

part of Baker Hughes. Unless other contract terms have been agreed to by the parties, each party's liabilities and obligations shall be governed by Baker Hughes Incorporated's Worldwide Terms and Conditions."

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	1907.00	5227.00	1919.00	5233.00	2016-05-20 00:10	2016-05-20 15:01	13.02
2	2	8.500	PDC	2.00	AutoTrak Curve	5221.73	17620.55	5233.90	17627.10	2016-05-20 22:17	2016-05-23 08:17	51.89

Crew

Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite
Austin Small		2016-05-19	2016-05-23	Chad Hough		2016-05-19	2016-05-23	David Browning		2016-05-19	2016-05-20
Hans Carey		2016-05-19	2016-05-23	Will Drake		2016-05-19	2016-05-23	Alex Osbourne		2016-05-20	2016-05-23

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+ (%)
2016-05-19 13:31		1	1920.00	Oil Based Mud	9.6	57	N/A	18.0	64/24	Active Pit	37000	0.00
2016-05-20 20:10		2	5233.90	Oil Based Mud	9.6	57	N/A	18.0	64/24	Active Pit	37500	0.00
2016-05-21 02:30		2	6166.51	Oil Based Mud	9.3	47	N/A	17.6	66/23	Active Pit	41000	0.00
2016-05-21 10:37		2	8592.00	Oil Based Mud	9.6	44	N/A	17.8	65.5/22	Active Pit	42500	0.00
2016-05-22 14:00		2	14026.00	Oil Based Mud	9.7	46	N/A	18.0	66/21	Active Pit	41000	0.00
2016-05-23 02:45		2	16595.00	Oil Based Mud	9.5	46	N/A	20.8	65/23.5	Active Pit	41000	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	12194646	Near Bit VSS	5.93	6.55	7.000	4.330
1	ATC_SU	12194646	Near Bit Inclination	5.93	6.55	7.000	4.330
1	ATC_MWD	12252765	Gamma (single)	2.20	12.17	7.000	3.250
1	ATC_MWD	12252765	Directional (mag)	12.27	22.24	7.000	3.250
2	ATC_SU	12798941	Near Bit VSS	5.93	6.55	7.000	4.330
2	ATC_SU	12798941	Near Bit Inclination	5.93	6.55	7.000	4.330
2	ATC_MWD	12161072	Gamma (single)	2.18	12.17	7.000	3.250
2	ATC_MWD	12161072	Directional (mag)	12.25	22.24	7.000	3.250

Comments


- 1
- Baker Hughes Runs 1 and 2 utilized a 6.75 inch AutoTrak Curve rotary Steerable Assembly tool behind a 8.5 inch bit from 1919 ft MD to 17626 ft MD (1919 ft TVD to 6667 ft TVD).
- 2
- Depth Measurements obtained from a depth control system not supplied or operated by Baker Hughes. Due to a lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
- 3
- Small Gaps in gamma data are due to tool power cycling off during downlinks and not recording data.

Remarks

Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	1919.00	8.500	1	The interval from 1907 ft MD to 1919 ft MD (1907 ft TVD to 1919 ft TVD) has only gamma ray data due to gamma ray sensor to bit offset.
2	5227.00	8.500	1	The interval from 5227 ft MD to 5233 ft MD was logged up to 8 hours after drilling due to trip out of hole to inspect and change AutoTrak, motor and Bit due to erratic torque causing a loss of ROP.
3	17615.00	8.500	2	The interval from 17615 ft MD to 17626 ft MD (6667 ft TVD) was not logged for gamma ray due to bit sensor offset at well TD.

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

Shadow A26-637

Date From:2016-05-20 14:14

Date To:2016-05-23 02:17

2016-05-23 19:13

Top:1907.00

Bottom:17626.00

Gamma Ray - Apparent 3 ft Average GRAM

0150

API

True Vertical Depth TVD

70001000

ft

MD 1:1200 feet

Rate of Penetration 3 ft Average ROPA

10000

ft/h

Surface Weight On Bit 1 ft Average WOBA

0100

klb

Downhole Temperature TCDM

0300

degF

1800

1900 2000 2100 2200 2300 2400 2500 2600

>R1

See Remark 1

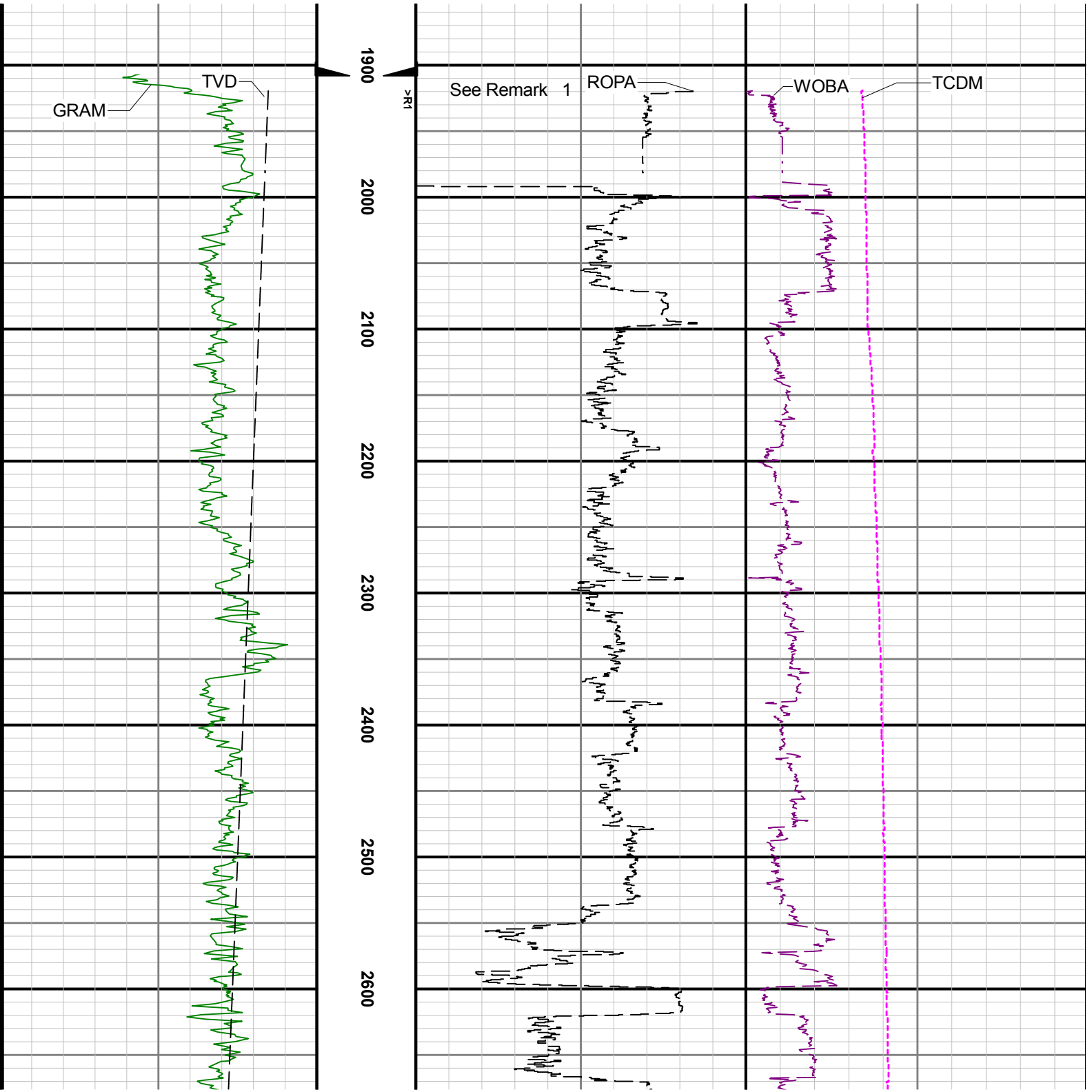
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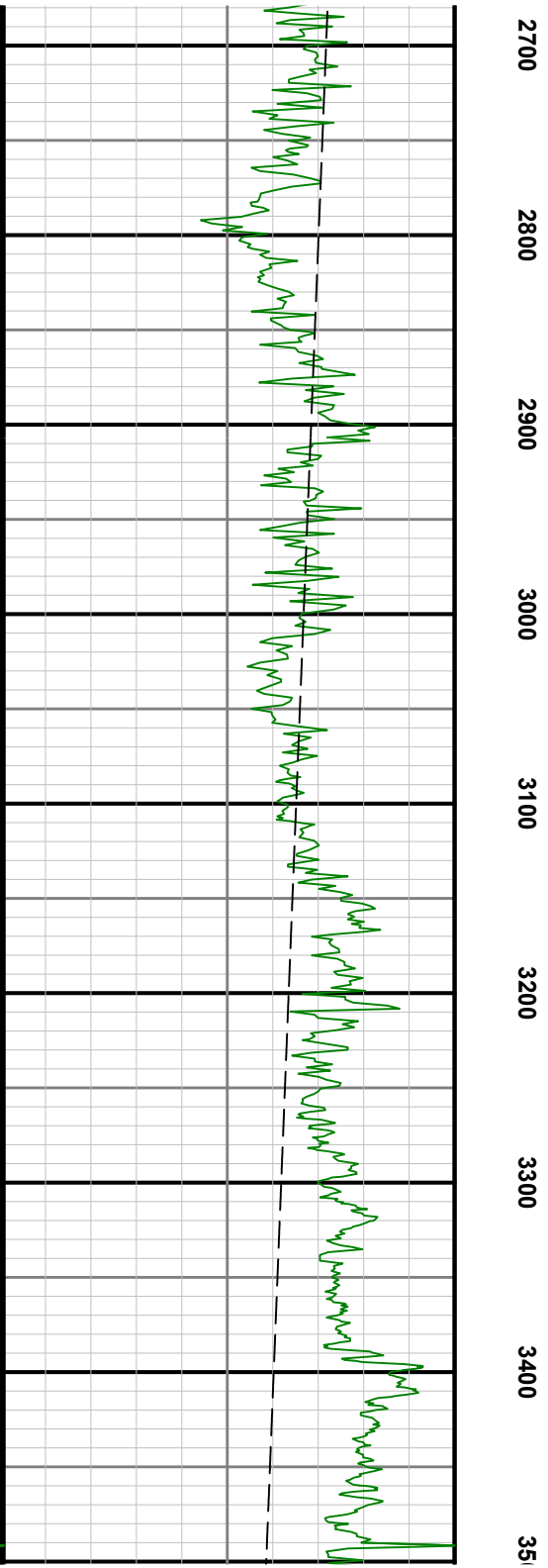
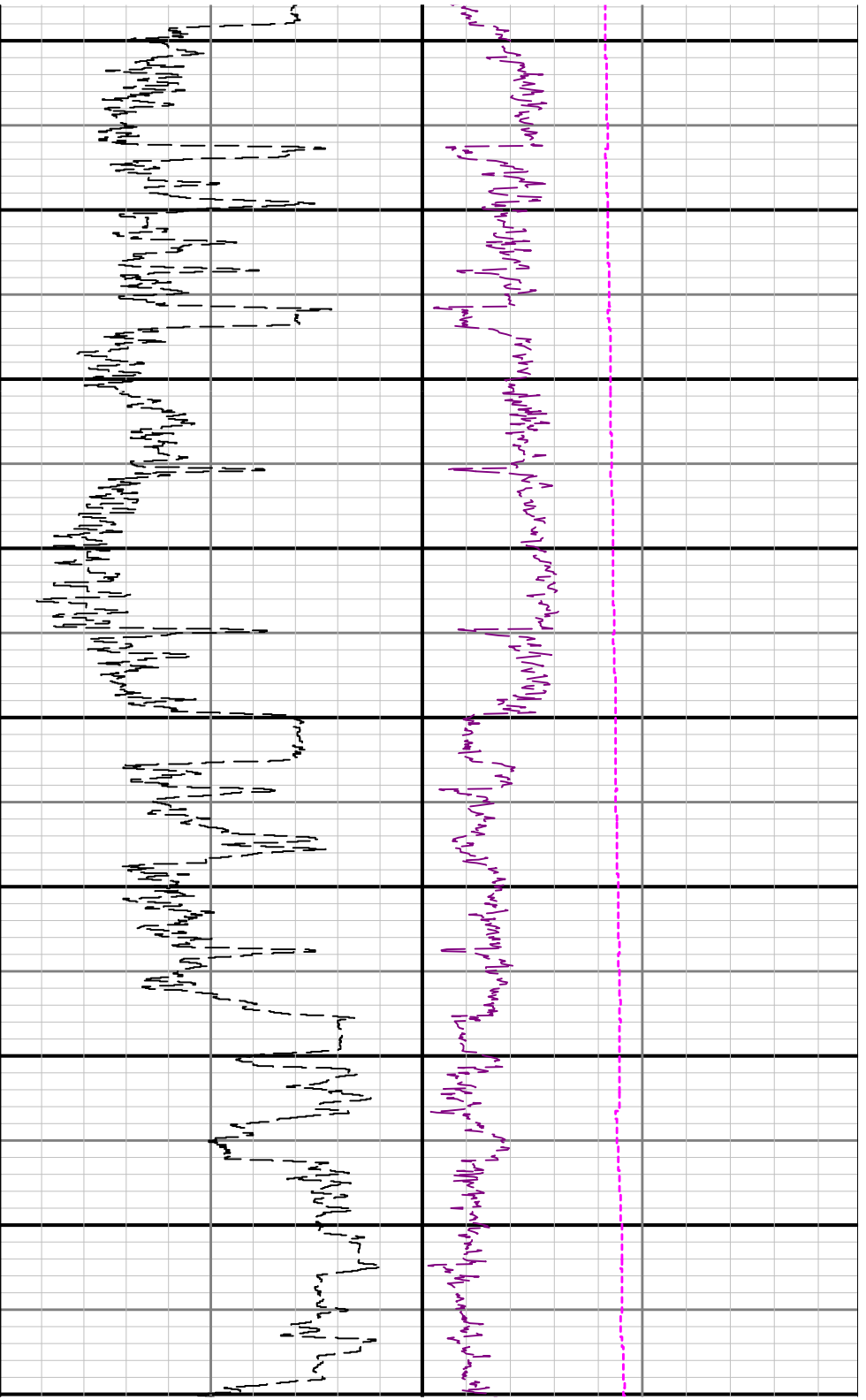
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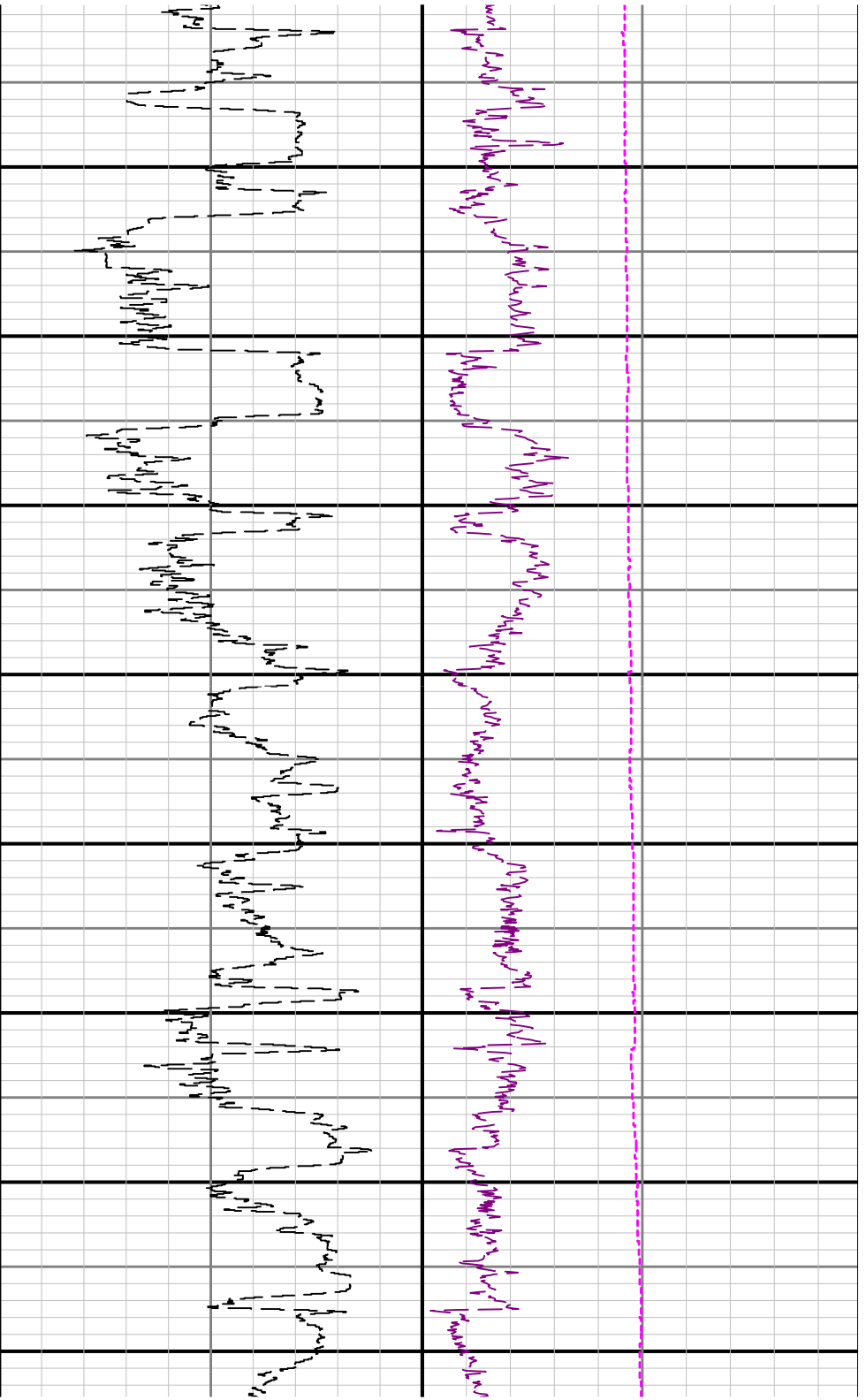
TCDM

