

Company : NORTHEAST NATURAL ENERGY LLC

Well : BOGGESS 17H ST01

Field : MARCELLUS SHALE

Date : 28-Jun-2019

Time : 11:23



GAMMA-RAY
AZIMUTHAL IMAGE

5" = 100'
FEET MD

COMPANY : NORTHEAST NATURAL ENERGY LLC
WELL : BOGGESS 17H ST01
FIELD : MARCELLUS SHALE
COUNTY : MONONGALIA
STATE : WV
COUNTRY : USA
API No. : 47-061-01812

COMPANY : NORTHEAST NATURAL ENERGY LLC
WELL : BOGGESS 17H ST01
FIELD : MARCELLUS SHALE
COUNTY : MONONGALIA
STATE : WV
COUNTRY : USA
API WELL No. : 47-061-01812

WELL LOCATION
LAT: 39°40'13"N LON: 80°05'35"W
X: 1,801,561 Y: 426,810 MAD83
SEC: TWP: RANGE:

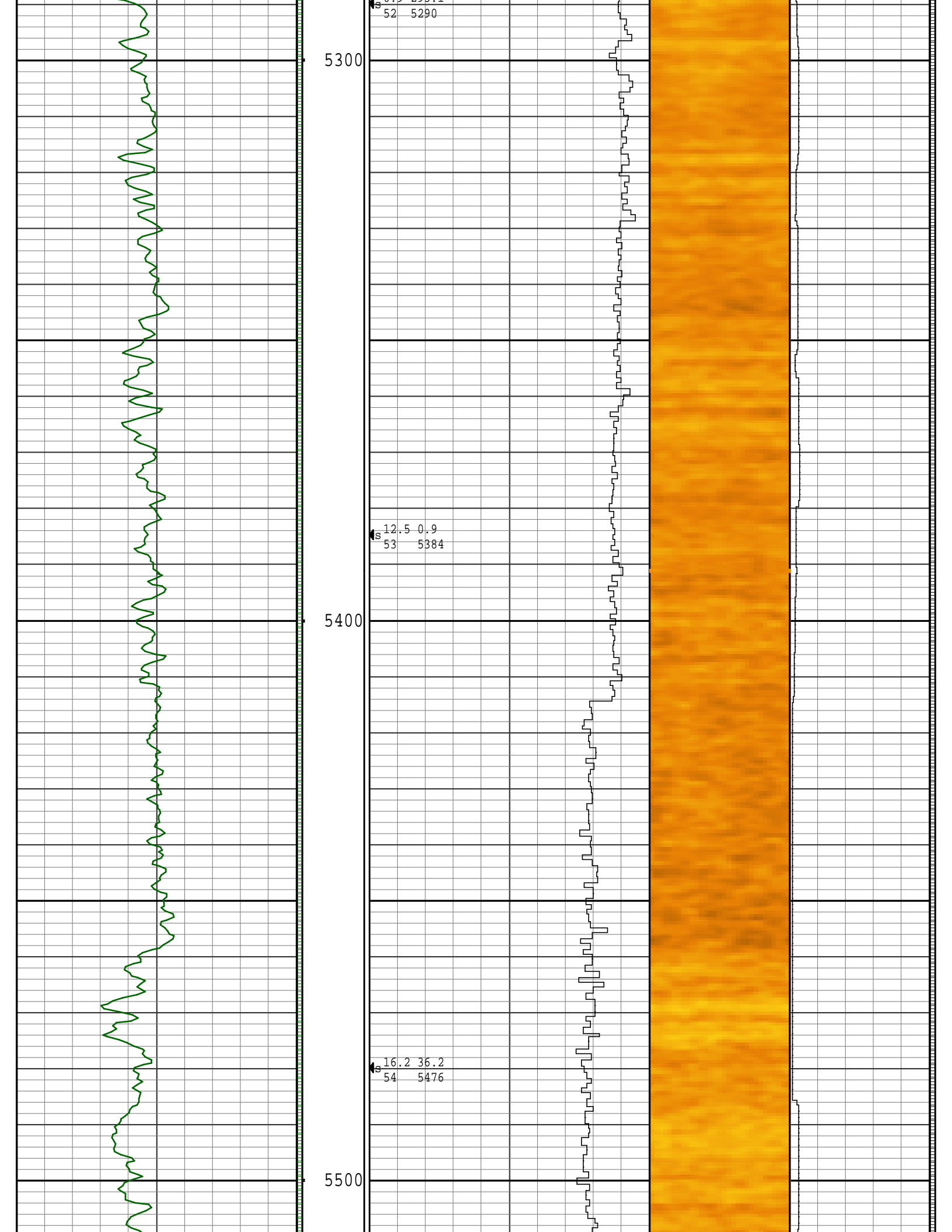
OTHER SERVICES
DIRECTIONAL
ROP

DEPTH REF. : ROTARY TABLE
ELEVATION : 25.00 ft (ROTARY TABLE - GROUND LEVEL)
ALTITUDE : 1268.00 ft (GROUND LEVEL - MEAN SEA LEVEL)

BOREHOLE RECORD			DEVIATION RECORD		
HOLE SIZE in	FROM ft	TO ft	INCLINATION deg	FROM ft	TO ft
8 1/2	5236	19055	00 - 00	25	5290
			00 - 56	5290	6143
			56 +/-1	6143	9081
			56 - 87	9081	10408
			87 +/-4	10408	19055
CASTING RECORD					
CASTING SIZE in	FROM ft	TO ft			
9 5/8	25	2438			

DRILLING Co.: PATTERSON
RIG : 334
LMD UNIT No.: TRAILER DISTRICT : NBB
SPUD DATE : 21-JUN-19
LMD START DATE : 21-JUN-19 DEPTH : 5213 ft
LMD END DATE : 29-JUN-19 DEPTH : 19032 ft
TOTAL DEPTH : 19055 ft

RUN DATA	
RUN NUMBER	1
START DATE	20-JUN-19
START TIME	22:00
END DATE	28-JUN-19
END TIME	09:00
DEPTH IN ft	5236
DEPTH OUT ft	19055
LOG TOP ft	5213
LOG BOTTOM ft	19032
HOLE SIZE in	8 1/2
MUD DATA @ ft	19055
MUD TYPE	OIL BASED
DENSITY lb/gal	12.00
VISCOSITY s/qt	67
pH	
FLUID LOSS cm3/30	12.5
SALINITY ppm	34000
Rm ohmm @ deg F	@
Rmf ohmm @ deg F	@



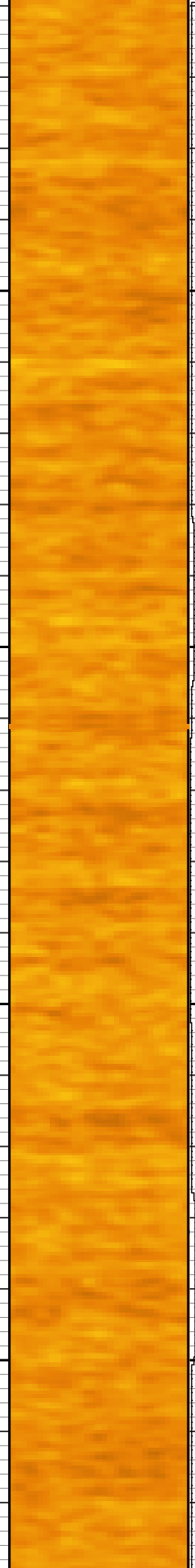
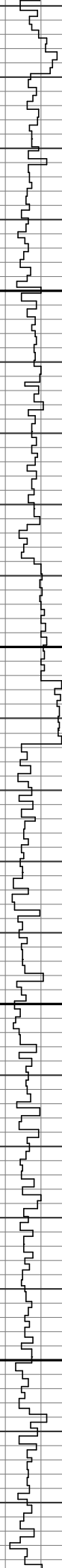


5600

22.9 44.3
55 5566

5700

29.3 33.0
56 5651



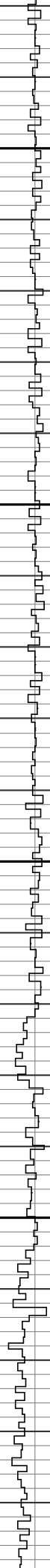


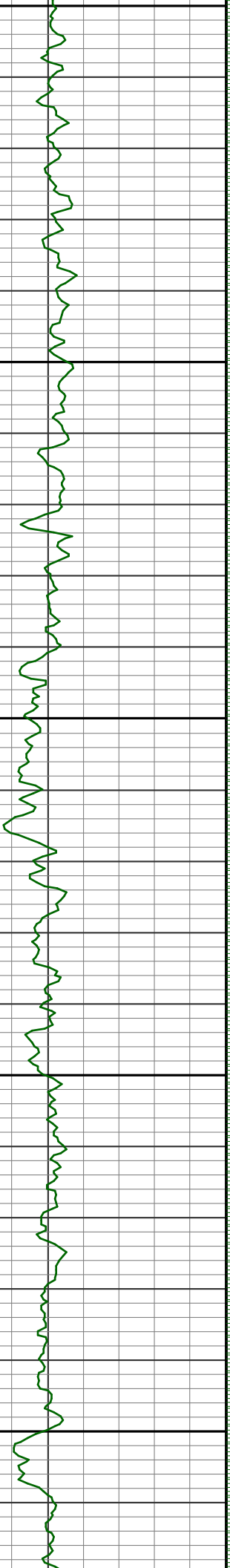
5800

5900

37.0 28.6
57 5730

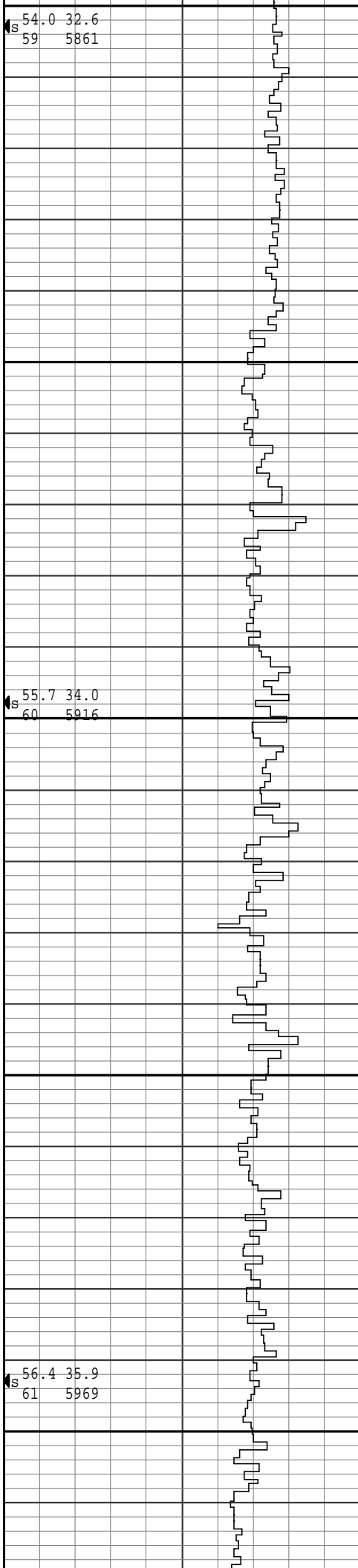
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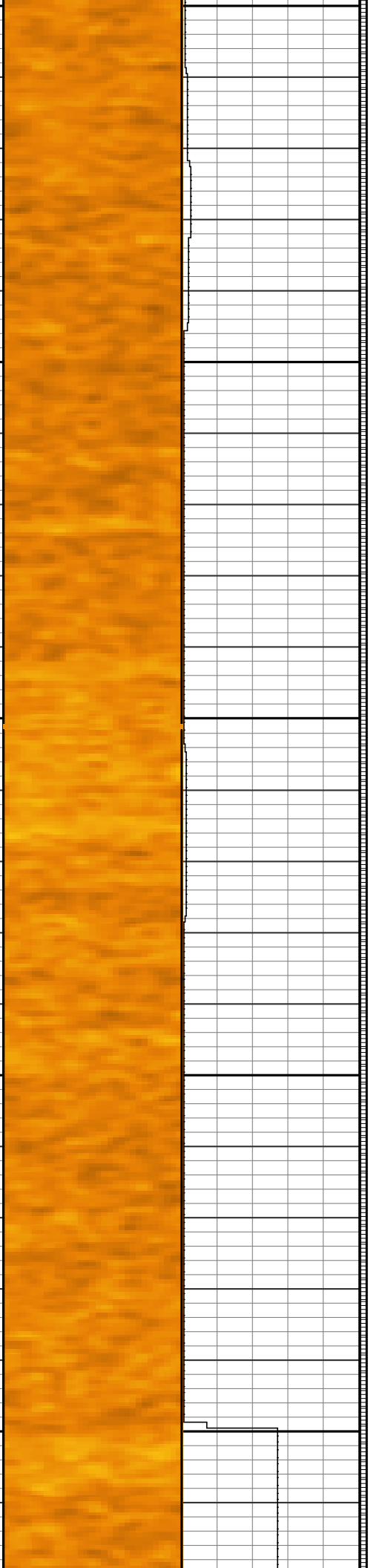
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54.0 32.6
59 5861

55.7 34.0
60 5916

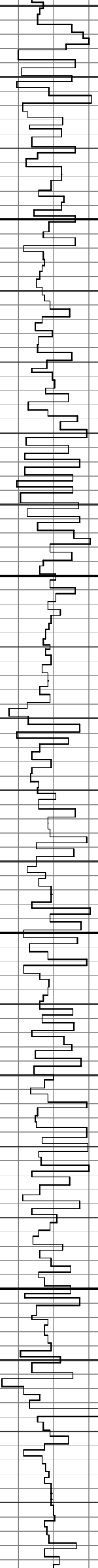
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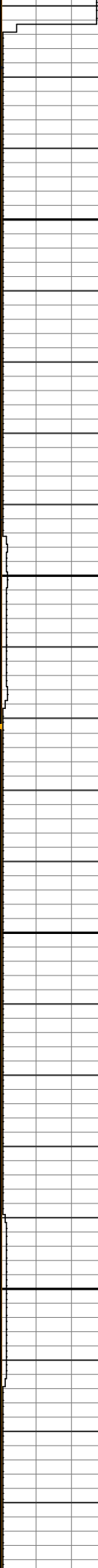
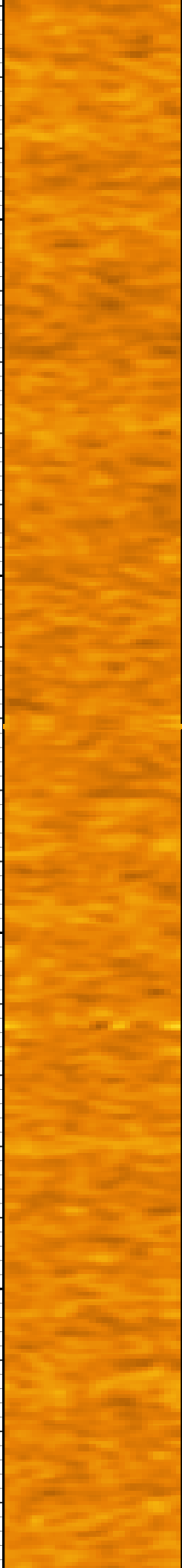
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6300

56.4 38.4
63 6074





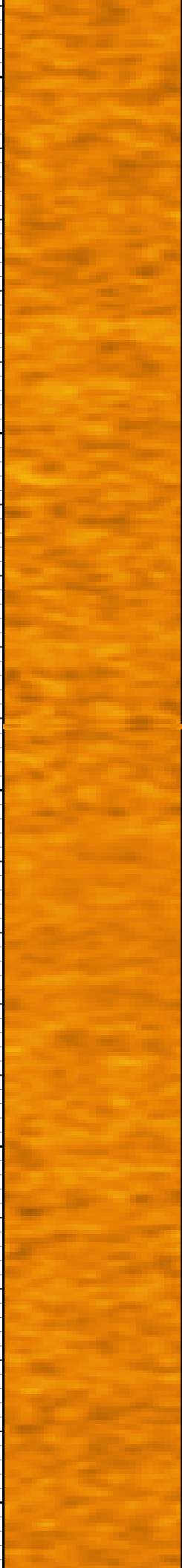
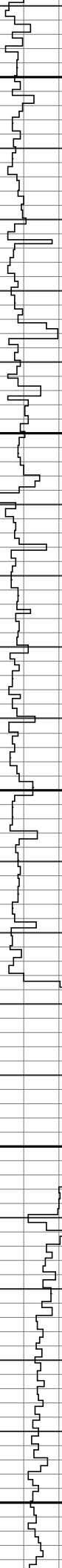
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56.5 38.1
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6600





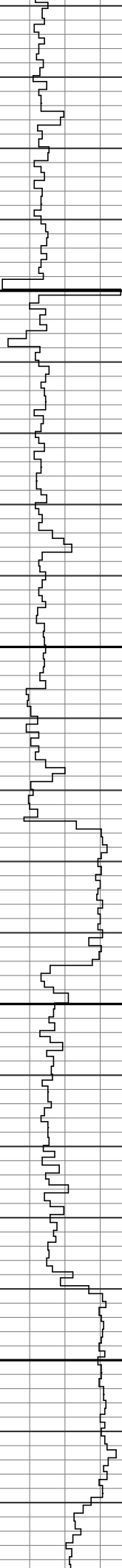
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56.5 40.3
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55.8 40.5
68 6336



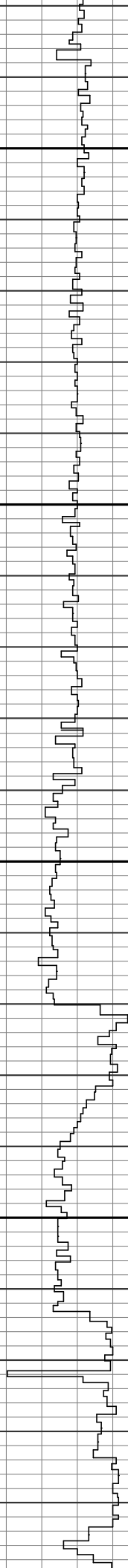


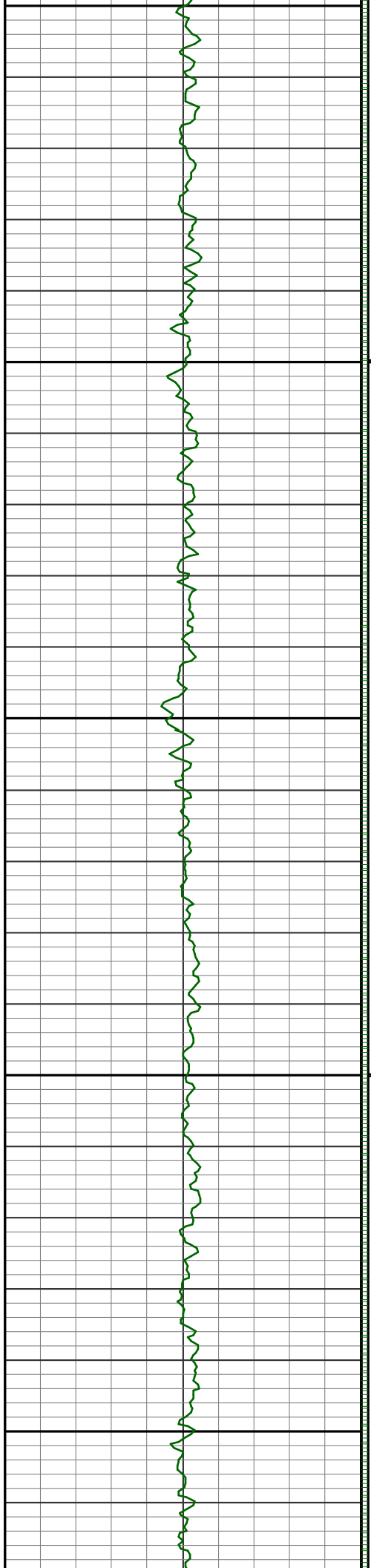
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s 55.9 40.9
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7000

s 56.4 40.7
70 6442



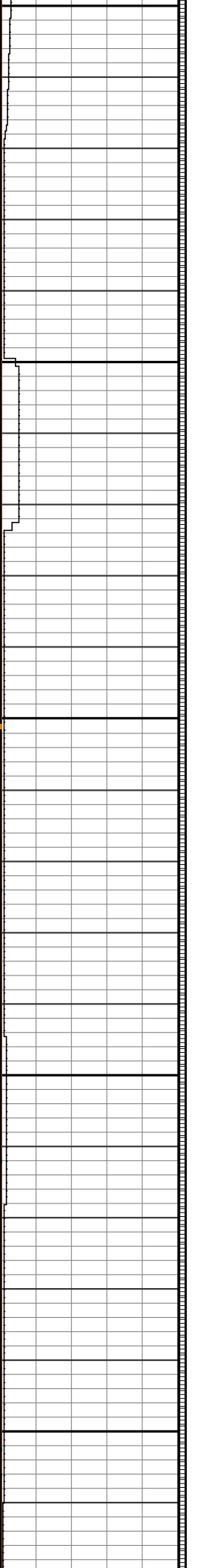
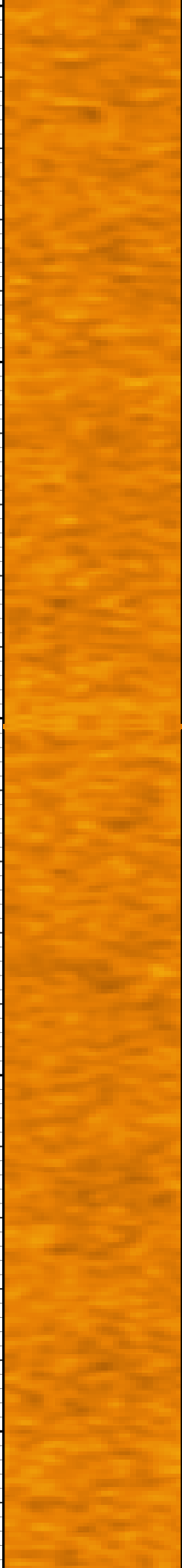
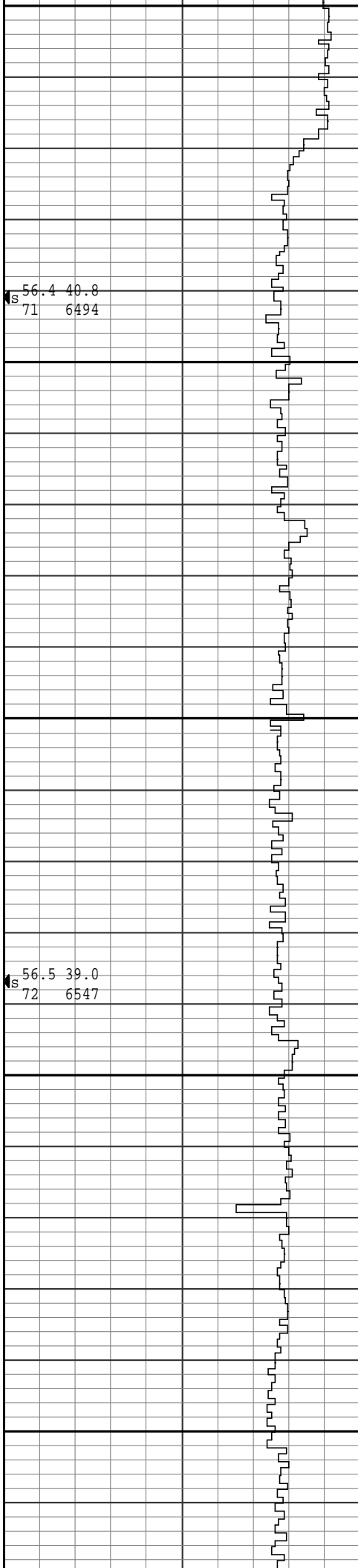


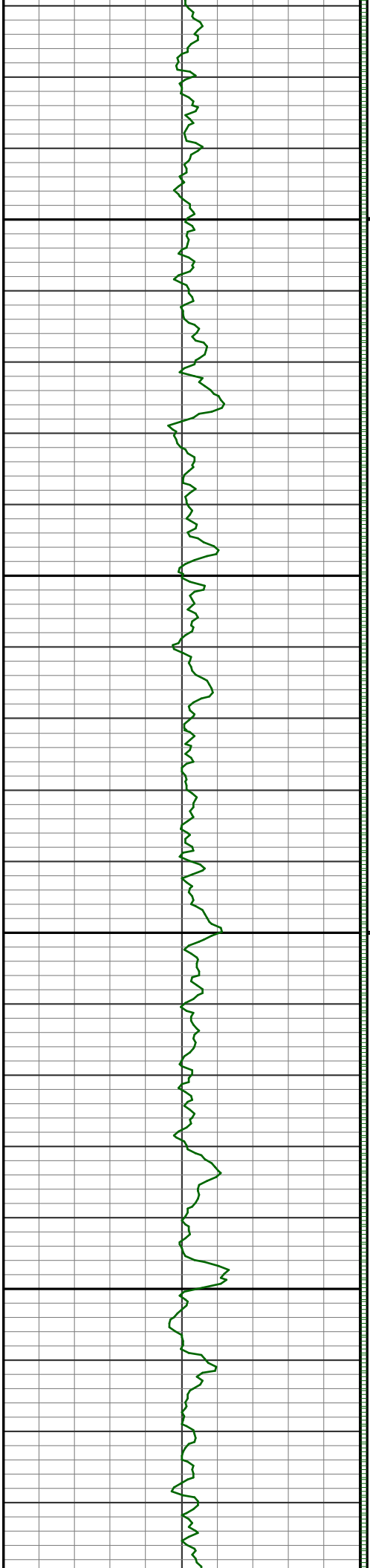
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S 56.4 40.8
71 6494

7200

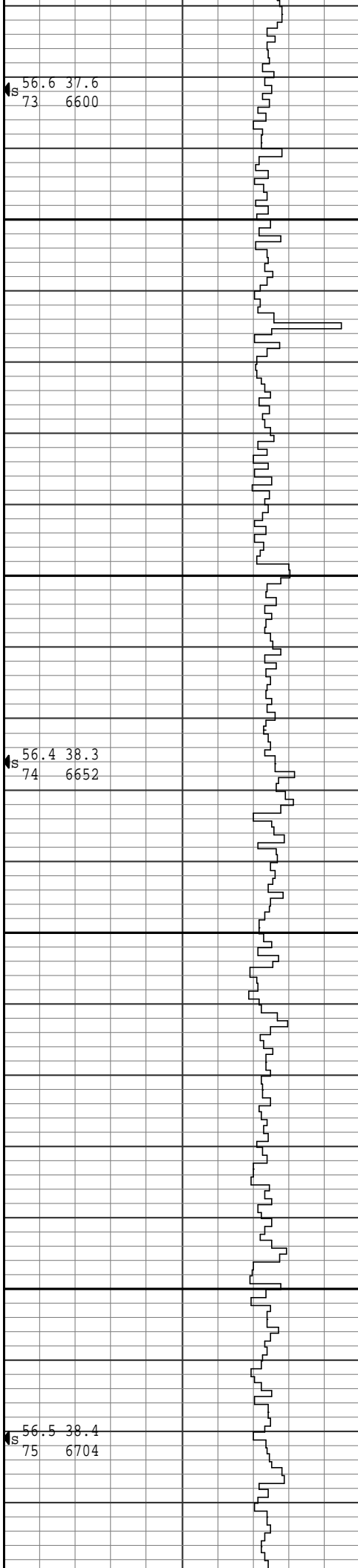
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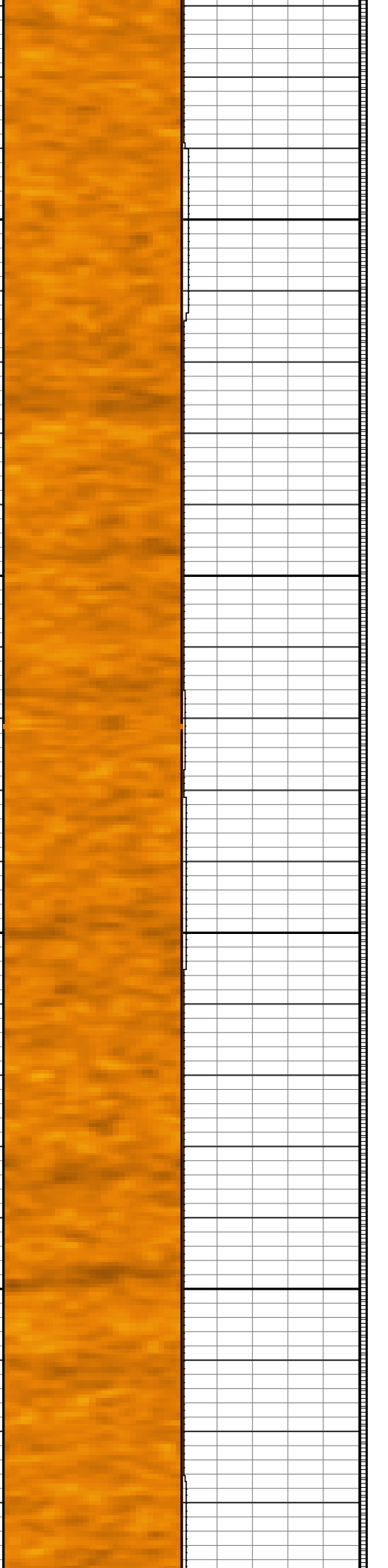
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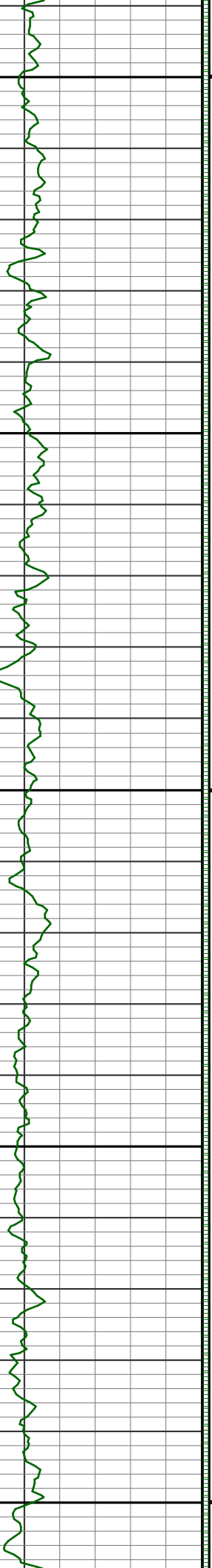


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7400

56.5 38.4
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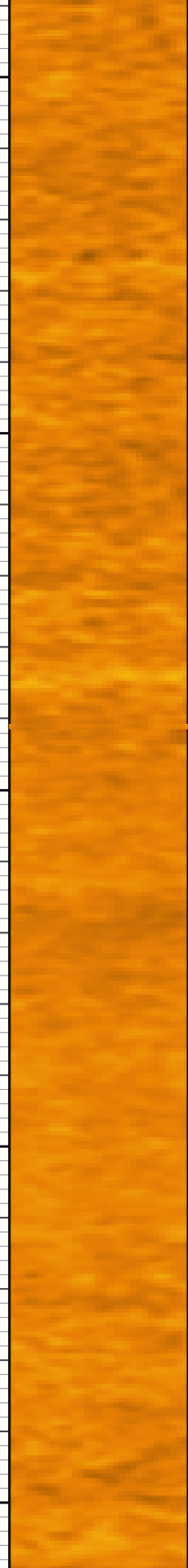
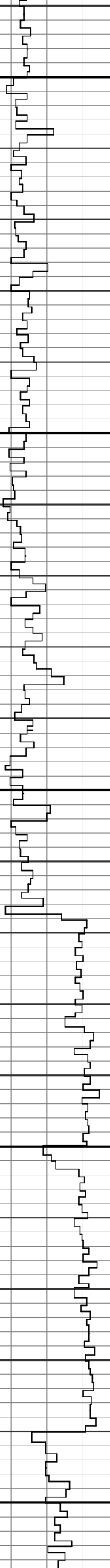
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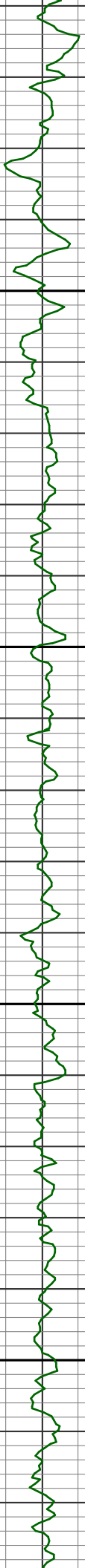
←s 56.5 38.2
76 6757

7600

←s 55.4 38.1
77 6809

7700





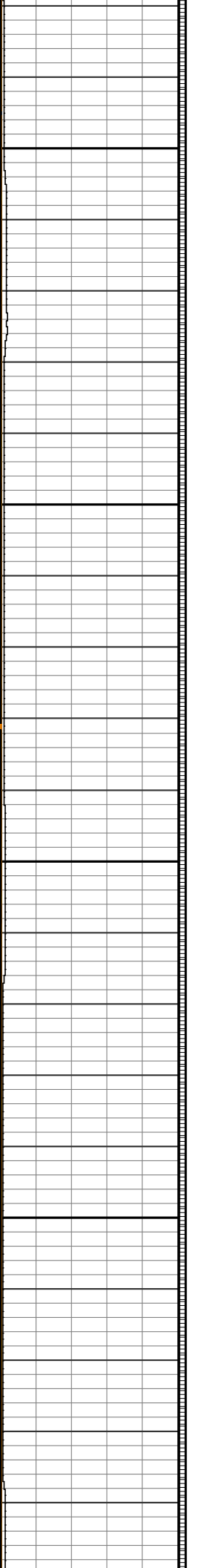
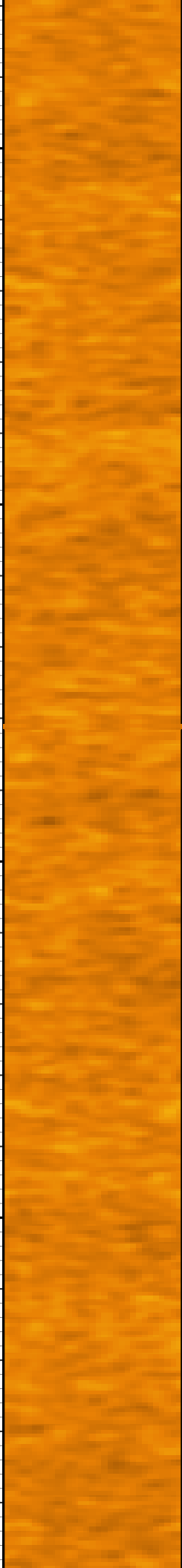
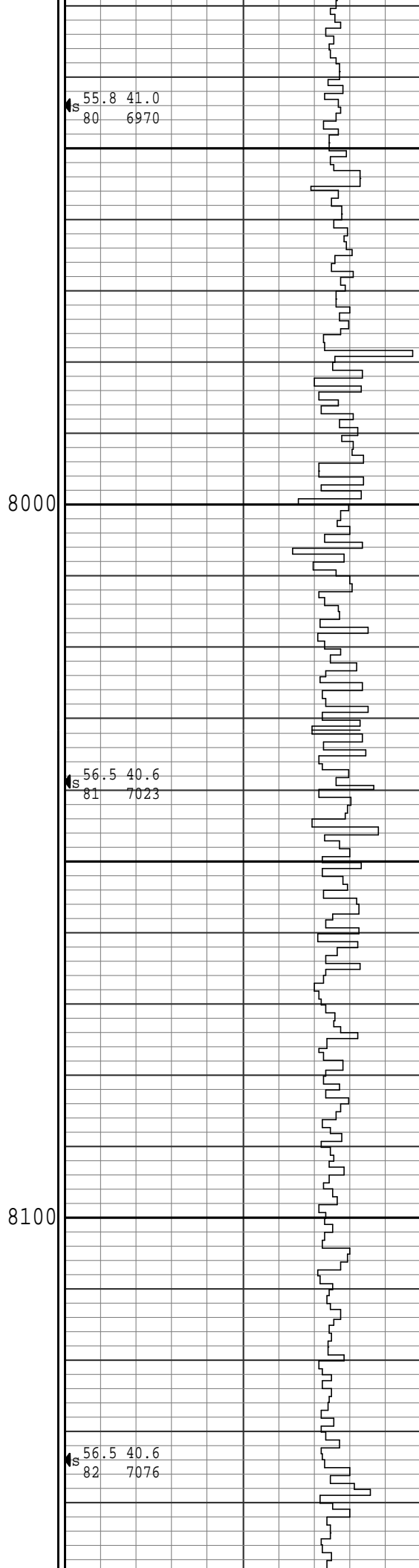
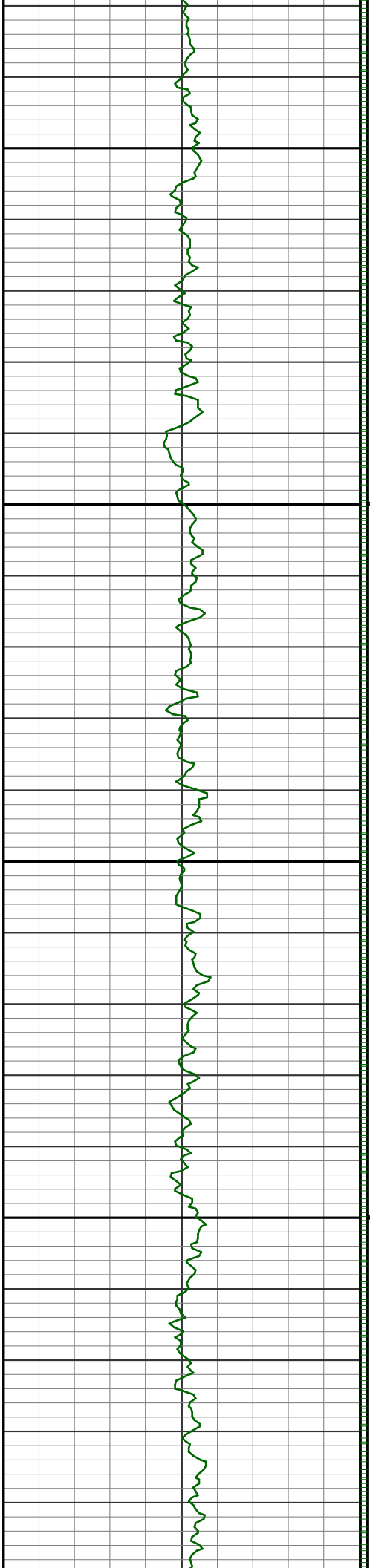
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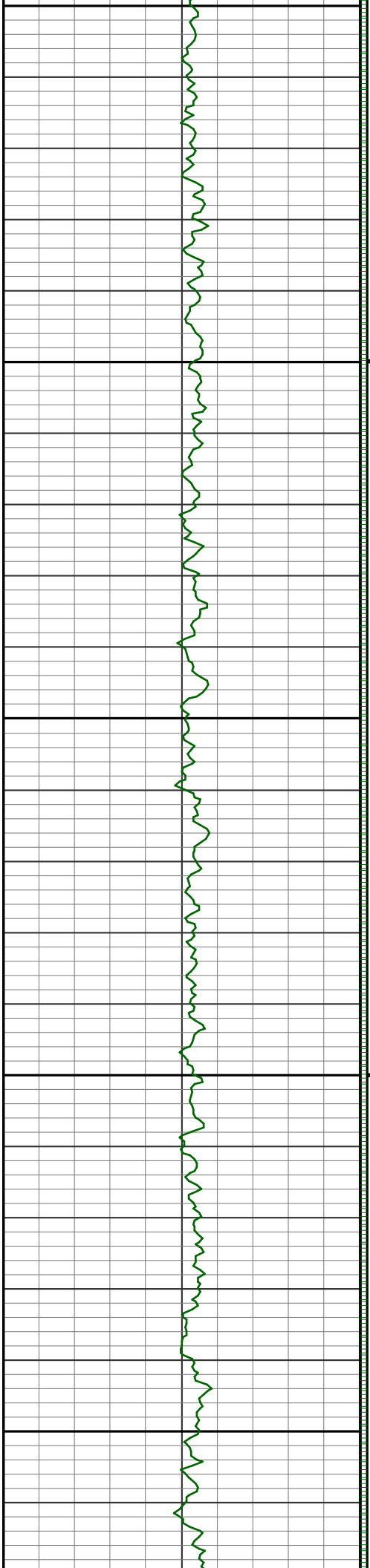
S 55.3 40.9
78 6863

