



Radial Cement Bond
Gamma Ray
Casing Collar Log

Company Kerr-McGee Oil & Gas Onshore, L.P.

Well RW 15N-32HZ

Field Wattenberg

County Weld State Colorado

Location: API #: 05-123-44754

Other Services
Gauge Ring

SEC 29 TWP 3N RGE 65W

Elevation

Permanent Datum Ground Level Elevation 4869'
Log Measured From Kelly Bushing 21 FT
Drilling Measured From Kelly Bushing

K.B. 4890'
D.F. ---
G.L. 4869'

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| | | | | |
|------------------------|-----------------|--------------|-------|---------|
| Date | 19-NOV-2017 | | | |
| Run Number | Two | | | |
| Depth Driller | 13294 FT | | | |
| Depth Logger | 7270 FT | | | |
| Bottom Logged Interval | 7266 FT | | | |
| Top Log Interval | Surface | | | |
| Open Hole Size | 7 875" | | | |
| Type Fluid | Water | | | |
| Density / Viscosity | 8.34 lb/gal | | | |
| Max. Recorded Temp. | 250°F | | | |
| Estimated Cement Top | See Log | | | |
| Time Well Ready | ROA | | | |
| Time Logger on Bottom | 12:57 PM | | | |
| Equipment Number | HD-340 | | | |
| Location | Fort Lupton, CO | | | |
| Recorded By | J. Fresquez | | | |
| Witnessed By | J. McMillen | | | |
| Borehole Record | | | | |
| Run Number | Bit | From | To | Size |
| | | | | Weight |
| | | | | From |
| | | | | To |
| Tubing Record | | | | |
| Casing Record | Size (in) | Wgt (lbs/ft) | Grade | Top |
| Surface Casing | 9 5/8 | 36 | J-55 | Surface |
| Intermediate #1 | 5 1/2 | 20 | P-110 | Surface |
| Intermediate #2 | | | | |
| Inner | | | | |

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

Log ran as per customer request
Depth referenced to Casing Tally reported Marker Joint at 6364 FT
Adjusted +2 FT to correlate with Marker Joint
Gauge Ring/Junk Basket ran to 7315 FT with no debris
Log ran from as deep as possible in heel to Surface
Log ran with 2800 PSI Surface Induced Pressure
Logging tools were clean and free of debris upon completion of operations

Thank you for choosing Reliance Oilfield Services, LLC!!

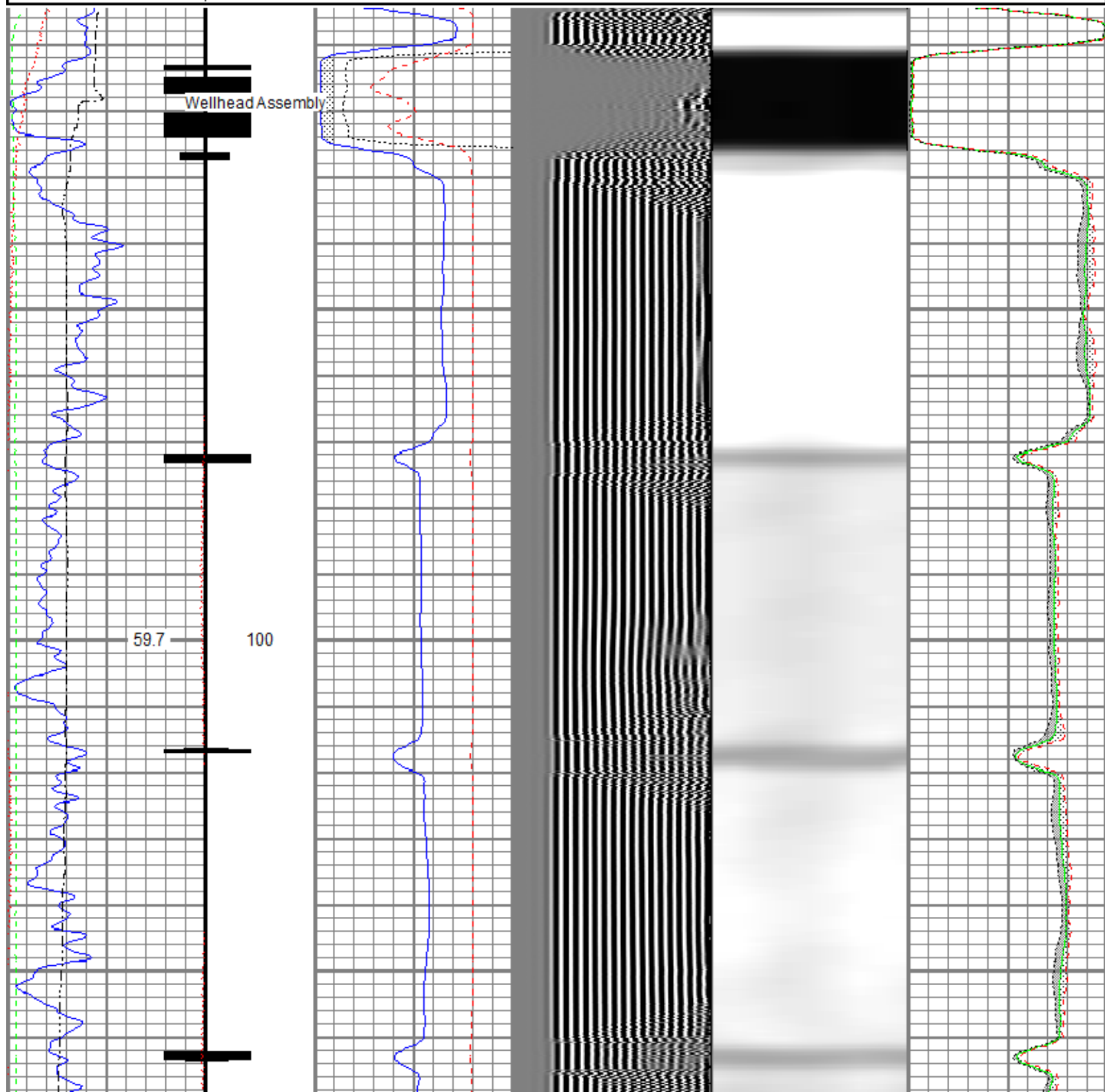
Main Pass

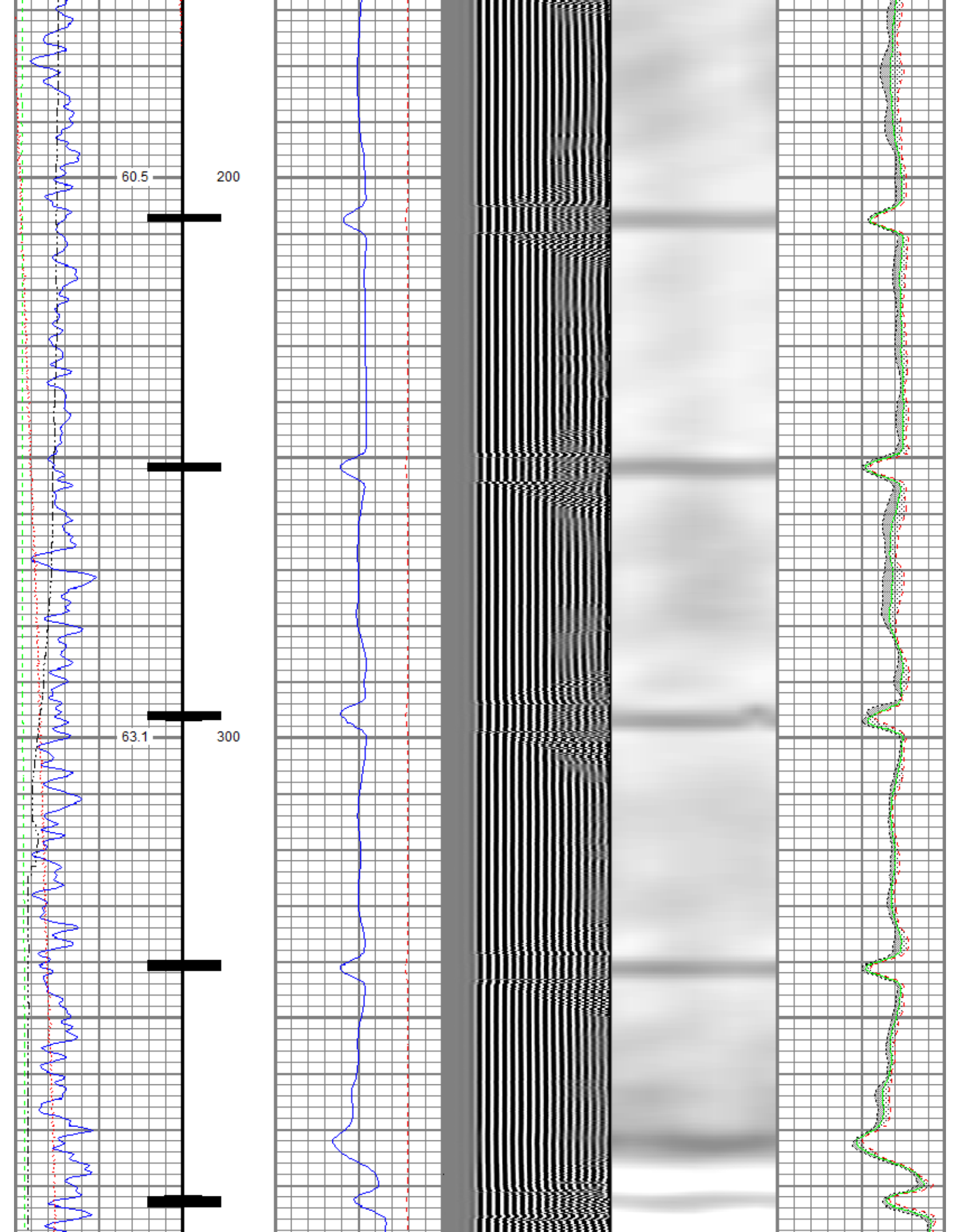


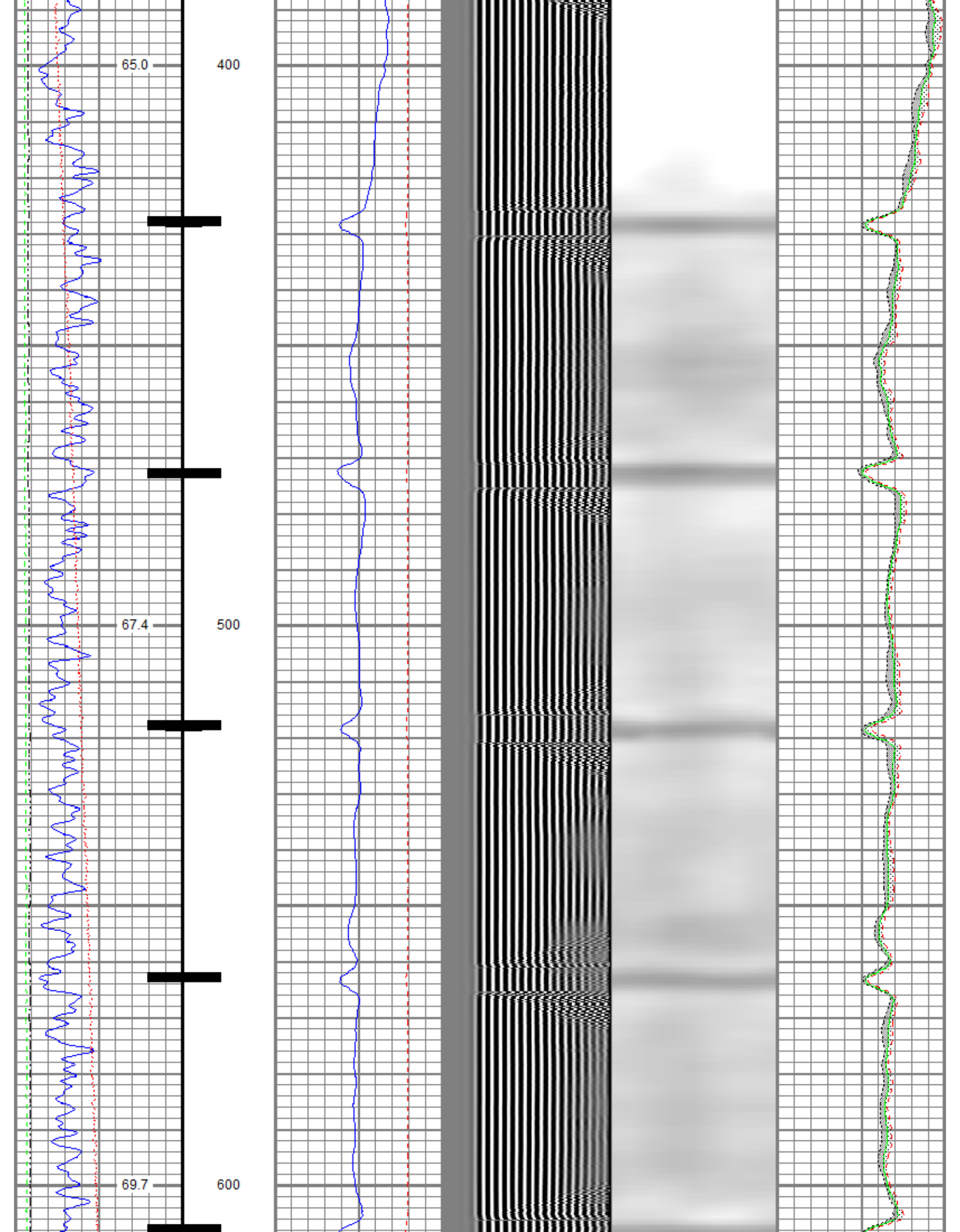
Recorded With 2800 PSI Surface Induced Pressure

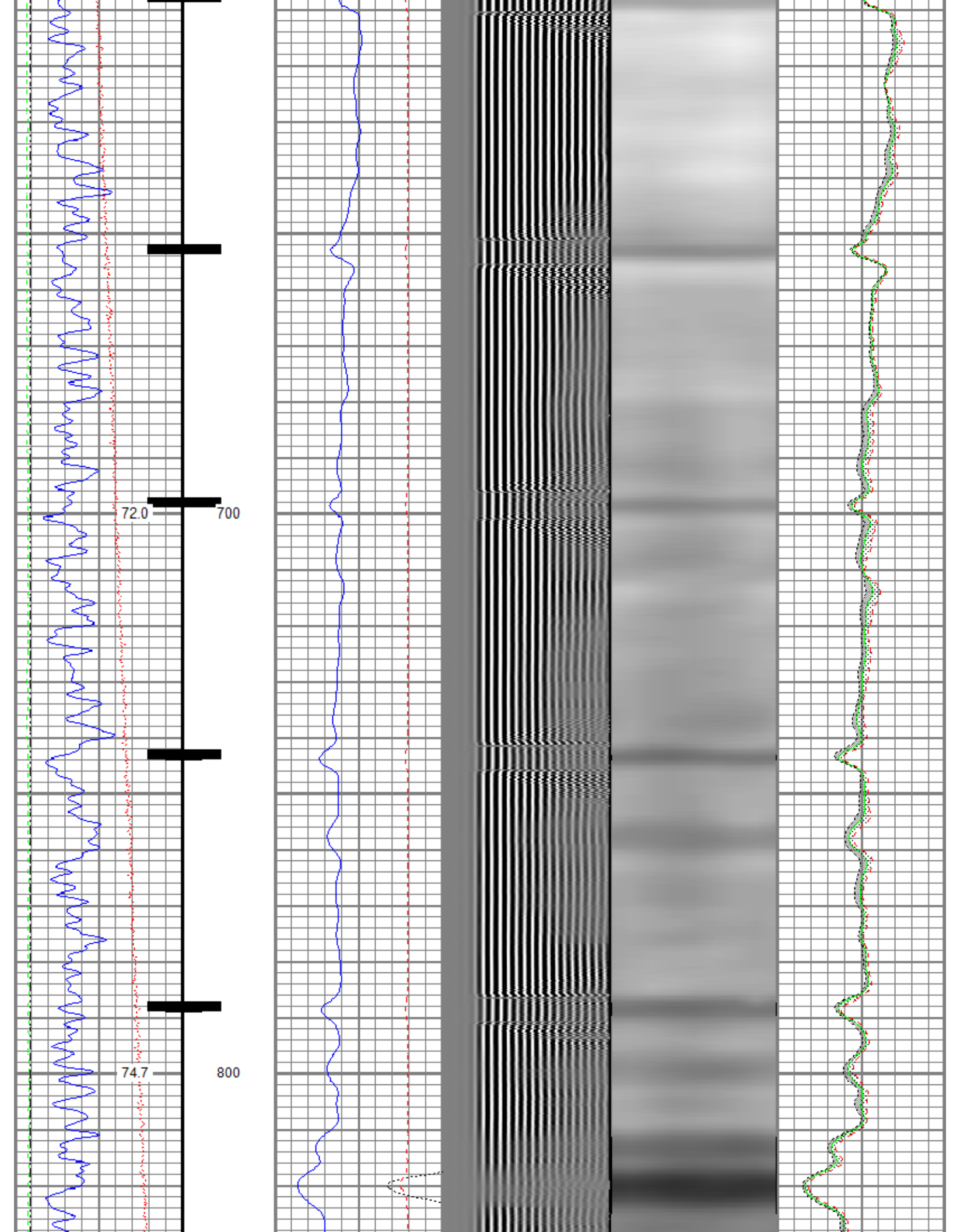
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|---------------------|--|
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| Dataset Pathname | well4/run1/pass6.1 |
| Presentation Format | ros_radri |
| Dataset Creation | Sun Nov 19 14:01:41 2017 |
| Charted by | Depth in Feet scaled 1:240 |

