

Bit Run Summary

Type		KCI/PHPA/GLYC.	KCI/PHPA/GLYC.	KCI/PHPA/GLYC.							
Mud weight	ppg	9.55	9.70	9.8							
Solids	%	4.7	6.1	6.5							
Chlorides	ppm	33,500	37,000	37,500							
Rm											
Rmf											
Rmc											
Potassium	ppm	37,441	41,353	41,912							
Environmental data											
GR											
Mud weight	ppg	9.55	9.70	9.8							
Bit size	in	8.5	8.5	8.5							
Resistivity											
Neutron porosity											
Hole Size											
Mud weight											
Temperature											
Mud salinity											
Formation salinity											
Recording rate 1	SEC										
Recording rate 2	SEC										
Filtering GR		3 pt	3 pt	3 pt							
Filtering density											
Filtering Neutron											
Company representative		R. Morris	B. Davis	G. Campbell	B. Steel						
Anadrill personnel		K. Handley	C. Tue	C. Soper	C. Cocks	D. Hastie					

DISCLAIMER

THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

OTHER SERVICES FOR RUN1 Gamma Ray Directional Drilling Directional Surveys	OTHER SERVICES FOR RUN2 Gamma Ray Directional Drilling Directional Surveys	OTHER SERVICES FOR RUN3 Gamma Ray Directional Drilling Directional Surveys
REMARKS: RUN NUMBER 1 8-1/2 in. hole was drilled from 616.0 m to 2527.0 m. Depth is referenced to the Driller's Depth. Gamma Ray is corrected for Tool Size, Bit Size and Mud Weight. Mud type is KCL/PHPA/Glycol. POOH due to bit change.	REMARKS: RUN NUMBER 2 8-1/2 in. hole was drilled from 2527.0 m to 2781.0 m. Depth is referenced to the Driller's Depth. Gamma Ray is corrected for Tool Size, Bit Size and Mud Weight. Mud type is KCL/PHPA/Glycol. POOH due to bit change.	REMARKS: RUN NUMBER 3 8-1/2 in. hole was drilled from 2781.0 m to 2952.0 m. Depth is referenced to the Driller's Depth. Gamma Ray is corrected for Tool Size, Bit Size and Mud Weight. Mud type is KCL/PHPA/Glycol. POOH due to TD of HLA A1A

Thank You for Choosing Schlumberger

Thank You for Choosing Schlumberger

Thank You for Choosing Schlumberger

EQUIPMENT DESCRIPTION

RUN1

RUN2

RUN3

DOWNHOLE EQUIPMENT

DOWNHOLE EQUIPMENT

DOWNHOLE EQUIPMENT

6-3/4 in. PowerPulse* 22.20
MDC: Z408-AC
MEC: 108-BA
MDI: 108-BC
MGR: 146-AA
DH Software v7.0c00

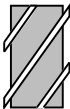
D&I 17.90
GR 17.25



6-1/2 in. PMDC 13.75
S/N: ASS15700



6-1/8 in. NM Stab. 12.06
S/N: DOTS4058
Stab. OD: 8-1/4 in.



6-1/2 in. PMDC 10.61
S/N: 9612058



6-3/4 in. PowerPak* Motor 7.92
A675XP7850
S/N: 3604
1.50 deg. bend
8-3/8 in. Motor Sleeve



6-3/4 in. PowerPulse* 22.21
MDC: Z408-AC
MEC: 108-BA
MDI: 108-BC
MGR: 146-AA
DH Software v7.0c00

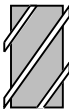
D&I 17.91
GR 17.26



6-1/2 in. PMDC 13.76
S/N: ASS15700



6-1/8 in. NM Stab. 12.07
S/N: DOTS4058
Stab. OD: 8-1/4 in.



6-1/2 in. PMDC 10.62
S/N: 9612058



6 3/4 in. PowerPak* Motor 7.93
A675XP7850
S/N: 3604
1.50 deg. bend
8-3/8 in. Motor Sleeve



6-3/4 in. PowerPulse* 21.94
MDC: 066-AB
MEC: 612-BB
MDI: 626-BC
MGR: 295-AA
DH Software v6.1c00

D&I 17.63
GR 16.98



6-1/2 in. PMDC 13.72
S/N: ASS15700



6-1/8 in. NM Stab. 12.03
S/N: DOTS4058
Stab. OD: 8-1/4 in.



6-1/2 in. PMDC 10.58
S/N: 9612058



6-3/4 in. PowerPak* Motor 7.89
A675XP7850
S/N: 2307
0 deg. bend
8-3/8 in. Motor Sleeve





