



Radial Cement Bond  
Gamma Ray  
Casing Collar Log

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

Well Wagner 1N-E10HZ

Field Wattenberg

County Weld State Colorado

Location: API #: 05-123-43475

SEC 22 TWP 1N RGE 67W

Permanent Datum Ground Level Elevation 4971'

Log Measured From Kelly Bushing 21 FT

Drilling Measured From Kelly Bushing

Other Services  
MIT  
JBGR

Elevation

K.B. 4992'  
D.F. ---  
G.L. 4971'

Company Kerr-McGee Oil & Gas Onshore, L.P.  
Well Wagner 1N-E10HZ  
Field Wattenberg  
County Weld  
State Colorado

Date	08-DEC-2017
Run Number	Two
Depth Driller	14872 FT
Depth Logger	5730 FT
Bottom Logged Interval	5725 FT
Top Log Interval	Surface
Open Hole Size	---
Type Fluid	Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	186°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	12:50
Equipment Number	HD-325
Location	Fort Lupton, CO
Recorded By	C. Sisneros
Witnessed By	Justin Cleveland
Recorded By	S. Hopper
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 1880 FT
Intermediate #1	7 26 HCP-110 Surface 5884 FT
Intermediate #2	5 --- --- 5654 FT 5678 FT
Liner	4 1/2 11.6 P-110 5678 FT 14840 FT

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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

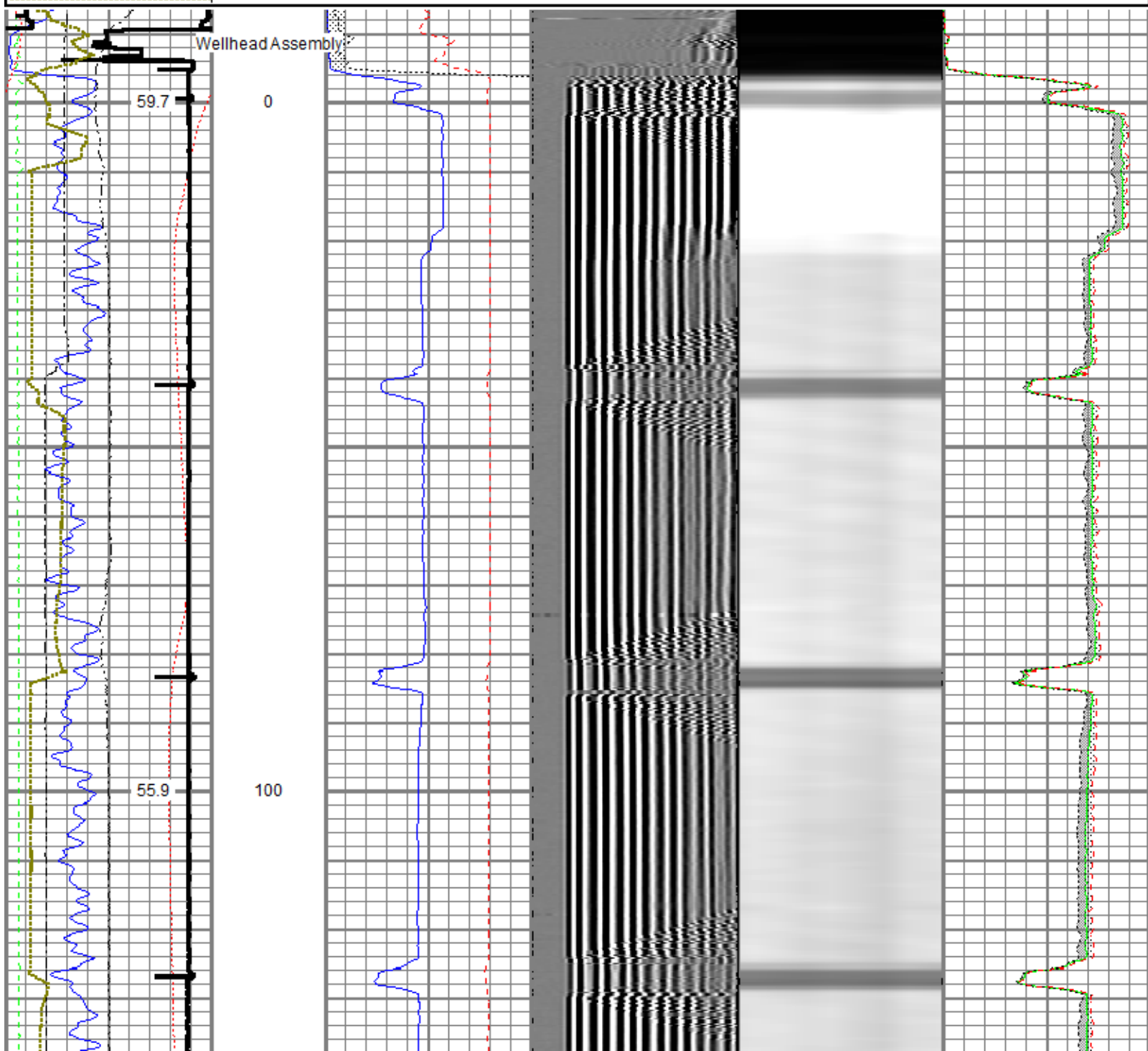
Log ran as per customer request  
Depth referenced to Casing Tally reported Liner Top at 5654 FT  
Adjusted -29 FT to correlate with Liner Top  
Gauge Ring/Junk Basket ran to 5845 FT with no debris  
Log ran from as deep as possible in heel to Surface  
Recorded with 2800 PSI Surface Induced Pressure  
Logging tools were clean and free of any debris upon completion of operations  
  
Thank you for choosing Reliance Oilfield Services, LLC!!

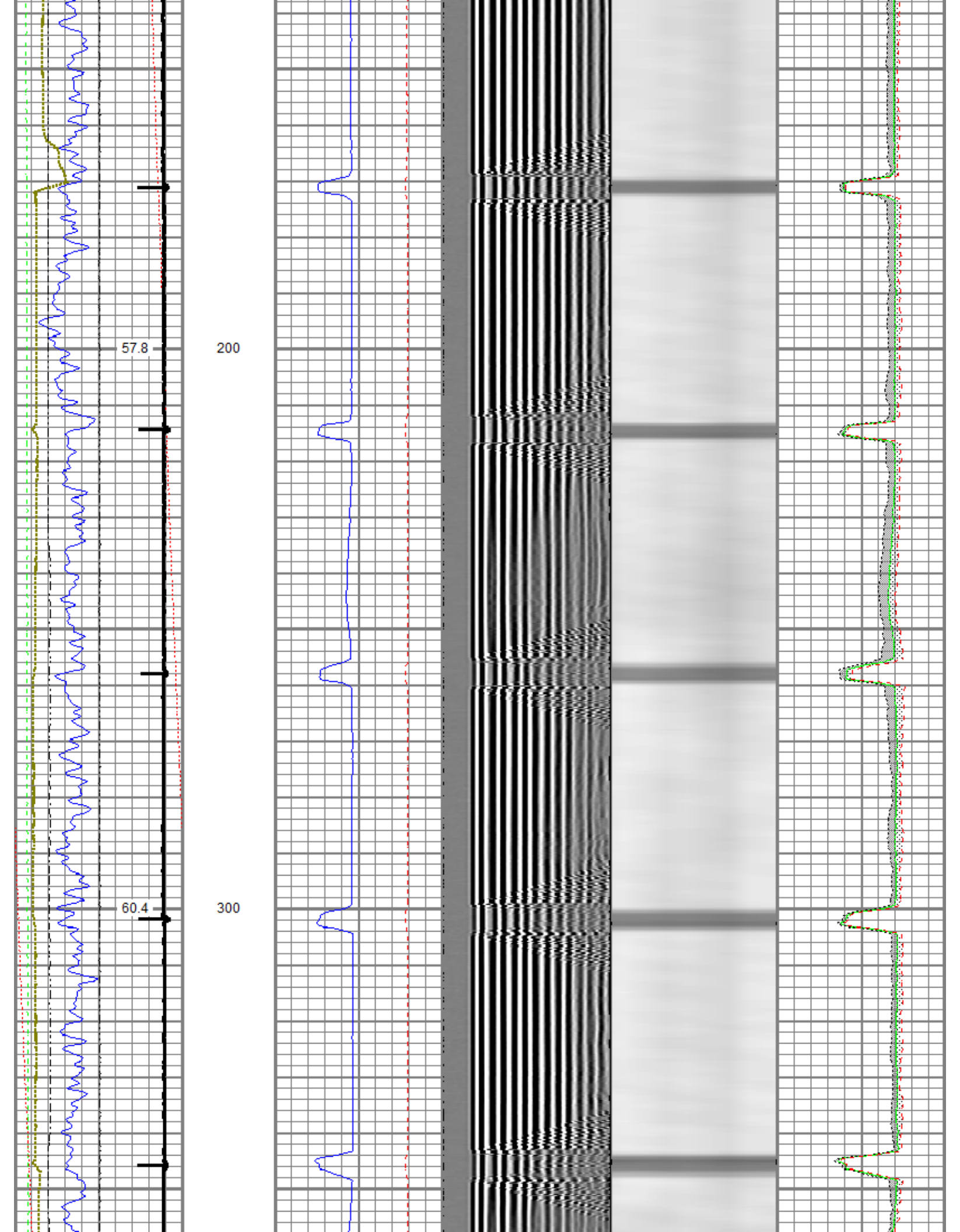
Main Pass

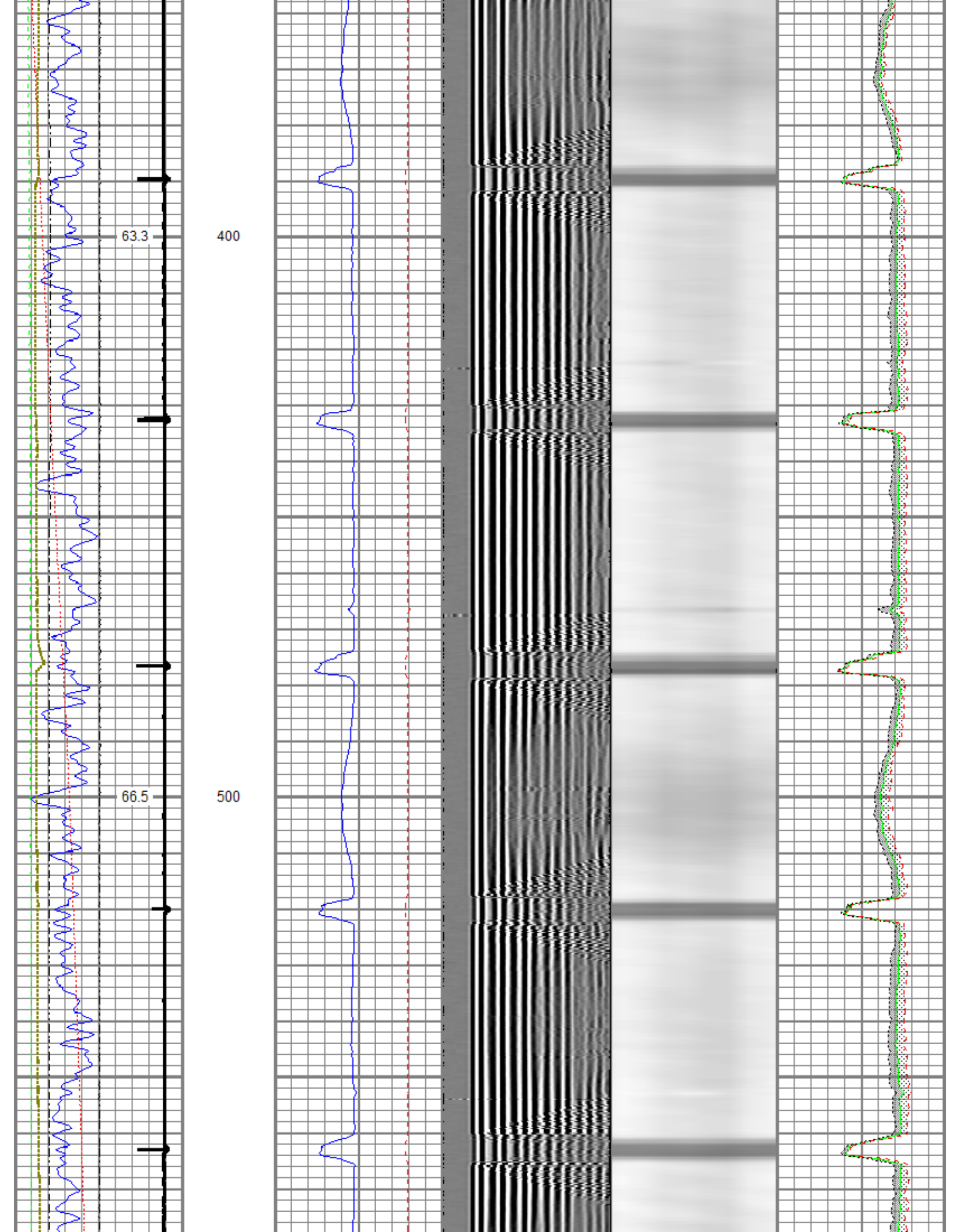


Database File anadarko\_wagner 1n-e10hz\0512343475\_anadarko\_wagner 1n-e10hz\_rbl\_12-08-17.db  
 Dataset Pathname pass4.2  
 Presentation Format ros\_rbt\_mit\_sx  
 Dataset Creation Fri Dec 08 15:20:44 2017  
 Charted by Depth in Feet scaled 1:240

