

part of Baker Hughes. Unless other contract terms have been agreed to by the parties, each party's liabilities and obligations shall not be limited by the following disclaimer: "The data contained herein is the property of Baker Hughes and is provided for informational purposes only. It is not to be used for legal or financial purposes. Baker Hughes disclaims any liability for errors or omissions in this data. The data is provided as is, without warranty of any kind, express or implied, including but not limited to the accuracy, completeness, or availability of the data. Baker Hughes shall not be responsible for any damages, including consequential damages, arising from the use of this data. The data is provided on an "as is" basis and is subject to change without notice. Baker Hughes reserves the right to modify or discontinue this data at any time without notice. The data is provided for informational purposes only and is not to be used for legal or financial purposes. Baker Hughes disclaims any liability for errors or omissions in this data. The data is provided as is, without warranty of any kind, express or implied, including but not limited to the accuracy, completeness, or availability of the data. Baker Hughes shall not be responsible for any damages, including consequential damages, arising from the use of this data. The data is provided on an "as is" basis and is subject to change without notice. Baker Hughes reserves the right to modify or discontinue this data at any time without notice."

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	Bottom	From	To	Start Logging	End Logging	
						(ft)	(ft)	(ft)	(ft)			
1	1	8.500	PDC	2.00	AutoTrak Curve	1852.83	16072.99	1865.00	16079.54	2016-01-29 05:30	2016-02-01 04:11	62.33

Crew

Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite
David Browning		2016-01-28	2016-02-01	Mike Gurnsey		2016-01-28	2016-02-01	Nick Williams		2016-01-28	2016-02-01
Will Drake		2016-01-28	2016-02-01								

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+ (%)
2016-01-28 23:29	1	1865.00	Water Based Mud	9.0	31	N/A	0.0	2.0 / 95.0	Active Pit	44000	0.00
2016-01-29 04:00	1	4431.00	Oil Based Mud	9.8	87	N/A	0.0	60.0 / 27.0	Active Pit	0	0.00
2016-01-31 04:00	1	9084.00	Oil Based Mud	9.6	56	N/A	0.0	60.5 / 28.0	Active Pit	0	0.00
2016-01-30 04:00	1	14084.00	Oil Based Mud	9.5	52	N/A	0.0	61.0 / 26.5	Active Pit	0	0.00
2016-02-01 04:00	1	16079.00	Oil Based Mud	9.9	60	N/A	0.0	59.0 / 26.0	Active Pit	0	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	12406995	Near Bit Inclination	5.93	6.55	7.000	4.330
1	ATC_SU	12406995	Near Bit VSS	5.93	6.55	7.000	4.330
1	ATC_MWD	11993917	Gamma (single)	2.19	12.17	7.000	3.250
1	ATC_MWD	11993917	Directional (mag)	12.26	22.24	7.000	3.250

Comments

- 1 Baker Hughes Run 1 utilized a 6 3/4 inch AutoTrak Curve (Rotary Steerable, Directional and Gamma Ray) tool behind an 8 1/2 inch bit and rotary steerable assembly from 1865.0 ft. MD (1864.3 ft. TVD) to 16079.0 ft. MD (6449.2 ft. TVD).
- 2 Depth measurements were 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 and the unverified depths as supplied to Baker Hughes are being used to represent logging data.


3 Inconsistent gamma data density is due to downlinking to the rotary steerable while drilling ahead, additional rotary steerable data transmitted and utilizing bandwidth while coupled with high ROP.

Remarks

Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	1860.00	8.500	1	As per customer request, Gamma logging was initiated at 1865.0 ft. MD (1865.5 ft. TVD).
2	1860.00	8.500	1	Interval from 1852.0 to 1859.0 ft. MD (1852.5 to 1859.6 ft. TVD) GRAM is present due to testing of BHA, a bit to Gamma Ray sensor offset is present in the interval from 1865.0 to 1878.0 (1865.5 to 1878.6 ft. TVD).
3	1890.00	8.500	1	Due to the lack of communication with the third-party logging system, the WOBA in the interval from 1865.0 to 8023.0 ft. MD (1865.9 to 8463.52 ft. TVD) lacks WOBA values.
4	9590.00	8.500	1	Interval from 9592.0 to 9613.0 ft. MD (6466.3 to 6466.5 ft. TVD) GRAM is not present due to communication with 3rd party logging services. WOBA is not present in the interval from 9592.0 to 9910.0 (6466.3 to 6466.4 ft. TVD).

Curve Mnemonics

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



Company

Well

Interval

Created

Noble Energy

Wells Ranch AF05-665

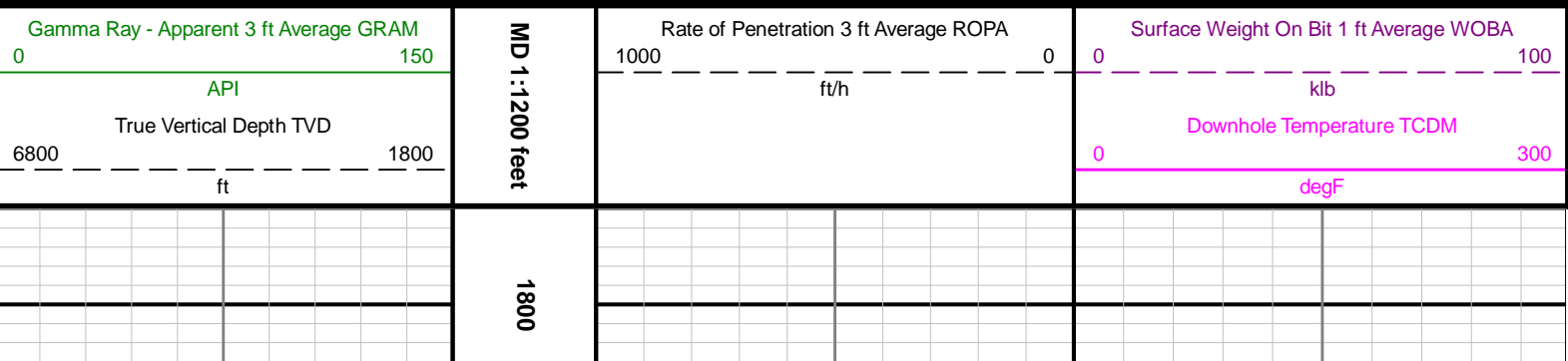
Date From:2016-01-29 05:30

Date To:2016-02-01 04:11

2016-02-02 04:20

Top:1853.00

Bottom:16080.00



See Remark 1
See Remark 2
See Remark 3

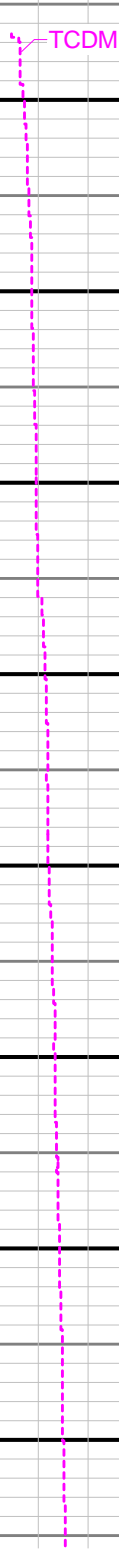
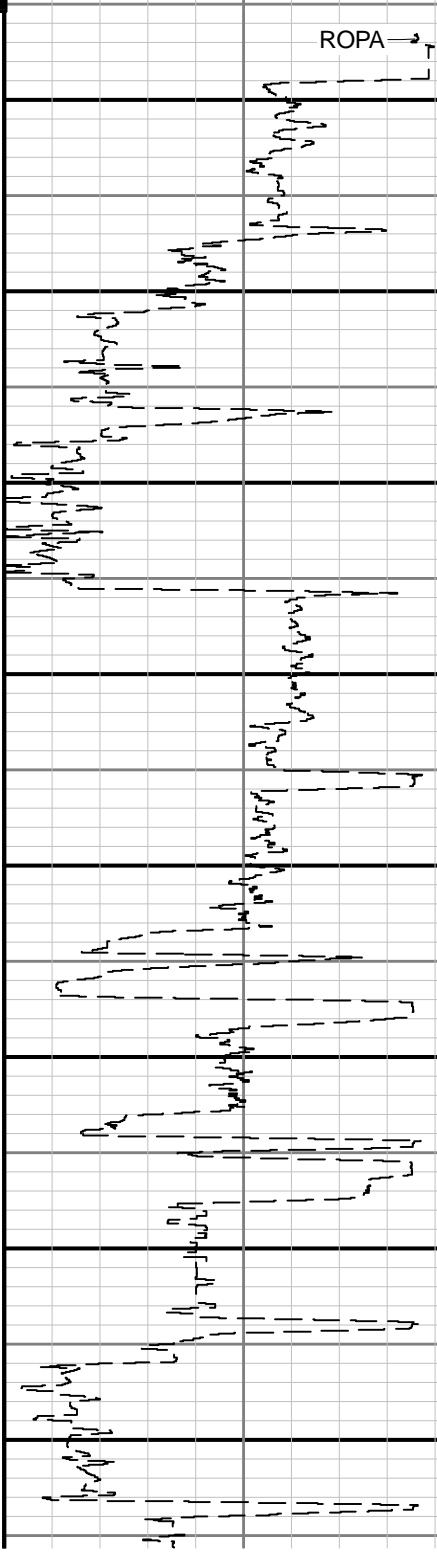
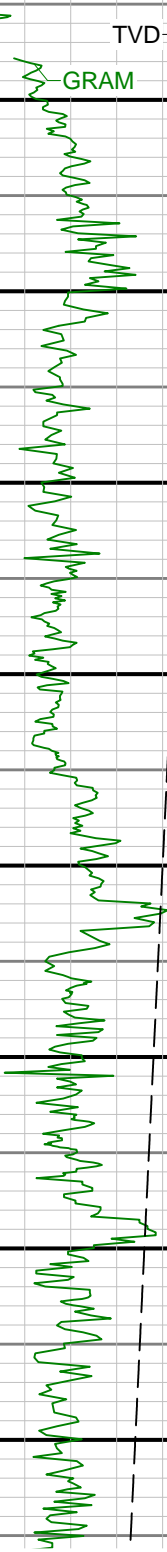
TVD
GRAM

