

<div><div><div>BAKER HUGHES</div></div><div><div>Gamma Ray</div></div></div>				LWD MEMORY LOG			
Scale: 1:240 TVD		Company: Noble Energy		Well: Hazzard Federal LC22-735			
Depth Reference:		Field: Weld County		Country: United States			
Driller's Depth		County: Weld		Country: United States			
Status: Final Print		State: Colorado		Other Services:			
API No: 05123429800000		Surface Location: Latitude: 39° 14' 00" N Longitude: 106° 15' 00" W		Wellbore Survey			
Job ID: 8300313		SEC: 22 TWN: 9N RGE: 59W		Elev. KB: 4926.00 ft Elev. DF: 4896.00 ft Elev. GL:			
Permanent Datum (P.D.): Ground Level		Elevation: Above P.D.		4896.00 ft			
Log Measured From: Rig Floor		30.00 ft		Elev. GL: 4896.00 ft			
Dates				Interval Logged			
Date From: 2017-03-05		Top: (ft) 1913.00		Azi Reference North: Grid		Dip Angle: (deg) 67.10	
Date To: 2017-03-05		Bottom: (ft) 6103.00		Total Magnetic Field Strength: (nT)		52667	
Spud Date: 2017-03-03				Mag to Reference North Correction: (deg)		6.69 E	
Borehole Record				Casing Record			
Hole Size (in)		From (ft)		To (ft)		Size (in)	
13.250		30.00		1939.00		9.625	
8.500		1939.00		10800.00			
Mud Record				Deviation Record			
Type		From (ft)		To (ft)		Hole Size (in)	
Oil Based Mud		1935.00		10973.00		8.500	
						Interval (ft) 9038.00	
						Inc Az (Start) 0.38 181.93	
						Inc Az (End) 90.62 182.81	
Acquisition System				Software Version		Other	
Baker Hughes Cadence		RT4.1		Rig: H&P 524		Contractor: Helmerich & Payne Drilling Co	
PlotStudio		4.0.7570.8		District: RMD		Unit: D&E	

"These interpretations and analyses ("Interpretations") are opinions provided by Baker Hughes Oilfield Operations, Inc ("Baker Hughes"), based upon industry practice, empirical relationships, assumptions and measurements, (many of which may be provided by the customer). The Interpretations are not infallible and may be subject to different opinions. Vjwu."Dcmgt"JwiJgu"fqgu"pqv"ycttcpv"vjgkt"ceewtce{"."eqttgevpguu."qt"eqorngvgpguu."qt"vjcv"vjg"ewuvqogtøu"cpflqt"cp{"vjktf"rctv{øu"tgnkcepg"qp"uwej"Kpvgtrtgvcvkqpu"yknn"ceeqornkuj"cp{"rctvkewnct"tguwnvu0"Vjg"ewuvqogt"cuuwogu"hwnn"responsibility for the use of the Interpretations and for decisions based thereon and the customer agrees to release, defend and indemnify Baker Hughes, its parent, subsidiaries and affiliated or related entities, and subcontractors, together with its and their officers, directors, employees, agents and invitees against, any and all claims, losses, damages, or expenses sustained by the customer or any third party arising out of reliance upon or use of the Interpretations, without regard to the cause(s) thereof, including without limitation any form of negligence on the part of Baker Hughes. Unless other contract terms have been agreed to by the parties, each party's liabilities and qdnkicvkqpu"ujcnn"dg"iqxgtpgf"d{"Dcmgt"JwiJgu"Kpeqtrqtccvgføu"Yqtnfykfg"Vgtou"cpf"Eqpfkvkqpu0\$""

Log Run Summary

Run No	Bit Run No.	Bit Size (in)	Bit Type	Bit Gauge Length (in)	Assembly Type	Logged Interval		Bit Depth Interval		Date / Time		Circ. Hours (h)
						Top (ft)	Bottom (ft)	From (ft)	To (ft)	Start Logging	End Logging	
1	1	8.500	PDC	2.00	AutoTrak Curve	1927.00	5817.00	1939.00	5829.00	2017-03-04 04:16	2017-03-05 06:54	28.64
2	2	8.500	PDC	2.00	AutoTrak Curve	5817.00	10961.00	5829.00	10973.00	2017-03-05 13:22	2017-03-06 09:13	17.64

Crew

Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite
David Browning		2017-03-03	2017-03-06	Steve Cano		2017-03-03	2017-03-06	David Gibbs		2017-03-05	2017-03-06

Mud Properties Record

Date / Time	Run No.	Measured Depth (ft)	Mud Type	Density (ppg)	Viscosity (cP)	pH	Fluid Loss (cm3)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
2017-03-03 23:52	1	1939.00	Oil Based Mud	9.1	4	N/A	15.0	82.6/17.4	Active Pit	24500	0.00
2017-03-05 11:25	2	5829.13	Oil Based Mud	9.1	10	0	16.0	84.6/15.4	Active Pit	23000	0.00
2017-03-05 17:42	2	6513.00	Oil Based Mud	9.2	10	0	14.8	85.6/14.4	Active Pit	22500	0.00

Equipment and Service Data

Run No.	Tool	Serial Number	Measurement	Sensor Offset (ft)	Bit Offset (ft)	Max O.D. (in)	Min I.D. (in)
1	ATC_SU	12252539	Near Bit Inclination	5.93	6.73	7.000	4.330
1	ATC_SU	12252539	Near Bit VSS	5.93	6.73	7.000	4.330
1	ATC_MWD	12899370	Gamma (single)	2.75	12.90	7.000	3.250
1	ATC_MWD	12899370	Directional (mag)	12.28	22.43	7.000	3.250
2	ATC_SU	12252539	Near Bit Inclination	5.93	6.75	7.000	4.330
2	ATC_SU	12252539	Near Bit VSS	5.93	6.75	7.000	4.330
2	ATC_MWD	12899370	Gamma (single)	2.75	12.92	7.000	3.250
2	ATC_MWD	12899370	Directional (mag)	12.28	22.45	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