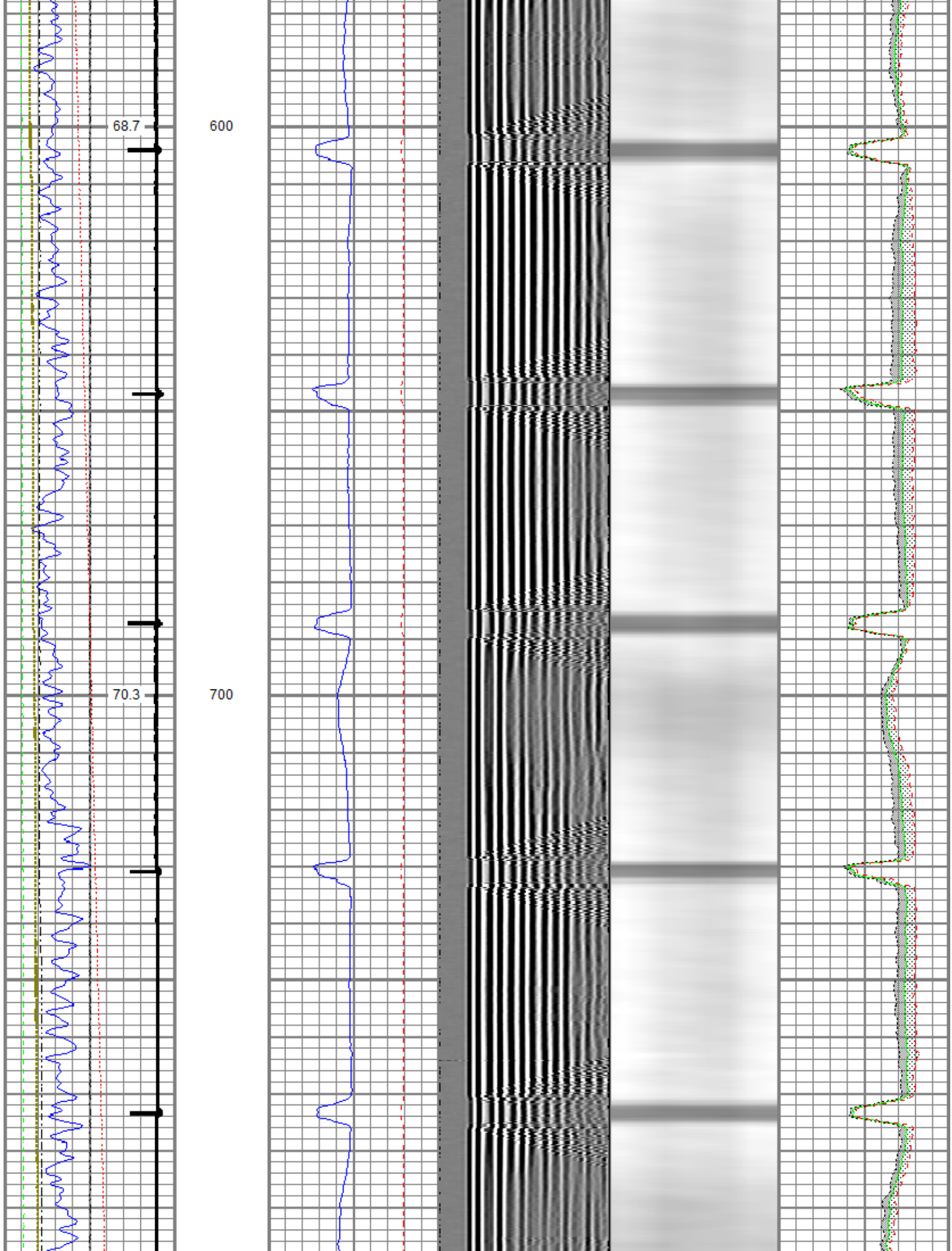
Gamma Ray	0	3' Amplitude (mV) 100	5' Variable Density Log	Sector Map	0	Average Amplitude 100
(GAPI) 120		3' Amplitude x 5	200			Minimum Amplitude
Line Speed	0	(mV) 20			0	100
(ft/min) 100		3' Travel Time				Maximum Amplitude
Line Tension (lb) 2000	0	650 (usec) 150			0	100
Differential Temperature			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