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S 55.4 40.8
79 6917





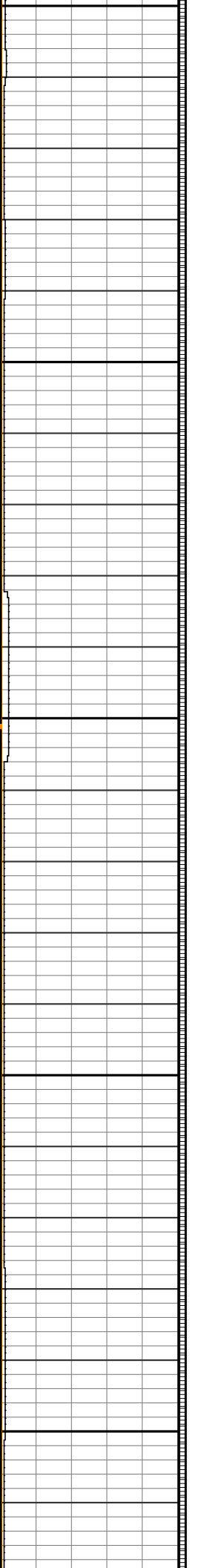
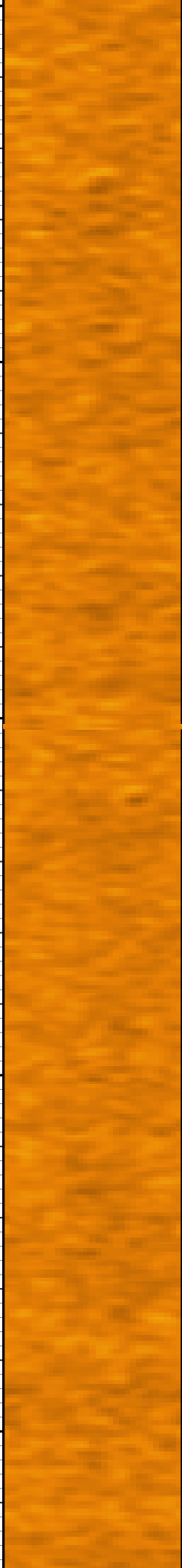
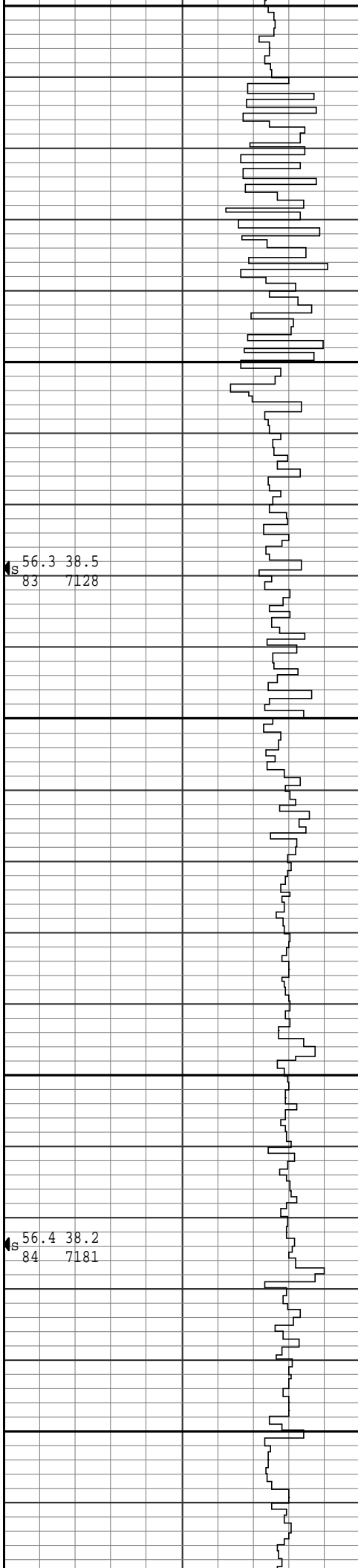


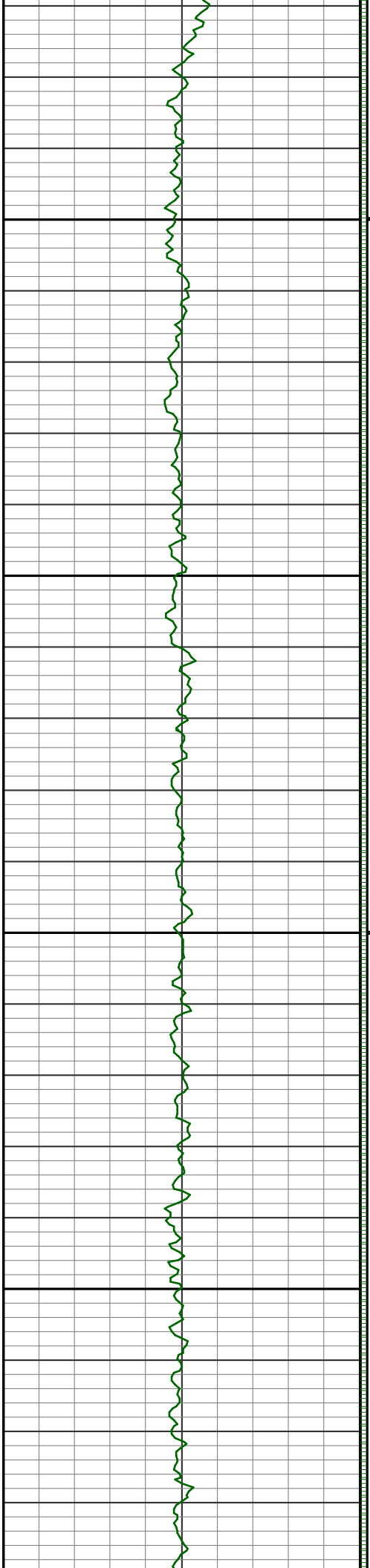
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56.4 38.2
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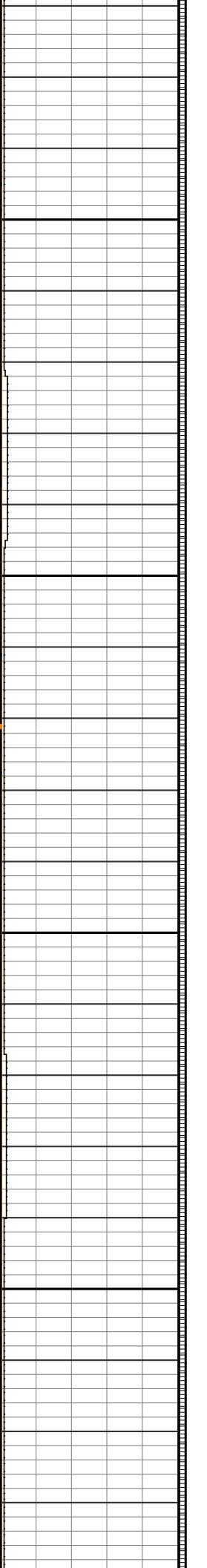
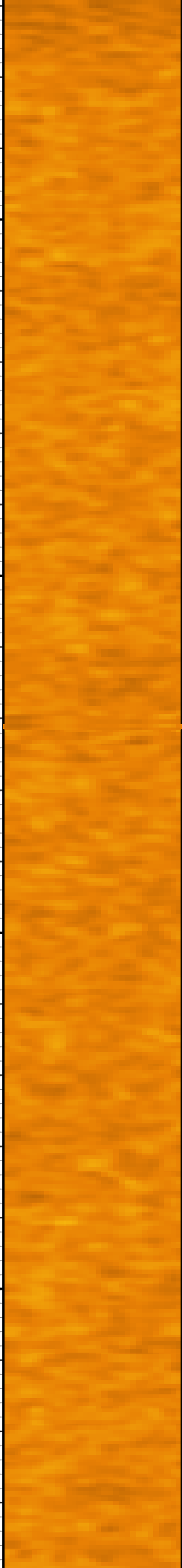
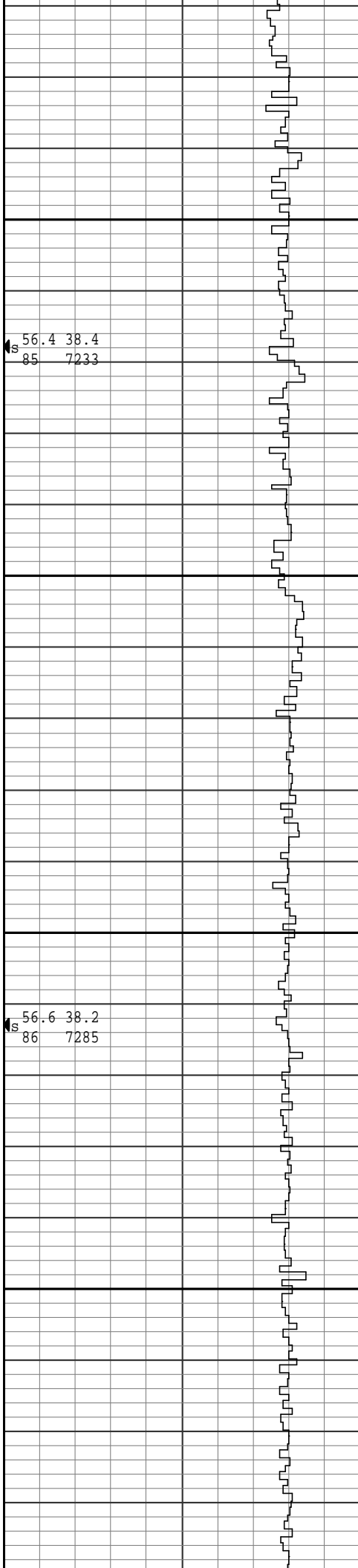


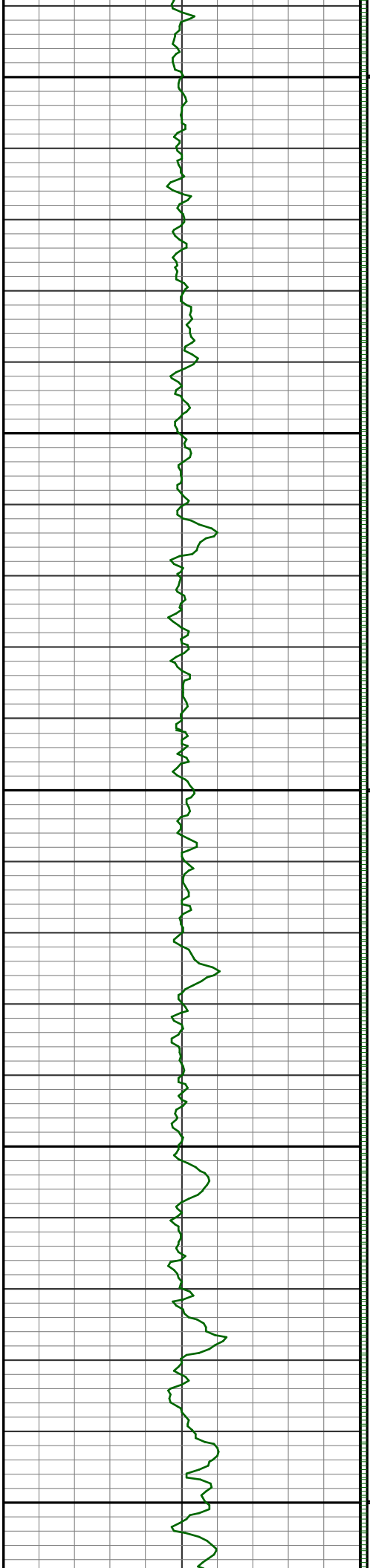
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56.6 38.2
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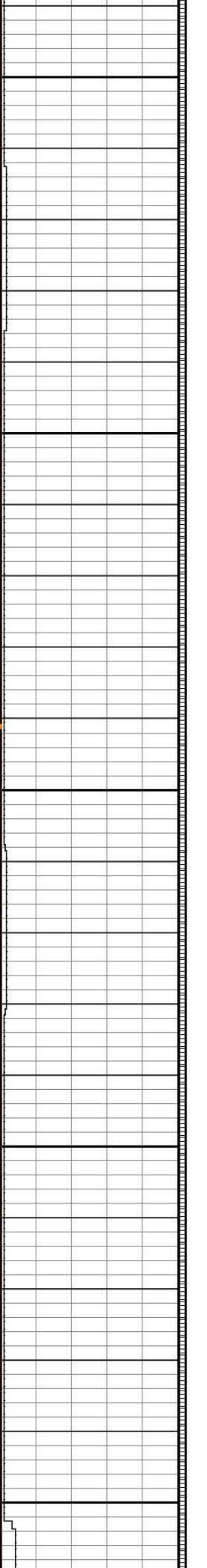
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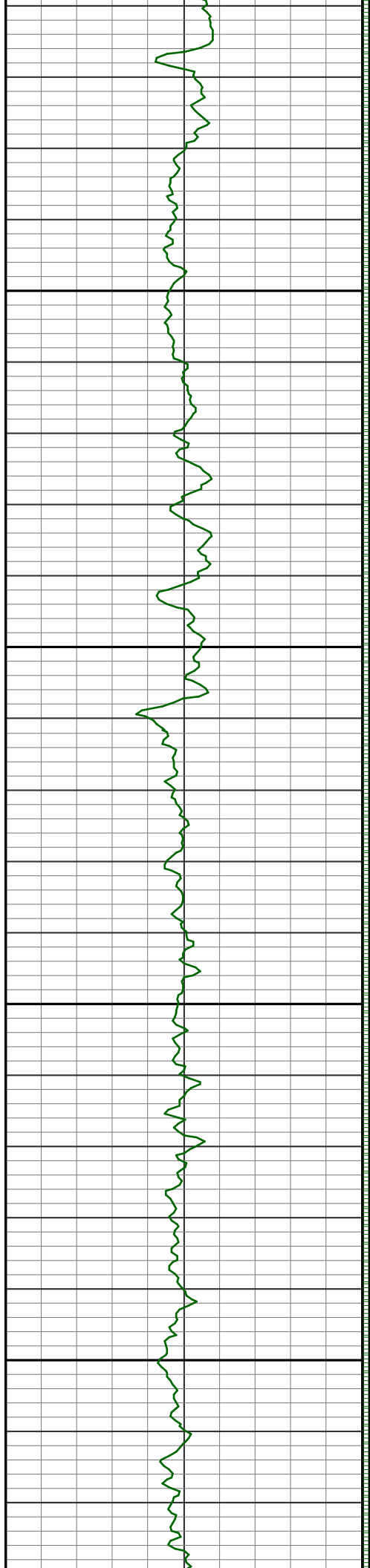
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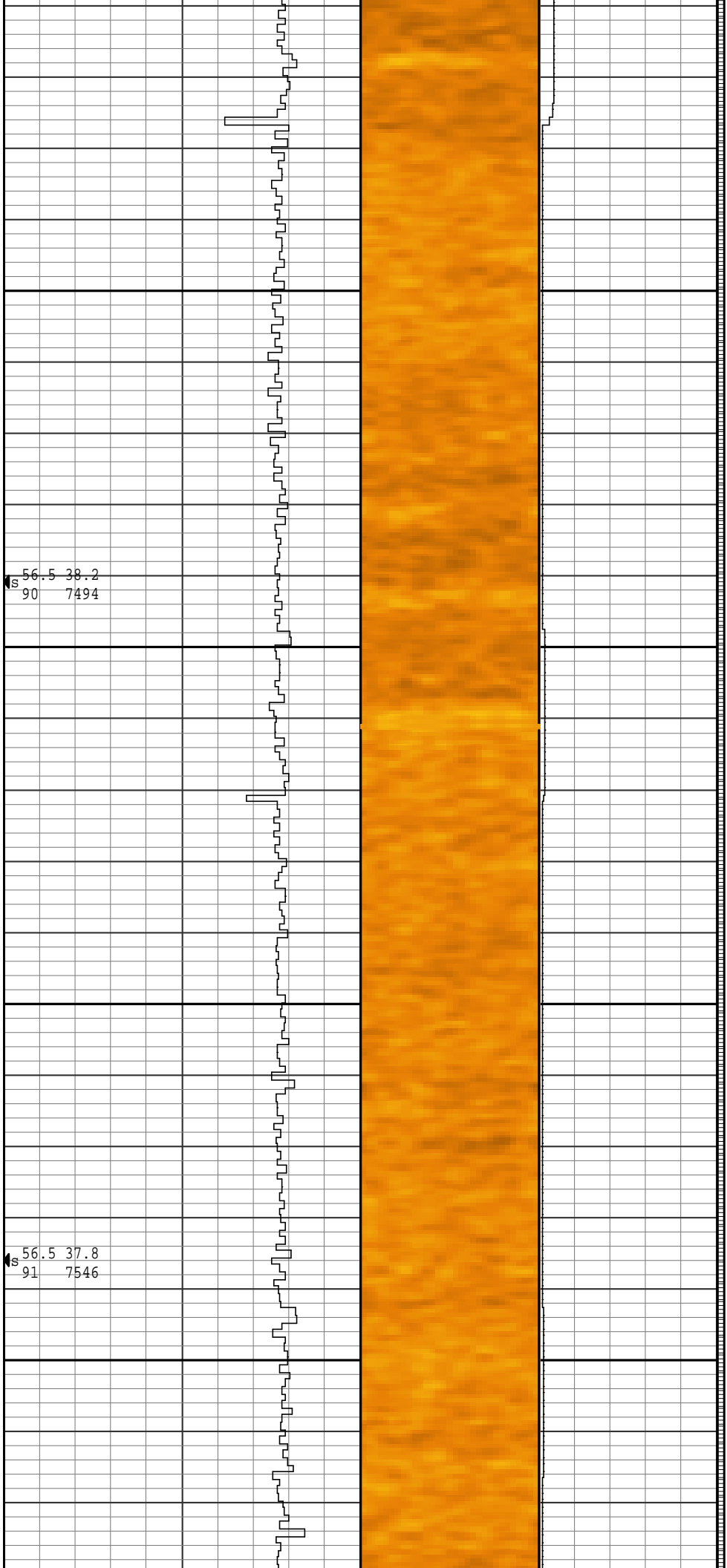


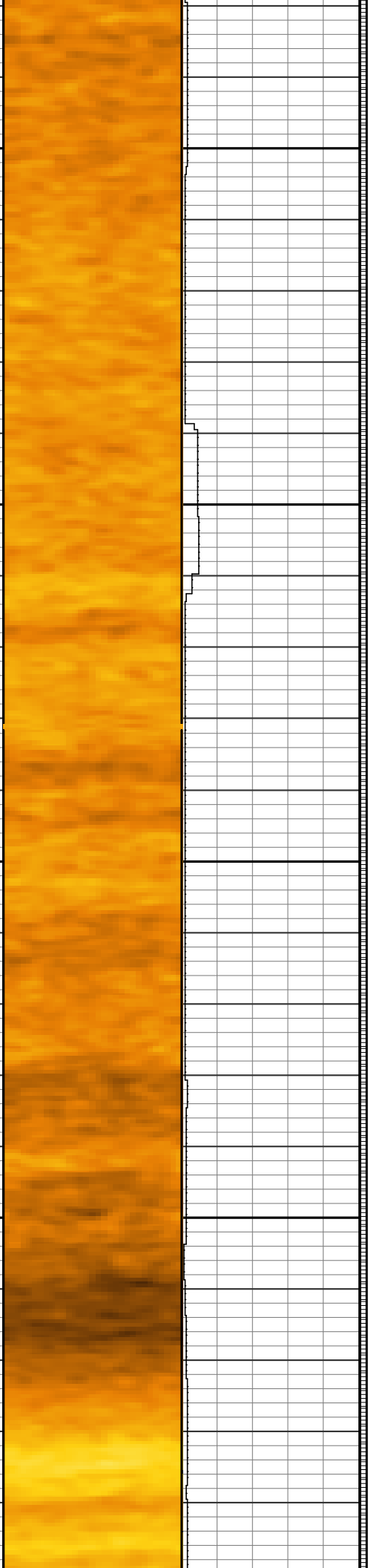
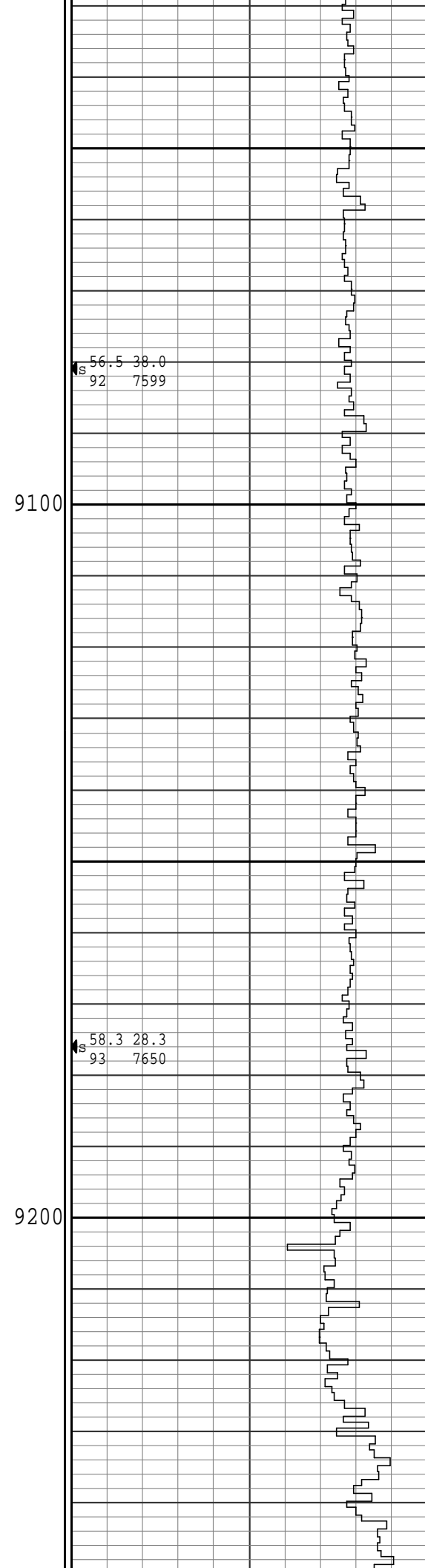
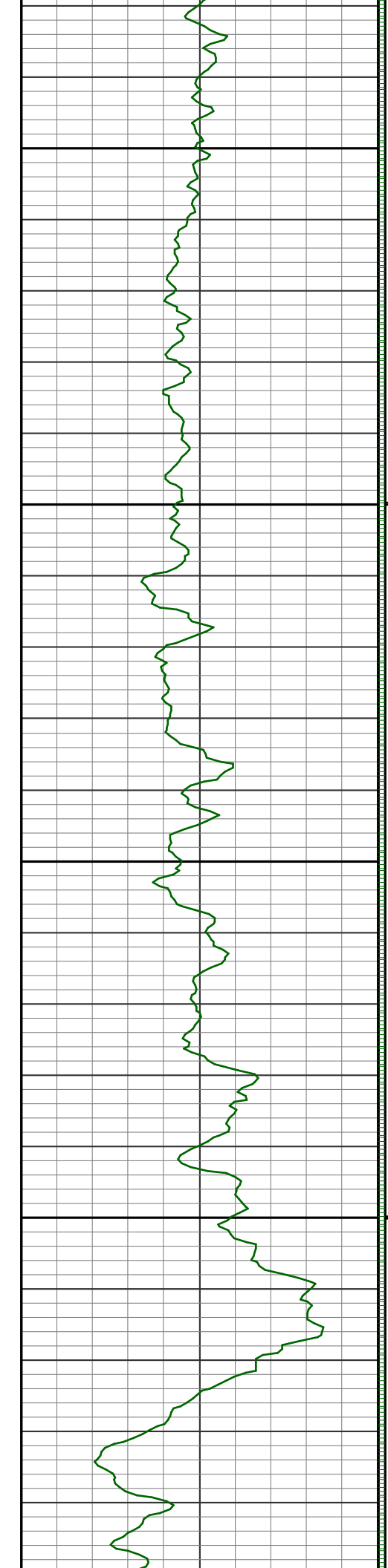
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90 7494

8900

s 56.5 37.8
91 7546

9000



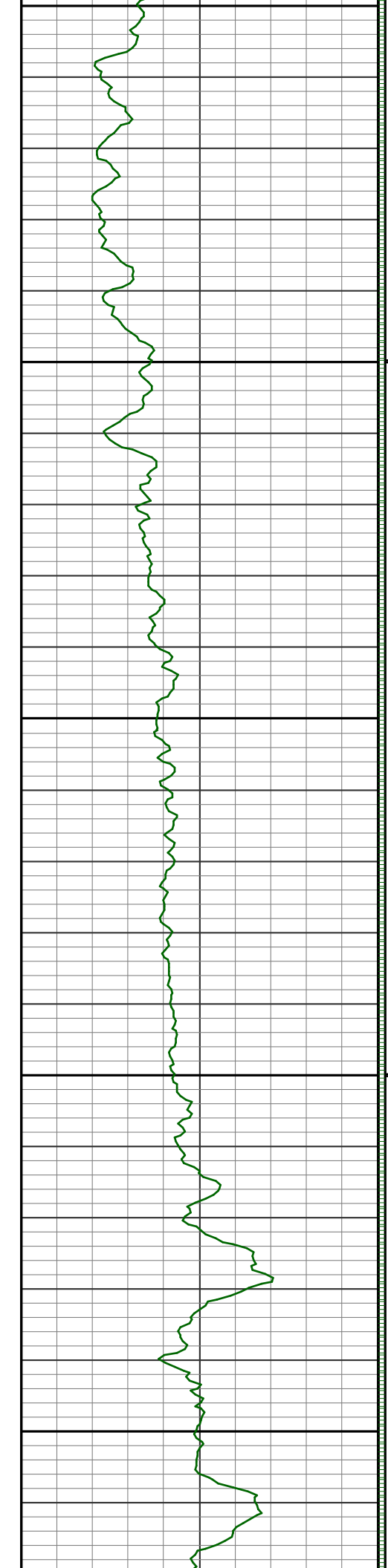


s 56.5 38.0
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s 58.3 28.3
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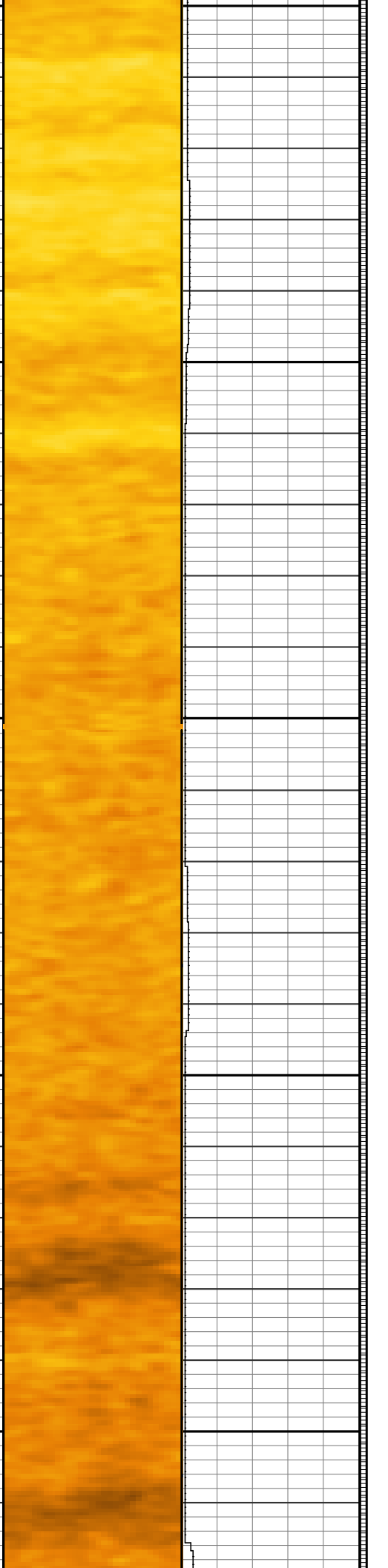
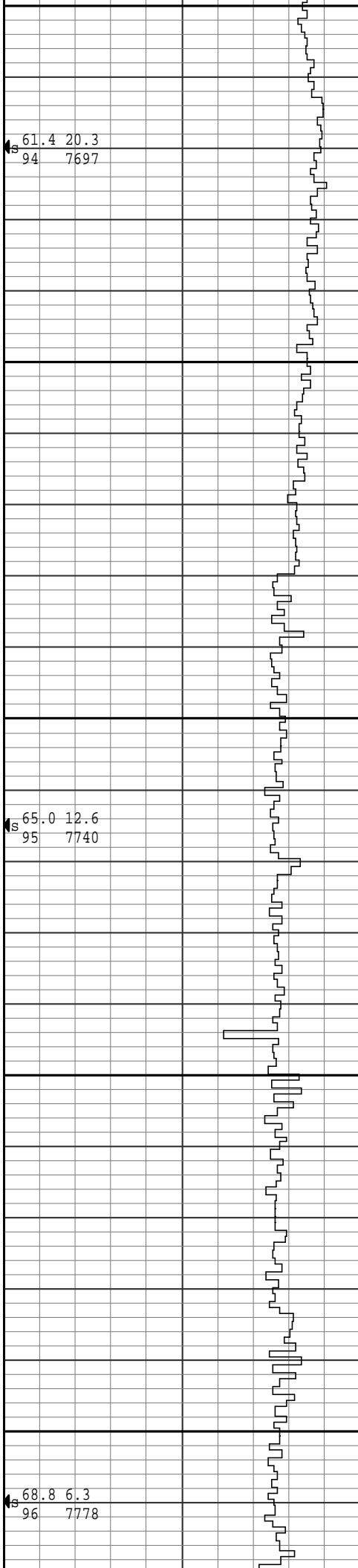
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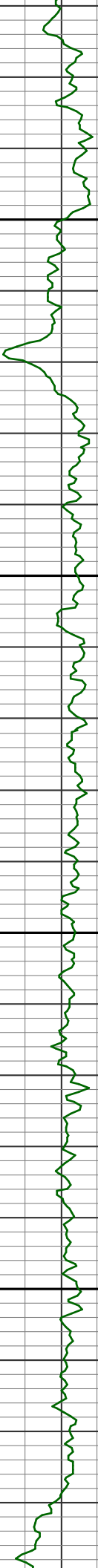
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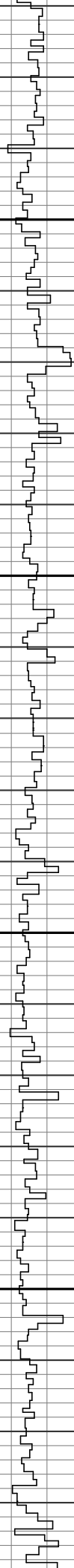