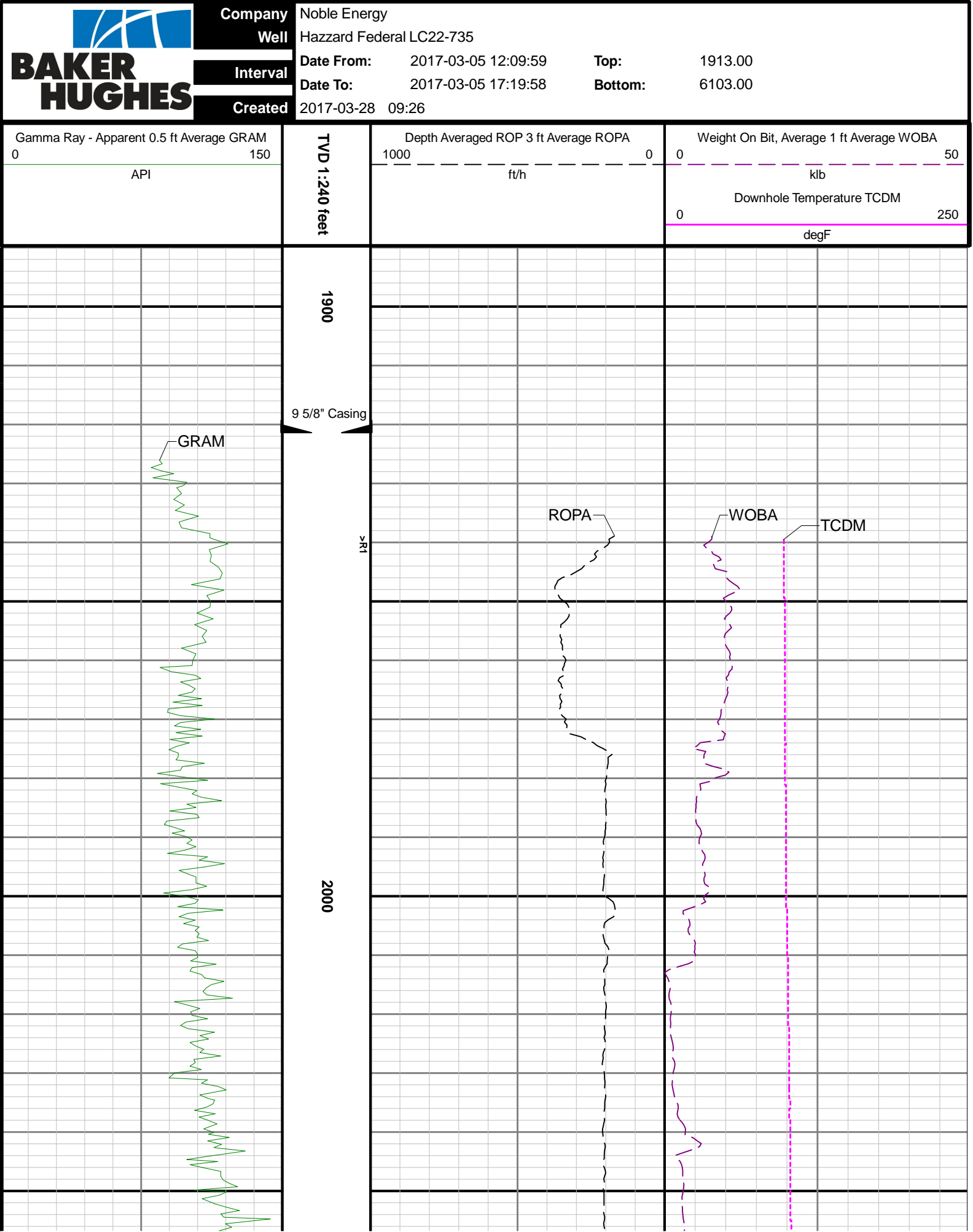
- 1
- Depth measurements obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
- 2
- Baker Hughes Run 1 utilized a 6 3/4 inch NaviGamma service (Gamma Ray and Directional) behind a 8 1/2 inch bit and rotary steerable assembly from 1939 to 5829 feet MD (1939 to 5735 feet TVD).
- 3
- Baker Hughes Run 2 utilized a 6 3/4 inch NaviGamma service (Gamma Ray and Directional) behind a 8 1/2 inch bit and rotary steerable assembly from 5829 to 10973 feet MD (5735 to 6067 feet TVD).

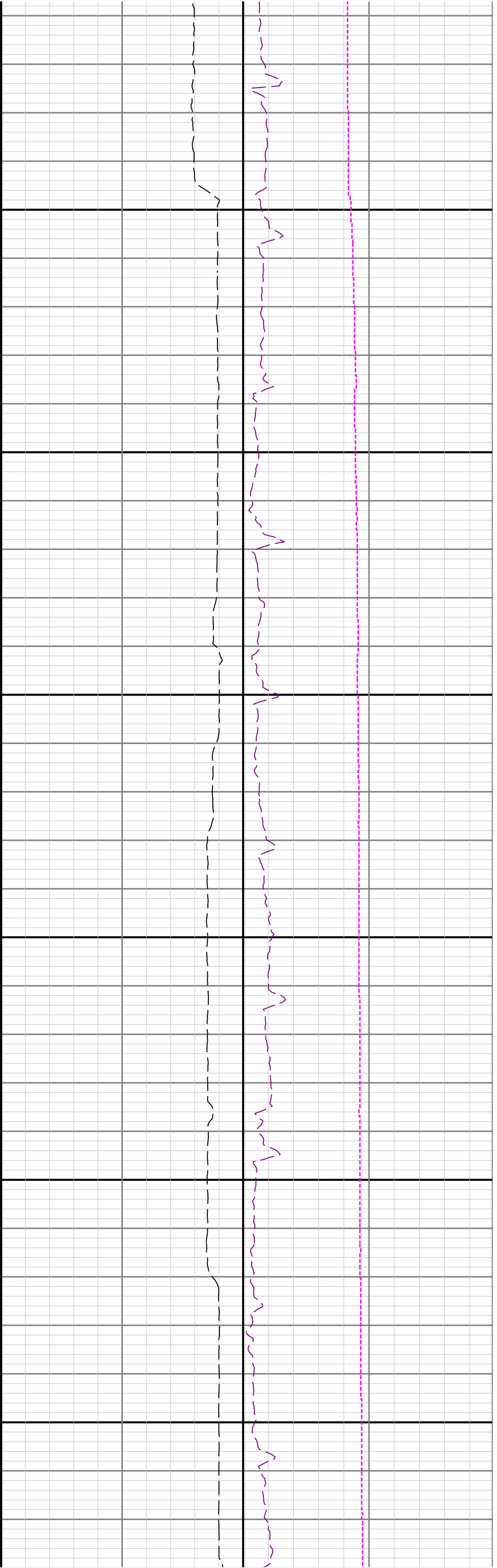
Remarks

Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	5817.00	8.500	1	The interval from 5817 to 5829 ft MD (5723 to 5735 ft TVD) was logged 7 hours after being drilled, due to tripping out of the hole to change out BHA .
2	10961.00	8.500	2	The interval from 10961 to 10973 feet MD (6067 feet TVD) was not logged due to sensor to bit offset at well TD.

