

Company : NOBLE ENERGY INC
Well : WELLS RANCH AE 19-636
Field : WATTENBERG

Date : 02-Jan-2015
Time : 01:48



A Schlumberger Company

GAMMA-RAY

2" = 100'

FEET MD

COMPANY : NOBLE ENERGY INC
WELL : WELLS RANCH AE 19-636
FIELD : WATTENBERG
COUNTY : WELD
STATE : CO
COUNTRY : USA
API No. : 05-123-39634

COMPANY : NOBLE ENERGY INC
WELL : WELLS RANCH AE 19-636
FIELD : WATTENBERG
COUNTY : WELD
STATE : CO
COUNTRY : USA
API WELL No. : 05-123-39634

WELL LOCATION

LAT: 40°28'10"N LON: 104°21'21"W
X: 1,415,925 Y: 3,318,319 NAD83
SEC: 24 TWP: 6N 63W RANGE:

OTHER SERVICES

DIRECTIONAL
ROP

DEPTH REF. : ROTARY TABLE
ELEVATION : 4816.00 ft (ROTARY TABLE - MEAN SEA LEVEL)
WATER DEPTH : 4786.00 ft (MEAN SEA LEVEL - SEA BED)

BOREHOLE RECORD

DEVIATION RECORD

HOLE SIZE in	FROM ft	TO ft	INCLINATION deg	FROM ft	TO ft
8 3/4	0	6915	00-08	725	2000
6 1/8	6915	11772	08-00	2000	5843
			00-88	5843	6915
			90 +/-5	6915	11772

CASING RECORD

CASING SIZE in	FROM ft	TO ft		
9 5/8	0	720		
7	0	6905		

DRILLING Co.: H&P
RIG : 330
LMD UNIT No.: N/A DISTRICT : COO
SPUD DATE : 30-DEC-14
LMD START DATE : 31 DEC 14 DEPTH : 725 ft
LMD END DATE : 7 JAN 15 DEPTH : 11729 ft
TOTAL DEPTH : 11772 ft

RUN DATA

RUN NUMBER	1	2	3			
START DATE	31-DEC-14	03-JAN-15	06-JAN-15			
START TIME	01:00	21:15	02:30			
END DATE	02-JAN-15	06-JAN-15	07-JAN-15			
END TIME	15:15	00:30	11:00			
DEPTH IN ft	725	6915	10913			
DEPTH OUT ft	6915	10913	11772			
LOG TOP ft	711	6873	10871			
LOG BOTTOM ft	6874	10871	11729			
HOLE SIZE in	8 3/4	6 1/8	6 1/8			
MUD DATA @ ft	4929	6915	10913			
MUD TYPE	WATER BASED	WATER BASED	WATER BASED			
DENSITY lb/gal	9.20	10.60	9.40			
VISCOSITY s/qt	32	37	38			
pH	8.5	8.2	9.0			
FLUID LOSS cm3/30	0.0	0.0	0.0			
SALINITY ppm	2300	2200	2200			
Rm ohmm @ deg C	@	@	@			
Rmf ohmm @ deg C	@	@	@			

MAX REC TEMP deg C	40	101	106			
Rm @ MAX TEMP ohmm						
LWD ENGINEER #1	N.COOPER	N.COOPER	N.COOPER			
LWD ENGINEER #2	T.BRIGGS	T.BRIGGS	T.BRIGGS			
LWD ENGINEER #3						

REMARKS

NOBLE ENERGY INC. AFE# 200464

PATHFINDER 14CC00719

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.

THIRD PARTY DEPTH TRACKING PROVIDED BY PASON SERVICES.

RUN #1: 8 3/4" HDS-1R/DIRECTIONAL/GAMMA LOGGING RUN

RUN #2: 6 1/4" HDS-1R/DIRECTIONAL/GAMMA LOGGING RUN

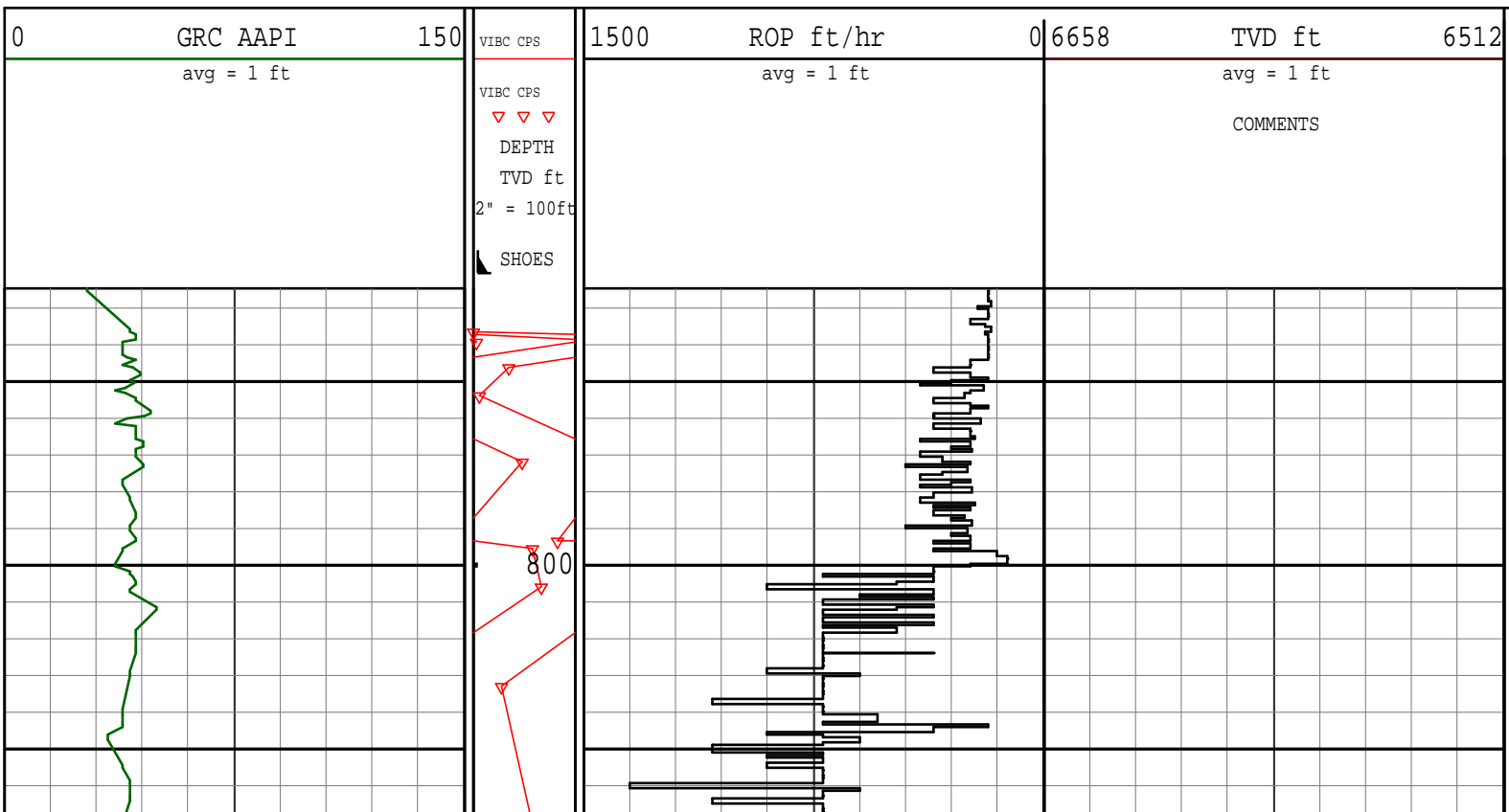
RUN #3: 6 1/4" HDS-1R/DIRECTIONAL/GAMMA LOGGING RUN

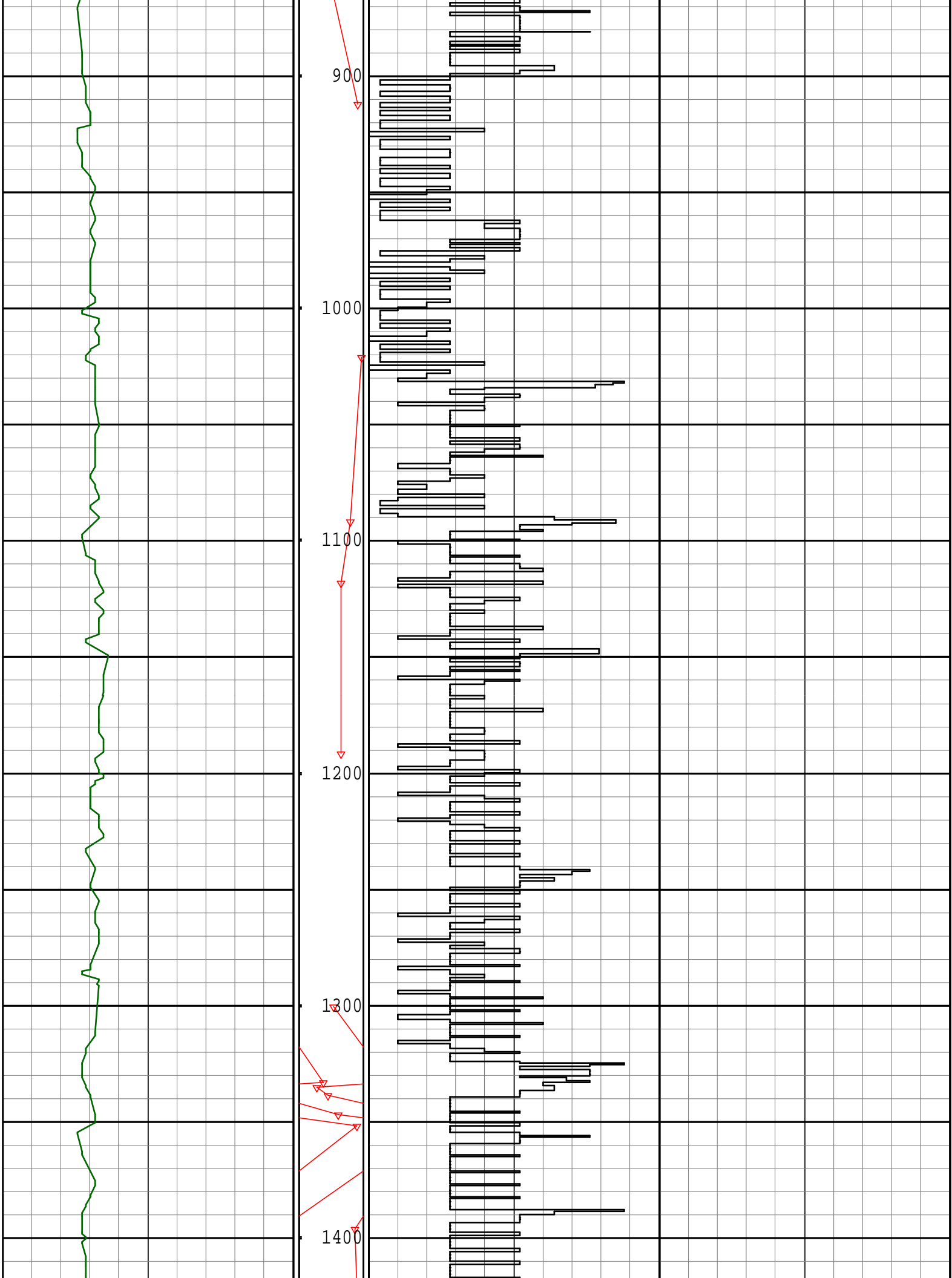
NOTICE - All interpretations are opinions based on inferences from electrical or other measurements and we do not guarantee the accuracy or correctness of any interpretations. We shall not, except in the case of gross or willful negligence on our part, be liable or responsible for loss, costs, damages 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.

