



Natural Formation Evaluation
Gamma Ray

Scale: Company: Anadarko

1:240

Well: Spurling 34N-34HZ

Measured Depth

Field: Weld County

County: Weld State: Colorado

Status: Surface Location: Other Services:

Final Print

Latitude: 40° 6' 3.589" N

API Number: 05-123-39124-00

Longitude: 104° 52' 57.882" W

SEC: 34 TWP: 2N RNC: 67W

Directional
VSS

Permanent Datum (P.D.): Ground Level Elevation: 5013.00 ft.

Elevations: N/A

Log Measured From: Rig Floor 5029.00 ft. Above P.D.

KB: 5029.00 ft.

Depth Reference: Driller's Depth

DF: 5013.00 ft.

GL:

Interval Logged

Dates

Magnetic Field Reference

Top: 6855.0 ft. Date From: 30/May/14 Date To: 06/Jun/14 Dip Angle: 66.71° Azi Reference North: True

Bottom: 12005.0 ft. Date To: 06/Jun/14 Total Mag to Reference

Spud Date: 30/May/14 Field Strength: 52836.0 nT North Correction: 8.64°

Borehole Record

Casing Record

| Hole Size | From | To | Size | Weight | From | To |
|------------|------------|-------------|-----------|-------------|---------|------------|
| 13.500 in. | Surface | 1072.0 ft. | 9.625 in. | 36.00 lb/ft | Surface | 1062.0 ft. |
| 8.750 in. | 1062.0 ft. | 7905.0 ft. | 7.000 in. | 26.00 lb/ft | Surface | 7895.0 ft. |
| 6.125 in. | 7895.0 ft. | 12005.0 ft. | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Mud Record

Deviation Record

| Type | From | To | Hole Size | Interval | Inc / Az (Start) | Inc / Az (End) |
|-----------------|------------|-------------|------------|------------|------------------|----------------|
| Fresh Water | Surface | 4900.0 ft. | 13.500 in. | 1072.0 ft. | 0.0° / 0.0° | 0.6° / 321.2° |
| Water Based Mud | 4900.0 ft. | 12005.0 ft. | 8.750 in. | 6843.0 ft. | 0.4° / 320.2° | 89.4° / 180.1° |
| | | | 6.125 in. | 4110.0 ft. | 88.4° / 179.6° | 90.1° / 178.9° |
| | | | | | / | / |
| | | | | | / | / |
| | | | | | / | / |

Acquisition System Software Version

Other

| | | | |
|-----------|----------|----------------------|-----------------------------|
| Advantage | 2.20U4 | Rig: Xtreme 6 | / Xtreme Coil Drilling Corp |
| PATS | 6.4.1.34 | Job No: 6325353 | / D&E |
| | | District / Unit: RMD | |

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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 | 2 | 8.750 | PDC | 4.000 | Steerable | 6855.0 | 7905.0 | 1072.0 | 7905.0 | 30/May/2014 22:30 | 03/Jun/2014 02:30 | 47.3 |
| 2 | 2 | 3 | 6.125 | PDC | 4.000 | Steerable | 7852.0 | 12005.0 | 7905.0 | 12005.0 | 04/Jun/2014 01:00 | 06/Jun/2014 06:00 | 32.7 |

Crew

| Name | Arrive | Depart | Name | Arrive | Depart | Name | Arrive | Depart |
|-----------------|-----------|-------------|-------------|-----------|-------------|----------------|-------------|-------------|
| | Wellsite | Wellsite | | Wellsite | Wellsite | | Wellsite | Wellsite |
| Matthew Delmore | 30/May/14 | 06/Jun/2014 | Jake Miller | 30/May/14 | 04/Jun/2014 | David Campbell | 04/Jun/2014 | 06/Jun/2014 |

| | |
|---------------|----------------|
| Name | LWD Run Number |
| David Cornett | 1 |
| Joe Wallem | 1 |
| Pat Cain | 1, 2 |
| Derreck Perry | 1, 2 |

| 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+ (%) |
| 31/May/2014 | 8:00 | 1 | 2203.0 | Fresh Water | 8.5 | 28 | 9.4 | N/A | 0/100 | Active Pit | 1300 | N/A |
| 31/May/2014 | 22:00 | 1 | 5021.0 | Water Based Mud | 8.7 | 36 | 9.5 | 12.0 | 0/100 | Active Pit | 1400 | N/A |
| 1/Jun/2014 | 9:00 | 1 | 6863.0 | Water Based Mud | 10.3 | 44 | 9.2 | 5.4 | 2/87 | Active Pit | 1600 | N/A |
| 1/Jun/2014 | 22:00 | 1 | 7433.0 | Water Based Mud | 10.5 | 45 | 9.4 | 4.6 | 2/88 | Active Pit | 1800 | N/A |
| 2/Jun/2014 | 14:00 | 1 | 7905.0 | Water Based Mud | 10.5 | 43 | 9.5 | 4.7 | 3/86 | Active Pit | 1600 | N/A |
| 4/Jun/2014 | 10:00 | 2 | 7920.0 | Water Based Mud | 9.2 | 44 | 9.7 | 5.2 | 2/94 | Active Pit | 1500 | N/A |
| 4/Jun/2014 | 22:00 | 2 | 9344.0 | Water Based Mud | 9.3 | 42 | 9.4 | 5.2 | 2/93 | Active Pit | 1300 | N/A |
| 5/Jun/2014 | 10:00 | 2 | 10790.0 | Water Based Mud | 9.3 | 44 | 9.4 | 4.8 | 2/93 | Active Pit | 1400 | N/A |
| 5/Jun/2014 | 20:00 | 2 | 12005.0 | Water Based Mud | 9.5 | 43 | 9.5 | 4.8 | 2/92 | Active Pit | 1500 | N/A |

| Mnemonics | | |
|-----------|-------------------------------------|----------|
| Curve | Description | Units |
| GRAX | Gamma Ray Apparent, 0.5 ft. Avg. | API |
| GRIX | Gamma Ray Data Density | points |
| GRSI | Gamma Ray Sliding Indicator | unitless |
| GRTX | Gamma Ray Time Since Drilled | min |
| ROPA | Rate of Penetration, 3.0 ft. Avg. | ft/hr |
| TCDX | Downhole Temperature | degF |
| TVD | True Vertical Depth | ft. |
| WOBA | Surface Weight on Bit, 1.0 ft. Avg. | klbs |

| Equipment and Service Data | | | | | | |
|----------------------------|------|------------------|-------------|-----------------------|----------------------|----------------------|
| LWD Run No. | Tool | Serial Number | Measurement | Bit Offset (ft) | Max O.D. (in.) | Min I.D. (in.) |
| 1 | DIR | 12108818 | Directional | 47.52 | 6.750 | 3.250 |
| 1 | SRIG | 11858322 | Gamma | 44.15 | 6.750 | 3.250 |
| 2 | DIR | 12859420 | Directional | 52.86 | 4.750 | 2.688 |
| 2 | SRIG | 12722376 | Gamma | 49.48 | 4.750 | 2.688 |

| Service and Tool Mnemonics | | |
|----------------------------|-----------------------|--|
| Mnemonic | Name | Description |
| DIR | Directional | Wellbore directional survey |
| SRIG | Inclination and Gamma | Probe based gamma ray and inclination module |

Comments

1.) Baker Hughes LWD run 1 utilized 6 3/4 inch NaviTrak Services (VSS, Directional) from 1072 to 6905 ft. MD (1074.97 to 6819.89 ft. TVD) and NaviGamma Services (VSS, Directional, Gamma Ray) from 6905 to 7905 ft. MD (6819.89 to 7449.93 ft. TVD) behind an 8 3/4 inch bit and steerable assembly.

2.) Baker Hughes LWD run 2 utilized 4 3/4 inch NaviGamma Services (VSS, Directional, Gamma Ray) from 7905 to 12005 ft. MD (7449.93 ft. to 7432.82 TVD) behind an 6 1/8 inch bit and steerable assembly.

3.) A sliding indicator is shown on the left edge of track 1 as a heavy line. This indicator has been depth-shifted to the gamma ray sensor offset to correspond with gamma ray data.

4.) Depth measurements obtained from a depth control system not supplied or operated by Baker Hughes. Due to the lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.

Remarks

| Number | Measured | Hole | LWD | Remark |
|--------|----------|---------|---------|---|
| | Depth | Section | Run No. | |
| | (ft) | (in.) | | |
| 1 | 7880 | 6.125 | 2 | The interval from 7860 to 7905 ft. MD (7447.69 to 7449.93 ft. TVD) was logged up to 44.1 hours after being drilled due to a trip out of the hole to lay down the vertical/curve assembly, run intermediate casing, cementing operations, and to pick up the lateral assembly. |
| 2 | 11980 | 6.125 | 2 | The interval from 11955 to 12005 ft. MD (7432.90 to 7432.79 ft. TVD) does not contain GRAX, GRIX or GRTX due to the bit to sensor offset. |

