



# Weatherford®

**6 3/4 in. & 4 3/4 in. WeatherfordM/LWD™**  
**Azimuthal Density Image**  
**5 in. MEASURED DEPTH**  
**RECORDED DATA**  
**FINAL PRINT**

|          |                       |
|----------|-----------------------|
| Company: | <u>Anadarko</u>       |
| Well:    | <u>Cannon 37C-3HZ</u> |
| Field:   | <u>Wattenberg</u>     |
| Rig:     | <u>H&amp;P 307</u>    |
| County:  | <u>Weld</u>           |

|  |                                       |
|--|---------------------------------------|
| Location   |                                       |
| Latitude:  | 40.17378° N      X = 3,239,877.08 ft  |
| Longitude:                                       | 104.64157° W      Y = 1,307,311.69 ft |
| Other Services:      Directional and Temperature |                                       |

|         |                          |
|---------|--------------------------|
| COMPANY | <b>Anadarko</b>          |
| WELL    | <b>Cannon 37C-3HZ</b>    |
| FIELD   | <b>Wattenberg</b>        |
| RIG     | <b>H&amp;P 307</b>       |
| COUNTY  | <b>Weld</b>              |
| STATE   | <b>Colorado</b>          |
| API #   | <b>05-123-35790-0000</b> |

|                    |                                     |  |                |
|--------------------|-------------------------------------|--|----------------|
| Permanent Datum:   | <u>Mean Sea Level</u>               | Elev: <u>4867.0 ft</u> above perm. datum | K.B. Top Drive |
| Log Measured From: | <u>Drill Floor</u>                  | Total Depth: <u>11477 ft</u>             | G.L. 4840.0 ft |
| Depth Reference:   | <u>Drillers Tally</u>               | Runs: <u>3</u>                           | D.F. 4865.0 ft |
| Depth Logged:      | <u>6500 ft</u> to <u>11477 ft</u>   | Spud Date: <u>4-Sep-12</u>               | W.D. Land      |
| Date Logged:       | <u>6-Sep-12</u> to <u>11-Sep-12</u> |  |                |

| Borehole Record |         | Casing Record |           |            |         |         |
|-----------------|---------|---------------|-----------|------------|---------|---------|
| Hole Size       | From    | To            | Size      | Weight     | From    | To      |
| 13.500 in.      | 0 ft    | 825 ft        | 9.625 in. | 36.0 lb/ft | Surface | 825 ft  |
| 8.750 in.       | 825 ft  | 7502 ft       | 7.000 in. | 26.0 lb/ft | Surface | 7502 ft |
| 6.125 in.       | 7502 ft | 11477 ft      |           |            |         |         |
|                 |         |               |           |            |         |         |
|                 |         |               |           |            |         |         |

| Borehole Deviation Record |           | Mud Record |      |                  |         |          |
|---------------------------|-----------|------------|------|------------------|---------|----------|
| Hole Size                 | Min. Inc. | Max. Inc.  | Type | Weight           | From    | To       |
| 8.750 in.                 | 0.20°     | 82.63°     | WBM  | 8.40 - 9.50 ppg  | 825 ft  | 7502 ft  |
| 6.125 in.                 | 86.05°    | 93.57°     | WBM  | 9.50 - 10.00 ppg | 7502 ft | 11477 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             |  |  |  |  |
|---------------------|----------------------|--------------|---------------|--|--|--|--|
| Bit Size            | in. 8.750            | 8.750        | 6.125         |  |  |  |  |
| Bit Type            | PDC                  | PDC          | PDC           |  |  |  |  |
| Bit TFA             | sq.in. 0.648         | 0.648        | 0.648         |  |  |  |  |
| Bit Start Depth     | ft 825               | 6517         | 7502          |  |  |  |  |
| Bit End Depth       | ft 6517              | 7502         | 6262          |  |  |  |  |
| Top Log Interval    | ft No Logging        | 6500         | 7459          |  |  |  |  |
| Bottom Log Interval | ft No Logging        | 7502         | 11477         |  |  |  |  |
| Begin Log Time      | hrs No Logging       | 11:08        | 4:37          |  |  |  |  |
| Begin Log Date      | DD-MMM-YY No Logging | 6-Sep-12     | 9-Sep-12      |  |  |  |  |
| End Log Time        | hrs No Logging       | 8:22         | 14:34         |  |  |  |  |
| End Log Date        | DD-MMM-YY No Logging | 7-Sep-12     | 11-Sep-12     |  |  |  |  |
| Drill or Wipe       | Drill                | Drill        | Drill         |  |  |  |  |
| Flow Rate           | gal/min 507          | 595          | 300           |  |  |  |  |
| Max AV / CV @ MWD   | ft/min 401 / 166     | 487 / 106    | 492 / 370     |  |  |  |  |
| Min Inc @ Depth     | deg @ ft 0.20 @ 4157 | 0.22 @ 4061  | 86.05 @ 11425 |  |  |  |  |
| Max Inc @ Depth     | deg @ ft 6.99 @ 2545 | 82.63 @ 7444 | 93.57 @ 10693 |  |  |  |  |

| MUD DATA                  |                   |            |             |  |  |  |  |
|---------------------------|-------------------|------------|-------------|--|--|--|--|
| Depth                     | ft 6517           | 7502       | 11477       |  |  |  |  |
| Fluid Type                | WBM               | WBM        | WBM         |  |  |  |  |
| Mud Weight                | ppg 8.60          | 9.50       | 10.00       |  |  |  |  |
| Plastic Viscosity         | cP 2              | 13         | 14          |  |  |  |  |
| Solids / Sand             | % 1.9 / 0.2       | 6.2 / 0.5  | 8.7 / 0.6   |  |  |  |  |
| NaCl Equiv. Chlorides     | ppm 1320          | 1320       | 1320        |  |  |  |  |
| pH                        | 8.2               | 8.7        | 9.2         |  |  |  |  |
| Oil:Water Ratio           | % Vol 2.2 : 97.8  | 7.5 : 92.5 | 11.0 : 89.0 |  |  |  |  |
| Rm @ Temperature          | ohm-m @ deg F N/A | N/A        | 2.20 @ 80   |  |  |  |  |
| Rmc @ Temperature         | ohm-m @ deg F N/A | N/A        | 3.50 @ 78   |  |  |  |  |
| Rmf @ Temperature         | ohm-m @ deg F N/A | N/A        | 1.99 @ 78   |  |  |  |  |
| KCl                       | % Vol 0           | 0          | 0           |  |  |  |  |
| Client Representative     | C. Jones          | C. Jones   | C. Jones    |  |  |  |  |
| WeatherfordM/LWD Engineer | R. Komrs          | R. Komrs   | L. Howse    |  |  |  |  |

## EQUIPMENT SUMMARY

| <b>MWD/LWD Run Number</b>                        | <b>1</b>        | <b>2</b>        | <b>3</b>           |            |  |
|--|-----------------|-----------------|--------------------|------------|--|
| PP Serial Number                                 | CP20595YHRDP-01 | CP20595YHRDP-01 | N/A                |            |  |
| HEL Serial Number                                | N/A             | N/A             | NW21491PDSS4.75    |            |  |
| MFR Serial Number                                | N/A             | N/A             | NW21690RBBK4.75-M2 |            |  |
| IDS Serial Number                                | N/A             | N/A             | NW21691BI4.75      |            |  |
| SAGR Serial Number                               | N/A             | N/A             | NW21692JB4.75      |            |  |
| NDT Serial Number                                | N/A             | N/A             | NW21930NZBB4.75    |            |  |
| Density Source Serial Number                     | N/A             | N/A             | 06955B             |            |  |
| <b>Sensor to Bit Offsets / Acquisition Rates</b> |                 |                 |                    |            |  |
| Directional                                      | ft / sec        | 57.86 / RT      | 57.86 / RT         | 49.34 / RT |  |
| Gamma Ray  | ft / sec        | 43.65 / RT      | 43.65 / RT         | 39.23 / 5  |  |
| Resistivity                                      | ft / sec        | N/A             | N/A                | 75.19 / 5  |  |
| Density  | ft / sec        | N/A             | N/A                | 102.09 / 5 |  |
| <b>Other Information</b>                         |                 |                 |                    |            |  |
| Total BHA Length                                 | ft              | 96.32           | 96.32              | 162.73     |  |
| BHA Assembly Type                                |                 | Steerable       | Steerable          | Steerable  |  |
| Stabilizer Location                              | ft              | N/A             | N/A                | 29.26      |  |
| Stabilizer Location                              | ft              | N/A             | N/A                | 100.04     |  |
| Stabilizer Location                              | ft              | N/A             | N/A                | 162.73     |  |
| Run Circulating Time                             | hr              | 25.85           | 23.75              | 62.86      |  |
| Run Drilling Time                                | hr              | 16.39           | 12.90              | 26.04      |  |

## MUD SUMMARY

| Date and Time      | Run | Bit Depth | Mud Weight | % K | Rm @ Temp | Rmf @ Temp | Rmc @ Temp | BHCT  |
|--------------------|-----|-----------|------------|-----|-----------|------------|------------|-------|
| 5 Sept 12 @ 23:59  | 01  | 6517 ft   | 8.60 ppg   | 0   | N/A       | N/A        | N/A        | 94 F  |
| 7 Sept 12 @ 08:22  | 02  | 7502 ft   | 9.50 ppg   | 0   | N/A       | N/A        | N/A        | 150 F |
| 11 Sept 12 @ 14:34 | 03  | 11477 ft  | 10.00 ppg  | 0   | 2.20 @ 80 | 1.99 @ 78  | 3.50 @ 78  | 231 F |

## M/LWD RUN REMARKS

**Run Number: 1 :: REAL TIME LOG**

**WFT Services Provided:**

Real Time Logging: Temperature.

Directional Services: On demand Inclination and Azimuth.

**Run Number: 2 :: REAL TIME LOG**

**WFT Services Provided:**

Real Time Logging: Gamma Ray and Temperature.

Directional Services: On demand Inclination and Azimuth.

**Borehole and Environmental Correction:**

Collar O.D.: 6.75 in.

**Gamma Ray:** Collar O.D., collar I.D. and K1 factor.

Collar I.D.: 3.25

K1 Factor: 3.012

**Run Number: 3 :: RECORDED DATA LOG**

**WFT Services Provided:**

Recorded and Real Time Logging: Gamma Ray, Deep, Medium and Shallow Resistivity, Bulk Density 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: 10.00 ppg

**Resistivities:** Corrected for borehole temperature, hole size, drilling fluid resistivity and dielectric correction.

Borehole Temperature: 231° F

Drilling Fluid Resistivity: 2.20 ohm-m

**Bulk Density:** No corrections.

KCl Concentration: 0%

## M/LWD LOG COMMENTS

**Comment No. 1-1**

REAL TIME DATA LOG

Start of MWD Drilling Run 01

Weatherford International provided 6 3/4 in. Directional and Temperature for Run 01.

Run 01 started formation drilling September 4, 2012 at 17:10 at 825 MD / 825 TVD. Weatherford International logged the 8.750 in. borehole.

The WBM at the start of logging was 8.40 ppg.

**Comment No. 1-2**

End of MWD Drilling Run 01

Run 02 ended drilling formation September 5, 2012 at 23:59 at 6517 MD / 6504 TVD.

The WBM at the end of drilling was 8.60 ppg.

**Comment No. 2-1**

REAL TIME DATA LOG

Start of LWD Drilling Run 02

Weatherford International provided 6 3/4 in. Directional, Gamma Ray, and Temperature for Run 02.

Run 02 started formation drilling September 6, 2012 at 11:08 at 6517 MD / 6504 TVD. Weatherford International logged the 8.750 in. borehole.

The WBM at the start of drilling was 9.50 ppg.

**Comment No. 2-2**

End of LWD Drilling Run 02

Run 02 ended drilling formation September 7, 2012 at 08:22 at 7502 MD / 7156 TVD.

The WBM at the end of drilling was 9.50 ppg.

**Comment No. 3-1**

RECORDED DATA LOG

Start of LWD Drilling Run 03

Weatherford International provided 4 3/4 in. Directional, Resistivity, Spectral Gamma Ray, Bulk Density and Temperature for Run 03.

Run 03 started formation drilling September 09, 2012 at 4:37 at 7502 MD / 7156 TVD. Weatherford International logged the 6.125 in. borehole.

The WBM at the start of drilling was 10.70 ppg.

**Comment No. 3-2**

End of LWD Drilling Run 03

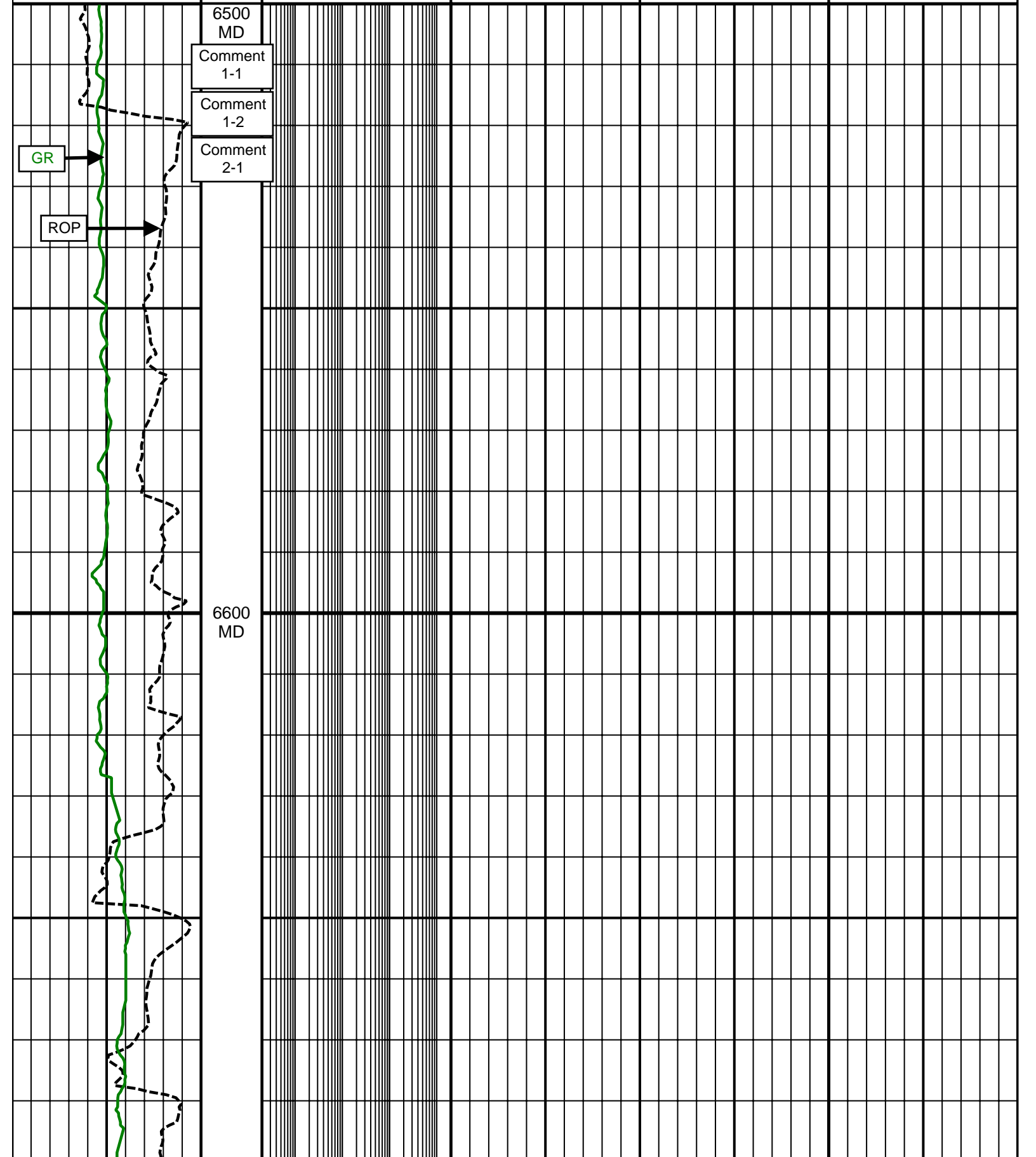
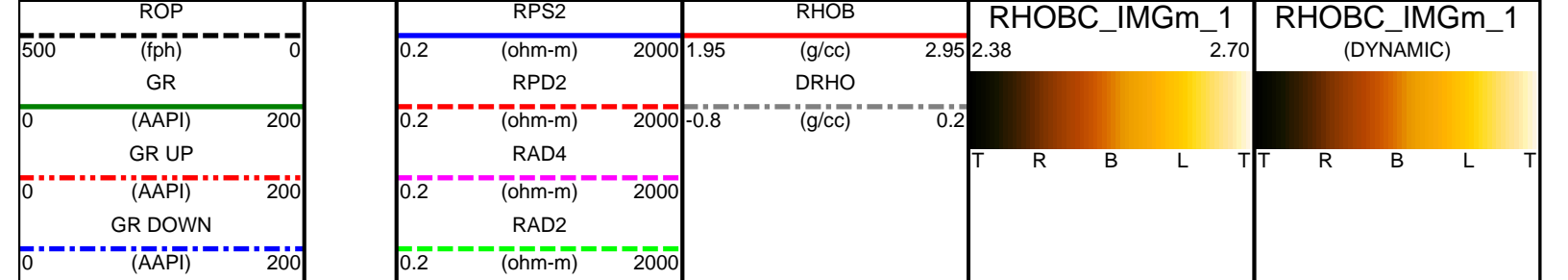
Run 03 ended drilling formation September 11, 2012 at 14:34 at 11477 MD / 7124 TVD.