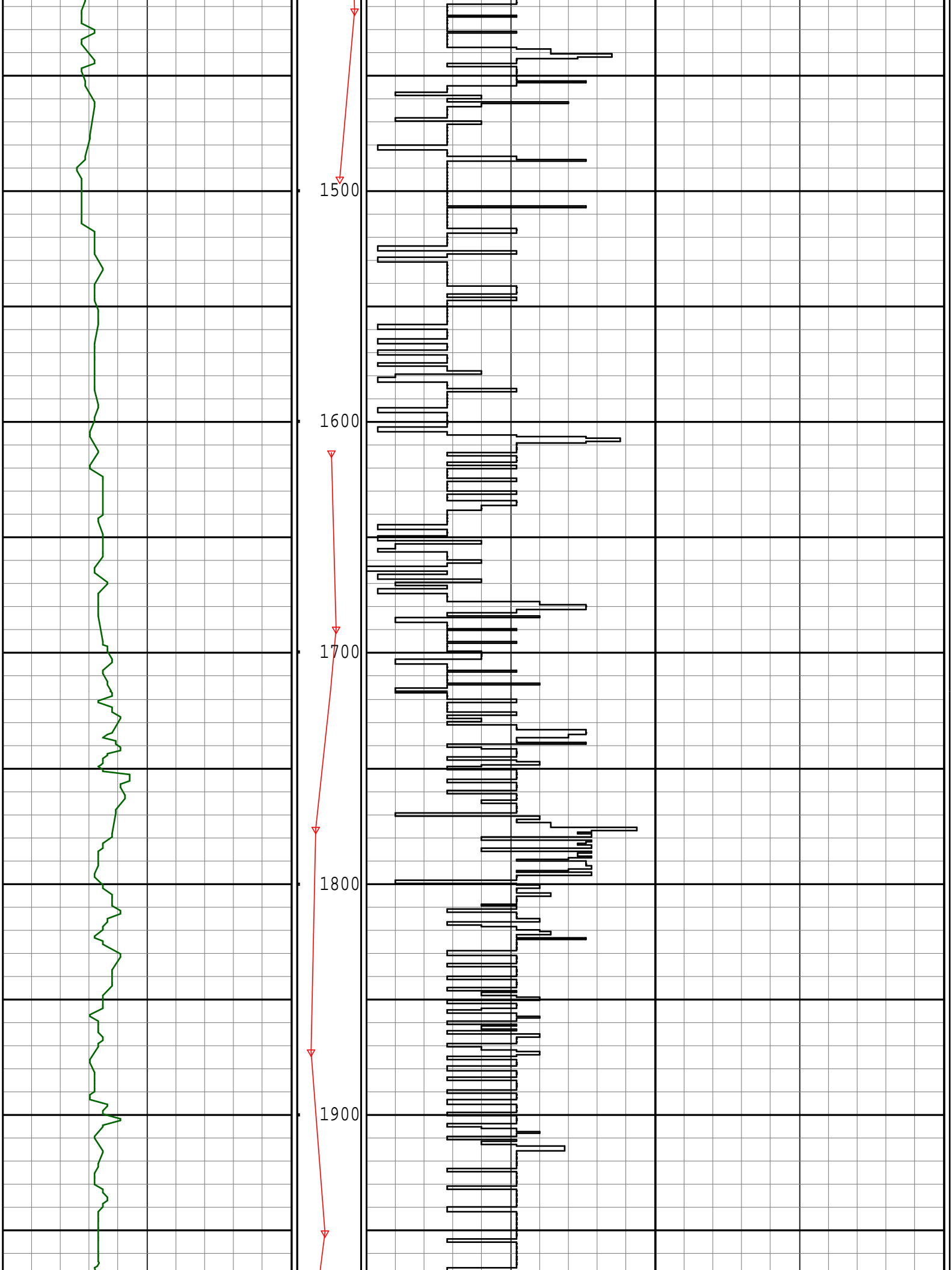
PATHFINDER - A Schlumberger Company

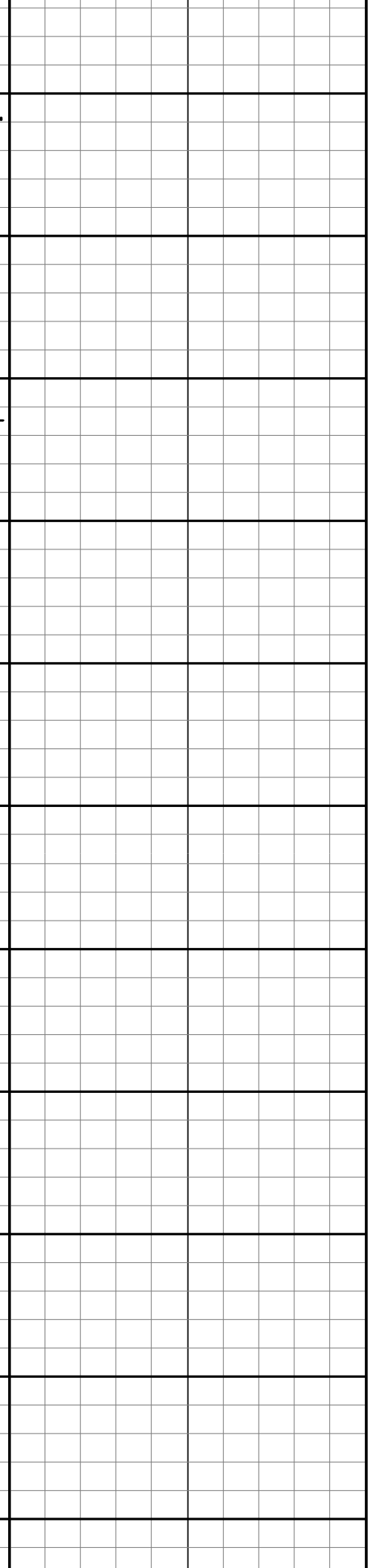
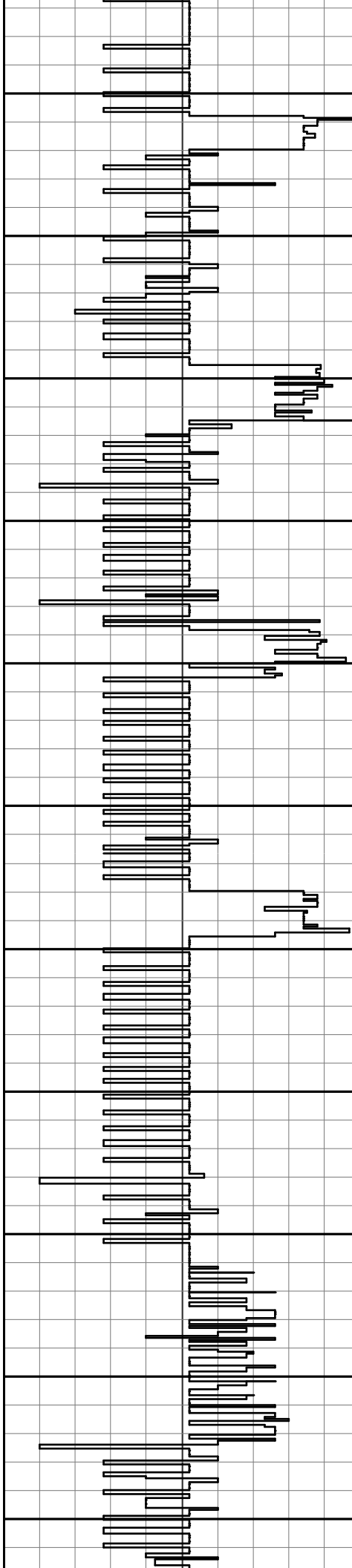
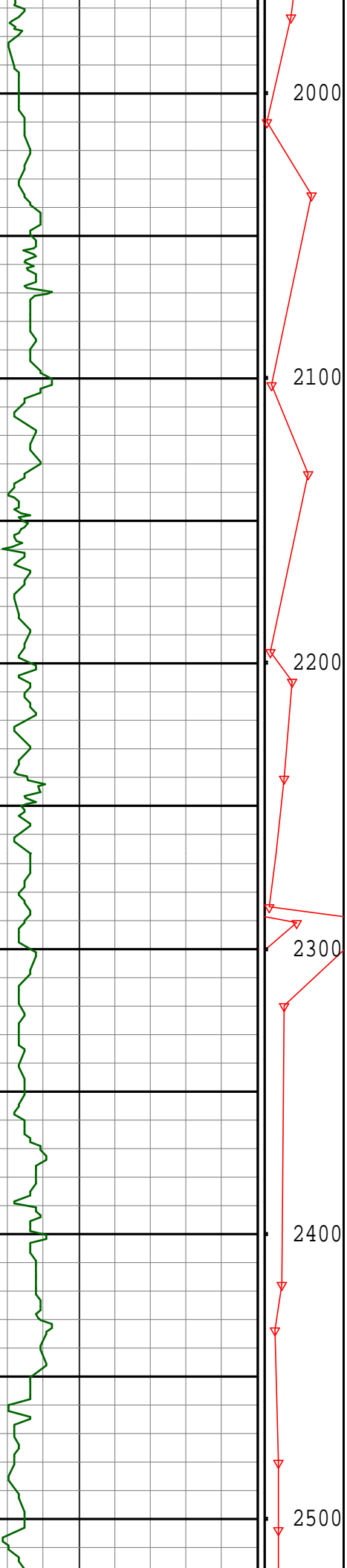
