



A Schlumberger Company

AZIMUTHAL DENSITY  
GAMMA-RAY

5" = 100'  
FEET MD

COMPANY : TEKTON ENERGY LLC  
WELL : FRYE FARMS #13 5-5-32-090-4CH  
FIELD : WATTENBERG  
COUNTY : WELD  
STATE : CO  
COUNTRY : USA  
API No. : 05-123-38127-00

COMPANY : TEKTON ENERGY LLC  
WELL : FRYE FARMS #13 5-5-32-090-4CH  
FIELD : WATTENBERG  
COUNTY : WELD  
STATE : CO  
COUNTRY : USA  
API WELL No. : 05-123-38127-00

WELL LOCATION  
LAT:40°26'22" LON:104°54'39"  
X:3,163,987' Y:1,403,516'NAD83  
SEC:32 TWP:06N RANGE:67W

OTHER SERVICES  
DIRECTIONAL  
ROP  
CALIPER/PE

DEPTH REF. : ROTARY TABLE  
ELEVATION : 22.50 ft (ROTARY TABLE - GROUND LEVEL)  
ALTITUDE : 4880.00 ft (GROUND LEVEL - MEAN SEA LEVEL)

BOREHOLE RECORD

DEVIATION RECORD

HOLE SIZE in	FROM ft	TO ft	INCLINATION deg	FROM ft	TO ft
8 3/4	930	7742	00 +/-1	0	1557
6 1/8	7742	11903	01 - 89	1557	7692
			89 +/-3	7692	11903

CASING RECORD

CASING SIZE in	FROM ft	TO ft			
9 5/8	0	930			
7	0	7731			

DRILLING Co.: FRONTIER DRILLING  
RIG : 10  
LMD UNIT No.: N/A DISTRICT : CASPER  
SPUD DATE : 17-OCT-13  
LMD START DATE : 04-NOV-13 DEPTH : 7742 ft  
LMD END DATE : 08-NOV-13 DEPTH : 11903 ft  
TOTAL DEPTH : 11903 ft

RUN DATA

RUN NUMBER	1					
START DATE	04-NOV-13					
START TIME	08:00					
END DATE	08-NOV-13					
END TIME	04:45					
DEPTH IN ft	7742					
DEPTH OUT ft	11903					
LOG TOP ft	7742					
LOG BOTTOM ft	11813					
HOLE SIZE in	6 1/8					
MUD DATA @ ft	11903					
MUD TYPE	WATER BASED					
DENSITY lb/gal	9.20					
VISCOSITY s/qt	47					
pH	10.0					
FLUID LOSS cm3/30	4.4					
SALINITY ppm	2000					
Rm ohmm @ deg F	@					
Rmf ohmm @ deg F	@					

REMARKS
TEKTON WINDSOR LLC.
PATHFINDER JOB #: 13CAS0258
ALL LOGGING DATA IS MEMORY UNLESS STATED OTHERWISE.
ALL REFERENCES TO LOG TOP, LOG BOTTOM OR LOGGING TOOL DEPTH REFER TO THE GAMMA-RAY SENSOR UNLESS STATED OTHERWISE. SENSOR OFFSETS FOR THE OTHER LOGGING TOOLS ARE SHOWN IN THE BHA REPORT ON THE LOG TRAILER.
ALL ANNOTATIONS IN THE DEPTH TRACK ARE REFERENCED TO BIT DEPTH.
THIRD PARTY DEPTH TRACKING SERVICES PROVIDED BY PASON.
RUN #1: 4 3/4" HDS-1L/GAMMA/IDNSC LOGGING RUN.
DENSITY POROSITY (DPHI) IS CALCULATED FOR A MATRIX DENSITY OF 2.71 G/CC AND A FLUID DENSITY OF 1.00 G/CC.
DENSITY DATA DENSITY (DDDN) TO THE LEFT OF THE DENSITY TRACK REPRESENTS 0-4 SAMPLES PER FOOT.
THE SLIDE INDICATOR TO THE LEFT OF THE DENSITY TRACK IS OFFSET TO THE DENSITY MEASUREMENT POINT.
DENSITY MEASUREMENTS MAY BE SUBSTANDARD THROUGH INTERVALS OF HIGH WEIGHTED STANDOFF (WSOD).
HIGH WSOD IS CAUSED BY POOR WALL CONTACT AND MAY BE THE RESULT OF UNFAVORABLE STABILIZER POSITION, UNFAVORABLE TOOLFACE ORIENTATION DURING SLIDING, EXCESSIVE HOLE ENLARGEMENT OR HIGH ROP'S.
REMARK #1: GAMMA-RAY LOGGED THROUGH CASING FROM 7652'-7731'MD (7201'-7203'TVD).
NOTICE - All interpretations are opinions based on inferences from electrical or other measurements and we do not guarantee the accuracy or correctness of any interpretations. We shall not, except in the case of gross or willful negligence on our part, be liable or responsible for loss, costs, damages or expenses incurred or sustained by anyone as a result of any interpretations made by one of our officers, agents or employees. These interpretations are also subject to our General Terms and Conditions as set out in our current Price Schedule.
PATHFINDER - A Schlumberger Company
Version No : RX5 V6.04D Release 13Dec2012
Plot Time : 08-Nov-2013 08:05

[illegible]

SEE REMARK #1

S 86.1 90.0  
7201

T 88.6 89.5  
0 7203

7700

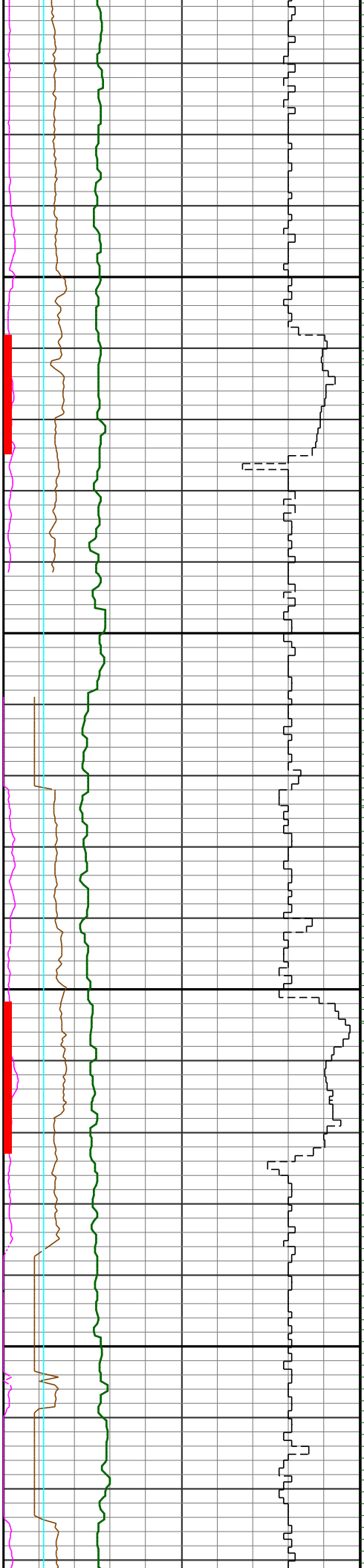
7" CASING

R  
U  
N  
#1

S 90.4 91.4  
1 7203

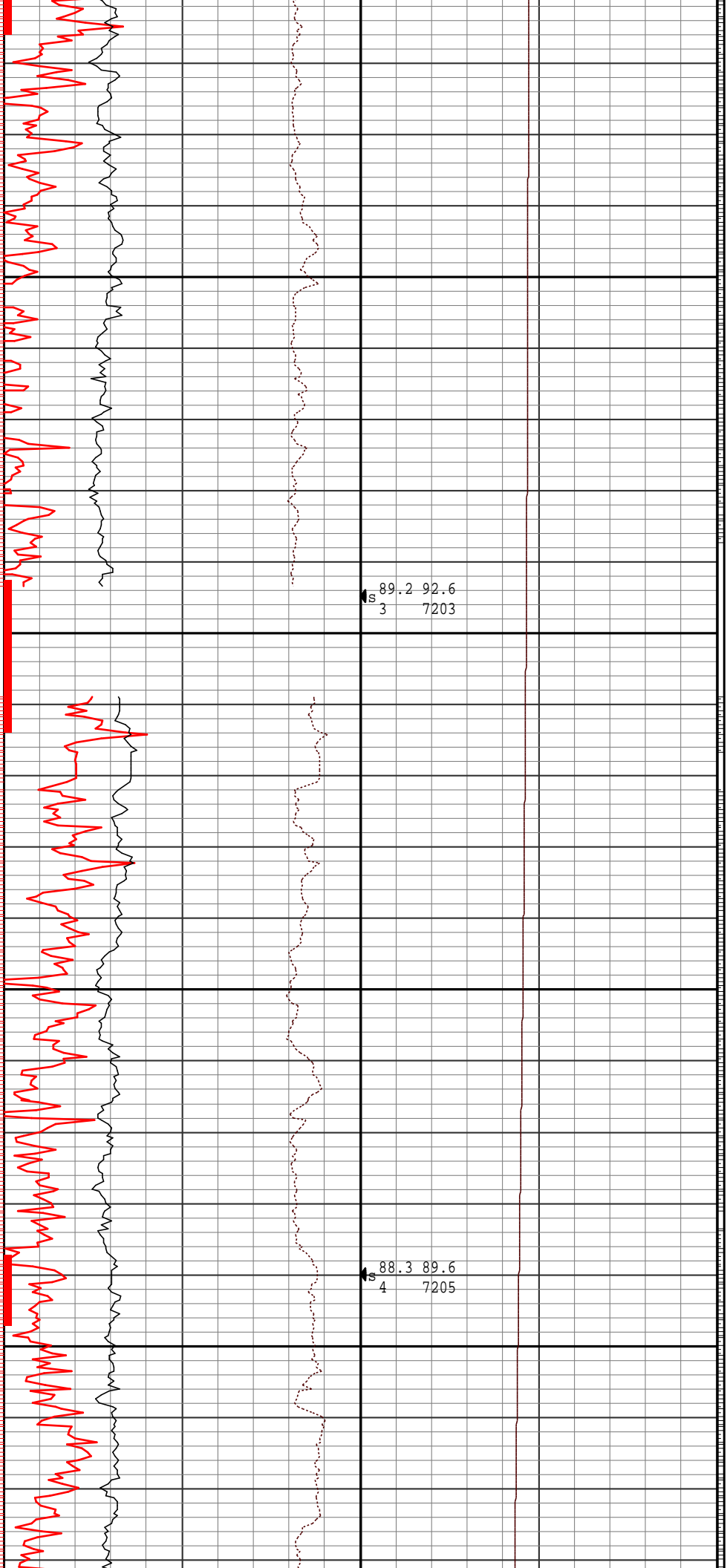
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S 90.2 91.7  
2 7203



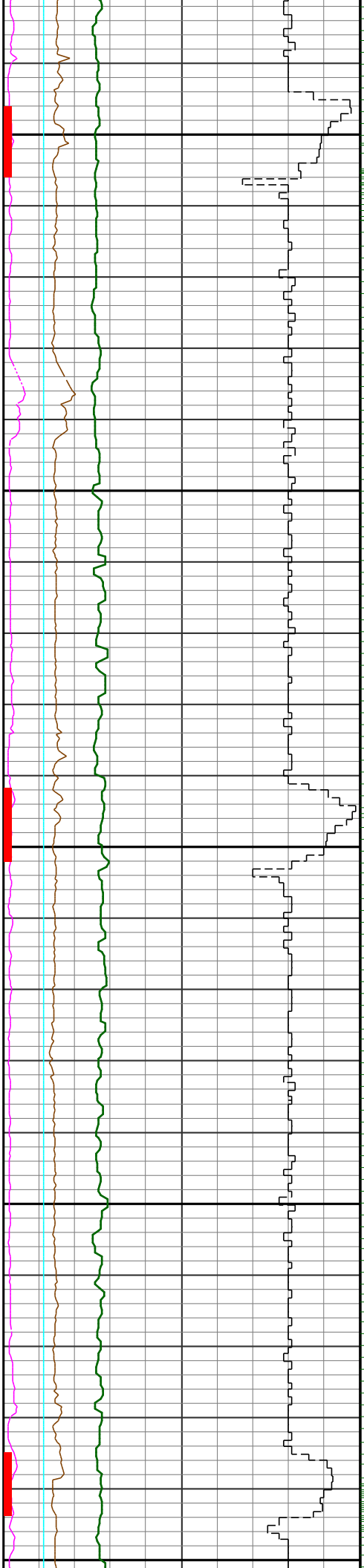
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89.2 92.6  
3 7203

