

Radial Cement Bond Gamma Ray Casing Collar Log

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

Well Elton N Miller C GU 1

Field Wattenberg

County Weld **State** Colorado

Location: API #: 05-123-07862

Permanent Datum SEC 7 TWP 2N RGE 66W

Log Measured From Kelly Bushing

Drilling Measured From Kelly Bushing

Elevation

K.B. 4854'

D.F. ---

G.L. 4844'

Date

15-OCT-2019

Run Number

ONE

Depth Driller

7960'

Depth Logger

7060'

Bottom Logged Interval

7056'

Top Log Interval

SURFACE

Open Hole Size

7.875

Type Fluid

Water

Density / Viscosity

8.34 lb/gal

Max. Recorded Temp.

231°F

Estimated Cement Top

See Log

Time Well Ready

ROA

Time Logger on Bottom

15:29 PM

Equipment Number

HD 324

Location

Platteville, CO

Recorded By

J. Fresquez

Witnessed By

Brandon Tracey

Run Number

Bit

From

To

Size

Weight

From

To

Top

Bottom

222'

7970'

Surface

Surface

7970'

7970'

7970'

7970'

7970'

7970'

7970'

7970'

7970'

7970'

7970'

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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.

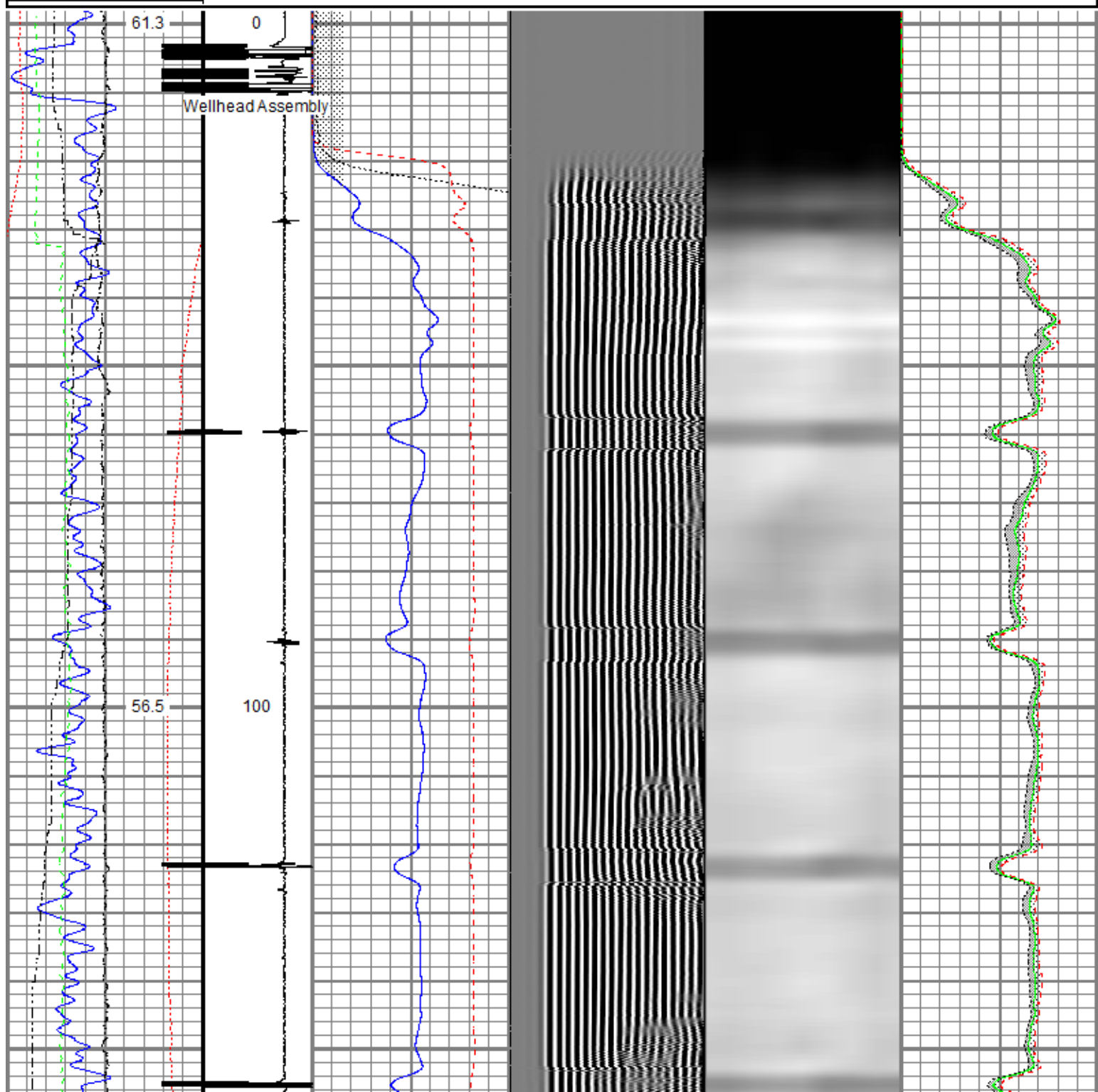
Comments

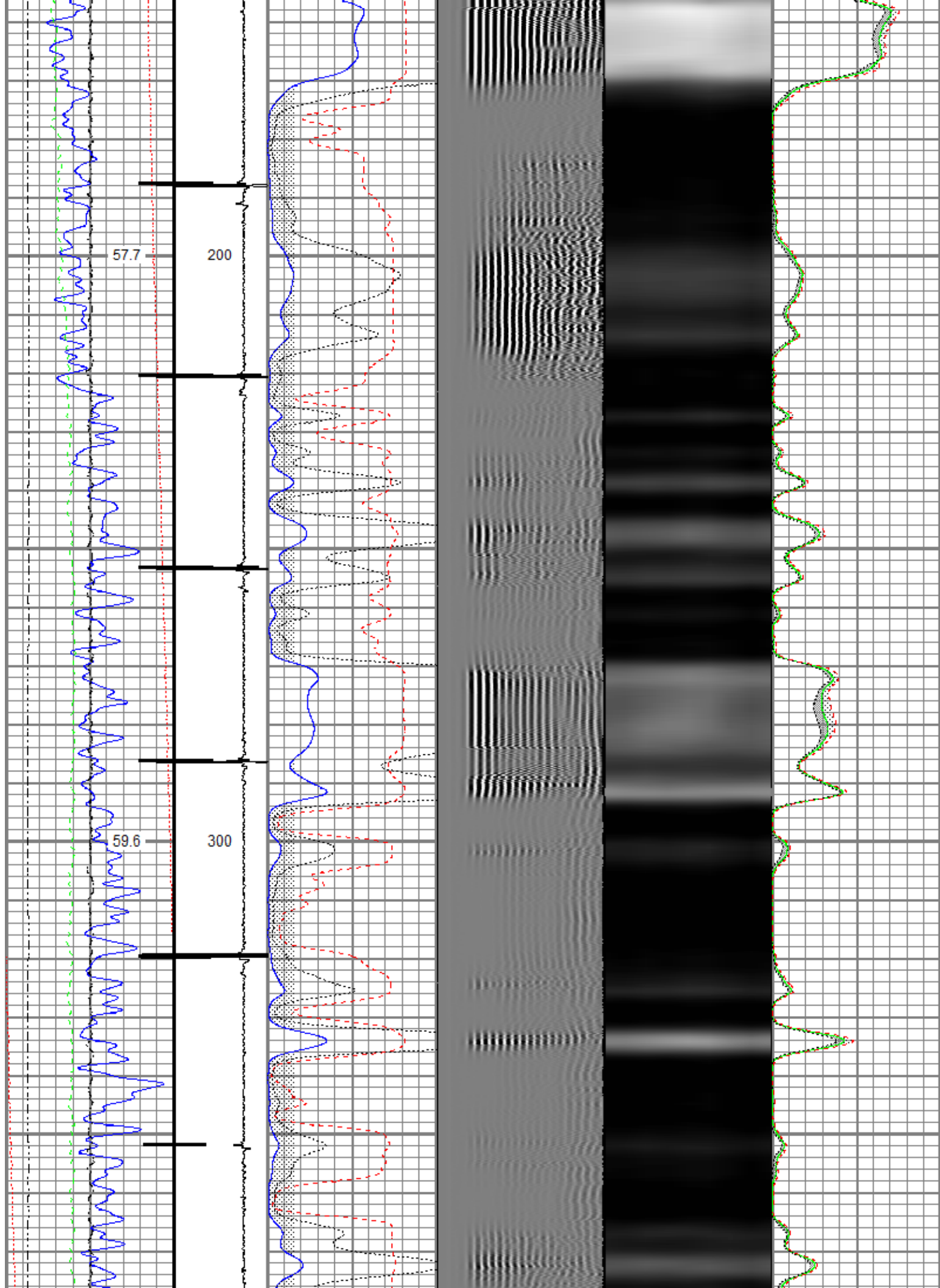
Log ran as per customer request
Depth referenced to Kelly Bushing at 10 FT
Adjusted 0 FT to correlate with Kelly Bushing
Shop calibrations preformed on the RBL Tool on 15-OCT-2019
Free Pipe Calibrated at 2300 FT
GOBO indicates 80% Bond Index for 4.5-inch casing (16.24 mV)
Log ran with 500 PSI surface induced pressure
Logging tools were clean and free of debris upon completion of operations

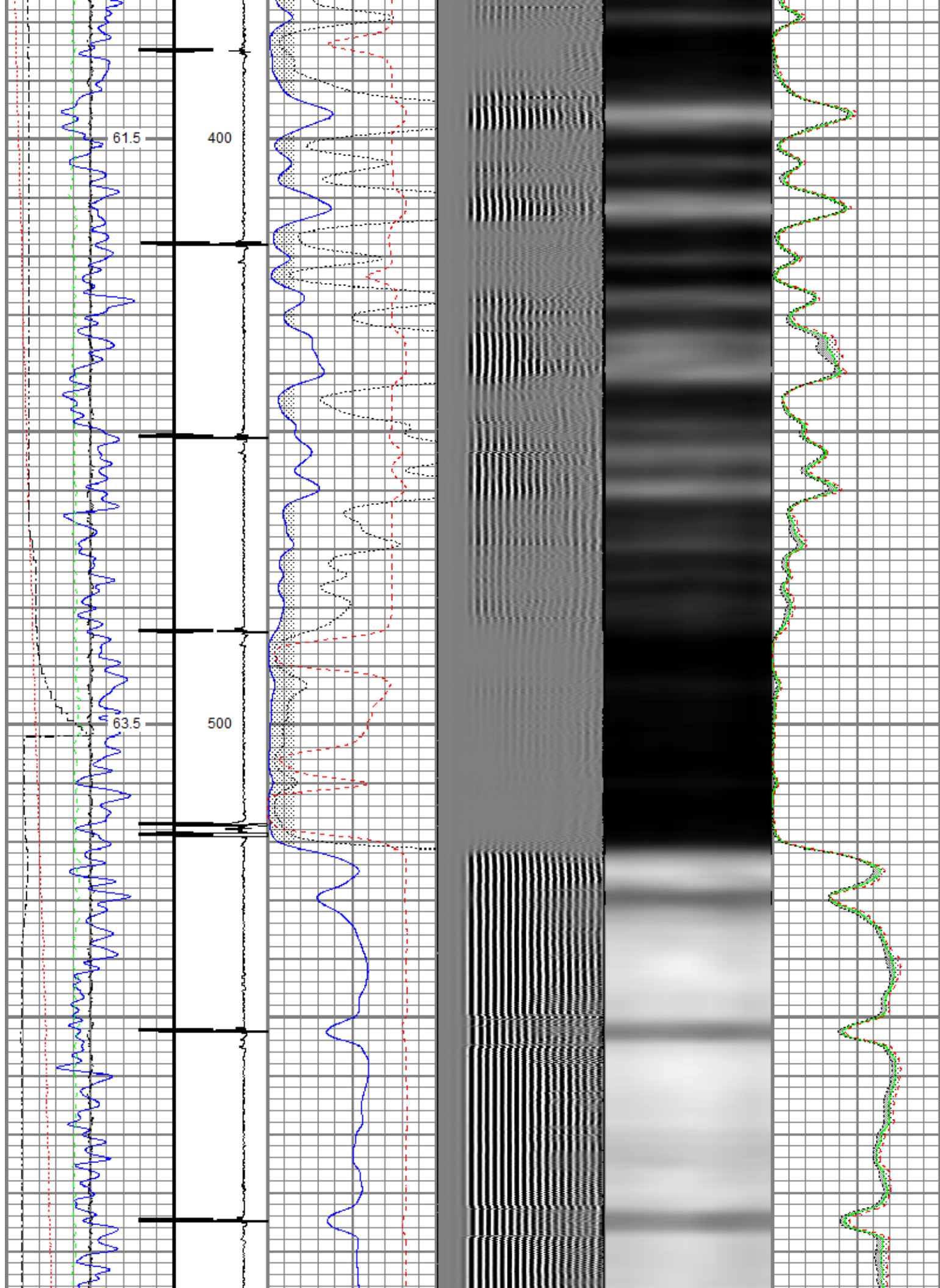
Thank you for choosing Reliance Oilfield Services, LLC!!

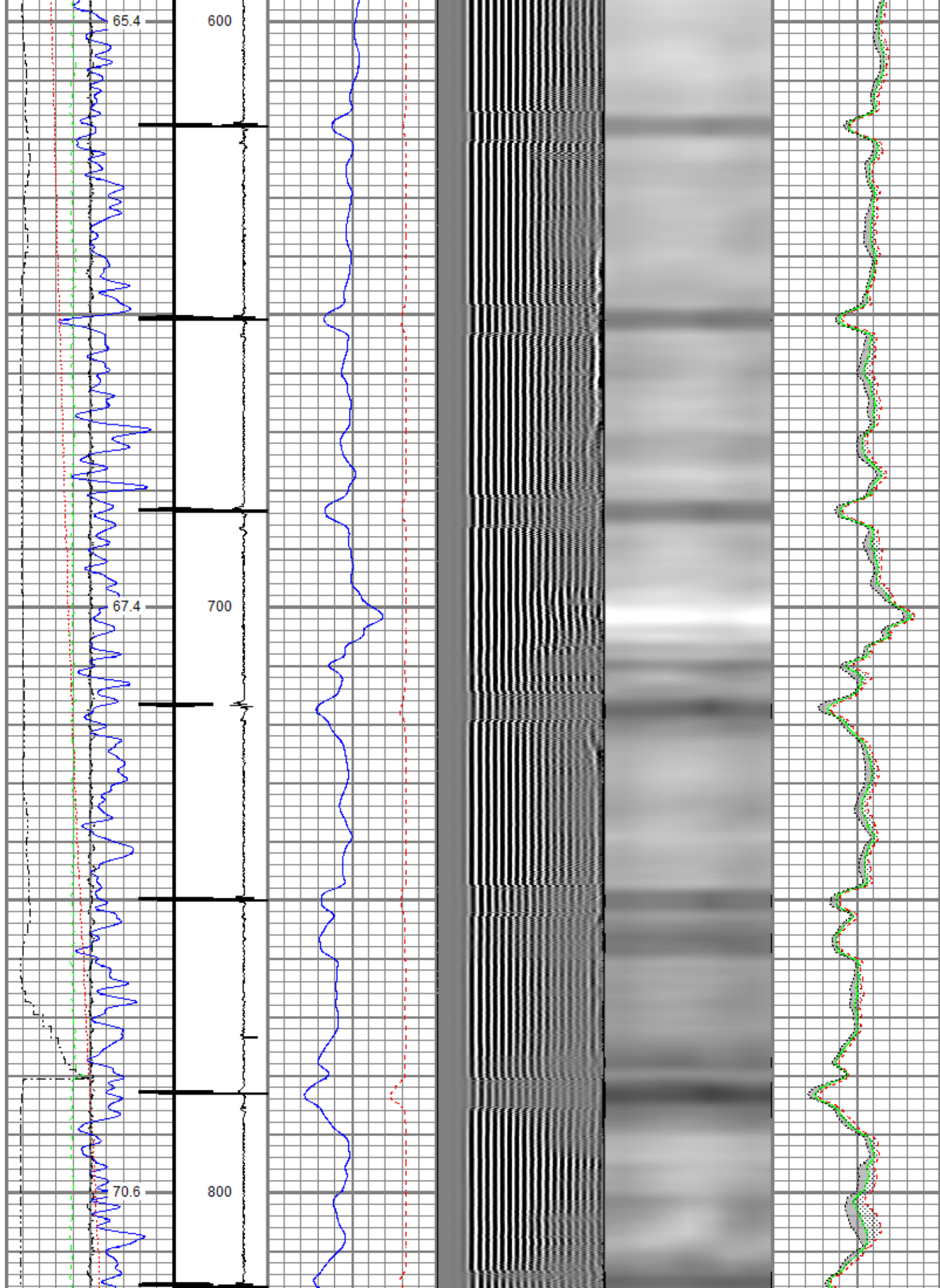
Database File oxy_miller_elton_gu_c1_15_oct_2019_rcbl.db
Dataset Pathname gu_c1/rcbl_1/pass5
Presentation Format ros_radli_oxv_vert_gobo_45
Dataset Creation Tue Oct 15 15:28:19 2019
Charted by Depth in Feet scaled 1:240