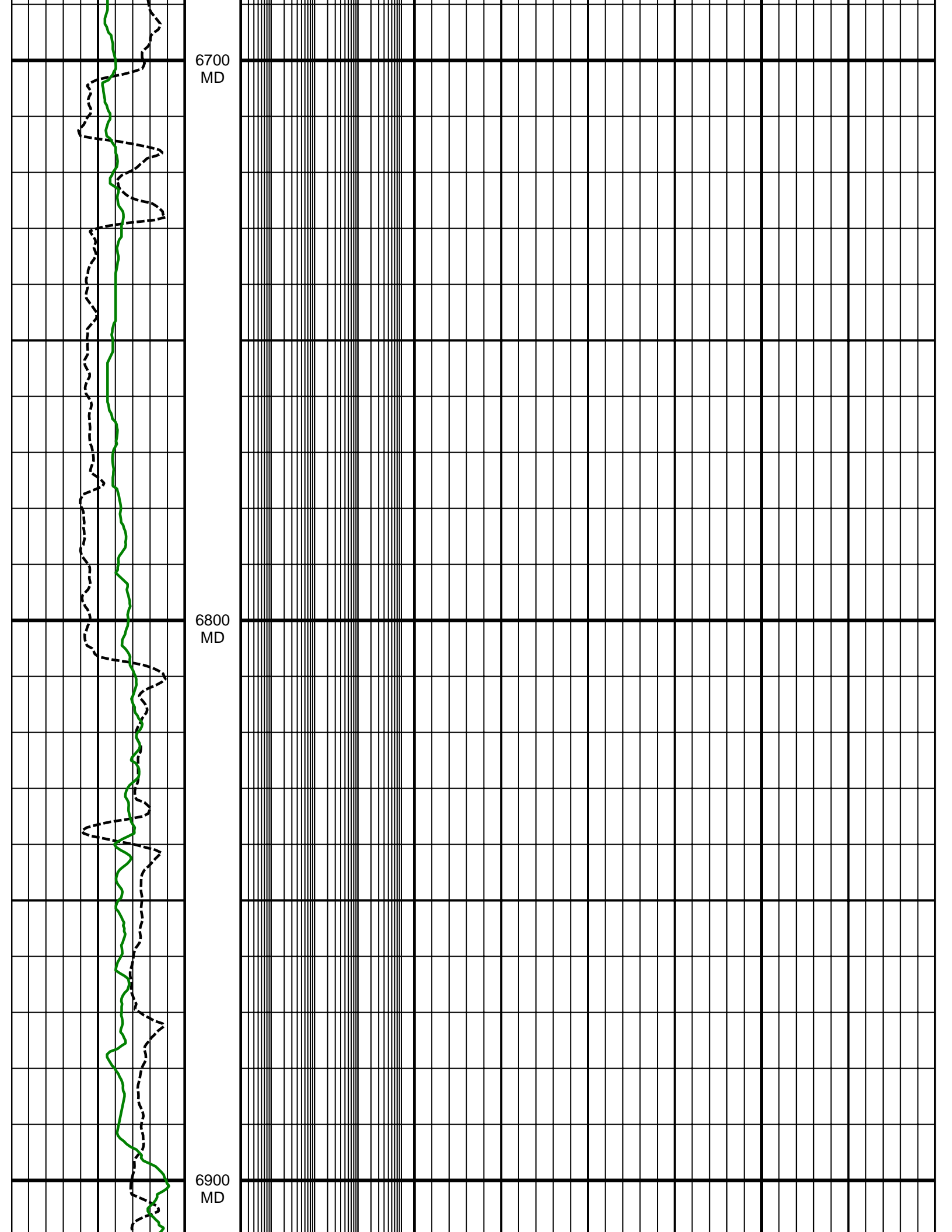
The WBM at the end of drilling was 10.00 ppg.

## CURVE SPECIFICATIONS

| CURVE TYPE                   | MNEMONIC | UNITS | COMMENTS  | CORRECTIONS           |
|------------------------------|----------|-------|---|-----------------------|
| Rate of Penetration          | ROP      | fph   | Rate of Penetration<br>3.0 ft window 0.5 ft Exponential Smoothing                 | None                  |
| Gamma Ray                    | GR       | AAPI  | Gamma Ray<br>3.0 ft window 0.5 ft Exponential Smoothing                           | See M/LWD Run Remarks |
| Gamma Ray Up                 | GR       | AAPI  | Gamma Ray Up<br>3.0 ft window 0.5 ft Exponential Smoothing                        |                       |
| Gamma Ray Down               | GR       | AAPI  | Gamma Ray Down<br>3.0 ft window 0.5 ft Exponential Smoothing                      |                       |
| Deep Phase Resistivity       | RPD2     | ohm-m | 2MHz Deep Phase Resistivity<br>3.0 ft window 0.5 ft Exponential Smoothing         |                       |
| Deep Attenuation Resistivity | RAD2     | ohm-m | 2MHz Deep Attenuation Resistivity<br>3.0 ft window 0.5 ft Exponential Smoothing   |                       |
| Deep Attenuation Resistivity | RAD4     | ohm-m | 400kHz Deep Attenuation Resistivity<br>3.0 ft window 0.5 ft Exponential Smoothing |                       |
| Shallow Phase Resistivity    | RPS2     | ohm-m | 2MHz Shallow Phase Resistivity<br>3.0 ft window 0.5 ft Exponential Smoothing      |                       |
| Bulk Density                 | RHOB     | g/cc  | Bulk Density<br>3.0 ft window 0.5 ft Exponential Smoothing                        | None                  |
| Delta RHO                    | DRHO     | g/cc  | Spine and Rib Correction<br>3.0 ft window 0.5 ft Exponential Smoothing            |                       |
| Density Static Image         | STATIC   | g/cc  | Density Static Image<br>3.0 ft window 0.5 ft Exponential Smoothing                |                       |
| Density Dynamic Image        | DYNAMIC  | g/cc  | Density Dynamic Image<br>3.0 ft window 0.5 ft Exponential Smoothing               |                       |