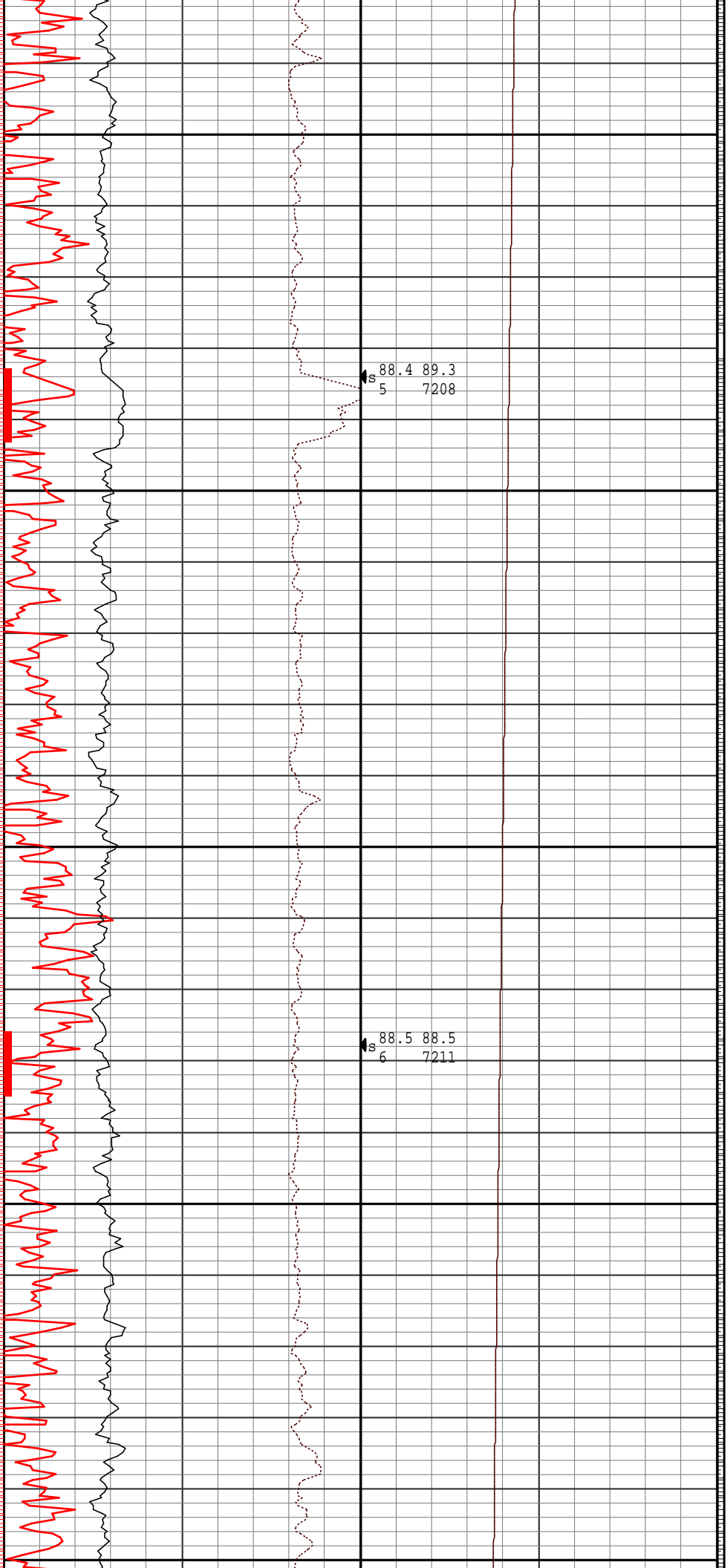
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4 7205



8100

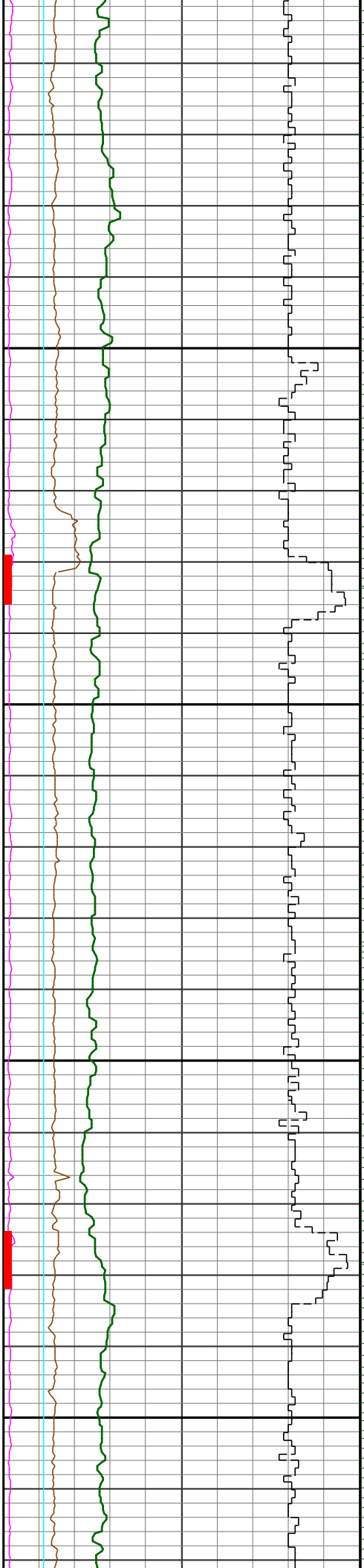
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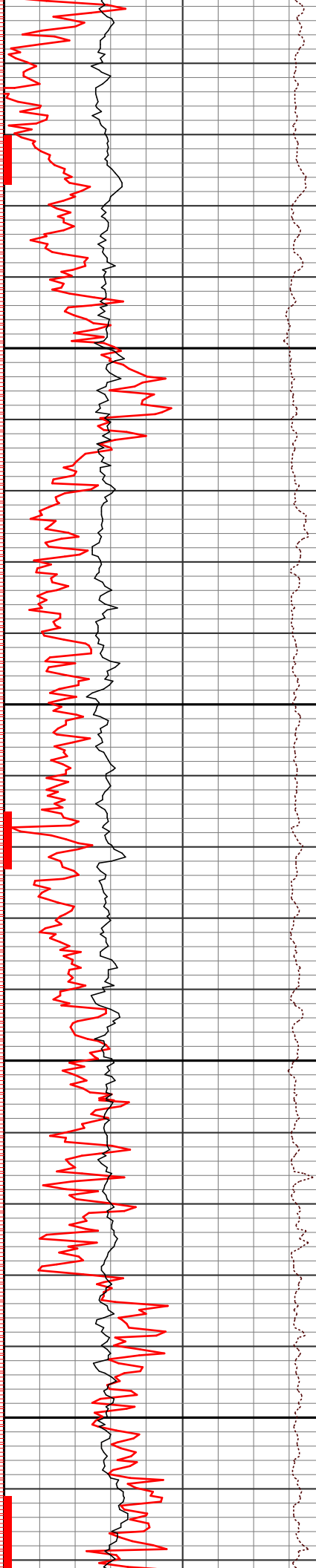
88.4 89.3  
5 7208

88.5 88.5  
6 7211



8400

8500



88.7 87.1  
7 7213

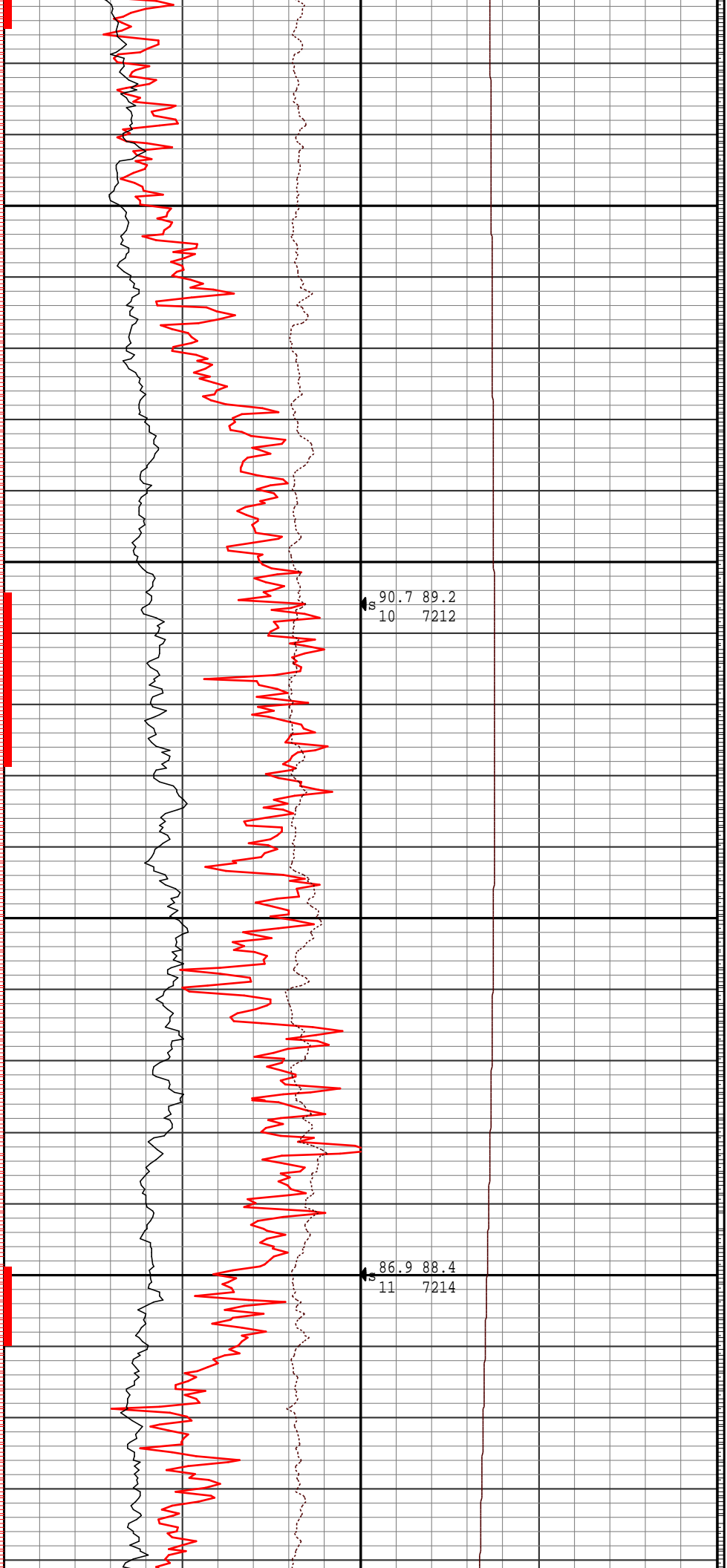
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8 7214

90.9 88.6  
9 7214



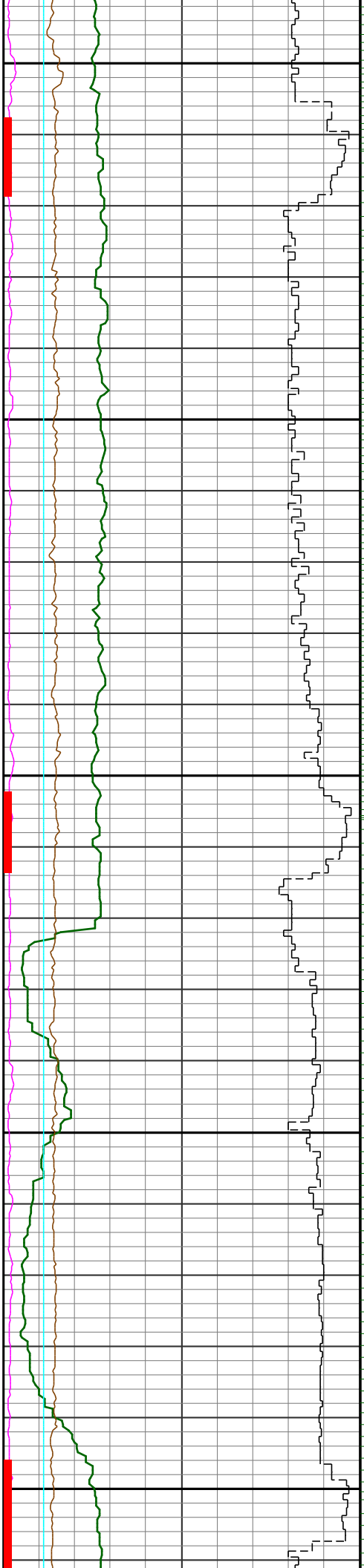
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8700



