



Multifinger Imaging Tool  
Gamma Ray  
Casing Collar Log

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

Well Newby 27N-33HZ

Field Wattenberg

County Weld State Colorado

Location: API #: 05-123-44566

SEC 33 TWP 3N RGE 68W

Permanent Datum Ground Level Elevation 4895'

Log Measured From Kelly Bushing 32 FT

Drilling Measured From Kelly Bushing

Other Services  
RBL  
JBGR

Elevation

K.B. 4927'  
D.F. ---  
G.L. 4895'

Company Kerr-McGee Oil & Gas Onshore, L.P.  
Well Newby 27N-33HZ  
Field Wattenberg  
County Weld  
State Colorado

Date	15-MAR-2018			
Run Number	Two			
Depth Driller	12703 FT			
Depth Logger	7534 FT			
Bottom Logged Interval	7519 FT			
Top Log Interval	Surface			
Open Hole Size	---			
Type Fluid	Water			
Density / Viscosity	8.34 lb/gal			
Max. Recorded Temp.	228°F			
Estimated Cement Top	---			
Time Well Ready	ROA			
Time Logger on Bottom	14.10			
Equipment Number	HD-363			
Location	Fort Lupton, CO			
Recorded By	Greg Lueck			
Witnessed By	John McCarthy			
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	7	26	P-110	Surface
Intermediate #2				
Liner	4 1/2	11.6	HCP-110	5888 FT
				12697 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 5888 FT  
Adjusted +3 FT to correlate with Liner Top  
Gauge Ring/Junk Basket ran to 7596 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 debris upon completion of operations  
  
Thank you for choosing Reliance Oilfield Services, LLC!!

Main Pass (7 inch Casing)

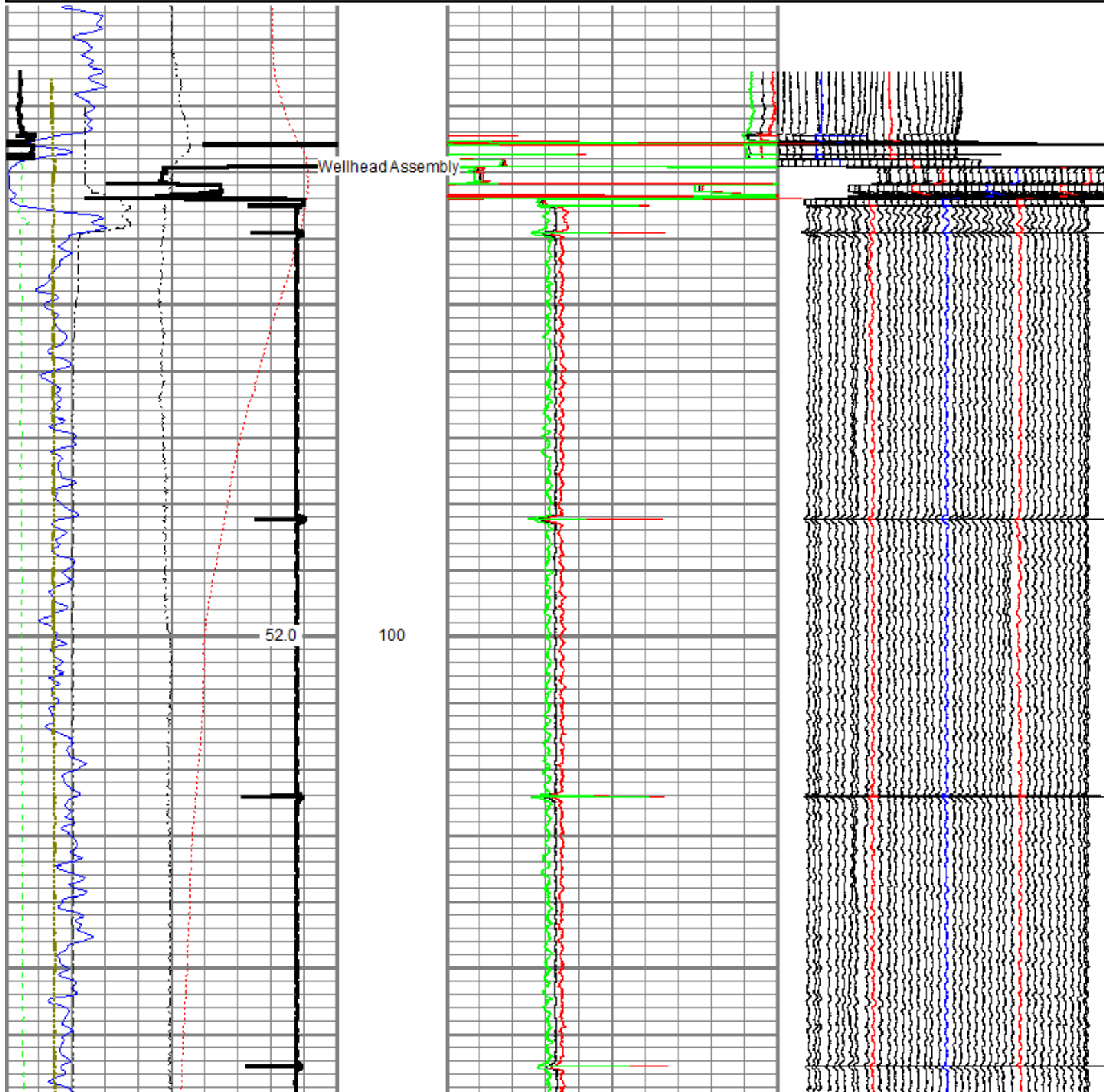


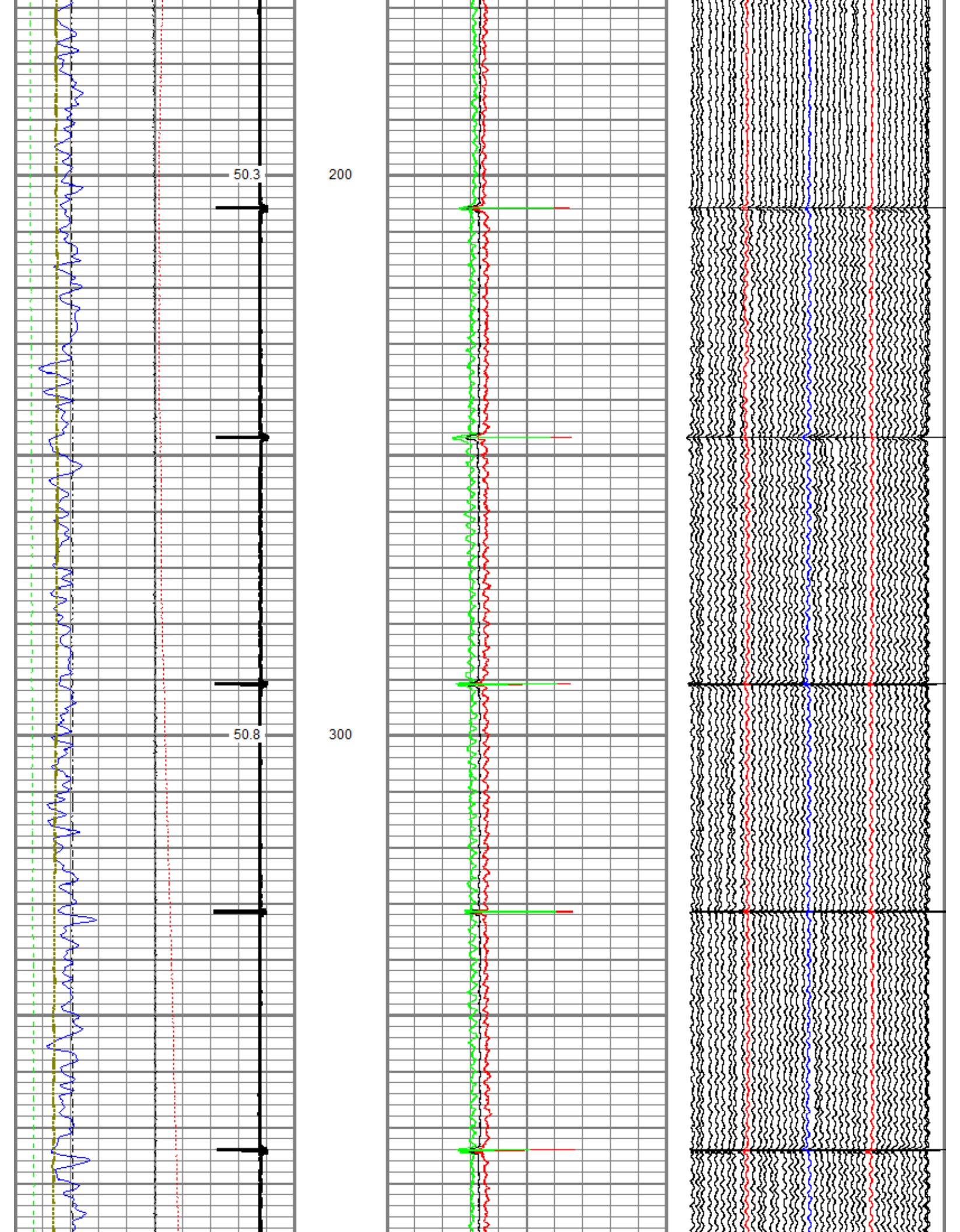
Recorded With 2800 PSI Surface Induced Pressure

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 Presentation Format    ros\_70mit40sx  
 Dataset Creation      Thu Mar 15 14:33:05 2018  
 Charted by            Depth in Feet scaled 1:240

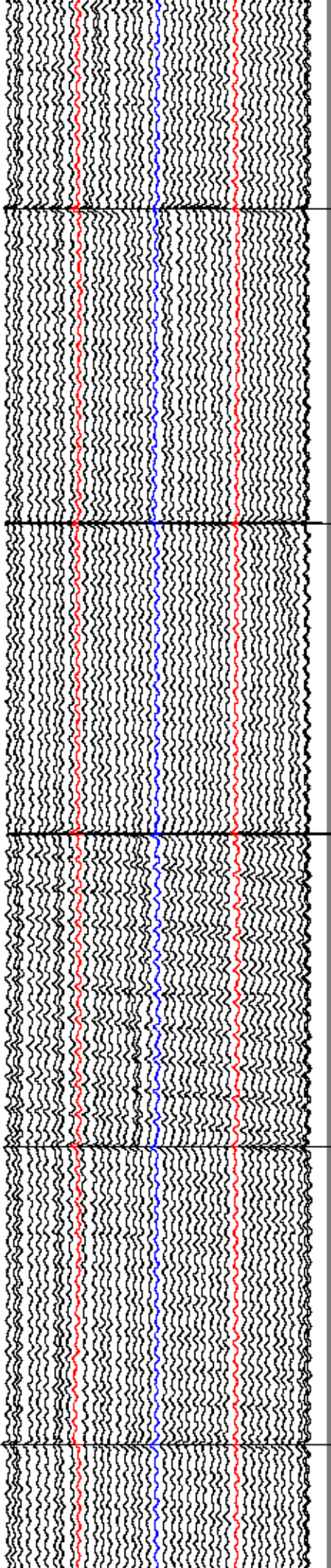
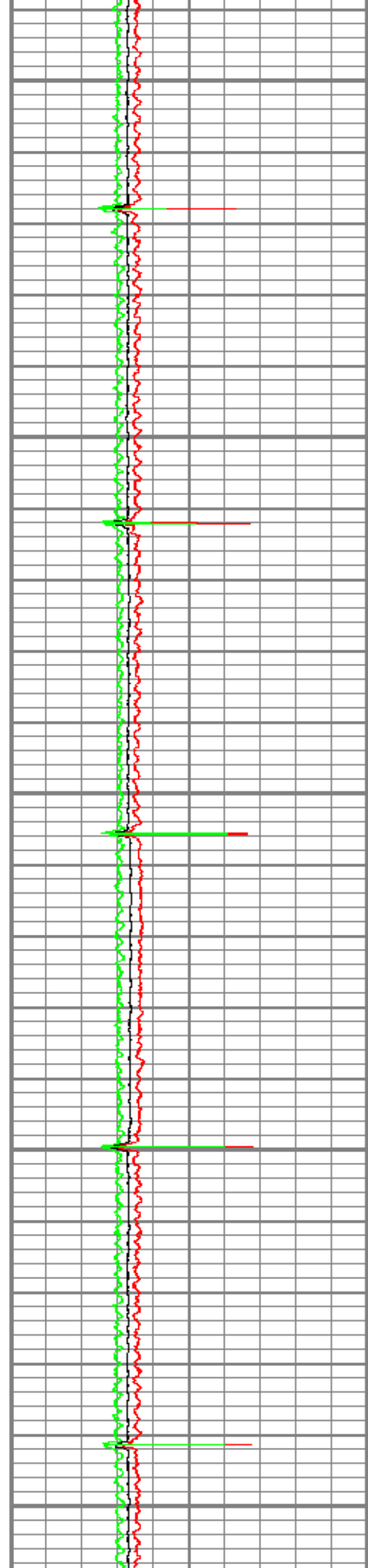
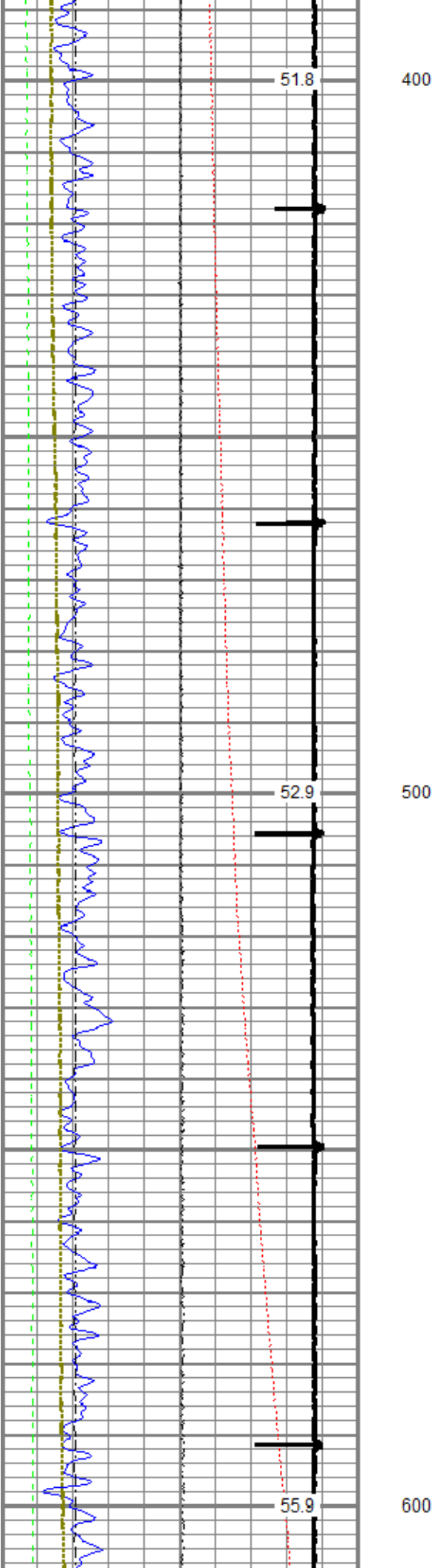
0	Gamma Ray (GAPI)	120
-100	Line Speed (ft/min)	100
-10	Deviation (deg)	90
0	Line Tension (lb)	2000
-2	Differential Temperature (degF)	2
0	Temperature (degF)	20
Casing Collar Locator		

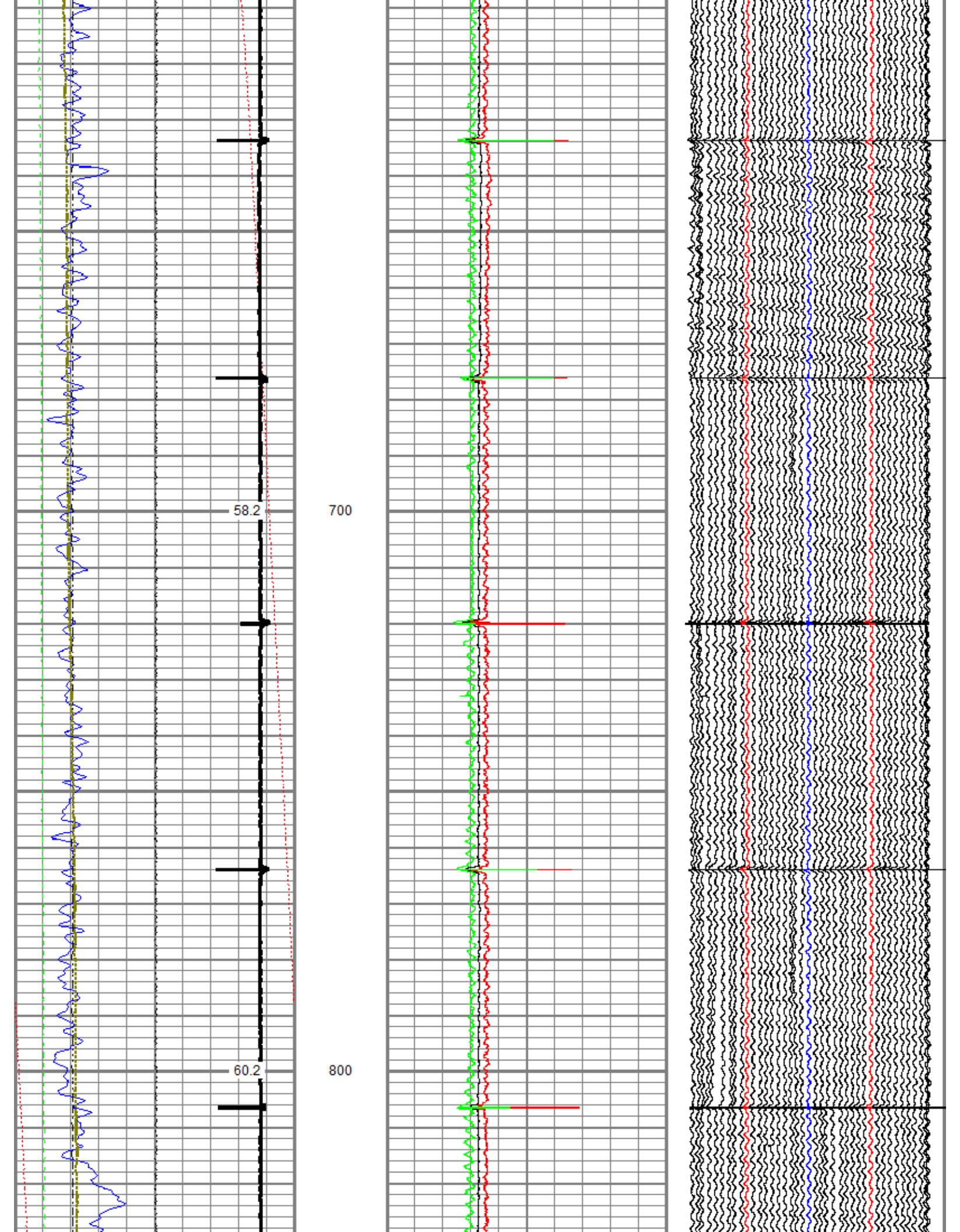
6	Average Diameter (in)	7	Caliper #10
6	Maximum Diameter (in)	7	Caliper #20
6	Minimum Diameter (in)	7	Caliper #30



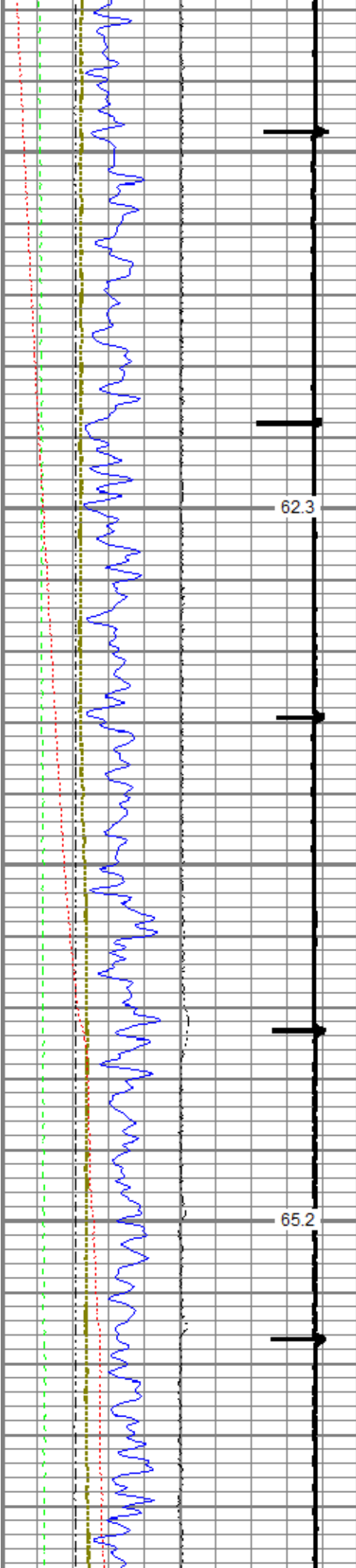






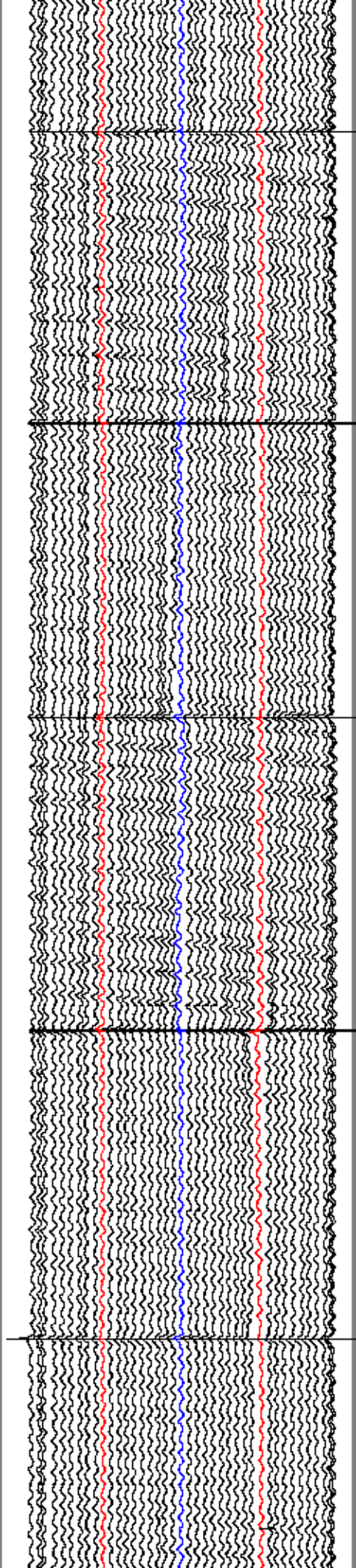
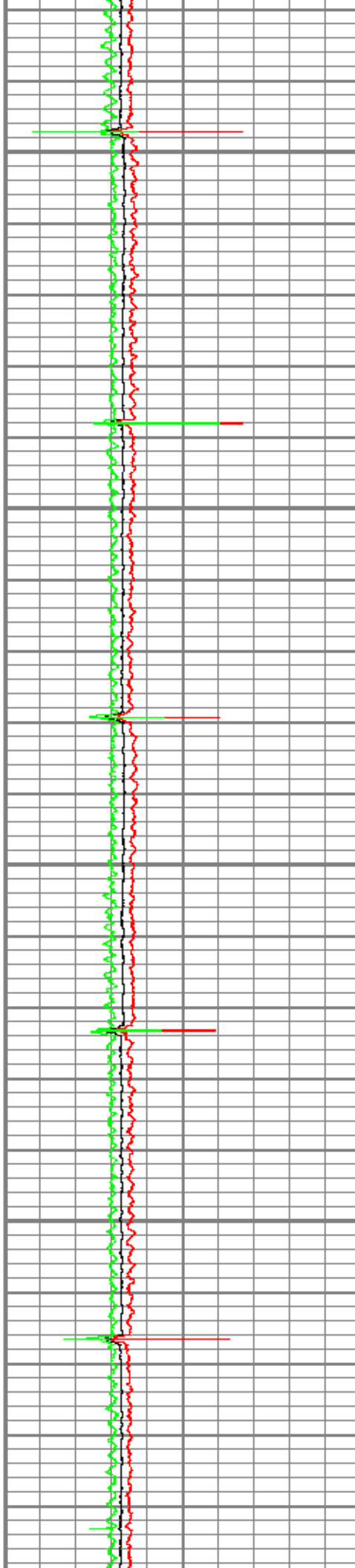


