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| <<< Fold Here >>> |
| 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 24 FT Marker Joints recorded at 4893-4908 FT 5081-5097 FT Log ran from just above Liner Top to surface Recorded with 2500 PSI Surface Induced Pressure Logging tools were clean and free of any debris upon completion of operations Thank you for choosing FMC Technologies Surface Integrated Services. |



Database File:01-28-16_noble energy_remora lc34-715_mit_rbl_cnl.db

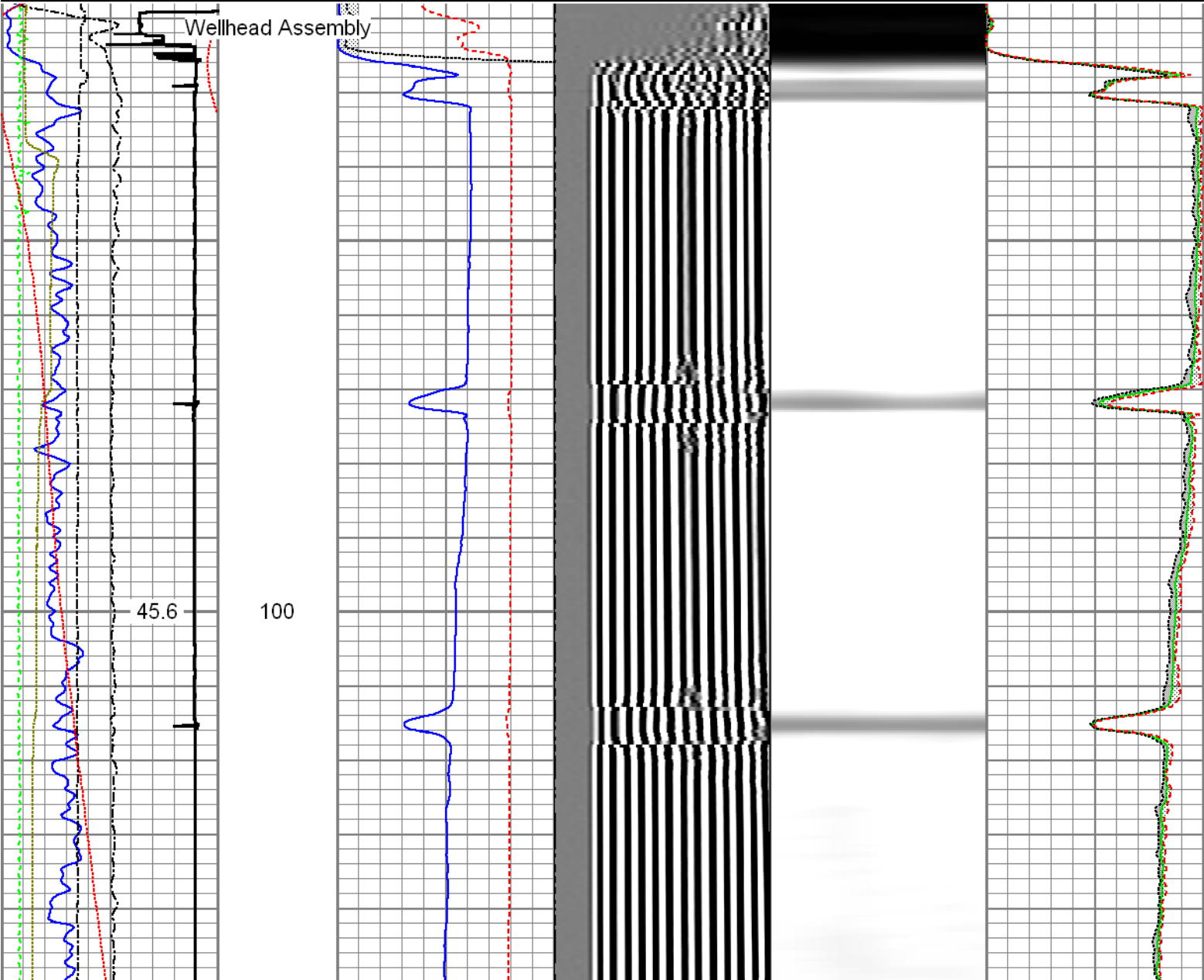
Dataset Pathname:pass11.1

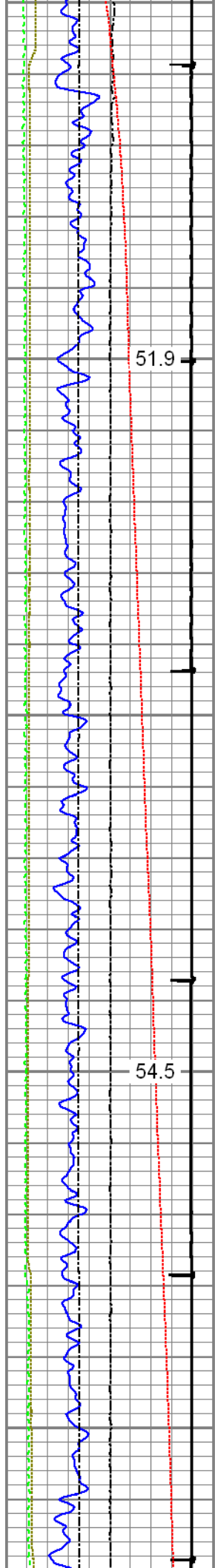
Presentation Format:rbt4_mit

Dataset Creation:Thu Jan 28 13:07:37 2016 by Calc 7.0 B1

Charted by:Depth in Feet scaled 1:240

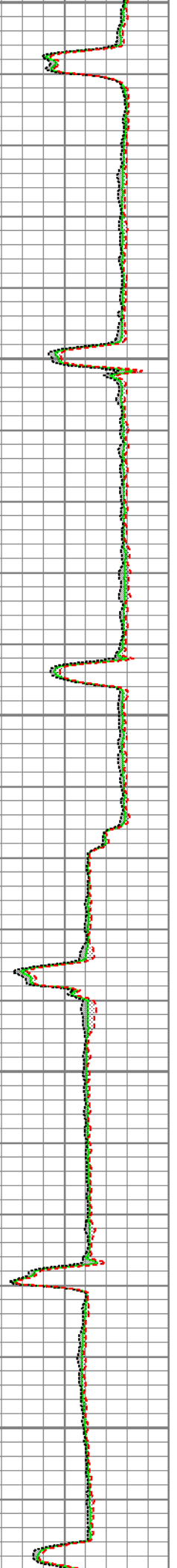
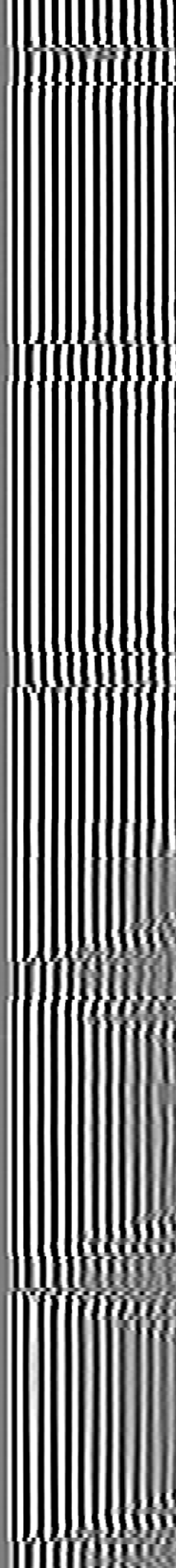
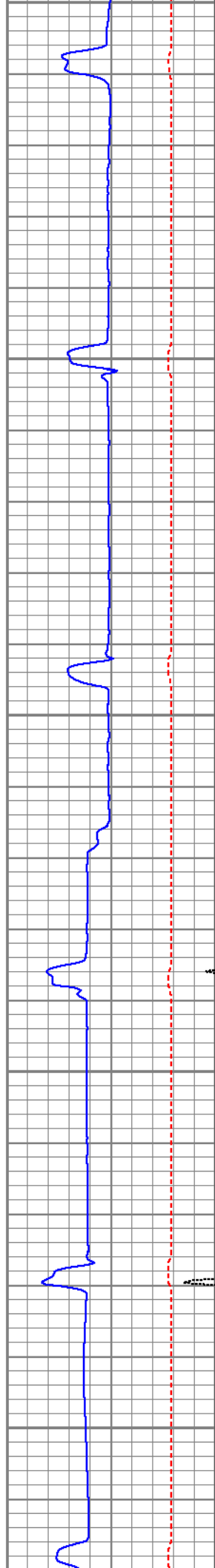
| | | | | |
|--------------------------|------------------|-------------------------|------------|-------------------|
| Gamma Ray | 3' Amplitude | 5' Variable Density Log | Sector Map | Average Amplitude |
| 0 (GAPI) 120 | 0 (mV) 100 | 200 1200 | | 0 100 |
| Casing Collar Locator | 3' Amplitude x 5 | | | Mimimum Amplitude |
| Line Speed | 0 (mV) 20 | | | 0 100 |
| -100 (ft/min) 100 | 3' Travel Time | | | Maximum Amplitude |
| Line Tension | 650 (usec) 150 | | | 0 100 |
| 0 (lb) 2000 | | | | |
| Differential Temperature | | | | |
| -2 (degF) 2 | | | | |
| Temperature | | | | |
| 0 (degF) 20 | | | | |
| -10 Deviation (°) 90 | | | | |

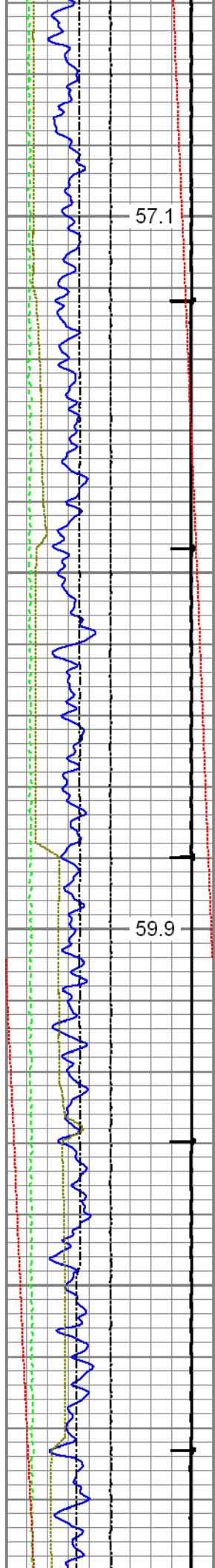




200

300



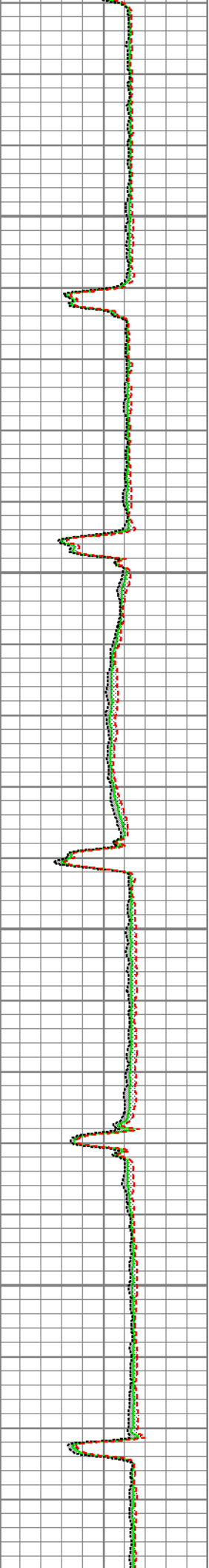
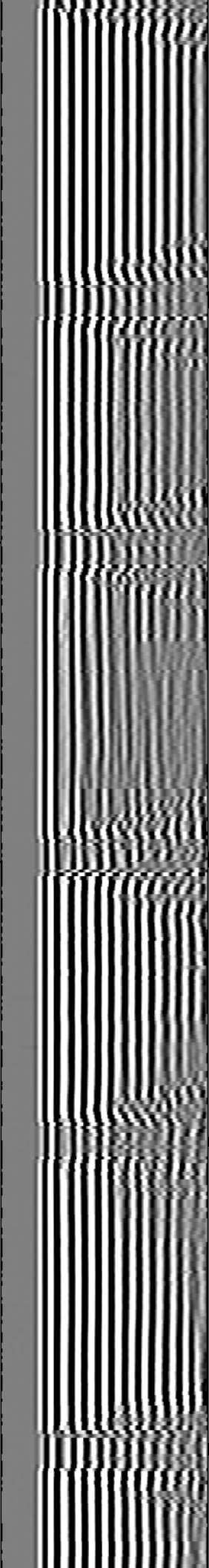
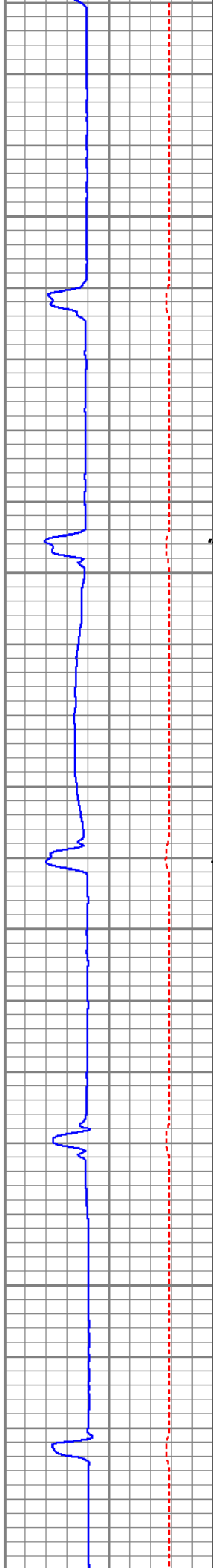


