

	ATC_MWD	12200463	Gamma (single)	2.20	12.17	7.000	3.250
1	ATC_MWD	12200463	Directional (mag)	12.27	22.24	7.000	3.250

Service and Tool Mnemonics

Mnemonic	Name	Description
ATC_SU	ATC_SU	Auto Trak Curve Steering Unit
ATC_MWD	ATC_MWD	Auto Trak Curve MWD
ATC_LCPM	ATC_LCPM	Auto Trak Curve LCPM

Comments


1	On 9/11/2016, the well was drilled to a depth of 1938.00 ft MD (1938.00 ft TVD). The interval from 1938 to 1950 ft MD (1938 to 1950 ft TVD) has no ROPA, WOBA, and TCDM data due to the Gamma Ray sensor to bit offset.
2	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.

Remarks

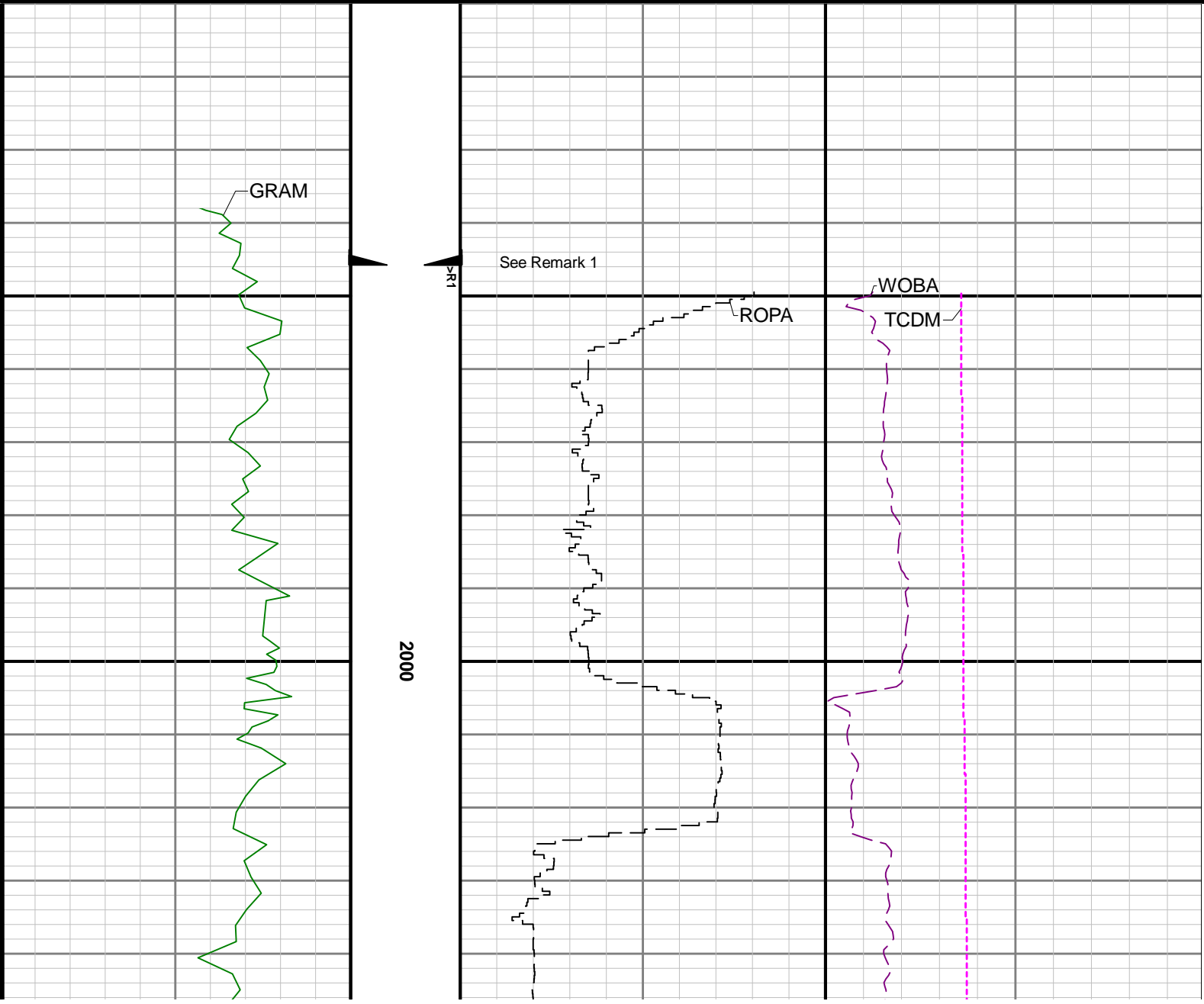
Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	1940.00	8.500	1	The interval from 1938 to 1950 ft MD (1938 to 1950 ft TVD) has no ROPA, WOBA, and TCDM data due to the Gamma Ray sensor to bit offset.