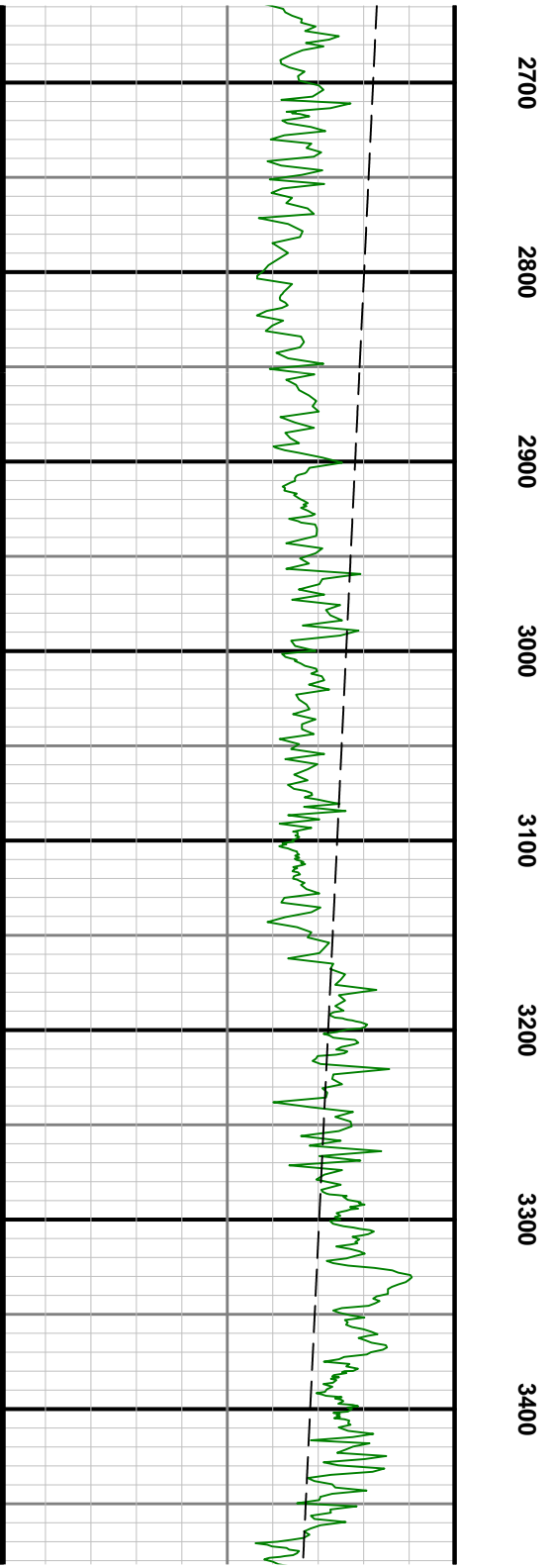
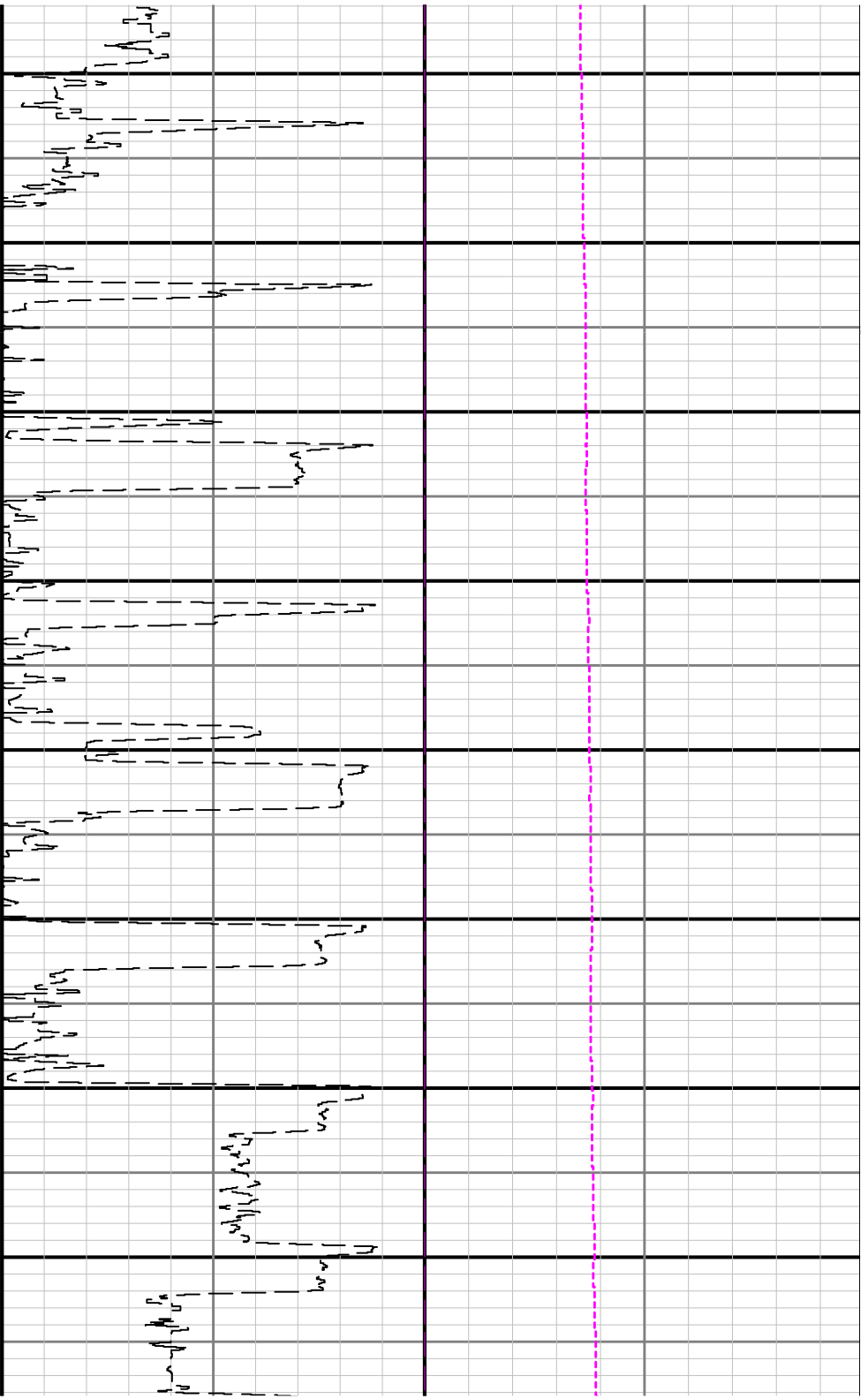
1900
2000
2100
2200
2300
2400
2500
2600

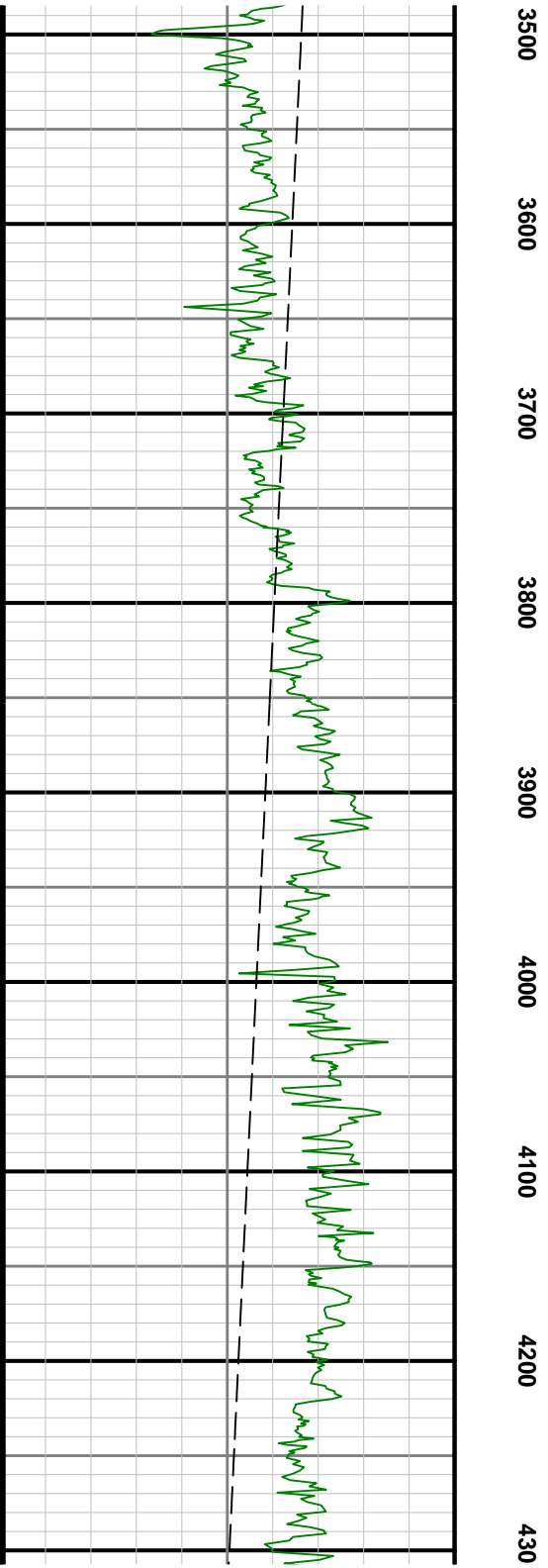
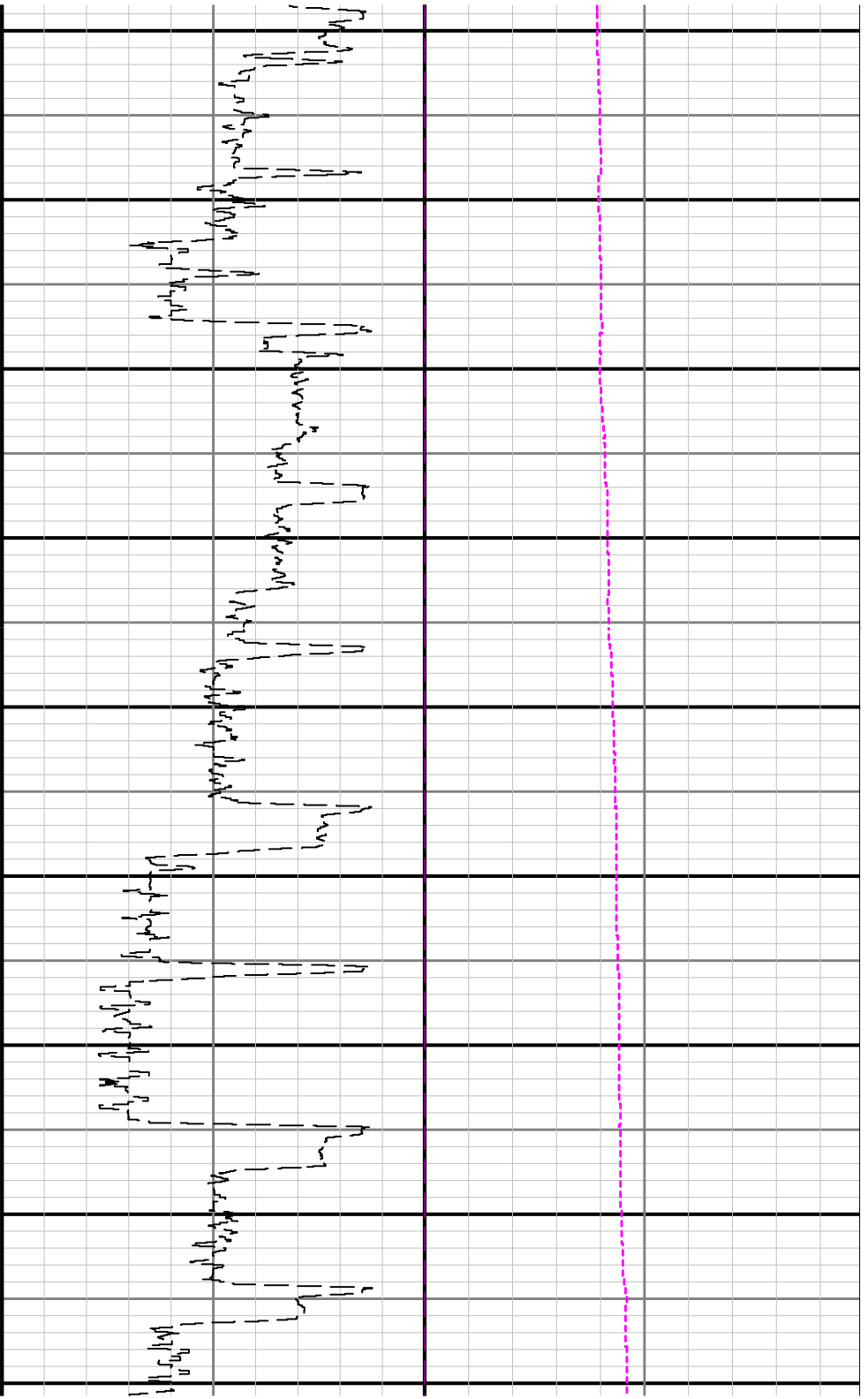
>R1

