

**Company :** NOBLE ENERGY INC  
**Well :** WELLS RANCH AE19-649  
**Field :** WATTENBERG

**Date :** 24-Jan-2015  
**Time :** 13:05



A Schlumberger Company

GAMMA-RAY

2" = 100'  
FEET MD

COMPANY : NOBLE ENERGY INC  
WELL : WELLS RANCH AE19-649  
FIELD : WATTENBERG  
COUNTY : WELD  
STATE : CO  
COUNTRY : USA  
API No. : 05-123-39635

COMPANY : NOBLE ENERGY INC  
WELL : WELLS RANCH AE19-649  
FIELD : WATTENBERG  
COUNTY : WELD  
STATE : CO  
COUNTRY : USA  
API WELL No. : 05-123-39635

WELL LOCATION

LAT:40°28'10"N LON:104°21'21"  
X:3,318,318 Y:1,416,002 NAD83  
SEC:24 TWP:6N RANGE:63W

OTHER SERVICES

DIRECTIONAL  
ROP

DEPTH REF. : ROTARY TABLE  
ELEVATION : 30.00 ft (ROTARY TABLE - GROUND LEVEL)  
ALTITUDE : 4786.00 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	720	6992	00-13	720	5138
6 1/8	6992	11772	13-00	5138	6000
			00-90	6000	7123
			90+/-3	7123	11772

CASING RECORD

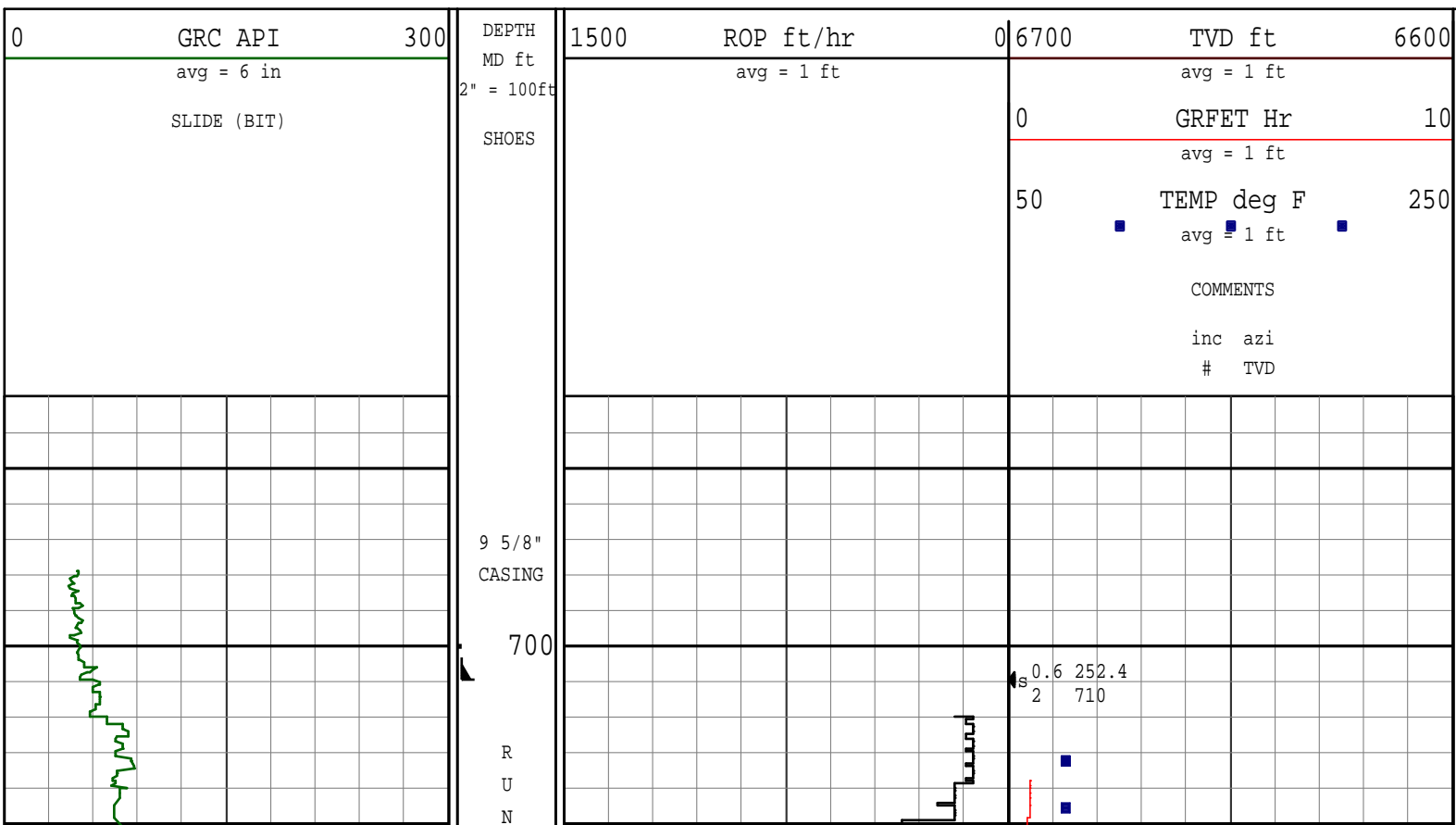
CASING SIZE in	FROM ft	TO ft
9 5/8	0	710
7	0	6987

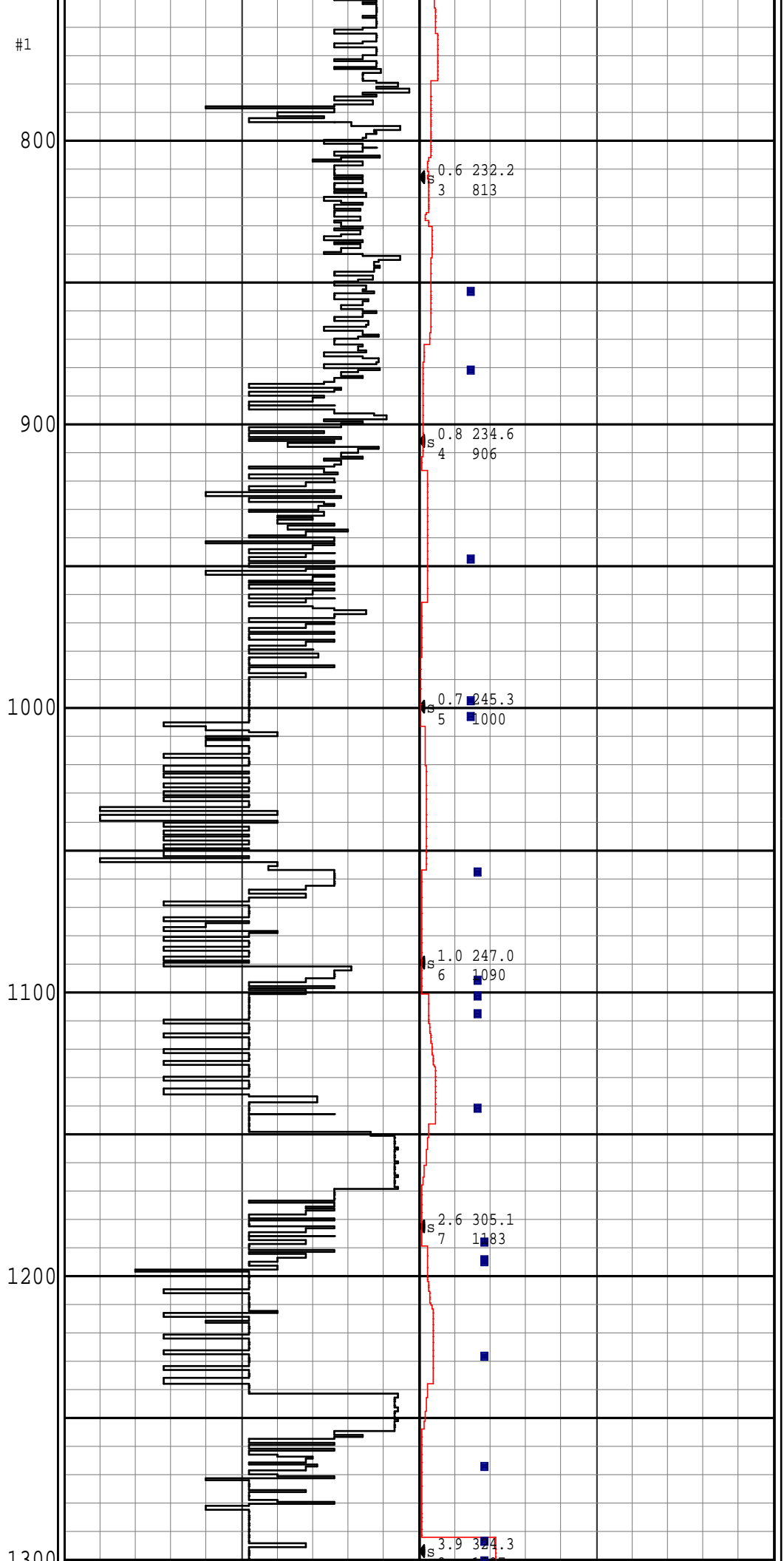
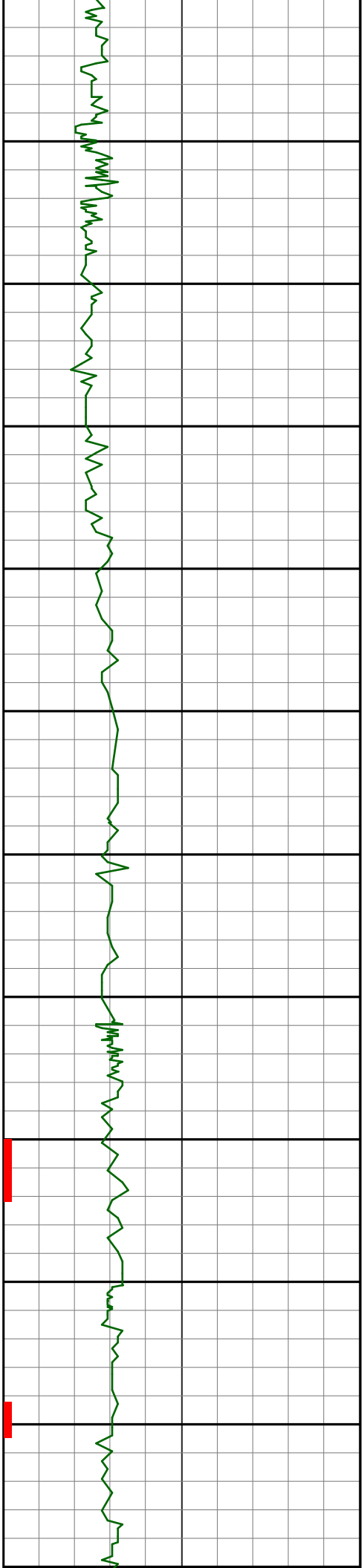
DRILLING Co.: HELMERICH & PAYNE, INC  
RIG : 330  
LMD UNIT No.: TRAILER DISTRICT : COMMERCE CTY  
SPUD DATE : 18-JAN-15  
LMD START DATE : 18-JAN-15 DEPTH : 680 ft  
LMD END DATE : 24-JAN-15 DEPTH : 11772 ft  
TOTAL DEPTH : 11772 ft

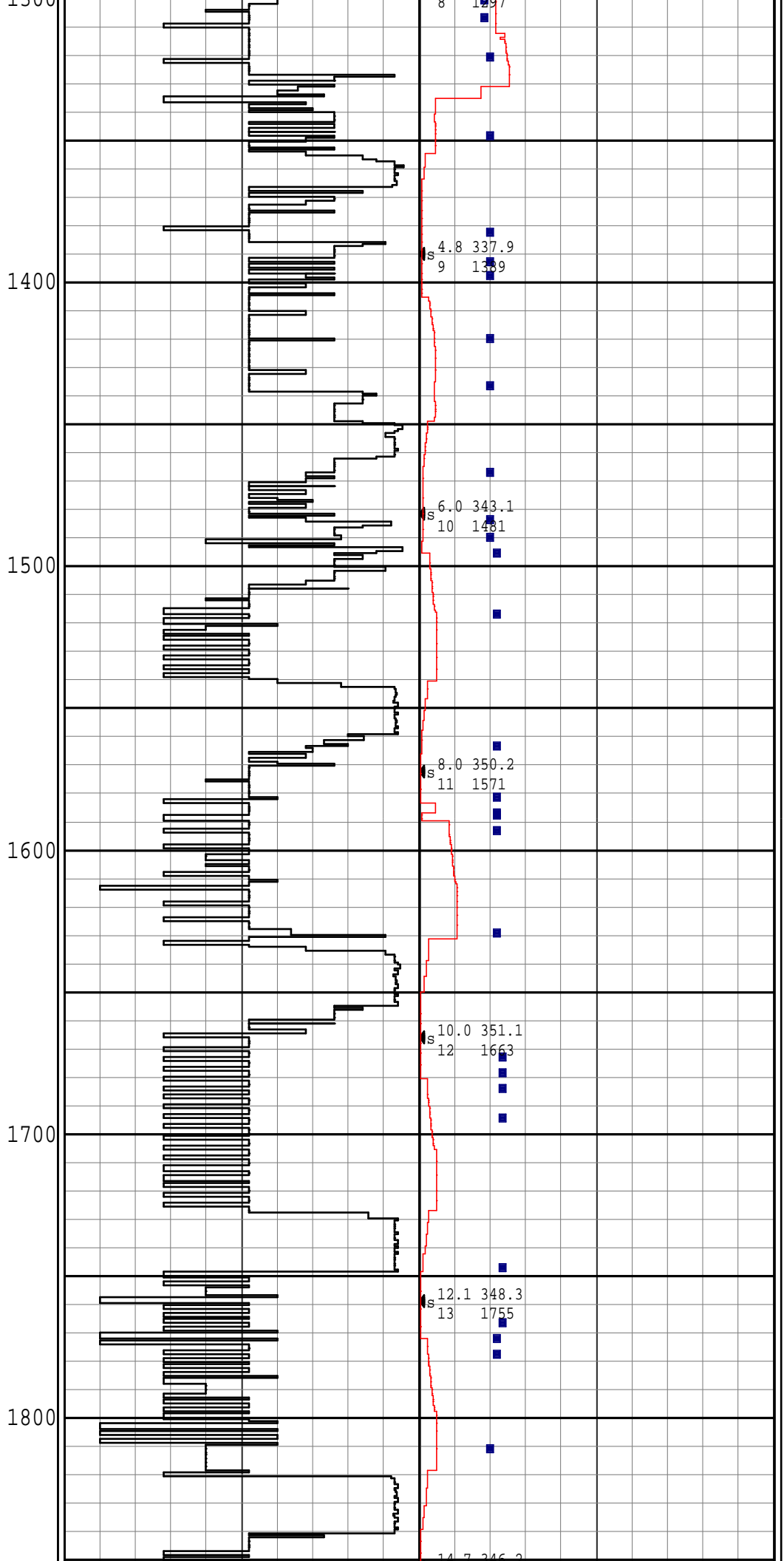
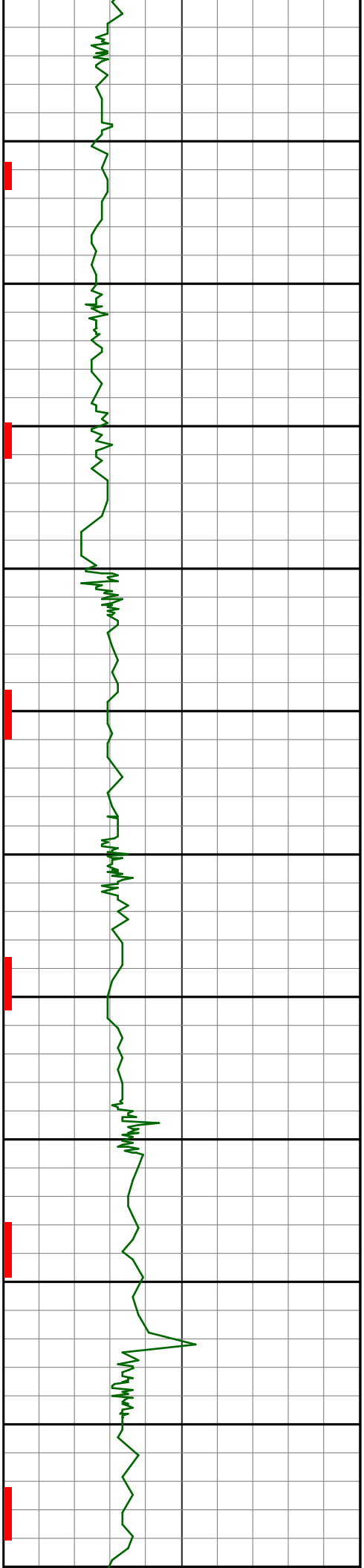
RUN DATA

