

**Company : NOBLE ENERGY**

**Well : Oscar Y11-79HN**

**Field : WATTENBERG**

**Date : 28-Dec-2014**

**Time : 19:54**



A Schlumberger Company

GAMMA-RAY

5" = 100'

FEET MD

COMPANY : NOBLE ENERGY  
WELL : Oscar Y11-79HN  
FIELD : WATTENBERG  
COUNTY : WELD  
STATE : CO  
COUNTRY : USA  
API No. : 05-123-37943

COMPANY : NOBLE ENERGY  
WELL : Oscar Y11-79HN  
FIELD : WATTENBERG  
COUNTY : WELD  
STATE : CO  
COUNTRY : USA  
API WELL No. : 05-123-37943

WELL LOCATION

LAT: 40° 9' 8" N LON: 104° 31' 50" W  
X: 3,270,958' Y: 1,299,778' NAD83  
SEC: 010 TWP: 02N RANGE: 64W

OTHER SERVICES

DIRECTIONAL  
ROP

DEPTH REF. : ROTARY TABLE  
ELEVATION : 24.00 ft (ROTARY TABLE - GROUND LEVEL)  
WATER DEPTH : 4929.00 ft (GROUND LEVEL - MEAN SEA LEVEL)

BOREHOLE RECORD

DEVIATION RECORD

HOLE SIZE in	FROM ft	TO ft	INCLINATION deg	FROM ft	TO ft
13 3/4	0	1161	0-10	0	6848
8 3/4	1161	7196	10-90	6848	7196
6 1/8	7196	8396	90+/-5	7196	8256

CASING RECORD

CASING SIZE in	FROM ft	TO ft
9 5/8	0	1153
7	0	7190

DRILLING Co. : H&P  
RIG : 277  
LMD UNIT No. : DISTRICT : CCO  
SPUD DATE : 05-DEC-14  
LMD START DATE : 17-DEC-14 DEPTH : 1161 ft  
LMD END DATE : 23-DEC-14 DEPTH : 8256 ft  
TOTAL DEPTH : 8300 ft

RUN DATA

RUN NUMBER	1	2	3	4	5	
START DATE	16-DEC-14	18-DEC-14	20-DEC-14	21-DEC-14	22-DEC-14	
START TIME	09:35	10:25	22:15	16:25	18:00	
END DATE	18-DEC-14	19-DEC-14	21-DEC-14	22-DEC-14	23-DEC-14	
END TIME	08:30	8:30	15:10	17:00	13:00	
DEPTH IN ft	0	4549	7196	7327	7922	
DEPTH OUT ft	4549	7196	7327	7922	8300	
LOG TOP ft	1161	4504	7152	7283	7878	
LOG BOTTOM ft	4504	7152	7283	7878	7834	
HOLE SIZE in	8 3/4	8 3/4	6 1/8	6 1/8	6 1/8	
MUD DATA @ ft	1161	4883	7330	7327	7922	
MUD TYPE	WATER BASED	WATER BASED	OIL BASED	OIL BASED	OIL BASED	
DENSITY lb/gal	8.85	9.05	9.45	9.55	9.60	
VISCOSITY s/qt	31	31	95	63	63	
pH	8.6	8.6				
FLUID LOSS cm3/30						
SALINITY ppm	1200	1300	38500	56000	55000	
Rm ohmm @ deg F	@	@	@	@	@	
Rmf ohmm @ deg F	@	@	@	@	@	

MAX REC TEMP deg F	119	119	203	203	205	
Rm @ MAX TEMP ohmm						
LWD ENGINEER #1	C. WELTY	C. WELTY	C.WELTY	C. WELTY	C.WELTY	
LWD ENGINEER #2	J.LESLIE	J. LESLIE	J.LESLIE	J. LESLIE	J.LESLIE	
LWD ENGINEER #3						

REMARKS

NOBLE ENERGY, INC AFE #: 200181  
PATHFINDER JOB #: 14CC00660

ALL LOGGING DATA IS TRANSMITTED 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.

RUN #1: 6 3/4" HDS1-R/GAMMA LOGGING RUN.  
RUN #2: 6 3/4" HDS1-R/GAMMA LOGGING RUN.  
RUN #3: 4 3/4" HDS1-R/GAMMA LOGGING RUN.  
RUN #4: 4 3/4" HDS1-R/GAMMA LOGGING RUN.  
RUN #5: 4 3/4" HDS1-R/GAMMA LOGGING RUN.

REMARK #1: GAMMA-RAY SERVICES BEGIN AT 1161' MD PER CUSTOMER'S REQUEST.  
REMARK #2: MEMORY DATA PRESENTED FROM 7152'-7282' MD (6814'-6831' TVD) DUE TO HIGH ROP.  
REMARK #3: GAMMA-RAY LOGGED THROUGH CASING FROM 7152'-7196' MD (6814'-6820' TVD).

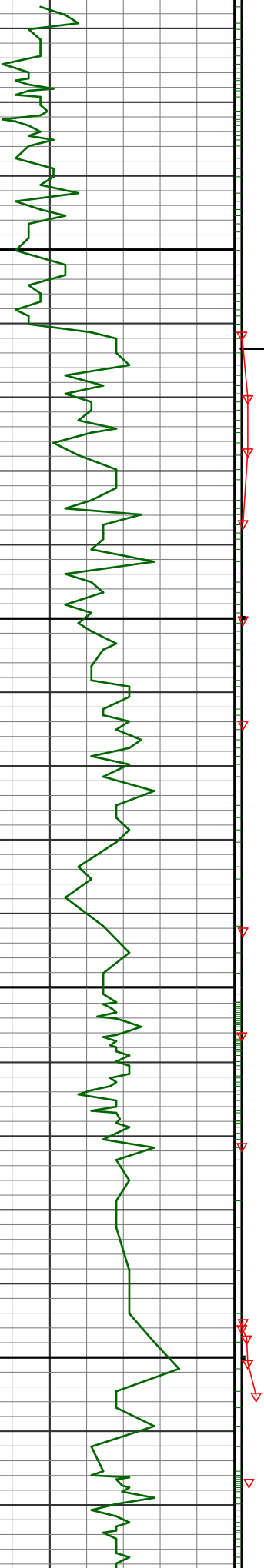
NOTICE - All interpretations are opinions based on inferences from electrical or other measurements and we do not guarantee the accuracy or correctness of any interpretations. We shall not, except in the case of gross or willful negligence on our part, be liable or responsible for loss, costs, damages 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 V6.05B Release 20Jun2014  
Plot Time : 28-Dec-2014 19:53

0	GRC API	150	VIBC CPS	1200	ROP ft/hr	0	6900	TVD ft	6700
	avg = 6 in		VIBC CPS		avg = 1 ft			avg = 1 ft	
	SLIDE (BIT)		▽ ▽ ▽				0	GRFET Hr	10
			DEPTH					avg = 1 ft	
			MD ft				0	VIBXYG	20
			5" = 100ft				0	VIBXYG	20
			SHOES				0	VIBZG	20
							0	VIBZG	20
								COMMENTS	
								inc azi	
								# TVD	
			1100						
	SEE REMARK #1								

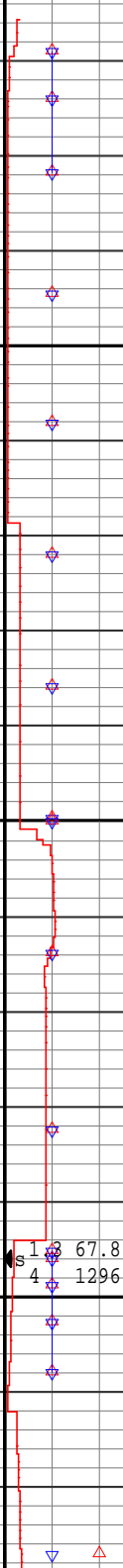
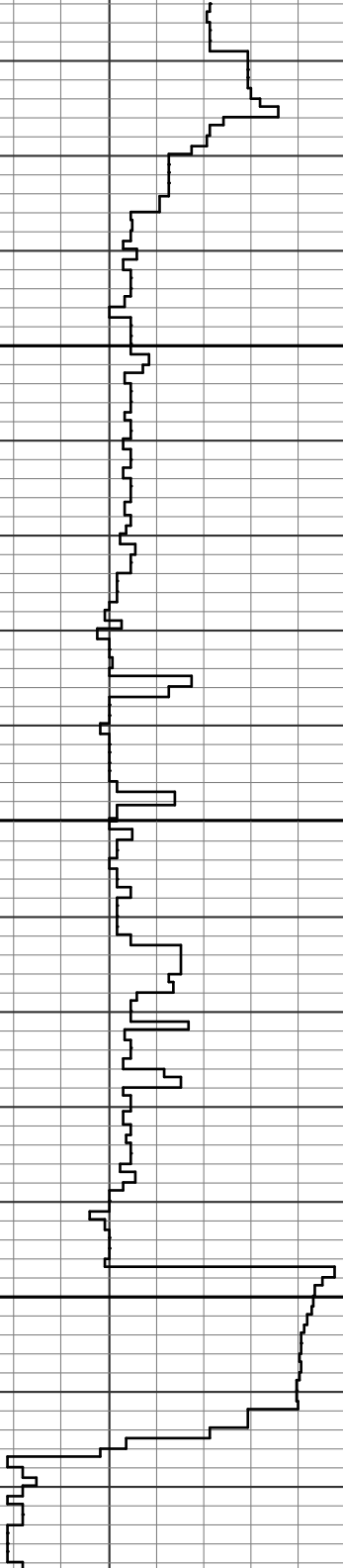
SEE REMARK #2



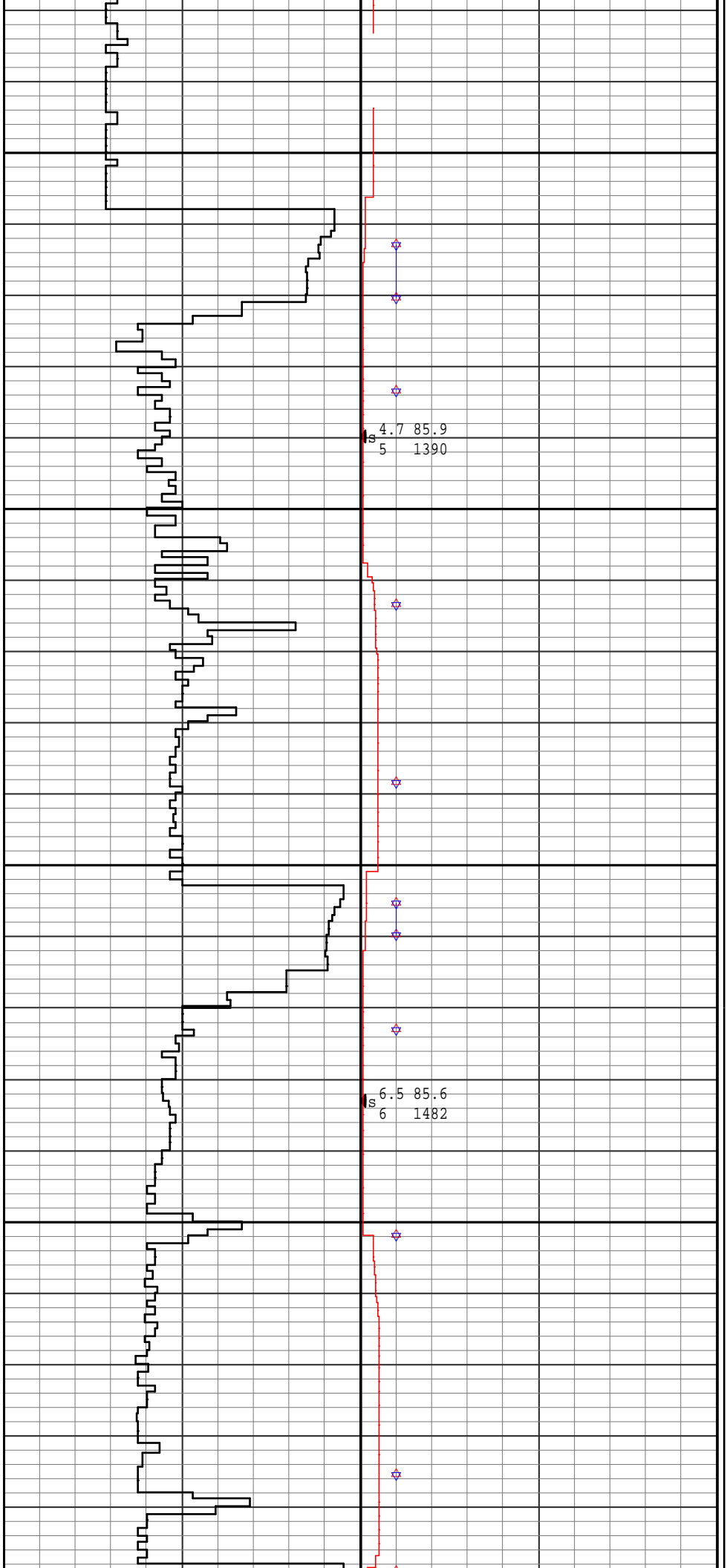
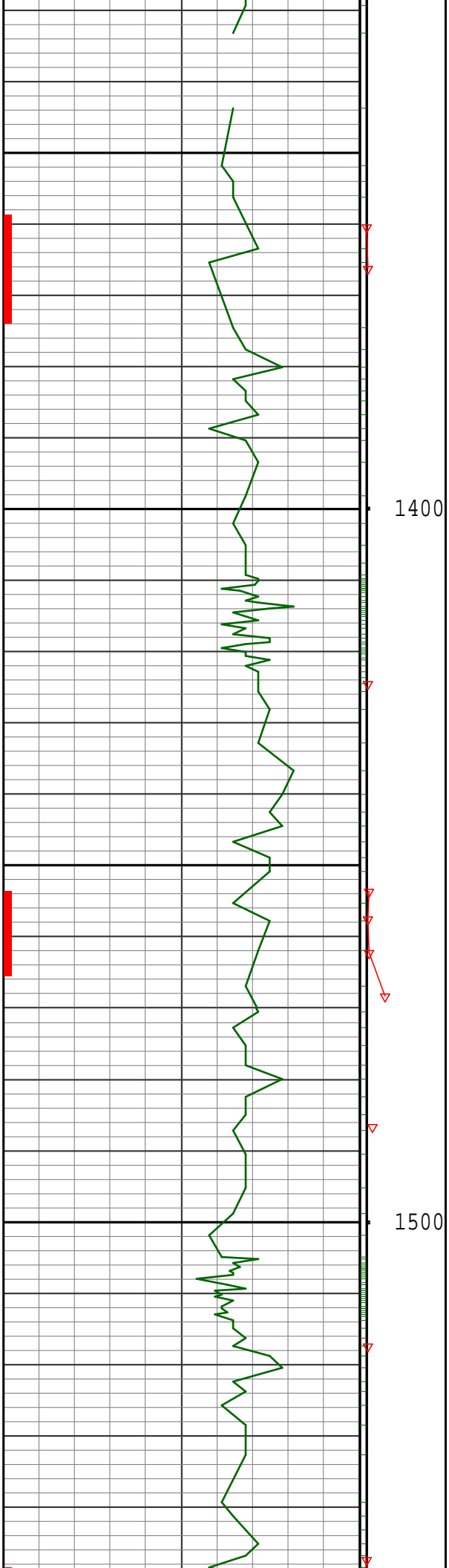
R  
U  
N  
#1

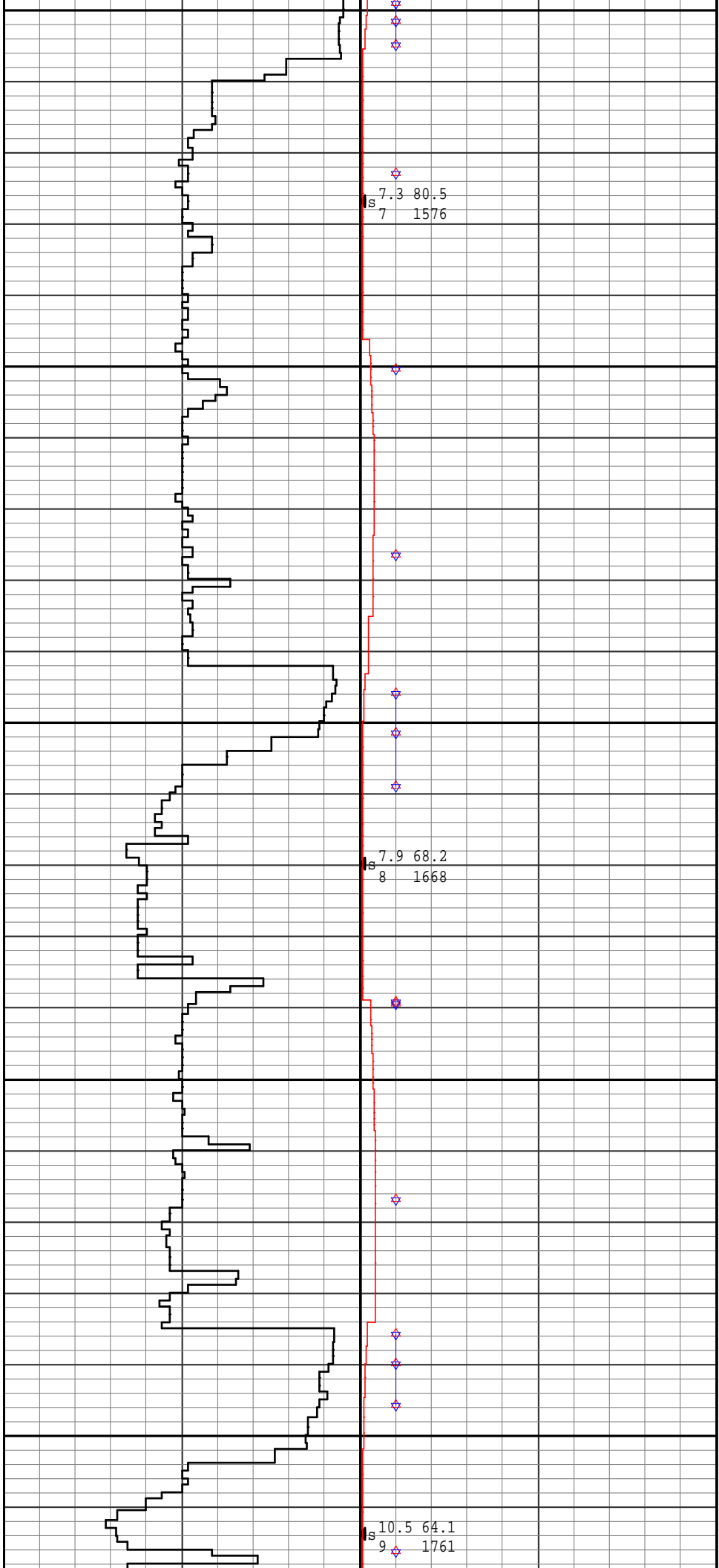
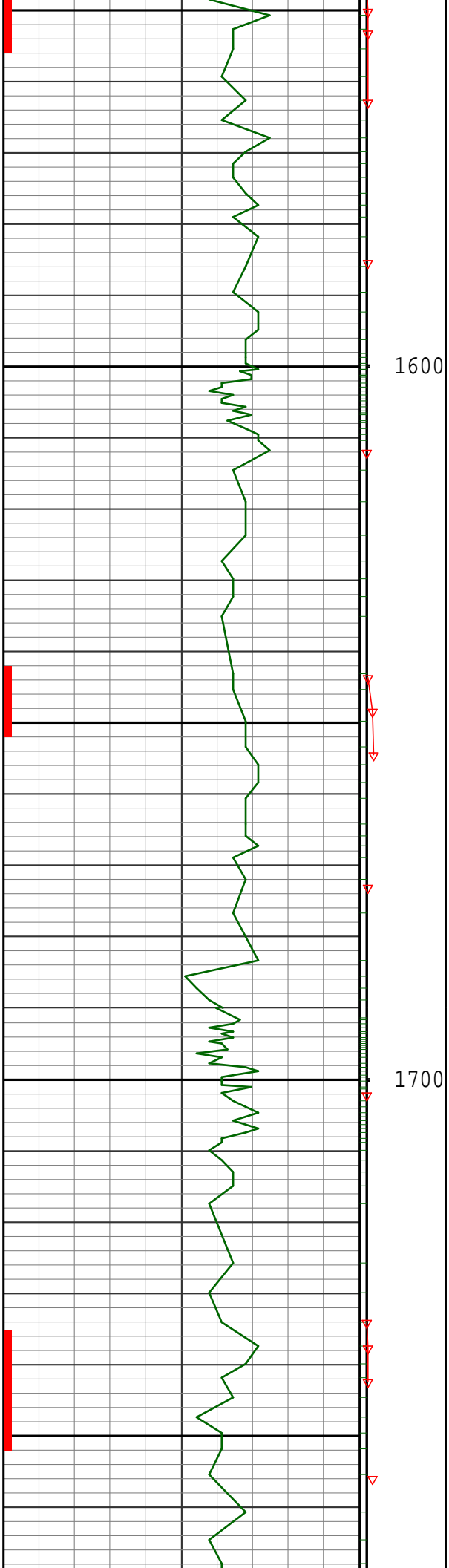
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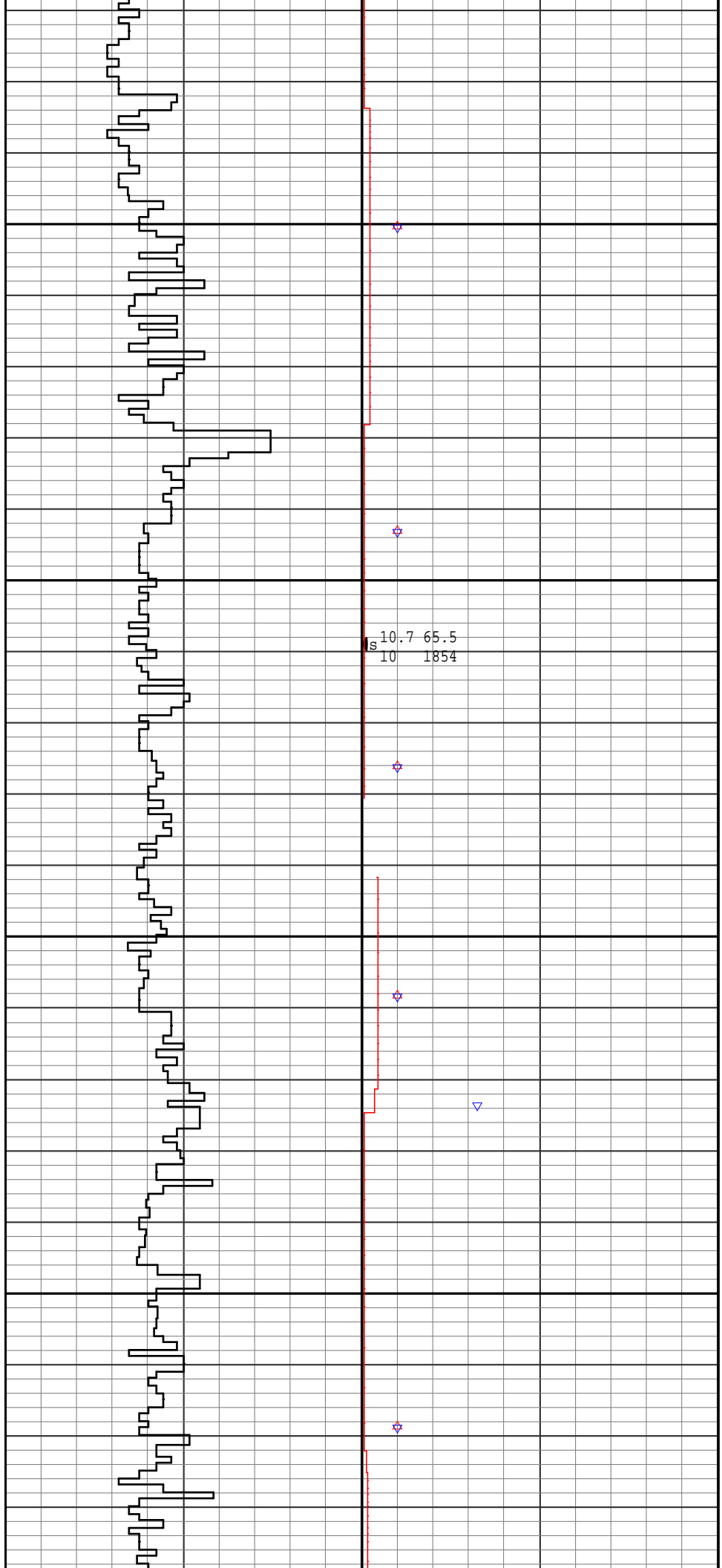
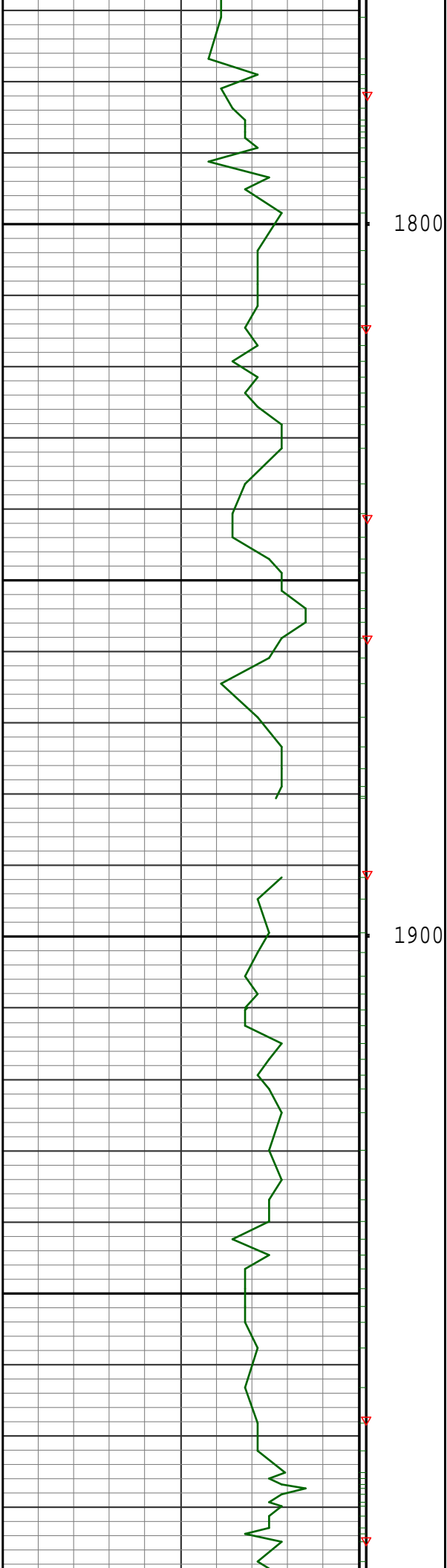
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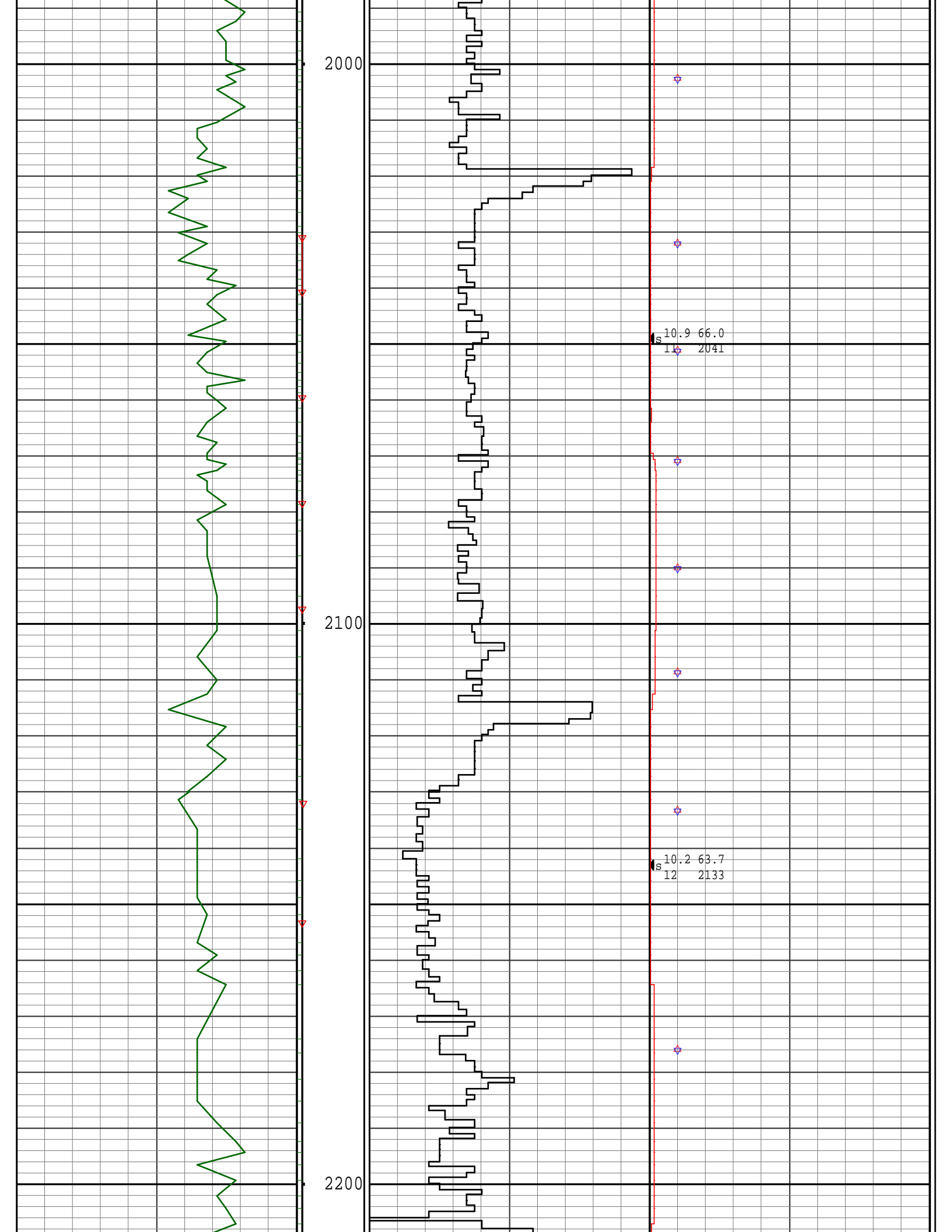


