

BAKER HUGHES				LWD MEMORY LOG											
				Gamma Ray											
Scale:				Company: Noble Energy											
1:240 TVD				Well: Beretta Federal LC24-760											
Depth Reference:				Field: Weld County (Noble NAD 83 Grid)											
Driller's Depth				County: Weld County State: Colorado											
Status:				Surface Location:						Other Services:					
Final Print				Latitude: 040° 44' 28.572" N						Directional					
API No: 0512342960				Longitude: 103° 55' 44.364" W											
Job ID: 8241849				SEC: 24		TWN: 9N		RGE: 59W							
Permanent Datum (P.D.): Mean Sea Level				Elevation:		0.00 ft		KB: N/A							
Log Measured From: Rig Floor				Above P.D.		4888.00 ft		DF: 4888.00 ft		GL: 4858.00 ft					
Dates				Interval Logged						Magnetic Field Reference					
Date From: 2016-12-02				Top: (ft)		1938.00		Azi Reference North: Grid		Dip Angle: (deg)		67.14			
Date To: 2016-12-03				Bottom: (ft)		5947.00		Total Magnetic Field Strength: (nT)				52649			
Spud Date: 2016-12-01								Mag to Reference North Correction: (deg)				6.64 E			
Borehole Record				Casing Record											
Hole Size (in)				From (ft)		To (ft)		Size (in)		Weight (lb/ft)		From (ft)		To (ft)	
13.500				0.00		1950.00		9.625		36.00		0.00		1944.00	
8.500				1950.00		10397.00									

ATC_MWD	ATC_MWD	Auto Trak Curve MWD
ATC_LCPM	ATC_LCPM	Auto Trak Curve LCPM

Comments


- 1
- Depth measurements obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
- 2
- Baker Hughes LWD Run 1 utilized 6 3/4 inch NaviGamma Services (Gamma Ray and Directional) behind an 8 1/2 inch bit and rotary steerable assembly from 1950 to 10397 ft MD (1950 to 5911 ft TVD).

Remarks

Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	1937.00	8.500	1	Gamma Ray logging operations began at 1937 feet MD (1937 feet TVD)

Curve Mnemonics

Presented Curves	Description	Units
ROPA	Depth Averaged ROP 3 ft Average	ft/h
GRAM	Gamma Ray - Apparent 0.5 ft Average	API
TCDM	Downhole Temperature	degF
WOBA	Weight On Bit, Average 1 ft Average	klb