Curve Mnemonics

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

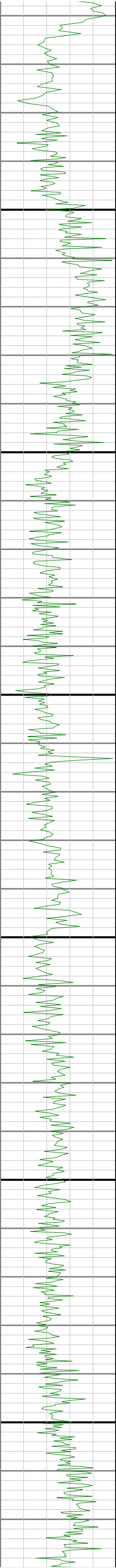


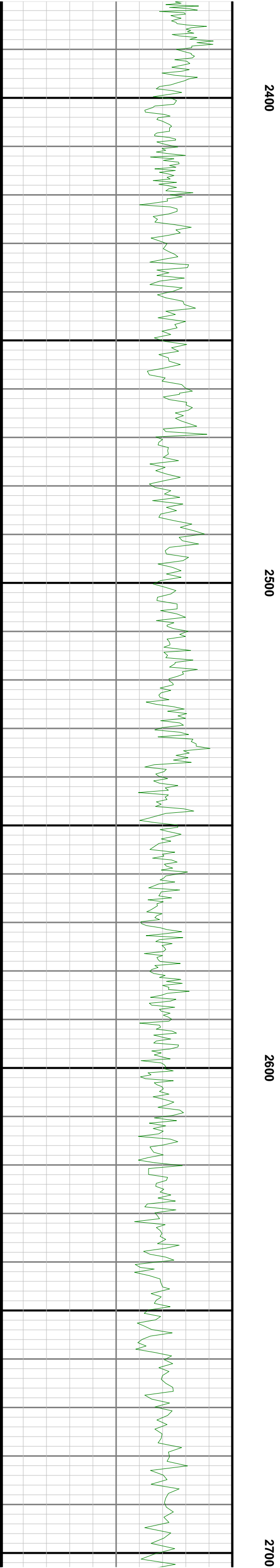


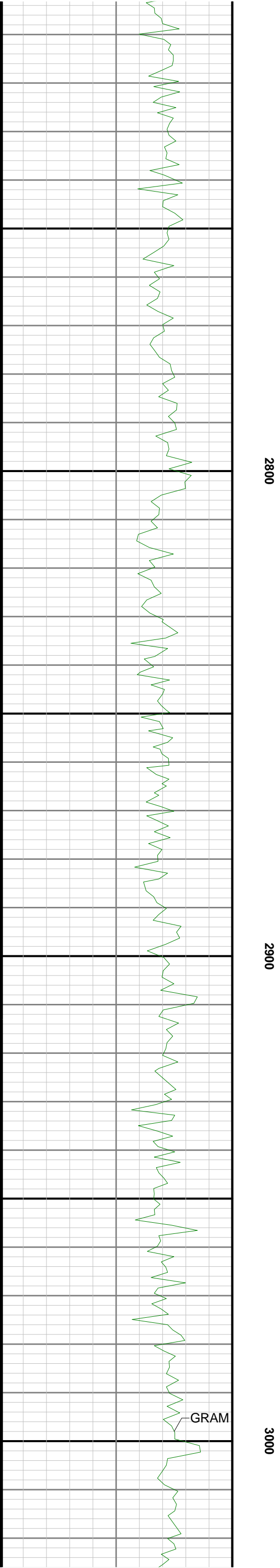
2100

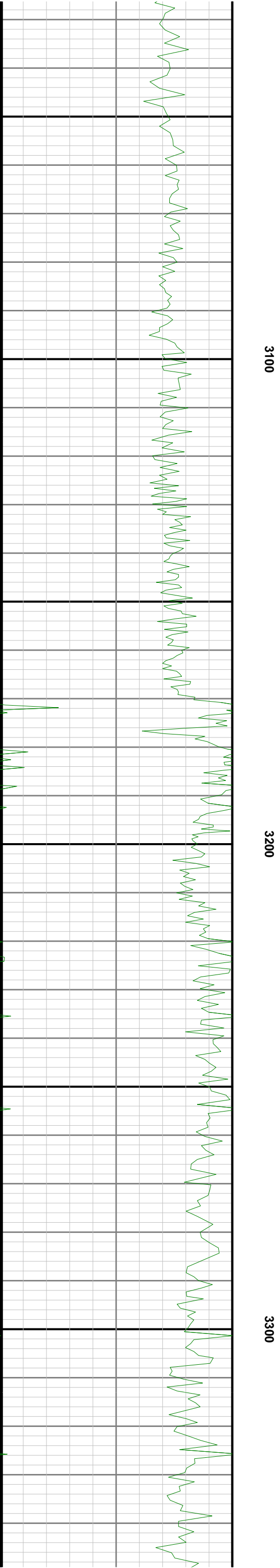
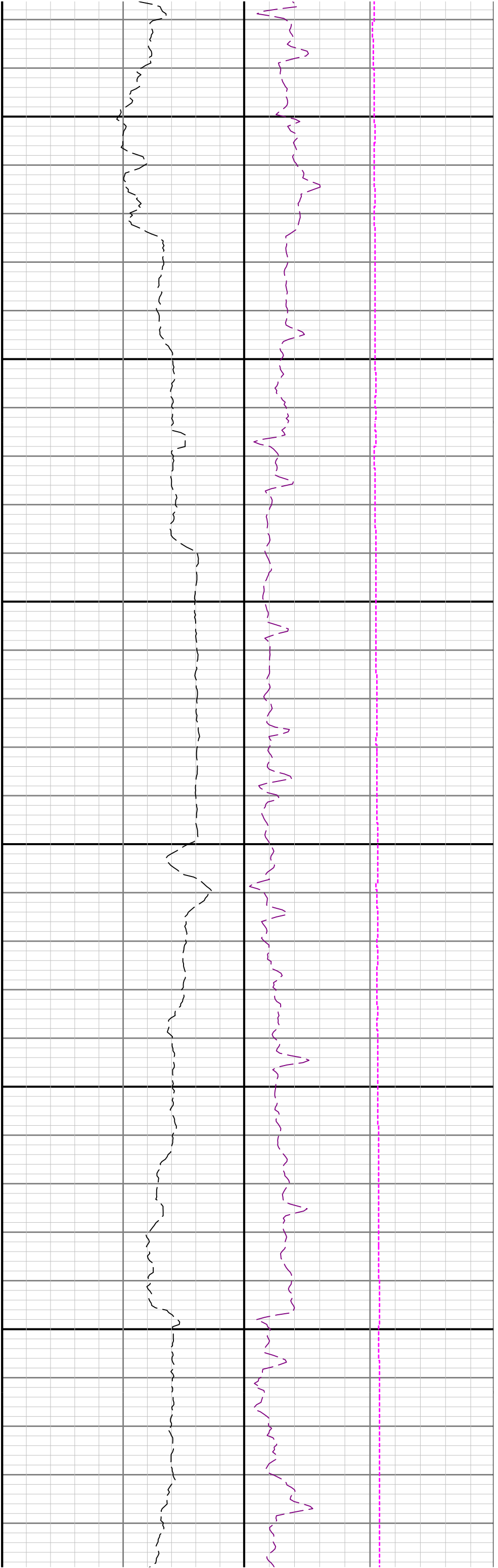
2200