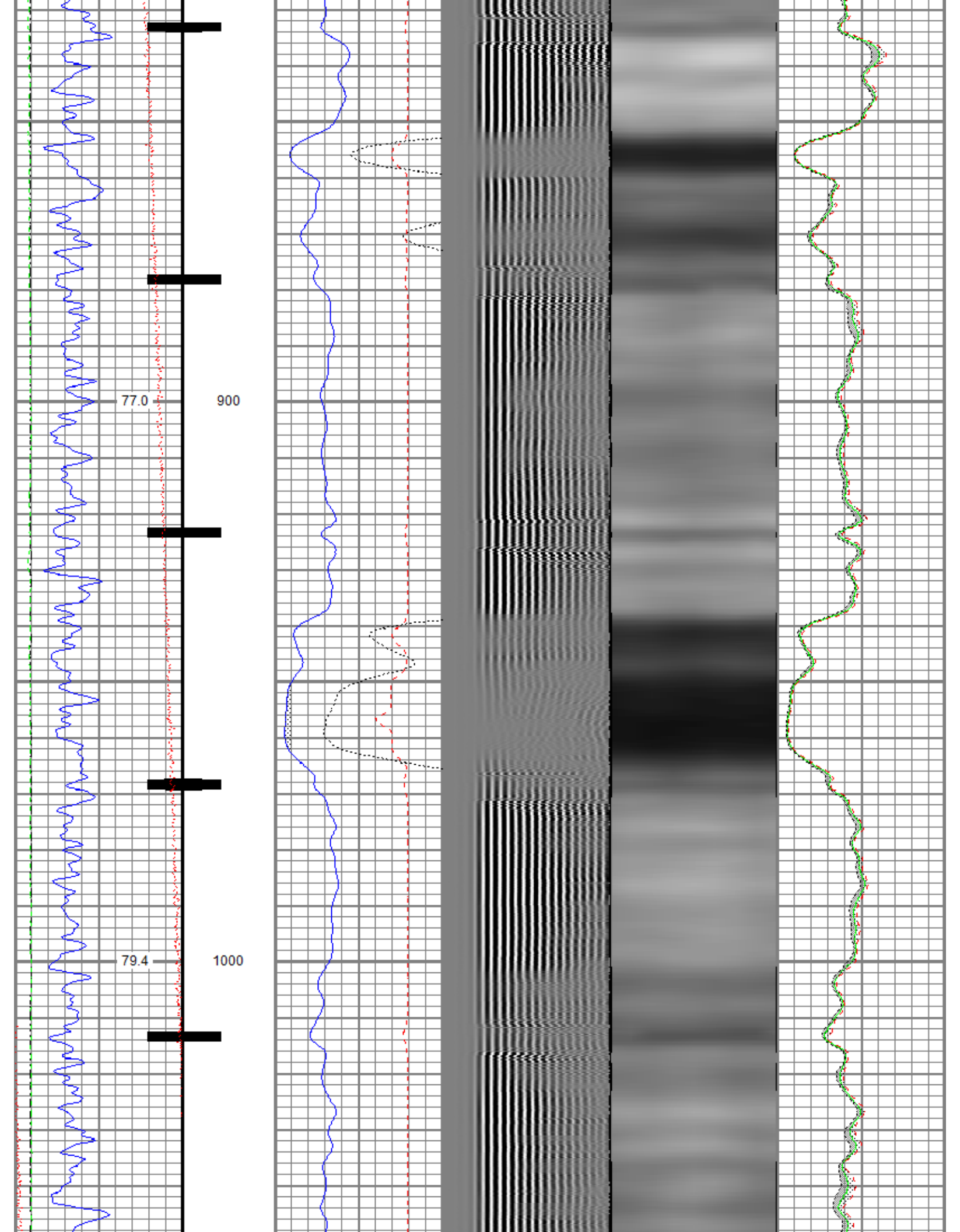
| | | | | | | |
|------------------------|-----|-----------------------|-------------------------|------------|---|-----------------------|
| Gamma Ray | 0 | 3' Amplitude (mV) 100 | 5' Variable Density Log | Sector Map | 0 | Average Amplitude 100 |
| (GAPI) 120 | | 3' Amplitude x 5 | 200 | | | Minimum Amplitude |
| Casing Collar Locator | 0 | (mV) 20 | | | 0 | 100 |
| Temperature (degF) 20 | | 3' Travel Time | | | | Maximum Amplitude |
| Line Speed | 650 | (usec) 150 | | | 0 | 100 |
| (ft/min) 150 | | | | | | |
| Line Tension (lb) 2000 | | | | | | |