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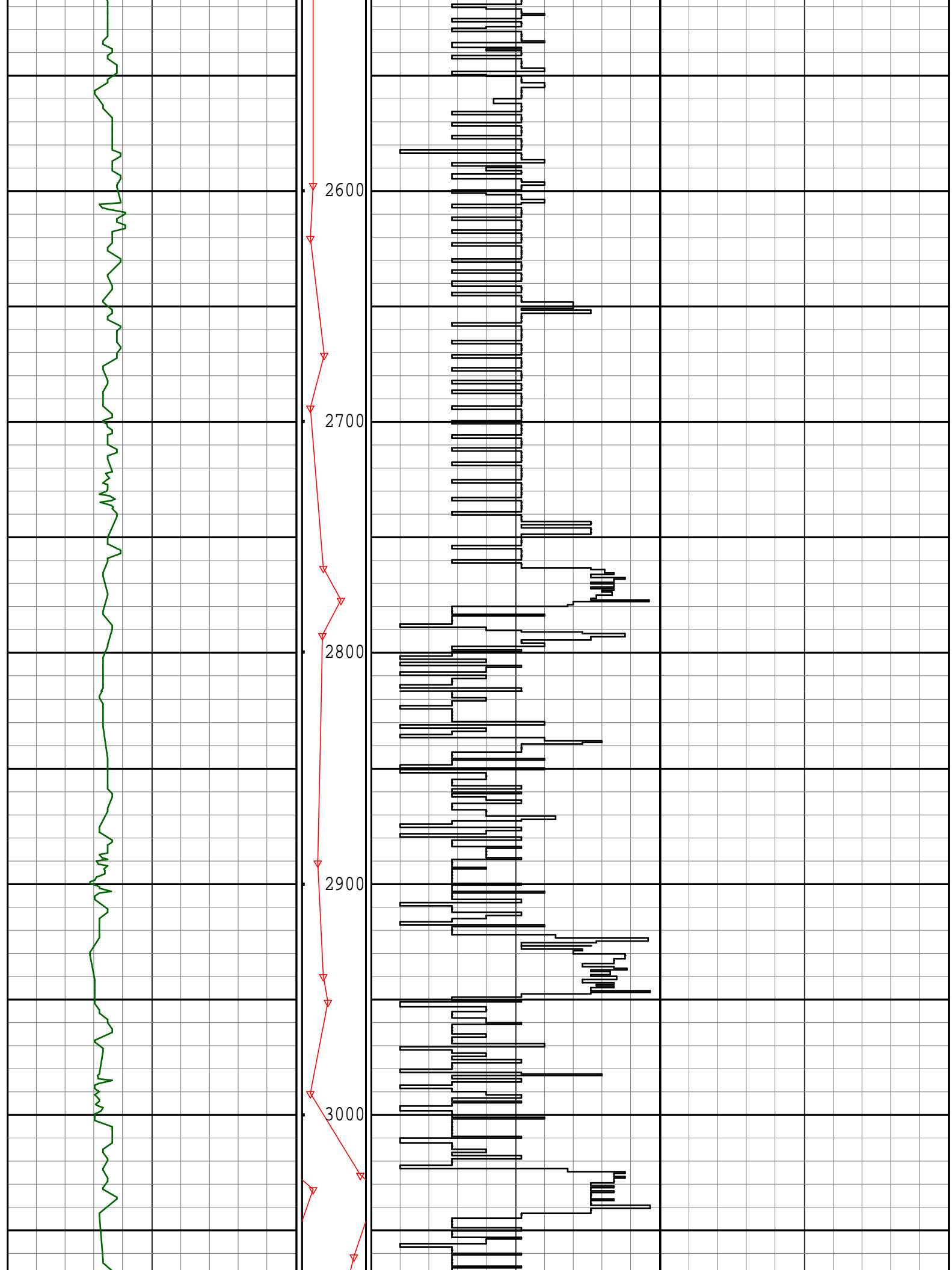
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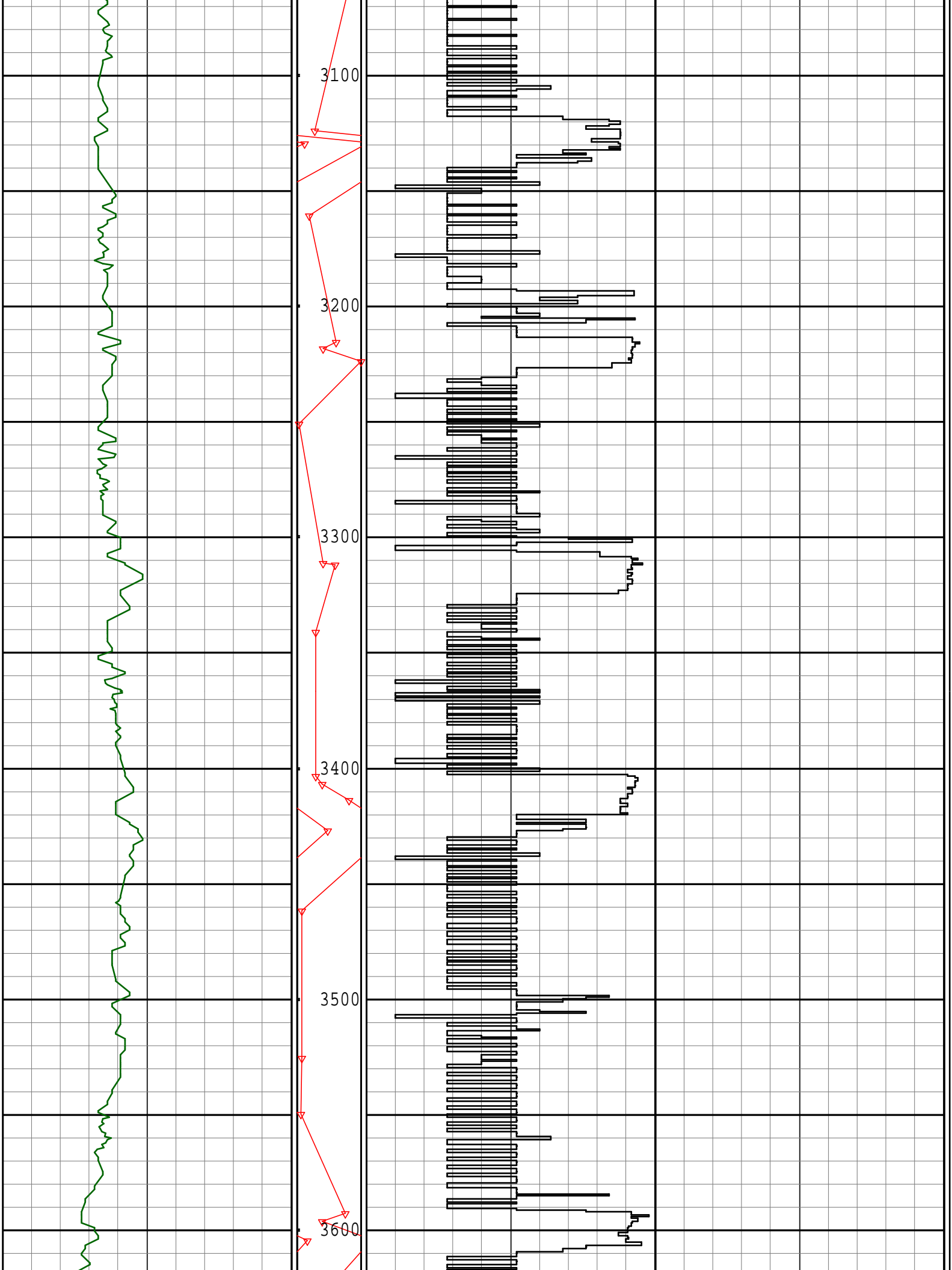