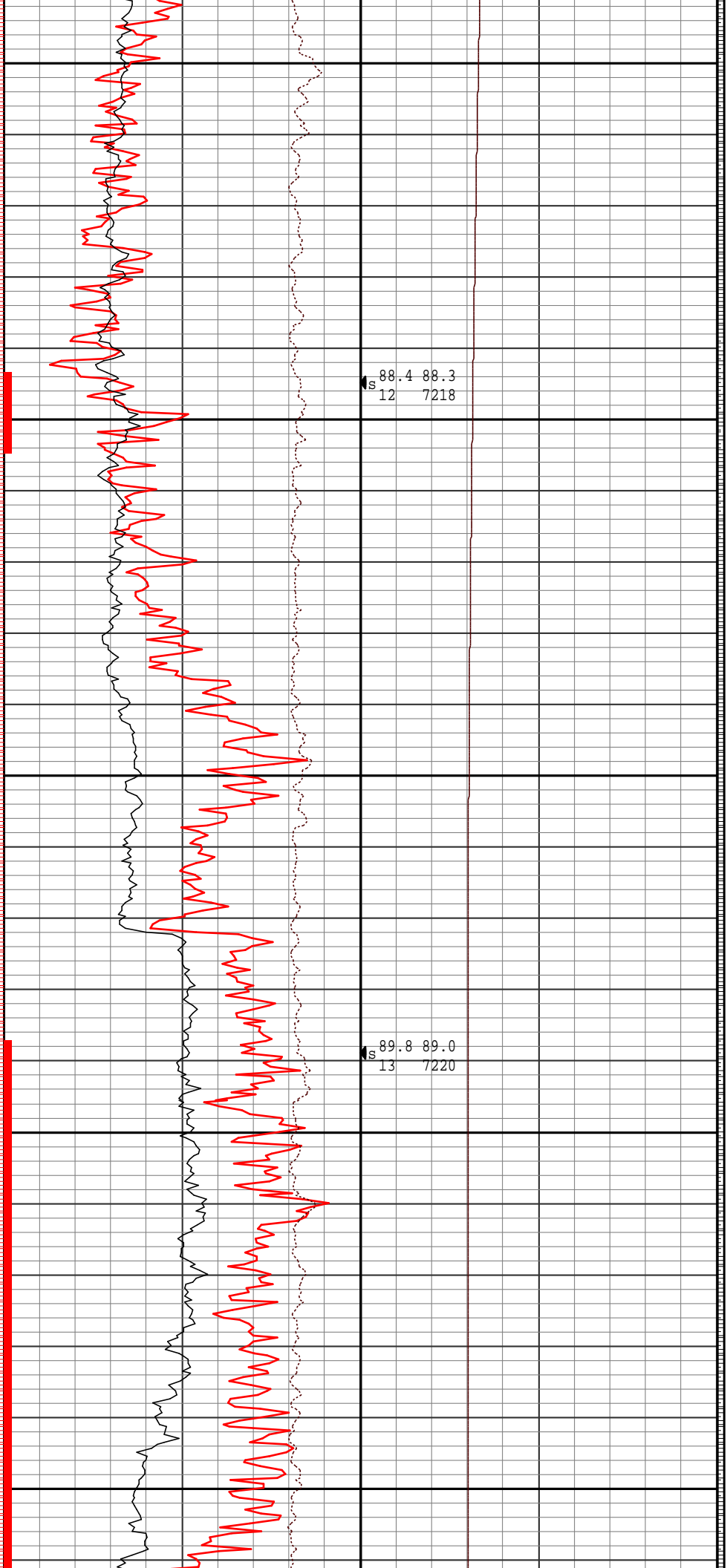
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10 7212

86.9 88.4  
11 7214



8800

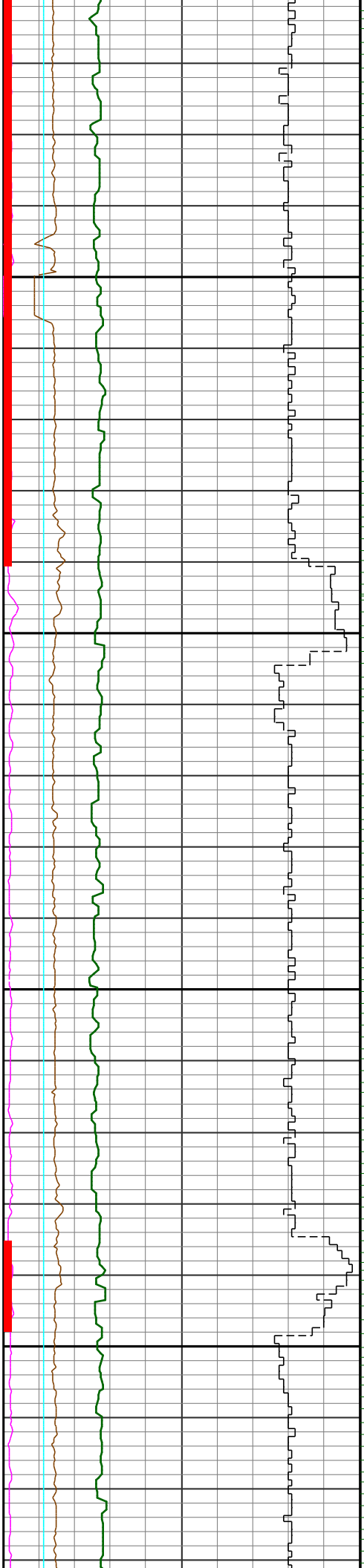
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88.4 88.3  
12 7218

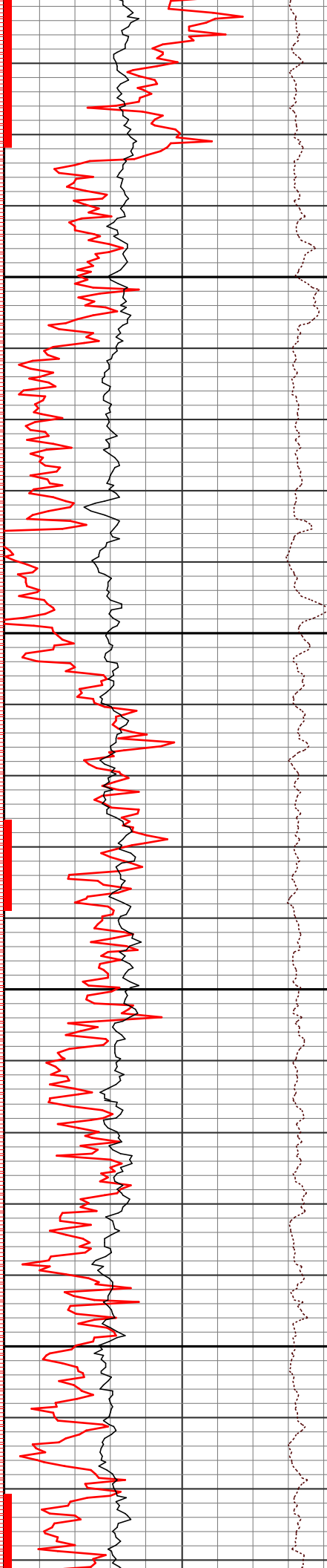
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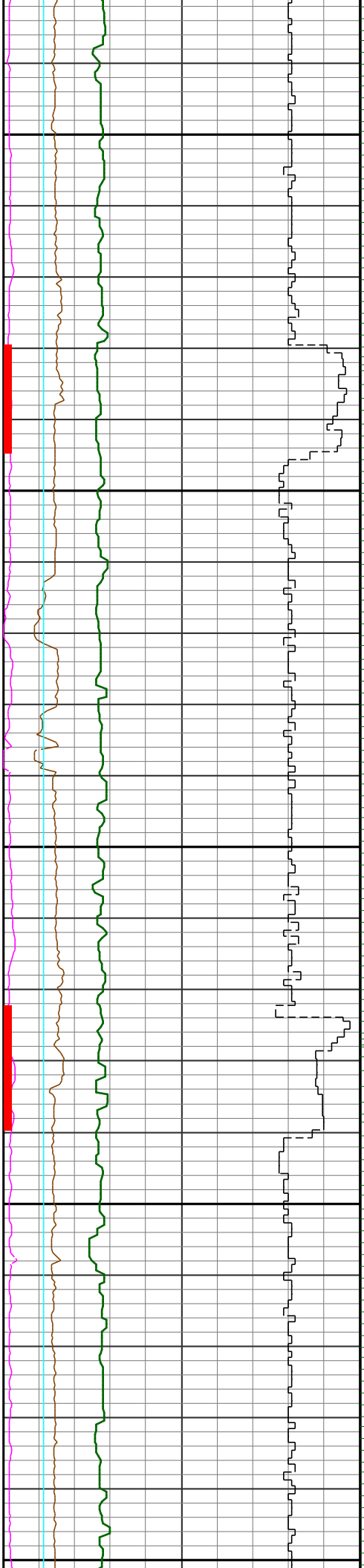
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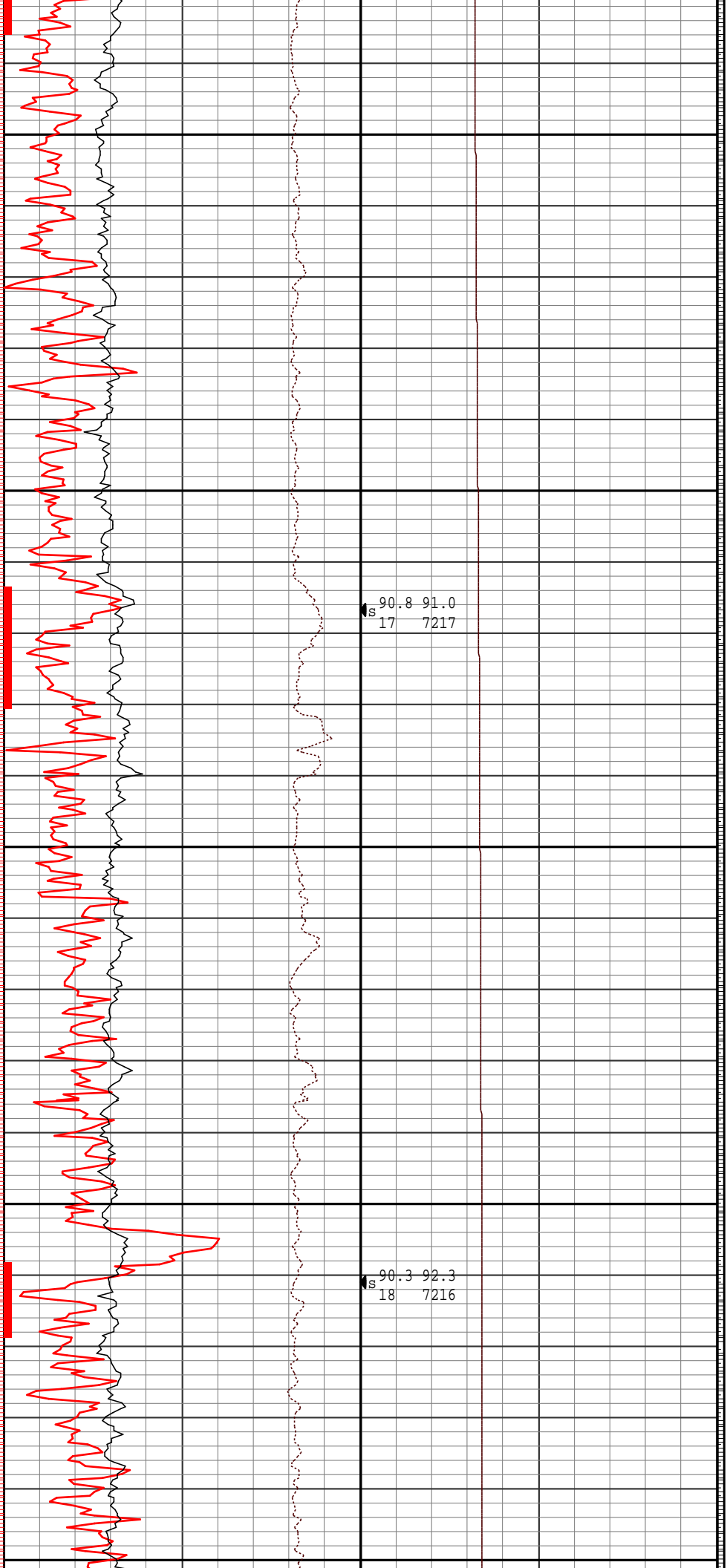
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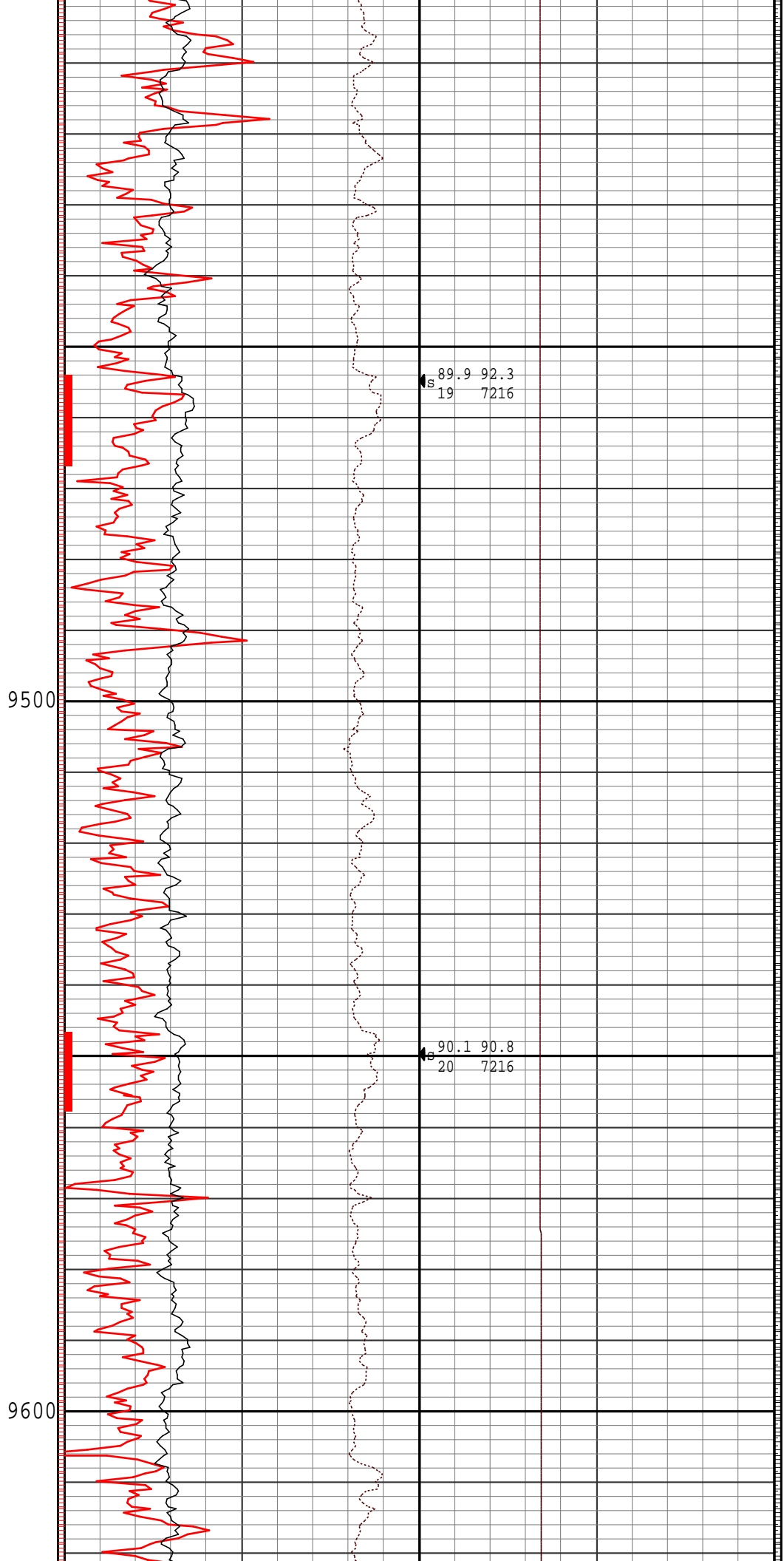
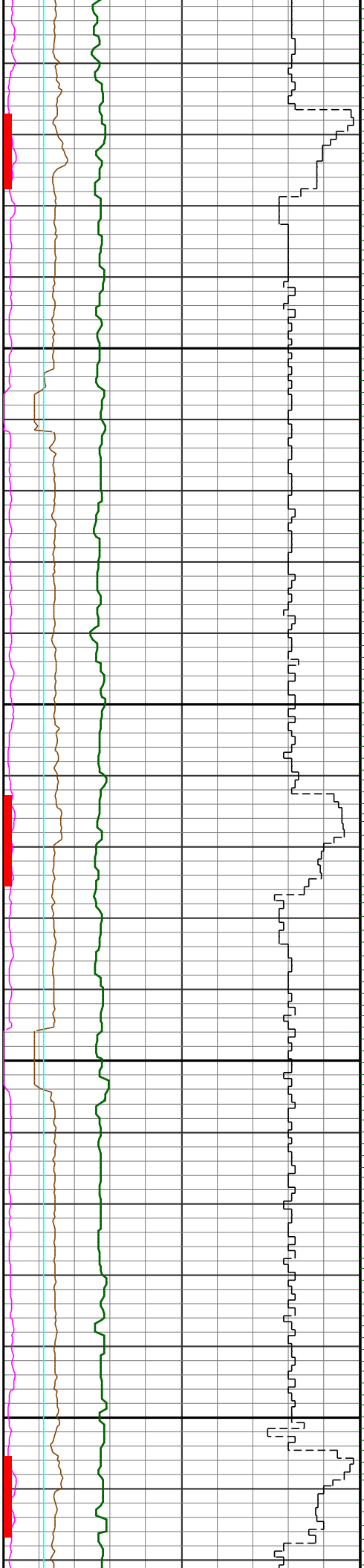