**5 Inch - Measured Depth (Image Log)**

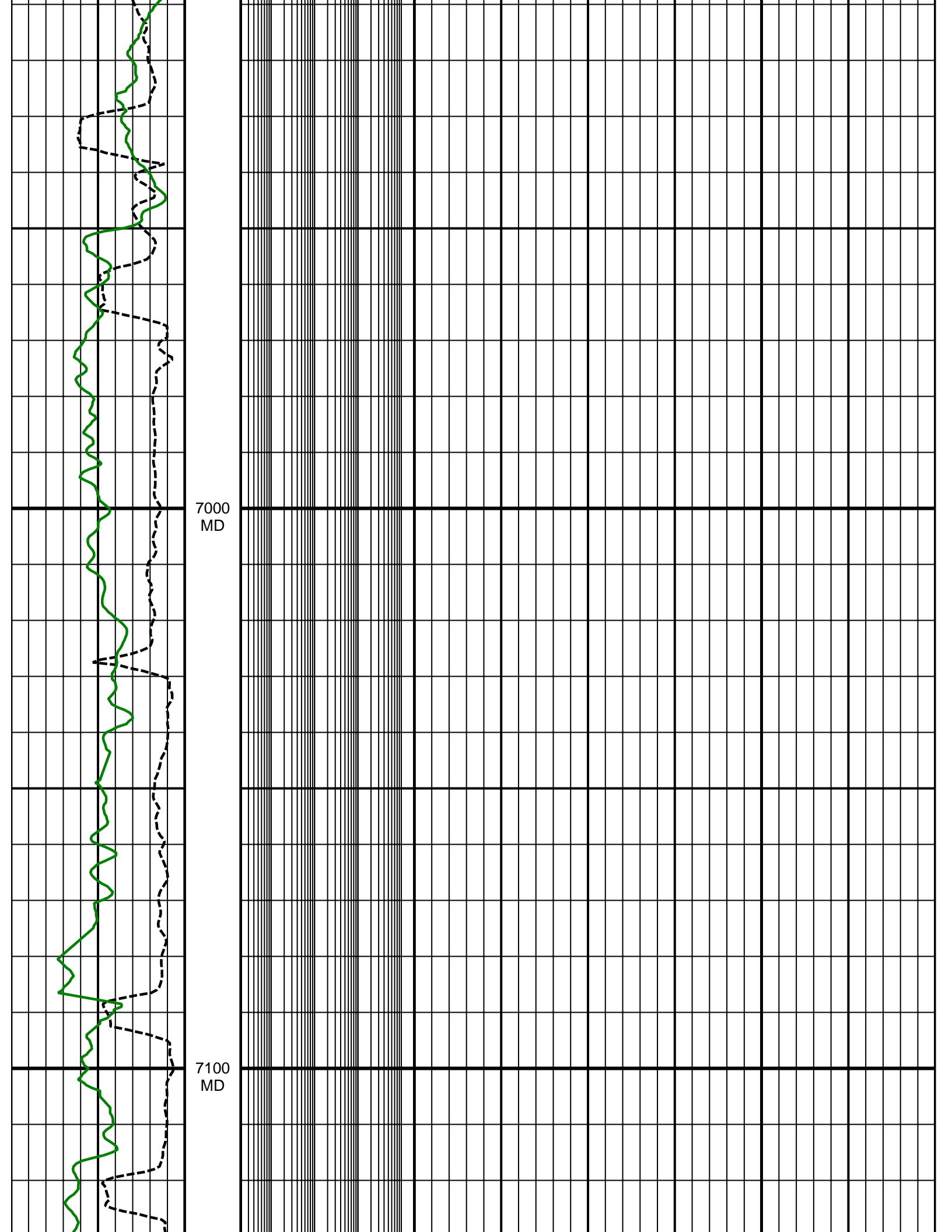


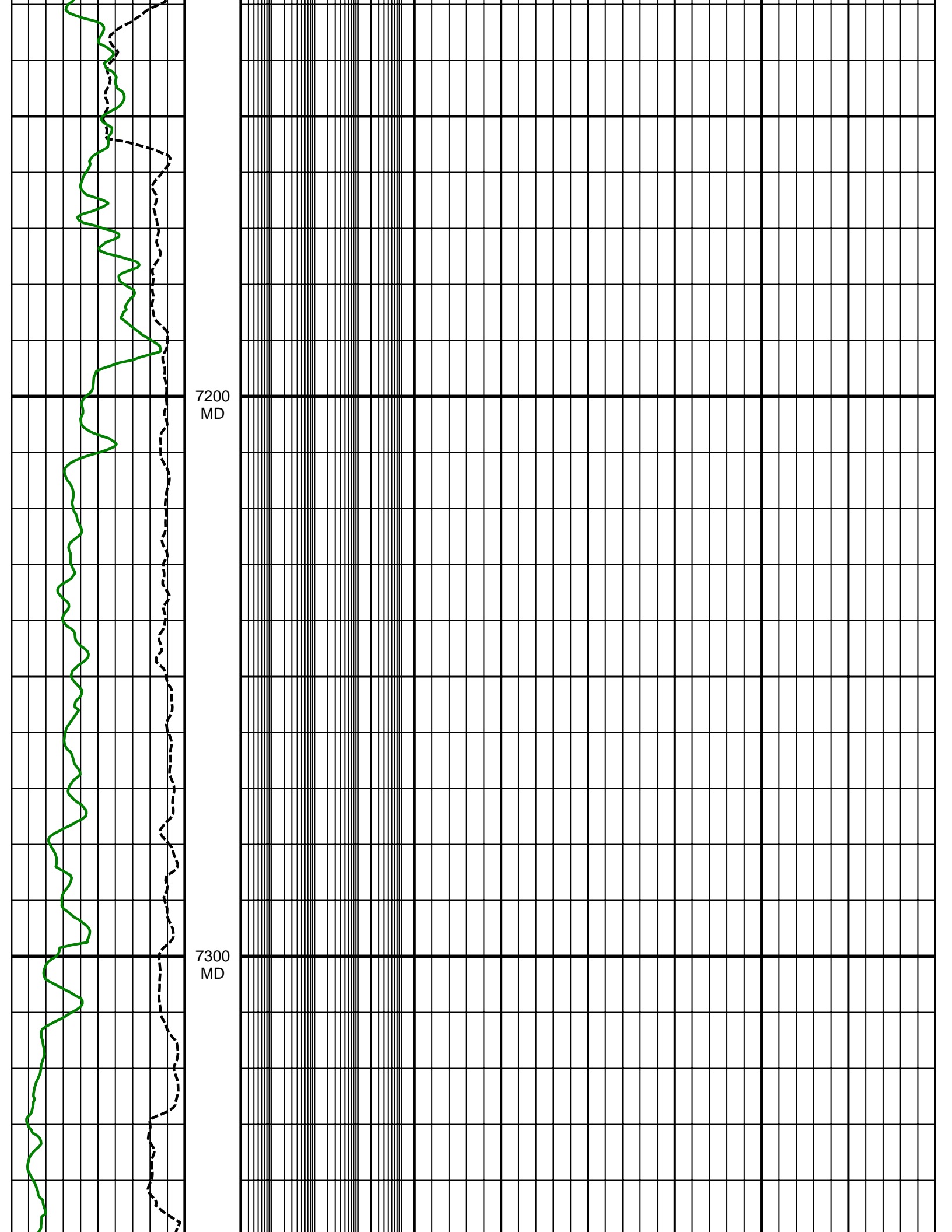


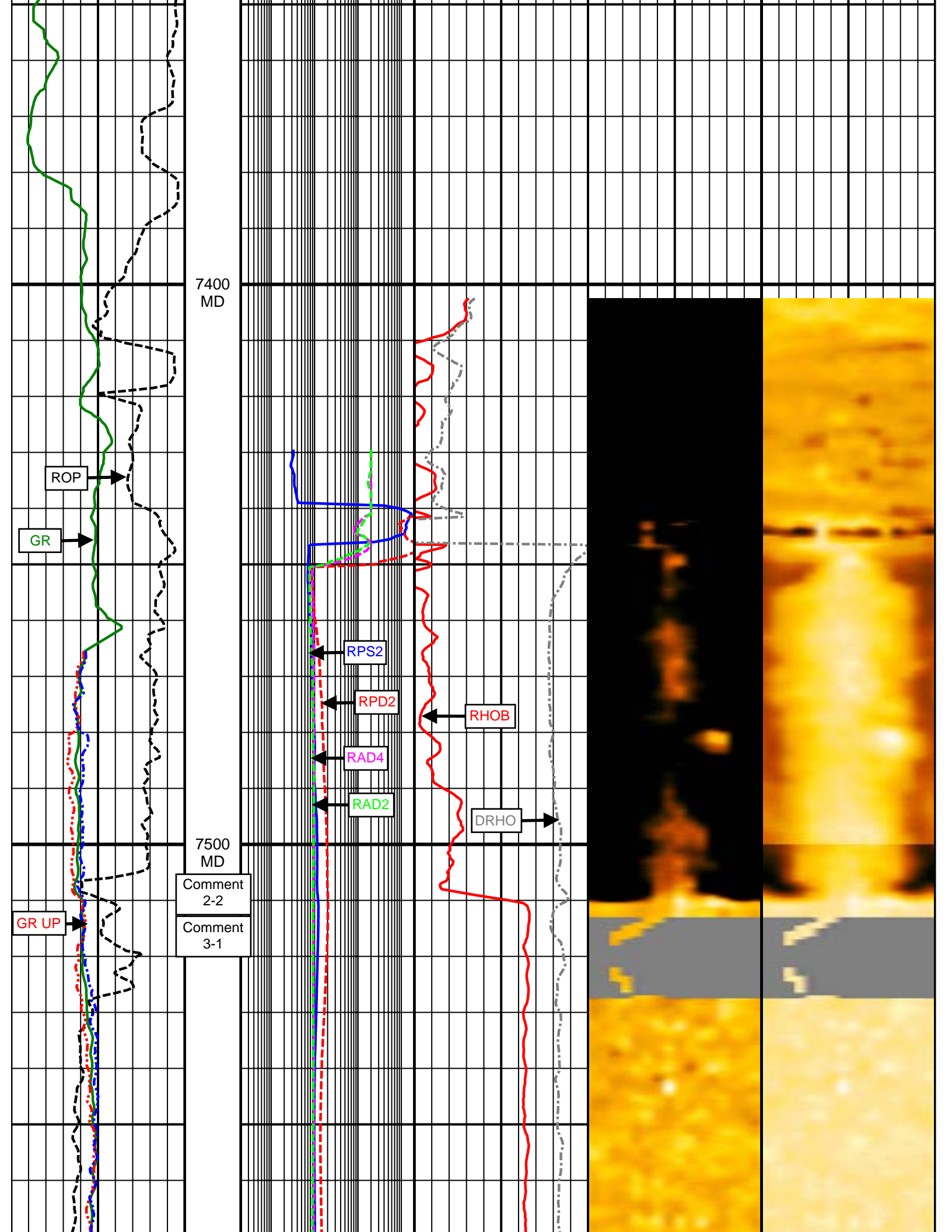
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MD

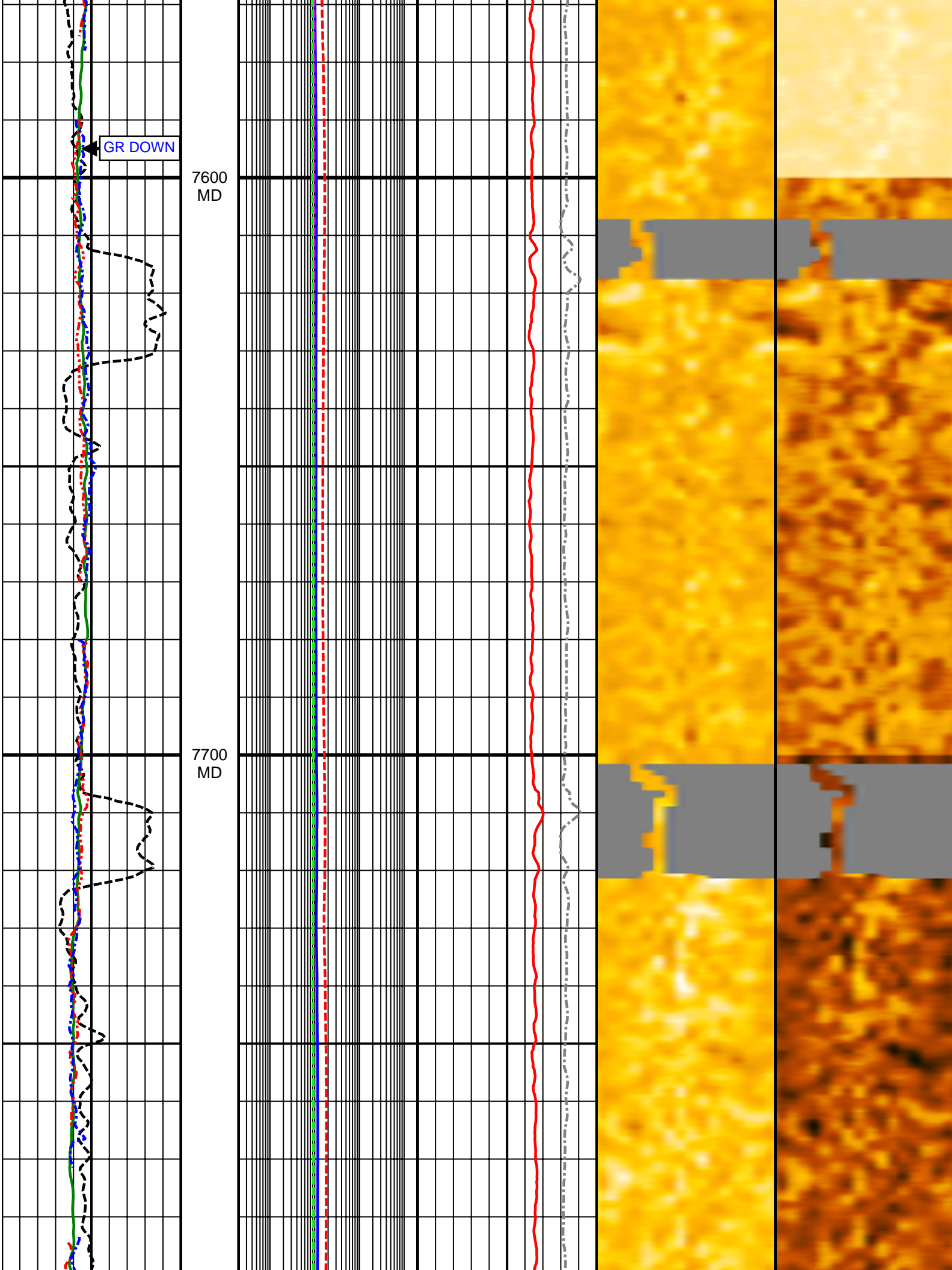
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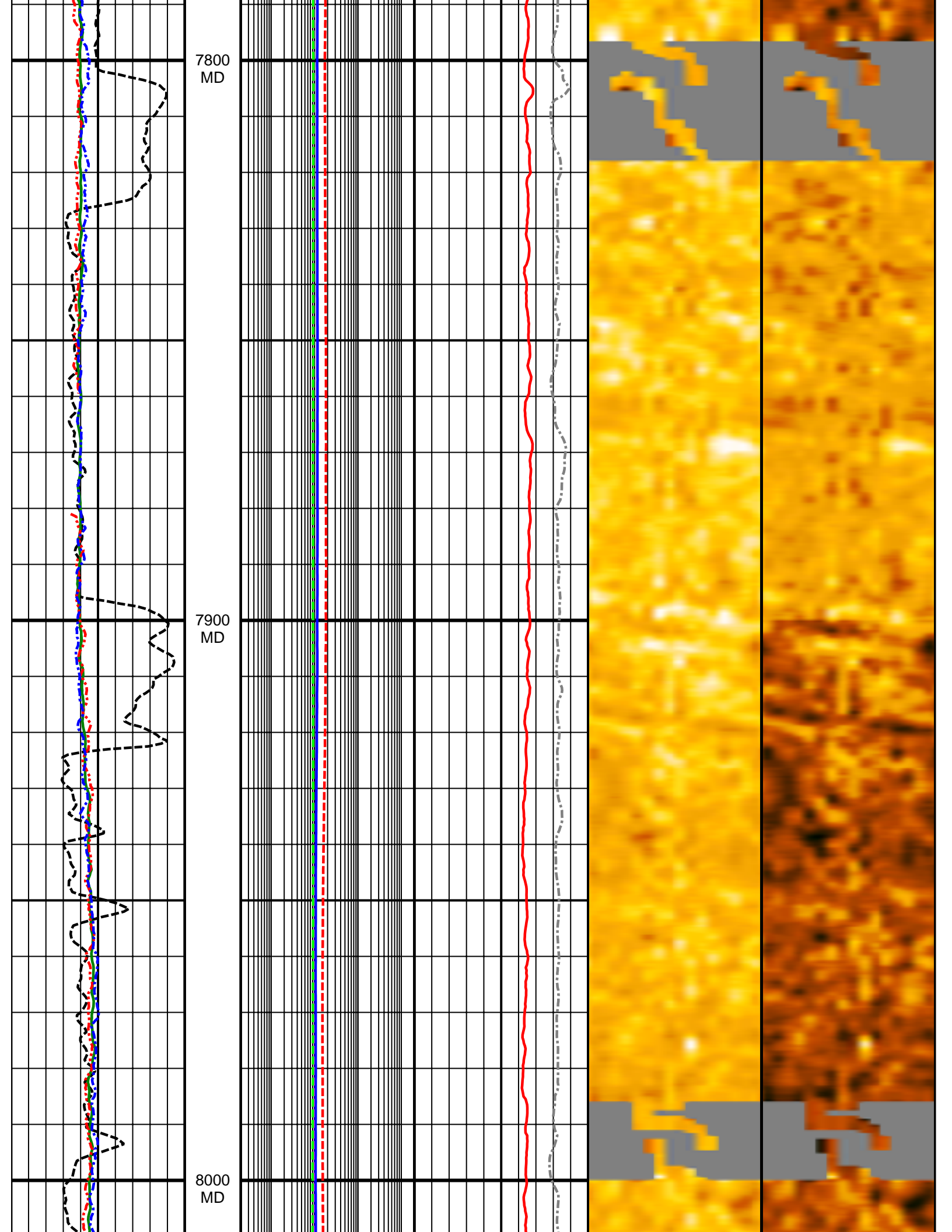
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MD