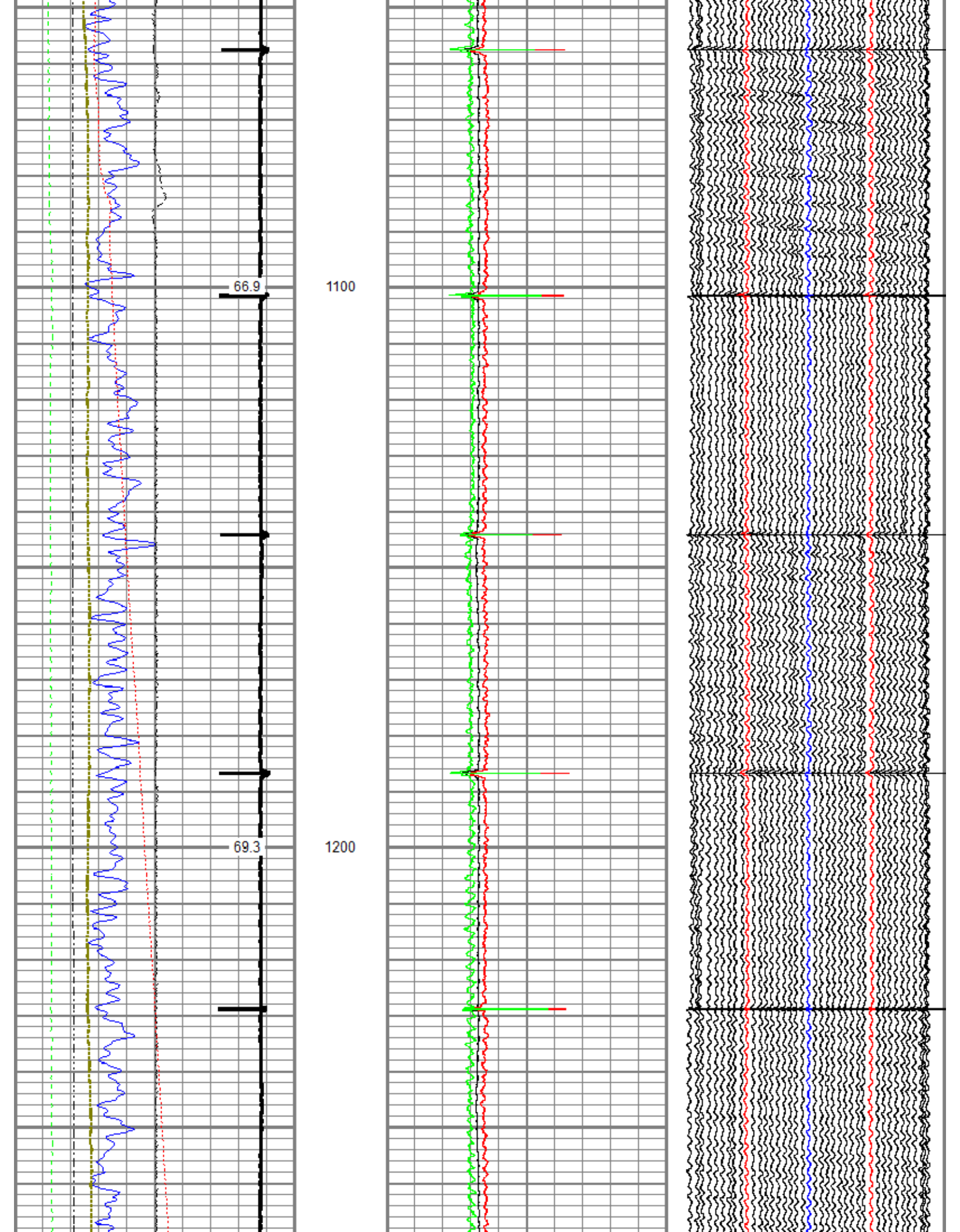




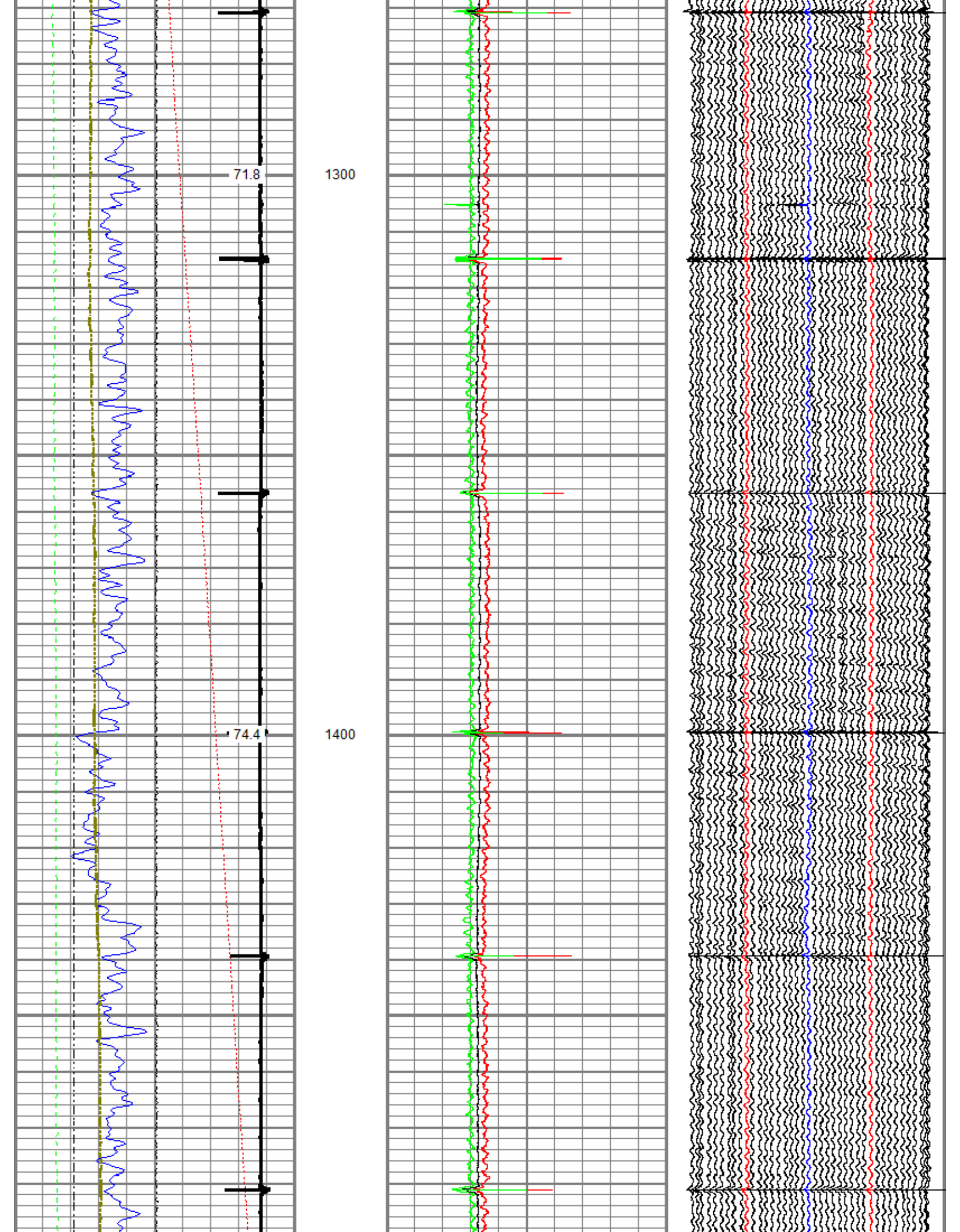
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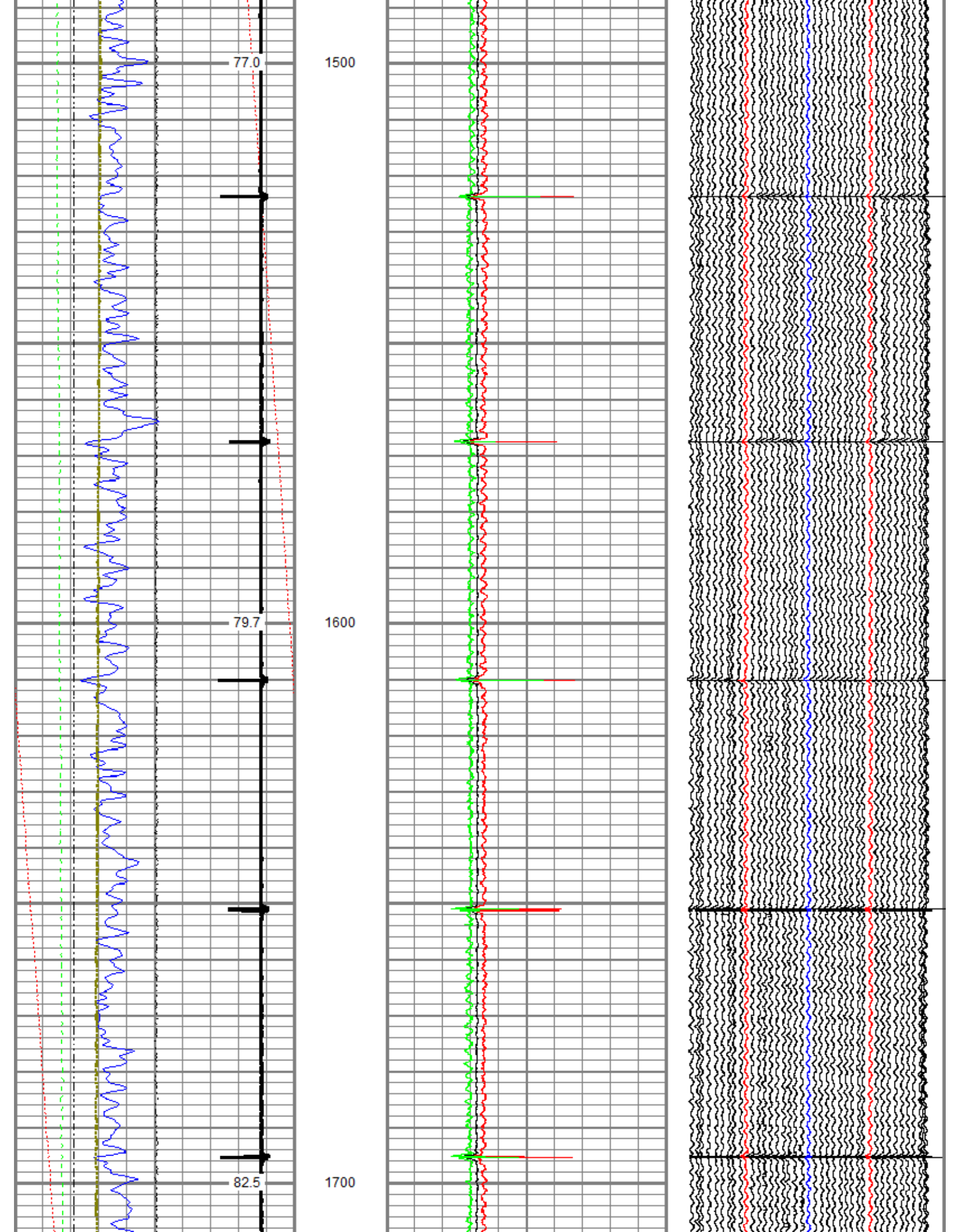


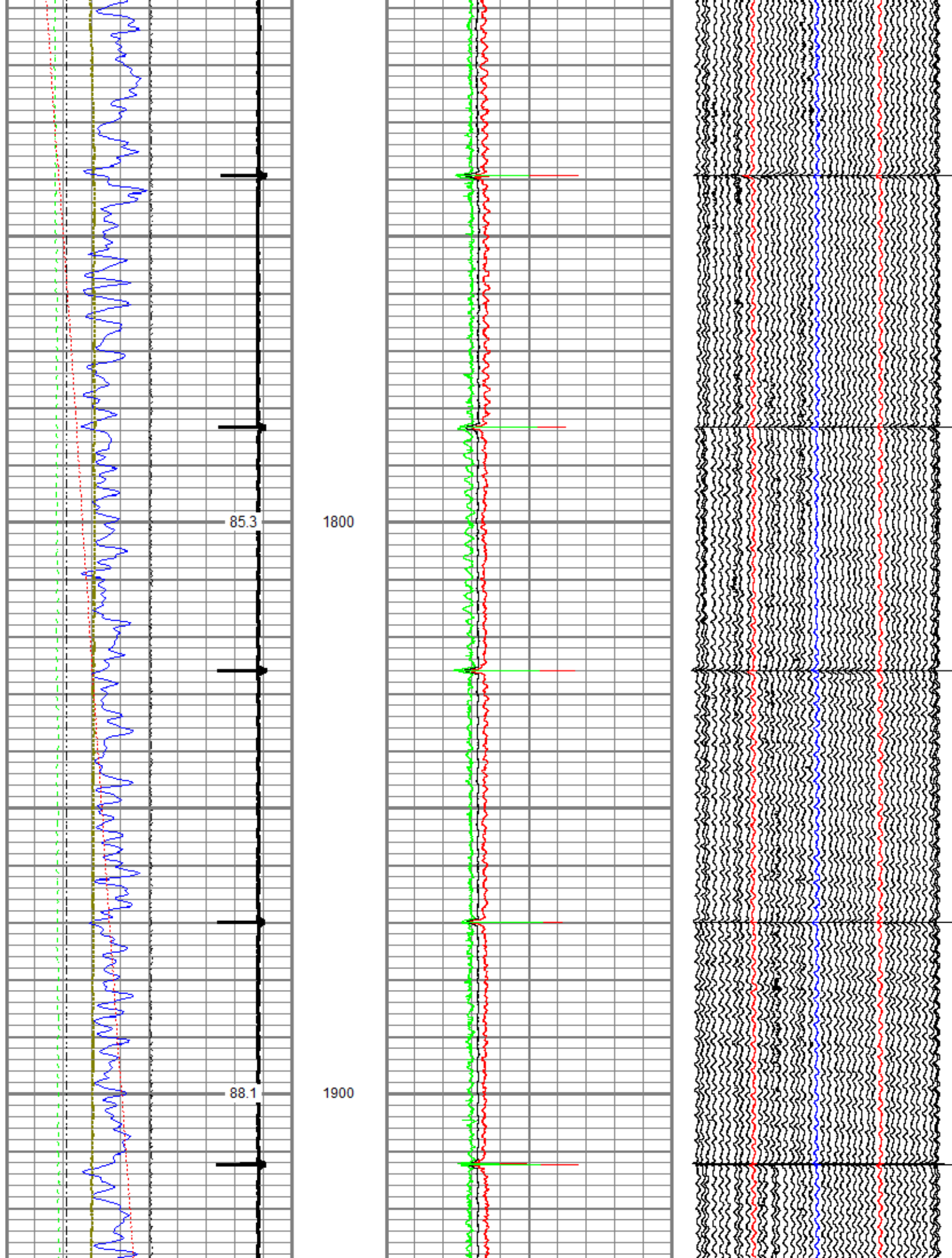




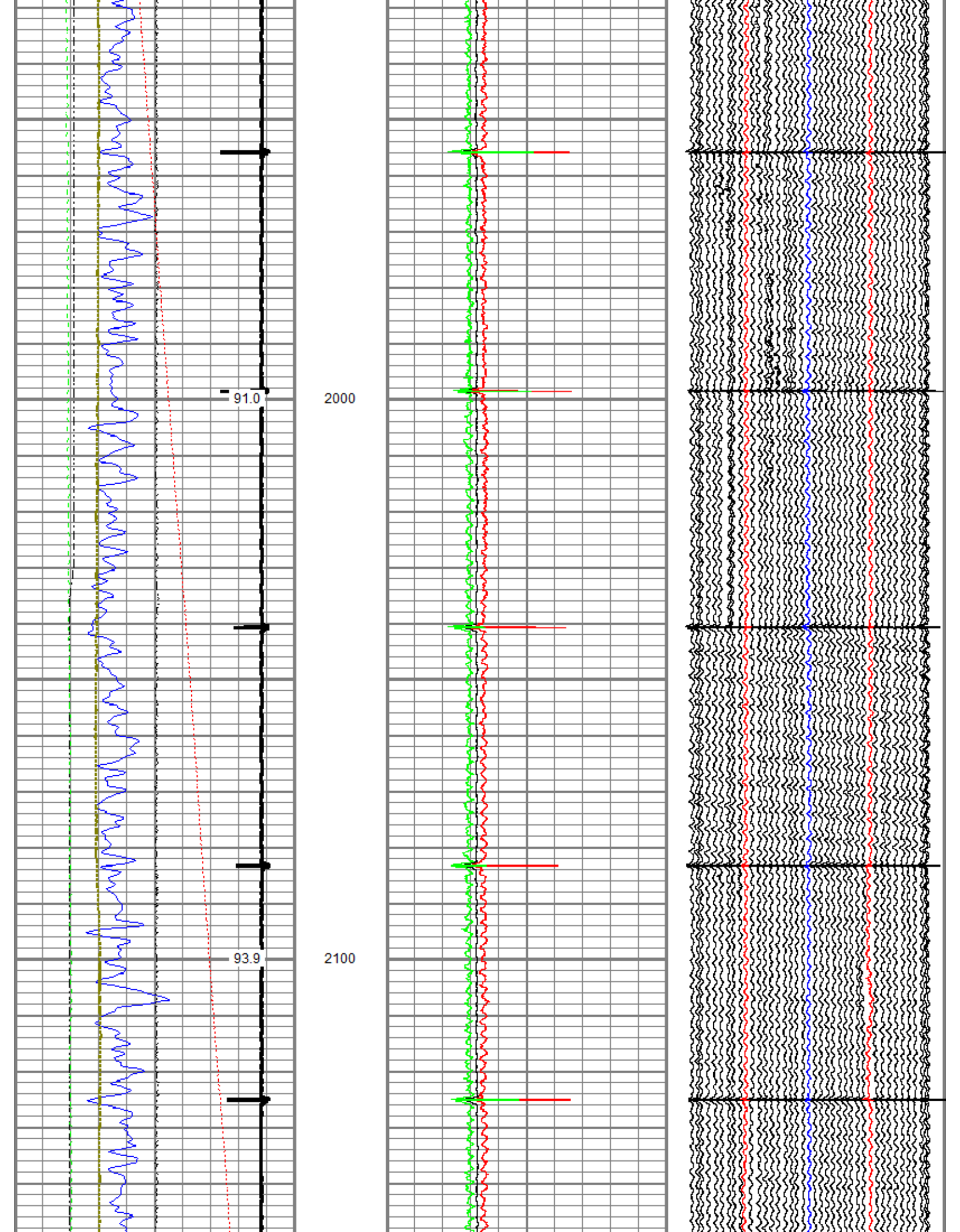


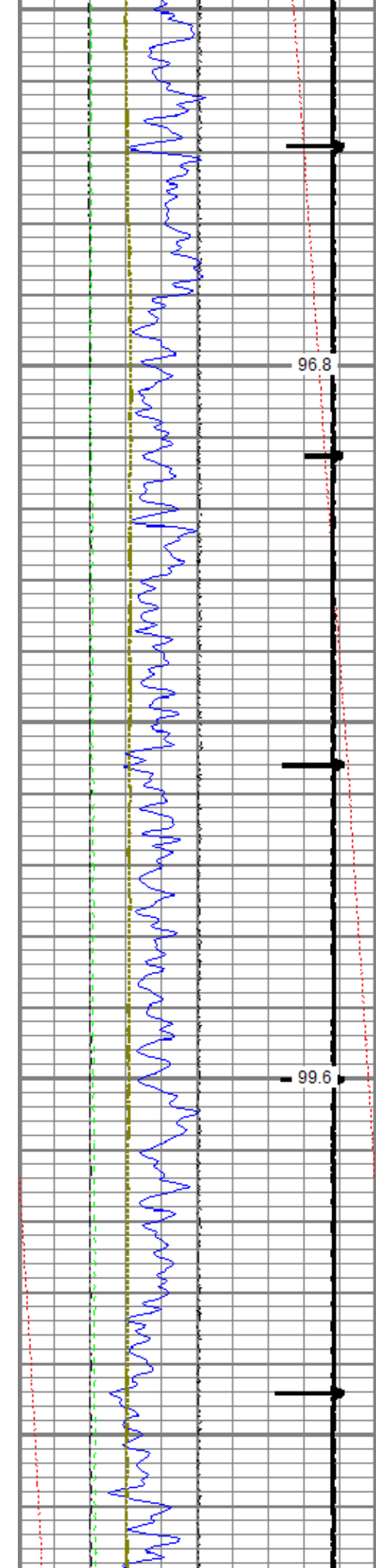






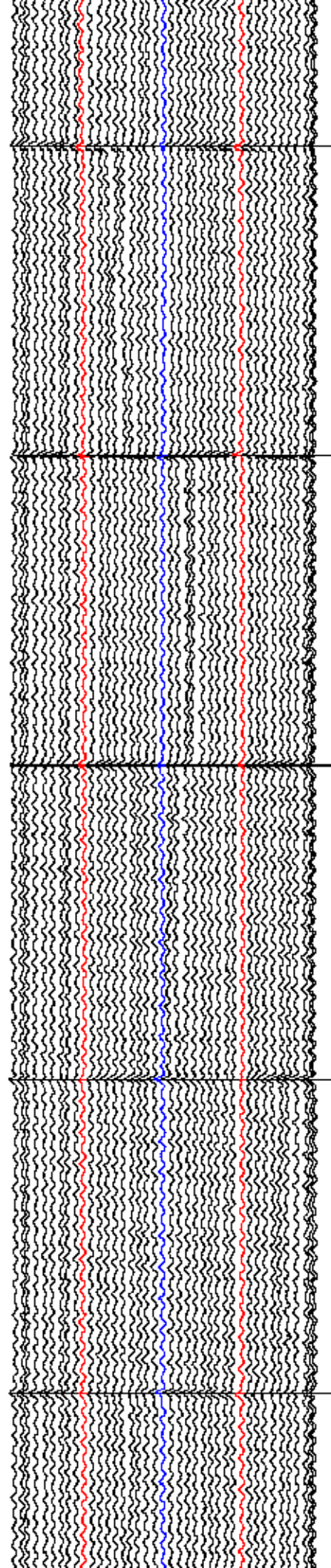
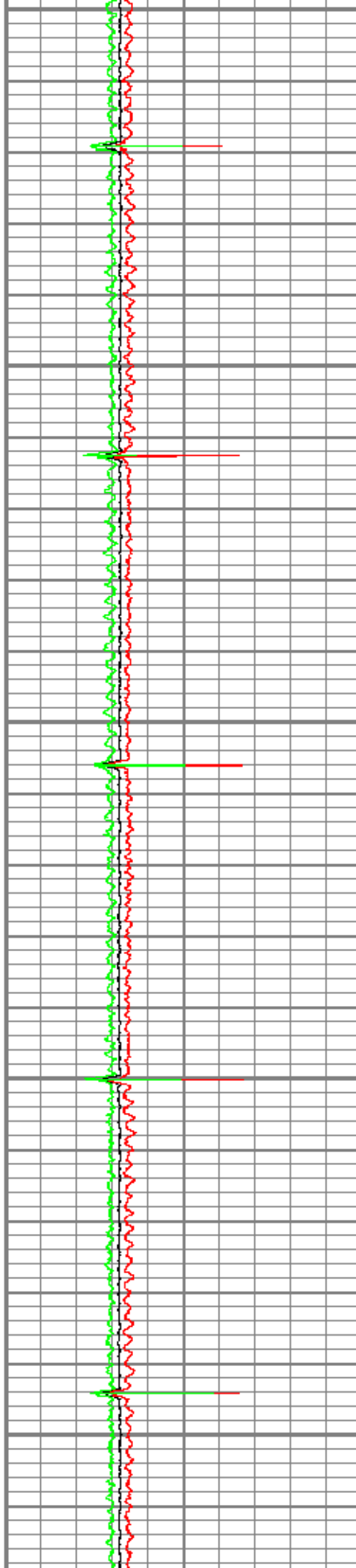