S75HPX S/N: JS6695A

All lengths in Meters

REED TCI BIT

TD53AKPRDH S/N: T96931

All lengths in Meters



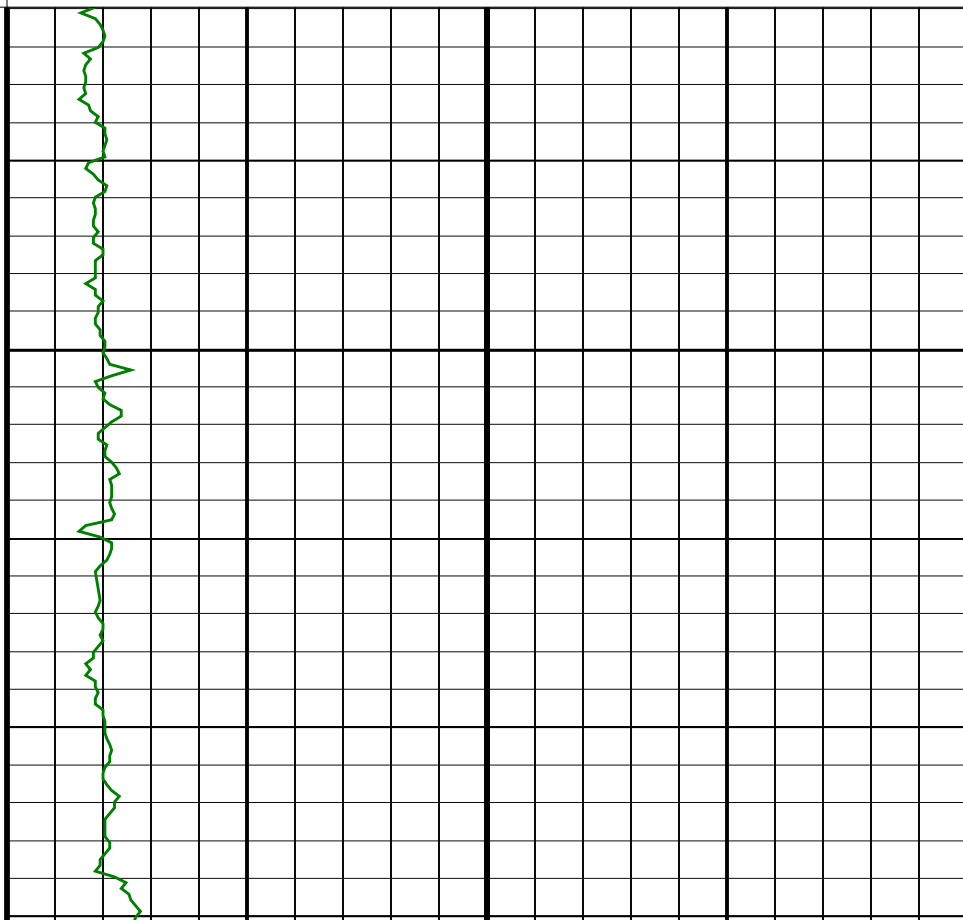
Smith PDC Bit

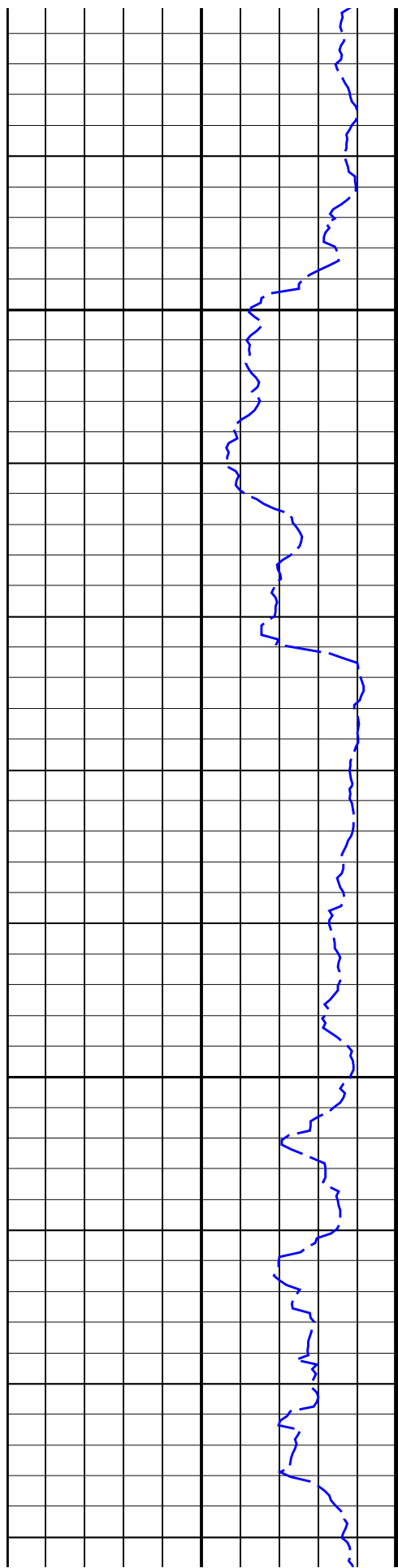
S75HPX S/N: JS6695A

All lengths in Meters



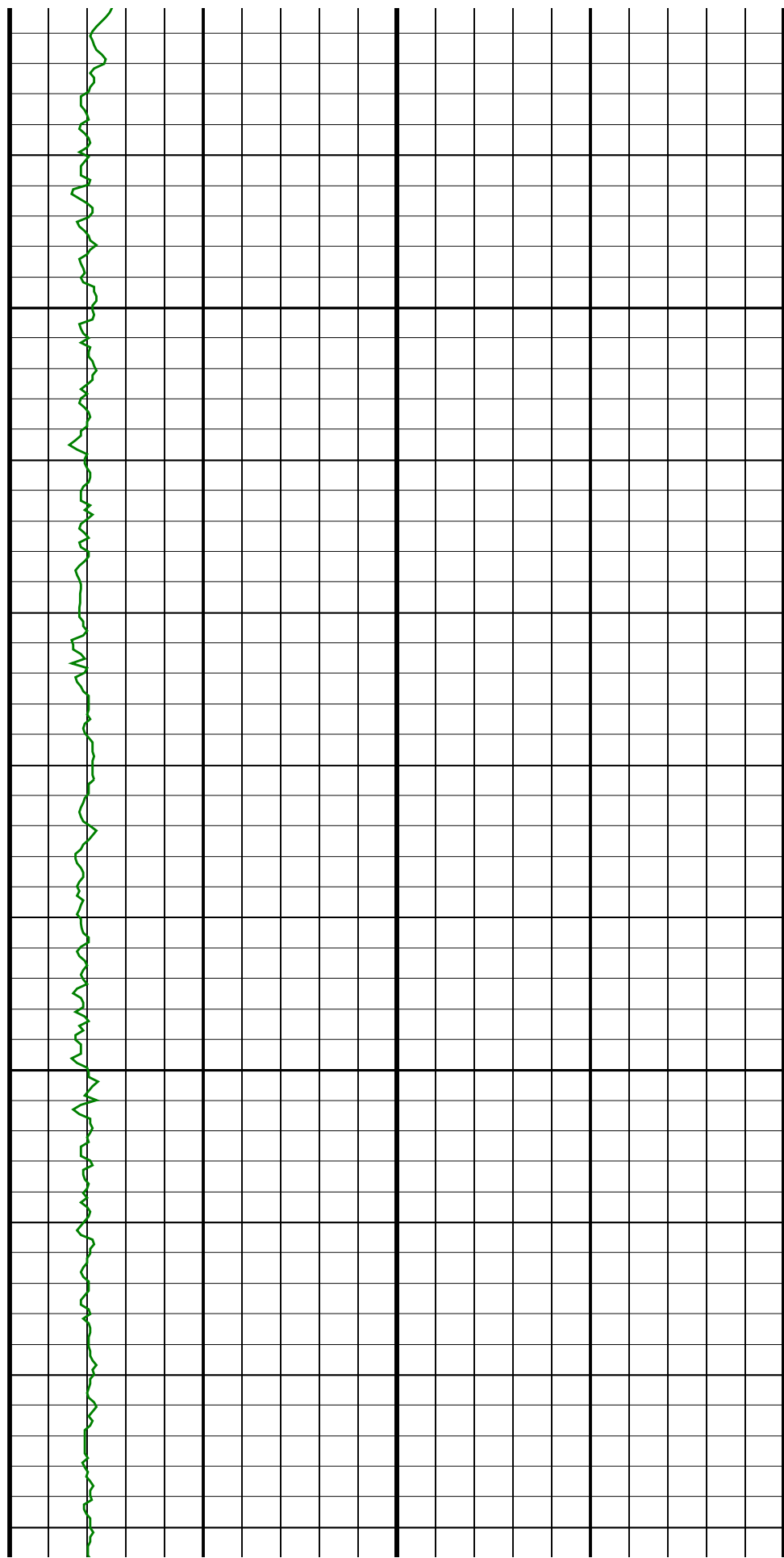
0.20

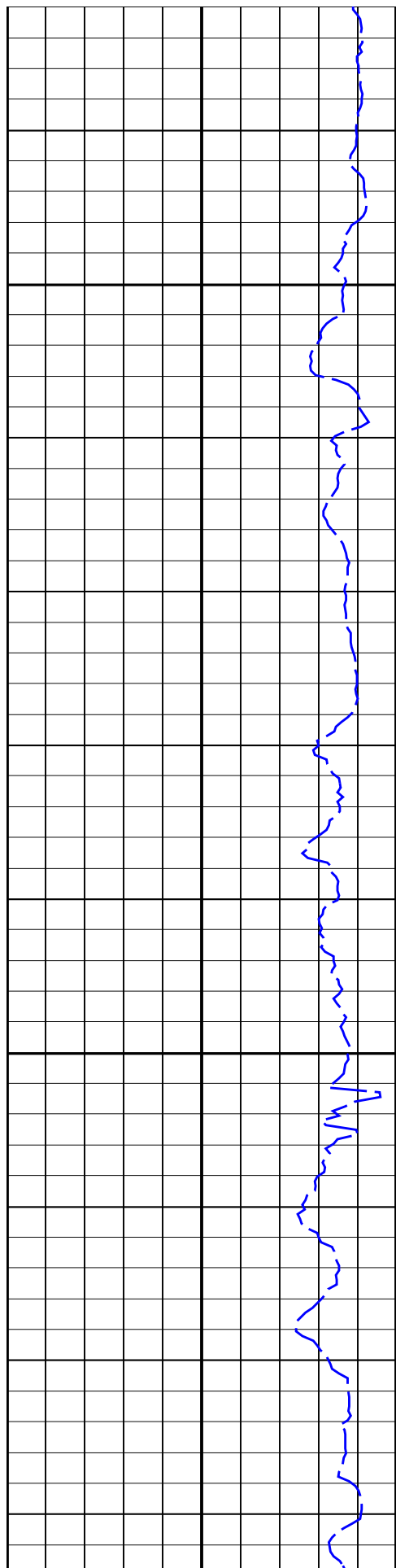




650
TVD

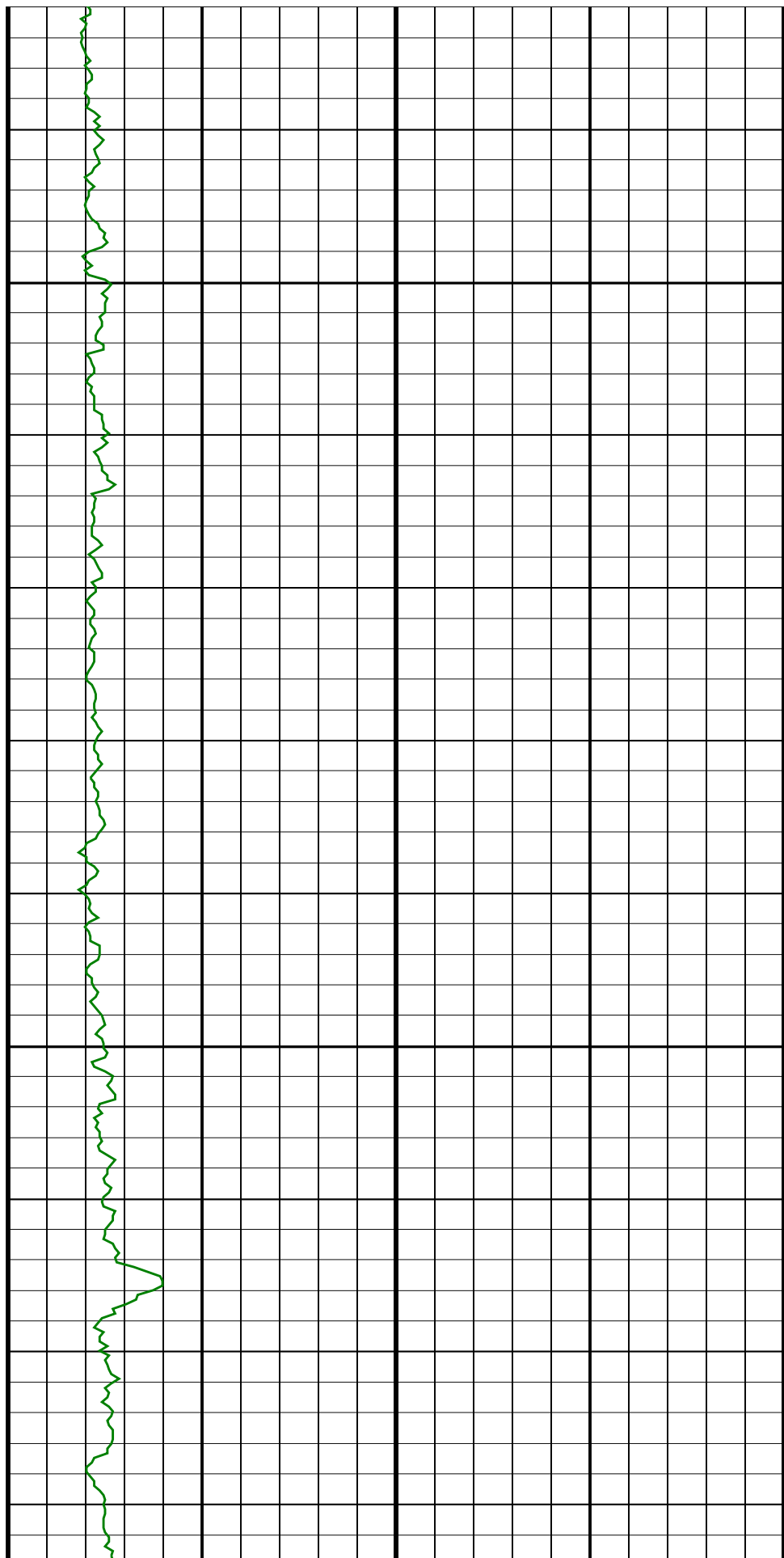
675
TVD

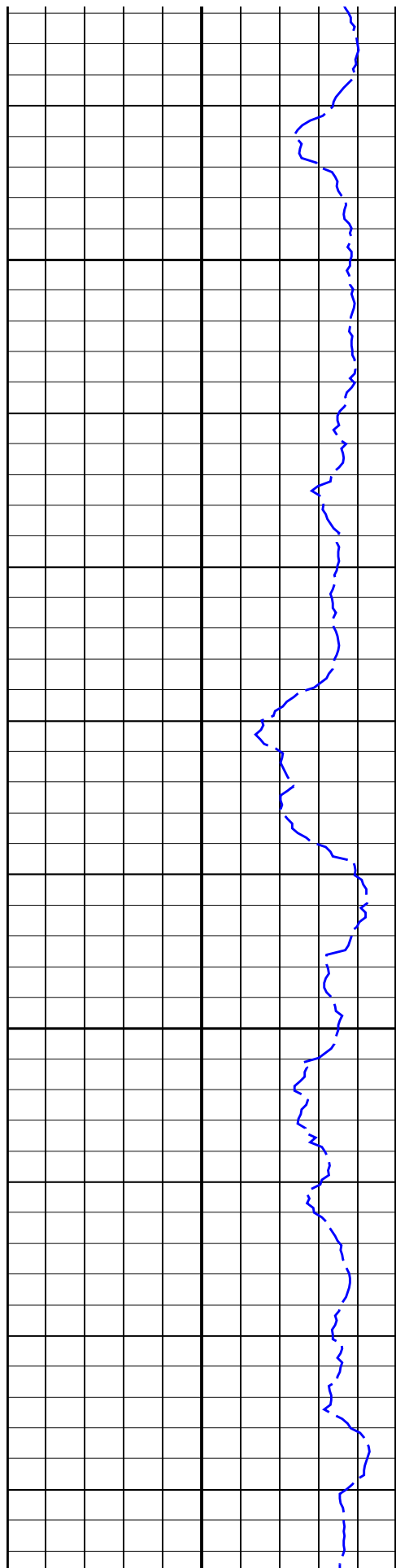




700
TVD

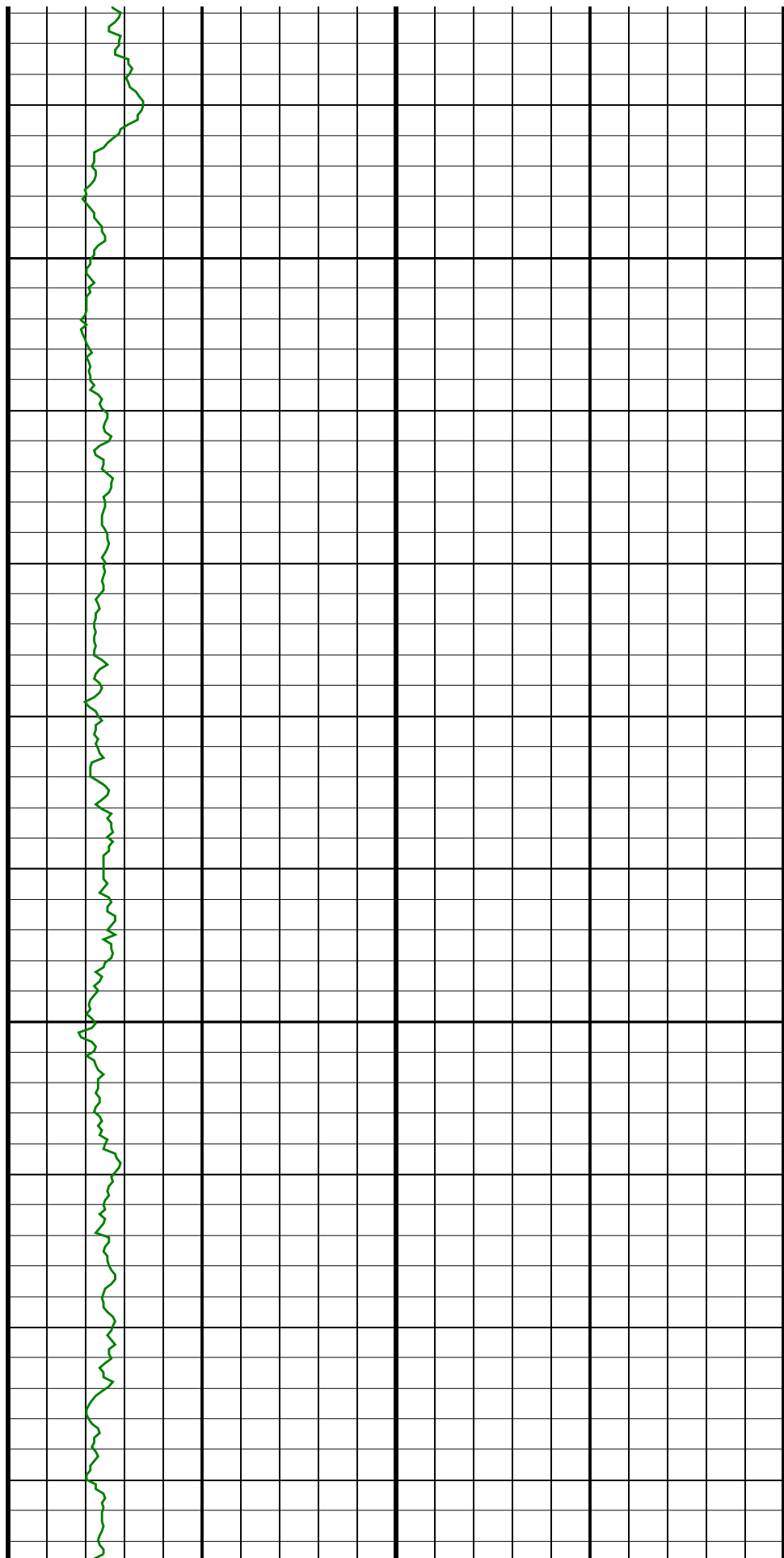