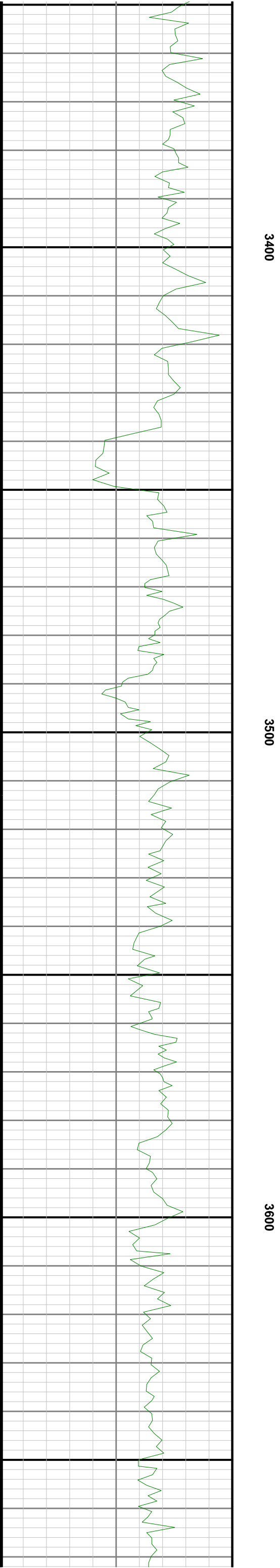
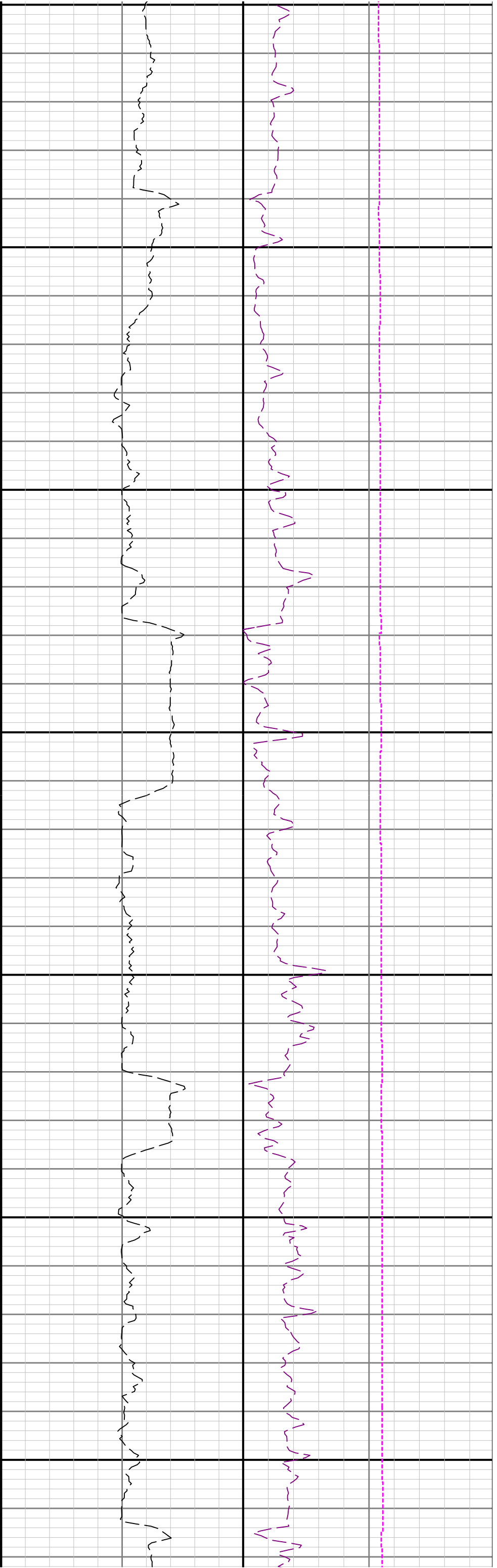
2300

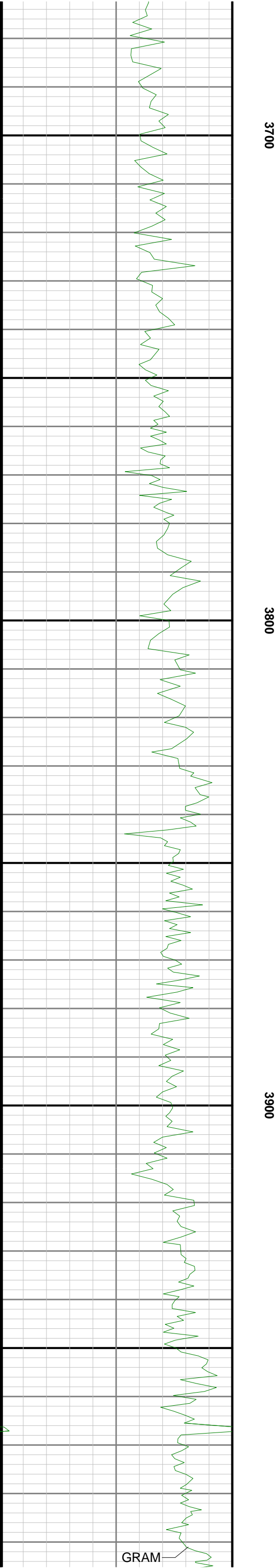
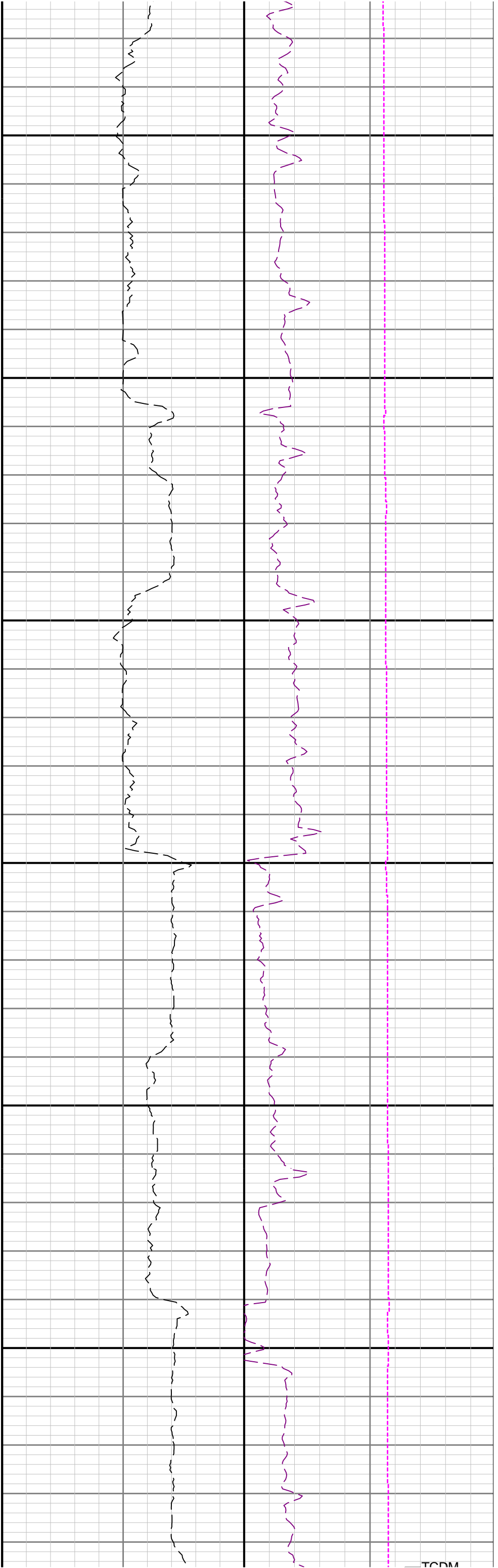