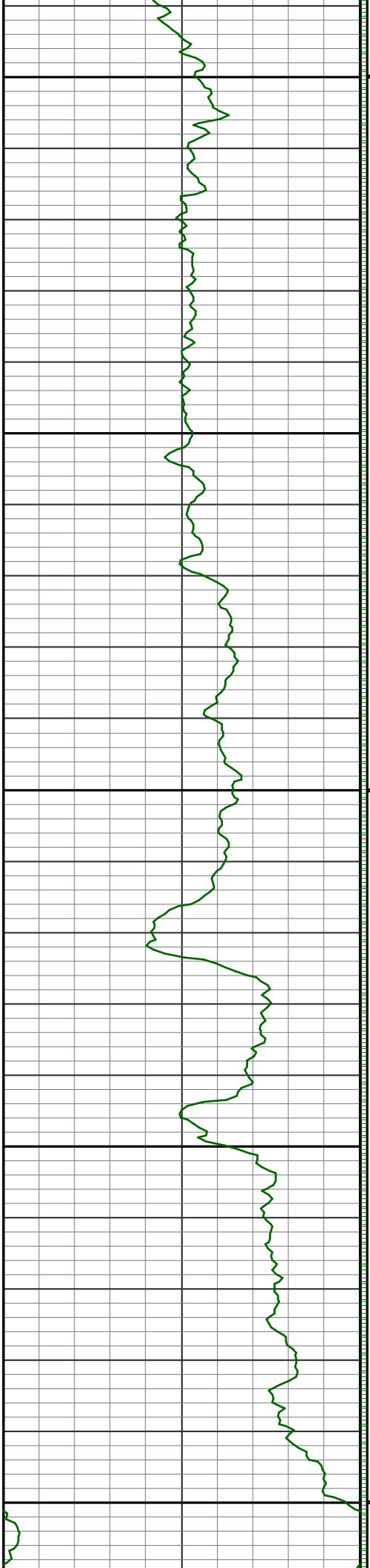
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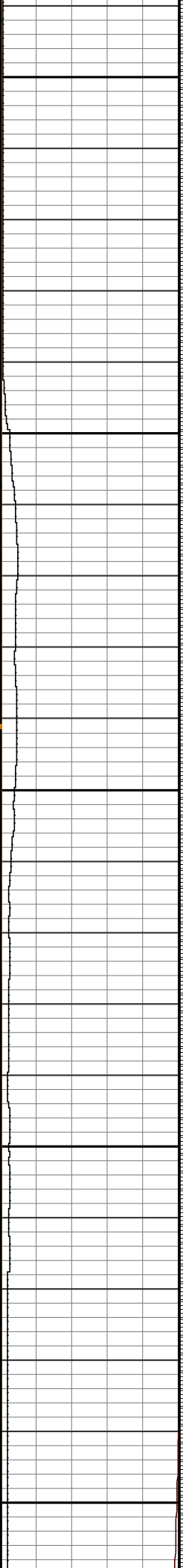
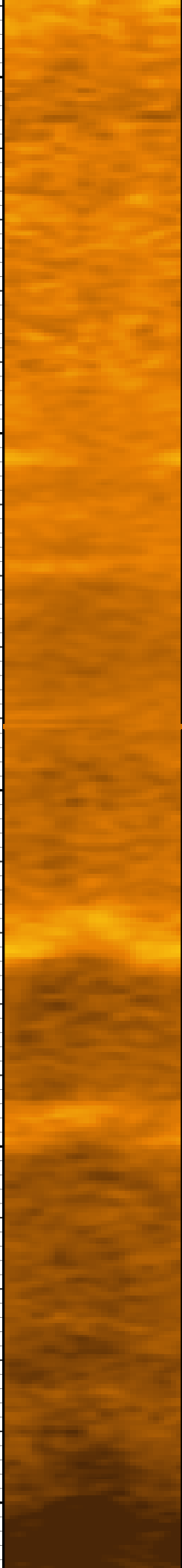
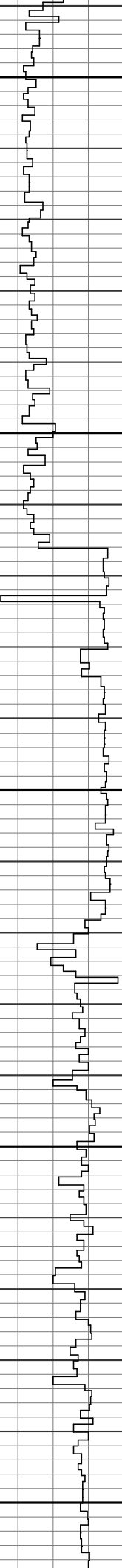
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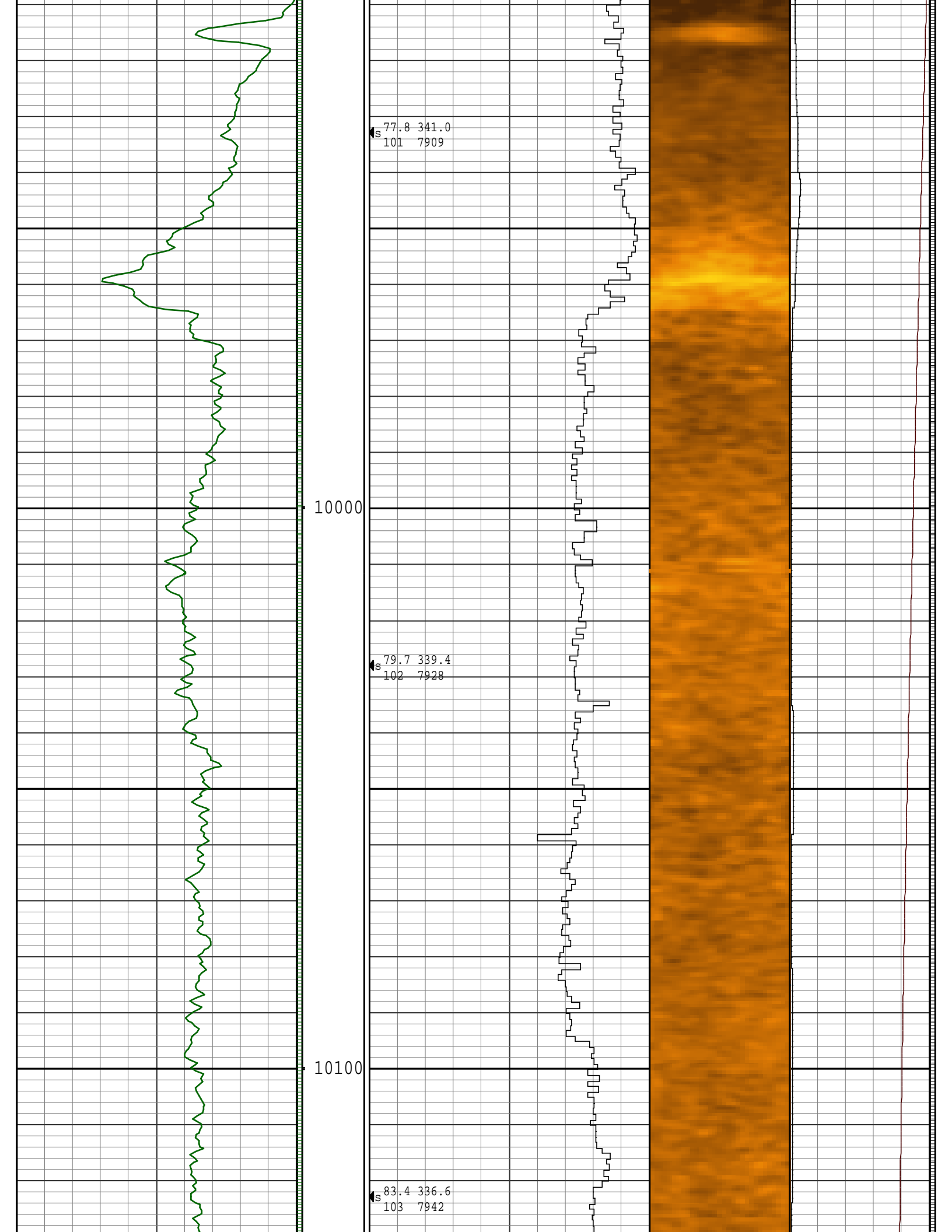
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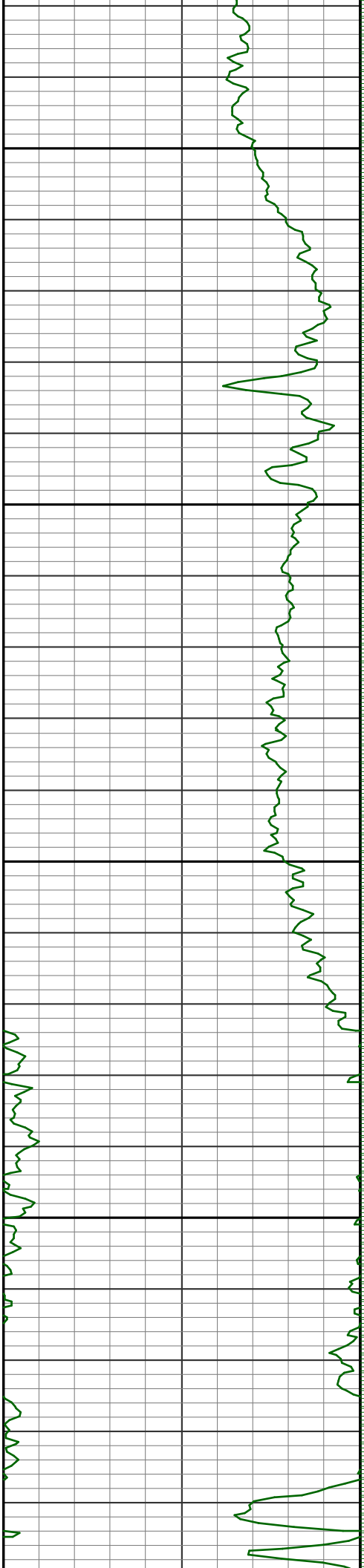
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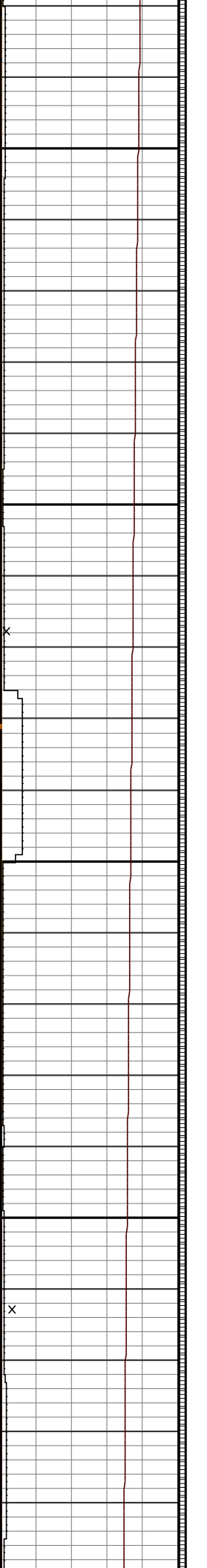
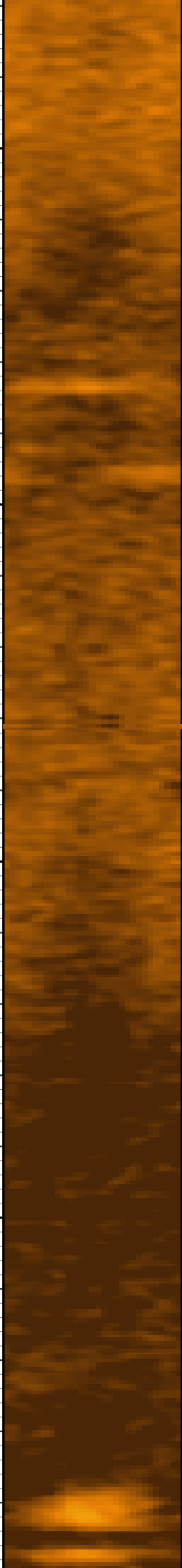
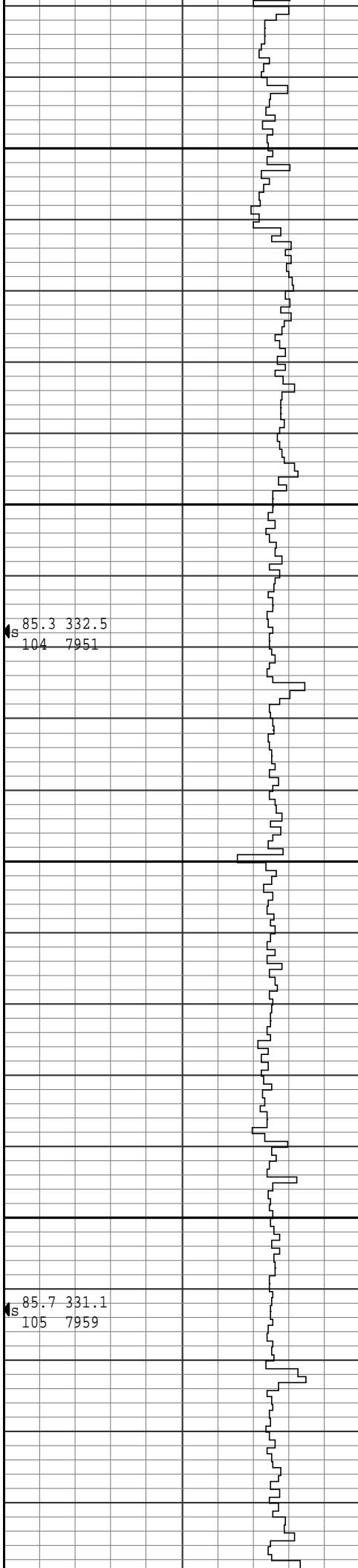


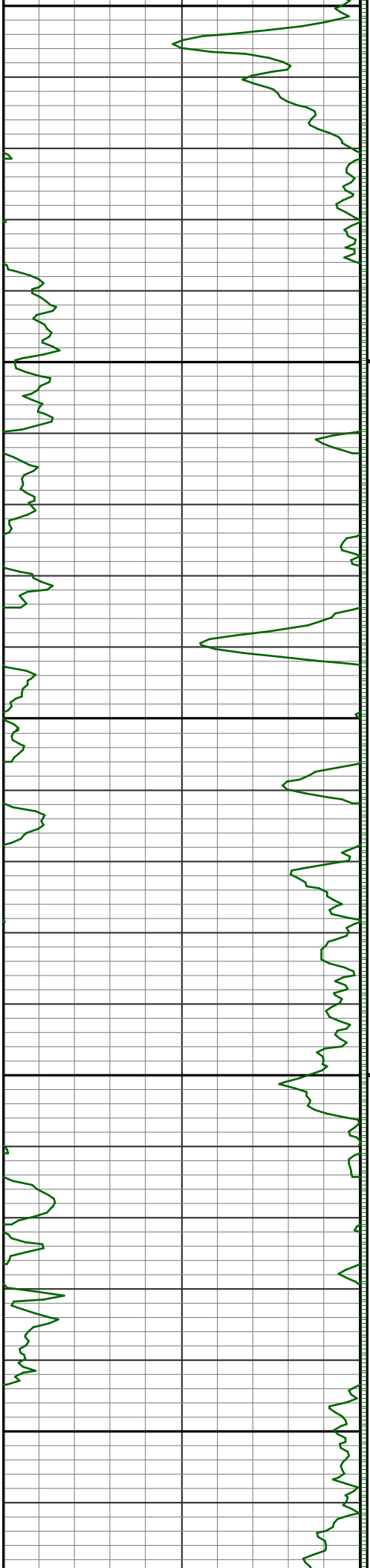
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85.3 332.5
104 7951

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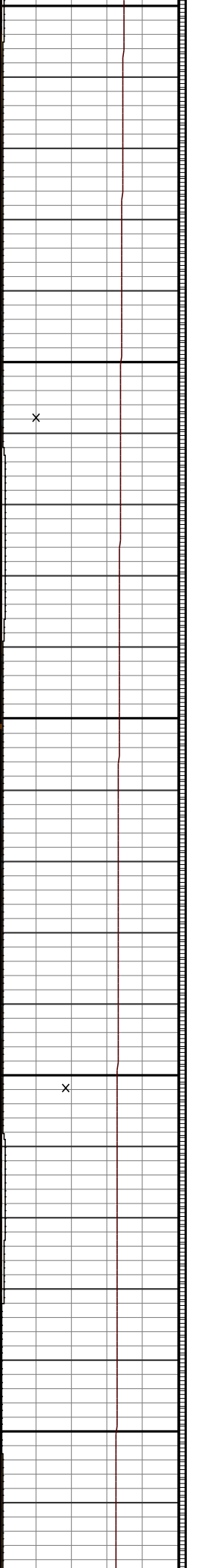
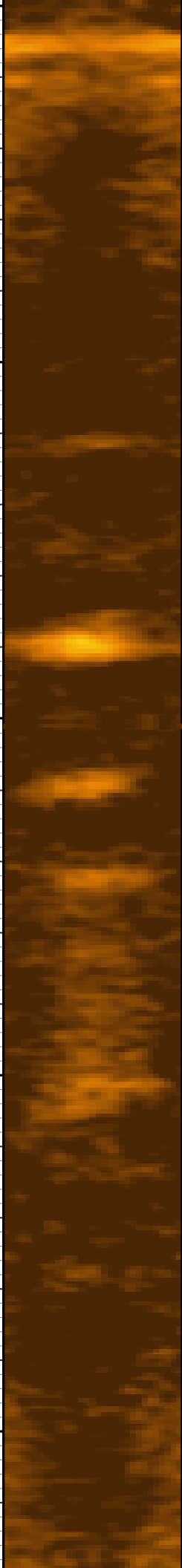
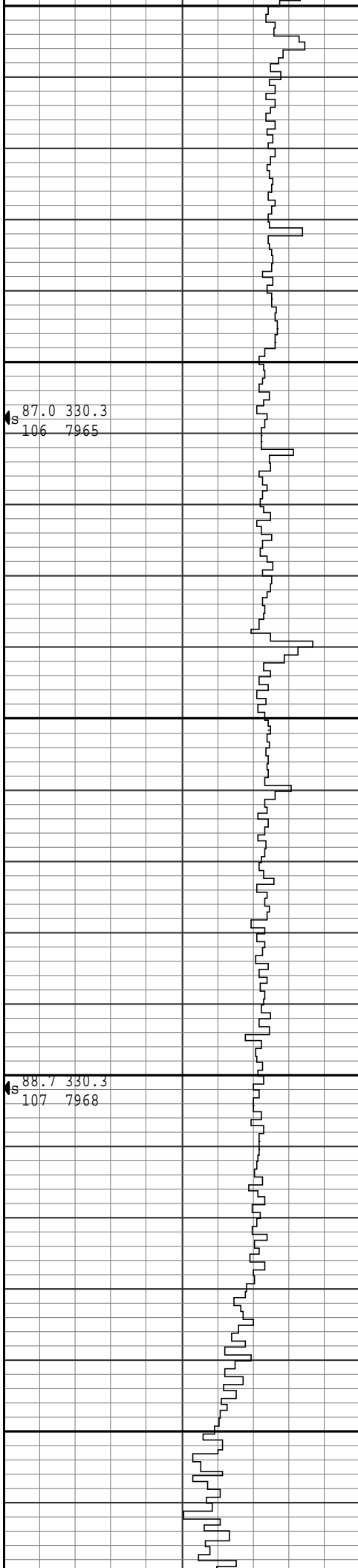


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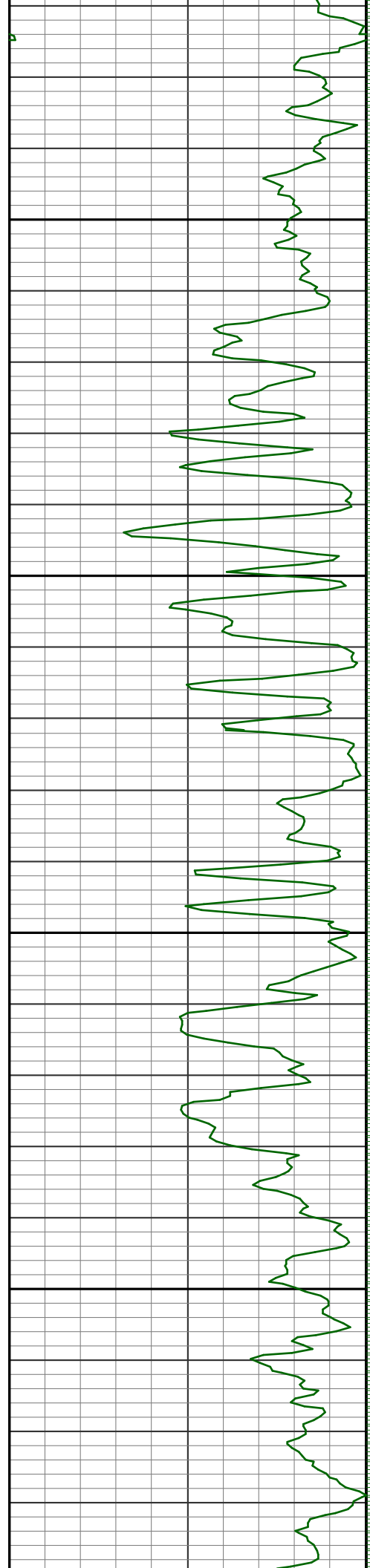
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x

x



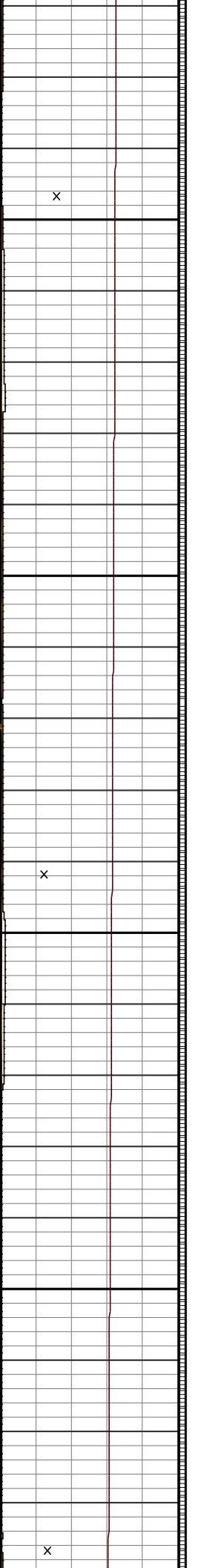
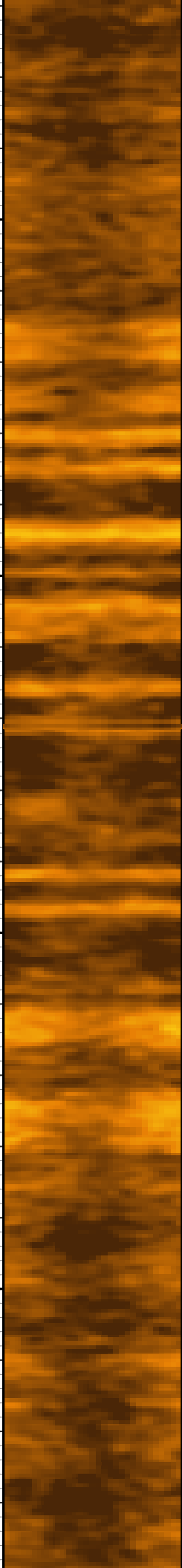
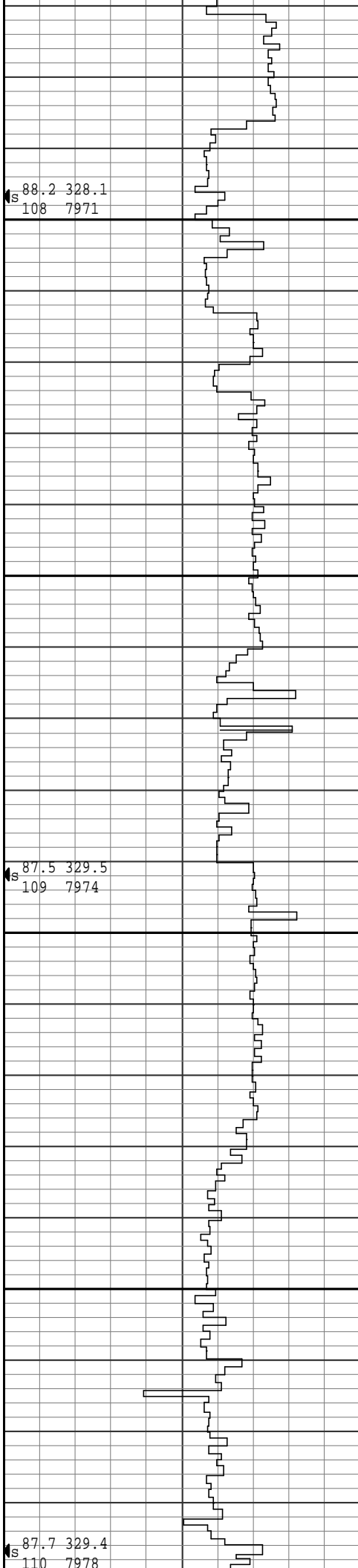
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87.5 329.5
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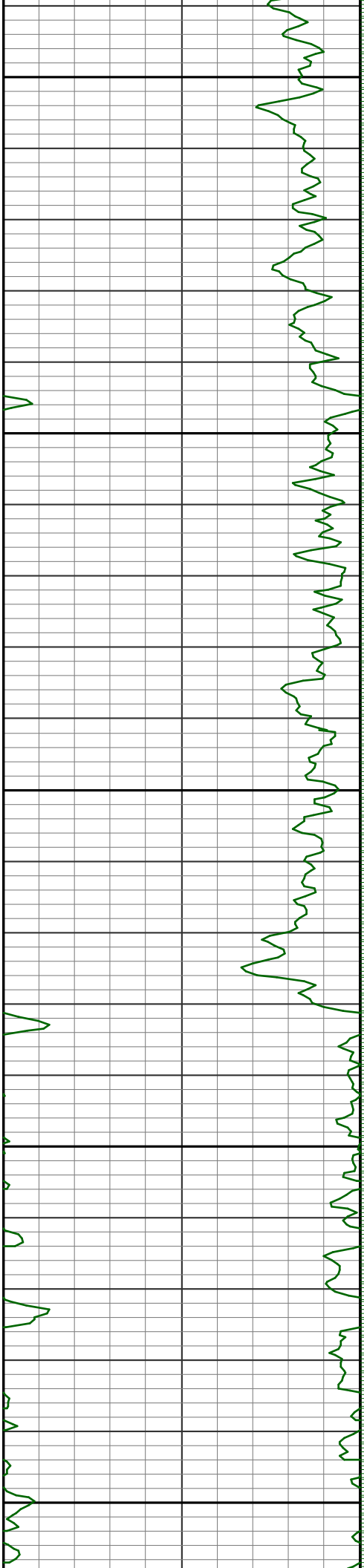
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x

x

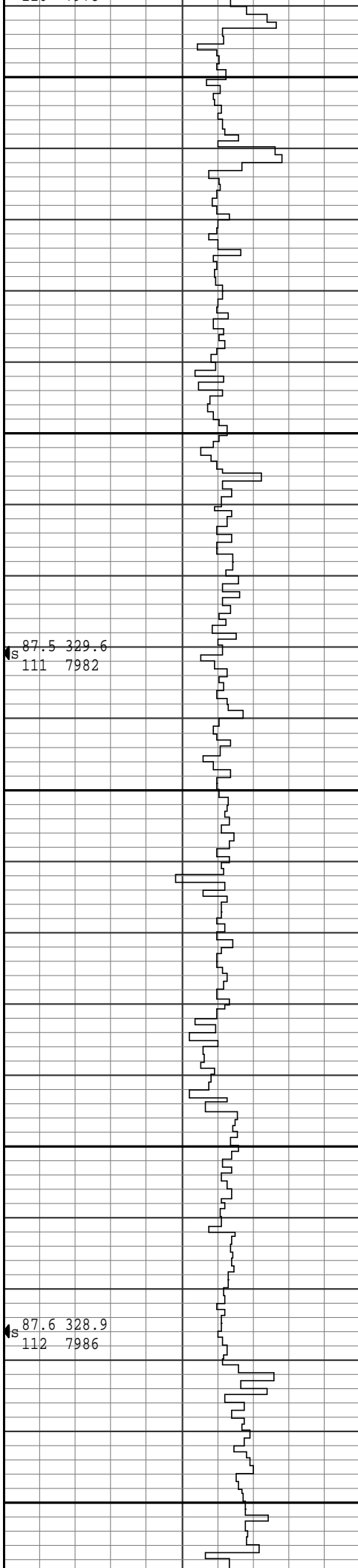
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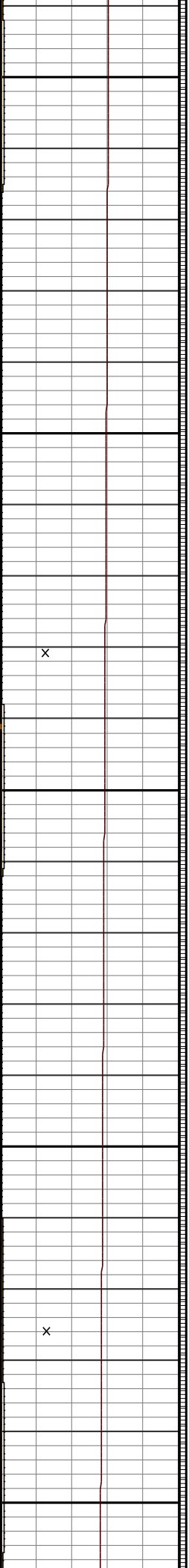
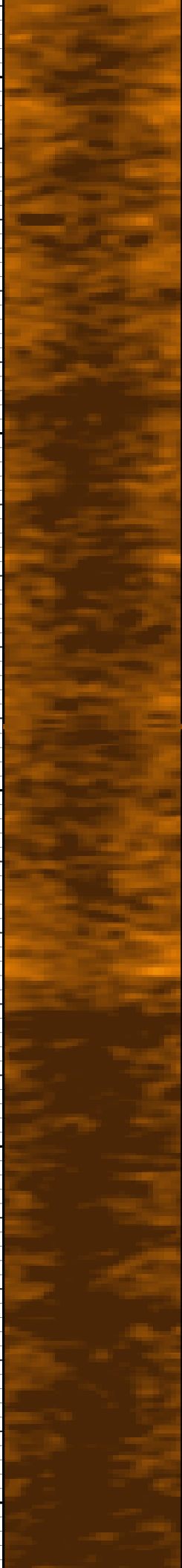
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11000



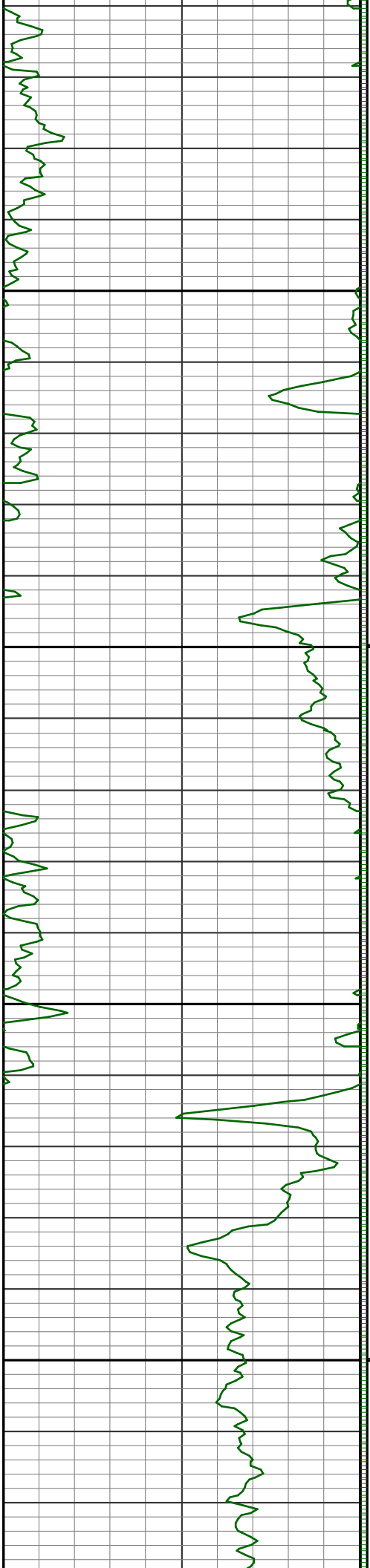
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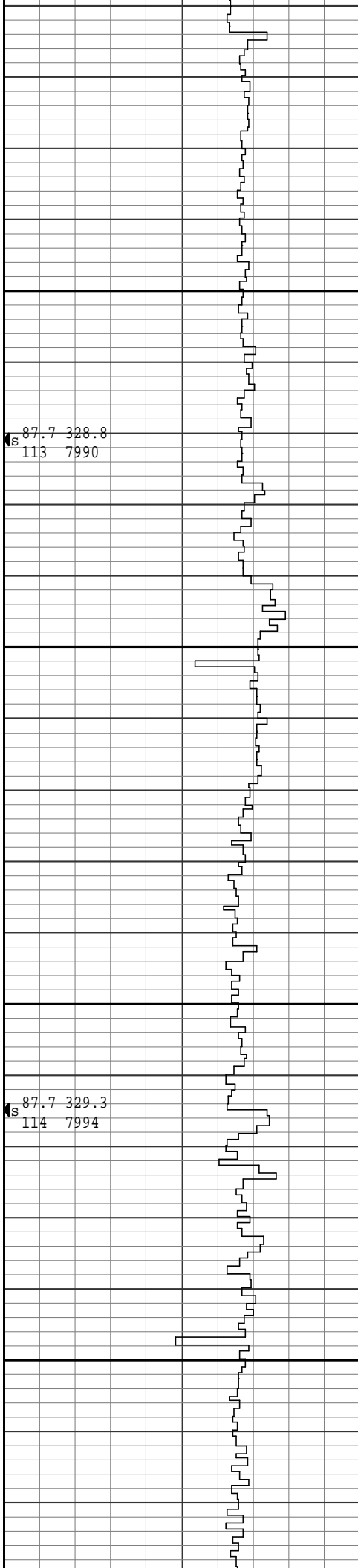
x

x



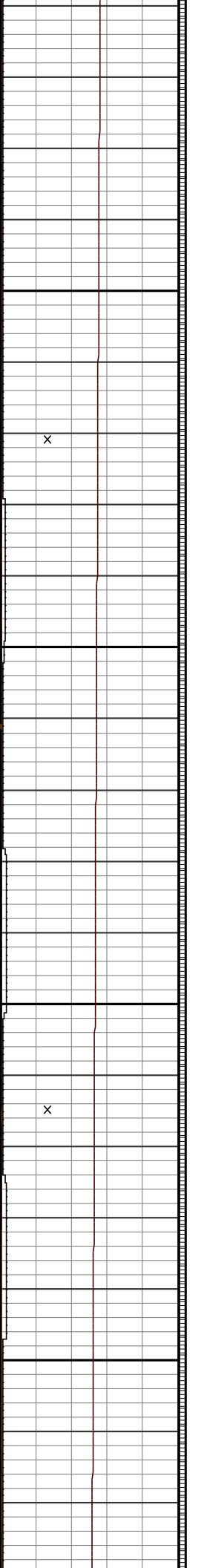
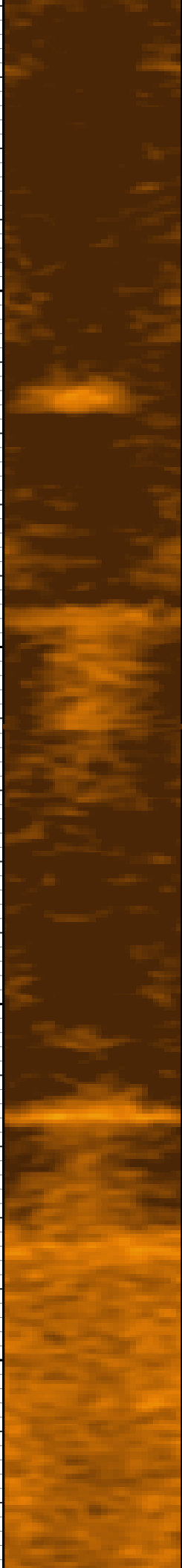
11100

11200



S 87.7 328.8
113 7990

S 87.7 329.3
114 7994



x

x



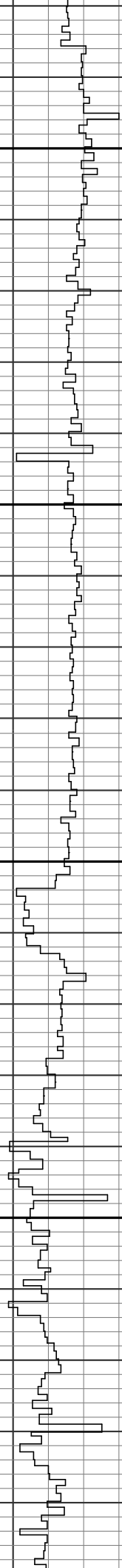
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11400