725
TVD

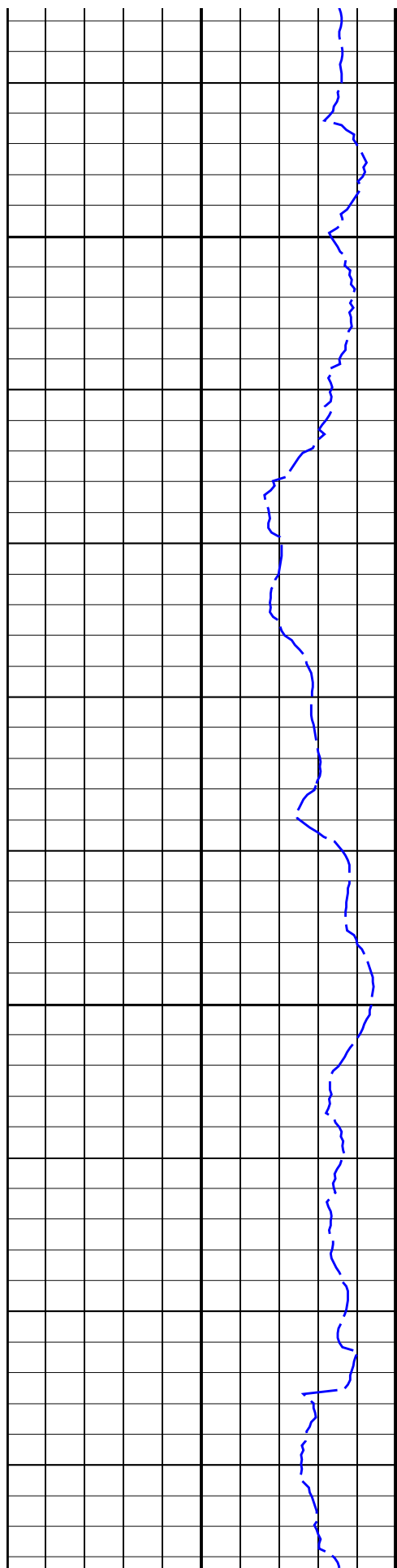




750
TVD

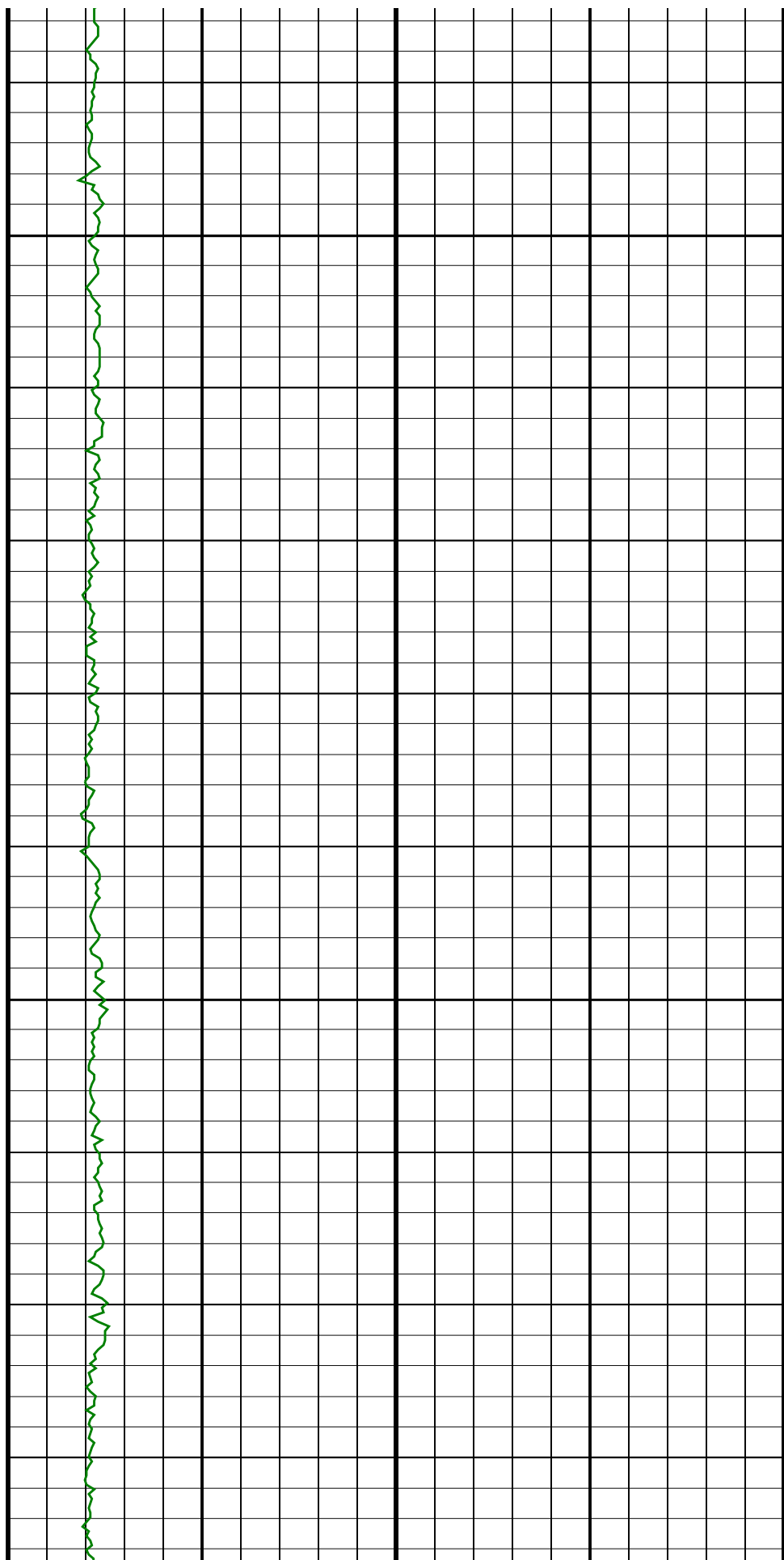
775
TVD

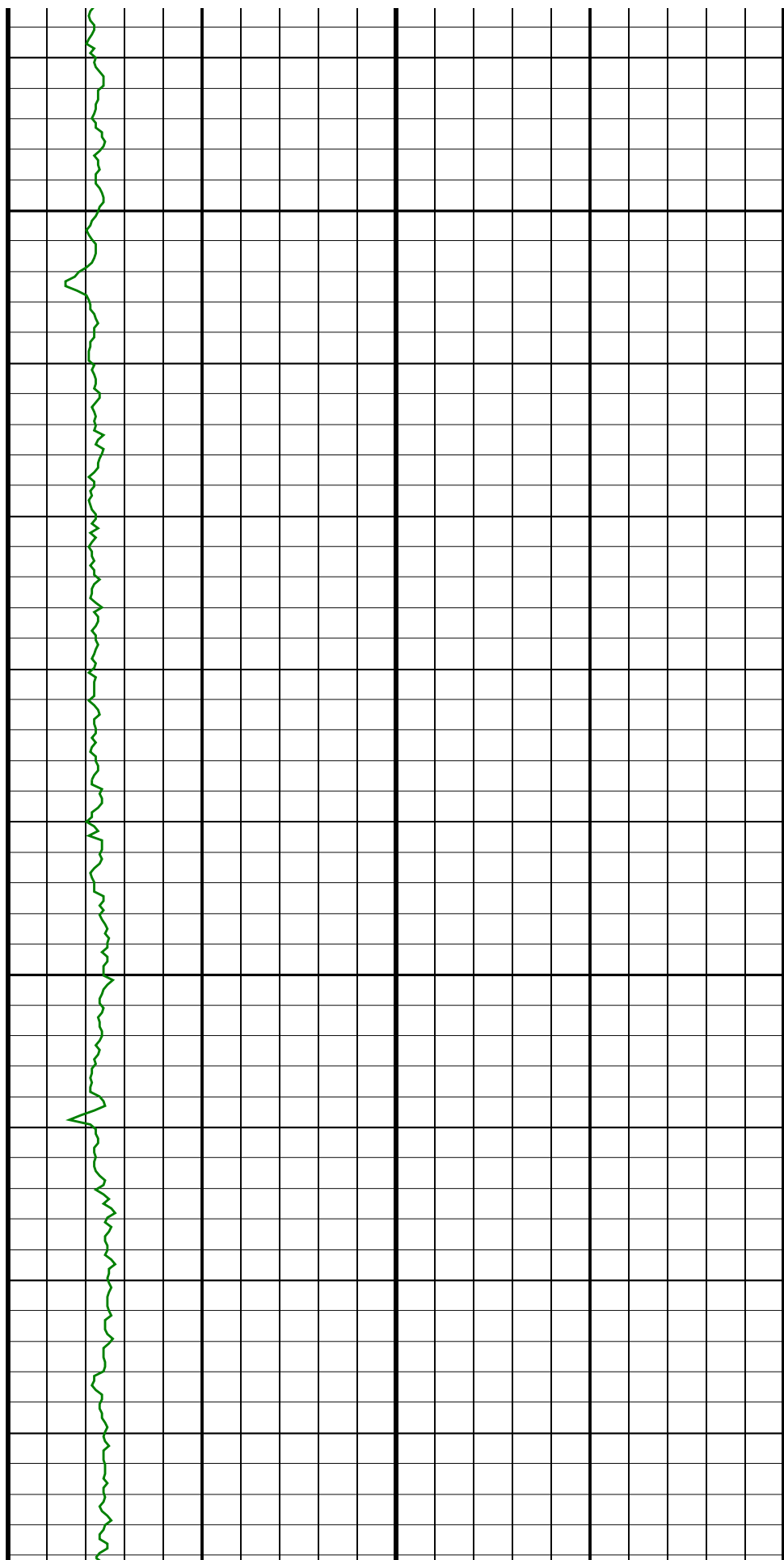
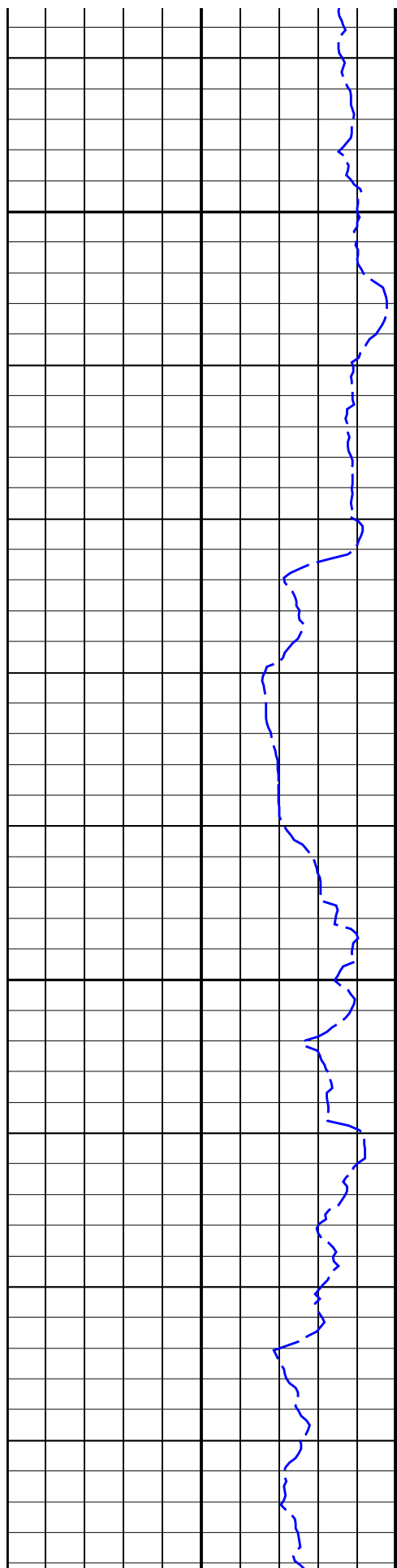


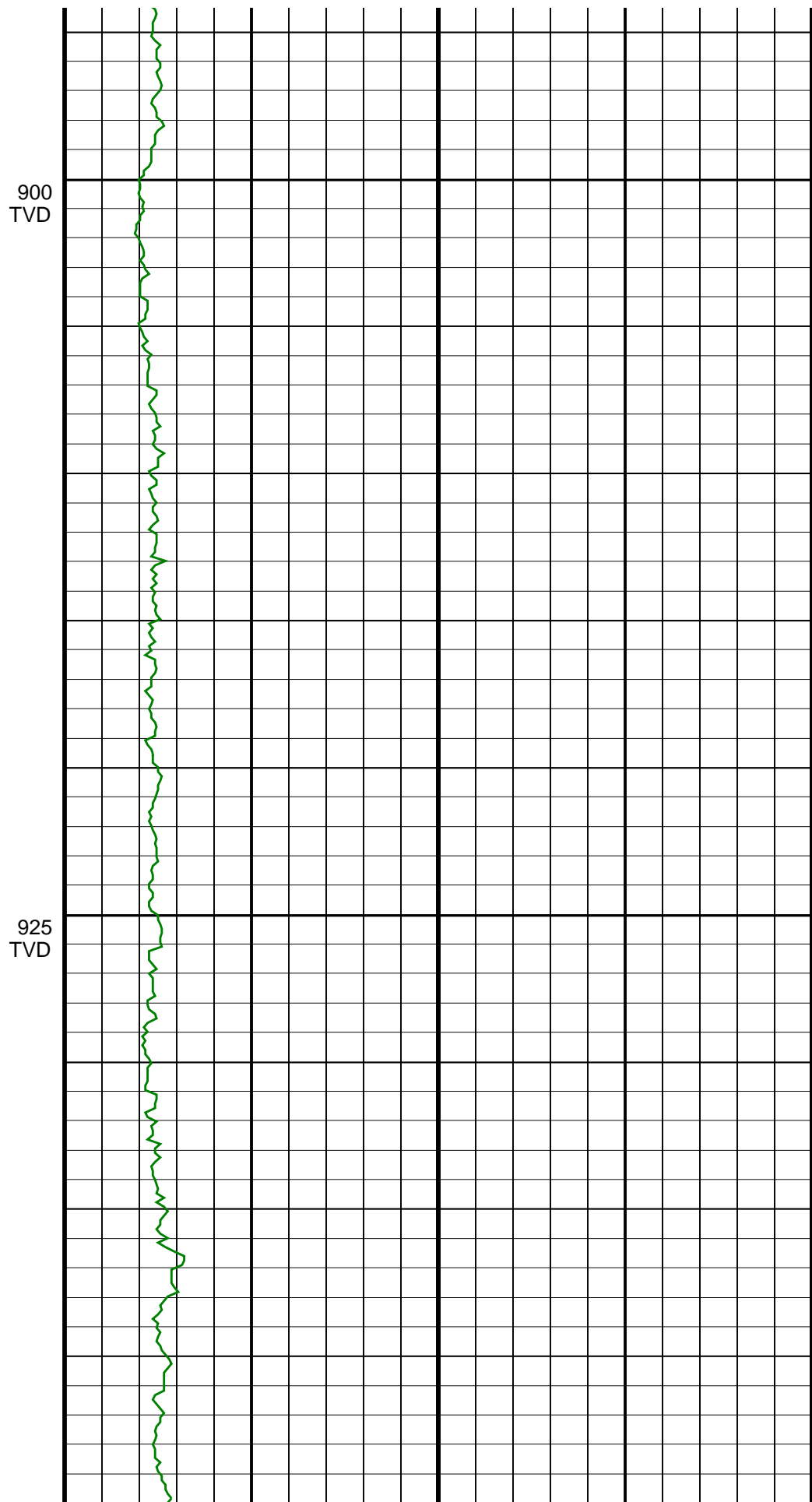
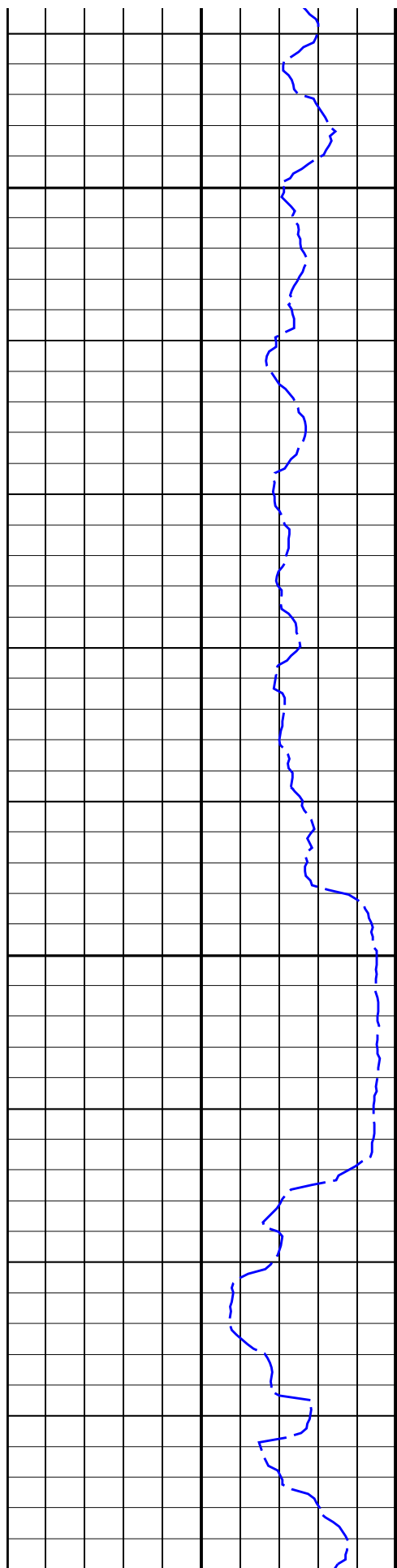


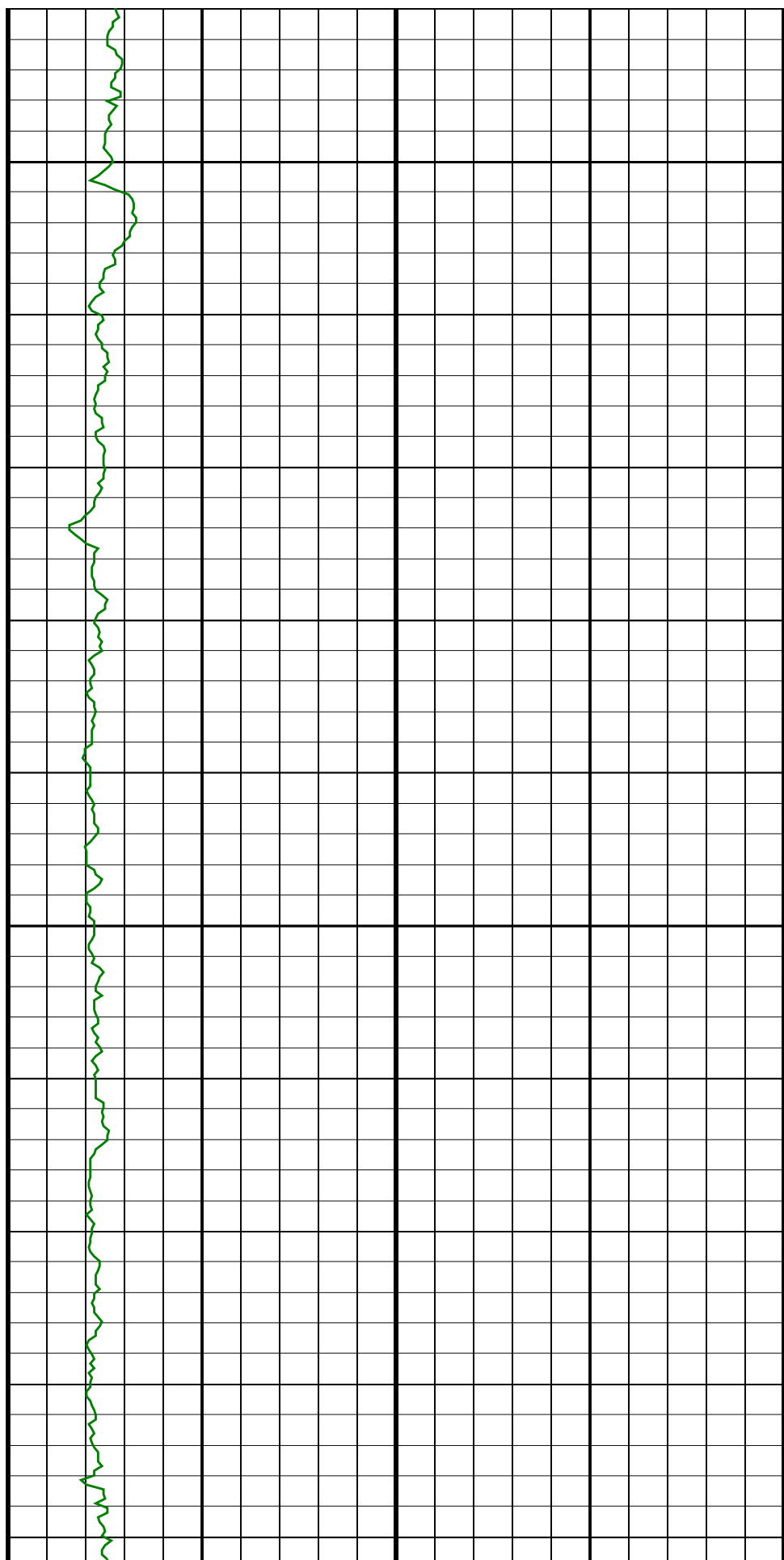
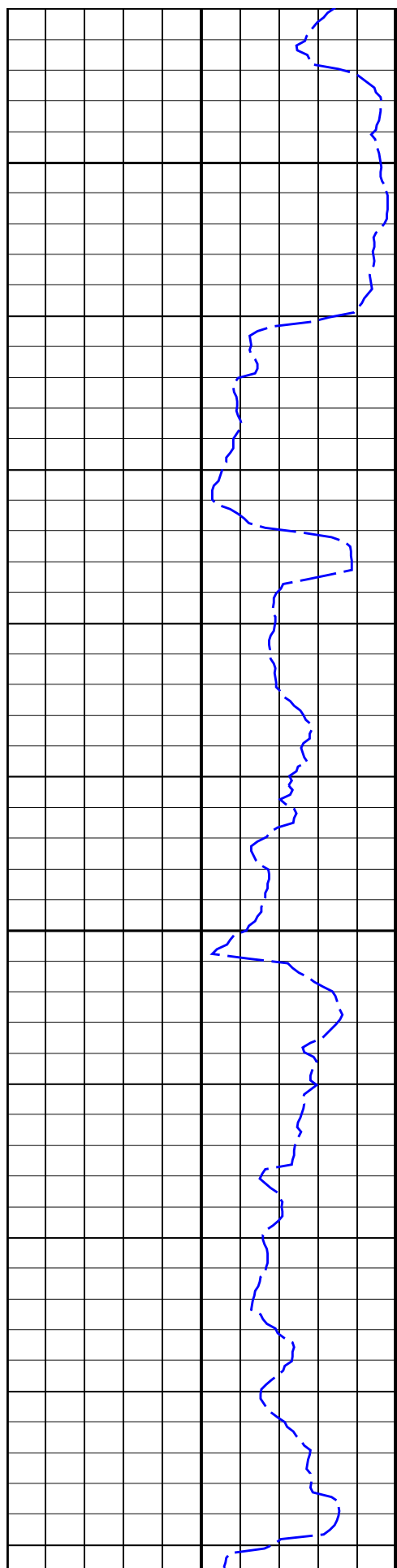
800
TVD

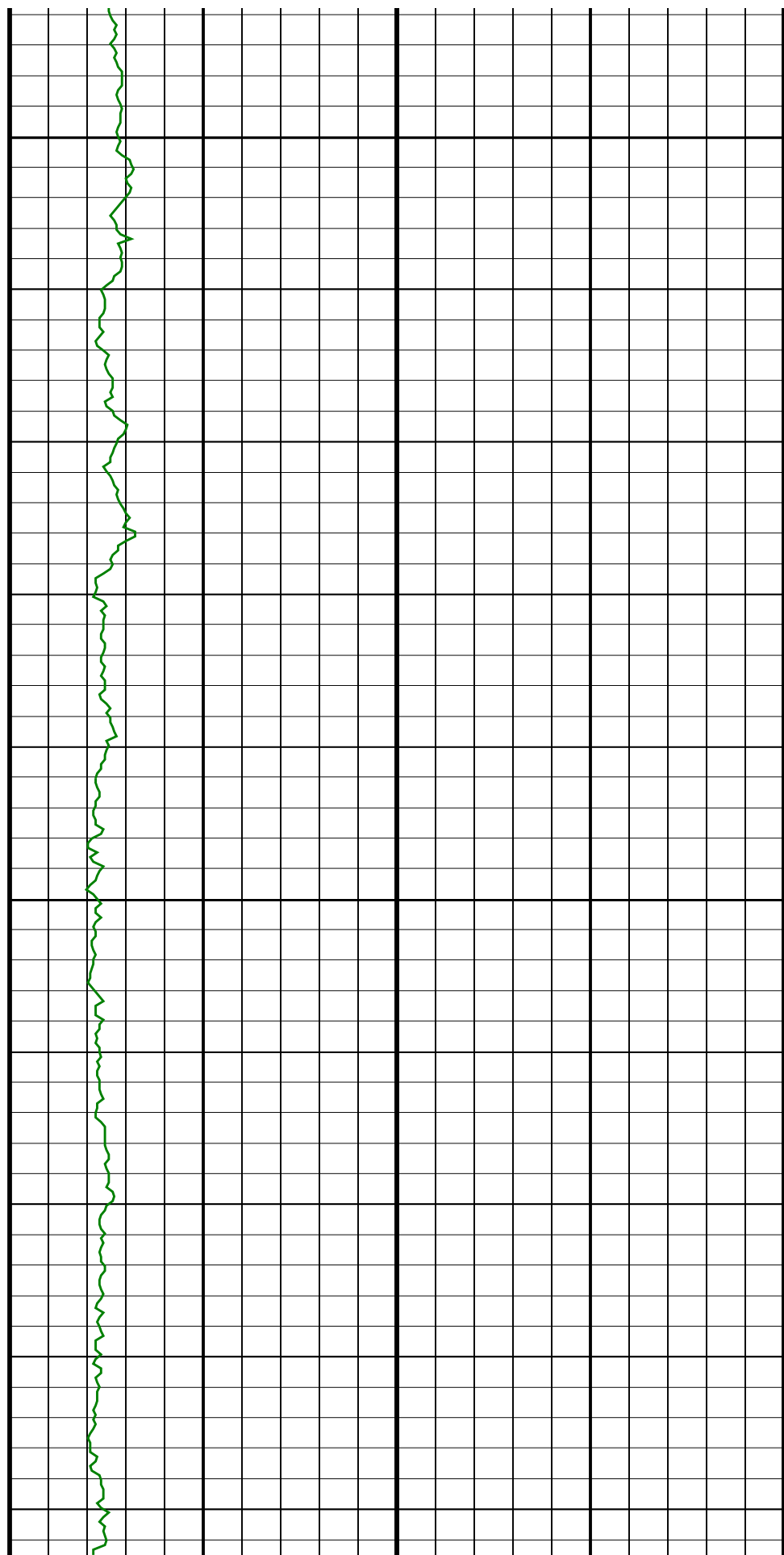
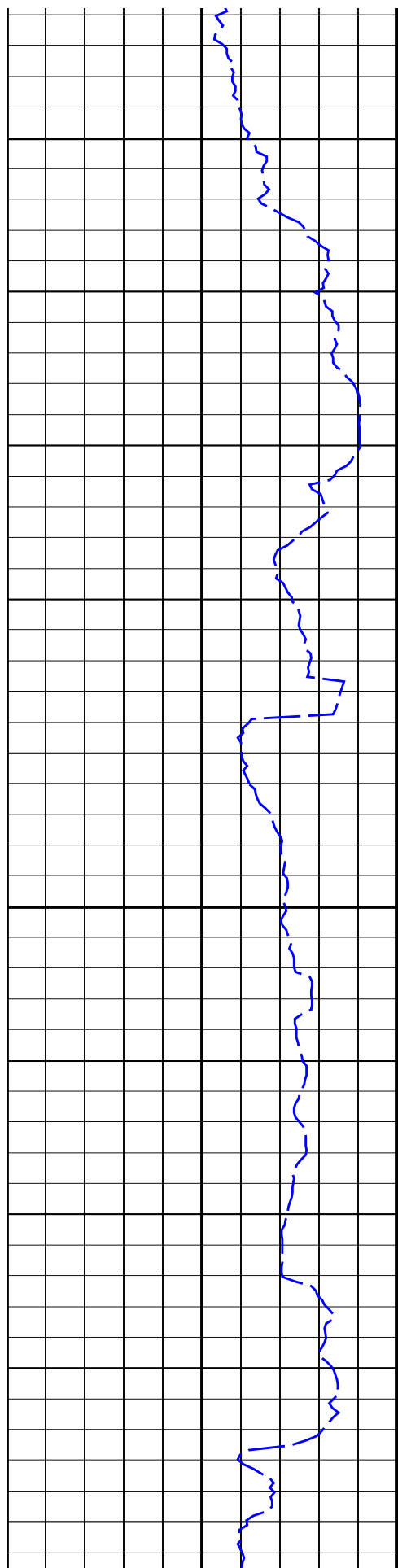
825
TVD

