

# Radial Cement Bond Gamma Ray Casing Collar Log

|                        |                                 |
|------------------------|---------------------------------|
| Company                | Kerr McGee Oil & Gas Onshore LP |
| Well                   | Greenleaf 37C-15HZ              |
| Field                  | Wattenberg                      |
| County                 | Weld                            |
| State                  | Colorado                        |
| Company                | Kerr McGee Oil & Gas Onshore LP |
| Well                   | Greenleaf 37C-15HZ              |
| Field                  | Wattenberg                      |
| County                 | Weld                            |
| State                  | Colorado                        |
| Location:              | API # : 05-123-37922            |
| Permanent Datum        | SEC 15 TWP 2N RGE 65W           |
| Log Measured From      | Ground Level                    |
| Drilling Measured From | Kelly Bushing                   |
|                        | Elevation 4868'                 |
|                        | Other Services                  |
|                        | Gauge ring                      |
|                        | RCBL                            |
|                        | Elevation                       |
|                        | K.B. 4884'                      |
|                        | D.F. 4883'                      |
|                        | G.L. 4868'                      |

|                        |                |
|------------------------|----------------|
| Date                   | 23 Jan. 2015   |
| Run Number             | One            |
| Depth Driller          | 11,814 FT      |
| Depth Logger           | 6727 FT        |
| Bottom Logged Interval | 6722 FT        |
| Top Log Interval       | Surface        |
| Open Hole Size         | 9.625"         |
| Type Fluid             | Water          |
| Density / Viscosity    | 8.34 lbm/gal   |
| Max. Recorded Temp.    | 228° F         |
| Estimated Cement Top   | Surface        |
| Time Well Ready        | R.O.A.         |
| Time Logger on Bottom  | 1:00 PM        |
| Equipment Number       | HD-0119        |
| Location               | Ft. Lupton, CO |
| Recorded By            | W.Wacker       |
| Witnessed By           | Trevor Daniel  |

| Borehole Record |           |              |         | Tubing Record |         |      |    |
|-----------------|-----------|--------------|---------|---------------|---------|------|----|
| Run Number      | Bit       | From         | To      | Size          | Weight  | From | To |
|                 |           |              |         |               |         |      |    |
|                 |           |              |         |               |         |      |    |
|                 |           |              |         |               |         |      |    |
|                 |           |              |         |               |         |      |    |
| Casing Record   | Size (in) | Wgt (lbs/ft) | Grade   | Top           | Bottom  |      |    |
| Surface Casing  | 9-5/8     | 36           | J-55    | Surface       | 831 FT  |      |    |
| Intermediate #1 | 7         | 26           | HCP-110 | Surface       | 7636 FT |      |    |
| Intermediate #2 |           |              |         |               |         |      |    |
| Liner           | 4.5       | 11.6         | HCP-110 | 6713 FT       | 11,799  |      |    |

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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 reference to Casing Tally reported liner top at 6713 FT.  
Adjusted -14 FT to correlate to liner top.  
Log ran as deep as possible to surface.  
Log ran with 2800 PSI surface induced pressure.

Thank you for choosing FMC Technologies Completion Services, Inc.!!

Database File:0512337922\_anadarko\_greenleaf 37c-15hz\_01-23-15\_mit\_rbl.db

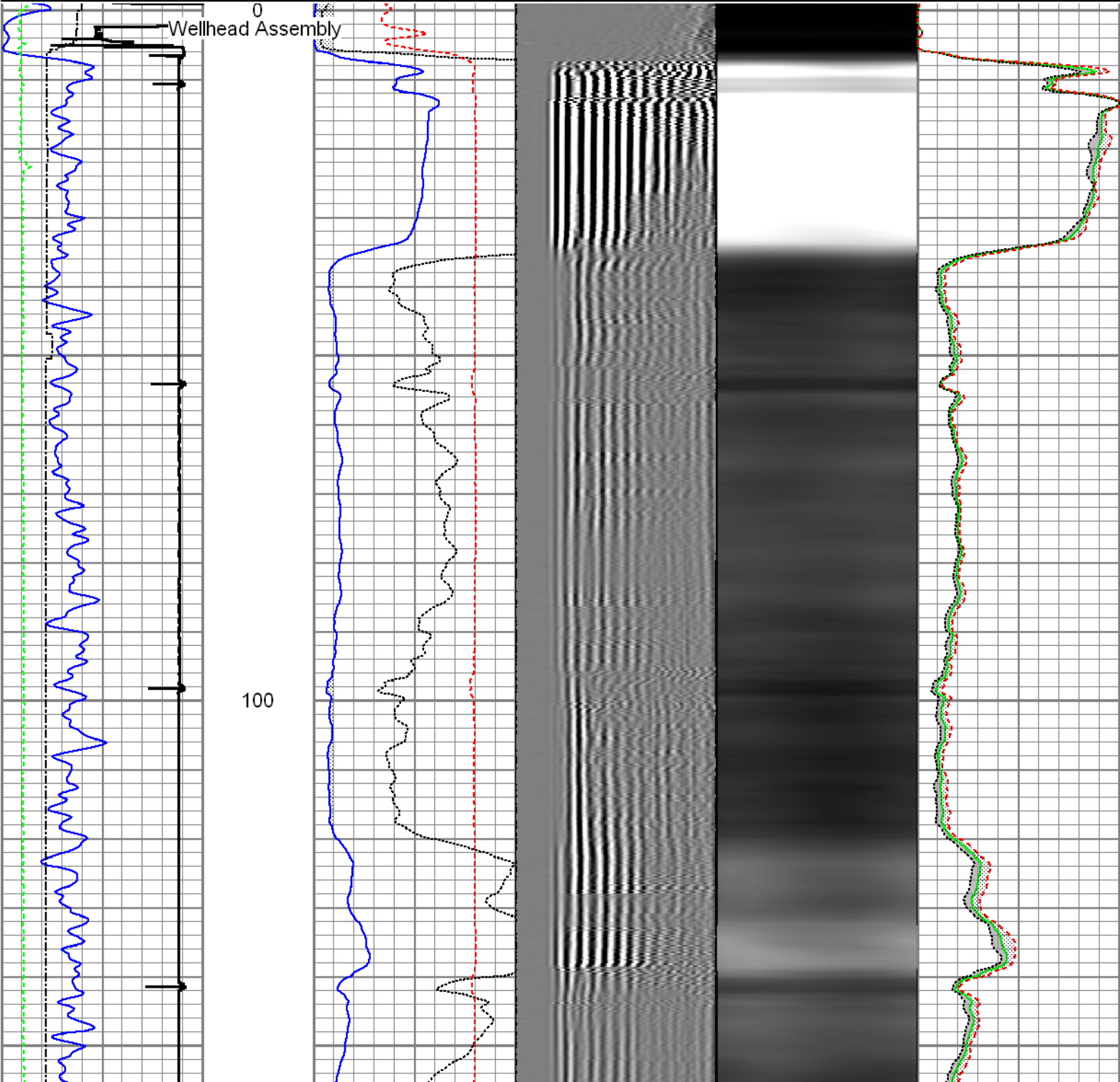
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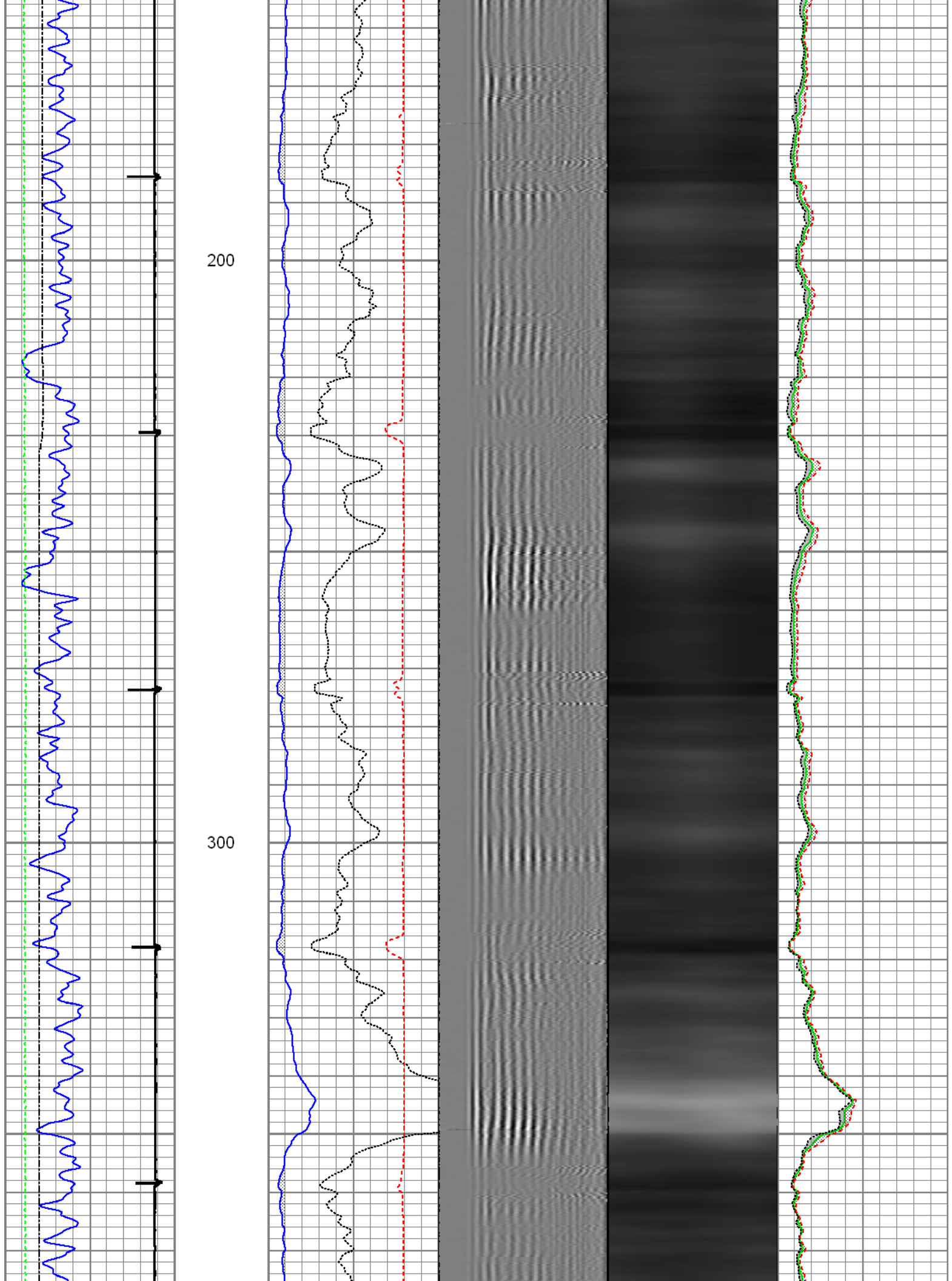
Presentation Format:rbt4\_mit

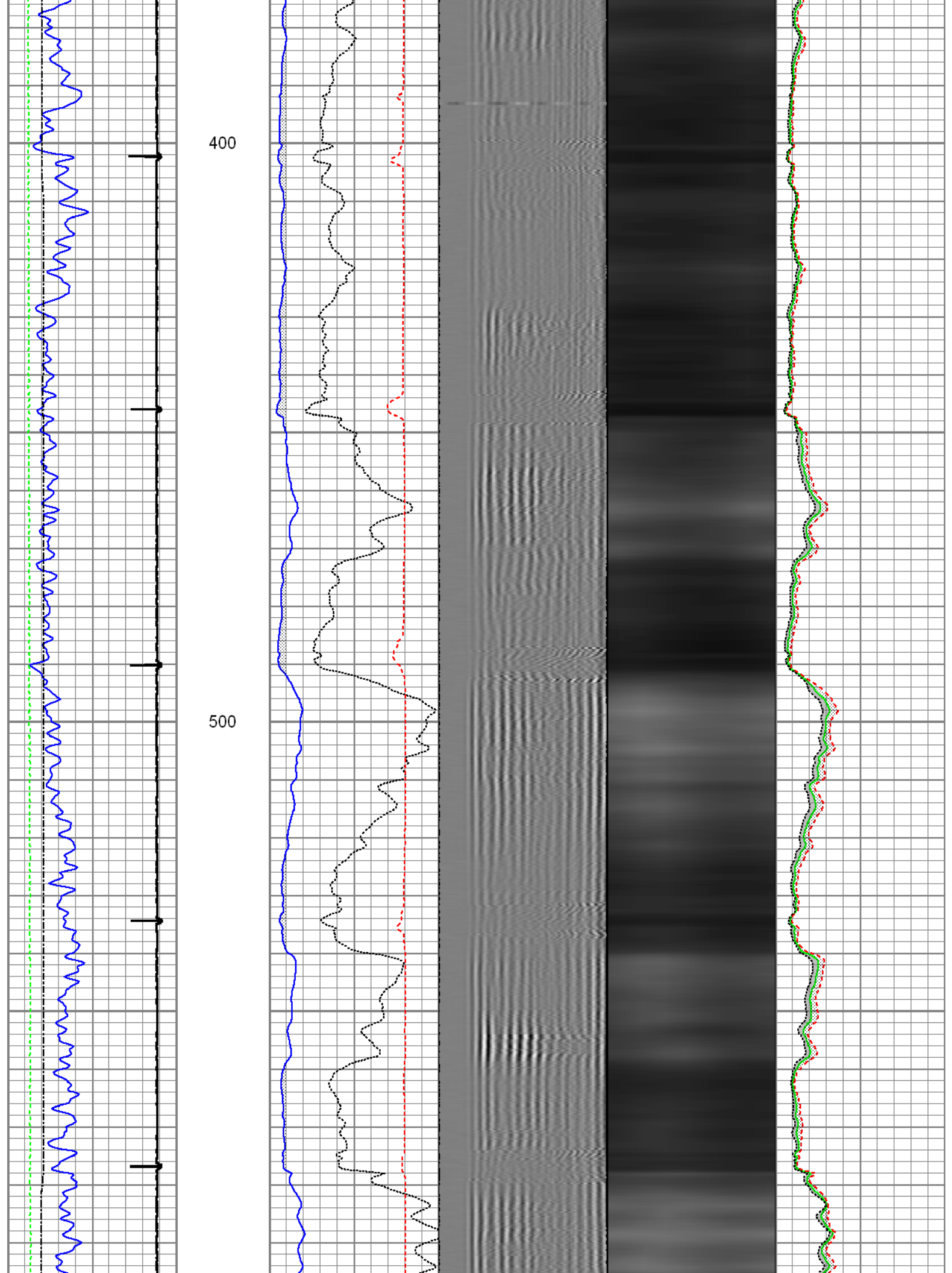
Dataset Creation:Mon Jan 26 14:47:24 2015 by Calc SCH 120430

Charted by:Depth in Feet scaled 1:240

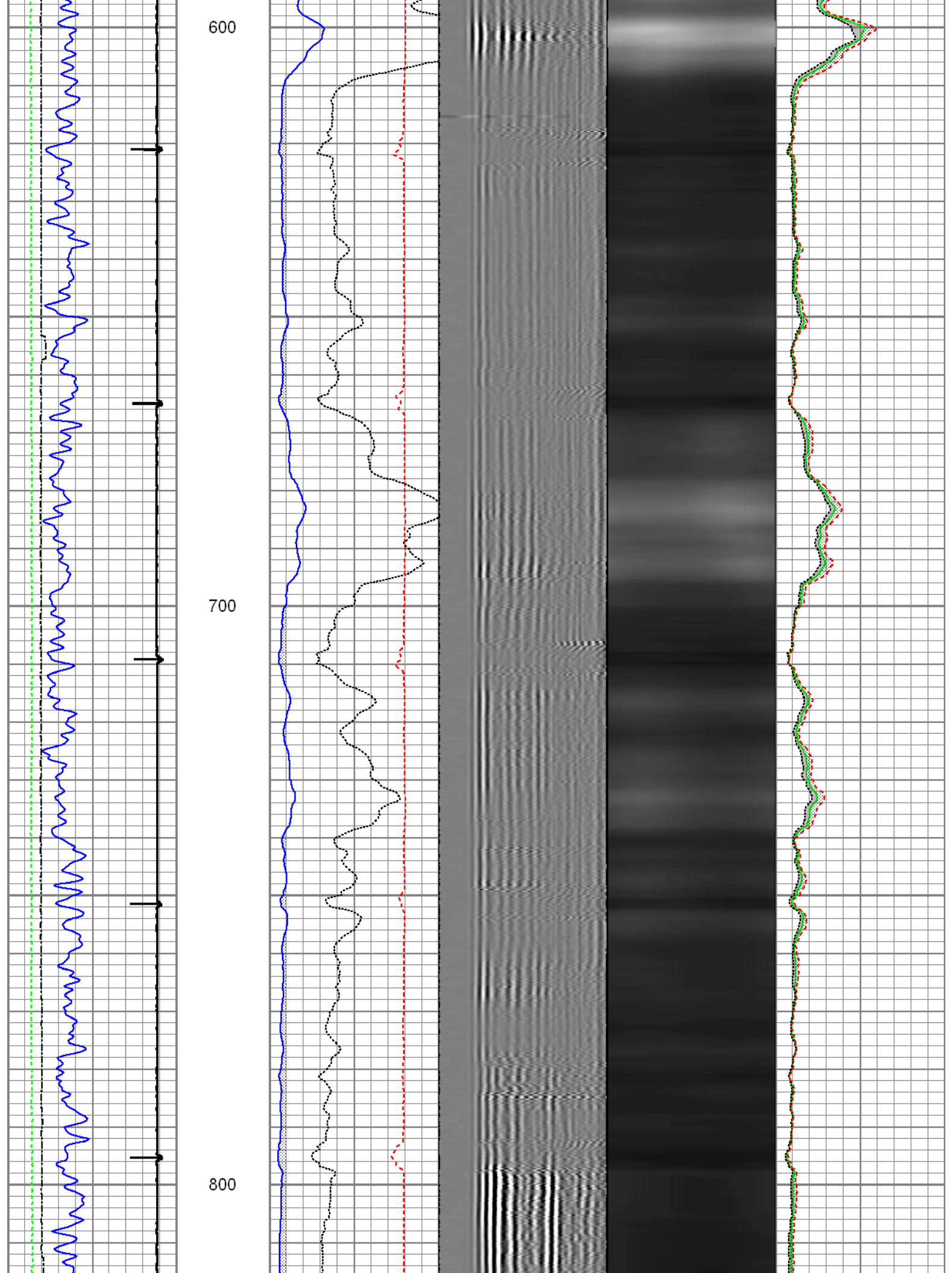
|                       |                  |                         |            |                   |
|-----------------------|------------------|-------------------------|------------|-------------------|
| Gamma Ray             | 3' Amplitude     | 5' Variable Density Log | Sector Map | Average Amplitude |
| 0 (GAPI) 120          | 0 (mV) 100       | 200 1200                |            | 0 100             |
| Line Speed            | 3' Amplitude x 5 |                         |            | Mimimum 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             |
| Casing Collar Locator |                  |                         |            |                   |

