



Multifinger Imaging Caliper
Gamma Ray
Casing Collar Log

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

Well Cowboy 21-7HZ

Field Wattenberg

County Weld State Colorado

Location: API #: 05-123-47099

SEC 21 TWP 2N RGE 67W

Permanent Datum Ground Level Elevation 5041'

Log Measured From Kelly Bushing 26 FT

Drilling Measured From Kelly Bushing

Other Services
JB/GR
RBP

Elevation

K.B. 5067'
D.F. ---
G.L. 5041'

Company Kerr-McGee Oil & Gas Onshore, L.P.
Well Cowboy 21-7HZ
Field Wattenberg
County Weld
State Colorado

Date	08-NOV-2018	One		
Run Number		21554 FT		
Depth Driller		7260 FT		
Depth Logger		7255 FT		
Bottom Logged Interval		Surface		
Top Log Interval		---		
Open Hole Size		Water		
Type Fluid		8.34 lb/gal		
Density / Viscosity		222°F		
Max. Recorded Temp.		---		
Estimated Cement Top		ROA		
Time Well Ready		11:50		
Time Logger on Bottom		HD-325		
Equipment Number		Platteville, CO		
Location		J. Morrison		
Recorded By		Kyle Carver		
Witnessed By				
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	5 1/2	17	P-110 HC	Surface
Intermediate #2				
Inner				

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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 26 FT
Adjusted 0 FT to correlate with Kelly Bushing
Gauge Ring/Junk Basket ran to 7894 FT
Retrievable Bridge Plug set at 7280 FT
Casing Tally reported Maker Joint at 7231 FT was not logged due to RBP set depth
Log ran with 0 PSI Surface Induced Pressure
Logging tools were clean and free of debris upon completion of operations
Thank you for choosing Reliance Oilfield Services, LLC!!

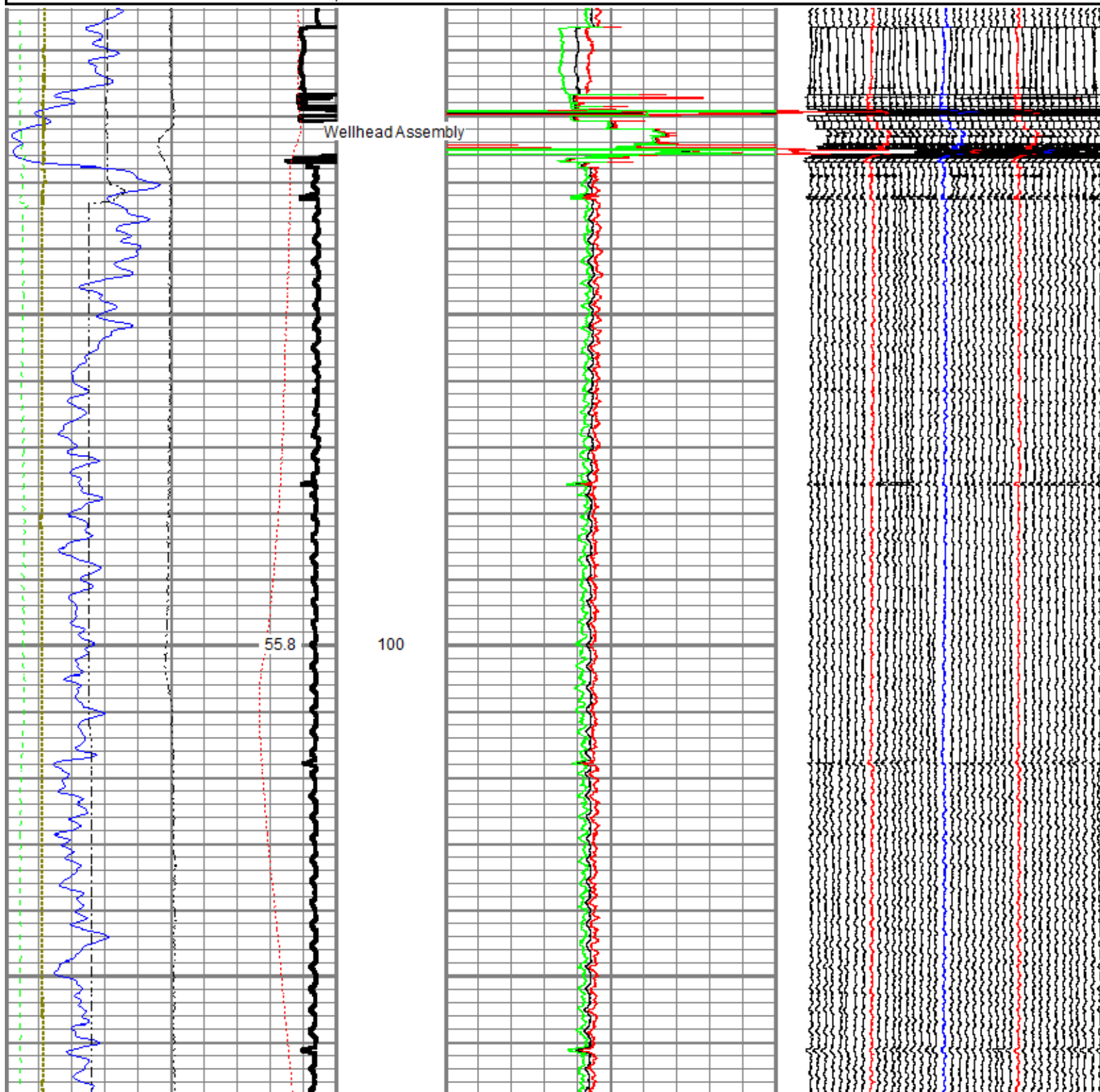
Main Pass

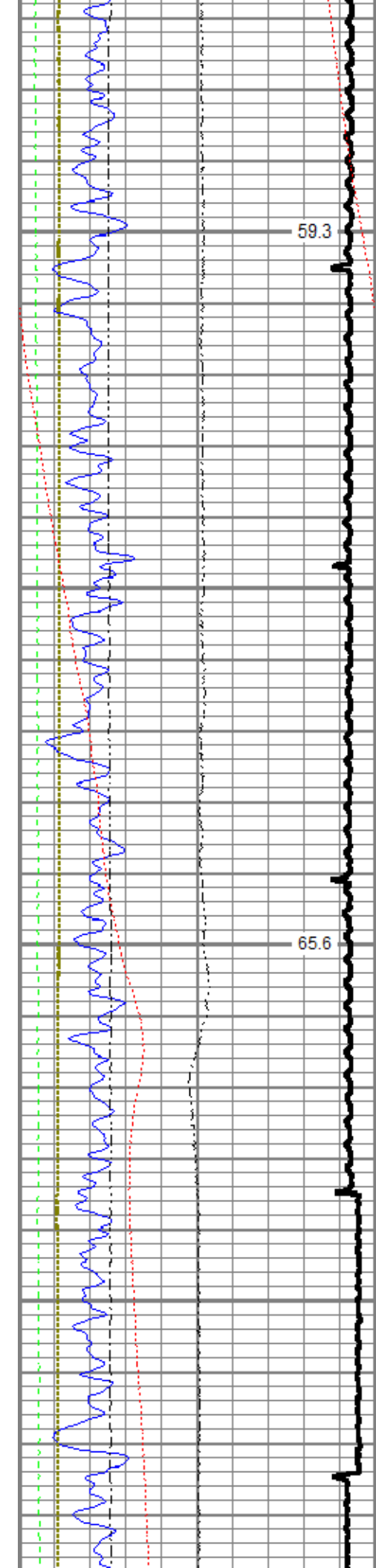


Database File	01_anadarko\cowboy 21-7hz\0512347099_anadarko_cowboy 21-7hz_mit_11-08-18.db
Dataset Pathname	Main
Presentation Format	ros_55mit40sx
Dataset Creation	Thu Nov 08 12:07:41 2018
Charted by	Depth in Feet scaled 1:240

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

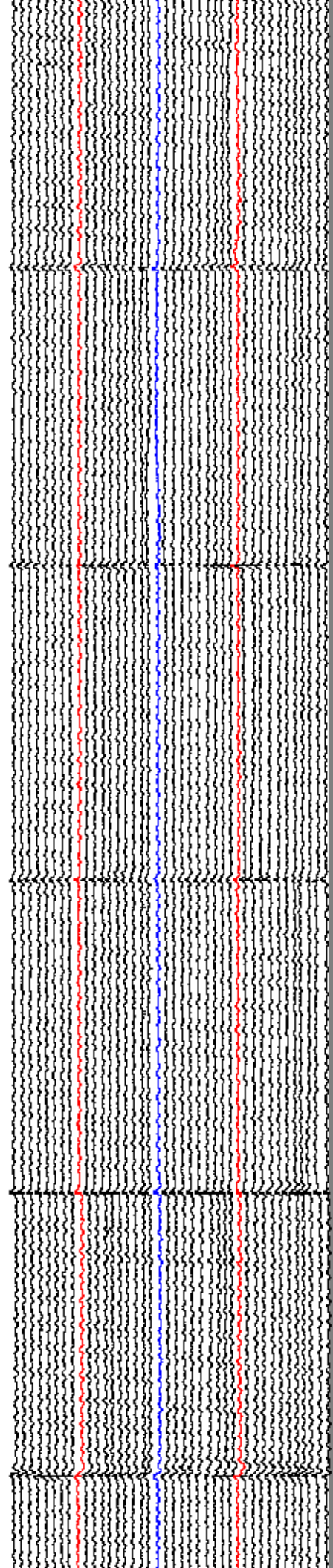
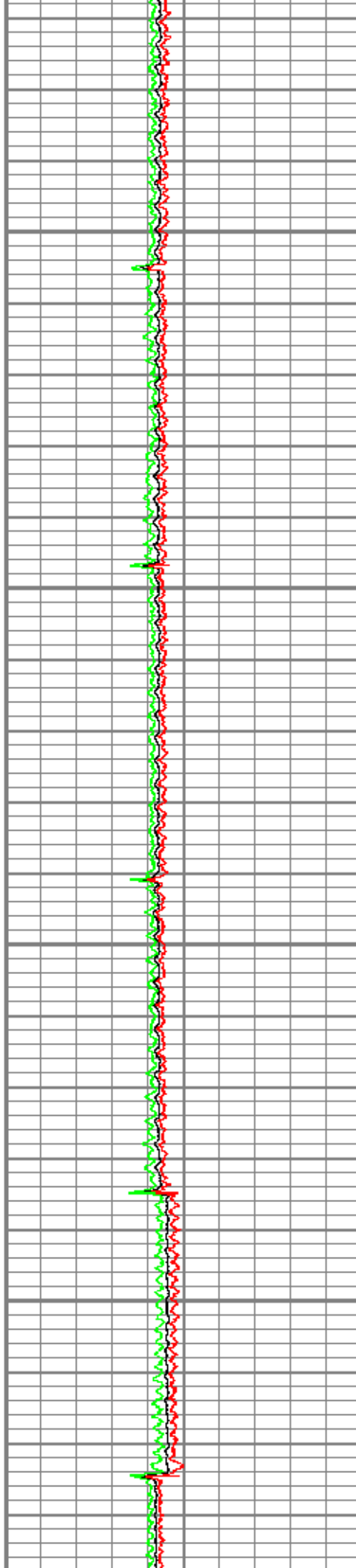
4.5	Average Diameter (in)	5.5	Caliper #10
4.5	Maximum Diameter (in)	5.5	Caliper #20
4.5	Minimum Diameter (in)	5.5	Caliper #30

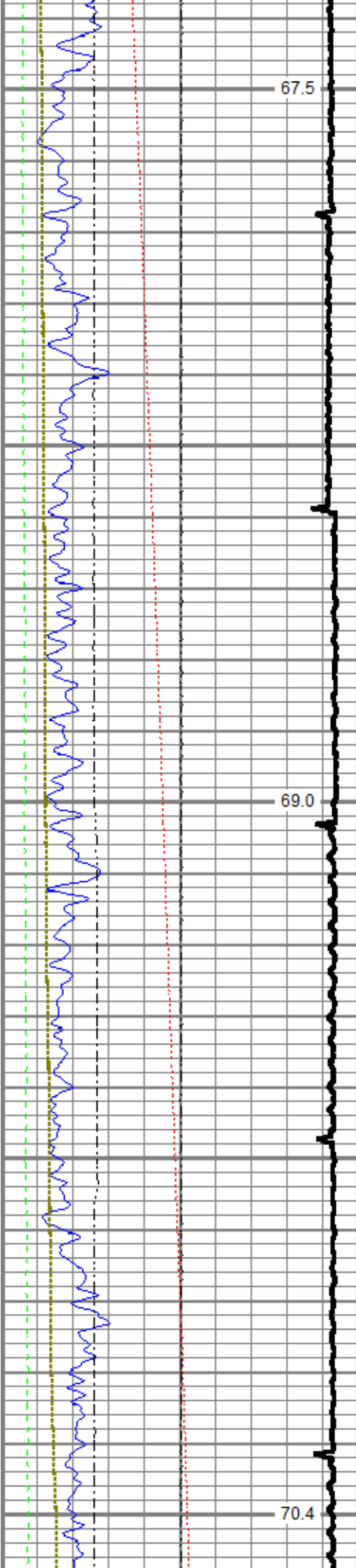




200

300

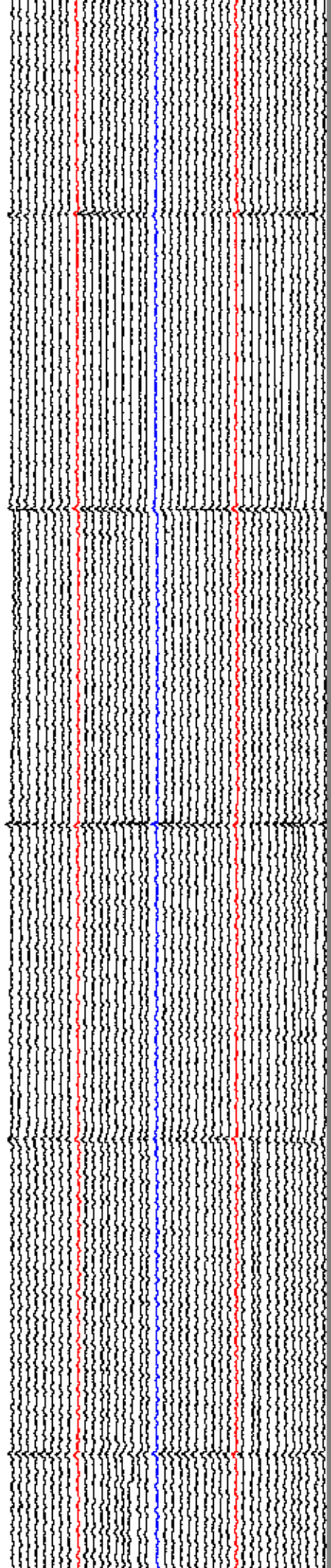
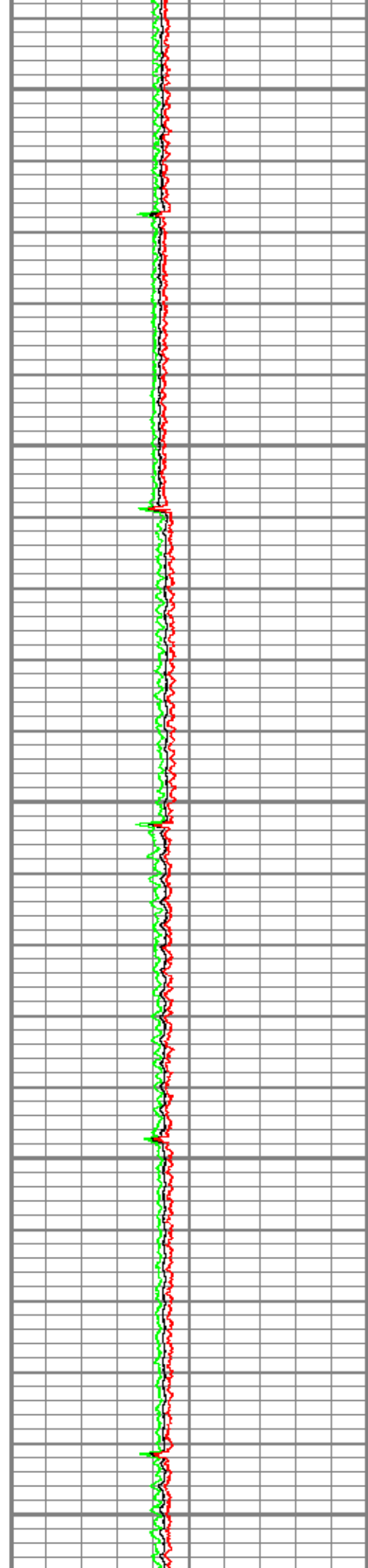