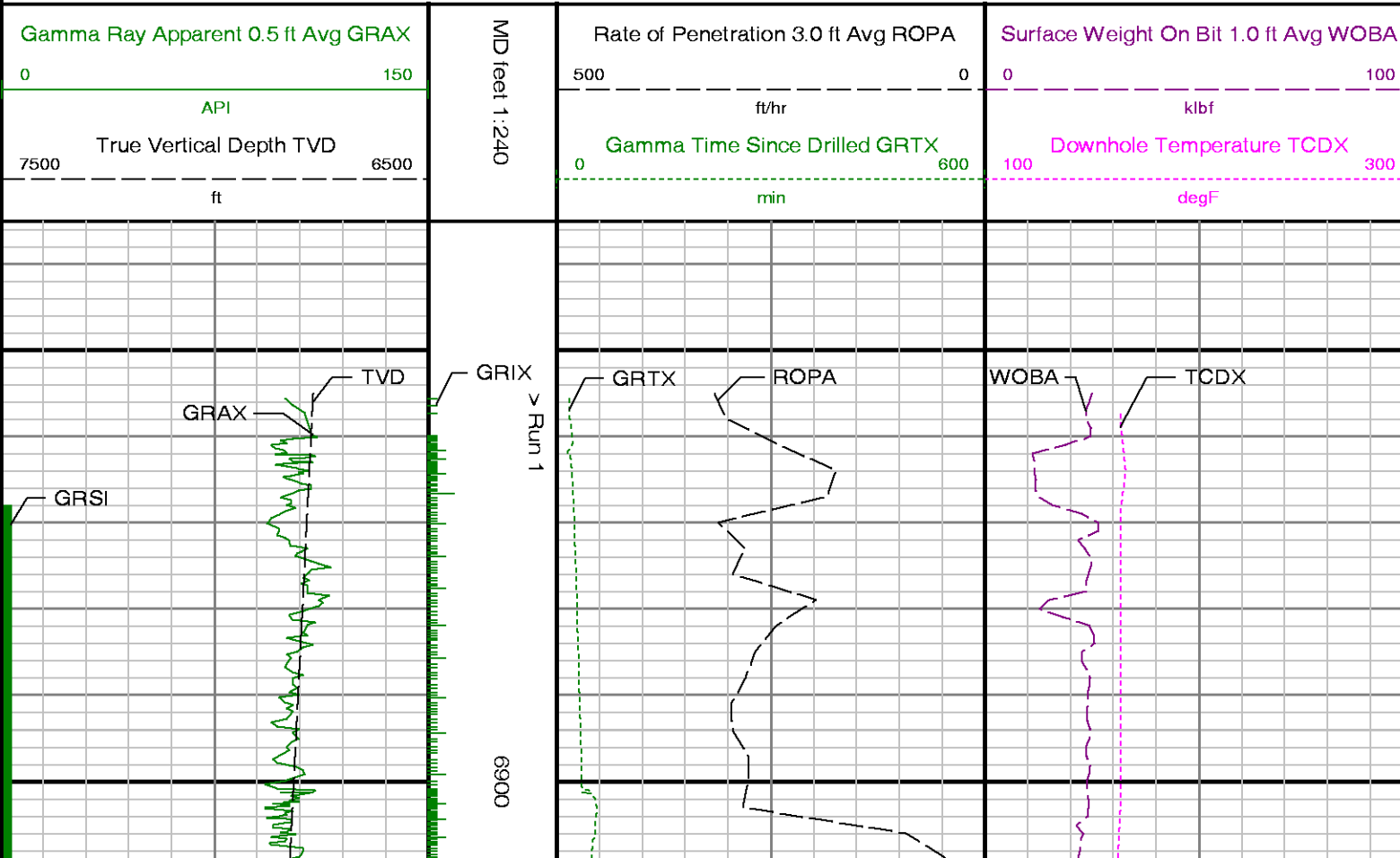


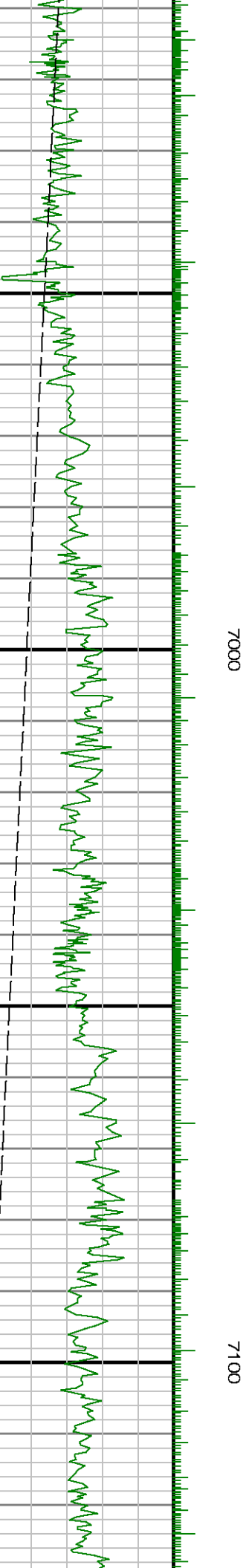
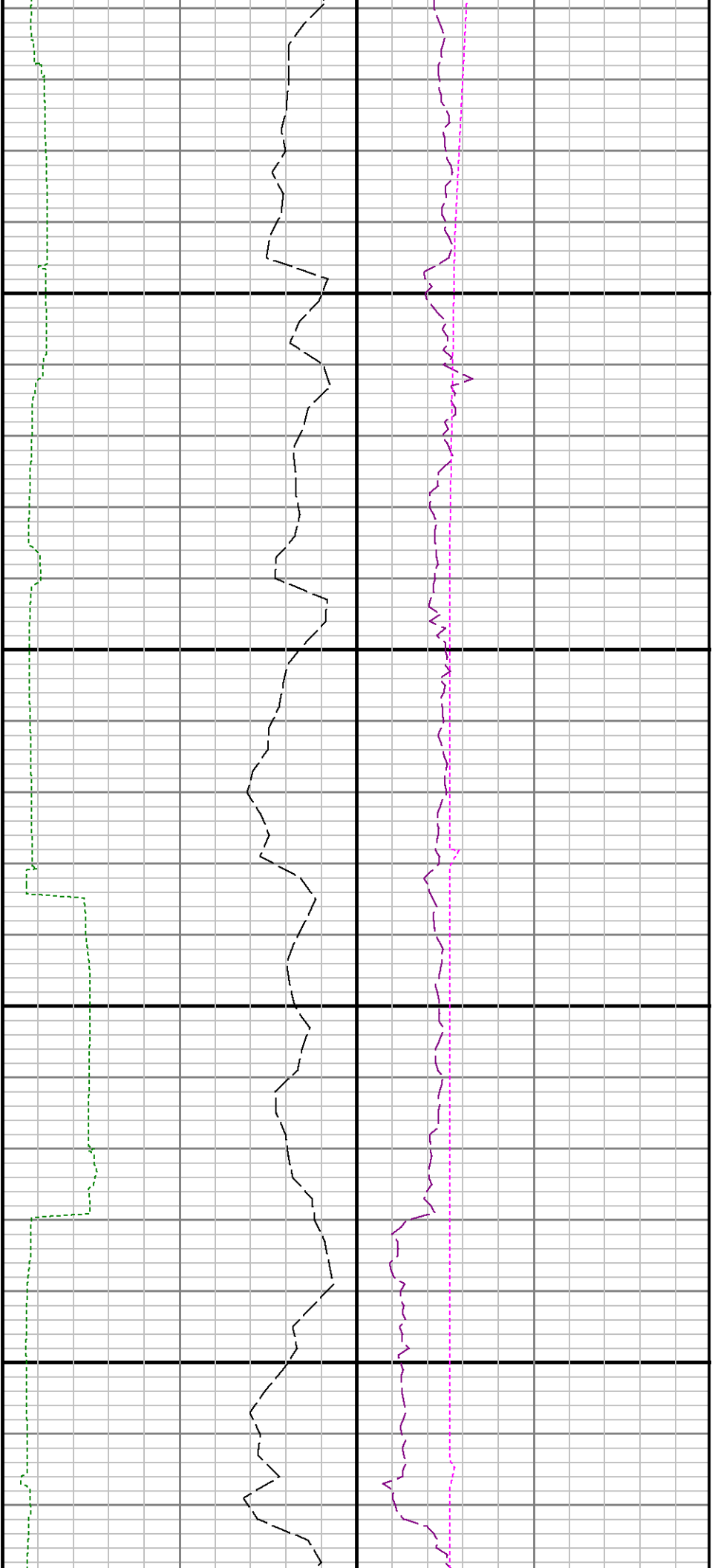
Company : Anadarko

