



TVD
1:240
Feet

MWD Gamma / ROP (5")

Client: *Whiting Petroleum Corp.*

Well Name: Razor #12F-0108B

API/UWID: 051233871700

County: Weld

Permit #: 15-0356

State: Colorado

Field: Wildcat

Country: USA

Personnel

Longitude: 103° 49' 3.23 W
Latitude: 40° 51' 16.779 N

Rig Name:	Unit 409	Company Representative K. Wilkerson / T. Renton
Job Number:	1523841	

Ground Level: 4936.80 ft

Kelly Bushing: 4956.80 ft

Drill Floor: 20.00 ft

Permanent Datum: Mean Sea Level

Drilling Measured From: Kelly Bushing

Spud Date: July 28, 2015

Bottom Hole Temp: 235 °F

Log Start Depth: 0.00 ft

Log End Depth: 6000.00 ft

MWD Operator(s)

Justin Amari

Larry Seebeck

Reference Data

North Reference: True North

Magnetic Declination: 7.43

Grid Convergence: 0.00

Total Mag Correction: 7.43

Comments:

Main Leg

PHOENIX TECHNOLOGY SERVICES LP ("PHOENIX") DOES NOT MAKE AND EXPRESSLY DISCLAIMS ALL WARRANTIES, REPRESENTATIONS AND CONDITIONS, WITH REGARD TO THE INFORMATION CONTAINED IN THIS DOCUMENT, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED OR ARISING FROM CONTRACT OR OTHERWISE. ANYONE USING THIS INFORMATION DOES SO AT THEIR OWN RISK AND ACKNOWLEDGES AND AGREES THAT PHOENIX SHALL NOT BE LIABLE FOR ANY ERROR, OMISSION, DEFECT, DEFICIENCY, OR NONCONFORMITY IN THE INFORMATION AND WITHOUT LIMITING THE FOREGOING, PHOENIX DOES NOT WARRANT THAT THE INFORMATION (OR THE USE THEREOF) WILL BE FREE OF ALL ERRORS OR THAT IT DOES NOT INFRINGE ANY THIRD PARTY RIGHTS. ANYONE USING THE INFORMATION AGREES TO INDEMNIFY AND HOLD PHOENIX HARMLESS FROM ALL CLAIMS, ACTIONS, COSTS (INCLUDING LEGAL COSTS) ON A SOLICITOR AND CLIENT BASIS) AND LIABILITIES ARISING FROM OR IN CONNECTION WITH THE USE OF THE INFORMATION.

1:240

Log

Creation Date: August 05, 2015 07:13

0

50

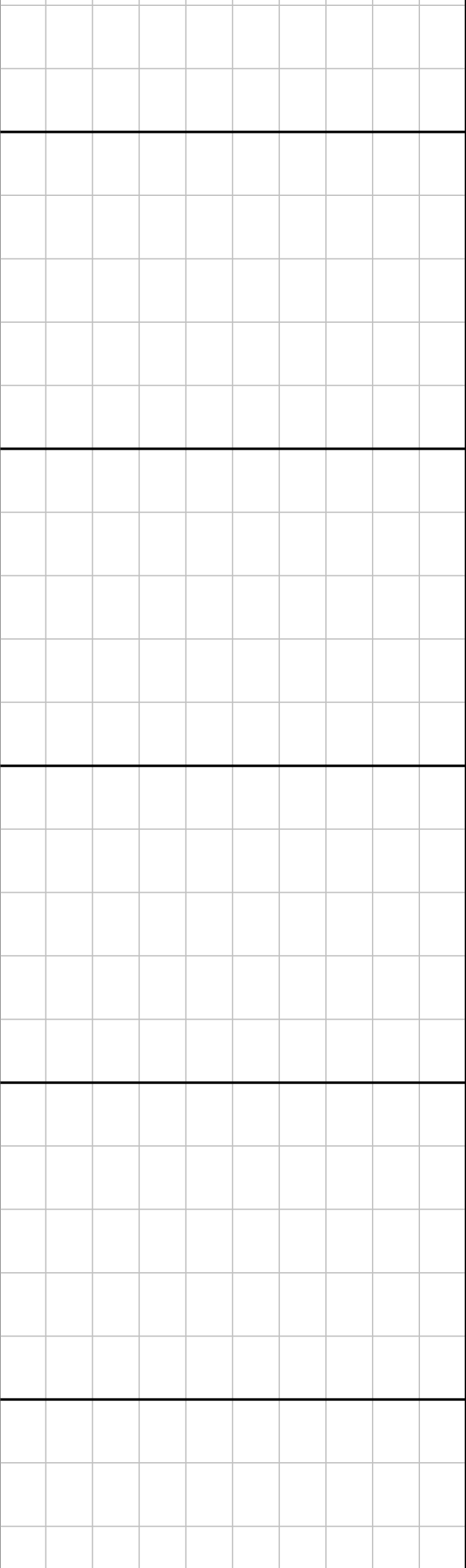
	ROP	ROP
0	ft/hr	300
	ROP	ROP
300	ft/hr	600
	ROP	ROP
600	ft/hr	900
	ROP	ROP
900	ft/hr	1200

[illegible]

	Gamma	Gama
0	AAPI	200
	Gamma	Gama
200	AAPI	400
	Gamma	Gama
400	AAPI	600
	Gamma	Gama
600	AAPI	800

[illegible]

[illegible]