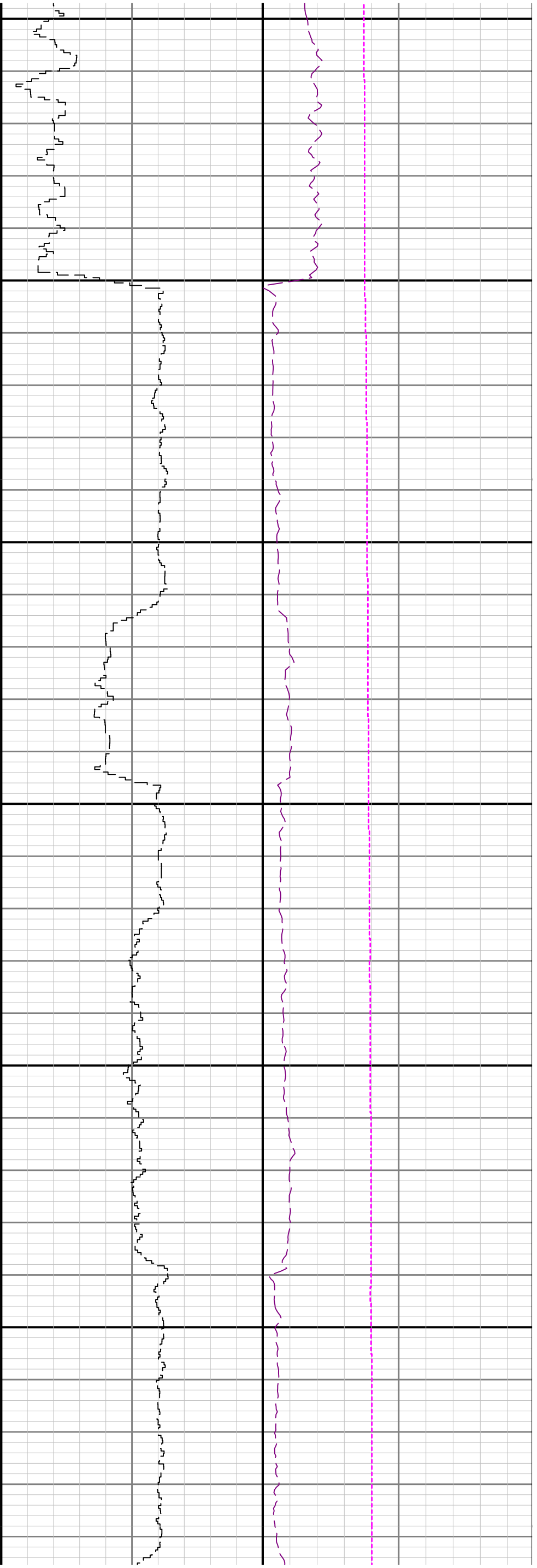
Curve Mnemonics

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	Noble Energy			
	Well	Harper LD21-675			
	Interval	Date From:	2016-09-11 12:15:06	Top:	1938.00
	Created	Date To:	2016-09-12 06:33:37	Bottom:	5768.00
		2016-09-13 19:29			

Gamma Ray - Apparent 0.5 ft Average GRAM 0150	TVD 1:240 feet	Rate of Penetration 3 ft Average ROPA 10000 ft/h	Surface Weight On Bit 1 ft Average WOBA 0100 klb
API			Downhole Temperature TCDM 0300 degF

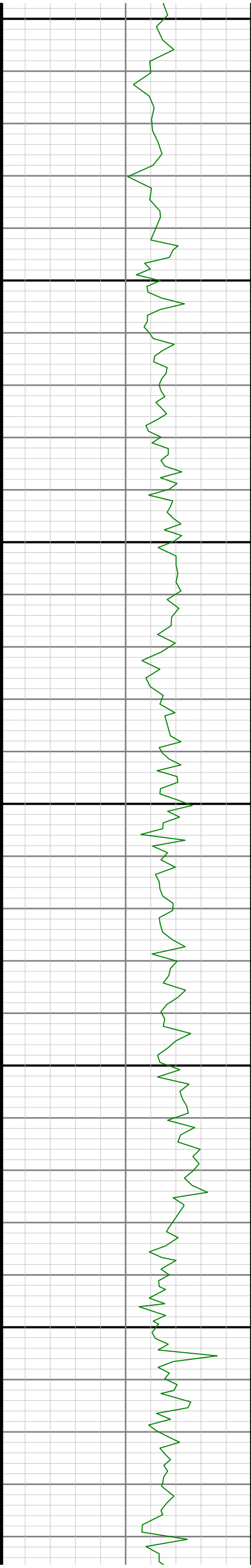


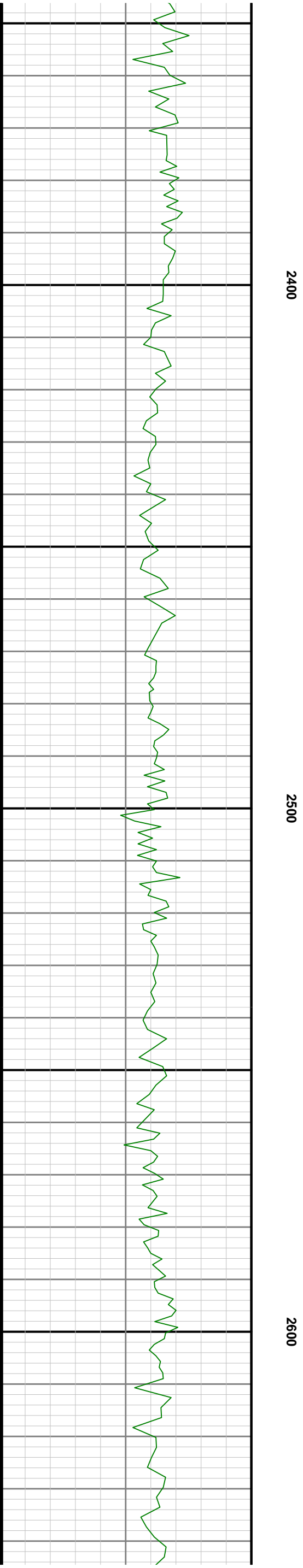
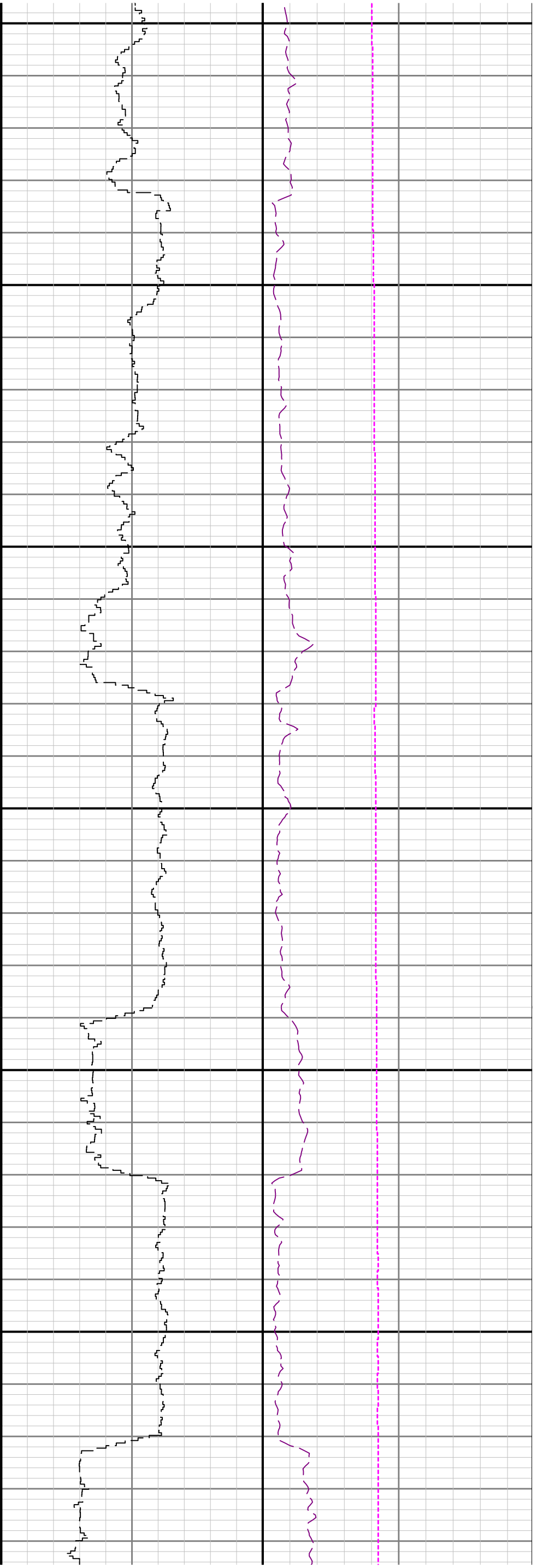