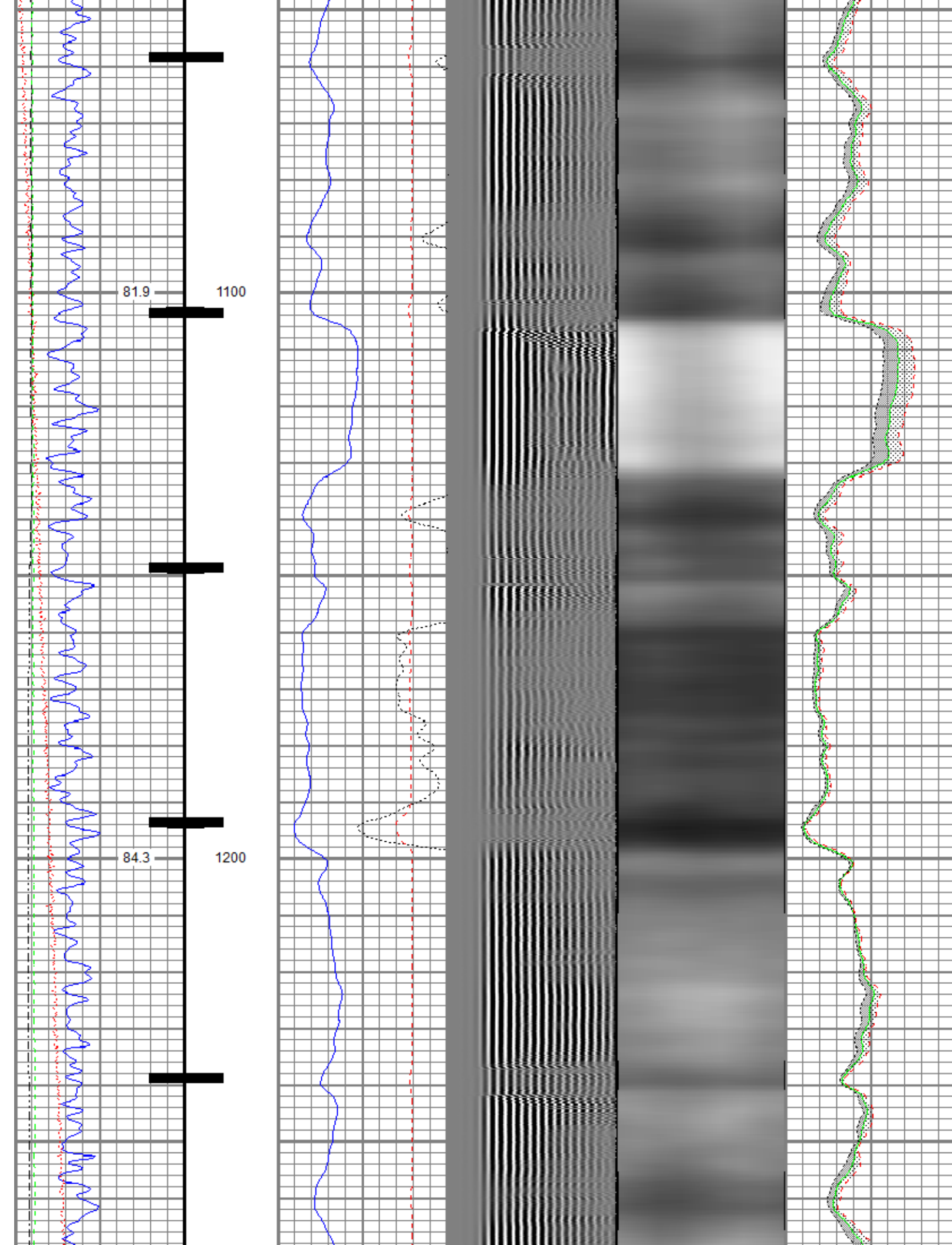


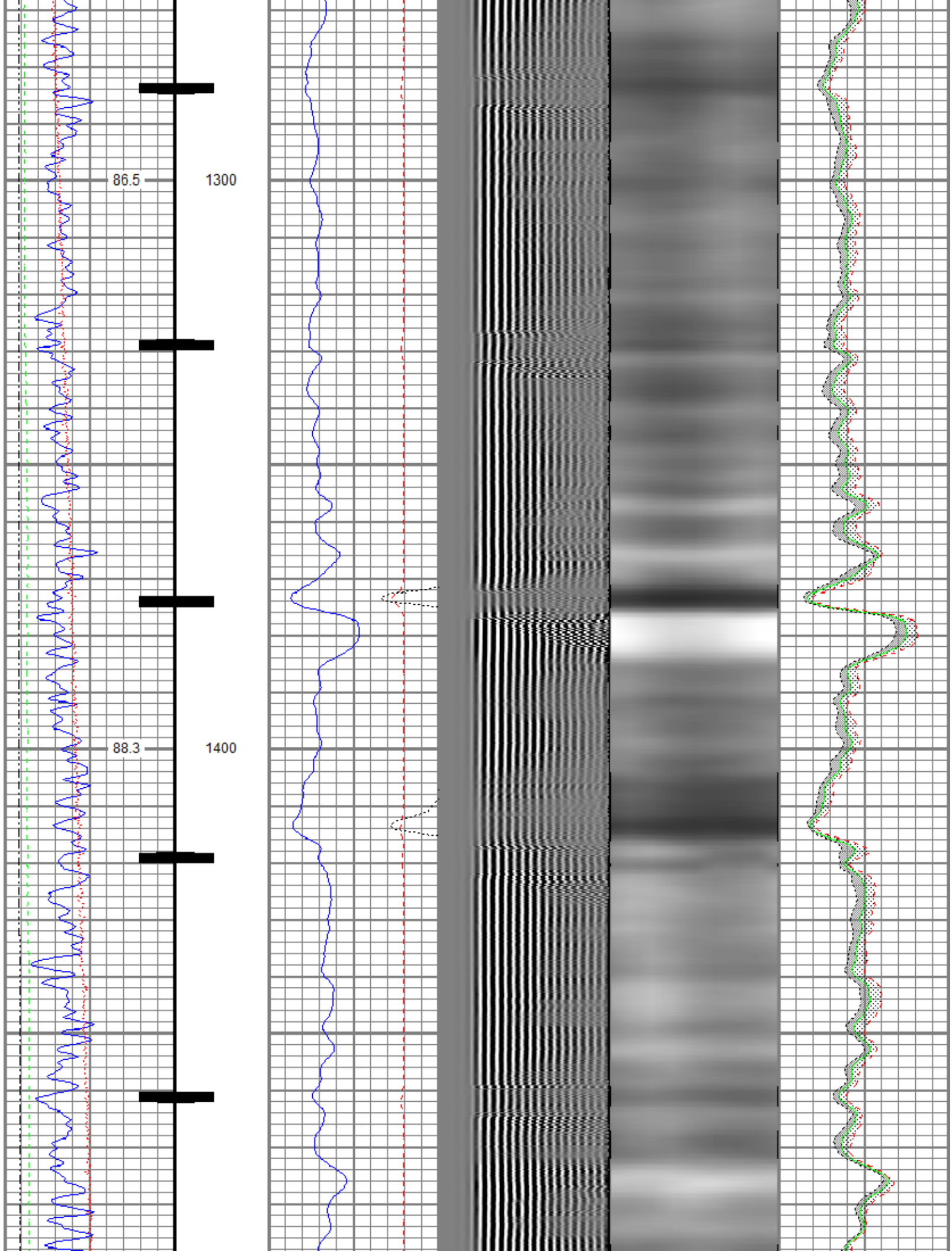


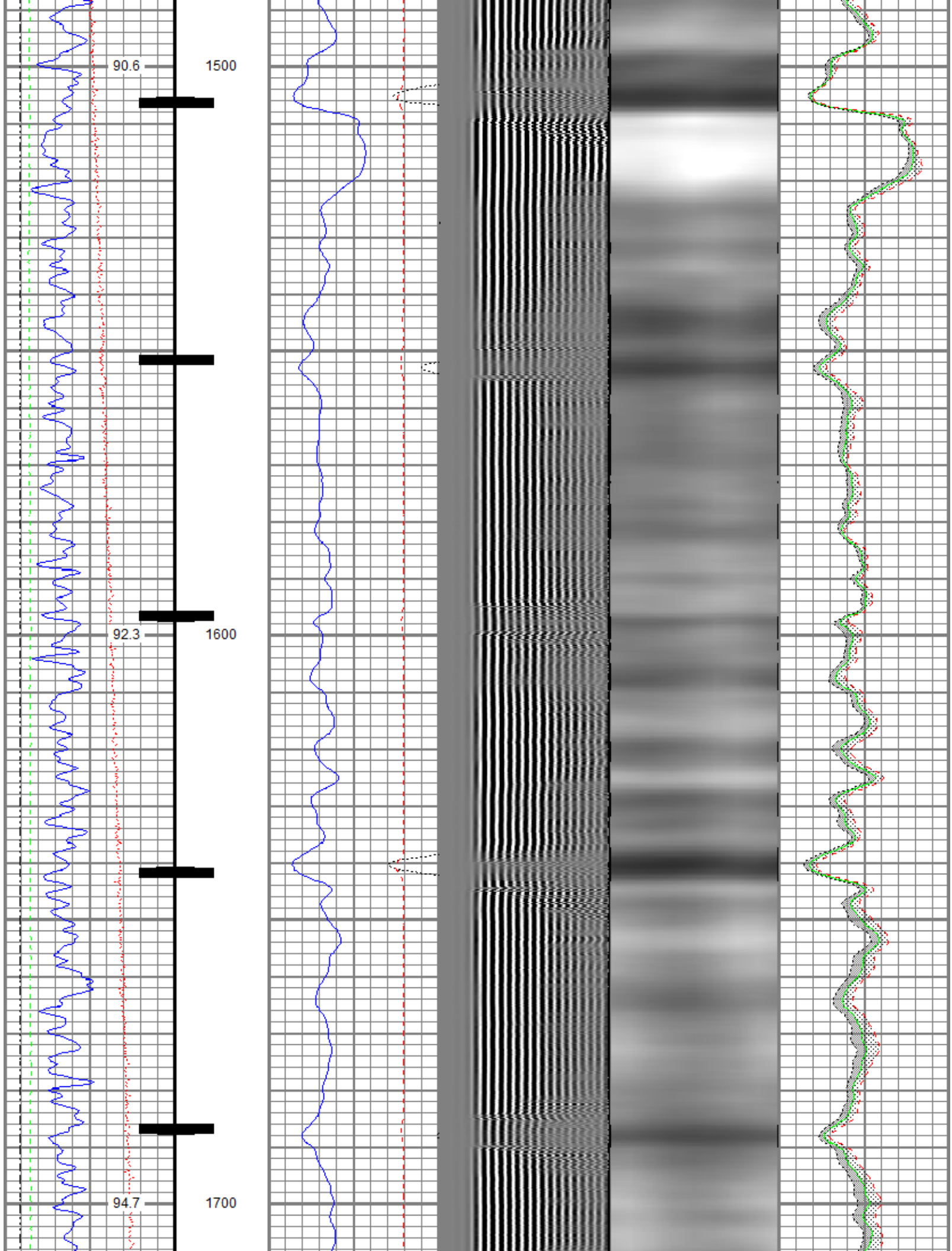


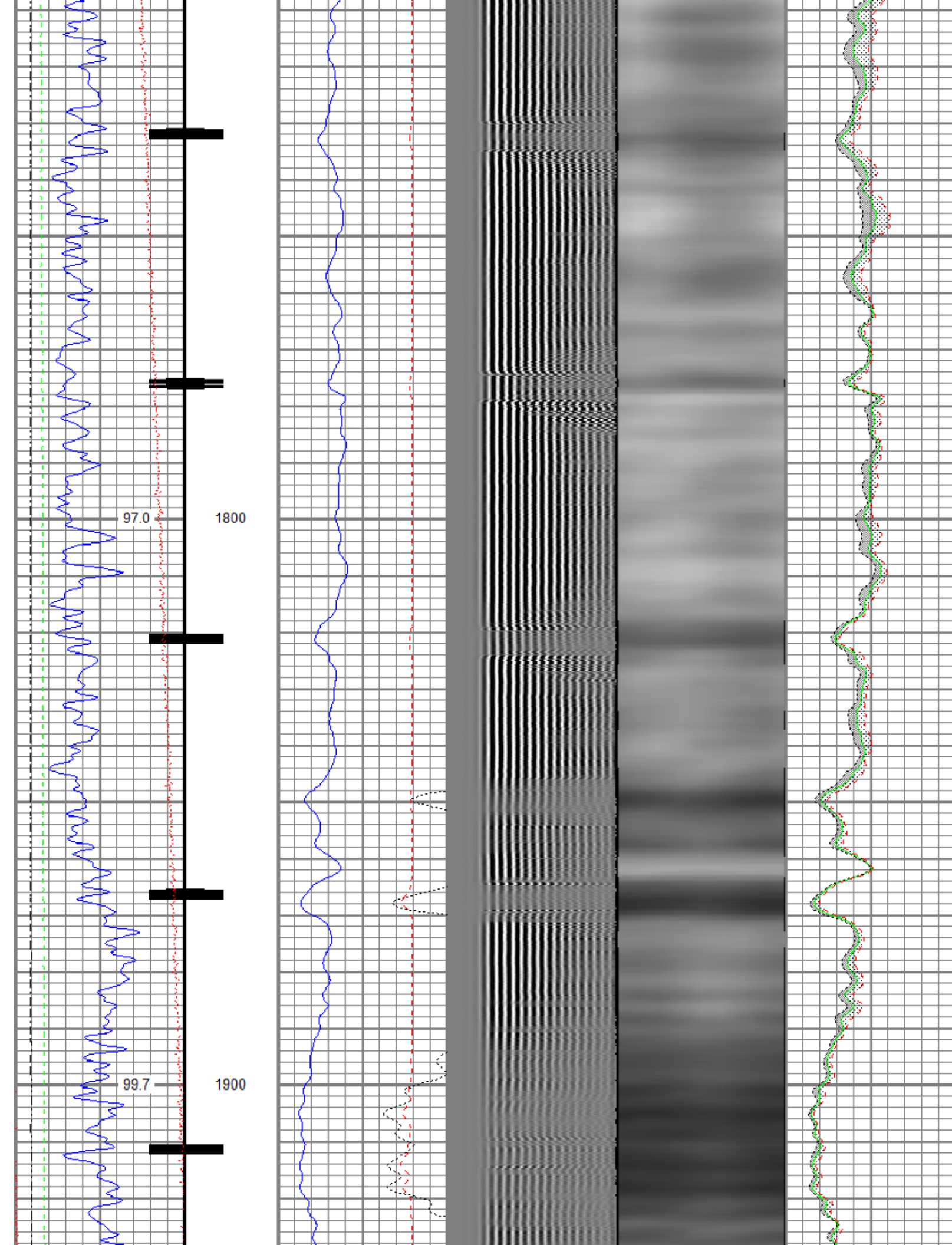


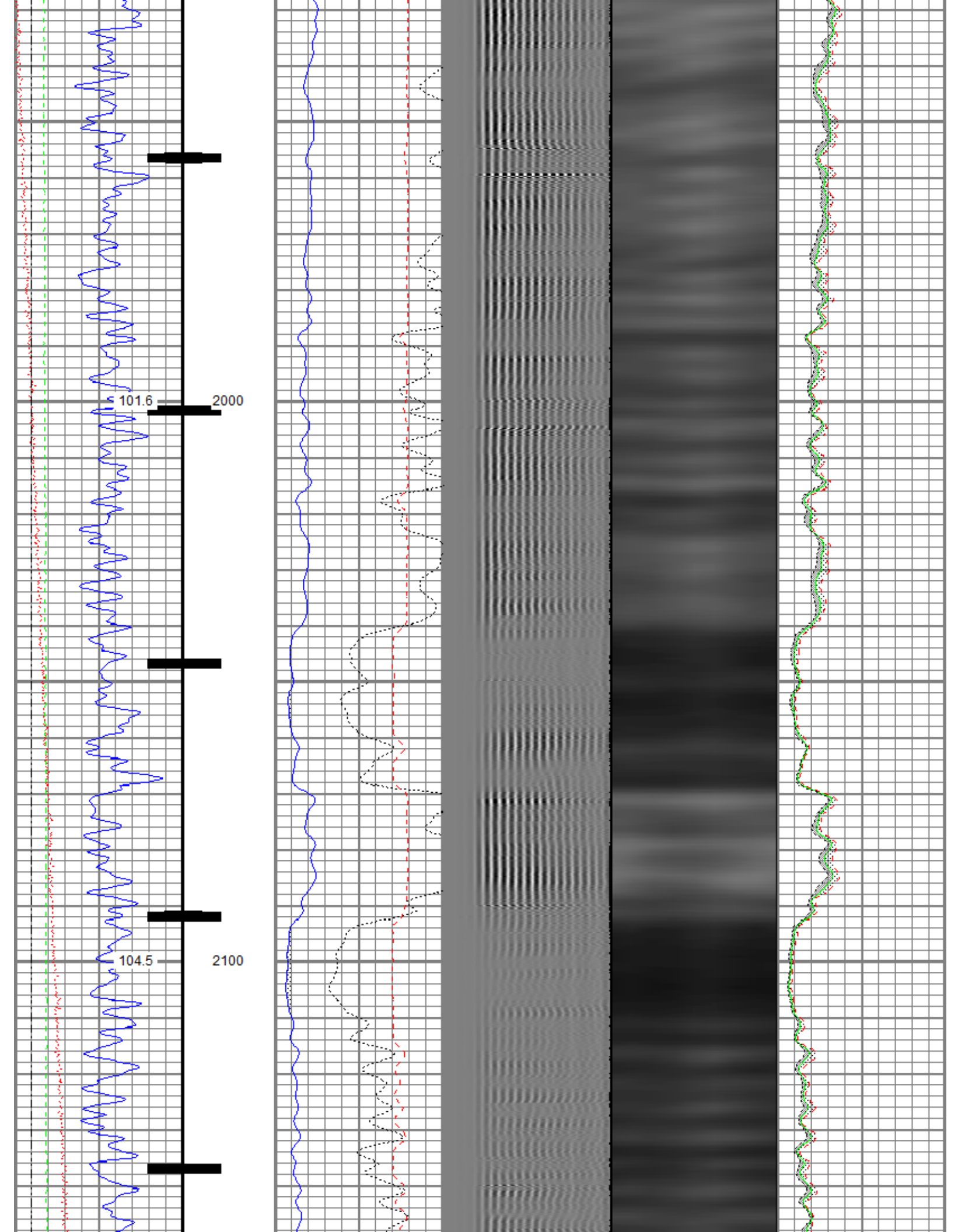


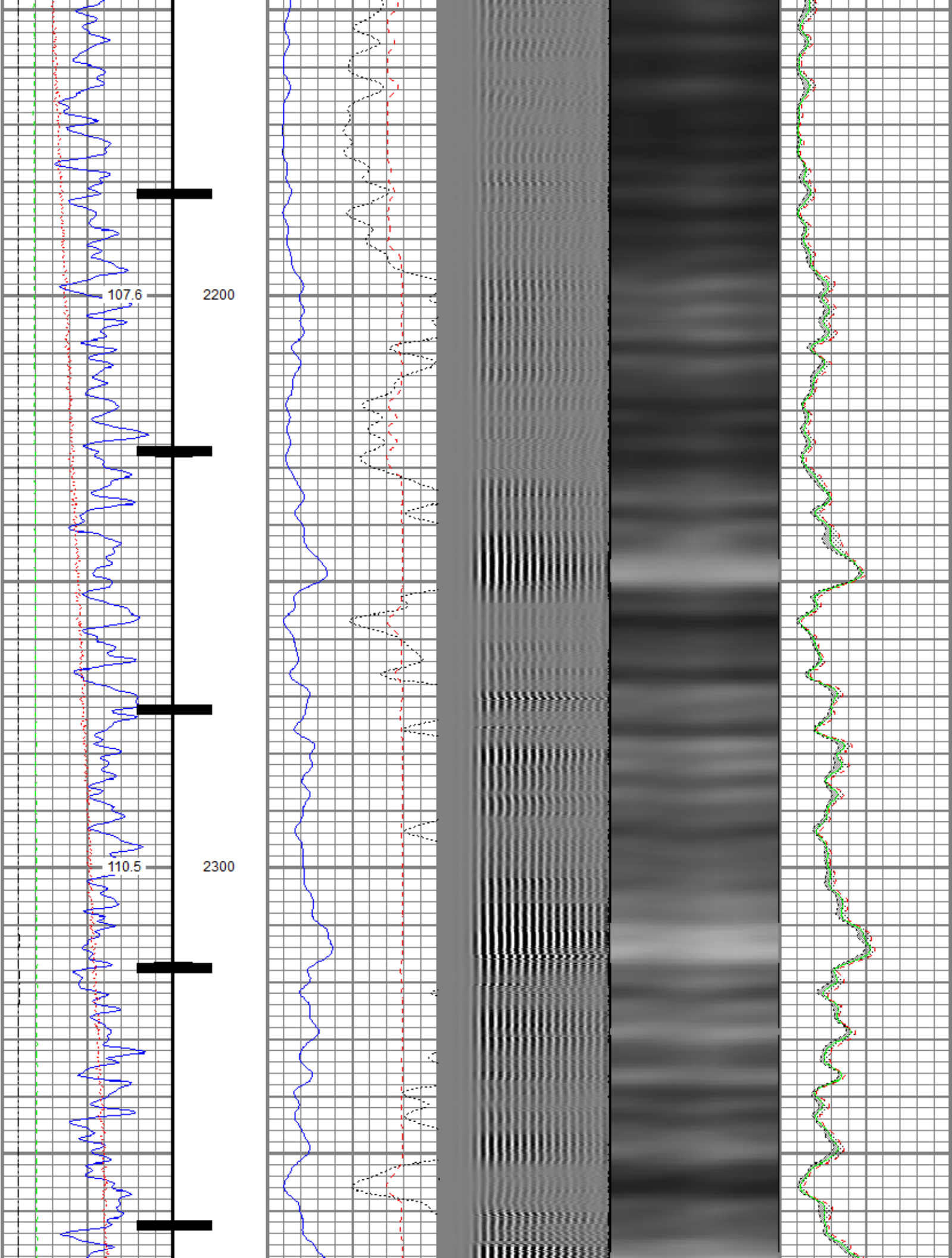


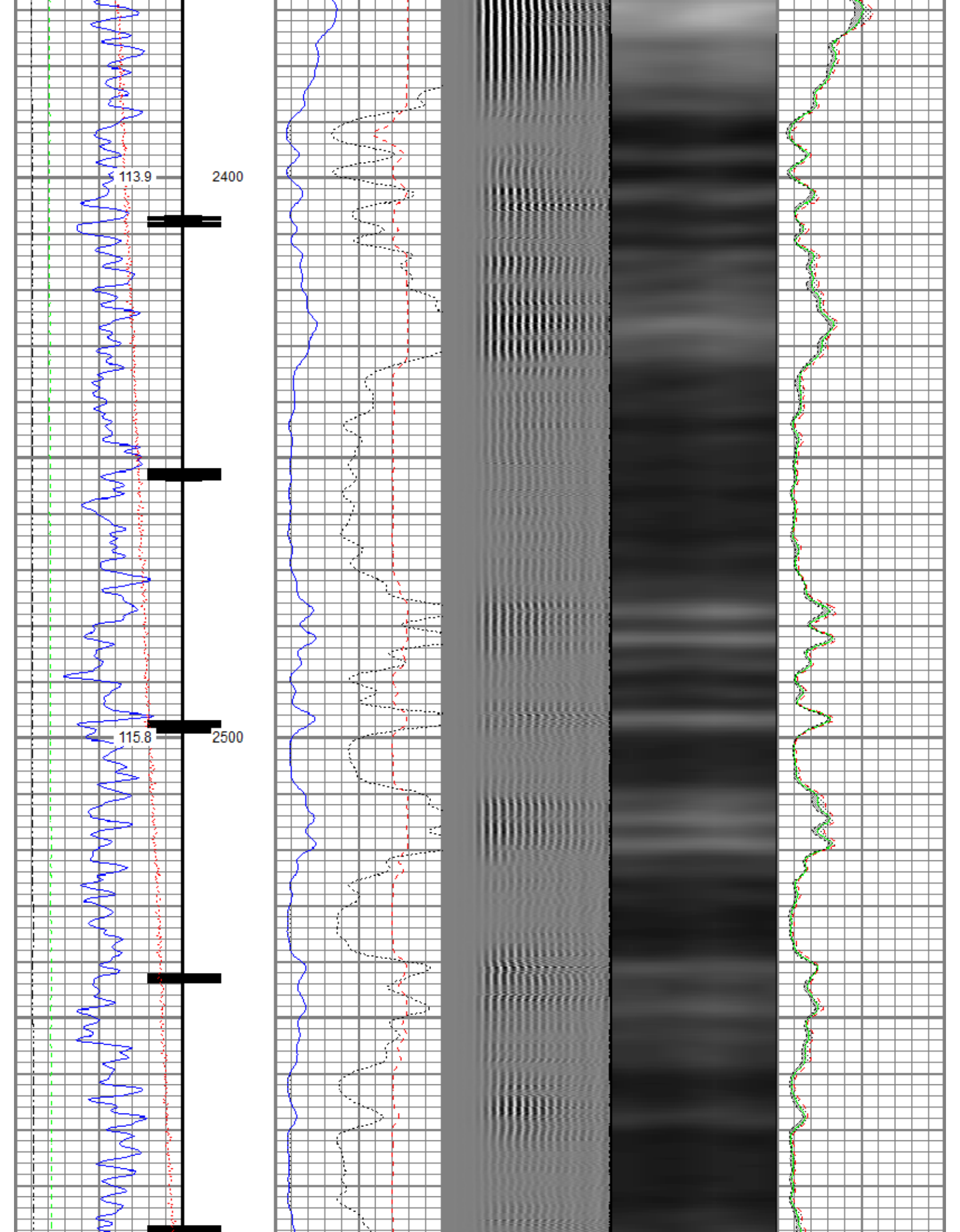


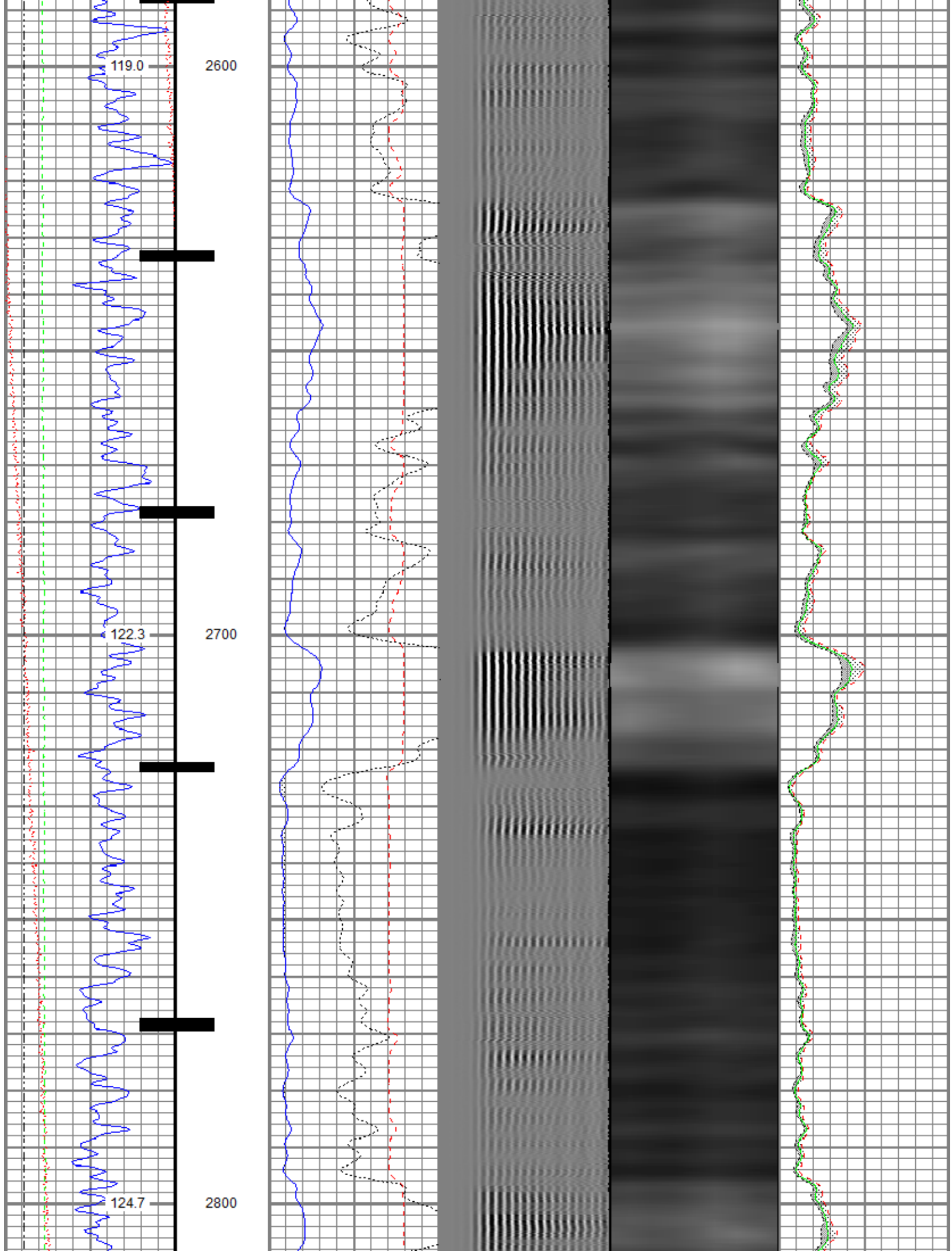