Company

Well

Interval

Created

Noble Energy

Beretta Federal LC24-760

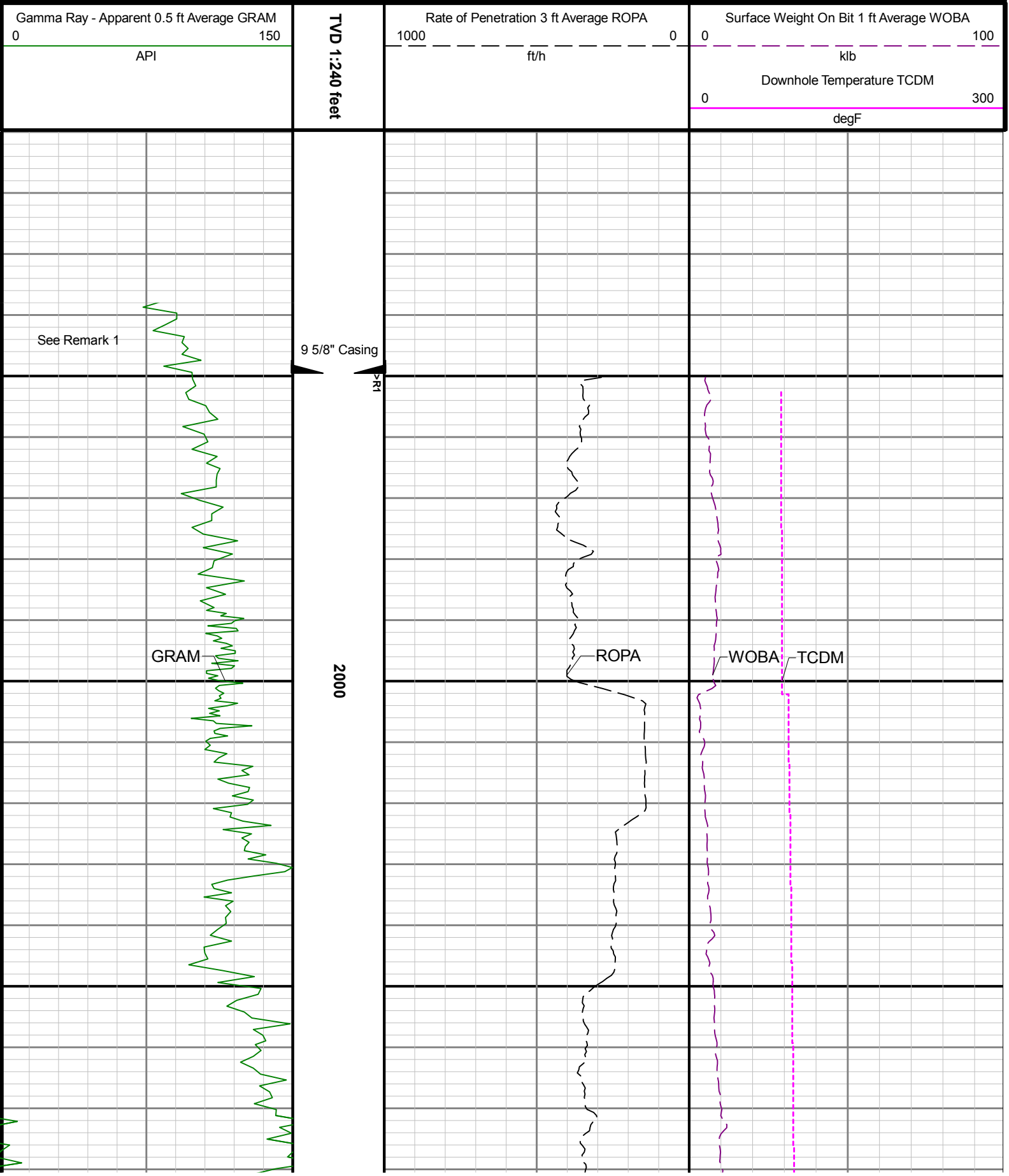
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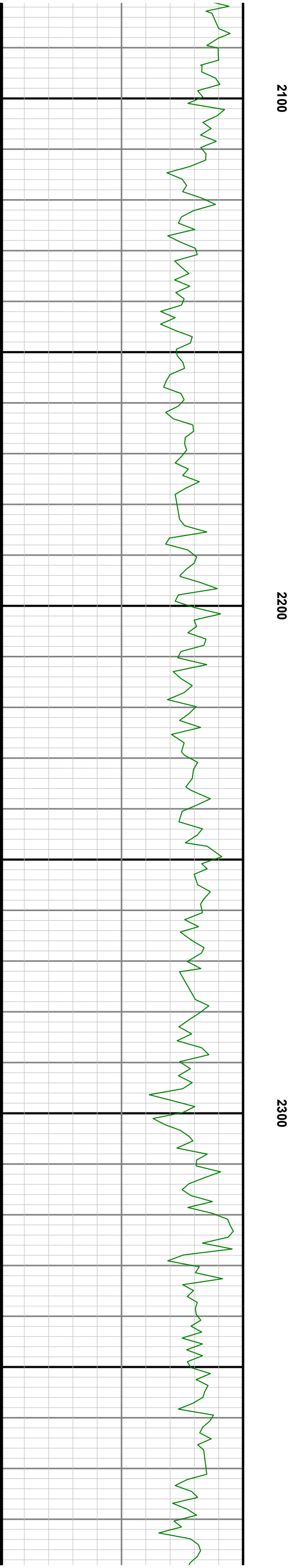
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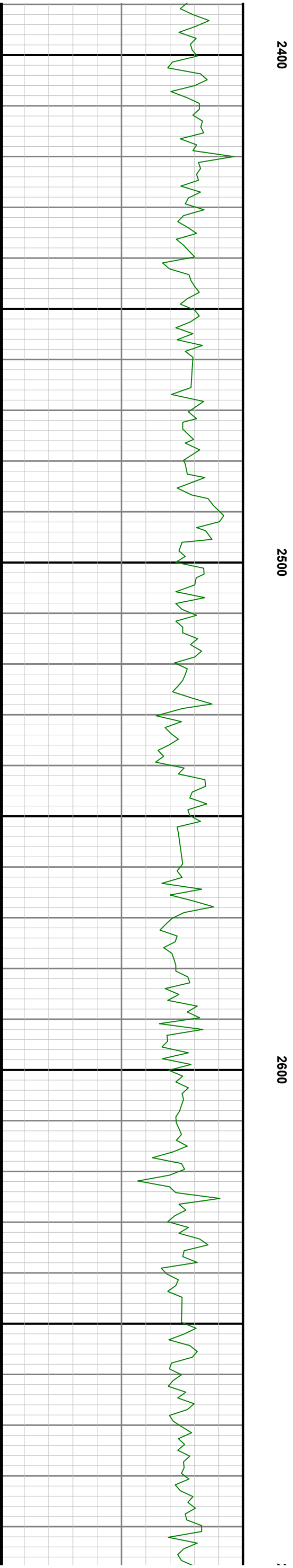