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4 1296

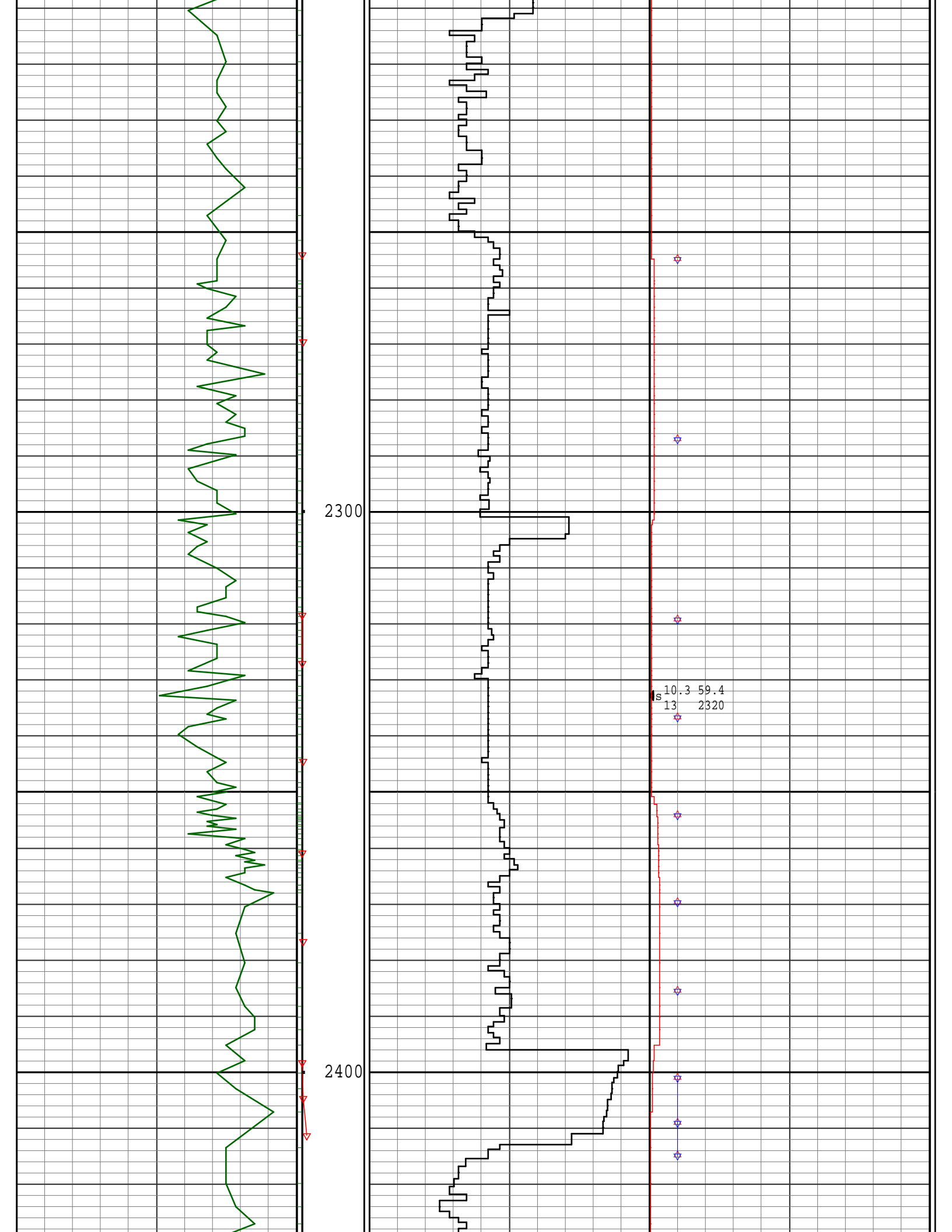


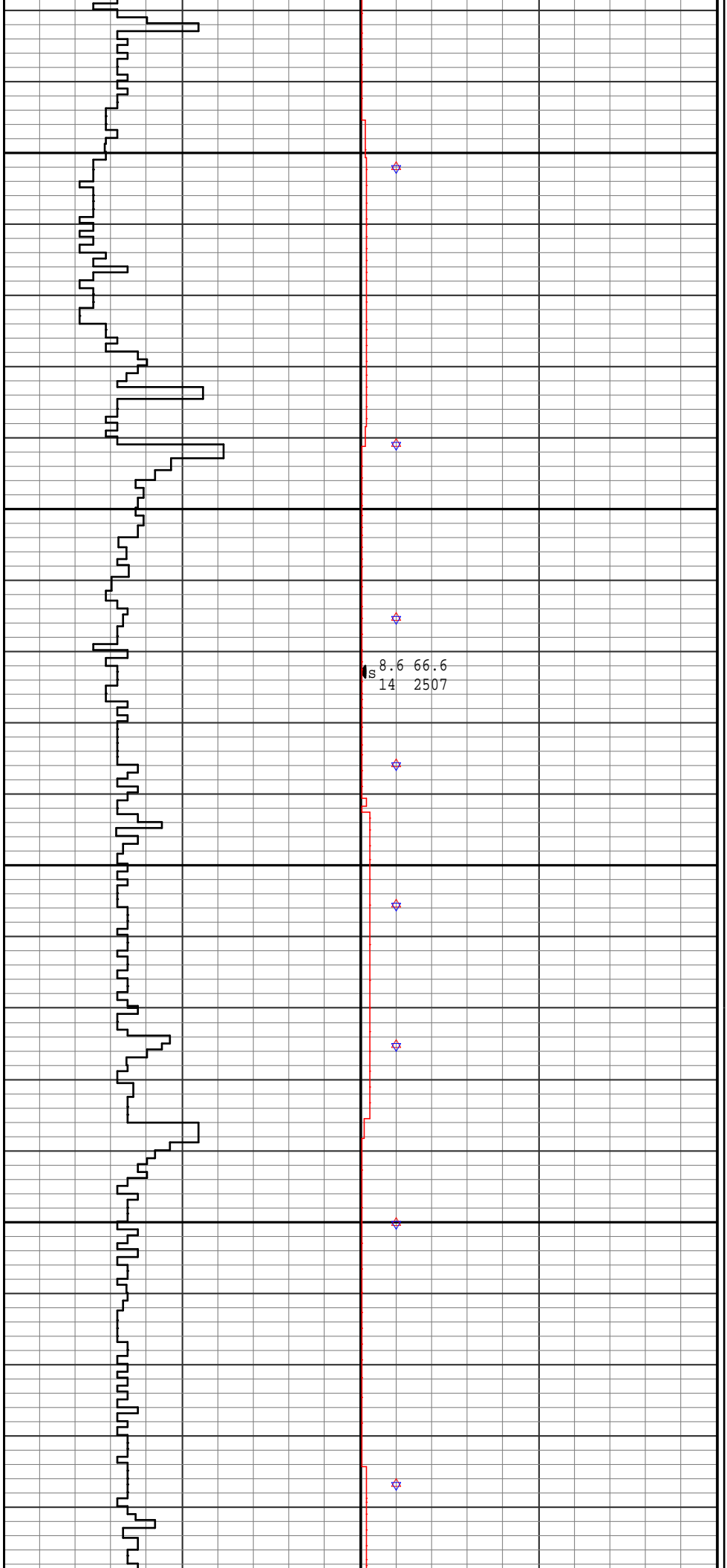
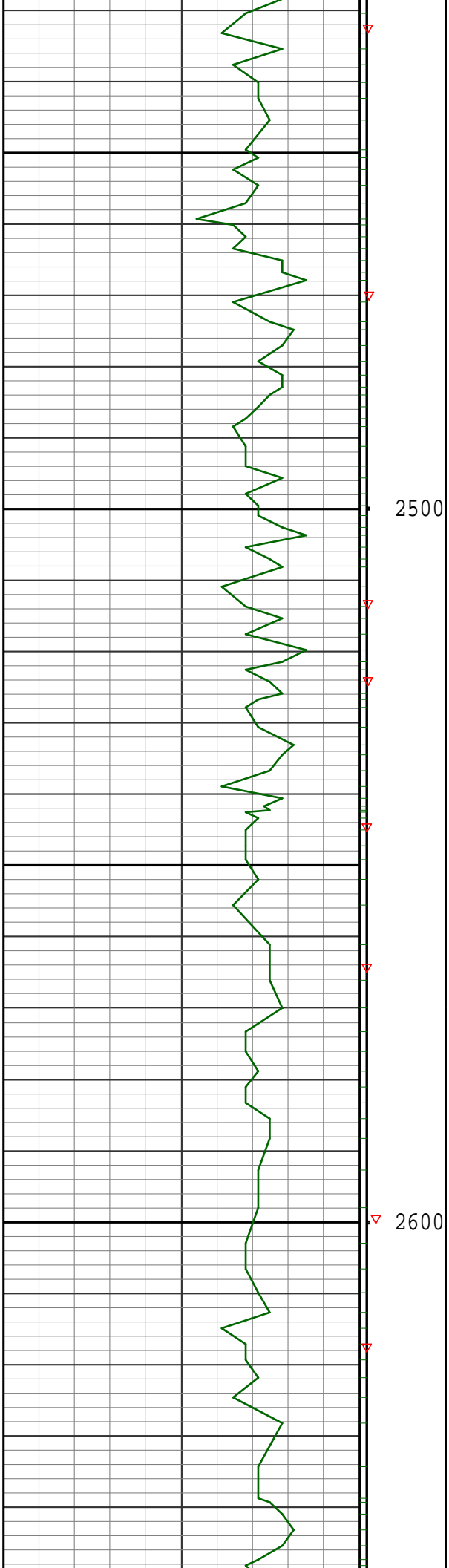


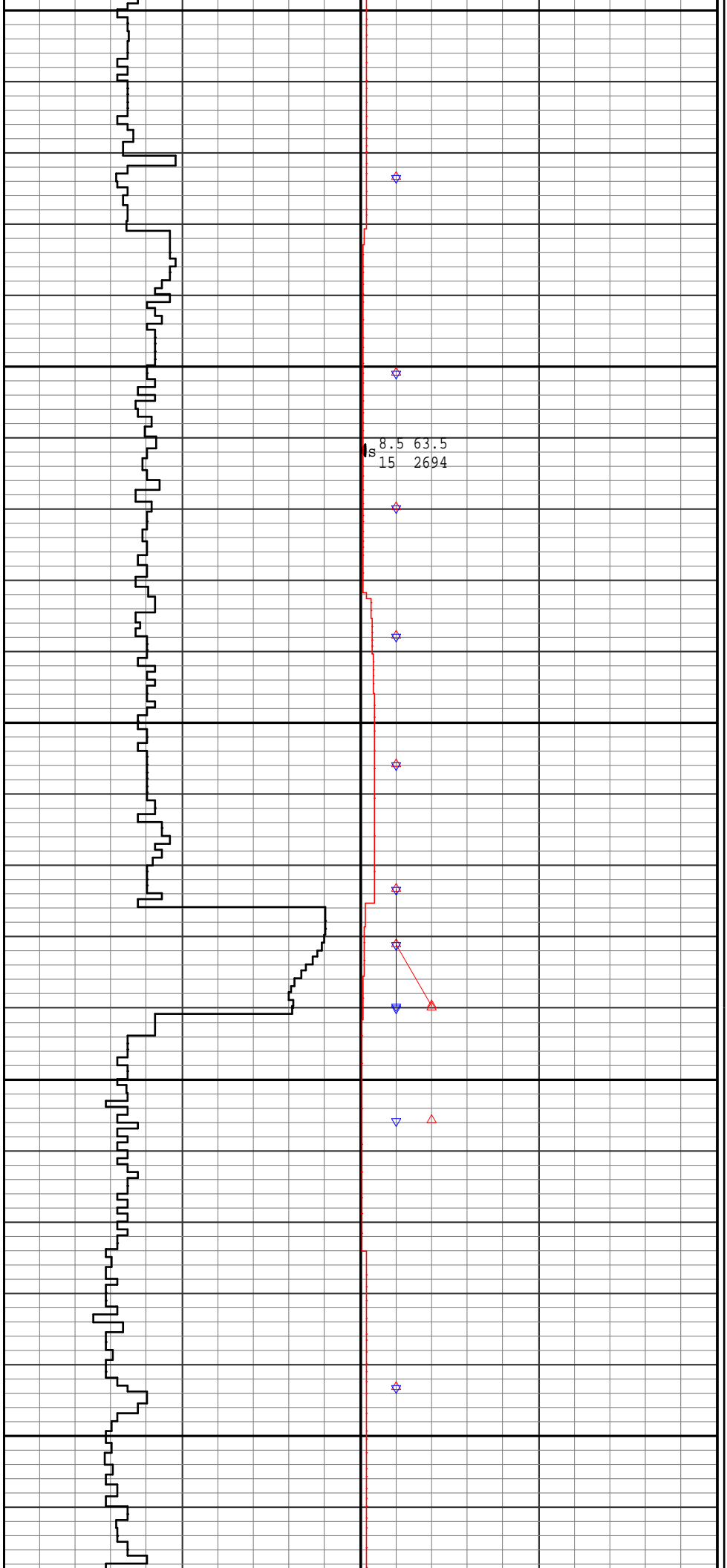
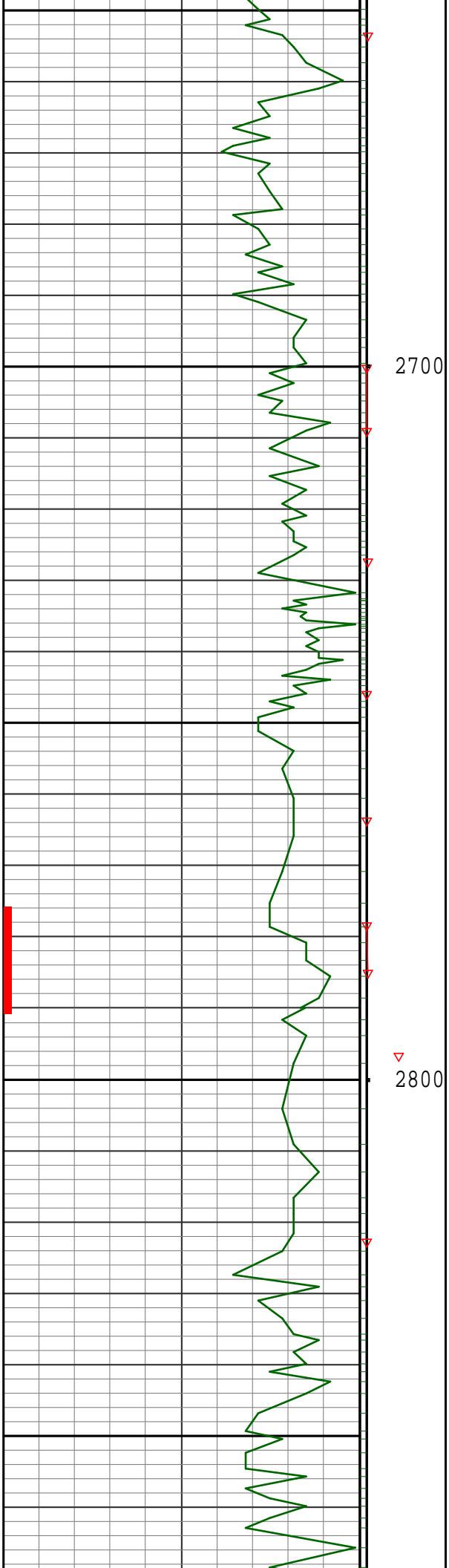