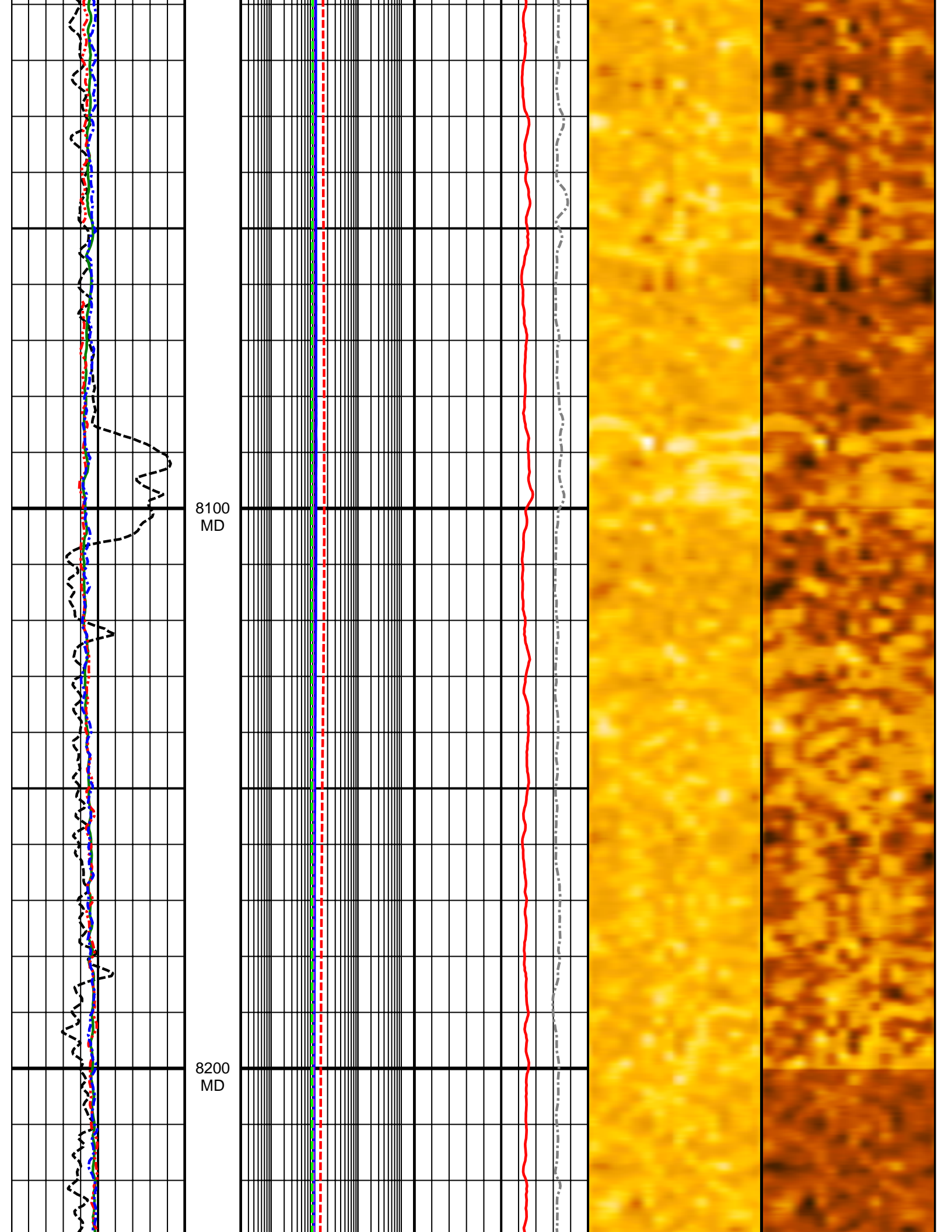


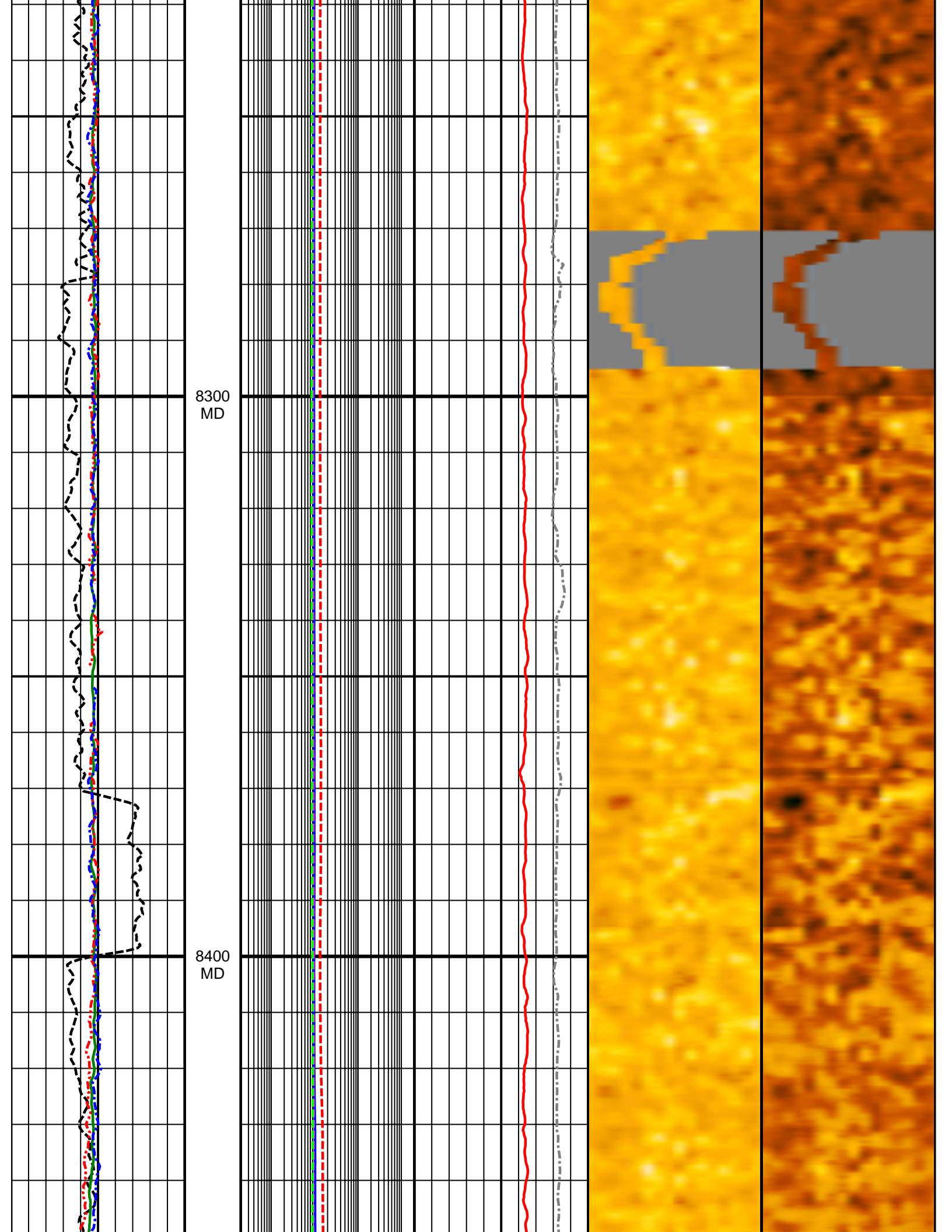


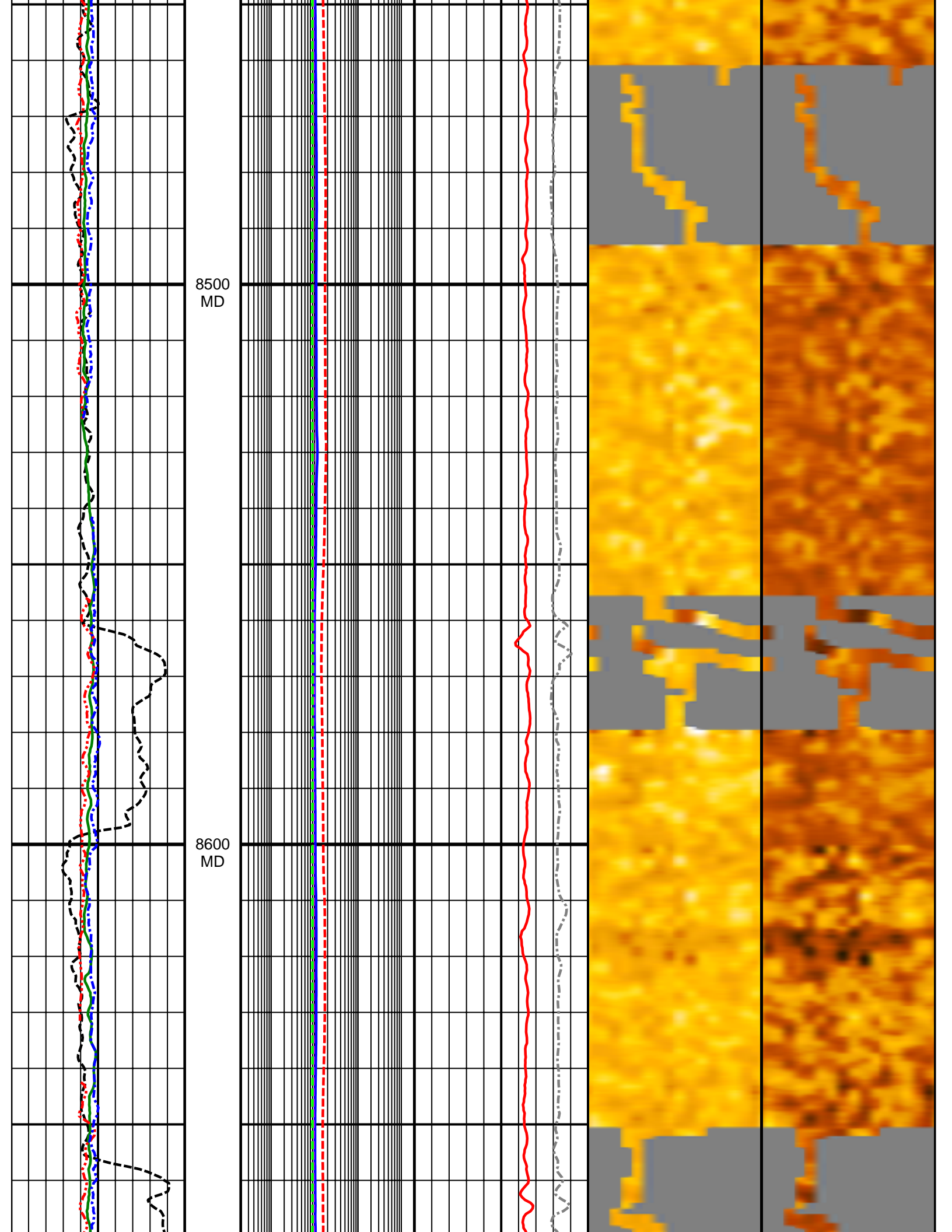


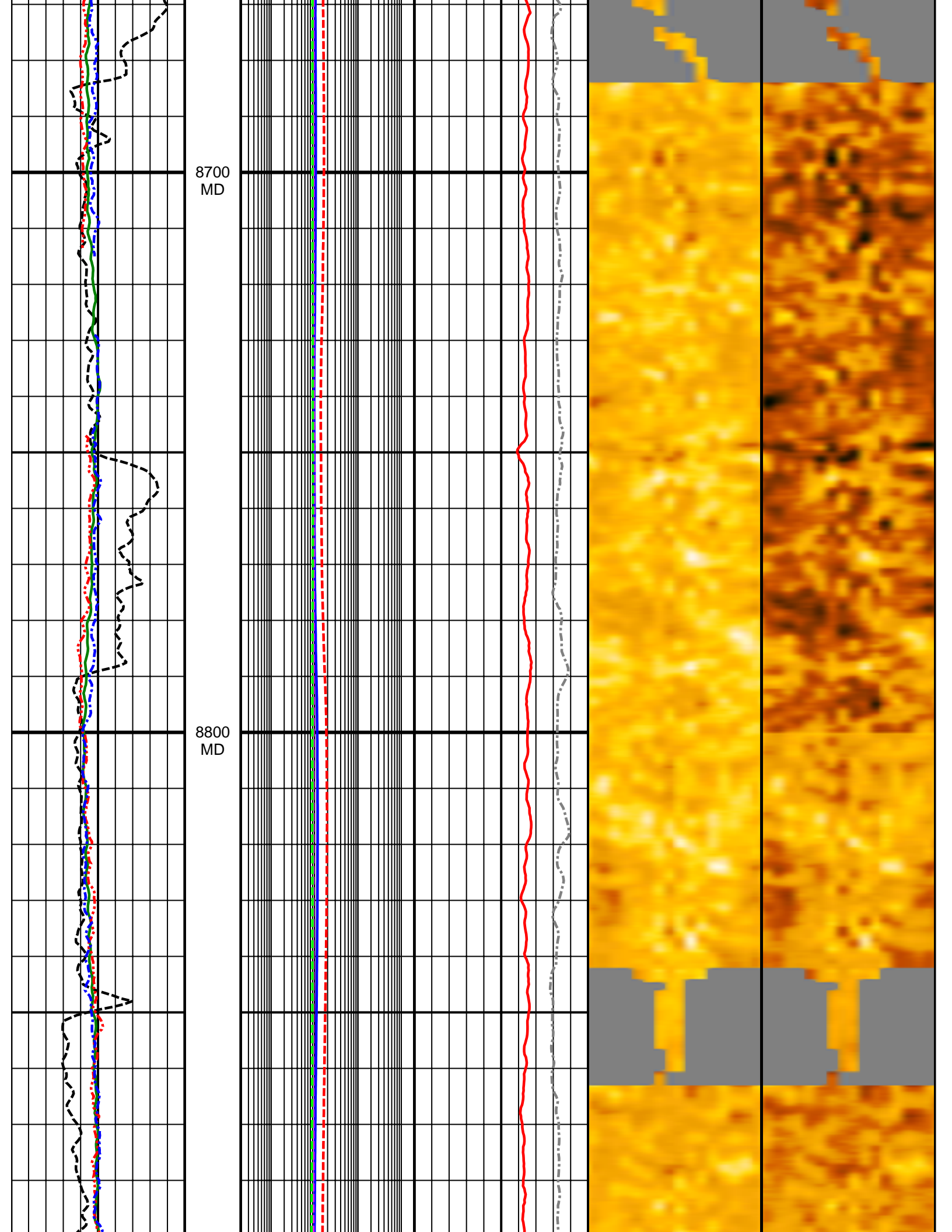


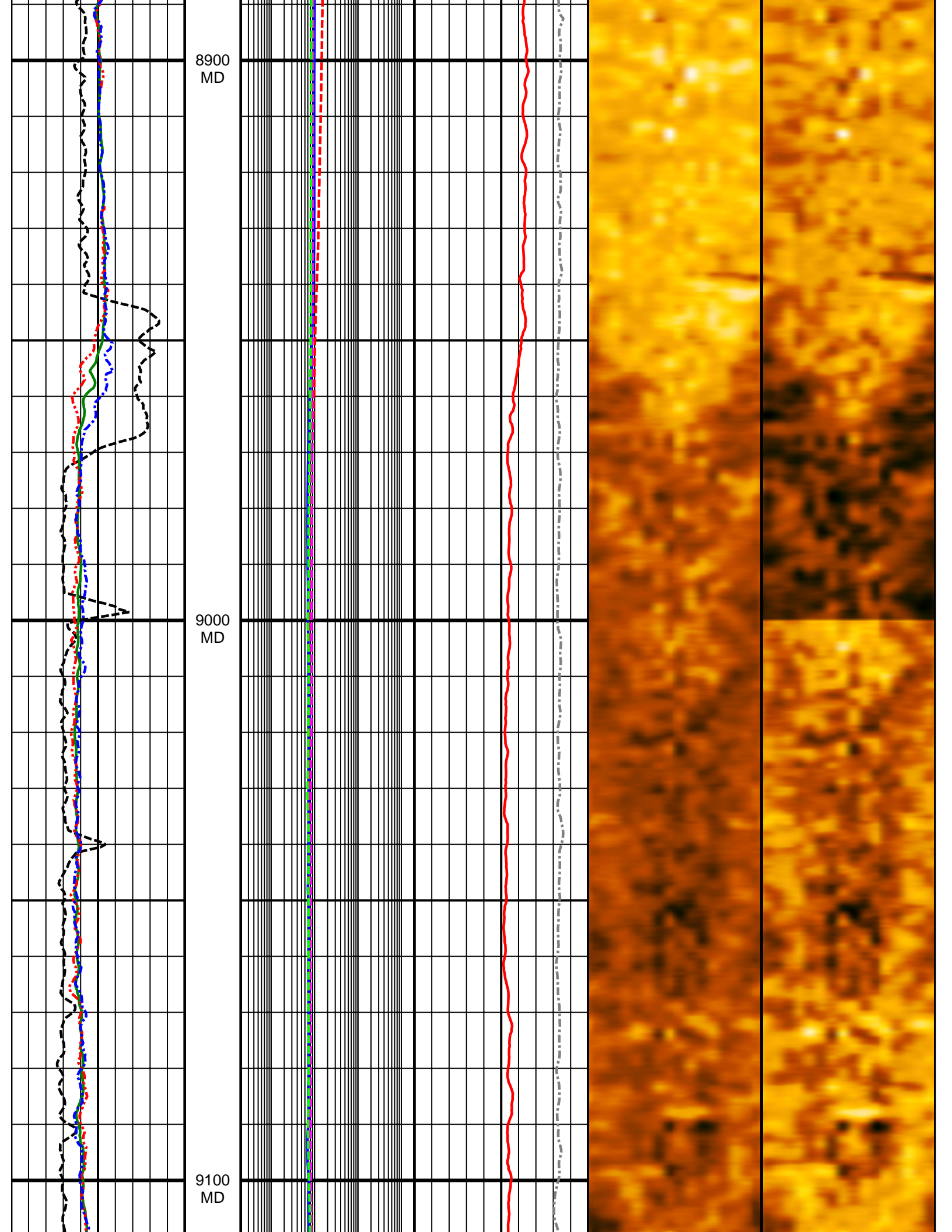


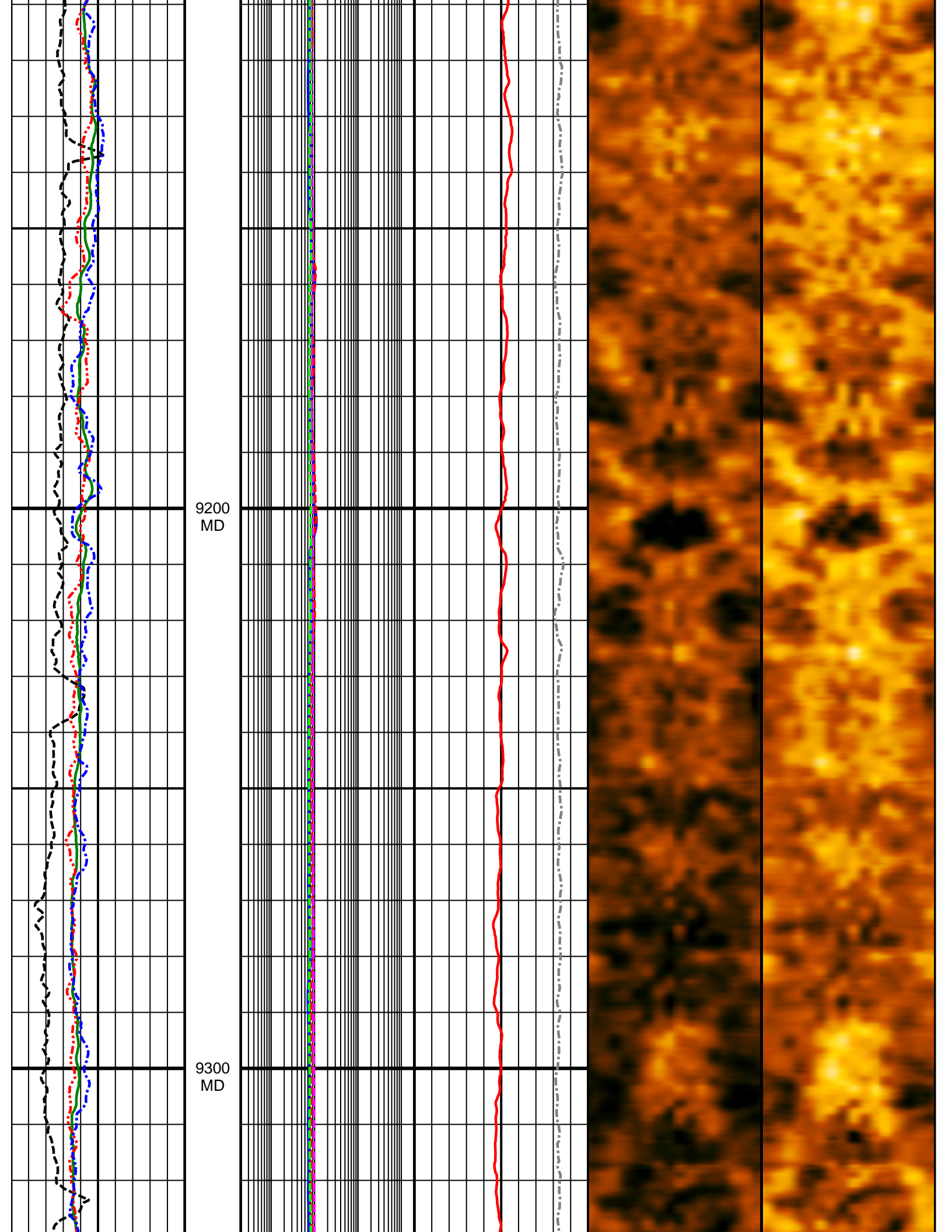


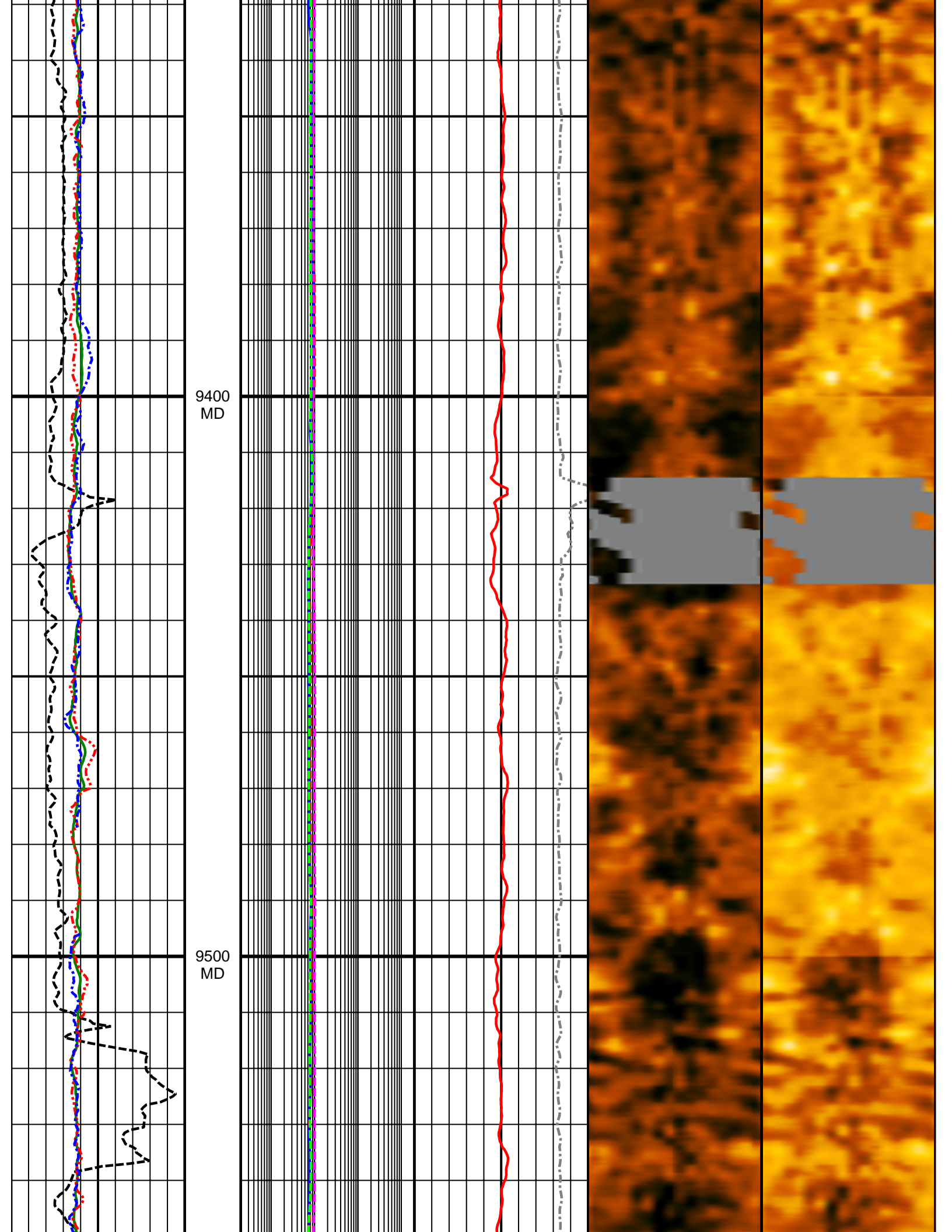


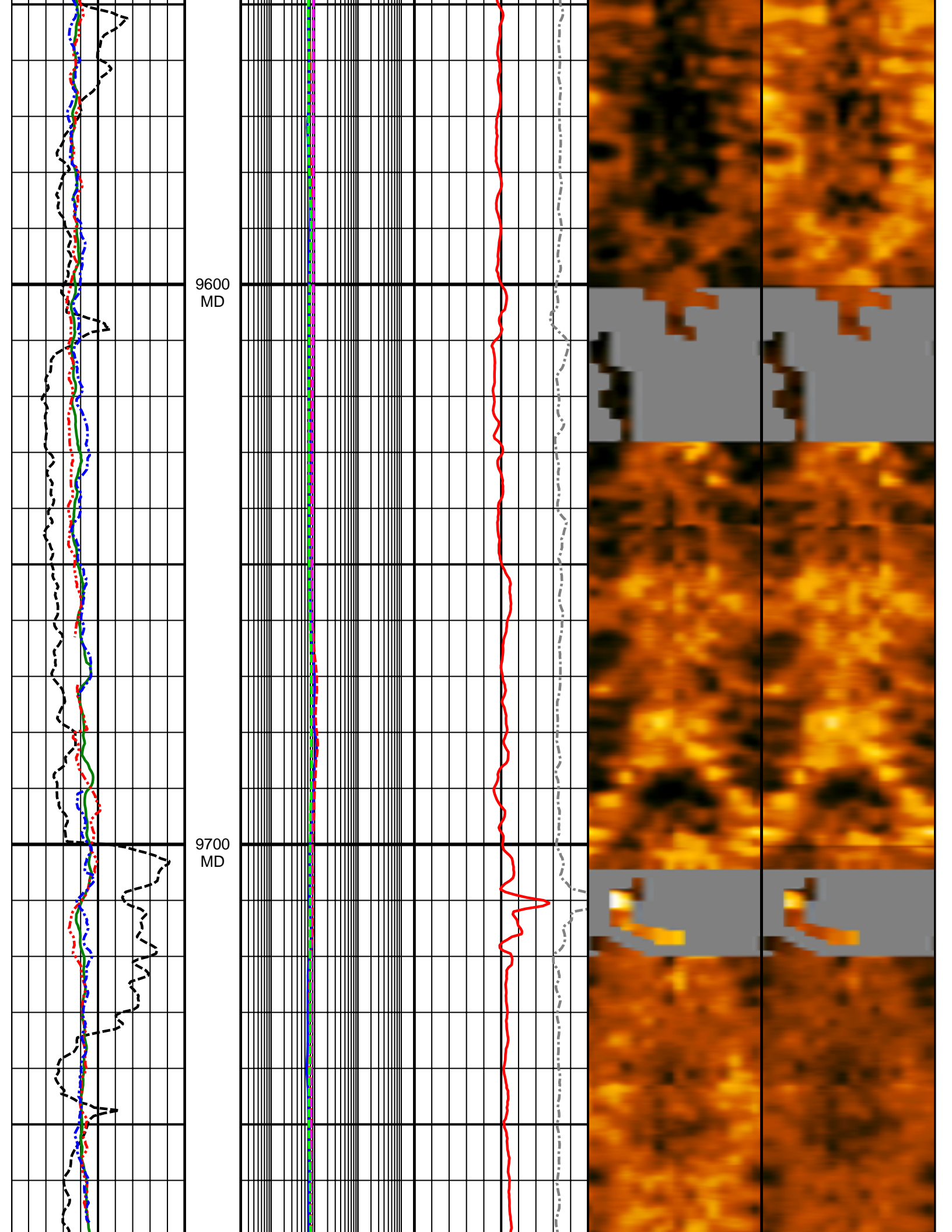


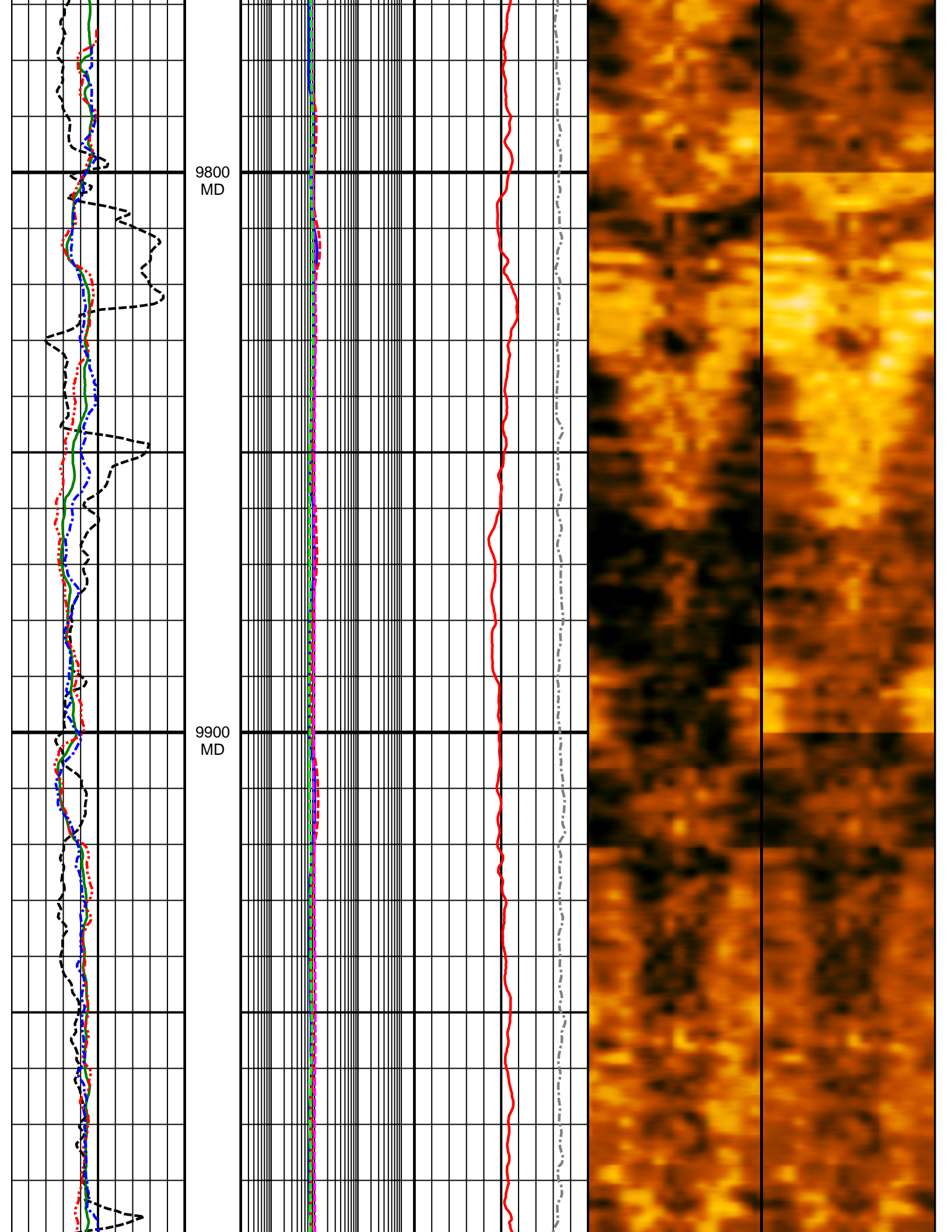


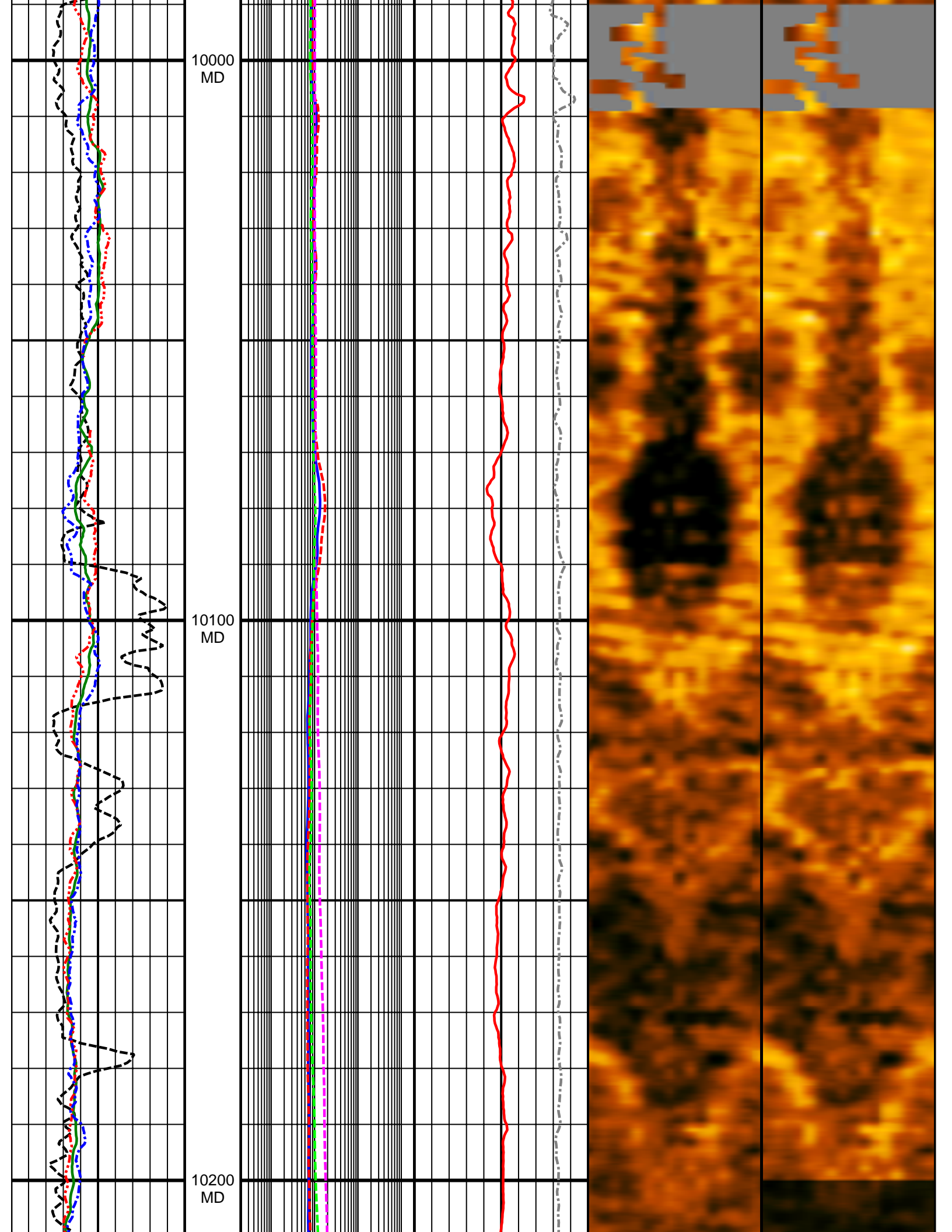


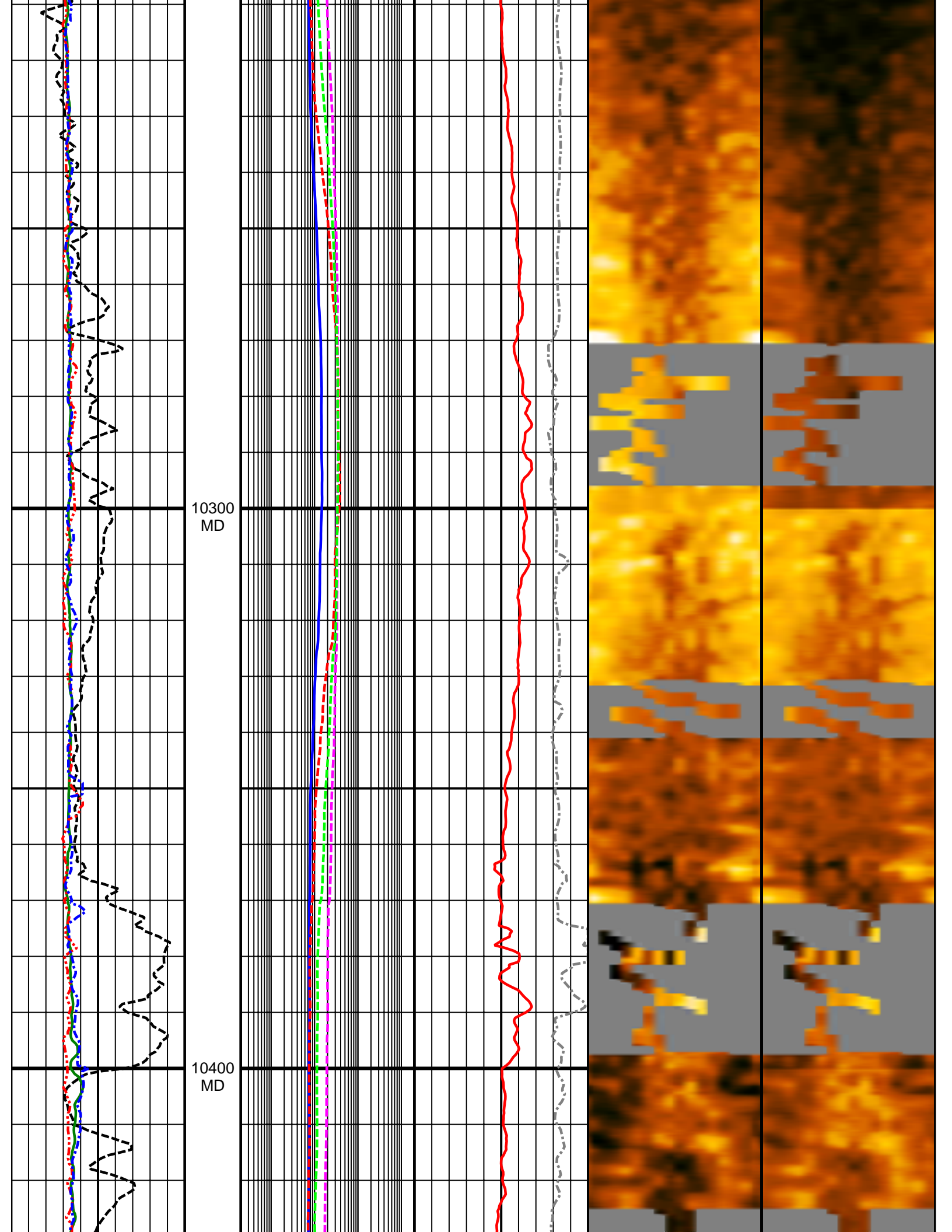


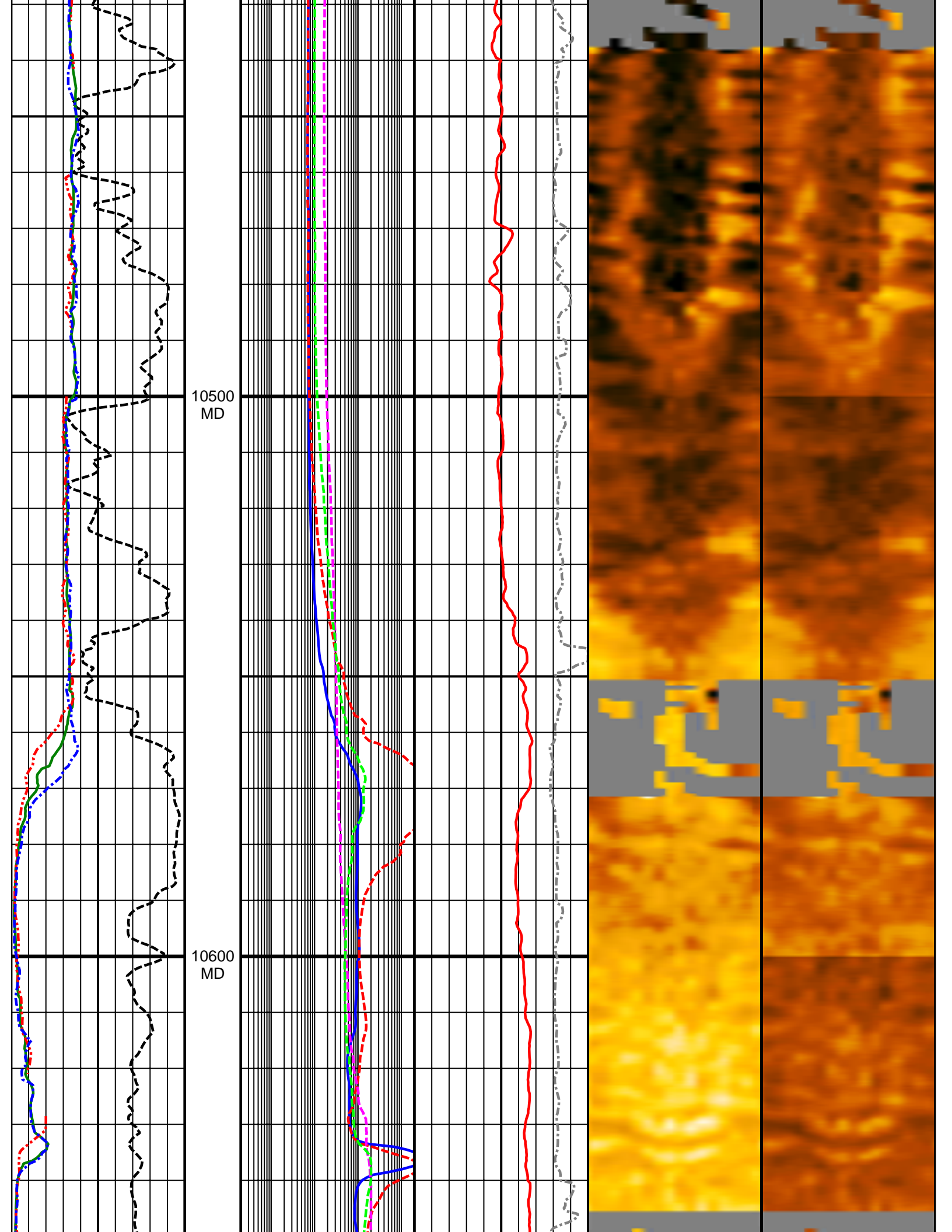


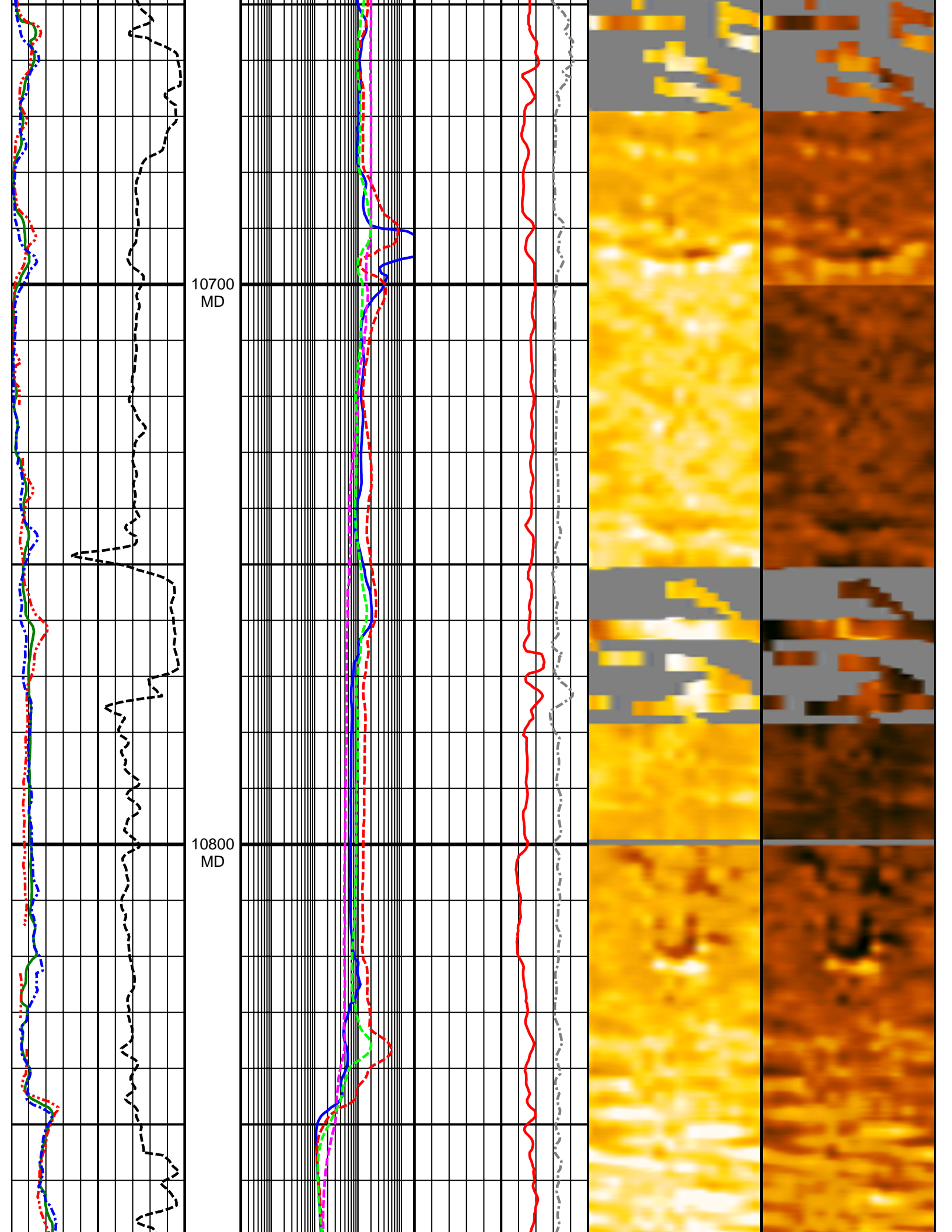


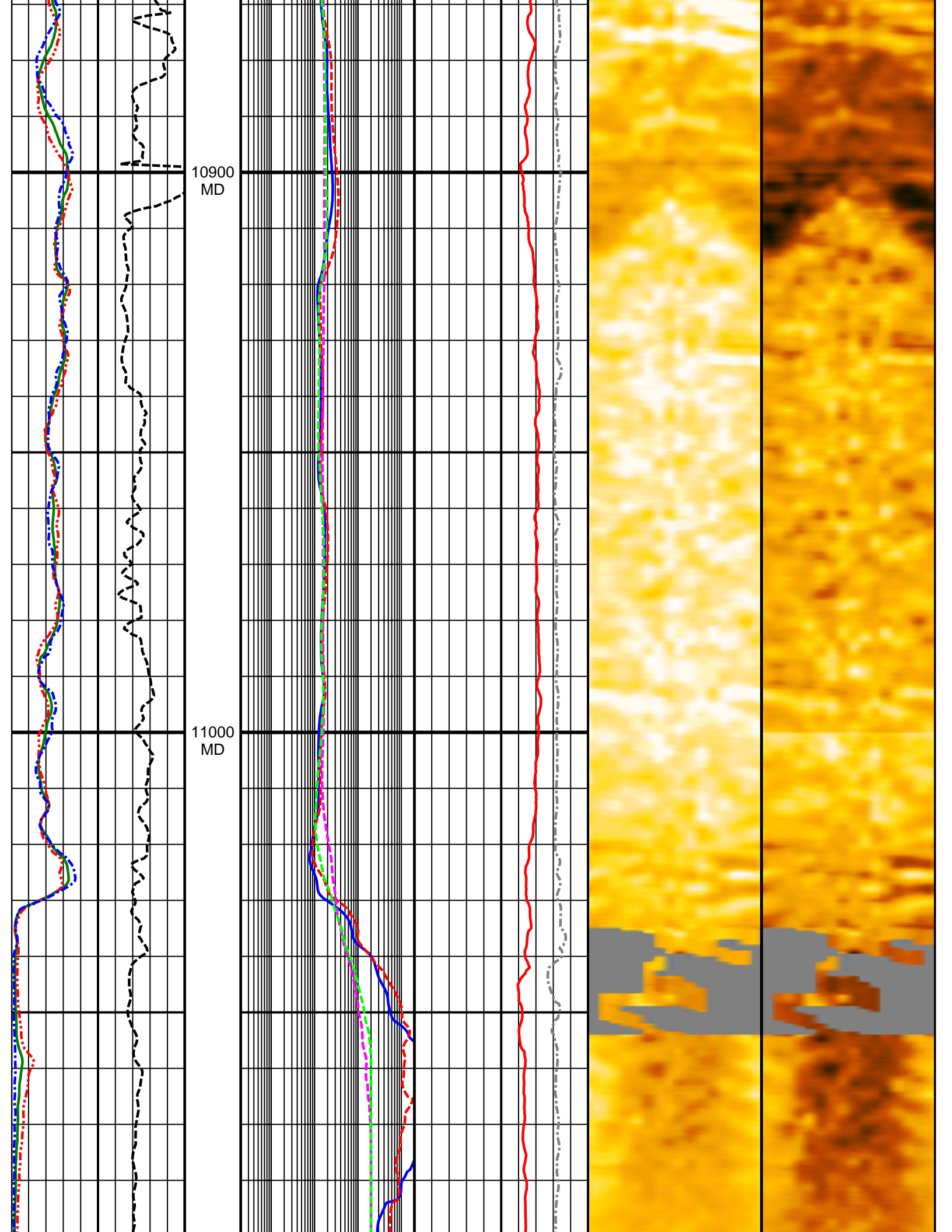


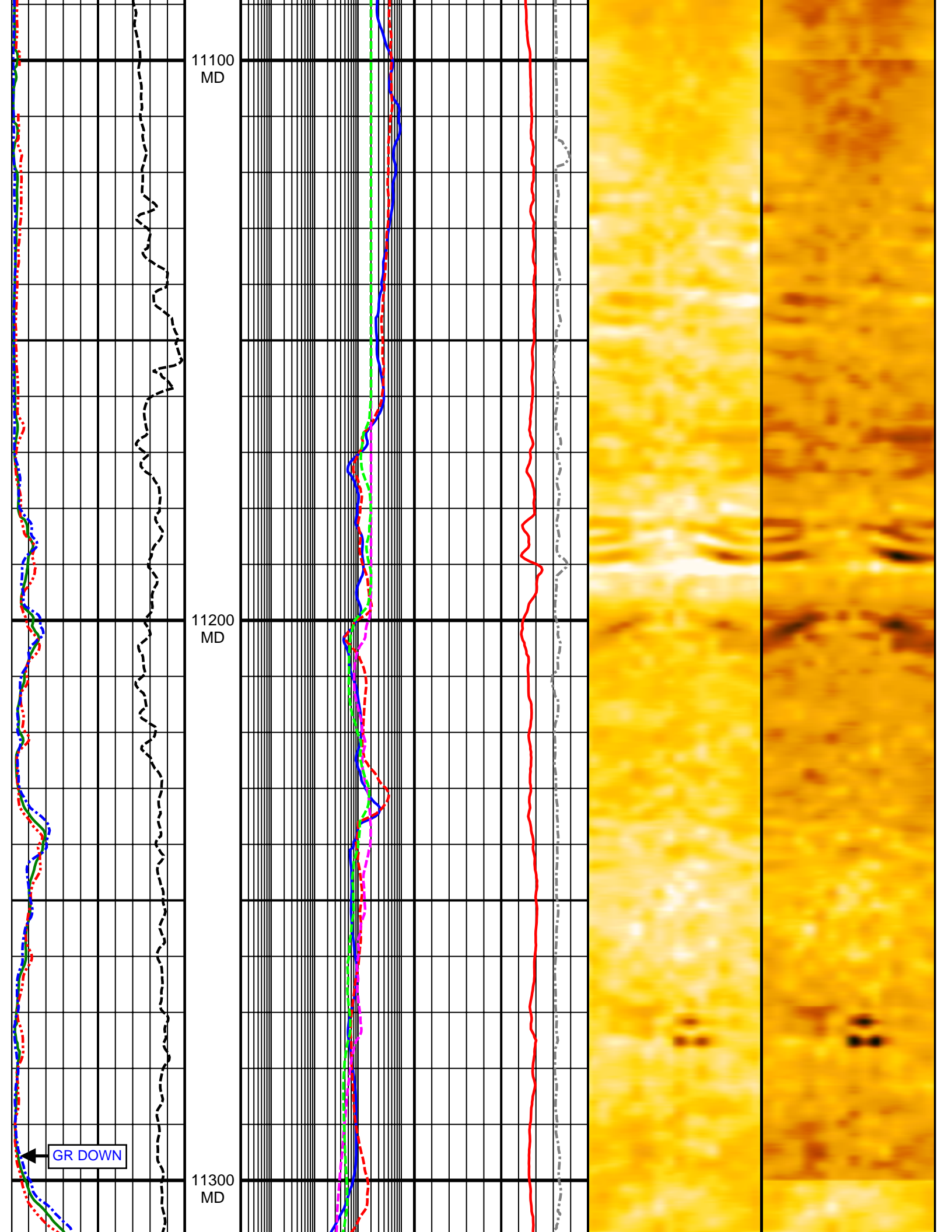










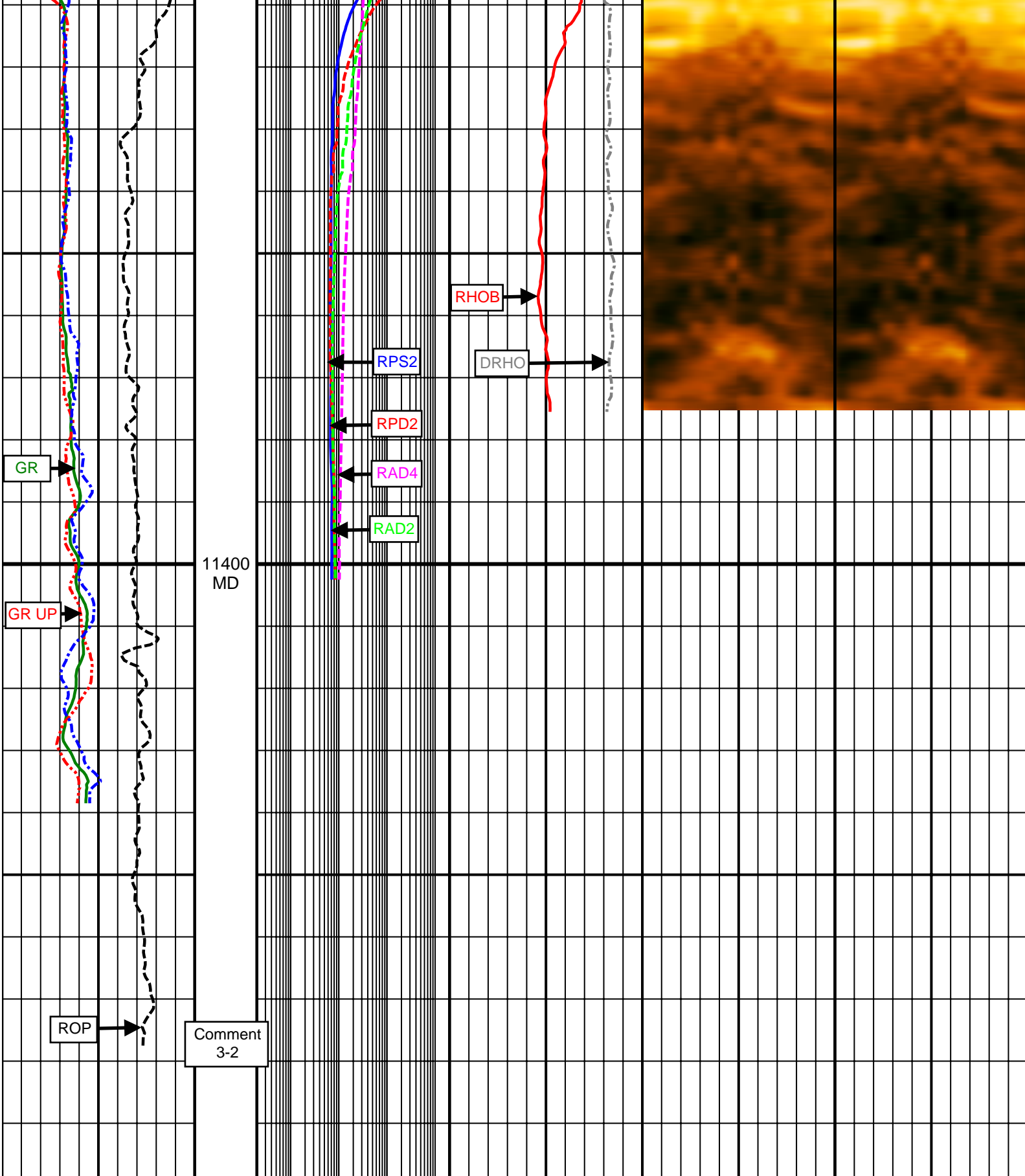


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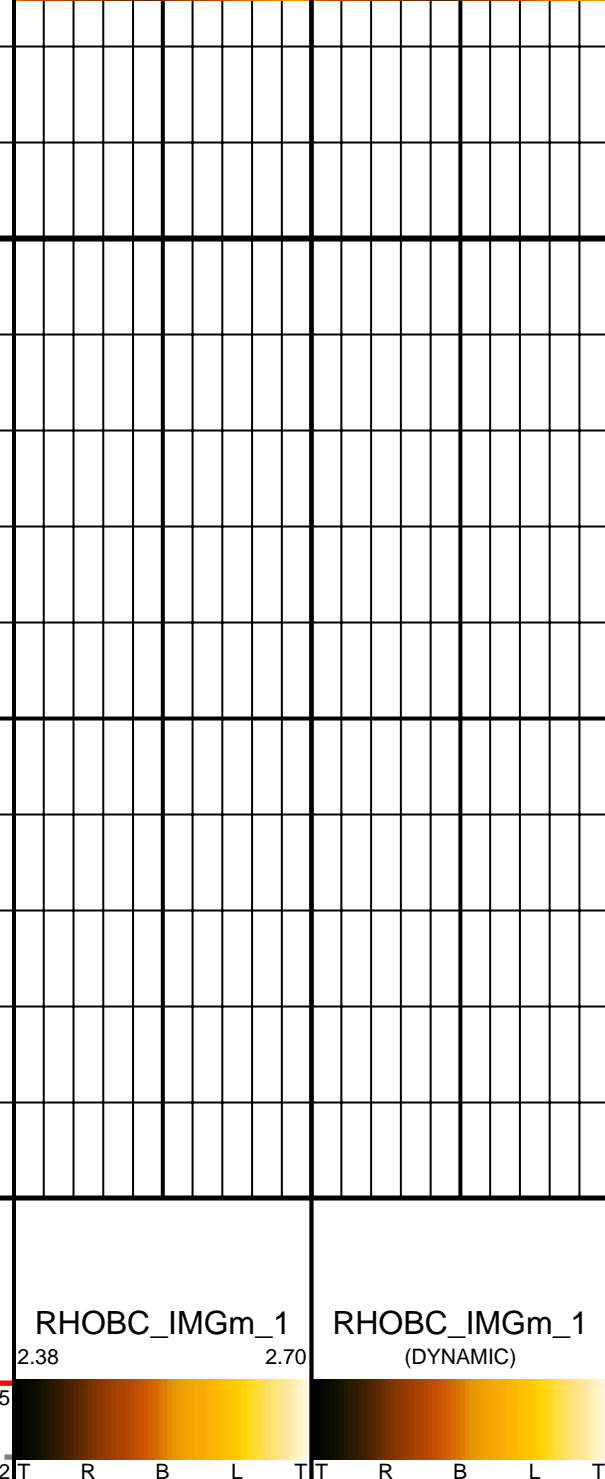
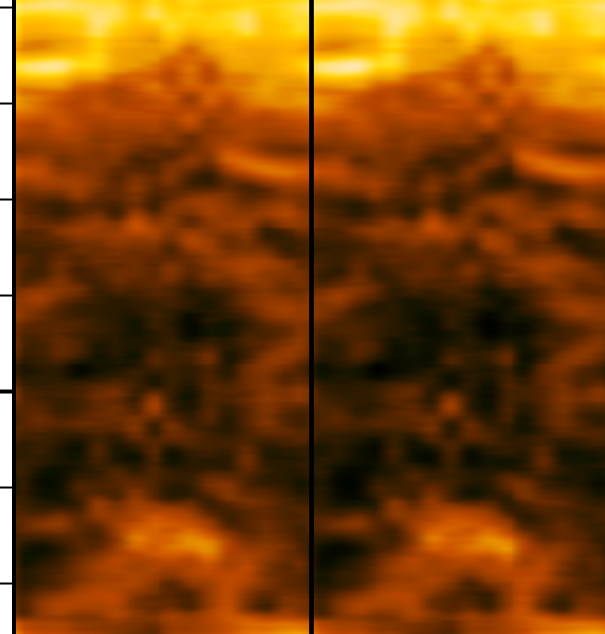
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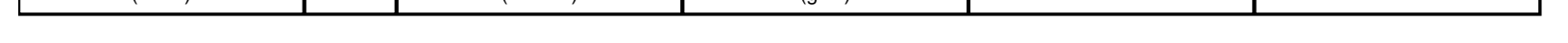
11300  
MD

GR DOWN



|                         |                          |                          |                   |                   |
|-------------------------|--------------------------|--------------------------|-------------------|-------------------|
| ROP<br>500 (fph) 0      | RPS2<br>0.2 (ohm-m) 2000 |                          |                   |                   |
| GR<br>0 (AAPI) 200      | RPD2<br>0.2 (ohm-m) 2000 |                          |                   |                   |
| GR UP<br>0 (AAPI) 200   | RAD4<br>0.2 (ohm-m) 2000 | RHOB<br>1.95 (g/cc) 2.95 | RHOB<br>2.38 2.70 | RHOB<br>2.38 2.70 |
