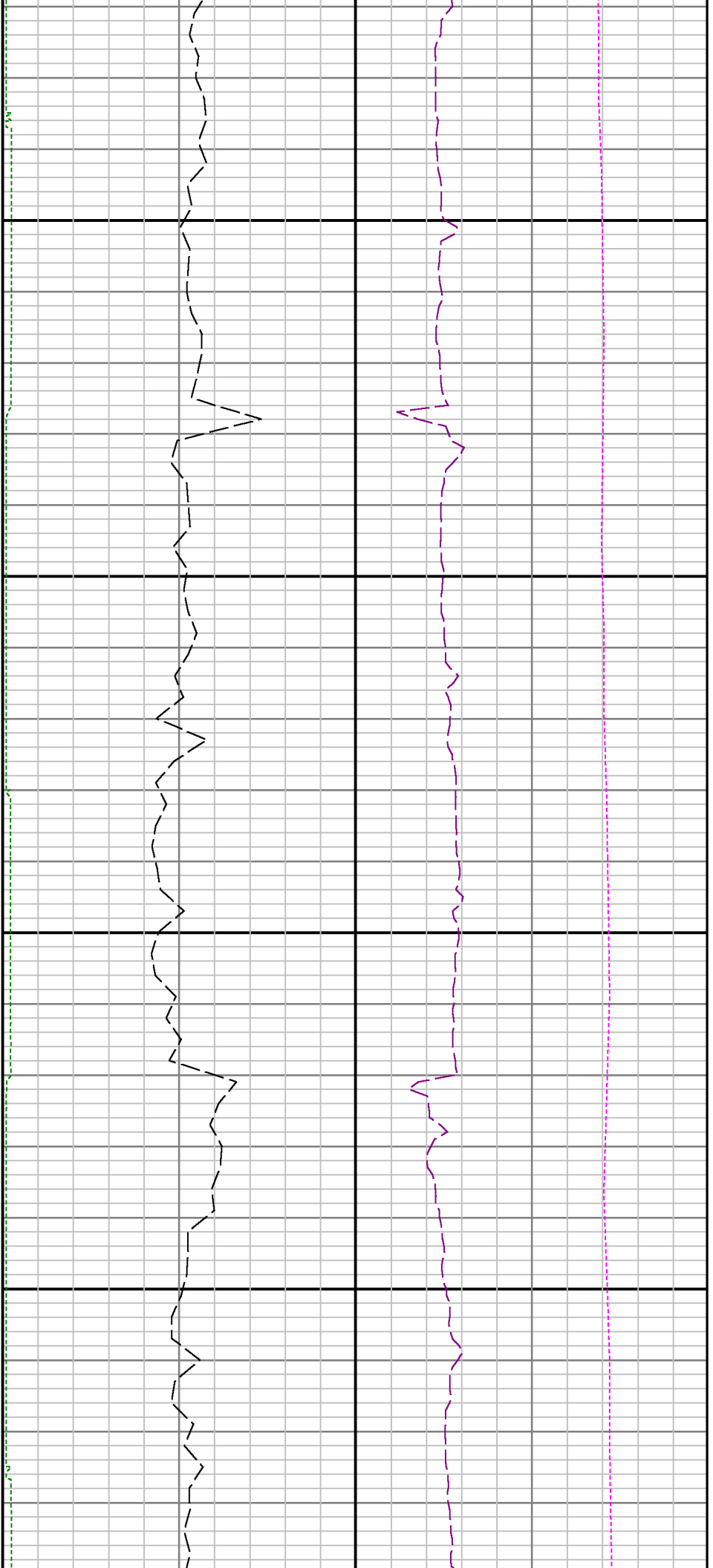






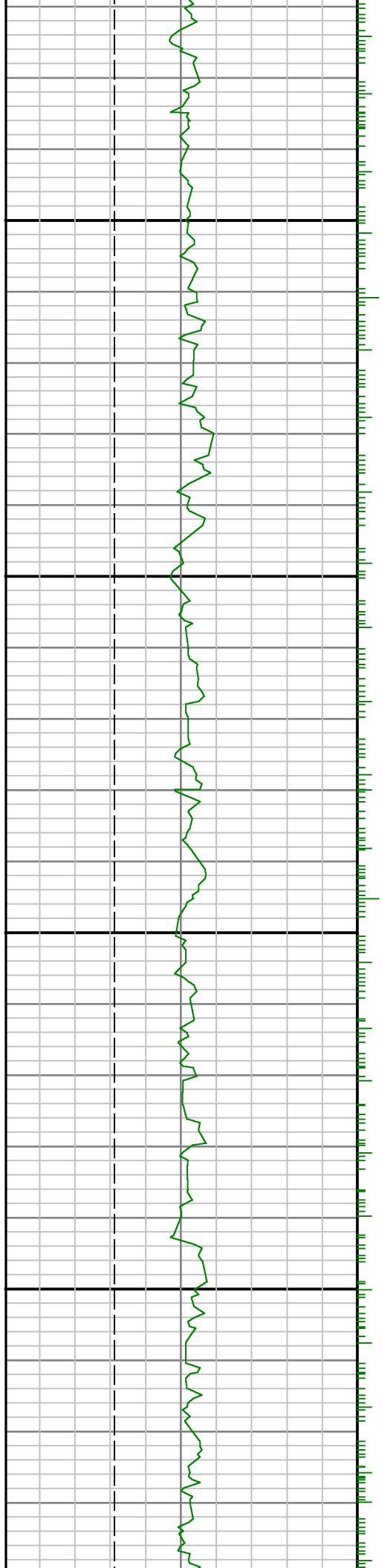


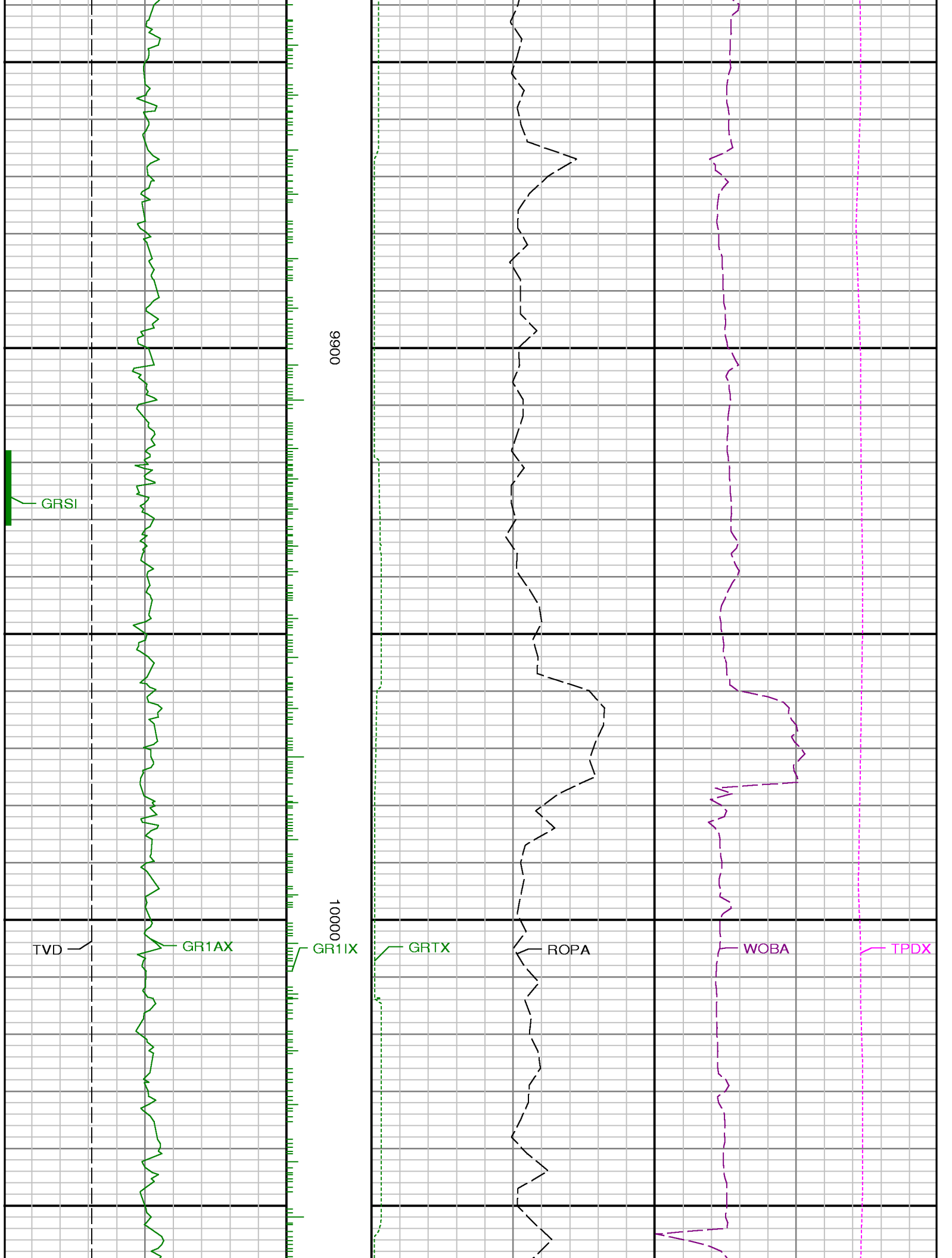




