



Weatherford®

6 3/4 & 4 3/4 in. WeatherfordM/LWD™
Gamma Ray & Resistivity
1 in. & 5 in. MEASURED DEPTH
RECORDED DATA
FINAL PRINT

Company: Anadarko Petroleum Corp.
Well: Sparboe 27C-26 HZ
Field: Wattenburg
Rig: Xtreme 23
County: Weld

| | | | |
|---------|--|---------------------------------|--|
| COMPANY | | Anadarko Petroleum Corp. | |
| WELL | | Sparboe 27C-26 HZ | |
| FIELD | | Wattenburg | |
| RIG | | Xtreme 23 | |
| COUNTY | | STATE | |
| API # | | Colorado | |
| | | 05-123-36247 | |

| | | | |
|----------|-------------------------|------------------|-----------------|
| Location | Latitude: 40.08845° N | x = 3,243,920 ft | Mag Decl: 8.60° |
| | Longitude: 104.62819° W | y = 1,276,264 | Mag Dip: 66.74° |

Other Services: Directional and Temperature

Permanent Datum: Mean Sea Level

Log Measured From: Drill Floor Elev: 4985 ft above perm. datum

Depth Reference: Drillers Tally Total Depth: 17129 ft

Depth Logged: 6602 ft to 17129 ft Runs: 4

Date Logged: 19-Mar-13 to 2-Apr-05 Spud Date: 17-Mar-13

| | |
|-----------|----------------|
| Elevation | K.B. Top Drive |
| | G.L. 4969 ft |
| | D.F. 4985 ft |
| | W.D. N/A |

Borehole Record

Casing Record

| Hole Size | From | To | Size | Weight | From | To |
|-----------|---------|----------|----------|------------|---------|---------|
| 8.750 in | 6645 ft | 7650 ft | 7.000 in | 26.0 lb/ft | Surface | 7638 ft |
| 6.125 in | 7650 ft | 17129 ft | | | | |

| | | | | | | |
|--|--|--|--|--|--|--|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Borehole Deviation Record

Mud Record

| Hole Size | Min. Inc. | Max. Inc. | Type | Weight | From | To |
|-----------|-----------|-----------|------|------------------|---------|----------|
| 8.750 in | 0.14° | 92.17° | WBM | 8.80 - 9.20 ppq | 1800 ft | 7650 ft |
| 6.125 in | 87.28° | 93.64° | OBM | 9.40 - 10.50 ppq | 7650 ft | 17129 ft |

| | | | | | | |
|--|--|--|--|--|--|--|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

All interpretations of log data are opinions based on inferences from electrical or other measurements. Weatherford International does not guarantee the accuracy or correctness of any interpretation or recommendation and we shall not be liable or responsible for any loss, cost, damages or expenses incurred or sustained by anyone resulting from any interpretation or recommendation made by any of our employees or agents.

| Run Summary | | | | | | | |
|-------------------------|---------------|-------------|---------------|---------------|---------------|--|--|
| M/LWD Run Number | | 1 | 2 | 3 | 4 | | |
| Bit Size | in. | 8.750 | 8.750 | 6.125 | 6.125 | | |
| Bit Type | | PDC | PDC | PDC | PDC | | |
| Bit TFA | sq.in. | 1.240 | 1.530 | 0.980 | 1.243 | | |
| Bit Start Depth | ft | 1800 | 6645 | 7650 | 12251 | | |
| Bit End Depth | ft | 6569 | 7650 | 12251 | 17129 | | |
| Top Log Interval | ft | N/A | 6602 | 7595 | 12174 | | |
| Bottom Log Interval | ft | N/A | 7606 | 12171 | 17129 | | |
| Begin Log Time | hrs | N/A | 7:07 | 16:30 | 6:17 | | |
| Begin Log Date | DD-MMM-YY | N/A | 19-Mar-13 | 25-Mar-13 | 30-Mar-13 | | |
| End Log Time | hrs | N/A | 10:35 | 7:28 | 18:45 | | |
| End Log Date | DD-MMM-YY | N/A | 21-Mar-13 | 29-Mar-13 | 2-Apr-13 | | |
| Drill or Wipe | | N/A | Drill | Wipe/Drill | Wipe/Drill | | |
| Flow Rate | gal/min | 600 | 600 | 300 | 268 | | |
| Max AV / CV @ MWD | ft/min | 541 / 99 | 458 / 334 | 465 / 429 | 419 / 449 | | |
| Min Inc @ Depth | deg @ ft | 0.14 @ 6243 | 0.63 @ 6585 | 87.28 @ 12180 | 87.59 @ 12520 | | |
| Max Inc @ Depth | deg @ ft | 7.60 @ 4450 | 92.17 @ 75.90 | 93.64 @ 11838 | 92.04 @ 12776 | | |
| MUD DATA | | | | | | | |
| Depth | ft | 5878 | 7460 | 9800 | 17129 | | |
| Fluid Type | | Water | Water | OBM | OBM | | |
| Mud Weight | ppg | 8.60 | 9.90 | 9.60 | 10.50 | | |
| Plastic Viscosity | cP | 1 | 12 | 20 | 20 | | |
| Solids / Sand | % | 1.7 / 0.3 | 9.2 / 0.3 | 9.6 / 0.3 | 15.7 / 1.3 | | |
| NaCl Equiv. Chlorides | ppm | 3135 | 3960 | 102300 | 56100 | | |
| pH | | 8.8 | 8.8 | OBM | OBM | | |
| Oil:Water Ratio | % Vol | 1.7 : 98.3 | 10.0 : 90.0 | 72.0 : 28.0 | 82.0 : 18.0 | | |
| Rm @ Temperature | ohm-m @ deg F | N/A | N/A | OBM | OBM | | |
| Rmc @ Temperature | ohm-m @ deg F | N/A | N/A | OBM | OBM | | |
| Rmf @ Temperature | ohm-m @ deg F | N/A | N/A | OBM | OBM | | |
| KCl | % Vol | 0 | 0 | 0 | 0 | | |
| Client Representative | | R. McPeters | R. McPeters | D. Bell | D. Bell | | |
| WeatherfordLWD Engineer | | D. Palmer | D. Palmer | A. Danna | M. Nguyen | | |

EQUIPMENT SUMMARY

| M/LWD Run Number | 1 | 2 | 3 | 4 | |
|--|-------------------|-------------------|-------------------|-------------------|------------|
| MWD/HEL Serial Number | CP130111PDYBG-TO3 | CP130111PDYBG-TO3 | NW130771PDBBI4.75 | NW130771PDBBI4.75 | |
| MFR Serial Number | N/A | N/A | NW130770RSBK4.75 | NW130770RSBK4.75 | |
| SAGR Serial Number | N/A | N/A | NW130772JS4.75 | NW130772JS4.75 | |
| Sensor to Bit Offsets / Acquisition Rates | | | | | |
| Directional | ft / sec | 57.08 / RT | 57.22 / RT | 53.49 / RT | 51.42 / RT |
| Gamma Ray | ft / sec | 42.87 / 10 | 43.01 / 10 | 38.64 / 5 | 70.18 / 5 |
| Resistivity | ft / sec | N/A | N/A | 81.82 / 10 | 79.75 / 10 |
| Other Information | | | | | |
| Total BHA Length | ft | 1003.57 | 1003.57 | 4493.81 | 4493.81 |
| BHA Assembly Type | | Steerable | Steerable | Steerable | Steerable |
| Stabilizer Location | ft | 2.51 | 2.49 | 34.02 | 34.02 |
| Stabilizer Location | ft | 80.75 | 80.75 | 102.87 | 102.87 |
| Run Circulating Time | hr | 10.04 | 25.77 | 78.42 | 72.57 |
| Run Drilling Time | hr | 2.24 | 12.88 | 43.20 | 37.74 |

MUD SUMMARY

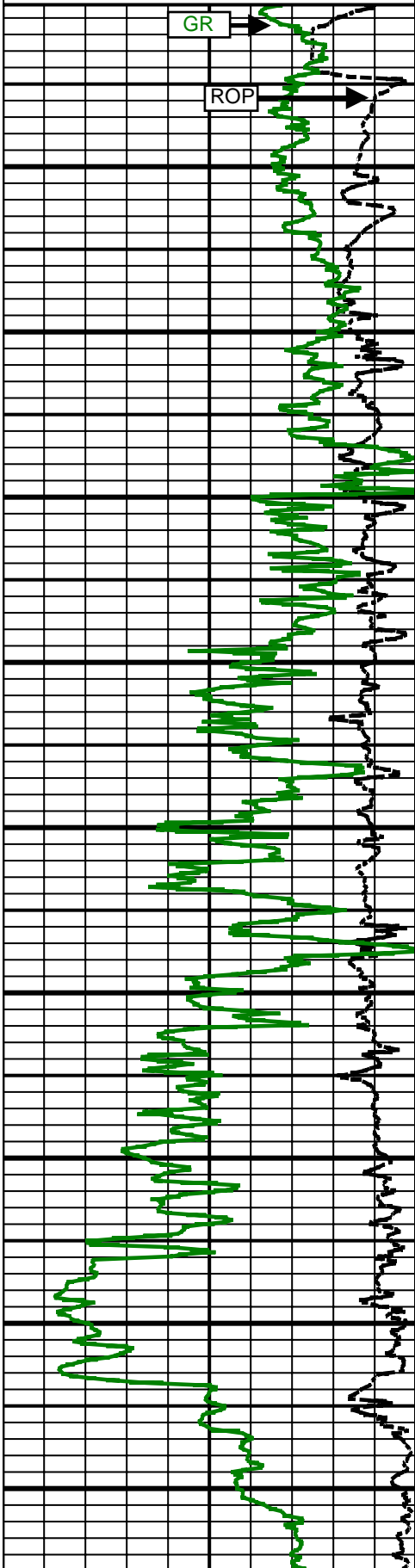
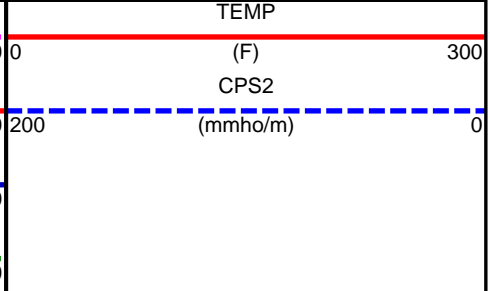
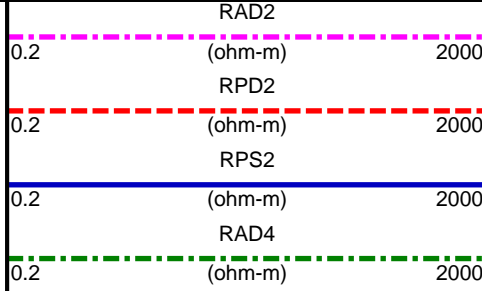
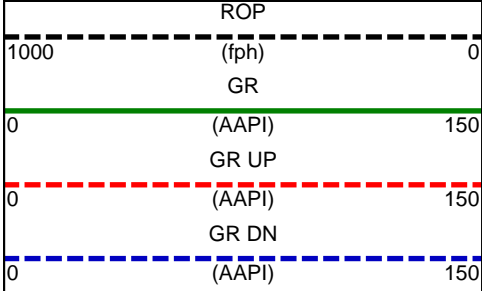
| Date and Time | Run | Bit Depth | Mud Weight | % K | Rm @ Temp | Rmf @ Temp | Rmc @ Temp | BHCT |
|-------------------|-----|-----------|------------|-----|-----------|------------|------------|-------|
| 19 Mar 13 @ 00:30 | 01 | 5878 ft | 8.60 ppg | 0 | N/A | N/A | N/A | 136 F |
| 21 Mar 13 @ 00:30 | 02 | 7460 ft | 9.90 ppg | 0 | N/A | N/A | N/A | 164 F |
| 27 Mar 13 @ 00:30 | 03 | 9800 ft | 9.60 ppg | 0 | OBM | OBM | OBM | 235 F |
| 02 Apr 13 @ 03:00 | 04 | 17129 ft | 10.50 ppg | 0 | OBM | OBM | OBM | 245 F |

| | | | |
|---|-----------------|--|-----------|
| MWD RUN REMARKS | | | |
| Run Number: 1 :: RECORDED DATA LOG | | | |
| WFT Services Provided: | | | |
| Recorded and Real Time Logging: Gamma Ray and Temperature. | | | |
| Directional Services: On demand Inclination and Azimuth. | | | |
| Borehole and Environmental Correction: | | | |
| Hole Size: | 8.750 in. | Gamma Ray: Hole size, mudweight, Collar O.D., Collar I.D. and K1 factor. | |
| Mud Weight: | 9.80 ppg | Collar O.D.: | 6.750 in. |
| K1 Factor: | 3.179 | Collar I.D.: | 3.250 in. |
| Run Number: 2 :: RECORDED DATA LOG | | | |
| WFT Services Provided: | | | |
| Recorded and Real Time Logging: Gamma Ray and Temperature. | | | |
| Directional Services: On demand Inclination and Azimuth. | | | |
| Borehole and Environmental Correction: | | | |
| Hole Size: | 8.750 in. | Gamma Ray: Hole size, mudweight, Collar O.D., Collar I.D. and K1 factor. | |
| Mud Weight: | 9.90 ppg | Collar O.D.: | 6.750 in. |
| K1 Factor: | 3.179 | Collar I.D.: | 3.250 in. |
| Run Number: 3 :: RECORDED DATA LOG | | | |
| WFT Services Provided: | | | |
| Recorded and Real Time Logging: Gamma Ray, Deep, Medium and Shallow Resistivity, and Temperature. | | | |
| Directional Services: On demand Inclination and Azimuth. | | | |
| Borehole and Environmental Correction: | | | |
| Hole Size: | 6.125 in. | Gamma Ray: Corrected for mud weight, hole size and KCl concentration. | |
| Mud Weight: | 9.60 ppg | Resistivities: Corrected for borehole temperature, hole size, drilling fluid resistivity | |
| Borehole Temperature: | 235° F | and dielectric correction. | |
| Drilling Fluid Resistivity: | OBM (500 ohm-m) | | |
| KCl Concentration: | 0% | | |
| Run Number: 4 :: RECORDED DATA LOG | | | |
| WFT Services Provided: | | | |
| Recorded and Real Time Logging: Gamma Ray, Deep, Medium and Shallow Resistivity, and Temperature. | | | |
| Directional Services: On demand Inclination and Azimuth. | | | |
| Borehole and Environmental Correction: | | | |
| Hole Size: | 6.125 in. | Gamma Ray: Corrected for mud weight, hole size and KCl concentration. | |
| Mud Weight: | 10.50 ppg | Resistivities: Corrected for borehole temperature, hole size, drilling fluid resistivity | |
| Borehole Temperature: | 245° F | and dielectric correction. | |
| Drilling Fluid Resistivity: | OBM (500 ohm-m) | | |
| KCl Concentration: | 0% | | |

| M/LWD LOG COMMENTS | |
|--------------------|--|
| Comment No. 1-1 | No logging during this run. |
| Comment No. 2-1 | RECORDED DATA LOG Start of M/LWD Drilling Run 02 Weatherford International provided 6 3/4 in. Directional, Gamma Ray, and Temperature for Run 02. Run 02 started formation drilling March 19, 2013 at 7:07 at 6645 MD / 6569 TVD. Weatherford International logged the 8.750 in. borehole. The WBM at the start of drilling was 9.90 ppg. |
| Comment No. 2-2 | End of M/LWD Drilling Run 02 Run 02 ended drilling formation March 21, 2013 at 10:35 at 7650 MD / 7218 TVD. The OBM at the end of drilling was 9.90 ppg. |
| Comment No. 3-1 | RECORDED DATA LOG Start of LWD Drilling Run 03 Weatherford International provided 4 3/4 in. Directional, Resistivity, Gamma Ray, and Temperature for Run 03. Run 03 started formation drilling March 25, 2013 at 16:30 at 7650 MD / 7218 TVD. Weatherford International logged the 6.125 in. borehole. The OBM at the start of drilling was 9.40 ppg. |
| Comment No. 3-2 | End of LWD Drilling Run 03 Run 03 ended drilling formation March 29, 2013 at 07:28 at 12251 MD / 7213 TVD. The OBM at the end of drilling was 9.60 ppg. |
| Comment No. 4-1 | RECORDED DATA LOG Start of LWD Drilling Run 04 Weatherford International provided 4 3/4 in. Directional, Resistivity, Gamma Ray, and Temperature for Run 04. Run 04 started formation drilling March 30, 2013 at 6:17 at 12251 MD / 7213 TVD. Weatherford International logged the 6.125 in. borehole. During this run, the Spectral Gamma Ray was providing inconsistent data. Spectral Gamma Ray inconsistent data started at 12300 MD / 7217 TVD. Azimuthal Gamma Ray was spliced in at 12300 MD / 7217 TVD. The OBM at the start of drilling was 9.60 ppg. |
| Comment No. 4-2 | End of LWD Drilling Run 04 Run 04 ended drilling formation April 02, 2013 at 18:45 at 17129 MD / 7229 TVD. The OBM at the end of drilling was 10.50 ppg. |

| Curve Specifications | | | | |
|------------------------------|----------|--------|---|-----------------------|
| Curve Type | Mnemonic | Units | Comments | Corrections |
| Rate of Penetration | ROP | fph | Rate of Penetration 3.0 ft window 0.5 ft Exponential Smoothing | None |
| Gamma Ray | GR | AAPI | Gamma Ray 3.0 ft window 0.5 ft Exponential Smoothing | See M/LWD Run Remarks |
| Azimuthal Gamma Ray | GR UP | AAPI | Recorded Azimuthal Gamma Ray 3.0 ft window 0.5 ft Exponential Smoothing | |
| Azimuthal Gamma Ray | GR Down | AAPI | Recorded Azimuthal Gamma Ray 3.0 ft window 0.5 ft Exponential Smoothing | |
| Deep Phase Resistivity | RPD2 | ohm-m | 2MHz Deep Phase Resistivity 3.0 ft window 0.5 ft Exponential Smoothing | |
| Deep Attenuation Resistivity | RAD2 | ohm-m | 2MHz Deep Attenuation Resistivity 3.0 ft window 0.5 ft Exponential Smoothing | |
| Deep Attenuation Resistivity | RAD4 | ohm-m | 400kHz Deep Attenuation Resistivity 3.0 ft window 0.5 ft Exponential Smoothing | |
| Shallow Phase Resistivity | RPS2 | ohm-m | 2MHz Shallow Phase Resistivity 3.0 ft window 0.5 ft Exponential Smoothing | |
| Shallow Phase Conductivity | CPS2 | mmho/m | 2MHz Shallow Phase Conductivity 3.0 ft window 0.5 ft Exponential Smoothing | |
| Temperature | TEMP | F | Recorded Borehole Tmperature 3.0 ft window 0.5 ft Exponential Smoothing | None |

1 Inch - Measured Depth



MD

6700 MD

6800 MD

6900 MD

7000 MD

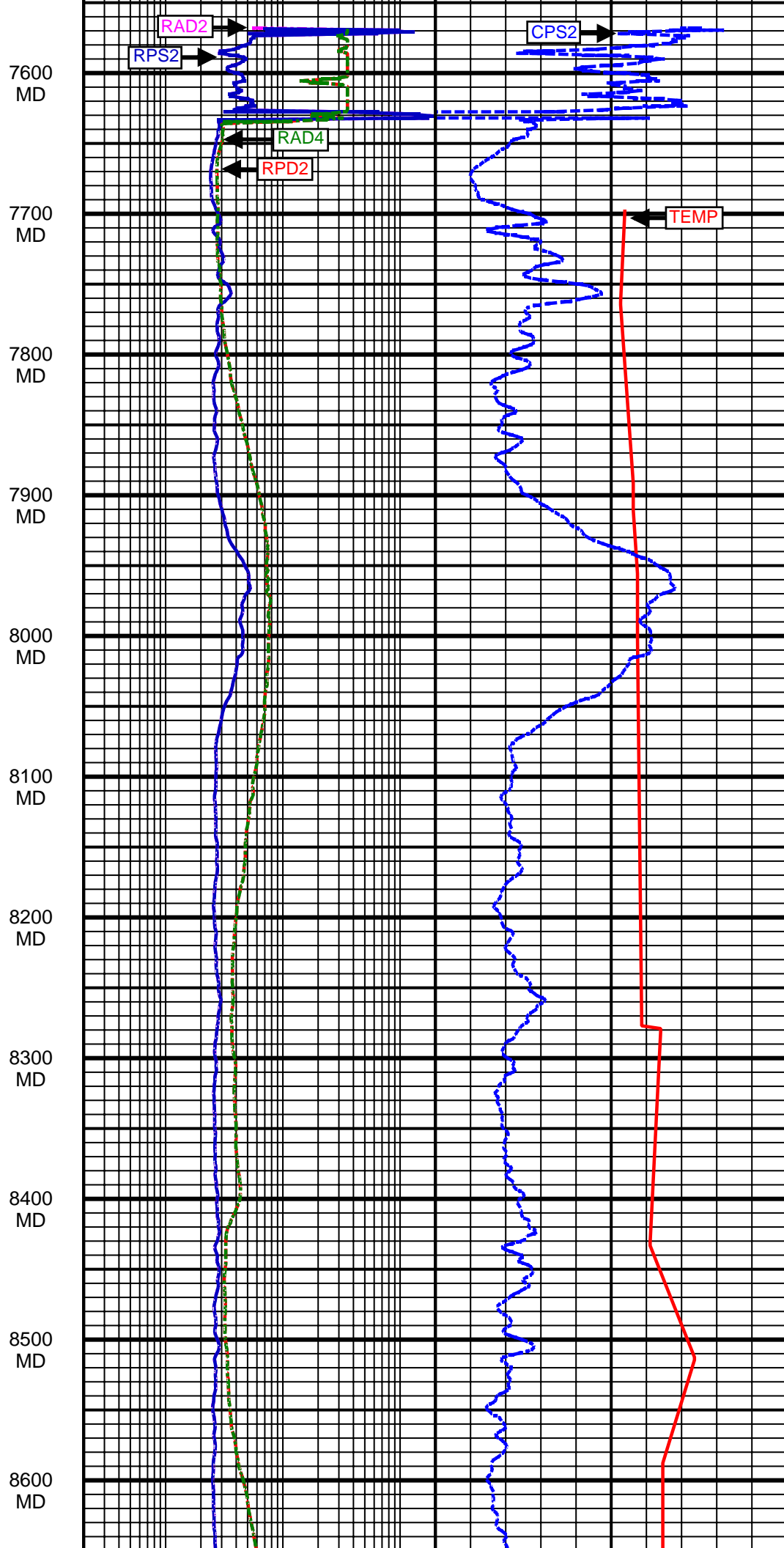
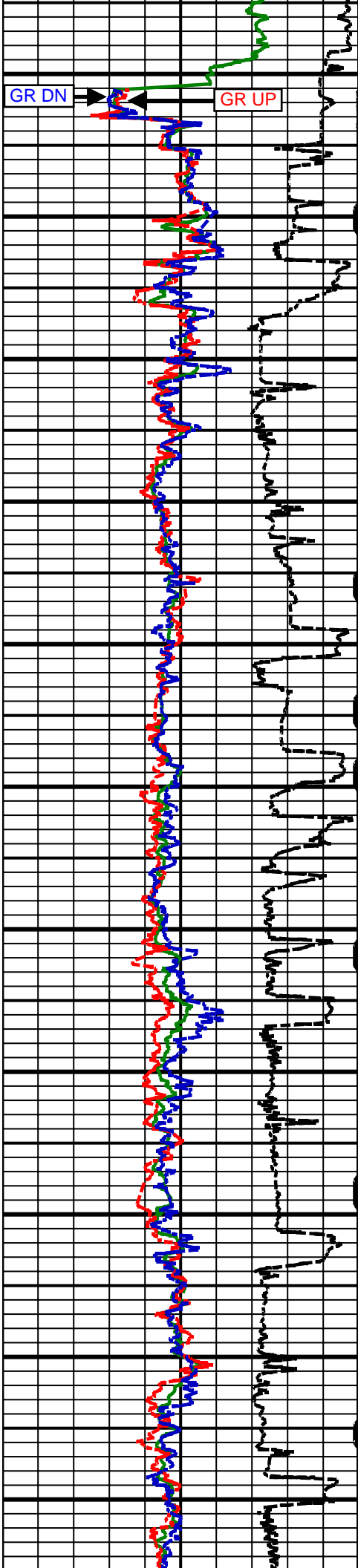
7100 MD