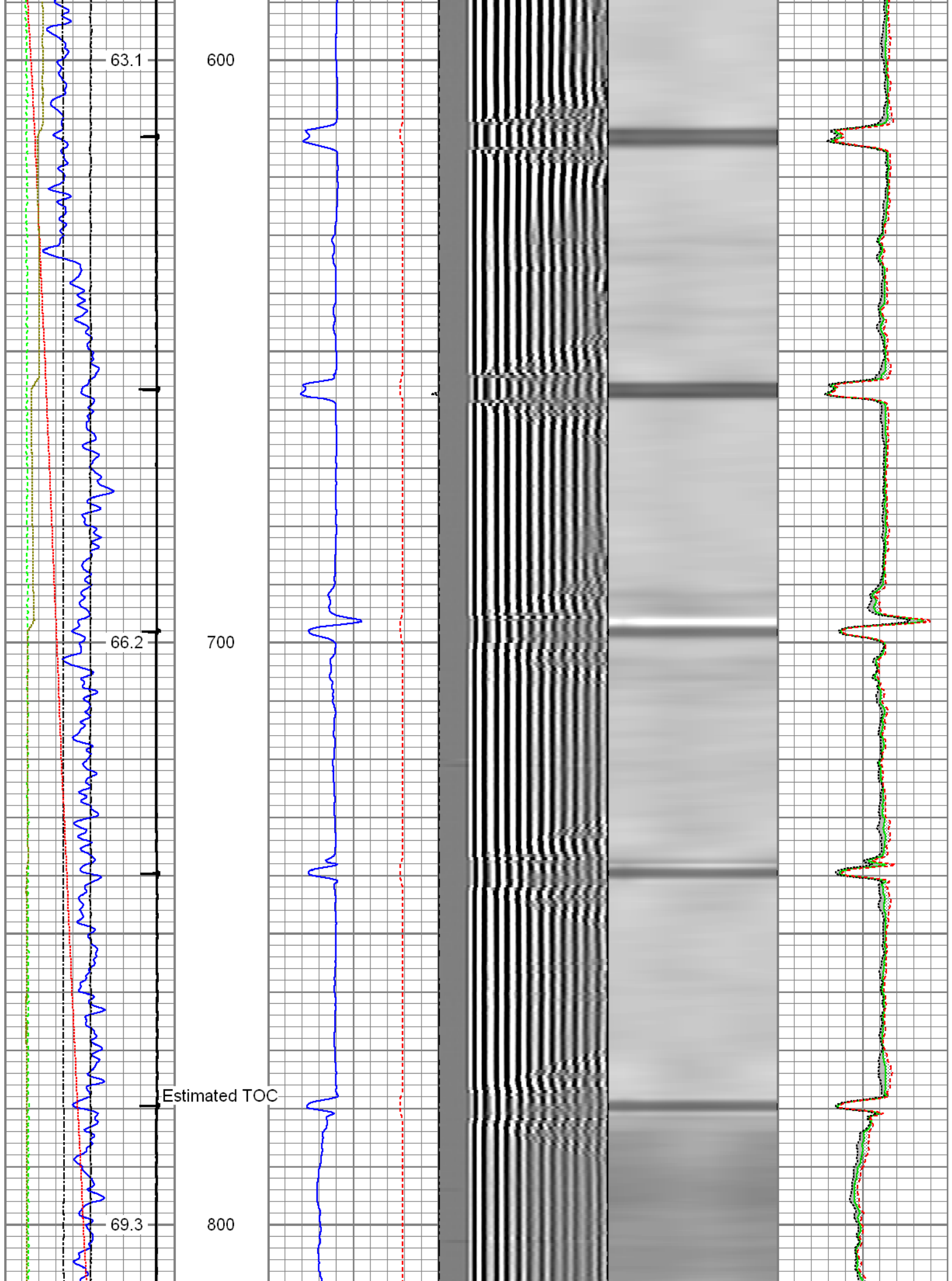
57.1

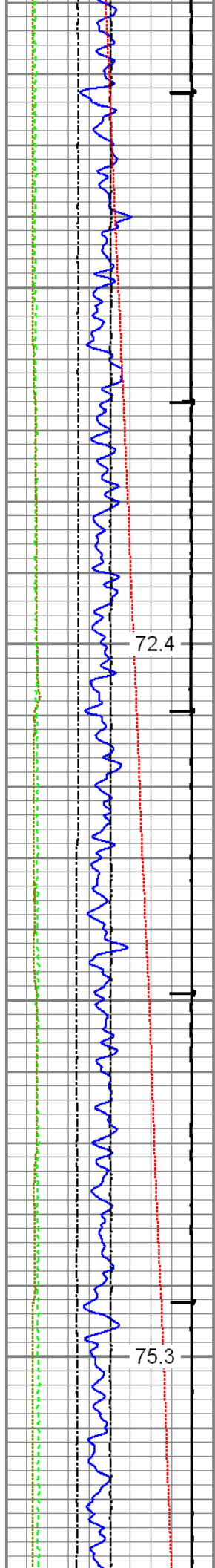
400

59.9

500





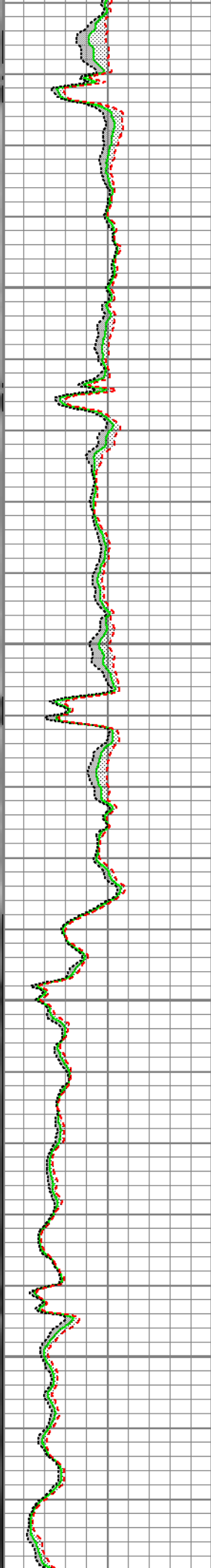
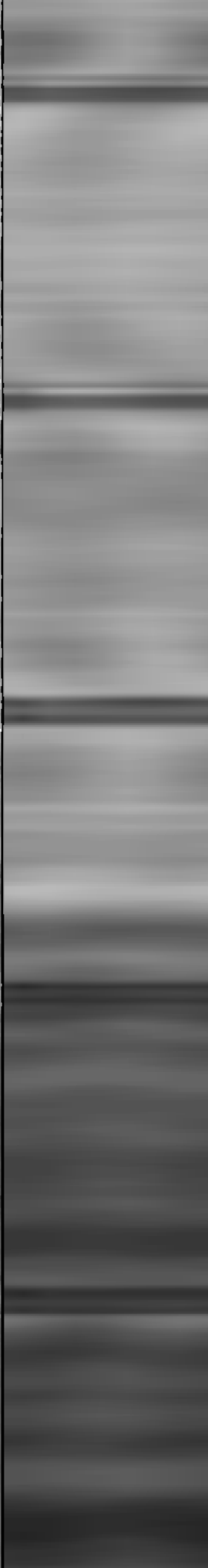
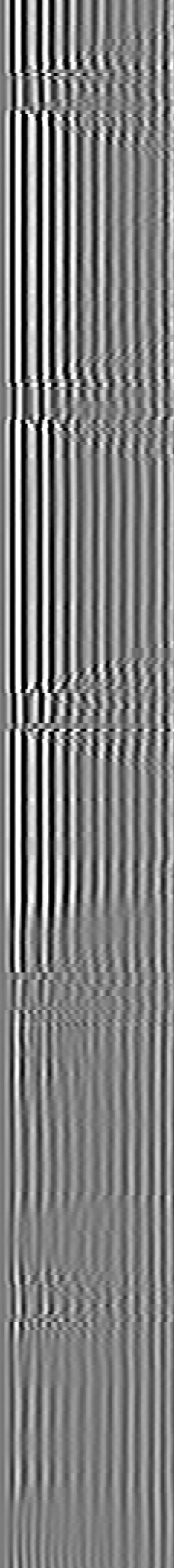
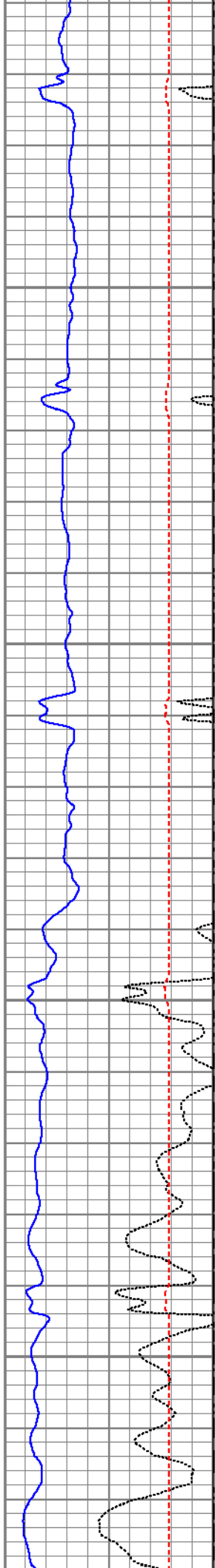


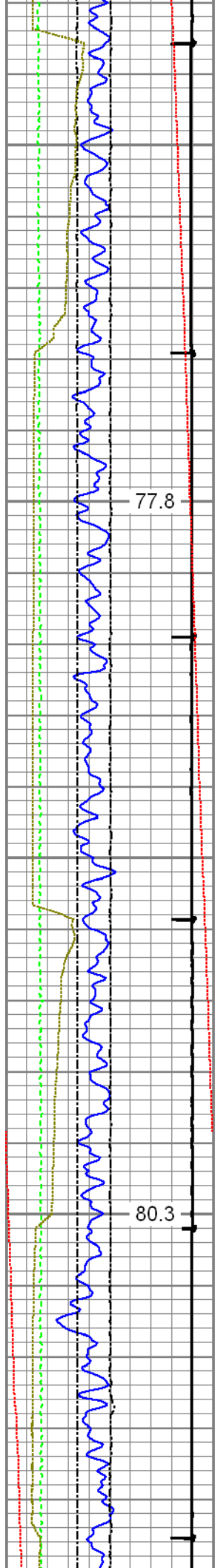
72.4

75.3

900

1000



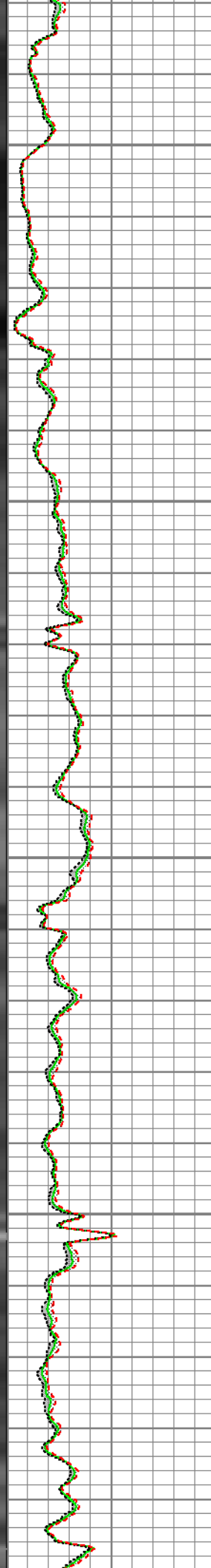
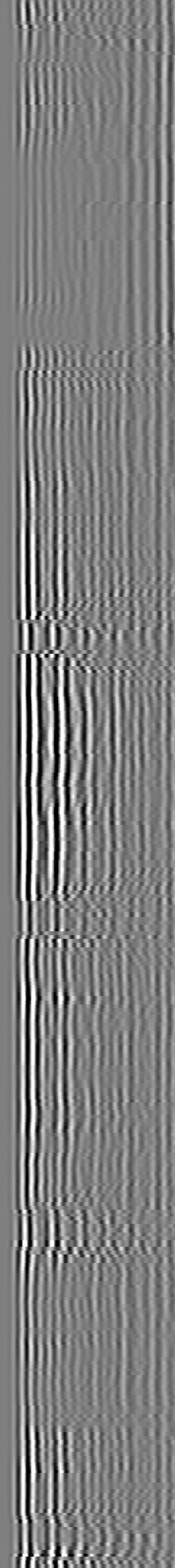
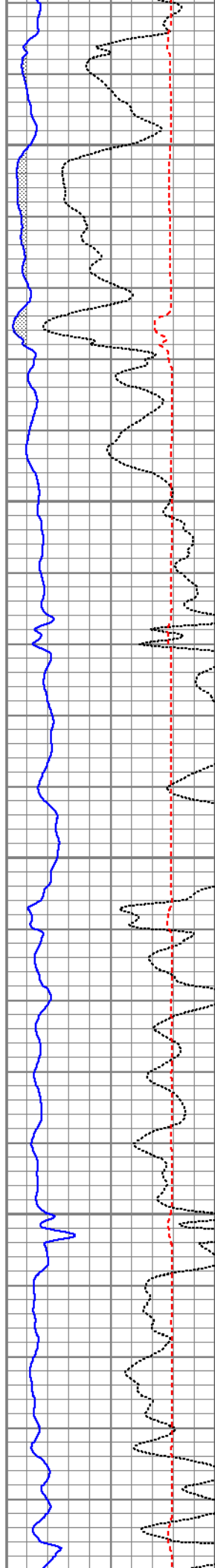


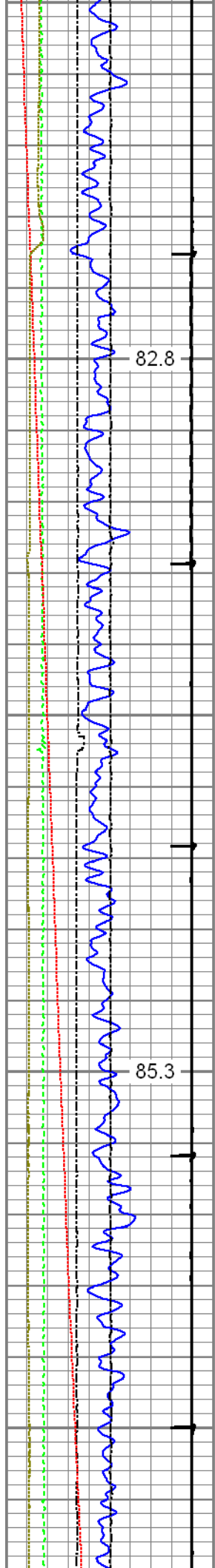
77.8

80.3

1100

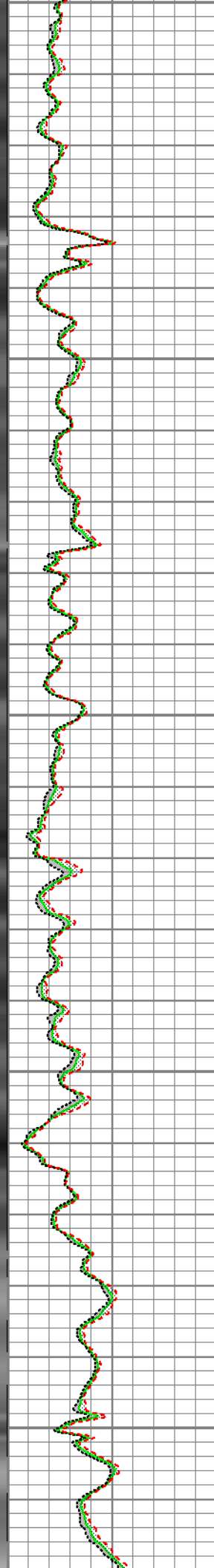
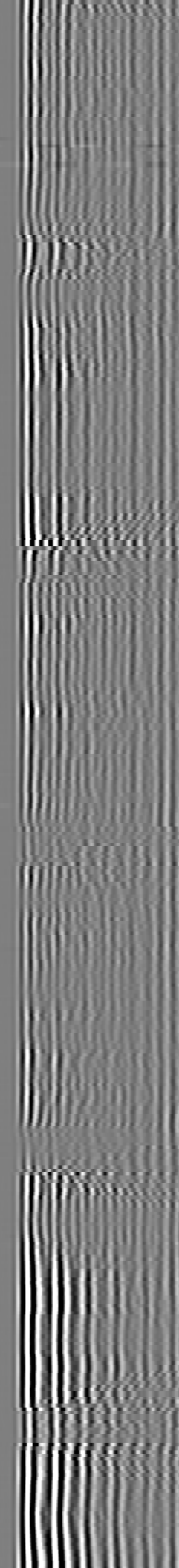
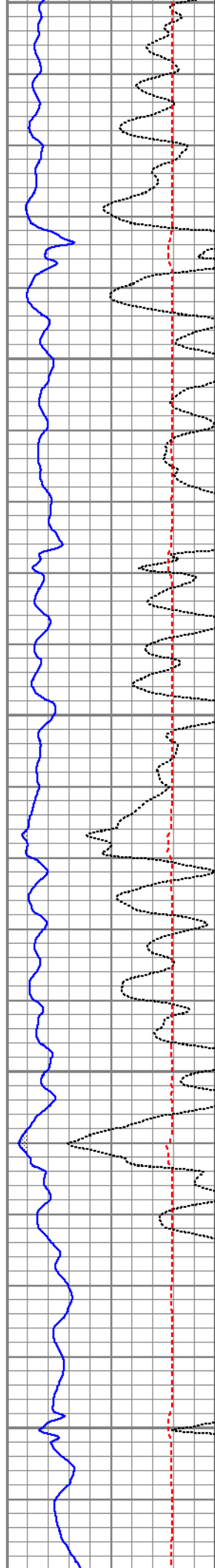
1200

