



## Company

**Well**

## Interval

**Created**

Noble Energy

Browning Federal LC24-780

**Date From:** 2016-12-11 14:27:18

**Top:** 1912.00

**Date To:** 2016-12-12 12:46:34

**Bottom:** 5840.00

2016-12-12 12:46

Gamma Ray - Apparent 0.5 ft Average GRAX

0 150

API

**TVD 1:240 feet**

**1900**

2000

2100

VR1

Depth Averaged ROP 3 ft Average ROPA

1000

ft/h

Weight On Bit, Average 1 ft Average WOB

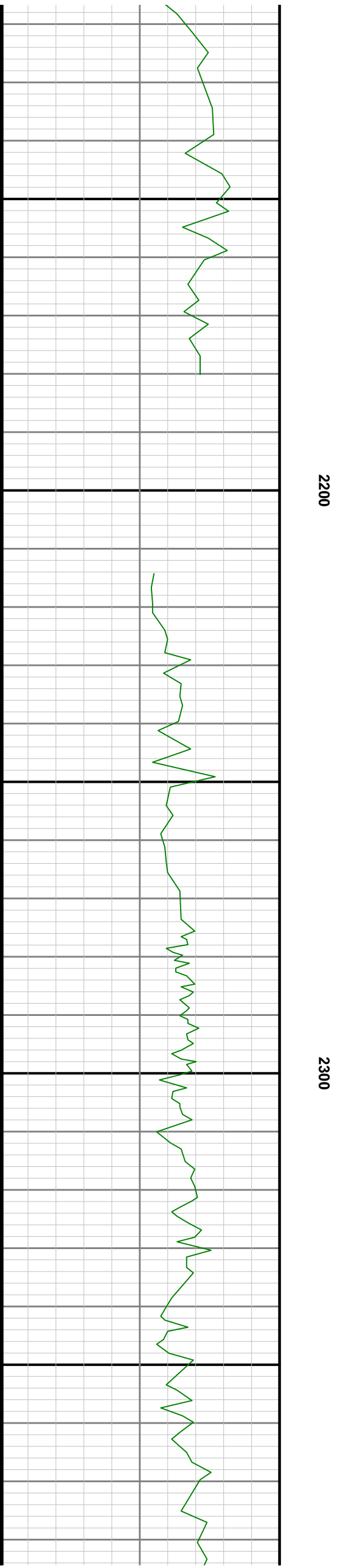
A horizontal number line with a solid line and dashed tick marks. The number 0 is at the left end, and 50 is at the right end. There are 10 dashed tick marks between 0 and 50, representing intervals of 5 units.

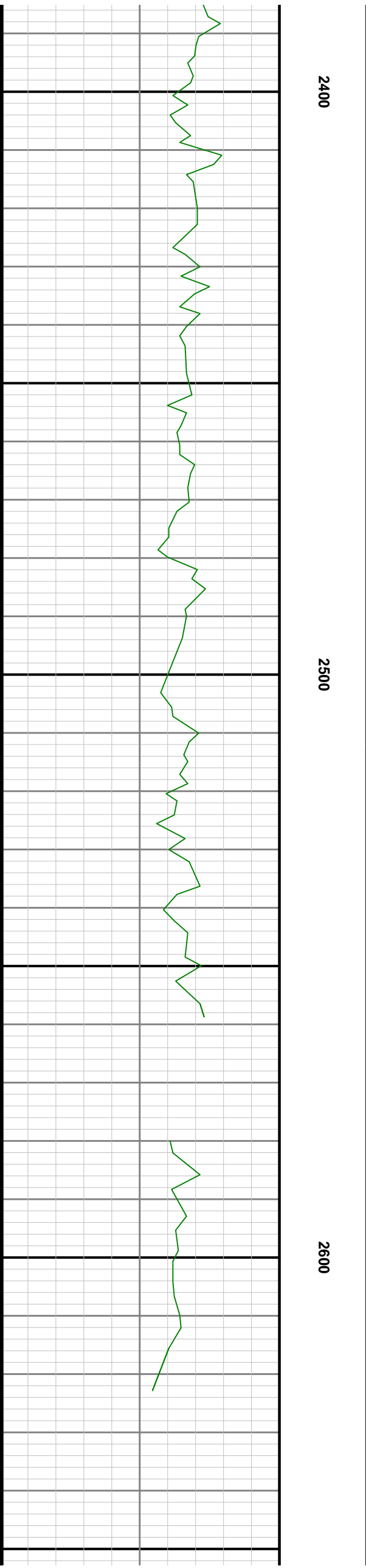
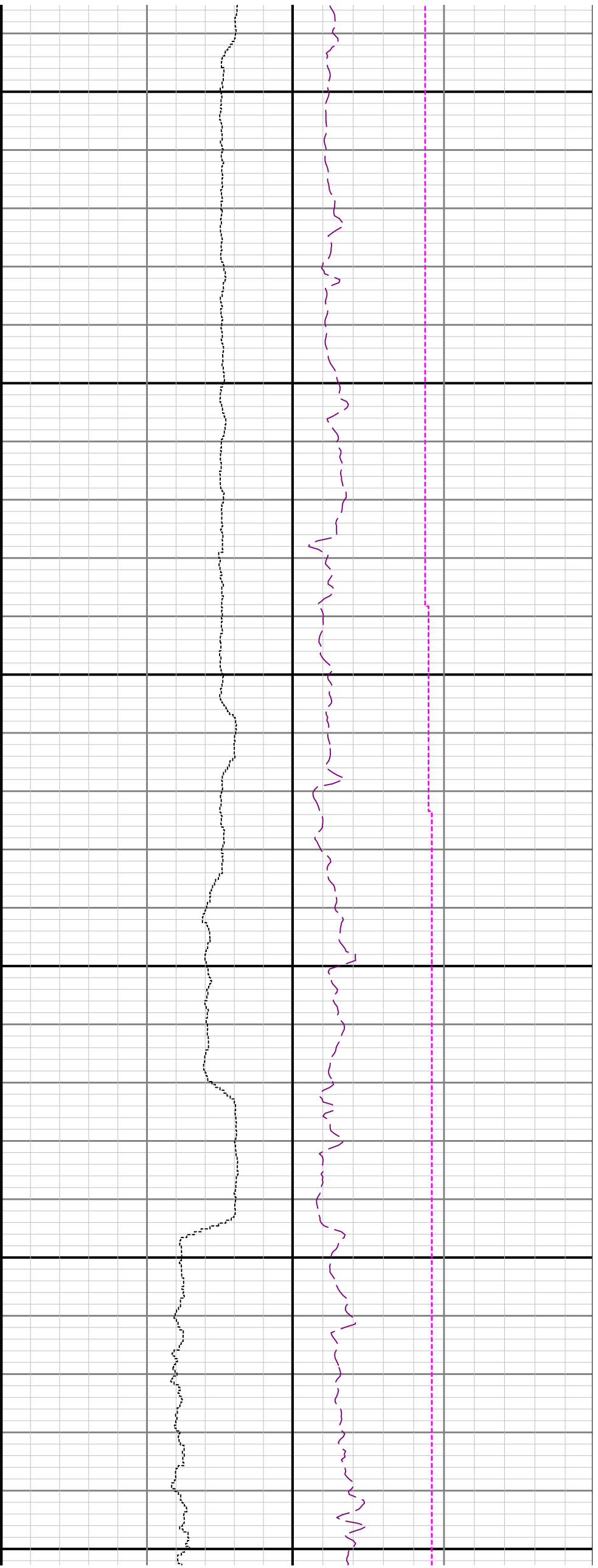
klb