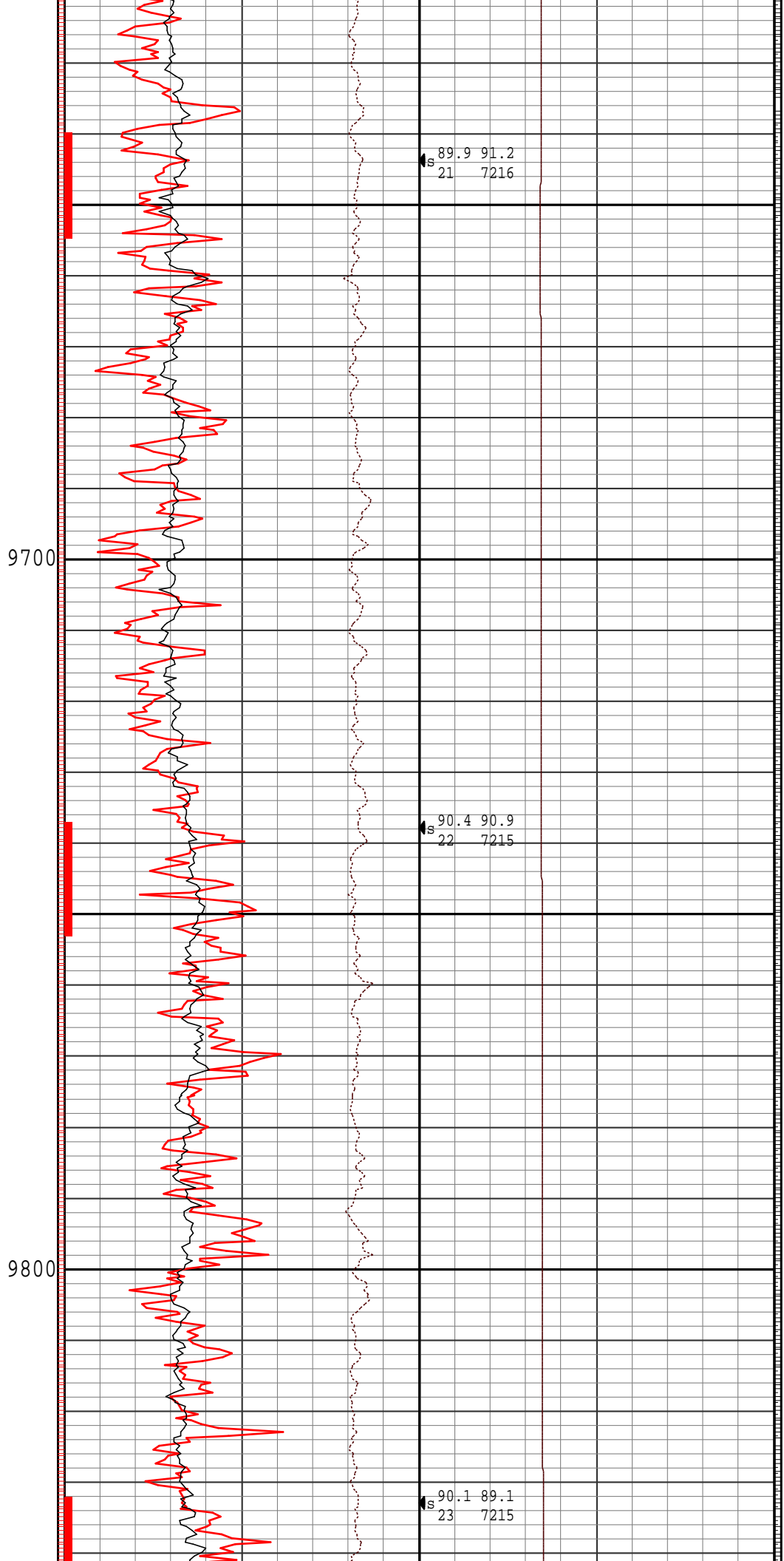
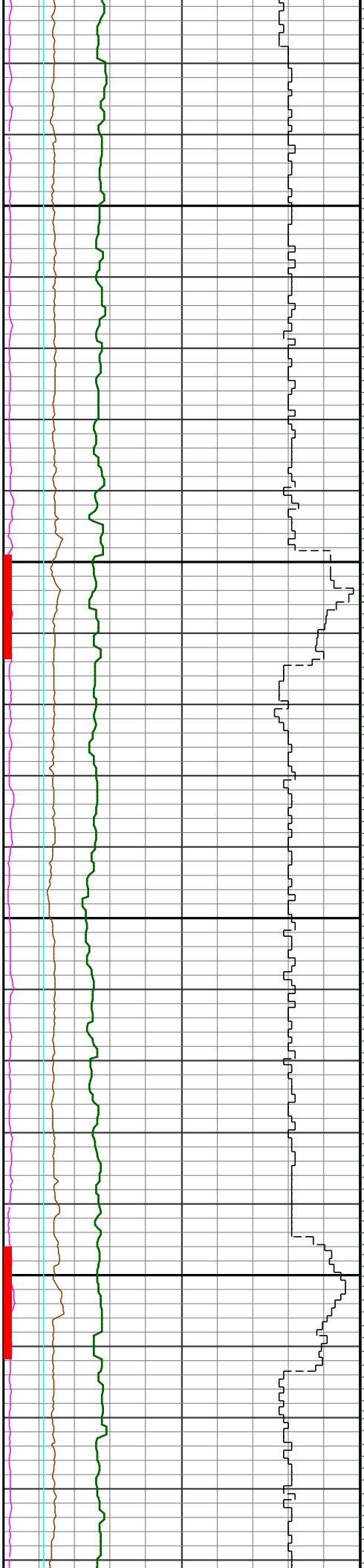
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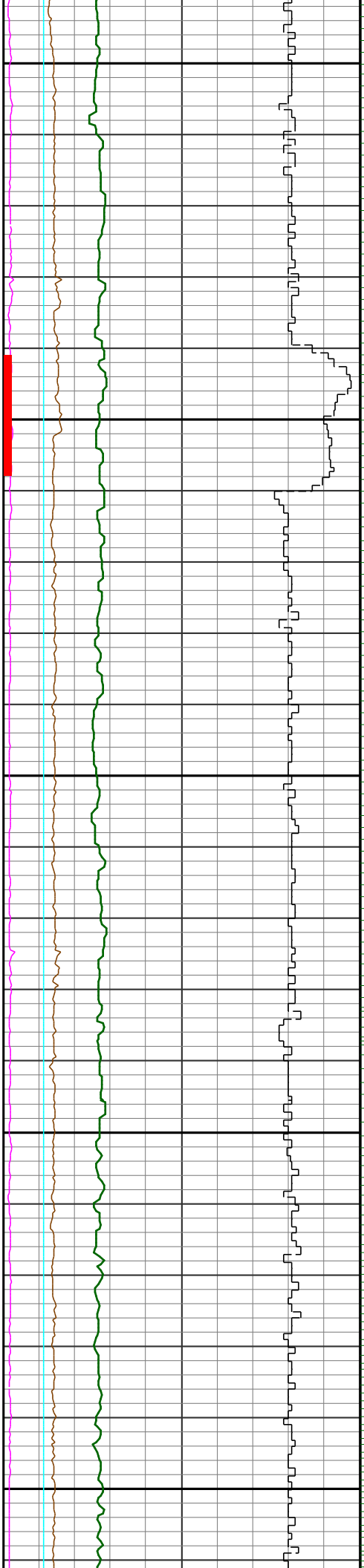
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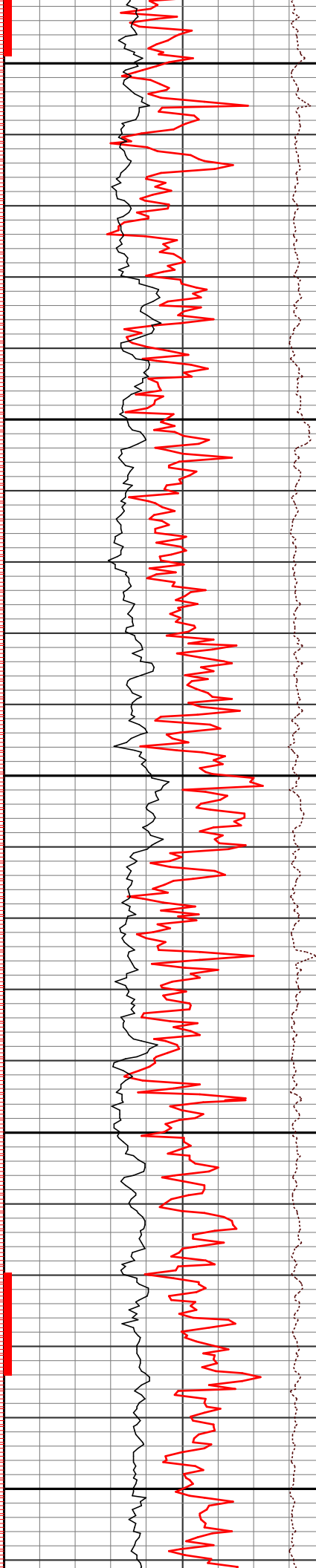