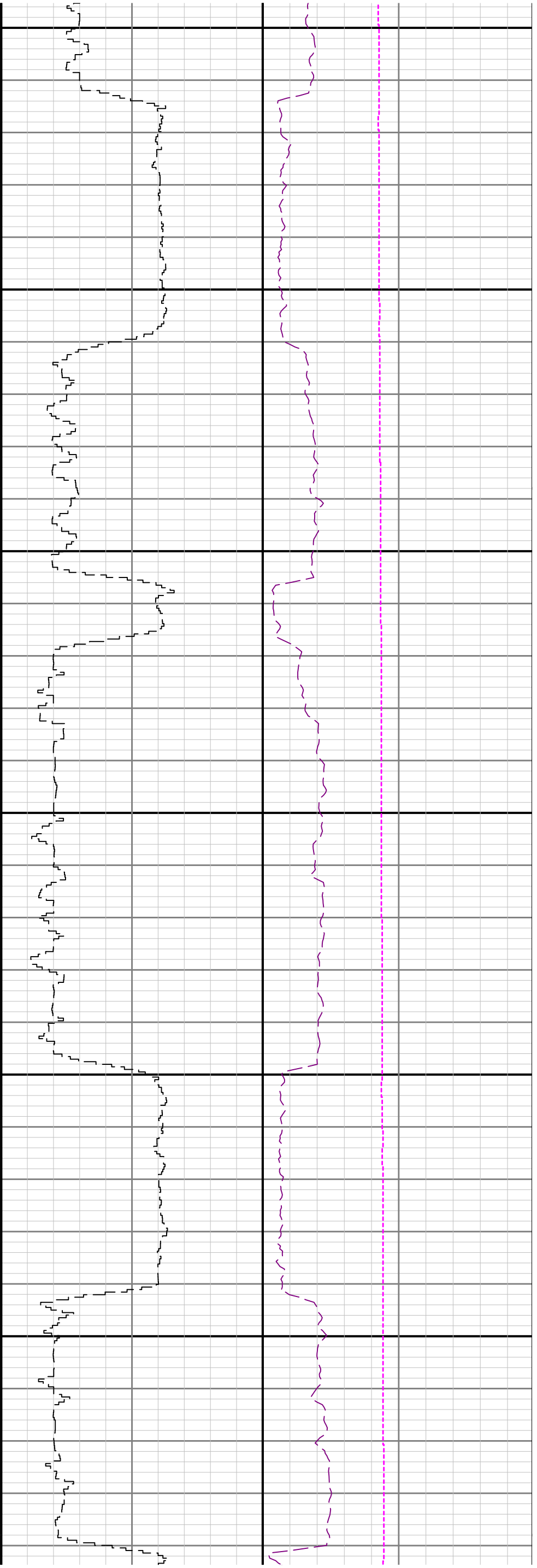
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2200