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9800

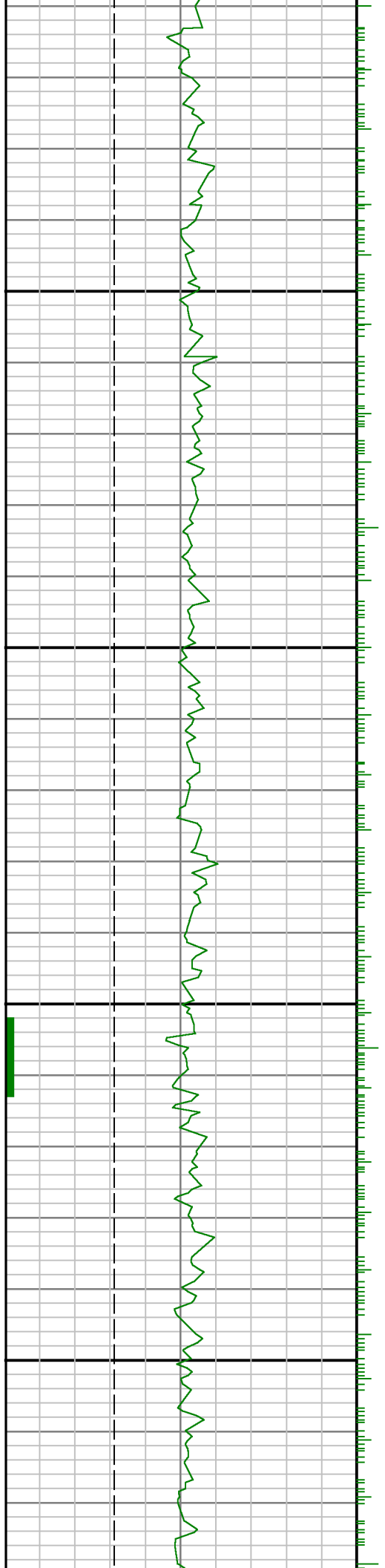


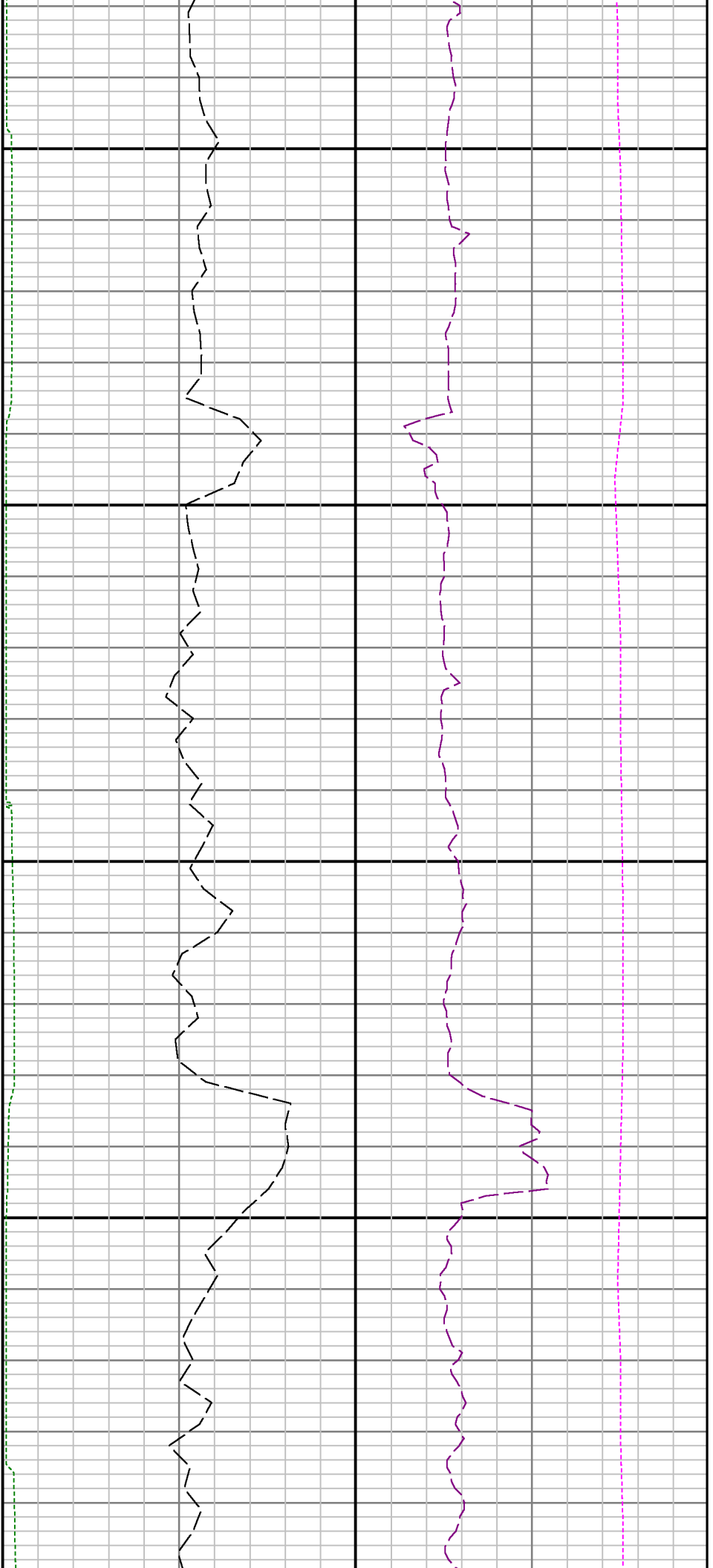