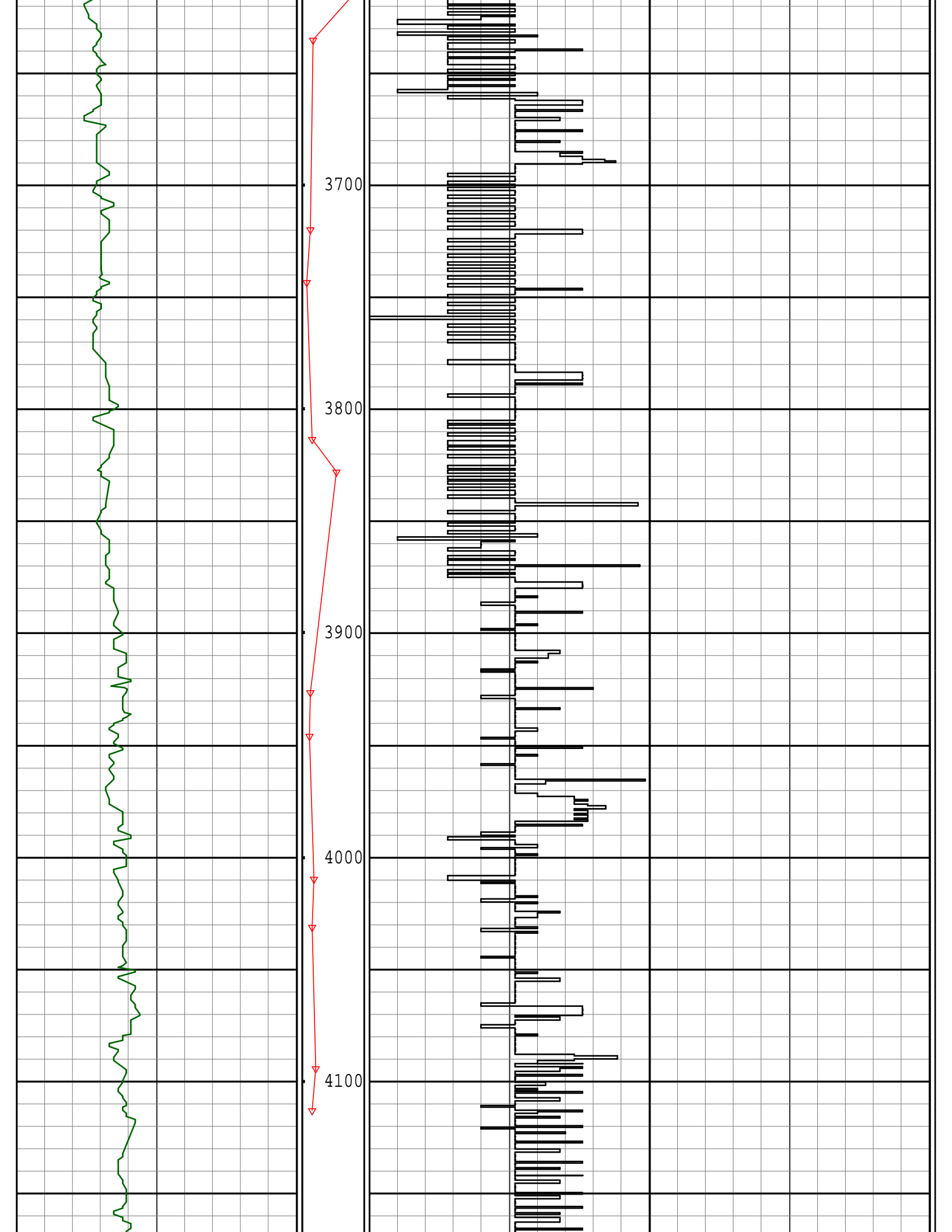


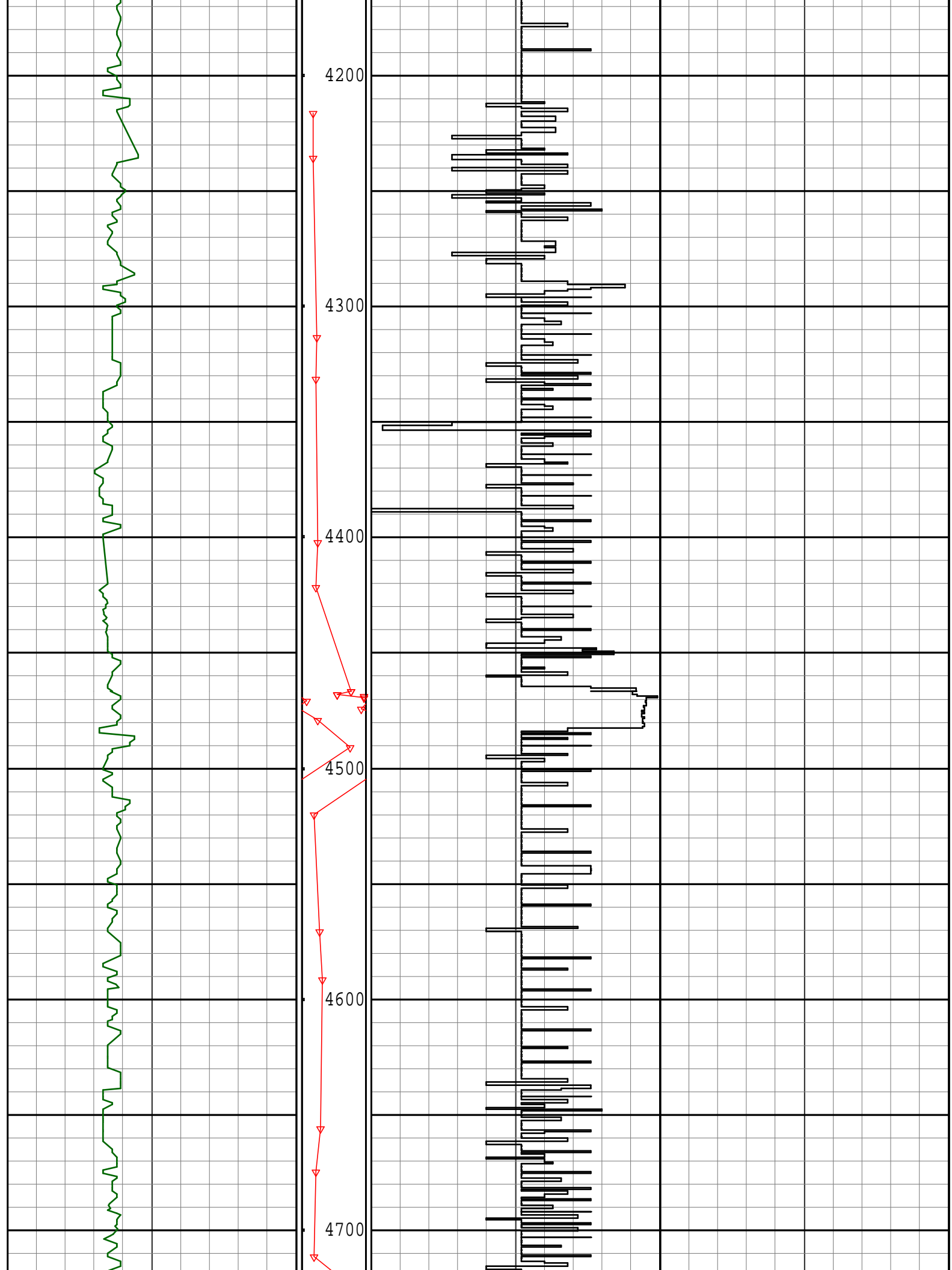


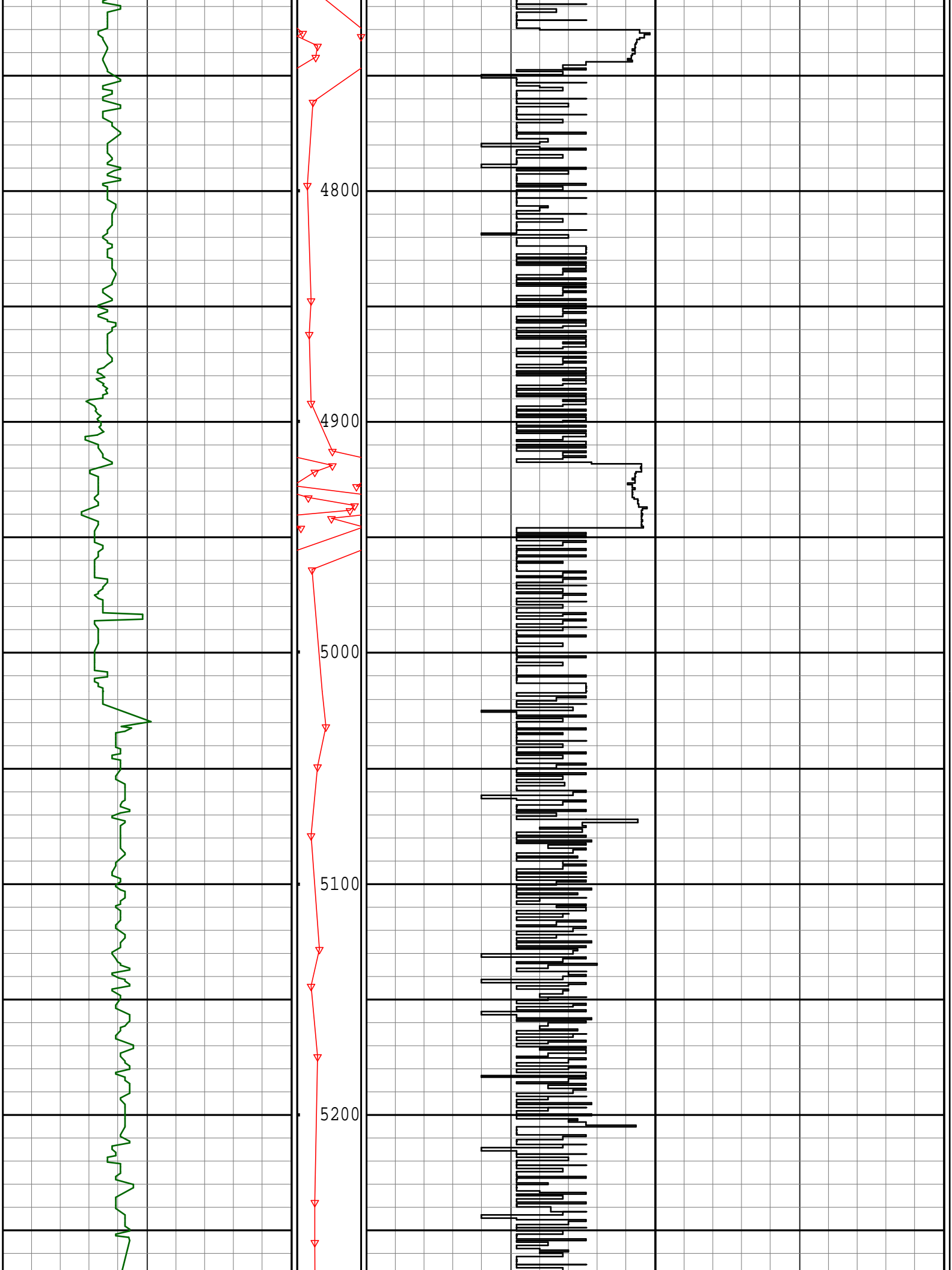


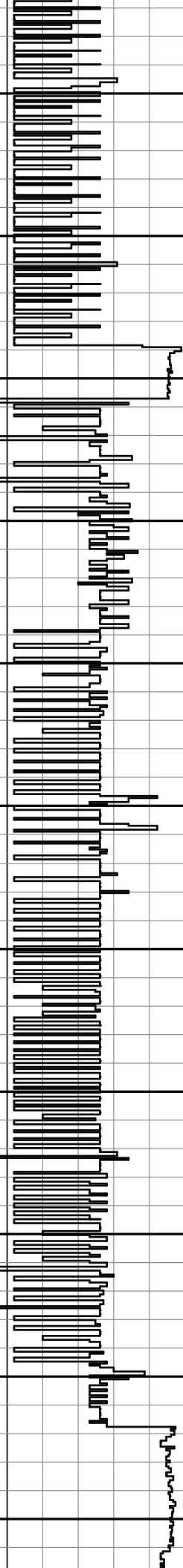
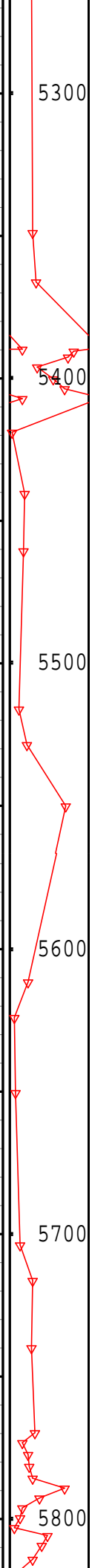