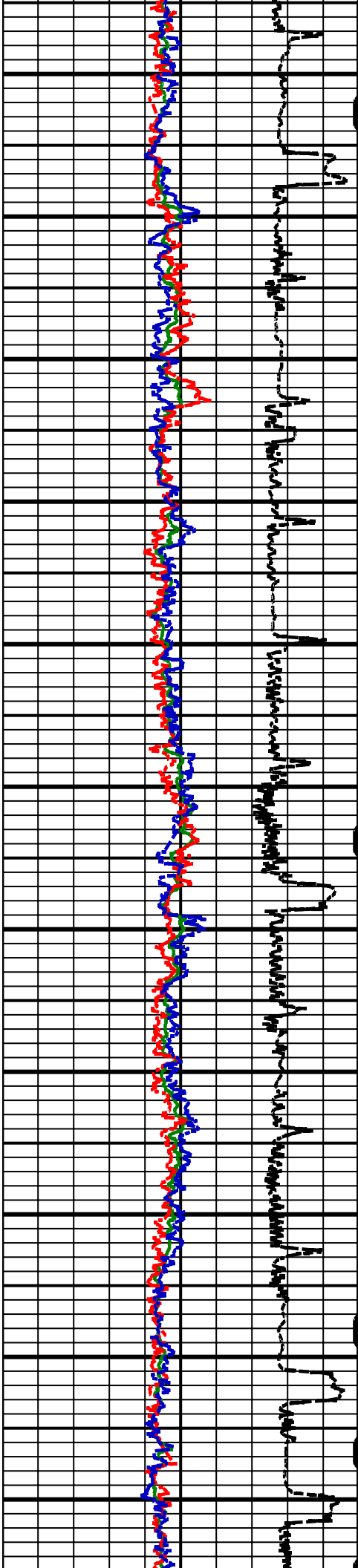
7200 MD

7300 MD

7400 MD

7500 MD





8700
MD

8800
MD

8900
MD

9000
MD

9100
MD

9200
MD

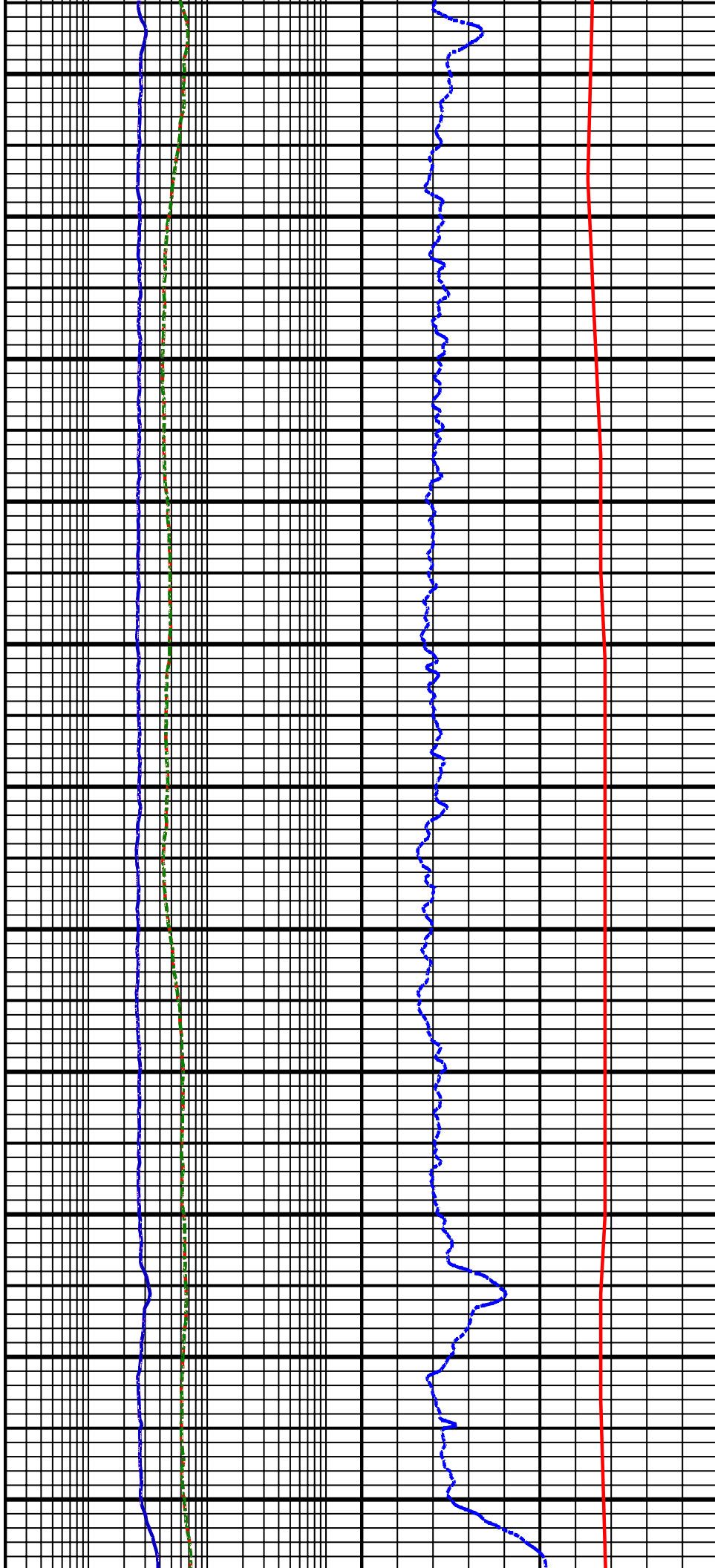
9300
MD

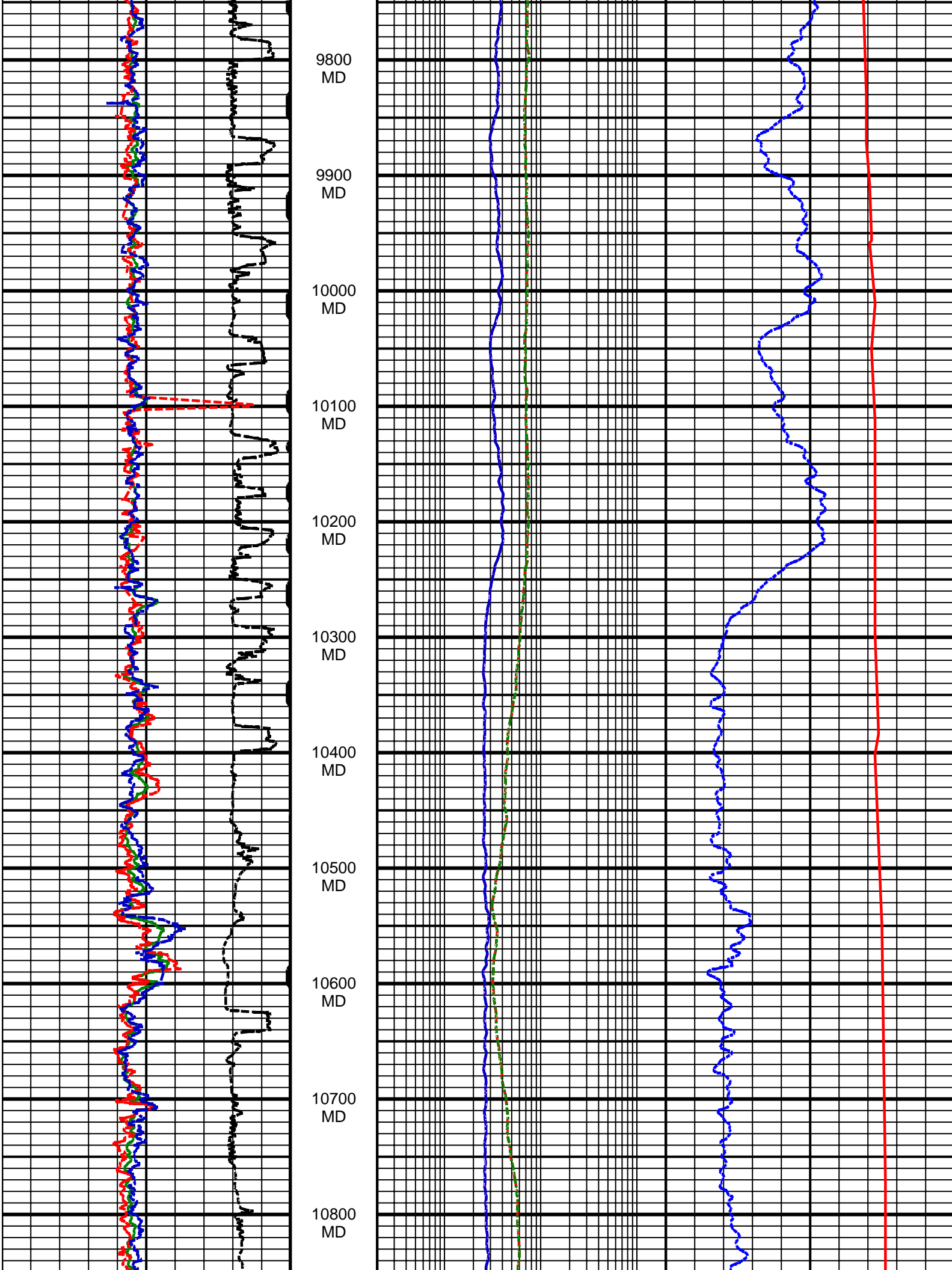
9400
MD

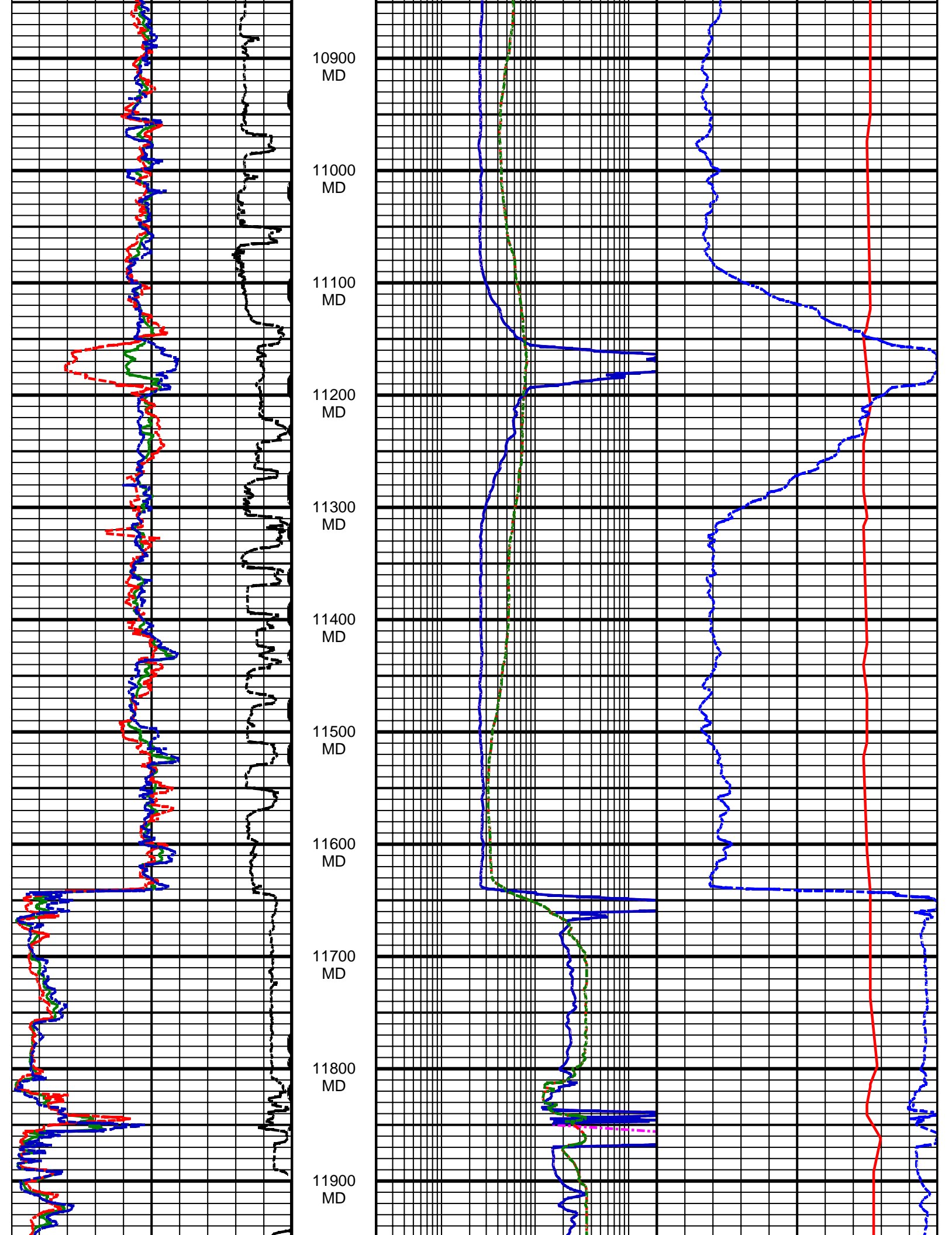
9500
MD

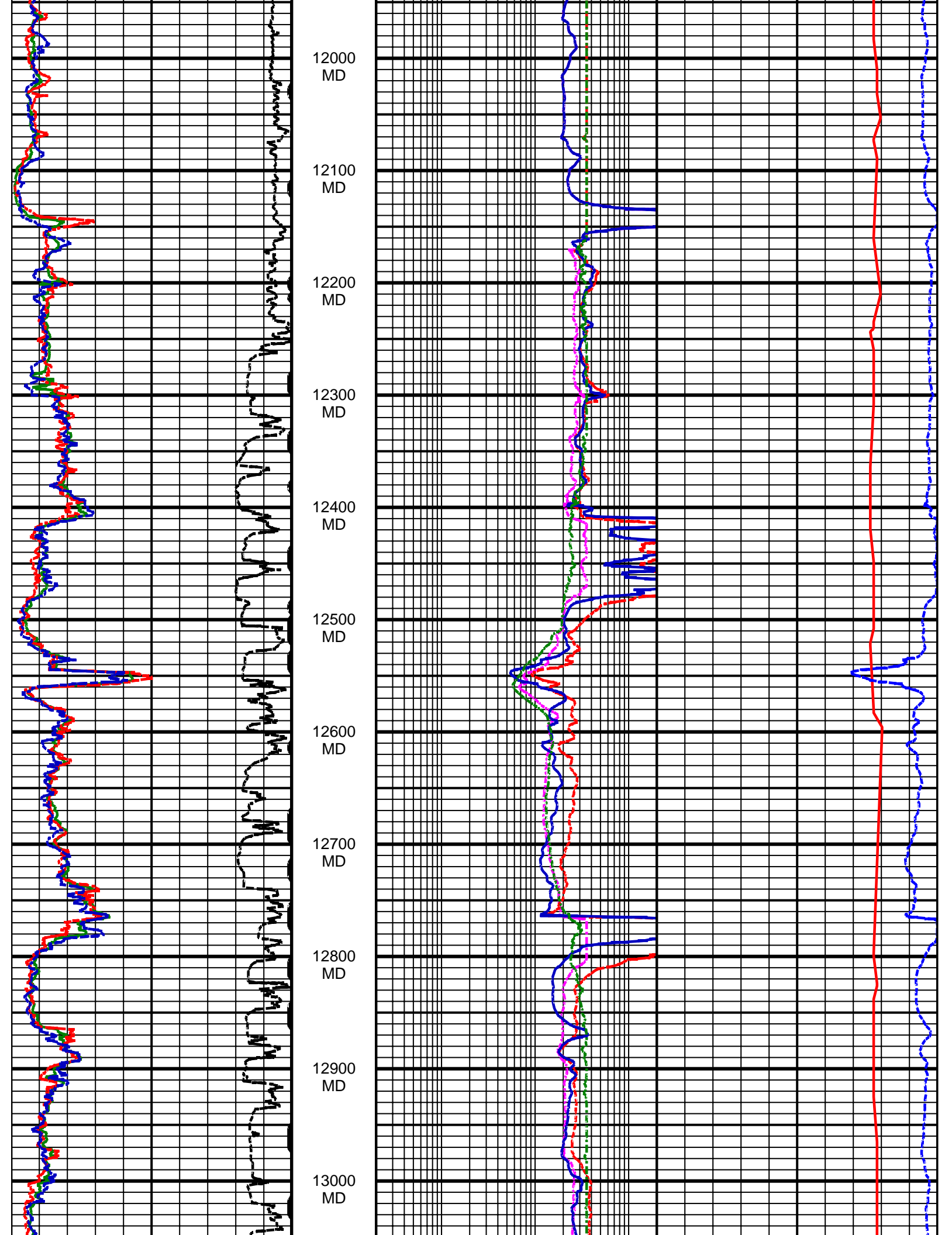
9600
MD

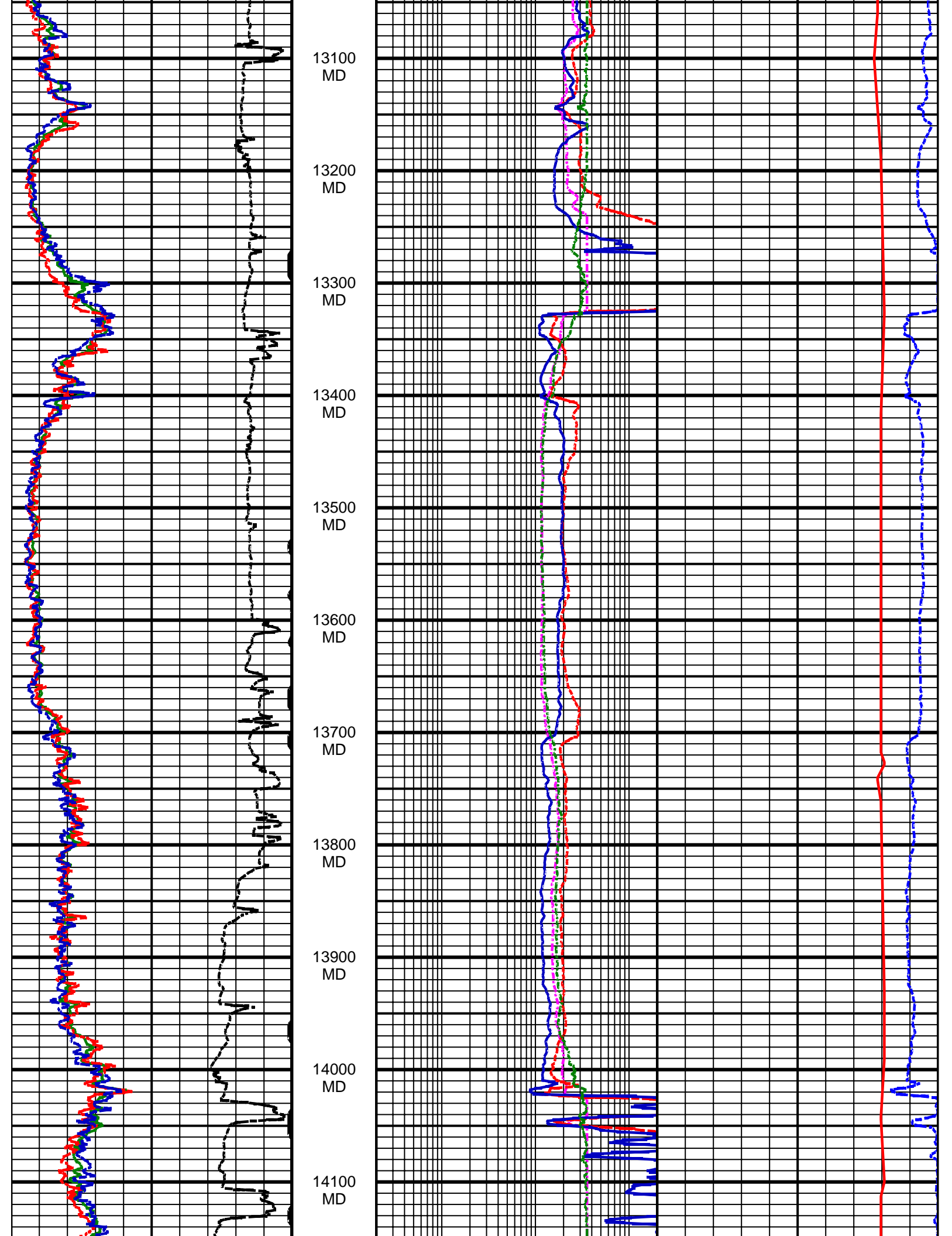
9700
MD

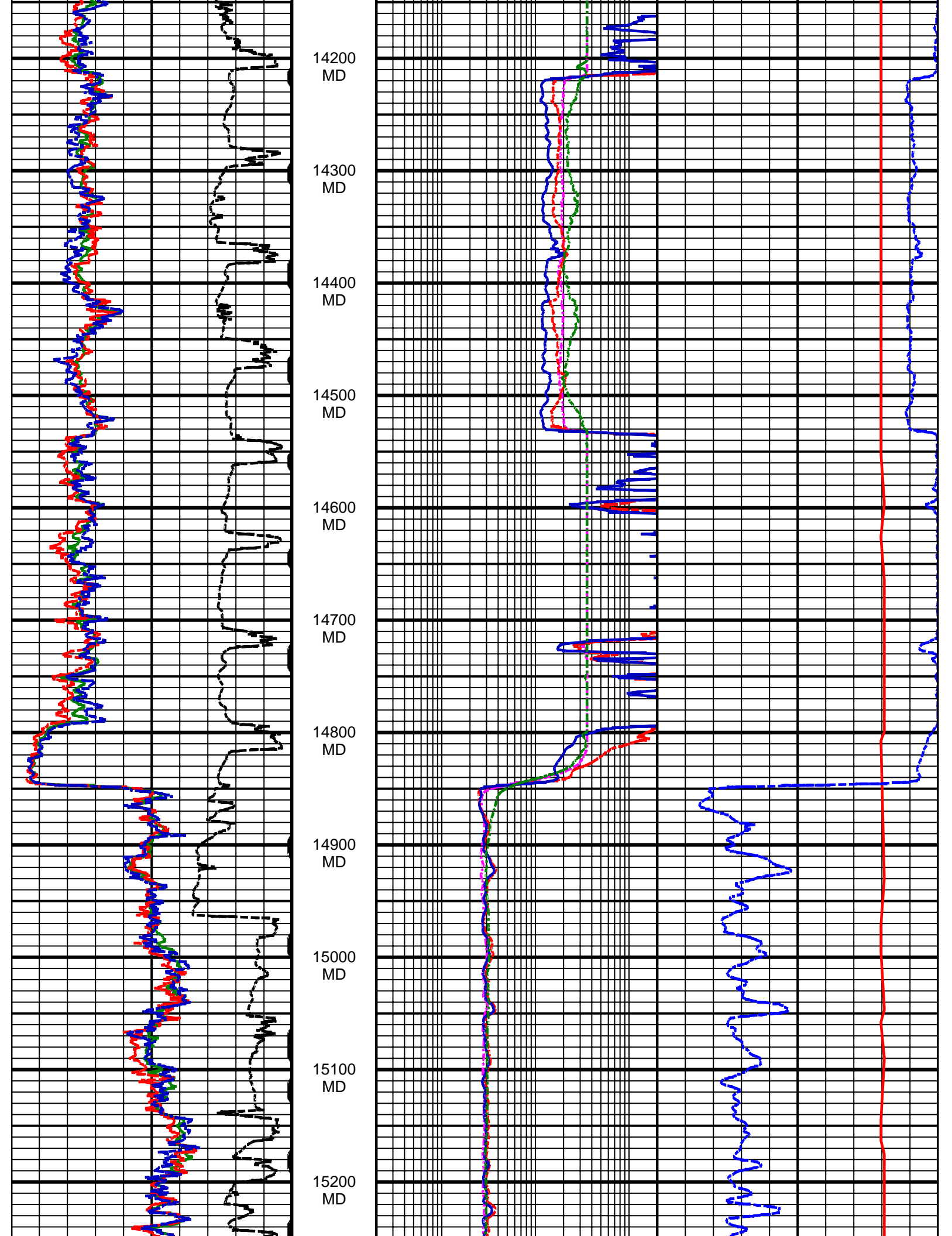


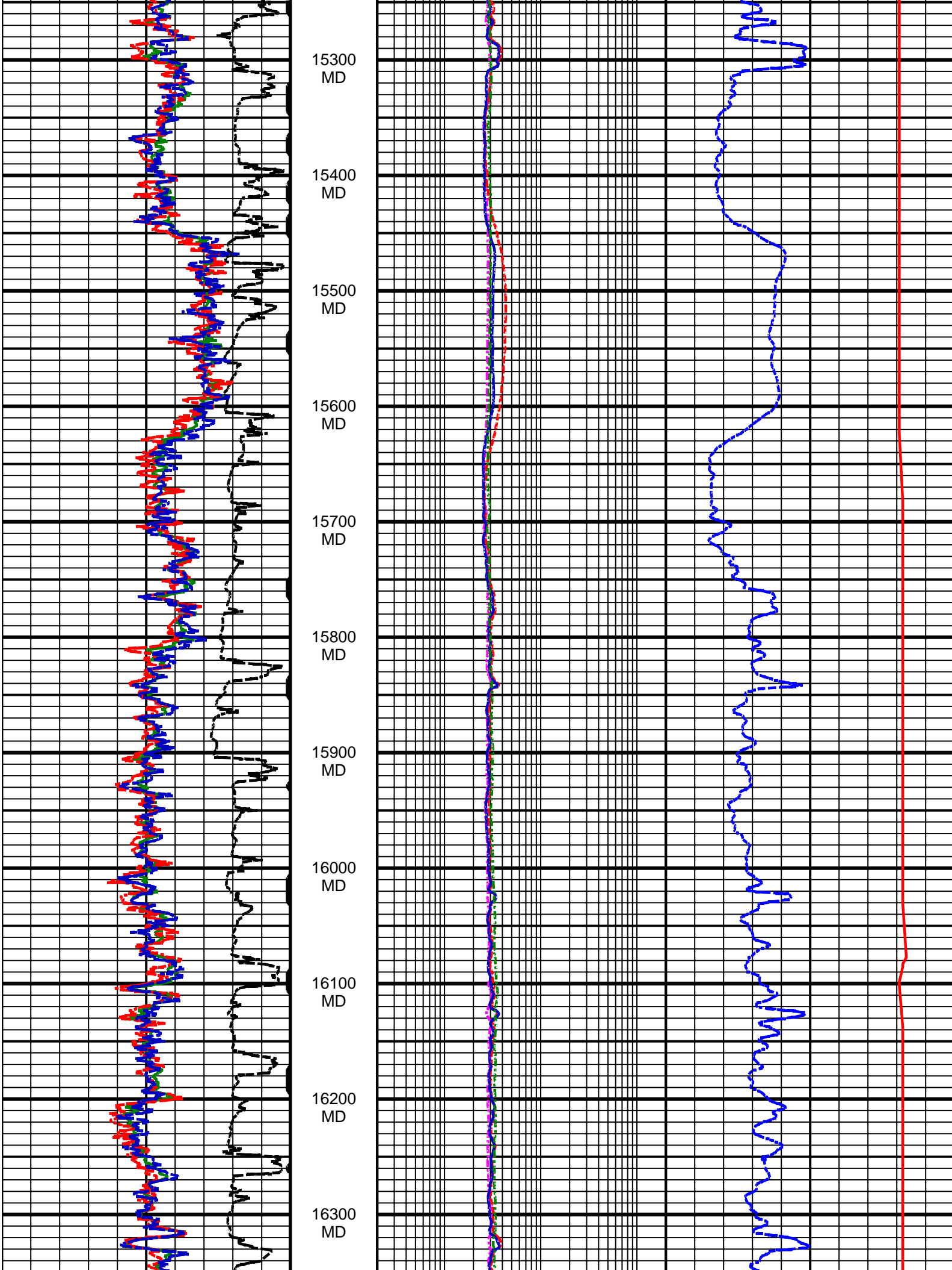


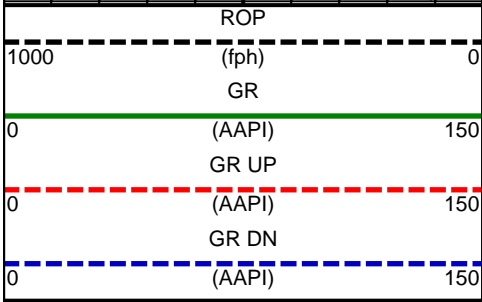
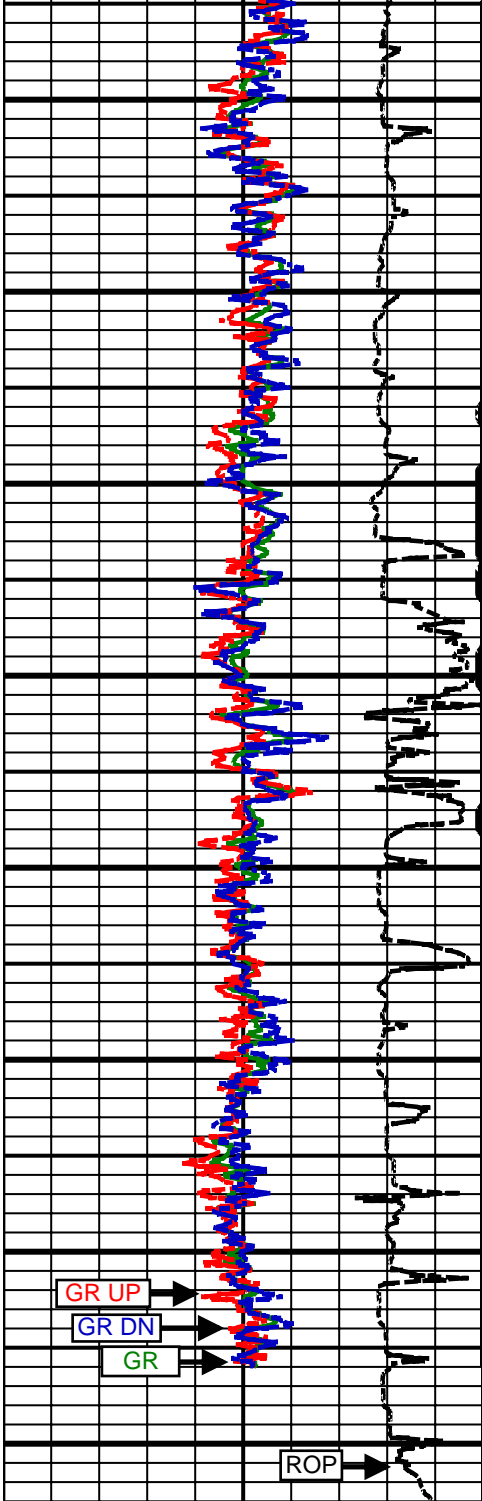




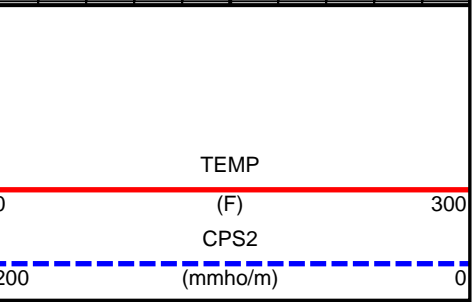
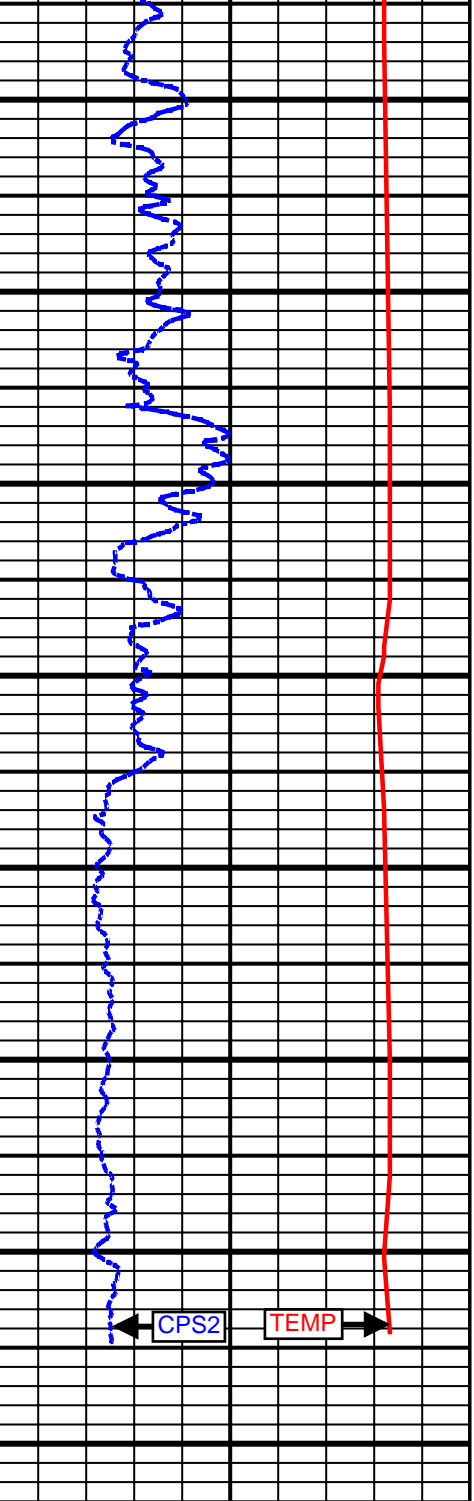
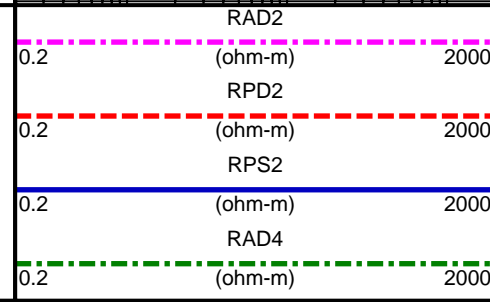
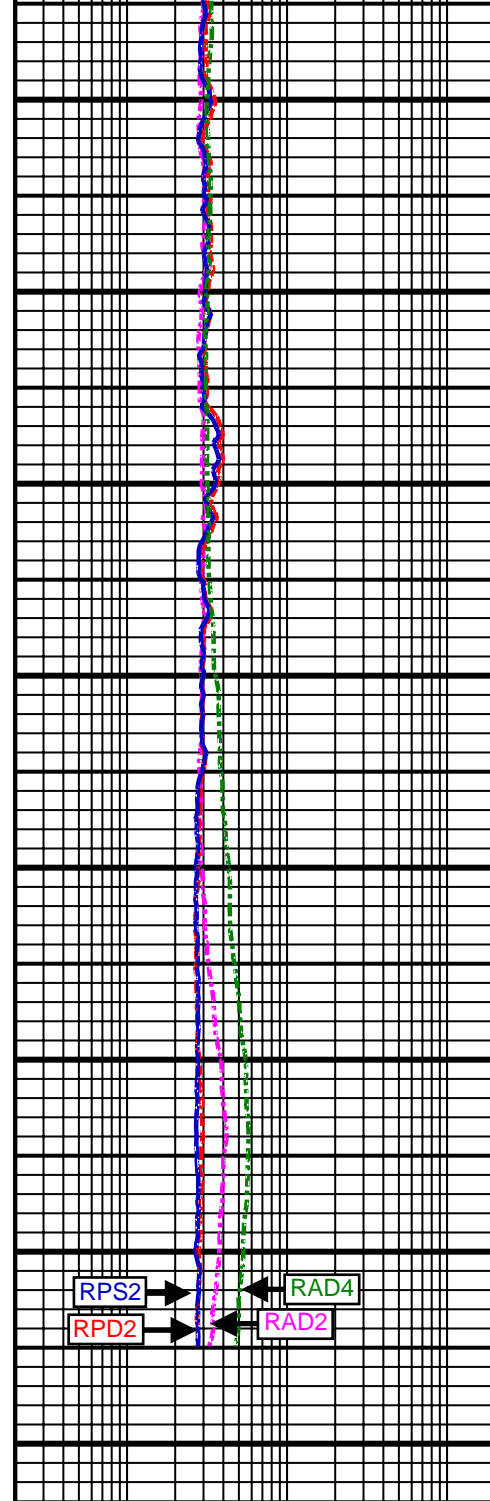




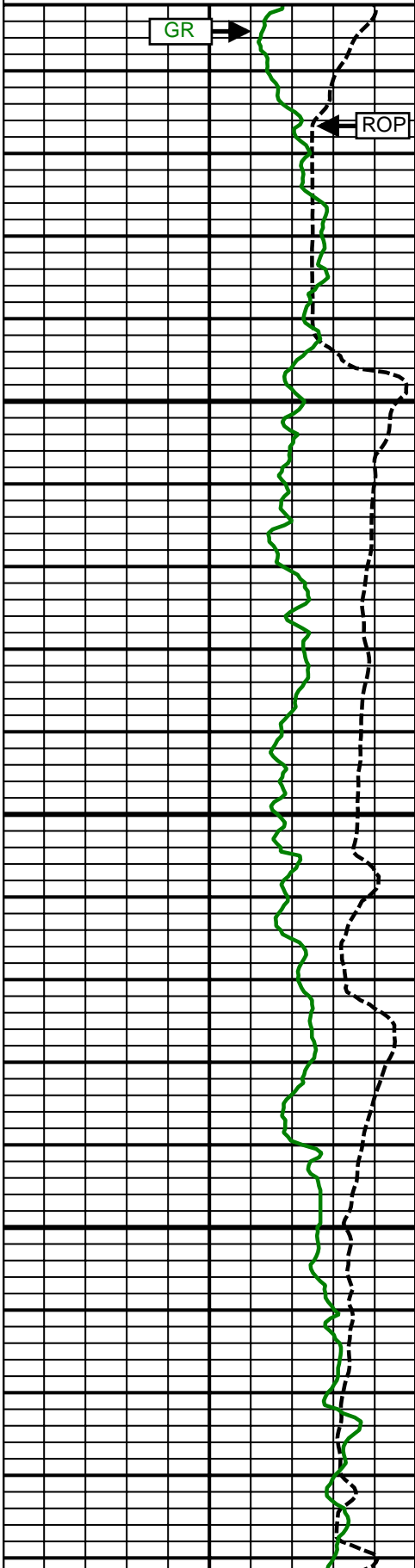
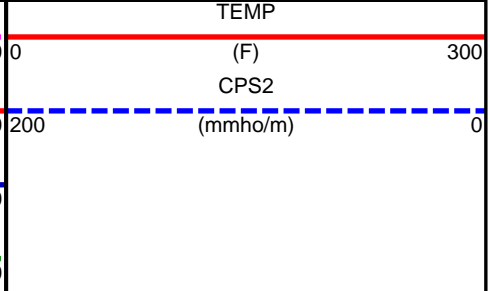
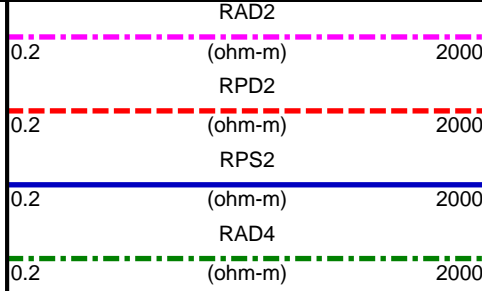
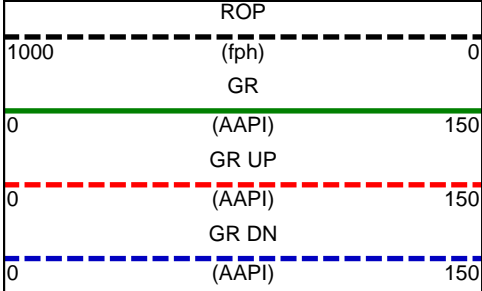




16400 MD
16500 MD
16600 MD
16700 MD
16800 MD
16900 MD
17000 MD
17100 MD



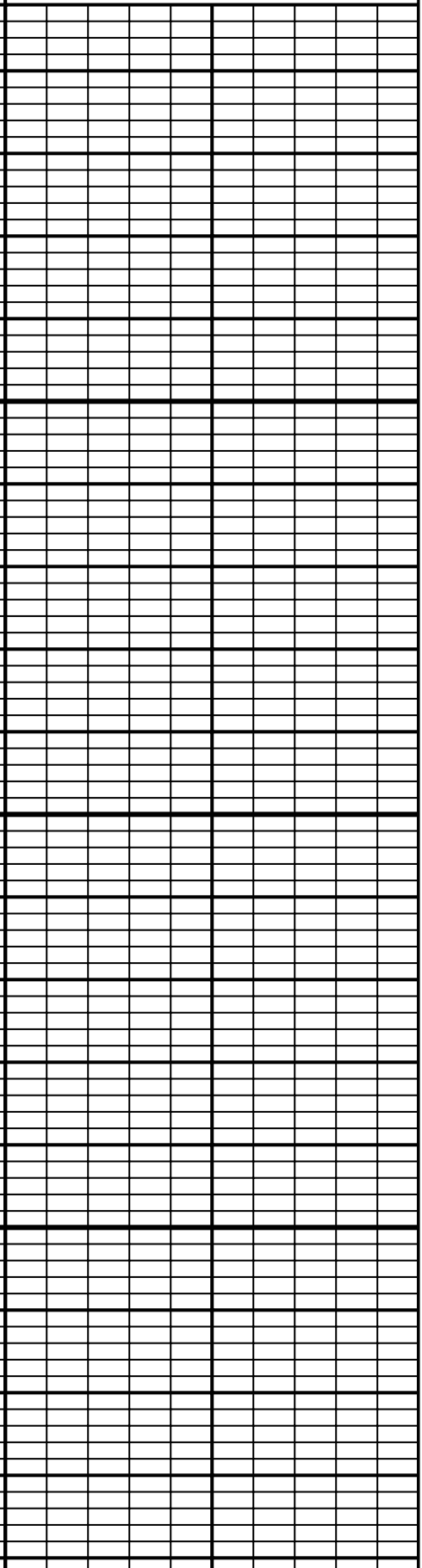
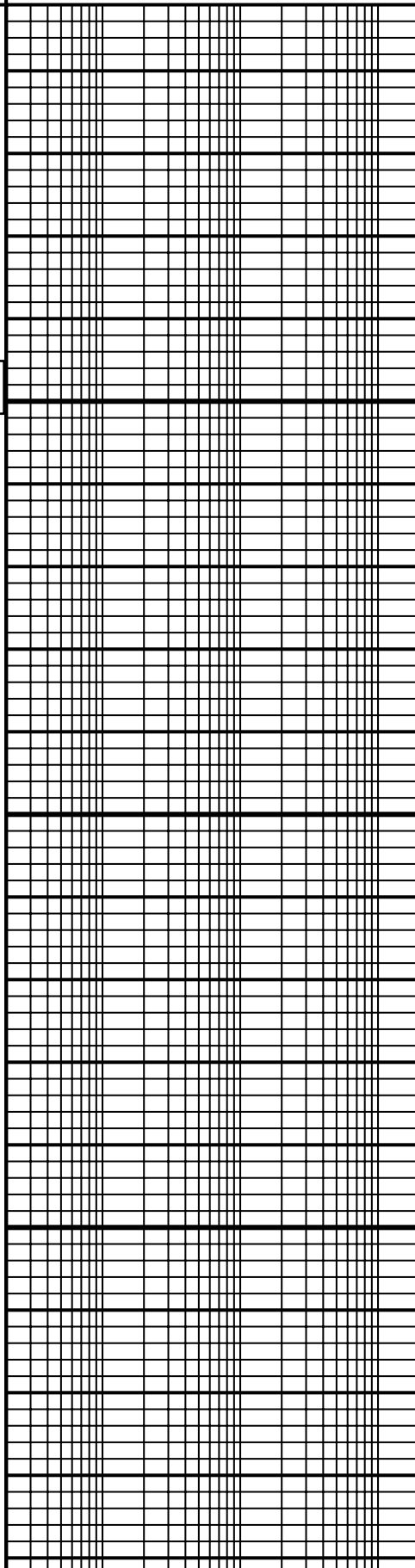
5 Inch - Measured Depth