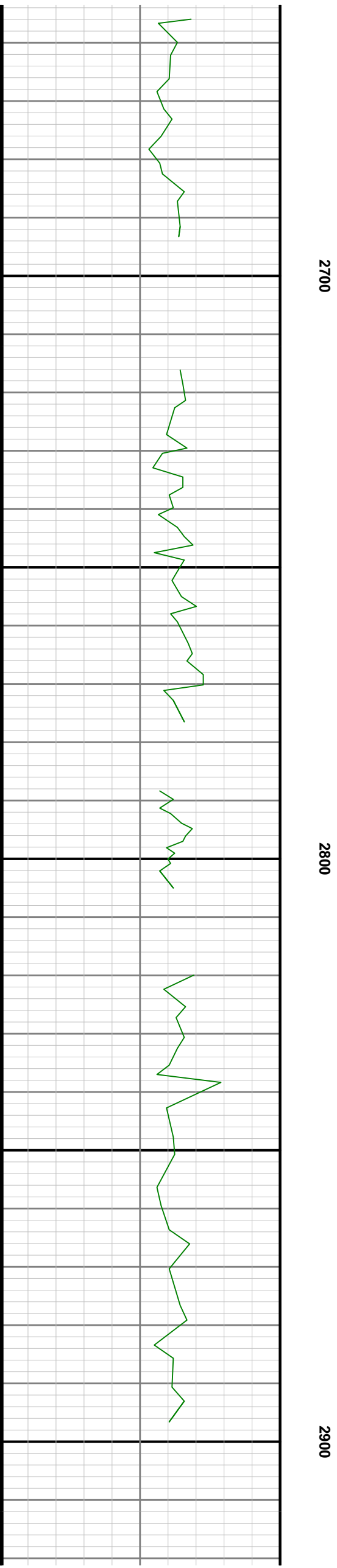
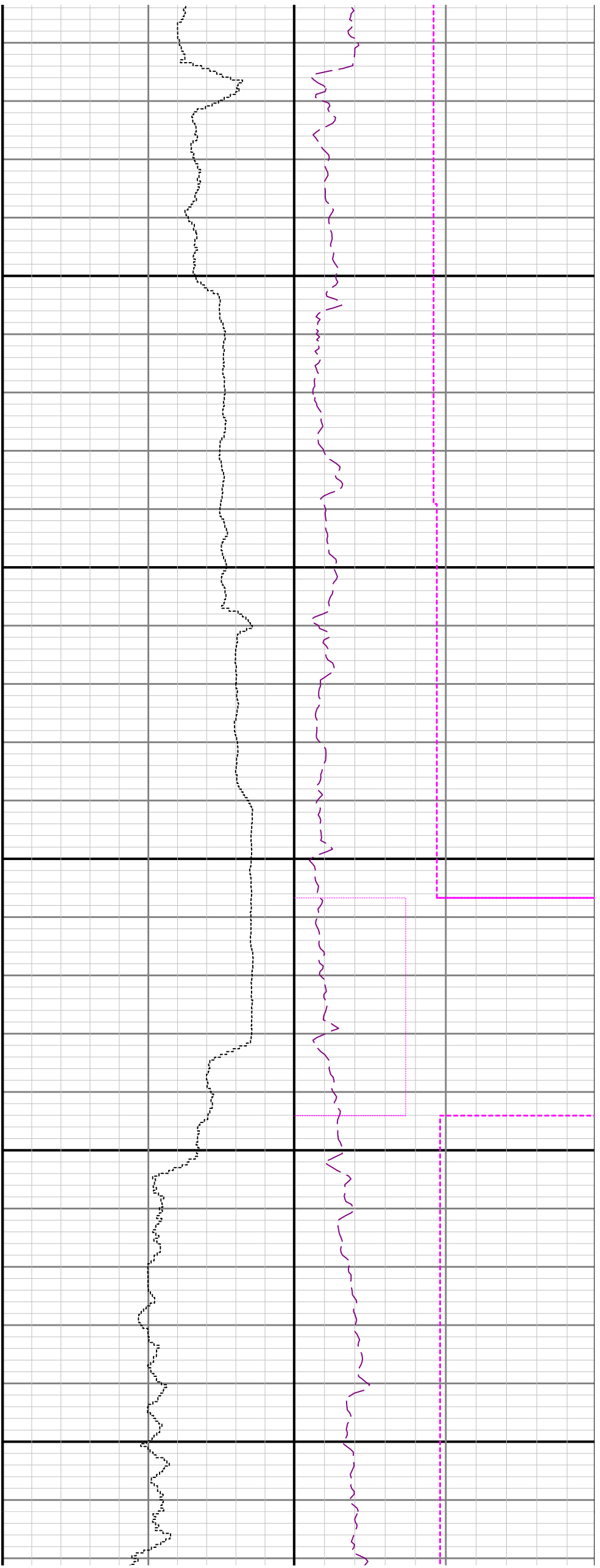
Downhole Temperature TCDX

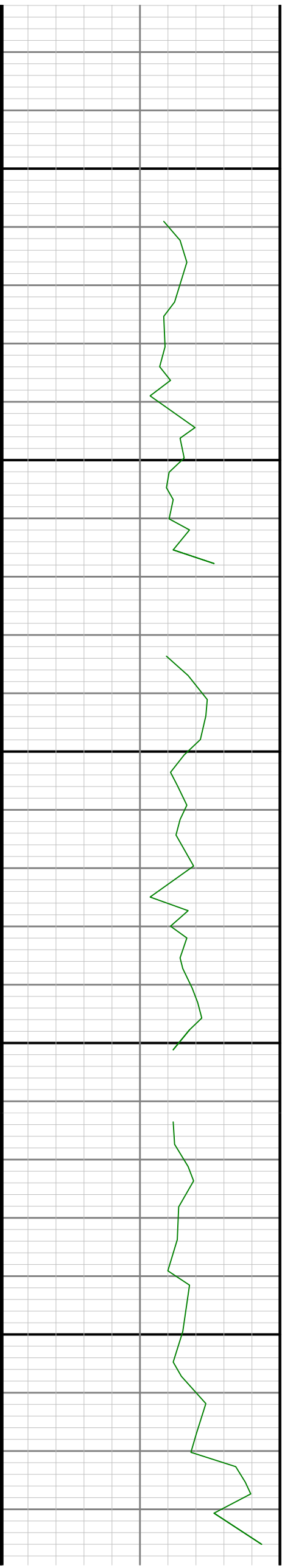
0 250

degF



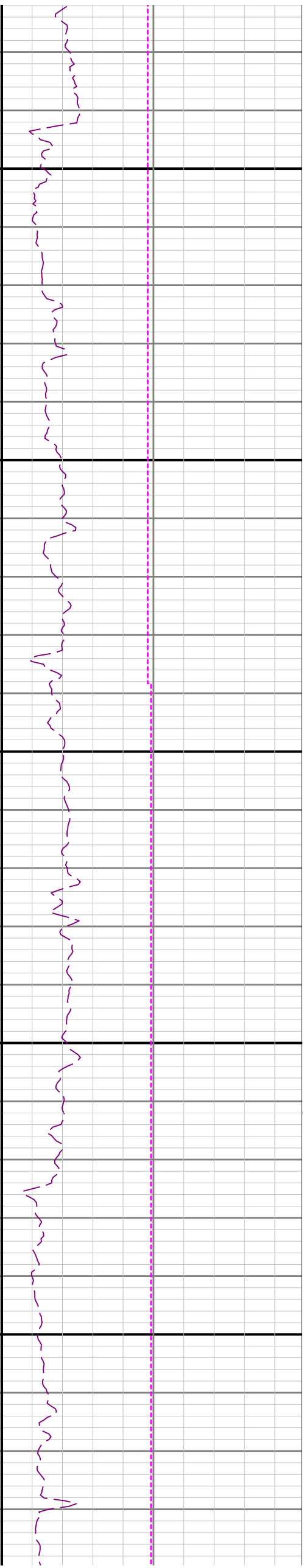
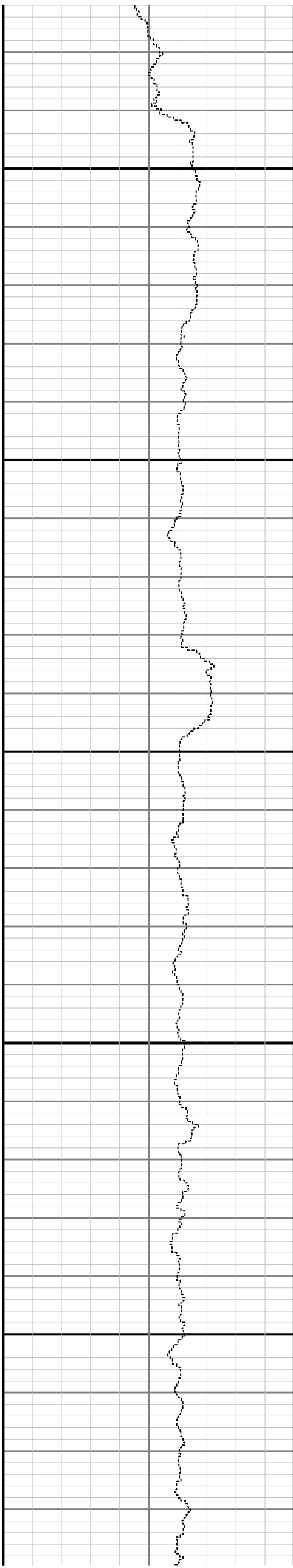


