



Multifinger Imaging Caliper
Gamma Ray
Casing Collar Log

Company Kerr-McGee Oil & Gas Onshore, L.P.
Well Hopper State 24N-34SLHZ
Field Wattenberg
County Weld
State Colorado

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County Weld
State Colorado

Location:

API #: 05-123-43024

SEC 15 TWP 2N RGE 68W

Permanent Datum
Log Measured From
Drilling Measured From

Ground Level
Kelly Bushing
Kelly Bushing

Elevation
26 FT

Elevation

Other Services
JB/GR
RBL

K.B. 4919'
D.F. 4918'
G.L. 4893'

Date

18-APR-2017

Run Number

Two

Depth Driller

21660 FT

Depth Logger

7323 FT

Bottom Logged Interval

7320 FT

Top Log Interval

Surface

Open Hole Size

7.875"

Type Fluid

Water

Density / Viscosity

8.34 lb/gal

Max. Recorded Temp.

226°F

Estimated Cement Top

Time Well Ready

ROA

Time Logger on Bottom

9:34 AM

Equipment Number

HD-0325

Location

Fort Lupton, CO

Recorded By

G. Lueck

Witnessed By

B. Jolly

Borehole Record

Run Number

Bit

From

To

Size

Weight

From

To

Tubing Record

Run Number

From

To

Weight

From

To

Casing Record

Run Number

Size (in)

Wgt (lbs/ft)

Grade

Top

Bottom

Surface Casing

9 5/8

36

J-55

Surface

2366 FT

Intermediate #1

5 1/2

20

HCP-110

Surface

21656 FT

Intermediate #2

Liner

<<< 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 Casing Tally reported Marker Joint at 6568 FT
Adjusted -5 FT to correlate with Marker Joint
Gauge Ring/Junk Basket ran to 7506 FT with no debris
Log ran from as deep as possible in heel to surface
Log ran 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!!

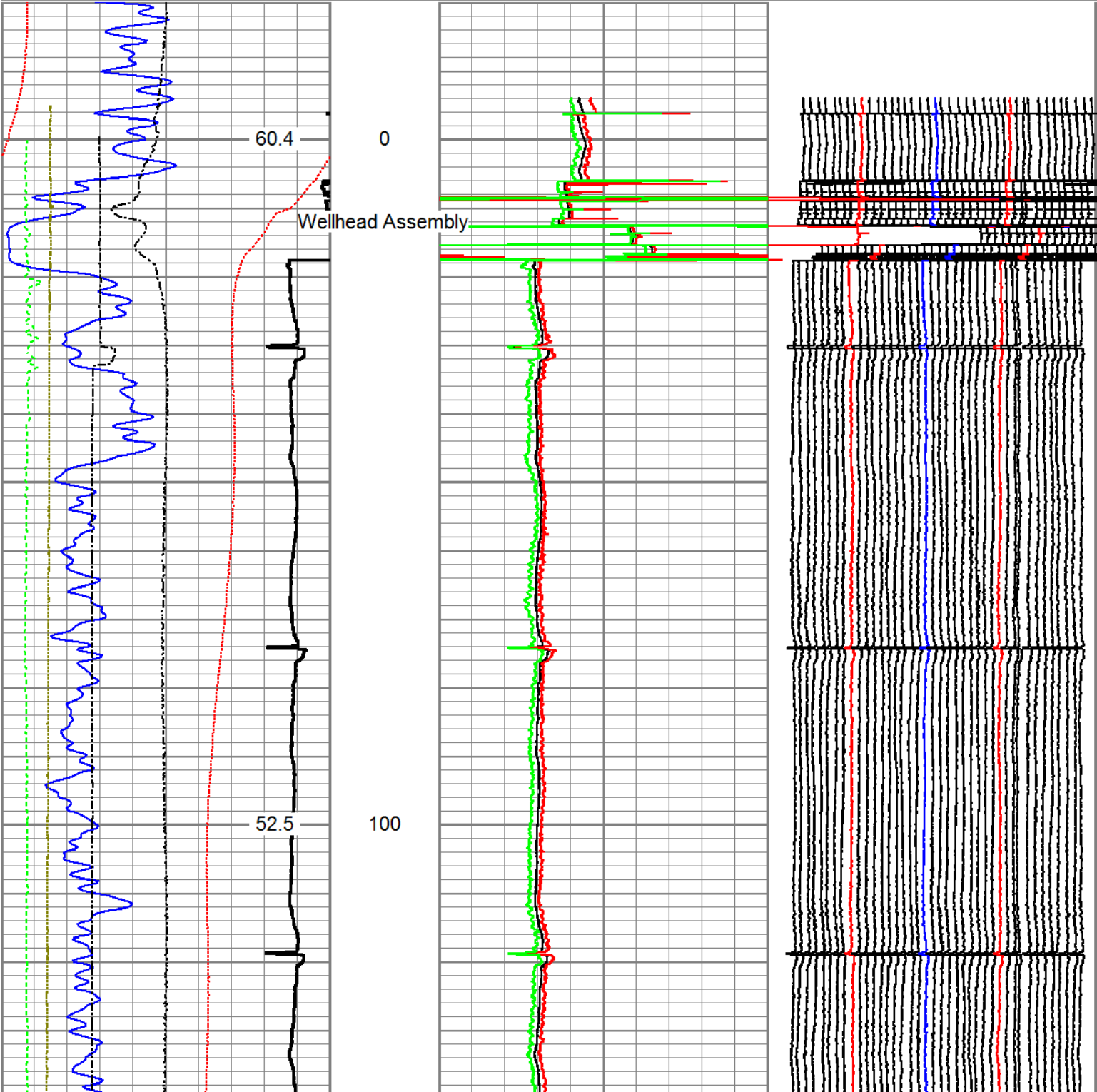


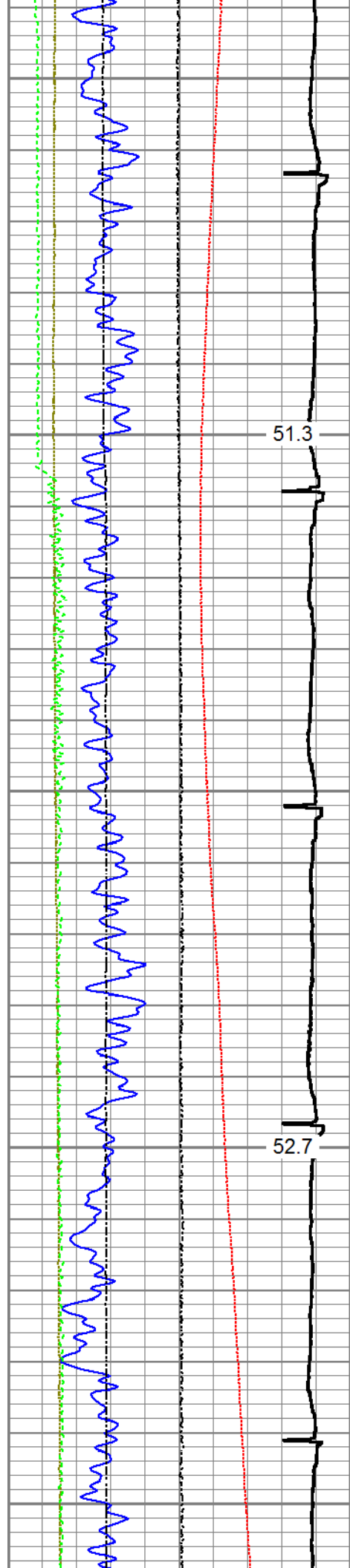
Main Pass

Recorded With 2800 PSI Surface Induced Pressure

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

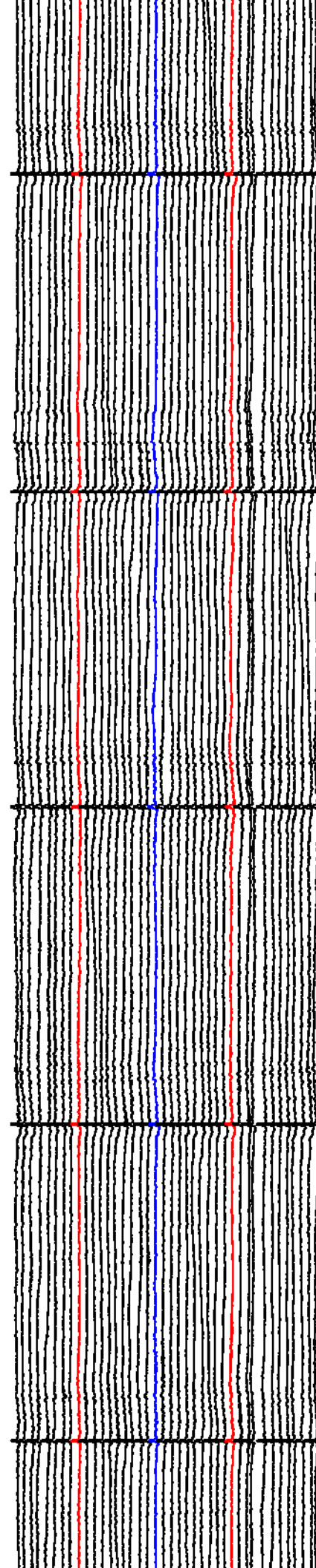
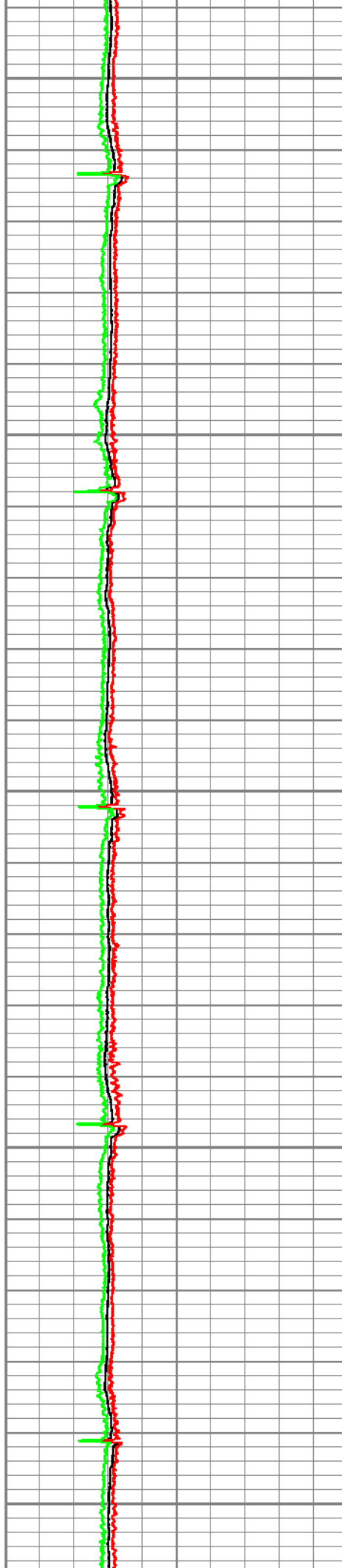
4.5	Average Diameter (in)	5.5	Caliper #10
4.5	Maximum Diameter (in)	5.5	Caliper #20
4.5	Minimum Diameter (in)	5.5	Caliper #30

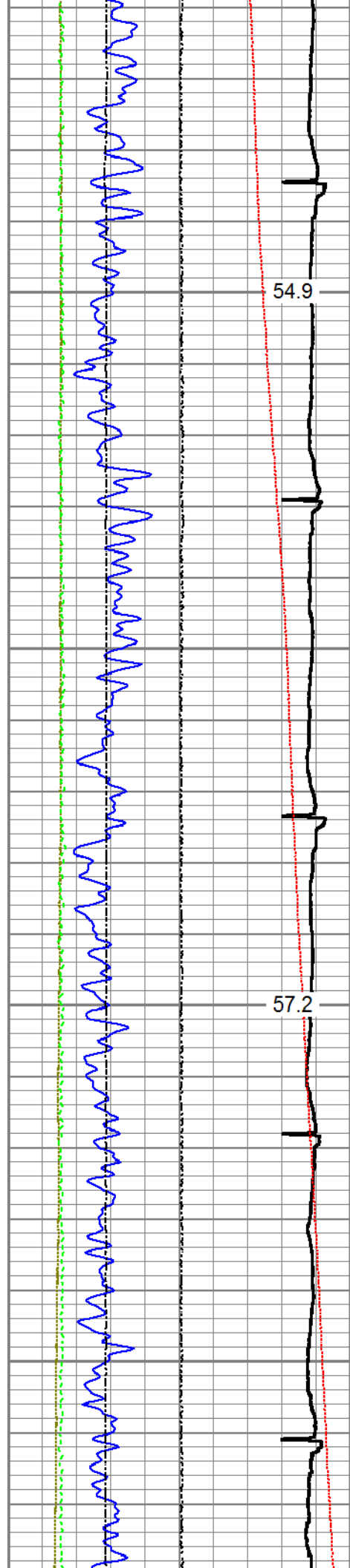




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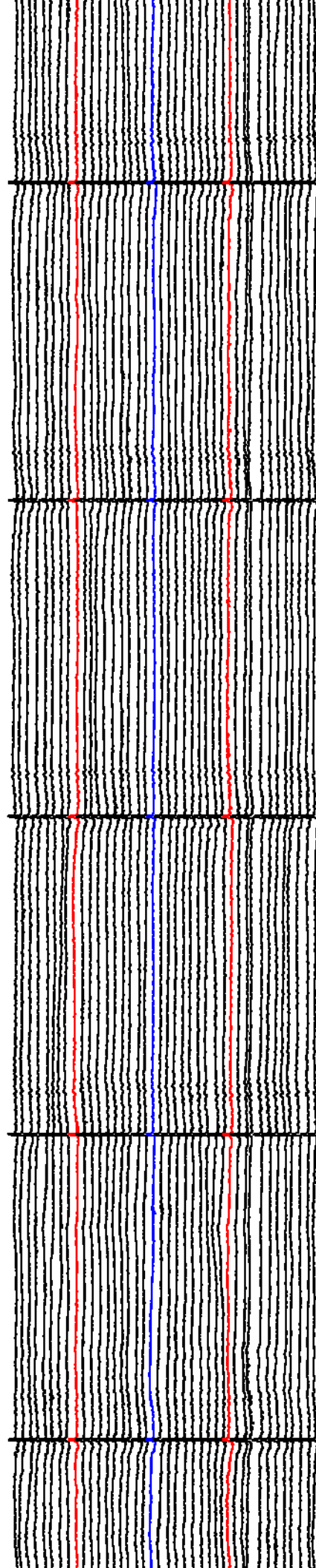
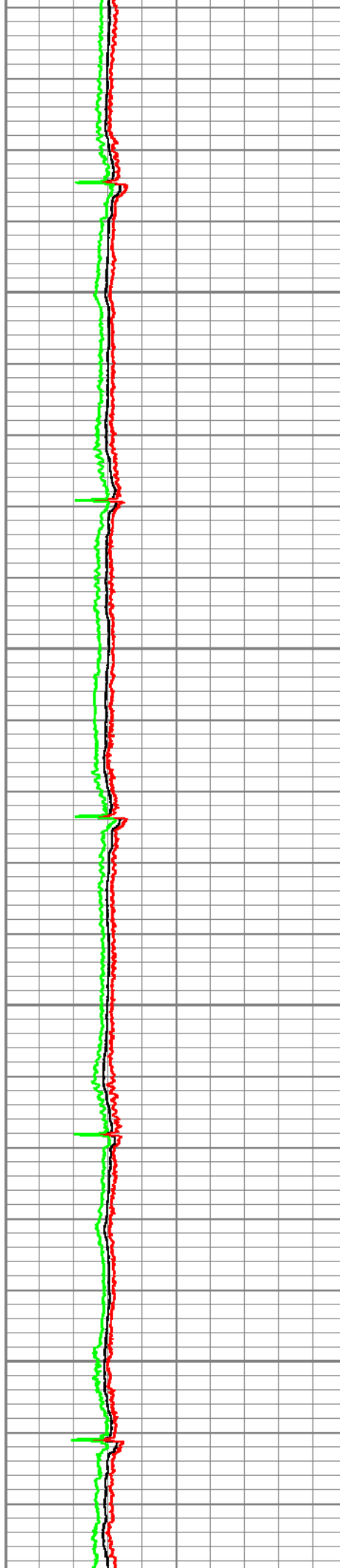
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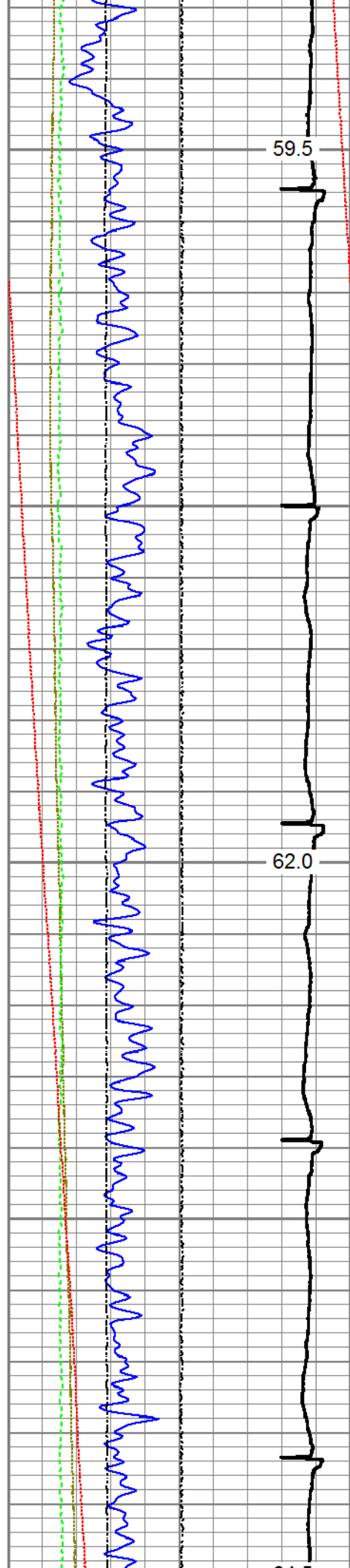




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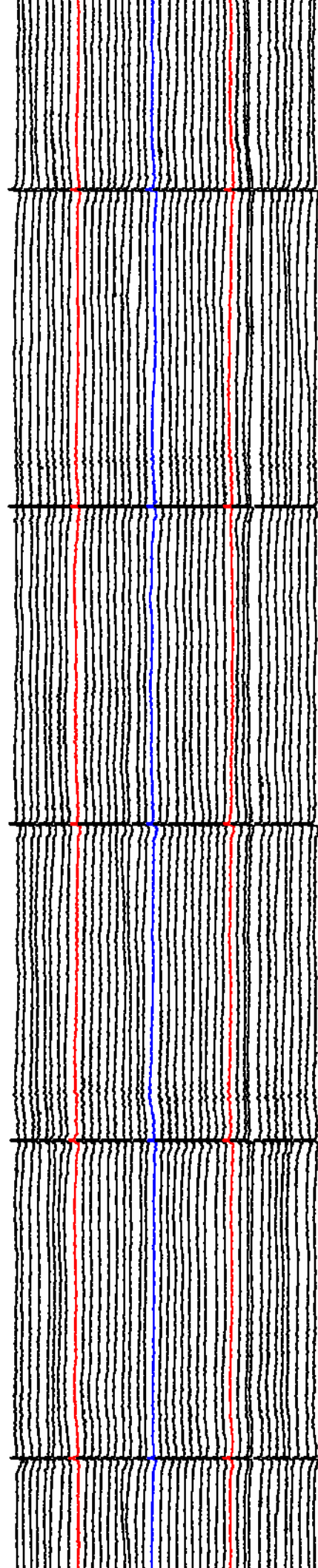
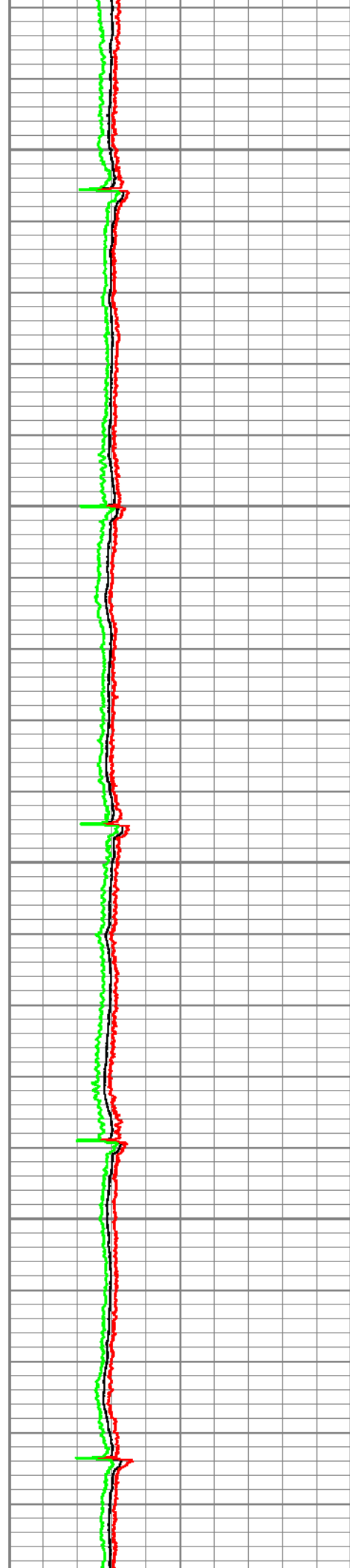
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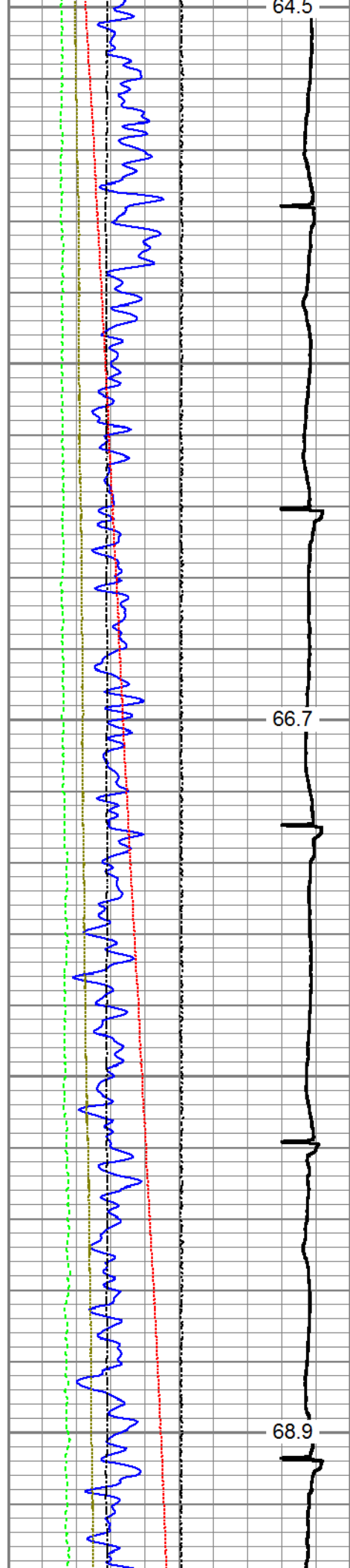




