



Multifinger Imaging Caliper
Gamma Ray
Casing Collar Log

Company Noble Energy Inc.		Company Noble Energy Inc.	
Well Gracie LD22-740		Well Gracie LD22-740	
Field Wildcat		Field Wildcat	
County Weld		County Weld	
State Colorado		State Colorado	
Location:		API #: 05-123-41563	
SEC 22 TWP 9N RGE 58W		Other Services	
Permanent Datum		Ground Level	
Log Measured From		Kelly Bushing	
Drilling Measured From		Kelly Bushing	
		Elevation	
		K.B. 4858'	
		D.F. 4857'	
		G.L. 4828'	
Date		4-SEP-2015	
Run Number		One	
Depth Driller		10.427 FT	
Depth Logger		6006 FT	
Bottom Logged Interval		5996 FT	
Top Log Interval		Surface	
Open Hole Size		8.750"	
Type Fluid		Water	
Density / Viscosity		8.34 lbm/gal	
Max. Recorded Temp.		208°F	
Estimated Cement Top		92 FT	
Time Well Ready		ROA	
Time Logger on Bottom		08:42	
Equipment Number		HD-0119	
Location		Fort Lupton, CO	
Recorded By		J. Amidei	
Witnessed By		Sam Hopper	
Borehole Record		Tubing Record	
Run Number		Bit	
		From	
		To	
		Size	
		Weight	
		From	
		To	
Casing Record		Size (in)	
Surface Casing		Wgt (lbs/Ft)	
Intermediate #1		Grade	
Intermediate #2		Top	
Liner		Bottom	
		765 FT	
		6132 FT	
		6016 FT	
		10407 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 Kelly Bushing at 30 FT
Adjusted +2 FT to correlate with Kelly Bushing
Log ran from 6006 FT to surface
Recorded with 2500 PSI surface induced pressure
Logging tools were coated with debris upon completion of operations

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



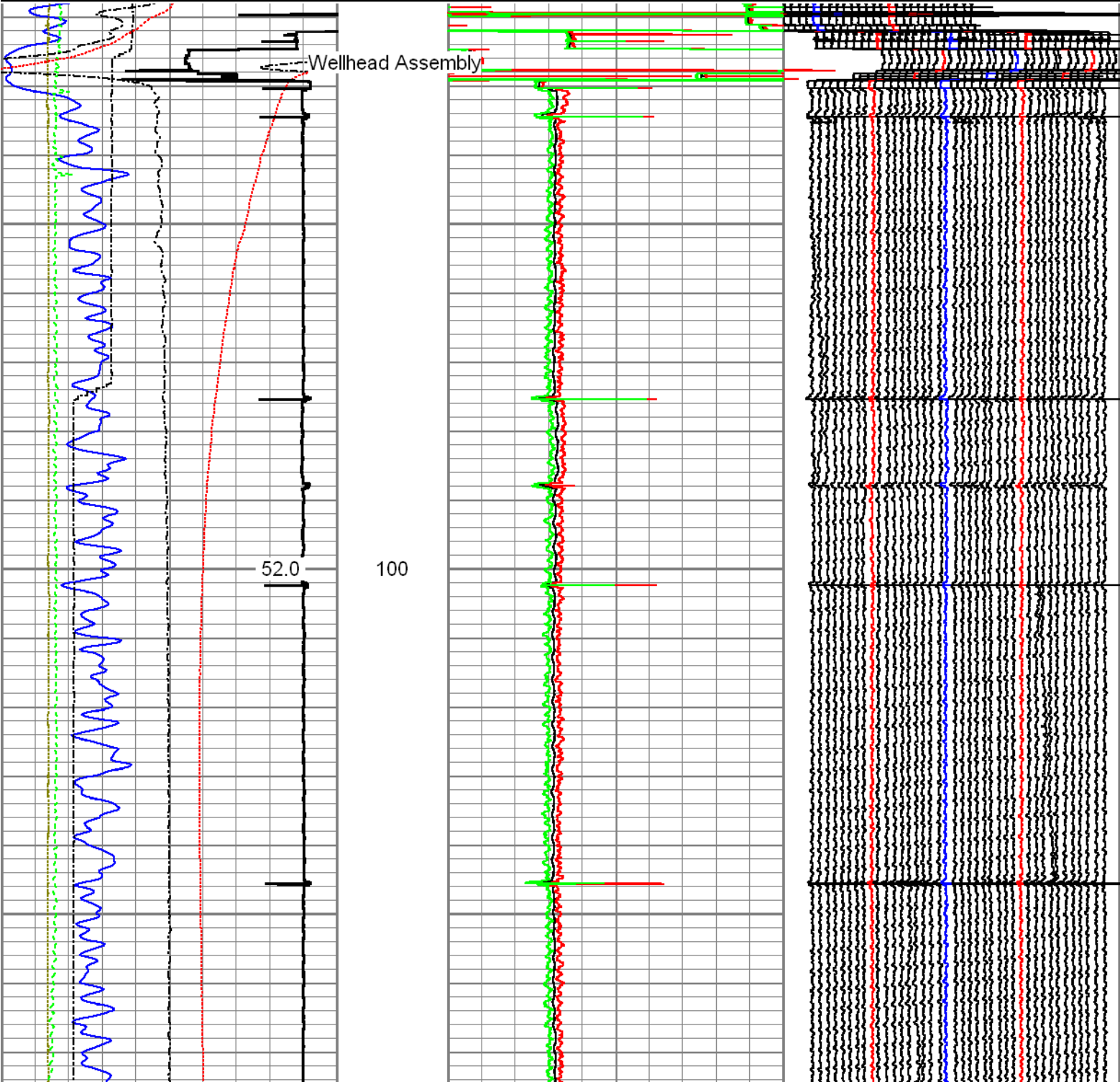
Main Pass

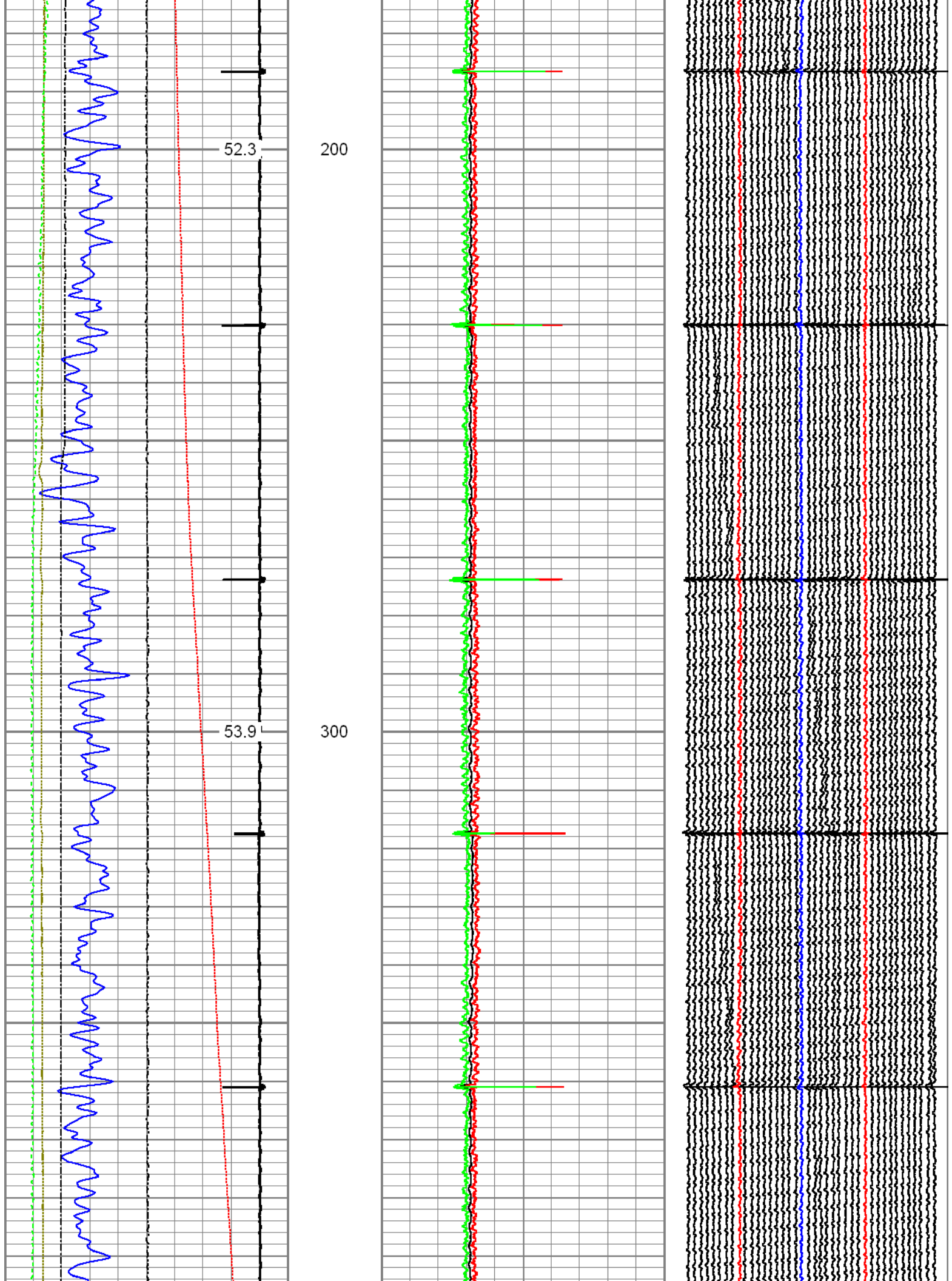
Recorded With 2500 PSI Surface Induced Pressure

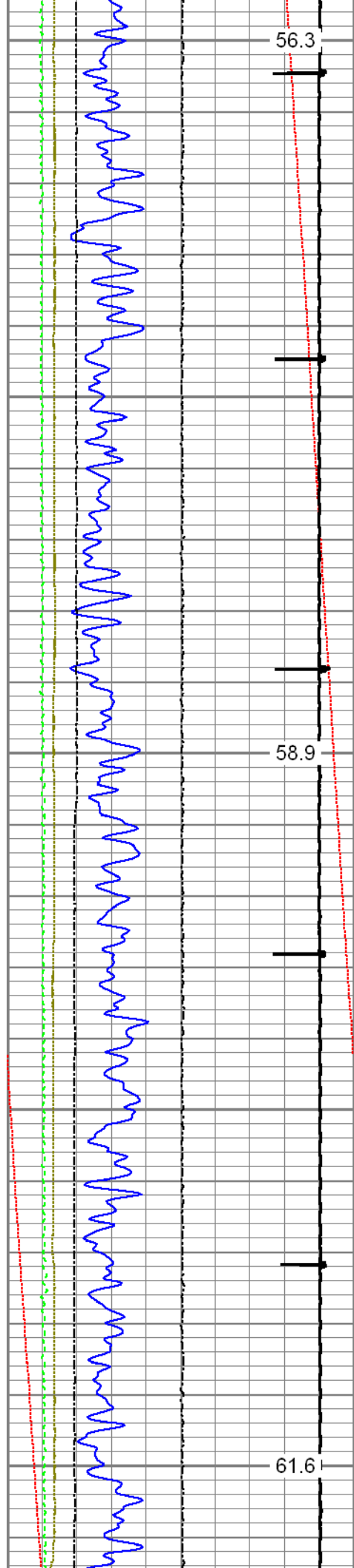
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Dataset Pathname: pass9
Presentation Format: 70mit40s
Dataset Creation: Fri Sep 04 08:47:58 2015 by Log 7.0 B1
Charted by: Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	120
-100	Line Speed (ft/min)	100
-10	Deviation (°)	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



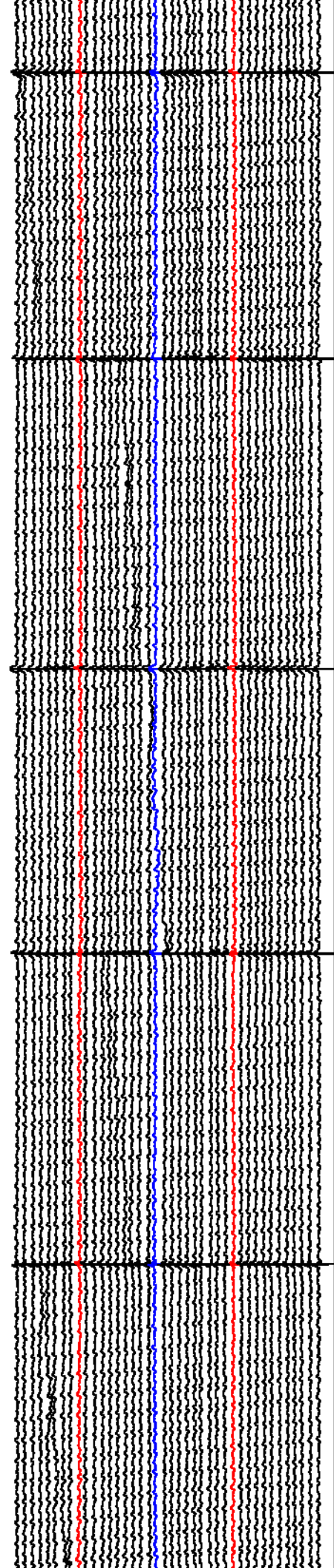
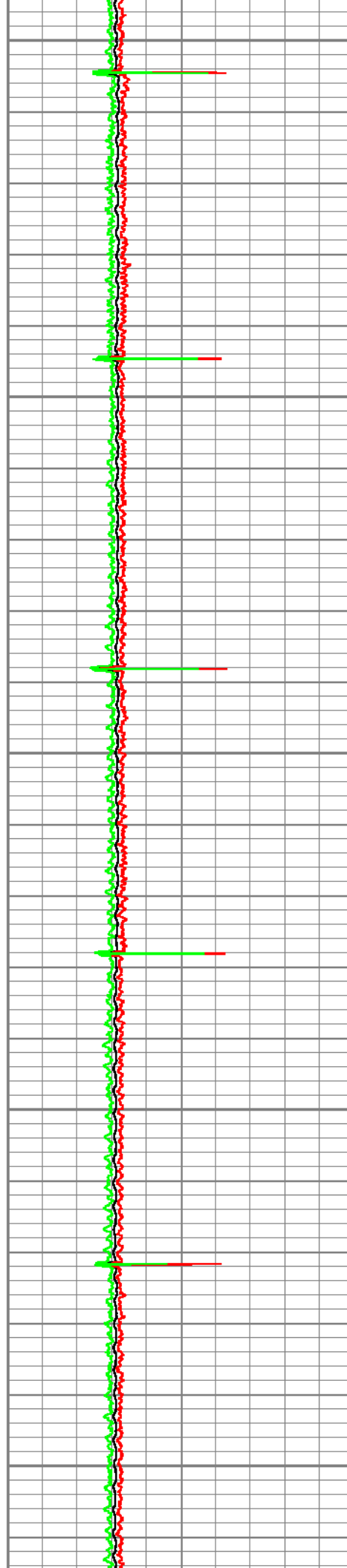


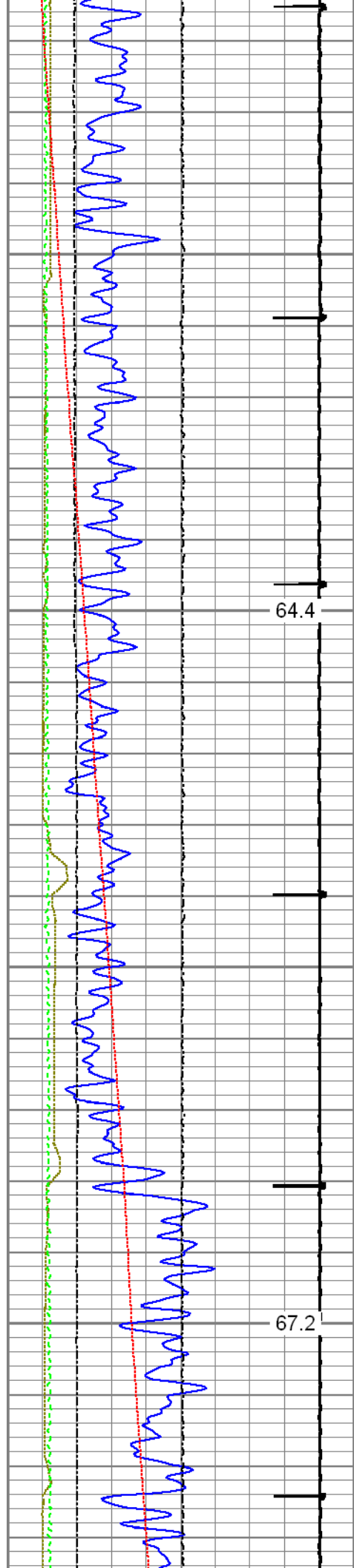


400

500

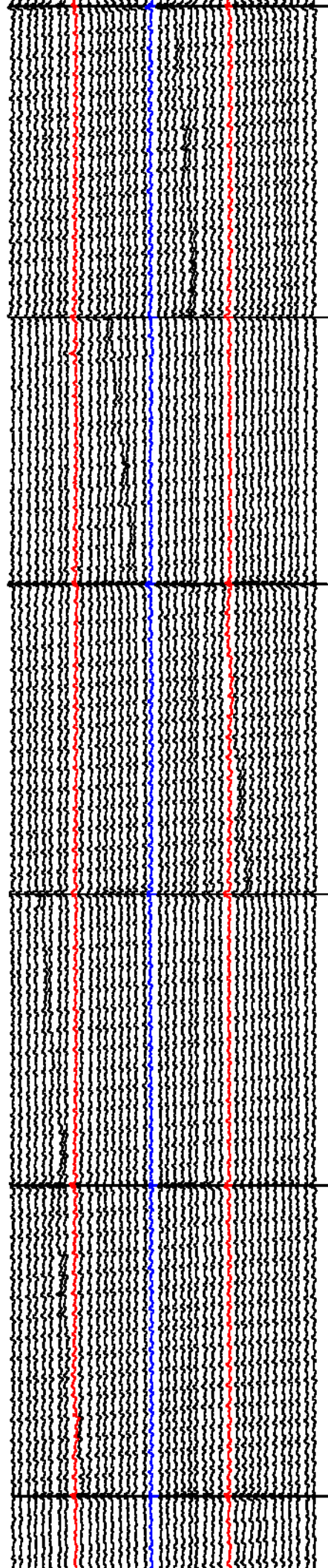
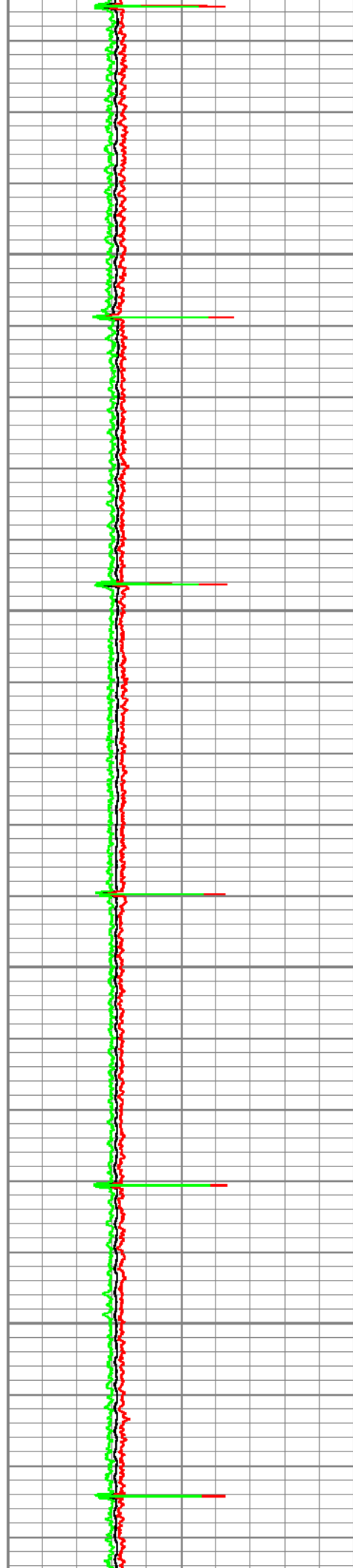
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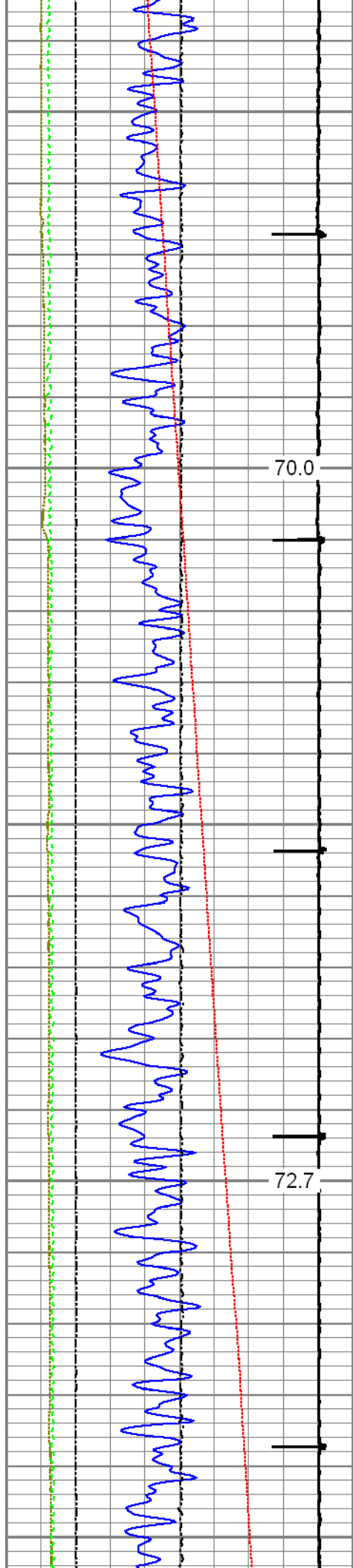