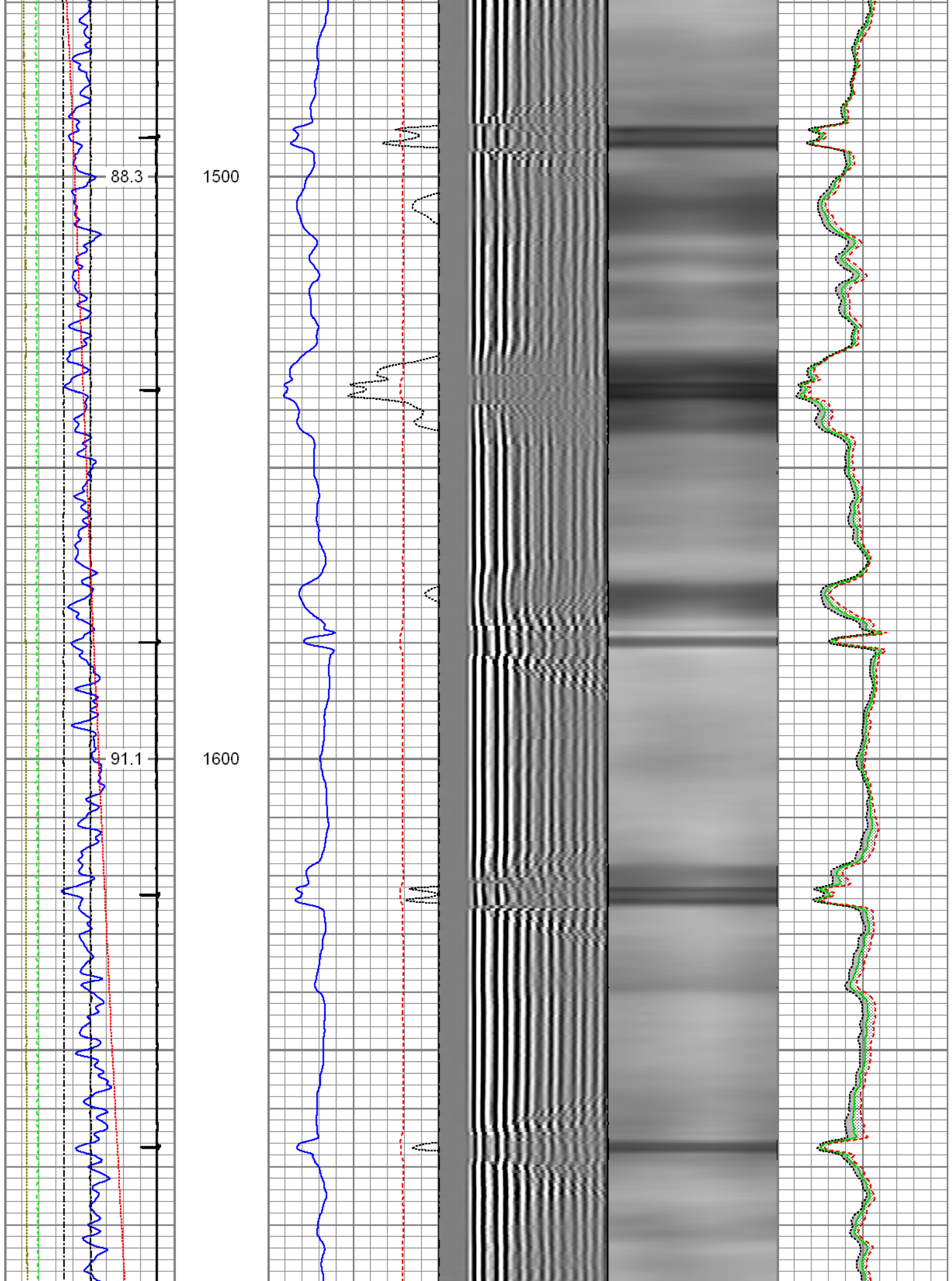


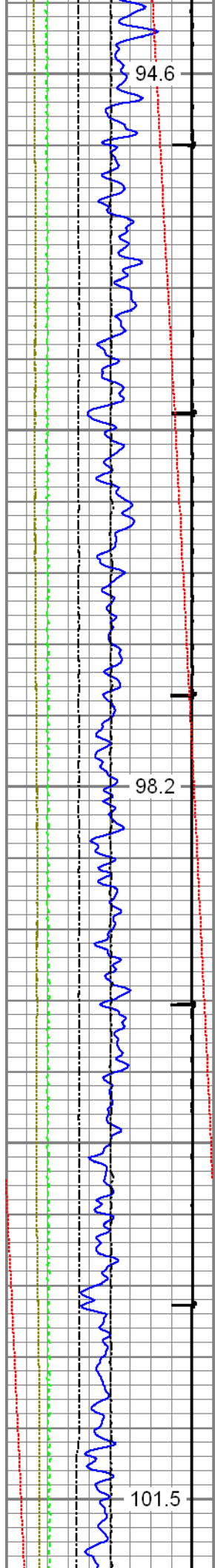


1300

1400



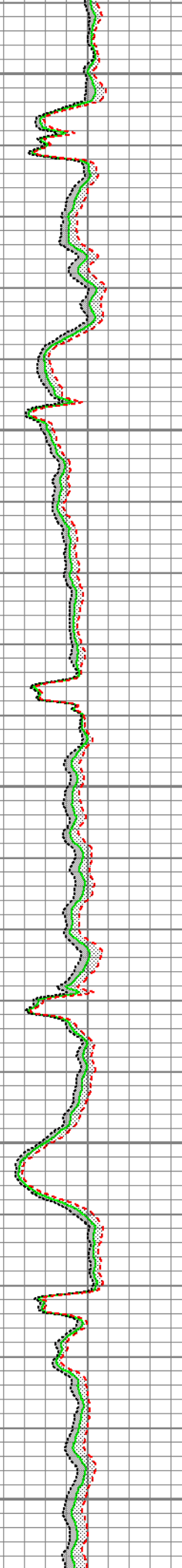
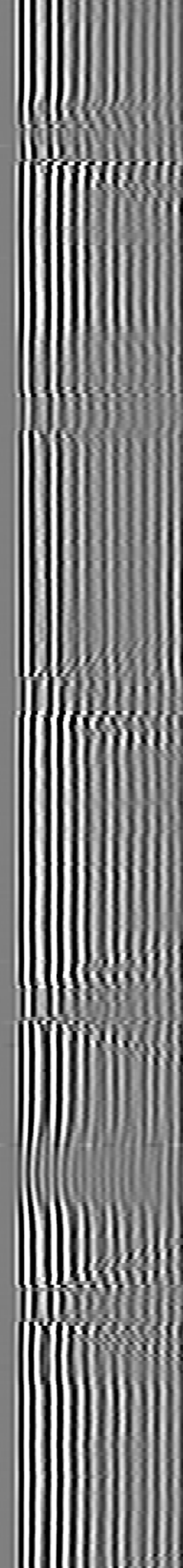
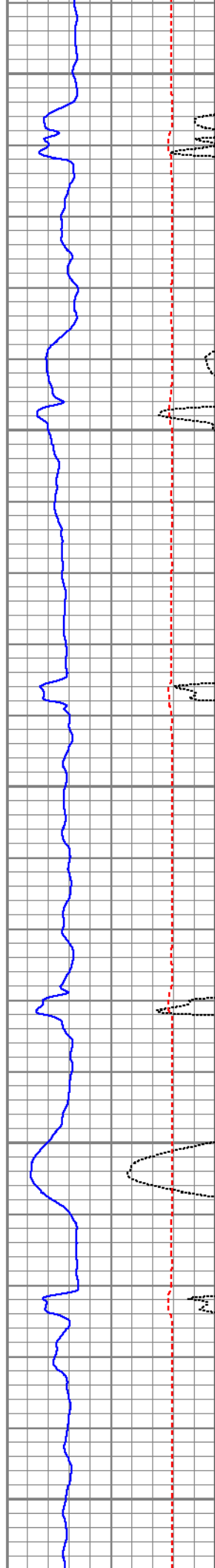


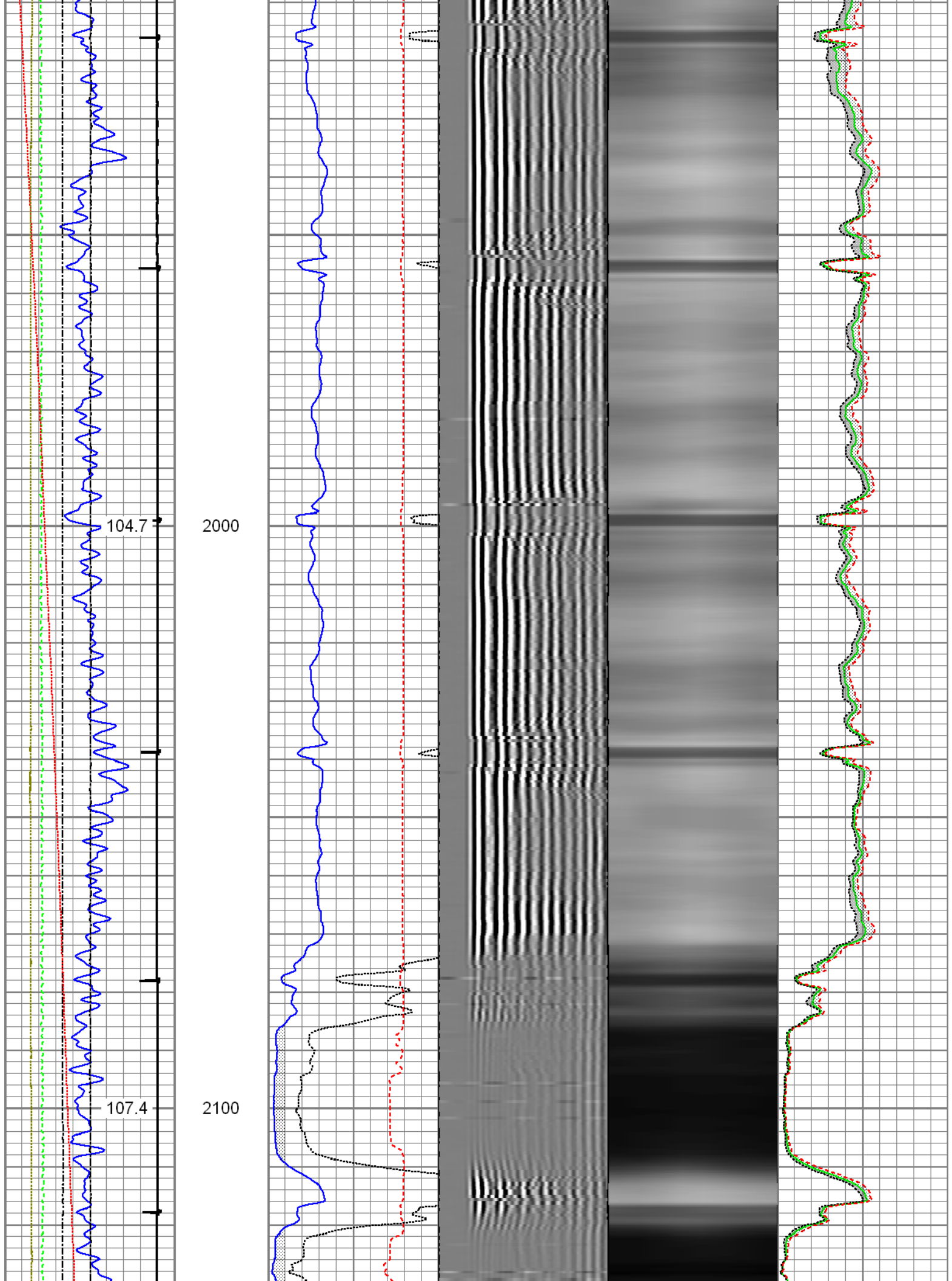


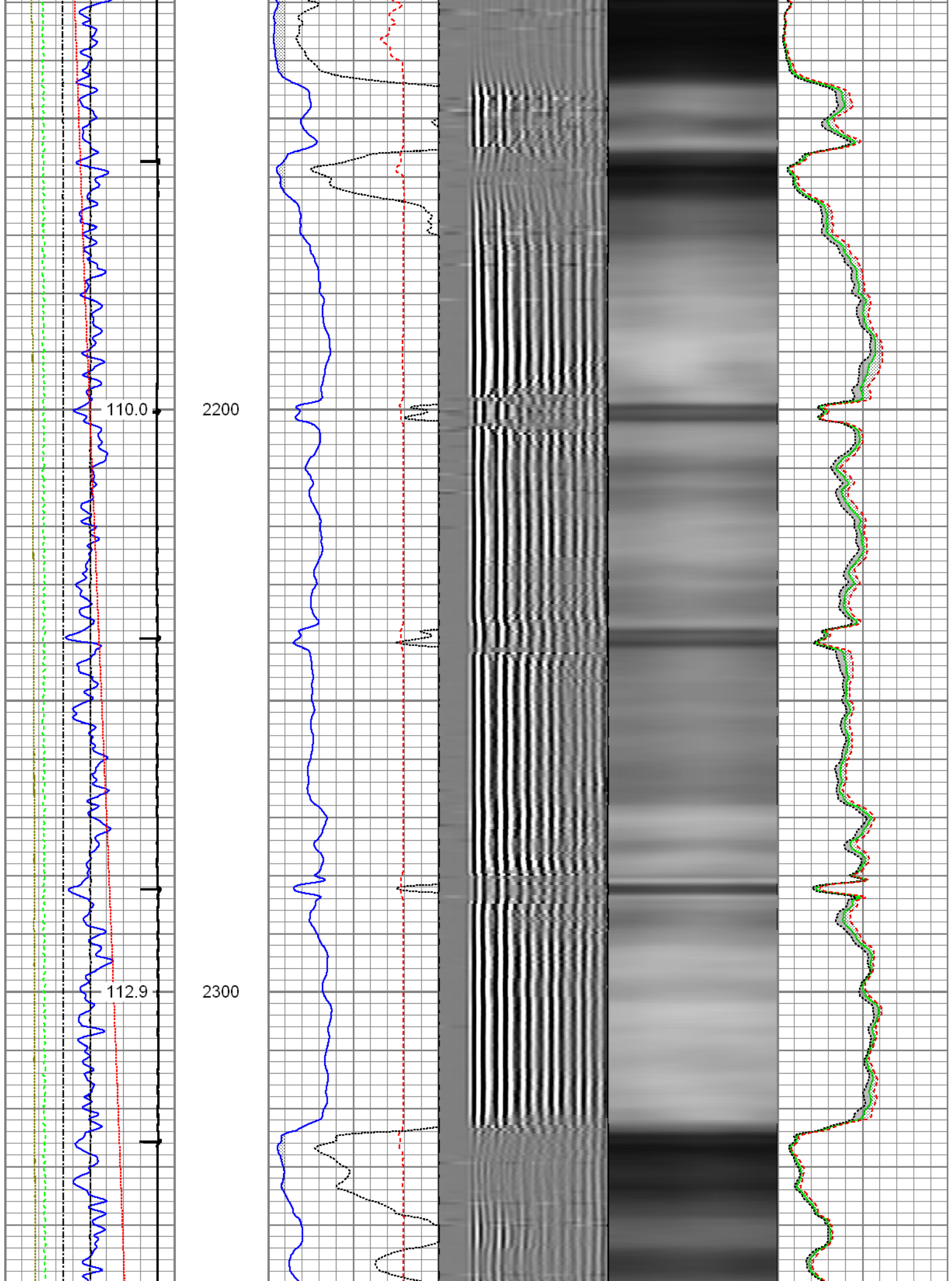
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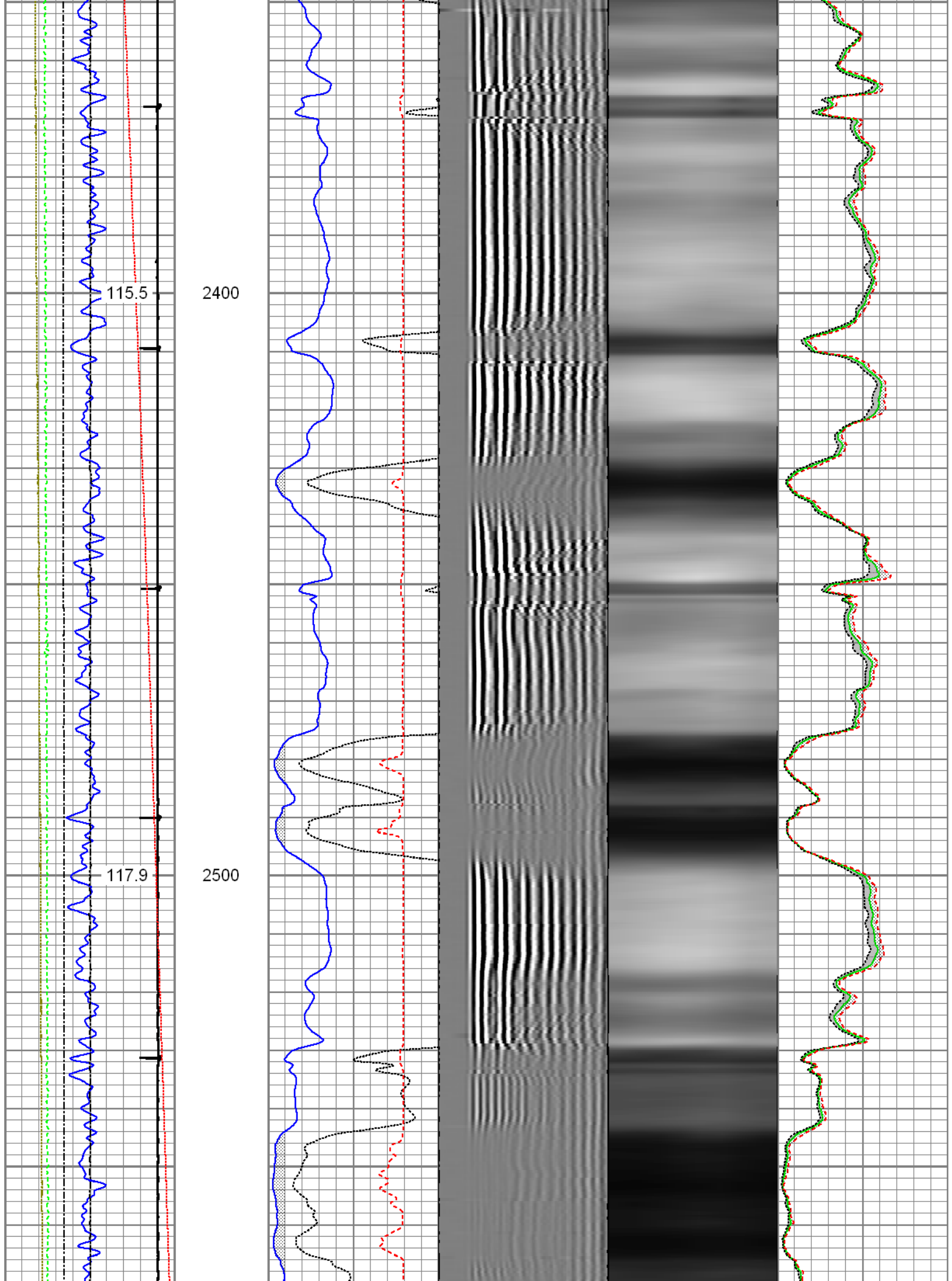
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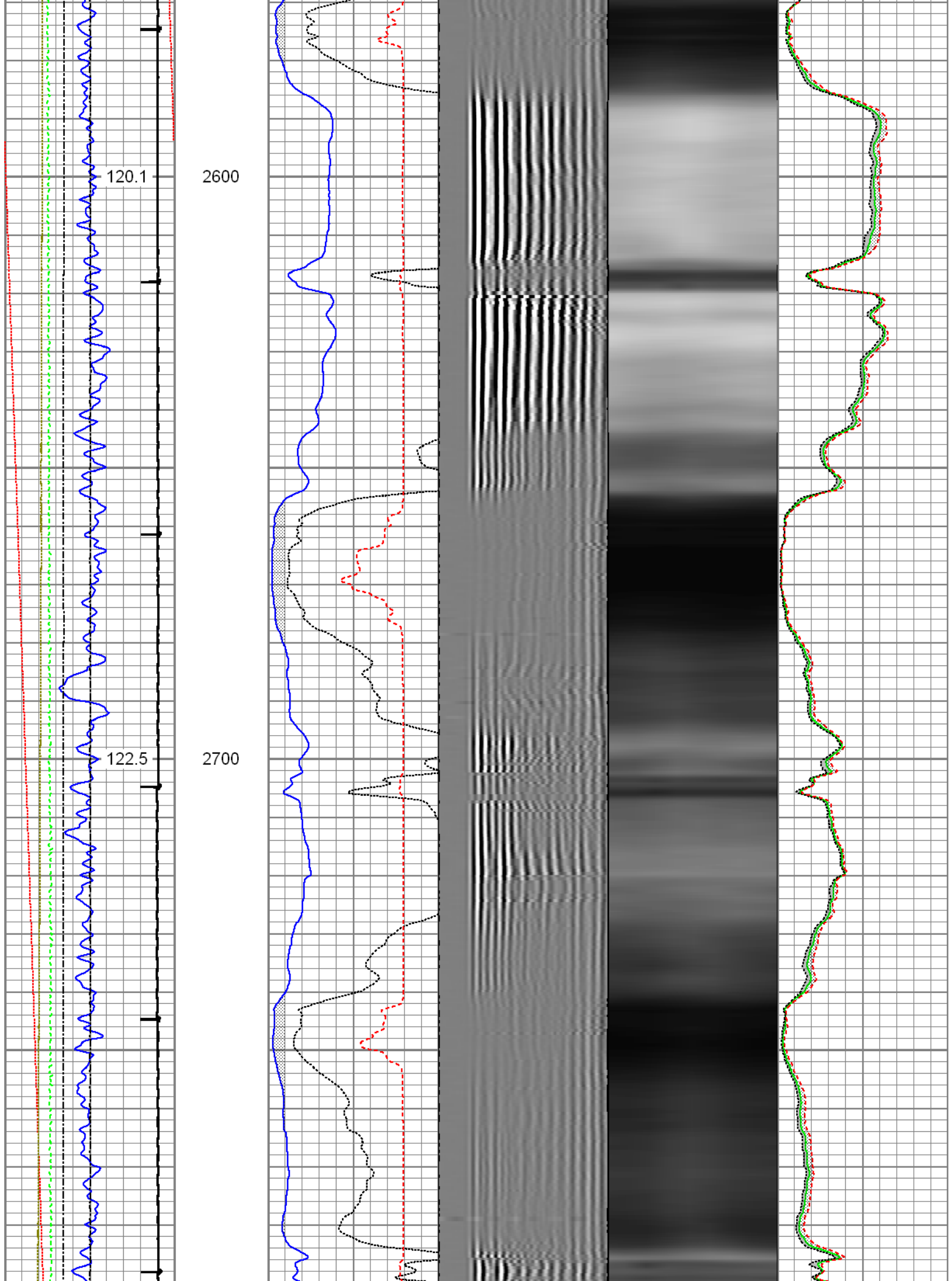
1900