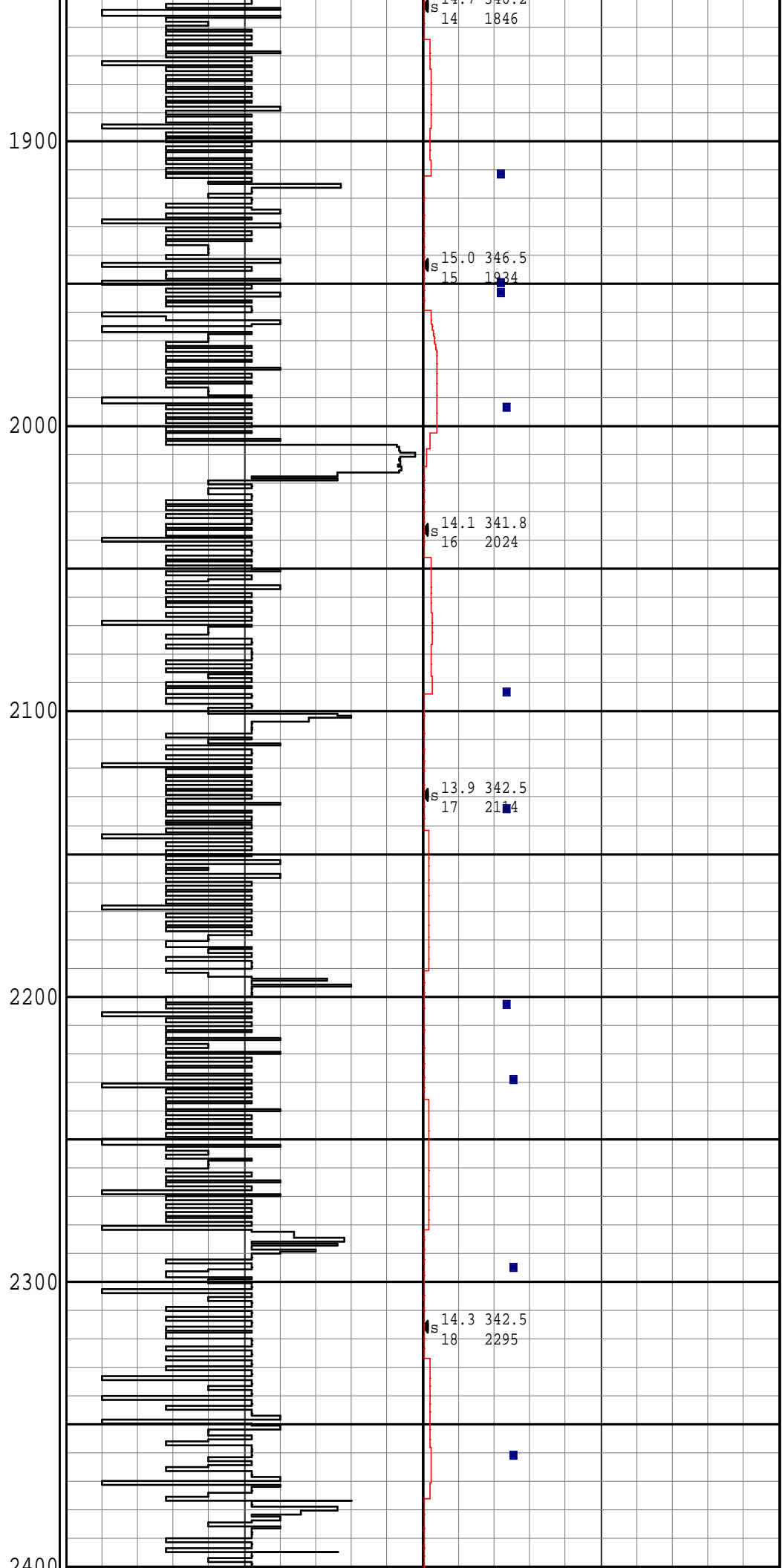
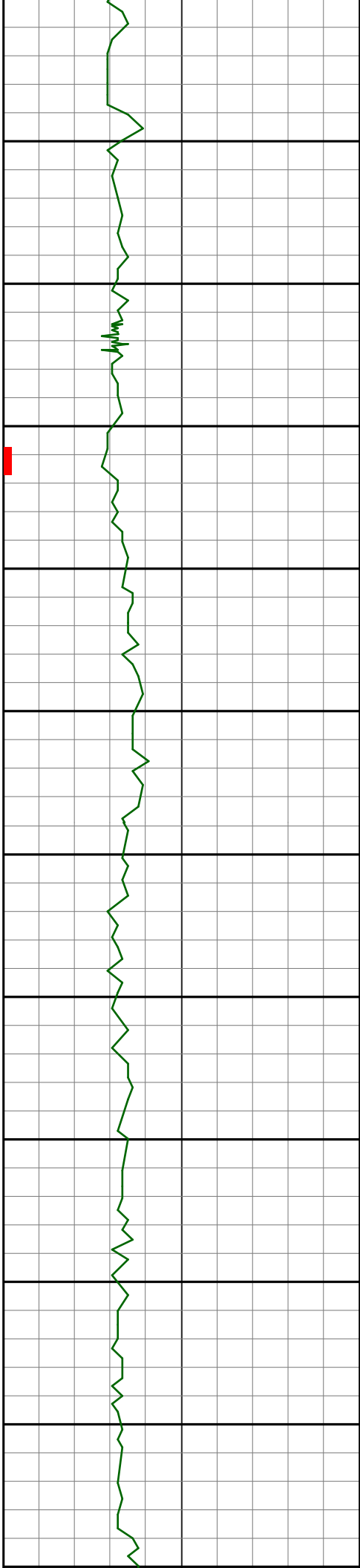
RUN NUMBER	1	3	4			
START DATE	18-JAN-15	20-JAN-15	22-JAN-15			
START TIME	06:15	04:45	03:30			
END DATE	19-JAN-15	21-JAN-15	24-JAN-15			
END TIME	23:00	05:30	12:00			
DEPTH IN ft	720	6158	6992			
DEPTH OUT ft	6158	6992	11772			
LOG TOP ft	720	6115	6952			
LOG BOTTOM ft	6115	6952	11730			
HOLE SIZE in	8 3/4	8 3/4	6 1/8			
MUD DATA @ ft	1450	6500	8693			
MUD TYPE	WATER BASED	WATER BASED	WATER BASED			
DENSITY lb/gal	8.40	10.90	9.70			
VISCOSITY s/qt	28	42	38			
pH	8.2	8.4	8.8			
FLUID LOSS cm3/30	0.0	0.0	0.0			
SALINITY ppm	2000	2000	2200			
Rm ohmm @ deg F	@	@	@			
Rmf ohmm @ deg F	@	@	@			

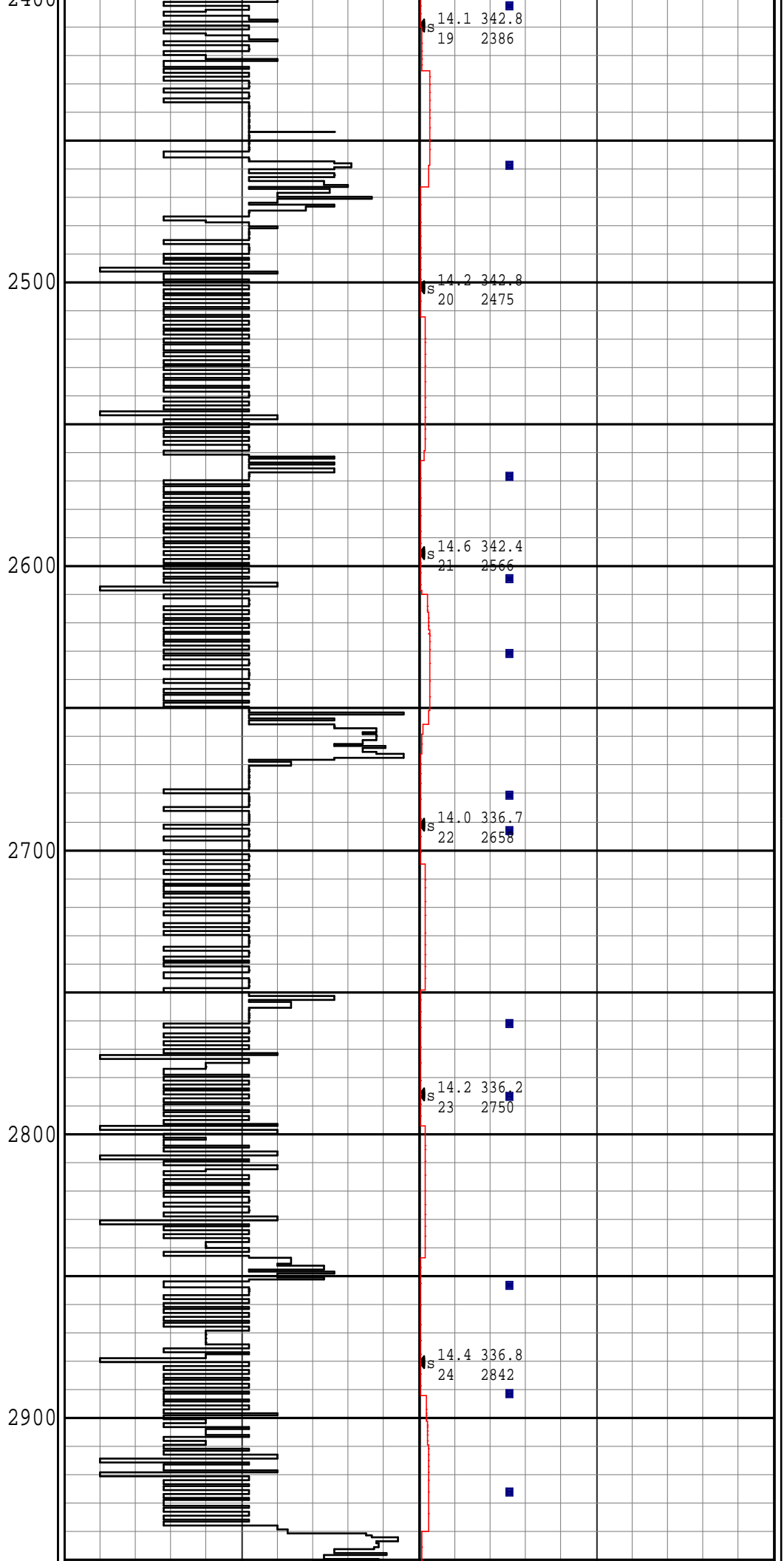
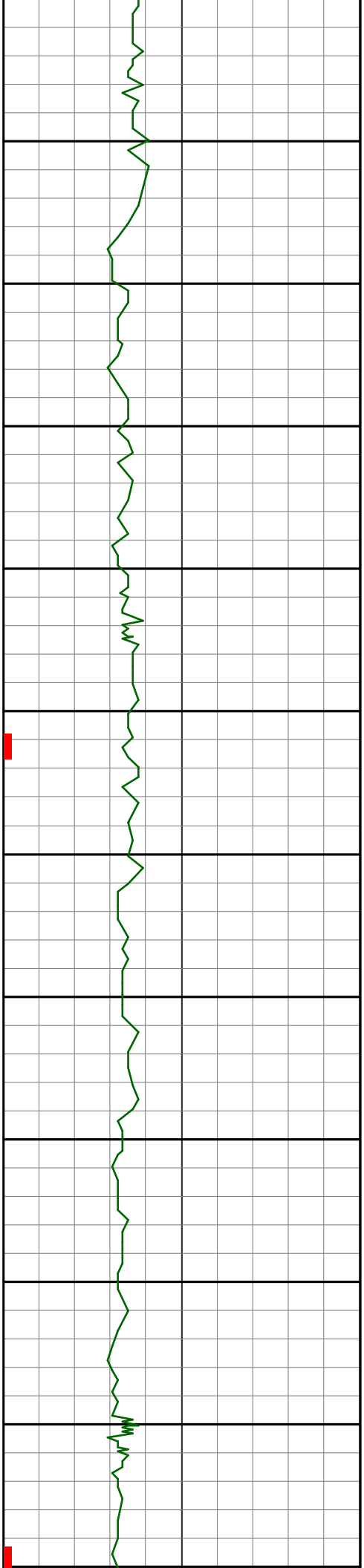
REMARKS
NOBLE ENERGY INC. AFE #: 200461
PATHFINDER JOB #: 15CC00125
ALL LOGGING DATA IS TRANSMITTED ONLY UNLESS STATED OTHERWISE.
ALL REFERENCES TO LOG TOP, LOG BOTTOM, OR LOGGING TOOL DEPTH REFER TO THE GAMMA-RAY SENSOR UNLESS STATED OTHERWISE.
ALL ANNOTATIONS IN THE DEPTH TRACK ARE REFERENCED TO BIT DEPTH.
LOGGED THROUGH CASING.
THIRD PARTY DEPTH TRACKING SERVICES PROVIDED BY PASON.
RUN #1: 6 3/4 HDS-1R/GAMMA LOGGING RUN.
RUN #3: 6 3/4 HDS-1R/GAMMA LOGGING RUN.
RUN #4: 4 3/4 HDS-1R/GAMMA LOGGING RUN.
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 V6.05B Release 20Jun2014
Plot Time : 24-Jan-2015 13:04