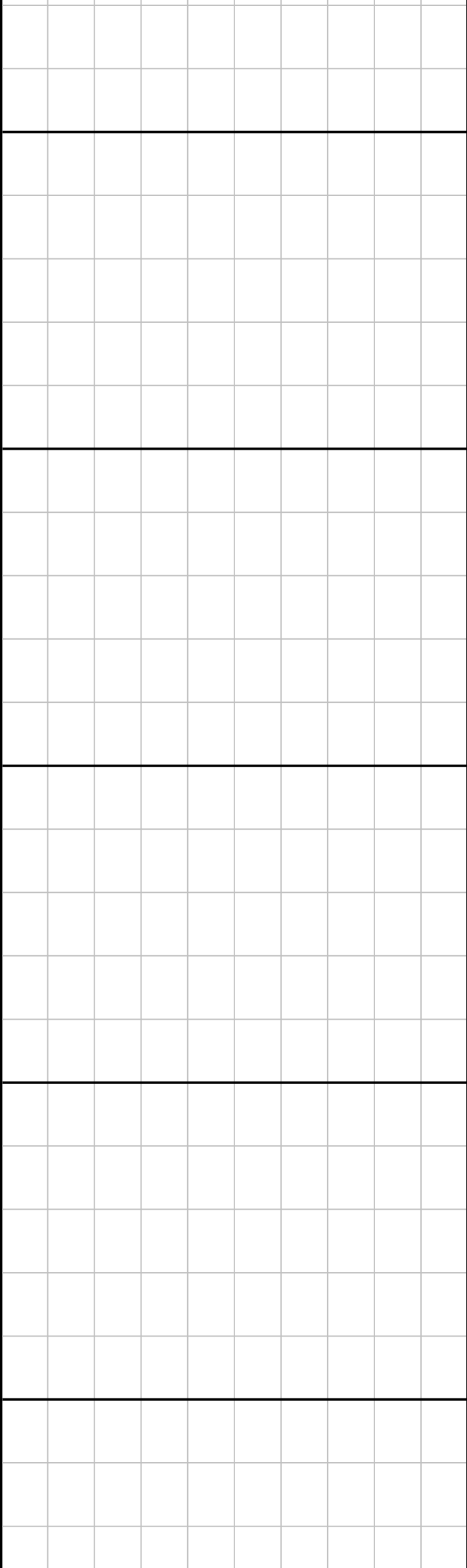
350

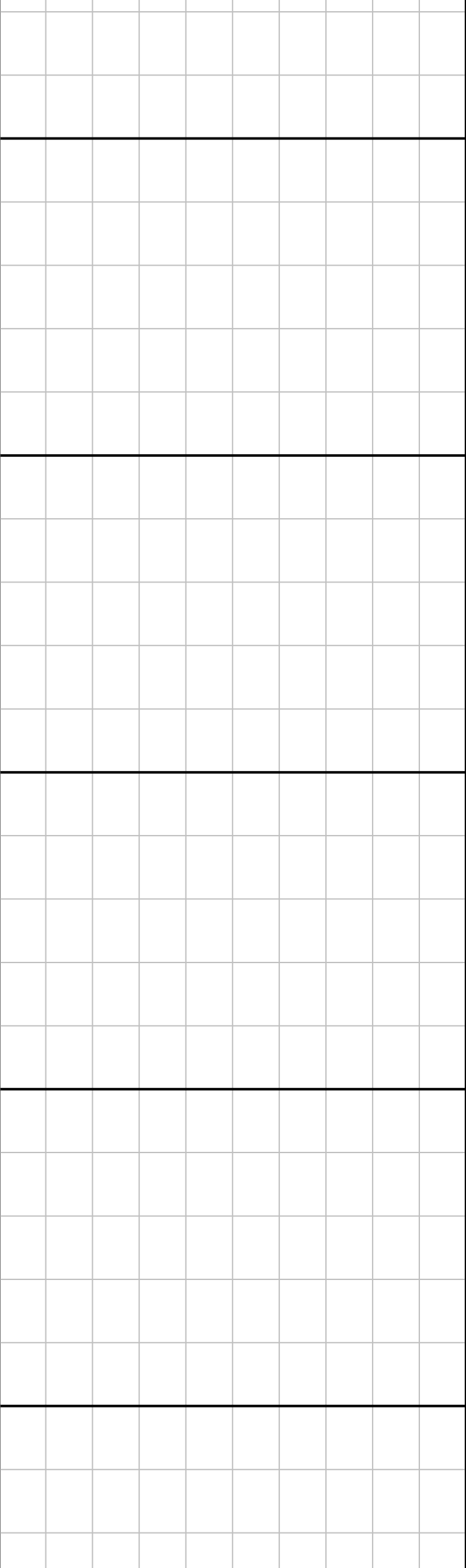
400

450

500

550





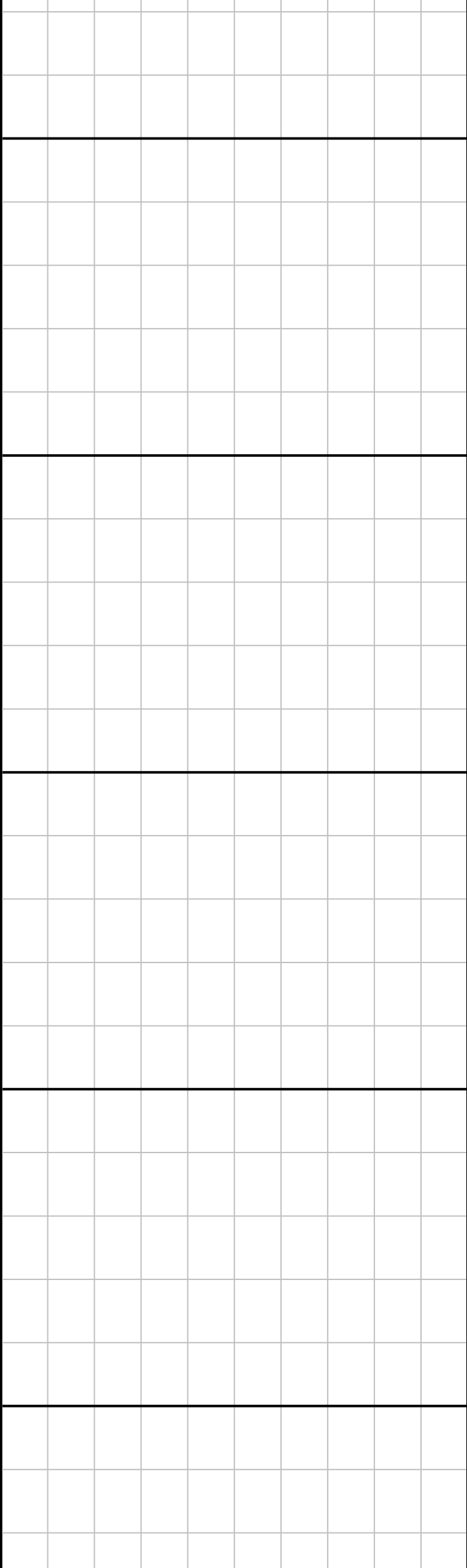
600

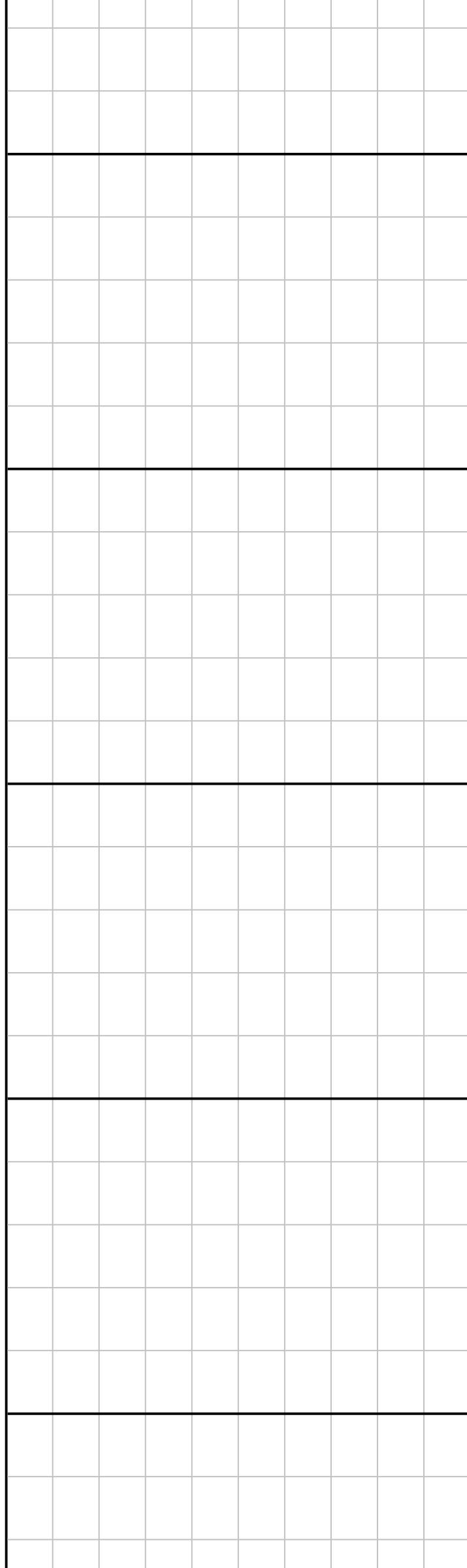
650

700

750

800





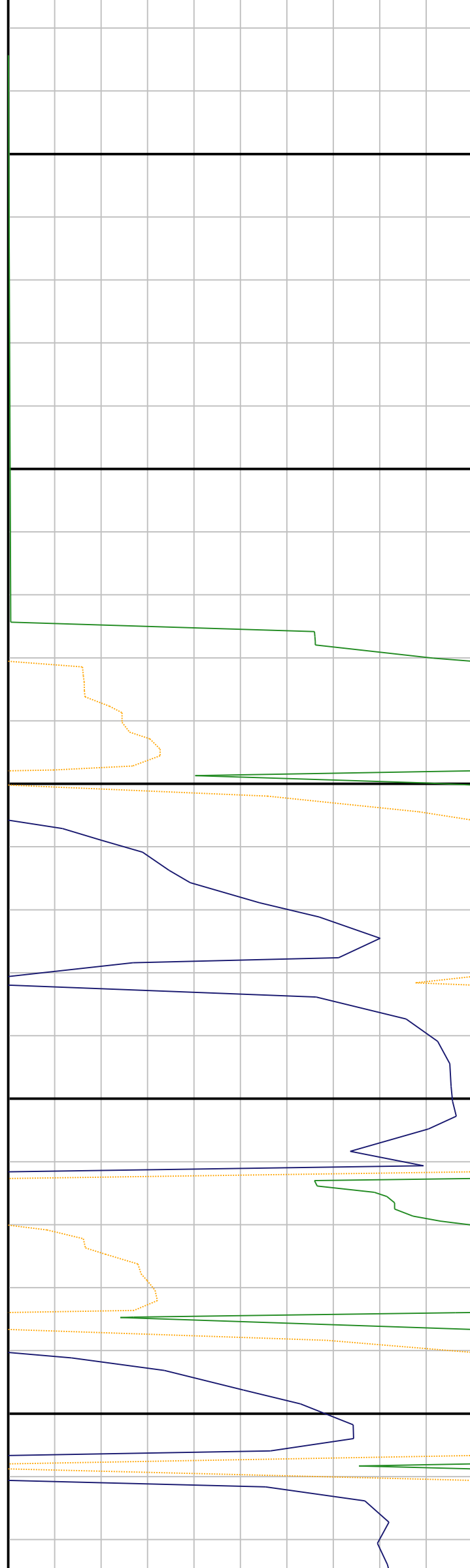
850

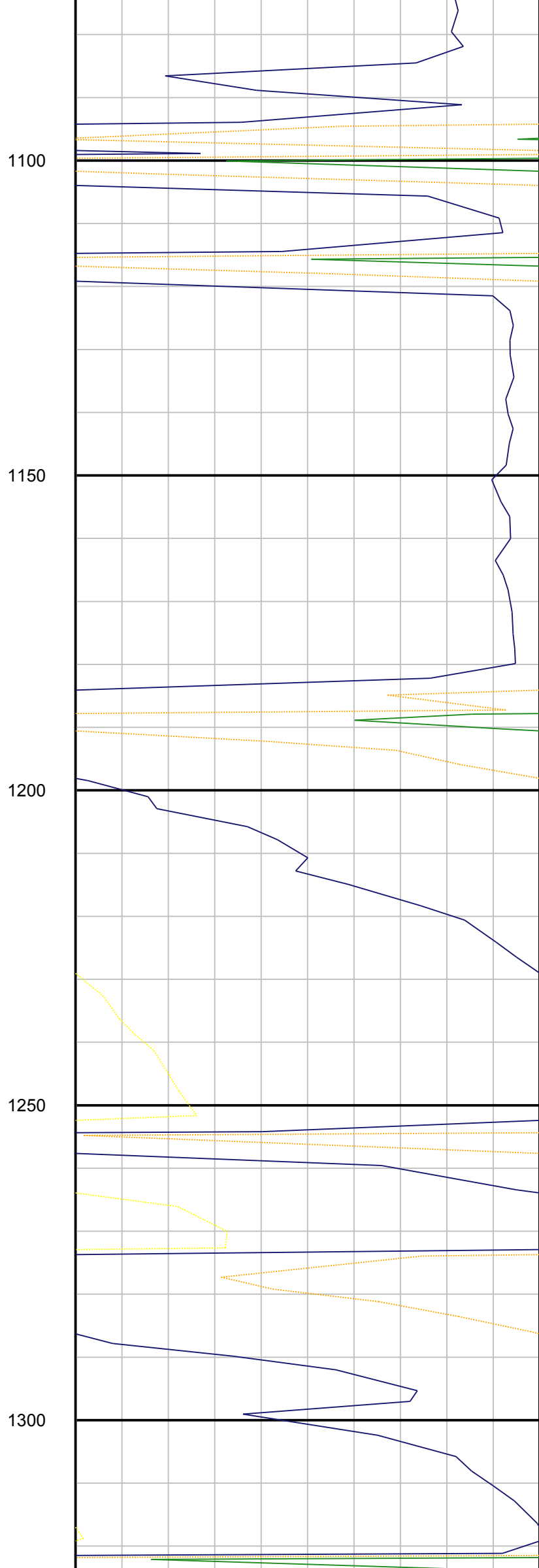
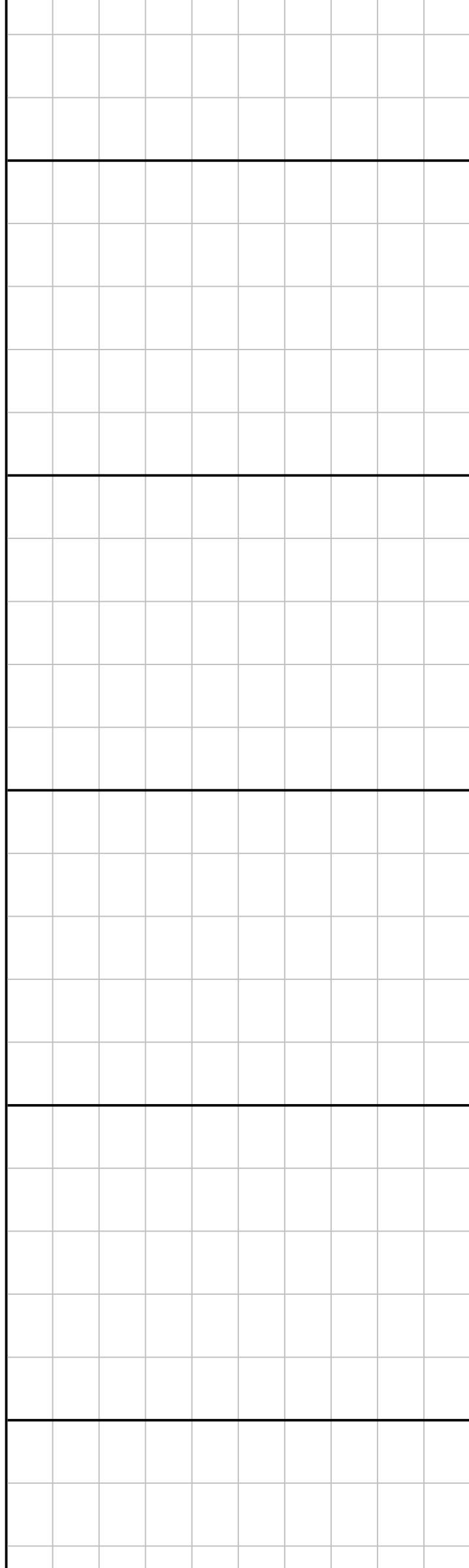
900

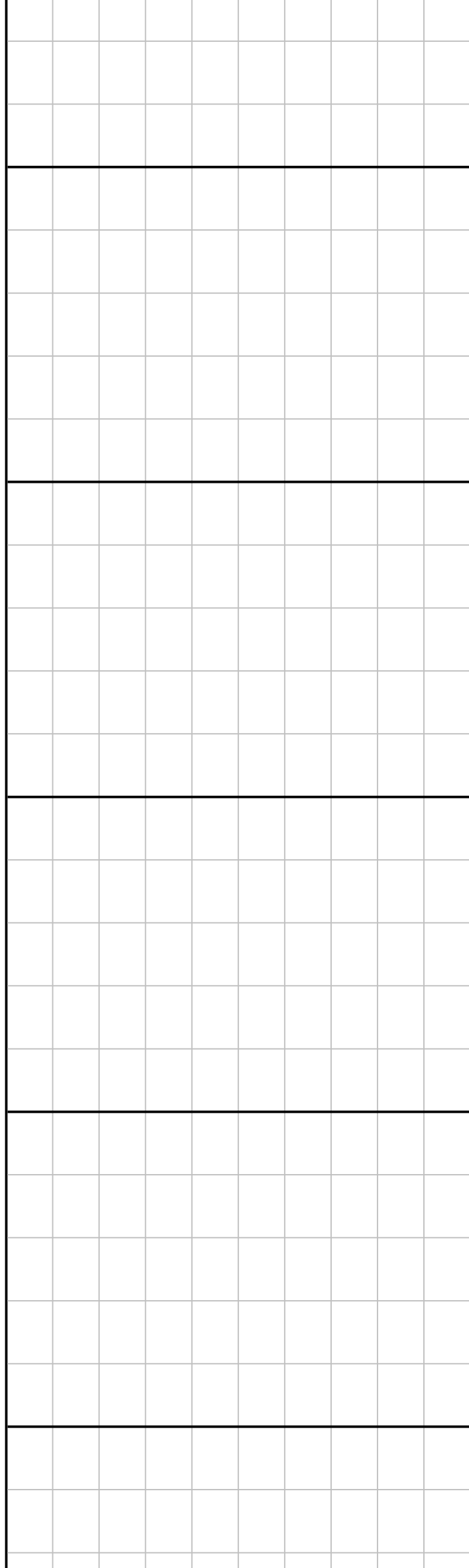
950

1000

1050







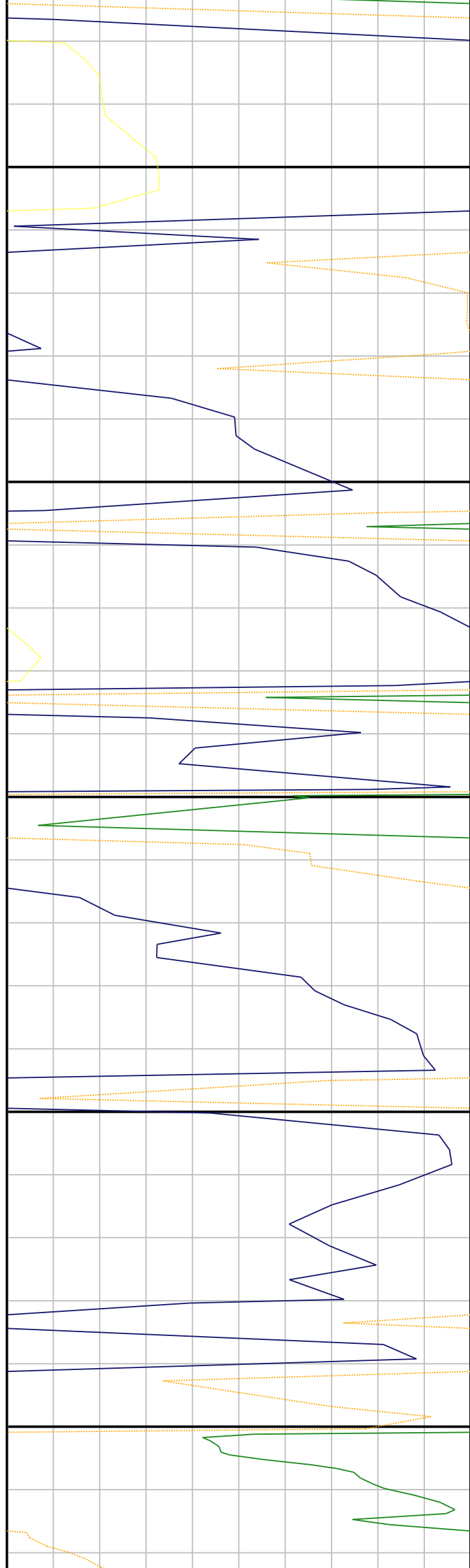
1350

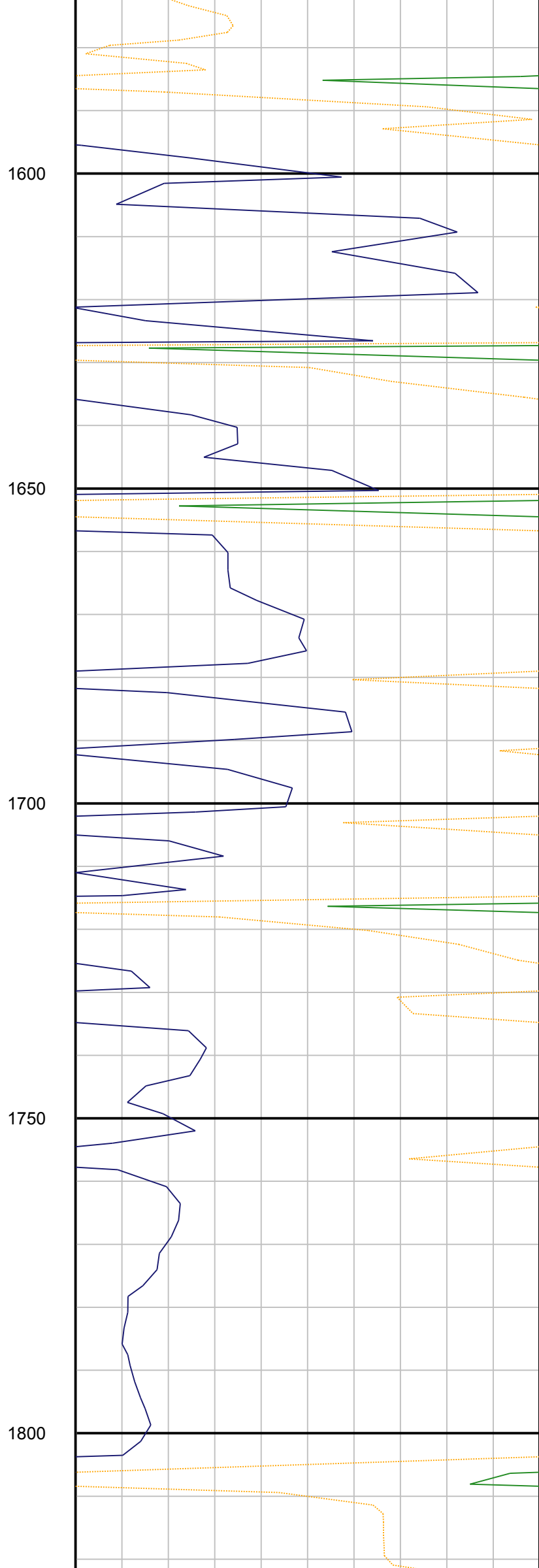
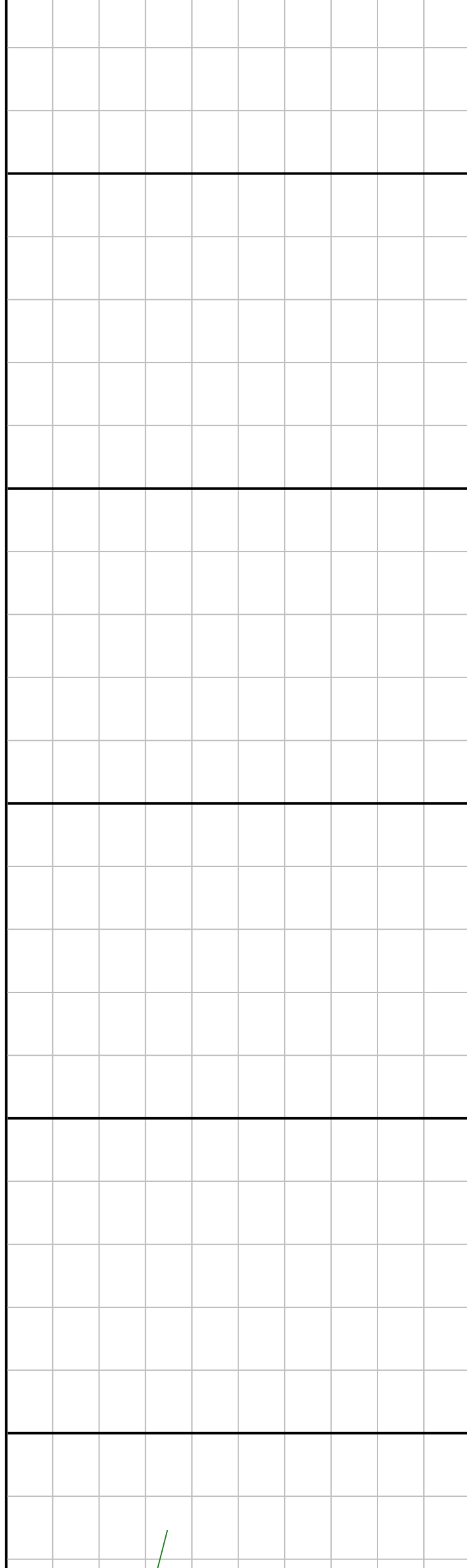
1400