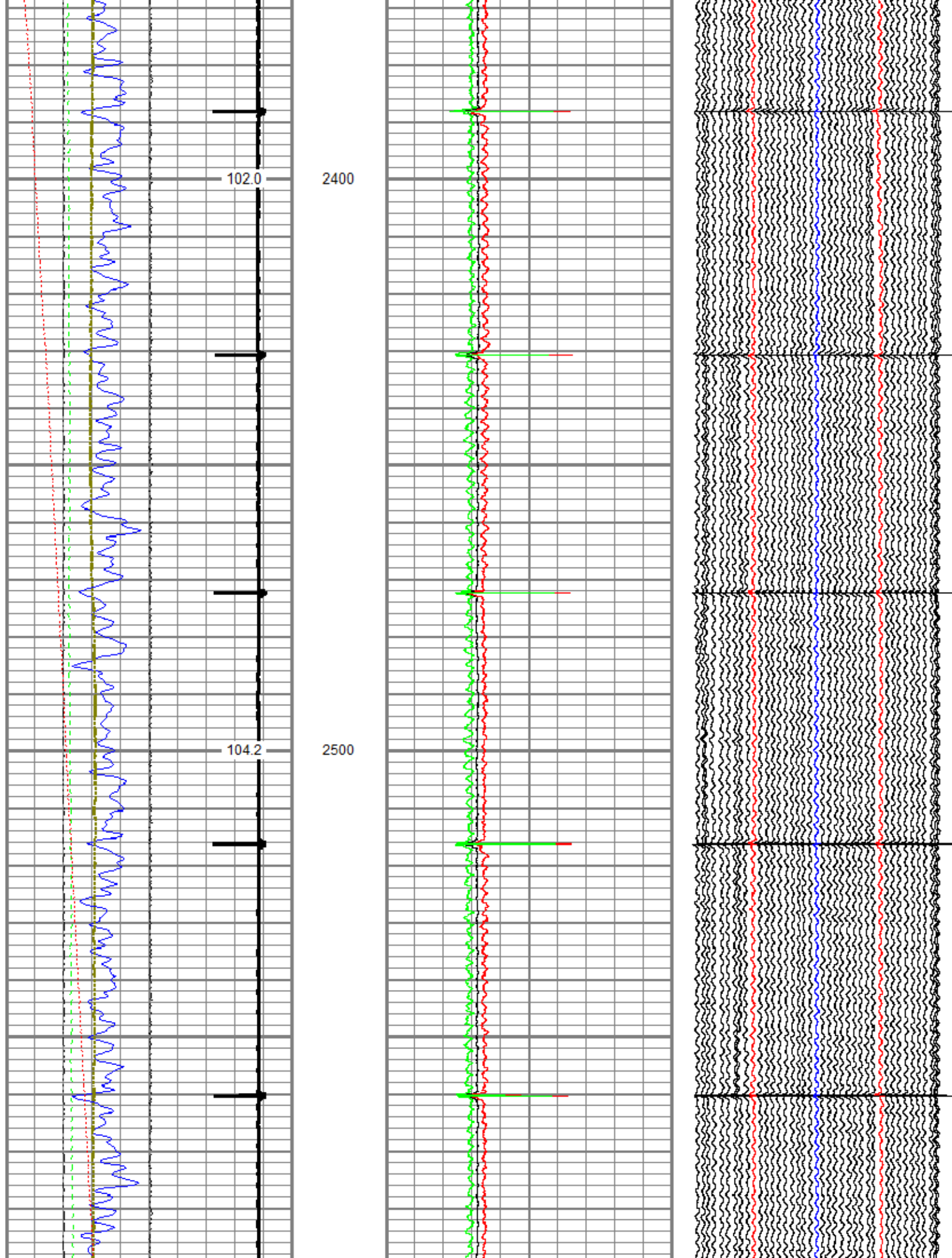


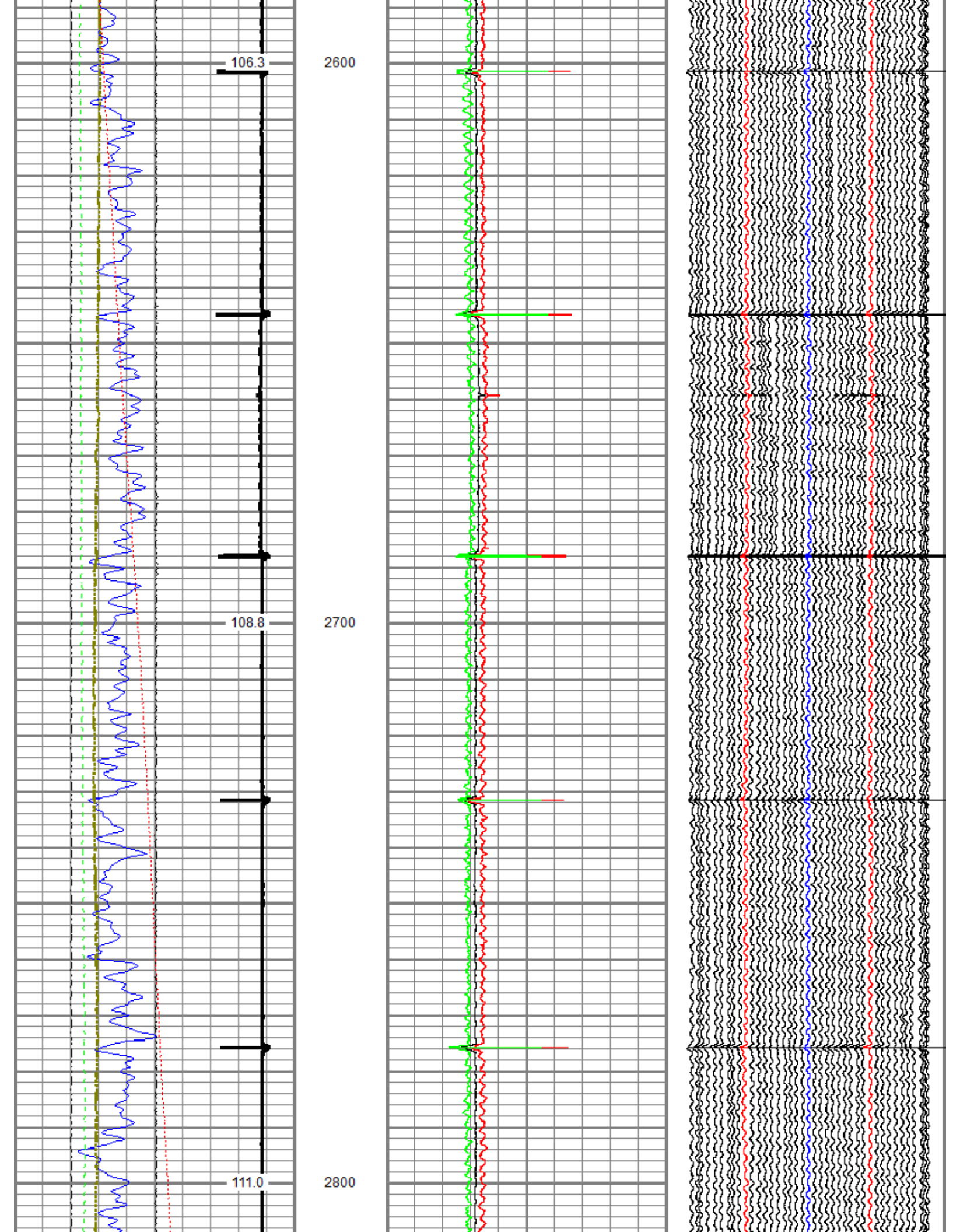
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2300

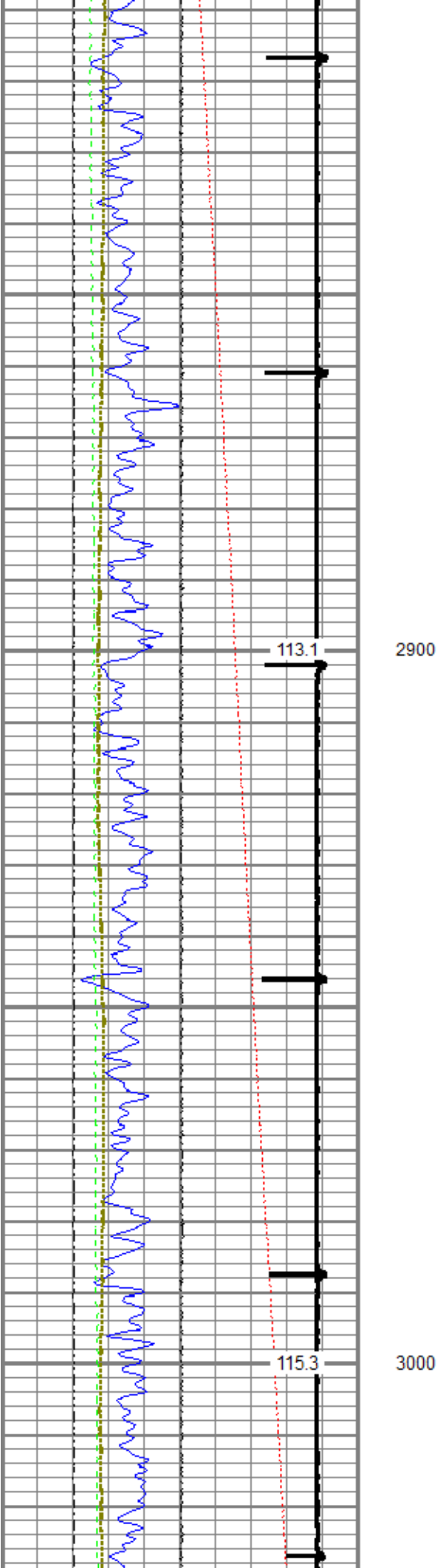
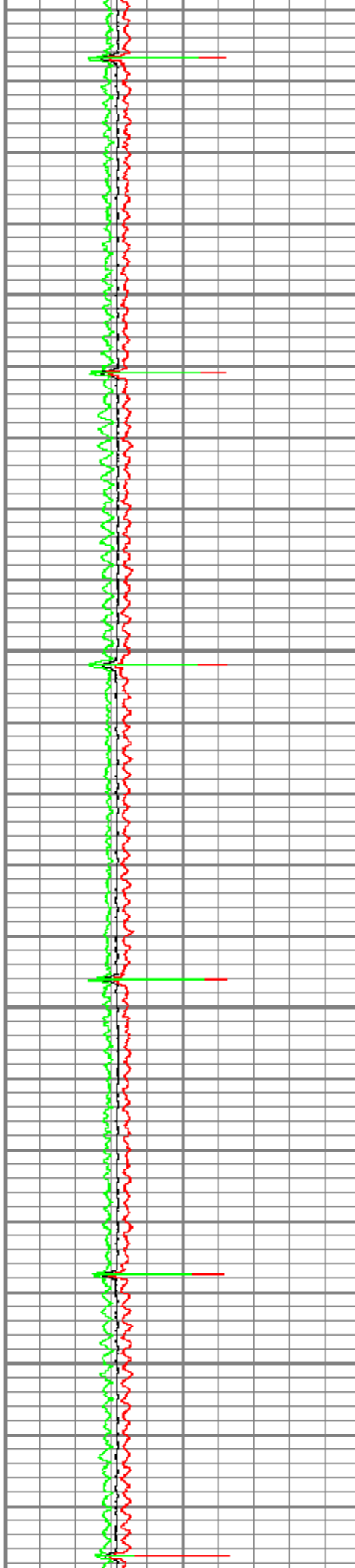
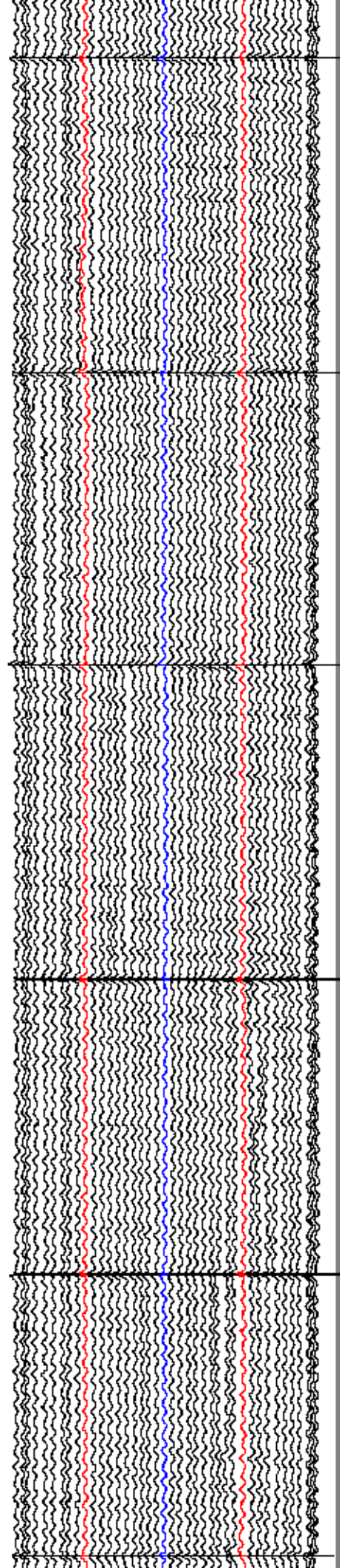