600

700

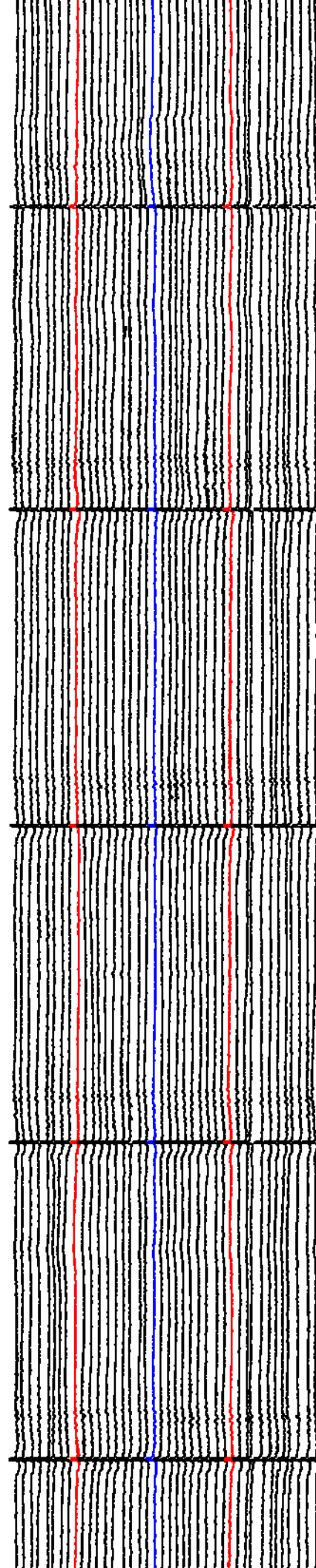
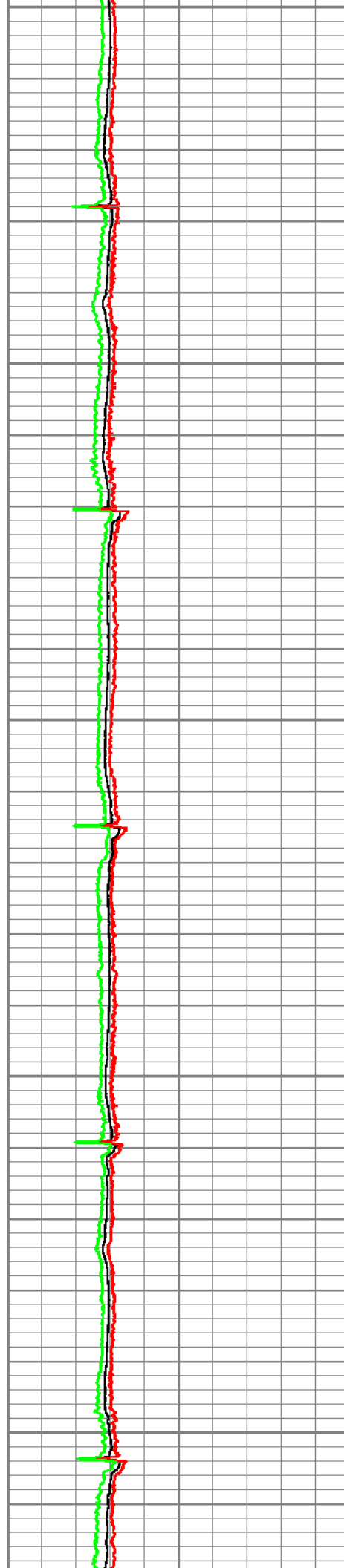


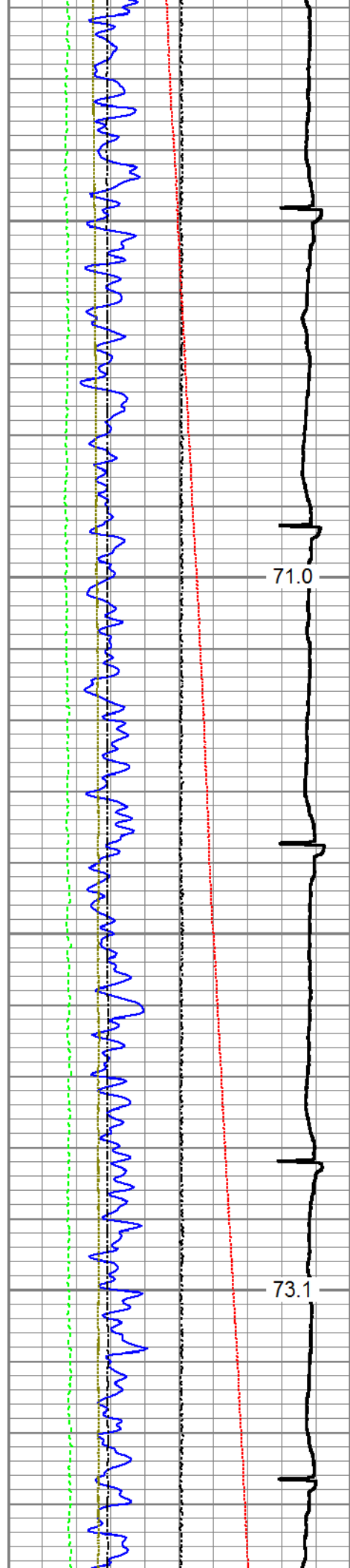


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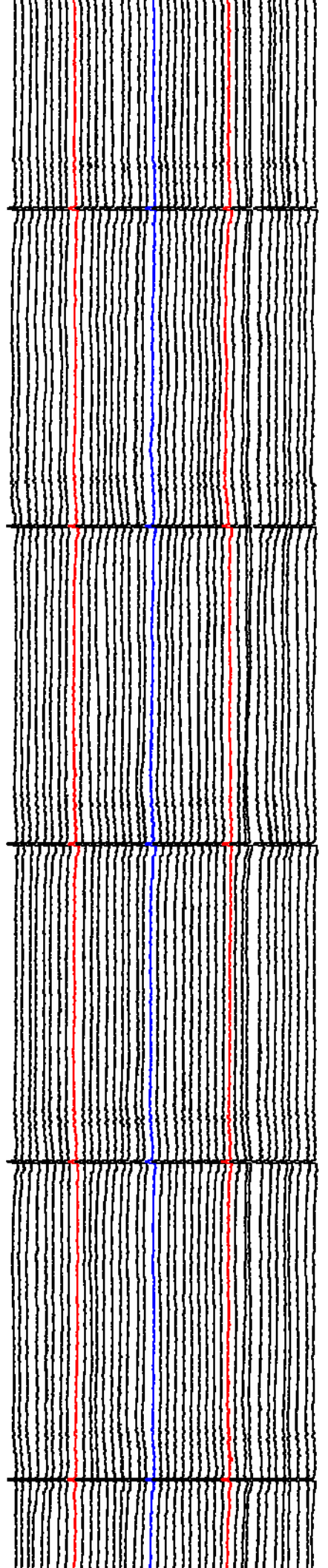
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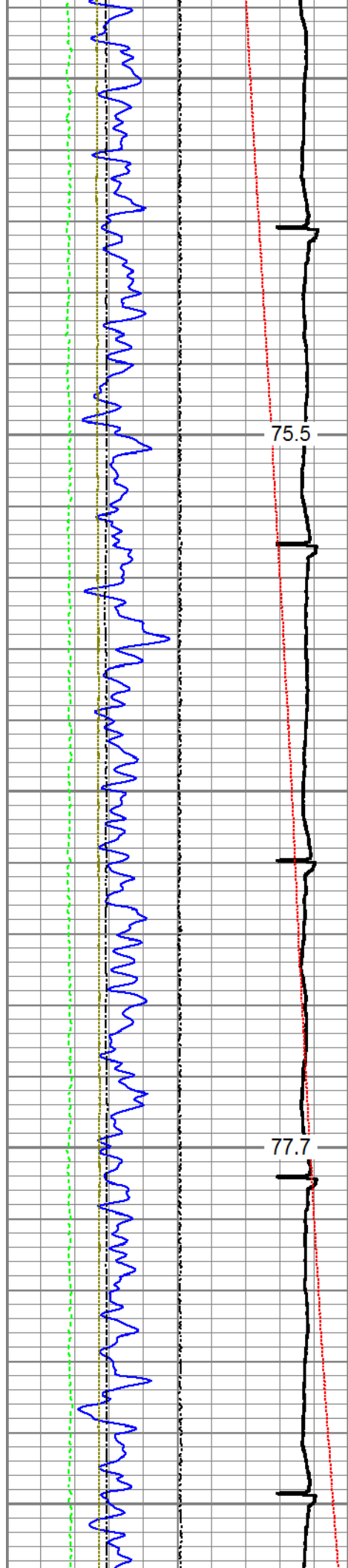




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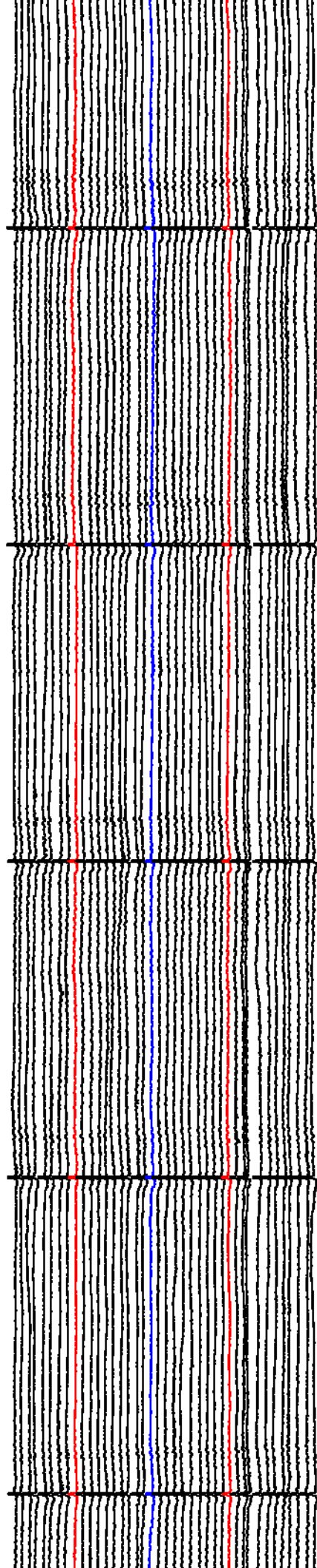
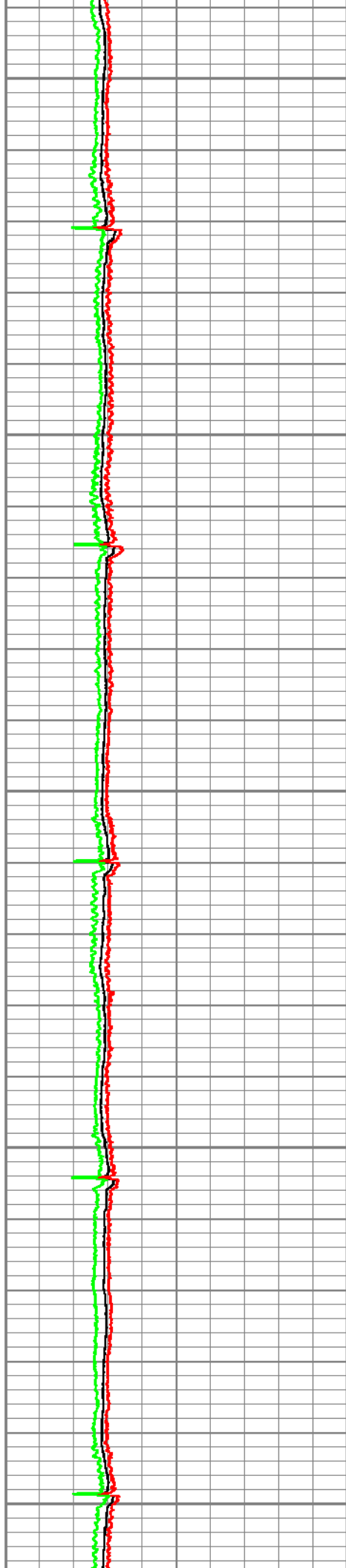
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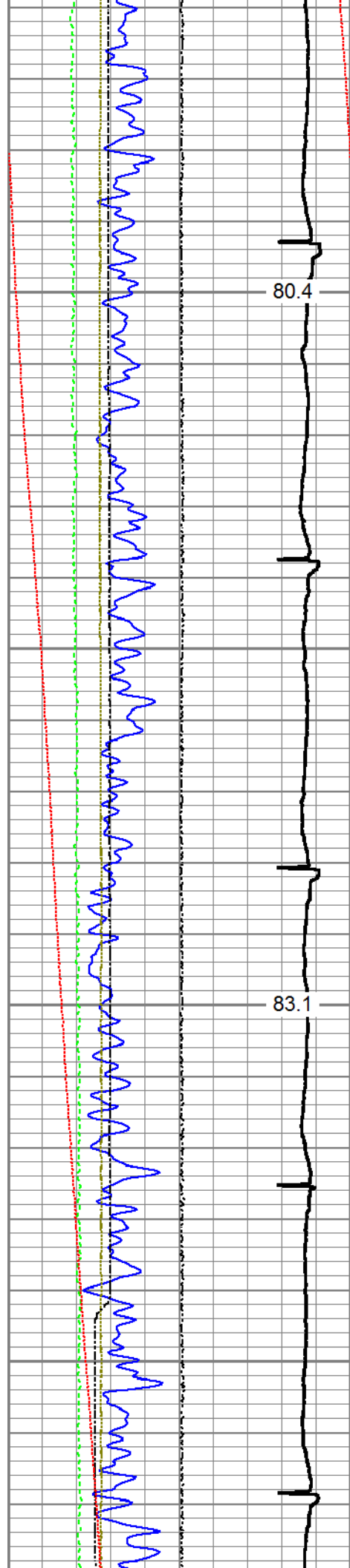




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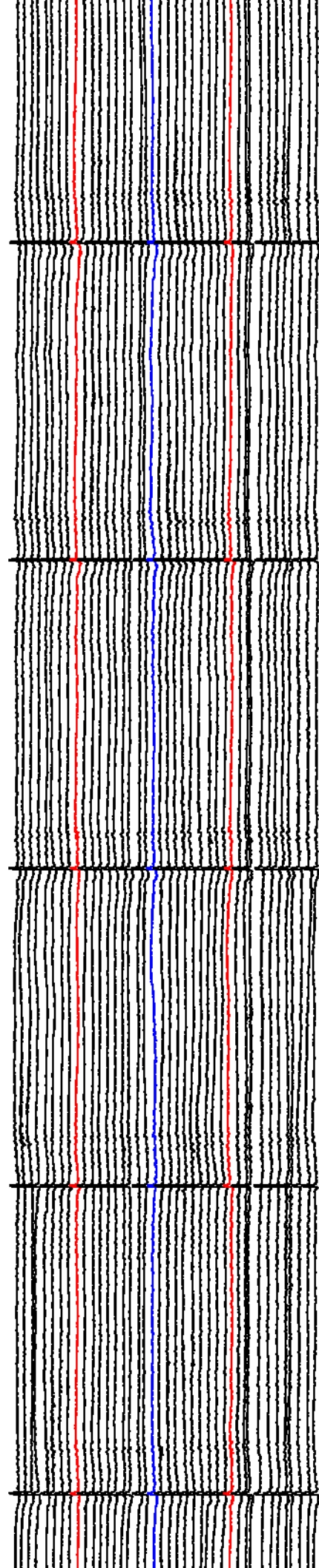
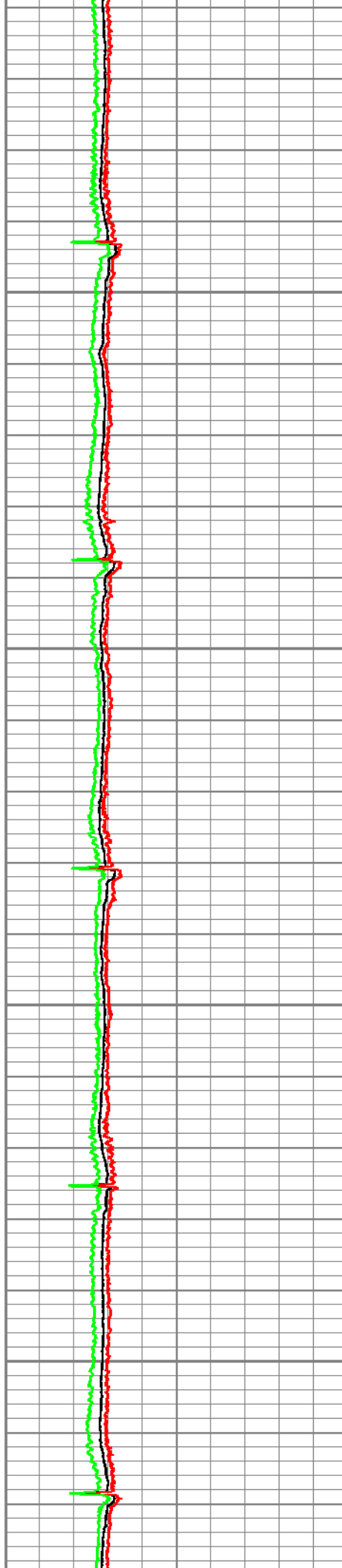
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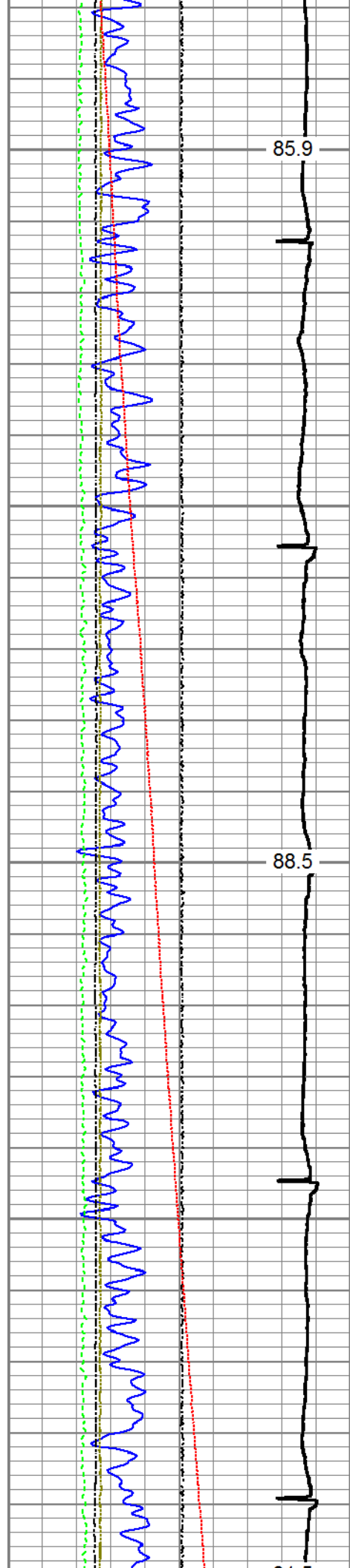




1500

1600





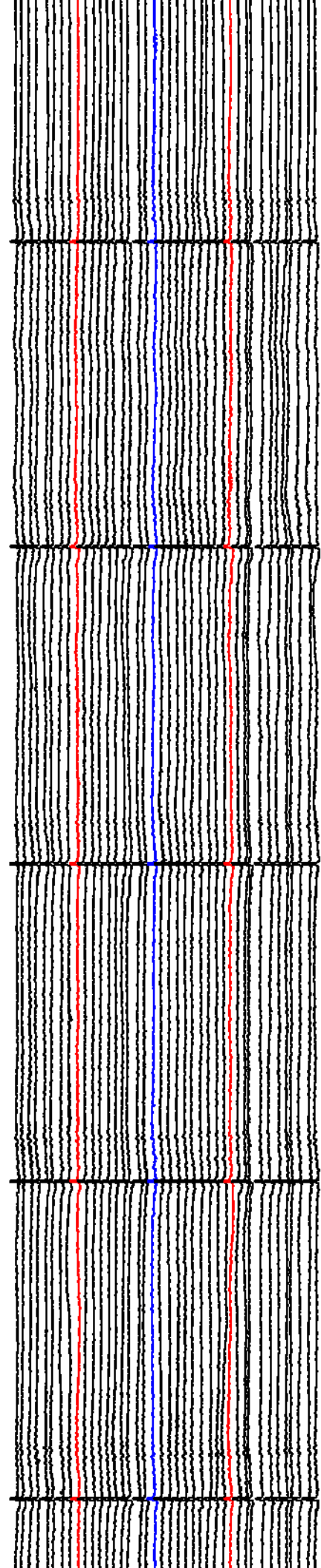
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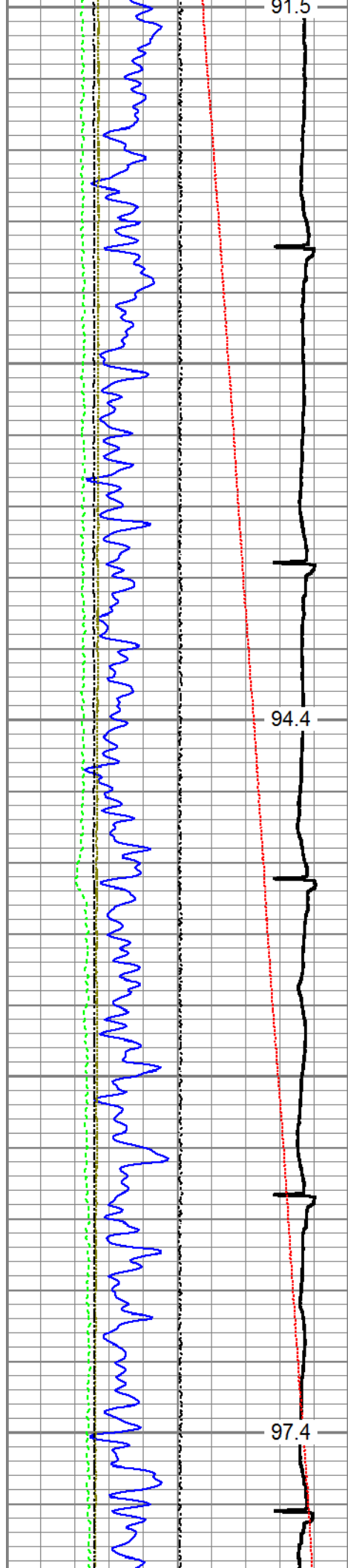
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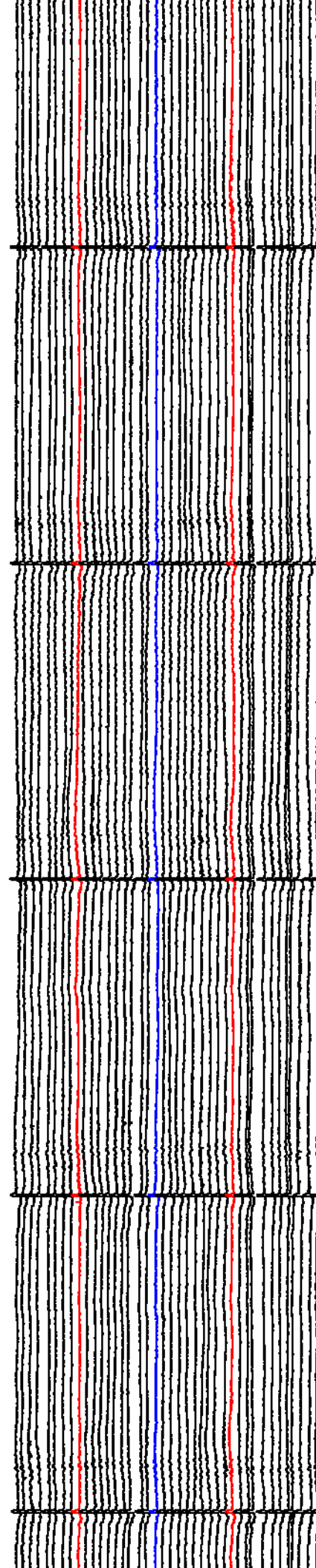
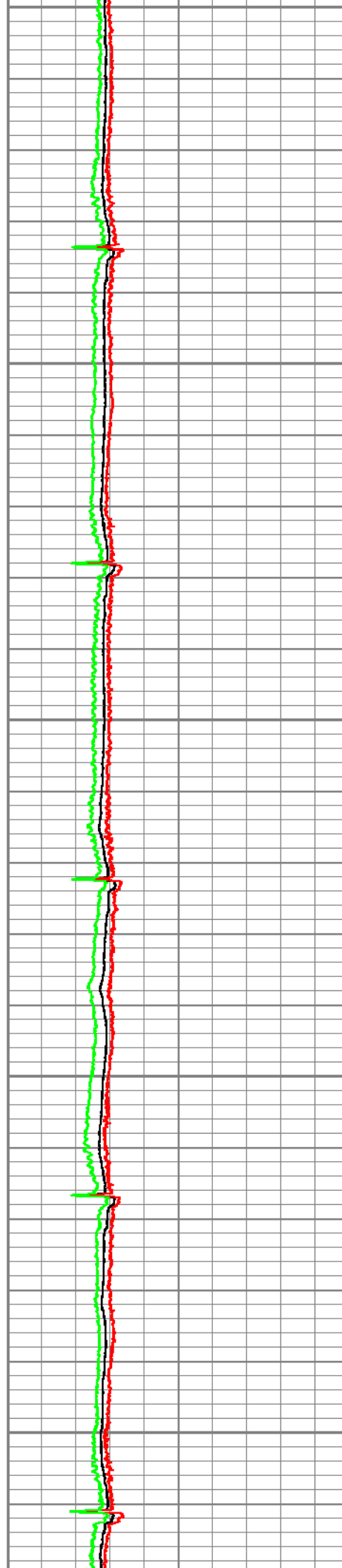