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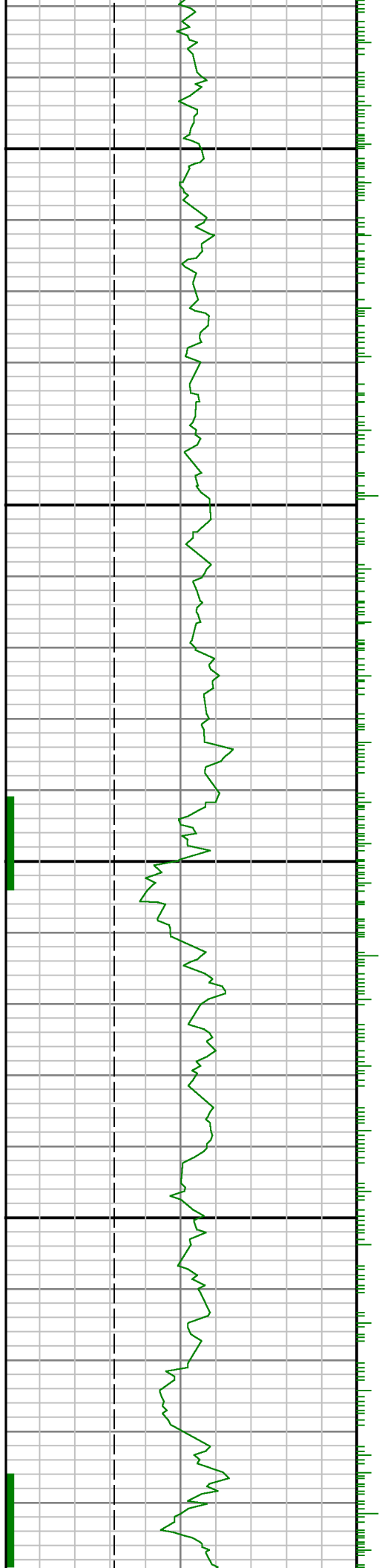


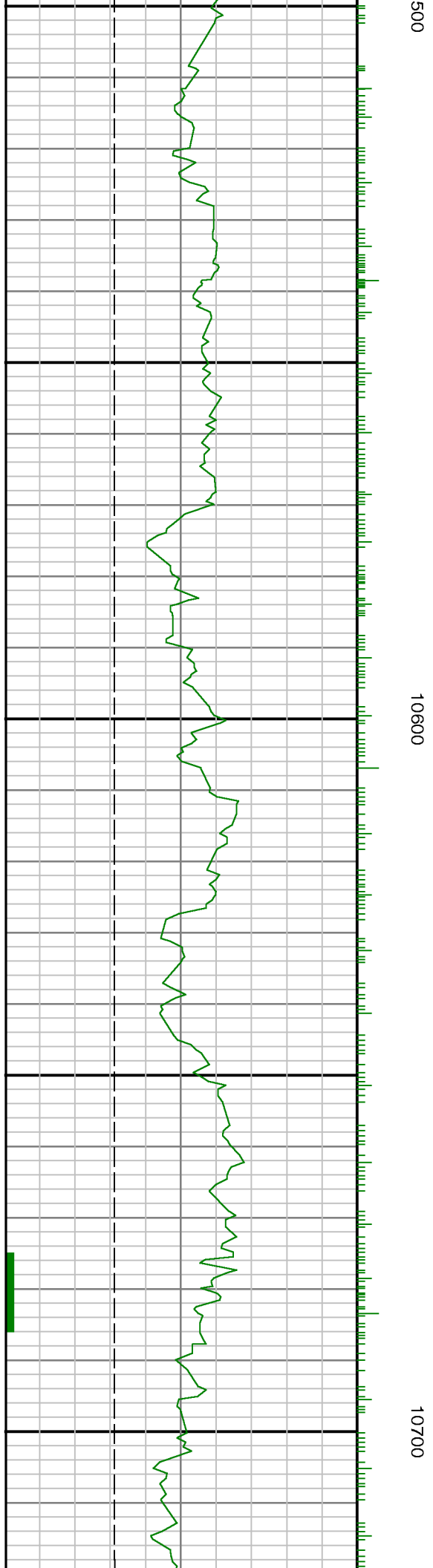
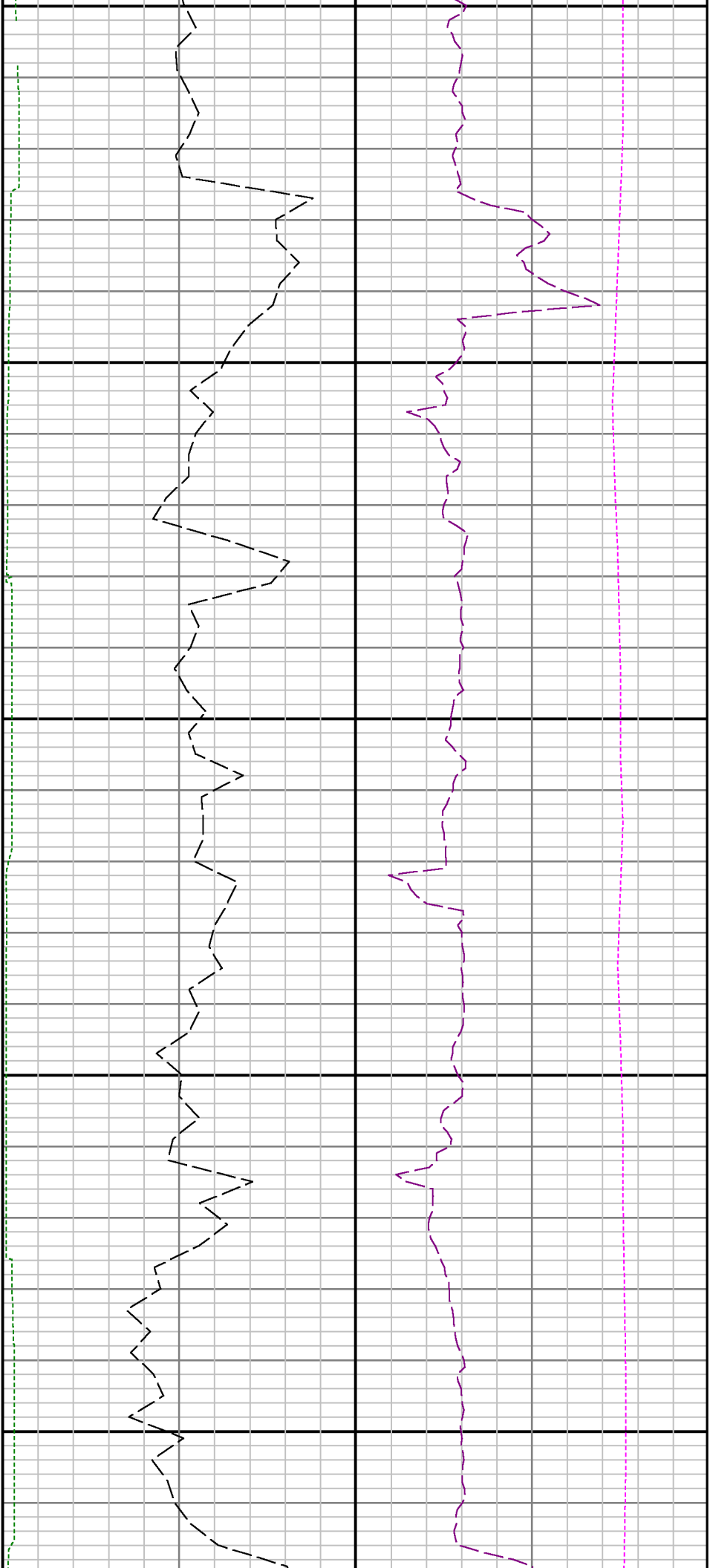