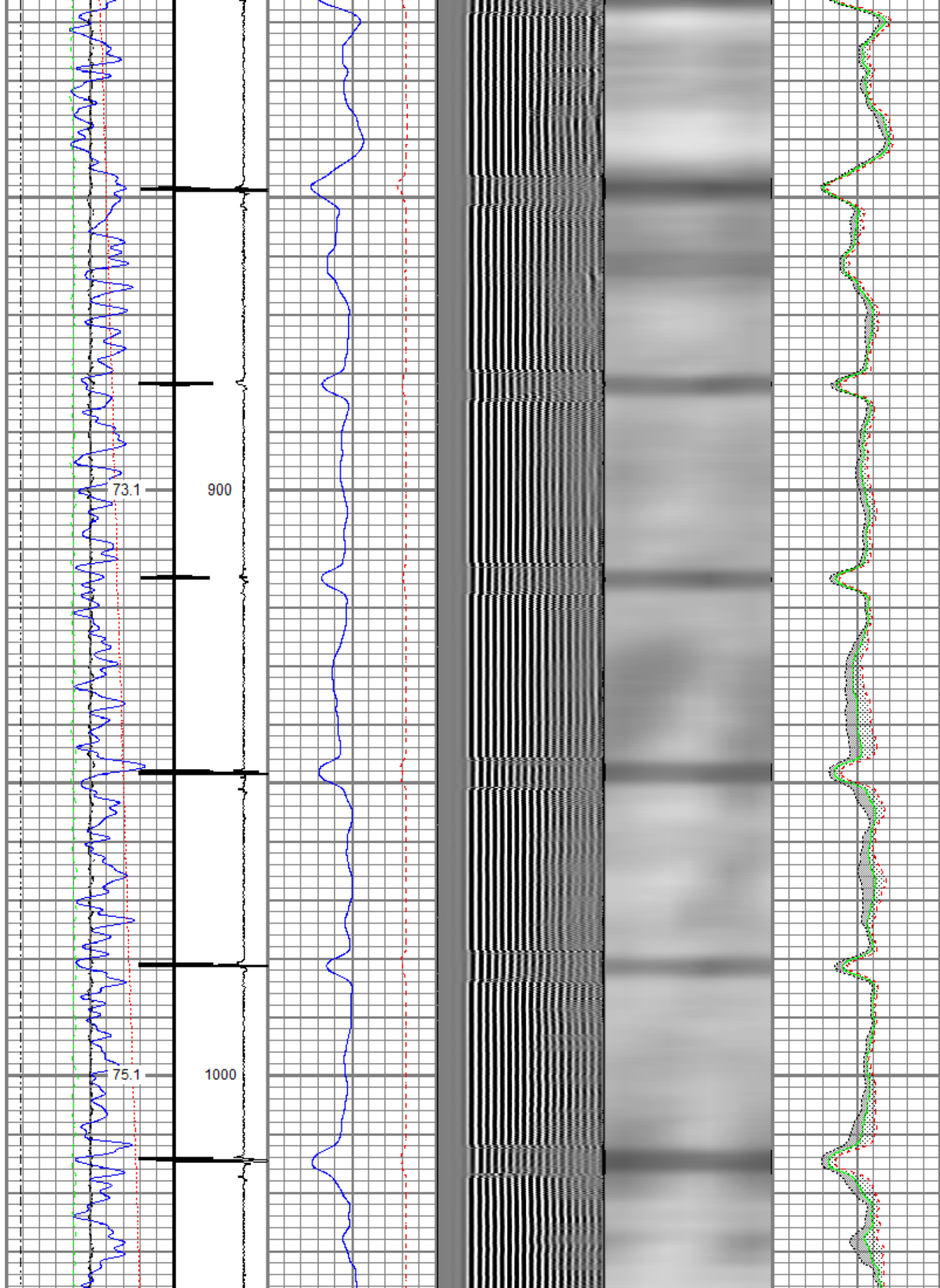
| | | | | | | | | | |
|--------------------------|-----|--------|---|---|-------------------|-----|-------------------------|------------|-------------------|
| Gamma Ray | 5 | CCL\$2 | 0 | 0 | 3' Amplitude (mV) | 100 | 5' Variable Density Log | Sector Map | Average Amplitude |
| 0 (GAPI) | 120 | | | | 3' Amplitude x 5 | 200 | (usec) | 1200 | 0 100 |
| Temperature | | | | | 0 (mV) | 20 | | | Minimum Amplitude |
| 0 (degF) | 20 | | | | 3' Travel Time | | | | 0 100 |
| Line Speed | | | | | 650 (usec) | 150 | | | Maximum Amplitude |
| -150 (ft/min) | 150 | | | | | | | | 0 100 |
| Line Tension (lb) | 000 | | | | | | | | |
| Differential Temperature | | | | | | | | | |
| -2 (degF) | 2 | | | | | | | | |
| Casing Collar Locator | | | | | | | | | |