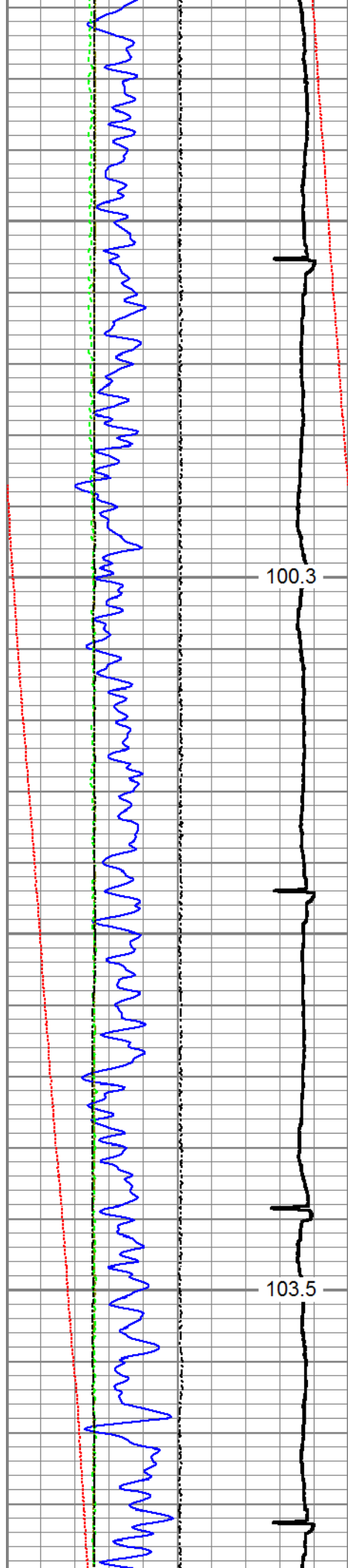


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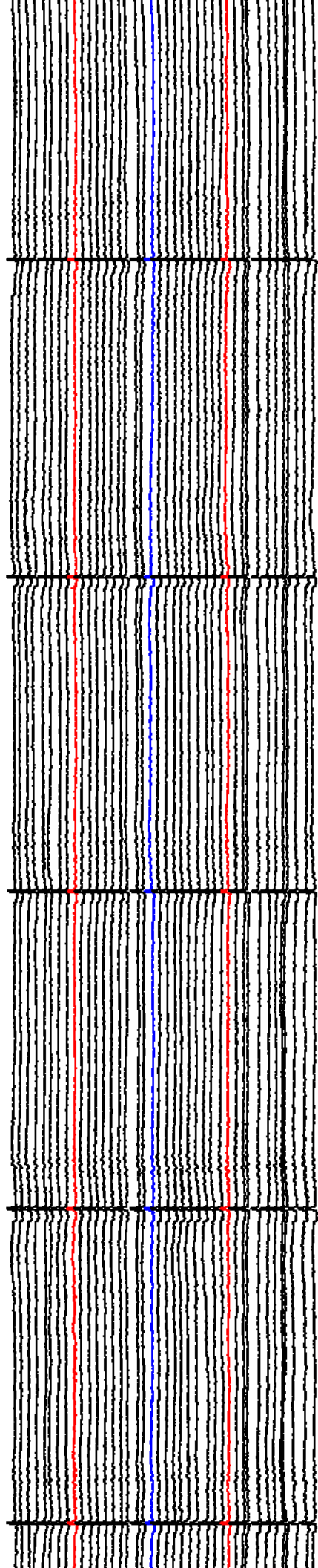
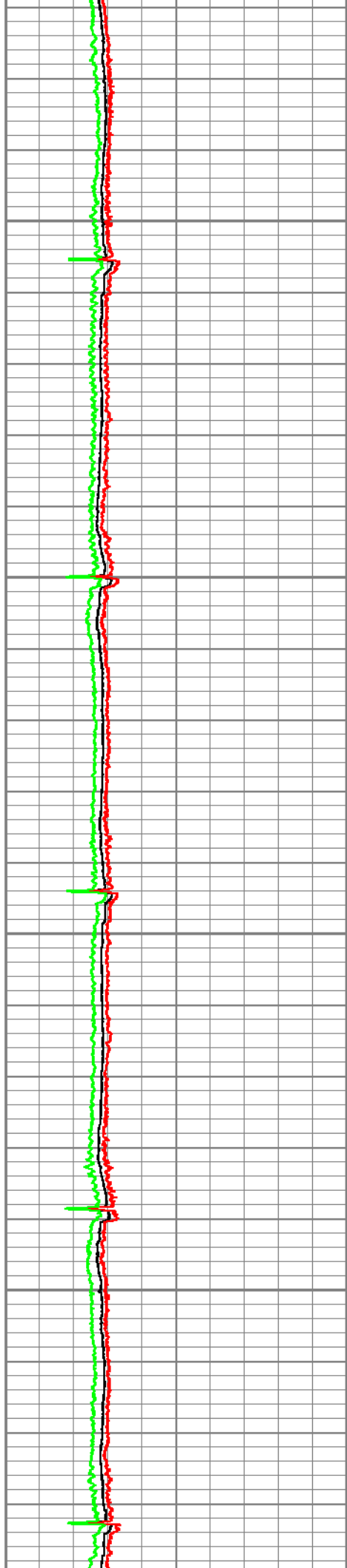


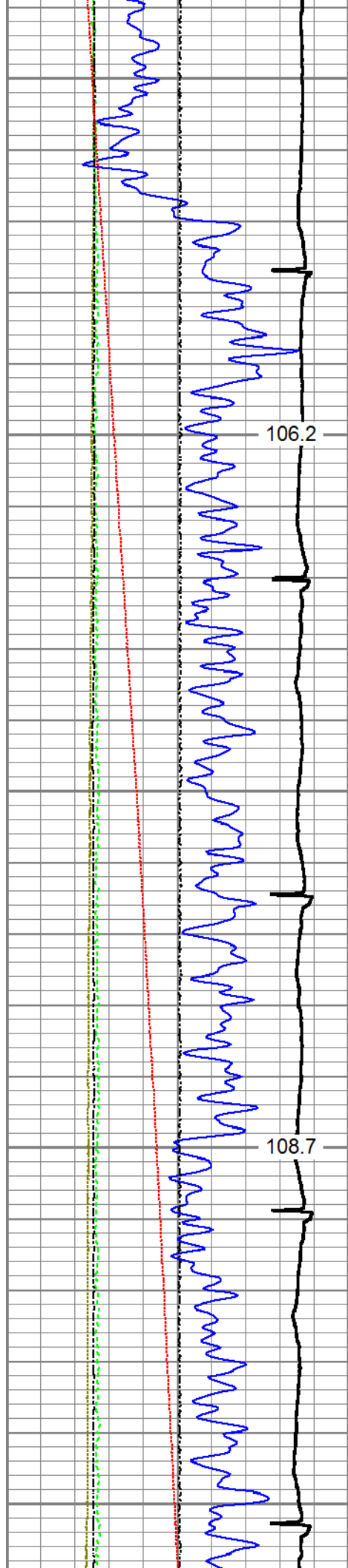
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2200

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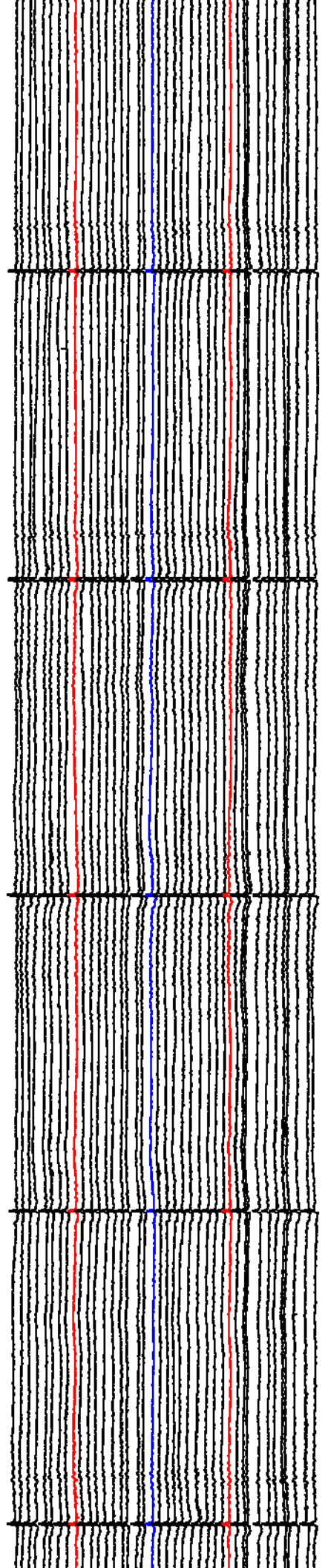
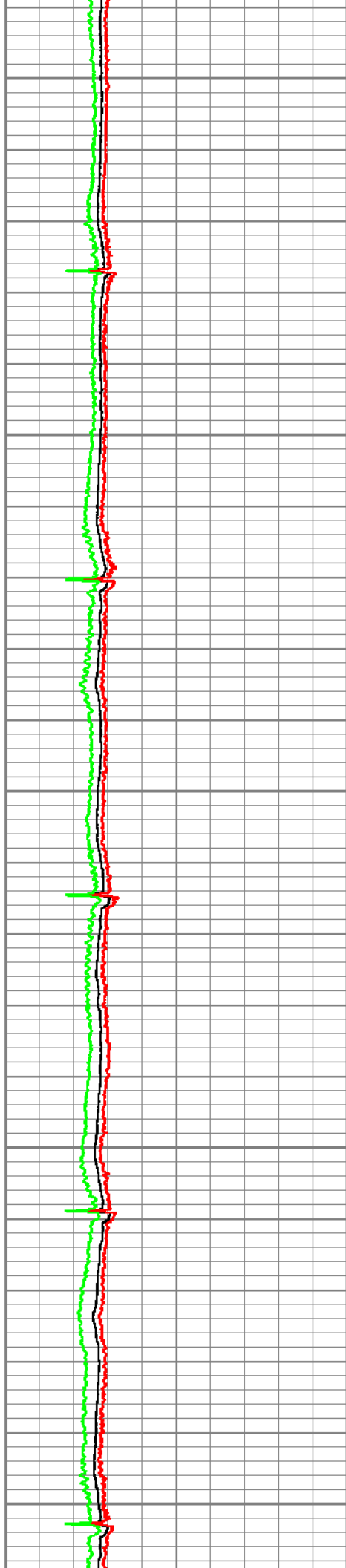
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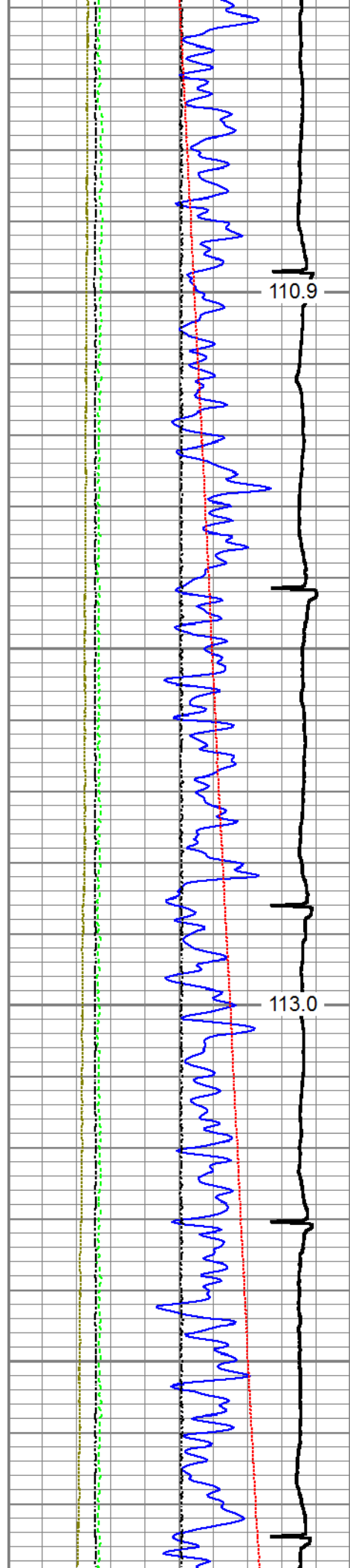




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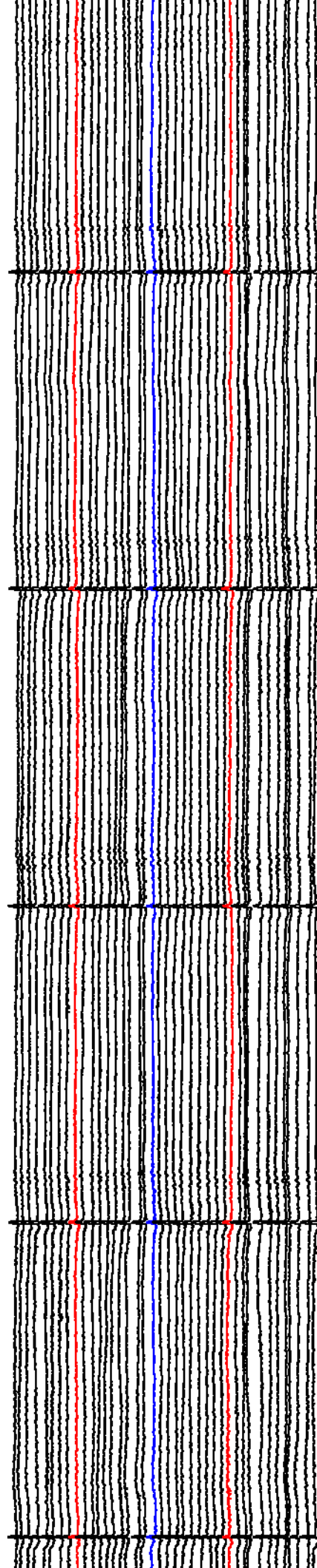
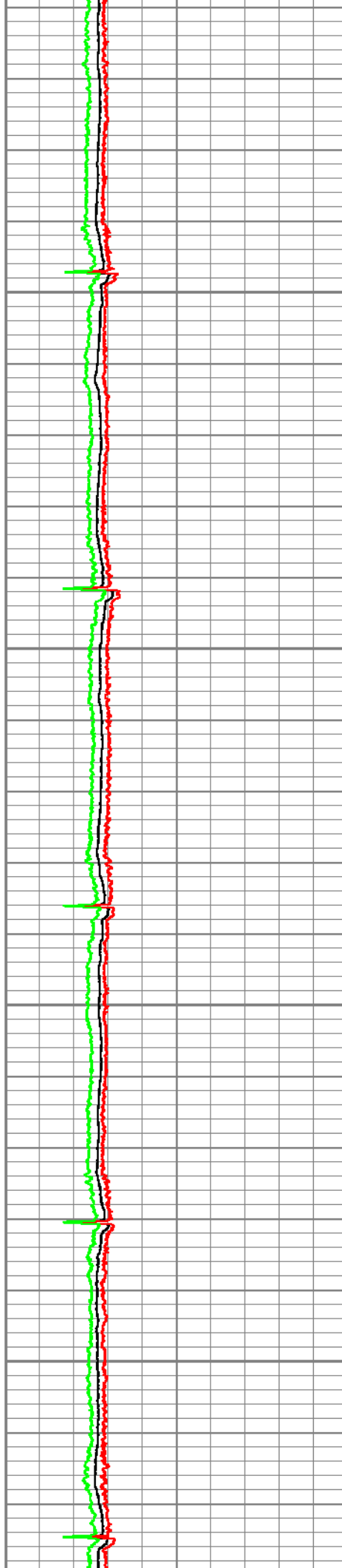
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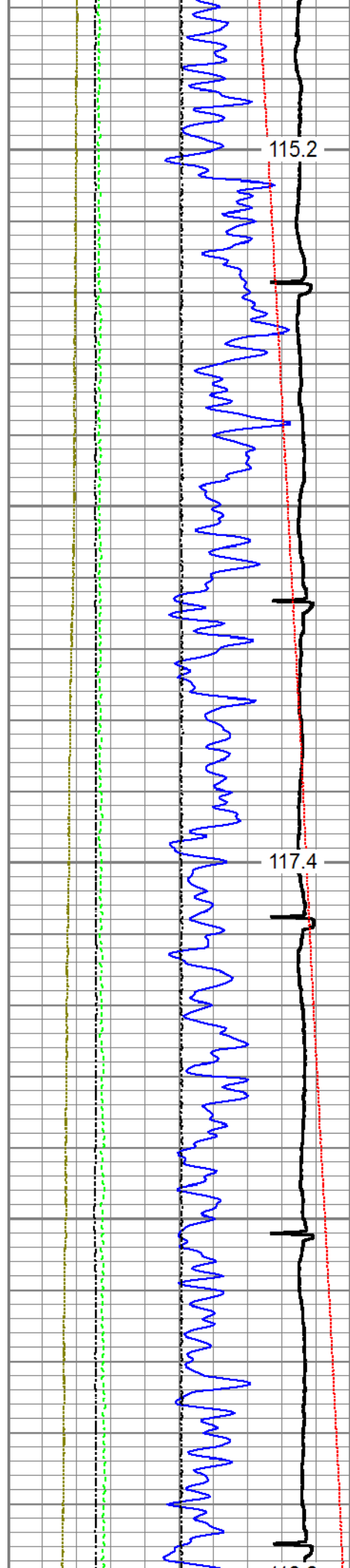




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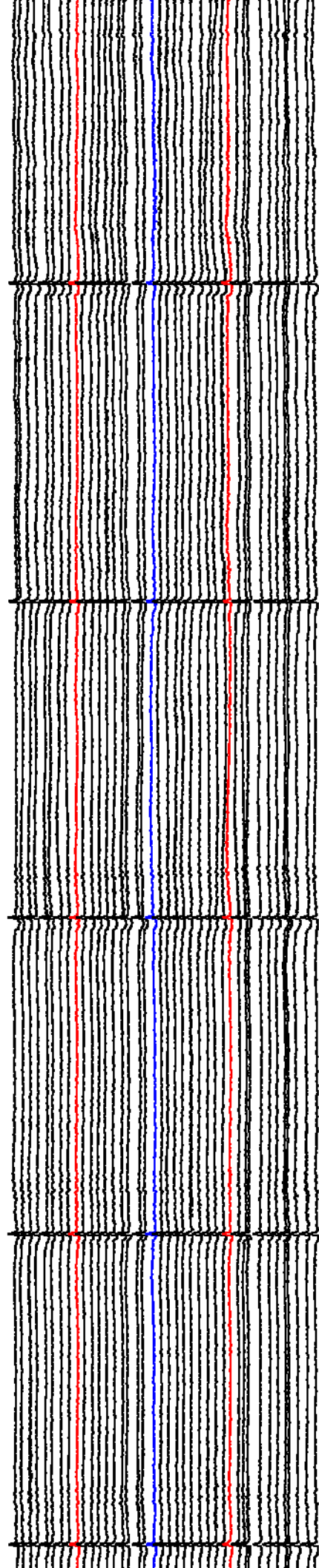
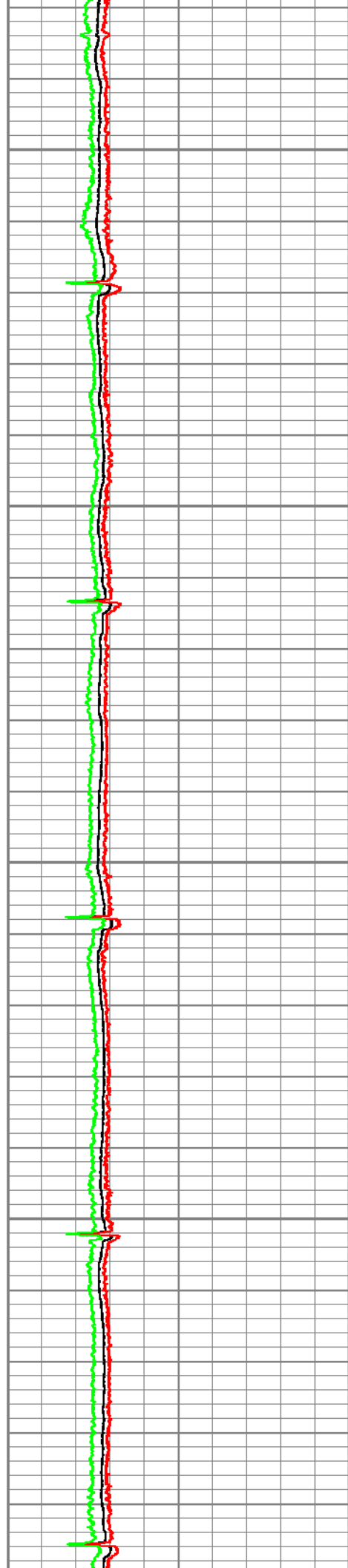