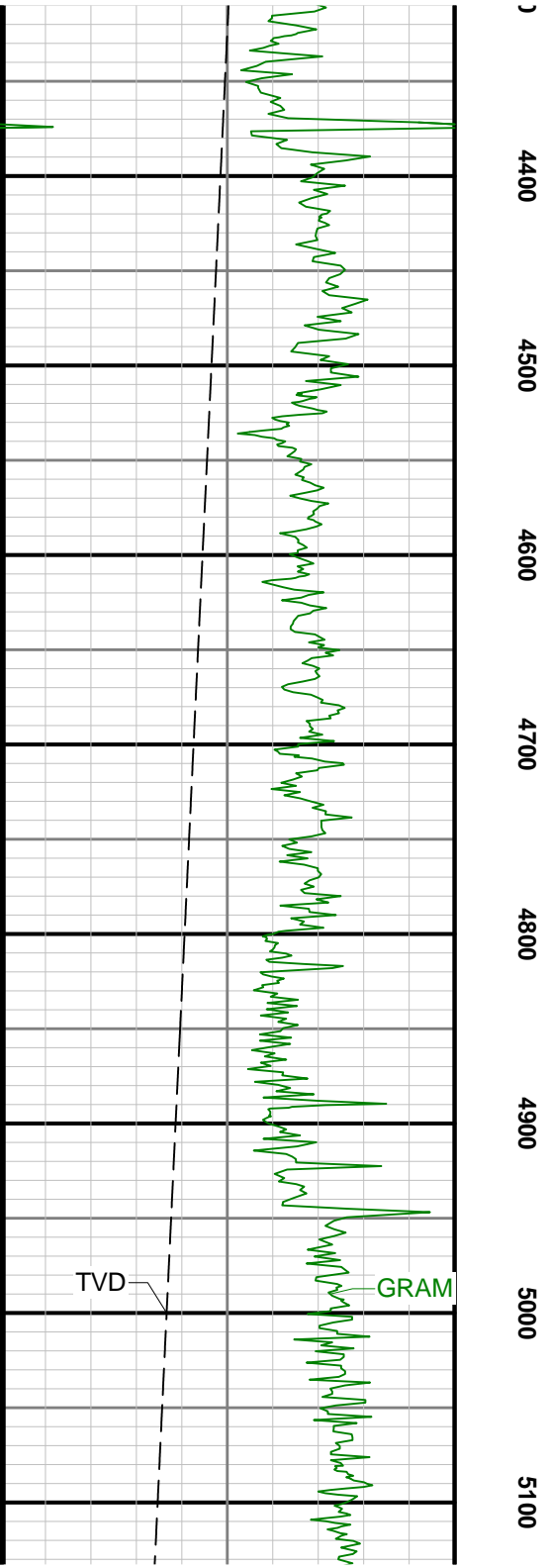
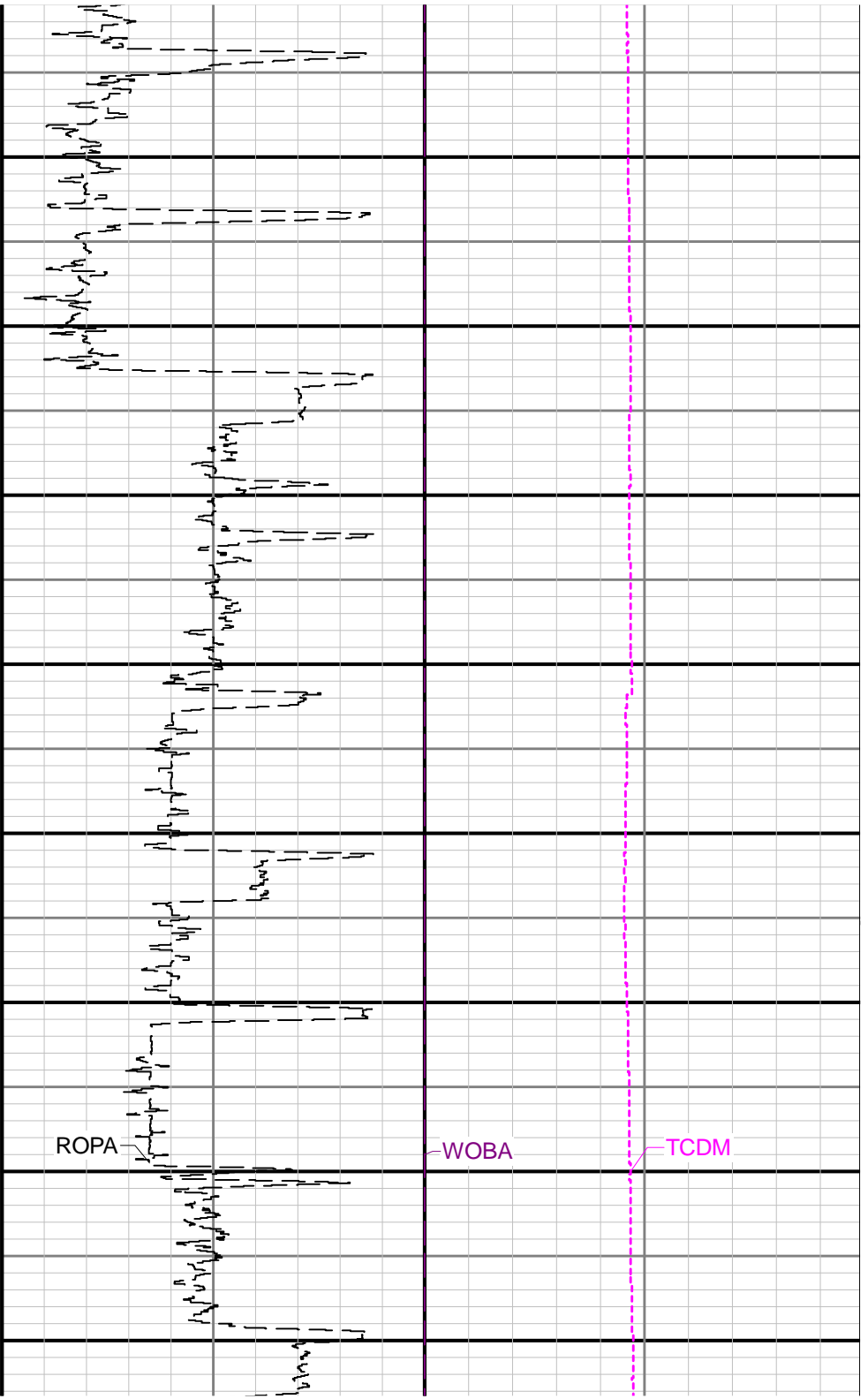
ROPA

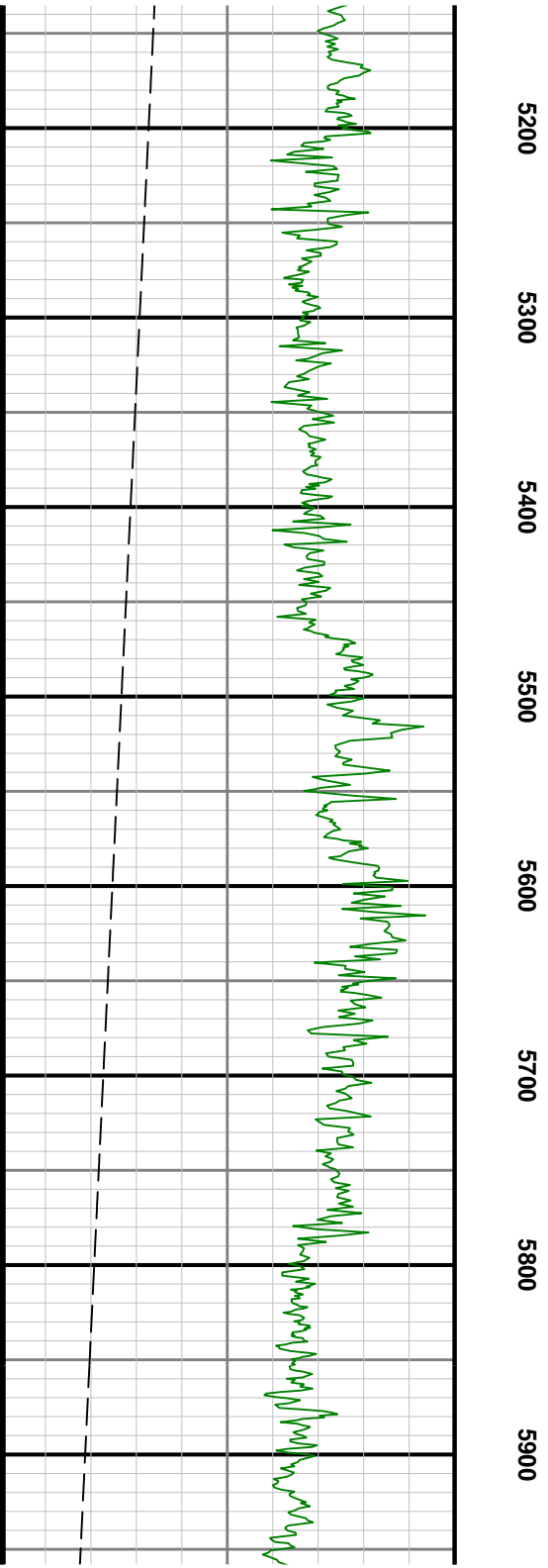
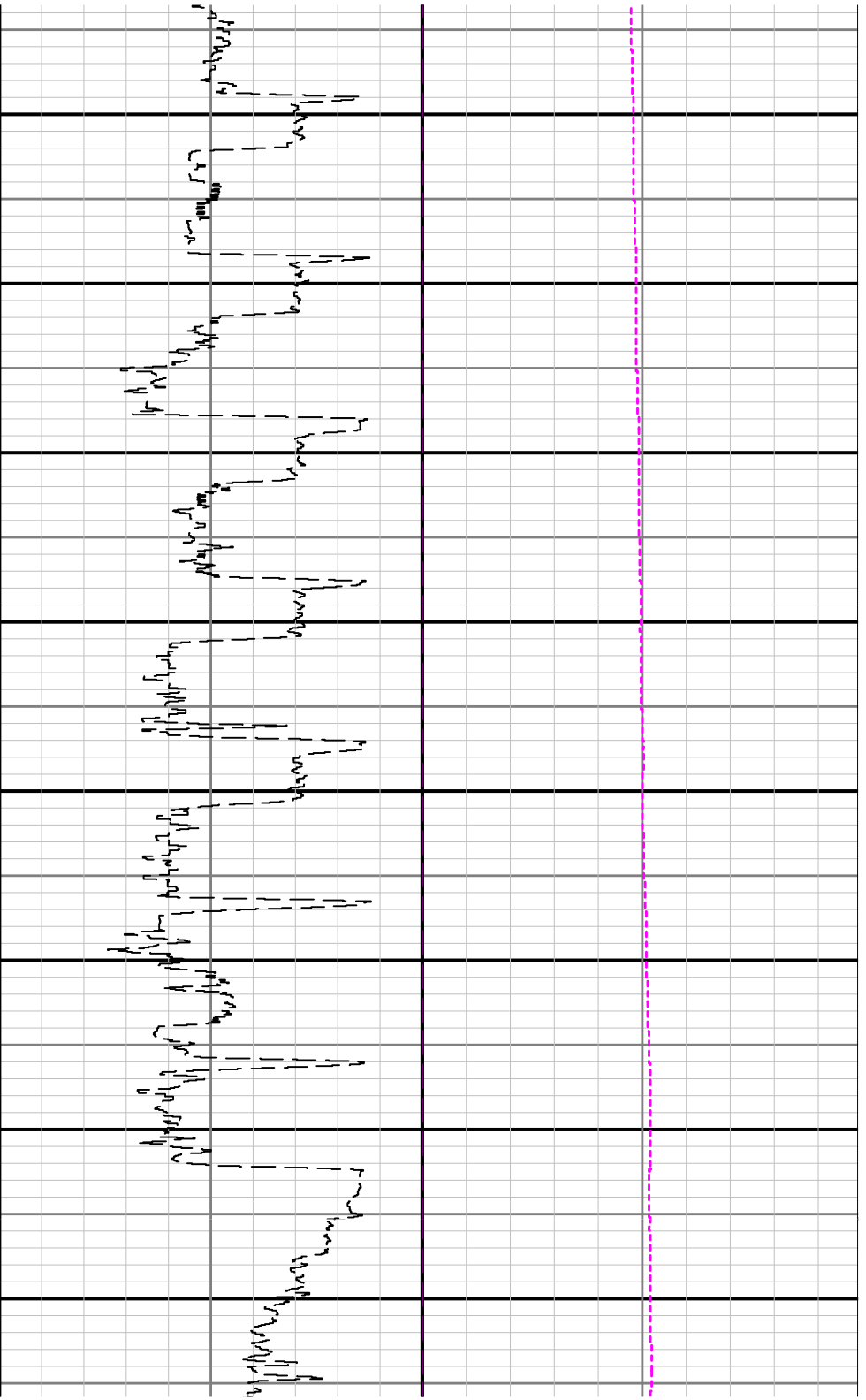
TCDM