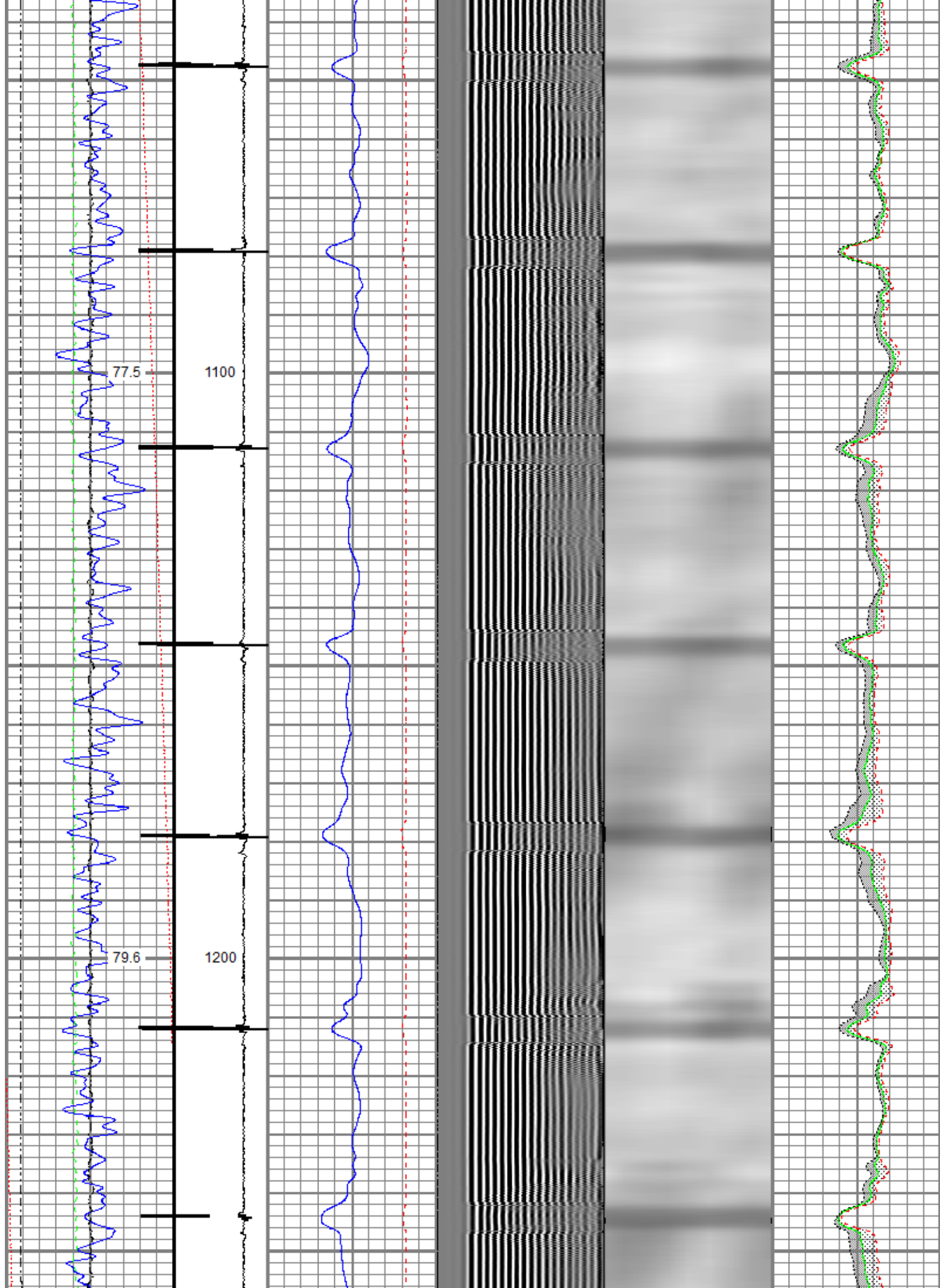


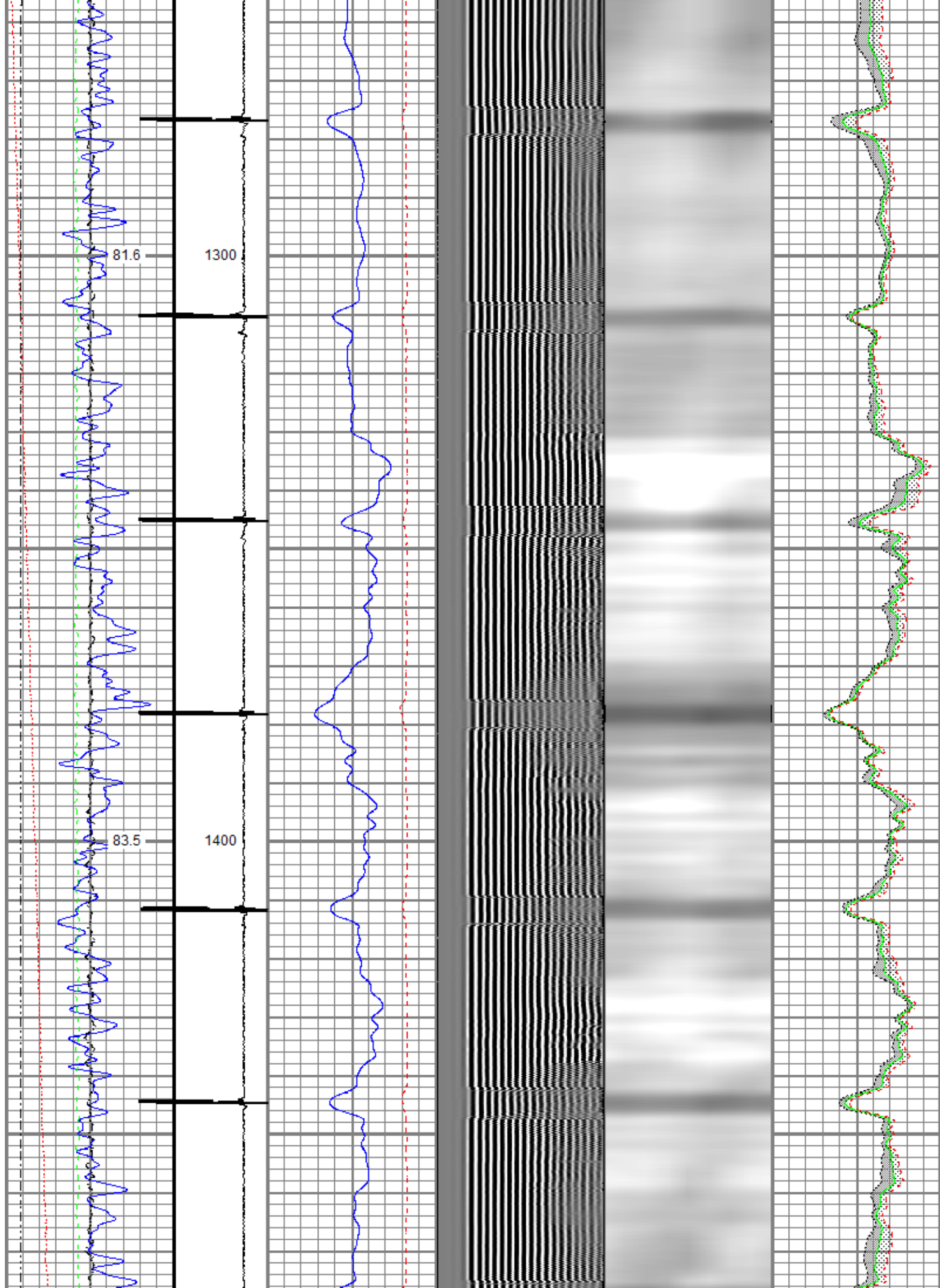


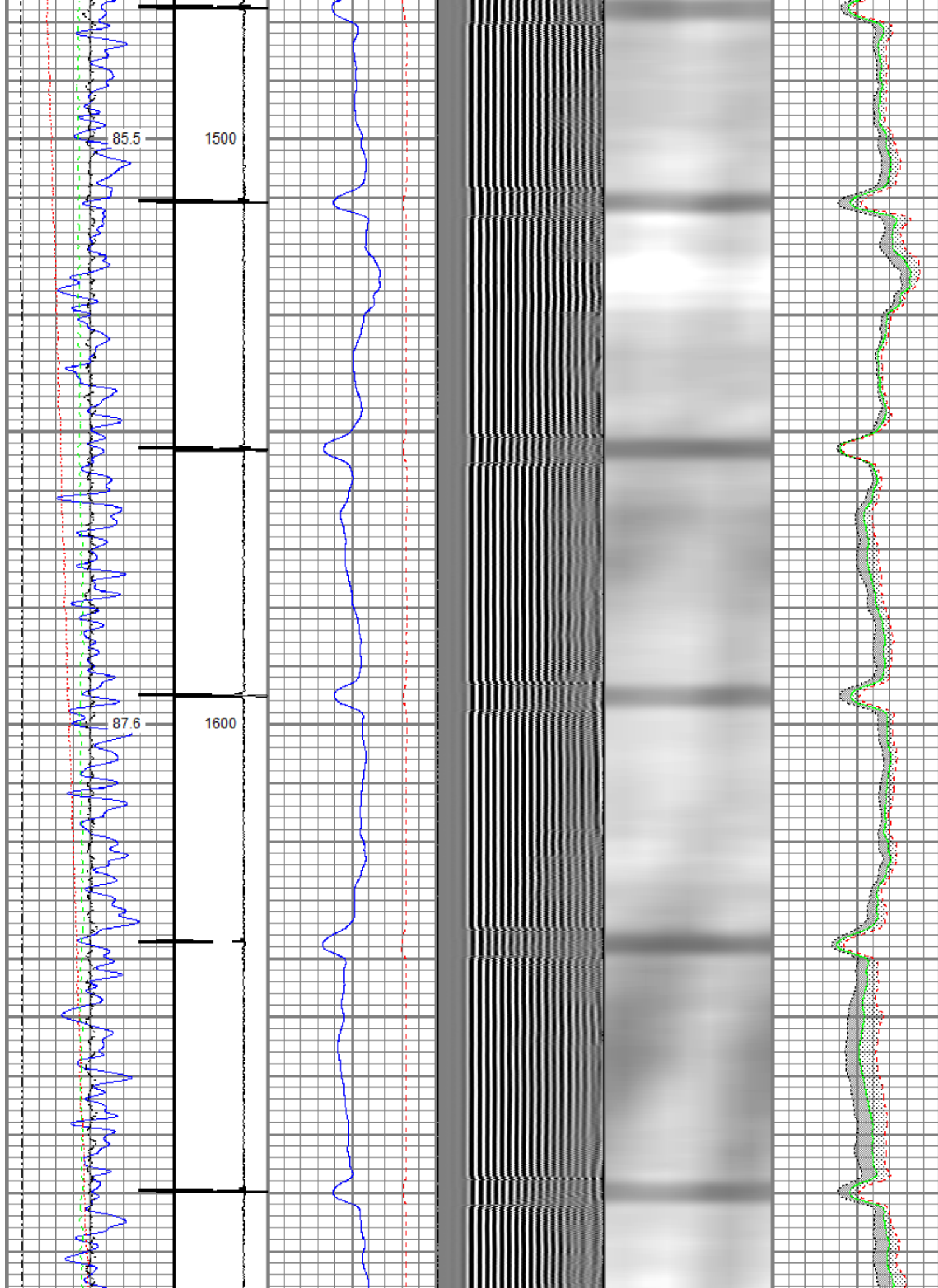


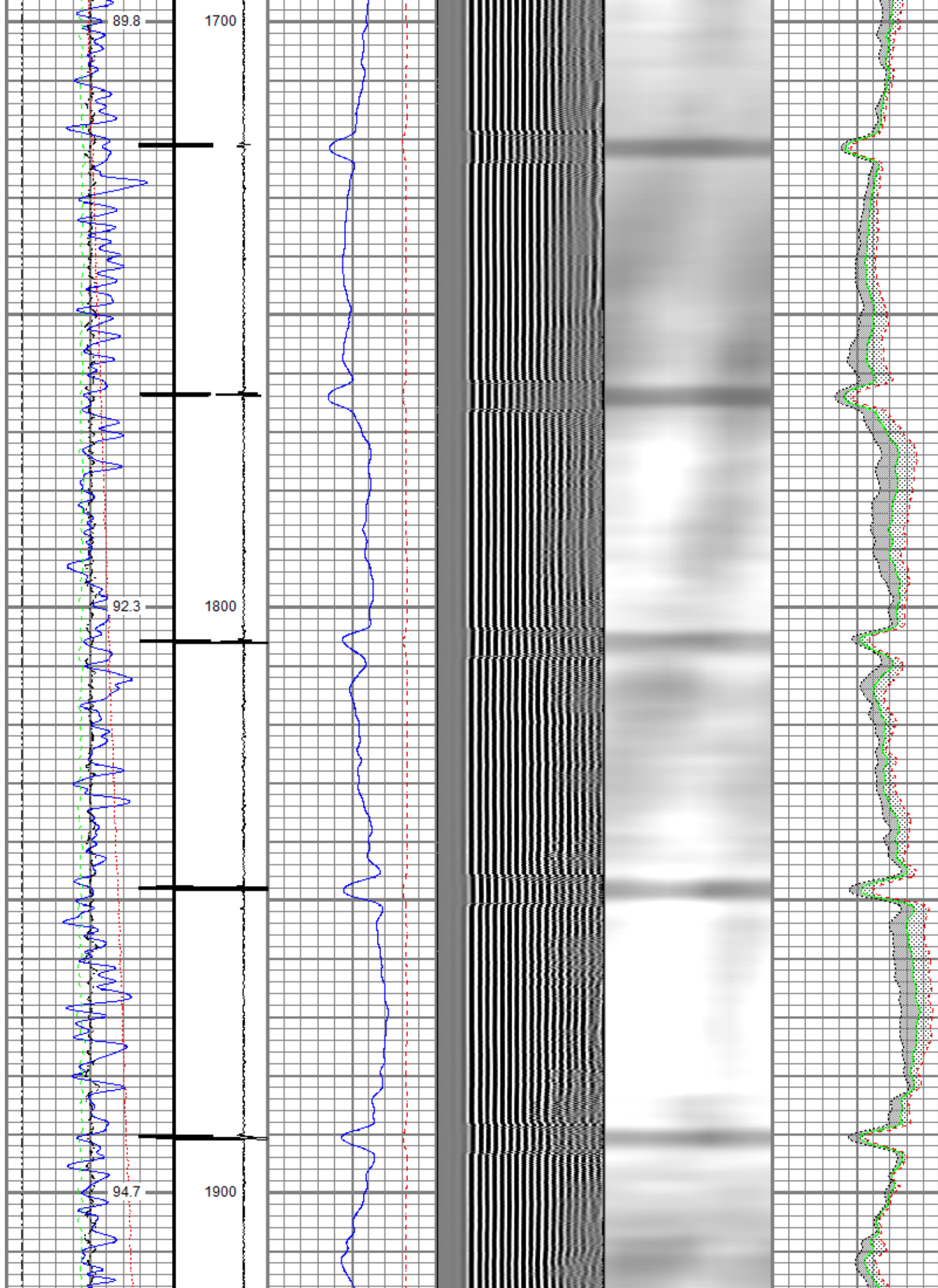


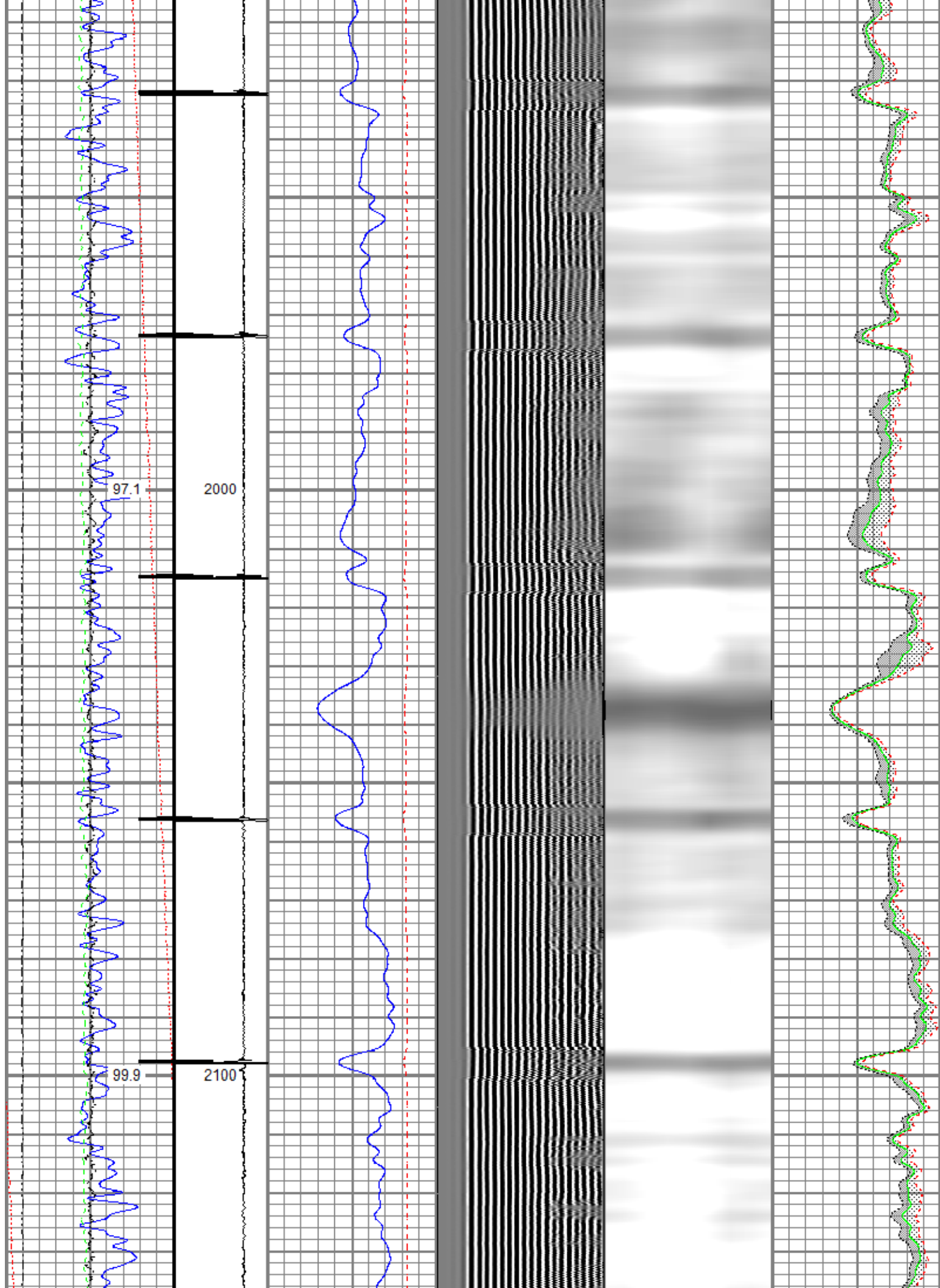


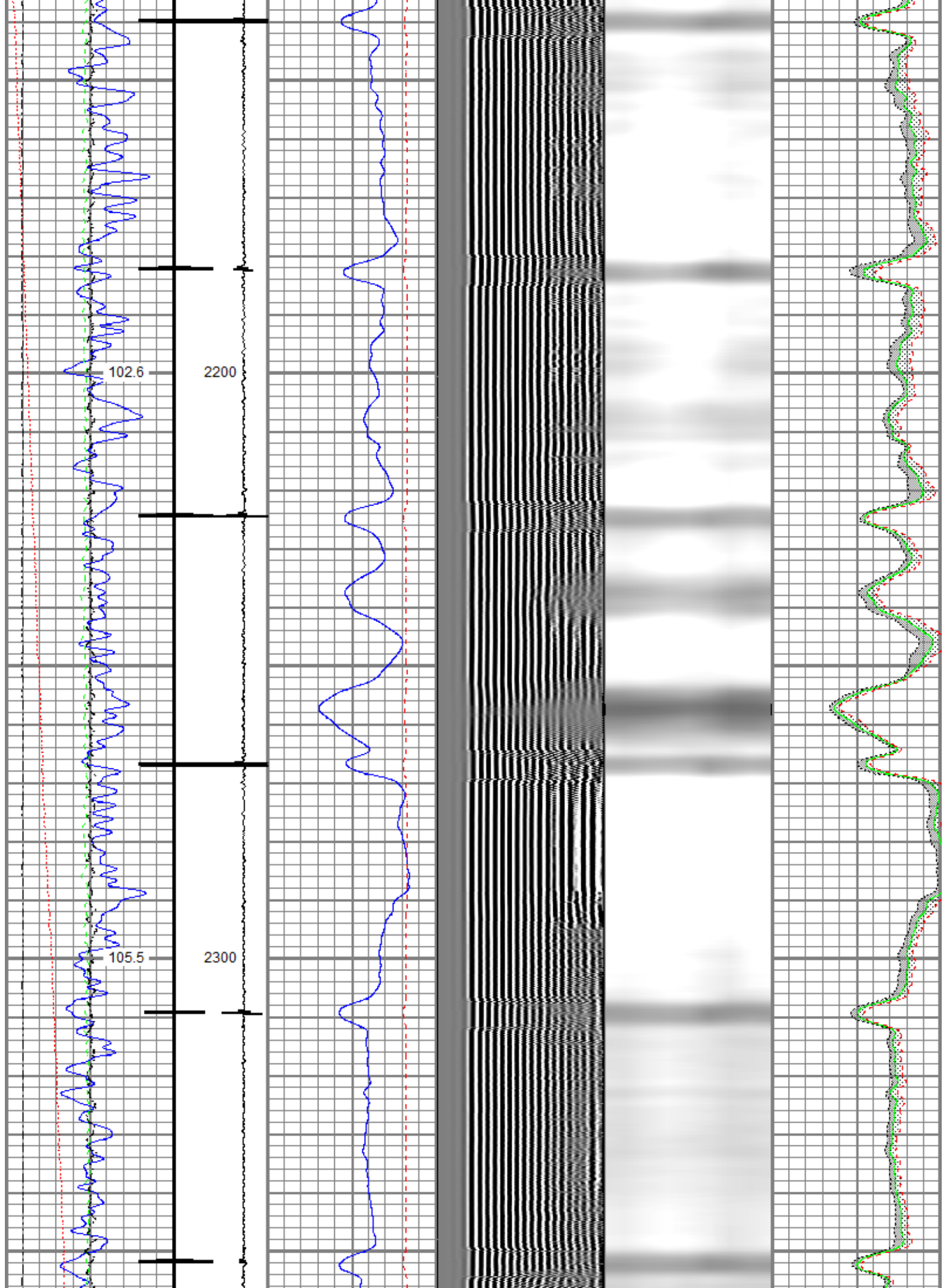


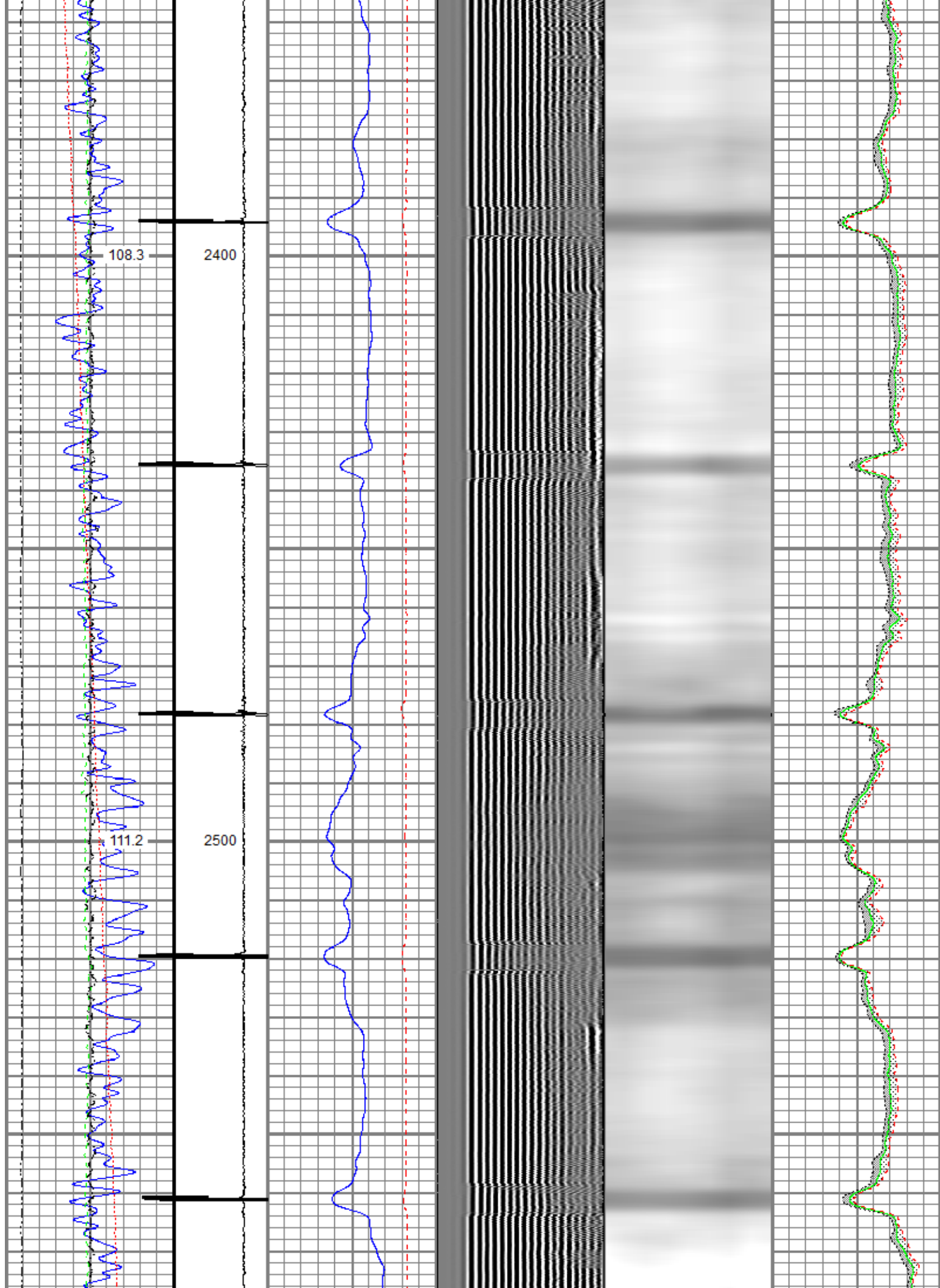


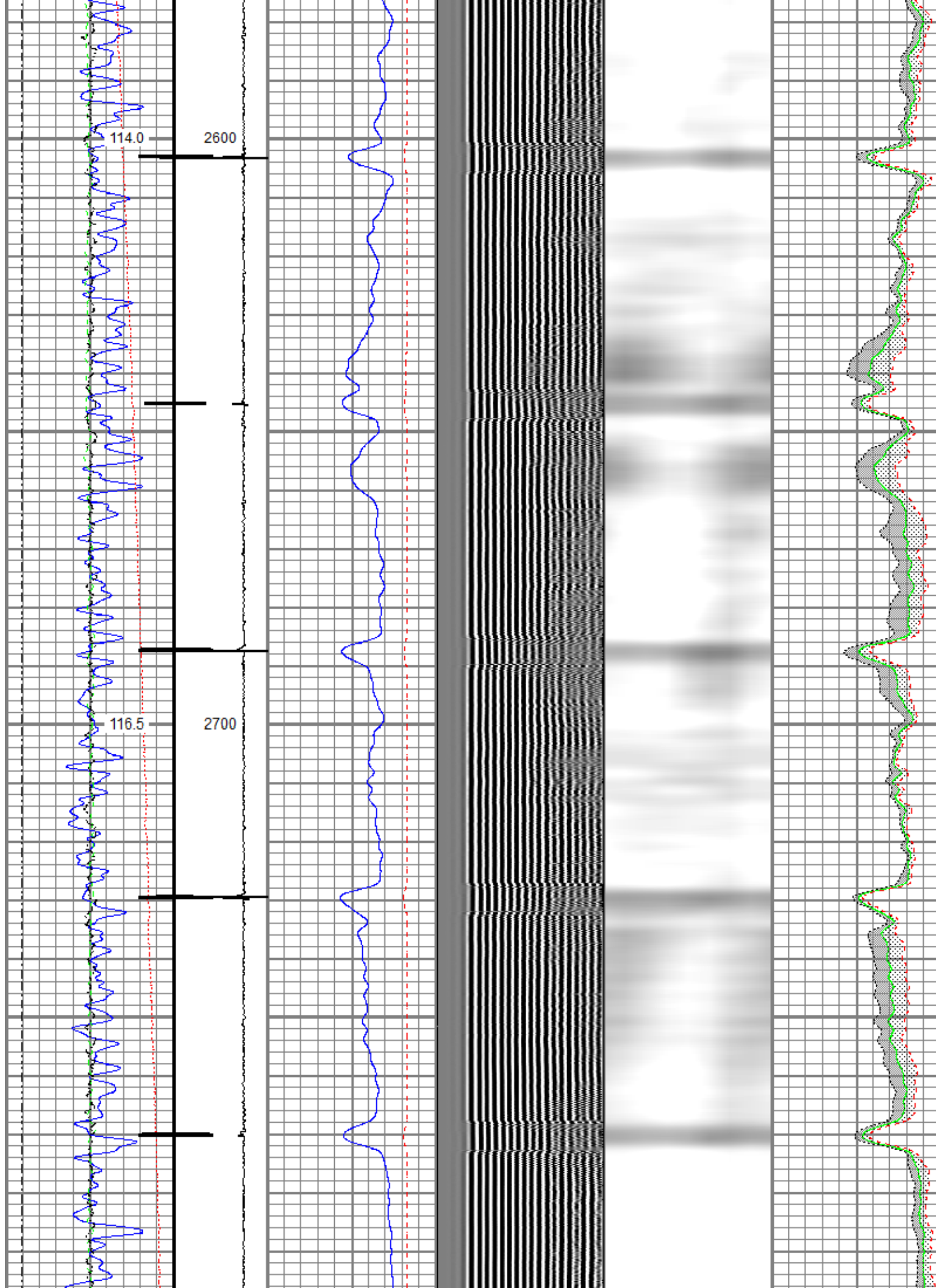


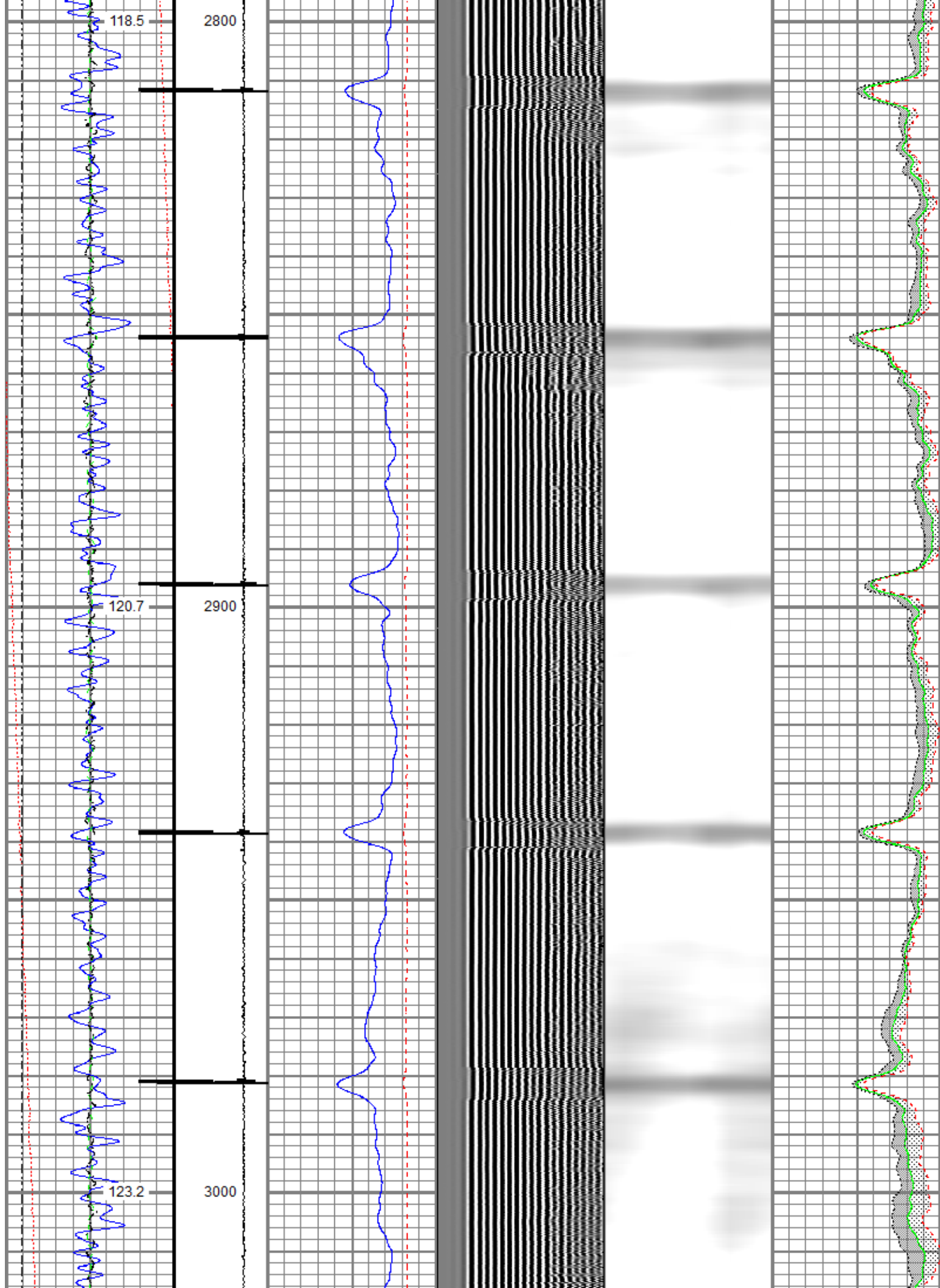


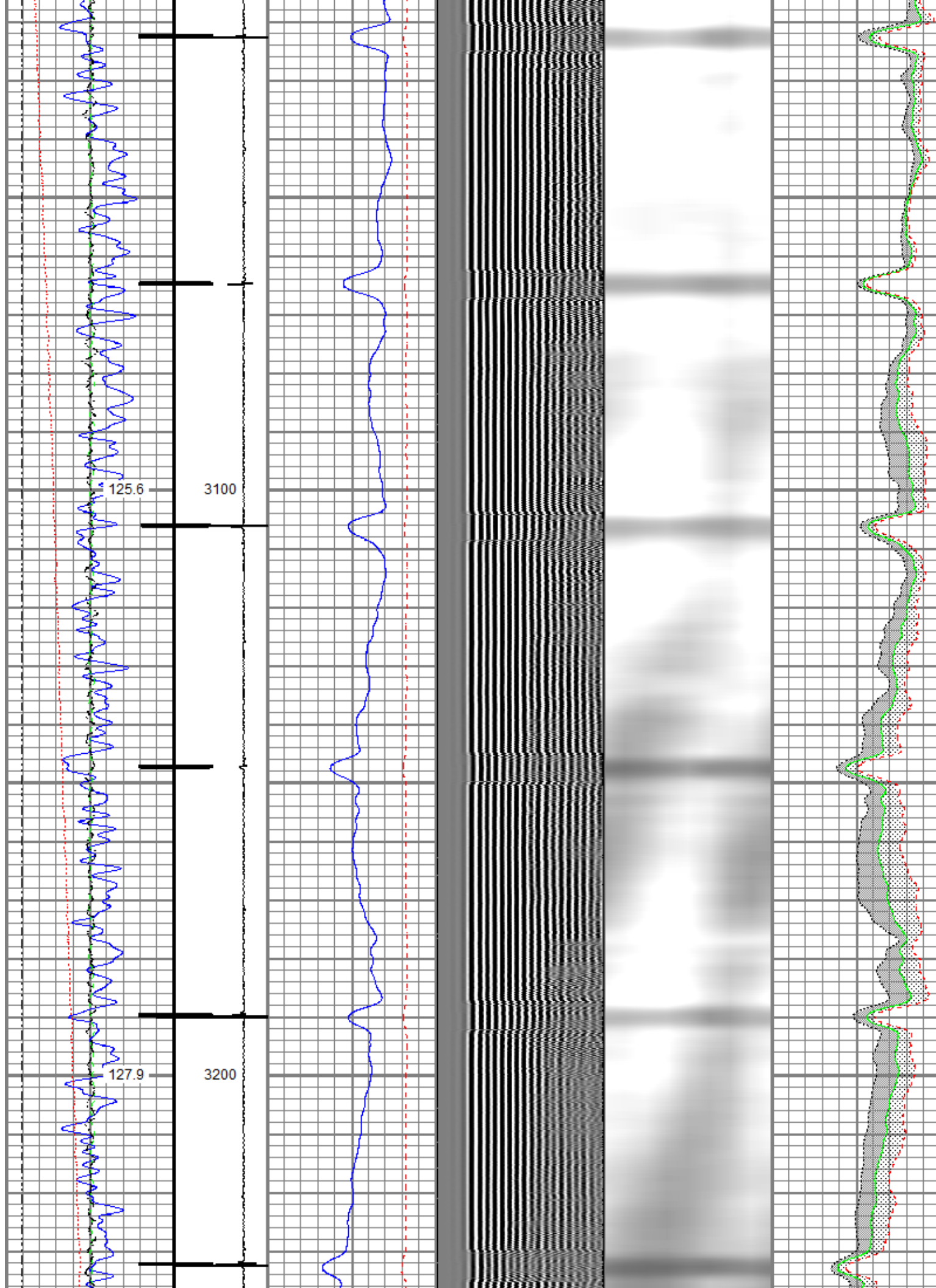


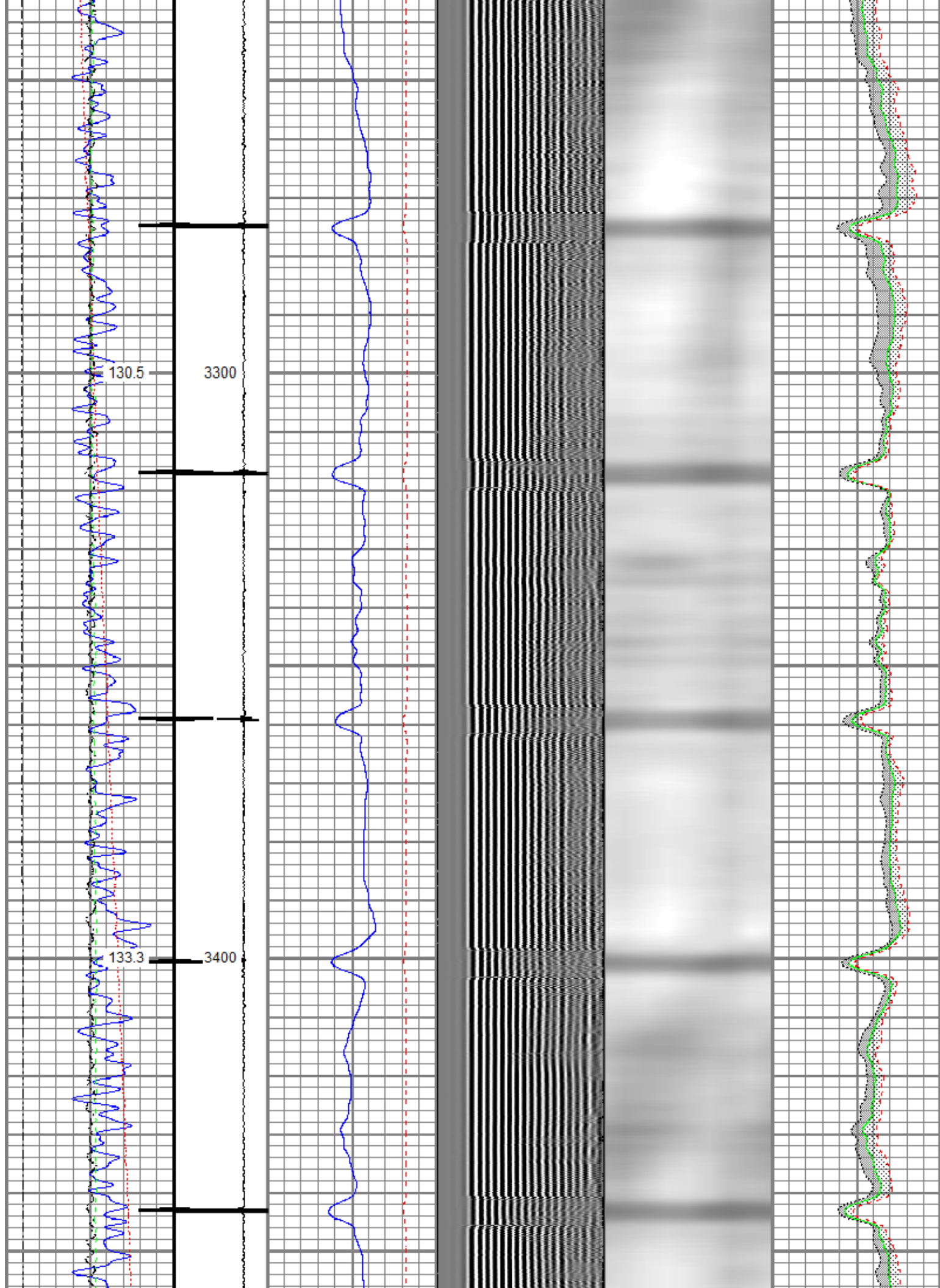


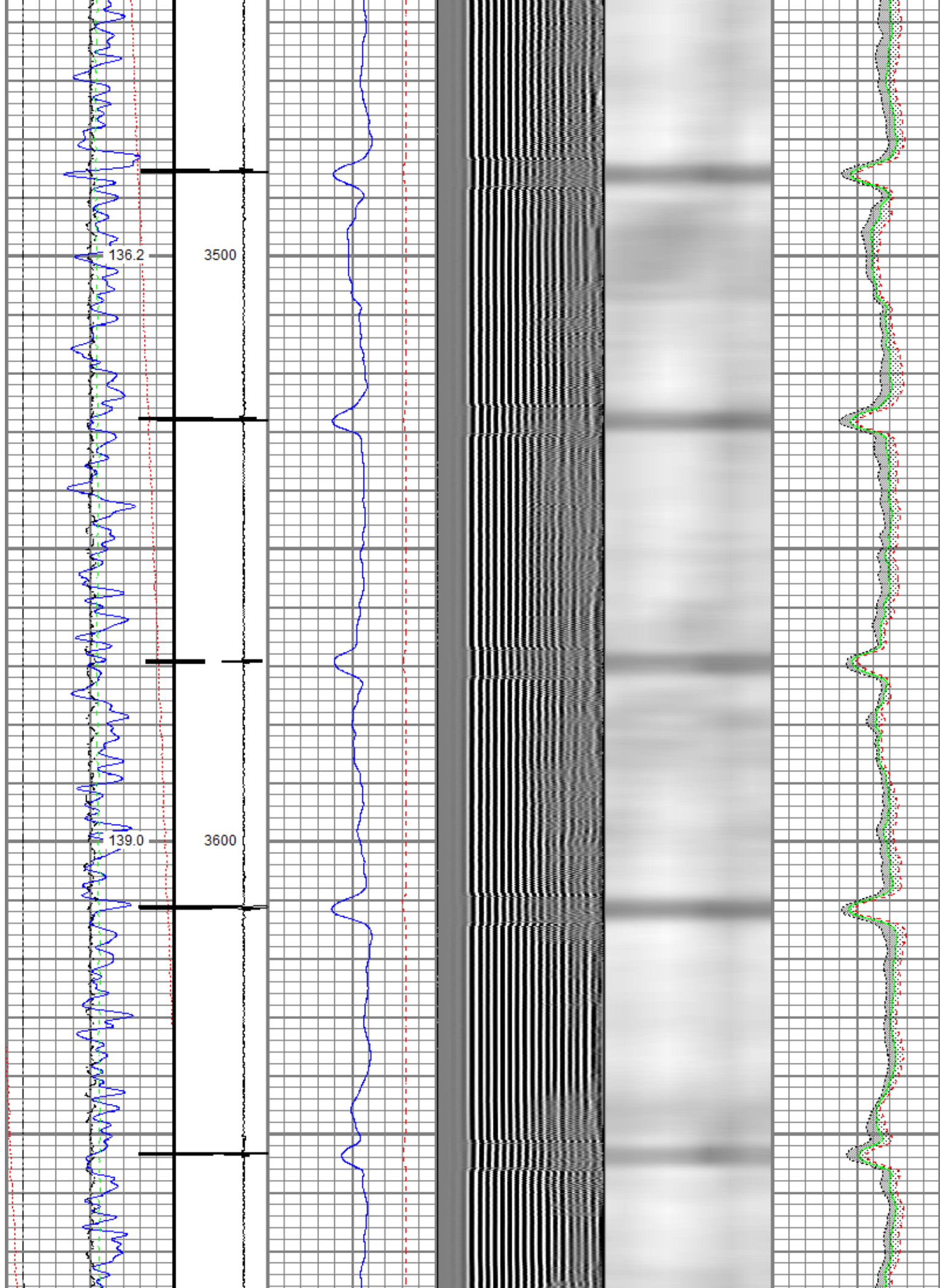


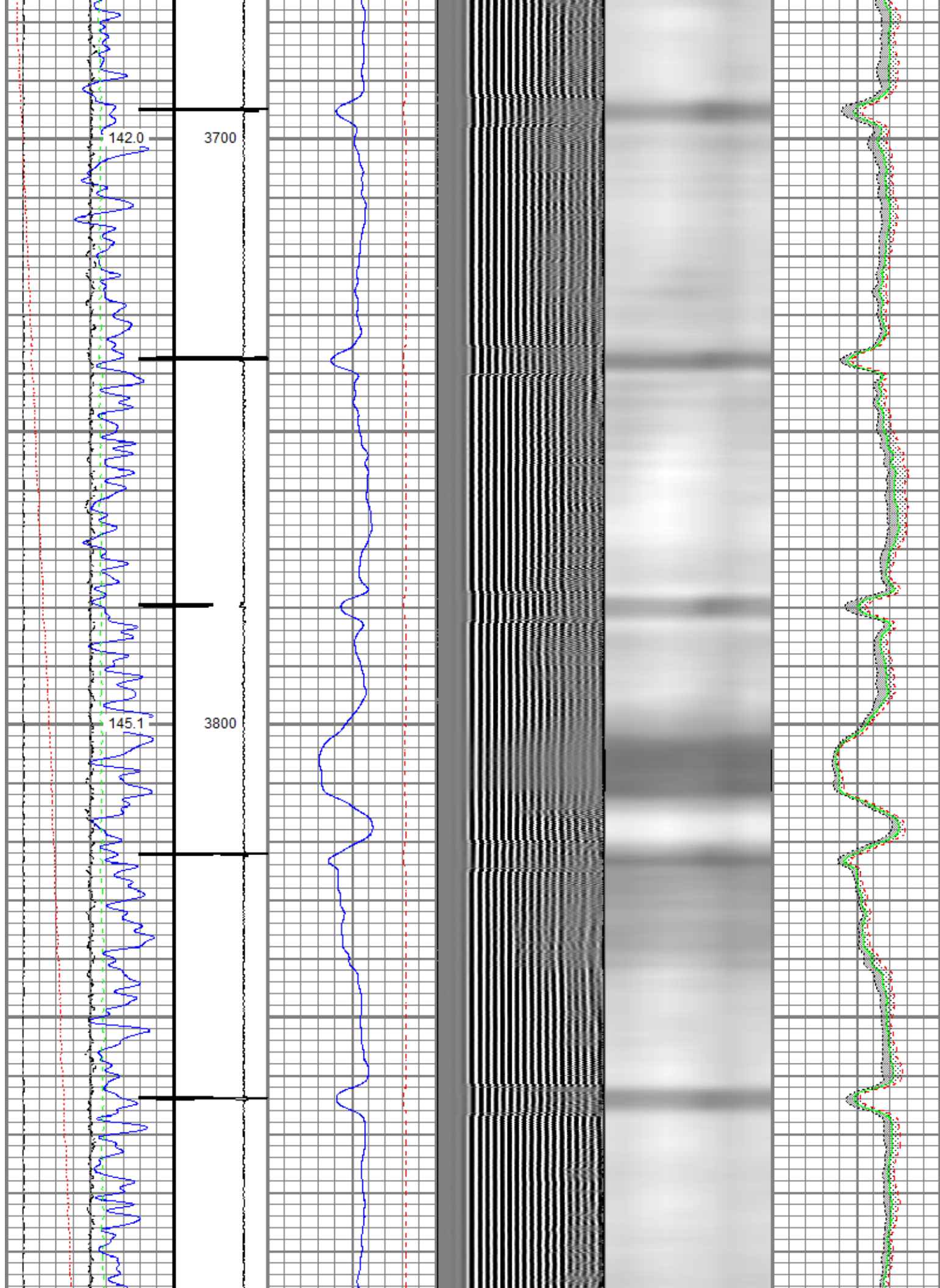


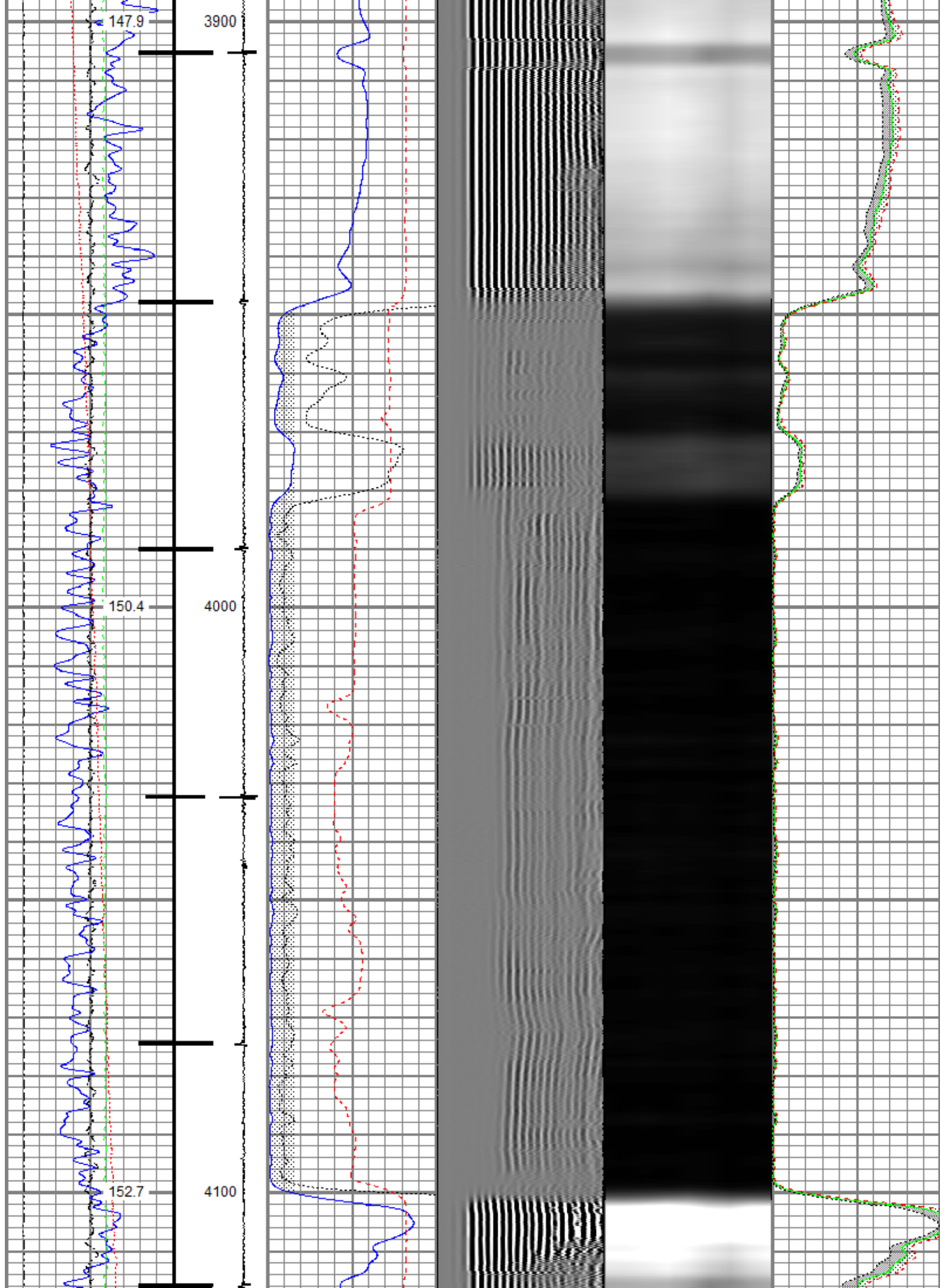


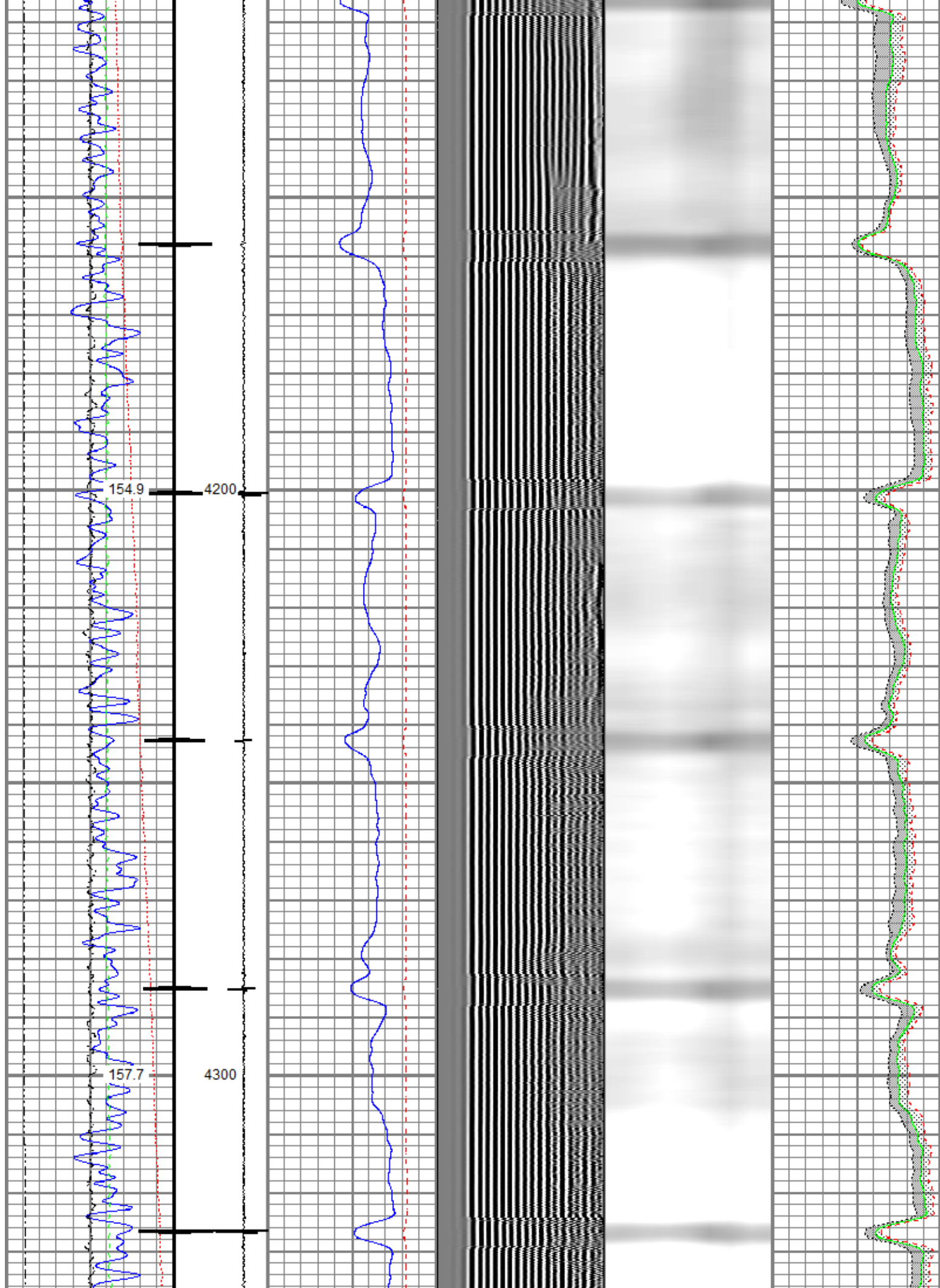


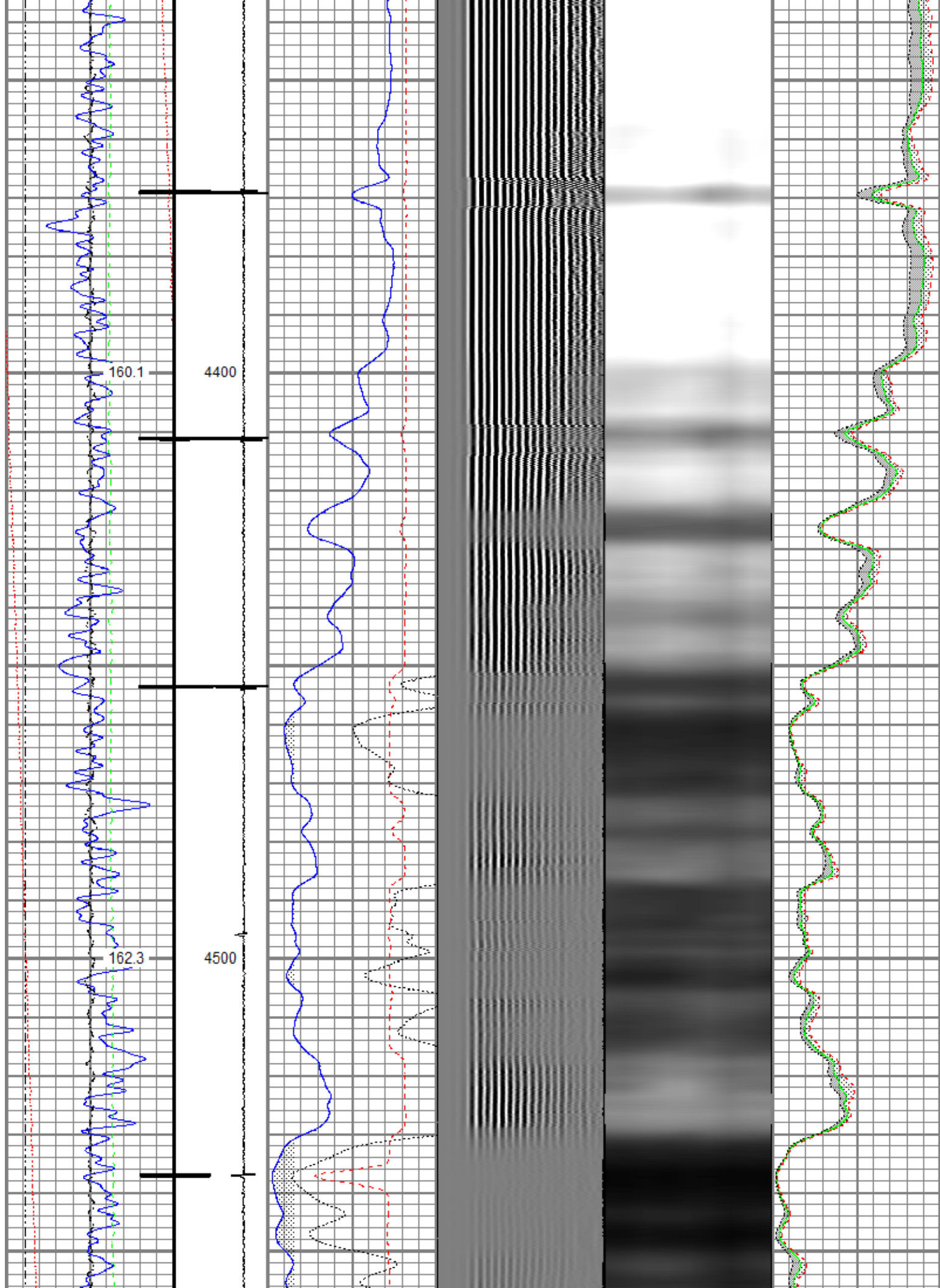


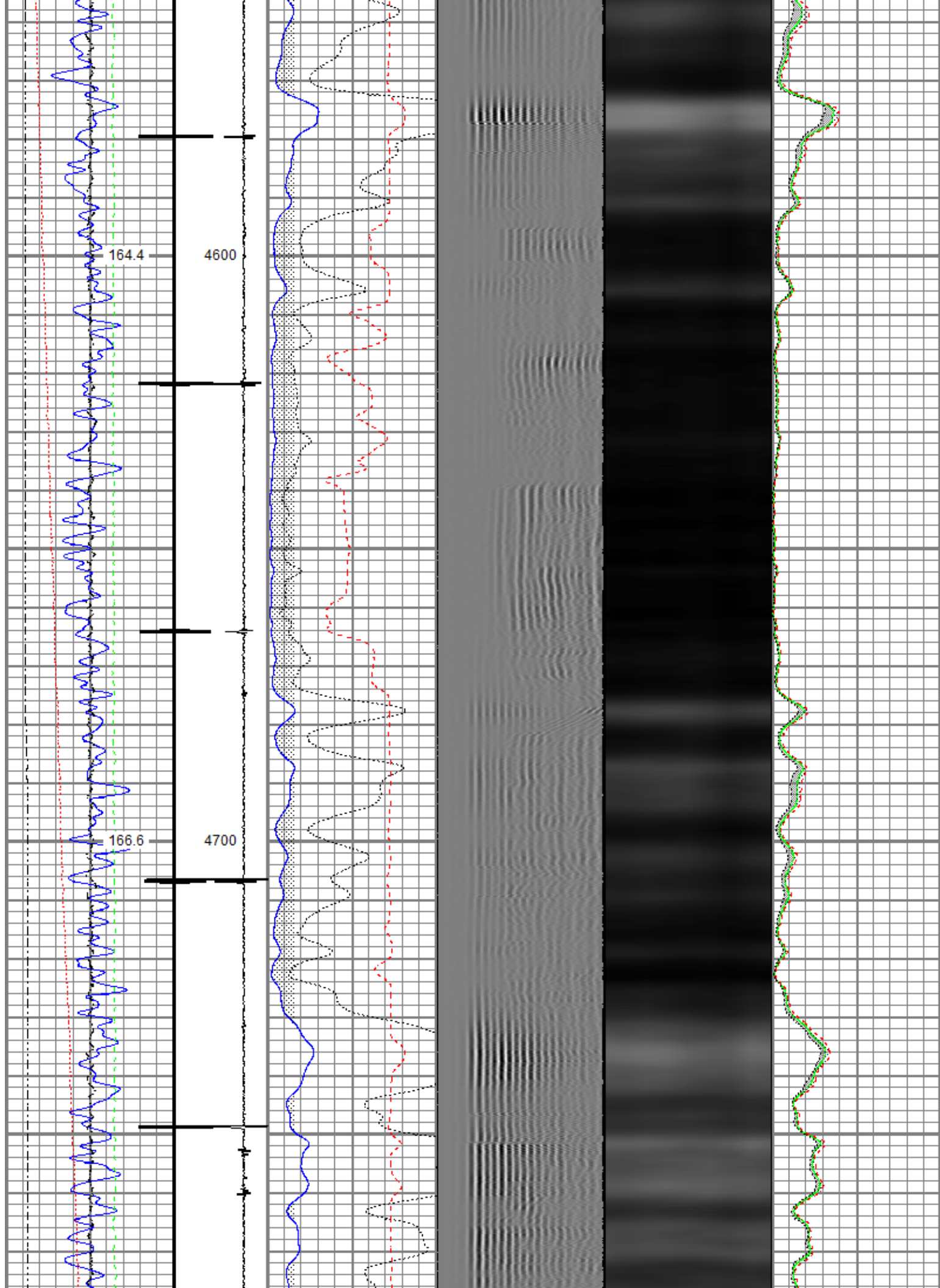


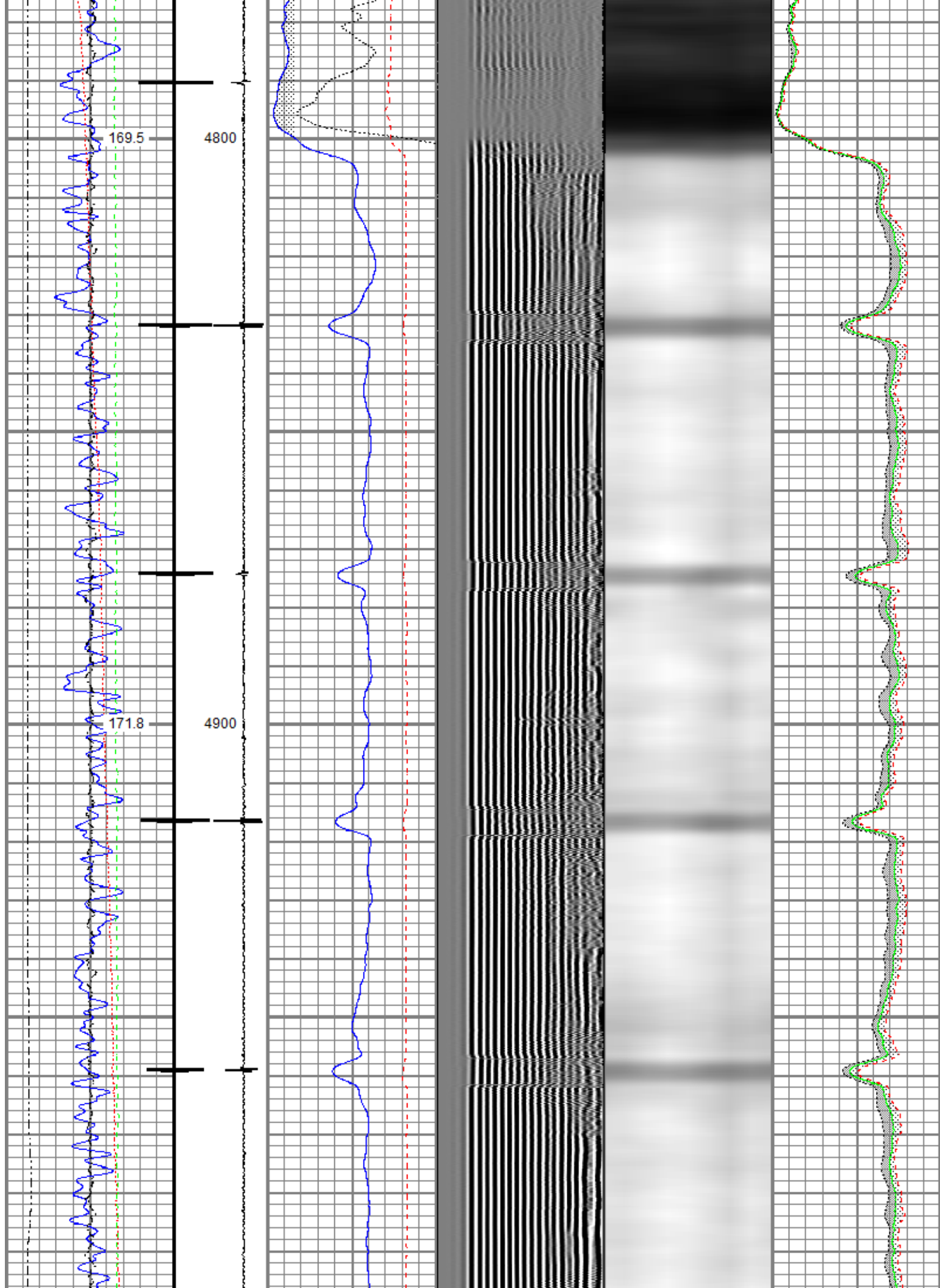


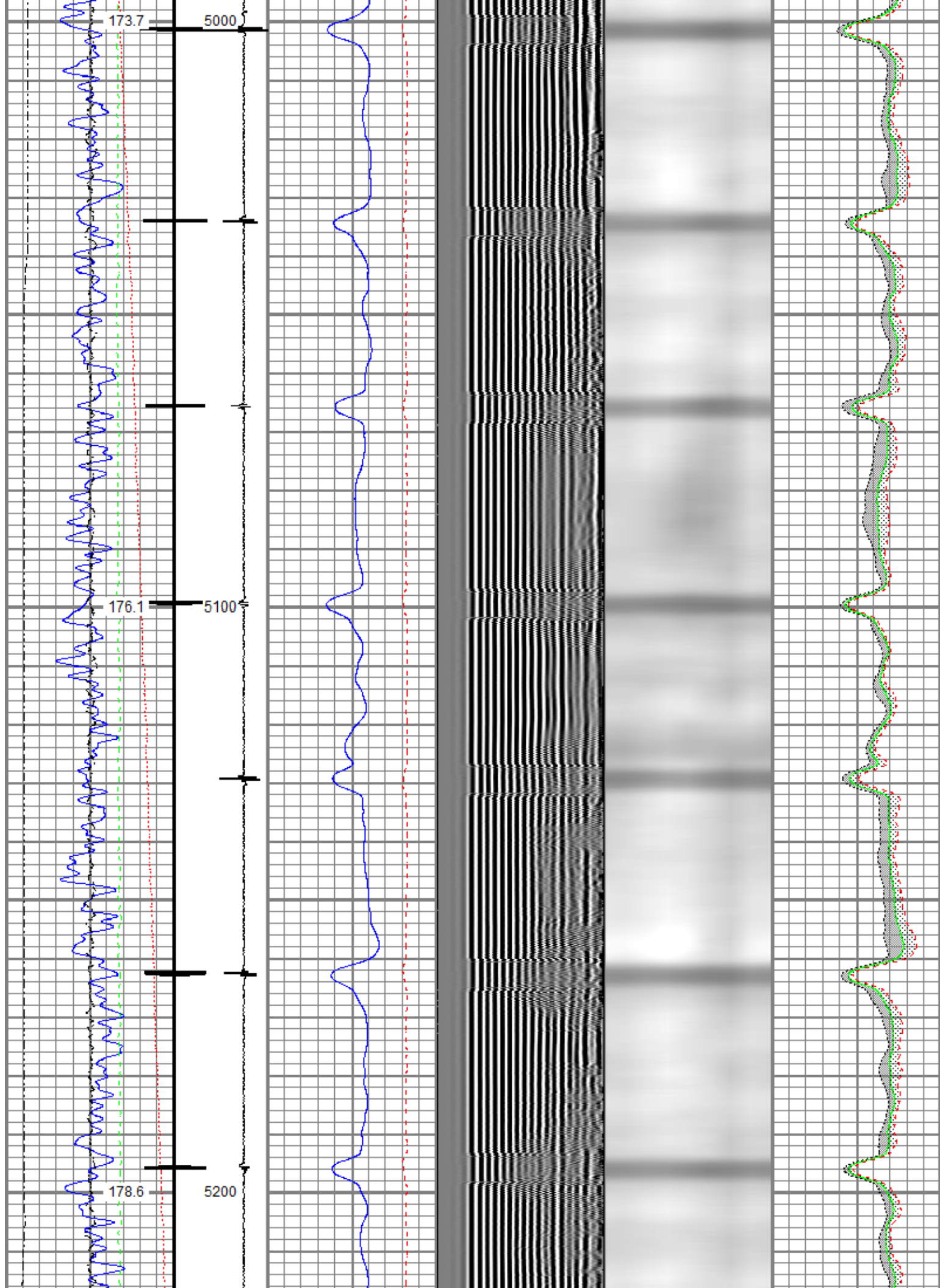


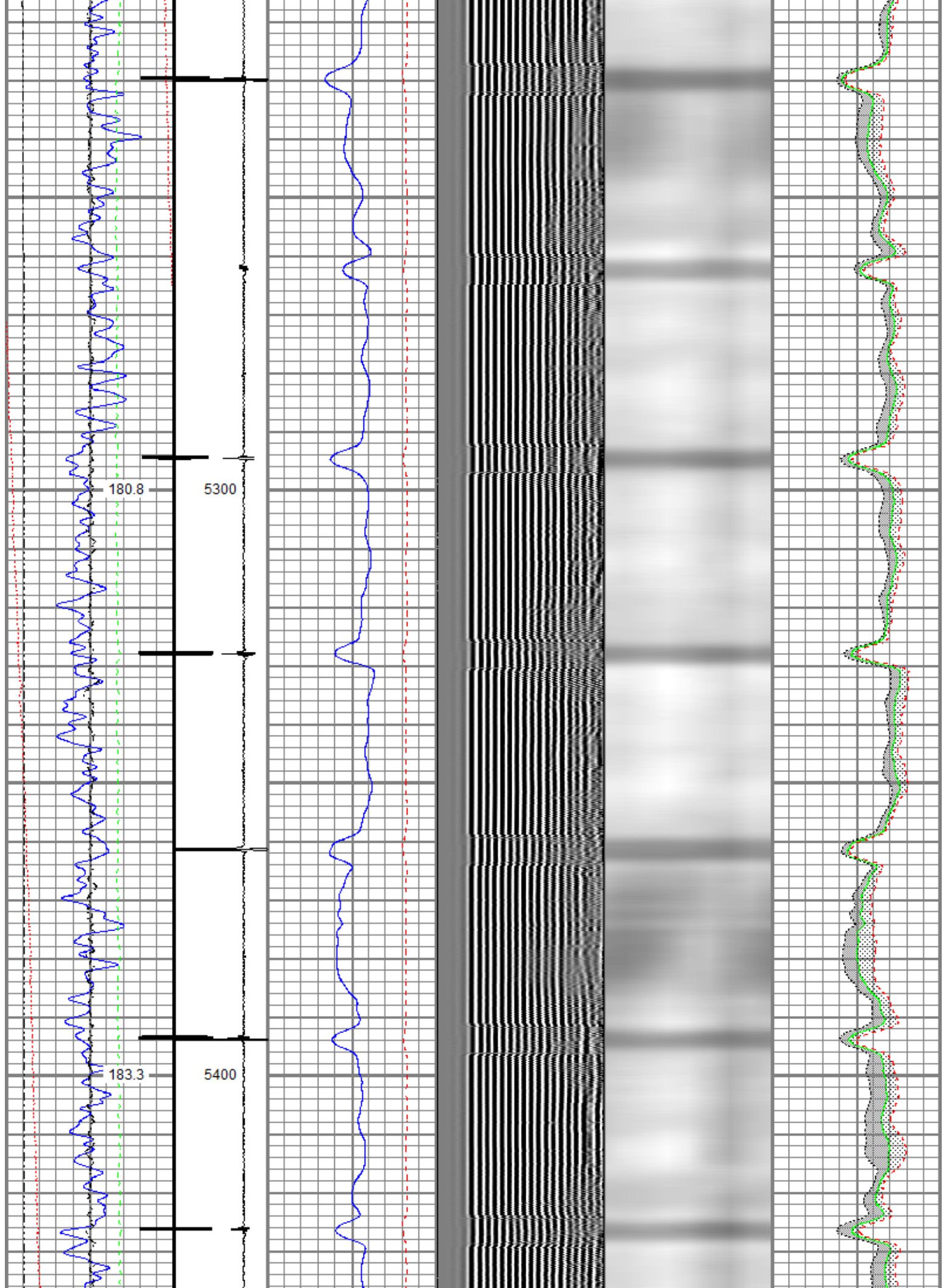


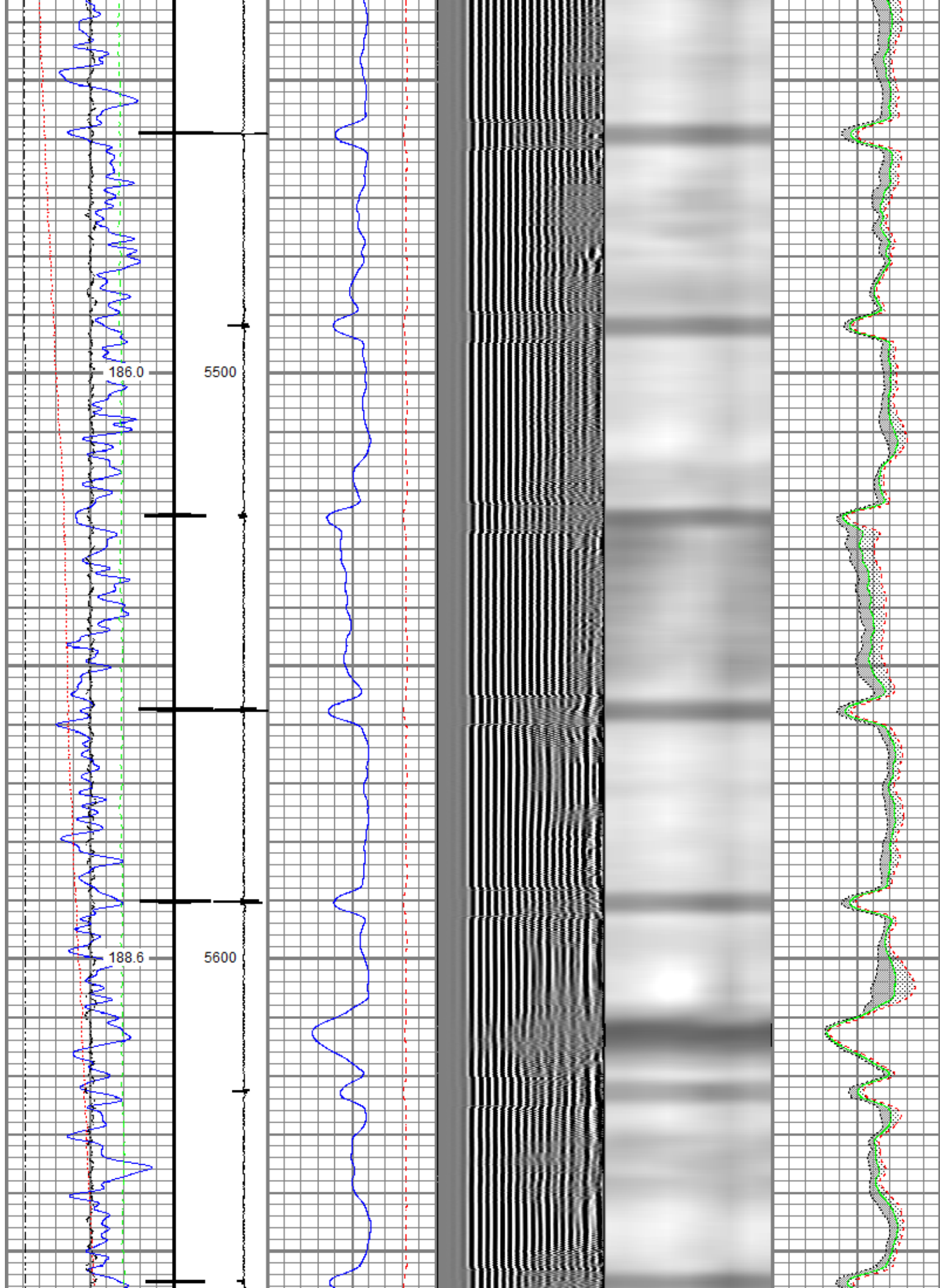


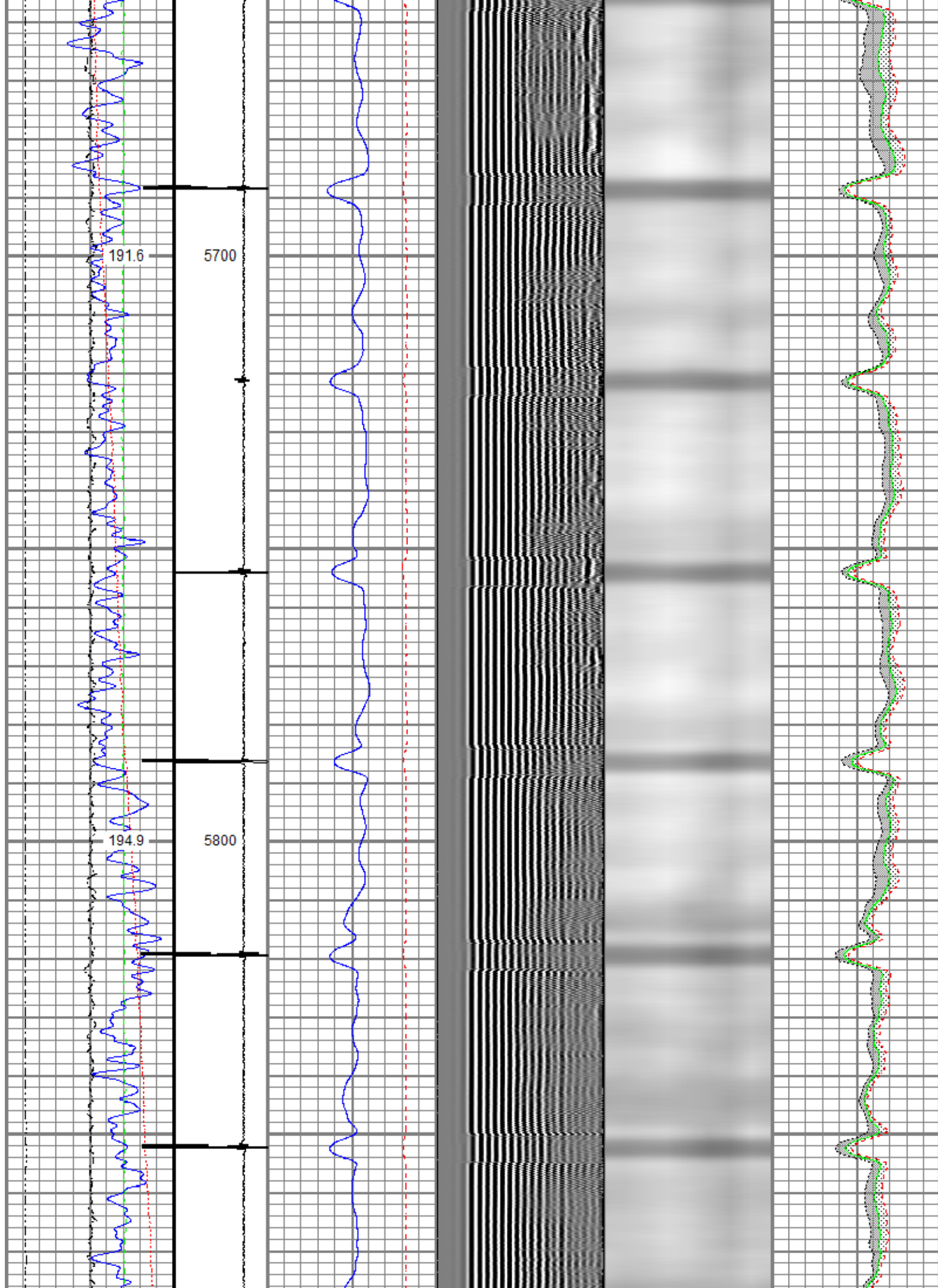


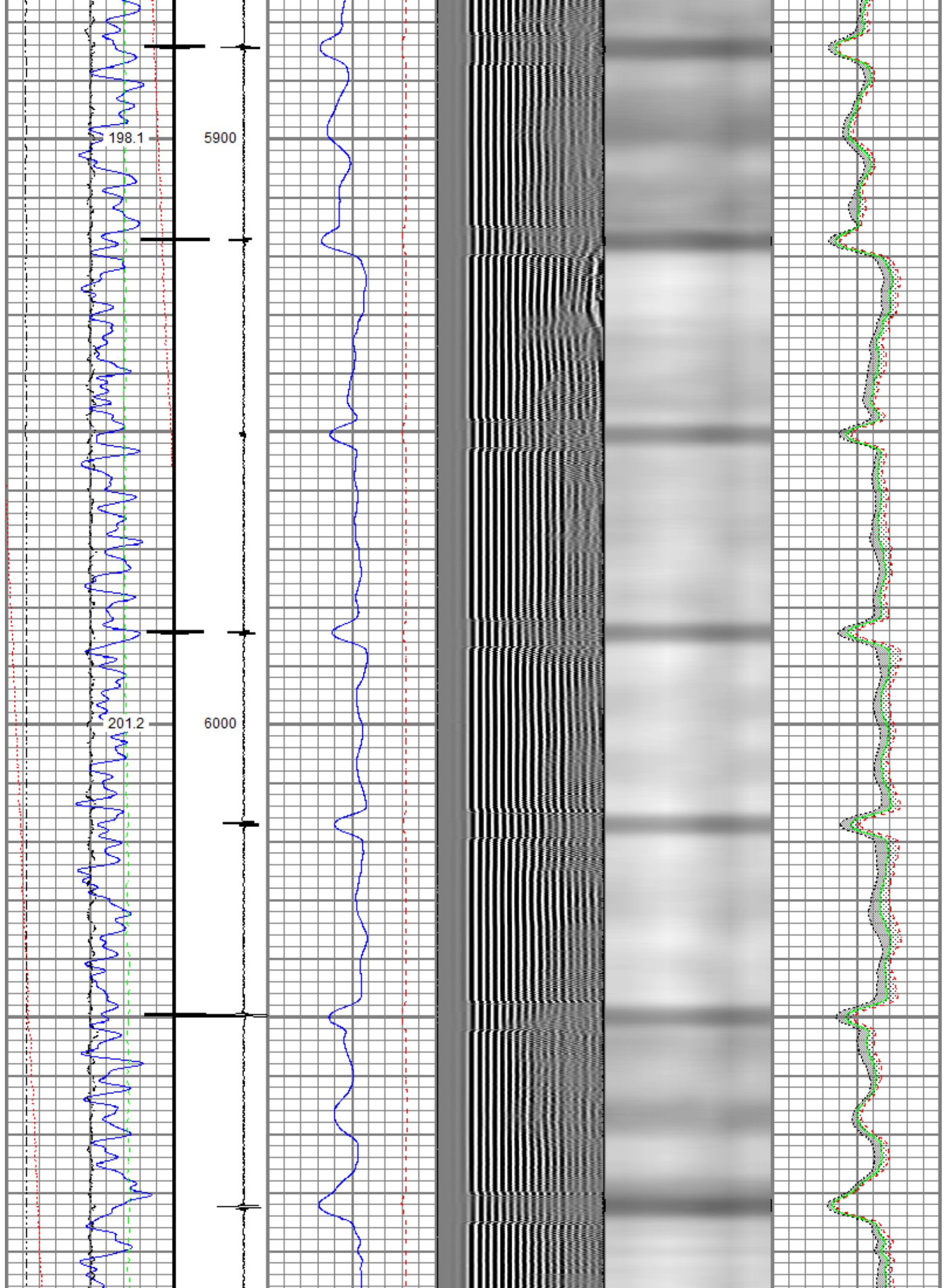