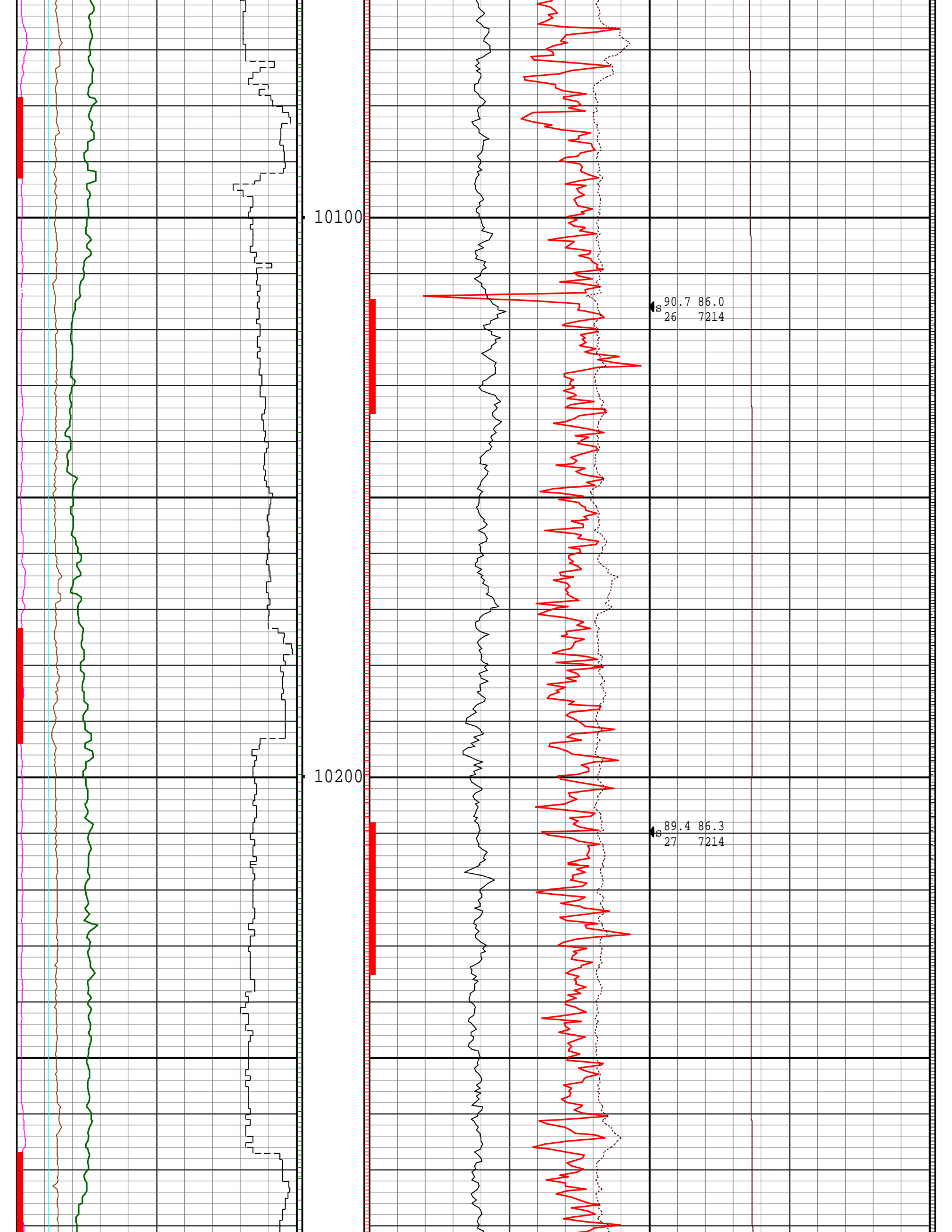
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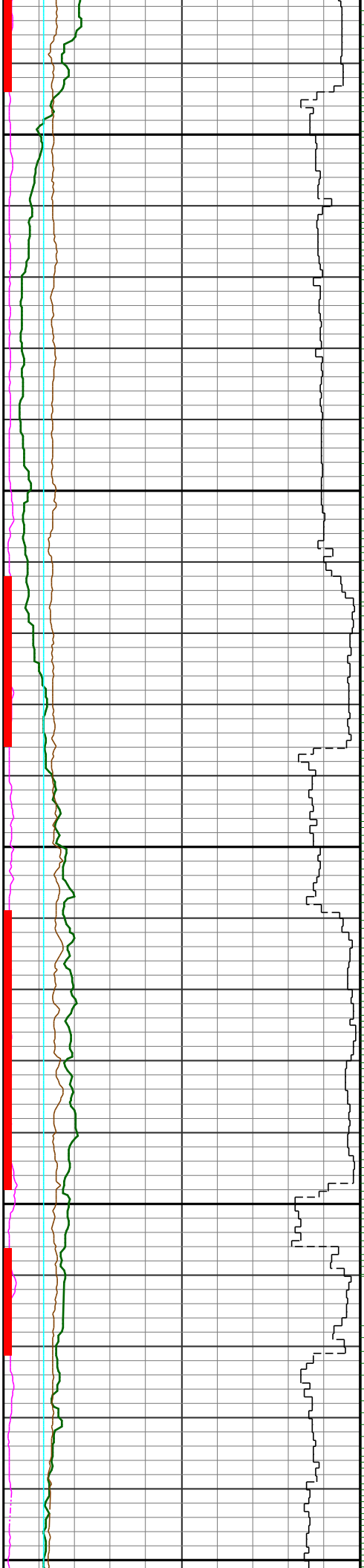
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24 7215

S 90.5 86.1  
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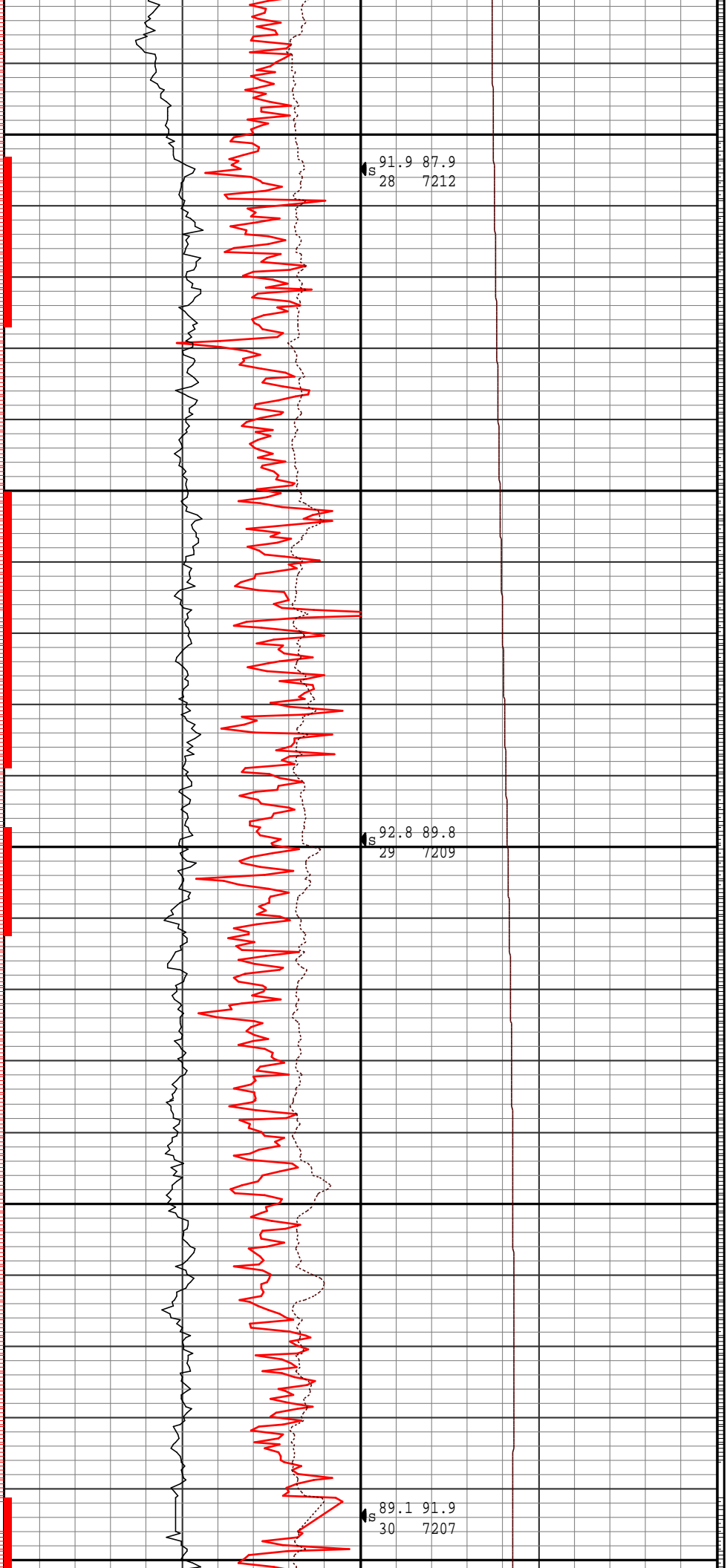




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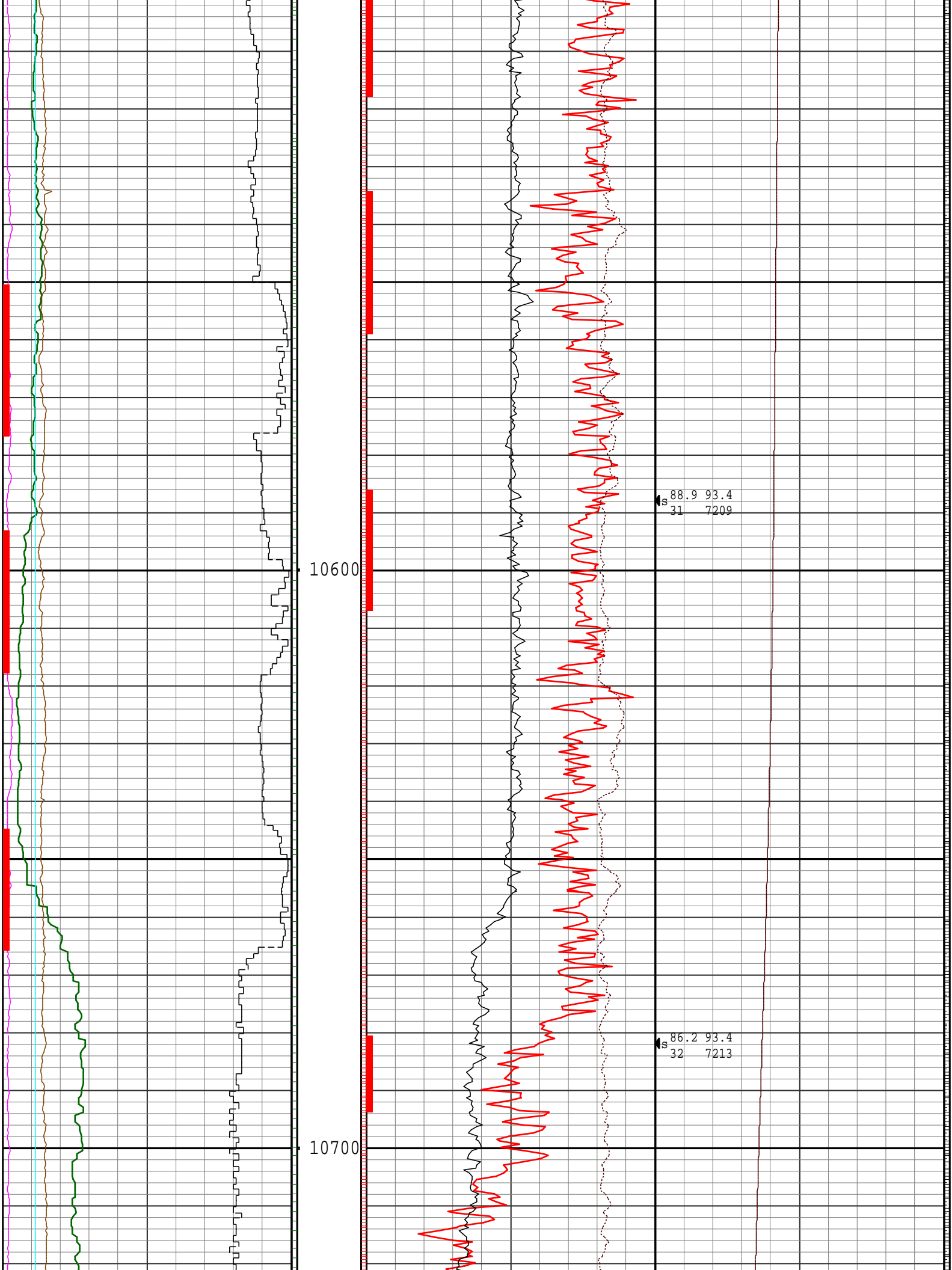
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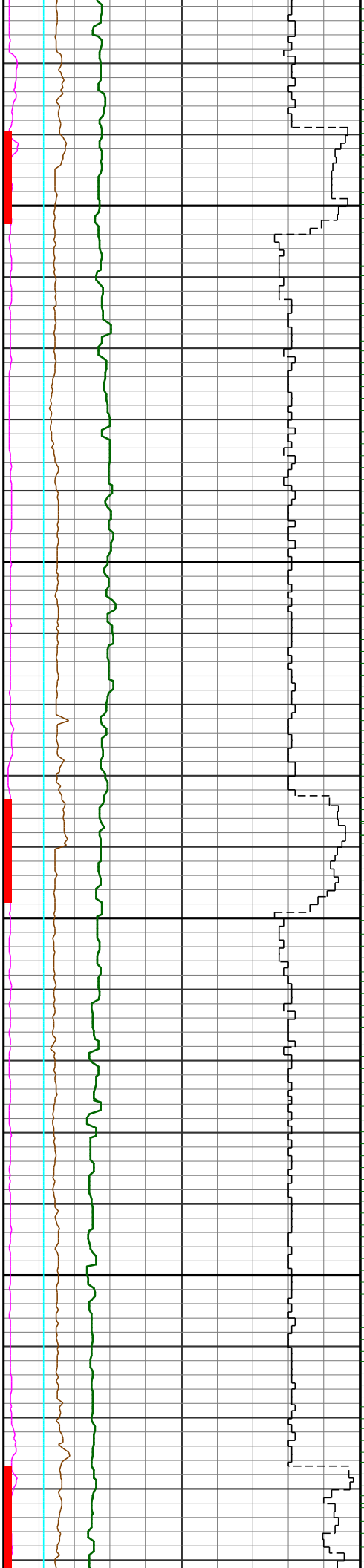
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28 7212