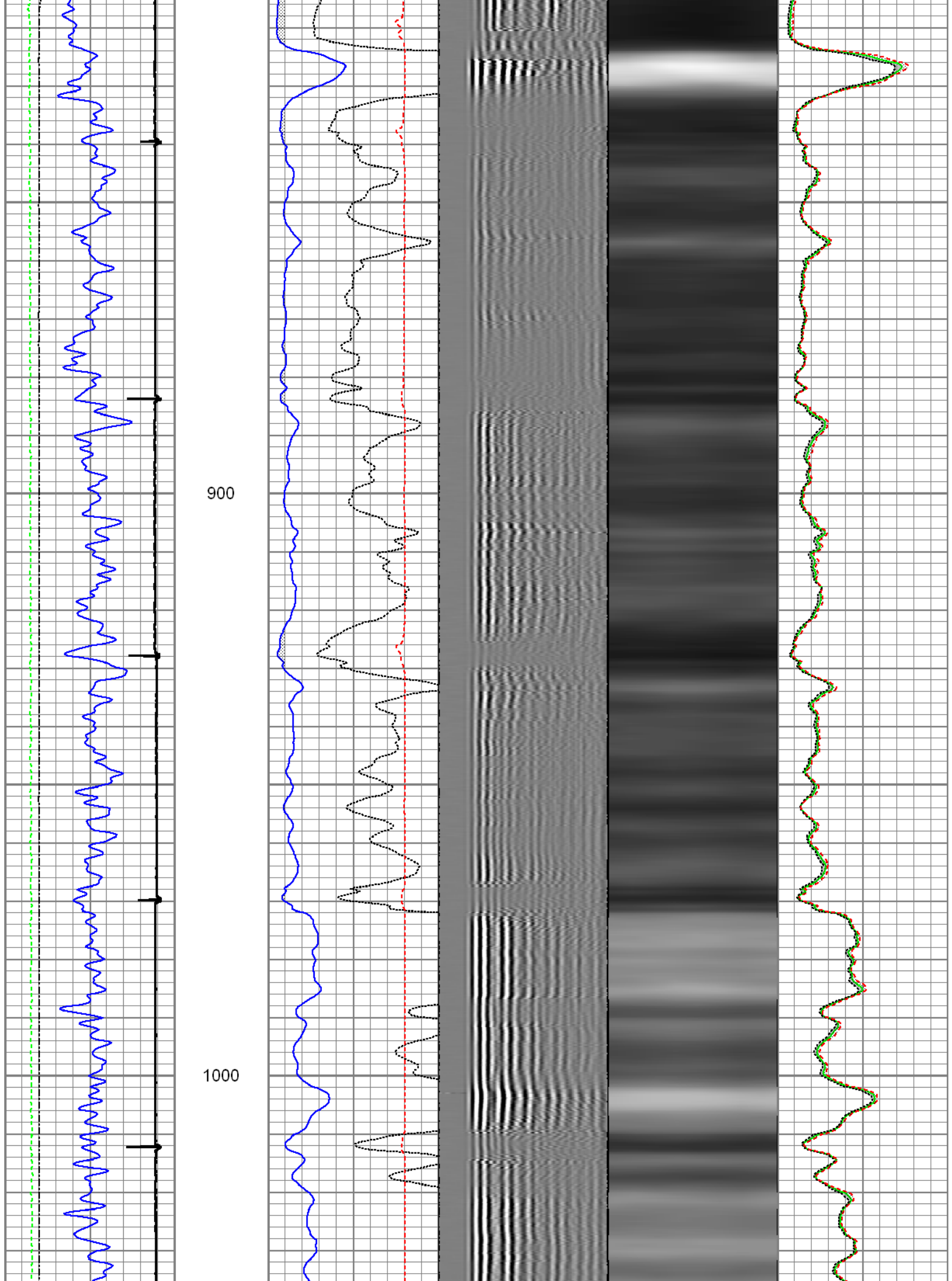


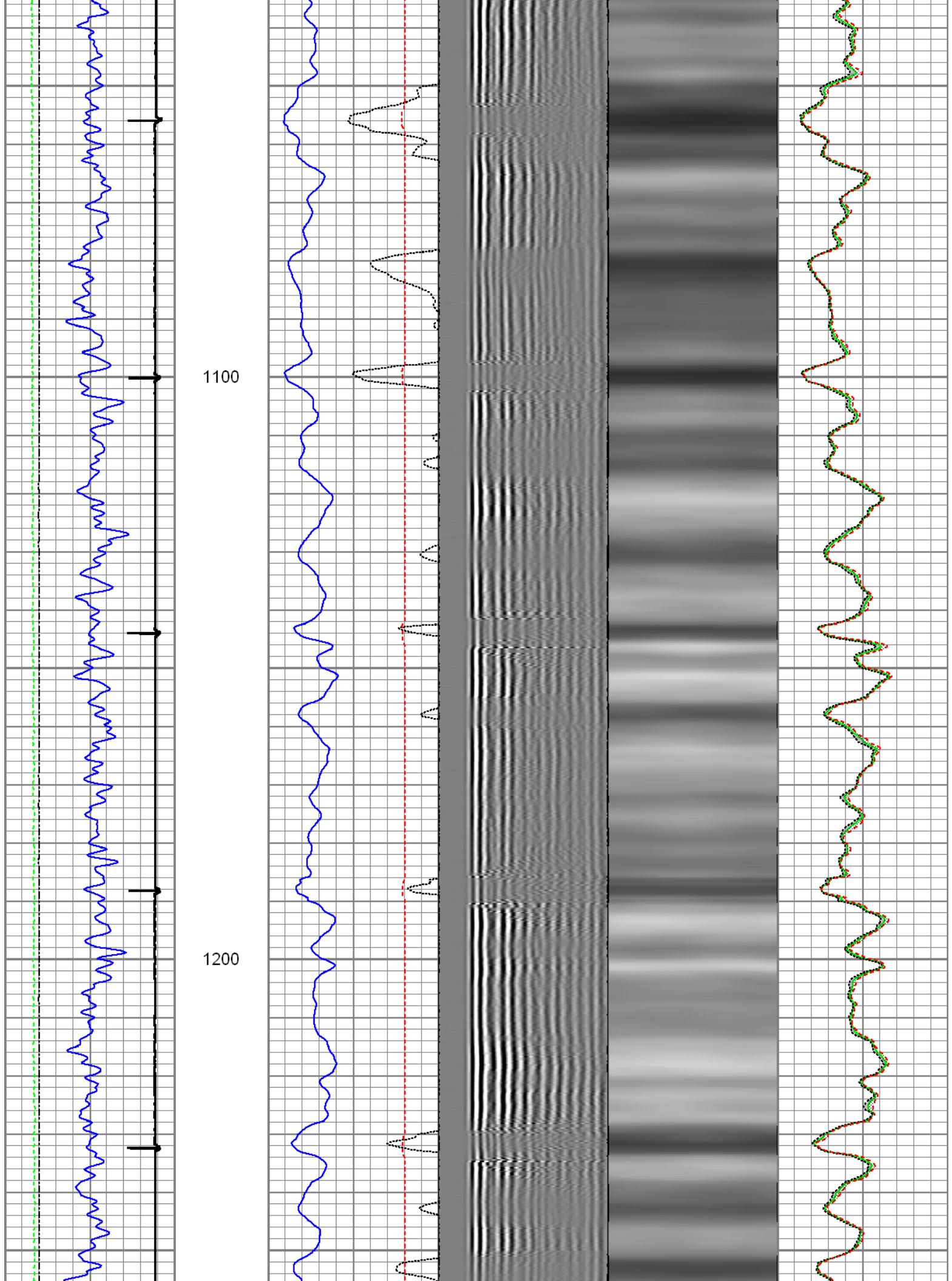


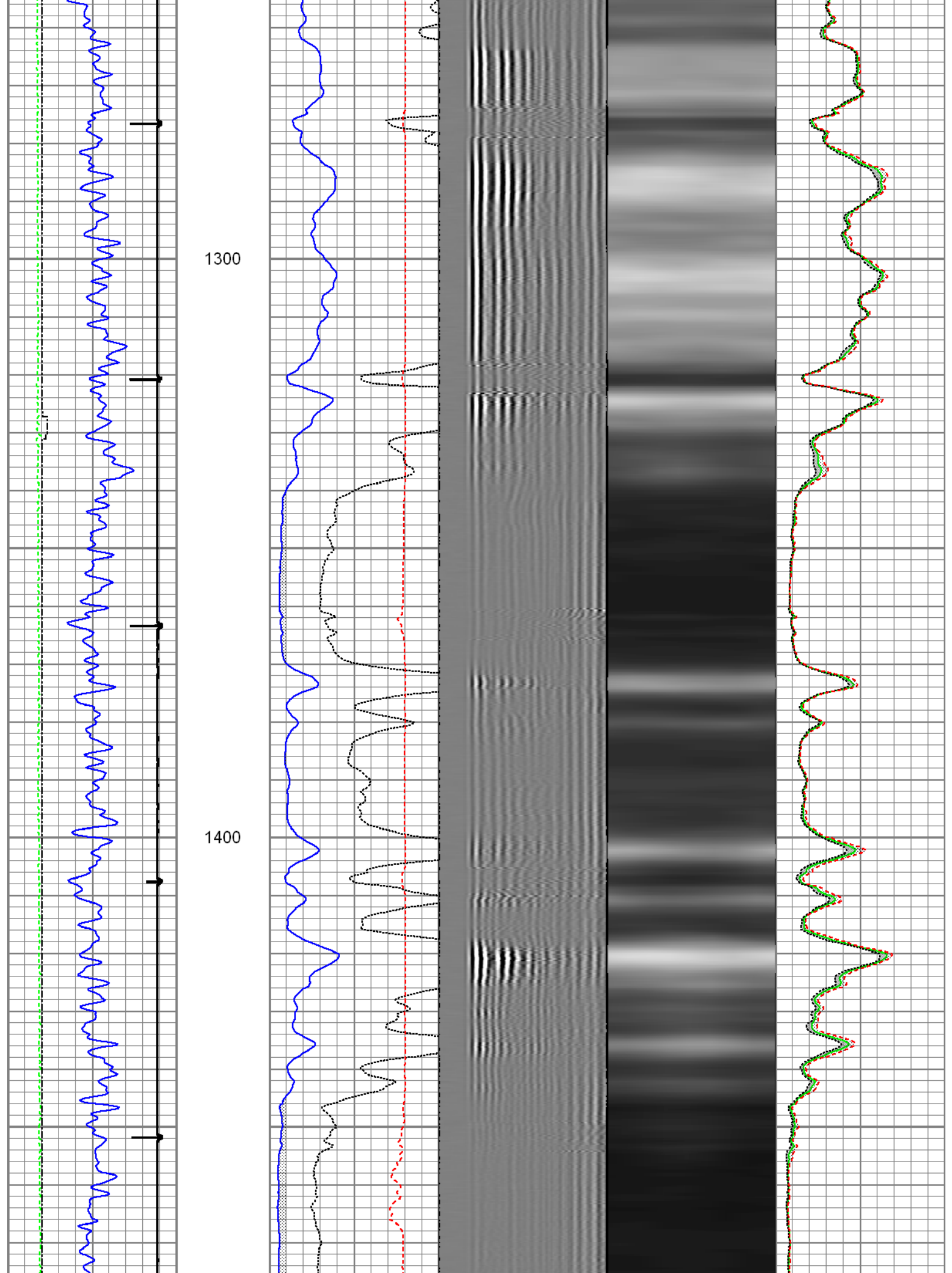




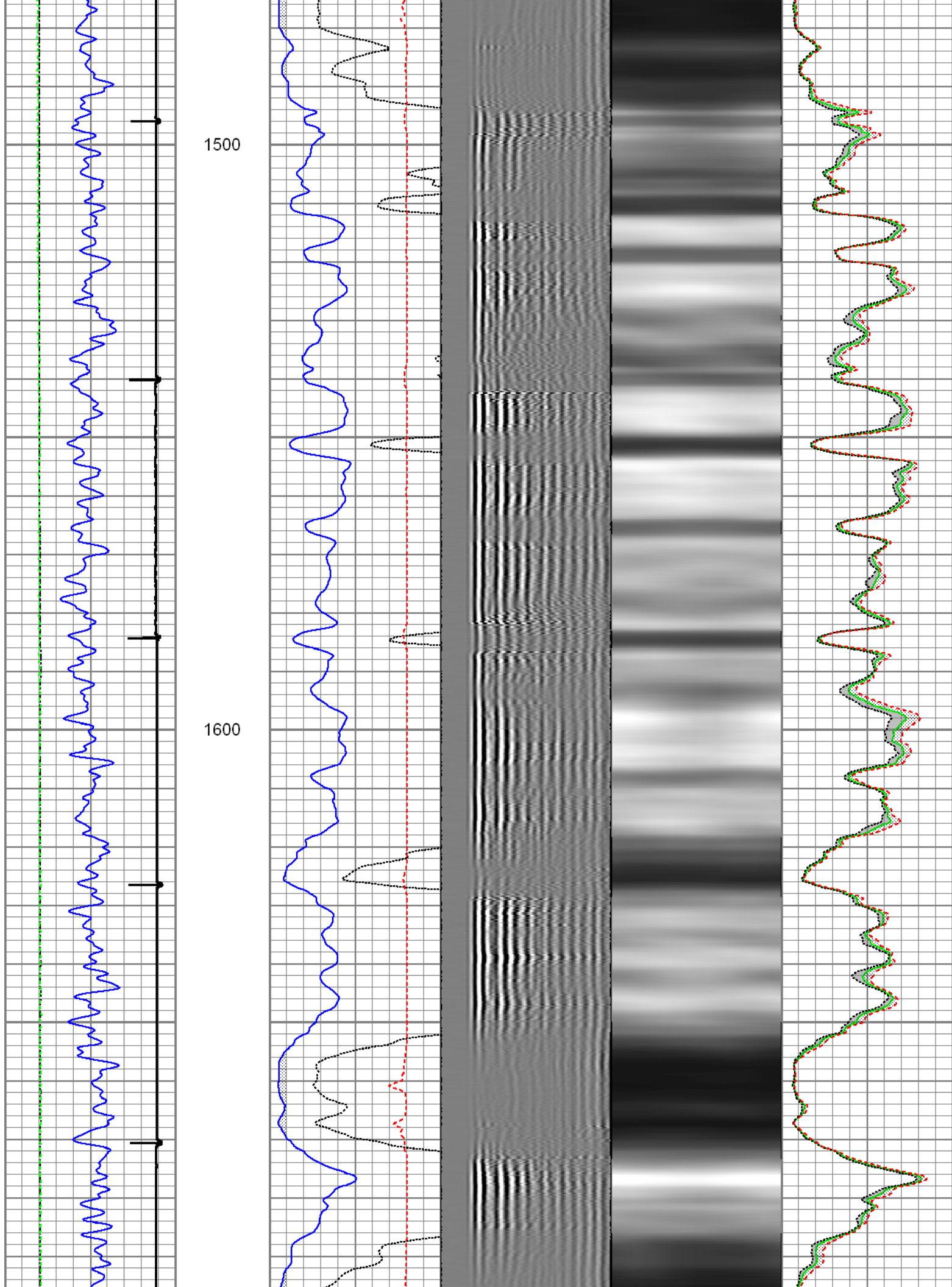




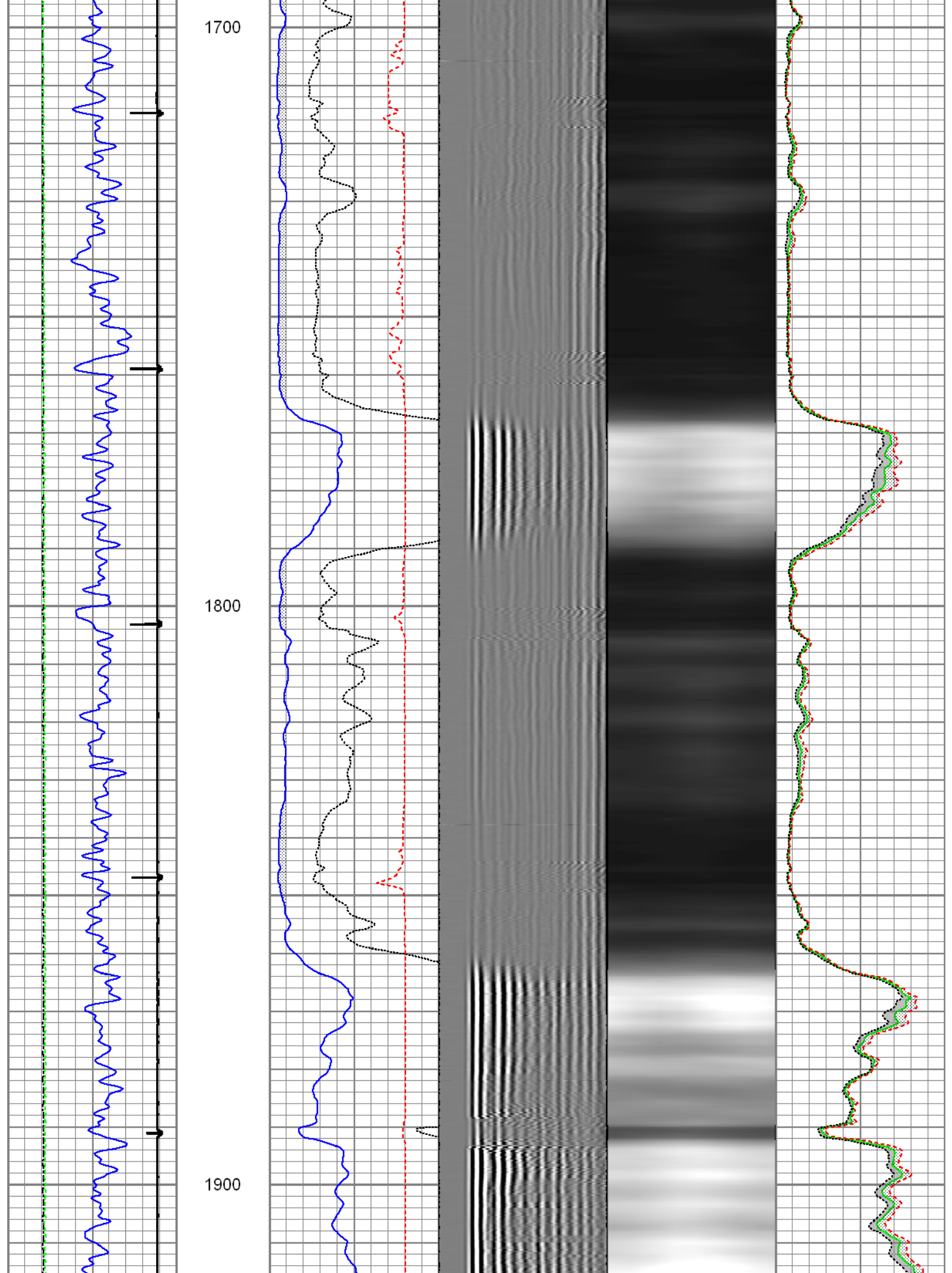