| GR DOWN<br>0 (AAPI) 200 | RAD2<br>0.2 (ohm-m) 2000 | DRHO<br>-0.8 (g/cc) 0.2  |                   |                   |





# AZD Density and Pe Calibration

All count rates are corrected for deadtime, without background subtraction.

|                       |        |                   |              |                  |      |
|-----------------------|--------|-------------------|--------------|------------------|------|
| Tool Serial Number:   | 47915  | Stabilizer blade: | 5.875 in.    | Aluminum Block:  | AL03 |
| Insert Serial Number: | 47913  | Calibration Date: | Jun 29, 2012 | Magnesium Block: | MG03 |
| Source Serial Number: | 06955B | Calibration Time: | 02:30:18 PM  | Run Numbers:     | 03   |

| Near Detector         | Background                | Al with Source            | Al + SST with source      | Mg with Source            | Units |
|-----------------------|---------------------------|---------------------------|---------------------------|---------------------------|-------|
| Peak (214-216):       | 214.660<br>214   █   216  | 214.570<br>214   █   216  | 214.557<br>214   █   216  | 214.330<br>214   █   216  | Ch    |
| Resolution (5-13.5%): | 9.133<br>5     13.5       | 8.996<br>5     13.5       | 8.776<br>5     13.5       | 9.102<br>5     13.5       | %     |
| HV:                   | 900.409<br>600   █   1300 | 898.462<br>600   █   1300 | 899.170<br>600   █   1300 | 900.763<br>600   █   1300 | V     |