700

800



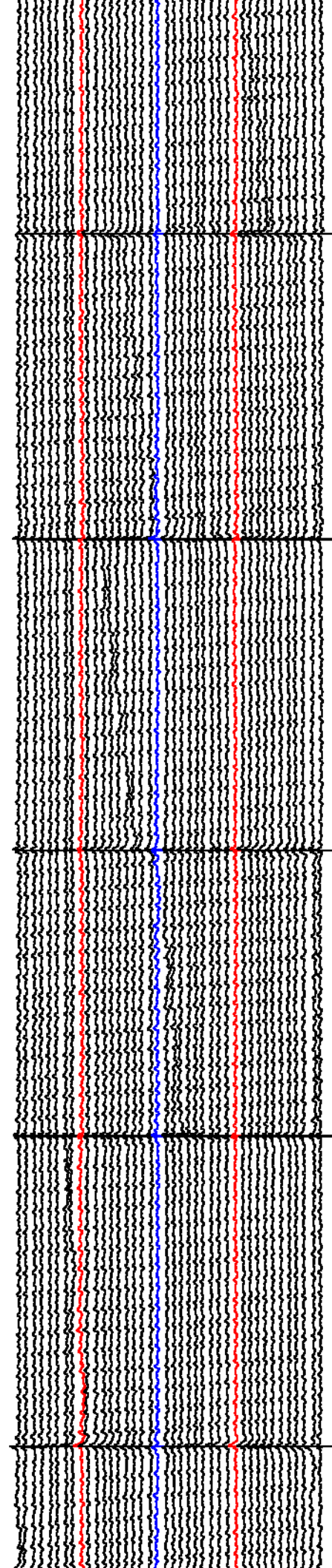
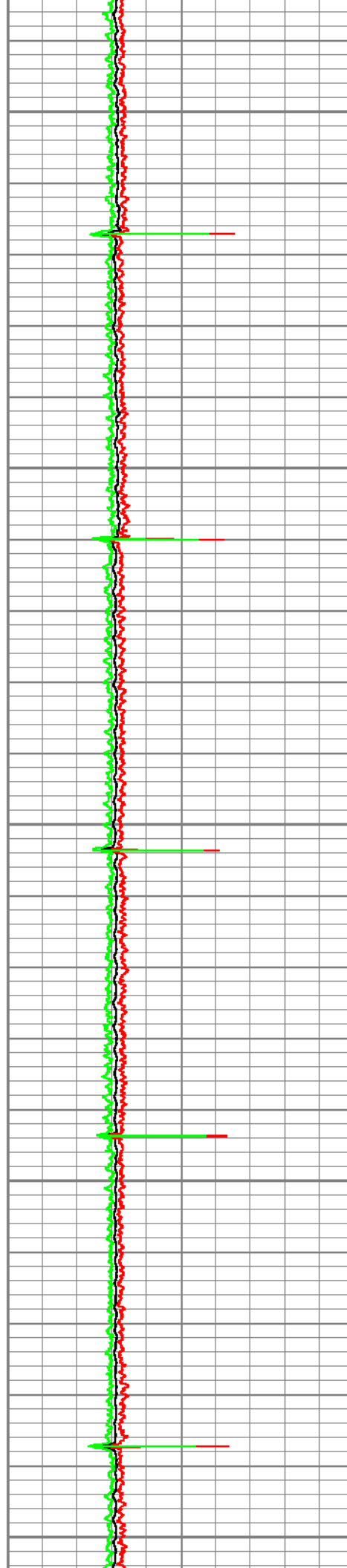


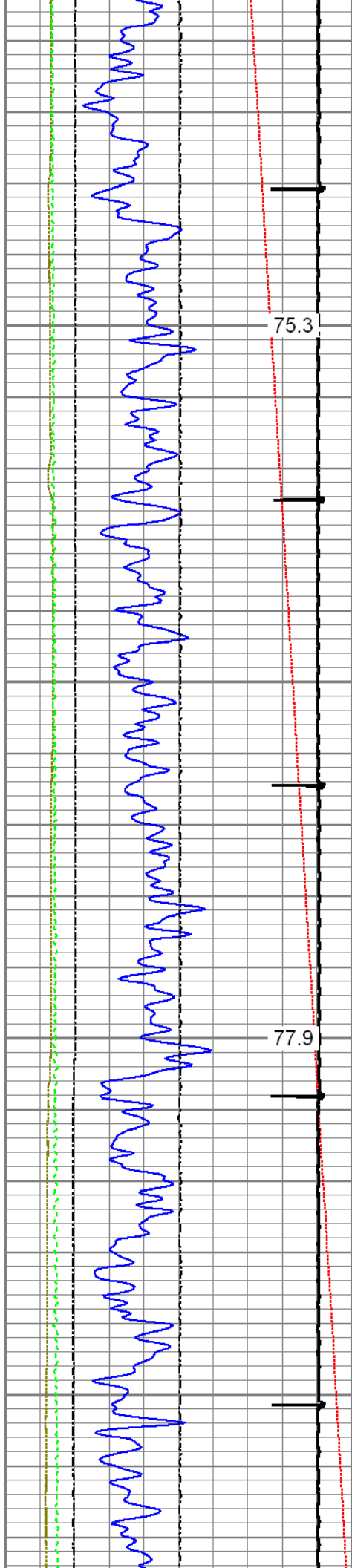
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900

72.7

1000



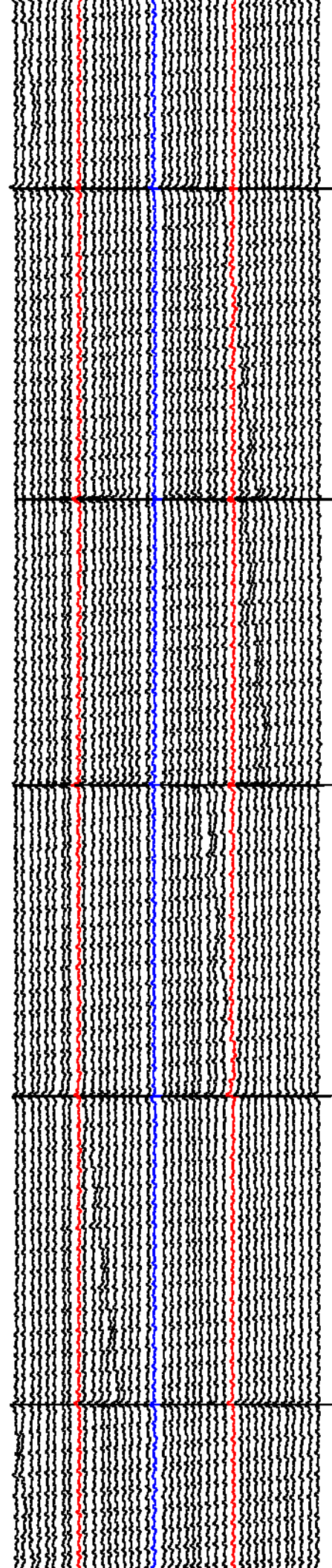
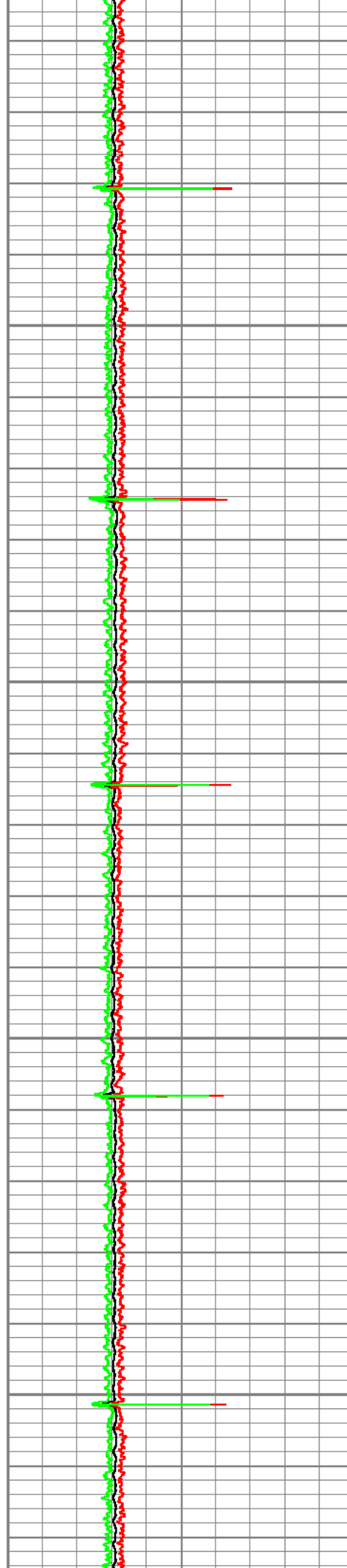


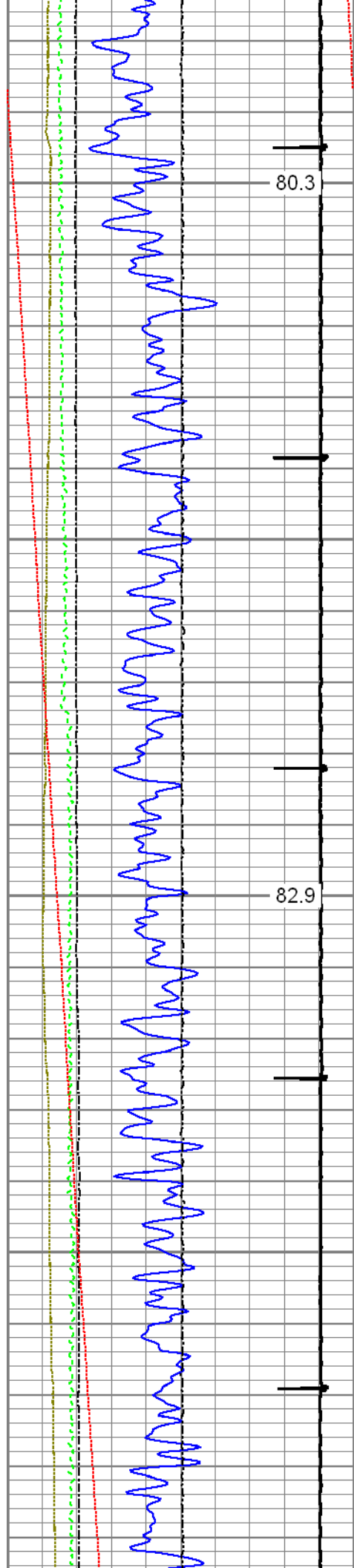
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1100

77.9

1200



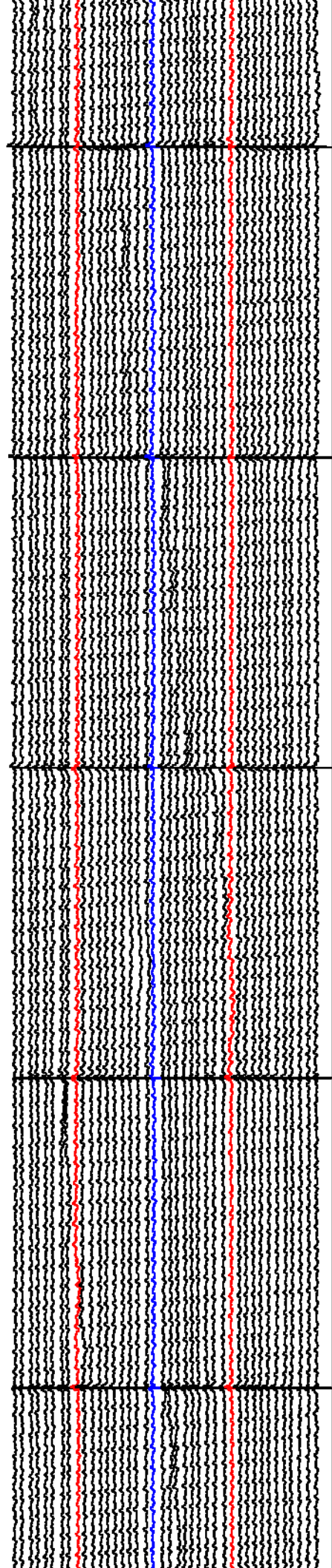
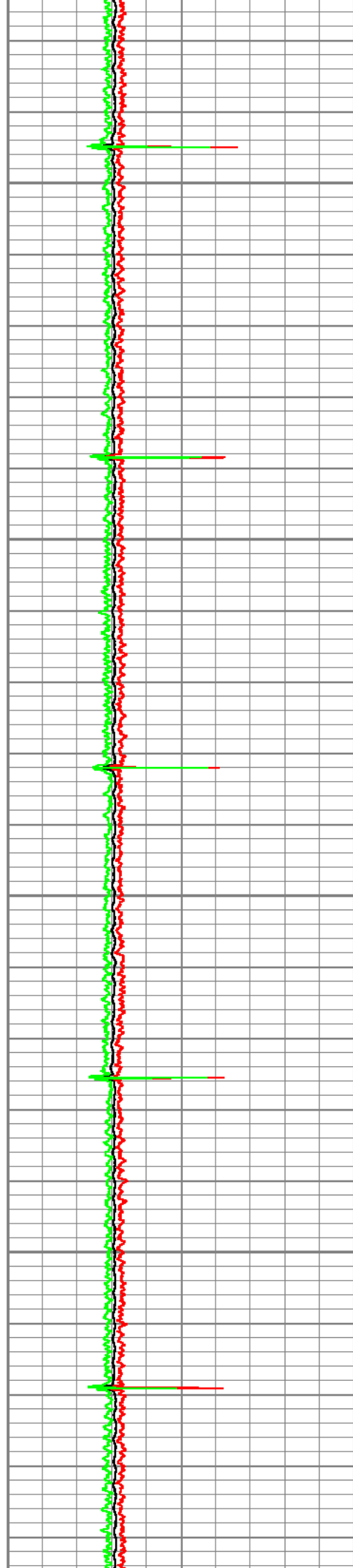


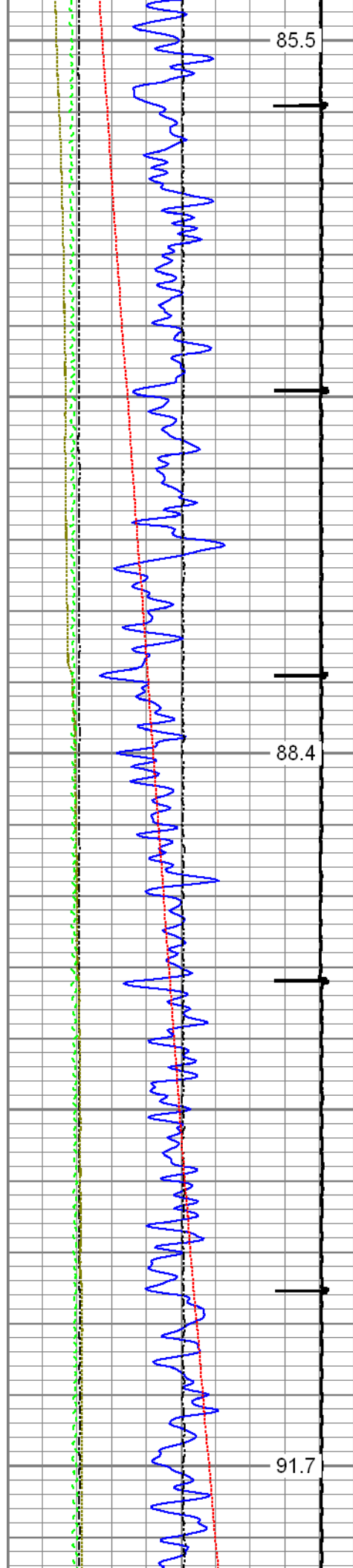
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1300