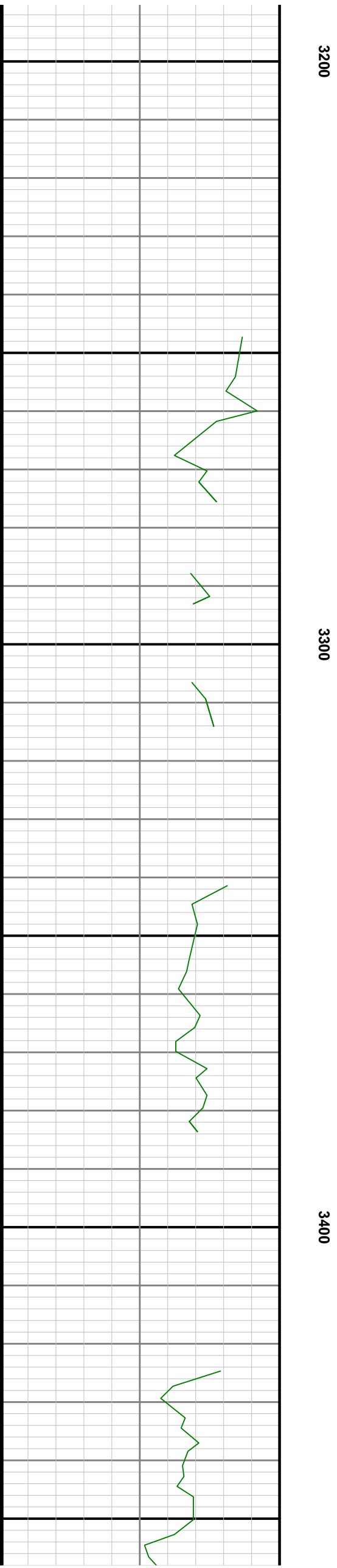
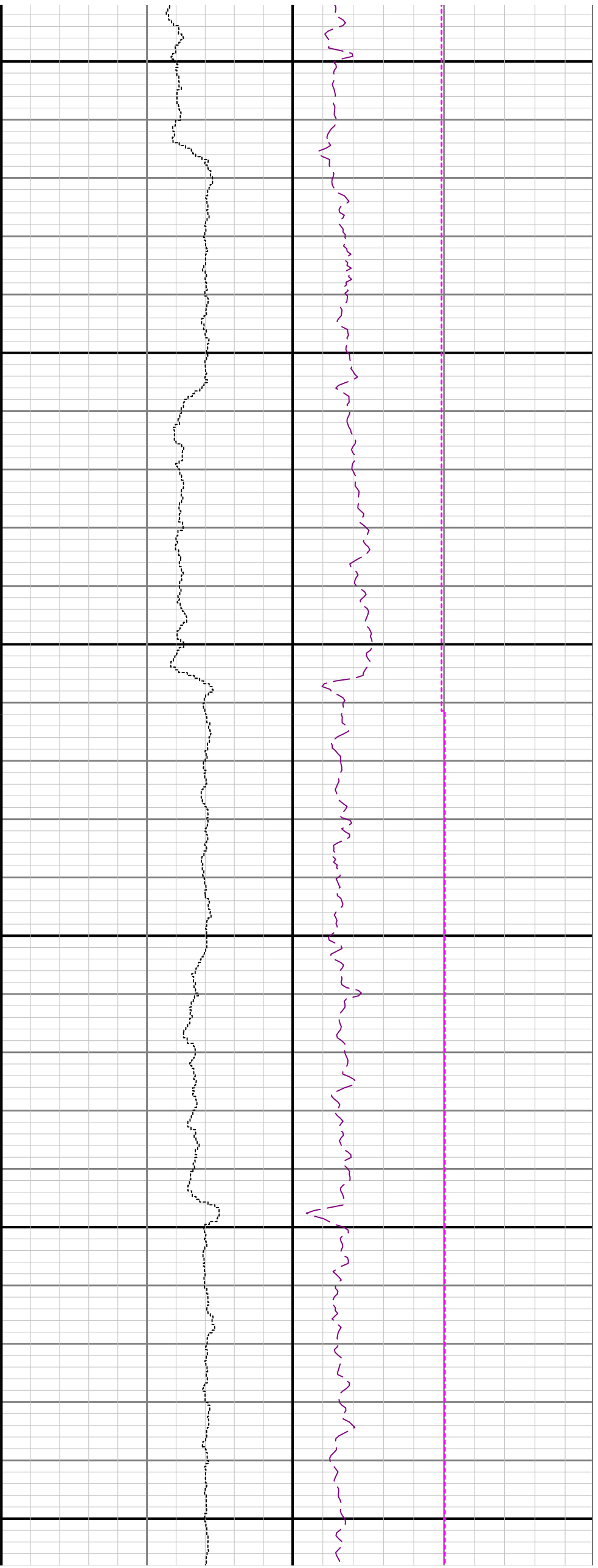