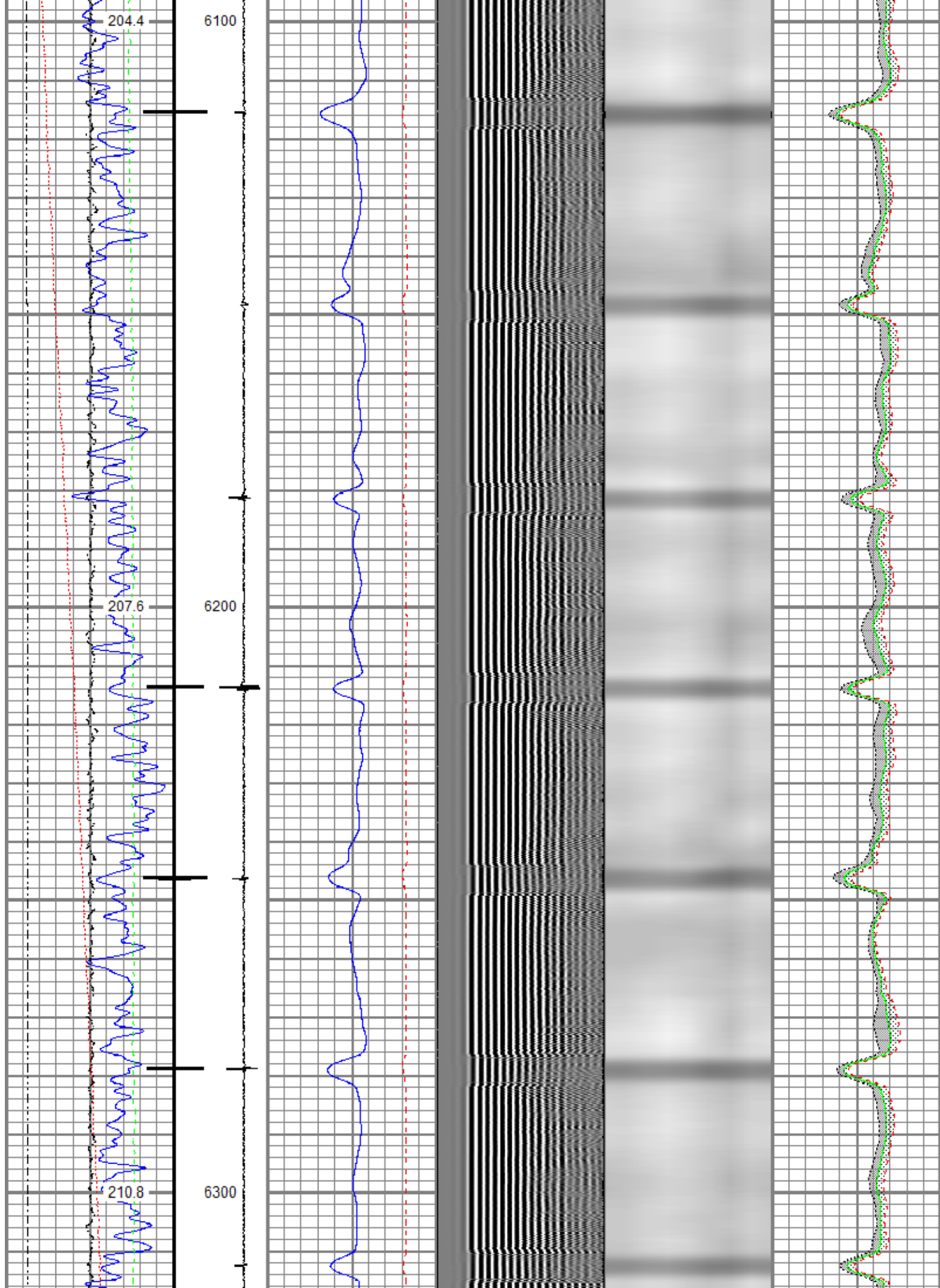


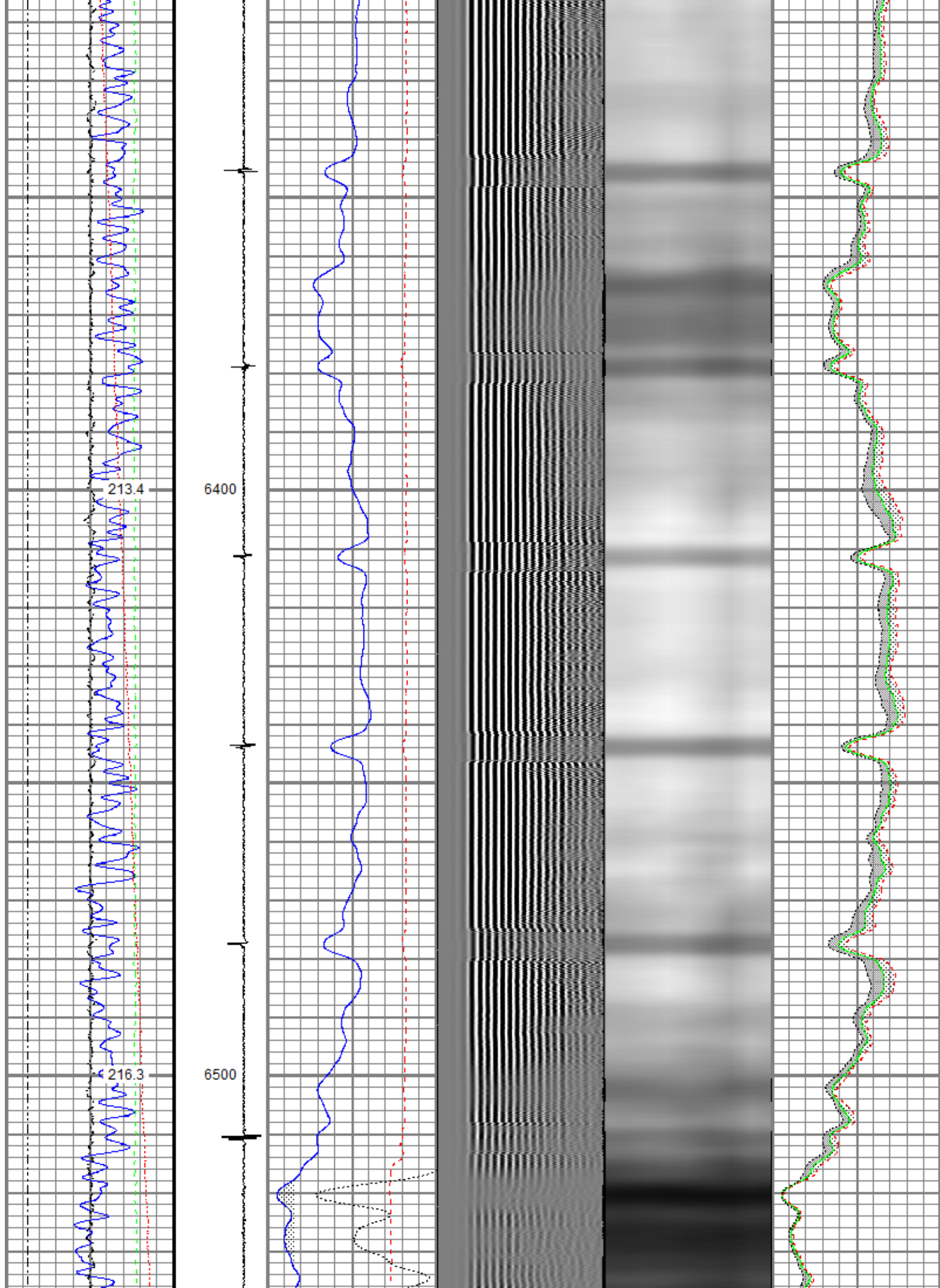


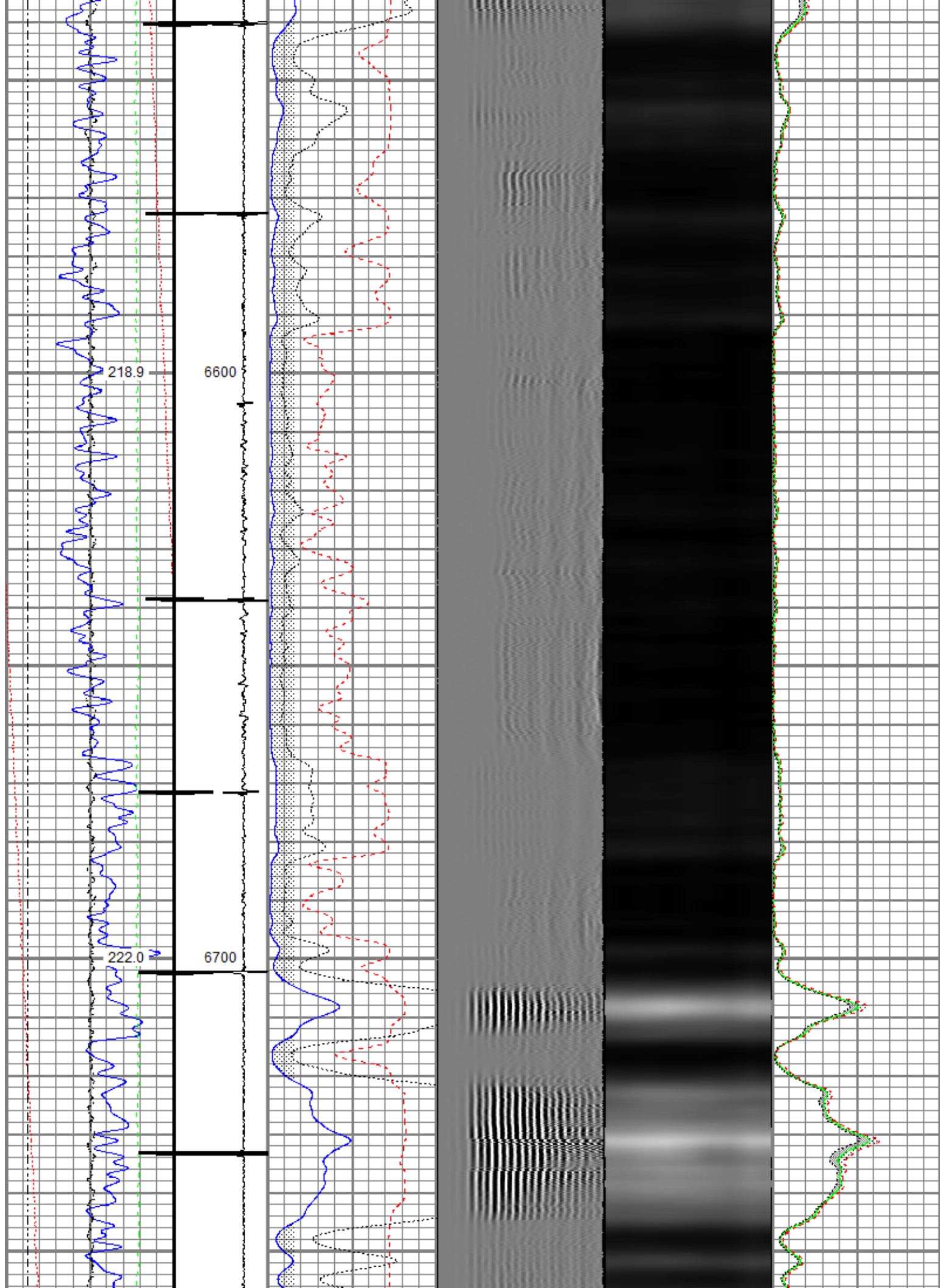


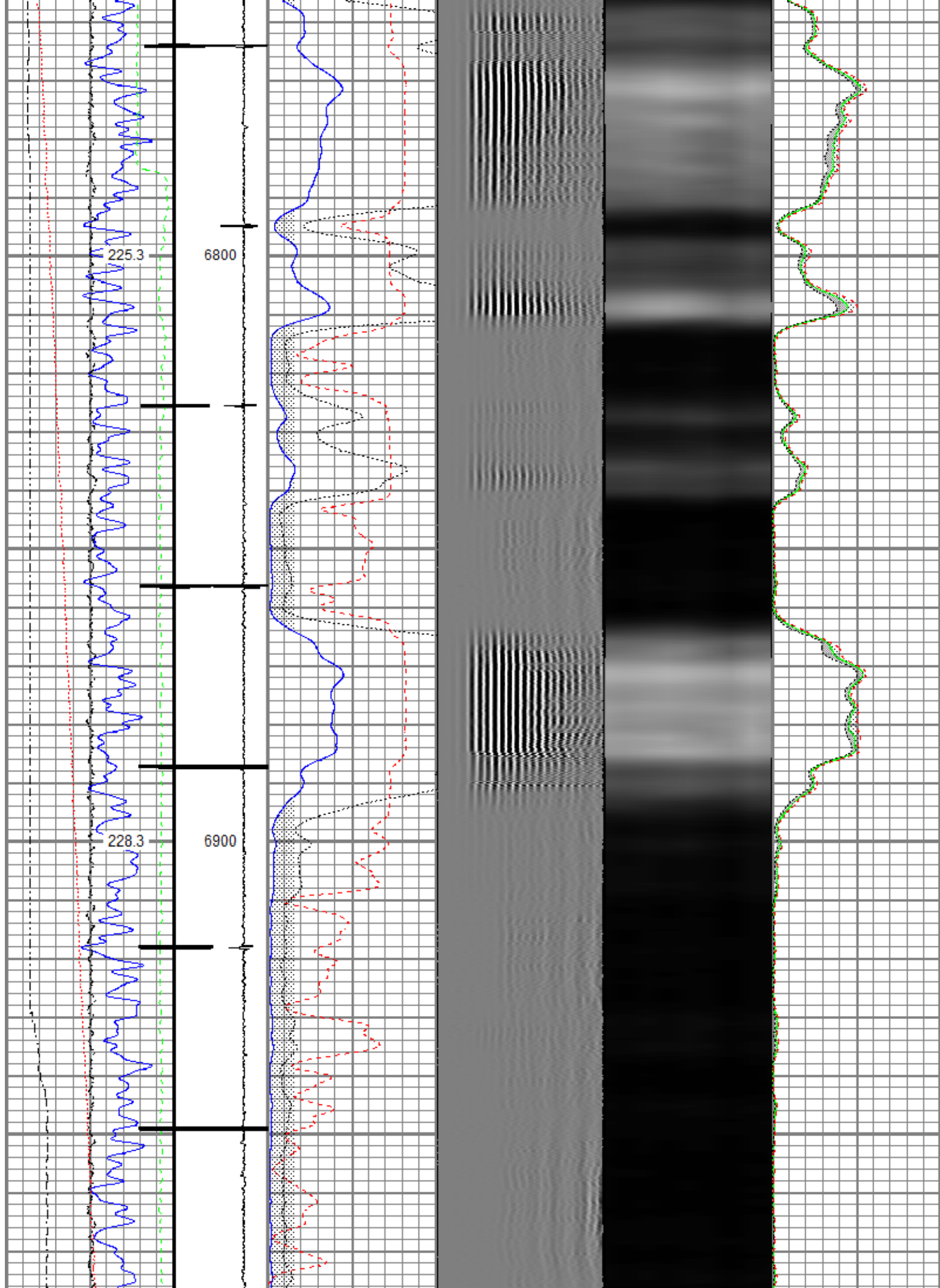


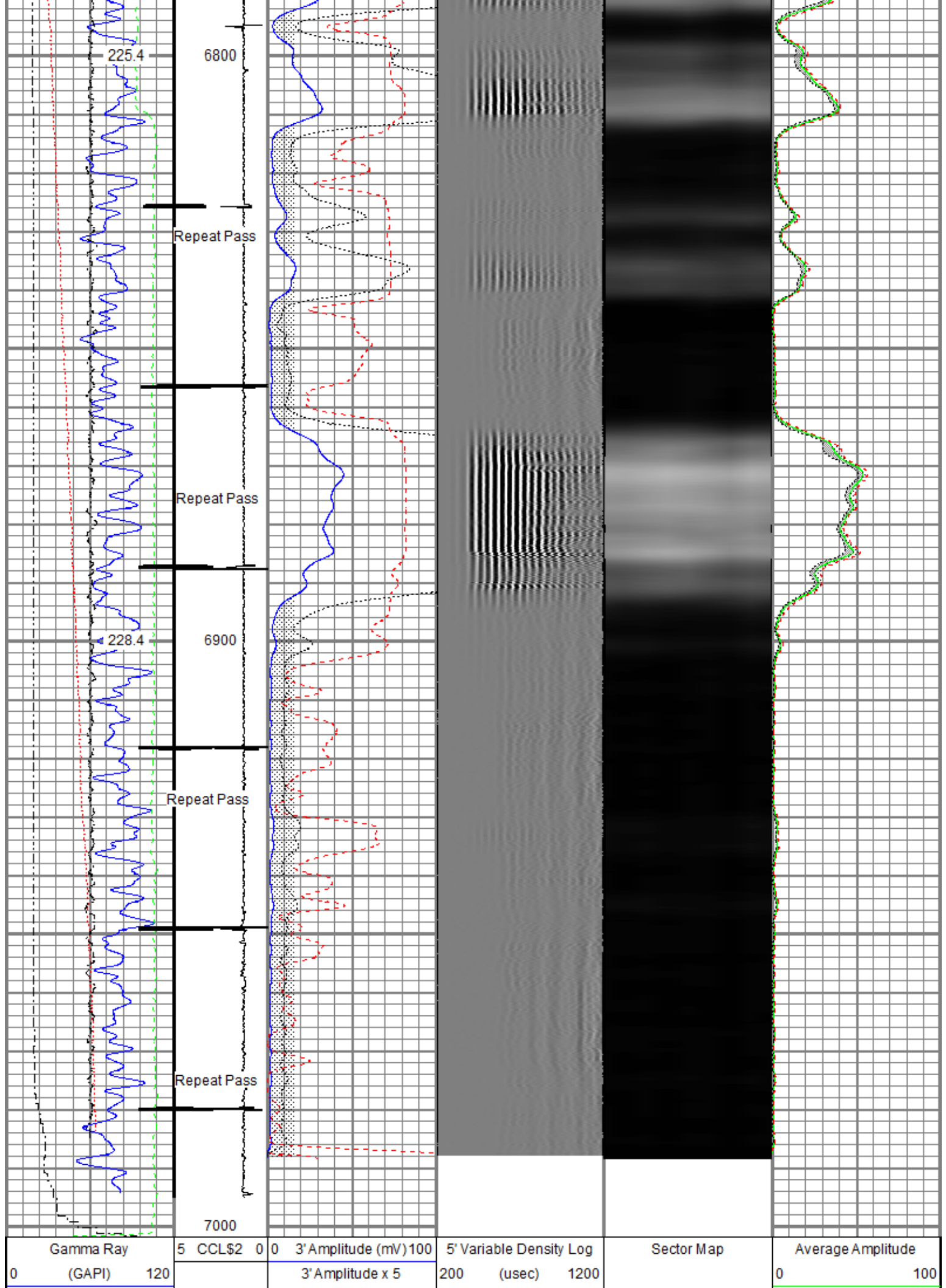






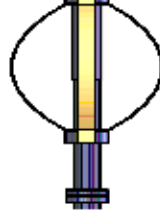






| | | | |
|--------------------------|-------------------|----------------|-------------------|
| Temperature | 0 (degF) 20 | 0 (mV) 20 | Minimum Amplitude |
| Line Speed | -150 (ft/min) 150 | 3' Travel Time | 0 100 |
| Line Tension (lb) 000 | | 650 (usec) 150 | Maximum Amplitude |
| Differential Temperature | -2 (degF) 2 | | 0 100 |
| Casing Collar Locator | | | |

| Sensor | Offset (ft) | Schematic | Description | Length (ft) | O.D. (in) | Weight (lb) |
|----------|-------------|-----------|---|-------------|-----------|-------------|
| | | | Titan CHD-14375 GO Titan 1-7/16" Assembled Electric Cable Head with 1" Fishing Neck | 1.03 | 1.44 | 3.60 |
| | | | Probe CENT-2750 Probe 2-3/4" Electric Inline Bowspring Centralizer | 2.88 | 2.75 | 20.00 |