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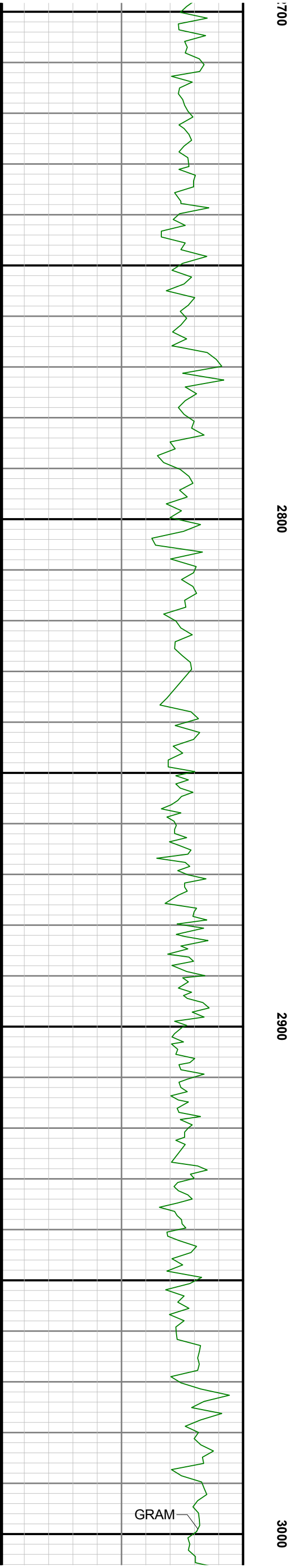
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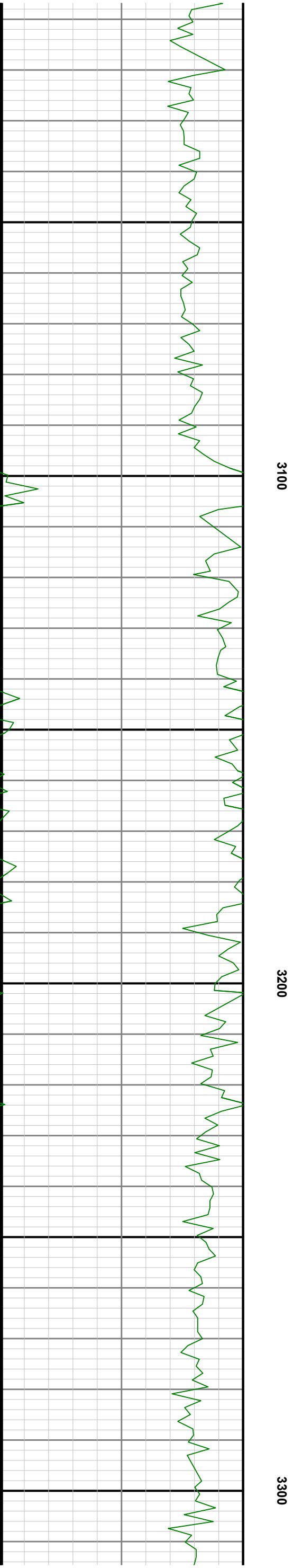
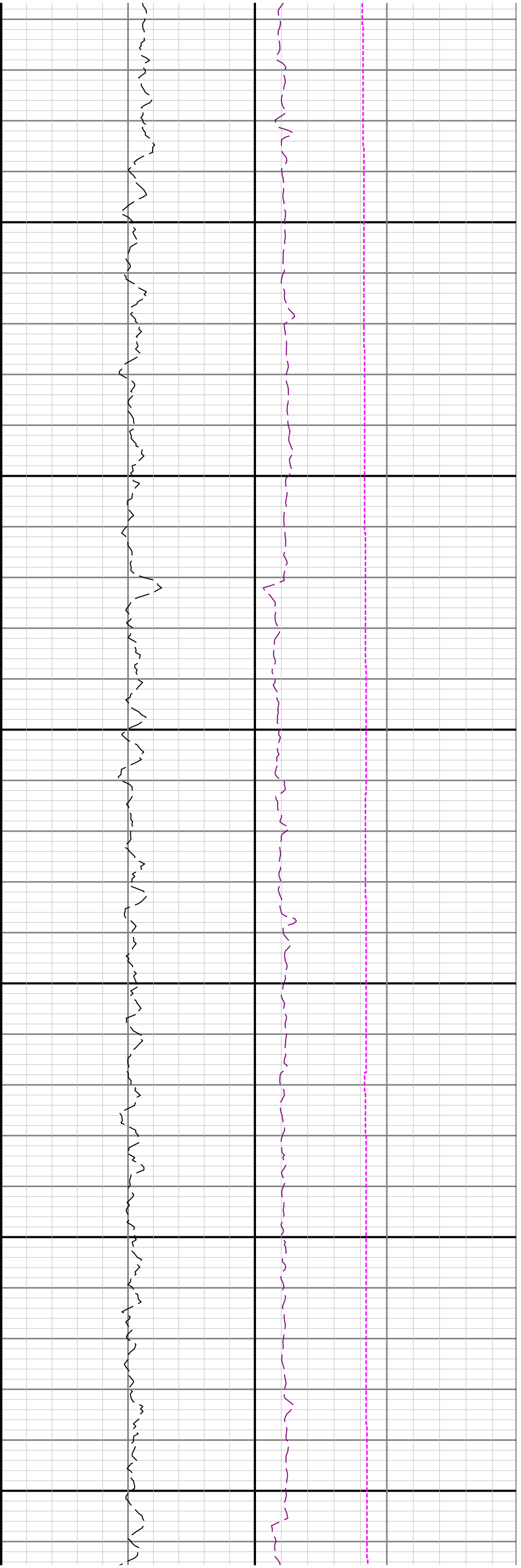
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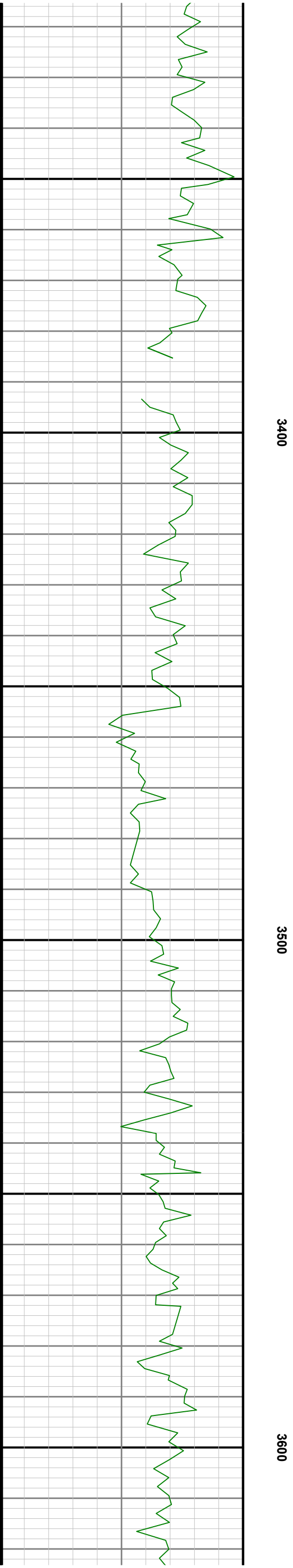
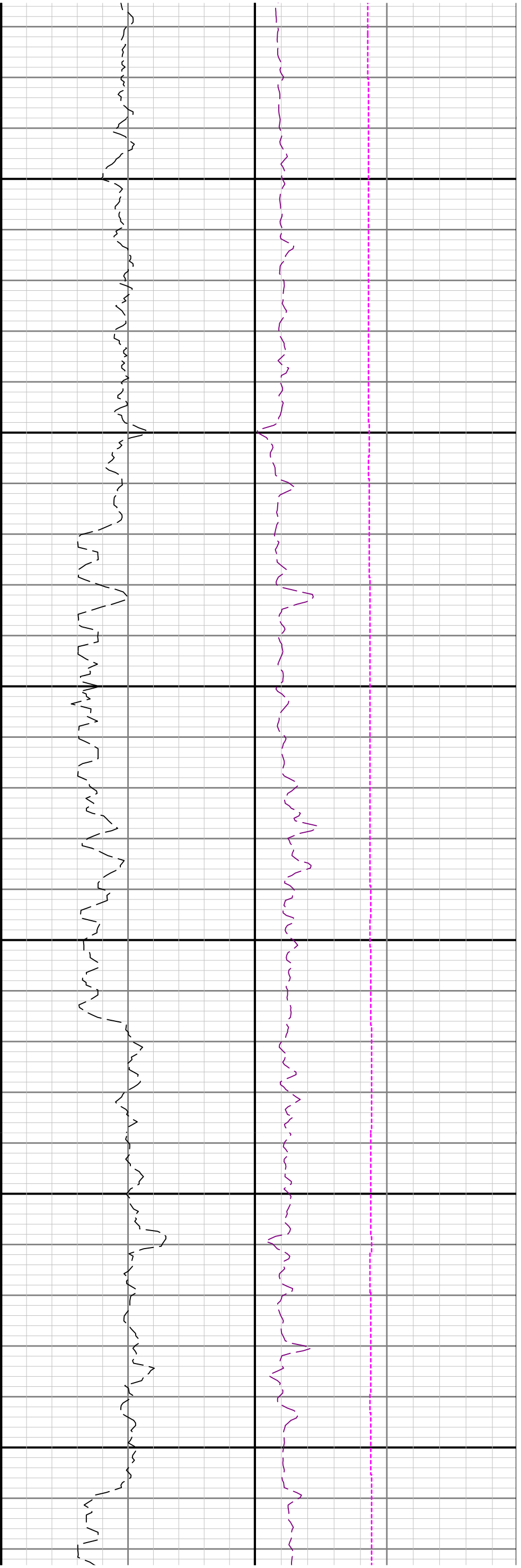