| Density:              | 543.182                   | 8488.490                  | 7520.596                  | 12841.040                 | CPS   |
| Pe:                   | 147.445                   | 4079.302                  | 3158.738                  | 6212.256                  | CPS   |
| Source:               | 202.177<br>150   █   300  | 214.864                   | 212.141                   | 219.944                   | CPS   |

| Far Detector          | Background               | Al with Source           | Al + SST with source     | Mg with Source          | Units |
|-----------------------|--------------------------|--------------------------|--------------------------|-------------------------|-------|
| Peak (214-216):       | 215.065<br>214     216   | 215.223<br>214   █   216 | 215.460<br>214   █   216 | 214.920<br>214     216  | Ch    |
| Resolution (5-13.5%): | 9.793<br>5   █   13.5    | 8.994<br>5     13.5      | 9.425<br>5     13.5      | 9.068<br>5     13.5     | %     |
| HV:                   | 952.271<br>600     1300  | 951.032<br>600     1300  | 951.032<br>600     1300  | 949.439<br>600     1300 | V     |
| Density:              | 275.912                  | 828.636                  | 760.046                  | 4279.531                | CPS   |
| Pe:                   | 49.541                   | 205.405                  | 164.539                  | 1212.671                | CPS   |
| Source:               | 142.748<br>100   █   200 | 143.952                  | 144.010                  | 142.998                 | CPS   |

| Results | Near Density                 | Far Density                  | Near Pe                 | Far Pe  |  |
|---------|------------------------------|------------------------------|-------------------------|---------|--|
| Slope:  | -0.4783<br>-0.56   █   -0.43 | -2.2002<br>-2.26   █   -2.16 | 2.6692<br>0.1   █   10  | 3.6423  |  |
| Offset: | 10.2180                      | 12.0017                      | -0.9426<br>-3   █   0.1 | -0.6674 |  |

# SURVEY

Survey Calculation Method: **Minimum Curvature**

|                      |                   |                      |                    |                      |                  |                  |
|----------------------|-------------------|----------------------|--------------------|----------------------|------------------|------------------|
| Magnetic Reference   | Target Direction  | Total Magnetic Field | Magnetic Dip Angle | Magnetic Declination | Grid Convergence | Total Correction |
| <b>True North</b>    | <b>179.65 deg</b> | <b>52906 nT</b>      | <b>66.94 deg</b>   | <b>8.70 deg</b>      | <b>0.00 deg</b>  | <b>8.70 deg</b>  |
| <b>Survey Tie-On</b> | Depth             | INC                  | AZ                 | TVD                  | NS               | EW               |
|                      | <b>749.00 ft</b>  | <b>0.12 deg</b>      | <b>57.17 deg</b>   | <b>749.00 ft</b>     | <b>0.77 ft</b>   | <b>-0.26 ft</b>  |