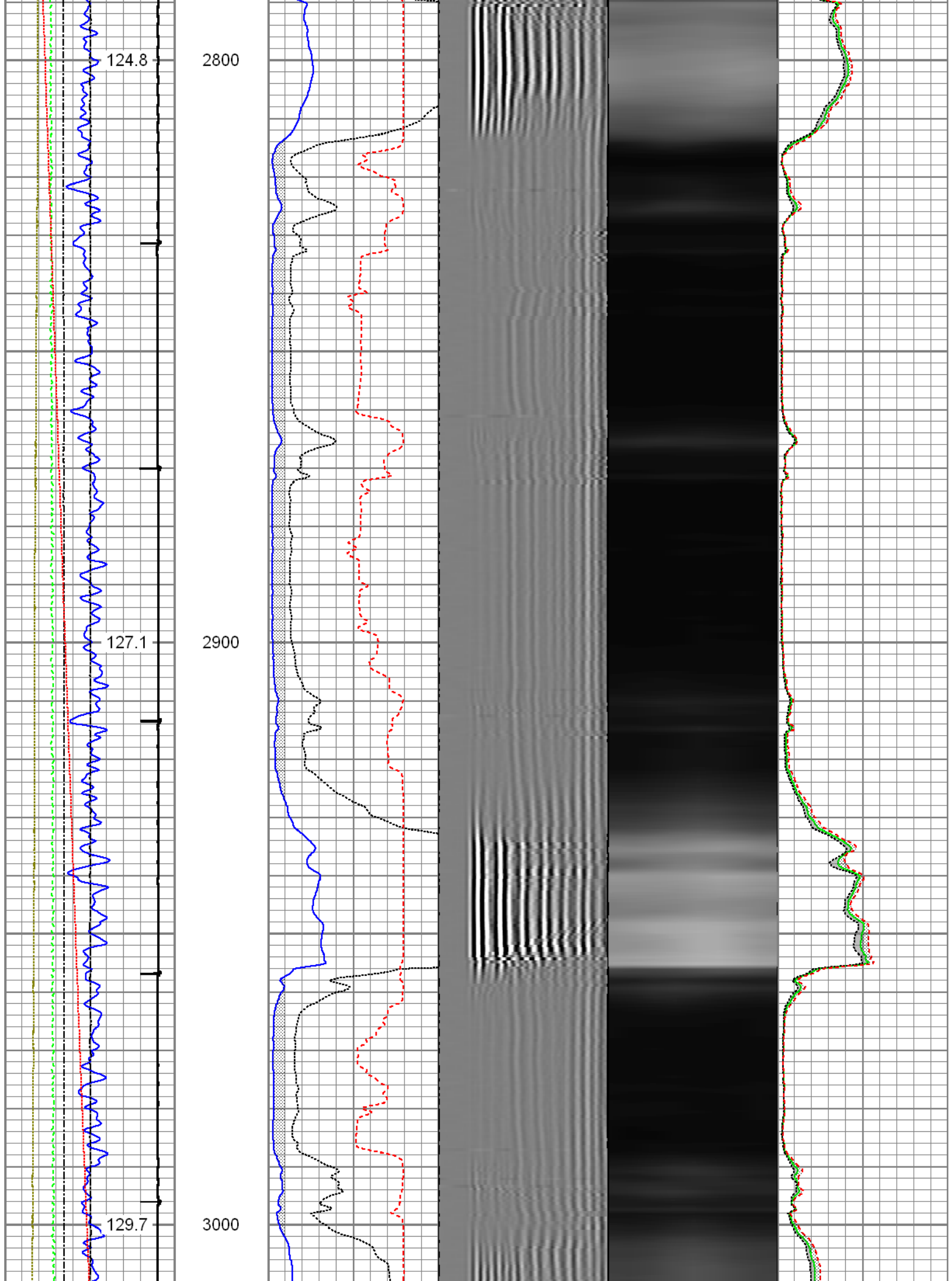


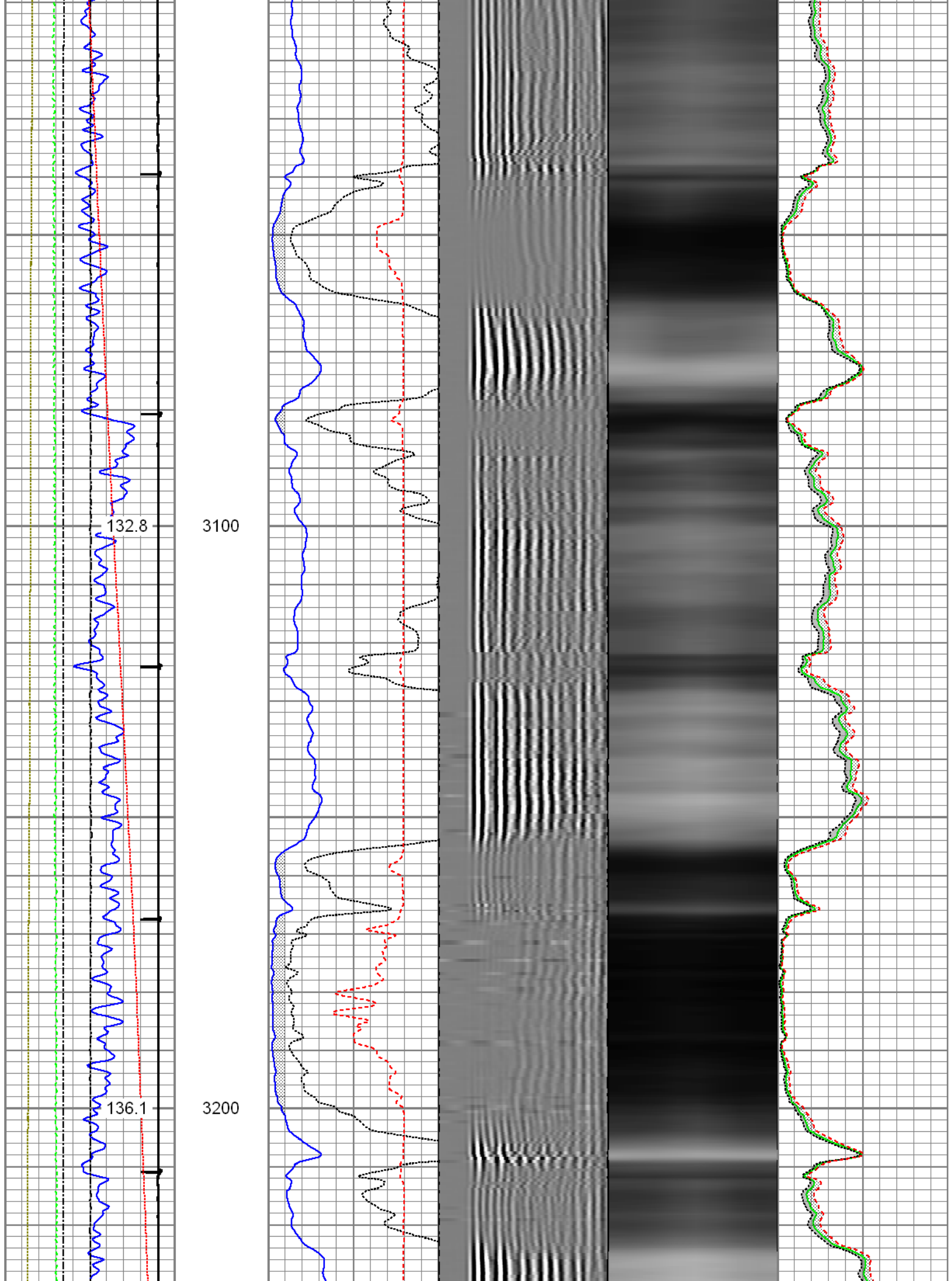


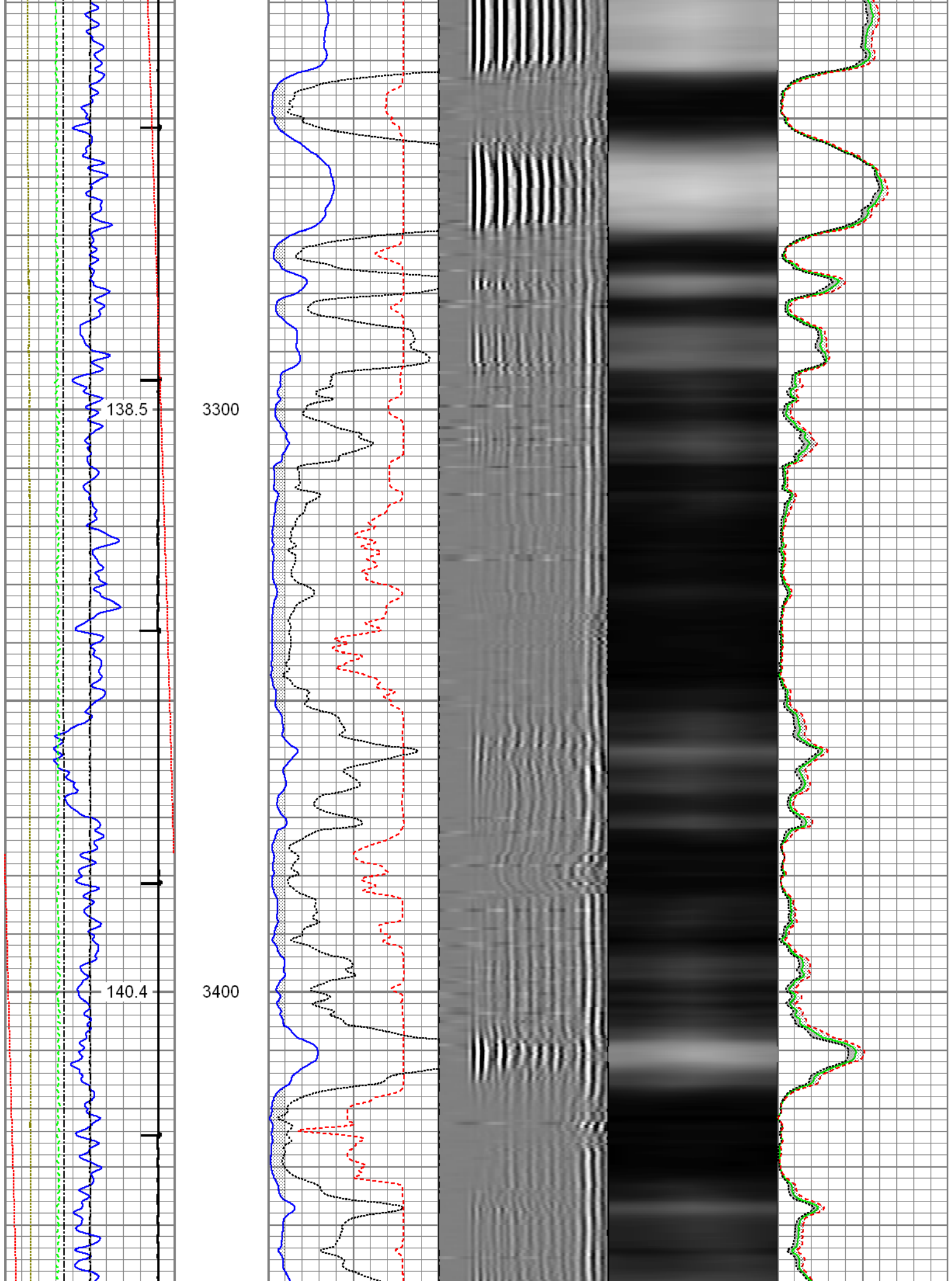


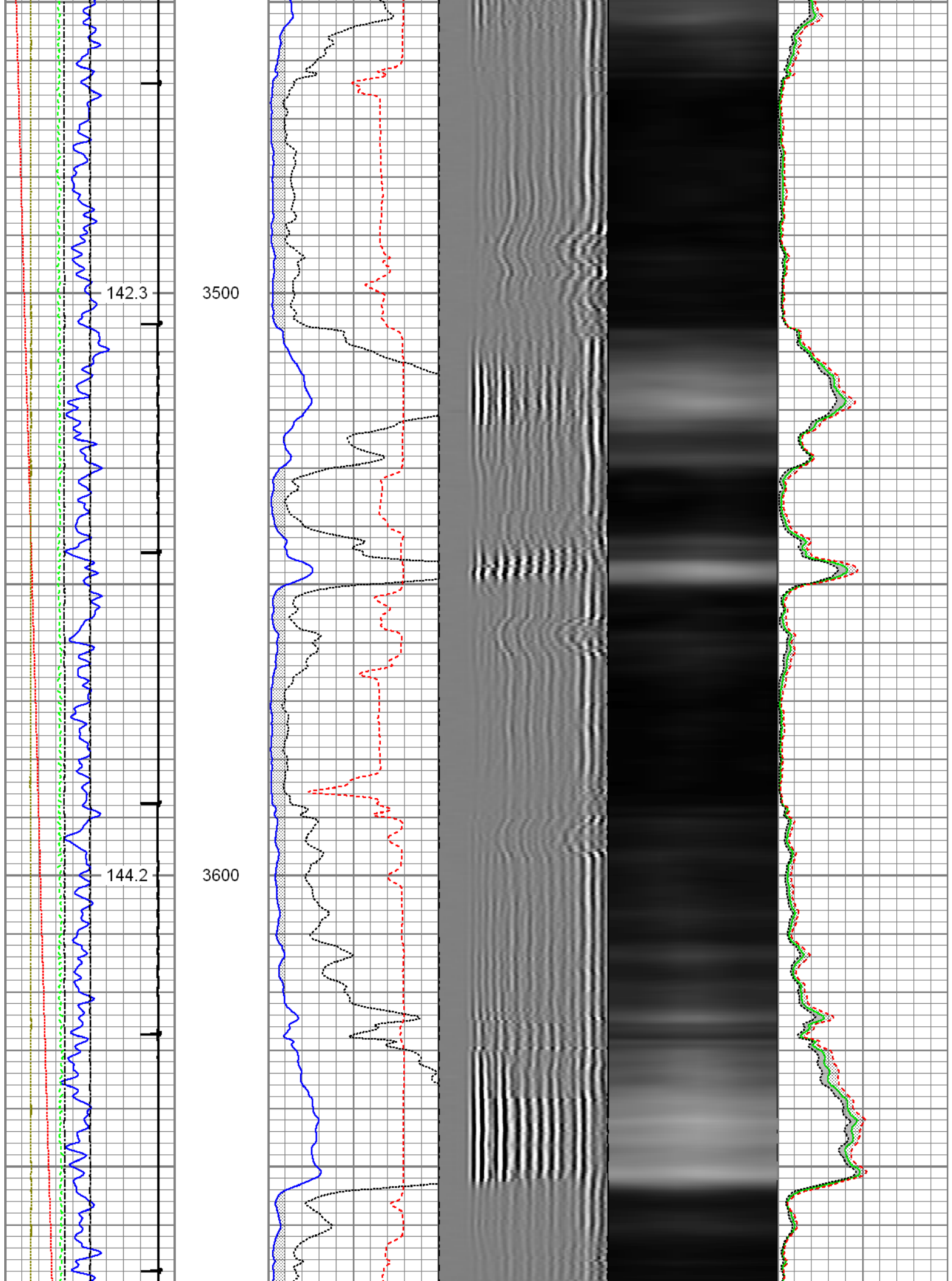


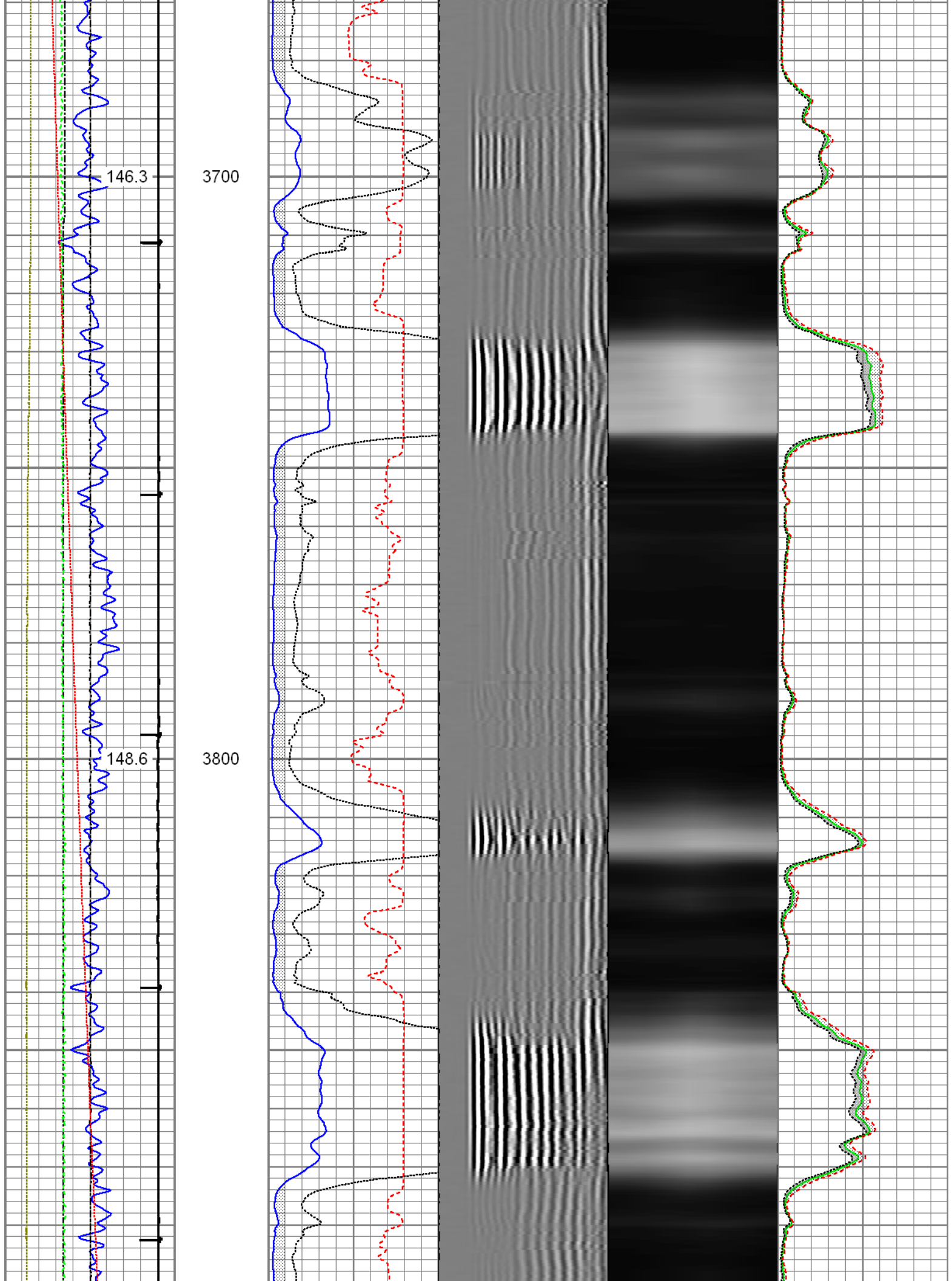