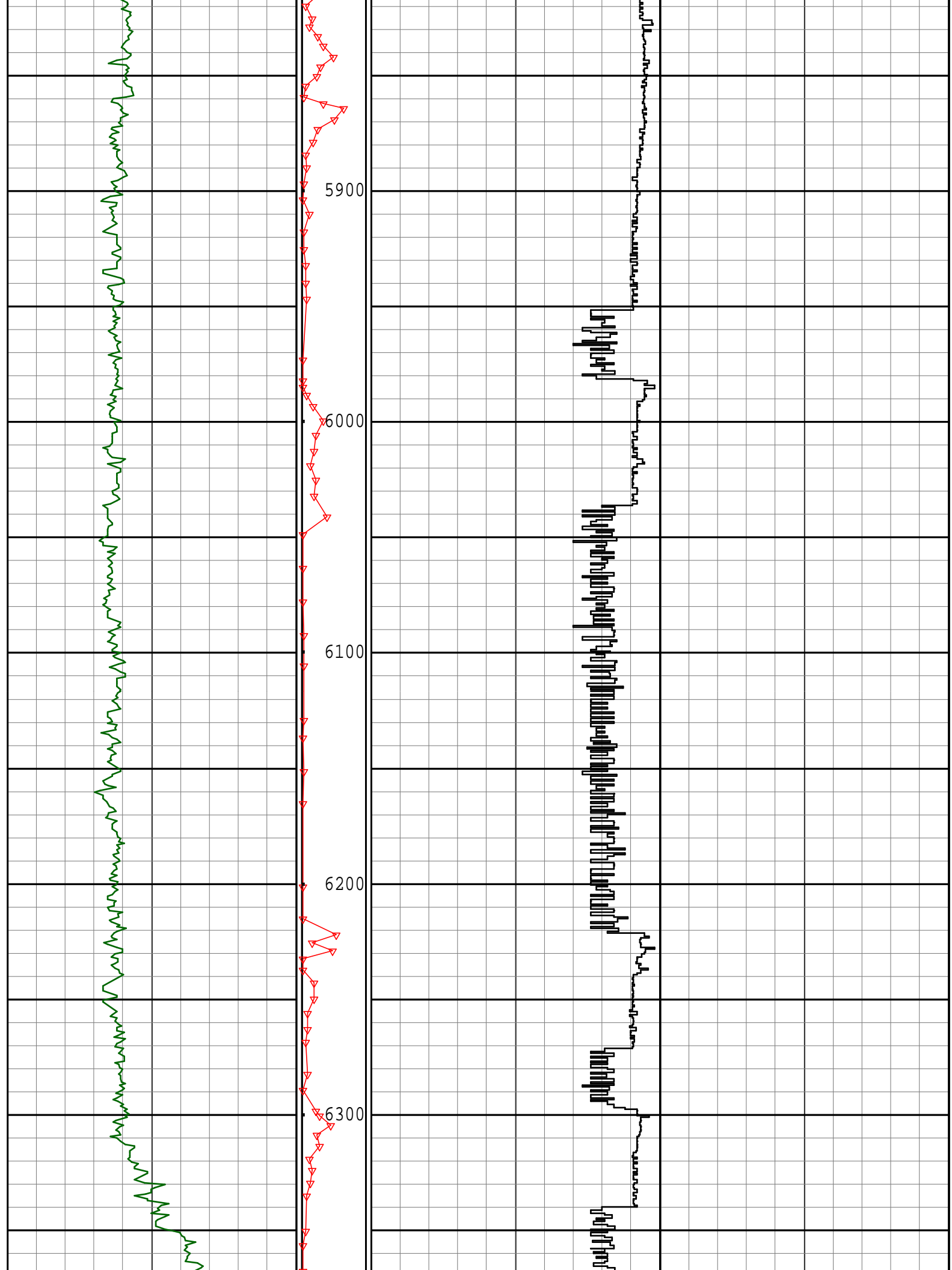


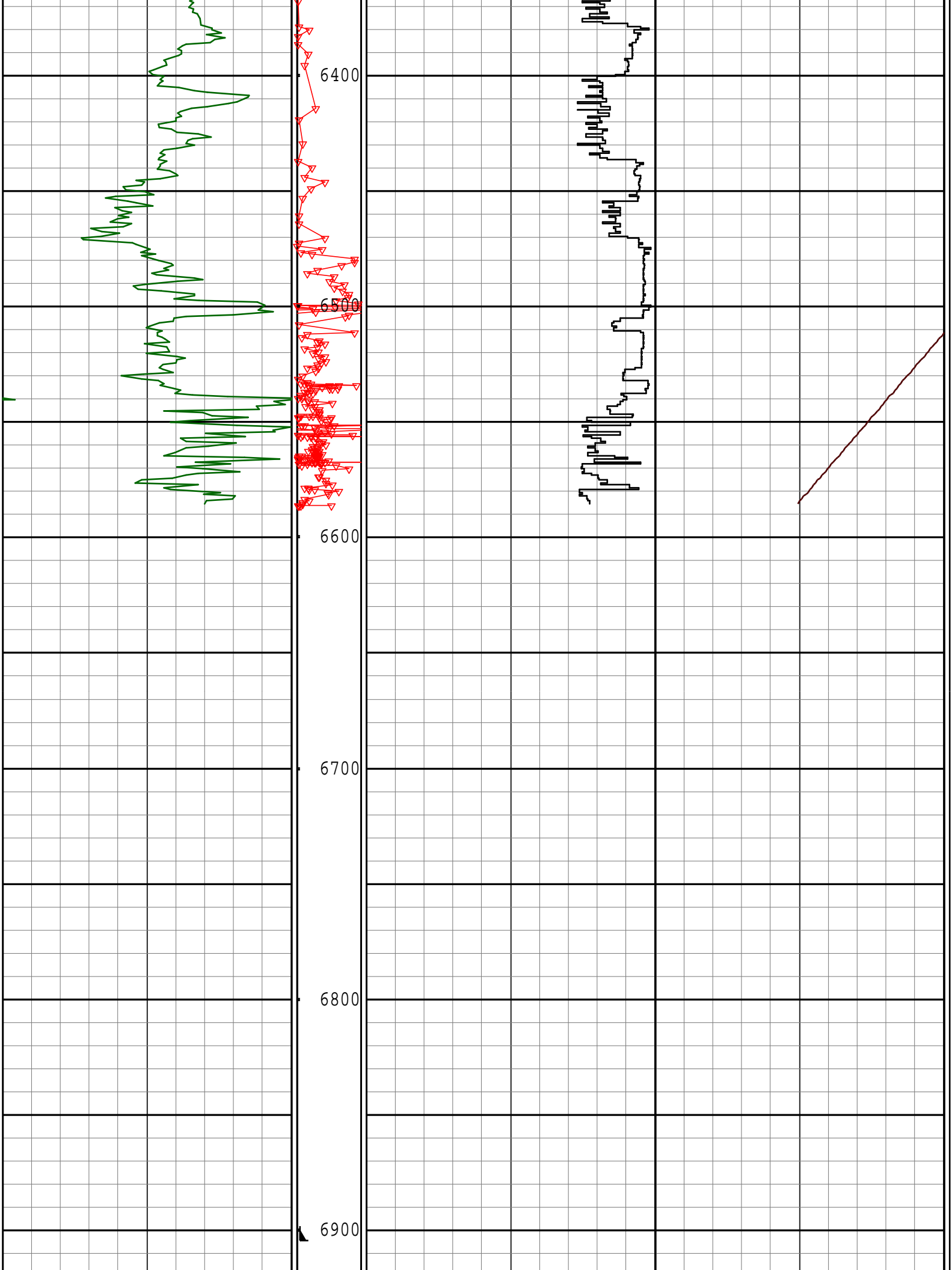


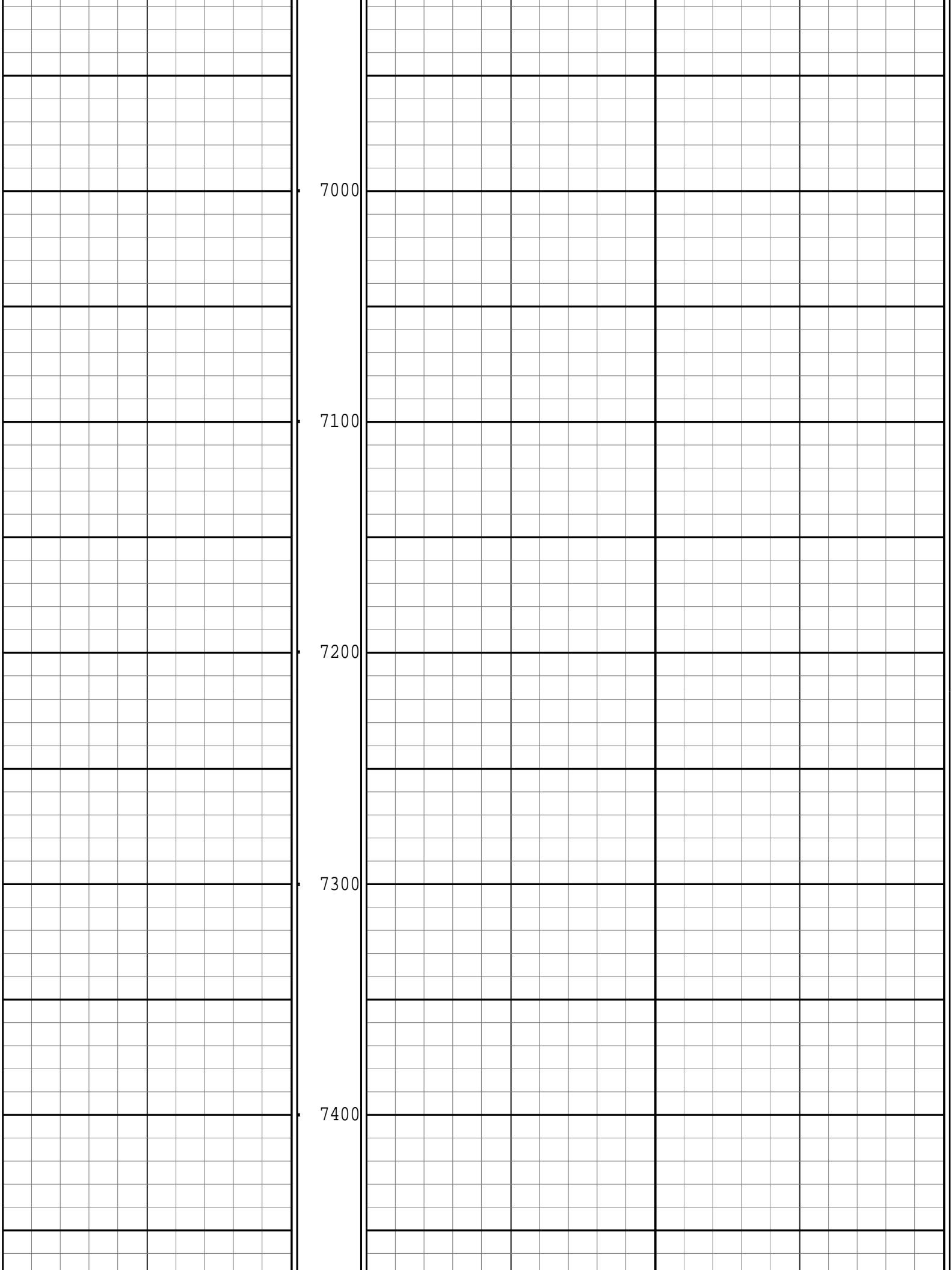


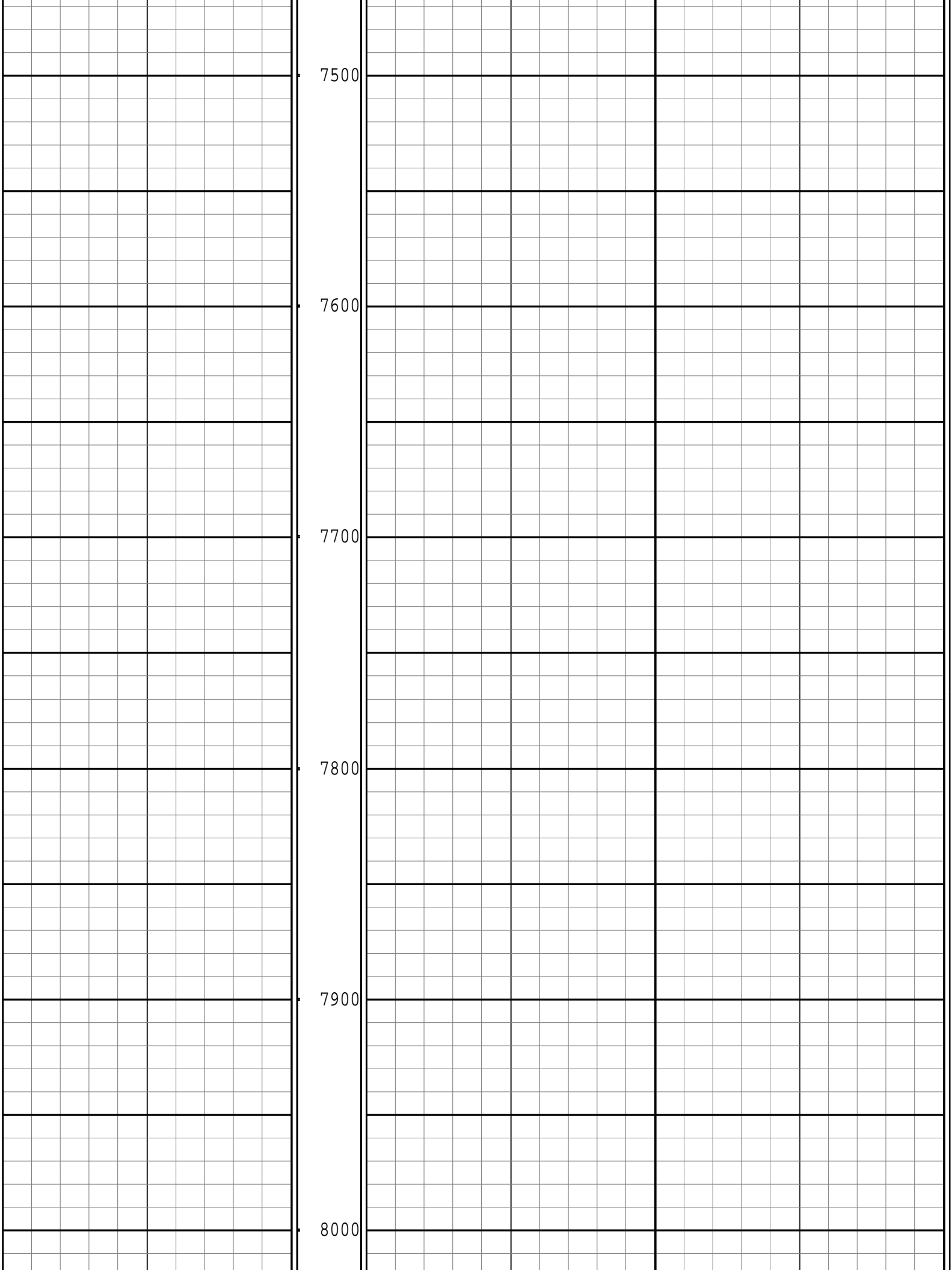