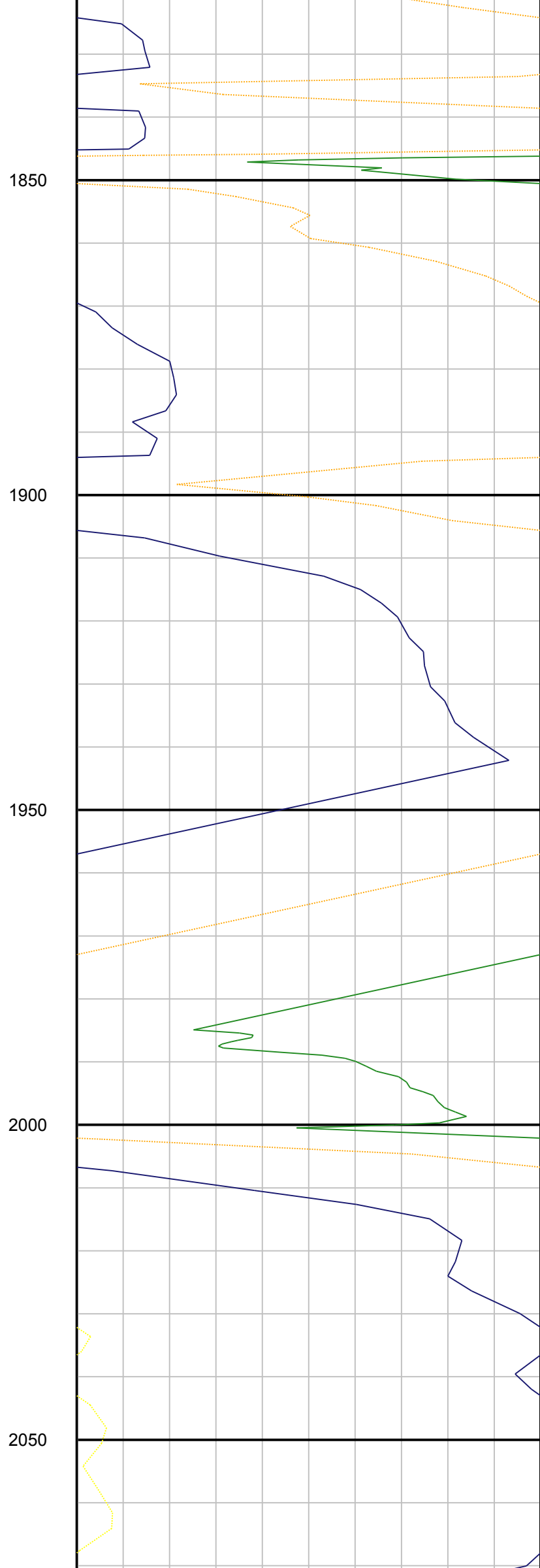
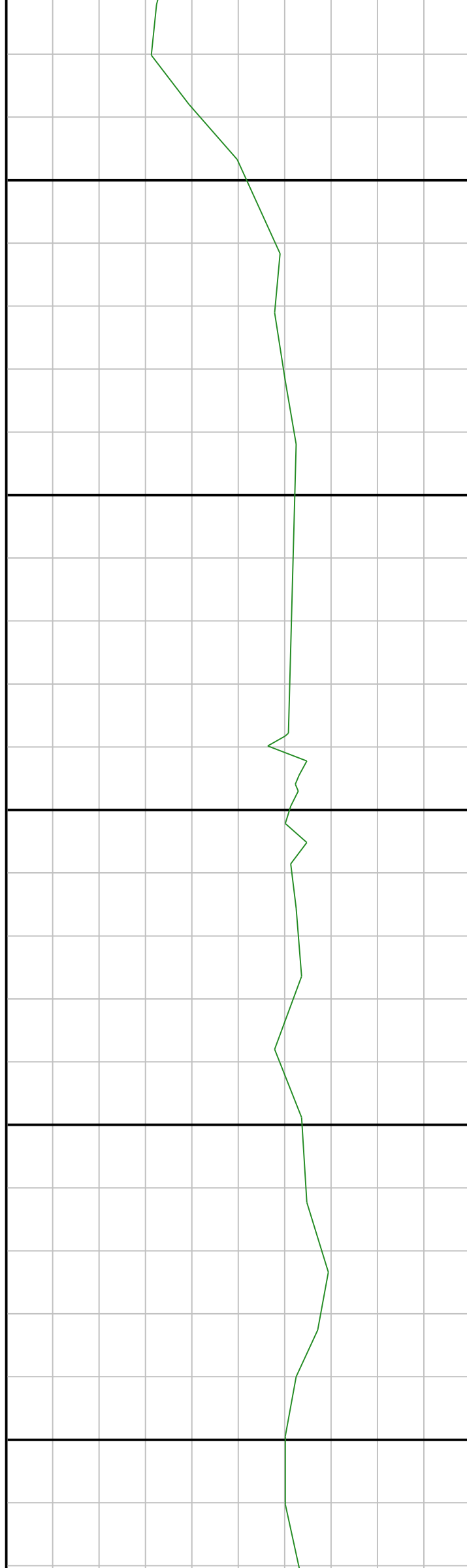
1450