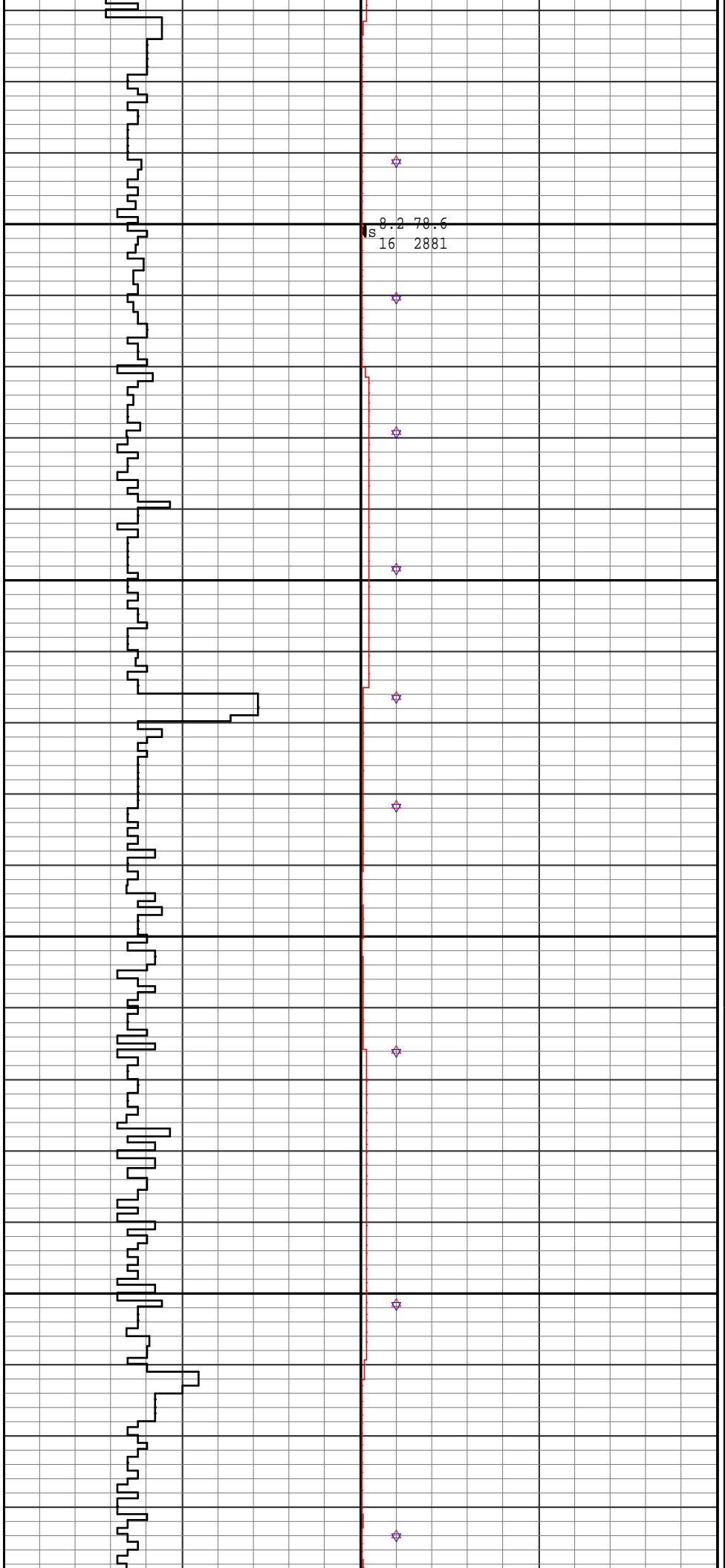
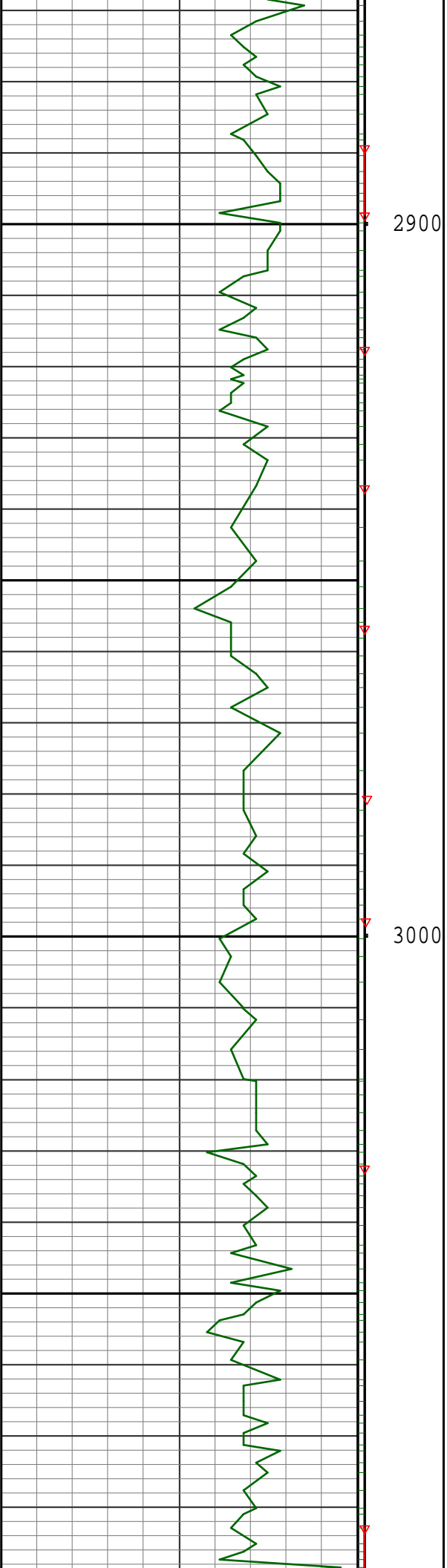


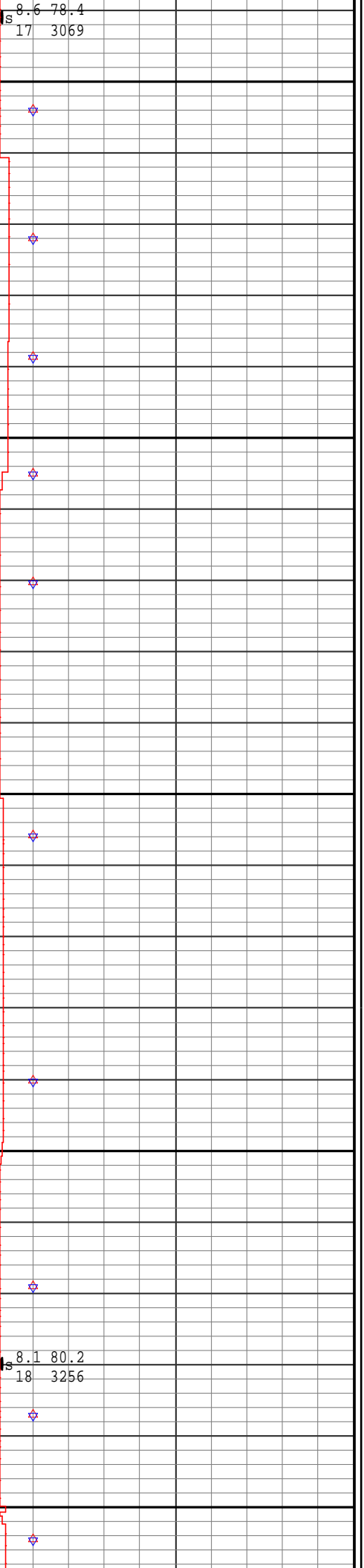
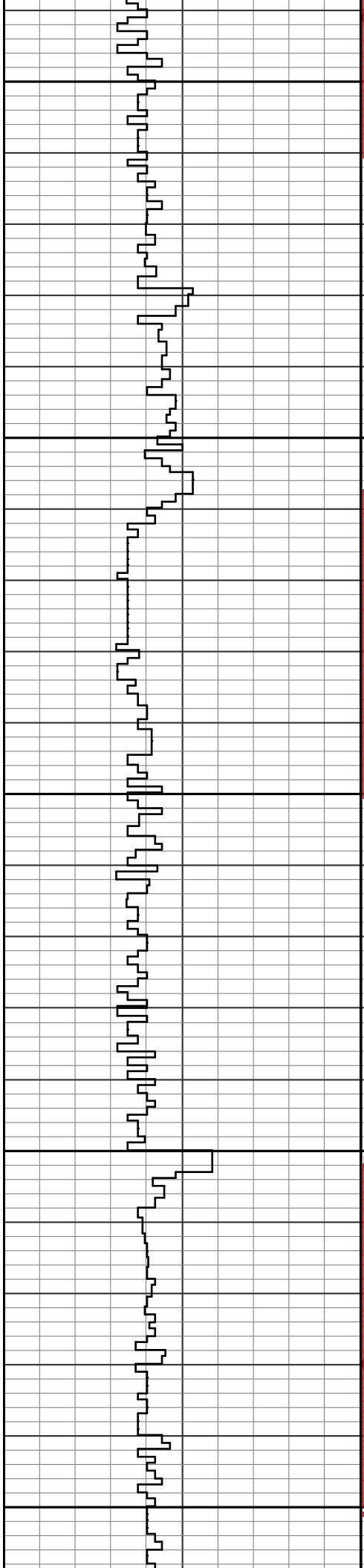
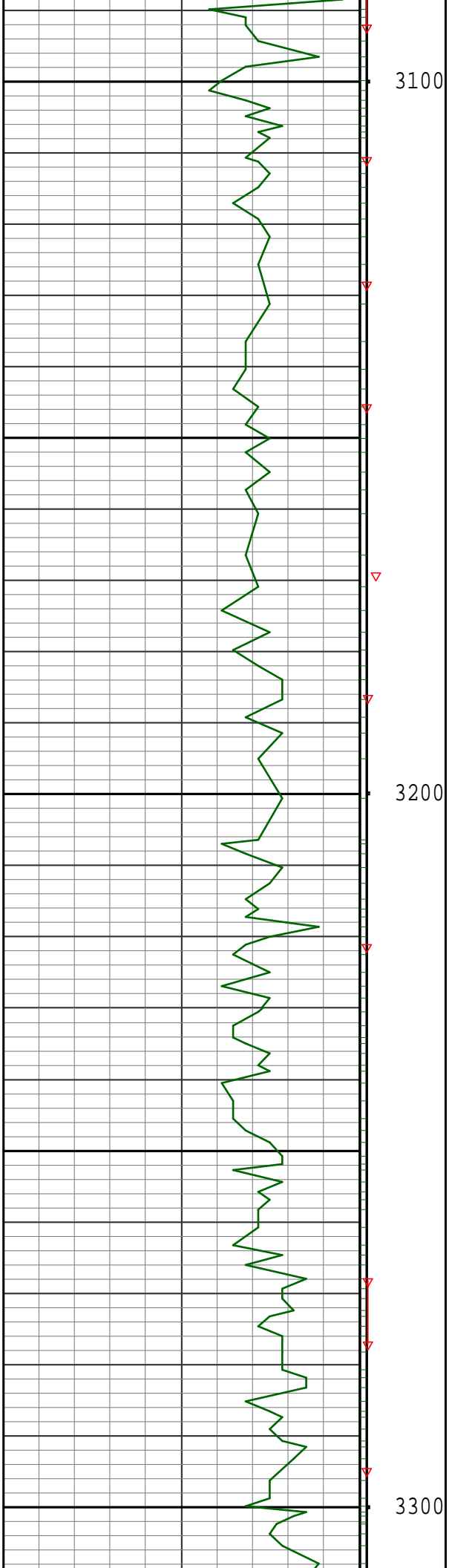


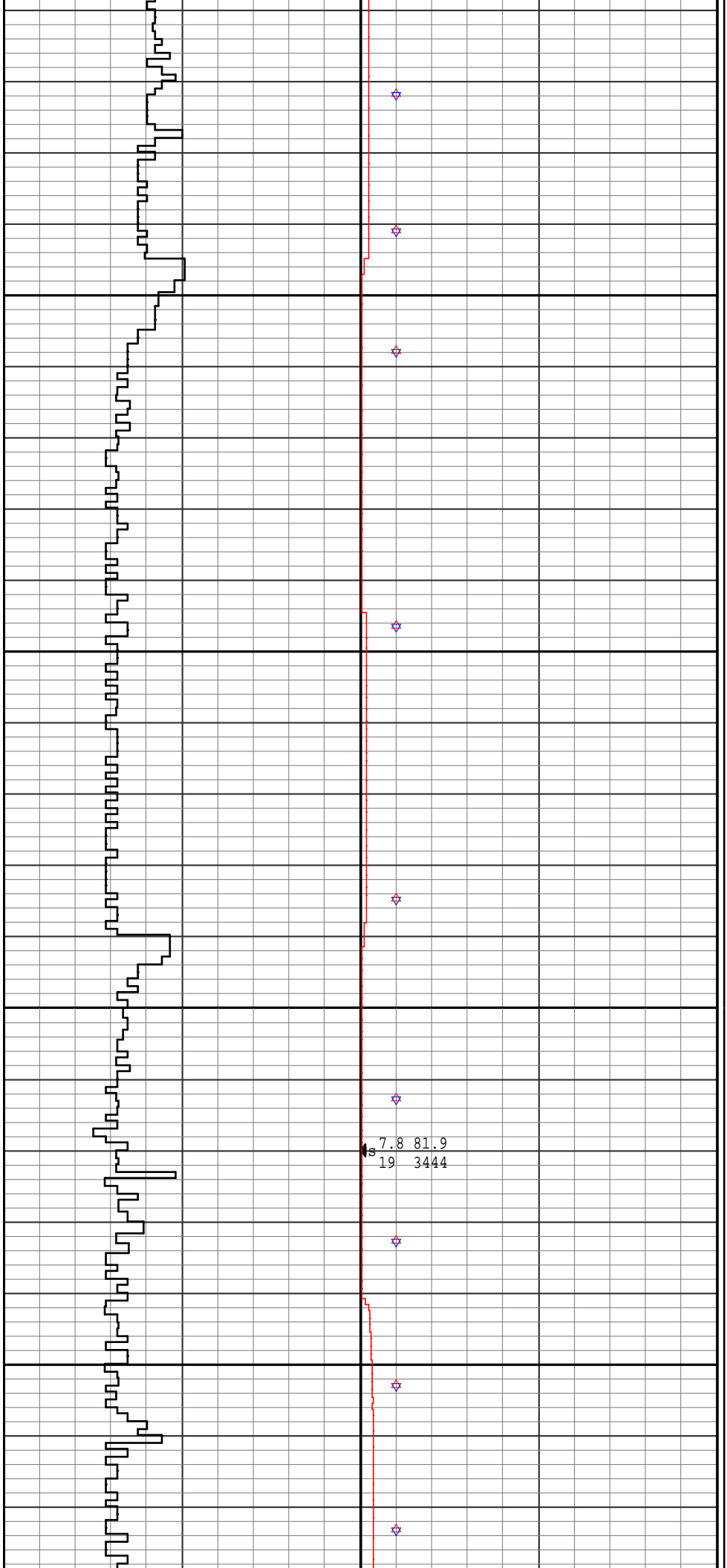
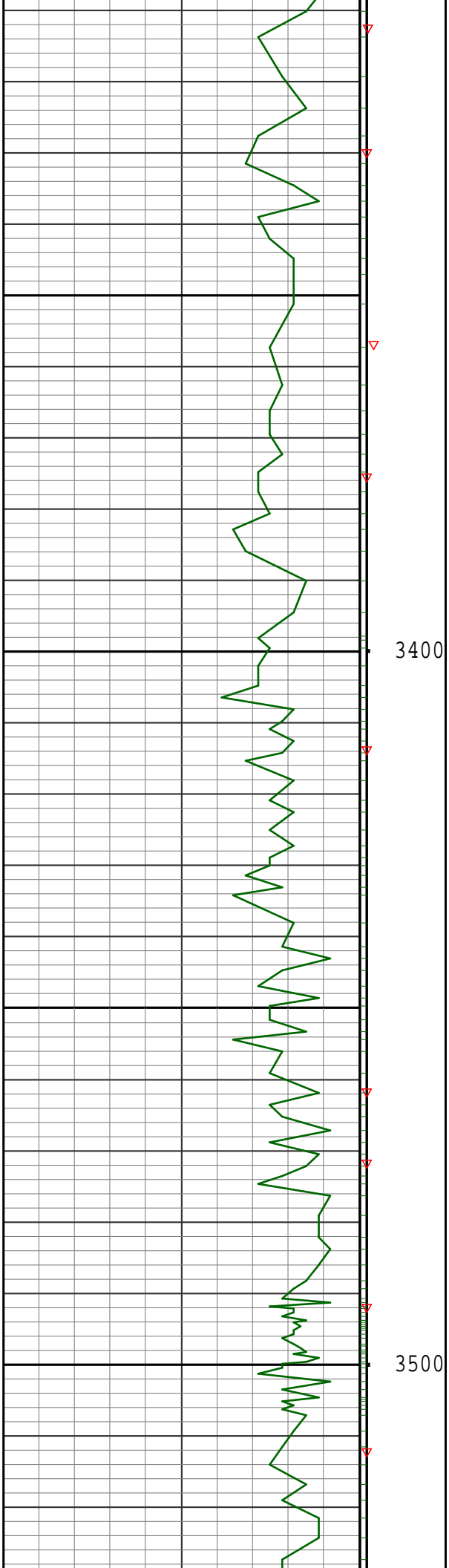


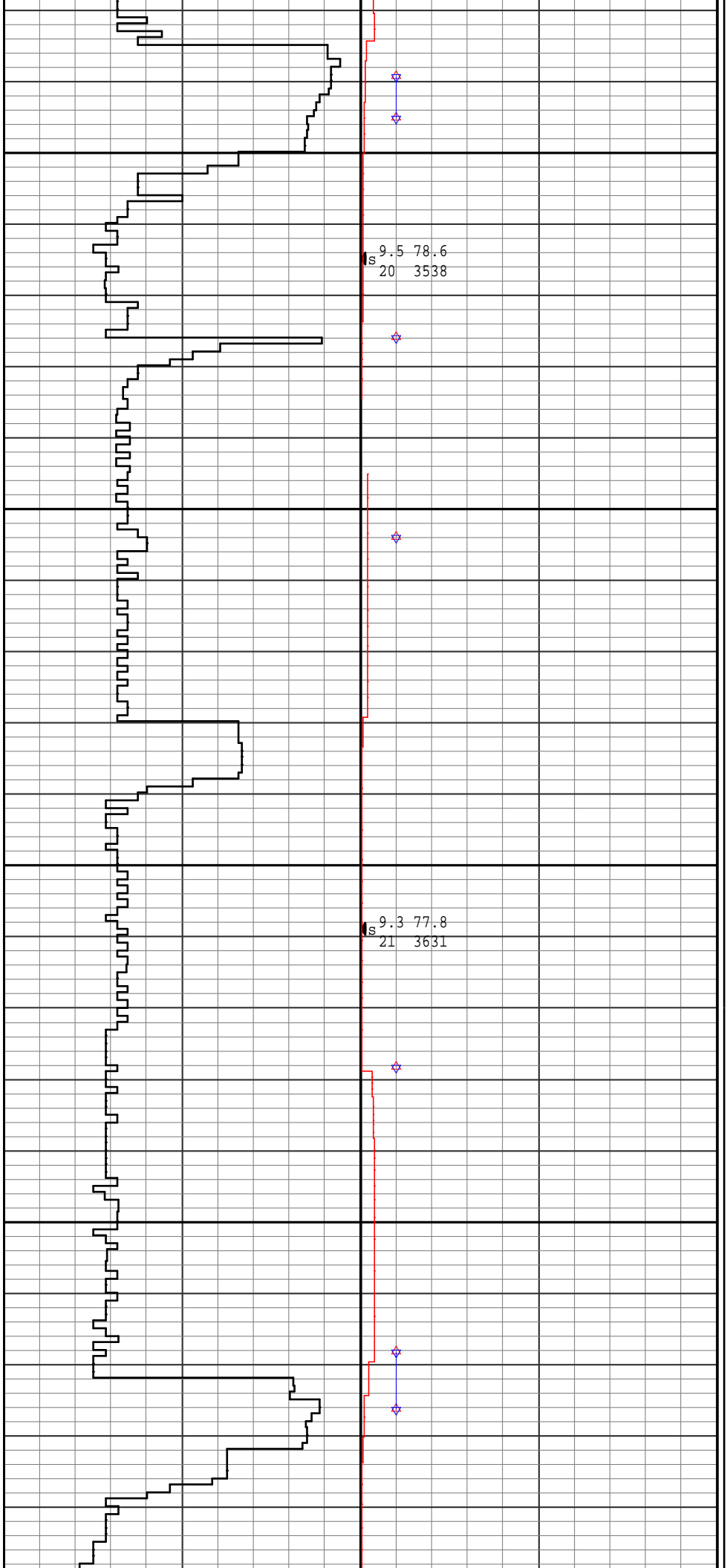
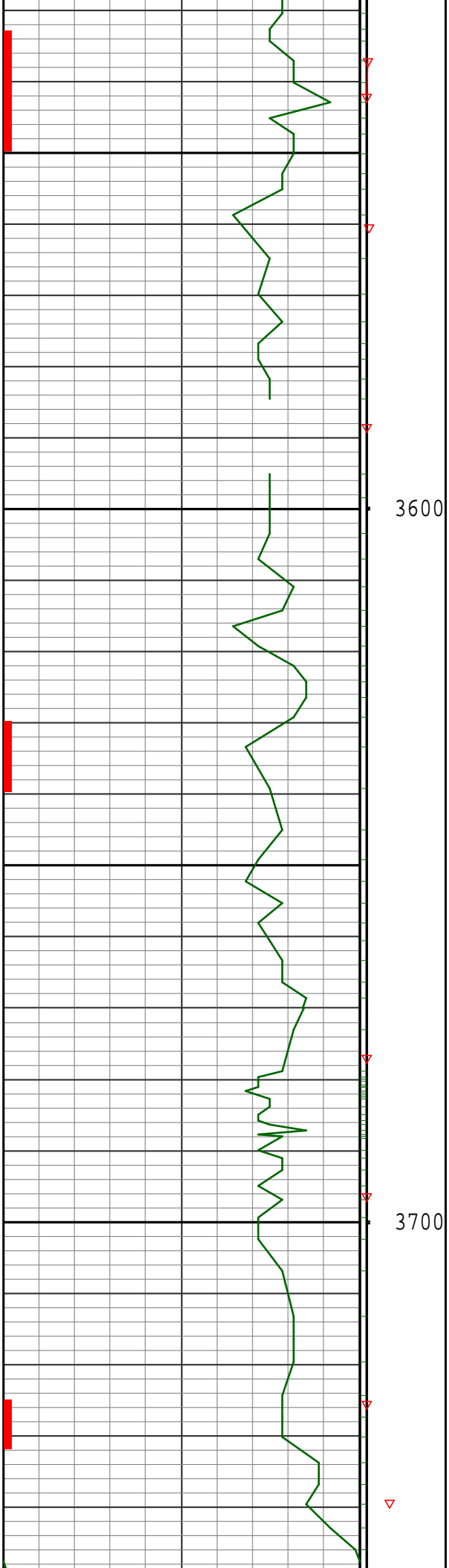