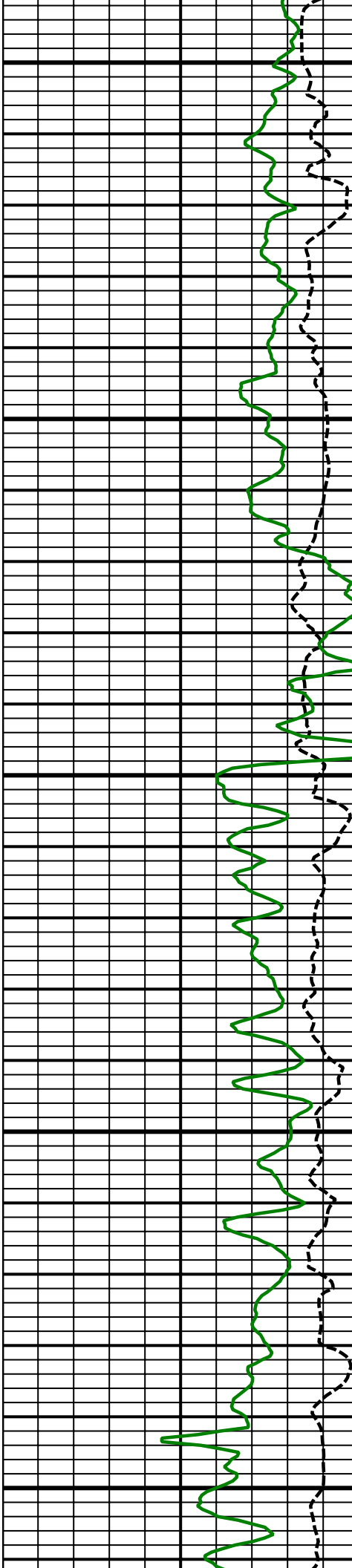


MD

Comment 2-1

6700 MD

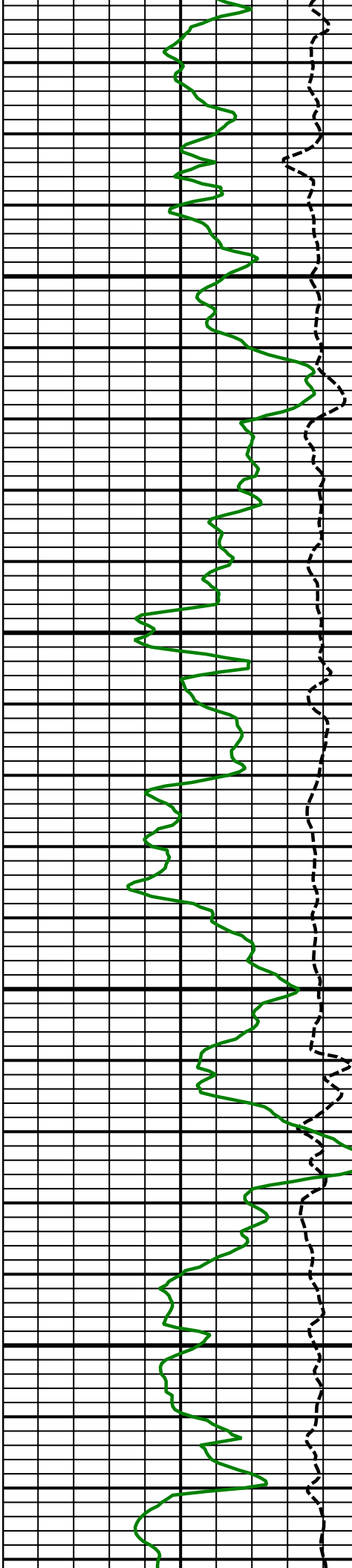




6800
MD

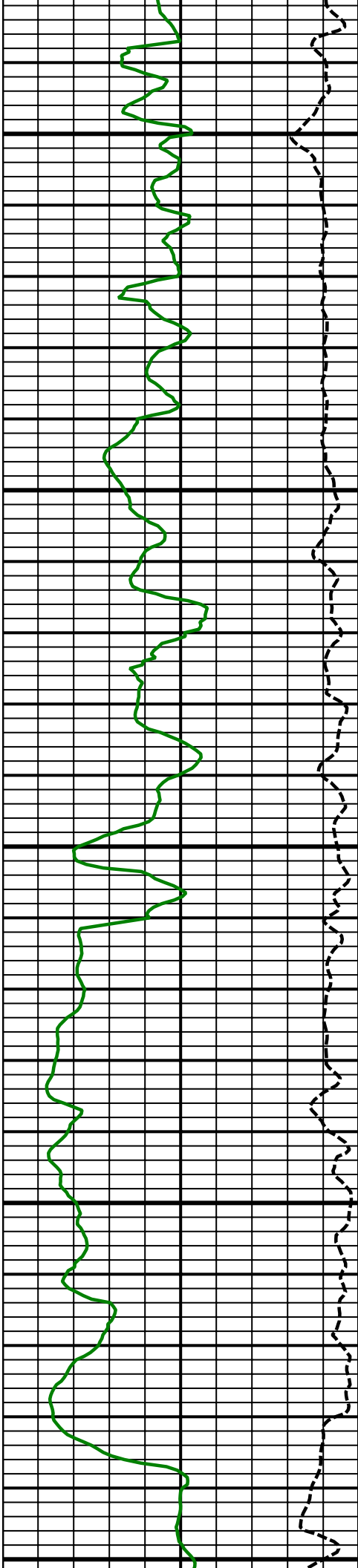
6900
MD

7000
MD



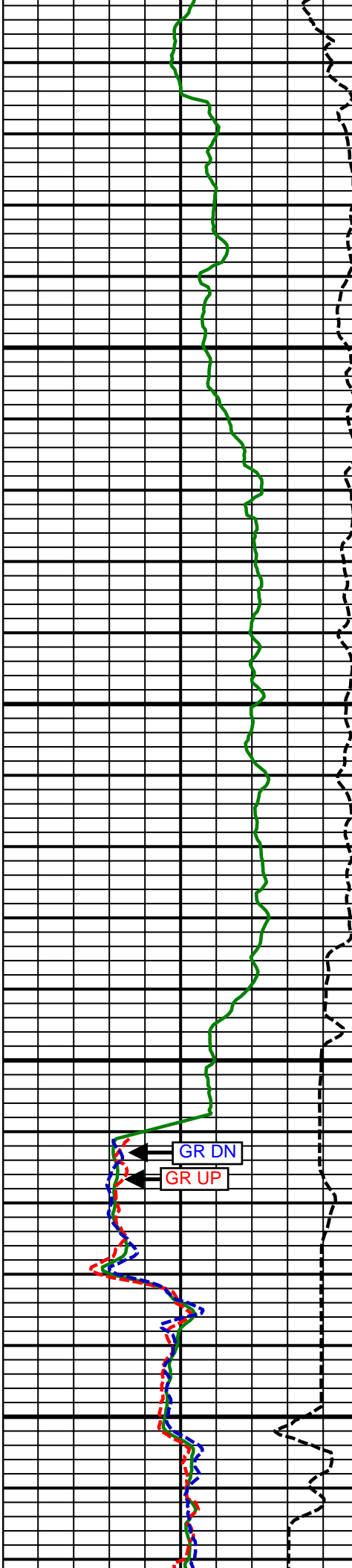
7100
MD

7200
MD



7300
MD

7400
MD



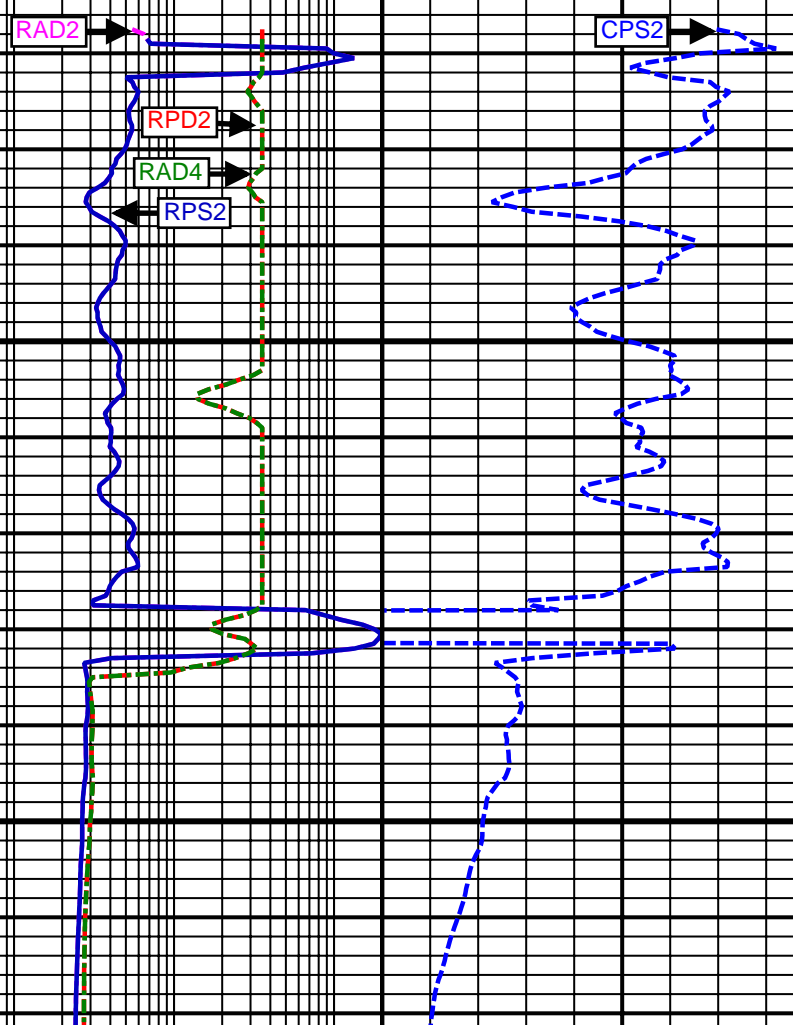
7500
MD

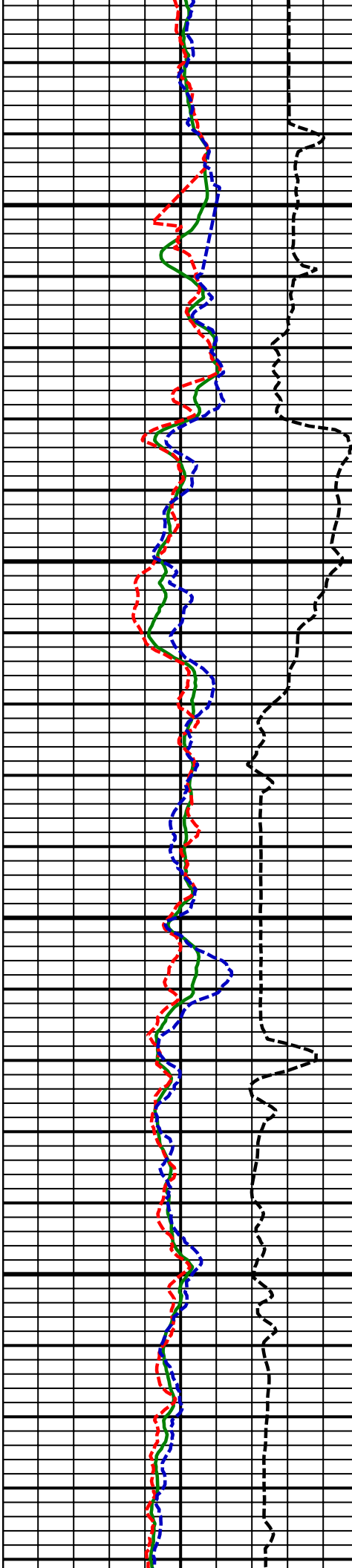
7600
MD

GR DN
GR UP

Comment
2-2

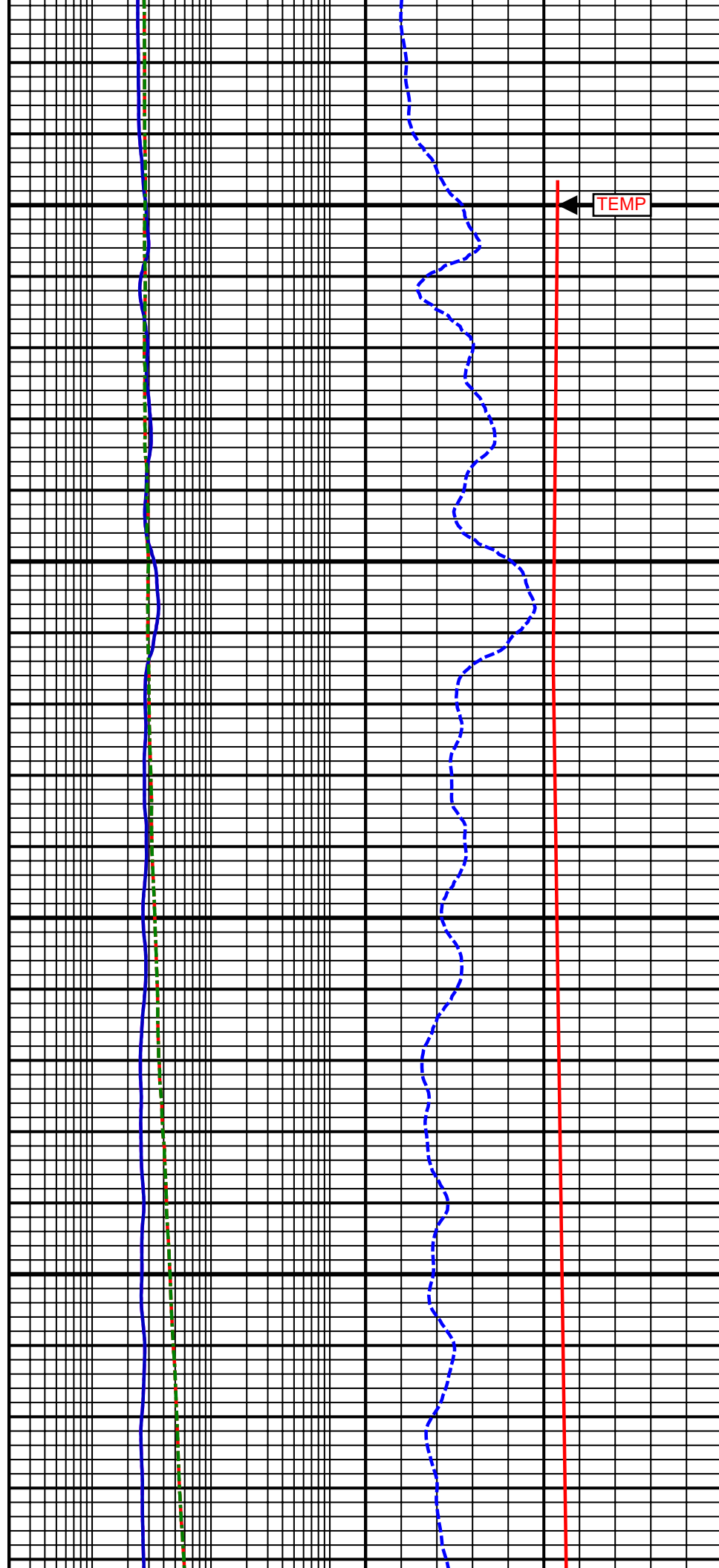
Comment
3-1

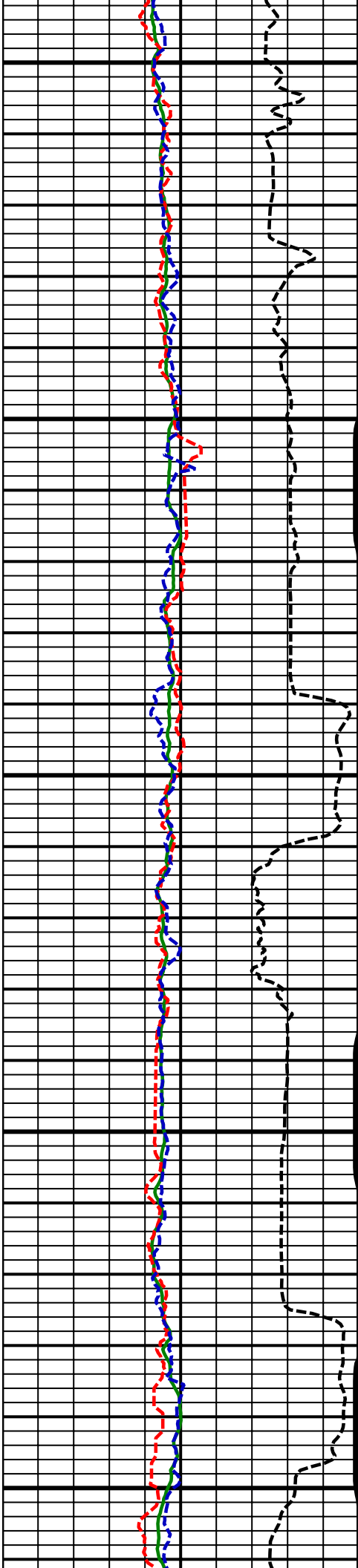




7700
MD

7800
MD

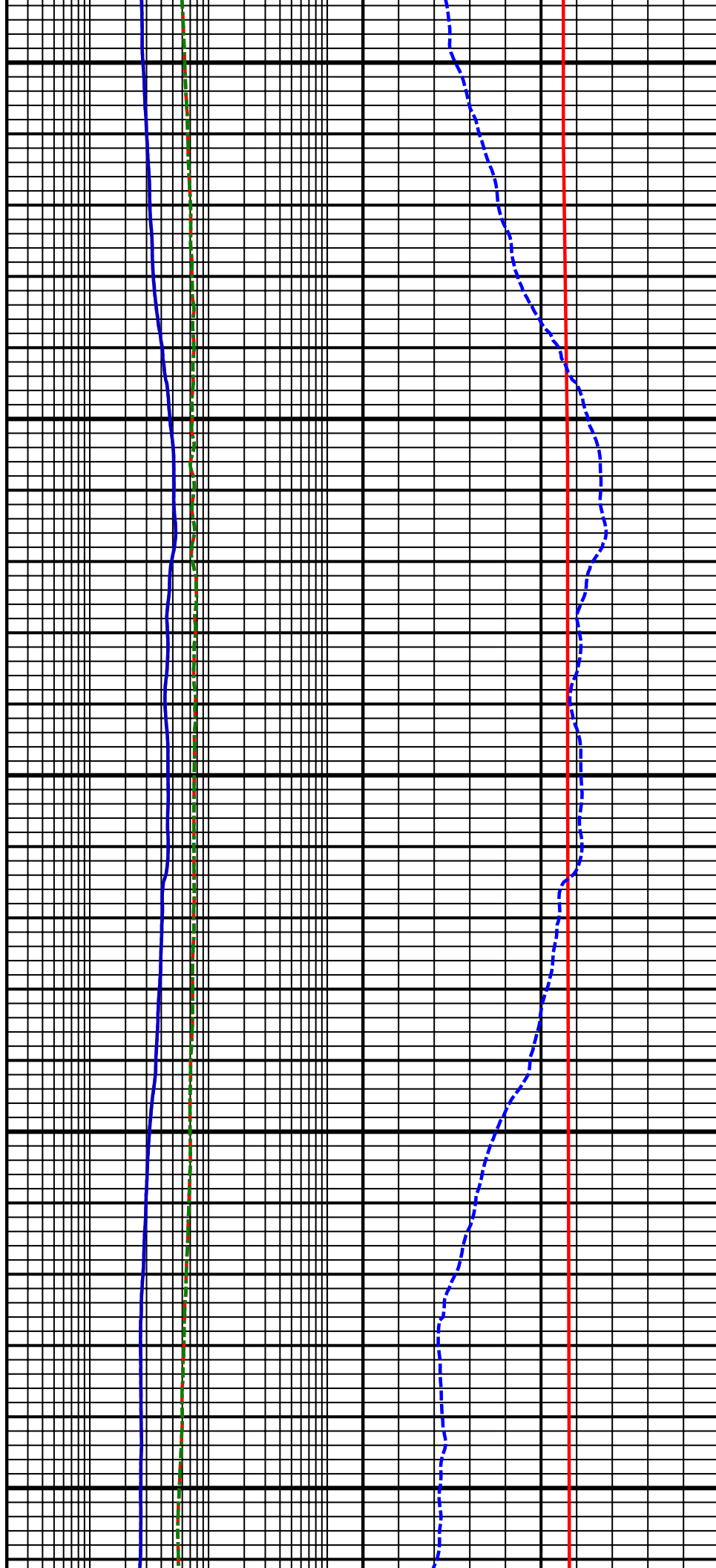


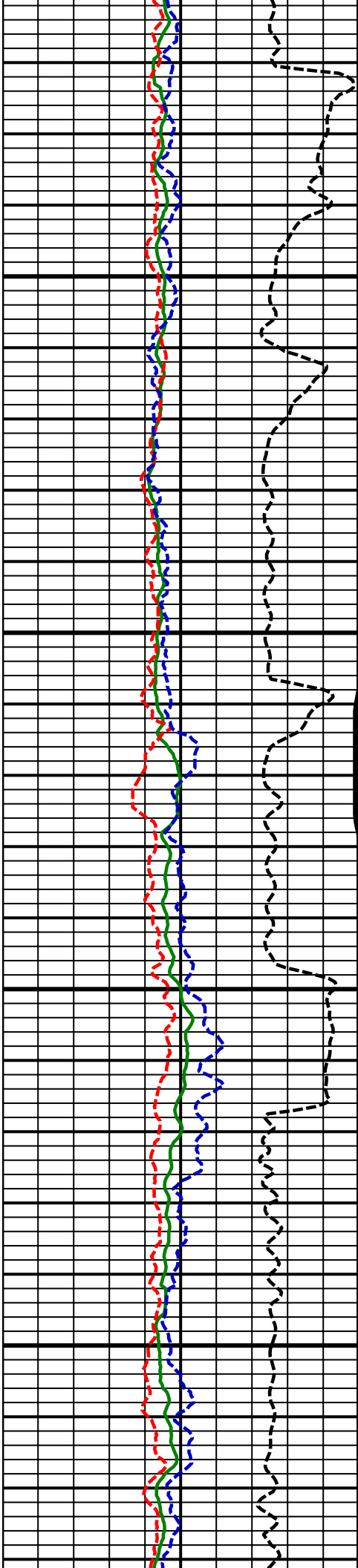


7900
MD

8000
MD

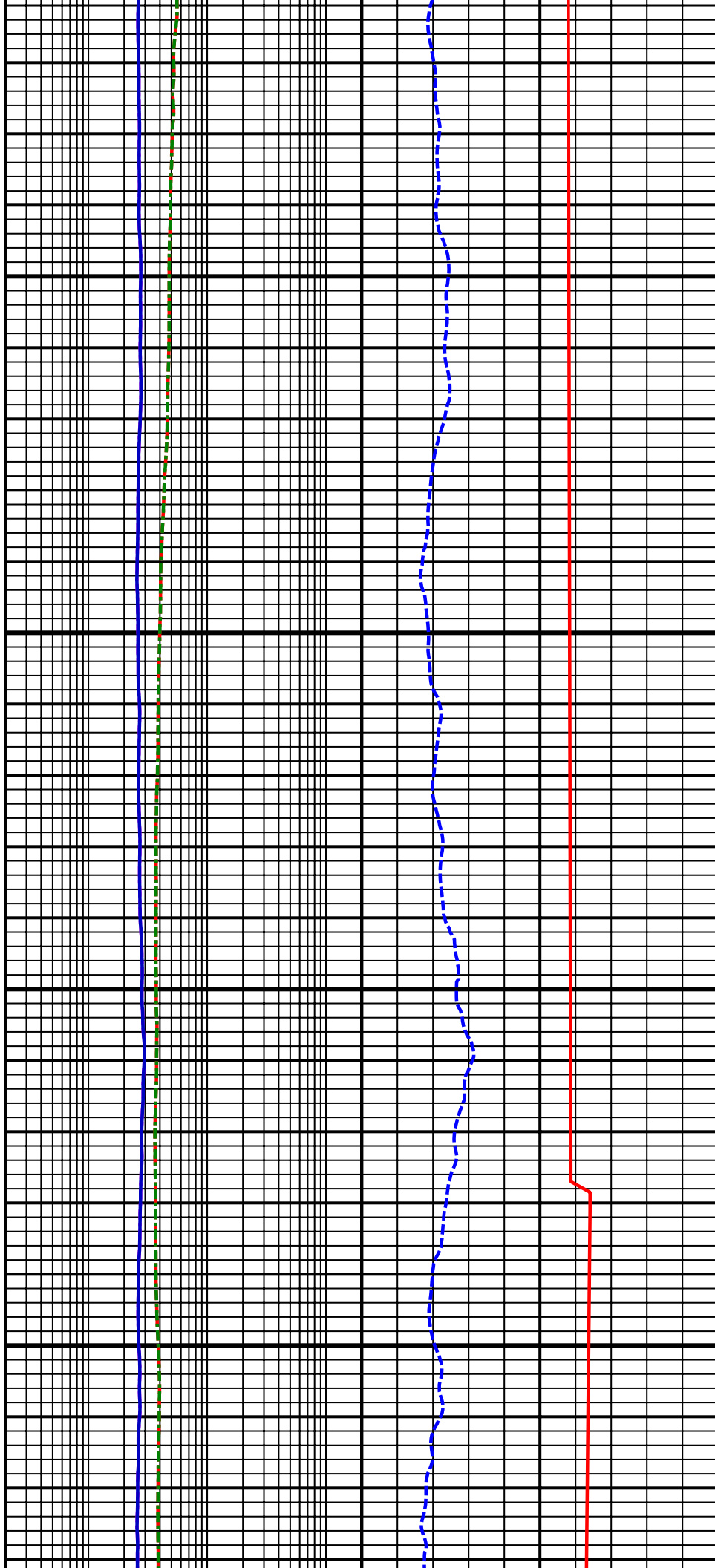
8100
MD

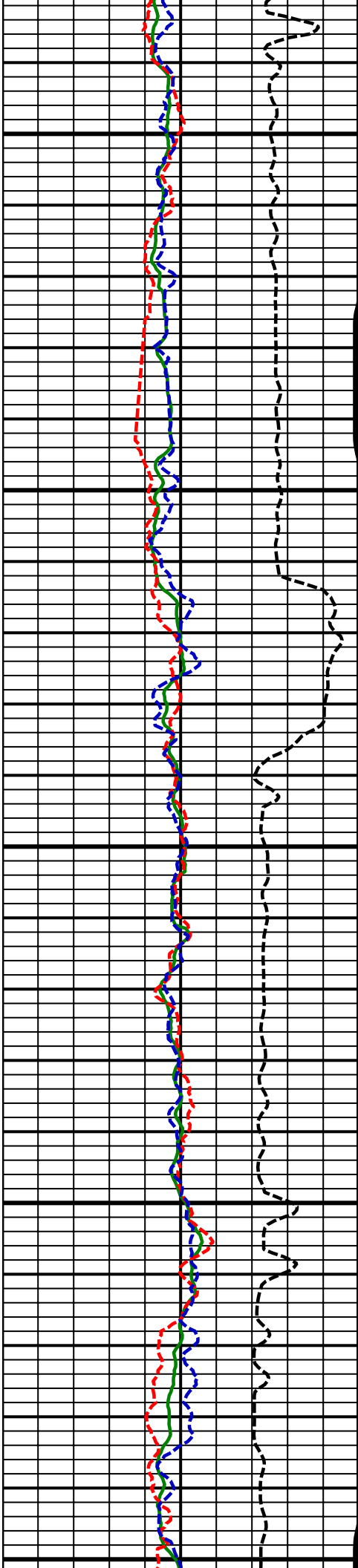




8200
MD

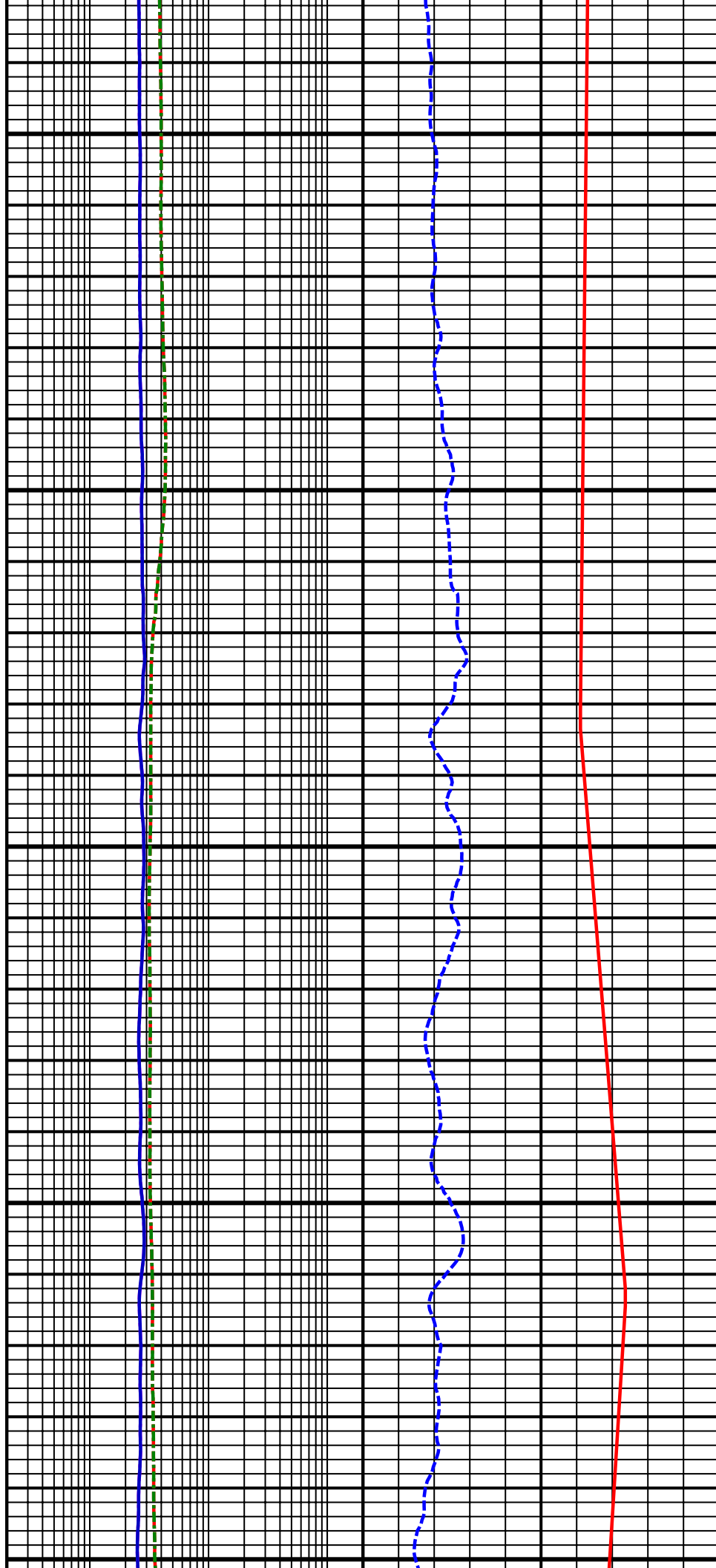
8300
MD

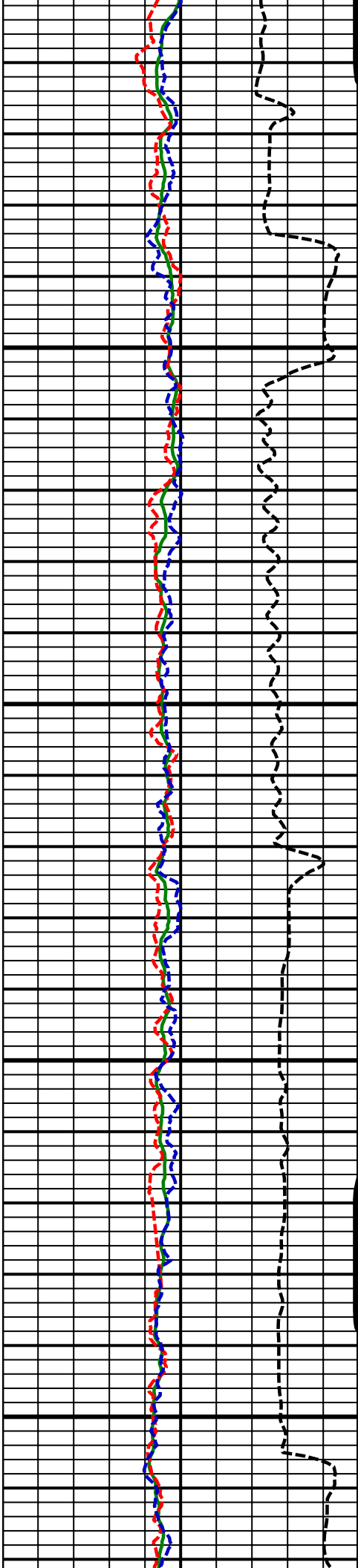




8400
MD

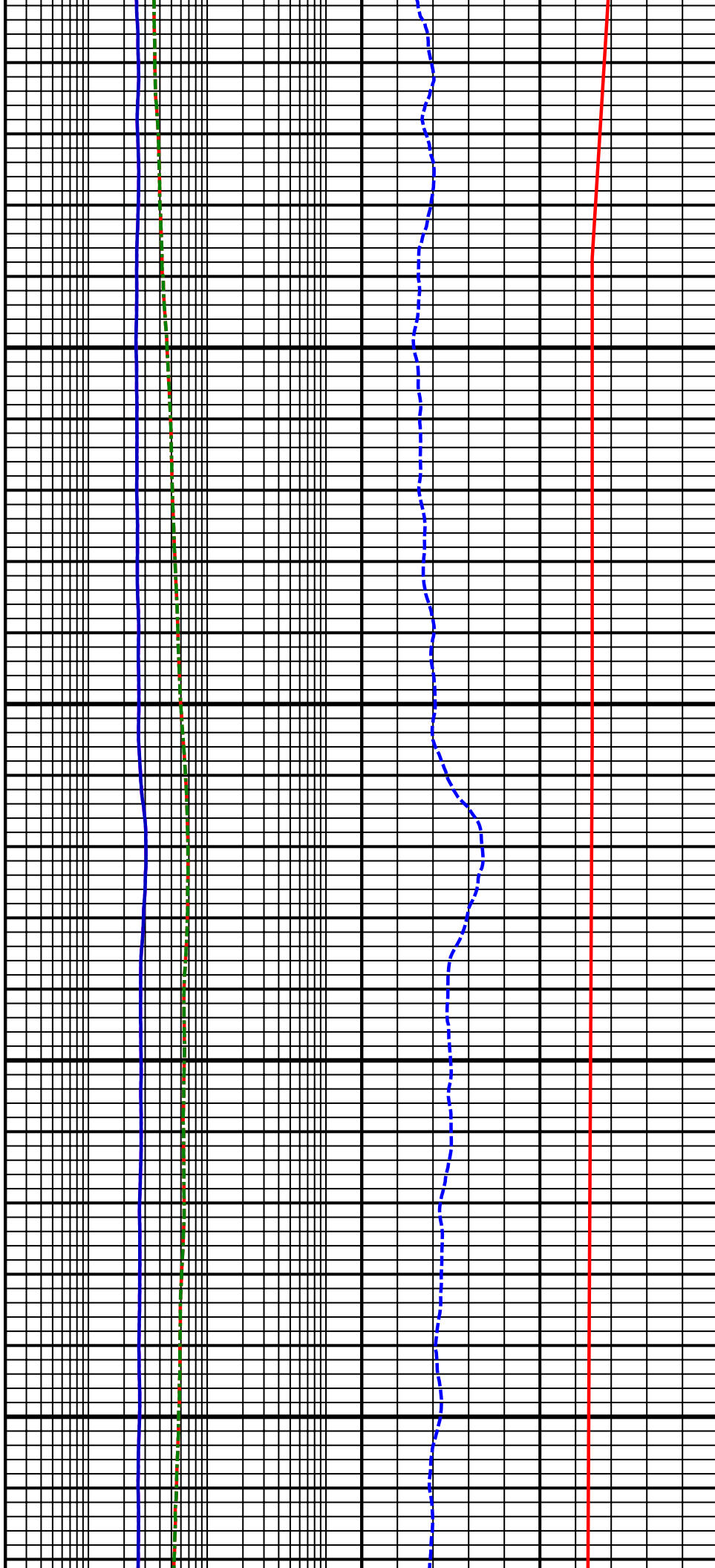
8500
MD

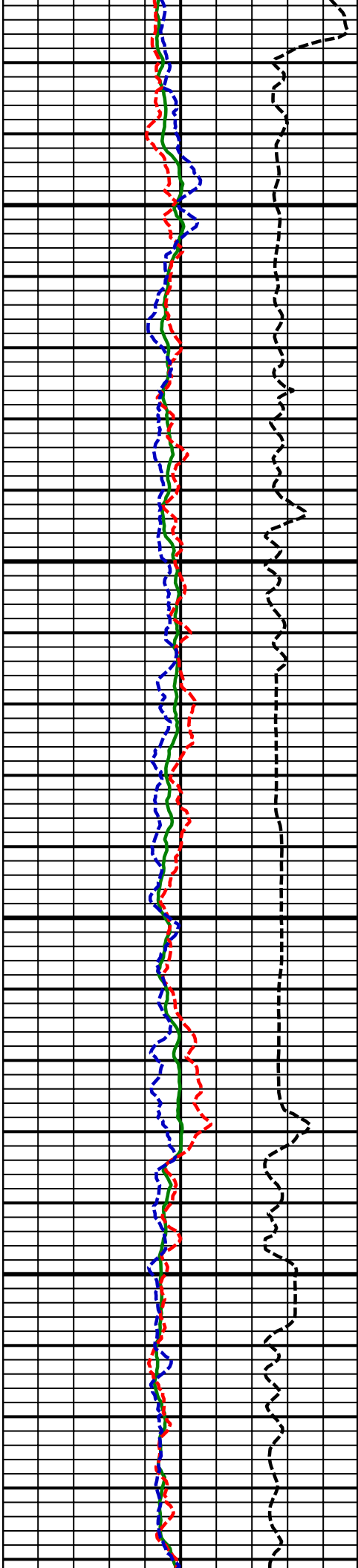




8600
MD

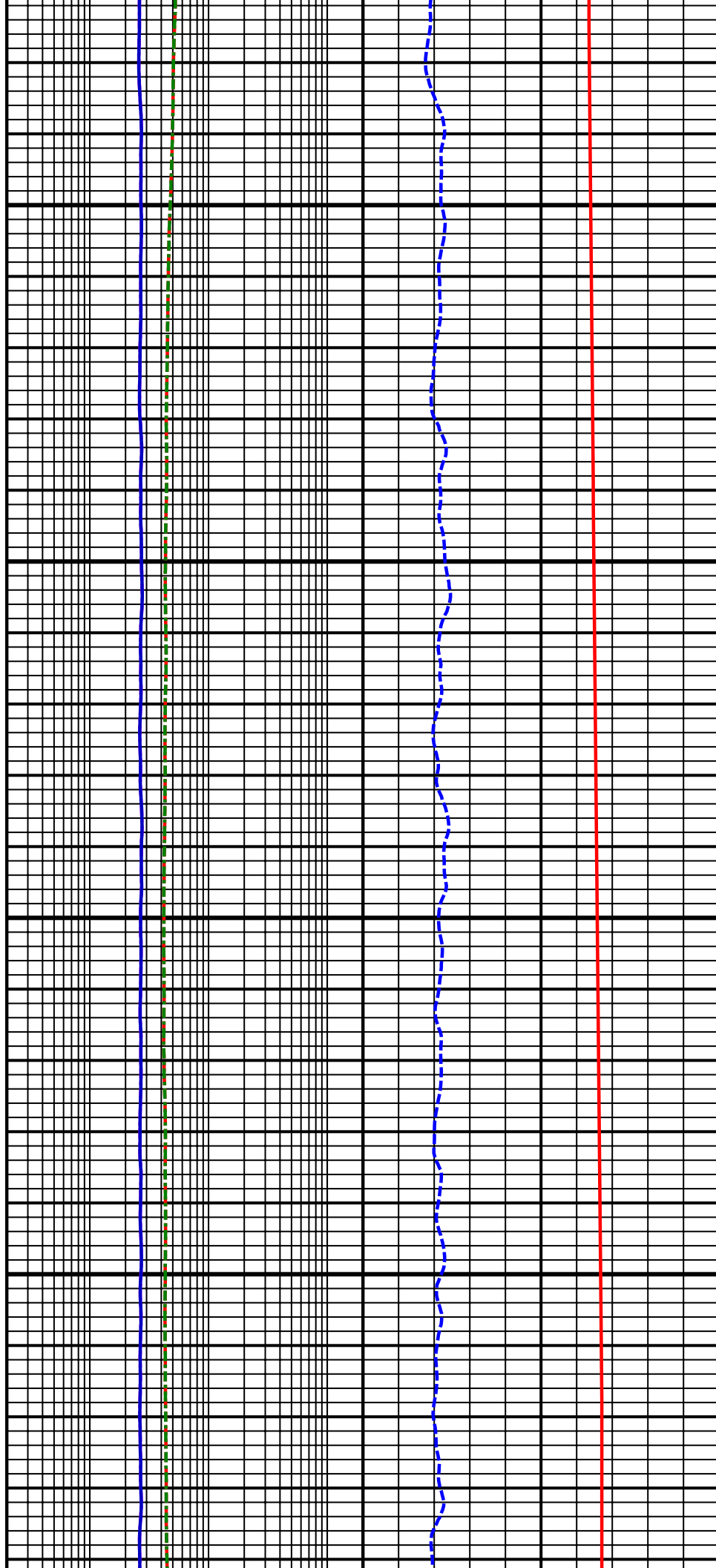
8700
MD

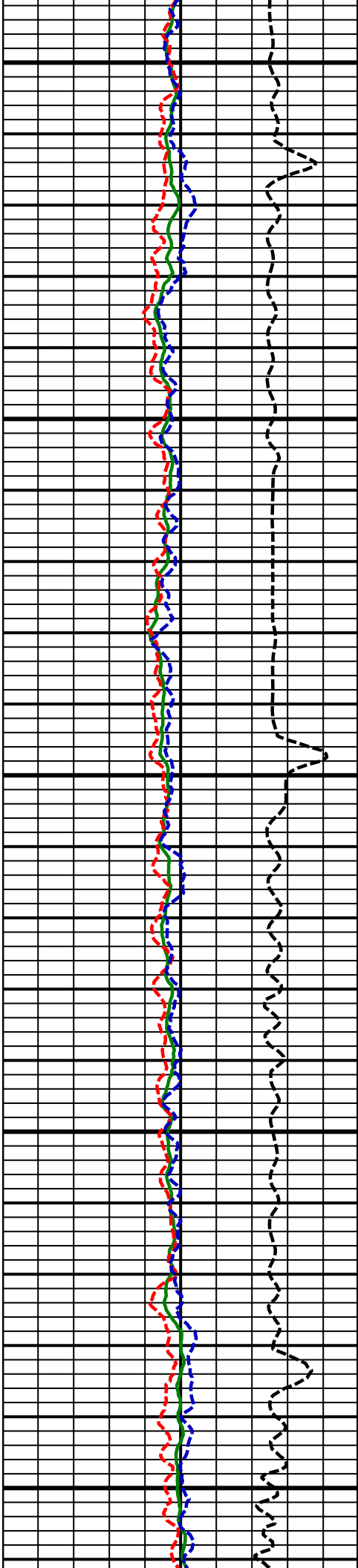




8800
MD

8900
MD

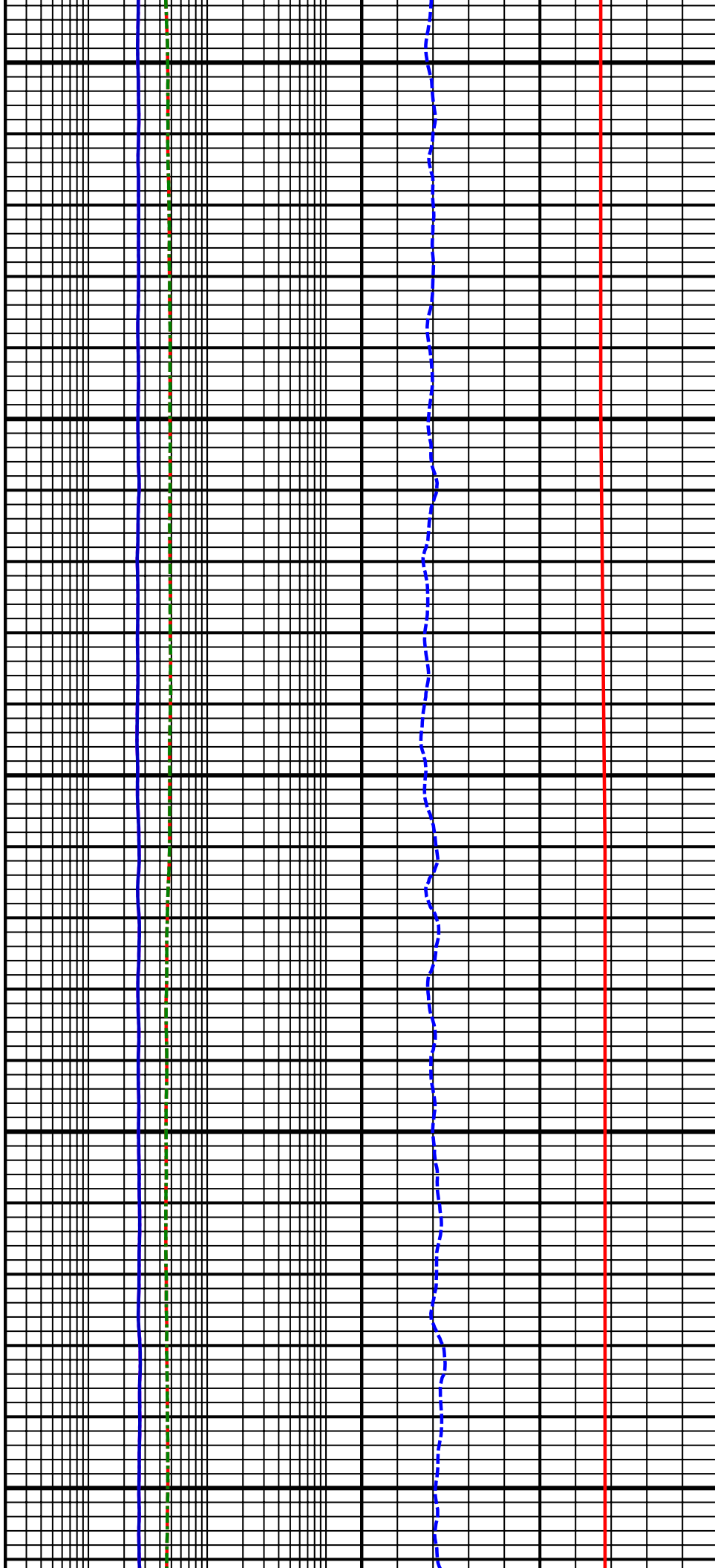


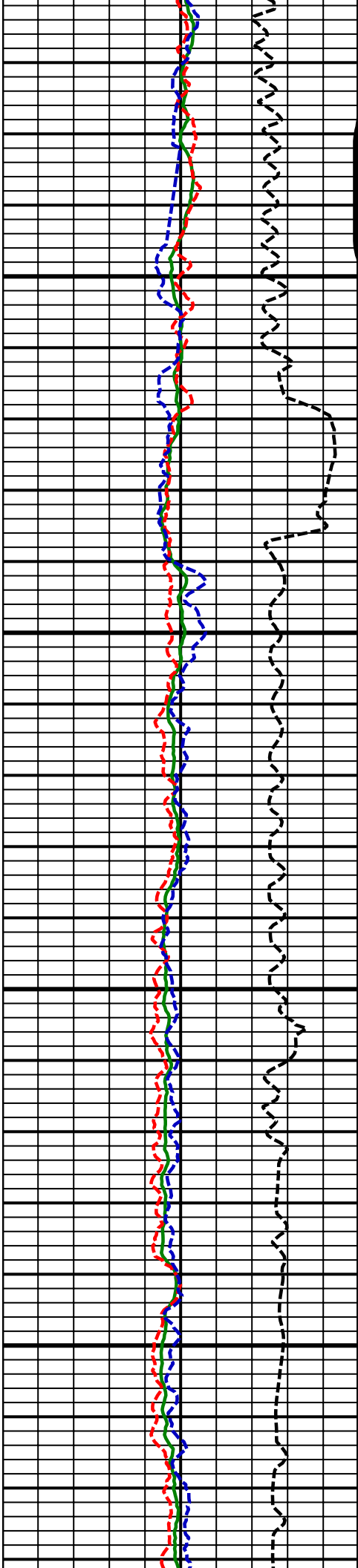


9000
MD

9100
MD

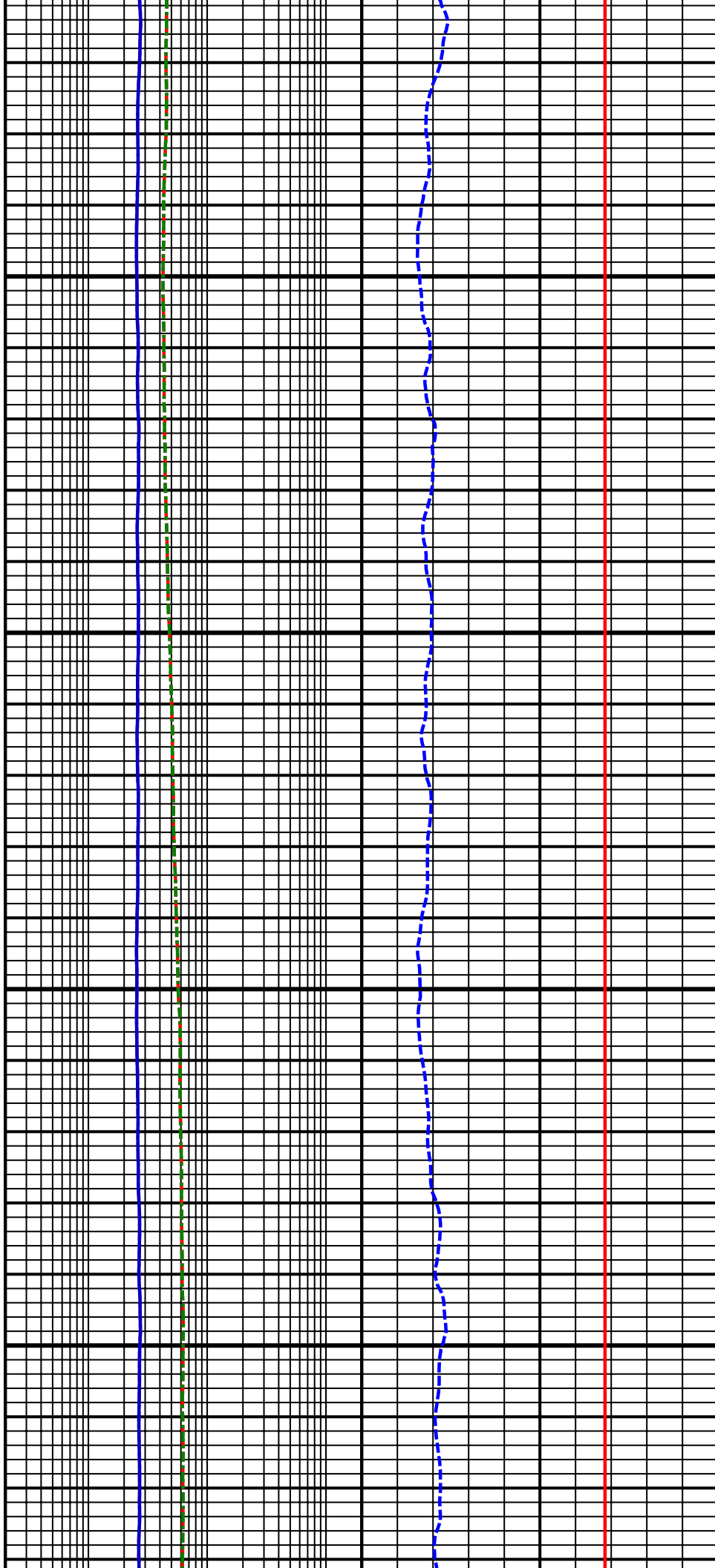
9200
MD

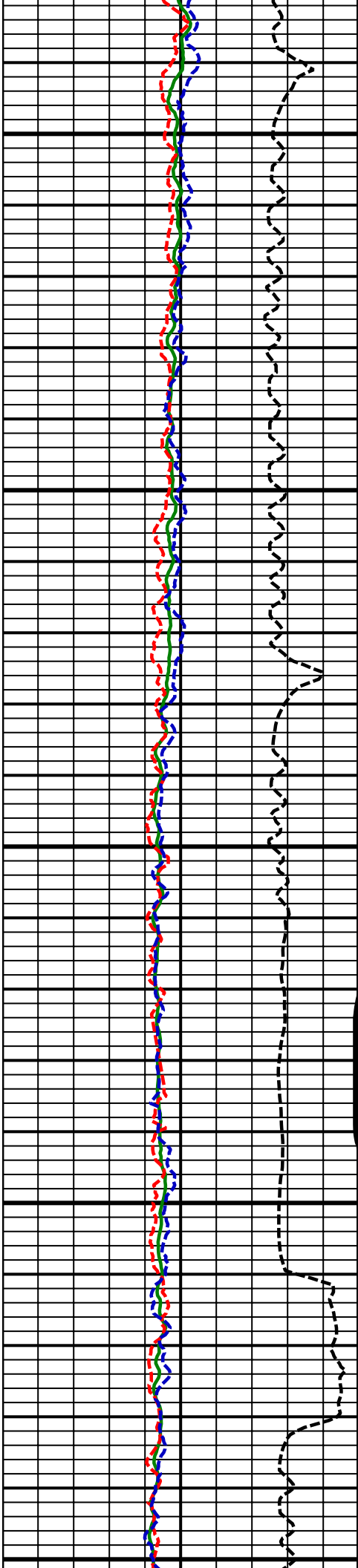




9300
MD

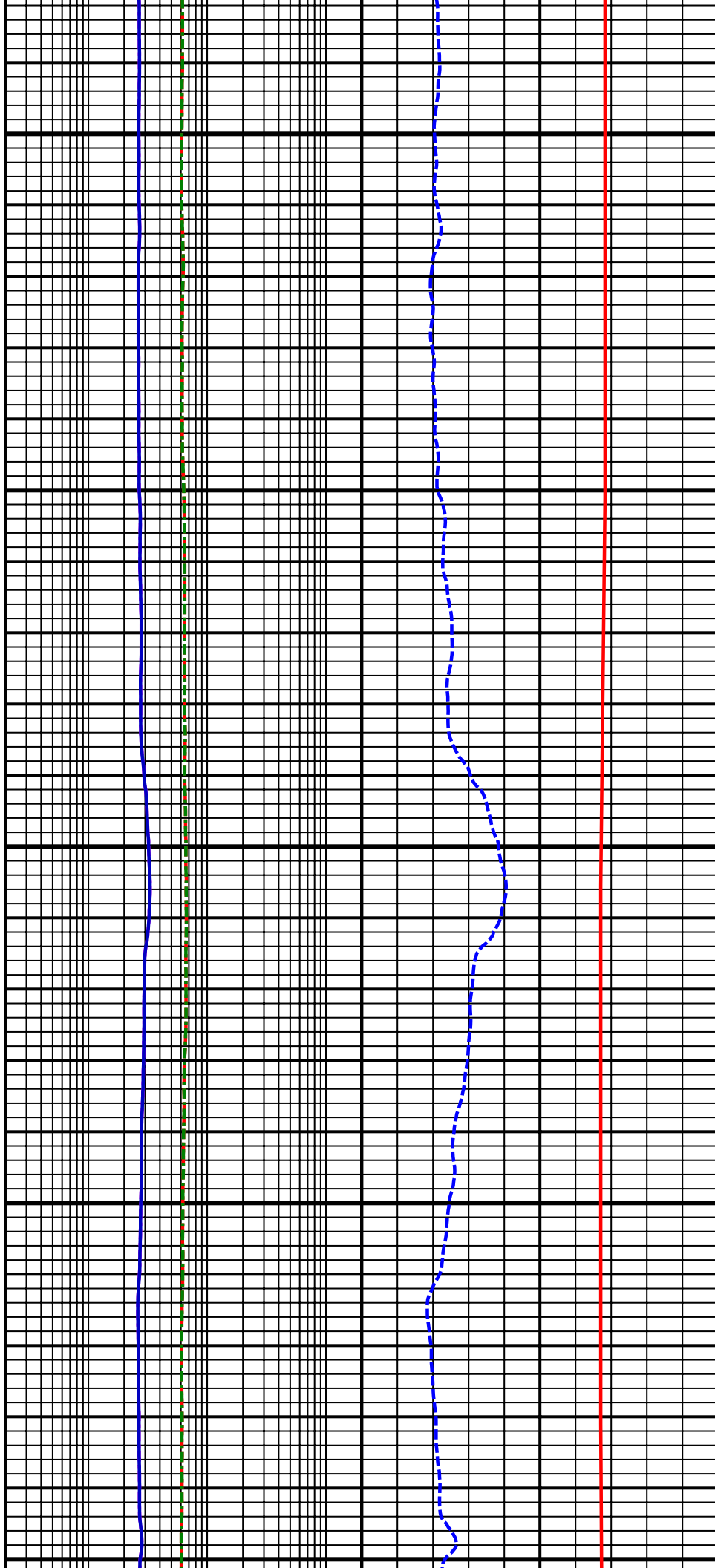
9400
MD

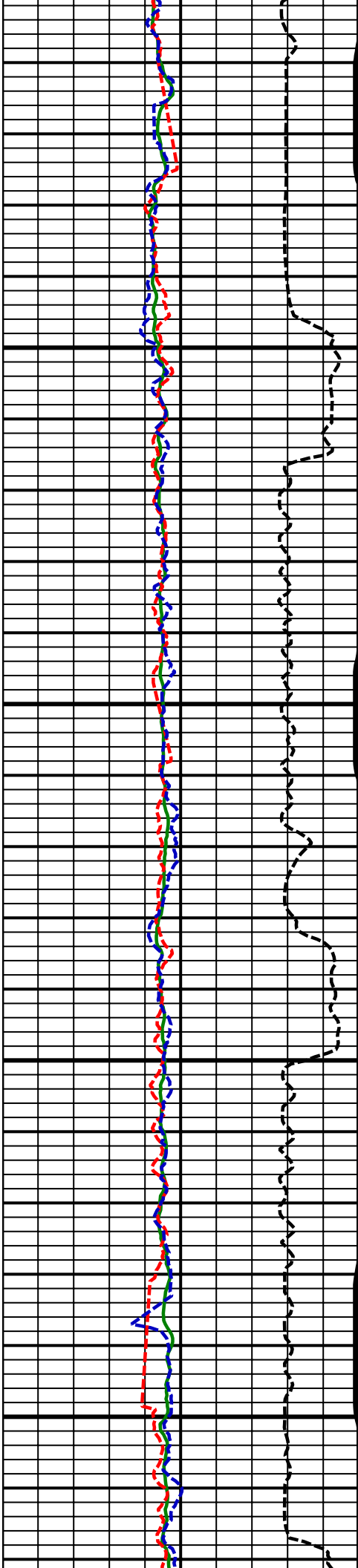




9500
MD

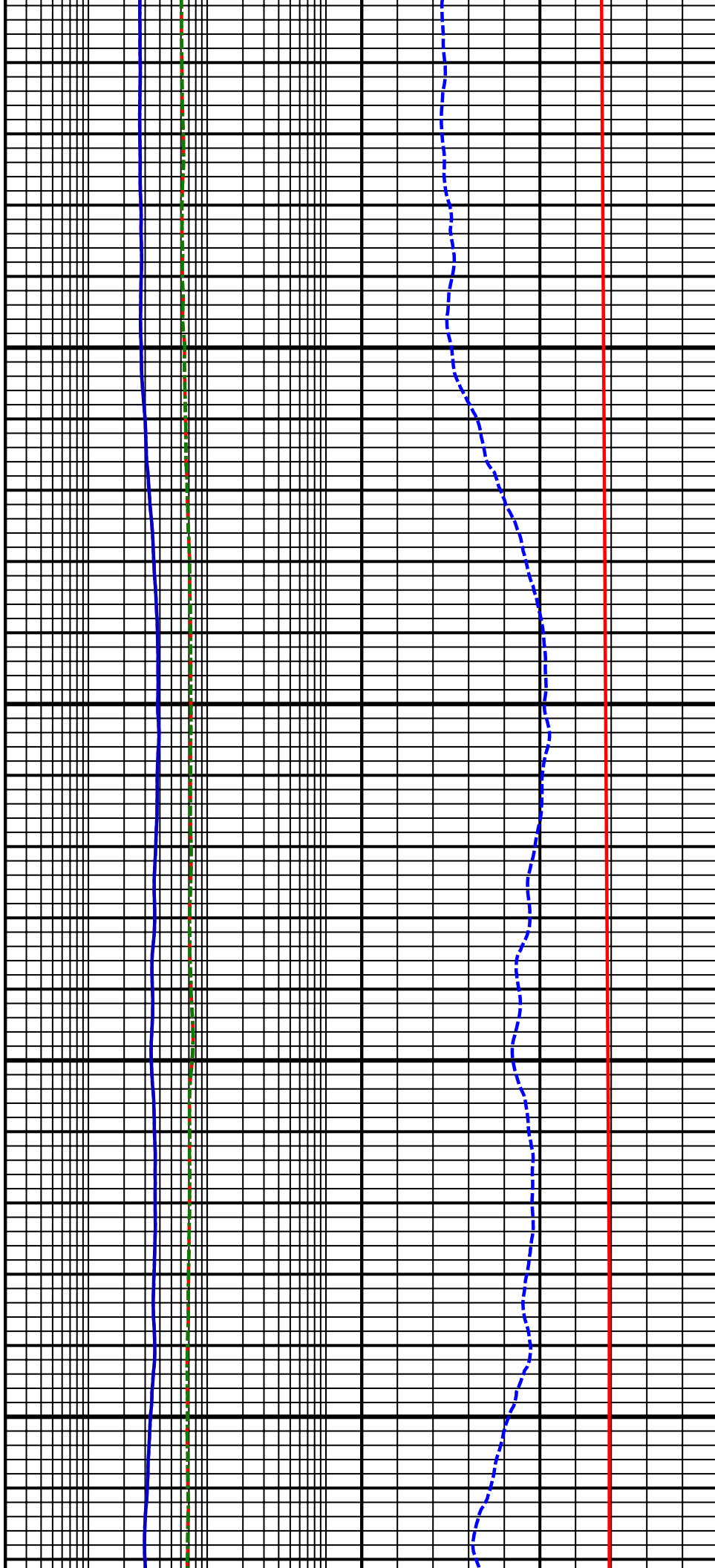
9600
MD

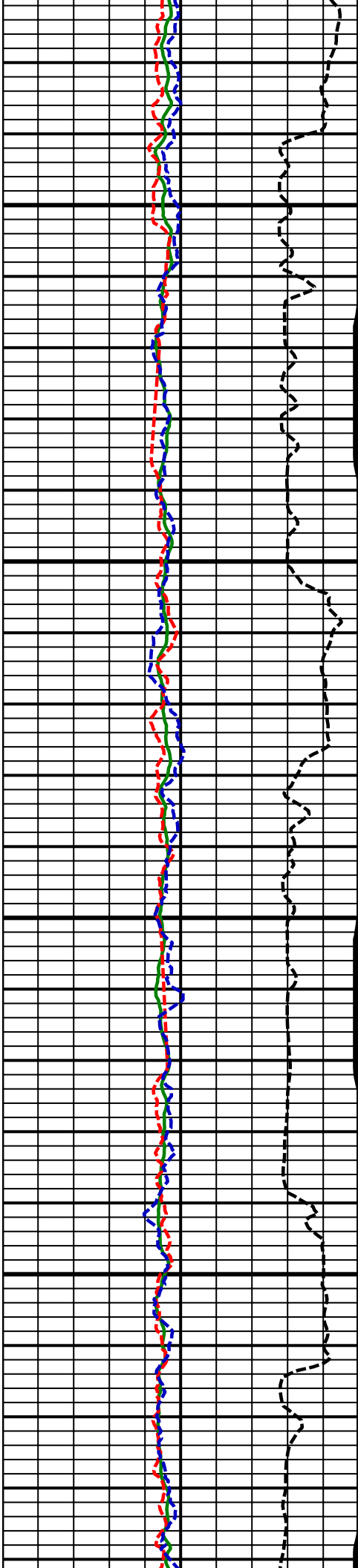




9700
MD

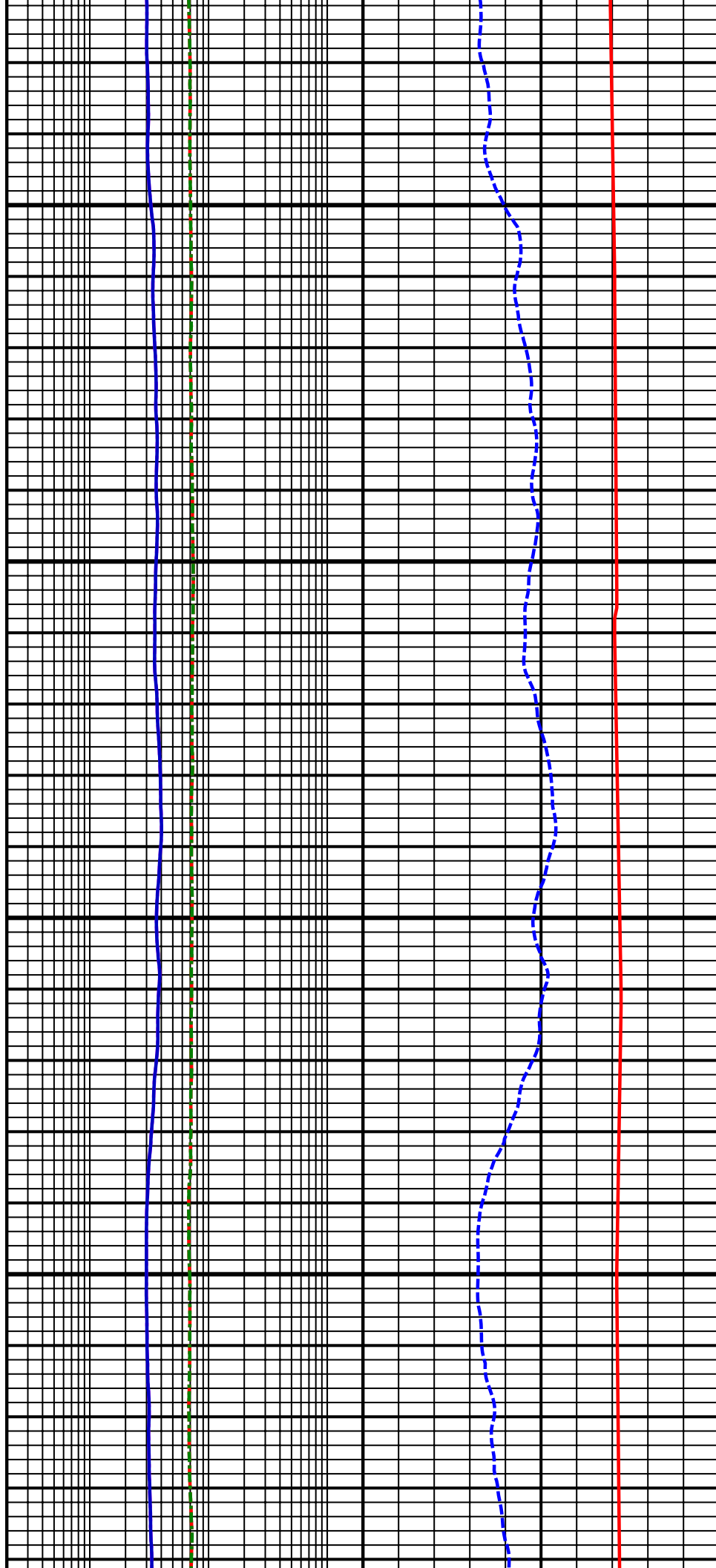
9800
MD

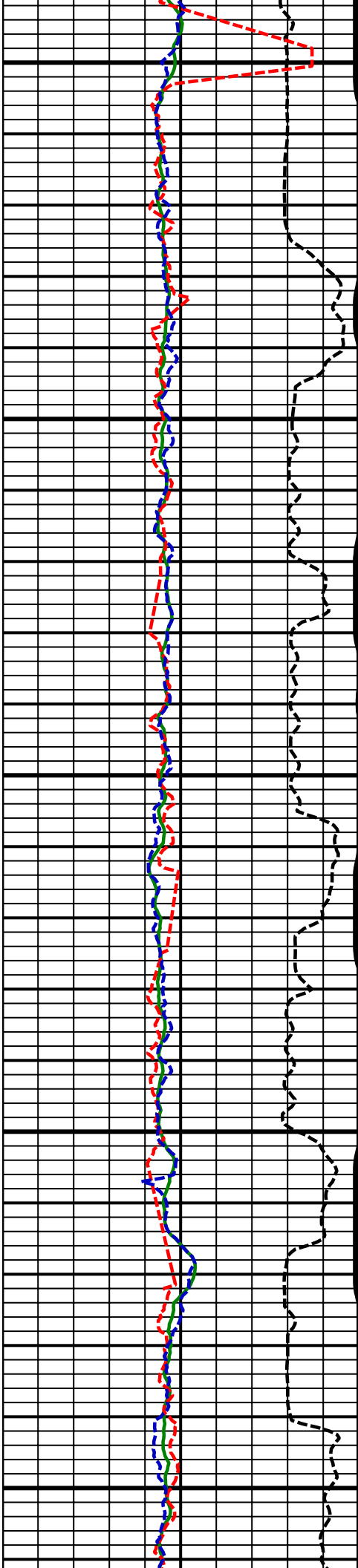




9900
MD

10000
MD

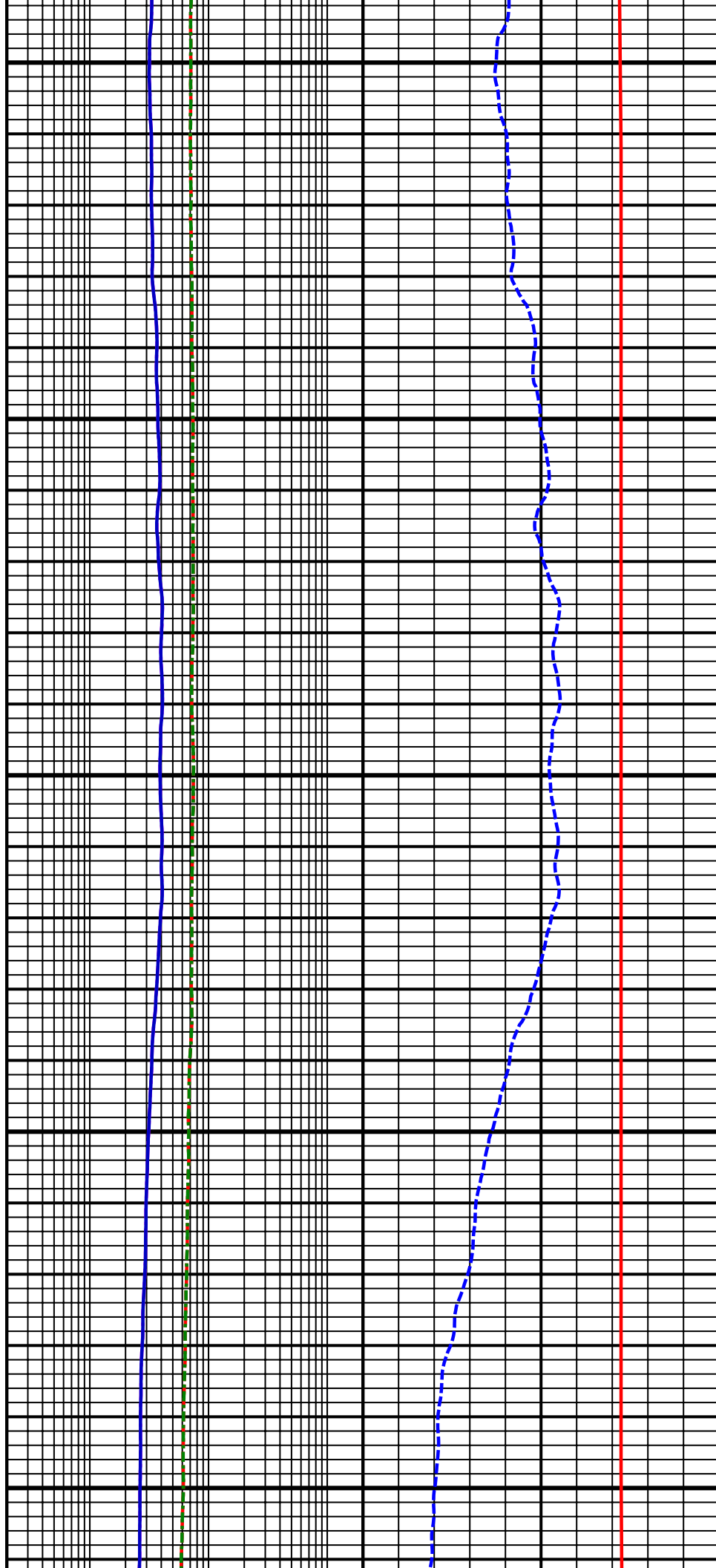


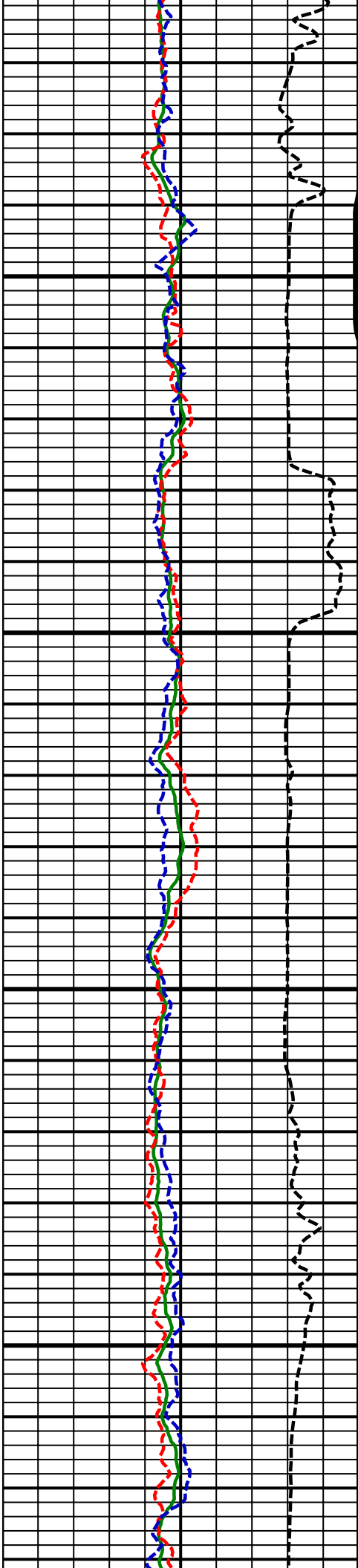


10100
MD

10200
MD

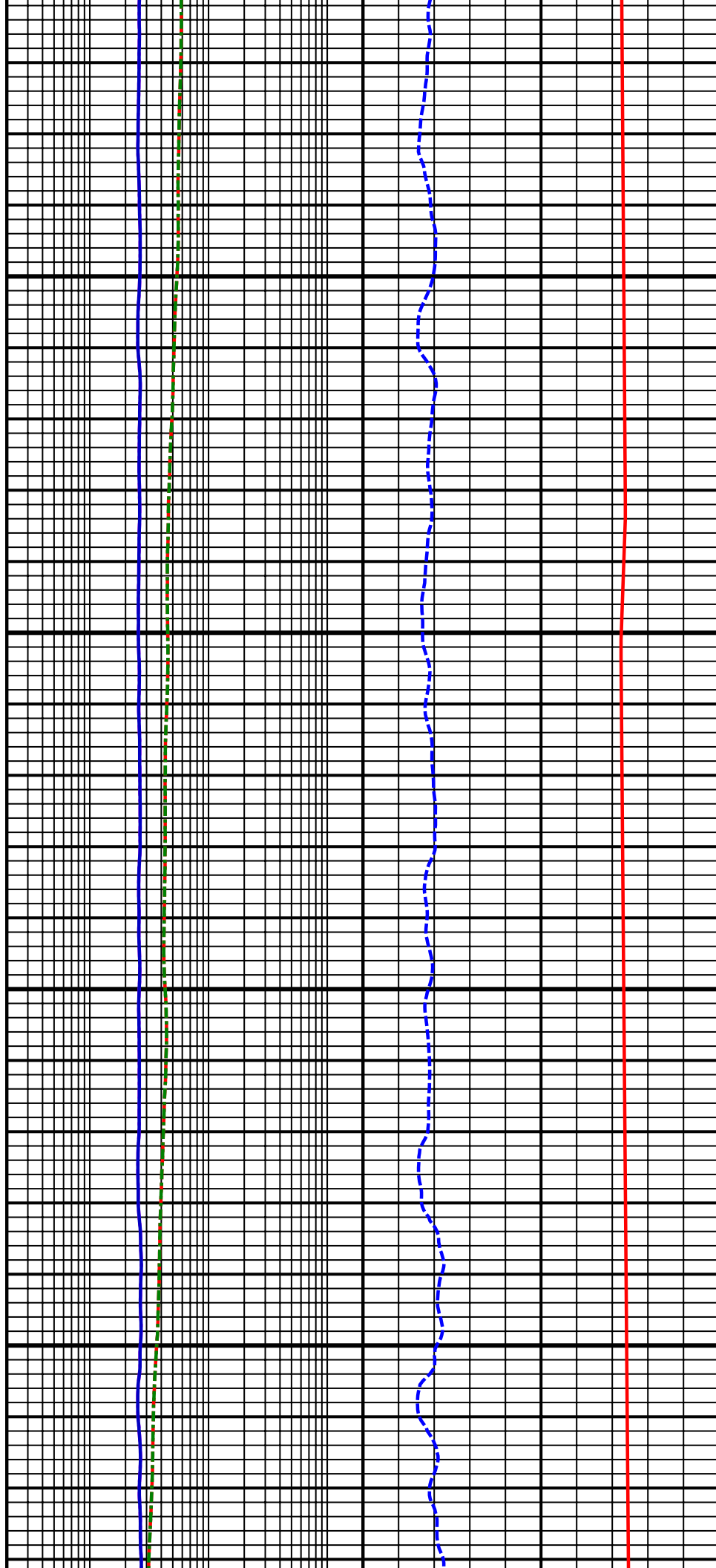
10300
MD

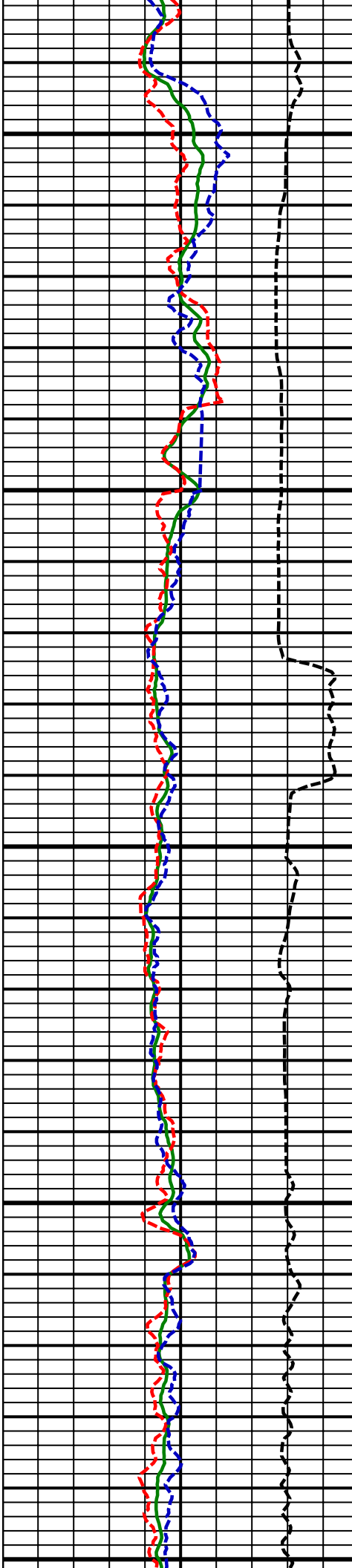




10400
MD

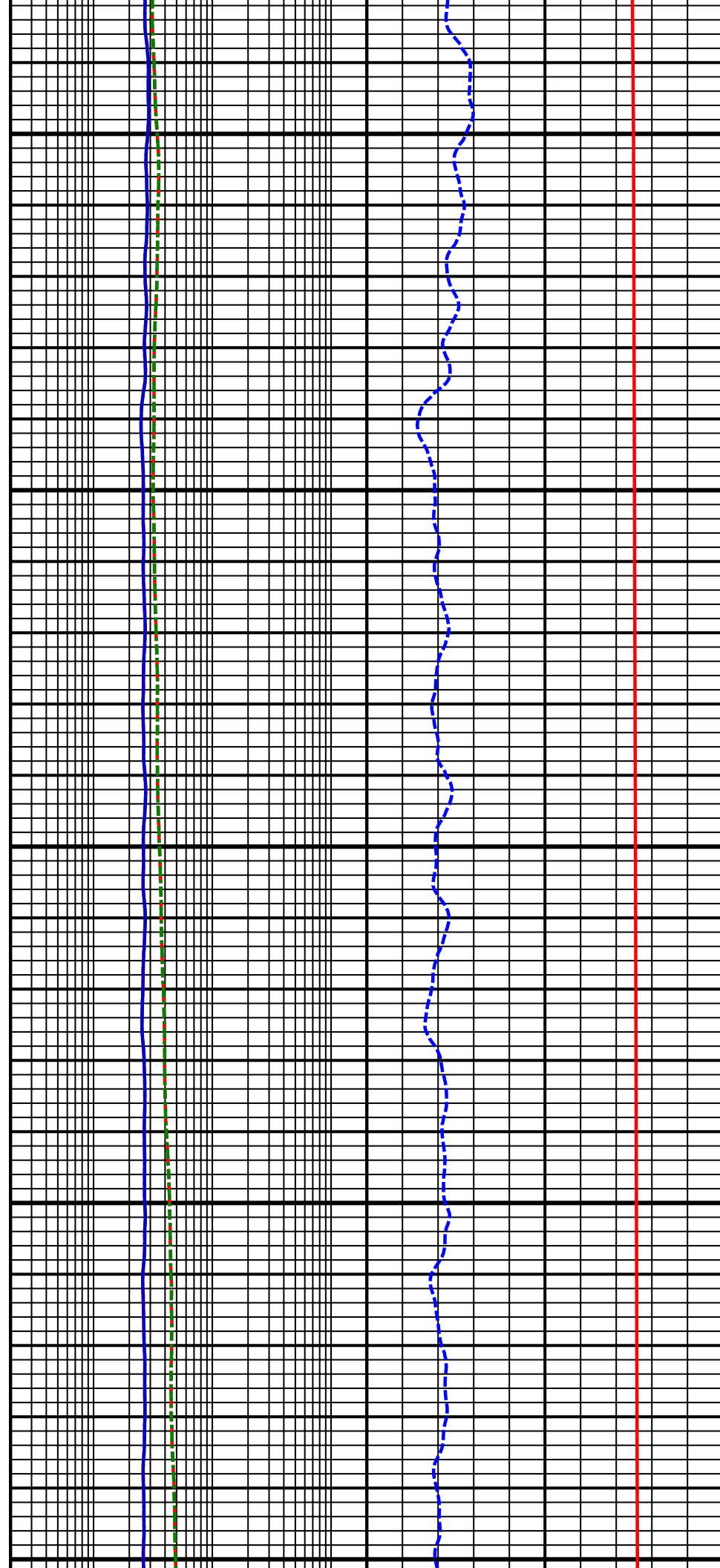
10500
MD

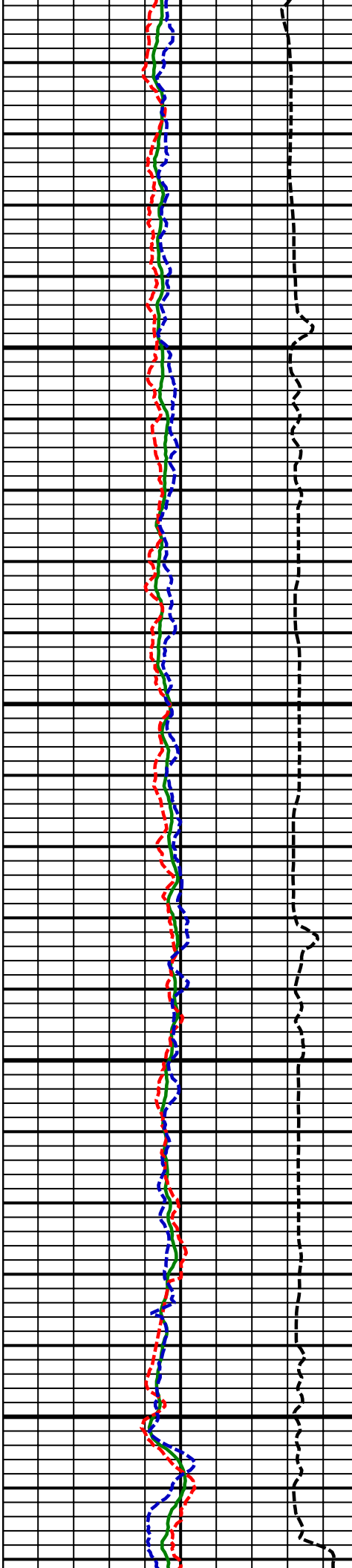




10600
MD

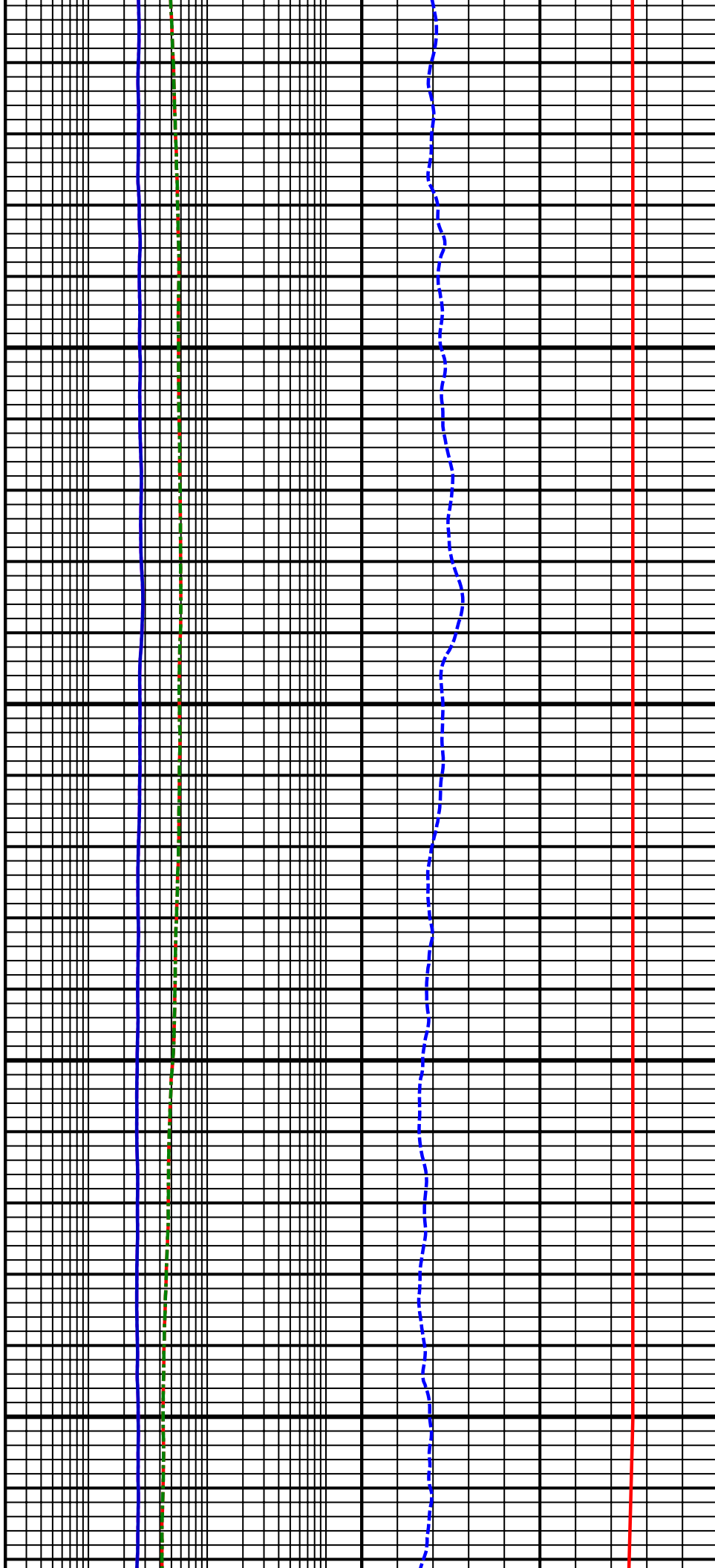
10700
MD

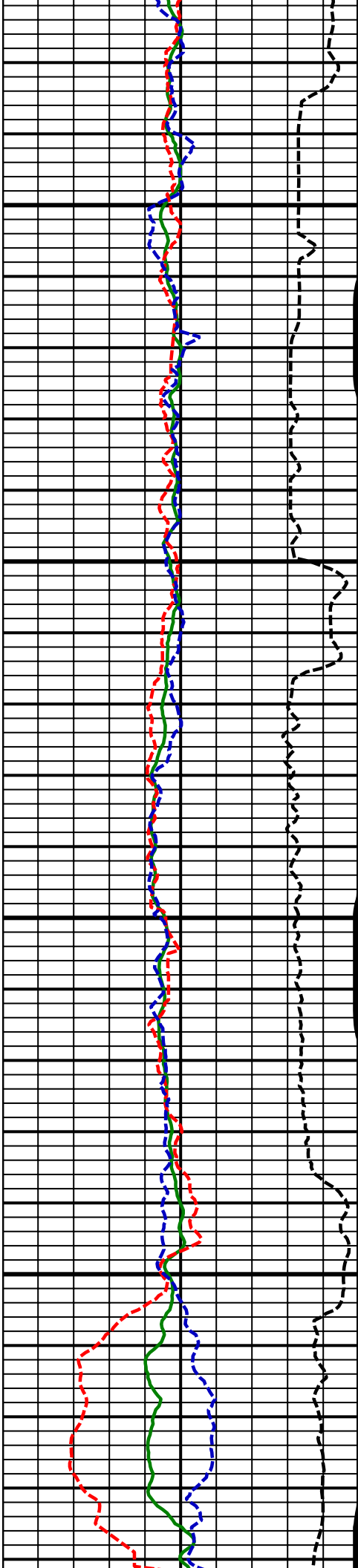




10800
MD

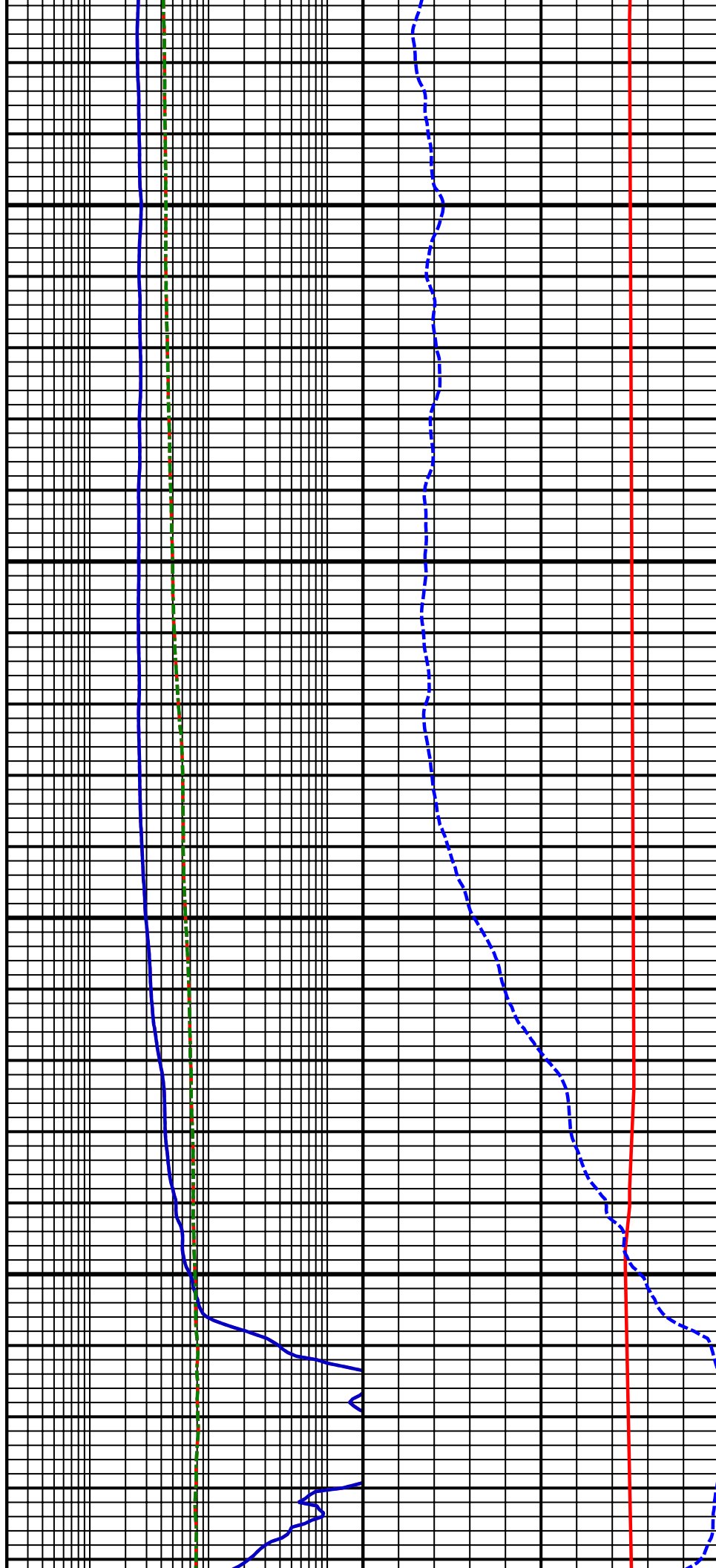
10900
MD

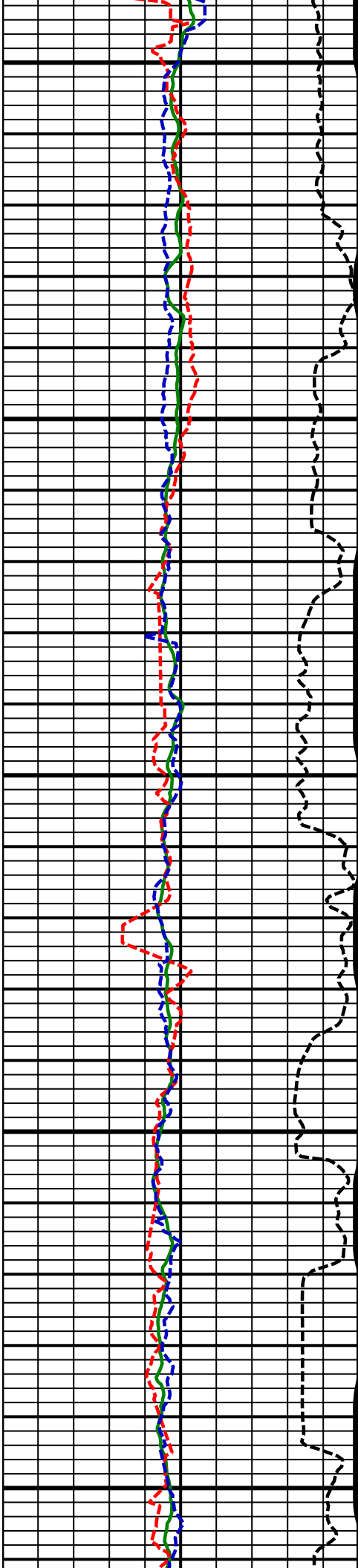




11000
MD

11100
MD





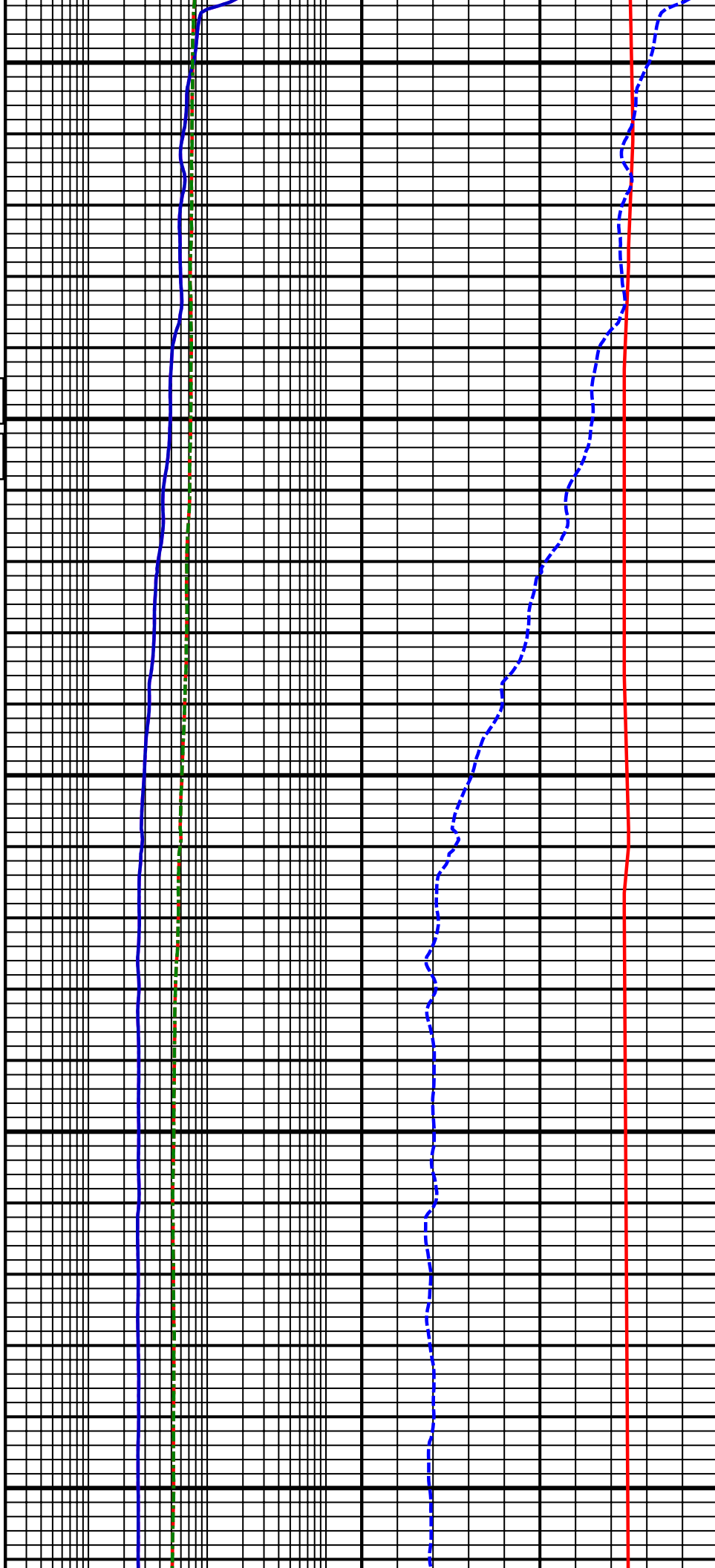
11200
MD

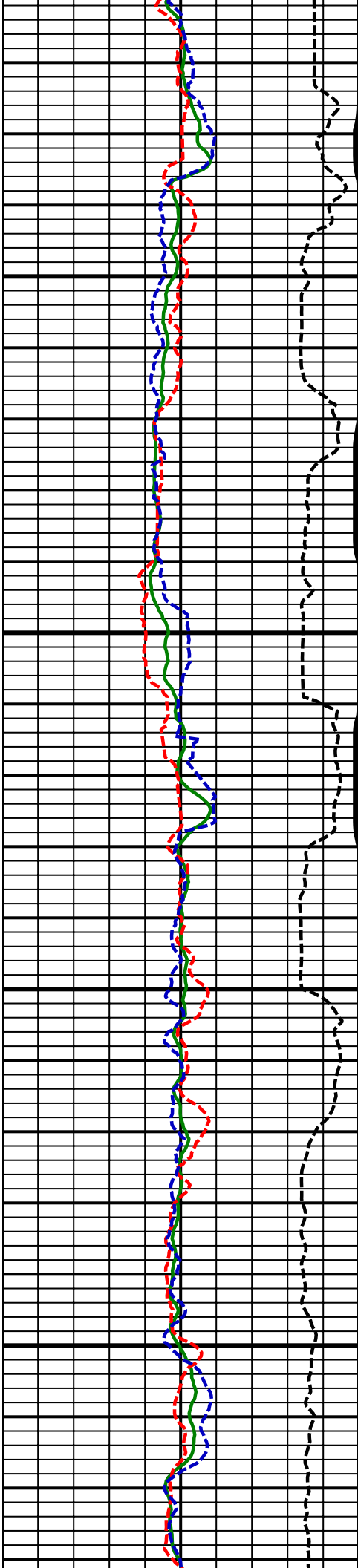
Comment
3-2

Comment
4-1

11300
MD

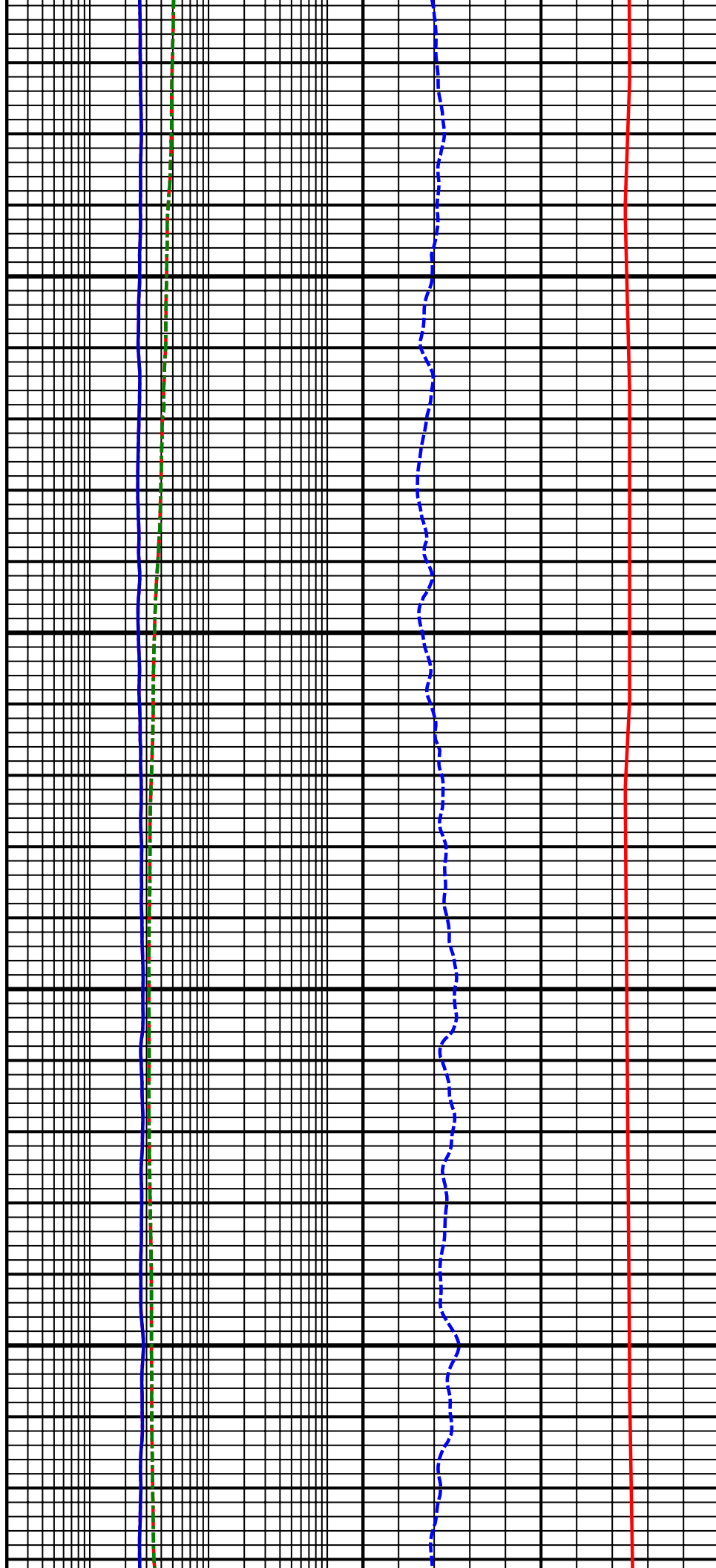
11400
MD

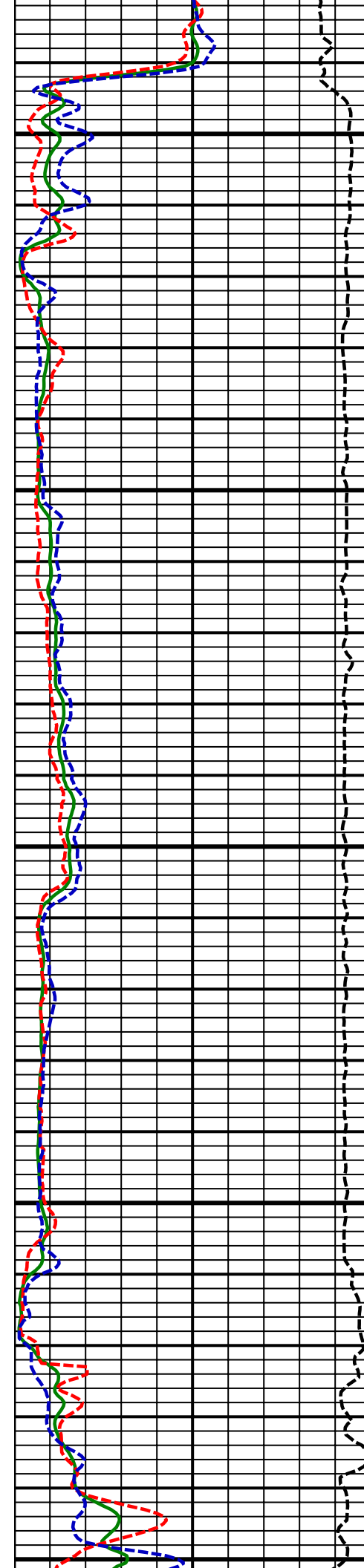




11500
MD

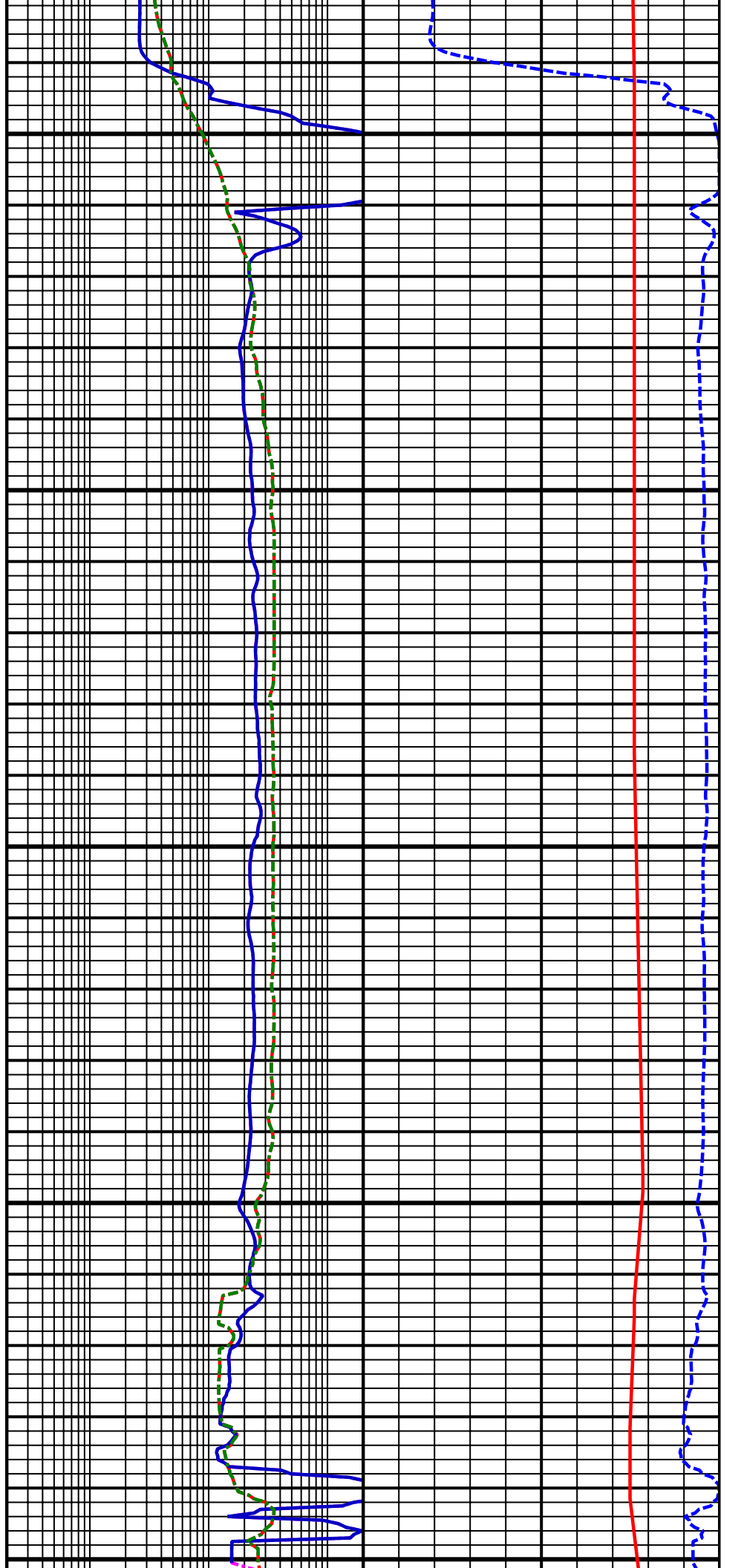
11600
MD

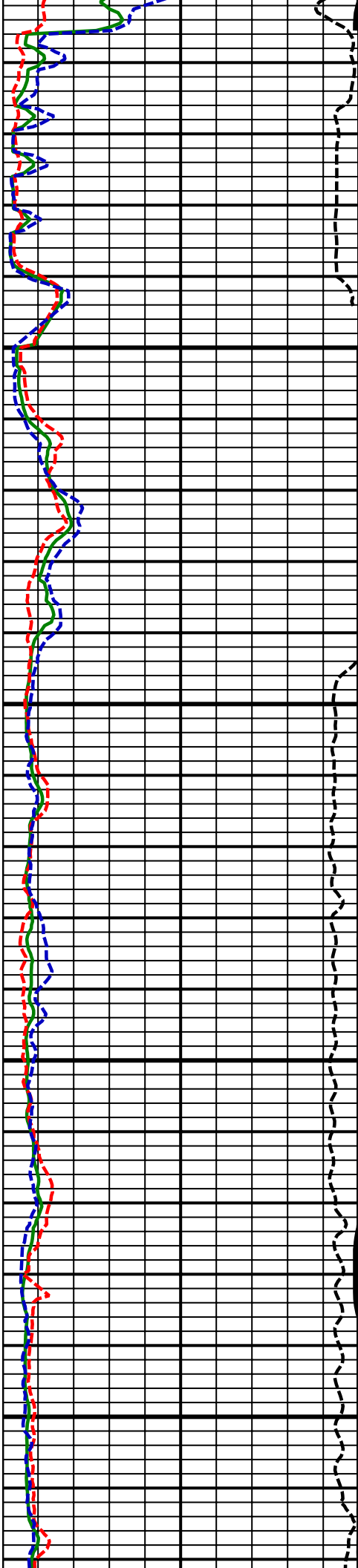




11700
MD

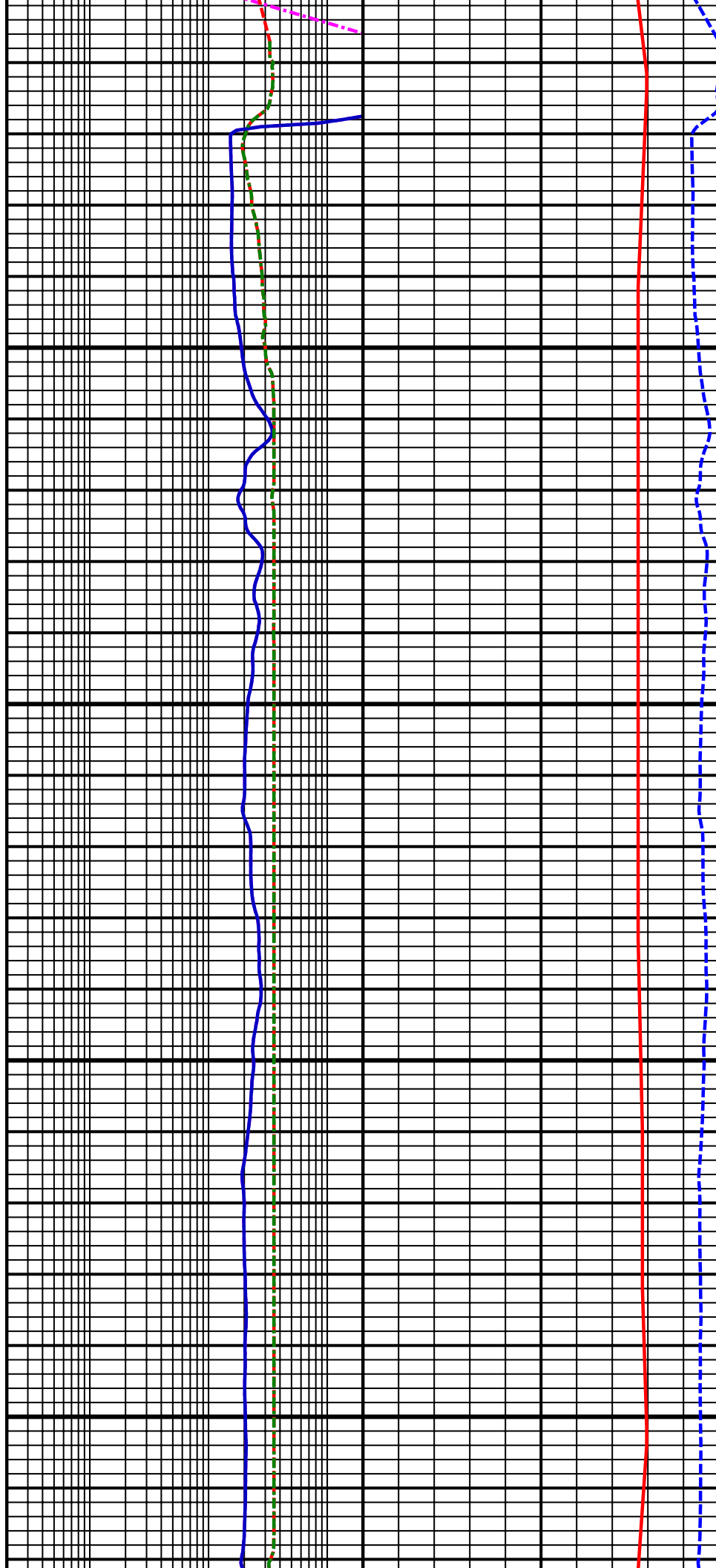
11800
MD

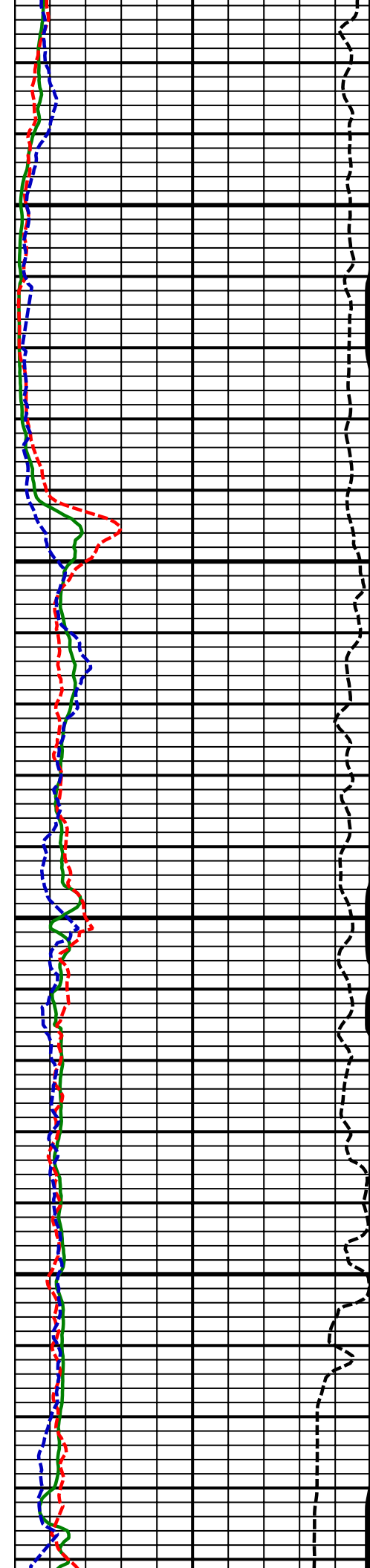




11900
MD

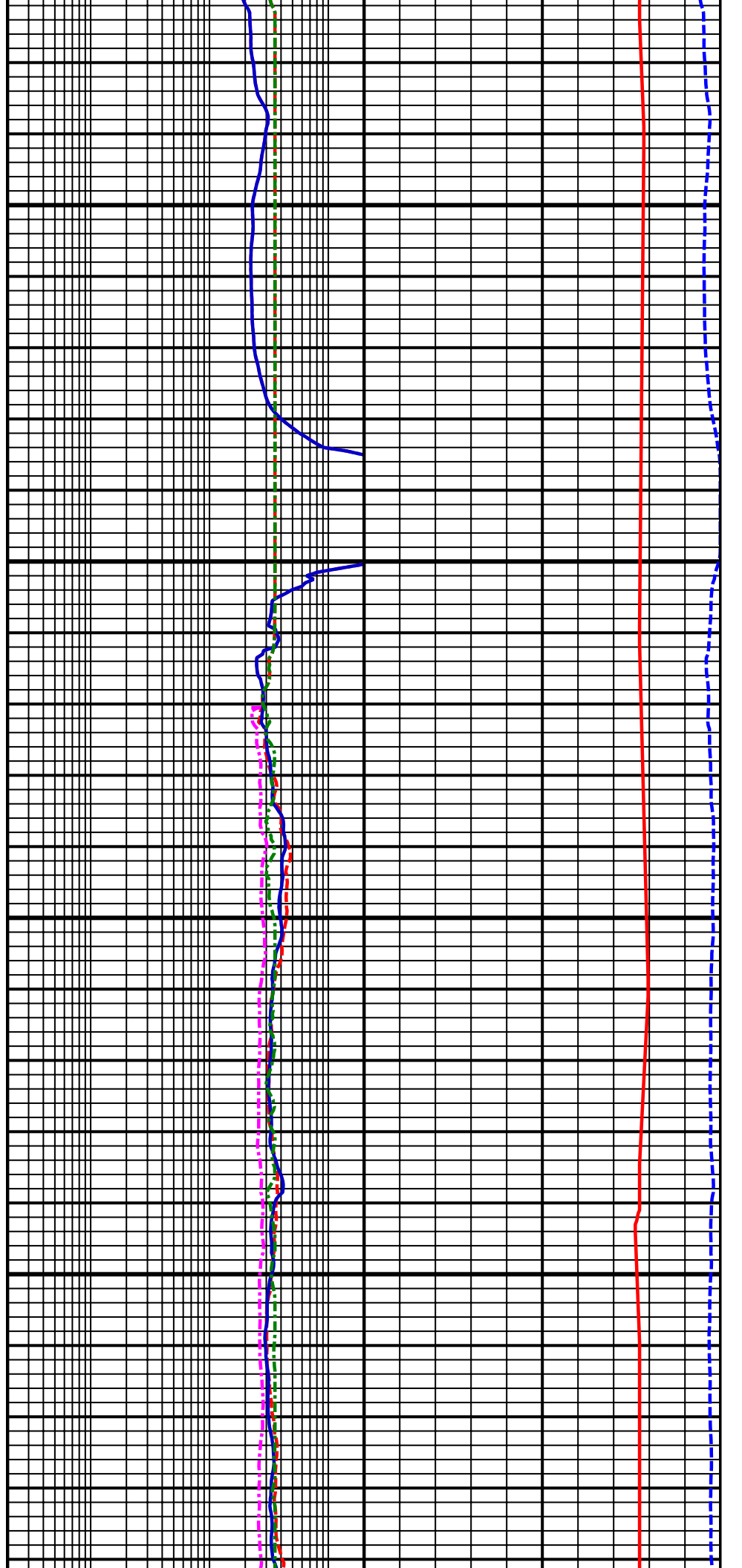
12000
MD

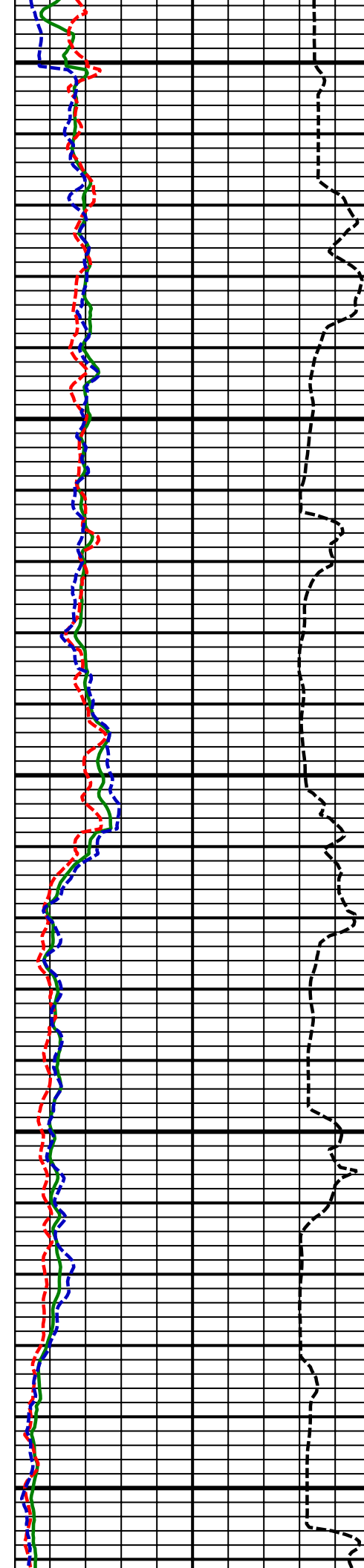




12100
MD

12200
MD

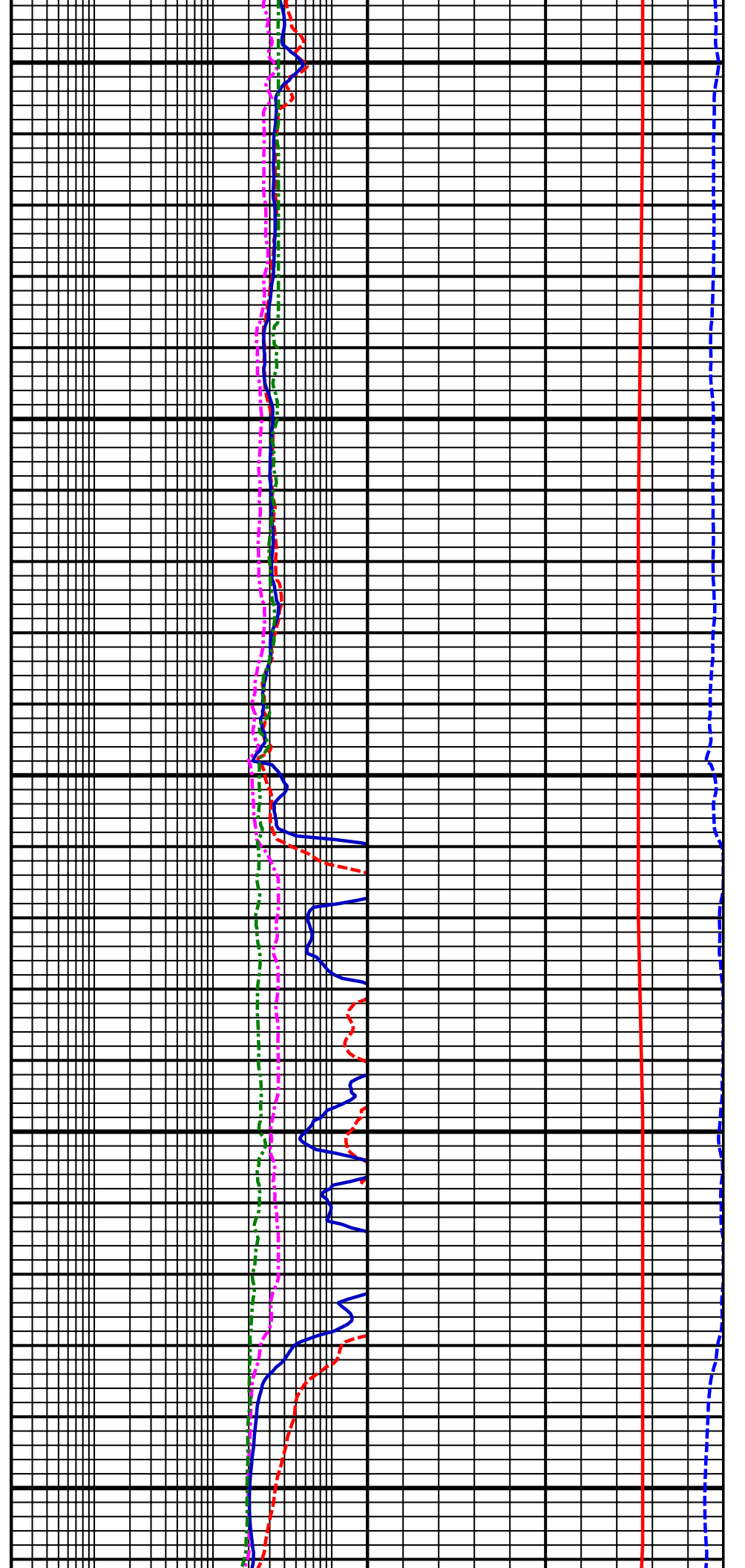


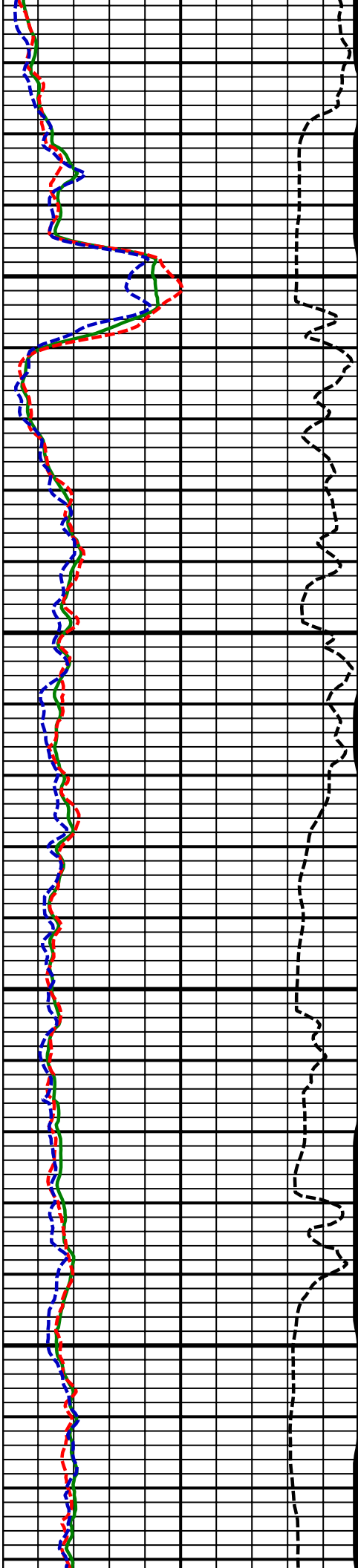


12300
MD

12400
MD

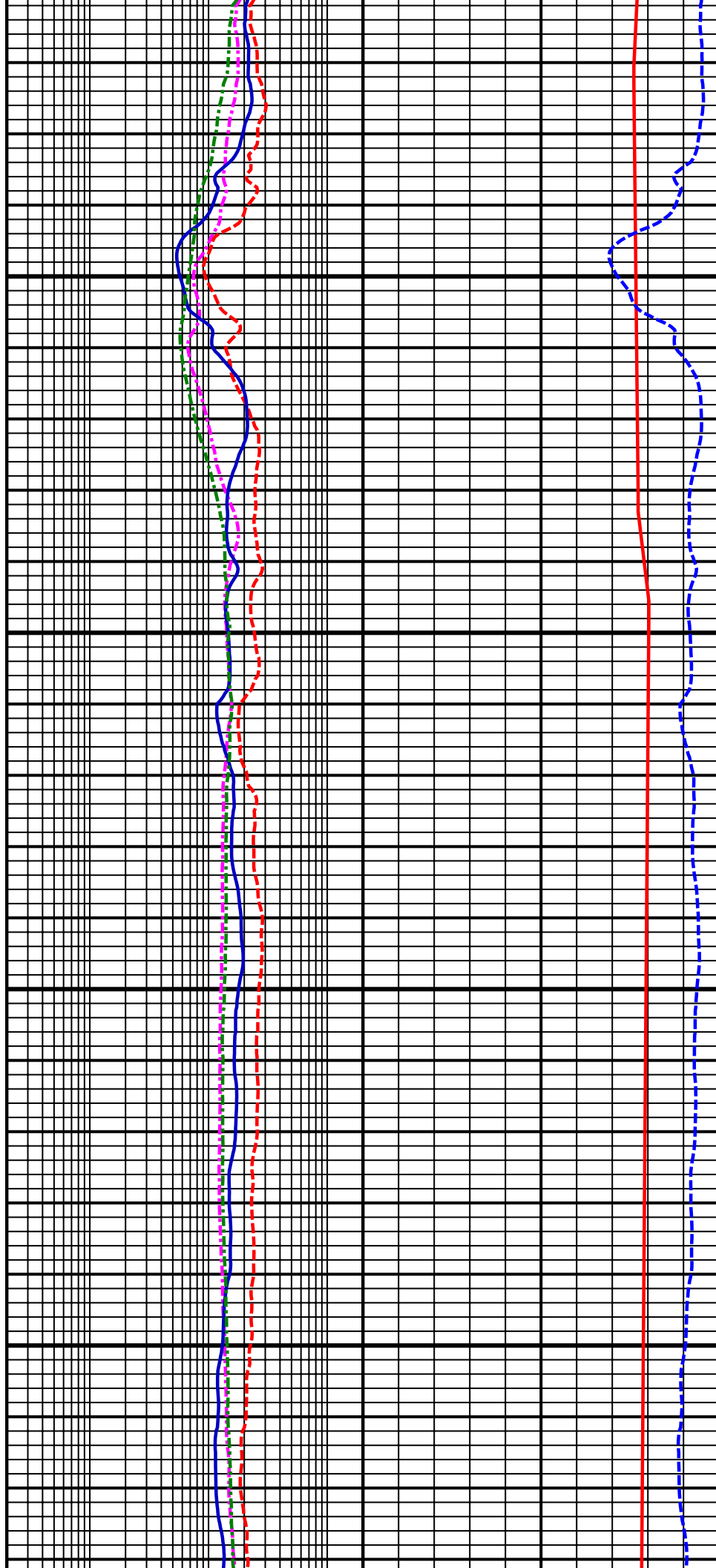
12500
MD

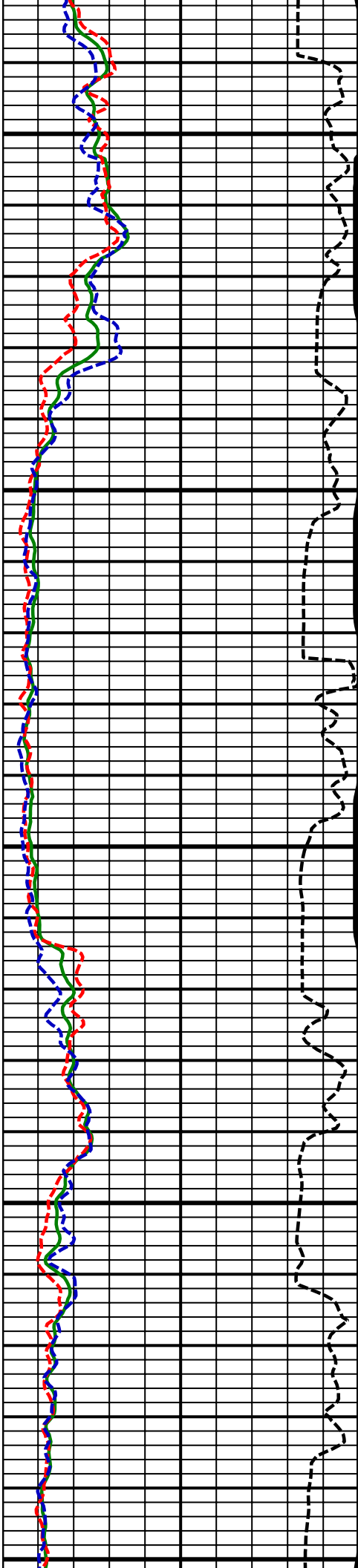




12600
MD

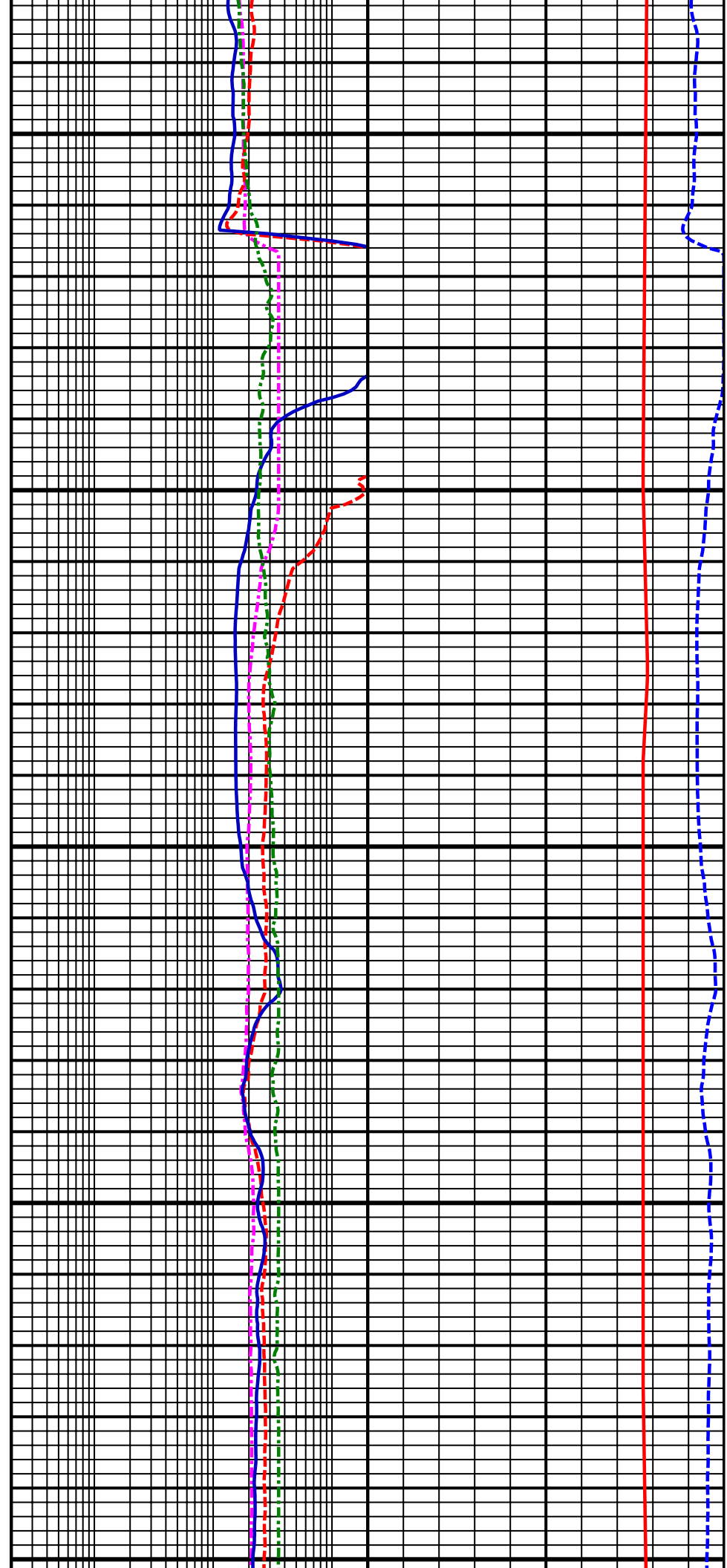
12700
MD

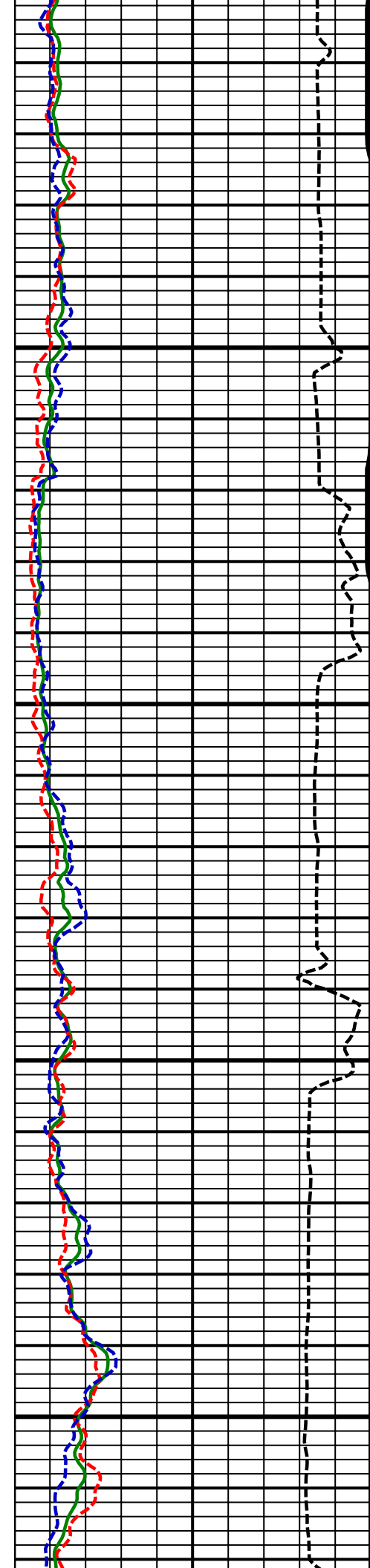




12800
MD

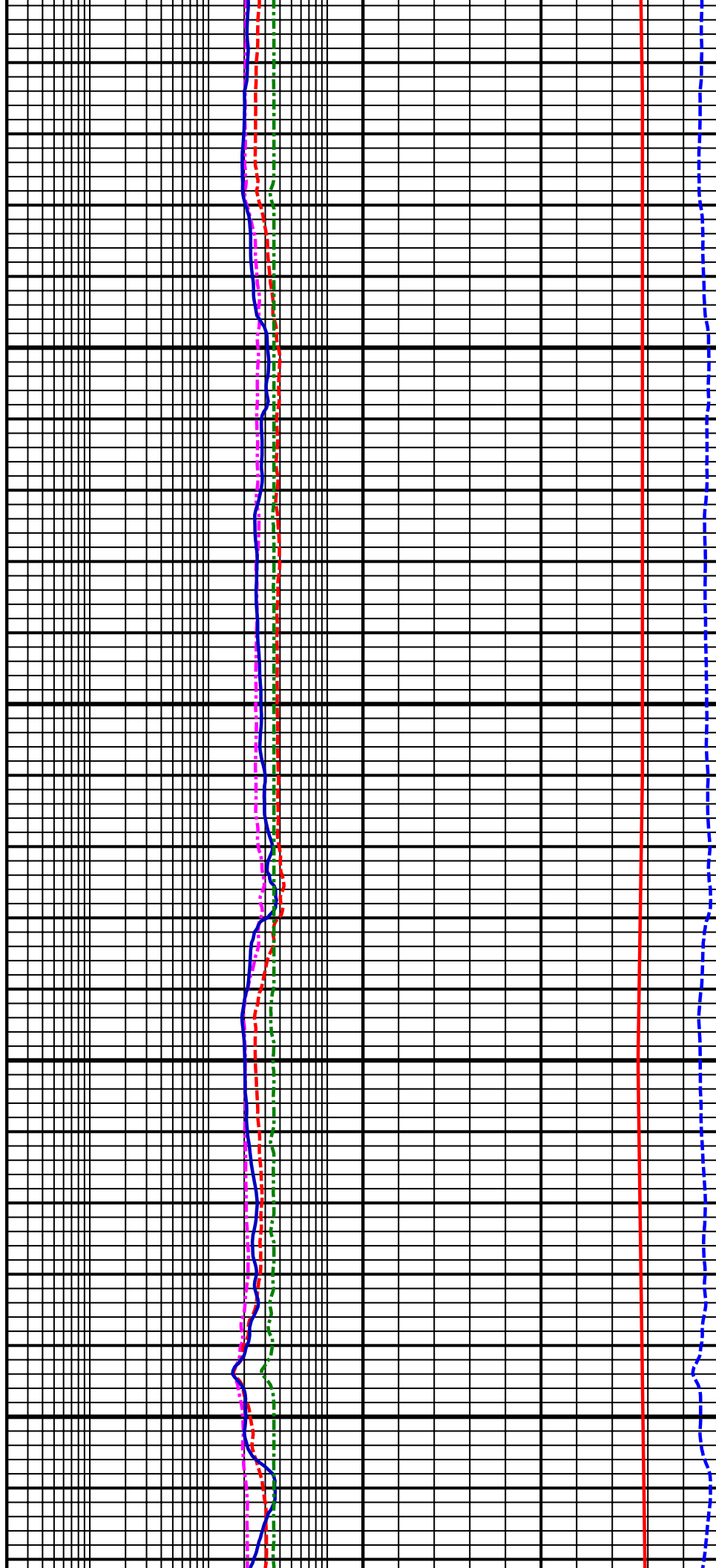
12900
MD

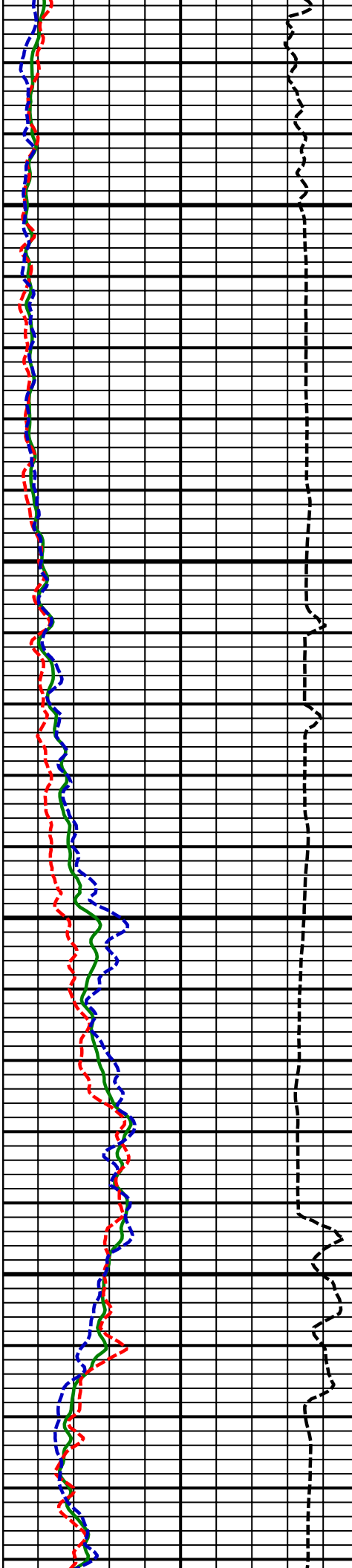




13000
MD

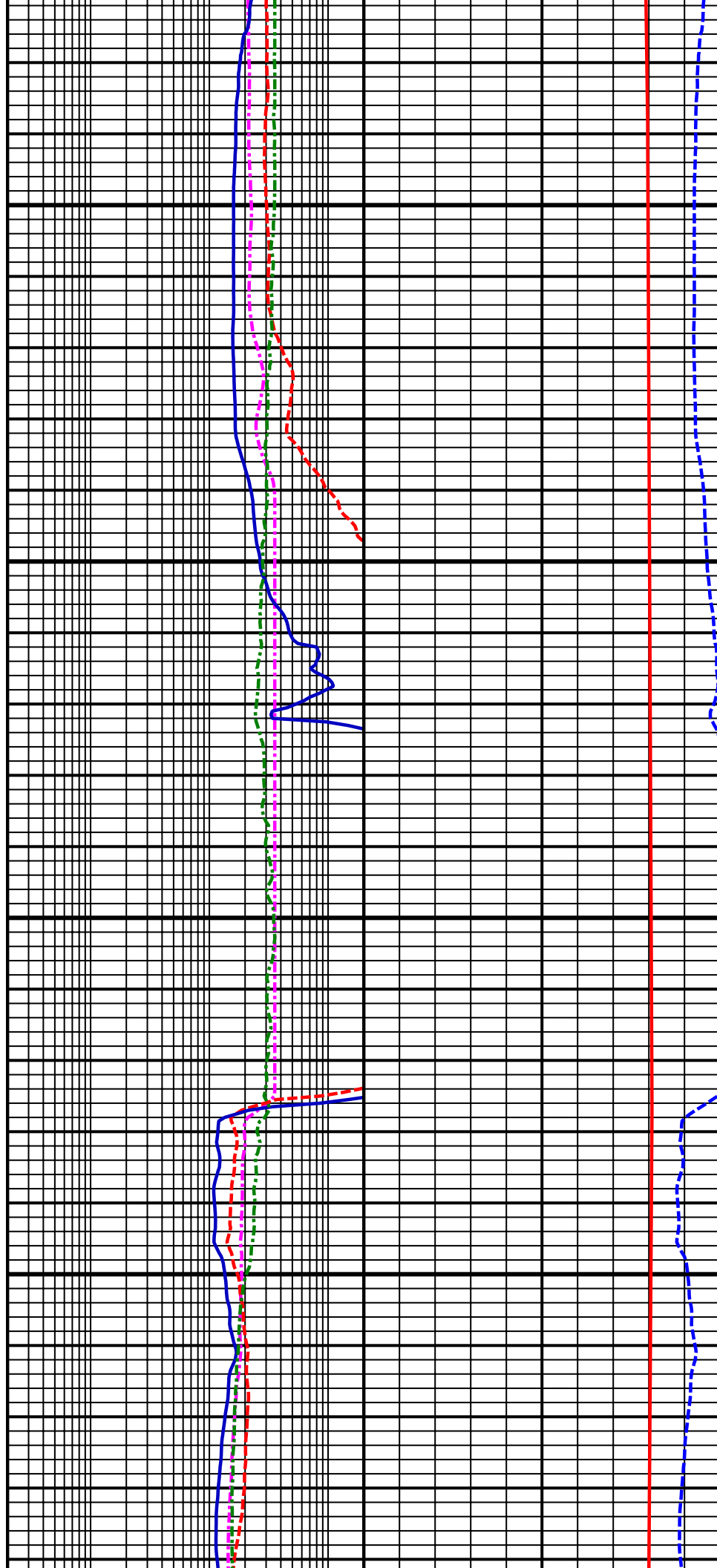
13100
MD

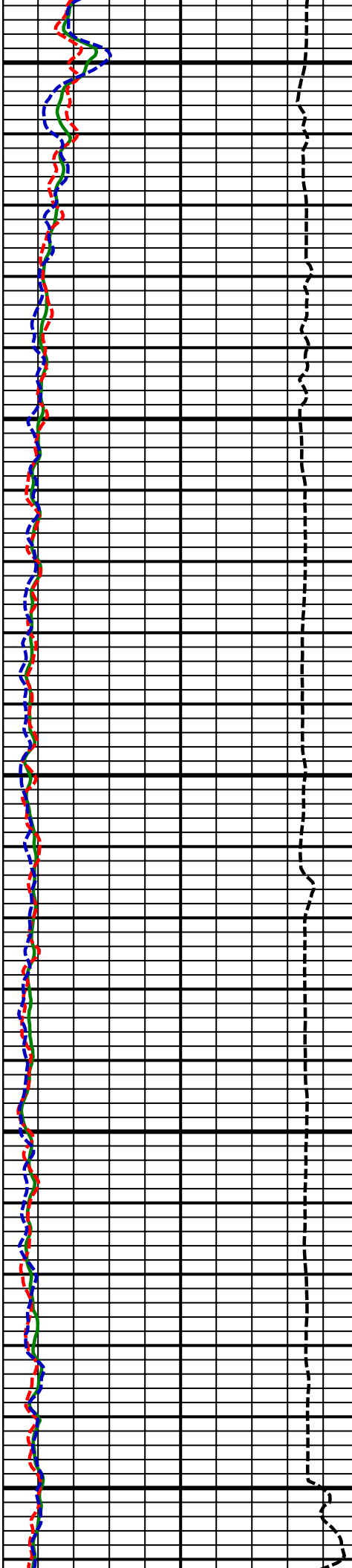




13200
MD

13300
MD

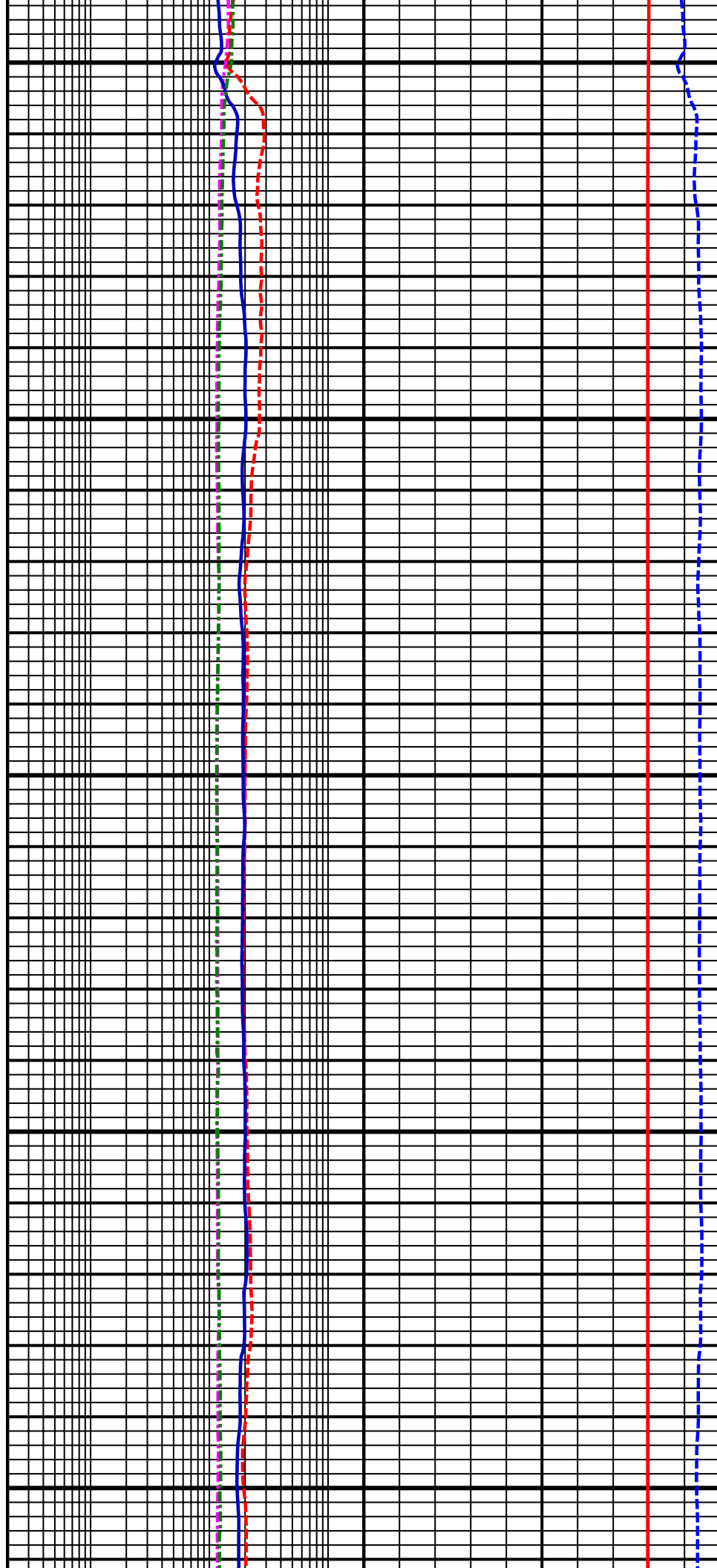


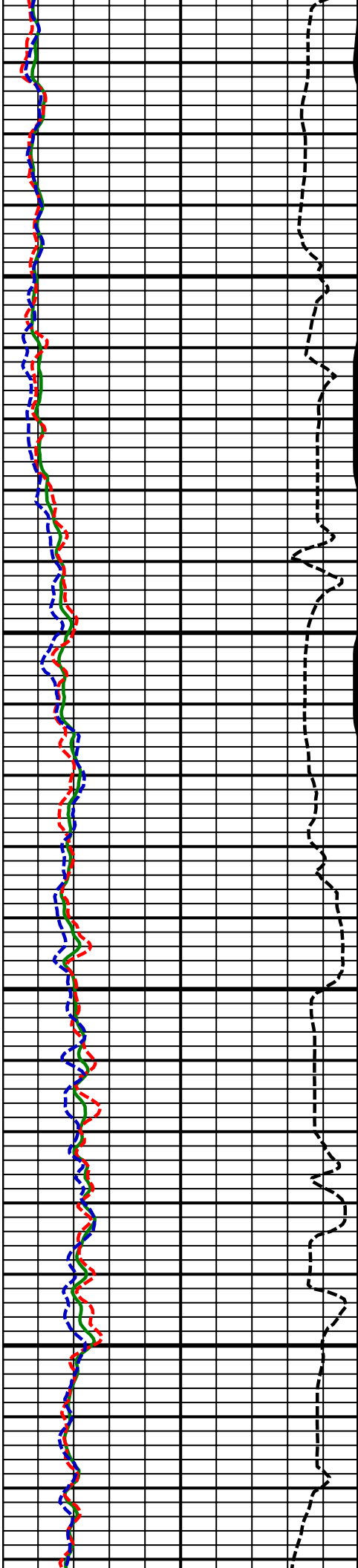


13400
MD

13500
MD