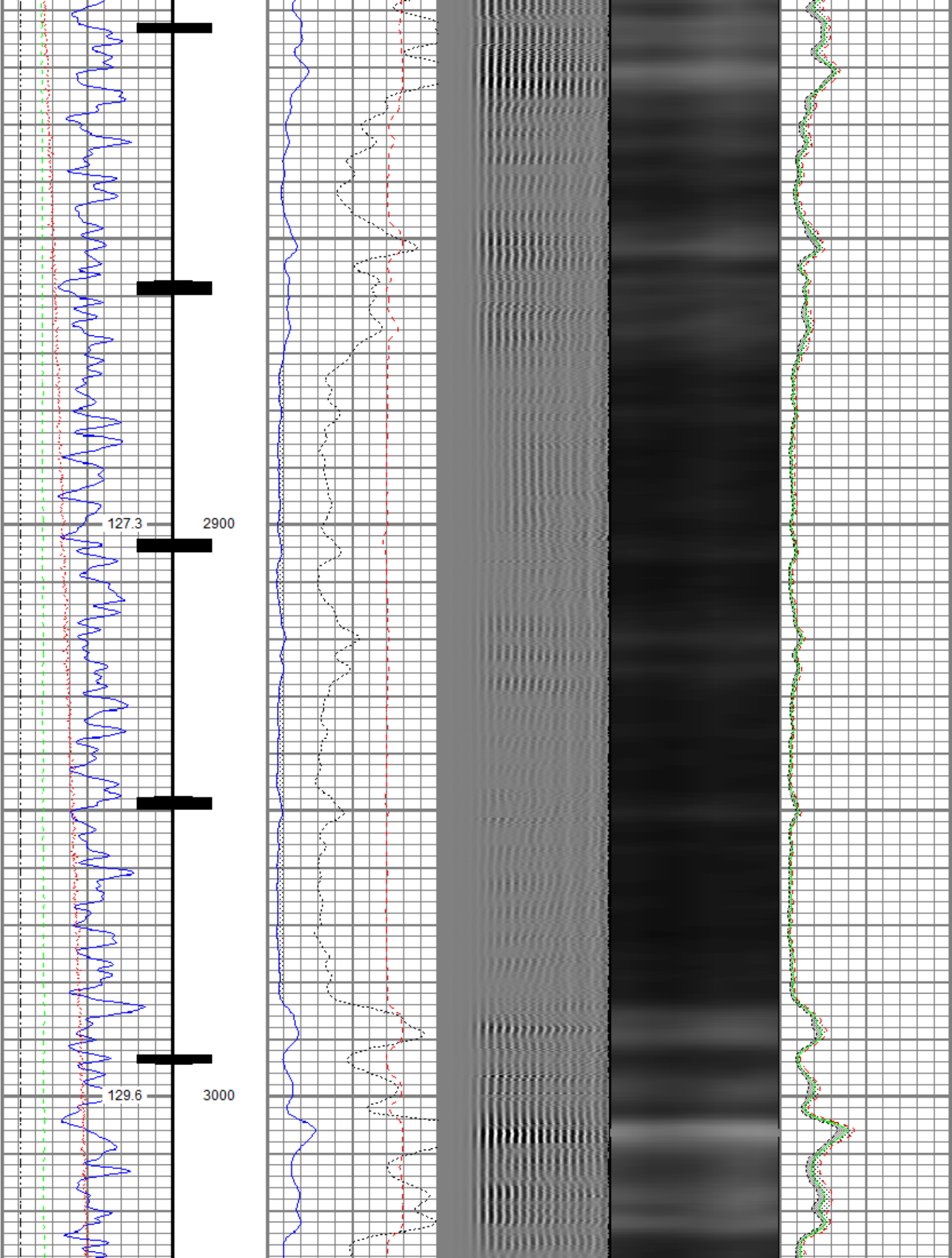


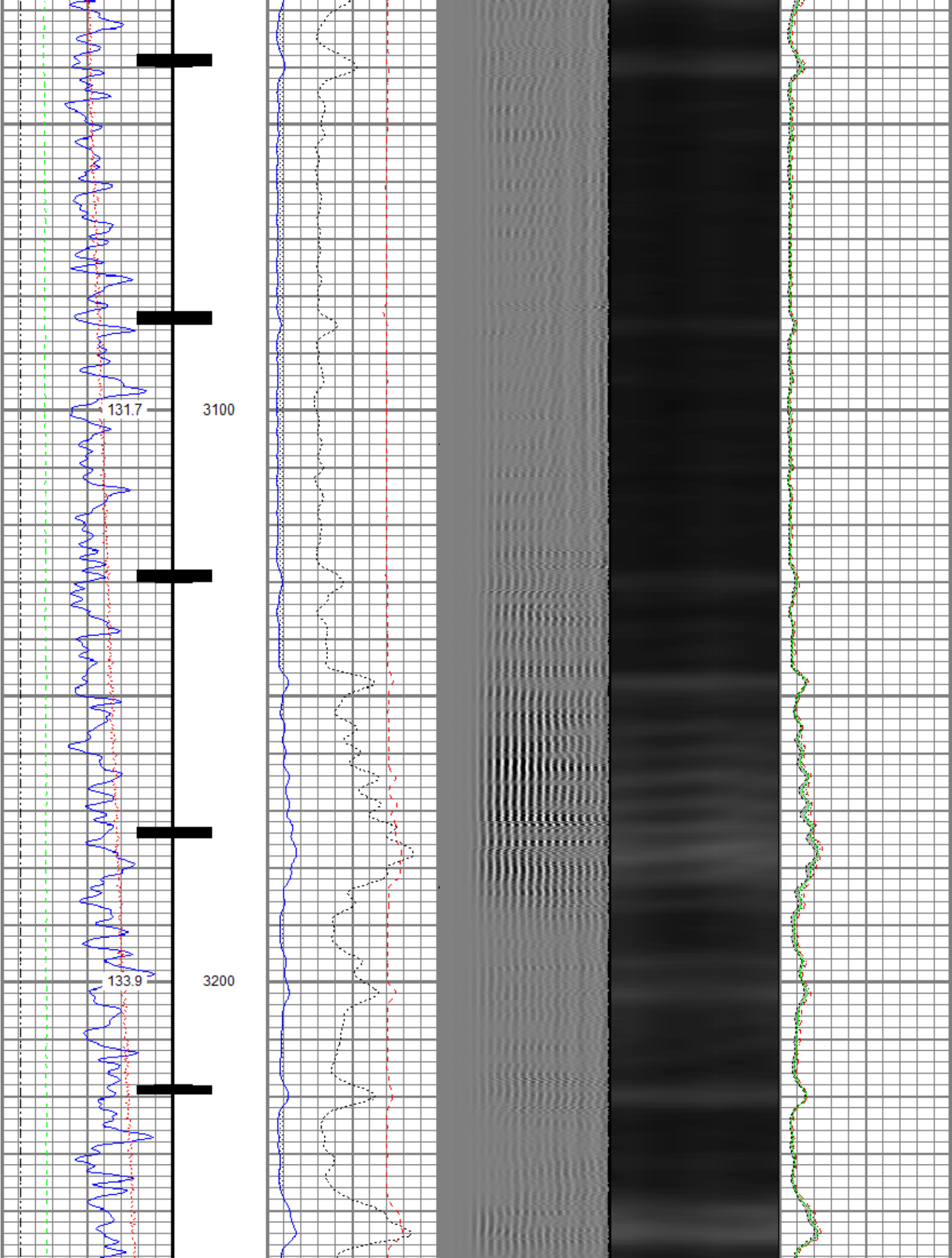


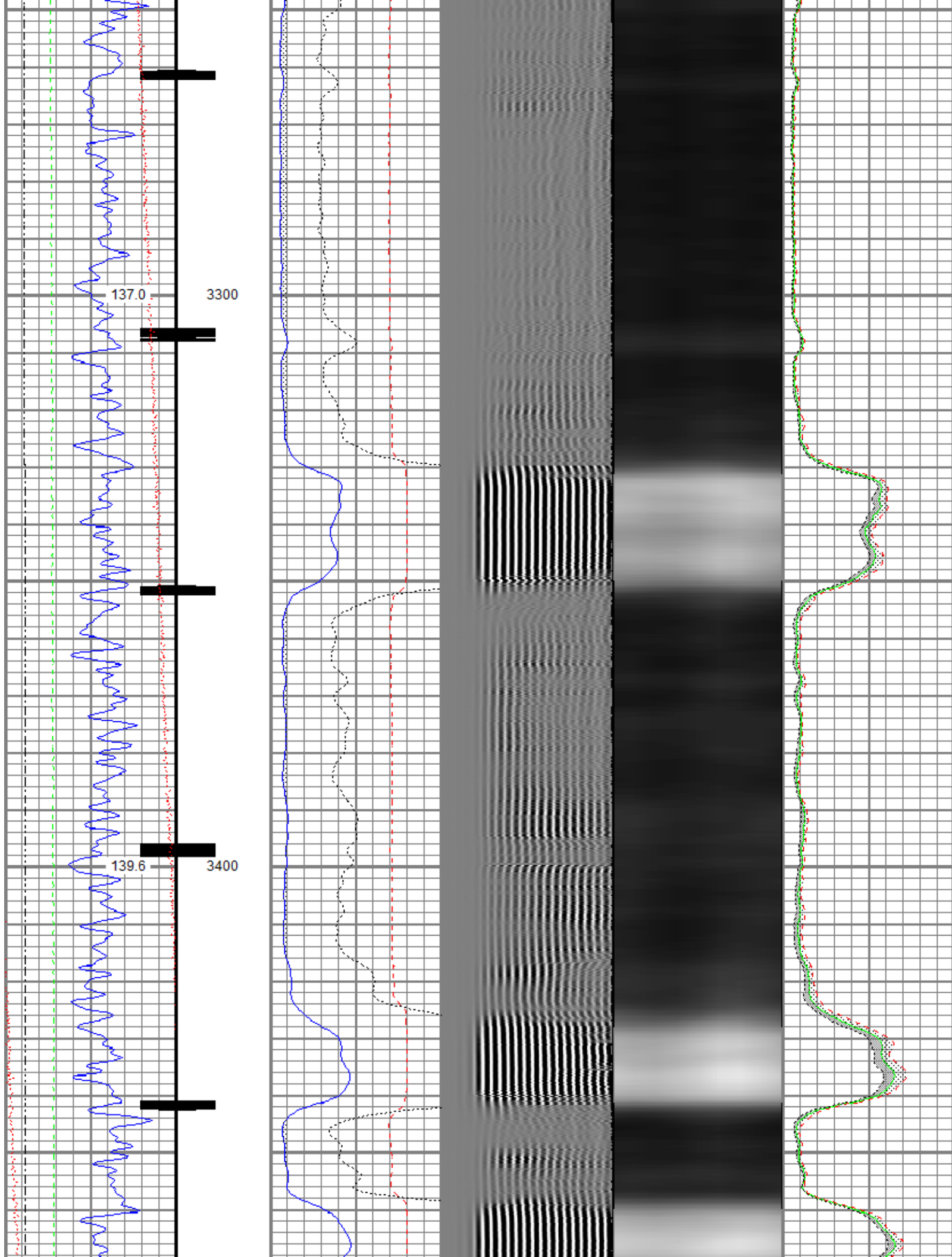


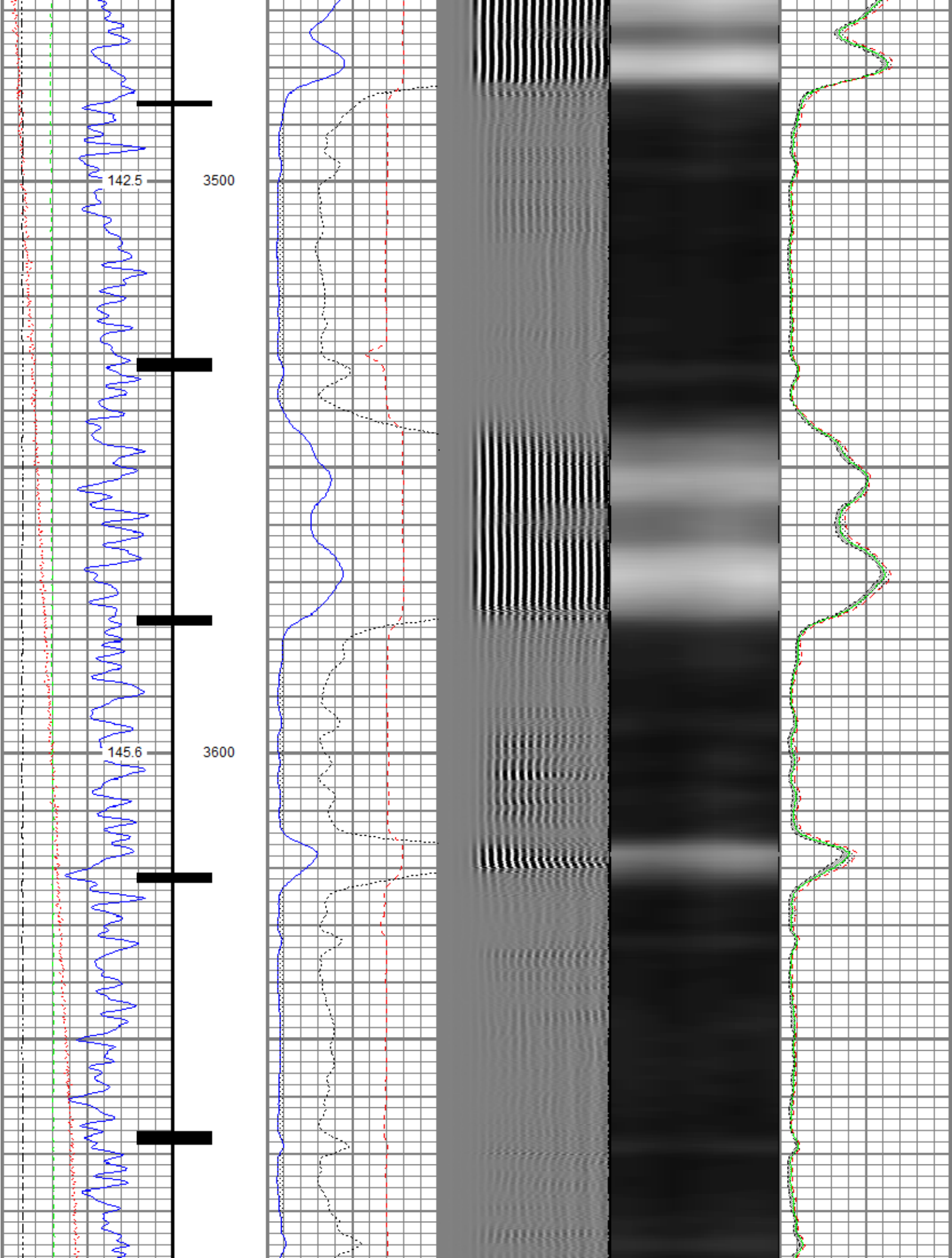


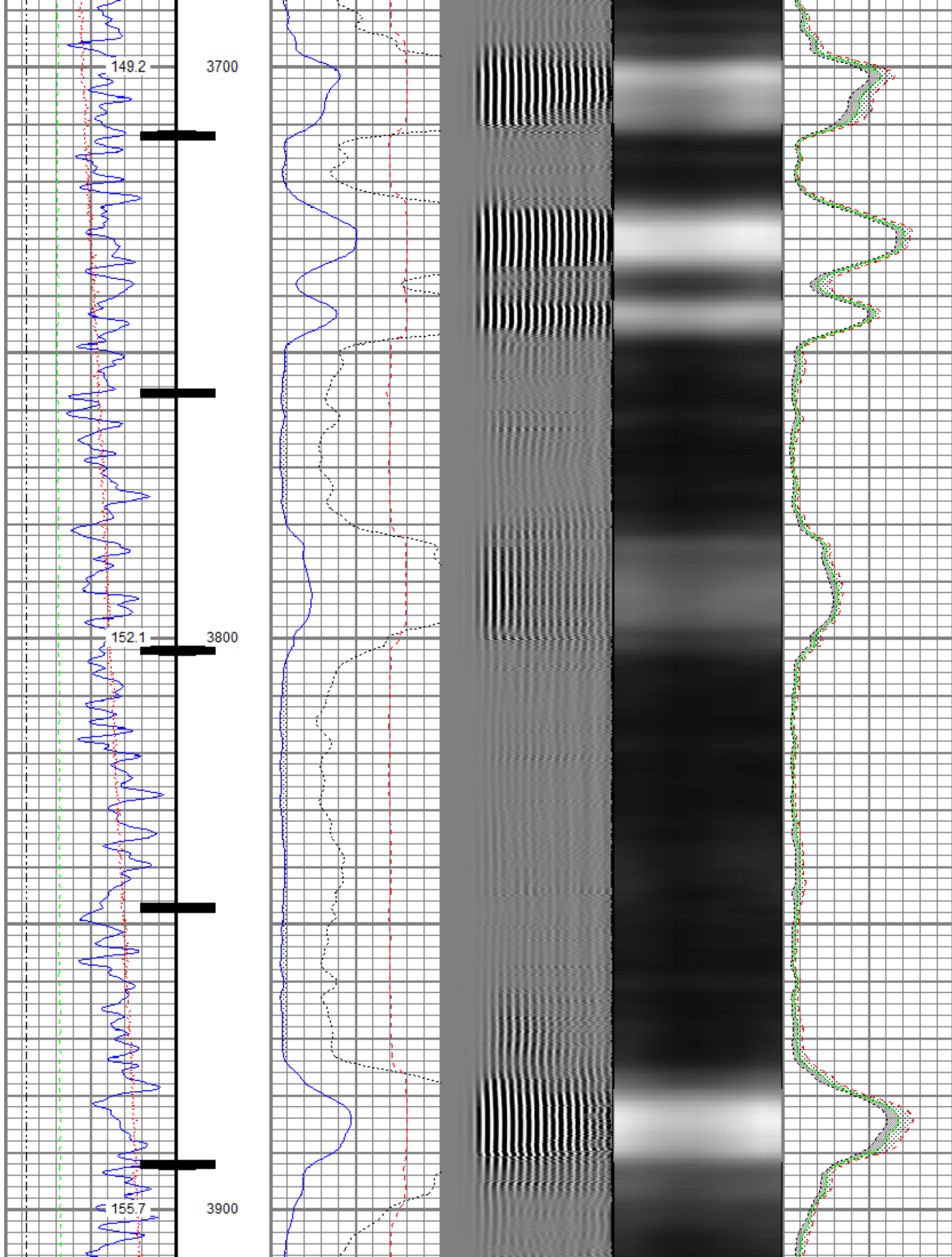


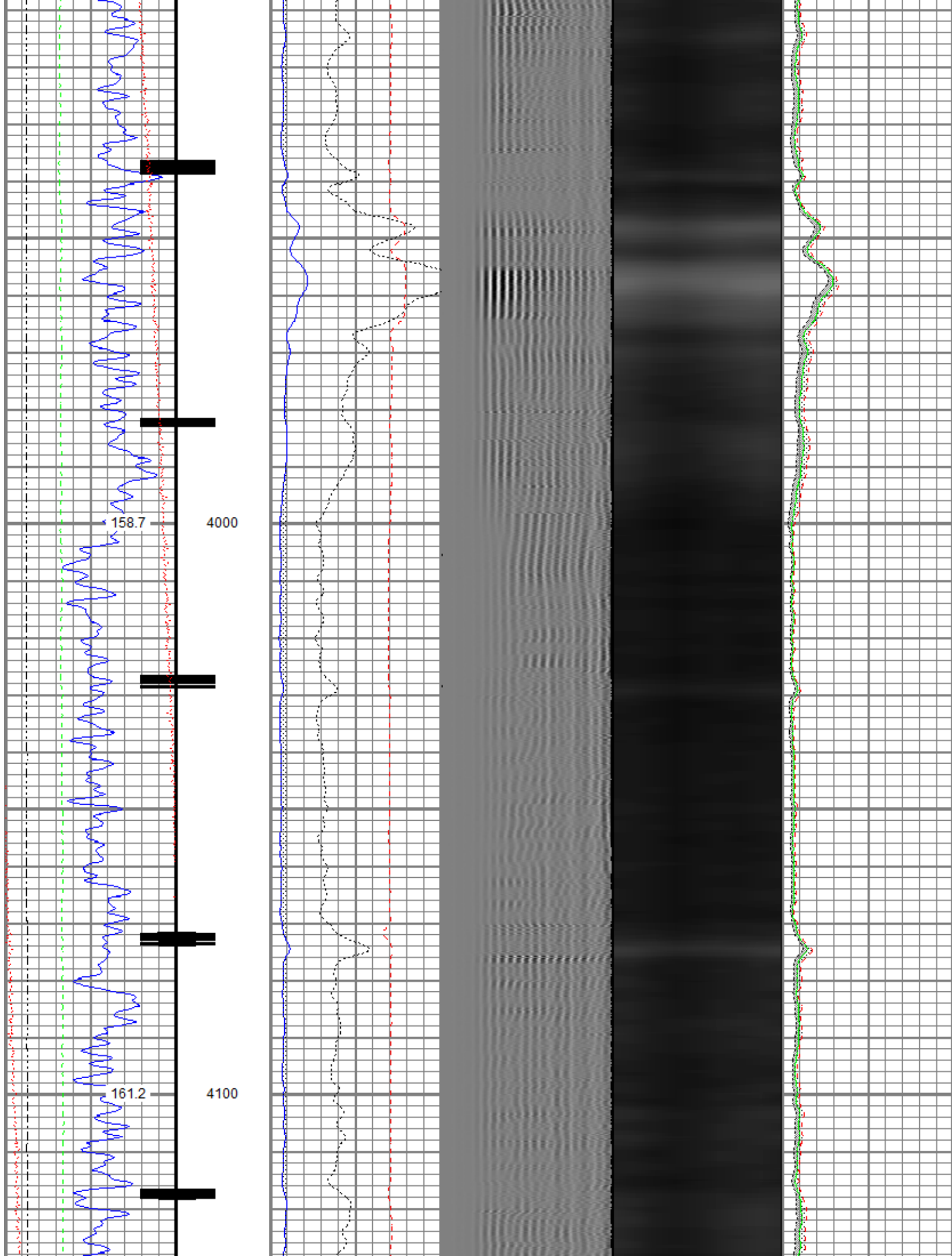


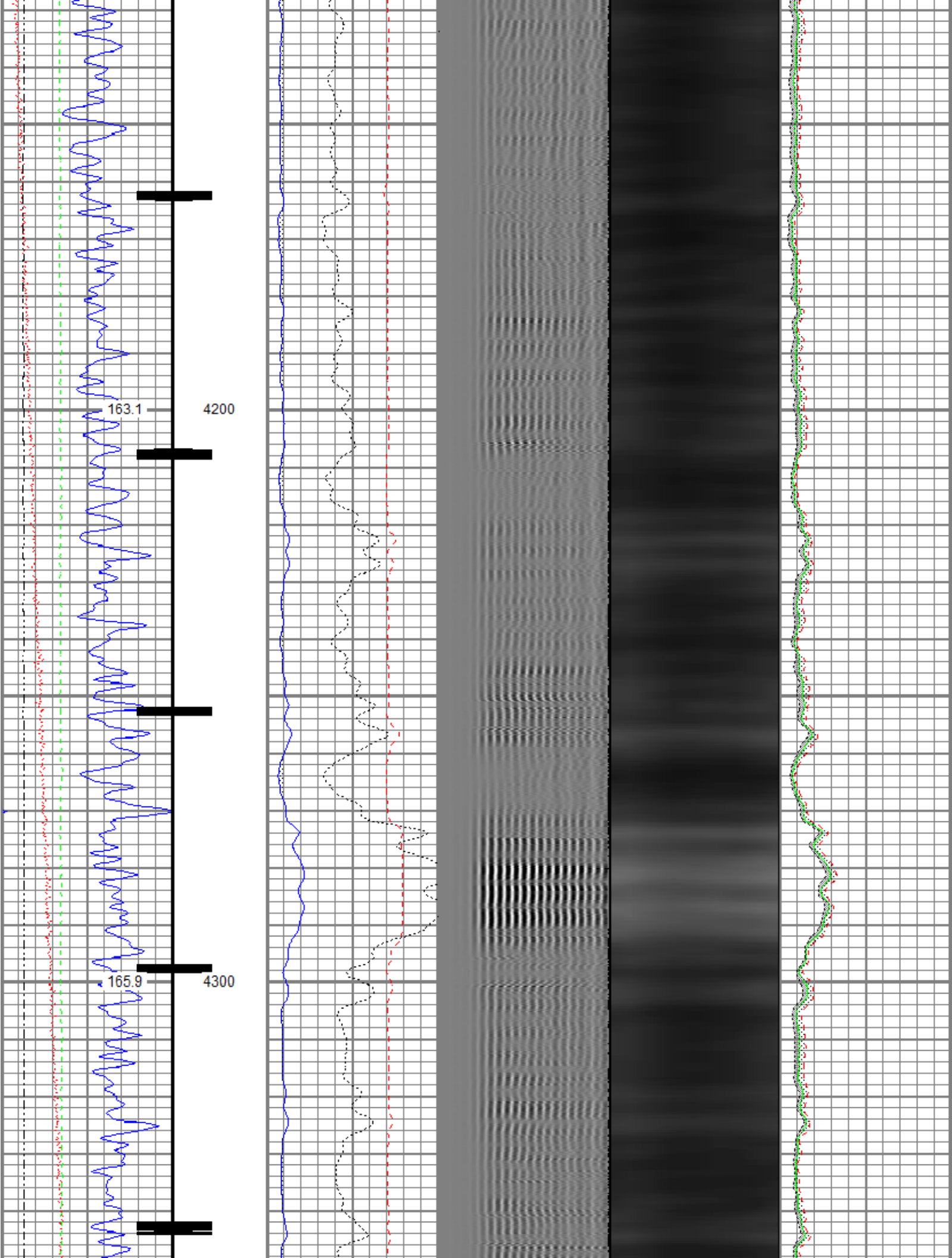