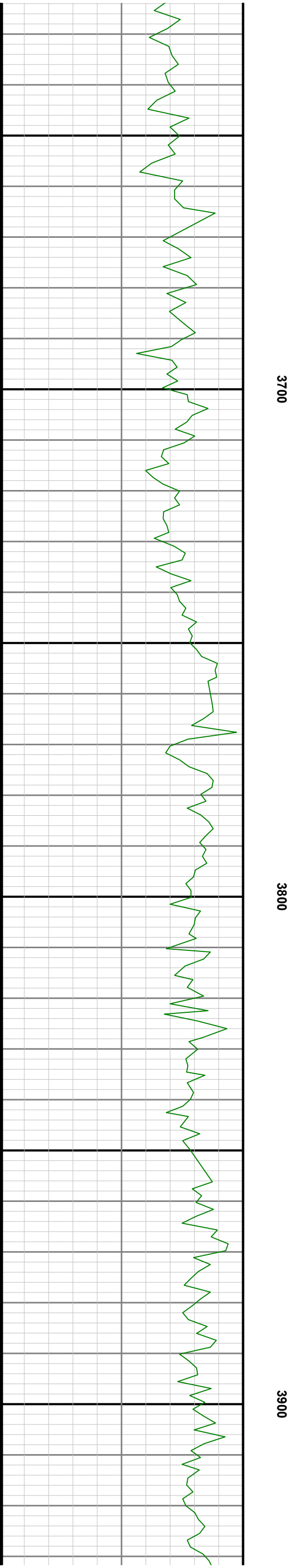
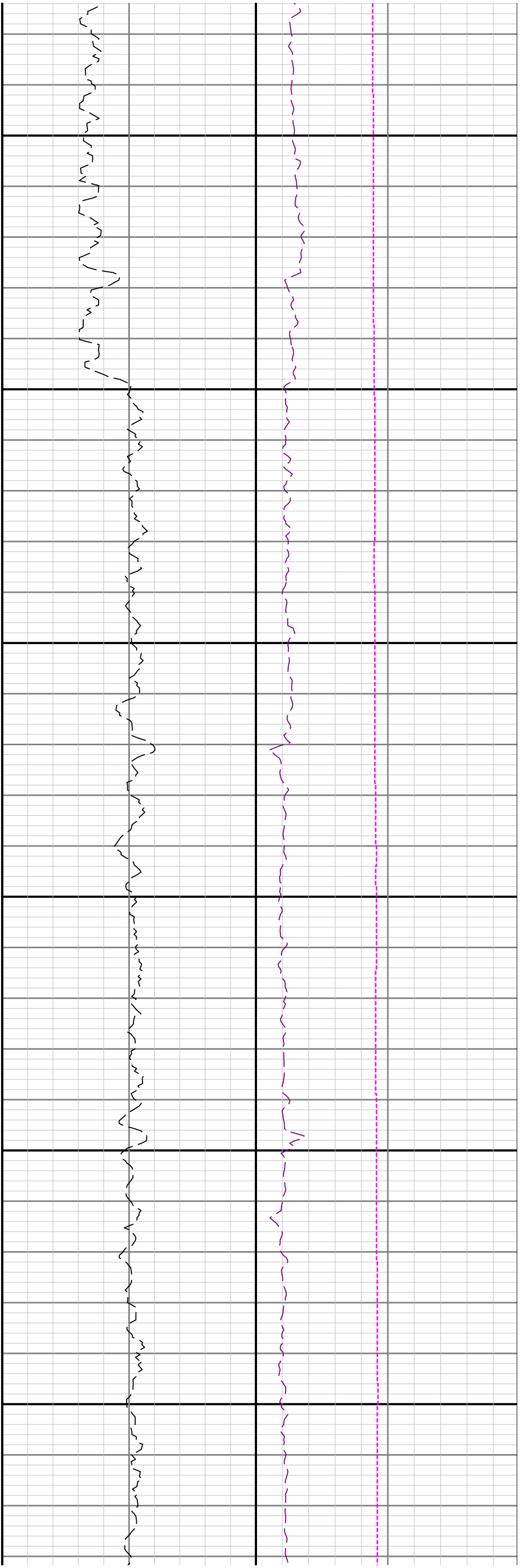