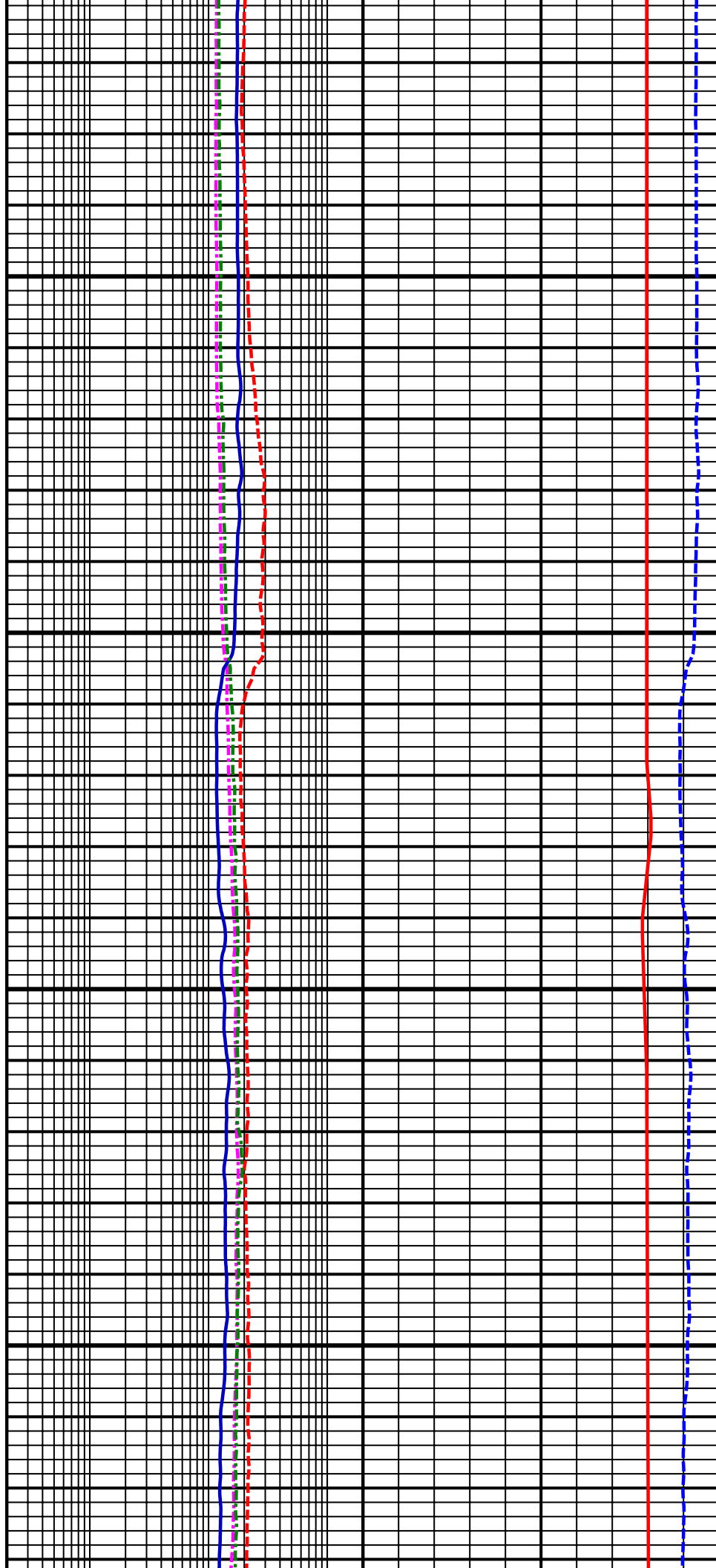
13600
MD

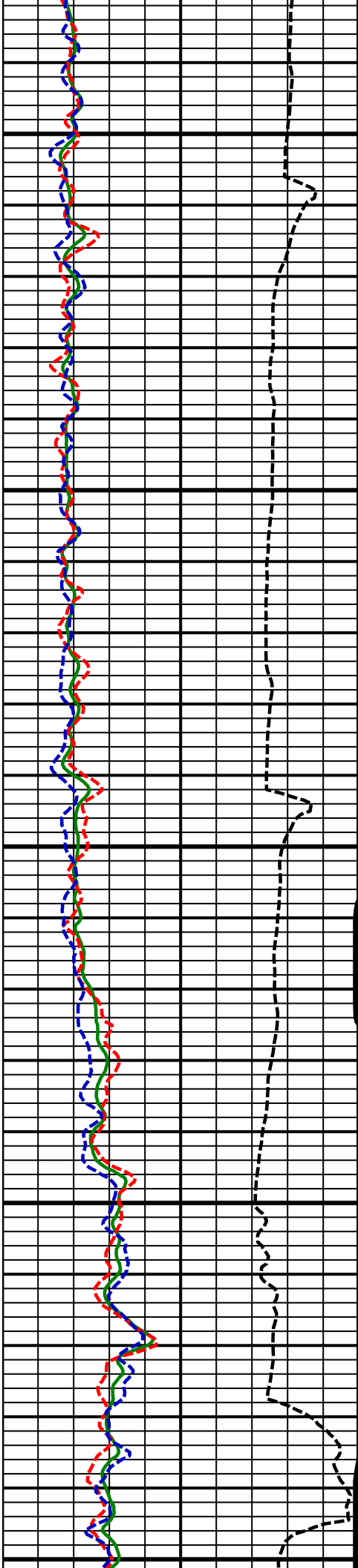




13700
MD

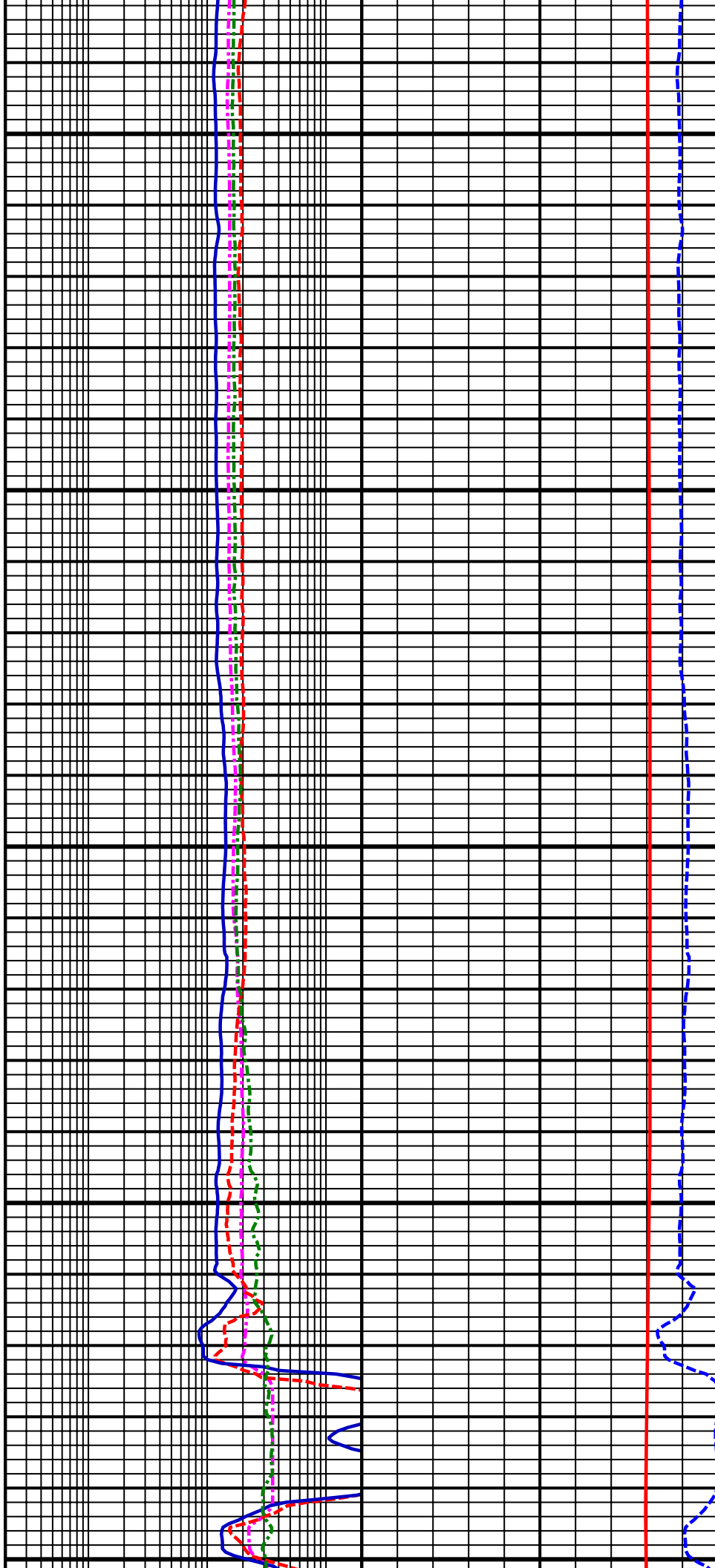
13800
MD

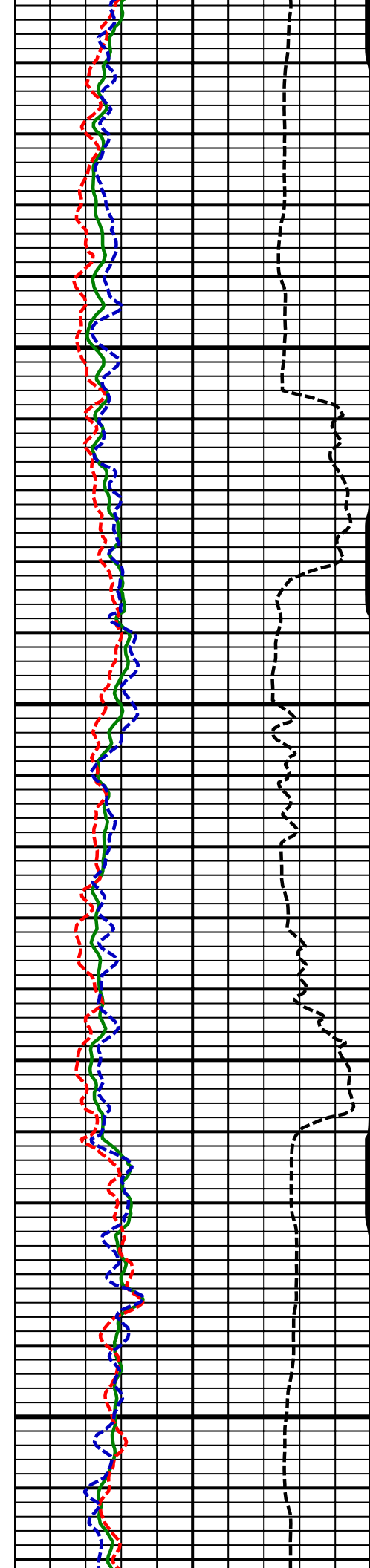




13900
MD

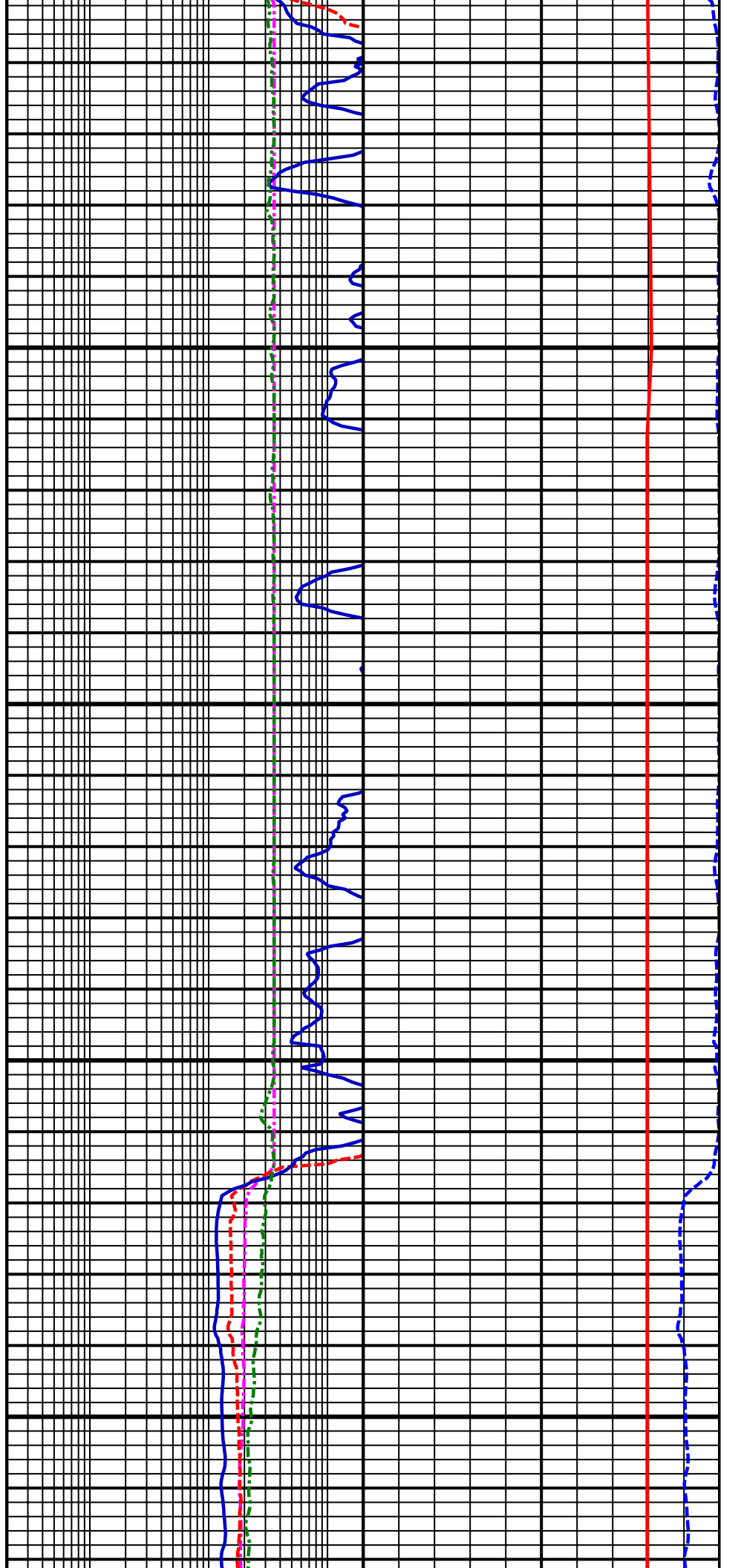
14000
MD

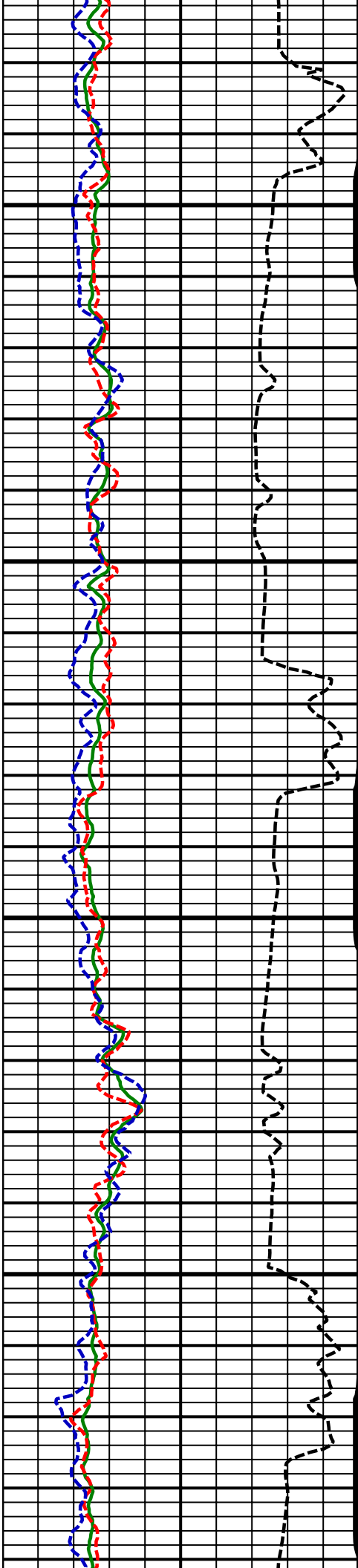




14100
MD

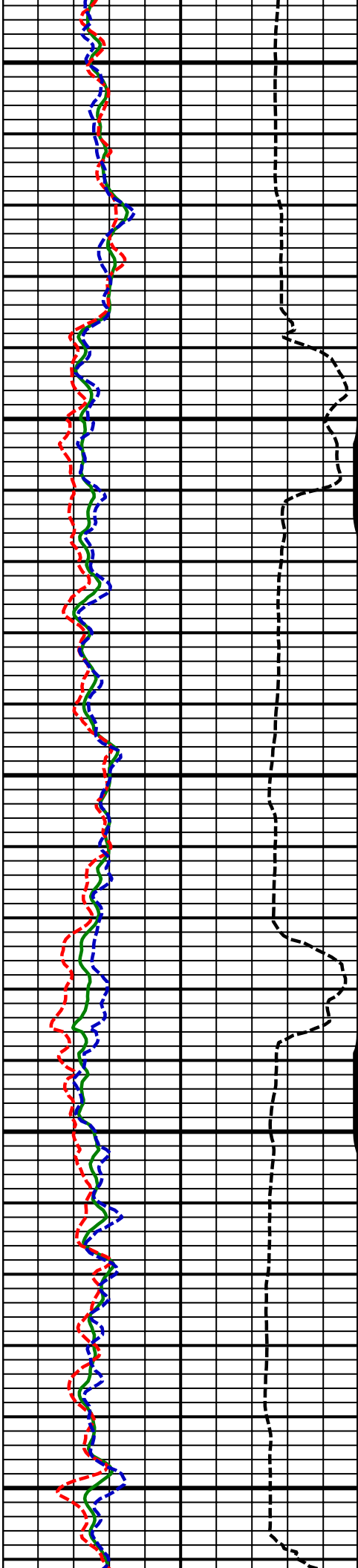
14200
MD





14300
MD

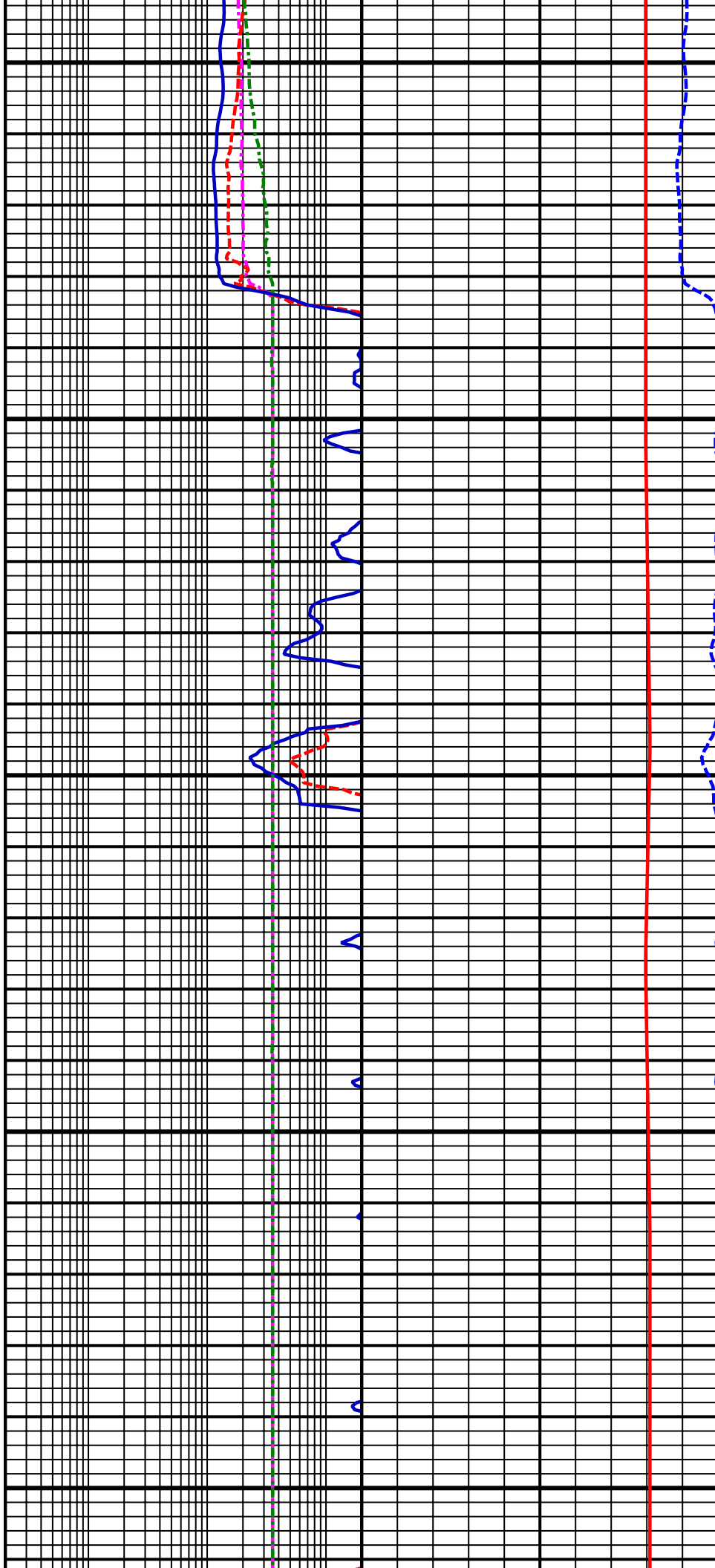
14400
MD

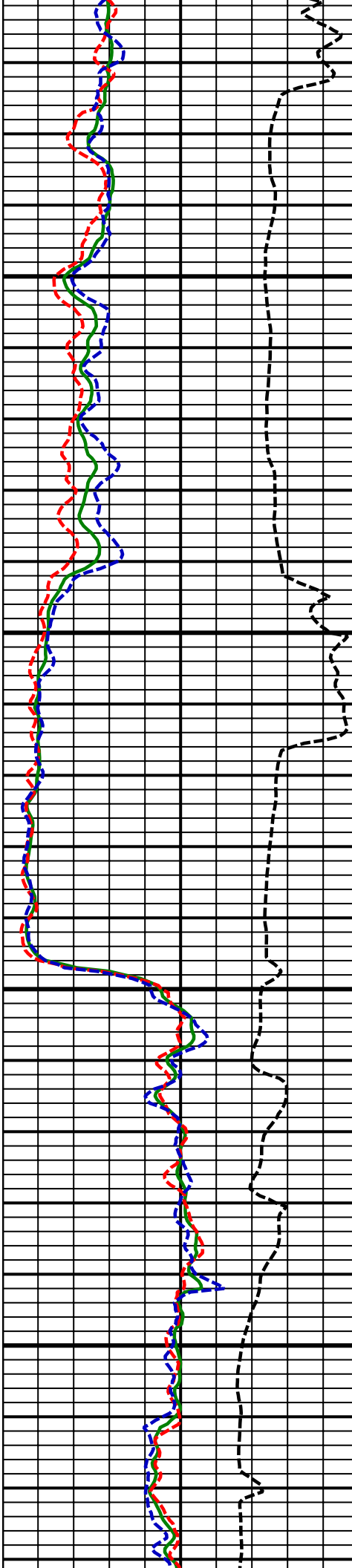


14500
MD

14600
MD

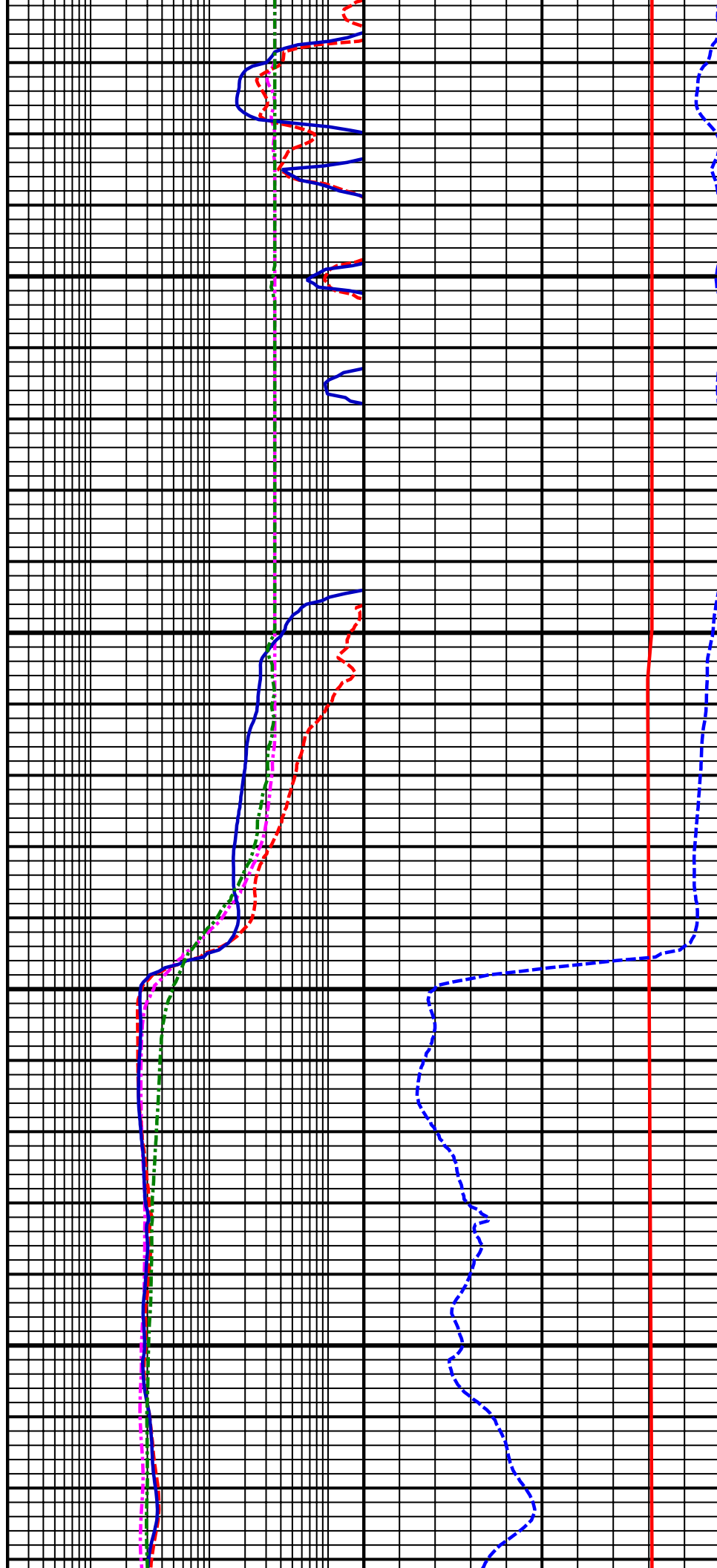
14700
MD

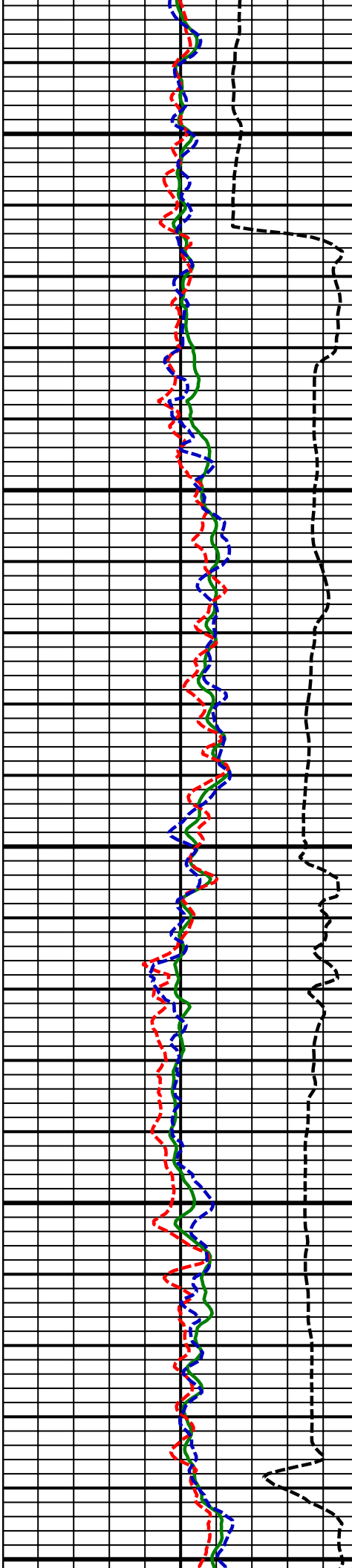




14800
MD

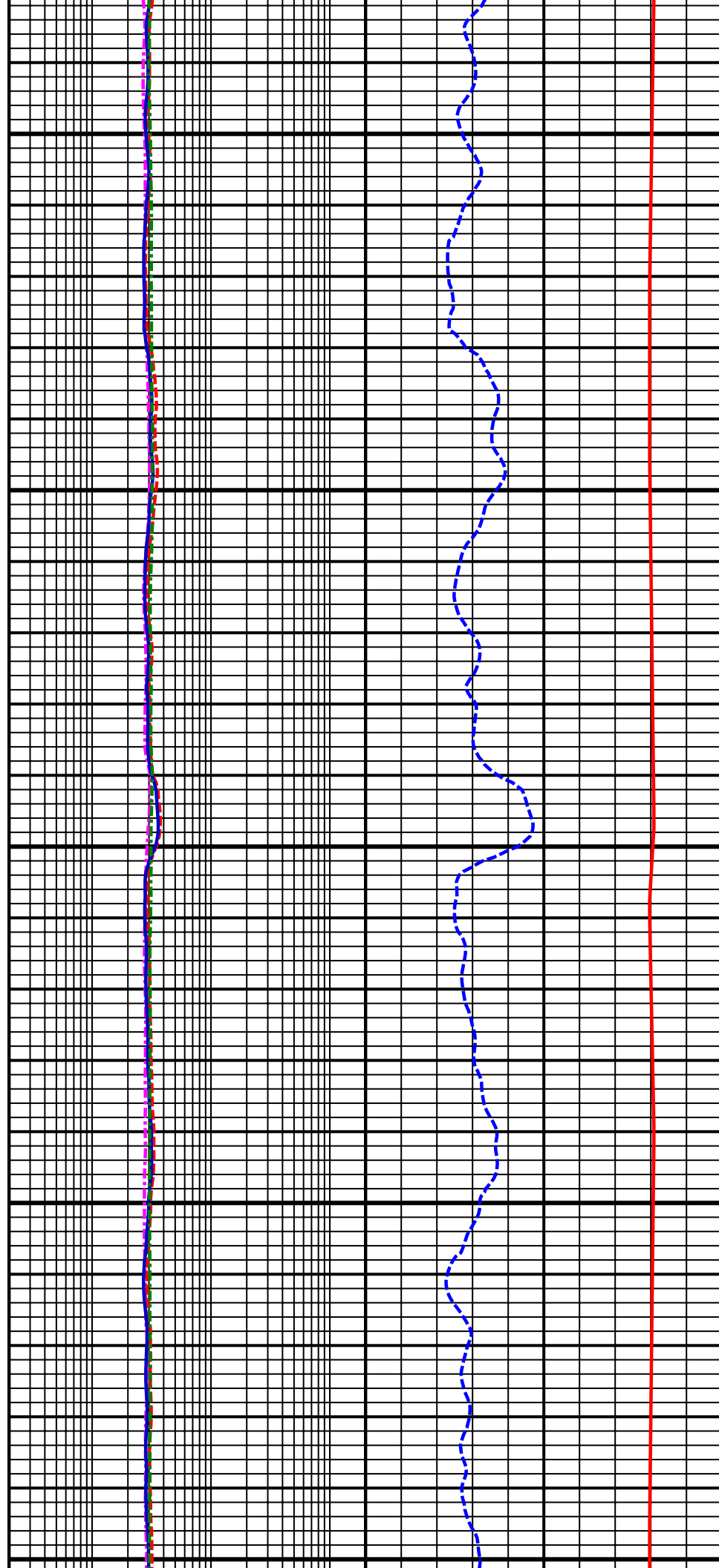
14900
MD

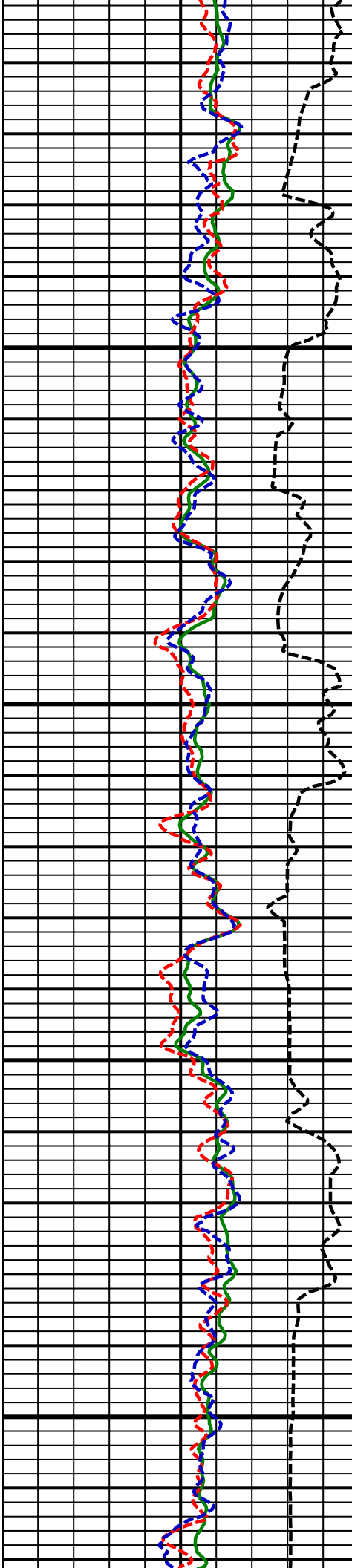




15000
MD

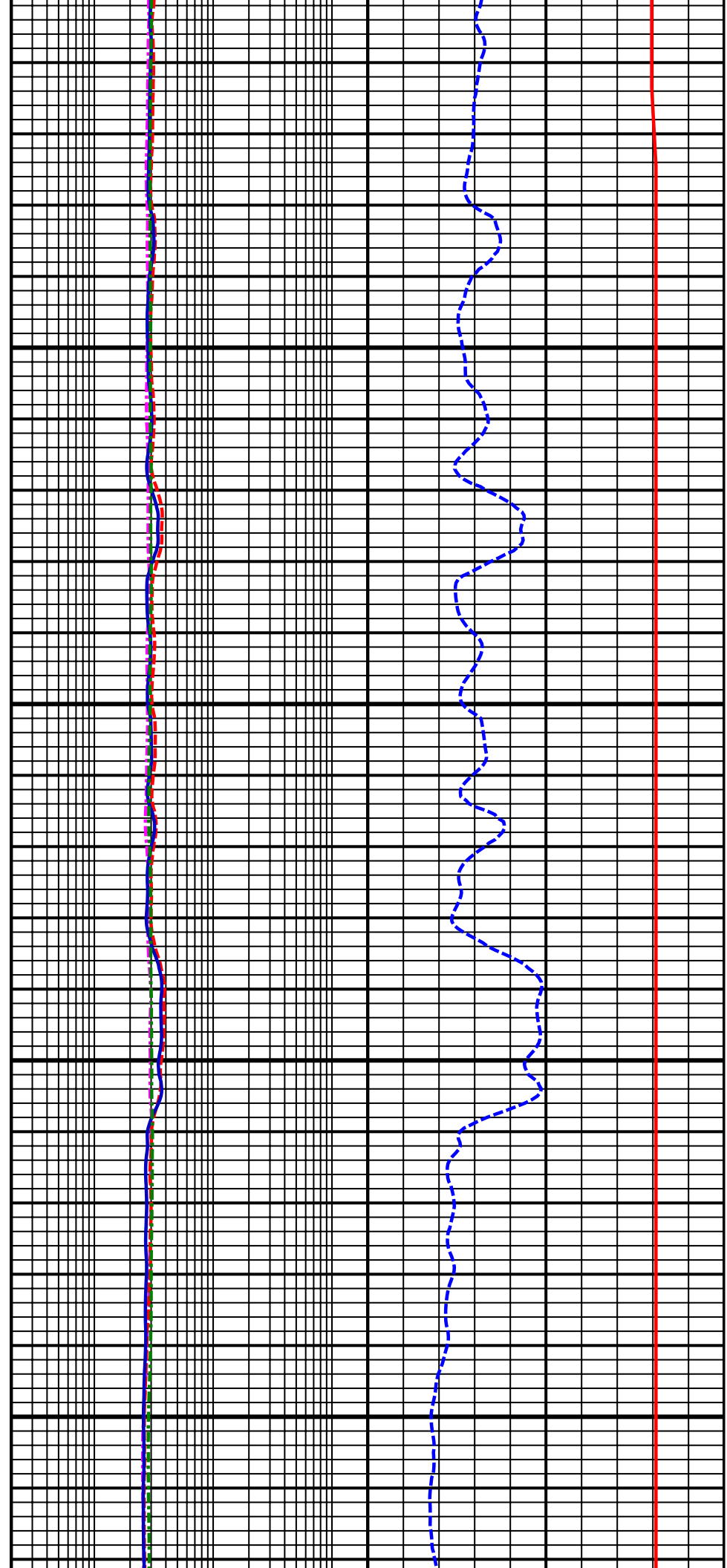
15100
MD

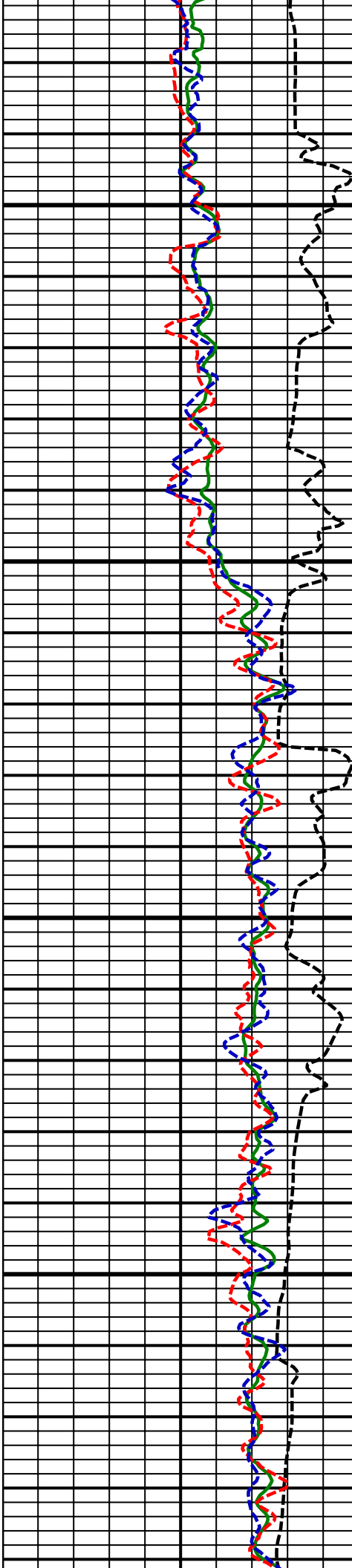




15200
MD

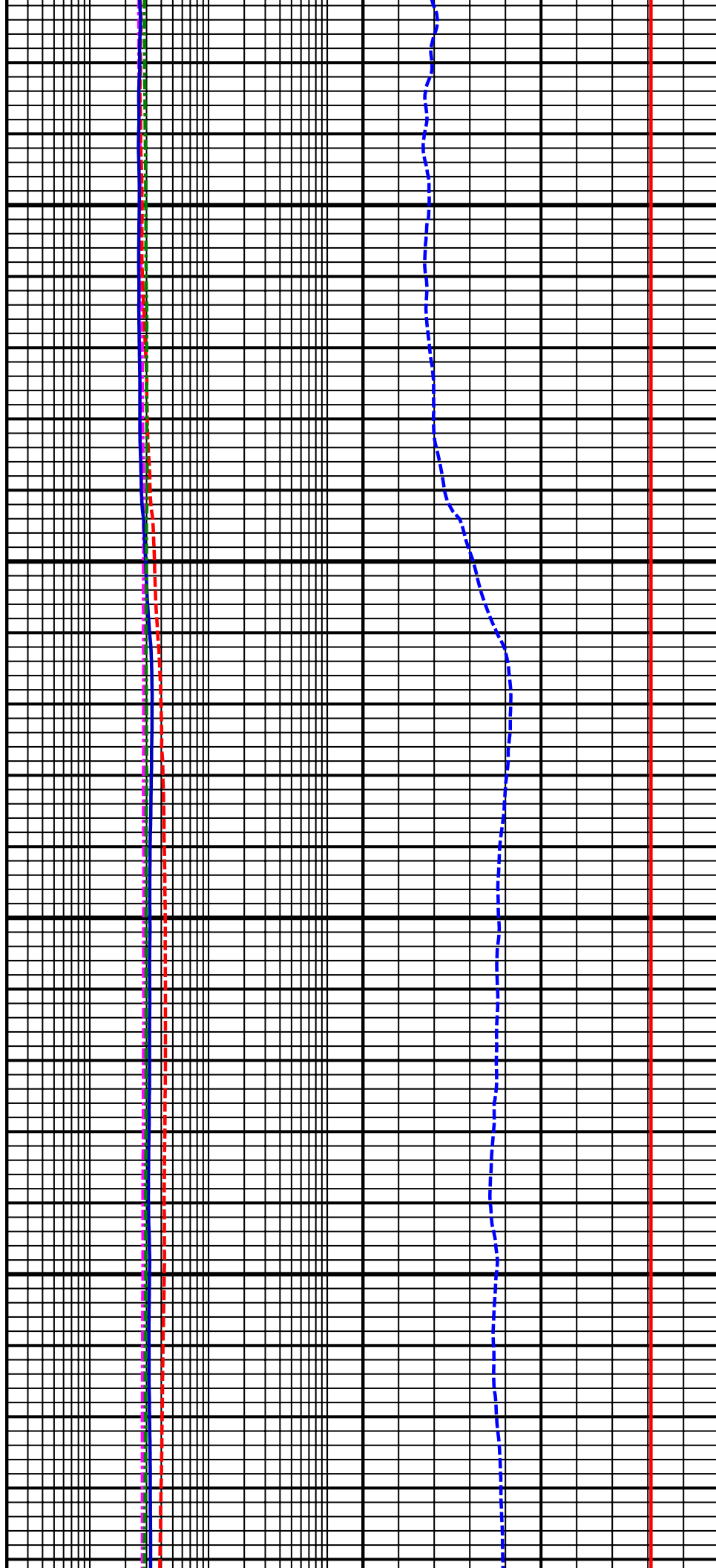
15300
MD

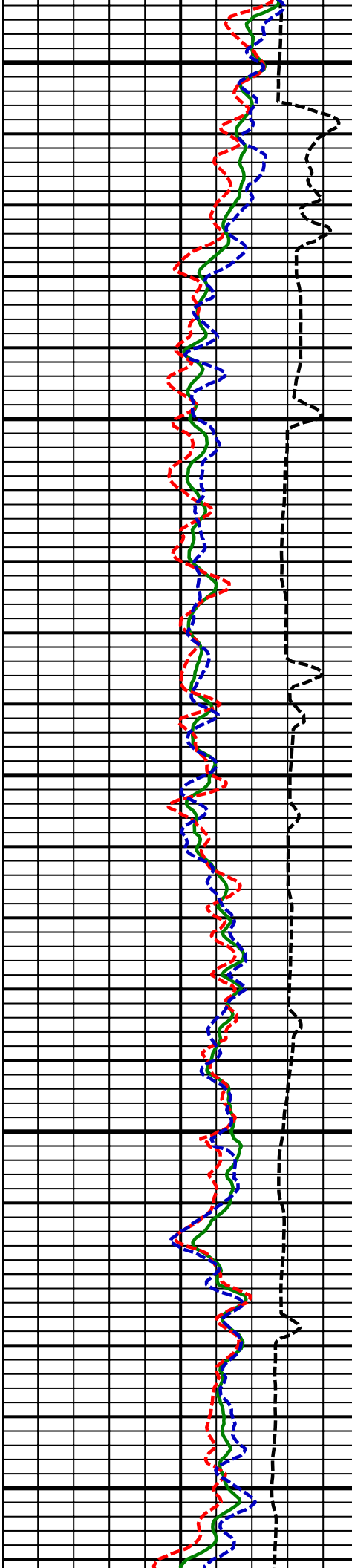




15400
MD

15500
MD

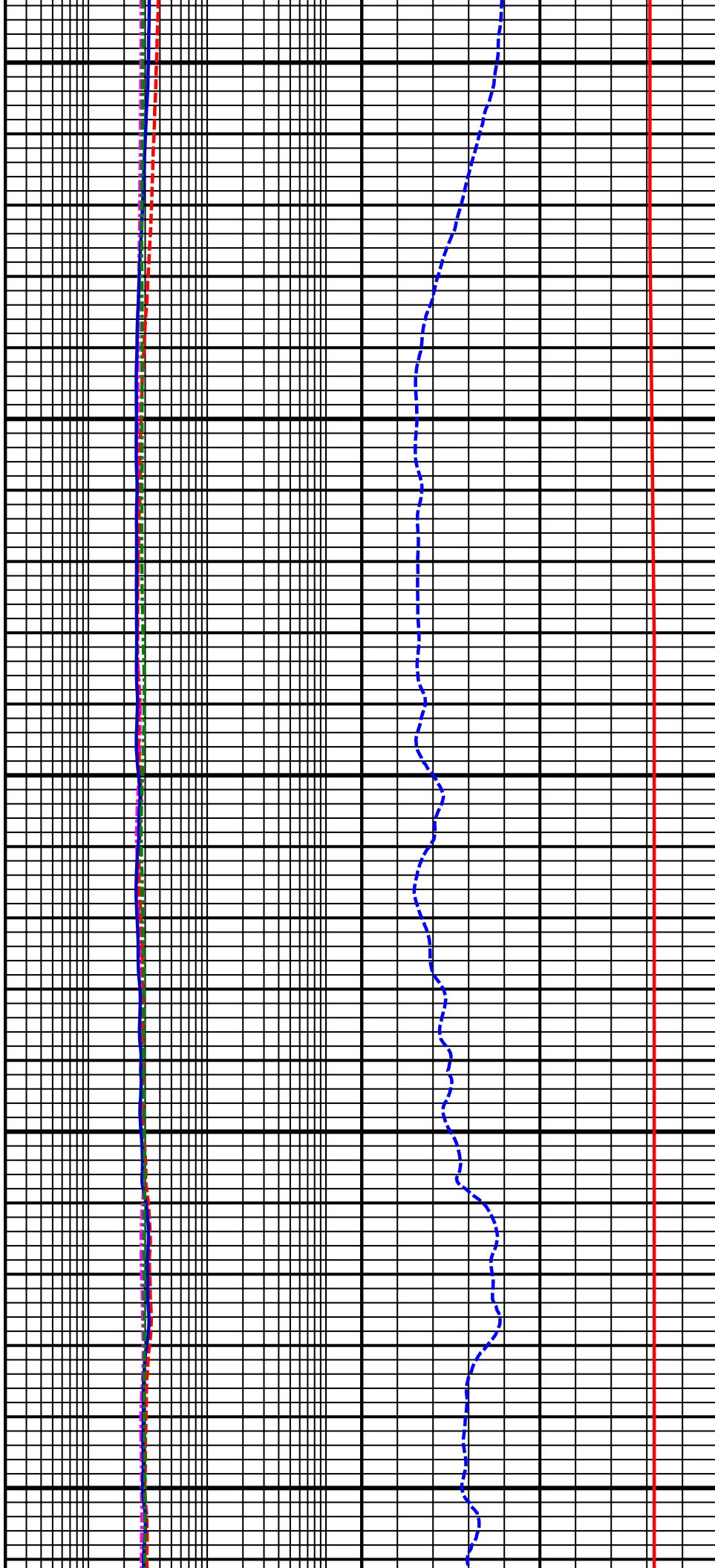


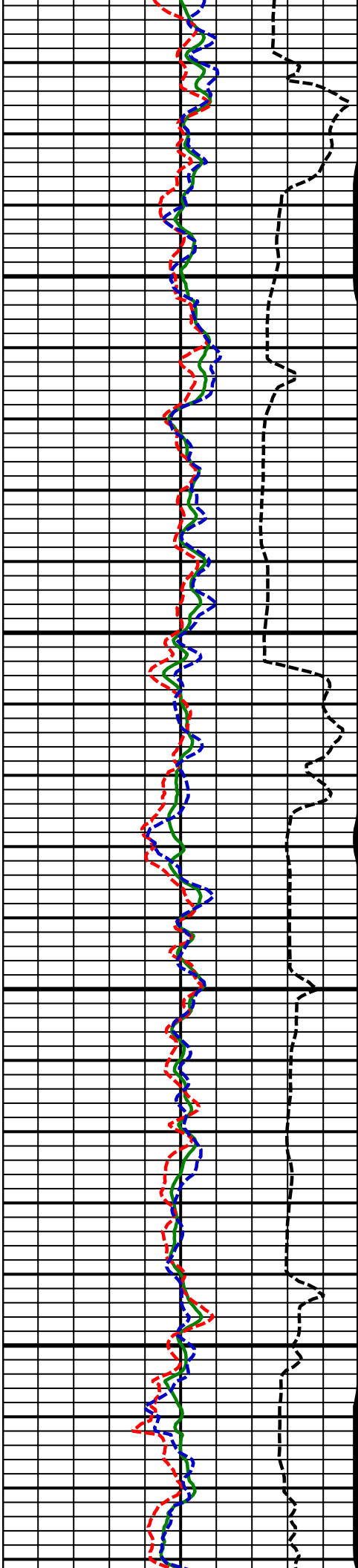


15600
MD

15700
MD

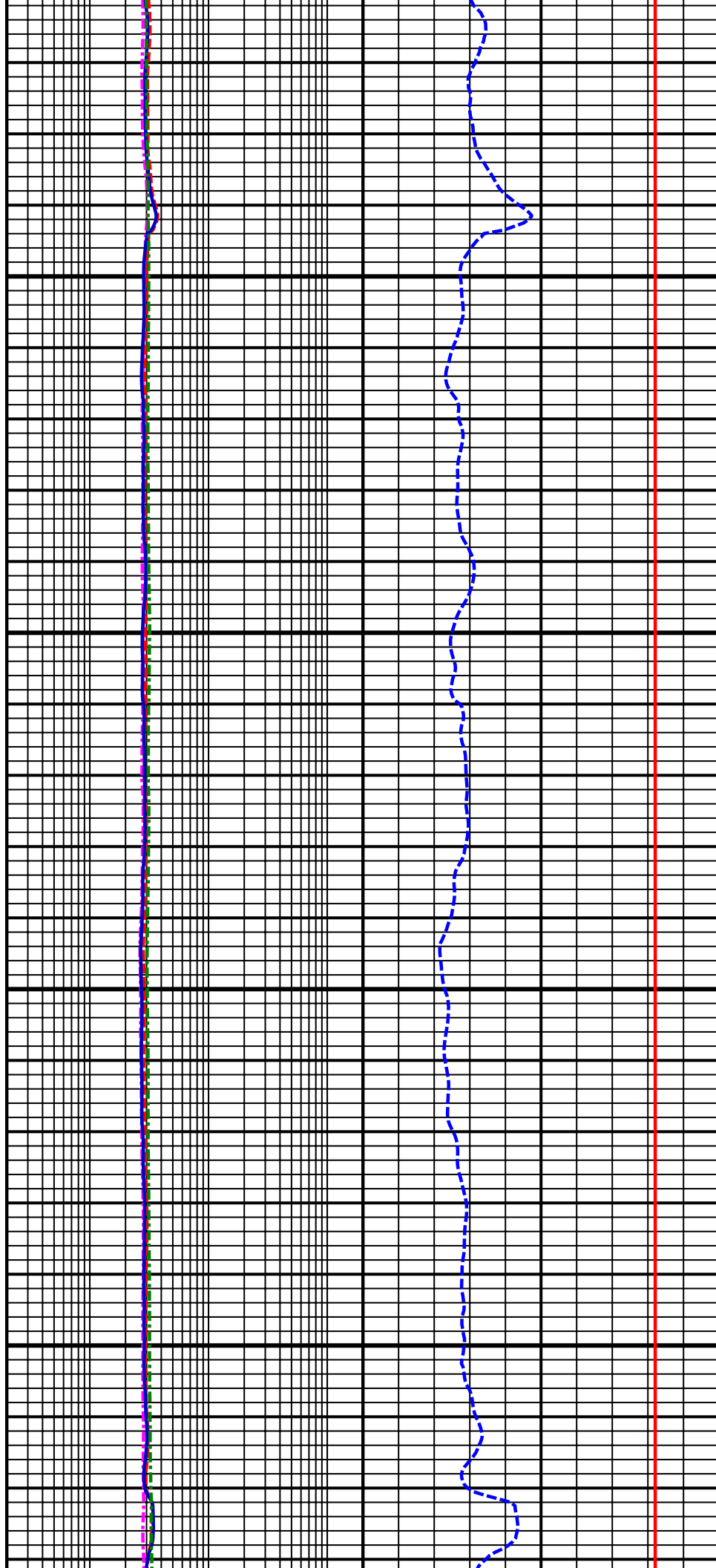
15800
MD

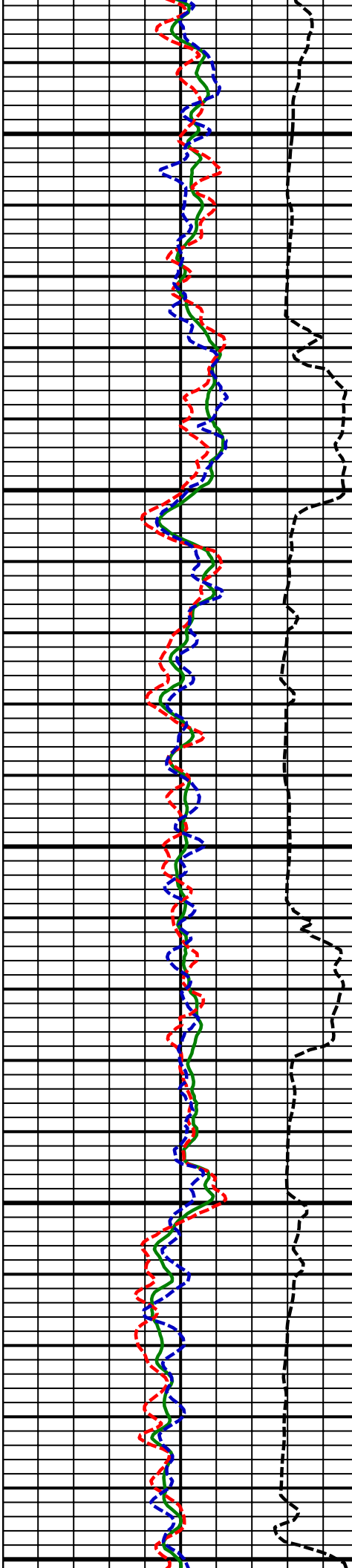




15900
MD

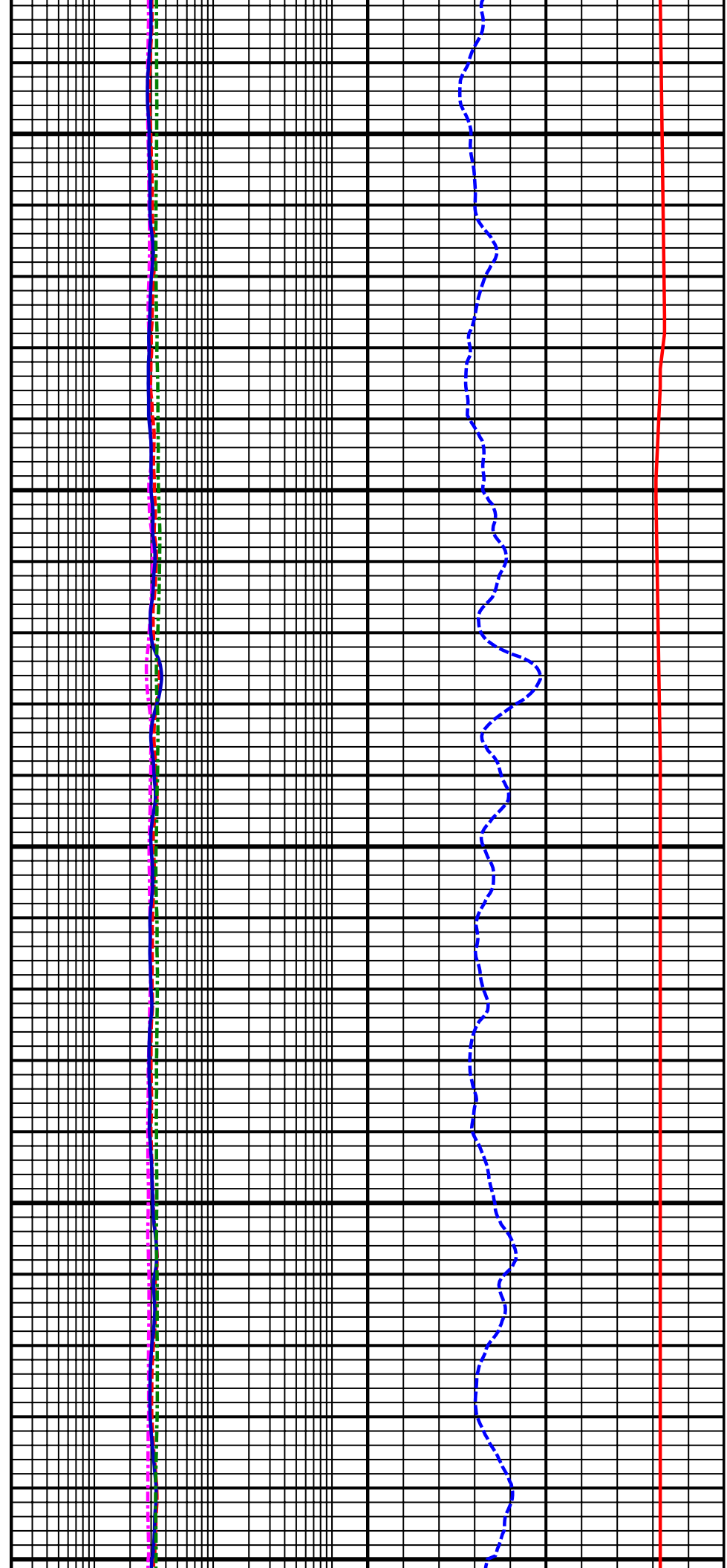
16000
MD

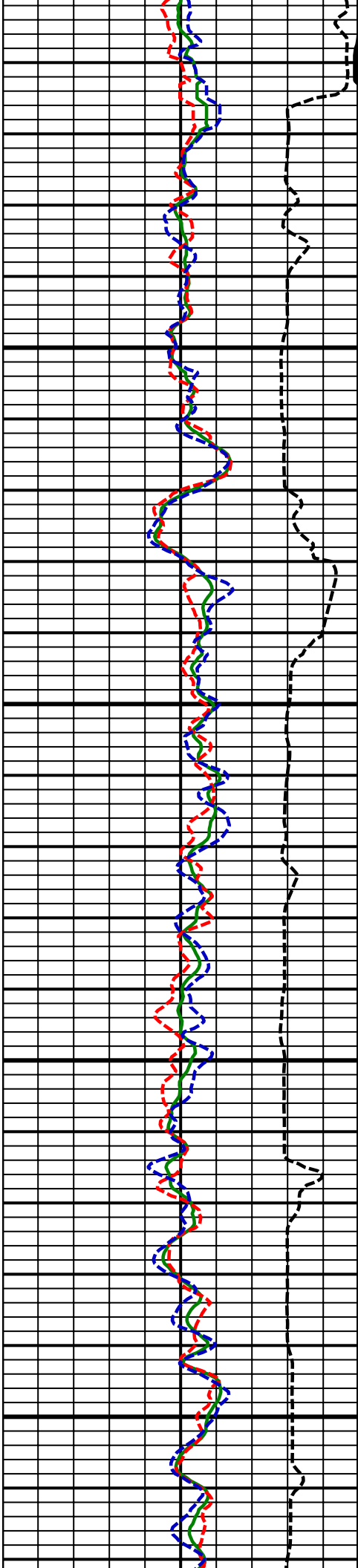




16100
MD

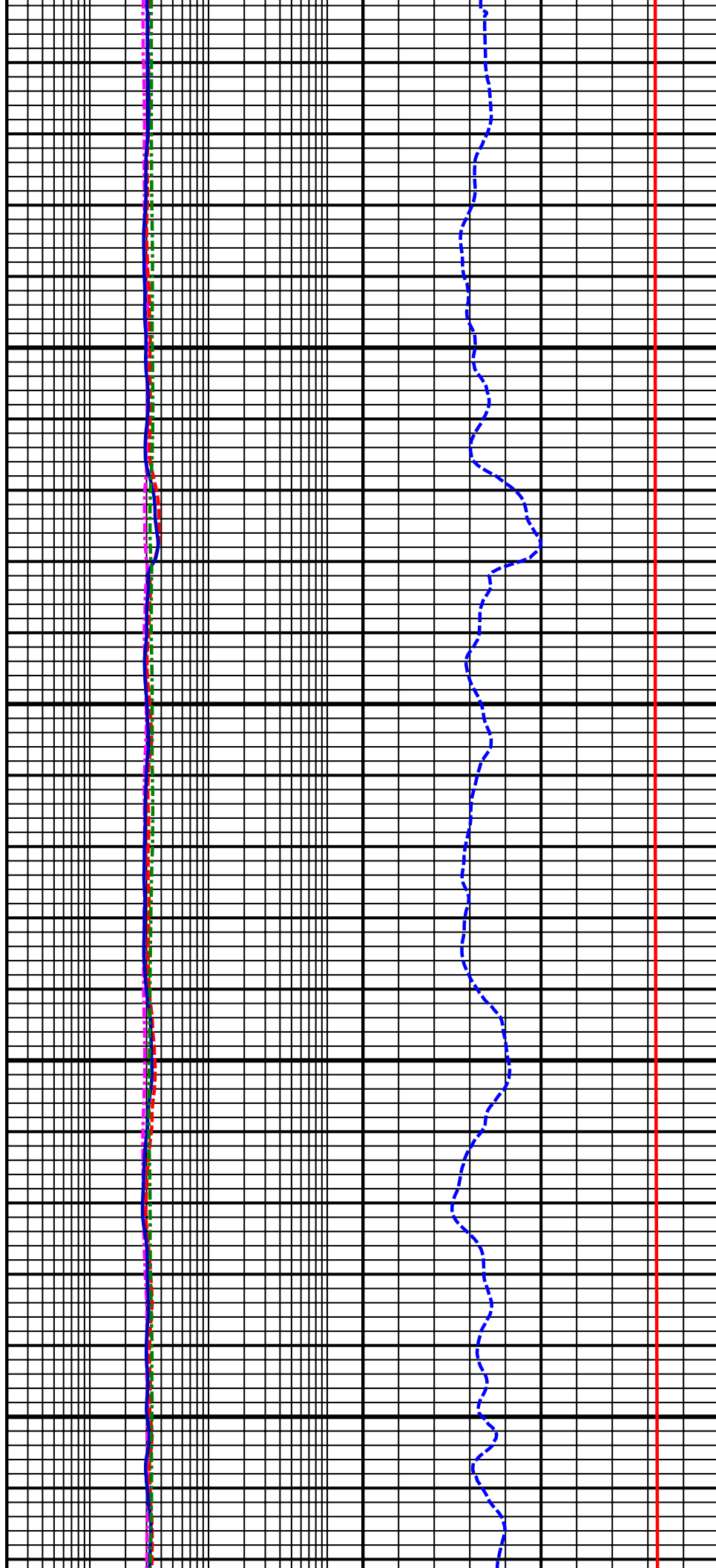
16200
MD

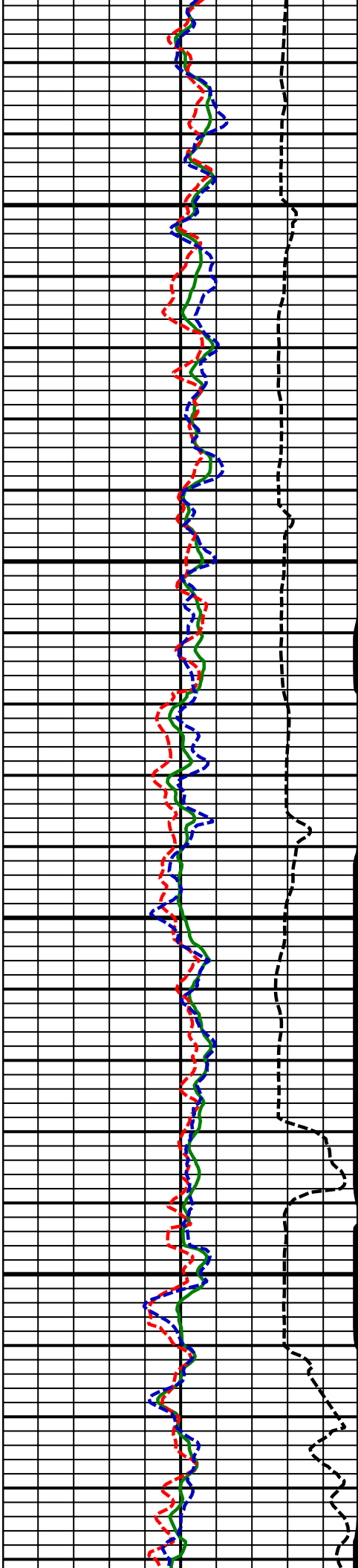




16300
MD

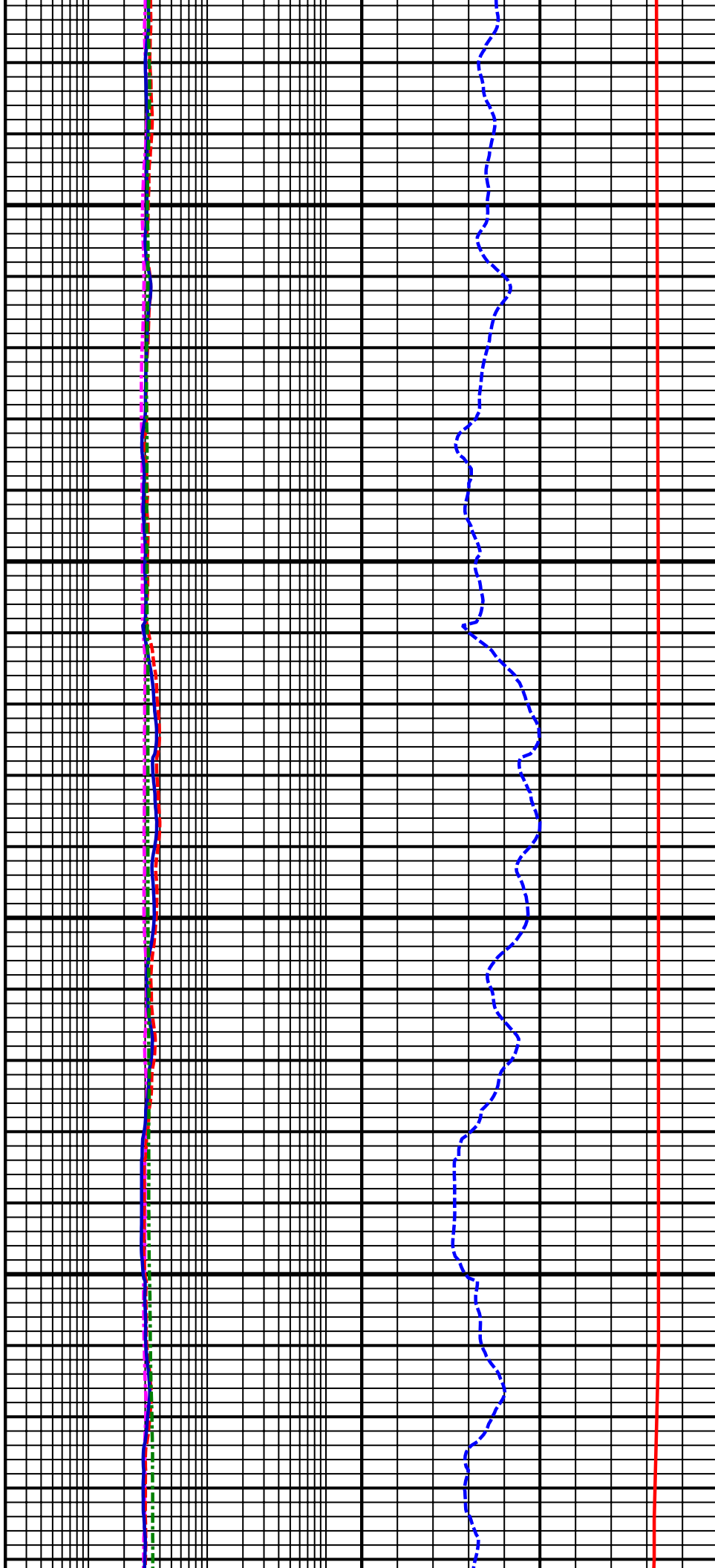
16400
MD

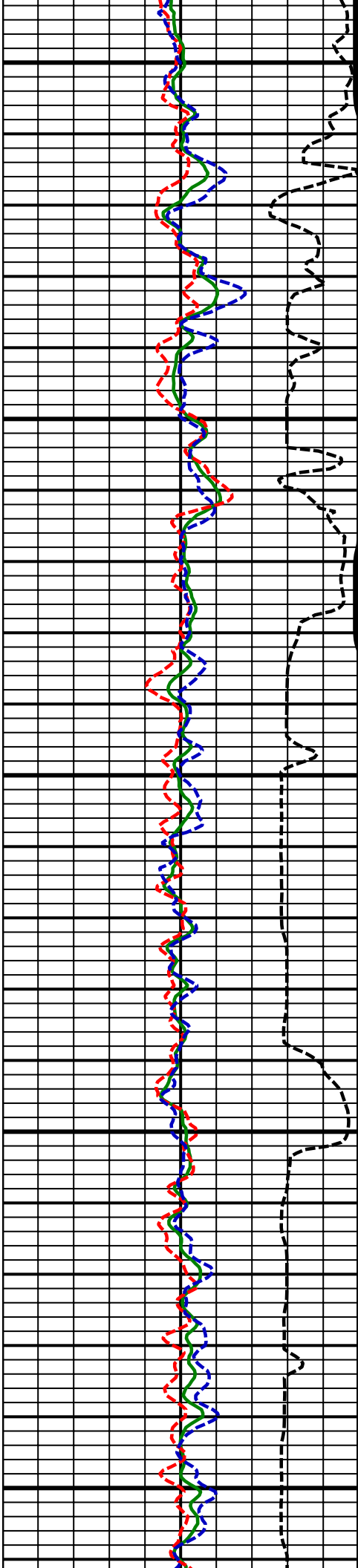




16500
MD

16600
MD

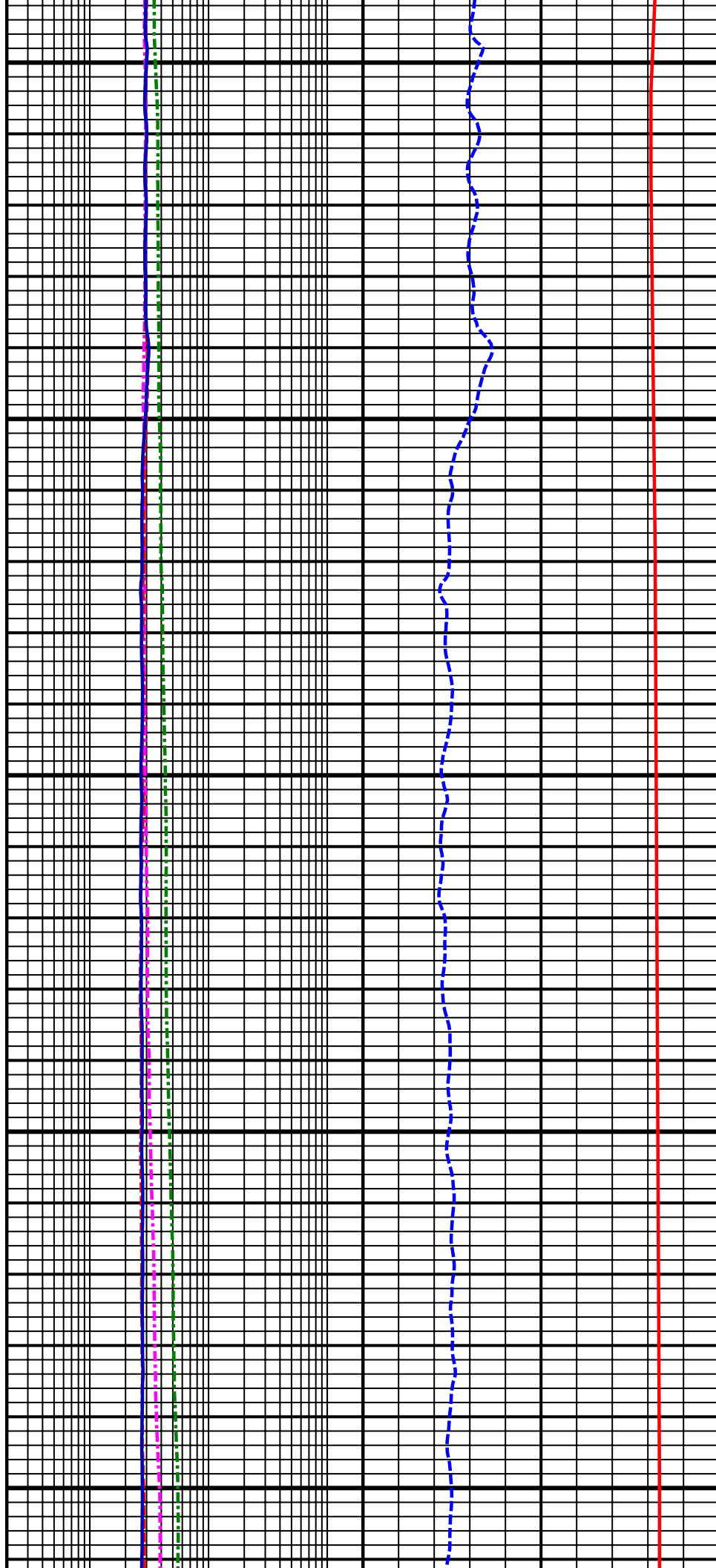


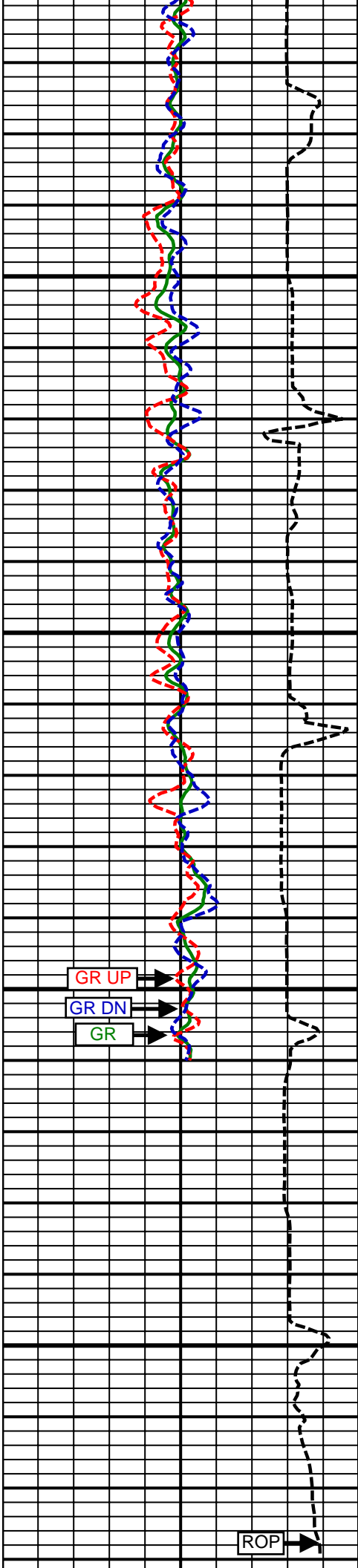


16700
MD

16800
MD

16900
MD

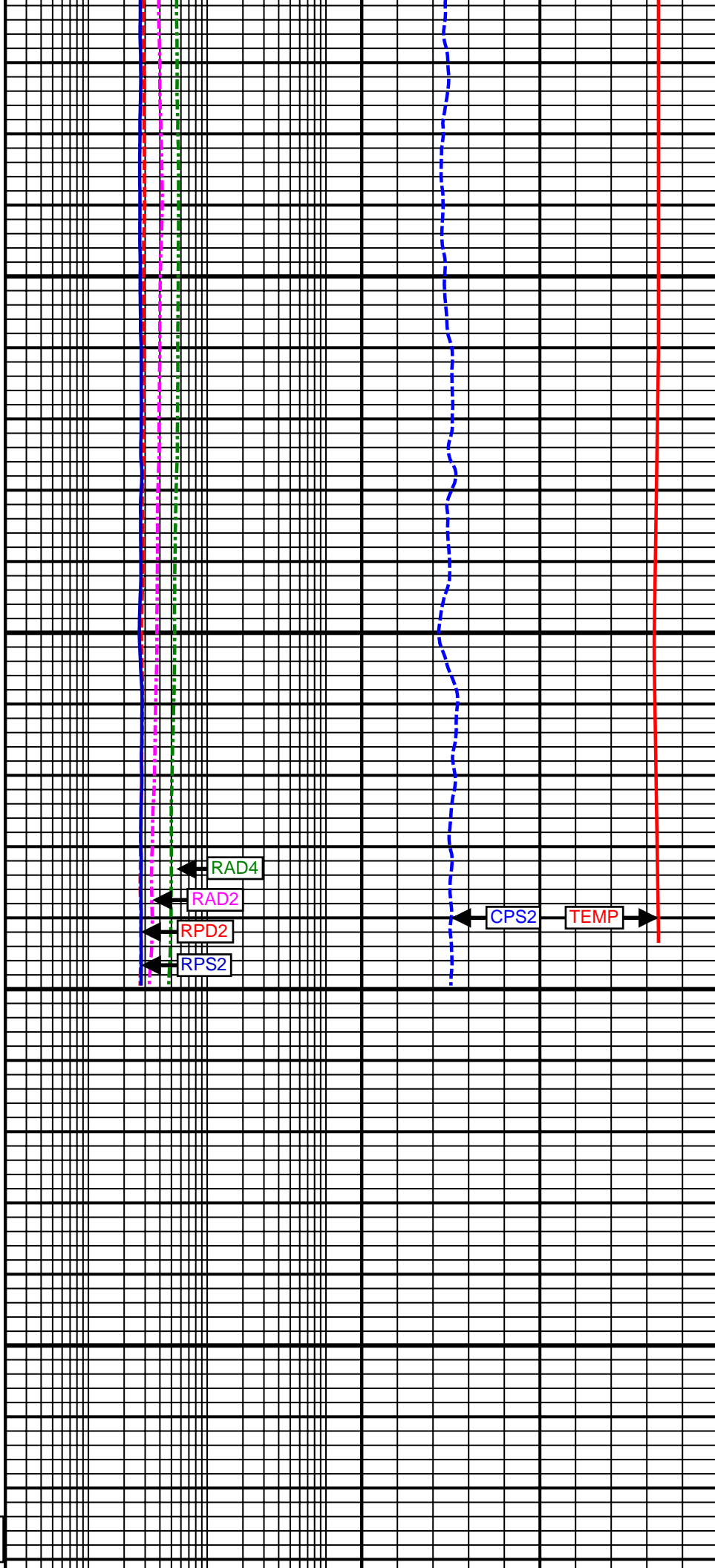




17000
MD

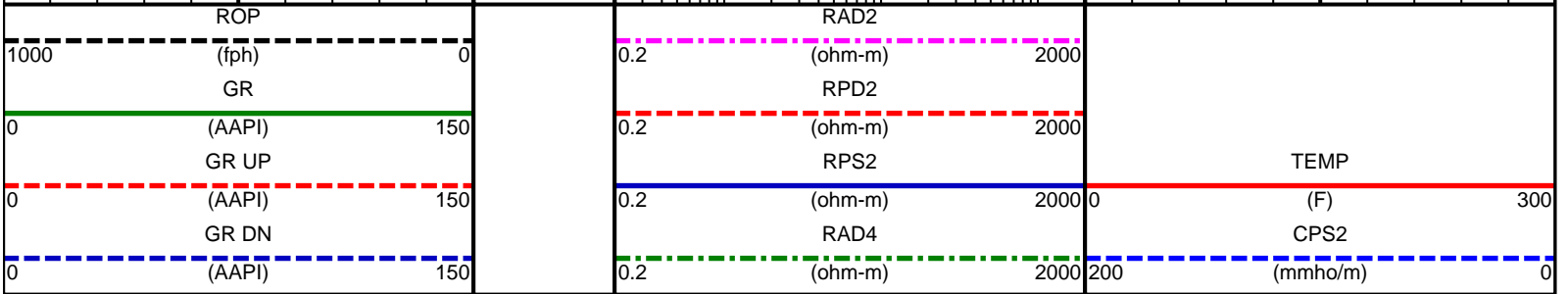
17100
MD

Comment
4-2



RAD4
RAD2
RPD2
RPS2

CPS2
TEMP



| SURVEY | | | | | | |
|---|-------------------|----------------------|--------------------|----------------------|------------------|------------------|
| Survey Calculation Method: Minimum Curvature | | | | | | |
| Magnetic Reference | Target Direction | Total Magnetic Field | Magnetic Dip Angle | Magnetic Declination | Grid Convergence | Total Correction |
| True North | 0.02 deg | 52935 nT | 66.74 deg | 8.41 deg | 0.00 deg | 8.41 deg |
| Survey Tie-On | Depth | INC | AZ | TVD | NS | EW |
| | 1746.00 ft | 0.09 deg | 50.15 deg | 1745.93 ft | -2.16 ft | 1.95 ft |

| Well Head | | | | | | | |
|------------|-----------|-----------|----------|---------|---------|------------|--------------------|
| Depth (ft) | Inc (deg) | Azm (deg) | TVD (ft) | NS (ft) | EW (ft) | VSect (ft) | Dogleg (deg/100ft) |
| 1902.00 | 1.19 | 299.62 | 1901.92 | -1.28 | 0.64 | -1.28 | 0.78 |
| 1995.00 | 0.88 | 184.05 | 1994.91 | -1.52 | -0.25 | -1.52 | 1.89 |
| 2087.00 | 3.09 | 166.65 | 2086.85 | -4.63 | 0.27 | -4.63 | 2.46 |
| 2178.00 | 4.41 | 152.68 | 2177.66 | -10.13 | 2.44 | -10.13 | 1.75 |
| 2271.00 | 4.21 | 152.29 | 2270.39 | -16.33 | 5.67 | -16.33 | 0.22 |
| 2363.00 | 3.57 | 150.50 | 2362.18 | -21.81 | 8.65 | -21.81 | 0.71 |
| 2457.00 | 4.42 | 146.67 | 2455.95 | -27.38 | 12.08 | -27.38 | 0.95 |
| 2549.00 | 4.01 | 144.35 | 2547.70 | -32.96 | 15.90 | -32.95 | 0.48 |
| 2642.00 | 5.01 | 153.44 | 2640.41 | -39.23 | 19.62 | -39.23 | 1.32 |
| 2735.00 | 4.34 | 150.81 | 2733.10 | -45.94 | 23.15 | -45.93 | 0.76 |
| 2827.00 | 3.94 | 152.34 | 2824.86 | -51.78 | 26.31 | -51.77 | 0.45 |