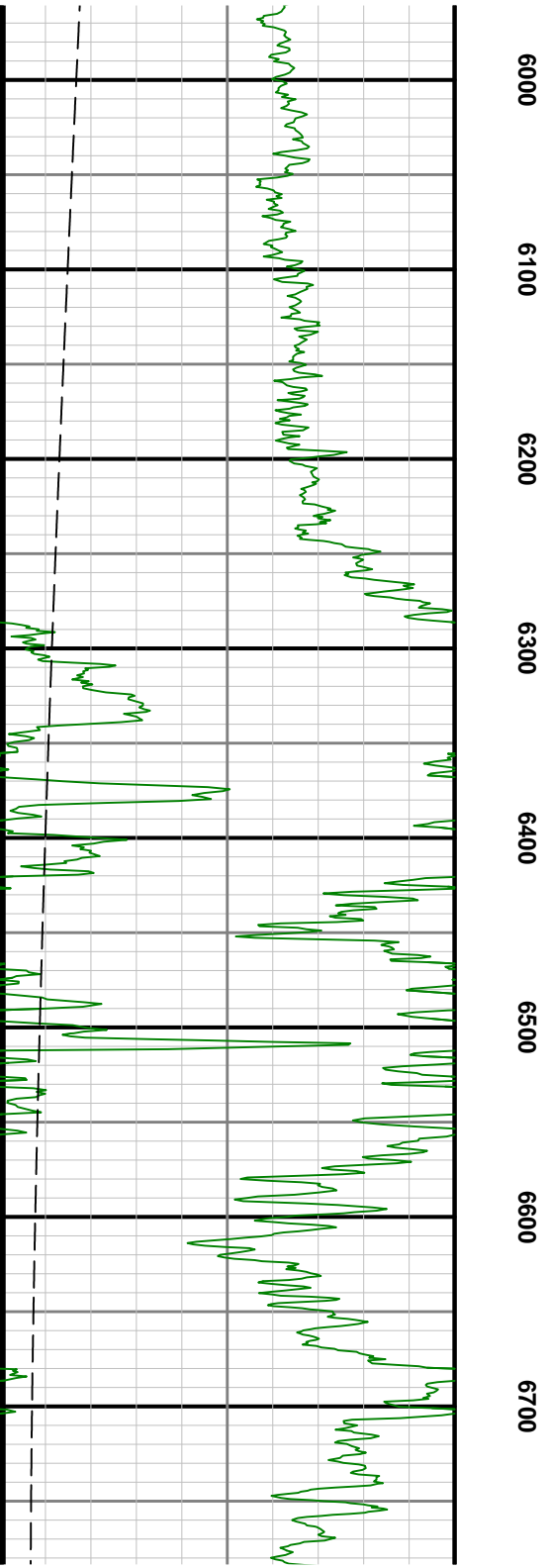
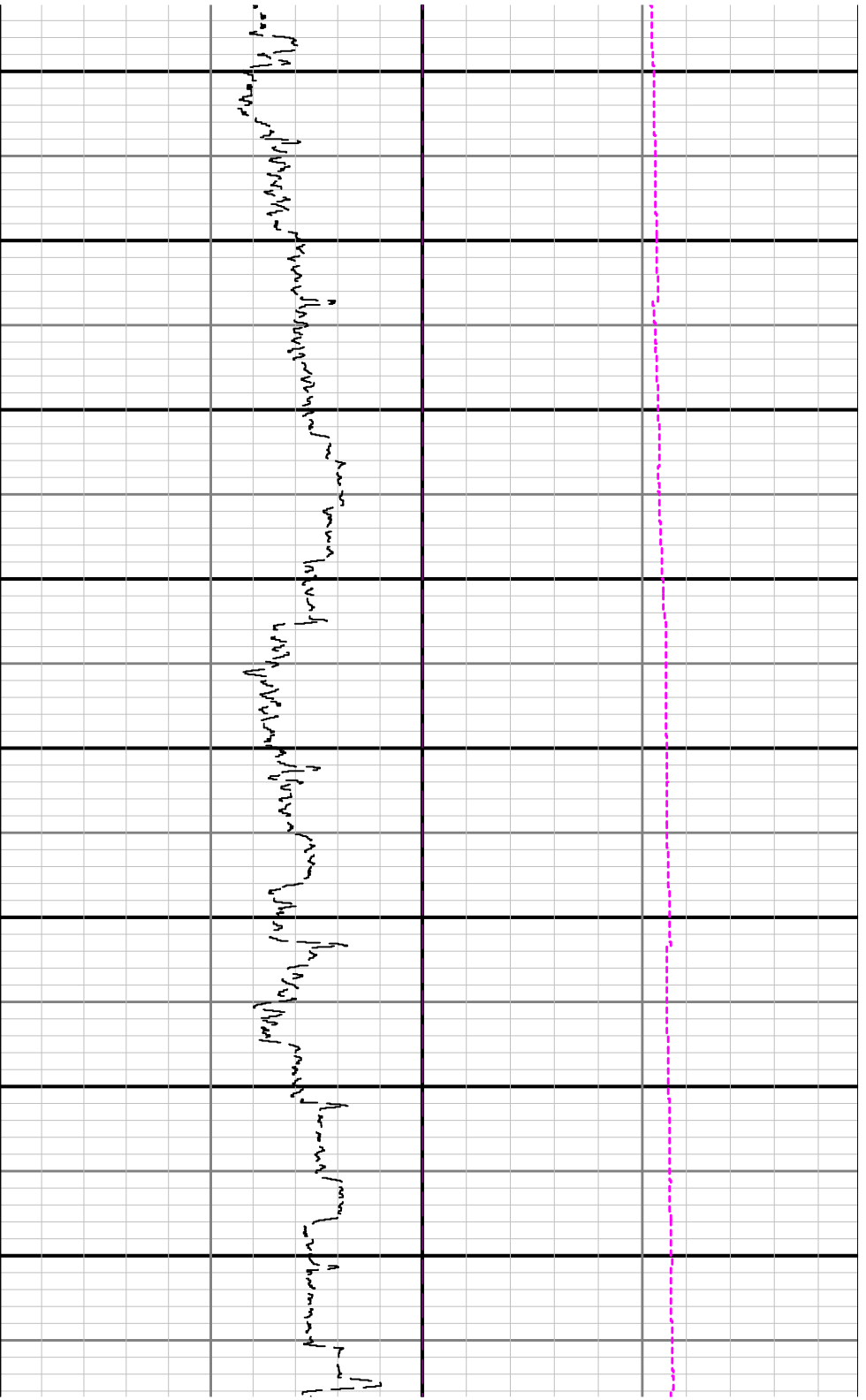