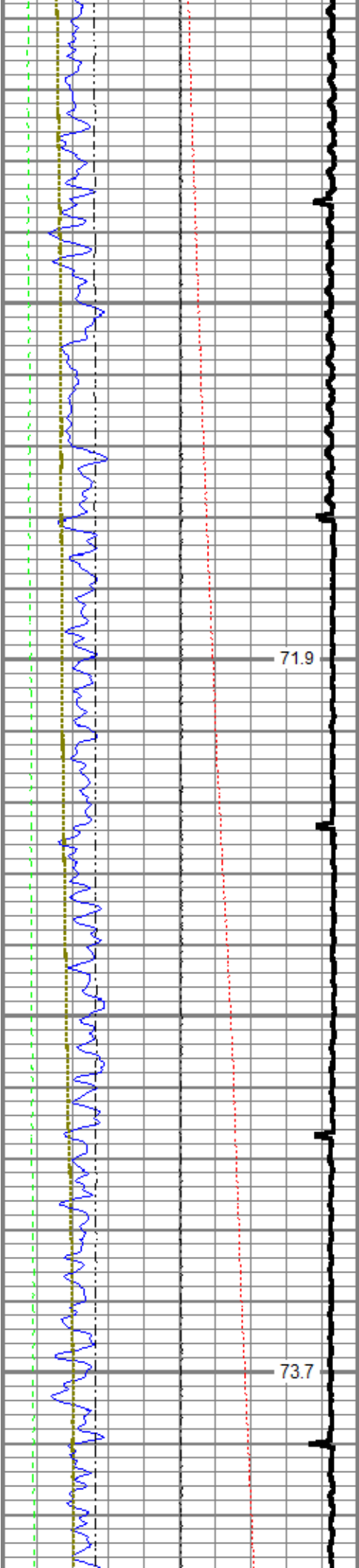


400

500

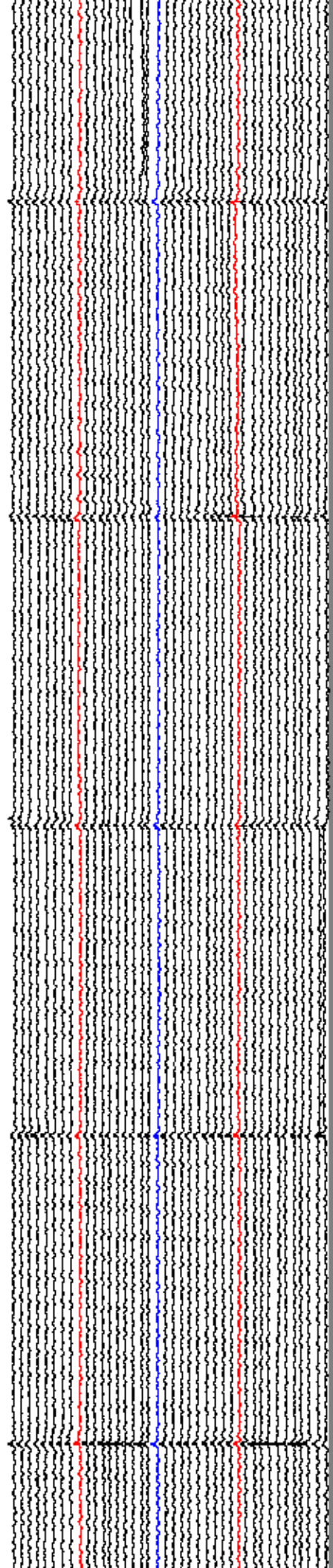
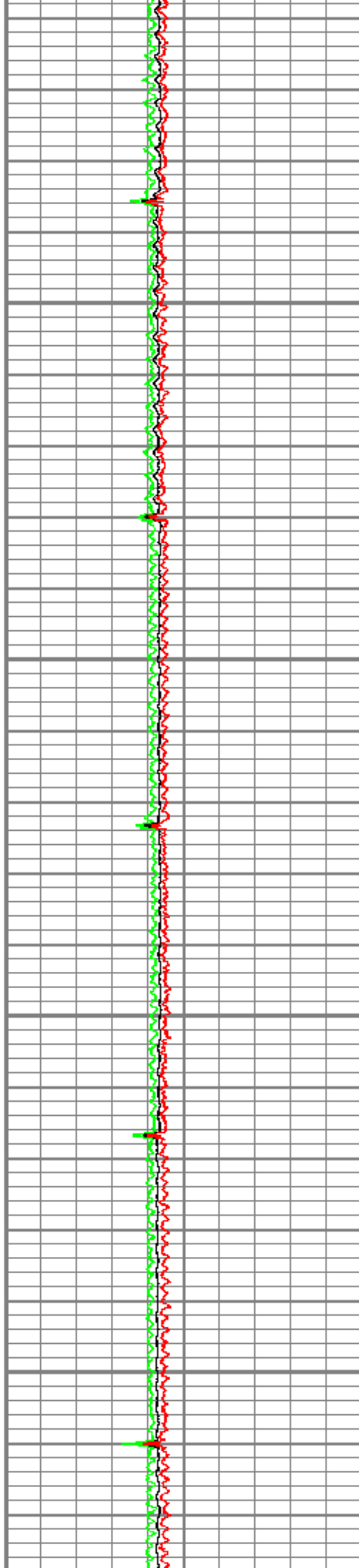
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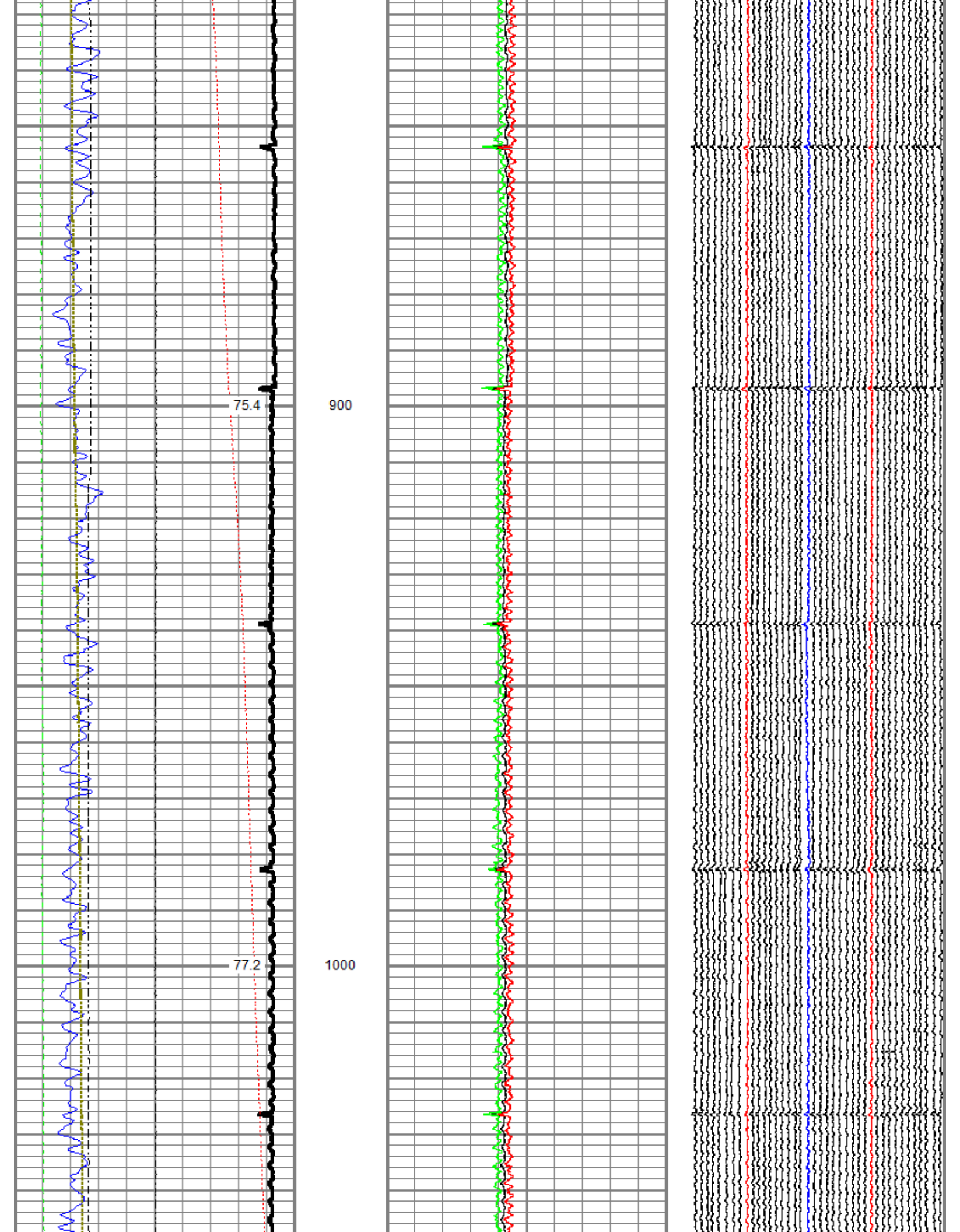


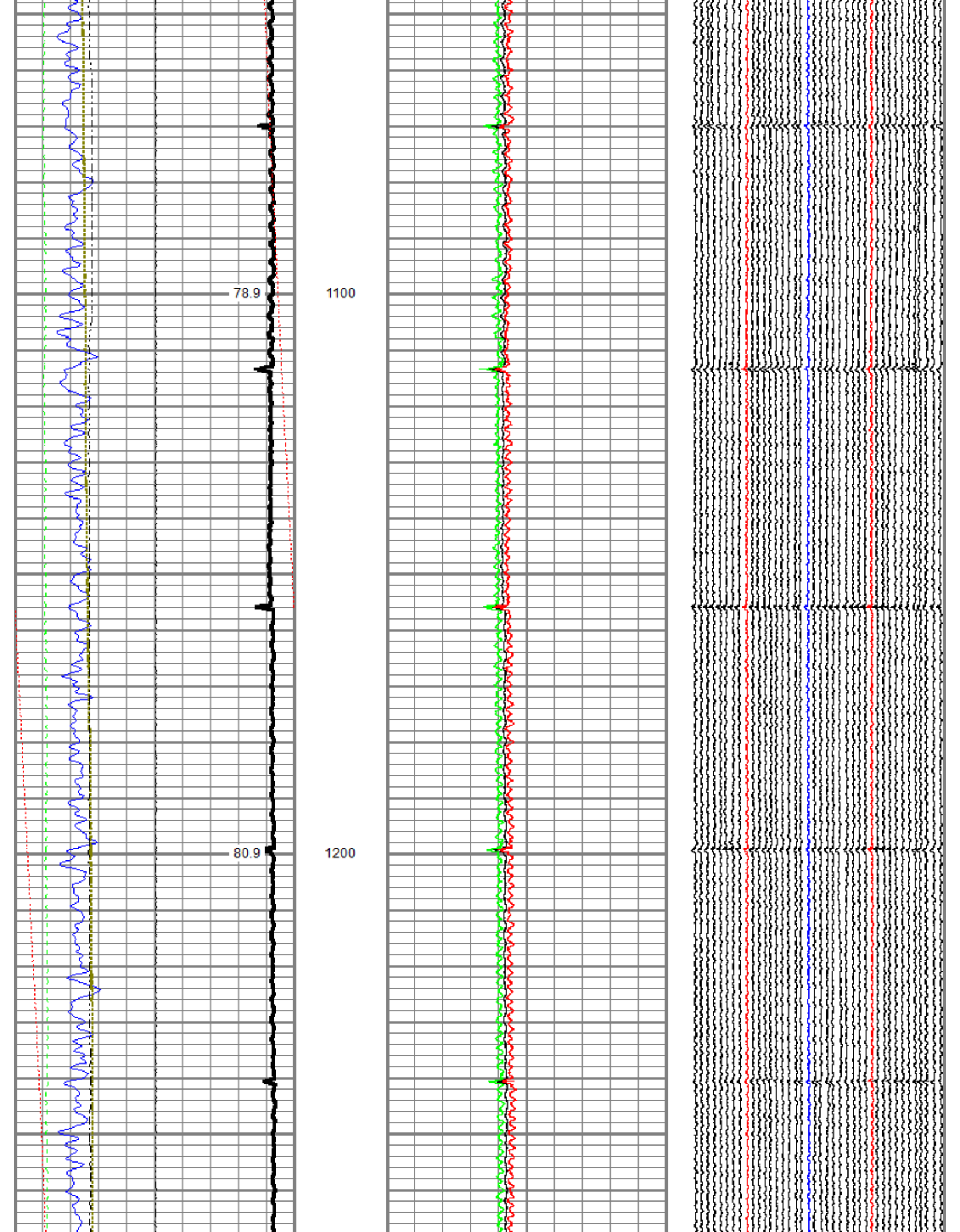


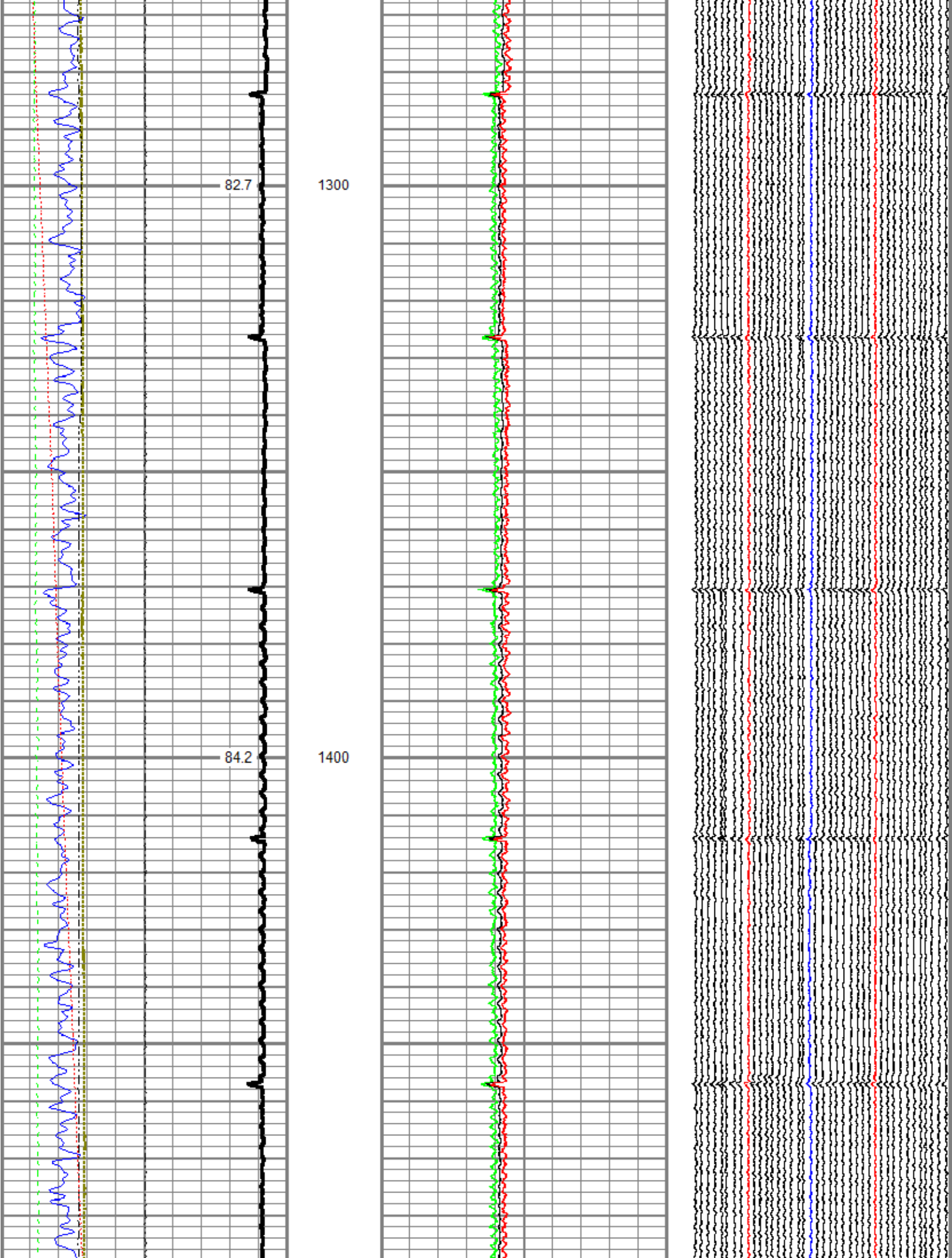
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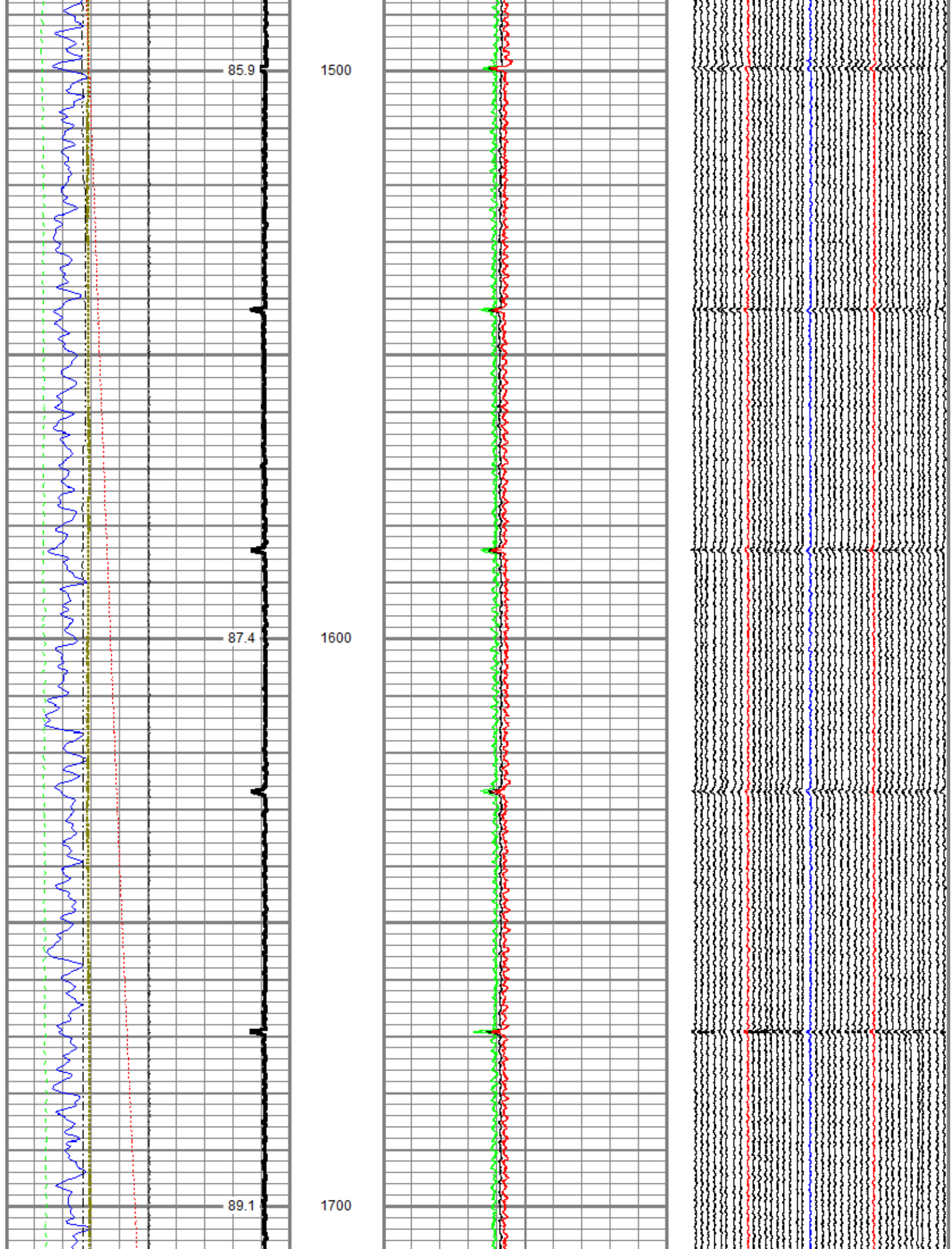
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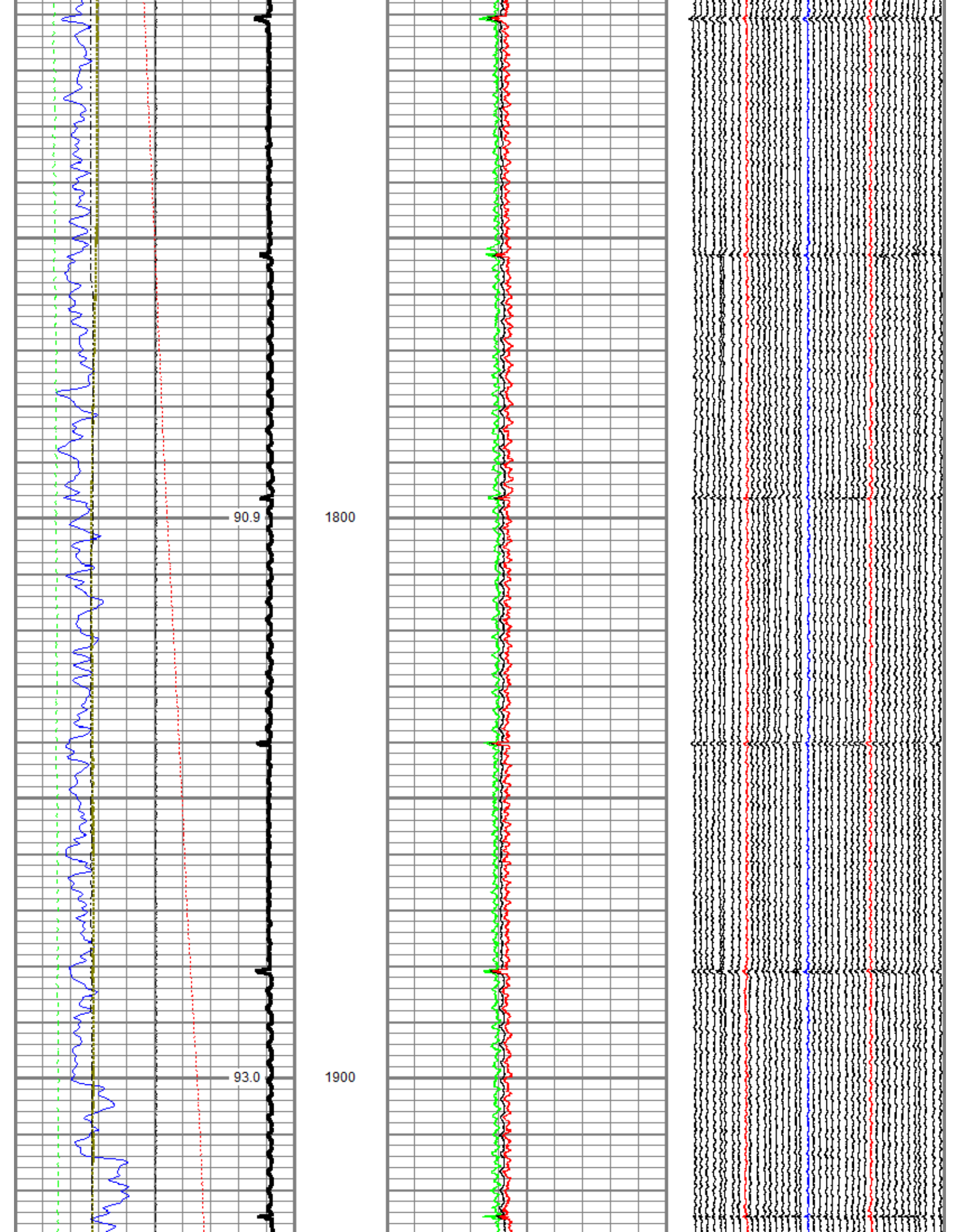