GRAM

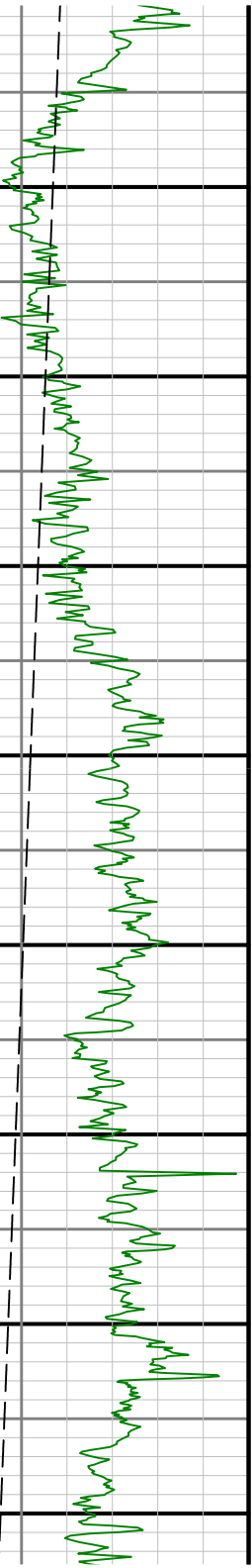
TVD

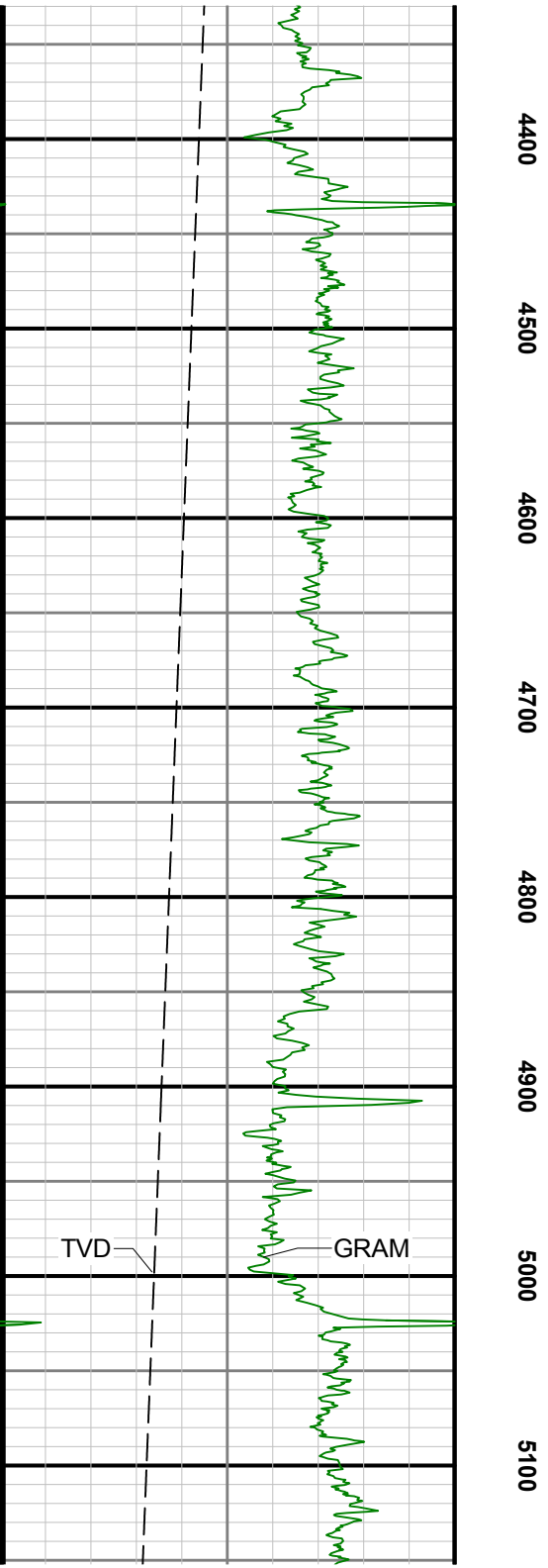
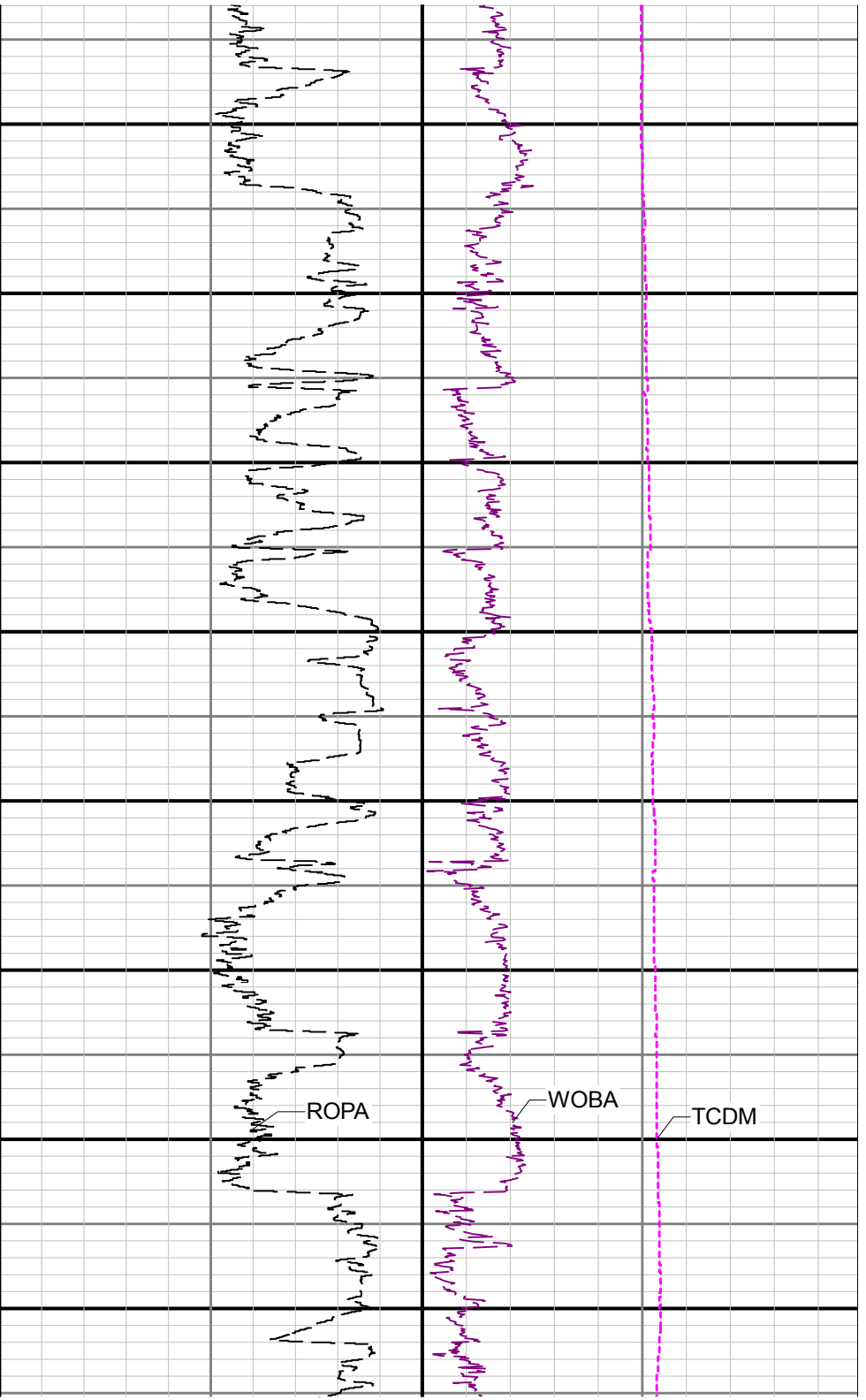