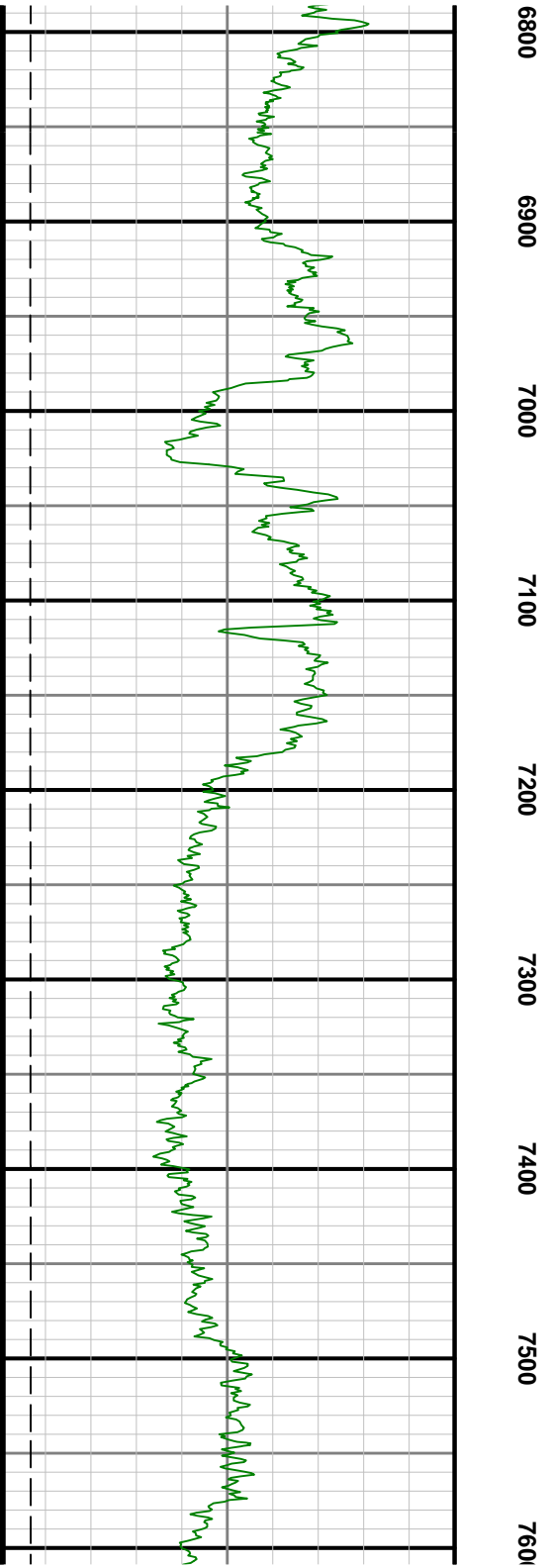
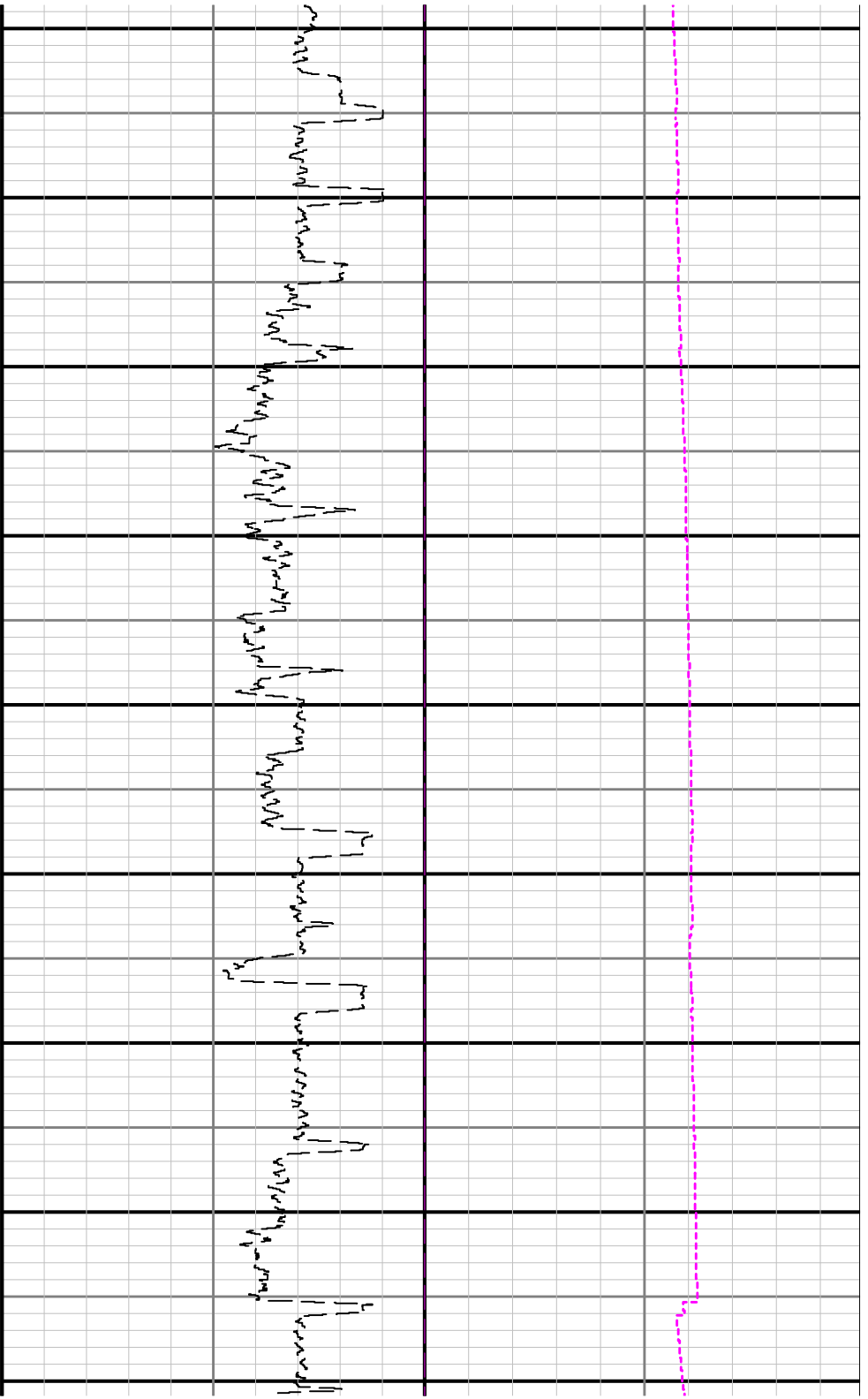


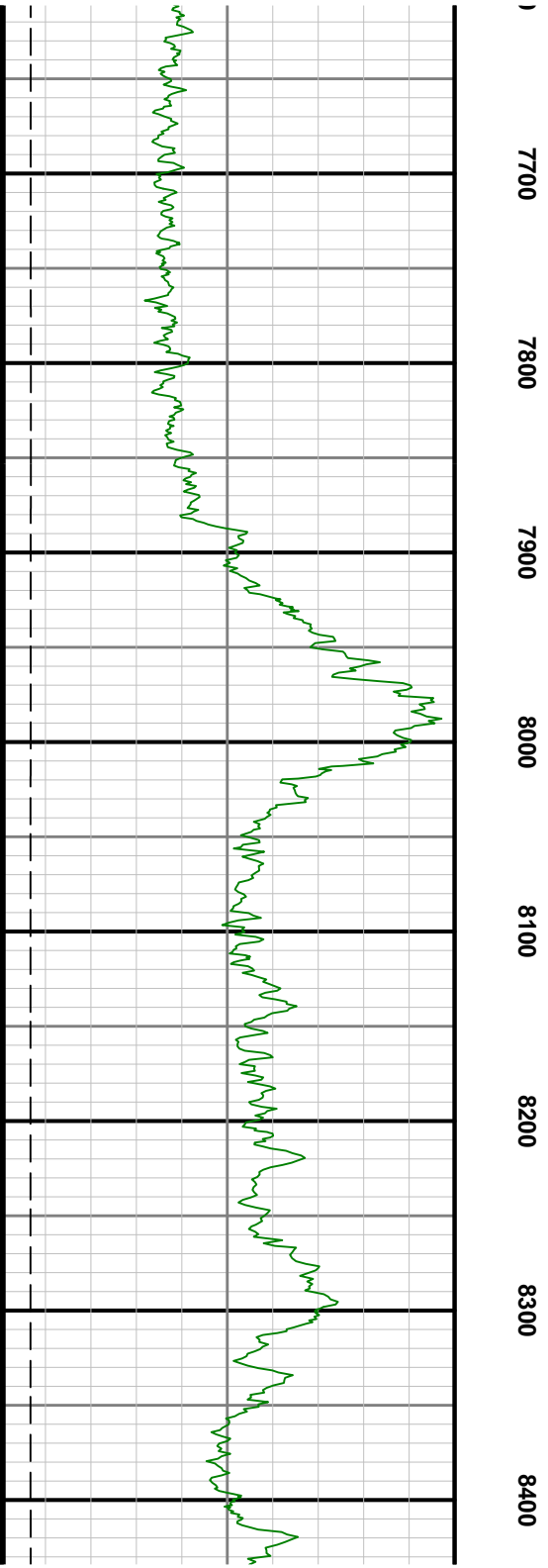
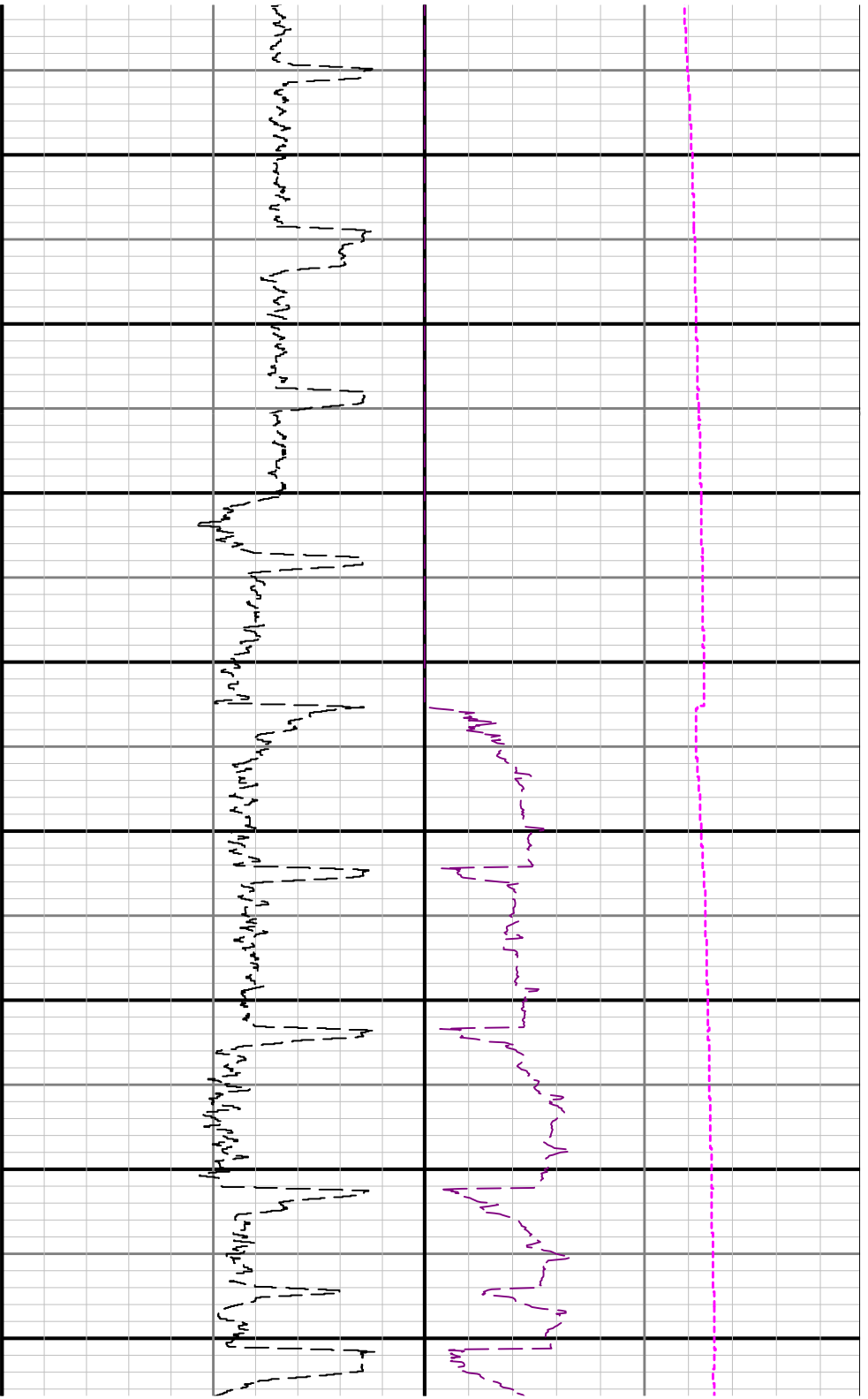