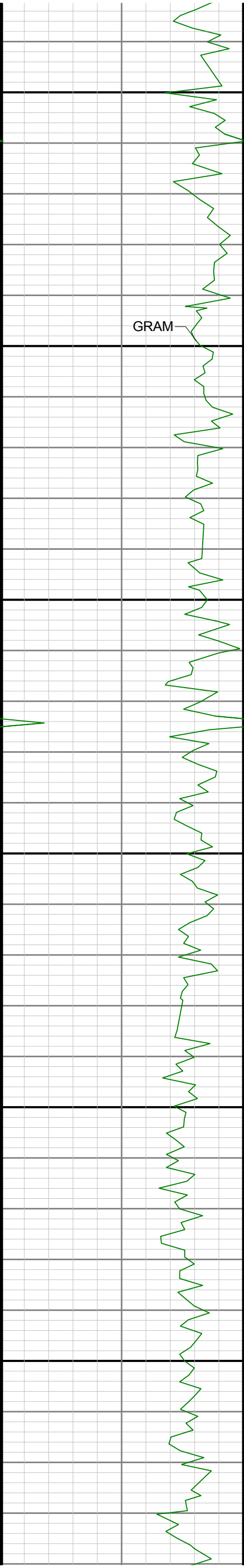










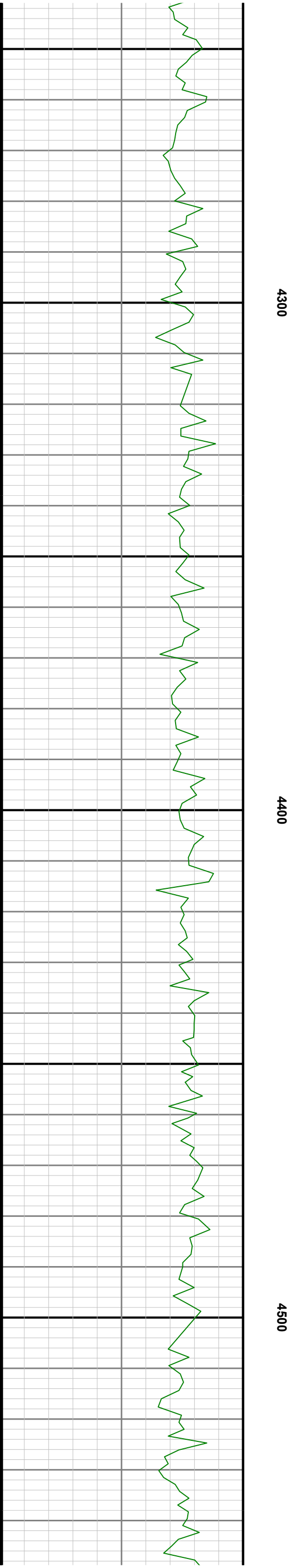
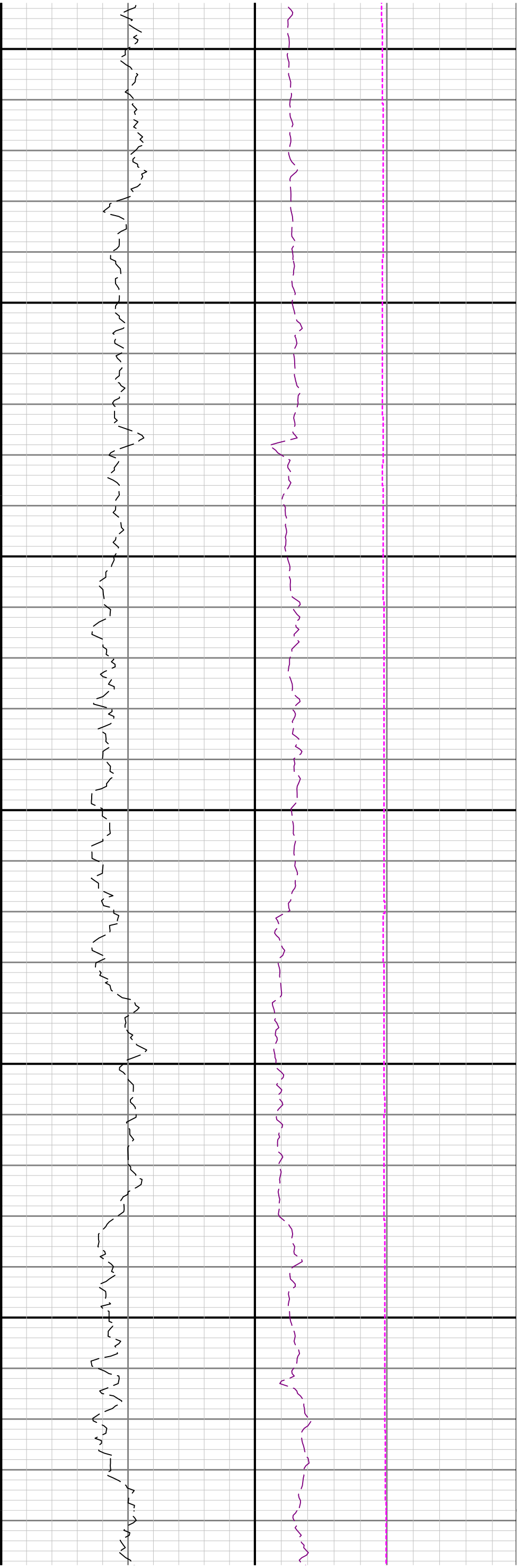