| TEMP | 17.04 | | | | | |
| | | | Probe Radii-2750 RBT (FW1305-096) Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub | 9.39 | 2.75 | 105.00 |
| WVFS8 | 14.81 | | | | | |
| WVFS7 | 14.81 | | | | | |
| WVFS6 | 14.81 | | | | | |
| WVFS5 | 14.81 | | | | | |
| WVFS4 | 14.81 | | | | | |
| WVFS3 | 14.81 | | | | | |
| WVFS2 | 14.81 | | | | | |
| WVFS1 | 14.81 | | | | | |
| WVFCAL | 14.81 | | | | | |
| WVF3FT | 14.81 | | | | | |
| WVF5FT | 13.81 | | | | | |
| HEADVOLT | 10.56 | | Probe CENT-2750 Probe 2-3/4" Electric Inline Bowspring Centralizer | 2.88 | 2.75 | 20.00 |
| CCL\$2 | 6.80 | | | | | |
| CCL\$1 | 6.80 | | | | | |
| GR | 5.46 | | Probe GR-CCL-2750 6PB (FW1810-001) Probe 2-3/4" rev.1 Digital Scintillation Gamma Ray/CCL Combined with 6 Pin Bottom for CNT | 4.80 | 2.75 | 55.00 |



Probe CENT-2750
Probe 2-3/4" Electric Inline Bowspring Centralizer

2.88

2.75

20.00

Dataset: oxy_miller_elton_gu_c1_15_oct_2019_rcbl.db: field/gu_c1/rcbl_1/pass5