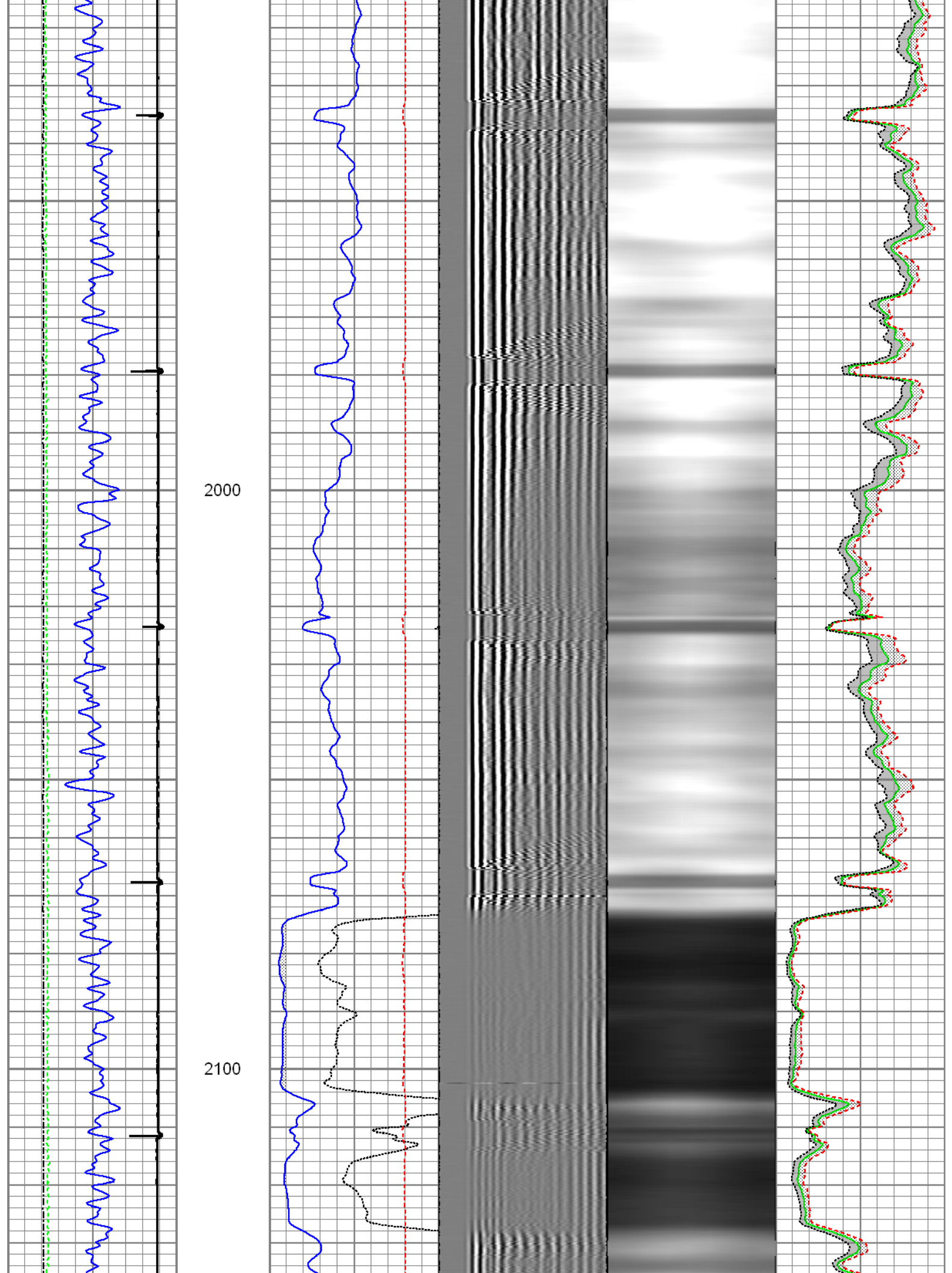


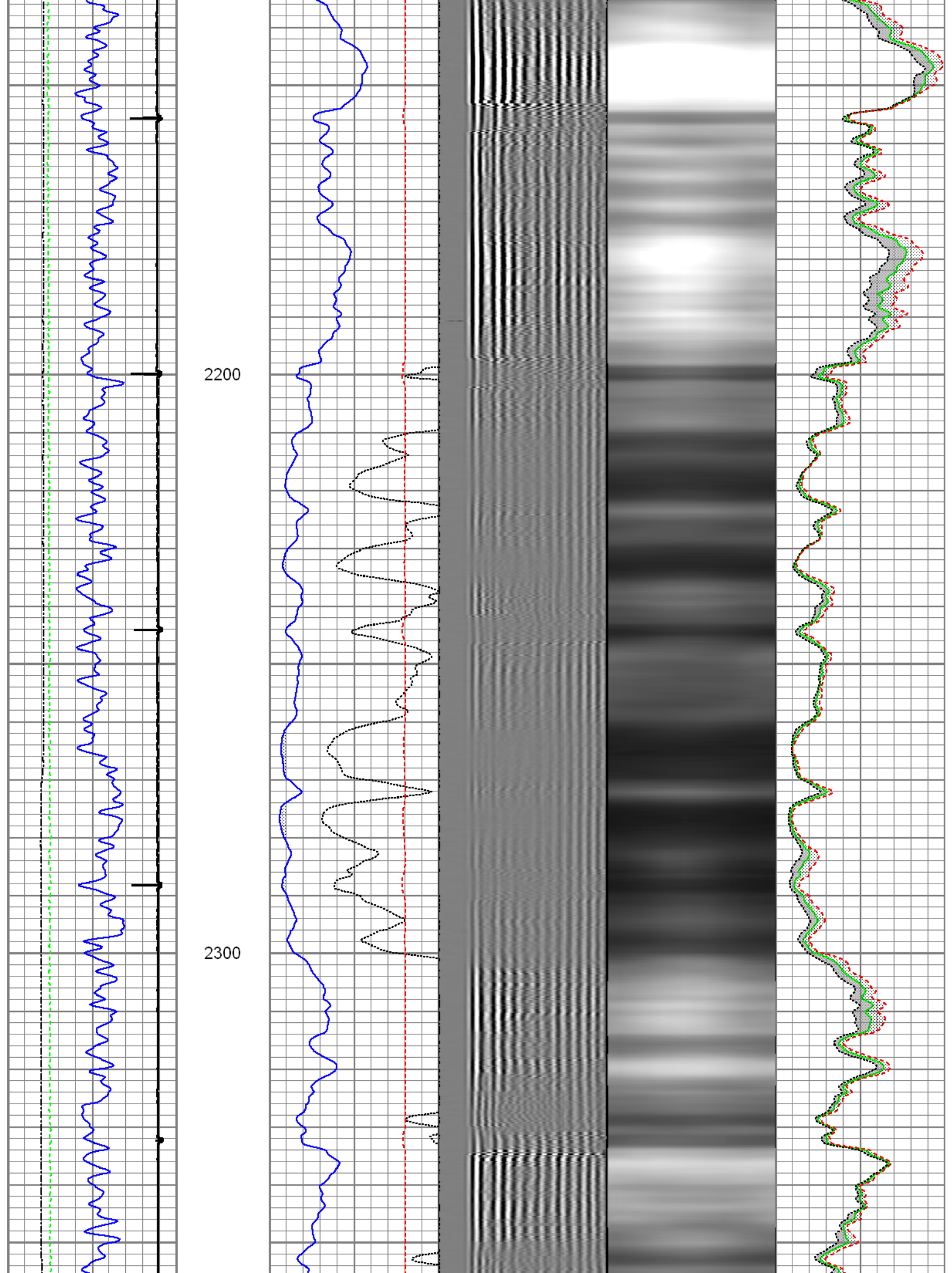


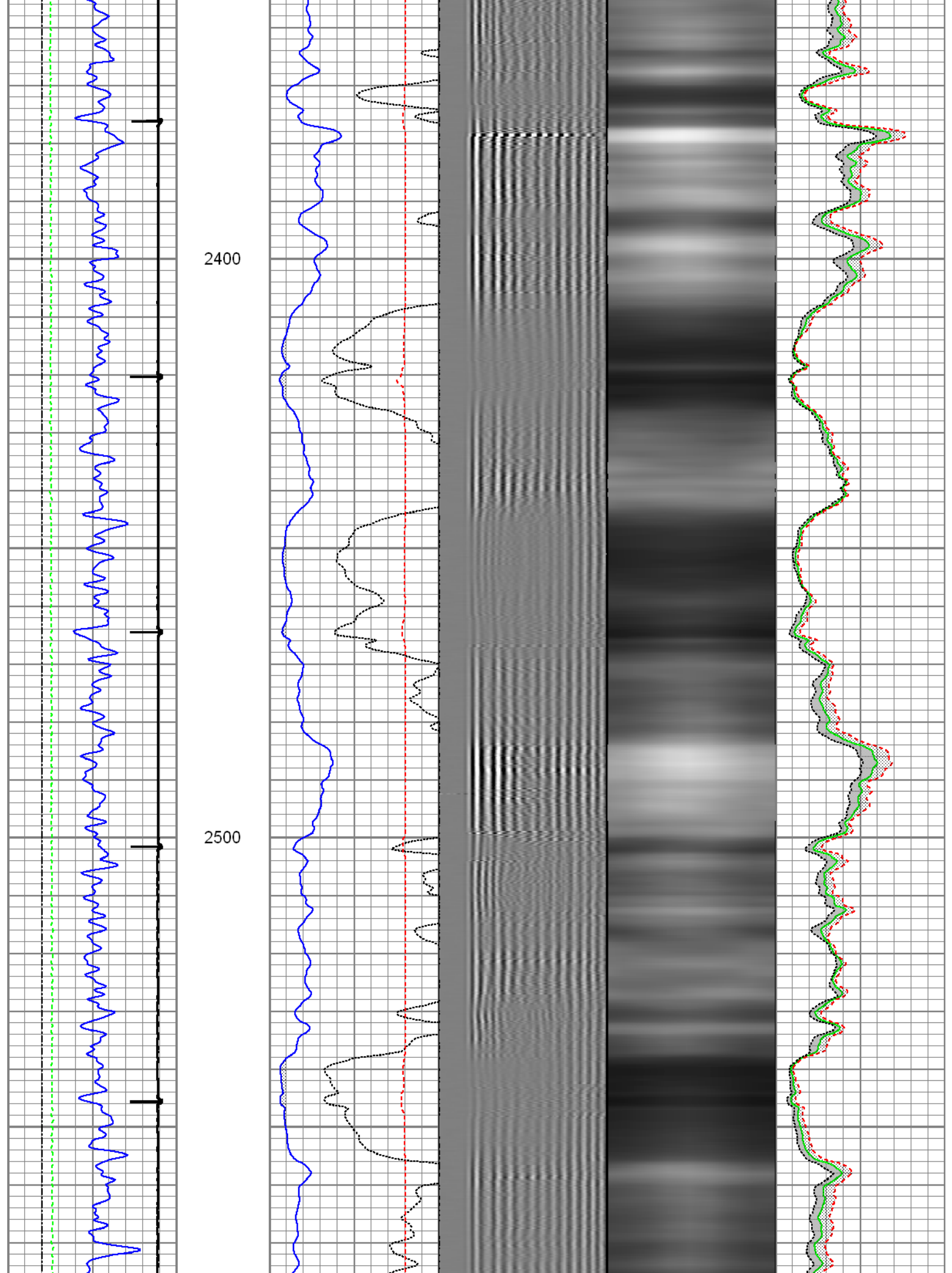




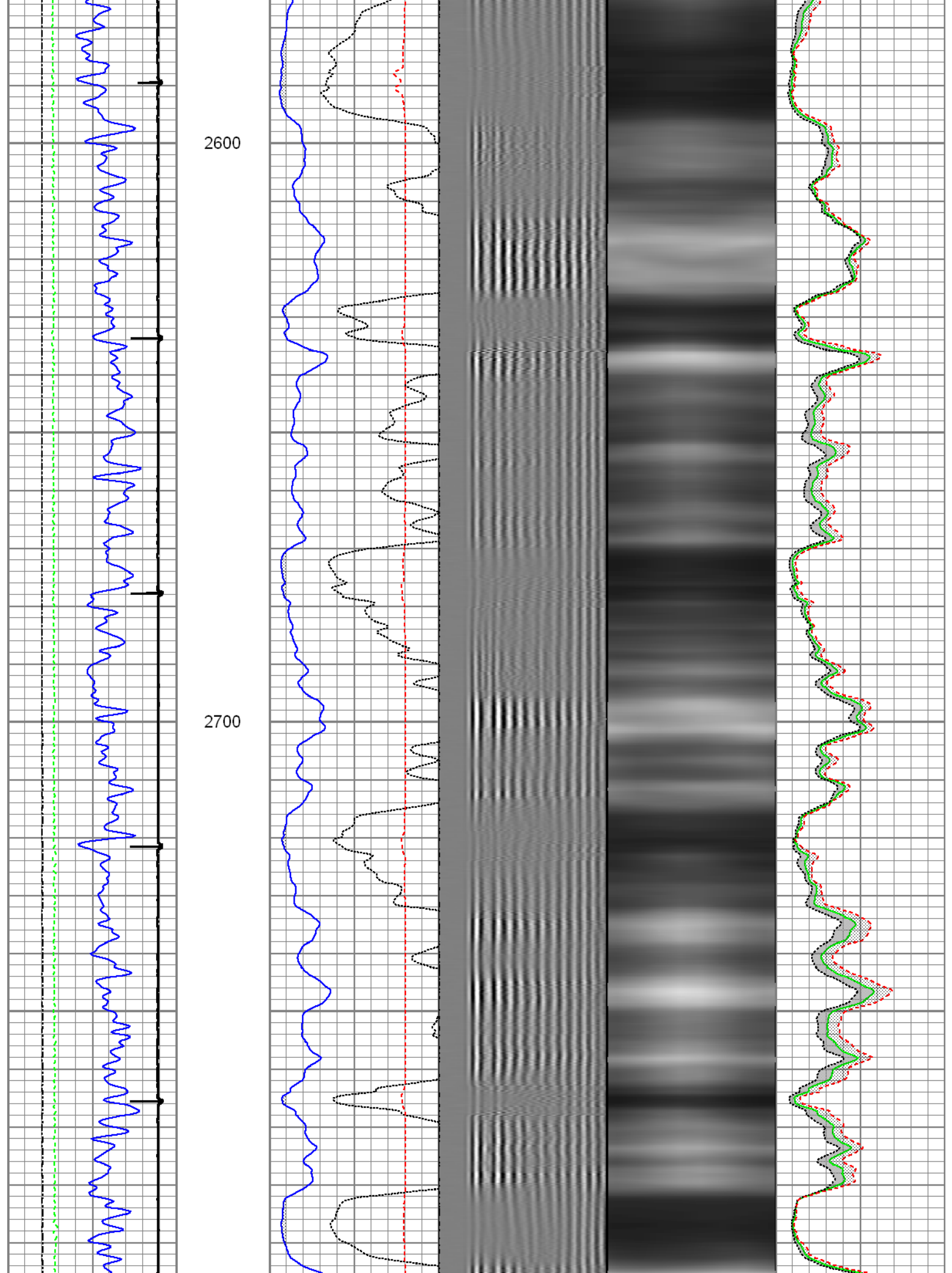










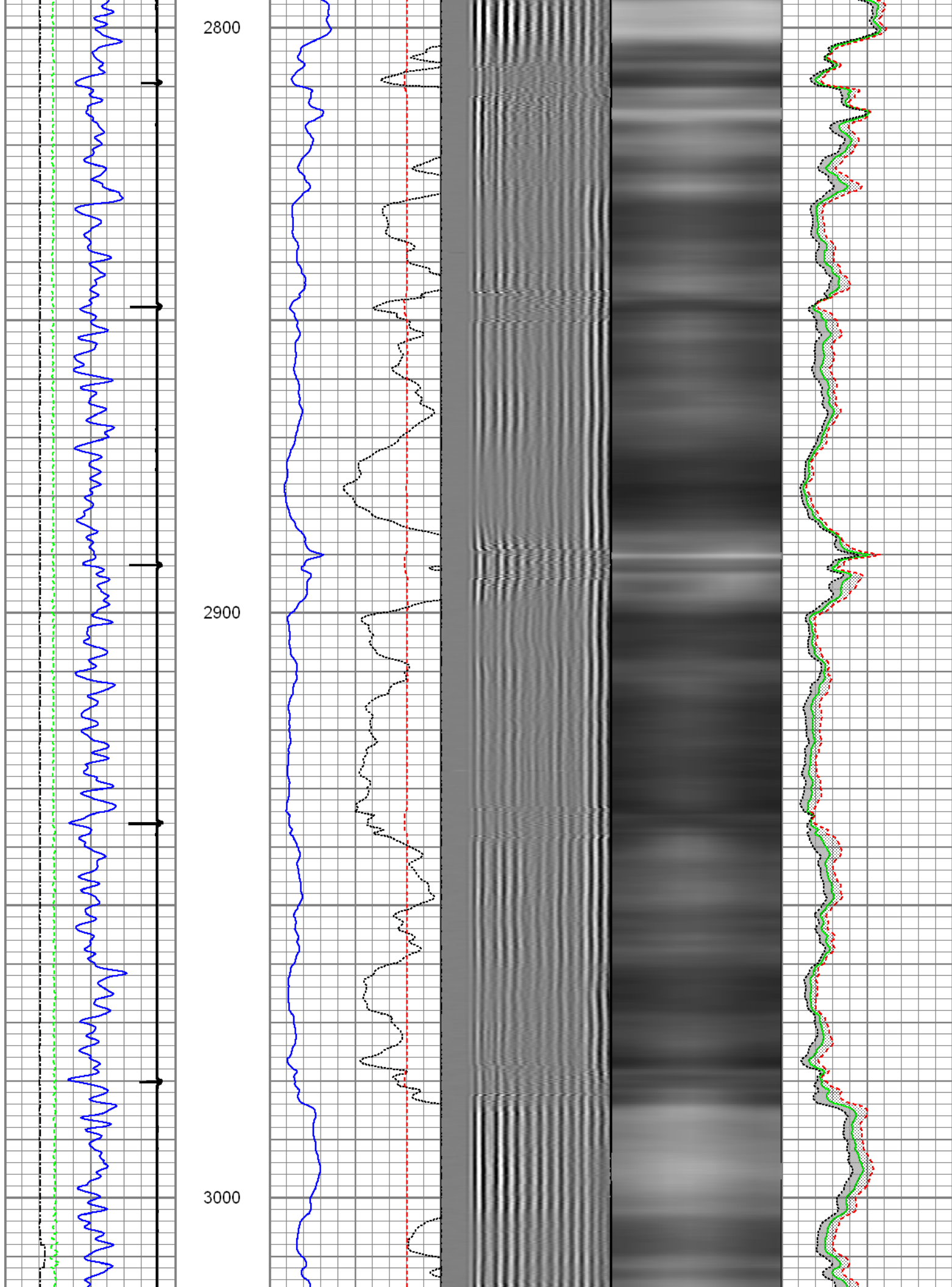


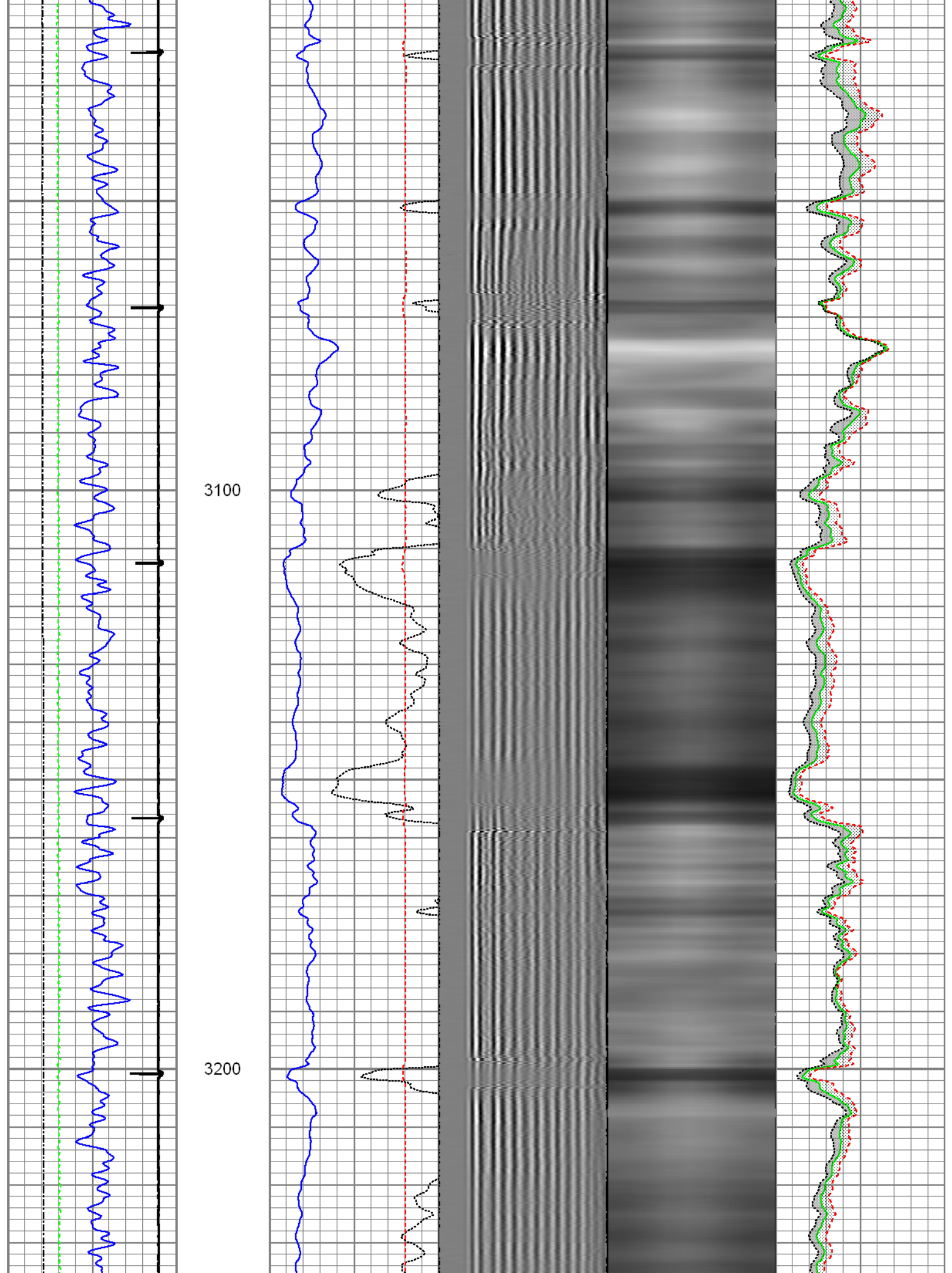