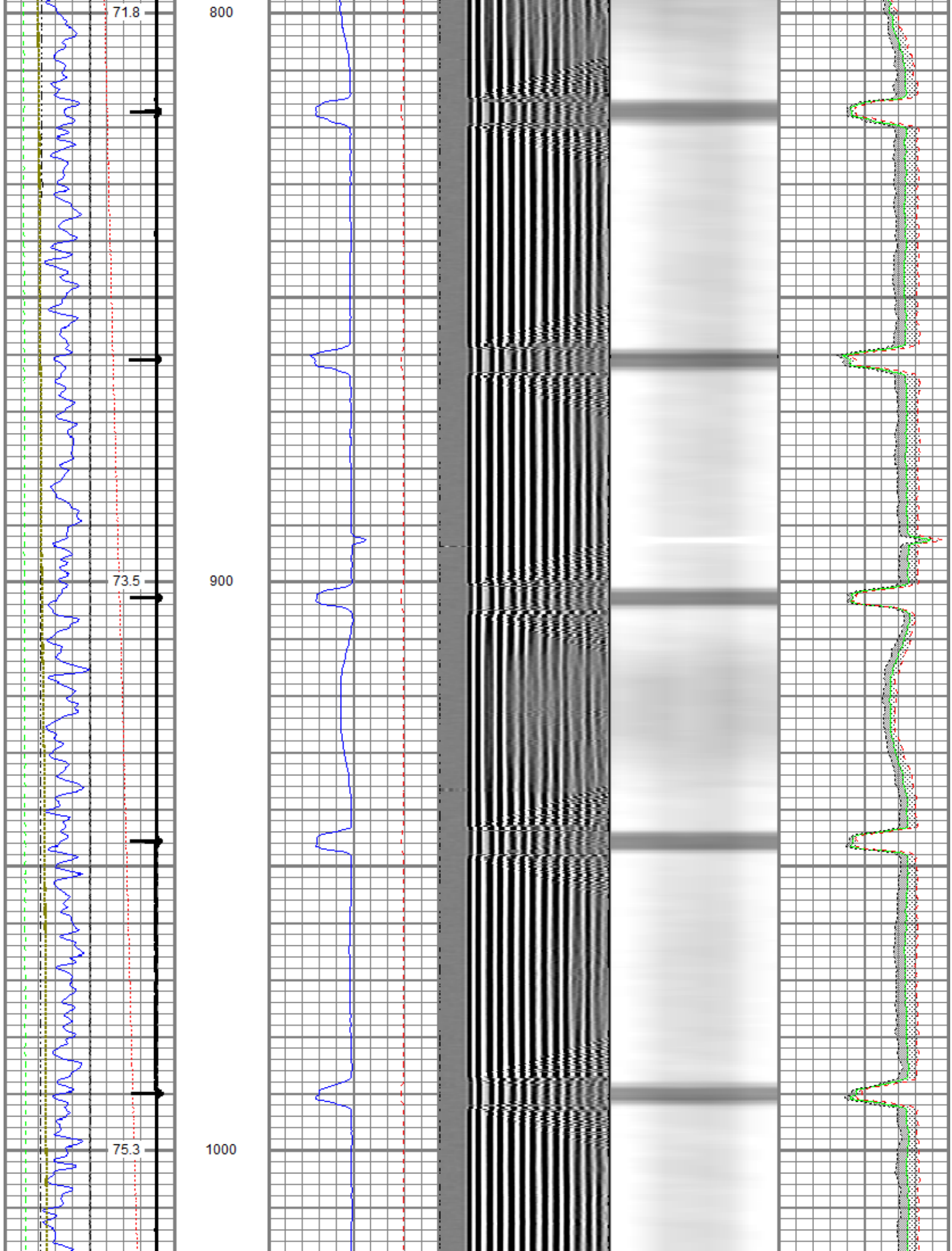


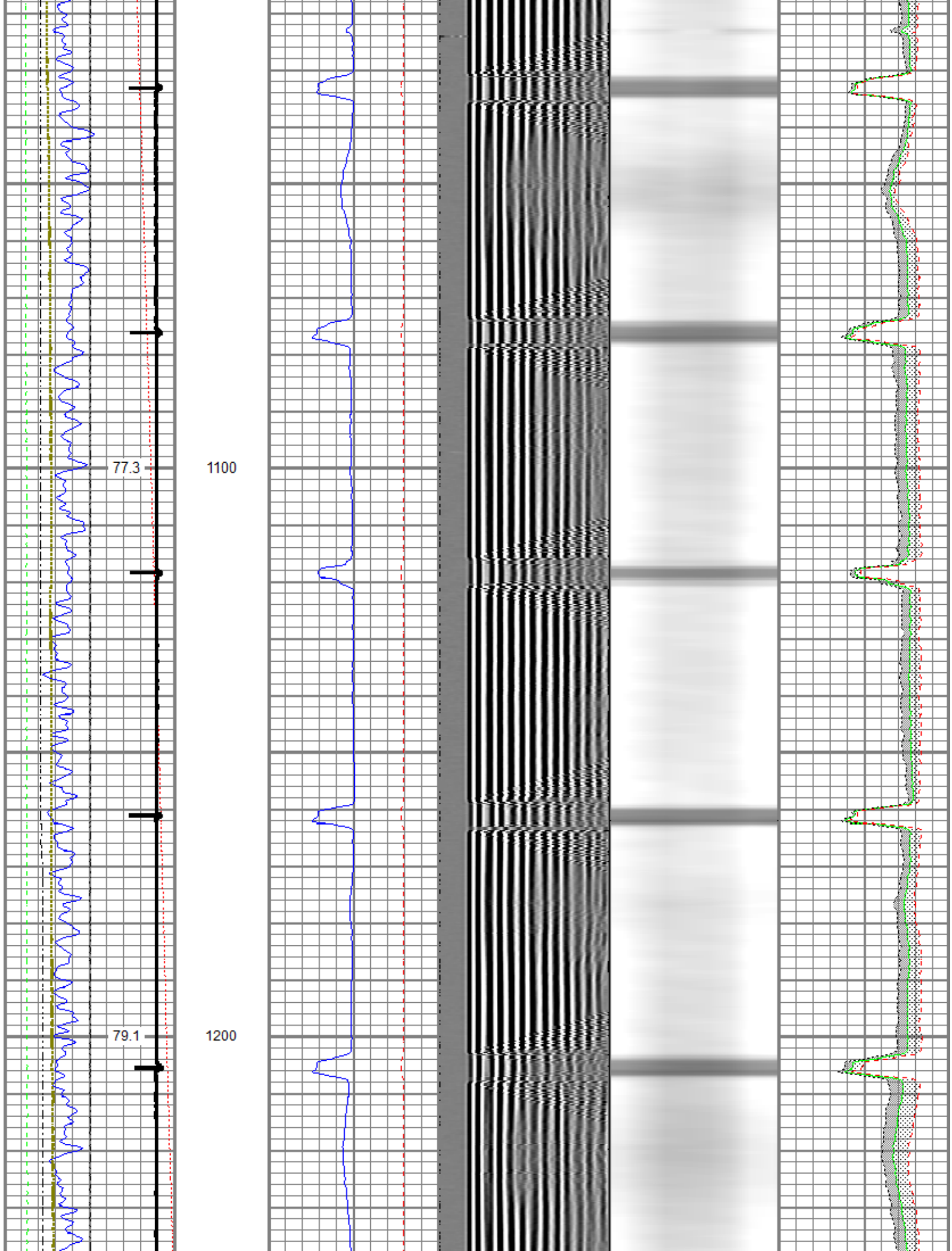


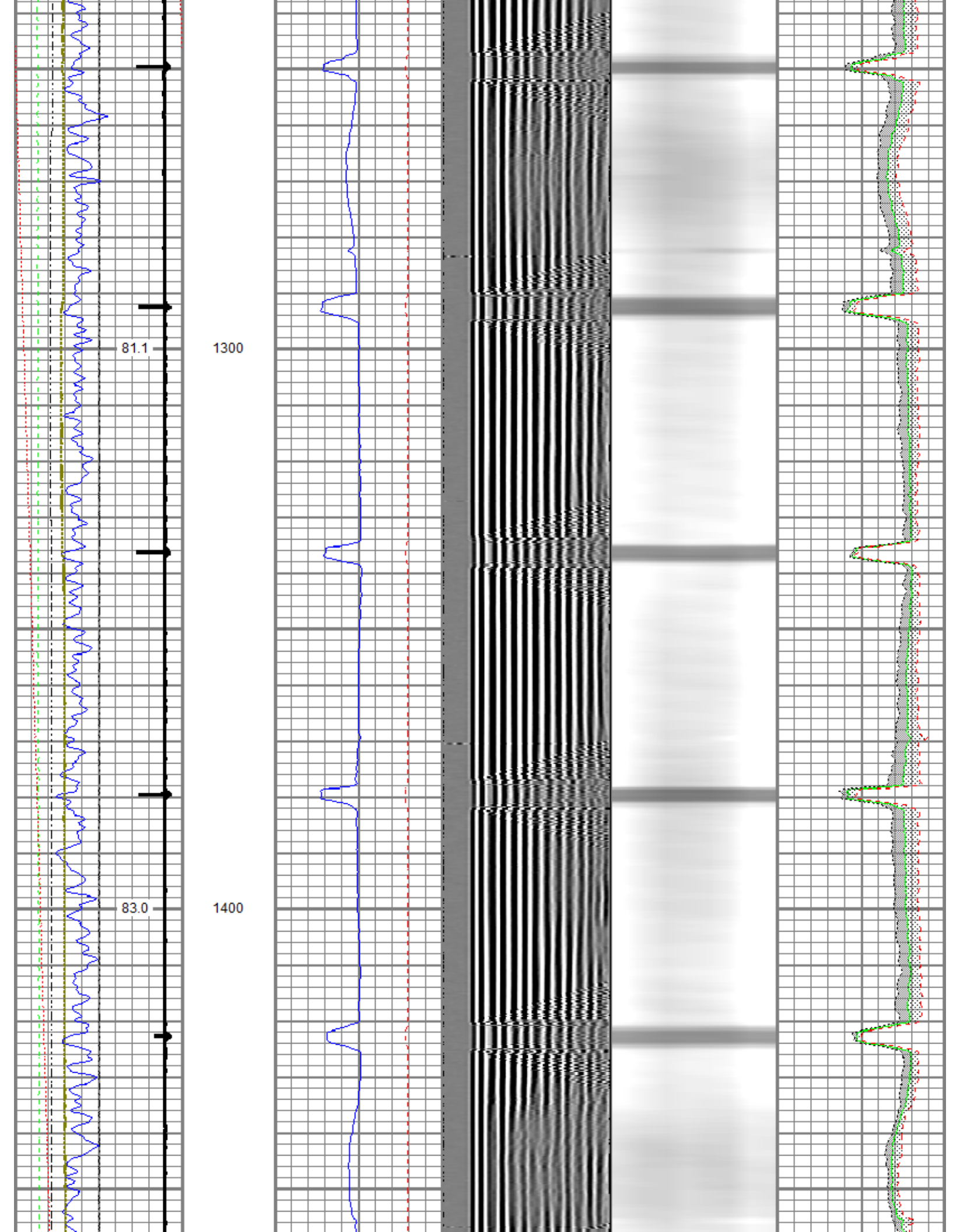




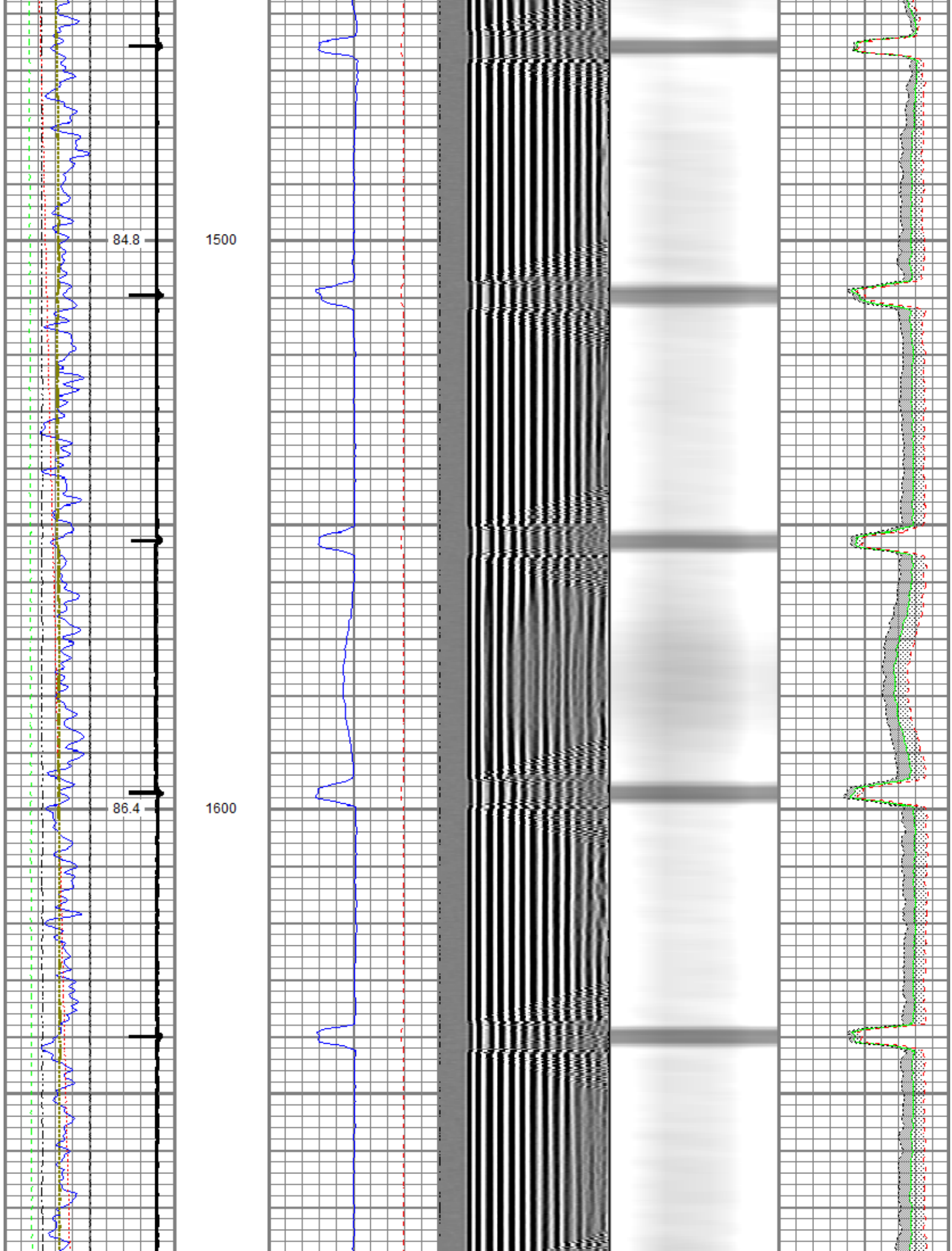


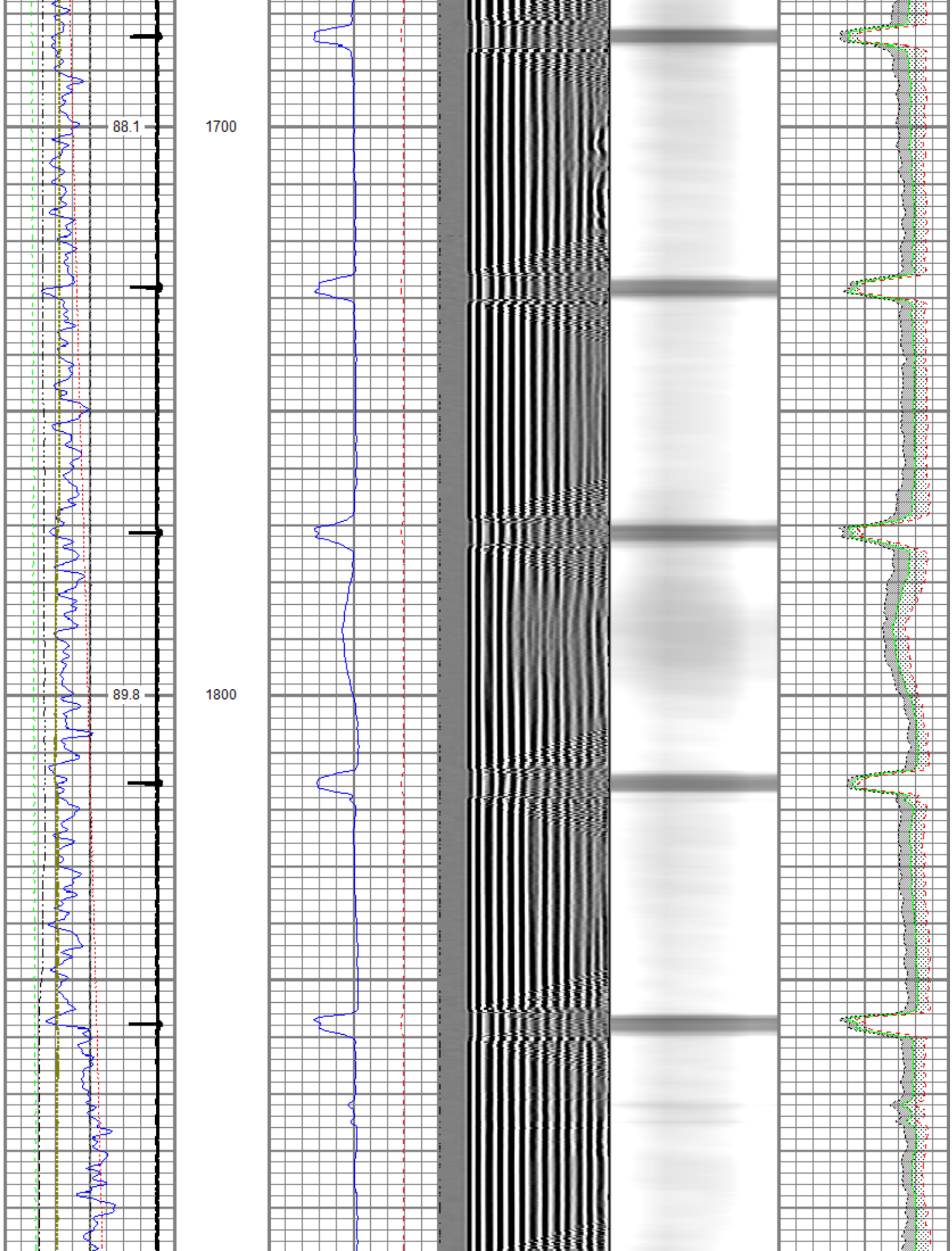


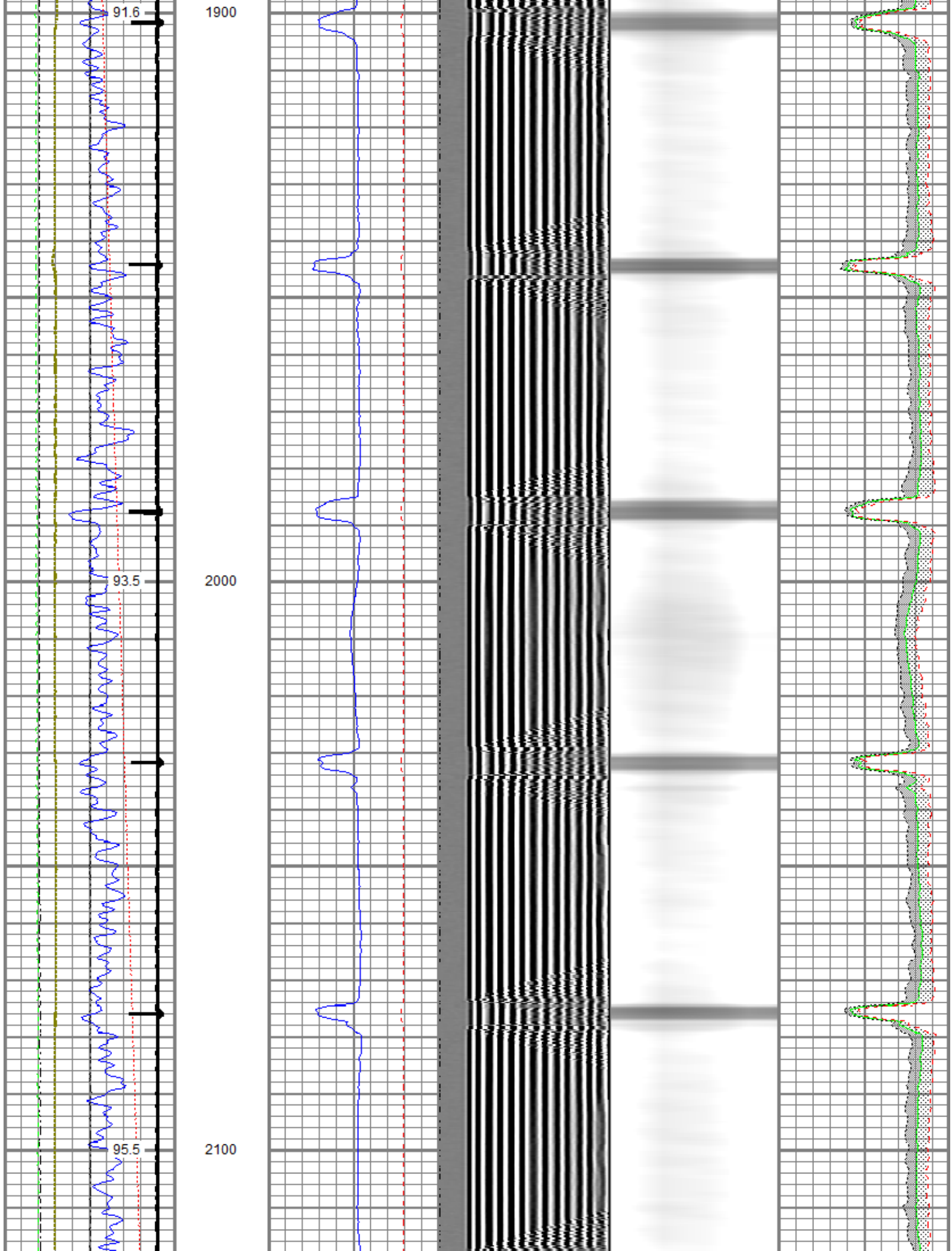