87.8 327.7
115 7998

88.3 328.6
116 8001

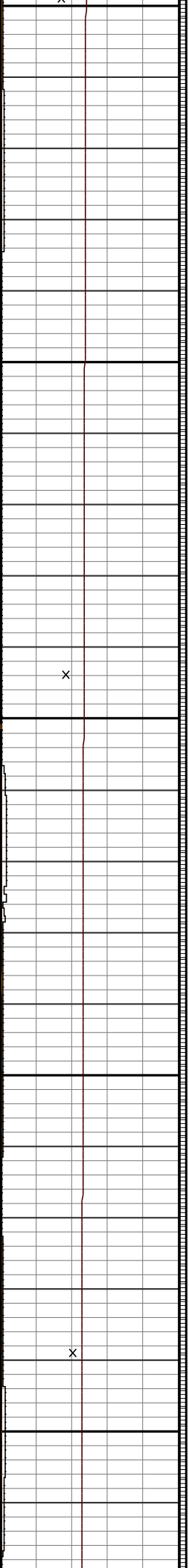
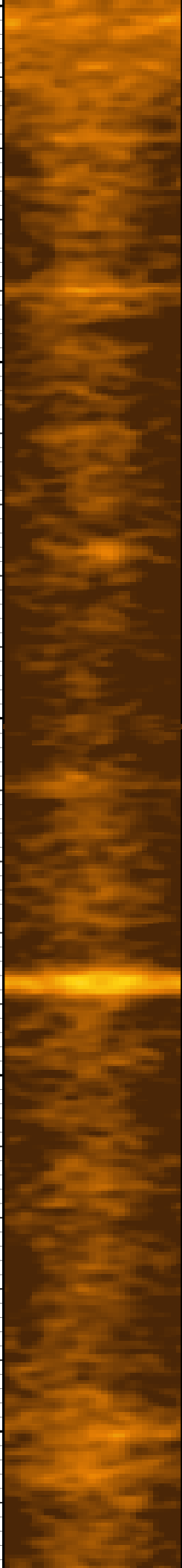
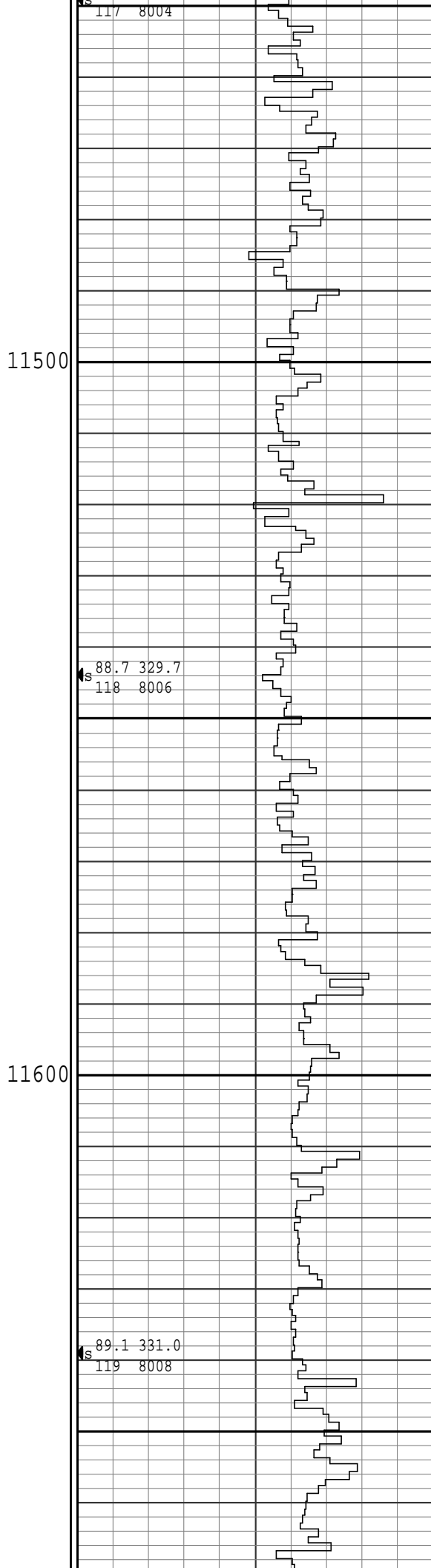
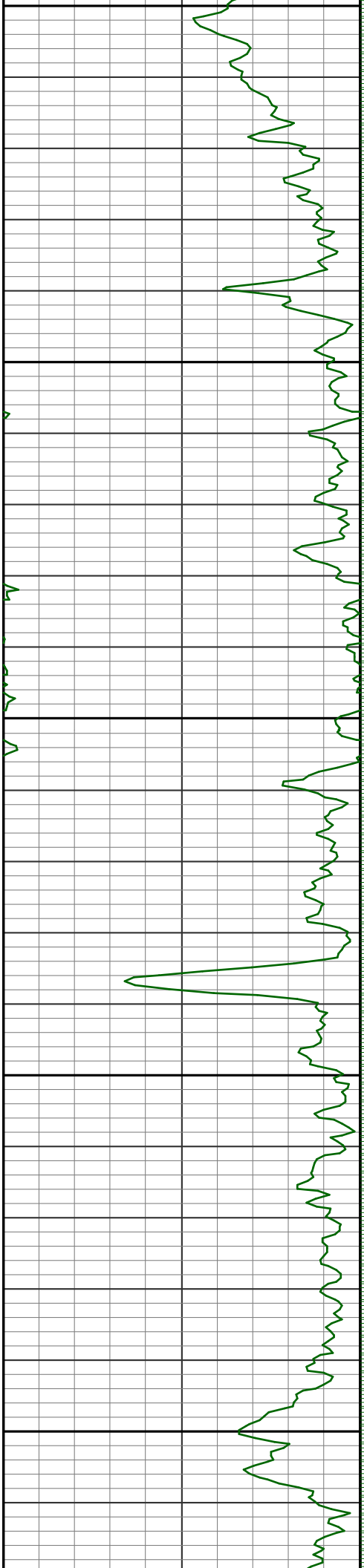
88.4 329.5



x

x

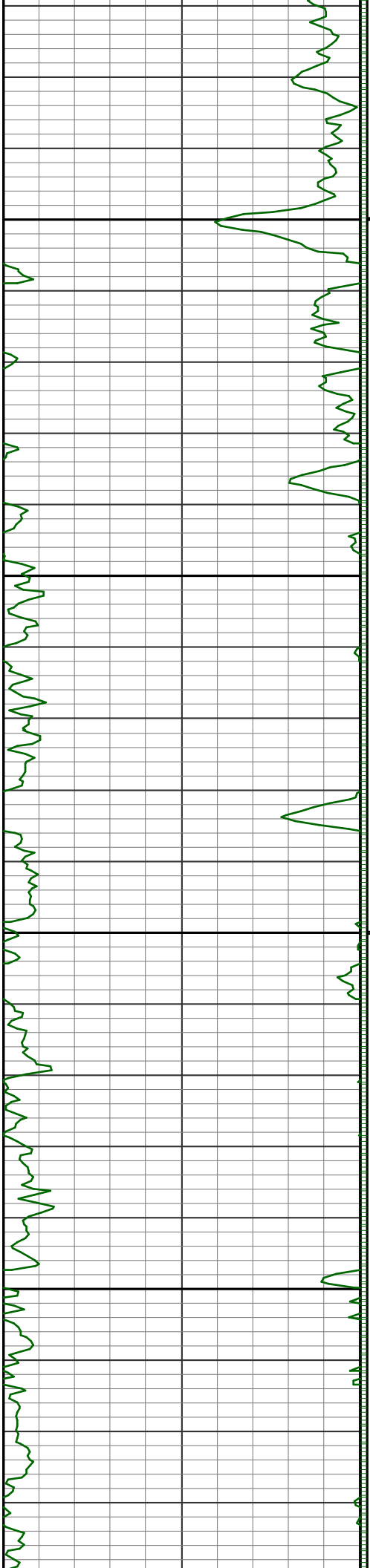
x



117 8004

88.7 329.7
118 8006

89.1 331.0
119 8008

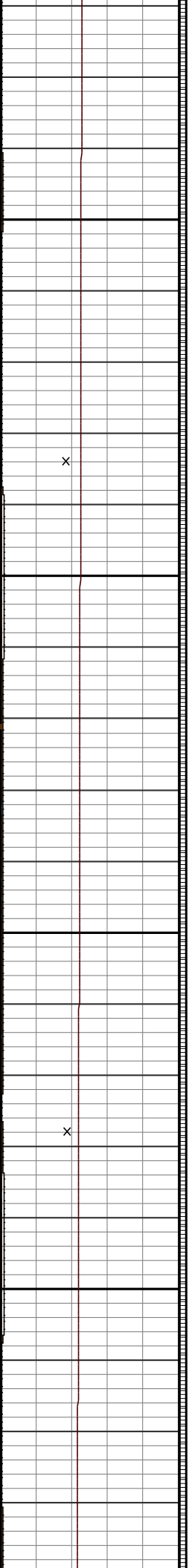
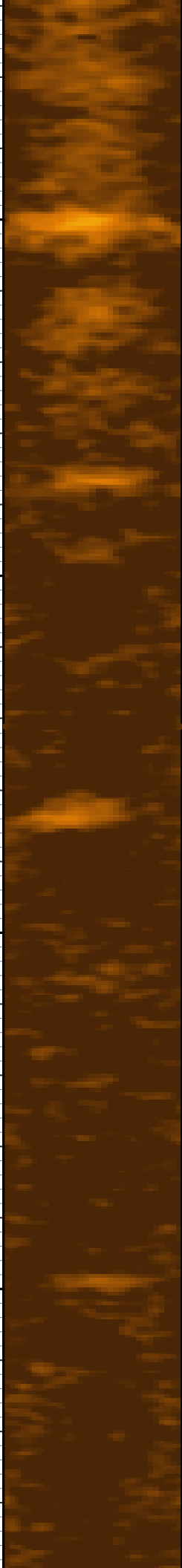
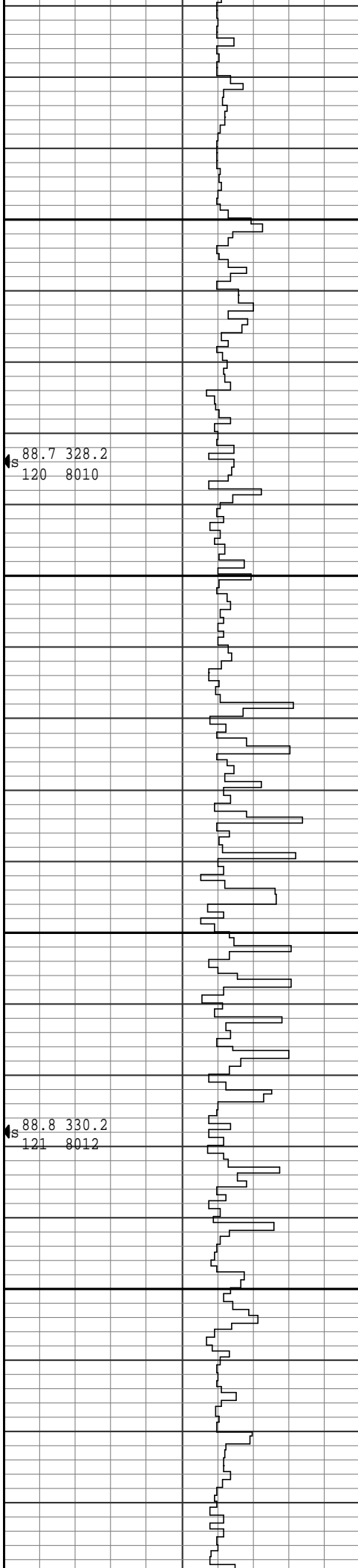


11700

s 88.7 328.2
120 8010

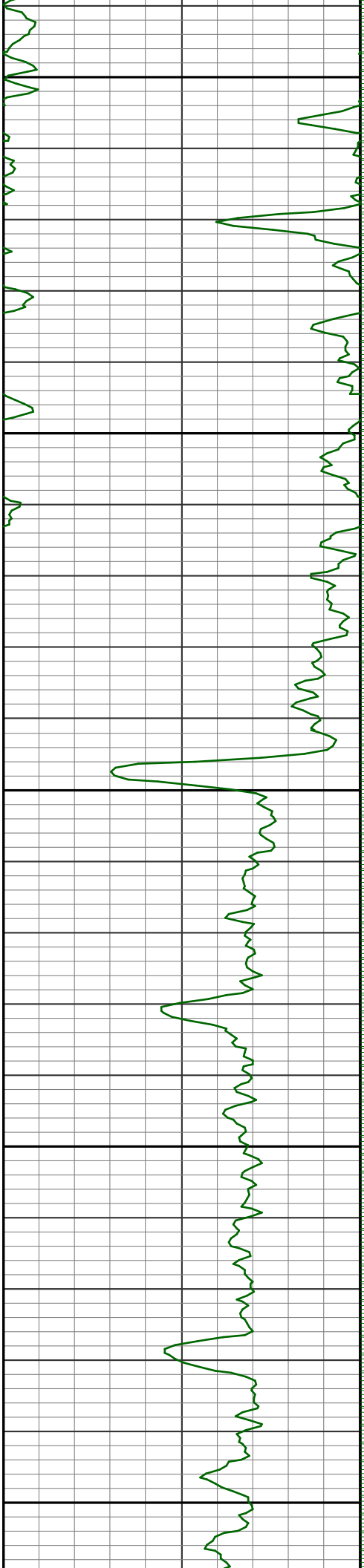
11800

s 88.8 330.2
121 8012



x

x



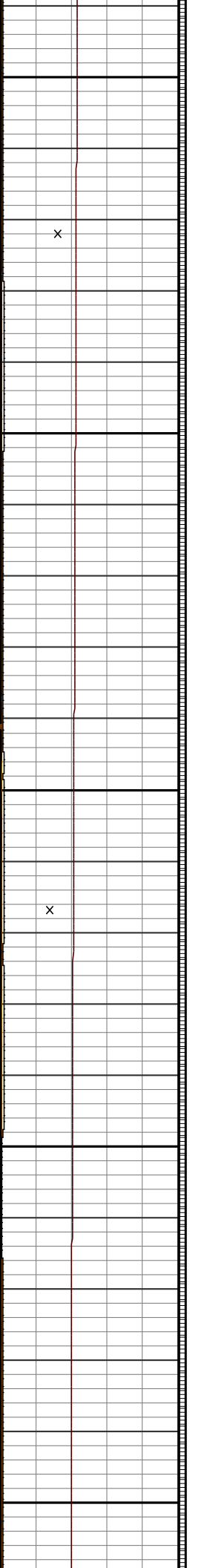
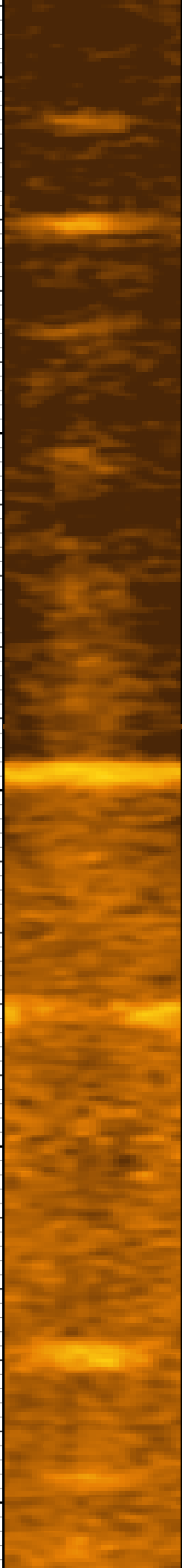
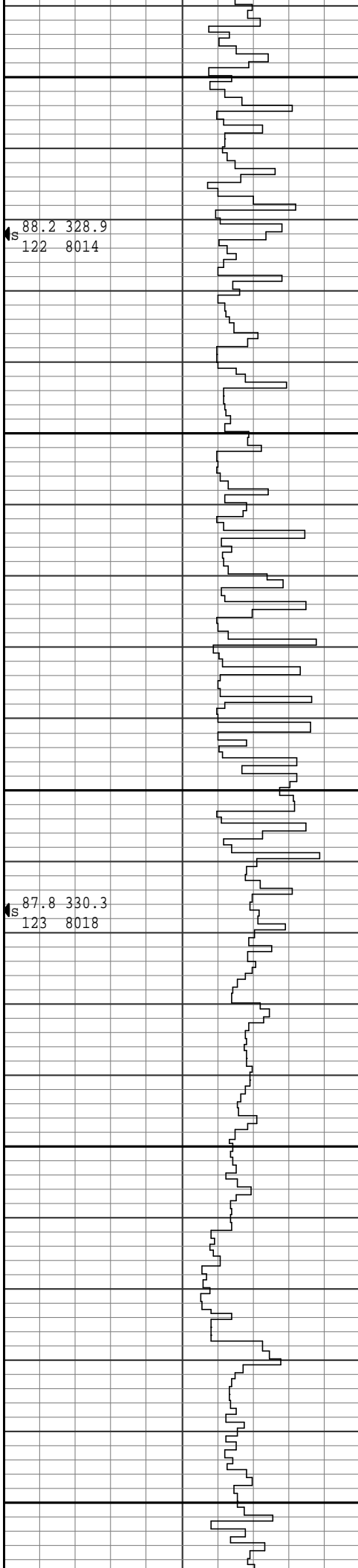
11900

s 88.2 328.9
122 8014

12000

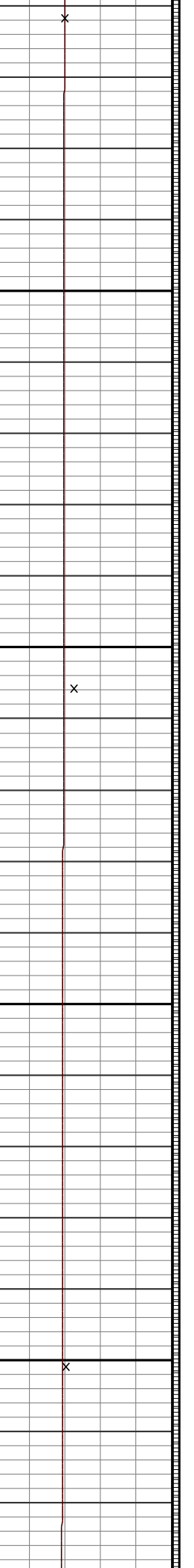
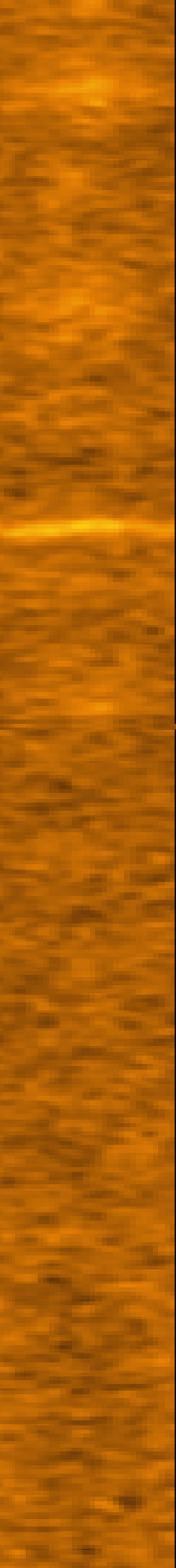
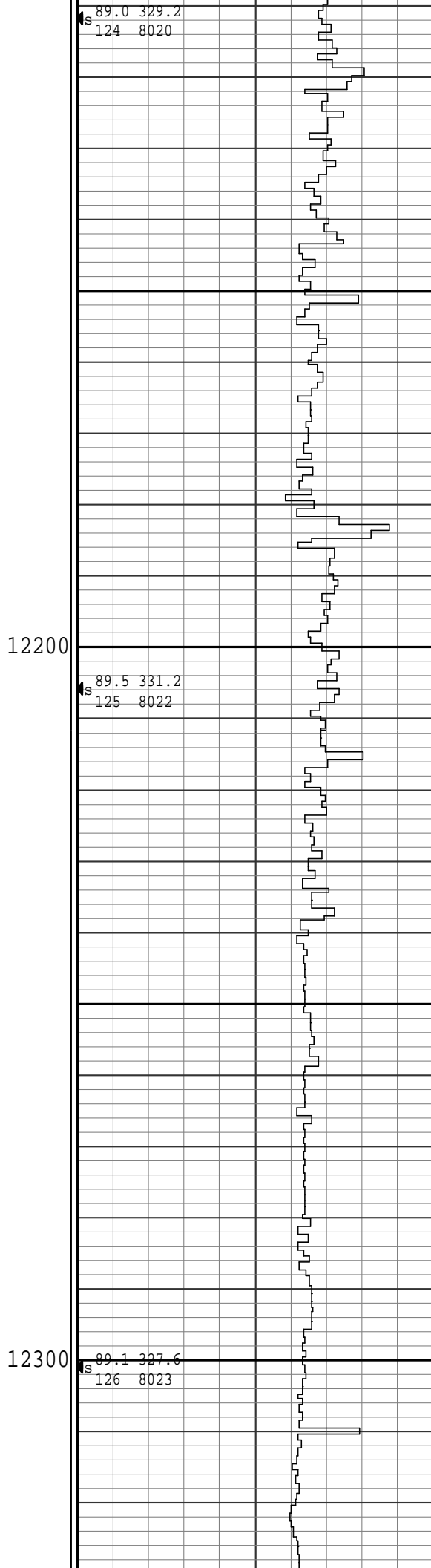
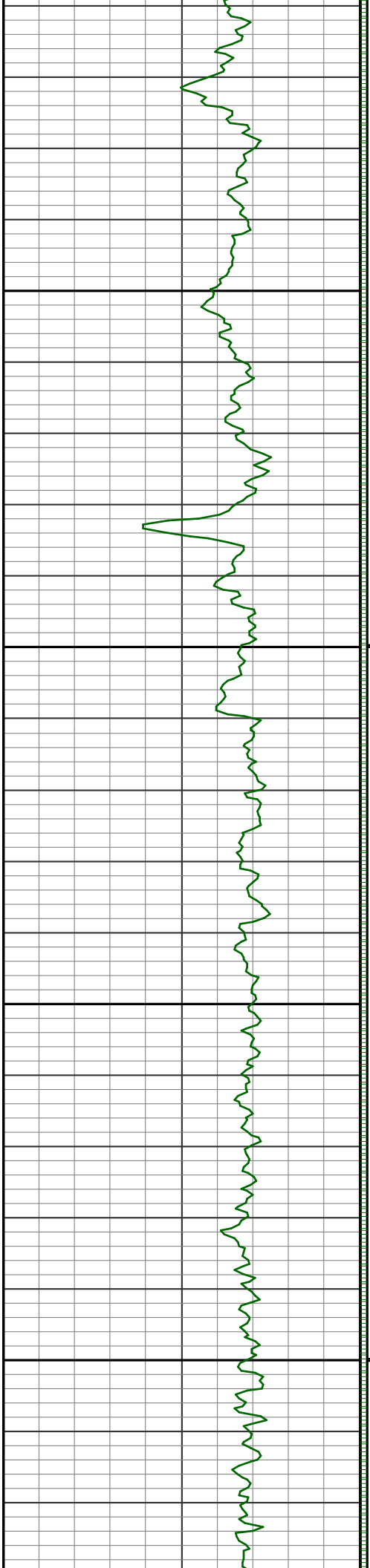
s 87.8 330.3
123 8018

12100



x

x



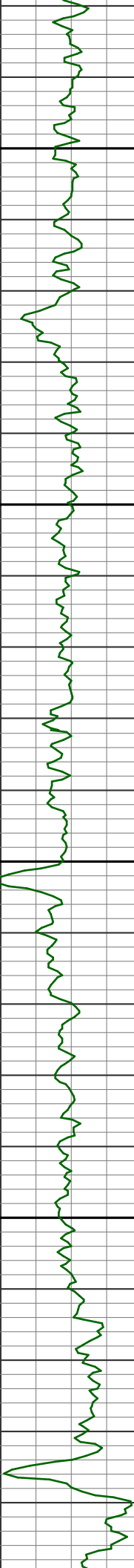
s 89.0 329.2
124 8020

s 89.5 331.2
125 8022

s 89.1 327.6
126 8023

12200

12300

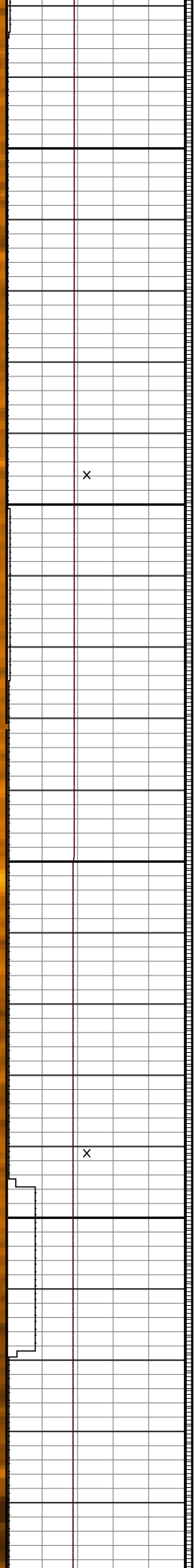
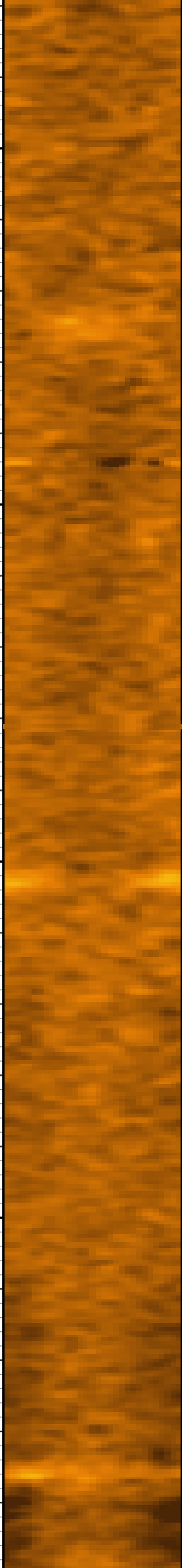
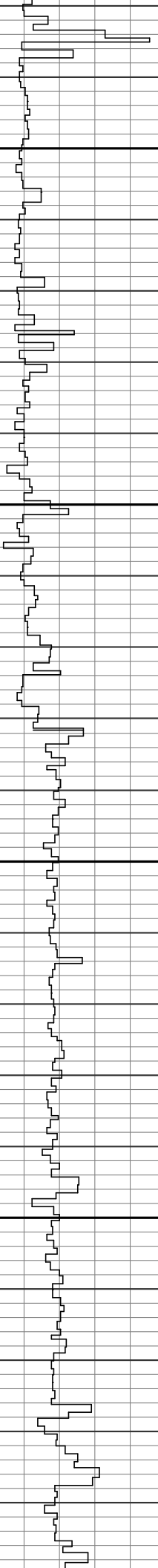


s 89.5 329.5
127 8024

12400

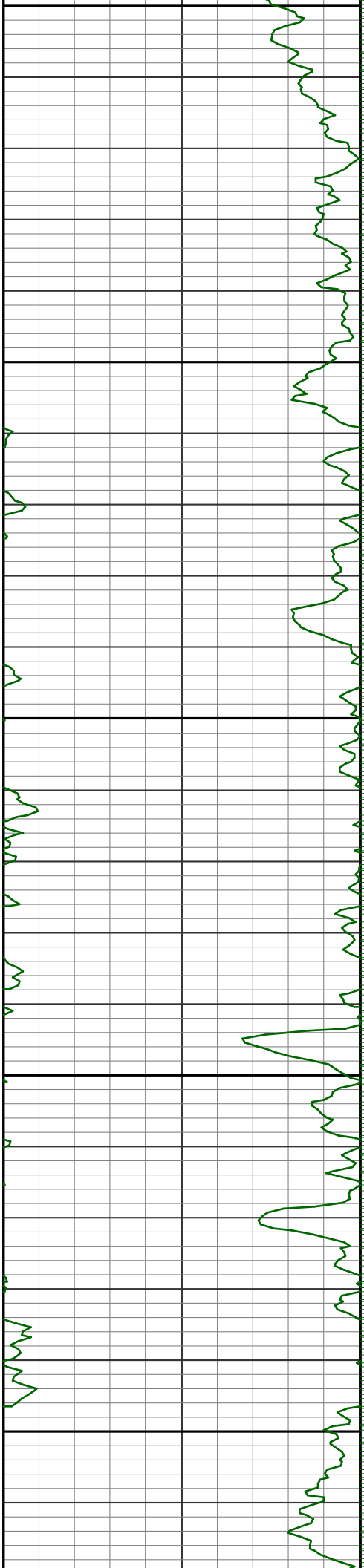
s 89.6 329.6
128 8025

12500

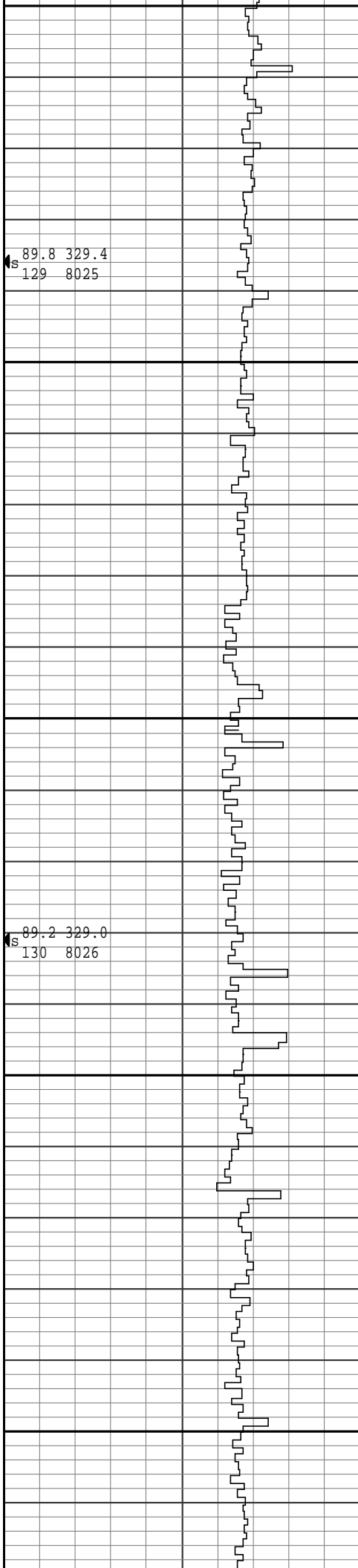


x

x

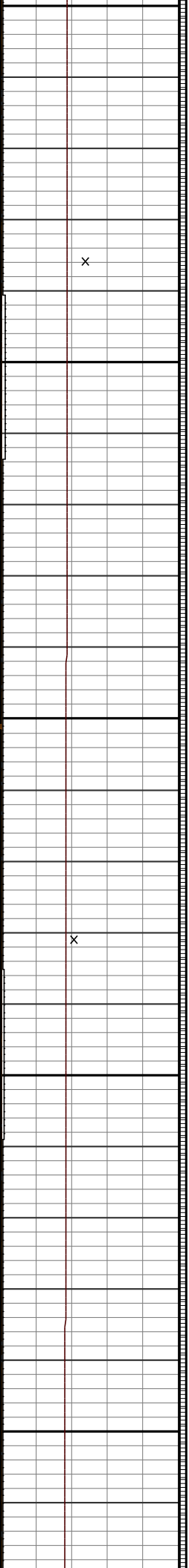
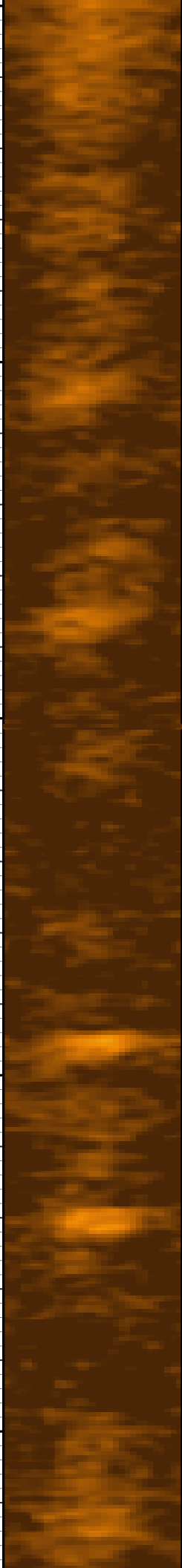


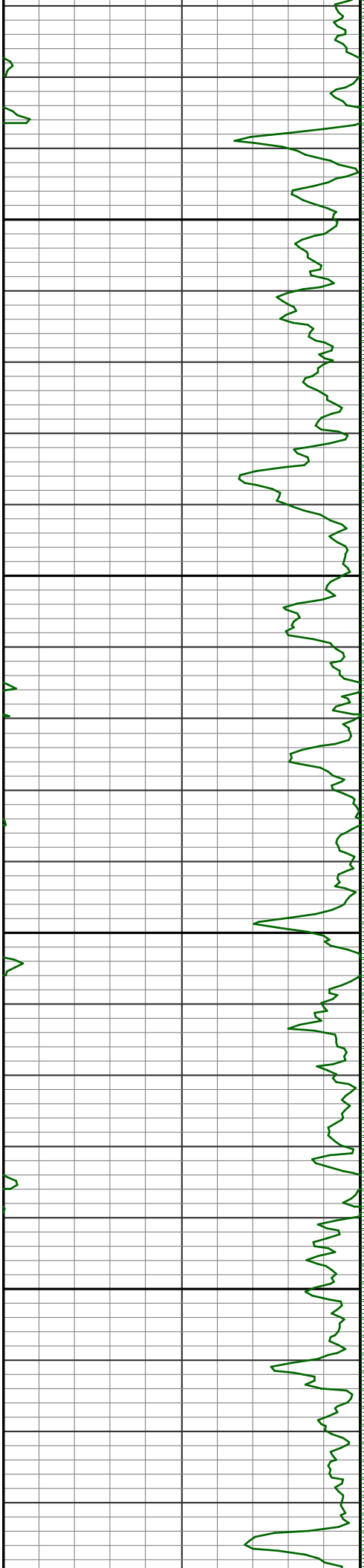
12600
12700



89.8 329.4
129 8025

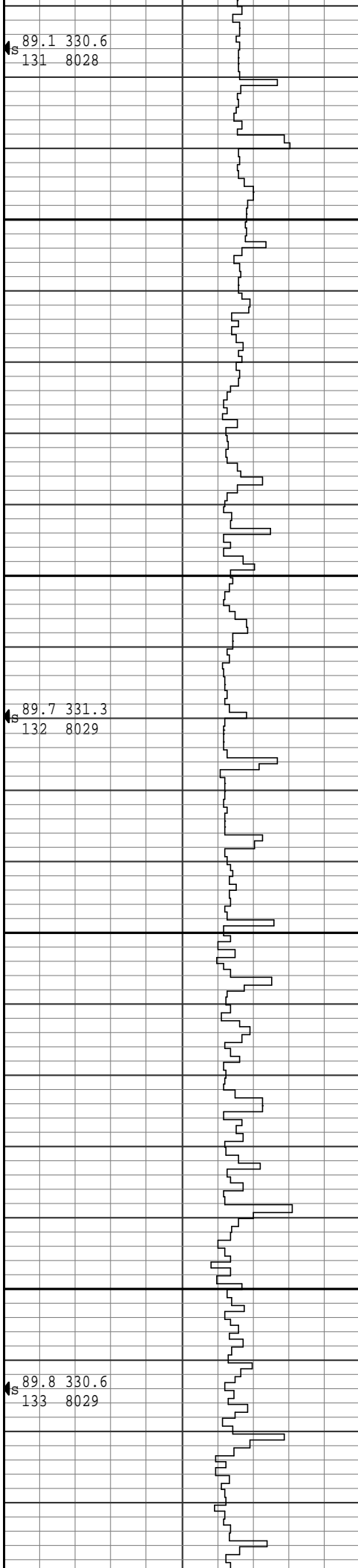
89.2 329.0
130 8026





12800

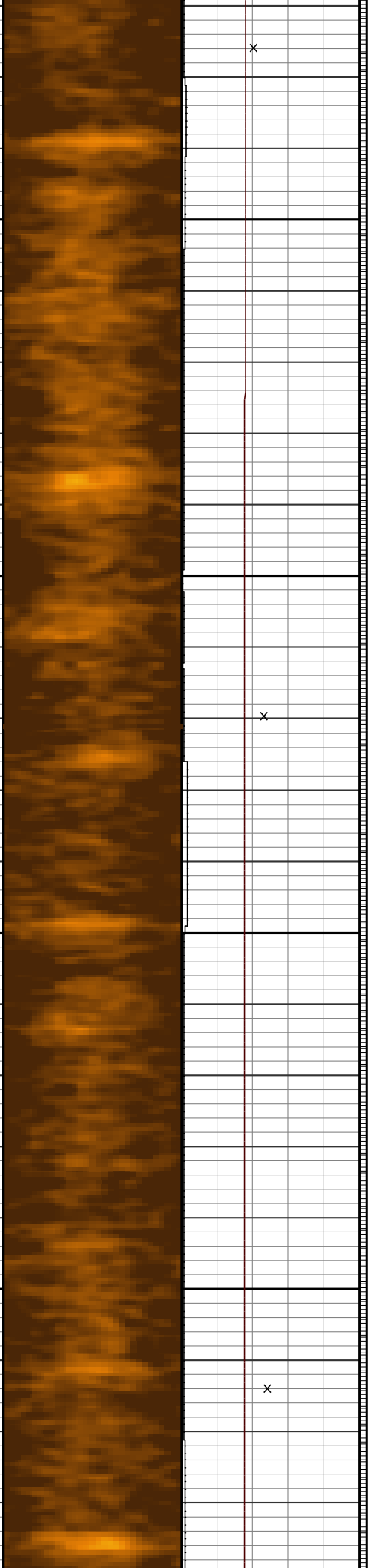
12900



89.1 330.6
131 8028

89.7 331.3
132 8029

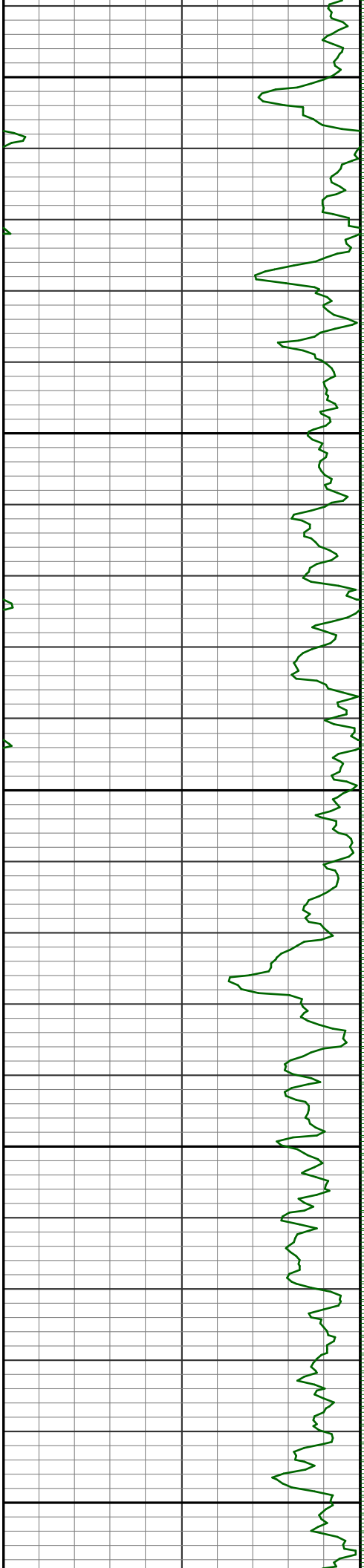
89.8 330.6
133 8029



x

x

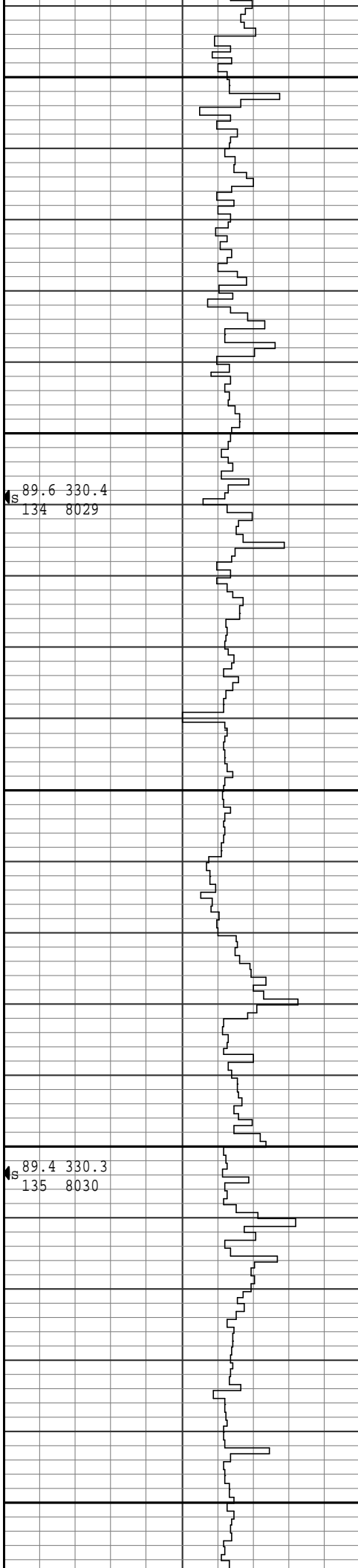
x



13000

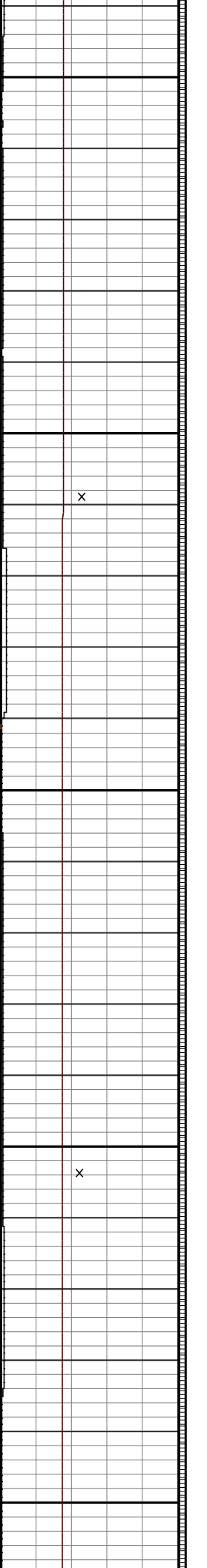
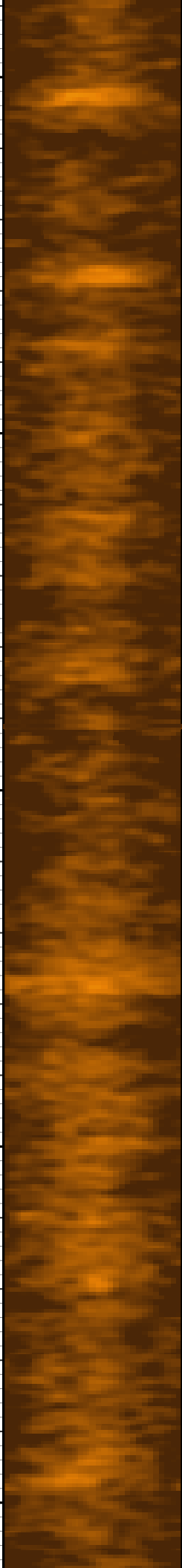
13100