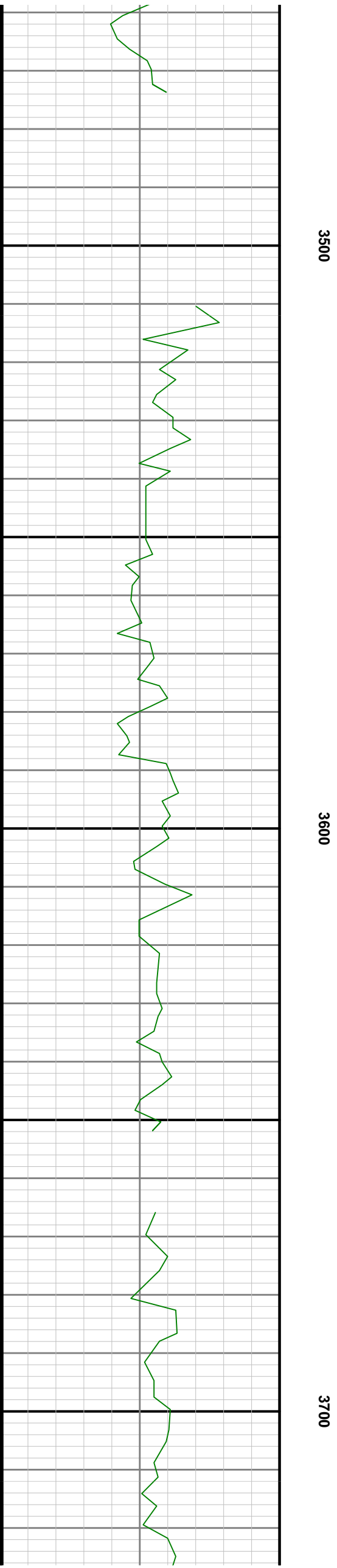


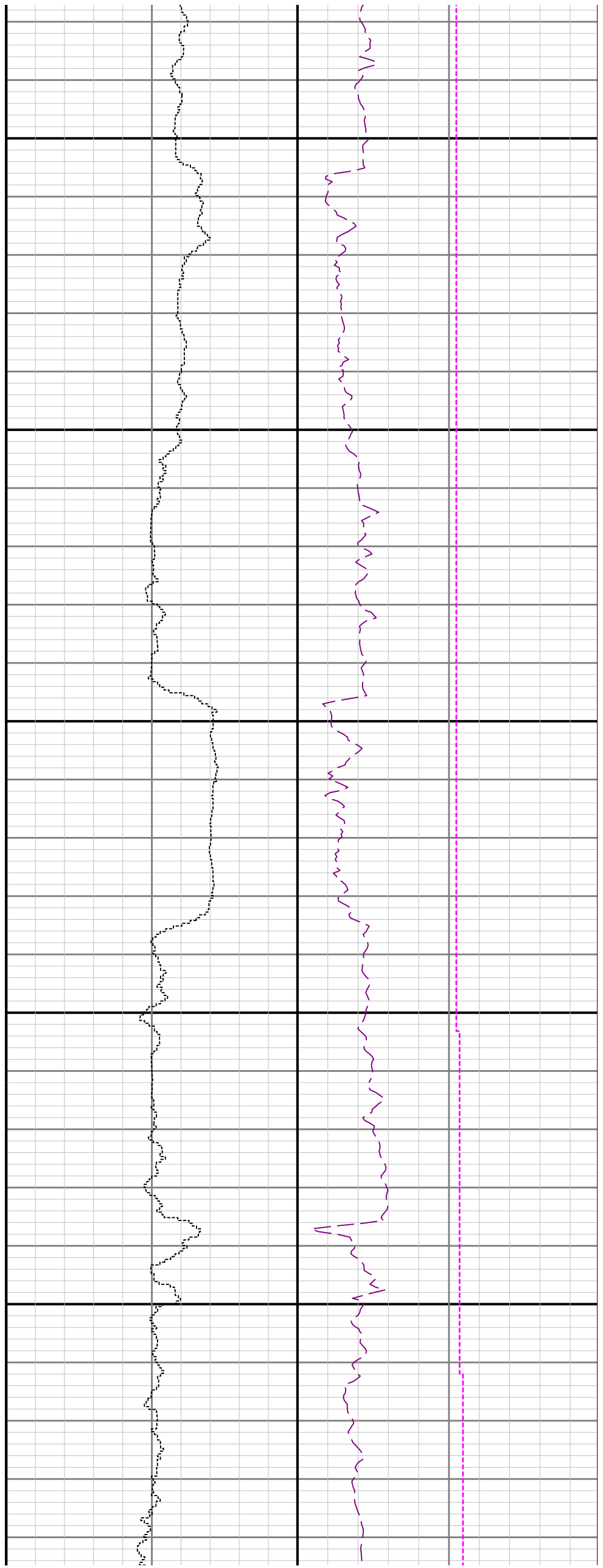
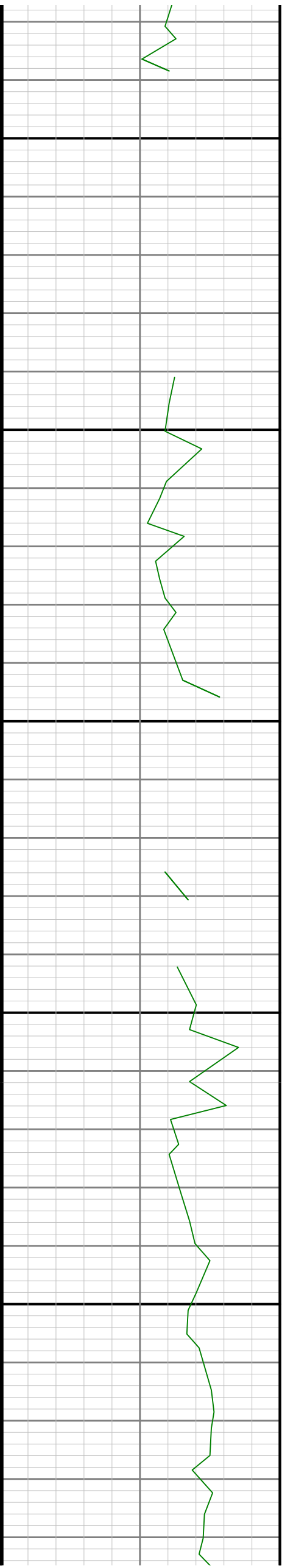
3000

3100

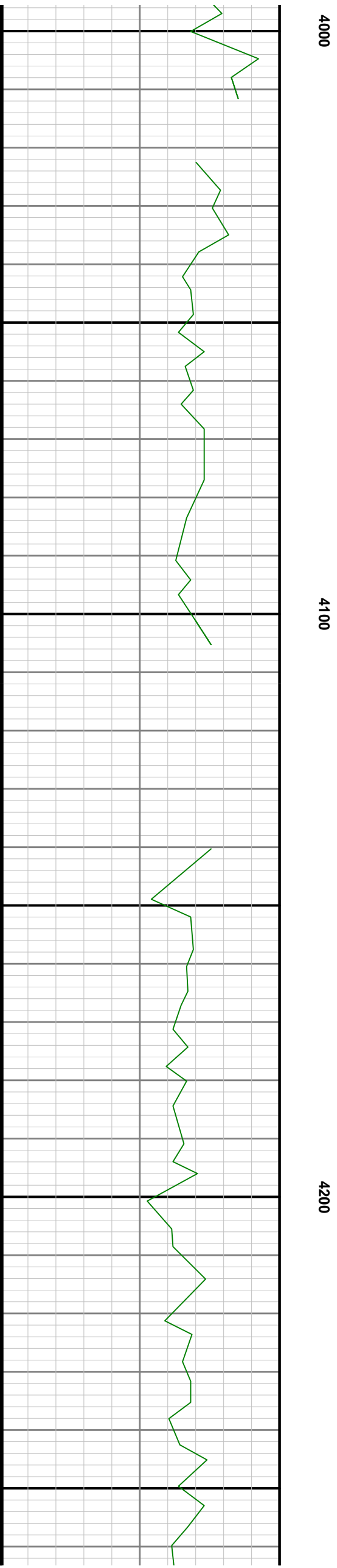
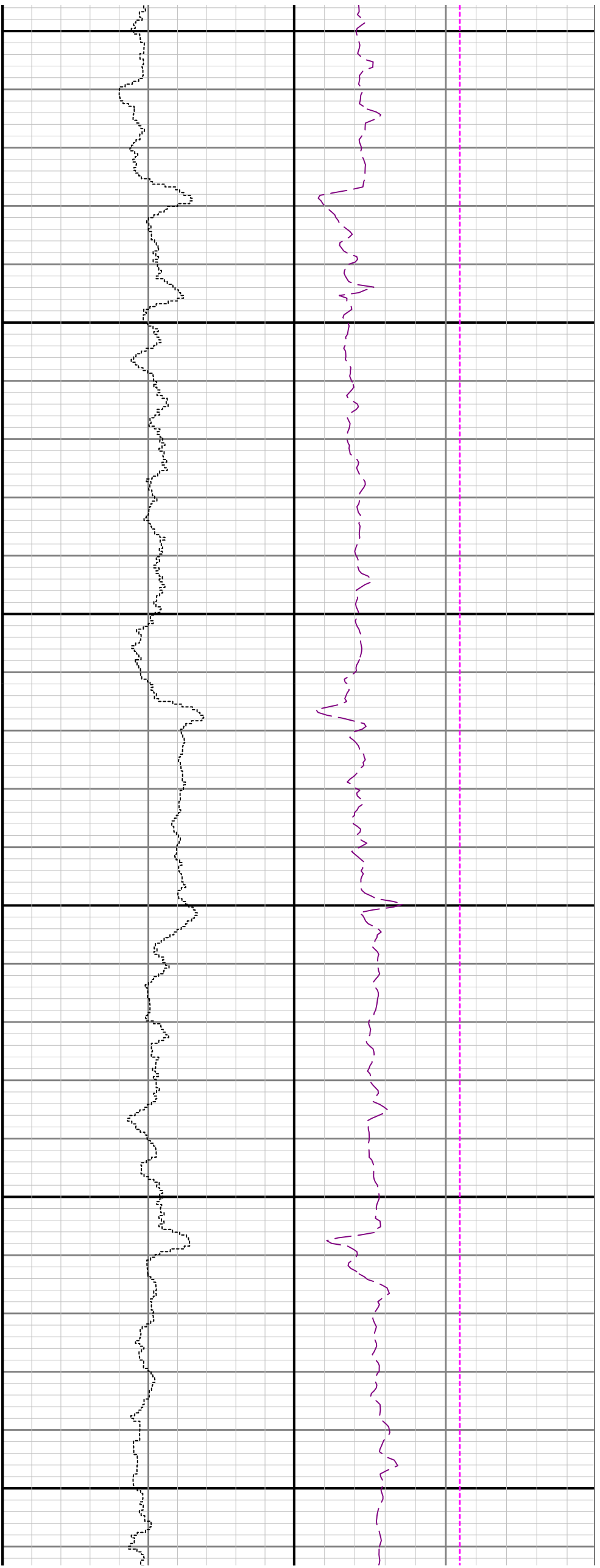