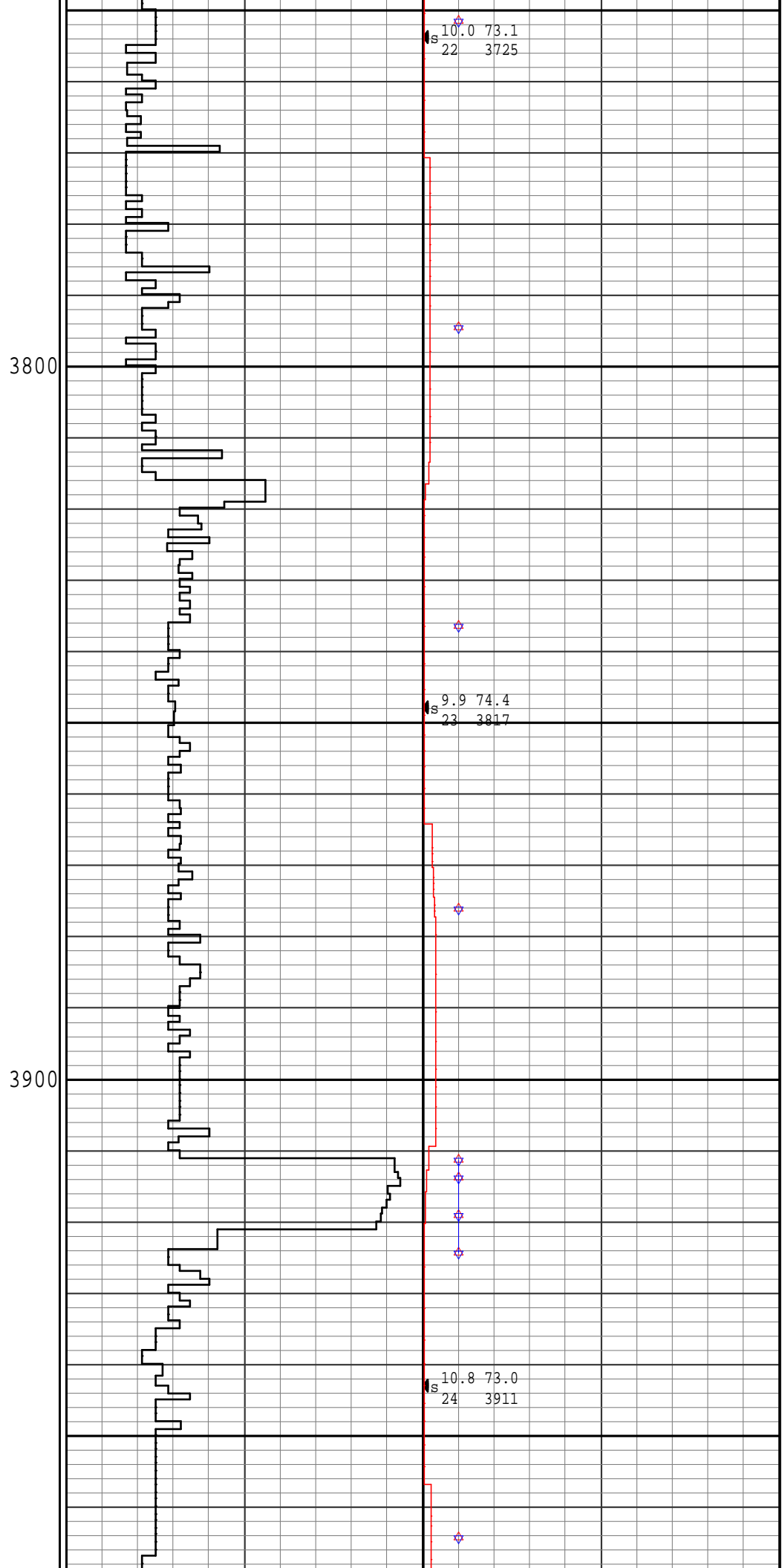
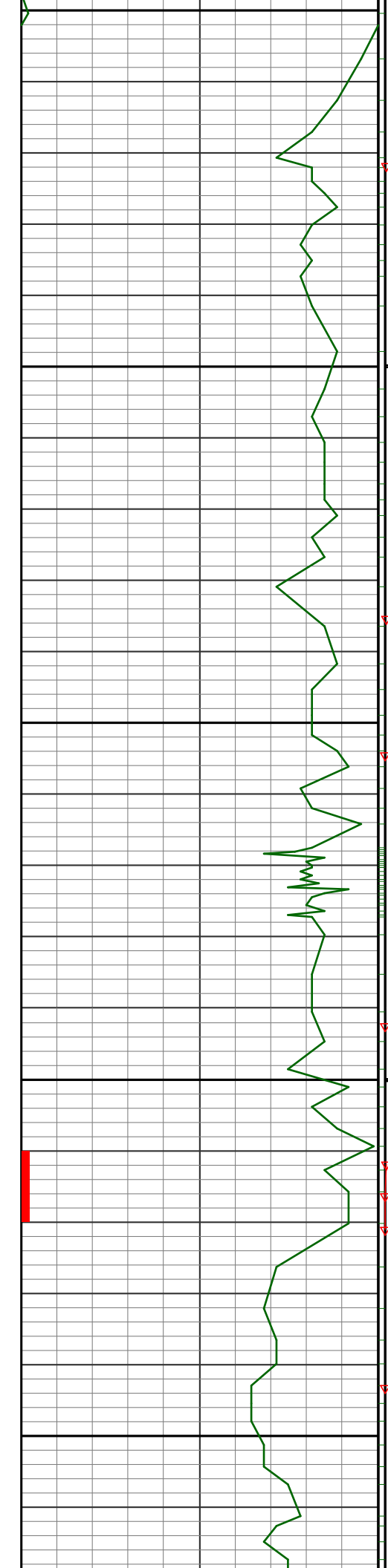




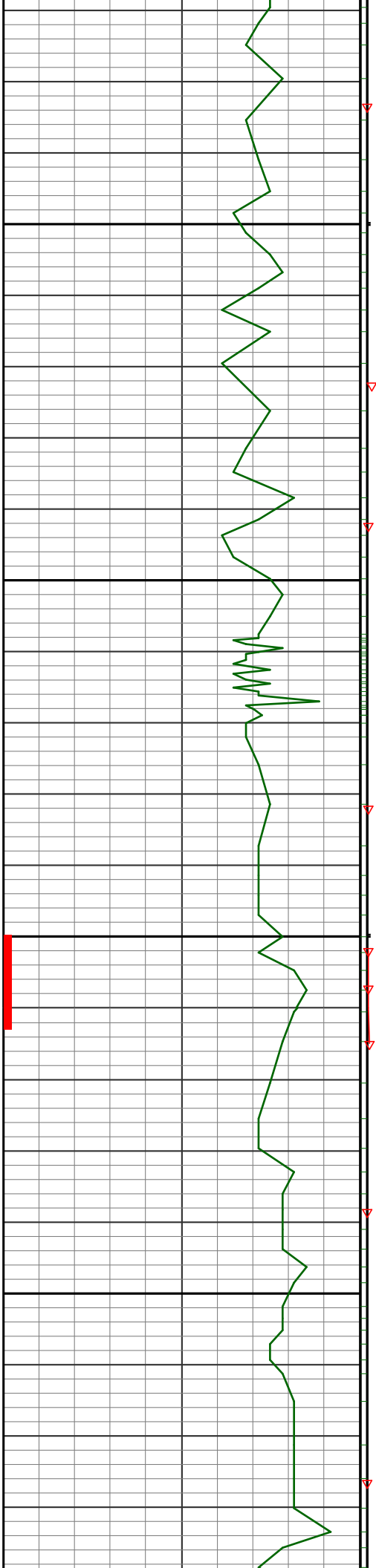






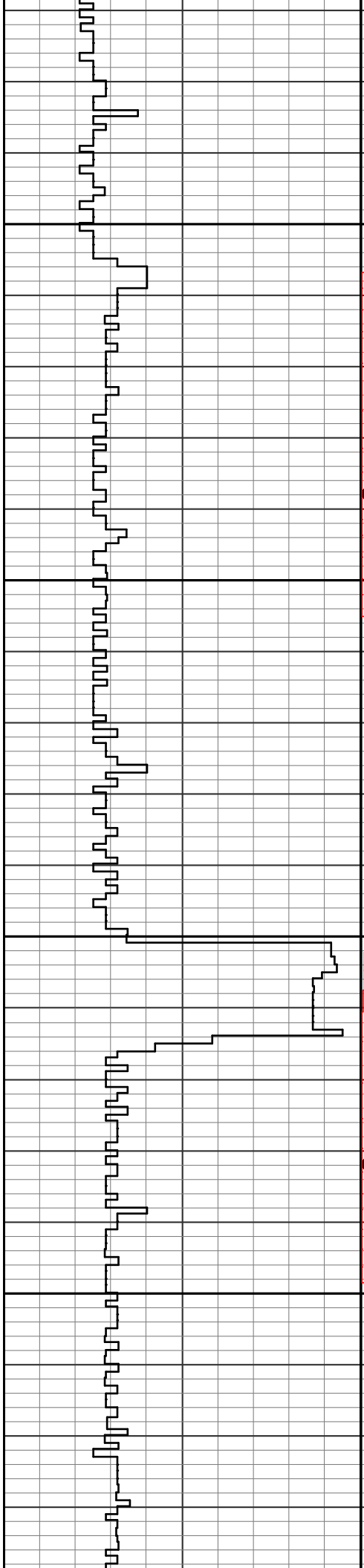






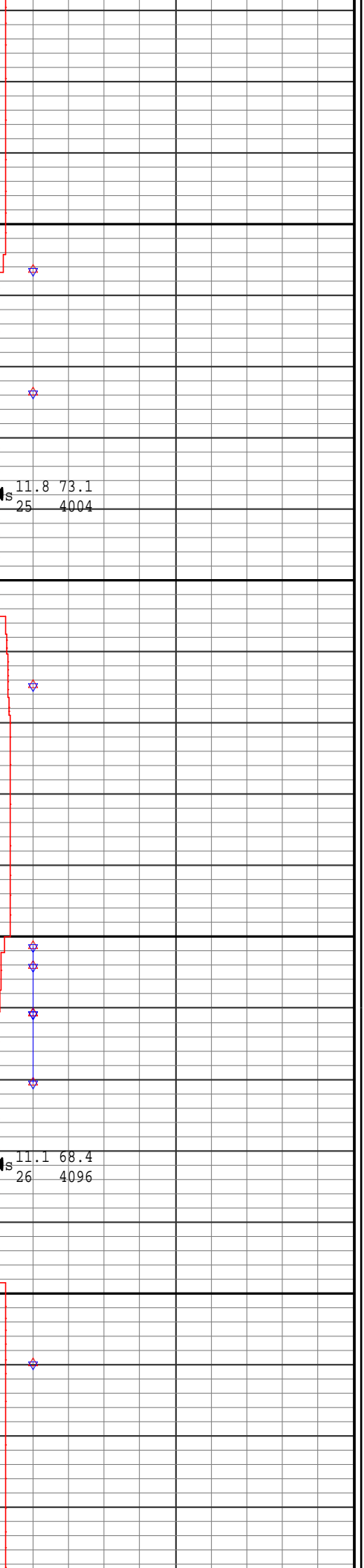
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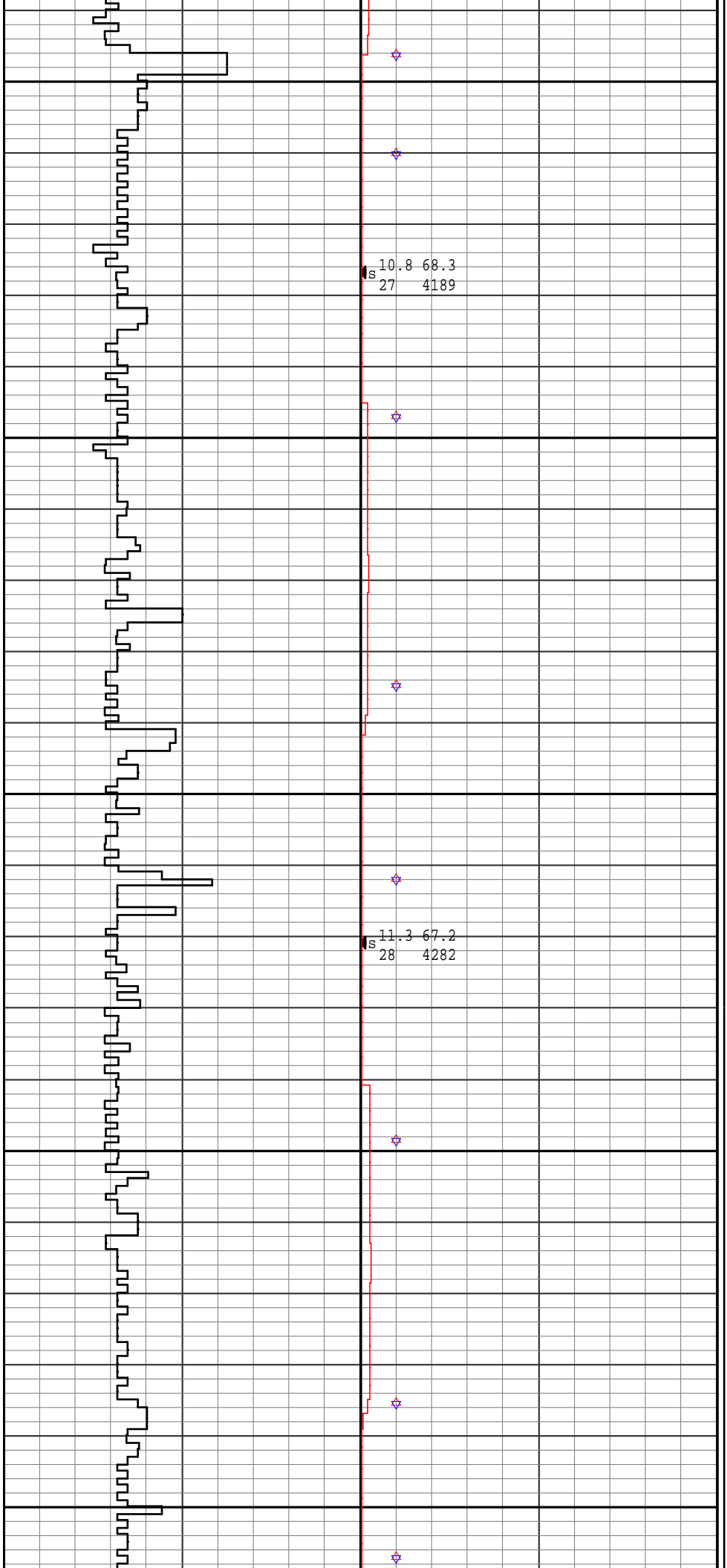
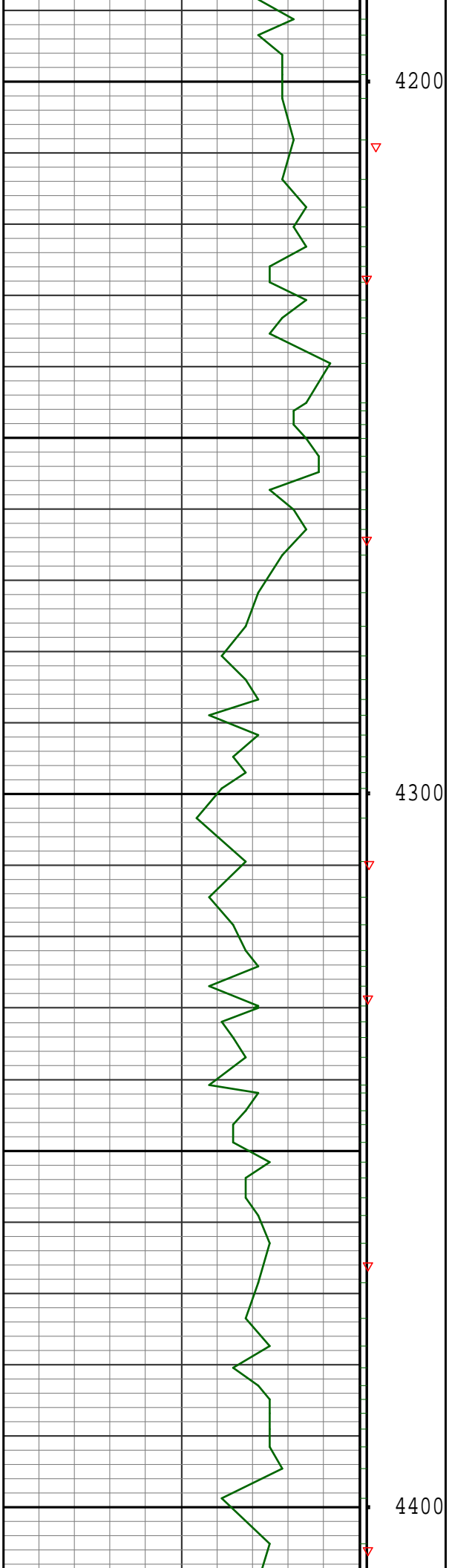
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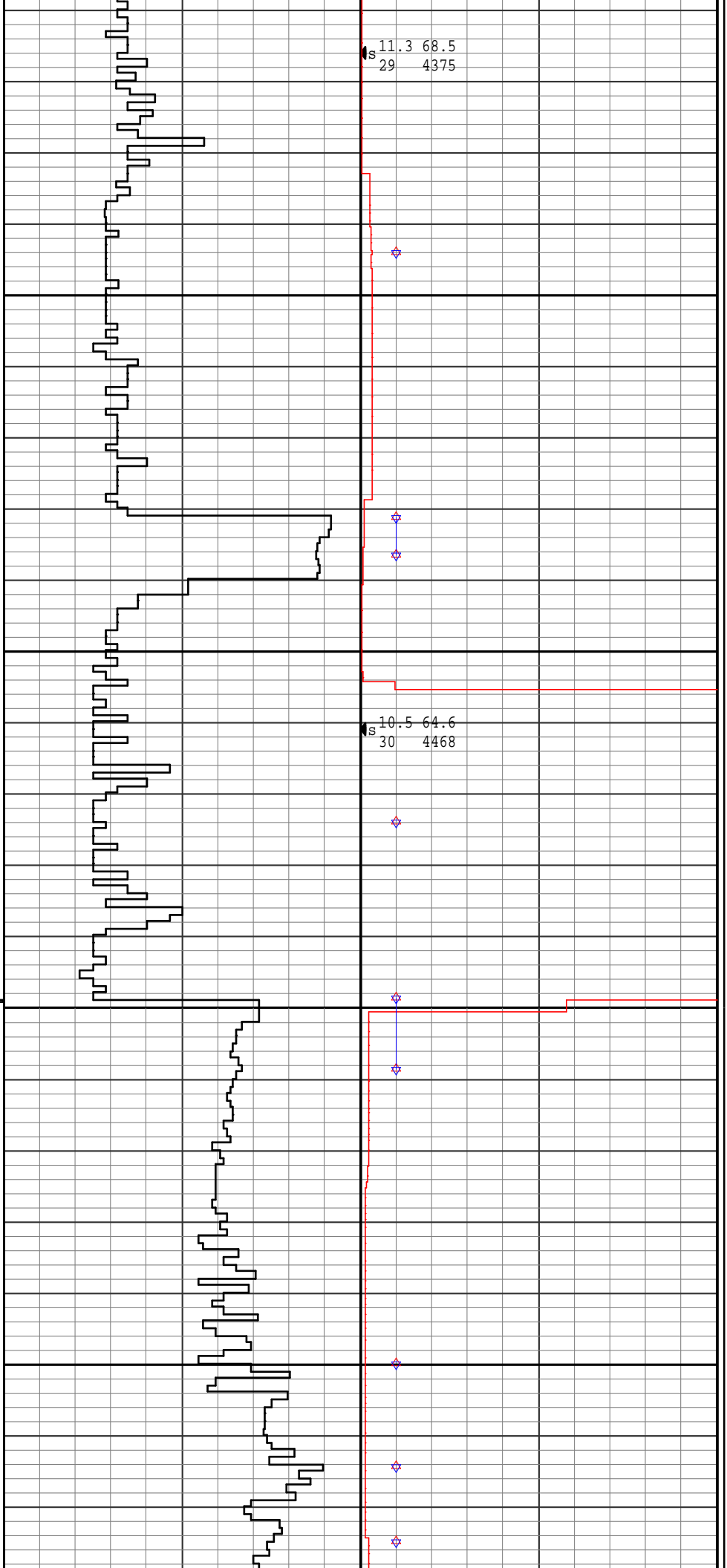
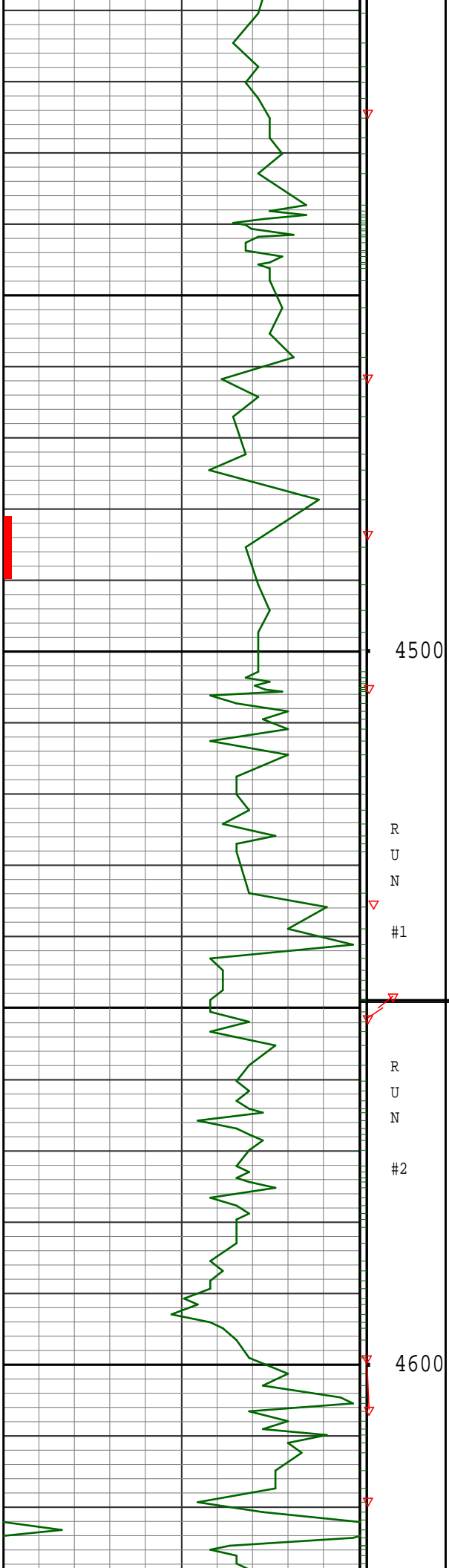