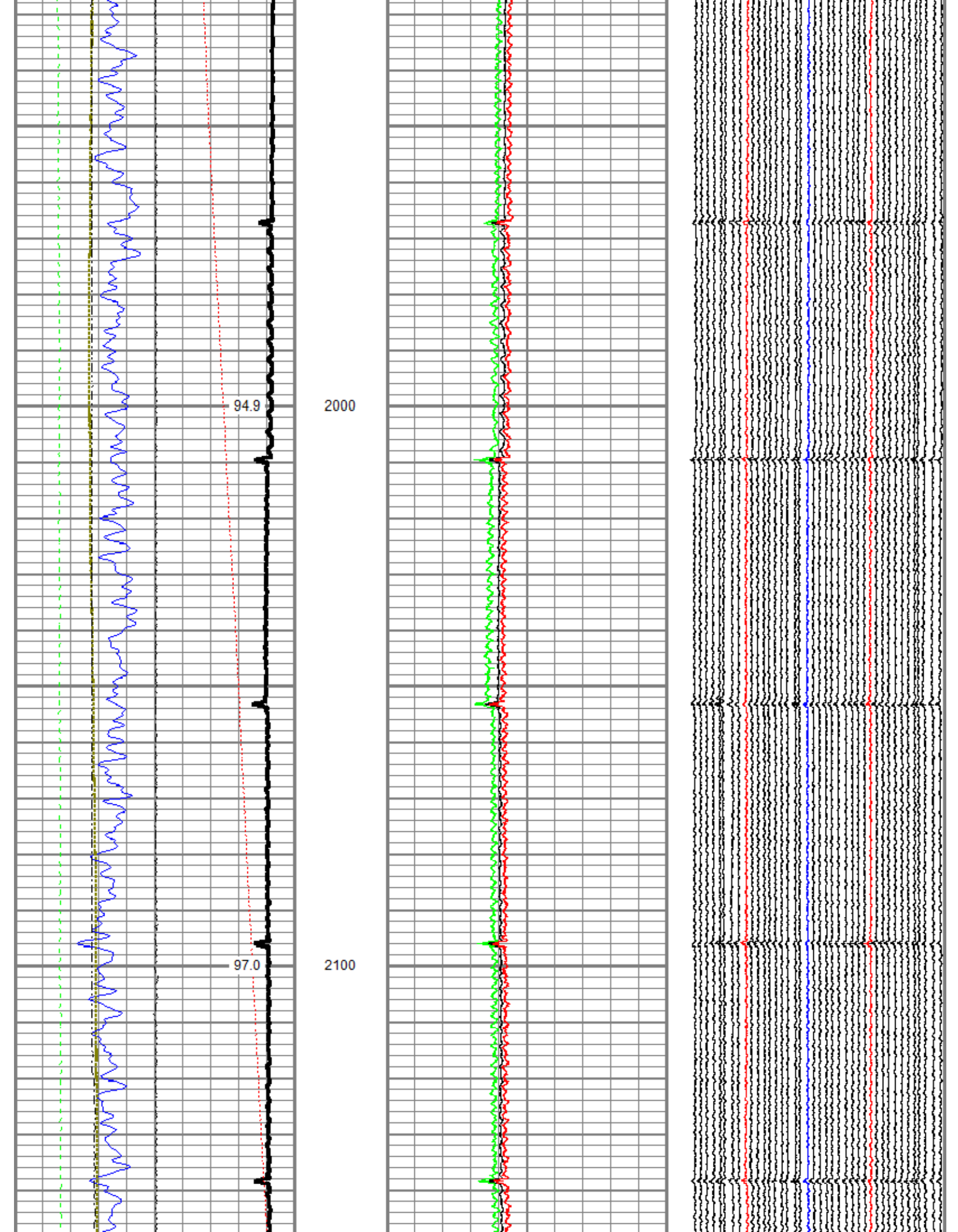


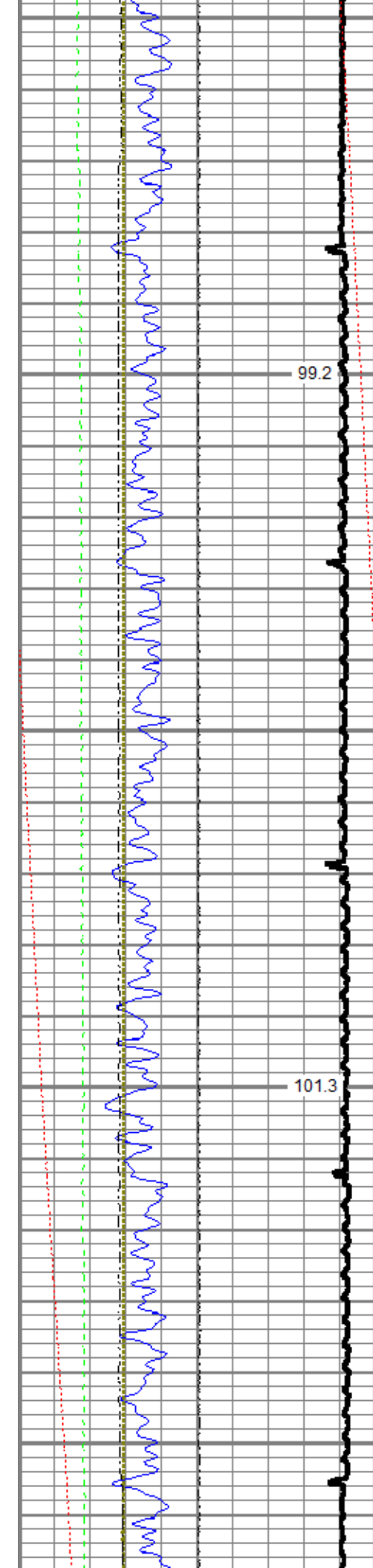






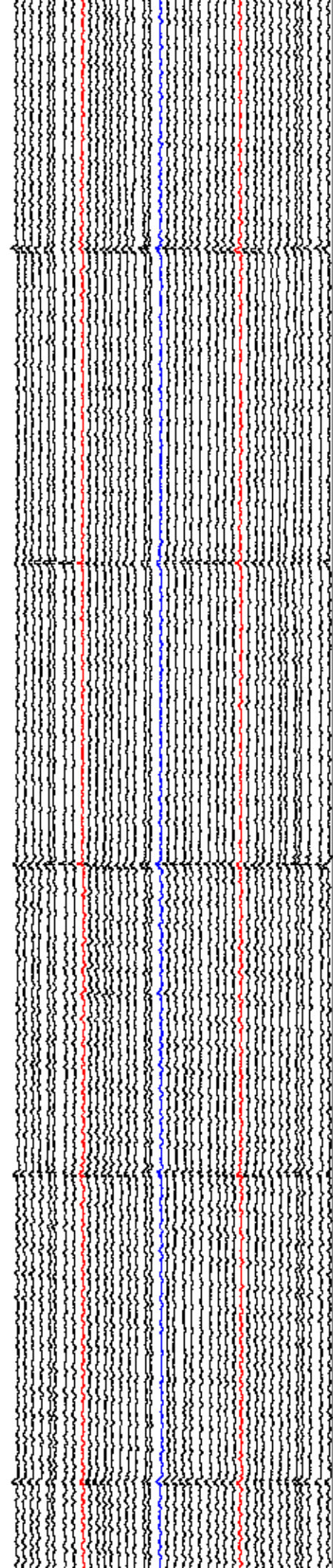
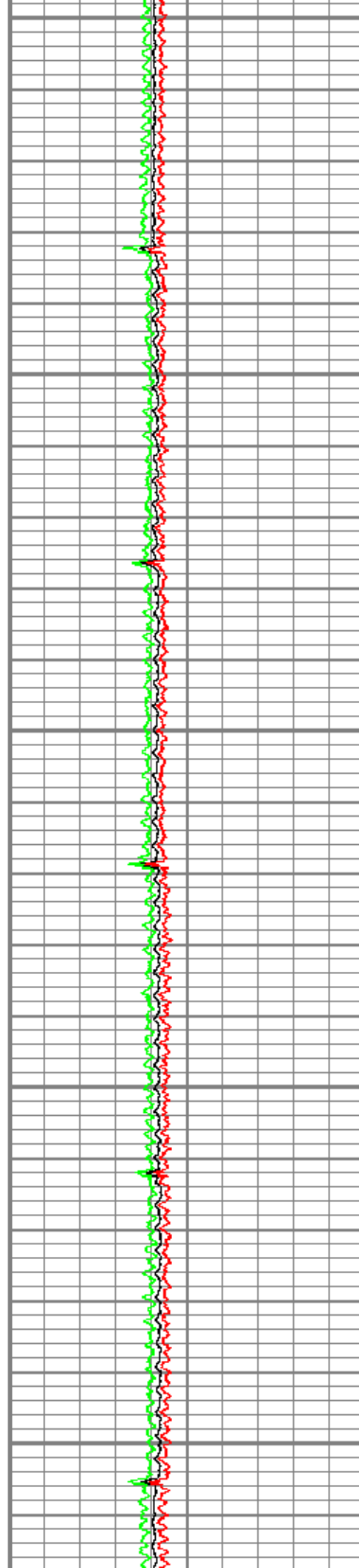


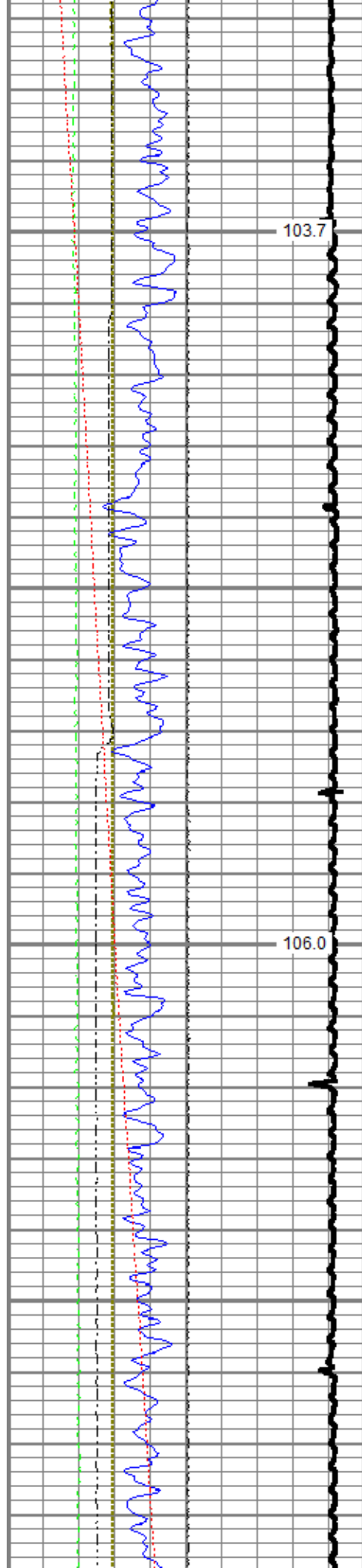




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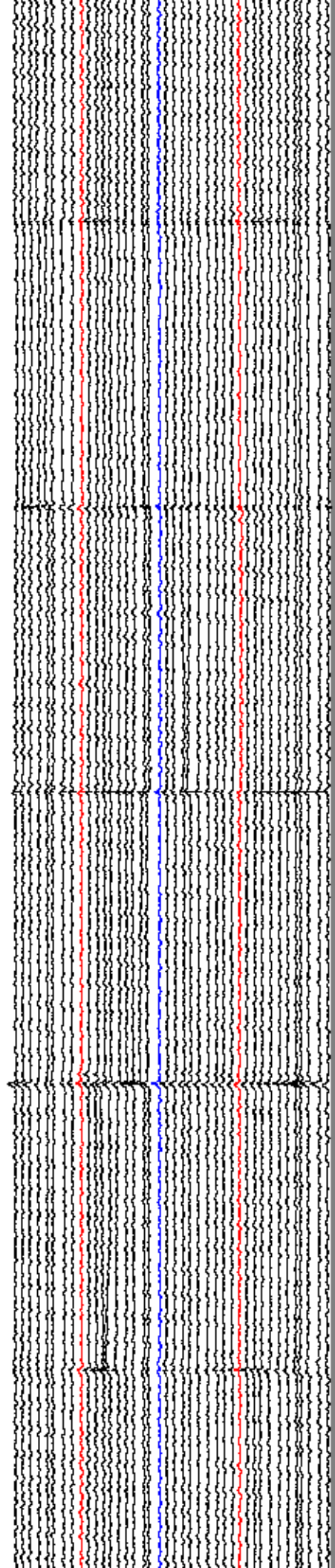
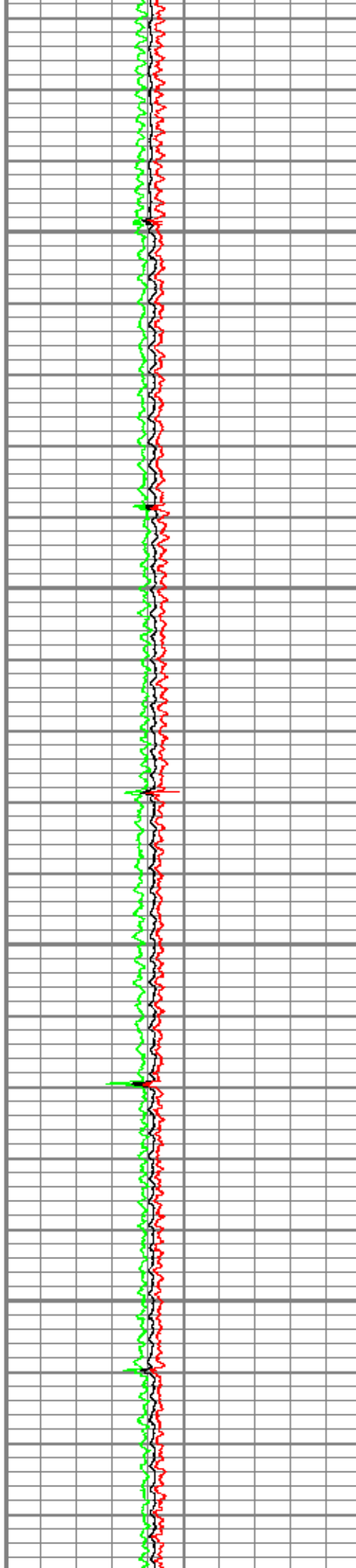
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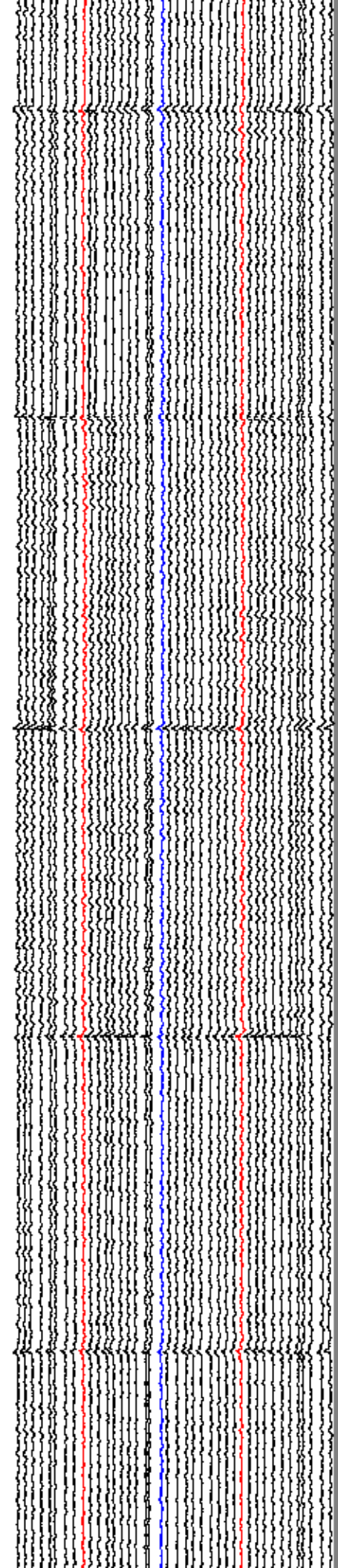
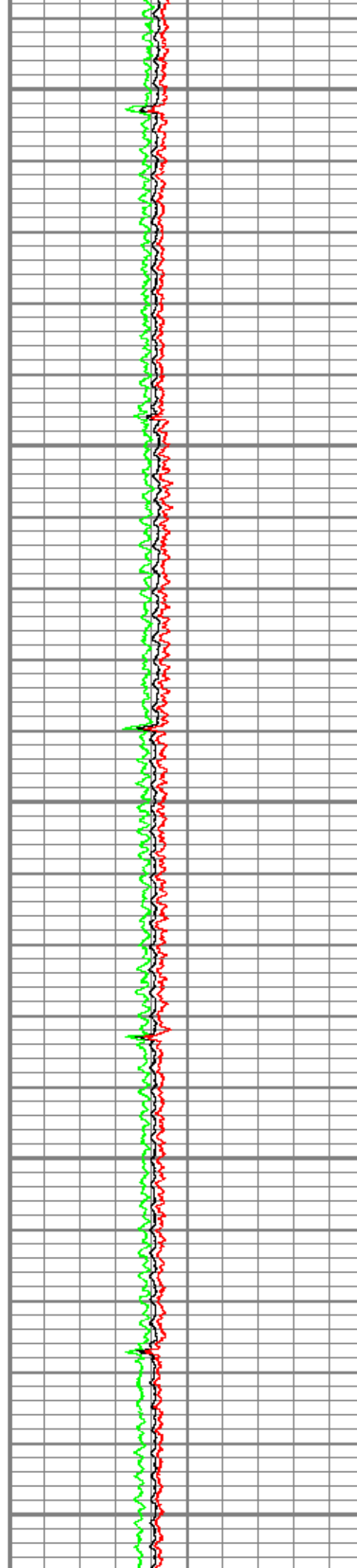
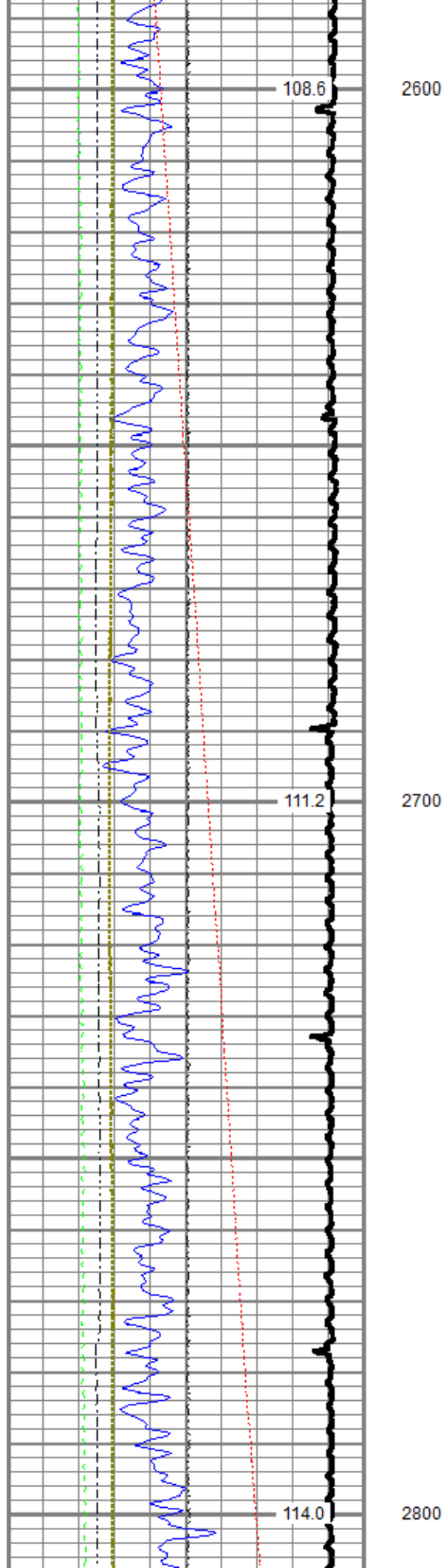