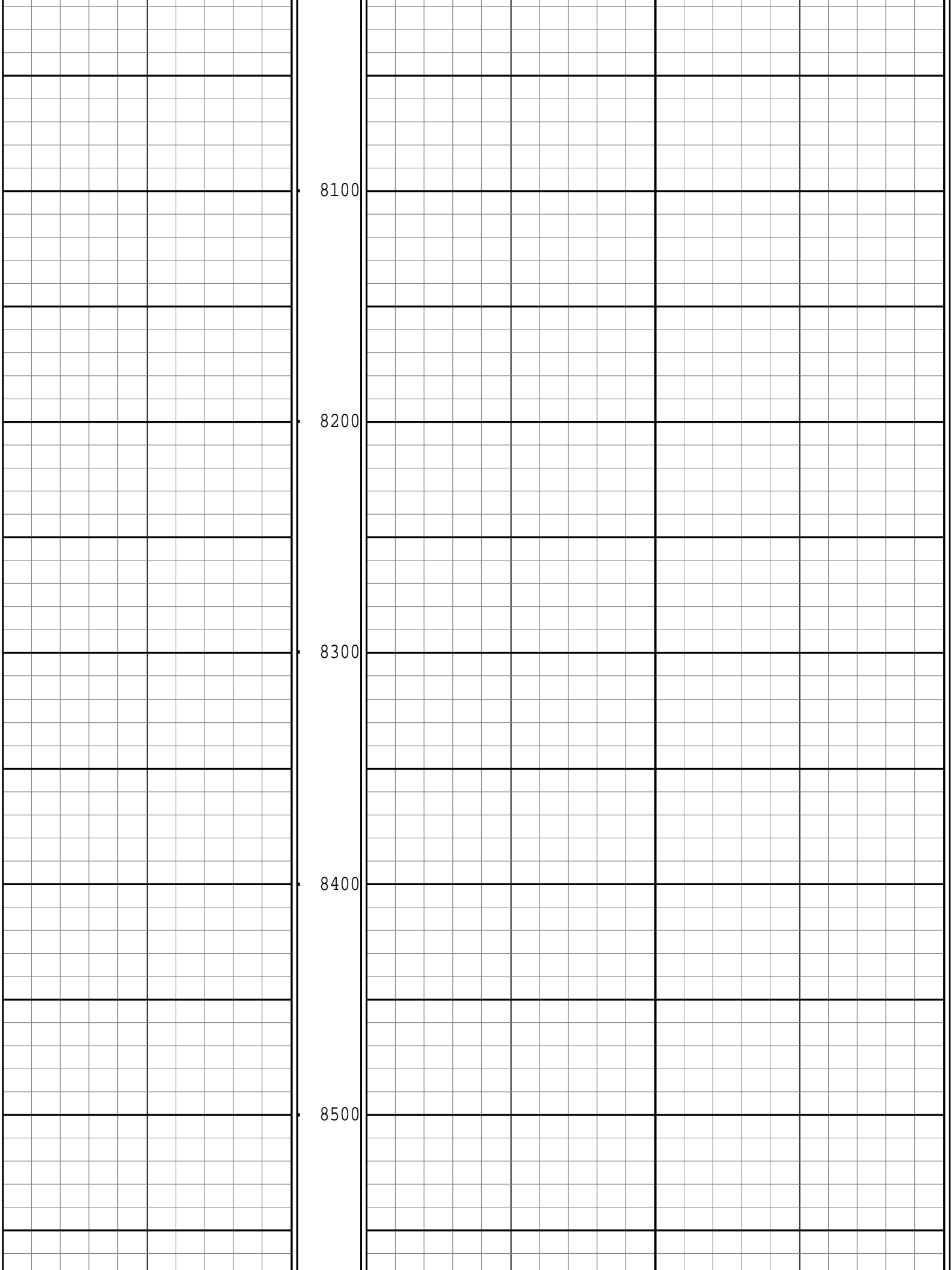


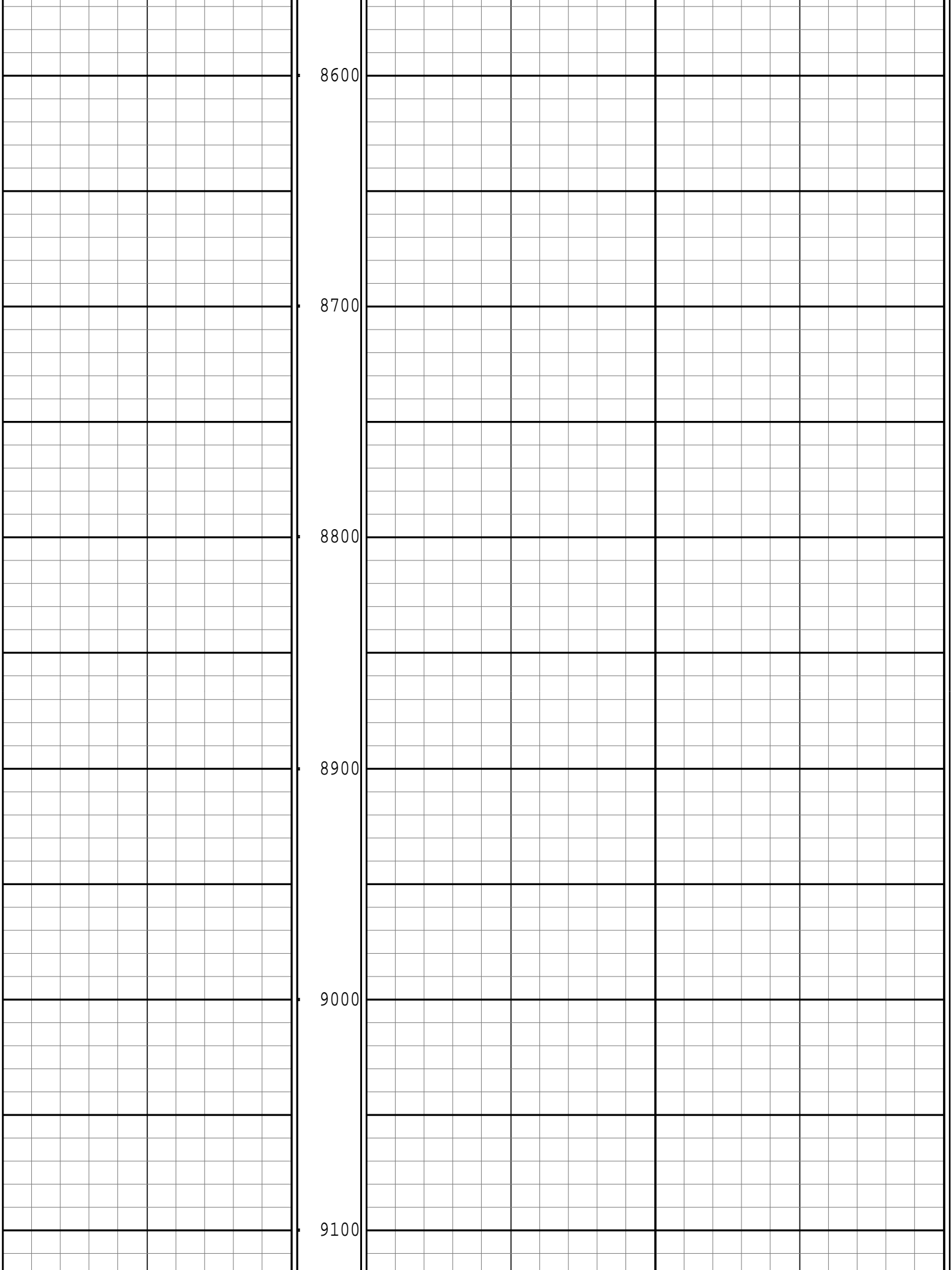


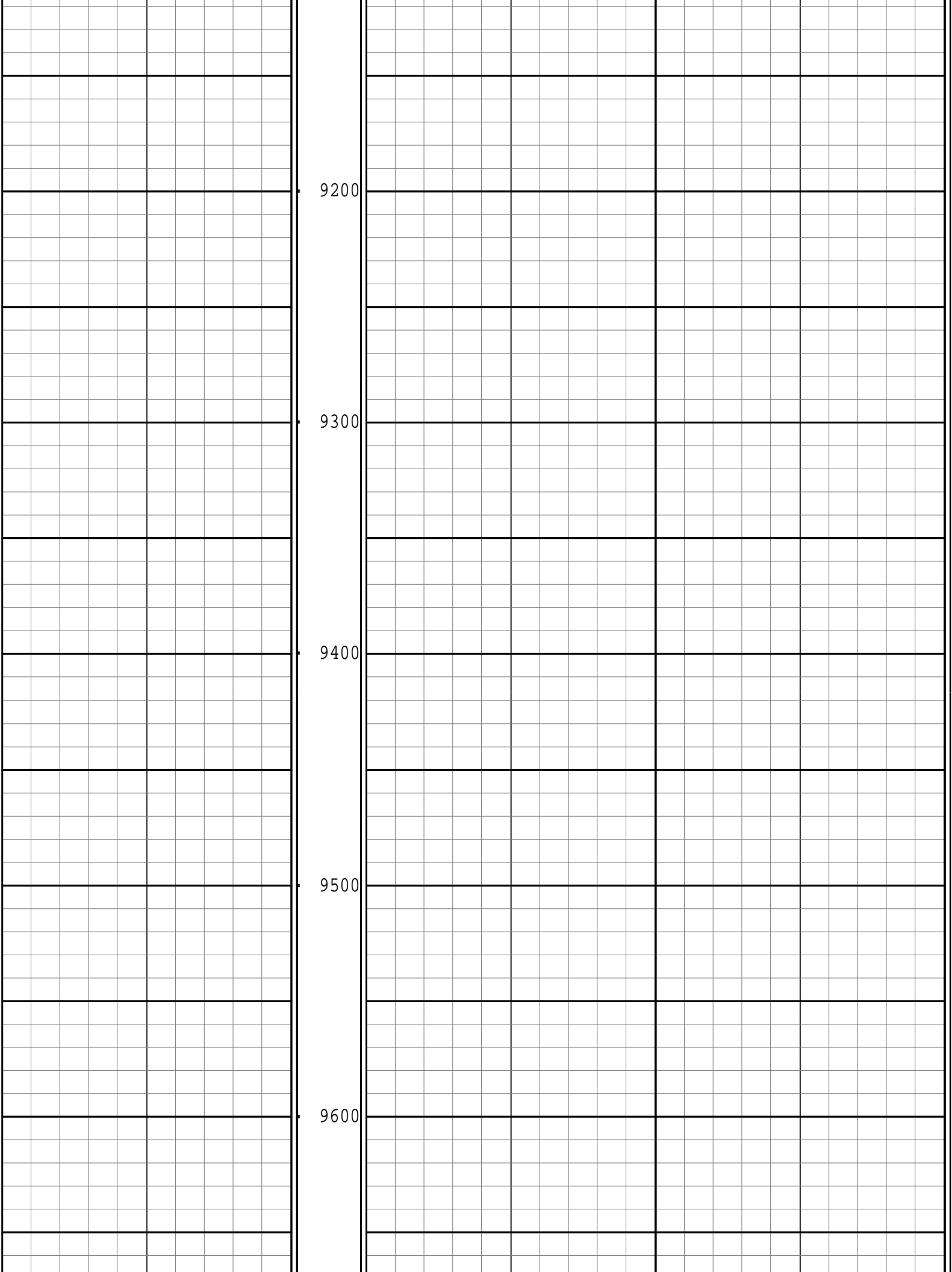


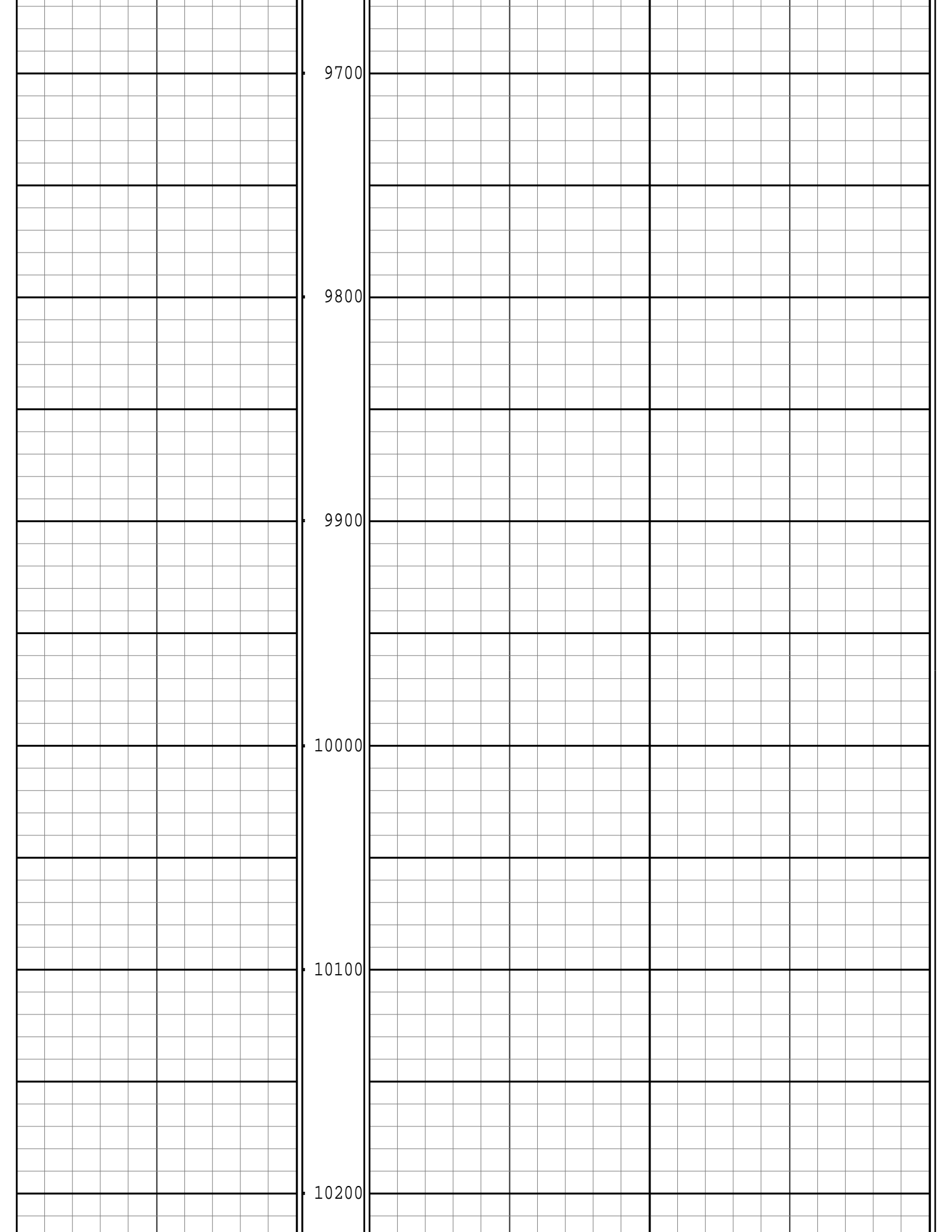


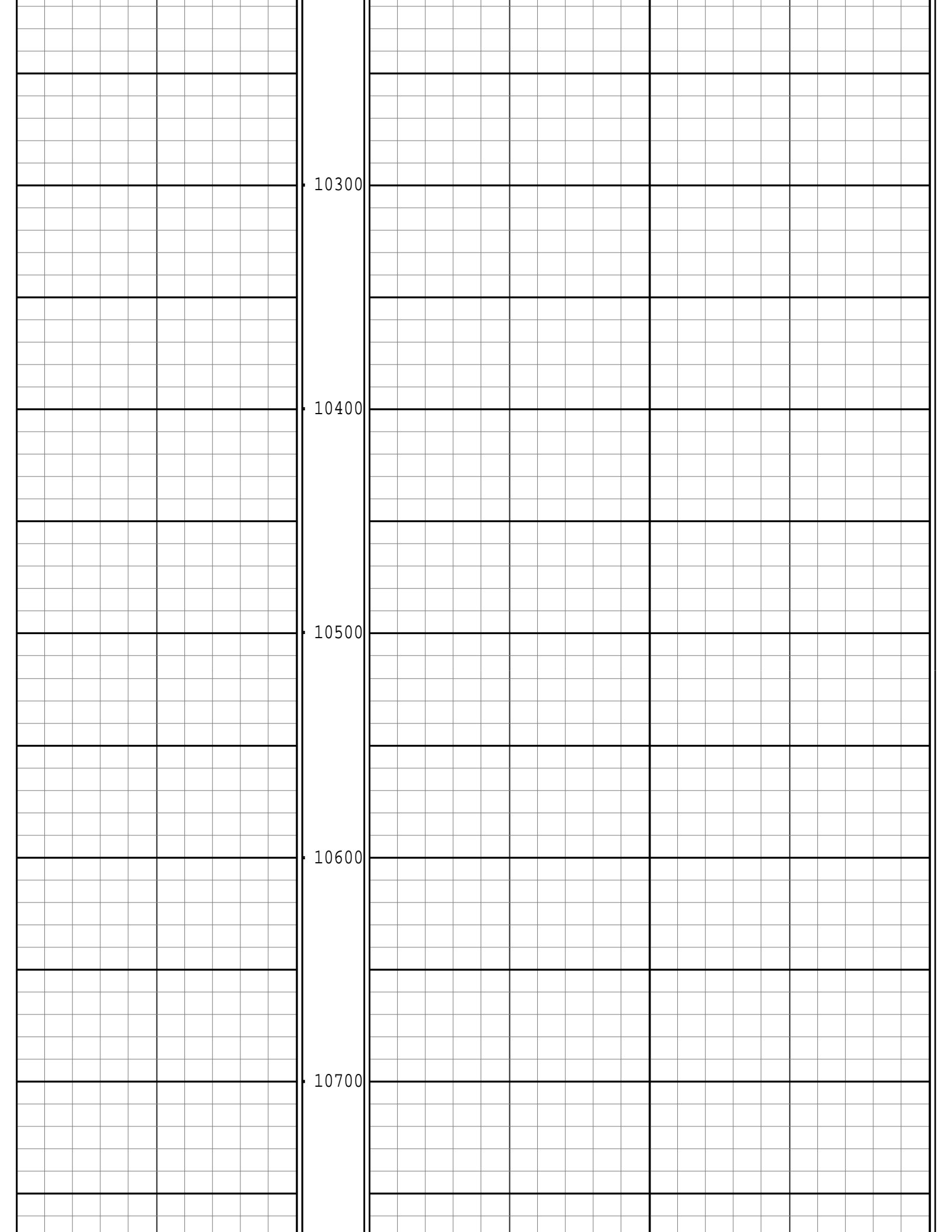