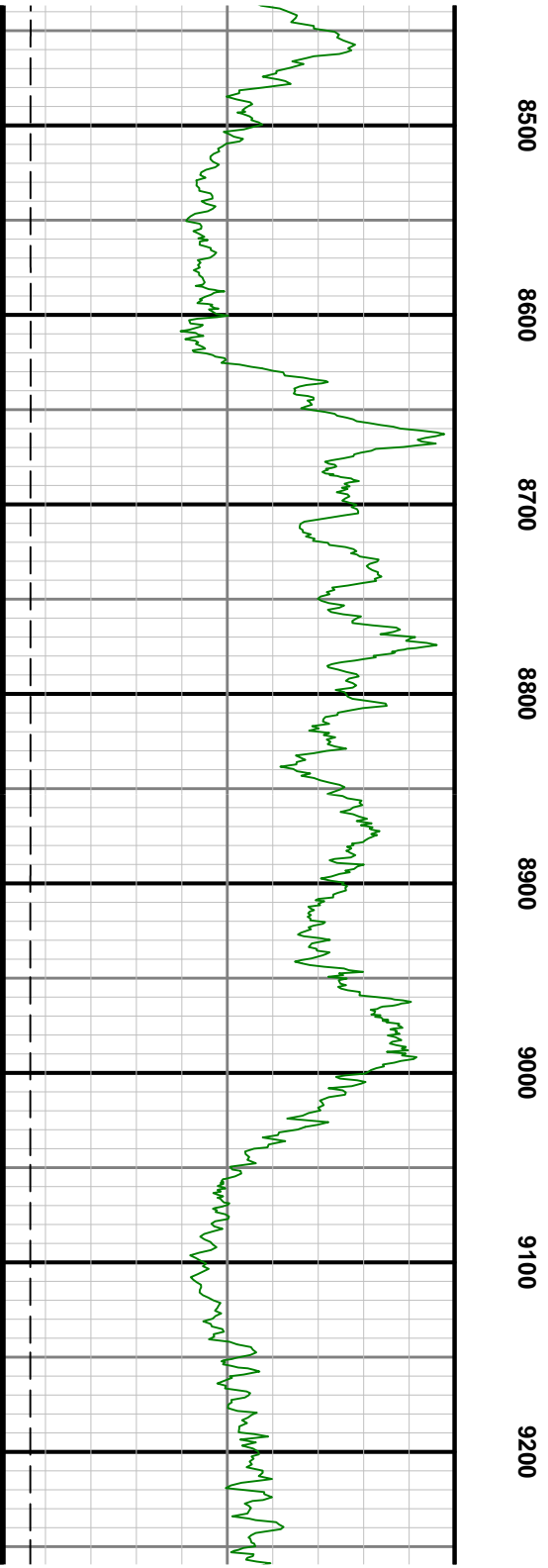
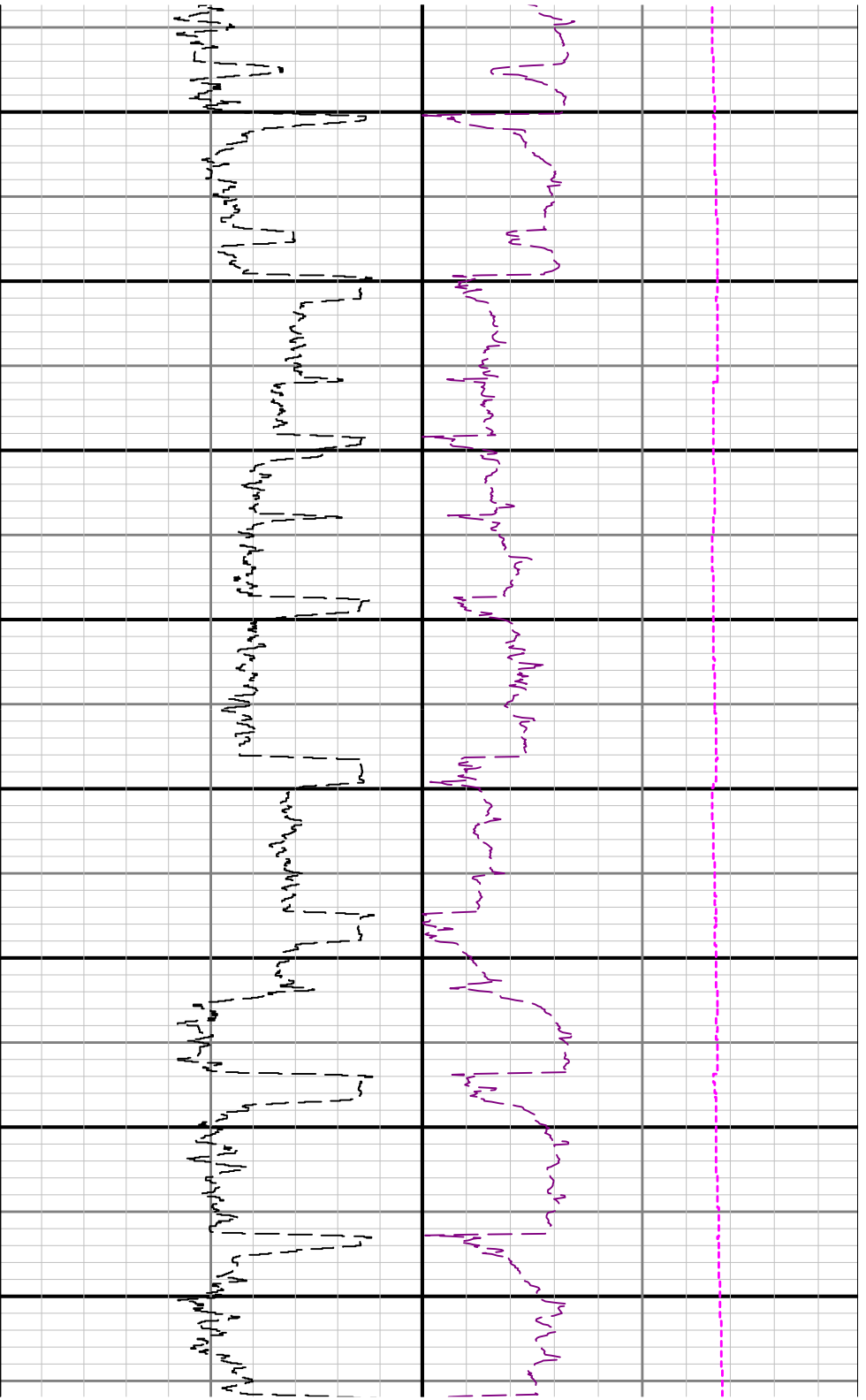




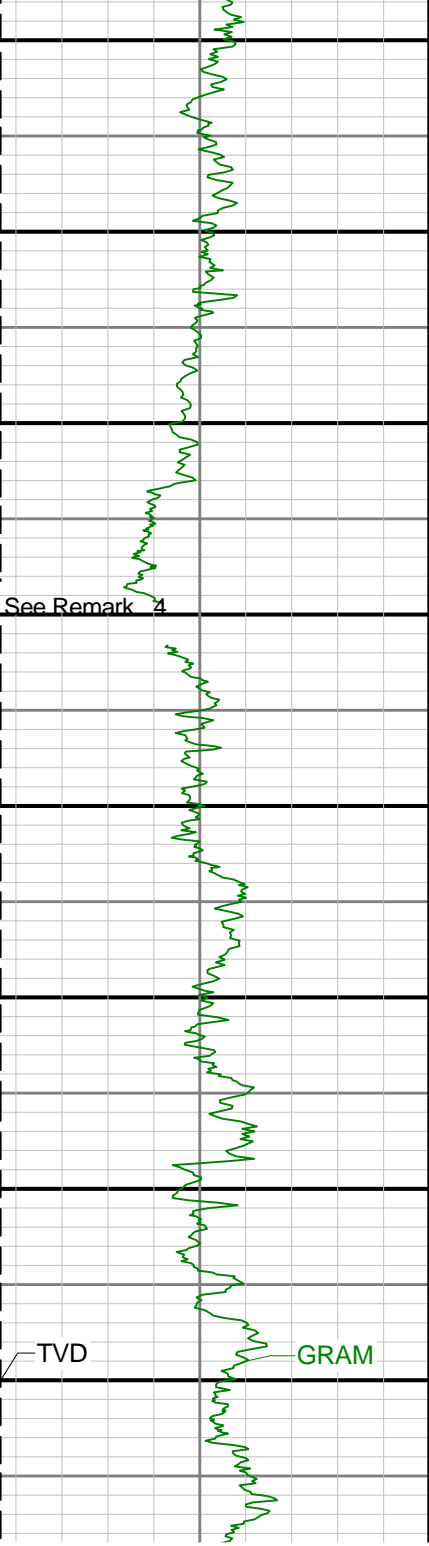
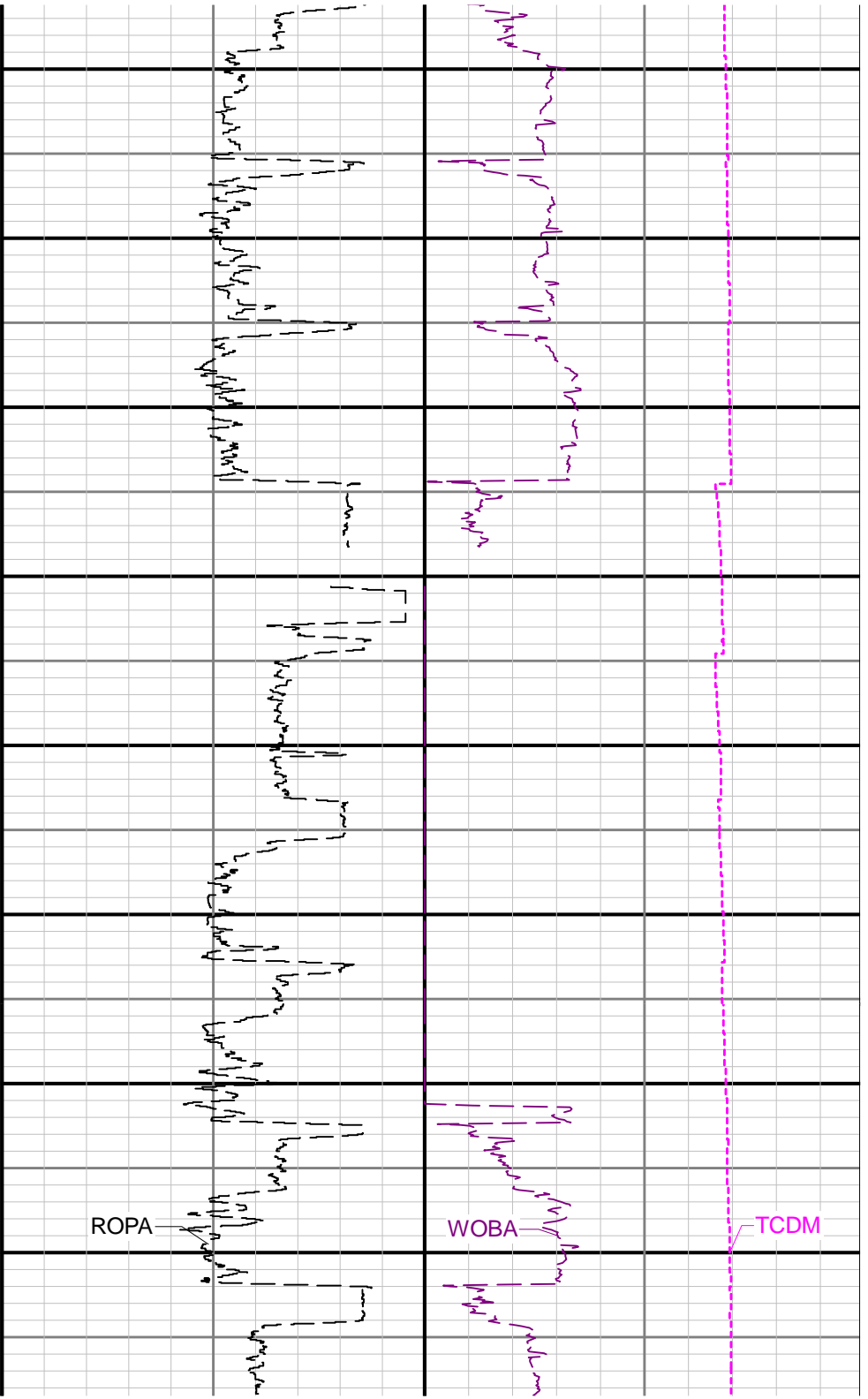