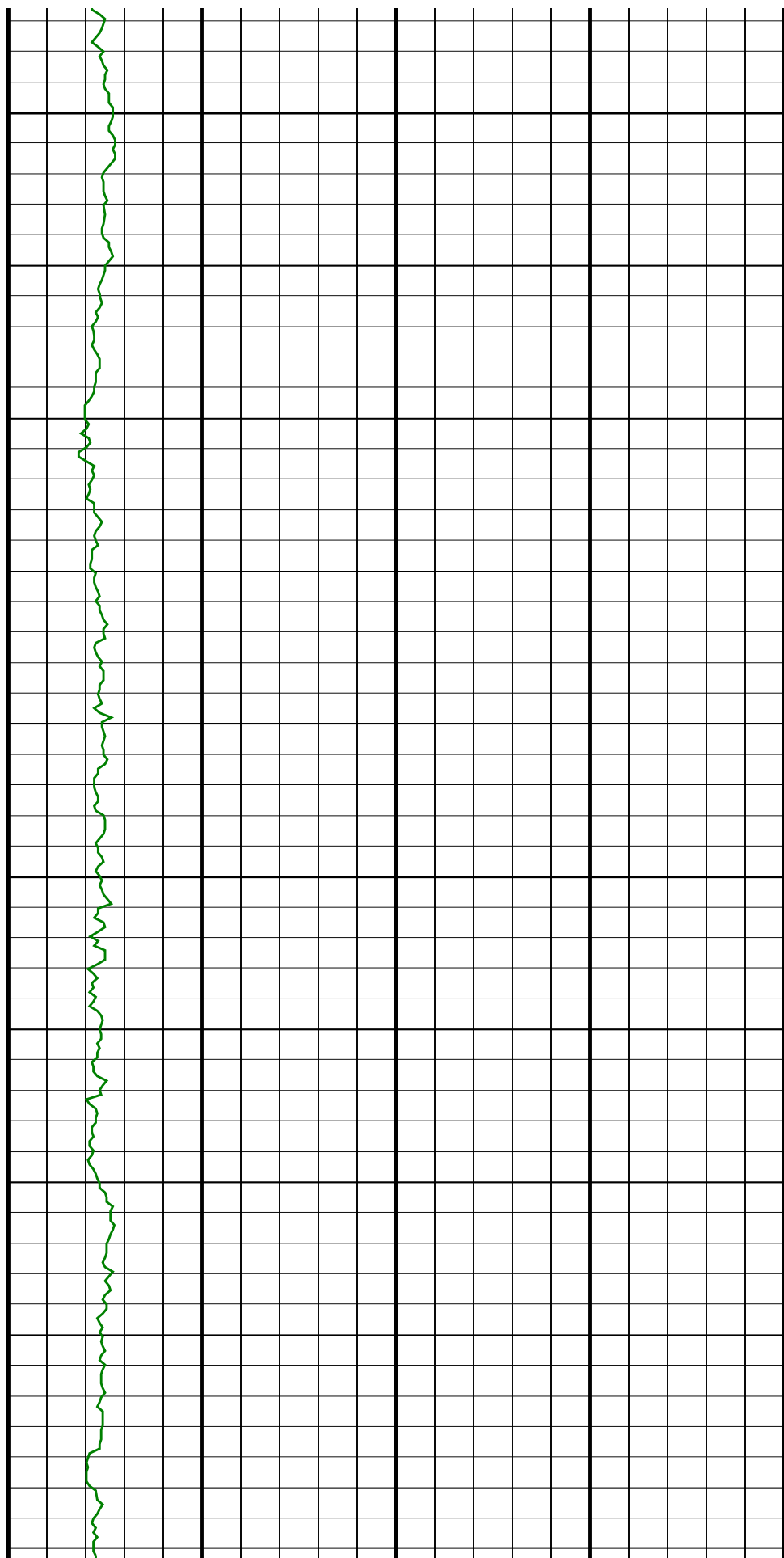
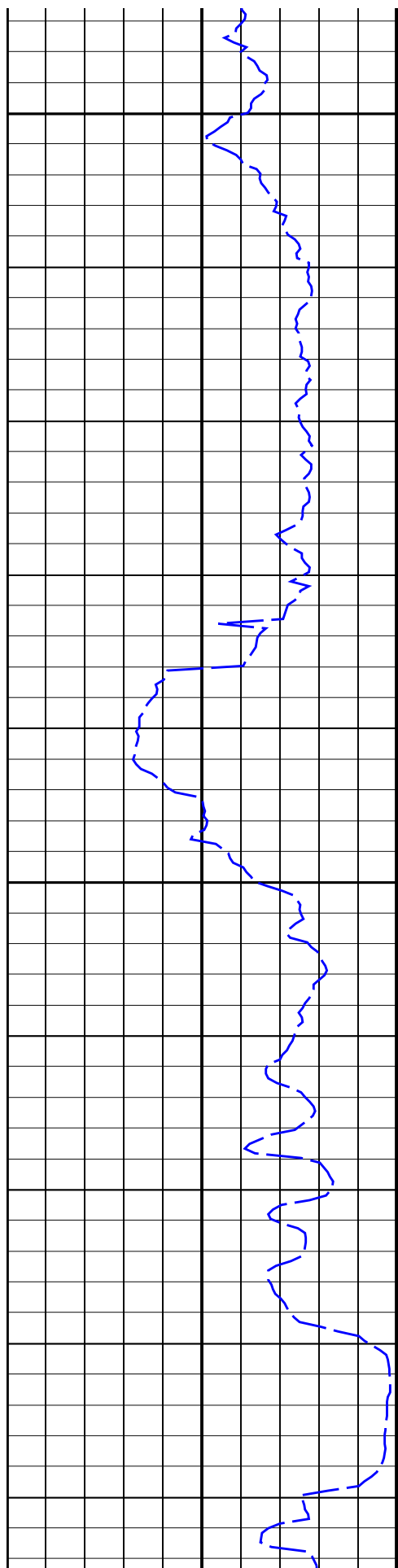


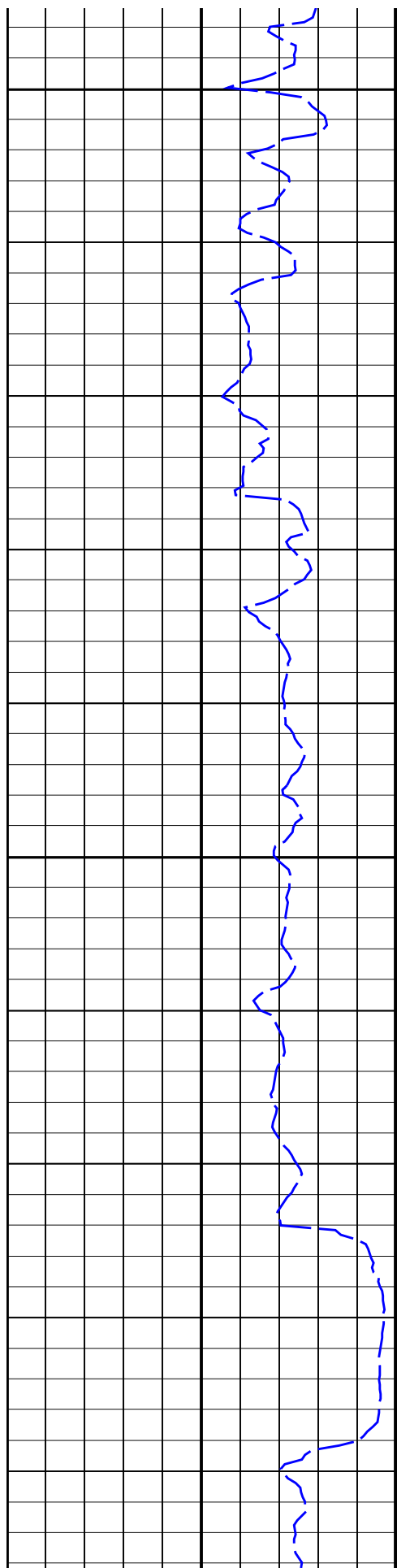






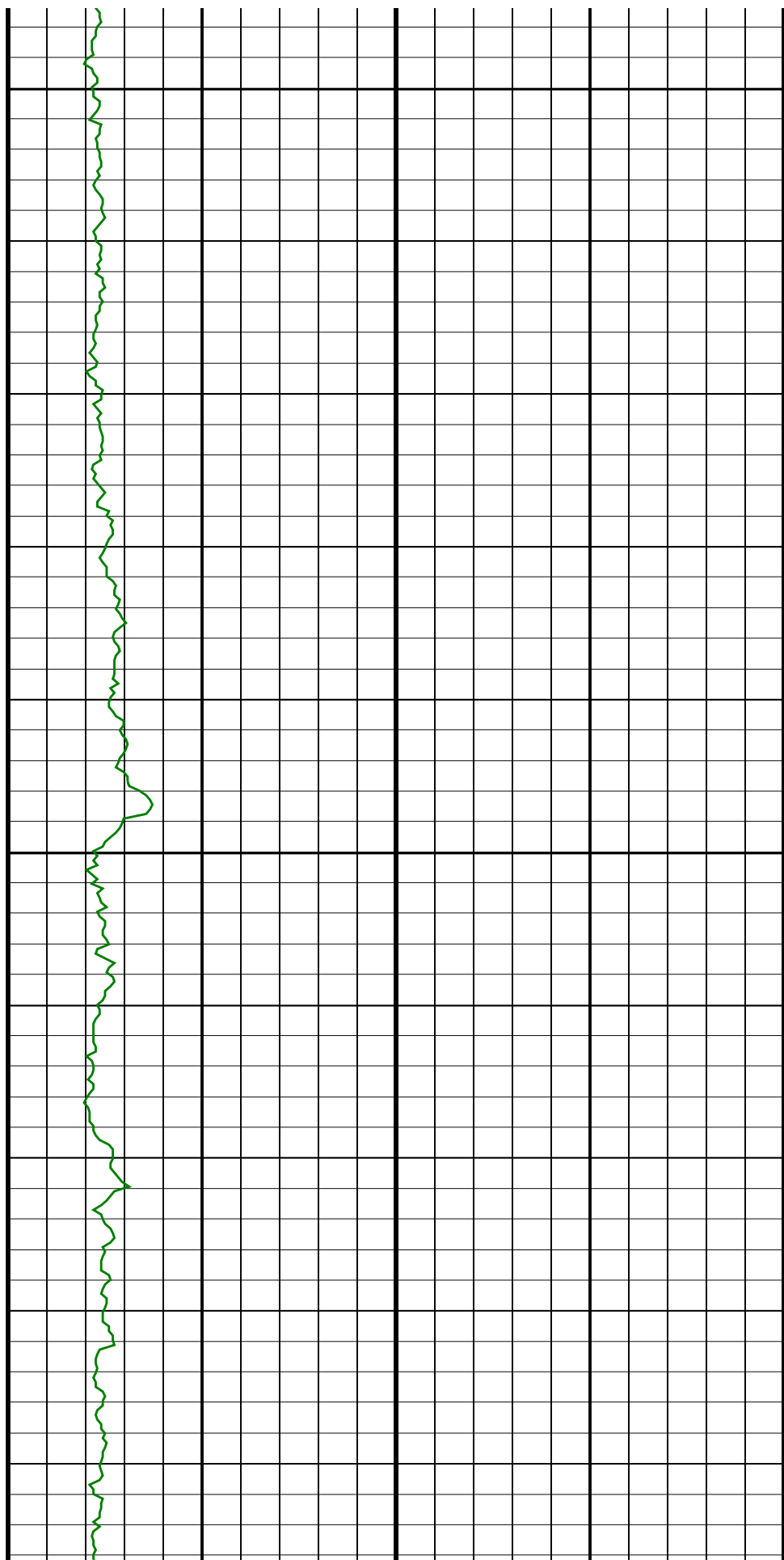


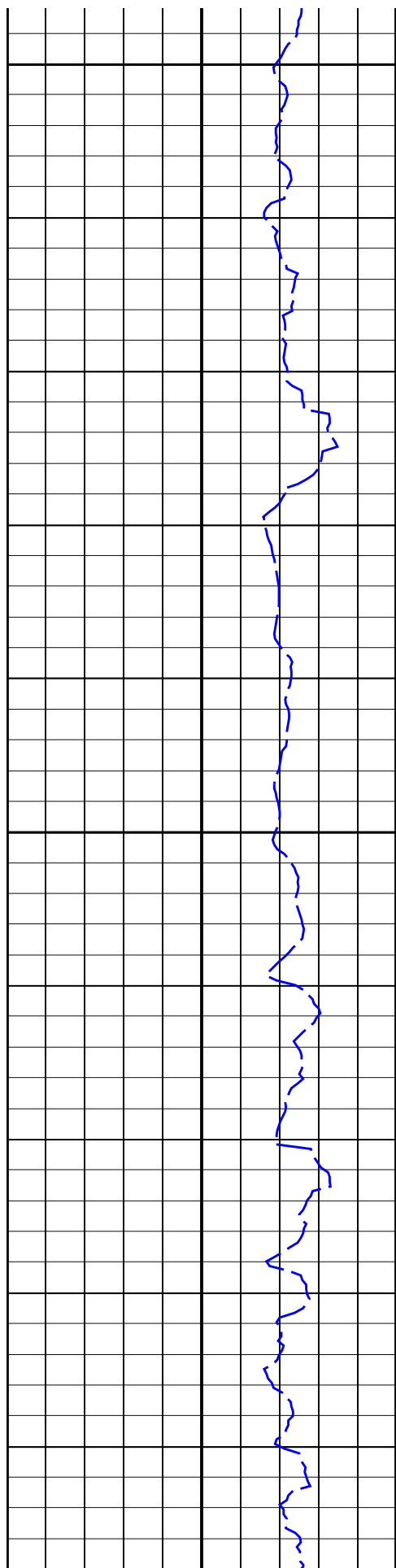




1100
TVD

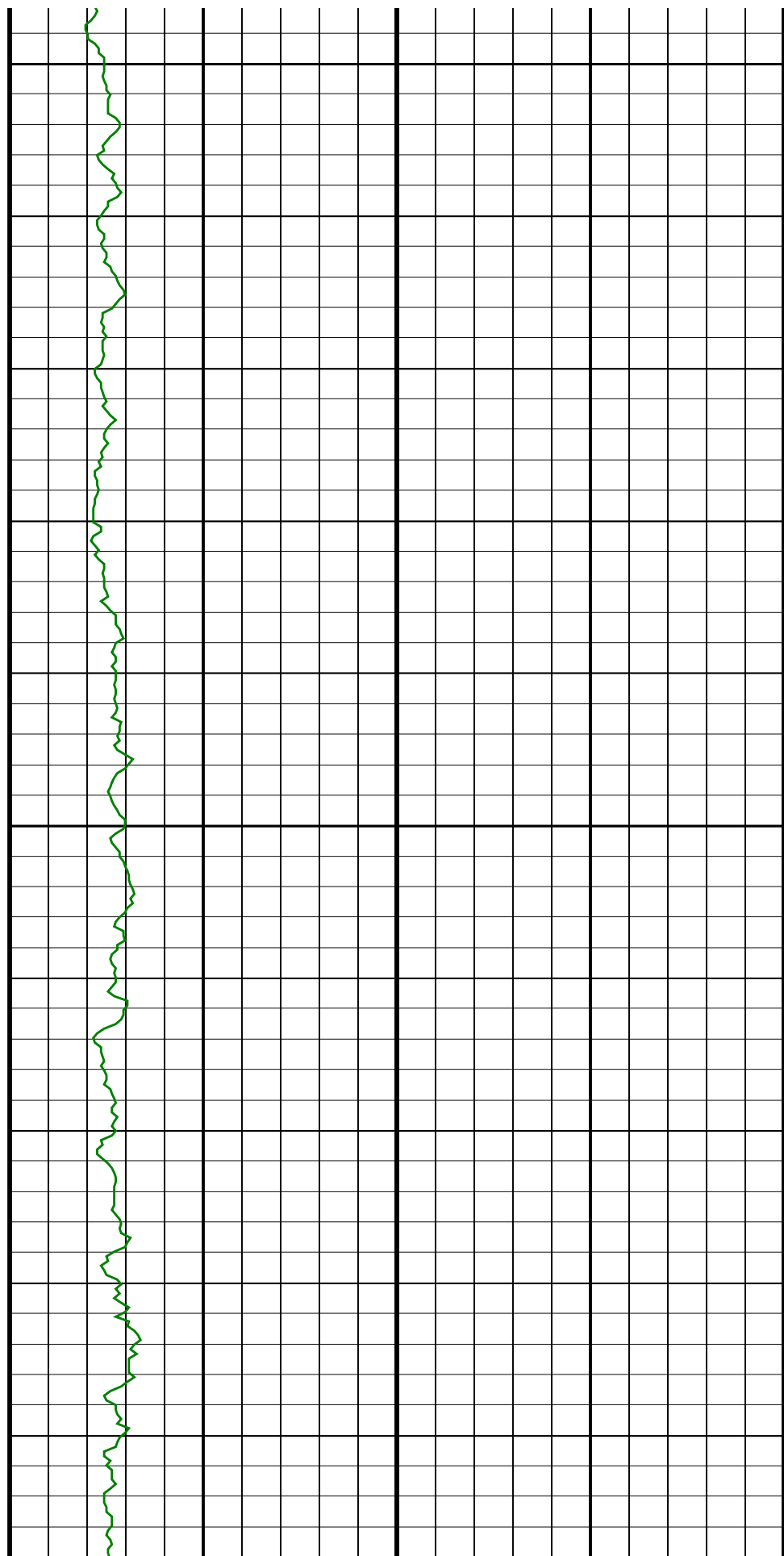
1125
TVD

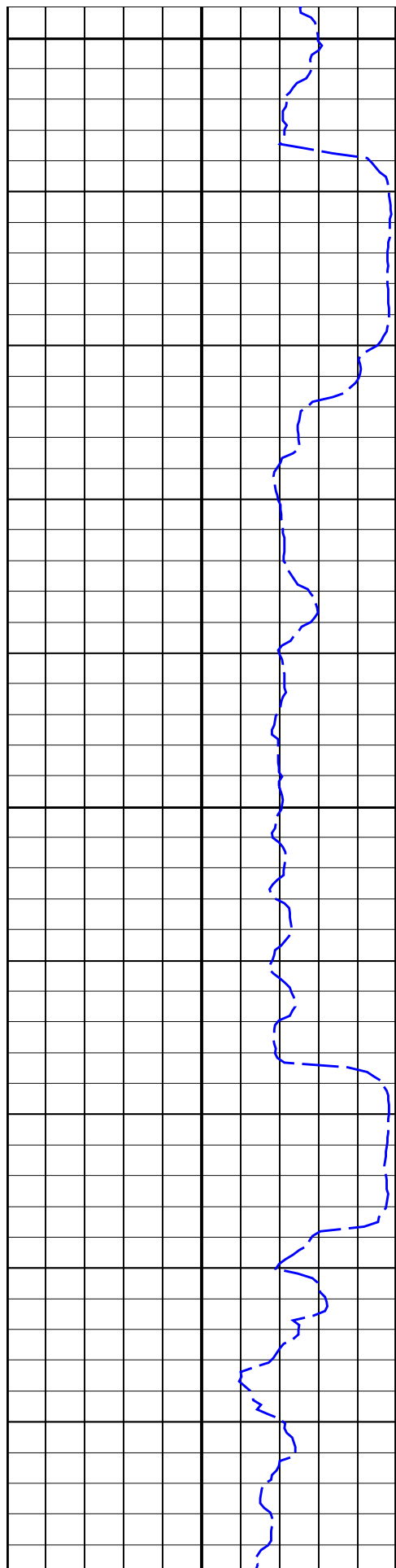




1150
TVD

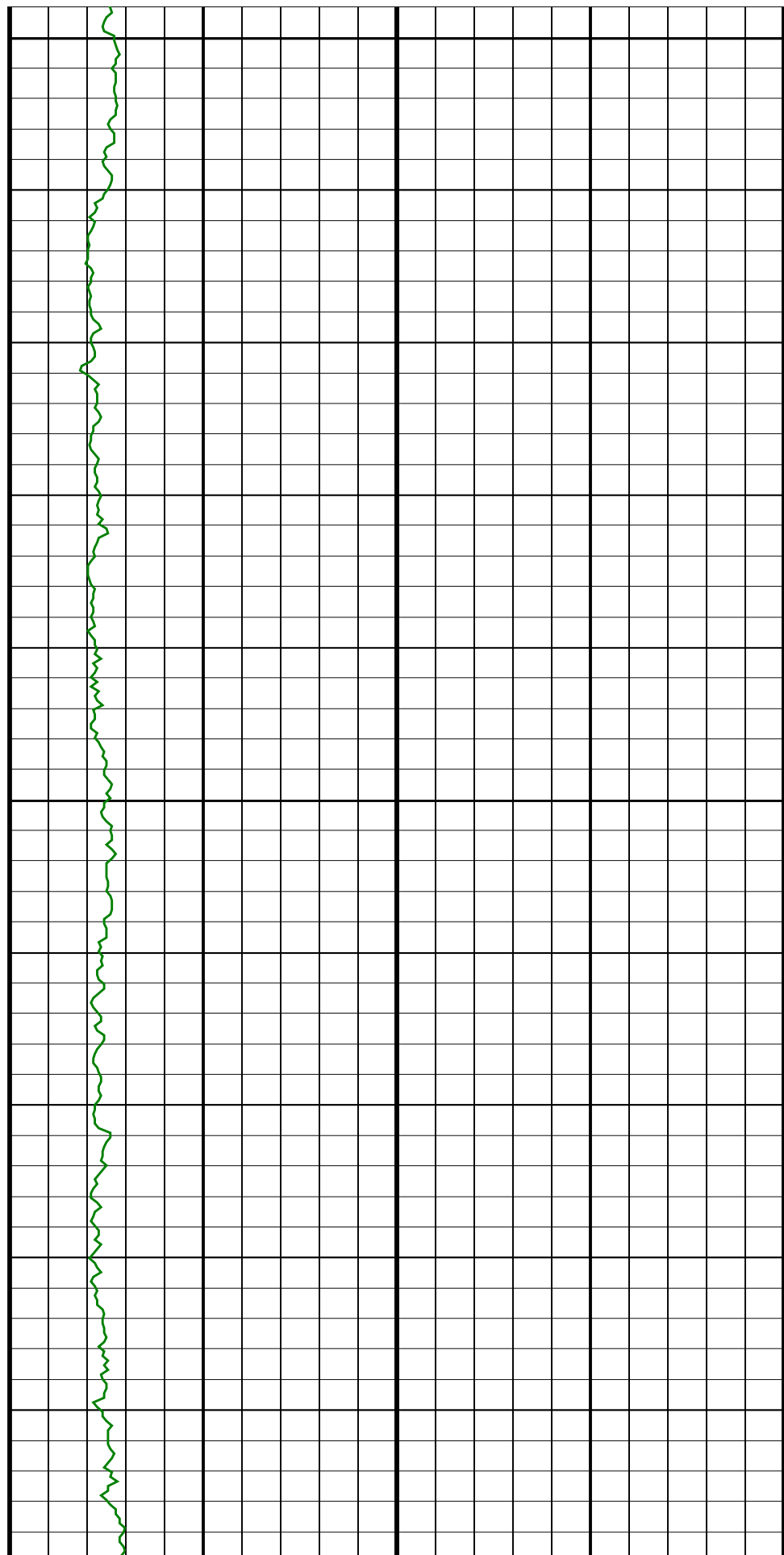
1175
TVD

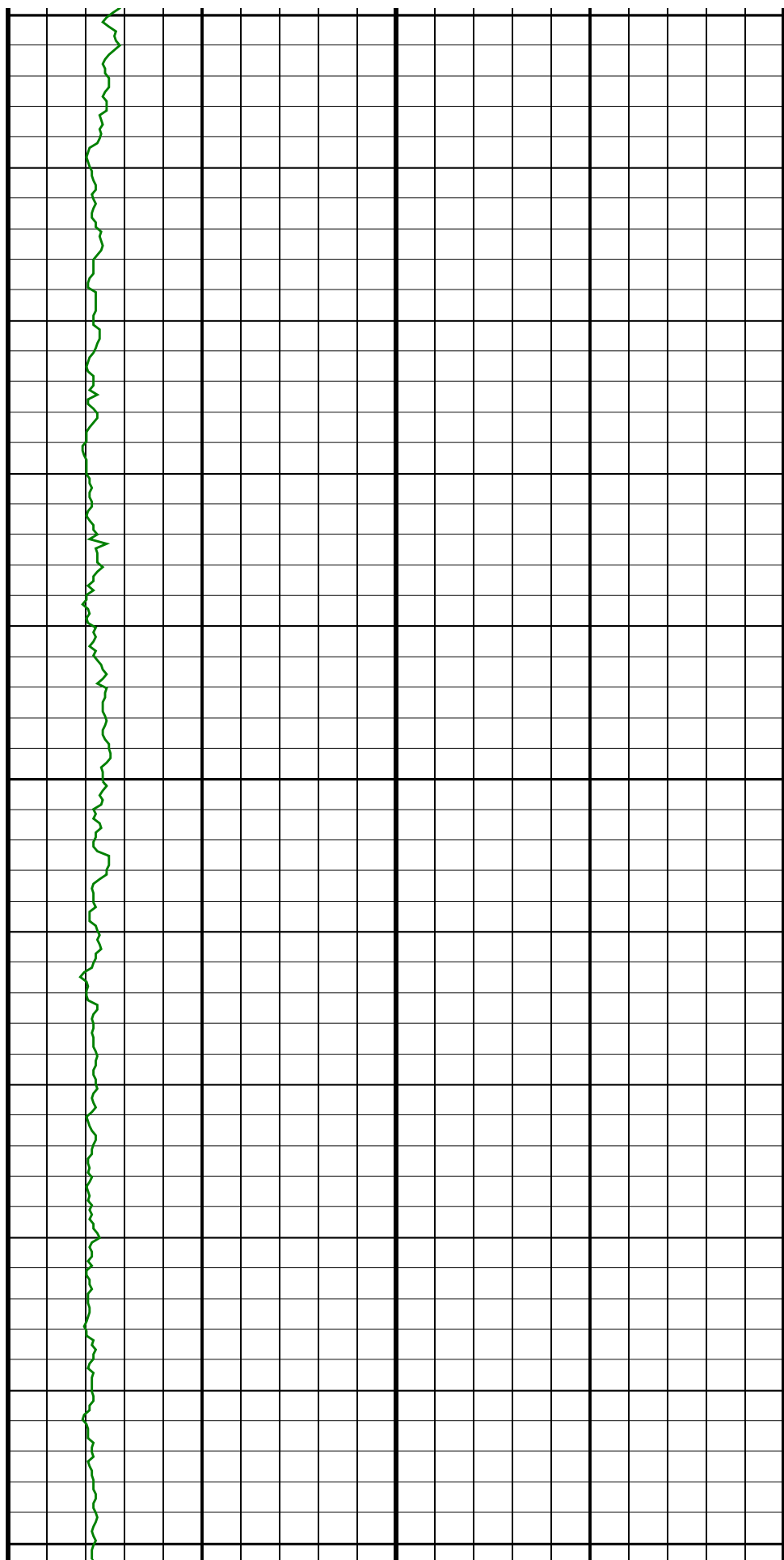
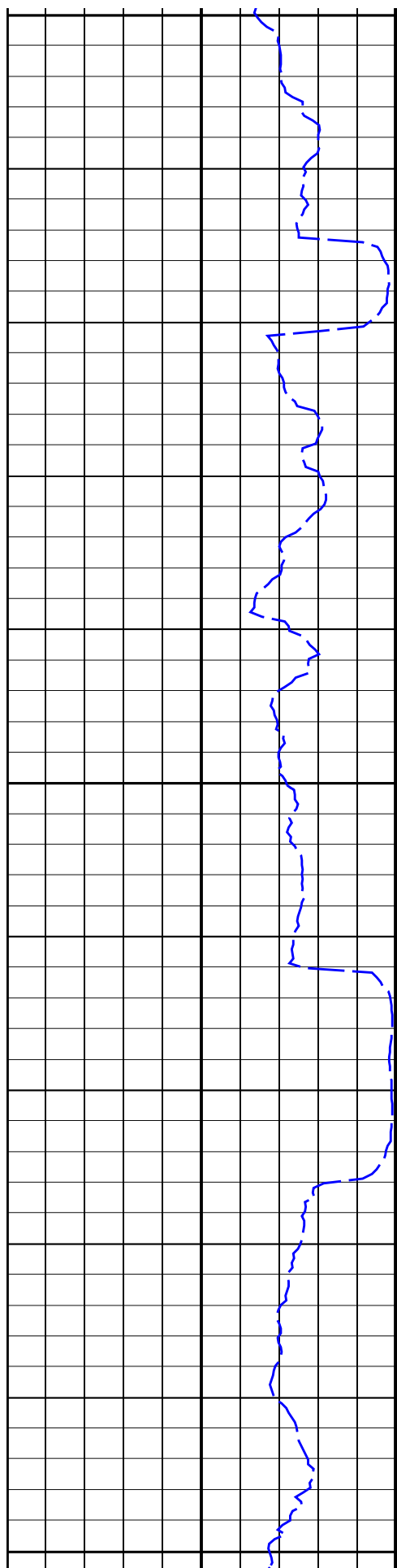