92.8 89.8  
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89.1 91.9  
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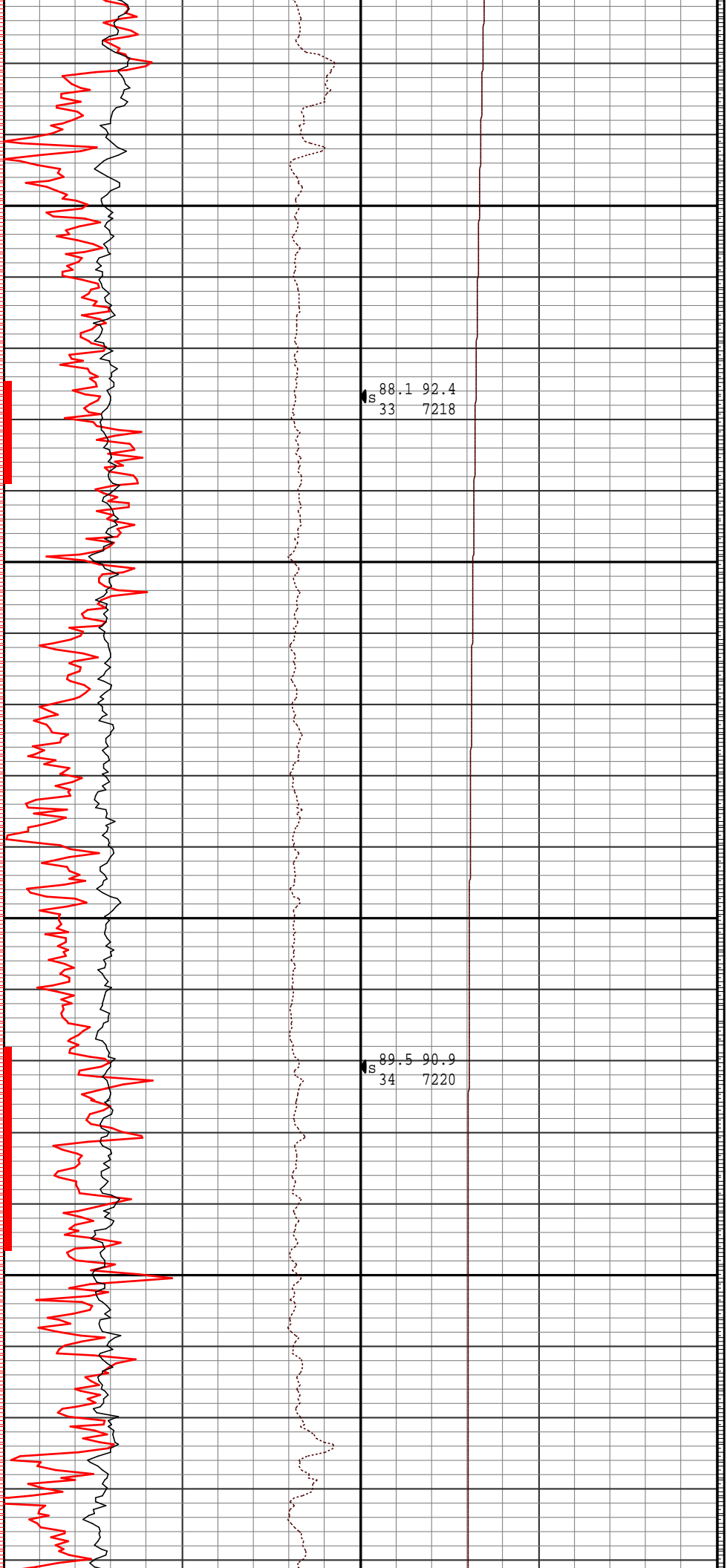






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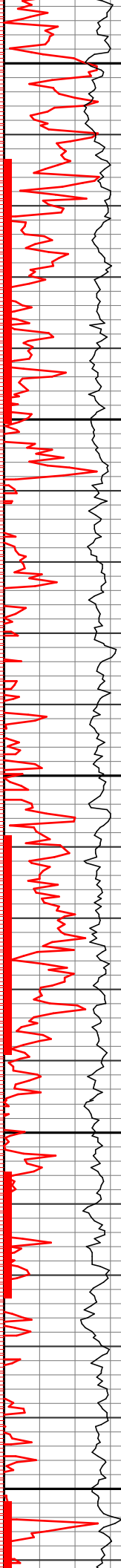
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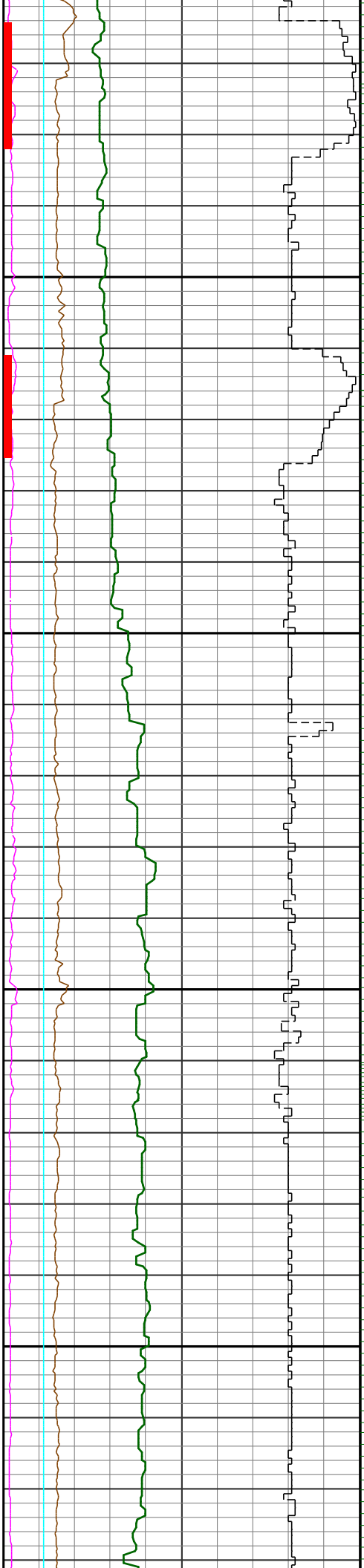
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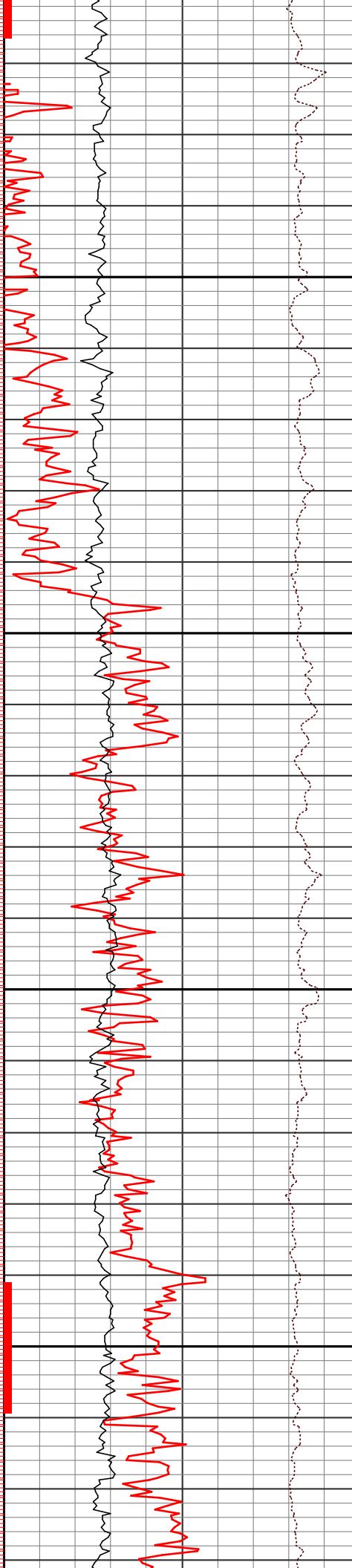
90.3 90.5  
36 7219

88.4 90.3  
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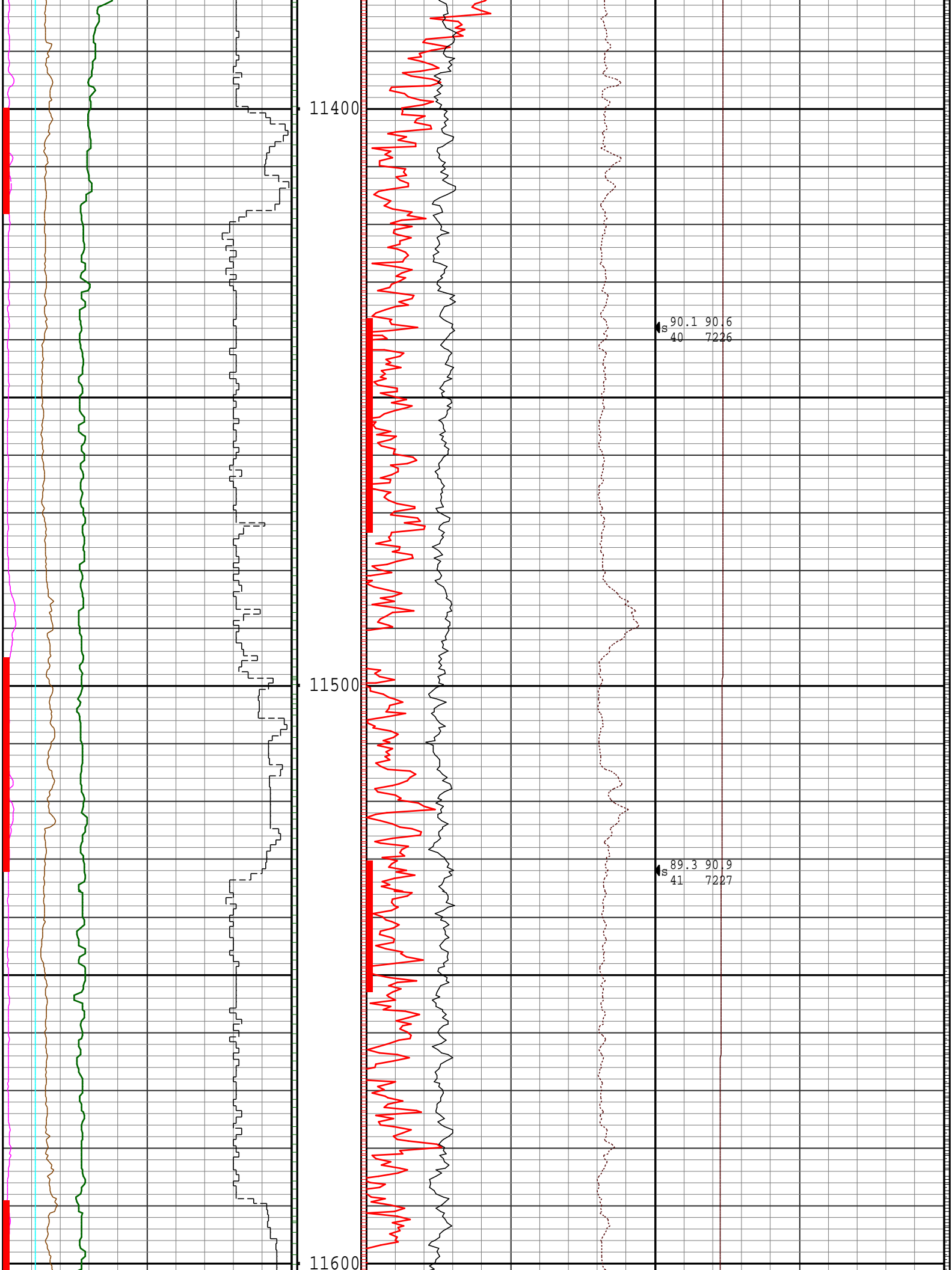
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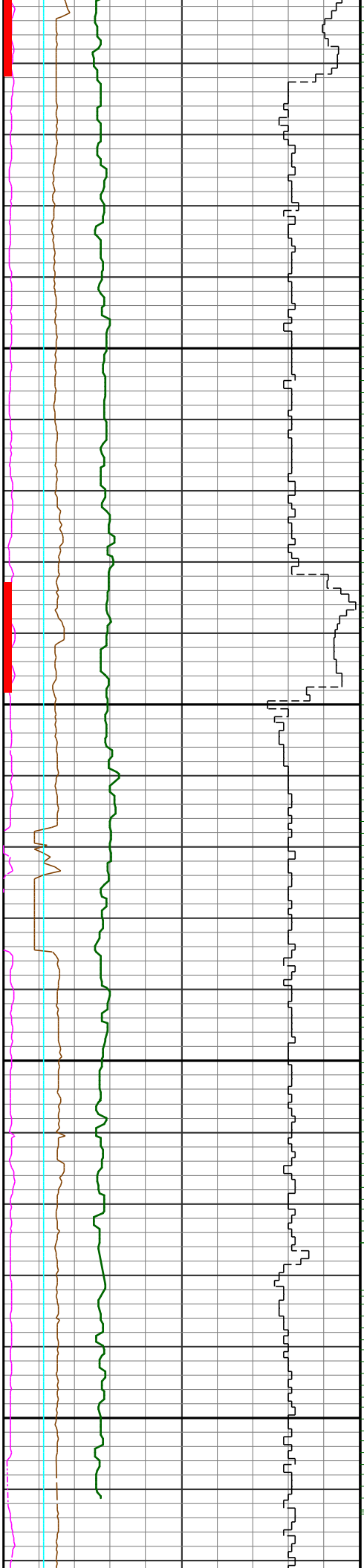
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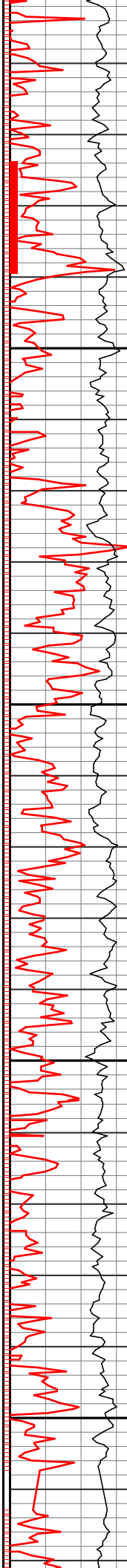
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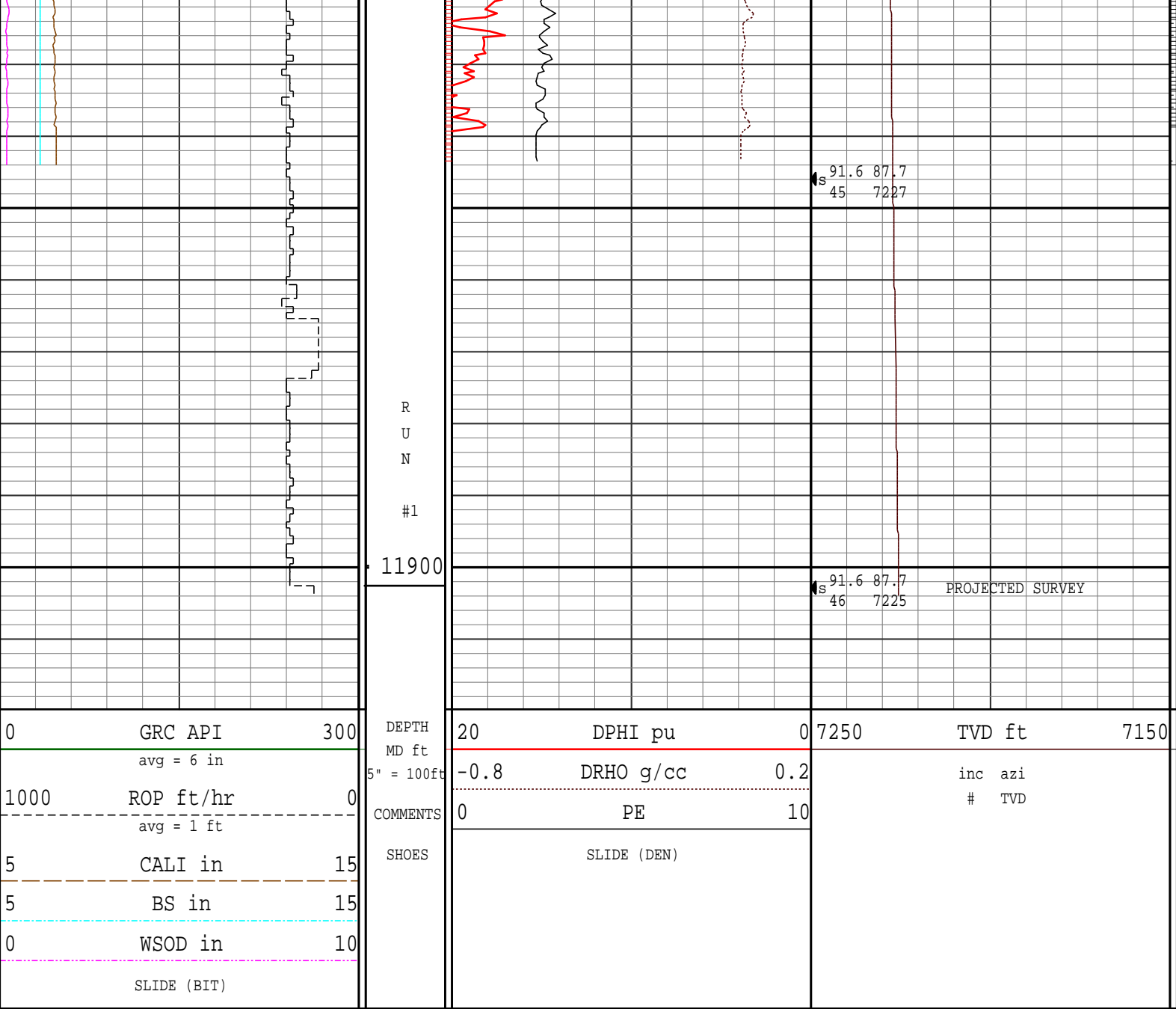
11800