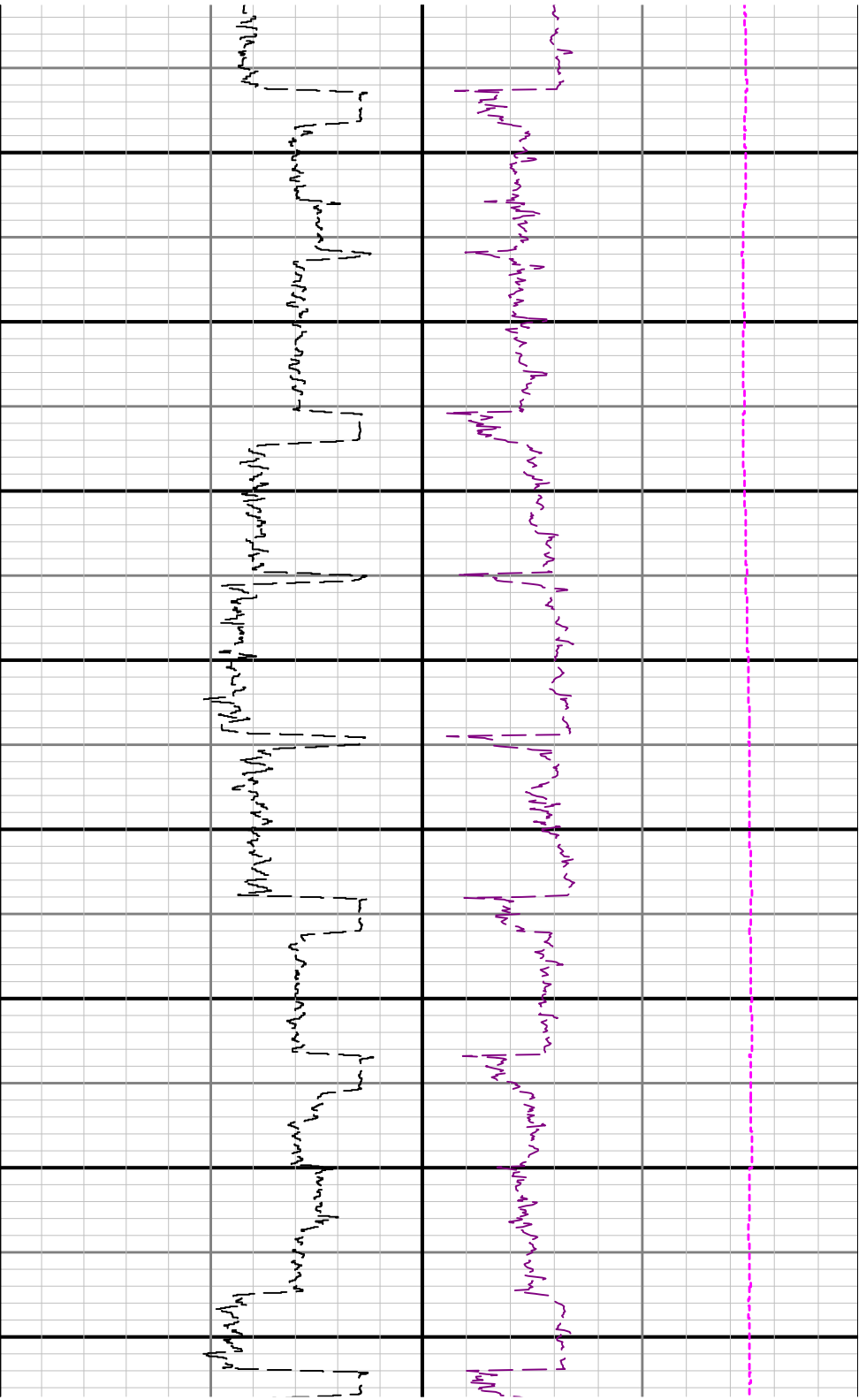




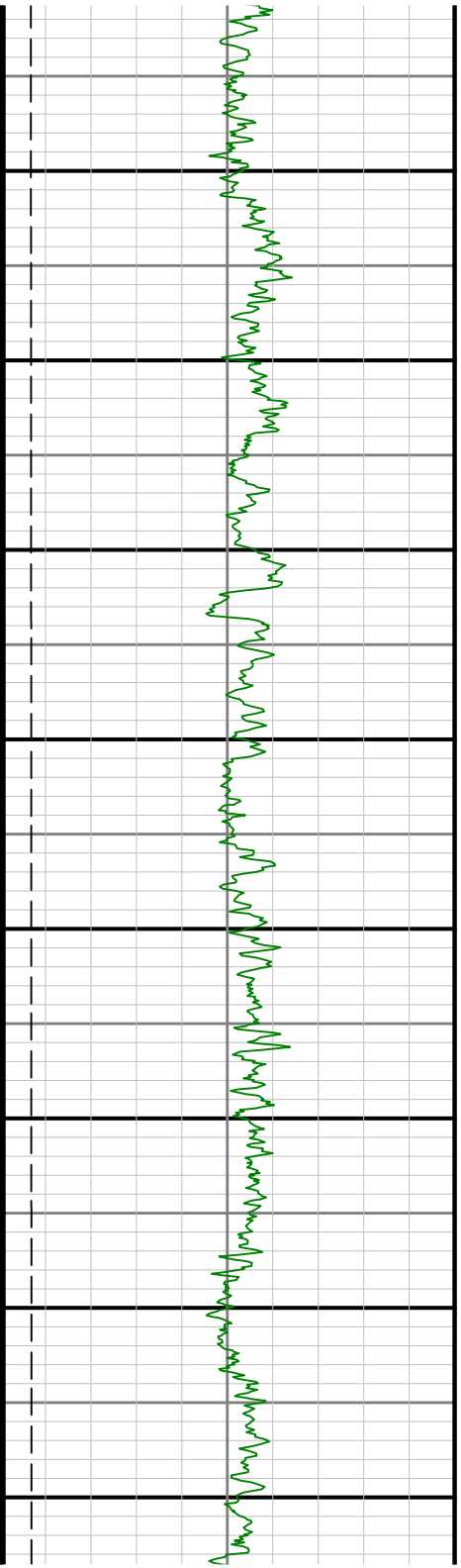


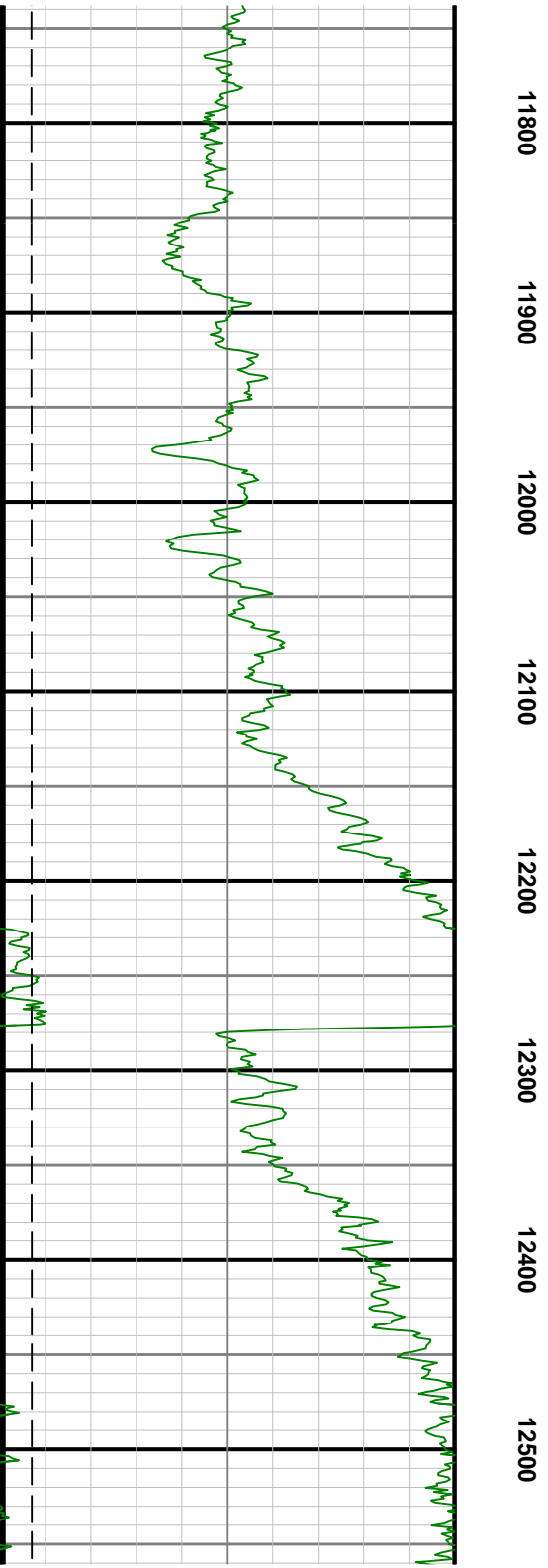
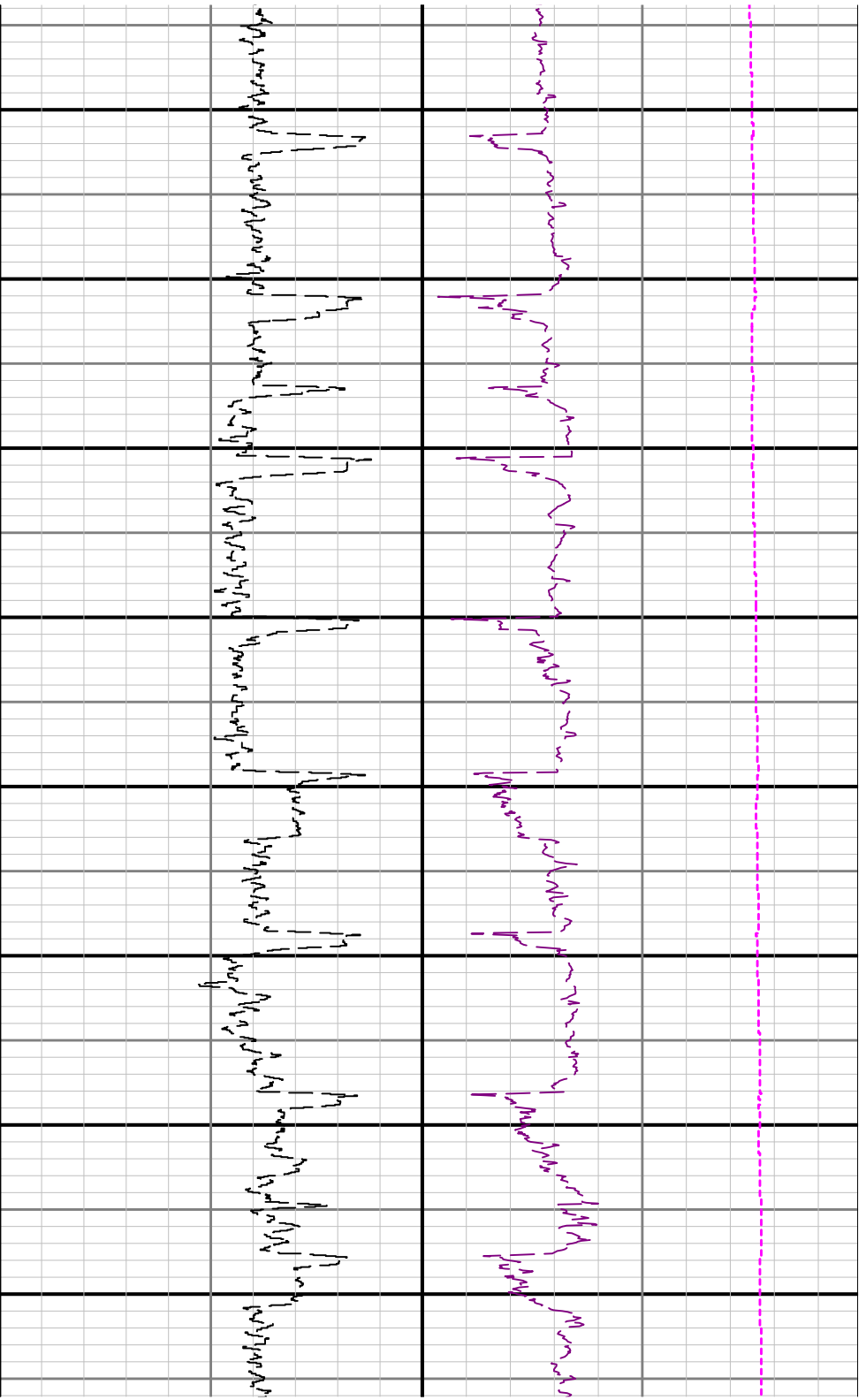
9300 9400 9500 9600 9700 9800 9900 10000