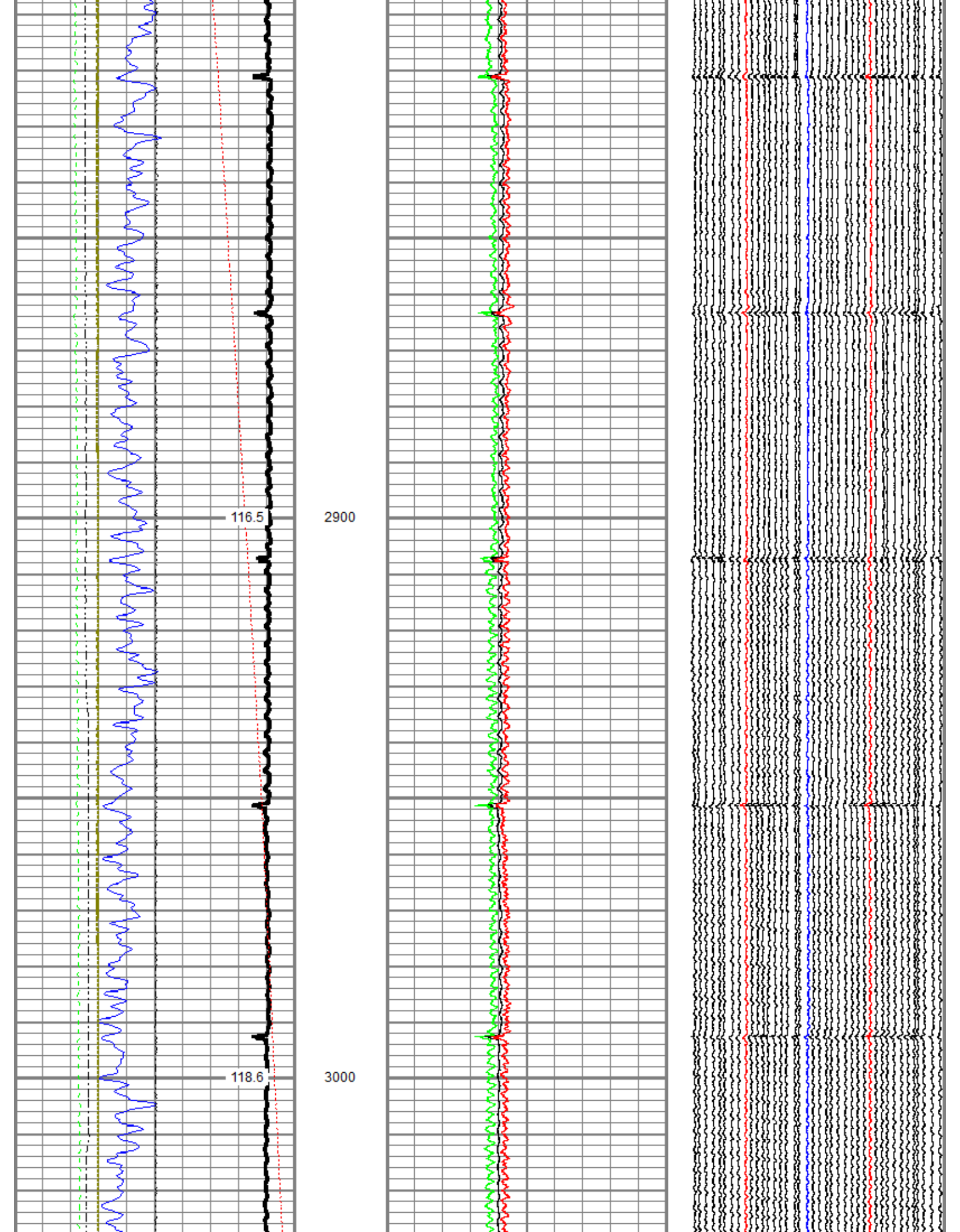


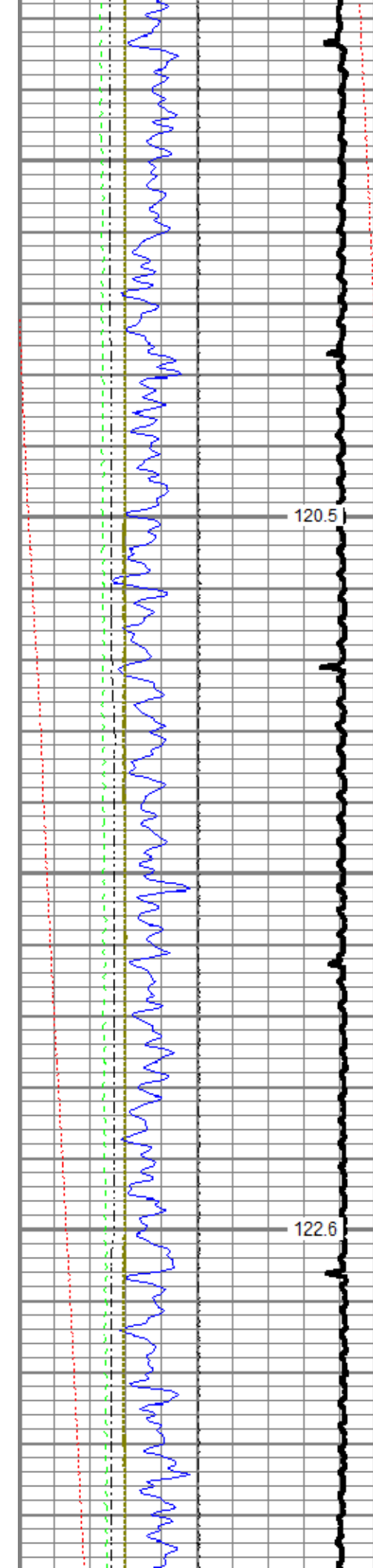
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2500



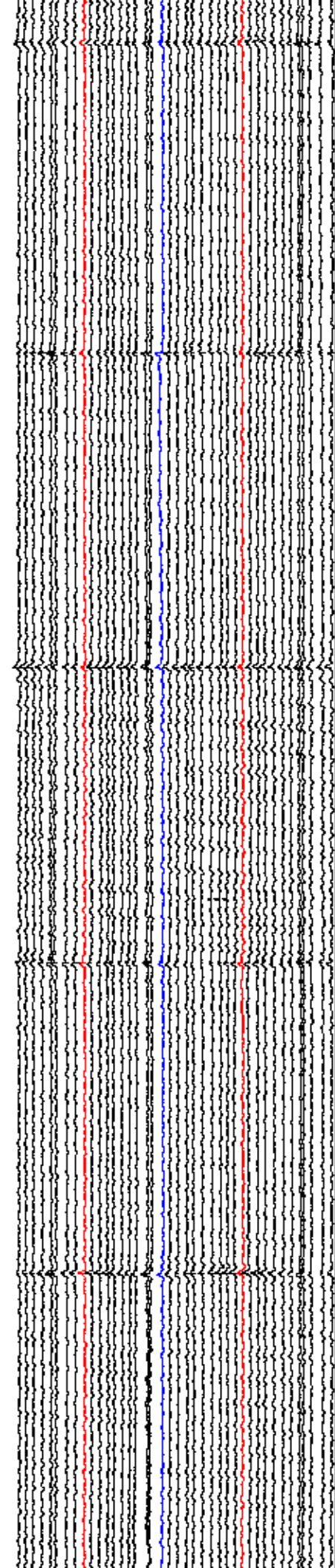
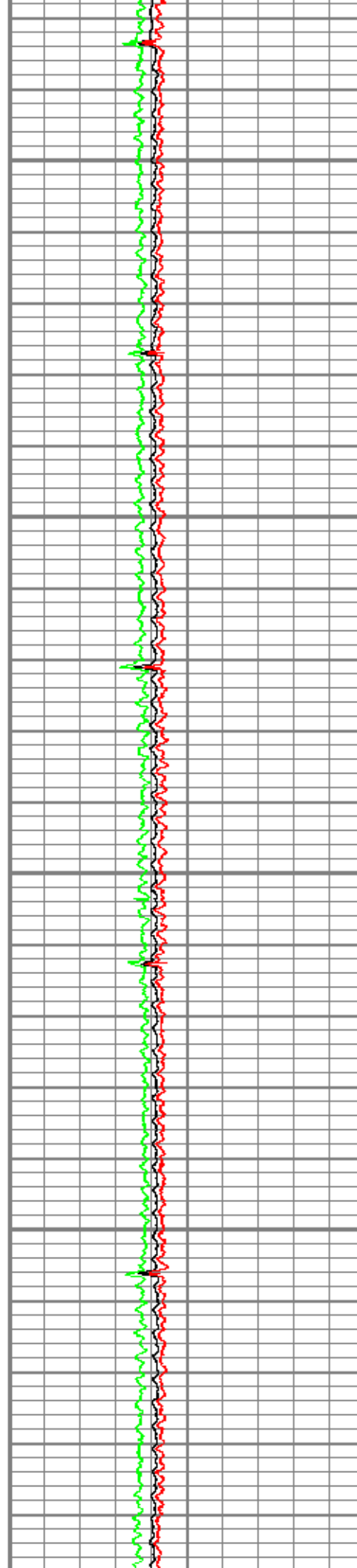


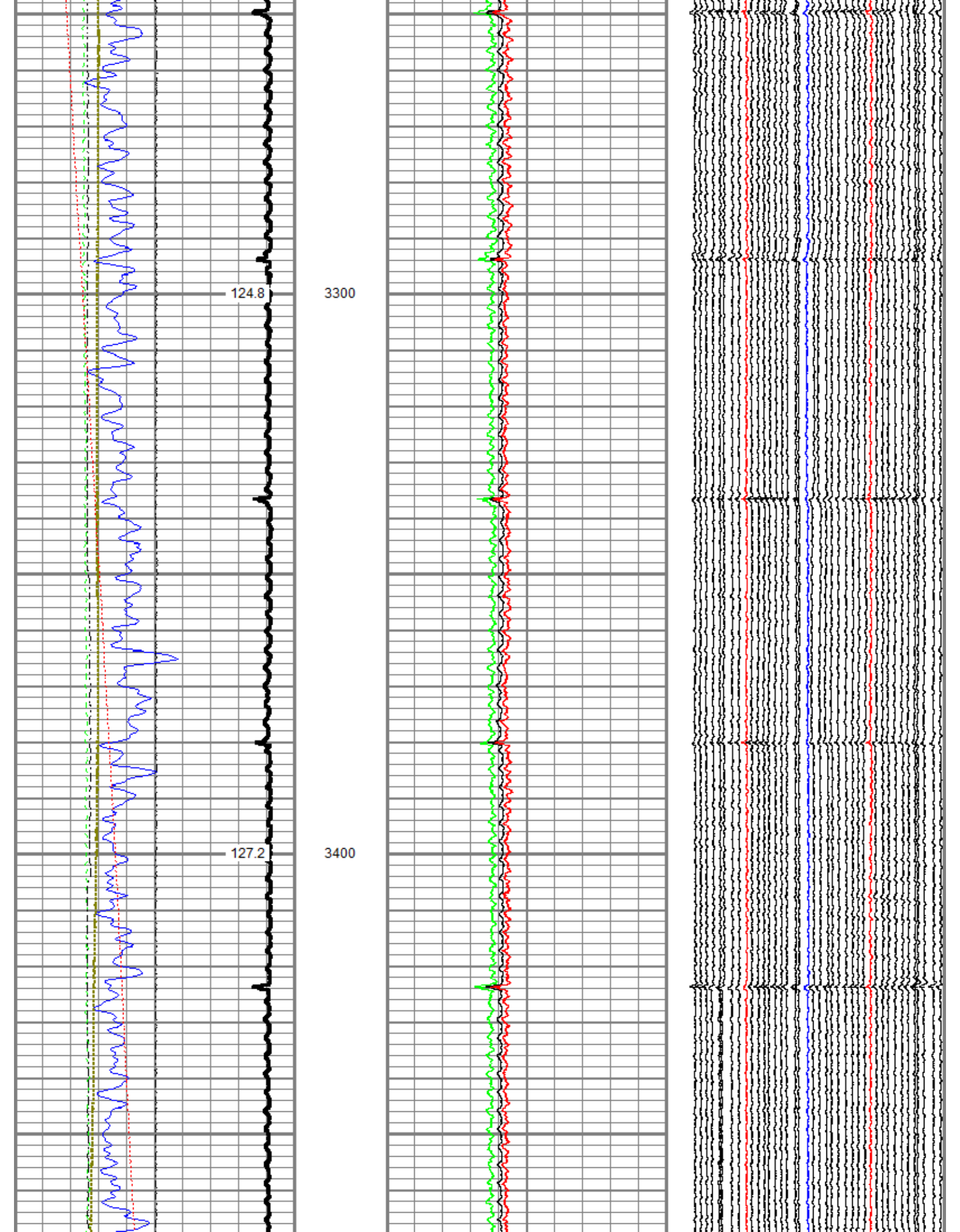


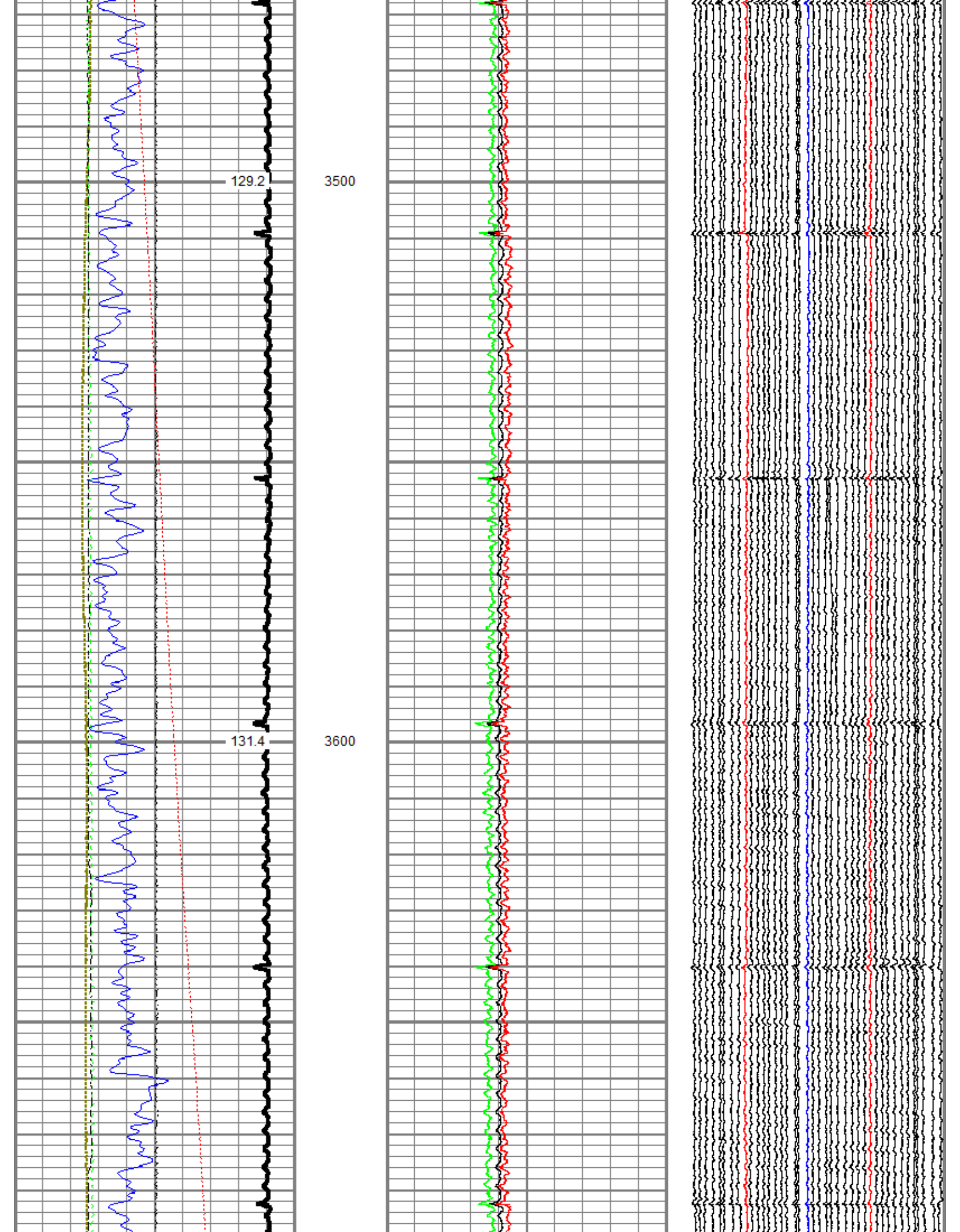


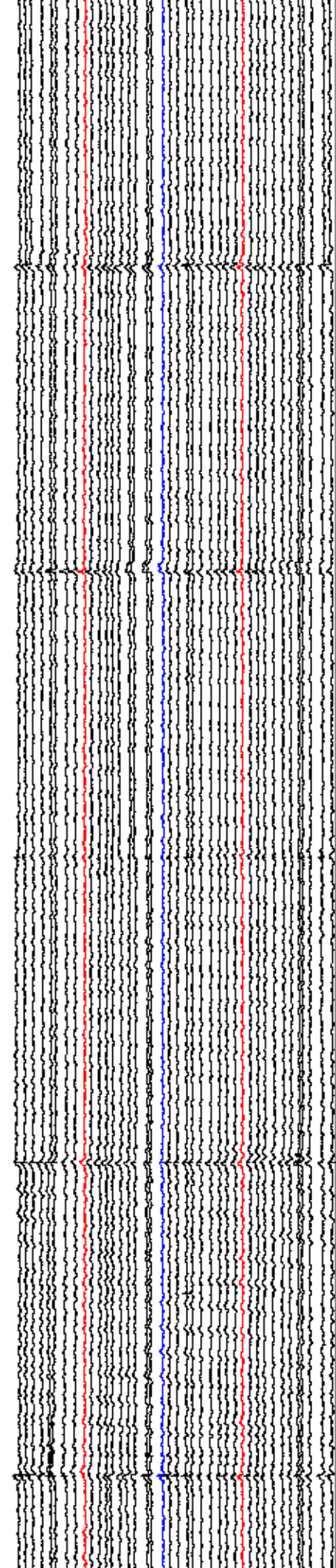
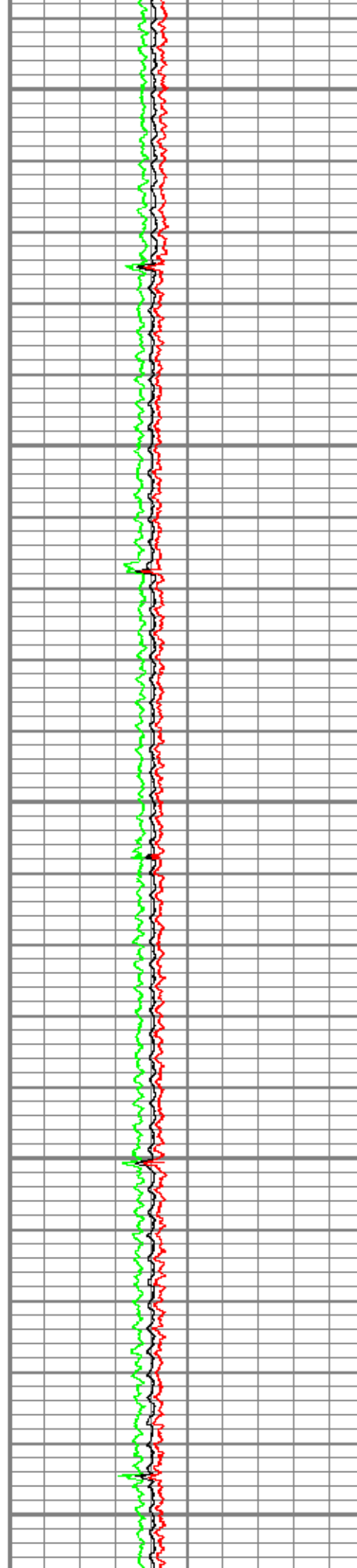
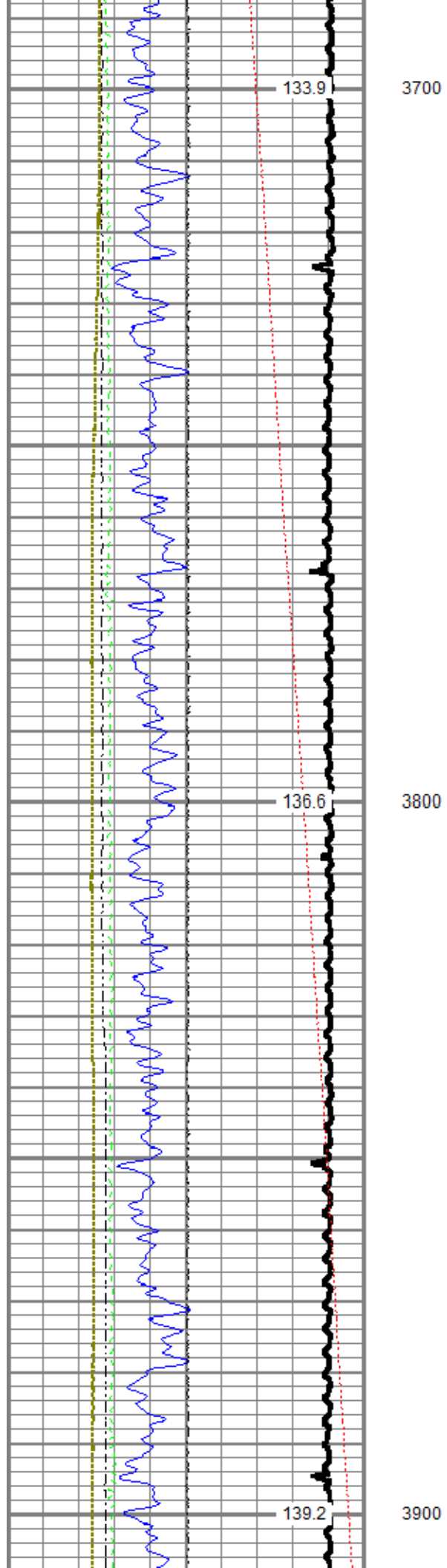
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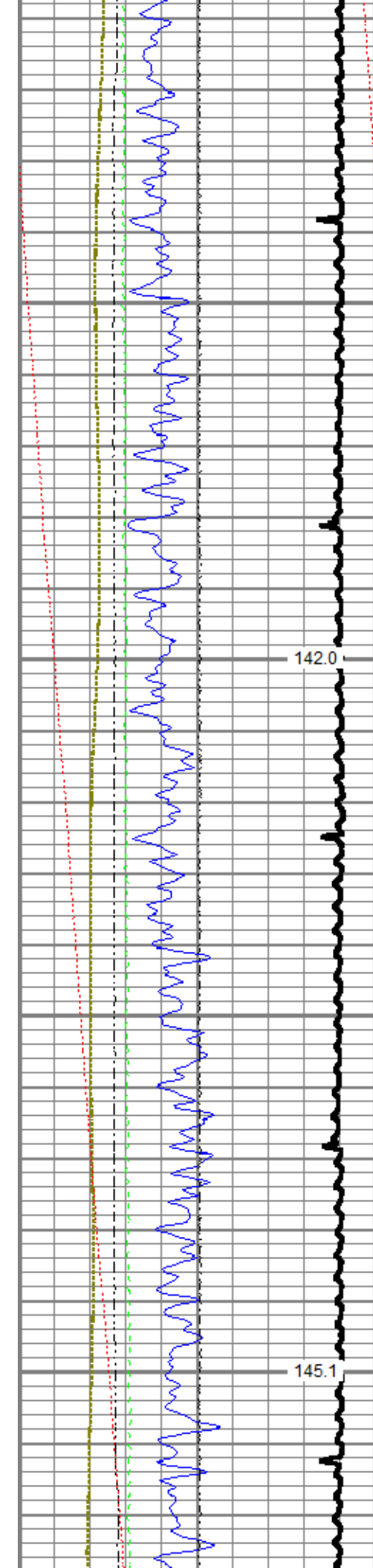
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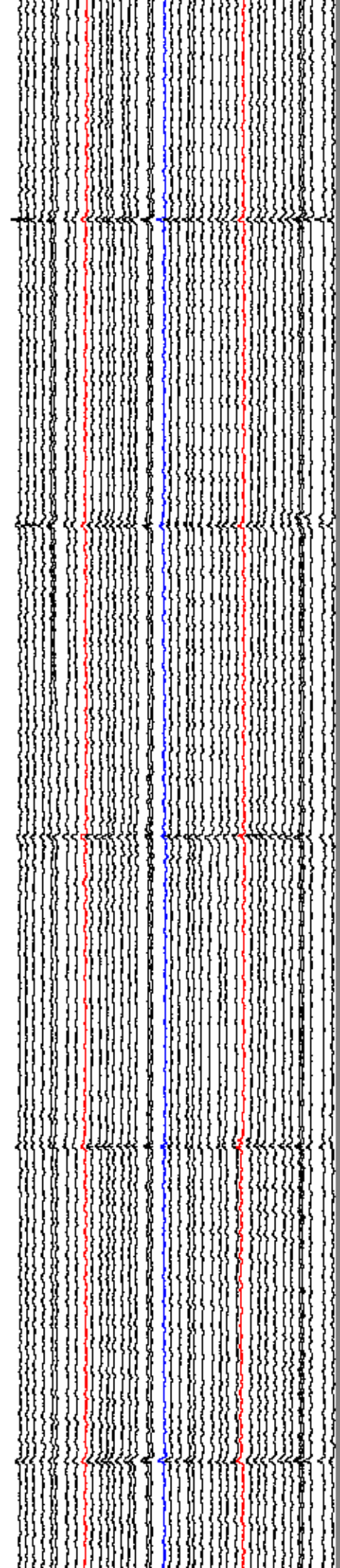
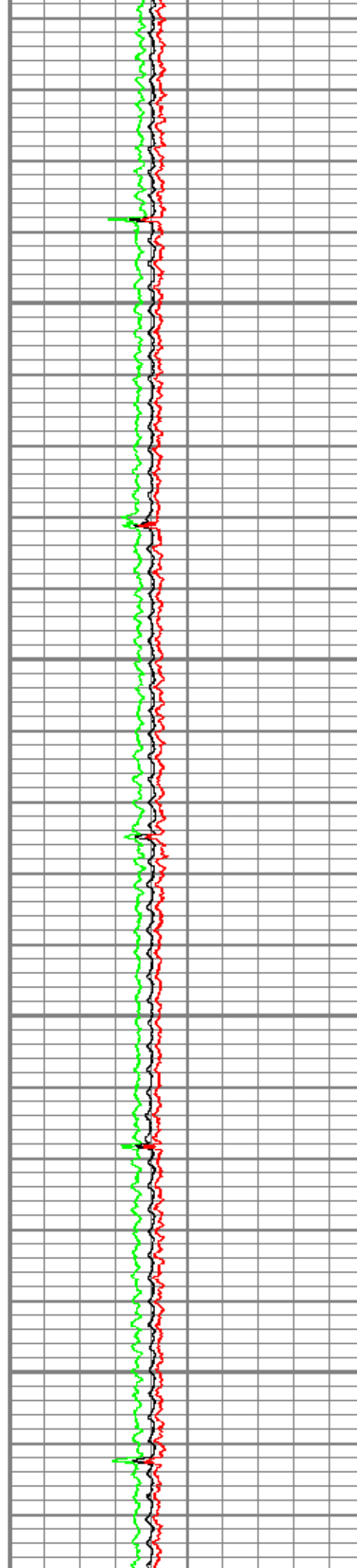