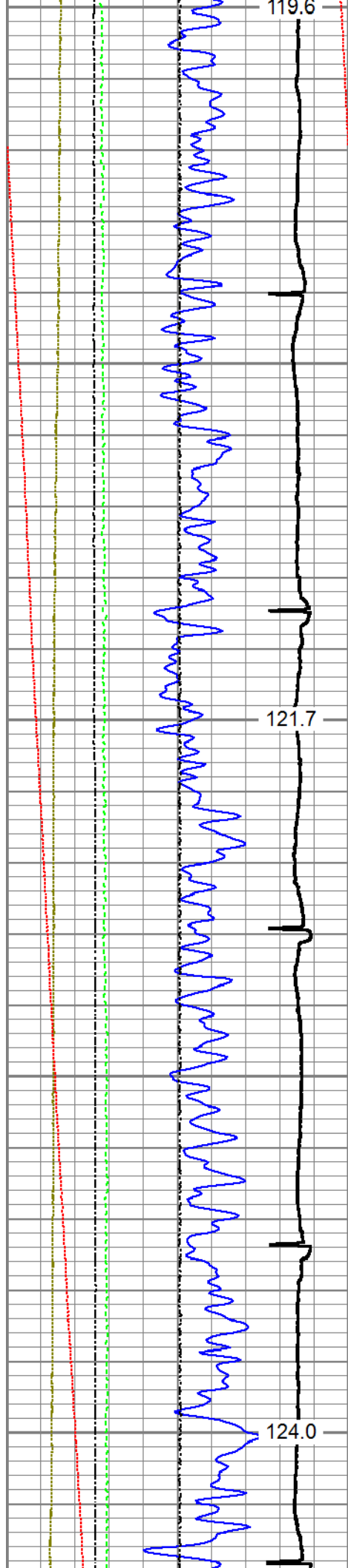


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2900

3000





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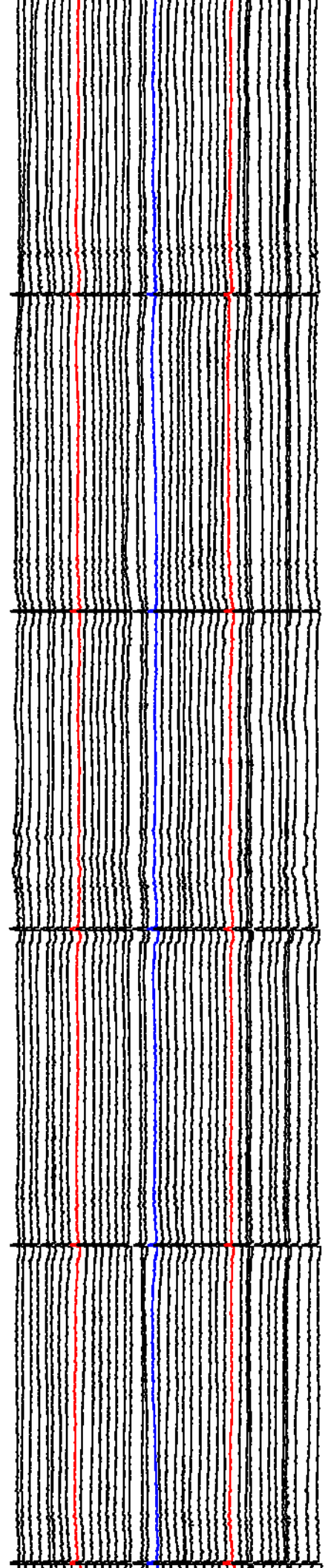
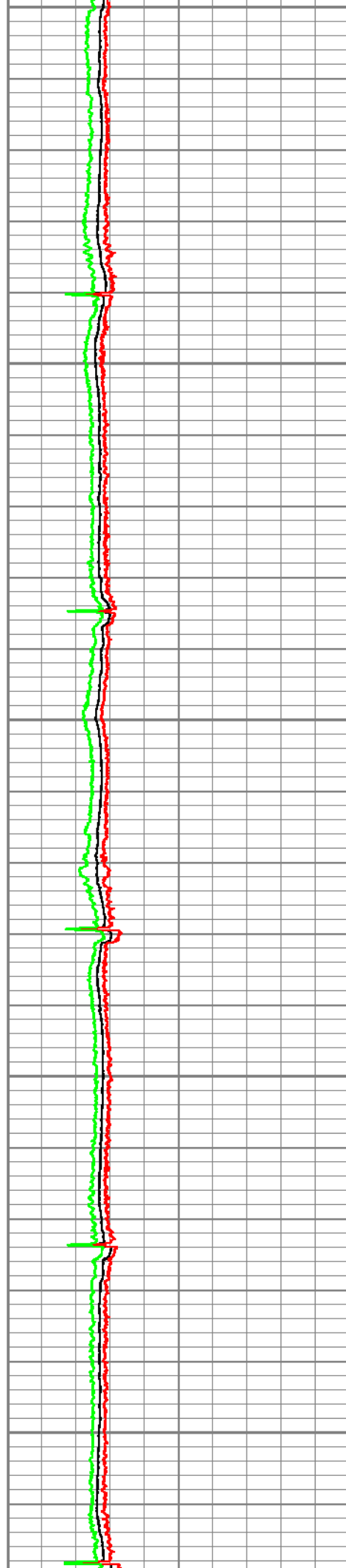
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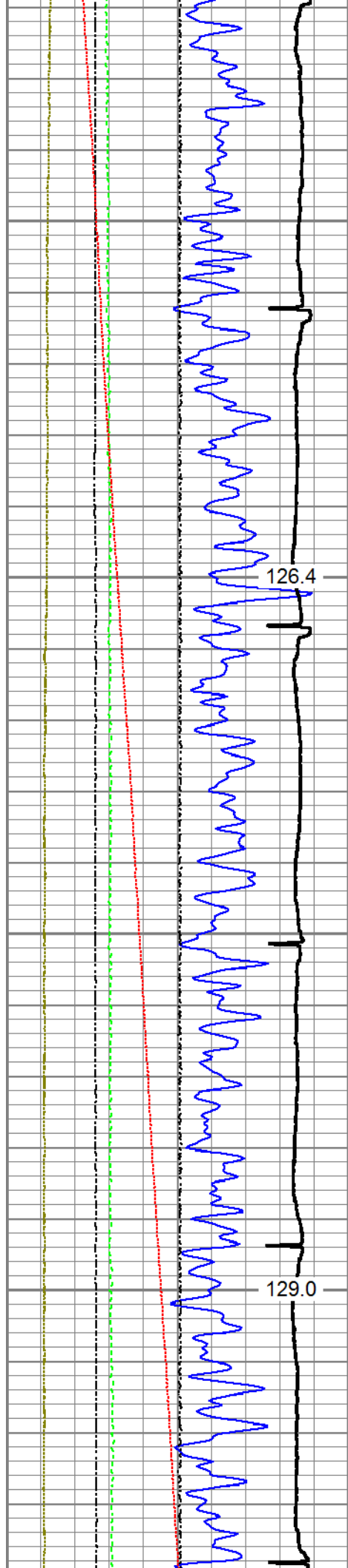
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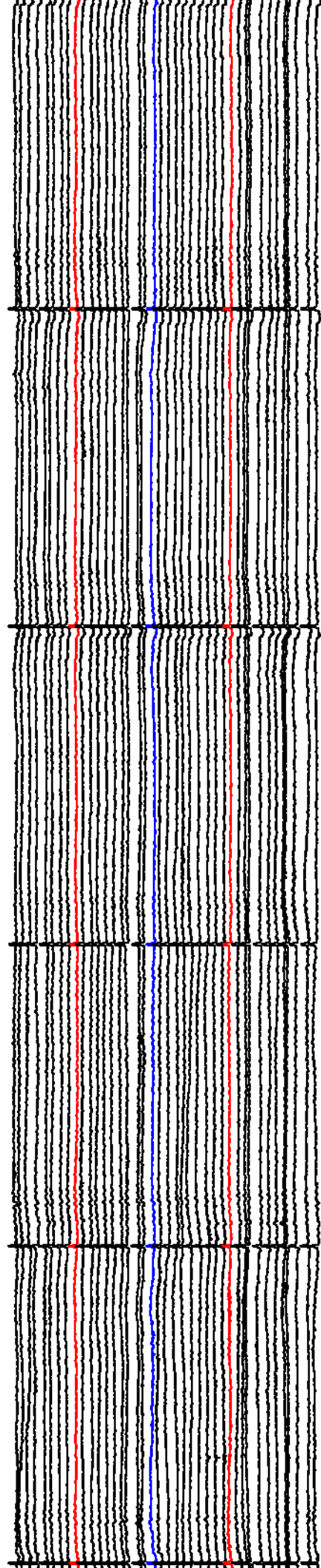
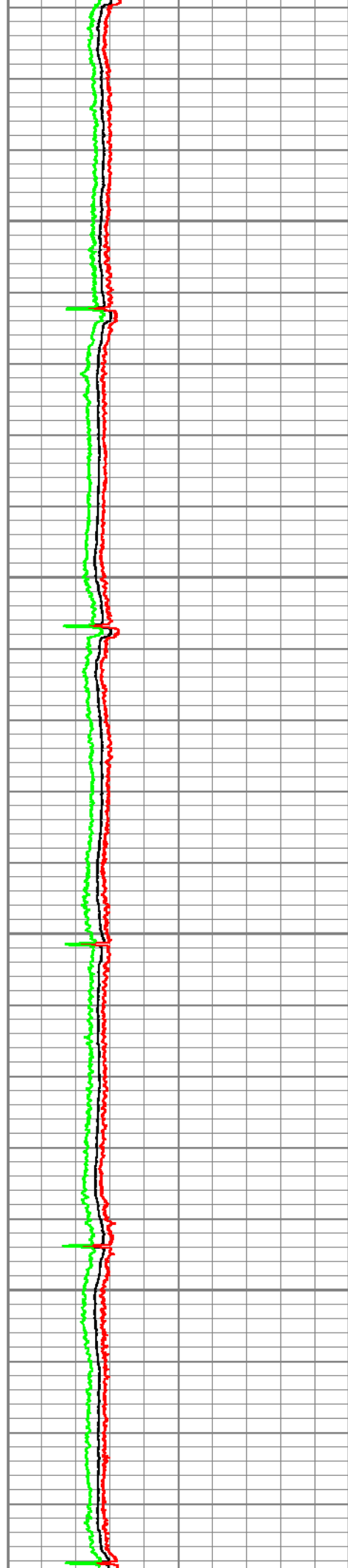
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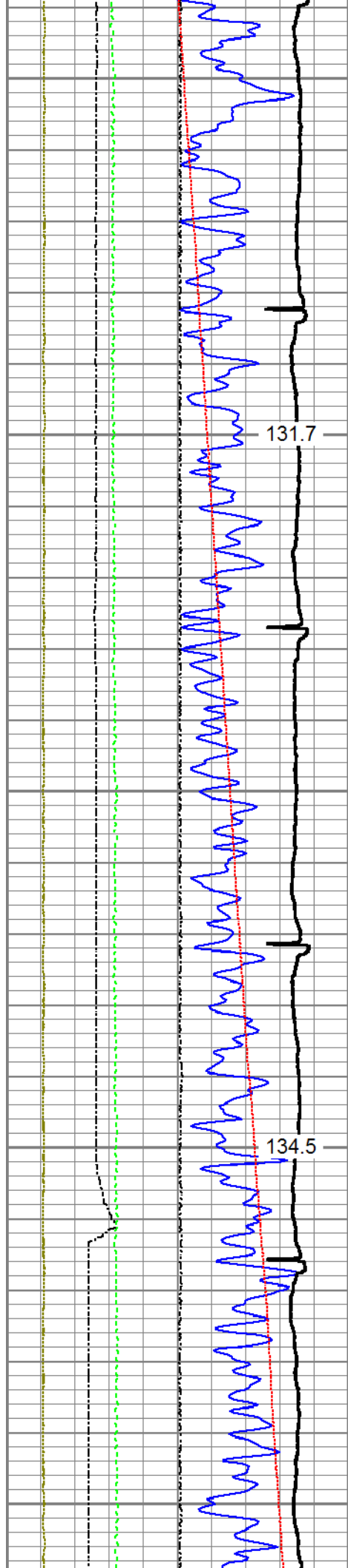




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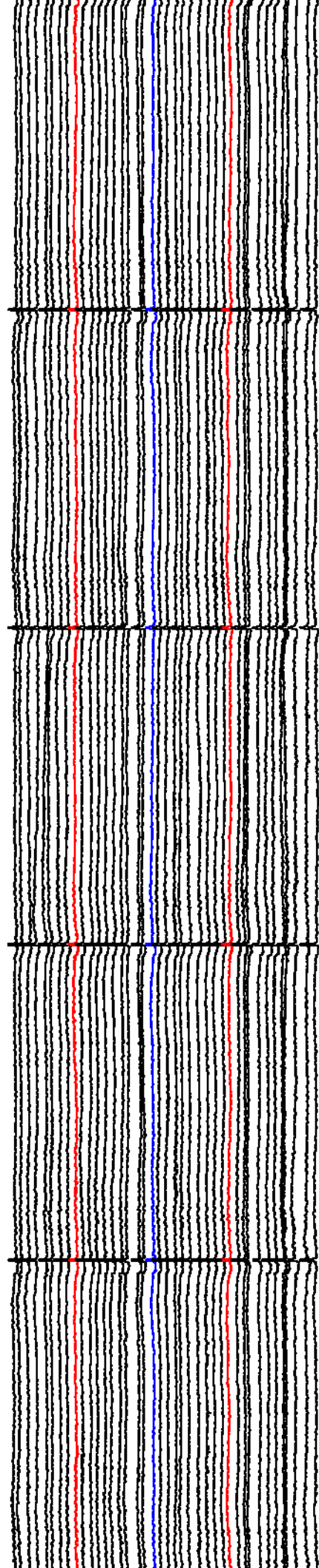
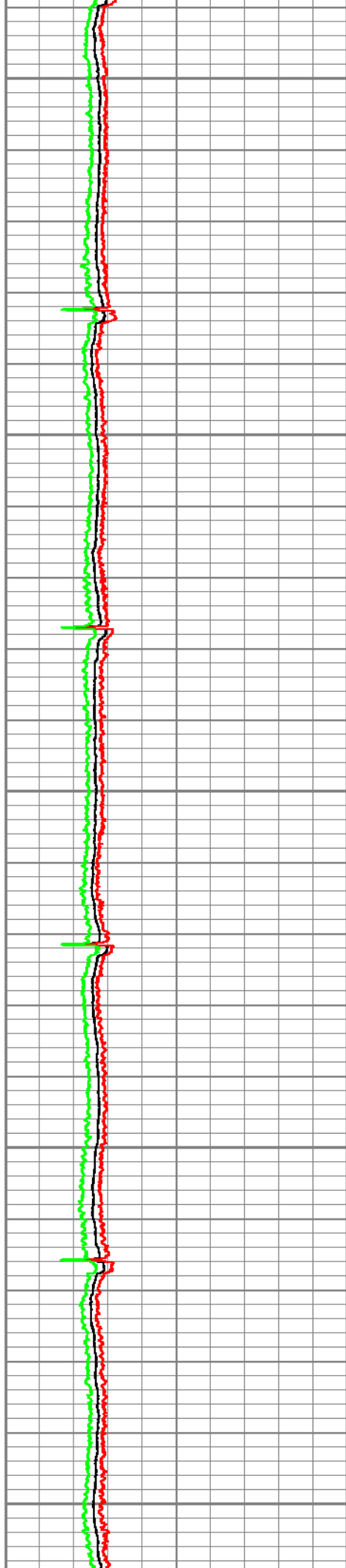
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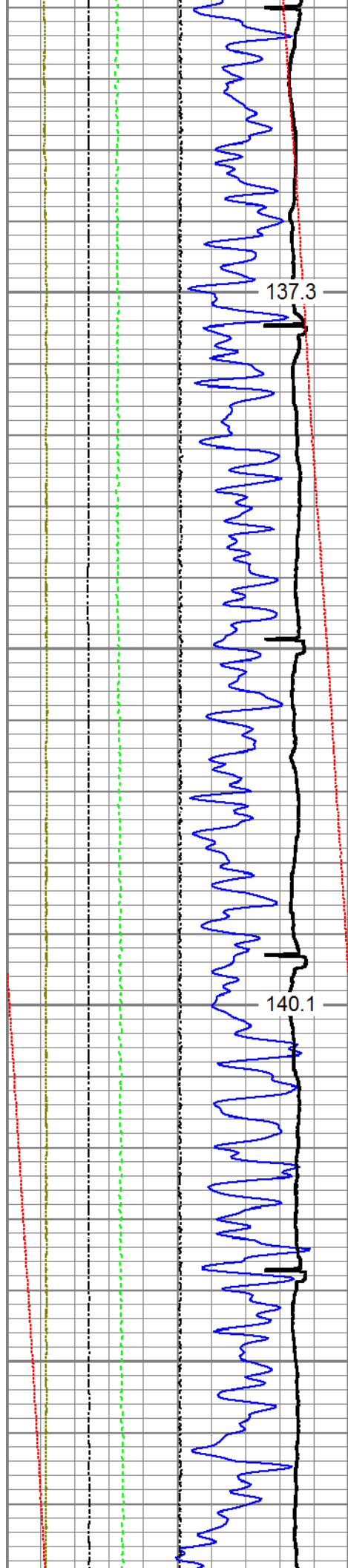




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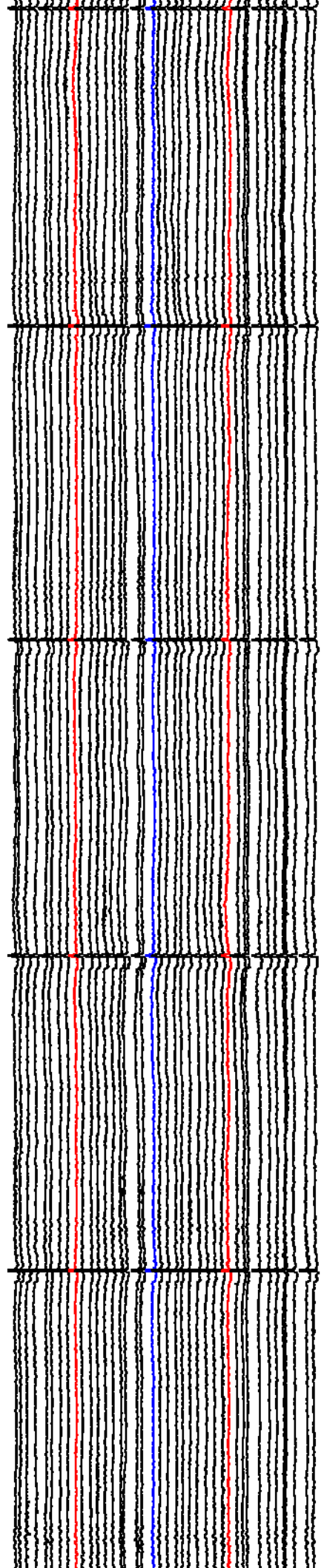
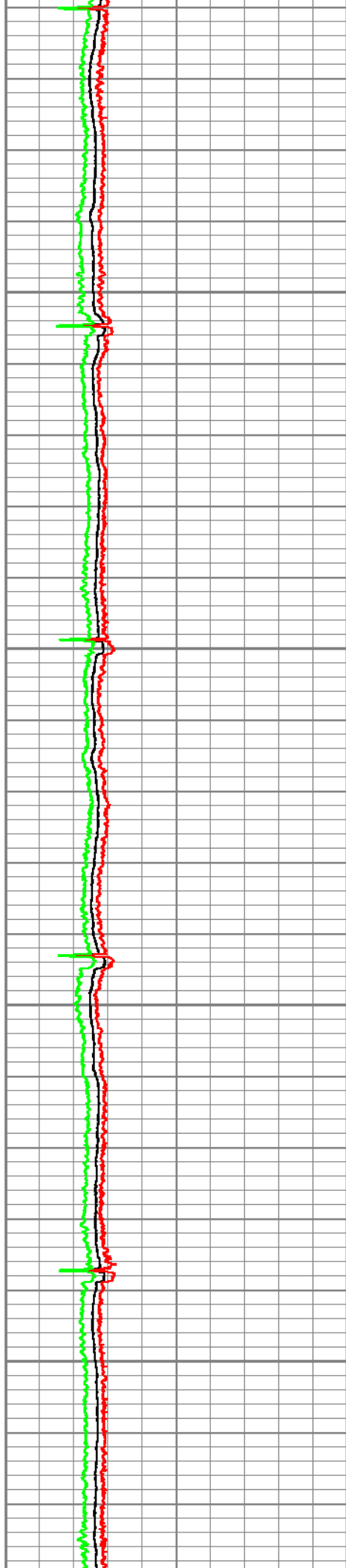
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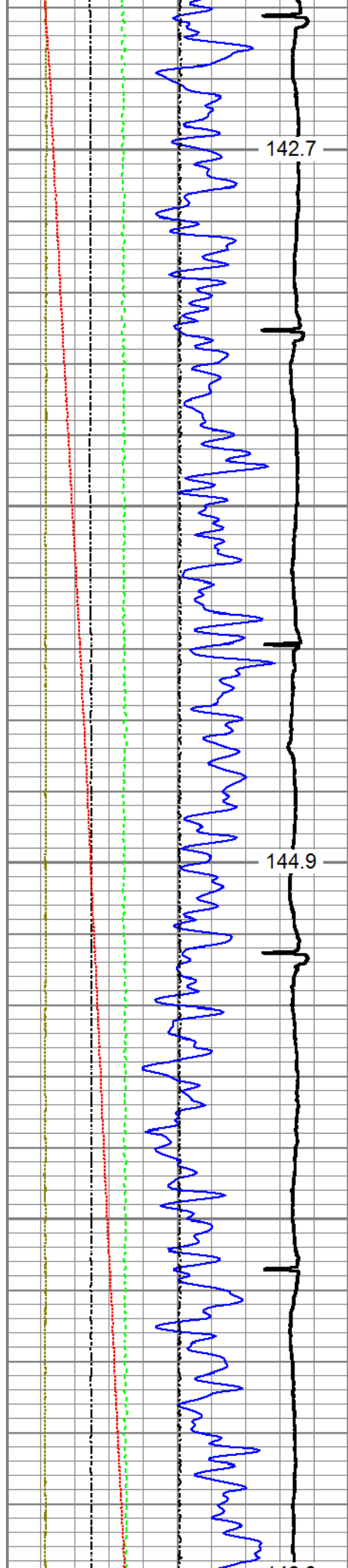




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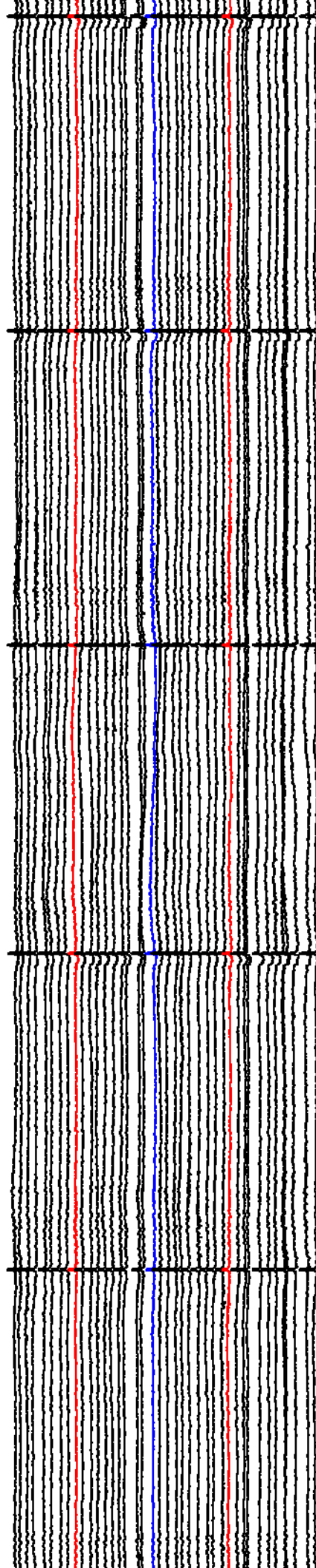
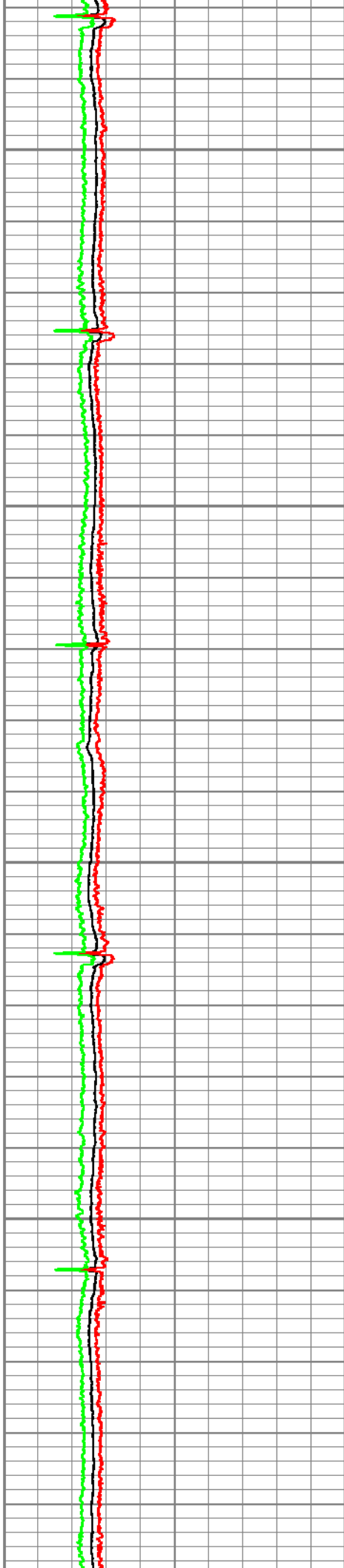
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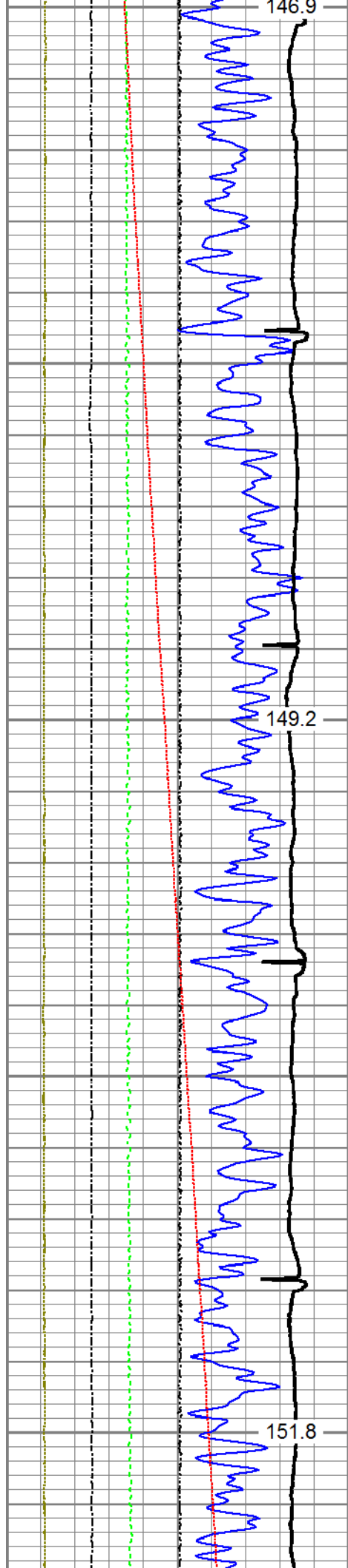