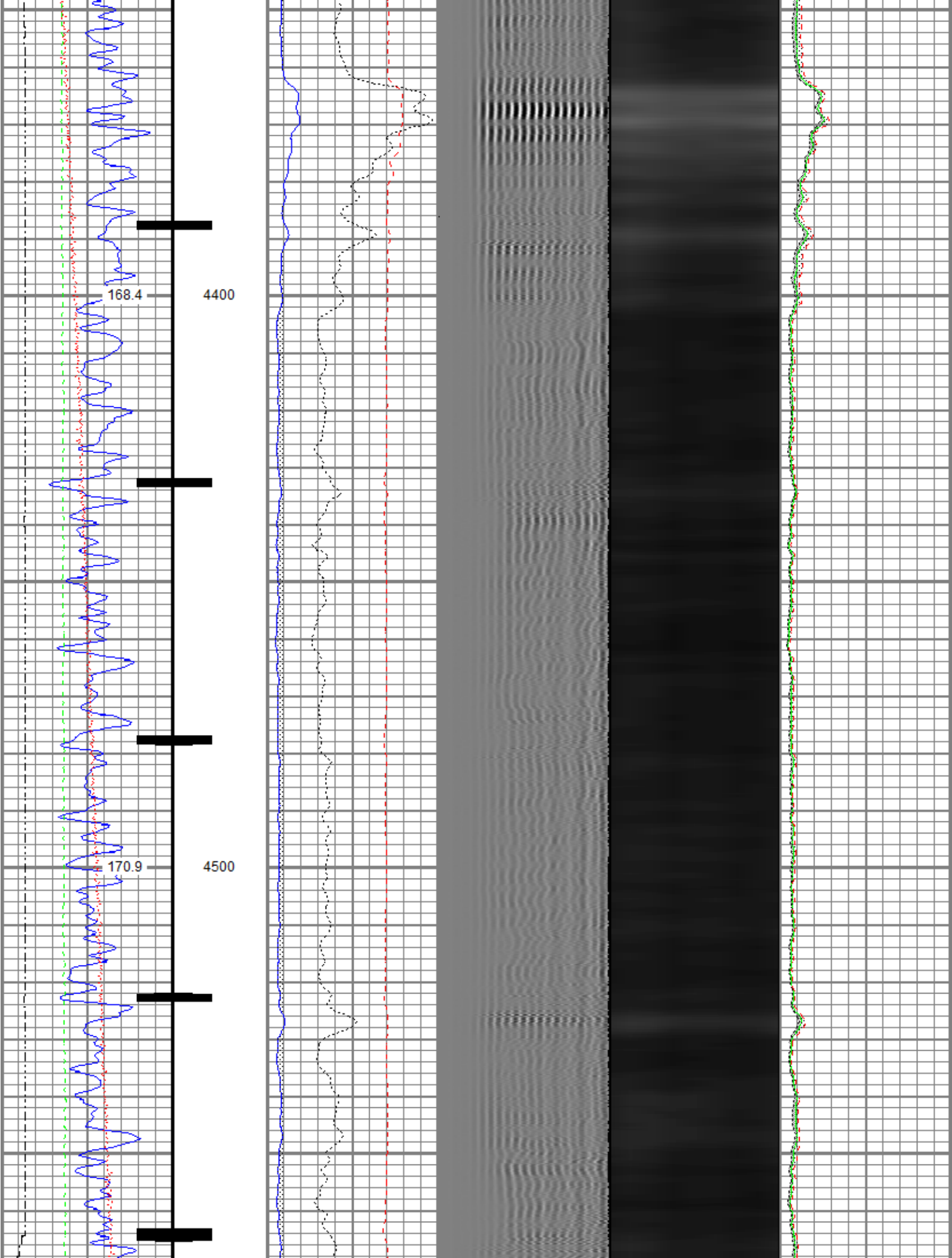










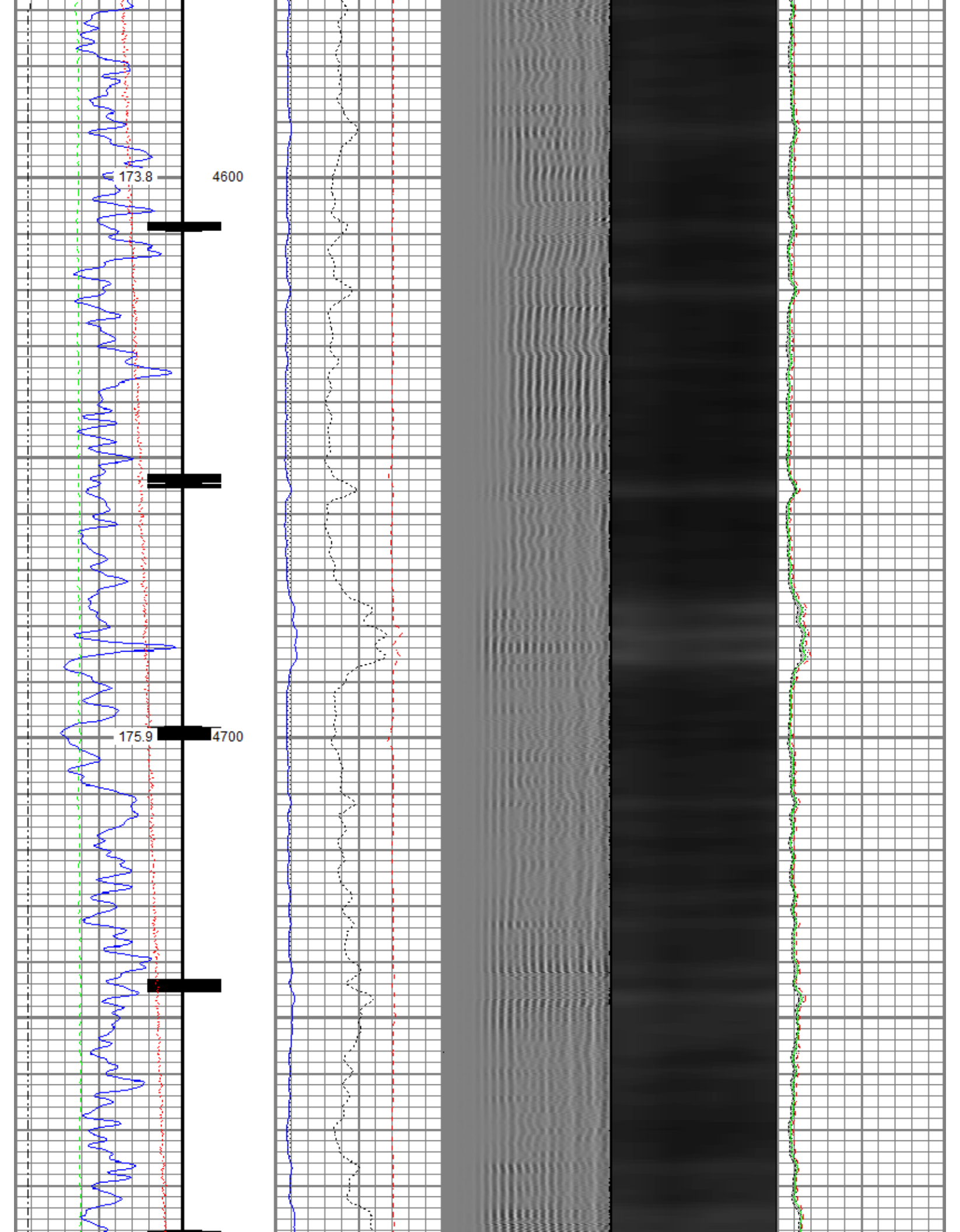


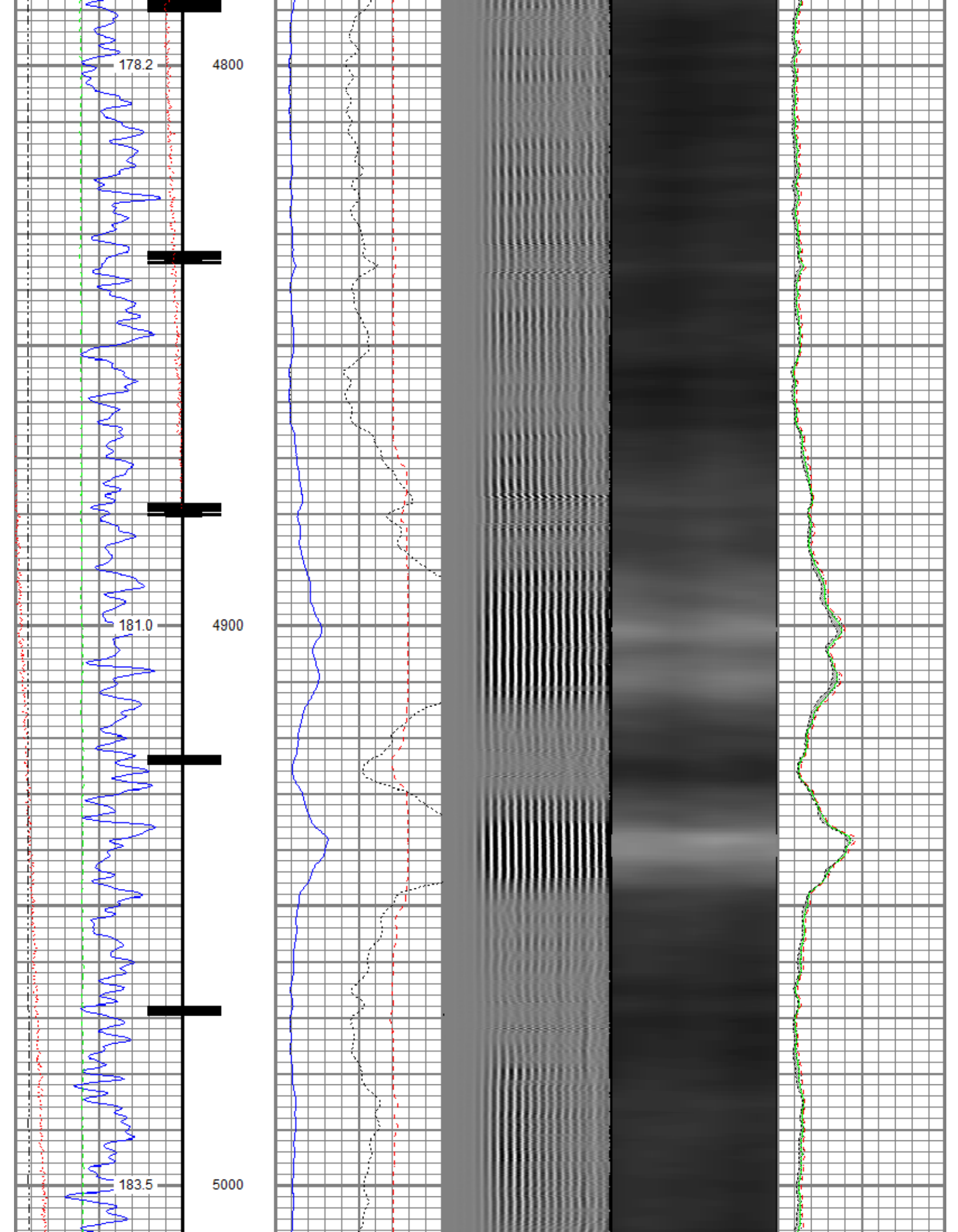
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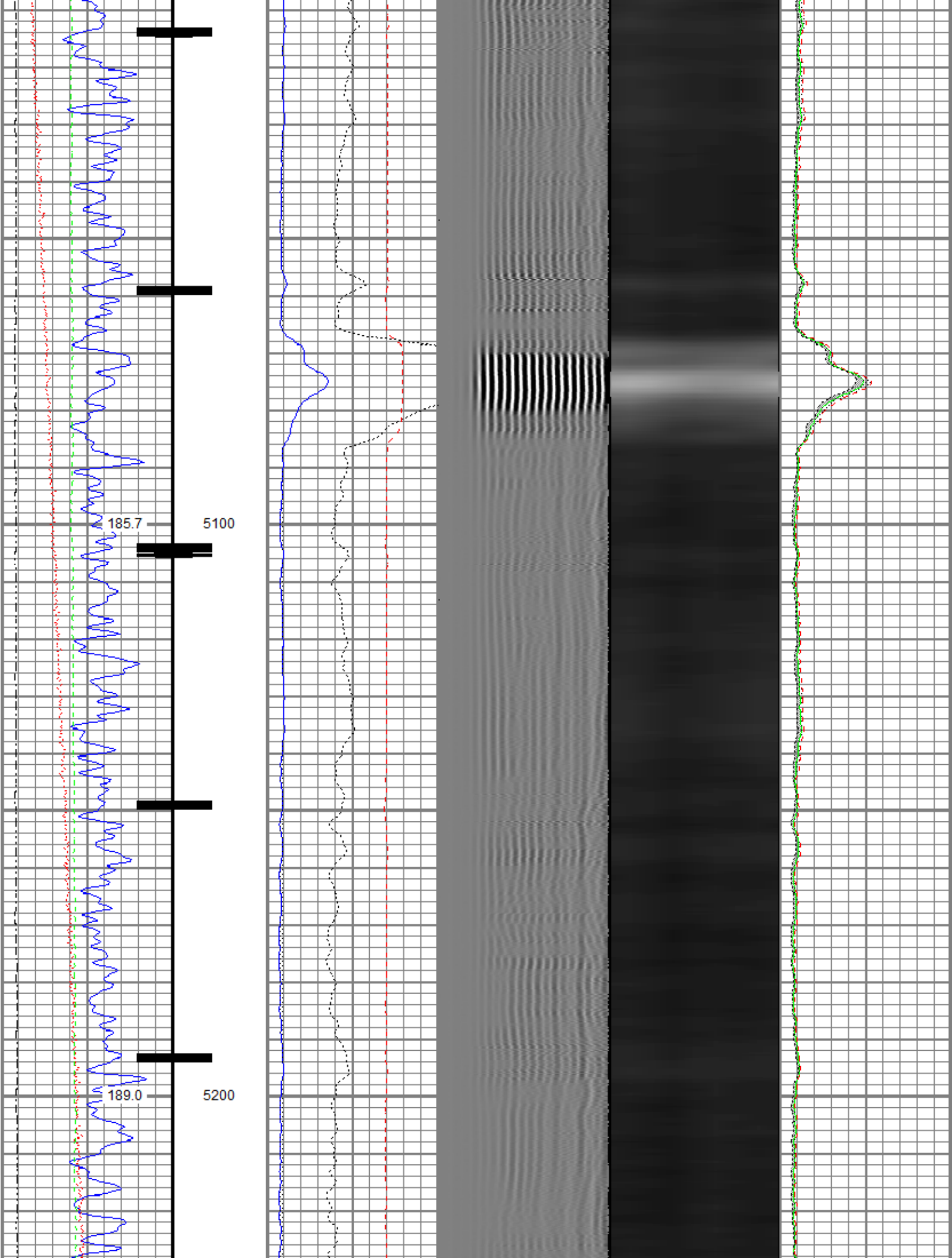
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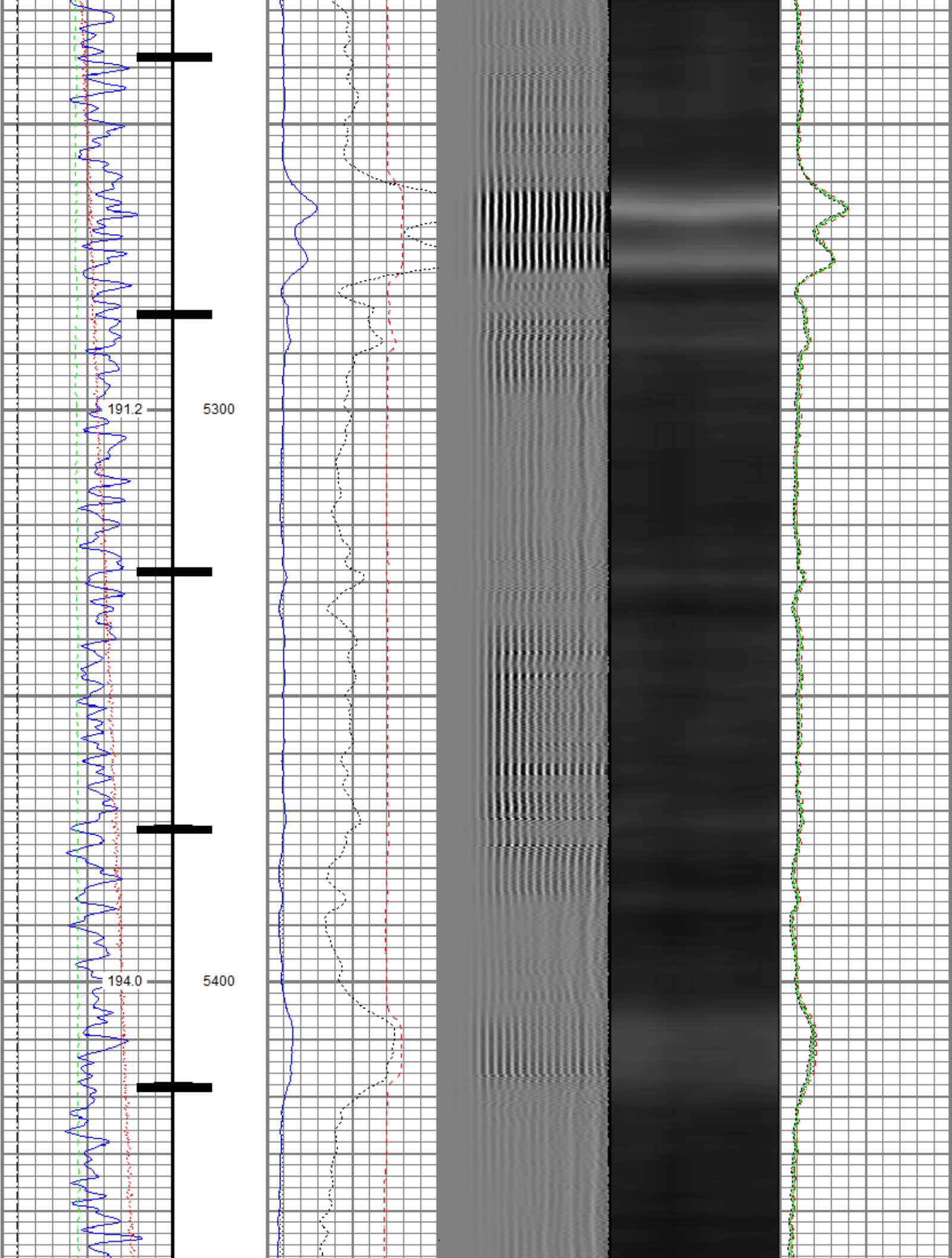