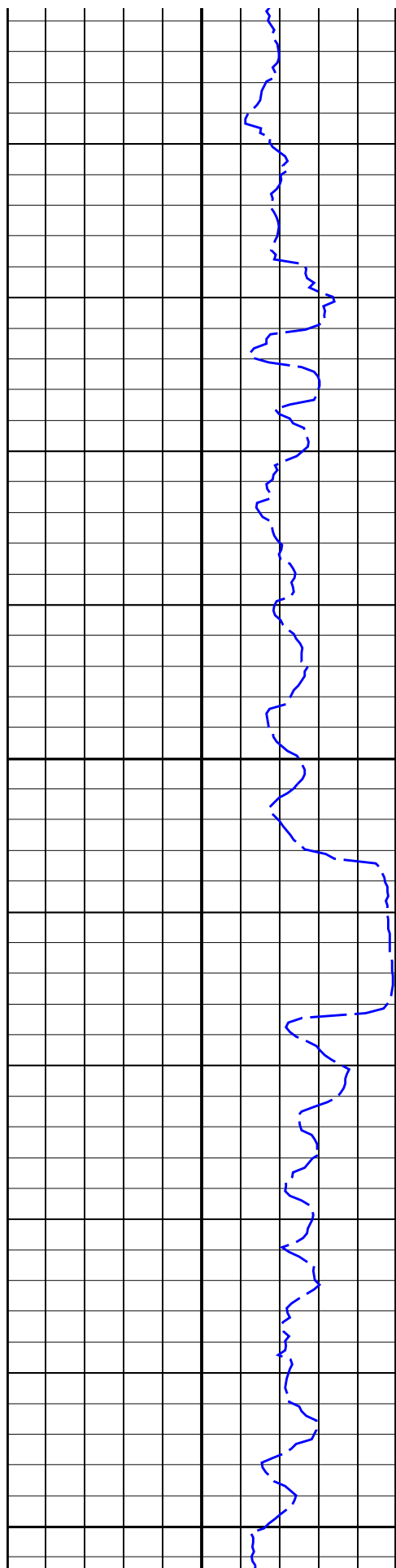


1200
TVD

1225
TVD



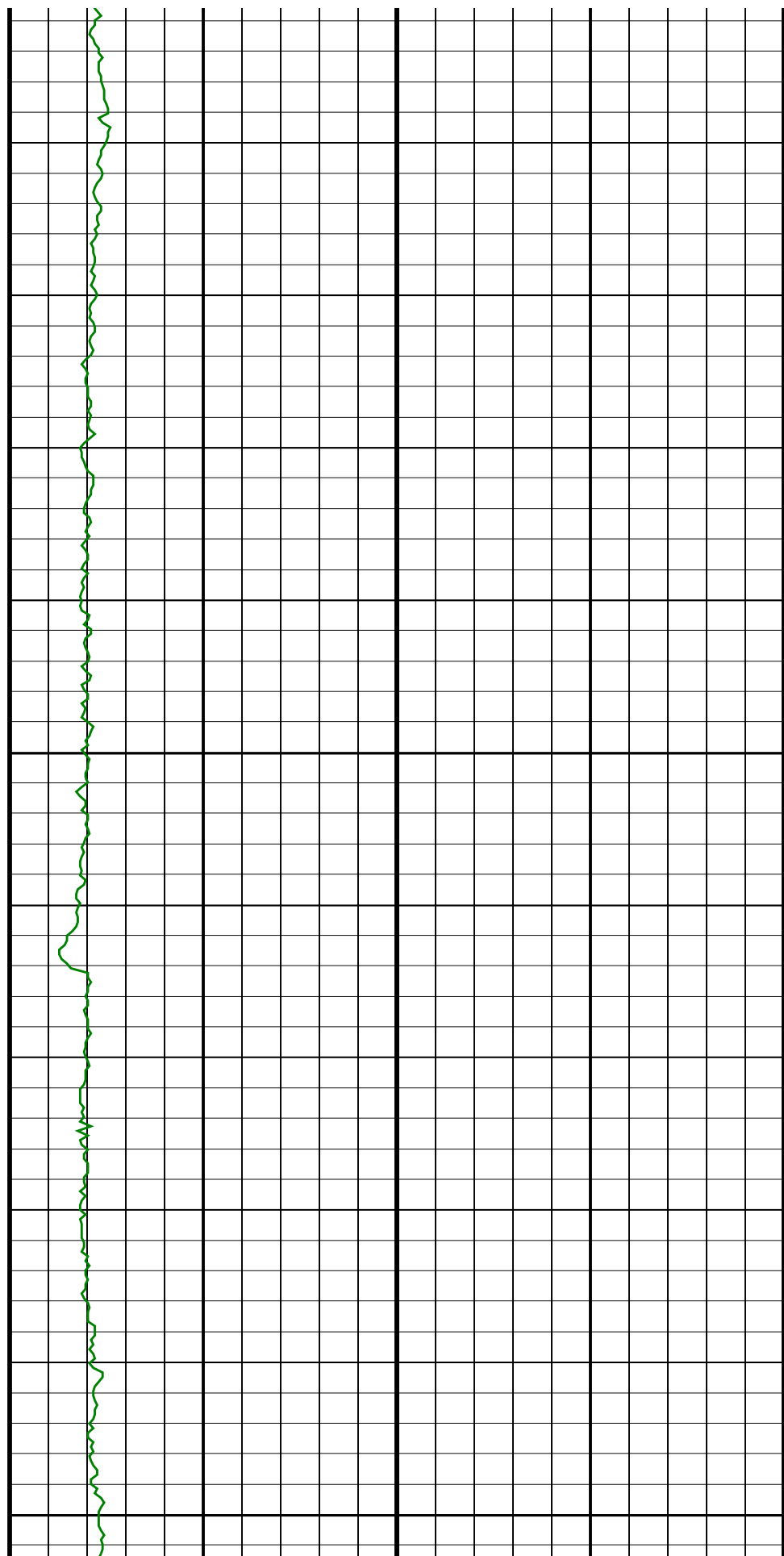


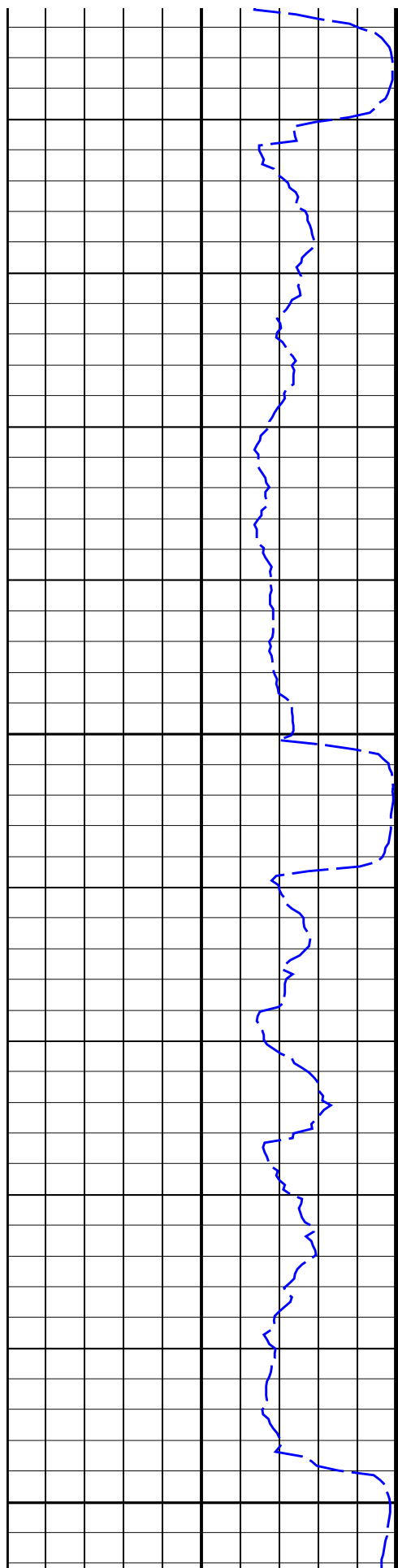


1300
TVD

1325
TVD

1350

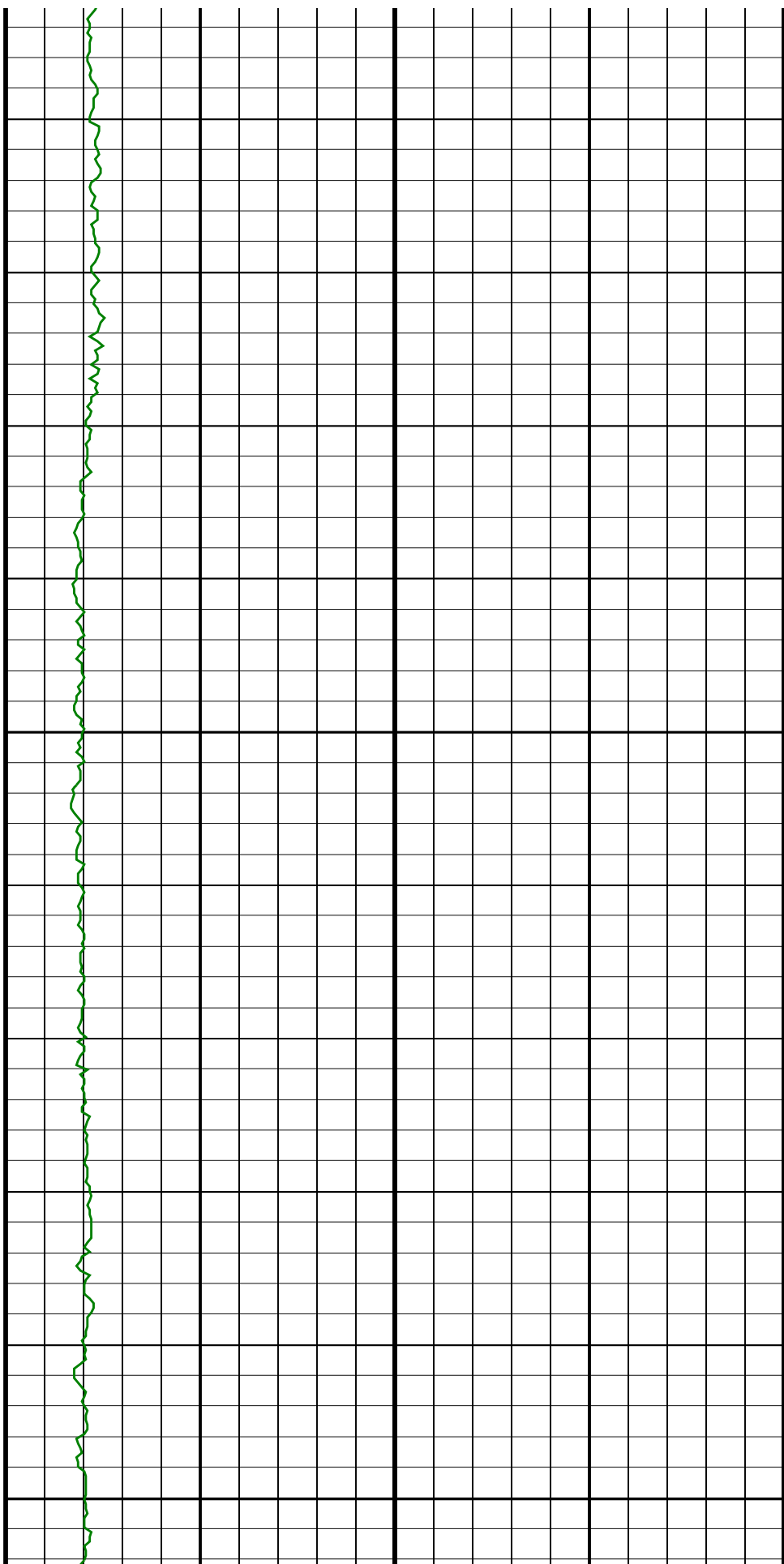


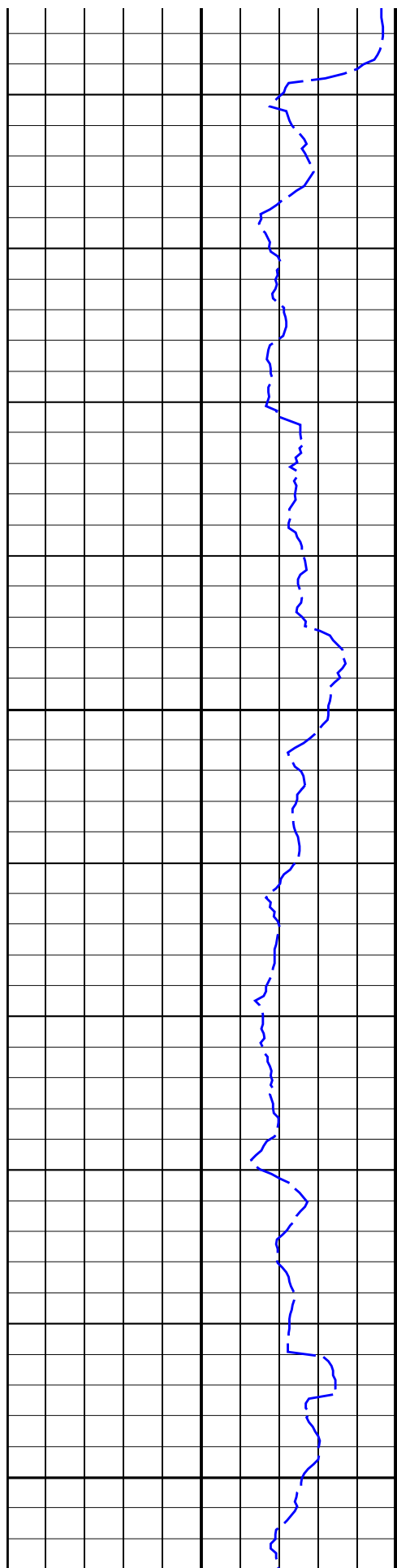


TVD

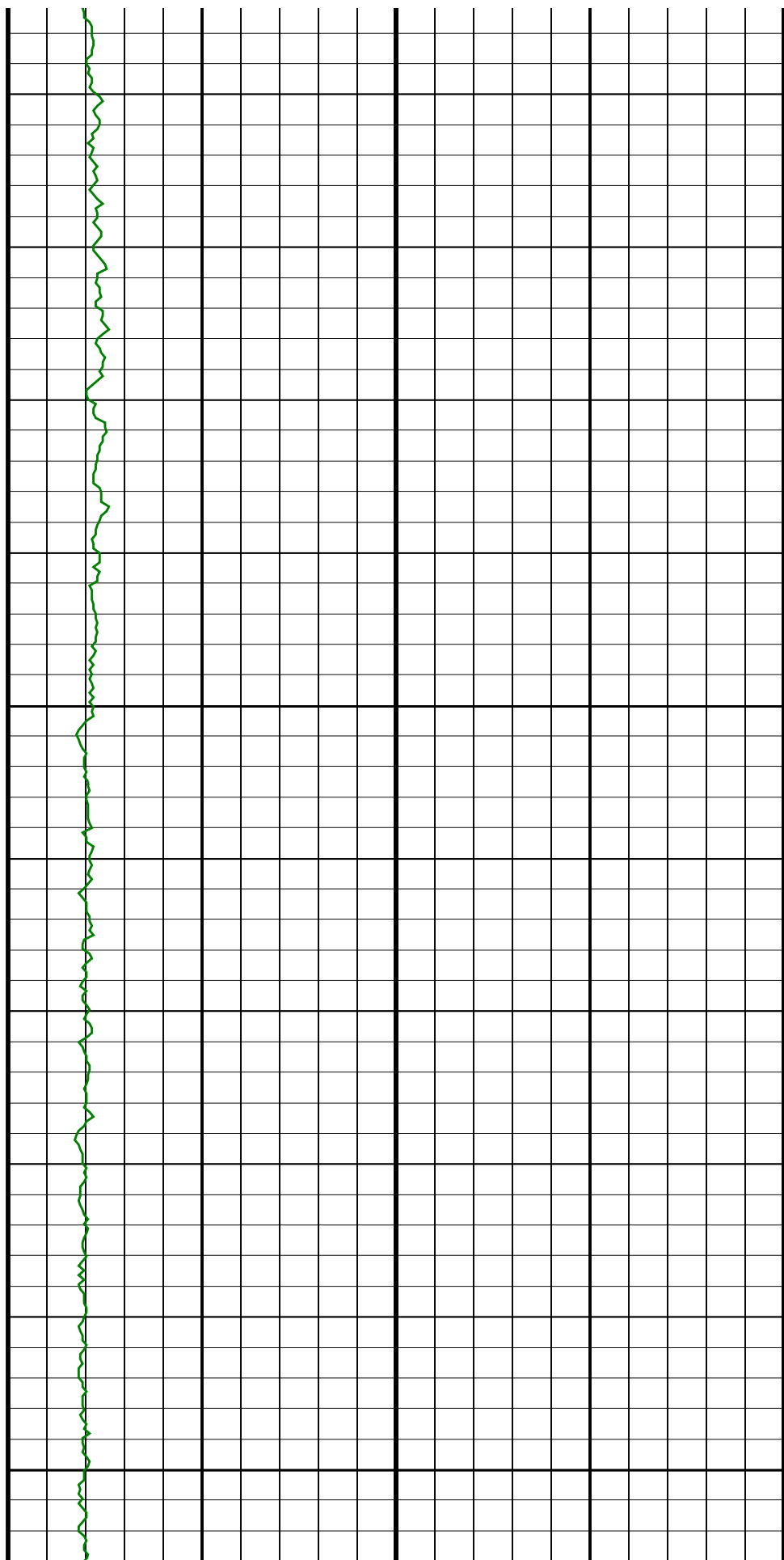
1375
TVD

1400
TVD

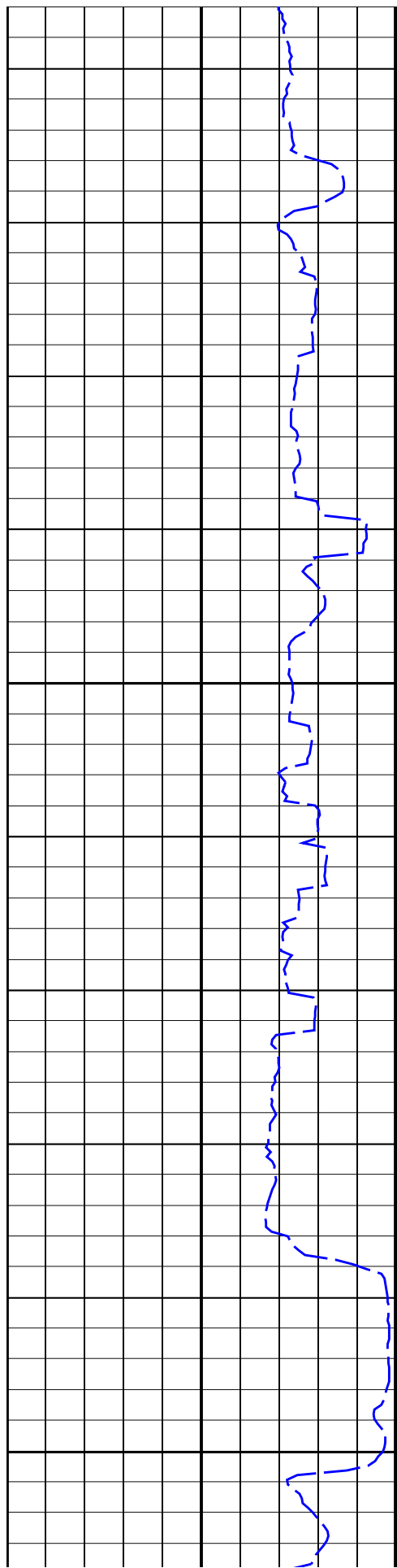




1425
TVD

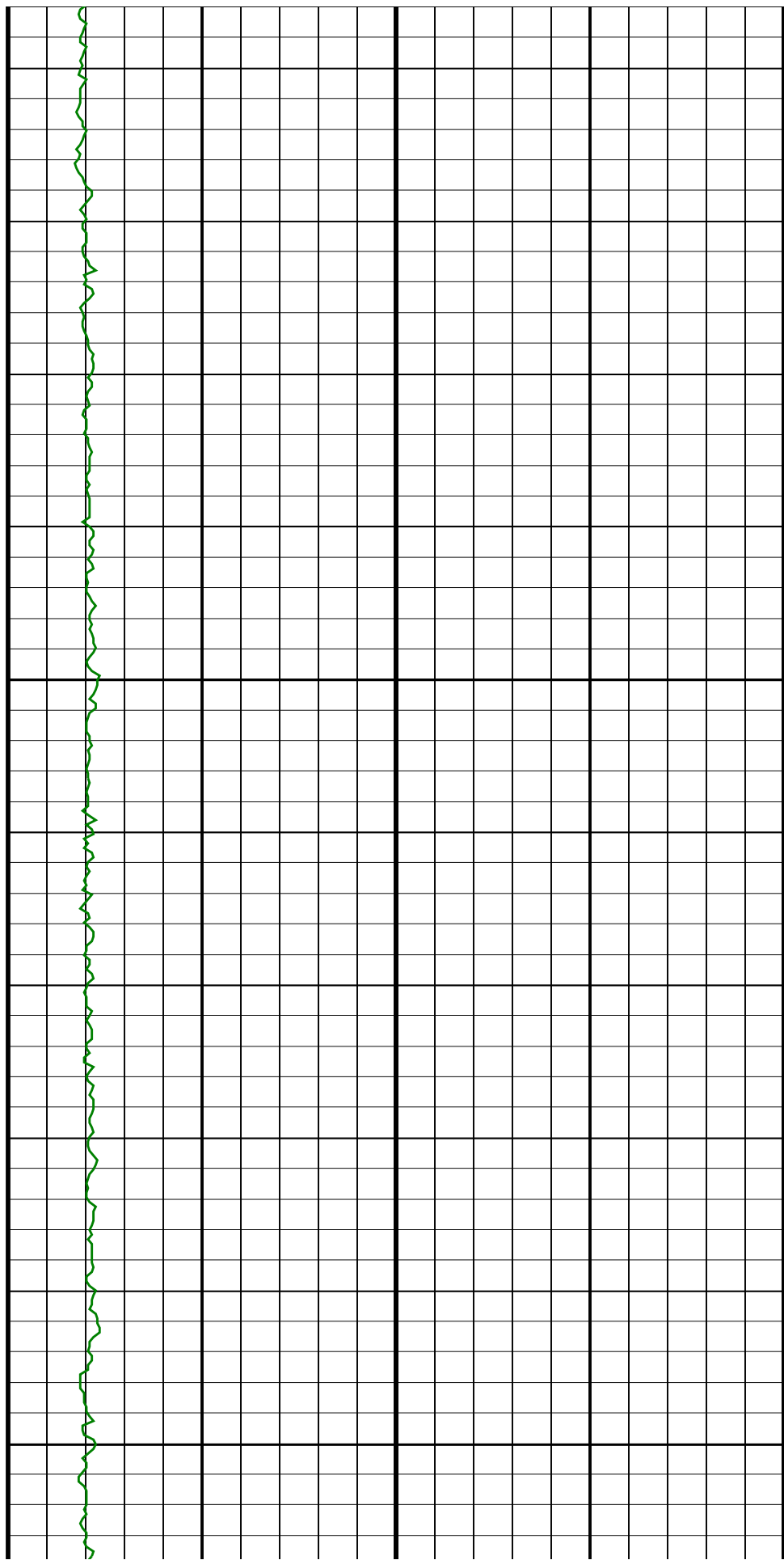


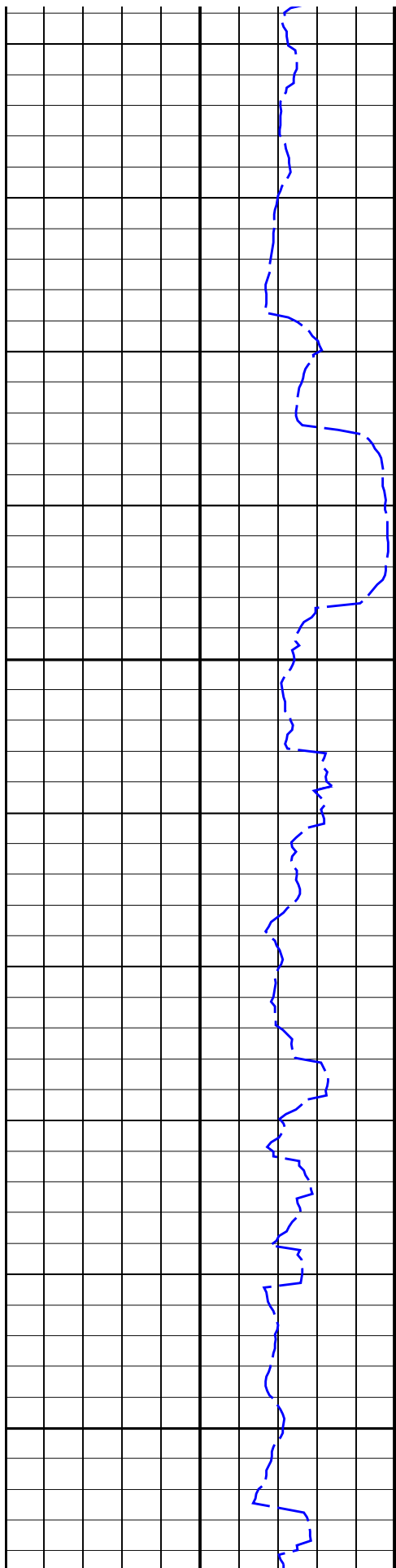
1450
TVD



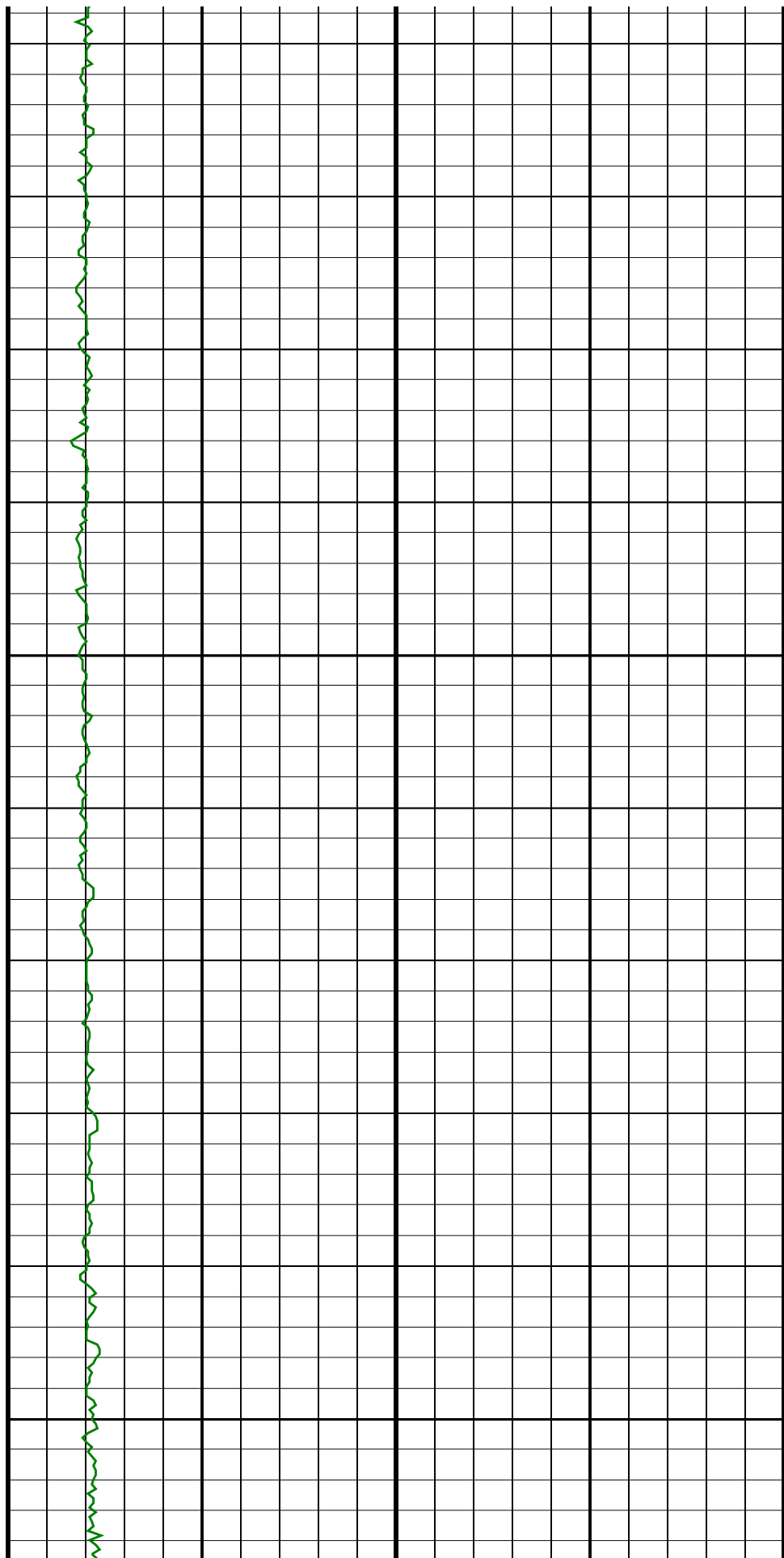
1475
TVD

1500
TVD

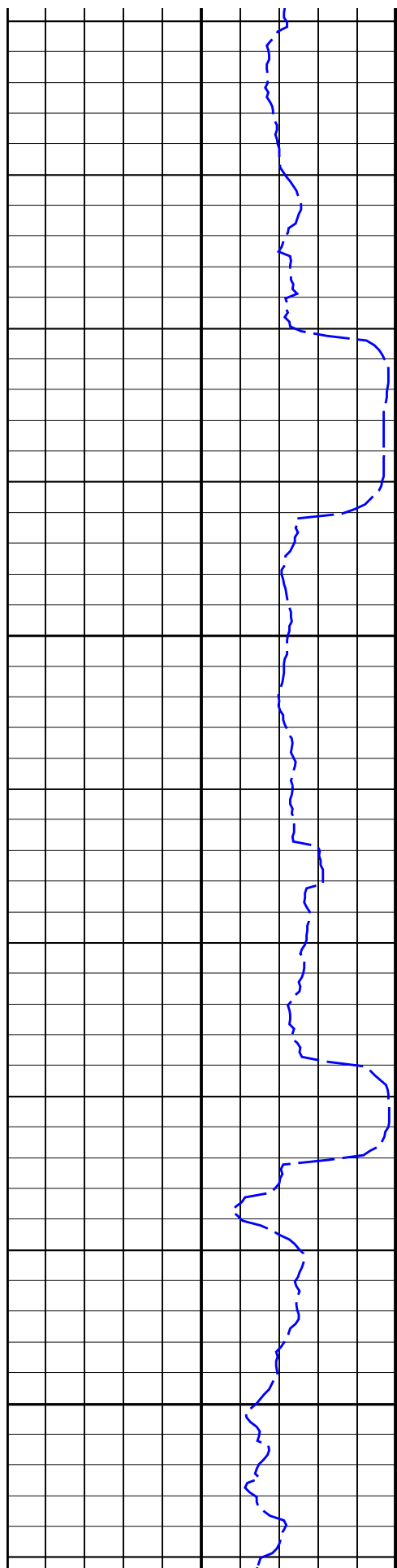




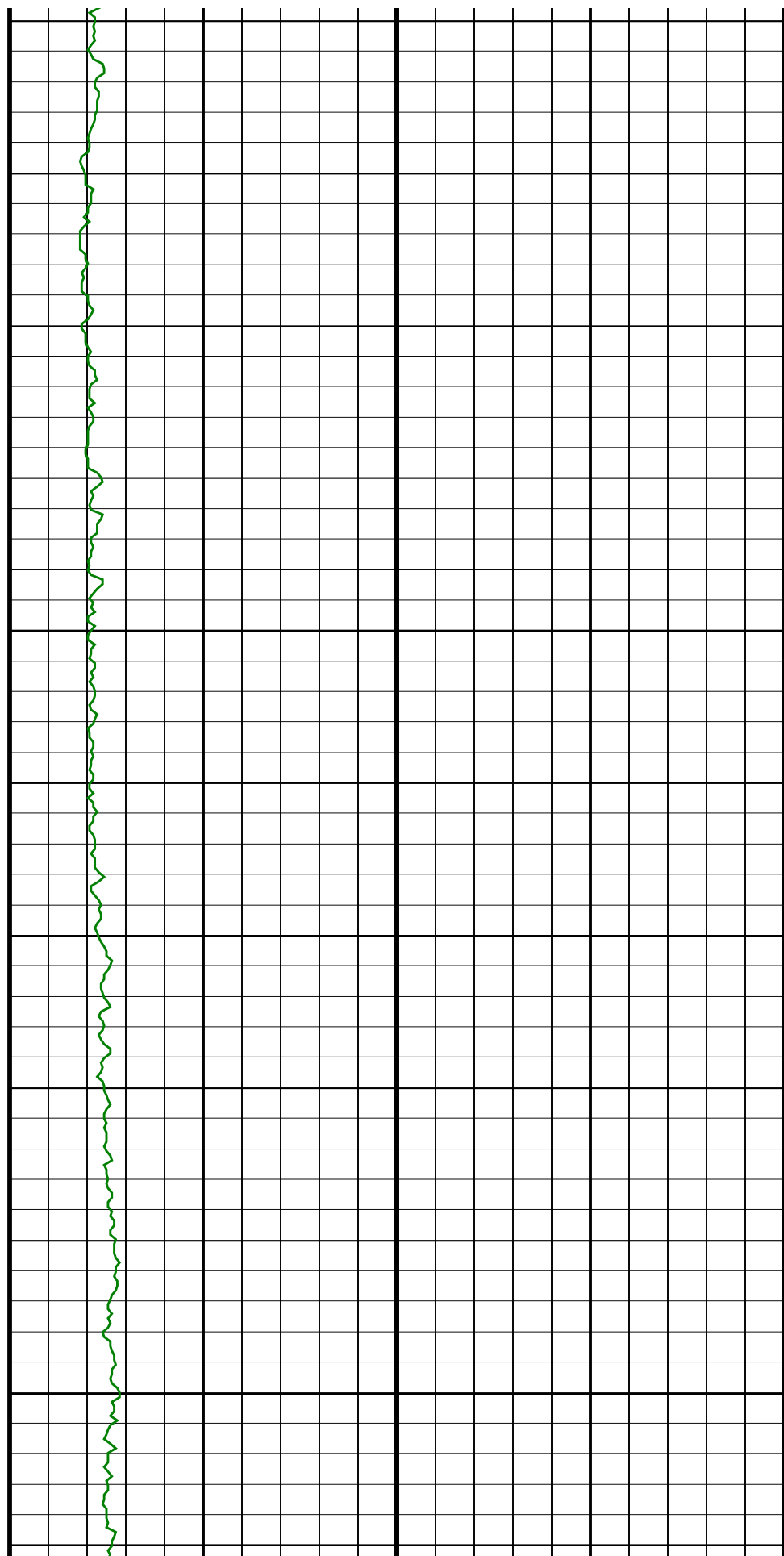
1525
TVD



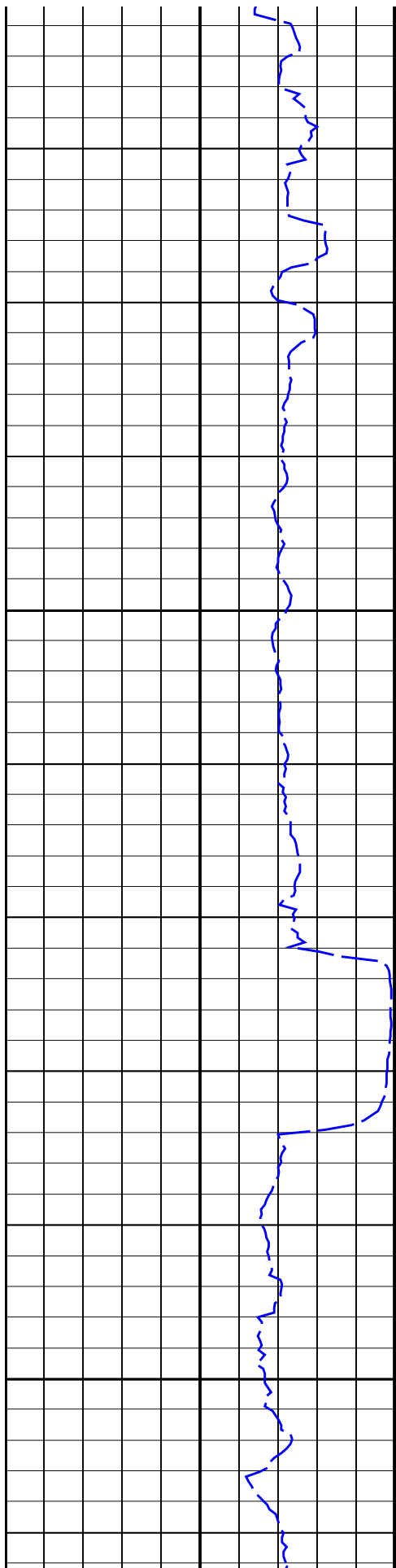