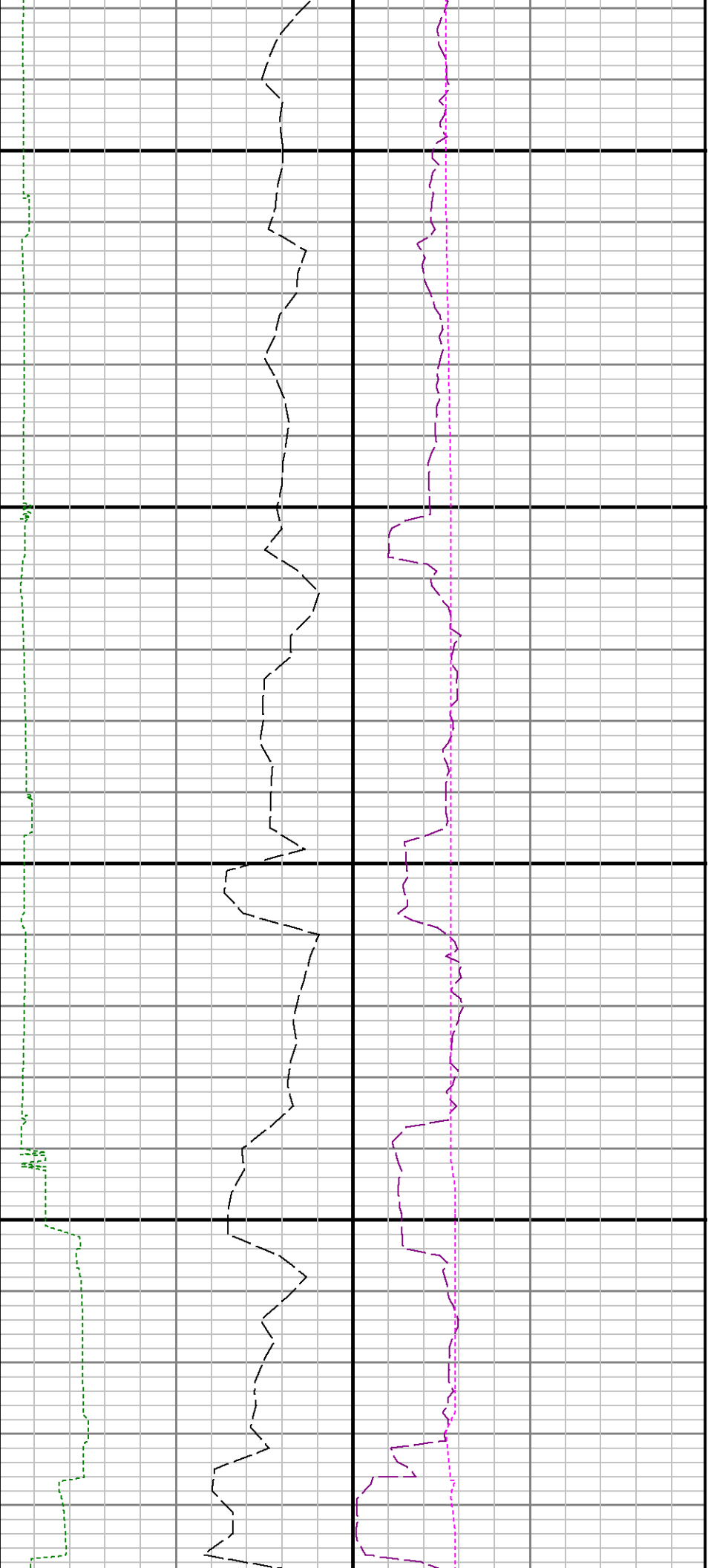
Well : Spurling 34N-34HZ

Interval : 6835.00 - 12025.00 feet

Created : 05/Jun/2014 4:06:20 PM

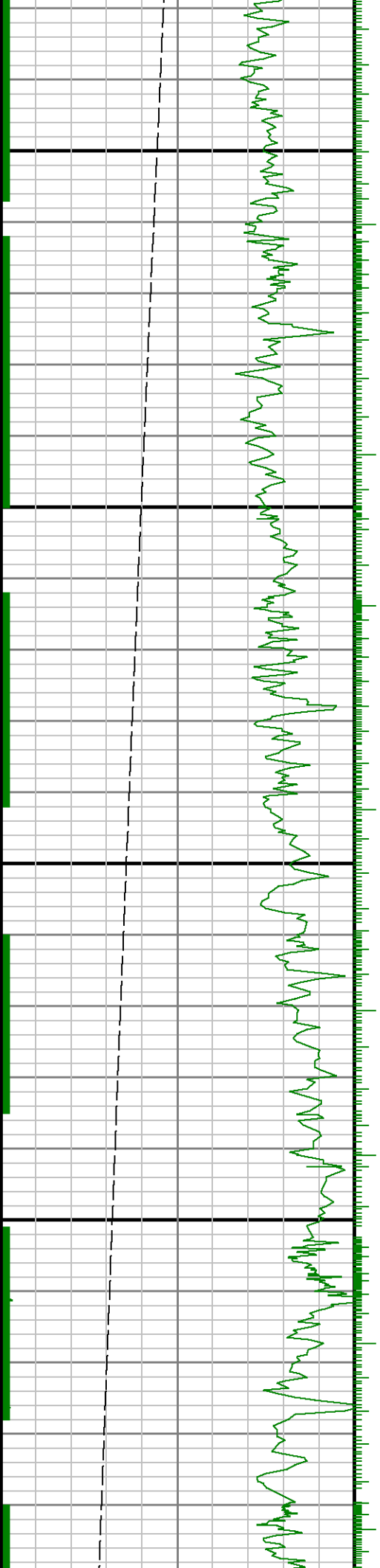


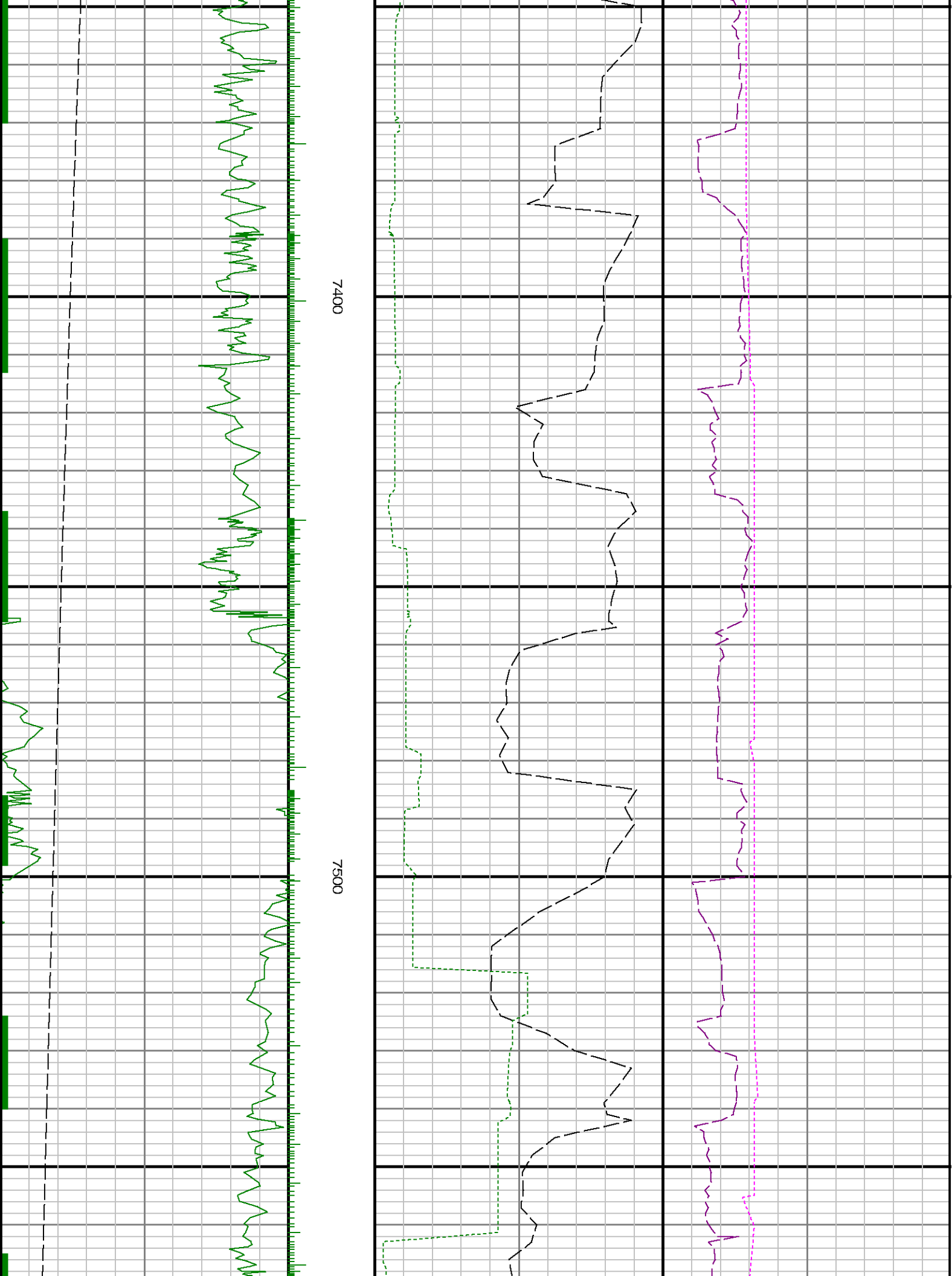


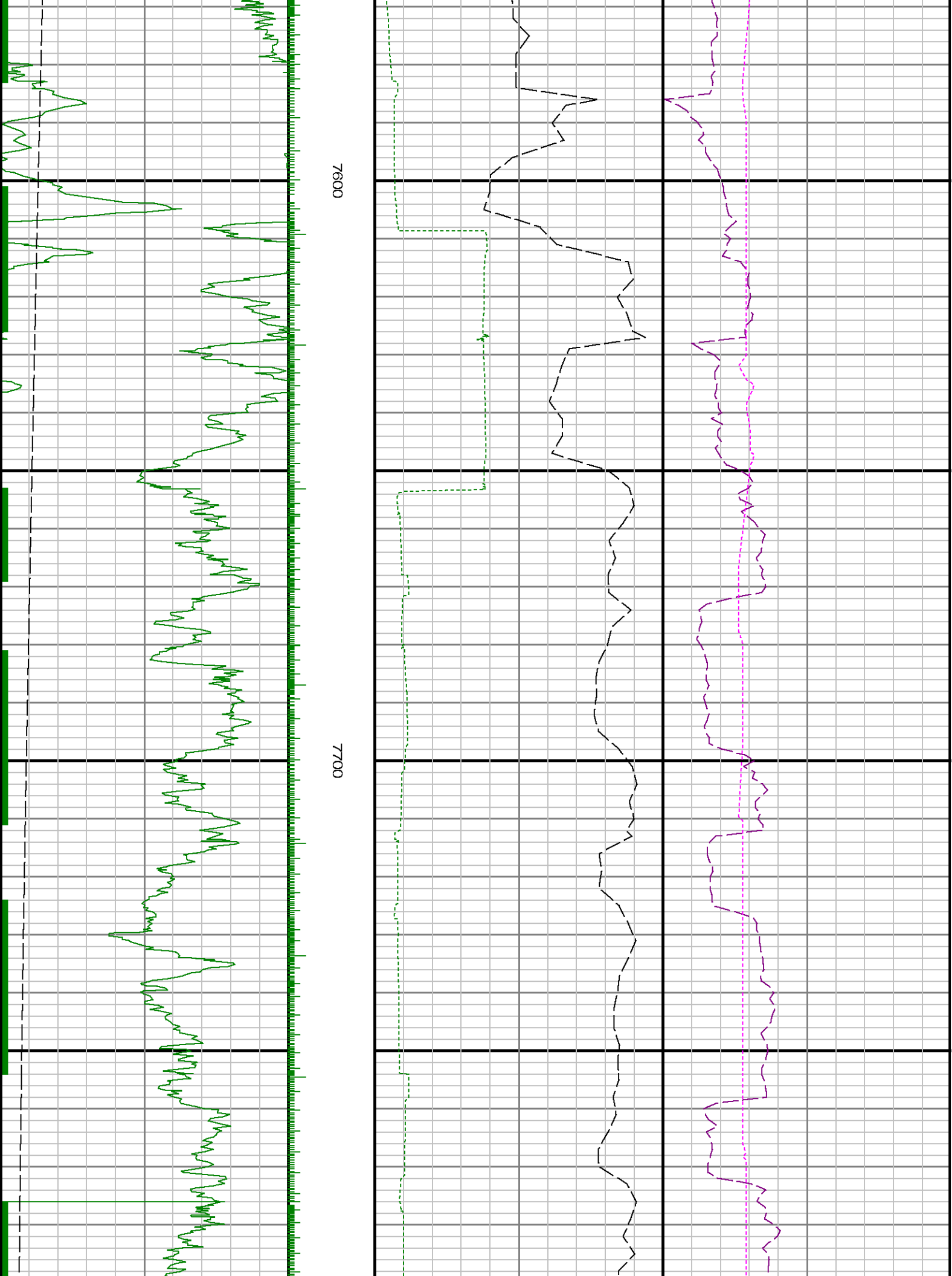