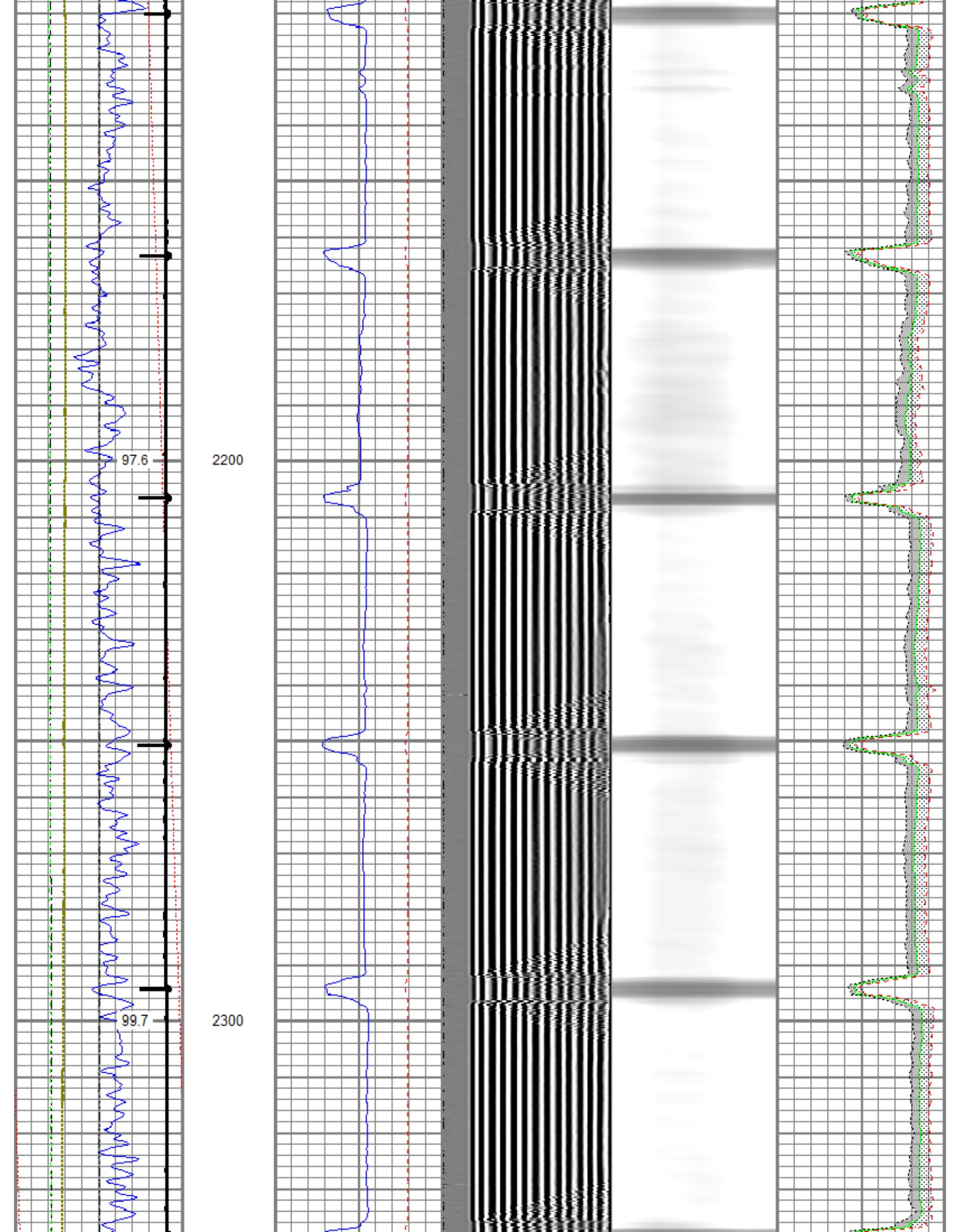




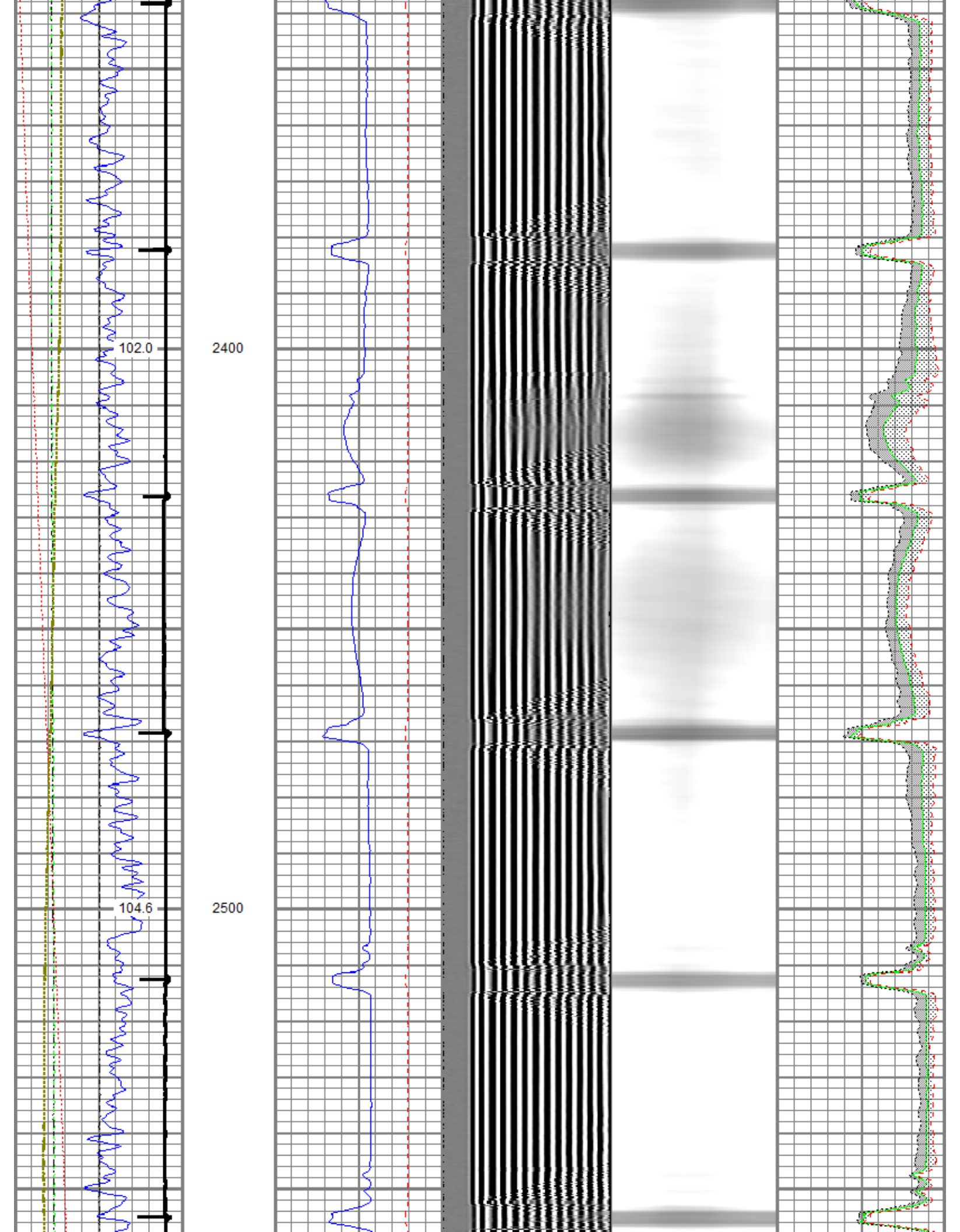


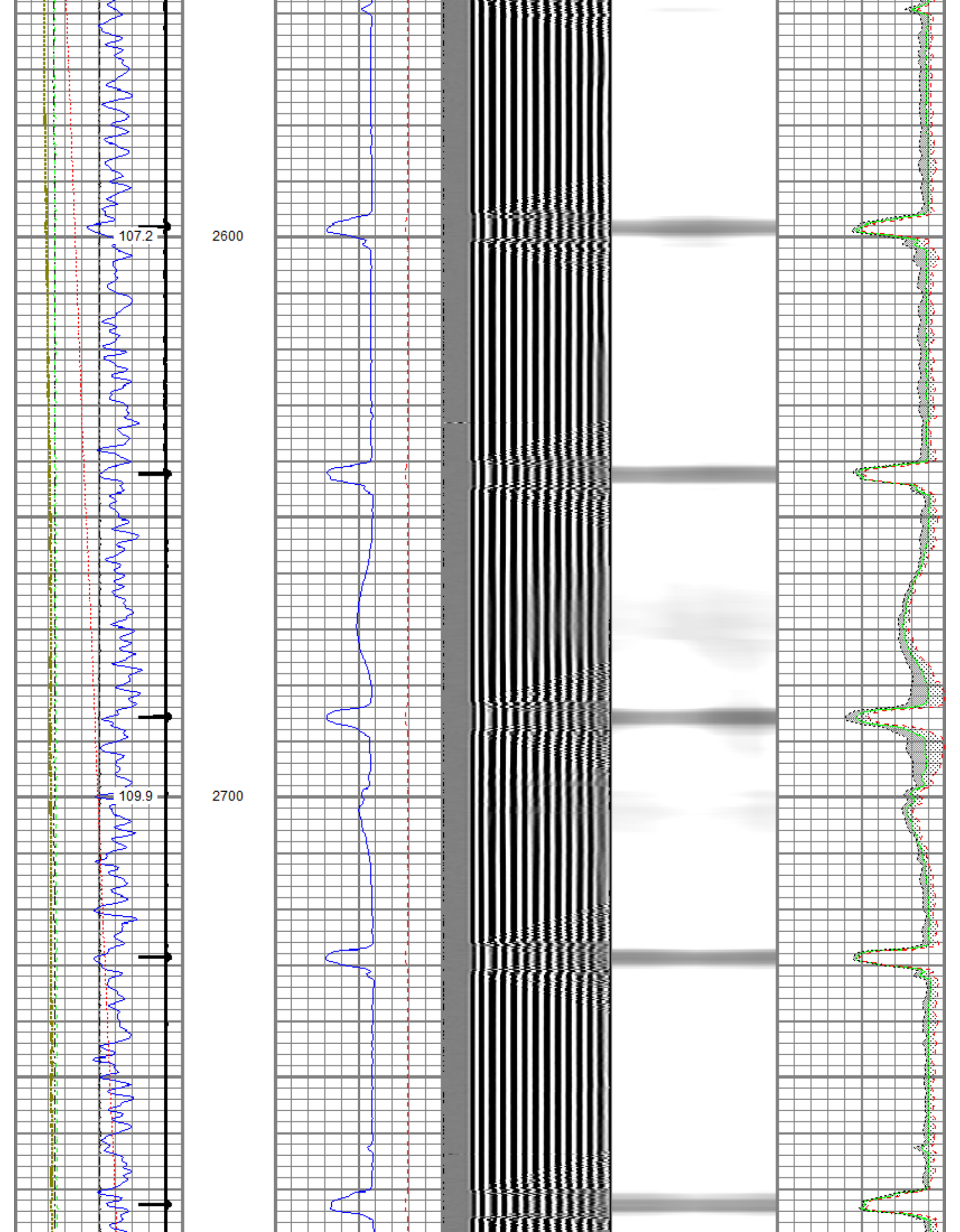


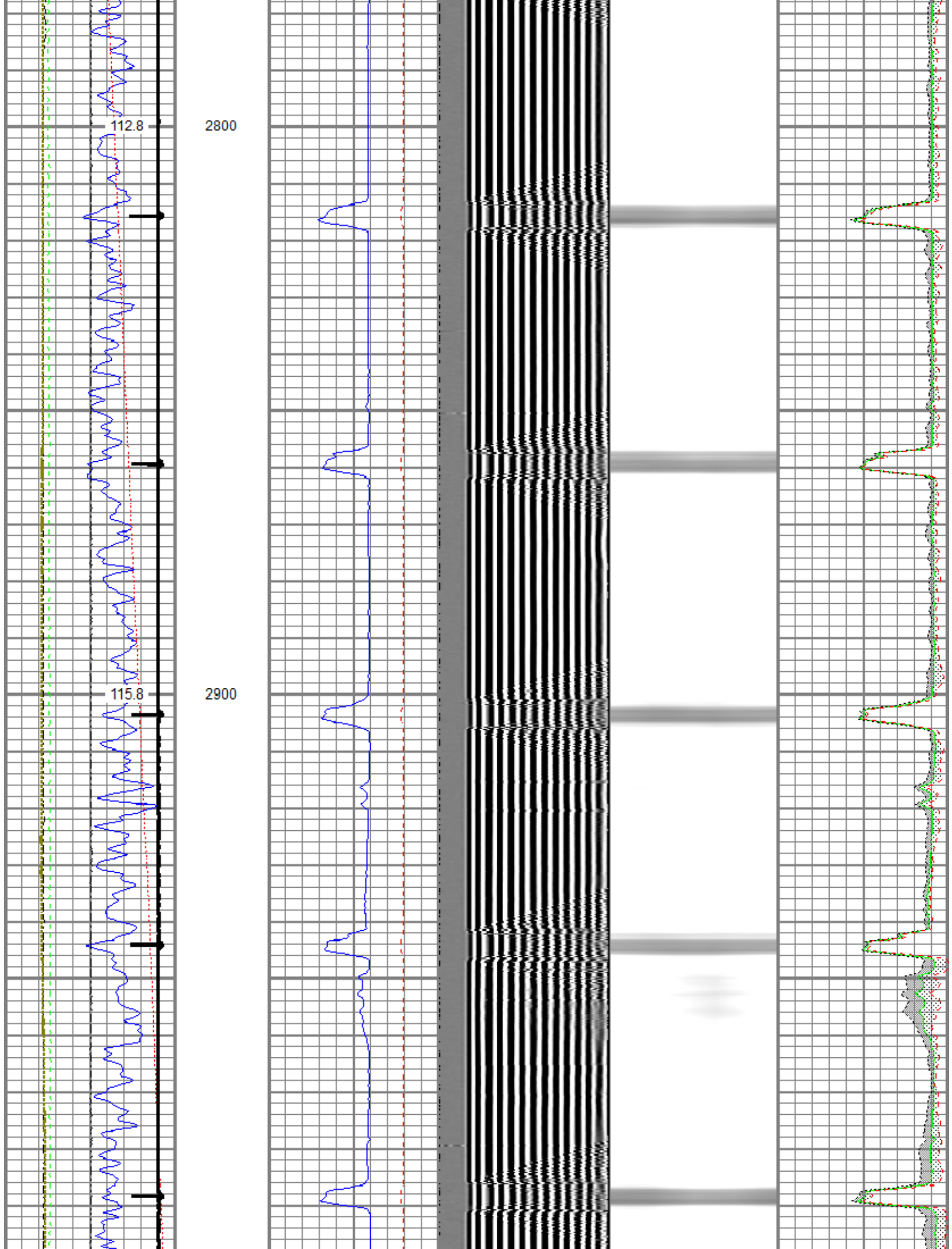


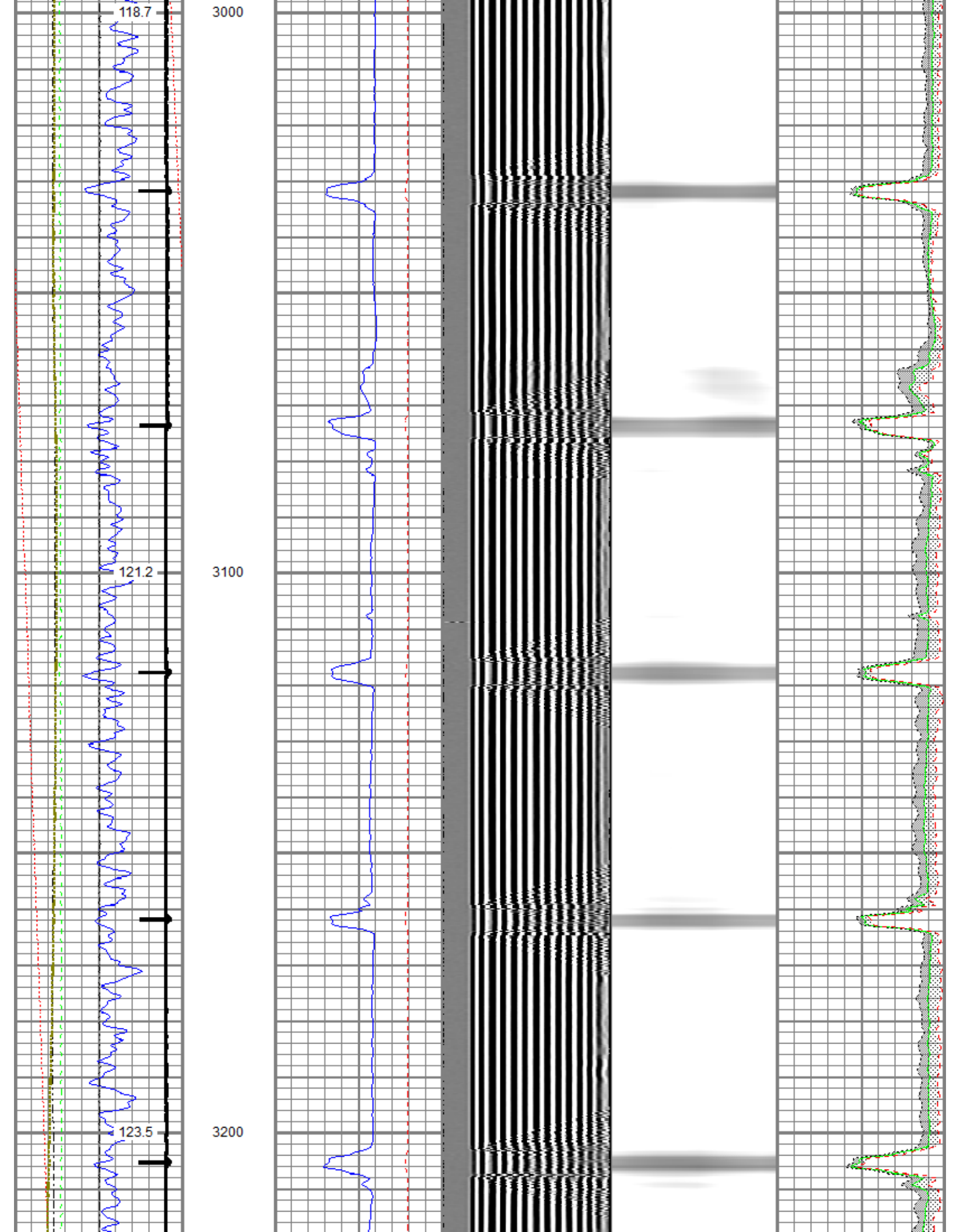




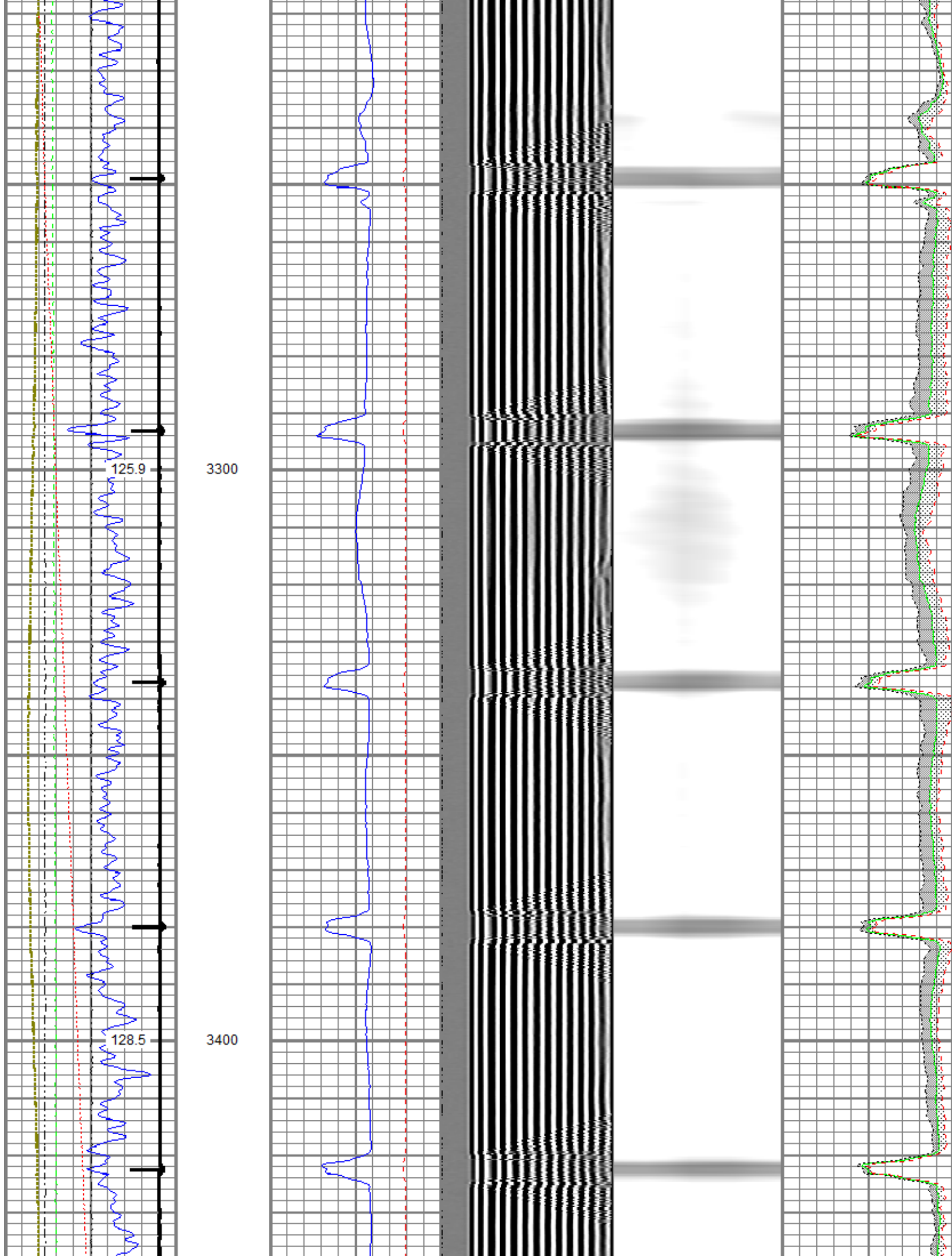


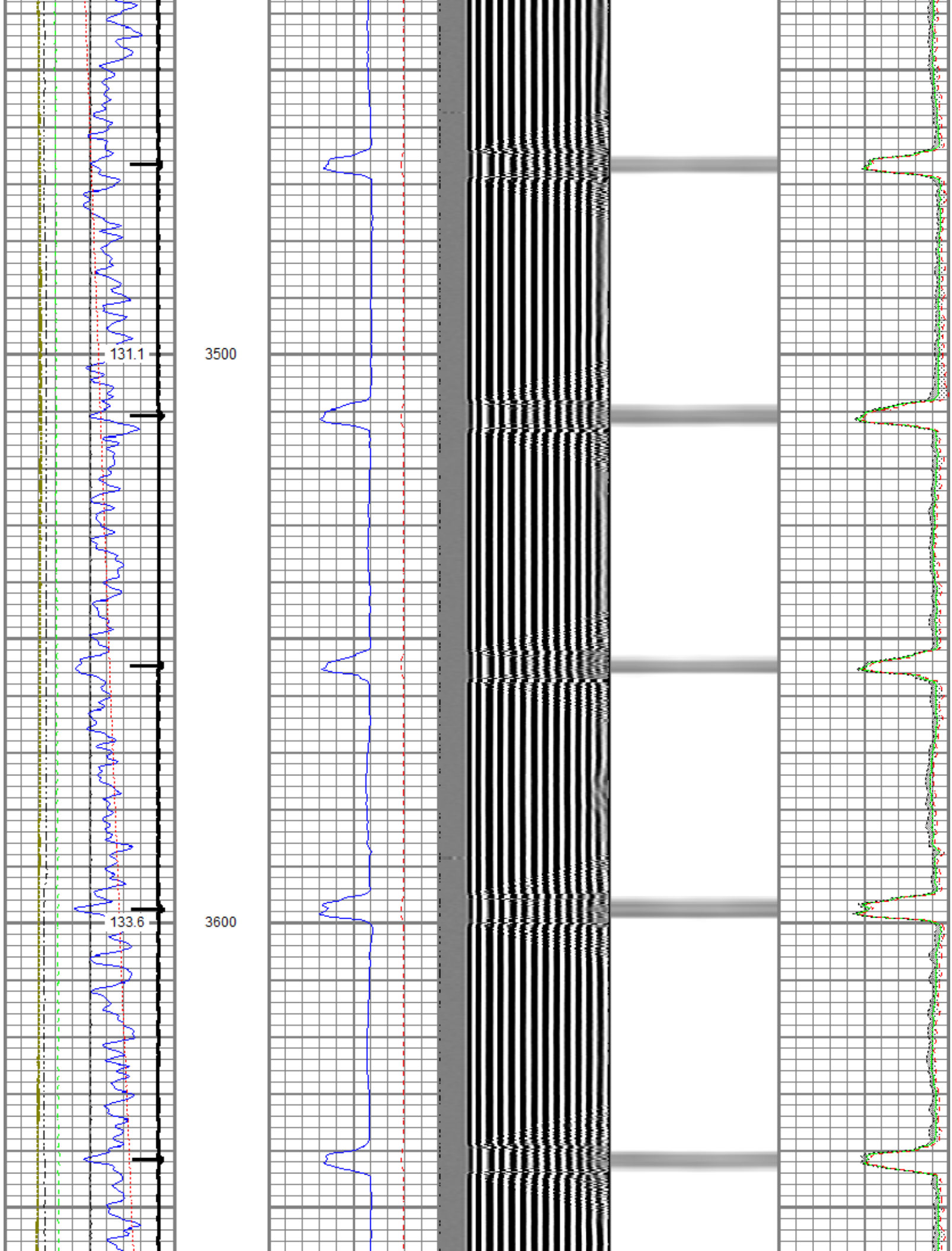