1550
TVD



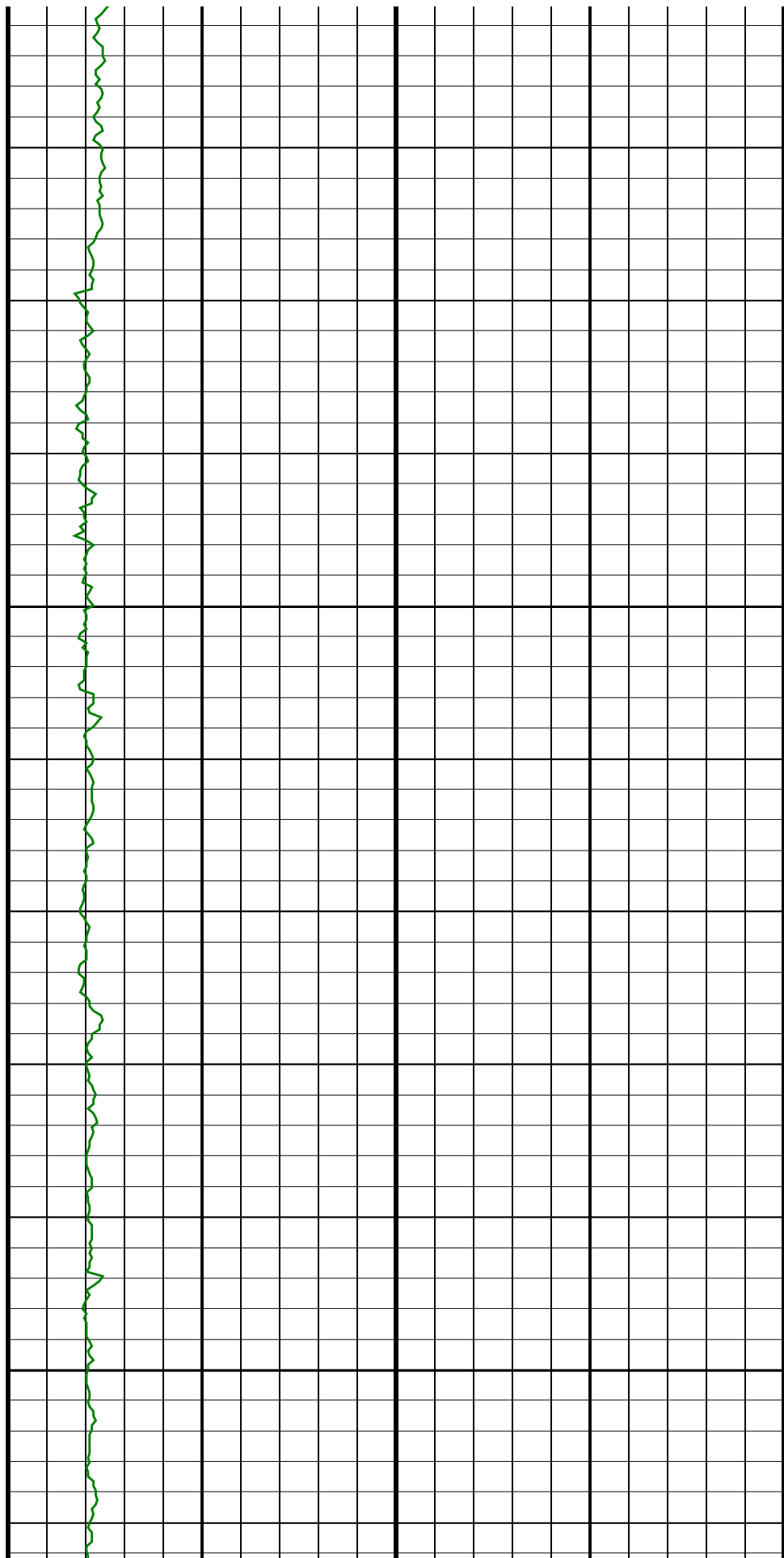
1575
TVD



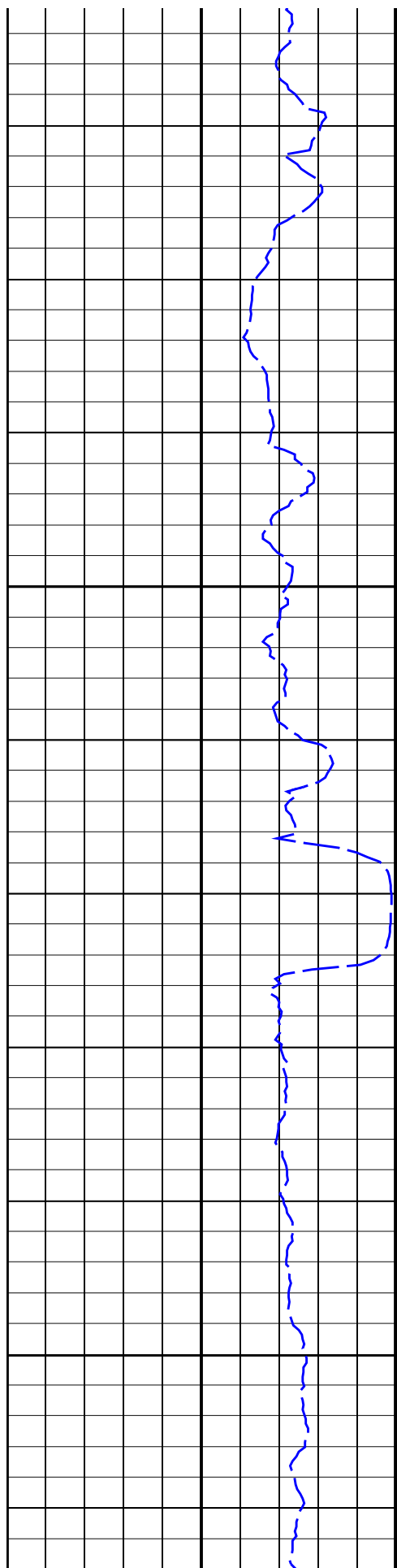
1600
TVD



1625
TVD

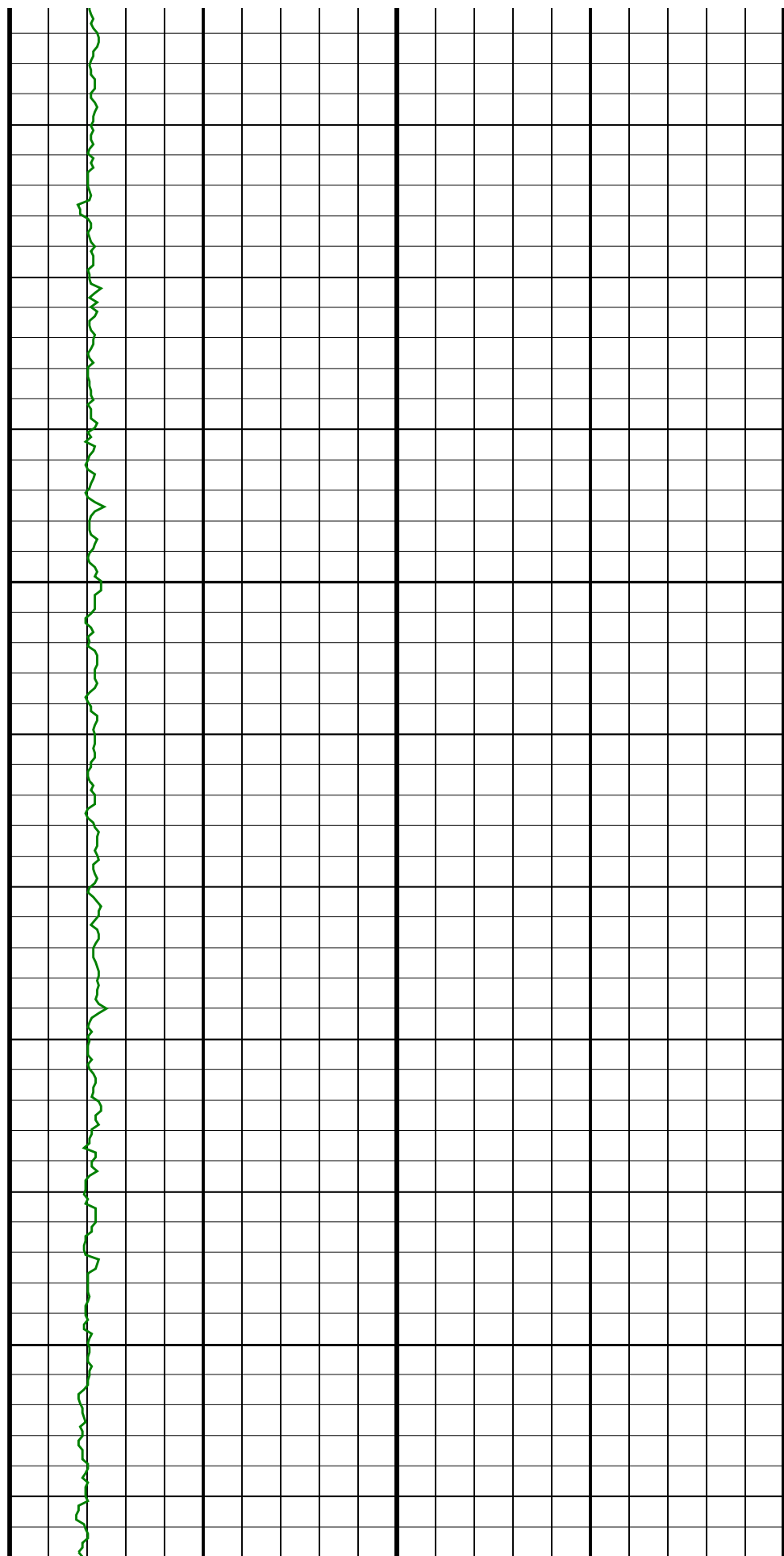


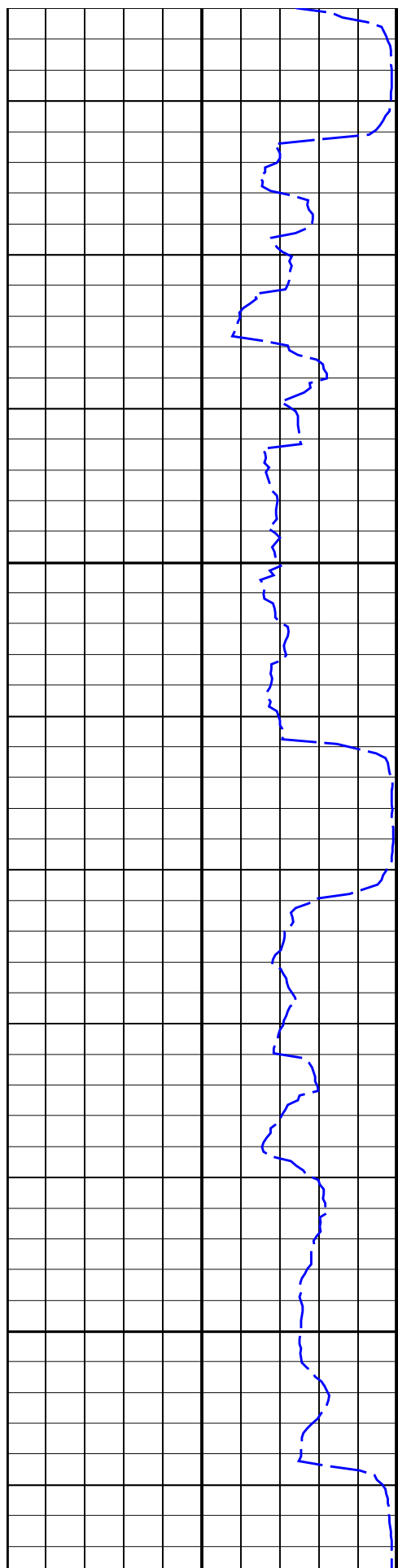
1650
TVD

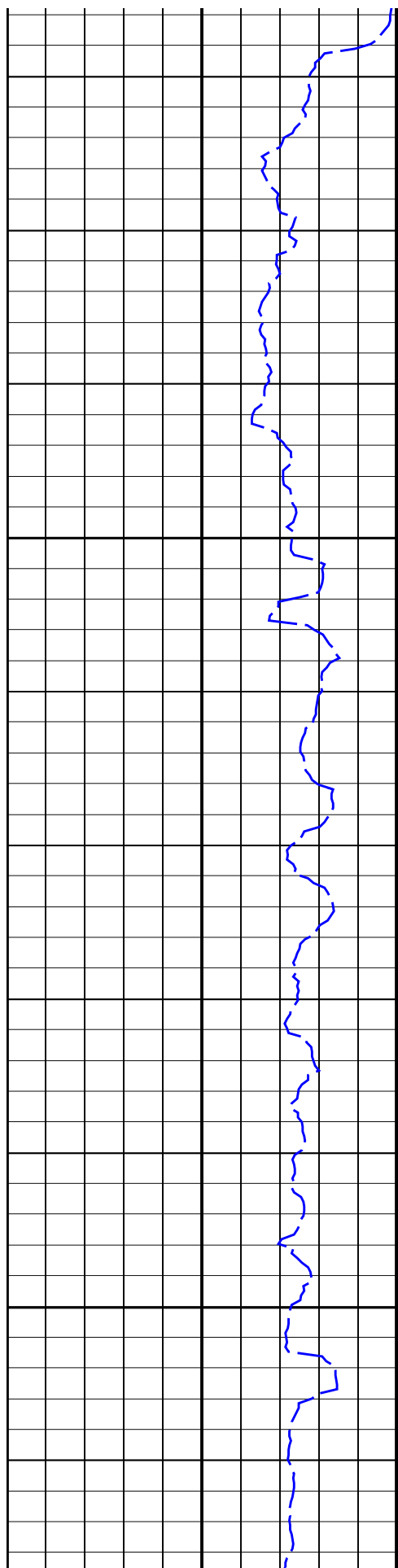


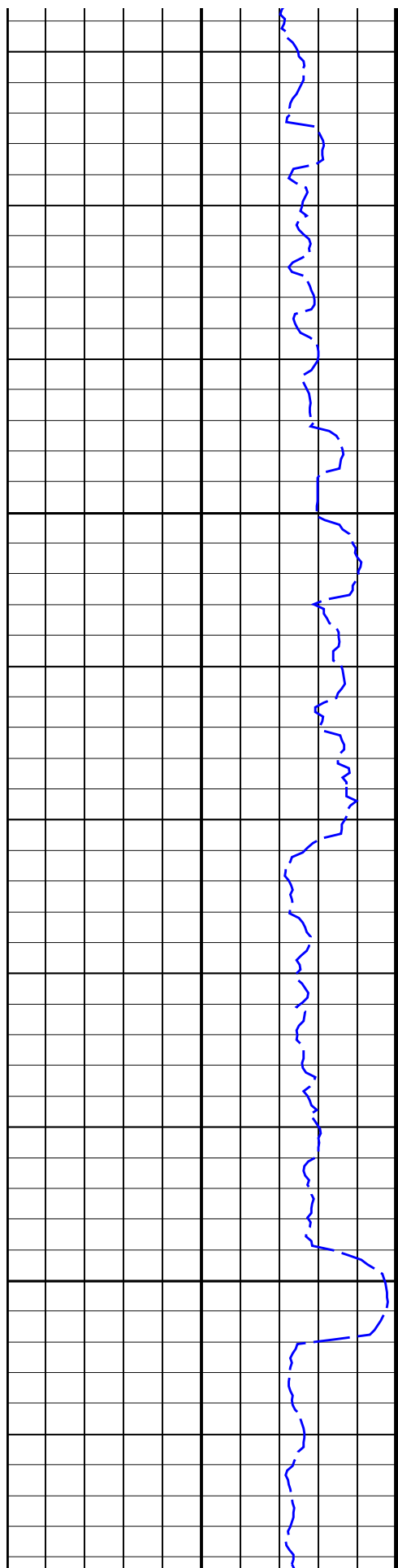
1675
TVD

1700
TVD



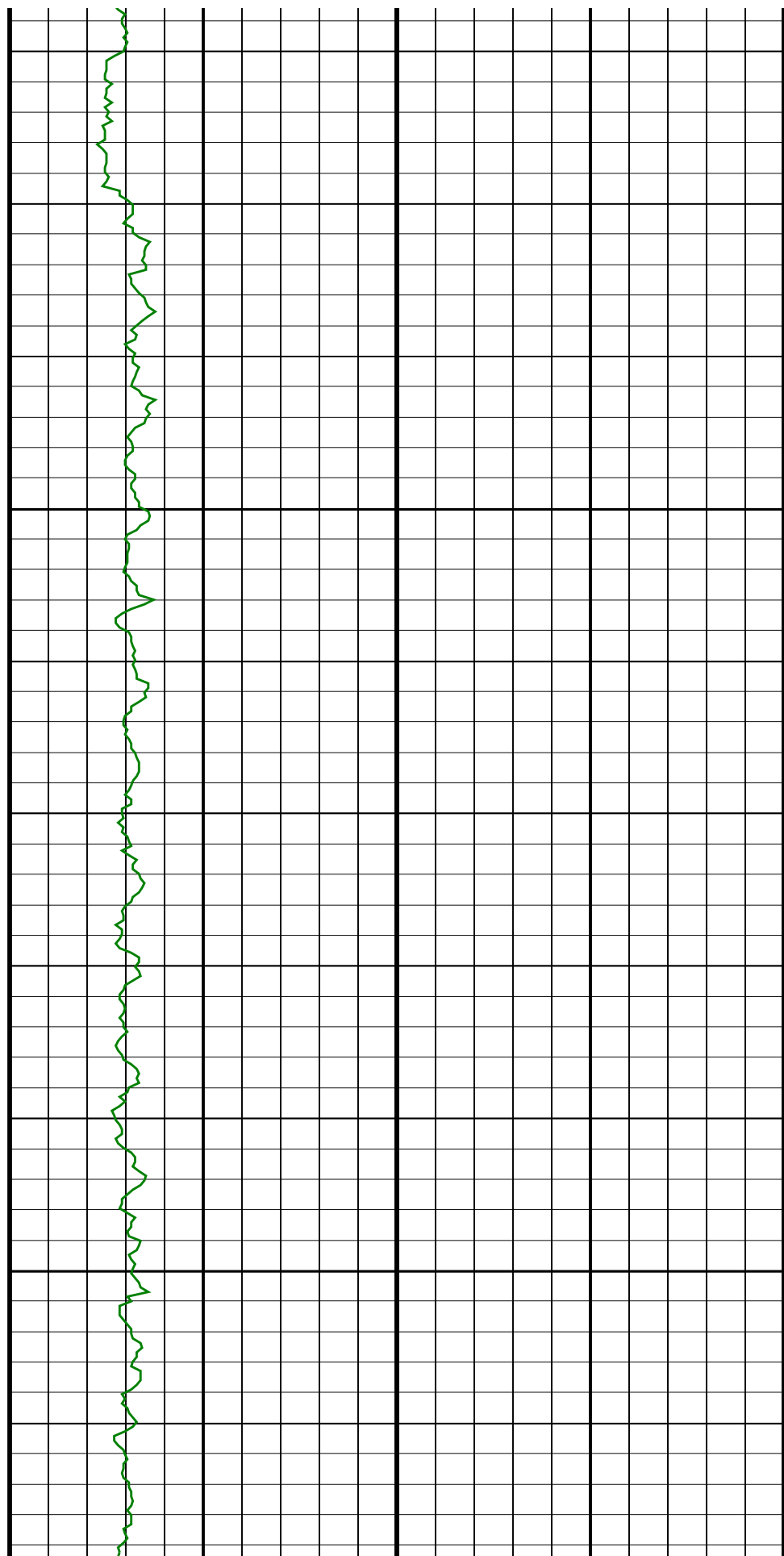


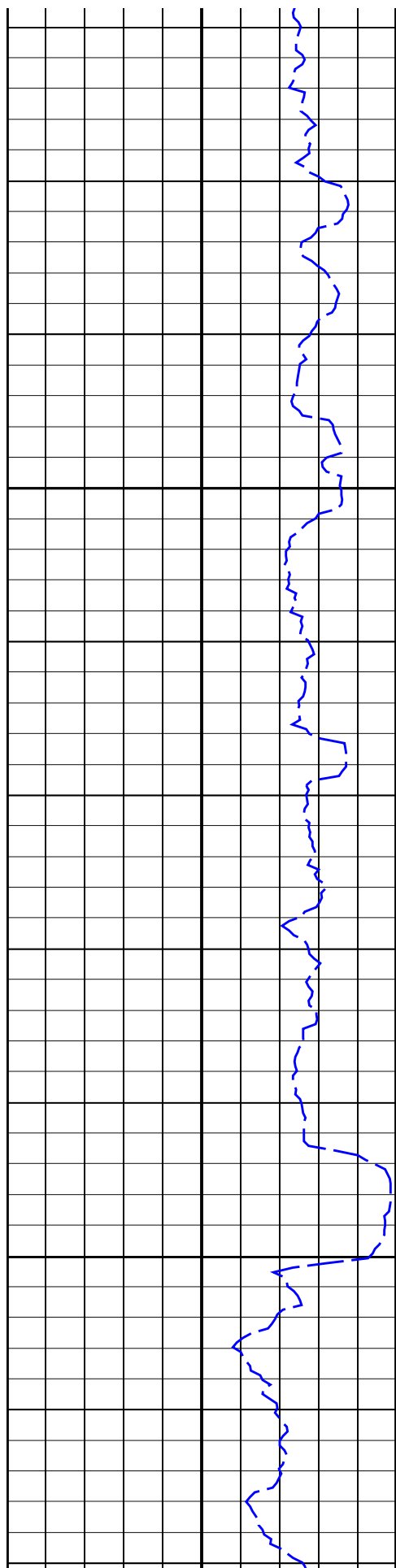




1825
TVD

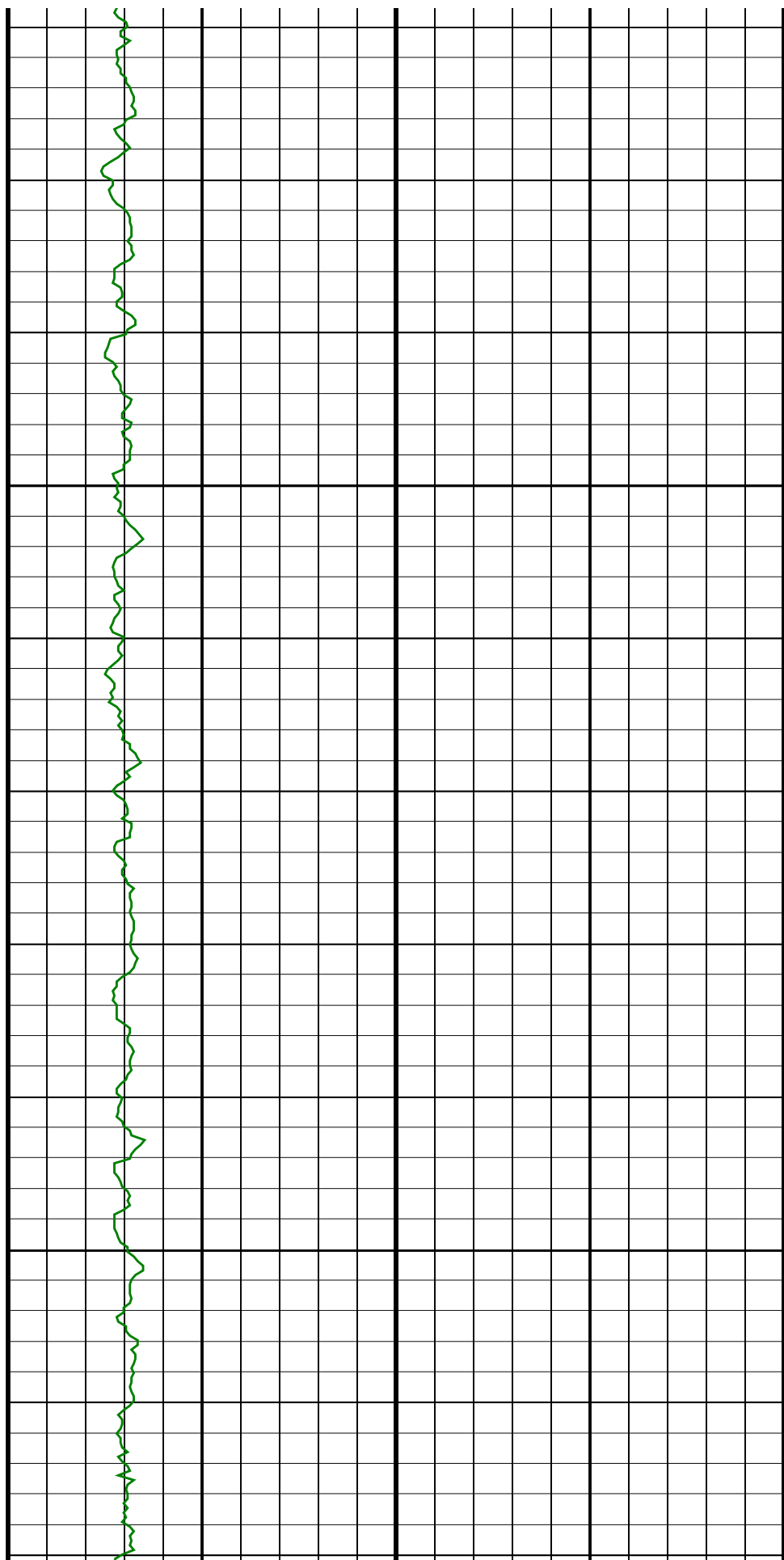
1850
TVD

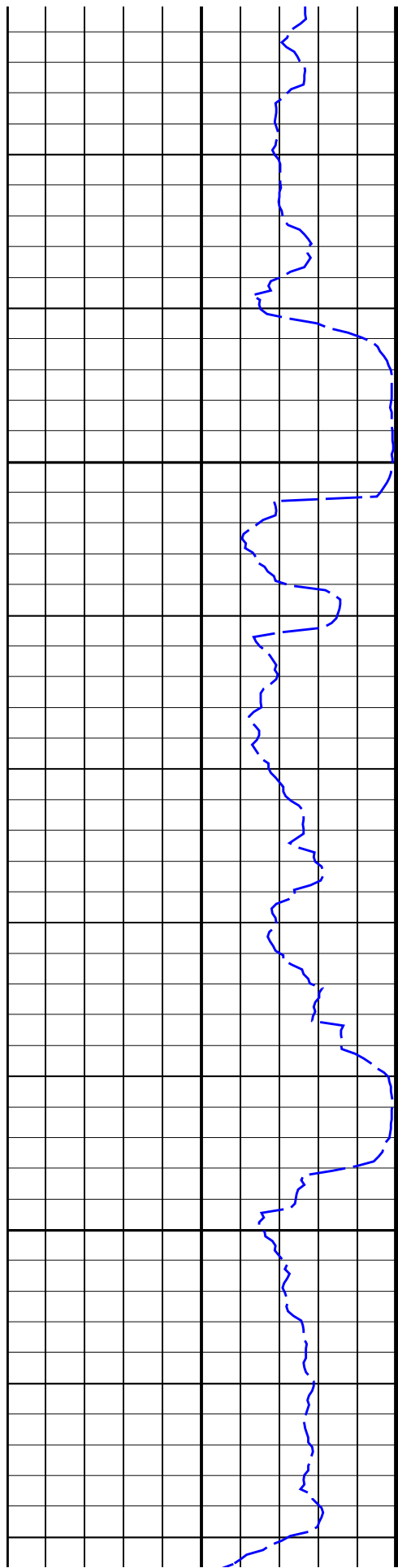




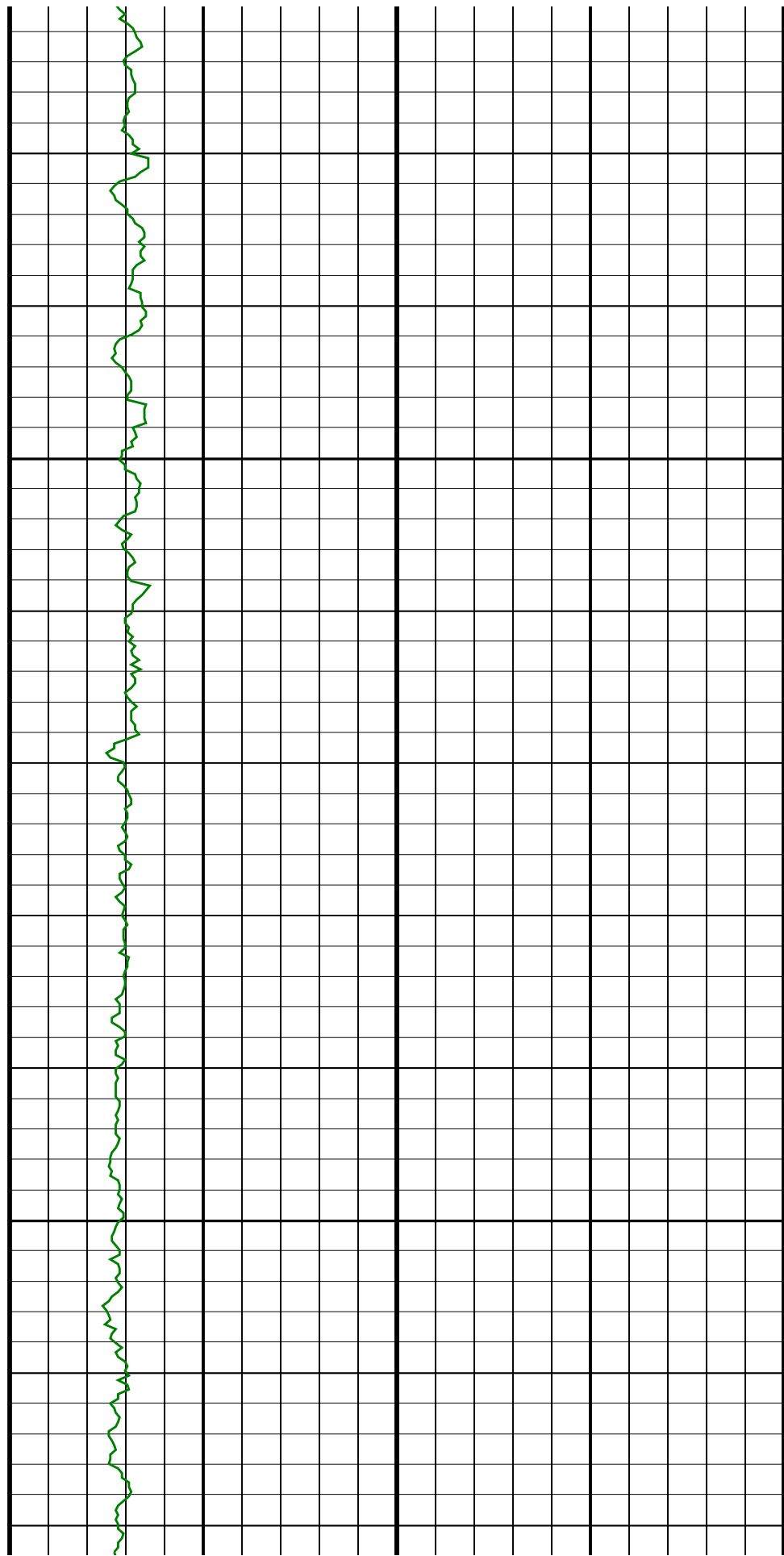
1875
TVD

1900
TVD

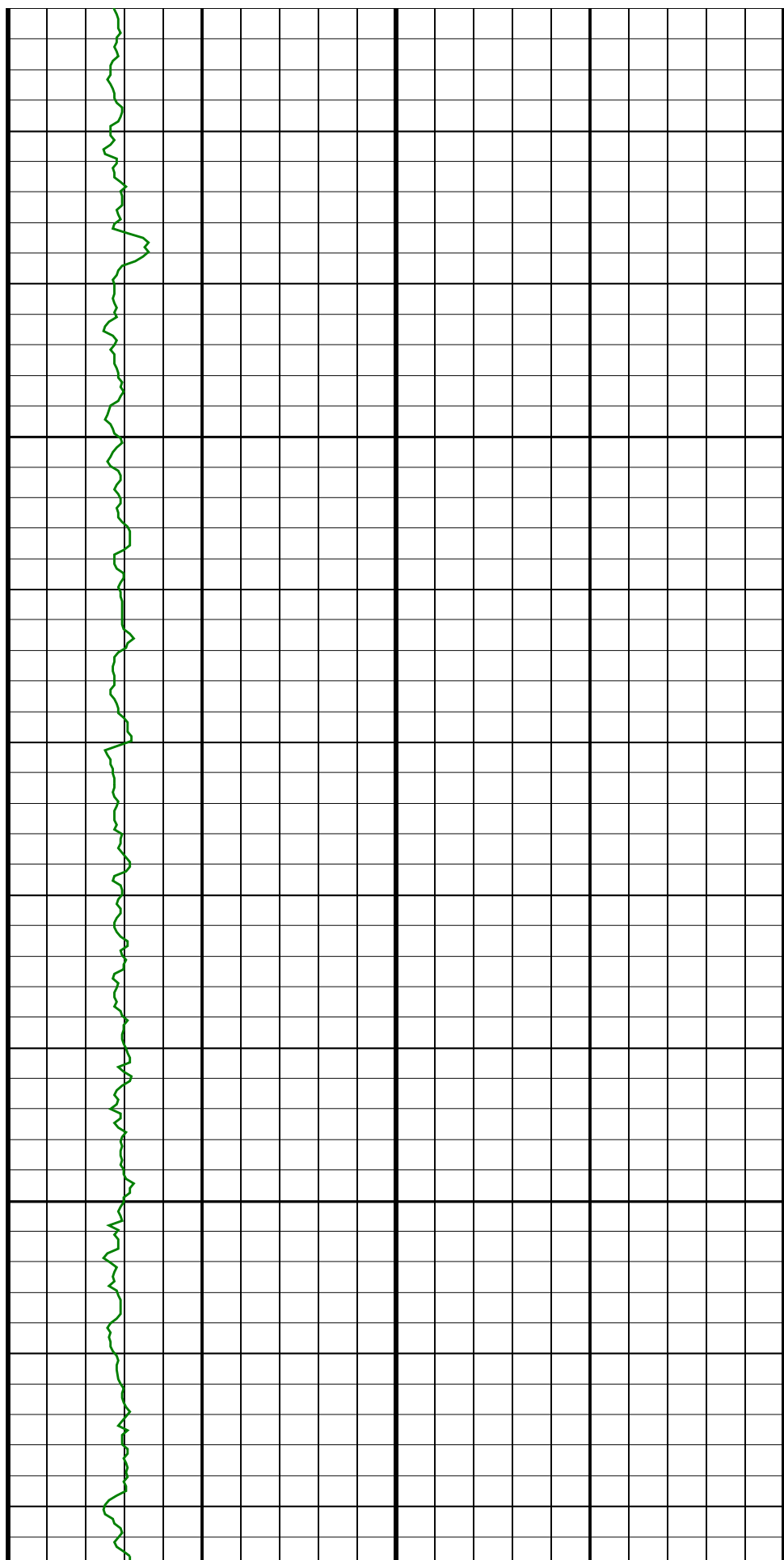
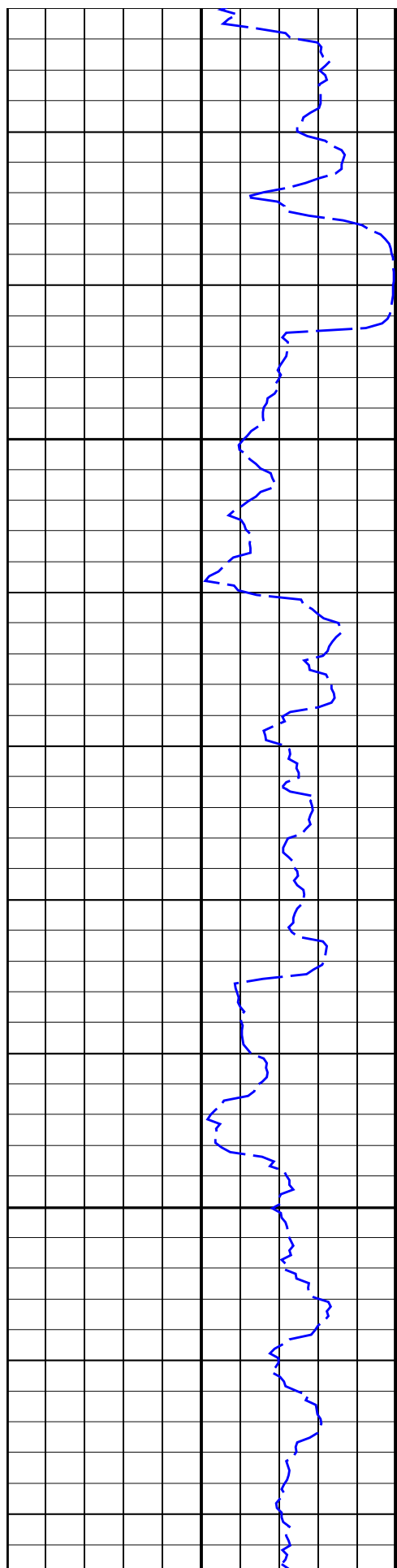