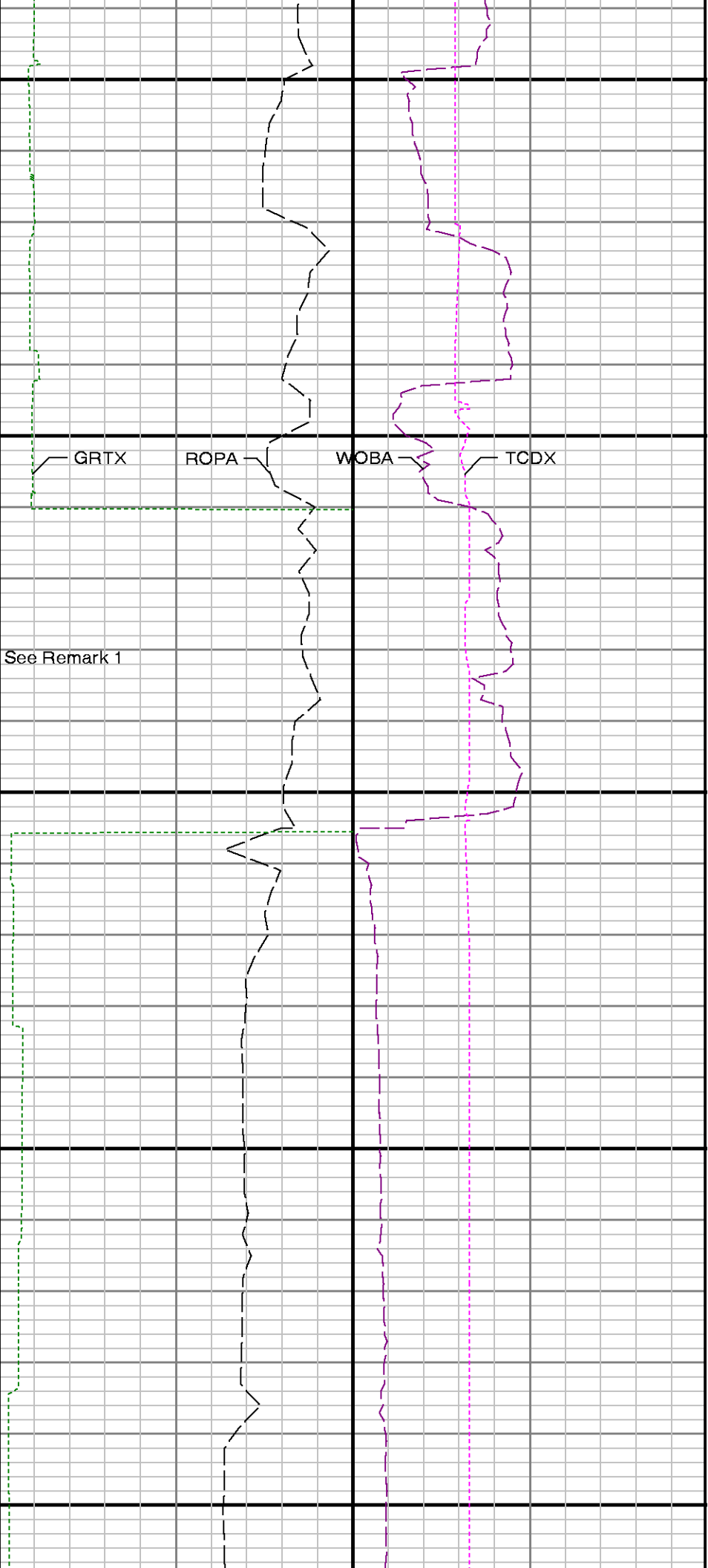
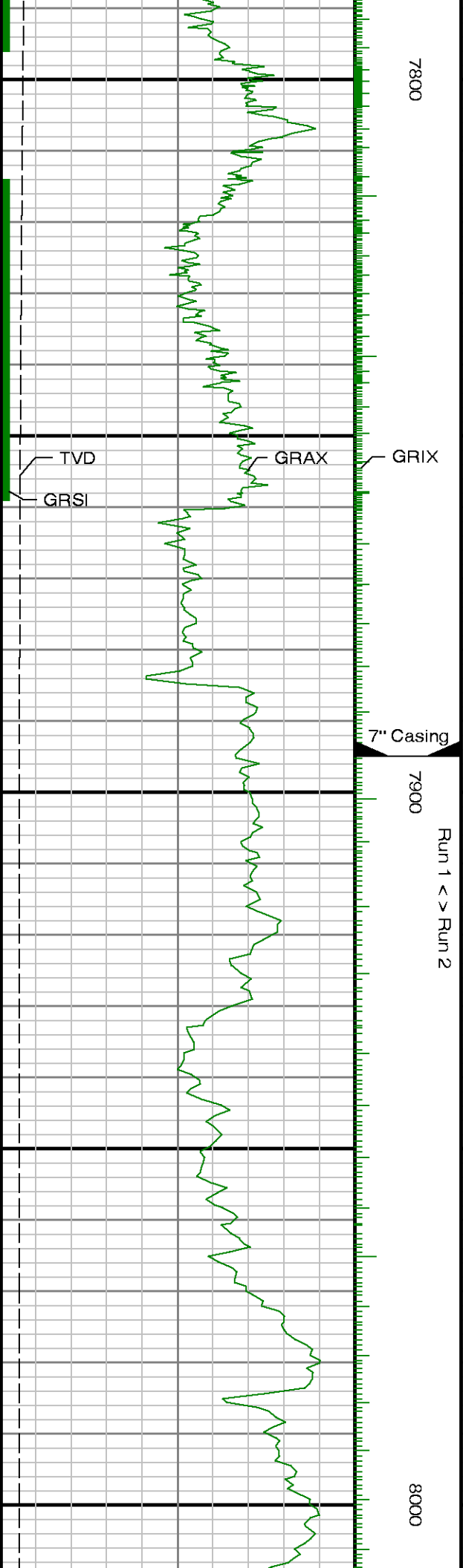
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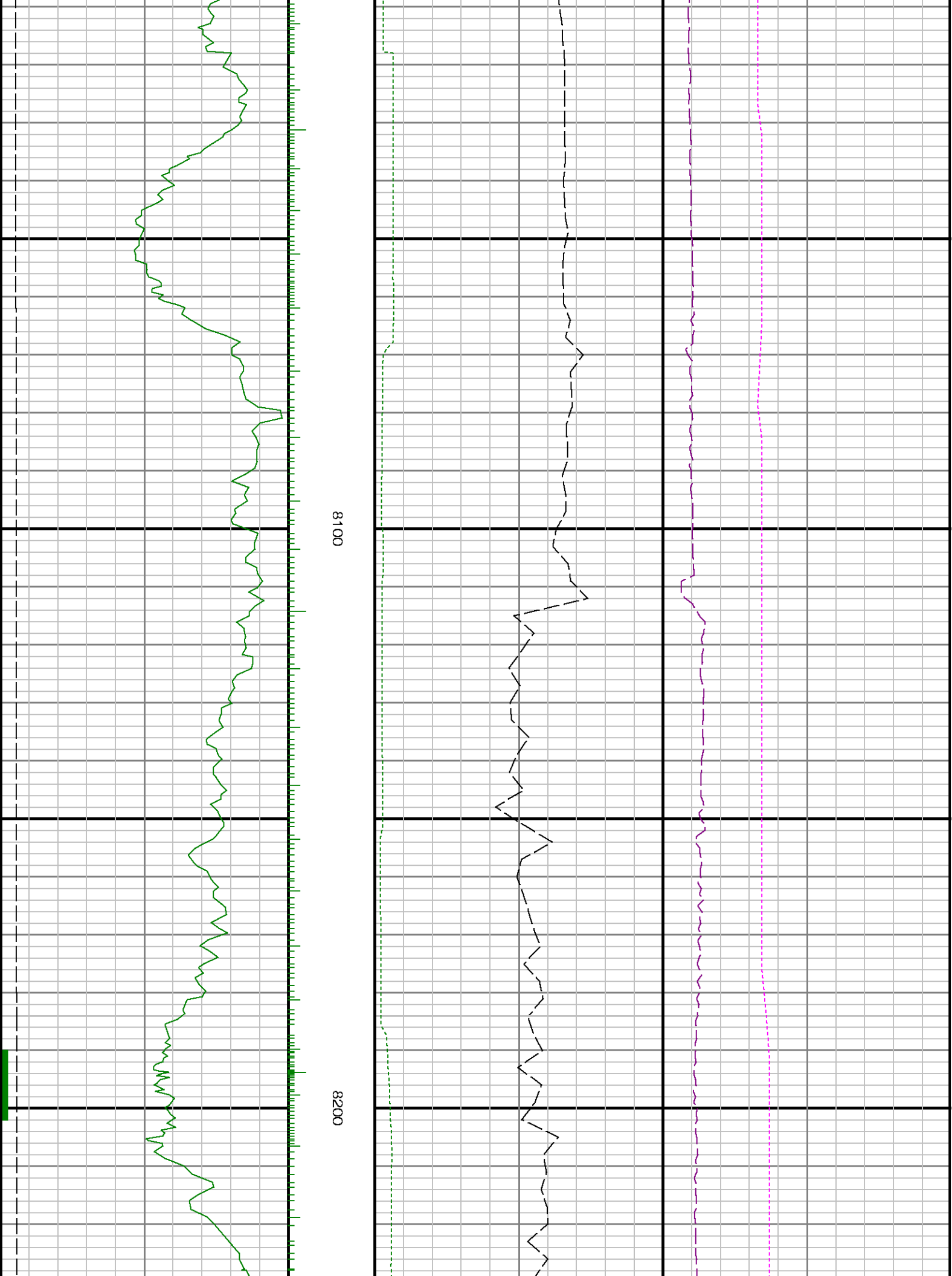
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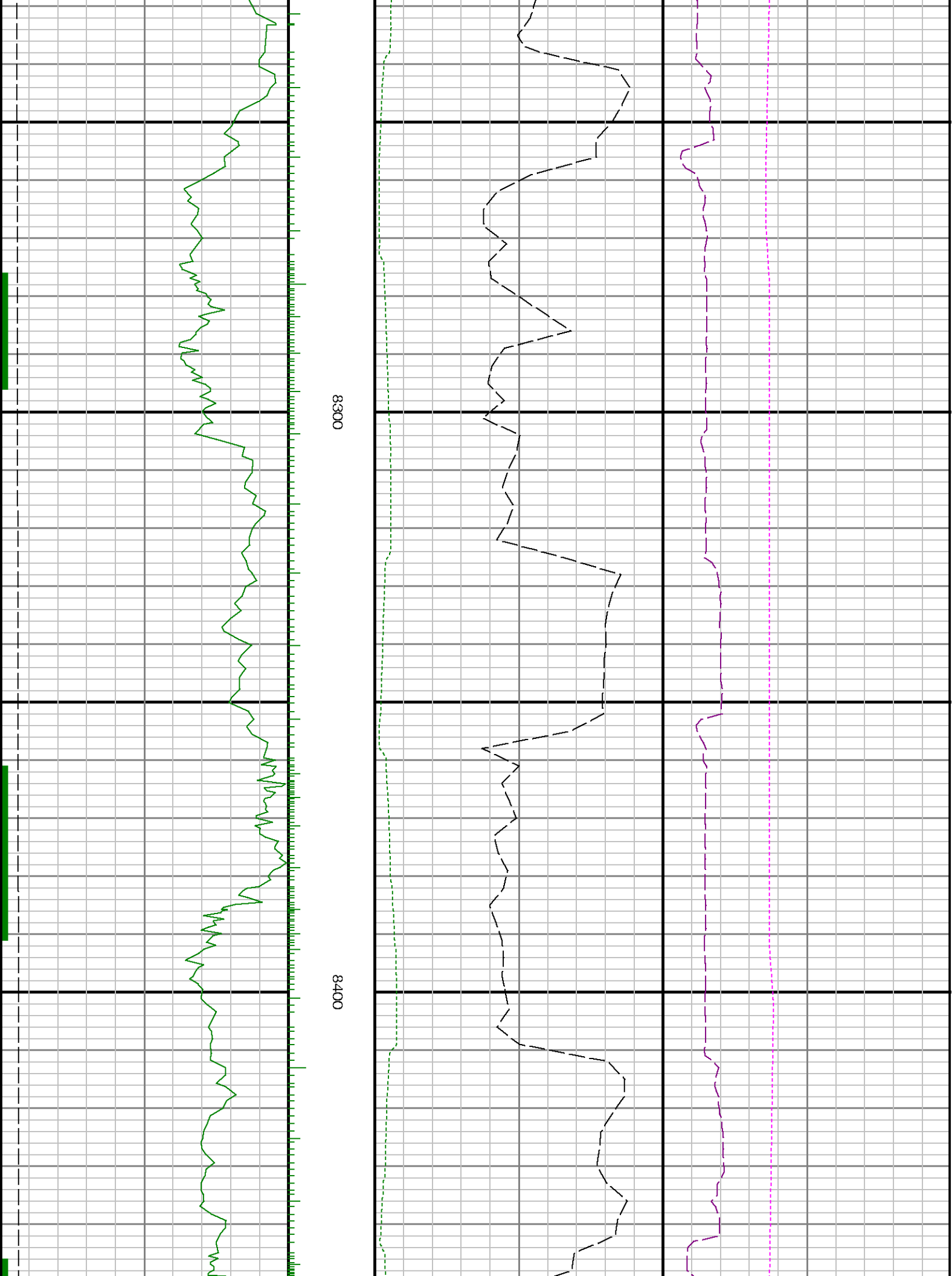