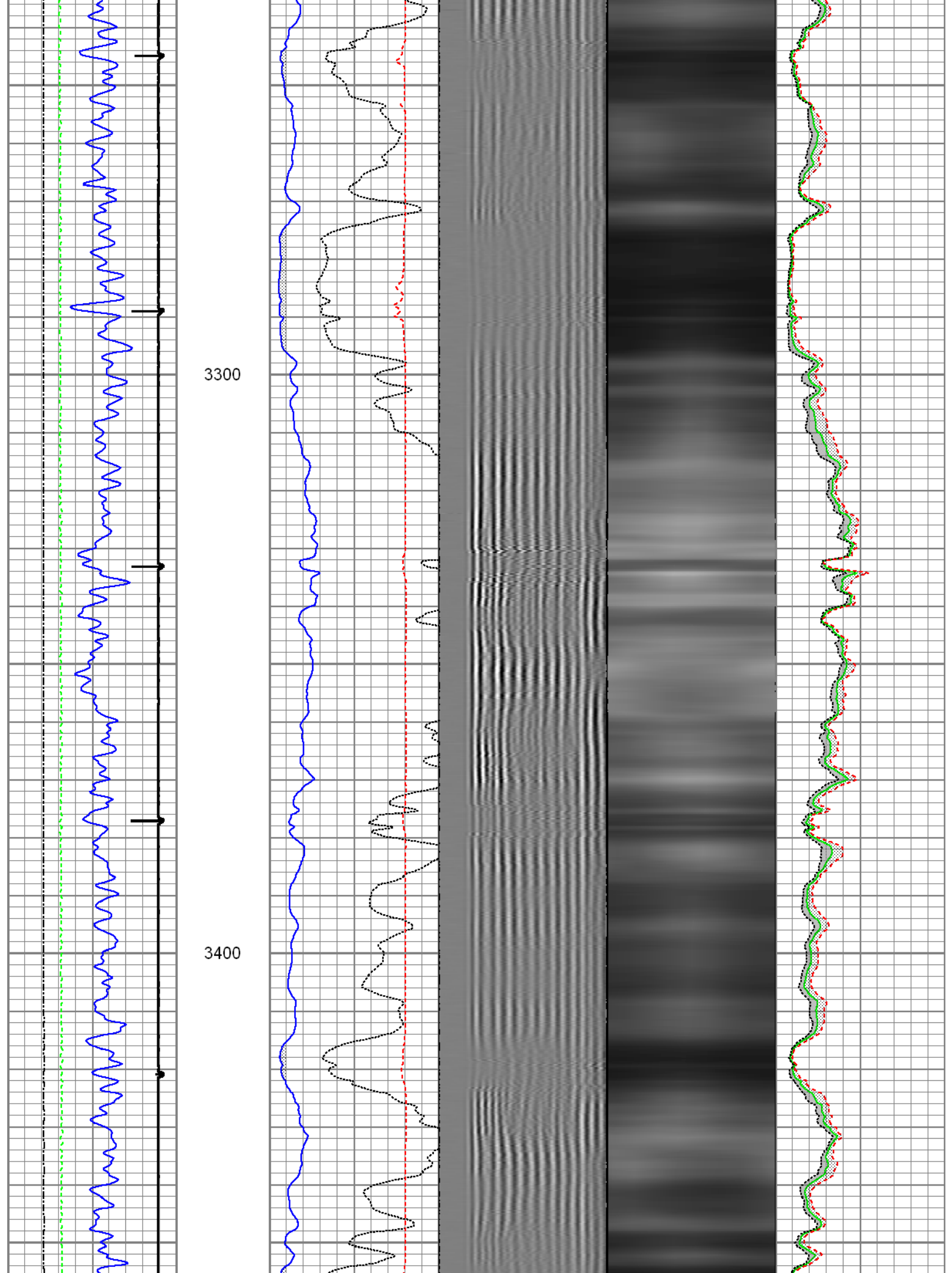
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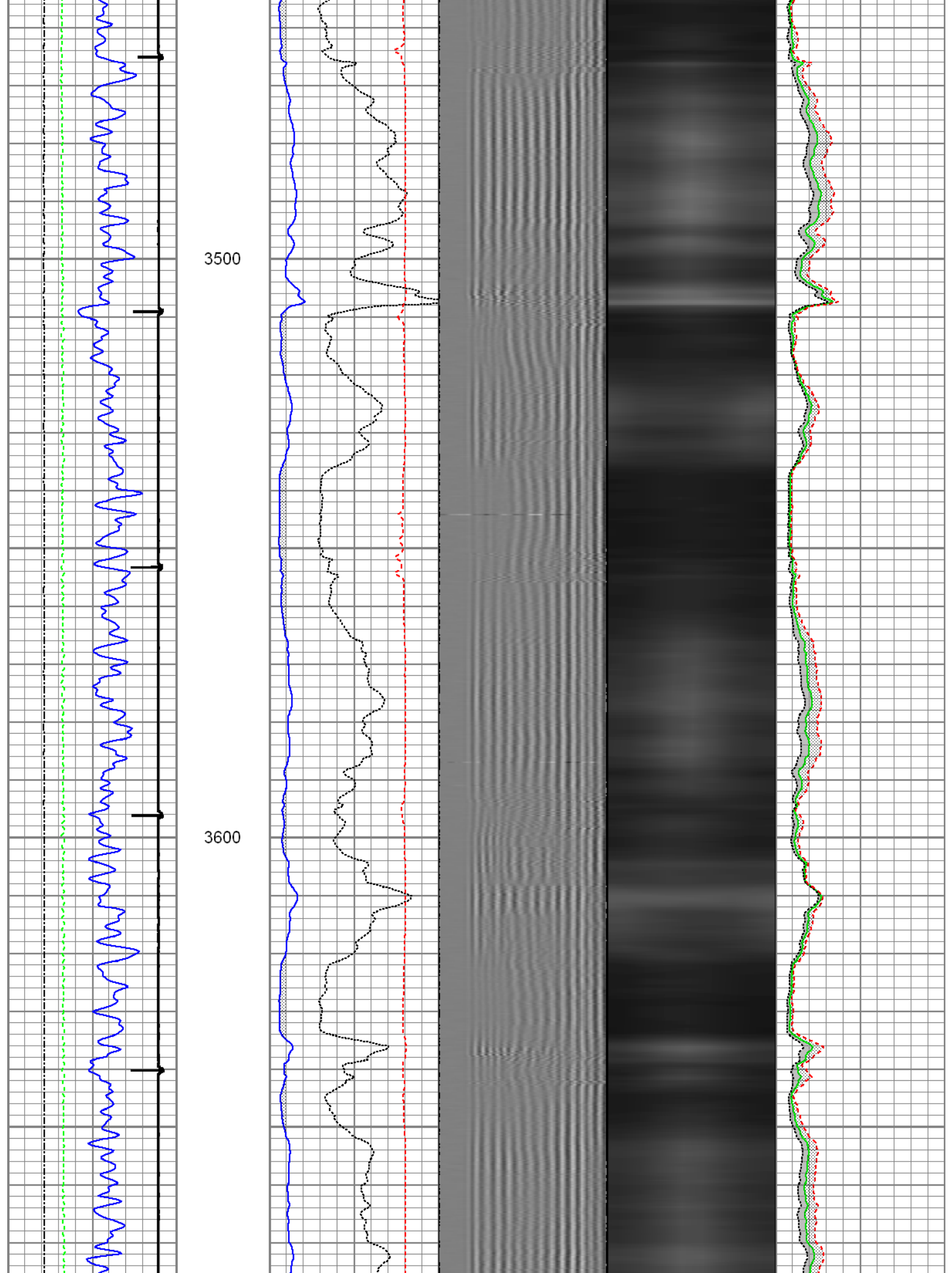
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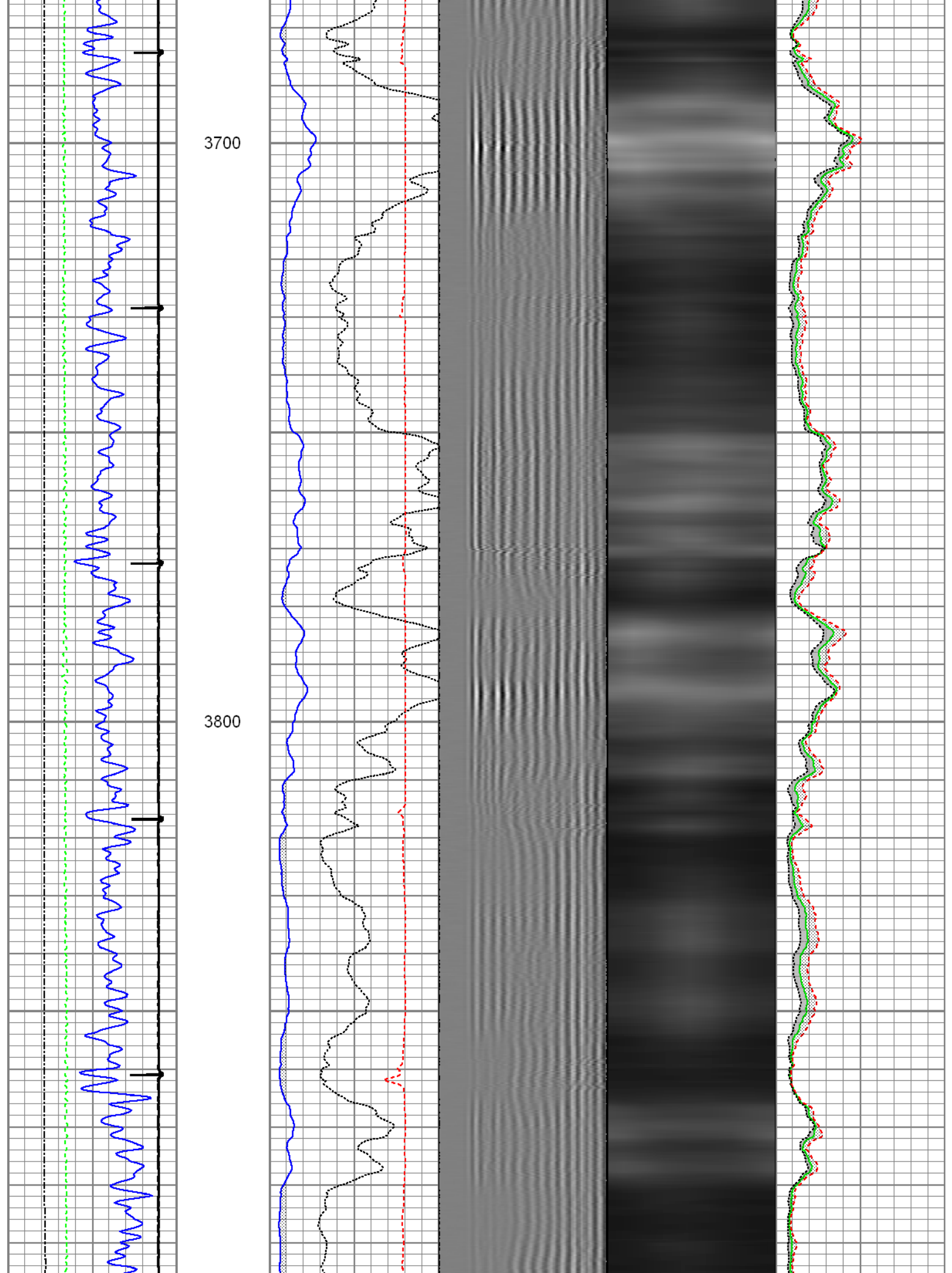