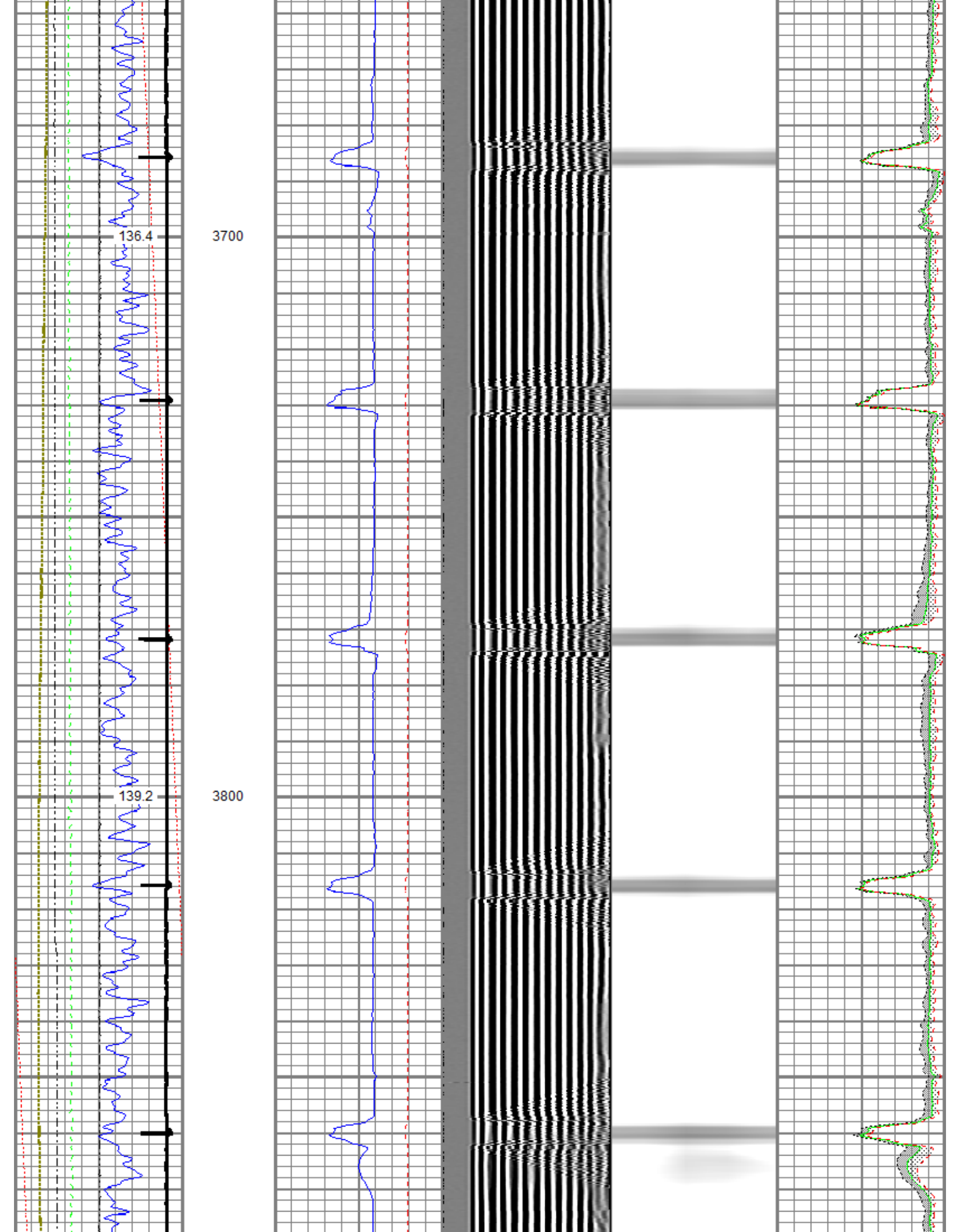


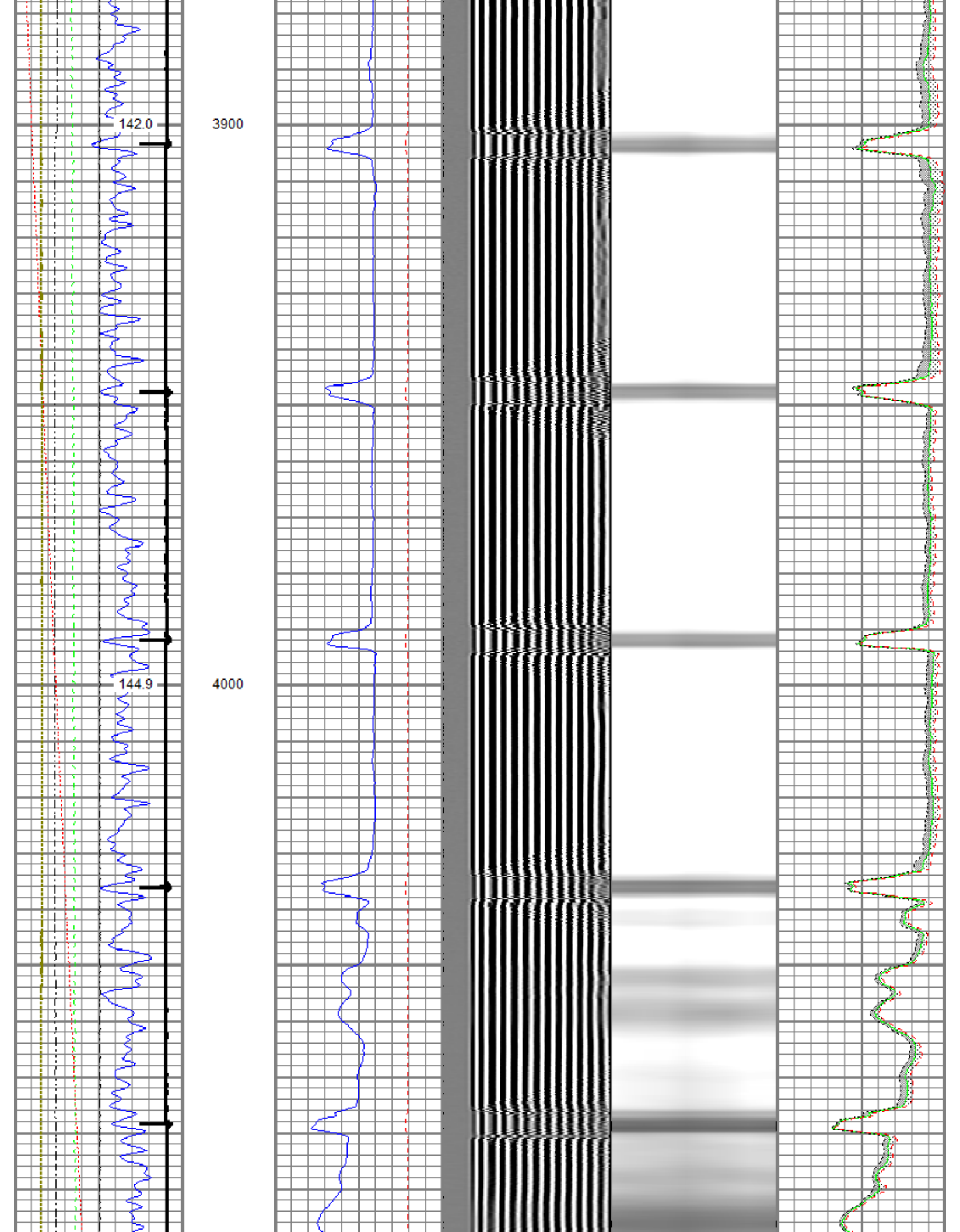




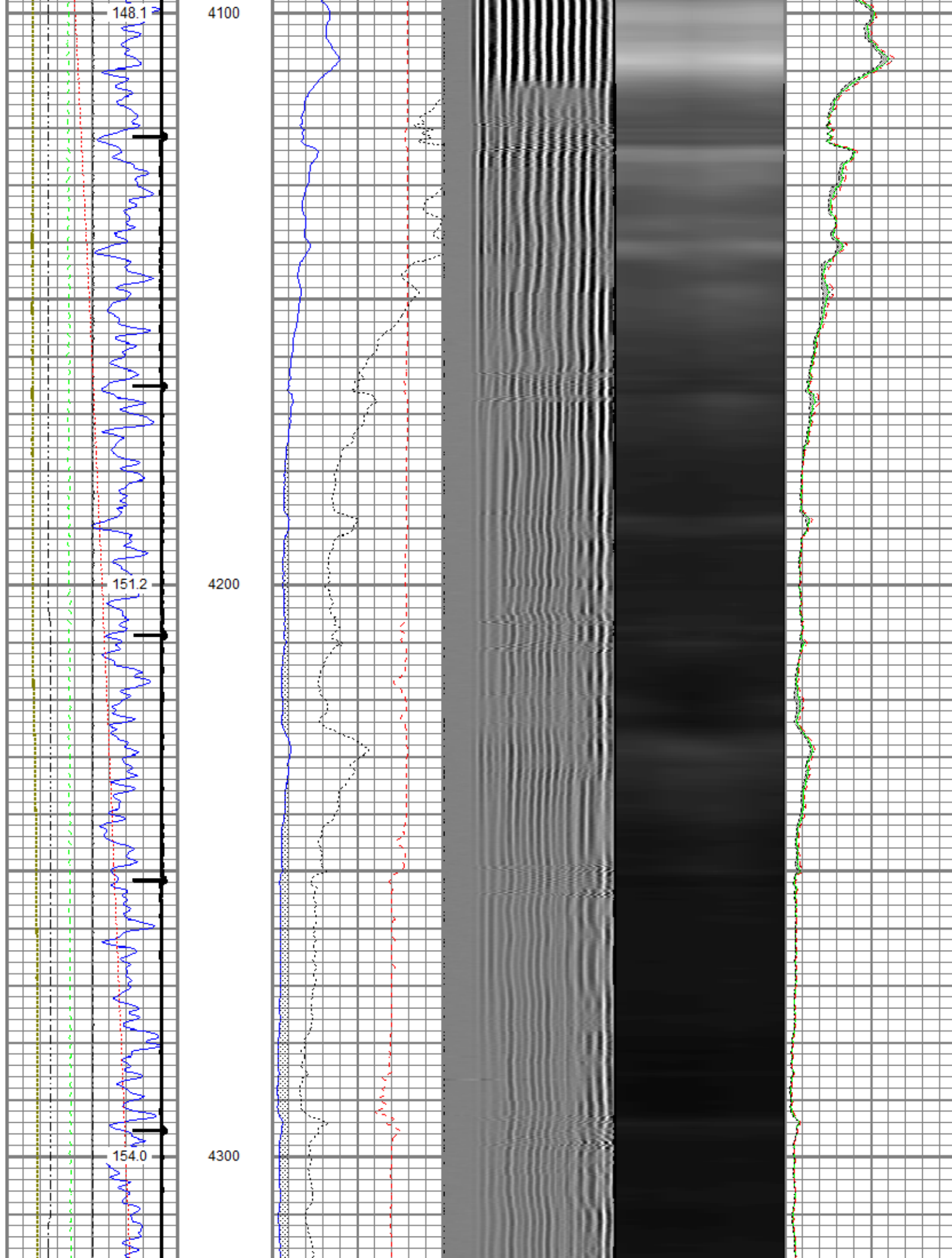


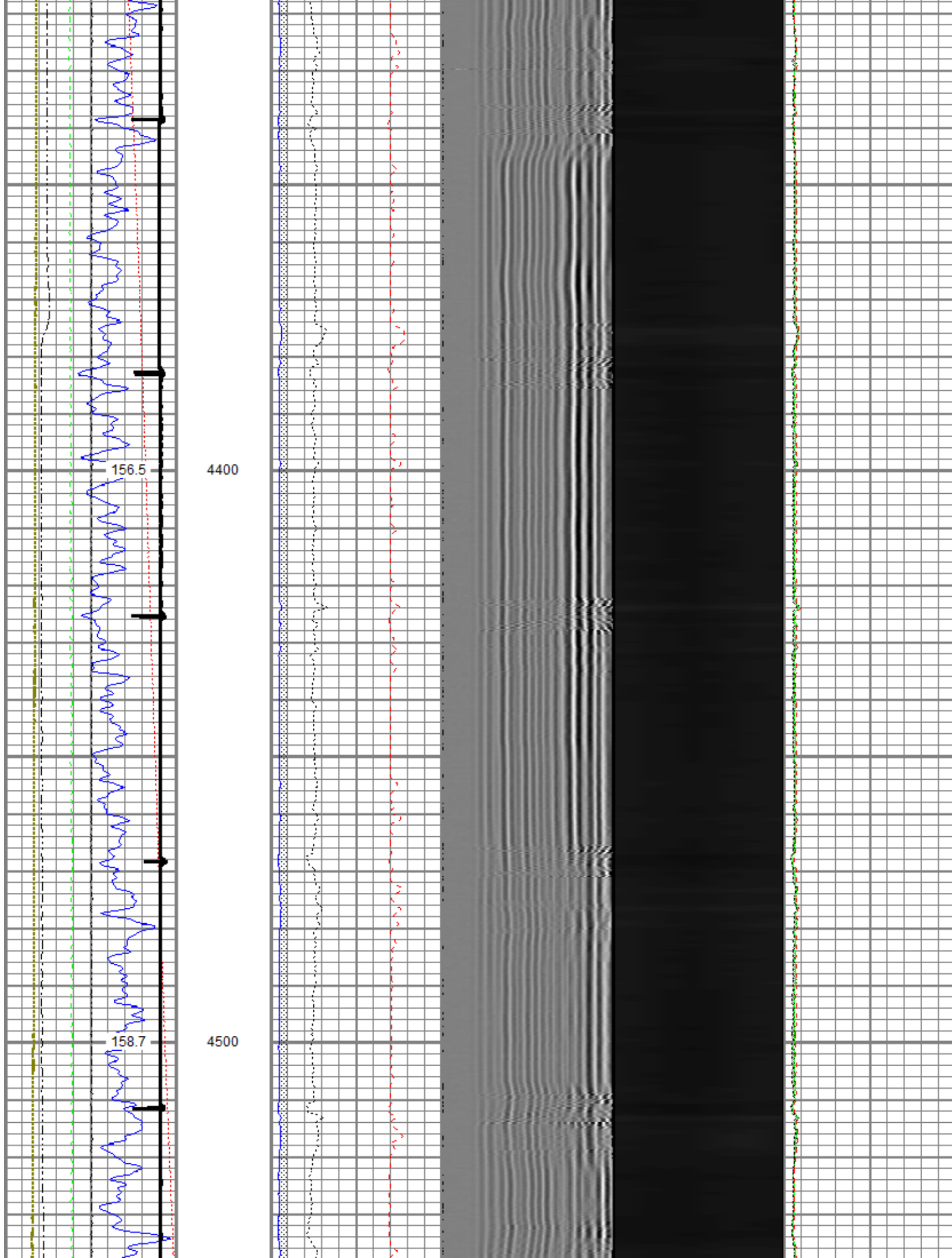


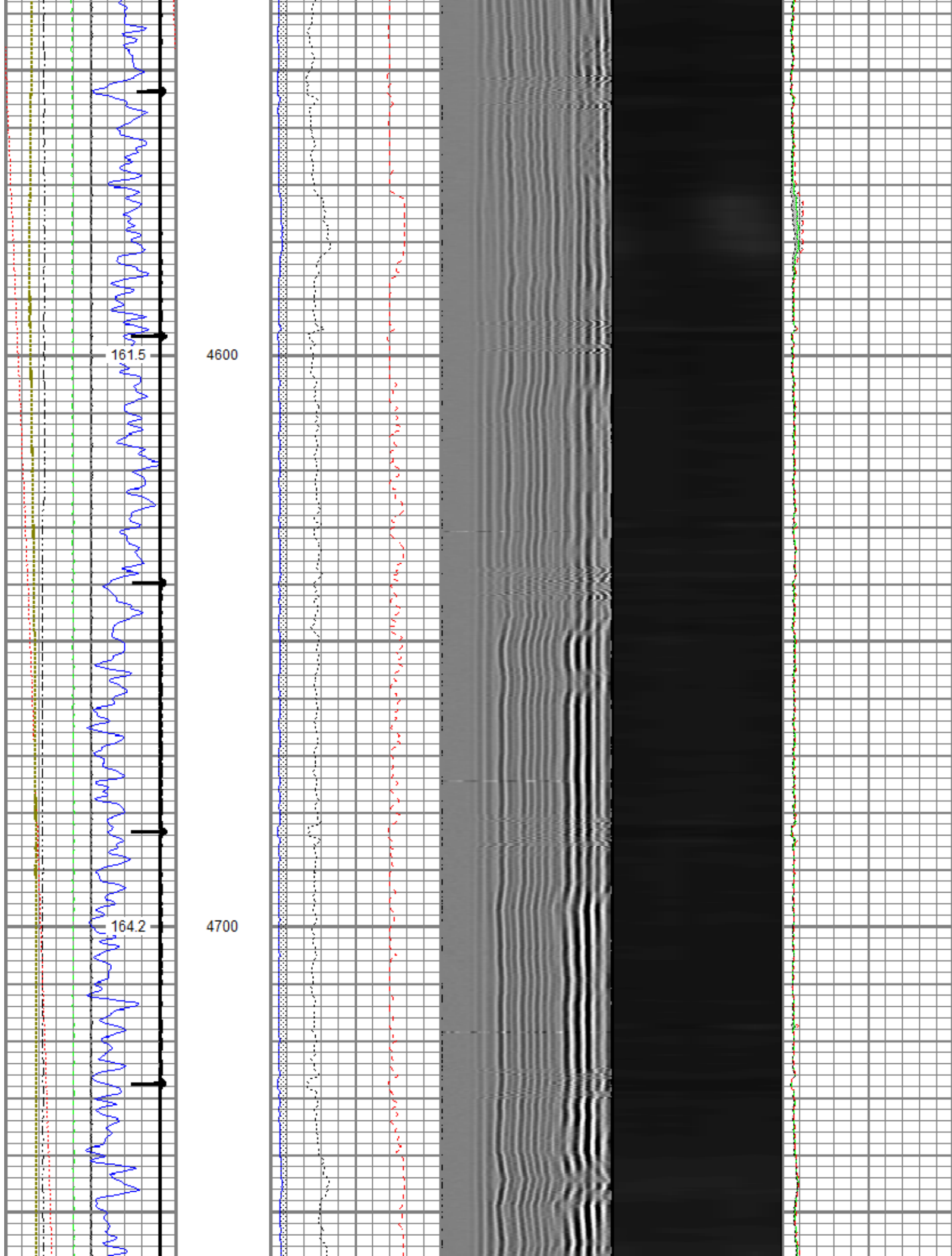


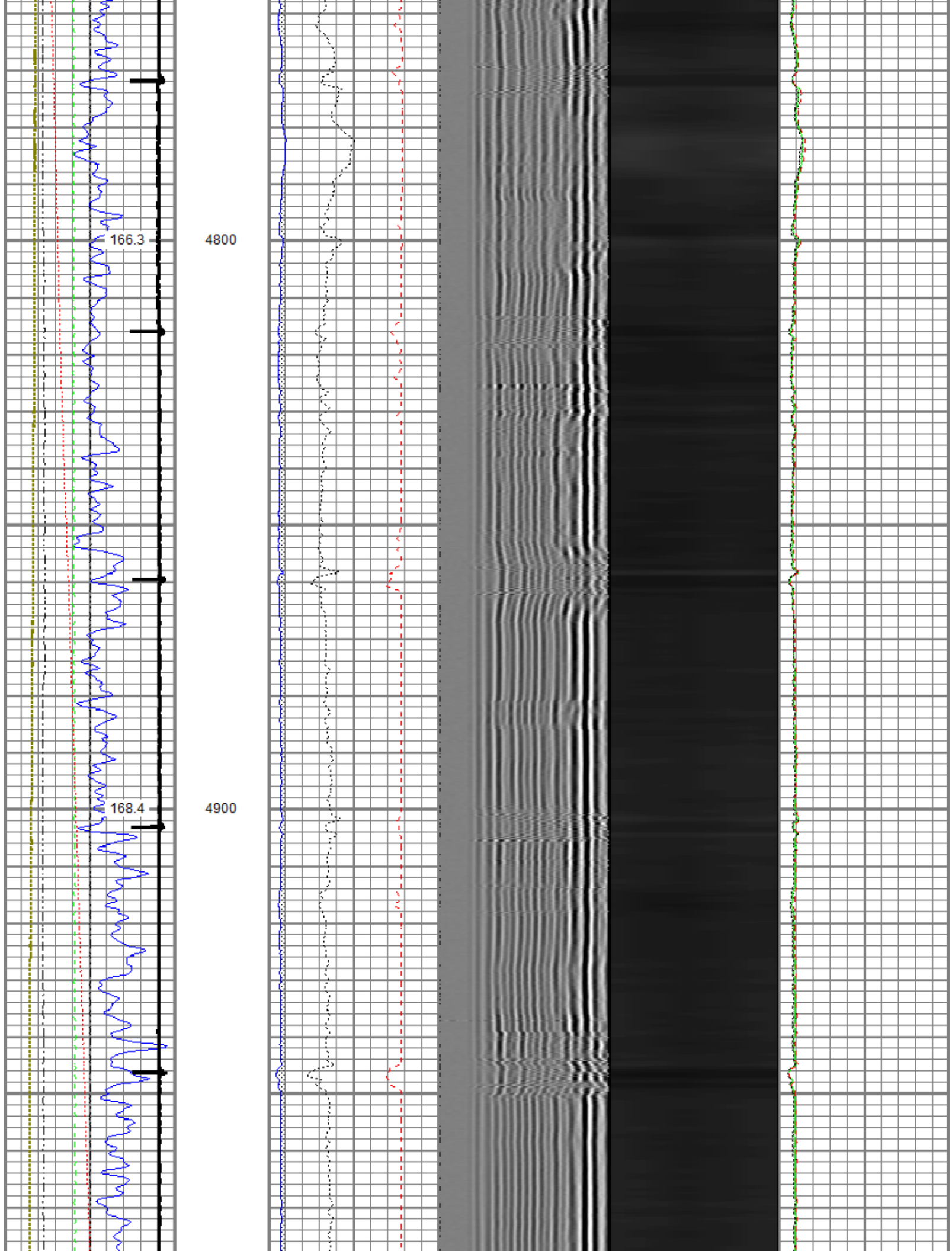