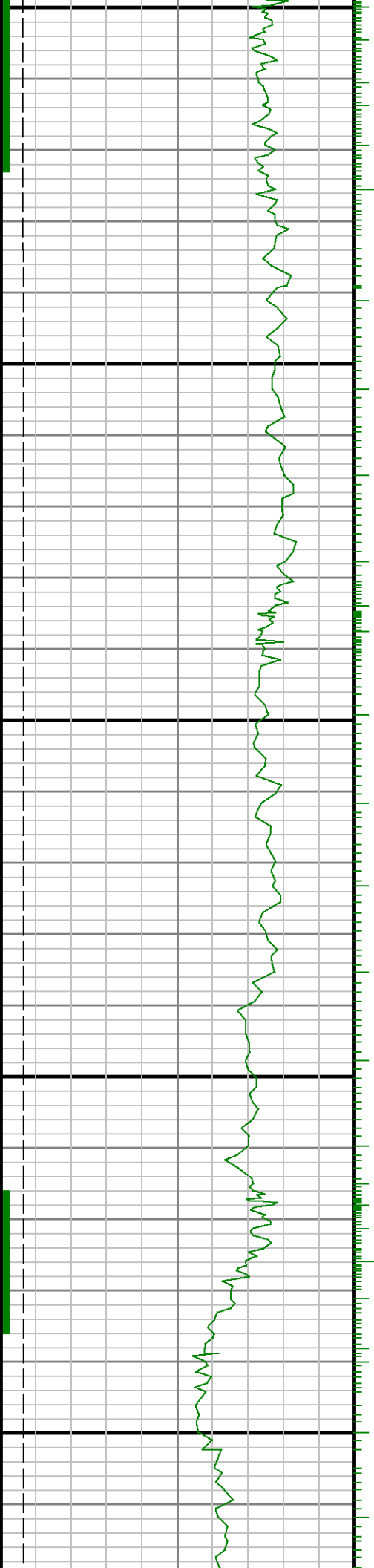






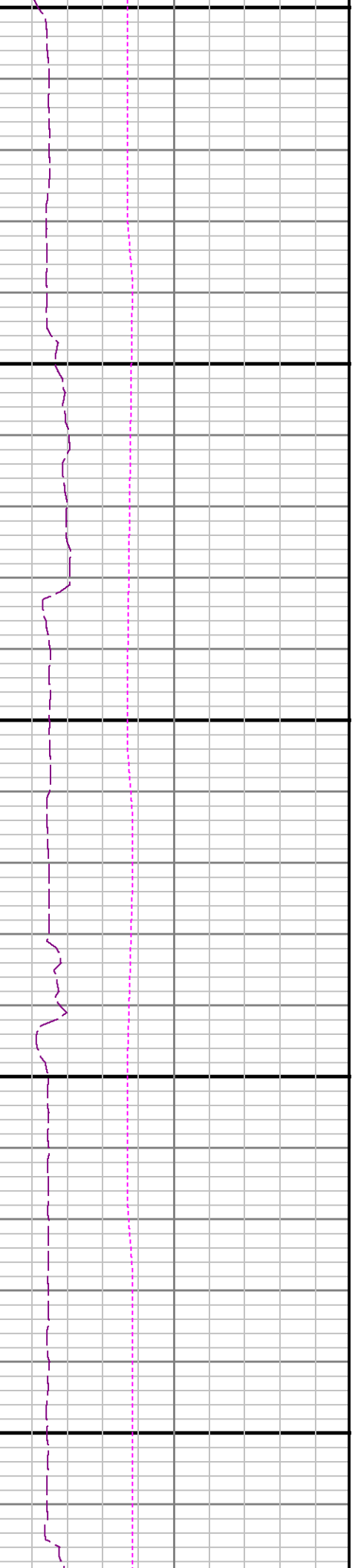
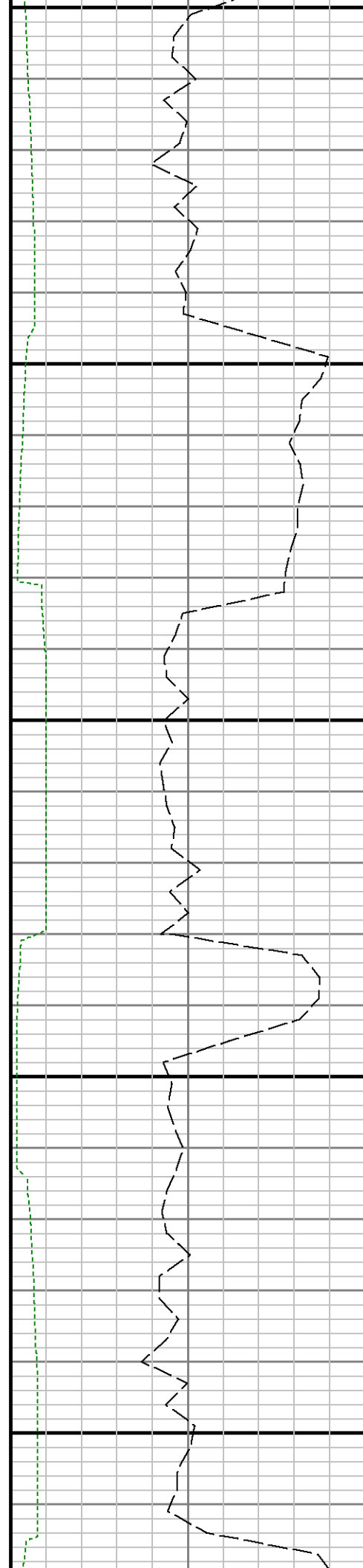


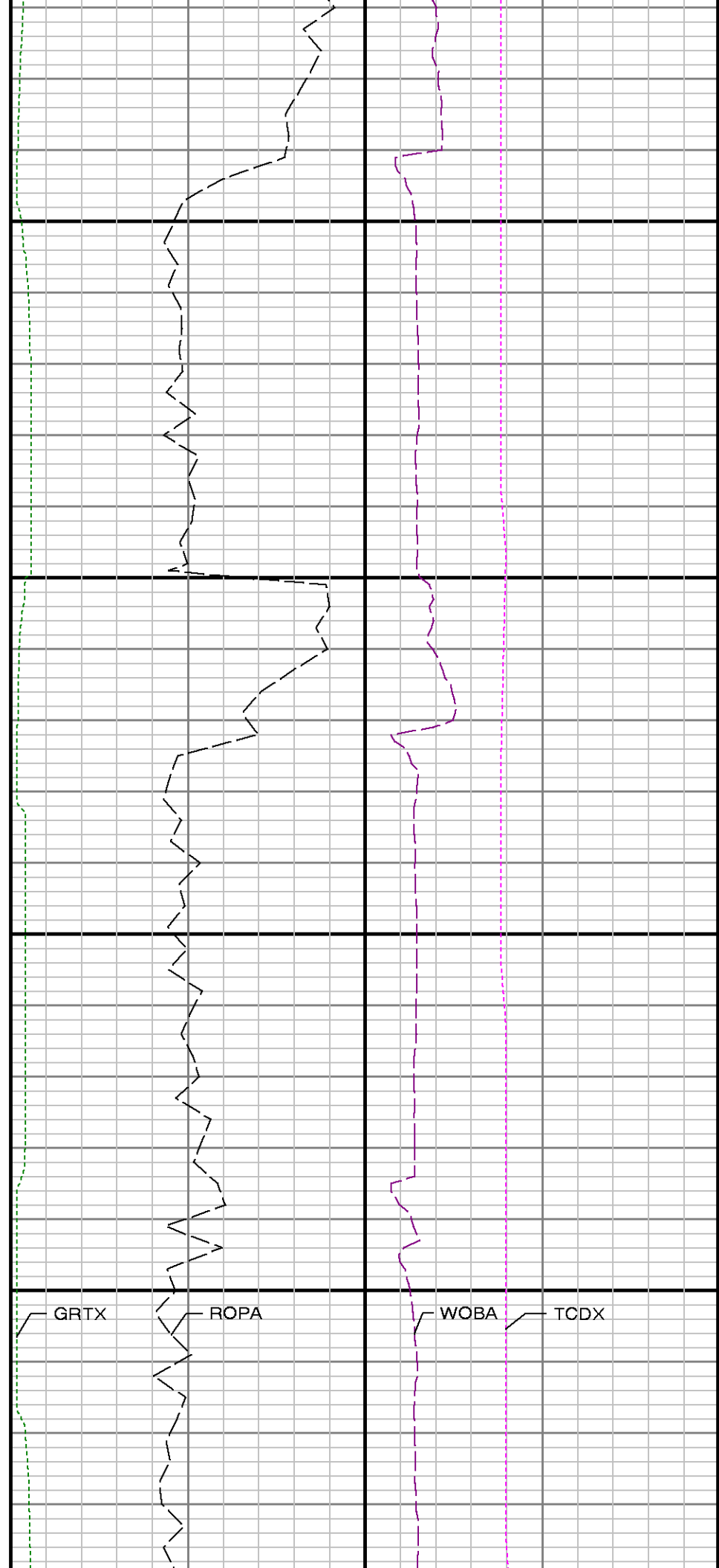
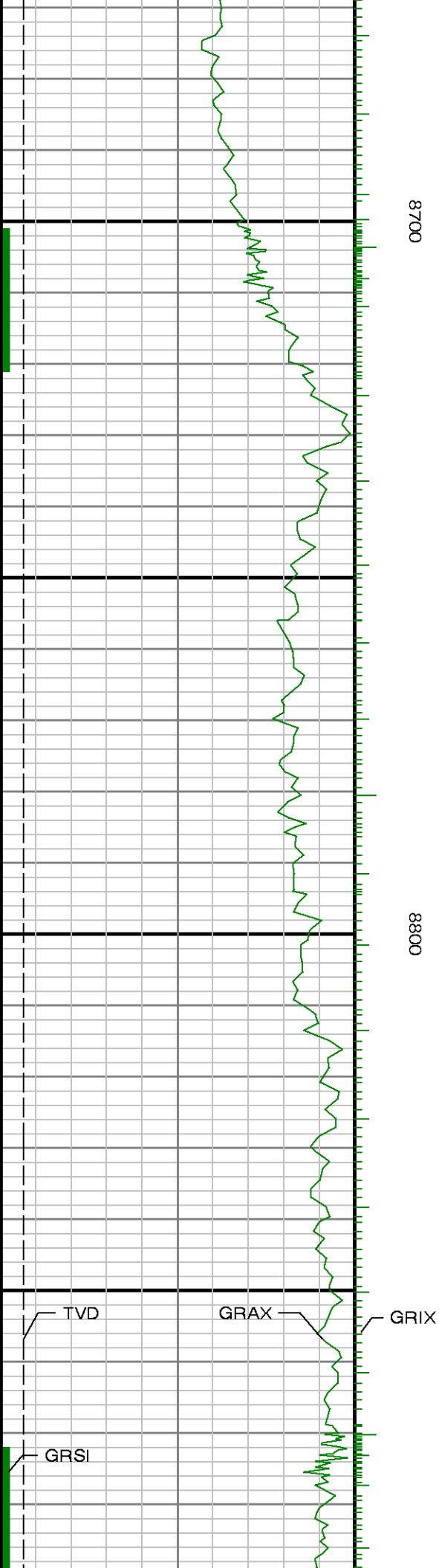