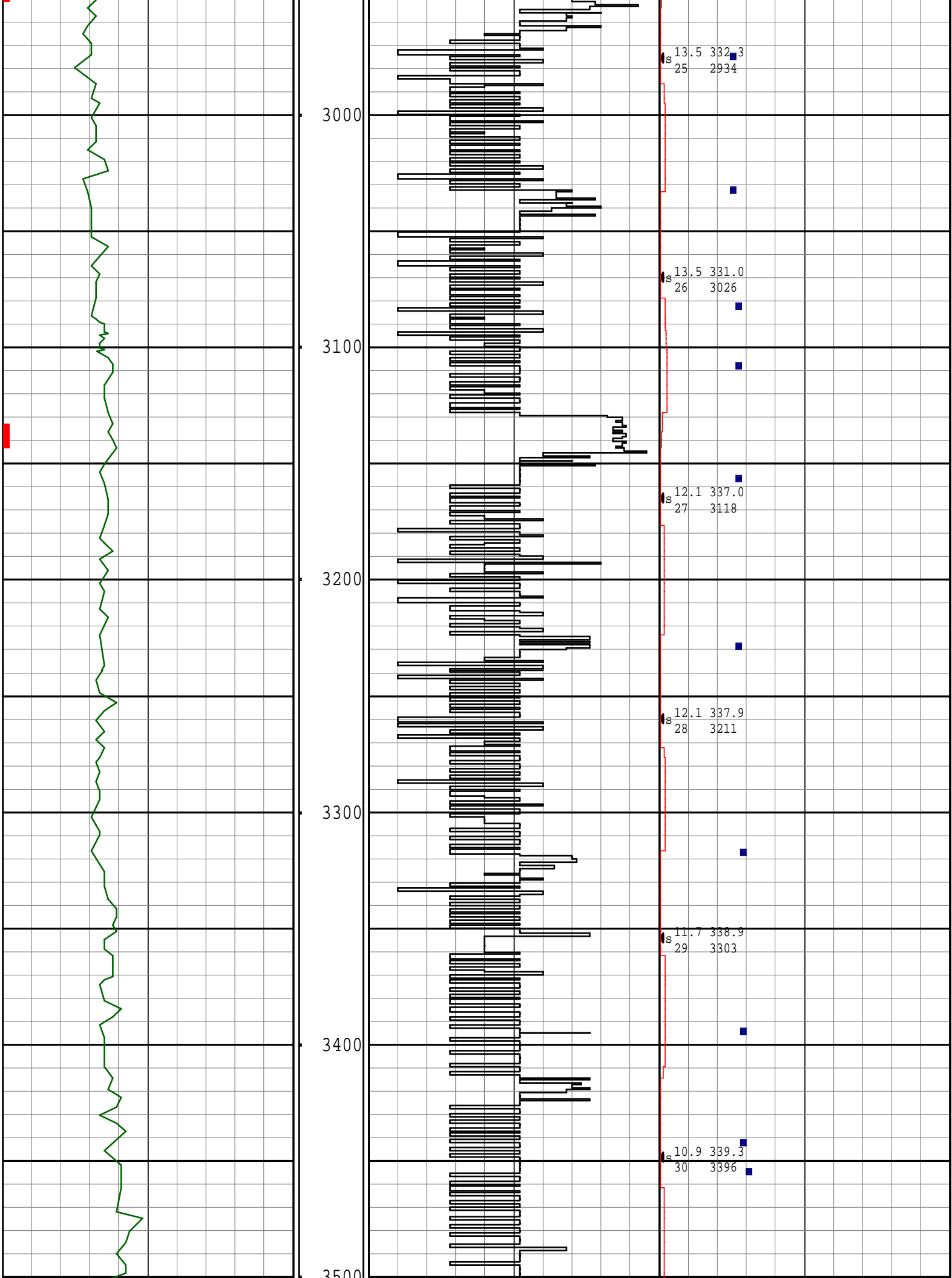




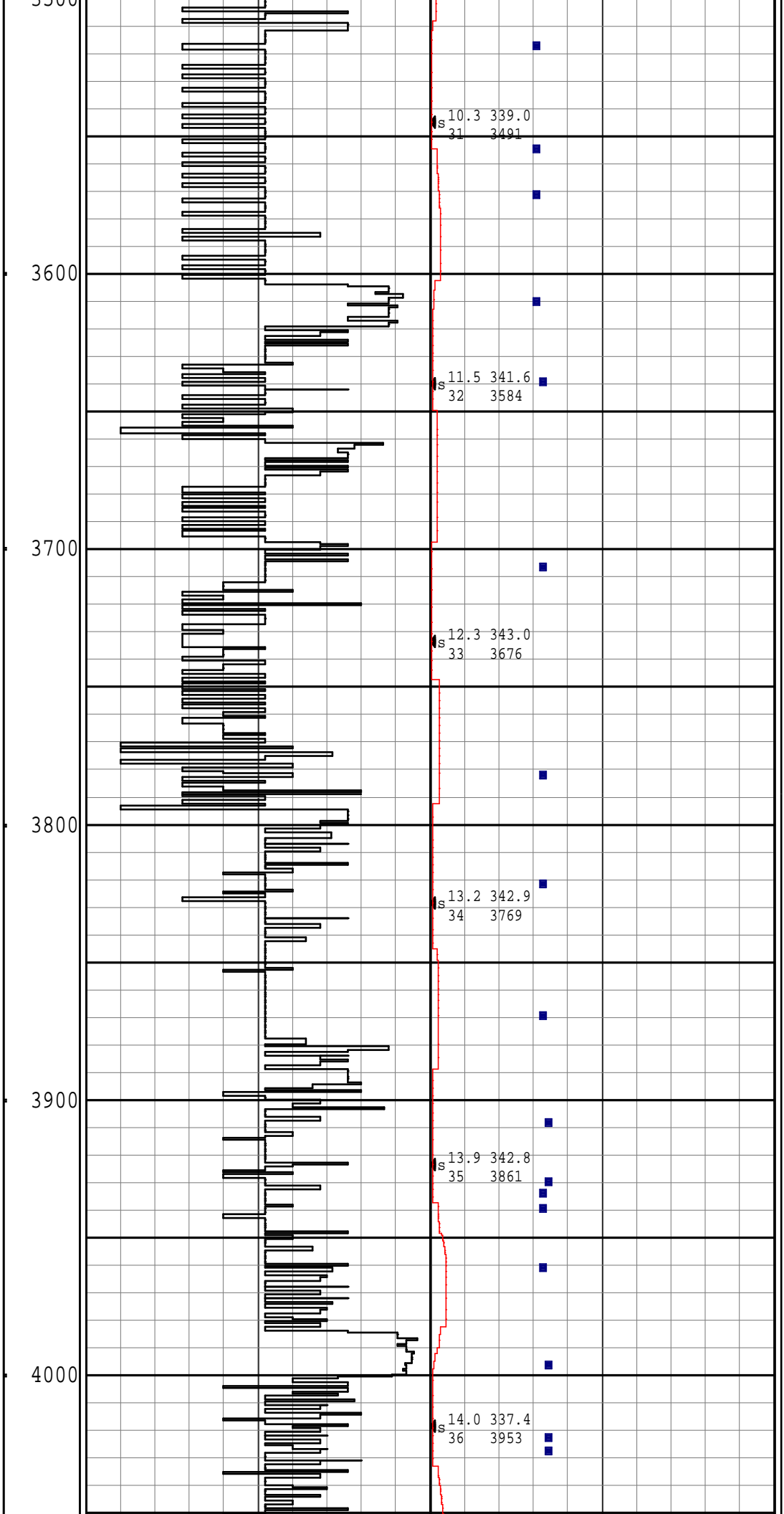
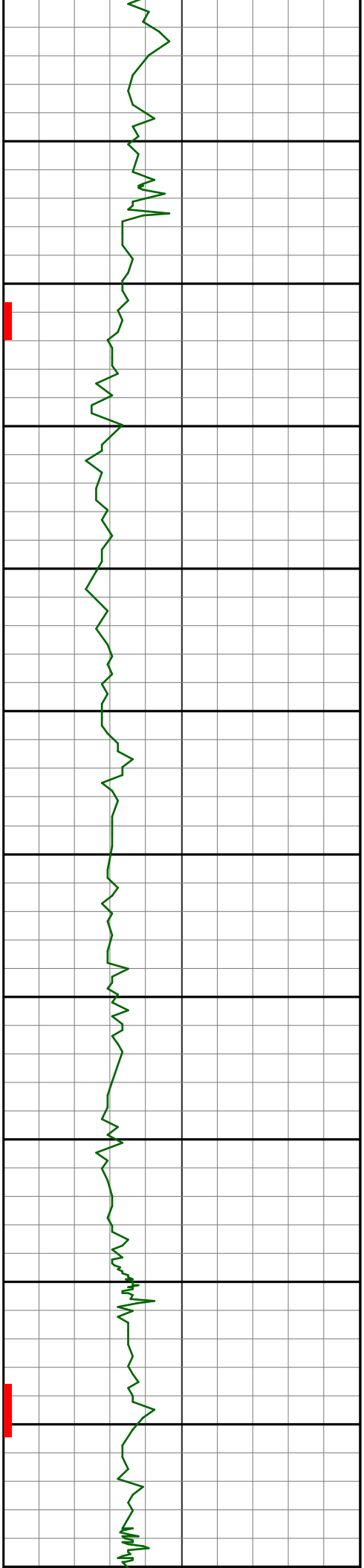


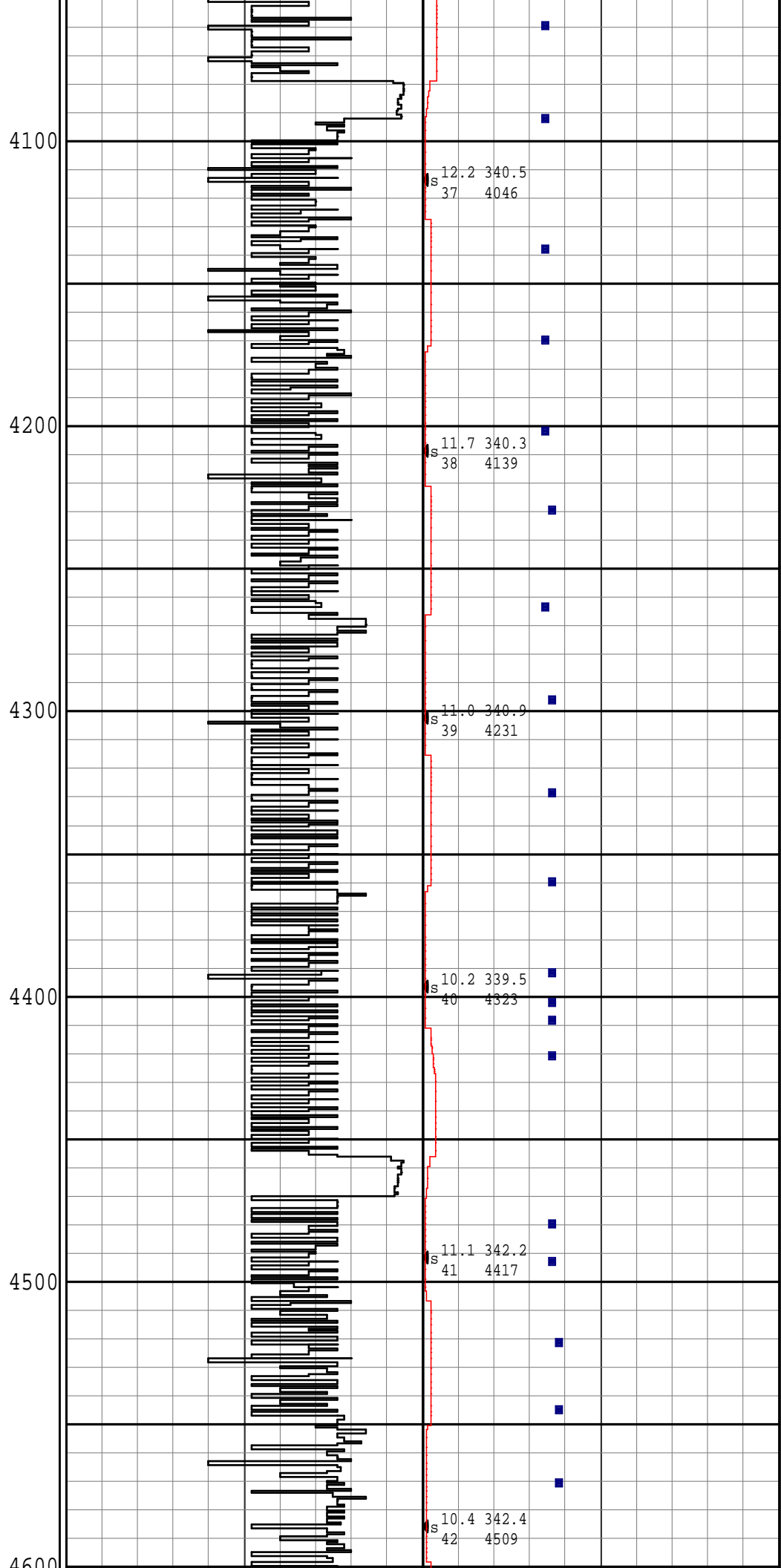
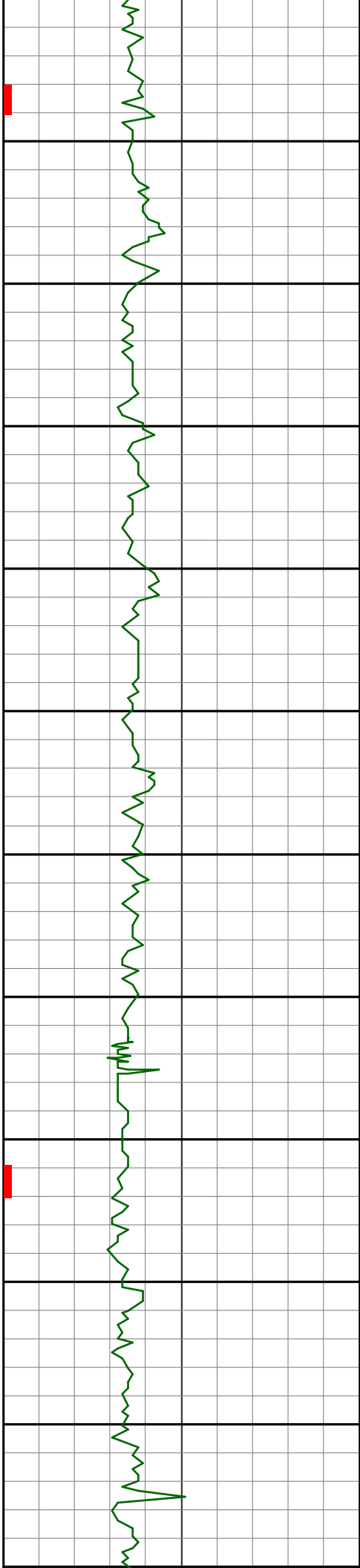