| 2912.00 | 4.48 | 152.90 | 2909.63 | -57.32 | 29.18 | -57.31 | 0.64 |
| 2997.00 | 4.57 | 153.73 | 2994.37 | -63.31 | 32.19 | -63.30 | 0.13 |
| 3083.00 | 4.12 | 151.53 | 3080.12 | -69.10 | 35.18 | -69.09 | 0.56 |
| 3168.00 | 3.72 | 153.64 | 3164.92 | -74.25 | 37.86 | -74.24 | 0.50 |
| 3254.00 | 3.99 | 158.04 | 3250.73 | -79.53 | 40.22 | -79.52 | 0.47 |
| 3339.00 | 4.29 | 158.55 | 3335.51 | -85.23 | 42.49 | -85.22 | 0.36 |
| 3425.00 | 5.42 | 160.76 | 3421.20 | -92.06 | 45.00 | -92.04 | 1.33 |
| 3510.00 | 6.34 | 168.86 | 3505.75 | -100.45 | 47.23 | -100.44 | 1.46 |
| 3595.00 | 6.27 | 174.44 | 3590.24 | -109.68 | 48.59 | -109.66 | 0.73 |
| 3681.00 | 6.45 | 169.14 | 3675.71 | -119.10 | 49.95 | -119.08 | 0.71 |
| 3766.00 | 6.87 | 159.62 | 3760.14 | -128.55 | 52.62 | -128.53 | 1.39 |
| 3852.00 | 7.07 | 160.62 | 3845.50 | -138.37 | 56.17 | -138.35 | 0.27 |
| 3937.00 | 6.09 | 159.37 | 3929.94 | -147.52 | 59.49 | -147.50 | 1.17 |
| 4023.00 | 6.18 | 158.80 | 4015.45 | -156.11 | 62.78 | -156.08 | 0.13 |
| 4108.00 | 6.84 | 160.14 | 4099.90 | -165.13 | 66.15 | -165.11 | 0.80 |
| 4193.00 | 6.63 | 160.18 | 4184.31 | -174.51 | 69.53 | -174.48 | 0.25 |
| 4279.00 | 5.59 | 159.30 | 4269.82 | -183.10 | 72.70 | -183.07 | 1.21 |
| 4364.00 | 5.80 | 148.46 | 4354.41 | -190.63 | 76.41 | -190.60 | 1.29 |
| 4450.00 | 7.60 | 148.13 | 4439.81 | -199.17 | 81.68 | -199.14 | 2.09 |
| 4536.00 | 7.15 | 151.09 | 4525.10 | -208.68 | 87.27 | -208.65 | 0.68 |
| 4621.00 | 6.83 | 149.33 | 4609.47 | -217.66 | 92.41 | -217.63 | 0.45 |
| 4706.00 | 6.69 | 150.61 | 4693.88 | -226.32 | 97.42 | -226.29 | 0.24 |
| 4792.00 | 6.66 | 151.42 | 4779.30 | -235.06 | 102.26 | -235.03 | 0.11 |
| 4877.00 | 5.85 | 151.52 | 4863.79 | -243.20 | 106.68 | -243.16 | 0.95 |
| 4963.00 | 5.00 | 148.99 | 4949.41 | -250.26 | 110.71 | -250.23 | 1.03 |
| 5048.00 | 4.65 | 147.82 | 5034.10 | -256.36 | 114.45 | -256.32 | 0.43 |
| 5133.00 | 4.36 | 157.52 | 5118.84 | -262.26 | 117.52 | -262.22 | 0.96 |
| 5218.00 | 5.05 | 157.98 | 5203.56 | -268.71 | 120.16 | -268.67 | 0.81 |
| 5304.00 | 4.90 | 150.37 | 5289.23 | -275.41 | 123.39 | -275.37 | 0.79 |
| 5389.00 | 4.14 | 147.91 | 5373.97 | -281.17 | 126.82 | -281.12 | 0.92 |
| 5474.00 | 3.71 | 148.29 | 5458.77 | -286.11 | 129.89 | -286.06 | 0.51 |

| | | | | | | | |
|----------|-------|--------|---------|---------|--------|---------|-------|
| 5560.00 | 1.83 | 138.84 | 5544.66 | -289.51 | 132.26 | -289.46 | 2.24 |
| 5645.00 | 1.17 | 155.48 | 5629.63 | -291.32 | 133.51 | -291.27 | 0.92 |
| 5731.00 | 0.82 | 158.66 | 5715.62 | -292.69 | 134.10 | -292.64 | 0.41 |
| 5901.00 | 1.09 | 106.29 | 5885.60 | -294.28 | 136.10 | -294.23 | 0.52 |
| 5987.00 | 0.98 | 101.92 | 5971.59 | -294.66 | 137.60 | -294.61 | 0.16 |
| 6072.00 | 0.56 | 148.73 | 6056.58 | -295.16 | 138.53 | -295.12 | 0.85 |
| 6158.00 | 0.30 | 143.01 | 6142.58 | -295.70 | 138.88 | -295.65 | 0.31 |
| 6243.00 | 0.14 | 133.55 | 6227.58 | -295.95 | 139.09 | -295.90 | 0.19 |
| 6328.00 | 0.21 | 214.47 | 6312.58 | -296.15 | 139.08 | -296.10 | 0.27 |
| 6414.00 | 0.30 | 172.20 | 6398.58 | -296.51 | 139.02 | -296.46 | 0.24 |
| 6499.00 | 0.42 | 202.06 | 6483.57 | -297.01 | 138.93 | -296.97 | 0.26 |
| 6585.00 | 0.63 | 216.57 | 6569.57 | -297.69 | 138.53 | -297.64 | 0.29 |
| 6663.00 | 3.07 | 336.08 | 6647.53 | -296.12 | 137.43 | -296.07 | 4.39 |
| 6748.00 | 12.13 | 358.59 | 6731.71 | -285.09 | 136.28 | -285.04 | 11.02 |