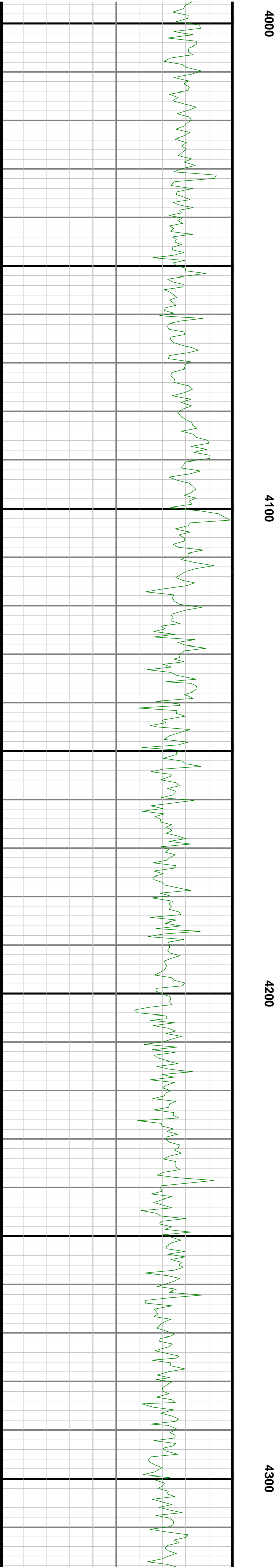
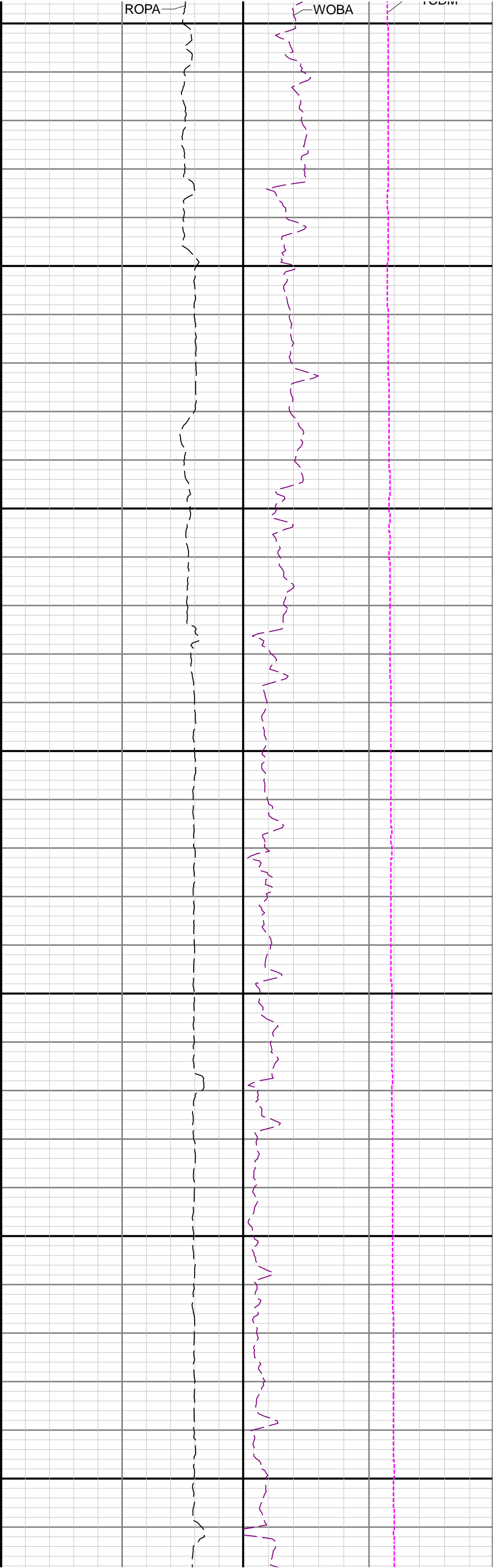


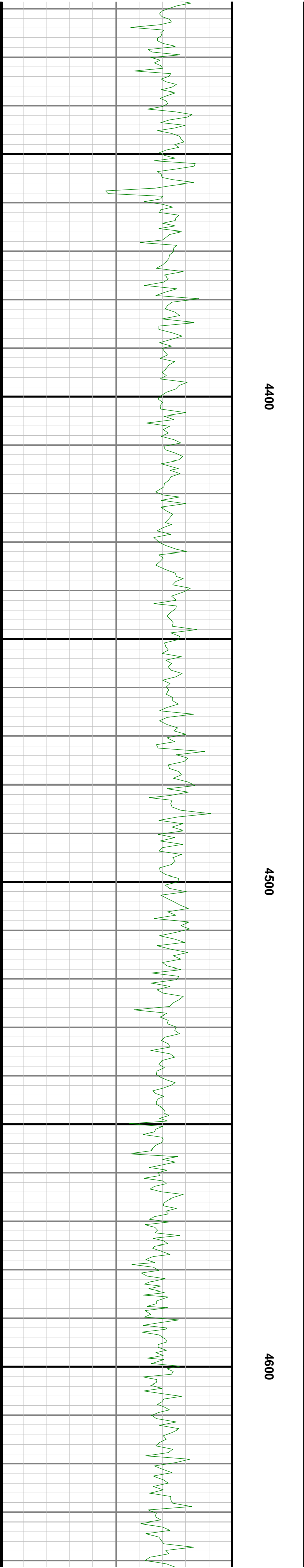


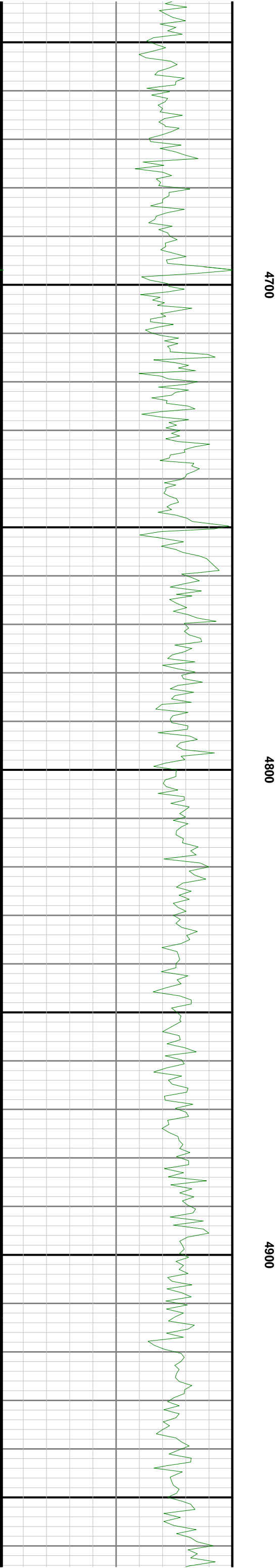
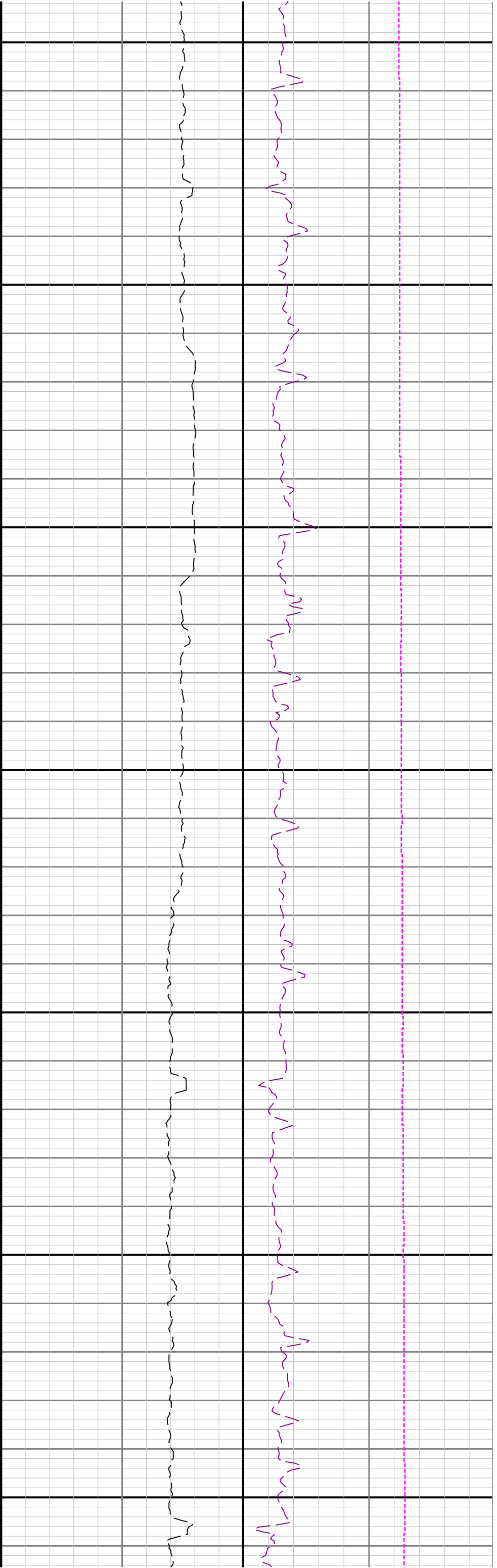