2300



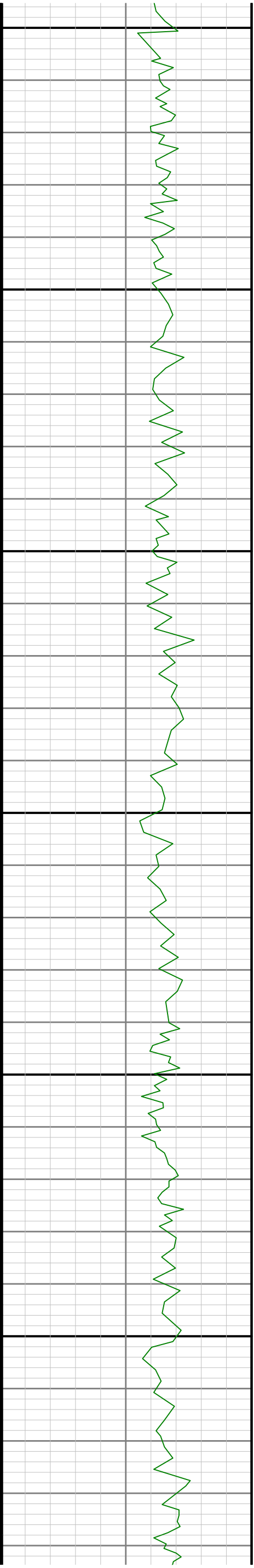


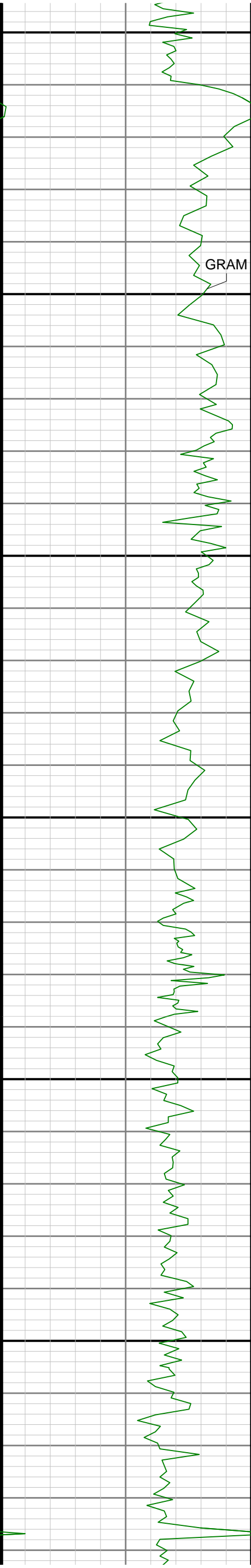


2700

2800

2900

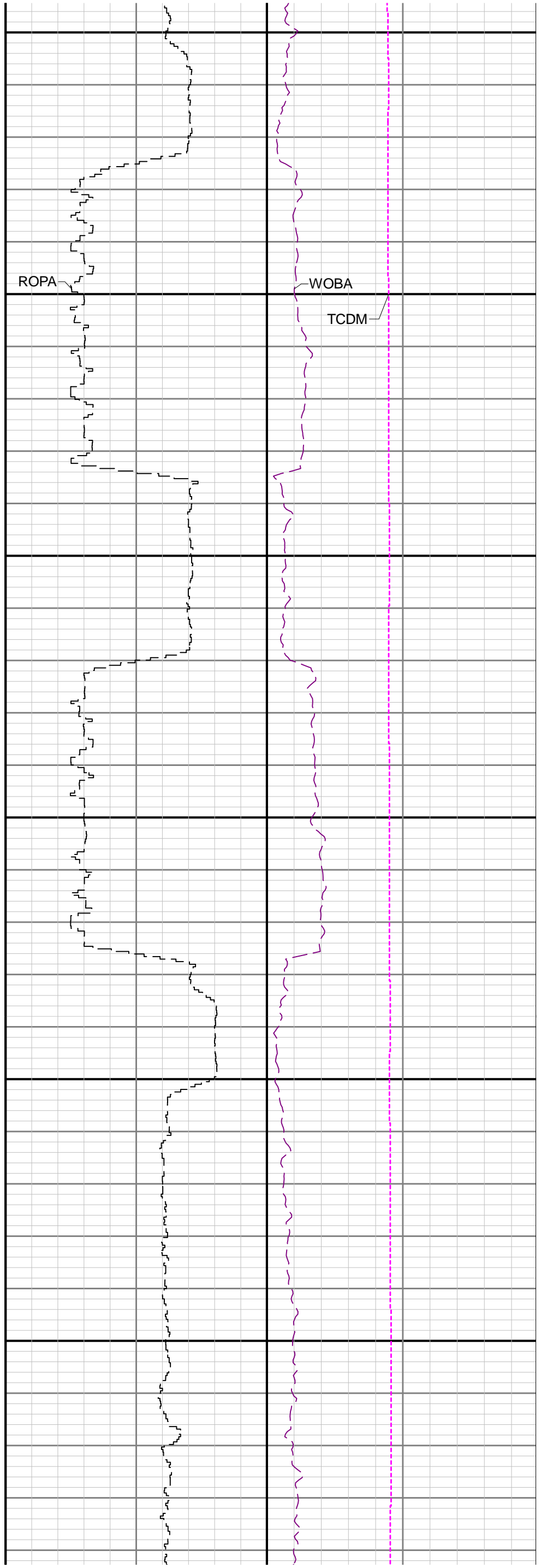


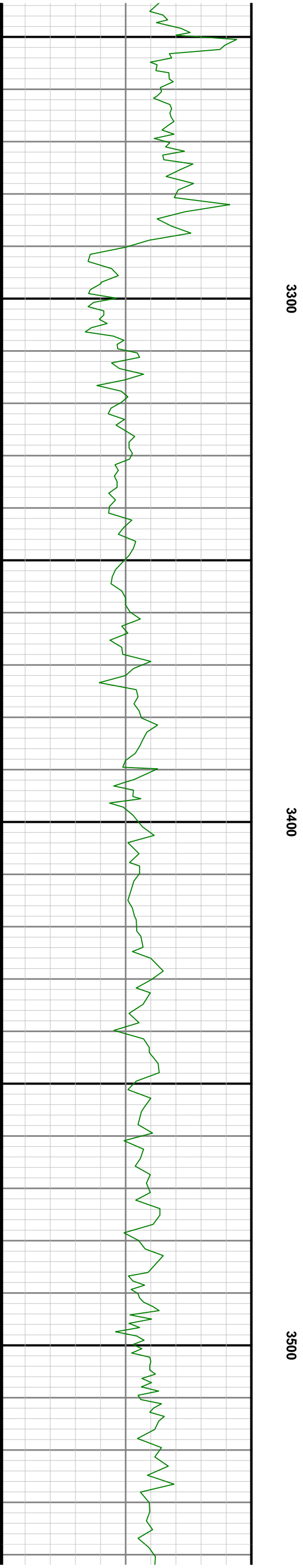
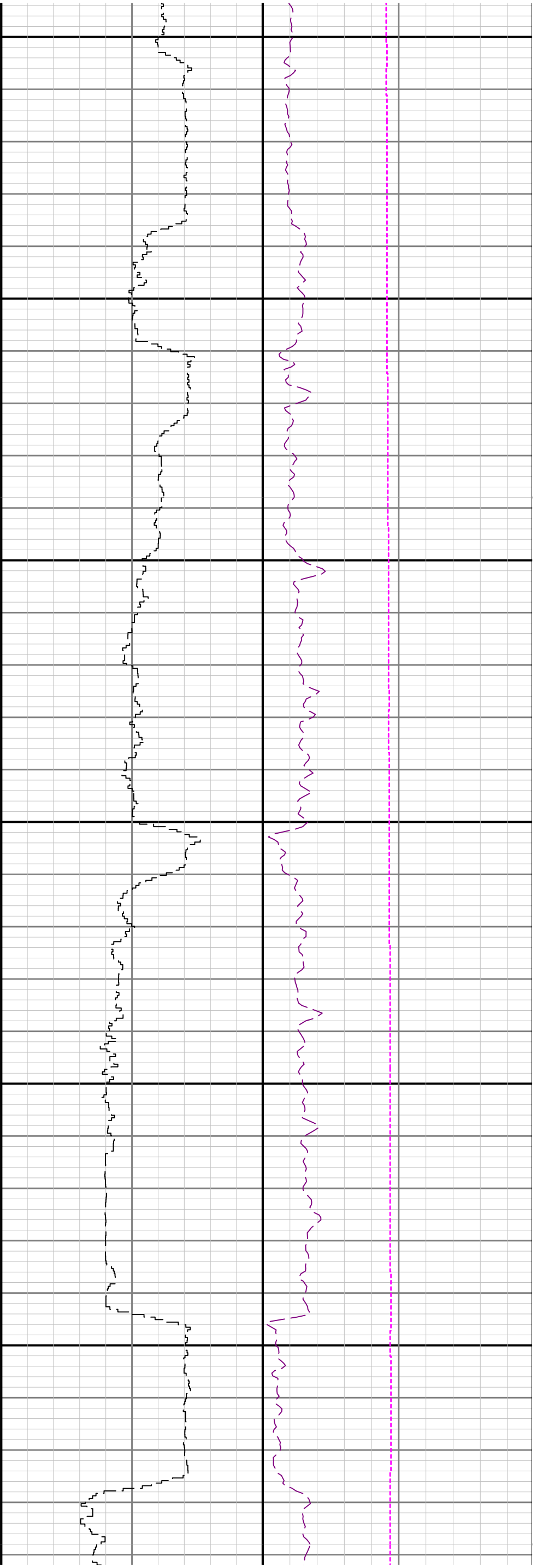