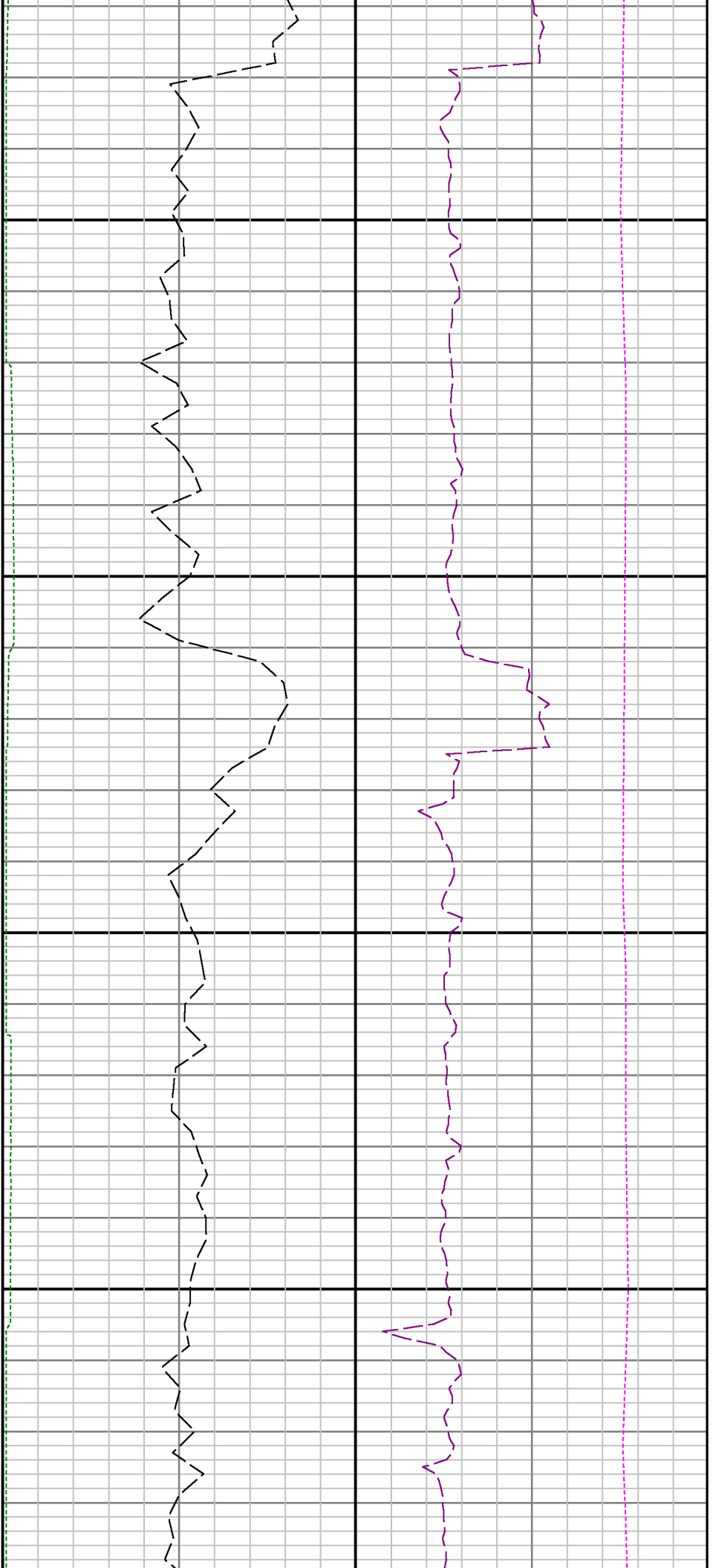
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10400