82.9

1400

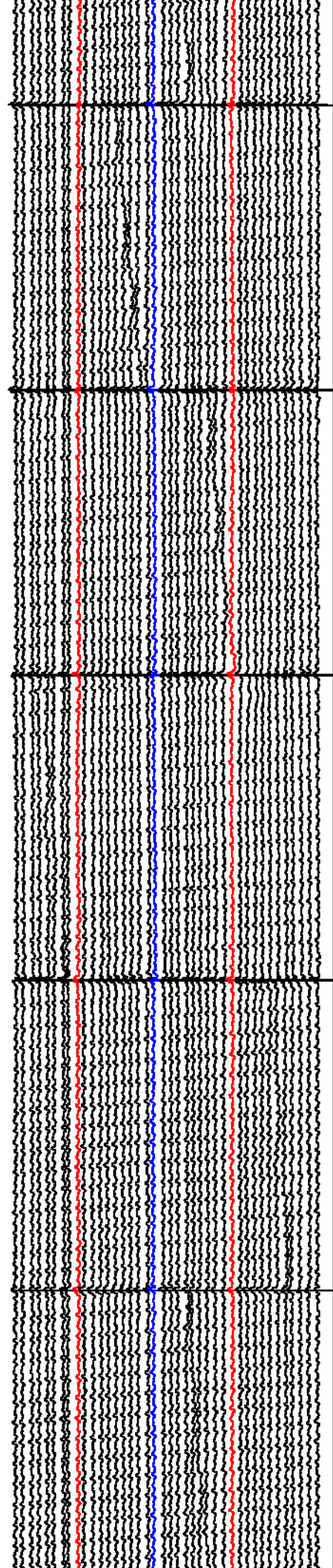


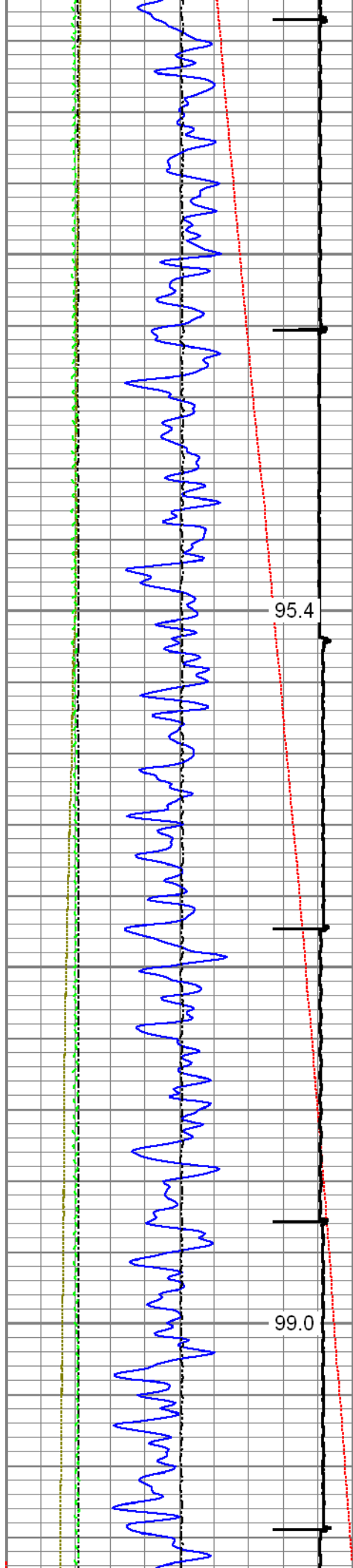


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1600

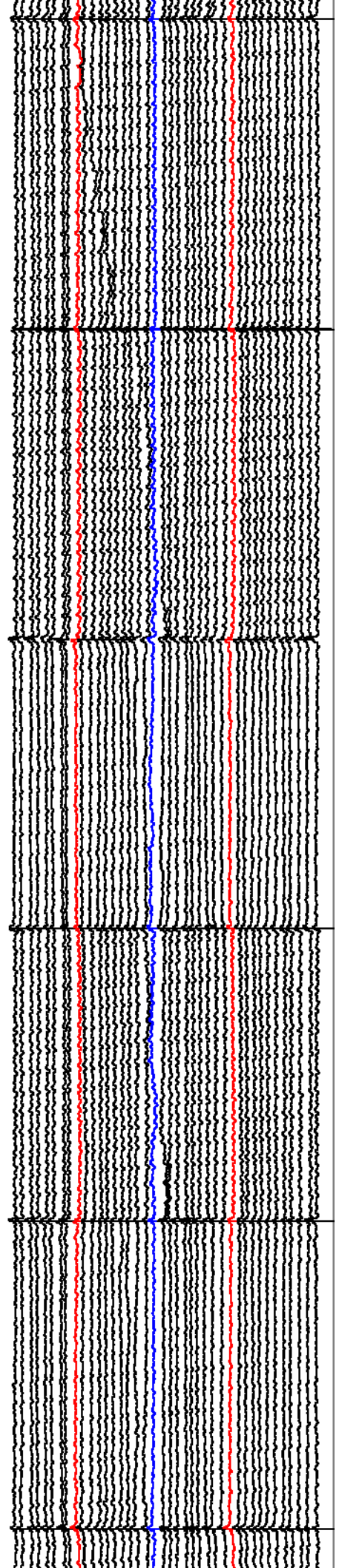
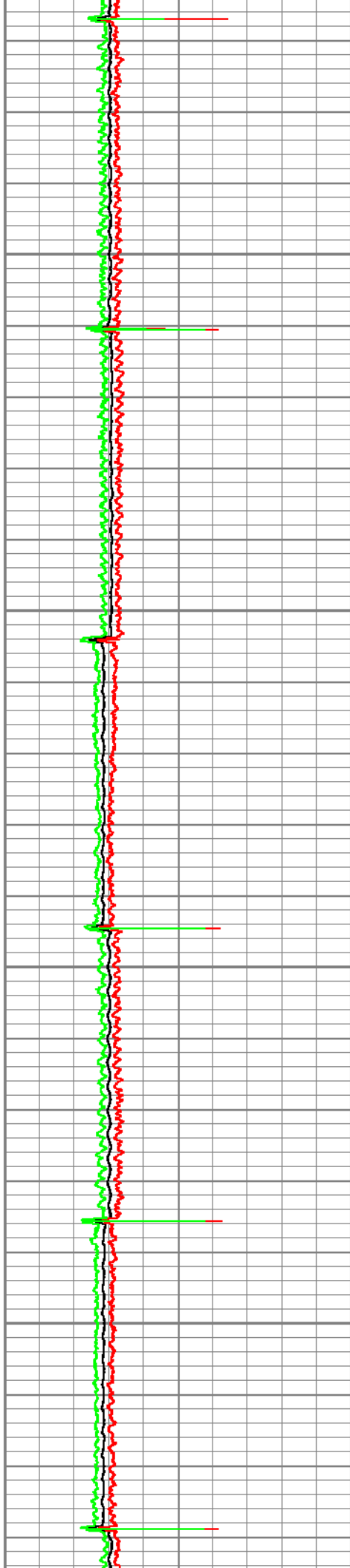
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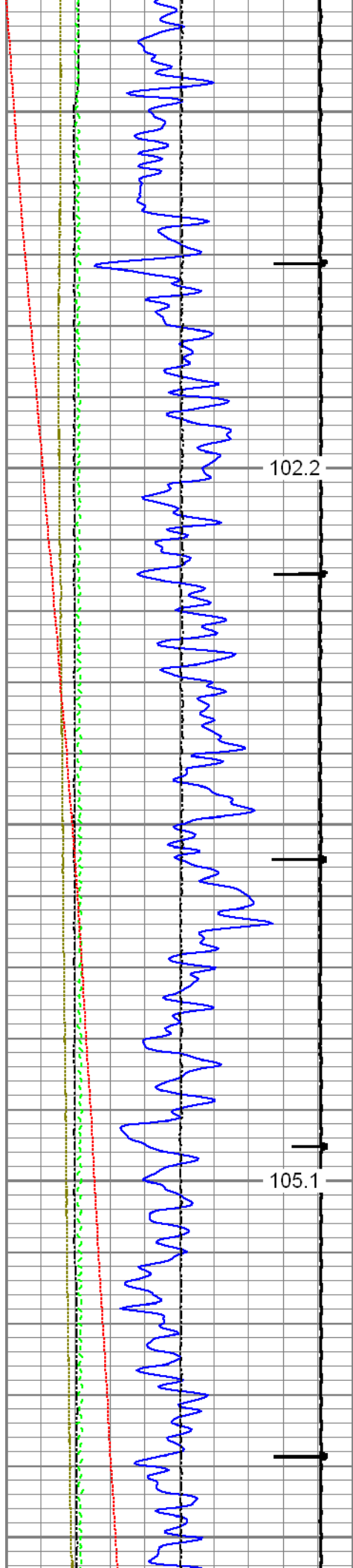




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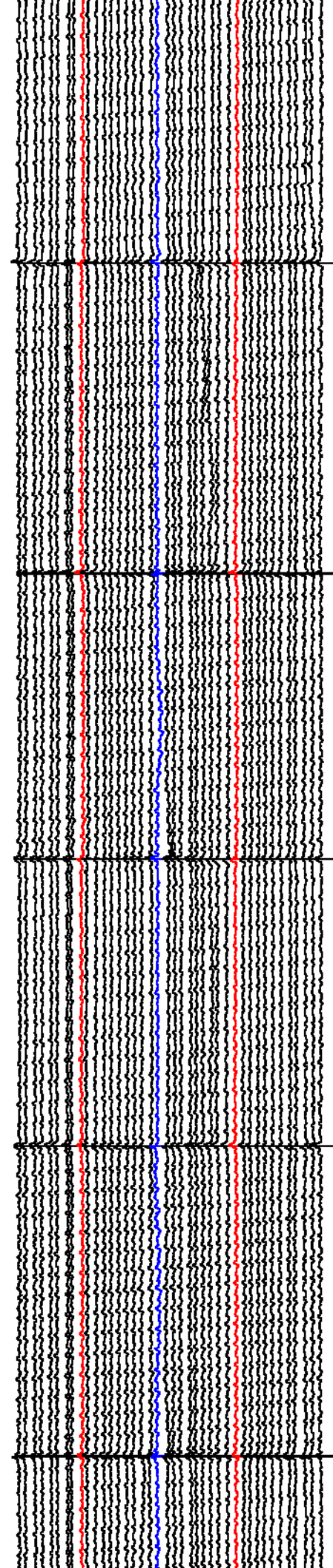
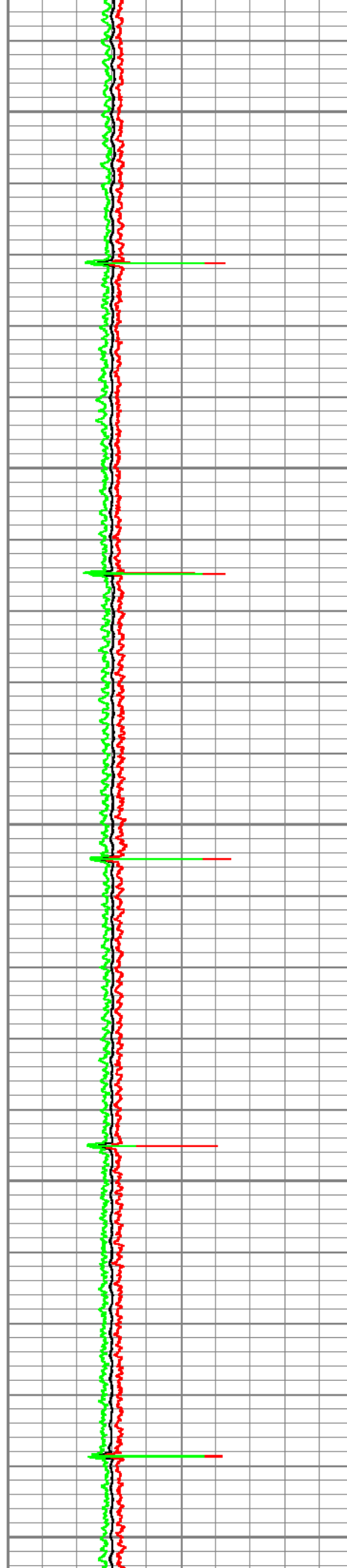
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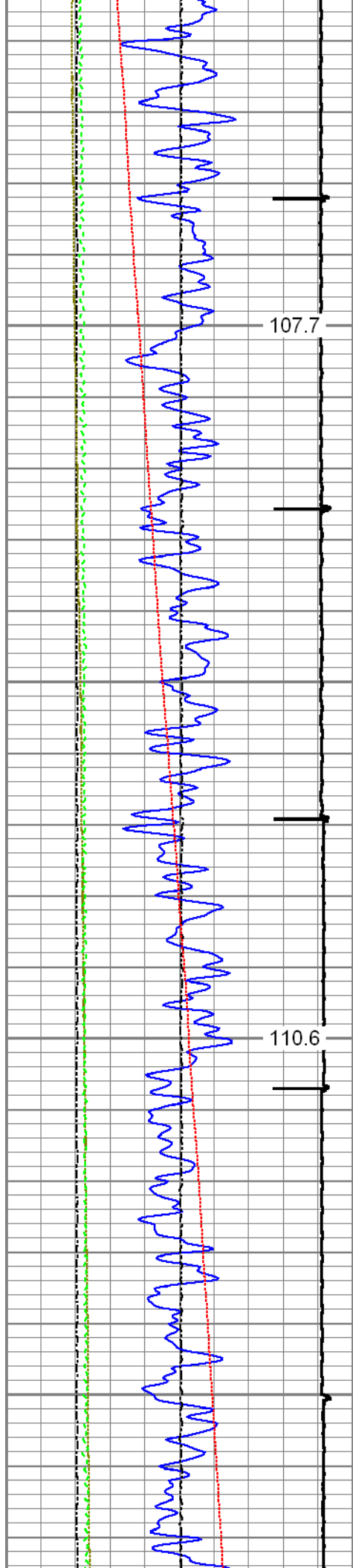




2000

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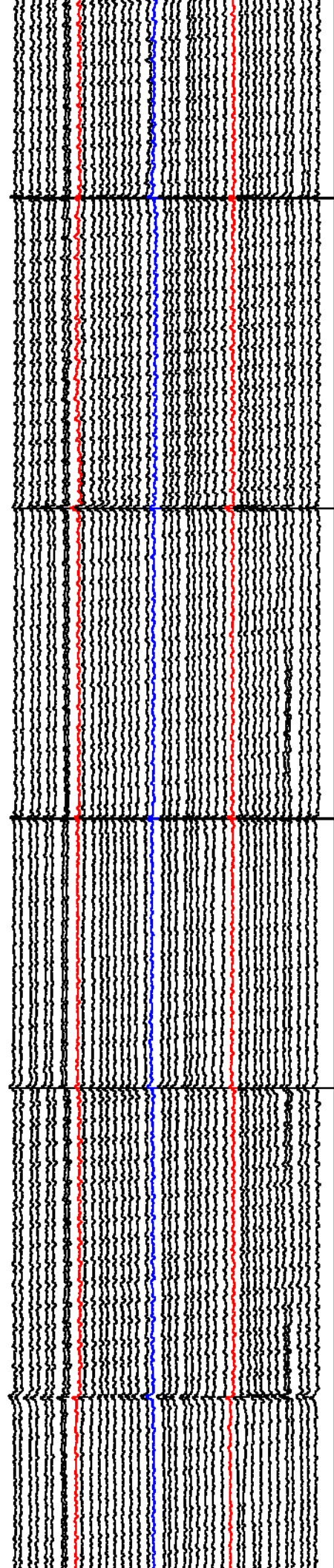


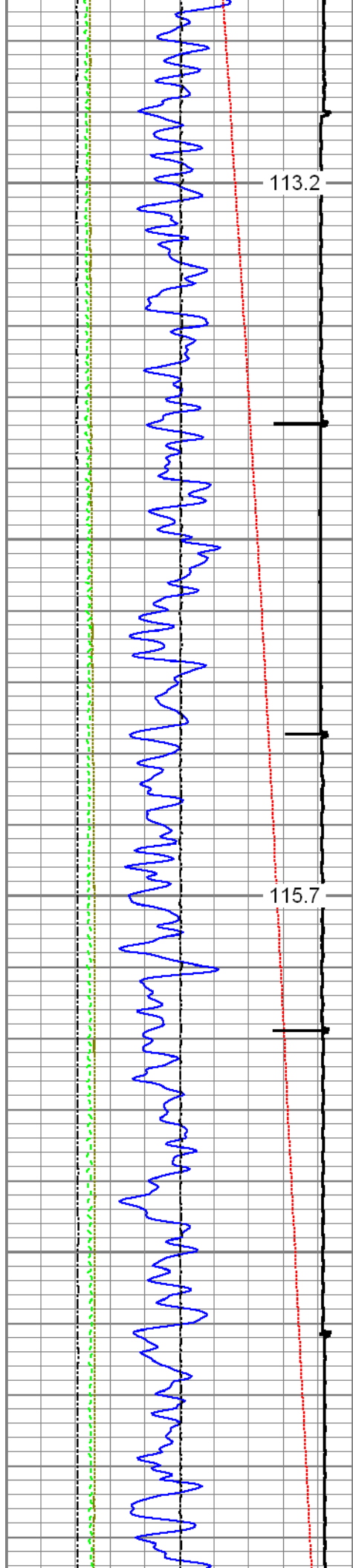
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110.6

2200

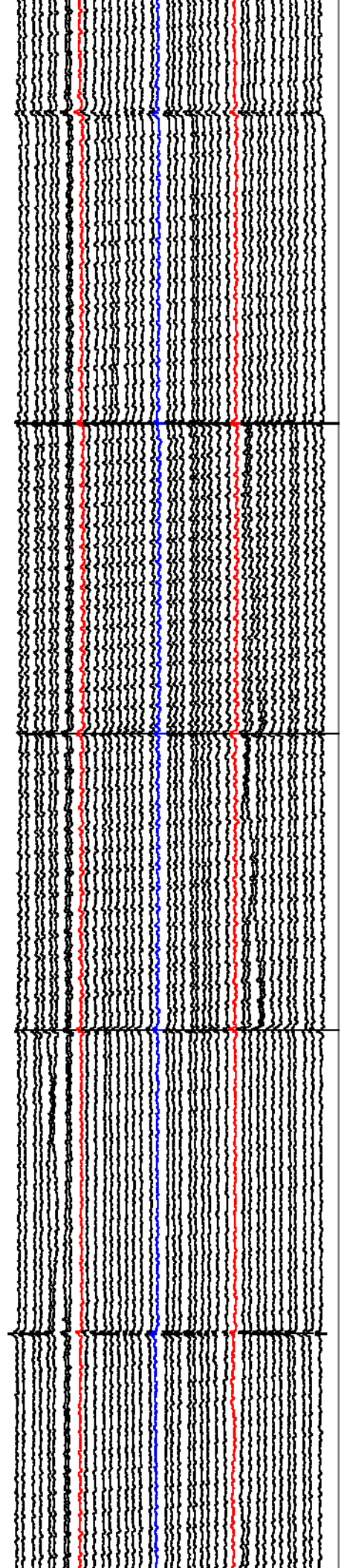
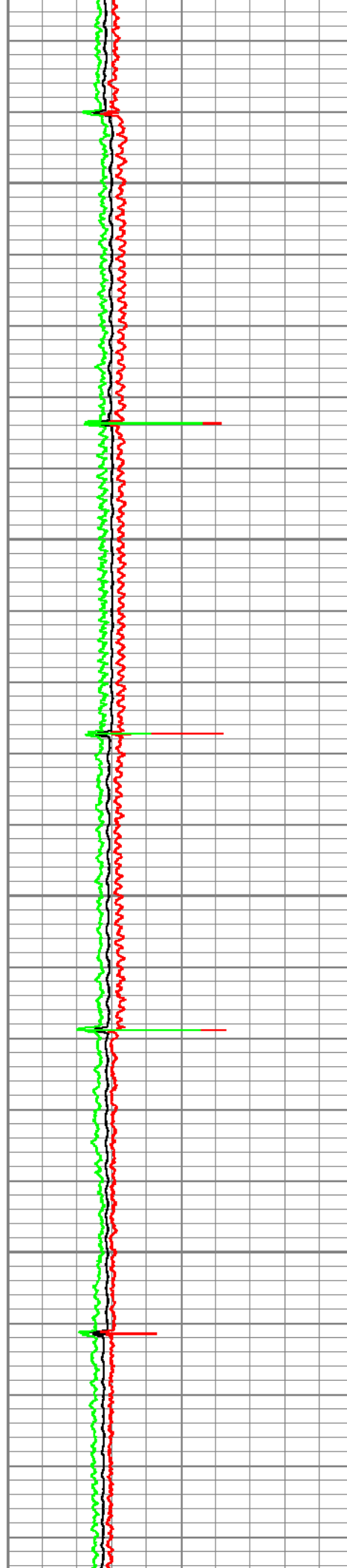
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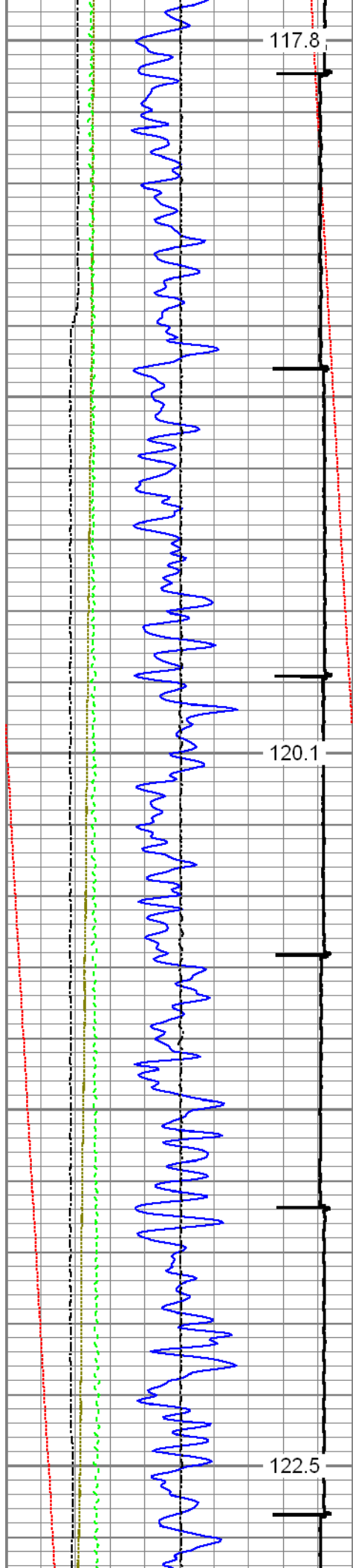