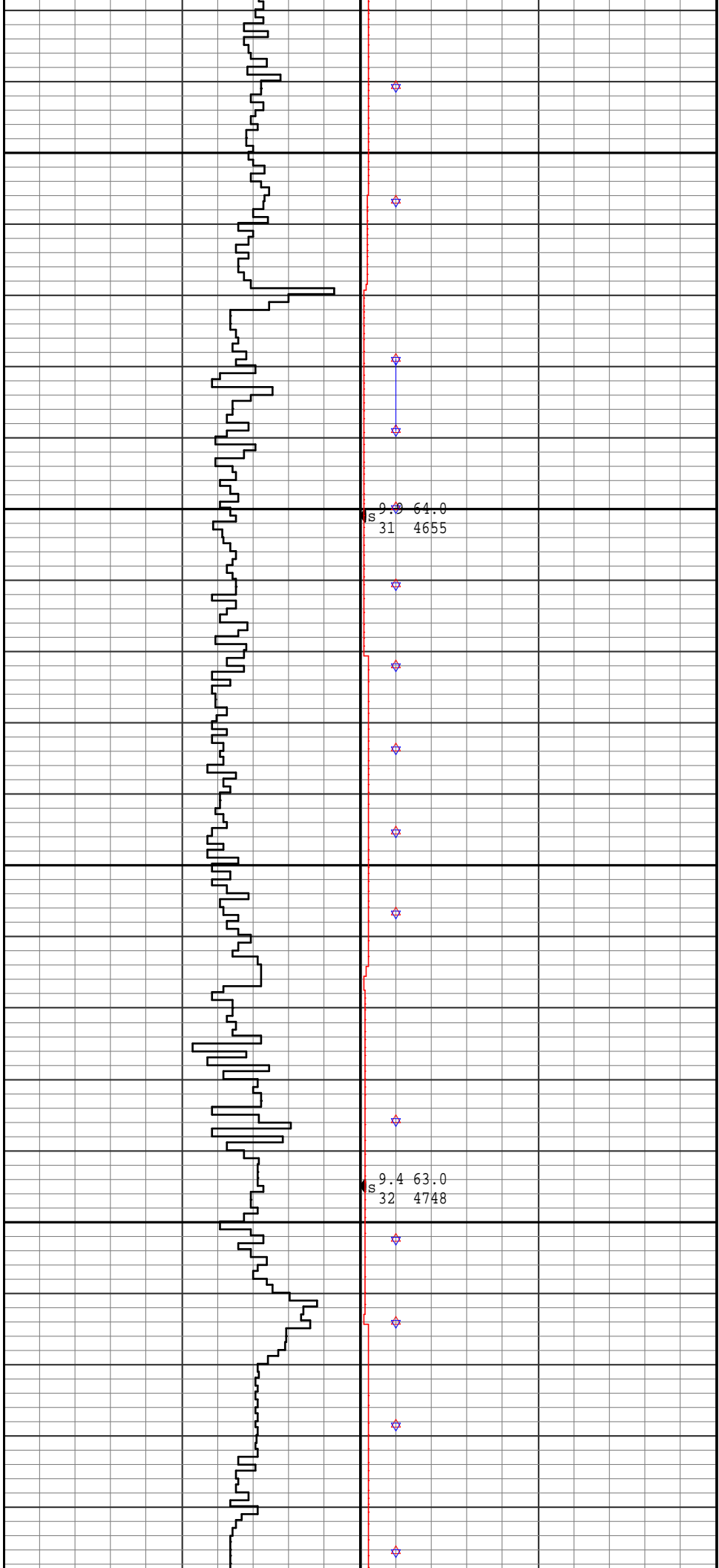
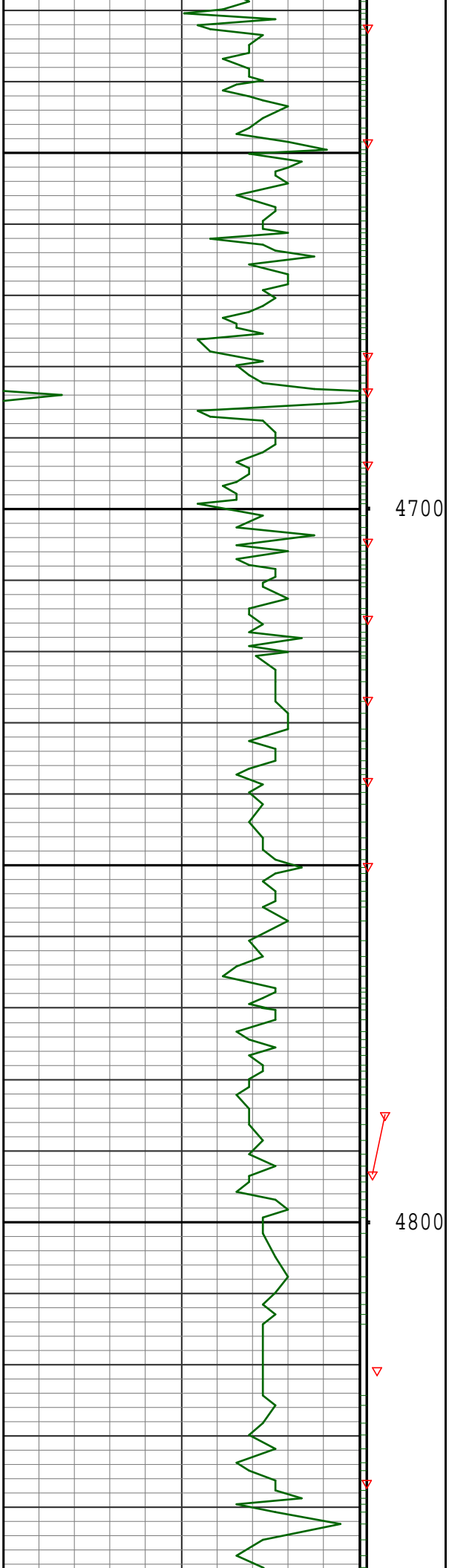
11.8 73.1  
s 25 4004

11.1 68.4  
s 26 4096





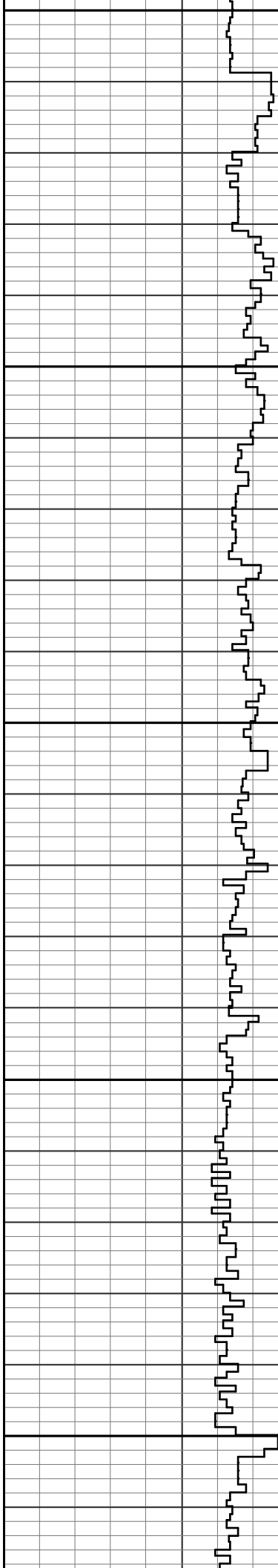




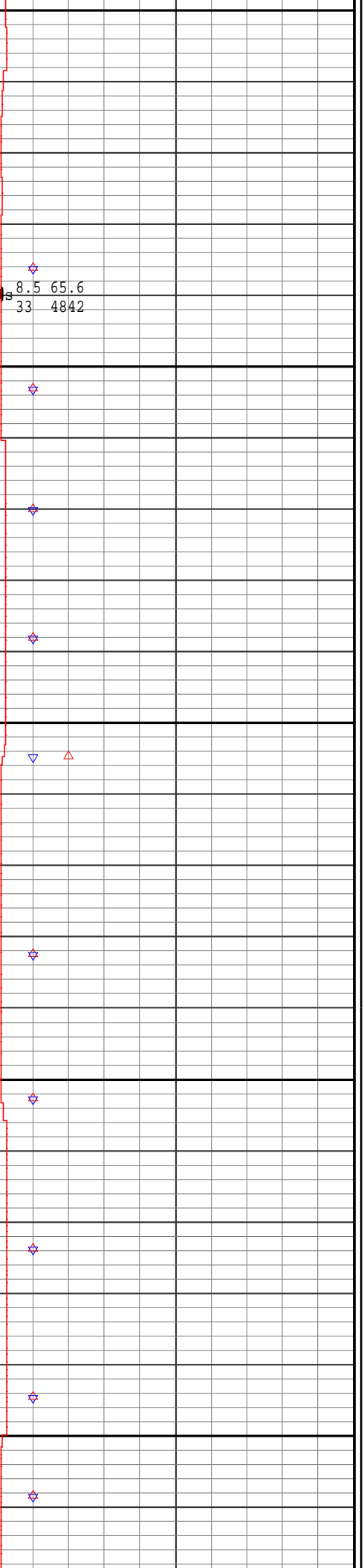


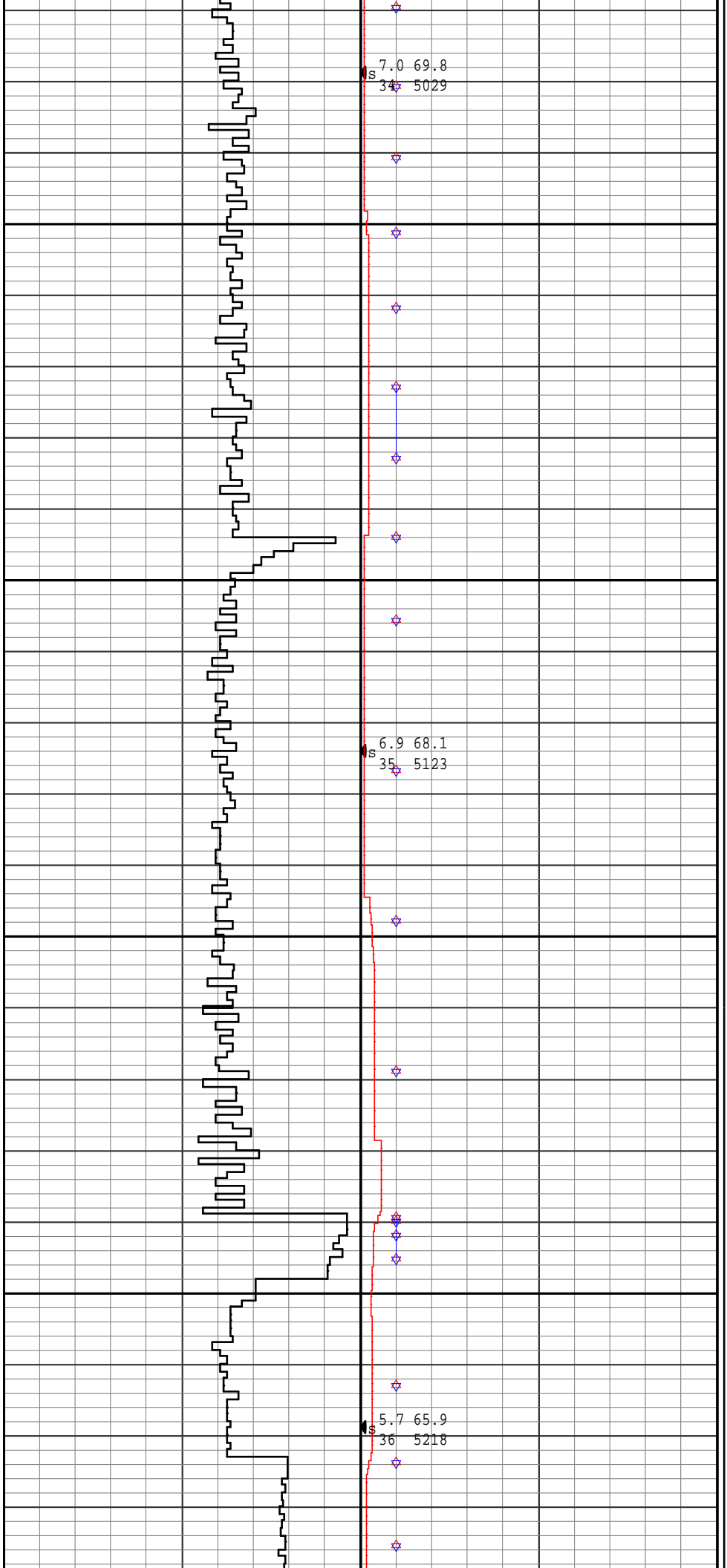
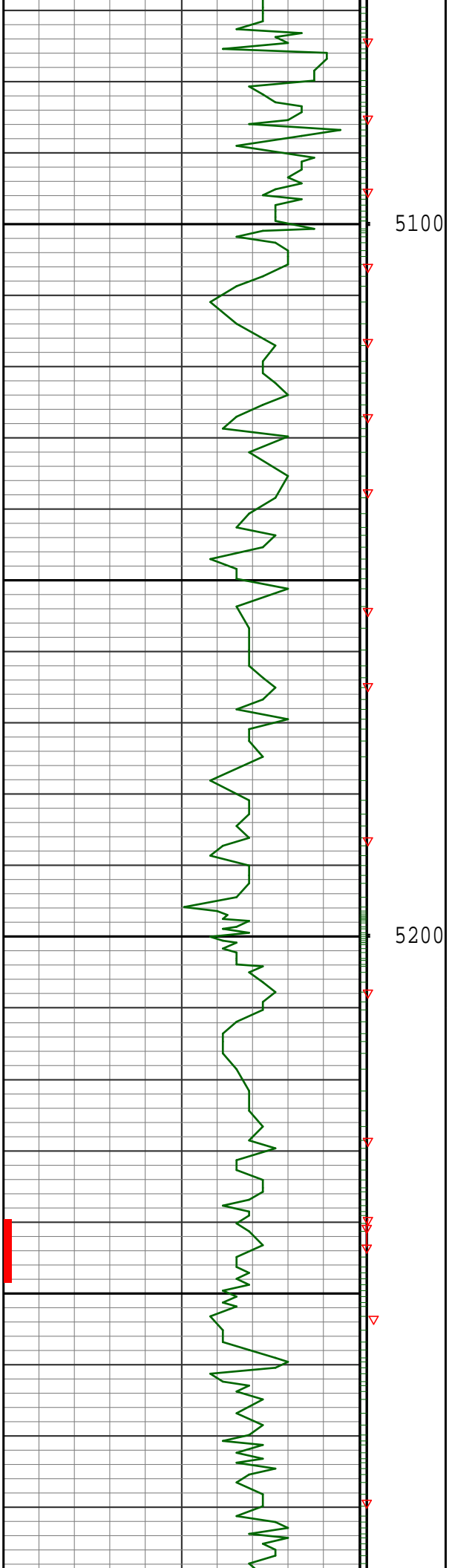
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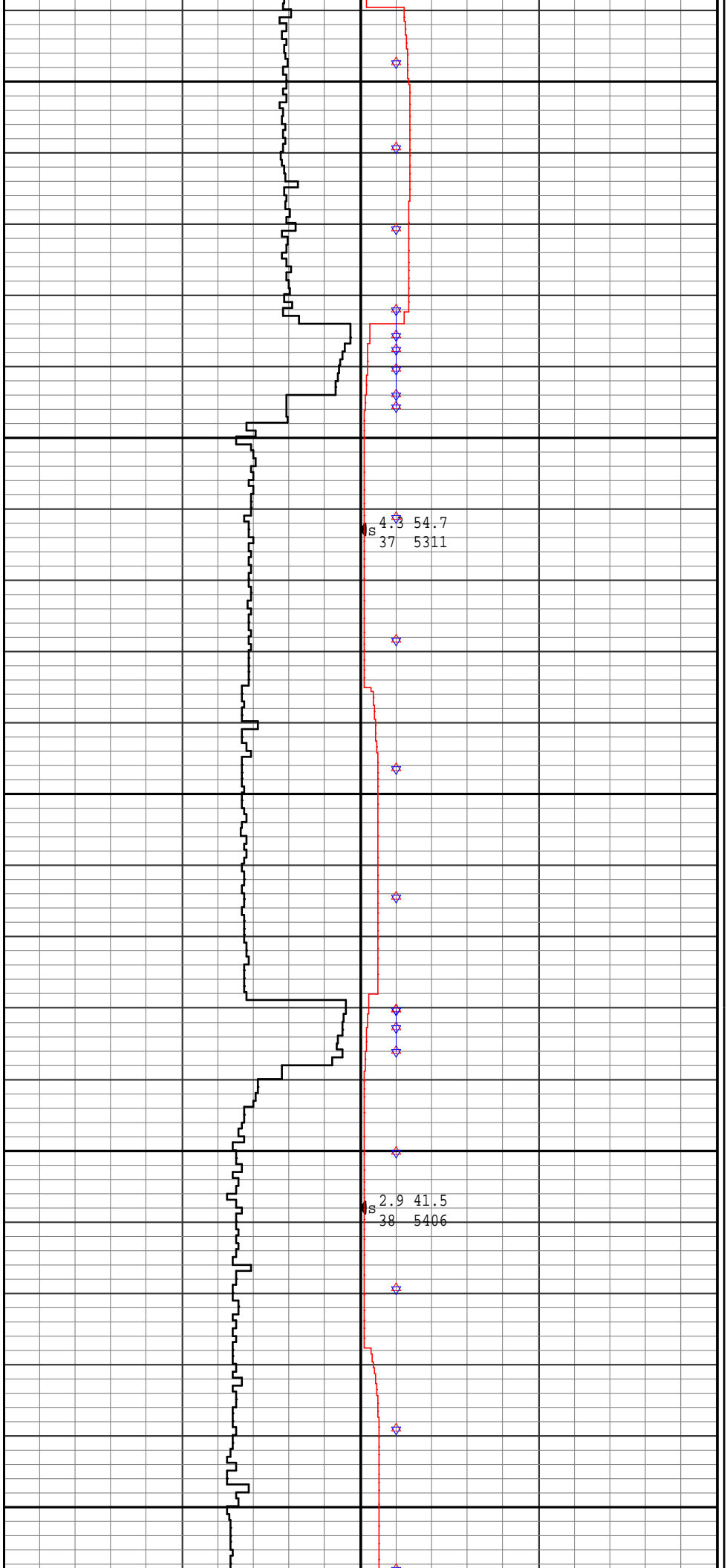
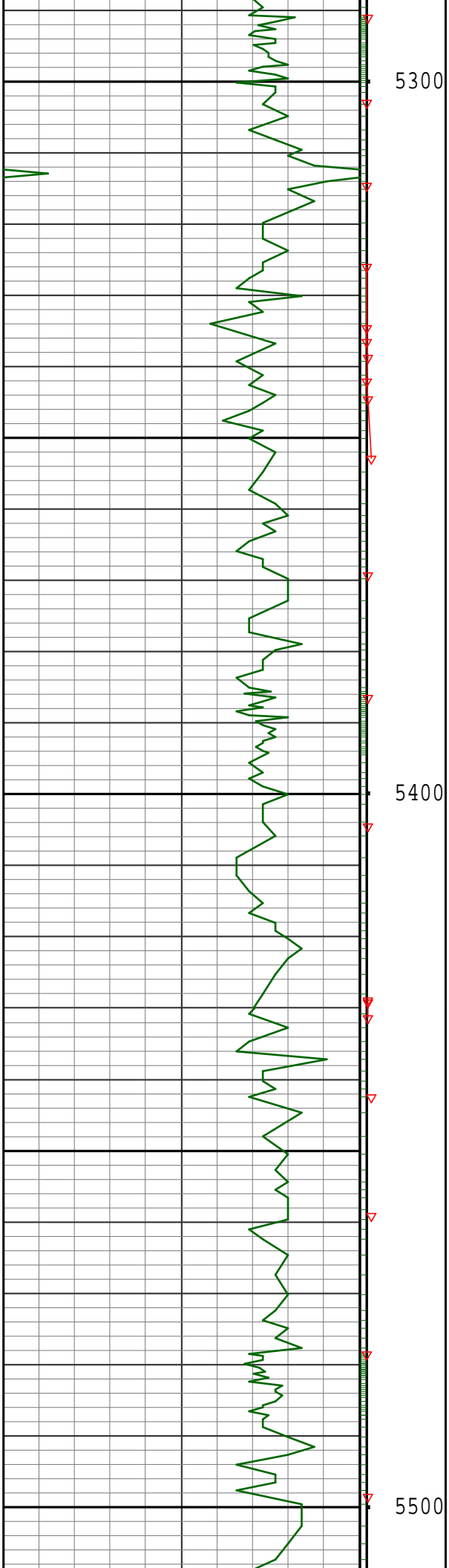
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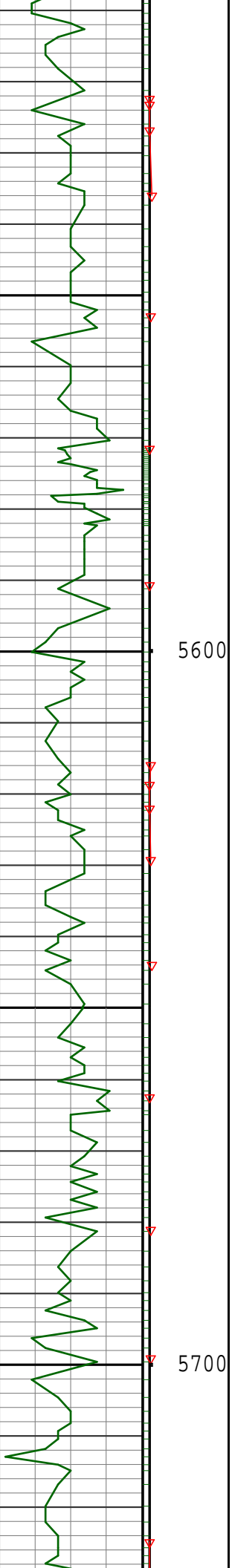


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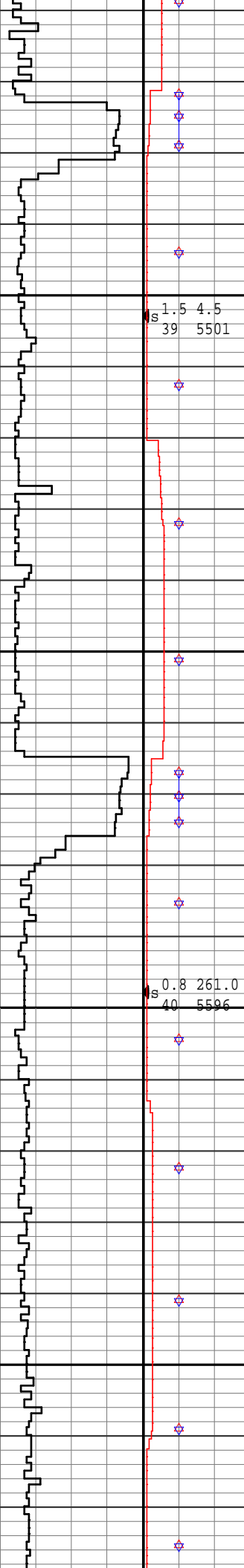