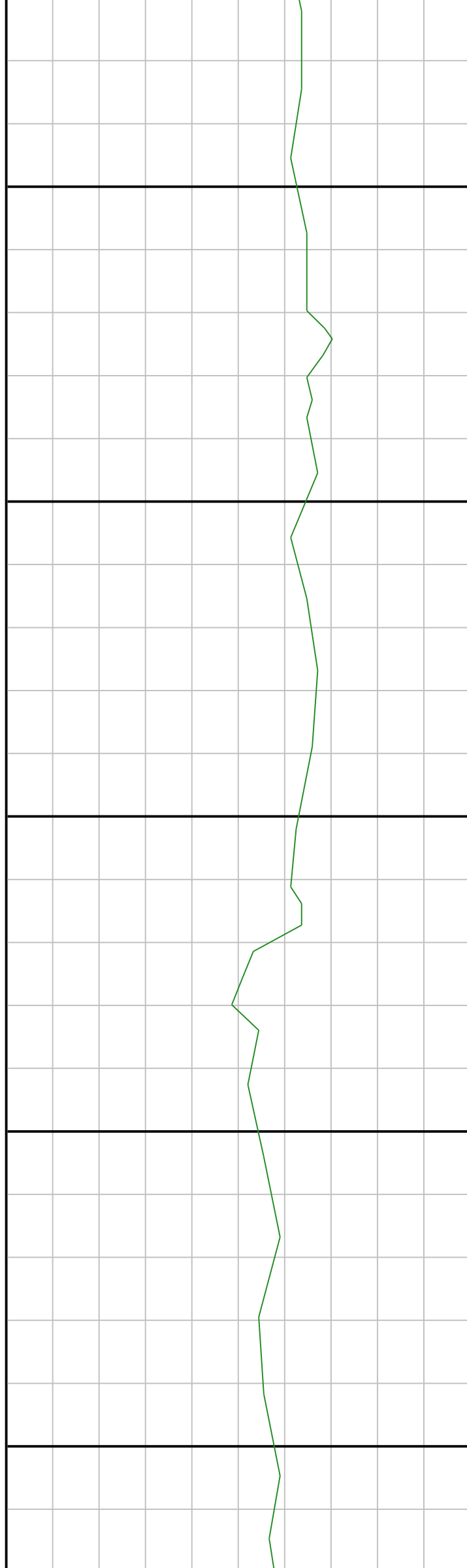
1500

1550









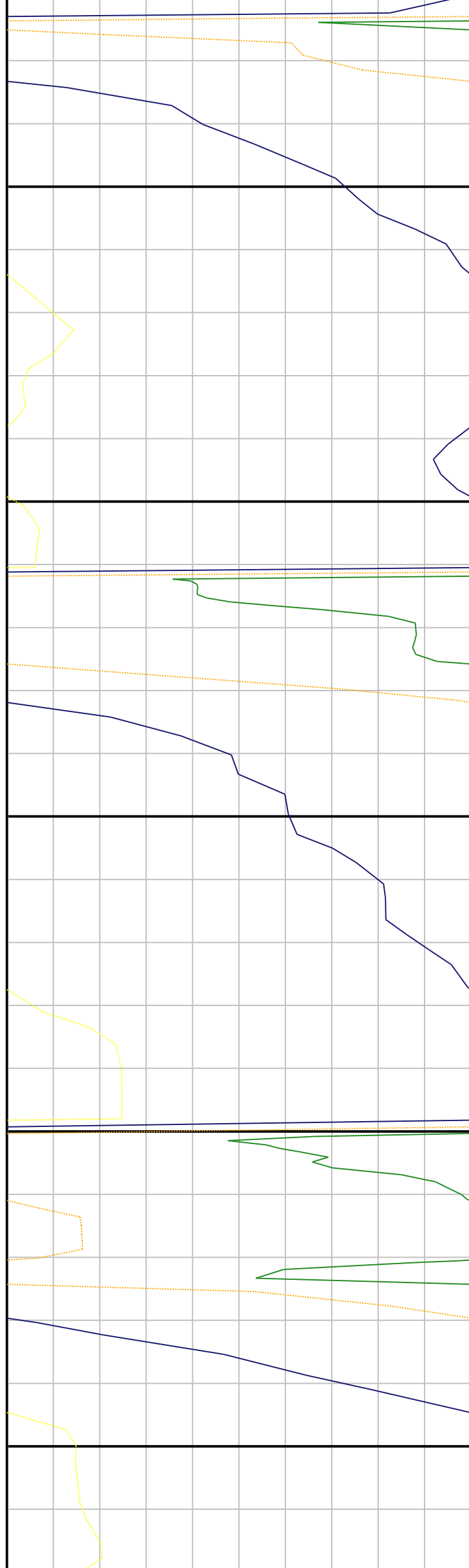
2100

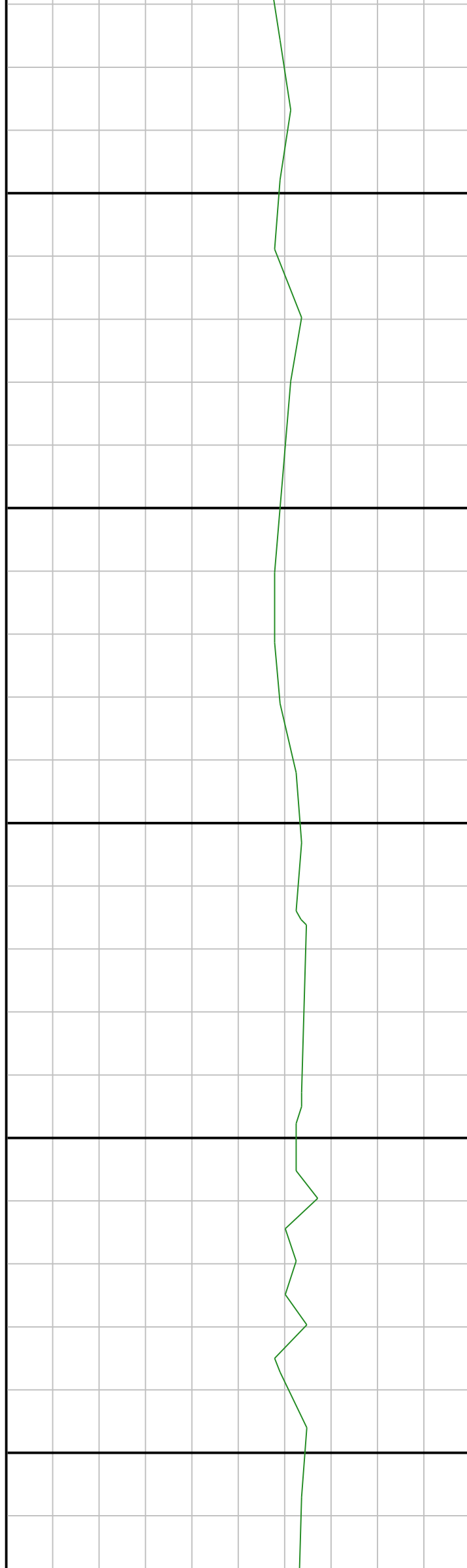
2150

2200

2250

2300





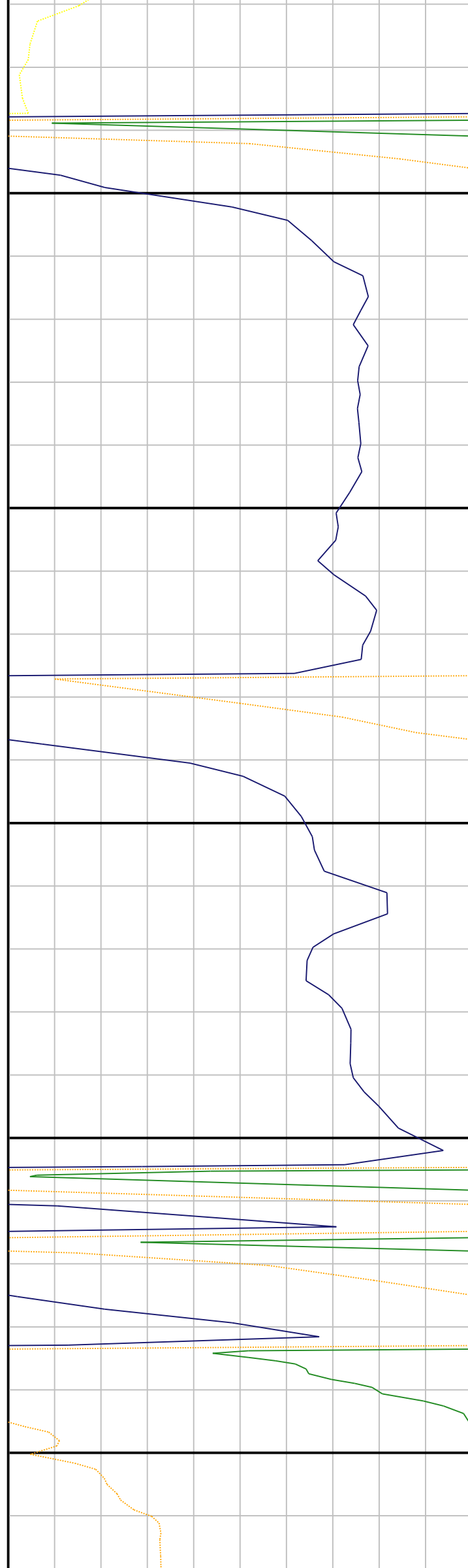
2350

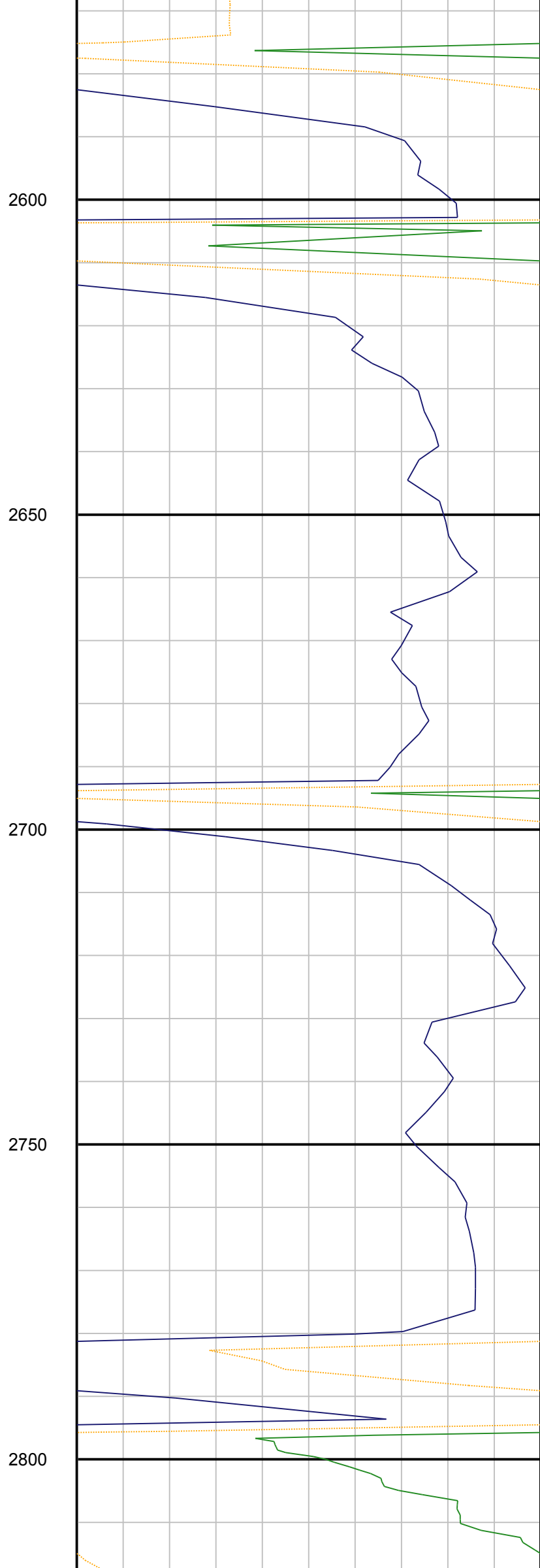
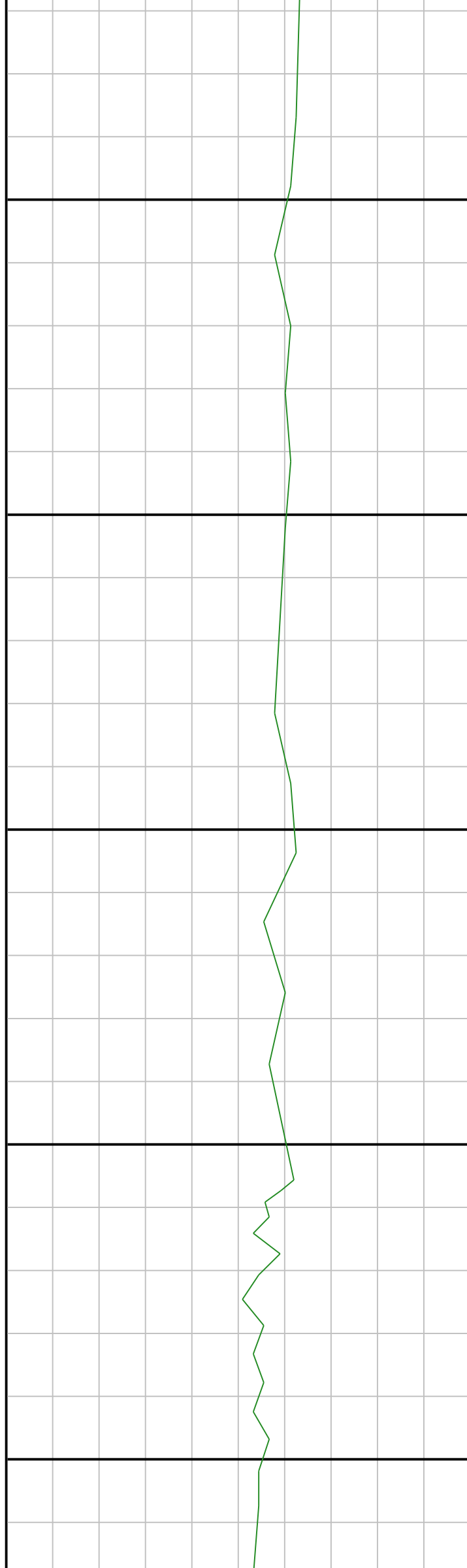
2400

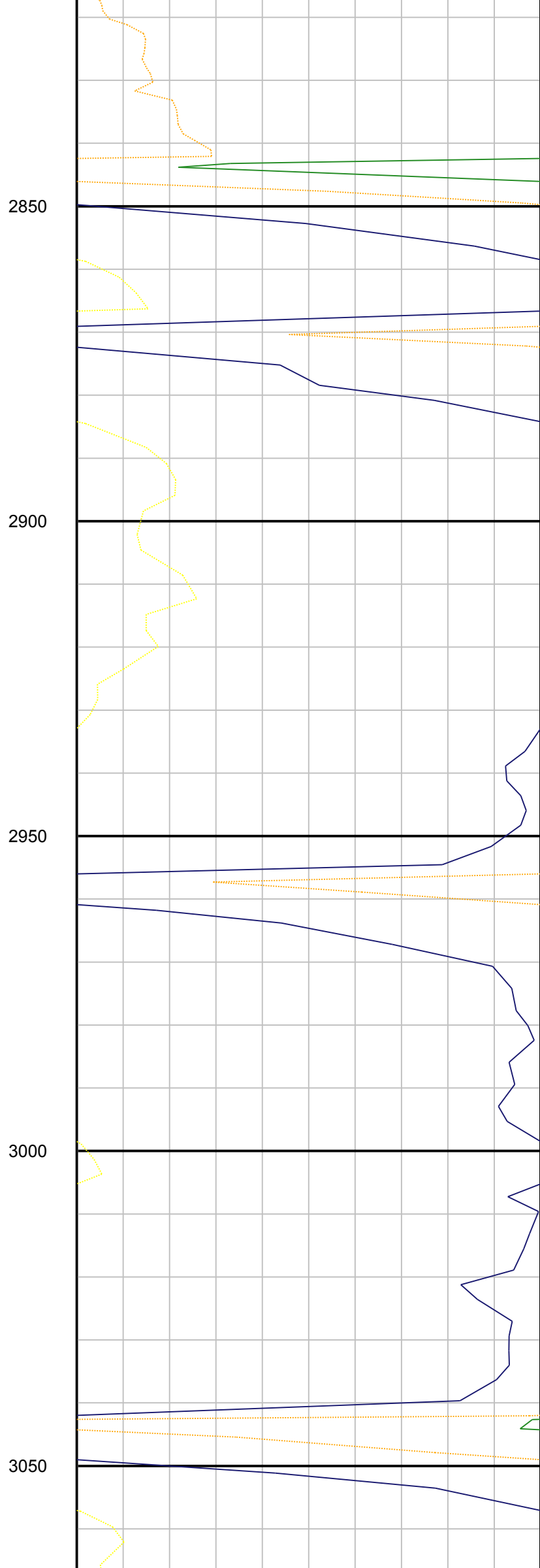
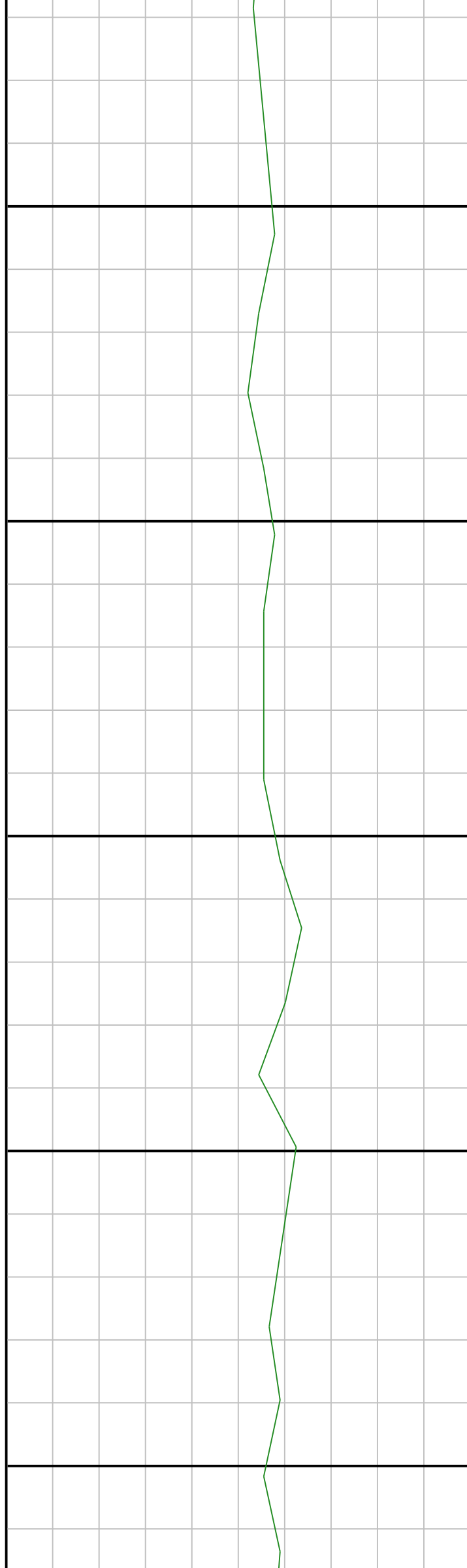
2450

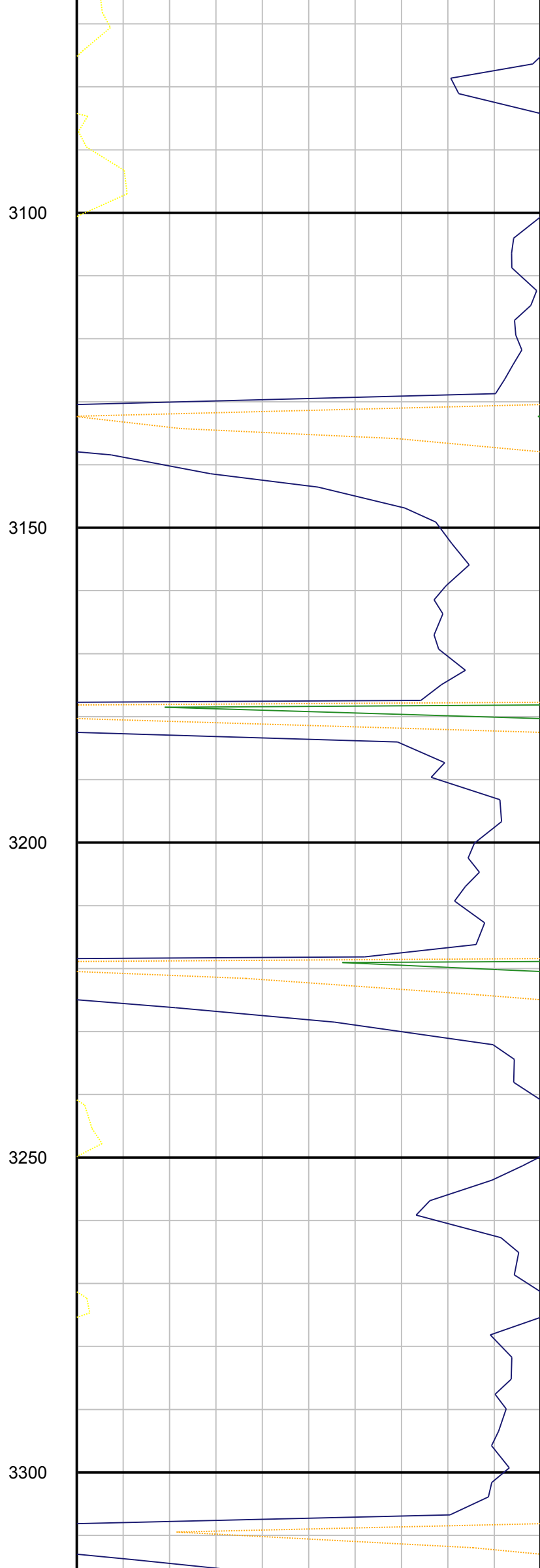
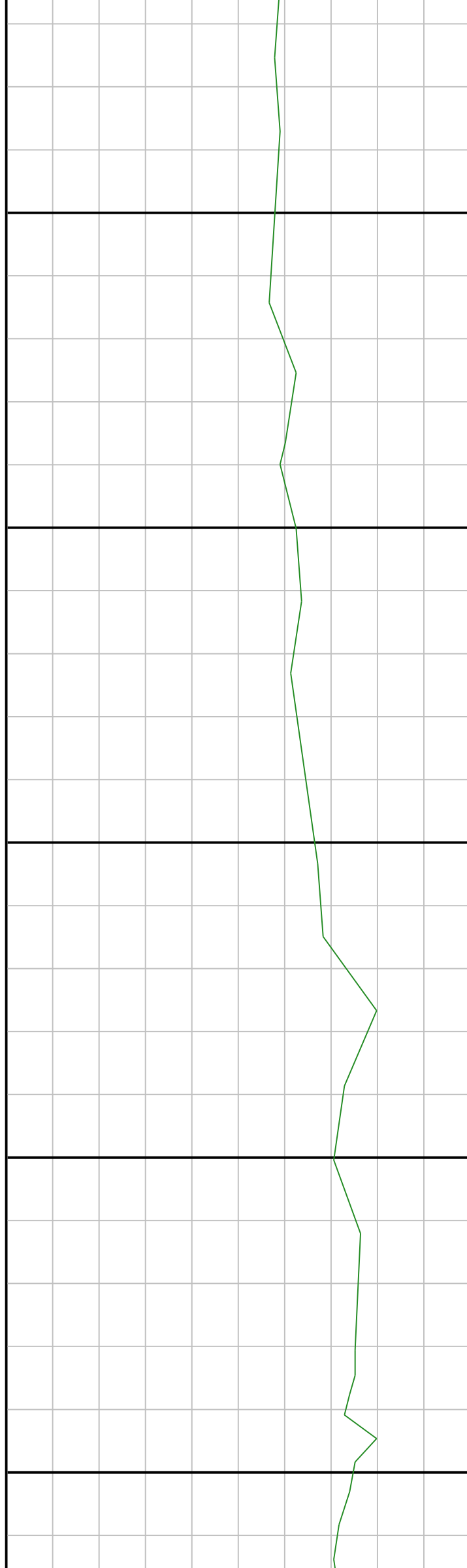
2500