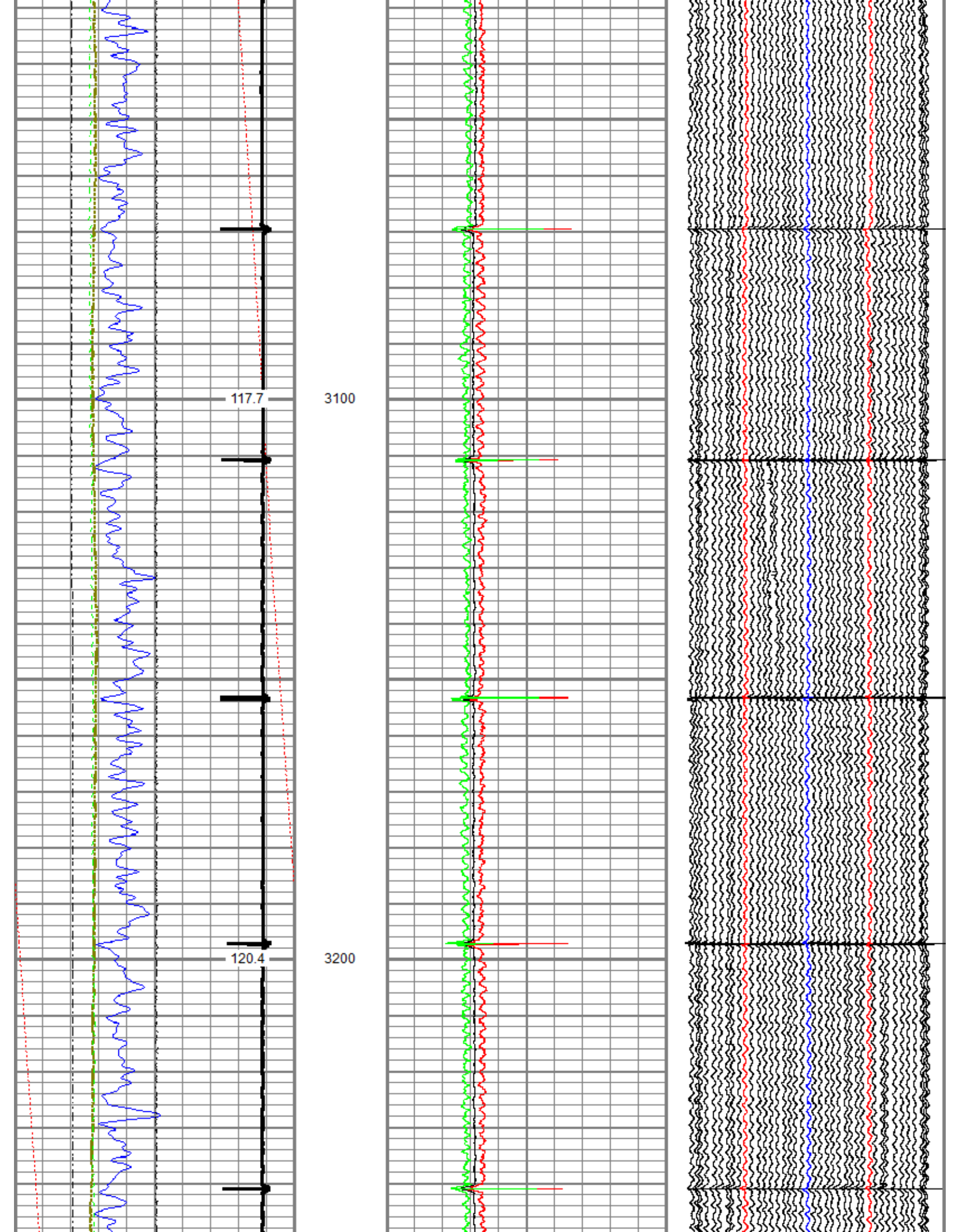




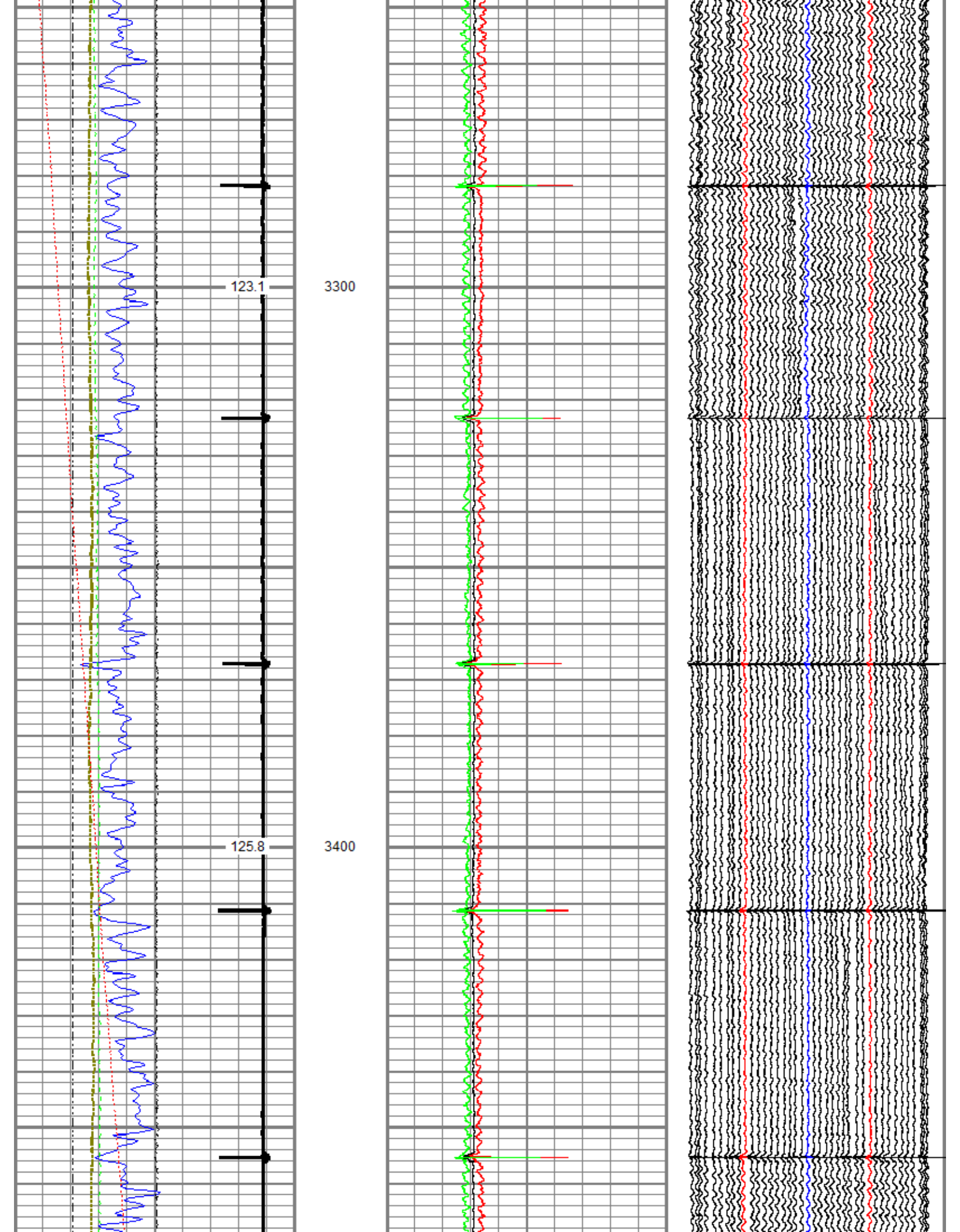


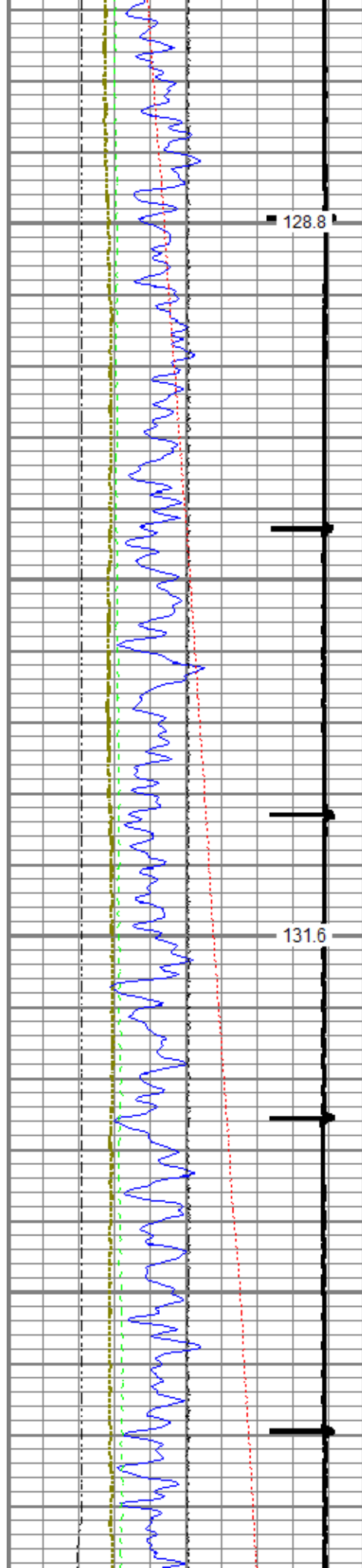










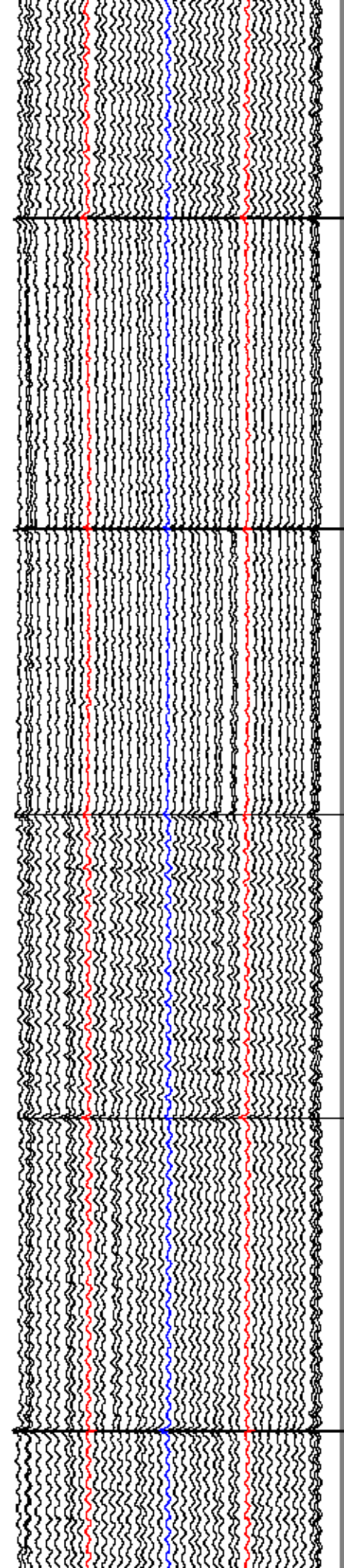
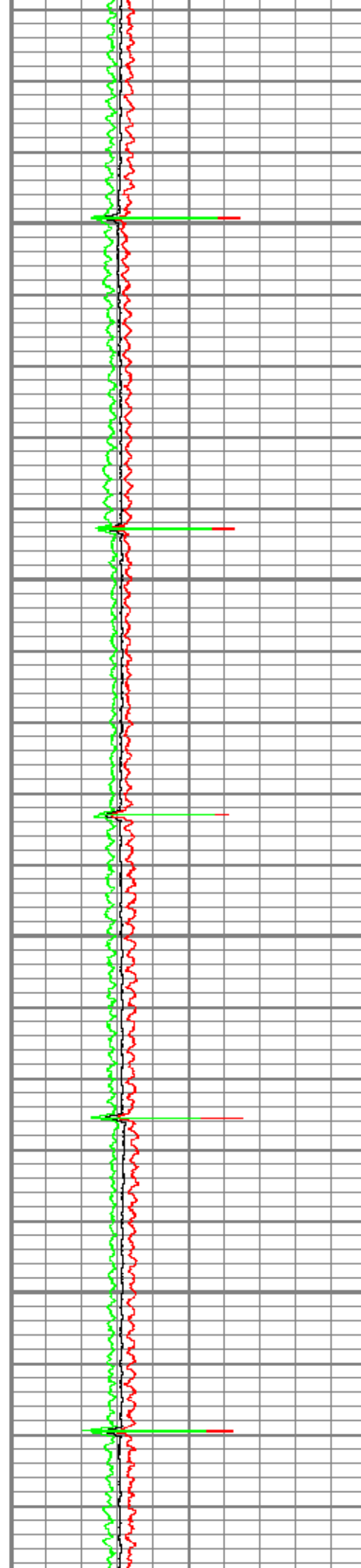


128.8

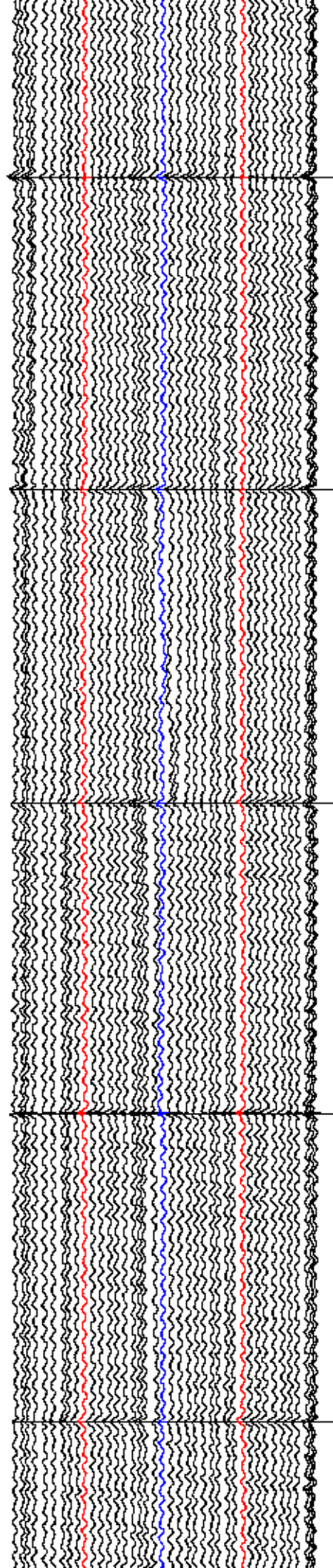
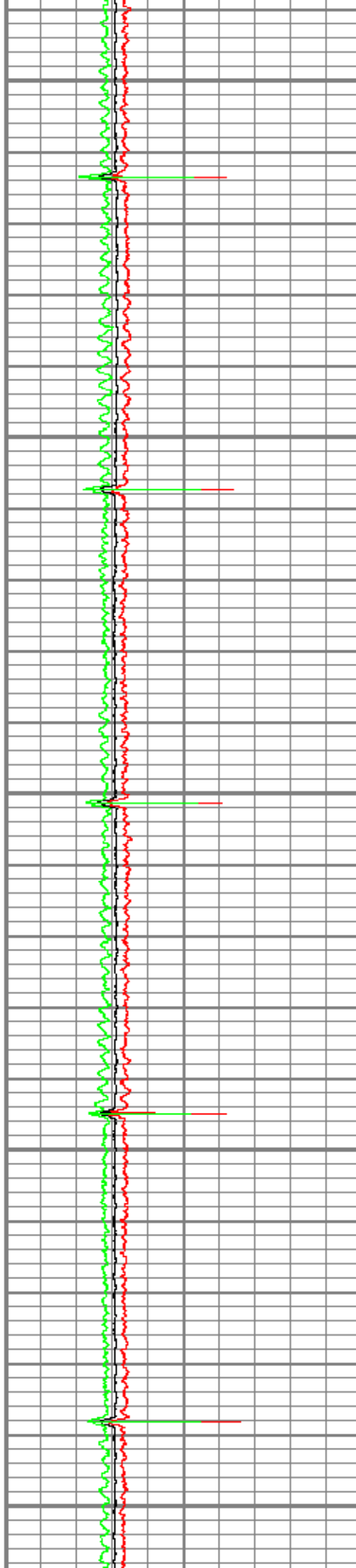
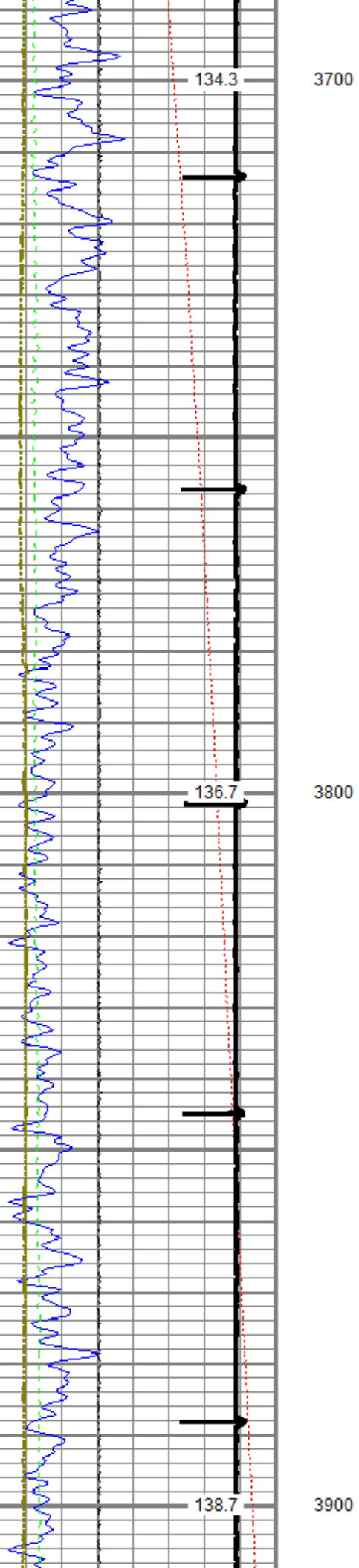
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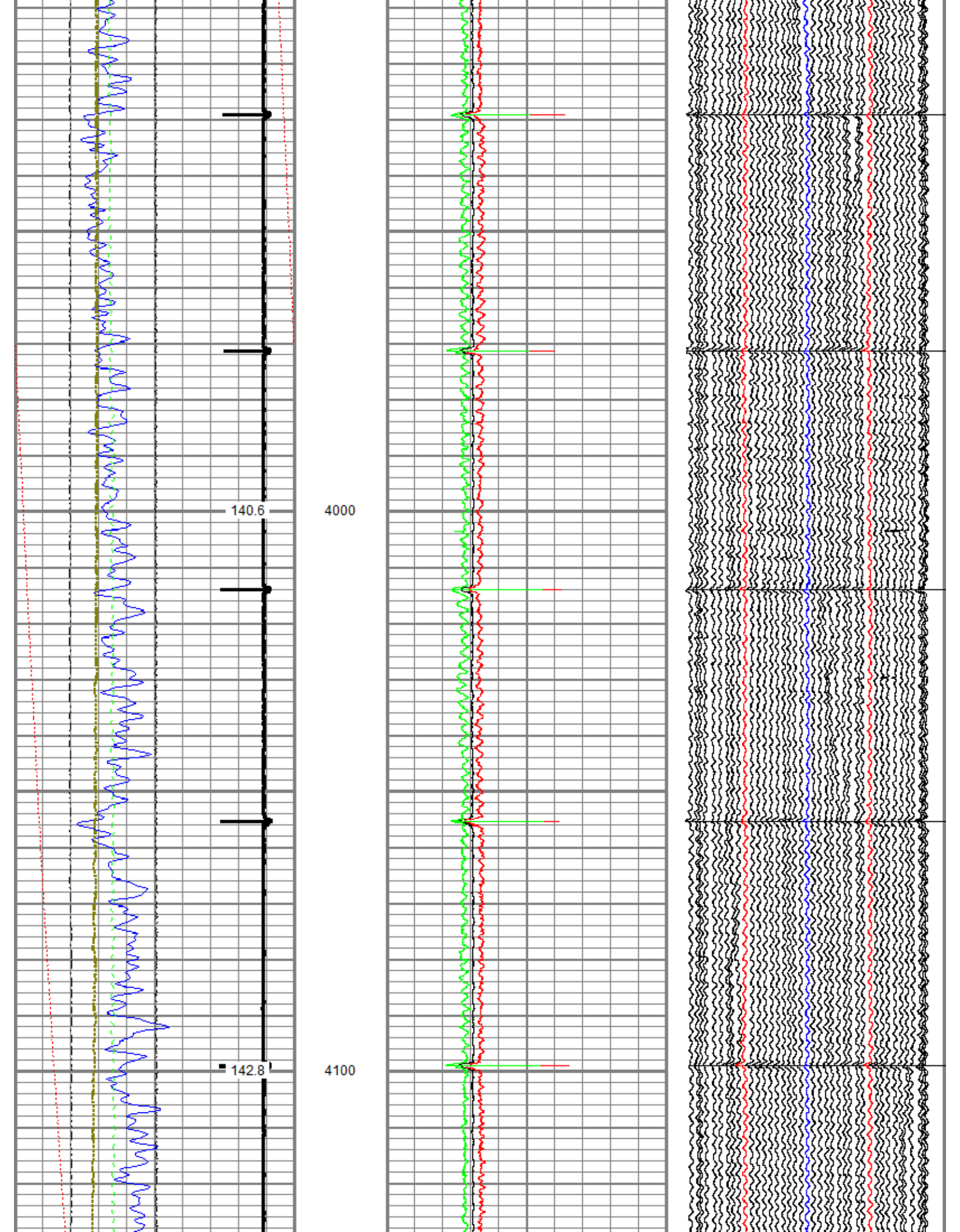
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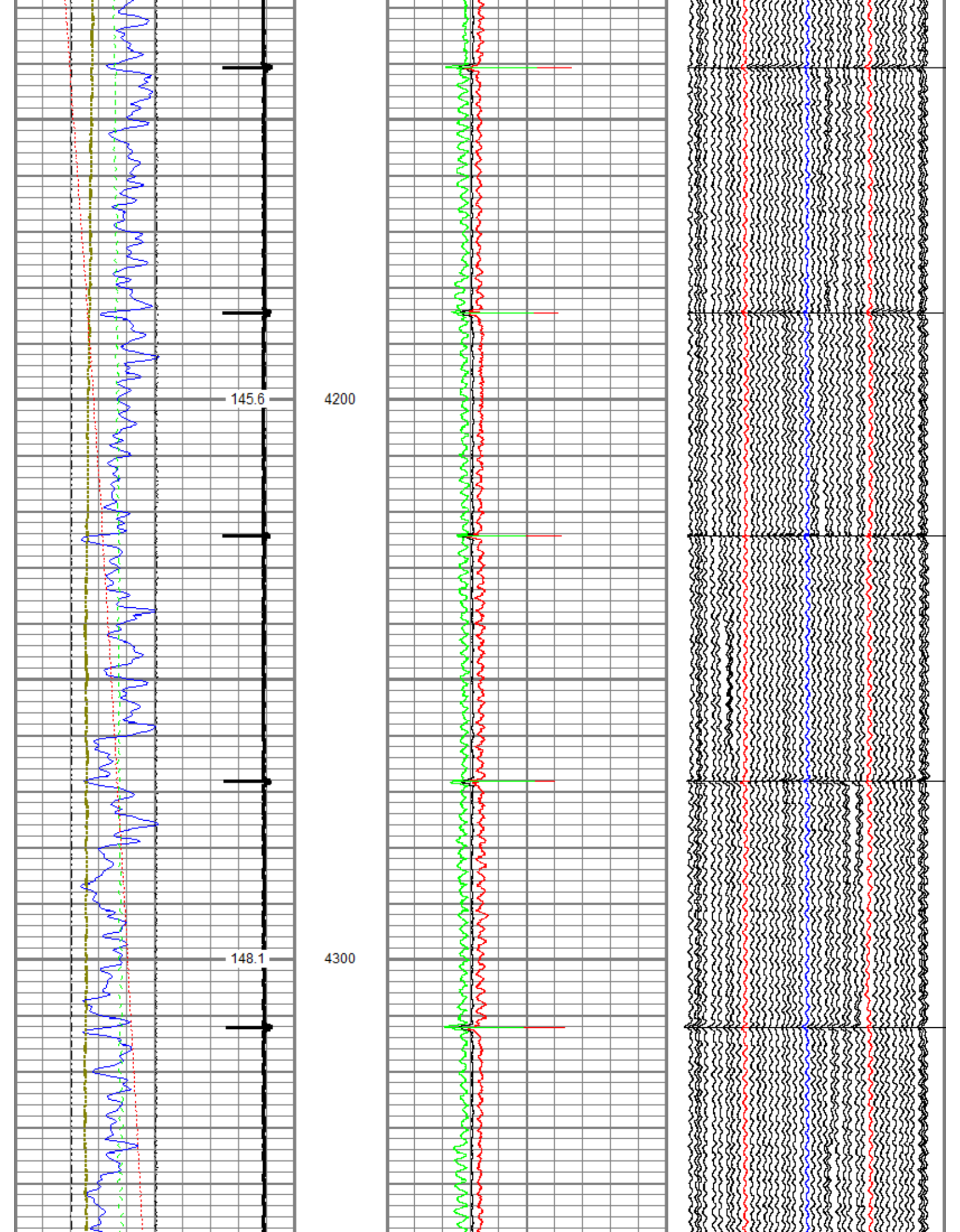


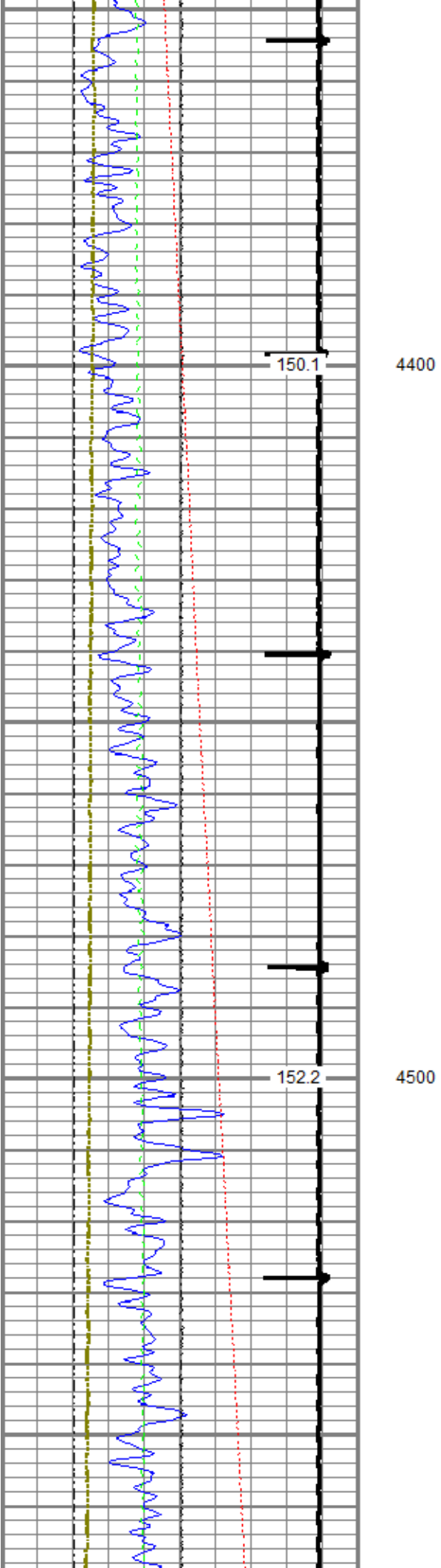
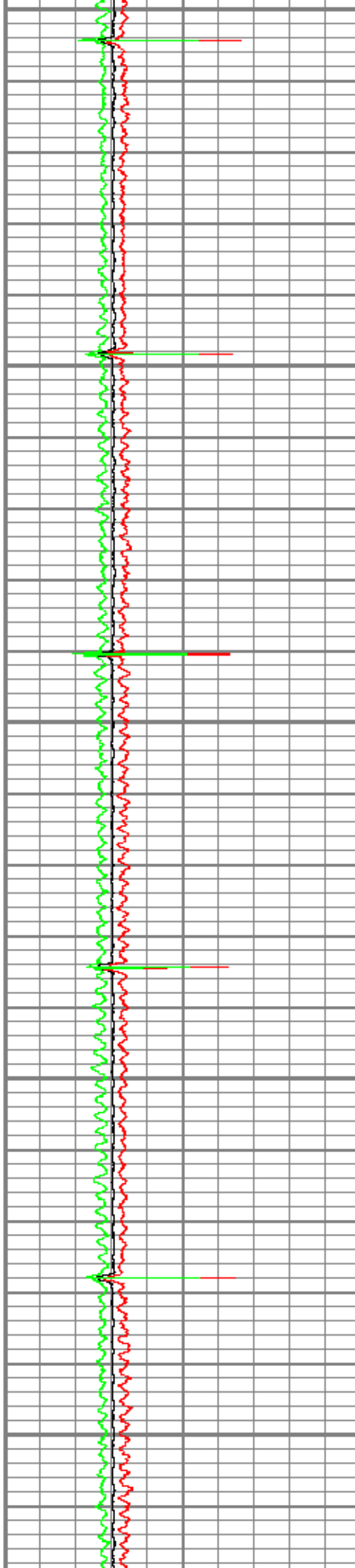
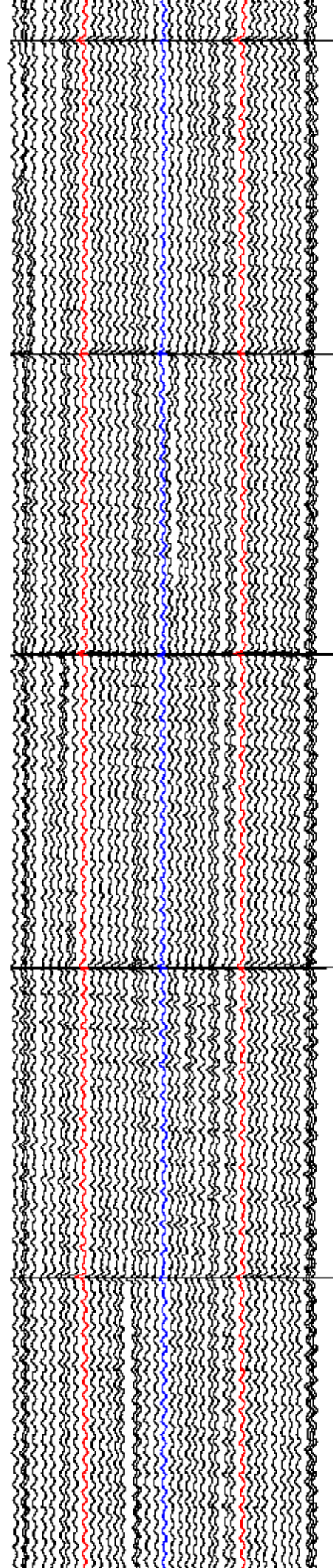