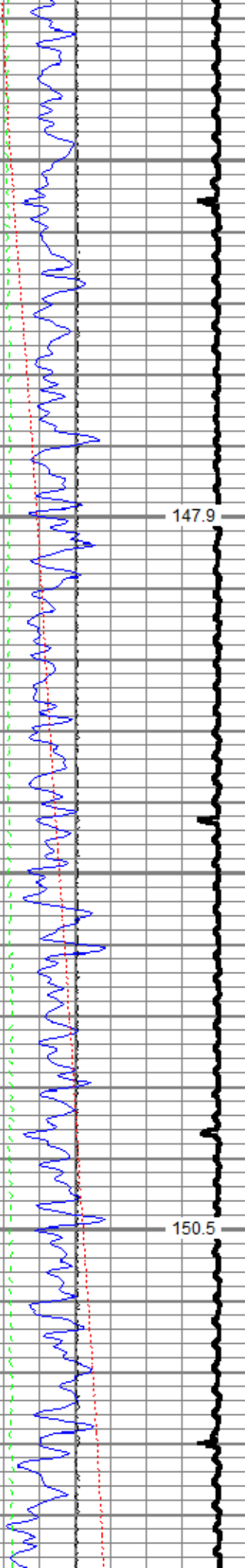




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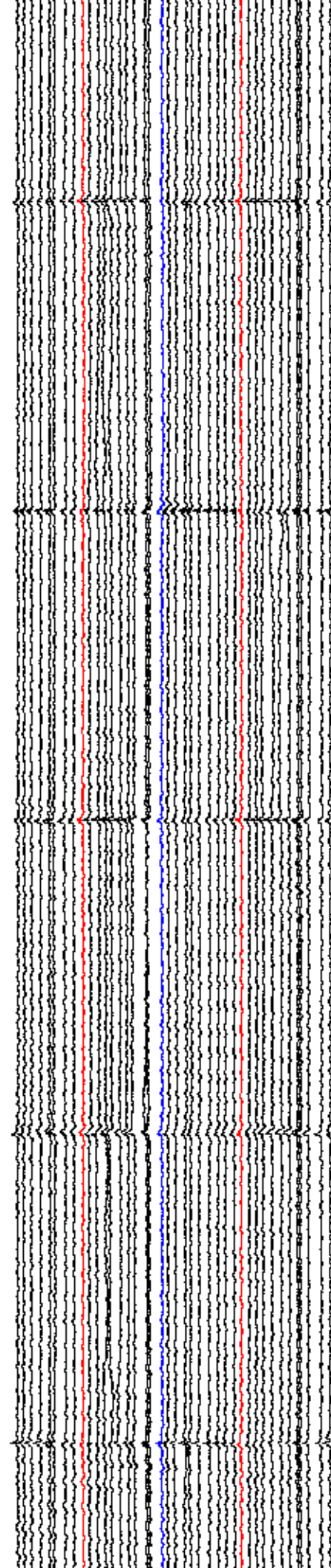
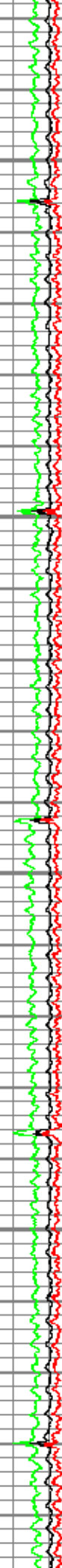
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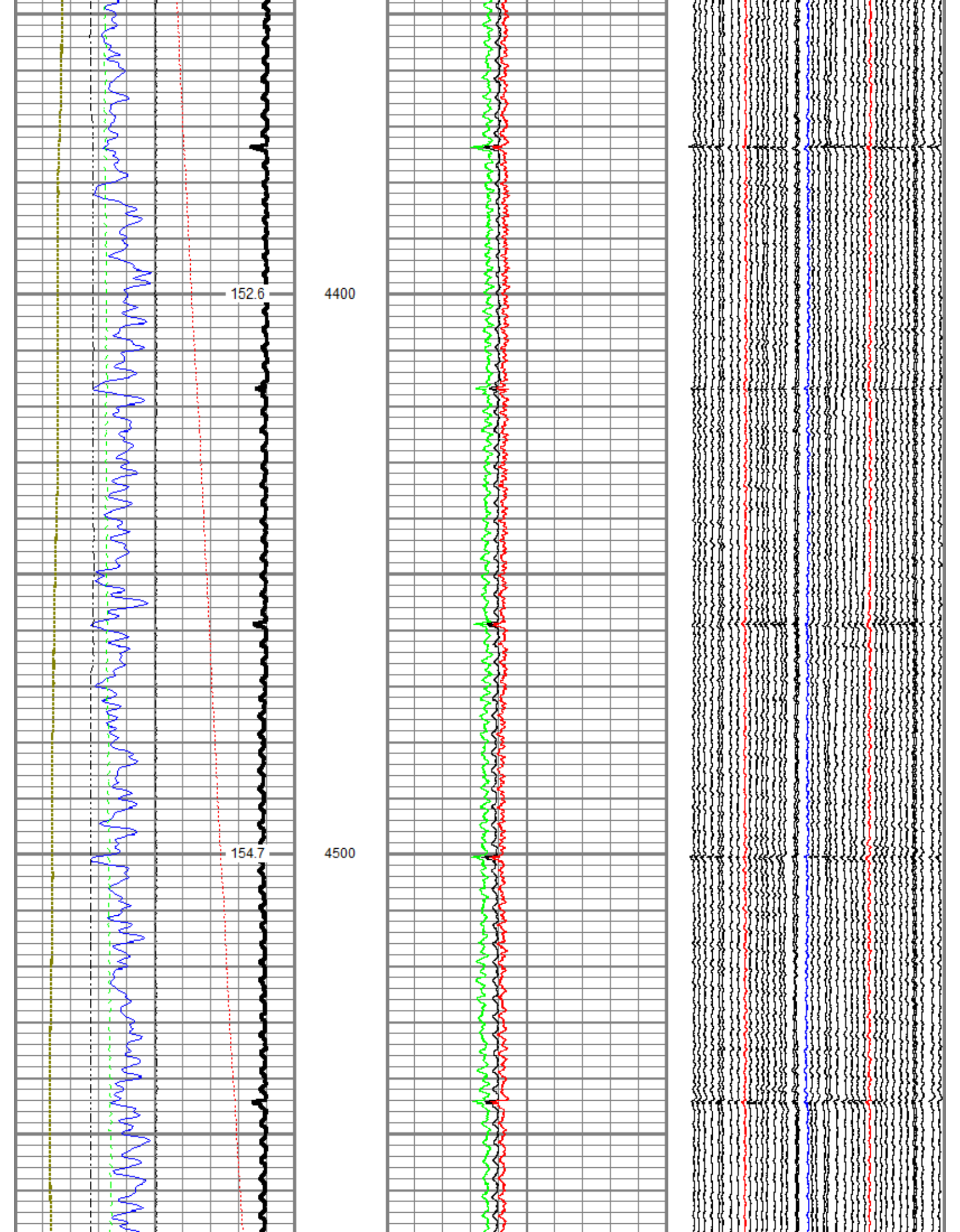


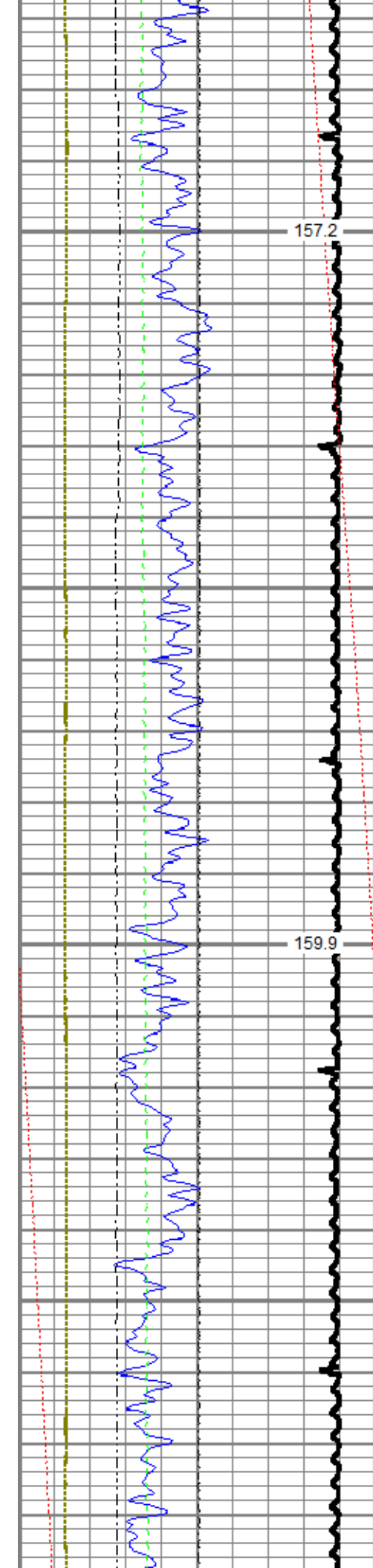


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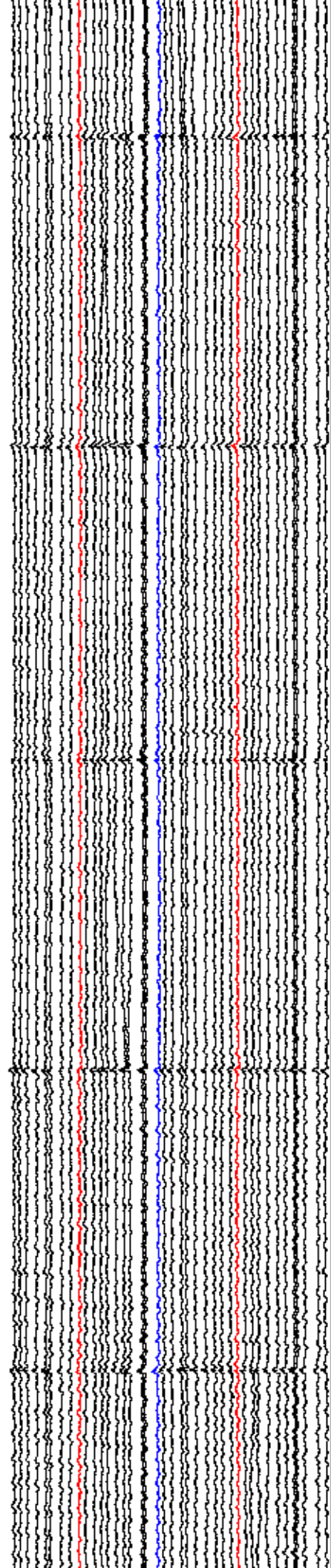
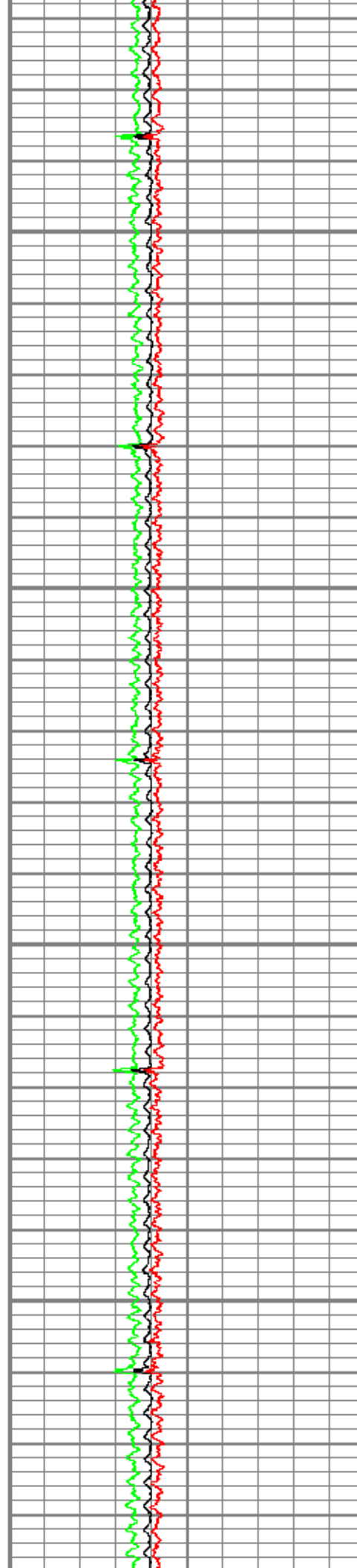