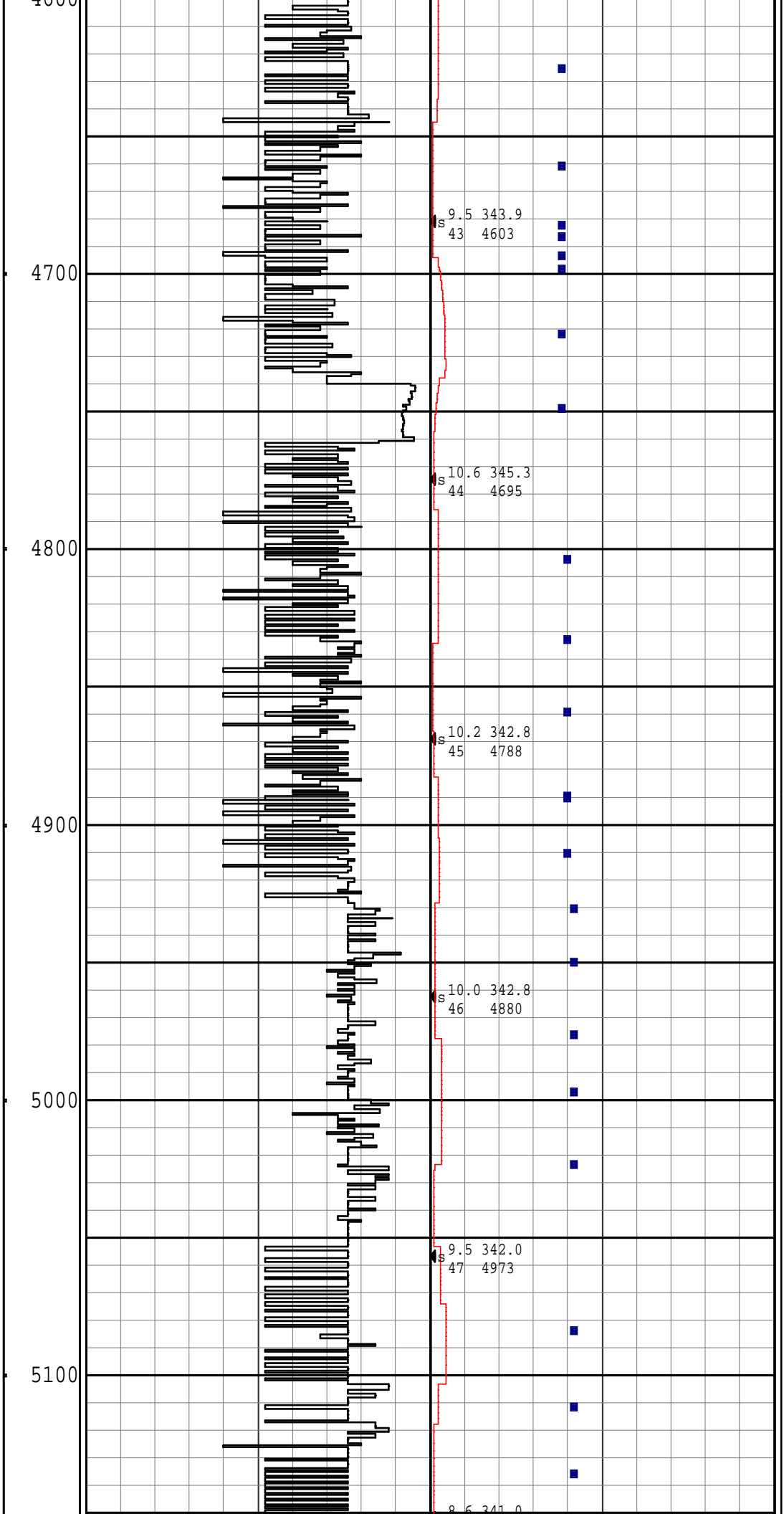
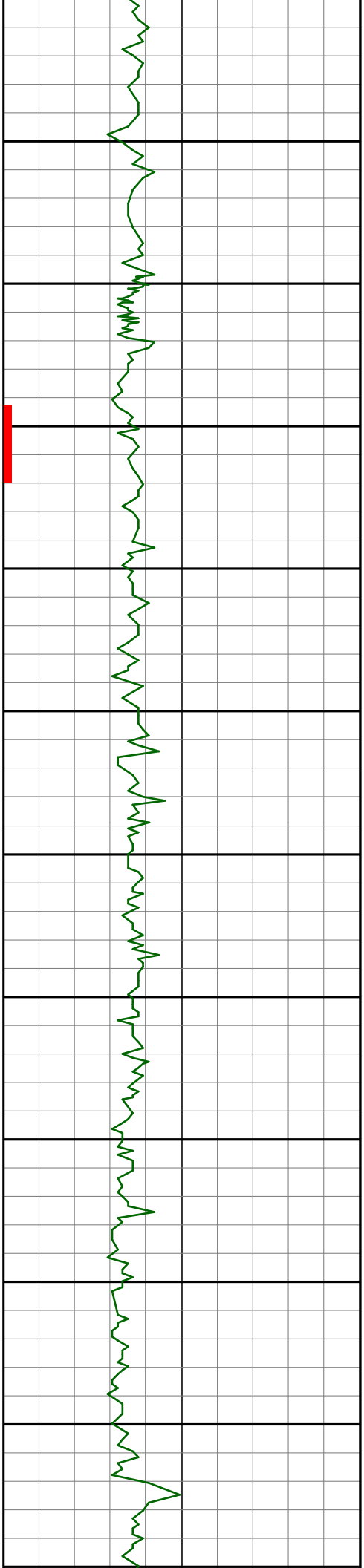