Total length: 23.86 ft
Total weight: 223.60 lb
O.D.: 2.75 in

Calibration Report

Database File oxy_miller_elton_gu_c1_15_oct_2019_rcbl.db
Dataset Pathname gu_c1/rcbl_1/pass5
Dataset Creation Tue Oct 15 15:28:19 2019

Gamma Ray Calibration Report

Serial Number: FW1810-001
Tool Model: 2750 6PB
Performed: Sat Nov 10 12:22:37 2018

Calibrator Value: 637.0 GAPI

Background Reading: 100.1 cps
Calibrator Reading: 1264.5 cps

Sensitivity: 0.5471 GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number: FW1305-096
Tool Model: 2750 RBT

Calibration Casing Diameter: 4.500 in
Calibration Depth: 2300.614 ft

Master Calibration, performed Tue Oct 15 14:45:11 2019:

| | Raw (v) | | Calibrated (mv) | | Results | |
|-----|---------|-------|-----------------|---------|---------|--------|
| | Zero | Cal | Zero | Cal | Gain | Offset |
| 3' | 0.006 | 0.425 | 0.800 | 81.196 | 191.795 | -0.371 |
| CAL | 0.006 | 0.603 | | | | |
| 5' | 0.006 | 0.398 | 0.800 | 81.196 | 205.218 | -0.438 |