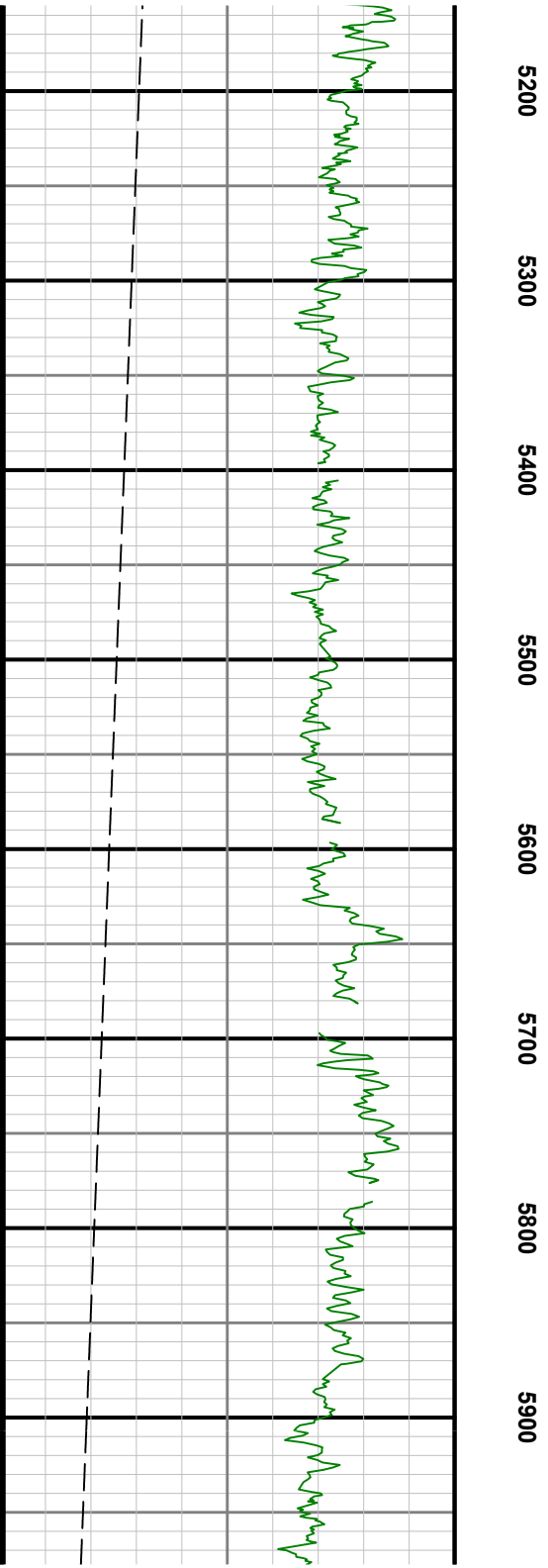
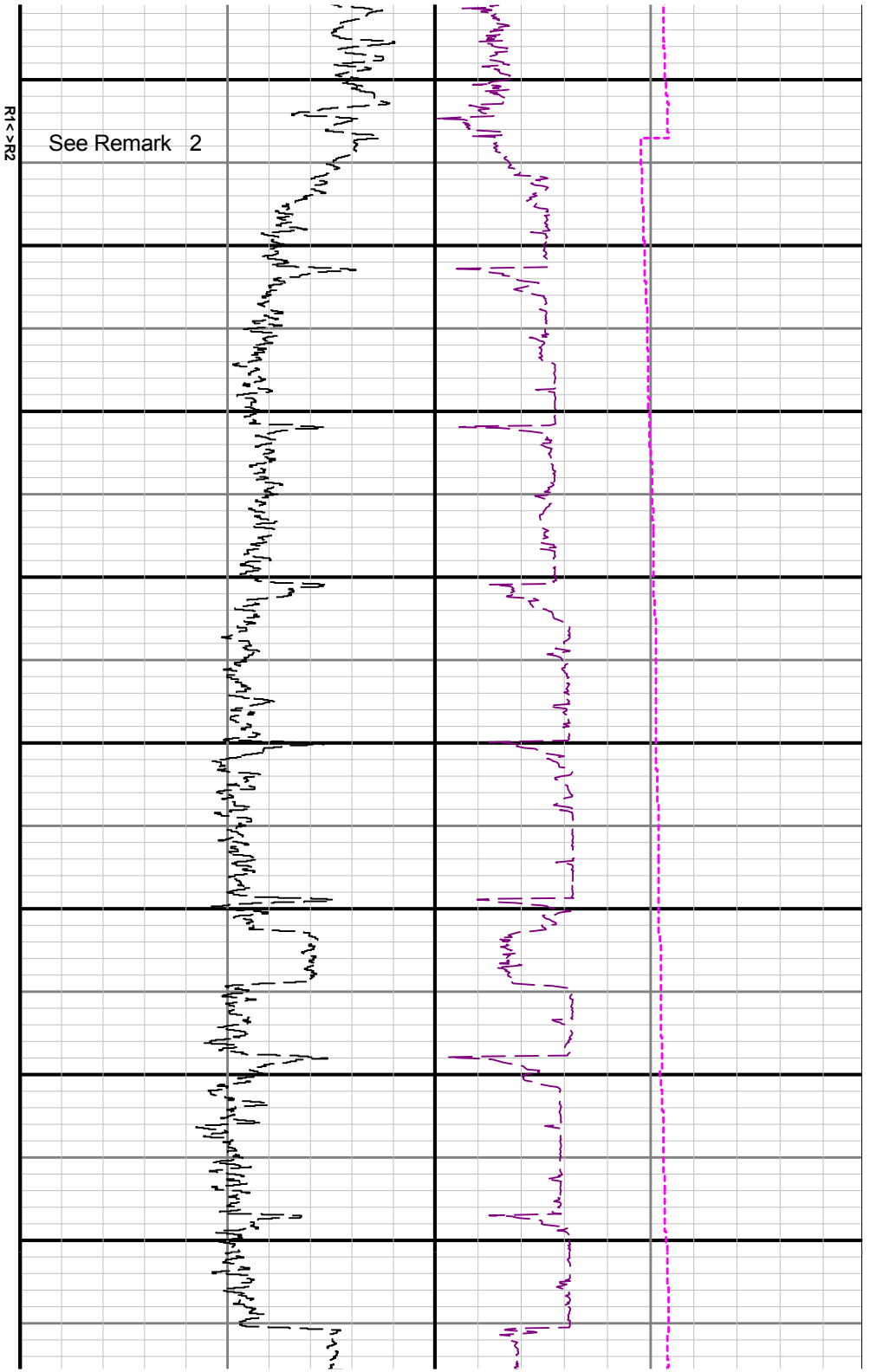


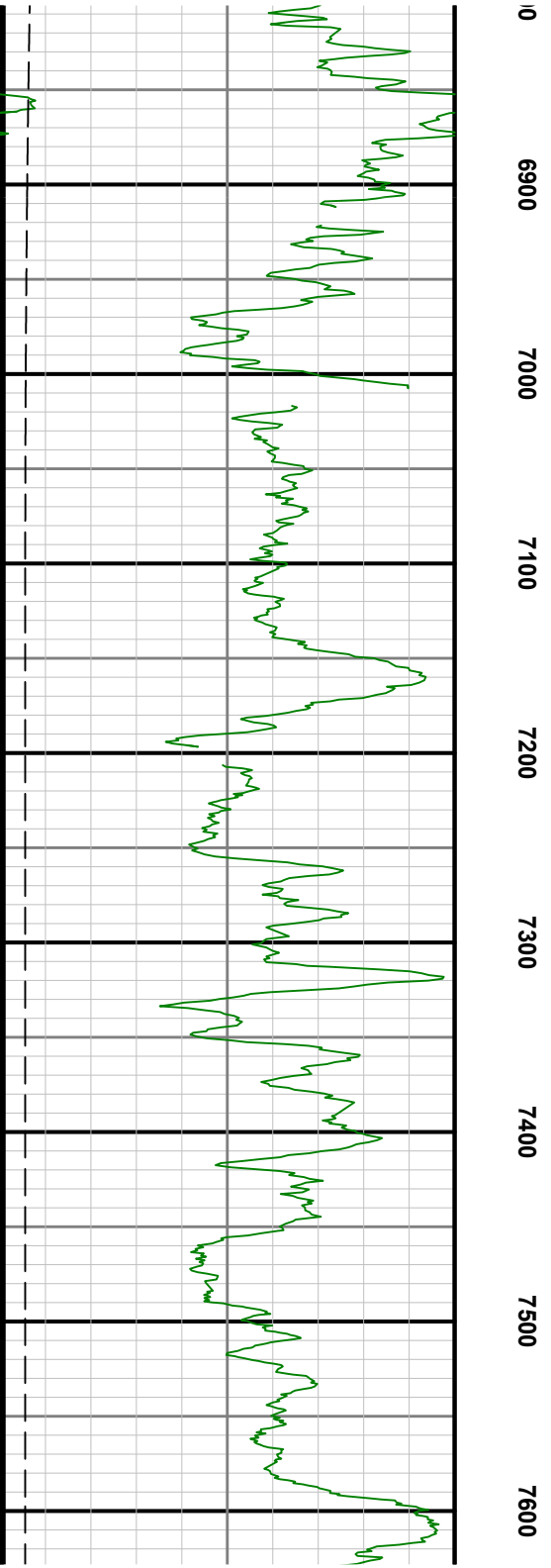
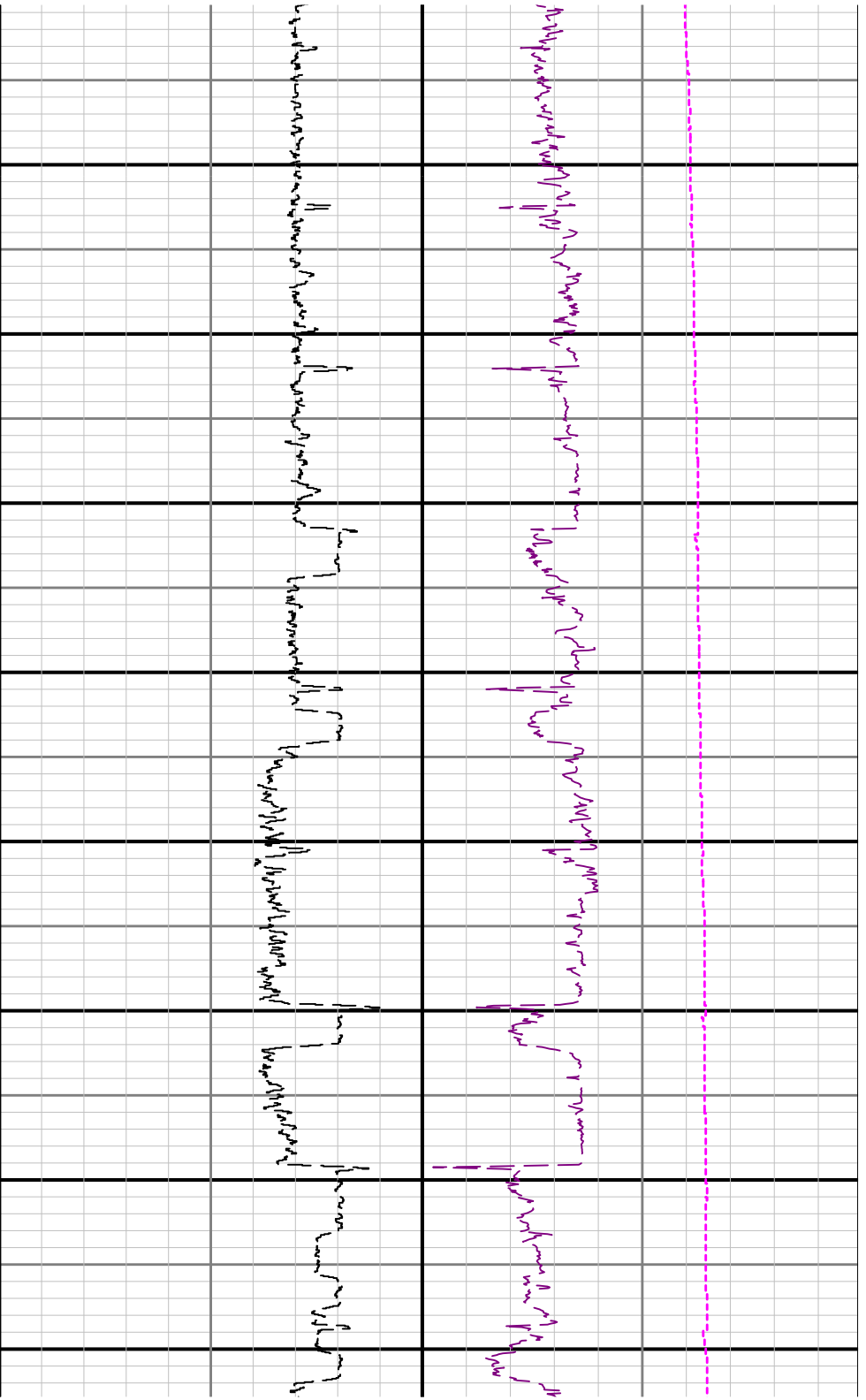