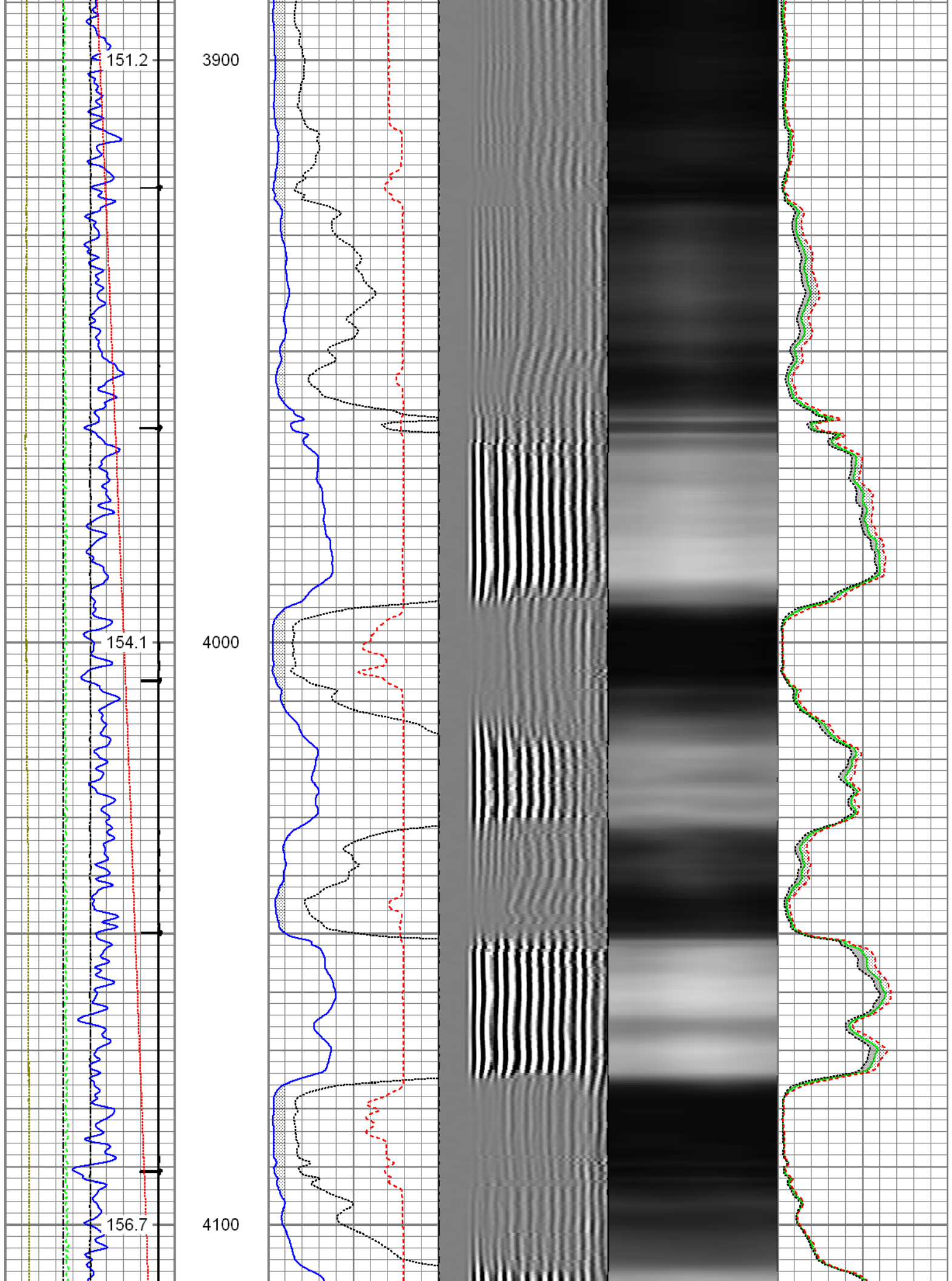


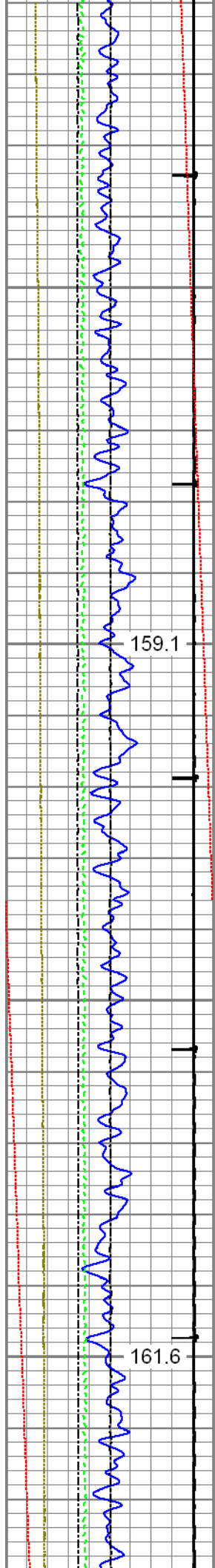






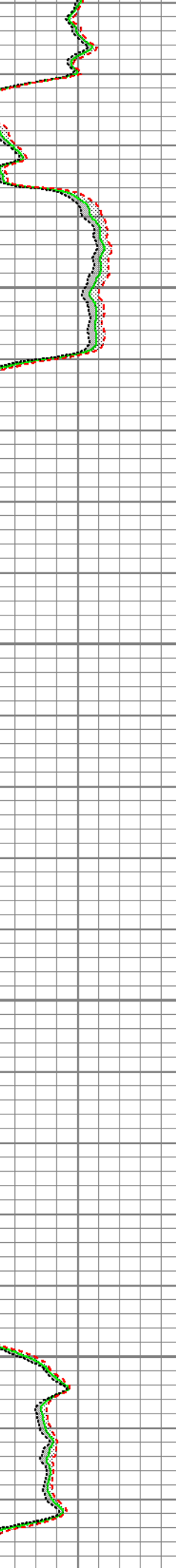
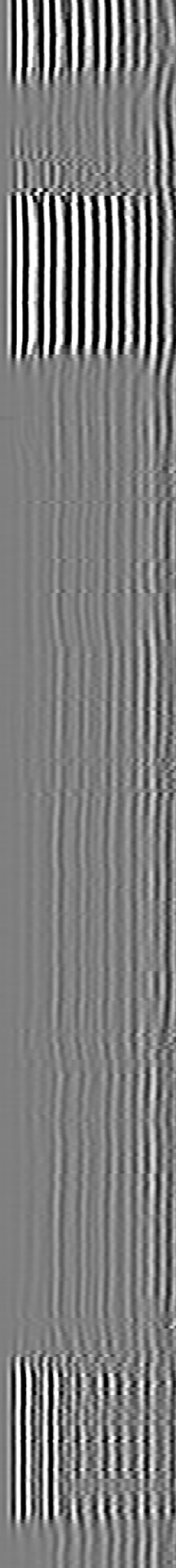
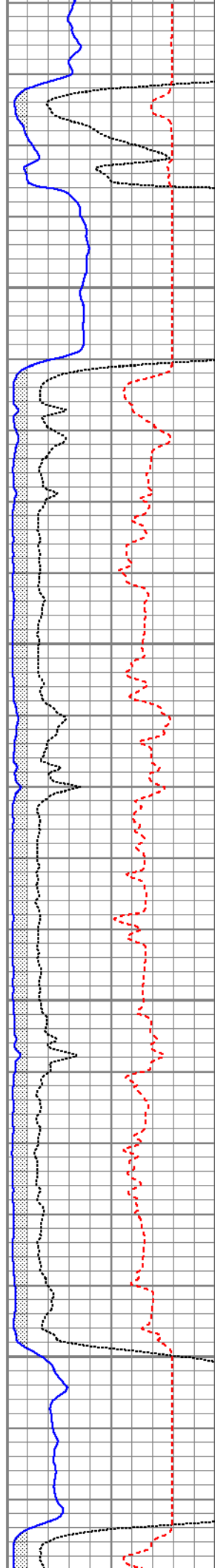