| 6834.00 | 19.00 | 0.72 | 6814.51 | -262.03 | 136.24 | -261.98 | 8.01 |
| 6919.00 | 25.70 | 359.15 | 6893.08 | -229.73 | 136.14 | -229.68 | 7.91 |
| 7004.00 | 31.88 | 355.77 | 6967.54 | -188.87 | 134.21 | -188.83 | 7.52 |
| 7090.00 | 42.05 | 357.69 | 7036.17 | -137.31 | 131.36 | -137.26 | 11.90 |
| 7175.00 | 50.27 | 355.46 | 7095.00 | -76.18 | 127.62 | -76.13 | 9.85 |
| 7260.00 | 61.21 | 356.09 | 7142.78 | -6.22 | 122.48 | -6.18 | 12.89 |
| 7303.00 | 67.18 | 357.79 | 7161.49 | 32.42 | 120.43 | 32.46 | 14.33 |
| 7346.00 | 71.37 | 358.73 | 7176.70 | 72.61 | 119.21 | 72.65 | 9.96 |
| 7389.00 | 73.50 | 359.79 | 7189.68 | 113.60 | 118.68 | 113.64 | 5.48 |
| 7431.00 | 76.25 | 0.74 | 7200.63 | 154.14 | 118.87 | 154.18 | 6.90 |
| 7474.00 | 78.12 | 1.85 | 7210.17 | 196.05 | 119.82 | 196.09 | 5.02 |
| 7517.00 | 83.42 | 1.49 | 7217.07 | 238.46 | 121.06 | 238.50 | 12.35 |
| 7559.00 | 89.93 | 1.10 | 7219.50 | 280.36 | 122.01 | 280.40 | 15.53 |
| 7590.00 | 92.17 | 0.65 | 7218.93 | 311.35 | 122.48 | 311.39 | 7.37 |
| 7677.00 | 93.46 | 359.65 | 7214.66 | 398.24 | 122.71 | 398.28 | 1.88 |
| 7762.00 | 90.86 | 359.03 | 7211.46 | 483.17 | 121.73 | 483.21 | 3.14 |
| 7848.00 | 90.43 | 358.35 | 7210.49 | 569.14 | 119.76 | 569.18 | 0.94 |
| 7933.00 | 89.91 | 358.01 | 7210.24 | 654.09 | 117.06 | 654.13 | 0.73 |
| 8018.00 | 89.20 | 356.39 | 7210.90 | 738.99 | 112.91 | 739.03 | 2.08 |
| 8104.00 | 89.21 | 358.18 | 7212.09 | 824.88 | 108.84 | 824.92 | 2.08 |
| 8189.00 | 88.85 | 359.95 | 7213.53 | 909.85 | 107.45 | 909.89 | 2.12 |
| 8275.00 | 90.18 | 359.77 | 7214.26 | 995.85 | 107.24 | 995.88 | 1.56 |
| 8360.00 | 89.88 | 358.73 | 7214.21 | 1080.84 | 106.13 | 1080.87 | 1.27 |
| 8445.00 | 90.68 | 359.92 | 7213.80 | 1165.83 | 105.13 | 1165.86 | 1.69 |
| 8530.00 | 90.79 | 359.24 | 7212.71 | 1250.82 | 104.50 | 1250.85 | 0.81 |
| 8616.00 | 89.75 | 0.65 | 7212.30 | 1336.81 | 104.42 | 1336.85 | 2.04 |
| 8701.00 | 89.57 | 359.59 | 7212.81 | 1421.81 | 104.60 | 1421.85 | 1.26 |
| 8787.00 | 89.56 | 1.36 | 7213.46 | 1507.80 | 105.31 | 1507.84 | 2.06 |
| 8872.00 | 89.88 | 0.44 | 7213.87 | 1592.79 | 106.65 | 1592.83 | 1.15 |
| 8957.00 | 90.35 | 0.30 | 7213.70 | 1677.79 | 107.20 | 1677.82 | 0.58 |
| 9043.00 | 89.94 | 0.56 | 7213.49 | 1763.78 | 107.84 | 1763.82 | 0.56 |
| 9128.00 | 89.57 | 0.86 | 7213.85 | 1848.78 | 108.89 | 1848.81 | 0.56 |
| 9214.00 | 89.14 | 0.99 | 7214.82 | 1934.76 | 110.28 | 1934.80 | 0.52 |
| 9299.00 | 90.74 | 0.19 | 7214.91 | 2019.75 | 111.16 | 2019.79 | 2.10 |
| 9384.00 | 90.37 | 359.81 | 7214.08 | 2104.75 | 111.16 | 2104.79 | 0.62 |
| 9470.00 | 89.81 | 358.90 | 7213.95 | 2190.74 | 110.19 | 2190.78 | 1.24 |
| 9555.00 | 88.77 | 357.99 | 7215.00 | 2275.70 | 107.88 | 2275.74 | 1.63 |
| 9640.00 | 89.01 | 359.46 | 7216.65 | 2360.66 | 105.99 | 2360.70 | 1.75 |
| 9726.00 | 90.62 | 359.91 | 7216.93 | 2446.66 | 105.52 | 2446.69 | 1.94 |
| 9811.00 | 89.63 | 358.85 | 7216.74 | 2531.65 | 104.60 | 2531.69 | 1.71 |
| 9896.00 | 90.26 | 359.77 | 7216.82 | 2616.64 | 103.58 | 2616.68 | 1.31 |
| 9982.00 | 89.51 | 359.29 | 7217.00 | 2702.64 | 102.87 | 2702.67 | 1.04 |
| 10067.00 | 89.82 | 359.64 | 7217.49 | 2787.63 | 102.08 | 2787.67 | 0.55 |
| 10152.00 | 90.06 | 358.66 | 7217.58 | 2872.62 | 100.82 | 2872.66 | 1.19 |
| 10238.00 | 88.89 | 359.18 | 7218.37 | 2958.60 | 99.20 | 2958.64 | 1.49 |