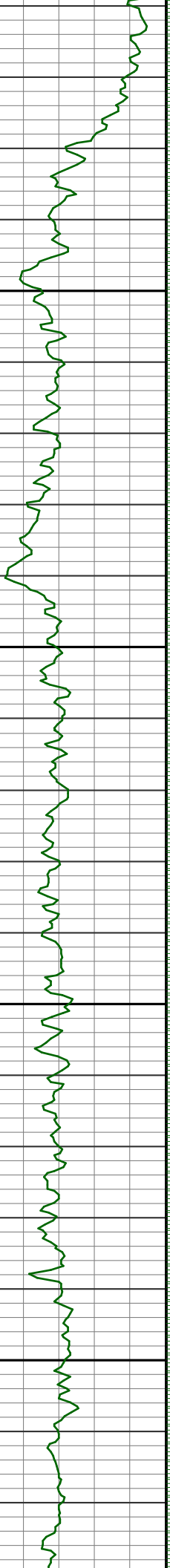
13200



89.6 330.4
134 8029

89.4 330.3
135 8030



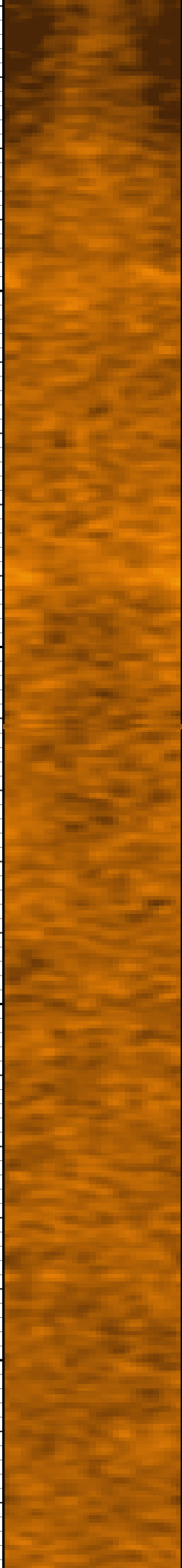
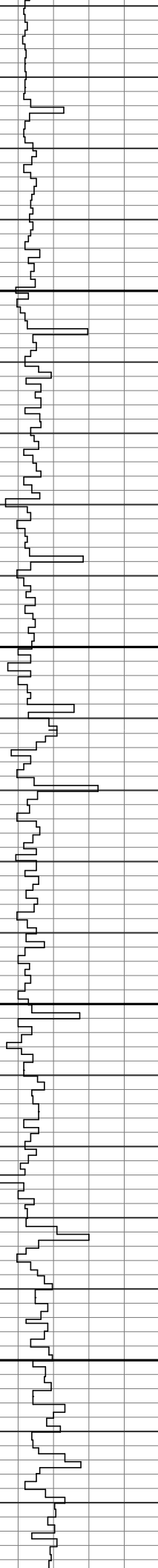


13300

13400

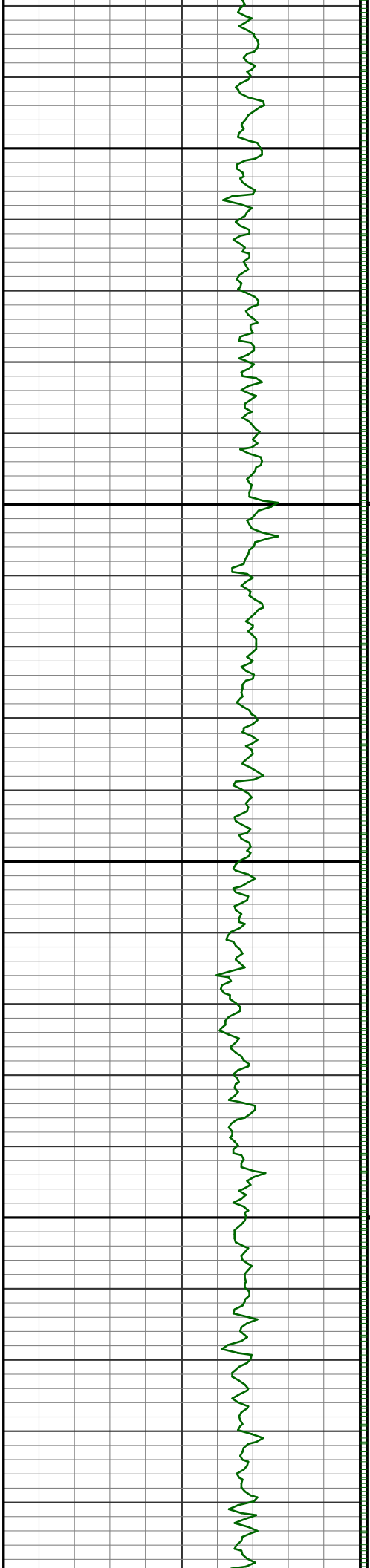
89.8 328.6
136 8031

89.7 329.7
137 8031



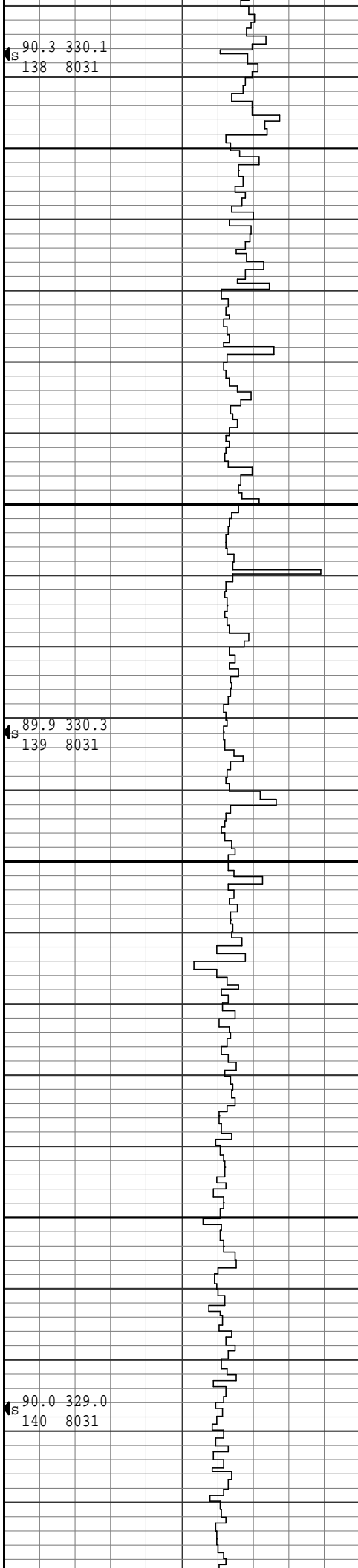
x

x



13500

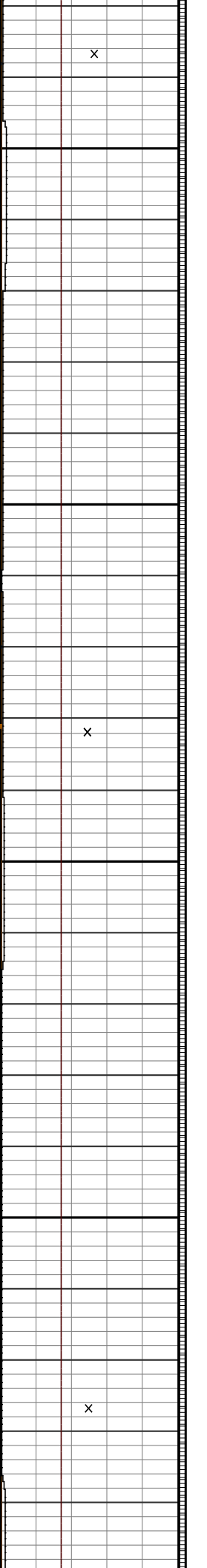
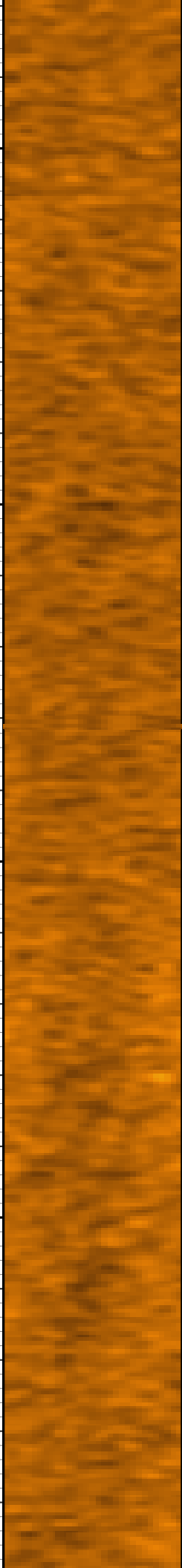
13600



90.3 330.1
138 8031

89.9 330.3
139 8031

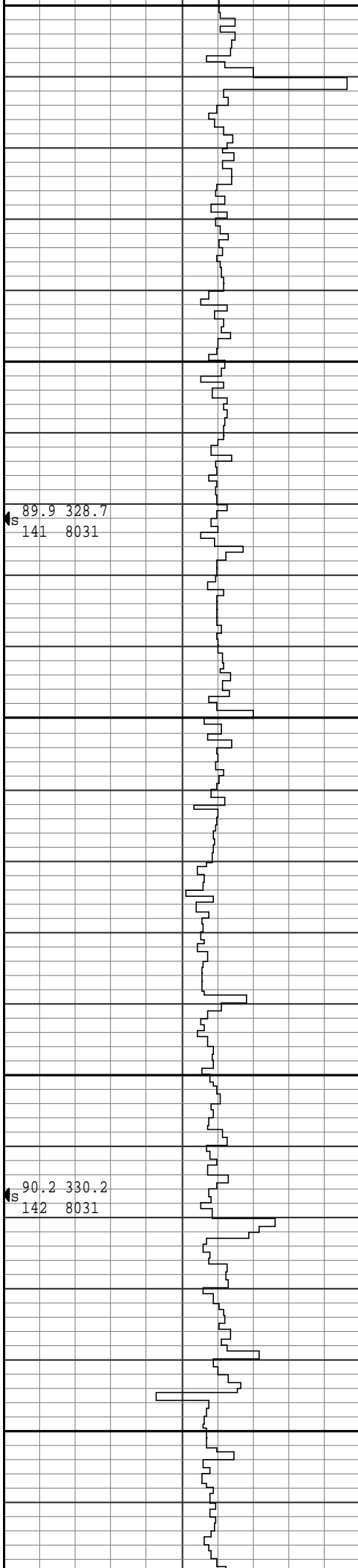
90.0 329.0
140 8031





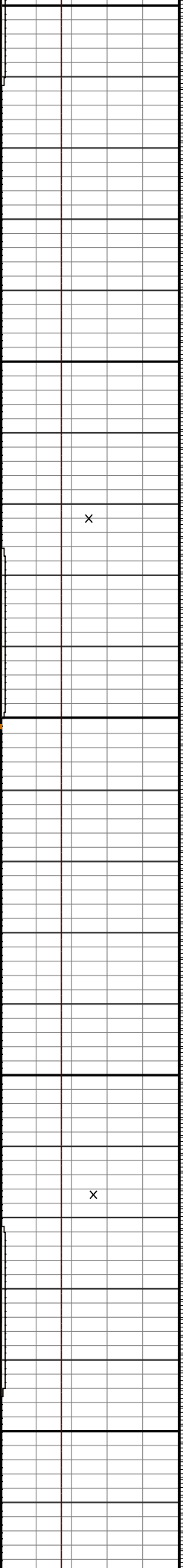
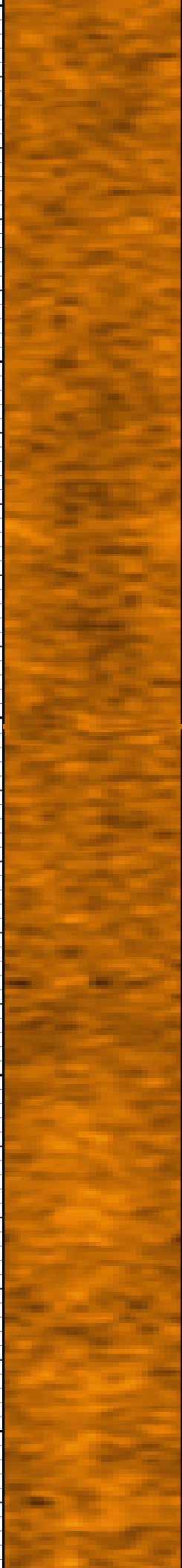
13700

13800



89.9 328.7
141 8031

90.2 330.2
142 8031



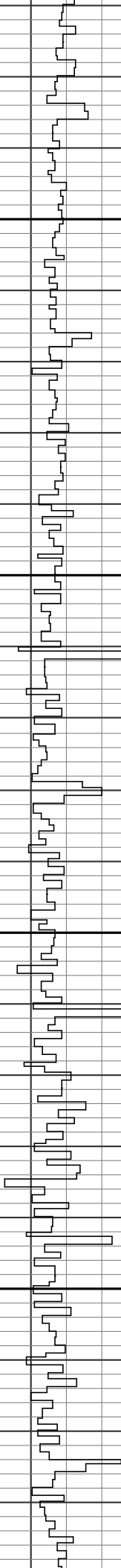
x

x



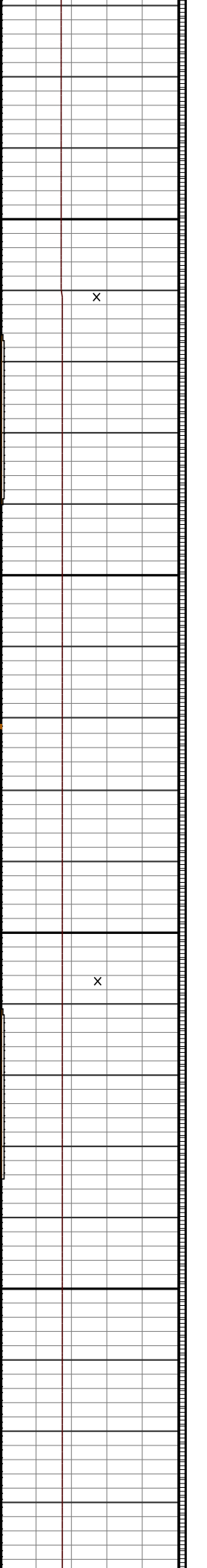
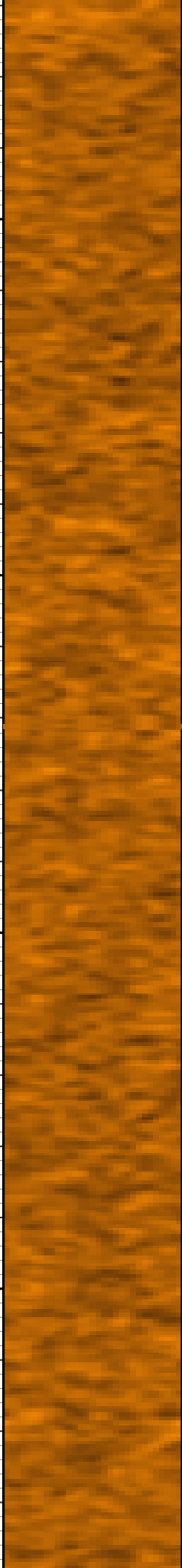
13900

S 90.4 330.8
143 8031



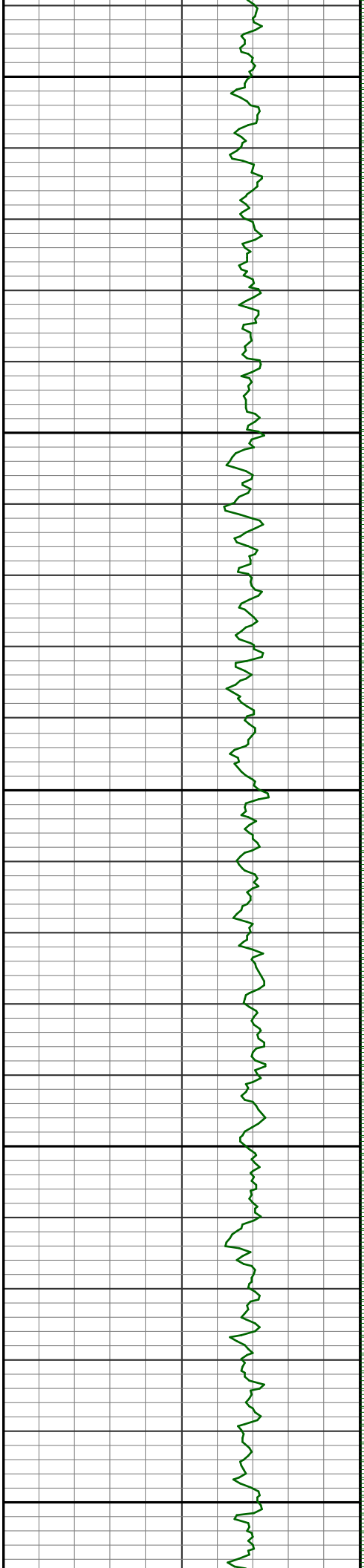
14000

S 90.4 329.2
144 8030



x

x



14100

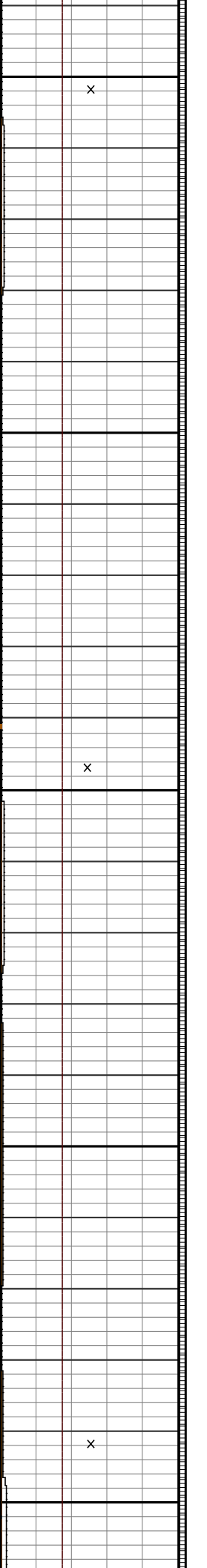
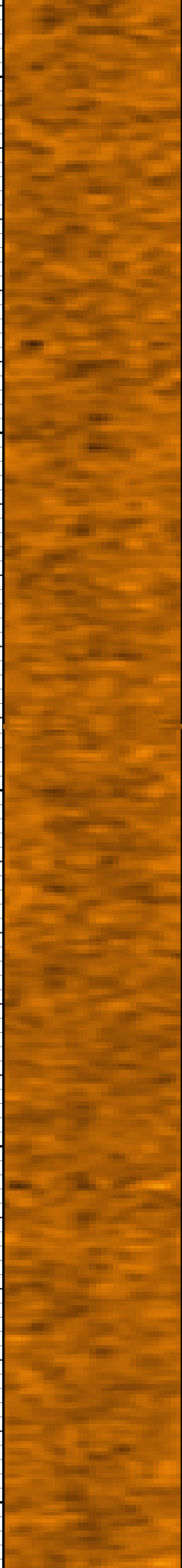
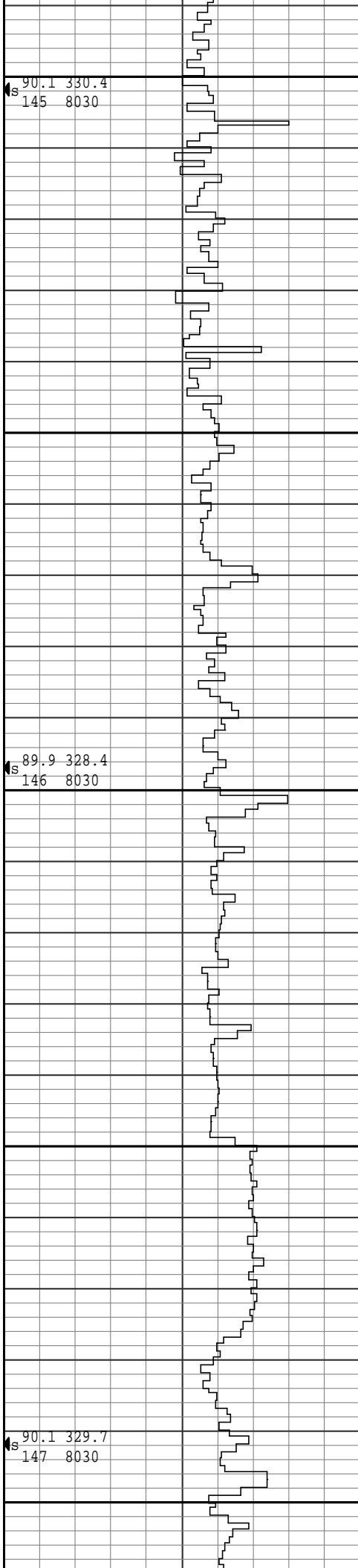
90.1 330.4
s 145 8030

89.9 328.4
s 146 8030

14200

90.1 329.7
s 147 8030

14300



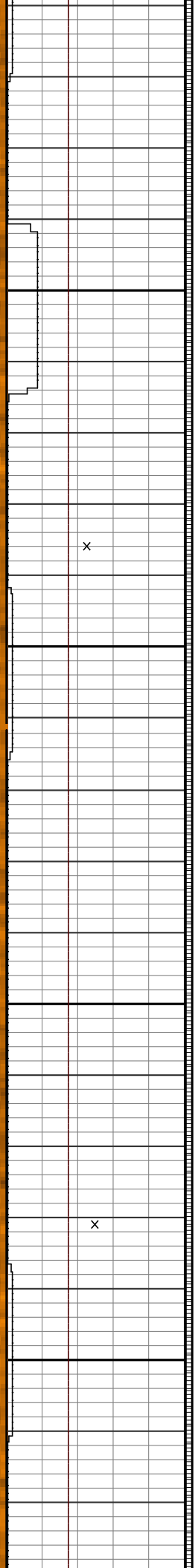
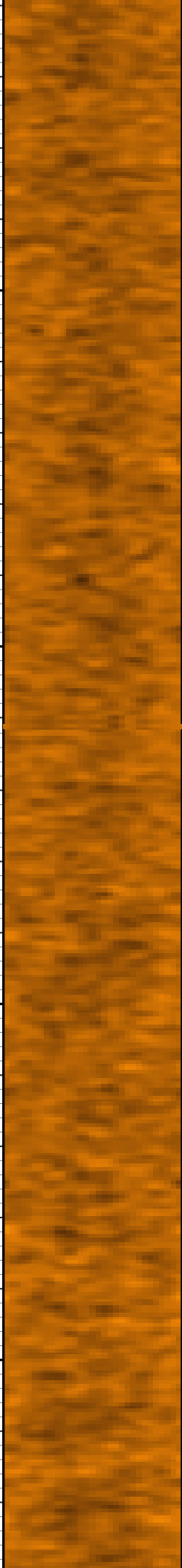
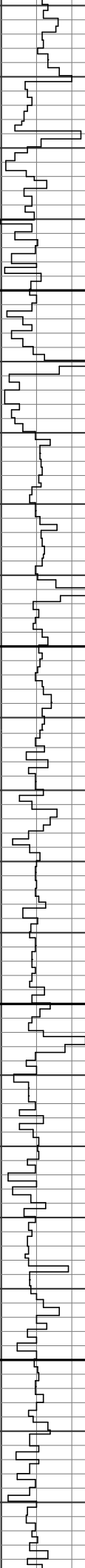


14400

89.6 327.3
148 8030

14500

90.0 329.1
149 8030



x

x

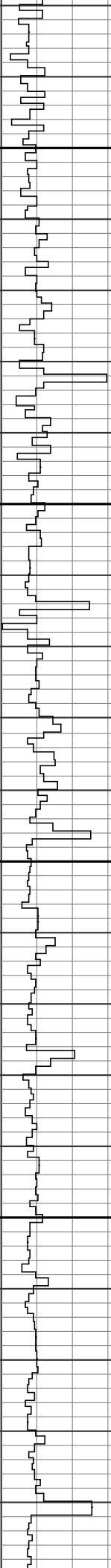


14600

14700

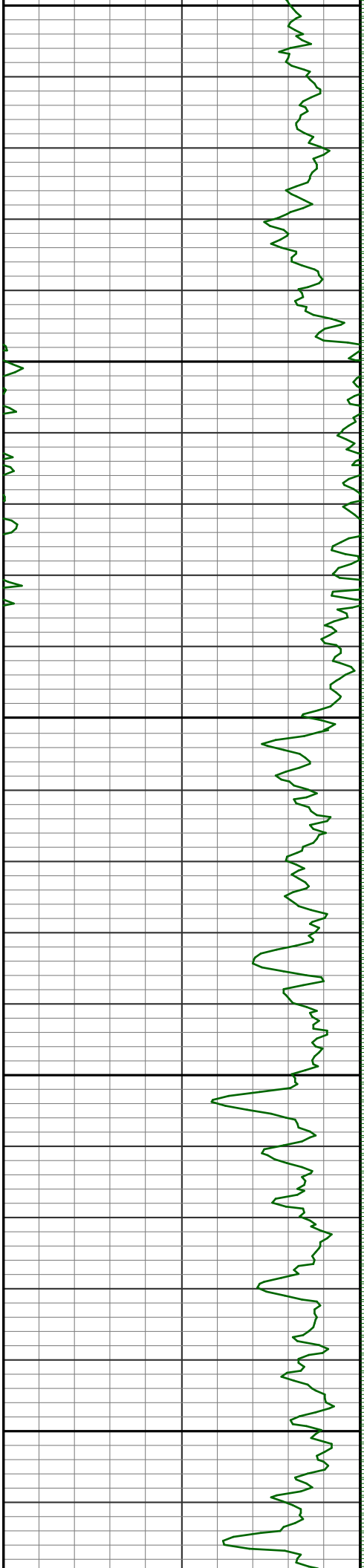
90.1 329.4
150 8030

90.7 329.3
151 8030



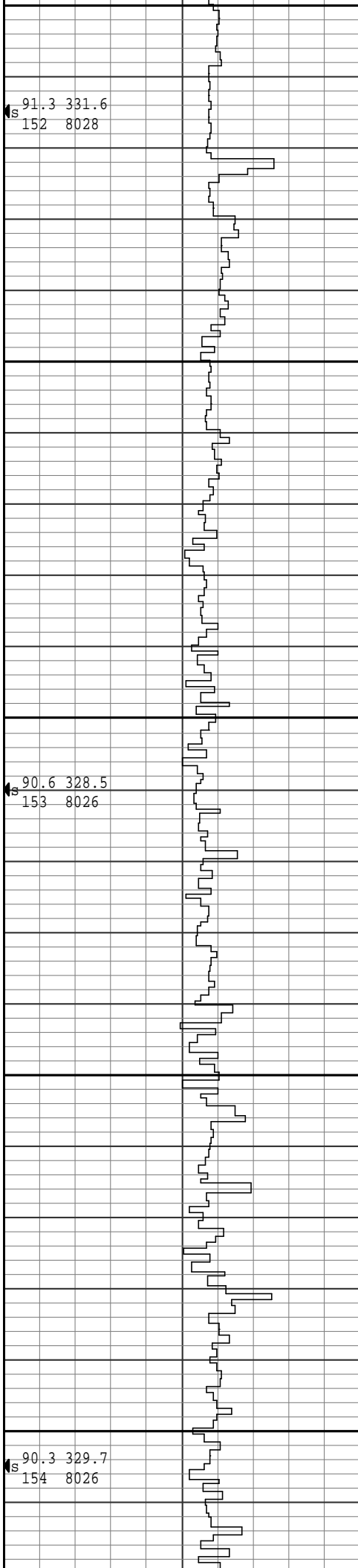
x

x



14800

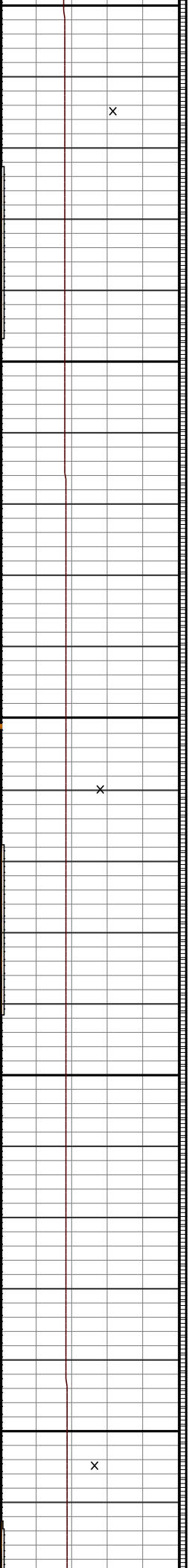
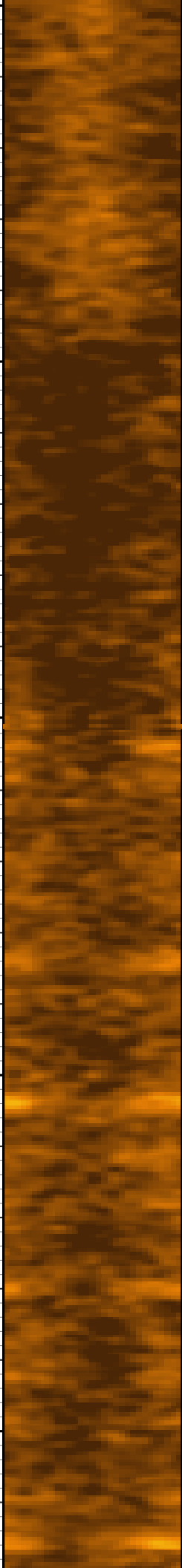
14900



S 91.3 331.6
152 8028

S 90.6 328.5
153 8026

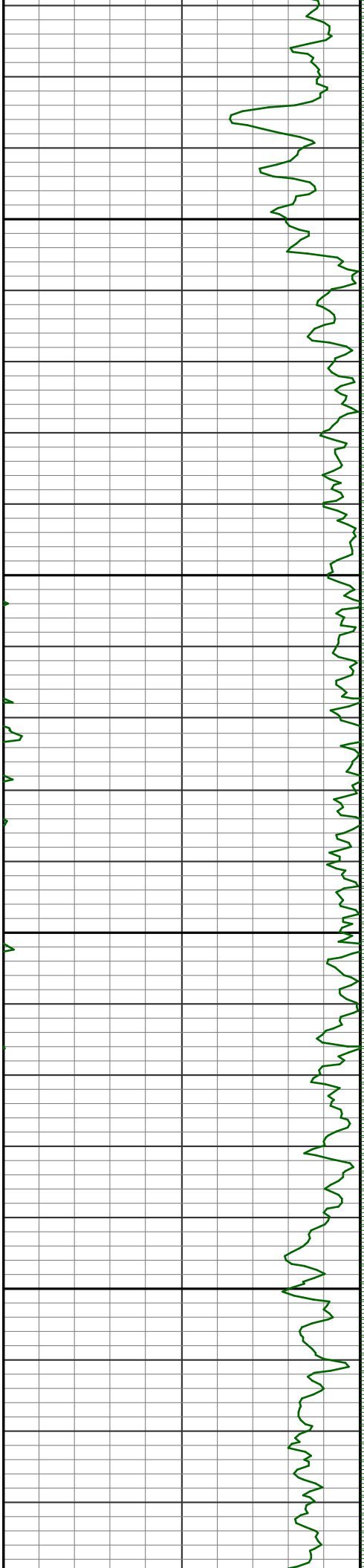
S 90.3 329.7
154 8026



x

x

x

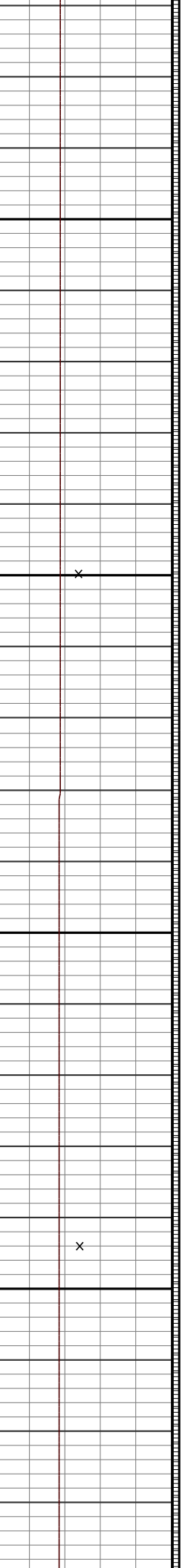
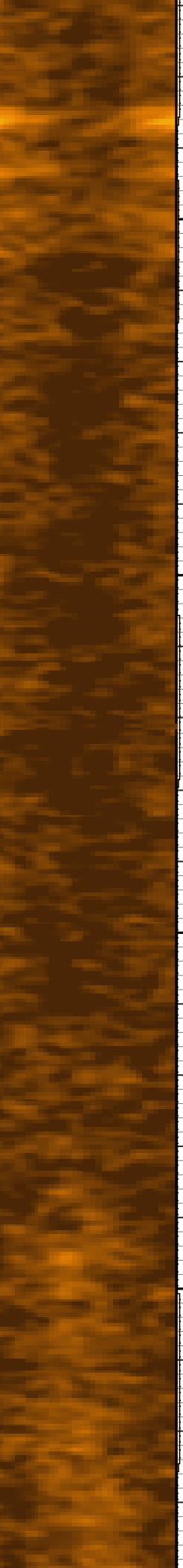
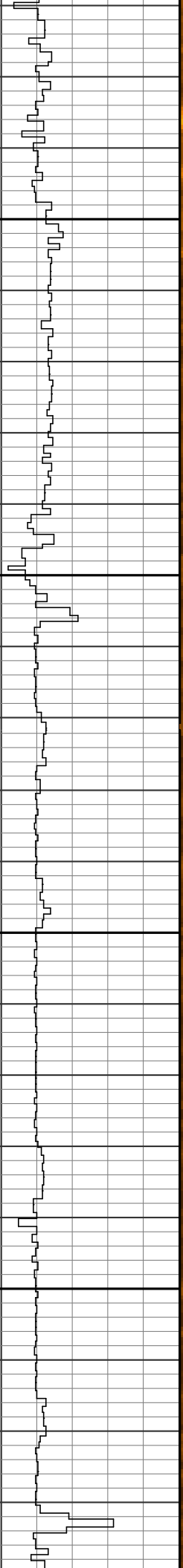