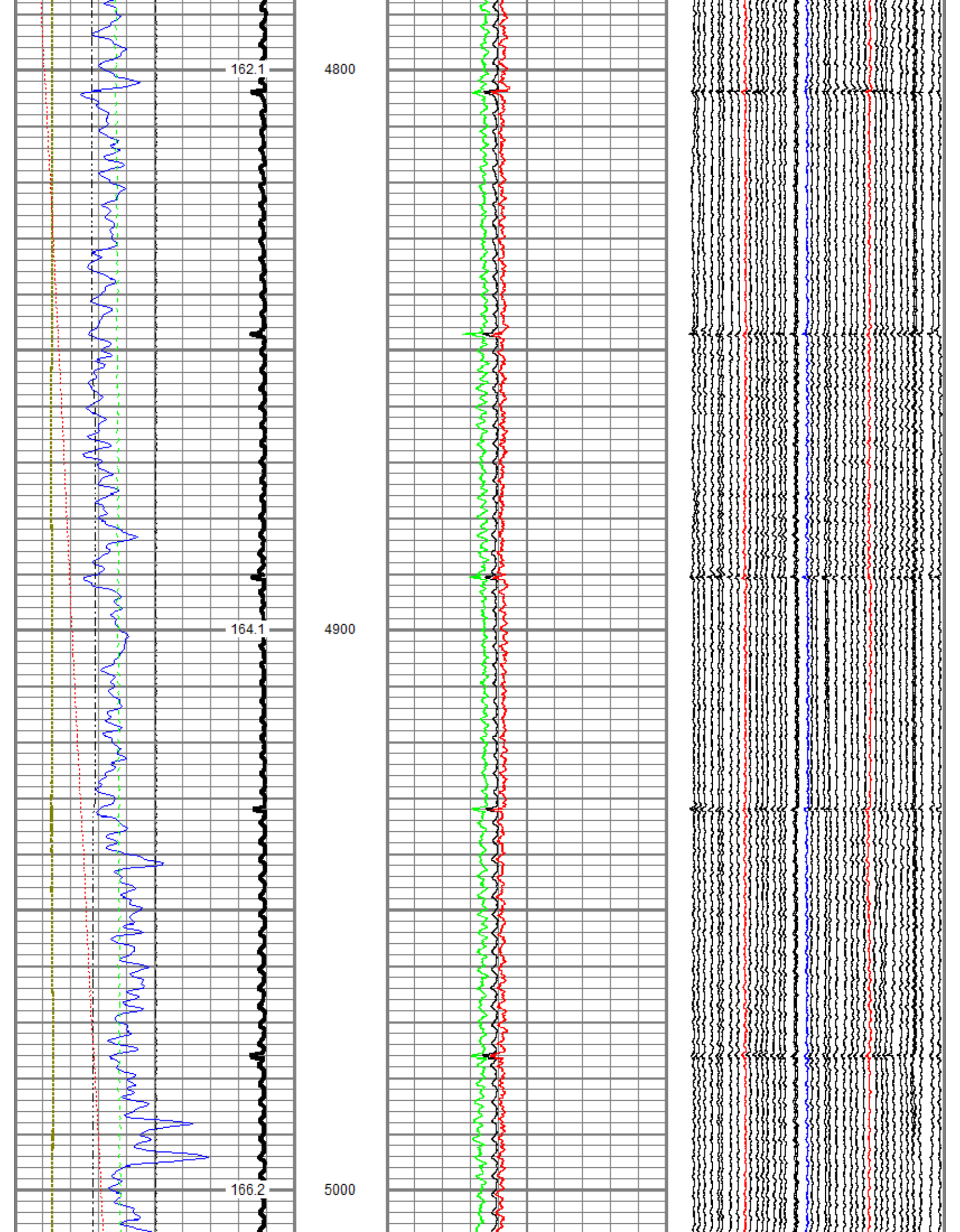


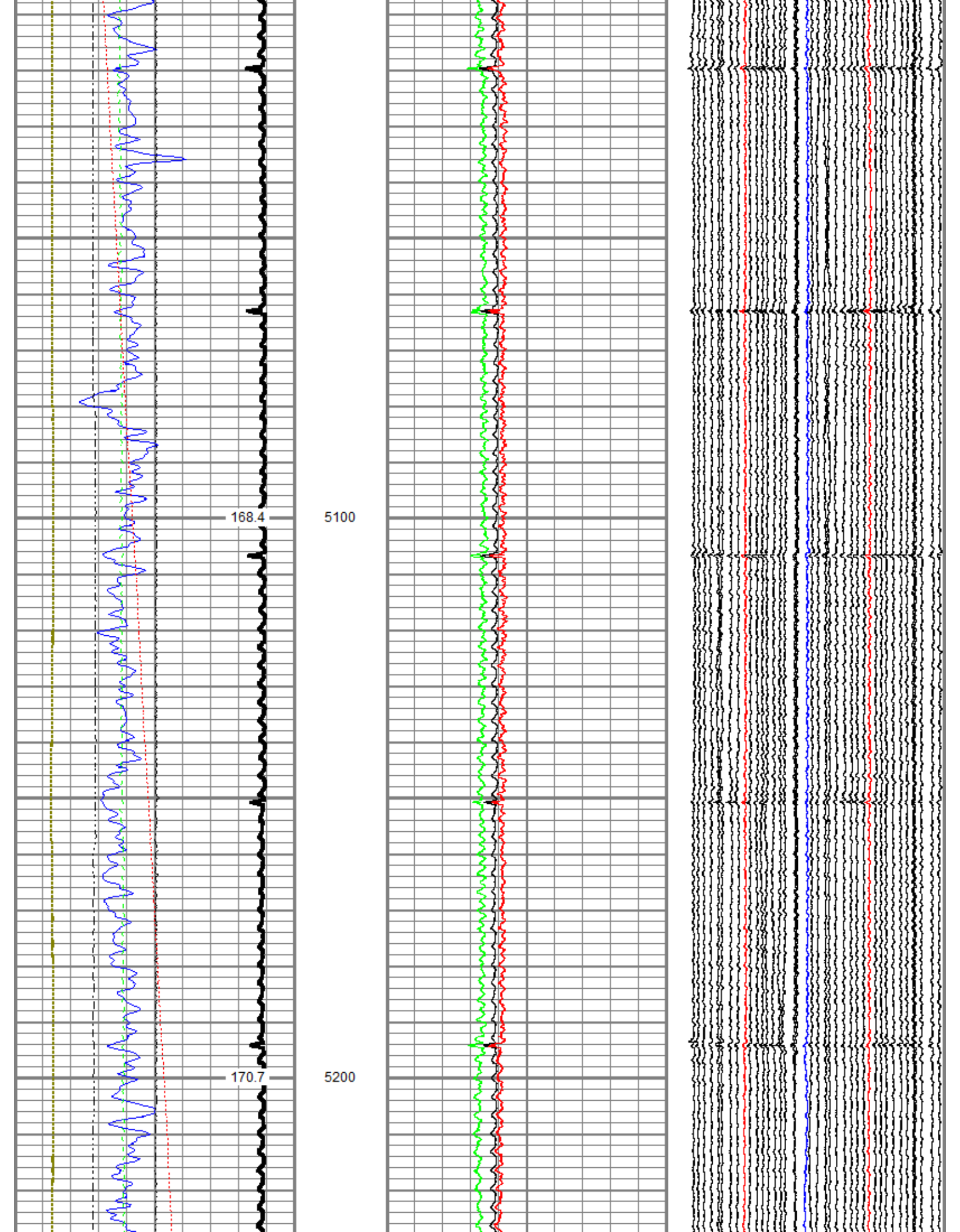


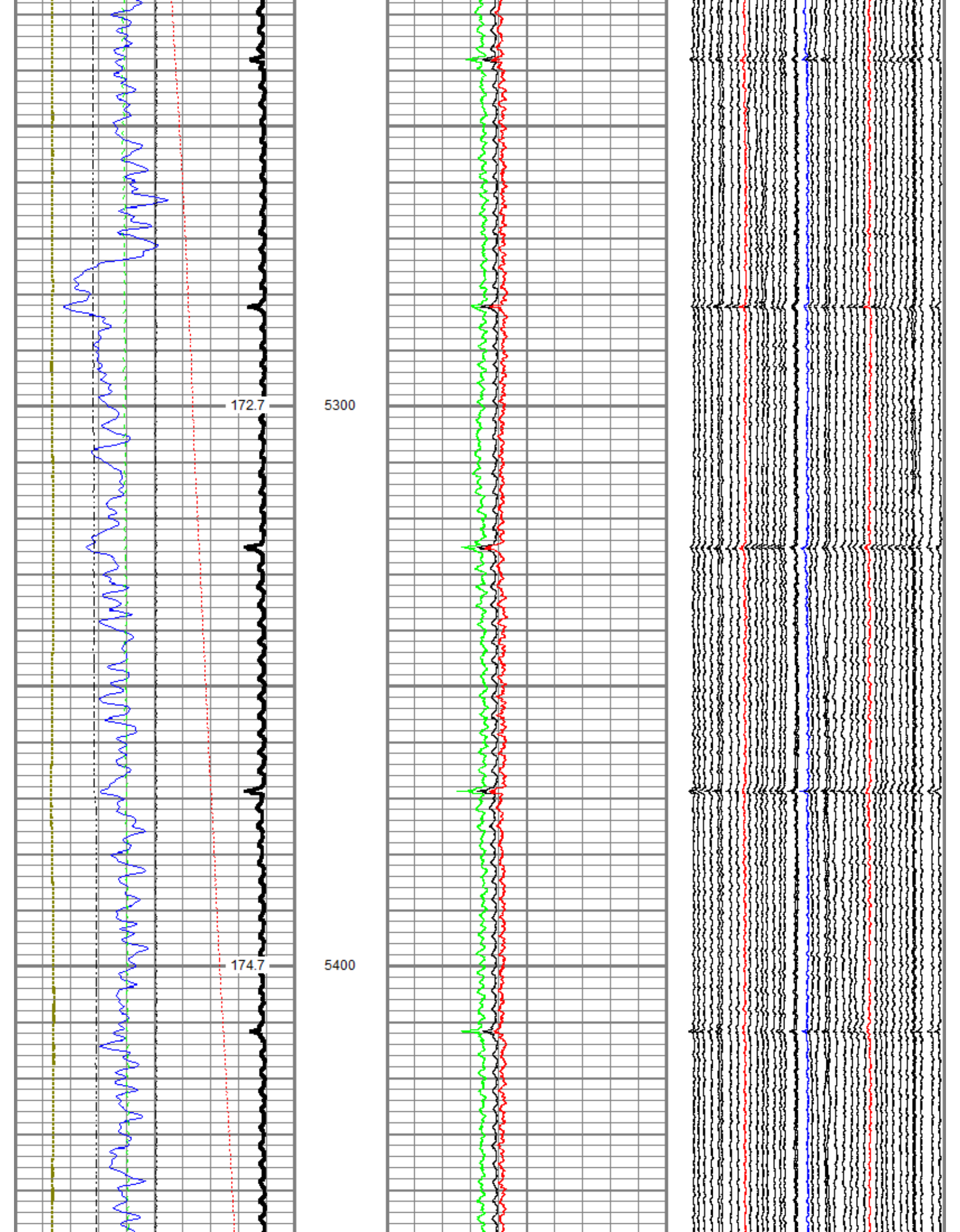
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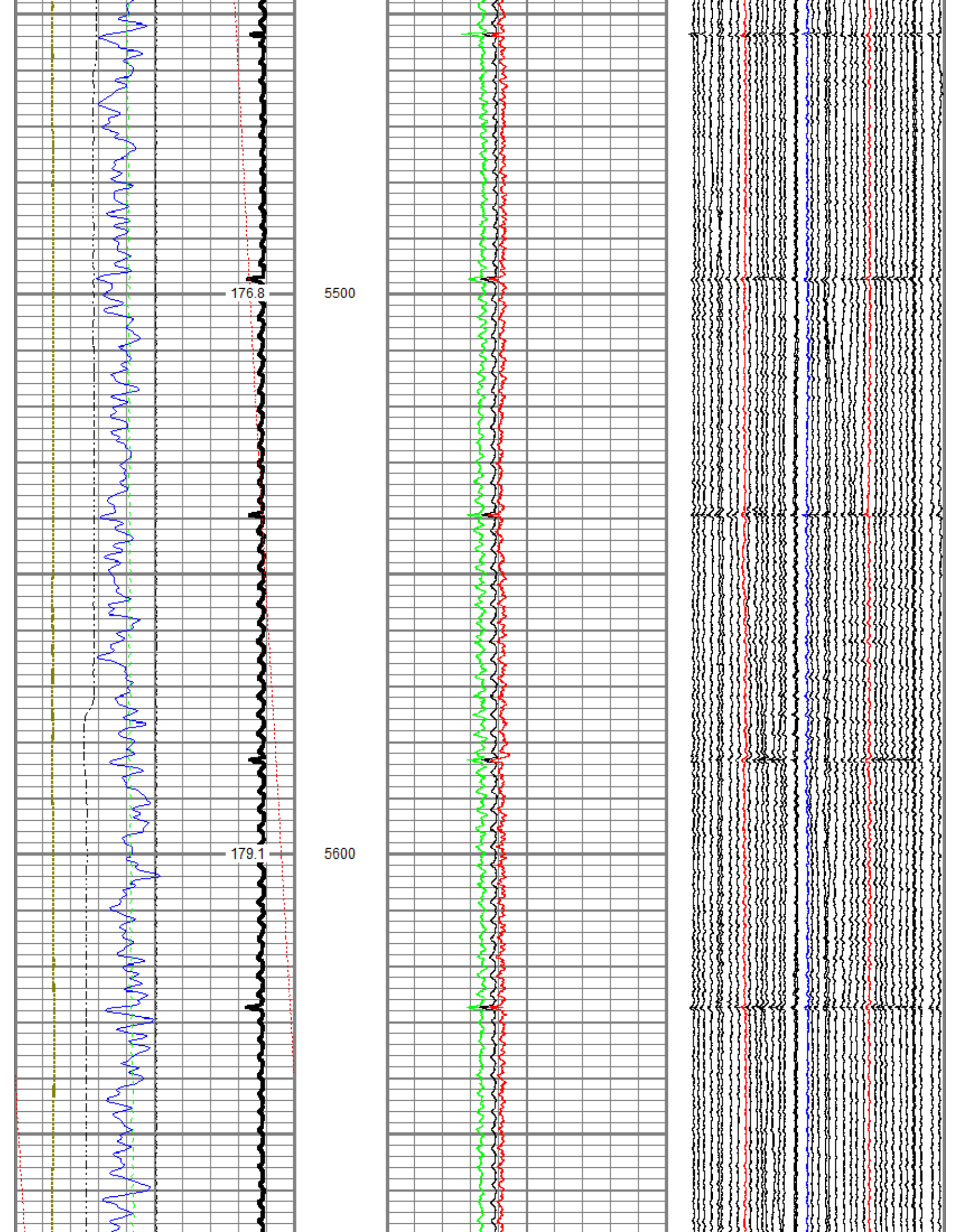
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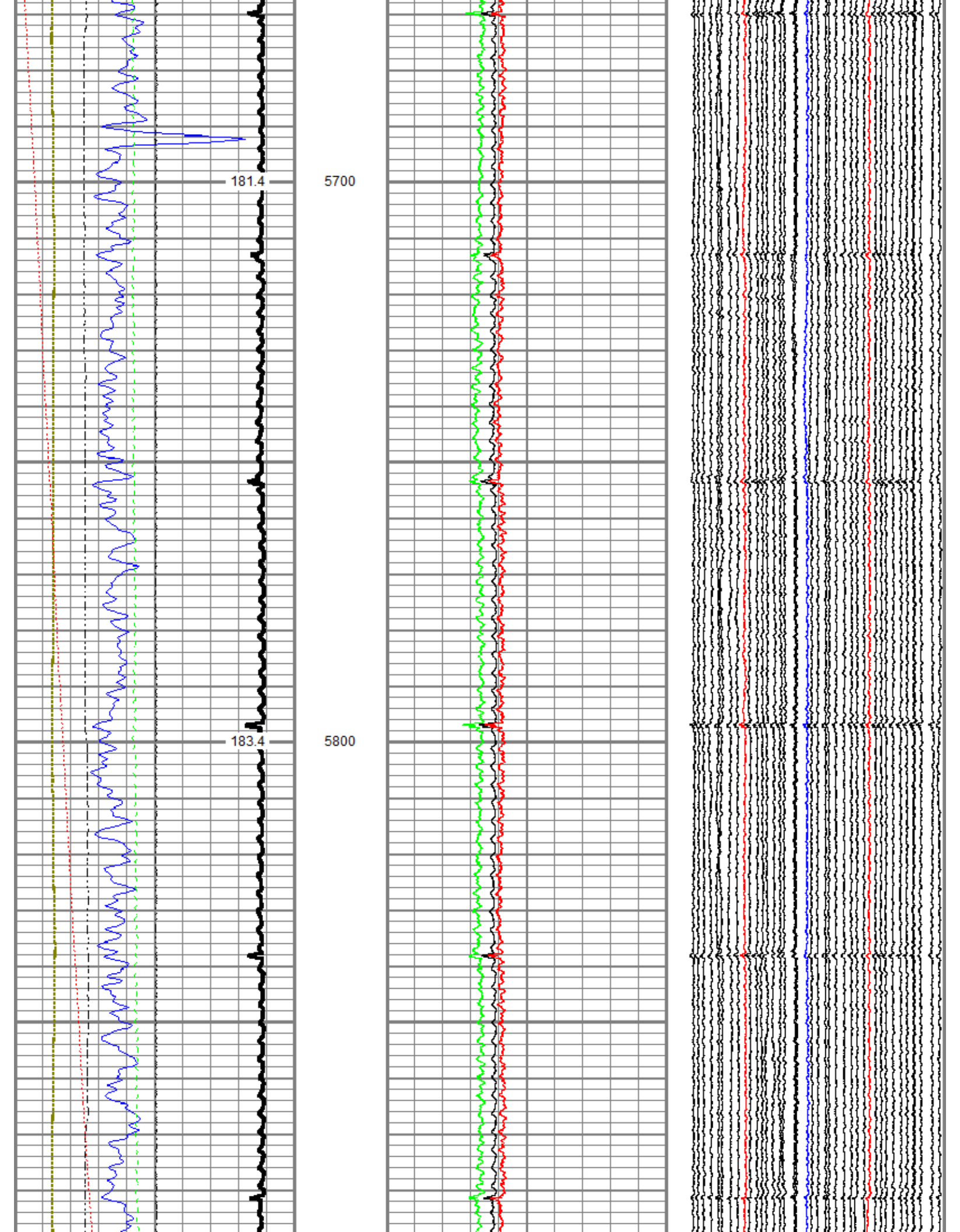