| 10323.00 | 89.63 | 1.29 | 7219.47 | 3043.59 | 99.54 | 3043.62 | 2.63 |
| 10409.00 | 90.43 | 1.58 | 7219.42 | 3129.56 | 101.70 | 3129.60 | 0.99 |

| | | | | | | | |
|----------|-------|--------|---------|---------|--------|---------|------|
| 10485.00 | 90.55 | 1.29 | 7218.77 | 3205.53 | 103.60 | 3205.57 | 0.41 |
| 10570.00 | 90.06 | 1.60 | 7218.32 | 3290.50 | 105.74 | 3290.54 | 0.68 |
| 10656.00 | 90.43 | 0.78 | 7217.95 | 3376.48 | 107.53 | 3376.52 | 1.05 |
| 10741.00 | 89.94 | 0.29 | 7217.68 | 3461.48 | 108.32 | 3461.52 | 0.82 |
| 10826.00 | 89.20 | 359.49 | 7218.32 | 3546.48 | 108.16 | 3546.51 | 1.28 |
| 10912.00 | 88.40 | 358.33 | 7220.12 | 3632.44 | 106.53 | 3632.48 | 1.64 |
| 10997.00 | 89.82 | 359.07 | 7221.44 | 3717.40 | 104.60 | 3717.44 | 1.88 |
| 11082.00 | 90.25 | 359.74 | 7221.38 | 3802.40 | 103.71 | 3802.44 | 0.94 |
| 11168.00 | 88.33 | 358.71 | 7222.45 | 3888.38 | 102.55 | 3888.42 | 2.53 |
| 11253.00 | 87.66 | 357.84 | 7225.42 | 3973.29 | 99.99 | 3973.32 | 1.29 |
| 11339.00 | 88.40 | 357.89 | 7228.38 | 4059.18 | 96.79 | 4059.21 | 0.86 |
| 11412.00 | 89.94 | 359.03 | 7229.44 | 4132.14 | 94.83 | 4132.17 | 2.62 |
| 11497.00 | 90.31 | 359.99 | 7229.25 | 4217.13 | 94.10 | 4217.17 | 1.21 |
| 11582.00 | 92.64 | 0.83 | 7227.06 | 4302.10 | 94.71 | 4302.13 | 2.91 |
| 11668.00 | 92.56 | 1.01 | 7223.16 | 4388.00 | 96.09 | 4388.03 | 0.23 |
| 11753.00 | 93.46 | 2.31 | 7218.70 | 4472.84 | 98.55 | 4472.88 | 1.86 |
| 11838.00 | 93.64 | 3.25 | 7213.44 | 4557.58 | 102.66 | 4557.61 | 1.12 |
| 11924.00 | 90.80 | 2.30 | 7210.11 | 4643.40 | 106.82 | 4643.44 | 3.48 |
| 12009.00 | 88.83 | 1.67 | 7210.38 | 4728.35 | 109.77 | 4728.39 | 2.43 |
| 12095.00 | 89.88 | 1.80 | 7211.35 | 4814.30 | 112.37 | 4814.34 | 1.23 |
| 12180.00 | 87.28 | 357.72 | 7213.46 | 4899.25 | 112.02 | 4899.29 | 5.69 |
| 12264.00 | 88.15 | 354.81 | 7216.81 | 4982.99 | 106.55 | 4983.03 | 3.61 |
| 12349.00 | 88.95 | 354.66 | 7218.96 | 5067.61 | 98.75 | 5067.64 | 0.96 |
| 12435.00 | 87.84 | 353.94 | 7221.36 | 5153.15 | 90.22 | 5153.18 | 1.54 |
| 12520.00 | 87.59 | 354.72 | 7224.75 | 5237.66 | 81.82 | 5237.69 | 0.96 |
| 12605.00 | 90.68 | 356.80 | 7226.04 | 5322.41 | 75.54 | 5322.43 | 4.38 |
| 12691.00 | 91.42 | 357.18 | 7224.46 | 5408.27 | 71.03 | 5408.30 | 0.97 |
| 12776.00 | 92.04 | 358.97 | 7221.89 | 5493.18 | 68.17 | 5493.21 | 2.23 |
| 12861.00 | 91.30 | 0.40 | 7219.42 | 5578.14 | 67.71 | 5578.16 | 1.89 |
| 12947.00 | 89.82 | 0.98 | 7218.58 | 5664.13 | 68.74 | 5664.15 | 1.85 |
| 13032.00 | 89.51 | 1.04 | 7219.07 | 5749.11 | 70.24 | 5749.14 | 0.37 |
| 13118.00 | 88.40 | 1.85 | 7220.64 | 5835.07 | 72.41 | 5835.10 | 1.60 |
| 13203.00 | 89.32 | 1.60 | 7222.33 | 5920.01 | 74.97 | 5920.04 | 1.12 |
| 13289.00 | 90.18 | 1.89 | 7222.71 | 6005.97 | 77.58 | 6006.00 | 1.06 |
| 13374.00 | 88.71 | 1.56 | 7223.53 | 6090.93 | 80.14 | 6090.95 | 1.77 |
| 13460.00 | 89.12 | 1.71 | 7225.16 | 6176.88 | 82.60 | 6176.91 | 0.51 |
| 13545.00 | 90.18 | 1.36 | 7225.68 | 6261.84 | 84.87 | 6261.87 | 1.31 |
| 13631.00 | 90.00 | 1.20 | 7225.54 | 6347.82 | 86.79 | 6347.85 | 0.28 |
| 13716.00 | 90.68 | 0.92 | 7225.04 | 6432.80 | 88.37 | 6432.84 | 0.87 |
| 13801.00 | 89.44 | 0.98 | 7224.95 | 6517.79 | 89.78 | 6517.82 | 1.46 |
| 13887.00 | 90.06 | 1.40 | 7225.33 | 6603.77 | 91.56 | 6603.80 | 0.87 |