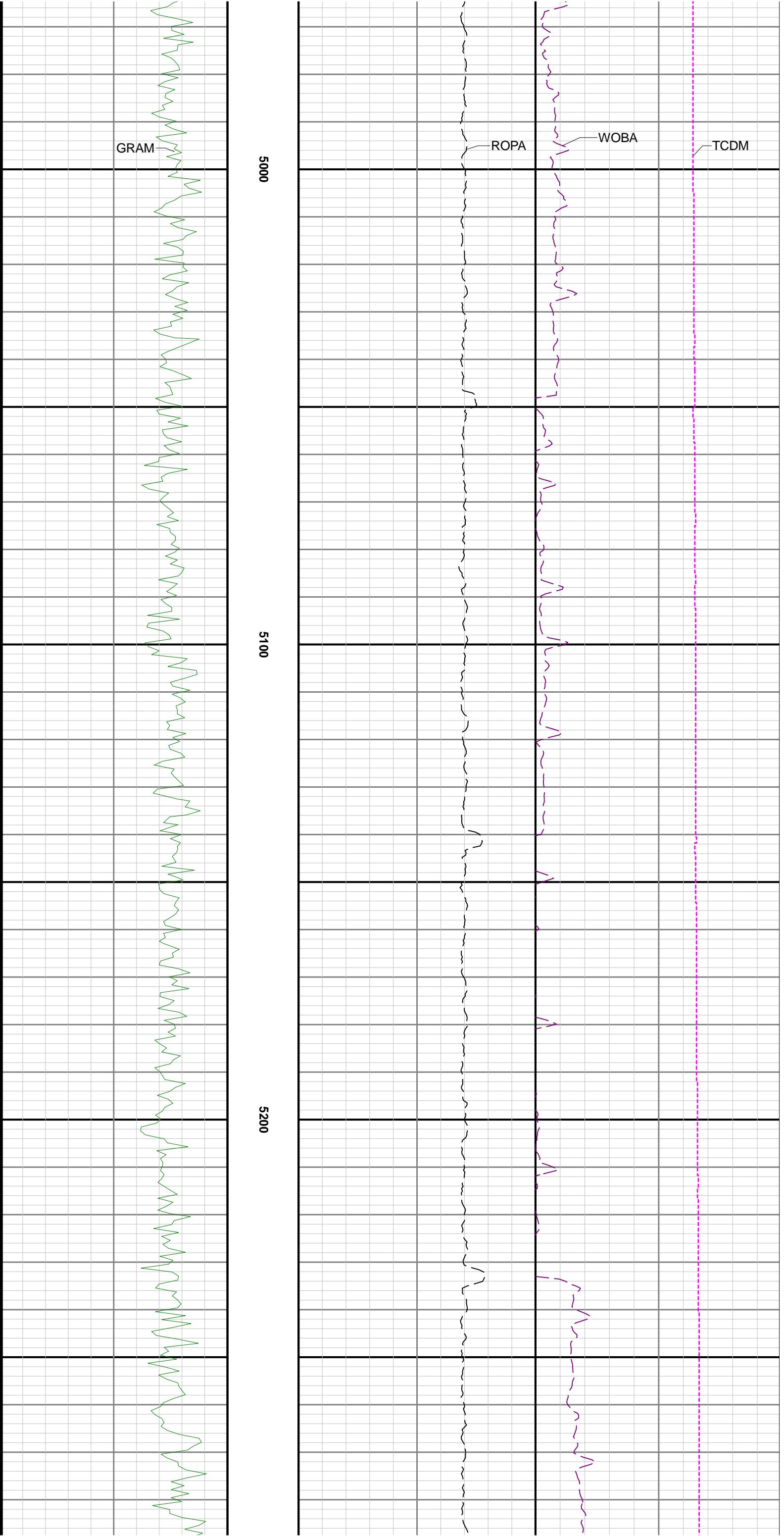


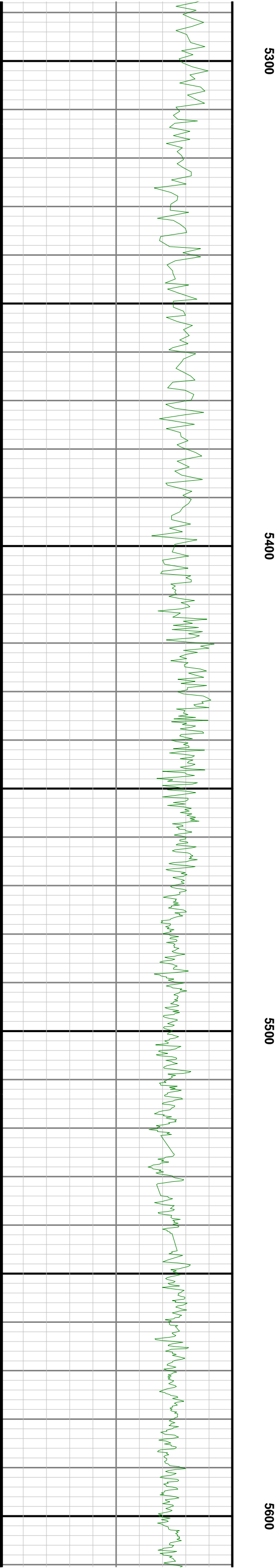


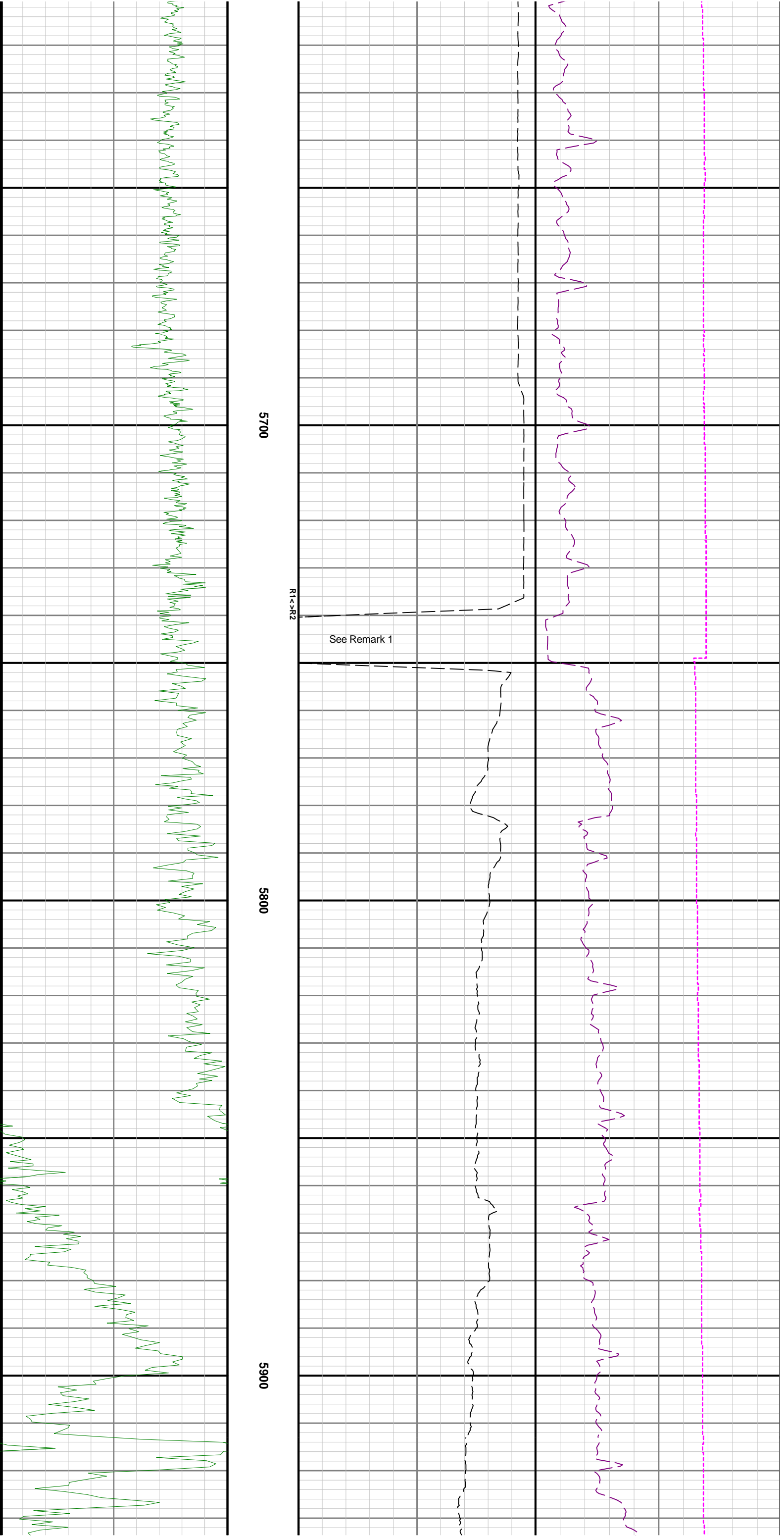












	1872.00	0.54	21.57	N/A	-3.71	6.23	1871.97	4.71	94.00	0.33	0.10	-37.16
	1923.00	0.41	32.41	N/A	-3.33	6.42	1922.97	4.37	51.00	0.31	-0.25	21.25
	1981.00	0.56	90.84	N/A	-3.16	6.81	1980.97	4.27	58.00	0.85	0.26	100.74
	2075.00	0.52	137.93	N/A	-3.49	7.56	2074.96	4.72	94.00	0.46	-0.04	50.10
	2169.00	0.83	349.15	N/A	-3.13	7.72	2168.96	4.40	94.00	1.39	0.33	-158.28
	2264.00	3.85	1.45	N/A	0.73	7.67	2263.87	0.58	95.00	3.20	3.18	12.95
	2358.00	4.99	1.78	N/A	7.97	7.88	2357.59	-6.52	94.00	1.21	1.21	0.35
	2453.00	8.67	19.17	N/A	18.87	10.36	2451.91	-16.85	95.00	4.40	3.87	18.31
	2547.00	11.25	25.55	N/A	33.84	16.64	2544.49	-30.53	94.00	2.98	2.74	6.79
	2642.00	13.68	42.78	N/A	50.45	28.27	2637.27	-44.94	95.00	4.65	2.56	18.14
	2736.00	13.72	47.20	N/A	66.18	44.00	2728.60	-57.79	94.00	1.11	0.04	4.70
	2830.00	13.28	43.26	N/A	81.62	59.58	2820.00	-70.36	94.00	1.08	-0.47	-4.19
	2925.00	13.71	38.48	N/A	98.38	74.06	2912.38	-84.43	95.00	1.26	0.45	-5.03
	3019.00	14.21	41.49	N/A	115.74	88.64	3003.61	-99.08	94.00	0.94	0.53	3.20
	3113.00	15.67	42.22	N/A	133.79	104.81	3094.43	-114.13	94.00	1.57	1.55	0.78
	3208.00	15.18	44.37	N/A	152.18	122.13	3186.01	-129.32	95.00	0.79	-0.52	2.26
	3302.00	13.33	48.34	N/A	168.18	138.83	3277.11	-142.27	94.00	2.22	-1.97	4.22
	3396.00	12.77	53.22	N/A	181.61	155.25	3368.69	-152.72	94.00	1.31	-0.60	5.19
	3490.00	12.79	57.19	N/A	193.46	172.32	3460.36	-161.52	94.00	0.93	0.02	4.22
	3585.00	12.83	59.25	N/A	204.56	190.22	3553.00	-169.43	95.00	0.48	0.04	2.17
	3679.00	12.75	58.17	N/A	215.36	208.00	3644.66	-177.07	94.00	0.27	-0.09	-1.15
	3774.00	12.76	57.85	N/A	226.47	225.79	3737.32	-185.01	95.00	0.08	0.01	-0.34
	3869.00	12.85	61.61	N/A	237.08	243.97	3829.96	-192.39	95.00	0.88	0.09	3.96
	3963.00	13.10	67.05	N/A	246.20	262.97	3921.56	-198.17	94.00	1.33	0.27	5.79
	4058.00	12.82	64.82	N/A	254.89	282.43	4014.14	-203.43	95.00	0.60	-0.29	-2.35
	4152.00	12.75	59.38	N/A	264.61	300.79	4105.81	-209.91	94.00	1.28	-0.07	-5.79
	4247.00	12.85	55.68	N/A	275.90	318.54	4198.46	-218.04	95.00	0.87	0.11	-3.89
	4341.00	13.08	50.37	N/A	288.58	335.36	4290.06	-227.69	94.00	1.29	0.24	-5.65
	4436.00	13.00	45.92	N/A	302.87	351.32	4382.61	-239.07	95.00	1.06	-0.08	-4.68
	4531.00	12.66	42.13	N/A	318.03	365.98	4475.24	-251.53	95.00	0.96	-0.36	-3.99
	4625.00	12.38	38.05	N/A	333.60	379.10	4567.01	-264.66	94.00	0.99	-0.30	-4.34
	4720.00	13.04	36.19	N/A	350.27	391.70	4659.68	-278.95	95.00	0.82	0.69	-1.96