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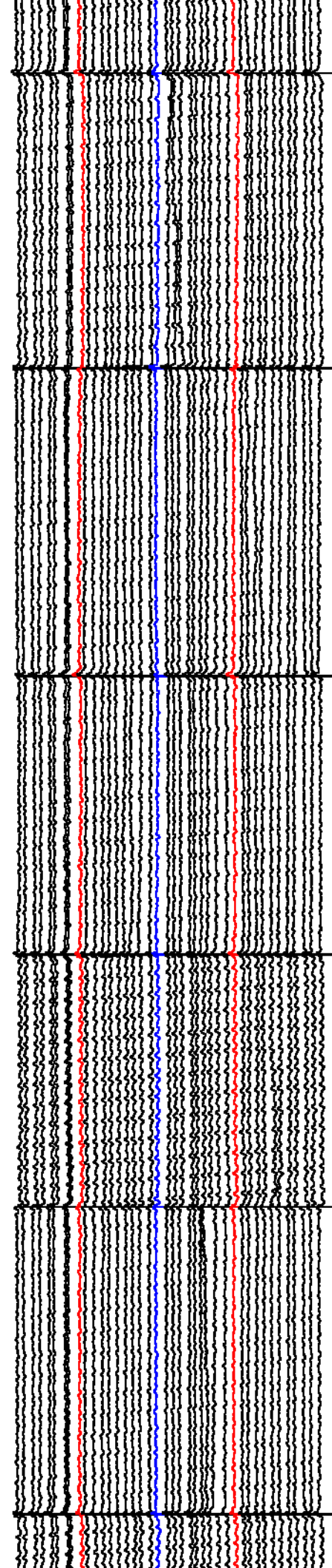
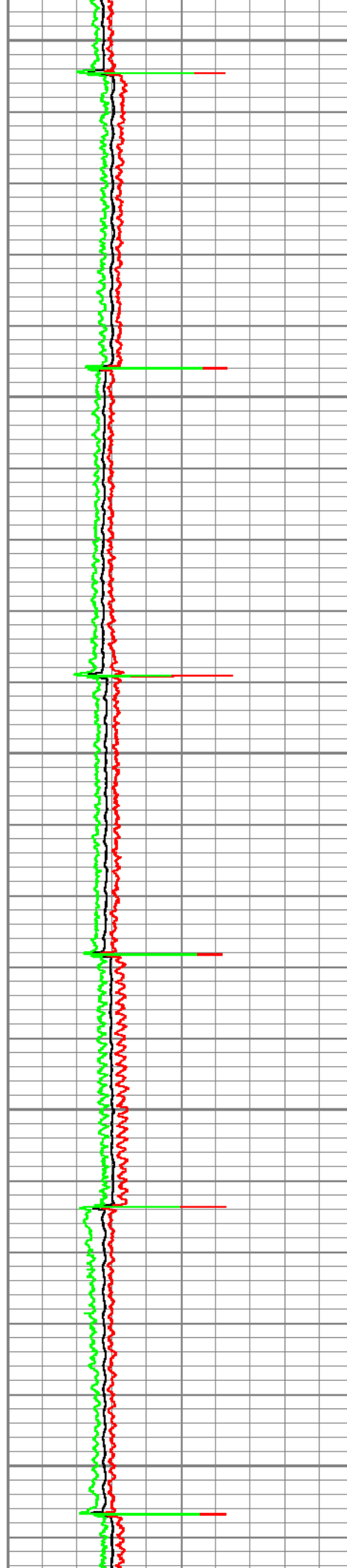


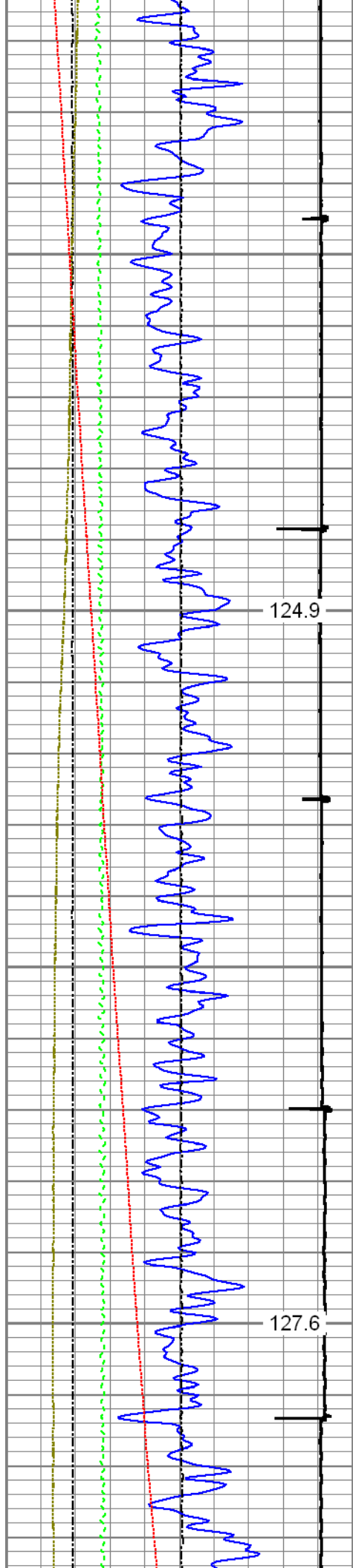


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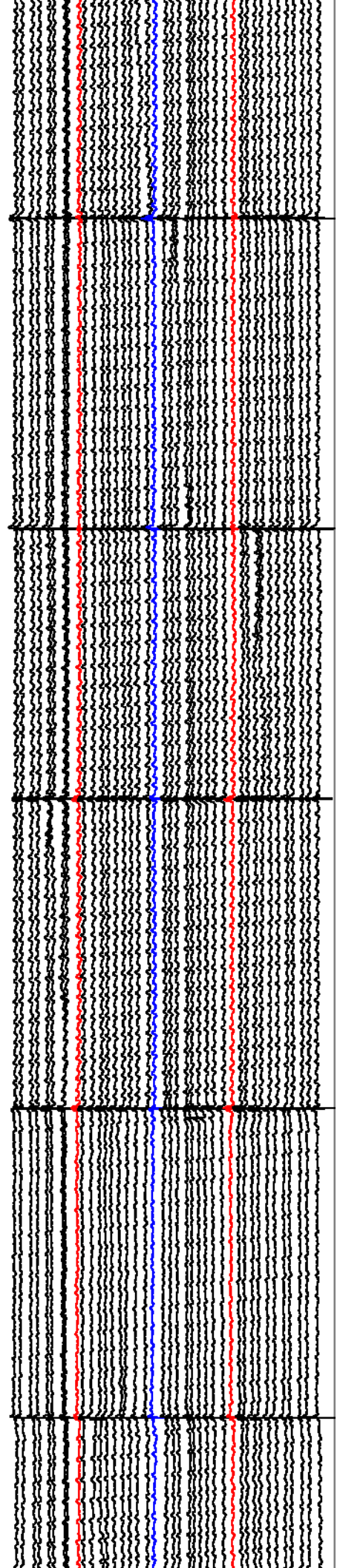
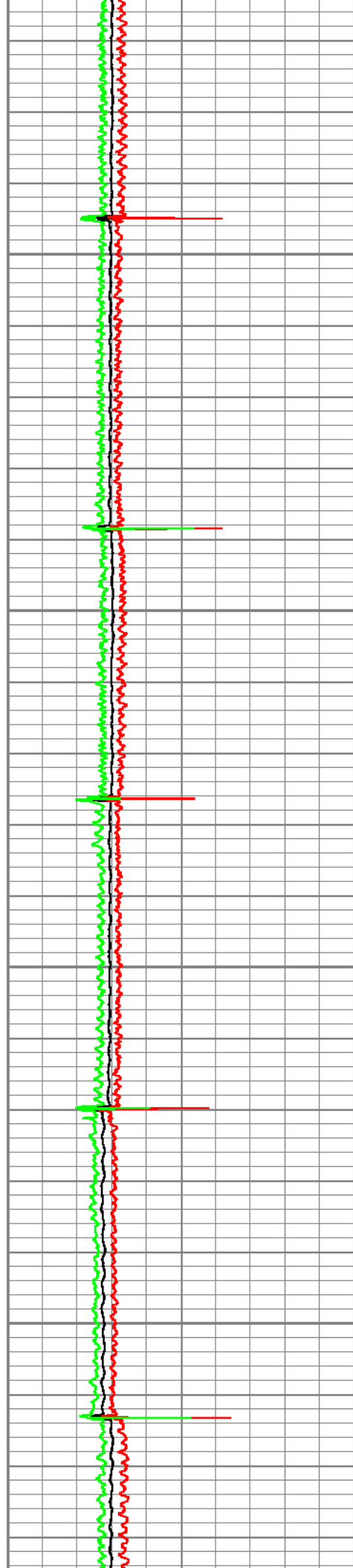
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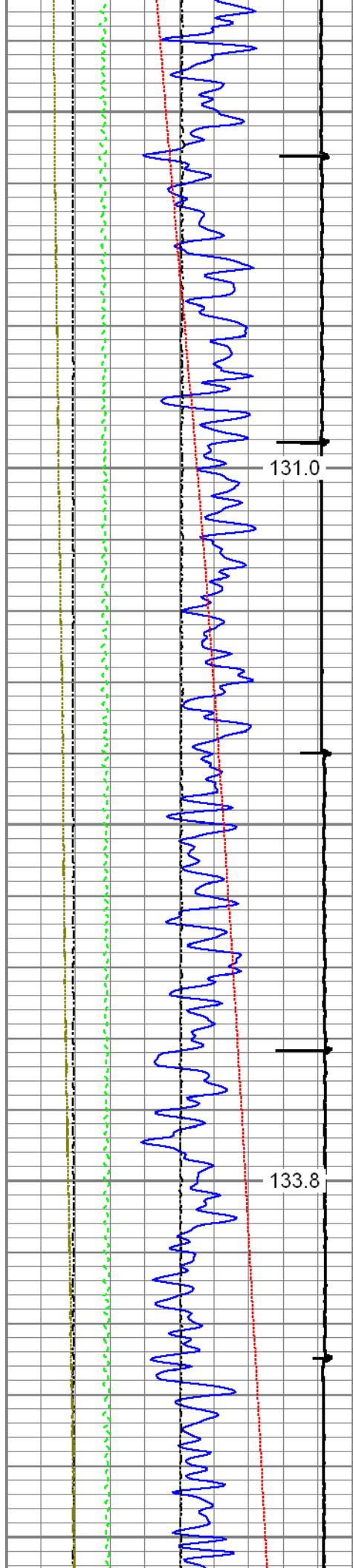




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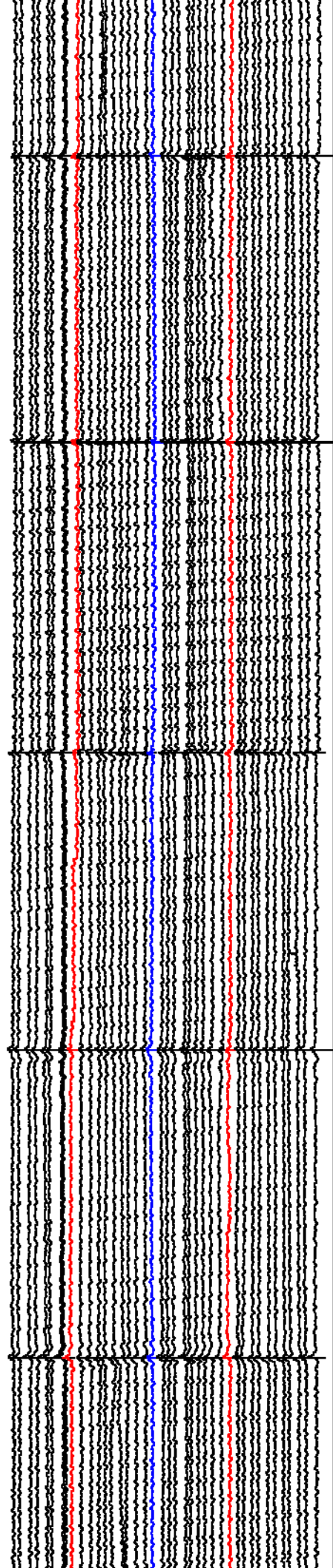


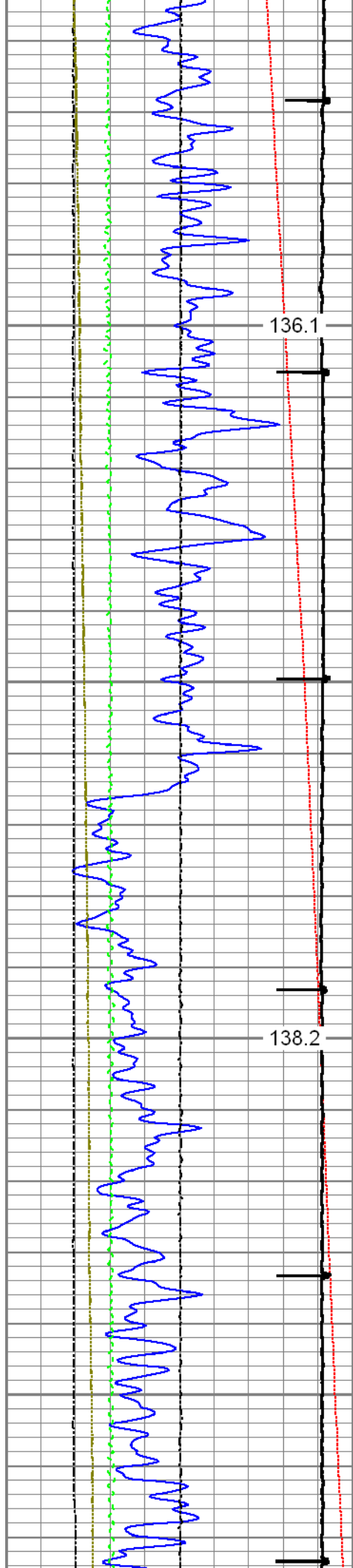
131.0

133.8

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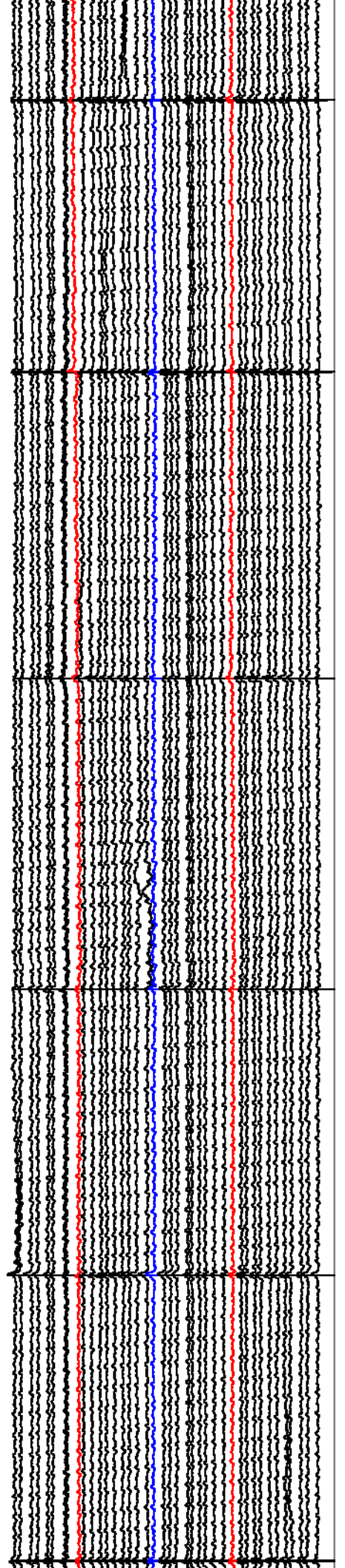
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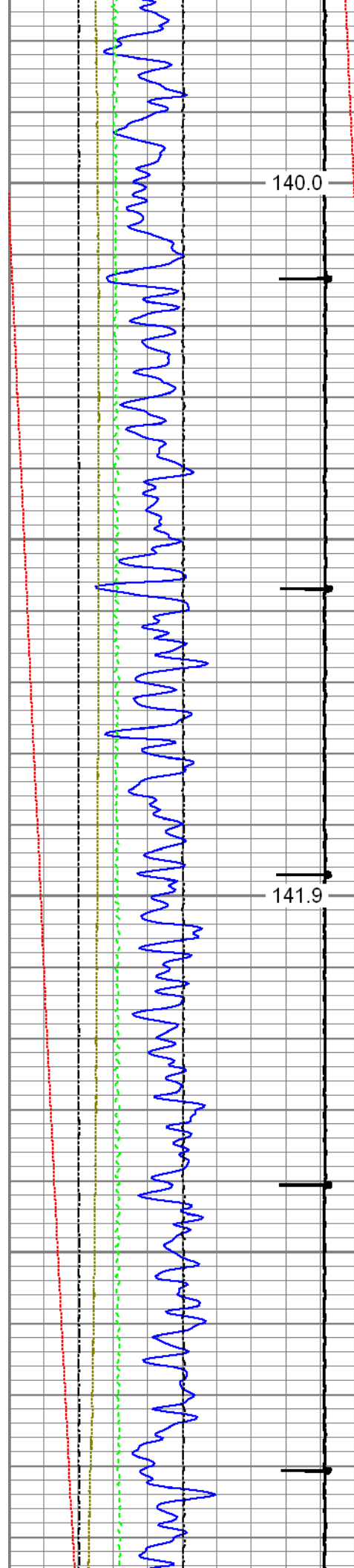