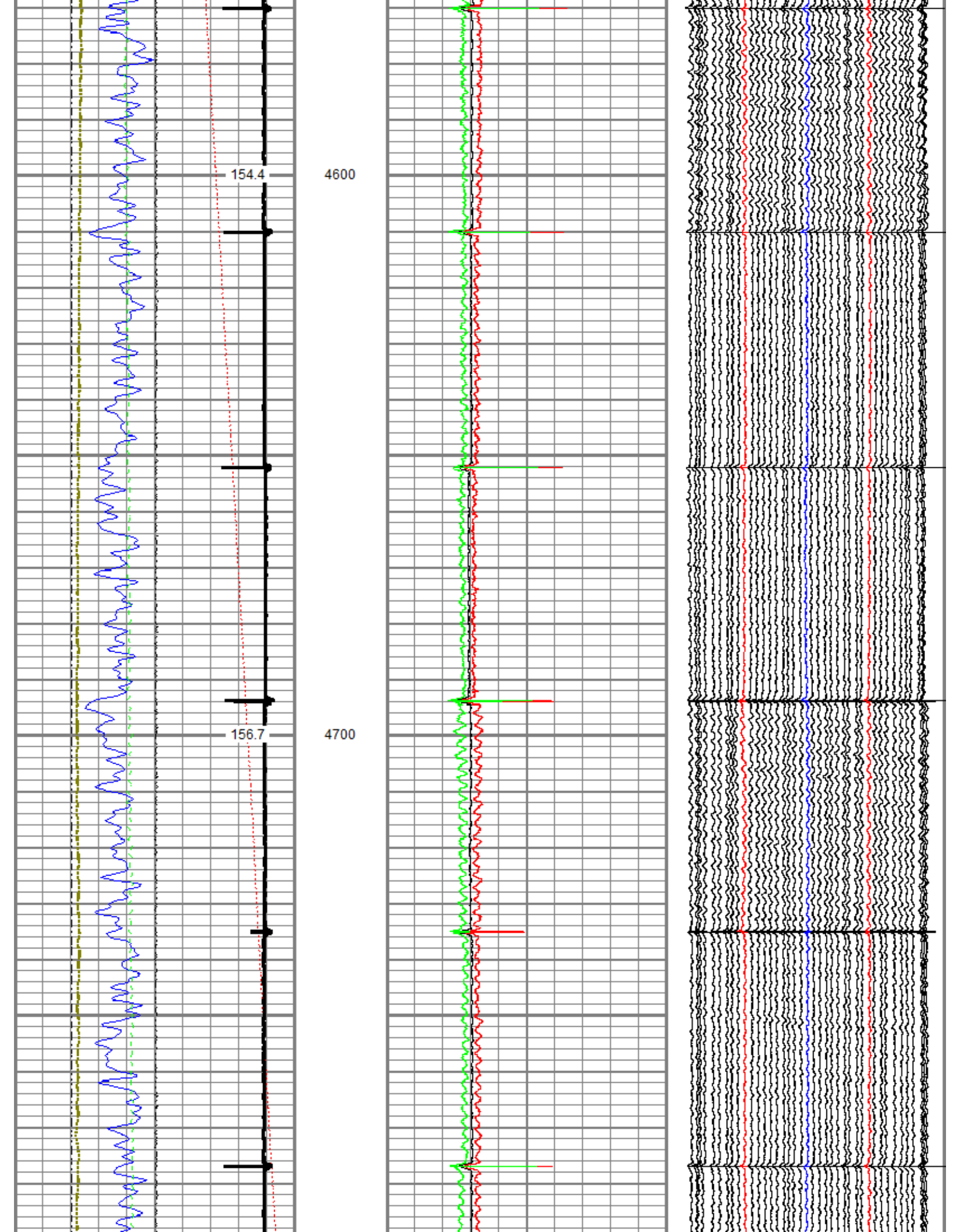


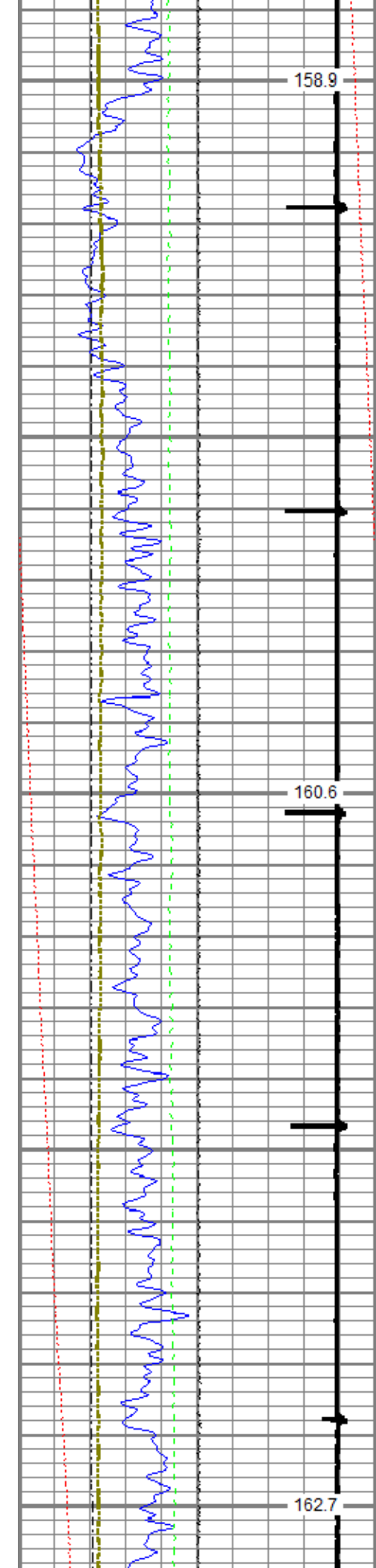








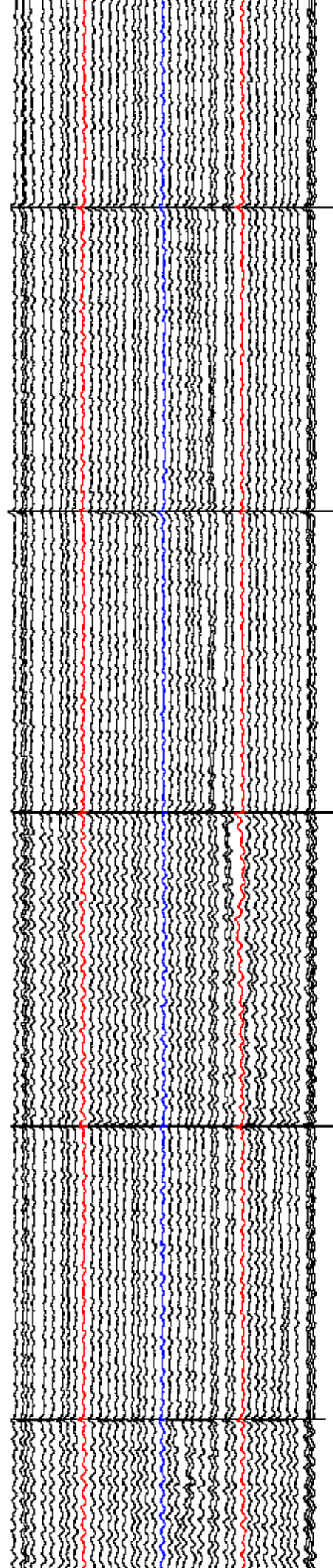
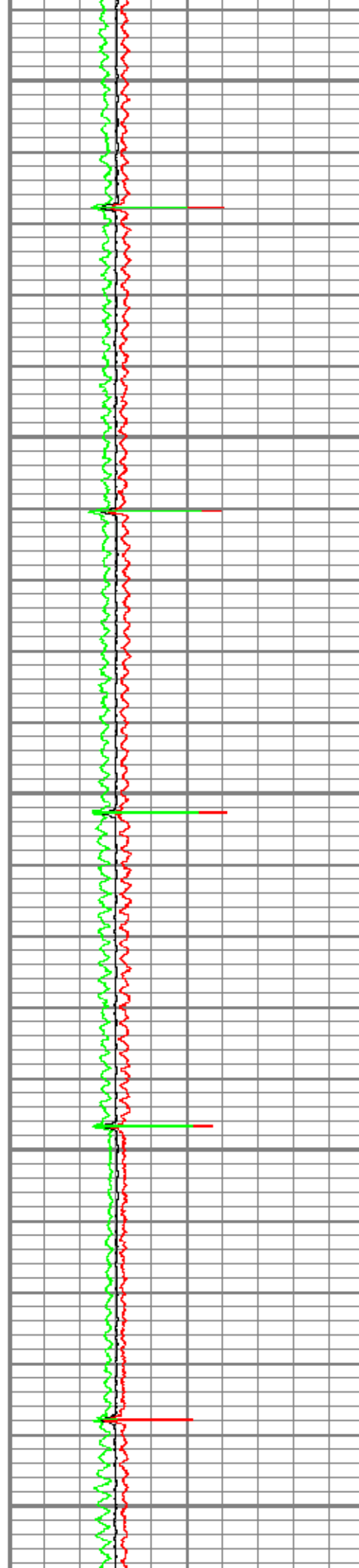




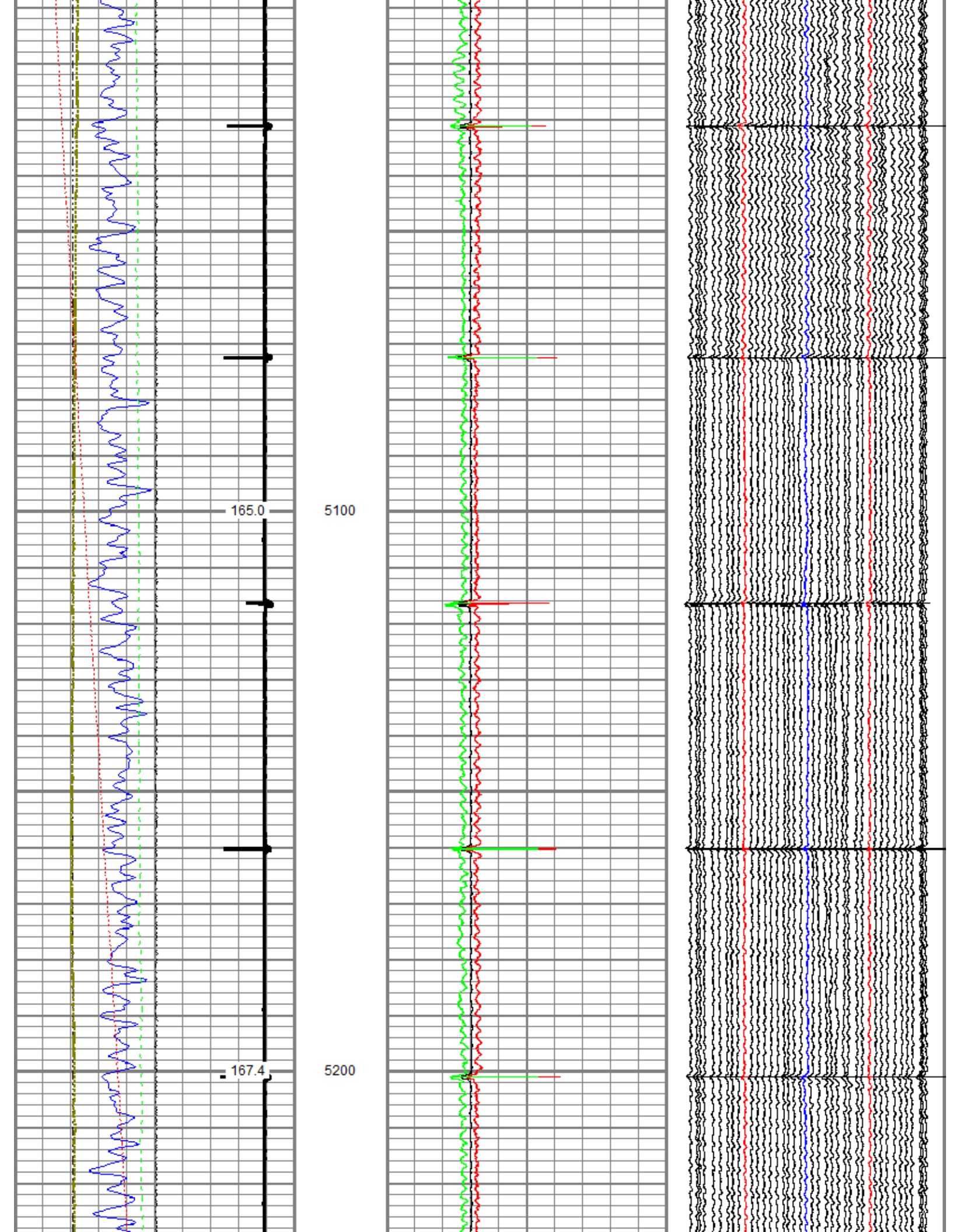
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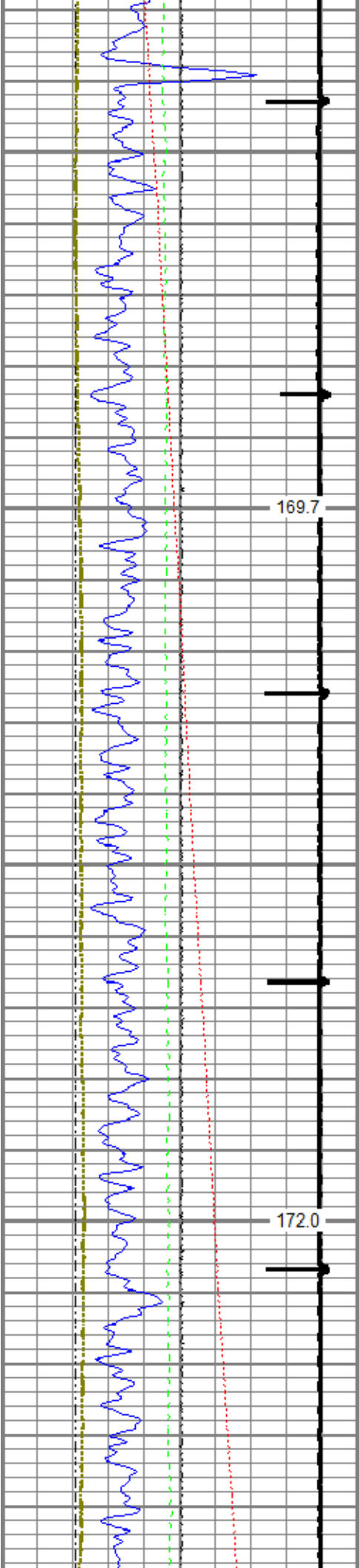
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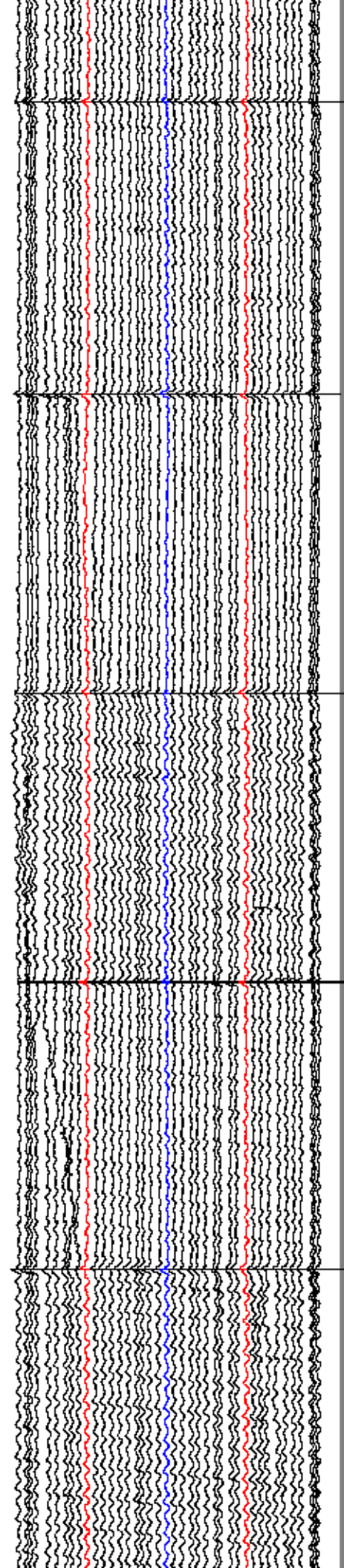
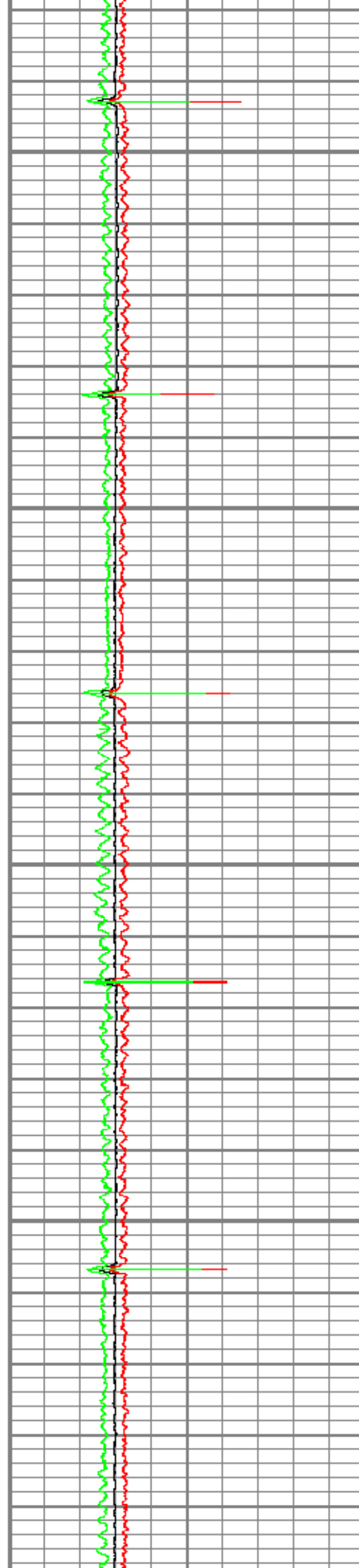


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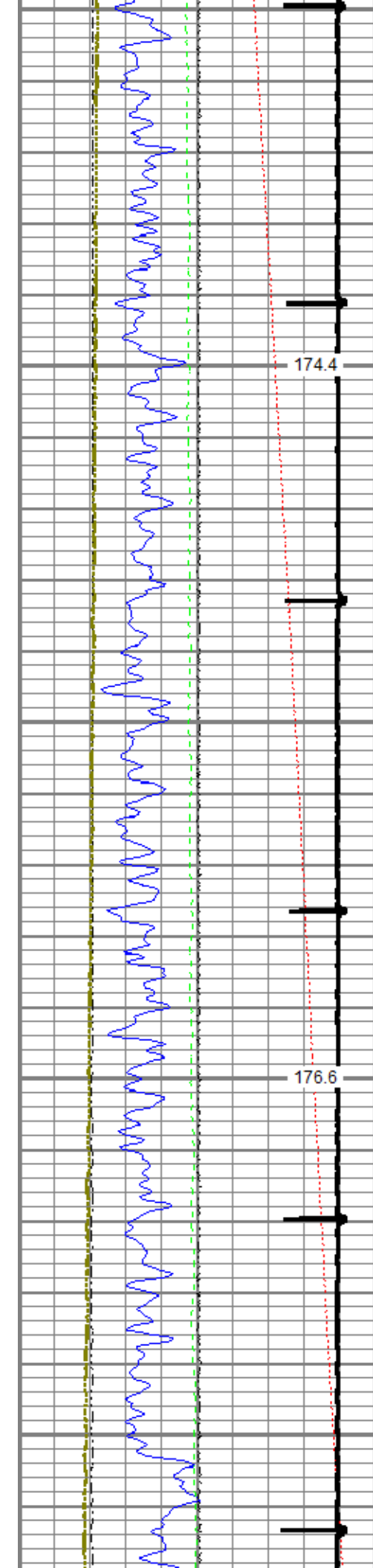
5300

172.0

5400





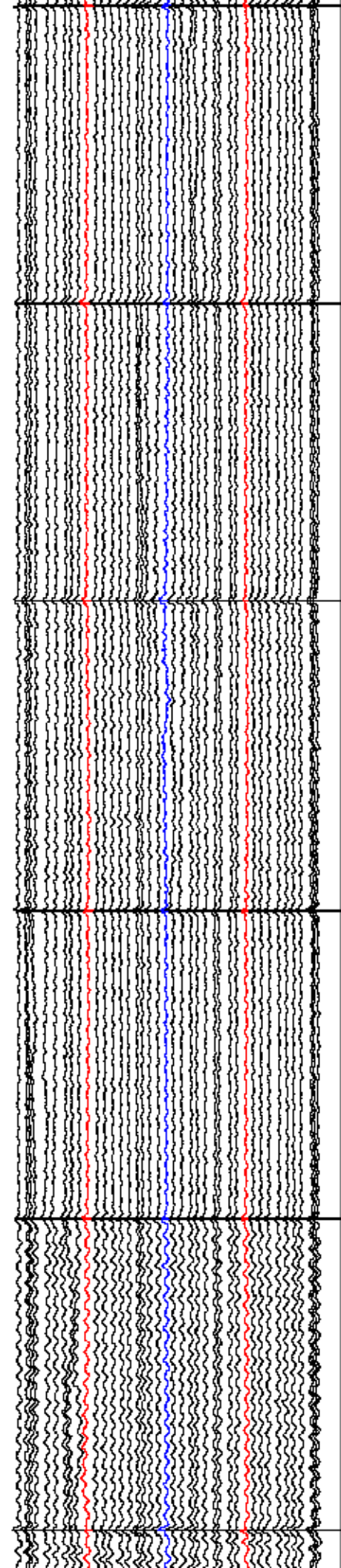
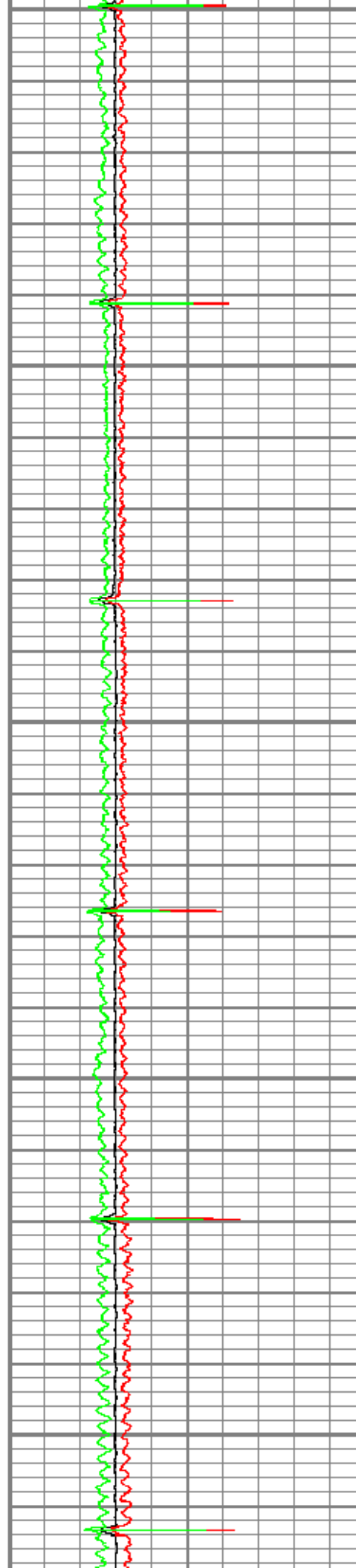