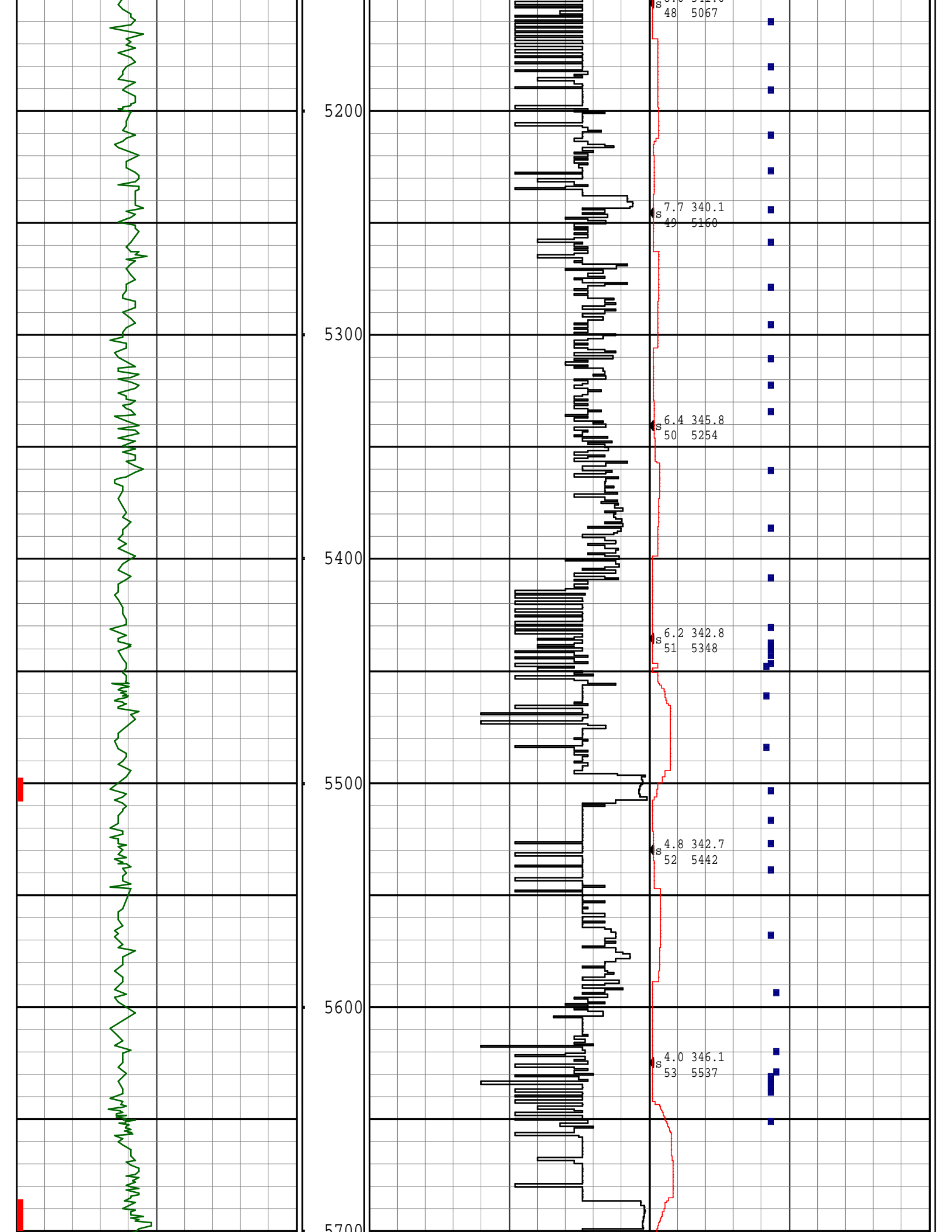


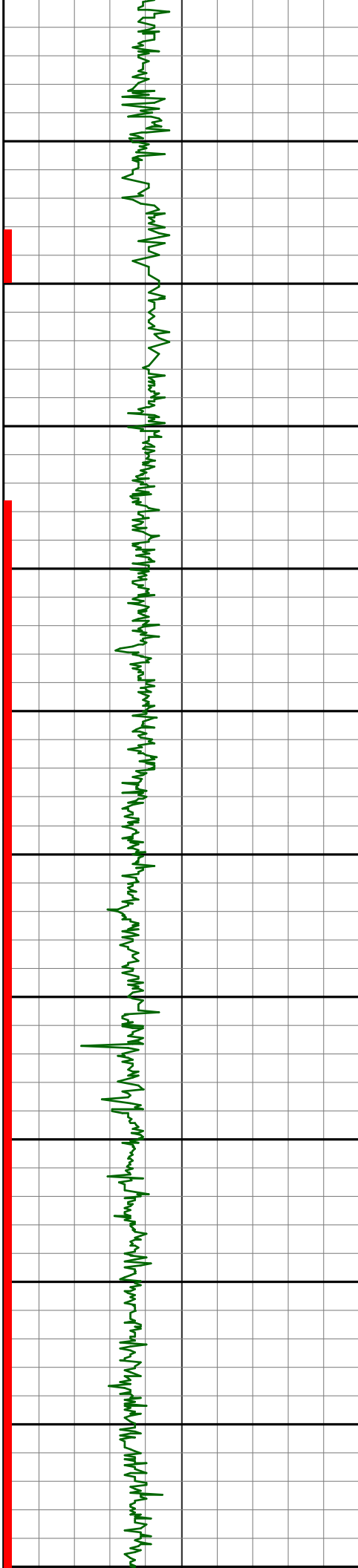








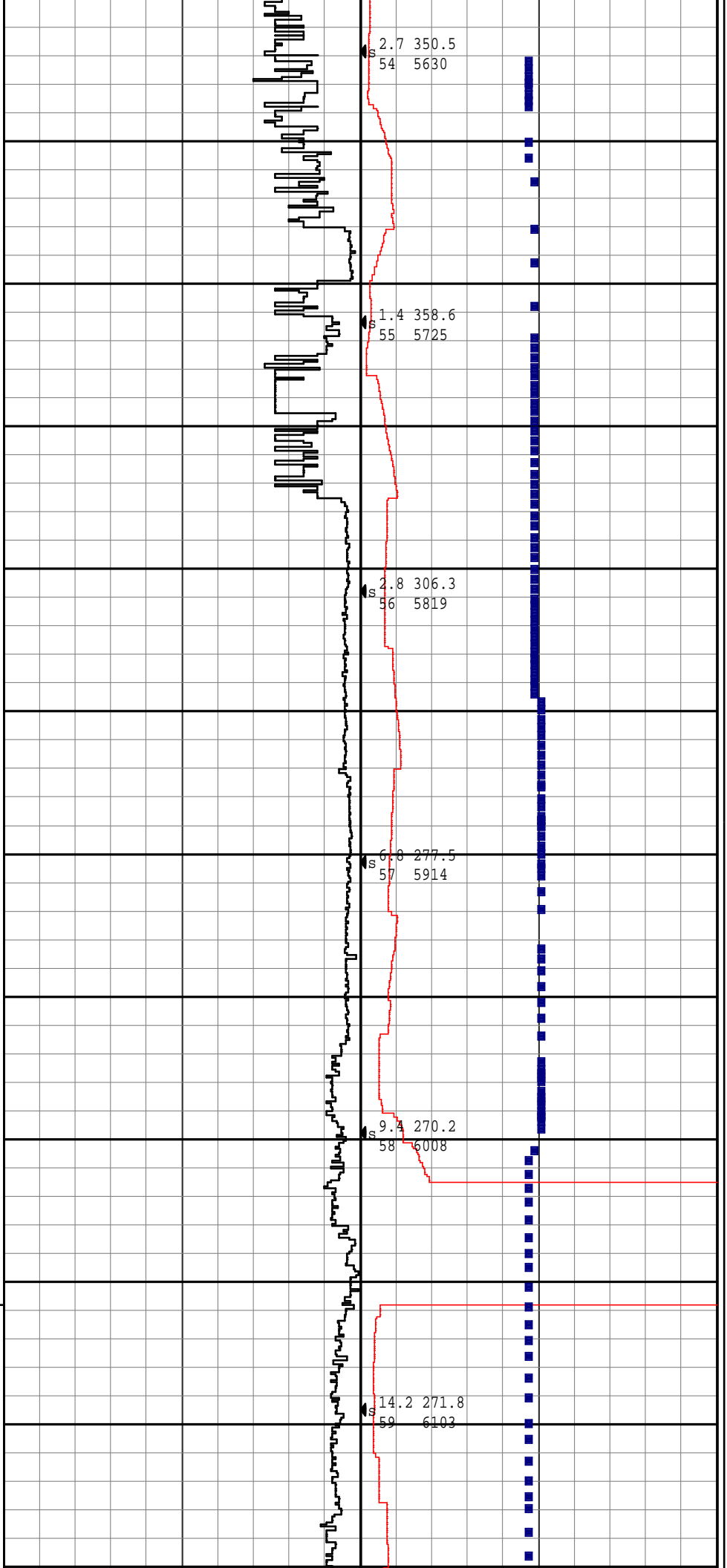




5700  
5800  
5900  
6000  
6100  
6200

R  
U  
N

#1



2.7 350.5  
54 5630

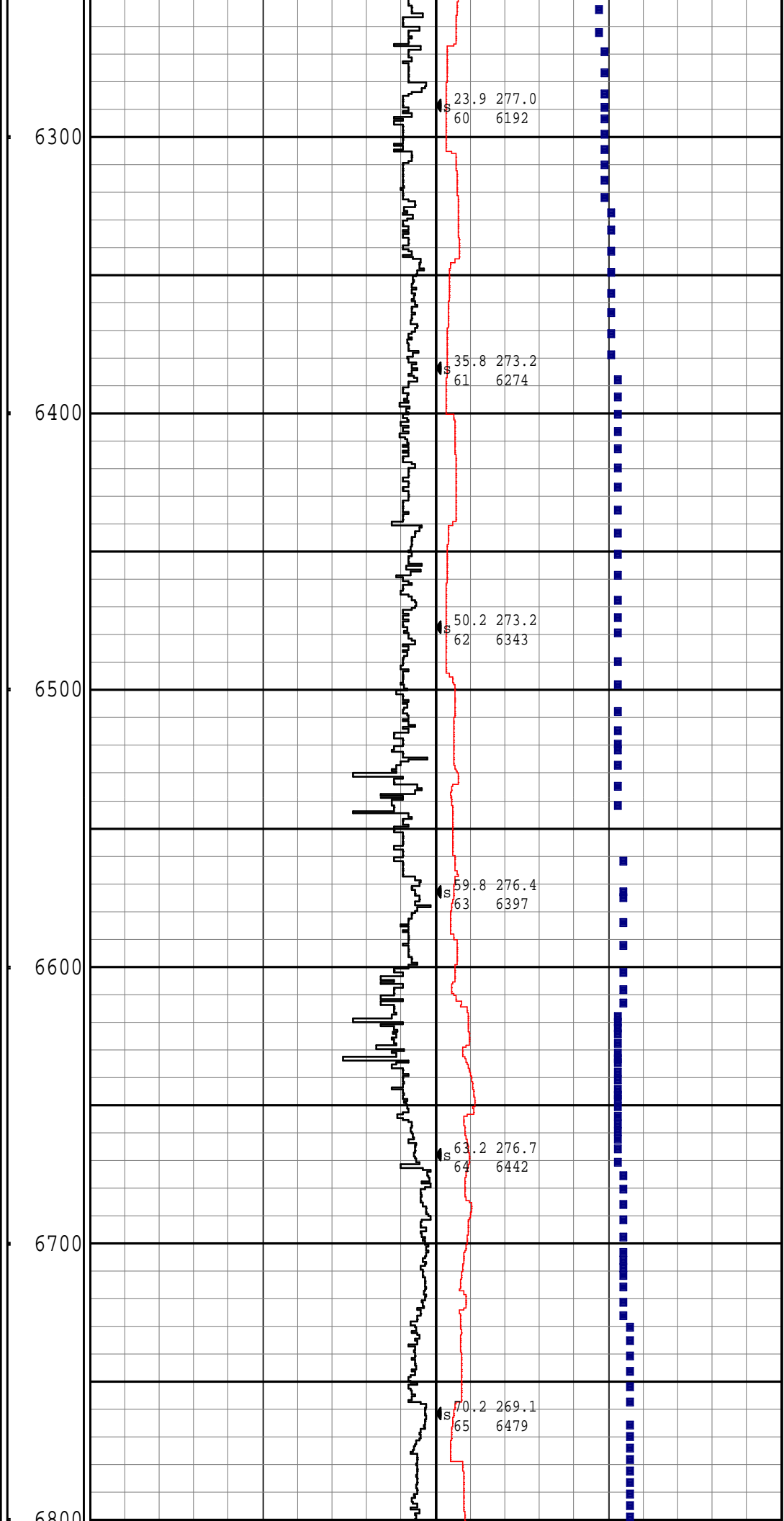
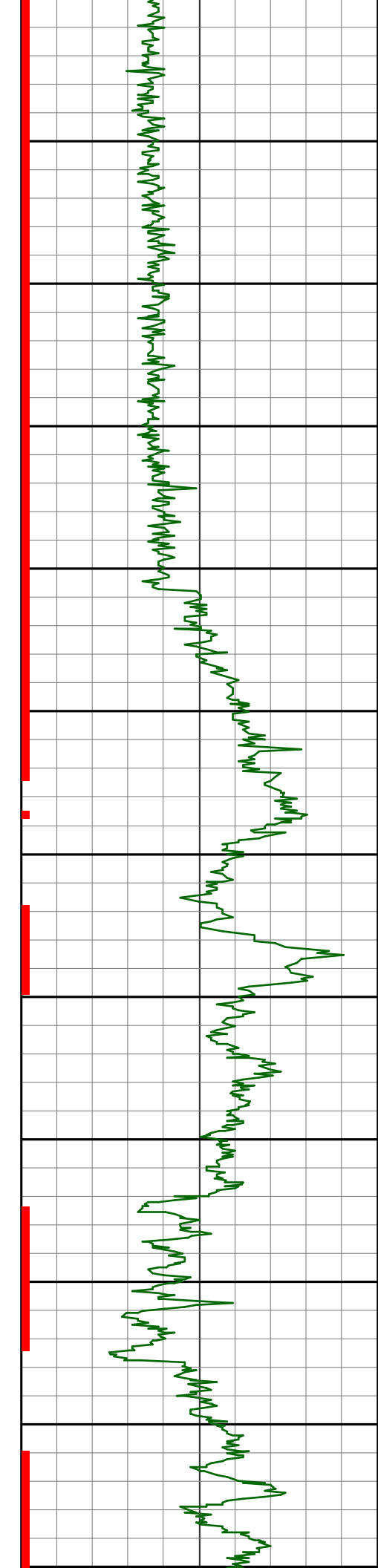
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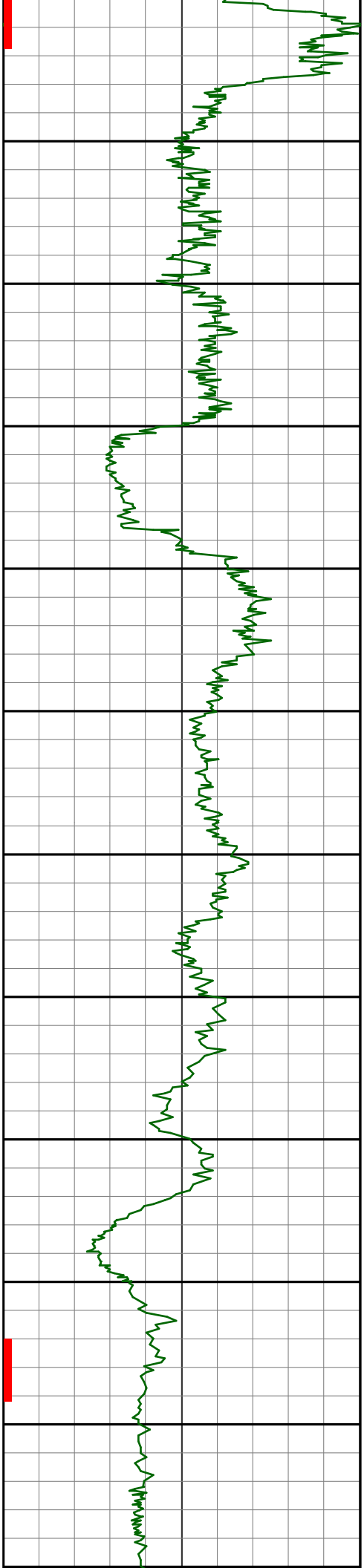
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56 5819

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57 5914

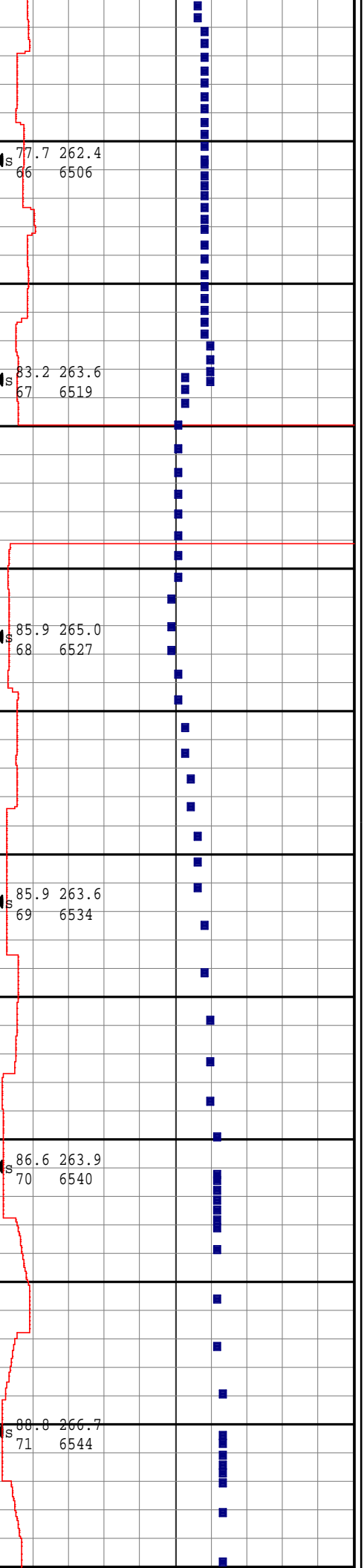
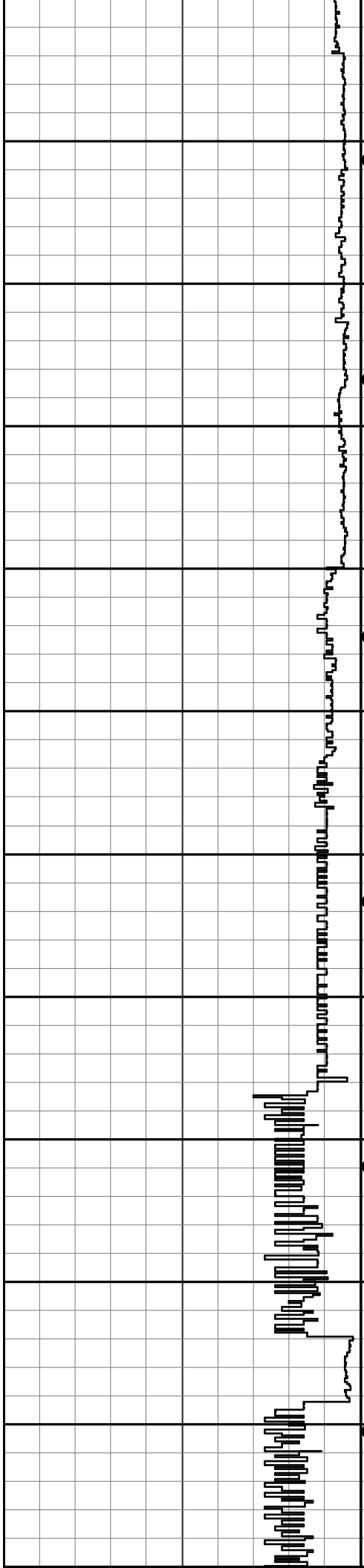
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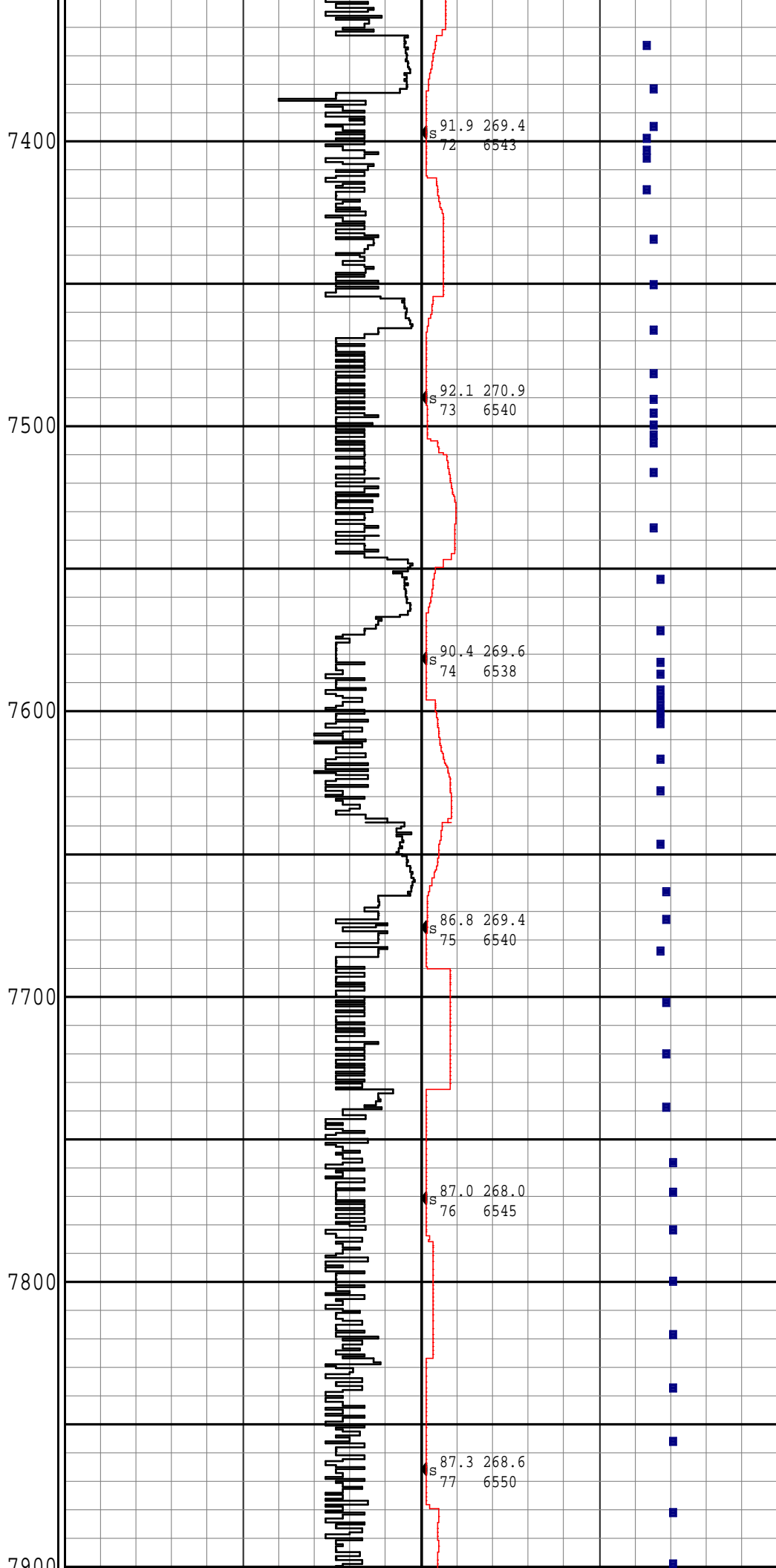
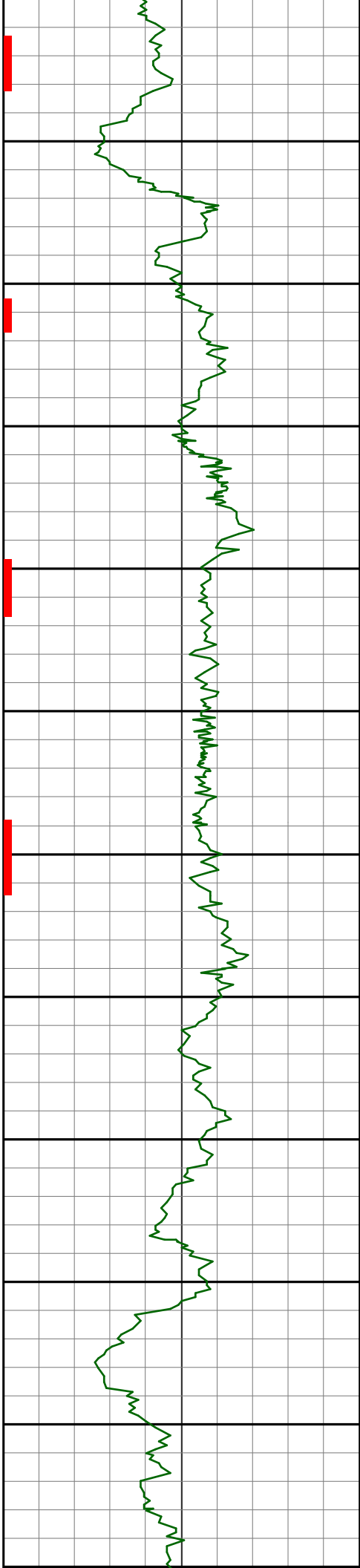
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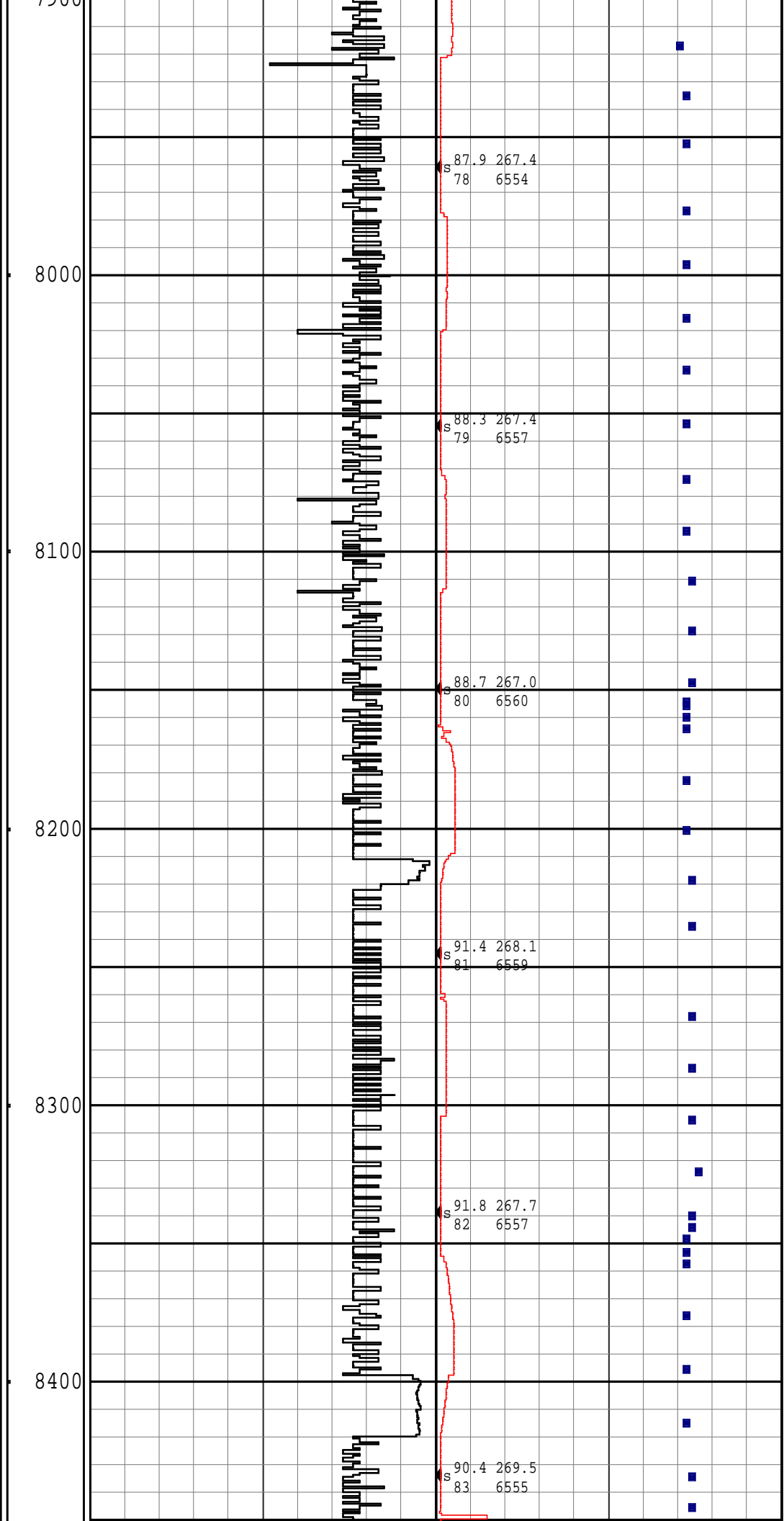
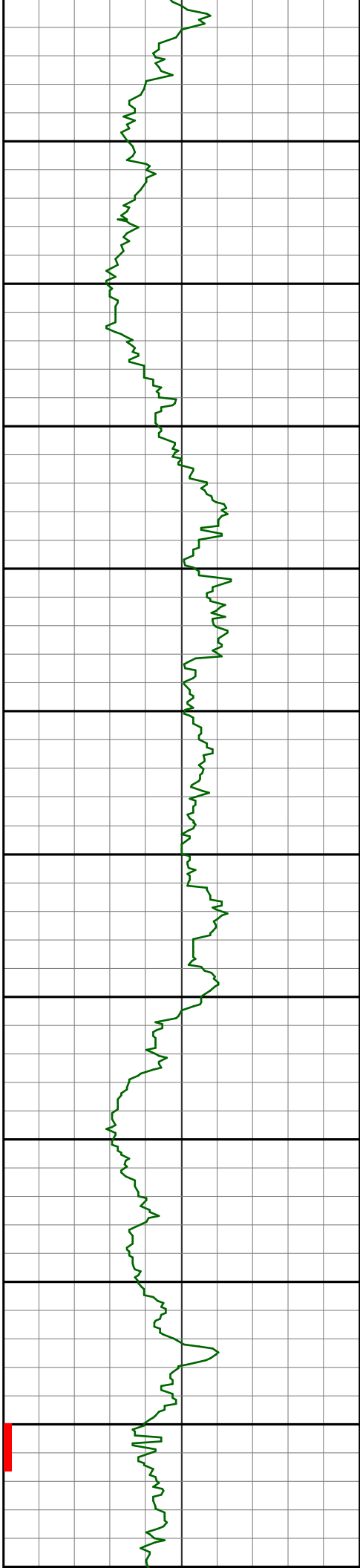