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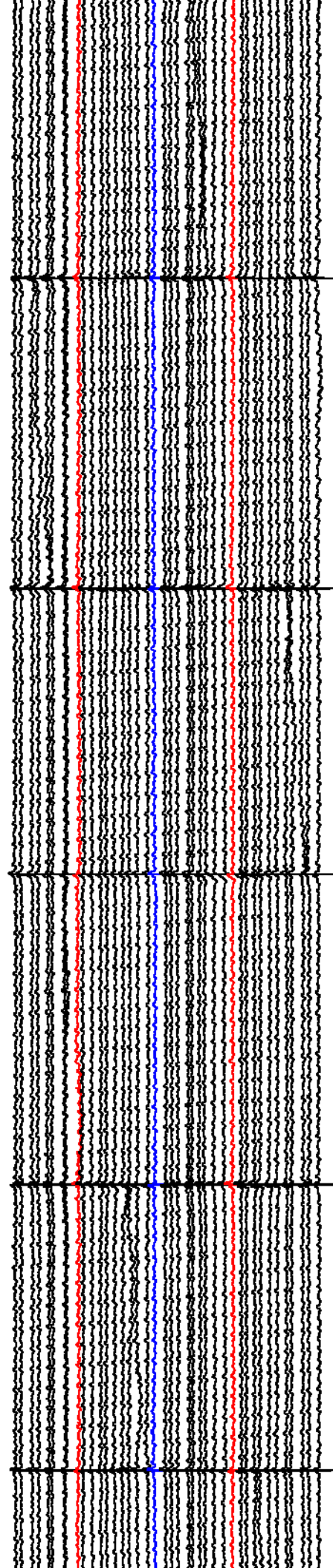
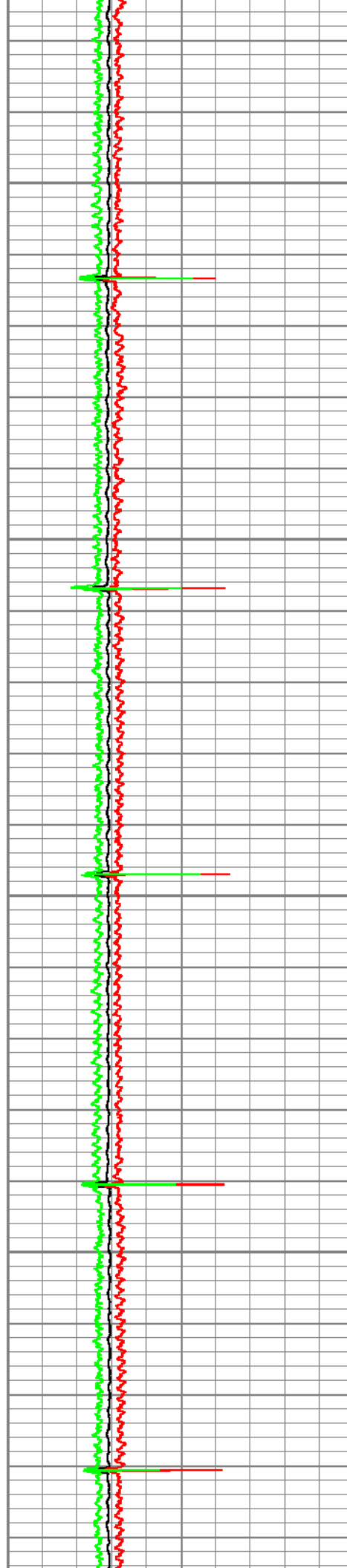


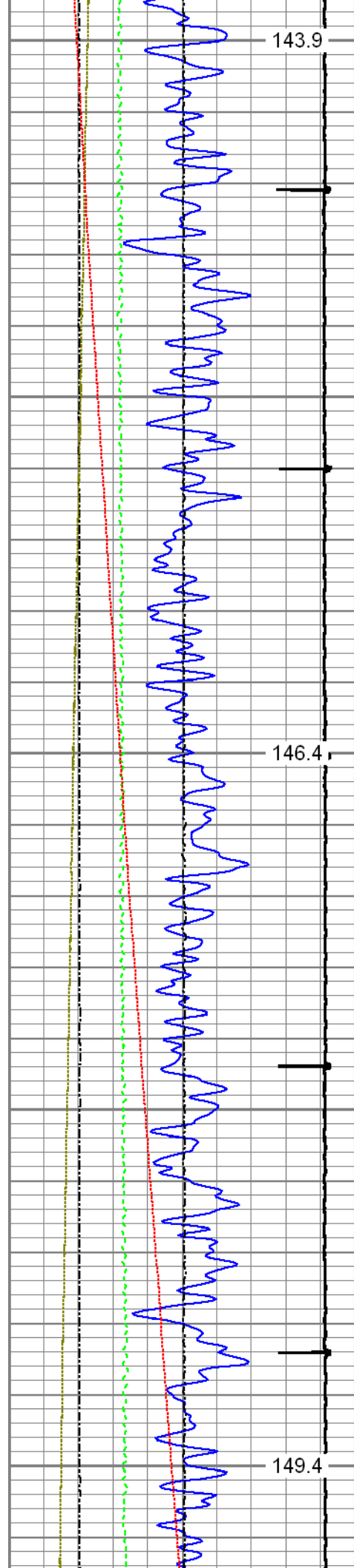
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3600

141.9

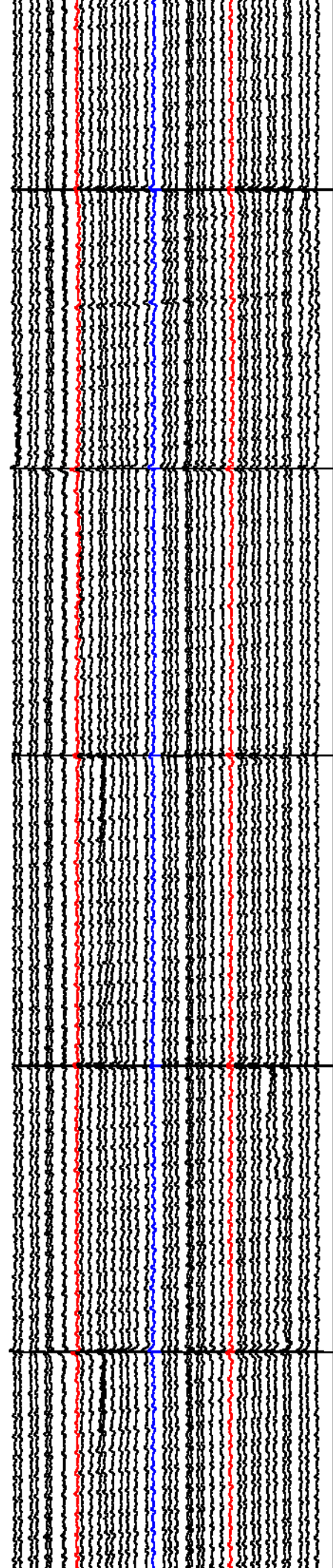
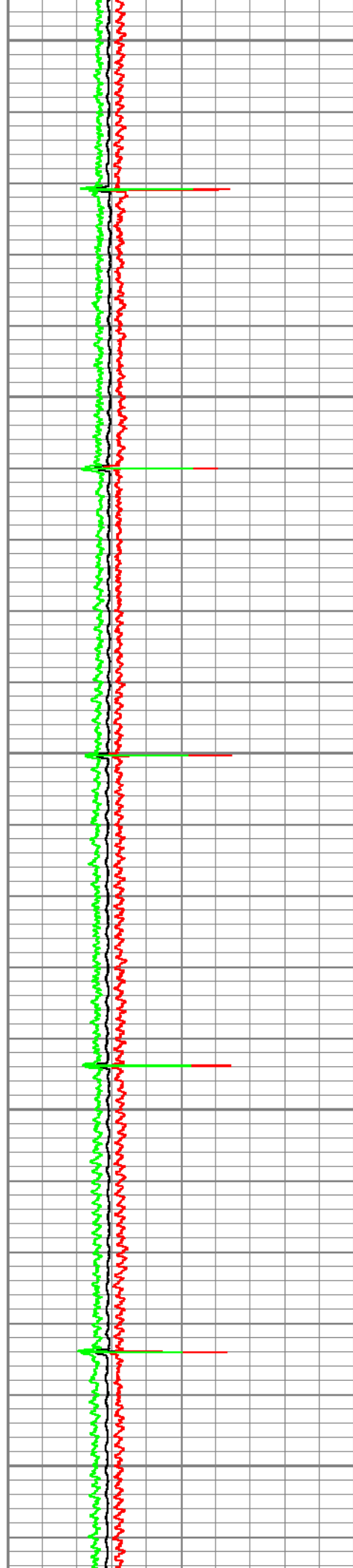


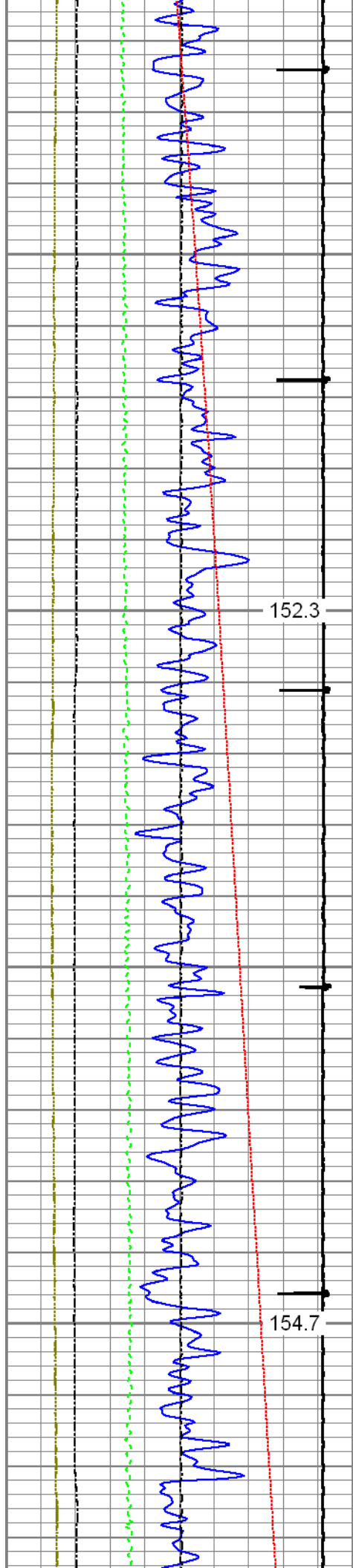


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3900



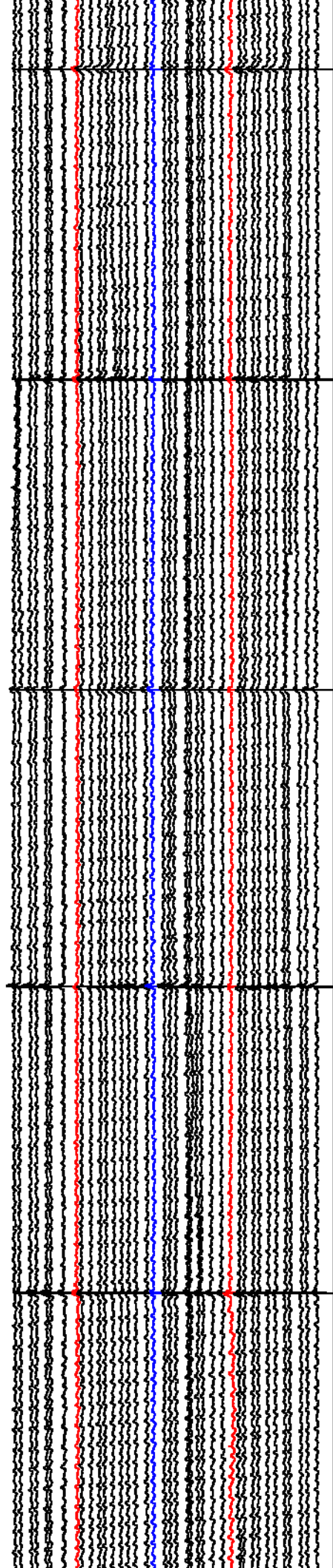
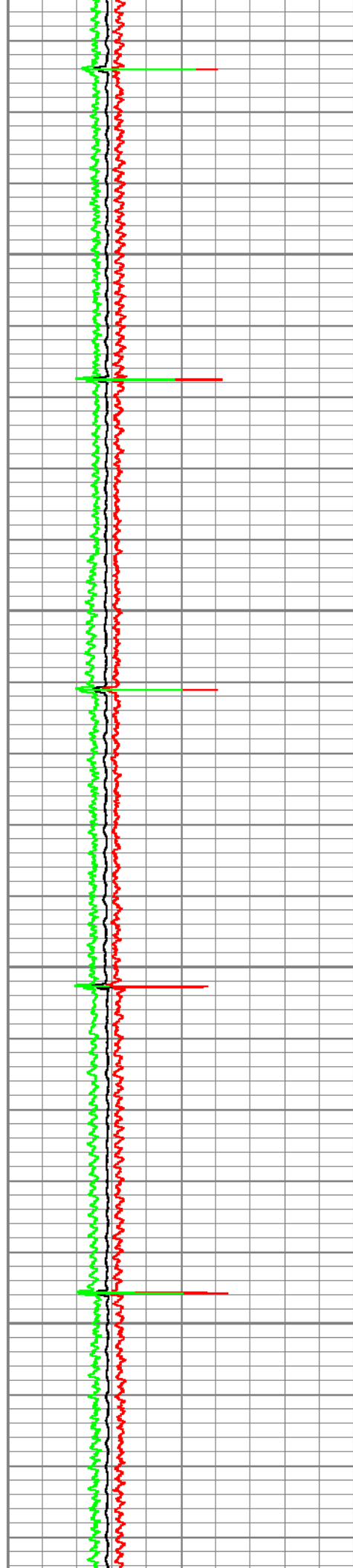


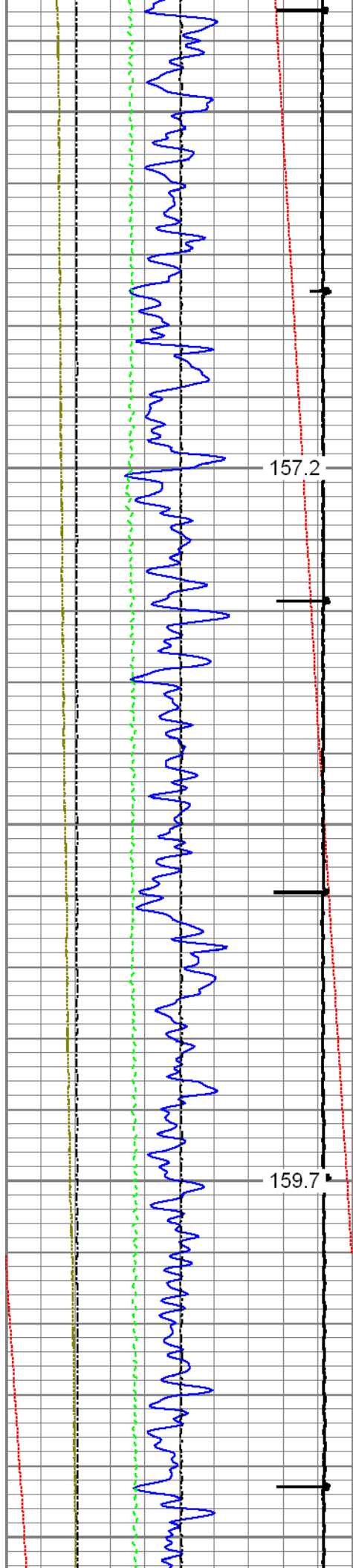
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154.7

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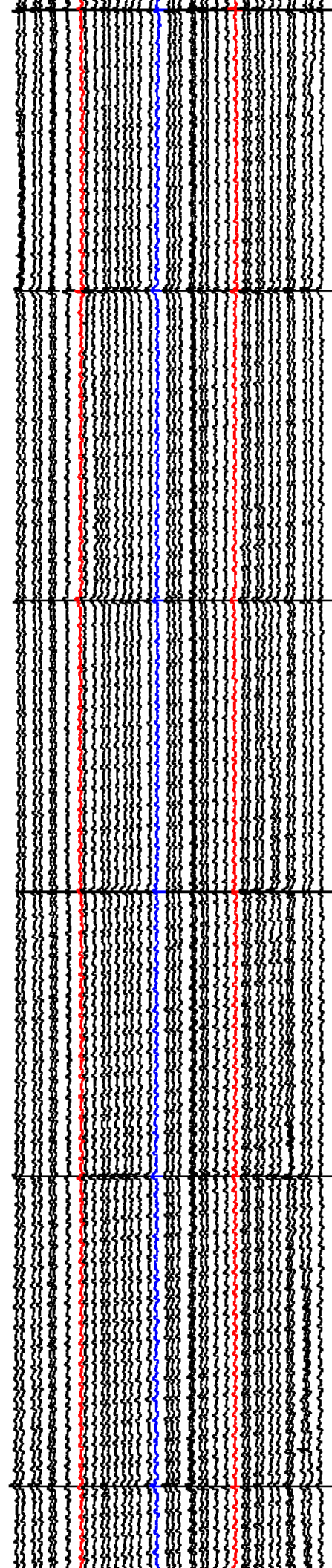
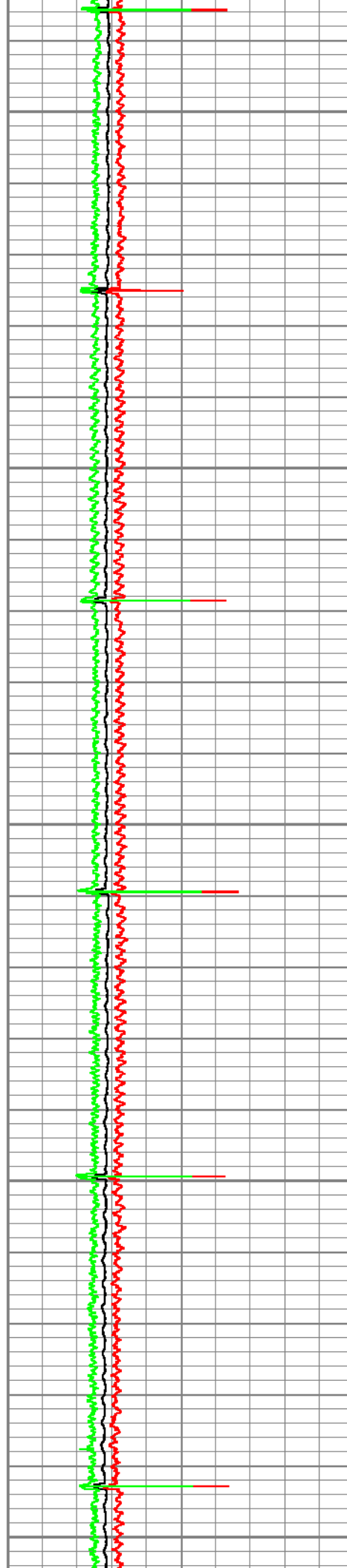
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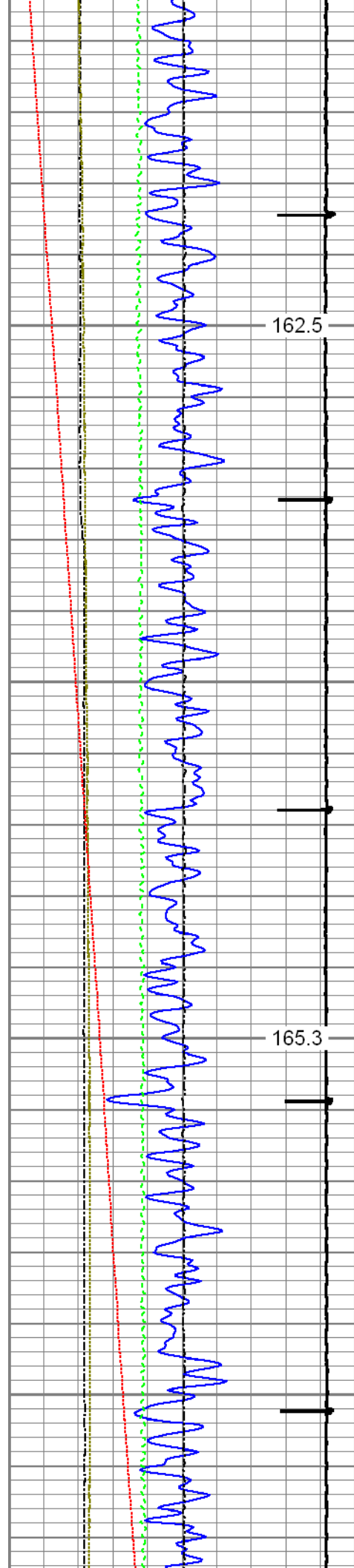