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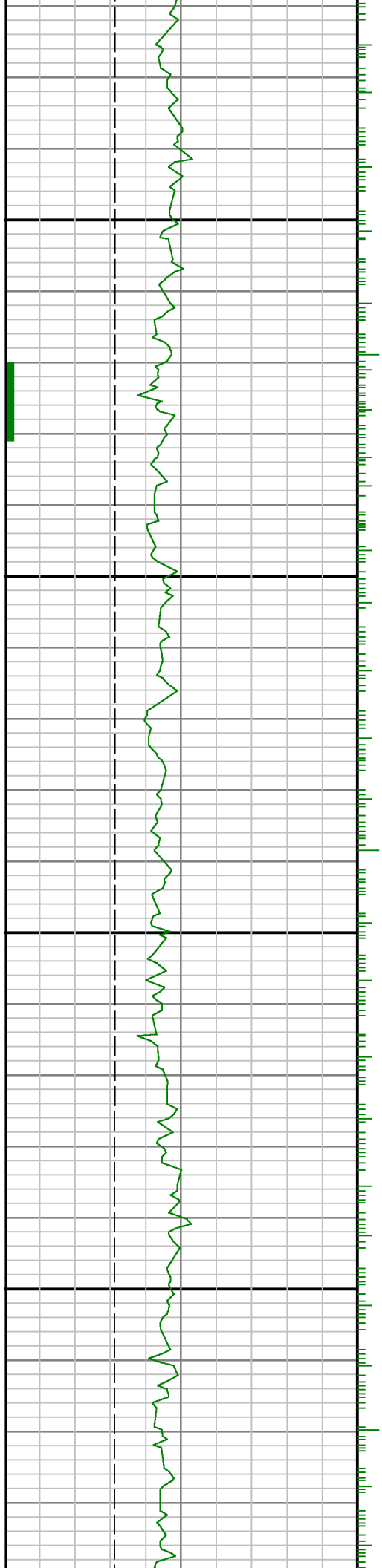






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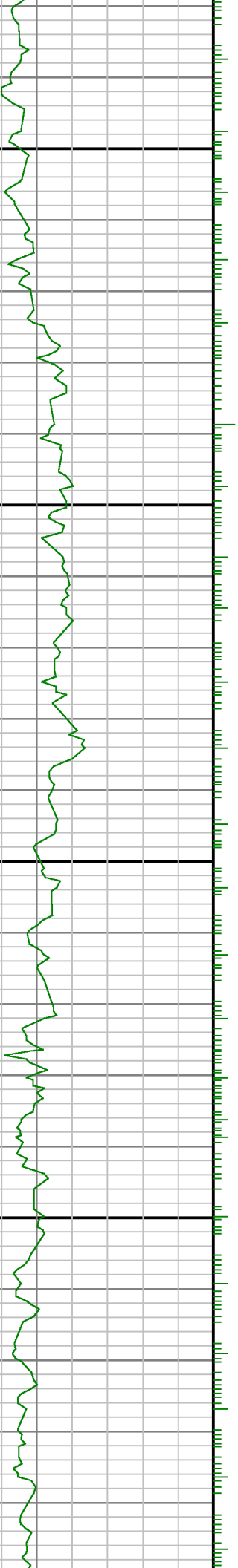