| SUM | | | | | | |
| S1 | 0.006 | 0.424 | 0.000 | 100.000 | 239.434 | -1.476 |
| S2 | 0.006 | 0.419 | 0.000 | 100.000 | 242.123 | -1.516 |
| S3 | 0.006 | 0.414 | 0.000 | 100.000 | 245.233 | -1.497 |
| S4 | 0.006 | 0.416 | 0.000 | 100.000 | 244.268 | -1.542 |
| S5 | 0.006 | 0.485 | 0.000 | 100.000 | 208.697 | -1.315 |
| S6 | 0.006 | 0.574 | 0.000 | 100.000 | 176.006 | -1.081 |
| S7 | 0.006 | 0.545 | 0.000 | 100.000 | 185.642 | -1.133 |
| S8 | 0.006 | 0.465 | 0.000 | 100.000 | 217.953 | -1.365 |


Internal Reference Calibration, performed (Not Performed):

| | Raw (v) | | Calibrated (v) | | Results | |
|-----|---------|-------|----------------|-------|---------|--------|
| | Zero | Cal | Zero | Cal | Gain | Offset |
| CAL | 0.000 | 0.000 | 0.006 | 0.603 | 1.000 | 0.000 |

Air Zero Calibration, performed Tue Oct 15 14:45:32 2019:

| | Raw (v) | Calibrated (v) | Results |
|-----|---------|----------------|---------|
| | Zero | Zero | Offset |