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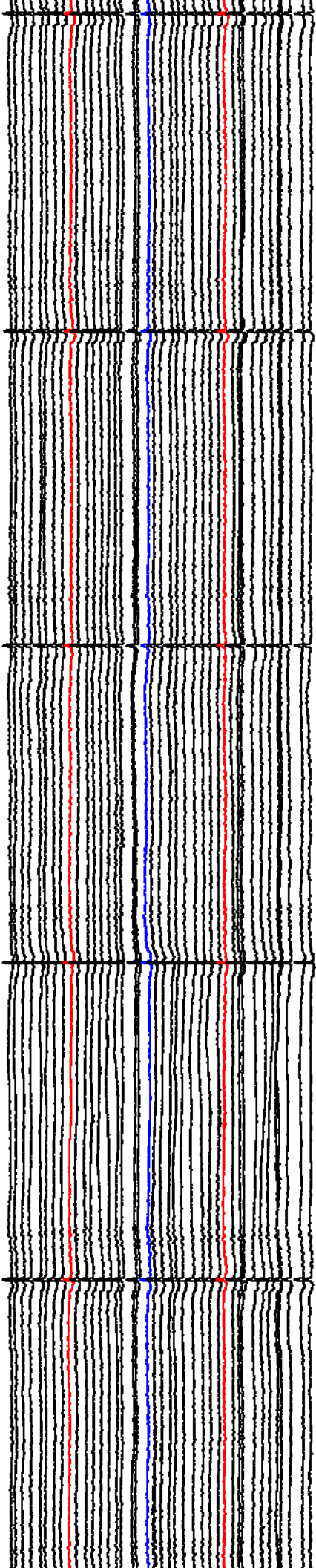
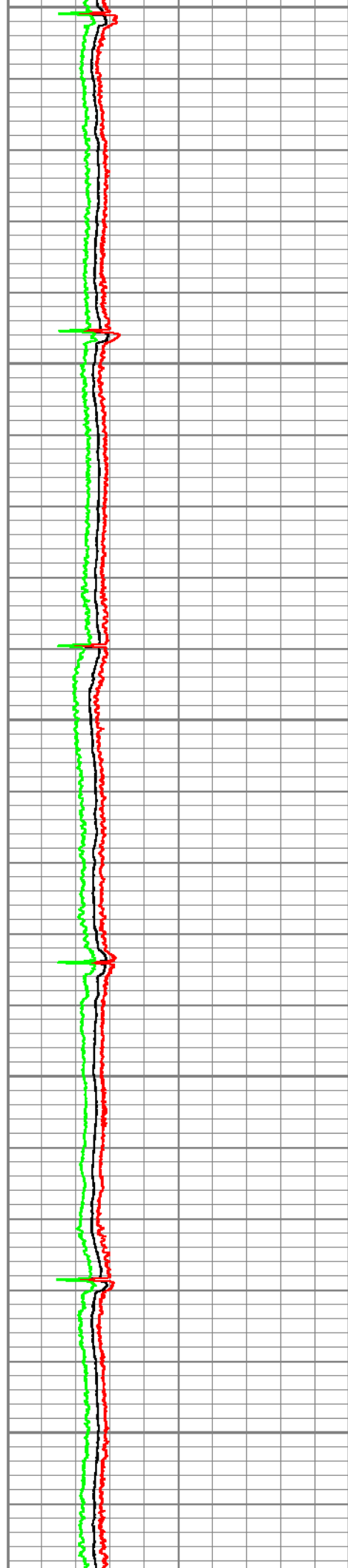


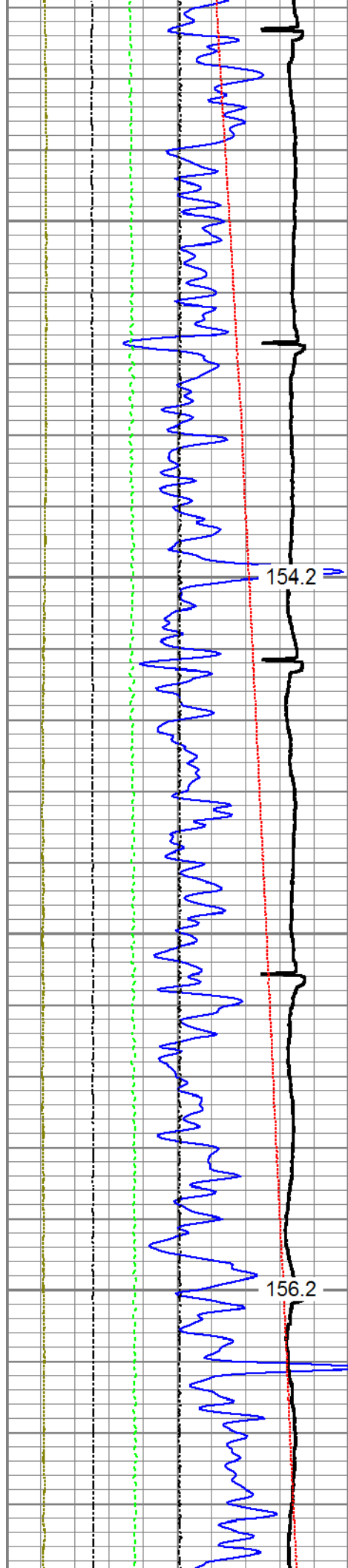


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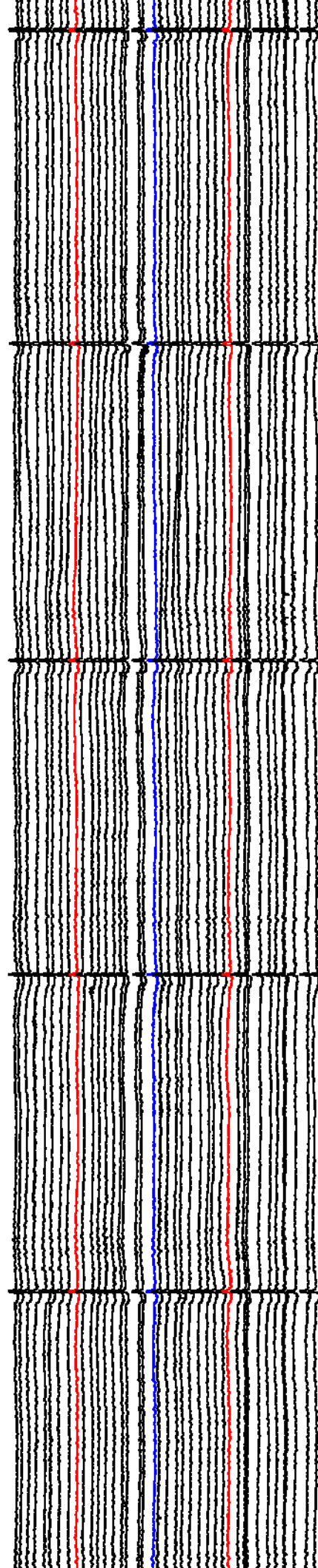
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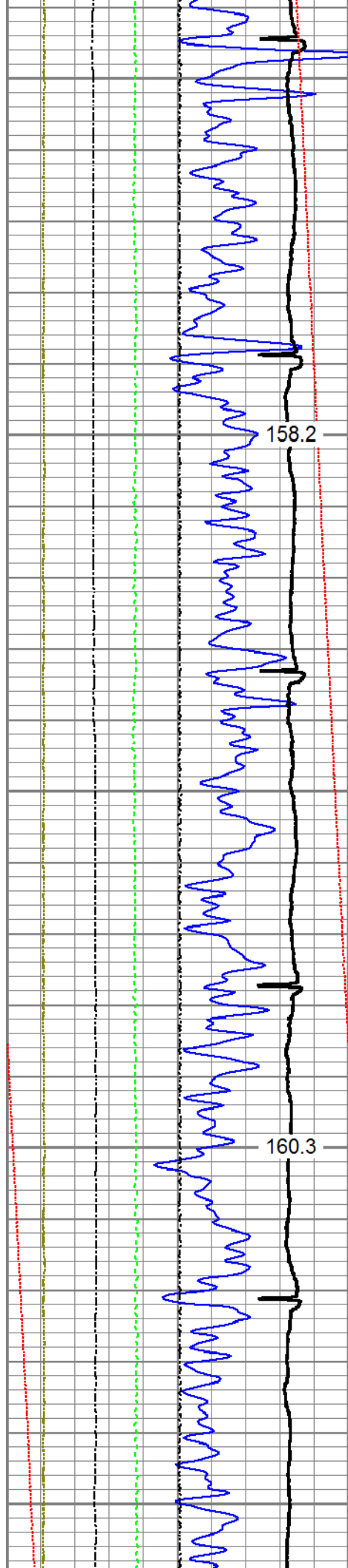




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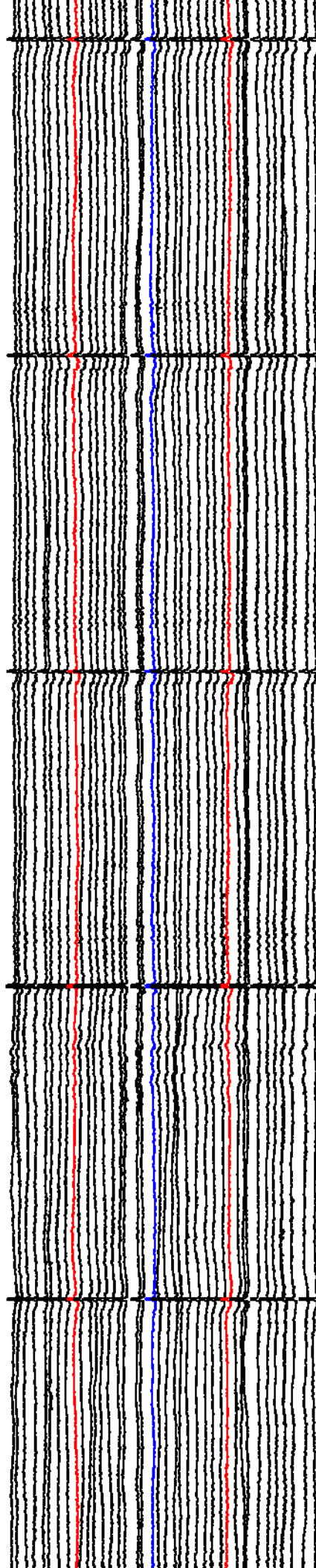
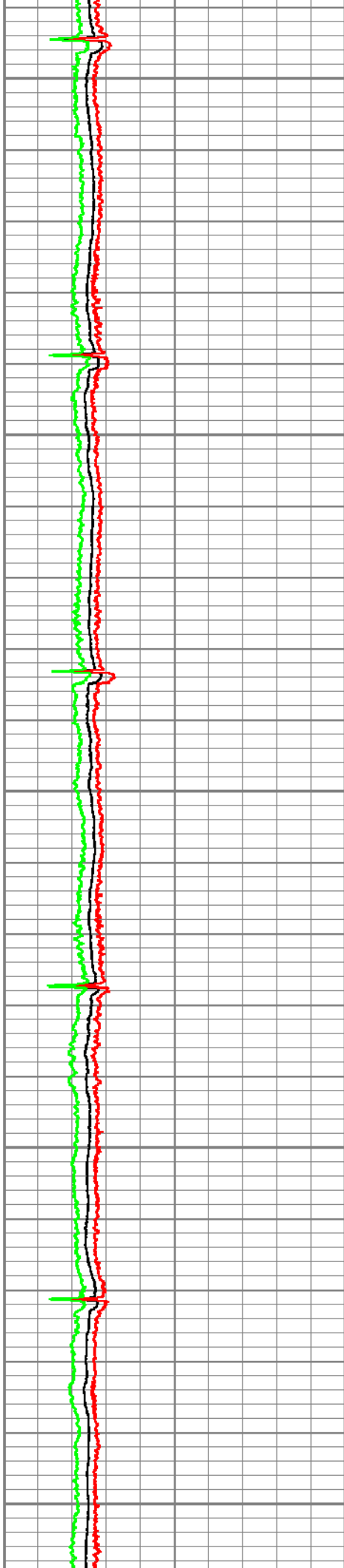


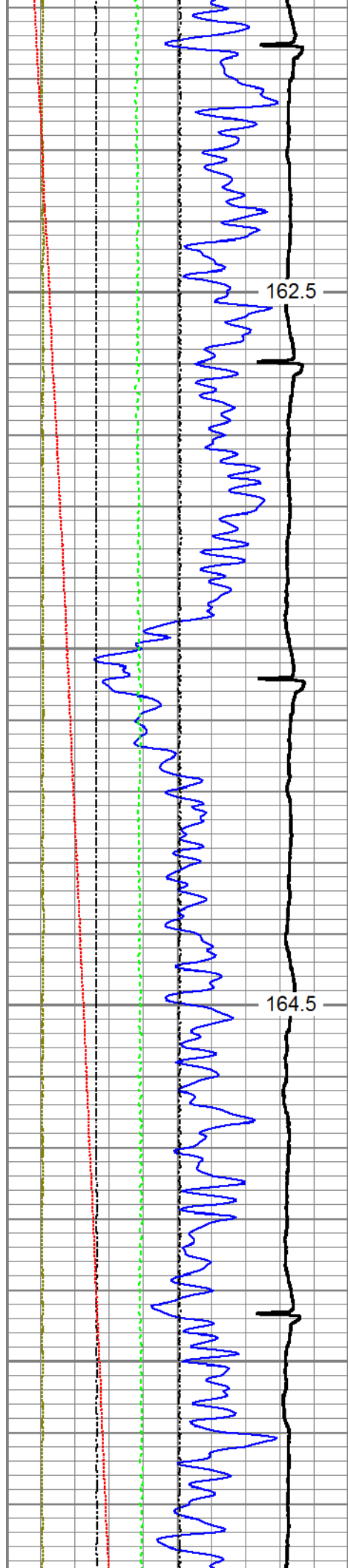
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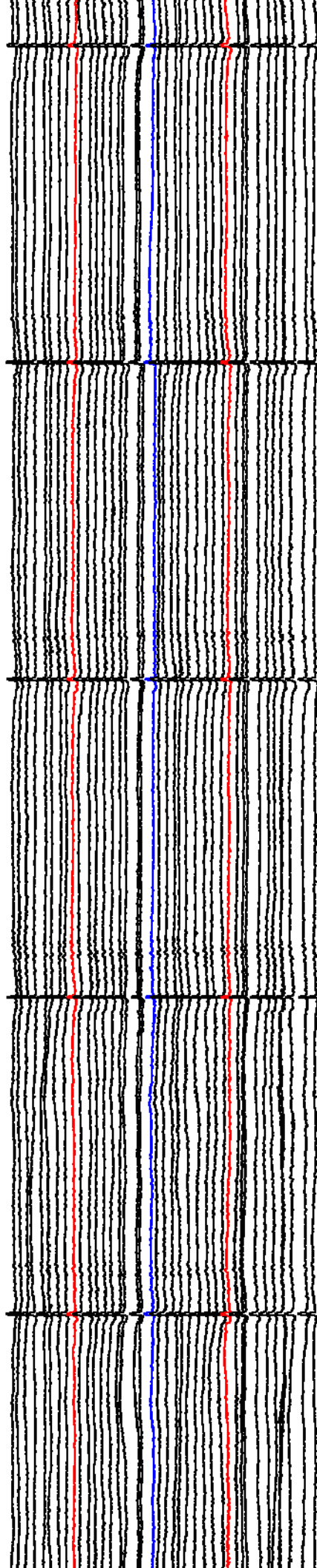
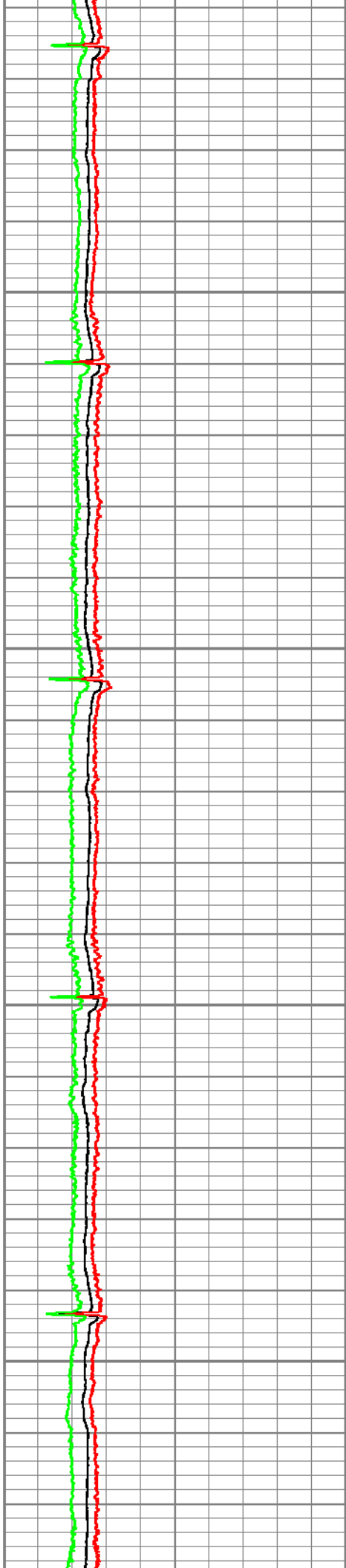
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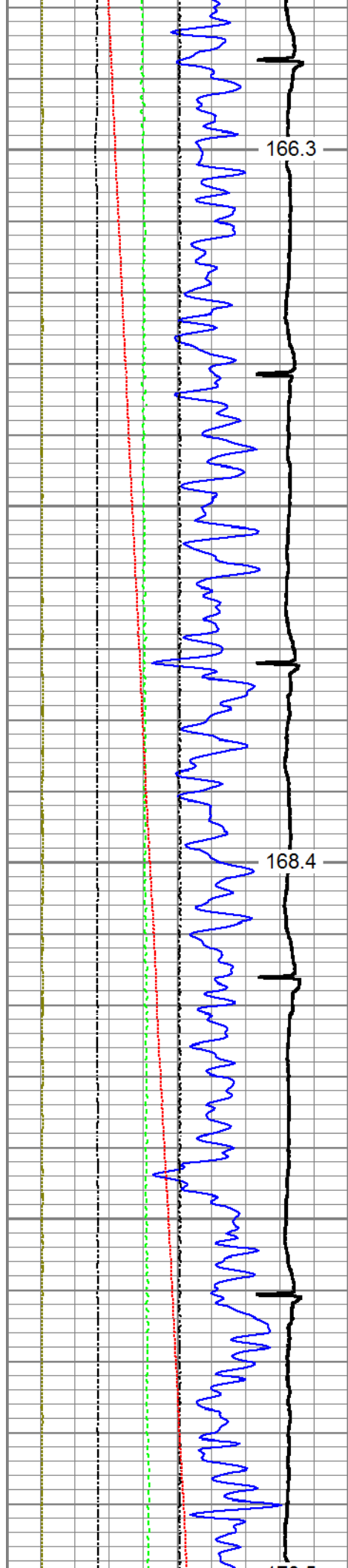




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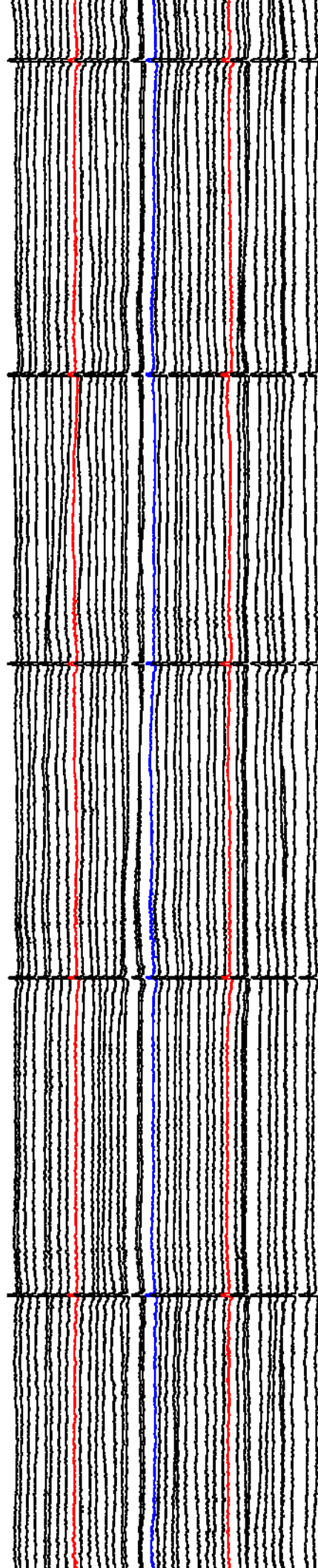
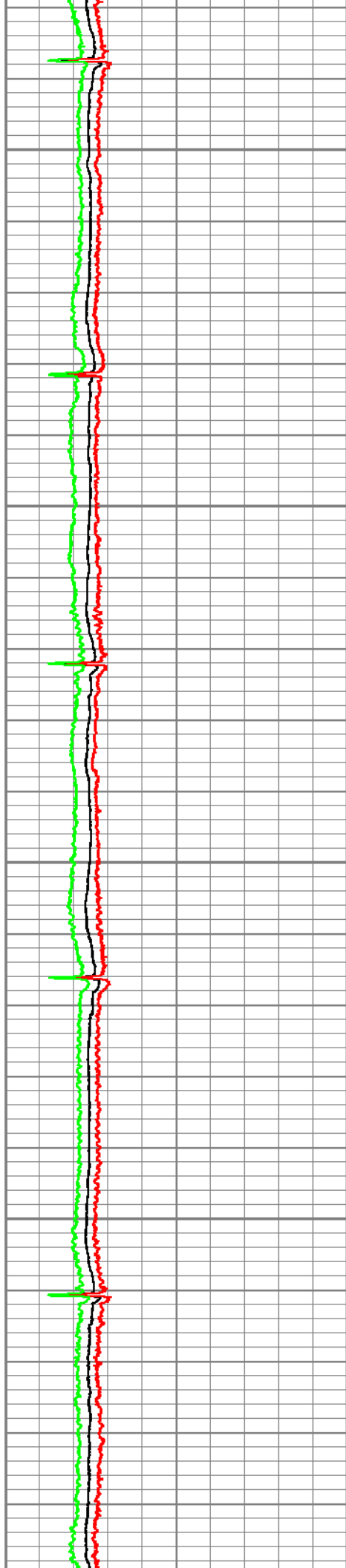