	4815.00	13.26	34.83	N/A	367.86	404.26	4752.19	-294.17	95.00	0.40	0.23	-1.43
	4910.00	13.35	35.94	N/A	385.69	416.92	4844.64	-309.59	95.00	0.29	0.09	1.17
	5004.00	13.09	35.16	N/A	403.17	429.42	4936.15	-324.72	94.00	0.34	-0.28	-0.83
	5099.00	13.58	37.40	N/A	420.83	442.38	5028.59	-339.92	95.00	0.75	0.52	2.36
	5193.00	13.36	43.48	N/A	437.48	456.56	5120.01	-353.93	94.00	1.52	-0.23	6.47
	5288.00	12.66	51.51	N/A	451.92	472.26	5212.58	-365.51	95.00	2.04	-0.74	8.45
	5383.00	12.63	54.37	N/A	464.45	488.85	5305.27	-375.05	95.00	0.66	-0.03	3.01
	5477.00	12.05	54.56	N/A	476.13	505.20	5397.10	-383.80	94.00	0.62	-0.62	0.20
	5571.00	11.01	72.49	N/A	484.52	521.76	5489.23	-389.27	94.00	3.95	-1.11	19.07
	5666.00	13.85	110.81	N/A	483.21	541.08	5582.15	-384.71	95.00	8.99	2.99	40.34
	5761.00	17.49	139.32	N/A	468.32	561.05	5673.74	-366.65	95.00	8.85	3.83	30.01
	5856.00	23.86	156.80	N/A	439.77	577.95	5762.66	-335.66	95.00	9.27	6.71	18.40
	5951.00	33.96	167.24	N/A	396.09	591.43	5845.76	-290.33	95.00	11.85	10.63	10.99
	6045.00	44.00	171.69	N/A	338.02	601.97	5918.76	-231.31	94.00	11.08	10.68	4.73
	6139.00	53.12	172.14	N/A	268.33	611.85	5980.90	-160.95	94.00	9.71	9.70	0.48
	6234.00	62.80	172.83	N/A	188.58	622.35	6031.24	-80.58	95.00	10.21	10.19	0.73
	6329.00	69.85	174.89	N/A	102.13	631.61	6069.37	6.19	95.00	7.68	7.42	2.17
	6423.00	79.66	177.10	N/A	11.77	637.89	6094.06	96.31	94.00	10.68	10.44	2.35
	6518.00	89.48	178.49	N/A	-82.61	641.52	6103.04	189.95	95.00	10.44	10.34	1.46
	6613.00	90.49	179.15	N/A	-177.59	643.47	6103.06	283.89	95.00	1.27	1.06	0.69
	6707.00	90.37	178.91	N/A	-271.57	645.06	6102.36	376.79	94.00	0.29	-0.13	-0.26
	6802.00	90.31	178.27	N/A	-366.54	647.40	6101.79	470.78	95.00	0.68	-0.06	-0.67
	6897.00	90.65	178.33	N/A	-461.50	650.22	6101.00	564.85	95.00	0.36	0.36	0.06
	6991.00	90.52	179.02	N/A	-555.47	652.39	6100.04	657.83	94.00	0.75	-0.14	0.73
	7086.00	90.40	179.20	N/A	-650.45	653.87	6099.28	751.70	95.00	0.23	-0.13	0.19
	7180.00	90.46	179.96	N/A	-744.45	654.56	6098.57	844.45	94.00	0.81	0.06	0.81
	7275.00	90.52	180.88	N/A	-839.44	653.86	6097.76	937.96	95.00	0.97	0.06	0.97
	7369.00	90.55	181.15	N/A	-933.42	652.20	6096.88	1030.30	94.00	0.29	0.03	0.29
	7464.00	90.37	179.34	N/A	-1028.41	651.79	6096.12	1123.86	95.00	1.91	-0.19	-1.91
	7559.00	90.19	178.34	N/A	-1123.39	653.71	6095.65	1217.79	95.00	1.07	-0.19	-1.05
	7653.00	90.49	179.09	N/A	-1217.36	655.82	6095.09	1310.77	94.00	0.86	0.32	0.80
	7748.00	90.43	179.07	N/A	-1312.35	657.35	6094.33	1404.64	95.00	0.07	-0.06	-0.02