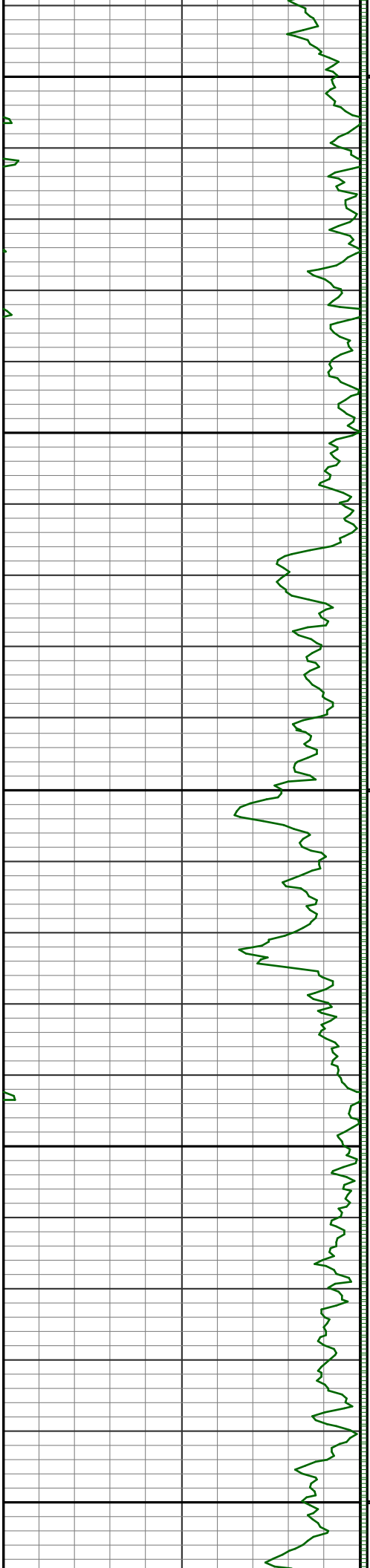
15000

15100

89.8 329.2
155 8026

89.8 331.1
156 8026





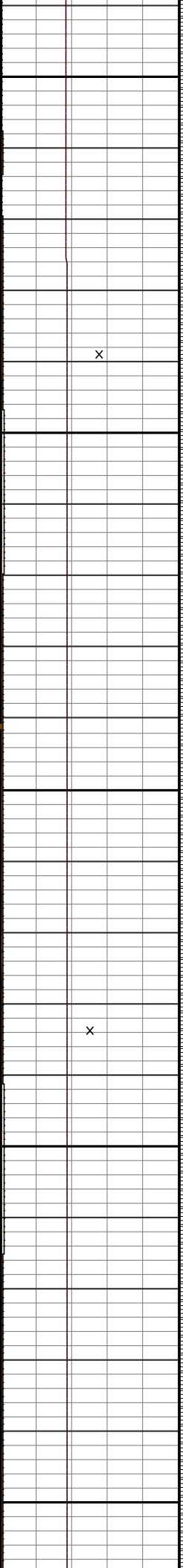
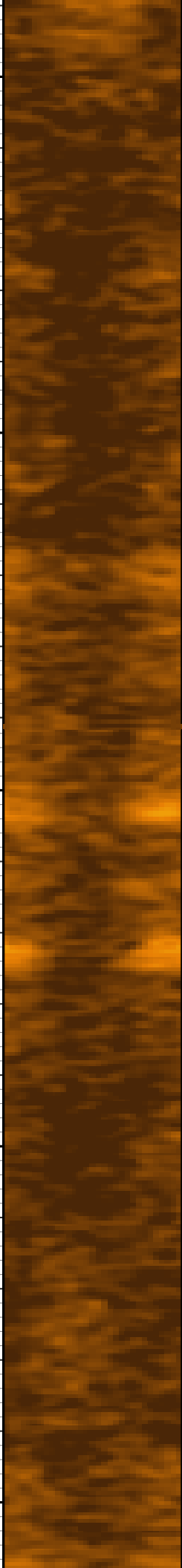
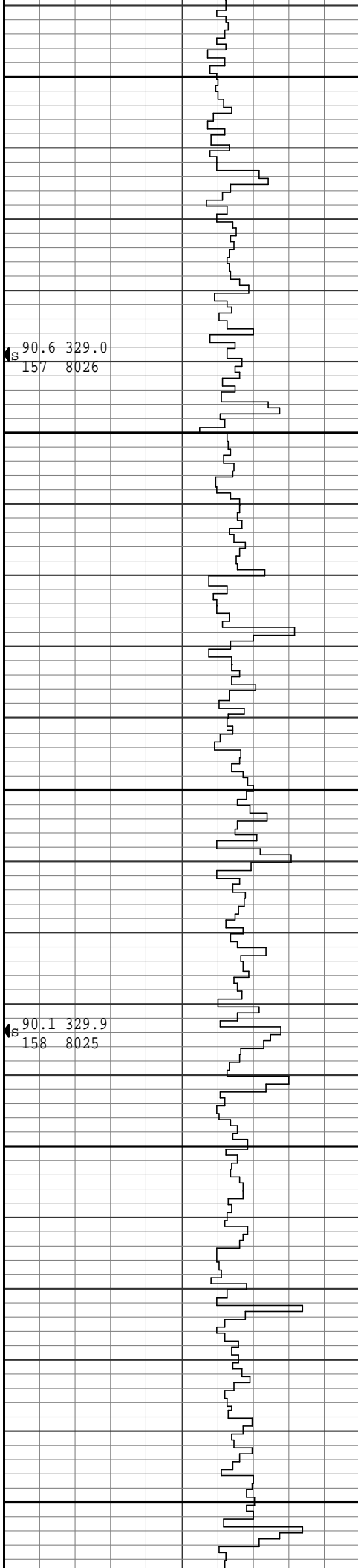
15200

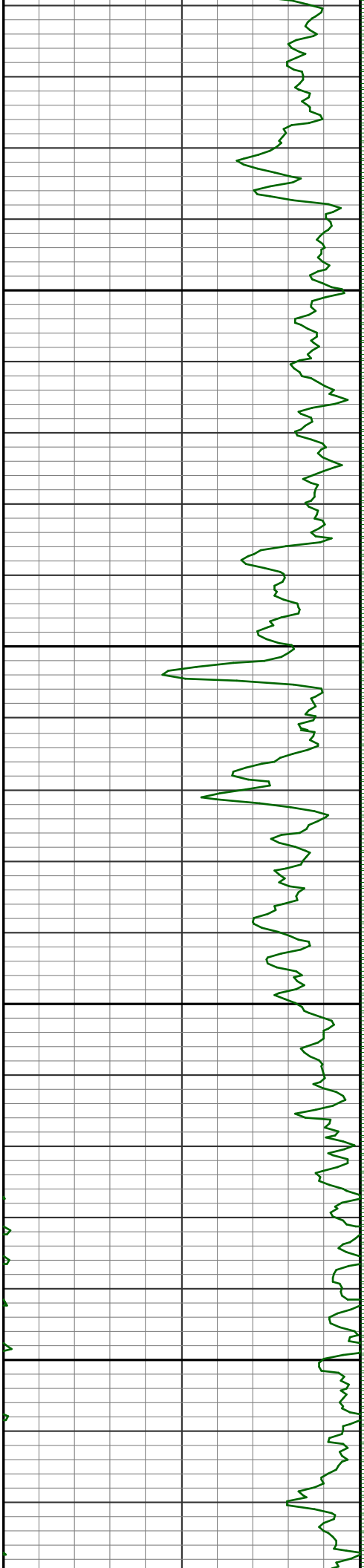
15300

15400

90.6 329.0
157 8026

90.1 329.9
158 8025





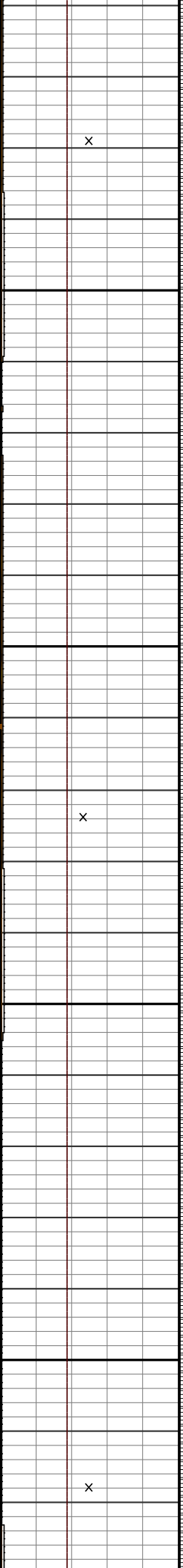
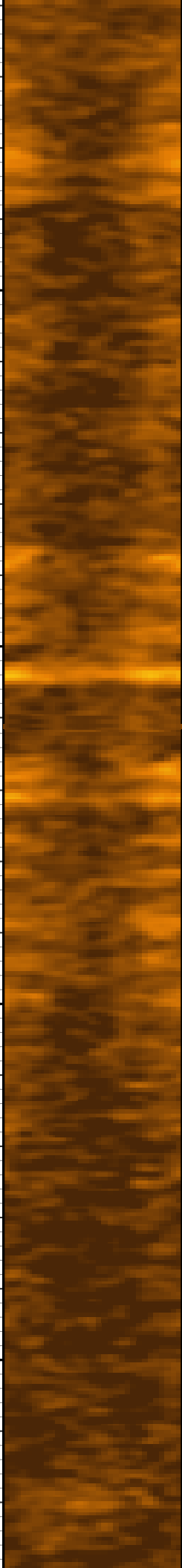
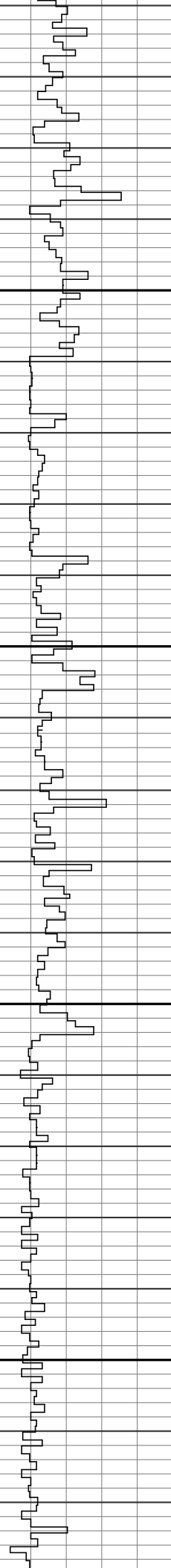
15500

15600

s 90.0 330.4
159 8025

s 89.7 328.8
160 8025

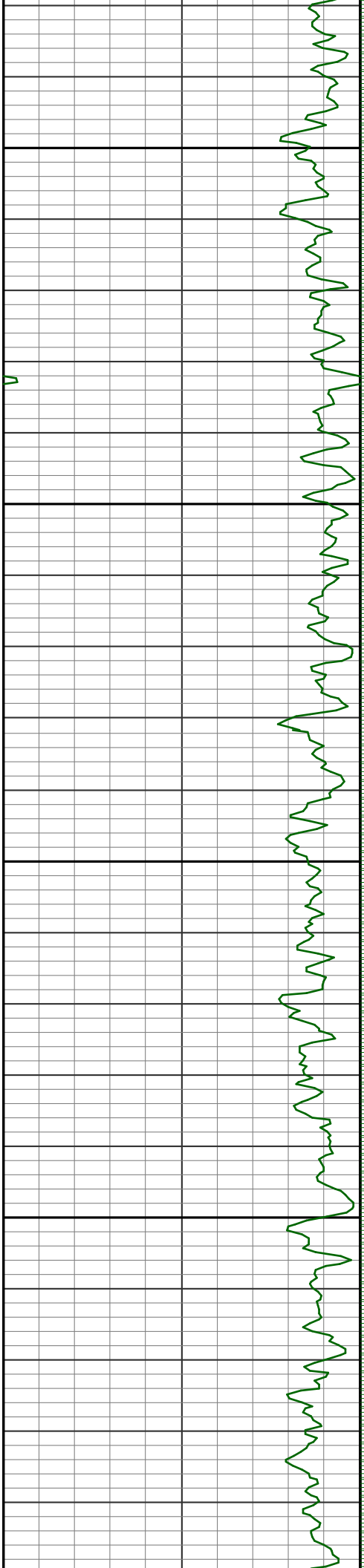
s 89.9 330.5
161 8026



x

x

x

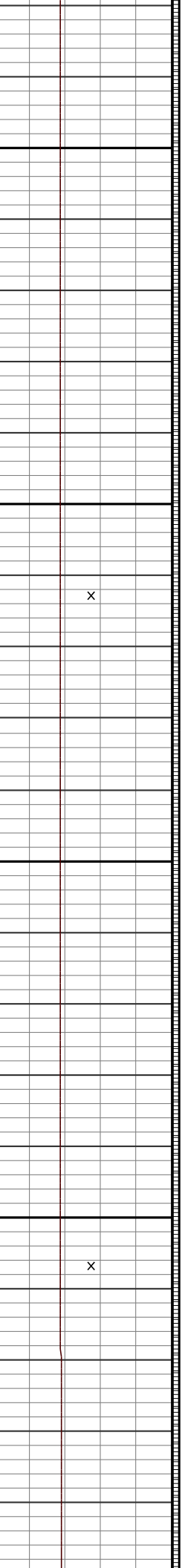
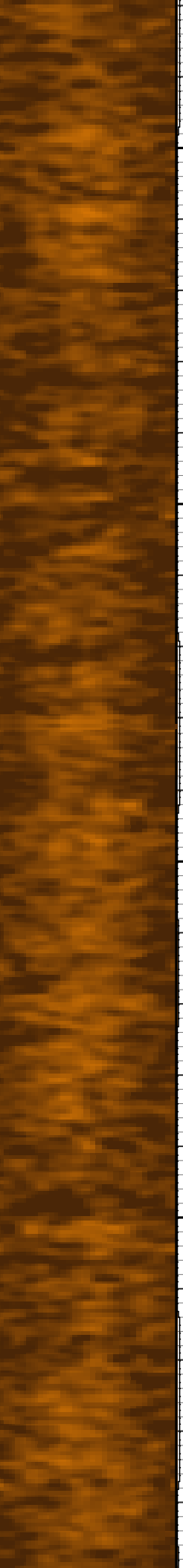
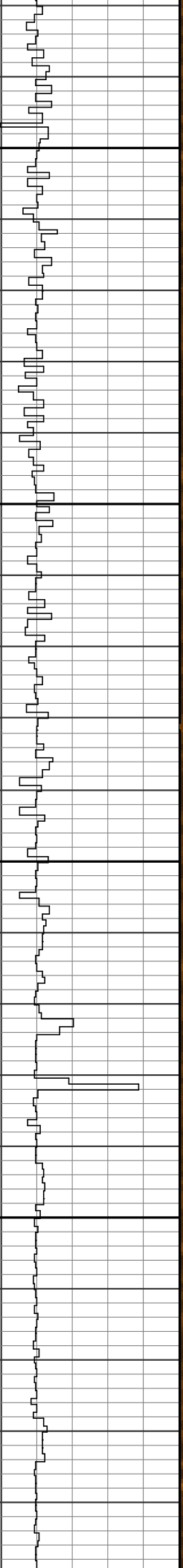


15700

90.4 330.7
162 8025

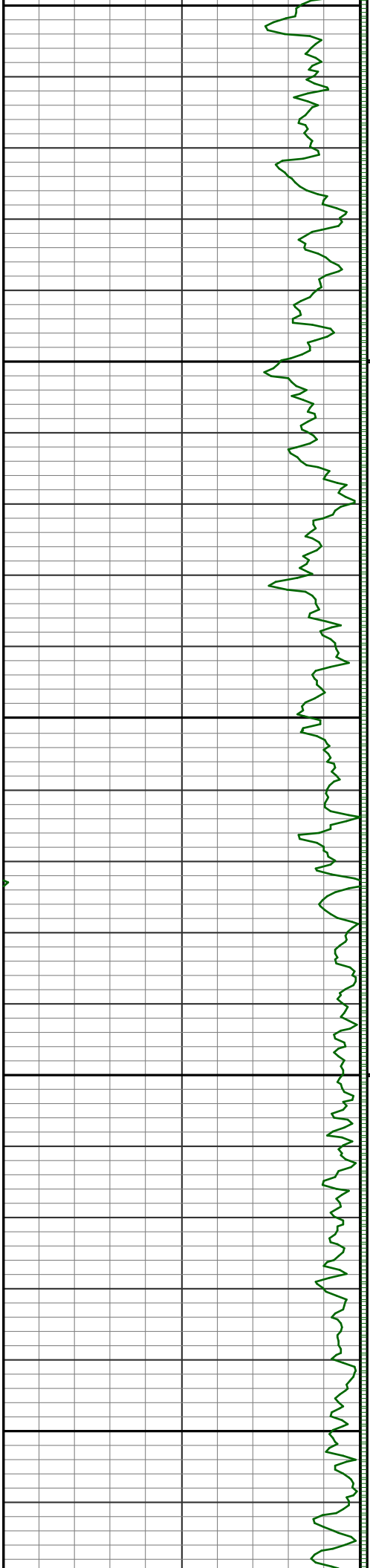
15800

90.5 331.6
163 8024



x

x

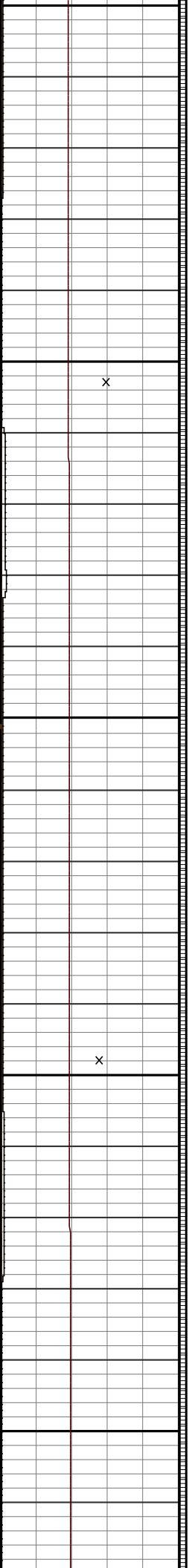
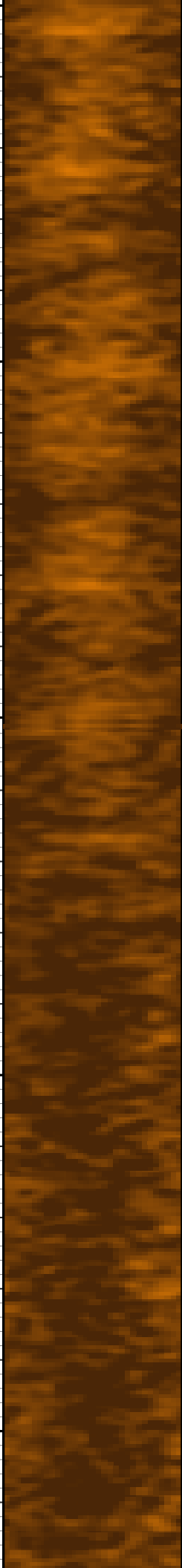
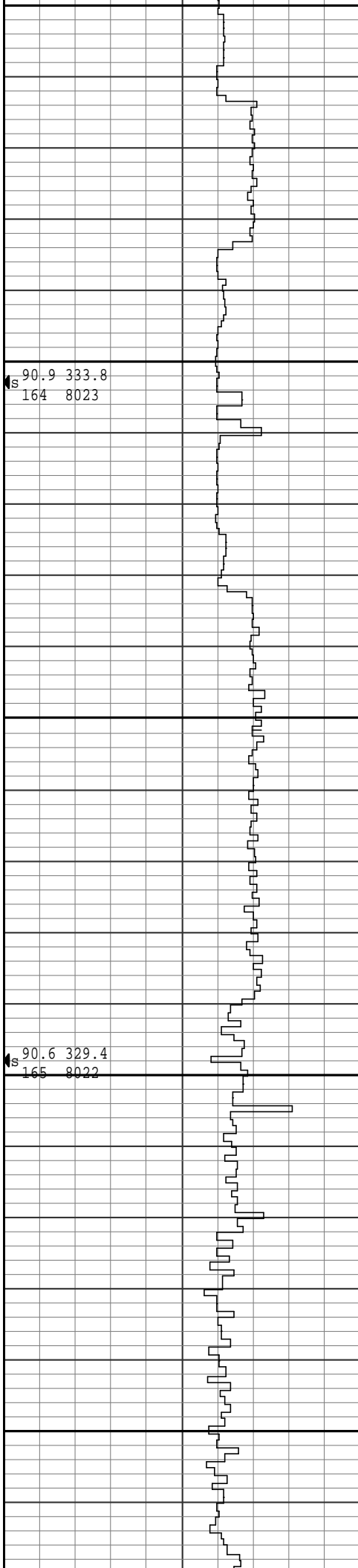


15900

90.9 333.8
164 8023

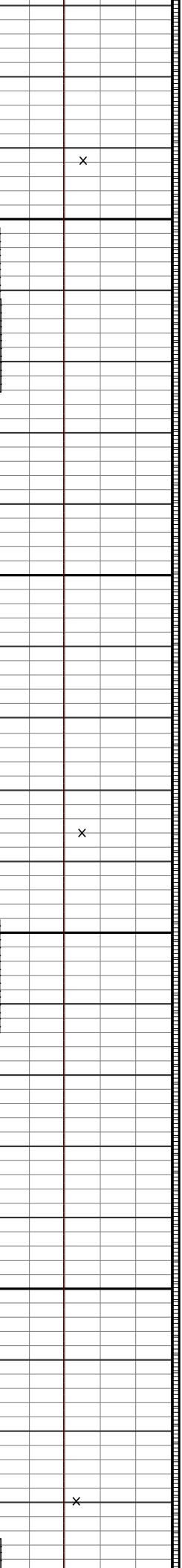
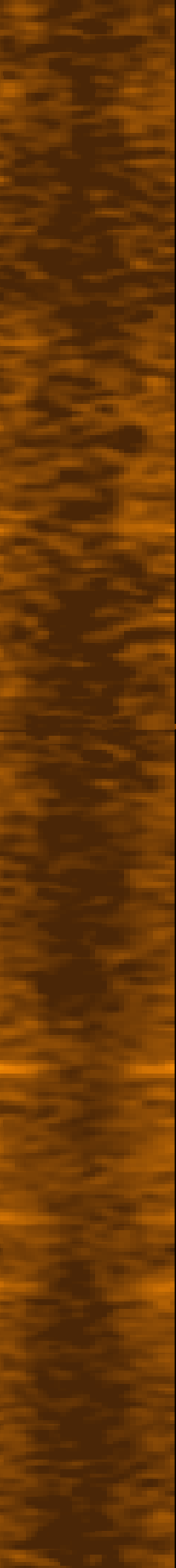
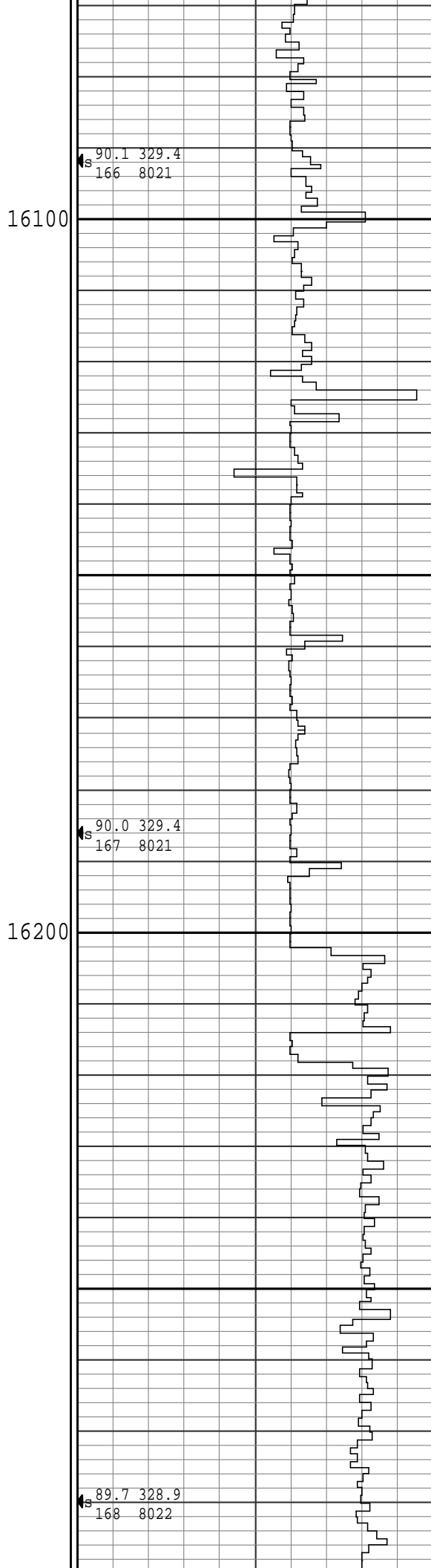
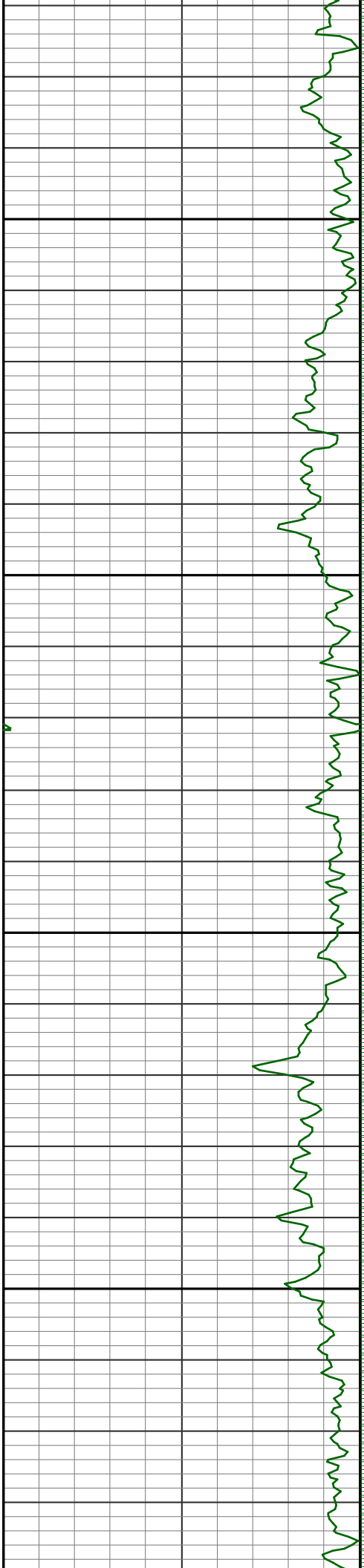
16000

90.6 329.4
165 8022



x

x



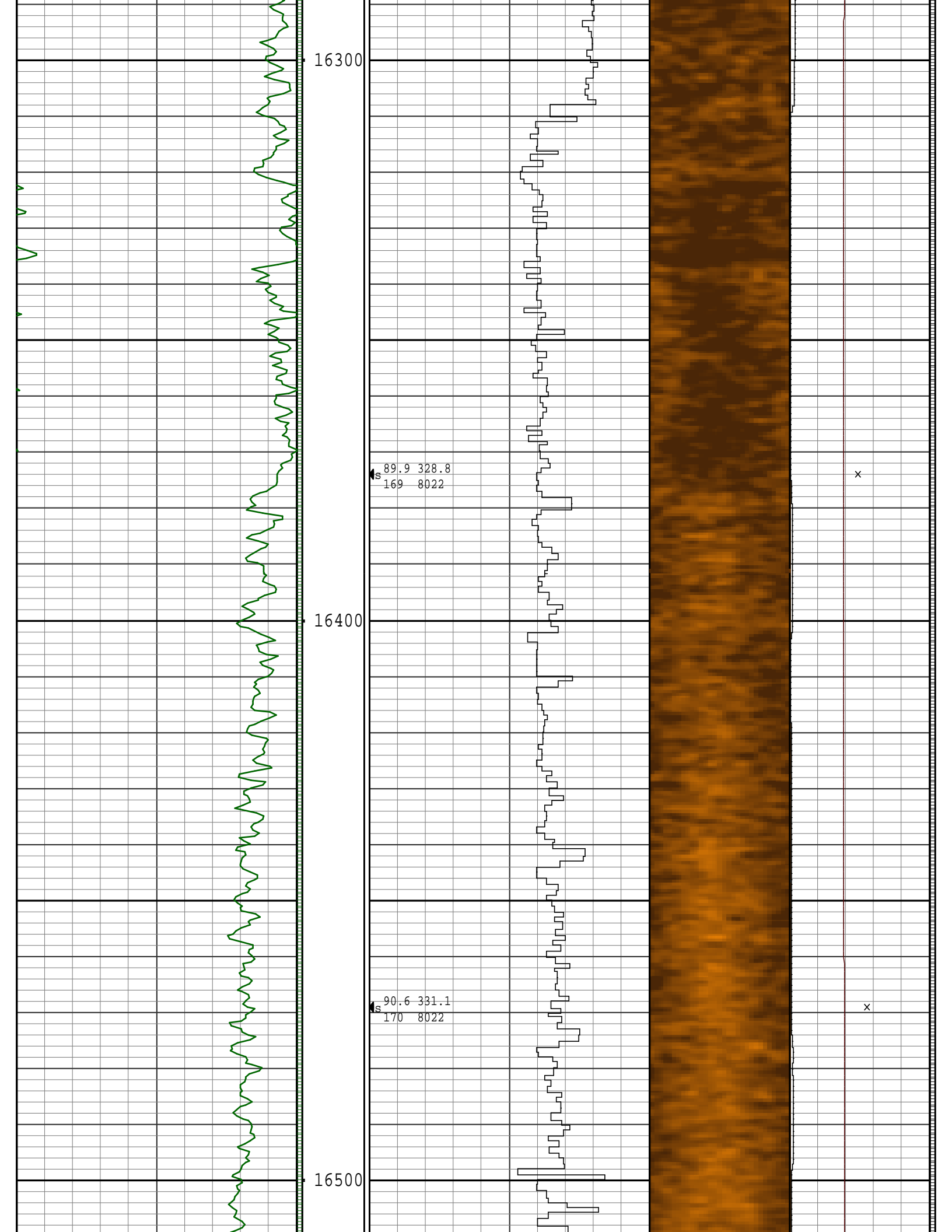
90.1 329.4
166 8021

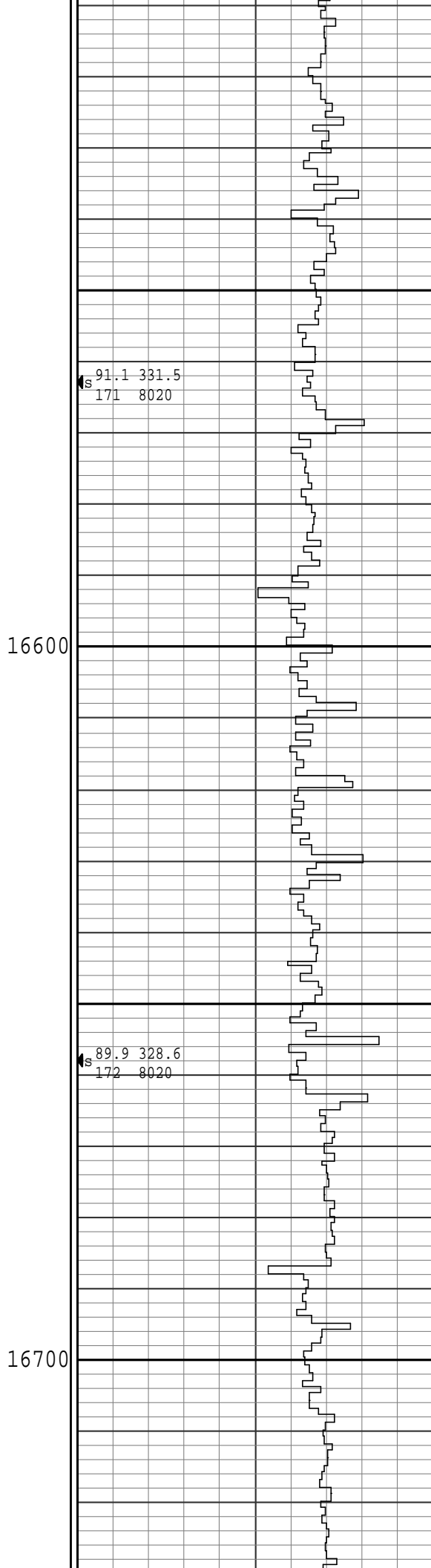
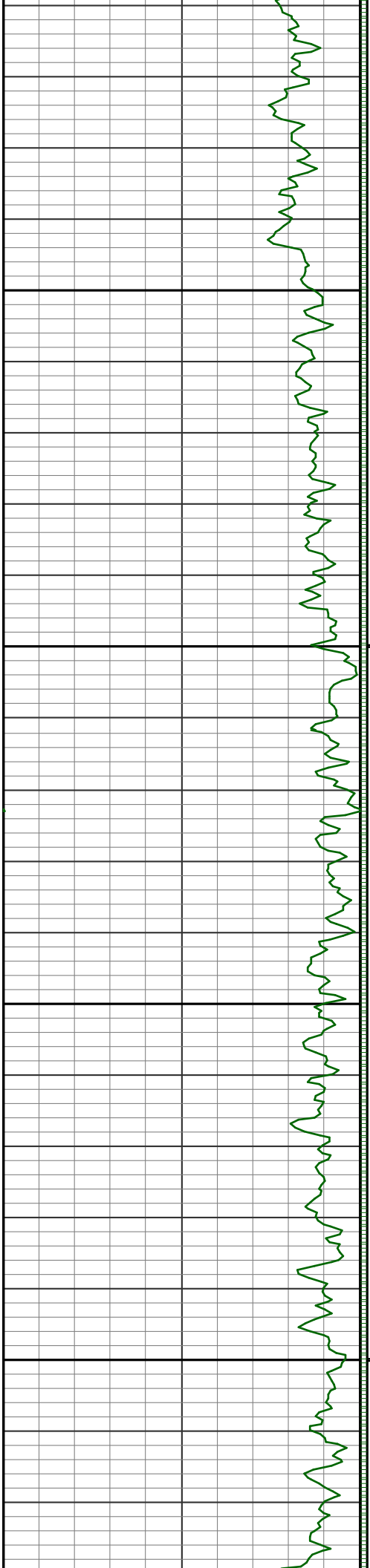
90.0 329.4
167 8021