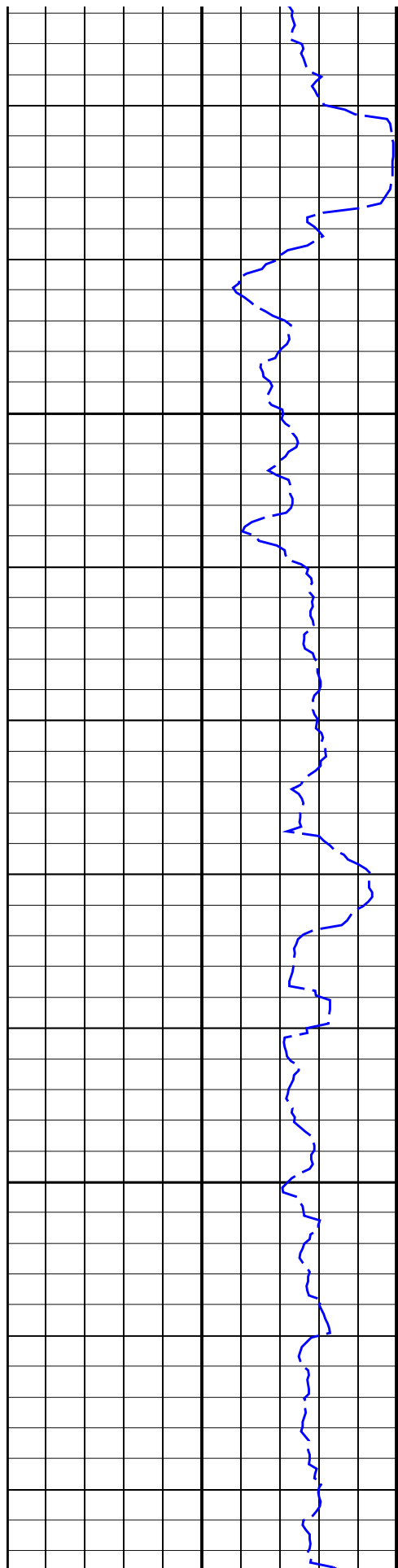


1925
TVD

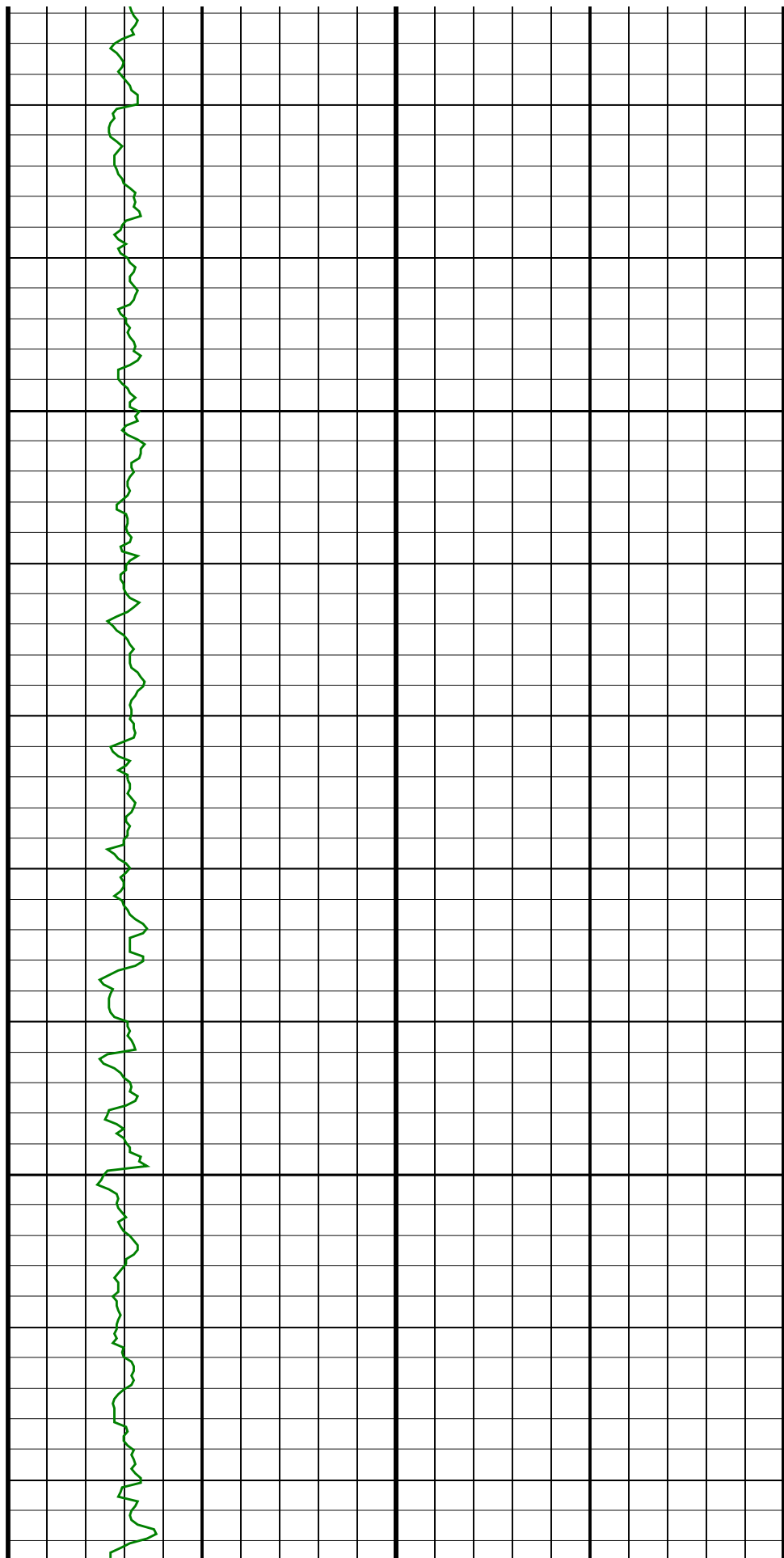


1950
TVD

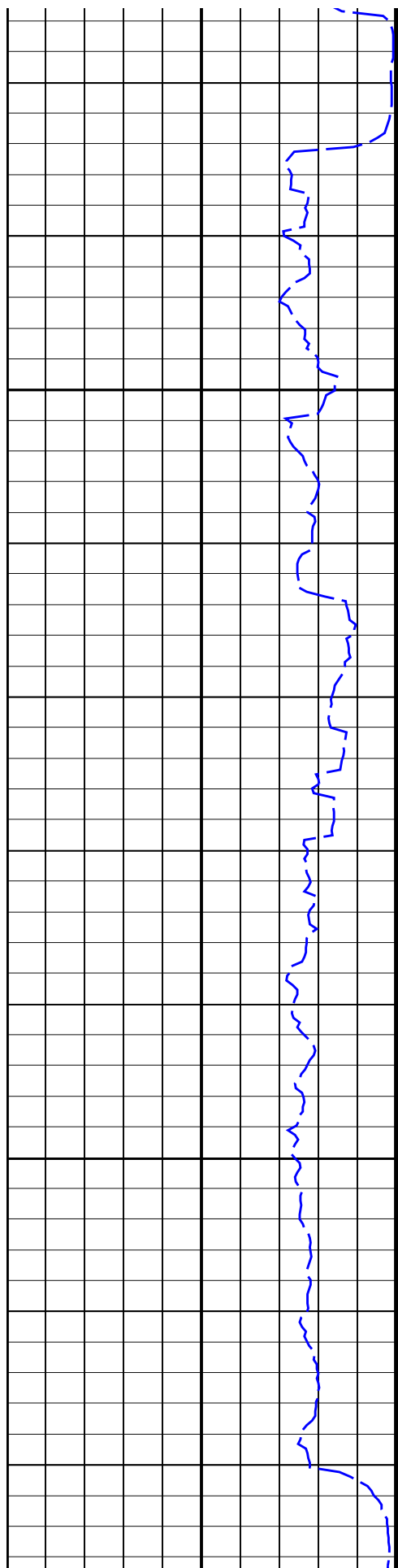




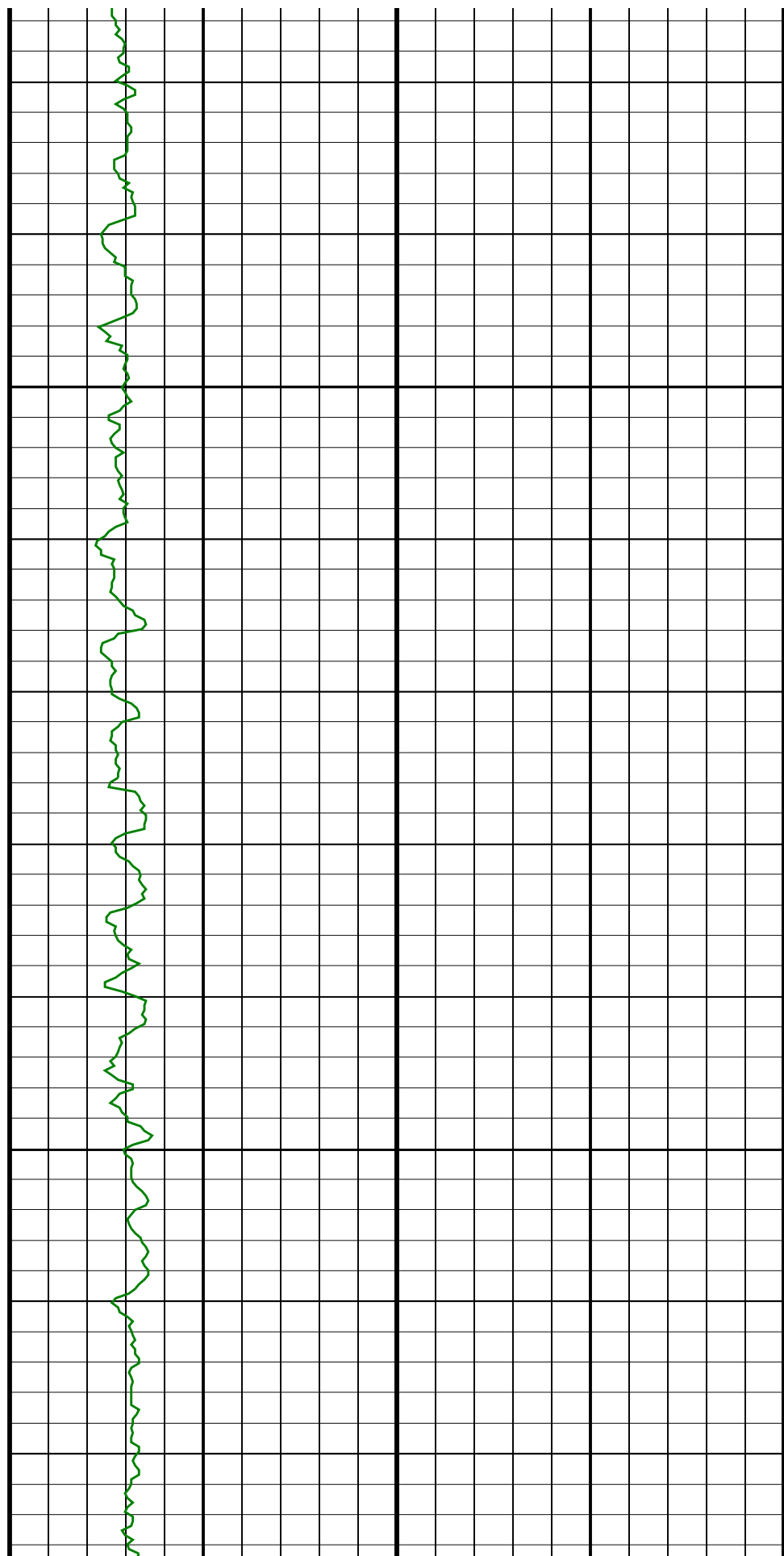
2025
TVD



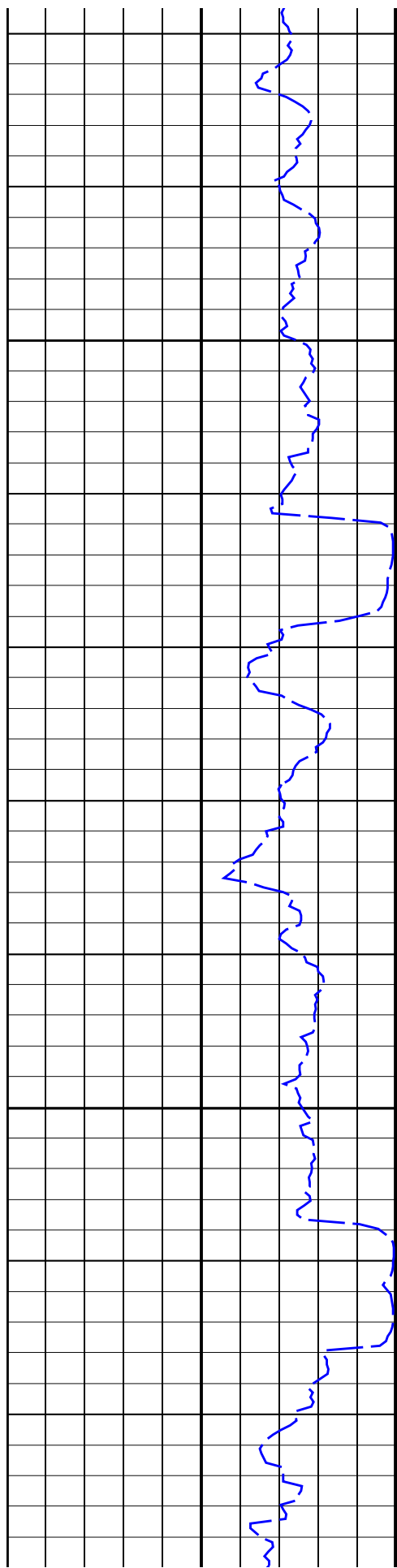
2050
TVD



2075
TVD

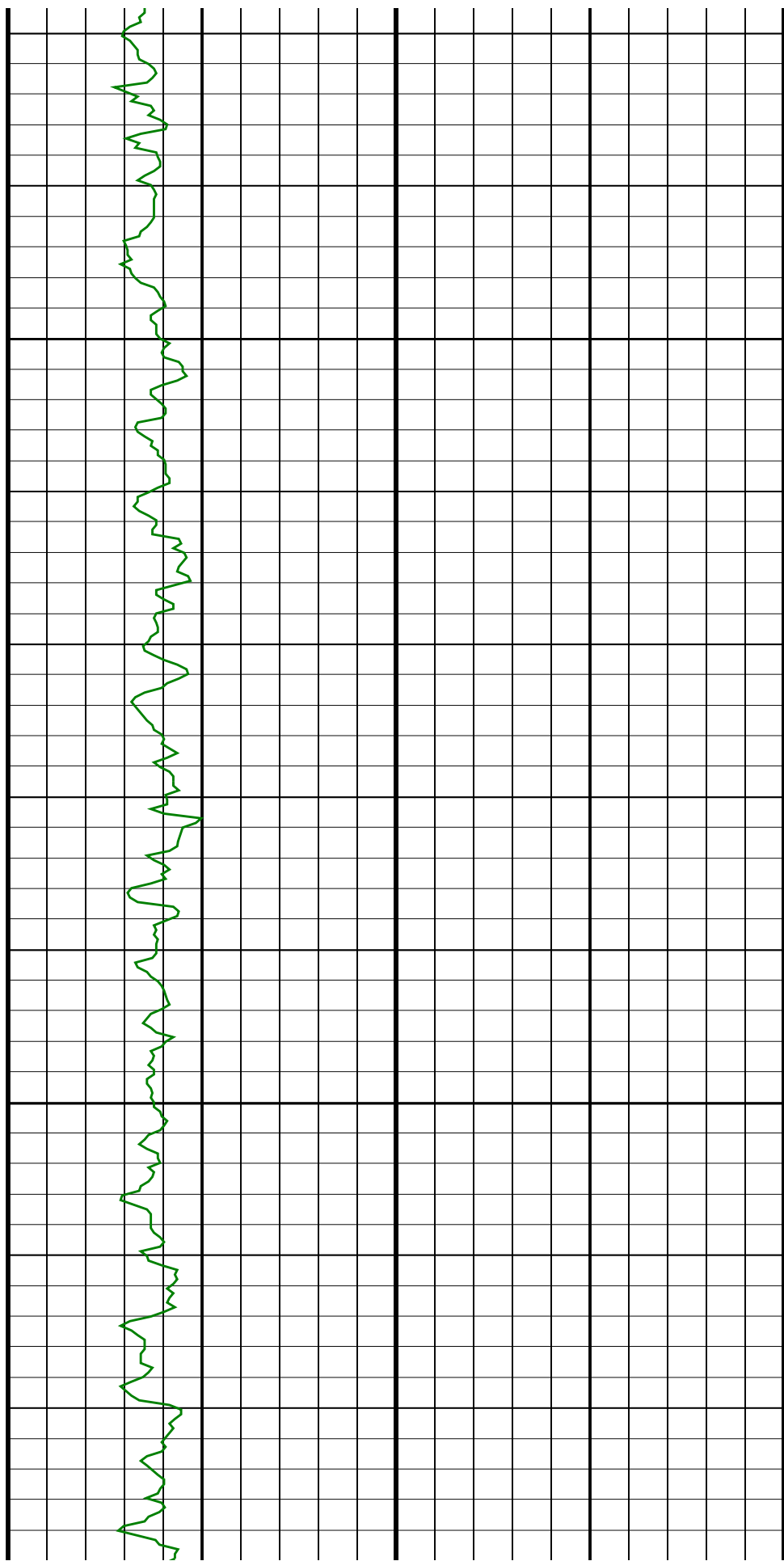


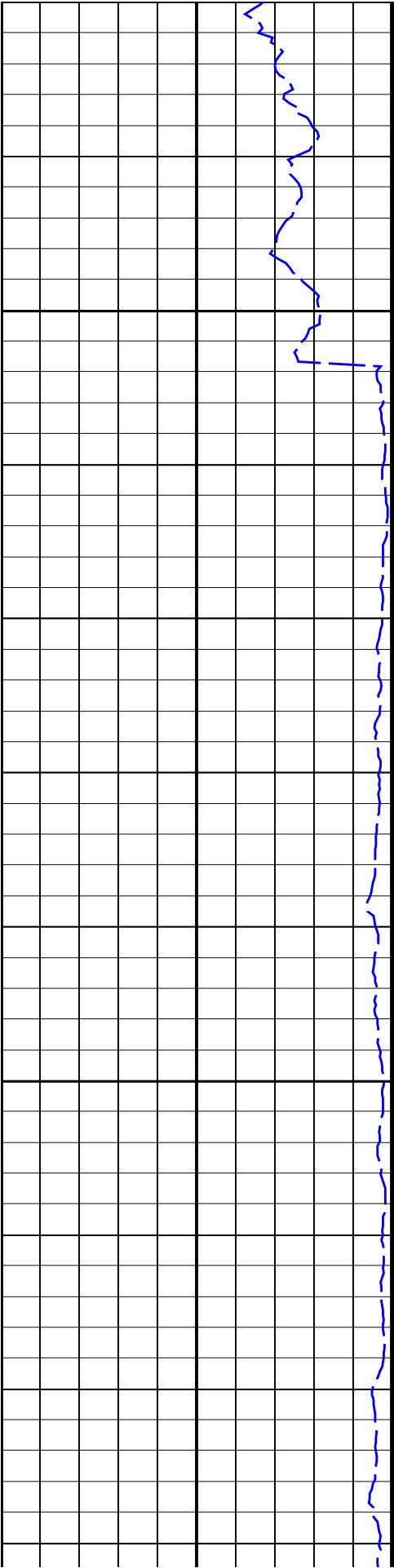
2100
TVD



2175
TVD

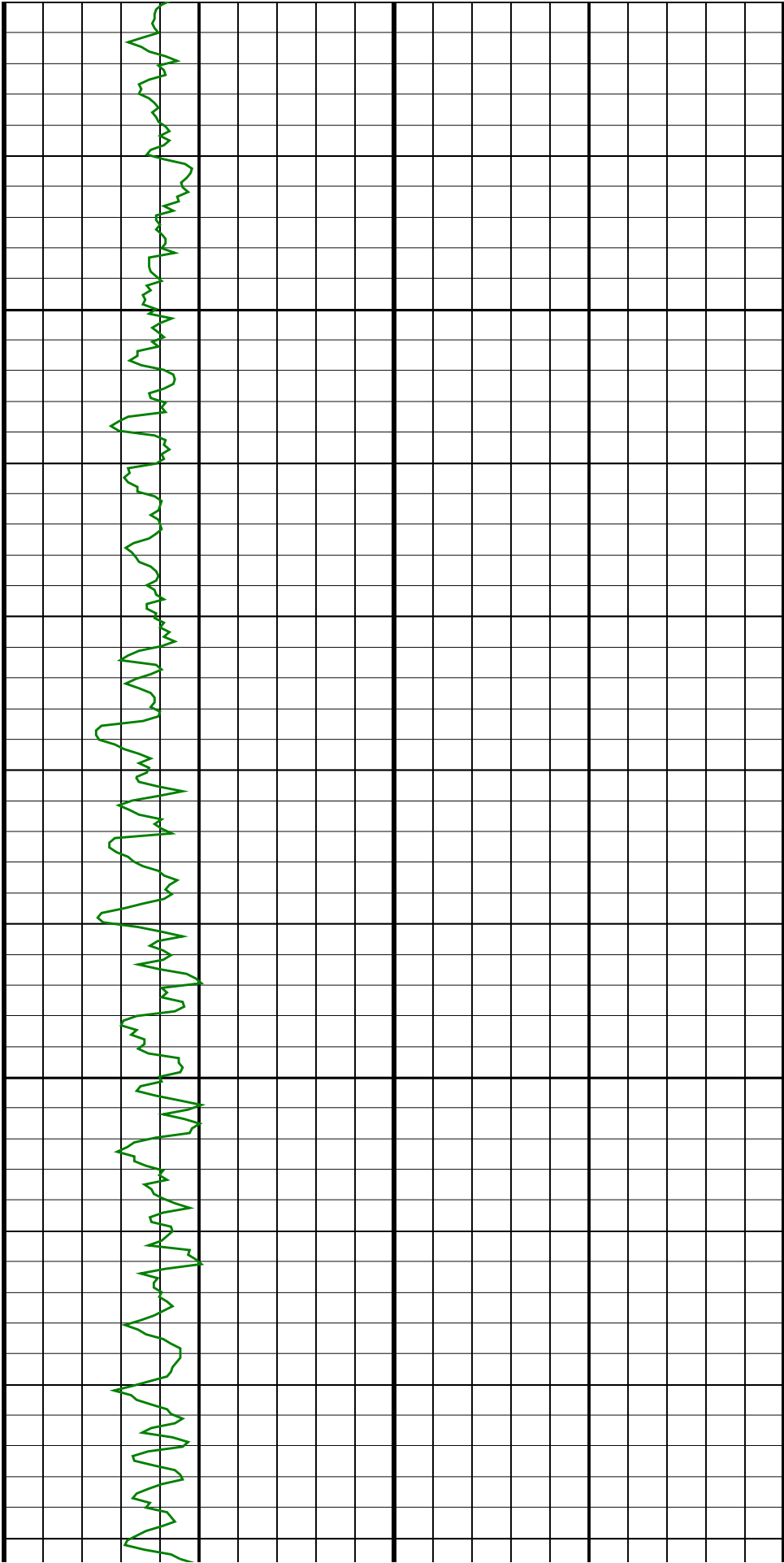
2200
TVD

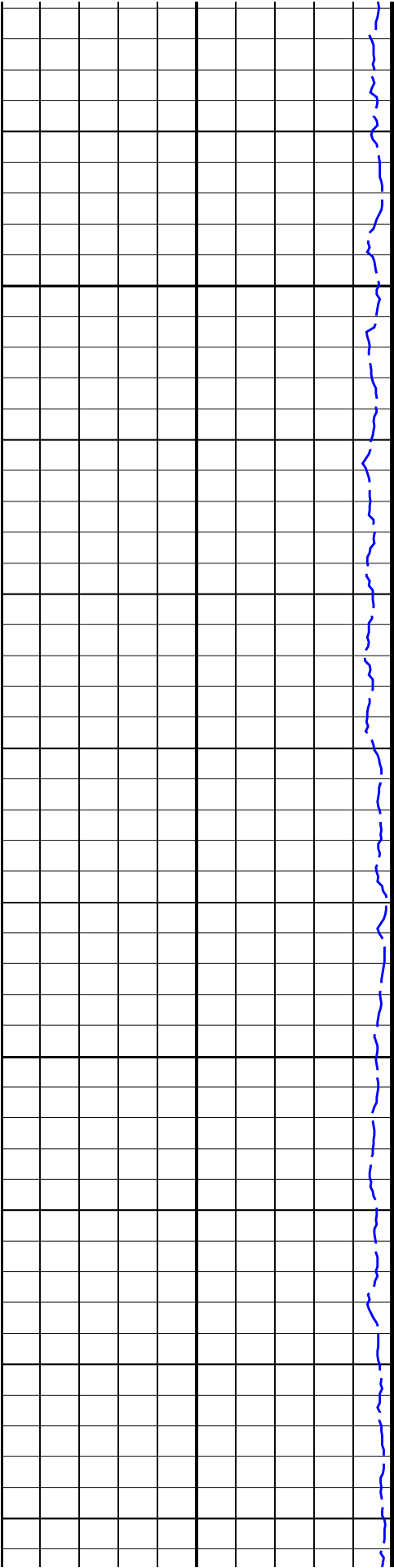




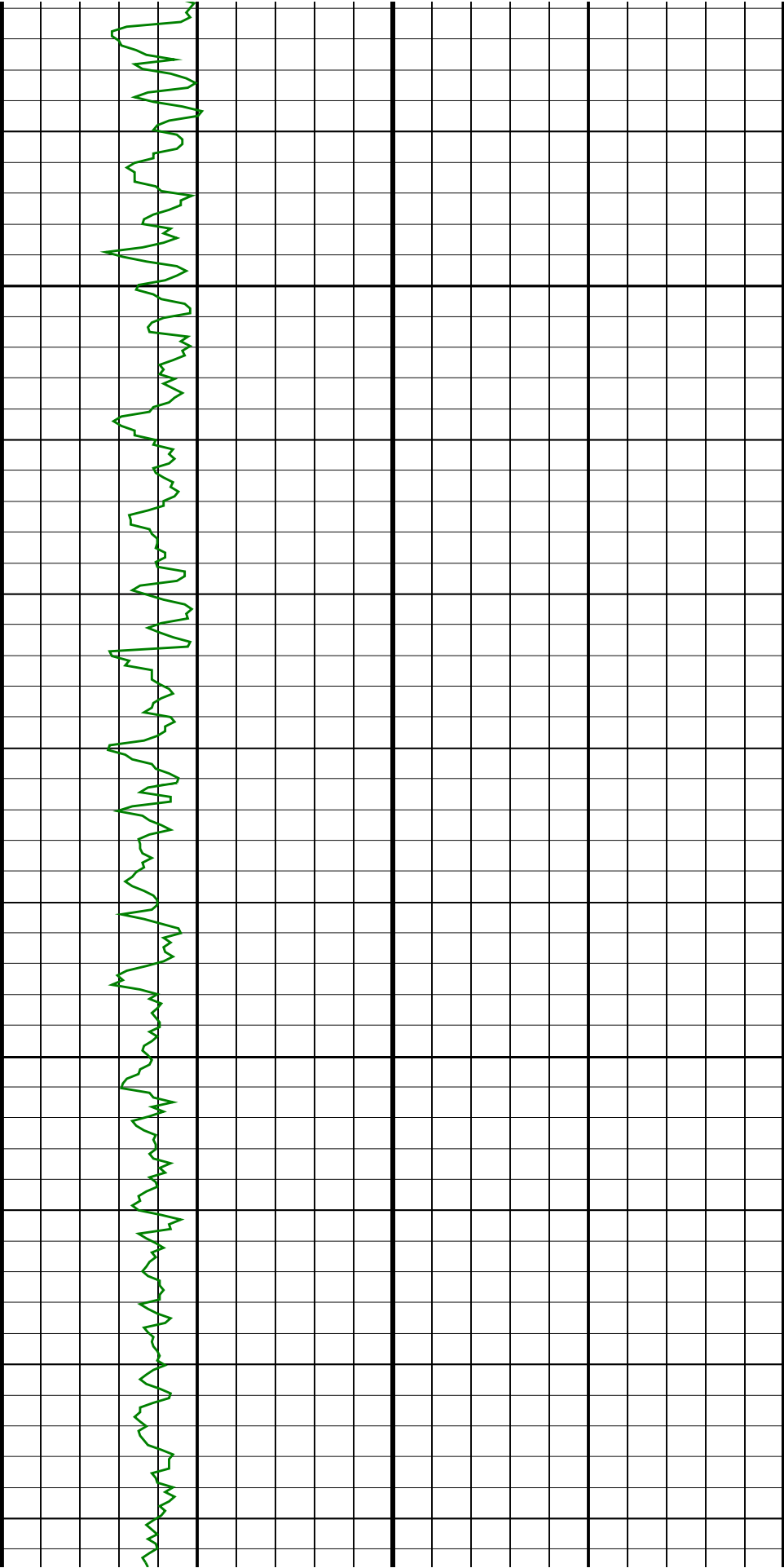
2225
TVD

2250
TVD

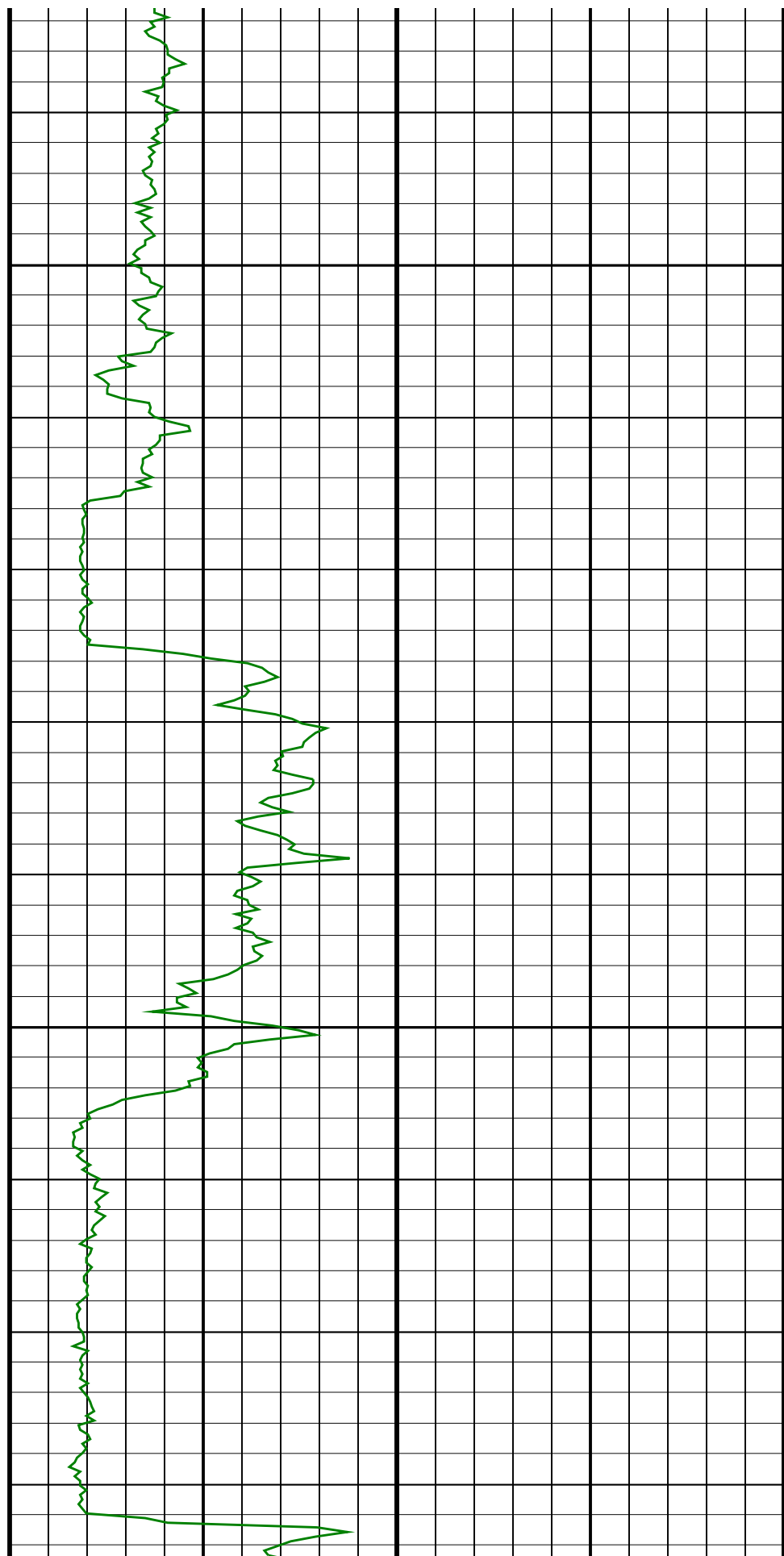
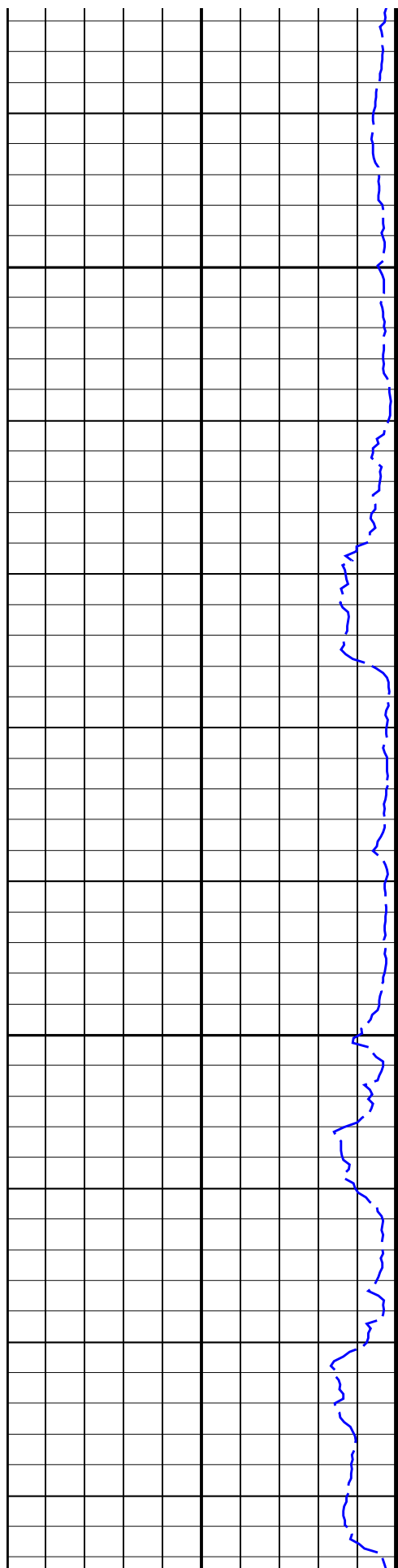