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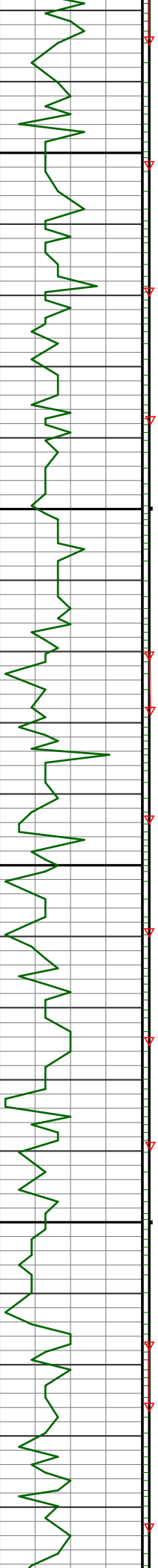
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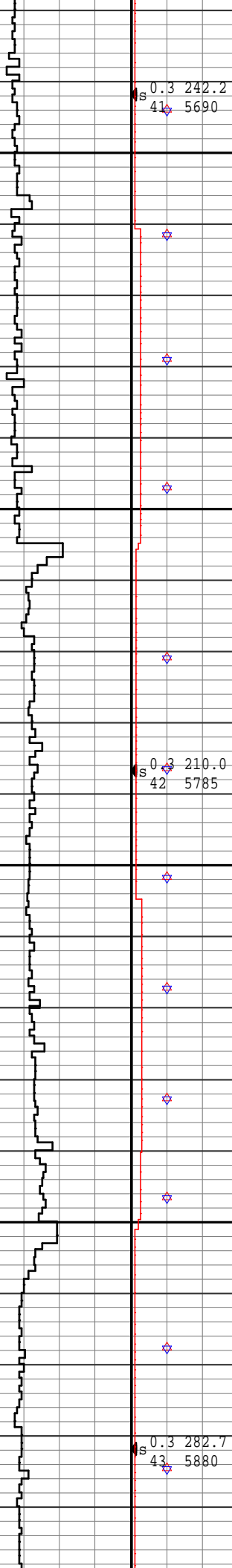
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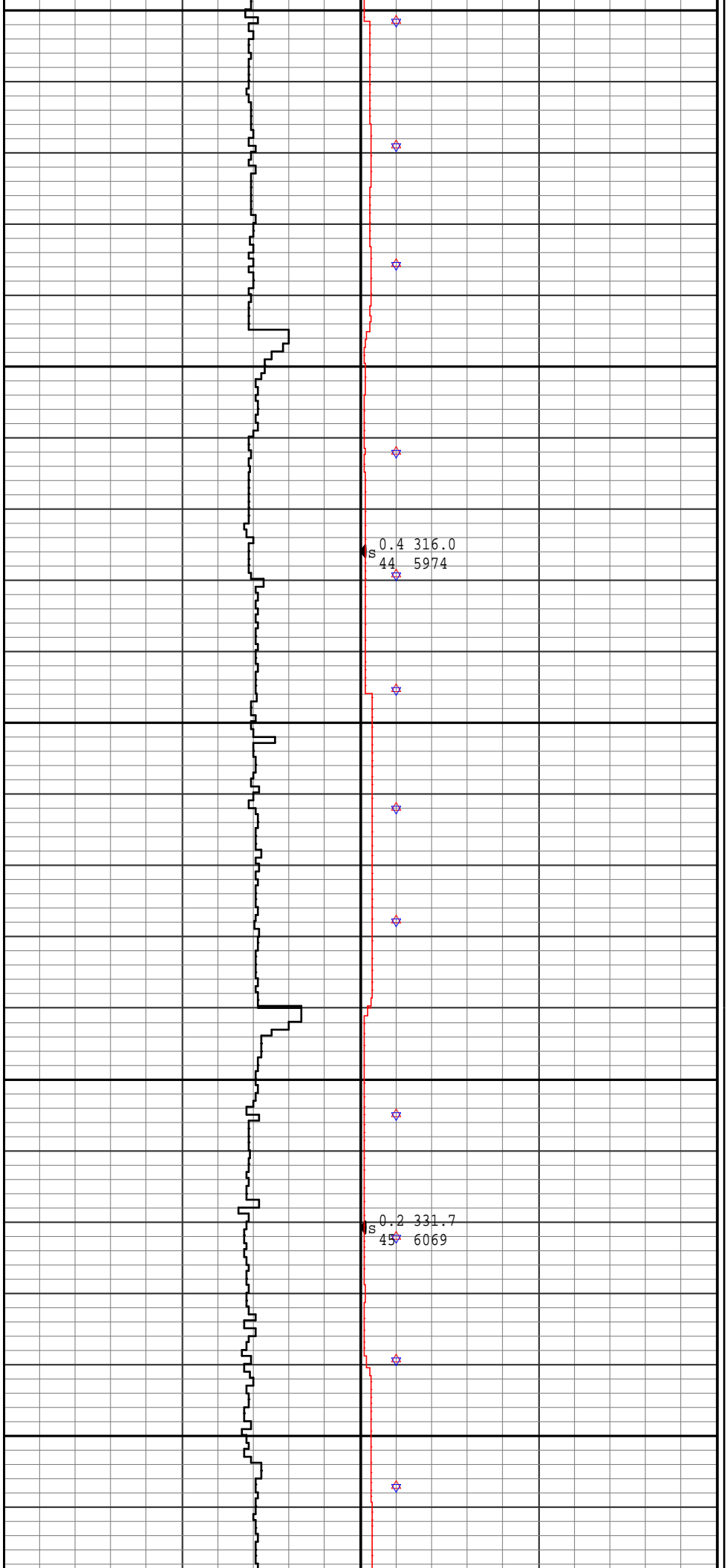
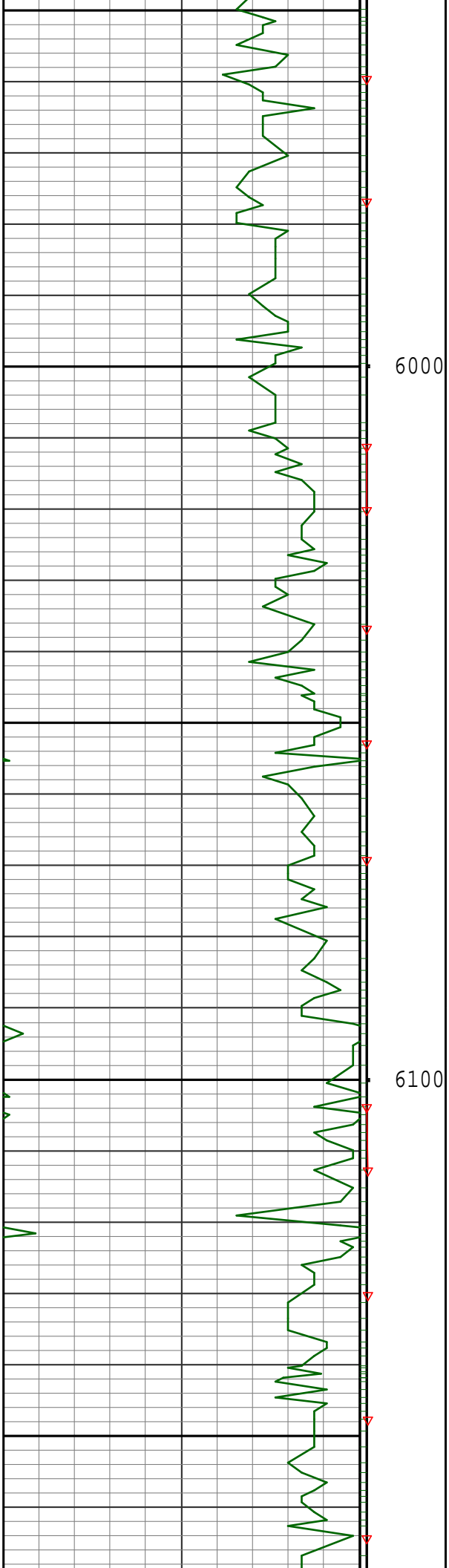
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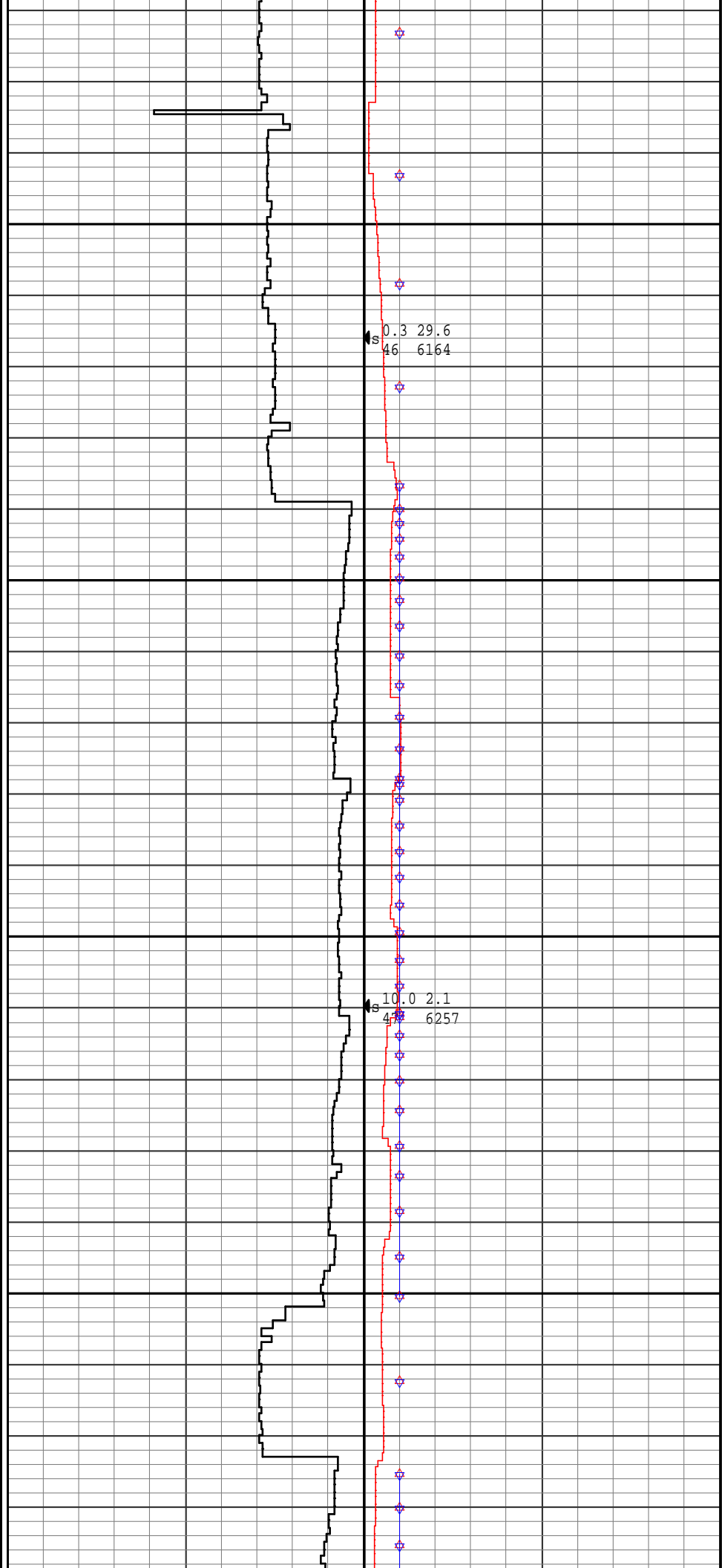
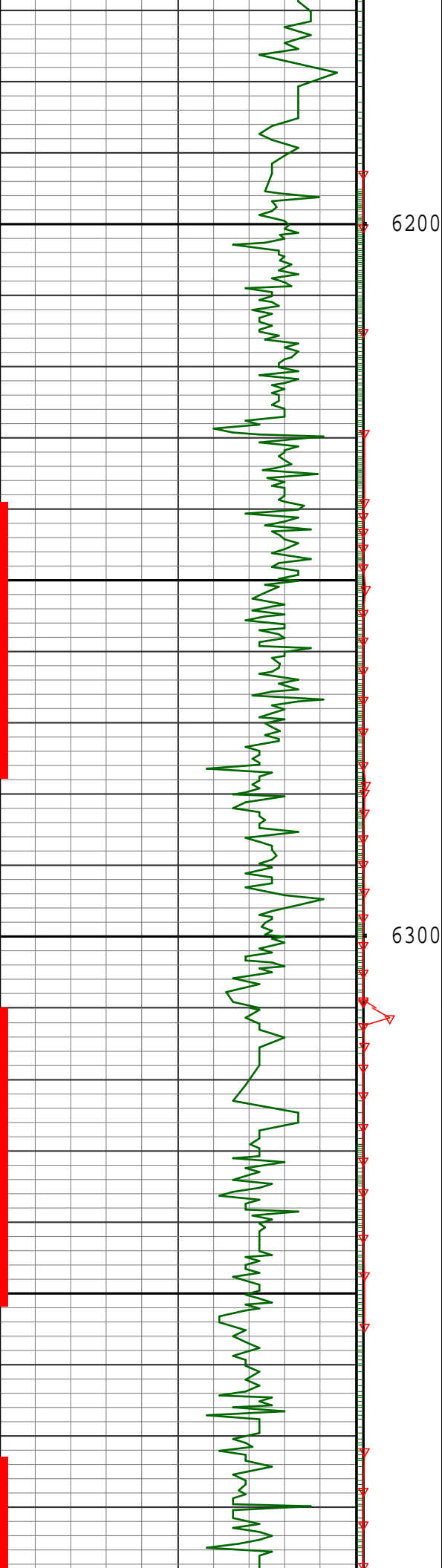


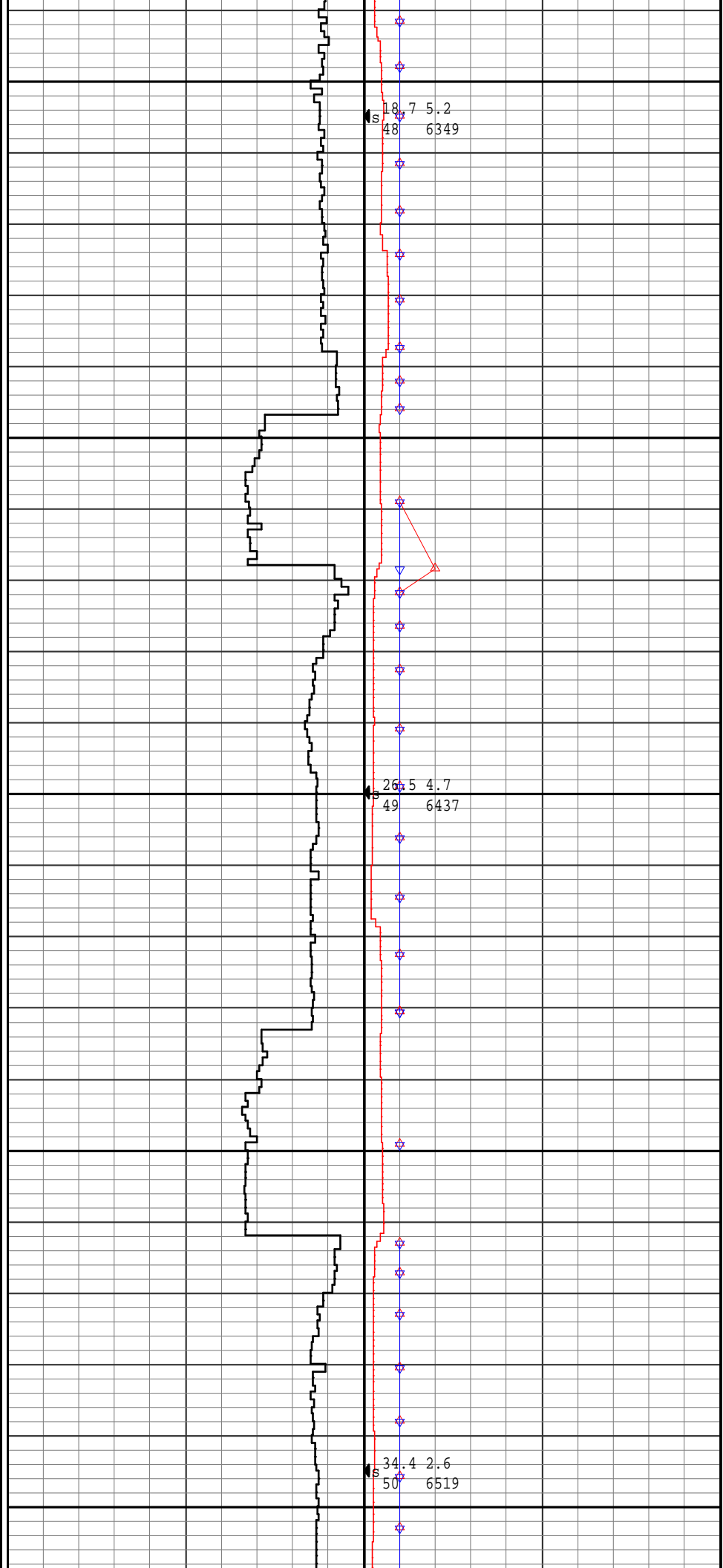
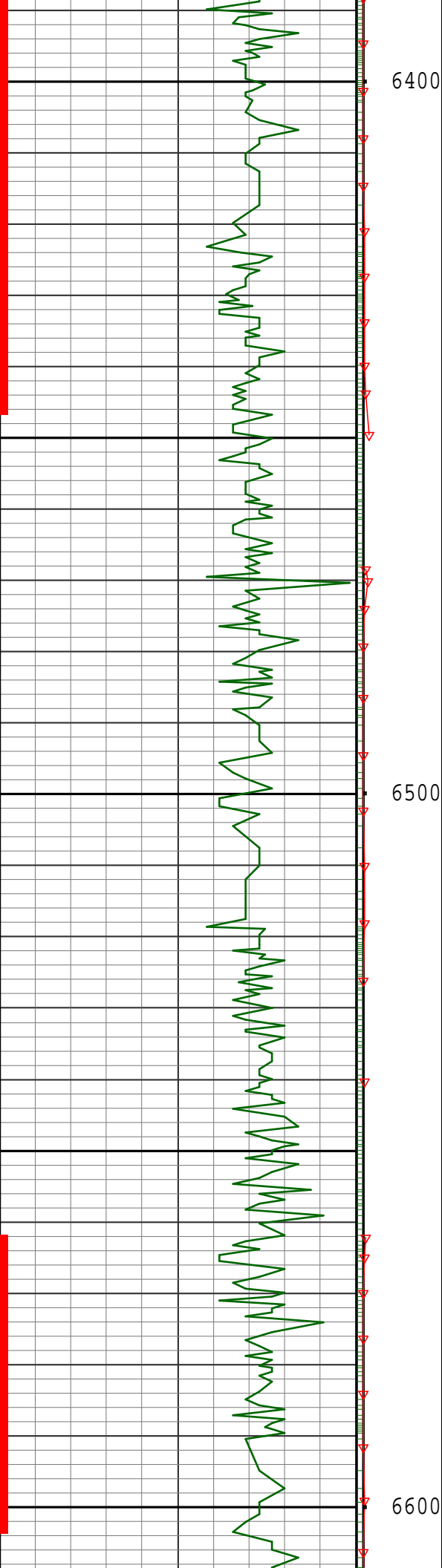
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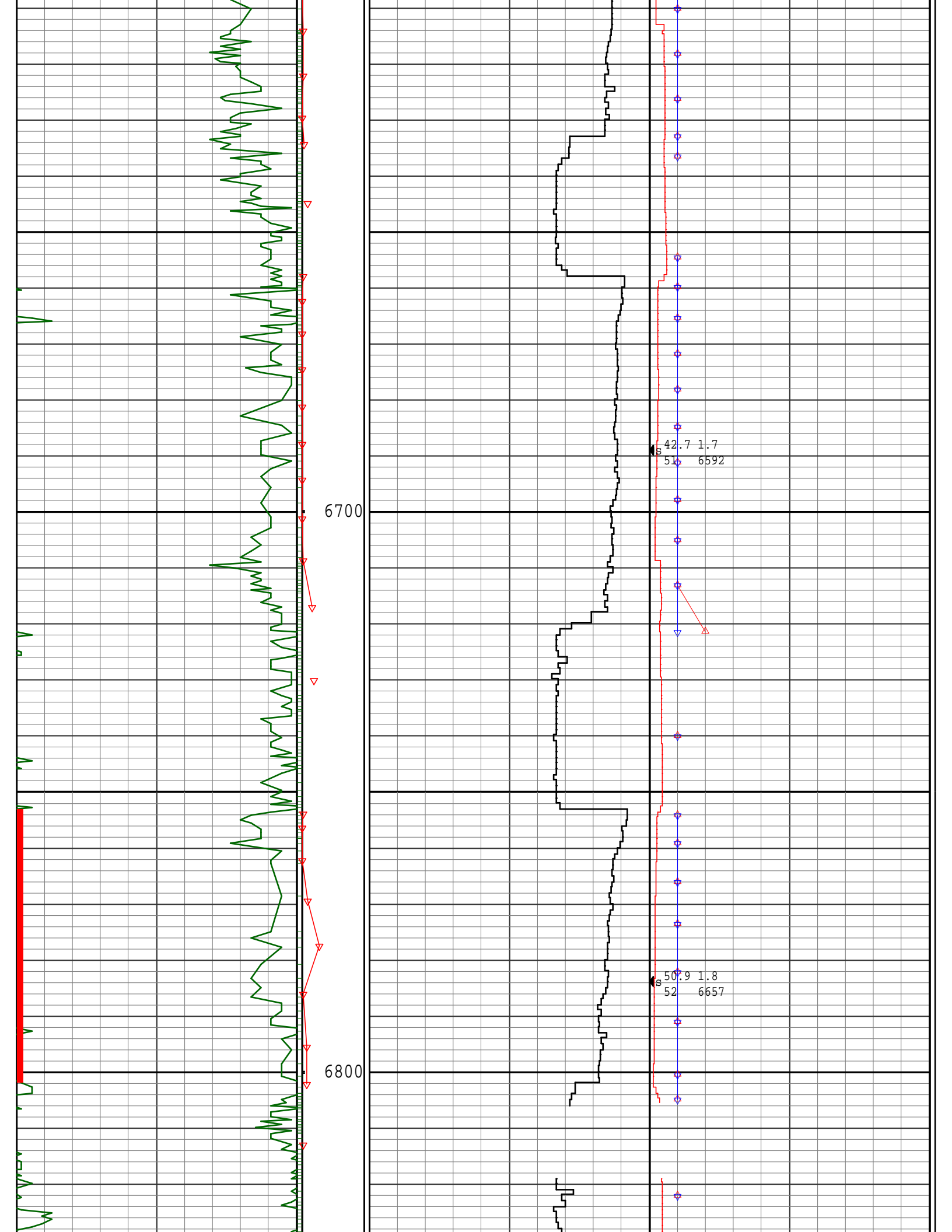
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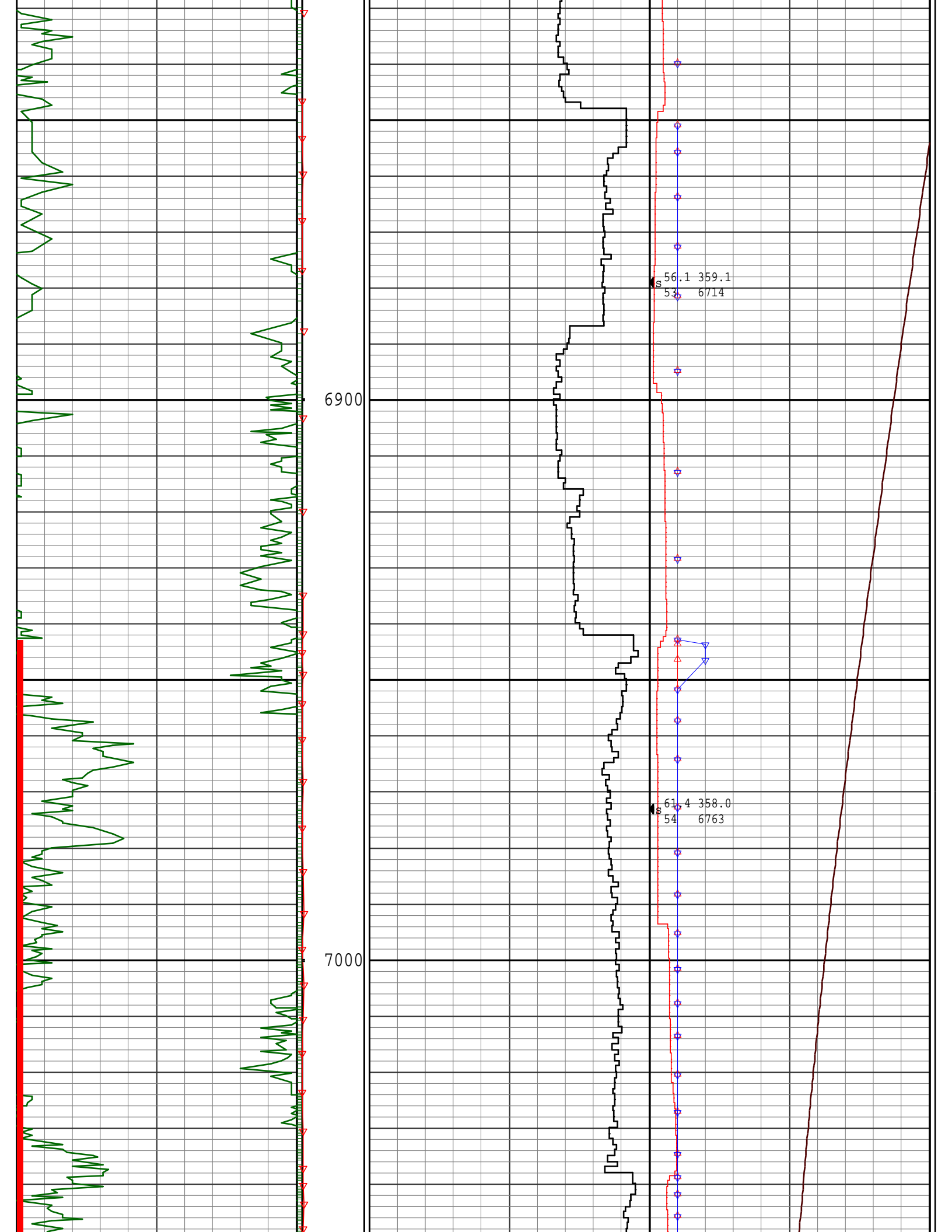
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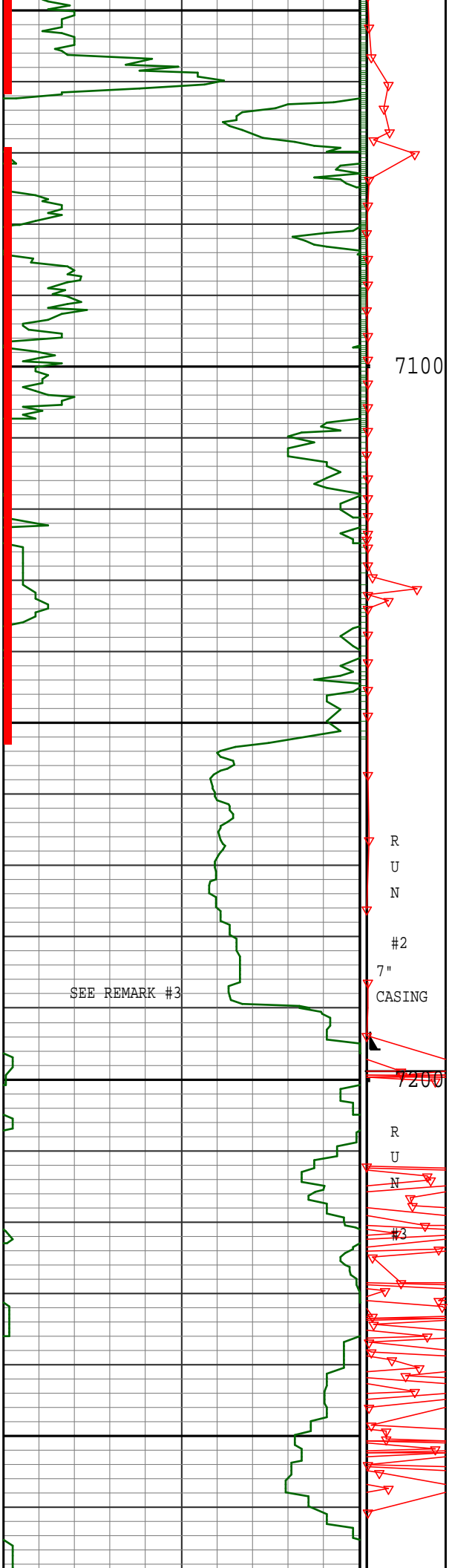