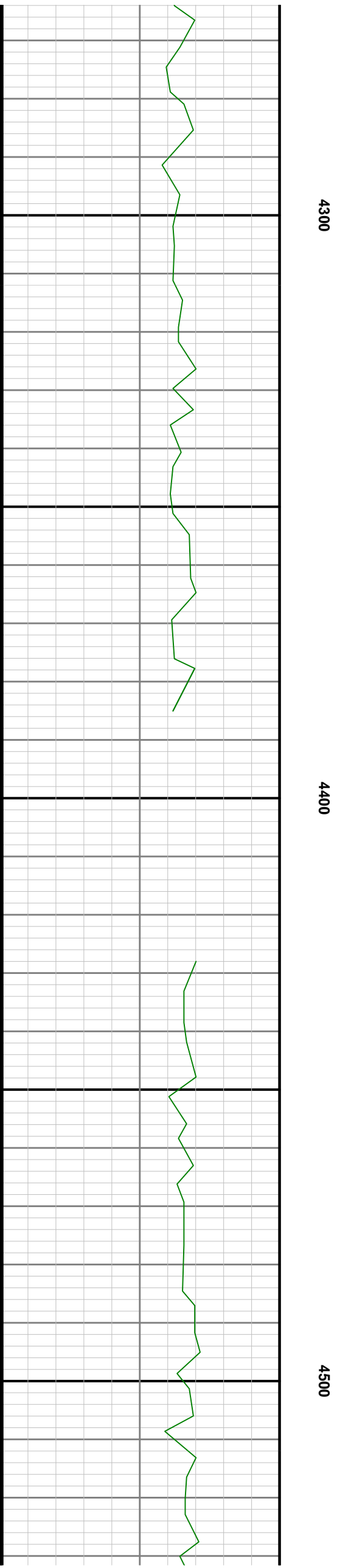
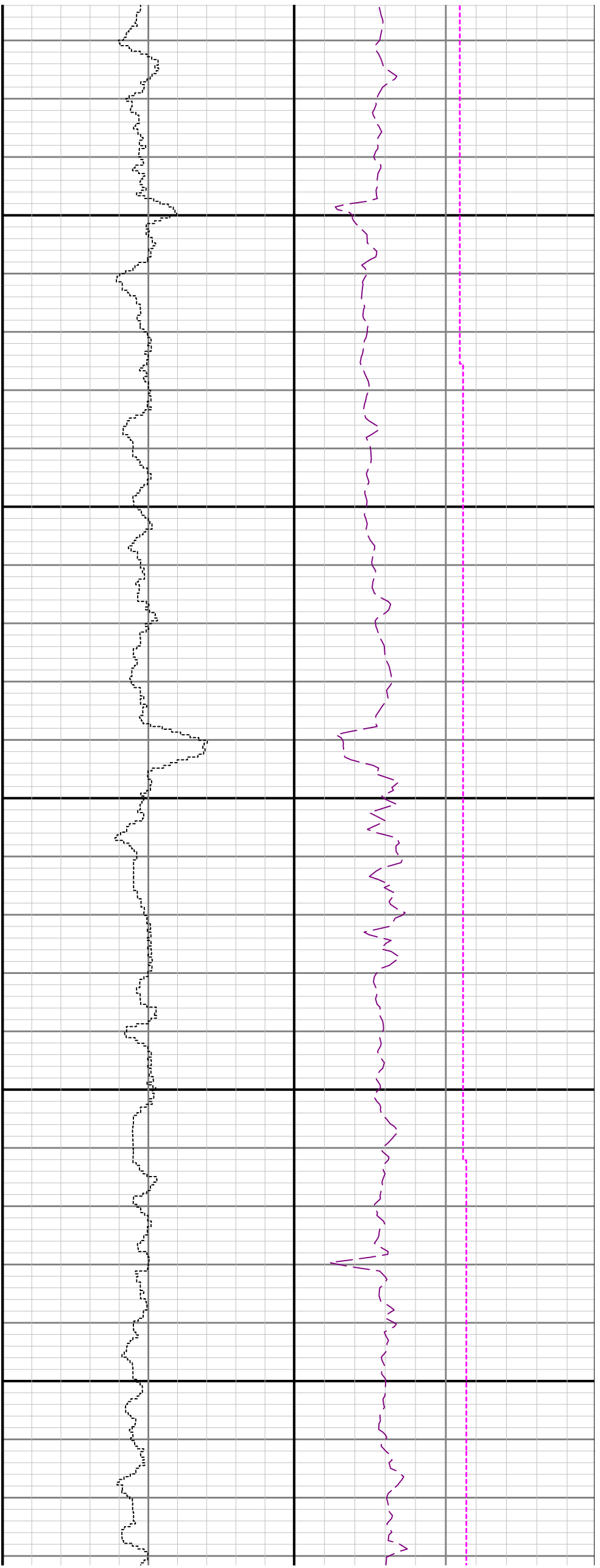