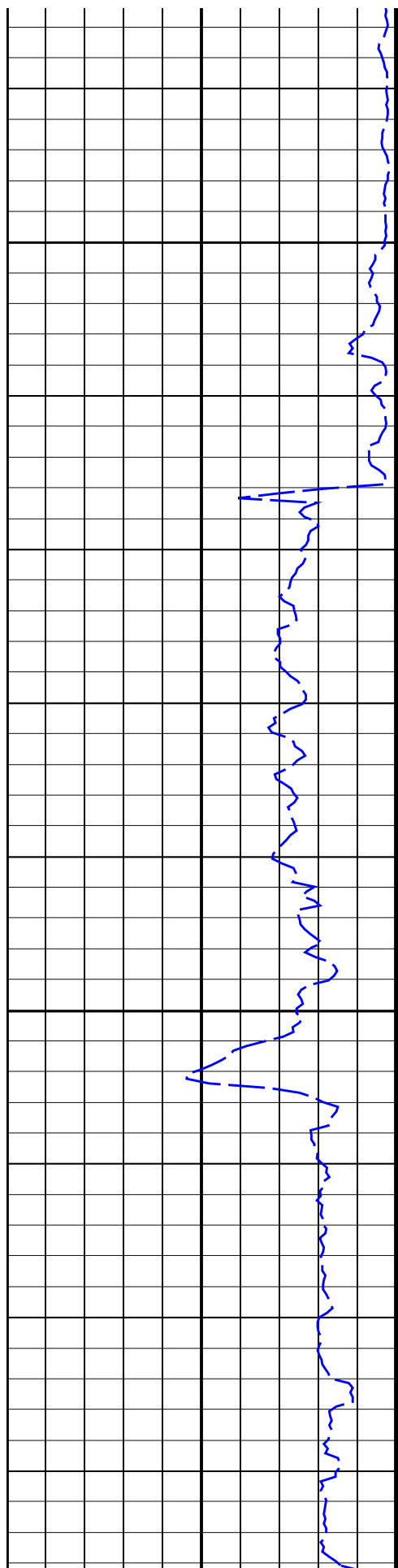


2275
TVD



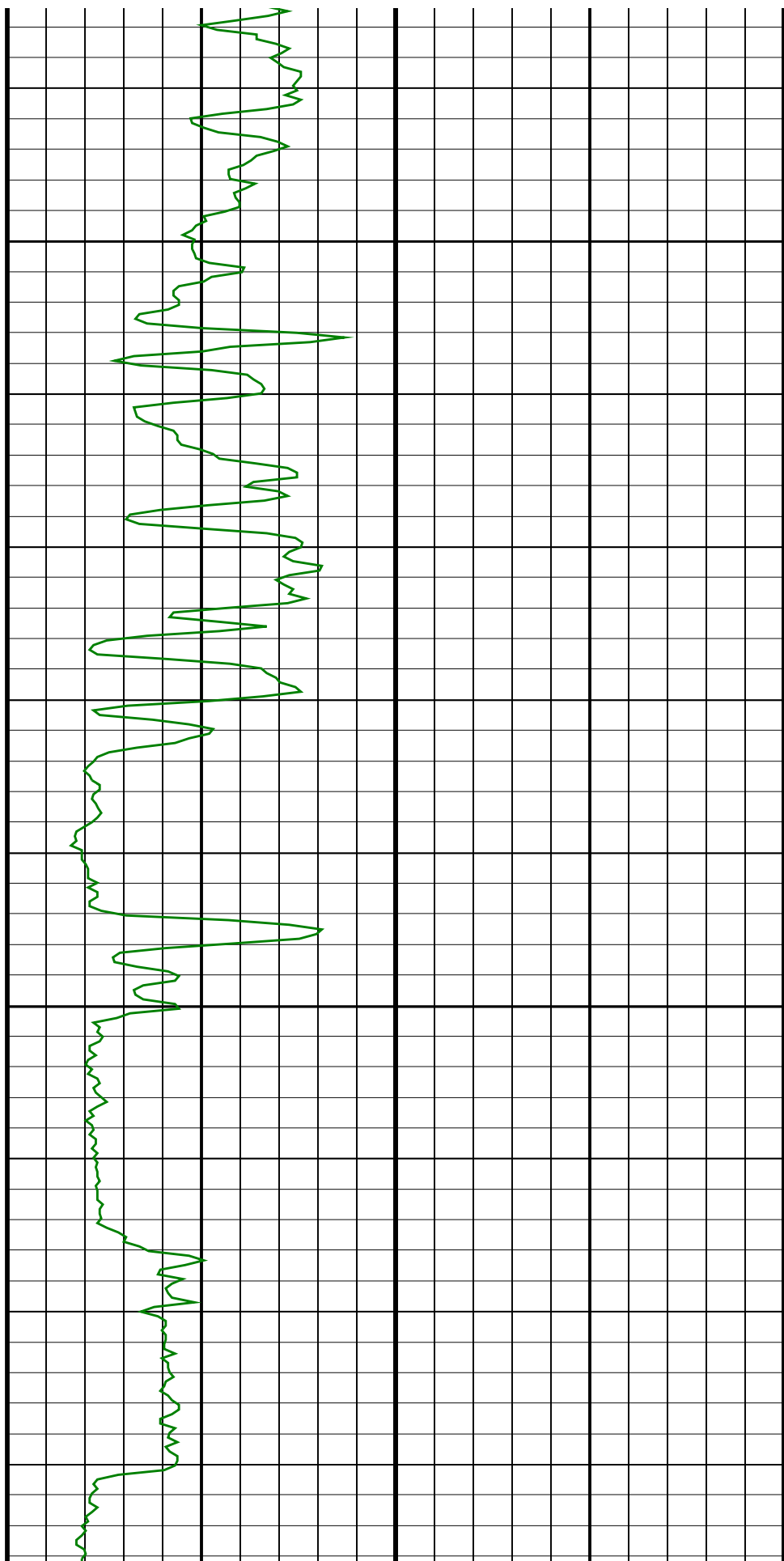
2300
TVD

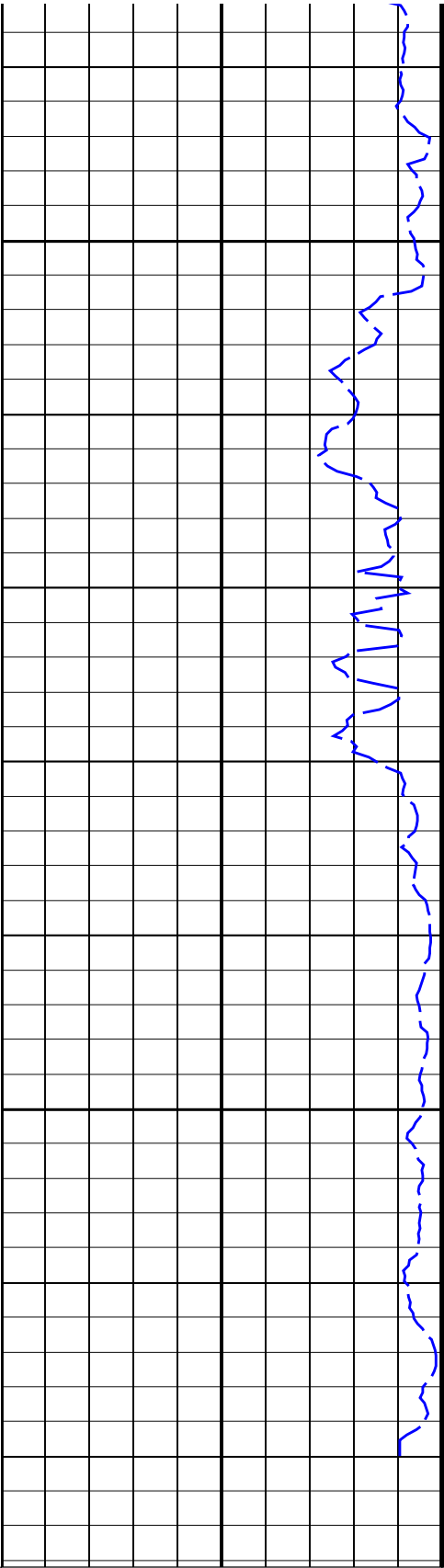




2375
TVD

2400
TVD

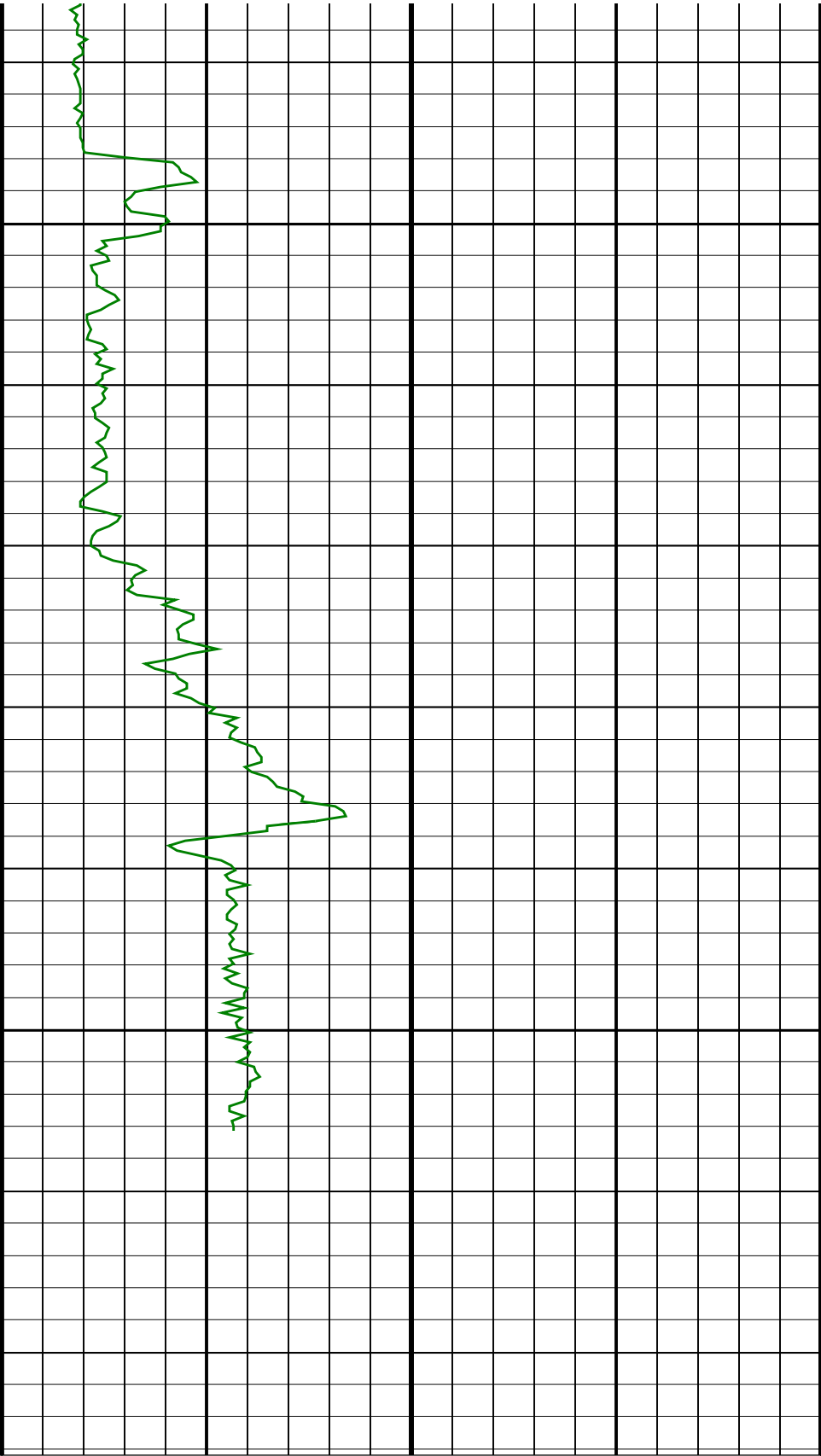




2425
TVD

2450
TVD

ROP*5 (ROP5)
(M/HR) 0 200



GR(TM) (GRM1)
(GAPI) 0 400

SCHLUMBERGER

Survey report 30-Nov-2003 10:28:15 Page 1 of 4

Client.....: ESSO Australia Pty. Ltd.
 Field.....: Halibut GDA 94

Well.....: HLA A1A Spud date.....: 18-Nov-2003
 API number.....: Last survey date.....: 30-Nov-03
 Engineer.....: Kym Handley Total accepted surveys.....: 84
 MD of first survey.....: 586.90 m
 RIG.....: ISDL 453 MD of last survey.....: 2952.00 m
 STATE.....: Victoria

----- Survey calculation methods ----- Geomagnetic data -----
 Method for positions.....: Minimum curvature Magnetic model.....: BGGM version 2002
 Method for DLS.....: Mason & Taylor Magnetic date.....: 16-Nov-2003
 Magnetic field strength...: 1201.99 HCNT
 ----- Depth reference ----- Magnetic dec (+E/W-).....: 13.21 degrees
 Permanent datum.....: Mean Sea Level Magnetic dip.....: -68.86 degrees
 Depth reference.....: Driller's Depth
 GL above permanent.....: -73.00 m ----- MWD survey Reference Criteria -----
 KB above permanent.....: Top Drive Reference G.....: 1000.04 mGal
 DF above permanent.....: 29.45 m Reference H.....: 1201.99 HCNT
 Reference Dip.....: -68.86 degrees
 ----- Vertical section origin ----- Tolerance of G.....: (+/-) 2.50 mGal
 Latitude (+N/S-).....: 0.00 m Tolerance of H.....: (+/-) 6.00 HCNT
 Departure (+E/W-).....: 0.00 m Tolerance of Dip.....: (+/-) 0.45 degrees
 ----- Platform reference point ----- Corrections -----
 Latitude (+N/S-).....: -304.57 m Magnetic dec (+E/W-).....: 13.21 degrees
 Departure (+E/W-).....: -304.57 m Grid convergence (+E/W-).....: -0.82 degrees
 Total az corr (+E/W-).....: 14.03 degrees
 Azimuth from rotary table to target: 4.09 degrees (Total az corr = magnetic dec - grid conv)
 Survey Correction Type ...:
 I=Sag Corrected Inclination
 M=Schlumberger Magnetic Correction
 S=Shell Magnetic Correction
 F=Failed Axis Correction
 R=Magnetic Resonance Tool Correction
 D=Dmag Magnetic Correction

[(c)2003 IDEAL ID8_OC_07]

SCHLUMBERGER Survey Report

30-Nov-2003 10:28:15

Page 2 of 4

Seq	Measured	Incl	Azimuth	Course	TVD	Vertical	Displ	Displ	Total	At	DLS	Srvy	Tool
#	depth	angle	angle	length	depth	section	+N/S-	+E/W-	displ	Azim	(deg/	tool	Corr
-	(m)	(deg)	(deg)	(m)	(m)	(m)	(m)	(m)	(deg)	10m)	type	(deg)	
1	586.90	0.33	53.09	0.00	586.88	-4.99	-6.26	17.55	18.63	109.63	0.00	TIP	None
2	604.00	0.21	67.80	17.10	603.98	-4.95	-6.22	17.62	18.68	109.44	0.08	GYR	None
3	632.70	5.38	14.50	28.70	632.64	-3.60	-4.90	18.00	18.66	105.21	1.83	GYR	None
4	661.50	10.39	13.90	28.80	661.16	0.29	-1.06	18.97	19.00	93.21	1.74	GYR	None
5	698.72	15.90	15.49	37.22	697.39	8.60	7.11	21.14	22.30	71.40	1.48	MWD	None
6	727.37	18.13	12.34	28.65	724.78	16.86	15.25	23.14	27.71	56.61	0.84	MWD	None
7	756.00	18.95	0.80	28.63	751.93	25.91	24.25	24.15	34.23	44.88	1.31	MWD	None
8	784.51	19.90	2.30	28.51	778.82	35.39	33.73	24.41	41.64	35.90	0.38	MWD	None
9	813.31	22.44	4.68	28.80	805.68	45.78	44.11	25.06	50.73	29.60	0.93	MWD	None
10	842.05	26.09	5.41	28.74	831.87	57.59	55.87	26.10	61.67	25.04	1.27	MWD	None
11	870.97	30.30	3.92	28.92	857.36	71.25	69.49	27.20	74.62	21.38	1.48	MWD	None
12	900.08	31.07	3.20	29.11	882.39	86.10	84.31	28.12	88.88	18.45	0.29	MWD	None
13	928.94	30.81	2.99	28.86	907.14	100.94	99.13	28.92	103.26	16.27	0.10	MWD	None
14	957.41	32.72	2.86	28.47	931.35	115.92	114.10	29.69	117.90	14.59	0.67	MWD	None
15	986.17	34.80	4.76	28.76	955.26	131.90	130.04	30.76	133.63	13.31	0.81	MWD	None
16	1014.83	34.93	5.38	28.66	978.77	148.28	146.36	32.21	149.86	12.41	0.13	MWD	None
17	1043.18	34.24	4.73	28.35	1002.11	164.37	162.39	33.62	165.83	11.70	0.28	MWD	None
18	1071.97	33.75	4.05	28.79	1025.98	180.47	178.44	34.86	181.81	11.05	0.22	MWD	None
19	1100.47	33.24	3.80	28.50	1049.75	196.20	194.13	35.93	197.43	10.49	0.19	MWD	None
20	1129.24	32.96	3.55	28.77	1073.85	211.91	209.81	36.94	213.04	9.99	0.11	MWD	None
21	1157.85	33.70	3.83	28.61	1097.75	227.63	225.50	37.95	228.67	9.55	0.26	MWD	None
22	1186.49	33.19	3.18	28.64	1121.65	243.41	241.25	38.92	244.37	9.16	0.22	MWD	None
23	1215.46	34.28	3.05	28.97	1145.74	259.50	257.32	39.79	260.37	8.79	0.38	MWD	None
24	1244.42	33.79	2.75	28.96	1169.74	275.70	273.50	40.61	276.50	8.45	0.18	MWD	None
25	1273.35	32.89	2.40	28.93	1193.91	291.60	289.39	41.33	292.32	8.13	0.32	MWD	None
26	1301.93	33.51	3.84	28.58	1217.83	307.24	305.01	42.18	307.92	7.87	0.35	MWD	None
27	1330.72	33.78	4.63	28.79	1241.79	323.19	320.92	43.36	323.84	7.69	0.18	MWD	None
28	1359.40	33.67	4.68	28.68	1265.65	339.12	336.79	44.65	339.74	7.55	0.04	MWD	None
29	1388.04	34.85	5.24	28.64	1289.32	355.24	352.85	46.05	355.84	7.44	0.43	MWD	None
30	1416.40	34.07	5.21	28.36	1312.70	371.28	368.83	47.51	371.88	7.34	0.28	MWD	None

Seq #	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (deg)	At Azim (deg)	DLS (deg/10m)	Srvy tool	Tool Corr
31	1445.06	34.47	4.92	28.66	1336.39	387.42	384.91	48.93	388.01	7.25	0.15	MWD	None
32	1473.68	34.48	4.26	28.62	1359.98	403.62	401.06	50.23	404.19	7.14	0.13	MWD	None
33	1502.44	34.58	3.88	28.76	1383.67	419.92	417.32	51.39	420.47	7.02	0.08	MWD	None
34	1530.99	35.08	4.46	28.55	1407.11	436.22	433.58	52.57	436.76	6.91	0.21	MWD	None
35	1559.85	34.60	4.63	28.86	1430.79	452.71	450.01	53.88	453.23	6.83	0.17	MWD	None
36	1588.53	34.58	4.77	28.68	1454.40	468.99	466.24	55.21	469.50	6.75	0.03	MWD	None
37	1617.25	33.83	4.58	28.72	1478.16	485.14	482.33	56.53	485.63	6.68	0.26	MWD	None
38	1645.96	34.14	4.27	28.71	1501.96	501.18	498.33	57.77	501.67	6.61	0.12	MWD	None
39	1674.76	34.52	4.61	28.80	1525.75	517.43	514.53	59.02	517.90	6.54	0.15	MWD	None
40	1703.49	33.57	4.49	28.73	1549.55	533.51	530.56	60.30	533.98	6.48	0.33	MWD	None
41	1732.46	34.52	3.52	28.97	1573.56	549.73	546.74	61.43	550.18	6.41	0.38	MWD	None
42	1761.37	34.69	3.69	28.91	1597.35	566.15	563.12	62.46	566.58	6.33	0.07	MWD	None
43	1789.70	33.96	3.89	28.33	1620.75	582.12	579.06	63.52	582.54	6.26	0.26	MWD	None
44	1818.25	35.03	5.25	28.55	1644.28	598.29	595.18	64.81	598.70	6.21	0.46	MWD	None
45	1847.12	34.04	4.99	28.87	1668.06	614.65	611.48	66.27	615.06	6.19	0.35	MWD	None
46	1875.80	33.93	4.54	28.68	1691.84	630.68	627.46	67.60	631.09	6.15	0.10	MWD	None
47	1904.04	34.25	3.82	28.24	1715.23	646.51	643.24	68.76	646.91	6.10	0.18	MWD	None
48	1932.93	34.71	4.24	28.89	1739.04	662.86	659.56	69.91	663.25	6.05	0.18	MWD	None
49	1961.62	35.30	3.22	28.69	1762.54	679.32	675.98	70.98	679.70	5.99	0.29	MWD	None
50	1990.63	34.82	3.23	29.01	1786.29	695.98	692.62	71.91	696.34	5.93	0.17	MWD	None
51	2019.23	34.91	3.62	28.60	1809.75	712.33	708.94	72.89	712.68	5.87	0.08	MWD	None
52	2048.31	34.31	3.52	29.08	1833.69	728.85	725.42	73.92	729.18	5.82	0.21	MWD	None
53	2077.10	34.25	3.18	28.79	1857.48	745.06	741.61	74.87	745.38	5.76	0.07	MWD	None
54	2105.66	33.72	3.05	28.56	1881.16	761.02	757.55	75.73	761.33	5.71	0.19	MWD	None
55	2134.30	33.77	3.16	28.64	1904.97	776.93	773.44	76.60	777.22	5.66	0.03	MWD	None
56	2163.25	34.18	4.88	28.95	1928.98	793.11	789.57	77.73	793.39	5.62	0.36	MWD	None
57	2192.05	34.61	4.86	28.80	1952.75	809.38	805.78	79.11	809.66	5.61	0.15	MWD	None
58	2220.46	34.87	4.70	28.41	1976.09	825.56	821.92	80.46	825.85	5.59	0.10	MWD	None
59	2249.13	34.25	4.51	28.67	1999.70	841.83	838.13	81.77	842.11	5.57	0.22	MWD	None
60	2277.70	34.38	4.65	28.57	2023.30	857.93	854.18	83.05	858.21	5.55	0.05	MWD	None

Seq #	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (deg)	At Azim (deg)	DLS (deg/10m)	Srvy tool	Tool Corr
61	2306.02	33.94	4.54	28.32	2046.73	873.83	870.03	84.33	874.11	5.54	0.16	MWD	None
62	2335.12	34.45	4.71	29.10	2070.80	890.19	886.34	85.65	890.46	5.52	0.18	MWD	None
63	2364.29	33.94	4.90	29.17	2094.93	906.58	902.67	87.02	906.86	5.51	0.18	MWD	None
64	2393.28	34.32	3.70	28.99	2118.93	922.84	918.89	88.24	923.12	5.49	0.27	MWD	None
65	2421.92	35.27	4.07	28.64	2142.45	939.19	935.20	89.35	939.45	5.46	0.34	MWD	None
66	2450.28	35.91	4.12	28.36	2165.51	955.69	951.66	90.52	955.95	5.43	0.23	MWD	None
67	2479.07	36.30	4.30	28.79	2188.77	972.66	968.58	91.77	972.92	5.41	0.14	MWD	None
68	2507.28	36.48	4.80	28.21	2211.48	989.39	985.26	93.10	989.65	5.40	0.12	MWD	None
69	2535.06	38.21	5.40	27.78	2233.56	1006.24	1002.05	94.60	1006.50	5.39	0.64	MWD	None
70	2563.79	42.31	5.15	28.73	2255.48	1024.80	1020.53	96.30	1025.06	5.39	1.43	MWD	None
71	2592.58	46.33	4.80	28.79	2276.08	1044.91	1040.56	98.04	1045.17	5.38	1.40	MWD	None
72	2621.59	49.82	4.69	29.01	2295.46	1066.49	1062.07	99.83	1066.75	5.37	1.20	MWD	None
73	2649.97	53.11	4.61	28.38	2313.13	1088.68	1084.19	101.63	1088.95	5.36	1.16	MWD	None
74	2679.12	57.16	2.06	29.15	2329.80	1112.59	1108.06	103.01	1112.84	5.31	1.56	MWD	None
75	2707.94	58.64	1.15	28.82	2345.11	1136.98	1132.47	103.69	1137.20	5.23	0.58	MWD	None
76	2736.76	58.93	2.71	28.82	2360.05	1161.61	1157.10	104.52	1161.81	5.16	0.47	MWD	None
77	2765.34	59.19	2.70	28.58	2374.74	1186.11	1181.59	105.68	1186.30	5.11	0.09	MWD	None
78	2793.68	59.67	2.93	28.34	2389.16	1210.51	1205.96	106.87	1210.68	5.06	0.18	MWD	None
79	2822.22	60.83	2.67	28.54	2403.32	1235.28	1230.71	108.08	1235.44	5.02	0.41	MWD	None
80	2850.98	62.46	2.43	28.76	2416.98	1260.58	1255.99	109.21	1260.73	4.97	0.57	MWD	None
81	2879.95	63.96	2.62	28.97	2430.03	1286.43	1281.82	110.35	1286.57	4.92	0.52	MWD	None
82	2908.68	65.60	2.64	28.73	2442.27	1312.41	1307.79	111.54	1312.54	4.87	0.57	MWD	None
83	2933.99	66.14	2.47	25.31	2452.62	1335.50	1330.86	112.57	1335.62	4.83	0.22	MWD	None
84	2952.00	66.30	2.50	18.01	2459.88	1351.98	1347.33	113.29	1352.08	4.81	0.09	Projection to TD	

Company: **ESSO Australia Pty. Ltd.**

Schlumberger

Well: **HLA A1A**

Field: **Halibut GDA 94**

Rig: **ISDL 453**

State: **Victoria**

**Gamma Ray Service
1:200 True Vertical Depth
Real Time Log**