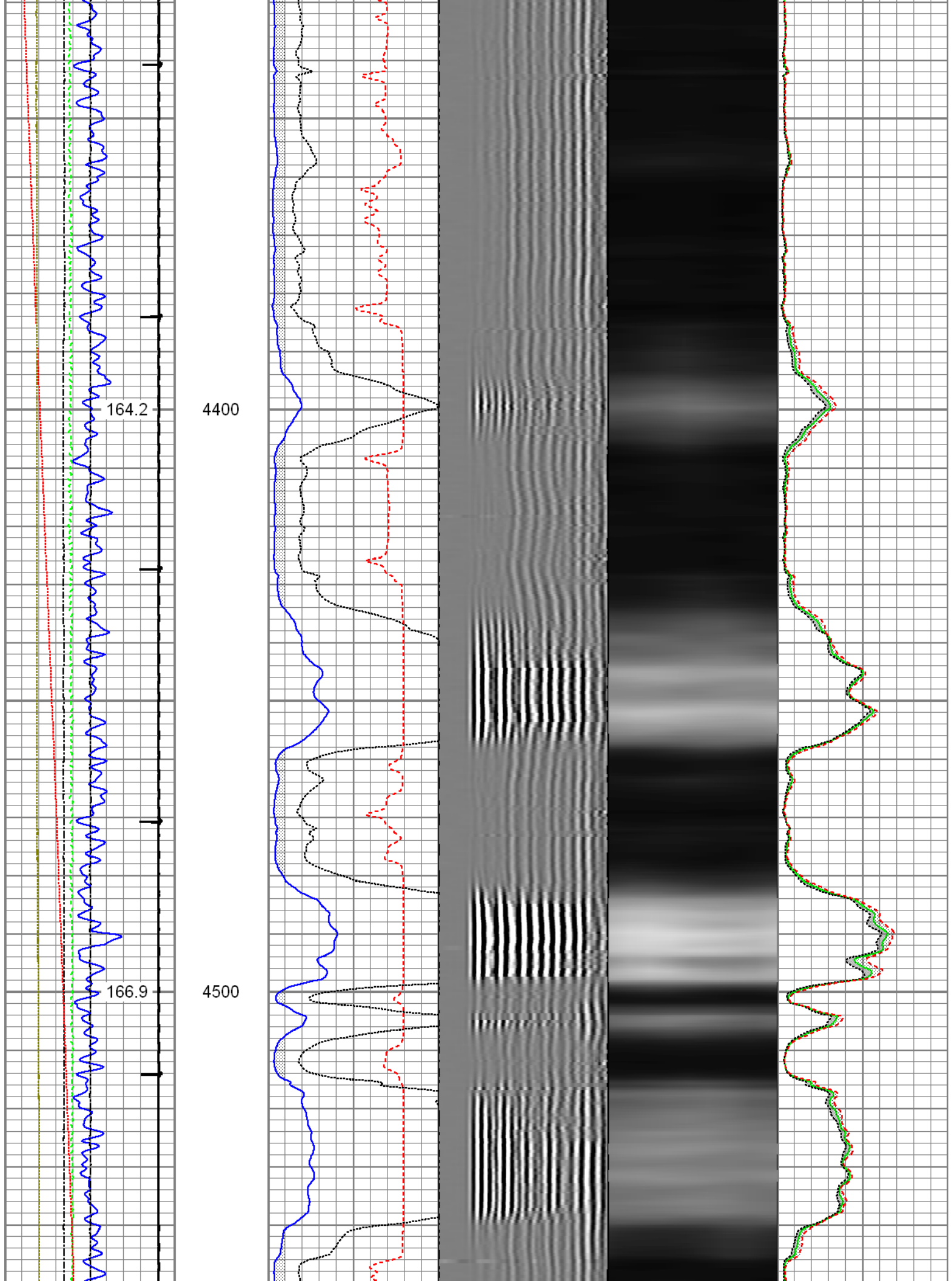


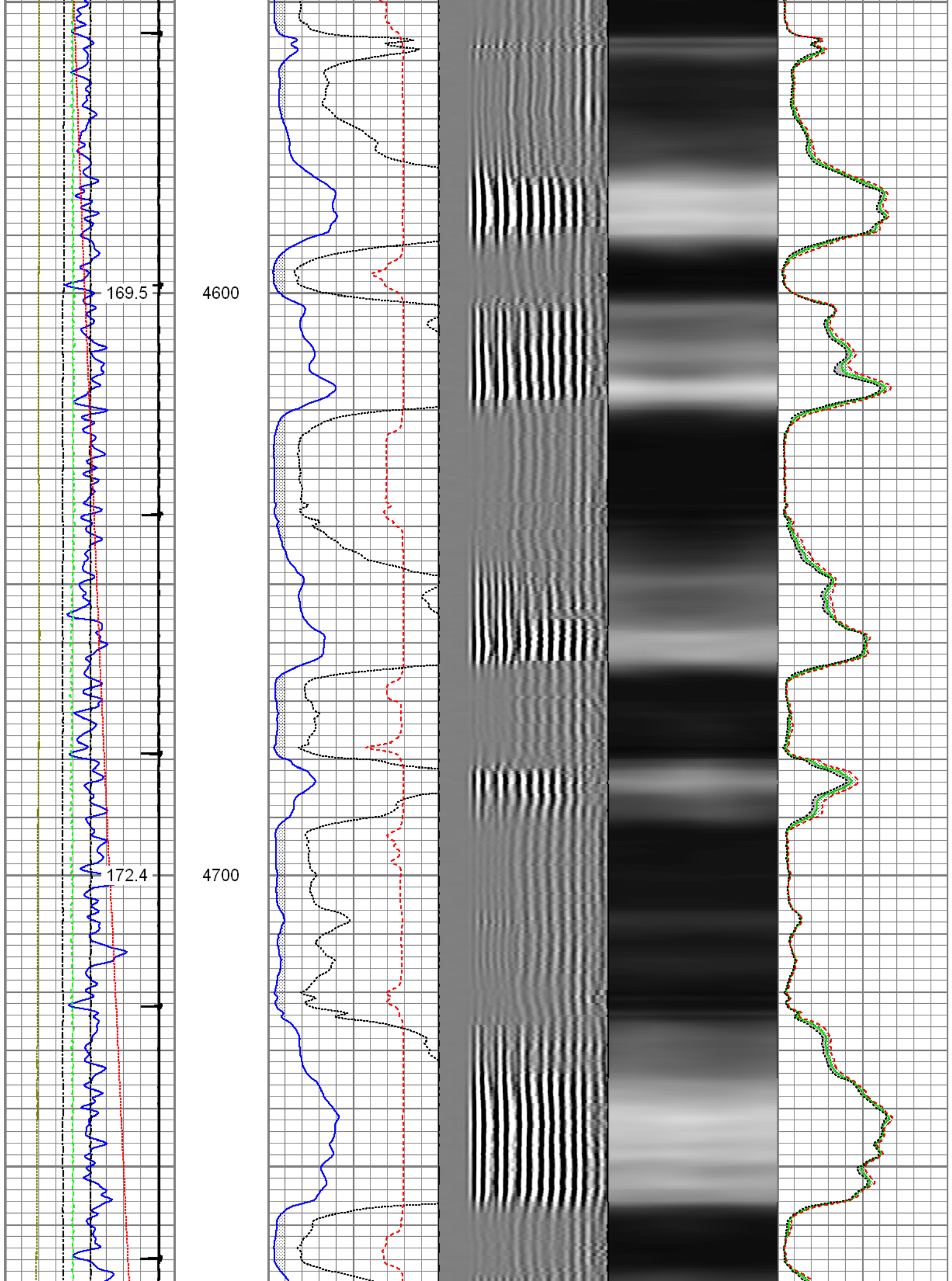


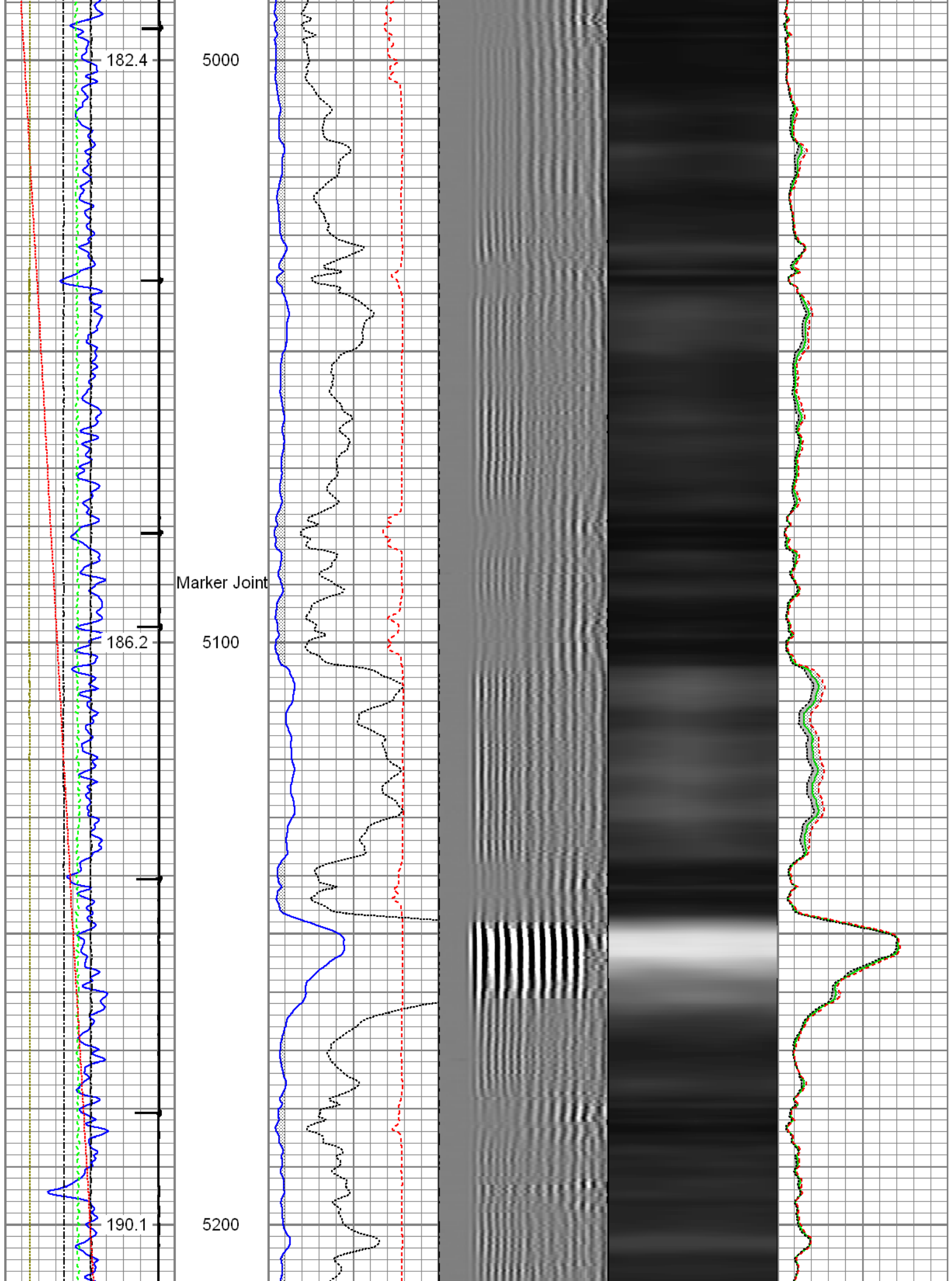
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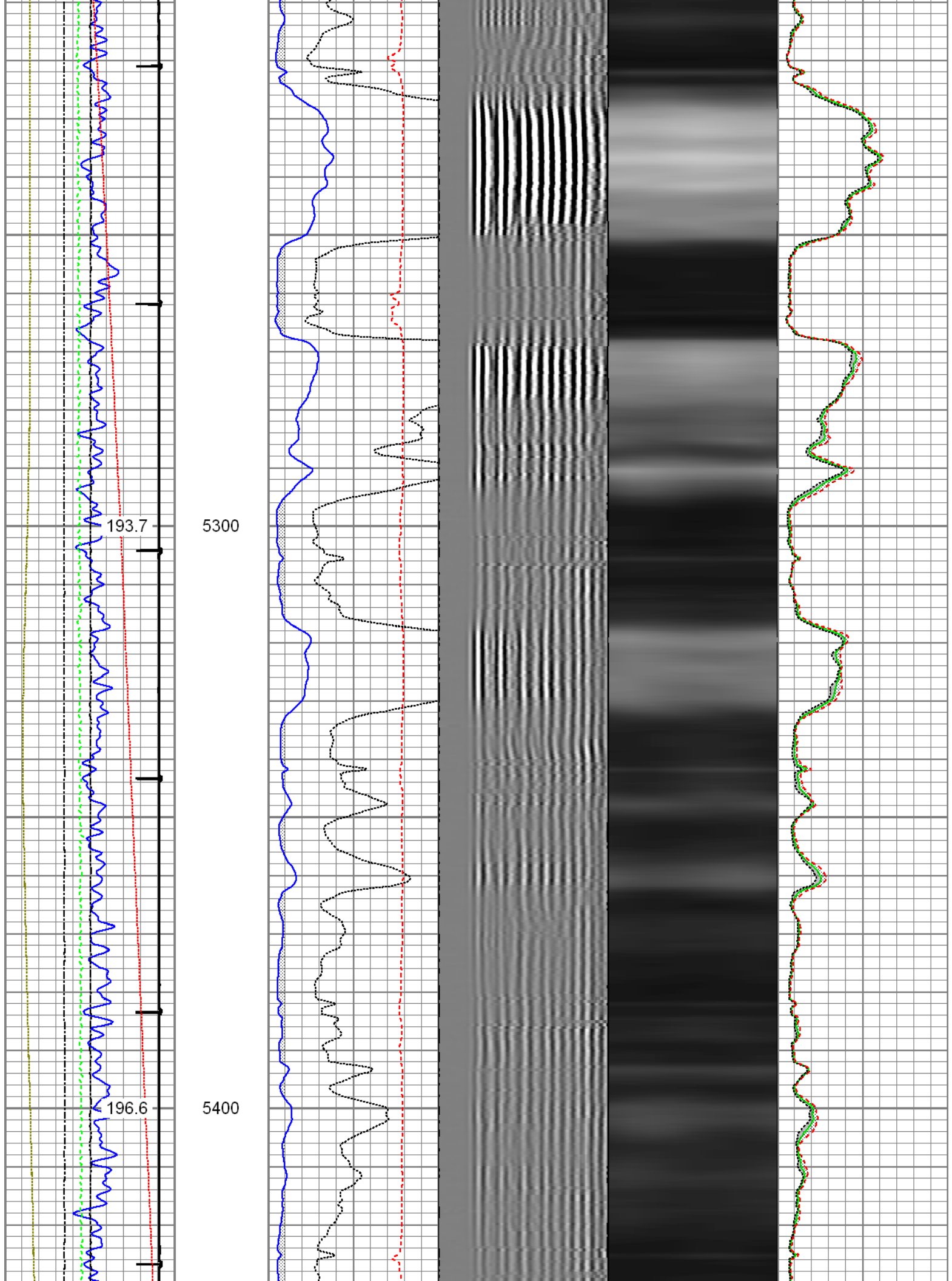
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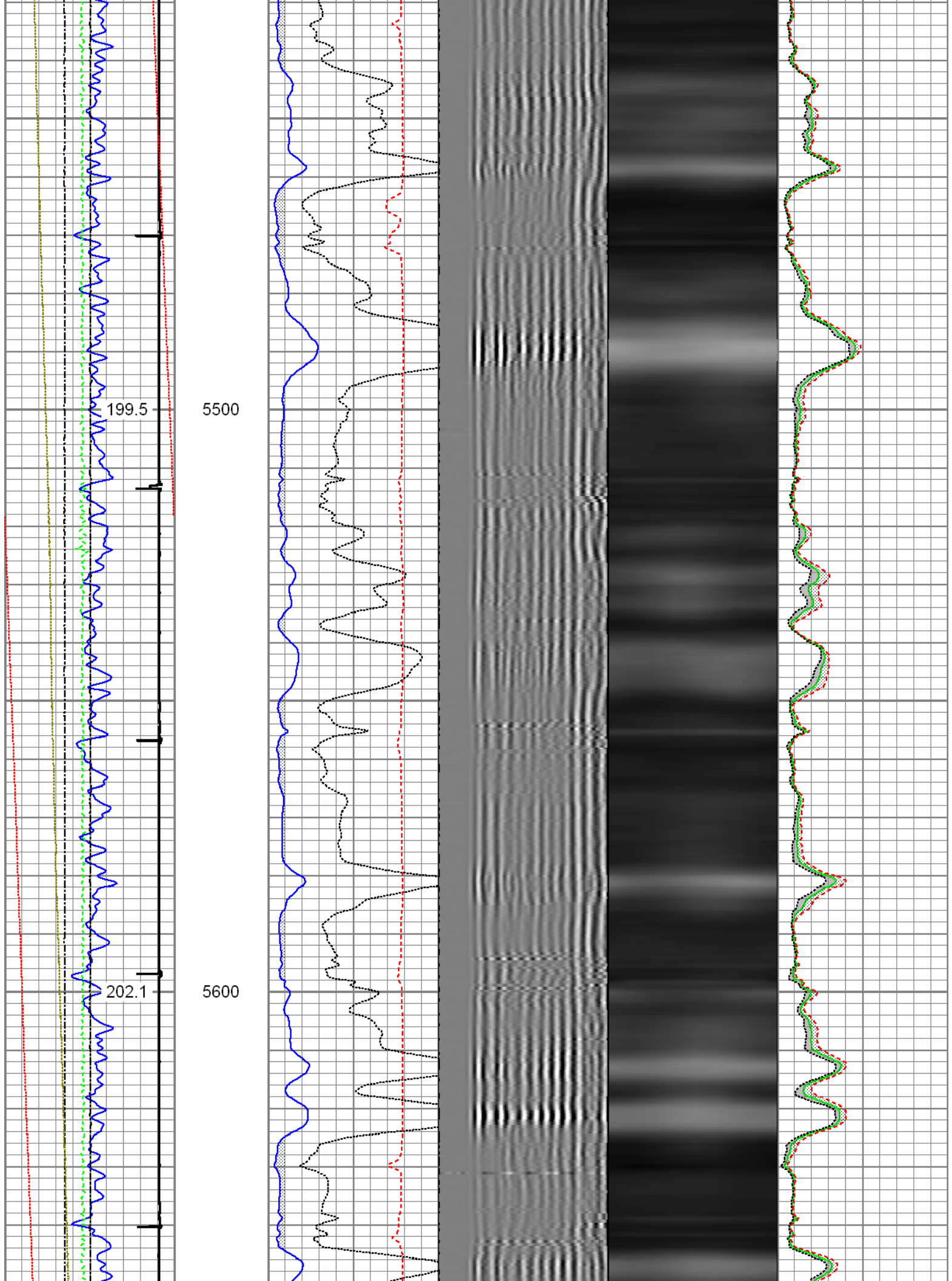