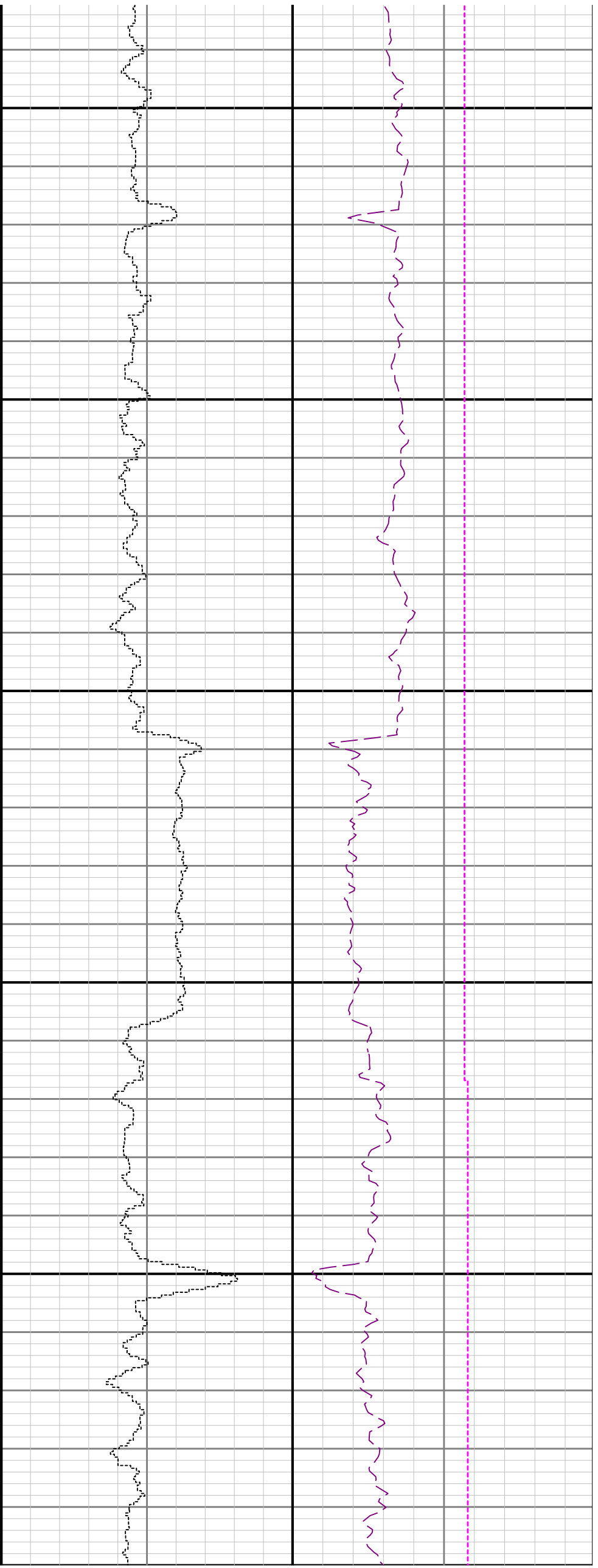








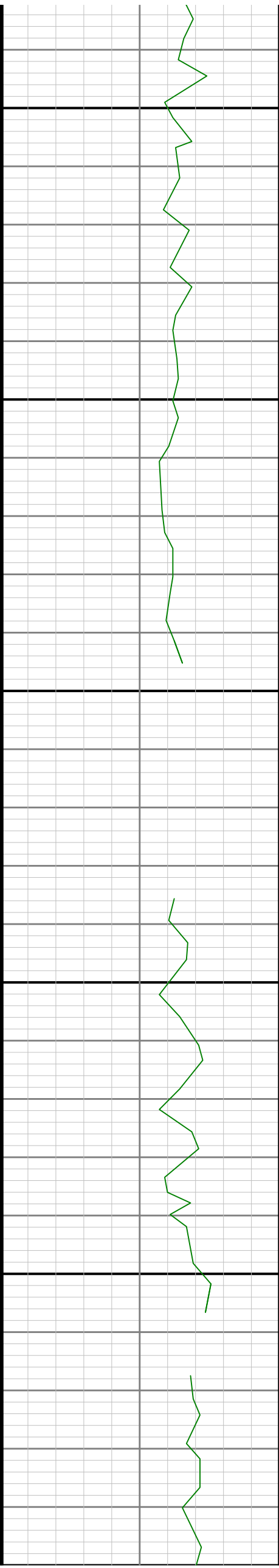


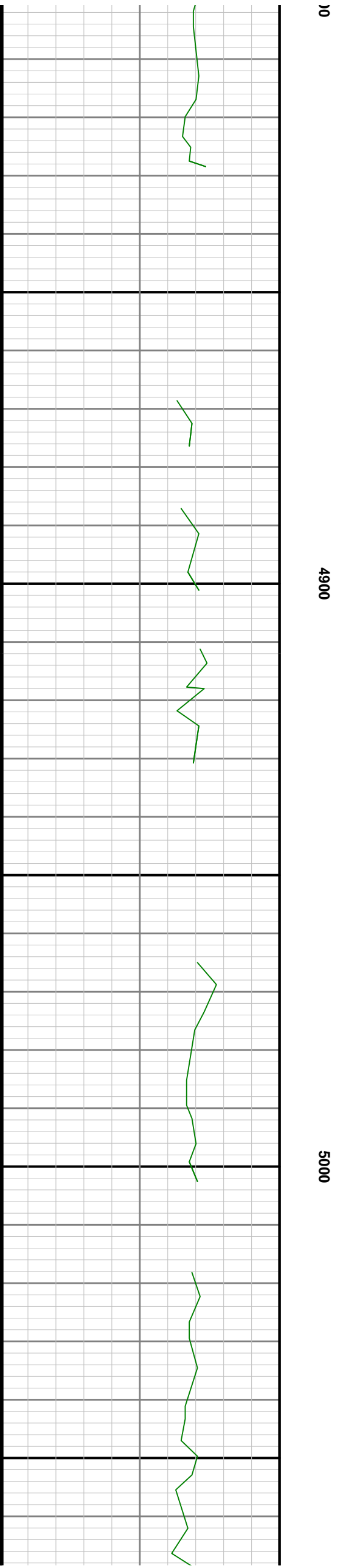
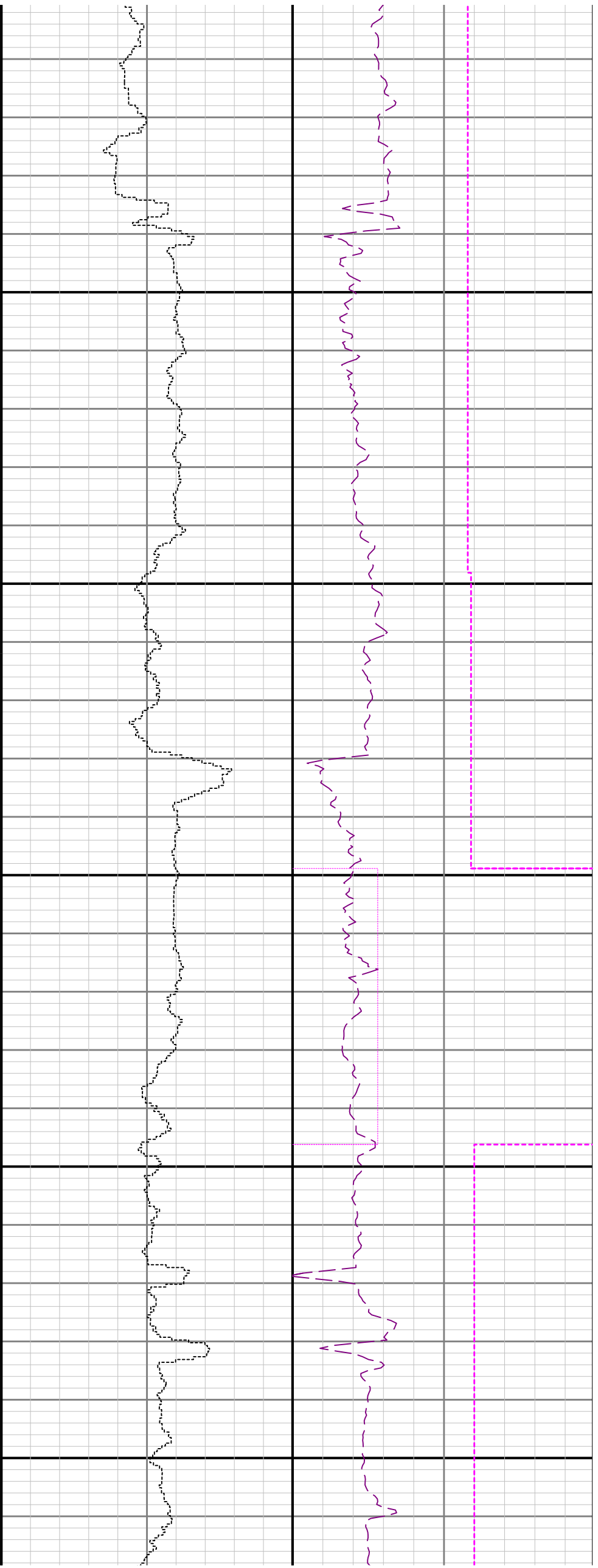