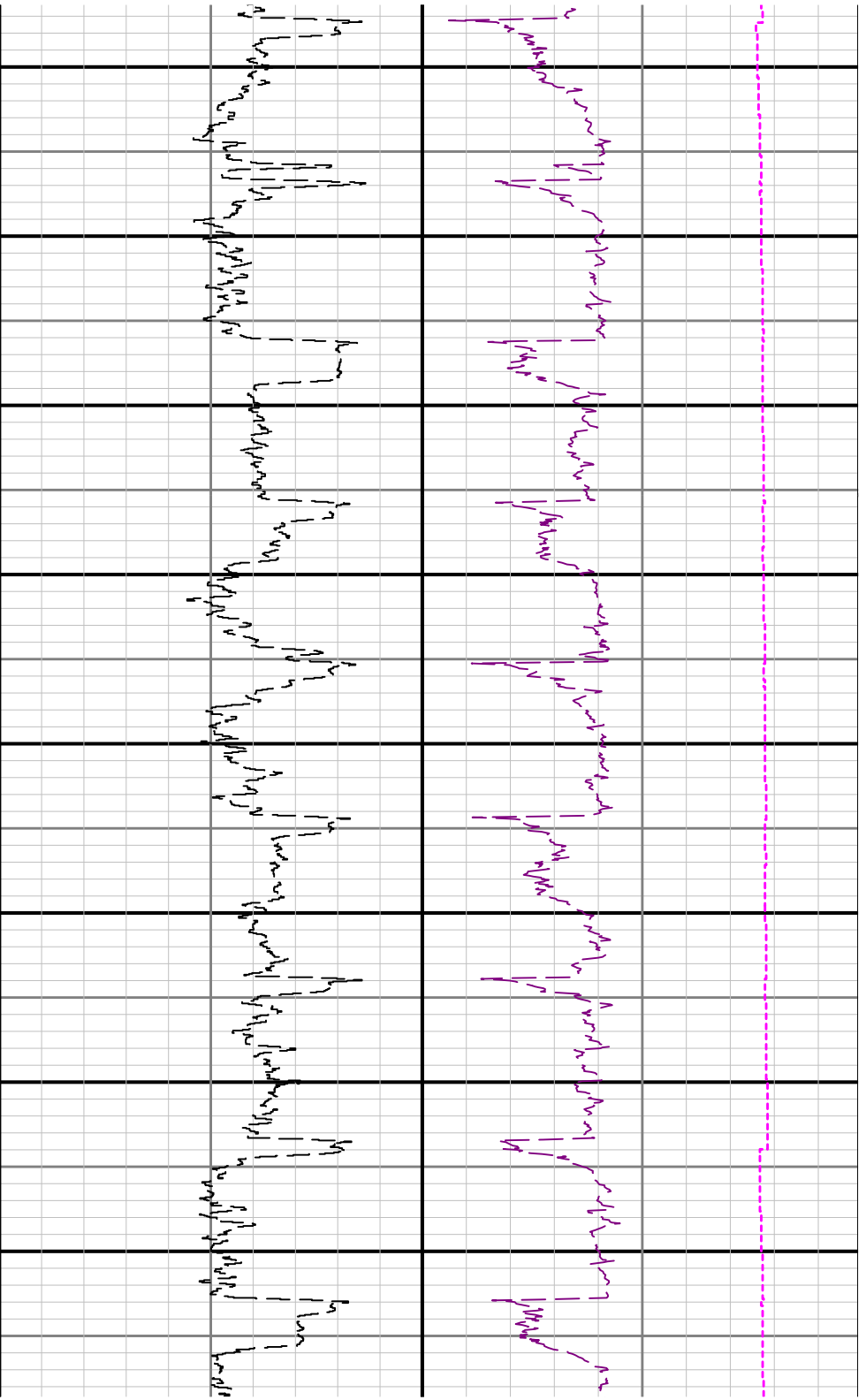




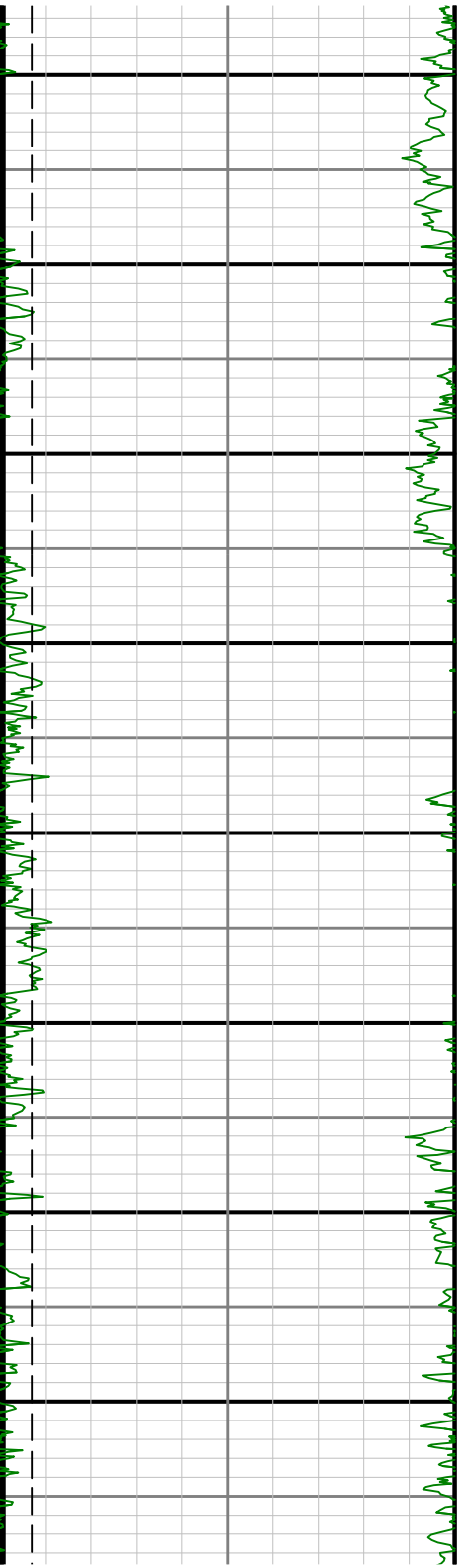
0 11000 11100 11200 11300 11400 11500 11600 11700

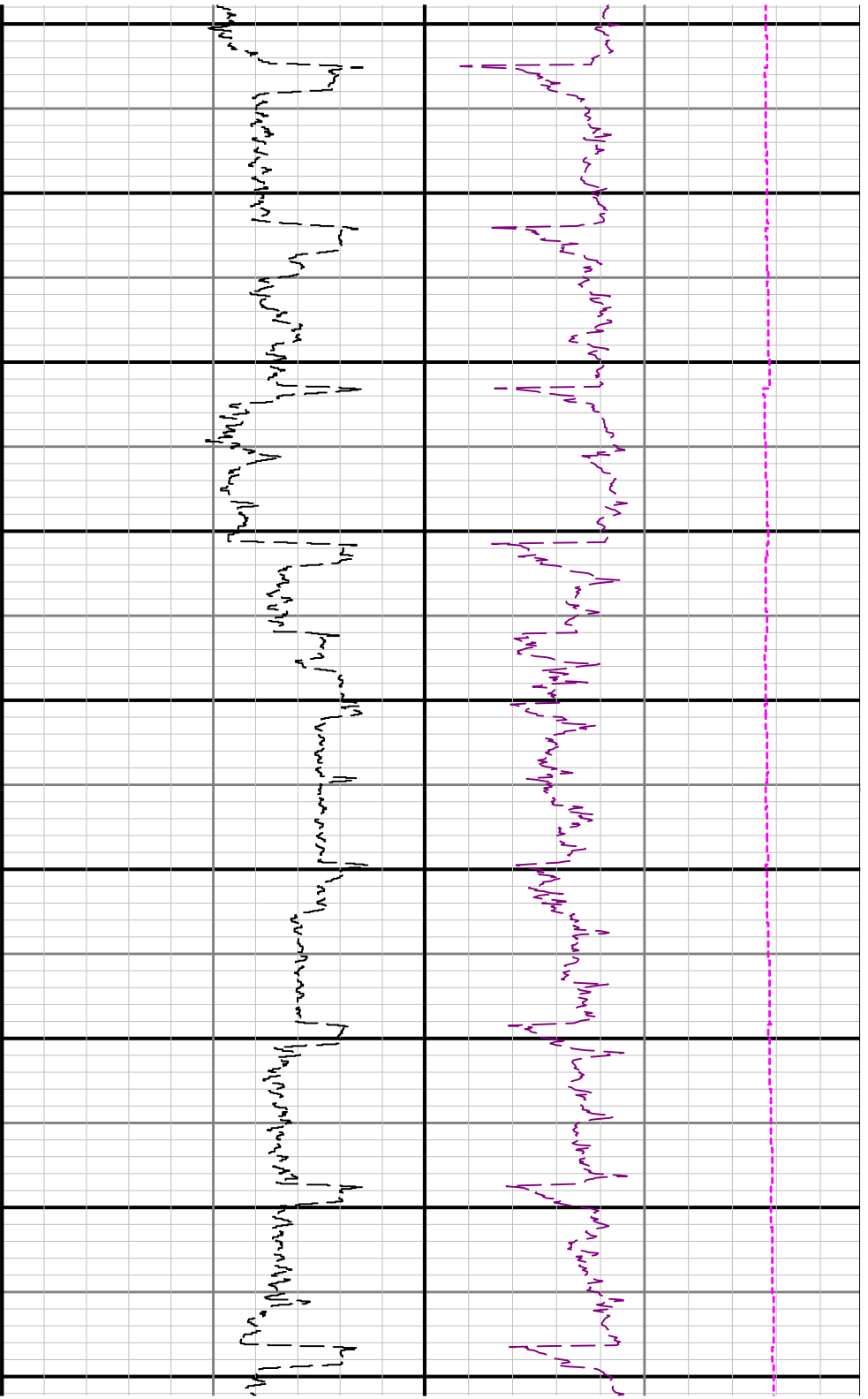






12600 12700 12800 12900 13000 13100 13200 13300





3400 13500 13600 13700 13800 13900 14000 14100 14200