	7843.00	90.34	177.97	N/A	-1407.31	659.80	6093.69	1498.65	95.00	1.16	-0.09	-1.16
	7937.00	90.59	179.07	N/A	-1501.28	662.23	6092.93	1591.67	94.00	1.20	0.27	1.17
	8032.00	90.28	179.52	N/A	-1596.27	663.40	6092.21	1685.49	95.00	0.58	-0.33	0.47
	8126.00	90.52	179.29	N/A	-1690.26	664.37	6091.55	1778.29	94.00	0.35	0.26	-0.24
	8221.00	90.55	177.36	N/A	-1785.21	667.15	6090.67	1872.34	95.00	2.03	0.03	-2.03
	8316.00	90.43	175.66	N/A	-1880.03	672.93	6089.85	1966.77	95.00	1.79	-0.13	-1.79
	8410.00	90.34	175.50	N/A	-1973.75	680.18	6089.22	2060.37	94.00	0.20	-0.10	-0.17
	8504.00	89.42	176.59	N/A	-2067.52	686.66	6089.42	2153.88	94.00	1.52	-0.98	1.16
	8599.00	90.22	176.14	N/A	-2162.33	692.68	6089.72	2248.34	95.00	0.97	0.84	-0.47
	8693.00	90.18	176.07	N/A	-2256.11	699.07	6089.39	2341.85	94.00	0.09	-0.04	-0.07
	8788.00	90.68	176.01	N/A	-2350.88	705.63	6088.68	2436.37	95.00	0.53	0.53	-0.06
	8883.00	90.68	175.48	N/A	-2445.61	712.68	6087.55	2530.93	95.00	0.56	0.00	-0.56
	8977.00	90.58	177.16	N/A	-2539.41	718.71	6086.51	2624.39	94.00	1.79	-0.11	1.79
	9072.00	90.83	178.63	N/A	-2634.33	722.20	6085.35	2718.54	95.00	1.57	0.26	1.55
	9166.00	90.74	179.17	N/A	-2728.31	724.00	6084.06	2811.46	94.00	0.58	-0.10	0.57
	9261.00	90.74	178.89	N/A	-2823.29	725.61	6082.83	2905.35	95.00	0.29	0.00	-0.29
	9355.00	90.74	179.07	N/A	-2917.26	727.28	6081.62	2998.25	94.00	0.19	0.00	0.19
	9450.00	90.74	178.69	N/A	-3012.24	729.14	6080.39	3092.17	95.00	0.40	0.00	-0.40
	9544.00	90.74	178.62	N/A	-3106.20	731.35	6079.18	3185.16	94.00	0.07	0.00	-0.07
	9638.00	90.43	179.48	N/A	-3200.18	732.91	6078.22	3278.05	94.00	0.97	-0.33	0.91
	9733.00	90.58	179.46	N/A	-3295.18	733.78	6077.38	3371.82	95.00	0.16	0.16	-0.02
	9827.00	90.55	180.11	N/A	-3389.17	734.14	6076.45	3464.52	94.00	0.69	-0.03	0.69
	9922.00	90.40	180.20	N/A	-3484.17	733.88	6075.66	3558.10	95.00	0.18	-0.16	0.09
	10016.00	90.25	178.32	N/A	-3578.15	735.09	6075.13	3650.94	94.00	2.01	-0.16	-2.00
	10111.00	90.28	177.63	N/A	-3673.09	738.45	6074.69	3745.08	95.00	0.73	0.03	-0.73
	10205.00	90.49	176.19	N/A	-3766.95	743.52	6074.06	3838.44	94.00	1.55	0.22	-1.53
	10300.00	90.55	176.17	N/A	-3861.74	749.85	6073.20	3932.93	95.00	0.07	0.06	-0.02
	10394.00	90.55	174.40	N/A	-3955.41	757.57	6072.30	4026.56	94.00	1.88	0.00	-1.88
	10489.00	90.40	173.07	N/A	-4049.84	767.94	6071.51	4121.38	95.00	1.41	-0.16	-1.40
	10583.00	90.37	174.85	N/A	-4143.31	777.83	6070.88	4215.18	94.00	1.89	-0.03	1.89
	10677.00	90.40	179.47	N/A	-4237.17	782.48	6070.24	4308.47	94.00	4.91	0.03	4.91
	10771.00	90.55	181.72	N/A	-4331.15	781.51	6069.47	4400.93	94.00	2.40	0.1	