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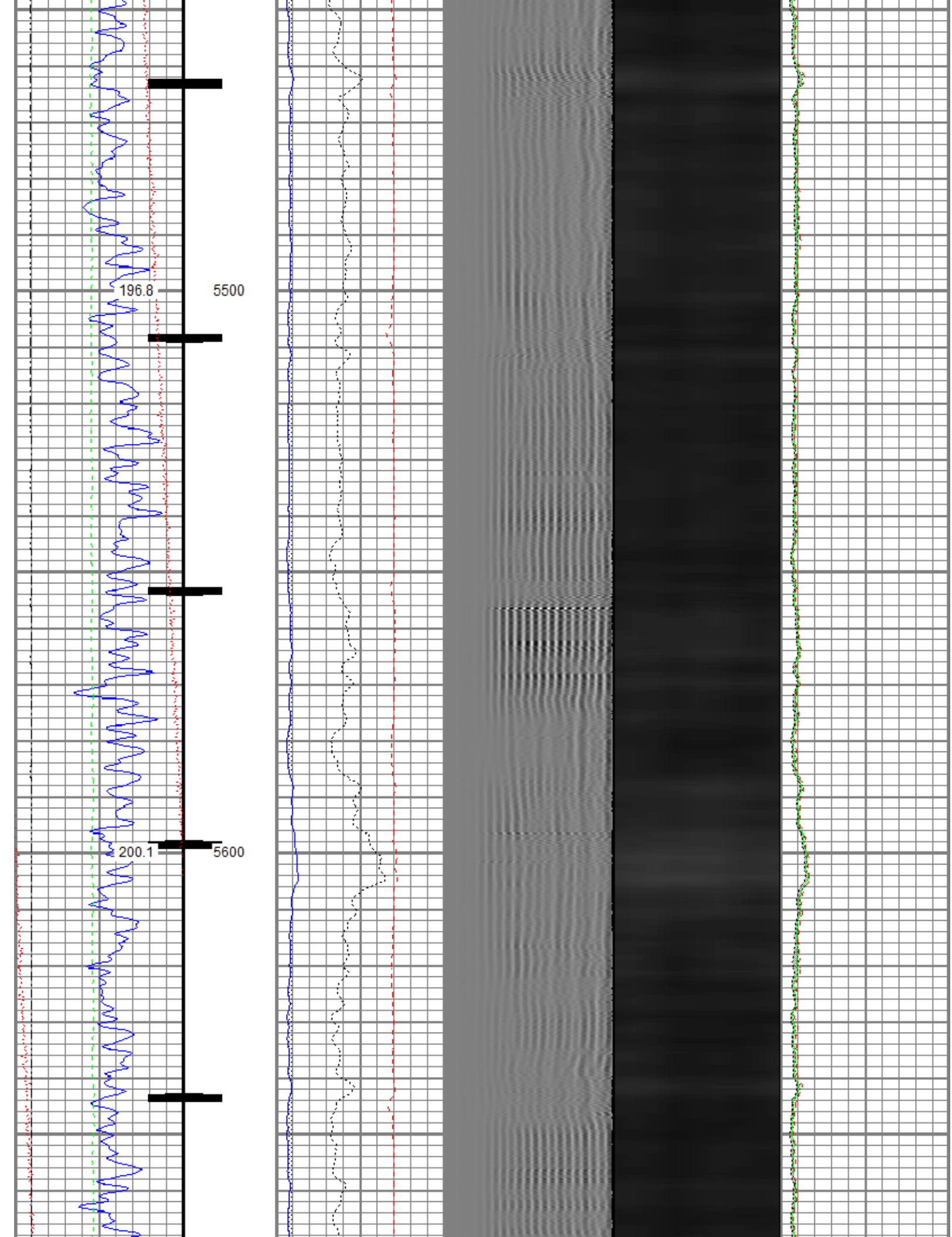
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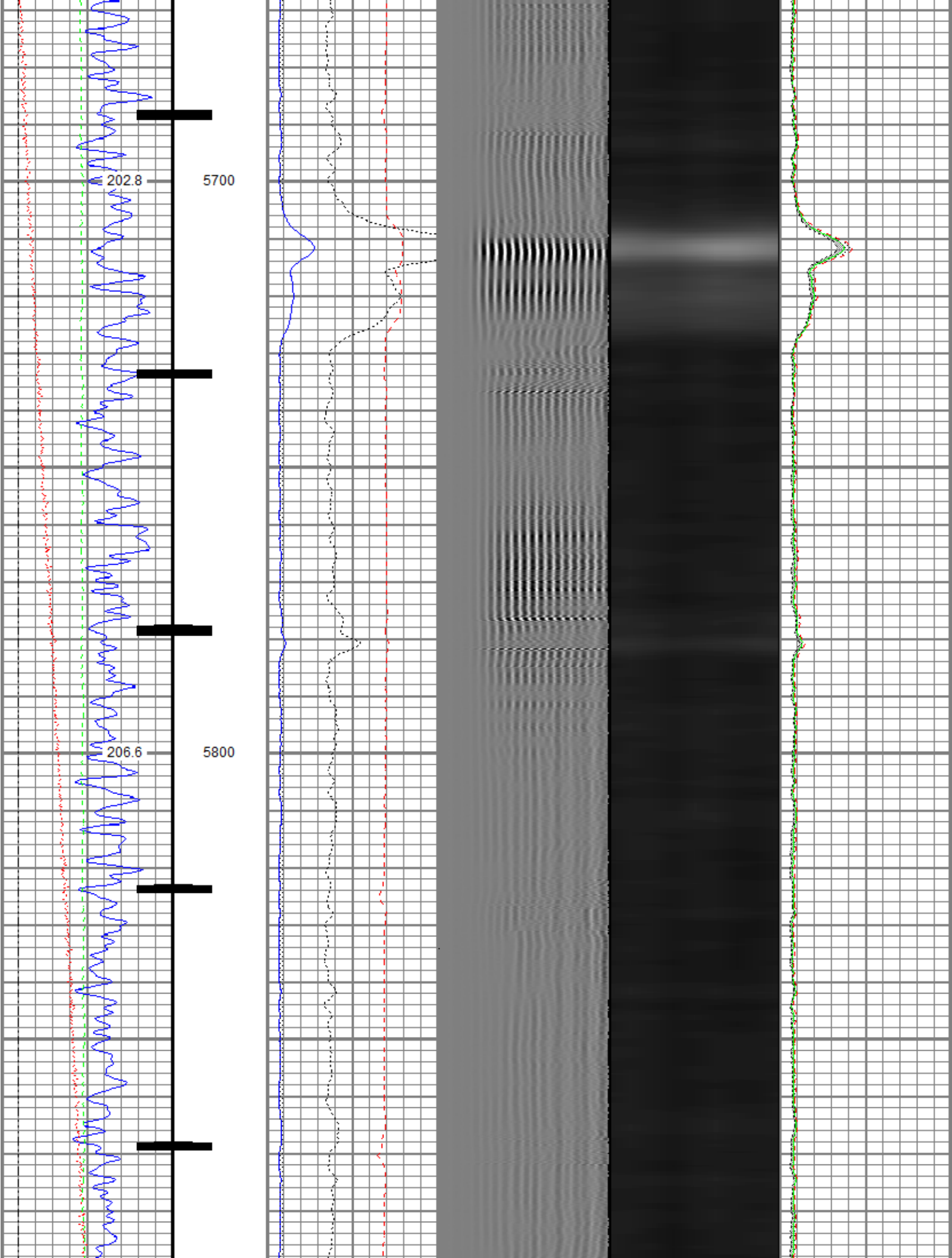












210.0

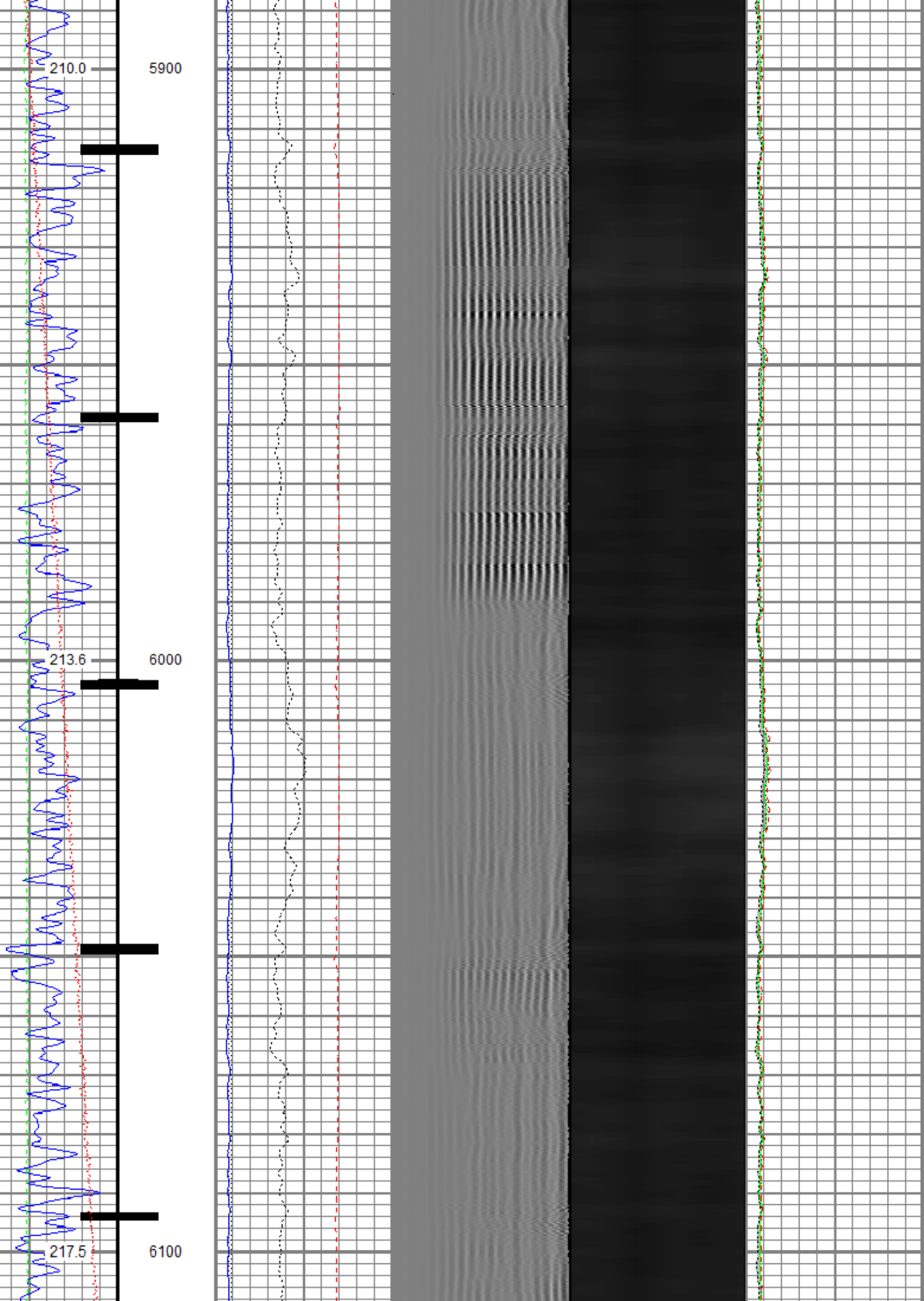
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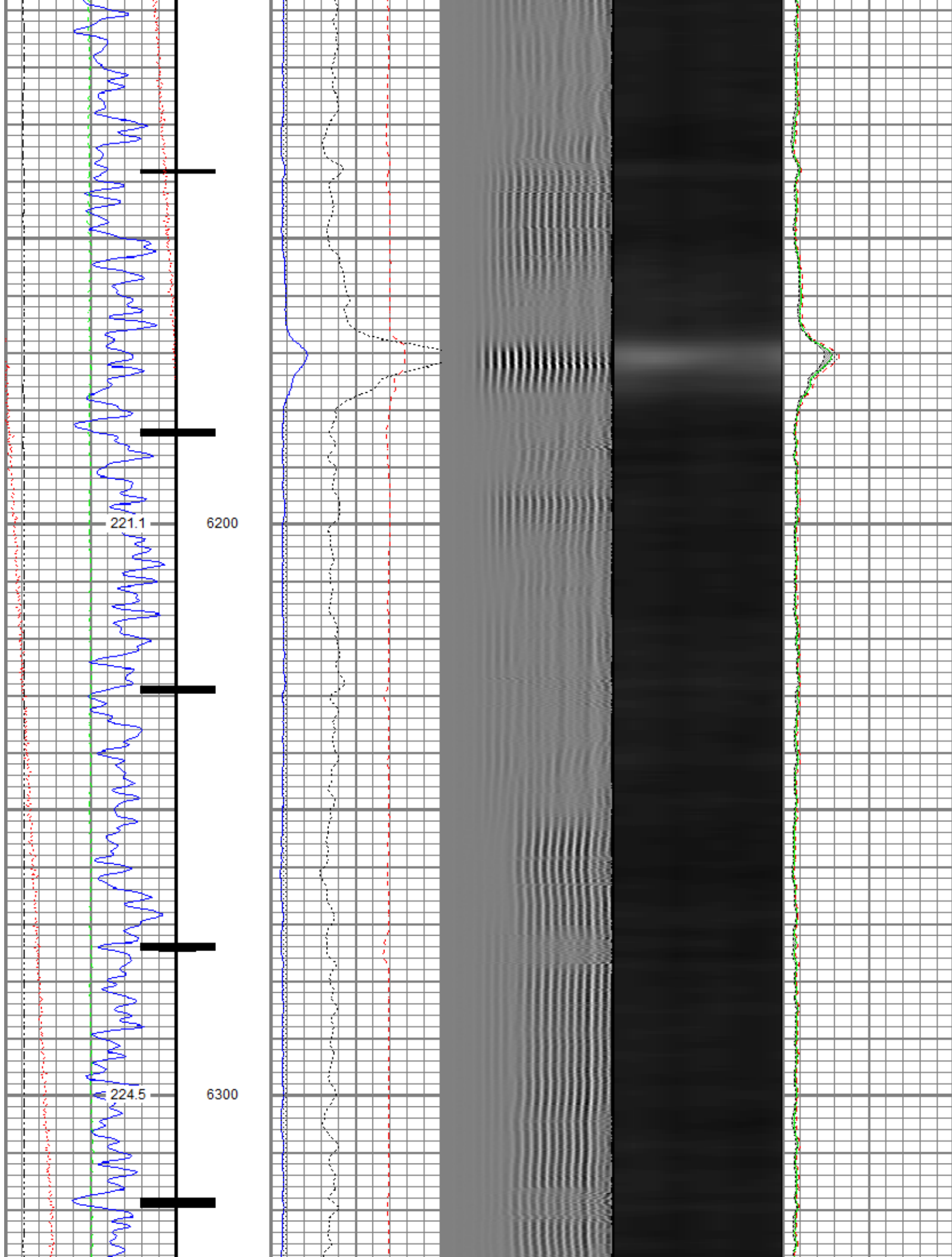
213.6