89.7 328.9
168 8022

16100

16200



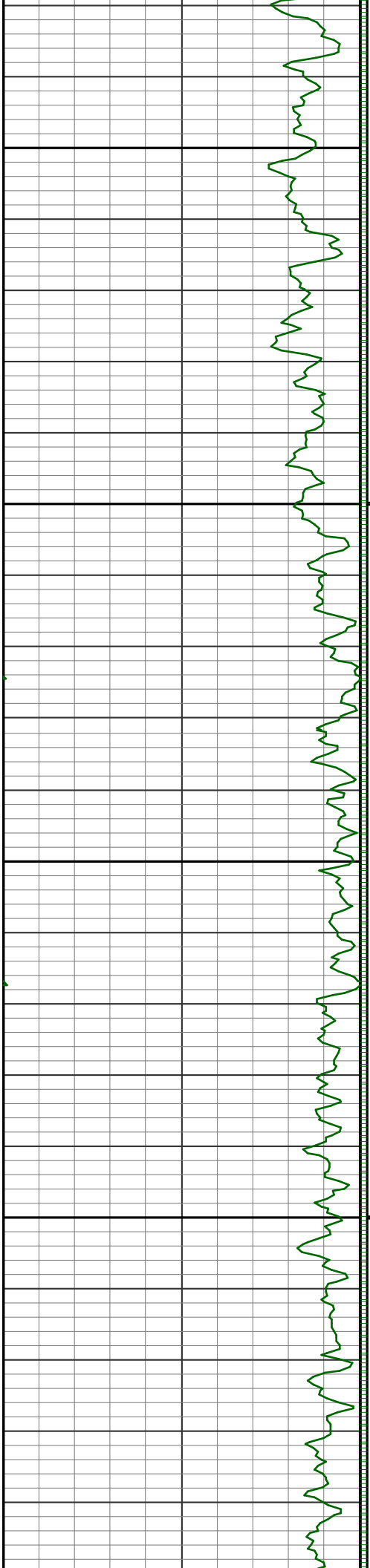


s 91.1 331.5
171 8020

x

s 89.9 328.6
172 8020

x



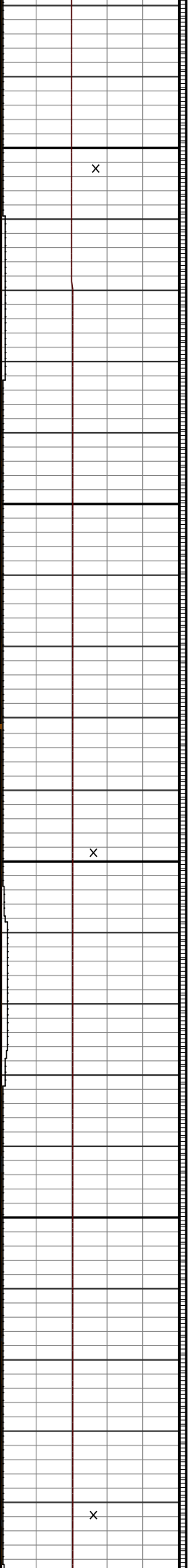
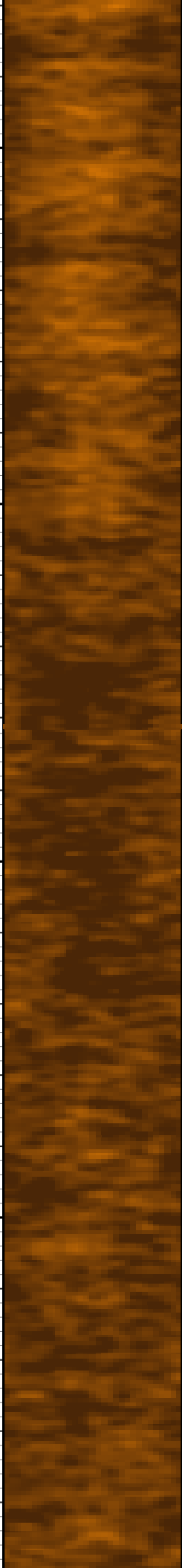
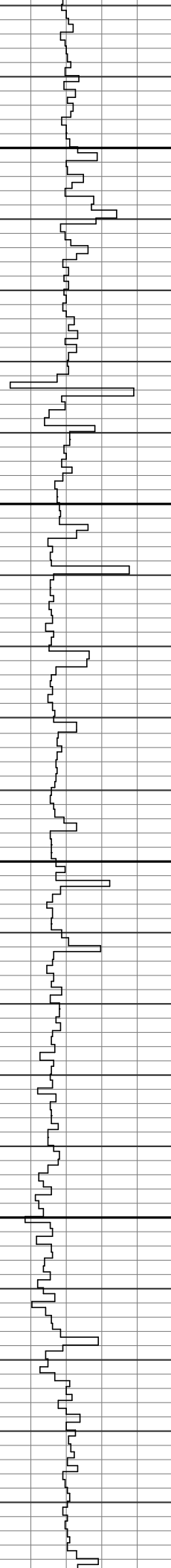
16800

16900

S 90.3 331.1
173 8019

S 90.2 328.7
174 8019

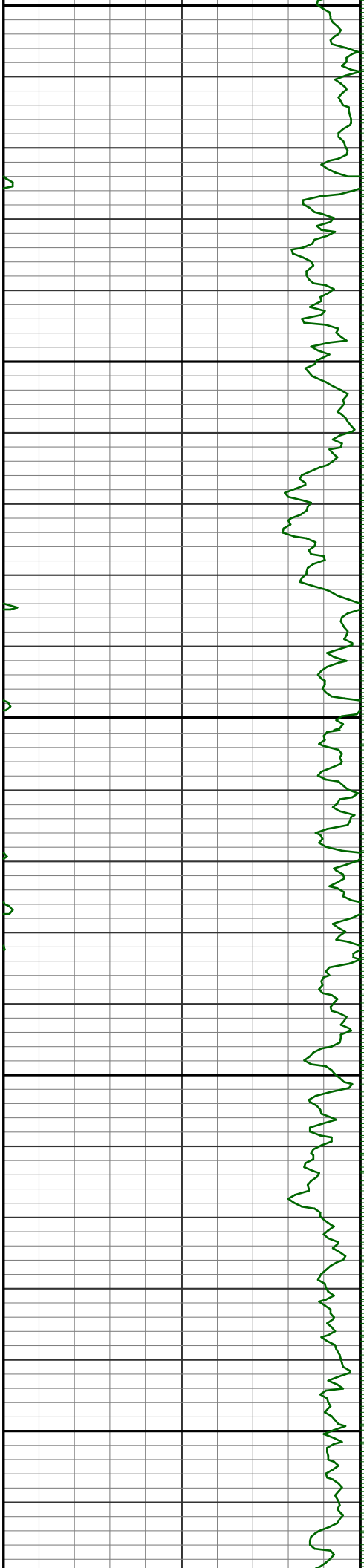
S 90.2 329.7
175 8019



x

x

x

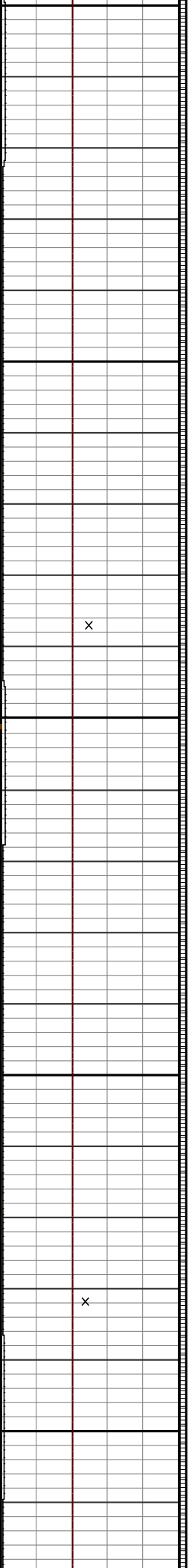
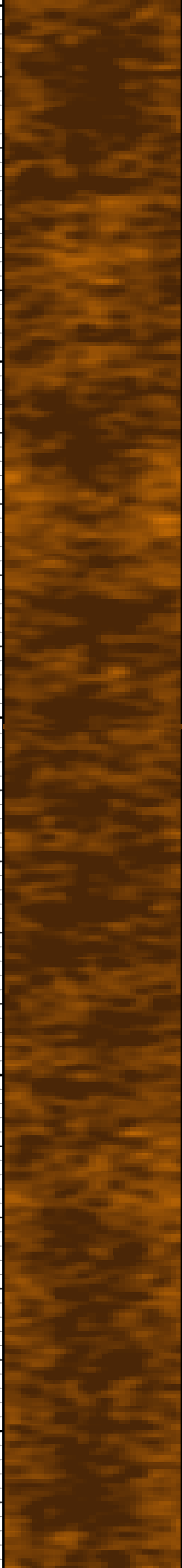
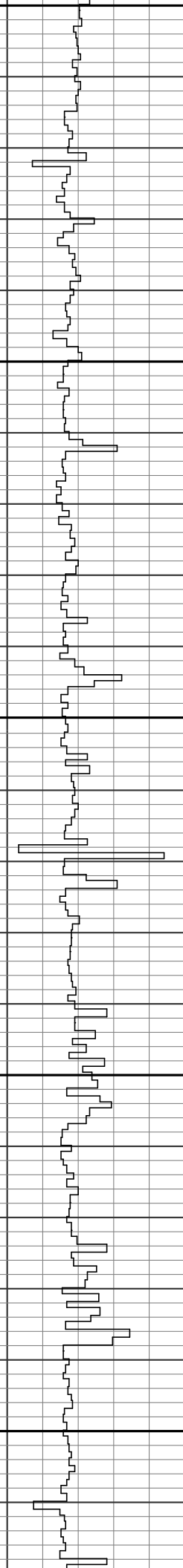


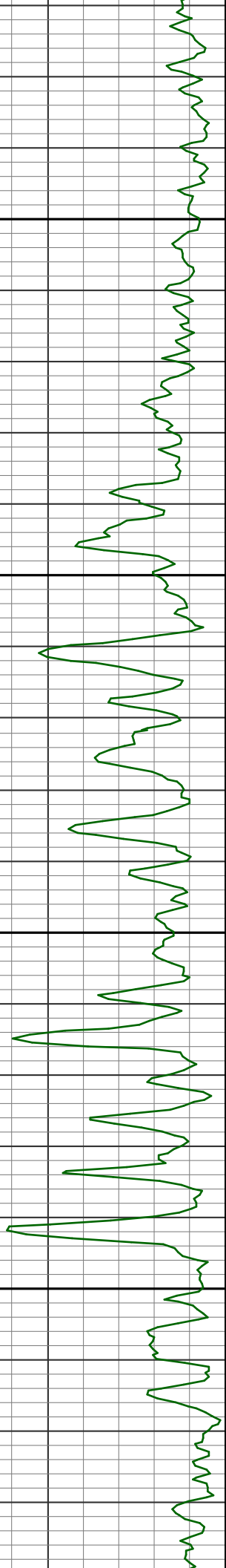
17000

17100

90.0 329.7
176 8018

89.8 328.7
177 8019



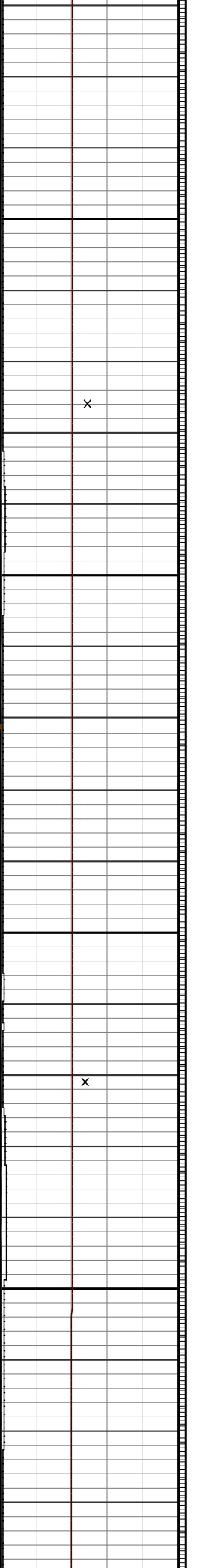
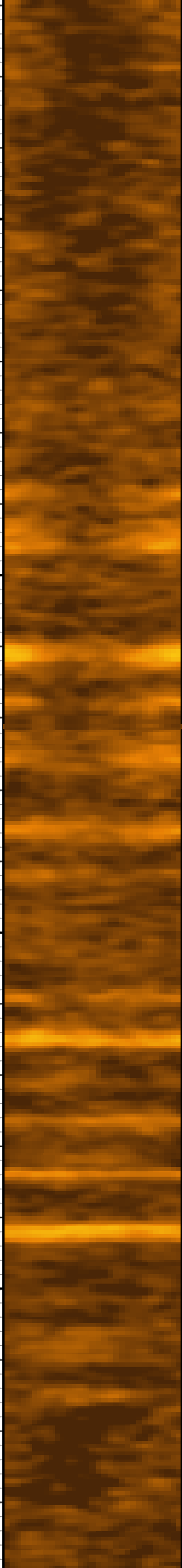
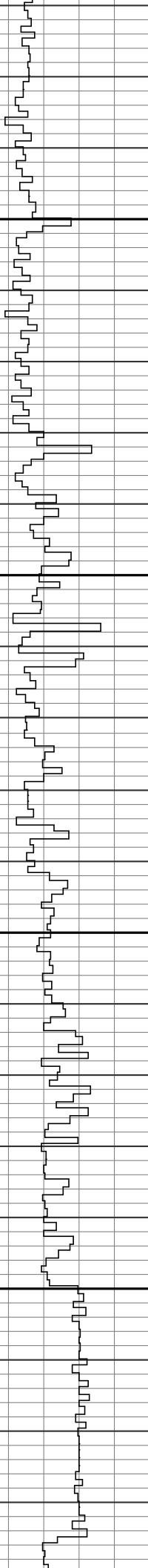


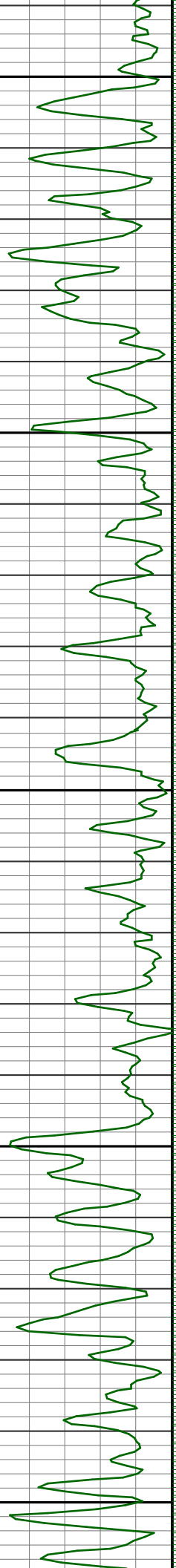
17200

17300

s 89.9 329.1
178 8019

s 89.8 327.5
179 8019





17400

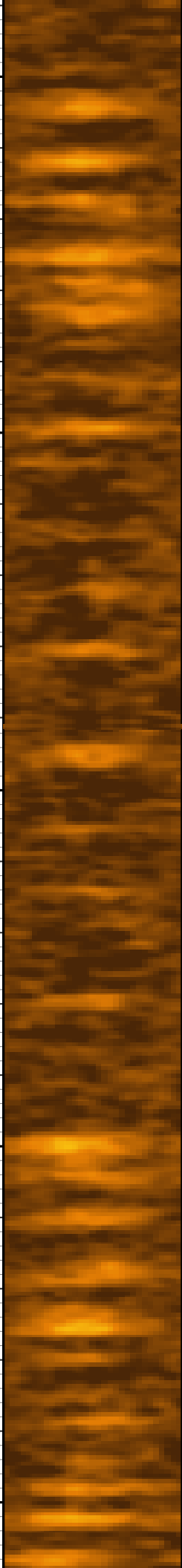
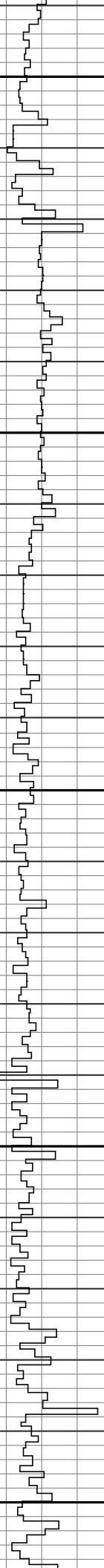
89.2 329.0
180 8020

17500

89.3 328.3
181 8021

17600

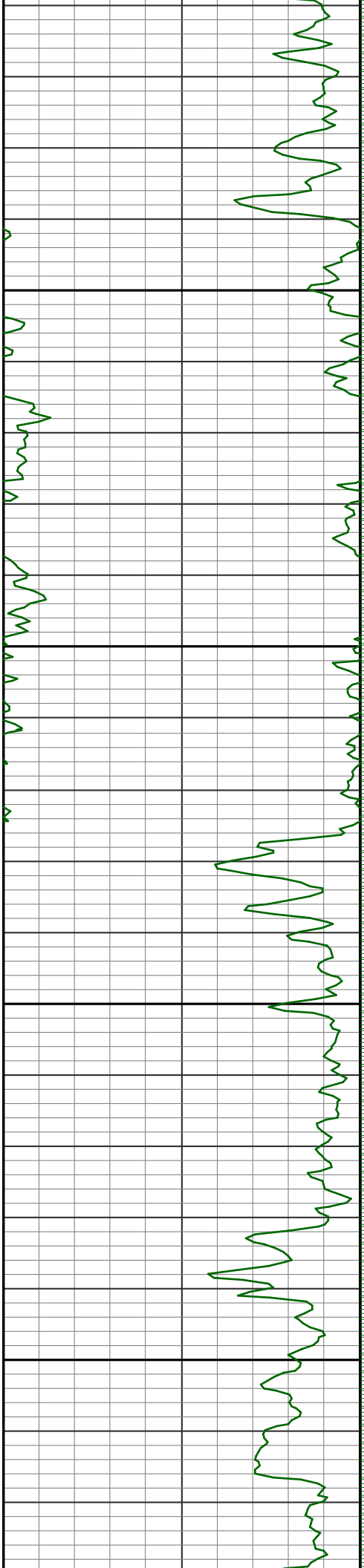
89.5 329.3
182 8022



x

x

x

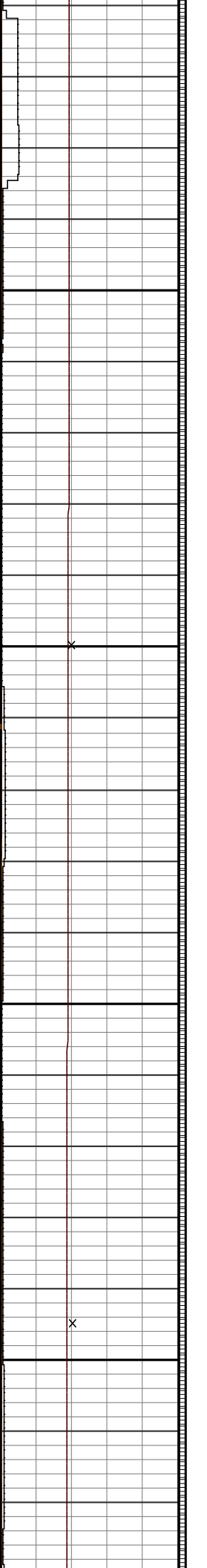
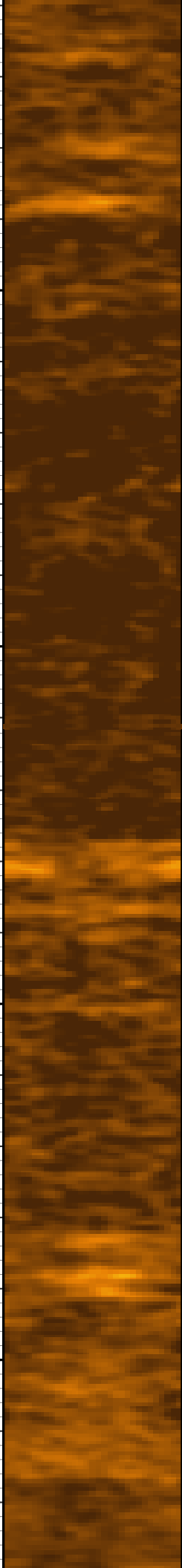
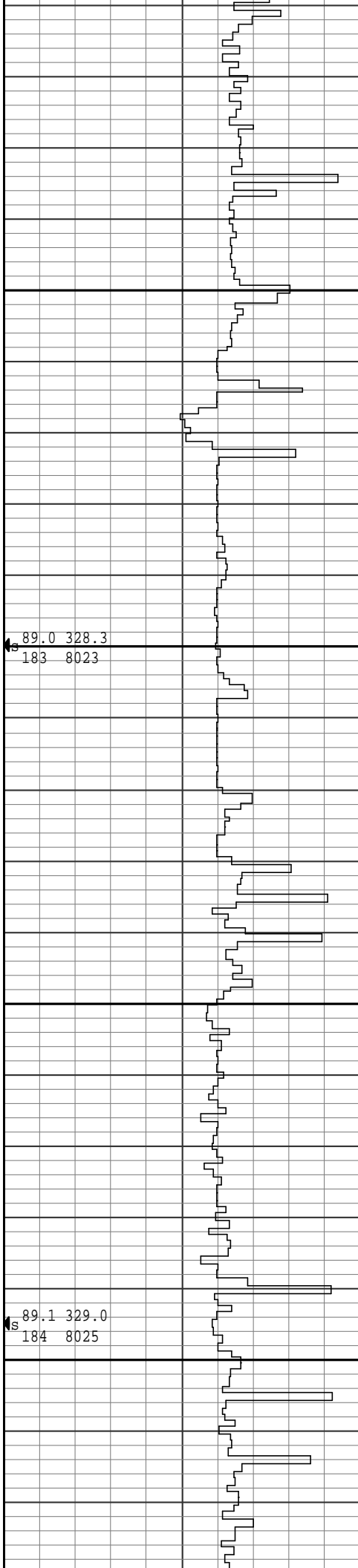


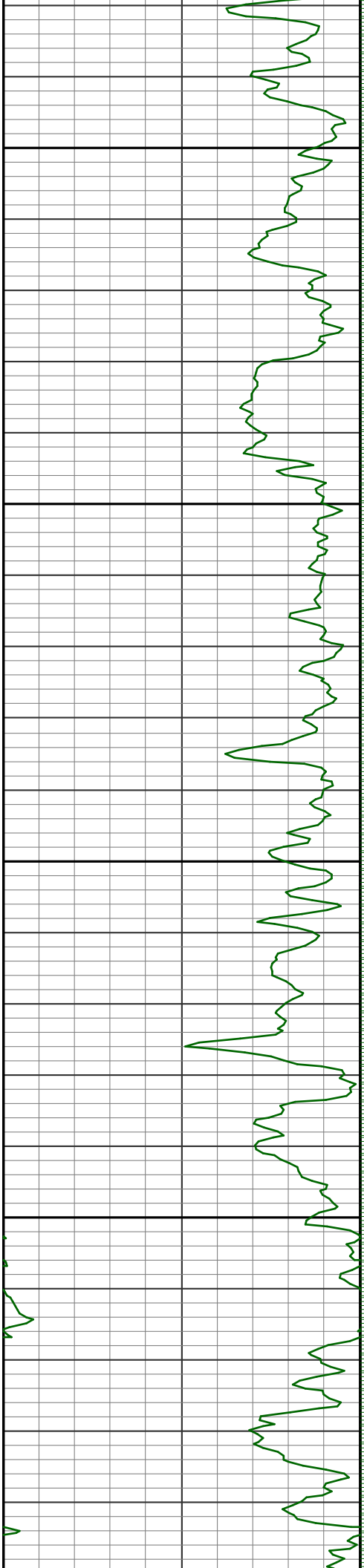
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89.0 328.3
183 8023

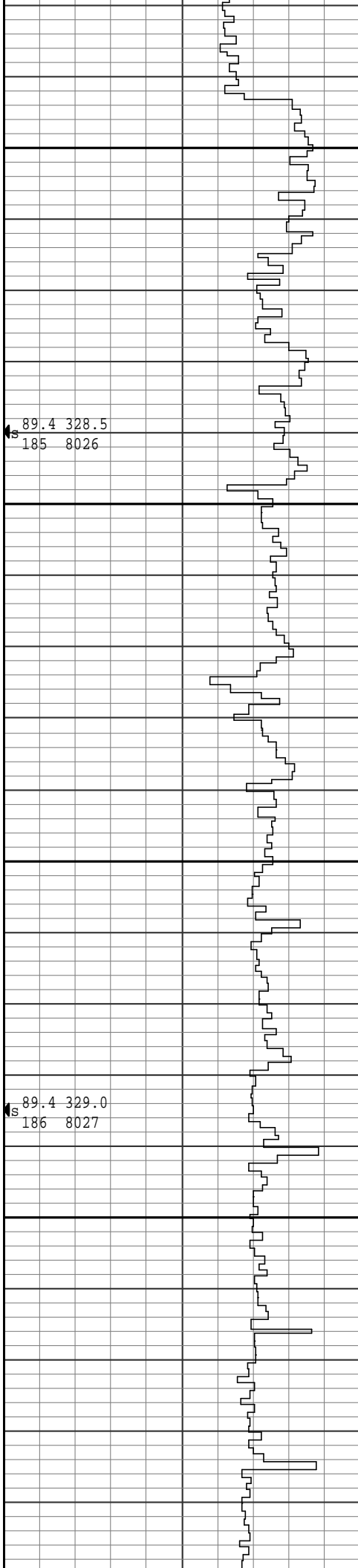
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89.1 329.0
184 8025



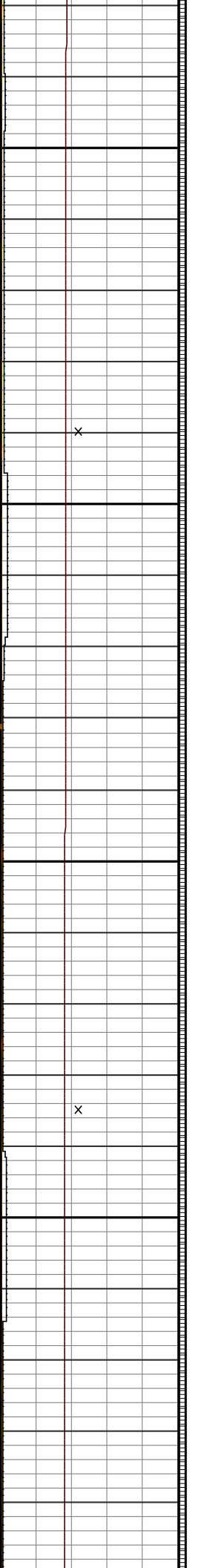
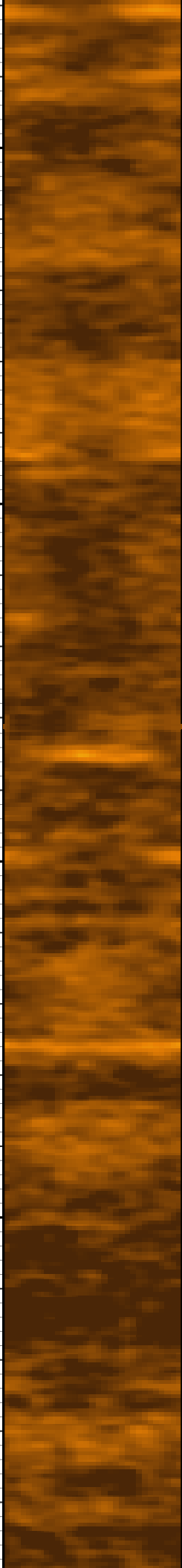


17900
18000



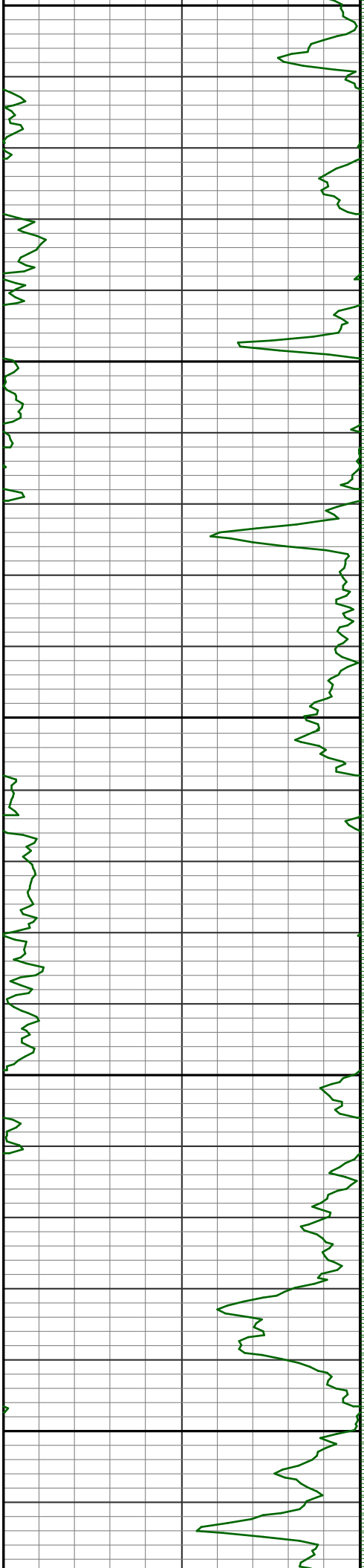
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185 8026

89.4 329.0
186 8027

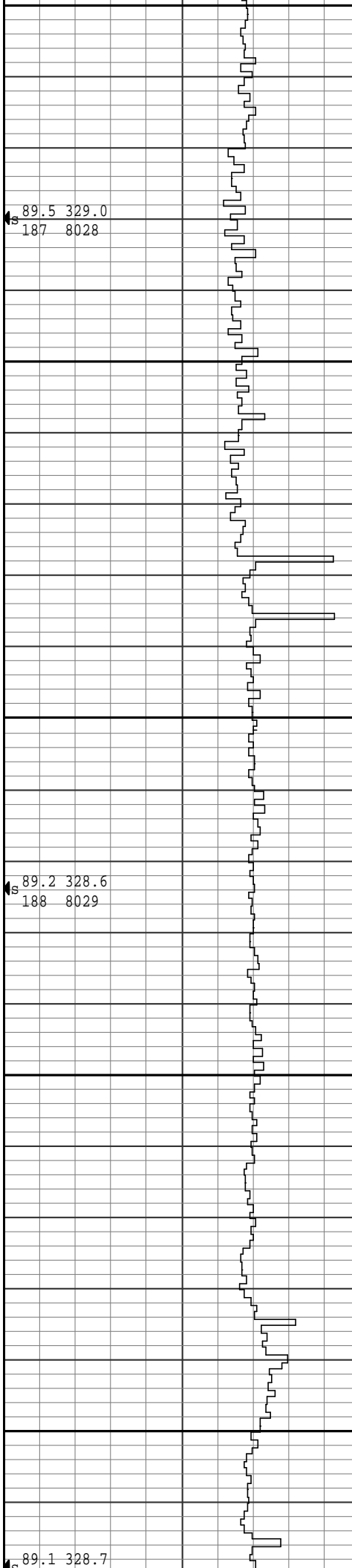


x

x



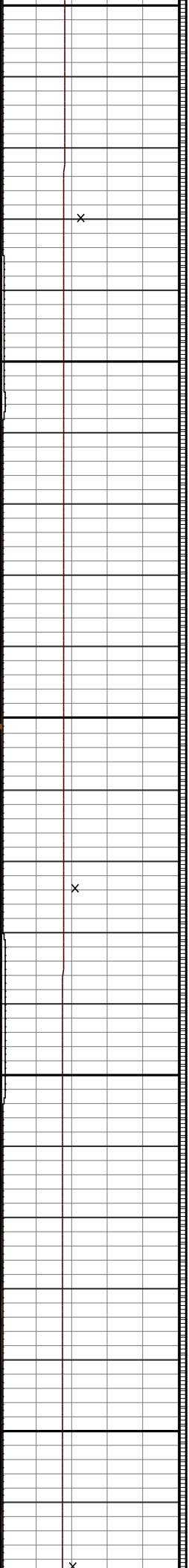
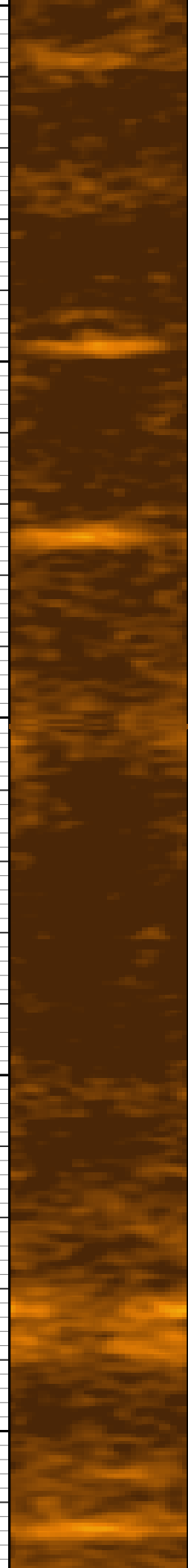
18100
18200