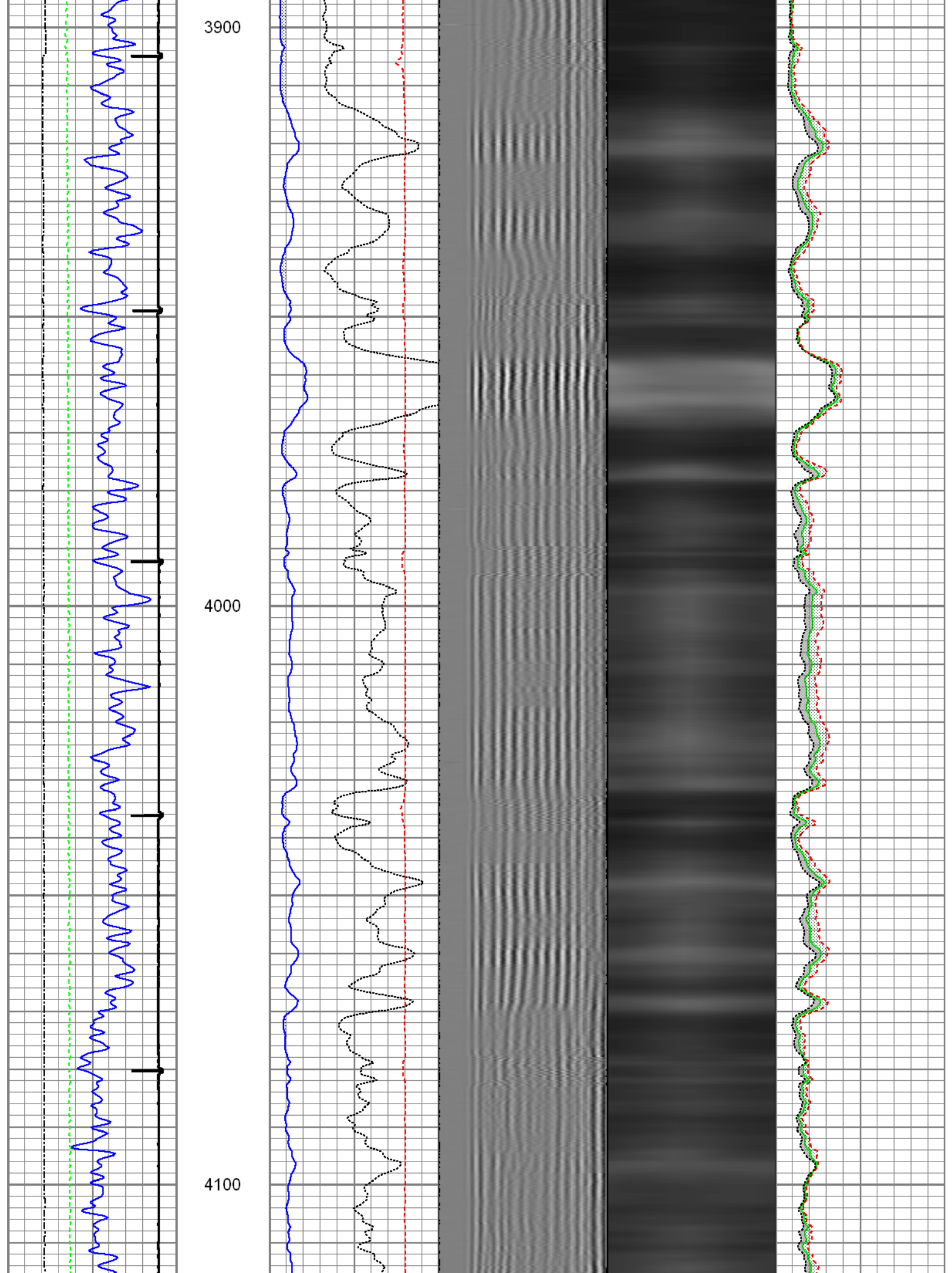






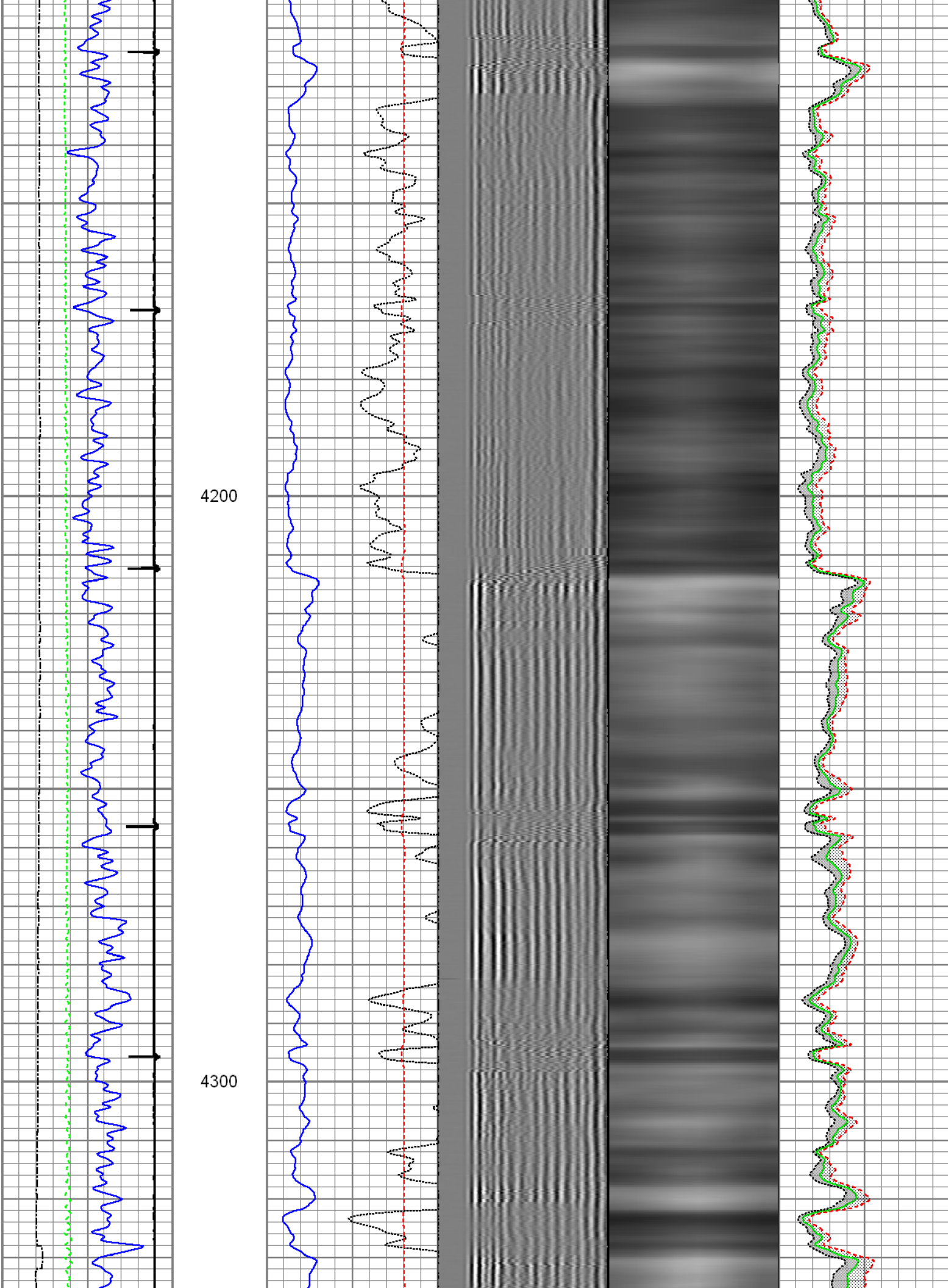


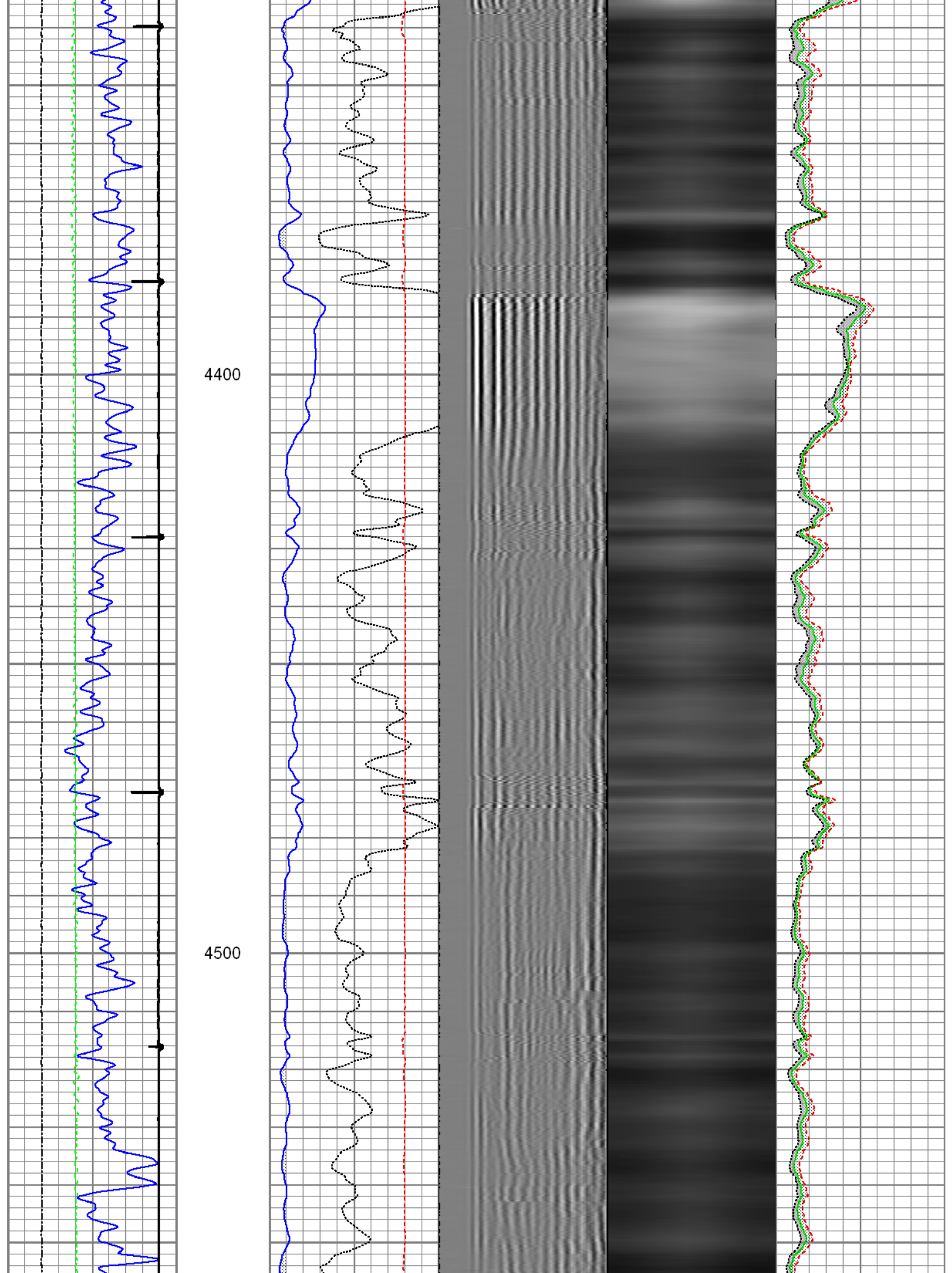




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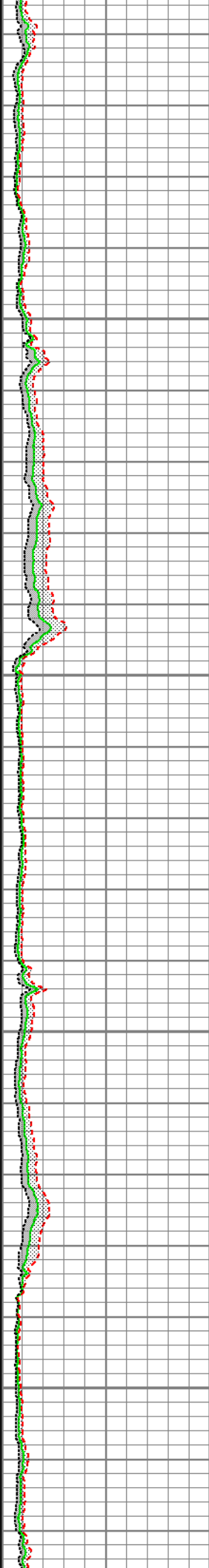
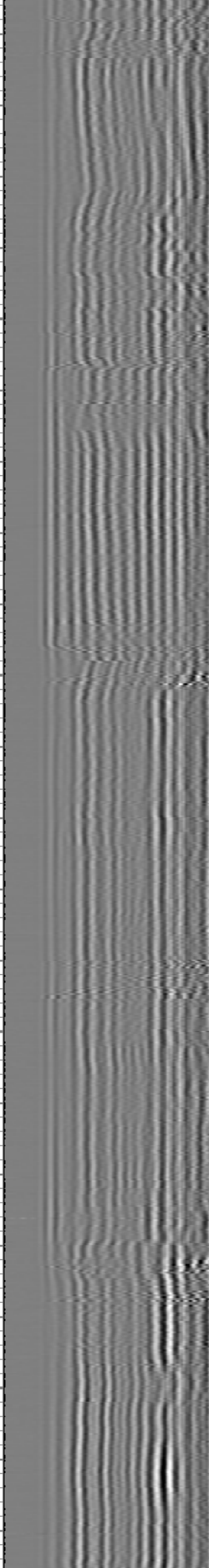
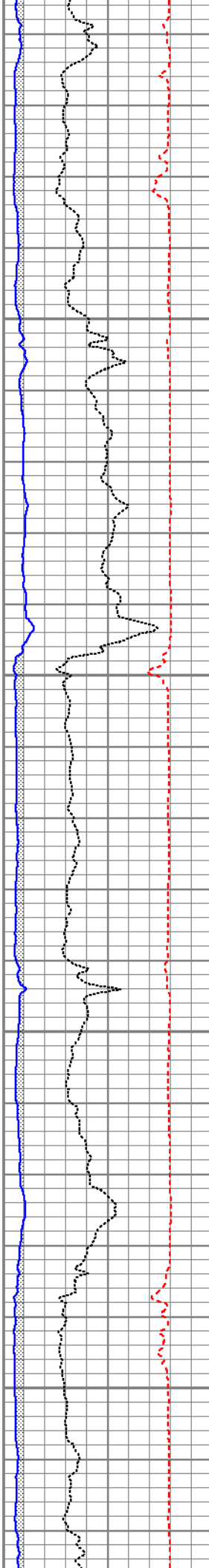
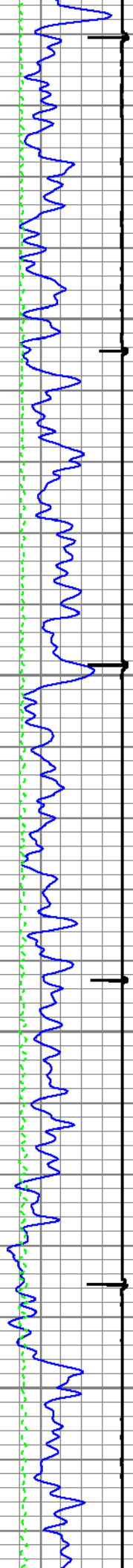
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4600