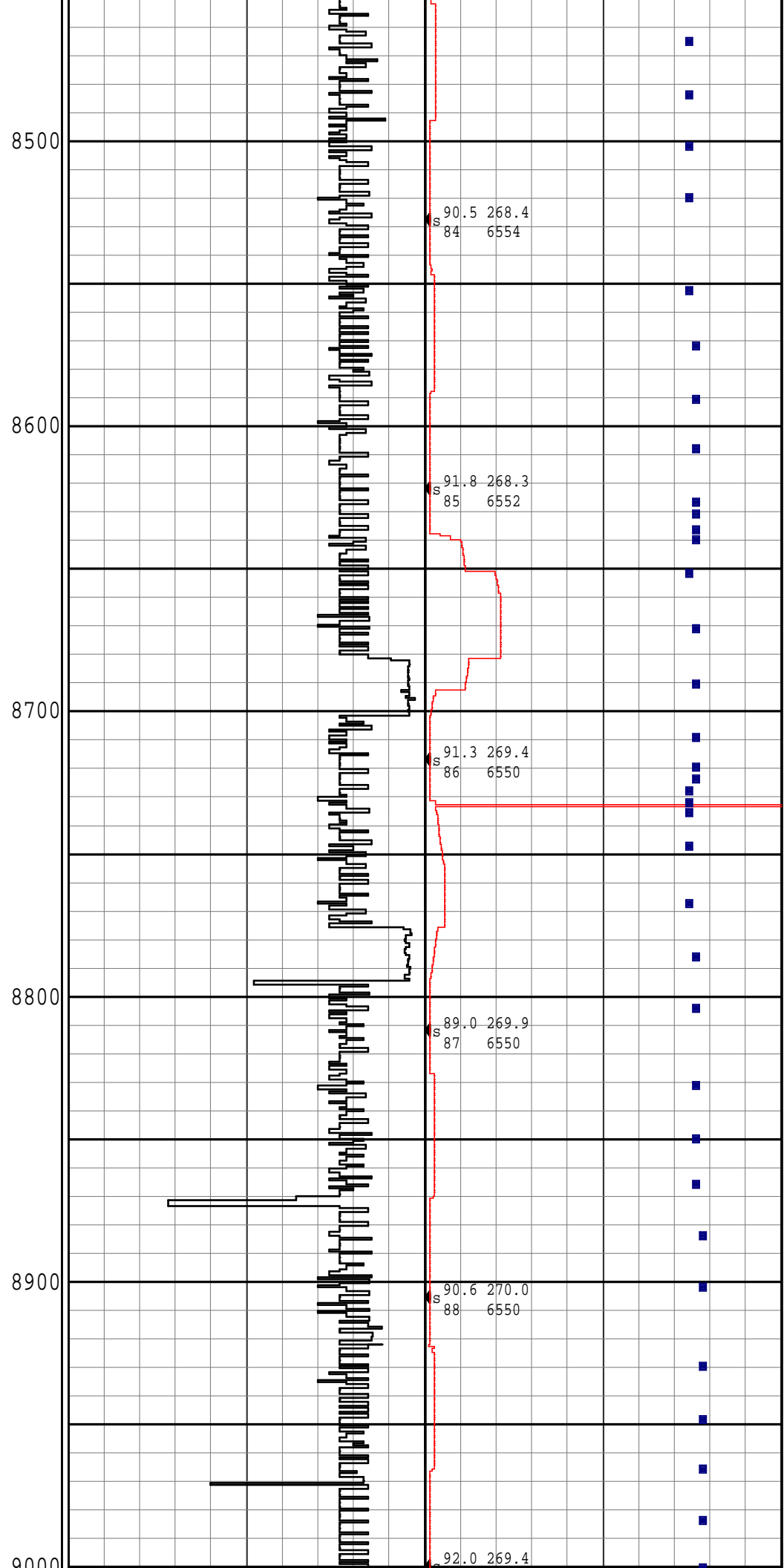
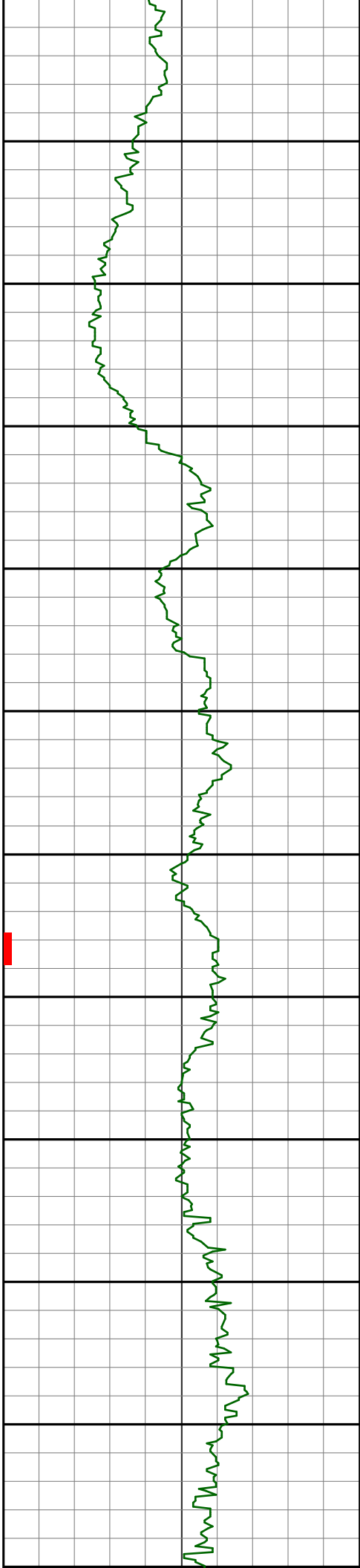
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6900  
7000  
7100  
7200  
7300