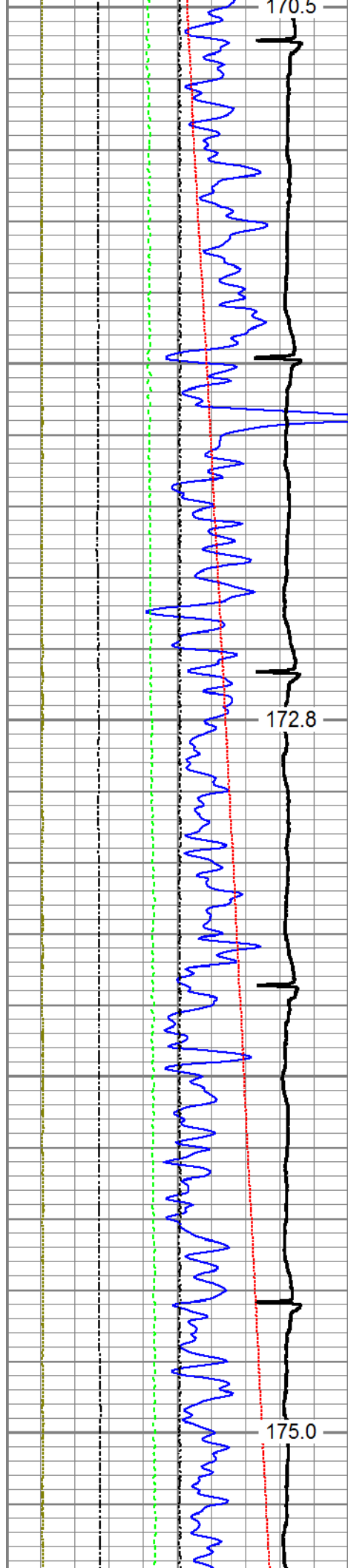
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5000

168.4

5100





5200

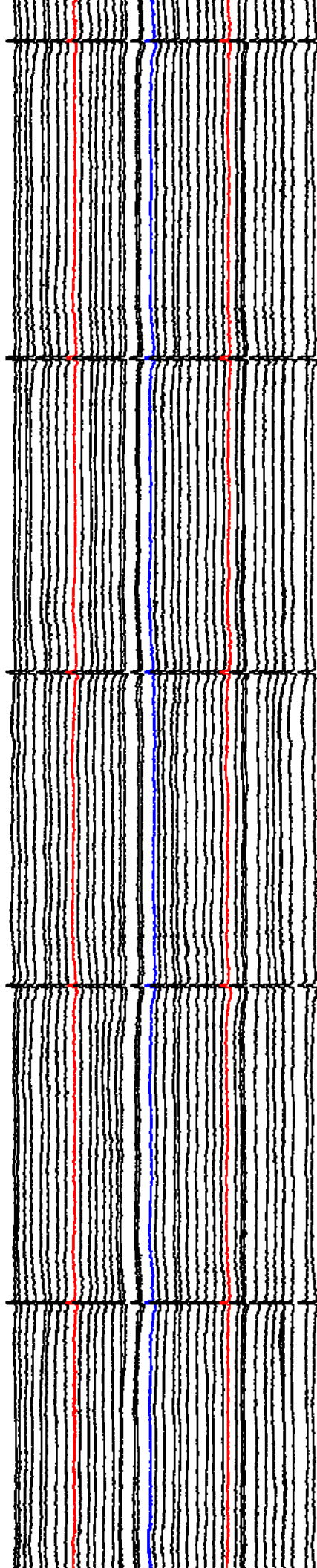
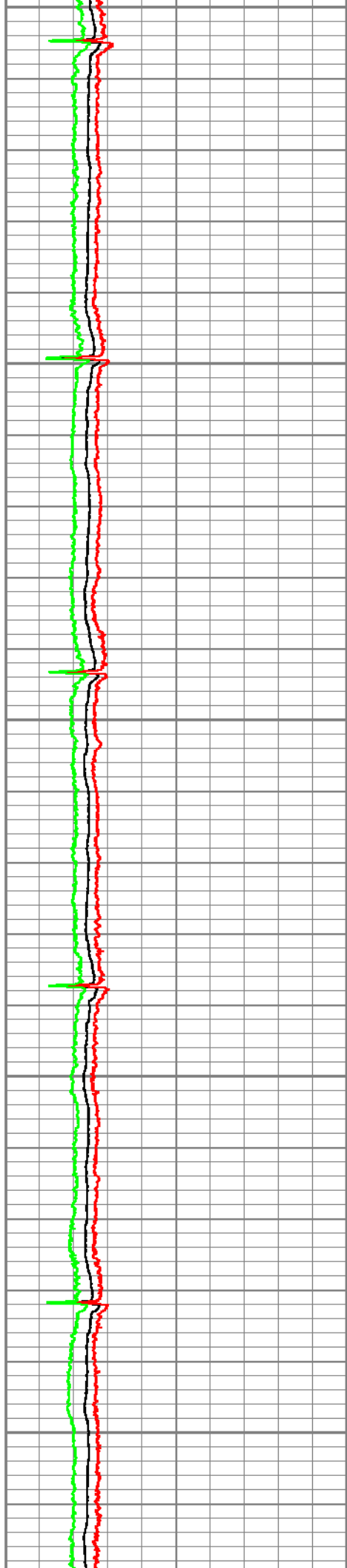
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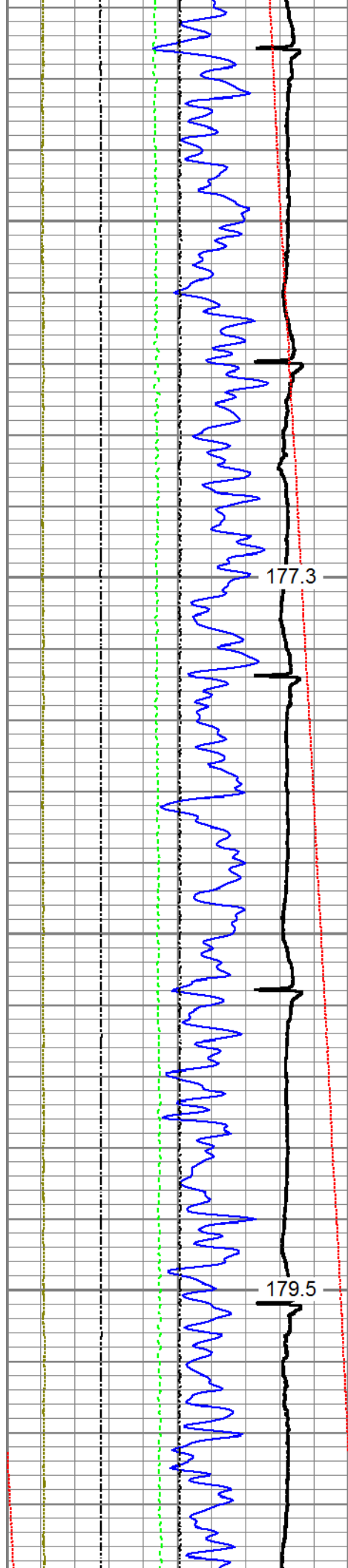
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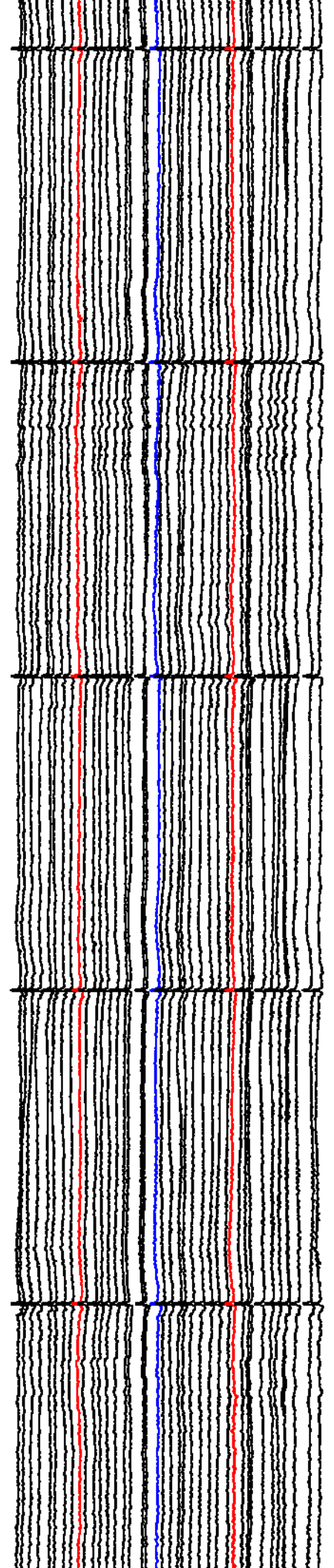
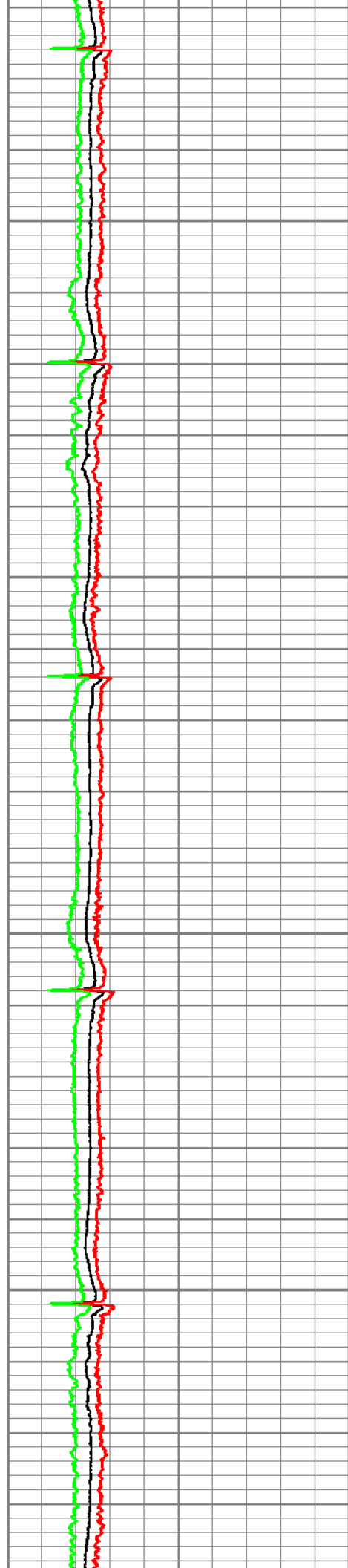
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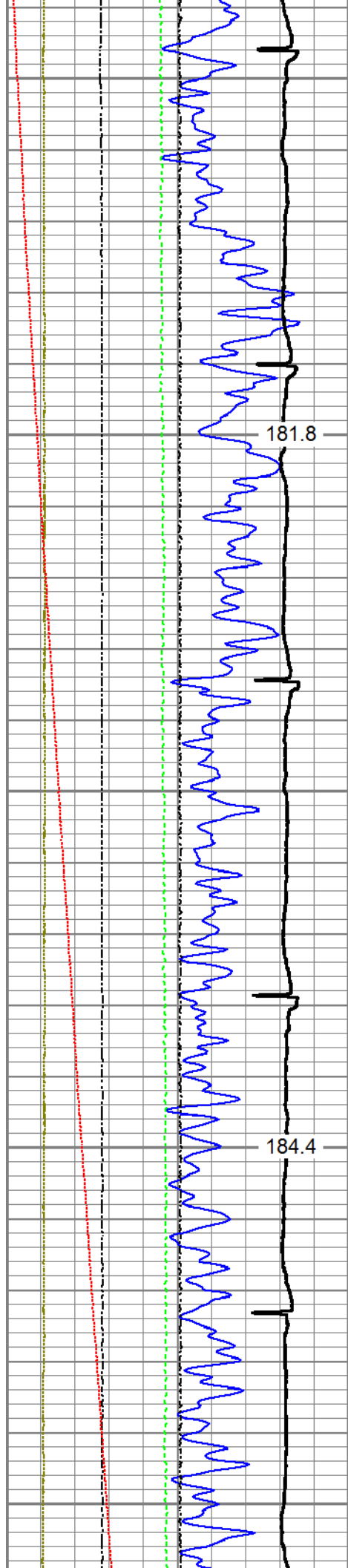




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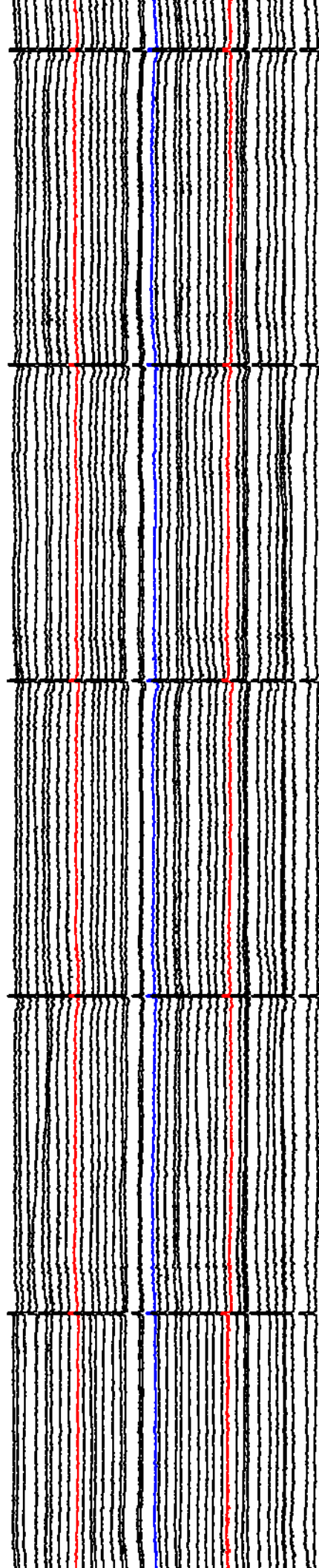
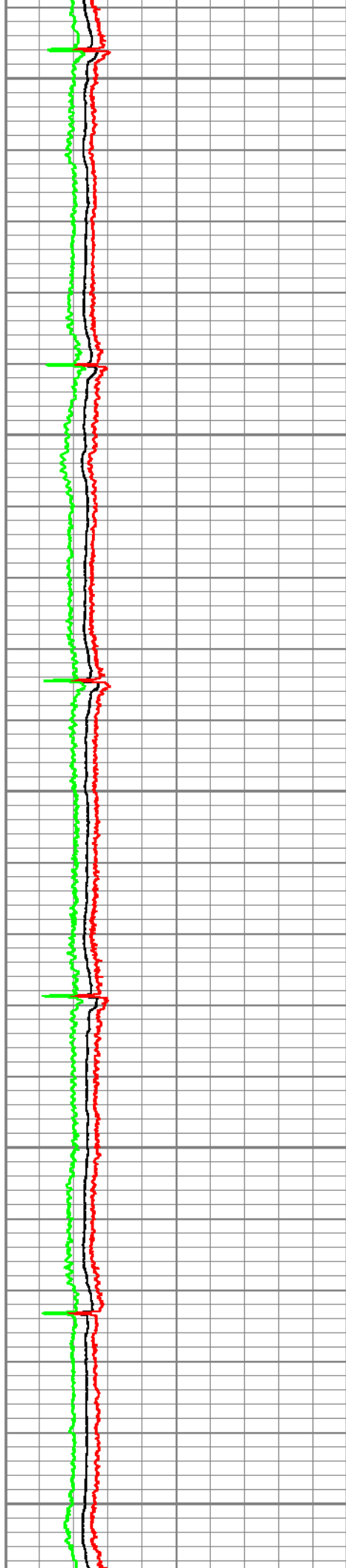
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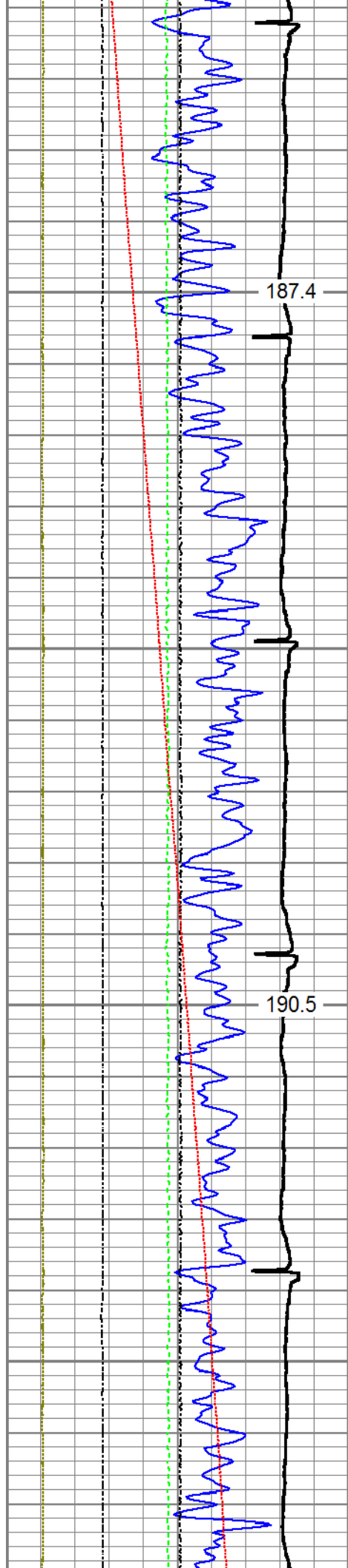




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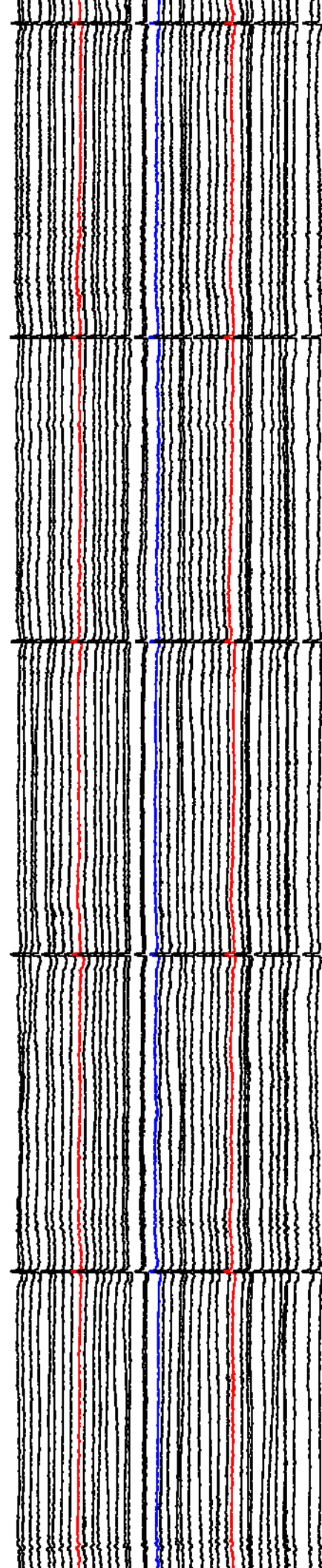
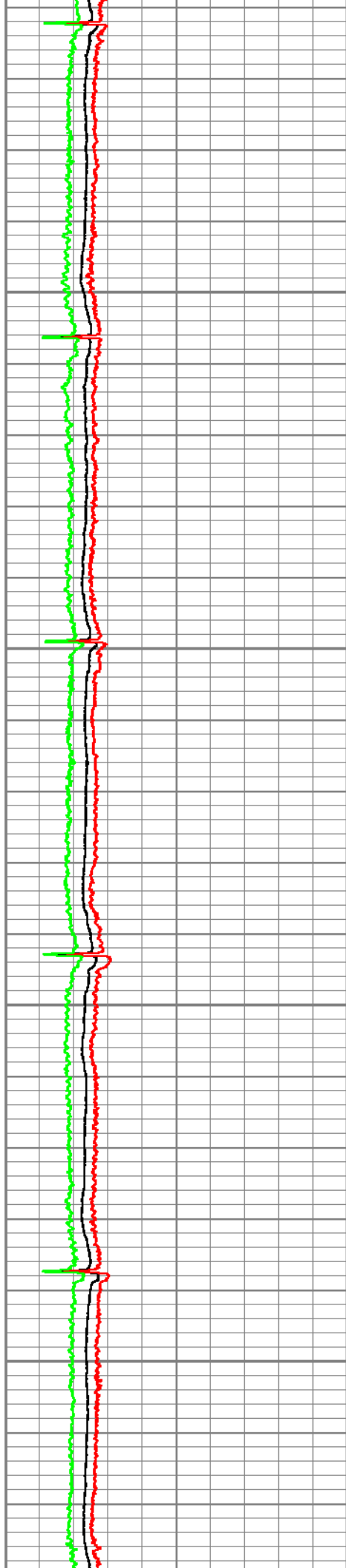
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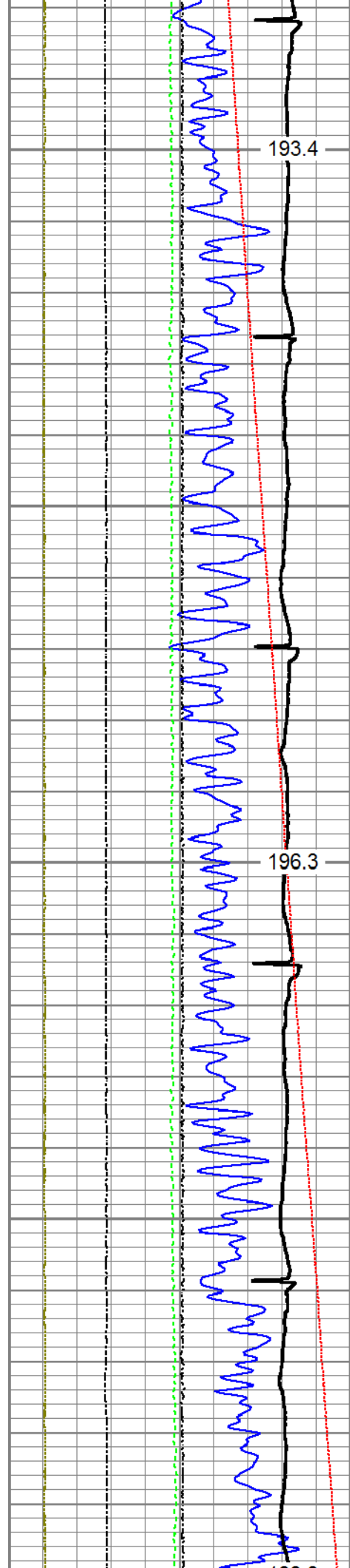