| Depth (ft) | Inc (deg) | Azm (deg) | TVD (ft) | Well Head |         | VSect (ft) | Dogleg (deg/100ft) |
|------------|-----------|-----------|----------|-----------|---------|------------|--------------------|
|            |           |           |          | NS (ft)   | EW (ft) |            |                    |
| 949.00     | 0.25      | 292.61    | 949.00   | 1.05      | -0.49   | -1.05      | 0.17               |
| 1039.00    | 0.56      | 310.60    | 1039.00  | 1.41      | -1.00   | -1.42      | 0.37               |
| 1130.00    | 1.93      | 9.37      | 1129.98  | 3.21      | -1.09   | -3.22      | 1.88               |
| 1221.00    | 4.06      | 17.55     | 1220.85  | 7.80      | 0.13    | -7.80      | 2.38               |
| 1314.00    | 6.03      | 16.38     | 1313.48  | 15.62     | 2.50    | -15.61     | 2.12               |
| 1406.00    | 6.60      | 14.38     | 1404.92  | 25.38     | 5.18    | -25.35     | 0.66               |
| 1501.00    | 6.56      | 14.05     | 1499.30  | 35.94     | 7.85    | -35.89     | 0.06               |
| 1596.00    | 6.59      | 5.01      | 1593.68  | 46.63     | 9.64    | -46.57     | 1.09               |
| 1691.00    | 6.13      | 1.30      | 1688.09  | 57.13     | 10.24   | -57.07     | 0.65               |
| 1786.00    | 5.90      | 3.14      | 1782.57  | 67.08     | 10.62   | -67.01     | 0.32               |
| 1881.00    | 5.97      | 13.19     | 1877.06  | 76.76     | 12.01   | -76.69     | 1.09               |
| 1975.00    | 5.43      | 13.92     | 1970.60  | 85.84     | 14.20   | -85.75     | 0.58               |
| 2070.00    | 4.87      | 10.40     | 2065.21  | 94.17     | 16.01   | -94.07     | 0.68               |
| 2165.00    | 6.32      | 14.24     | 2159.76  | 103.20    | 18.02   | -103.09    | 1.58               |
| 2260.00    | 5.36      | 12.02     | 2254.26  | 112.61    | 20.23   | -112.49    | 1.04               |
| 2355.00    | 6.32      | 16.41     | 2348.77  | 121.97    | 22.63   | -121.83    | 1.11               |
| 2449.00    | 5.40      | 14.73     | 2442.28  | 131.21    | 25.22   | -131.05    | 1.00               |
| 2545.00    | 6.99      | 12.44     | 2537.71  | 141.28    | 27.63   | -141.11    | 1.68               |
| 2640.00    | 5.60      | 10.21     | 2632.14  | 151.49    | 29.69   | -151.31    | 1.49               |
| 2734.00    | 4.69      | 3.87      | 2725.76  | 159.84    | 30.77   | -159.65    | 1.14               |
| 2829.00    | 6.31      | 10.97     | 2820.32  | 168.84    | 32.02   | -168.64    | 1.85               |
| 2924.00    | 5.98      | 9.76      | 2914.77  | 178.84    | 33.85   | -178.63    | 0.37               |
| 3018.00    | 5.45      | 7.70      | 3008.31  | 188.09    | 35.28   | -187.87    | 0.60               |
| 3113.00    | 6.16      | 19.46     | 3102.82  | 197.37    | 37.58   | -197.13    | 1.45               |
| 3208.00    | 4.69      | 21.42     | 3197.39  | 205.79    | 40.70   | -205.54    | 1.56               |
| 3303.00    | 5.68      | 19.71     | 3292.01  | 213.83    | 43.71   | -213.56    | 1.05               |
| 3399.00    | 6.32      | 11.49     | 3387.48  | 223.48    | 46.36   | -223.19    | 1.11               |
| 3494.00    | 4.96      | 11.26     | 3482.02  | 232.63    | 48.20   | -232.34    | 1.43               |
| 3589.00    | 3.65      | 356.56    | 3576.75  | 239.68    | 48.82   | -239.38    | 1.79               |
| 3683.00    | 1.86      | 331.73    | 3670.64  | 244.01    | 47.92   | -243.71    | 2.25               |
| 3777.00    | 0.80      | 261.11    | 3764.62  | 245.25    | 46.55   | -244.97    | 1.88               |
| 3873.00    | 0.74      | 261.92    | 3860.61  | 245.06    | 45.28   | -244.78    | 0.06               |
| 3967.00    | 0.90      | 267.49    | 3954.60  | 244.95    | 43.94   | -244.67    | 0.19               |
| 4062.00    | 0.38      | 142.99    | 4049.60  | 244.66    | 43.38   | -244.39    | 1.22               |
| 4157.00    | 0.20      | 1.16      | 4144.60  | 244.58    | 43.57   | -244.30    | 0.58               |
| 4252.00    | 0.69      | 320.96    | 4239.59  | 245.19    | 43.22   | -244.92    | 0.58               |
| 4346.00    | 1.09      | 328.14    | 4333.58  | 246.38    | 42.39   | -246.12    | 0.44               |
| 4440.00    | 0.80      | 244.93    | 4427.57  | 246.87    | 41.32   | -246.61    | 1.35               |
| 4535.00    | 1.09      | 268.83    | 4522.56  | 246.57    | 39.82   | -246.32    | 0.51               |
| 4630.00    | 1.05      | 152.66    | 4617.55  | 245.77    | 39.31   | -245.53    | 1.91               |
| 4724.00    | 0.97      | 145.03    | 4711.54  | 244.36    | 40.17   | -244.11    | 0.17               |
| 4819.00    | 0.58      | 55.98     | 4806.53  | 243.97    | 41.03   | -243.71    | 1.18               |

|         |       |        |         |          |       |         |       |
|---------|-------|--------|---------|----------|-------|---------|-------|
| 4913.00 | 0.73  | 23.83  | 4900.53 | 244.78   | 41.66 | -244.52 | 0.42  |
| 5008.00 | 1.41  | 143.21 | 4995.52 | 244.40   | 42.61 | -244.13 | 1.98  |
| 5103.00 | 1.00  | 164.58 | 5090.49 | 242.66   | 43.53 | -242.39 | 0.63  |
| 5198.00 | 0.63  | 178.44 | 5185.49 | 241.34   | 43.76 | -241.07 | 0.44  |
| 5292.00 | 0.49  | 213.29 | 5279.48 | 240.49   | 43.55 | -240.22 | 0.38  |
| 5387.00 | 0.51  | 230.60 | 5374.48 | 239.88   | 43.00 | -239.62 | 0.16  |
| 5482.00 | 0.29  | 215.02 | 5469.47 | 239.42   | 42.54 | -239.15 | 0.26  |
| 5576.00 | 0.20  | 286.27 | 5563.47 | 239.27   | 42.25 | -239.01 | 0.31  |
| 5672.00 | 0.22  | 241.79 | 5659.47 | 239.23   | 41.92 | -238.97 | 0.17  |
| 5767.00 | 0.73  | 187.99 | 5754.47 | 238.54   | 41.68 | -238.28 | 0.66  |
| 5863.00 | 0.97  | 200.01 | 5850.46 | 237.17   | 41.32 | -236.92 | 0.31  |
| 5958.00 | 1.21  | 205.76 | 5945.44 | 235.51   | 40.60 | -235.26 | 0.28  |
| 6052.00 | 0.56  | 185.90 | 6039.43 | 234.16   | 40.13 | -233.91 | 0.75  |
| 6147.00 | 0.72  | 193.72 | 6134.42 | 233.12   | 39.94 | -232.87 | 0.19  |
| 6242.00 | 0.91  | 191.80 | 6229.42 | 231.80   | 39.64 | -231.56 | 0.20  |
| 6337.00 | 1.22  | 209.70 | 6324.40 | 230.19   | 38.98 | -229.94 | 0.47  |
| 6432.00 | 1.06  | 194.02 | 6419.38 | 228.46   | 38.27 | -228.22 | 0.37  |
| 6526.00 | 3.83  | 171.93 | 6513.29 | 224.50   | 38.50 | -224.26 | 3.06  |
| 6558.00 | 8.07  | 178.32 | 6545.11 | 221.20   | 38.72 | -220.96 | 13.39 |
| 6590.00 | 11.85 | 178.16 | 6576.62 | 215.67   | 38.89 | -215.43 | 11.81 |
| 6621.00 | 14.64 | 179.45 | 6606.79 | 208.57   | 39.03 | -208.32 | 9.05  |
| 6654.00 | 17.06 | 177.90 | 6638.54 | 199.56   | 39.25 | -199.31 | 7.44  |
| 6685.00 | 20.44 | 177.11 | 6667.89 | 189.60   | 39.69 | -189.36 | 10.93 |
| 6717.00 | 21.54 | 177.91 | 6697.76 | 178.15   | 40.18 | -177.90 | 3.55  |
| 6749.00 | 20.72 | 177.59 | 6727.61 | 166.63   | 40.63 | -166.38 | 2.59  |
| 6780.00 | 19.75 | 176.39 | 6756.70 | 155.92   | 41.19 | -155.67 | 3.40  |
| 6812.00 | 20.49 | 175.45 | 6786.74 | 144.94   | 41.98 | -144.68 | 2.52  |
| 6843.00 | 23.52 | 178.41 | 6815.48 | 133.35   | 42.58 | -133.08 | 10.41 |
| 6875.00 | 26.88 | 183.72 | 6844.44 | 119.74   | 42.29 | -119.48 | 12.65 |
| 6907.00 | 30.00 | 185.38 | 6872.57 | 104.55   | 41.07 | -104.30 | 10.06 |
| 6938.00 | 32.82 | 183.45 | 6899.03 | 88.45    | 39.84 | -88.20  | 9.66  |
| 6970.00 | 35.57 | 182.12 | 6925.49 | 70.49    | 38.97 | -70.25  | 8.91  |
| 7001.00 | 39.53 | 181.32 | 6950.07 | 51.61    | 38.41 | -51.37  | 12.87 |
| 7033.00 | 42.93 | 180.02 | 6974.13 | 30.52    | 38.17 | -30.29  | 10.96 |
| 7064.00 | 46.89 | 179.14 | 6996.08 | 8.64     | 38.34 | -8.41   | 12.93 |
| 7096.00 | 49.77 | 178.78 | 7017.35 | -15.26   | 38.77 | 15.49   | 9.04  |
| 7128.00 | 51.42 | 178.64 | 7037.67 | -39.98   | 39.33 | 40.22   | 5.17  |
| 7159.00 | 53.40 | 179.18 | 7056.57 | -64.53   | 39.80 | 64.78   | 6.53  |
| 7191.00 | 57.02 | 179.81 | 7074.83 | -90.81   | 40.02 | 91.05   | 11.43 |
| 7222.00 | 61.47 | 179.96 | 7090.68 | -117.44  | 40.08 | 117.69  | 14.36 |
| 7254.00 | 66.47 | 179.77 | 7104.72 | -146.19  | 40.14 | 146.43  | 15.63 |
| 7285.00 | 70.39 | 180.66 | 7116.11 | -175.01  | 40.03 | 175.25  | 12.92 |
| 7318.00 | 73.62 | 180.75 | 7126.31 | -206.39  | 39.65 | 206.63  | 9.79  |
| 7349.00 | 76.81 | 179.88 | 7134.22 | -236.36  | 39.48 | 236.60  | 10.64 |
| 7381.00 | 79.31 | 178.95 | 7140.84 | -267.66  | 39.81 | 267.90  | 8.31  |
| 7412.00 | 80.51 | 178.14 | 7146.27 | -298.17  | 40.58 | 298.41  | 4.65  |
| 7444.00 | 82.63 | 178.26 | 7150.96 | -329.81  | 41.57 | 330.06  | 6.64  |
| 7560.00 | 89.32 | 179.69 | 7159.10 | -445.43  | 43.64 | 445.69  | 5.90  |
| 7655.00 | 89.94 | 178.49 | 7159.71 | -540.42  | 45.15 | 540.68  | 1.42  |
| 7750.00 | 90.06 | 178.23 | 7159.71 | -635.38  | 47.86 | 635.66  | 0.30  |
| 7844.00 | 91.23 | 178.00 | 7158.65 | -729.32  | 50.96 | 729.62  | 1.27  |
| 7939.00 | 92.16 | 179.92 | 7155.84 | -824.26  | 52.68 | 824.57  | 2.24  |
| 8034.00 | 91.48 | 179.59 | 7152.82 | -919.21  | 53.09 | 919.52  | 0.80  |
| 8129.00 | 91.48 | 180.48 | 7150.37 | -1014.18 | 53.03 | 1014.48 | 0.94  |
| 8224.00 | 90.74 | 180.71 | 7148.53 | -1109.15 | 52.04 | 1109.45 | 0.82  |
| 8319.00 | 90.06 | 180.02 | 7147.87 | -1204.15 | 51.44 | 1204.44 | 1.02  |
| 8414.00 | 91.66 | 180.17 | 7146.44 | -1299.13 | 51.28 | 1299.42 | 1.69  |
| 8509.00 | 90.55 | 179.19 | 7144.61 | -1394.11 | 51.81 | 1394.40 | 1.56  |
| 8604.00 | 90.86 | 180.02 | 7143.44 | -1489.10 | 52.47 | 1489.39 | 0.93  |
| 8699.00 | 90.43 | 180.34 | 7142.37 | -1584.09 | 52.17 | 1584.38 | 0.56  |
| 8794.00 | 91.97 | 181.22 | 7140.38 | -1679.06 | 50.87 | 1679.34 | 1.87  |

|          |       |        |         |          |        |         |      |
|----------|-------|--------|---------|----------|--------|---------|------|
| 8889.00  | 91.66 | 180.54 | 7137.37 | -1774.00 | 49.42  | 1774.27 | 0.79 |
| 8983.00  | 92.46 | 182.96 | 7133.99 | -1867.89 | 46.55  | 1868.14 | 2.71 |
| 9079.00  | 91.76 | 181.47 | 7130.46 | -1963.75 | 42.84  | 1963.97 | 1.71 |
| 9174.00  | 91.36 | 181.51 | 7127.87 | -2058.68 | 40.37  | 2058.89 | 0.42 |
| 9268.00  | 90.86 | 181.32 | 7126.05 | -2152.63 | 38.05  | 2152.83 | 0.57 |
| 9363.00  | 90.43 | 182.45 | 7124.98 | -2247.58 | 34.93  | 2247.75 | 1.27 |
| 9459.00  | 90.18 | 183.01 | 7124.47 | -2343.46 | 30.35  | 2343.61 | 0.64 |
| 9553.00  | 90.06 | 180.68 | 7124.27 | -2437.41 | 27.33  | 2437.53 | 2.48 |
| 9648.00  | 89.20 | 181.04 | 7124.89 | -2532.40 | 25.90  | 2532.51 | 0.98 |
| 9743.00  | 90.12 | 179.56 | 7125.45 | -2627.39 | 25.40  | 2627.50 | 1.83 |
| 9837.00  | 91.05 | 179.30 | 7124.49 | -2721.38 | 26.34  | 2721.49 | 1.03 |
| 9933.00  | 90.74 | 178.73 | 7122.99 | -2817.35 | 27.99  | 2817.47 | 0.68 |
| 10028.00 | 90.12 | 178.27 | 7122.28 | -2912.32 | 30.48  | 2912.45 | 0.81 |
| 10123.00 | 91.66 | 177.80 | 7120.80 | -3007.25 | 33.73  | 3007.40 | 1.69 |
| 10218.00 | 90.86 | 177.97 | 7118.71 | -3102.16 | 37.24  | 3102.33 | 0.86 |
| 10314.00 | 87.59 | 174.29 | 7120.01 | -3197.90 | 43.71  | 3198.11 | 5.13 |
| 10409.00 | 88.21 | 173.36 | 7123.49 | -3292.28 | 53.93  | 3292.55 | 1.18 |
| 10504.00 | 90.43 | 173.48 | 7124.62 | -3386.65 | 64.81  | 3386.98 | 2.34 |
| 10599.00 | 91.85 | 174.89 | 7122.73 | -3481.13 | 74.43  | 3481.52 | 2.11 |
| 10693.00 | 93.57 | 176.40 | 7118.29 | -3574.75 | 81.56  | 3575.18 | 2.43 |
| 10788.00 | 93.21 | 176.48 | 7112.67 | -3669.40 | 87.45  | 3669.87 | 0.39 |
| 10883.00 | 91.66 | 175.30 | 7108.63 | -3764.07 | 94.25  | 3764.57 | 2.05 |
| 10978.00 | 90.93 | 175.09 | 7106.49 | -3858.71 | 102.21 | 3859.26 | 0.80 |
| 11074.00 | 89.69 | 174.13 | 7105.97 | -3954.28 | 111.23 | 3954.88 | 1.63 |
| 11169.00 | 88.52 | 171.29 | 7107.45 | -4048.49 | 123.28 | 4049.17 | 3.23 |
| 11264.00 | 87.28 | 171.05 | 7110.93 | -4142.30 | 137.85 | 4143.06 | 1.33 |
| 11359.00 | 86.21 | 170.37 | 7116.33 | -4235.90 | 153.16 | 4236.76 | 1.33 |
| 11425.00 | 86.05 | 170.64 | 7120.78 | -4300.85 | 164.02 | 4301.77 | 0.47 |
| 11477.00 | 86.05 | 170.64 | 7124.36 | -4352.03 | 172.46 | 4353.00 | 0.00 |

\*Weatherford M/LWD surveys from 949 ft MD to 11425 ft MD.\*

\*TD at 11477.00 ft MD.\*

The total correction is 8.70 deg relative to True North.



**Weatherford**<sup>®</sup>

Final Print

|         |                       |        |             |
|---------|-----------------------|--------|-------------|
| COMPANY | <u>Anadarko</u>       |        |             |
| WELL    | <u>Cannon 37C-3HZ</u> |        |             |
| FIELD   | <u>Wattenberg</u>     |        |             |
| RIG     | <u>H&amp;P 307</u>    |        |             |
| LOC.    | <u>Colorado</u>       | COUNTY | <u>Weld</u> |