89.8 89.1  
42 7228

89.7 88.3  
43 7228

90.8 87.1  
44 7228



Survey Report											
Vertical Section Plane: 82.39°						Total Correction: 8.62° East to True					
Calculation Method: Minimum Curvature						Survey Reference: Wellhead					
North Aligned to: True North						Well: FRYE FARMS #13 5-5-32-090-4CH					
RT: 22.5 FT ROTARY TABLE TO GROUND LEVEL.						FIELD: WATENBERG					
Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	Rect Co-ord North (ft)	Rect Co-ord East (ft)	Closure Distance (ft)	Closure Direction (deg)	Dog-leg Severity (dg/hft)	Temp (deg F)
WELL ASSUMED TO BE VERTICAL AT SURFACE.											
0.00	0.00	0.00	0.23	0.00	-0.02	0.90 N	0.14 W	0.91	351.17	0.00	
THE FOLLOWING ARE ENSIGN PATHTRACKER MWD SURVEYS.											
166.00	0.90	165.30	166.22	166.00	0.14	0.36 S	0.19 E	0.41	152.23	0.54	
227.00	0.80	140.70	227.22	61.00	0.42	1.16 S	0.58 E	1.29	153.26	0.61	
318.00	1.30	2.10	318.21	91.00	0.93	0.62 S	1.02 E	1.19	121.07	2.17	
410.00	2.00	357.90	410.17	92.00	1.26	2.03 N	1.00 E	2.26	26.27	0.77	
502.00	1.00	318.50	502.14	92.00	0.97	4.24 N	0.41 E	4.26	5.55	1.50	
594.00	0.60	197.60	594.14	92.00	0.32	4.38 N	0.27 W	4.39	356.52	1.53	
686.00	0.40	218.70	686.13	92.00	-0.12	3.67 N	0.61 W	3.72	350.52	0.29	
778.00	0.60	231.90	778.13	92.00	-0.77	3.12 N	1.19 W	3.34	339.09	0.25	
870.00	0.90	221.70	870.12	92.00	-1.73	2.28 N	2.05 W	3.07	318.07	0.36	
1005.00	0.80	220.60	1005.11	135.00	-3.24	0.78 N	3.37 W	3.46	282.98	0.08	
1098.00	0.70	241.90	1098.10	93.00	-4.25	0.02 N	4.29 W	4.29	270.22	0.32	
1191.00	0.70	235.60	1191.09	93.00	-5.29	0.57 S	5.26 W	5.30	263.80	0.08	
1284.00	0.60	227.50	1284.09	93.00	-6.20	1.22 S	6.09 W	6.21	258.66	0.14	
1374.00	1.10	232.20	1374.08	90.00	-7.33	2.07 S	7.12 W	7.42	253.80	0.56	
1466.00	1.00	234.70	1466.06	92.00	-8.72	2.18 S	8.28 W	8.97	240.22	0.10	

1468.00	1.10	224.70	1468.00	92.00	-8.73	3.18 S	8.38 W	8.97	249.22	0.19
1557.00	1.10	54.90	1557.06	91.00	-8.59	3.24 S	8.23 W	8.84	248.49	2.30
1649.00	3.10	44.00	1648.99	92.00	-5.85	0.95 S	5.78 W	5.85	260.70	2.21
1741.00	5.20	41.70	1740.74	92.00	-0.74	3.96 N	1.28 W	4.16	342.13	2.29
1833.00	6.60	47.50	1832.25	92.00	6.76	10.64 N	5.40 E	11.93	26.89	1.65
1925.00	9.40	48.40	1923.35	92.00	17.33	19.20 N	14.91 E	24.31	37.83	3.05
2018.00	10.70	46.40	2014.92	93.00	30.61	30.20 N	26.85 E	40.41	41.64	1.45
2110.00	11.60	42.60	2105.18	92.00	44.63	42.90 N	39.29 E	58.17	42.49	1.26
2201.00	11.30	46.40	2194.37	91.00	58.87	55.78 N	51.94 E	76.22	42.96	0.89
2295.00	10.80	50.70	2286.63	94.00	73.82	67.71 N	65.43 E	94.16	44.02	1.03
2390.00	11.40	58.20	2379.86	95.00	89.96	78.30 N	80.29 E	112.15	45.72	1.65
2484.00	11.70	55.40	2471.96	94.00	106.92	88.60 N	96.04 E	130.67	47.30	0.68
2578.00	11.30	53.60	2564.07	94.00	123.49	99.48 N	111.29 E	149.27	48.21	0.57
2672.00	12.40	49.60	2656.07	94.00	140.04	111.49 N	126.39 E	168.54	48.59	1.46
2765.00	12.40	54.20	2746.90	93.00	157.24	123.80 N	142.10 E	188.46	48.94	1.06
2860.00	12.20	50.50	2839.72	95.00	174.75	136.15 N	158.11 E	208.66	49.27	0.86
2954.00	11.30	45.90	2931.75	94.00	190.59	148.88 N	172.39 E	227.78	49.19	1.38
3049.00	12.60	43.80	3024.69	95.00	206.17	162.84 N	186.25 E	247.40	48.84	1.44
3144.00	12.50	44.50	3117.42	95.00	222.39	177.65 N	200.63 E	267.97	48.48	0.19
3237.00	11.90	58.60	3208.34	93.00	239.11	189.83 N	215.87 E	287.46	48.67	3.26
3331.00	12.90	60.30	3300.15	94.00	257.70	200.07 N	233.26 E	307.31	49.38	1.13
3425.00	12.20	59.60	3391.90	94.00	276.58	210.30 N	250.94 E	327.41	50.04	0.76
3518.00	13.50	56.30	3482.57	93.00	295.39	221.30 N	268.44 E	347.90	50.50	1.60
3612.00	12.80	57.20	3574.11	94.00	314.66	233.02 N	286.33 E	369.16	50.86	0.78
3707.00	13.30	63.30	3666.66	95.00	334.51	243.63 N	304.93 E	390.31	51.38	1.54
3802.00	13.70	57.30	3759.04	95.00	355.03	254.62 N	324.16 E	412.21	51.85	1.53
3895.00	13.40	49.60	3849.46	93.00	374.06	267.56 N	341.64 E	433.94	51.93	1.96
3989.00	12.30	47.30	3941.10	94.00	391.41	281.41 N	357.29 E	454.81	51.78	1.29
4085.00	12.30	46.10	4034.90	96.00	408.02	295.43 N	372.18 E	475.18	51.56	0.27
4178.00	11.60	46.80	4125.88	93.00	423.61	308.70 N	386.13 E	494.36	51.36	0.77
4272.00	11.50	52.80	4217.98	94.00	439.45	320.84 N	400.48 E	513.15	51.30	1.28
4365.00	12.70	56.30	4308.91	93.00	456.69	332.12 N	416.37 E	532.61	51.42	1.51
4457.00	12.10	50.80	4398.77	92.00	473.99	343.82 N	432.26 E	552.32	51.50	1.44
4552.00	10.60	49.80	4491.91	95.00	489.83	355.75 N	446.65 E	571.02	51.46	1.59
4646.00	10.60	48.50	4584.31	94.00	504.29	367.06 N	459.73 E	588.29	51.39	0.25
4740.00	11.70	51.00	4676.53	94.00	519.60	378.79 N	473.61 E	606.46	51.35	1.28
4833.00	13.10	46.10	4767.36	93.00	536.15	392.03 N	488.54 E	626.39	51.25	1.88
4928.00	12.00	45.20	4860.09	95.00	552.70	406.46 N	503.30 E	646.93	51.08	1.18
5023.00	12.00	46.40	4953.02	95.00	568.55	420.23 N	517.46 E	666.60	50.92	0.26
5118.00	12.10	47.50	5045.92	95.00	584.71	433.77 N	531.95 E	686.39	50.81	0.26
5213.00	12.40	48.70	5138.76	95.00	601.37	447.22 N	546.96 E	706.52	50.73	0.41
5307.00	12.80	50.50	5230.50	94.00	618.61	460.51 N	562.58 E	727.02	50.70	0.60
5403.00	10.50	46.30	5324.51	96.00	634.71	473.32 N	577.11 E	746.38	50.64	2.55
5497.00	10.50	50.50	5416.94	94.00	648.90	484.68 N	589.91 E	763.49	50.59	0.81
5592.00	11.30	50.70	5510.23	95.00	664.17	496.09 N	603.79 E	781.45	50.59	0.84
5687.00	12.70	49.40	5603.15	95.00	680.85	508.78 N	618.92 E	801.20	50.58	1.50
5782.00	12.30	52.40	5695.90	95.00	698.37	521.75 N	634.87 E	821.75	50.59	0.80
5877.00	12.30	52.60	5788.72	95.00	715.92	534.07 N	650.92 E	841.98	50.63	0.05
5970.00	12.40	45.70	5879.57	93.00	732.52	547.06 N	665.94 E	861.83	50.60	1.59
6062.00	11.80	48.50	5969.53	92.00	748.25	560.19 N	680.06 E	881.07	50.52	0.91
6156.00	12.30	52.40	6061.46	94.00	764.90	572.67 N	695.19 E	900.69	50.52	1.02
6251.00	13.00	48.90	6154.15	95.00	782.58	585.87 N	711.26 E	921.48	50.52	1.09
6344.00	12.80	49.60	6244.80	93.00	799.96	599.42 N	726.99 E	942.24	50.49	0.27
6438.00	13.00	49.90	6336.43	94.00	817.63	612.98 N	743.00 E	963.22	50.48	0.22