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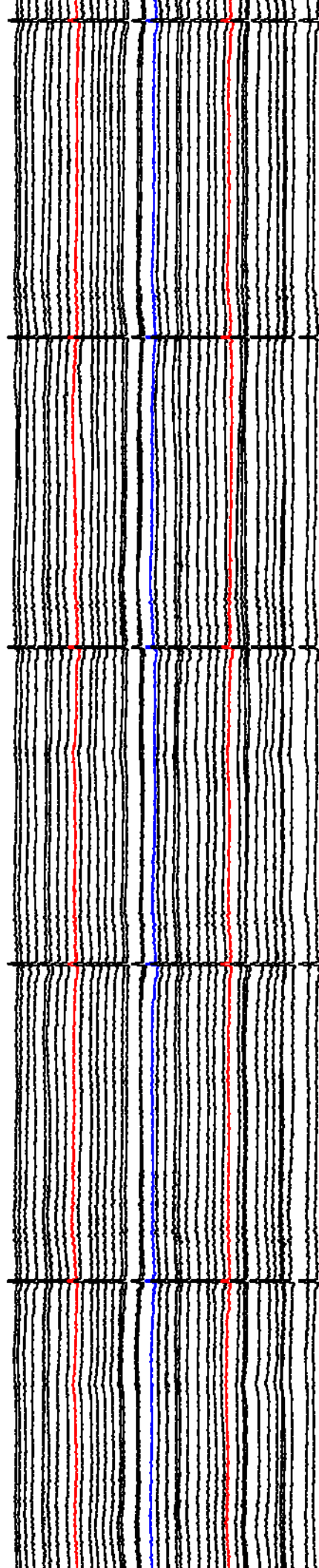
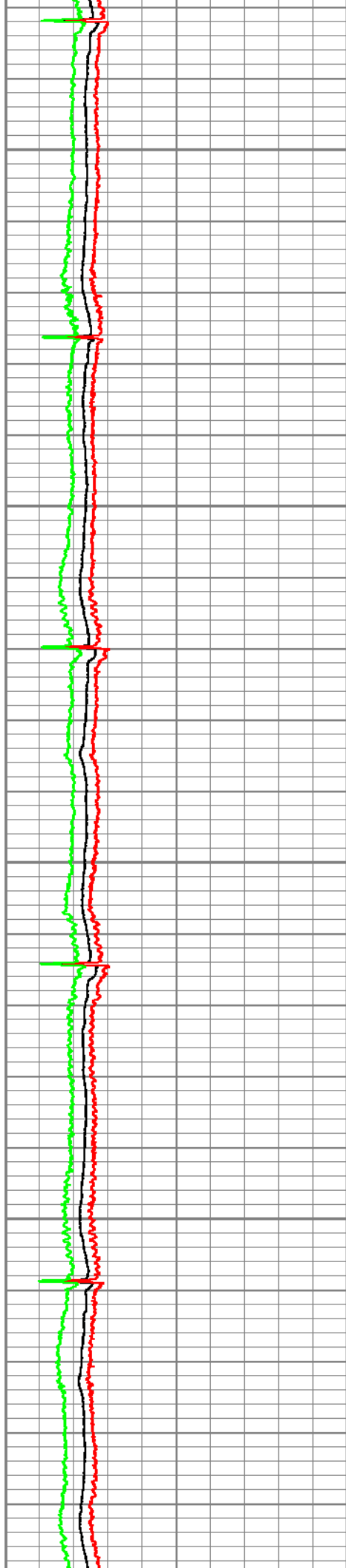
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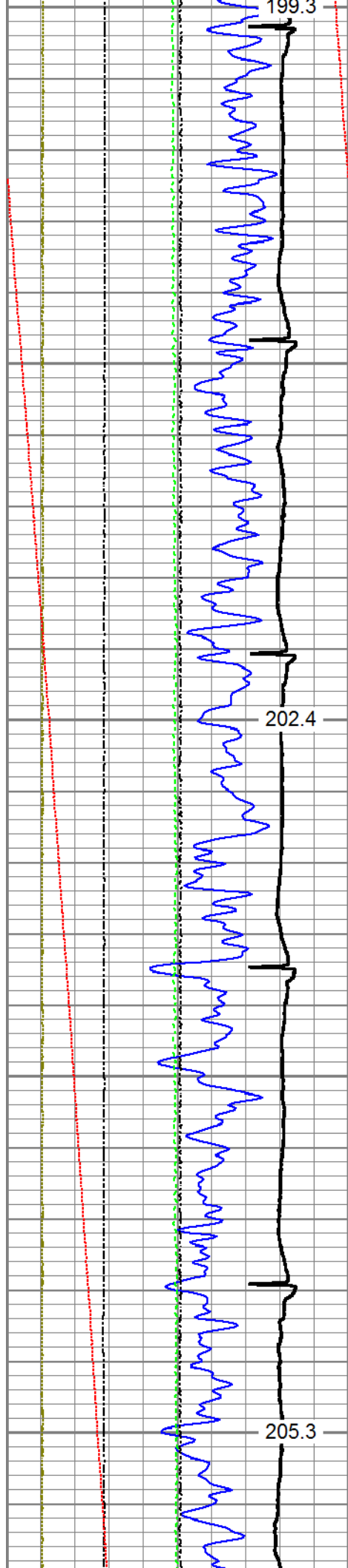




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6200

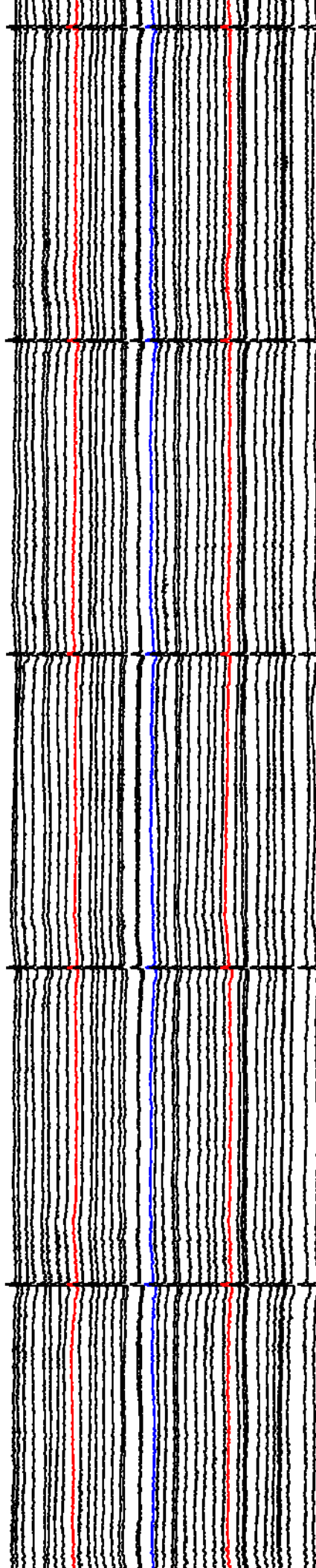
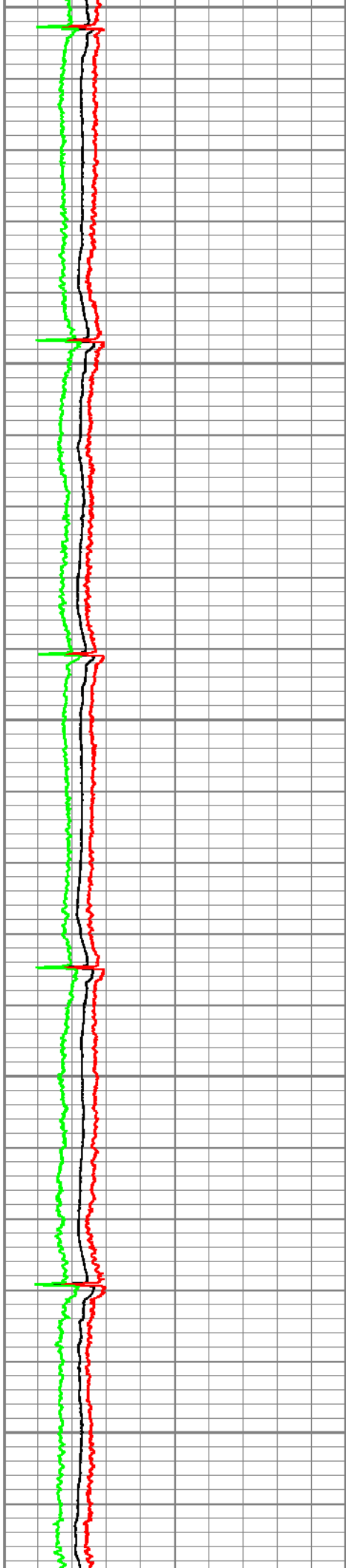


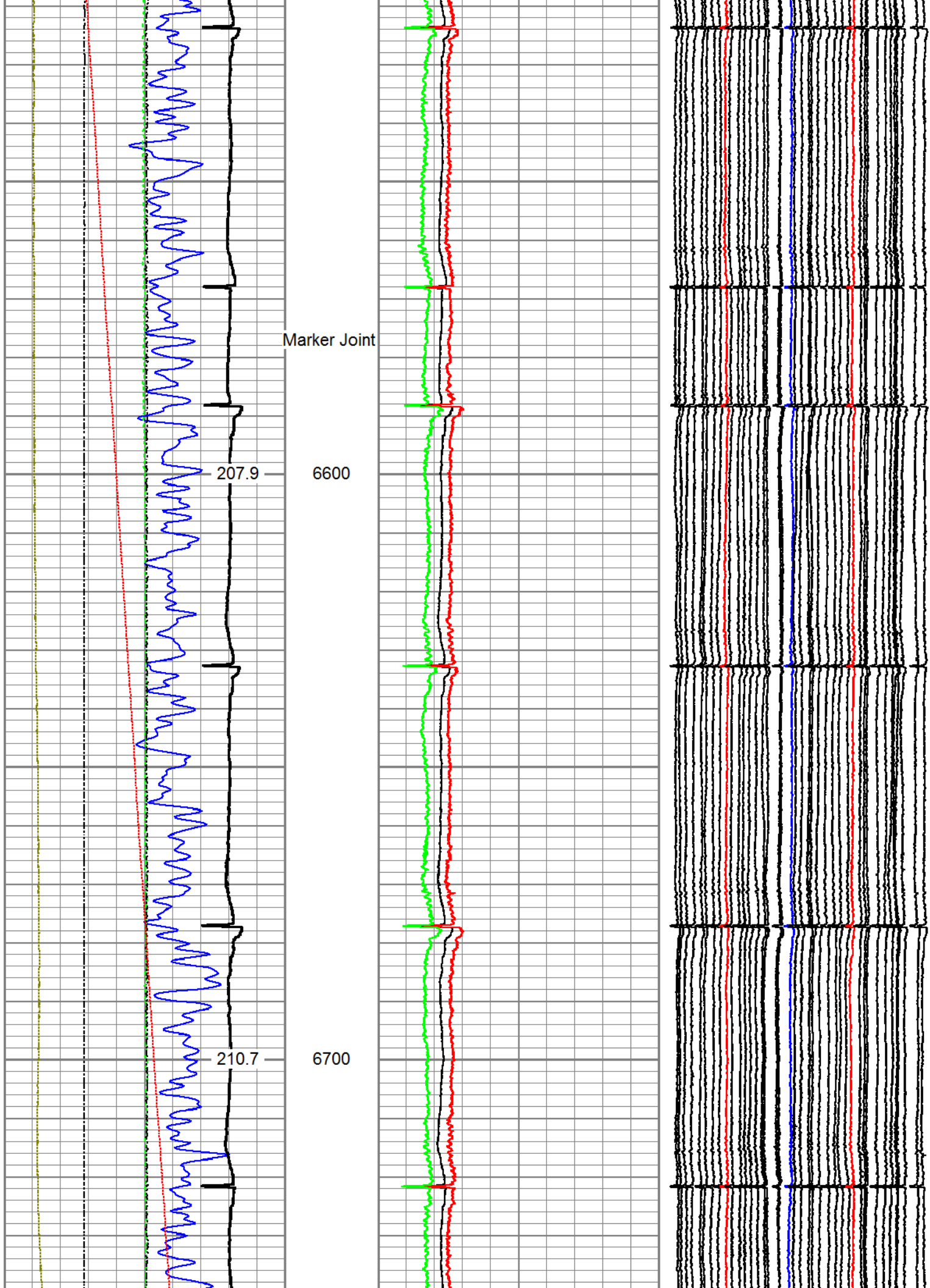


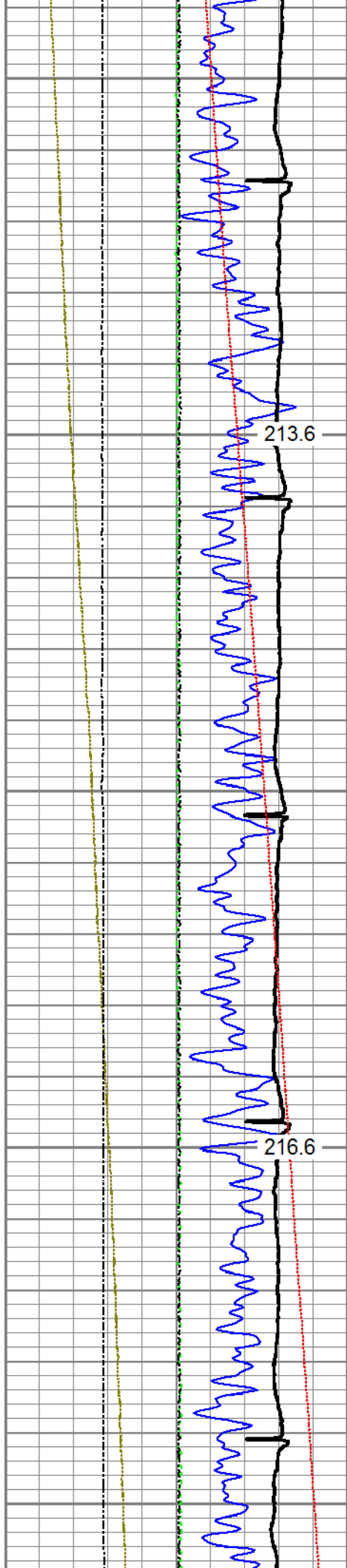
6300

6400

6500

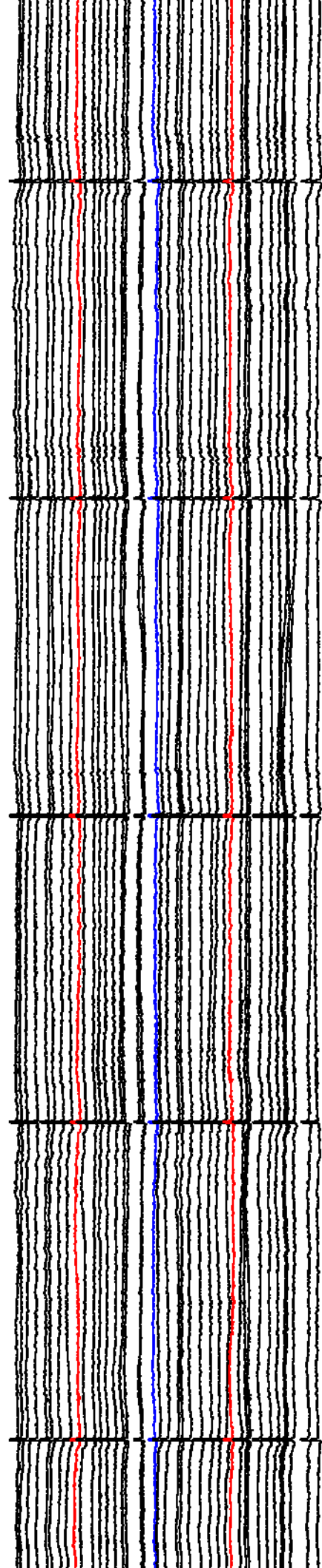
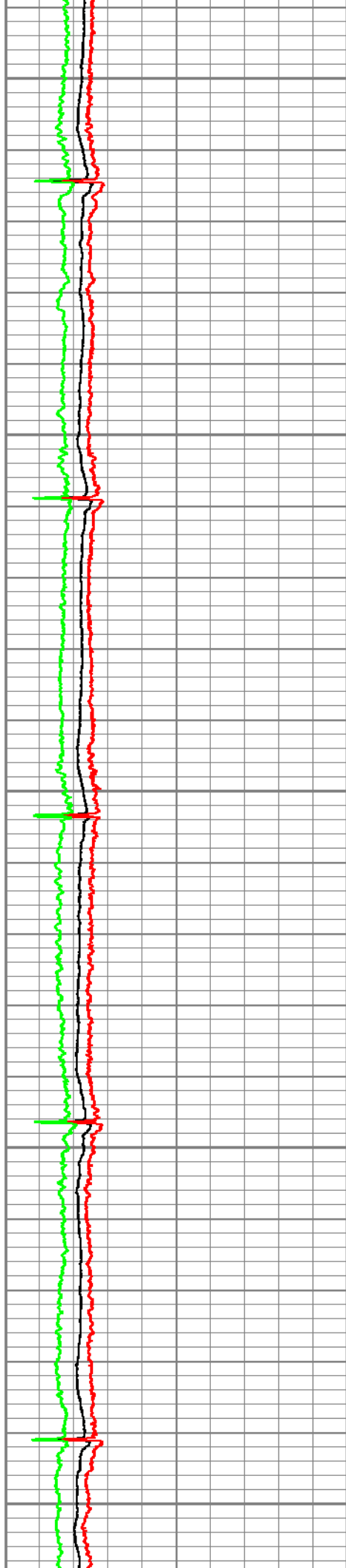


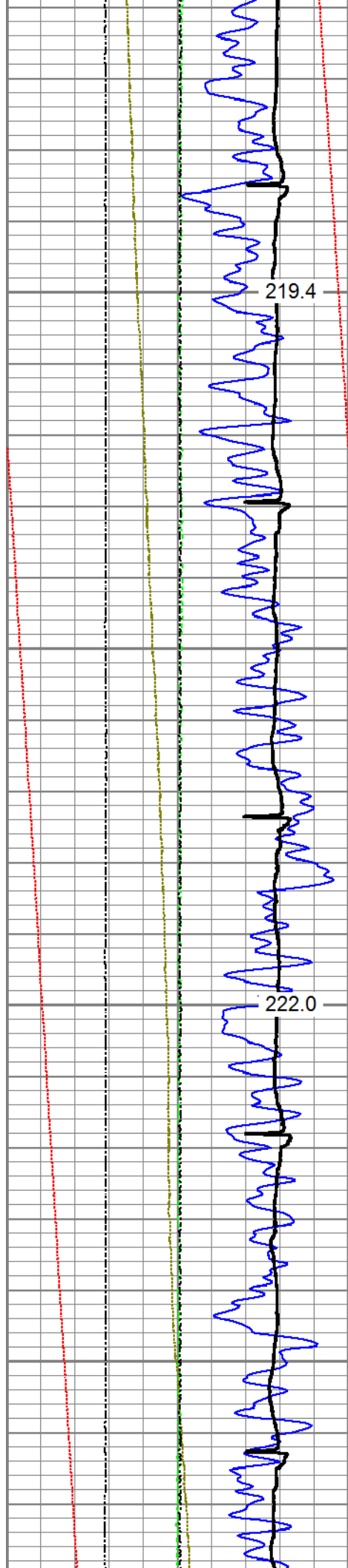




6800

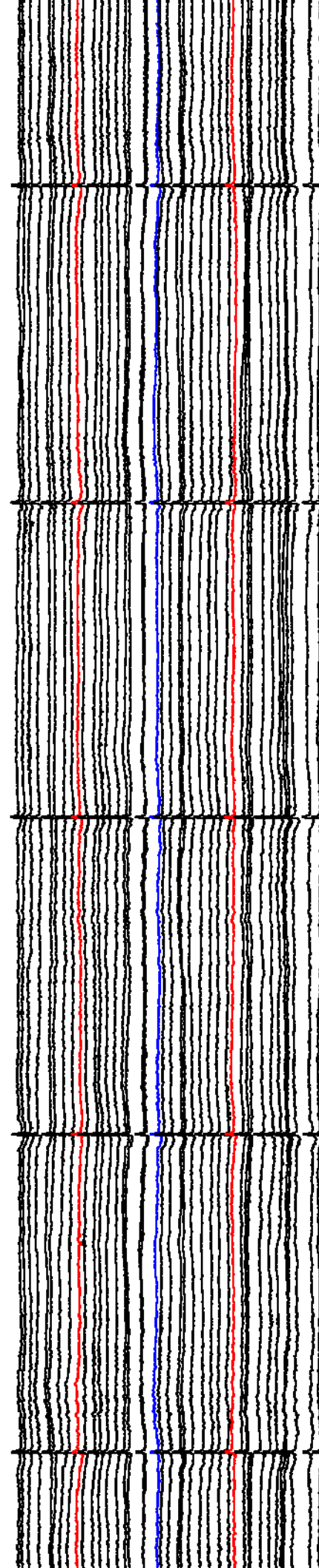
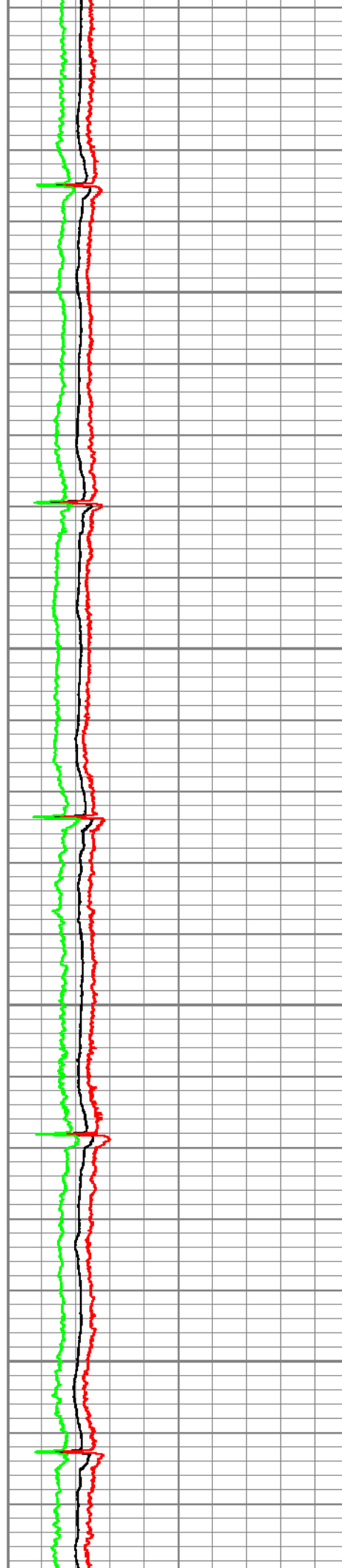
6900