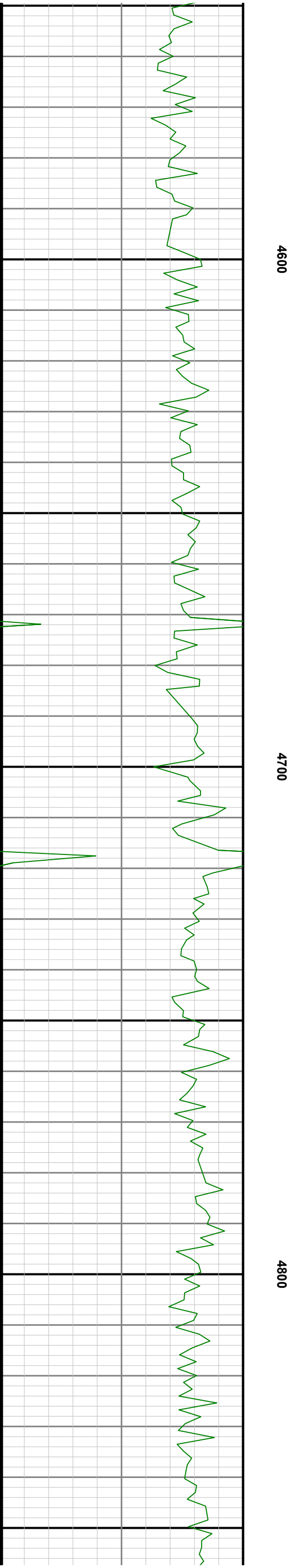
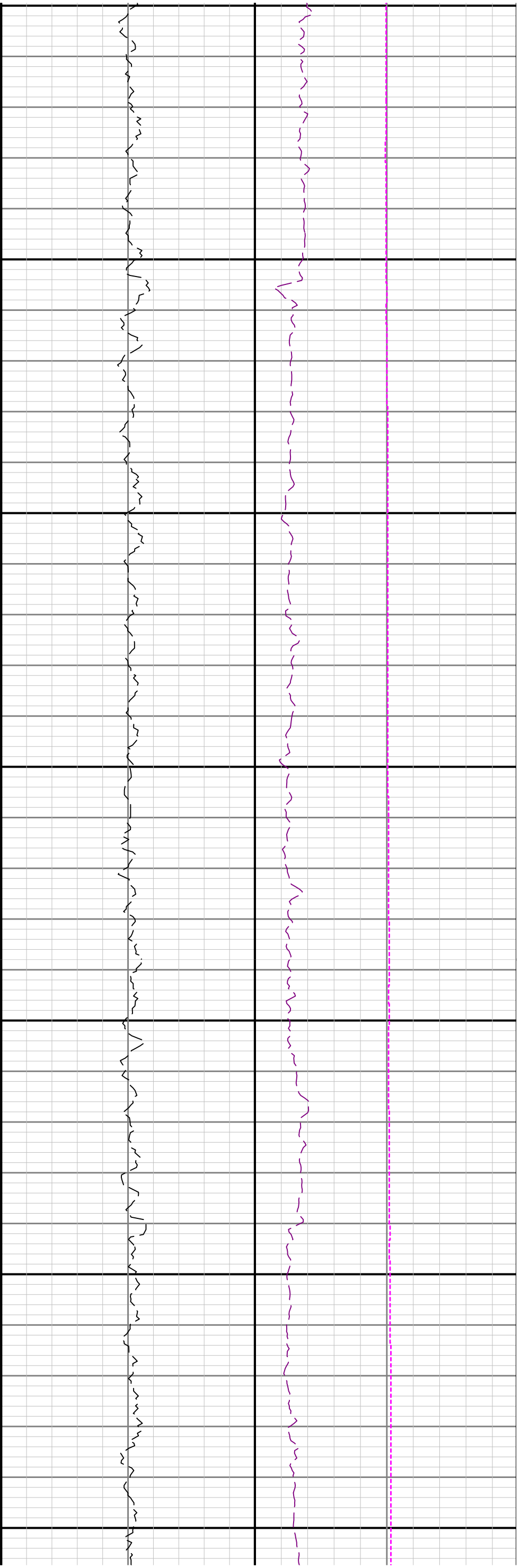
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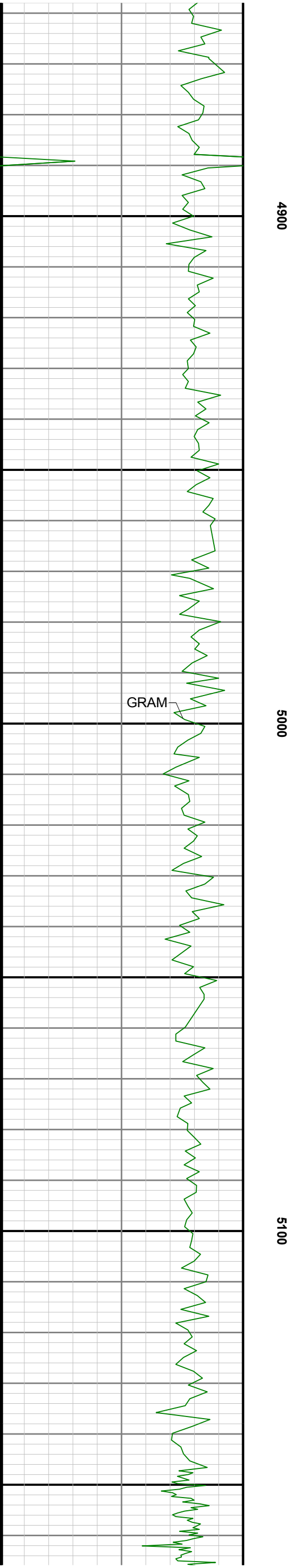
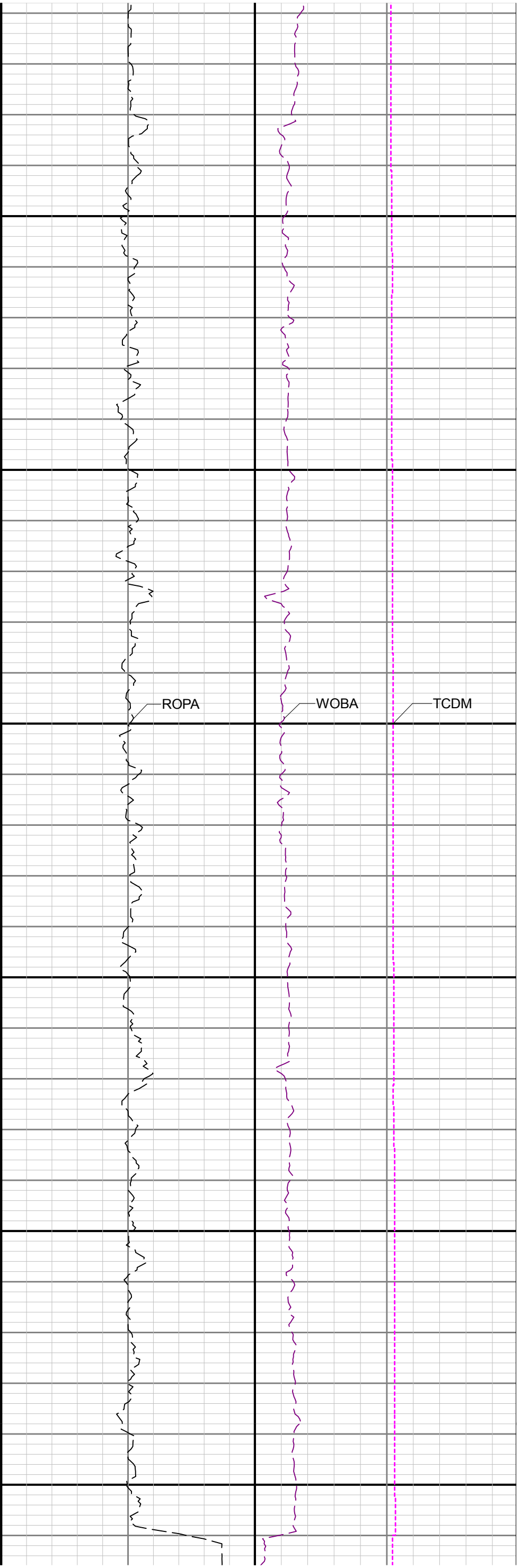