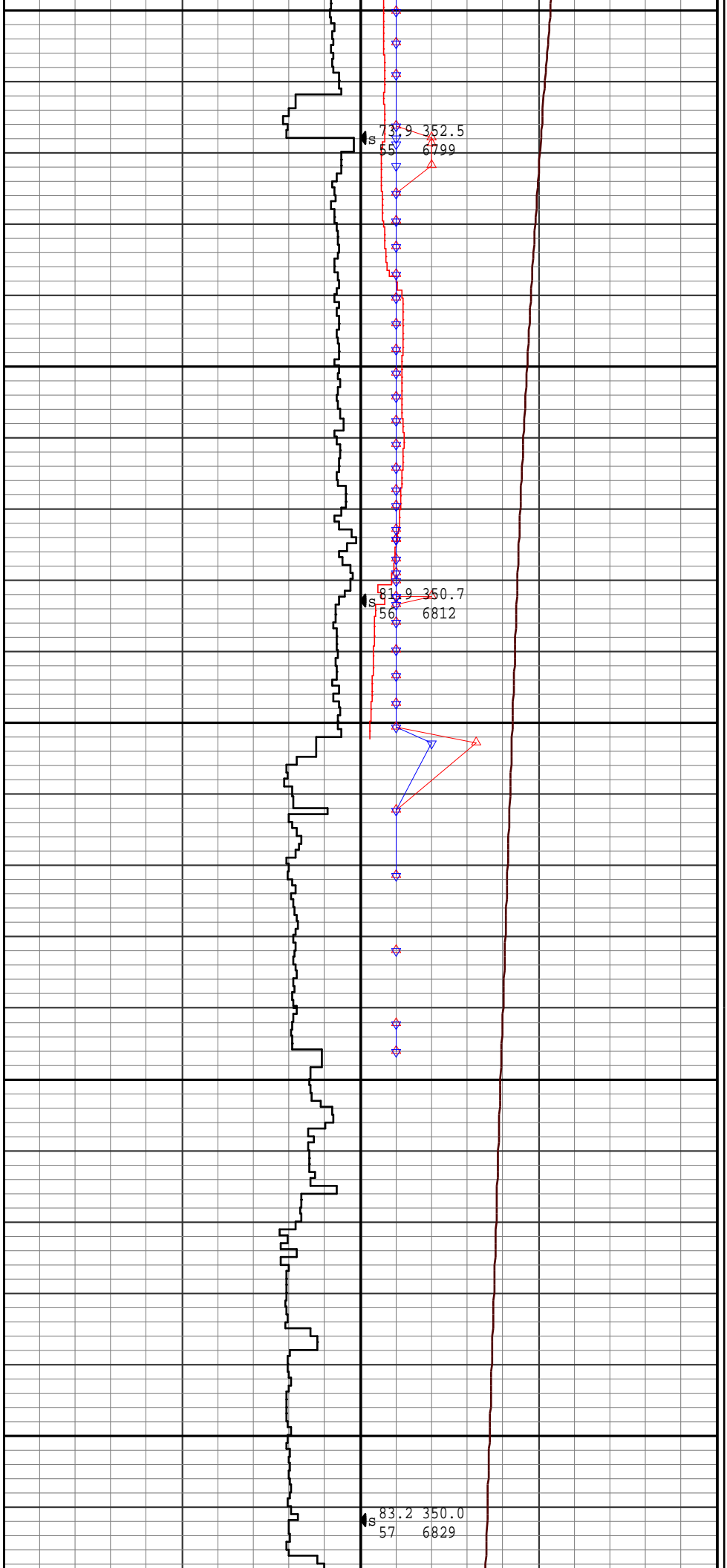
7100

SEE REMARK #3

R  
U  
N  
#2  
7" CASING

7200

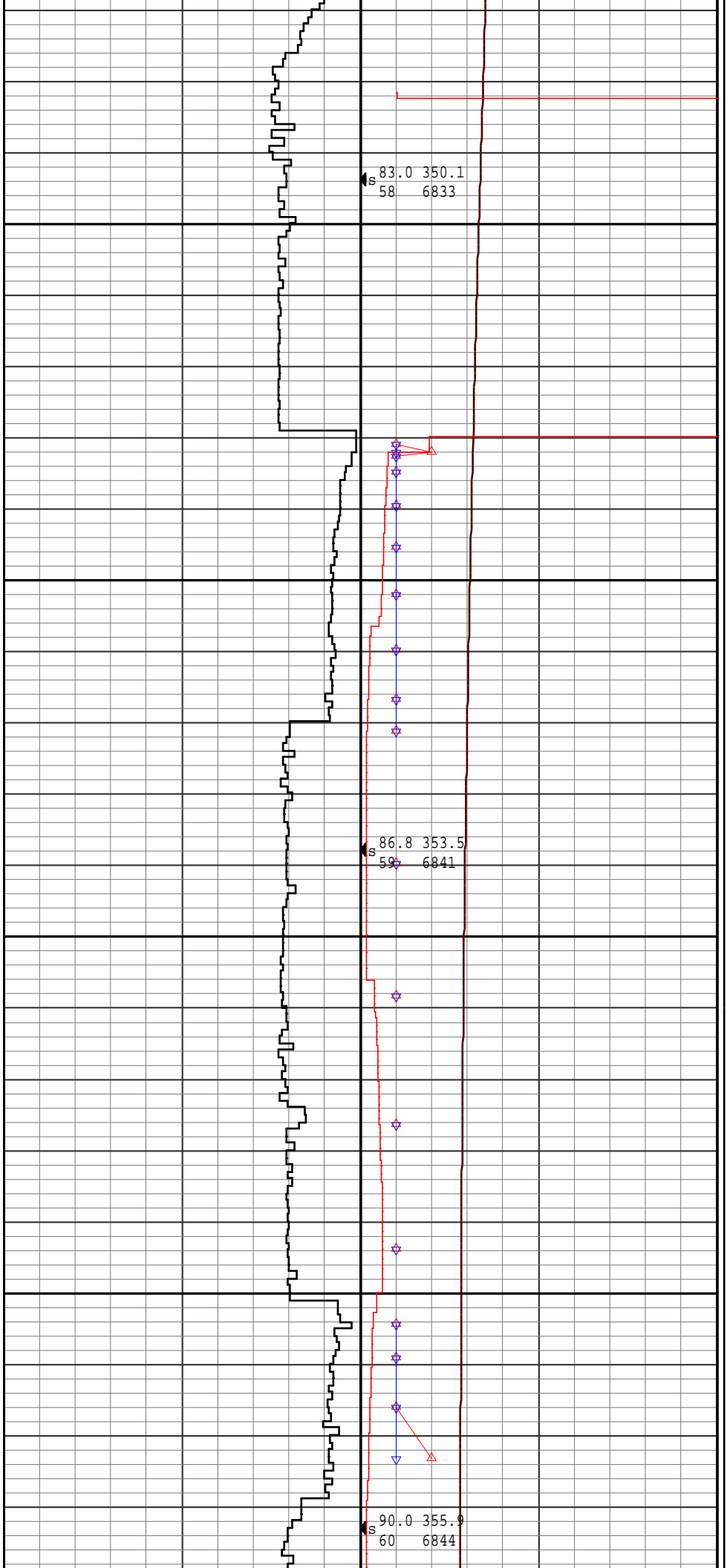
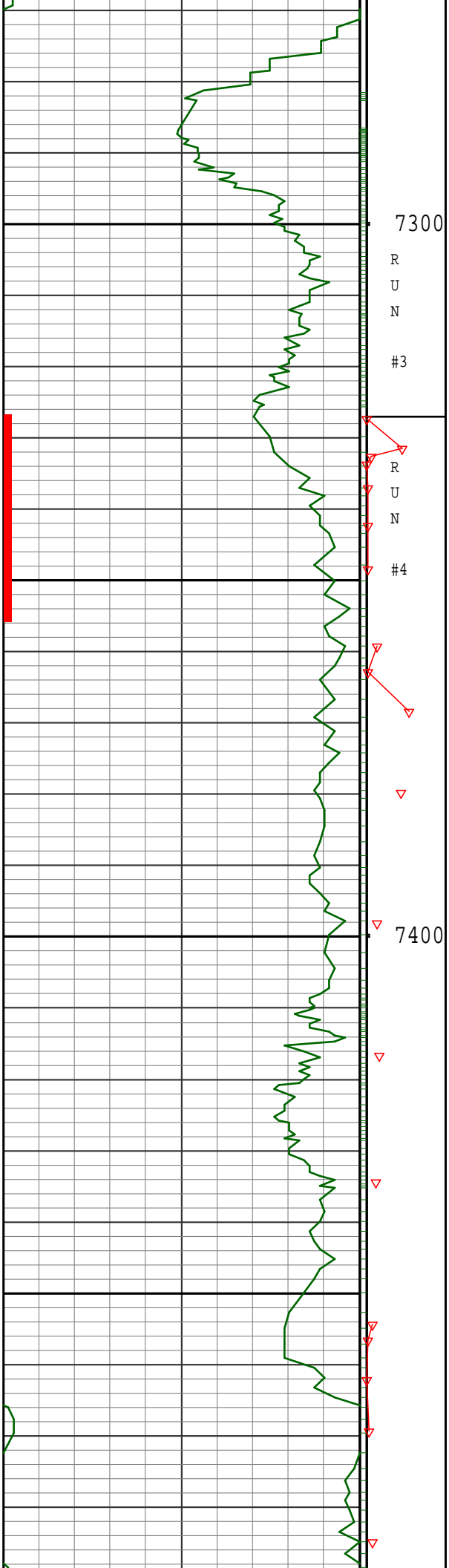
R  
U  
N  
#3



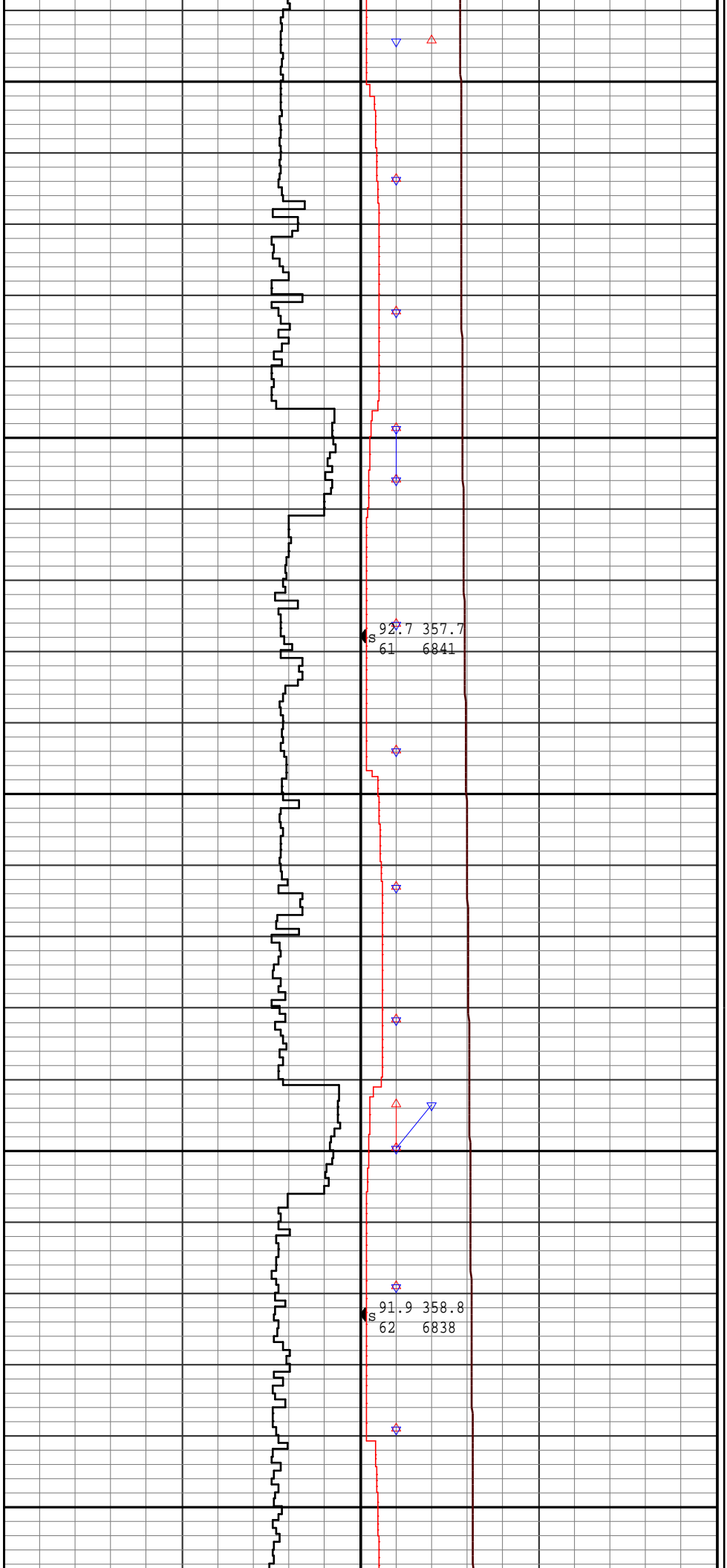
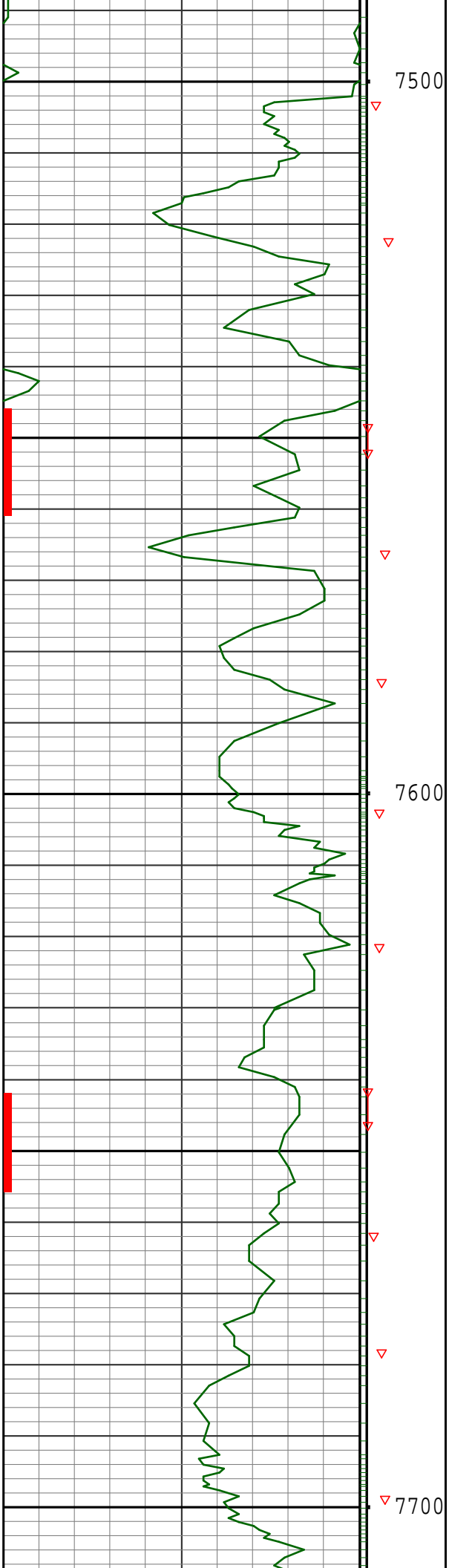
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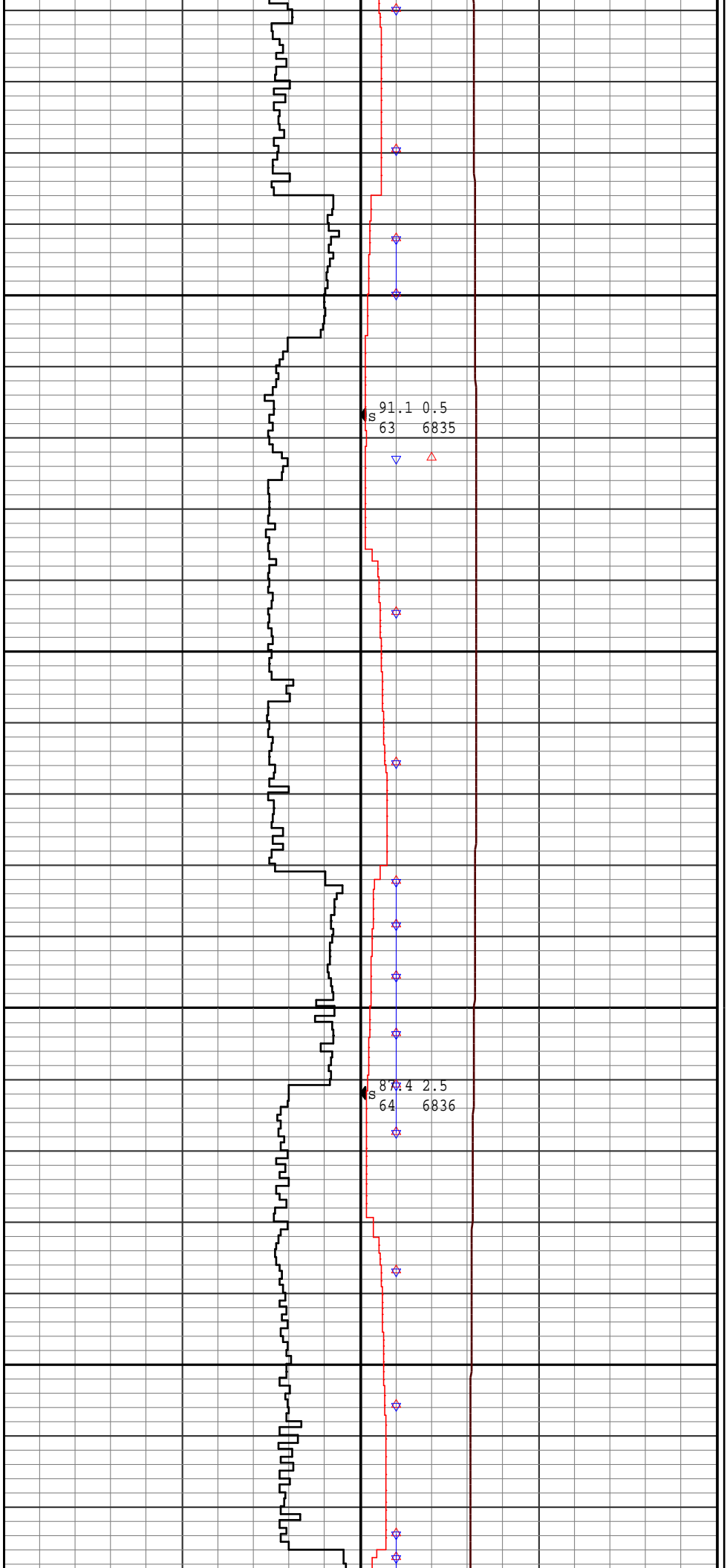
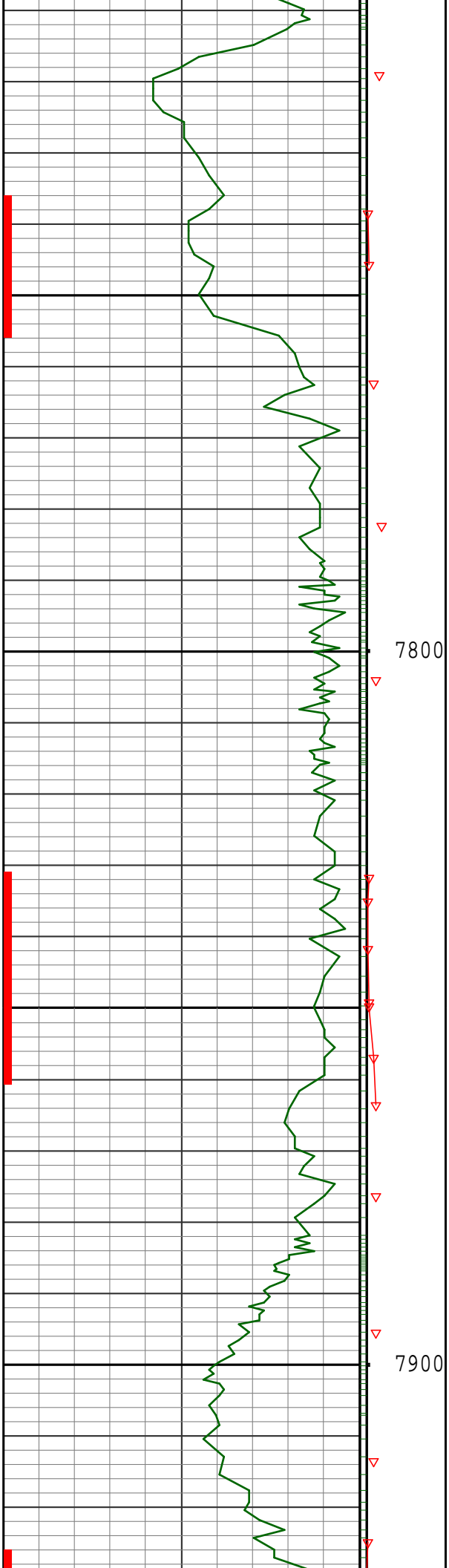
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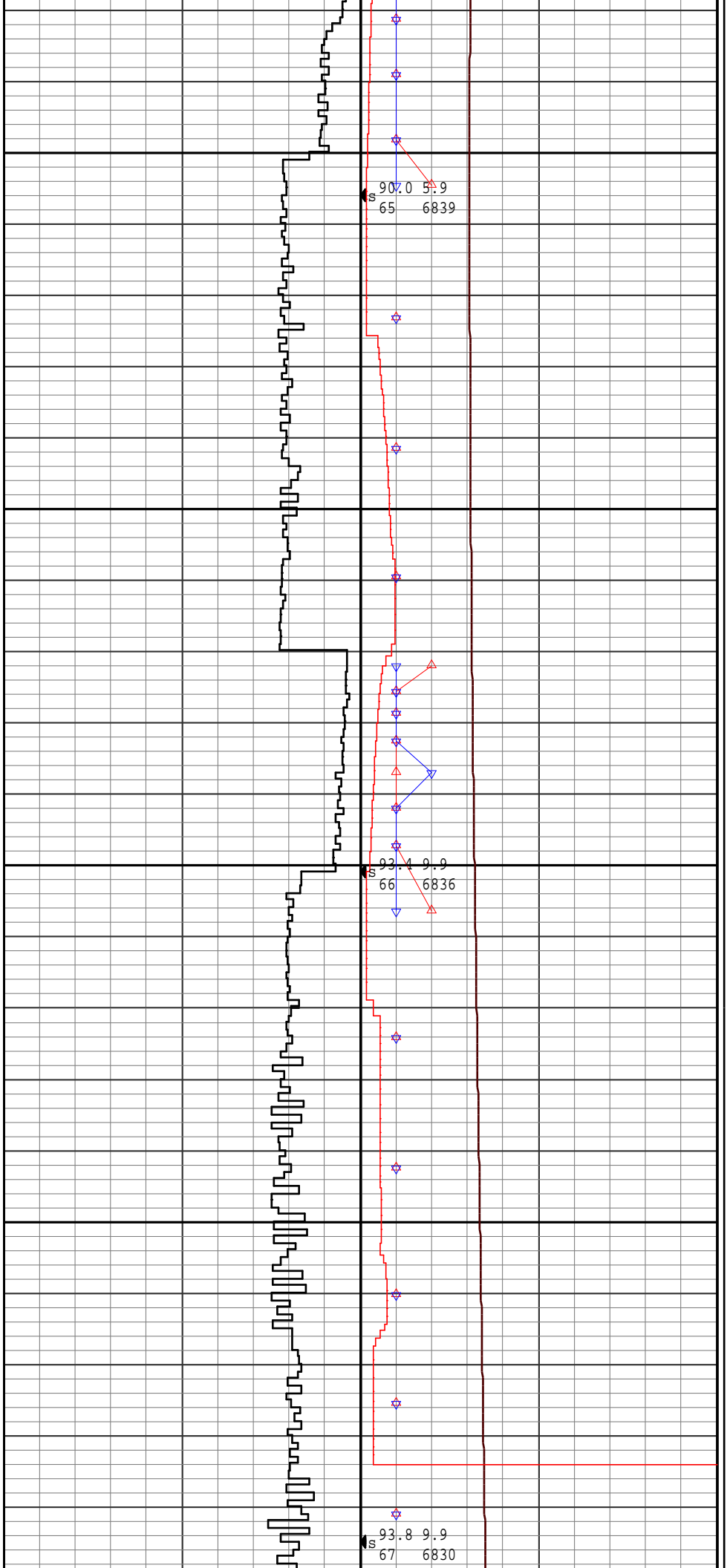
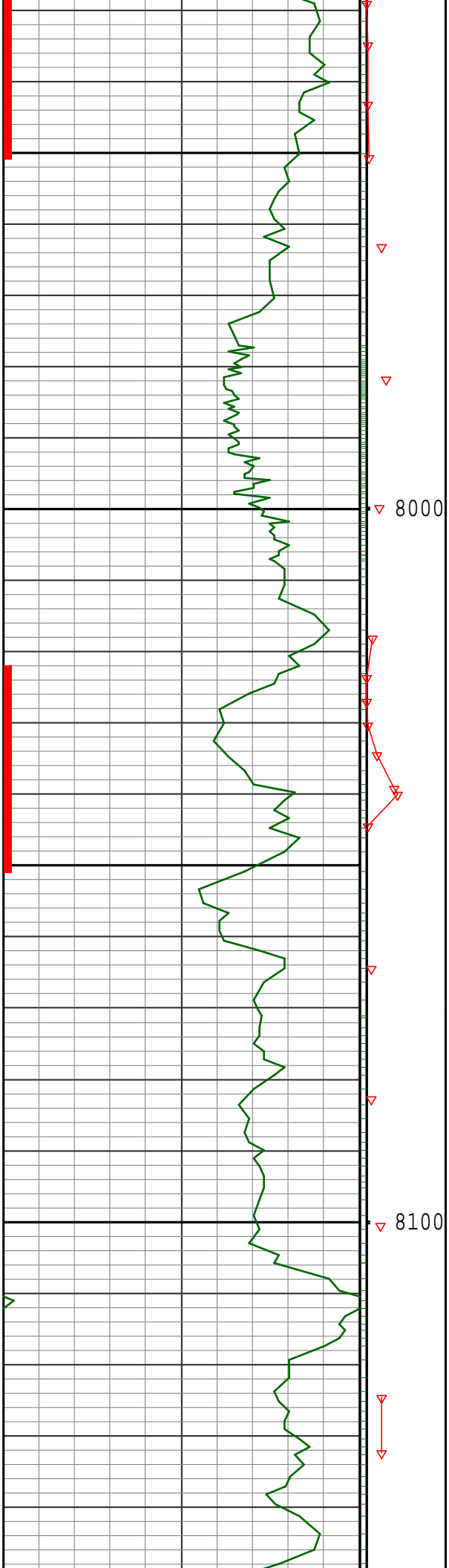
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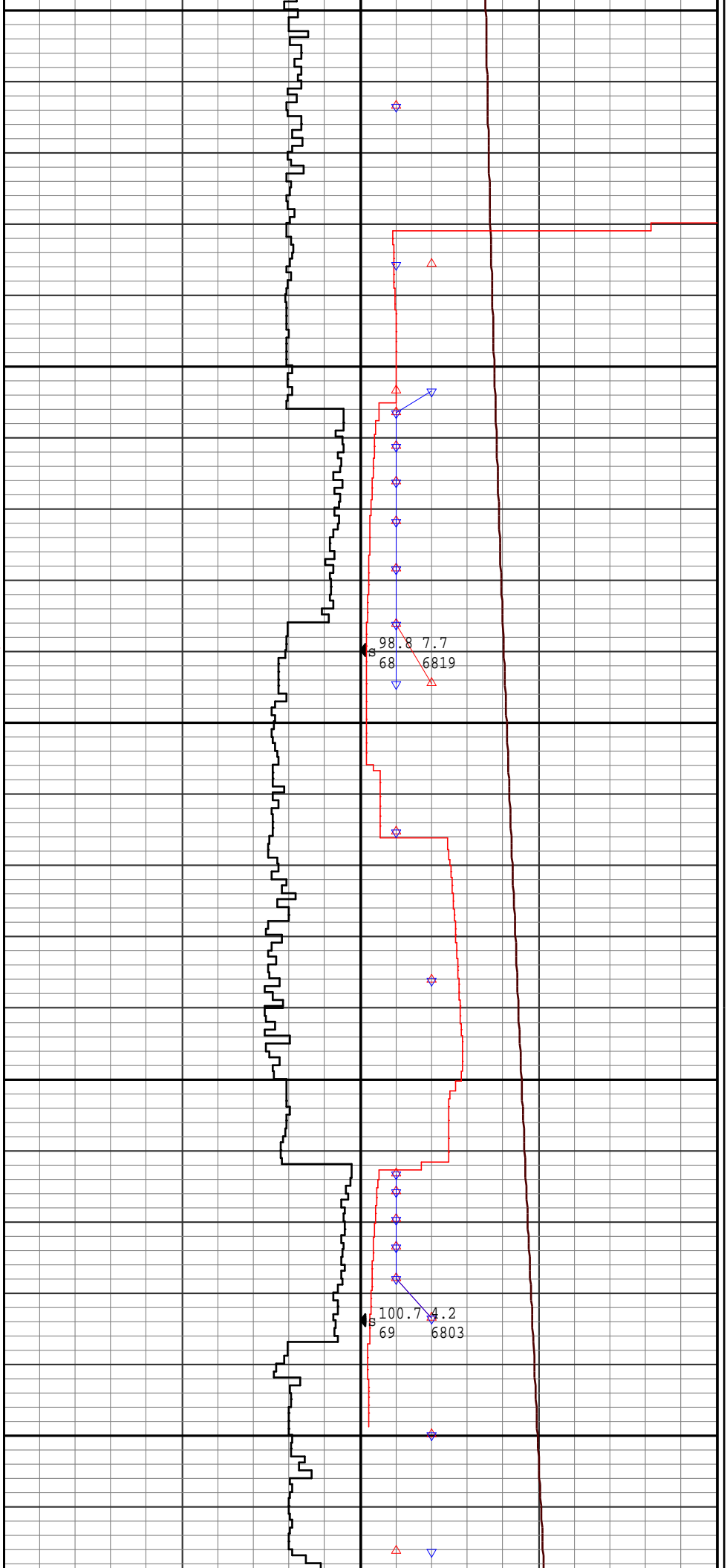
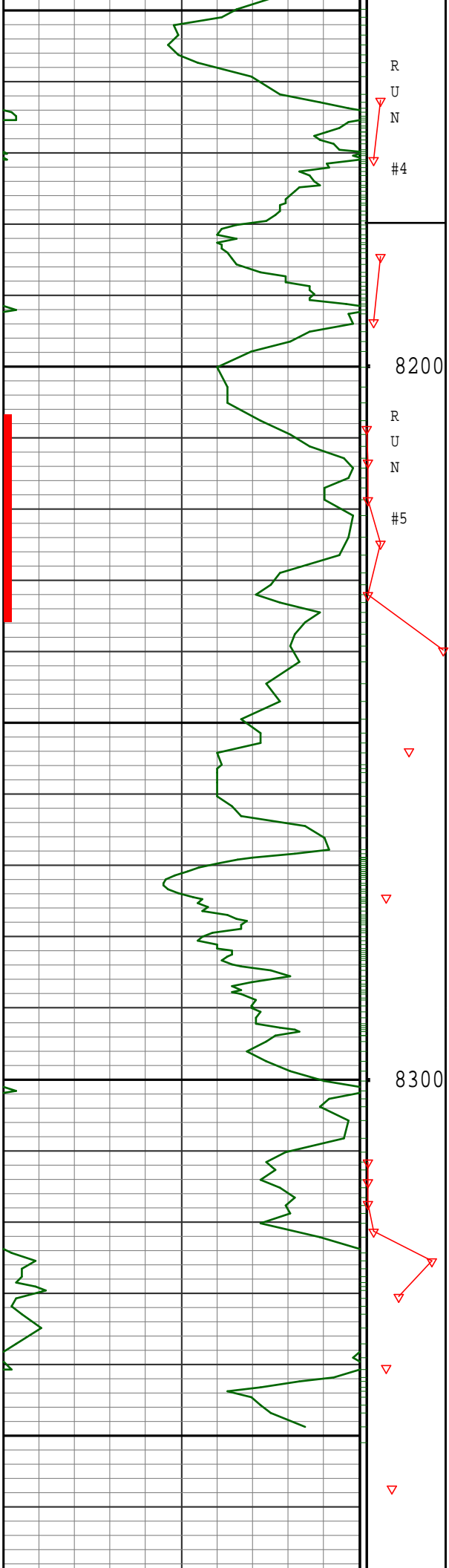