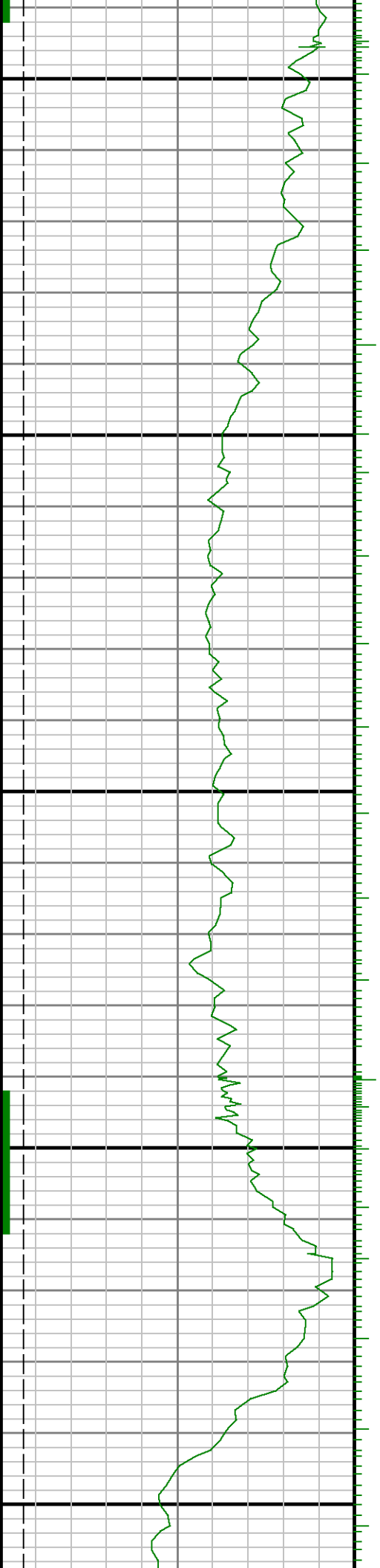


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8600





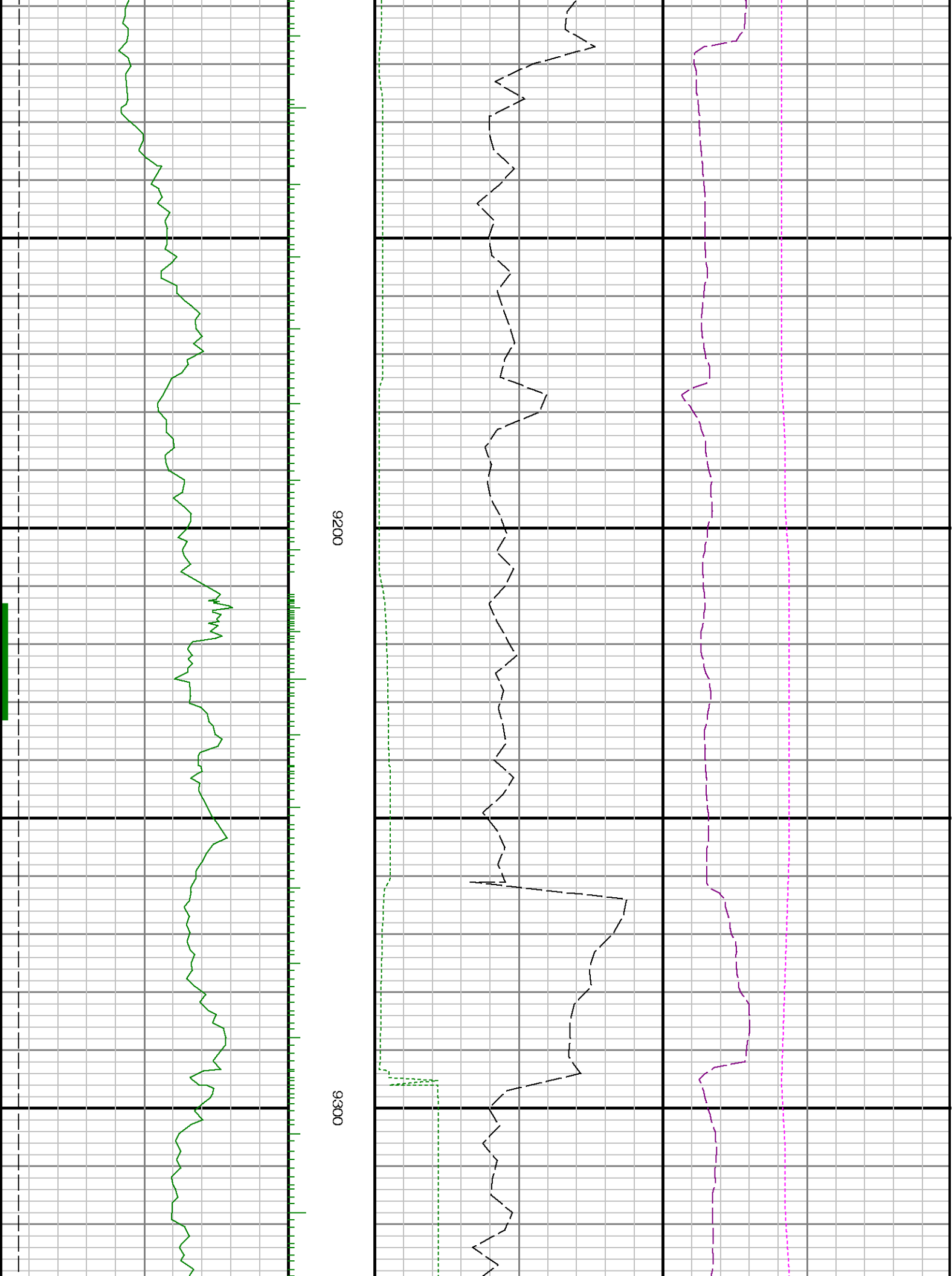


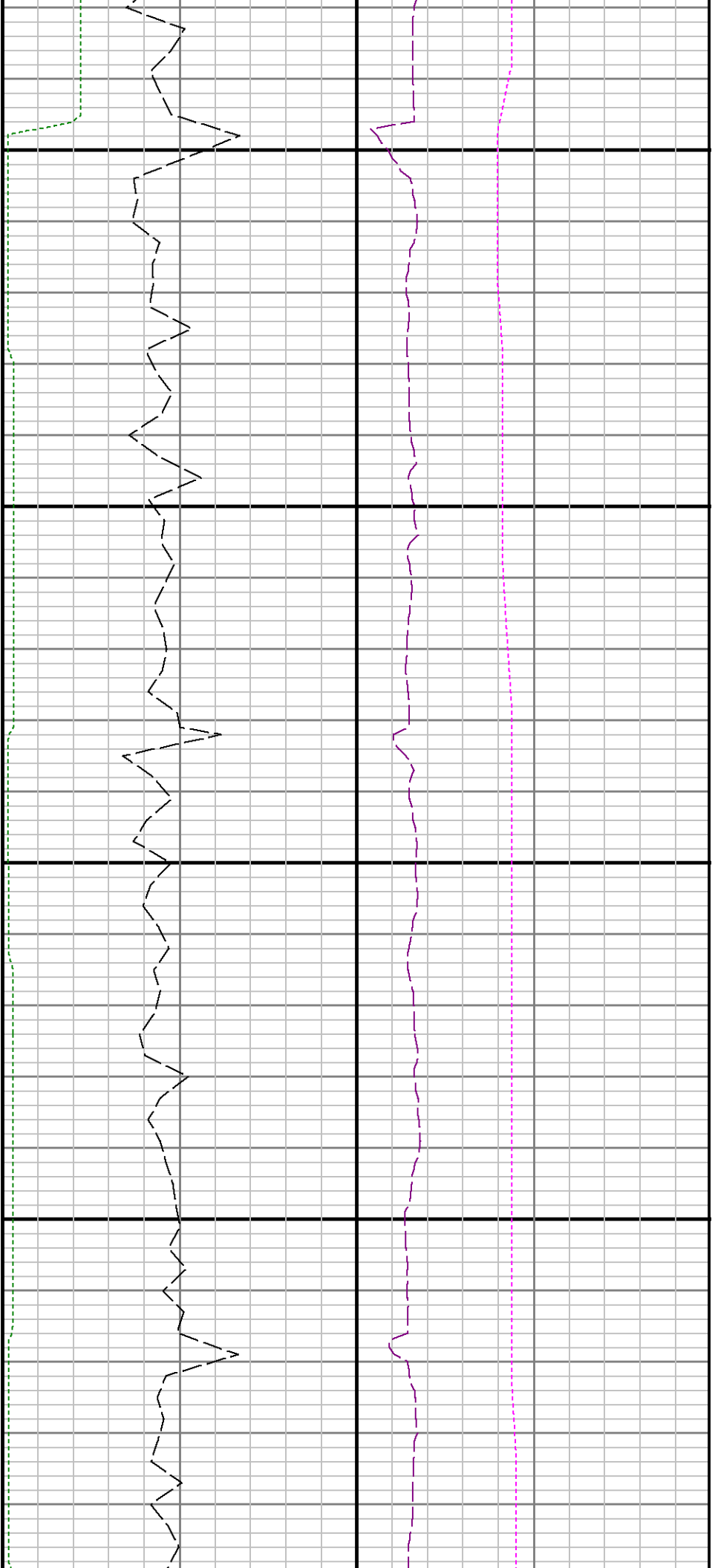
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9000