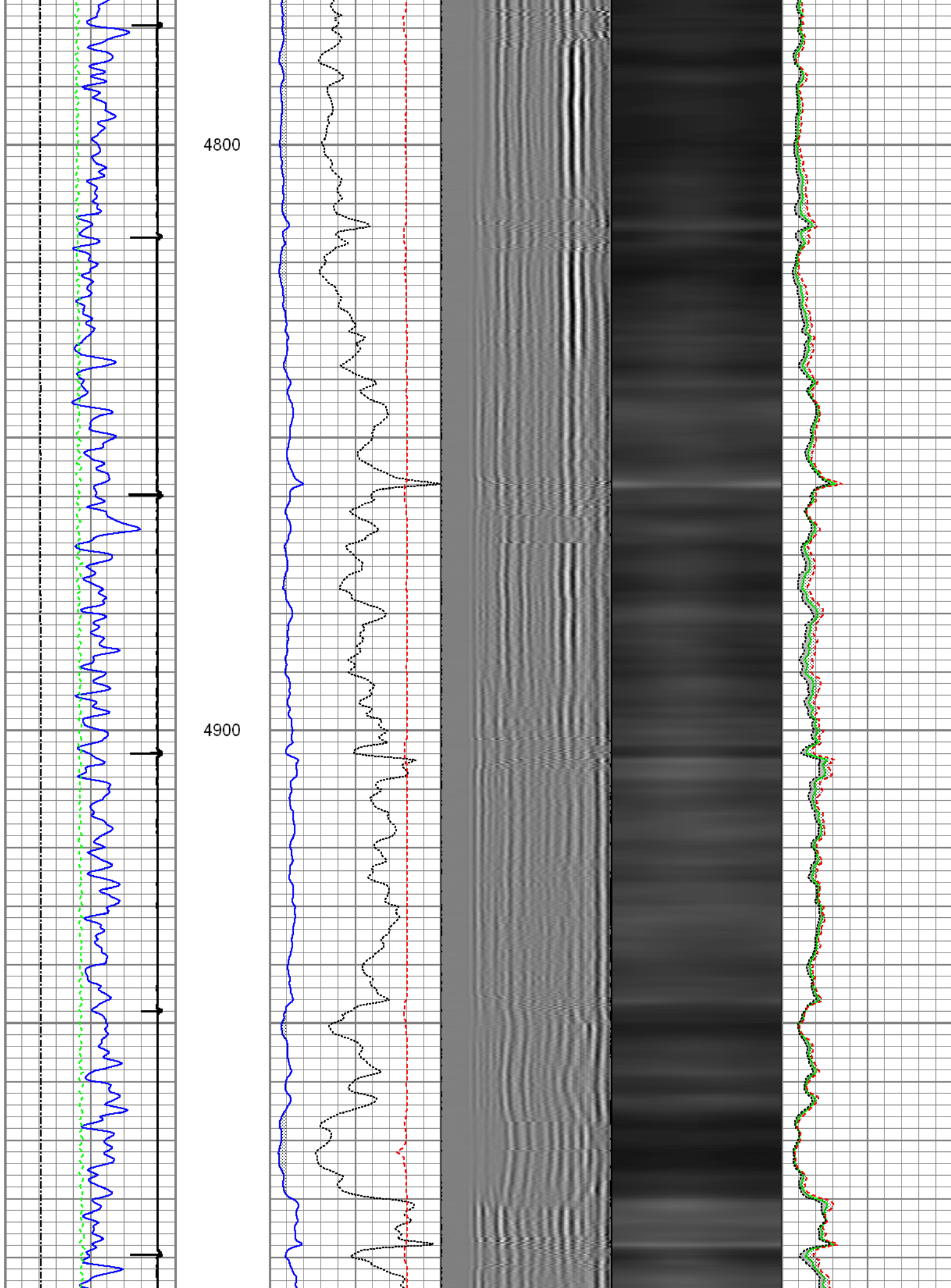
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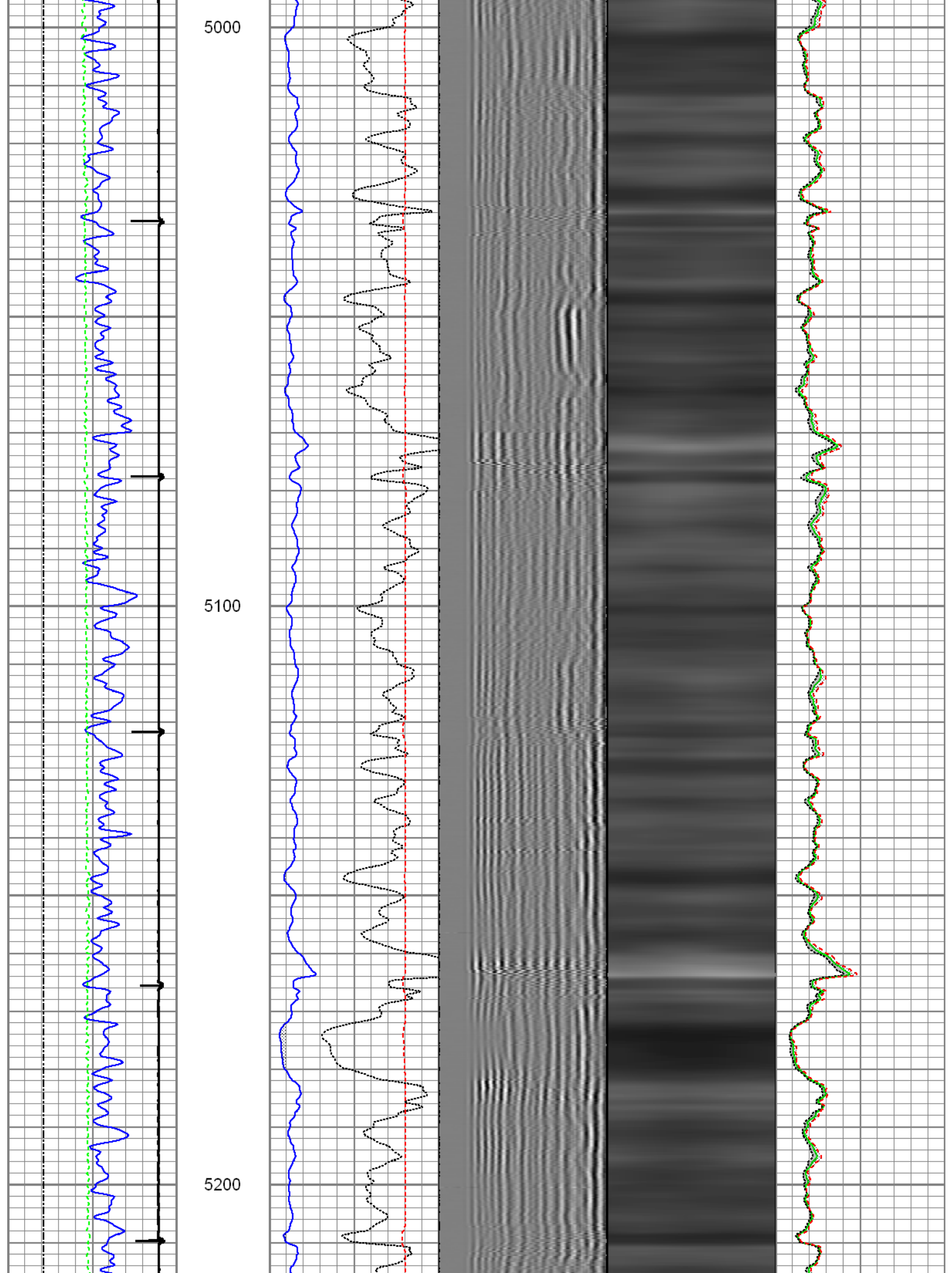


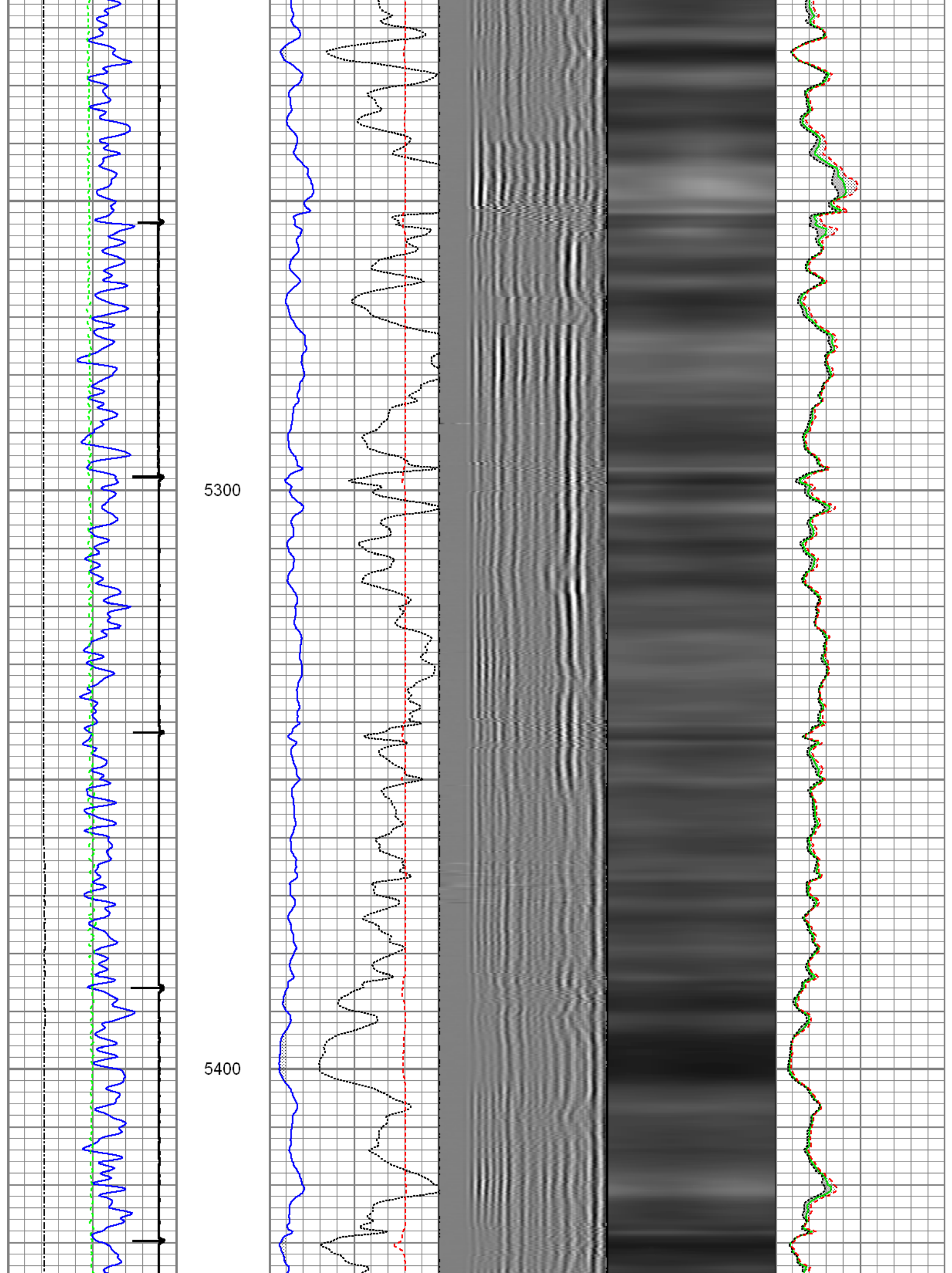
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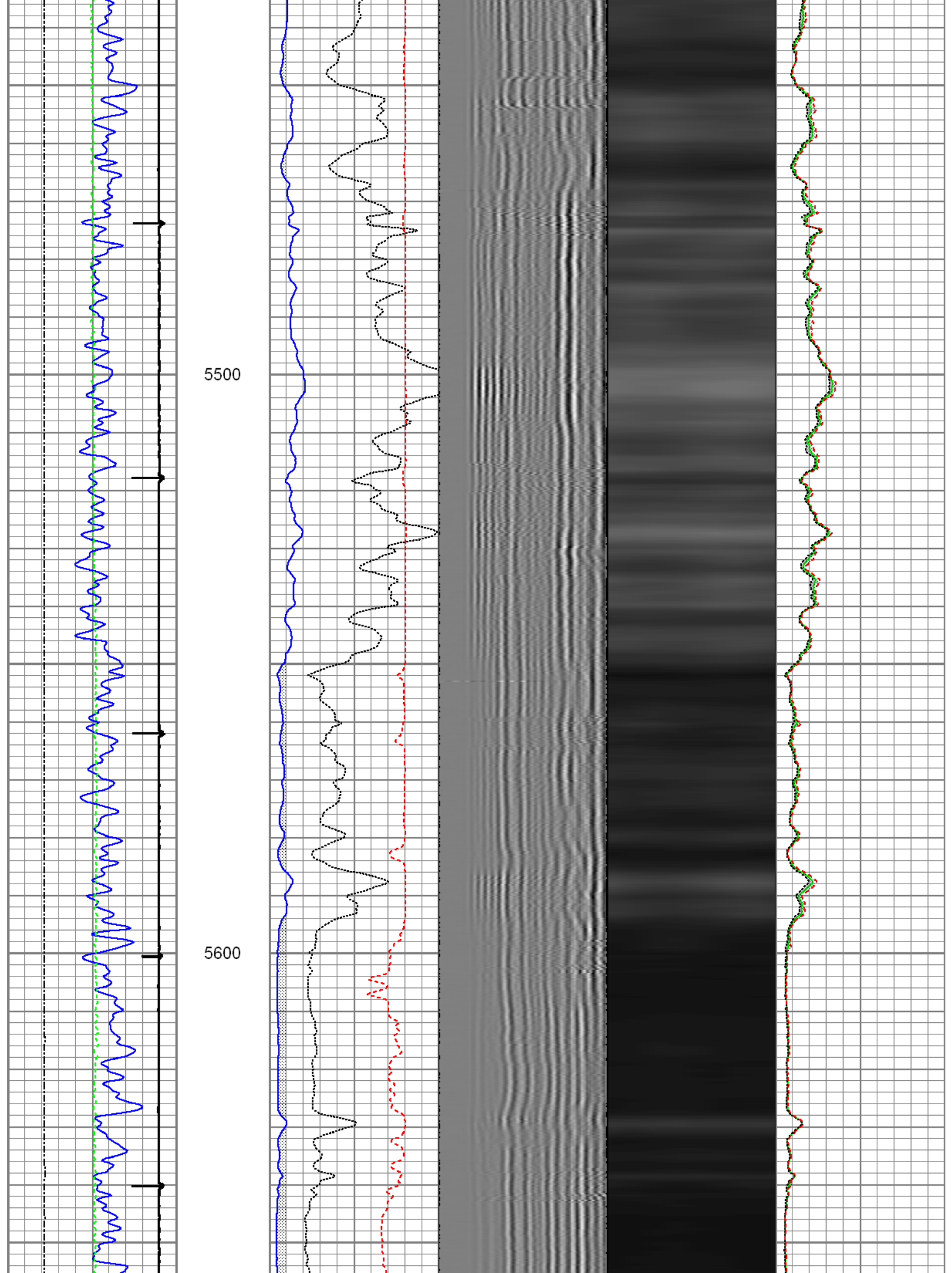
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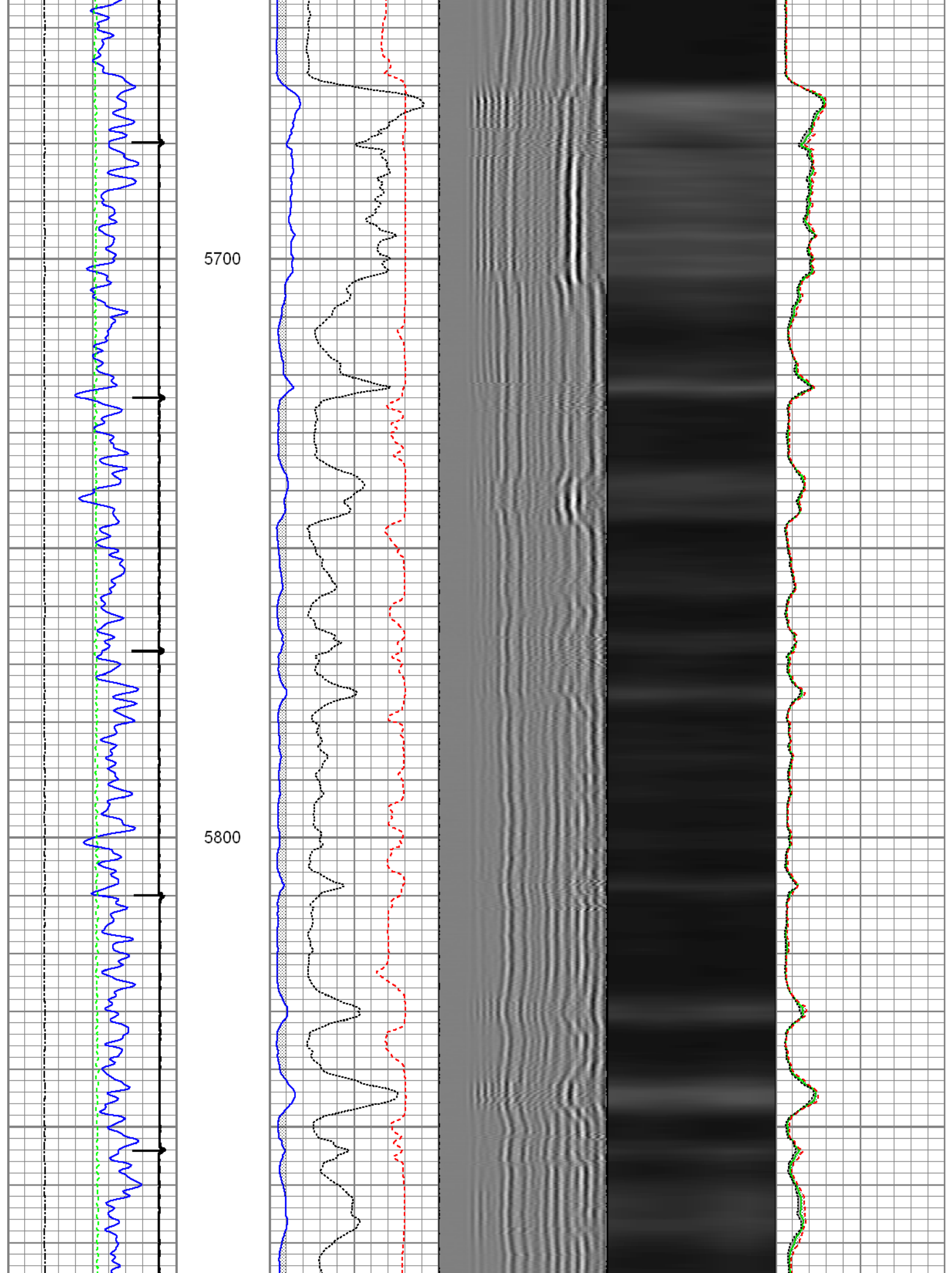