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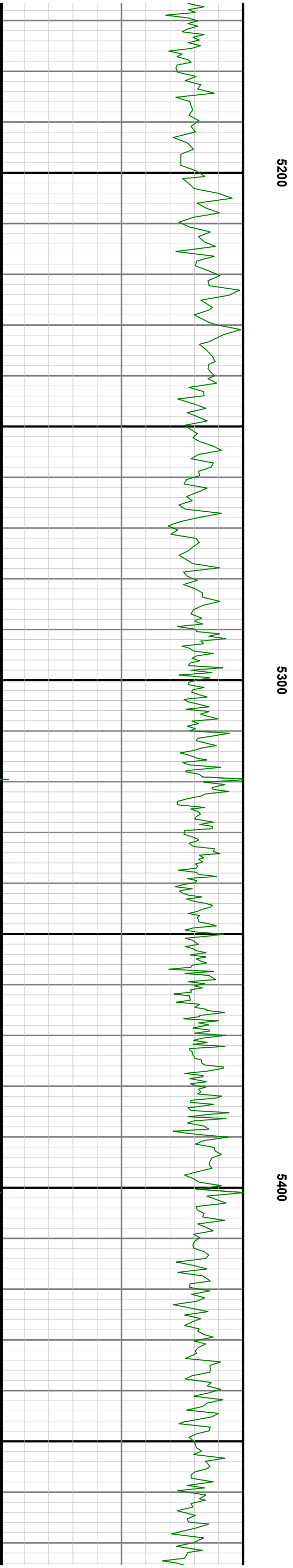
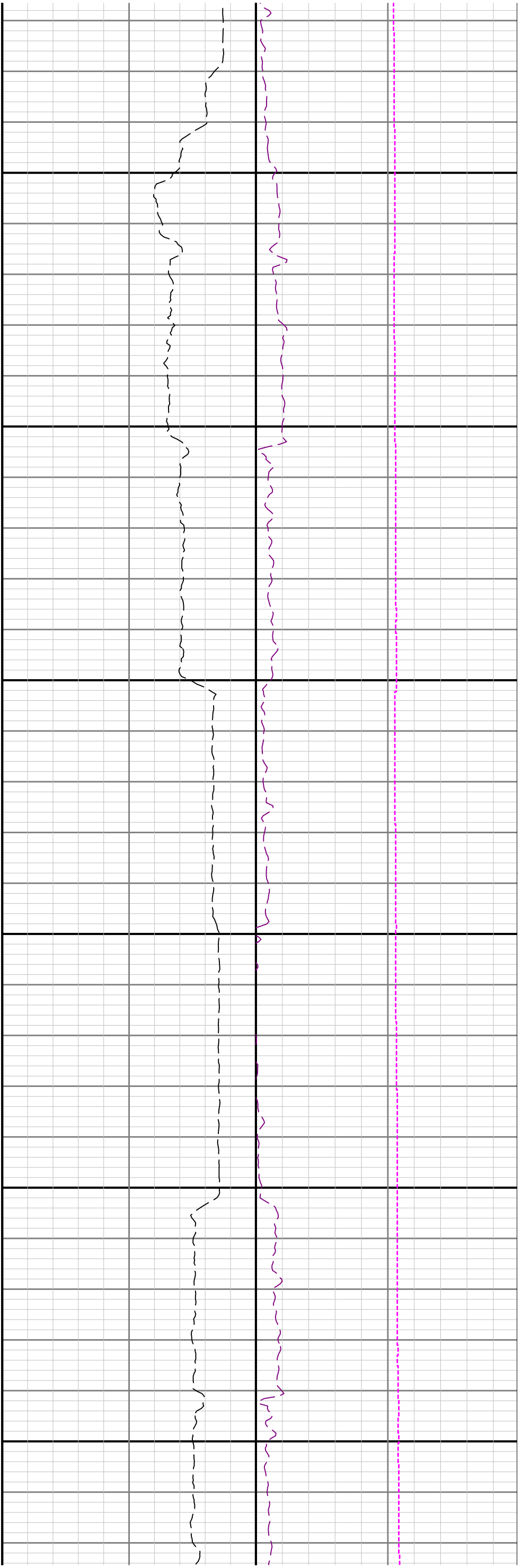
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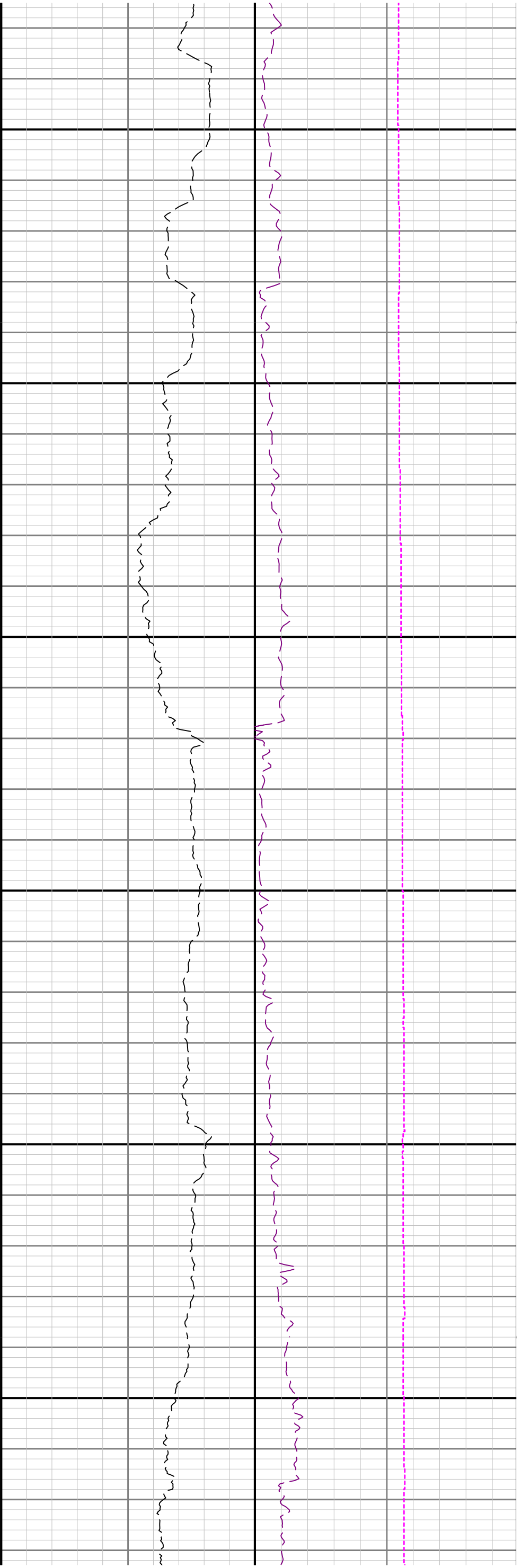