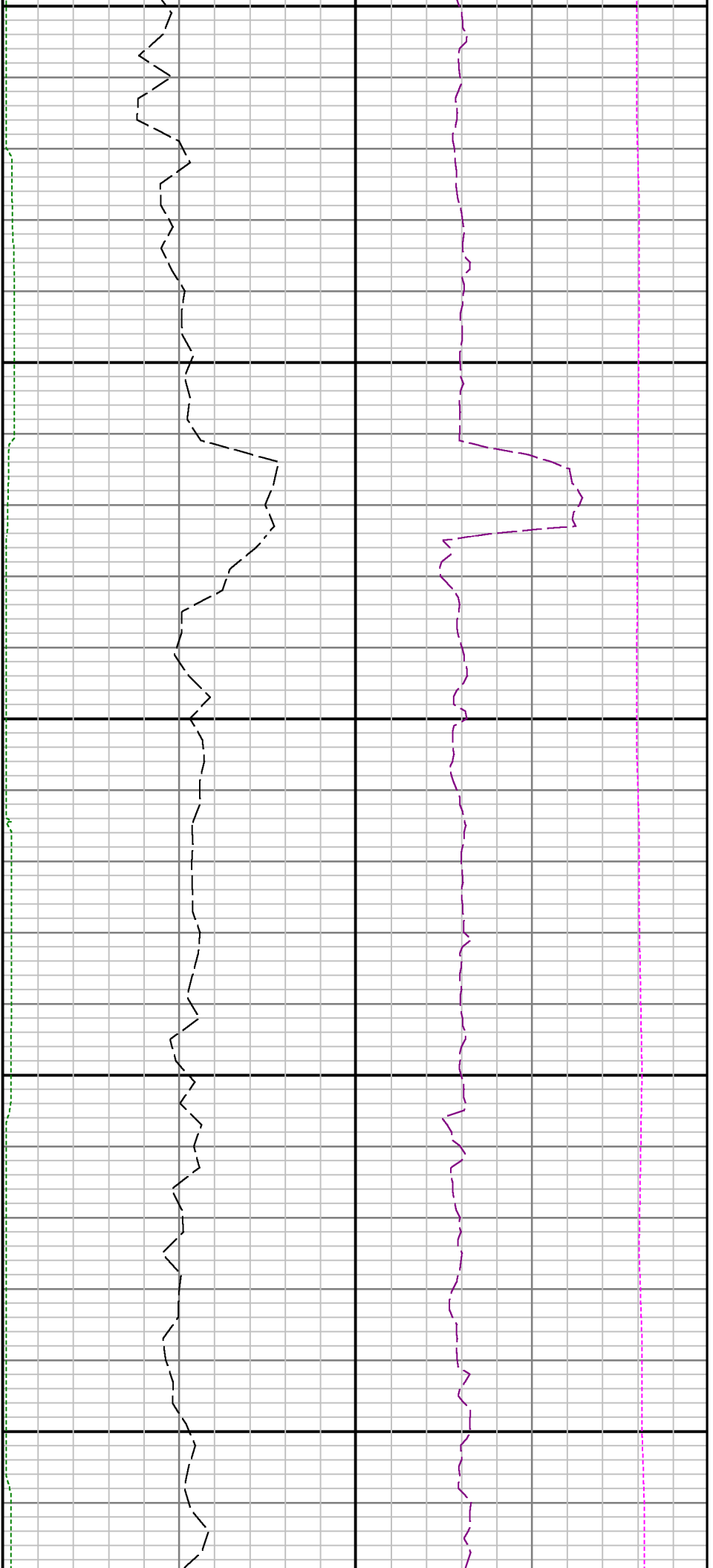


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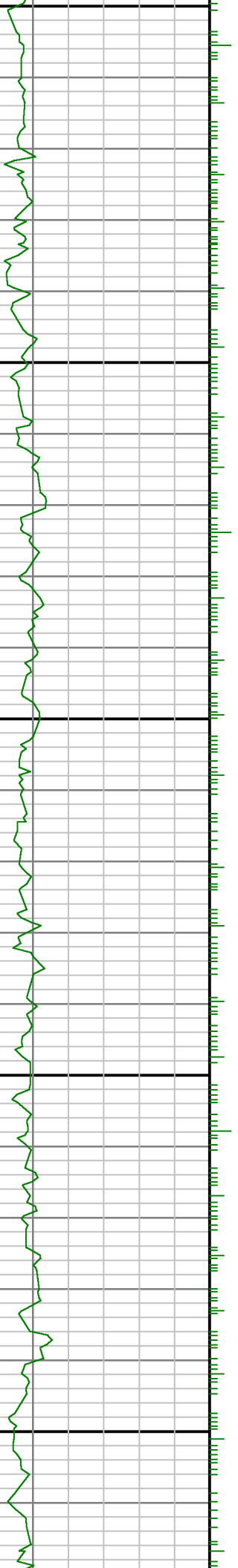