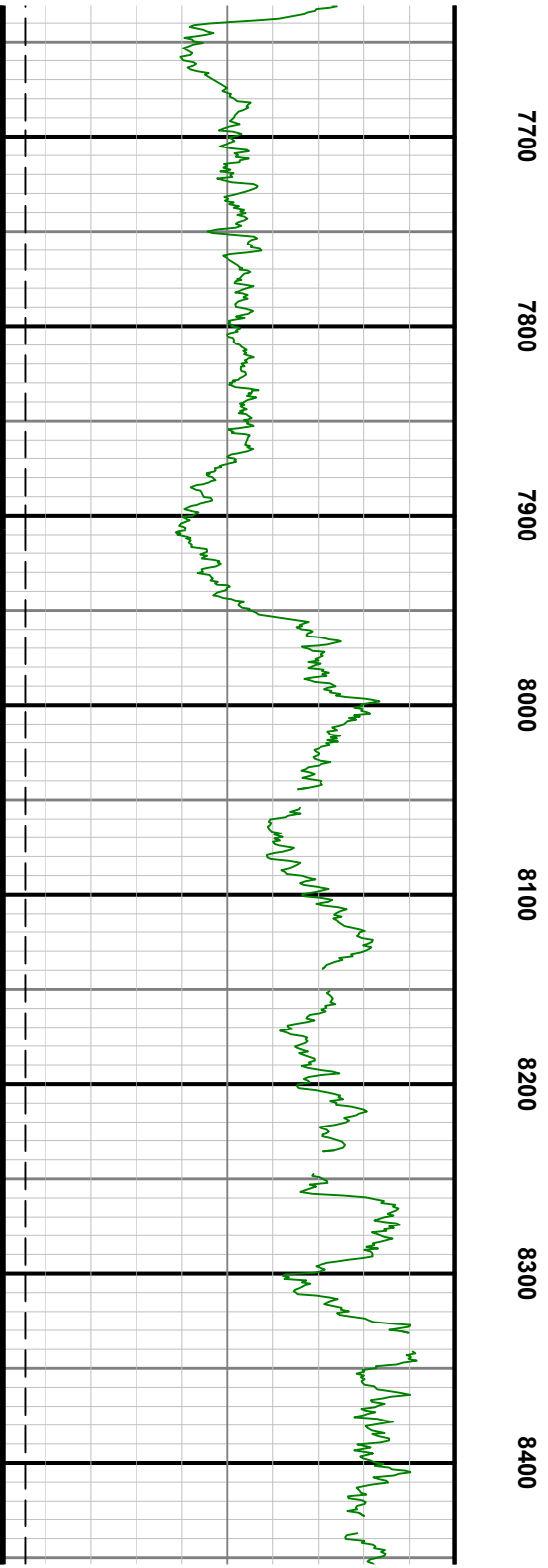
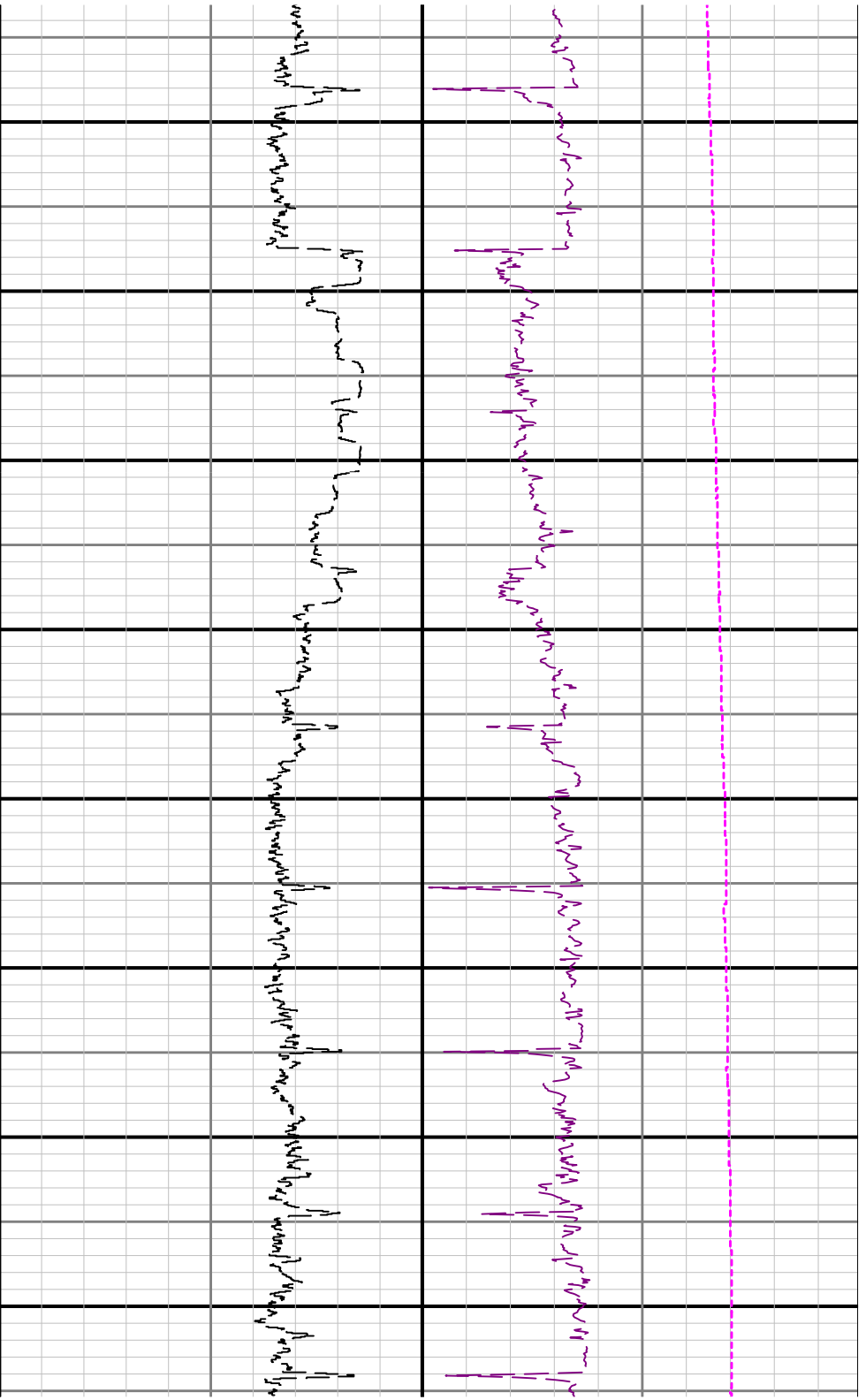
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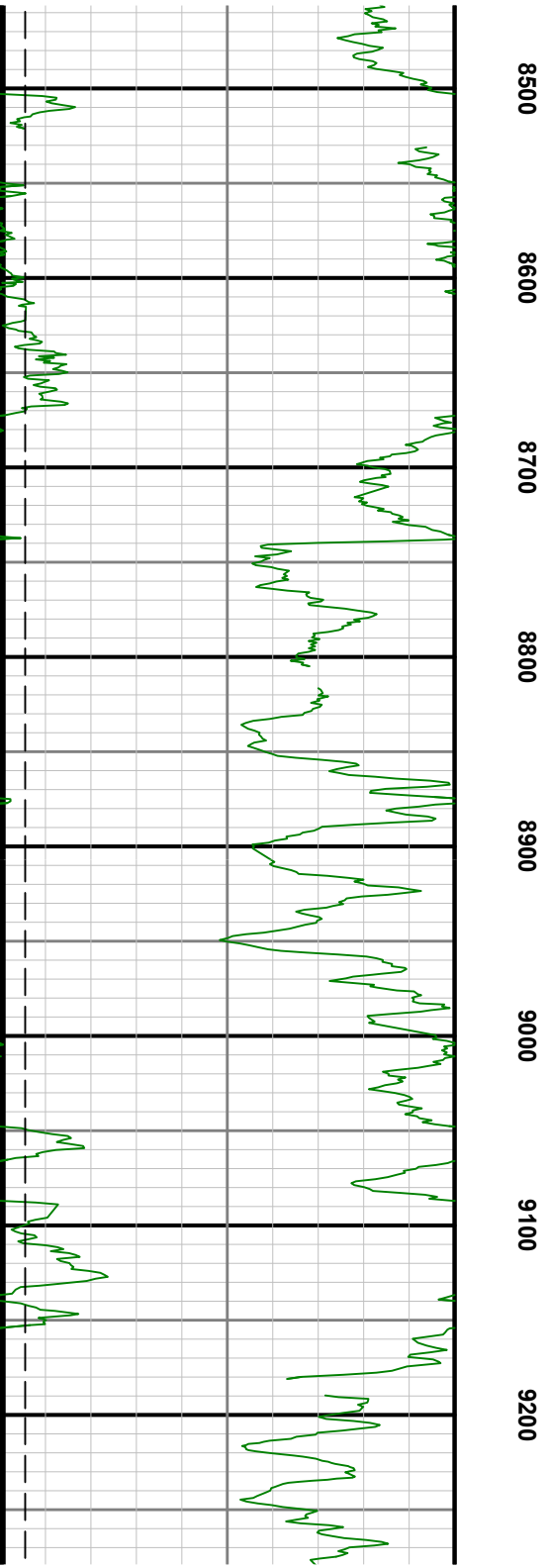
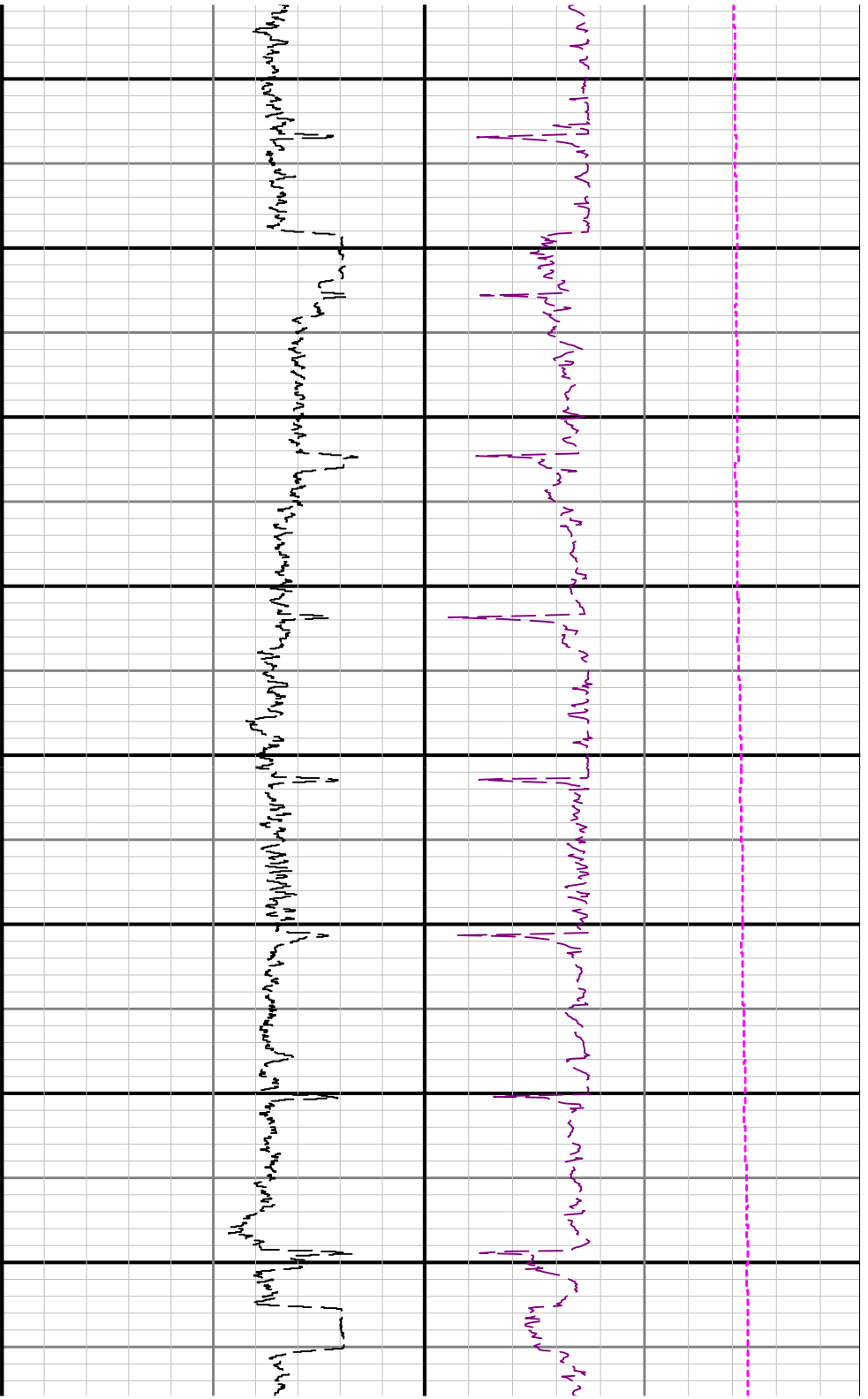