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4300



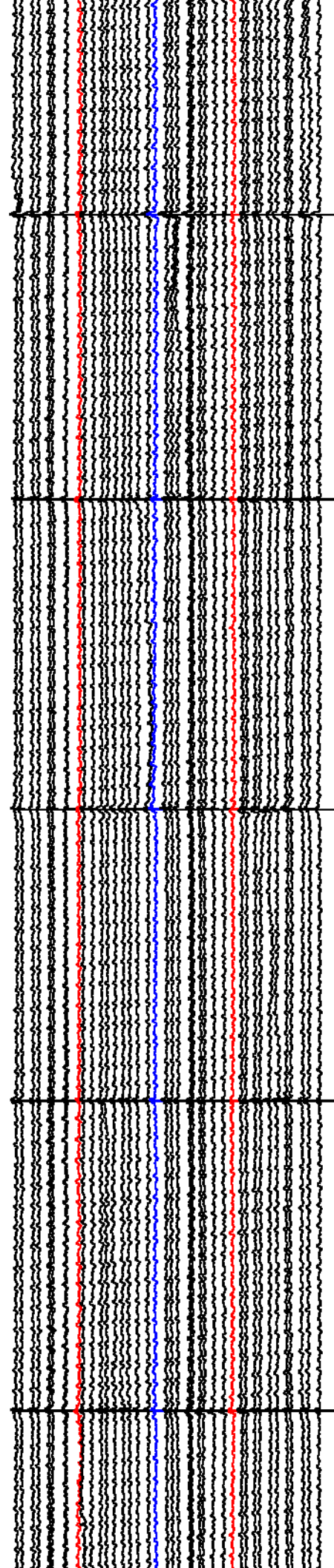
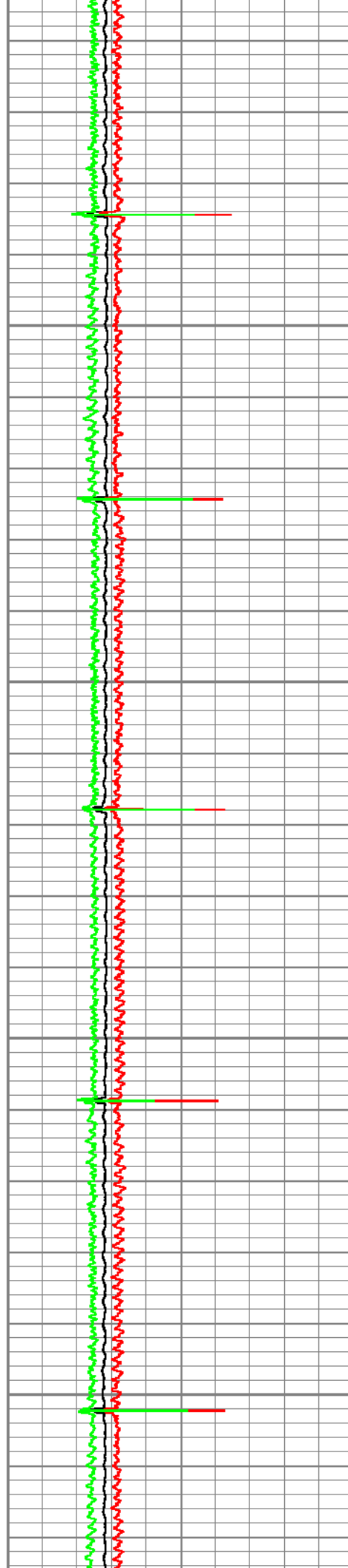


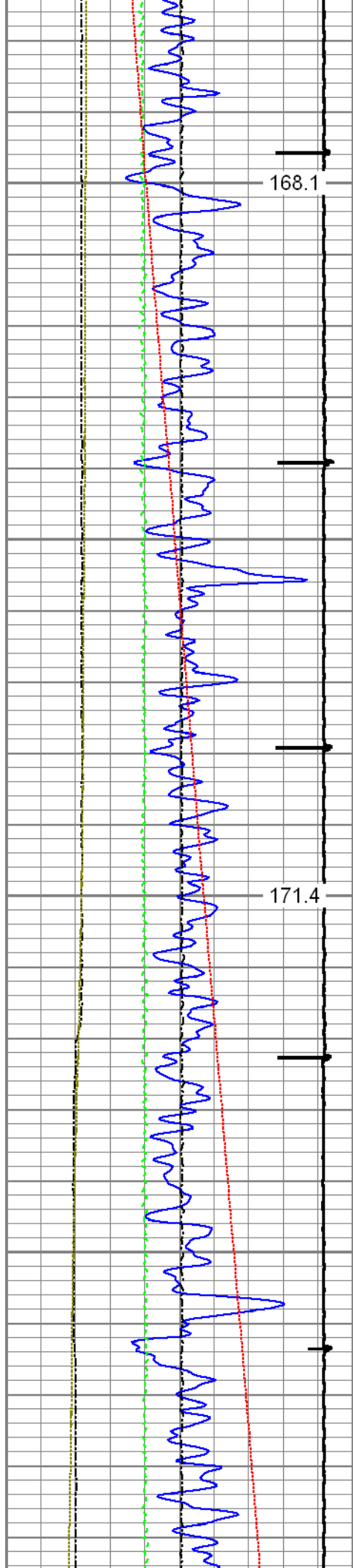
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165.3

4500



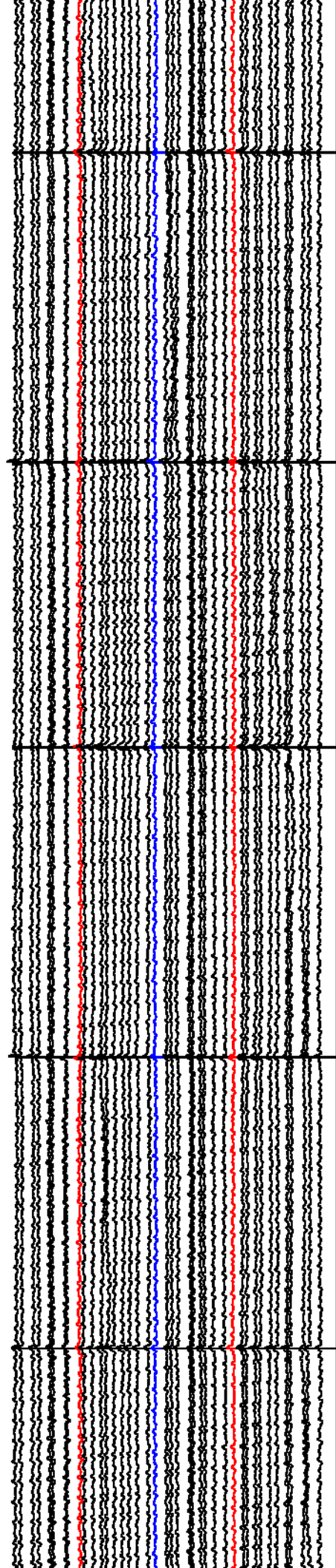
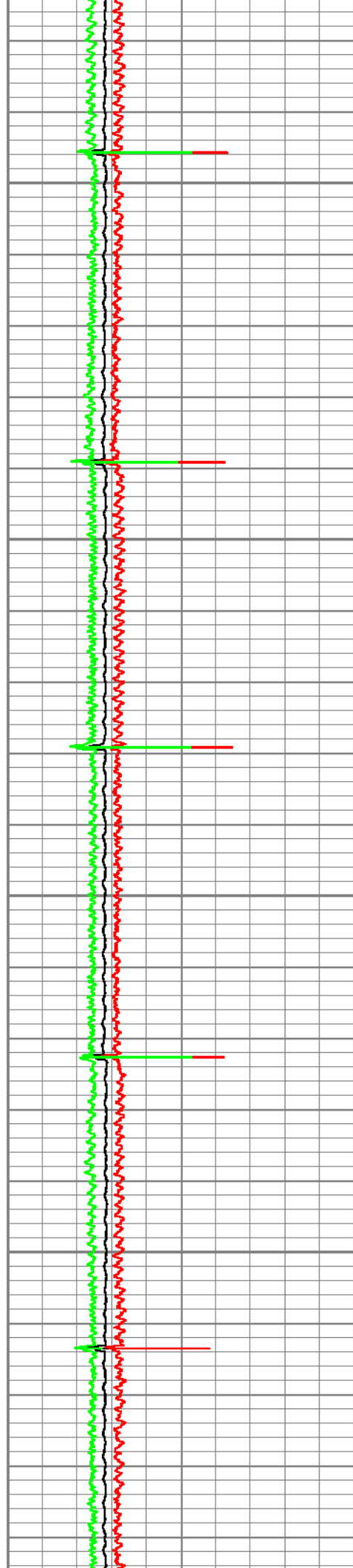


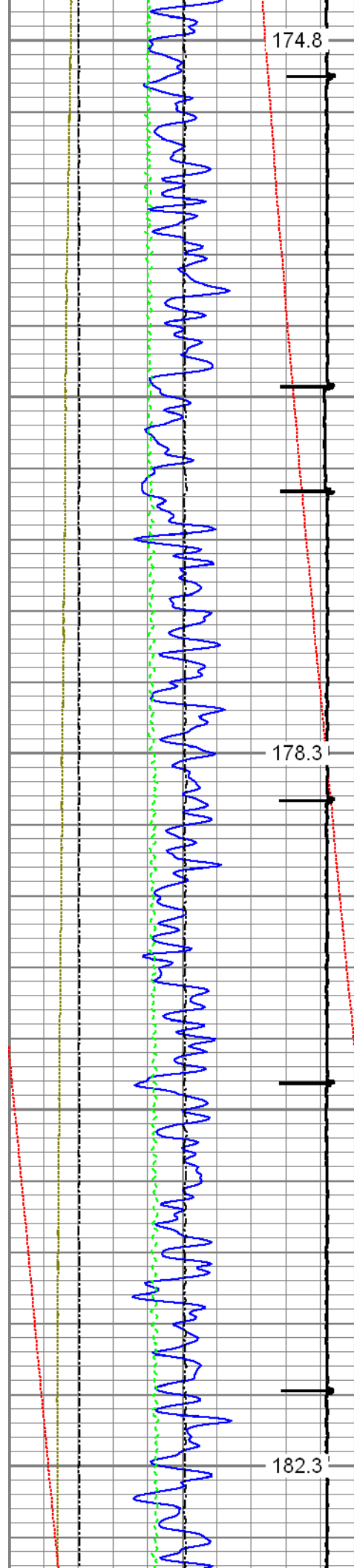
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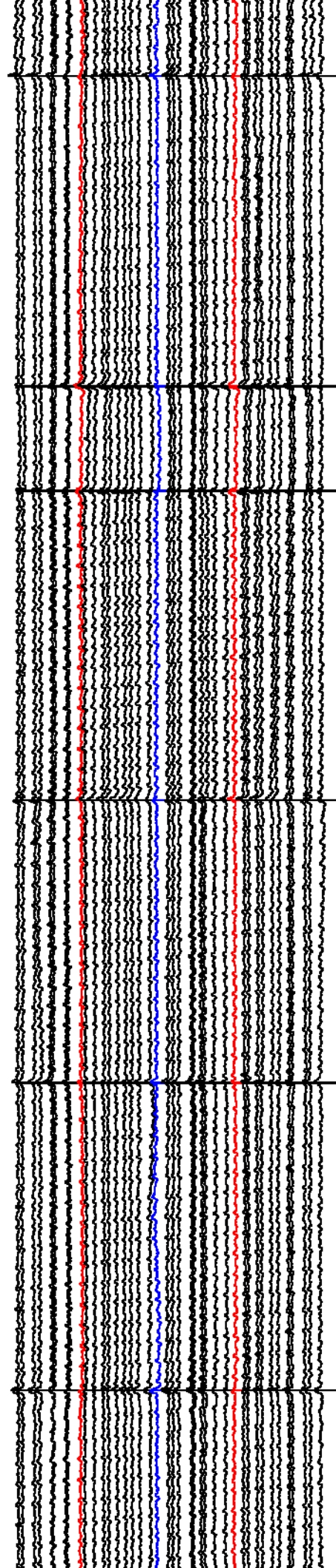
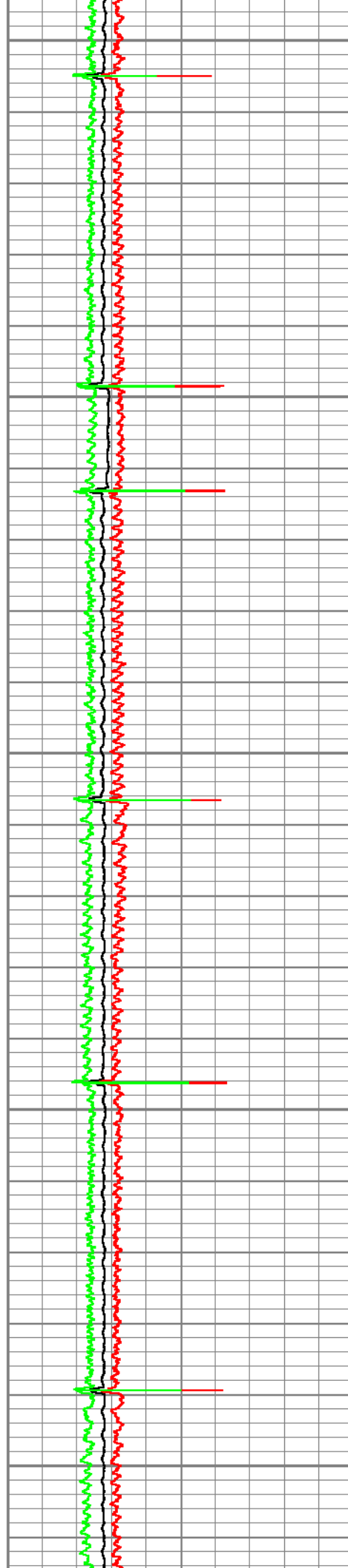
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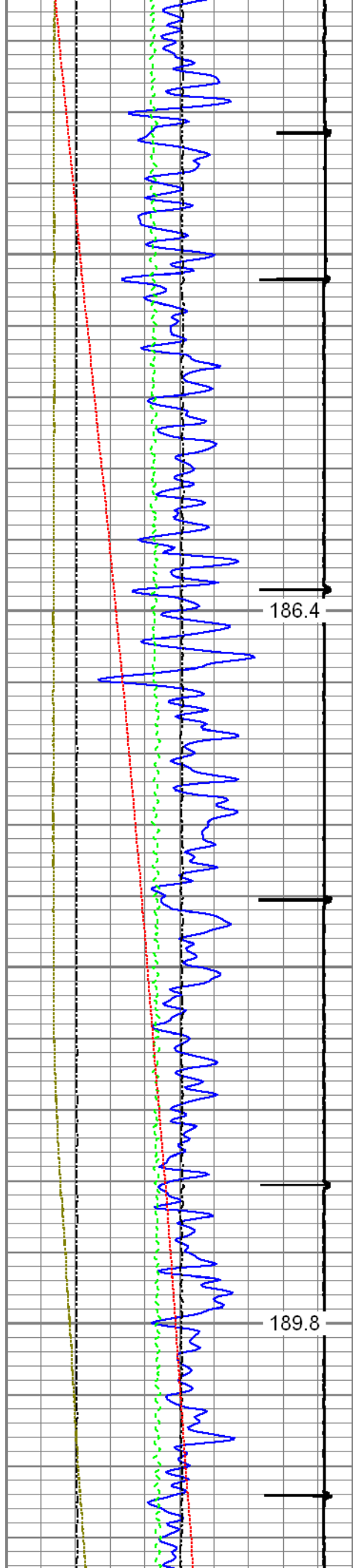
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178.3

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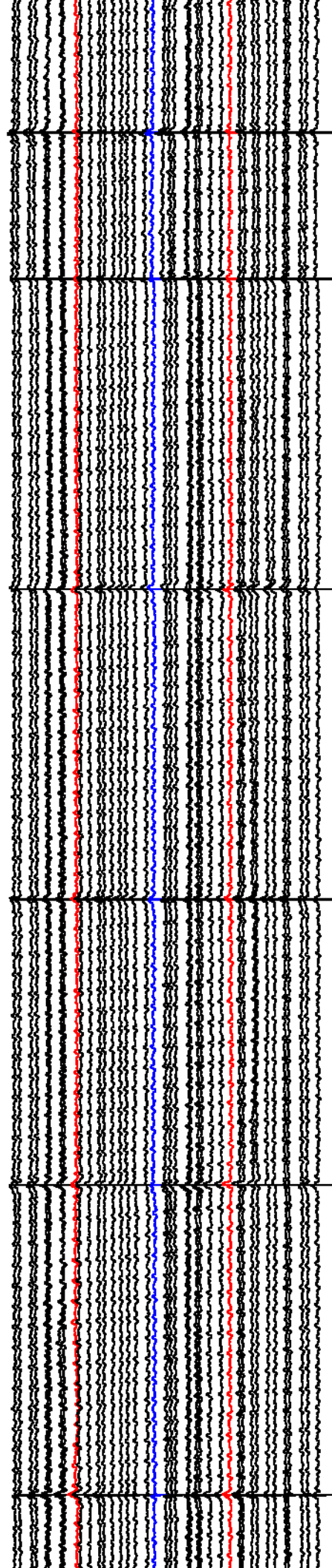
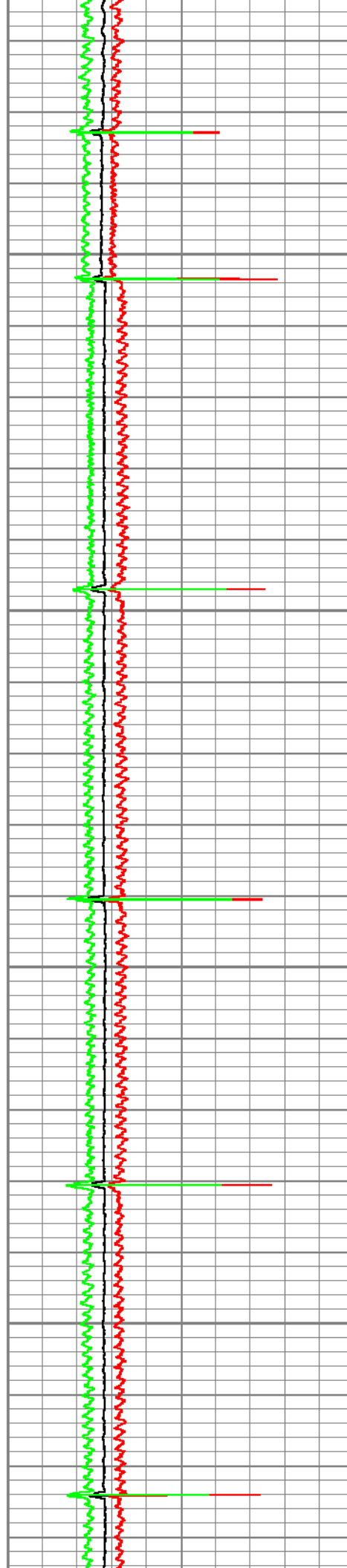
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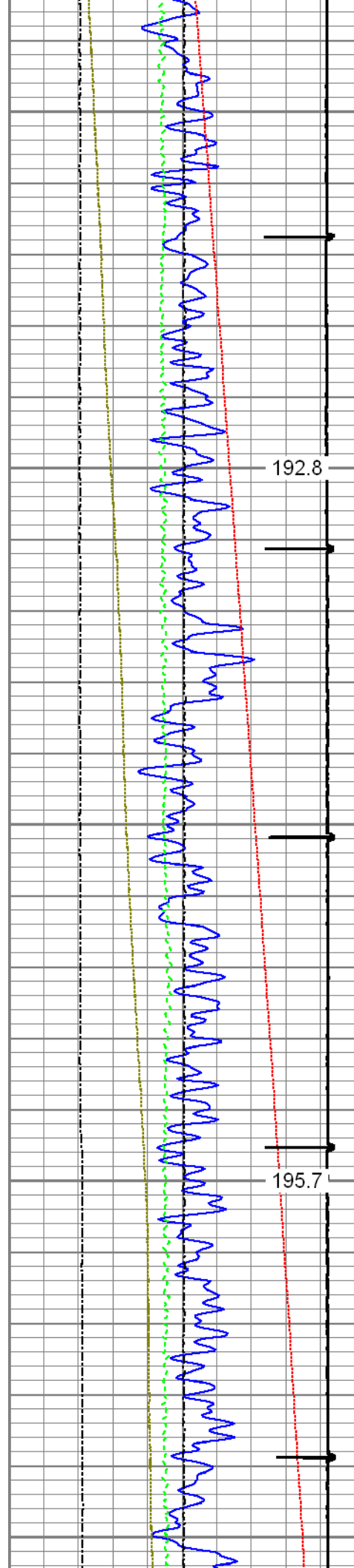