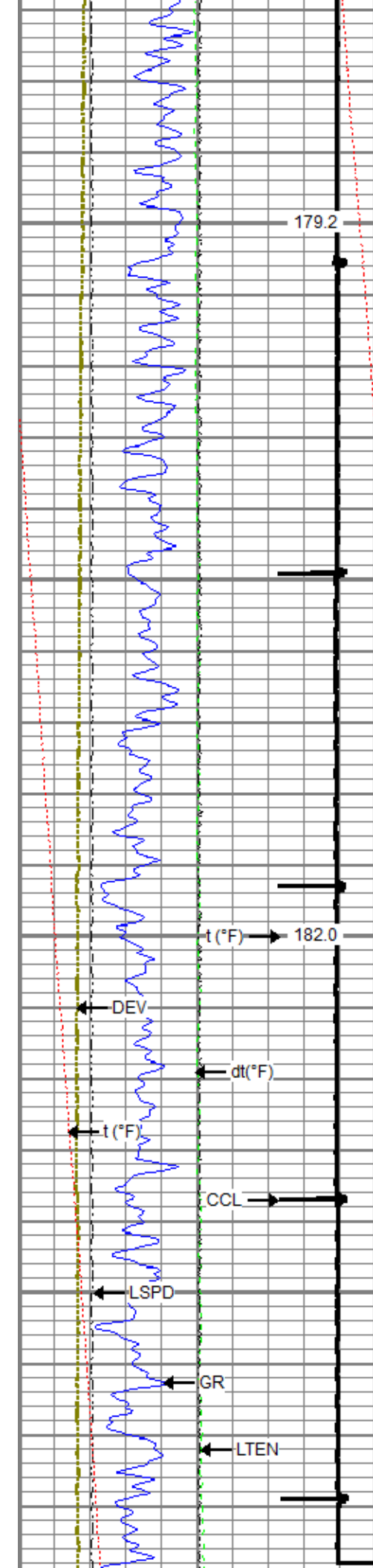
174.4

5500

176.6

5600

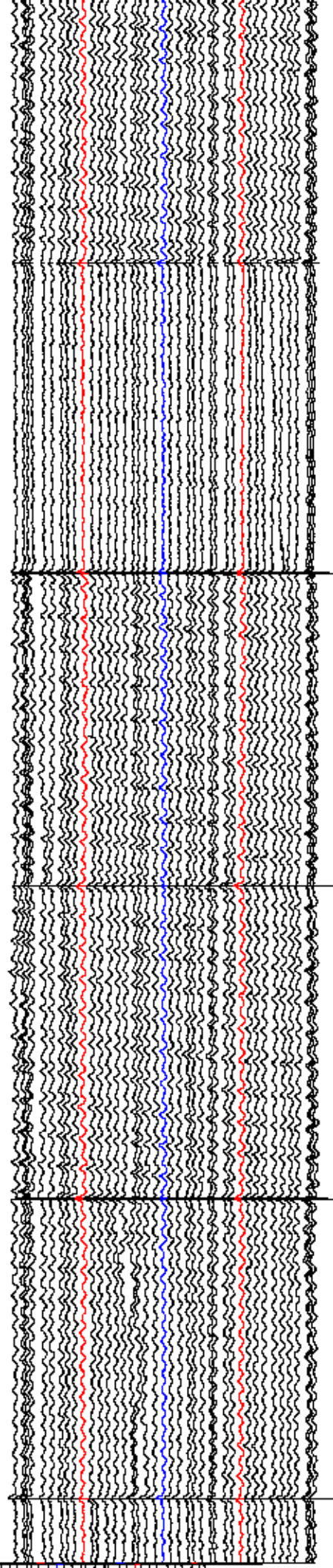
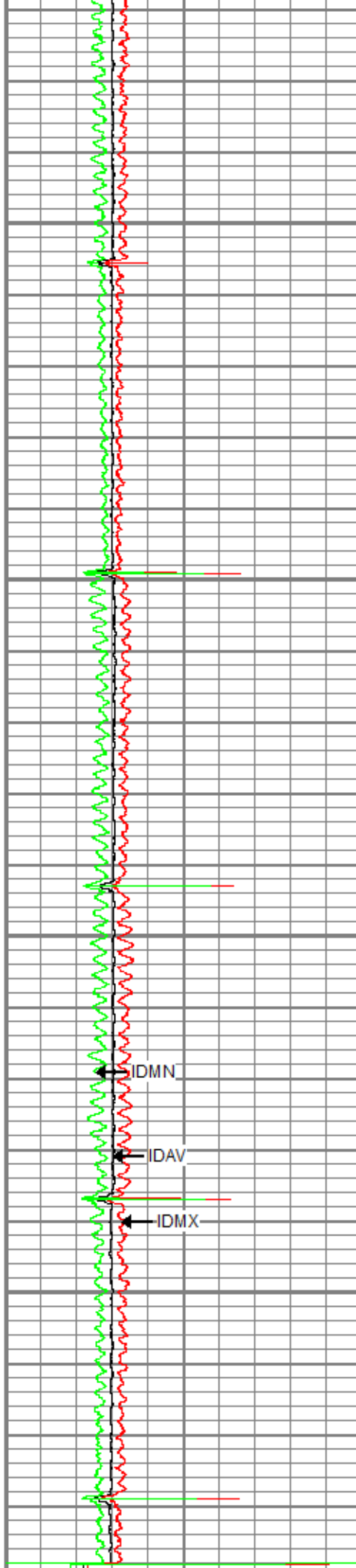




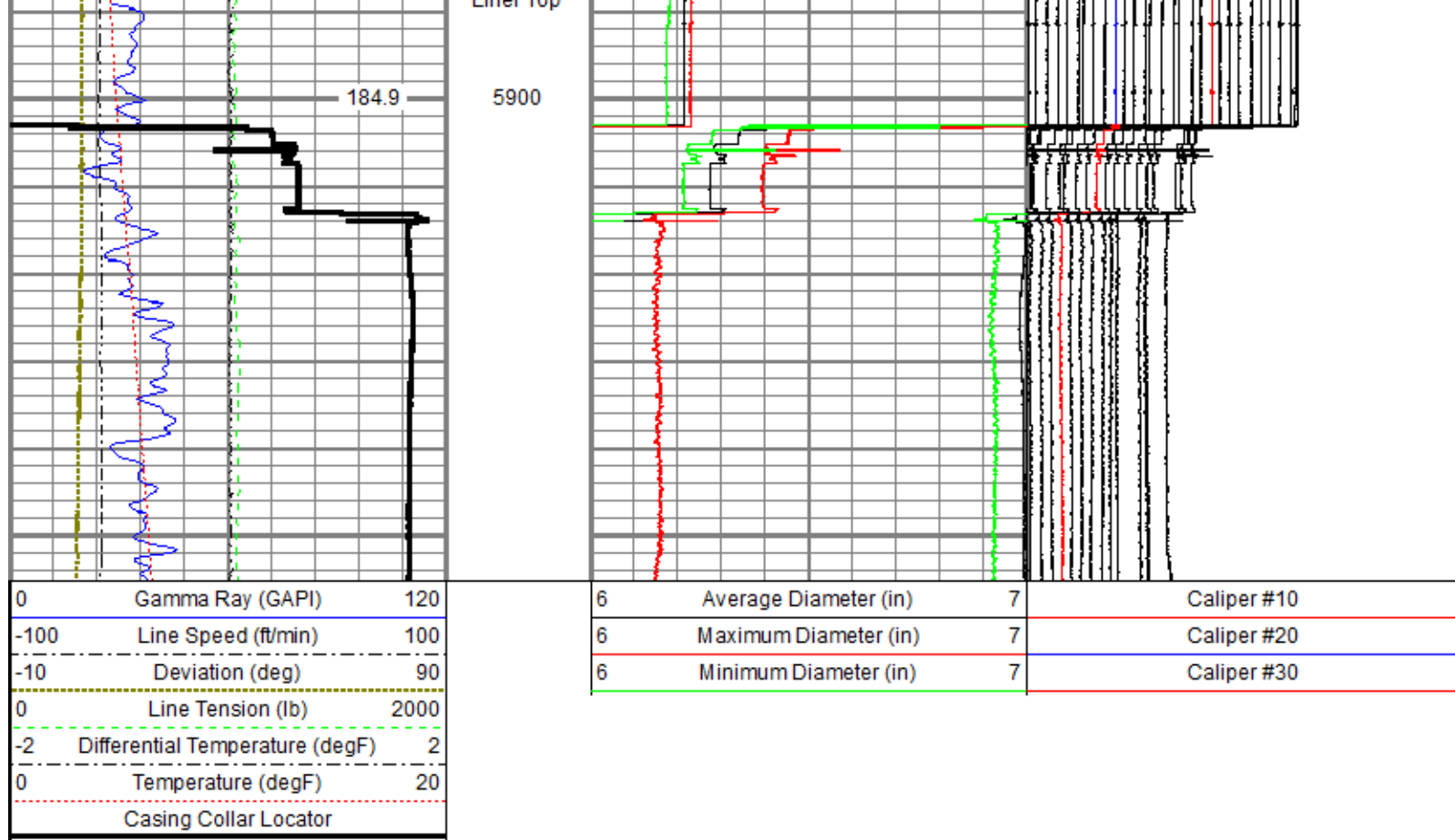
5700

5800

Liner Top



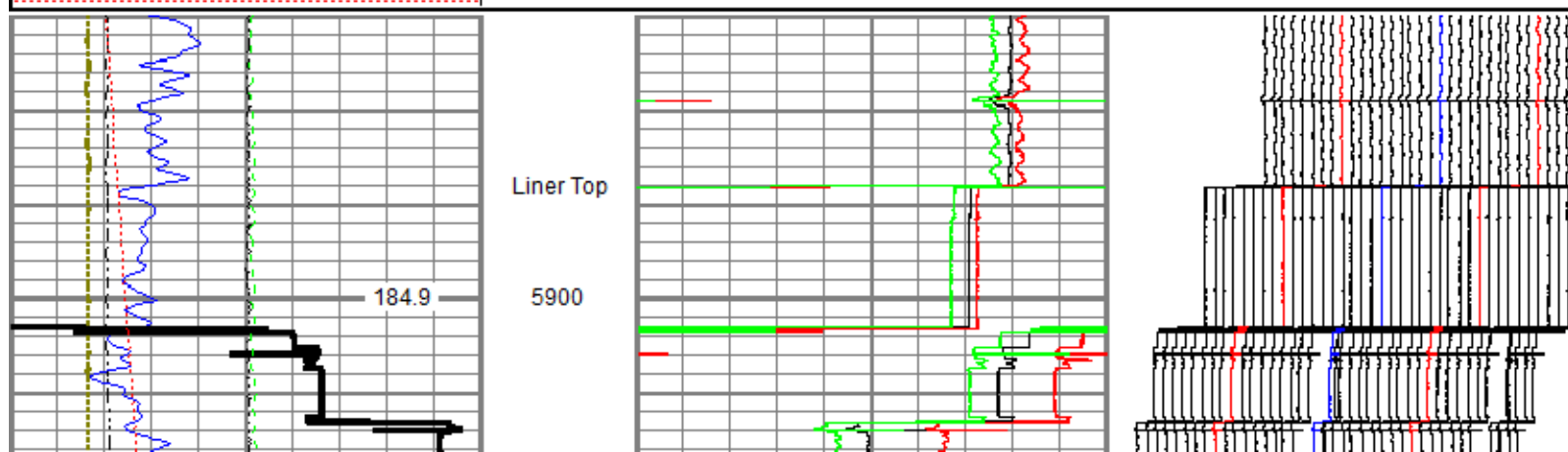
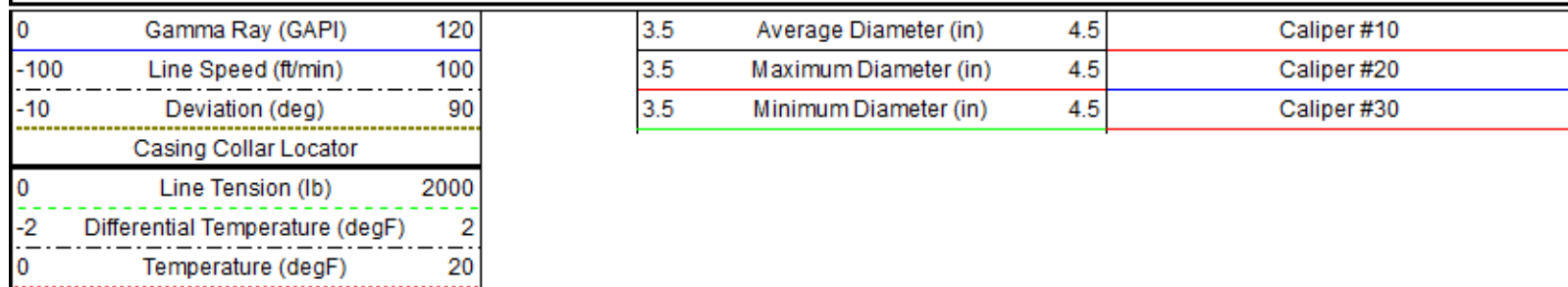


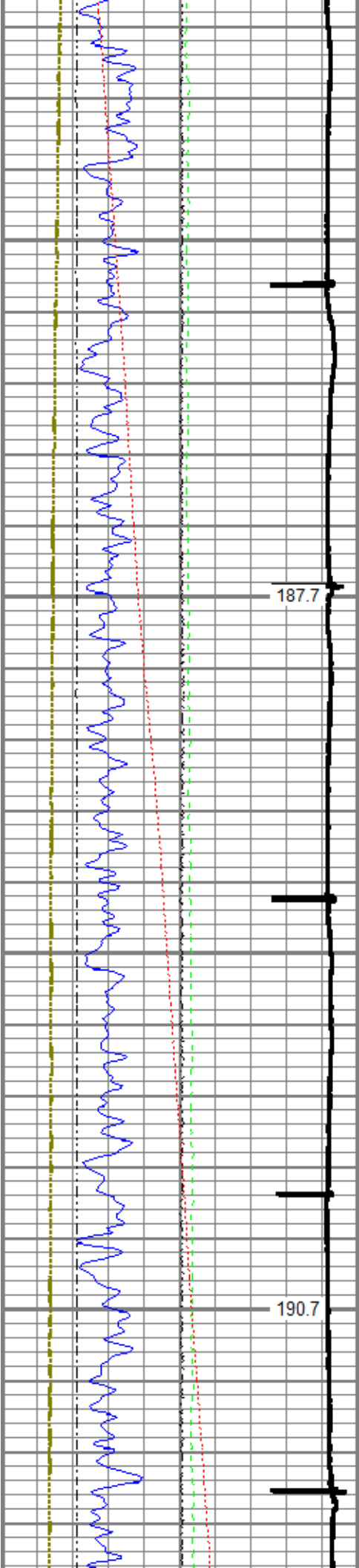


## Main Pass (4 inch Casing)

Recorded With 2800 PSI Surface Induced Pressure

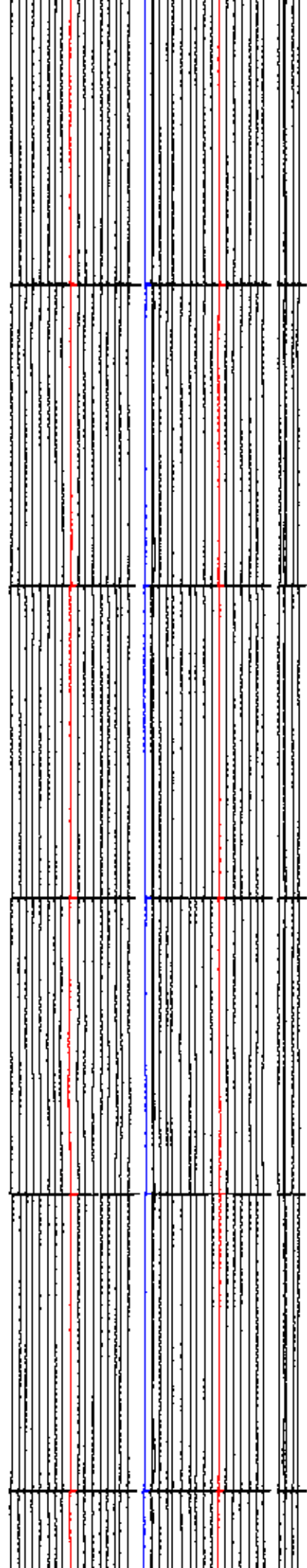
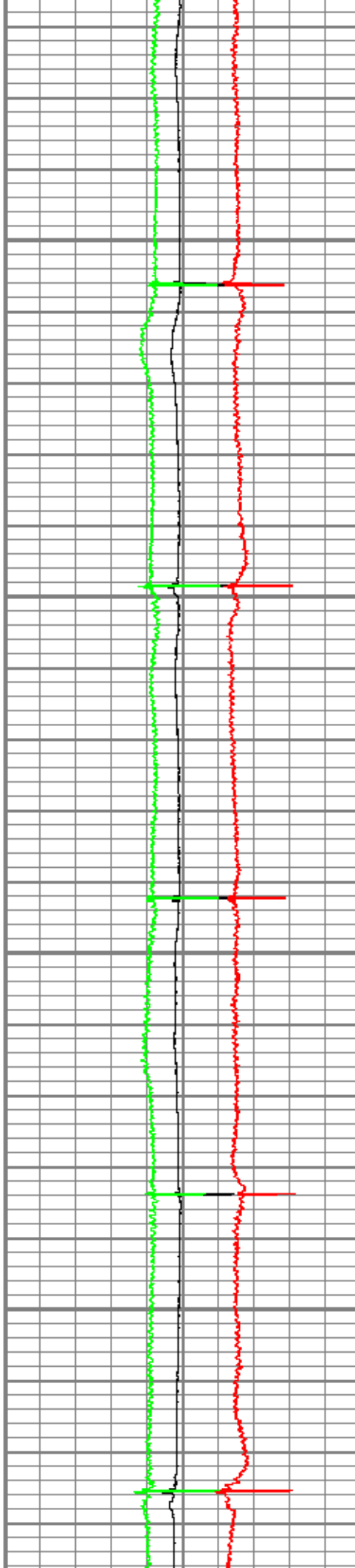
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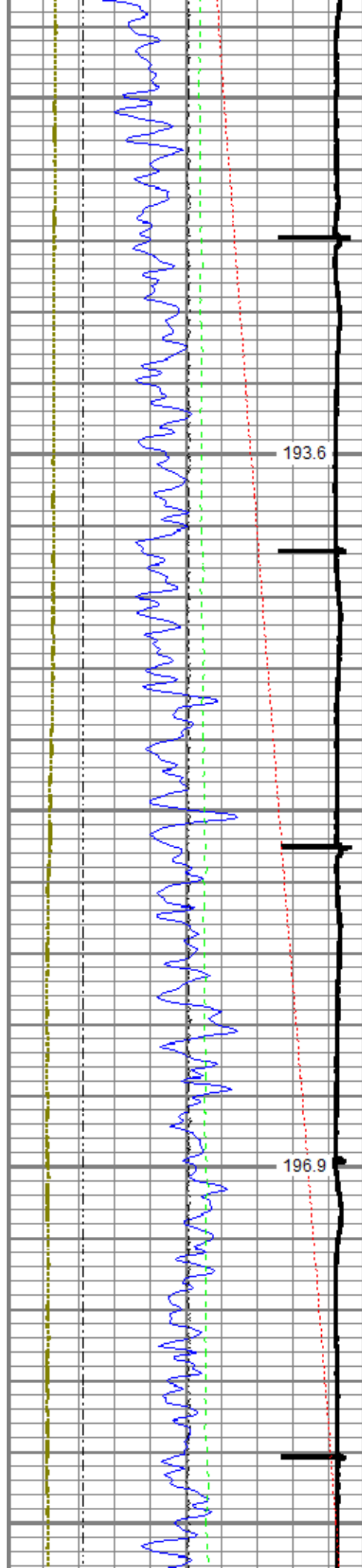


6000

6100

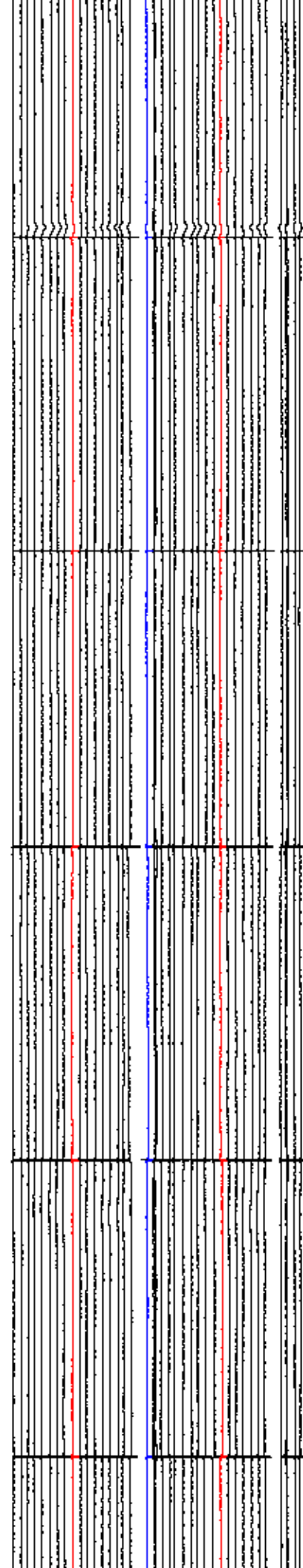
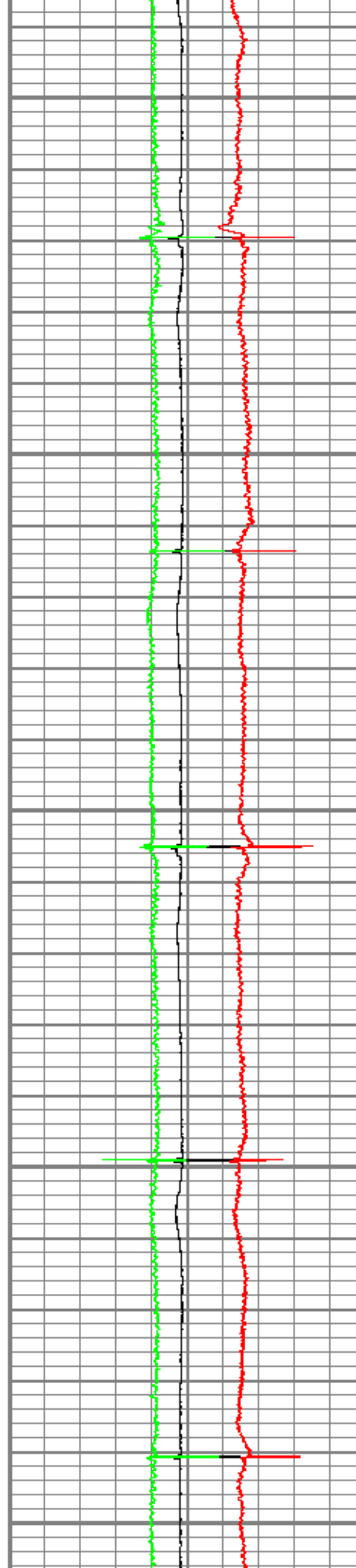