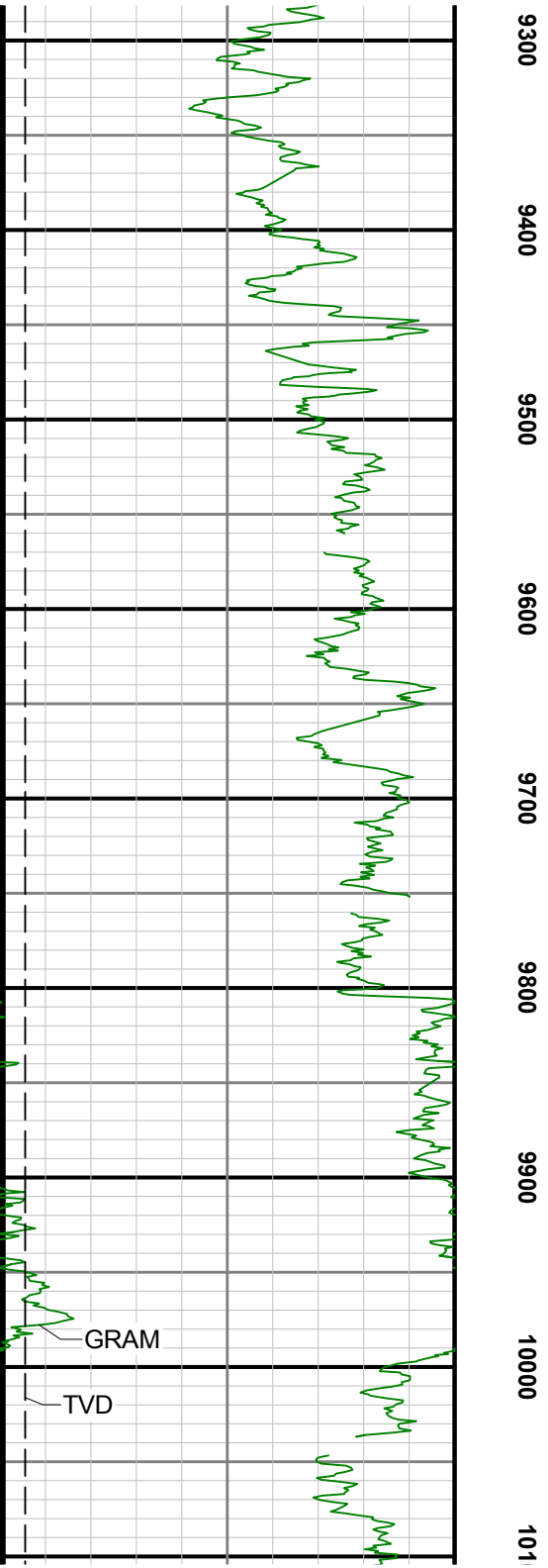
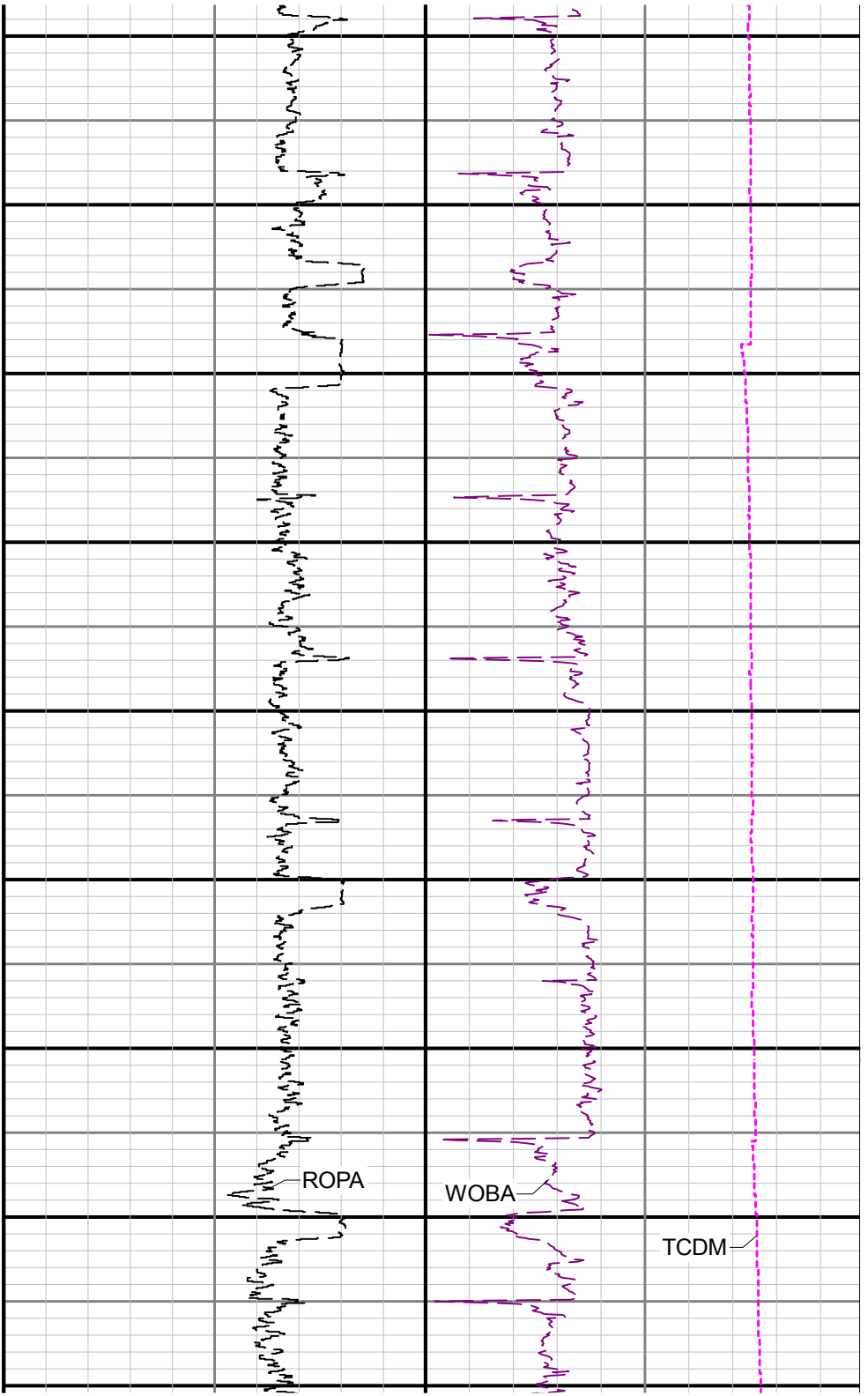


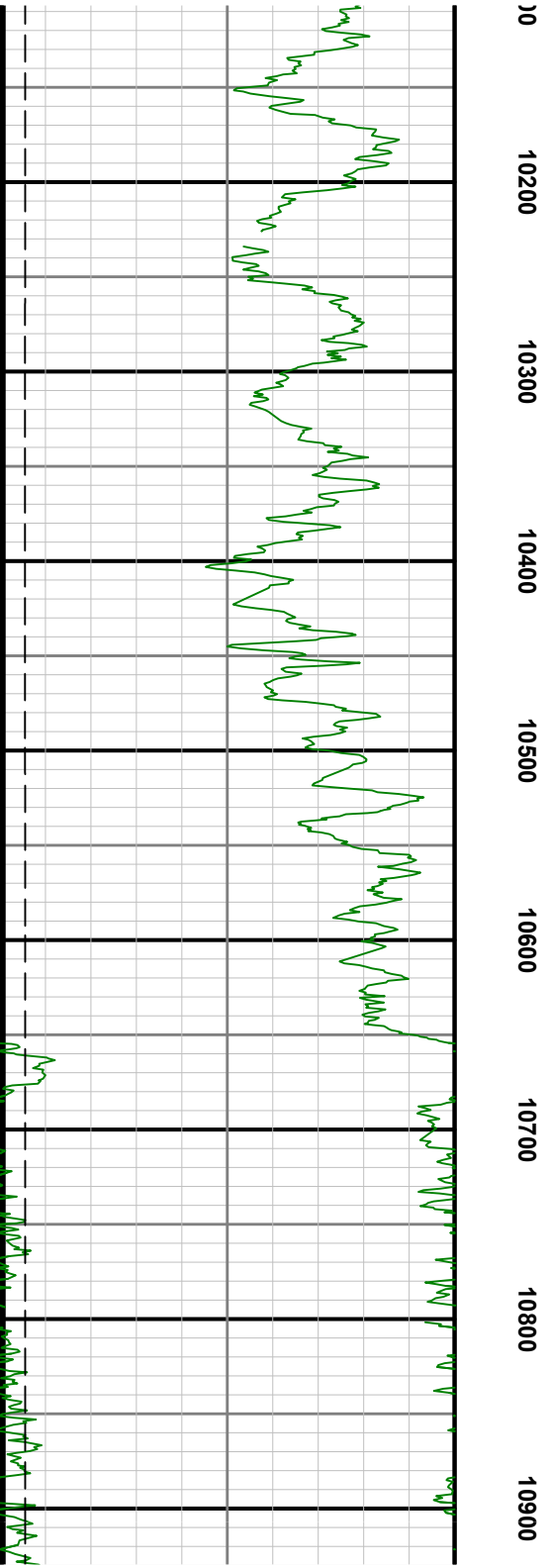
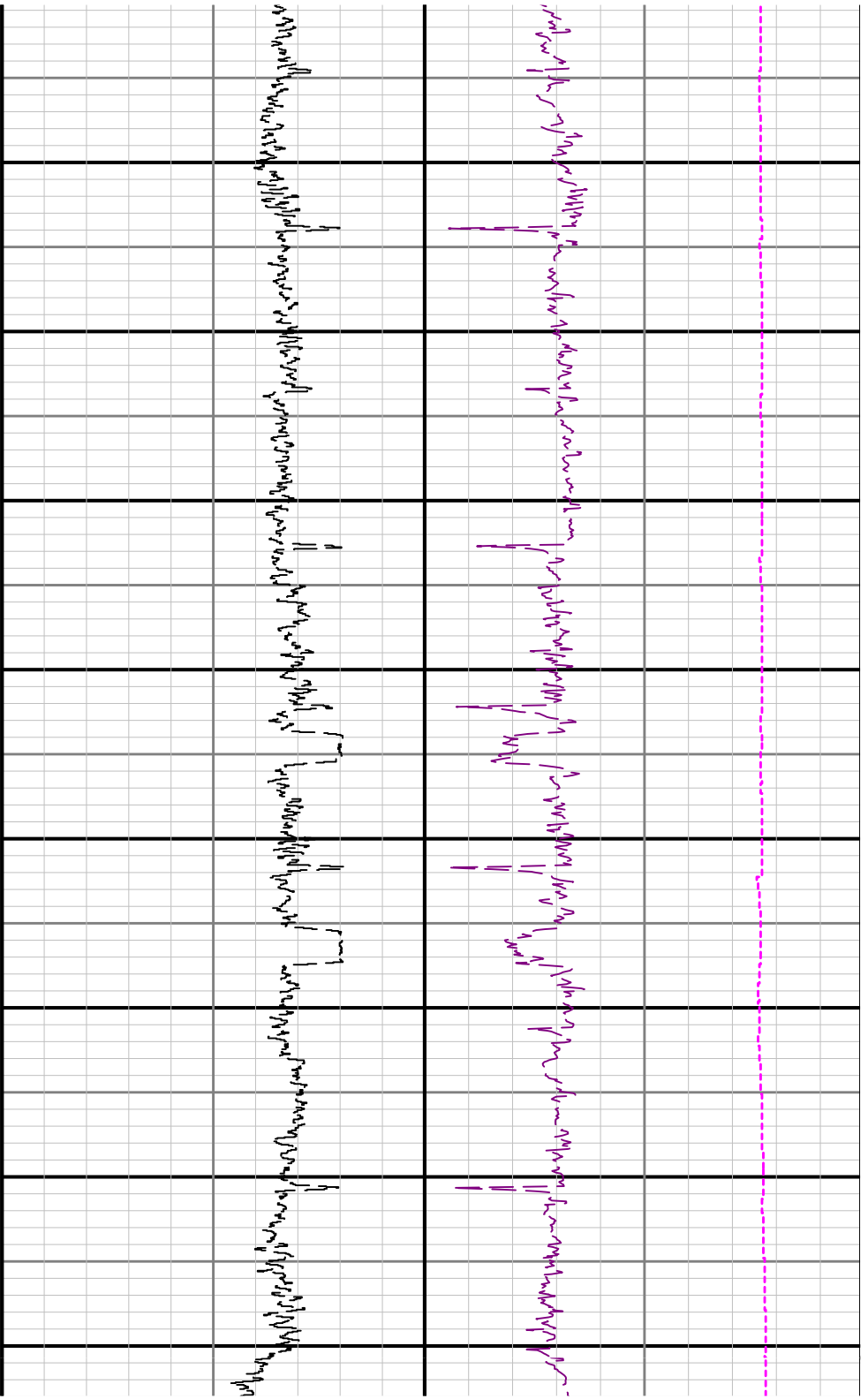