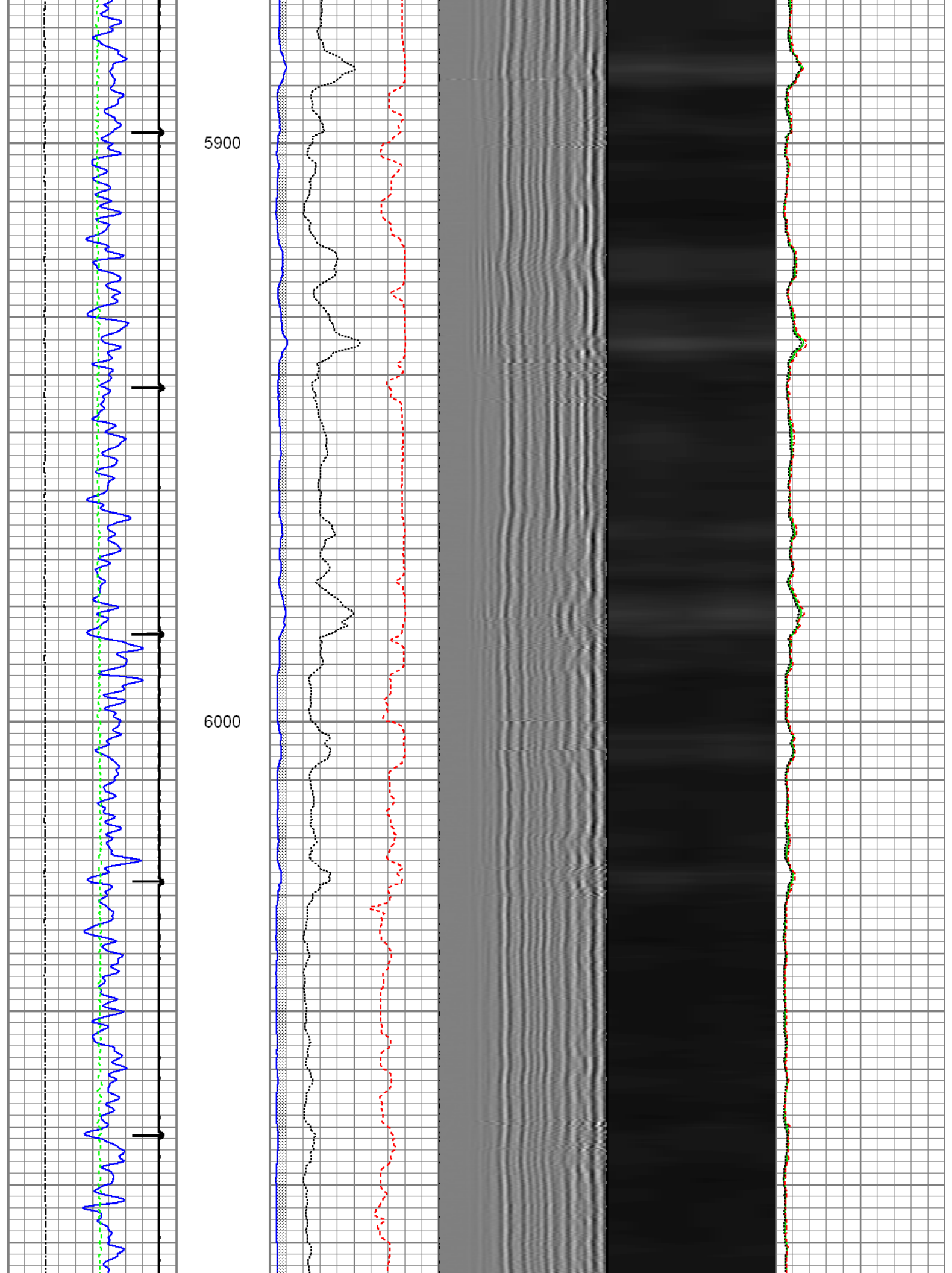








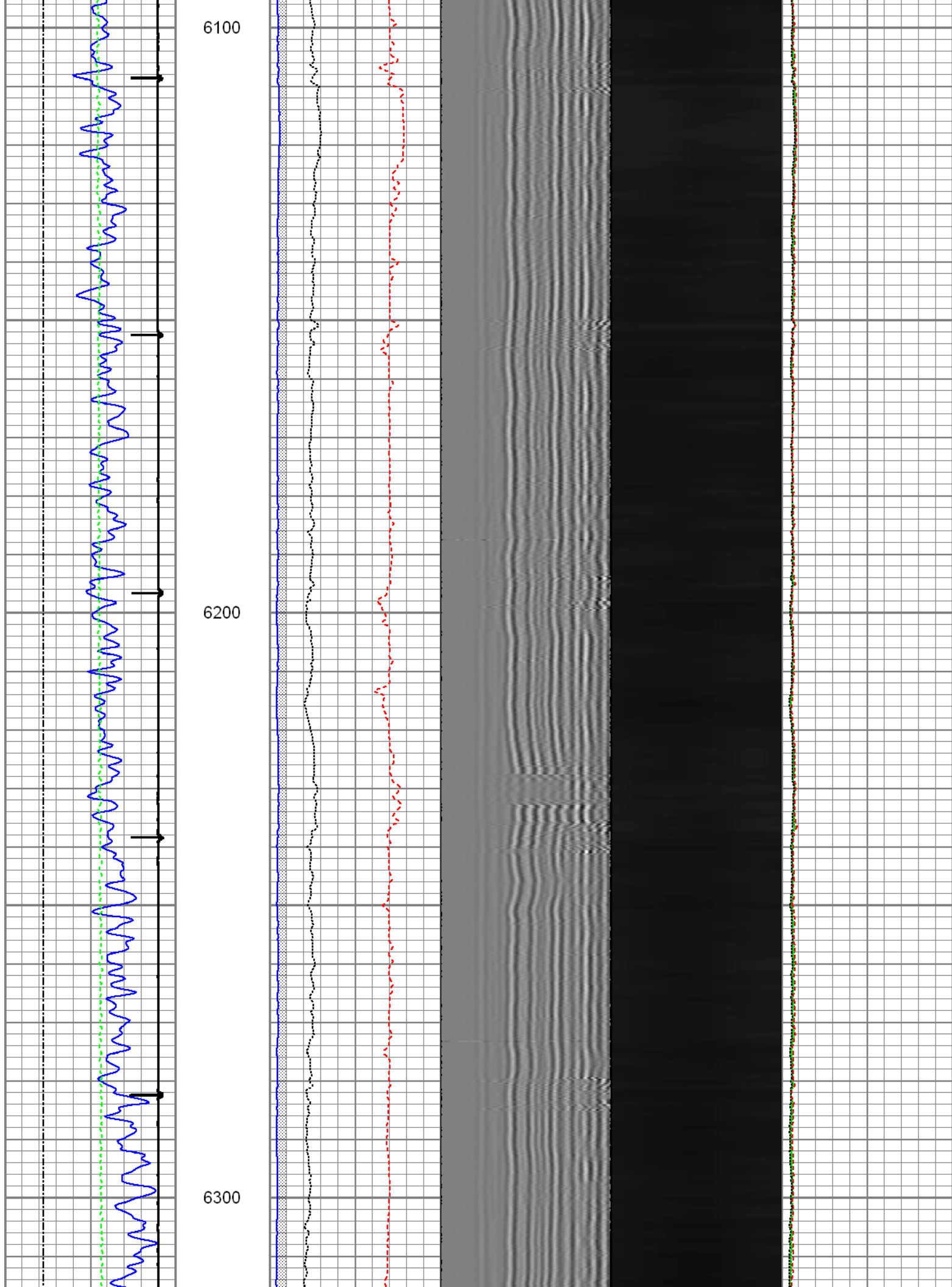


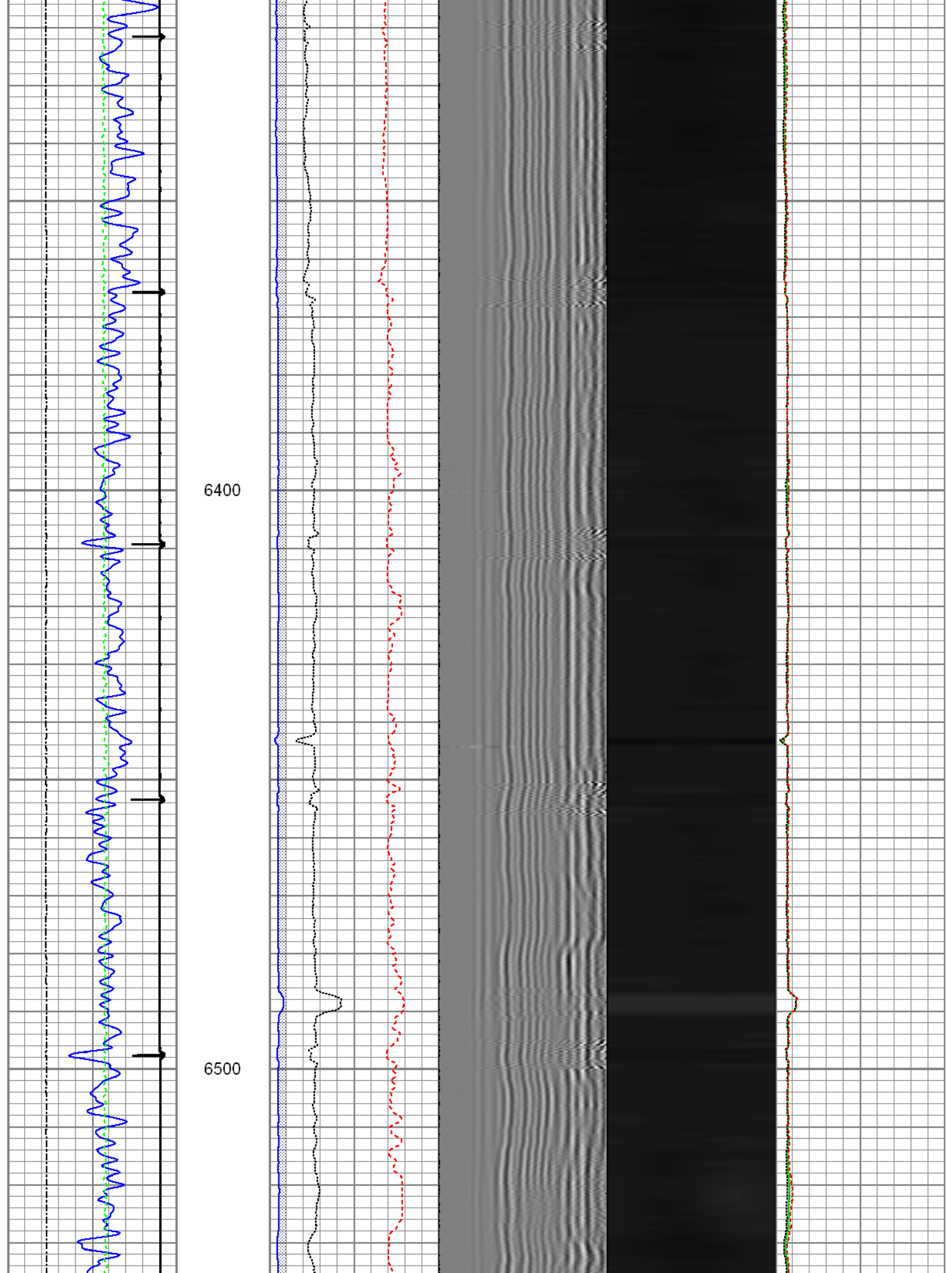


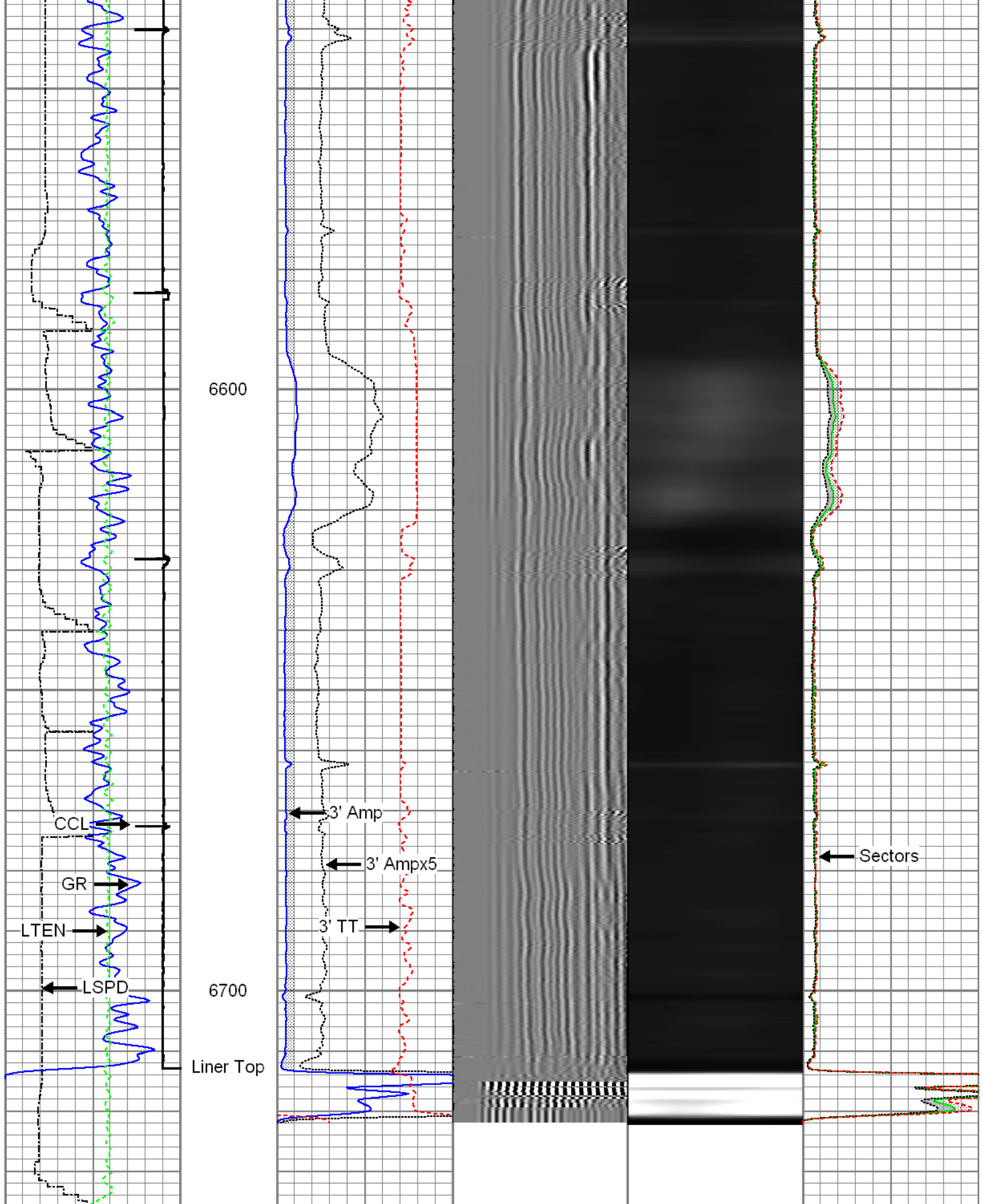
6100

6200

6300








|                        |                          |                         |            |                   |
|------------------------|--------------------------|-------------------------|------------|-------------------|
| Gamma Ray<br>(GAPI)    | 3' Amplitude<br>(mV)     | 5' Variable Density Log | Sector Map | Average Amplitude |
| 0 120                  | 0 100                    | 200 1200                |            | 0 100             |
| Line Speed<br>(ft/min) | 3' Amplitude x 5<br>(mV) |                         |            | Minimum Amplitude |
| -100 100               | 0 20                     |                         |            | 0 100             |



|                       |                |                   |
|-----------------------|----------------|-------------------|
| Line Tension          | 3' Travel Time | Maximum Amplitude |
| 0 (lb) 2000           | 650 (usec) 150 | 0 100             |
| Casing Collar Locator |                |                   |