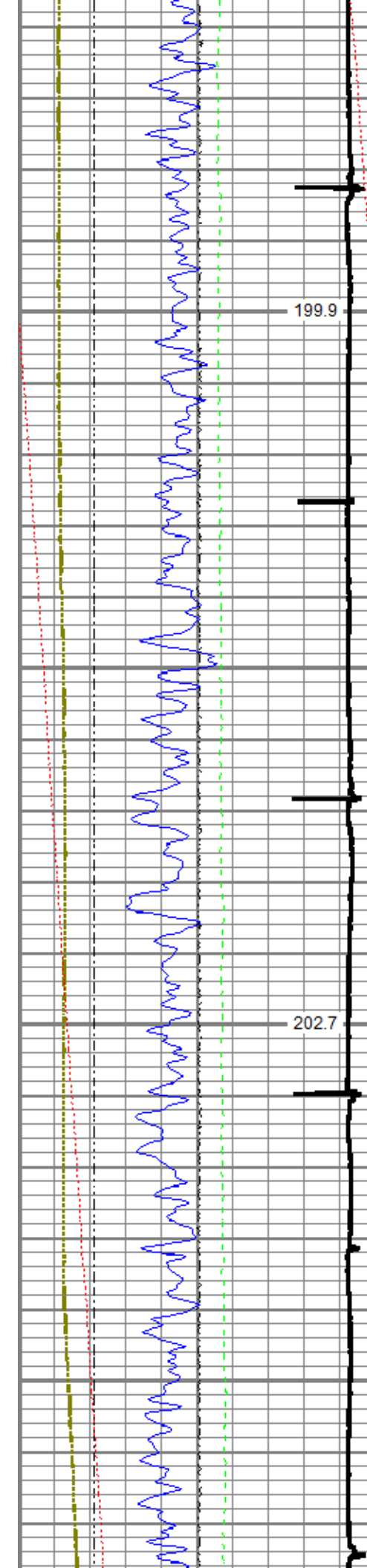




6200

6300



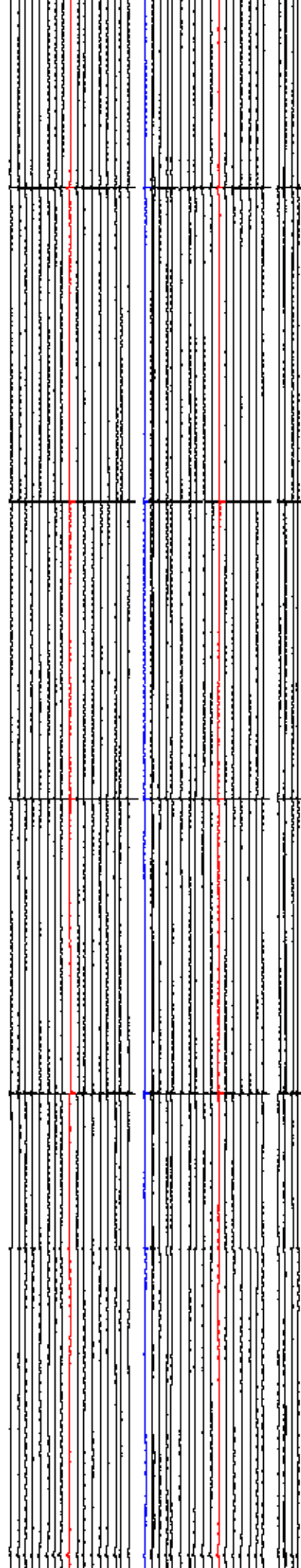
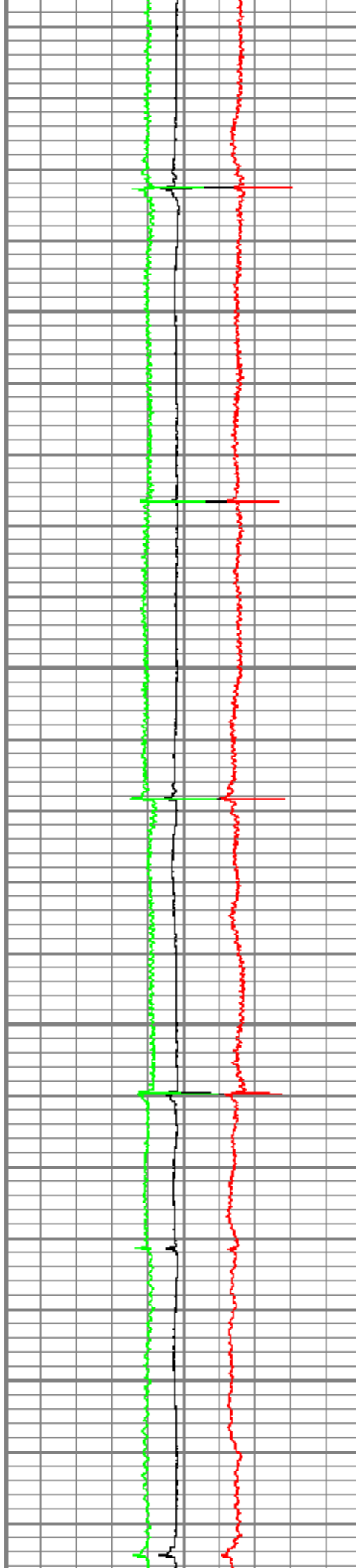


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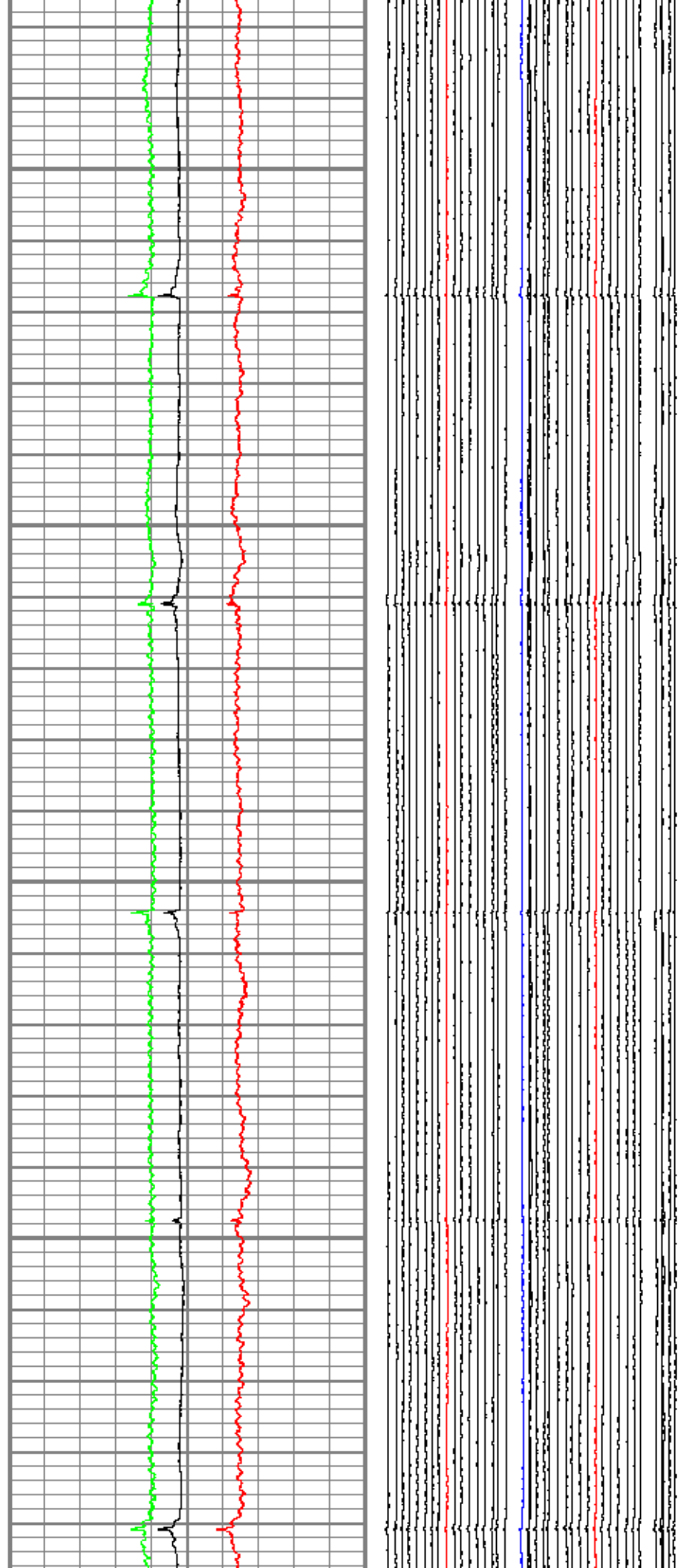
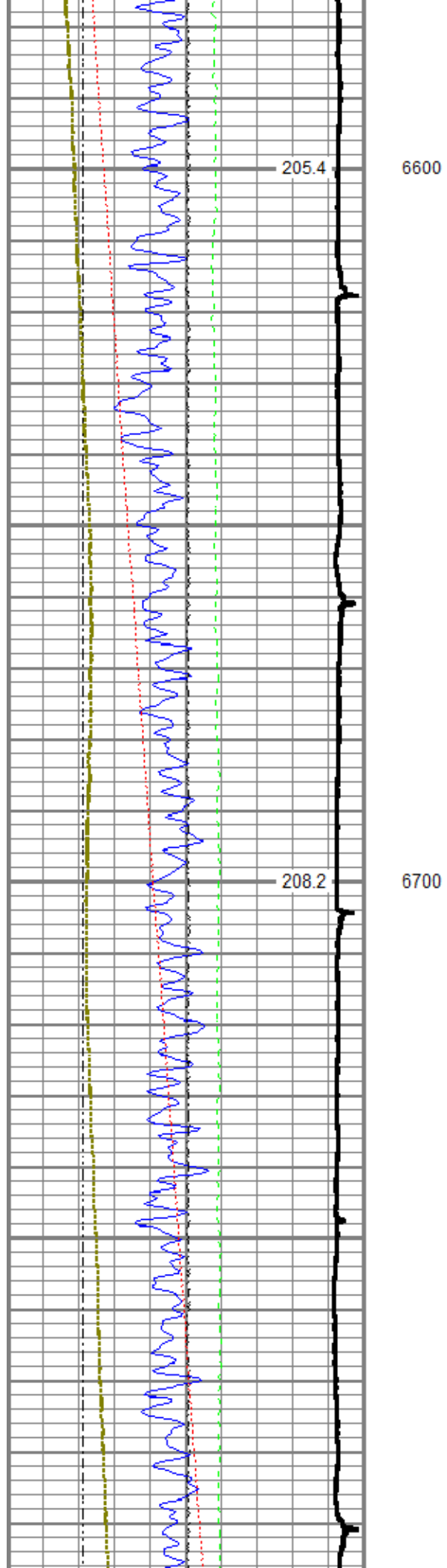
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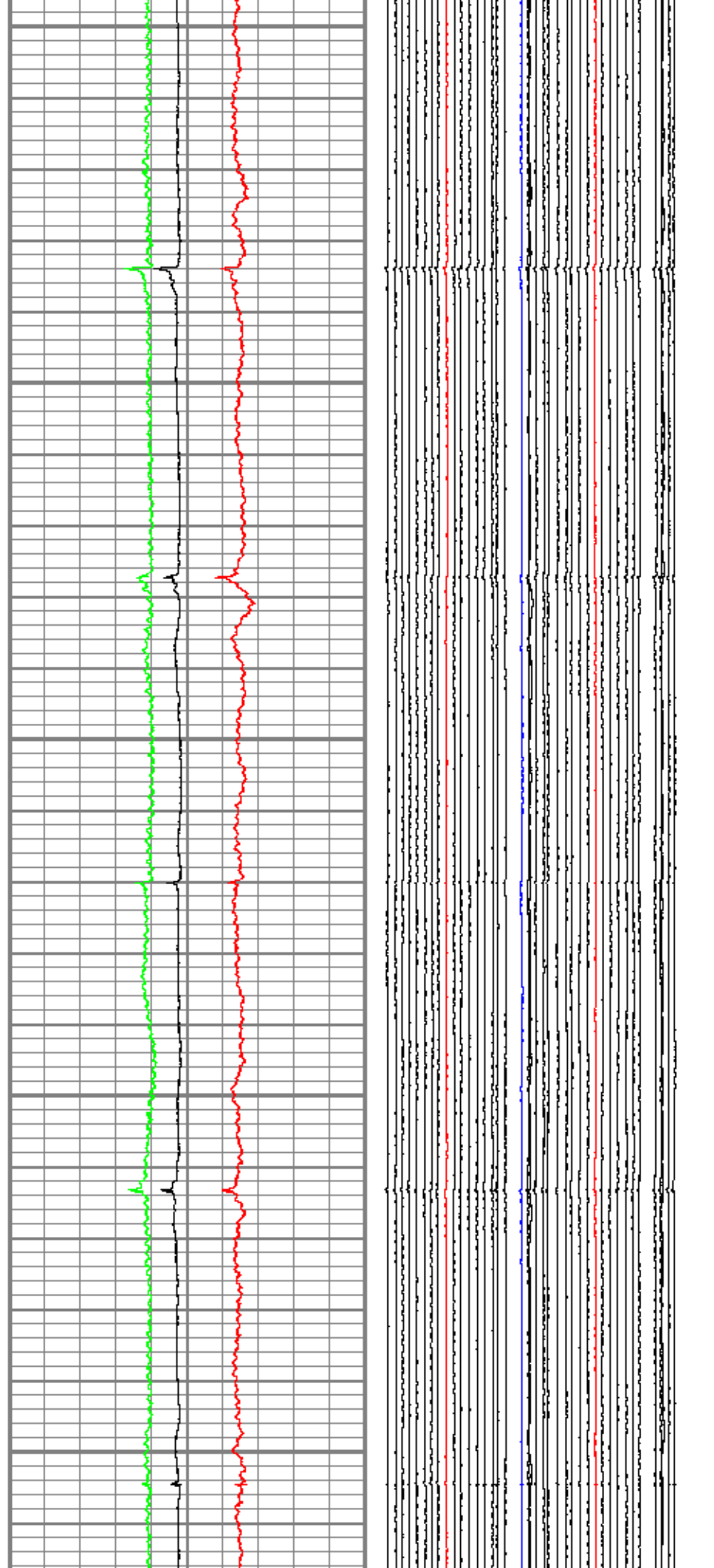
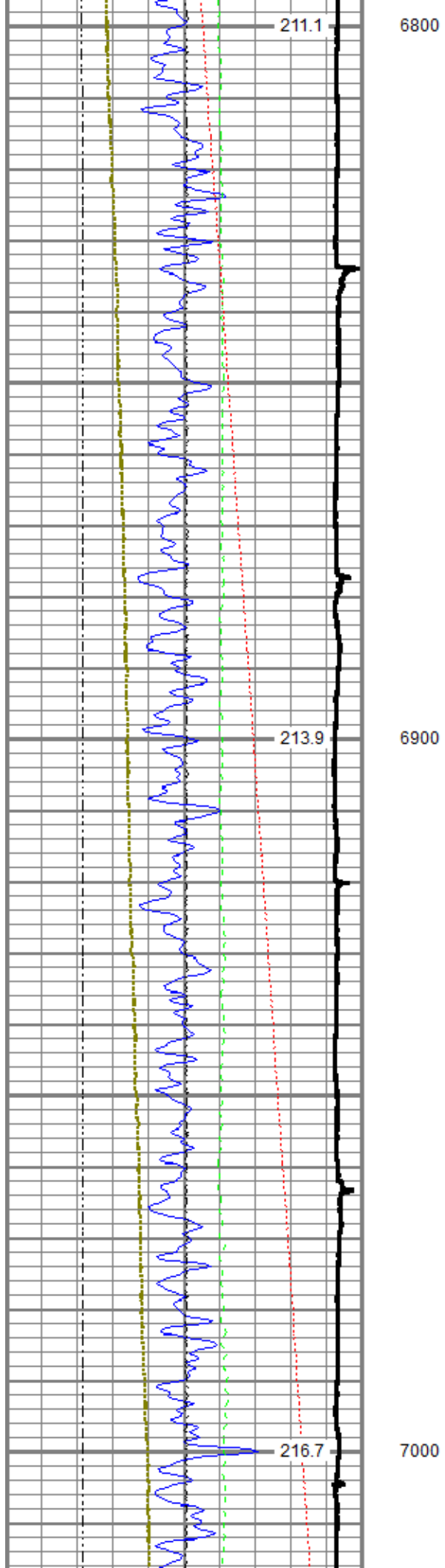
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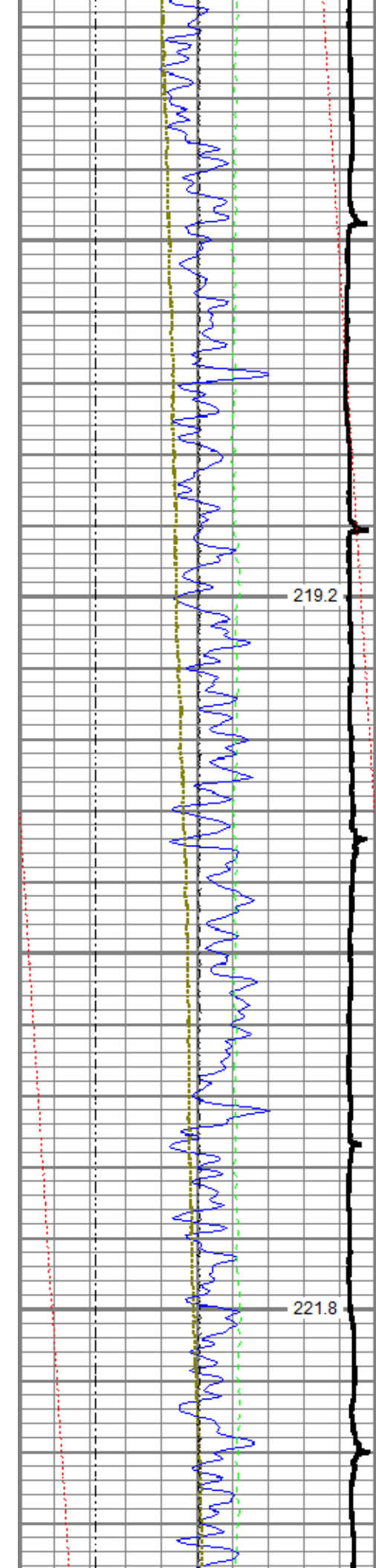