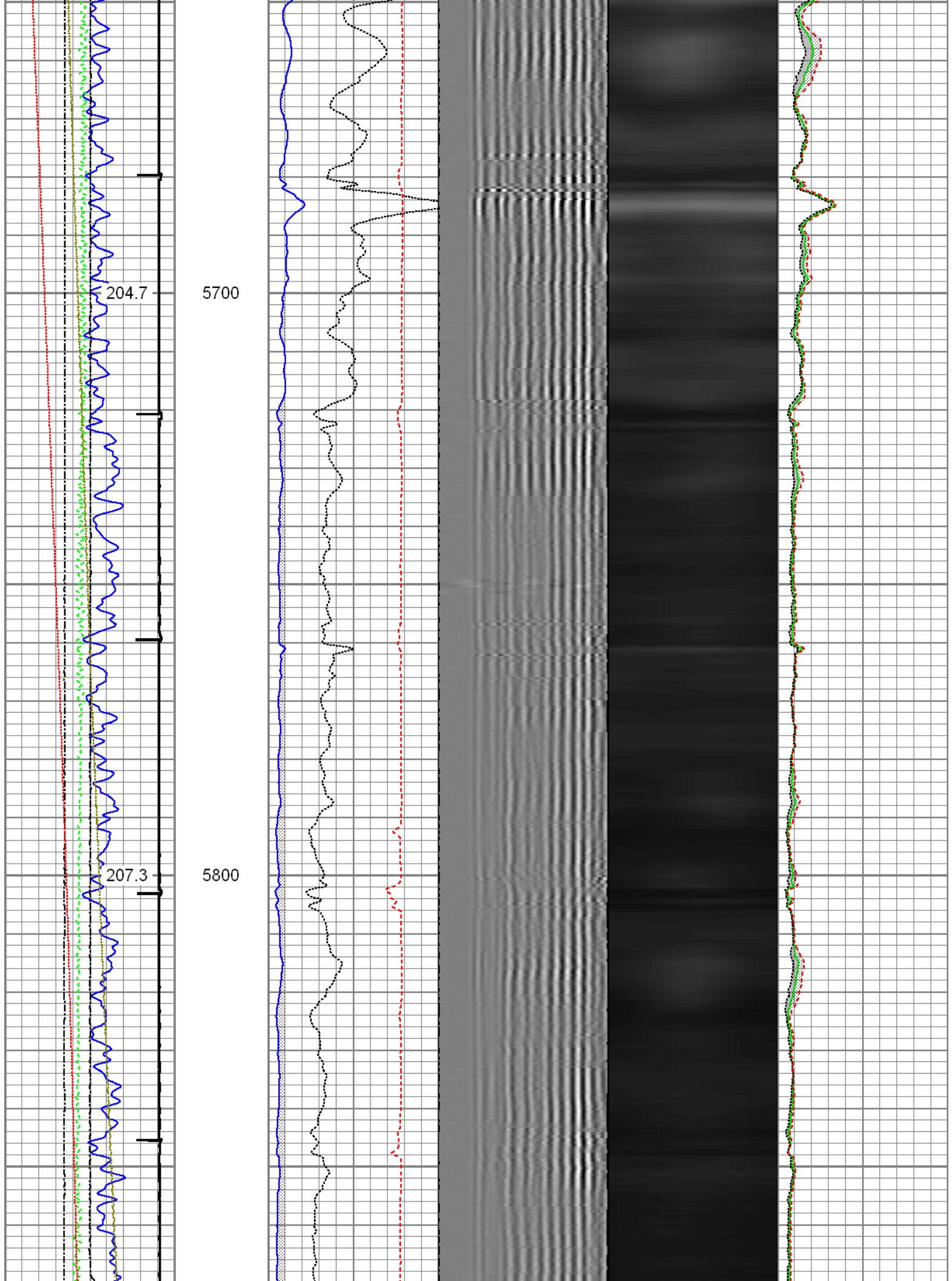


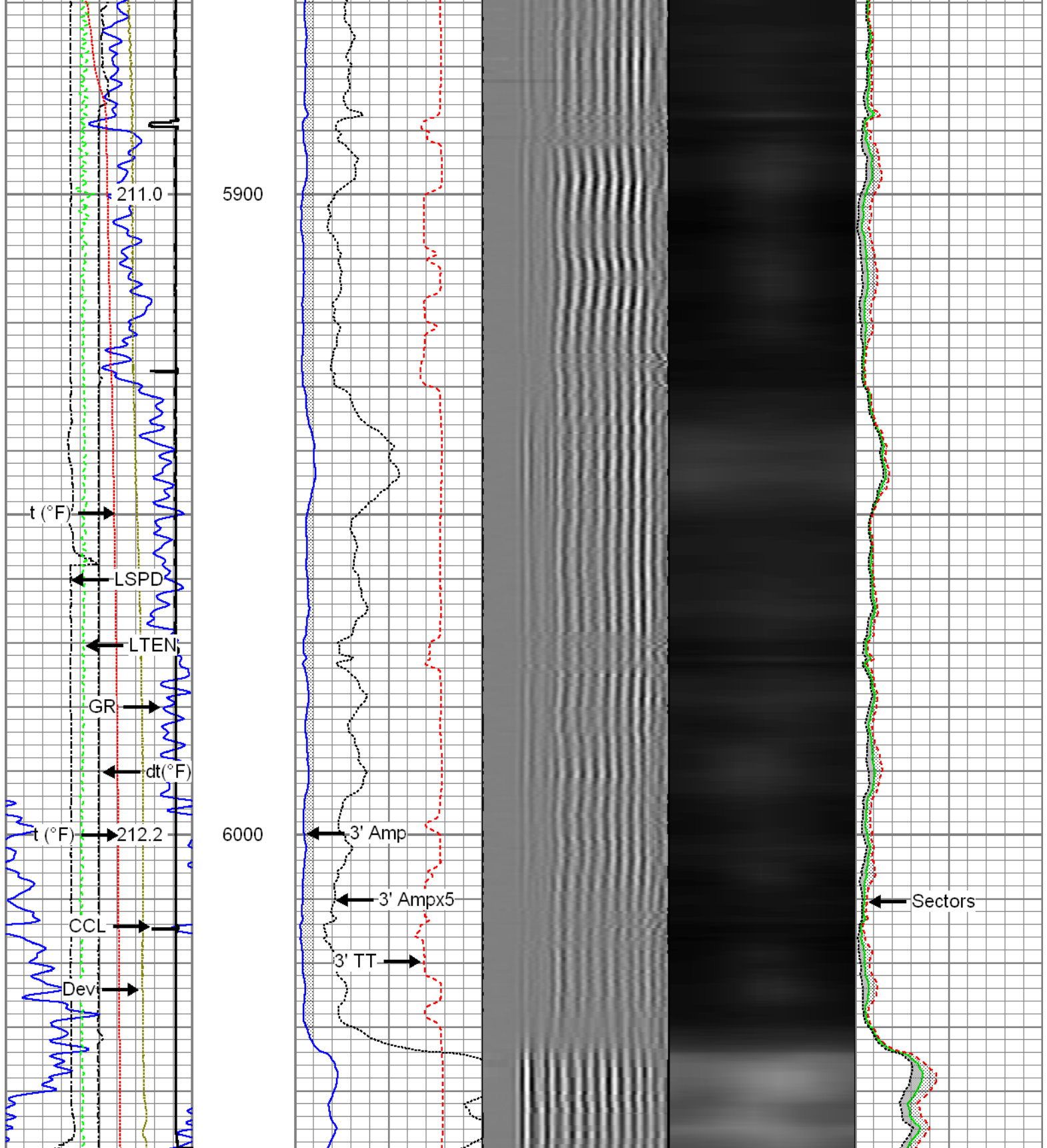












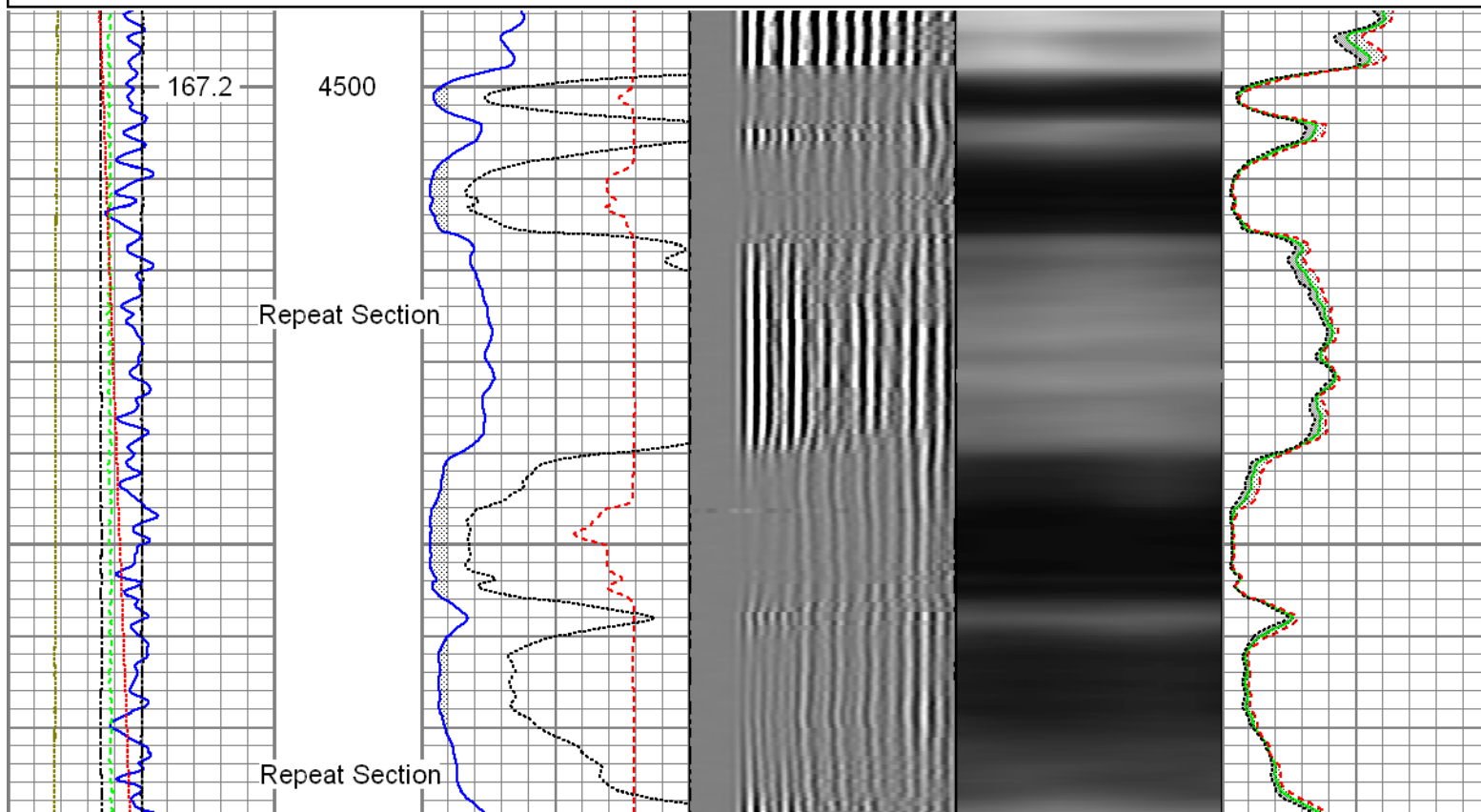
| | | | | |
|---------------------------------|----------------------------------|-------------------------------------|------------|----------------------------|
| Gamma Ray 0 (GAPI) 120 | 3' Amplitude 0 (mV) 100 | 5' Variable Density Log 200 1200 | Sector Map | Average Amplitude 0 100 |
| Casing Collar Locator | 3' Amplitude x 5 0 (mV) 20 | | | Minimum Amplitude 0 100 |
| Line Speed -100 (ft/min) 100 | 3' Travel Time 650 (usec) 150 | | | Maximum Amplitude 0 100 |
| Line Tension 0 (lb) 2000 | | | | |
| Differential Temperature | | | | |

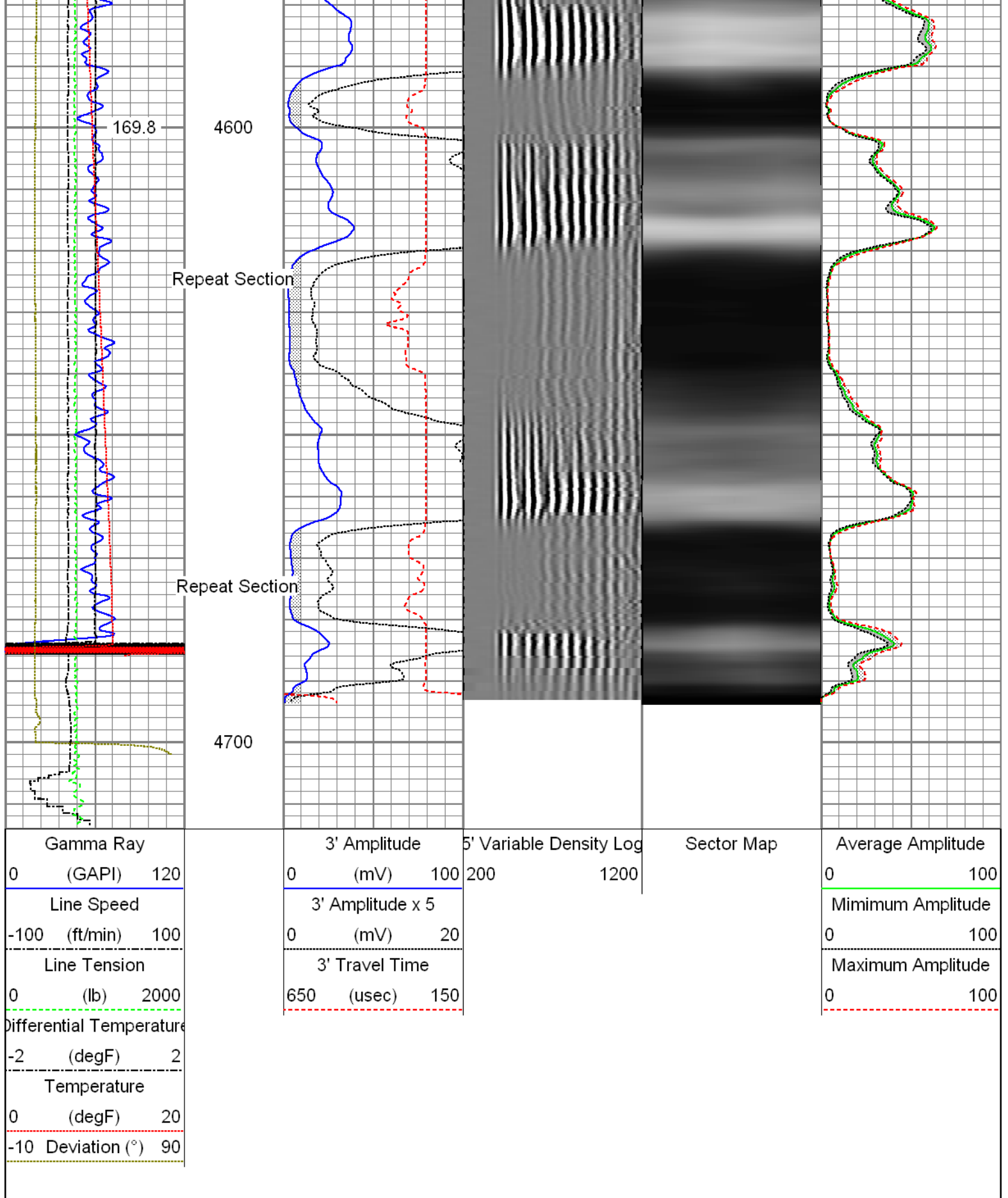
| | | |
|-----|---------------|----|
| -2 | (degF) | 2 |
| 0 | (degF) | 20 |
| -10 | Deviation (°) | 90 |


| | |
|----------------------------------------------------------------------------------|-------------------------------------------------|
|  | Repeat Pass |
| | Recorded With 2500 PSI Surface Induced Pressure |