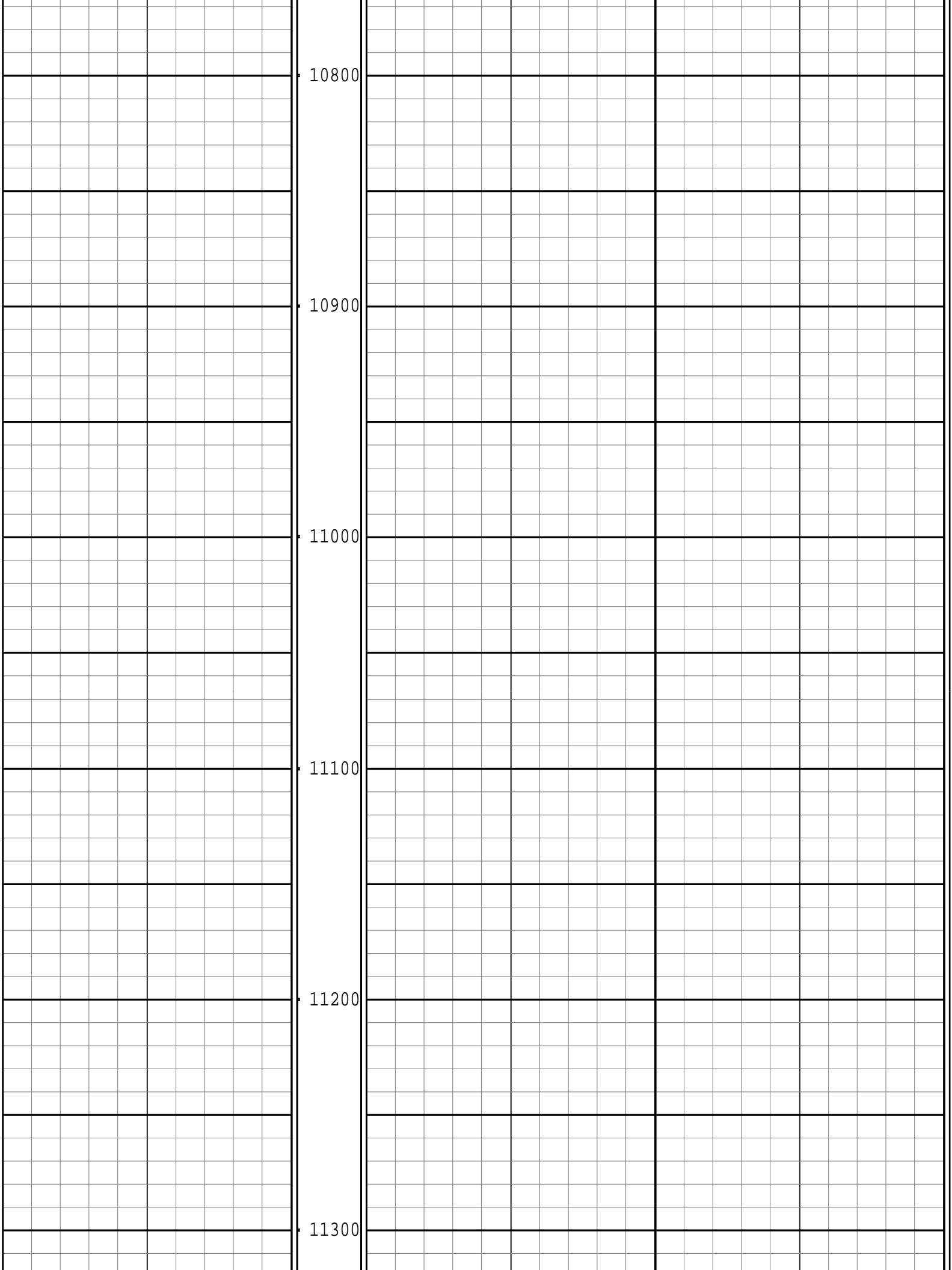












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Survey Report	
Vertical Section Plane: 268.90°	Total Correction: 7.61° East to True