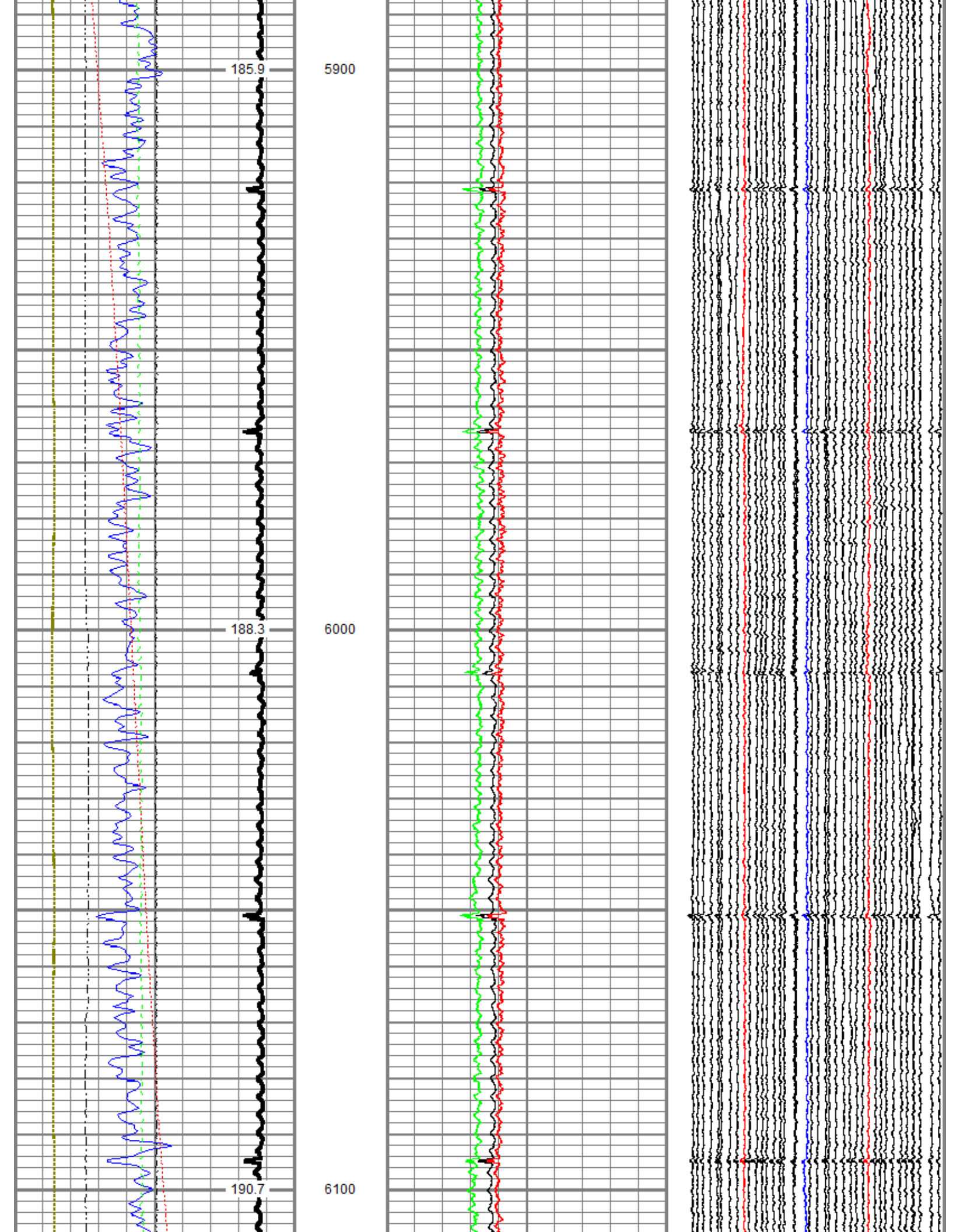


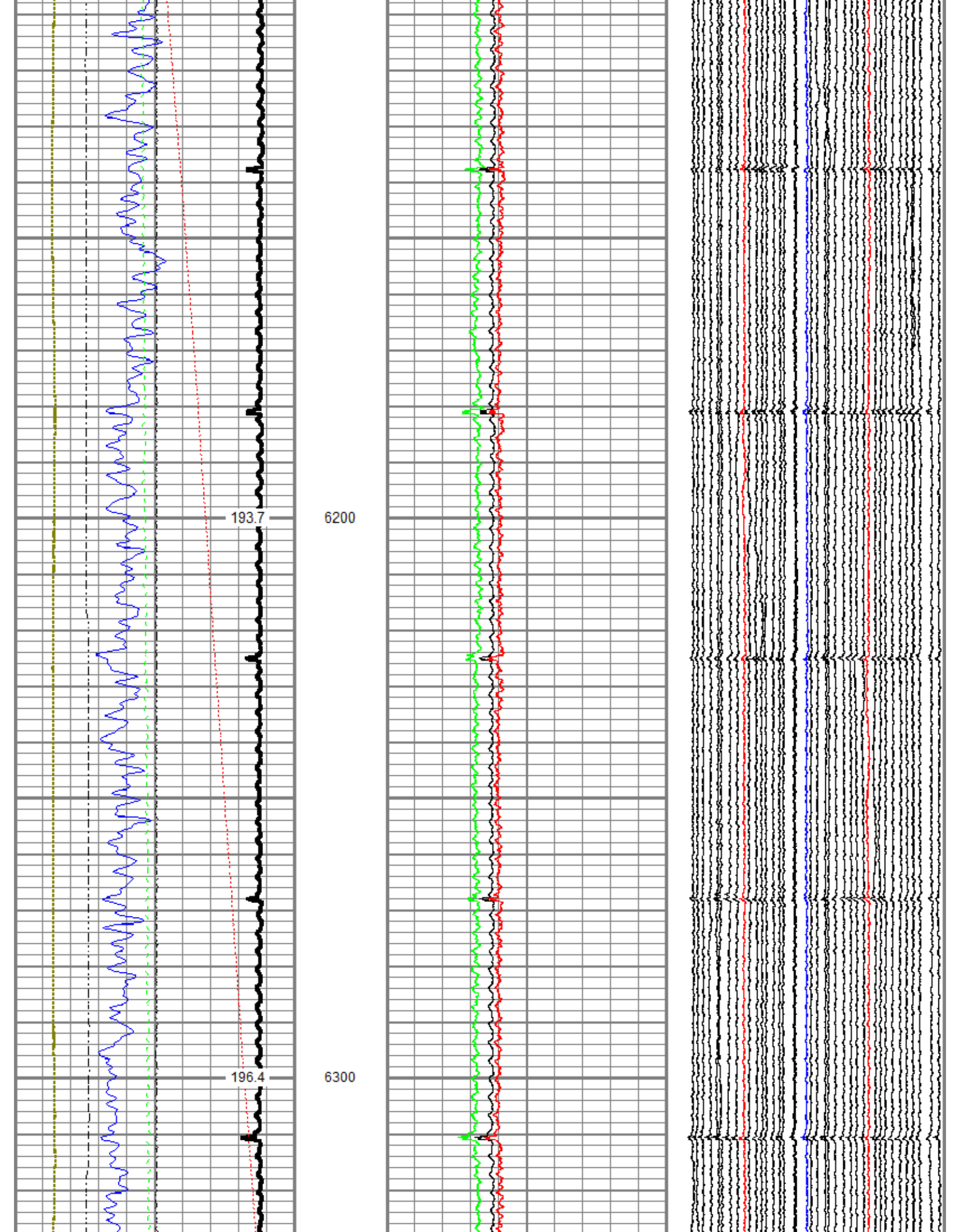


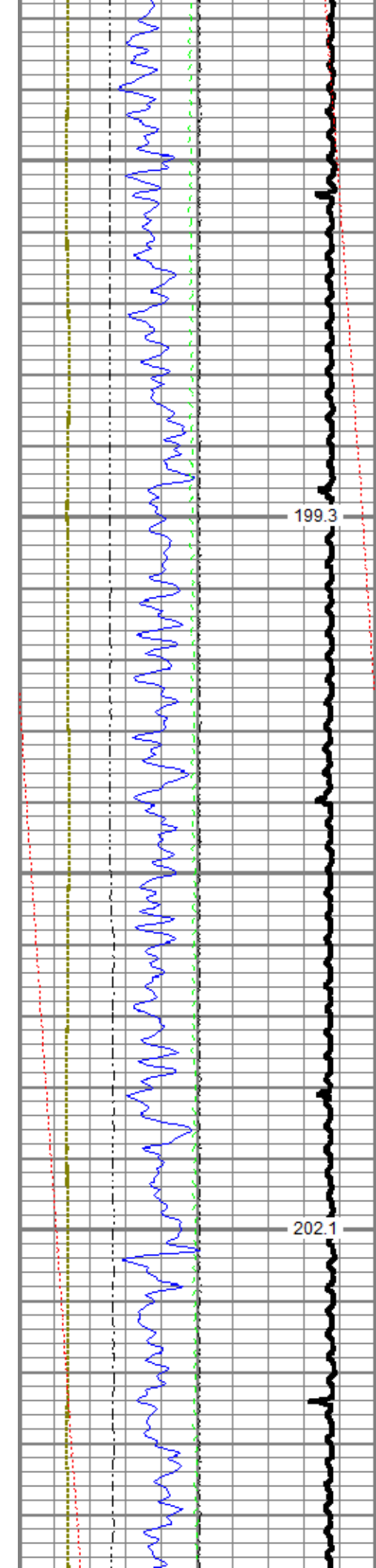






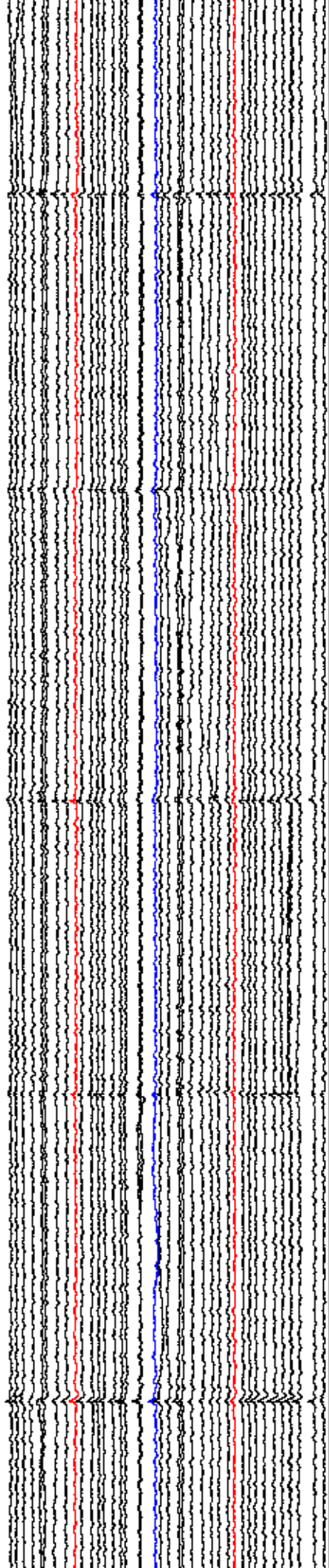
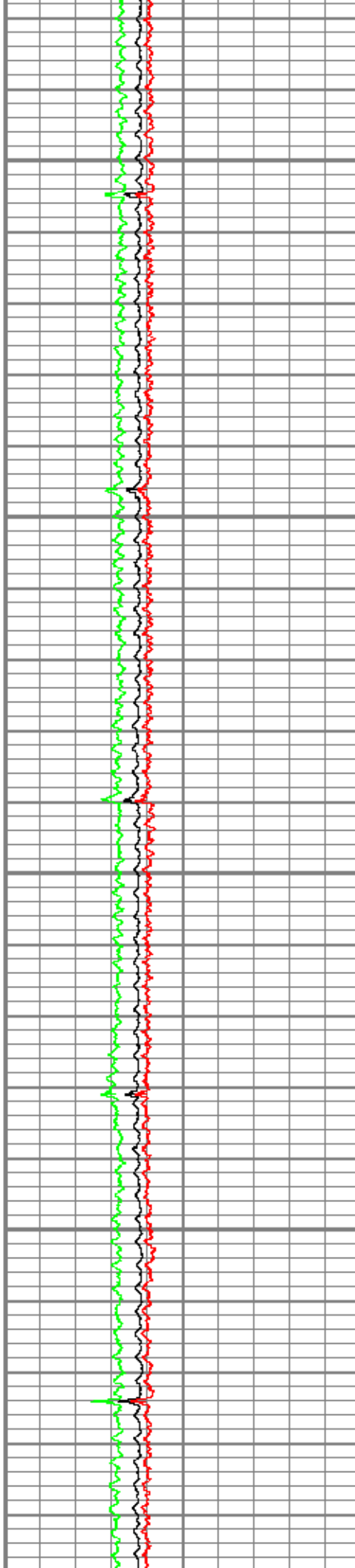


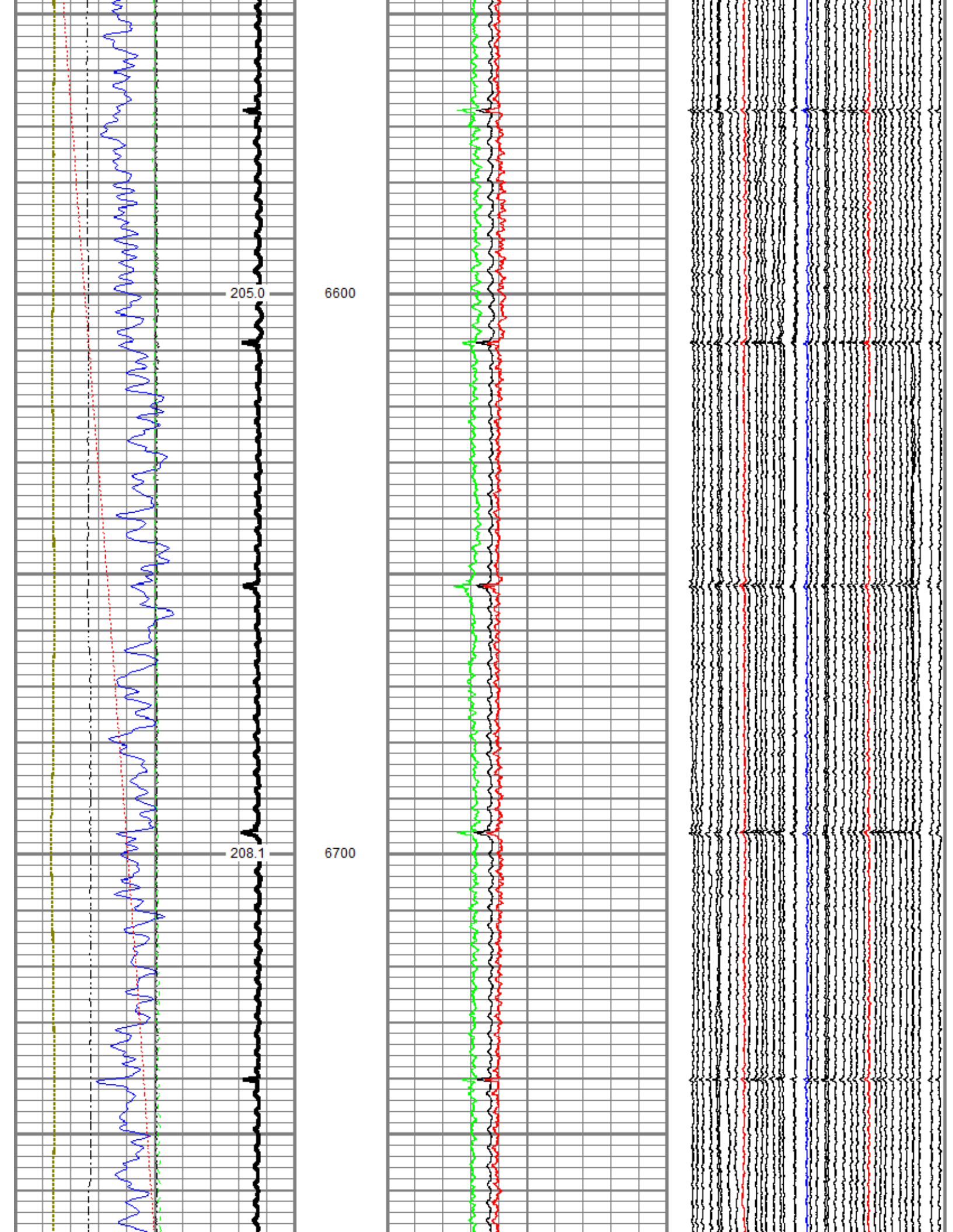


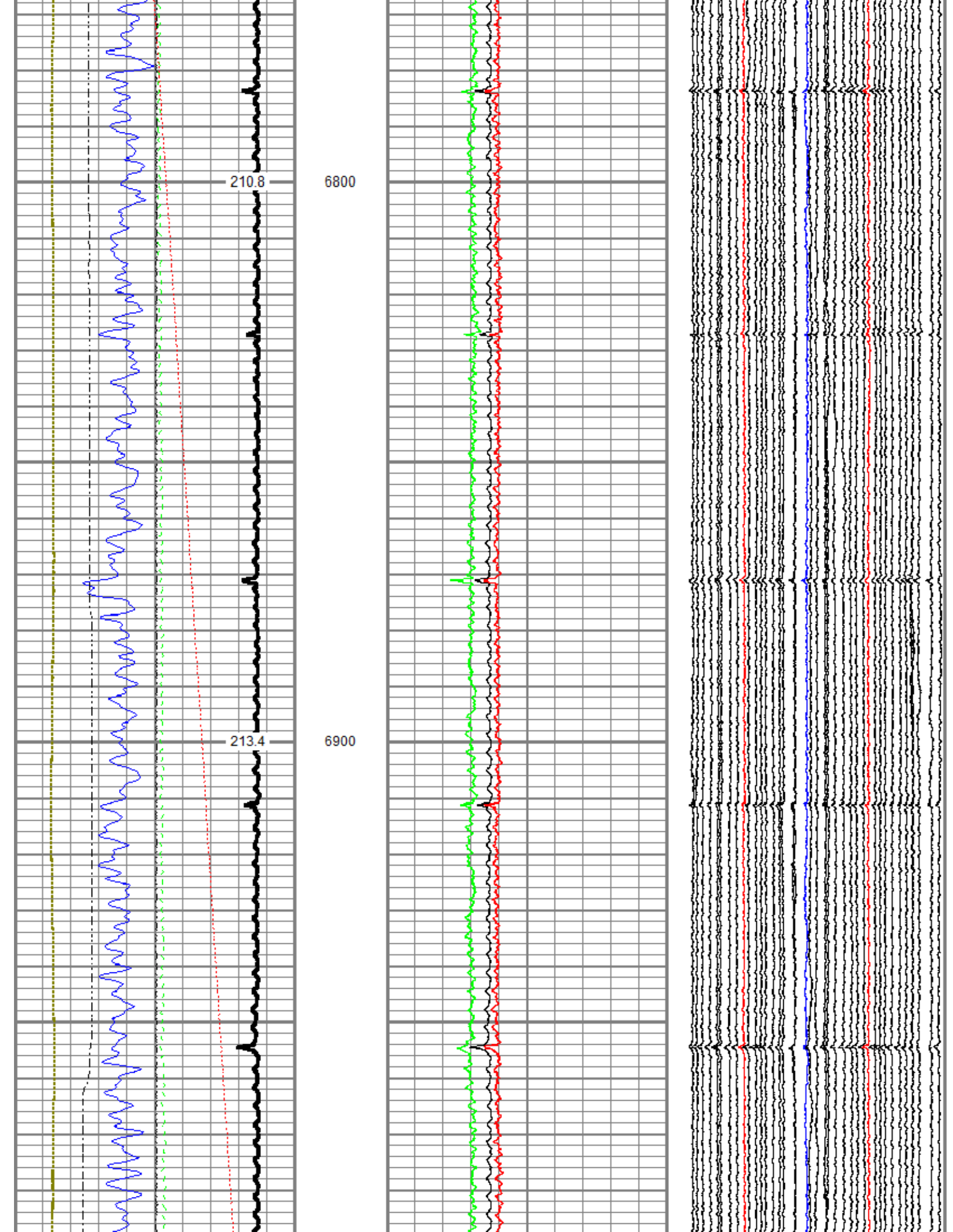


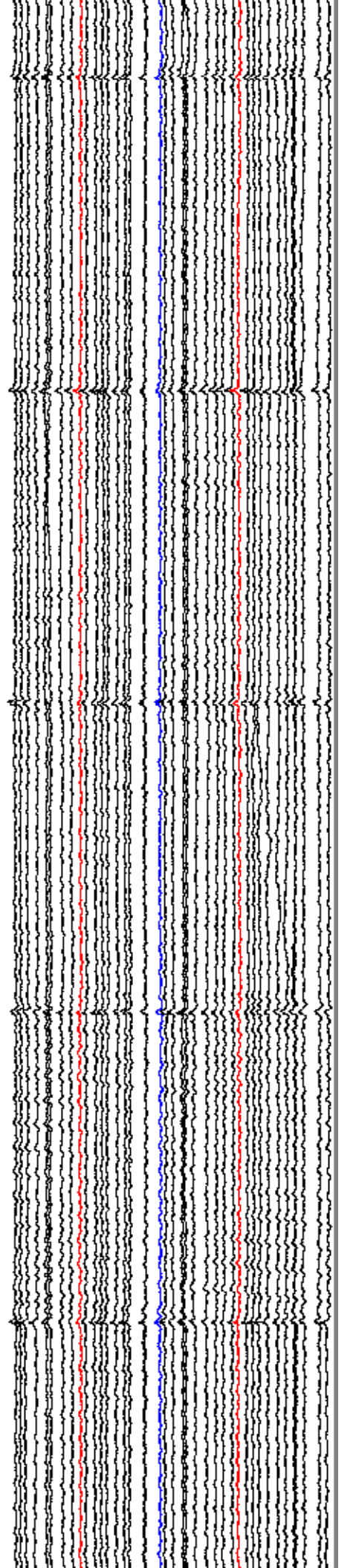
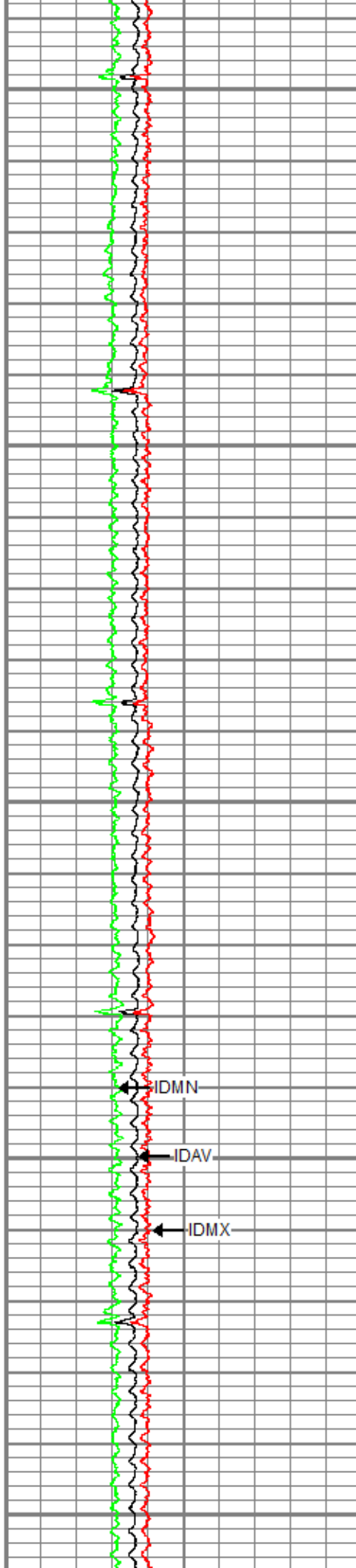
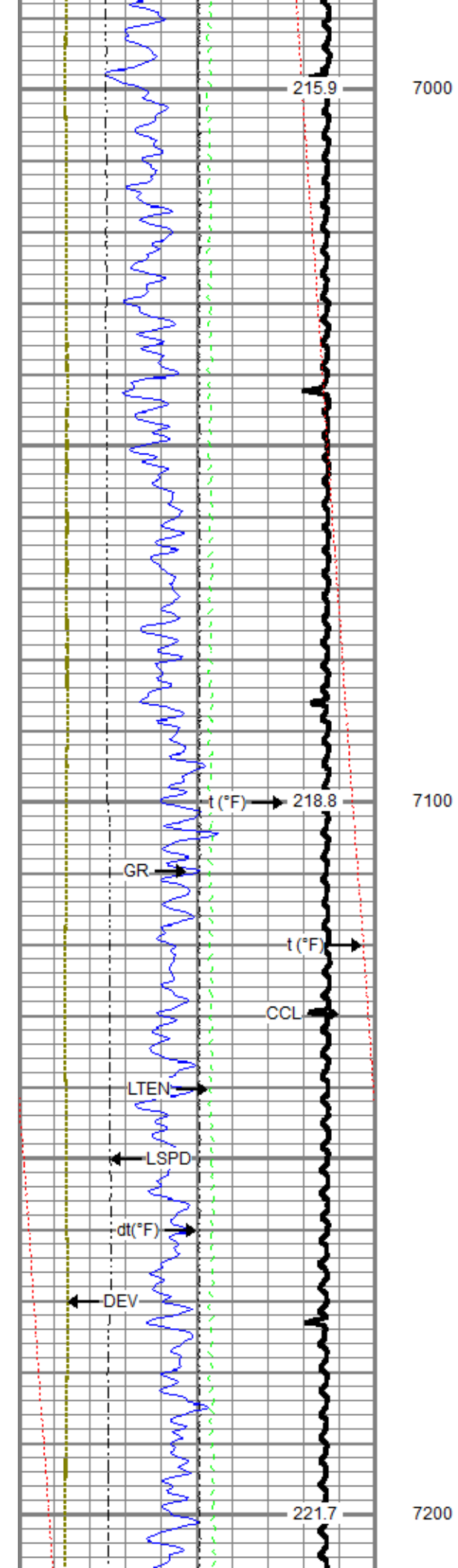
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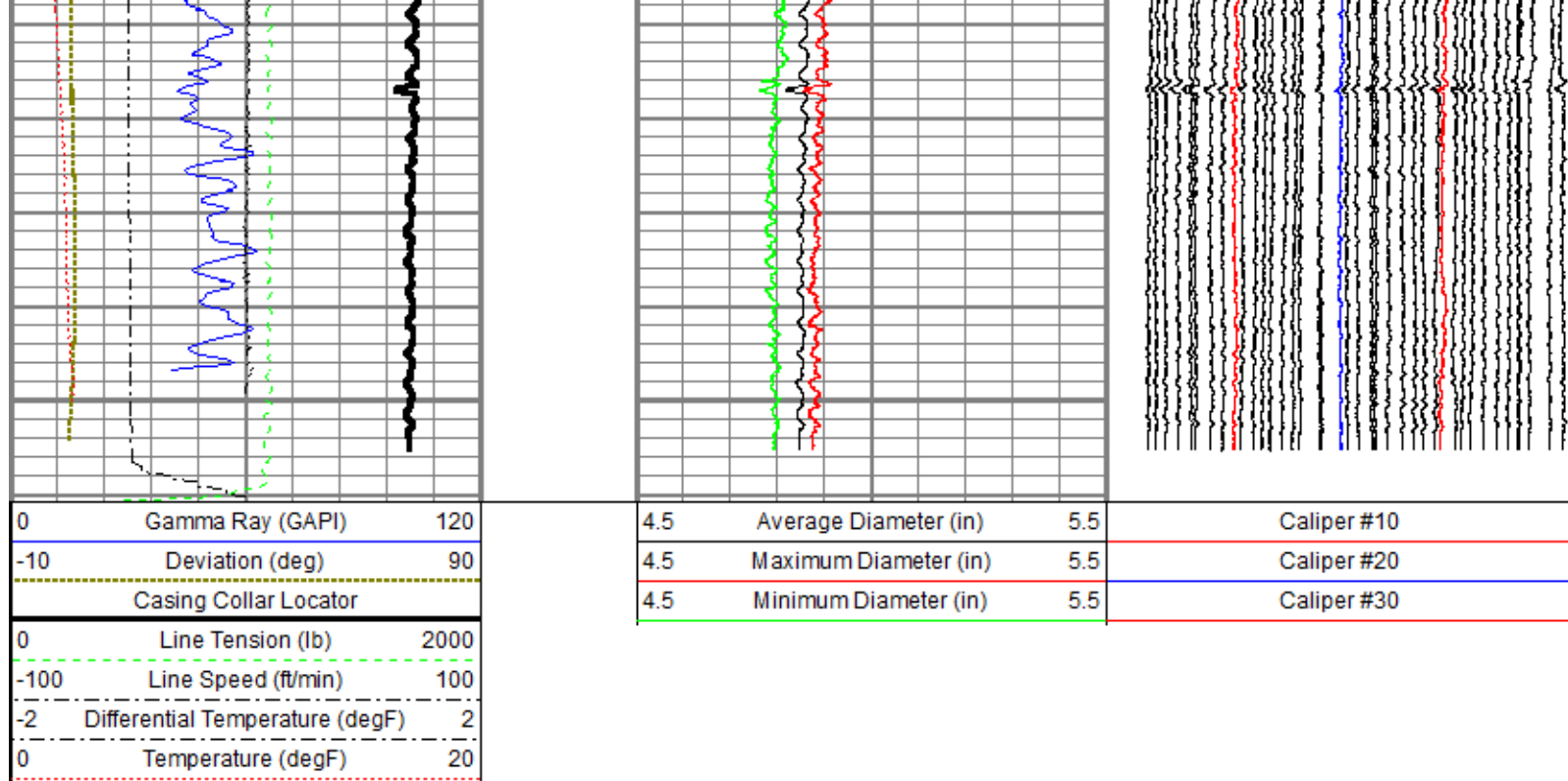
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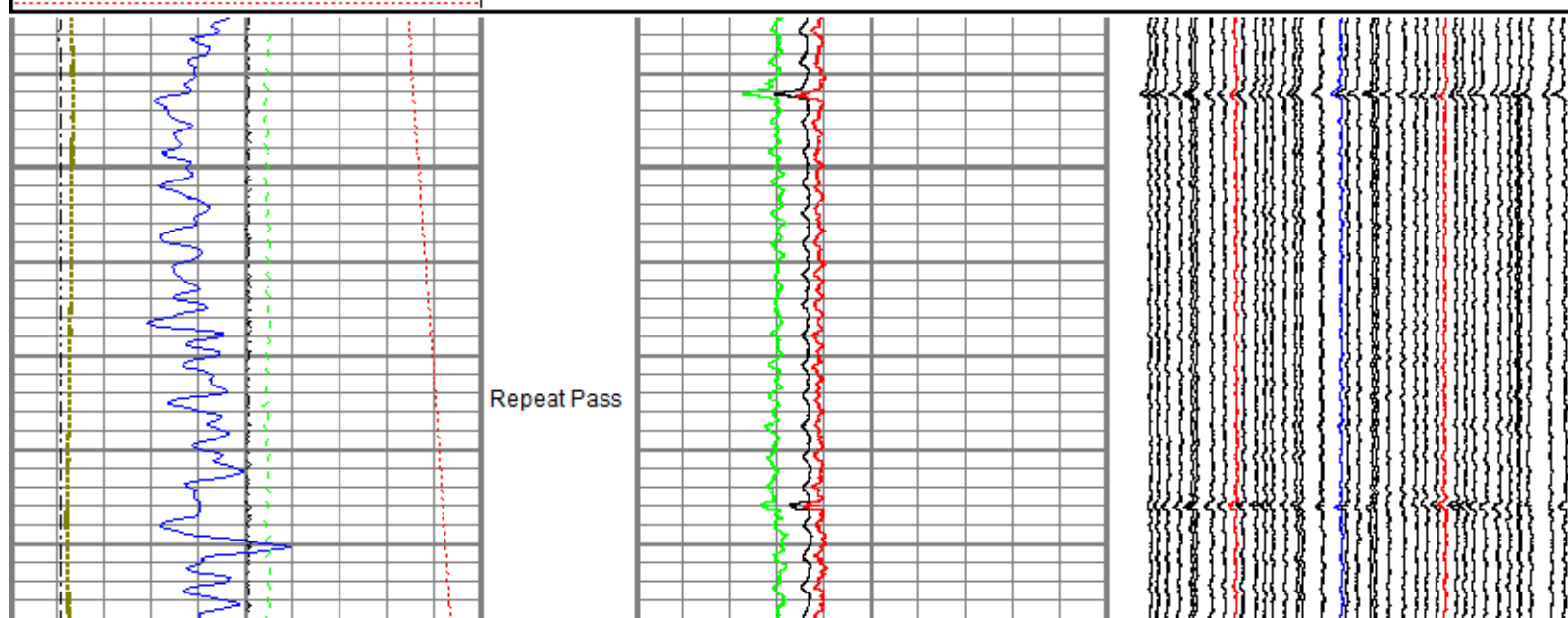
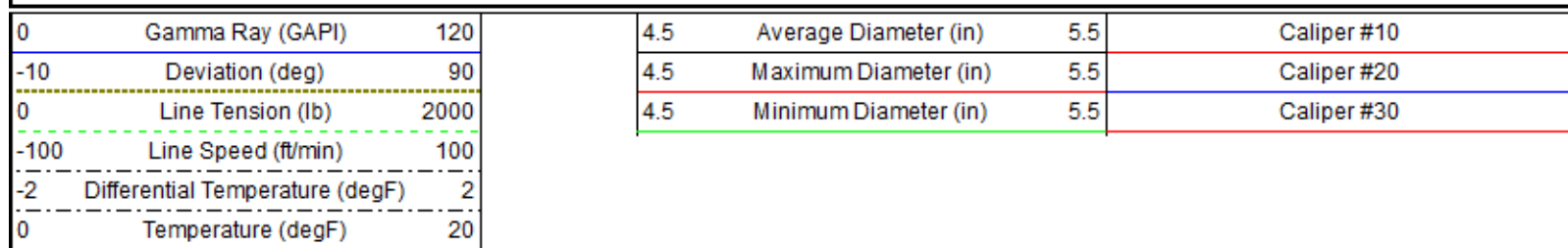