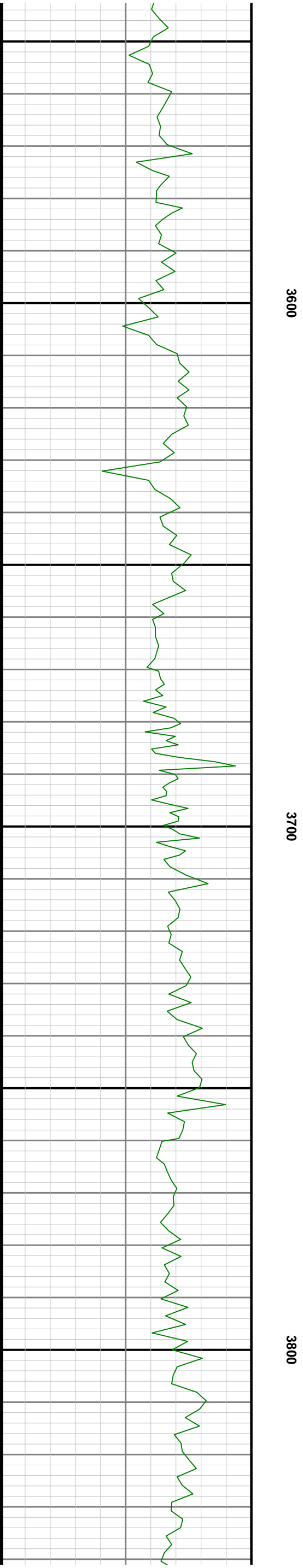
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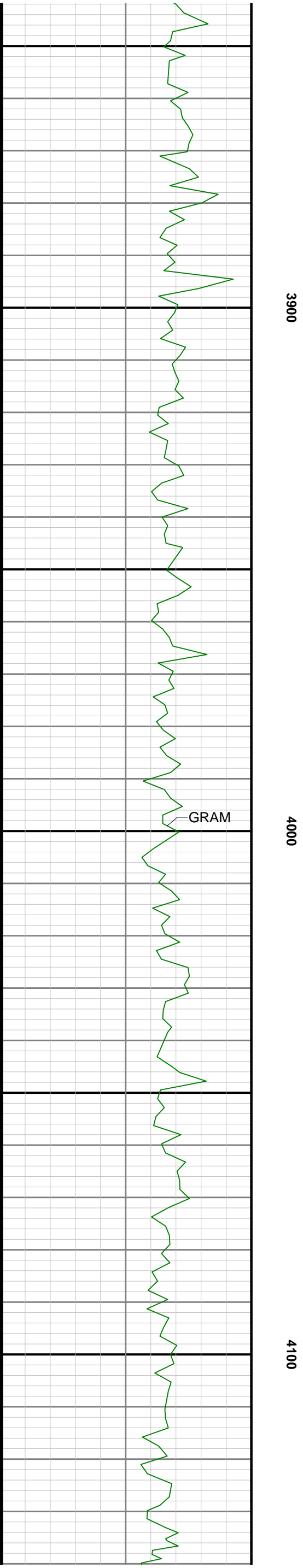
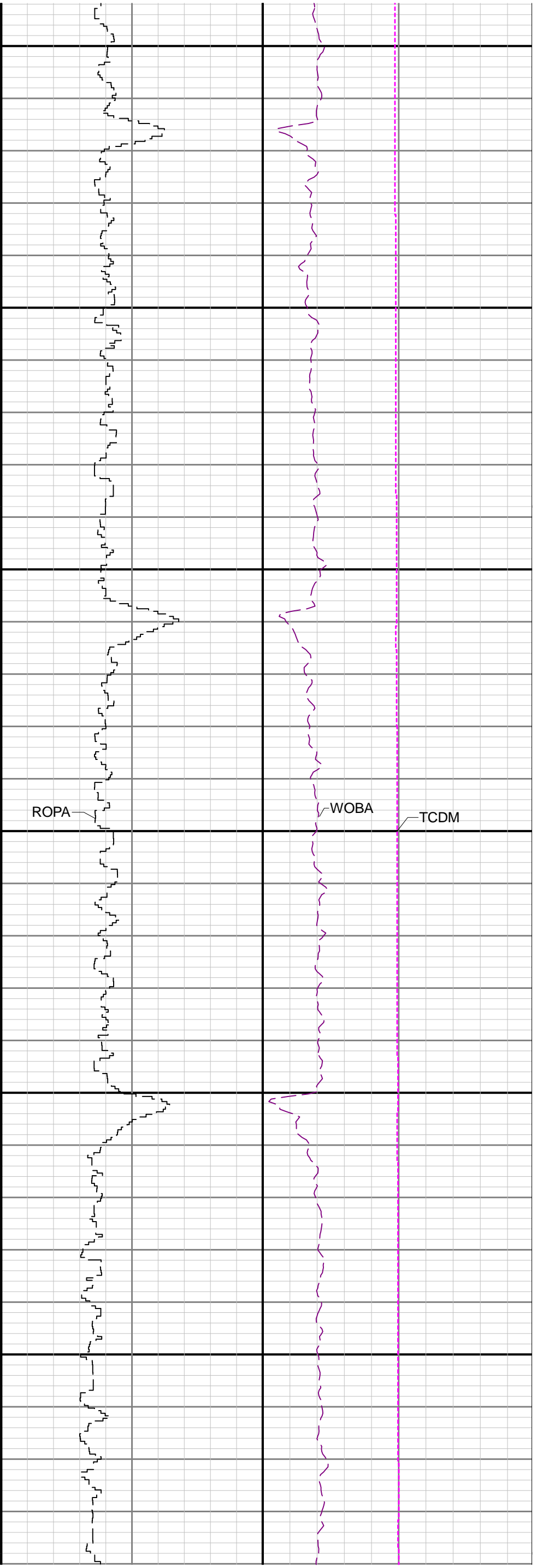