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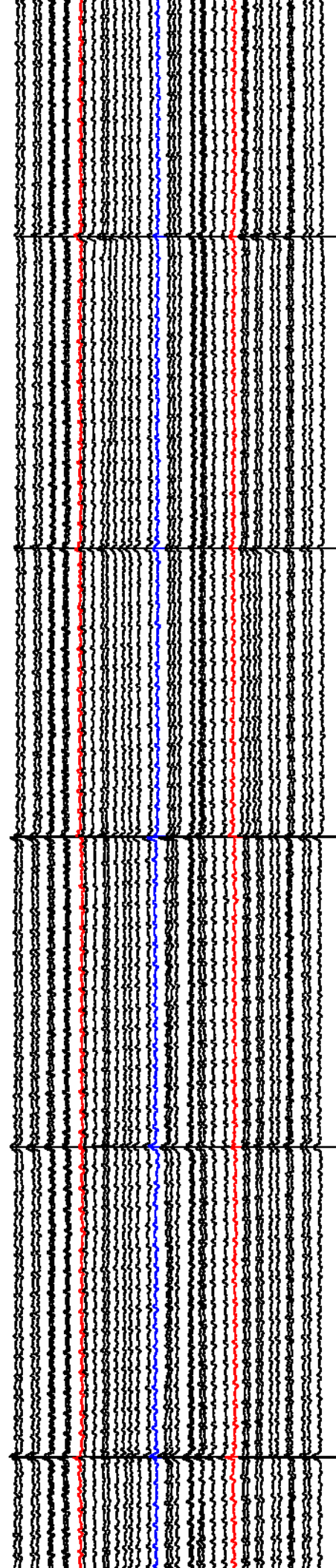
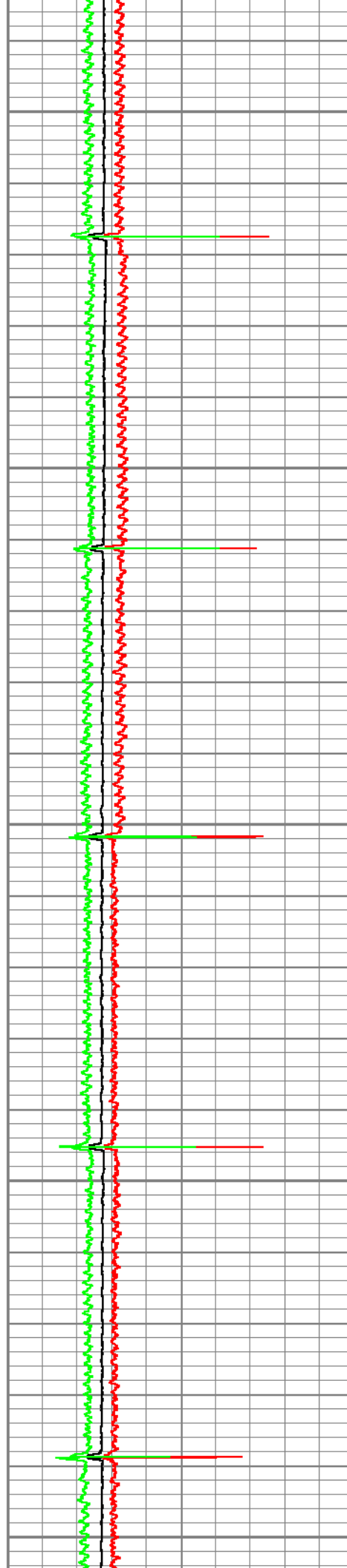
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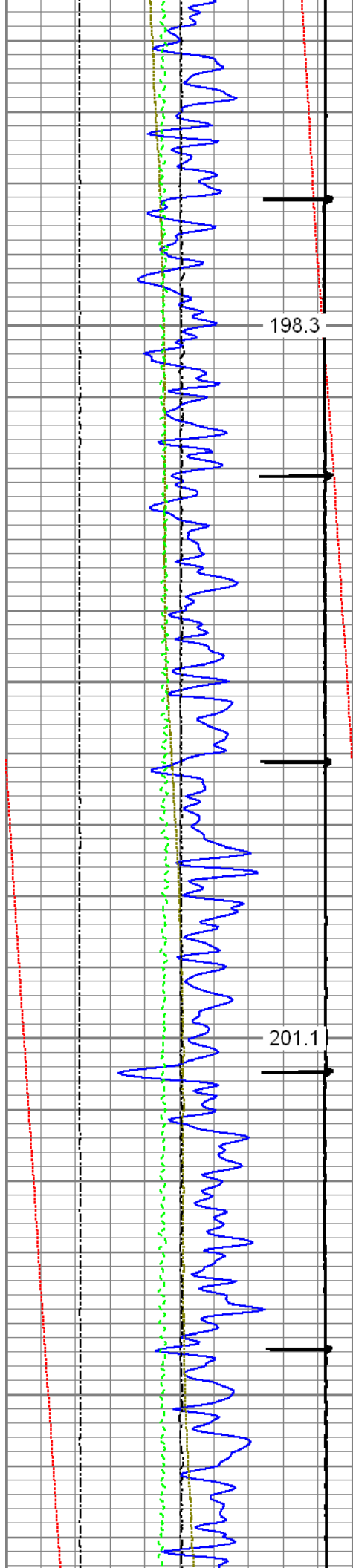




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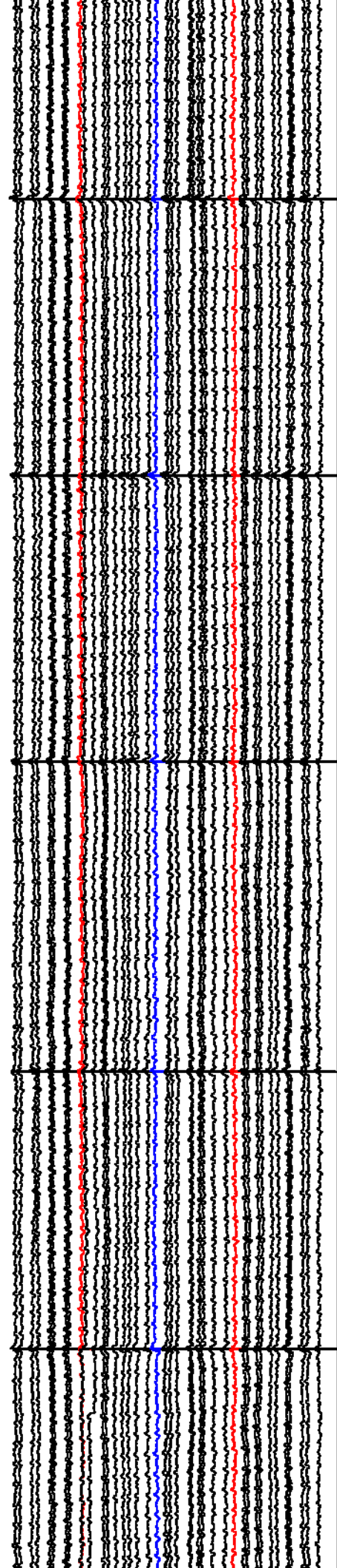
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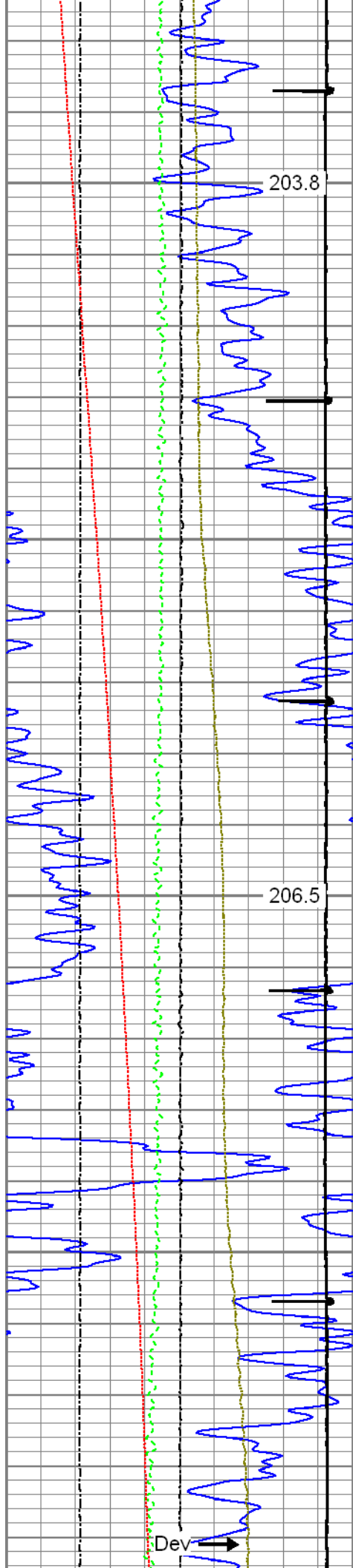




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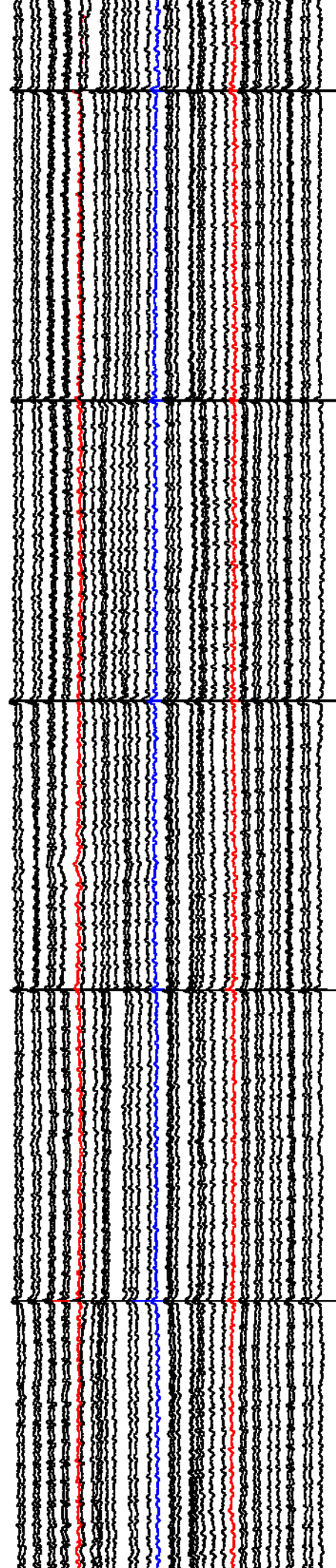
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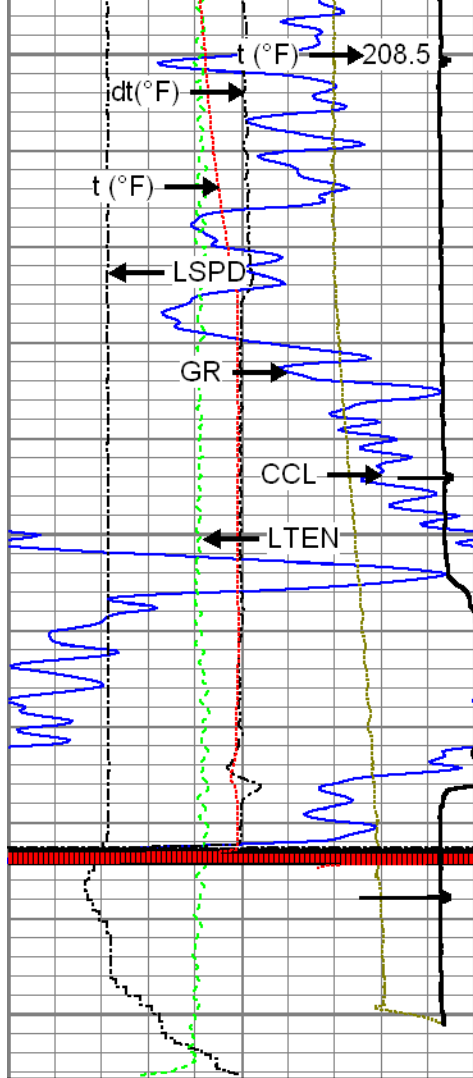




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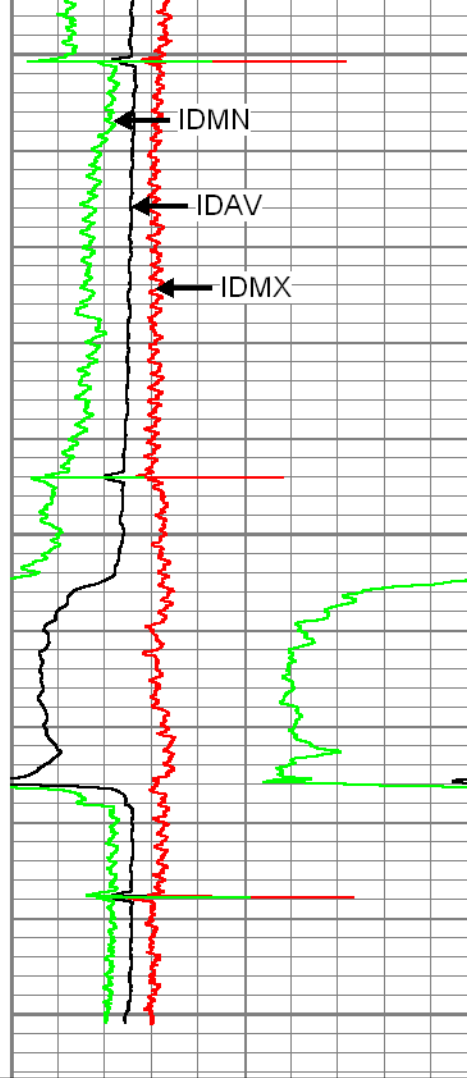




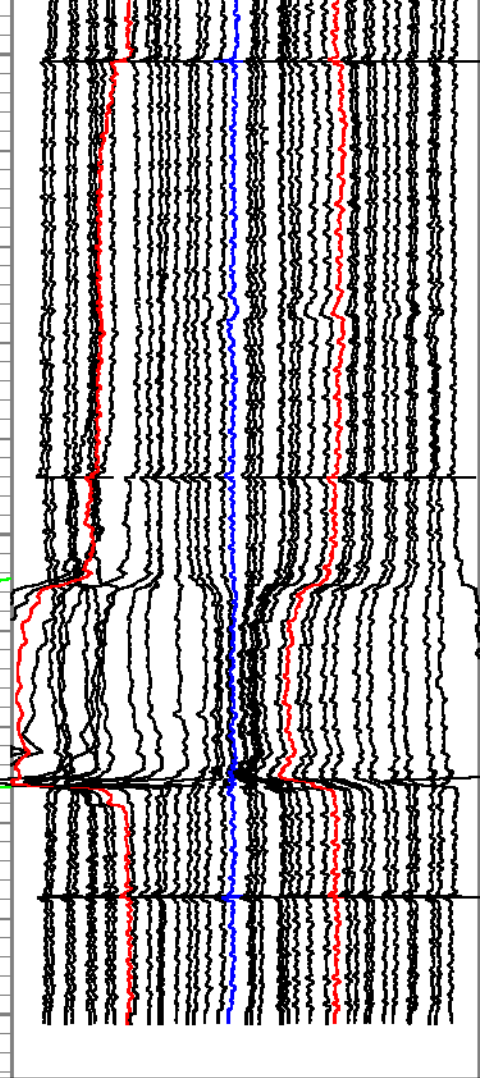
5900

6000

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



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



Caliper #10
Caliper #20
Caliper #30



Repeat Pass

Recorded With 2500 PSI Surface Induced Pressure

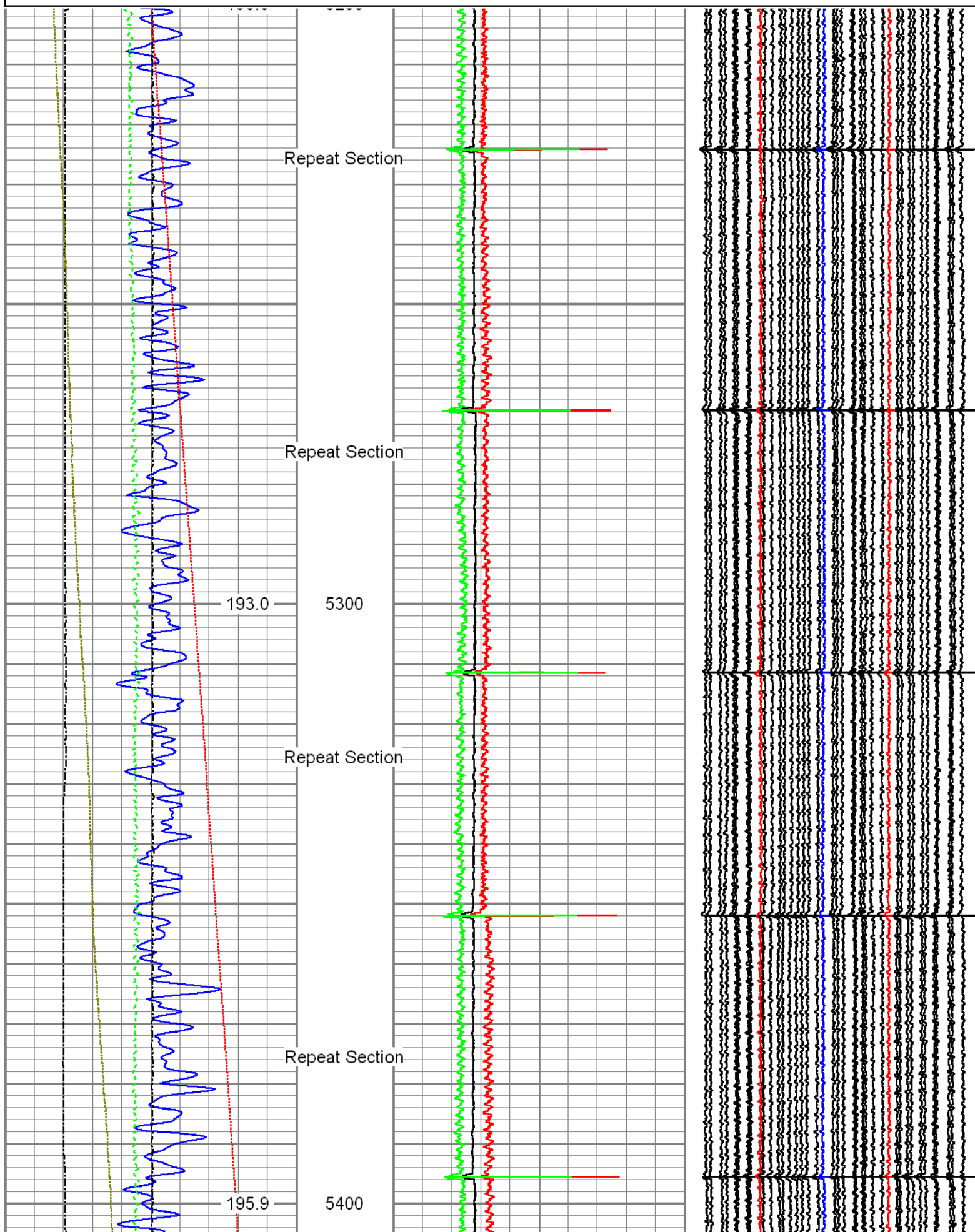
Database File: 09-04-15_noble energy_gracie Id22-740_mit_rbl.db
 Dataset Pathname: pass7
 Presentation Format: 70mit40s
 Dataset Creation: Fri Sep 04 08:35:47 2015 by Log 7.0 B1
 Charted by: Depth in Feet scaled 1:240