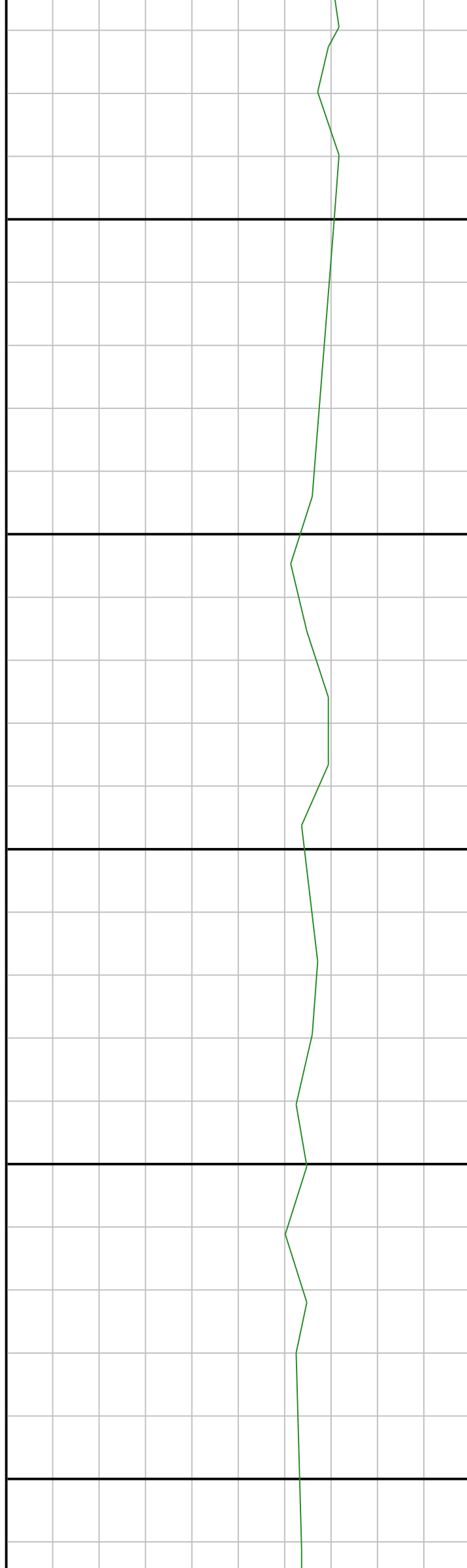
2550











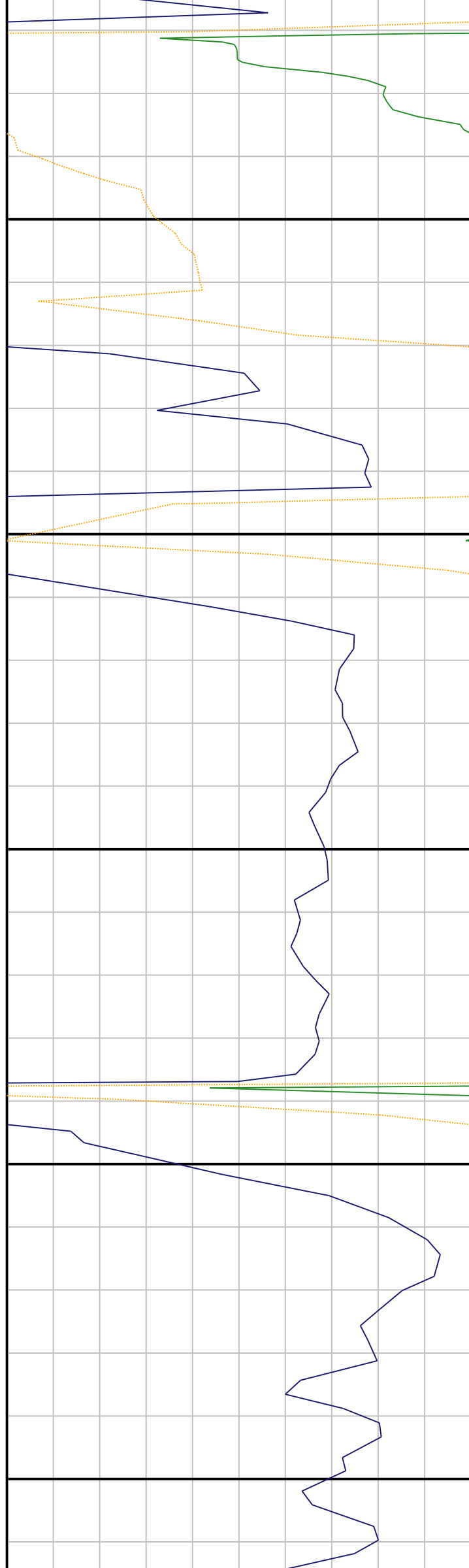
3350

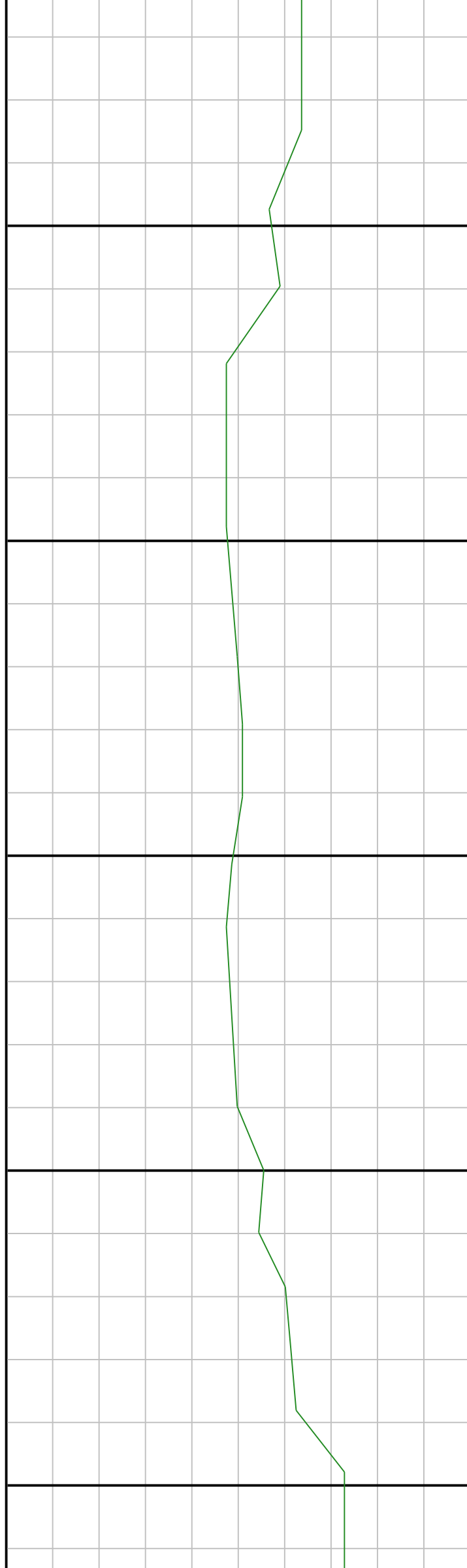
3400

3450

3500

3550





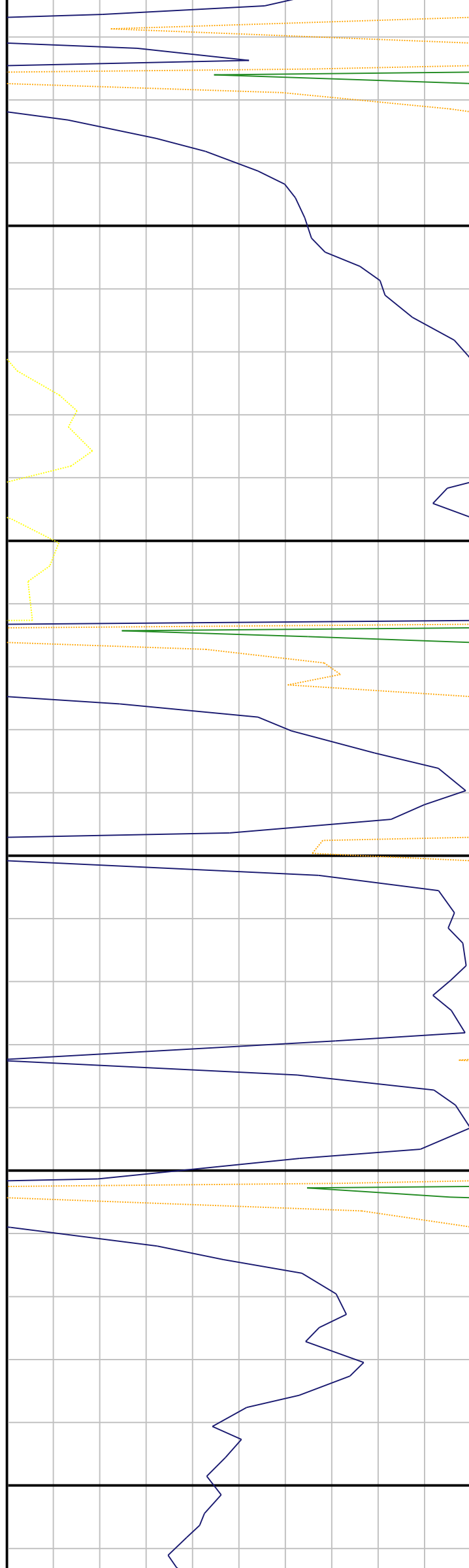
3600

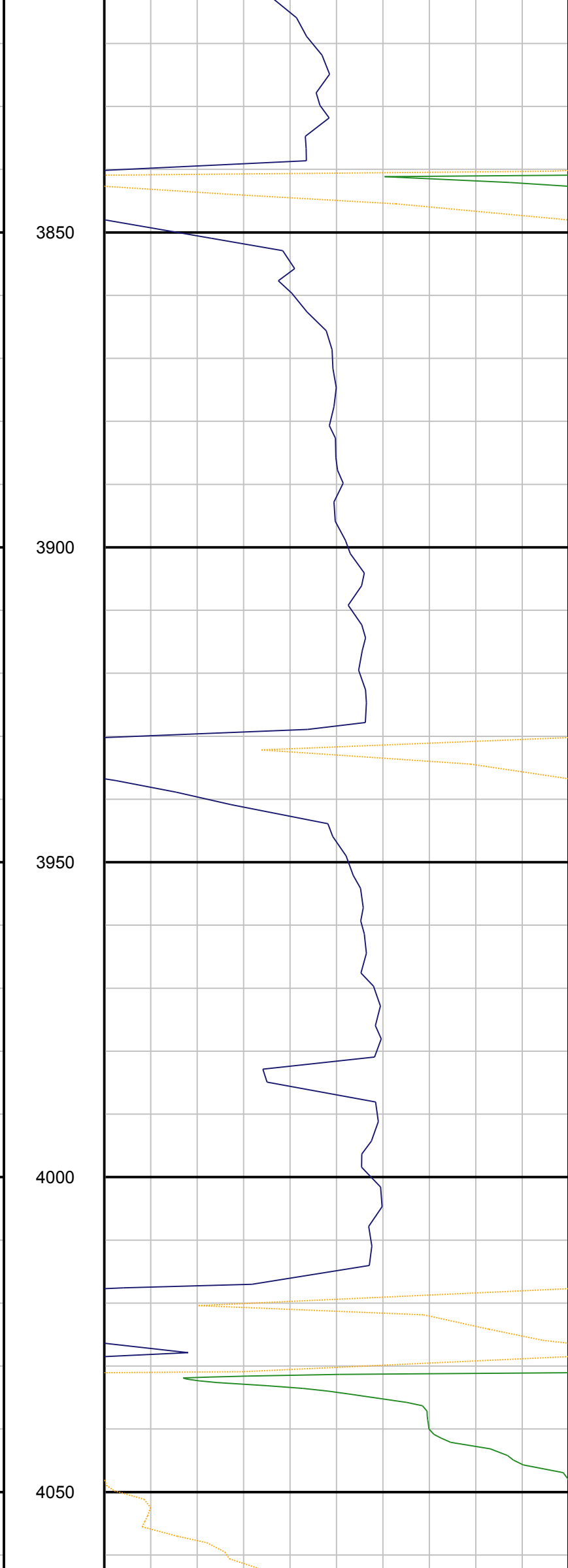
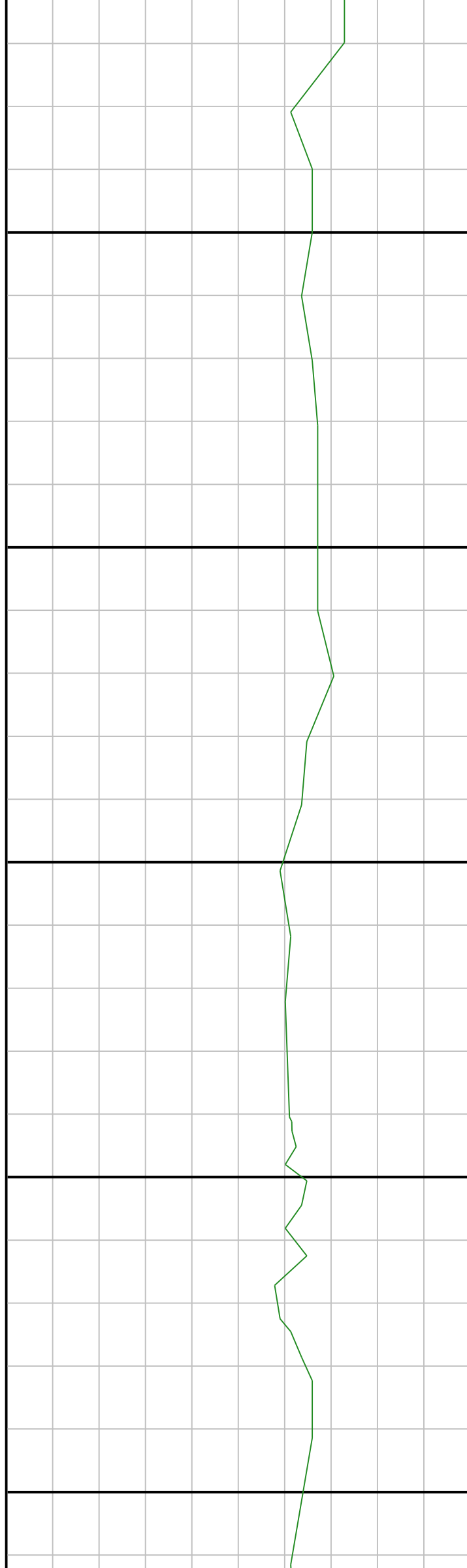
3650