9100

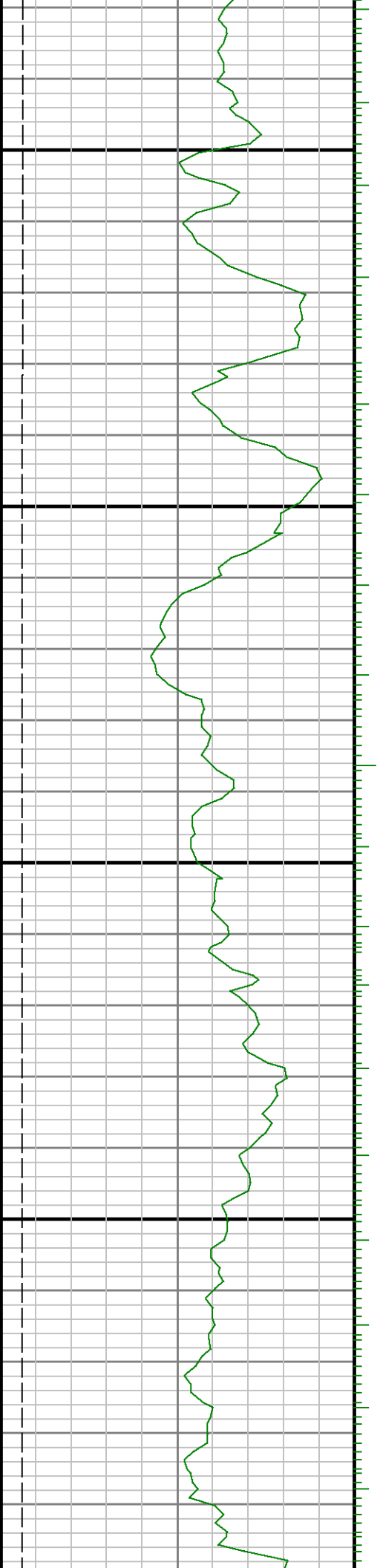


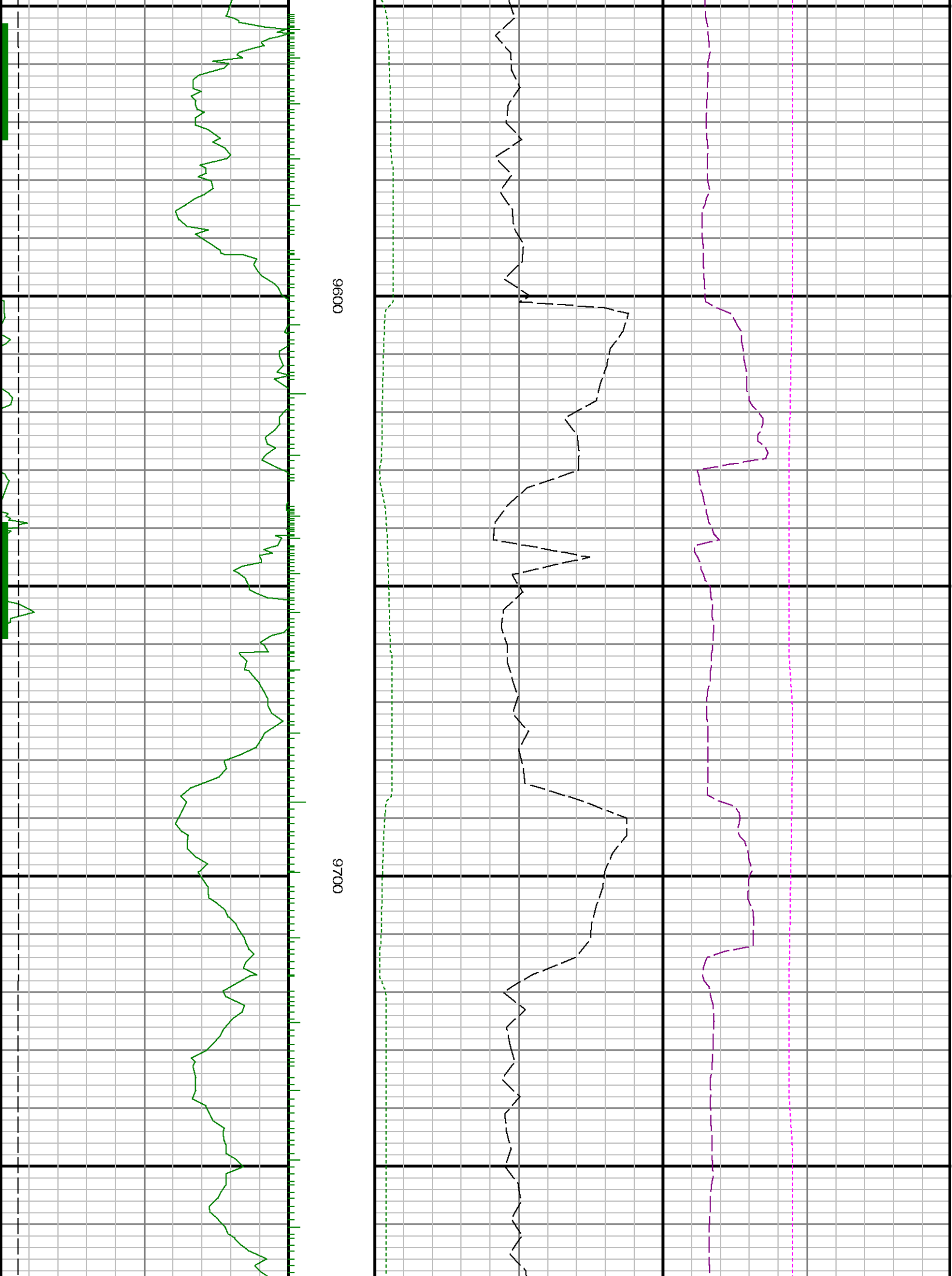


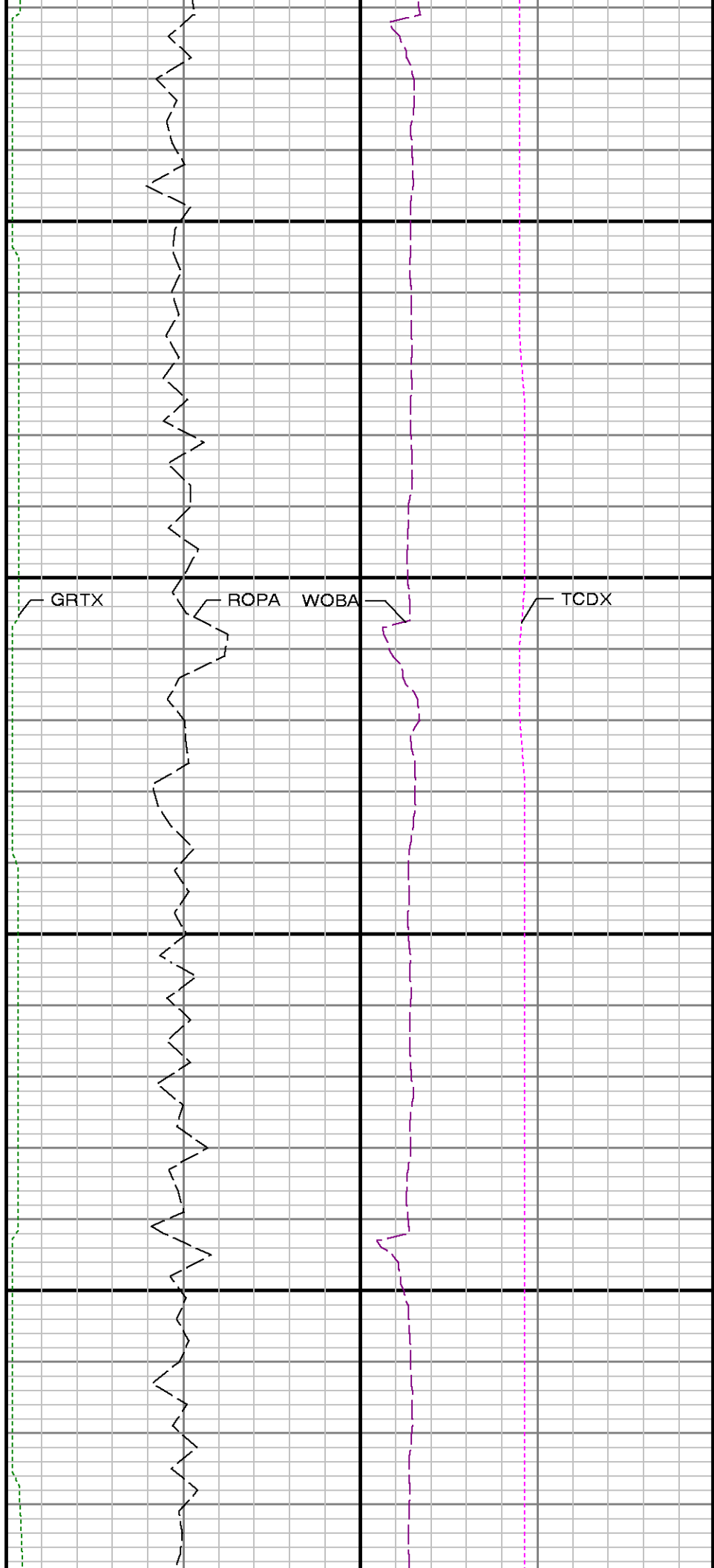
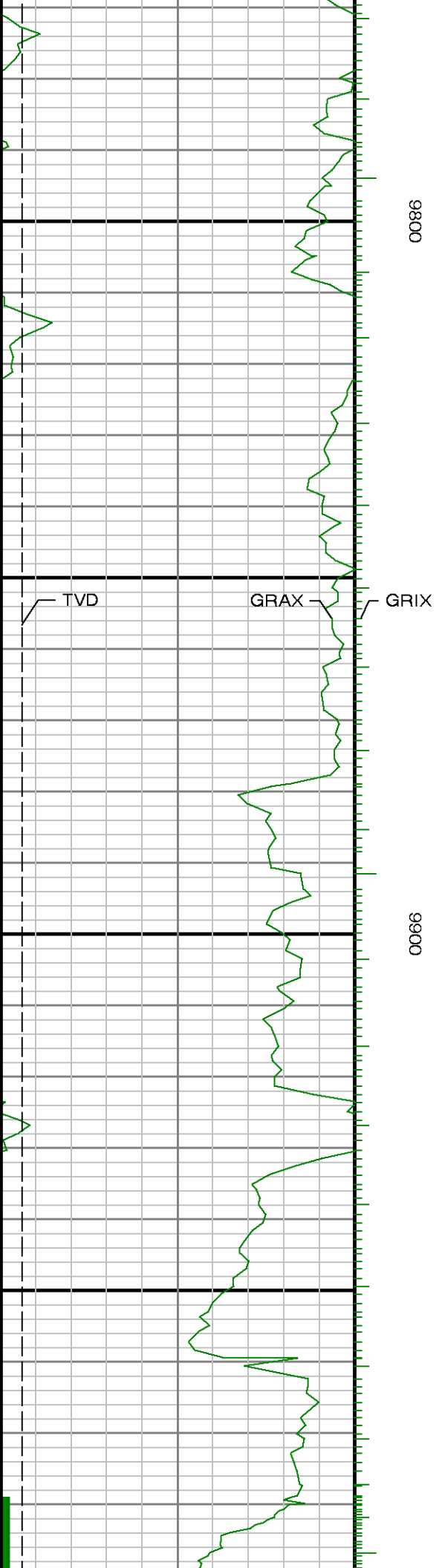


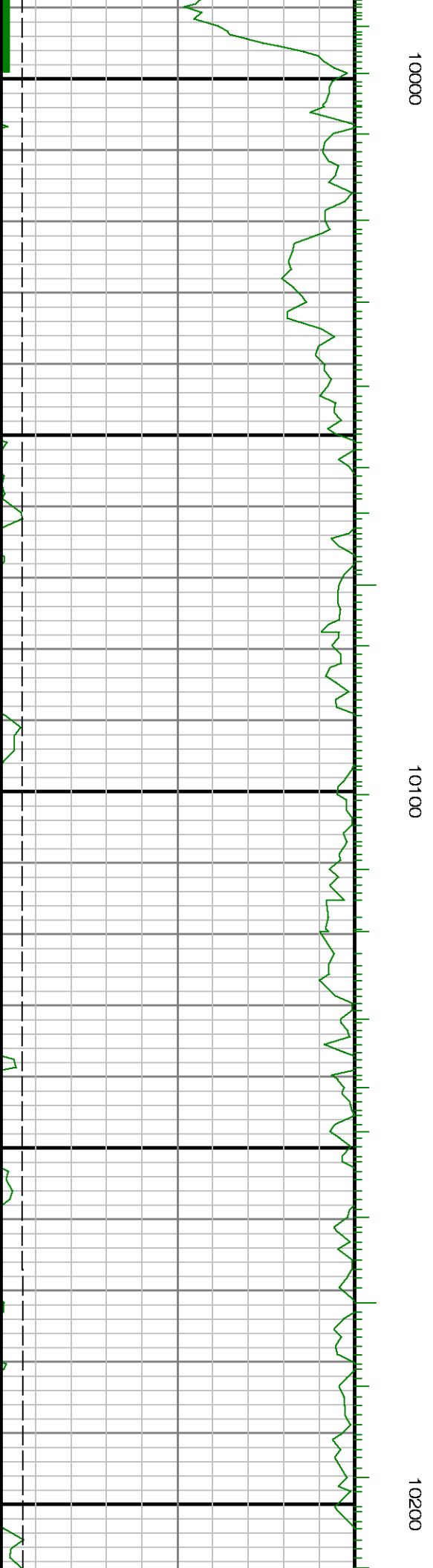
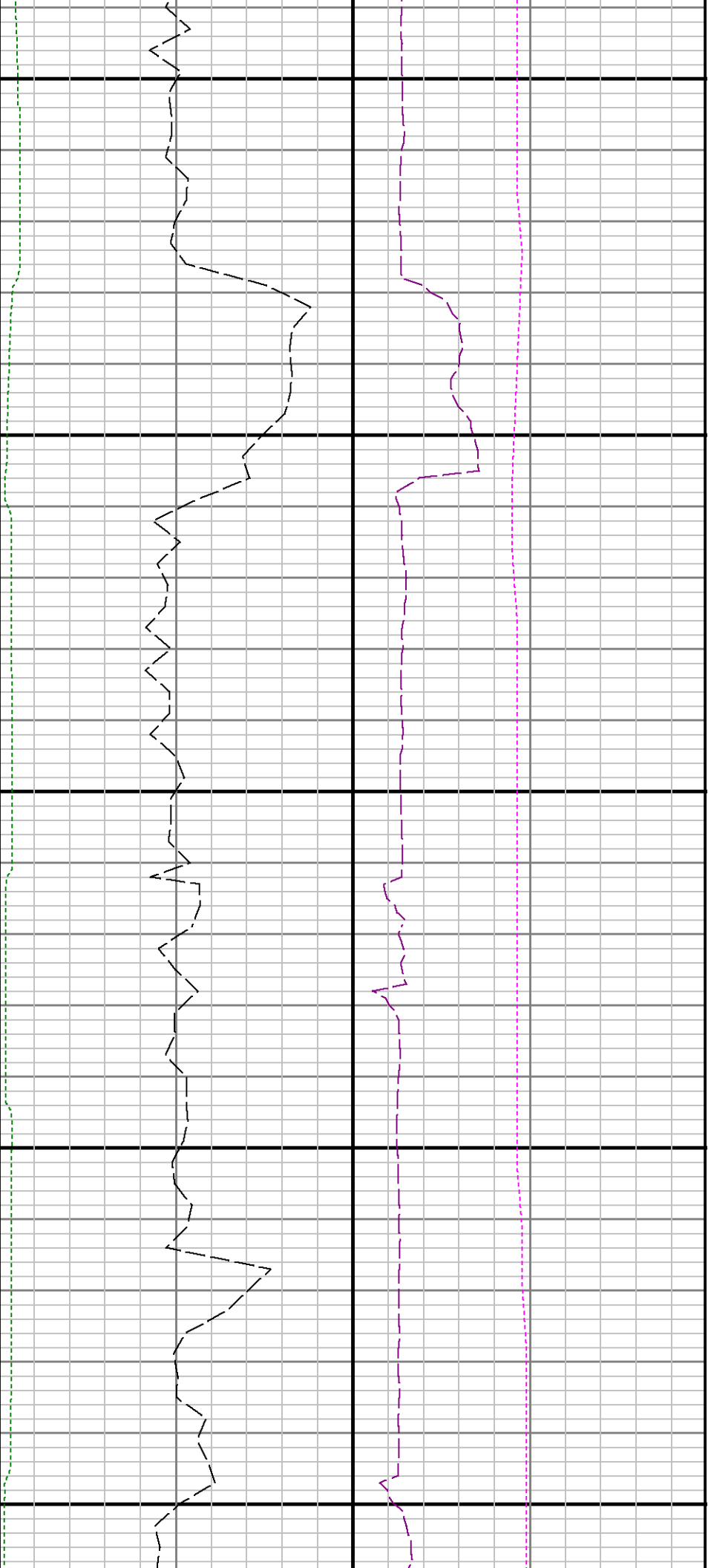
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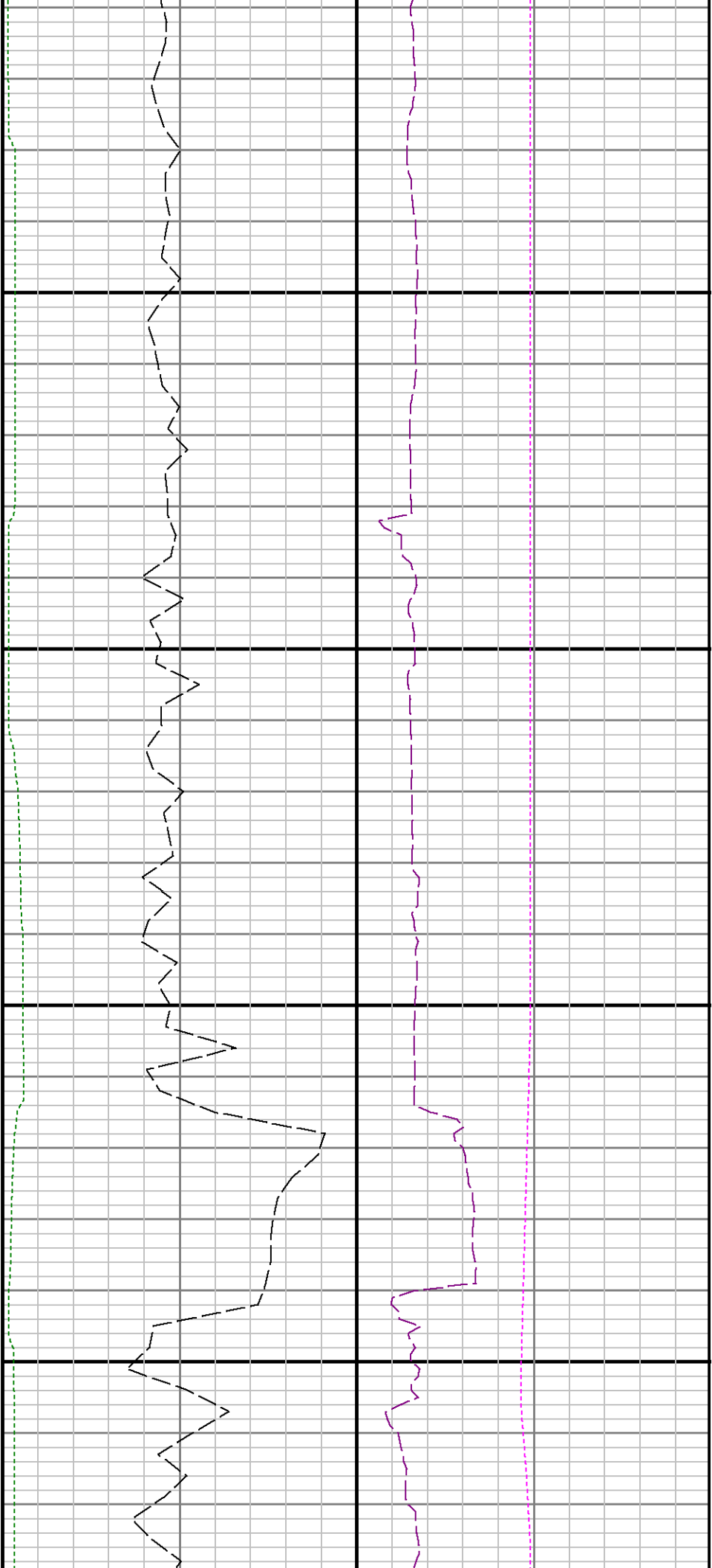
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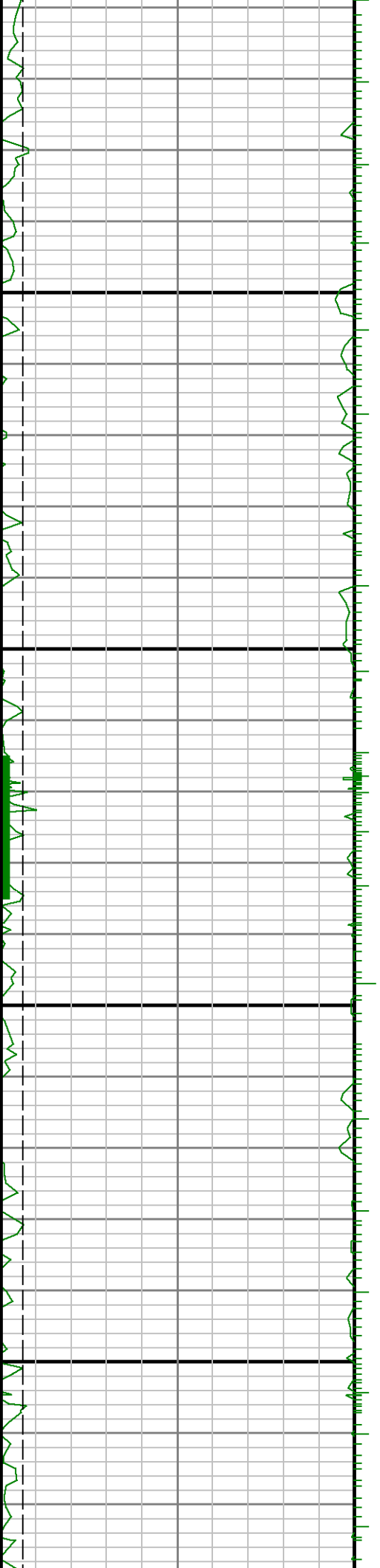