# Repeat Pass

Logged With 2800 PSI Surface Induced Pressure

Database File: 0512337922\_anadarko\_greenleaf 37c-15hz\_01-23-15\_mit\_rbl.db

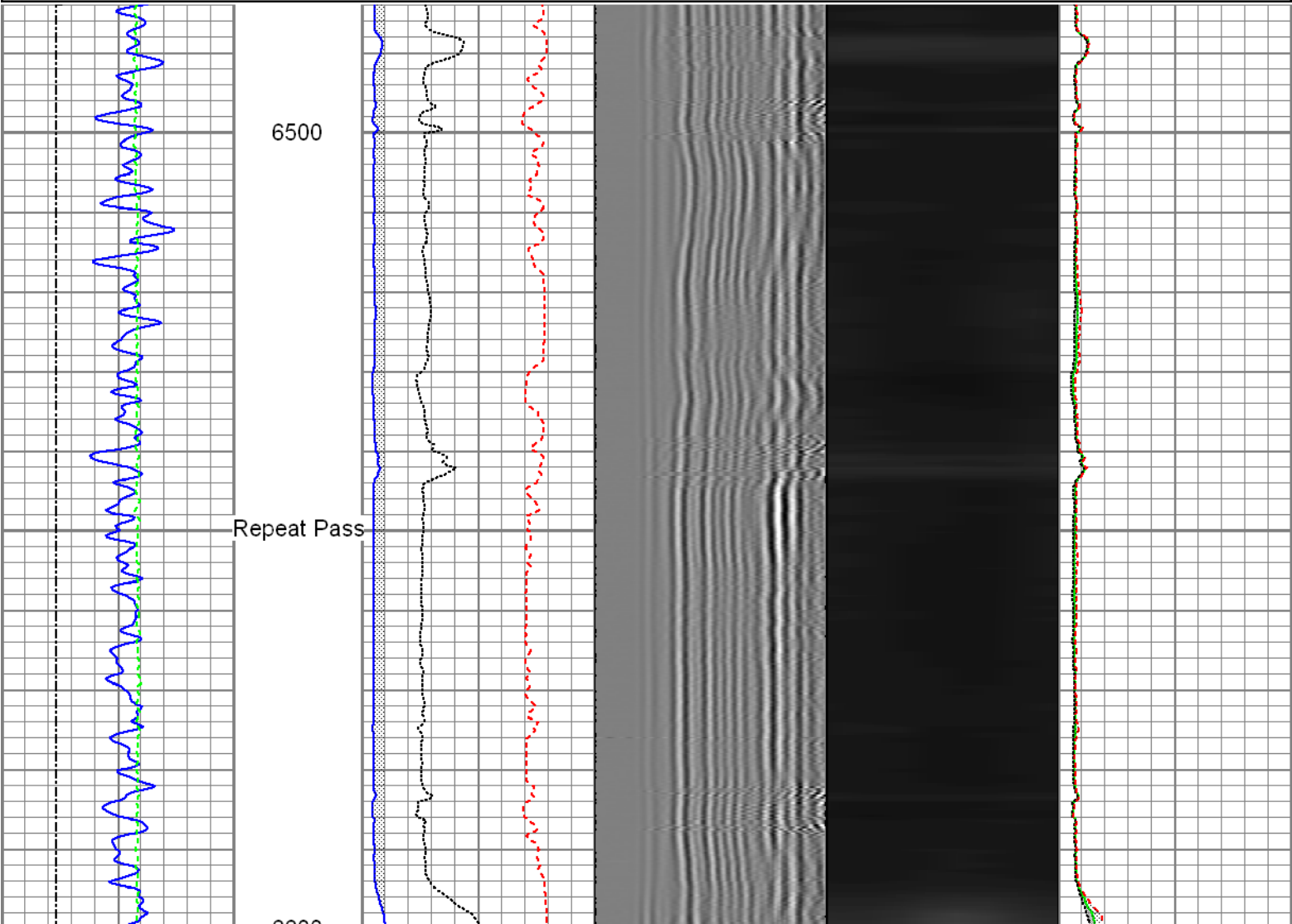
Dataset Pathname: repeat.1

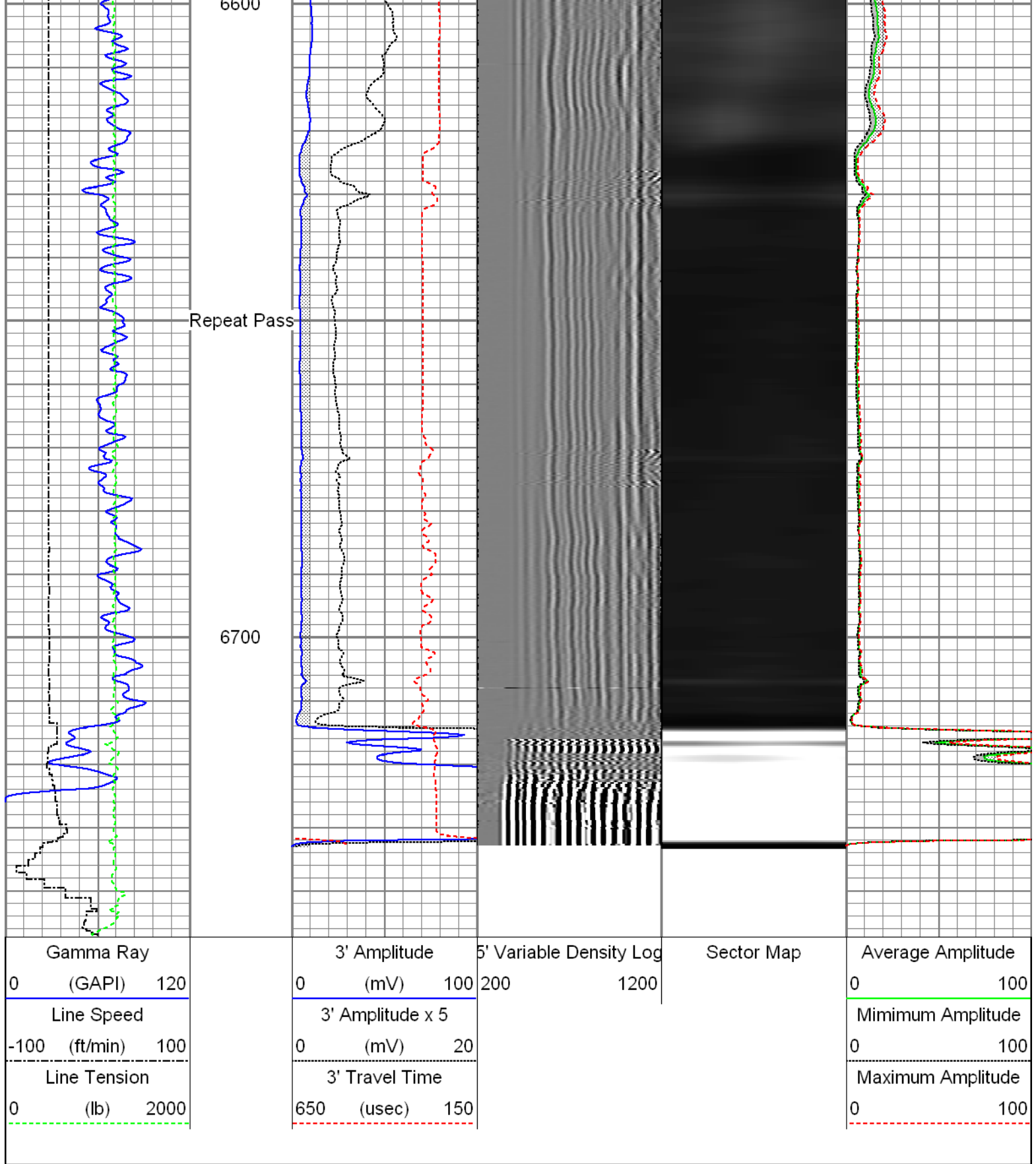
Presentation Format: rbt4\_mit


Dataset Creation: Mon Jan 26 15:08:07 2015 by Calc SCH 120430

Charted by: Depth in Feet scaled 1:240

|  |  |  |                       |   |
|--|--|--|-----------------------|---|
| <div>Gamma Ray</div> <div>0 (GAPI) 120</div> <div>Line Speed</div> <div>-100 (ft/min) 100</div> <div>Line Tension</div> <div>0 (lb) 2000</div> | <div>3' Amplitude</div> <div>0 (mV) 100</div> <div>3' Amplitude x 5</div> <div>0 (mV) 20</div> <div>3' Travel Time</div> <div>650 (usec) 150</div> | <div>5' Variable Density Log</div> <div>200 1200</div> | <div>Sector Map</div> | <div>Average Amplitude</div> <div>0 100</div> <div>Mimimum Amplitude</div> <div>0 100</div> <div>Maximum Amplitude</div> <div>0 100</div> |
|--|--|--|-----------------------|---|





| Sensor | Offset (ft) | Schematic   | Description  | Len (ft) | OD (in) | Wt (lb) |
|--------|-------------|---|--|----------|---------|---------|
|        |             |  | T_CH14375_1_GO<br>Titan 1-7/16" Assembled Electric Cable Head with 1" Fishing Neck | 1.03     | 1.44    | 4.00    |
|        |             |   | UW_AGS-UW_AGS_001 (10024281)<br>Sondex Adapter - GO Box to Sondex Pin              | 0.21     | 1.69    | 1.00    |
|        |             |   | UW_XTU-UW_XTU_002 (218874)<br>Crossover Ultrawire Toolbus to Ultralink             | 1.58     | 1.69    | 6.50    |

|  |       |  |   |      |      |        |  |
|--|-------|--|---|------|------|--------|--|
| GR   | 22.81 |  | UW_PGR-UW_PGR_020 (10019072)<br>Production Gamma Ray                              | 1.93 | 1.69 | 9.50   |  |
|  |       |  | UW_PRC #4 -DSSRAC (081)<br>2-3/4" DSS 5 Arm Roller Centralizer                    | 2.55 | 2.75 | 32.00  |  |
|  |       |  |   |      |      |        |  |
| WVF3FT   | 15.42 |  |   |      |      |        |  |
| WVFS1  | 15.42 |  | UW_RBT-UW_RBT_004 (1066)<br>Sondex Ultrawire 3-1/8" Radial Bond Tool              | 9.47 | 3.13 | 140.00 |  |
| WVFS2  | 15.42 |  |   |      |      |        |  |
| WVFS3  | 15.42 |  |   |      |      |        |  |
| WVFS4  | 15.42 |  |   |      |      |        |  |
| WVFS5  | 15.42 |  |   |      |      |        |  |
| WVFS6  | 15.42 |  |   |      |      |        |  |
| WVFS7  | 15.42 |  |   |      |      |        |  |
| WVFS8  | 15.42 |  |   |      |      |        |  |
| CBLTEMP  | 15.42 |  |   |      |      |        |  |
| CBLROT   | 15.42 |  |   |      |      |        |  |
| WVF5FT   | 14.42 |  |   |      |      |        |  |
|  |       |  | UW_PRC-DSSRAC (080)<br>2-3/4" DSS 5 Arm Roller Centralizer                        | 2.55 | 2.75 | 32.00  |  |
|  |       |  |   |      |      |        |  |
| MIT  | 5.41  |  | UW_MIT-UW_MIT40_042 (10014703)<br>40 Multifinger Imaging Tool                     | 4.54 | 2.75 | 61.10  |  |
|  |       |  |   |      |      |        |  |
|  |       |  | UW_PRC #3 -UW_PRC_057 (1102)<br>Sondex 2-3/4" 4-Arm Production Roller Centraliser | 2.98 | 2.75 | 32.00  |  |
|  |       |  |   |      |      |        |  |
|  |       |  | UW_BUL-UW_BUL_006 (10022928)<br>Sondex Ultrawire Bullnose Terminator              | 0.22 | 1.69 | 1.20   |  |
| TSTAMP   | 0.00  |  |   |      |      |        |  |
| Dataset: 0512337922_anadarko_greenleaf 37c-15hz_01-23-15_mit_rbl.db: field/well/run1/merge1.1<br>Total Length: 27.05 ft<br>Total Weight: 319.30 lb<br>O.D. 3.13 in |       |  |   |      |      |        |  |

| Calibration Report                           |  |
|--|--|
| Database File:                               | 0512337922_anadarko_greenleaf 37c-15hz_01-23-15_mit_rbl.db |
| Dataset Pathname:                            | merge1.1   |
| Dataset Creation:                            | Mon Jan 26 14:47:24 2015 by Calc SCH 120430                |
| Multi-finger Imaging Tool Calibration Report |  |

Serial Number: 10014703  
Number of Fingers: 40  
Tool Model: UW\_MIT40\_042

Inclinometer Calibration Report  
Performed: Fri Sep 20 11:47:48 2013  
Calibration Angle: 45

|                    |         |       |
|--------------------|---------|-------|
| Vertical:          | Inc X   | Inc Y |
|                    | 1963    | 1960  |
| Finger 1 up:       | 1748    | 1727  |
| Finger 31 up:      | 2195    | 1742  |
| Finger 21 up:      | 2178    | 2188  |
| Finger 11 up:      | 1727    | 2173  |
| Sensitivity ratio: | 1.00706 |       |
| X-axis angle:      | 132.825 |       |
| Deviation const.:  | 317.775 |       |

Finger Calibration Report  
Performed: Fri Jan 23 11:42:41 2015

| Ring size: | 4    |       | 5    |       | 6    |       | 7    |
|------------|------|-------|------|-------|------|-------|------|
| (in)       |      | Sens  |      | Sens  |      | Sens  |      |
| Finger 01: | 1088 | 385.0 | 1473 | 384.0 | 1857 | 401.0 | 2258 |
| Finger 02: | 1048 | 391.0 | 1439 | 398.0 | 1837 | 424.0 | 2261 |
| Finger 03: | 1046 | 377.0 | 1423 | 385.0 | 1808 | 419.0 | 2227 |
| Finger 04: | 1014 | 389.0 | 1403 | 407.0 | 1810 | 439.0 | 2249 |
| Finger 05: | 1022 | 366.0 | 1388 | 380.0 | 1768 | 407.0 | 2175 |
| Finger 06: | 1032 | 383.0 | 1415 | 394.0 | 1809 | 421.0 | 2230 |
| Finger 07: | 1043 | 379.0 | 1422 | 387.0 | 1809 | 414.0 | 2223 |
| Finger 08: | 1003 | 378.0 | 1381 | 401.0 | 1782 | 426.0 | 2208 |
| Finger 09: | 1077 | 382.0 | 1459 | 386.0 | 1845 | 403.0 | 2248 |
| Finger 10: | 1065 | 383.0 | 1448 | 391.0 | 1839 | 412.0 | 2251 |
| Finger 11: | 1005 | 376.0 | 1381 | 392.0 | 1773 | 419.0 | 2192 |
| Finger 12: | 1113 | 375.0 | 1488 | 370.0 | 1858 | 380.0 | 2238 |
| Finger 13: | 1056 | 372.0 | 1428 | 387.0 | 1815 | 414.0 | 2229 |
| Finger 14: | 1022 | 388.0 | 1410 | 403.0 | 1813 | 428.0 | 2241 |
| Finger 15: | 991  | 385.0 | 1376 | 404.0 | 1780 | 429.0 | 2209 |
| Finger 16: | 1026 | 378.0 | 1404 | 397.0 | 1801 | 419.0 | 2220 |
| Finger 17: | 1072 | 375.0 | 1447 | 383.0 | 1830 | 397.0 | 2227 |
| Finger 18: | 1114 | 379.0 | 1493 | 386.0 | 1879 | 403.0 | 2282 |
| Finger 19: | 1062 | 382.0 | 1444 | 396.0 | 1840 | 412.0 | 2252 |
| Finger 20: | 991  | 383.0 | 1374 | 400.0 | 1774 | 426.0 | 2200 |
| Finger 21: | 1050 | 377.0 | 1427 | 386.0 | 1813 | 410.0 | 2223 |
| Finger 22: | 1041 | 381.0 | 1422 | 393.0 | 1815 | 411.0 | 2226 |
| Finger 23: | 1095 | 385.0 | 1480 | 393.0 | 1873 | 408.0 | 2281 |
| Finger 24: | 1064 | 359.0 | 1423 | 360.0 | 1783 | 382.0 | 2165 |
| Finger 25: | 1085 | 391.0 | 1476 | 400.0 | 1876 | 413.0 | 2289 |
| Finger 26: | 1033 | 375.0 | 1408 | 389.0 | 1797 | 409.0 | 2206 |
| Finger 27: | 1203 | 404.0 | 1607 | 397.0 | 2004 | 407.0 | 2411 |
| Finger 28: | 1078 | 372.0 | 1450 | 382.0 | 1832 | 406.0 | 2238 |
| Finger 29: | 1023 | 381.0 | 1404 | 396.0 | 1800 | 419.0 | 2219 |
| Finger 30: | 994  | 378.0 | 1372 | 398.0 | 1770 | 425.0 | 2195 |
| Finger 31: | 1219 | 411.0 | 1630 | 406.0 | 2036 | 420.0 | 2456 |
| Finger 32: | 1008 | 381.0 | 1389 | 384.0 | 1773 | 404.0 | 2177 |
| Finger 33: | 1193 | 425.0 | 1618 | 420.0 | 2038 | 434.0 | 2472 |
| Finger 34: | 979  | 379.0 | 1358 | 391.0 | 1749 | 418.0 | 2167 |
| Finger 35: | 1134 | 405.0 | 1539 | 410.0 | 1949 | 427.0 | 2376 |
| Finger 36: | 1039 | 370.0 | 1409 | 373.0 | 1782 | 399.0 | 2181 |
| Finger 37: | 1128 | 407.0 | 1535 | 405.0 | 1940 | 424.0 | 2364 |
| Finger 38: | 1089 | 381.0 | 1470 | 380.0 | 1850 | 404.0 | 2254 |
| Finger 39: | 1063 | 370.0 | 1433 | 370.0 | 1803 | 388.0 | 2191 |
| Finger 40: | 992  | 395.0 | 1387 | 410.0 | 1797 | 442.0 | 2239 |

Segmented Cement Bond Log Calibration Report



Serial Number: 1066  
Tool Model: UW\_RBT\_004  
  
Calibration Casing Diameter: 7.000 in  
Calibration Depth: 802.885 ft

Master Calibration, performed Mon Jan 26 14:47:21 2015:

|     | Raw (v) |       | Calibrated (mv) |         | Results |        |
|-----|---------|-------|-----------------|---------|---------|--------|
|     | Zero    | Cal   | Zero            | Cal     | Gain    | Offset |
| 3FT | 0.004   | 0.703 | 0.800           | 62.165  | 87.846  | 0.434  |
| 5FT | 0.003   | 0.643 | 0.800           | 62.165  | 95.870  | 0.489  |
| S1  | 0.004   | 0.665 | 0.000           | 100.000 | 151.474 | -0.662 |
| S2  | 0.004   | 0.672 | 0.000           | 100.000 | 149.765 | -0.624 |
| S3  | 0.004   | 0.681 | 0.000           | 100.000 | 147.751 | -0.573 |
| S4  | 0.004   | 0.702 | 0.000           | 100.000 | 143.286 | -0.551 |
| S5  | 0.004   | 0.710 | 0.000           | 100.000 | 141.587 | -0.516 |
| S6  | 0.004   | 0.721 | 0.000           | 100.000 | 139.466 | -0.508 |
| S7  | 0.004   | 0.723 | 0.000           | 100.000 | 139.097 | -0.560 |
| S8  | 0.005   | 0.696 | 0.000           | 100.000 | 144.664 | -0.657 |

Gamma Ray Calibration Report

Serial Number: 10019072  
Tool Model: UW\_PGR\_020  
Performed: Sun Jun 13 13:33:21 1993  
  
Calibrator Value: 1.0 GAPI  
  
Background Reading: 0.0 cps  
Calibrator Reading: 1.0 cps  
  
Sensitivity: 1.0000 GAPI/cps



Company Kerr McGee Oil & Gas Onshore LP  
Well Greenleaf 37C-15HZ  
Field Wattenberg  
County Weld  
State Colorado