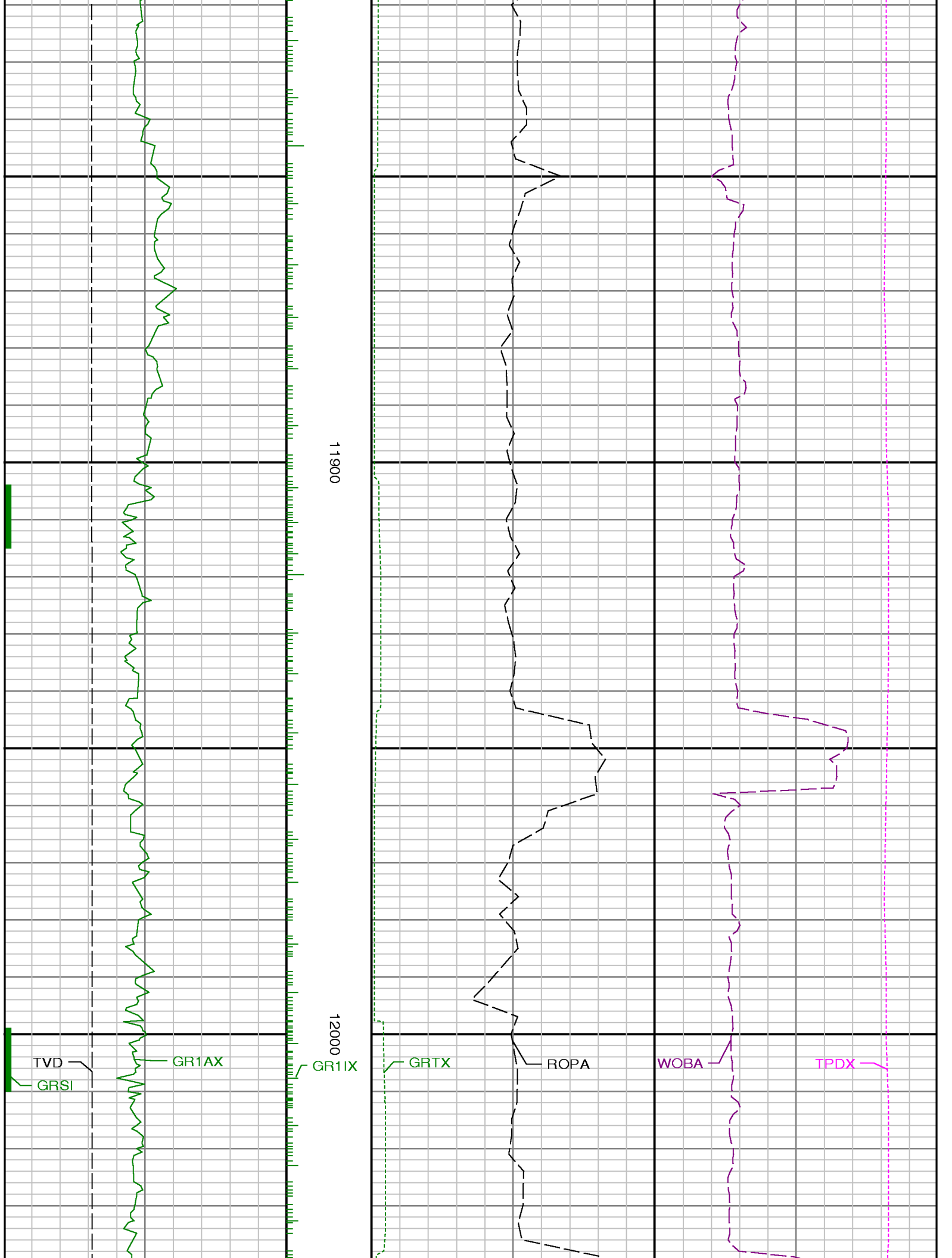


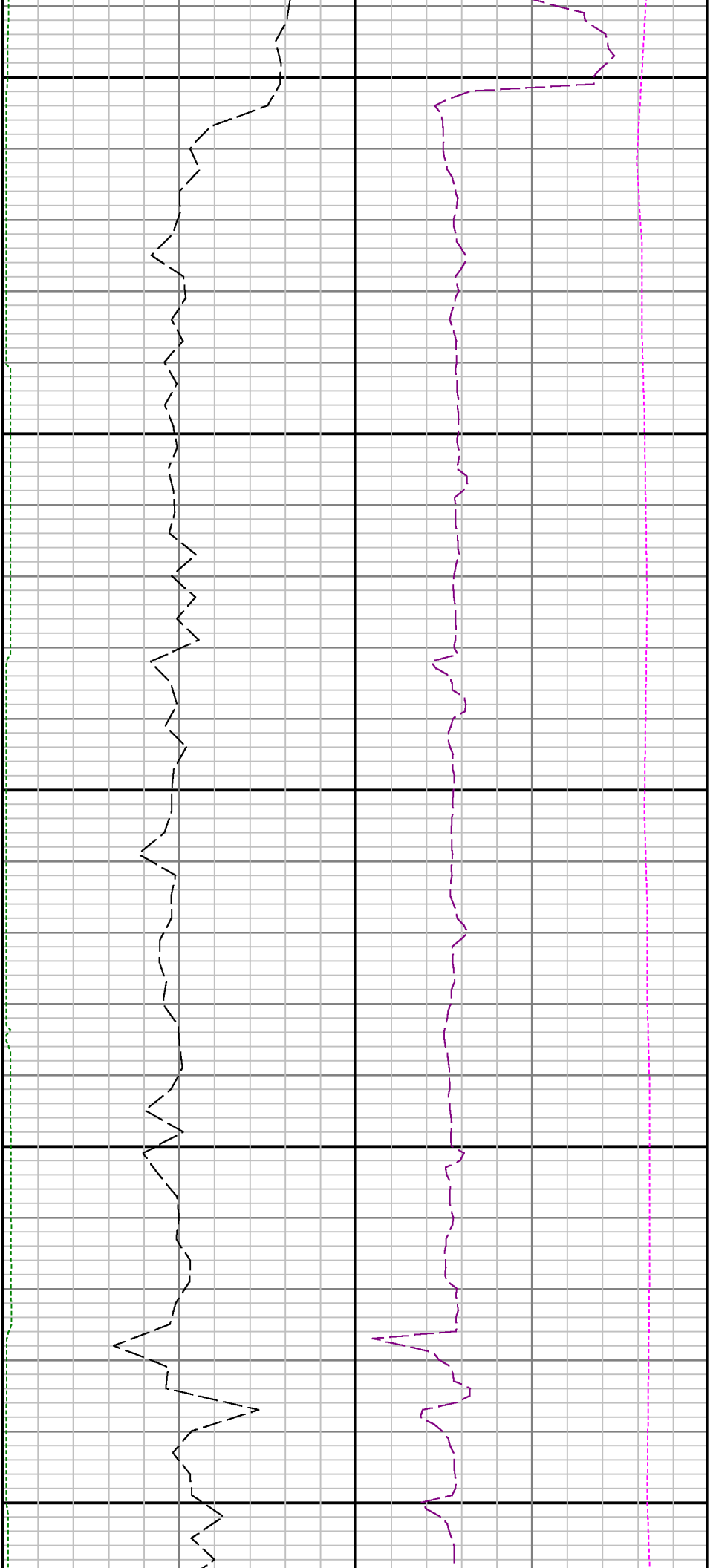
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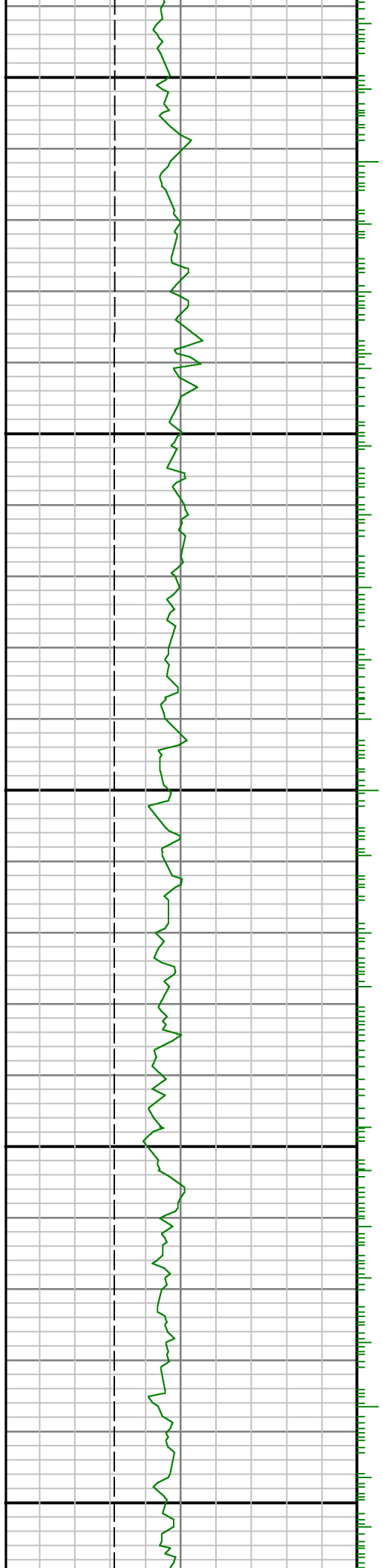






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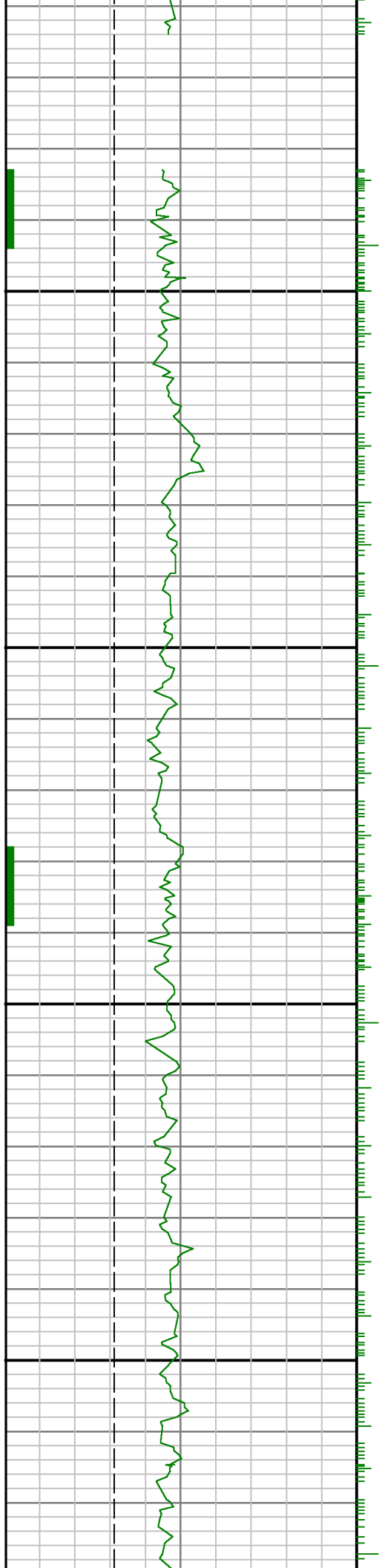
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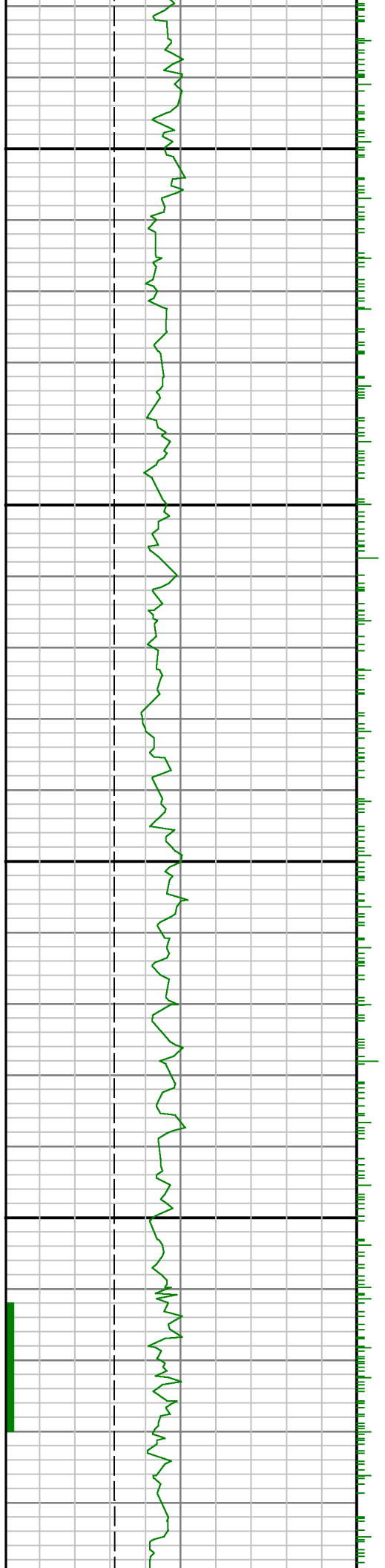