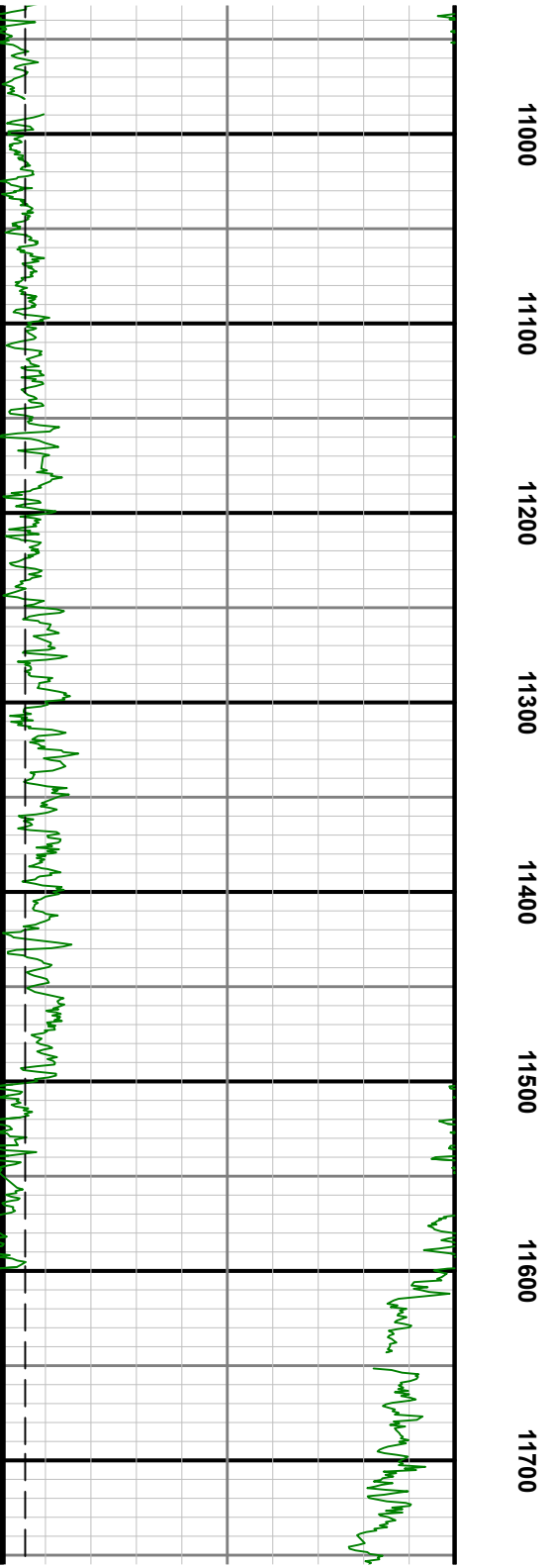
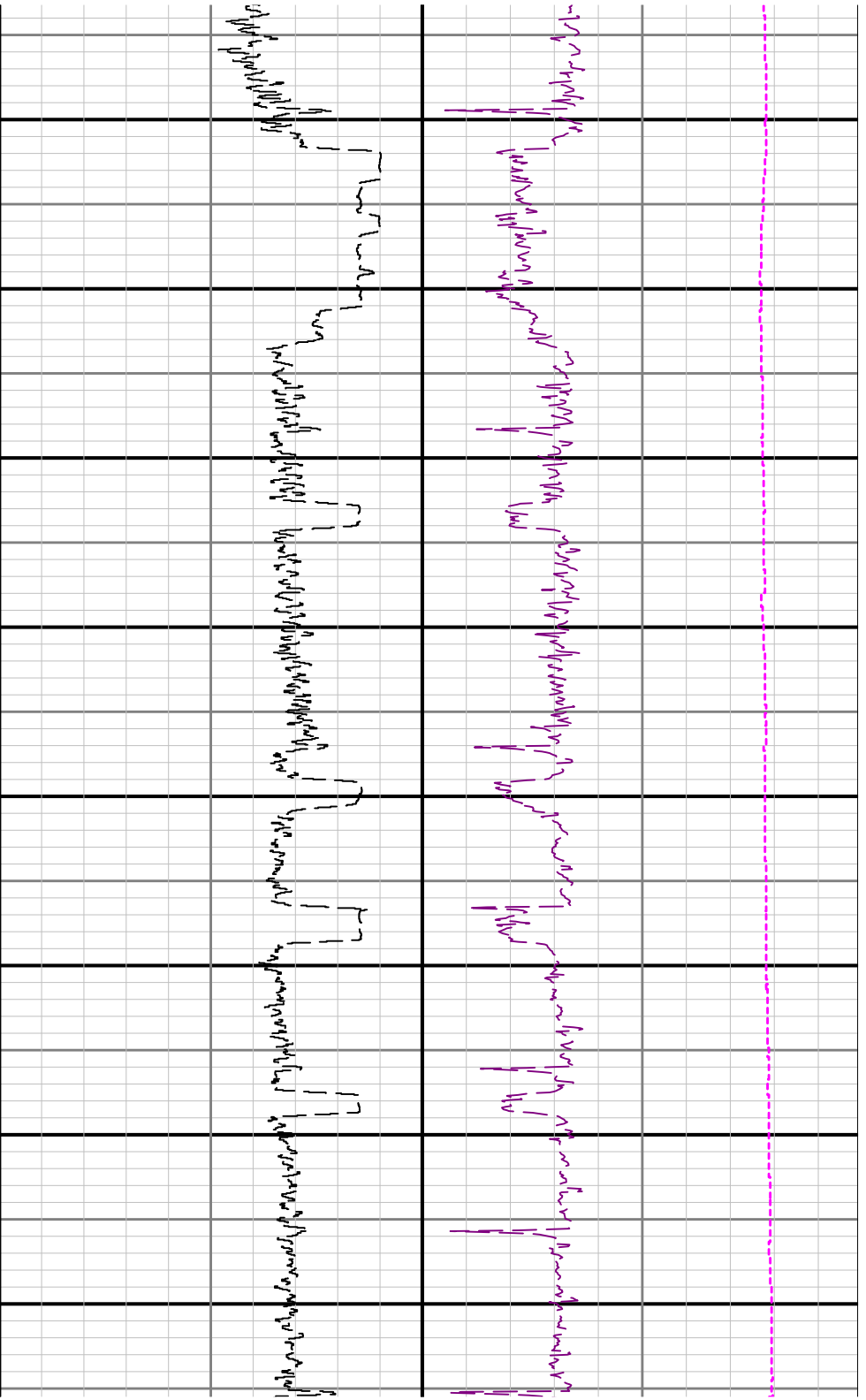


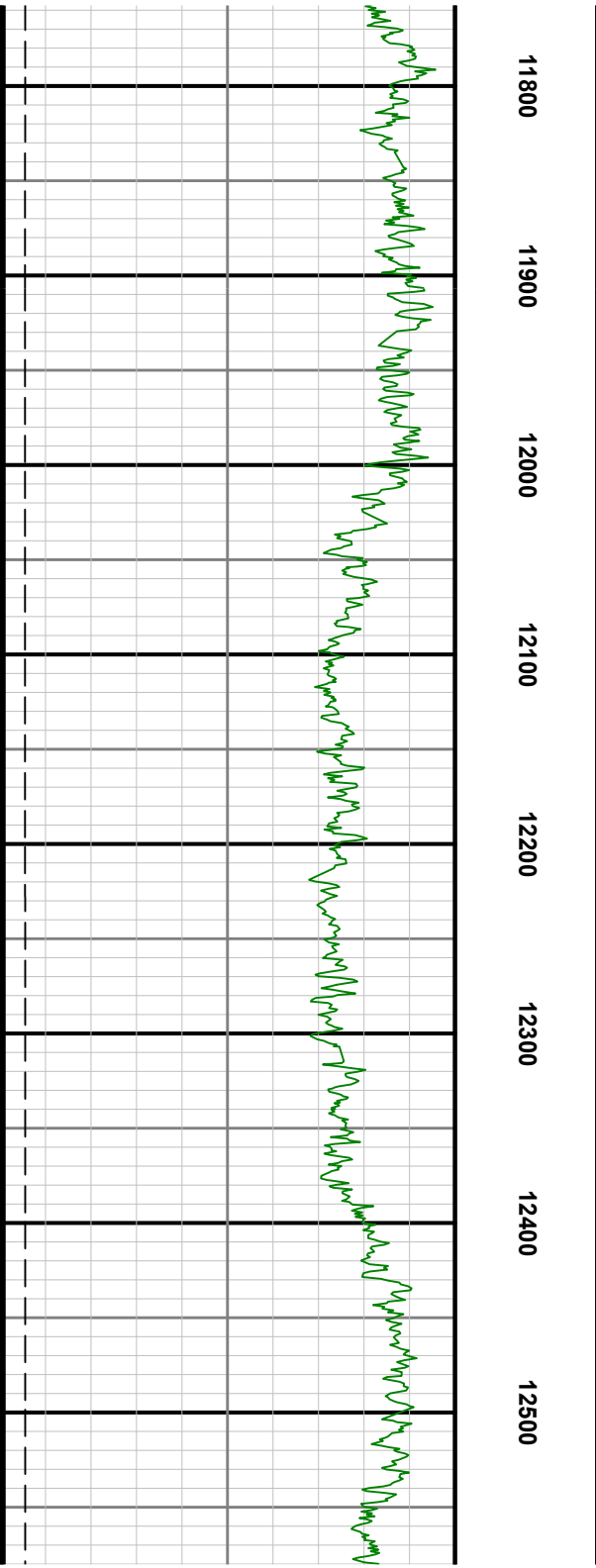
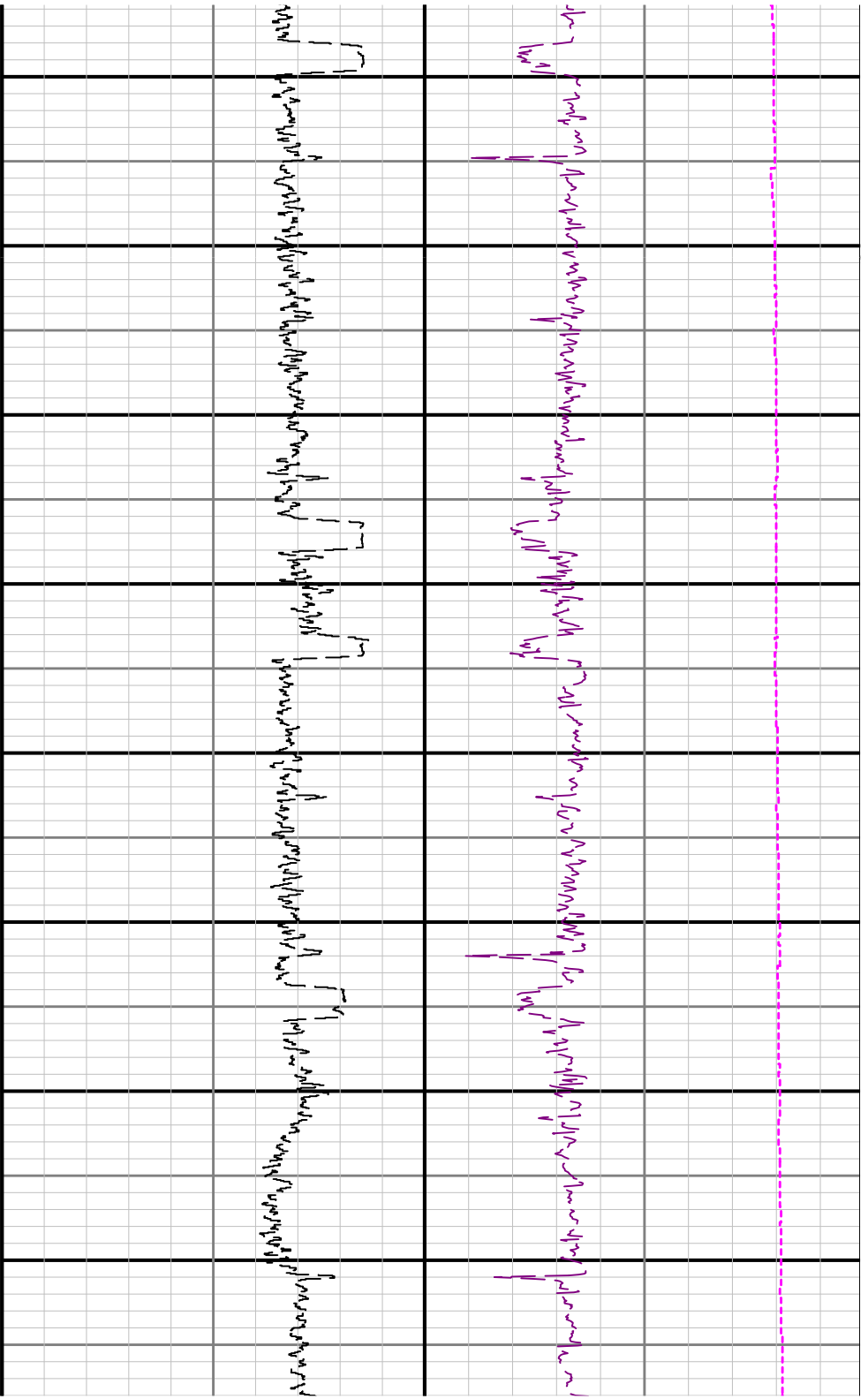