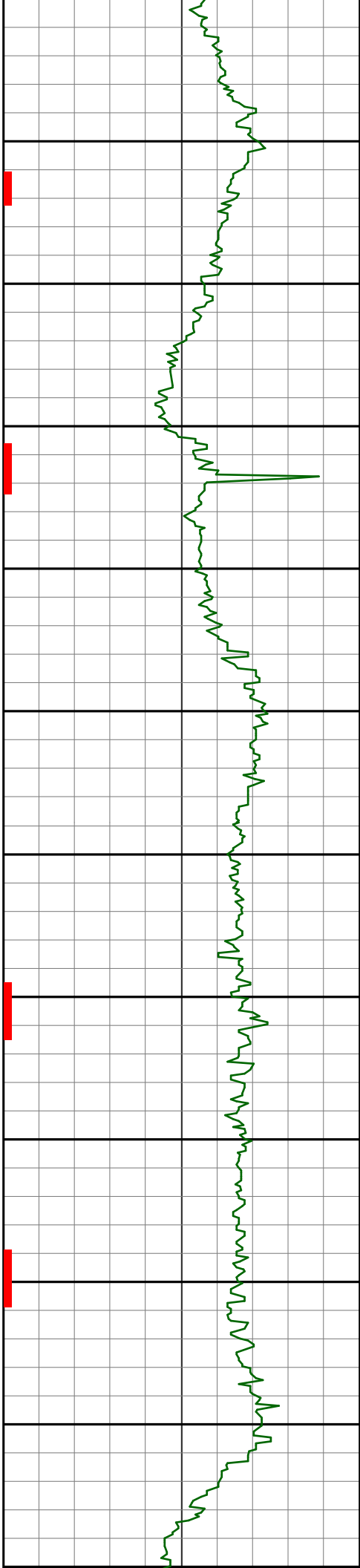




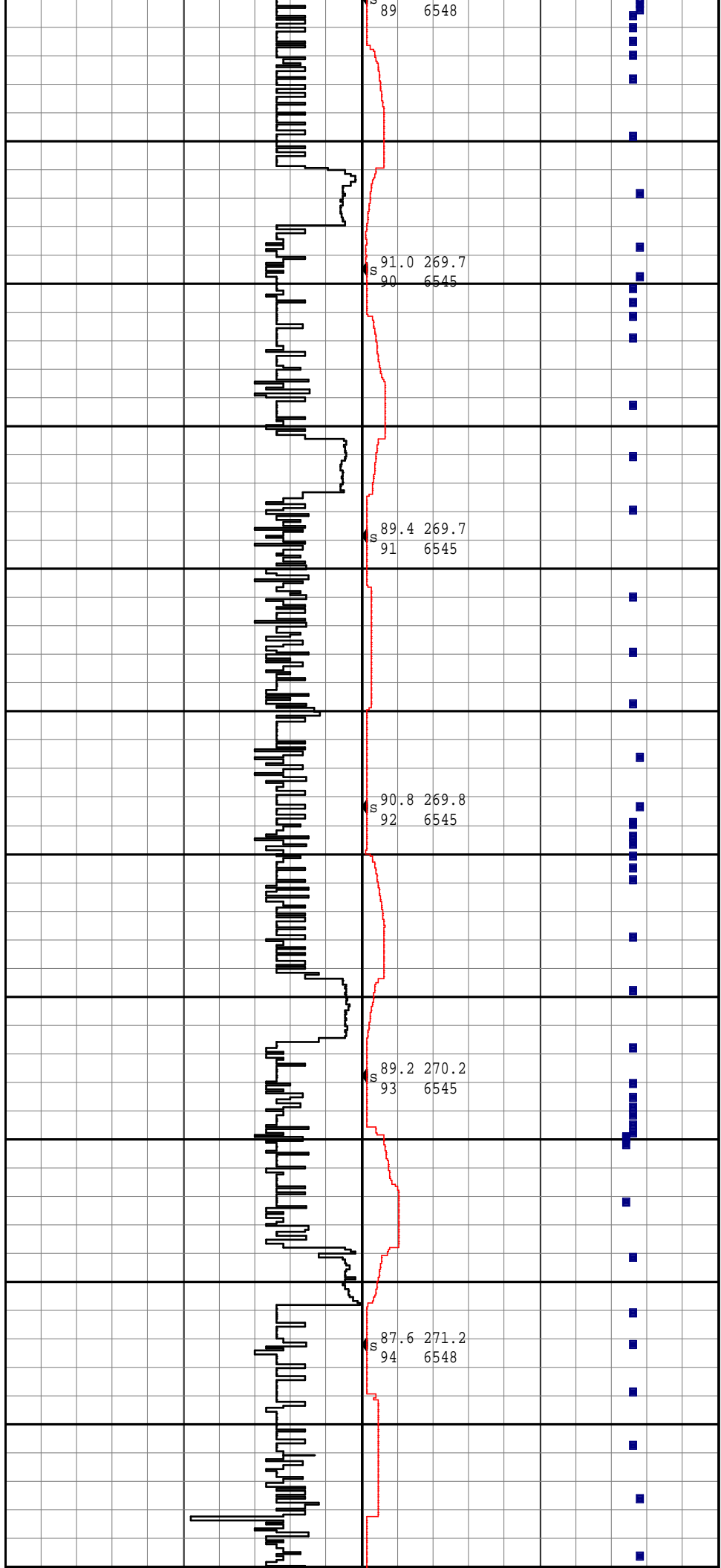


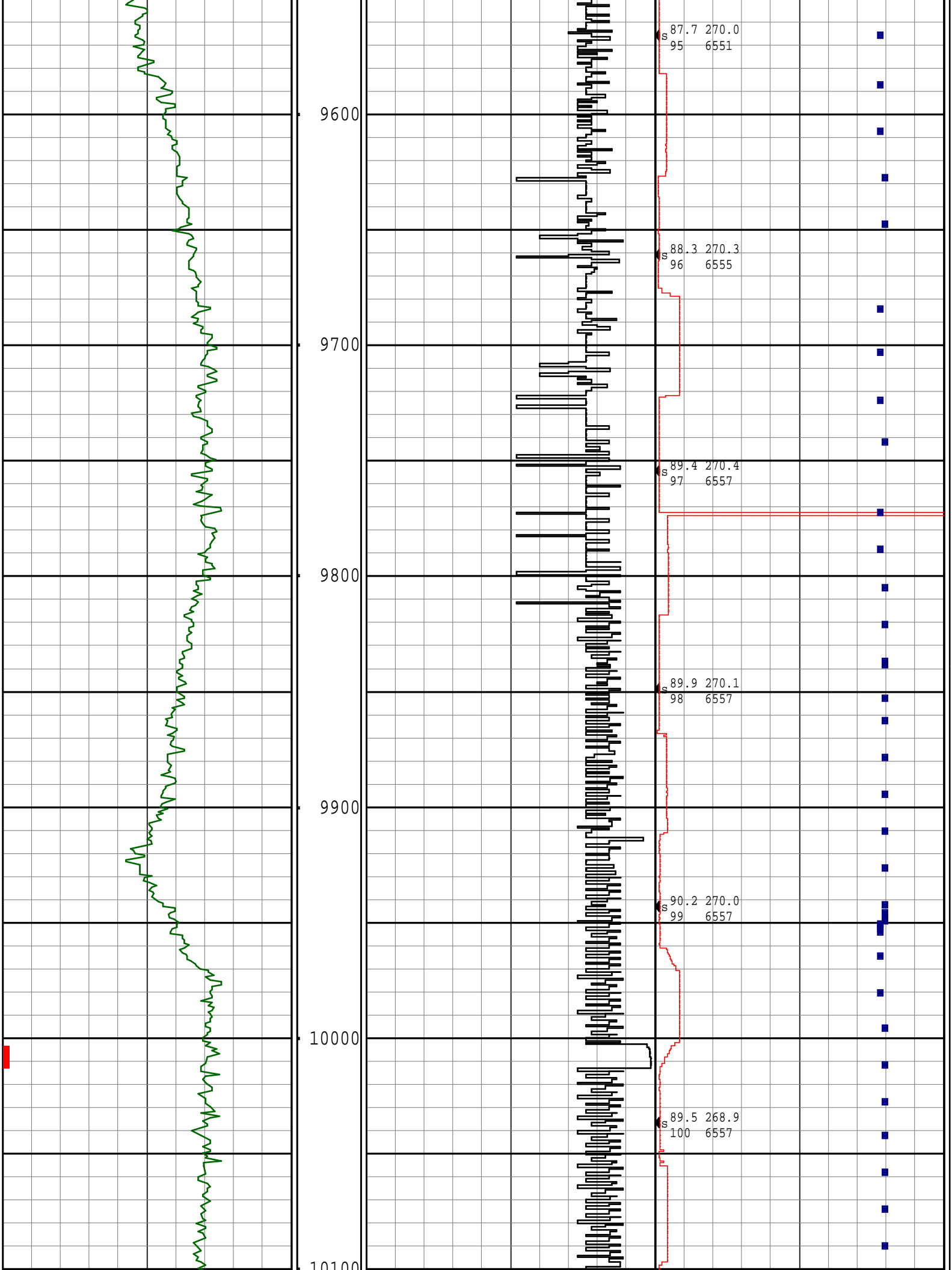


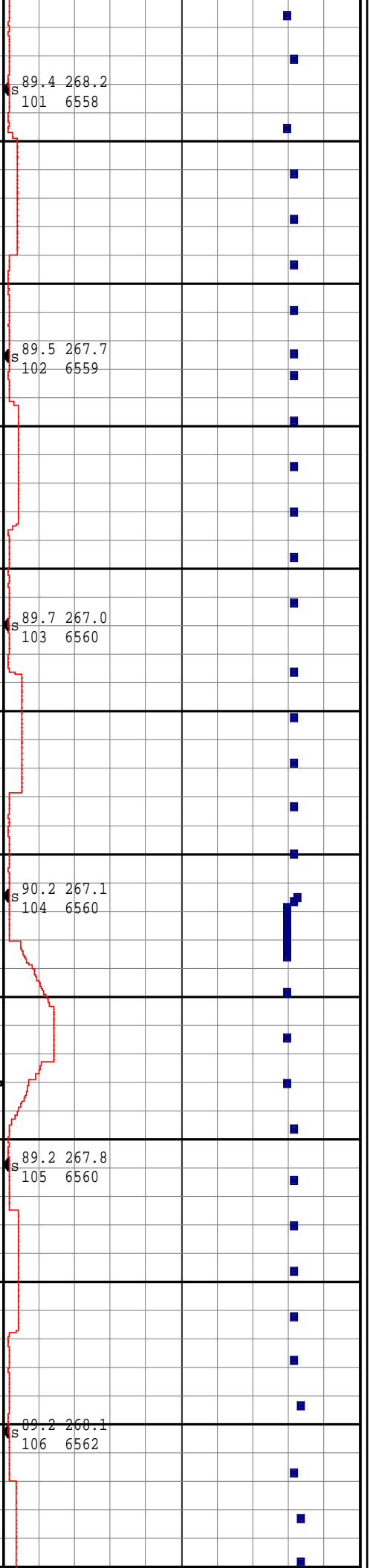
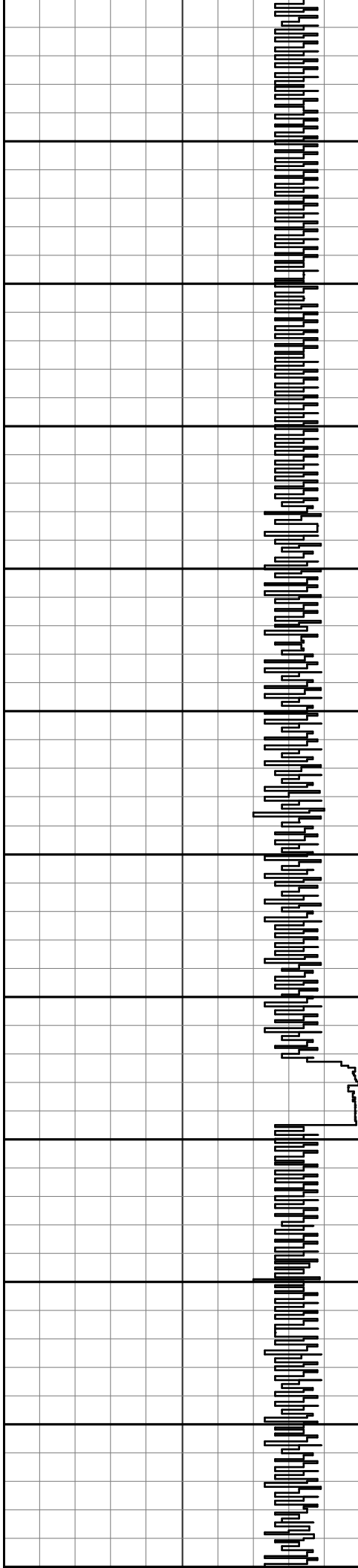
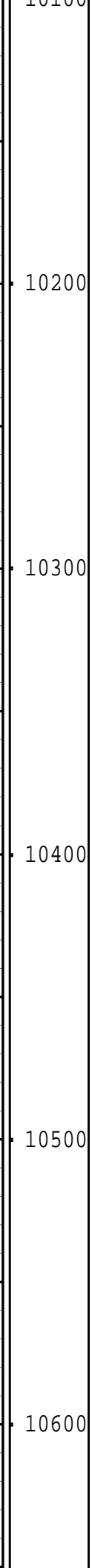
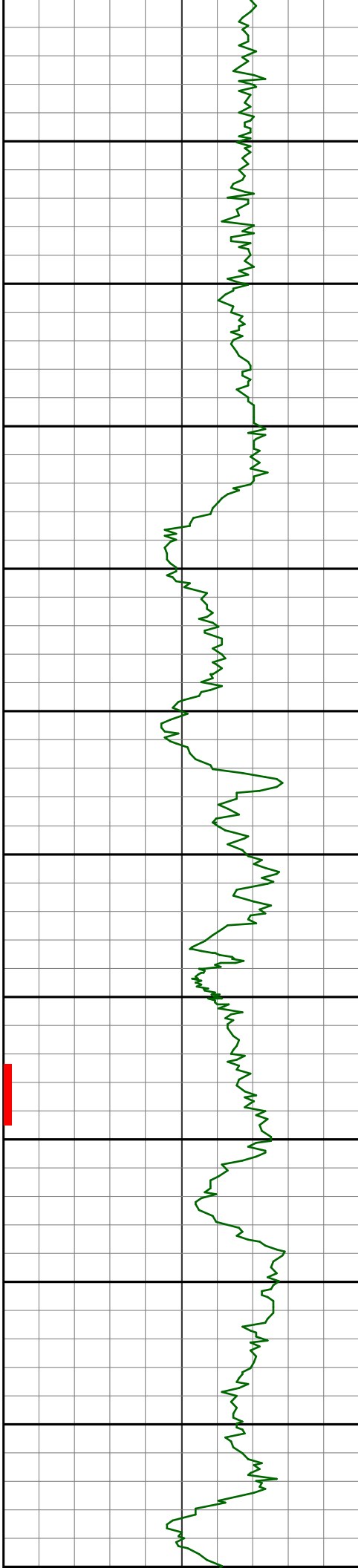




9000  
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9400  
9500







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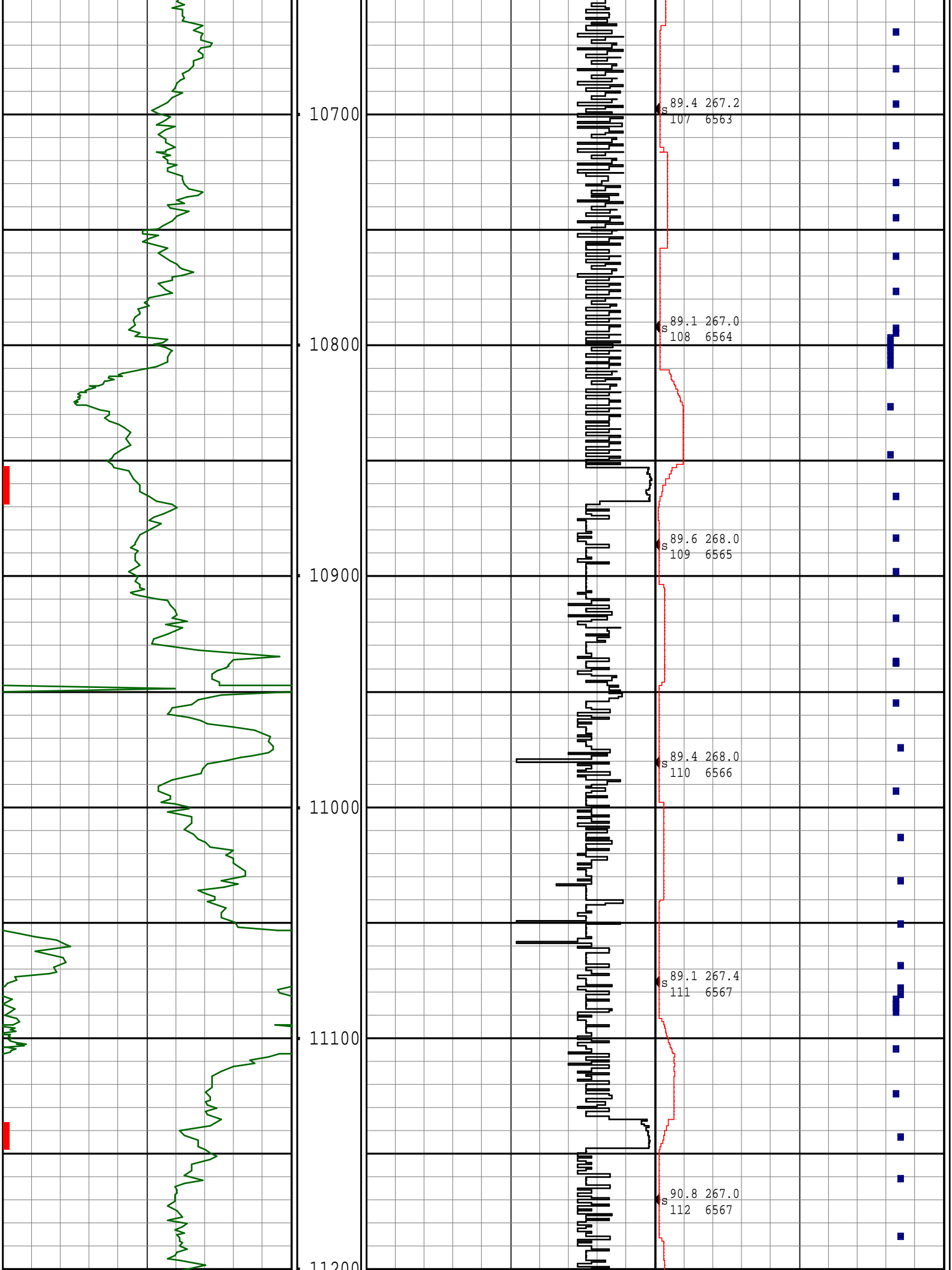
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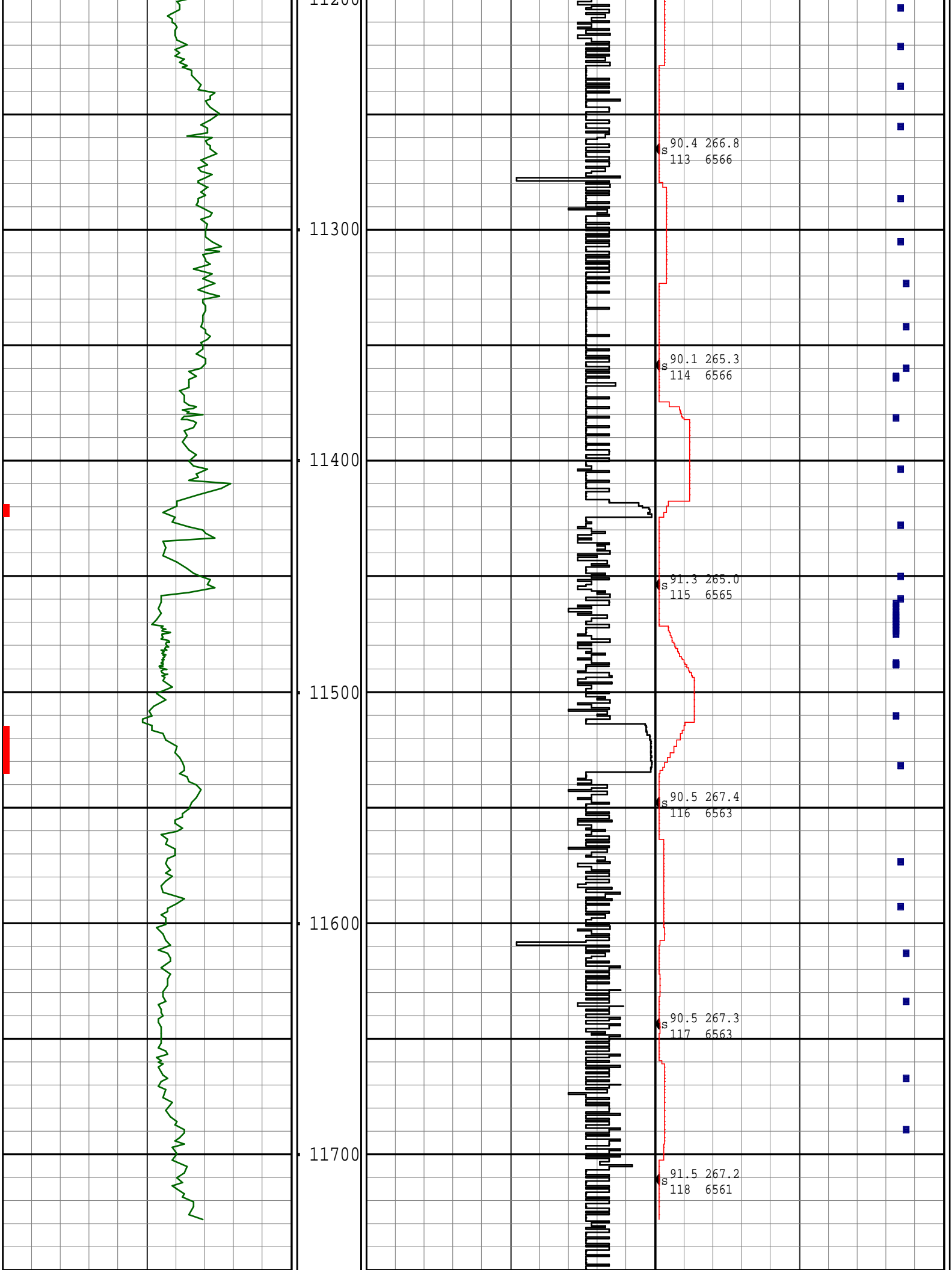
s 89.7 267.0  
103 6560