| 3' | 0.006 | 0.000 | 0.000 |
| 5' | 0.006 | 0.000 | -0.000 |
| SUM | | | |
| S1 | 0.006 | 0.000 | 0.000 |
| S2 | 0.006 | 0.000 | 0.000 |
| S3 | 0.006 | 0.000 | 0.000 |
| S4 | 0.006 | 0.000 | 0.000 |
| S5 | 0.006 | 0.000 | 0.000 |
| S6 | 0.006 | 0.000 | 0.000 |
| S7 | 0.006 | 0.000 | -0.000 |
| S8 | 0.006 | 0.000 | -0.000 |

| Temperature Calibration Report | | | |
|--------------------------------|--------------------------|---------|------|
| Serial Number: | FW1305-096 | | |
| Tool Model: | 2750 RBT | | |
| Performed: | Mon Oct 01 11:32:16 2018 | | |
| | Reference | Reading | |
| Low Reference: | 100.00 degF | 109.43 | degF |
| High Reference: | 350.00 degF | 405.87 | degF |
| Gain: | 0.84 | | |
| Offset: | 7.72 | | |
| Delta Spacing | 1 | | |

| | | |
|---|---------|------------------------------------|
|  RELIANCE OILFIELD SERVICES | Company | Kerr-McGee Oil & Gas Onshore, L.P. |
| | Well | Miller Elton GU C 1 |
| | Field | Wattenberg |
| | County | Weld |
| | State | Colorado |