Survey Report											
Vertical Section Plane: 82.39°						Total Correction: 8.62° East to True					
Calculation Method: Minimum Curvature						Survey Reference: Wellhead					
North Aligned to: True North						Well: FRYE FARMS #13 5-5-32-090-4CH					
RT: 22.5 FT ROTARY TABLE TO GROUND LEVEL.						FIELD: WATENBERG					
Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	Rect Co-ord North (ft)	Rect Co-ord East (ft)	Closure Distance (ft)	Closure Direction (deg)	Dog-leg Severity (dg/hft)	Temp (deg F)
6531.00	12.80	50.80	6427.08	93.00	835.23	626.23 N	758.99 E	983.98	50.47	0.31	
6625.00	13.60	51.70	6518.60	94.00	853.61	639.66 N	775.73 E	1005.45	50.49	0.88	
6672.00	12.70	52.10	6564.37	47.00	862.82	646.26 N	784.14 E	1016.14	50.51	1.92	
6720.00	13.20	53.80	6611.15	48.00	872.19	652.74 N	792.73 E	1026.88	50.53	1.31	
6767.00	15.10	61.90	6656.72	47.00	882.64	658.79 N	802.46 E	1038.24	50.62	5.83	
6813.00	18.80	65.10	6700.72	46.00	895.33	664.74 N	814.47 E	1051.30	50.78	8.29	
6860.00	23.00	68.40	6744.62	47.00	911.48	671.31 N	829.89 E	1067.41	51.03	9.28	
6908.00	25.70	70.50	6788.34	48.00	930.77	678.23 N	848.42 E	1086.20	51.36	5.91	
6955.00	28.50	74.20	6830.18	47.00	951.85	684.69 N	868.82 E	1106.19	51.76	6.95	
7002.00	32.30	76.30	6870.71	47.00	975.44	690.72 N	891.82 E	1128.03	52.24	8.39	
7049.00	35.70	74.60	6909.67	47.00	1001.52	697.34 N	917.25 E	1152.23	52.76	7.51	
7095.00	40.30	77.00	6945.91	46.00	1029.65	704.25 N	944.70 E	1178.32	53.30	10.50	
7142.00	44.00	80.20	6980.76	47.00	1061.11	710.45 N	975.61 E	1206.88	53.94	9.10	
7189.00	49.40	83.70	7012.98	47.00	1095.29	715.20 N	1009.47 E	1237.14	54.68	12.70	
7236.00	52.70	83.50	7042.53	47.00	1131.83	719.27 N	1045.78 E	1269.26	55.48	7.03	
7284.00	55.50	84.60	7070.67	48.00	1170.69	723.29 N	1084.45 E	1303.53	56.30	6.12	
7331.00	57.70	84.20	7096.54	47.00	1209.90	727.12 N	1123.50 E	1338.27	57.09	4.73	
7378.00	61.00	85.10	7120.50	47.00	1250.29	730.89 N	1163.75 E	1374.23	57.87	7.21	
7425.00	64.50	85.80	7142.02	47.00	1292.01	734.20 N	1205.40 E	1411.39	58.65	7.56	
7519.00	72.70	88.10	7176.29	94.00	1379.17	738.80 N	1292.71 E	1488.94	60.25	9.01	
7567.00	77.80	89.30	7188.51	48.00	1425.29	739.85 N	1339.10 E	1529.89	61.08	10.90	

7597.00	77.38	83.38	7188.58	47.00	1471.25	740.50 N	1385.39 E	1570.87	61.88	10.78	
7614.00	82.40	89.10	7196.58	47.00	1471.25	740.50 N	1385.39 E	1570.87	61.88	9.80	
7662.00	86.10	90.00	7201.39	48.00	1518.63	740.87 N	1433.14 E	1613.31	62.66	7.93	
7692.00	88.60	89.50	7202.78		1548.34	741.00 N	1463.10 E	1640.04	63.14		
THE FOLLOWING ARE PATHFINDER MWD SURVEYS.											
7756.00	90.39	91.36	7203.34	64.00	1611.71	740.52 N	1527.09 E	1697.17	64.13	4.03	184.15
7851.00	90.17	91.74	7202.88	95.00	1705.49	737.95 N	1622.05 E	1782.03	65.54	0.46	176.92
7945.00	89.22	92.60	7203.38	94.00	1798.12	734.39 N	1715.98 E	1866.53	66.83	1.36	176.92
8040.00	88.27	89.60	7205.46	95.00	1892.00	732.57 N	1810.93 E	1953.49	67.98	3.31	176.92
8134.00	88.38	89.29	7208.21	94.00	1985.24	733.48 N	1904.89 E	2041.22	68.94	0.35	176.92
8228.00	88.49	88.48	7210.78	94.00	2078.60	735.31 N	1998.83 E	2129.79	69.80	0.87	176.92
8323.00	88.71	87.11	7213.10	95.00	2173.15	738.96 N	2093.73 E	2220.31	70.56	1.46	176.92
8417.00	89.78	87.61	7214.34	94.00	2266.79	743.29 N	2187.62 E	2310.45	71.23	1.26	191.38
8511.00	90.89	88.64	7213.79	94.00	2360.31	746.36 N	2281.57 E	2400.54	71.89	1.61	173.31
8606.00	90.73	89.20	7212.44	95.00	2454.69	748.16 N	2376.54 E	2491.52	72.53	0.61	191.38
8700.00	86.86	88.41	7214.42	94.00	2548.06	750.11 N	2470.48 E	2581.85	73.11	4.20	176.92
8795.00	88.38	88.35	7218.36	95.00	2642.46	752.80 N	2565.36 E	2673.53	73.65	1.60	180.54
8889.00	89.83	89.02	7219.83	94.00	2735.88	754.95 N	2659.32 E	2764.41	74.15	1.70	180.54
8983.00	90.50	90.08	7219.56	94.00	2829.14	755.69 N	2753.31 E	2855.14	74.65	1.33	180.54
9078.00	90.28	88.89	7218.92	95.00	2923.41	756.55 N	2848.31 E	2947.07	75.12	1.27	180.54
9172.00	90.78	90.16	7218.05	94.00	3016.67	757.33 N	2942.30 E	3038.20	75.57	1.45	176.92
9267.00	90.78	90.98	7216.75	95.00	3110.70	756.38 N	3037.28 E	3130.05	76.02	0.86	180.54
9361.00	90.28	92.28	7215.88	94.00	3203.47	753.71 N	3131.24 E	3220.67	76.47	1.48	184.15
9455.00	89.89	92.27	7215.74	94.00	3296.08	749.98 N	3225.16 E	3311.22	76.91	0.42	184.15
9550.00	90.11	90.78	7215.74	95.00	3389.87	747.45 N	3320.13 E	3403.22	77.31	1.59	187.76
9644.00	89.94	91.18	7215.70	94.00	3482.81	745.84 N	3414.11 E	3494.63	77.68	0.46	191.38
9738.00	90.39	90.93	7215.43	94.00	3575.74	744.11 N	3508.10 E	3586.15	78.02	0.55	191.38
9833.00	90.06	89.14	7215.06	95.00	3669.89	744.05 N	3603.09 E	3679.11	78.33	1.92	194.99
9927.00	90.00	87.87	7215.01	94.00	3763.35	746.50 N	3697.06 E	3771.67	78.58	1.35	194.99
10022.00	90.50	86.15	7214.60	95.00	3858.04	751.46 N	3791.92 E	3865.67	78.79	1.89	198.61
10116.00	90.67	85.98	7213.64	94.00	3951.84	757.91 N	3885.70 E	3958.92	78.96	0.25	194.99
10210.00	89.44	86.26	7213.54	94.00	4045.64	764.27 N	3979.48 E	4052.21	79.13	1.34	194.99
10305.00	91.85	87.91	7212.48	95.00	4140.31	769.10 N	4074.34 E	4146.30	79.31	3.07	198.61
10399.00	92.75	89.83	7208.70	94.00	4233.63	770.95 N	4168.24 E	4238.94	79.52	2.25	194.99
10494.00	89.10	91.92	7207.17	95.00	4327.55	769.50 N	4263.20 E	4332.09	79.77	4.43	191.38
10588.00	88.88	93.41	7208.83	94.00	4420.03	765.13 N	4357.08 E	4423.75	80.04	1.60	198.61
10682.00	86.19	93.37	7212.87	94.00	4512.21	759.58 N	4450.82 E	4515.17	80.32	2.86	198.61
10777.00	88.10	92.42	7217.60	95.00	4605.49	754.79 N	4545.57 E	4607.81	80.57	2.24	202.22
10871.00	89.55	90.90	7219.53	94.00	4698.24	752.07 N	4639.51 E	4700.07	80.79	2.24	202.22
10965.00	90.17	90.63	7219.76	94.00	4791.24	750.81 N	4733.50 E	4792.68	80.99	0.72	202.22
11060.00	90.28	90.52	7219.38	95.00	4885.27	749.86 N	4828.49 E	4886.37	81.17	0.16	202.22
11154.00	88.43	90.27	7220.44	94.00	4978.34	749.21 N	4922.48 E	4979.17	81.35	1.99	202.22
11249.00	87.76	89.14	7223.60	95.00	5072.52	749.70 N	5017.43 E	5073.13	81.50	1.38	205.83
11343.00	89.33	90.46	7225.99	94.00	5165.70	750.03 N	5111.39 E	5166.13	81.65	2.18	209.45
11438.00	90.11	90.64	7226.45	95.00	5259.73	749.11 N	5206.38 E	5260.00	81.81	0.84	209.45
11532.00	89.33	90.85	7226.91	94.00	5352.73	747.89 N	5300.37 E	5352.88	81.97	0.86	209.45
11626.00	89.78	89.12	7227.64	94.00	5445.90	747.92 N	5394.37 E	5445.97	82.11	1.90	209.45
11721.00	89.66	88.28	7228.11	95.00	5540.33	750.07 N	5489.34 E	5540.35	82.22	0.89	209.45
11815.00	90.84	87.11	7227.70	94.00	5633.92	753.85 N	5583.26 E	5633.92	82.31	1.77	213.06
11846.00	91.62	87.69	7227.03	31.00	5664.79	755.26 N	5614.22 E	5664.79	82.34	3.13	213.06
SURVEY IS PROJECTED TO BIT DEPTH											

Survey Report											
Vertical Section Plane: 82.39°						Total Correction: 8.62° East to True					
Calculation Method: Minimum Curvature						Survey Reference: Wellhead					
North Aligned to: True North						Well: FRYE FARMS #13 5-5-32-090-4CH					
RT: 22.5 FT ROTARY TABLE TO GROUND LEVEL.						FIELD: WATENBERG					
Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	TVD (ft)	Course Length (ft)	Vertical Section (ft)	Rect Co-ord North (ft)	Rect Co-ord East (ft)	Closure Distance (ft)	Closure Direction (deg)	Dog-leg Severity (dg/hft)	Temp (deg F)
11903.00	91.62	87.69	7225.42	57.00	5721.53	757.55 N	5671.15 E	5721.53	82.39	0.00	

EQUIPMENT DATA						
RUN NUMBER	1					
RES DTA						
RES MANDREL						
RES SIZE in						
RES VERIFIER						
API BLANKET						
HDS-1M DTA						
HDS-1M MANDREL						
HDS-1M SIZE in						



DNSC DTA	47084					
DNSC MANDREL	N47M084-D					
DNSC SIZE in	4 3/4					
DENSITY SOURCE NO.	5207-GW					
NEUTRON SOURCE NO.						
CLSS DTA						
CLSS MANDREL						
CLSS SIZE in						
DPM DTA						
DPM SIZE in						
DFT DTA						
DFT MANDREL						
DFT SIZE in						
PZIG UXM DTA						
PZIG LXM DTA						
PZIG SIZE in						

## BOTTOM HOLE ASSEMBLY RECORD

RUN 1 ft							
6 1/8" PDC BIT	0.50						
1.5° MUD MOTOR	28.63						
AWR (NMDC)	20.30						
ISDNSC (DEN/CAL)	19.34						
SABS (BATTERY)	15.70						
XO	1.95						
HDS-1L (DIR/GR)	29.00						
NMDC	30.81						
NMDC	30.10						
DP X 1	30.36						
REAMER	3.46						
DP X 1	30.74						
REAMER	3.46						
DP X 173	5441.77						
HWDP X 57	1750.50						
=====							
TOTAL BHA LENGTH	7436.62						
SENSOR OFFSETS:							
DIRECTIONAL	98.24						
GAMMA-RAY	90.16						
CALIPER	60.18						
DENSITY	58.55						
IMG DIRECTIONAL	55.23						



A Schlumberger Company

AZIMUTHAL DENSITY  
GAMMA-RAY

5" = 100'