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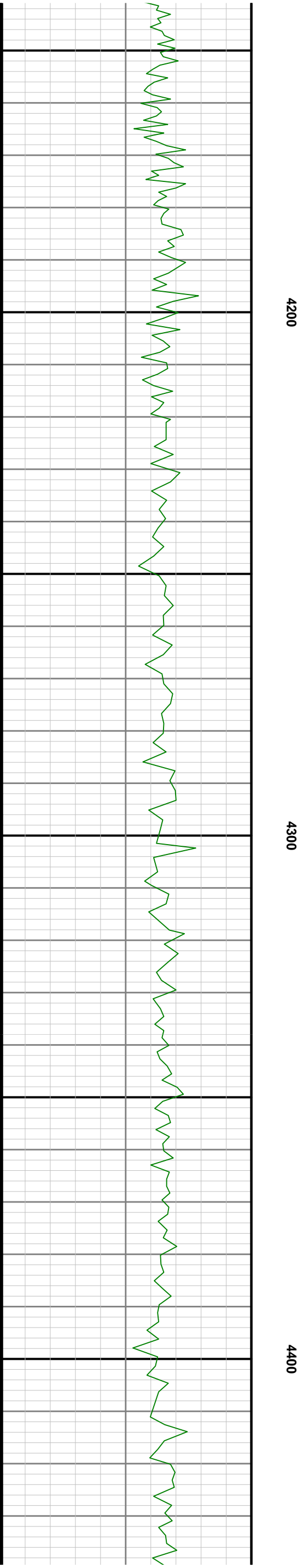
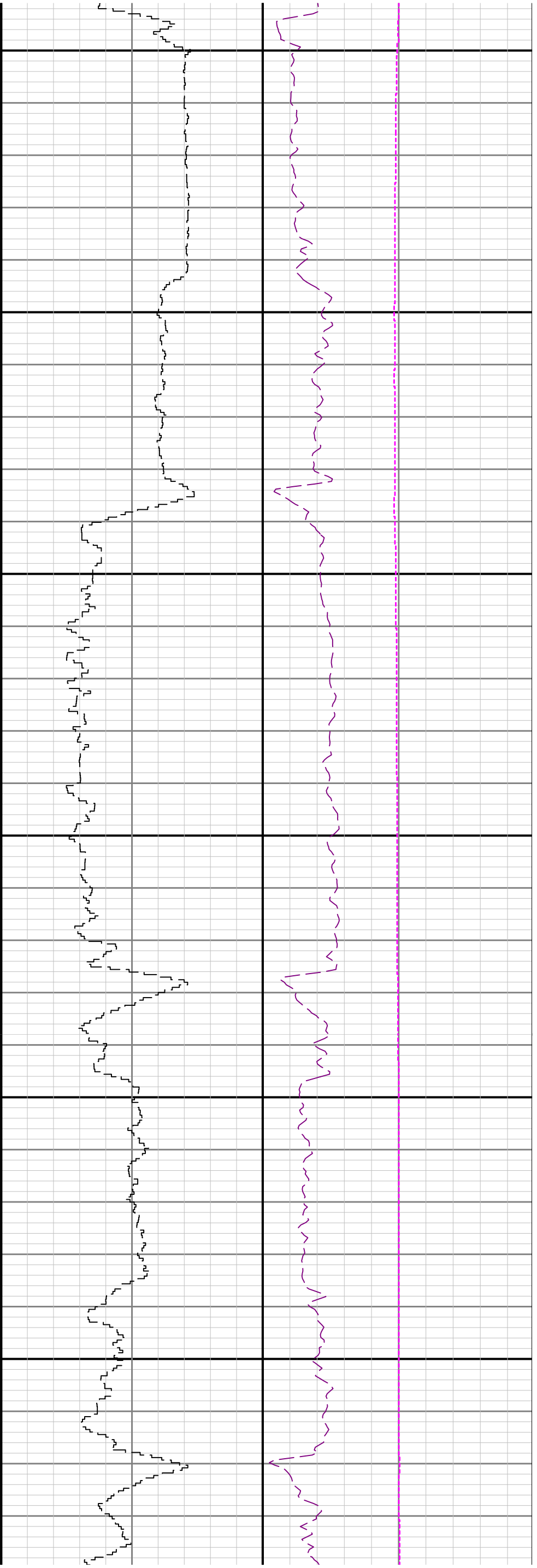
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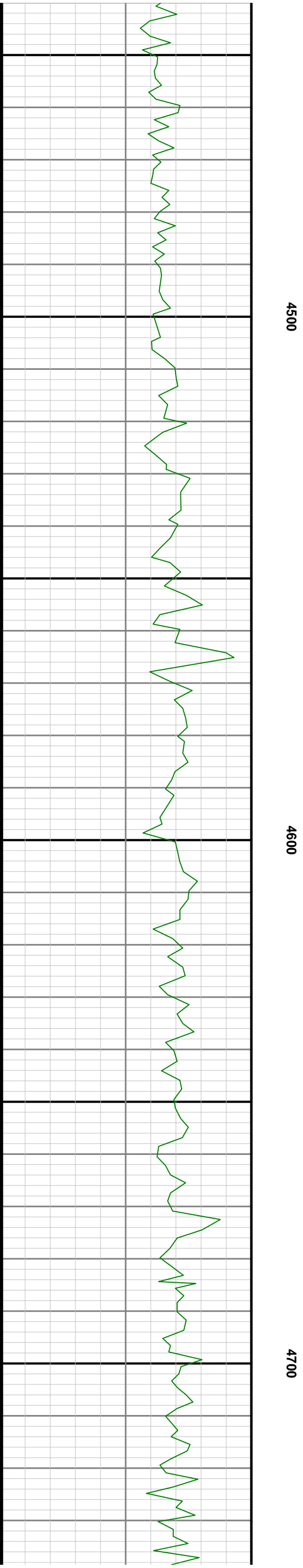