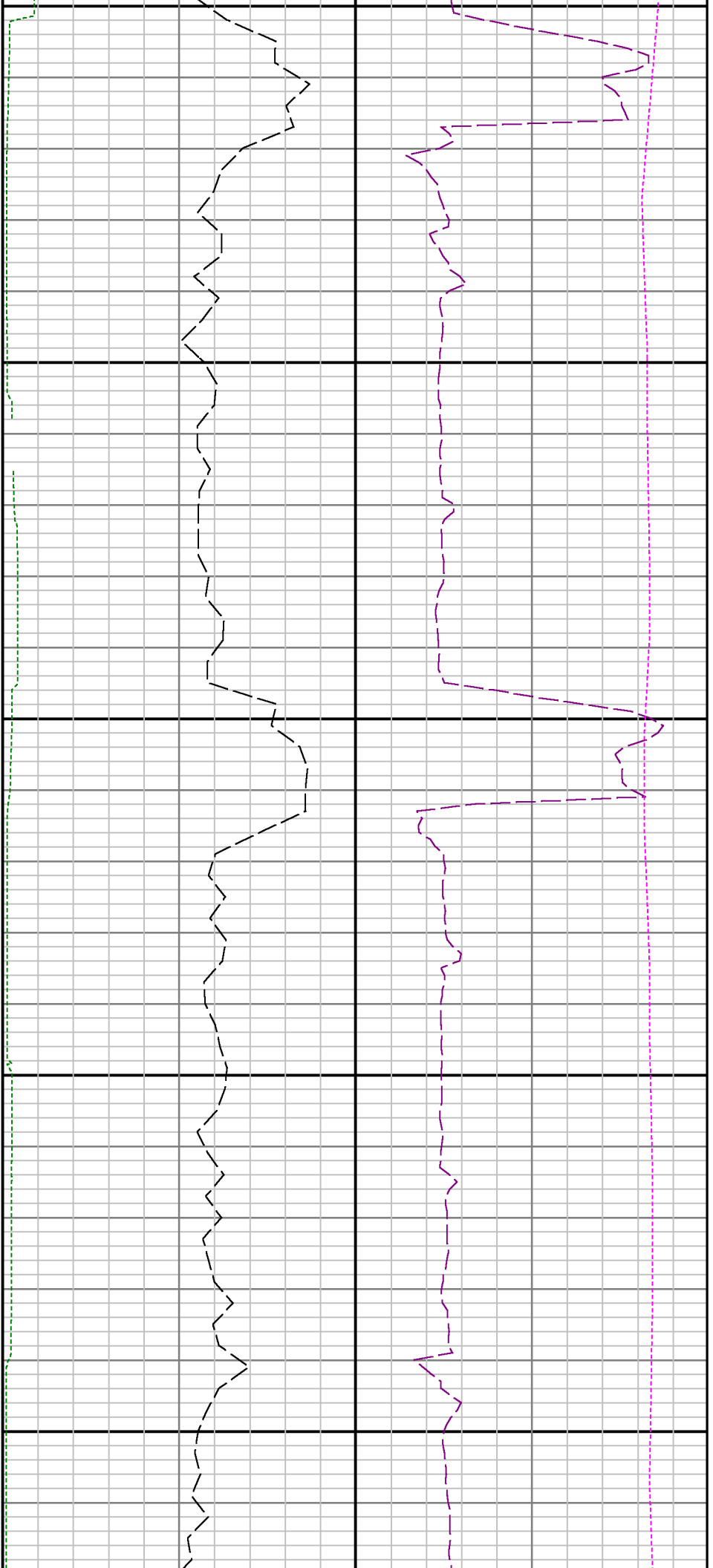


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12600

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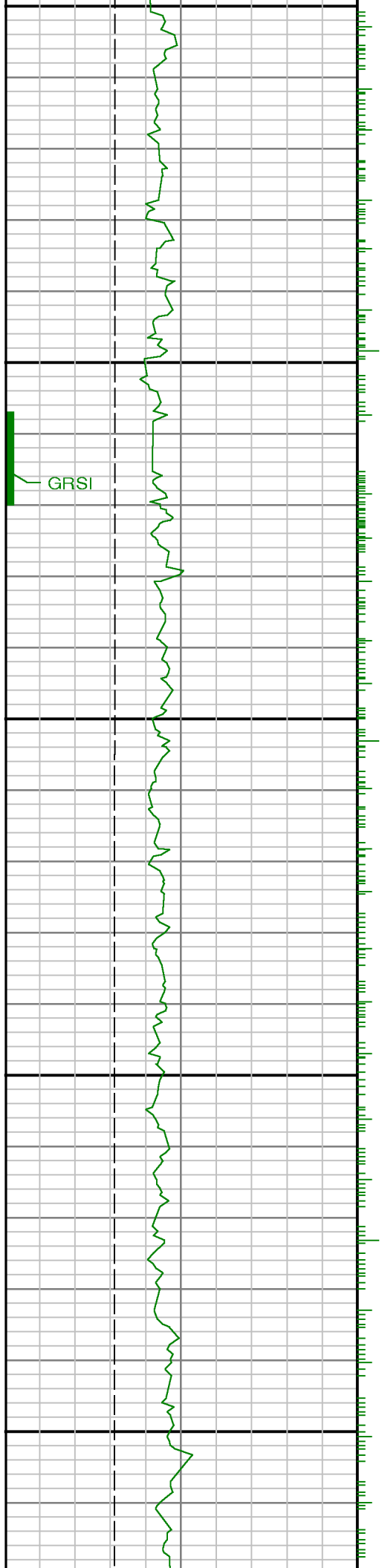




700

12800

12900



GRSI