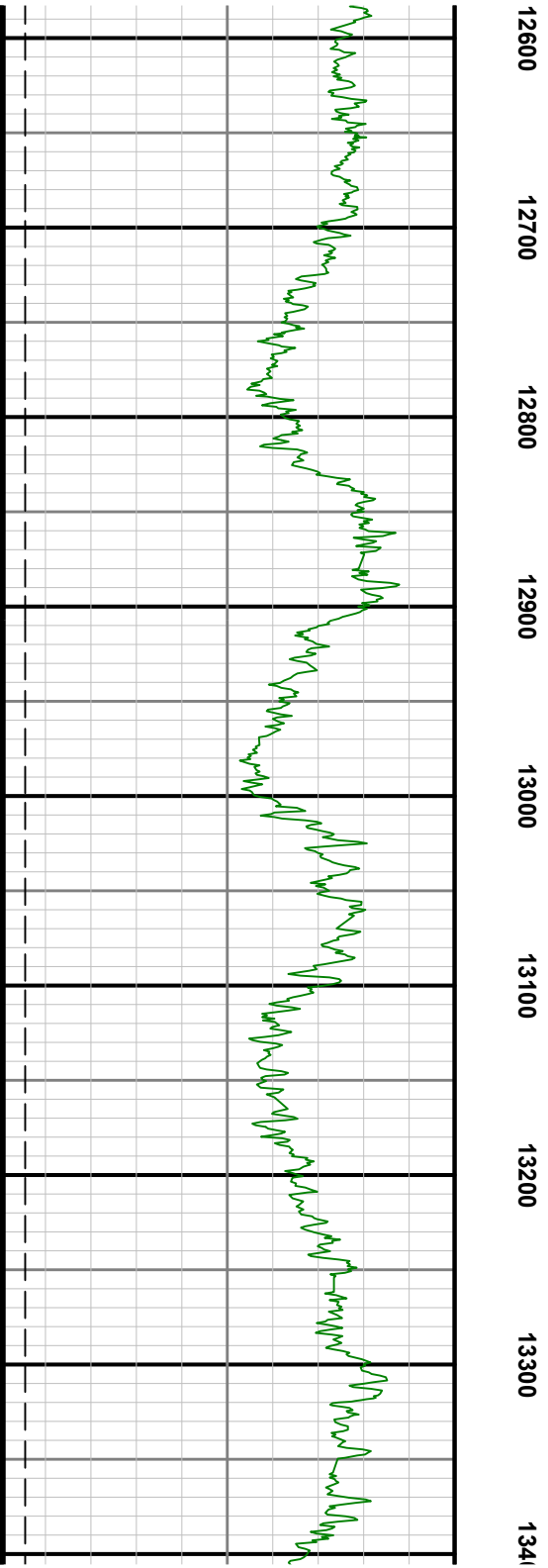
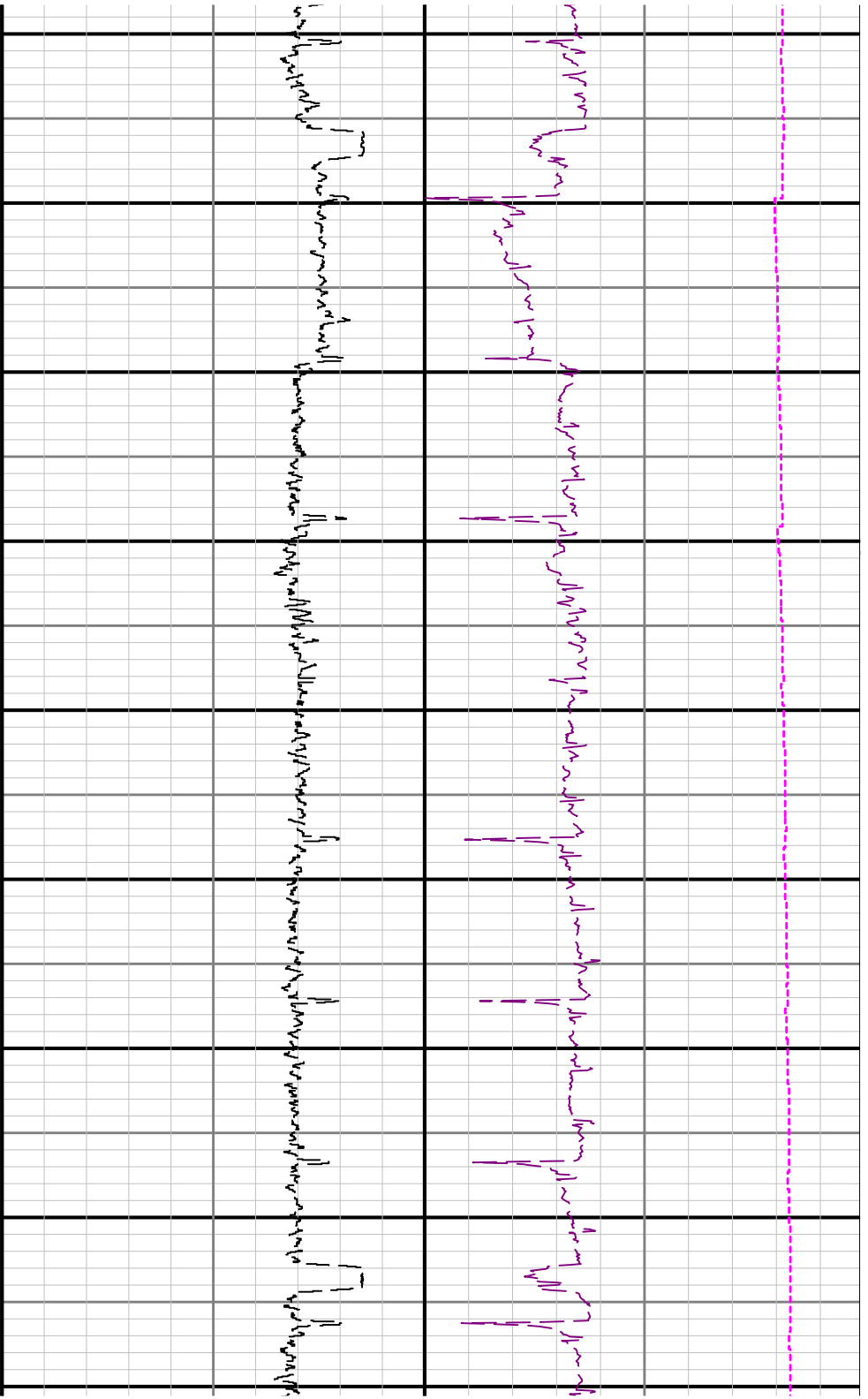


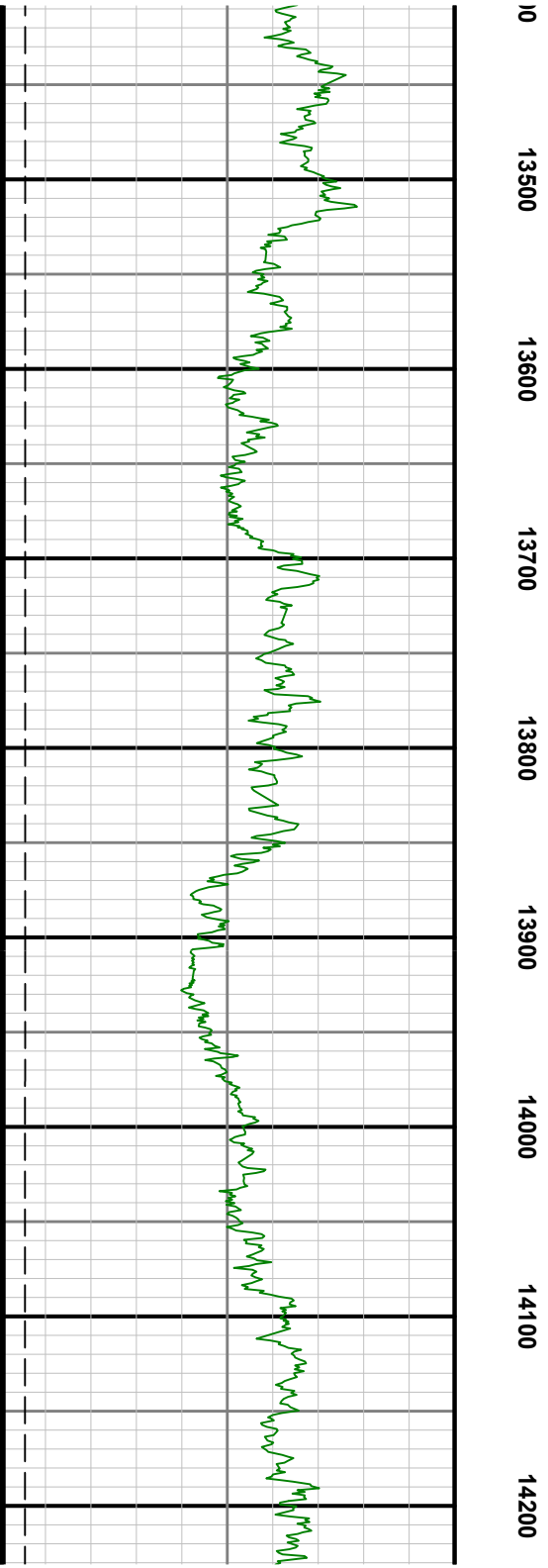
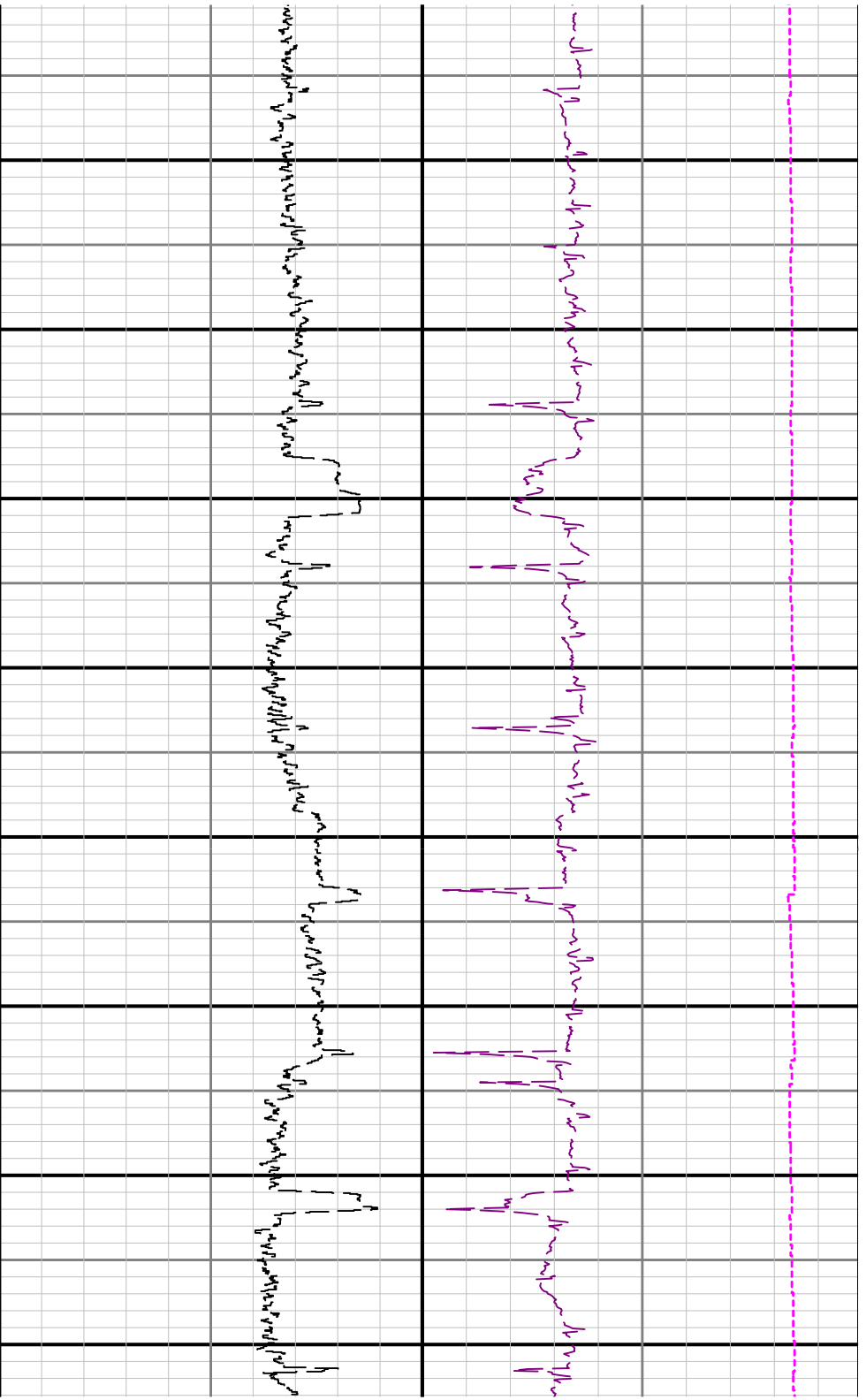