[illegible]

Vertical Section Plane: 3.68°	Total Correction: 7.69° East to True
Calculation Method: Minimum Curvature	Survey Reference: Rotary Table
North Aligned to: True North	Well: Oscar Y11-79HN

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)
1296.00	1.32	67.84	1295.95	406.00	7.23	6.98 N	4.03 E	8.06	30.01	0.36	79.34
1390.00	4.66	85.92	1389.81	94.00	8.22	7.66 N	8.85 E	11.70	49.10	3.65	82.95
1483.00	6.51	85.62	1482.36	93.00	9.47	8.34 N	17.87 E	19.72	65.00	1.99	86.57
1577.00	7.30	80.49	1575.68	94.00	11.58	9.73 N	29.08 E	30.66	71.50	1.07	86.57
1670.00	7.91	68.16	1667.87	93.00	15.68	13.09 N	40.84 E	42.89	72.24	1.87	90.18
1764.00	10.46	64.14	1760.66	94.00	22.68	19.22 N	54.53 E	57.82	70.59	2.80	90.18
1859.00	10.73	65.53	1854.04	95.00	31.10	26.64 N	70.34 E	75.21	69.26	0.39	93.80
2049.00	10.90	65.99	2040.66	190.00	47.79	41.28 N	102.85 E	110.82	68.13	0.10	93.80
2143.00	10.20	63.73	2133.07	94.00	56.08	48.58 N	118.43 E	128.00	67.70	0.86	97.41
2333.00	10.29	59.36	2320.05	190.00	74.04	64.67 N	148.11 E	161.62	66.41	0.41	97.41
2523.00	8.62	66.62	2507.47	190.00	90.09	78.97 N	175.79 E	192.71	65.81	1.08	101.02
2712.00	8.53	63.50	2694.35	189.00	103.58	90.85 N	201.33 E	220.88	65.71	0.25	104.64
2901.00	8.18	78.57	2881.37	189.00	114.13	99.77 N	227.06 E	248.01	66.28	1.17	104.64
3091.00	8.62	78.39	3069.33	190.00	121.41	105.31 N	254.26 E	275.20	67.50	0.23	108.25
3280.00	8.09	80.25	3256.33	189.00	128.24	110.41 N	281.24 E	302.13	68.57	0.31	111.87
3470.00	7.83	81.89	3444.50	190.00	133.99	114.50 N	307.23 E	327.87	69.56	0.18	115.48
3565.00	9.50	78.61	3538.41	95.00	137.35	116.96 N	321.32 E	341.94	70.00	1.83	115.48
3659.00	9.32	77.85	3631.14	94.00	141.44	120.10 N	336.36 E	357.16	70.35	0.23	115.48
3754.00	10.02	73.11	3724.79	95.00	146.44	124.12 N	351.79 E	373.05	70.57	1.12	115.48
3848.00	9.85	74.37	3817.39	94.00	151.97	128.66 N	367.36 E	389.24	70.70	0.29	119.09
3943.00	10.82	72.96	3910.84	95.00	157.82	133.46 N	383.71 E	406.26	70.82	1.05	119.09
4038.00	11.78	73.08	4004.00	95.00	164.38	138.90 N	401.52 E	424.86	70.92	1.01	122.71
4132.00	11.08	68.36	4096.14	94.00	171.62	145.02 N	419.09 E	443.47	70.91	1.24	122.71
4227.00	10.82	68.30	4189.41	95.00	179.35	151.69 N	435.86 E	461.50	70.81	0.27	126.32
4321.00	11.26	67.17	4281.67	94.00	187.23	158.51 N	452.52 E	479.48	70.70	0.52	126.32
4416.00	11.26	68.53	4374.84	95.00	195.31	165.50 N	469.70 E	498.00	70.59	0.28	126.32
4511.00	10.46	64.62	4468.18	95.00	203.44	172.59 N	486.12 E	515.85	70.45	1.14	119.09
4701.00	9.94	64.01	4655.13	190.00	219.93	187.17 N	516.44 E	549.32	70.08	0.28	119.09
4795.00	9.41	62.98	4747.80	94.00	227.87	194.22 N	530.58 E	565.01	69.90	0.59	122.71
4890.00	8.53	65.57	4841.64	95.00	235.16	200.66 N	543.92 E	579.75	69.75	1.02	122.71
5079.00	7.03	69.75	5028.89	189.00	246.45	210.46 N	567.53 E	605.30	69.65	0.85	126.32
5174.00	6.95	68.07	5123.19	95.00	251.30	214.62 N	578.32 E	616.86	69.64	0.23	129.94
5269.00	5.72	65.94	5217.60	95.00	255.98	218.70 N	587.97 E	627.33	69.60	1.32	133.55
5363.00	4.31	54.74	5311.24	94.00	260.38	222.65 N	595.13 E	635.42	69.49	1.82	133.55
5458.00	2.90	41.51	5406.06	95.00	264.53	226.51 N	599.64 E	640.99	69.31	1.71	133.55
5553.00	1.49	4.49	5500.99	95.00	267.66	229.54 N	601.33 E	643.65	69.11	2.03	133.55
5648.00	0.79	261.02	5595.98	95.00	268.75	230.67 N	600.78 E	643.54	69.00	1.94	133.55
5742.00	0.35	242.18	5689.97	94.00	268.46	230.43 N	599.89 E	642.62	68.99	0.50	133.55
5837.00	0.35	210.03	5784.97	95.00	268.05	230.04 N	599.48 E	642.11	69.01	0.20	137.17
5932.00	0.26	282.71	5879.97	95.00	267.82	229.84 N	599.13 E	641.70	69.01	0.39	137.17
6026.00	0.44	316.04	5973.97	94.00	268.10	230.15 N	598.67 E	641.38	68.97	0.28	140.78

6121.00	0.18	331.71	6068.96	95.00	268.47	230.54 N	598.35 E	641.22	68.93	0.28	140.78
6216.00	0.26	29.58	6163.96	95.00	268.79	230.86 N	598.38 E	641.37	68.90	0.24	137.17
6310.00	10.02	2.14	6257.47	94.00	277.18	239.24 N	598.79 E	644.82	68.22	10.42	137.17
6405.00	18.73	5.23	6349.41	95.00	300.73	262.73 N	600.50 E	655.46	66.37	9.20	140.78
6500.00	26.47	4.67	6437.05	95.00	337.20	299.08 N	603.62 E	673.65	63.64	8.15	144.39
6595.00	34.38	2.57	6518.91	95.00	385.27	347.05 N	606.55 E	698.82	60.22	8.40	144.39
6689.00	42.74	1.70	6592.35	94.00	443.79	405.55 N	608.69 E	731.42	56.33	8.91	148.01
6784.00	50.91	1.80	6657.29	95.00	512.97	474.74 N	610.80 E	773.60	52.14	8.60	151.62
6879.00	56.10	359.08	6713.78	95.00	589.18	551.07 N	611.33 E	823.05	47.97	5.93	151.62
6973.00	61.38	357.99	6762.54	94.00	669.17	631.37 N	609.25 E	877.39	43.98	5.70	155.24
7068.00	73.95	352.54	6798.60	95.00	755.86	718.71 N	601.83 E	937.41	39.94	14.25	155.24
7133.00	81.95	350.74	6812.16	65.00	817.97	781.55 N	592.58 E	980.80	37.17	12.60	158.85
7" CASING SHOE											
7262.00	83.19	349.99	6828.84	129.00	942.44	907.66 N	571.17 E	1072.42	32.18	1.12	187.76
7294.00	83.01	350.08	6832.68	32.00	973.32	938.94 N	565.67 E	1096.18	31.07	0.63	180.54
7388.00	86.79	353.45	6841.04	94.00	1064.90	1031.58 N	552.28 E	1170.11	28.16	5.38	169.69
7483.00	90.04	355.91	6843.67	95.00	1158.67	1126.11 N	543.47 E	1250.40	25.76	4.29	169.69
7578.00	92.68	357.67	6841.41	95.00	1252.95	1220.92 N	538.16 E	1334.27	23.79	3.34	169.69
7673.00	91.89	358.81	6837.62	95.00	1347.44	1315.80 N	535.24 E	1420.50	22.14	1.46	169.69
7767.00	91.10	0.48	6835.17	94.00	1441.17	1409.76 N	534.66 E	1507.75	20.77	1.96	169.69
7862.00	87.41	2.46	6836.41	95.00	1536.07	1504.70 N	537.10 E	1597.69	19.64	4.41	169.69
7956.00	89.96	5.93	6838.56	94.00	1630.02	1598.40 N	543.97 E	1688.43	18.79	4.58	169.69
8051.00	93.39	9.85	6835.79	95.00	1724.69	1692.43 N	557.00 E	1781.73	18.22	5.48	169.69
8145.00	93.83	9.95	6829.87	94.00	1817.95	1784.85 N	573.13 E	1874.61	17.80	0.48	173.31
8240.00	98.84	7.71	6819.39	95.00	1911.96	1878.11 N	587.62 E	1967.90	17.37	5.77	176.92
8334.00	100.68	4.16	6803.45	94.00	2004.50	1970.24 N	597.21 E	2058.76	16.86	4.21	176.92
STRAIGHT LINE PROJECTION TO BIT @ 8396' MD.											
8396.00	100.68	4.16	6791.96	62.00	2065.43	2031.00 N	601.63 E	2118.24	16.50	0.00	

BOTTOM HOLE ASSEMBLY RECORD											
RUN #1		ft	RUN #2		ft	RUN #3		ft	RUN #4		ft
8 3/4" PDC BIT		0.70	8 3/4" PDC BIT		0.86	6.125" PDC BIT		0.61	6 1/8" PDC BIT		0.61
1.75° MUD MOTOR		26.20	1.75° MUD MOTOR		26.22	1.5° MUD MOTOR		26.82	1.5° MUD MOTOR		26.82
FLOAT SUB		2.27	FLOAT SUB		2.27	STAB		4.71	STAB		4.71
FLOAT SUB		2.94	FLOAT SUB		2.94	ORIENTING		3.19	ORIENTING		3.01
ORIENTING SUB		3.30	ORIENTING SUB		3.30	HDS-1R (DIR/GR)		30.57	HDS-1R (DIR/GR)		30.57
HDS-1R (DIR/GR)		29.84	HDS-1R (DIR/GR)		29.84	NMDC		31.11	NMDC		31.11
NM FLEX DC		31.06	NM FLEX DC		31.06	FILTER SUB		2.82	FILTER SUB		2.82
NM FLEX DC		31.09	NM FLEX DC		31.09	X/O SUB		3.37	X/O SUB		3.37
FILTER SUB		2.68	FILTER SUB		2.68	HWDP		30.64	HWDP		31.63
X/O SUB		3.20	X/O SUB		3.20	REAMER		3.79	REAMER		3.79
HWDP			HWDP			DP X 63		1900.00	DP X 63		1989.55
						AGITATOR		11.52	AGITATOR		11.55
						SHOCK SUB		11.15	SHOCK SUB		11.13
						DP X 189		3799.91	DP X 189		5964.22
						HWDP X 54		1399.50	HWDP X 54		1694.63
TOTAL BHA LENGTH		133.28	TOTAL BHA LENGTH		133.46	TOTAL BHA LENGTH		166.54	TOTAL BHA LENGTH		138.44
SENSOR OFFSETS			SENSOR OFFSETS			SENSOR OFFSETS:			SENSOR OFFSETS		
DIRECTIONAL		60.92	DIRECTIONAL		61.09	DIRECTIONAL		60.88	DIRECTIONAL		60.83
GAMMA-RAY		43.52	GAMMA-RAY		43.69	GAMMA-RAY		43.48	GAMMA-RAY		43.43

BOTTOM HOLE ASSEMBLY RECORD								
RUN #5		ft						
6 1/8" PDC BIT	0.61							
1.5° MUD MOTOR	26.82							
STAB	4.71							

ORIENTING	3.01						
HDS-1R (DIR/GR)	29.96						
NMDC	30.12						
FILTER SUB	2.82						
X/O SUB	3.37						
HWDP	31.63						
REAMER	3.79						
DP X 63	1989.55						
AGITATOR	11.55						
SHOCK SUB	11.13						
DP X 189	5964.22						
HWDP X 54	1694.63						
TOTAL BHA LENGTH	136.84						
SENSOR OFFSETS							
DIRECTIONAL	60.83						
GAMMA-RAY	43.43						



GAMMA-RAY

5" = 100'

FEET MD