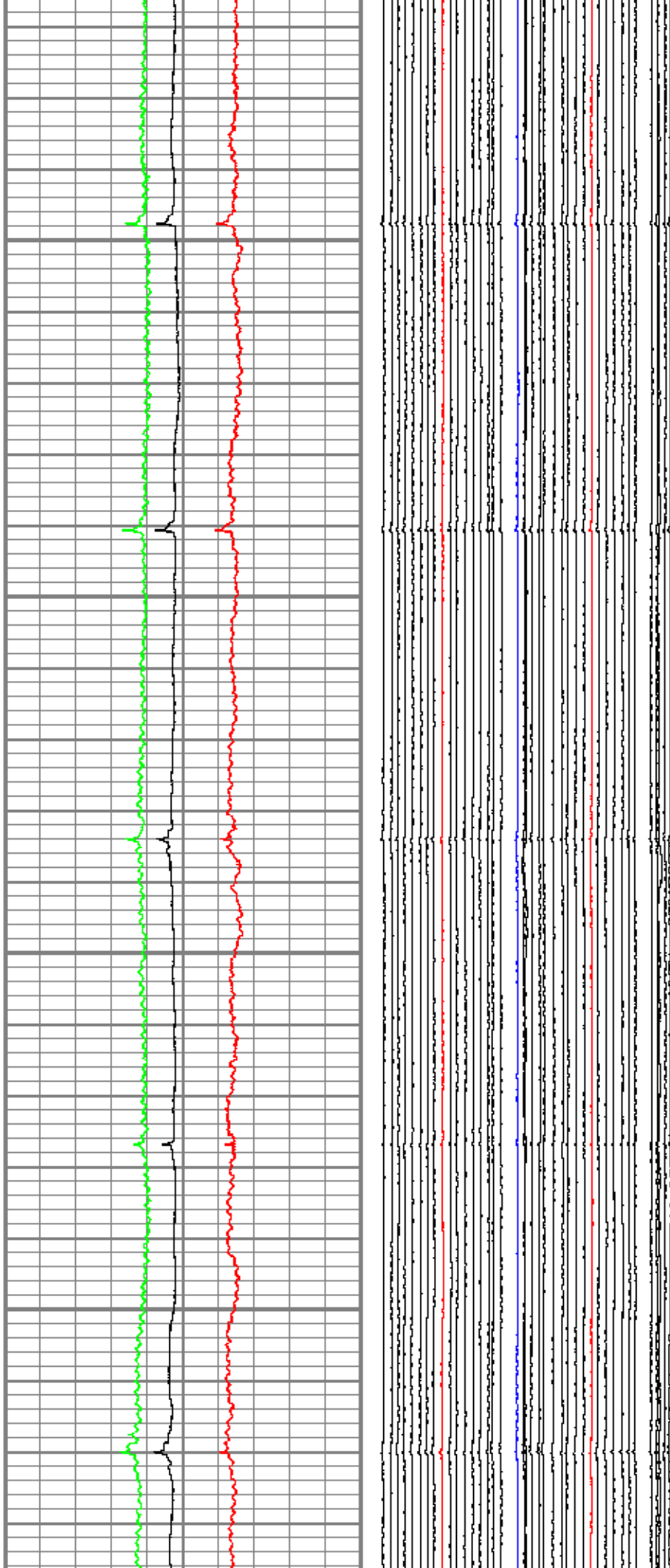


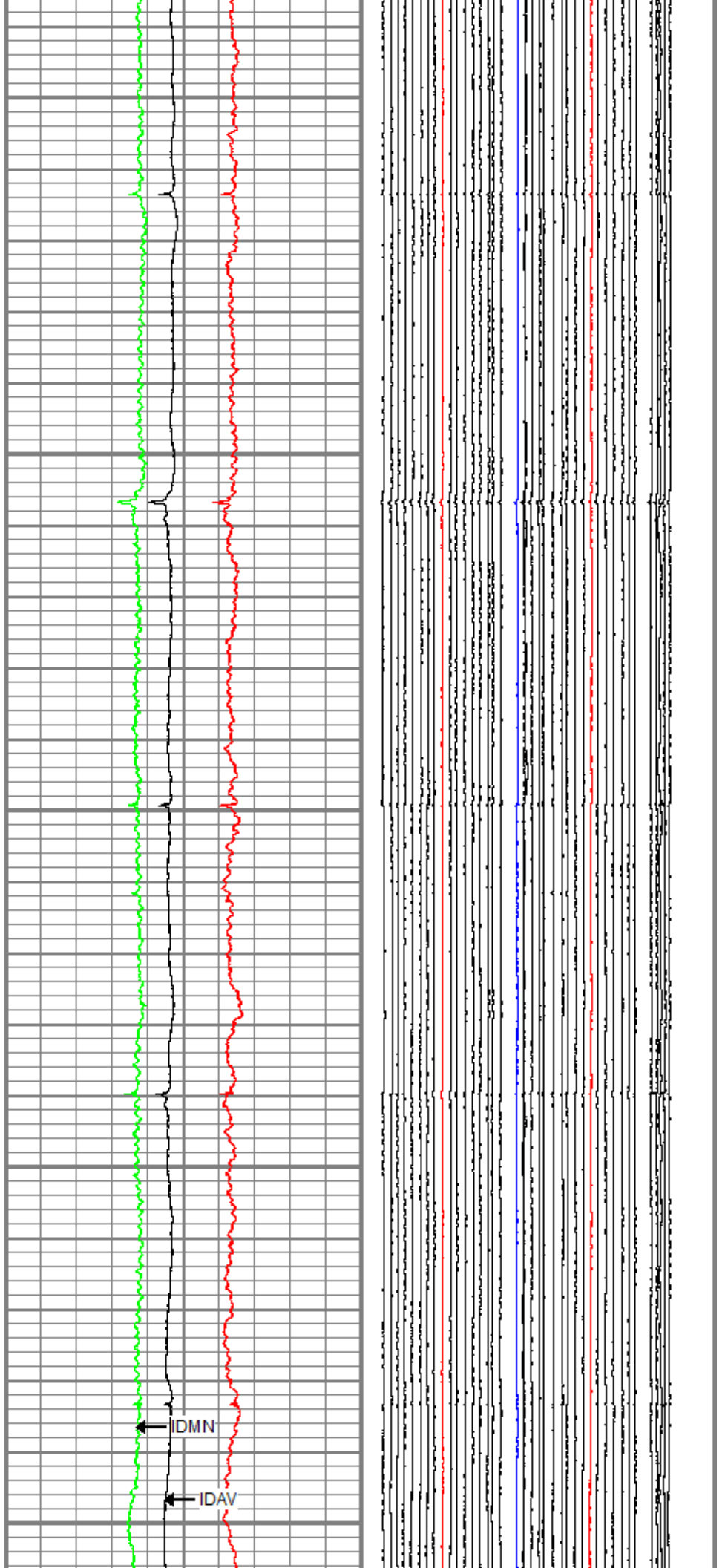
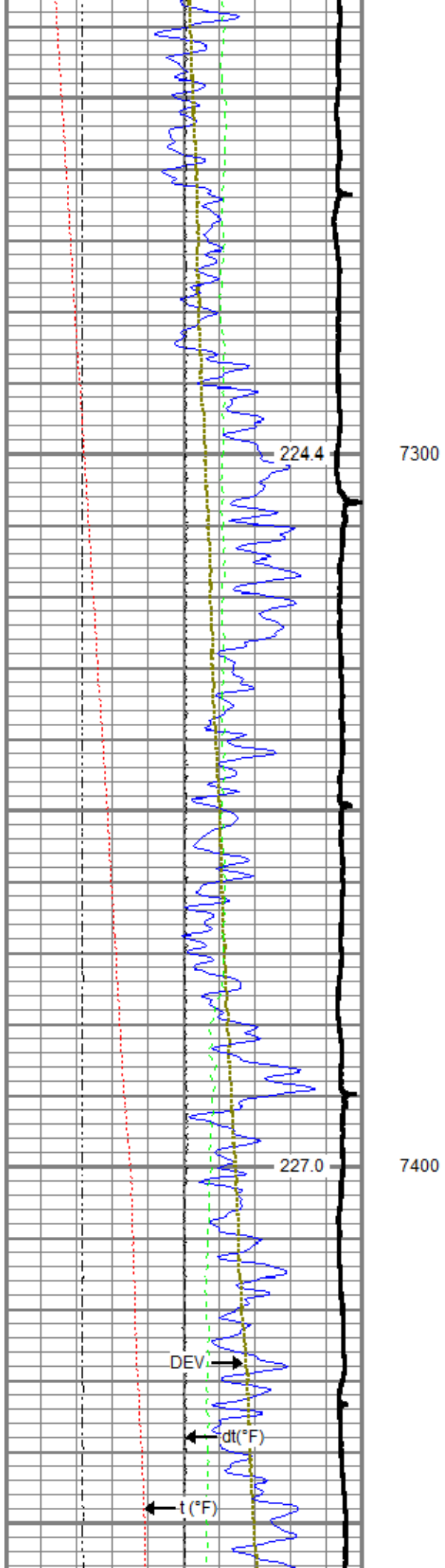
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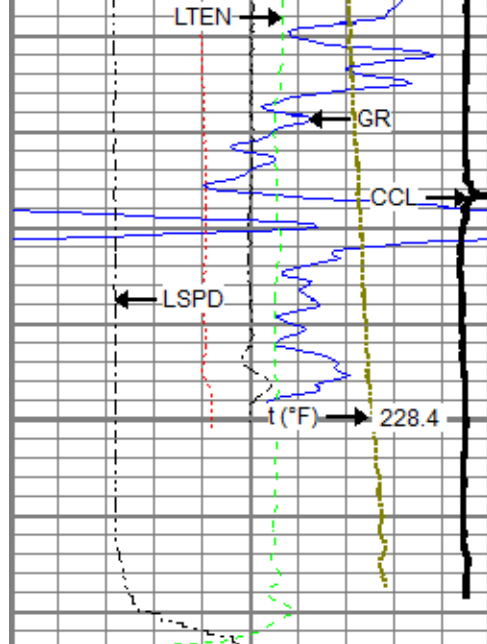
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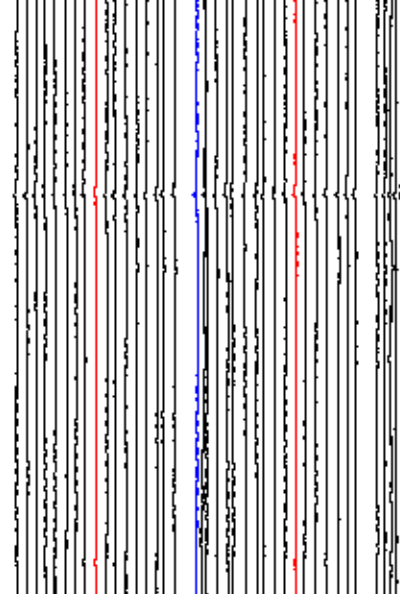
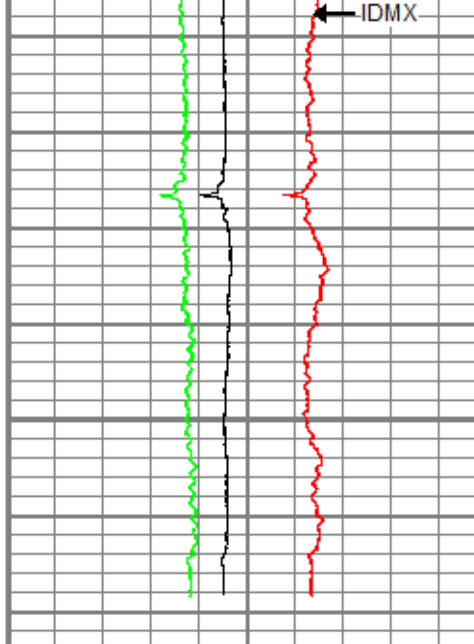








7500



0	Gamma Ray (GAPI)	120
-100	Line Speed (ft/min)	100
-10	Deviation (deg)	90
Casing Collar Locator		
0	Line Tension (lb)	2000
-2	Differential Temperature (degF)	2
0	Temperature (degF)	20

3.5	Average Diameter (in)	4.5
3.5	Maximum Diameter (in)	4.5
3.5	Minimum Diameter (in)	4.5

Caliper #10
Caliper #20
Caliper #30



## Repeat Pass

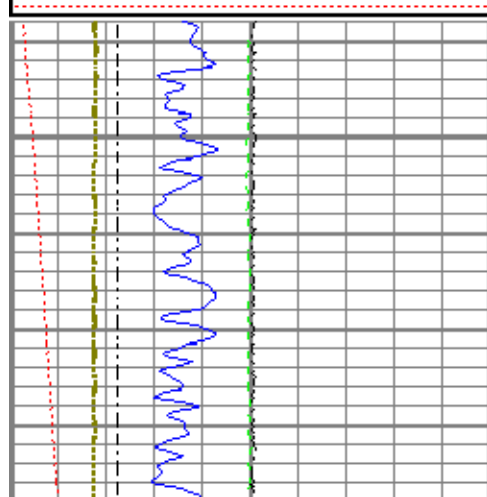
Recorded With 2800 PSI Surface Induced Pressure

Database File: anadarko\newby 27n-33hz\0512344566\_anadarko\_newby 27n-33hz\_mit\_rbl\_03-15-18.db  
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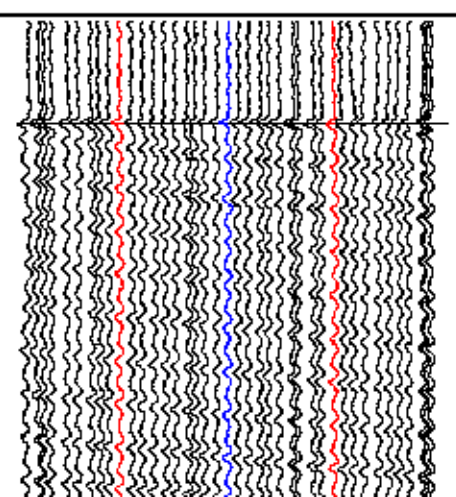
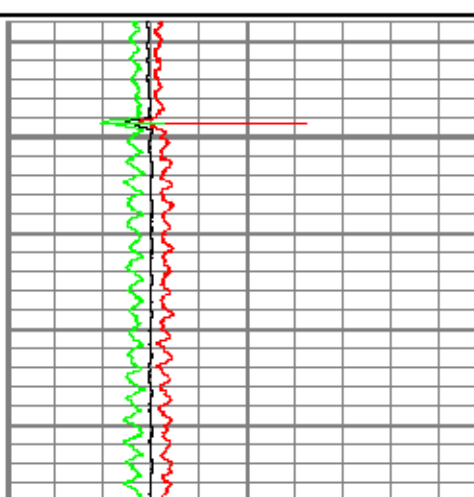
0	Gamma Ray (GAPI)	120
-100	Line Speed (ft/min)	100
-10	Deviation (deg)	90
Casing Collar Locator		
0	Line Tension (lb)	2000
-2	Differential Temperature (degF)	2
0	Temperature (degF)	20

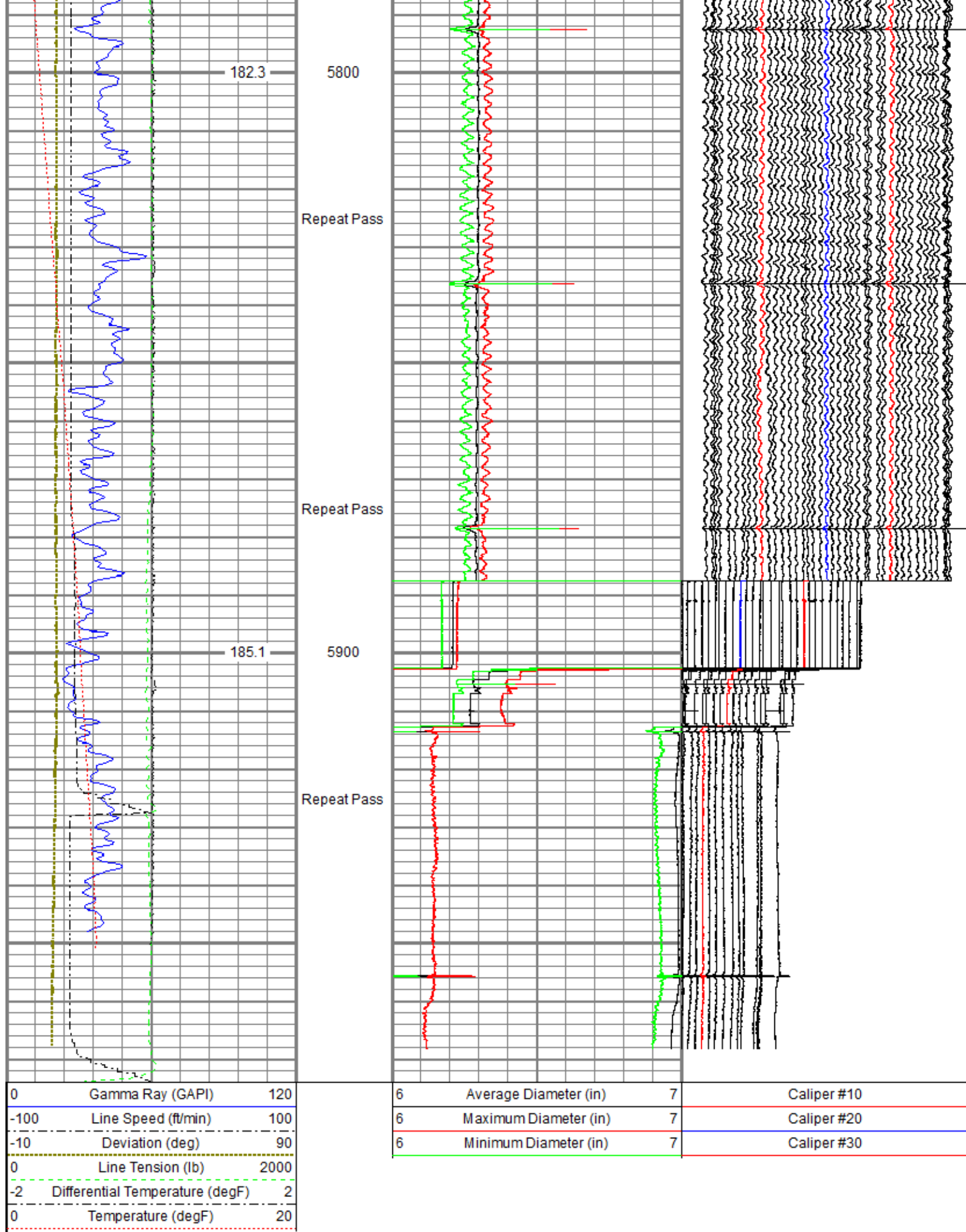
6	Average Diameter (in)	7
6	Maximum Diameter (in)	7
6	Minimum Diameter (in)	7

Caliper #10
Caliper #20
Caliper #30



Repeat Pass









Calibration Report							
Database File	C:\ProgramData\Warrior\Data\Anadarko\Newby 27N-33HZ\0512344566_Anadarko_Newby 27N-33HZ_MIT_RBL_03-15-18.db						
Dataset Pathname	log/pass11						
Dataset Creation	Thu Mar 15 17:06:10 2018						
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Serial Number:		10014703					
Number of Fingers:		40					
Tool Model:		40 042 E					
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:		Thu Mar 15 12:57:03 2018					
Ring size:	4		5		6		7
(in)		Sens		Sens		Sens	
Finger 01:	1061	361.0	1422	386.0	1808	403.0	2211
Finger 02:	1059	379.0	1438	409.0	1847	430.0	2277
Finger 03:	1053	368.0	1421	401.0	1822	430.0	2252
Finger 04:	997	374.0	1371	422.0	1793	455.0	2248
Finger 05:	1035	357.0	1392	391.0	1783	414.0	2197
Finger 06:	1038	373.0	1411	409.0	1820	432.0	2252
Finger 07:	1044	371.0	1415	400.0	1815	424.0	2239
Finger 08:	1023	371.0	1394	418.0	1812	450.0	2262
Finger 09:	1103	376.0	1479	400.0	1879	412.0	2291
Finger 10:	1056	369.0	1425	403.0	1828	428.0	2256
Finger 11:	1038	365.0	1403	405.0	1808	434.0	2242
Finger 12:	1133	359.0	1492	378.0	1870	388.0	2258
Finger 13:	1076	358.0	1434	398.0	1832	426.0	2258
Finger 14:	1048	369.0	1417	413.0	1830	441.0	2271
Finger 15:	1010	366.0	1376	416.0	1792	448.0	2240
Finger 16:	1067	355.0	1422	402.0	1824	426.0	2250
Finger 17:	1106	349.0	1455	386.0	1841	404.0	2245
Finger 18:	1132	349.0	1481	390.0	1871	408.0	2279
Finger 19:	916	540.0	1456	395.0	1851	419.0	2270
Finger 20:	1008	352.0	1360	408.0	1768	431.0	2199
Finger 21:	1090	345.0	1435	391.0	1826	415.0	2241
Finger 22:	1086	349.0	1435	394.0	1829	413.0	2242
Finger 23:	1119	350.0	1469	394.0	1863	413.0	2276
Finger 24:	1096	319.0	1415	361.0	1776	383.0	2159
Finger 25:	1108	352.0	1460	398.0	1858	414.0	2272
Finger 26:	1041	340.0	1381	388.0	1769	413.0	2182
Finger 27:	1213	363.0	1576	397.0	1973	408.0	2381
Finger 28:	1080	330.0	1410	373.0	1783	405.0	2188
Finger 29:	1047	344.0	1391	396.0	1787	413.0	2200
Finger 30:	1031	342.0	1373	396.0	1769	424.0	2193
Finger 31:	1248	371.0	1619	403.0	2022	418.0	2440
Finger 32:	1014	344.0	1358	380.0	1738	402.0	2140
Finger 33:	1107	373.0	1480	412.0	1892	431.0	2323
Finger 34:	989	349.0	1338	390.0	1728	418.0	2146
Finger 35:	1144	374.0	1518	411.0	1929	429.0	2358
Finger 36:	1061	342.0	1403	376.0	1779	397.0	2176
Finger 37:	950	564.0	1514	413.0	1927	433.0	2360
Finger 38:	1105	357.0	1462	384.0	1846	405.0	2251
Finger 39:	1048	342.0	1390	366.0	1756	392.0	2148
Finger 40:	978	370.0	1348	415.0	1763	444.0	2207



Performed:

Thu Mar 15 17:04:16 2018

Ring size: (in)	4	Nom. wear	5	Nom. wear	6	Nom. wear	7	Nom. wear
Finger 01:	3.987	-0.006	4.981	-0.010	5.988	-0.006	6.998	-0.001
Finger 02:	3.983	-0.008	4.973	-0.014	5.975	-0.012	6.996	-0.002
Finger 03:	3.982	-0.009	4.975	-0.013	5.964	-0.018	6.961	-0.019
Finger 04:	3.987	-0.007	4.985	-0.008	5.985	-0.007	6.990	-0.005
Finger 05:	3.990	-0.005	4.973	-0.013	5.974	-0.013	6.991	-0.004
Finger 06:	3.987	-0.007	4.979	-0.010	5.979	-0.010	6.992	-0.004
Finger 07:	3.989	-0.005	4.978	-0.011	5.985	-0.008	7.005	0.003
Finger 08:	3.986	-0.007	4.984	-0.008	5.982	-0.009	6.980	-0.010
Finger 09:	3.993	-0.004	4.985	-0.008	5.987	-0.006	7.008	0.004
Finger 10:	3.994	-0.003	4.984	-0.008	5.982	-0.009	6.979	-0.010
Finger 11:	3.983	-0.008	4.978	-0.011	5.978	-0.011	6.979	-0.010
Finger 12:	3.987	-0.007	4.979	-0.010	5.983	-0.008	6.997	-0.001
Finger 13:	3.990	-0.005	4.976	-0.012	5.975	-0.012	6.978	-0.011
Finger 14:	3.986	-0.007	4.978	-0.011	5.978	-0.011	6.980	-0.010
Finger 15:	3.988	-0.006	4.979	-0.011	5.983	-0.009	6.982	-0.009
Finger 16:	3.982	-0.009	4.979	-0.010	5.978	-0.011	6.991	-0.004
Finger 17:	3.985	-0.008	4.974	-0.013	5.977	-0.012	6.987	-0.007
Finger 18:	3.984	-0.008	4.976	-0.012	5.975	-0.012	6.980	-0.010
Finger 19:	4.338	0.169	4.970	-0.015	5.975	-0.012	6.985	-0.007
Finger 20:	3.986	-0.007	4.979	-0.011	5.972	-0.014	6.989	-0.005
Finger 21:	3.987	-0.006	4.982	-0.009	5.982	-0.009	6.985	-0.007
Finger 22:	3.984	-0.008	4.974	-0.013	5.972	-0.014	6.990	-0.005
Finger 23:	3.988	-0.006	4.979	-0.010	5.975	-0.012	6.976	-0.012
Finger 24:	3.993	-0.003	4.979	-0.011	5.978	-0.011	6.978	-0.011
Finger 25:	3.986	-0.007	4.983	-0.008	5.983	-0.008	6.997	-0.001
Finger 26:	3.986	-0.007	4.977	-0.012	5.982	-0.009	6.990	-0.005
Finger 27:	3.990	-0.005	4.985	-0.007	5.988	-0.006	6.996	-0.002
Finger 28:	3.989	-0.006	4.982	-0.009	5.991	-0.005	6.996	-0.002
Finger 29:	3.987	-0.007	4.978	-0.011	5.972	-0.014	6.994	-0.003
Finger 30:	3.979	-0.010	4.978	-0.011	5.981	-0.009	6.986	-0.007
Finger 31:	3.994	-0.003	4.983	-0.008	5.984	-0.008	6.987	-0.006
Finger 32:	3.984	-0.008	4.978	-0.011	5.981	-0.010	6.990	-0.005
Finger 33:	3.988	-0.006	4.977	-0.012	5.973	-0.014	6.982	-0.009
Finger 34:	3.987	-0.007	4.975	-0.013	5.978	-0.011	6.985	-0.007
Finger 35:	3.981	-0.010	4.979	-0.010	5.980	-0.010	6.981	-0.010
Finger 36:	3.991	-0.004	4.979	-0.011	5.974	-0.013	6.979	-0.010
Finger 37:	4.296	0.148	4.976	-0.012	5.975	-0.012	6.981	-0.010
Finger 38:	3.987	-0.006	4.976	-0.012	5.977	-0.011	6.985	-0.008
Finger 39:	3.987	-0.006	4.981	-0.010	5.989	-0.006	6.998	-0.001
Finger 40:	3.989	-0.006	4.976	-0.012	5.970	-0.015	6.972	-0.014
Average:	4.004	0.002	4.979	-0.011	5.979	-0.011	6.987	-0.007

## Segmented Cement Bond Log Calibration Report

Serial Number: 10013454

Tool Model: 004

Calibration Casing Diameter: 7.000 in

Calibration Depth: -23.563 ft

Master Calibration, performed Sun Feb 18 16:50:35 2018:

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	0.004	0.773	0.800	62.165	79.765	0.508
5FT	-0.002	0.768	0.800	62.165	79.625	0.994
S1	0.002	0.769	0.000	100.000	130.421	-0.314
S2	0.002	0.788	0.000	100.000	127.244	-0.242
S3	0.002	0.788	0.000	100.000	127.377	-0.311
S4	0.002	0.788	0.000	100.000	127.241	-0.309
S5	0.002	0.776	0.000	100.000	129.232	-0.316
S6	0.001	0.765	0.000	100.000	130.868	-0.165
S7	0.001	0.750	0.000	100.000	133.531	-0.192
S8	0.002	0.755	0.000	100.000	132.799	-0.258

# Temperature Calibration Report

Serial Number: 10025100  
 Tool Model: 016  
 Performed: Sun Nov 12 14:30:03 2017

Point #	Reading	Reference
1	13249.00 cps	68.00 degF
2	18454.00 cps	104.00 degF
3	29735.00 cps	176.00 degF
4	41457.00 cps	248.00 degF
5	52851.00 cps	320.00 degF
6	59128.00 cps	356.00 degF
7	cps	degF
8	cps	degF
9	cps	degF
10	cps	degF

# Gamma Ray Calibration Report

Serial Number: 211727  
 Tool Model: 020  
 Performed: Sun Nov 12 06:37:04 2017

Calibrator Value: 637.0 GAPI

Background Reading: 78.8 cps  
 Calibrator Reading: 1069.9 cps

Sensitivity: 0.6427 GAPI/cps



**Company** Kerr-McGee Oil & Gas Onshore, L.P.  
**Well** Newby 27N-33HZ  
**Field** Wattenberg  
**County** Weld  
**State** Colorado