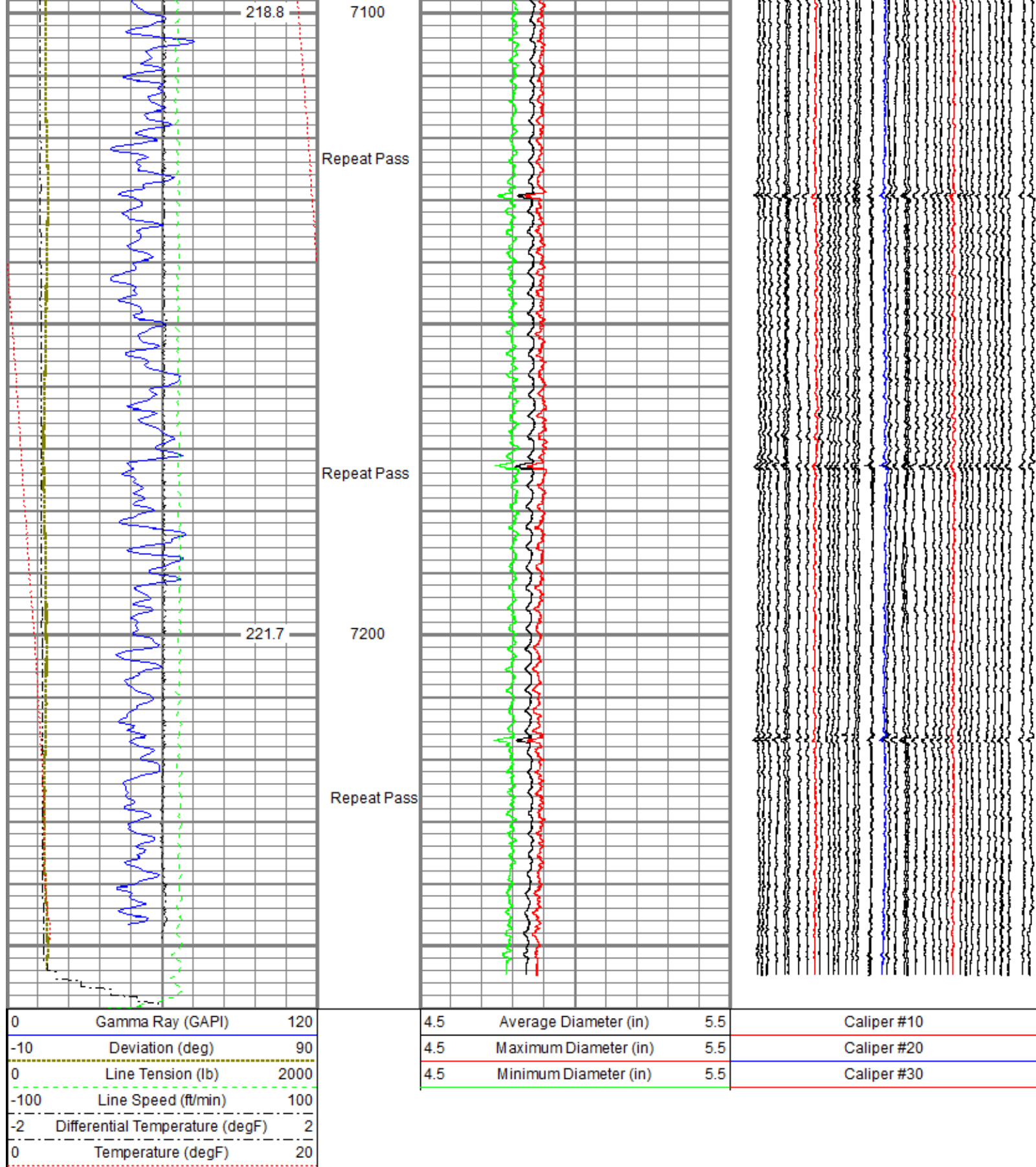



Repeat Pass


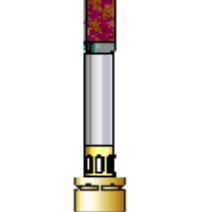
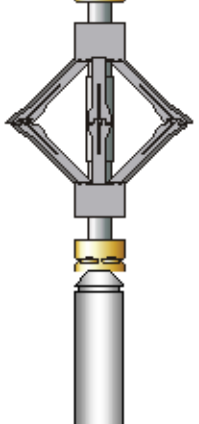
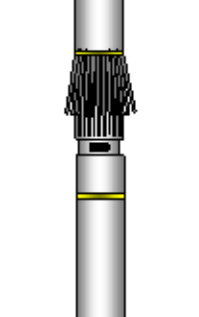
Recorded With 0 PSI Surface Induced Pressure

Database File 01_anadarko/cowboy 21-7hz\0512347099_anadarko_cowboy 21-7hz_mit_11-08-18.db
 Dataset Pathname Repeat1
 Presentation Format ros_55mit40sx
 Dataset Creation Thu Nov 08 11:59:11 2018
 Charted by Depth in Feet scaled 1:240





Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
			Titan CHD-14375 GO	1.03	1.44	3.60
			Titan 1-7/16" Assembled Electric Cable Head w/ 1" Fishing Neck			
			UW AGS-001 (211461)	0.21	1.69	1.00
			Sondex 1-11/16" Ultrawire Adapter - GO Box to			

GR	11.56		Sondex UW Pin	1.58	1.69	6.50
			UW XTU-002 (10017430) Sondex 1-11/16" Ultrawire Toolbus Crossover to Ultralink Telemetry			
			UW PGR-020 (050836) Sondex 1-11/16" Ultrawire Production Gamma Ray	1.92	1.69	9.50
TEMP	10.16		UW PRT-016 (10024052) Sondex 1-11/16" Ultrawire Platinum Resistance Thermometer	1.04	1.69	5.20
			UW CENT-DSS RAC 5 Arm 2-3/4" Roller Centralizer	2.55	2.75	32.00
MIT	5.27		UW MIT-40 042 E (10012912) Sondex 2-3/4" Ultrawire 40-Arm Multifinger Imaging Tool Ext.	4.54	2.75	65.00
			UW CENT-PRC 057 4 Arm 2-3/4" Production Roller Centralizer	2.71	2.75	32.00
TSTAMP	0.00		UW BUL-006 (031422) Sondex 1-11/16" Ultrawire Bullnose Terminator Sub	0.22	1.69	1.20
Dataset: 0512347099_Anadarko_Cowboy 21-7HZ_MIT_11-08-18.db: field/well/run1/Main Total length: 15.81 ft Total weight: 156.00 lb O.D.: 2.75 in						

Calibration Report	
Database File	C:\ProgramData\Warrior\Data\01_Anadarko\Cowboy 21-7HZ\0512347099_Anadarko_Cowboy 21-7HZ_MIT_11-08-18.db
Dataset Pathname	Cal
Dataset Creation	Thu Nov 08 14:52:45 2018
Multifinger Imaging Tool Calibration Report	

Serial Number:	10012912	
Number of Fingers:	40	
Tool Model:	40 042 E	
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:				Thu Nov 08 10:55:42 2018			
Ring size:	4		5		6		7
(in)		Sens		Sens		Sens	
Finger 01:	1073	352.0	1425	387.0	1812	410.0	2222
Finger 02:	1217	360.0	1577	387.0	1964	402.0	2366
Finger 03:	1097	363.0	1460	407.0	1867	426.0	2293
Finger 04:	1135	352.0	1487	399.0	1886	415.0	2301
Finger 05:	1137	356.0	1493	403.0	1896	418.0	2314
Finger 06:	1137	358.0	1495	403.0	1898	413.0	2311
Finger 07:	1122	361.0	1483	405.0	1888	415.0	2303
Finger 08:	1159	354.0	1513	400.0	1913	413.0	2326
Finger 09:	1146	354.0	1500	401.0	1901	409.0	2310
Finger 10:	1153	351.0	1504	402.0	1906	408.0	2314
Finger 11:	1145	354.0	1499	397.0	1896	402.0	2298
Finger 12:	1147	351.0	1498	397.0	1895	408.0	2303
Finger 13:	1155	352.0	1507	392.0	1899	395.0	2294
Finger 14:	1130	363.0	1493	399.0	1892	410.0	2302
Finger 15:	1089	364.0	1453	413.0	1866	423.0	2289
Finger 16:	1089	367.0	1456	410.0	1866	439.0	2305
Finger 17:	992	352.0	1344	393.0	1737	427.0	2164
Finger 18:	1128	360.0	1488	391.0	1879	424.0	2303
Finger 19:	1092	367.0	1459	392.0	1851	417.0	2268
Finger 20:	1073	365.0	1438	405.0	1843	425.0	2268
Finger 21:	1073	372.0	1445	400.0	1845	409.0	2254
Finger 22:	1045	375.0	1420	403.0	1823	430.0	2253
Finger 23:	994	373.0	1367	411.0	1778	439.0	2217
Finger 24:	1076	370.0	1446	413.0	1859	376.0	2235
Finger 25:	1009	375.0	1384	405.0	1789	438.0	2227
Finger 26:	1130	363.0	1493	376.0	1869	398.0	2267
Finger 27:	1065	375.0	1440	397.0	1837	421.0	2258
Finger 28:	1097	369.0	1466	381.0	1847	409.0	2256
Finger 29:	1027	376.0	1403	400.0	1803	434.0	2237
Finger 30:	1058	372.0	1430	392.0	1822	423.0	2245
Finger 31:	1093	376.0	1469	395.0	1864	432.0	2296
Finger 32:	1155	398.0	1553	418.0	1971	443.0	2414
Finger 33:	1152	372.0	1524	375.0	1899	412.0	2311
Finger 34:	1096	373.0	1469	396.0	1865	429.0	2294
Finger 35:	974	341.0	1315	377.0	1692	413.0	2105
Finger 36:	1075	367.0	1442	396.0	1838	429.0	2267
Finger 37:	1126	364.0	1490	389.0	1879	415.0	2294
Finger 38:	1151	355.0	1506	384.0	1890	400.0	2290
Finger 39:	1164	356.0	1520	382.0	1902	404.0	2306
Finger 40:	1121	361.0	1482	398.0	1880	417.0	2297

Post Survey Calibration Check								
Performed:				Thu Nov 08 14:51:57 2018				
Ring size:	4	Nom.	5	Nom.	6	Nom.	7	Nom.
(in)		wear		wear		wear		wear
Finger 01:	4.005	0.002	5.001	0.000	6.001	0.001	6.995	-0.003
Finger 02:	4.005	0.003	5.007	0.003	5.997	-0.001	6.996	-0.002
Finger 03:	4.000	-0.000	4.995	-0.002	5.996	-0.002	6.991	-0.004
Finger 04:	3.997	0.000	5.004	0.000	5.999	0.005	7.000	0.000

Finger 04:	3.997	-0.002	5.004	0.002	5.989	-0.005	7.000	-0.000
Finger 05:	3.989	-0.006	5.003	0.001	5.997	-0.002	6.997	-0.002
Finger 06:	3.999	-0.000	4.997	-0.002	5.995	-0.003	6.998	-0.001
Finger 07:	4.000	0.000	4.993	-0.003	5.981	-0.010	6.985	-0.007
Finger 08:	3.995	-0.002	4.994	-0.003	5.990	-0.005	6.989	-0.006
Finger 09:	3.990	-0.005	4.997	-0.002	5.992	-0.004	6.999	-0.000
Finger 10:	3.988	-0.006	5.002	0.001	5.994	-0.003	6.995	-0.002
Finger 11:	3.989	-0.006	4.994	-0.003	5.987	-0.007	6.995	-0.002
Finger 12:	3.984	-0.008	4.998	-0.001	5.995	-0.002	6.991	-0.005
Finger 13:	3.993	-0.003	4.999	-0.001	5.995	-0.003	6.998	-0.001
Finger 14:	3.997	-0.002	4.992	-0.004	5.991	-0.005	6.984	-0.008
Finger 15:	3.995	-0.003	5.000	0.000	5.995	-0.002	6.996	-0.002
Finger 16:	3.995	-0.002	4.995	-0.003	5.997	-0.001	6.966	-0.017
Finger 17:	4.016	0.008	5.000	-0.000	6.004	0.002	7.004	0.002
Finger 18:	4.001	0.001	4.998	-0.001	6.007	0.003	6.958	-0.021
Finger 19:	4.003	0.001	4.988	-0.006	6.000	-0.000	6.991	-0.004
Finger 20:	3.999	-0.000	5.003	0.002	6.002	0.001	6.997	-0.001
Finger 21:	3.998	-0.001	5.002	0.001	6.003	0.002	7.000	0.000
Finger 22:	3.997	-0.001	5.001	0.001	6.005	0.003	6.994	-0.003
Finger 23:	3.995	-0.003	5.000	0.000	5.991	-0.005	6.997	-0.001
Finger 24:	3.993	-0.003	5.001	0.001	5.938	-0.031	7.006	0.003
Finger 25:	4.000	0.000	5.007	0.004	6.005	0.002	7.008	0.004
Finger 26:	3.997	-0.001	5.001	0.001	6.003	0.002	7.002	0.001
Finger 27:	3.992	-0.004	5.000	-0.000	5.995	-0.002	6.993	-0.003
Finger 28:	3.989	-0.006	4.994	-0.003	6.003	0.001	7.002	0.001
Finger 29:	3.993	-0.004	4.996	-0.002	5.997	-0.001	6.998	-0.001
Finger 30:	3.997	-0.001	5.004	0.002	6.001	0.000	7.000	-0.000
Finger 31:	3.991	-0.004	4.978	-0.011	5.965	-0.018	6.955	-0.022
Finger 32:	3.995	-0.002	5.001	0.000	5.998	-0.001	6.996	-0.002
Finger 33:	3.993	-0.003	4.992	-0.004	5.987	-0.006	6.951	-0.025
Finger 34:	3.997	-0.001	4.998	-0.001	6.001	0.001	6.994	-0.003
Finger 35:	3.994	-0.003	4.999	-0.000	5.996	-0.002	6.997	-0.001
Finger 36:	3.997	-0.001	4.999	-0.001	6.001	0.000	6.998	-0.001
Finger 37:	3.993	-0.004	4.995	-0.002	5.998	-0.001	6.994	-0.003
Finger 38:	3.994	-0.003	4.998	-0.001	5.999	-0.001	6.995	-0.002
Finger 39:	4.006	0.003	5.003	0.001	6.003	0.002	6.992	-0.004
Finger 40:	3.999	-0.001	4.997	-0.001	5.994	-0.003	6.993	-0.003
Average:	3.996	-0.002	4.998	-0.001	5.995	-0.003	6.992	-0.004

Temperature Calibration Report					
Serial Number:			10024052		
Tool Model:			016		
Performed:			Mon Oct 01 10:54:16 2018		
Point #	Reading		Reference		
1	12242.00	cps	68.00	degF	
2	18329.00	cps	104.00	degF	
3	29563.00	cps	176.00	degF	
4	41222.00	cps	248.00	degF	
5	52988.00	cps	320.00	degF	
6	58824.00	cps	356.00	degF	
7		cps		degF	
8		cps		degF	
9		cps		degF	
10		cps		degF	

Gamma Ray Calibration Report			
Serial Number:		050836	
Tool Model:		020	
Performed:		Mon Oct 01 10:55:18 2018	
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

Cowboy 21-7HZ

Field

Wattenberg

County

Weld

State

Colorado