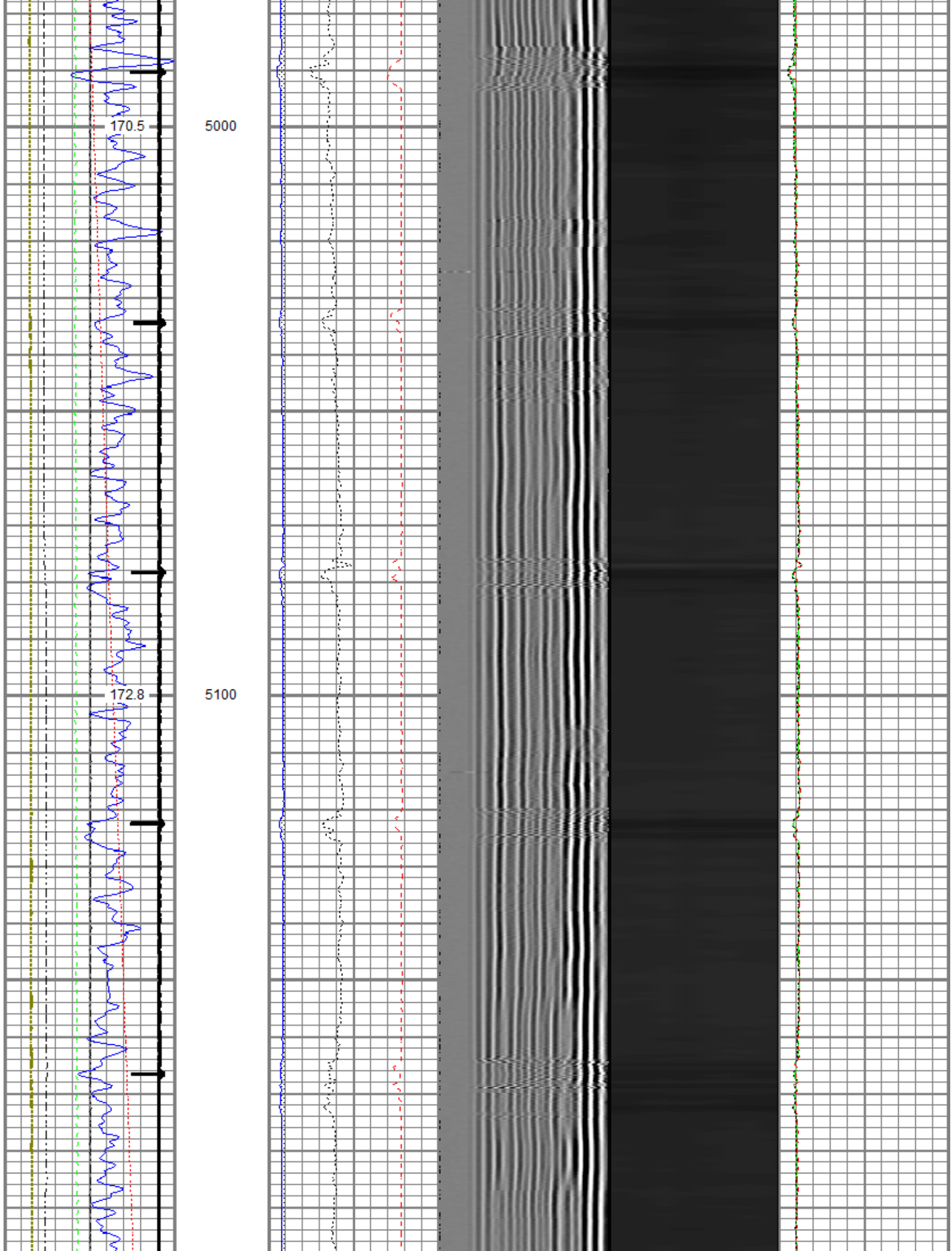


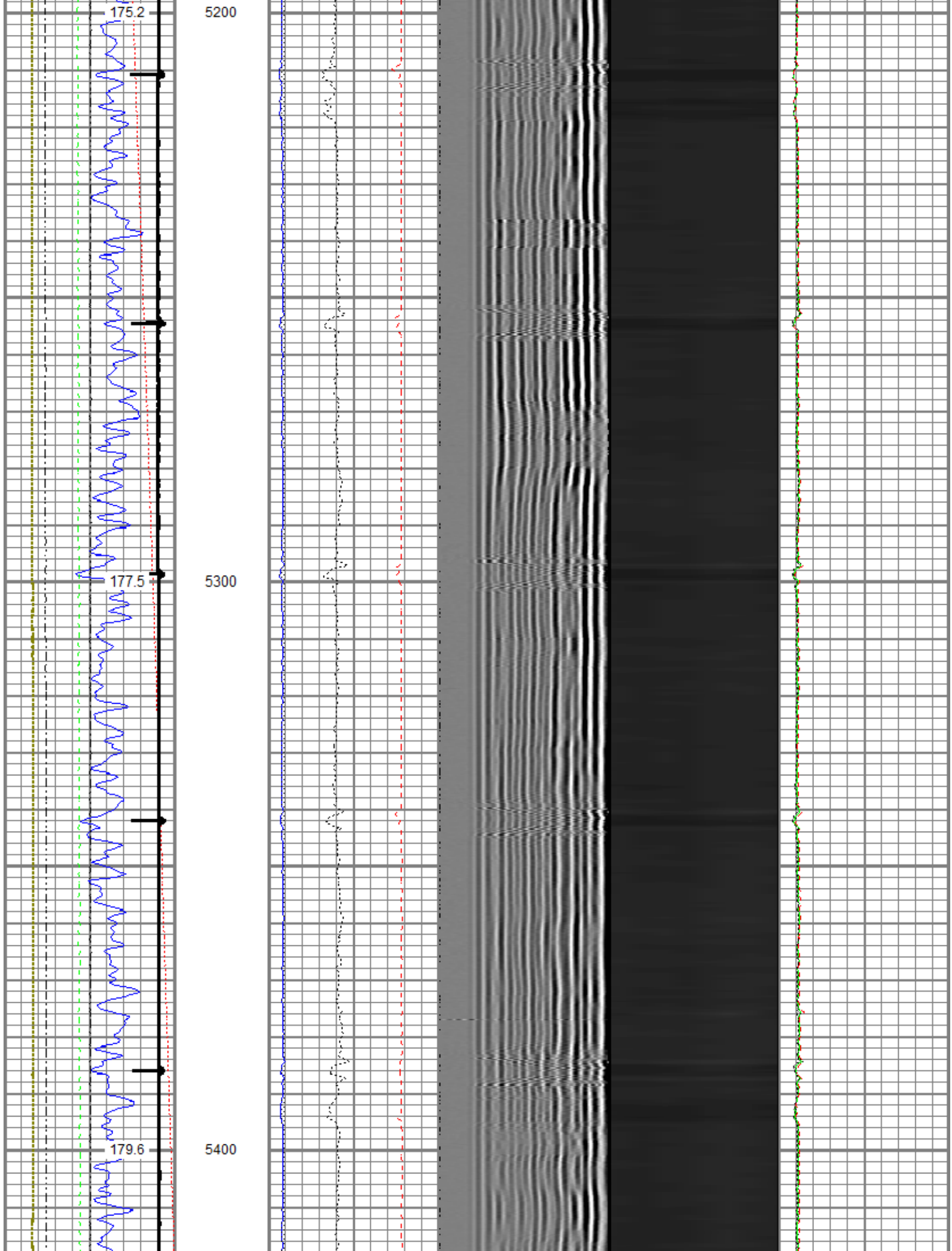


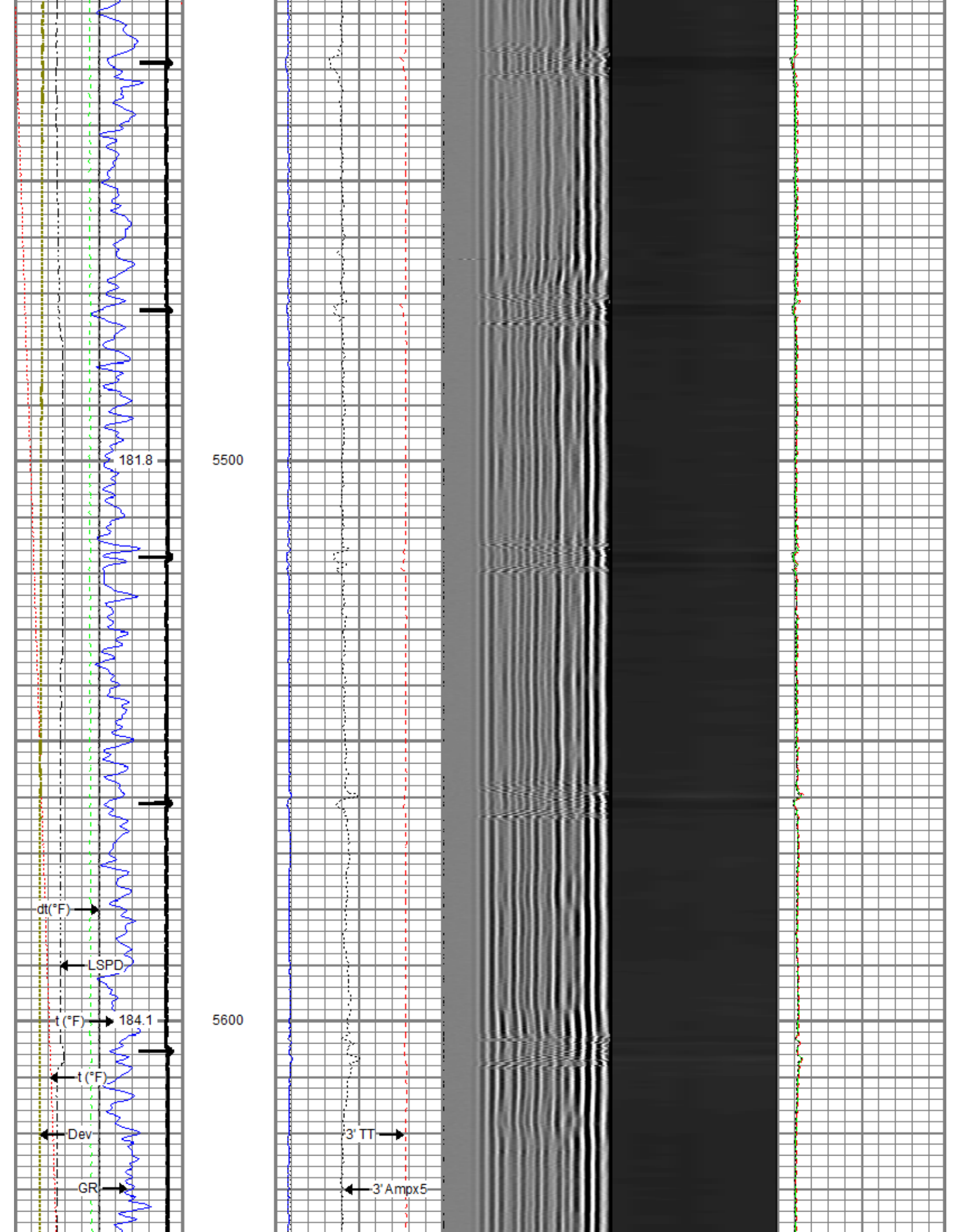


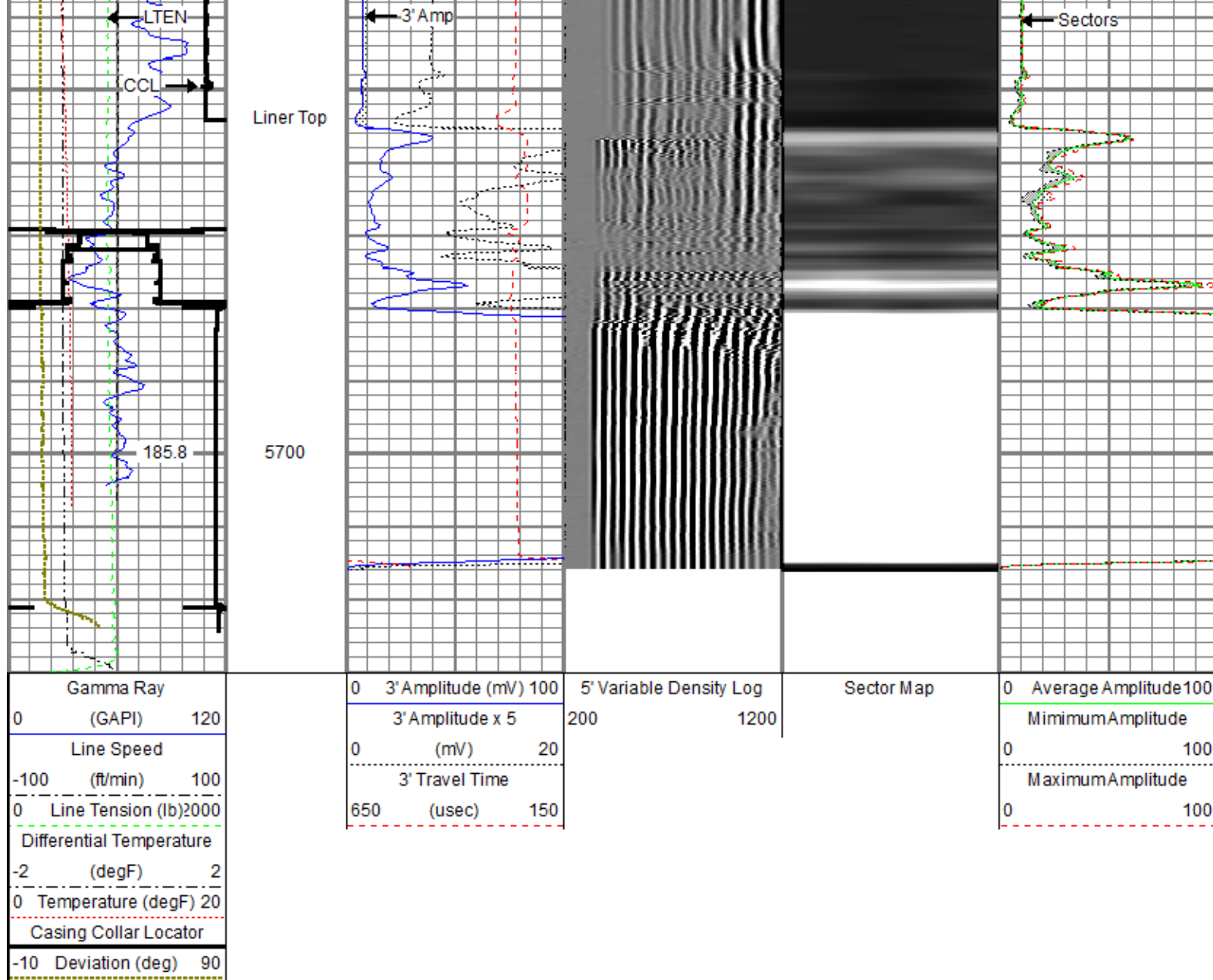








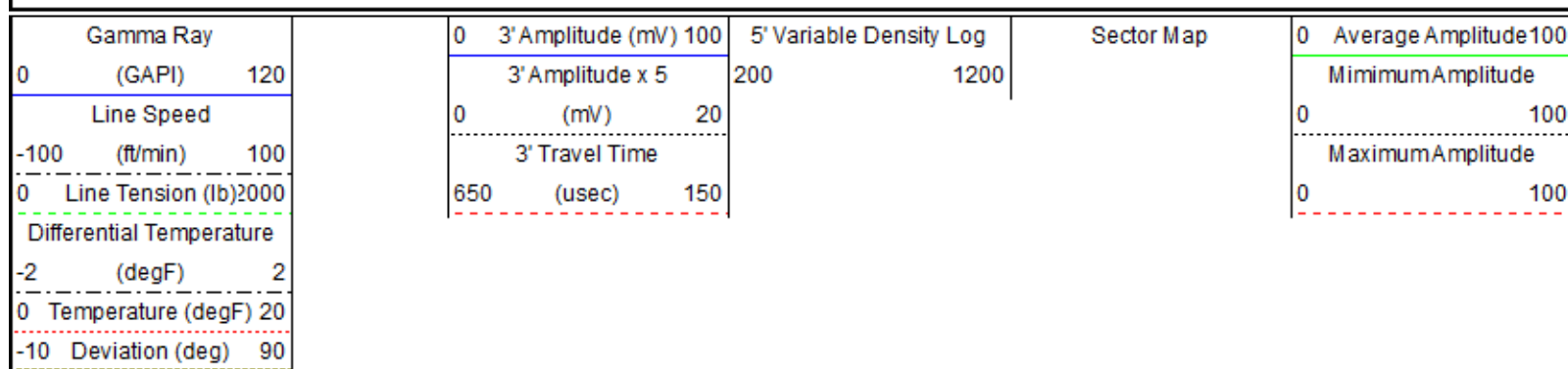




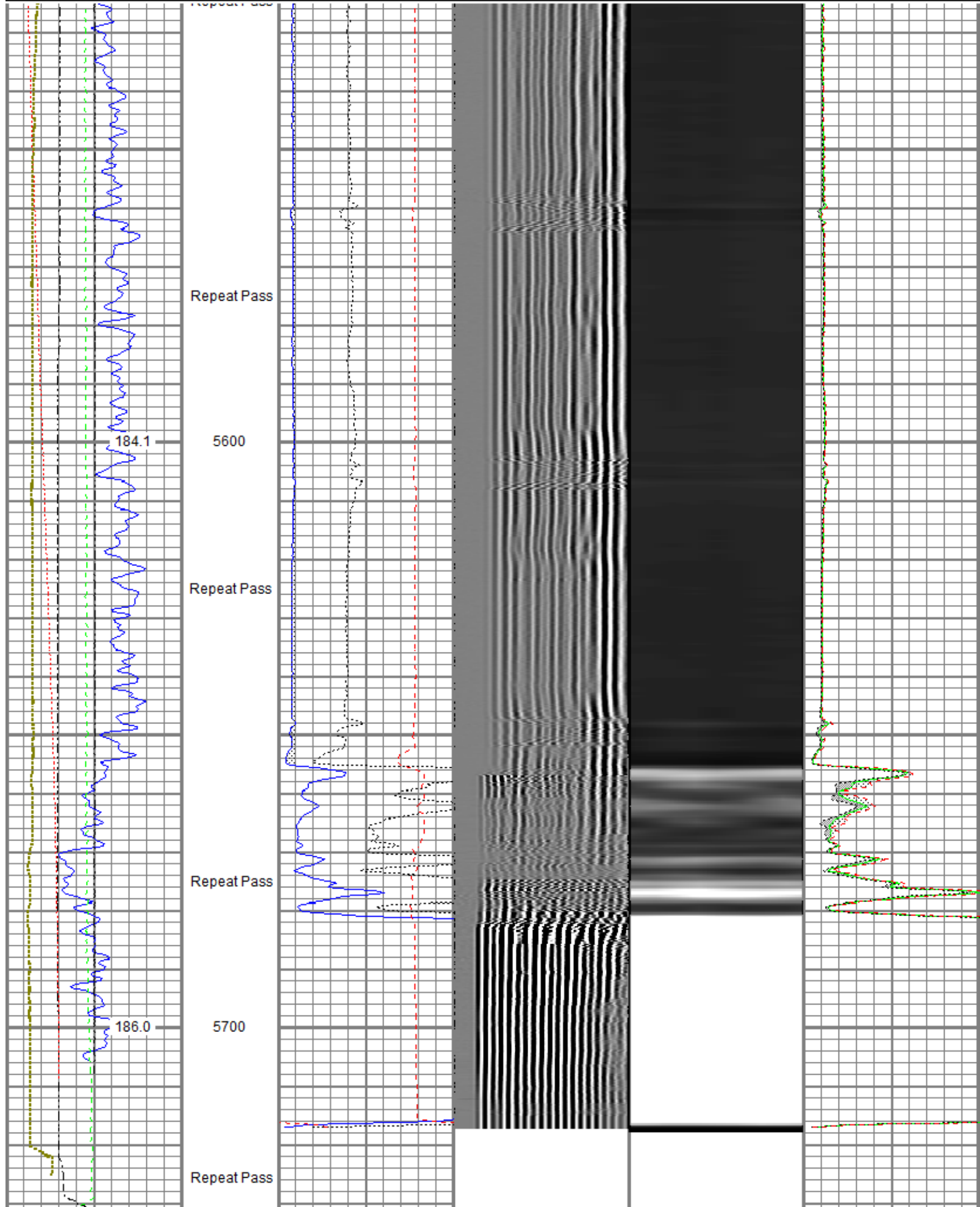
## Repeat Pass

Recorded With 2800 PSI Surface Induced Pressure

Database File anadarko\_wagner 1n-e10hz\0512343475\_anadarko\_wagner 1n-e10hz\_rbl\_12-08-17.db  
 Dataset Pathname pass2.1  
 Presentation Format ros\_rbt\_mit\_sx  
 Dataset Creation Sun Dec 10 08:58:39 2017  
 Charted by Depth in Feet scaled 1:240