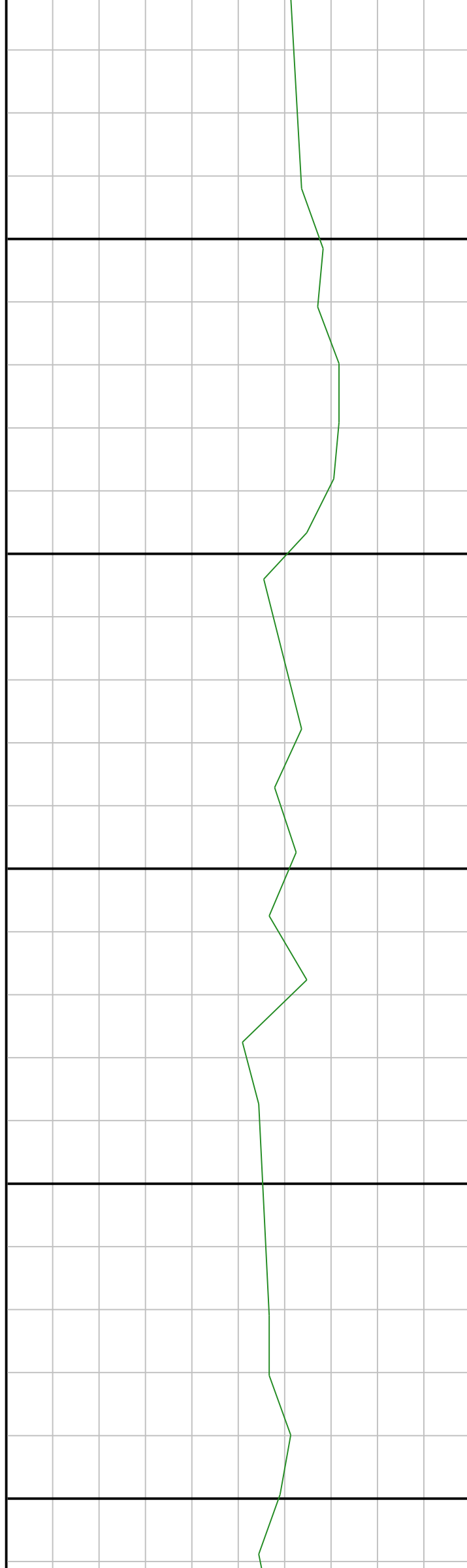
3700

3750

3800







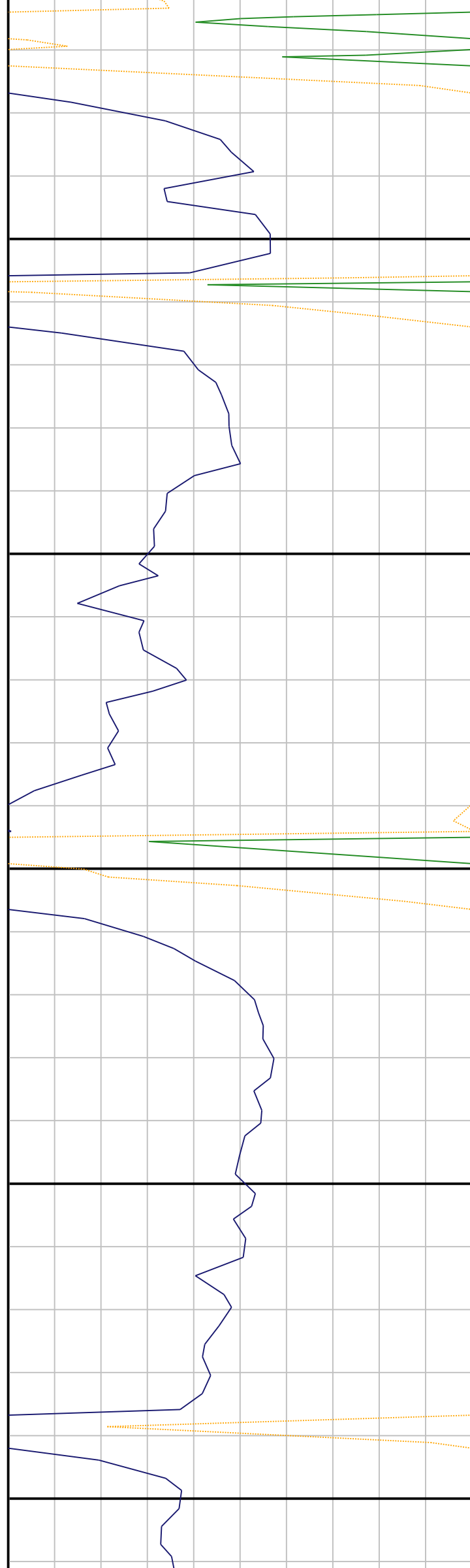
4100

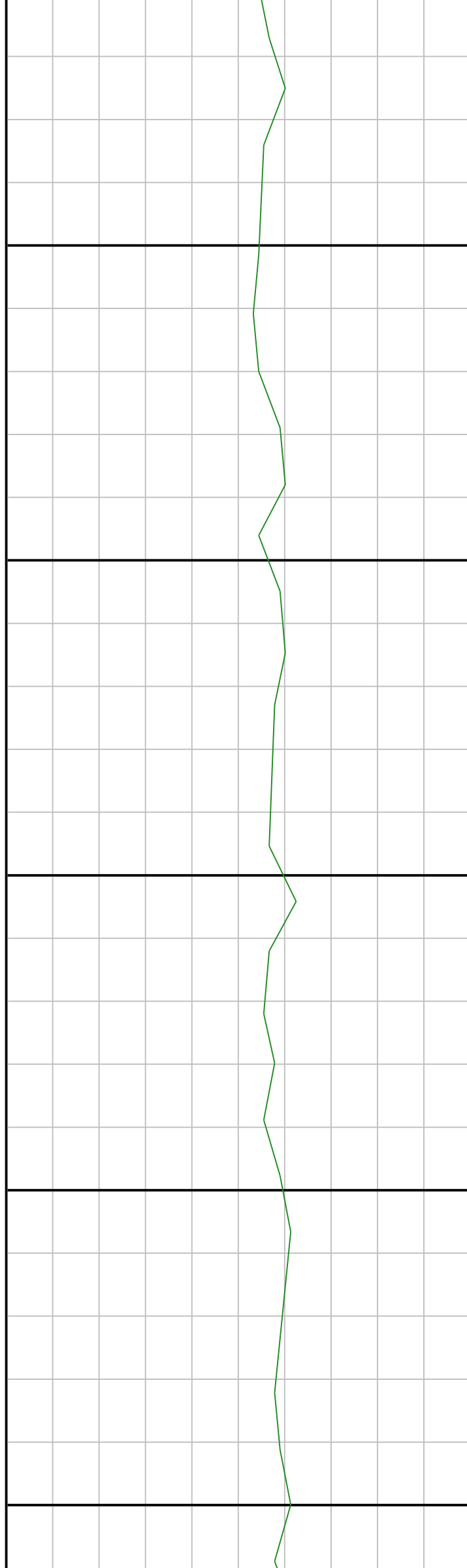
4150

4200

4250

4300





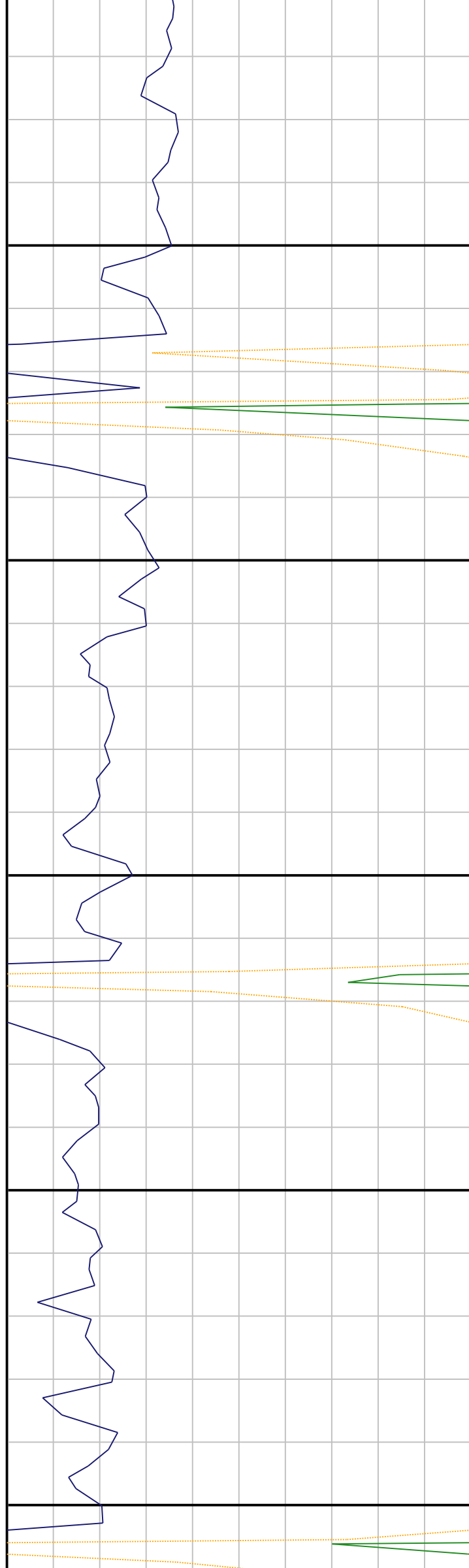
4350

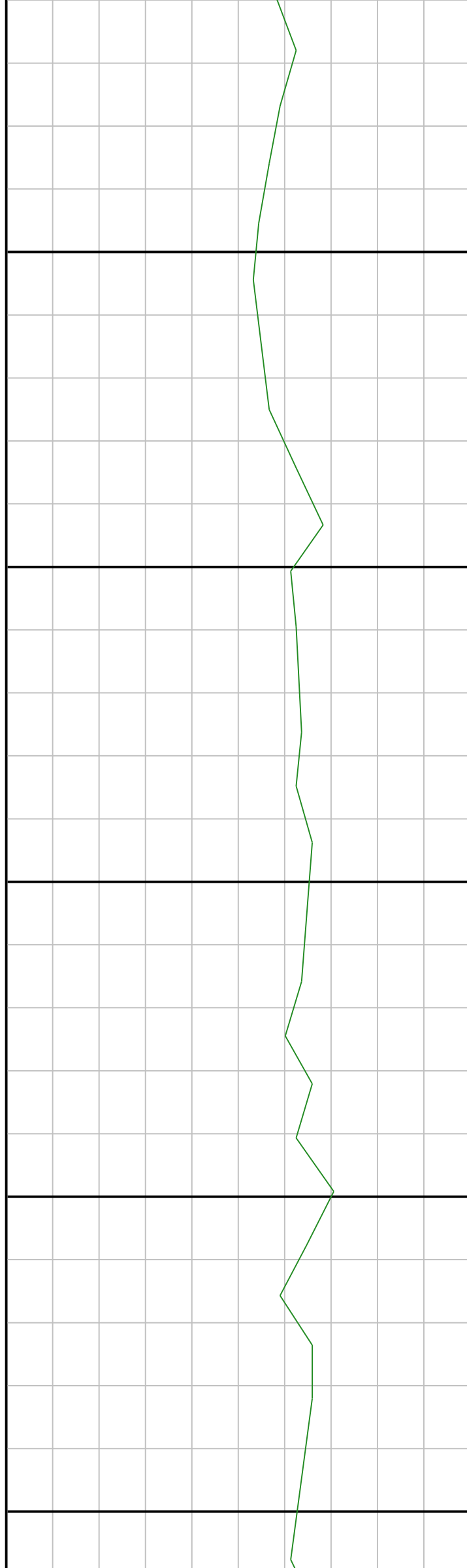
4400

4450

4500

4550





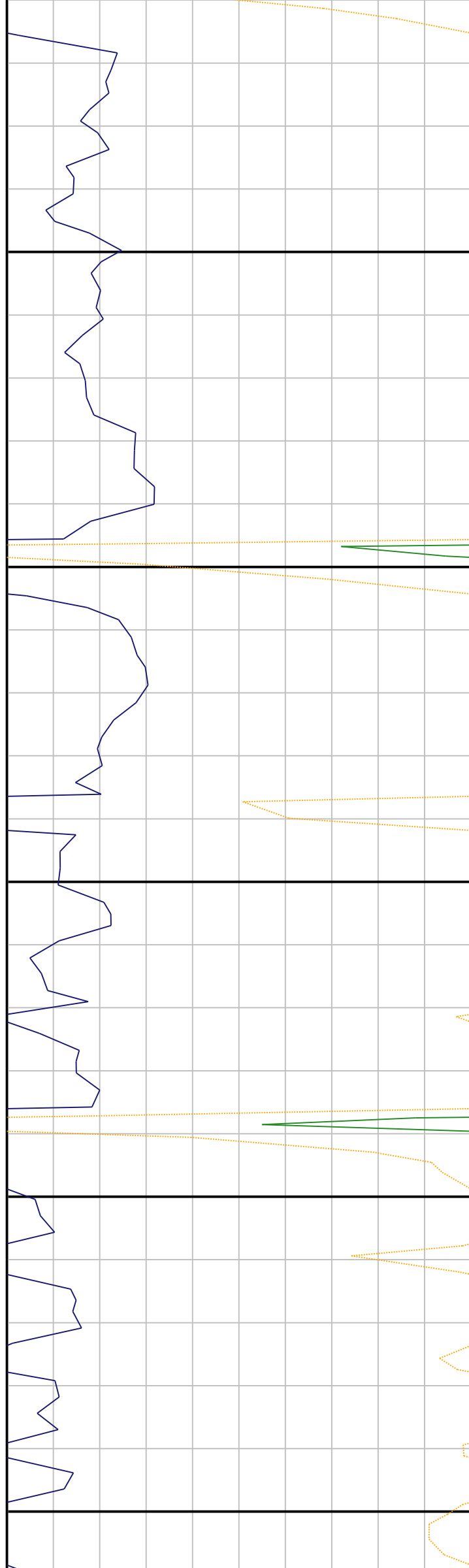
4600

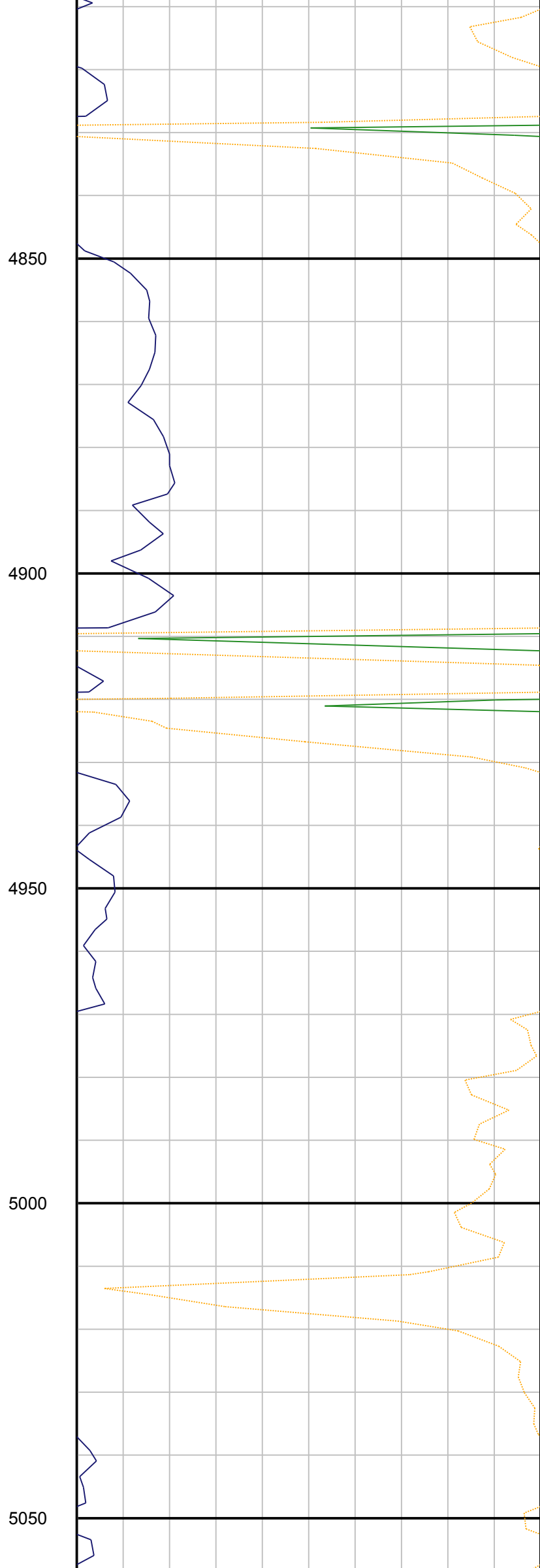
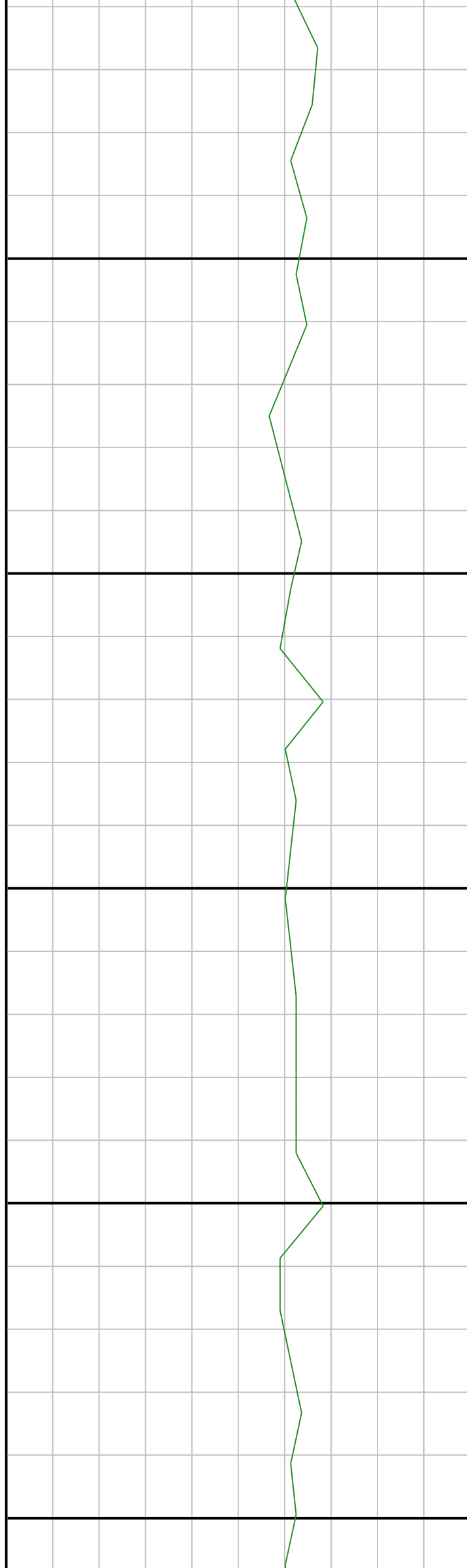
4650