6000

217.5

6100





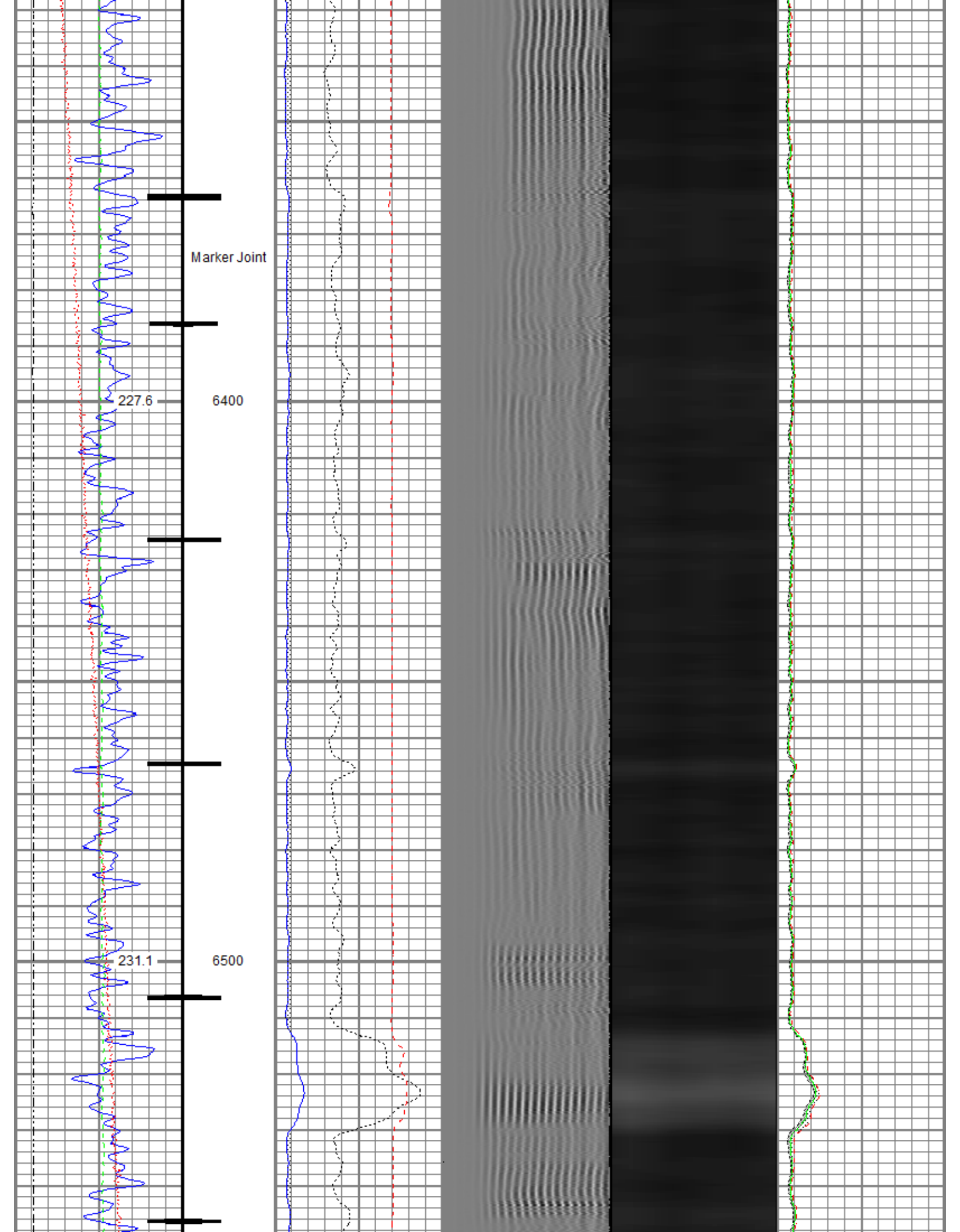
Marker Joint

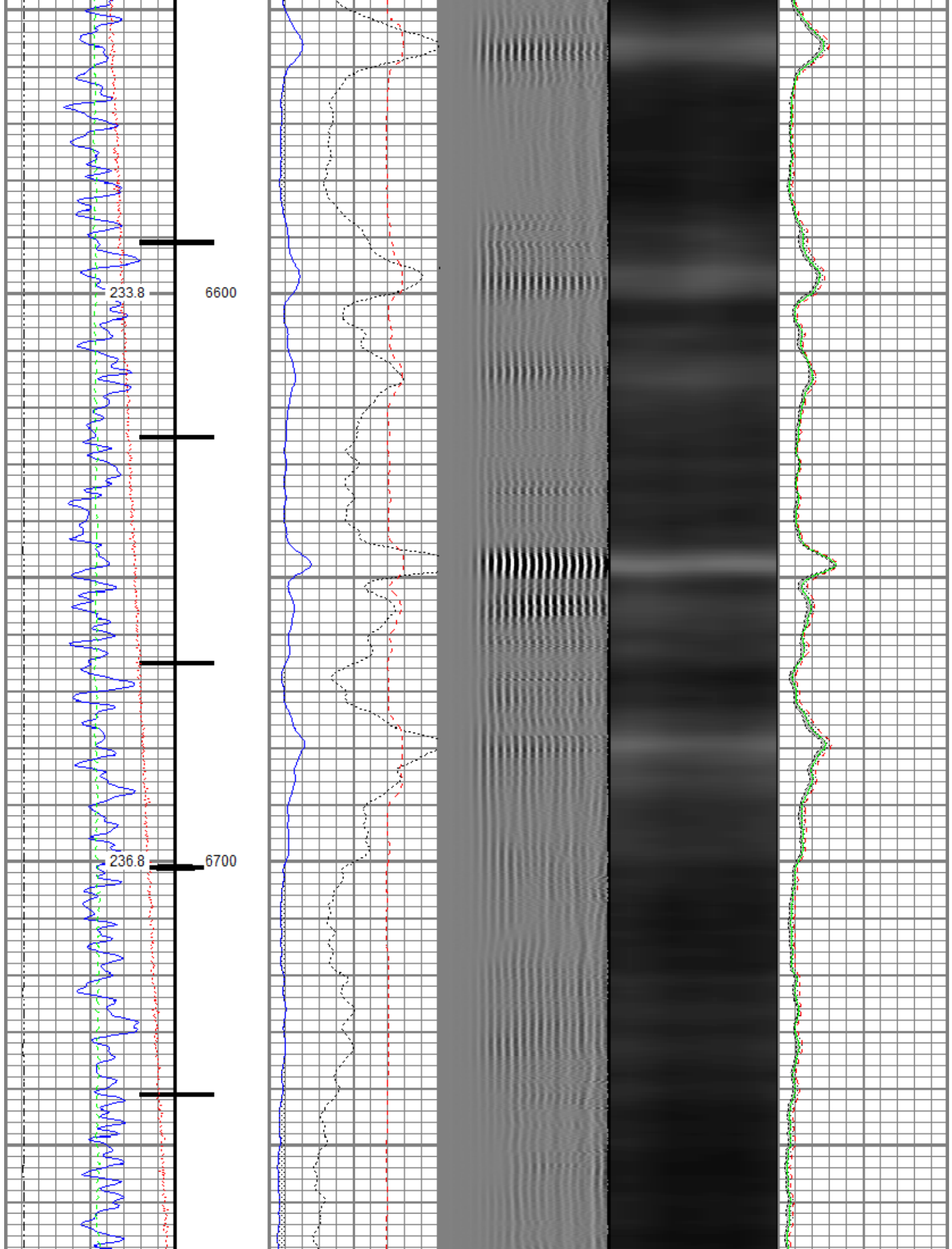
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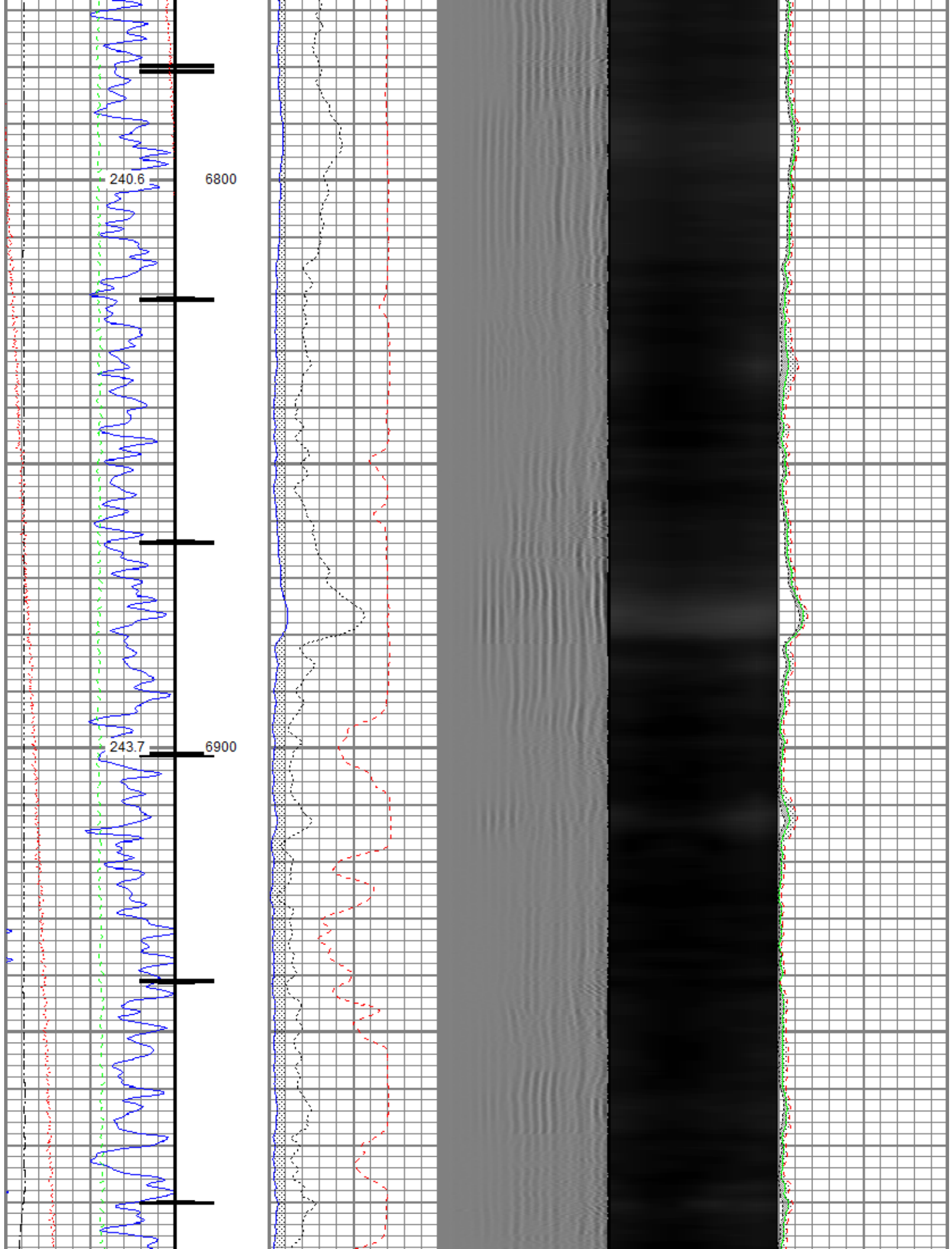
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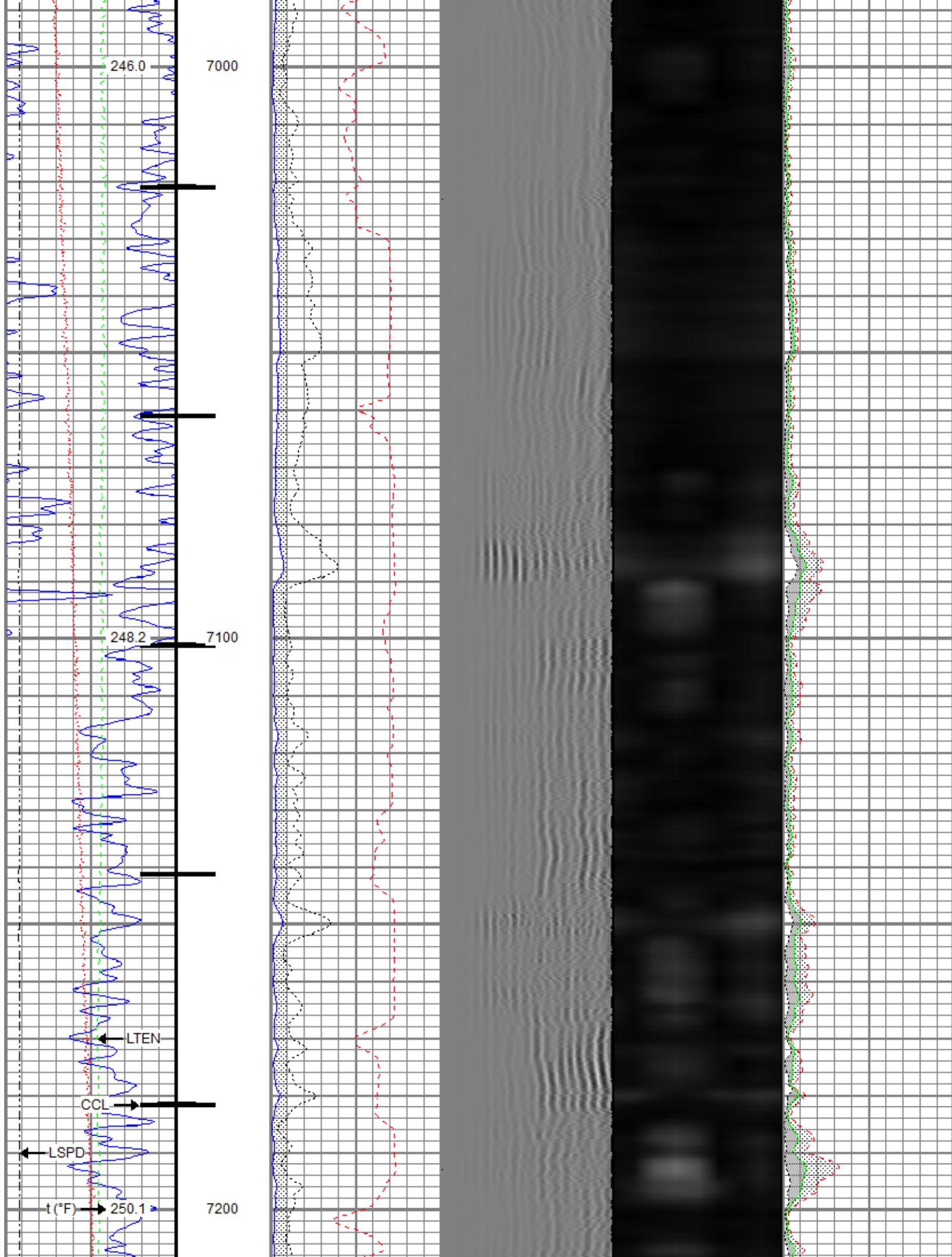
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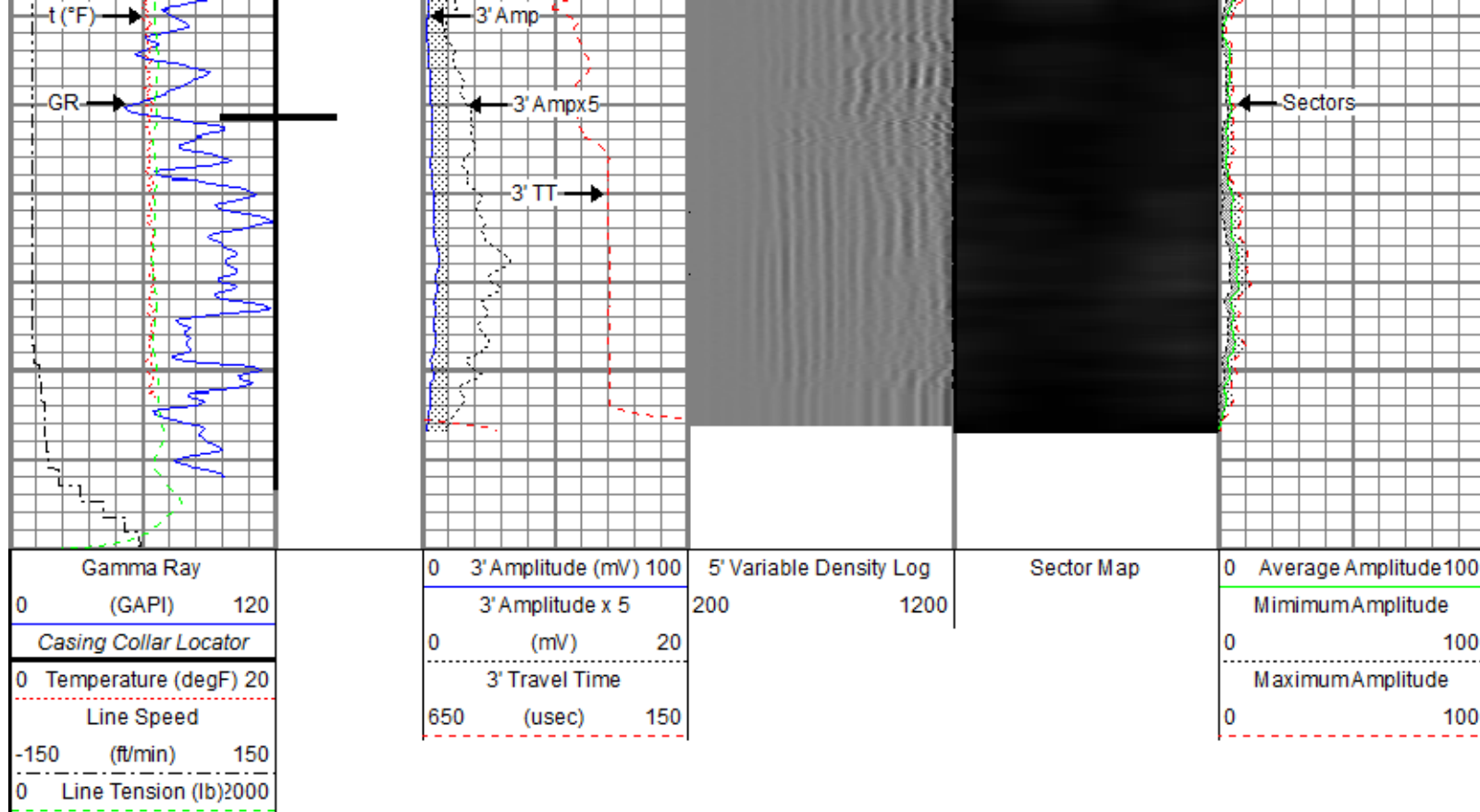
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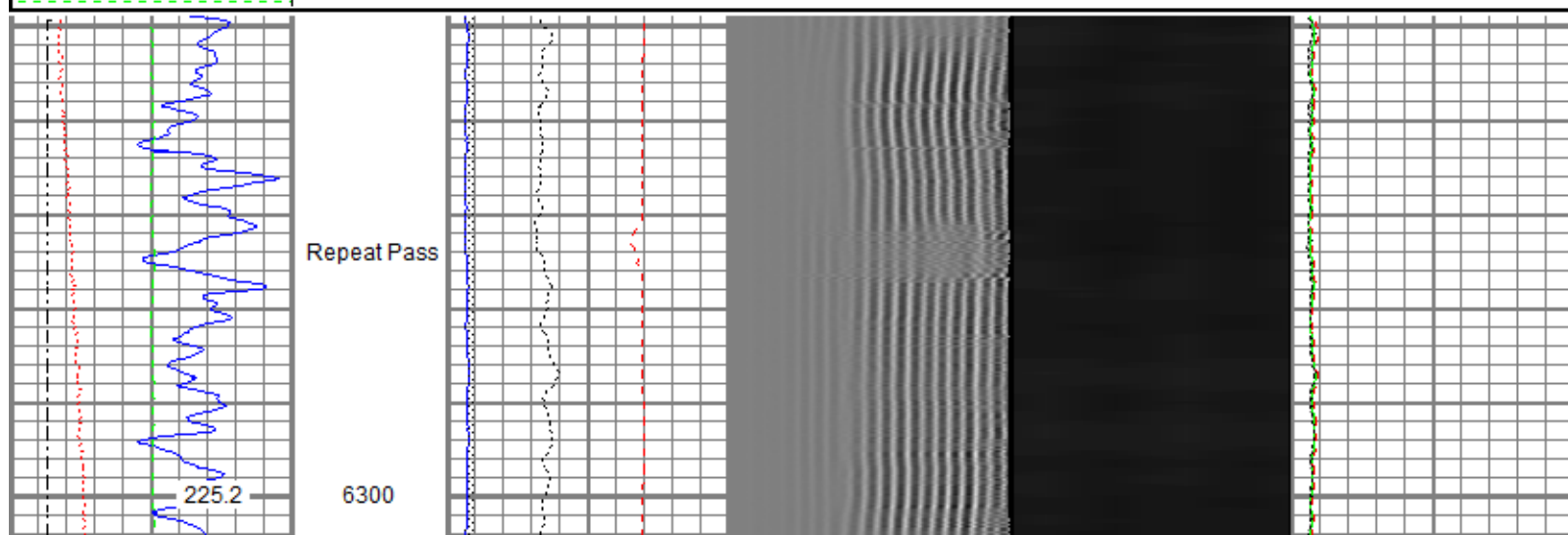
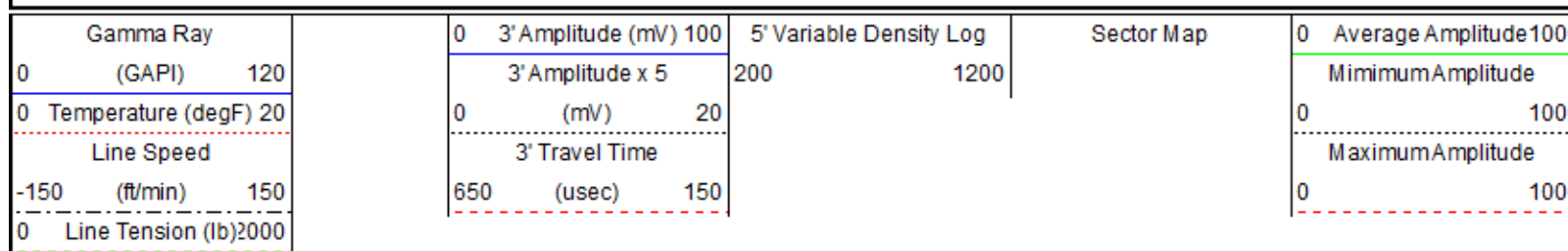