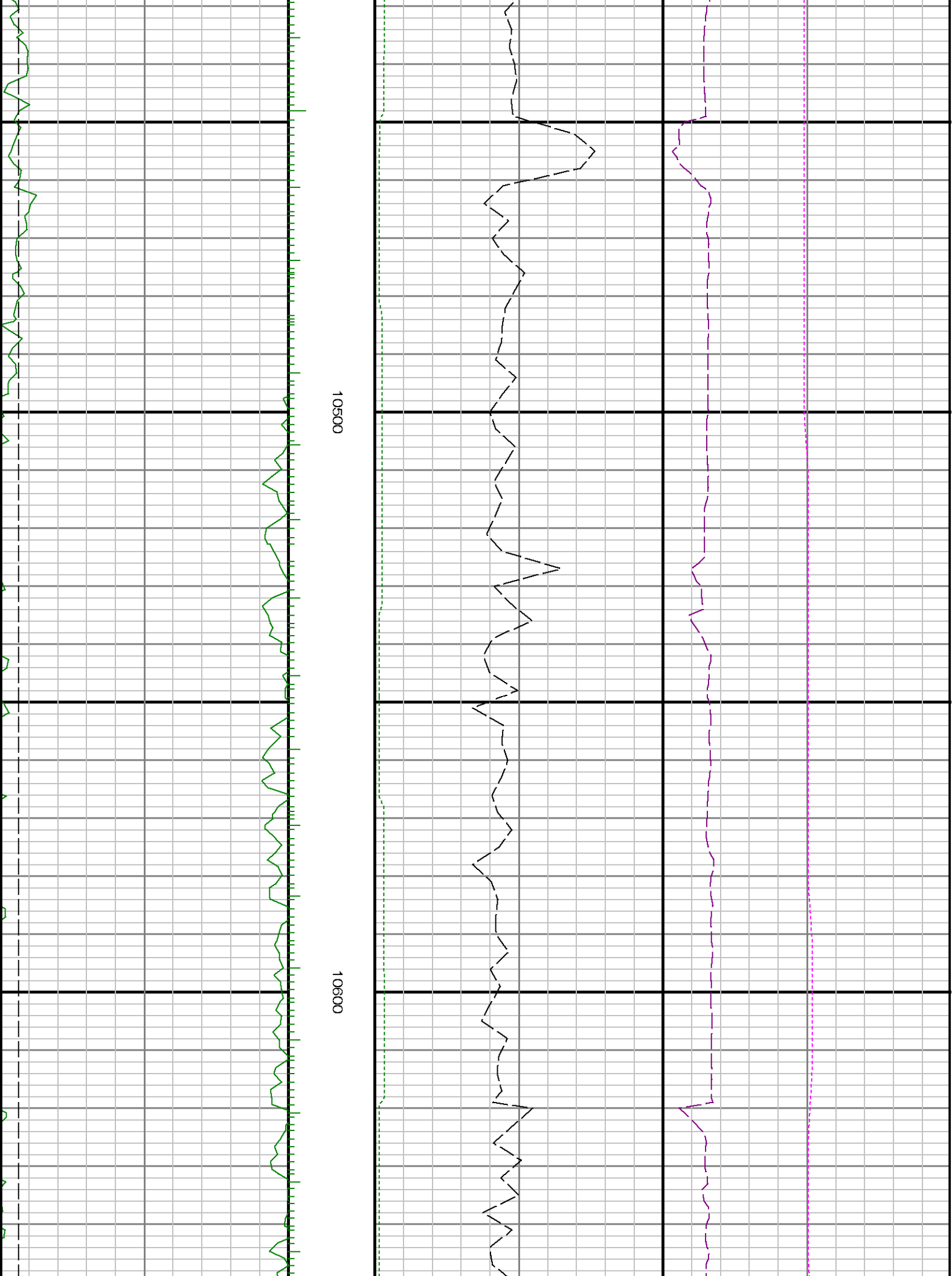




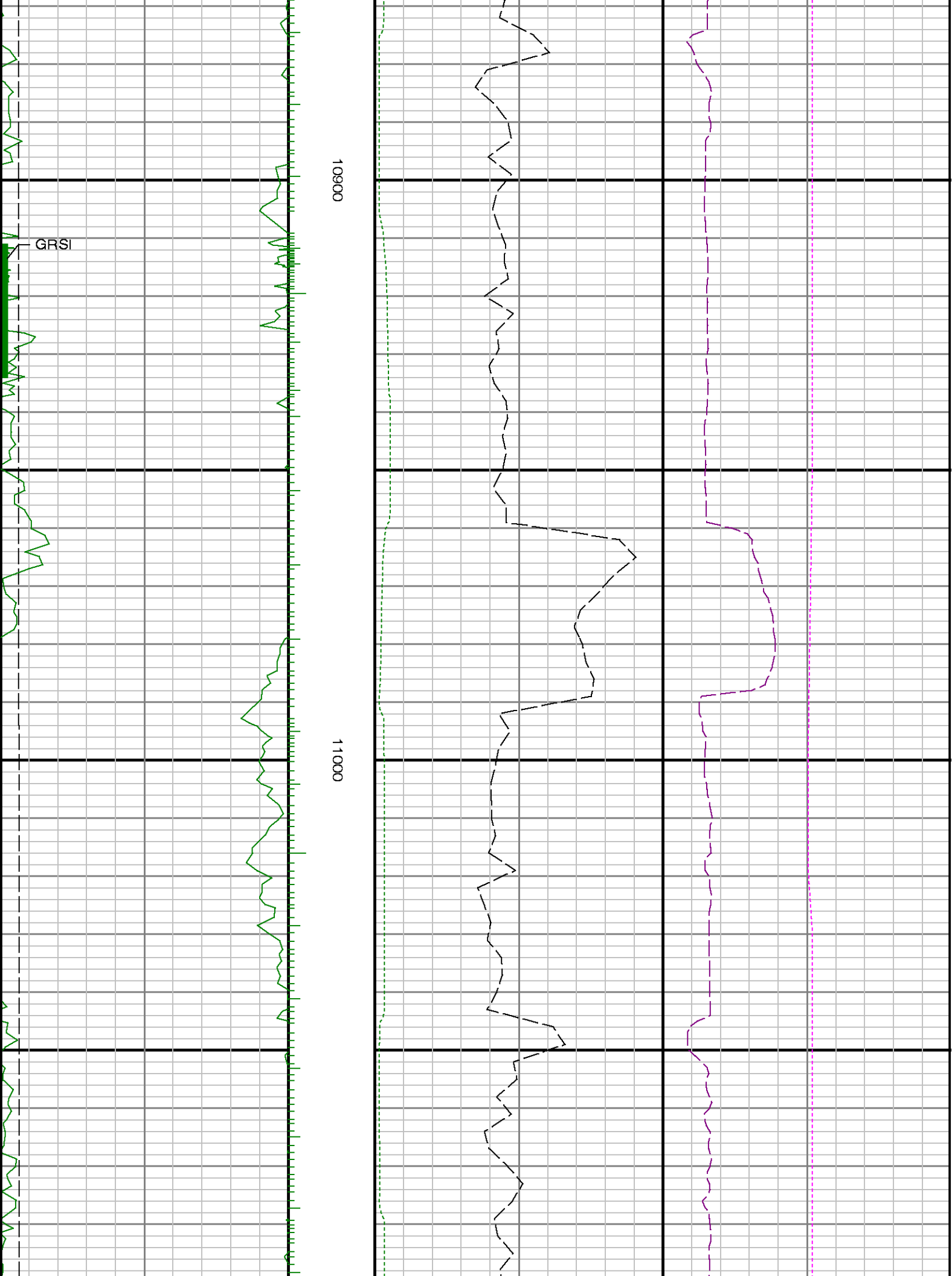
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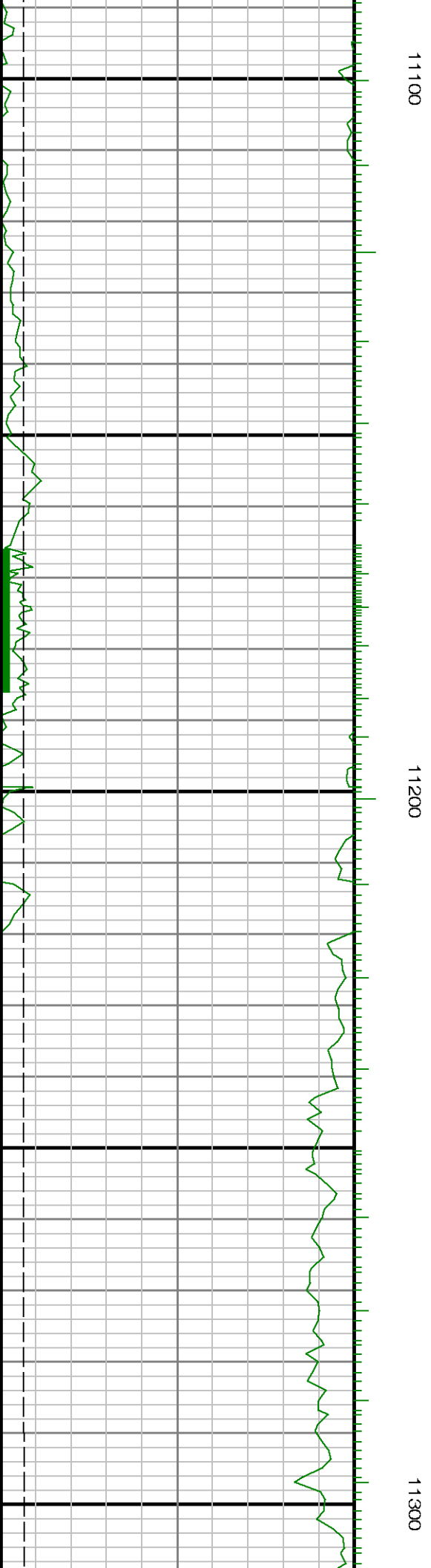
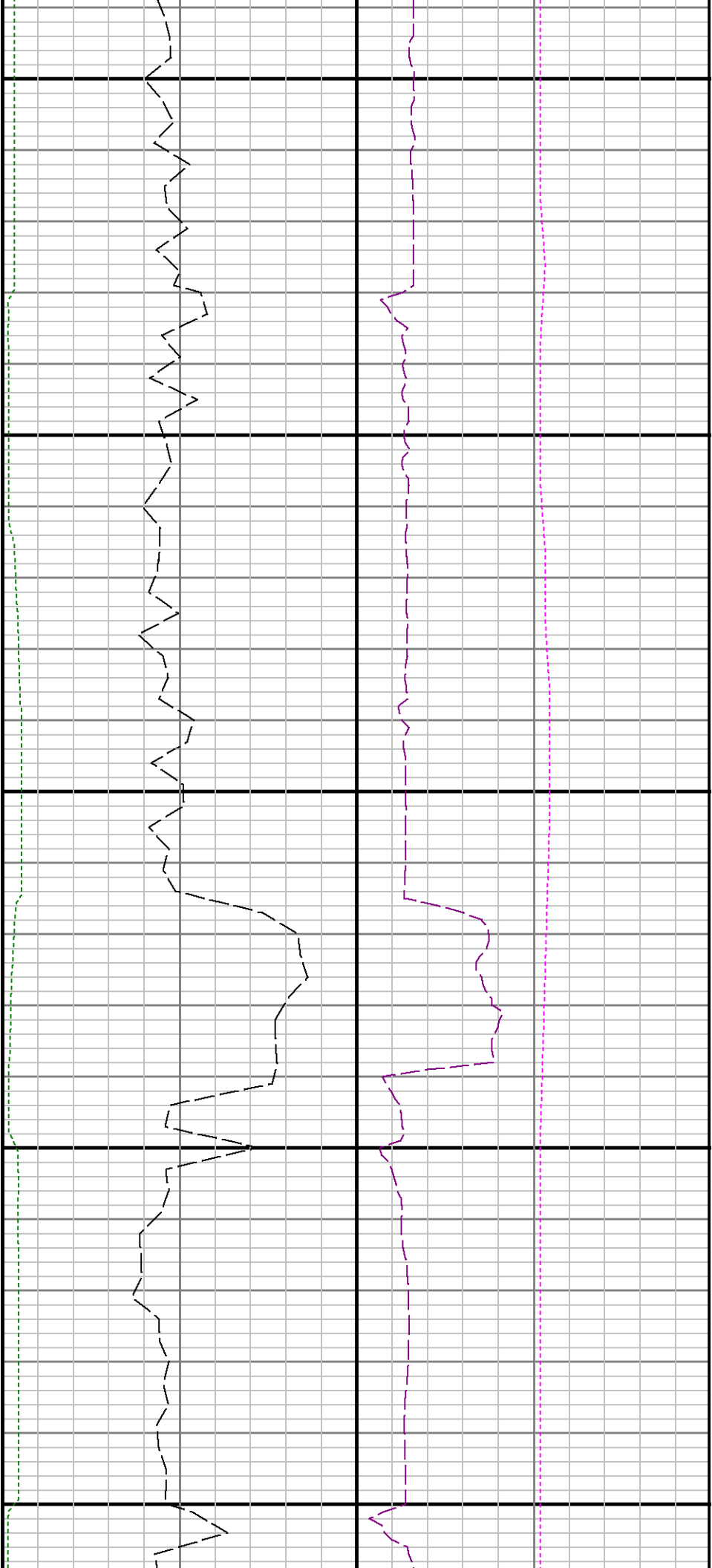
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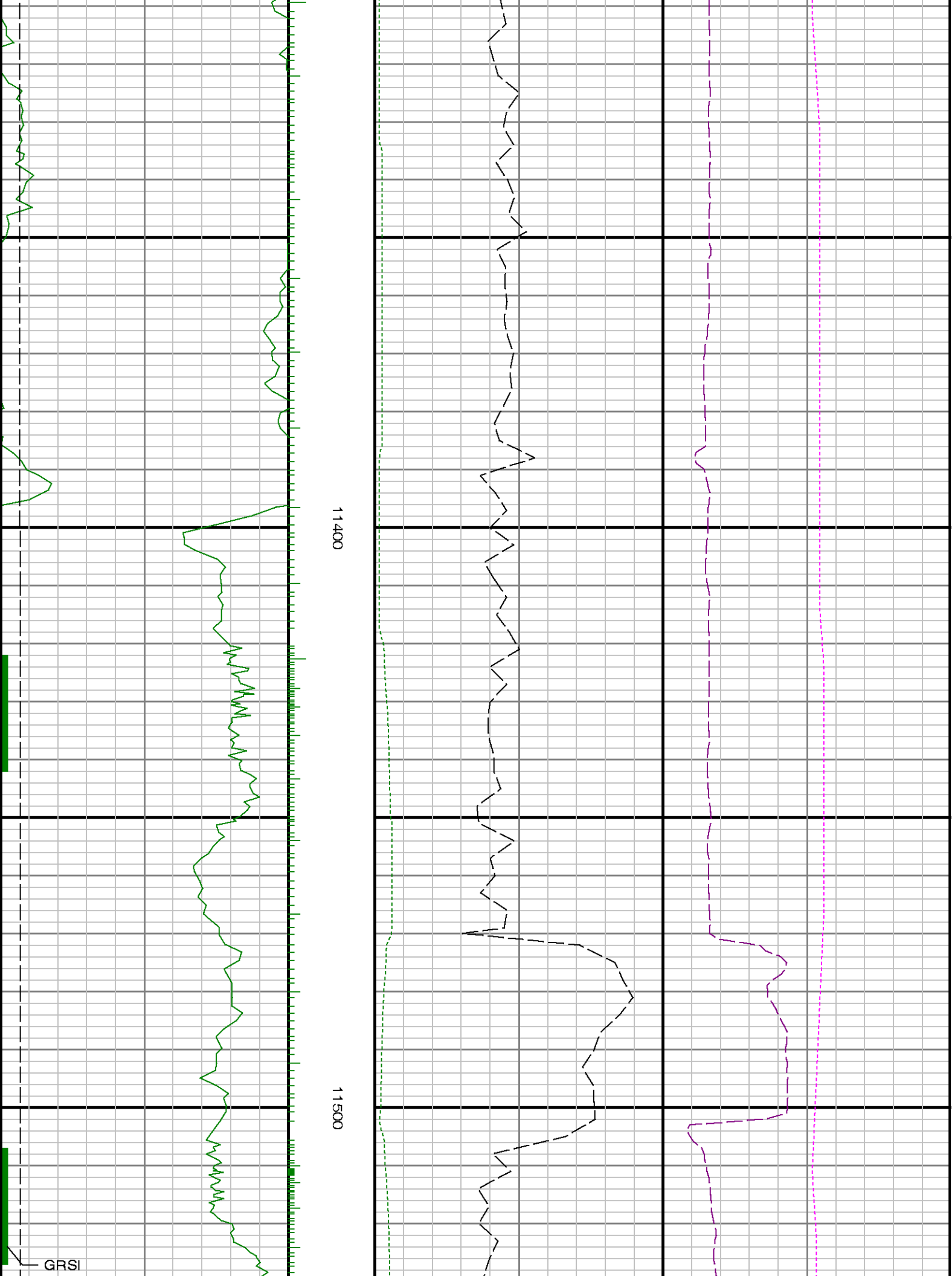


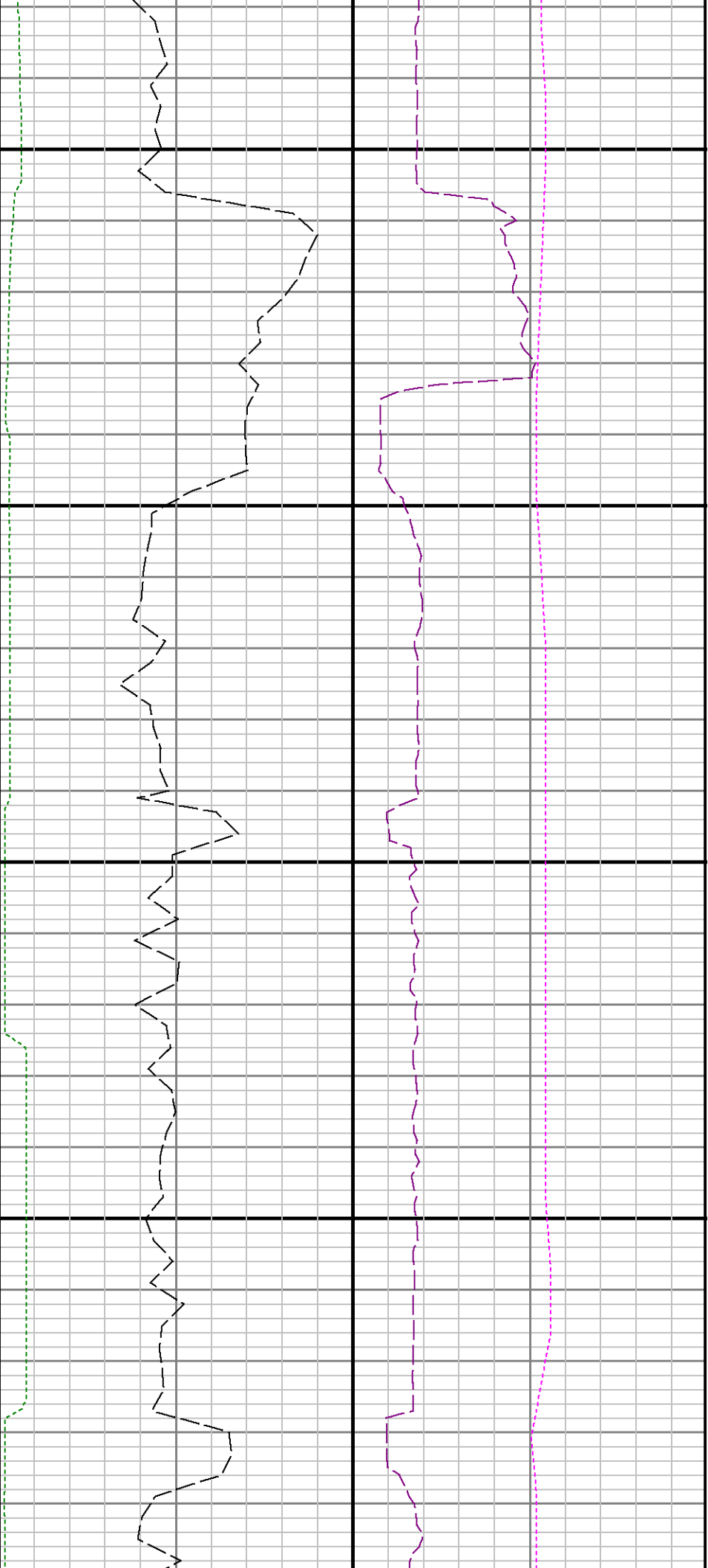






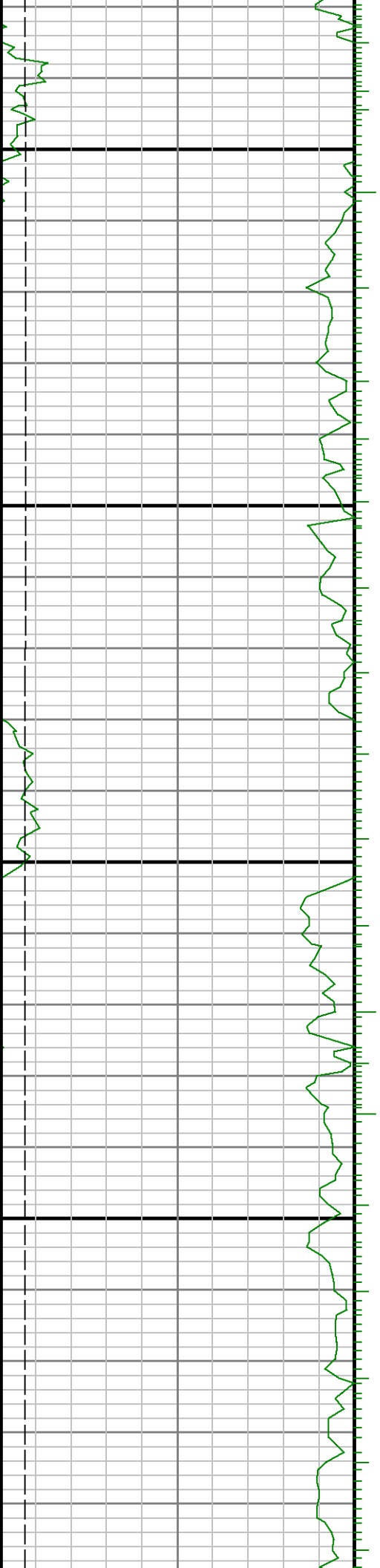






11600

11700





| | | | |
|---|--------------------------------|---|---|
| <div><div></div><div>TVD</div></div> | <div>Run 2 < 12000 ft</div> | <div>See Remark 2</div> <div>ROPA</div> | <div>WOBA</div> <div>TCDX</div> |
| <div>Gamma Ray Apparent 0.5 ft Avg GRAX</div> <div>0150</div> <div>API</div> <div>True Vertical Depth TVD</div> <div>75006500</div> <div>ft</div> | <div>MD feet 1:240</div> | <div>Rate of Penetration 3.0 ft Avg ROPA</div> <div>5000</div> <div>ft/hr</div> <div>Gamma Time Since Drilled GRTX</div> <div>0600</div> <div>min</div> | <div>Surface Weight On Bit 1.0 ft Avg WOBA</div> <div>0100</div> <div>klbf</div> <div>Downhole Temperature TCDX</div> <div>100300</div> <div>degF</div> |