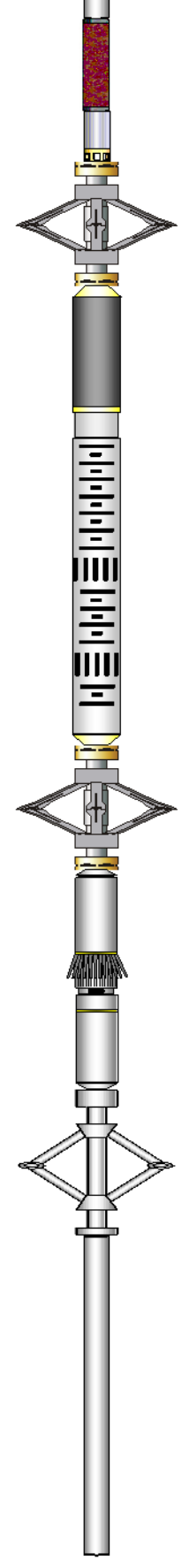
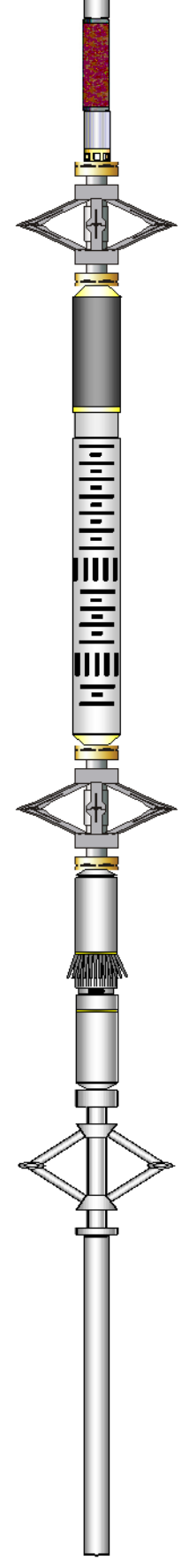
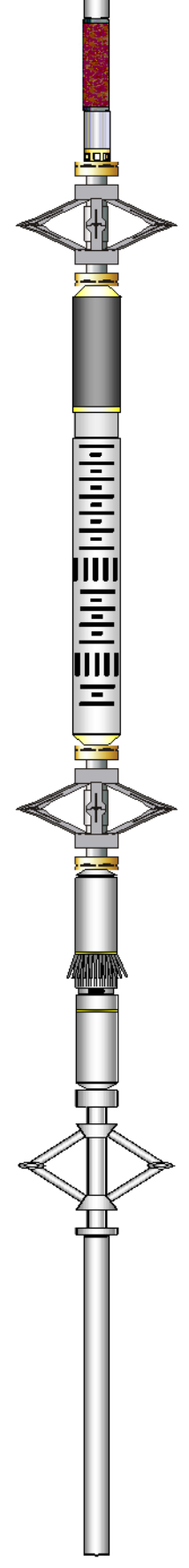
Database File: 01-28-16_noble energy_remora lc34-715_mit_rbl_cnl.db
 Dataset Pathname: pass9.1
 Presentation Format: rbt4_mit
 Dataset Creation: Fri Jan 29 10:00:36 2016 by Calc SCH 120430
 Charted by: Depth in Feet scaled 1:240

| | | | | |
|--------------------------|------------------|-------------------------|------------|-------------------|
| Gamma Ray | 3' Amplitude | 5' Variable Density Log | Sector Map | Average Amplitude |
| 0 (GAPI) 120 | 0 (mV) 100 | 200 1200 | | 0 100 |
| Line Speed | 3' Amplitude x 5 | | | Minimum Amplitude |
| -100 (ft/min) 100 | 0 (mV) 20 | | | 0 100 |
| Line Tension | 3' Travel Time | | | Maximum Amplitude |
| 0 (lb) 2000 | 650 (usec) 150 | | | 0 100 |
| Differential Temperature | | | | |
| -2 (degF) 2 | | | | |
| Temperature | | | | |
| 0 (degF) 20 | | | | |
| -10 Deviation (°) 90 | | | | |





| Sensor | Offset (ft) | Schematic | Description | Len (ft) | OD (in) | Wt (lb) |
|--------|-------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------|---------|---------|
| | |  | T_CH14375_1_GO Titan 1-7/16" Assembled Electric Cable Head with 1" Fishing Neck | 1.03 | 1.44 | 4.00 |
| | | | UW AGS-UW AGS 001 (215017) | 0.21 | 1.69 | 1.00 |

| | | | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------|------|--------|
| GR | 30.24 |  | Sondex Adapter - GO Box to Sondex Pin UW_XTU-UW_XTU_002 (10012277) Crossover Ultrawire Toolbus to Ultralink | 1.58 | 1.69 | 6.50 |
| TEMP | 28.84 | | UW_PGR-UW_PGR_020 (10013899) Production Gamma Ray | 1.93 | 1.69 | 9.50 |
| | | | UW_PRT-UW_PRT_016 (10025097) Platinum Resistance Thermometer | 1.04 | 1.69 | 5.20 |
| | | | UW_PRC-DSSRAC (081) 2-3/4" DSS 5 Arm Roller Centralizer | 2.55 | 2.75 | 32.00 |
| | | | | | | |
| WVFS3FT | 21.81 | | | | | |
| WVFS1 | 21.81 | | UW_RBT-UW_RBT_004 (10013454) Sondex Ultrawire 3-1/8" Radial Bond Tool | 9.47 | 3.13 | 140.00 |
| WVFS2 | 21.81 | | | | | |
| WVFS3 | 21.81 | | | | | |
| WVFS4 | 21.81 | | | | | |
| WVFS5 | 21.81 | | | | | |
| WVFS6 | 21.81 | | | | | |
| WVFS7 | 21.81 | | | | | |
| WVFS8 | 21.81 | | | | | |
| CBLTEMP | 21.81 |  | UW_PRC-DSSRAC (080) 2-3/4" DSS 5 Arm Roller Centralizer | 2.55 | 2.75 | 32.00 |
| CBLROT | 21.81 | | | | | |
| WVFS5FT | 20.81 | | | | | |
| | | | | | | |
| | | | | | | |
| MIT | 11.80 | | UW_MIT-UW_MIT40_027 (218950) 40 Multifinger Imaging Tool | 4.54 | 2.75 | 61.10 |
| | |  | | | | |
| | | | UW_PRC #4 -UW_PRC_057 (1037) Sondex 2-3/4" 4-Arm Production Roller Centraliser | 2.98 | 2.75 | 32.00 |
| | | | | | | |
| | | | CNL-007 (1005) Compensated Neutron Logging Tool | 6.61 | 1.69 | 30.00 |
| CNLSC | 1.53 | | | | | |
| CNSSC | 1.12 | | | | | |
| TSTAMP | 0.00 | | | | | |
| Dataset: 01-28-16_Noble Energy_Remora LC34-715_MIT_RBL_CNL.db: field/well/run1/pass9 Total Length: 34.48 ft Total Weight: 353.30 lb O.D. 3.13 in | | | | | | |

Calibration Report

Database File: 01-28-16_noble energy_remora lc34-715_mit_rbl_cnl.db
 Dataset Pathname: pass11.1
 Dataset Creation: Thu Jan 28 13:07:37 2016 by Calc 7.0 B1

| | | | | |
|----------------------------------------------|------|----------------------------|----------------|-------|
| Compensated Neutron Calibration Report | | | | |
| Serial Number: | | 1005 | | |
| Tool Model: | | 007 | | |
| Master Calibration | | Tue Jun 03 09:29:29 2014 | | |
| Detector | | Readings | | |
| Short Space | | 240.87 | cps | |
| Long Space | | 303.55 | cps | |
| Ratio | | Measured | Reference | |
| CNRAT Gain K | | 0.8150 | Sleeve: 1.0000 | |
| | | 1.0271 | | |
| Before Survey | | | | |
| Detector | | Readings | | |
| Short Space | | | cps | |
| Long Space | | | cps | |
| Ratio | | Measured | Reference | |
| After Survey | | | | |
| Detector | | Readings | | |
| Short Space | | | cps | |
| Long Space | | | cps | |
| Ratio | | Measured | Reference | |
| Multi-finger Imaging Tool Calibration Report | | | | |
| Serial Number: | | 218950 | | |
| Number of Fingers: | | 40 | | |
| Tool Model: | | UW_MIT40_027 | | |
| Inclinometer Calibration Report | | | | |
| Performed: | | Fri, Oct, 10 10:41:51 2008 | | |
| Calibration Angle: | | 45 | | |
| Vertical: | | Inc X | Inc Y | |
| Finger 1 up: | | 1996 | 1975 | |
| Finger 31 up: | | 2238 | 2226 | |
| Finger 21 up: | | 1760 | 2216 | |
| Finger 11 up: | | 1769 | 1745 | |
| Sensitivity ratio: | | 2250 | 1738 | |
| X-axis angle: | | 1.00023 | | |
| Deviation const.: | | 314.283 | | |
| | | 339.139 | | |
| Finger Calibration Report | | | | |
| Performed: | | Thu Jan 28 07:56:37 2016 | | |
| Ring size: | 4 | 5 | 6 | 7 |
| (in) | | | | |
| | Sens | Sens | Sens | |
| Finger 01: | 1381 | 275.0 | 1656 | 296.0 |
| Finger 02: | 1458 | 268.0 | 1726 | 288.0 |
| Finger 03: | 1674 | 270.0 | 1944 | 281.0 |
| Finger 04: | 1667 | 268.0 | 1935 | 279.0 |
| | | | | |

| | | | | | | | |
|------------|------|-------|------|-------|------|-------|------|
| Finger 04: | 1887 | 268.0 | 1935 | 279.0 | 2214 | 284.0 | 2498 |
| Finger 05: | 1544 | 256.0 | 1800 | 268.0 | 2068 | 285.0 | 2353 |
| Finger 06: | 1531 | 246.0 | 1777 | 261.0 | 2038 | 275.0 | 2313 |
| Finger 07: | 1359 | 267.0 | 1626 | 285.0 | 1911 | 311.0 | 2222 |
| Finger 08: | 1543 | 248.0 | 1791 | 262.0 | 2053 | 280.0 | 2333 |
| Finger 09: | 1425 | 261.0 | 1686 | 280.0 | 1966 | 303.0 | 2269 |
| Finger 10: | 1485 | 259.0 | 1744 | 273.0 | 2017 | 290.0 | 2307 |
| Finger 11: | 1480 | 255.0 | 1735 | 269.0 | 2004 | 283.0 | 2287 |
| Finger 12: | 1312 | 273.0 | 1585 | 294.0 | 1879 | 316.0 | 2195 |
| Finger 13: | 1580 | 274.0 | 1854 | 283.0 | 2137 | 297.0 | 2434 |
| Finger 14: | 1413 | 279.0 | 1692 | 293.0 | 1985 | 313.0 | 2298 |
| Finger 15: | 1542 | 258.0 | 1800 | 272.0 | 2072 | 286.0 | 2358 |
| Finger 16: | 1395 | 279.0 | 1674 | 294.0 | 1968 | 311.0 | 2279 |
| Finger 17: | 1618 | 268.0 | 1886 | 276.0 | 2162 | 290.0 | 2452 |
| Finger 18: | 1385 | 284.0 | 1669 | 305.0 | 1974 | 323.0 | 2297 |
| Finger 19: | 1641 | 257.0 | 1898 | 257.0 | 2155 | 265.0 | 2420 |
| Finger 20: | 1511 | 263.0 | 1774 | 274.0 | 2048 | 290.0 | 2338 |
| Finger 21: | 1601 | 248.0 | 1849 | 255.0 | 2104 | 265.0 | 2369 |
| Finger 22: | 1533 | 270.0 | 1803 | 282.0 | 2085 | 295.0 | 2380 |
| Finger 23: | 1355 | 271.0 | 1626 | 288.0 | 1914 | 305.0 | 2219 |
| Finger 24: | 1676 | 260.0 | 1936 | 271.0 | 2207 | 276.0 | 2483 |
| Finger 25: | 1373 | 287.0 | 1660 | 308.0 | 1968 | 320.0 | 2288 |
| Finger 26: | 1540 | 283.0 | 1823 | 298.0 | 2121 | 303.0 | 2424 |
| Finger 27: | 1461 | 257.0 | 1718 | 274.0 | 1992 | 277.0 | 2269 |
| Finger 28: | 1651 | 273.0 | 1924 | 286.0 | 2210 | 285.0 | 2495 |
| Finger 29: | 1475 | 270.0 | 1745 | 293.0 | 2038 | 292.0 | 2330 |
| Finger 30: | 1418 | 268.0 | 1686 | 294.0 | 1980 | 299.0 | 2279 |
| Finger 31: | 1527 | 263.0 | 1790 | 282.0 | 2072 | 281.0 | 2353 |
| Finger 32: | 1346 | 260.0 | 1606 | 283.0 | 1889 | 287.0 | 2176 |
| Finger 33: | 1631 | 295.0 | 1926 | 315.0 | 2241 | 311.0 | 2552 |
| Finger 34: | 1542 | 265.0 | 1807 | 281.0 | 2088 | 280.0 | 2368 |
| Finger 35: | 1442 | 265.0 | 1707 | 284.0 | 1991 | 290.0 | 2281 |
| Finger 36: | 1595 | 273.0 | 1868 | 289.0 | 2157 | 293.0 | 2450 |
| Finger 37: | 1603 | 269.0 | 1872 | 285.0 | 2157 | 293.0 | 2450 |
| Finger 38: | 1501 | 268.0 | 1769 | 286.0 | 2055 | 295.0 | 2350 |
| Finger 39: | 1462 | 274.0 | 1736 | 294.0 | 2030 | 307.0 | 2337 |
| Finger 40: | 1596 | 279.0 | 1875 | 298.0 | 2173 | 306.0 | 2479 |

| Segmented Cement Bond Log Calibration Report | | | | | | |
|---------------------------------------------------------|---------|------------|-----------------|---------|---------|--------|
| Serial Number: | | 10013454 | | | | |
| Tool Model: | | UW_RBT_004 | | | | |
| Calibration Casing Diameter: | | 7.000 | in | | | |
| Calibration Depth: | | 107.678 | ft | | | |
| Master Calibration, performed Thu Jan 28 13:06:54 2016: | | | | | | |
| | Raw (v) | | Calibrated (mv) | | Results | |
| | Zero | Cal | Zero | Cal | Gain | Offset |
| 3FT | -0.002 | 0.890 | 0.800 | 62.165 | 68.834 | 0.937 |
| 5FT | -0.055 | 0.966 | 0.800 | 62.165 | 60.088 | 4.108 |
| S1 | 0.000 | 0.855 | 0.000 | 100.000 | 117.015 | -0.001 |
| S2 | -0.002 | 0.891 | 0.000 | 100.000 | 111.915 | 0.228 |
| S3 | -0.002 | 0.931 | 0.000 | 100.000 | 107.169 | 0.221 |
| S4 | -0.002 | 0.951 | 0.000 | 100.000 | 104.947 | 0.176 |
| S5 | -0.000 | 0.934 | 0.000 | 100.000 | 106.981 | 0.047 |
| S6 | -0.002 | 0.911 | 0.000 | 100.000 | 109.547 | 0.174 |
| S7 | -0.002 | 0.874 | 0.000 | 100.000 | 114.127 | 0.280 |
| S8 | -0.003 | 0.856 | 0.000 | 100.000 | 116.421 | 0.299 |
| Temperature Calibration Report | | | | | | |

Serial Number: 1002509/
Tool Model: UW_PRT_016
Performed: Wed Feb 11 13:44:44 2015

| Point # | Reading | Reference |
|---------|--------------|-------------|
| 1 | 13053.00 cps | 68.00 degF |
| 2 | 18014.00 cps | 104.00 degF |
| 3 | 29668.00 cps | 176.00 degF |
| 4 | 41181.00 cps | 248.00 degF |
| 5 | 52983.00 cps | 320.00 degF |
| 6 | 58931.00 cps | 356.00 degF |
| 7 | cps | degF |
| 8 | cps | degF |
| 9 | cps | degF |
| 10 | cps | degF |

Gamma Ray Calibration Report

Serial Number: 10013899
Tool Model: UW_PGR_020
Performed: Thu Jan 14 11:37:27 2016

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 1.0 cps

Sensitivity: 1.0000 GAPI/cps



Company Noble Energy Inc.
Well Remora LC34-715
Field Wildcat
County Weld
State Colorado