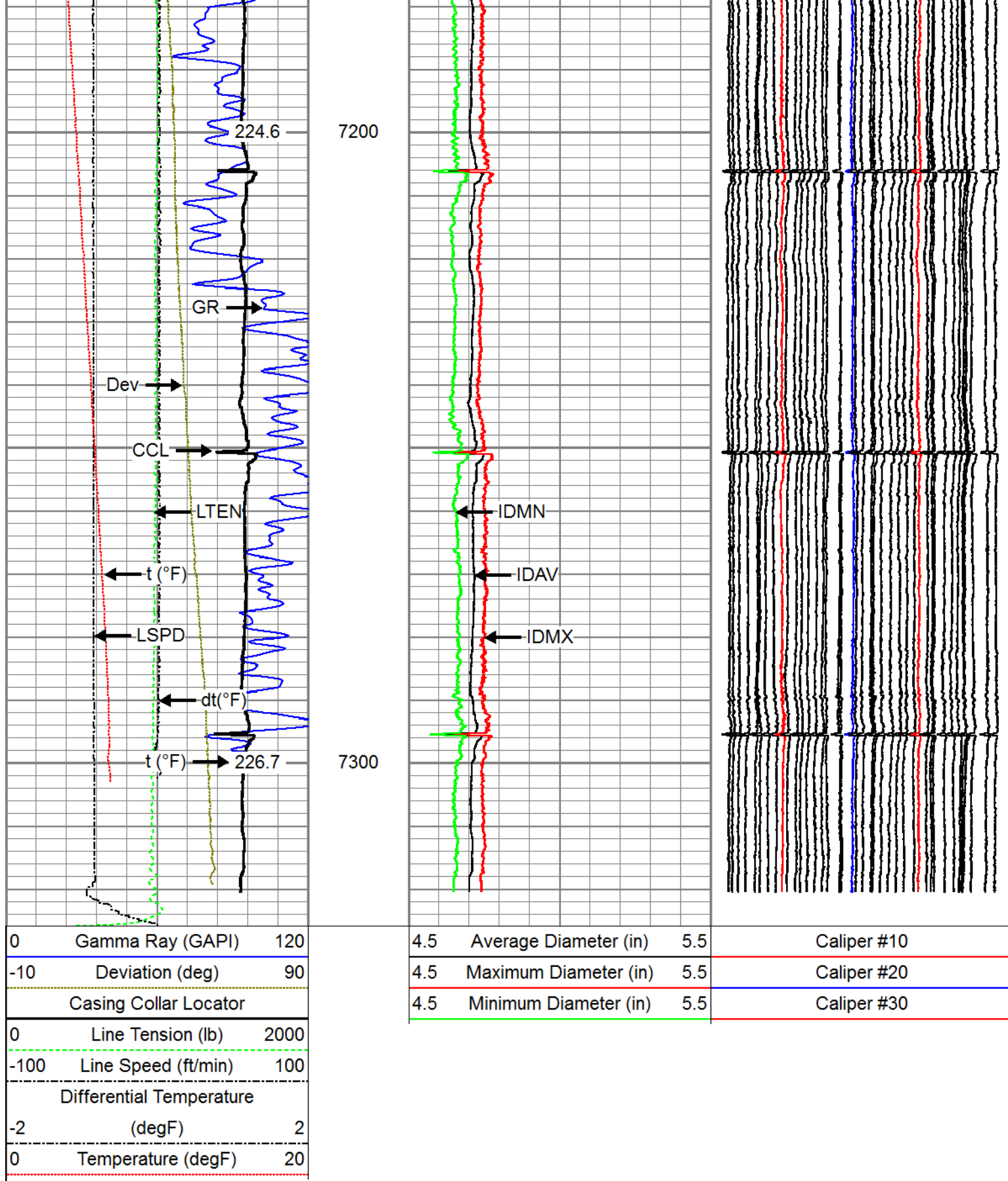




7000

7100

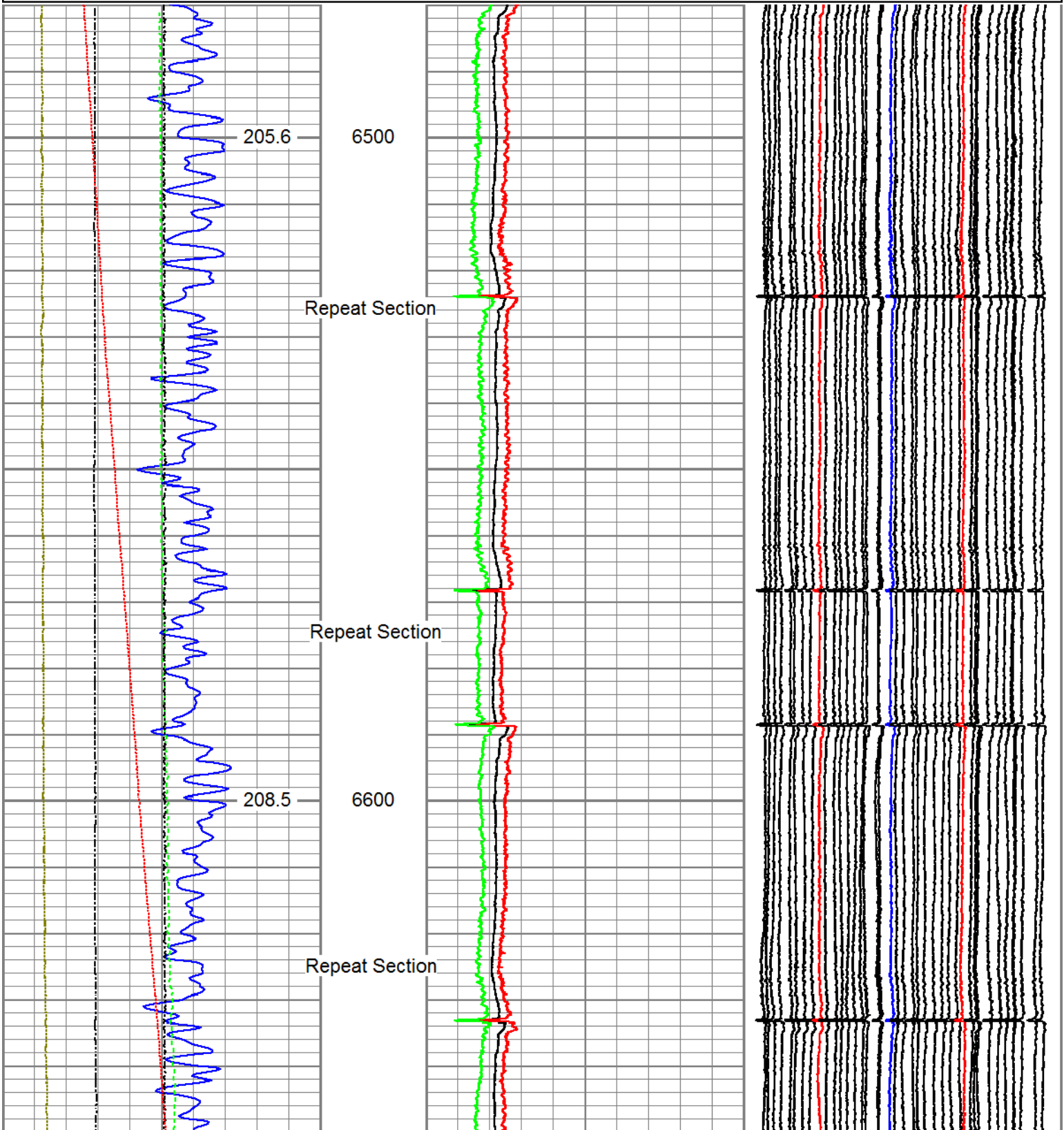


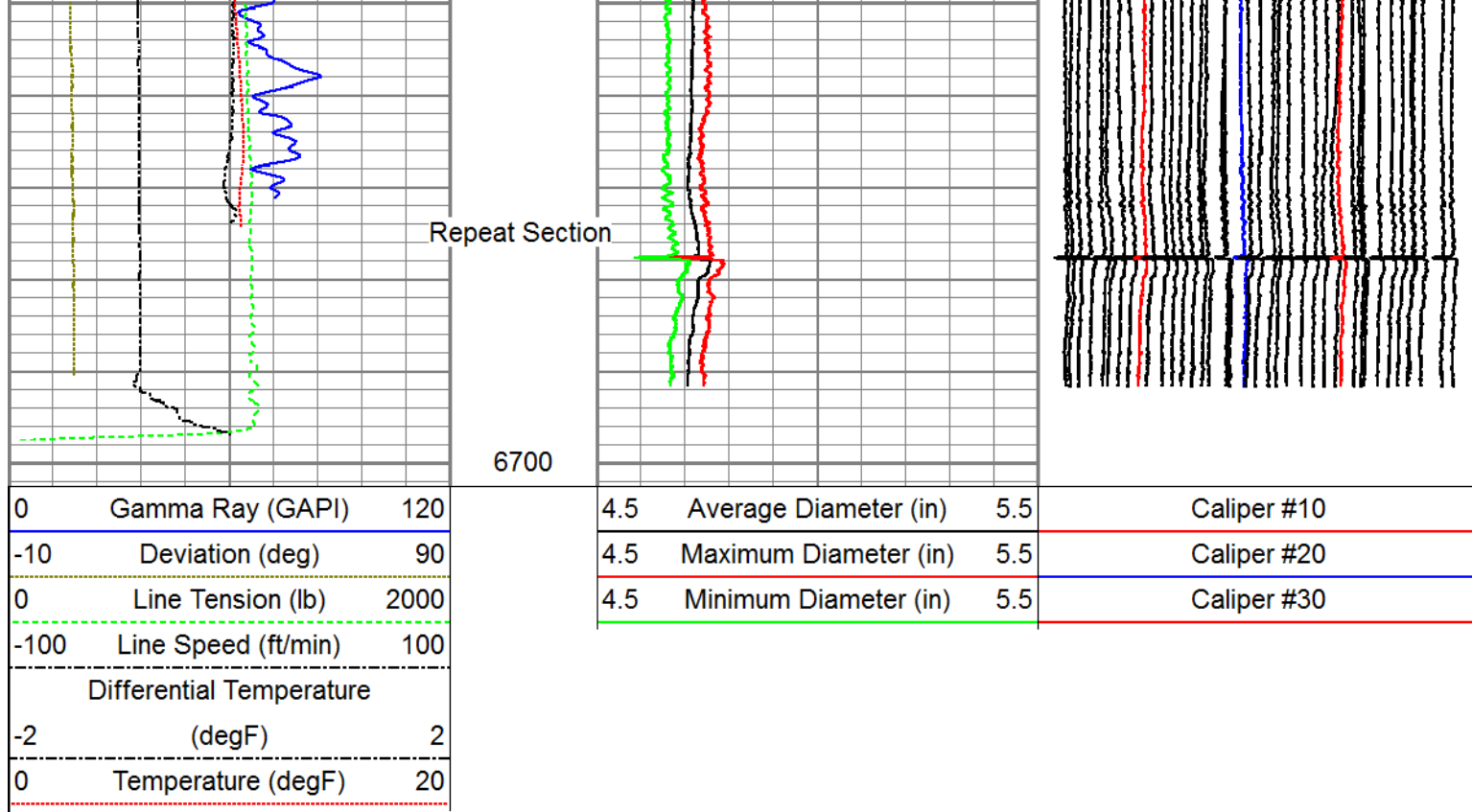


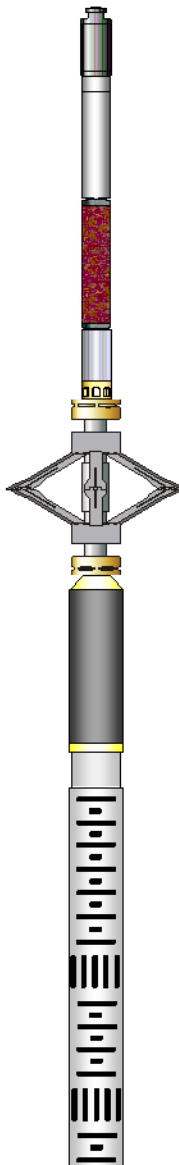
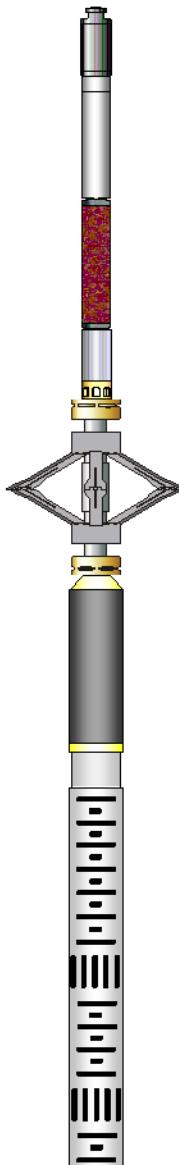
Repeat Pass

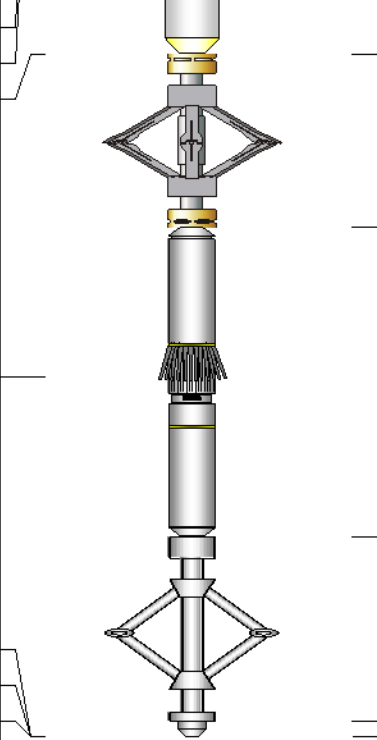
Recorded With 2800 PSI Surface Induced Pressure

0	Gamma Ray (GAPI)	120	4.5	Average Diameter (in)	5.5	Caliper #10
-10	Deviation (deg)	90	4.5	Maximum Diameter (in)	5.5	Caliper #20
0	Line Tension (lb)	2000	4.5	Minimum Diameter (in)	5.5	Caliper #30
-100	Line Speed (ft/min)	100				
	Differential Temperature					
-2	(degF)	2				
0	Temperature (degF)	20				





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				
			UW_XTU-UW_XTU_002 (219135)	1.58	1.69	6.50	
TEMP	22.18		Crossover Ultrawire Toolbus to Ultralink				
			UW_PGR-UW_PGR_020 (10013899)	1.92	1.69	9.50	
			Production Gamma Ray				
				UW_PRT-PRT_016 (10025097)	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				
CBLROT	15.15		UW_RBT-UW_RBT_004 (1066)	9.48	3.13	140.00	
WVFS8	15.15		Sondex Ultrawire 3-1/8" Radial Bond Tool				
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 5 Arm 2-3/4" Roller Centralizer	2.55	2.75	32.00
WVF5FT	14.15					
CBLTEMP	10.02					
MIT	5.27					
			UW_MIT-UW_MIT40_042 (10012912) 40 Multifinger Imaging Tool Ext.	4.54	2.75	65.00
HVOLTX	0.00		UW_PRC-PRC_057 4 Arm 2-3/4" Production Roller Centralizer	2.71	2.75	32.00
ITEMPX	0.00		UW_BUL-UW_BUL_006 (031422) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20
TSTAMP	0.00					
Dataset: 0512343024_Anadarko_Hopper State 24N-34SLHZ_18-APR-17_RBL_MIT.db: field/well/run1/pass1.8 Total length: 27.83 ft Total weight: 329.80 lb O.D.: 3.13 in						

Calibration Report			
Database File	C:\ProgramData\Warrior\Data\Anadarko_Hopper State 24N-34SLHZ_18-APR-17_RBL_MIT\0512343		
Dataset Pathname	calreport1		
Dataset Creation	Tue Apr 18 12:28:28 2017		
Multifinger Imaging Tool Calibration Report			
Serial Number:		10012912	
Number of Fingers:		40	
Tool Model:		UW_MIT40_042	
Inclinometer Calibration Report			
Performed:		Mon Jul 15 09:39:36 2013	
Calibration Angle:		45	
		Inc X	Inc Y
Vertical:		1968	1974
Finger 1 up:		1740	1744
Finger 31 up:		2215	1741
Finger 21 up:		2205	2224
Finger 11 up:		1731	2217
Sensitivity ratio:	0.992868		
X-axis angle:	134.307		
Deviation const.:	335.589		

Finger Calibration Report						
	Performed: Tue Apr 18 08:19:34 2017					
Ring size:	4	5	6	7		
(in)						
	Sens	Sens	Sens			
Finger 01:	1059 347.0	1406 389.0	1795 403.0	2198		
Finger 02:	1198 357.0	1555 387.0	1942 399.0	2341		
Finger 03:	1076 361.0	1437 404.0	1841 428.0	2269		
Finger 04:	1110 354.0	1464 391.0	1855 423.0	2278		
Finger 05:	1117 357.0	1474 402.0	1876 415.0	2291		
Finger 06:	1112 361.0	1473 394.0	1867 429.0	2296		

Finger 00:	1112	358.0	1475	394.0	1861	432.0	2293
Finger 07:	1105	362.0	1467	394.0	1861	432.0	2293
Finger 08:	1137	356.0	1493	386.0	1879	433.0	2312
Finger 09:	1119	363.0	1482	382.0	1864	429.0	2293
Finger 10:	1130	359.0	1489	386.0	1875	433.0	2308
Finger 11:	1132	358.0	1490	382.0	1872	427.0	2299
Finger 12:	1133	354.0	1487	383.0	1870	432.0	2302
Finger 13:	1146	357.0	1503	378.0	1881	421.0	2302
Finger 14:	1130	368.0	1498	389.0	1887	436.0	2323
Finger 15:	1085	366.0	1451	400.0	1851	447.0	2298
Finger 16:	1090	367.0	1457	399.0	1856	446.0	2302
Finger 17:	1006	345.0	1351	386.0	1737	444.0	2181
Finger 18:	1137	359.0	1496	384.0	1880	422.0	2302
Finger 19:	1101	363.0	1464	390.0	1854	427.0	2281
Finger 20:	1090	365.0	1455	401.0	1856	435.0	2291
Finger 21:	1091	369.0	1460	398.0	1858	415.0	2273
Finger 22:	1066	367.0	1433	405.0	1838	429.0	2267
Finger 23:	1015	366.0	1381	413.0	1794	437.0	2231
Finger 24:	1101	362.0	1463	393.0	1856	393.0	2249
Finger 25:	1036	364.0	1400	412.0	1812	425.0	2237
Finger 26:	1158	350.0	1508	383.0	1891	382.0	2273
Finger 27:	1086	362.0	1448	404.0	1852	403.0	2255
Finger 28:	1120	353.0	1473	392.0	1865	389.0	2254
Finger 29:	1052	359.0	1411	410.0	1821	408.0	2229
Finger 30:	1077	360.0	1437	403.0	1840	399.0	2239
Finger 31:	1113	358.0	1471	393.0	1864	392.0	2256
Finger 32:	1167	384.0	1551	429.0	1980	416.0	2396
Finger 33:	1163	369.0	1532	380.0	1912	363.0	2275
Finger 34:	1102	361.0	1463	408.0	1871	400.0	2271
Finger 35:	978	329.0	1307	385.0	1692	393.0	2085
Finger 36:	1074	357.0	1431	406.0	1837	405.0	2242
Finger 37:	1118	357.0	1475	398.0	1873	397.0	2270
Finger 38:	1140	353.0	1493	386.0	1879	387.0	2266
Finger 39:	1152	349.0	1501	386.0	1887	390.0	2277
Finger 40:	1105	358.0	1463	400.0	1863	409.0	2272

Post Survey Calibration Check

Performed:

Tue Apr 18 12:16:08 2017

Ring size: (in)	4	Nom. wear	5	Nom. wear	6	Nom. wear	7	Nom. wear
Finger 01:	4.011	0.005	5.005	0.003	6.005	0.002	6.889	-0.056
Finger 02:	3.997	-0.002	4.997	-0.002	5.998	-0.001	6.889	-0.056
Finger 03:	4.003	0.002	4.998	-0.001	5.999	-0.001	6.882	-0.059
Finger 04:	4.001	0.001	5.003	0.001	6.001	0.000	6.892	-0.054
Finger 05:	4.002	0.001	5.027	0.013	5.978	-0.011	6.905	-0.047
Finger 06:	4.008	0.004	5.004	0.002	5.999	-0.000	6.885	-0.057
Finger 07:	3.995	-0.003	4.996	-0.002	6.001	0.000	6.884	-0.058
Finger 08:	4.000	0.000	4.997	-0.001	6.000	0.000	6.885	-0.057
Finger 09:	4.000	0.000	4.988	-0.006	5.998	-0.001	6.889	-0.056
Finger 10:	3.993	-0.003	4.997	-0.002	6.001	0.000	6.885	-0.058
Finger 11:	3.997	-0.001	4.995	-0.003	5.999	-0.000	6.891	-0.055
Finger 12:	3.998	-0.001	5.000	-0.000	6.000	0.000	6.890	-0.055
Finger 13:	4.001	0.001	4.991	-0.005	6.049	0.024	6.886	-0.057
Finger 14:	4.007	0.003	5.001	0.000	5.998	-0.001	6.887	-0.056
Finger 15:	4.000	0.000	4.997	-0.002	5.997	-0.001	6.891	-0.055
Finger 16:	4.013	0.006	5.024	0.012	5.996	-0.002	6.902	-0.049
Finger 17:	3.996	-0.002	4.992	-0.004	6.006	0.003	6.883	-0.058
Finger 18:	4.005	0.003	5.021	0.011	6.002	0.001	6.899	-0.050
Finger 19:	4.011	0.005	4.998	-0.001	5.993	-0.004	6.882	-0.059
Finger 20:	4.007	0.004	4.999	-0.001	5.998	-0.001	6.885	-0.057
Finger 21:	4.007	0.003	4.995	-0.002	5.999	-0.001	6.885	-0.057
Finger 22:	4.000	0.000	4.999	-0.000	5.996	-0.002	6.884	-0.058
Finger 23:	4.005	0.002	5.002	0.001	6.000	-0.000	6.890	-0.055
Finger 24:	3.999	-0.001	4.995	-0.002	5.990	-0.005	6.883	-0.058
Finger 25:	3.995	-0.002	4.996	-0.002	5.997	-0.002	6.884	-0.058
Finger 26:	3.992	-0.004	5.001	0.001	5.998	0.001	6.891	-0.055

Finger 26:	3.992	-0.004	5.001	0.001	5.998	-0.001	6.891	-0.055
Finger 27:	4.005	0.003	5.004	0.002	6.003	0.001	6.889	-0.055
Finger 28:	3.992	-0.004	5.000	0.000	5.995	-0.002	6.891	-0.055
Finger 29:	4.000	0.000	5.003	0.001	6.006	0.003	6.893	-0.053
Finger 30:	4.001	0.001	4.997	-0.001	5.996	-0.002	6.882	-0.059
Finger 31:	4.005	0.003	5.015	0.007	6.033	0.017	6.903	-0.049
Finger 32:	4.003	0.001	5.002	0.001	6.000	-0.000	6.887	-0.057
Finger 33:	4.012	0.006	4.980	-0.010	5.992	-0.004	6.889	-0.056
Finger 34:	4.002	0.001	5.001	0.000	6.000	-0.000	6.887	-0.057
Finger 35:	3.999	-0.000	5.004	0.002	6.007	0.003	6.889	-0.056
Finger 36:	4.002	0.001	5.003	0.001	6.005	0.003	6.895	-0.052
Finger 37:	4.004	0.002	5.005	0.002	6.002	0.001	6.889	-0.055
Finger 38:	3.995	-0.002	4.989	-0.005	5.999	-0.000	6.882	-0.059
Finger 39:	4.004	0.002	4.999	-0.000	5.997	-0.002	6.882	-0.059
Finger 40:	4.007	0.003	5.004	0.002	6.001	0.001	6.887	-0.056
Average:	4.002	0.001	5.001	0.000	6.001	0.000	6.889	-0.056

Segmented Cement Bond Log Calibration Report

Serial Number: 1066
Tool Model: UW_RBT_004

Calibration Casing Diameter: 5.500 in
Calibration Depth: 0.000 ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3FT	-0.002	0.911	0.800	71.921	77.935	0.918
5FT	-0.008	0.933	0.800	71.921	75.591	1.413
S1	-0.001	0.924	0.000	100.000	108.058	0.152
S2	-0.003	0.945	0.000	100.000	105.529	0.281
S3	-0.002	0.928	0.000	100.000	107.521	0.227
S4	-0.003	0.913	0.000	100.000	109.197	0.343
S5	-0.001	0.890	0.000	100.000	112.140	0.159
S6	-0.002	0.930	0.000	100.000	107.337	0.220
S7	-0.002	0.953	0.000	100.000	104.767	0.181
S8	-0.002	0.913	0.000	100.000	109.288	0.167

Temperature Calibration Report

Serial Number: 10025097
Tool Model: PRT_016
Performed: Sun Oct 11 12:34:58 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_RBT_004

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 Hopper State 24N-34SLHZ

Field Wattenberg

County Weld

State Colorado