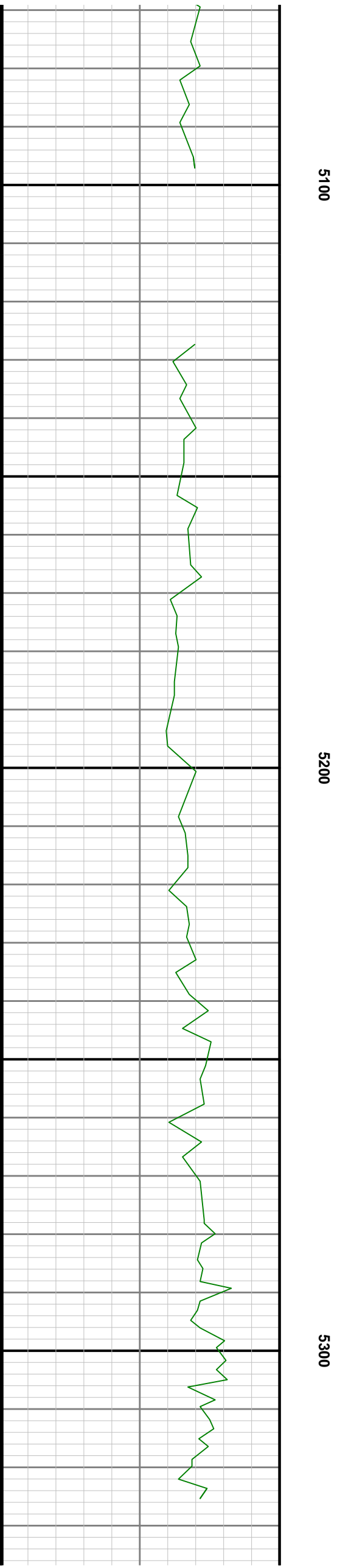
4600

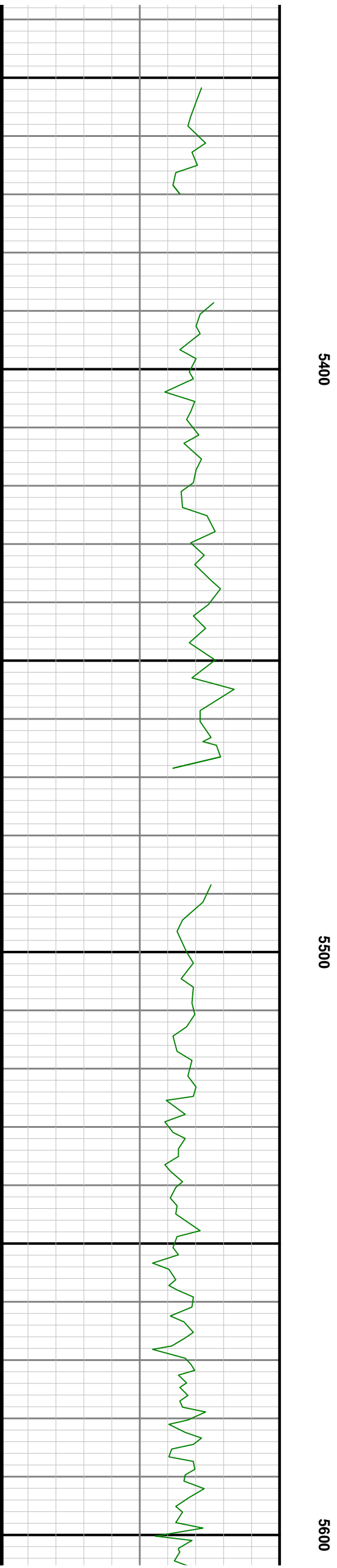
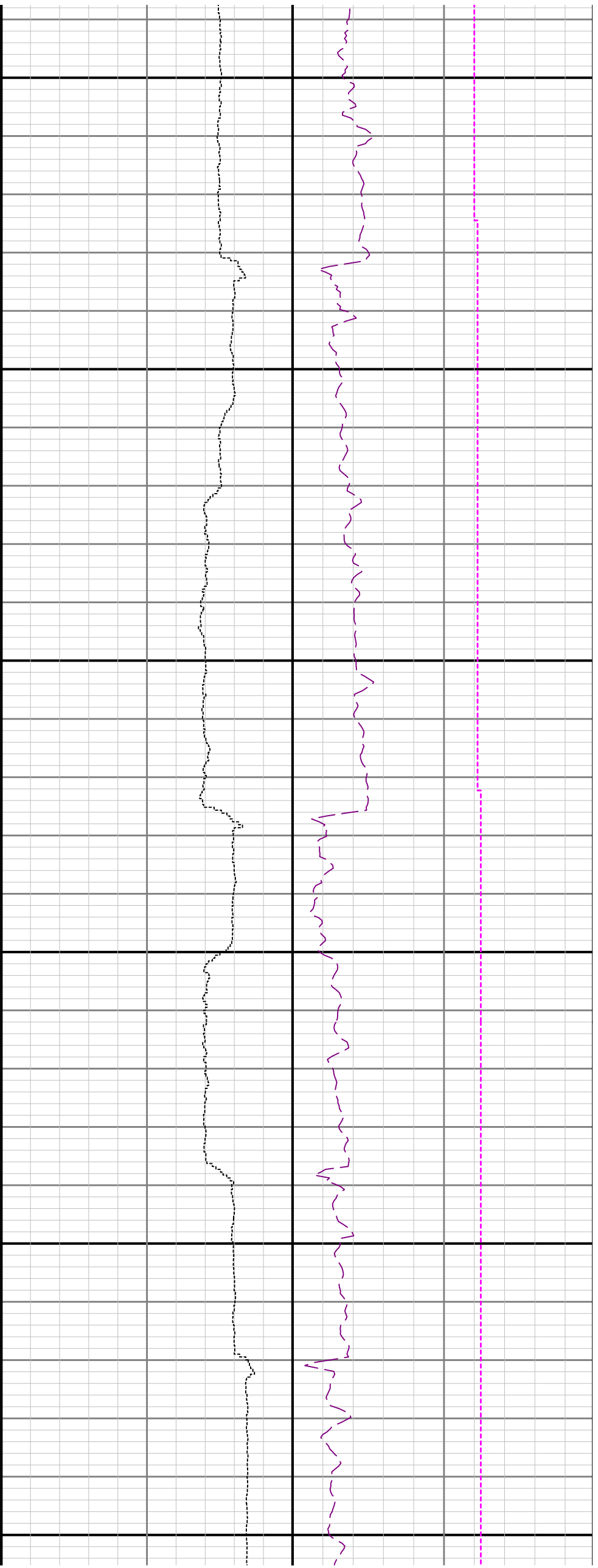
4700

48











	0	250

Directional Survey Summary

Latitude:	00° 00' 00" N	Longitude:	100° 00' 00" W
North Reference:	Grid	Drill Depth Zero:	Rig Floor
Vertical Datum is:	Ground Level	Vertical Datum to DDZ: (ft)	30.00
Vertical Section North: (m)	0.00	Vertical Section East: (m)	0.00
Vertical Section Azimuth: (deg)	358.99		
Grid Convergence: (deg)	-1.01	Magnetic Declination: (deg)	7.72
Total Correction: (deg)	6.71	TVD Calculation Method:	Minimum Curvature
Magnetic Correction:	On	Local Magnetic Field: (nT)	52633
Local Magnetic Dip Angle: (deg)	67.15	Local Gravity Field: (m/s2)	9.801