s 90.2 267.1  
104 6560

s 89.2 267.8  
105 6560

s 89.2 268.1  
106 6562









4963.00	10.02	342.81	4880.15	94.00	340.86	718.18 N	257.44 W	782.93	340.28	0.19	133.55
5057.00	9.50	342.01	4972.79	94.00	347.24	733.37 N	262.25 W	778.85	340.32	0.57	133.55
5152.00	8.62	340.99	5066.60	95.00	353.63	747.56 N	266.99 W	793.81	340.35	0.94	137.17
5246.00	7.74	340.10	5159.65	94.00	359.54	760.17 N	271.44 W	807.18	340.35	0.95	137.17
5341.00	6.42	345.77	5253.92	95.00	364.32	771.34 N	274.93 W	818.87	340.38	1.57	137.17
5436.00	6.16	342.75	5348.35	95.00	368.30	781.35 N	277.74 W	829.25	340.43	0.44	137.17
5530.00	4.75	342.70	5441.92	94.00	371.95	789.89 N	280.40 W	838.18	340.46	1.50	137.17
5625.00	4.04	346.11	5536.64	95.00	374.74	796.89 N	282.37 W	845.44	340.49	0.80	140.78
5719.00	2.73	350.46	5630.48	94.00	376.54	802.31 N	283.53 W	850.94	340.54	1.42	144.39
5814.00	1.41	358.65	5725.41	95.00	377.34	805.71 N	283.94 W	854.28	340.59	1.42	148.01
5908.00	2.81	306.33	5819.35	94.00	379.51	808.24 N	285.82 W	857.29	340.52	2.39	148.01
6003.00	6.77	277.55	5914.01	95.00	387.14	810.35 N	293.25 W	861.78	340.11	4.75	151.62
6098.00	9.41	270.23	6008.06	95.00	400.45	811.12 N	306.57 W	867.12	339.30	2.98	151.62
6195.00	14.25	271.77	6102.97	97.00	420.24	811.52 N	326.45 W	874.72	338.09	5.00	144.39
6289.00	23.92	276.99	6191.71	94.00	450.89	814.20 N	357.00 W	889.03	336.32	10.44	148.01
6384.00	35.79	273.24	6273.96	95.00	498.05	818.13 N	404.02 W	912.45	333.72	12.64	151.62
6478.00	50.21	273.16	6342.53	94.00	561.86	821.69 N	467.86 W	945.56	330.34	15.34	155.24
6573.00	59.79	276.36	6396.96	95.00	639.53	828.27 N	545.30 W	991.65	326.64	10.45	158.85
6668.00	63.22	276.68	6442.28	95.00	723.01	837.75 N	628.23 W	1047.14	323.13	3.62	155.24
6762.00	70.17	269.14	6479.49	94.00	808.99	841.98 N	714.33 W	1104.17	319.69	10.43	162.46
6857.00	77.65	262.44	6505.83	95.00	898.45	835.19 N	805.23 W	1160.14	316.05	10.38	166.08
6934.00	83.19	263.58	6518.64	77.00	972.16	825.96 N	880.56 W	1207.31	313.17	7.34	169.69
7024.00	85.91	264.95	6527.19	90.00	1059.61	817.01 N	969.69 W	1267.99	310.12	3.38	148.01

Survey Report

Vertical Section Plane: 276.80°	Total Correction: 7.38° East to Grid
Calculation Method: Minimum Curvature	Survey Reference: Wellhead
North Aligned to: Grid North	Well: WELLS RANCH AE19-649
30' ROTARY TABLE TO GROUND LEVEL	WATTENBERG

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)
7117.00	85.91	263.60	6533.82	93.00	1150.16	807.76 N	1061.99 W	1334.28	307.26	1.45	166.08
7210.00	86.61	263.90	6539.88	93.00	1240.57	797.65 N	1154.24 W	1403.04	304.65	0.82	173.31
7303.00	88.81	266.73	6543.60	93.00	1331.62	790.07 N	1246.84 W	1476.08	302.36	3.85	176.92
7397.00	91.89	269.40	6543.03	94.00	1424.50	786.89 N	1340.77 W	1554.62	300.41	4.34	180.54
7490.00	92.07	270.91	6539.81	93.00	1516.82	787.14 N	1433.71 W	1635.58	298.77	1.63	184.15
7582.00	90.40	269.57	6537.83	92.00	1608.19	787.53 N	1525.68 W	1716.94	297.30	2.33	184.15
7676.00	86.79	269.37	6540.14	94.00	1701.38	786.66 N	1619.63 W	1800.57	295.91	3.85	184.15
7771.00	86.97	268.01	6545.31	95.00	1795.29	784.49 N	1714.46 W	1885.42	294.59	1.44	191.38
7866.00	87.32	268.63	6550.04	95.00	1889.13	781.71 N	1809.31 W	1970.95	293.37	0.75	191.38
7961.00	87.93	267.40	6553.97	95.00	1982.94	778.42 N	1904.16 W	2057.13	292.23	1.44	194.99
8055.00	88.29	267.35	6557.08	94.00	2075.62	774.12 N	1998.01 W	2142.74	291.18	0.39	198.61
8150.00	88.72	266.98	6559.55	95.00	2169.24	769.42 N	2092.86 W	2229.82	290.19	0.60	198.61
8245.00	91.36	268.06	6559.49	95.00	2262.99	765.31 N	2187.77 W	2317.76	289.28	3.00	198.61
8339.00	91.80	267.74	6556.90	94.00	2355.83	761.87 N	2281.67 W	2405.50	288.46	0.58	198.61
8434.00	90.40	269.49	6555.07	95.00	2449.83	759.57 N	2376.62 W	2495.05	287.72	2.36	198.61
8528.00	90.48	268.37	6554.35	94.00	2542.94	757.82 N	2470.60 W	2584.21	287.05	1.19	202.22
8622.00	91.80	268.27	6552.48	94.00	2635.90	755.06 N	2564.53 W	2673.38	286.41	1.41	202.22
8717.00	91.28	269.41	6549.93	95.00	2729.95	753.14 N	2659.48 W	2764.06	285.81	1.32	202.22
8812.00	88.99	269.86	6549.70	95.00	2824.20	752.53 N	2754.47 W	2855.42	285.28	2.46	202.22
8906.00	90.57	270.05	6550.06	94.00	2917.52	752.46 N	2848.47 W	2946.18	284.80	1.69	205.83
9000.00	91.98	269.39	6547.97	94.00	3010.78	752.00 N	2942.44 W	3037.01	284.34	1.66	205.83
9095.00	91.01	269.74	6545.49	95.00	3104.99	751.28 N	3037.40 W	3128.94	283.89	1.09	205.83
9189.00	89.43	269.73	6545.13	94.00	3198.27	750.85 N	3131.40 W	3220.16	283.48	1.68	202.22
9284.00	90.84	269.76	6544.91	95.00	3292.55	750.42 N	3226.39 W	3312.51	283.09	1.48	205.83
9378.00	89.16	270.25	6544.91	94.00	3385.89	750.43 N	3320.39 W	3404.14	282.74	1.86	205.83
9472.00	87.58	271.23	6547.58	94.00	3479.32	751.64 N	3414.34 W	3496.10	282.42	1.98	202.22
9566.00	87.67	270.02	6551.48	94.00	3572.69	752.67 N	3508.25 W	3588.08	282.11	1.29	205.83
9661.00	88.29	270.33	6554.83	95.00	3667.00	752.96 N	3603.19 W	3681.02	281.80	0.73	205.83
9755.00	89.43	270.44	6556.70	94.00	3760.39	753.59 N	3697.17 W	3773.19	281.52	1.22	209.45
9849.00	89.87	270.14	6557.27	94.00	3853.78	754.07 N	3791.17 W	3865.43	281.25	0.57	209.45
9943.00	90.22	269.95	6557.20	94.00	3947.13	754.14 N	3885.17 W	3957.68	280.98	0.42	209.45
10037.00	89.52	268.93	6557.41	94.00	4040.35	753.22 N	3979.16 W	4049.82	280.72	1.32	209.45
10132.00	89.43	268.22	6558.28	95.00	4134.37	750.86 N	4074.13 W	4142.74	280.44	0.75	213.06
10226.00	89.52	267.68	6559.14	94.00	4227.25	747.50 N	4168.06 W	4234.56	280.17	0.58	213.06
10320.00	89.69	267.02	6559.79	94.00	4319.97	743.15 N	4261.96 W	4326.26	279.89	0.72	213.06
10415.00	90.22	267.06	6559.86	95.00	4413.59	738.24 N	4356.83 W	4418.93	279.62	0.56	216.68
10509.00	89.16	267.82	6560.37	94.00	4506.34	734.05 N	4450.73 W	4510.86	279.37	1.39	213.06
10603.00	89.16	268.06	6561.75	94.00	4599.21	730.67 N	4544.66 W	4603.02	279.13	0.25	216.68
10698.00	89.43	267.20	6562.92	95.00	4692.99	726.74 N	4639.57 W	4696.15	278.90	0.95	216.68
10792.00	89.08	266.98	6564.14	94.00	4785.63	721.97 N	4733.44 W	4788.19	278.67	0.44	216.68
10887.00	89.60	268.01	6565.24	95.00	4879.37	717.82 N	4828.35 W	4881.41	278.46	1.21	216.68
10981.00	89.43	267.95	6566.03	94.00	4972.26	714.50 N	4922.28 W	4973.87	278.26	0.19	220.29
11076.00	89.08	267.39	6567.27	95.00	5066.05	710.64 N	5017.20 W	5067.27	278.06	0.70	220.29
11170.00	90.75	266.95	6567.41	94.00	5158.72	706.00 N	5111.08 W	5159.61	277.86	1.84	220.29
11265.00	90.40	266.77	6566.45	95.00	5252.29	700.80 N	5205.93 W	5252.89	277.67	0.41	220.29
11359.00	90.13	265.32	6566.02	94.00	5344.63	694.31 N	5299.70 W	5344.99	277.46	1.57	216.68
11454.00	91.28	264.95	6564.85	95.00	5437.66	686.26 N	5394.35 W	5437.83	277.25	1.27	220.29
11548.00	90.48	267.38	6563.41	94.00	5530.03	679.97 N	5488.12 W	5530.09	277.06	2.72	220.29
11644.00	90.48	267.27	6562.60	96.00	5624.71	675.49 N	5584.01 W	5624.72	276.90	0.12	223.91
11711.00	91.54	267.25	6561.42	67.00	5690.78	672.29 N	5650.93 W	5690.78	276.78	1.58	223.91
STRAIGHT LINE PROJECTION TO BIT AT 11772'MD											
11772.00	91.54	267.25	6559.78	61.00	5750.91	669.36 N	5711.83 W	5750.92	276.68	0.00	

11772.00	91.94	20772.00	9359.70	91.00	9750.91	009.90 N	9711.03 W	9750.92	270.00	0.00
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BOTTOM HOLE ASSEMBLY RECORD										
RUN #1		ft	RUN #3		ft	RUN #4		ft		
8 3/4" PDC BIT		0.70	8 3/4" PDC BIT		0.70	6 1/8" PDC BIT		0.56		
1.75° MUD MOTOR		26.43	2.25° MUD MOTOR		24.48	1.5° MUD MOTOR		26.81		
NM FLOAT SUB		2.93	NM FLOAT SUB		2.93	NM FLOAT SUB		2.66		
SUB MULESHOE		2.66	SUB MULESHOE		2.66	SUB MULESHOE		3.05		
HDS-1R (DIR/GR)		30.62	HDS-1R (DIR/GR)		30.62	HDS-1R (DIR/GR)		30.03		
NM FLEX DC		31.05	NM FLEX DC		31.05	NM DC		30.73		
NM FLEX DC		31.07	NM FLEX DC		31.07	NM FLOAT SUB		1.78		
FILTER SUB		3.23	FILTER SUB		3.23	NM DC		30.85		
DRILL PIPE		1040.06	DRILL PIPE		1040.06	FILTER SUB		3.10		
XOVER SUB		3.20	XOVER SUB		3.20	XOVER SUB		3.78		
HWDP		1392.51	HWDP		1392.19	HWDP		31.55		
						REAMER		8.52		
						DRILL PIPE		2179.05		
						AGITATOR		11.55		
						SHOCK SUB		11.14		
						DRILL PIPE		3875.91		
						HWDP		1392.91		
=====			=====			=====				
TOTAL BHA LENGTH		2564.46	TOTAL BHA LENGTH		2562.19	TOTAL BHA LENGTH		7643.98		
SENSOR OFFSETS:			SENSOR OFFSETS:			SENSOR OFFSETS:				
=====			=====			=====				
DIRECTIONAL		60.00	DIRECTIONAL		56.45	DIRECTIONAL		58.70		
GAMMA-RAY		42.60	GAMMA-RAY		39.05	GAMMA-RAY		41.30		

GAMMA-RAY



A Schlumberger Company

2" = 100'

FEET MD