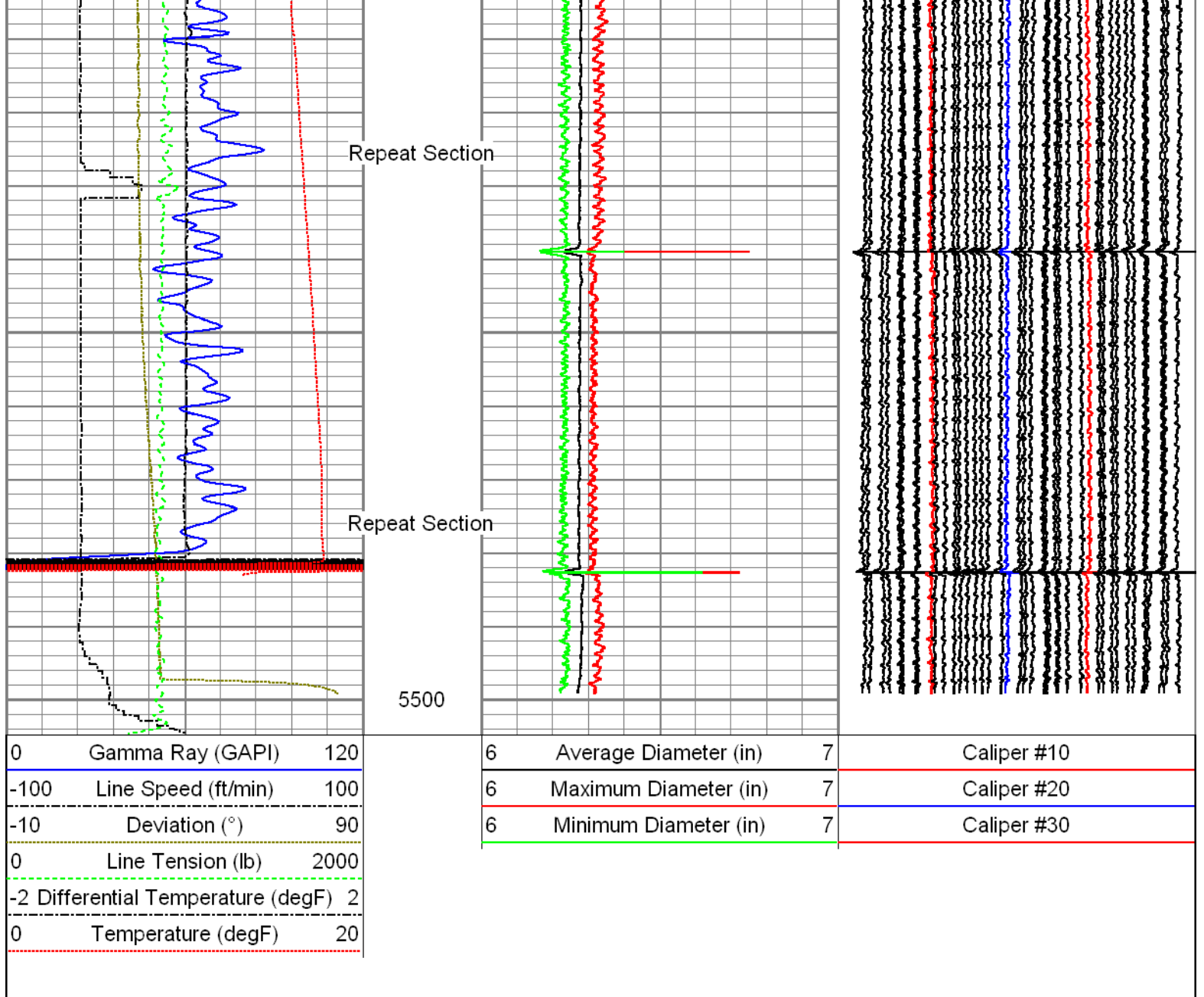
0	Gamma Ray (GAPI)	120
-100	Line Speed (ft/min)	100
-10	Deviation (°)	90
0	Line Tension (lb)	2000

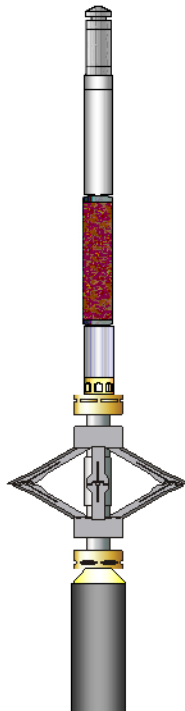
6	Average Diameter (in)	7
6	Maximum Diameter (in)	7
6	Minimum Diameter (in)	7

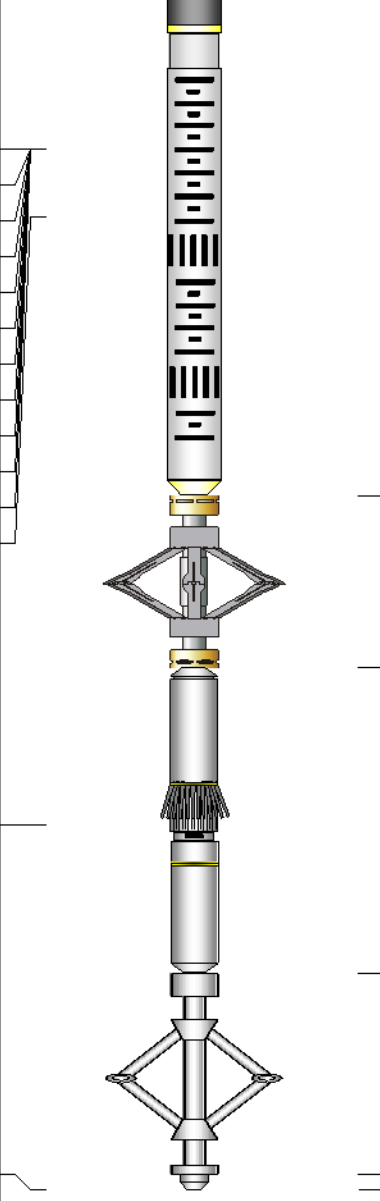
Caliper #10
Caliper #20
Caliper #30

-2 Differential Temperature (degF) 2
0 Temperature (degF) 20





Sensor	Offset (ft)	Schematic	Description	Len (ft)	OD (in)	Wt (lb)
GR	23.85		T_CH14375_1_GO Titan 1-7/16" Assembled Electric Cable Head with 1" Fishing Neck	1.03	1.44	4.00
			UW_AGS-UW_AGS_001 (215017) Sondex Adapter - GO Box to Sondex Pin	0.21	1.69	1.00
			UW_XTU-UW_XTU_002 (10010522) Crossover Ultrawire Toolbus to Ultralink	1.58	1.69	6.50
			UW_PGR-UW_PGR_020 (10019371) Production Gamma Ray	1.93	1.69	9.50
TEMP	22.45		UW_PRT-UW_PRT_016 (10025097) Platinum Resistance Thermometer	1.04	1.69	5.20
			UW_PRC #3 -DSSRAC (082) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00

WVF3FT	15.42		UW_RBT-UW_RBT_004 (10013454) Sondex Ultrawire 3-1/8" Radial Bond Tool	9.47	3.13	140.00
WVFS1	15.42					
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		UW_PRC-DSSRAC (080) 2-3/4" DSS 5 Arm Roller Centralizer	2.55	2.75	32.00
WVF5FT	14.42					
MIT	5.41		UW_MIT-UW_MIT40_027 (218949) 40 Multifinger Imaging Tool	4.54	2.75	61.10
TSTAMP	0.00		UW_PRC #4 -UW_PRC_057 (1037) Sondex 2-3/4" 4-Arm Production Roller Centraliser	2.98	2.75	32.00
			UW_BUL-UW_BUL_006 (031422) Sondex Ultrawire Bullnose Terminator	0.22	1.69	1.20
Dataset: 09-04-15_Noble Energy_Gracie LD22-740_MIT_RBL.db: field/well/run1/pass9 Total Length: 28.09 ft Total Weight: 324.50 lb O.D. 3.13 in						

Calibration Report			
Database File:	09-04-15_Noble Energy_Gracie LD22-740_MIT_RBL.db		
Dataset Pathname:	pass10		
Dataset Creation:	Fri Sep 04 10:41:08 2015 by Log 7.0 B1		
Multi-finger 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		

Sensitivity ratio: 1.0002
X-axis angle: 131.534
Deviation const.: 331.322

Finger Calibration Report

Performed:

Fri Sep 04 08:02:02 2015

Ring size: (in)	4	Sens	5	Sens	6	Sens	7
Finger 01:	1374	278.0	1652	298.0	1950	311.0	2261
Finger 02:	1441	274.0	1715	292.0	2007	304.0	2311
Finger 03:	1653	275.0	1928	284.0	2212	290.0	2502
Finger 04:	1667	274.0	1941	280.0	2221	287.0	2508
Finger 05:	1531	262.0	1793	271.0	2064	281.0	2345
Finger 06:	1531	254.0	1785	264.0	2049	273.0	2322
Finger 07:	1347	269.0	1616	286.0	1902	302.0	2204
Finger 08:	1540	253.0	1793	263.0	2056	275.0	2331
Finger 09:	1418	268.0	1686	281.0	1967	295.0	2262
Finger 10:	1488	262.0	1750	275.0	2025	283.0	2308
Finger 11:	1478	260.0	1738	269.0	2007	279.0	2286
Finger 12:	1319	276.0	1595	293.0	1888	308.0	2196
Finger 13:	1578	277.0	1855	287.0	2142	291.0	2433
Finger 14:	1419	282.0	1701	292.0	1993	306.0	2299
Finger 15:	1536	261.0	1797	273.0	2070	282.0	2352
Finger 16:	1401	279.0	1680	293.0	1973	305.0	2278
Finger 17:	1638	270.0	1908	277.0	2185	284.0	2469
Finger 18:	1376	286.0	1662	305.0	1967	319.0	2286
Finger 19:	1637	257.0	1894	260.0	2154	261.0	2415
Finger 20:	1504	264.0	1768	275.0	2043	287.0	2330
Finger 21:	1590	249.0	1839	259.0	2098	265.0	2363
Finger 22:	1524	273.0	1797	287.0	2084	294.0	2378
Finger 23:	1344	272.0	1616	290.0	1906	301.0	2207
Finger 24:	1675	261.0	1936	272.0	2208	278.0	2486
Finger 25:	1356	288.0	1644	309.0	1953	323.0	2276
Finger 26:	1529	285.0	1814	298.0	2112	320.0	2432
Finger 27:	1463	260.0	1723	272.0	1995	285.0	2280
Finger 28:	1628	274.0	1902	286.0	2188	292.0	2480
Finger 29:	1465	270.0	1735	290.0	2025	301.0	2326
Finger 30:	1414	272.0	1686	294.0	1980	308.0	2288
Finger 31:	1521	265.0	1786	280.0	2066	290.0	2356
Finger 32:	1338	264.0	1602	285.0	1887	298.0	2185
Finger 33:	1602	299.0	1901	315.0	2216	321.0	2537
Finger 34:	1534	268.0	1802	282.0	2084	288.0	2372
Finger 35:	1433	264.0	1697	282.0	1979	297.0	2276
Finger 36:	1582	280.0	1862	292.0	2154	298.0	2452
Finger 37:	1594	274.0	1868	287.0	2155	297.0	2452
Finger 38:	1488	273.0	1761	284.0	2045	300.0	2345
Finger 39:	1458	279.0	1737	295.0	2032	310.0	2342
Finger 40:	1576	285.0	1861	296.0	2157	306.0	2463

Post Survey Calibration Check

Performed:

Fri Sep 04 10:40:56 2015

Ring size: (in)	4	Nom. wear	5	Nom. wear	6	Nom. wear	7	Nom. wear
Finger 01:	3.982	-0.009	4.992	-0.004	5.992	-0.004	6.991	-0.004
Finger 02:	3.973	-0.013	4.987	-0.006	5.988	-0.006	6.995	-0.003
Finger 03:	3.973	-0.014	4.994	-0.003	5.998	-0.001	6.999	-0.000
Finger 04:	3.973	-0.014	4.993	-0.003	6.001	0.001	6.993	-0.003
Finger 05:	3.988	-0.006	4.990	-0.005	5.992	-0.004	7.002	0.001
Finger 06:	3.985	-0.007	4.990	-0.005	5.993	-0.003	6.994	-0.003
Finger 07:	3.983	-0.009	4.991	-0.005	5.990	-0.005	6.985	-0.008
Finger 08:	3.985	-0.008	4.998	-0.001	6.001	0.000	6.999	-0.000
Finger 09:	3.979	-0.010	4.985	-0.008	5.985	-0.007	6.994	-0.003
Finger 10:	3.986	-0.007	4.992	-0.004	5.995	-0.002	6.999	-0.000
Finger 11:	3.969	-0.015	4.970	-0.015	5.981	-0.009	6.983	-0.009
Finger 12:	3.988	-0.006	4.994	-0.003	5.996	-0.002	6.991	-0.005

Finger 12:	3.988	-0.006	4.994	-0.003	5.996	-0.002	6.991	-0.005
Finger 13:	3.980	-0.010	4.994	-0.003	5.993	-0.004	6.997	-0.002
Finger 14:	3.994	-0.003	4.990	-0.005	5.994	-0.003	6.995	-0.002
Finger 15:	3.989	-0.005	4.990	-0.005	5.987	-0.007	6.988	-0.006
Finger 16:	3.989	-0.005	4.995	-0.003	6.002	0.001	6.998	-0.001
Finger 17:	3.977	-0.012	4.980	-0.010	5.988	-0.006	6.991	-0.004
Finger 18:	3.985	-0.008	4.991	-0.004	5.994	-0.003	6.998	-0.001
Finger 19:	3.980	-0.010	4.989	-0.006	5.992	-0.004	7.002	0.001
Finger 20:	3.983	-0.009	4.994	-0.003	6.004	0.002	7.016	0.008
Finger 21:	3.978	-0.011	4.990	-0.005	5.997	-0.001	7.001	0.001
Finger 22:	3.708	-0.146	4.744	-0.128	5.722	-0.139	6.682	-0.159
Finger 23:	3.983	-0.008	4.996	-0.002	5.996	-0.002	6.998	-0.001
Finger 24:	3.978	-0.011	4.992	-0.004	5.998	-0.001	7.010	0.005
Finger 25:	3.988	-0.006	4.991	-0.004	5.992	-0.004	6.998	-0.001
Finger 26:	3.976	-0.012	4.993	-0.003	5.997	-0.002	6.962	-0.019
Finger 27:	3.971	-0.014	4.980	-0.010	5.992	-0.004	6.990	-0.005
Finger 28:	3.975	-0.012	4.984	-0.008	5.987	-0.007	6.992	-0.004
Finger 29:	3.976	-0.012	4.984	-0.008	5.989	-0.006	6.993	-0.004
Finger 30:	3.481	-0.259	4.997	-0.002	5.996	-0.002	6.999	-0.000
Finger 31:	3.989	-0.005	4.989	-0.005	5.994	-0.003	7.000	0.000
Finger 32:	3.990	-0.005	4.993	-0.004	5.994	-0.003	6.996	-0.002
Finger 33:	3.989	-0.006	4.992	-0.004	5.991	-0.004	6.992	-0.004
Finger 34:	3.988	-0.006	4.990	-0.005	5.989	-0.005	6.997	-0.001
Finger 35:	3.988	-0.006	4.987	-0.006	5.996	-0.002	7.002	0.001
Finger 36:	3.986	-0.007	4.985	-0.008	5.985	-0.008	6.995	-0.002
Finger 37:	4.004	0.002	5.005	0.002	5.994	-0.003	6.988	-0.006
Finger 38:	3.954	-0.023	4.969	-0.015	5.988	-0.006	6.995	-0.002
Finger 39:	3.981	-0.009	4.993	-0.003	6.007	0.003	7.014	0.007
Finger 40:	4.004	0.002	4.990	-0.005	5.998	-0.001	7.001	0.001
Average:	3.963	-0.018	4.984	-0.008	5.987	-0.007	6.988	-0.006

Segmented Cement Bond Log Calibration Report								
Serial Number:			10013454					
Tool Model:			UW_RBT_004					
Calibration Casing Diameter:			7.000	in				
Calibration Depth:			75.767	ft				

Master Calibration, performed Fri Sep 04 08:11:49 2015:							
	Raw (v)		Calibrated (mv)		Results		
	Zero	Cal	Zero	Cal	Gain	Offset	
3FT	-0.002	0.698	0.800	62.165	87.602	1.007	
5FT	-0.004	0.762	0.800	62.165	80.186	1.094	
S1	-0.002	0.689	0.000	100.000	144.567	0.353	
S2	-0.004	0.691	0.000	100.000	143.982	0.554	
S3	-0.004	0.683	0.000	100.000	145.651	0.533	
S4	-0.004	0.693	0.000	100.000	143.415	0.618	
S5	-0.003	0.698	0.000	100.000	142.823	0.378	
S6	-0.004	0.703	0.000	100.000	141.500	0.523	
S7	-0.003	0.699	0.000	100.000	142.470	0.363	
S8	-0.003	0.702	0.000	100.000	141.819	0.462	

Temperature Calibration Report								
Serial Number:			10025097					
Tool Model:			UW_PRT_016					
Performed:			Wed Feb 11 13:44:44 2015					
Point #		Reading		Reference				

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

Gamma Ray Calibration Report				
Serial Number:	10019371			
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	Noble Energy Inc.
	Well	Gracie LD22-740
	Field	Wildcat
	County	Weld
	State	Colorado