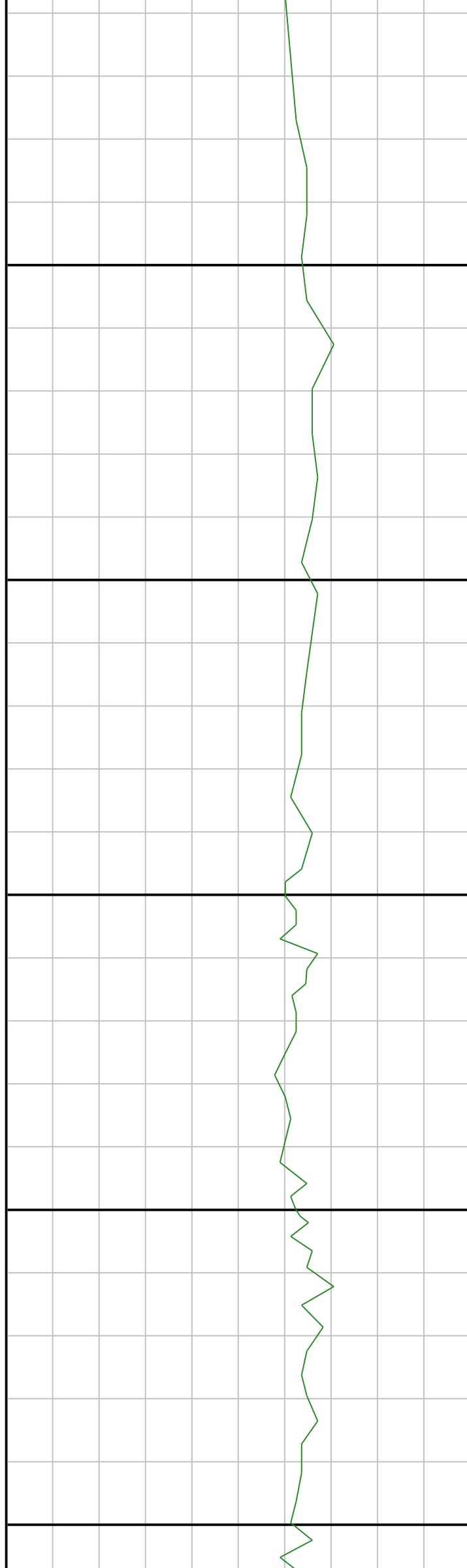
4700

4750

4800







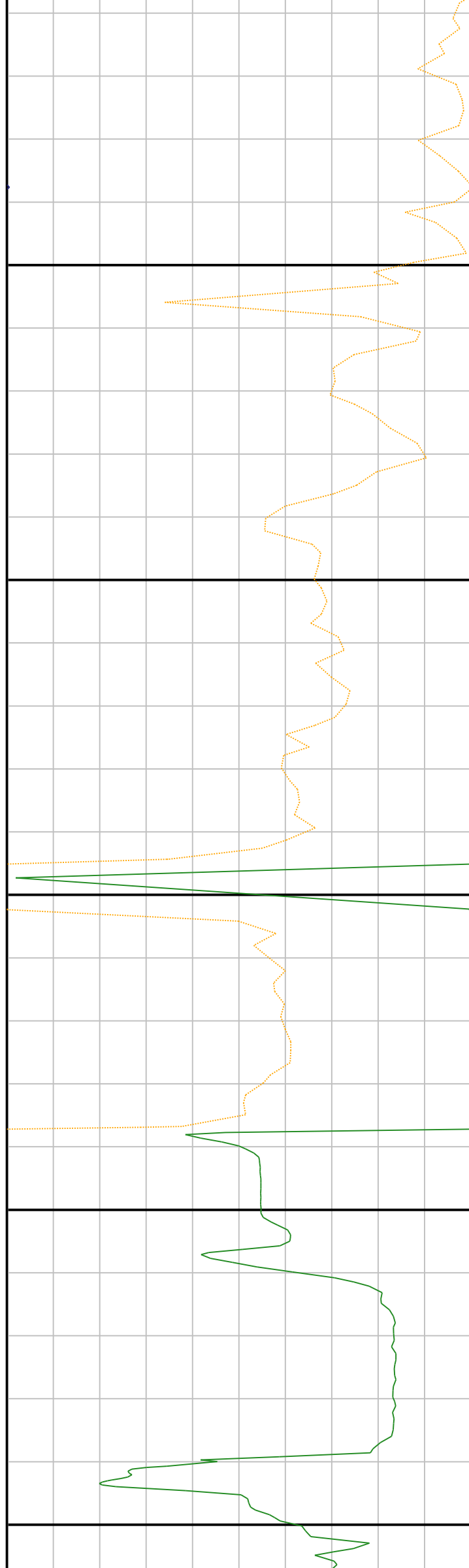
5100

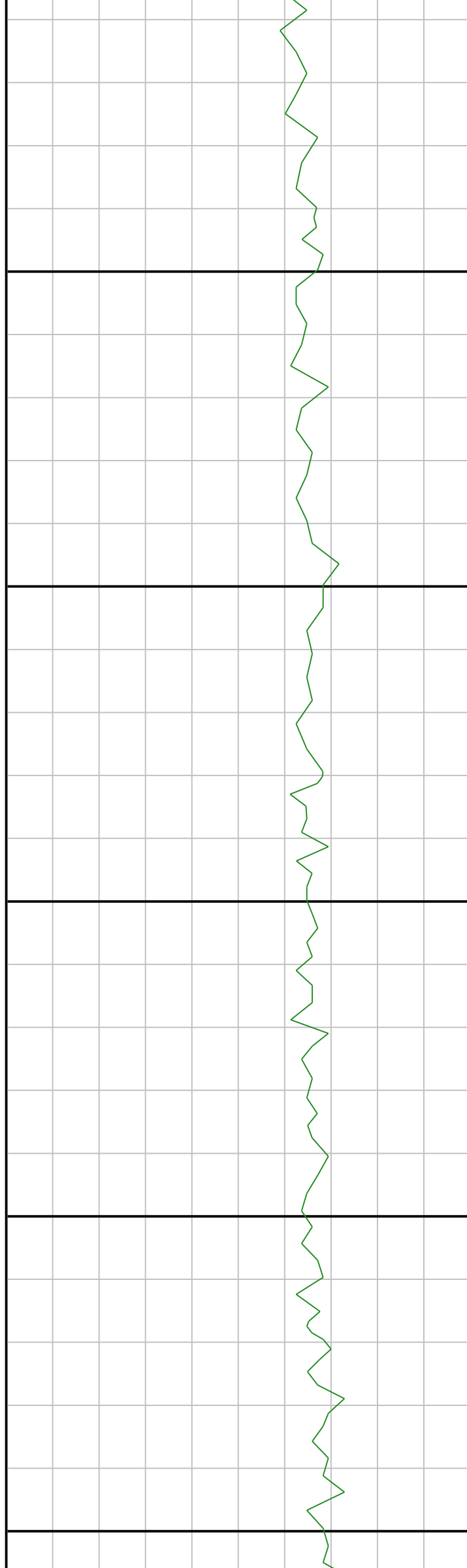
5150

5200

5250

5300





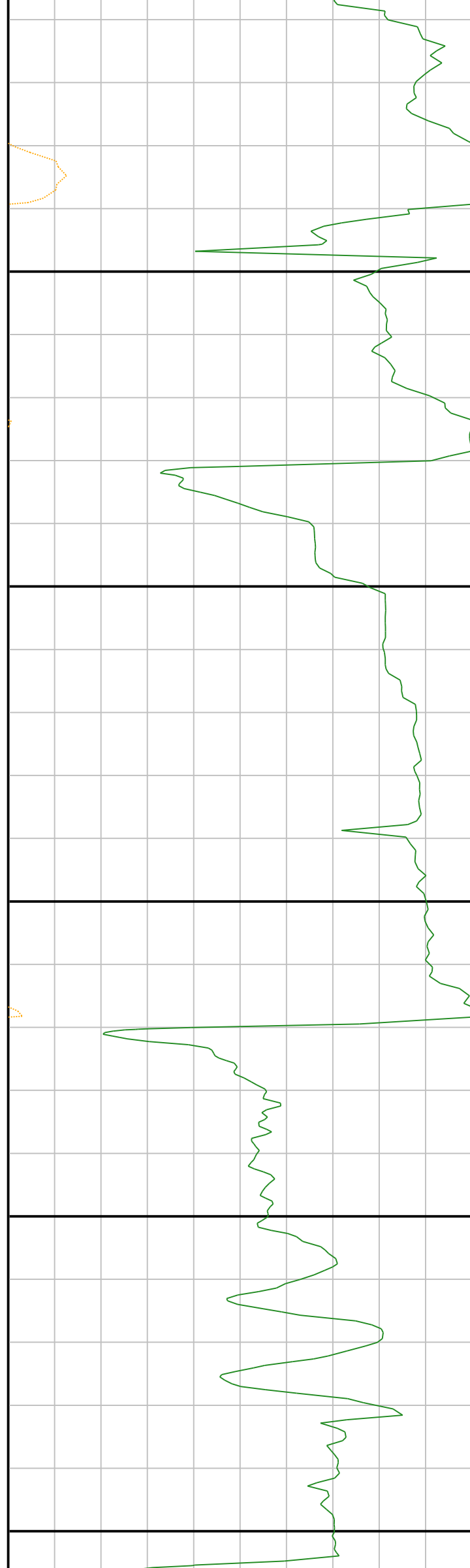
5350

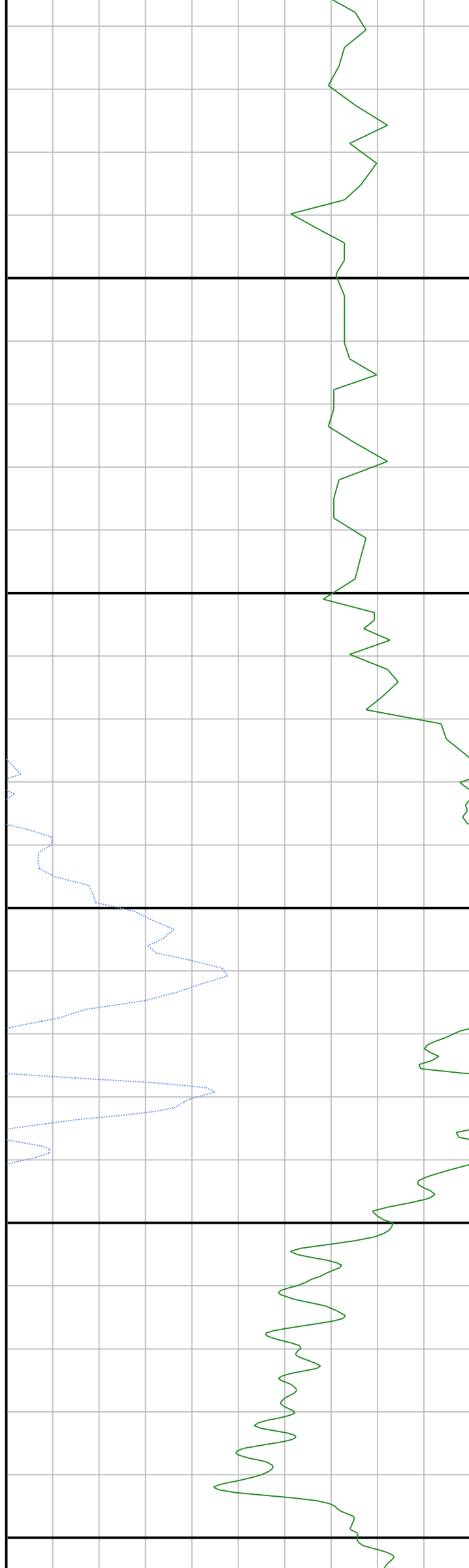
5400

5450

5500

5550





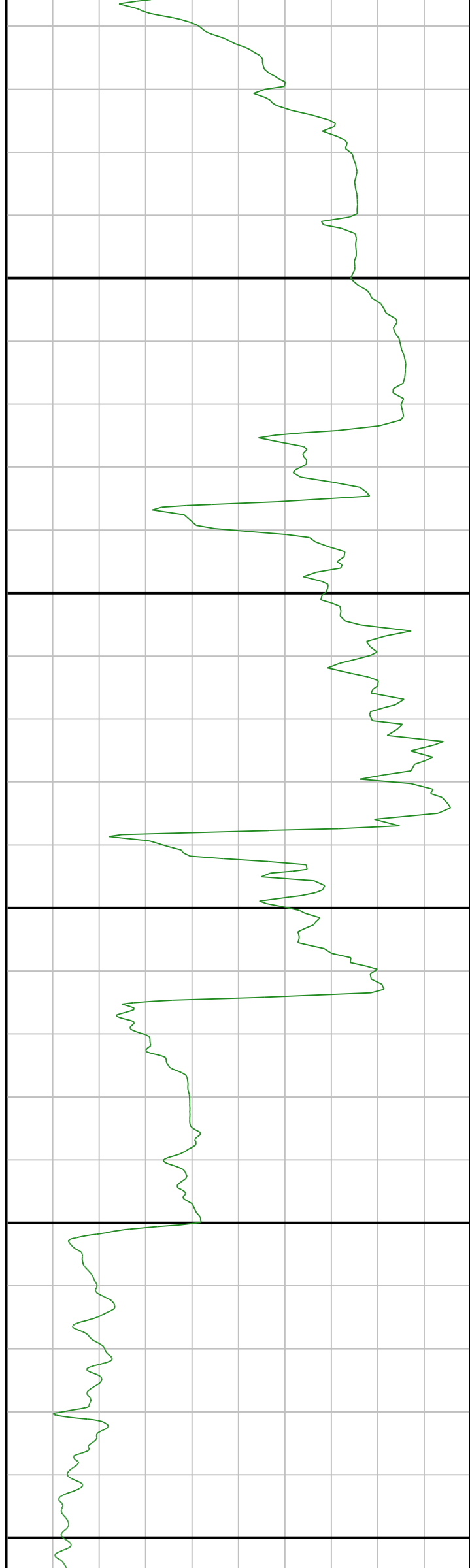
5600

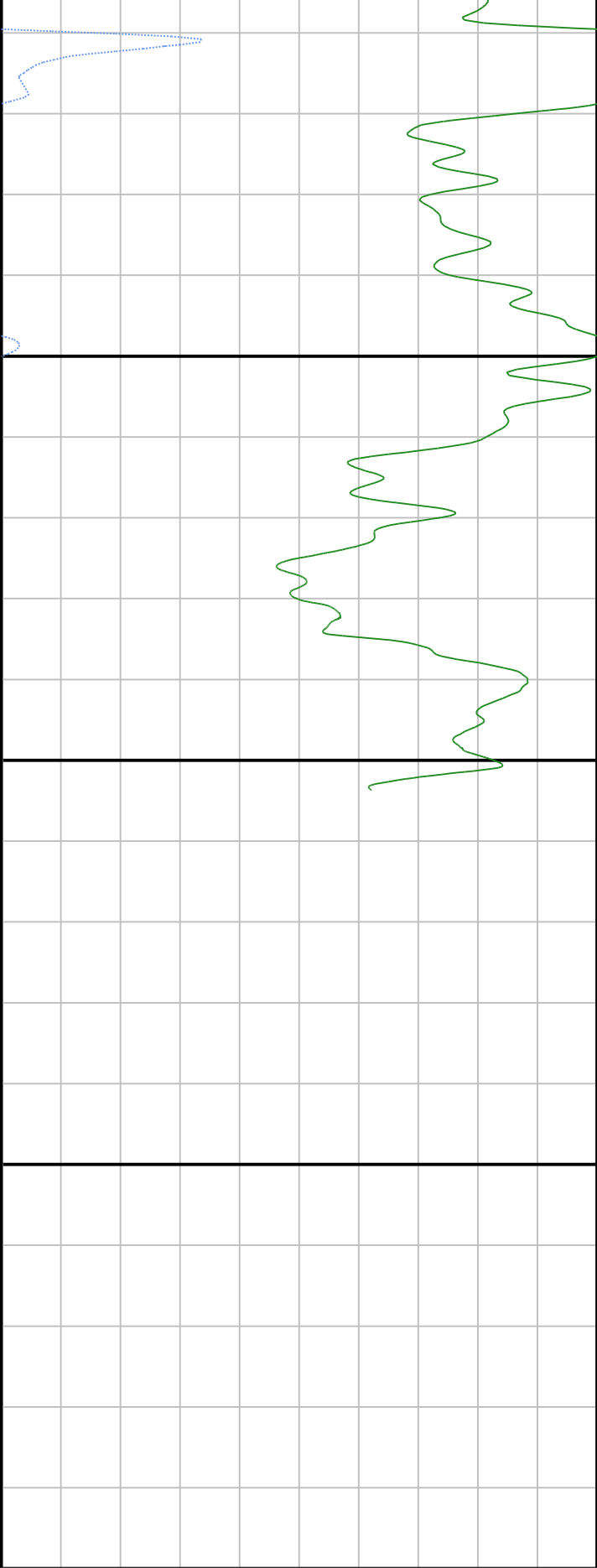
5650

5700

5750

5800





Gamma		Gama
0	AAP	200
Gamma		Gama
200	AAP	400
Gamma		Gama
400	AAP	600
Gamma		Gama
600	AAP	800