Calculation Method: Minimum Curvature						Survey Reference: Wellhead					
North Aligned to: True North						Well: WELLS RANCH AE 19-636					
Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	TVD (ft)	Sub Sea TVD (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 C)
6936.00	87.23	275.11	6541.28	6541.28	876.53	24.78 N	877.16 W	877.51	271.62	6.67	80.51
7027.00	87.67	273.28	6545.33	6545.33	967.04	31.43 N	967.83 W	968.34	271.86	2.07	80.51
7120.00	87.58	270.27	6549.18	6549.18	1059.84	34.30 N	1060.69 W	1061.25	271.85	3.24	80.51
7213.00	88.29	268.66	6552.54	6552.54	1152.77	33.44 N	1153.62 W	1154.11	271.66	1.89	80.51
7306.00	88.99	267.16	6554.74	6554.74	1245.73	30.05 N	1246.53 W	1246.89	271.38	1.78	80.51
7399.00	89.16	268.25	6556.24	6556.24	1338.69	26.32 N	1339.44 W	1339.70	271.13	1.19	80.51
7492.00	90.22	267.30	6556.75	6556.75	1431.67	22.71 N	1432.37 W	1432.55	270.91	1.53	82.52
7584.00	89.78	268.47	6556.75	6556.75	1523.65	19.32 N	1524.31 W	1524.43	270.73	1.36	82.52
7679.00	90.40	268.34	6556.60	6556.60	1618.65	16.67 N	1619.27 W	1619.35	270.59	0.67	82.52
7774.00	89.96	269.47	6556.30	6556.30	1713.65	14.86 N	1714.25 W	1714.31	270.50	1.28	82.52
7870.00	90.48	268.59	6555.93	6555.93	1809.64	13.23 N	1810.23 W	1810.28	270.42	1.07	84.53
7965.00	90.84	269.51	6554.84	6554.84	1904.64	11.66 N	1905.21 W	1905.25	270.35	1.04	84.53
8059.00	87.93	268.81	6555.85	6555.85	1998.62	10.28 N	1999.19 W	1999.21	270.29	3.18	84.53
8154.00	88.37	268.22	6558.91	6558.91	2093.57	7.82 N	2094.10 W	2094.12	270.21	0.77	88.54
8249.00	88.90	267.89	6561.18	6561.18	2188.53	4.59 N	2189.02 W	2189.03	270.12	0.66	88.54
8343.00	89.25	267.61	6562.69	6562.69	2282.50	0.90 N	2282.94 W	2282.94	270.02	0.48	88.54
8438.00	89.25	267.29	6563.94	6563.94	2377.46	3.32 S	2377.83 W	2377.84	269.92	0.34	86.54
8532.00	89.78	267.31	6564.73	6564.73	2471.42	7.75 S	2471.73 W	2471.74	269.82	0.56	90.55
8626.00	89.69	266.41	6565.17	6565.17	2565.36	12.90 S	2565.58 W	2565.62	269.71	0.96	90.55
8721.00	90.40	267.11	6565.09	6565.09	2660.29	18.27 S	2660.43 W	2660.49	269.61	1.05	92.56
8816.00	90.84	267.31	6564.06	6564.06	2755.24	22.89 S	2755.31 W	2755.41	269.52	0.51	92.56
8910.00	89.96	266.66	6563.41	6563.41	2849.19	27.84 S	2849.18 W	2849.31	269.44	1.16	92.56
9004.00	90.48	266.18	6563.05	6563.05	2943.10	33.71 S	2942.99 W	2943.19	269.34	0.75	92.56
9099.00	89.52	267.87	6563.05	6563.05	3038.04	38.64 S	3037.86 W	3038.11	269.27	2.05	92.56
9193.00	89.43	266.78	6563.91	6563.91	3132.00	43.02 S	3131.75 W	3132.05	269.21	1.16	92.56
9288.00	89.52	265.36	6564.78	6564.78	3226.88	49.53 S	3226.52 W	3226.90	269.12	1.50	94.57
9382.00	89.60	266.18	6565.50	6565.50	3320.74	56.47 S	3320.26 W	3320.74	269.03	0.88	94.57
9476.00	89.08	269.30	6566.58	6566.58	3414.70	60.17 S	3414.17 W	3414.70	268.99	3.37	92.56
9570.00	89.52	269.66	6567.73	6567.73	3508.69	61.03 S	3508.16 W	3508.69	269.00	0.60	94.57
9665.00	90.13	269.46	6568.02	6568.02	3603.68	61.75 S	3603.16 W	3603.69	269.02	0.68	94.57
9759.00	90.75	268.58	6567.30	6567.30	3697.67	63.36 S	3697.14 W	3697.68	269.02	1.15	96.57
9853.00	86.97	267.20	6569.17	6569.17	3791.62	66.82 S	3791.04 W	3791.63	268.99	4.28	96.57
9947.00	86.35	266.78	6574.65	6574.65	3885.41	71.75 S	3884.75 W	3885.41	268.94	0.80	96.57
10041.00	87.49	269.10	6579.70	6579.70	3979.25	75.12 S	3978.54 W	3979.25	268.92	2.75	96.57
10135.00	87.32	268.45	6583.95	6583.95	4073.15	77.13 S	4072.42 W	4073.15	268.91	0.71	98.58
10230.00	89.52	269.01	6586.57	6586.57	4168.11	79.23 S	4167.36 W	4168.11	268.91	2.39	98.58
10324.00	91.80	268.76	6585.49	6585.49	4262.10	81.06 S	4261.33 W	4262.10	268.91	2.44	98.58
10419.00	91.36	268.17	6582.87	6582.87	4357.06	83.61 S	4356.26 W	4357.06	268.90	0.78	98.58
10513.00	91.36	266.57	6580.64	6580.64	4451.00	87.92 S	4450.13 W	4451.00	268.87	1.70	100.59
10607.00	90.84	264.66	6578.84	6578.84	4544.82	95.10 S	4543.83 W	4544.83	268.80	2.11	102.60
10702.00	90.13	266.98	6578.03	6578.03	4639.67	102.03 S	4638.57 W	4639.69	268.74	2.55	100.59
10796.00	90.13	267.79	6577.82	6577.82	4733.64	106.32 S	4732.47 W	4733.66	268.71	0.86	100.59
10890.00	89.16	268.04	6578.40	6578.40	4827.62	109.74 S	4826.41 W	4827.65	268.70	1.07	100.59
10985.00	89.16	268.98	6579.79	6579.79	4922.61	112.21 S	4921.36 W	4922.64	268.69	0.99	100.59
11079.00	89.87	268.11	6580.59	6580.59	5016.60	114.59 S	5015.33 W	5016.64	268.69	1.19	102.60
11174.00	89.87	267.65	6580.80	6580.80	5111.59	118.11 S	5110.26 W	5111.63	268.68	0.48	104.61
11268.00	89.60	267.13	6581.24	6581.24	5205.55	122.39 S	5204.16 W	5205.60	268.65	0.62	104.61
11363.00	89.78	267.88	6581.75	6581.75	5300.52	126.52 S	5299.07 W	5300.58	268.63	0.81	104.61
11458.00	90.57	268.11	6581.46	6581.46	5395.51	129.85 S	5394.01 W	5395.57	268.62	0.87	104.61
11552.00	90.57	267.72	6580.53	6580.53	5489.49	133.27 S	5487.94 W	5489.56	268.61	0.42	104.61
11647.00	91.80	266.92	6578.56	6578.56	5584.43	137.71 S	5582.82 W	5584.51	268.59	1.54	106.61
11711.00	91.36	266.02	6576.80	6576.80	5648.35	141.65 S	5646.67 W	5648.45	268.56	1.56	104.61
Projection to bit. 11772.00	91.36	266.02	6575.35	6575.35	5709.25	145.88 S	5707.51 W	5709.37	268.54	0.00	

BOTTOM HOLE ASSEMBLY RECORD							
1 ft		2 ft		3 ft			
8 /34 PDC BIT	0.70	6 1/4 PDC BIT	0.56	6 1/4" PDC BIT	0.56		
1.75 FX MOTOR	26.19	1.5° FX MOTOR	26.78	1.5° FX MOTOR	26.80		
NM FLOAT SUB	3.22	NM FLOAT SUB	3.50	NM FLOAT SUB	3.50		
MULESHOE	2.58	SUB MULESHOE	2.97	SUB MULESHOE	2.97		
HDS-1R (DIR/GR)	29.50	HDS-1R (DIR/GR)	31.11	NM DC	31.11		
NM FLEX DC	31.10	NM DC	30.97	NM DC	30.97		
NM FLEX DC	31.04	NM FLOAT SUB	3.49	NM FLOAT SUB	3.49		
FILTER SUB	2.83	NM DC	30.97	NM DC	30.97		
XO SUB	2.88	FILTER SUB	3.05	FILTER SUB	3.05		
		X/O SUB	3.06	X/O SUB	3.06		
		HWDP	30.67	HWDP	31.55		
		REAMER	8.52	REAMER	8.52		

		DRILL PIPE	2179.05	DRILL PIPE	2179.05		
		AGITATOR	11.56	AGITATOR	11.40		
		SHOCK SUB	11.15	SHOCK SUB	11.15		
		DRILL PIPE	3875.91	DRILL PIPE	3875.91		
		HWDP	1392.91	HWDP	1392.91		
=====		=====		=====			
TOTAL BHA LENGTH	130.04	TOTAL BHA LENGTH	7646.23	TOTAL BHA LENGTH	7646.97		
SENSOR OFFSETS:		SENSOR OFFSETS:		SENSOR OFFSETS:			
=====		=====		=====			
DIRECTIONAL	58.30	DIRECTIONAL	59.39	DIRECTIONAL	59.41		
GAMMA-RAY	41.00	GAMMA-RAY	42.09	GAMMA-RAY	42.11		

 <p>PATHFINDER</p> <p>A Schlumberger Company</p>	GAMMA-RAY
	2" = 100'
	FEET TVD