Tie-In / Projection	Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	Temperature (degF)	North (ft)	East (ft)	True Vertical Depth (ft)	Vertical Section (ft)	Course Length (ft)	Dog Leg Severity (deg/100ft)	Build Rate (deg/100ft)	Turn Rate (deg/100ft)
Tie-In	0.00	0.00	0.00	N/A	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	78.00	0.22	181.84	N/A	-0.15	-0.00	78.00	-0.15	78.00	0.28	0.28	-228.41
	175.00	0.09	220.23	N/A	-0.39	-0.06	175.00	-0.39	97.00	0.16	-0.13	39.58
	267.00	0.17	225.89	N/A	-0.54	-0.20	267.00	-0.54	92.00	0.09	0.09	6.15
	362.00	0.50	148.11	N/A	-0.99	-0.09	362.00	-0.99	95.00	0.52	0.35	-81.87
	456.00	0.21	161.34	N/A	-1.51	0.18	456.00	-1.51	94.00	0.32	-0.31	14.07
	551.00	0.23	194.68	N/A	-1.86	0.19	551.00	-1.86	95.00	0.13	0.02	35.09
	645.00	0.28	200.42	N/A	-2.25	0.06	644.99	-2.25	94.00	0.06	0.05	6.11
	740.00	0.10	220.48	N/A	-2.53	-0.07	739.99	-2.53	95.00	0.20	-0.19	21.12
	834.00	0.19	218.86	N/A	-2.72	-0.22	833.99	-2.71	94.00	0.10	0.10	-1.72
	928.00	0.28	205.53	N/A	-3.05	-0.42	927.99	-3.04	94.00	0.11	0.10	-14.18
	1023.00	0.02	201.18	N/A	-3.27	-0.52	1022.99	-3.26	95.00	0.27	-0.27	-4.58
	1117.00	0.19	336.43	N/A	-3.14	-0.59	1116.99	-3.13	94.00	0.22	0.18	143.88
	1212.00	0.02	254.04	N/A	-3.00	-0.67	1211.99	-2.99	95.00	0.20	-0.18	-86.73
	1305.00	0.31	170.01	N/A	-3.26	-0.64	1304.99	-3.24	93.00	0.33	0.31	-90.35
	1401.00	0.36	210.15	N/A	-3.77	-0.75	1400.99	-3.76	96.00	0.24	0.05	41.81
	1496.00	0.34	207.87	N/A	-4.28	-1.03	1495.99	-4.26	95.00	0.03	-0.02	-2.40
	1591.00	0.42	214.28	N/A	-4.82	-1.36	1590.99	-4.79	95.00	0.10	0.08	6.75
	1685.00	0.41	216.61	N/A	-5.37	-1.75	1684.98	-5.34	94.00	0.02	-0.01	2.48
	1780.00	0.09	223.03	N/A	-5.70	-2.01	1779.98	-5.66	95.00	0.34	-0.34	6.76
	1874.00	0.29	258.98	N/A	-5.80	-2.29	1873.98	-5.76	94.00	0.24	0.21	38.24
	1908.00	0.29	261.45	N/A	-5.83	-2.46	1907.98	-5.78	34.00	0.04	0.00	7.26
	1981.00	0.31	255.98	N/A	-5.90	-2.84	1980.98	-5.85	73.00	0.05	0.03	-7.49
	2076.00	0.62	227.94	N/A	-6.31	-3.47	2075.98	-6.25	95.00	0.40	0.33	-29.52
	2170.00	0.76	95.43	N/A	-6.71	-3.22	2169.97	-6.65	94.00	1.35	0.15	-140.97
	2265.00	1.18	294.66	N/A	-6.36	-3.49	2264.97	-6.30	95.00	2.01	0.44	-169.23
	2360.00	2.94	207.89	N/A	-8.11	-5.51	2359.92	-8.01	95.00	3.27	1.85	-91.34
	2455.00	5.61	198.73	N/A	-14.66	-8.15	2454.65	-14.51	95.00	2.89	2.81	-9.64
	2549.00	7.83	165.81	N/A	-25.22	-8.05	2548.03	-25.08	94.00	4.63	2.36	-35.02
	2739.00	8.08	139.42	N/A	-47.92	3.81	2736.26	-47.98	190.00	1.91	0.13	-13.89
	2834.00	13.31	173.00	N/A	-63.87	9.50	2829.67	-64.03	95.00	8.35	5.51	35.35
	2928.00	16.36	188.22	N/A	-87.73	8.92	2920.56	-87.87	94.00	5.24	3.24	16.19
	3023.00	16.91	189.69	N/A	-114.59	4.68	3011.58	-114.65	95.00	0.73	0.58	1.55
	3118.00	16.90	186.36	N/A	-141.93	0.83	3102.48	-141.92	95.00	1.02	-0.01	-3.51
	3307.00	16.88	188.15	N/A	-196.40	-6.10	3283.33	-196.26	189.00	0.28	-0.01	0.95
	3401.00	17.06	187.20	N/A	-223.58	-9.77	3373.23	-223.38	94.00	0.35	0.19	-1.01
	3496.00	17.68	185.07	N/A	-251.78	-12.79	3463.90	-251.52	95.00	0.93	0.65	-2.24
	3590.00	17.63	181.60	N/A	-280.23	-14.45	3553.48	-279.93	94.00	1.12	-0.05	-3.69
	3685.00	17.65	177.70	N/A	-309.00	-14.27	3644.01	-308.70	95.00	1.24	0.02	-4.11
	3779.00	17.56	173.89	N/A	-337.34	-12.19	3733.61	-337.07	94.00	1.23	-0.10	-4.05
	3874.00	17.71	167.69	N/A	-365.71	-7.58	3824.16	-365.52	95.00	1.98	0.16	-6.53
	3969.00	17.64	163.99	N/A	-393.66	-0.53	3914.67	-393.59	95.00	1.18	-0.07	-3.89
	4063.00	17.39	168.45	N/A	-421.12	6.21	4004.32	-421.16	94.00	1.45	-0.27	4.74
	4158.00	17.48	173.02	N/A	-449.19	10.78	4094.96	-449.31	95.00	1.44	0.09	4.81
	4252.00	17.52	174.40	N/A	-477.28	13.88	4184.61	-477.45	94.00	0.44	0.04	1.47
	4347.00	17.56	174.18	N/A	-505.77	16.73	4275.19	-505.99	95.00	0.08	0.04	-0.23
	4442.00	17.56	169.64	N/A	-534.13	20.76	4365.77	-534.41	95.00	1.44	0.00	-4.78
	4537.00	17.60	167.74	N/A	-562.26	26.39	4456.33	-562.64	95.00	0.61	0.04	-2.00
	4631.00	17.52	168.42	N/A	-590.01	32.24	4545.95	-590.49	94.00	0.23	-0.09	0.72
	4726.00	17.57	168.58	N/A	-618.07	37.95	4636.54	-618.64	95.00	0.07	0.05	0.17
	4821.00	16.75	168.30	N/A	-645.53	43.57	4727.31	-646.20	95.00	0.87	-0.86	-0.29
	4915.00	16.39	179.36	N/A	-672.06	46.47	4817.42	-672.78	94.00	3.37	-0.38	11.77
	5007.00	17.27	188.03	N/A	-698.57	44.70	4905.50	-699.25	92.00	2.89	0.96	9.42
	5104.00	17.00	187.37	N/A	-726.89	40.87	4998.19	-727.50	97.00	0.34	-0.28	-0.68
	5200.00	16.93	190.39	N/A	-754.56	36.55	5090.02	-755.08	96.00	0.92	-0.07	3.15
	5294.00	16.93	186.53	N/A	-781.62	32.53	5179.94	-782.07	94.00	1.20	0.00	-4.11
	5388.00	16.84	177.69	N/A	-808.83	31.52	5269.91	-809.26	94.00	2.73	-0.10	-9.40
	5483.00	12.47	164.88	N/A	-832.49	34.75	5361.82	-832.98	95.00	5.70	-4.60	-13.48
	5578.00	4.96	117.01	N/A	-844.29	41.10	5455.75	-844.88	95.00	10.36	-7.91	-50.39
	5672.00	7.70	89.73	N/A	-846.11	51.02	5549.19	-846.87	94.00	4.25	2.91	-29.02
	5767.00	14.66	40.63	N/A	-836.92	65.26	5642.51	-837.94	95.00	11.80	7.33	-51.68
	5862.00	23.75	25.17	N/A	-810.41	81.27	5732.19	-811.72	95.00	10.89	9.57	-16.27
	5956.00	28.65	2.38	163.5	-770.64	90.28	5816.72	-772.11	94.00	11.82	5.21	-24.24