5850

5900

5950

6000



ROP		ROP
0	ft/hr	300
ROP		ROP
300	ft/hr	600
ROP		ROP
600	ft/hr	900
ROP		ROP
900	ft/hr	1200

Survey Information

Seq	MD (ft)	Inc (°)	Azm (°)	TVD (ft)	V Sec (ft)	N-S (ft)	E-W (ft)	DLS (°/100ft)	Bld Rate (°/ft)
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	324.00	0.99	124.66	323.98	-1.30	-1.59	2.30	0.31	0.00
3	417.00	2.16	140.74	416.95	-2.88	-3.41	4.07	1.33	0.01

• Tie-in Point

4	509.00	3.79	142.04	508.82	-6.22	-7.15	7.04	1.77	0.02
5	601.00	6.25	138.59	600.46	-11.69	-13.30	12.22	2.69	0.03
6	694.00	8.05	142.26	692.73	-19.66	-22.25	19.56	2.00	0.02
7	786.00	10.65	142.95	783.50	-30.33	-34.13	28.62	2.83	0.03
8	879.00	12.62	140.03	874.59	-43.42	-48.77	40.33	2.21	0.02
9	971.00	14.81	139.00	963.96	-58.13	-65.35	54.50	2.40	0.02
10	1064.00	16.55	140.30	1053.50	-75.14	-84.52	70.76	1.91	0.02
11	1156.00	17.03	139.69	1141.57	-93.23	-104.87	87.85	0.56	0.01
12	1248.00	17.50	139.41	1229.43	-111.66	-125.65	105.56	0.52	0.01
13	1432.00	18.06	141.80	1404.64	-150.35	-169.07	141.20	0.50	0.00
14	1524.00	18.78	143.80	1491.93	-171.16	-192.23	158.77	1.04	0.01
15	1616.00	17.26	139.23	1579.42	-191.10	-214.52	176.43	2.26	-0.02
16	1801.00	16.36	139.45	1756.51	-227.07	-255.10	211.29	0.49	0.00
17	1844.00	15.92	138.91	1797.82	-235.08	-264.15	219.10	1.08	-0.01
18	1982.00	14.08	134.67	1931.11	-257.94	-290.22	243.48	1.55	-0.01
19	2074.00	15.73	130.39	2020.02	-271.62	-306.17	260.94	2.15	0.02
20	2166.00	15.34	126.40	2108.66	-284.42	-321.47	280.24	1.24	0.00
21	2258.00	14.67	129.88	2197.52	-296.69	-336.16	298.97	1.22	-0.01
22	2350.00	15.55	136.56	2286.35	-310.84	-352.59	316.39	2.12	0.01
23	2442.00	14.81	132.51	2375.14	-325.49	-369.49	333.54	1.41	-0.01
24	2534.00	14.45	126.93	2464.16	-338.02	-384.33	351.38	1.58	0.00
25	2626.00	17.07	129.30	2552.70	-350.93	-399.78	371.01	2.93	0.03
26	2718.00	18.43	129.63	2640.31	-365.95	-417.61	392.66	1.48	0.01
27	2810.00	18.09	125.45	2727.69	-380.56	-435.17	415.50	1.47	0.00
28	2902.00	17.48	133.53	2815.30	-395.55	-452.97	437.16	2.76	-0.01
29	3086.00	17.63	139.13	2990.74	-430.63	-493.08	475.43	0.92	0.00
30	3177.00	17.04	137.41	3077.61	-448.48	-513.32	493.47	0.86	-0.01
31	3269.00	15.64	132.93	3165.90	-464.47	-531.69	511.67	2.05	-0.02
32	3361.00	14.11	130.12	3254.81	-477.84	-547.36	529.33	1.84	-0.02
33	3454.00	16.68	130.93	3344.47	-491.46	-563.41	548.08	2.77	0.03
34	3545.00	16.01	134.94	3431.79	-506.43	-580.84	566.83	1.44	-0.01
35	3638.00	15.14	134.63	3521.38	-521.70	-598.43	584.56	0.94	-0.01
36	3729.00	14.68	133.08	3609.31	-535.72	-614.65	601.43	0.67	-0.01
37	3821.00	15.51	131.83	3698.14	-549.58	-630.82	619.12	0.97	0.01
38	3913.00	15.55	131.34	3786.78	-563.53	-647.17	637.54	0.15	0.00
39	4005.00	14.68	131.51	3875.60	-577.06	-663.04	655.53	0.95	-0.01
40	4097.00	13.45	128.48	3964.84	-589.22	-677.42	672.63	1.56	-0.01
41	4189.00	15.66	133.63	4053.88	-602.19	-692.65	690.00	2.78	0.02
42	4281.00	14.42	138.37	4142.73	-617.14	-709.78	706.60	1.90	-0.01
43	4373.00	13.67	134.29	4231.98	-631.27	-725.94	721.99	1.35	-0.01
44	4465.00	12.71	132.30	4321.56	-643.68	-740.34	737.26	1.15	-0.01
45	4557.00	11.65	133.70	4411.48	-655.05	-753.57	751.46	1.20	-0.01
46	4649.00	9.73	134.16	4501.88	-665.28	-765.40	763.75	2.09	-0.02
47	4741.00	8.25	133.83	4592.75	-673.92	-775.39	774.09	1.61	-0.02
48	4833.00	6.54	136.77	4683.98	-681.21	-783.78	782.44	1.90	-0.02
49	4925.00	5.83	132.80	4775.45	-687.28	-790.77	789.46	0.90	-0.01
50	5017.00	4.72	126.61	4867.06	-691.88	-796.20	795.93	1.35	-0.01
51	5109.00	3.57	123.23	4958.81	-695.00	-800.03	801.36	1.28	-0.01
52	5201.00	3.33	115.90	5050.65	-697.13	-802.77	806.16	0.55	0.00
53	5293.00	2.58	116.89	5142.53	-698.69	-804.87	810.41	0.82	-0.01
54	5385.00	2.52	119.61	5234.43	-700.17	-806.81	814.02	0.15	0.00
55	5477.00	6.52	353.30	5326.25	-695.86	-802.61	815.17	8.98	0.04
56	5523.00	9.40	3.32	5371.81	-689.57	-796.27	815.08	6.93	0.06
57	5569.00	12.45	0.51	5416.97	-680.90	-787.56	815.34	6.73	0.07
58	5614.00	16.34	7.98	5460.55	-669.74	-776.43	816.27	9.56	0.09
59	5661.00	19.80	10.91	5505.23	-655.19	-762.06	818.69	7.61	0.07
60	5707.00	25.01	11.83	5547.74	-637.71	-744.88	822.16	11.35	0.11
61	5753.00	28.31	11.79	5588.84	-617.14	-724.68	826.39	7.17	0.07
62	5799.00	29.56	12.80	5629.10	-594.98	-702.94	831.13	2.92	0.03
63	5845.00	32.21	12.46	5668.57	-571.48	-679.90	836.29	5.77	0.06
64	5890.00	35.57	14.16	5705.92	-546.54	-655.49	842.08	7.76	0.07
65	5937.00	38.77	12.94	5743.37	-518.33	-627.89	848.72	6.99	0.07
66	5983.00	45.37	11.76	5777.50	-487.65	-597.79	855.29	14.45	0.14
67	6029.00	51.37	11.90	5808.04	-453.41	-564.16	862.34	13.05	0.13
68	6085.00	61.04	10.21	5839.16	-407.03	-518.53	871.21	17.45	0.17
69	6131.00	67.16	8.69	5859.24	-365.71	-477.73	877.99	13.63	0.13
70	6177.00	76.78	6.51	5873.46	-322.02	-434.43	883.74	21.39	0.21
71	6223.00	84.35	5.64	5881.00	-276.69	-389.34	888.54	16.56	0.16
72	6239.00	86.64	4.03	5882.26	-260.75	-373.44	889.88	17.48	0.14
73	6241.00	84.45	255.22	5882.26	-260.75	-373.44	889.88	17.48	0.14

	6313.00	91.15	355.33	5883.69	-187.47	-299.55	889.46	13.24	0.06
74	6407.00	91.48	354.93	5881.53	-95.54	-205.91	881.49	0.55	0.00
75	6500.00	90.08	352.76	5880.26	-5.03	-113.47	871.52	2.78	-0.02
76	6593.00	89.86	353.06	5880.31	85.14	-21.18	860.04	0.40	0.00
77	6685.00	89.02	354.98	5881.21	174.75	70.31	850.45	2.28	-0.01
78	6778.00	89.22	357.96	5882.64	266.13	163.12	844.73	3.21	0.00
79	6871.00	88.80	359.82	5884.25	358.16	256.08	842.93	2.05	0.00
80	6964.00	88.10	358.82	5886.76	450.27	349.04	841.82	1.31	-0.01
81	7056.00	88.77	358.17	5889.27	541.21	440.97	839.41	1.01	0.01
82	7150.00	89.78	358.06	5890.46	634.05	534.91	836.32	1.08	0.01
83	7243.00	90.87	357.45	5889.94	725.81	627.84	832.67	1.34	0.01
84	7336.00	90.28	0.21	5889.00	817.83	720.80	830.78	3.03	-0.01
85	7428.00	90.81	0.19	5888.13	909.16	812.80	831.10	0.58	0.01
86	7522.00	91.68	359.79	5886.09	1002.42	906.77	831.08	1.02	0.01
87	7614.00	89.22	1.02	5885.36	1093.78	998.76	831.73	2.99	-0.03
88	7707.00	87.32	1.35	5888.17	1186.24	1091.69	833.65	2.07	-0.02
89	7800.00	87.90	0.88	5892.05	1278.66	1184.59	835.46	0.80	0.01
90	7893.00	88.18	0.58	5895.23	1371.03	1277.53	836.65	0.44	0.00
91	7986.00	89.05	0.62	5897.48	1463.41	1370.50	837.62	0.94	0.01
92	8079.00	89.72	0.48	5898.48	1555.79	1463.49	838.51	0.74	0.01
93	8172.00	90.39	0.08	5898.39	1648.14	1556.49	838.97	0.84	0.01
94	8265.00	91.51	0.25	5896.84	1740.45	1649.47	839.23	1.22	0.01
95	8357.00	89.30	1.23	5896.19	1831.87	1741.46	840.42	2.63	-0.02
96	8450.00	89.30	0.84	5897.33	1924.35	1834.43	842.10	0.42	0.00
97	8543.00	89.50	0.48	5898.30	2016.76	1927.42	843.17	0.44	0.00
98	8636.00	90.50	1.29	5898.30	2109.21	2020.41	844.61	1.38	0.01
99	8728.00	88.69	1.27	5898.95	2200.73	2112.38	846.66	1.97	-0.02
100	8821.00	88.97	0.67	5900.85	2293.18	2205.35	848.24	0.71	0.00
101	8913.00	89.22	0.26	5902.31	2384.55	2297.33	848.99	0.52	0.00
102	9005.00	89.53	359.96	5903.31	2475.87	2389.33	849.16	0.47	0.00
103	9098.00	89.89	359.53	5903.78	2568.10	2482.32	848.75	0.60	0.00
104	9190.00	91.37	0.17	5902.77	2659.36	2574.31	848.51	1.75	0.02
105	9282.00	91.87	359.94	5900.17	2750.63	2666.28	848.60	0.60	0.01
106	9375.00	90.45	0.72	5898.29	2842.96	2759.25	849.13	1.74	-0.02
107	9467.00	90.95	0.41	5897.16	2934.36	2851.24	850.04	0.64	0.01
108	9560.00	91.54	0.00	5895.14	3026.67	2944.22	850.37	0.77	0.01
109	9652.00	89.52	359.54	5894.29	3117.91	3036.21	850.00	2.25	-0.02
110	9745.00	90.03	359.40	5894.66	3210.08	3129.20	849.14	0.57	0.01
111	9837.00	89.92	358.22	5894.70	3301.12	3221.18	847.23	1.29	0.00
112	9929.00	89.72	357.31	5894.98	3391.91	3313.11	843.64	1.01	0.00
113	10021.00	89.86	356.35	5895.32	3482.43	3404.97	838.56	1.05	0.00
114	10113.00	89.50	357.36	5895.84	3572.97	3496.83	833.51	1.17	0.00
115	10205.00	90.34	357.57	5895.96	3663.67	3588.74	829.44	0.94	0.01
116	10298.00	91.31	359.53	5894.62	3755.63	3681.69	827.09	2.35	0.01
117	10390.00	90.67	0.81	5893.03	3846.94	3773.67	827.36	1.56	-0.01
118	10483.00	90.28	0.94	5892.26	3939.39	3866.66	828.78	0.44	0.00
119	10575.00	90.84	1.02	5891.36	4030.86	3958.64	830.35	0.61	0.01
120	10667.00	91.03	0.64	5889.86	4122.30	4050.62	831.69	0.46	0.00
121	10759.00	89.92	2.10	5889.10	4213.84	4142.59	833.88	1.99	-0.01
122	10851.00	90.31	1.81	5888.92	4305.47	4234.53	837.02	0.53	0.00
123	10943.00	89.22	2.06	5889.29	4397.09	4326.48	840.13	1.22	-0.01
124	11035.00	89.80	1.87	5890.08	4488.72	4418.42	843.28	0.66	0.01
125	11127.00	90.08	1.66	5890.18	4580.32	4510.38	846.12	0.38	0.00
126	11219.00	89.92	1.41	5890.18	4671.89	4602.34	848.58	0.32	0.00
127	11311.00	89.94	1.20	5890.29	4763.42	4694.32	850.68	0.23	0.00
128	11403.00	89.89	1.36	5890.43	4854.95	4786.30	852.73	0.18	0.00
129	11495.00	90.50	1.65	5890.11	4946.51	4878.26	855.15	0.73	0.01
130	11587.00	90.98	1.65	5888.92	5038.09	4970.22	857.80	0.52	0.01
131	11679.00	91.45	1.57	5886.97	5129.65	5062.16	860.38	0.52	0.01
132	11770.00	89.78	1.32	5886.00	5220.20	5153.12	862.68	1.86	-0.02
133	11862.00	90.00	1.25	5886.17	5311.73	5245.10	864.74	0.25	0.00
134	11954.00	90.34	1.24	5885.90	5403.25	5337.08	866.74	0.37	0.00
135	12047.00	91.06	1.24	5884.76	5495.76	5430.05	868.75	0.77	0.01
136	12138.00	91.57	1.27	5882.68	5586.26	5521.00	870.74	0.56	0.01
137	12230.00	89.72	0.59	5881.64	5677.72	5612.98	872.24	2.14	-0.02
138	12322.00	89.13	0.11	5882.56	5769.08	5704.97	872.80	0.83	-0.01
139	12414.00	89.86	0.02	5883.37	5860.38	5796.97	872.90	0.80	0.01
140	12506.00	88.71	358.78	5884.52	5951.54	5888.95	871.94	1.84	-0.01
141	12598.00	88.99	358.65	5886.37	6042.54	5980.91	869.88	0.34	0.00
142	12690.00	89.97	358.91	5887.20	6133.57	6072.88	867.92	1.10	0.01

143	12782.00	89.11	359.52	5887.94	6224.70	6164.87	866.66	1.15	-0.01
144	12874.00	87.46	359.09	5890.70	6315.81	6256.82	865.54	1.85	-0.02
145	12966.00	87.88	358.49	5894.44	6406.77	6348.72	863.60	0.80	0.00
146	13058.00	88.63	358.14	5897.24	6497.65	6440.64	860.90	0.90	0.01
147	13150.00	89.44	357.53	5898.79	6588.44	6532.56	857.42	1.10	0.01
148	13242.00	88.44	357.72	5900.49	6679.17	6624.46	853.61	1.11	-0.01
149	13334.00	89.05	357.27	5902.50	6769.86	6716.35	849.59	0.82	0.01
150	13457.00	89.86	356.52	5903.67	6890.91	6839.17	842.93	0.90	0.01