| 13972.00 | 90.86 | 1.89 | 7224.64 | 6688.73 | 94.00 | 6688.77 | 1.10 |
| 14058.00 | 90.43 | 2.10 | 7223.68 | 6774.67 | 97.00 | 6774.71 | 0.56 |
| 14143.00 | 90.00 | 359.80 | 7223.36 | 6859.66 | 98.41 | 6859.69 | 2.75 |
| 14228.00 | 88.94 | 359.07 | 7224.14 | 6944.65 | 97.57 | 6944.68 | 1.51 |
| 14314.00 | 90.43 | 1.34 | 7224.62 | 7030.64 | 97.87 | 7030.67 | 3.16 |
| 14398.00 | 90.74 | 1.56 | 7223.76 | 7114.61 | 100.00 | 7114.64 | 0.45 |
| 14484.00 | 90.53 | 1.36 | 7222.81 | 7200.57 | 102.19 | 7200.61 | 0.34 |
| 14569.00 | 89.38 | 359.03 | 7222.87 | 7285.56 | 102.48 | 7285.60 | 3.06 |
| 14654.00 | 89.45 | 0.47 | 7223.74 | 7370.56 | 102.11 | 7370.59 | 1.70 |
| 14740.00 | 90.00 | 2.89 | 7224.15 | 7456.51 | 104.63 | 7456.55 | 2.89 |
| 14825.00 | 88.03 | 1.03 | 7225.61 | 7541.44 | 107.54 | 7541.48 | 3.19 |
| 14911.00 | 88.64 | 1.95 | 7228.11 | 7627.38 | 109.77 | 7627.41 | 1.28 |
| 14996.00 | 88.03 | 1.58 | 7230.58 | 7712.30 | 112.39 | 7712.34 | 0.84 |
| 15081.00 | 87.53 | 2.01 | 7233.88 | 7797.19 | 115.05 | 7797.23 | 0.78 |
| 15167.00 | 87.47 | 0.93 | 7237.63 | 7883.08 | 117.25 | 7883.12 | 1.26 |
| 15252.00 | 89.20 | 1.69 | 7240.10 | 7968.02 | 119.20 | 7968.06 | 2.22 |
| 15338.00 | 88.71 | 0.53 | 7241.66 | 8053.99 | 120.86 | 8054.03 | 1.46 |
| 15423.00 | 89.63 | 0.53 | 7242.90 | 8138.97 | 121.65 | 8139.02 | 1.08 |
| 15508.00 | 91.11 | 0.79 | 7242.35 | 8223.96 | 122.63 | 8224.01 | 1.77 |
| 15593.00 | 91.23 | 1.38 | 7240.61 | 8308.93 | 124.24 | 8308.97 | 0.71 |

| | | | | | | | |
|----------|-------|--------|---------|---------|--------|---------|------|
| 15678.00 | 91.23 | 1.72 | 7238.79 | 8393.88 | 126.54 | 8393.92 | 0.40 |
| 15764.00 | 91.36 | 1.88 | 7236.84 | 8479.82 | 129.24 | 8479.86 | 0.24 |
| 15849.00 | 90.88 | 1.36 | 7235.18 | 8564.76 | 131.64 | 8564.81 | 0.83 |
| 15935.00 | 90.06 | 0.21 | 7234.48 | 8650.75 | 132.82 | 8650.80 | 1.64 |
| 16020.00 | 89.26 | 0.14 | 7234.98 | 8735.75 | 133.08 | 8735.79 | 0.94 |
| 16105.00 | 89.94 | 0.36 | 7235.57 | 8820.75 | 133.45 | 8820.79 | 0.84 |
| 16191.00 | 90.00 | 0.65 | 7235.62 | 8906.74 | 134.21 | 8906.79 | 0.34 |
| 16276.00 | 90.35 | 0.48 | 7235.36 | 8991.74 | 135.04 | 8991.78 | 0.46 |
| 16362.00 | 91.06 | 0.65 | 7234.30 | 9077.73 | 135.89 | 9077.77 | 0.85 |
| 16447.00 | 90.71 | 0.65 | 7232.99 | 9162.71 | 136.86 | 9162.76 | 0.41 |
| 16533.00 | 90.37 | 0.48 | 7232.18 | 9248.70 | 137.70 | 9248.75 | 0.44 |
| 16618.00 | 89.32 | 359.50 | 7232.41 | 9333.70 | 137.69 | 9333.75 | 1.69 |
| 16704.00 | 89.94 | 0.78 | 7232.96 | 9419.70 | 137.90 | 9419.74 | 1.65 |
| 16789.00 | 90.93 | 0.49 | 7232.32 | 9504.69 | 138.84 | 9504.73 | 1.21 |
| 16875.00 | 90.93 | 0.57 | 7230.92 | 9590.67 | 139.64 | 9590.72 | 0.09 |
| 16960.00 | 90.37 | 0.33 | 7229.96 | 9675.66 | 140.30 | 9675.71 | 0.72 |
| 17075.00 | 89.63 | 359.99 | 7229.96 | 9790.66 | 140.63 | 9790.71 | 0.71 |
| 17129.00 | 89.63 | 359.99 | 7230.31 | 9844.66 | 140.62 | 9844.71 | 0.00 |

Weatherford surveys from 1902 ft MD to 17075 ft MD.

TD well at 17129 ft MD.

The total correction is 8.41 deg relative to True North.



Weatherford®

Final Print

| | | | |
|---------|---------------------------------|--------|-------------|
| COMPANY | <u>Anadarko Petroleum Corp.</u> | | |
| WELL | <u>Sparboe 27C-26 HZ</u> | | |
| FIELD | <u>Wattenburg</u> | | |
| RIG | <u>Xtreme 23</u> | | |
| LOC. | <u>Colorado</u> | COUNTY | <u>Weld</u> |