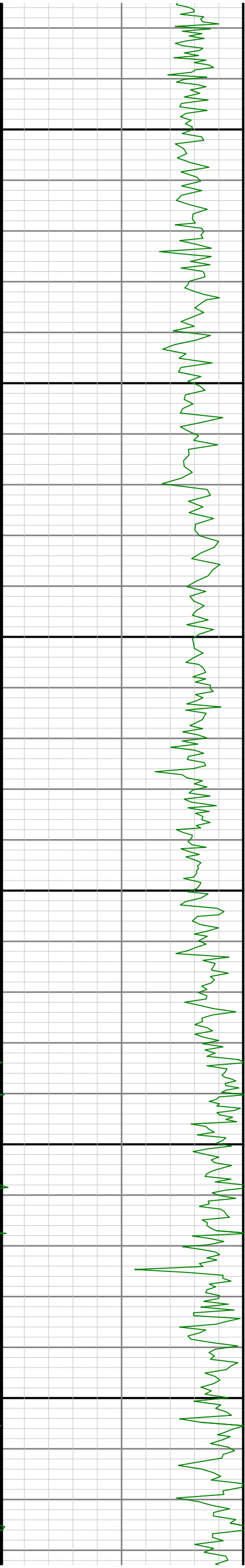




5500

5600

5700



	1633.00	1.11	333.02	N/A	-10.37	-13.33	1633.73	12.17	93.00	0.12	-0.11	2.33
	1783.00	0.64	292.69	N/A	-12.67	-16.33	1782.72	11.37	94.00	0.53	-0.50	-11.63
	1878.00	0.22	252.14	N/A	-12.52	-16.99	1877.71	11.17	95.00	0.52	-0.44	-42.68
	1906.00	0.14	236.13	N/A	-12.55	-17.07	1905.71	11.20	28.00	0.33	-0.29	-57.18
	1980.00	0.13	106.88	N/A	-12.63	-17.07	1979.71	11.27	74.00	0.33	-0.01	-174.66
	2075.00	2.59	47.77	N/A	-11.22	-15.38	2074.68	10.00	95.00	2.66	2.59	-62.22
	2169.00	4.26	43.08	N/A	-7.24	-11.42	2168.51	6.34	94.00	1.80	1.78	-4.99
	2263.00	6.09	51.02	N/A	-1.55	-5.16	2262.12	1.15	94.00	2.09	1.95	8.45
	2358.00	6.93	43.36	N/A	5.78	2.70	2356.51	-5.56	95.00	1.27	0.88	-8.06
	2453.00	9.10	38.43	N/A	15.84	11.30	2450.58	-14.92	95.00	2.39	2.28	-5.19
	2547.00	10.81	22.37	N/A	29.82	19.28	2543.18	-28.24	94.00	3.45	1.82	-17.09
	2642.00	13.62	8.98	N/A	49.11	24.42	2636.04	-47.08	95.00	4.18	2.96	-14.09
	2736.00	12.93	357.21	N/A	70.55	25.63	2727.54	-68.36	94.00	2.96	-0.73	-12.52
	2831.00	11.16	347.38	N/A	90.14	23.11	2820.46	-88.09	95.00	2.85	-1.86	-10.35
	2925.00	11.29	2.76	N/A	108.21	21.56	2912.68	-106.23	94.00	3.18	0.14	16.36
	3020.00	11.31	13.53	N/A	126.56	24.19	3005.85	-124.32	95.00	2.22	0.02	11.34
	3114.00	11.35	10.37	N/A	144.62	28.01	3098.02	-142.03	94.00	0.66	0.04	-3.36
	3209.00	11.21	7.54	N/A	162.97	30.91	3191.18	-160.10	95.00	0.60	-0.15	-2.98
	3303.00	11.40	10.94	N/A	181.15	33.87	3283.36	-177.99	94.00	0.74	0.20	3.62
	3398.00	11.37	15.19	N/A	199.41	38.10	3376.49	-195.87	95.00	0.88	-0.03	4.47
	3493.00	11.34	21.06	N/A	217.16	43.91	3469.64	-213.12	95.00	1.22	-0.03	6.18
	3587.00	11.24	24.98	N/A	234.09	51.10	3561.82	-229.44	94.00	0.82	-0.11	4.17
	3682.00	11.56	14.19	N/A	251.71	57.35	3654.96	-246.53	95.00	2.27	0.34	-11.36
	3776.00	11.37	2.54	N/A	270.10	60.07	3747.09	-264.66	94.00	2.47	-0.20	-12.39
	3871.00	11.26	8.27	N/A	288.64	61.82	3840.25	-283.00	95.00	1.19	-0.12	6.03
	3965.00	11.35	24.17	N/A	306.16	66.92	3932.45	-300.08	94.00	3.31	0.10	16.91
	4060.00	11.26	36.92	N/A	322.11	76.33	4025.62	-315.25	95.00	2.63	-0.09	13.42
	4155.00	11.47	29.18	N/A	337.77	86.50	4118.76	-330.08	95.00	1.62	0.22	-8.15
	4249.00	11.28	18.27	N/A	354.66	93.94	4210.93	-346.35	94.00	2.29	-0.20	-11.61
	4343.00	11.34	20.64	N/A	372.04	100.08	4303.10	-363.20	94.00	0.50	0.06	2.52
	4438.00	11.25	25.86	N/A	389.12	107.42	4396.26	-379.66	95.00	1.08	-0.09	5.49
	4533.00	11.18	30.42	N/A	405.40	116.12	4489.45	-395.22	95.00	0.94	-0.07	4.80
	4627.00	11.52	30.53	N/A	421.35	125.50	4581.61	-410.39	94.00	0.36	0.36	0.12
	4722.00	11.70	30.91	N/A	437.78	135.27	4674.67	-426.03	95.00	0.21	0.19	0.40
	4816.00	11.73	29.74	N/A	454.26	144.91	4766.71	-441.71	94.00	0.25	0.03	-1.24
	4911.00	11.72	19.57	N/A	471.73	152.93	4859.74	-458.51	95.00	2.17	-0.01	-10.71
	5005.00	11.38	4.71	N/A	489.98	156.89	4951.86	-476.39	94.00	3.18	-0.36	-15.81
	5100.00	11.54	17.99	N/A	508.36	160.60	5044.98	-494.43	95.00	2.78	0.17	13.98
	5194.00	11.64	27.86	N/A	525.69	167.93	5137.07	-511.14	94.00	2.11	0.11	10.50
	5289.00	4.52	27.23	N/A	537.50	174.13	5231.07	-522.45	95.00	7.50	-7.49	-0.66
	5383.00	6.58	107.38	N/A	539.19	180.97	5324.74	-523.60	94.00	7.78	2.19	85.27
	5477.00	9.72	181.09	N/A	529.62	185.98	5417.99	-513.68	94.00	10.72	3.34	78.41
	5572.00	18.58	177.37	N/A	506.44	186.52	5510.02	-490.52	95.00	9.37	9.33	-3.92
	5666.00	26.16	183.86	N/A	470.75	185.81	5596.90	-454.99	94.00	8.47	8.06	6.90
	5761.00	34.79	183.66	N/A	422.72	182.67	5678.70	-407.34	95.00	9.08	9.08	-0.21
	5855.00	44.76	177.28	N/A	362.72	182.52	5750.88	-347.54	94.00	11.45	10.61	-6.79
	5950.00	52.69	179.76	N/A	291.41	184.27	5813.50	-276.31	95.00	8.57	8.35	2.61
	6045.00	61.74	179.49	N/A	211.63	184.80	5864.89	-196.72	95.00	9.53	9.53	-0.28
	6139.00	69.92	177.40	N/A	125.98	187.18	5903.35	-111.15	94.00	8.93	8.70	-2.22
	6234.00	77.84	175.83	N/A	34.95	192.59	5929.71	-19.97	95.00	8.49	8.34	-1.65
	6328.00	85.07	176.68	N/A	-57.74	198.65	5943.67	72.91	94.00	7.74	7.69	0.90
	6423.00	90.52	176.68	N/A	-152.48	204.14	5947.32	167.79	95.00	5.74	5.74	0.00
	6518.00	90.40	175.49	N/A	-247.25	210.63	5946.56	262.78	95.00	1.26	-0.13	-1.25
	6612.00	90.77	175.64	N/A	-340.96	217.90	5945.60	356.78	94.00	0.42	0.39	0.16
	6707.00	90.68	177.39	N/A	-435.78	223.67	5944.40	451.75	95.00	1.84	-0.09	1.84
	6802.00	90.71	177.64	N/A	-530.68	227.79	5943.24	546.69	95.00	0.27	0.03	0.26
	6896.00	90.52	174.98	N/A	-624.47	233.84	5942.23	640.67	94.00	2.84	-0.20	-2.83
	6991.00	90.89	176.08	N/A	-719.17	241.24	5941.07	735.66	95.00	1.22	0.39	1.16
	7085.00	90.62	177.74	N/A	-813.03	246.31	5939.83	829.62	94.00	1.79	-0.29	1.77
	7180.00	90.71	178.40	N/A	-907.97	249.51	5938.72	924.53	95.00	0.70	0.09	0.69
	7275.00	90.71	180.56	N/A	-1002.95	250.37	5937.55	1019.29	95.00	2.27	0.00	2.27
	7369.00	90.71	182.46	N/A	-1096.90	247.89	5936.38	1112.78	94.00	2.02	0.00	2.02
	7464.00	90.49	180.88	N/A	-1191.86	245.13	5935.39	1207.23	95.00	1.68	-0.23	-1.66
	7558.00	90.43	178.34	N/A	-1285.84	245.77	5934.63	1300.99	94.00	2.70	-0.06	-2.70
	7653.00	90.49	177.64	N/A	-1380.78	249.10	5933.87	1395.90	95.00	0.74	0.06	-0.74
	7747.00	90.43	177.72	N/A	-1474.70	252.90	5933.12	1489.83	94.00	0.11	-0.06	0.09
	7842.00	90.62	177.48	N/A	-1569.61	256.88	5932.24	1584.77	95.00	0.32	0.20	-0.25
	7937.00	90.37	177.95	N/A	-1664.53	260.67	5931.42	1679.70	95.00	0.56	-0.26	0.49
	8031.00	90.58	179.18	N/A	-1758.50	263.02	5930.64	1773.56	94.00	1.33	0.22	1.31
	8126.00	90.58	181.51	N/A	-1853.49	262.45	5929.68	1868.22	95.00	2.45	0.00	2.45
	8220.00	90.52	181.72	N/A	-1947.44	259.80	5928.78	1961.69	94.00	0.23	-0.06	0.22
	8315.00	90.58	180.22	N/A	-2042.42	258.19	5927.87	2056.27	95.00	1.58	0.06	-1.58
	8409.00	90.49	181.26	N/A	-2136.41	256.98	5926.99	2149.88	94.00	1.11	-0.10	1.11
	8503.00	90.43	180.31	N/A	-2230.40	255.69	5926.24	2243.48	94.00	1.01	-0.06	-1.01
	8598.00	90.34	177.81	N/A	-2325.38	257.25	5925.60	2338.30	95.00	2.63	-0.09	-2.63
	8693.00	90.46	174.56	N/A	-2420.15	263.57	5924.93	2433.28	95.00	3.42	0.13	-3.42
	8787.00	90.40	175.74	N/A	-2513.81	271.52	5924.23	2527.27	94.00	1.26	-0.06	1.26
	8881.00	90.37	174.35	N/A	-2607.45	279.64	5923.60	2621.26	94.00	1.48	-0.03	-1.48
	8976.00	90.49	174.91	N/A	-2702.03	288.53	5922.88	2716.25	95.00	0.60	0.13	0.59
	9070.00	90.59	176.22	N/A	-2795.75	295.79	5922.00	2810.24	94.00	1.40	0.11	1.39
	9165.00	90.46	178.21	N/A	-2890.62	300.41	5921.13	2905.19	95.00	2.10	-0.14	2.09
	9259.00	90.59	179.11	N/A	-2984.59	302.61	5920.27	2999.05	94.00	0.97	0.14	0.96
	9354.00	90.40	179.75	N/A	-3079.59	303.55	5919.45	3093.83	95.00	0.70	-0.20	0.67
	9449.00	90.49	179.76	N/A	-3174.58	303.96	5918.71	3188.58	95.00	0.10	0.09	0.01
	9543.00	90.40	179.83	N/A	-3268.58	304.30	5917.98	3282.32	94.00	0.12	-0.10	0.07
	9638.00	90.31	180.70	N/A	-3363.57	303.86	5917.39	3377.00	95.00	0.92	-0.09	0.92
	9732.00	90.49	177.81	N/A	-3457.55	305.08	5916.73	3470.79	94.00	3.08	0.19	-3.07
	9827.00	90.65	173.05	N/A	-3552.22	312.64	5915.79	3565.76	95.00	5.01	0.17	-5.01
	9921.00	90.43	172.57	N/A	-3645.48	324.41	5914.90	3659.64	94.00	0.56	-0.23	-0.51
	10016.00	90.49	174.08	N/A	-3739.83	335.45	5914.14	3754.56	95.00	1.59	0.06	1.59
	10111.00	90.49	174.84	N/A	-3834.38	344.62	5913.33	3849.54	95.00	0.80	0.00	0.80
	10205.00	90.40	177.58	N/A	-3928.16	350.83	5912.60	3943.52	94.00	2.92	-0.10	2.91
	10299.00	90.28	181.22	N/A	-4022.14	351.82	5912.04	4037.30	94.00	3.87	-0.13	3.87
	10373.00	90.43	184.39	N/A	-4096.04	348.20	5911.58	4110.70	74.00	4.29	0.20	4.28
Projection	10397.00	90.43	184.39	N/A	-4119.97	346.36	5911.40	4134.41	24.00	0.00	0.00	0.00