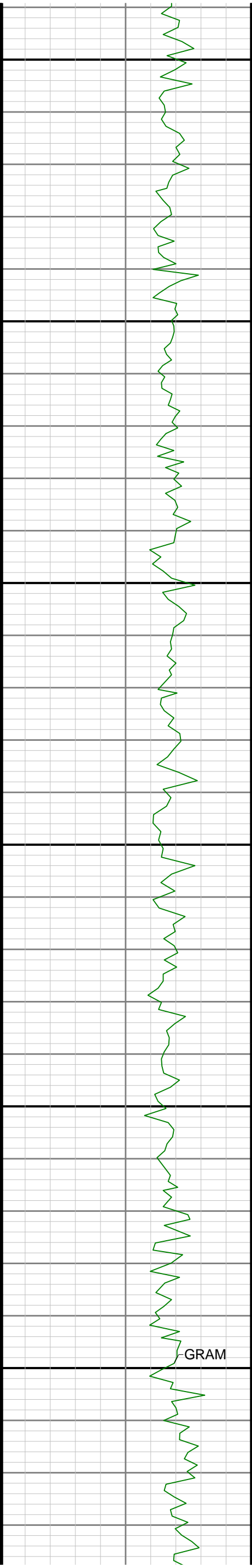










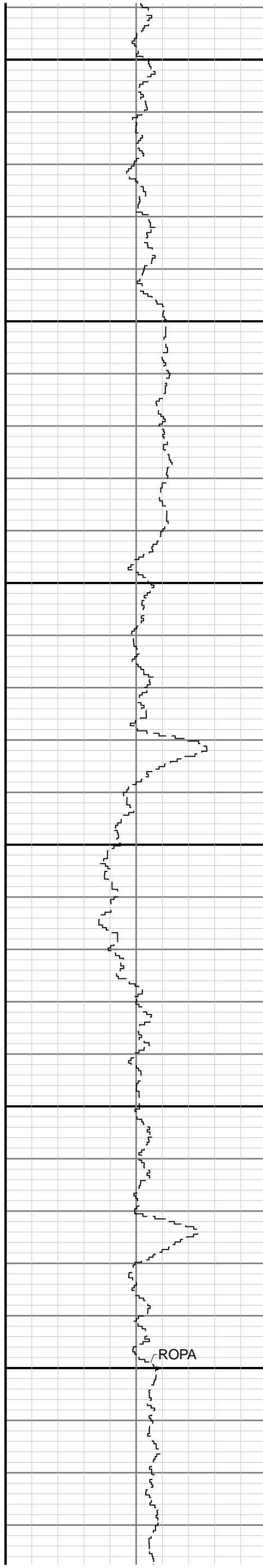


4800

4900

5000

GRAM



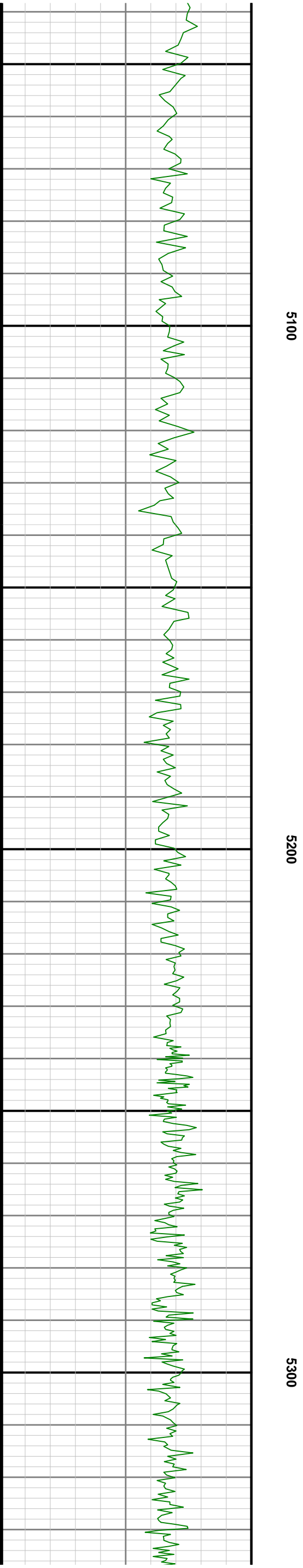
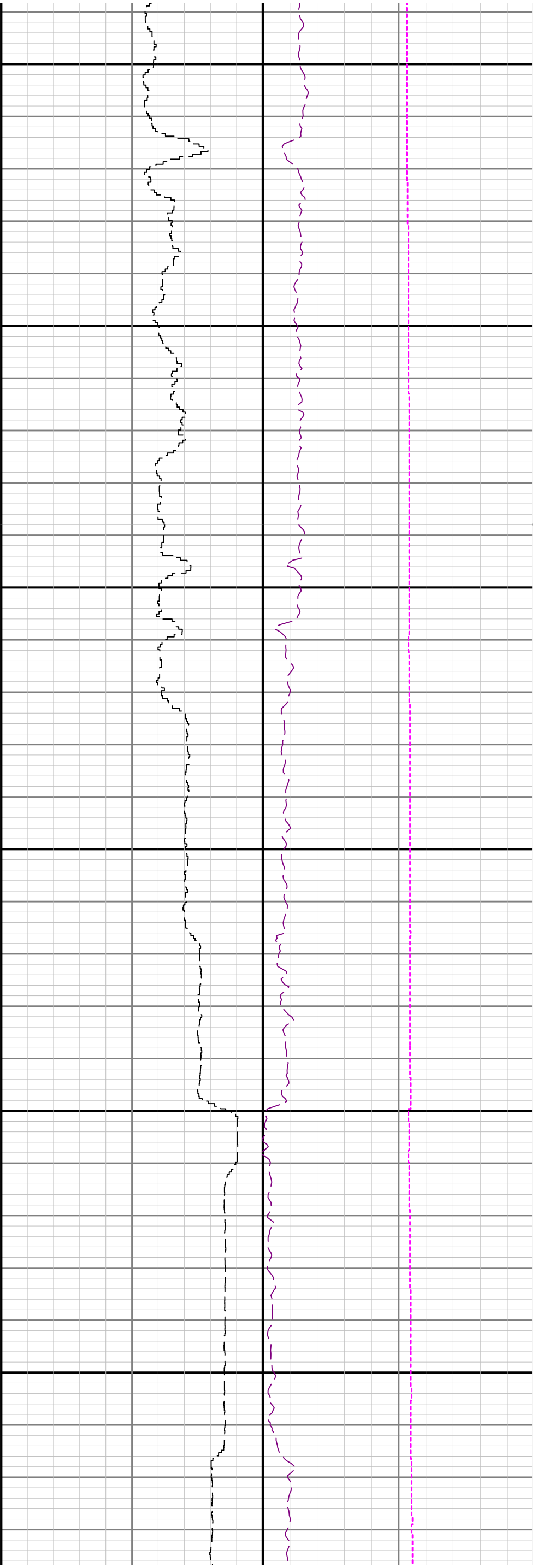
ROPA