89.5 329.0
187 8028

89.2 328.6
188 8029

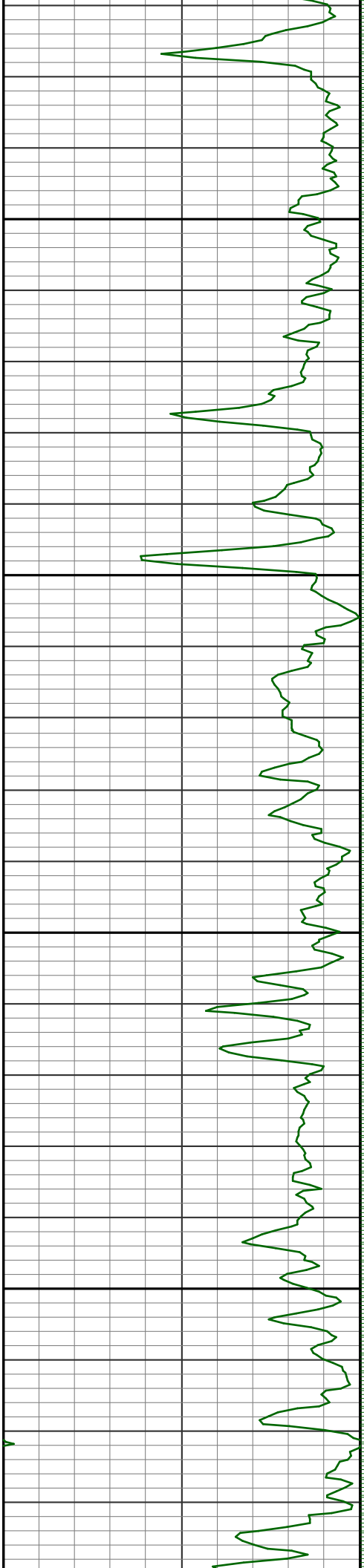
89.1 328.7



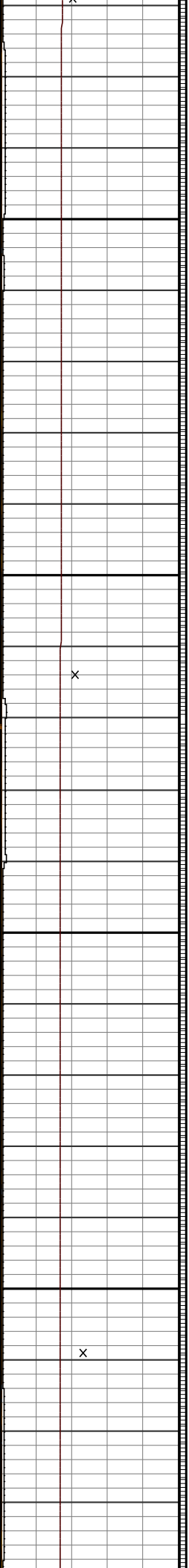
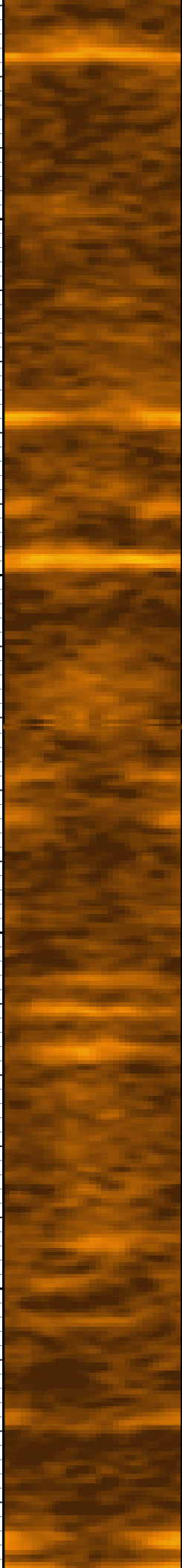
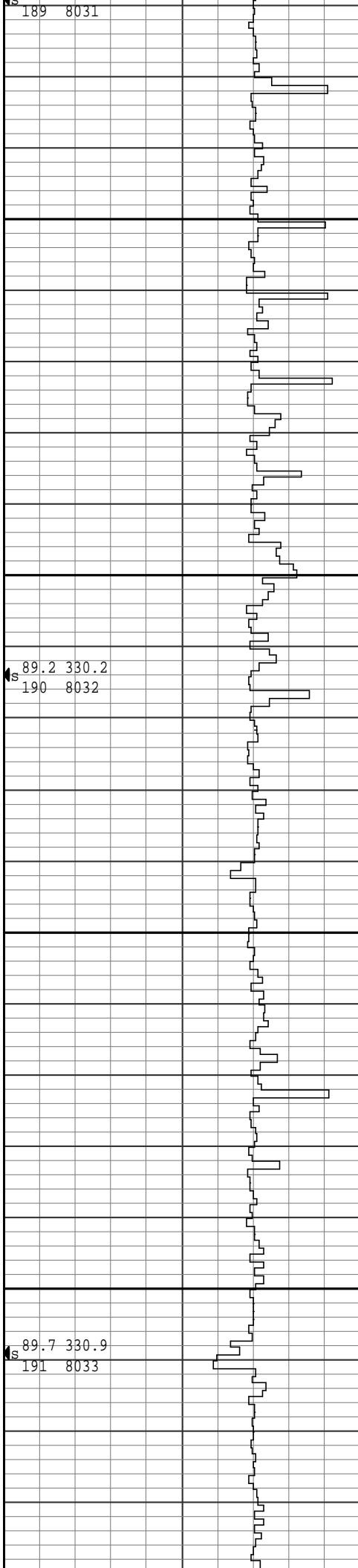
x

x

x



18300
18400



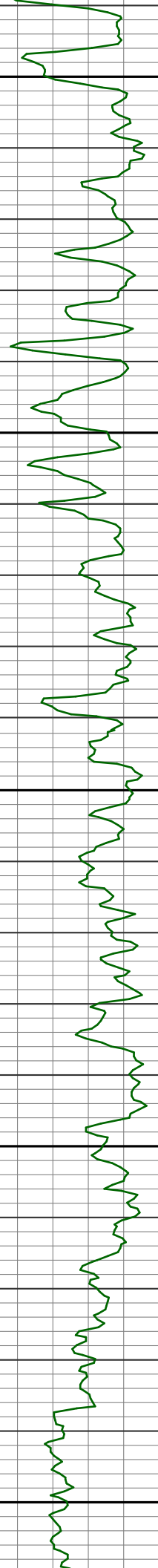
189 8031

89.2 330.2
190 8032

89.7 330.9
191 8033

x

x



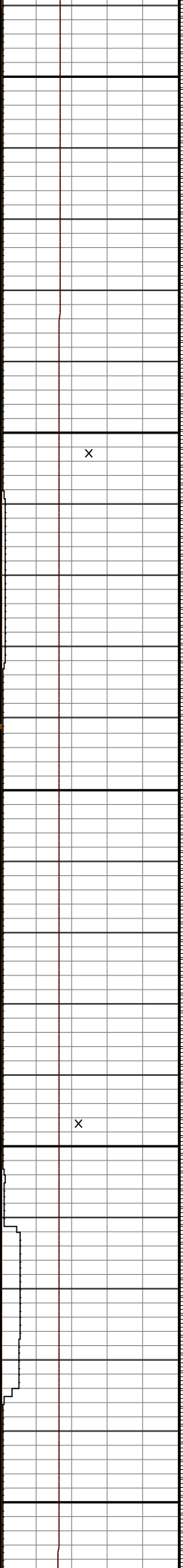
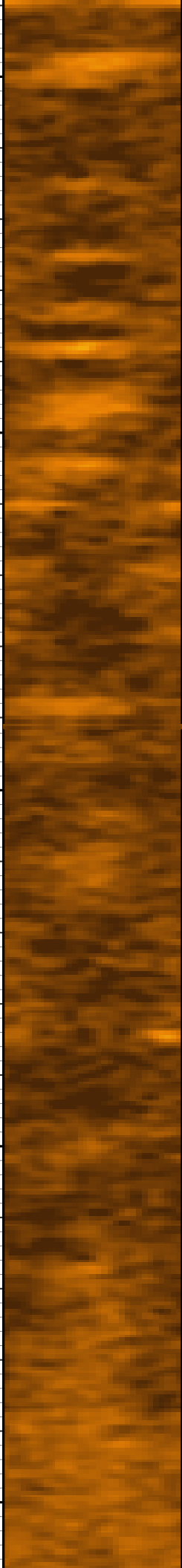
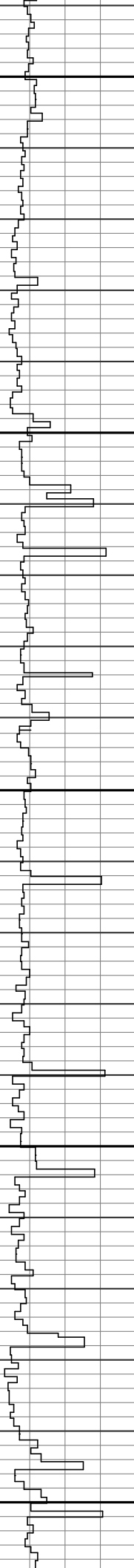
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18600

18700

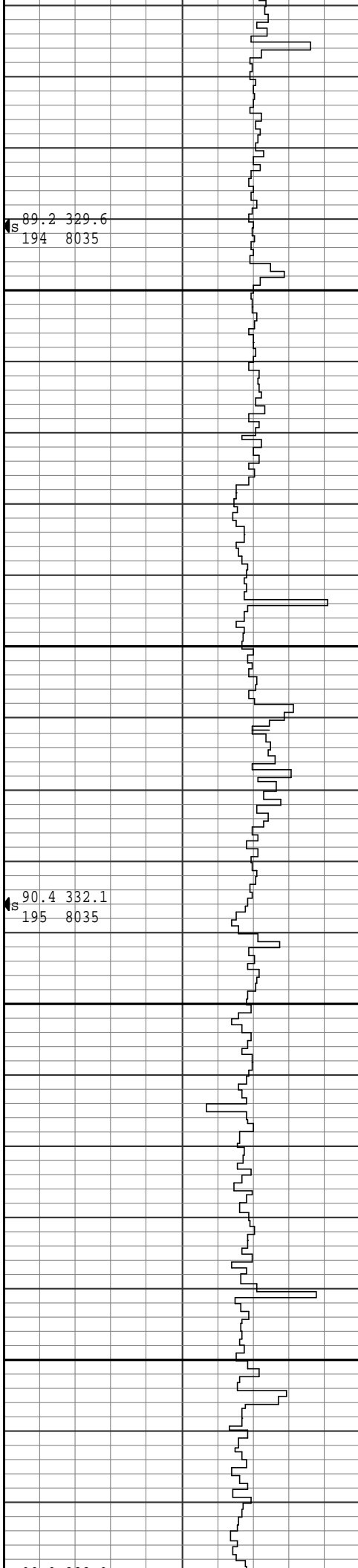
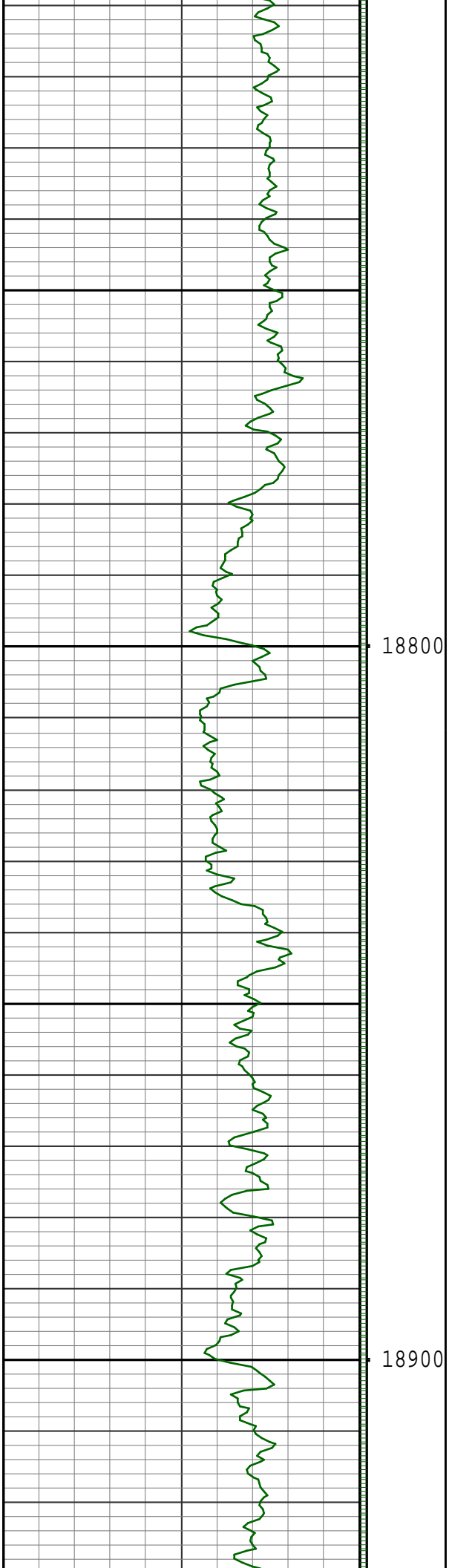
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192 8033

89.4 330.0
193 8034



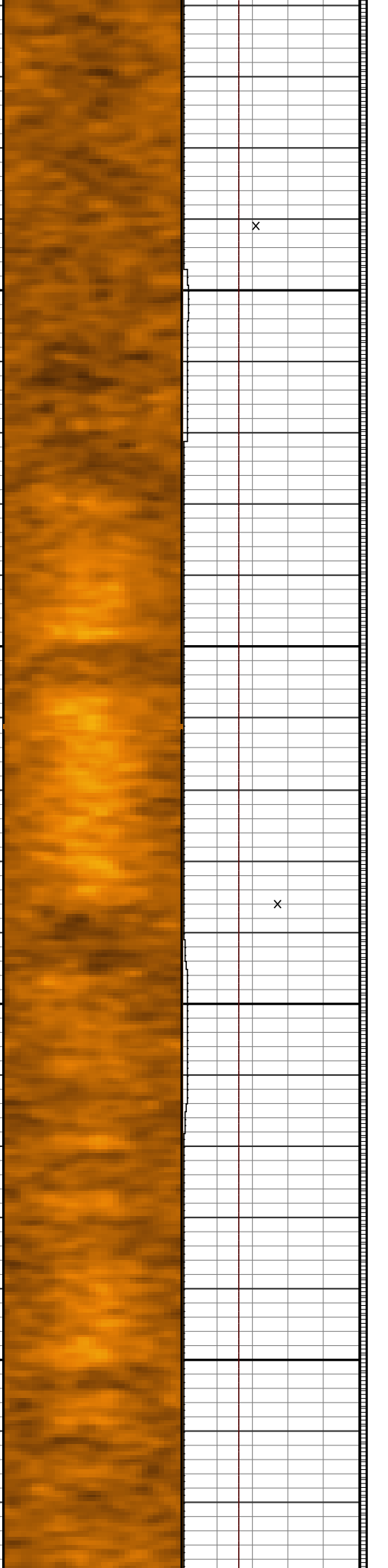
x

x



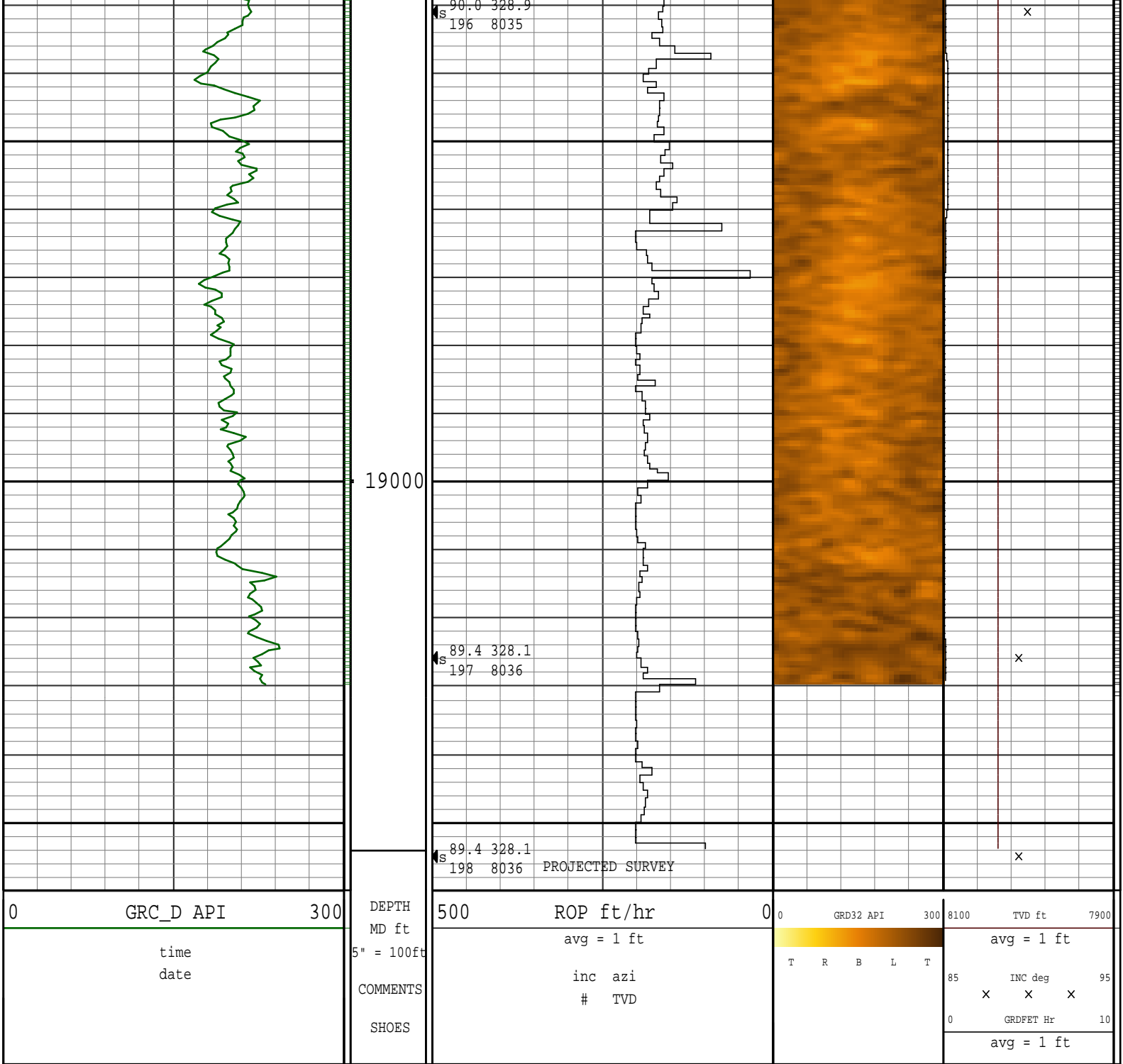
89.2 329.6
194 8035

90.4 332.1
195 8035



x

x



Survey Report

Vertical Section Plane: 329.66°	Total Correction: 9.27° West to True
Calculation Method: Minimum Curvature	Survey Reference: Wellhead
North Aligned to: True North	Well: BOGCESS 17H ST01
RT: 25' ROTARY TABLE TO GROUND LEVEL	FIELD: MARCELLUS SHALE

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)
ORIGIN OF WELL AT SURFACE											
0.00	0.00	0.00	0.00		0.00	0.00 N	0.00 E	0.00	0.00		
THE FOLLOWING ARE MULTISHOT SURVEYS											
110.00	0.16	266.21	110.00	110.00	0.07	0.01 S	0.15 W	0.15	266.21	0.14	
210.00	0.15	259.79	210.00	100.00	0.18	0.04 S	0.42 W	0.42	264.23	0.02	
310.00	0.16	259.84	310.00	100.00	0.27	0.09 S	0.69 W	0.69	262.51	0.01	
410.00	0.17	250.98	410.00	100.00	0.35	0.16 S	0.97 W	0.98	260.39	0.03	
510.00	0.16	258.86	510.00	100.00	0.42	0.24 S	1.24 W	1.27	259.13	0.02	
610.00	0.15	93.36	610.00	100.00	0.39	0.27 S	1.25 W	1.28	257.65	0.31	
710.00	0.19	77.78	710.00	100.00	0.27	0.25 S	0.96 W	0.99	255.58	0.06	
810.00	0.16	77.09	810.00	100.00	0.18	0.18 S	0.66 W	0.68	254.73	0.03	

910.00	0.12	56.80	910.00	100.00	0.14	0.09 S	0.43 W	0.44	258.15	0.06	
1010.00	0.22	319.13	1010.00	100.00	0.33	0.11 N	0.47 W	0.49	283.26	0.26	
1110.00	0.22	324.63	1110.00	100.00	0.71	0.41 N	0.71 W	0.82	300.22	0.02	
1210.00	0.17	74.03	1210.00	100.00	0.87	0.61 N	0.68 W	0.91	312.01	0.32	
1310.00	0.36	91.78	1309.99	100.00	0.67	0.64 N	0.22 W	0.68	340.98	0.20	
1410.00	0.36	98.88	1409.99	100.00	0.30	0.58 N	0.40 E	0.71	34.66	0.05	
1510.00	0.38	103.44	1509.99	100.00	-0.13	0.46 N	1.04 E	1.13	66.16	0.03	
1610.00	0.43	111.91	1609.99	100.00	-0.65	0.24 N	1.71 E	1.72	81.97	0.08	
1710.00	0.47	117.31	1709.98	100.00	-1.30	0.09 S	2.42 E	2.42	92.07	0.06	
1810.00	0.48	119.63	1809.98	100.00	-2.01	0.48 S	3.15 E	3.18	98.72	0.02	
1910.00	0.58	128.60	1909.98	100.00	-2.84	1.01 S	3.91 E	4.03	104.43	0.13	
2010.00	0.58	136.87	2009.97	100.00	-3.81	1.69 S	4.65 E	4.95	109.99	0.08	
2110.00	0.57	134.85	2109.97	100.00	-4.78	2.41 S	5.35 E	5.87	114.27	0.02	
2210.00	0.59	134.53	2209.96	100.00	-5.76	3.12 S	6.07 E	6.82	117.23	0.02	
2310.00	0.56	139.11	2309.96	100.00	-6.74	3.85 S	6.75 E	7.78	119.70	0.05	
2410.00	0.46	140.69	2409.95	100.00	-7.61	4.53 S	7.33 E	8.62	121.74	0.10	
2510.00	0.47	137.61	2509.95	100.00	-8.41	5.15 S	7.86 E	9.39	123.22	0.03	
2610.00	0.49	139.22	2609.95	100.00	-9.23	5.77 S	8.42 E	10.21	124.45	0.02	
2710.00	0.54	135.94	2709.94	100.00	-10.11	6.44 S	9.02 E	11.08	125.50	0.06	
2810.00	0.57	134.87	2809.94	100.00	-11.05	7.13 S	9.70 E	12.04	126.29	0.03	
2910.00	0.57	139.68	2909.93	100.00	-12.02	7.86 S	10.38 E	13.02	127.13	0.05	
3010.00	0.56	141.26	3009.93	100.00	-12.99	8.62 S	11.00 E	13.98	128.06	0.02	
3110.00	0.52	146.54	3109.92	100.00	-13.93	9.38 S	11.56 E	14.88	129.04	0.06	
3210.00	0.52	145.87	3209.92	100.00	-14.84	10.13 S	12.07 E	15.75	130.02	0.01	
3310.00	0.55	134.35	3309.91	100.00	-15.75	10.84 S	12.66 E	16.67	130.57	0.11	
3410.00	0.67	125.51	3409.91	100.00	-16.75	11.52 S	13.48 E	17.73	130.50	0.15	
3510.00	0.66	125.35	3509.90	100.00	-17.81	12.19 S	14.43 E	18.89	130.19	0.01	
3610.00	0.62	122.70	3609.90	100.00	-18.81	12.81 S	15.35 E	20.00	129.85	0.05	
3710.00	0.54	116.16	3709.89	100.00	-19.69	13.31 S	16.23 E	20.99	129.36	0.10	
3810.00	0.50	115.15	3809.89	100.00	-20.44	13.71 S	17.05 E	21.88	128.80	0.04	
3910.00	0.51	119.11	3909.88	100.00	-21.19	14.11 S	17.83 E	22.74	128.35	0.04	
4010.00	0.49	138.77	4009.88	100.00	-21.99	14.65 S	18.50 E	23.60	128.37	0.17	
4110.00	0.46	141.40	4109.88	100.00	-22.81	15.28 S	19.04 E	24.41	128.76	0.04	
4210.00	0.45	138.38	4209.87	100.00	-23.59	15.89 S	19.55 E	25.19	129.11	0.03	
4310.00	0.44	145.10	4309.87	100.00	-24.36	16.50 S	20.03 E	25.95	129.48	0.05	
4410.00	0.43	144.34	4409.87	100.00	-25.11	17.12 S	20.47 E	26.68	129.91	0.01	
4510.00	0.38	173.10	4509.86	100.00	-25.79	17.75 S	20.72 E	27.29	130.58	0.21	
4610.00	0.41	173.21	4609.86	100.00	-26.42	18.44 S	20.81 E	27.80	131.54	0.03	
4710.00	0.66	213.04	4709.86	100.00	-27.01	19.28 S	20.54 E	28.16	133.19	0.43	
4810.00	0.71	229.84	4809.85	100.00	-27.37	20.16 S	19.75 E	28.22	135.59	0.21	
4910.00	0.73	240.96	4909.84	100.00	-27.46	20.87 S	18.72 E	28.03	138.11	0.14	
5010.00	0.64	245.75	5009.84	100.00	-27.39	21.41 S	17.65 E	27.74	140.49	0.11	
5110.00	0.49	247.03	5109.83	100.00	-27.28	21.80 S	16.75 E	27.49	142.47	0.15	
THE FOLLOWING ARE SCHLUMBERGER MWD SURVEYS											
5290.00	0.90	295.10	5289.82	180.00	-26.01	21.50 S	14.76 E	26.08	145.53	0.38	129.94
5385.00	12.48	0.89	5384.04	95.00	-16.59	10.88 S	14.24 E	17.92	127.39	12.78	140.78
5480.00	16.24	36.18	5476.23	95.00	-2.48	10.15 N	22.26 E	24.46	65.49	9.83	140.78
5575.00	22.89	44.32	5565.71	95.00	7.71	34.12 N	43.04 E	54.92	51.59	7.55	144.39
5670.00	29.26	33.04	5651.05	95.00	23.02	66.86 N	68.65 E	95.82	45.76	8.47	144.39
5764.00	36.99	28.56	5729.73	94.00	47.97	111.03 N	94.73 E	145.95	40.47	8.62	144.39
5859.00	46.17	29.29	5800.71	95.00	80.12	166.13 N	125.23 E	208.04	37.01	9.68	148.01
5953.00	54.05	32.58	5860.96	94.00	114.65	227.87 N	162.37 E	279.80	35.47	8.80	148.01
6048.00	55.69	33.95	5915.62	95.00	149.17	292.82 N	204.99 E	357.45	34.99	2.09	151.62
6143.00	56.44	35.90	5968.66	95.00	182.15	357.44 N	250.11 E	436.26	34.98	1.88	151.62
6238.00	56.44	38.30	6021.18	95.00	212.51	420.57 N	297.86 E	515.37	35.31	2.10	151.62
6333.00	56.44	38.42	6073.70	95.00	241.27	482.65 N	346.99 E	594.43	35.71	0.10	155.24
6428.00	56.31	38.37	6126.31	95.00	269.96	544.65 N	396.12 E	673.46	36.03	0.14	155.24
6523.00	56.46	38.12	6178.90	95.00	298.85	606.78 N	445.09 E	752.52	36.26	0.27	155.24
6618.00	56.49	40.42	6231.37	95.00	326.44	668.08 N	495.22 E	831.61	36.55	2.02	158.85
6712.00	56.54	40.33	6283.24	94.00	352.33	727.81 N	546.00 E	909.85	36.88	0.10	155.24

Survey Report

Vertical Section Plane: 329.66°	Total Correction: 9.27° West to True
Calculation Method: Minimum Curvature	Survey Reference: Wellhead
North Aligned to: True North	Well: BOGESS 17H ST01
RT: 25' ROTARY TABLE TO GROUND LEVEL	FIELD: MARCELLUS SHALE

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)
6806.00	55.85	40.46	6335.53	94.00	378.10	787.30 N	596.62 E	987.82	37.16	0.74	158.85
6902.00	55.89	40.94	6389.40	96.00	403.92	847.54 N	648.44 E	1067.15	37.42	0.42	158.85
6996.00	56.36	40.73	6441.79	94.00	429.10	906.59 N	699.47 E	1145.06	37.65	0.53	158.85
7091.00	56.44	40.77	6494.36	95.00	454.75	966.53 N	751.12 E	1224.08	37.85	0.09	158.85
7187.00	56.53	39.01	6547.37	96.00	481.82	1027.94 N	802.45 E	1304.07	37.98	1.53	158.85
7282.00	56.60	37.64	6599.72	95.00	510.66	1090.13 N	851.61 E	1383.34	38.00	1.20	162.46
7376.00	56.44	38.27	6651.57	94.00	539.66	1151.95 N	899.83 E	1461.74	37.99	0.59	162.46
7471.00	56.47	38.44	6704.07	95.00	568.42	1214.04 N	948.96 E	1540.92	38.01	0.15	162.46
7566.00	56.48	38.17	6756.54	95.00	597.26	1276.19 N	998.05 E	1620.11	38.03	0.24	162.46
7660.00	55.36	38.11	6809.21	94.00	625.82	1337.42 N	1046.13 E	1697.97	38.03	1.19	162.46
7755.00	55.29	40.94	6863.27	95.00	652.71	1397.68 N	1095.85 E	1776.06	38.10	2.45	166.08
7849.00	55.44	40.80	6916.69	94.00	677.62	1456.16 N	1146.46 E	1853.31	38.21	0.20	166.08
7944.00	55.85	41.03	6970.30	95.00	702.83	1515.43 N	1197.82 E	1931.66	38.32	0.48	166.08
8039.00	56.47	40.56	7023.20	95.00	728.34	1575.17 N	1249.37 E	2010.49	38.42	0.77	166.08

8134.00	56.48	40.66	7075.67	95.00	754.21	1635.30 N	1300.91 E	2089.63	38.50	0.06	169.69
8229.00	56.31	38.55	7128.25	95.00	781.36	1696.27 N	1351.33 E	2168.74	38.54	1.83	166.08
8324.00	56.43	38.16	7180.87	95.00	810.10	1758.30 N	1400.41 E	2247.84	38.54	0.36	169.69
8418.00	56.36	38.42	7232.90	94.00	838.63	1819.75 N	1448.92 E	2326.13	38.53	0.24	169.69
8513.00	56.56	38.25	7285.38	95.00	867.42	1881.86 N	1498.04 E	2405.31	38.52	0.26	169.69
8608.00	56.53	38.13	7337.76	95.00	896.43	1944.15 N	1547.04 E	2484.57	38.51	0.11	169.69
8703.00	56.54	38.24	7390.14	95.00	925.45	2006.45 N	1596.03 E	2563.82	38.50	0.10	173.31
8798.00	56.37	38.06	7442.64	95.00	954.48	2068.71 N	1644.94 E	2642.99	38.49	0.24	169.69
8891.00	56.51	38.25	7494.05	93.00	982.89	2129.65 N	1692.82 E	2720.49	38.48	0.23	173.31
8986.00	56.47	37.85	7546.50	95.00	1012.06	2192.03 N	1741.64 E	2799.70	38.47	0.35	173.31
9081.00	56.48	38.04	7598.97	95.00	1041.36	2254.48 N	1790.34 E	2878.89	38.45	0.17	176.92
9176.00	58.33	28.34	7650.23	95.00	1077.03	2321.37 N	1834.01 E	2958.44	38.31	8.82	176.92
9270.00	61.39	20.30	7697.48	94.00	1124.06	2395.38 N	1867.36 E	3037.25	37.94	8.08	180.54
9365.00	65.00	12.59	7740.36	95.00	1182.11	2476.63 N	1891.25 E	3116.17	37.37	8.18	184.15
9460.00	68.76	6.27	7777.69	95.00	1249.26	2562.76 N	1905.49 E	3193.53	36.63	7.29	180.54
9554.00	71.65	1.46	7809.54	94.00	1322.39	2650.97 N	1911.41 E	3268.20	35.79	5.71	180.54
9649.00	74.18	356.53	7837.46	95.00	1401.53	2741.72 N	1909.79 E	3341.31	34.86	5.63	184.15
9743.00	74.87	350.89	7862.56	94.00	1484.22	2831.72 N	1899.87 E	3410.01	33.86	5.83	184.15
9839.00	75.23	344.94	7887.35	96.00	1572.26	2922.37 N	1880.45 E	3475.11	32.76	6.00	184.15
9933.00	77.76	341.04	7909.30	94.00	1661.18	3009.74 N	1853.71 E	3534.80	31.63	4.85	184.15
10028.00	79.70	339.41	7927.87	95.00	1752.76	3097.41 N	1822.18 E	3593.65	30.47	2.65	187.76
10123.00	83.44	336.56	7941.80	95.00	1845.72	3184.50 N	1786.96 E	3651.61	29.30	4.93	187.76
10218.00	85.35	332.55	7951.08	95.00	1939.89	3269.85 N	1746.34 E	3706.97	28.11	4.66	187.76
10313.00	85.69	331.11	7958.50	95.00	2034.53	3353.34 N	1701.63 E	3760.38	26.91	1.55	187.76
10408.00	87.03	330.30	7964.53	95.00	2129.32	3436.02 N	1655.24 E	3813.93	25.72	1.65	187.76
10502.00	88.71	330.26	7968.03	94.00	2223.25	3517.60 N	1608.68 E	3867.99	24.58	1.79	191.38
10597.00	88.15	328.07	7970.63	95.00	2318.20	3599.13 N	1560.00 E	3922.67	23.43	2.38	194.99
10692.00	87.48	329.46	7974.25	95.00	2413.12	3680.30 N	1510.78 E	3978.32	22.32	1.62	198.61
10787.00	87.65	329.38	7978.29	95.00	2508.03	3762.01 N	1462.49 E	4036.29	21.24	0.20	198.61
10881.00	87.54	329.64	7982.23	94.00	2601.95	3842.94 N	1414.84 E	4095.12	20.21	0.30	198.61
10976.00	87.59	328.94	7986.27	95.00	2696.86	3924.55 N	1366.37 E	4155.60	19.20	0.74	202.22
11071.00	87.65	328.83	7990.21	95.00	2791.77	4005.81 N	1317.32 E	4216.85	18.20	0.13	202.22
11165.00	87.65	329.30	7994.07	94.00	2885.69	4086.37 N	1269.04 E	4278.89	17.25	0.50	198.61
11259.00	87.76	327.70	7997.83	94.00	2979.59	4166.45 N	1219.96 E	4341.38	16.32	1.70	202.22
11354.00	88.32	328.64	8001.08	95.00	3074.50	4247.12 N	1169.89 E	4405.30	15.40	1.15	198.61
11449.00	88.43	329.55	8003.78	95.00	3169.46	4328.59 N	1121.12 E	4471.42	14.52	0.96	202.22
11544.00	88.66	329.68	8006.19	95.00	3264.42	4410.52 N	1073.08 E	4539.18	13.67	0.28	202.22
11639.00	89.10	330.97	8008.05	95.00	3359.40	4493.04 N	1026.06 E	4608.71	12.86	1.43	202.22
11734.00	88.71	328.25	8009.86	95.00	3454.37	4574.97 N	978.01 E	4678.34	12.07	2.89	202.22
11828.00	88.77	330.18	8011.93	94.00	3548.34	4655.70 N	929.91 E	4747.66	11.30	2.05	205.83
11922.00	88.21	328.90	8014.41	94.00	3642.31	4736.69 N	882.28 E	4818.16	10.55	1.49	205.83
12017.00	87.82	330.32	8017.70	95.00	3737.25	4818.59 N	834.25 E	4890.27	9.82	1.55	205.83
12112.00	88.99	329.25	8020.34	95.00	3832.21	4900.65 N	786.46 E	4963.35	9.12	1.67	205.83
12206.00	89.50	331.21	8021.58	94.00	3926.19	4982.23 N	739.80 E	5036.86	8.45	2.16	205.83
12301.00	89.10	327.58	8022.74	95.00	4021.16	5063.98 N	691.44 E	5110.97	7.78	3.84	209.45
12396.00	89.50	329.49	8023.90	95.00	4116.13	5145.00 N	641.86 E	5184.88	7.11	2.05	209.45
12491.00	89.55	329.58	8024.69	95.00	4211.13	5226.88 N	593.70 E	5260.49	6.48	0.11	205.83
12586.00	89.78	329.37	8025.24	95.00	4306.13	5308.71 N	545.45 E	5336.66	5.87	0.33	205.83
12681.00	89.16	328.95	8026.12	95.00	4401.12	5390.28 N	496.75 E	5413.12	5.27	0.79	205.83
12776.00	89.10	330.63	8027.57	95.00	4496.11	5472.36 N	448.95 E	5490.75	4.69	1.77	205.83
12870.00	89.66	331.31	8028.58	94.00	4590.07	5554.55 N	403.34 E	5569.17	4.15	0.94	205.83
12964.00	89.83	330.65	8029.00	94.00	4684.05	5636.74 N	357.74 E	5648.08	3.63	0.72	209.45
13059.00	89.61	330.44	8029.46	95.00	4779.04	5719.46 N	311.03 E	5727.91	3.11	0.32	209.45
13154.00	89.44	330.30	8030.25	95.00	4874.03	5802.04 N	264.06 E	5808.04	2.61	0.23	209.45
13248.00	89.78	328.65	8030.89	94.00	4968.02	5883.00 N	216.32 E	5886.98	2.11	1.79	213.06
13342.00	89.66	329.71	8031.35	94.00	5062.01	5963.73 N	168.16 E	5966.10	1.62	1.14	213.06
13437.00	90.28	330.15	8031.40	95.00	5157.01	6045.94 N	120.56 E	6047.14	1.14	0.80	213.06

Survey Report

Vertical Section Plane: 329.66°	Total Correction: 9.27° West to True
Calculation Method: Minimum Curvature	Survey Reference: Wellhead
North Aligned to: True North	Well: BOGESS 17H ST01
RT: 25' ROTARY TABLE TO GROUND LEVEL	FIELD: MARCELLUS SHALE

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)
13532.00	89.89	330.27	8031.26	95.00	5252.01	6128.39 N	73.36 E	6128.83	0.69	0.43	213.06
13627.00	90.00	329.02	8031.35	95.00	5347.01	6210.36 N	25.35 E	6210.41	0.23	1.32	216.68
13722.00	89.94	328.71	8031.40	95.00	5442.00	6291.68 N	23.77 W	6291.72	359.78	0.33	216.68
13817.00	90.22	330.17	8031.27	95.00	5536.99	6373.48 N	72.07 W	6373.89	359.35	1.56	216.68
13911.00	90.39	330.83	8030.77	94.00	5630.98	6455.29 N	118.35 W	6456.38	358.95	0.72	216.68
14007.00	90.45	329.21	8030.06	96.00	5726.97	6538.44 N	166.32 W	6540.56	358.54	1.69	216.68
14102.00	90.11	330.42	8029.60	95.00	5821.97	6620.56 N	214.09 W	6624.02	358.15	1.32	216.68
14197.00	89.89	328.44	8029.60	95.00	5916.96	6702.35 N	262.40 W	6707.48	357.76	2.10	220.29
14292.00	90.11	329.73	8029.60	95.00	6011.96	6783.85 N	311.21 W	6790.99	357.37	1.38	220.29
14386.00	89.55	327.31	8029.88	94.00	6105.93	6864.01 N	360.29 W	6873.46	357.00	2.64	202.22
14481.00	90.00	329.15	8030.25	95.00	6200.90	6944.77 N	410.30 W	6956.88	356.62	1.99	209.45
14576.00	90.11	329.44	8030.16	95.00	6295.89	7026.45 N	458.81 W	7041.42	356.26	0.33	213.06
14671.00	90.67	329.31	8029.51	95.00	6390.89	7108.20 N	507.21 W	7126.27	355.92	0.61	216.68
14765.00	91.29	331.64	8027.91	94.00	6484.86	7189.98 N	553.52 W	7211.25	355.60	2.57	216.68
14860.00	90.62	328.52	8026.32	95.00	6579.83	7272.29 N	600.89 W	7297.07	355.28	3.36	216.68
14955.00	90.28	329.69	8025.58	95.00	6674.82	7353.81 N	649.67 W	7382.45	354.95	1.28	216.68
15050.00	89.78	329.16	8025.53	95.00	6769.82	7435.60 N	697.99 W	7468.29	354.64	0.77	216.68

SENSOR OFFSETS:							
GAMMA-RAY	23.16						
DIRECTIONAL	26.47						

Schlumberger

GAMMA-RAY
AZIMUTHAL IMAGE

5" = 100'
FEET MD