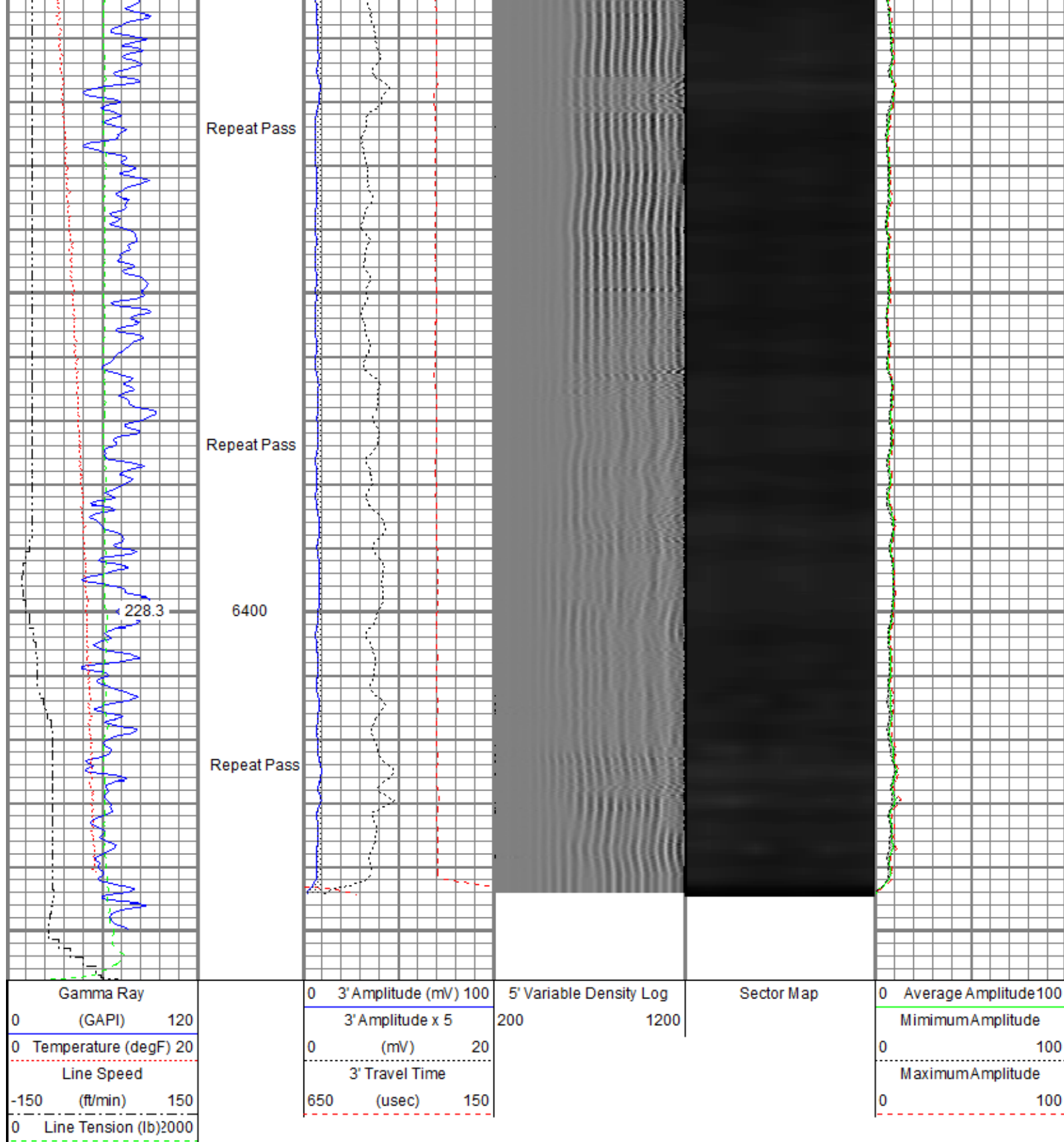


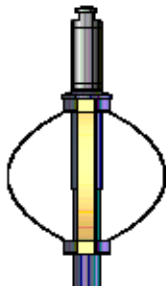
Repeat Pass

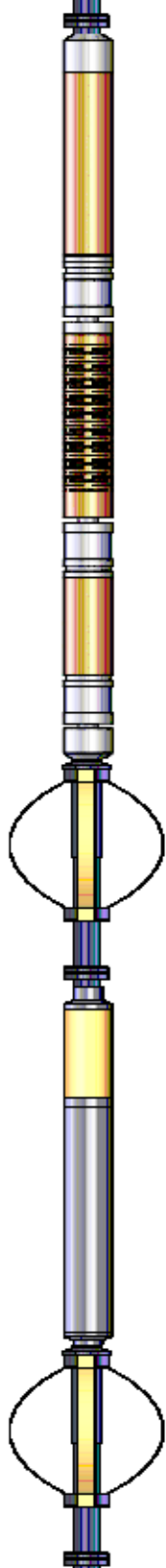
Recorded With 2800 PSI Surface Induced Pressure

Database File 0512344754_anadarko_rw 15n-32hz_rbl_11-19-17\processed_0512344754_anadarko_rw 15n-32hz_rbl_11-19-17.db
 Dataset Pathname well4/run1/pass4.1
 Presentation Format ros_radri
 Dataset Creation Mon Nov 20 09:03:01 2017
 Charted by Depth in Feet scaled 1:240





| Sensor | Offset (ft) | Schematic | Description | Length (ft) | O.D. (in) | Weight (lb) |
|--------|-------------|---|---|-------------|-----------|-------------|
| | |  | Titan_Electric_Cable_Heads-Titan_1-11/16" Electric Cable Head with 1" Fishing Neck | 1.03 | 1.69 | 5.40 |
| | | | Probe_ELine_BowSpring_Centralizer-P_EBSC_2.88 Probe 2-3/4" Electric Inline Bowspring Centralizer | | 2.75 | 20.00 |

| | | | | | | |
|--|-------|---|--|------|-------|--------|
| Temp | 16.72 |  | | | | |
| WVFS8 | 14.55 | | Probe_RADII-C-P_RBT_2750 (FW1302-002) Probe 2-3/4" Sector Cement Bond Tool with Temperature Probe | 9.19 | 2.75 | 105.00 |
| WVFS7 | 14.55 | | | | | |
| WVFS6 | 14.55 | | | | | |
| WVFS5 | 14.55 | | | | | |
| WVFS4 | 14.55 | | | | | |
| WVFS3 | 14.55 | | | | | |
| WVFS2 | 14.55 | | | | | |
| WVFS1 | 14.55 | | | | | |
| WVFCAL | 14.55 | | | | | |
| WVF3FT | 14.55 | | | | | |
| WVF5FT | 13.55 | | | | | |
| HeadVolt | 10.30 | | | | | |
| DCCL | 6.51 | Probe_ELine_BowSpring_Centralizer-P_EBSC_2.88 Probe 2-3/4" Electric Inline Bowspring Centralizer | | 2.75 | 20.00 | |
| CCL | 6.51 | | | | | |
| GR | 5.30 | | | | | |
| | | Probe_GR_CCL-P_CGR_2750_S (FW1212-026) Probe 2-3/4" Digital CCL / Gamma Ray Combined | 6.54 | 2.75 | 55.00 | |
| | | Probe_ELine_BowSpring_Centralizer-P_EBSC_2.88 Probe 2-3/4" Electric Inline Bowspring Centralizer | | 2.75 | 20.00 | |
| Dataset: PROCESSED_0512344754_Anadarko_RW 15N-32HZ_RBL_11-19-17.db: field/well4/run1/pass6.1 Total length: 23.40 ft Total weight: 225.40 lb O.D.: 2.75 in | | | | | | |

| Calibration Report | |
|------------------------------|--|
| Database File | C:\ProgramData\Warrior\Data\0512344754_Anadarko_RW 15N-32HZ_RBL_11-19-17\PROCESSED_0512344754_Anadarko_R |
| Dataset Pathname | well4/run1/pass6.1 |
| Dataset Creation | Sun Nov 19 14:01:41 2017 |
| Gamma Ray Calibration Report | |
| Serial Number: | FW1212-026 |
| Tool Model: | P_CGR_2750_S |

Performed:

Sat Feb 06 11:32:54 2016

| | | |
|---------------------|--------|----------|
| Calibrator Value: | 1.0 | GAPI |
| Background Reading: | 0.0 | cps |
| Calibrator Reading: | 1.6 | cps |
| Sensitivity: | 0.6061 | GAPI/cps |

Segmented Cement Bond Log Calibration Report

Serial Number: FW1302-002
Tool Model: P_RBT_2750

Calibration Casing Diameter: 5.500 in
Calibration Depth: 0.288 ft

Master Calibration, performed (Derived):

| | Raw (v) | | Calibrated (mv) | | Results | |
|-----|---------|-------|-----------------|---------|---------|--------|
| | Zero | Cal | Zero | Cal | Gain | Offset |
| 3' | -0.005 | 0.337 | 0.800 | 71.921 | 207.686 | 1.861 |
| CAL | 0.418 | 0.610 | | | | |
| 5' | 0.000 | 0.299 | 0.800 | 71.921 | 238.162 | 0.758 |
| SUM | | | | | | |
| S1 | 0.000 | 0.329 | 0.000 | 100.000 | 304.004 | -0.083 |
| S2 | -0.003 | 0.328 | 0.000 | 100.000 | 302.333 | 0.964 |
| S3 | -0.001 | 0.337 | 0.000 | 100.000 | 295.674 | 0.427 |
| S4 | -0.001 | 0.345 | 0.000 | 100.000 | 289.366 | 0.159 |
| S5 | -0.001 | 0.355 | 0.000 | 100.000 | 280.725 | 0.329 |
| S6 | -0.003 | 0.350 | 0.000 | 100.000 | 283.281 | 0.875 |
| S7 | 0.000 | 0.336 | 0.000 | 100.000 | 297.494 | -0.074 |
| S8 | 0.000 | 0.333 | 0.000 | 100.000 | 300.883 | -0.097 |

Internal Reference Calibration, performed (Not Performed):

| | Raw (v) | | Calibrated (v) | | Results | |
|-----|---------|-------|----------------|-------|---------|--------|
| | Zero | Cal | Zero | Cal | Gain | Offset |
| CAL | 0.000 | 0.000 | 0.418 | 0.610 | 1.000 | 0.000 |

Air Zero Calibration, performed Sun Nov 19 11:41:10 2017:

| | Raw (v) | | Calibrated (v) | | Results | |
|-----|---------|--|----------------|--|---------|--|
| | Zero | | Zero | | Offset | |
| 3' | 0.000 | | 0.000 | | 0.000 | |
| 5' | 0.000 | | 0.000 | | 0.000 | |
| SUM | | | | | | |
| S1 | 0.000 | | 0.000 | | 0.000 | |
| S2 | 0.000 | | 0.000 | | 0.000 | |
| S3 | 0.000 | | 0.000 | | 0.000 | |
| S4 | 0.000 | | 0.000 | | 0.000 | |
| S5 | 0.000 | | 0.000 | | 0.000 | |
| S6 | 0.000 | | 0.000 | | 0.000 | |
| S7 | 0.000 | | 0.000 | | 0.000 | |
| S8 | 0.000 | | 0.000 | | 0.000 | |



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Well RW 15N-32HZ
Field Wattenberg
County Weld

County
State

Weld
Colorado