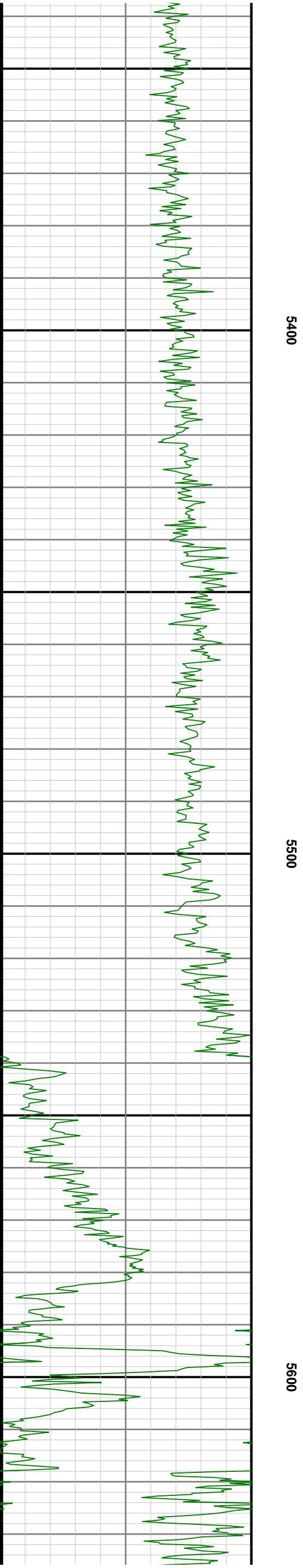
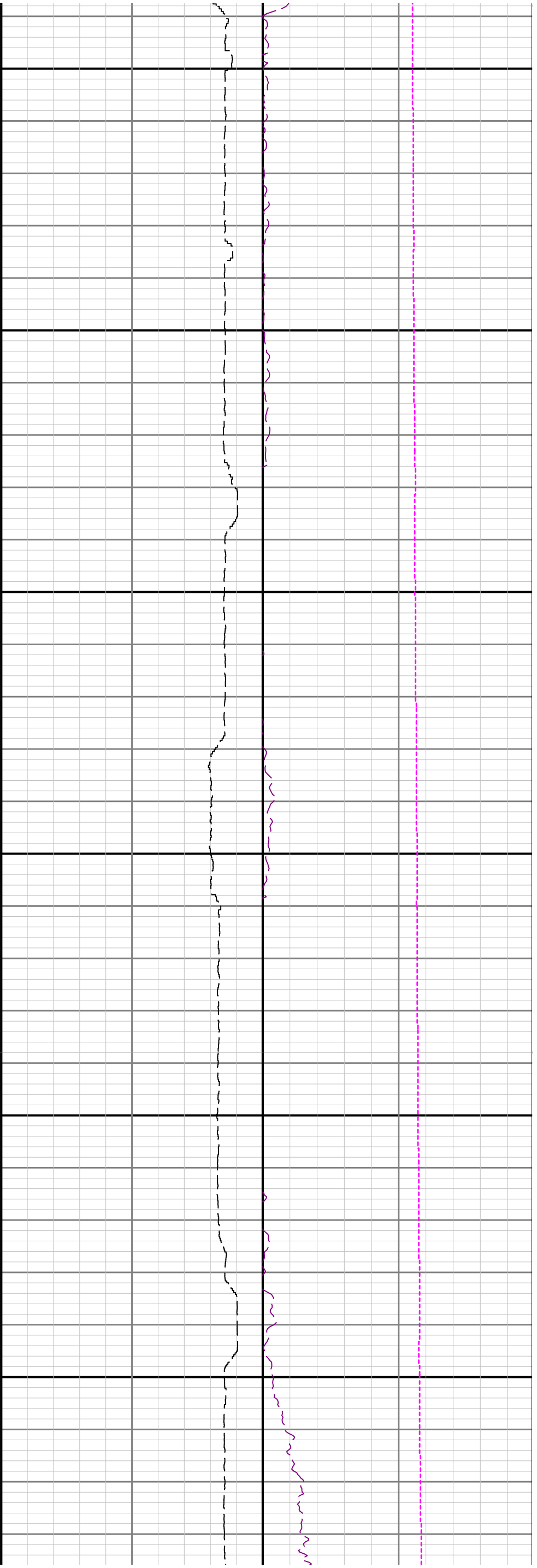


WOBA



TCDM





Directional Survey Summary

Latitude:	6.416667	Longitude:	104.166667
North Reference:	Grid	Drill Depth Zero:	Rig Floor
Vertical Datum is:	Mean Sea Level	Vertical Datum to DDZ: (ft)	4806.00
Vertical Section North: (m)	0.00	Vertical Section East: (m)	0.00
Vertical Section Azimuth: (deg)	276.41		
Grid Convergence: (deg)	-1.05	Magnetic Declination: (deg)	7.55
Total Correction: (deg)	6.50	TVD Calculation Method:	Minimum Curvature
Magnetic Correction:	Off	Local Magnetic Field: (nT)	52632
Local Magnetic Dip Angle: (deg)	67.21	Local Gravity Field: (m/s2)	9.799

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	0.43	295.71	N/A	0.13	-0.26	78.00	0.28	78.00	0.55	0.55	-82.42
	177.00	0.57	311.20	N/A	0.61	-0.97	177.00	1.03	99.00	0.20	0.14	15.65
	271.00	0.30	338.76	N/A	1.15	-1.41	270.99	1.53	94.00	0.36	-0.29	29.32
	366.00	0.38	359.80	N/A	1.70	-1.50	365.99	1.68	95.00	0.15	0.08	22.15
	460.00	0.32	351.34	N/A	2.27	-1.54	459.99	1.79	94.00	0.08	-0.06	-9.00
	555.00	0.27	3.43	N/A	2.75	-1.57	554.99	1.87	95.00	0.08	-0.05	12.73
	650.00	0.19	358.96	N/A	3.13	-1.56	649.99	1.90	95.00	0.09	-0.08	-4.71
	744.00	0.07	29.92	N/A	3.34	-1.53	743.99	1.90	94.00	0.14	-0.13	32.94
	839.00	0.14	144.86	N/A	3.30	-1.44	838.99	1.80	95.00	0.19	0.07	120.99
	934.00	0.36	137.98	N/A	2.98	-1.17	933.99	1.49	95.00	0.23	0.23	-7.24
	1028.00	0.08	168.71	N/A	2.70	-0.96	1027.99	1.25	94.00	0.31	-0.30	32.69
	1123.00	0.39	308.44	N/A	2.83	-1.20	1122.98	1.51	95.00	0.48	0.33	147.08
	1217.00	0.19	312.21	N/A	3.13	-1.57	1216.98	1.91	94.00	0.21	-0.21	4.01
	1311.00	0.52	257.46	N/A	3.15	-2.10	1310.98	2.44	94.00	0.47	0.35	-58.24
	1406.00	0.34	249.45	N/A	2.95	-2.78	1405.98	3.09	95.00	0.20	-0.19	-8.43
	1501.00	0.57	272.73	N/A	2.88	-3.52	1500.98	3.82	95.00	0.31	0.24	24.51
	1595.00	0.41	253.68	N/A	2.81	-4.31	1594.97	4.59	94.00	0.24	-0.17	-20.27
	1689.00	0.20	173.06	N/A	2.55	-4.61	1688.97	4.87	94.00	0.45	-0.22	-85.77
	1784.00	0.35	145.23	N/A	2.15	-4.43	1783.97	4.64	95.00	0.21	0.16	-29.29
	1879.00	0.62	152.40	N/A	1.45	-4.02	1878.97	4.16	95.00	0.29	0.28	7.55
	1917.00	0.66	149.54	N/A	1.08	-3.82	1916.96	3.91	38.00	0.13	0.11	-7.53
	1982.00	0.10	10.42	109.5	0.81	-3.62	1981.96	3.68	65.00	1.14	-0.86	-214.03
	2076.00	0.07	236.68	N/A	0.86	-3.65	2075.96	3.72	94.00	0.17	-0.03	-142.28
	2171.00	2.03	352.70	N/A	2.50	-3.91	2170.94	4.17	95.00	2.17	2.06	122.13
	2265.00	3.80	0.45	N/A	7.27	-4.10	2264.82	4.88	94.00	1.92	1.88	8.24
	2360.00	5.97	0.18	N/A	15.36	-4.06	2359.47	5.75	95.00	2.28	2.28	-0.24

Projection	10825.00	90.40	267.52	N/A	590.33	-5280.73	5729.83	5313.62	24.00	0.00	0.00	0.00
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