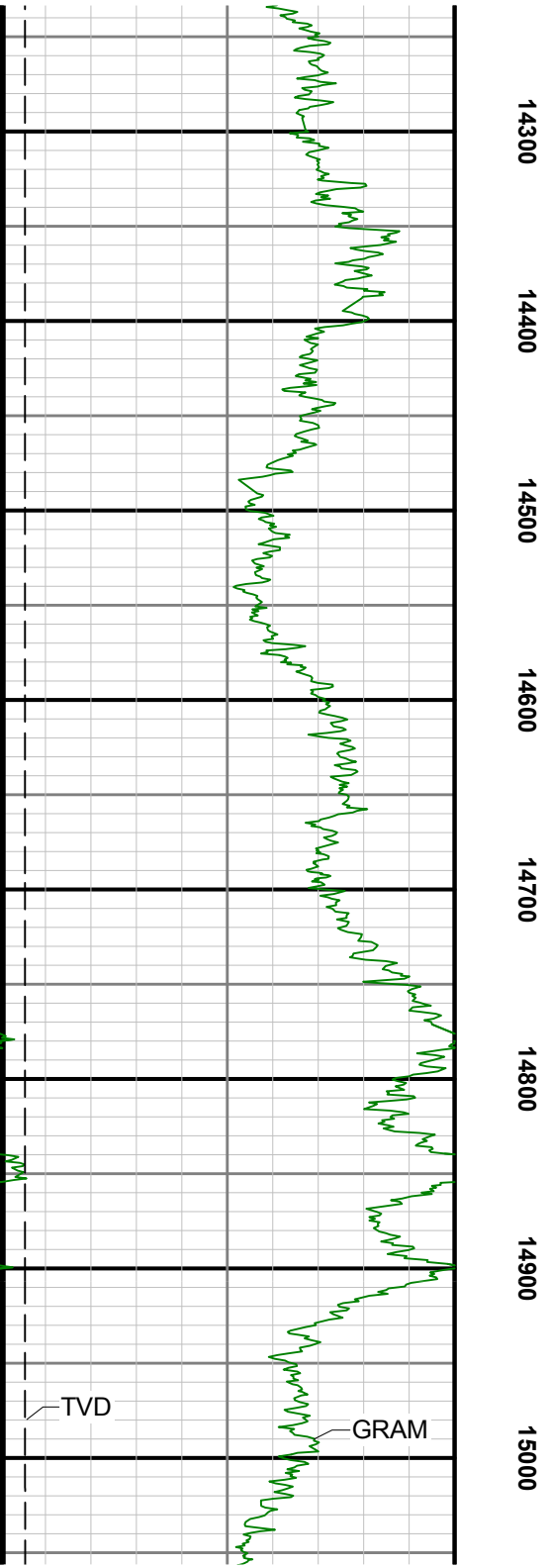
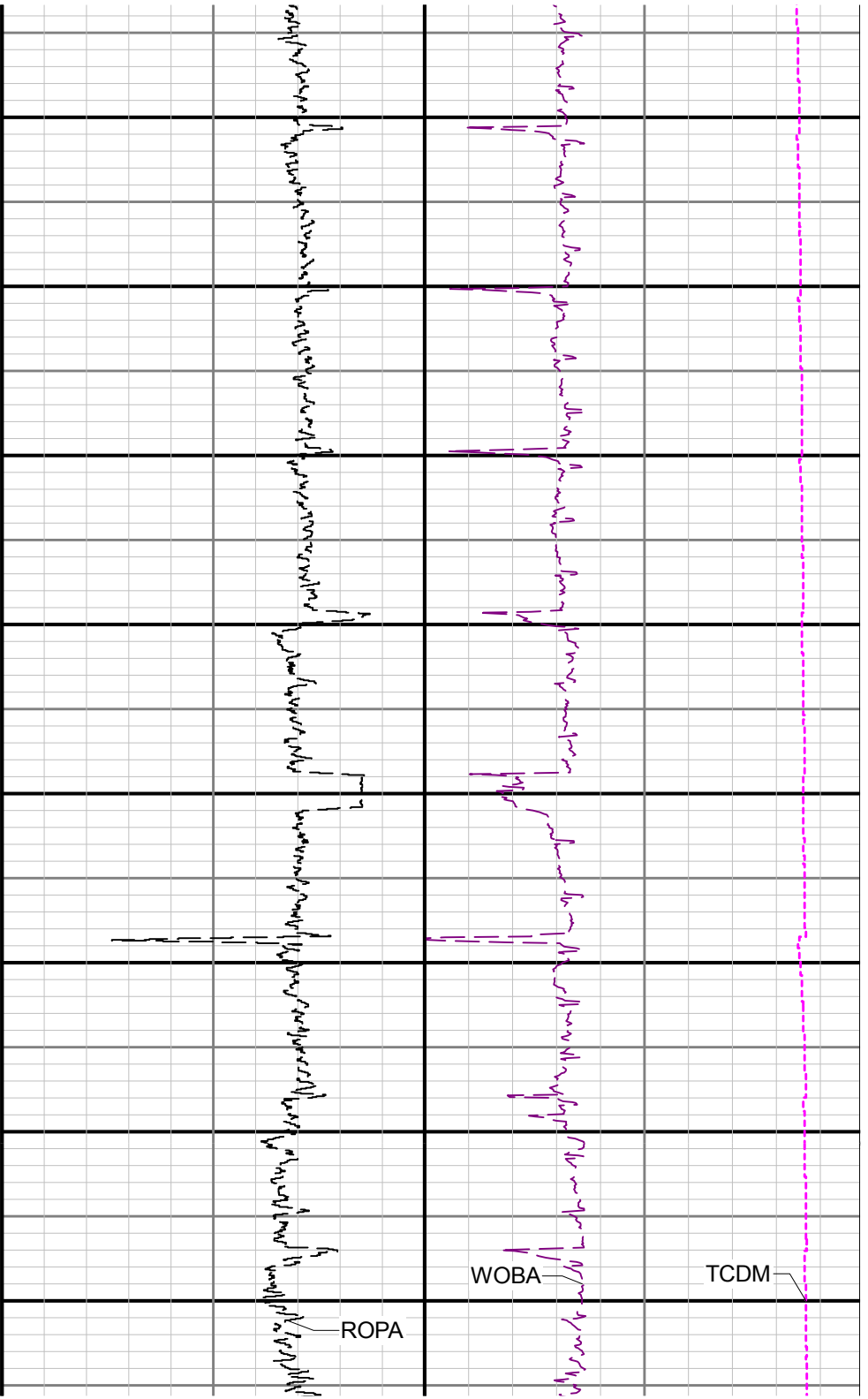


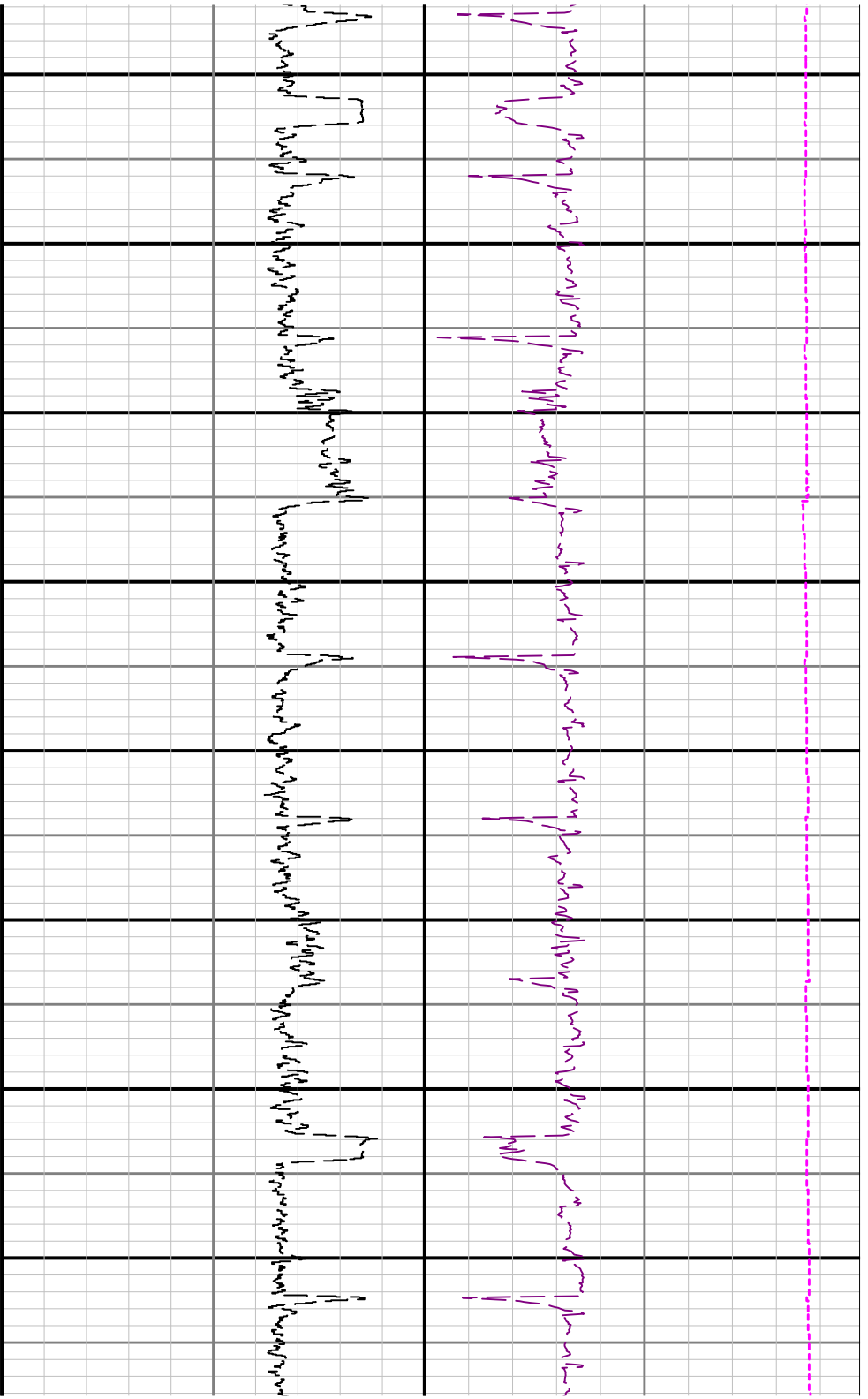












15100

15200

15300

15400

15500

15600

15700

15800