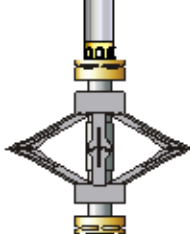
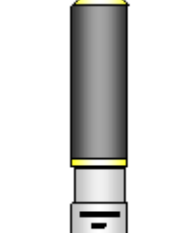
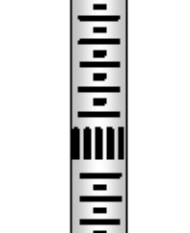

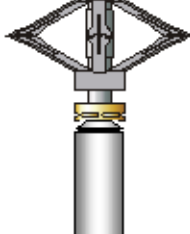
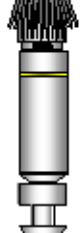


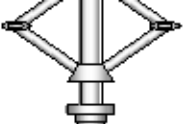





Gamma Ray (GAPI)	0	120
Line Speed	0	120
3' Amplitude (mV)	0	100
3' Amplitude x 5 (mV)	0	20
5' Variable Density Log	200	1200
Sector Map		
Average Amplitude	0	100
Minimum Amplitude	0	100

-100	(ft/min)	100	3' Travel Time		Maximum Amplitude		
0	Line Tension (lb)	2000	650	(usec)	150	0	100
Differential Temperature							
-2	(degF)	2					
0	Temperature (degF)	20					
-10	Deviation (deg)	90					

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	23.58		Titan_Electric_Cable_Heads-Titan_1-11/16"	1.03	1.69	5.40
			Electric Cable Head with 1" Fishing Neck			
			UW_AGS-UW_AGS_001 (219135)	0.21	1.69	1.00
			Sondex Adapter - GO Box to Sondex Pin			
TEMP	22.18		UW_XTU-UW_XTU_002 (051219)	1.58	1.69	6.50
			Crossover Ultrawire Toolbus to Ultralink			
			UW_PGR-UW_PGR_020 (10013902)	1.92	1.69	9.50
			UW_PRT-PRT_016 (10024052)	1.04	1.69	5.20
			Platinum Resistance Thermometer			
			UW_PRC-DSS_RAC	2.55	2.75	32.00
			5 Arm 2-3/4" Roller Centralizer			
			UW_RBT-UW_RBT_004 (1066)	9.48	3.13	140.00
			Sondex Ultrawire 3-1/8" Radial Bond Tool			
CBLROT	15.15		UW_PRC-DSS_RAC	2.55	2.75	32.00
CBLTEMP	15.15					
WVFS8	15.15					
WVFS7	15.15					
WVFS6	15.15					
WVFS5	15.15					
WVFS4	15.15					
WVFS3	15.15					
WVFS2	15.15					
WVFS1	15.15					
WVF3FT	15.15		UW_PRC-DSS_RAC	2.55	2.75	32.00
WVF5FT	14.15					
CBLTEMP	10.02					
MIT	5.27		UW_MIT-UW_MIT40_027 (218949)	4.54	2.75	65.00
			40 Multifinger Imaging Tool			

			UW_PRC-PRC_057 4 Arm 2-3/4" Production Roller Centralizer	2.71	2.75	32.00
TSTAMP	0.00		UW_BUL-UW_BUL_006 (031422) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20
Dataset: 0512343475_Anadarko_Wagner 1N-E10HZ_RBL_12-08-17.db: field/well/run1/pass1 Total length: 27.83 ft Total weight: 329.80 lb O.D.: 3.13 in						

Calibration Report			
Database File	C:\ProgramData\Warrior\Data\Anadarko_Wagner 1N-E10HZ\0512343475_Anadarko_Wagner 1N-E10HZ_RBL_12-08-17.db		
Dataset Pathname	calreport		
Dataset Creation	Fri Dec 08 15:14:23 2017		
Multifinger Imaging Tool Calibration Report			
Serial Number:		218949	
Number of Fingers:		40	
Tool Model:		UW_MIT40_027	
Inclinometer Calibration Report			
Performed:		Mon, Oct, 06 14:03:04 2008	
Calibration Angle:		45	
		Inc X	Inc Y
Vertical:		1996	1984
Finger 1 up:		1780	1738
Finger 31 up:		2235	1756
Finger 21 up:		2216	2228
Finger 11 up:		1736	2196
Sensitivity ratio:	1.0062		
X-axis angle:	131.534		
Deviation const.:	331.322		

Finger Calibration Report						
Performed:			Fri Dec 08 11:54:25 2017			
Ring size:	4	5	6	7		
(in)	Sens	Sens	Sens			
Finger 01:	1374	287.0	1661	295.0	1956	315.0
Finger 02:	1449	281.0	1730	288.0	2018	304.0
Finger 03:	1642	281.0	1923	285.0	2208	290.0
Finger 04:	1639	288.0	1927	275.0	2202	291.0
Finger 05:	1538	270.0	1808	270.0	2078	285.0
Finger 06:	1525	260.0	1785	264.0	2049	272.0
Finger 07:	1356	280.0	1636	287.0	1923	305.0
Finger 08:	1538	262.0	1800	263.0	2063	276.0
Finger 09:	1423	273.0	1696	285.0	1981	300.0
Finger 10:	1484	269.0	1753	278.0	2031	285.0
Finger 11:	1479	264.0	1743	272.0	2015	277.0
Finger 12:	1316	281.0	1597	297.0	1894	309.0
Finger 13:	1581	282.0	1863	291.0	2154	291.0
Finger 14:	1421	281.0	1702	298.0	2000	304.0
Finger 15:	1545	261.0	1806	275.0	2081	281.0
Finger 16:	1402	279.0	1681	298.0	1979	307.0
Finger 17:	1624	267.0	1891	284.0	2175	283.0
Finger 18:	1390	283.0	1673	311.0	1984	318.0
Finger 19:	1646	255.0	1901	262.0	2163	260.0
Finger 20:	1517	259.0	1776	280.0	2056	286.0
Finger 21:	1604	244.0	1848	260.0	2108	265.0
Finger 22:	1533	269.0	1802	287.0	2089	294.0
Finger 23:	1356	266.0	1622	291.0	1913	303.0
Finger 24:	1677	257.0	1934	272.0	2206	277.0
Finger 25:	1373	281.0	1654	312.0	1966	319.0
Finger 26:	1539	277.0	1816	300.0	2116	307.0
Finger 27:	1456	252.0	1708	276.0	1984	283.0
Finger 28:	1647	267.0	1914	288.0	2202	293.0
Finger 29:	1471	266.0	1737	290.0	2027	302.0
Finger 30:	1413	267.0	1680	293.0	1973	309.0
Finger 31:	1599	264.0	1793	279.0	2069	294.0

Finger 31:	1522	261.0	1783	279.0	2062	291.0	2353
Finger 32:	1339	258.0	1597	282.0	1879	298.0	2177
Finger 33:	1623	296.0	1919	312.0	2231	321.0	2552
Finger 34:	1534	270.0	1804	278.0	2082	292.0	2374
Finger 35:	1436	268.0	1704	282.0	1986	299.0	2285
Finger 36:	1584	281.0	1865	289.0	2154	301.0	2455
Finger 37:	1593	277.0	1870	282.0	2152	298.0	2450
Finger 38:	1488	279.0	1767	285.0	2052	301.0	2353
Finger 39:	1452	283.0	1735	296.0	2031	310.0	2341
Finger 40:	1584	292.0	1876	296.0	2172	312.0	2484

Post Survey Calibration Check								
Performed:			Fri Dec 08 15:11:51 2017					
Ring size: (in)	4	Nom. wear	5	Nom. wear	6	Nom. wear	7	Nom. wear
Finger 01:	4.002	0.001	5.005	0.002	6.003	0.002	6.994	-0.003
Finger 02:	3.993	-0.003	4.997	-0.002	5.996	-0.002	7.001	0.001
Finger 03:	3.985	-0.008	4.999	-0.001	5.983	-0.008	6.979	-0.011
Finger 04:	3.980	-0.010	4.962	-0.019	5.973	-0.014	6.946	-0.027
Finger 05:	3.994	-0.003	4.998	-0.001	5.998	-0.001	6.988	-0.006
Finger 06:	3.993	-0.004	5.001	0.000	5.992	-0.004	6.998	-0.001
Finger 07:	3.997	-0.001	4.997	-0.002	5.996	-0.002	6.989	-0.006
Finger 08:	3.994	-0.003	4.992	-0.004	5.999	-0.001	6.999	-0.001
Finger 09:	3.994	-0.003	4.996	-0.002	5.990	-0.005	6.981	-0.010
Finger 10:	3.998	-0.001	4.999	-0.000	5.992	-0.004	6.986	-0.007
Finger 11:	3.998	-0.001	4.998	-0.001	6.001	0.001	7.011	0.005
Finger 12:	3.995	-0.002	4.995	-0.002	5.998	-0.001	6.996	-0.002
Finger 13:	3.996	-0.002	4.987	-0.006	5.981	-0.010	6.978	-0.011
Finger 14:	3.996	-0.002	4.997	-0.002	5.994	-0.003	6.995	-0.002
Finger 15:	3.993	-0.004	4.993	-0.003	5.995	-0.002	6.989	-0.005
Finger 16:	3.997	-0.001	5.003	0.002	5.991	-0.004	6.980	-0.010
Finger 17:	3.993	-0.004	5.003	0.002	5.991	-0.005	6.983	-0.008
Finger 18:	3.989	-0.006	4.995	-0.002	5.994	-0.003	6.969	-0.015
Finger 19:	3.997	-0.001	4.994	-0.003	6.005	0.002	6.983	-0.009
Finger 20:	3.992	-0.004	4.992	-0.004	5.997	-0.001	6.987	-0.007
Finger 21:	3.989	-0.006	4.996	-0.002	6.005	0.002	7.007	0.004
Finger 22:	3.997	-0.001	4.989	-0.005	5.996	-0.002	6.995	-0.003
Finger 23:	3.995	-0.003	4.994	-0.003	6.001	0.000	6.995	-0.003
Finger 24:	3.993	-0.003	4.998	-0.001	5.999	-0.001	7.013	0.007
Finger 25:	3.993	-0.003	4.994	-0.003	5.992	-0.004	7.000	-0.000
Finger 26:	3.995	-0.003	4.997	-0.002	5.996	-0.002	7.000	0.000
Finger 27:	3.993	-0.004	4.996	-0.002	5.989	-0.005	6.990	-0.005
Finger 28:	3.992	-0.004	5.000	0.000	5.985	-0.008	6.978	-0.011
Finger 29:	3.992	-0.004	5.000	0.000	5.993	-0.003	6.986	-0.007
Finger 30:	3.995	-0.002	4.987	-0.007	5.975	-0.013	6.955	-0.023
Finger 31:	3.991	-0.004	4.991	-0.005	5.988	-0.006	6.983	-0.008
Finger 32:	3.991	-0.005	4.991	-0.004	5.990	-0.005	6.984	-0.008
Finger 33:	3.997	-0.002	4.995	-0.003	5.994	-0.003	6.985	-0.007
Finger 34:	3.998	-0.001	4.994	-0.003	6.001	0.000	6.982	-0.009
Finger 35:	3.996	-0.002	4.999	-0.001	6.000	-0.000	6.993	-0.004
Finger 36:	3.996	-0.002	4.994	-0.003	5.996	-0.002	6.994	-0.003
Finger 37:	4.002	0.001	5.004	0.002	6.007	0.004	6.999	-0.001
Finger 38:	3.994	-0.003	4.996	-0.002	6.002	0.001	7.004	0.002
Finger 39:	3.991	-0.005	4.996	-0.002	5.997	-0.002	7.005	0.003
Finger 40:	3.991	-0.004	5.000	0.000	6.000	-0.000	6.998	-0.001
Average:	3.994	-0.003	4.995	-0.002	5.994	-0.003	6.989	-0.005

Segmented Cement Bond Log Calibration Report			
Serial Number:		1066	
Tool Model:		UW_RBT_004	
Calibration Casing Diameter:		7.000	in
Calibration Depth:		21.037	ft

Master Calibration, performed Fri Dec 08 08:13:16 2017:					
Raw (v)		Calibrated (mv)		Results	
Zero	Cal	Zero	Cal	Gain	Offset



3FT	0.002	0.580	0.800	62.165	106.226	0.546
5FT	-0.002	0.568	0.800	62.165	107.645	1.063
S1	0.002	0.567	0.000	100.000	177.194	-0.430
S2	0.001	0.588	0.000	100.000	170.284	-0.208
S3	0.002	0.582	0.000	100.000	172.246	-0.296
S4	0.001	0.592	0.000	100.000	169.288	-0.198
S5	0.002	0.586	0.000	100.000	171.292	-0.364
S6	0.001	0.586	0.000	100.000	170.941	-0.248
S7	0.002	0.592	0.000	100.000	169.610	-0.408
S8	0.003	0.573	0.000	100.000	175.223	-0.473

#### Temperature Calibration Report

Serial Number: 10024052  
 Tool Model: PRT\_016  
 Performed: Sun Oct 11 12:16:39 2015

Point #	Reading	Reference
1	12242.00 cps	68.00 degF
2	18329.00 cps	104.00 degF
3	29563.00 cps	176.00 degF
4	41222.00 cps	248.00 degF
5	52988.00 cps	320.00 degF
6	58824.00 cps	356.00 degF
7	cps	degF
8	cps	degF
9	cps	degF
10	cps	degF

#### Gamma Ray Calibration Report

Serial Number: 10013902  
 Tool Model: UW\_PGR\_020  
 Performed: (Not Performed)

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, L.P.  
**Well** Wagner 1N-E10HZ  
**Field** Wattenberg  
**County** Weld  
**State** Colorado