



Gamma Ray

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
David Browning	2017-03-12	2017-03-16	Steven Cano	2017-03-12	2017-03-16	David Gibbs	2017-03-14	2017-03-16

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+ (%)
2017-03-13 04:52	1	1930.00	Oil Based Mud	9.1	10	N/A	16.0	84.1/15.9	Active Pit	22000	0.00
2017-03-15 11:50	1	10734.60	Oil Based Mud	9.1	9	N/A	15.0	84.6/15.4	Active Pit	25500	0.00
2017-03-16 11:00	1	16532.99	Oil Based Mud	9.2	12	N/A	15.0	84/16	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	12142976	Near Bit VSS	5.93	6.76	7.000	4.330
1	ATC_SU	12142976	Near Bit Inclination	5.93	6.76	7.000	4.330
1	ATC_MWD	12271697	Gamma (single)	2.75	12.94	7.000	3.250
1	ATC_MWD	12271697	Directional (mag)	13.10	23.29	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 1930 to 16763 feet MD (1930 to 6616 feet TVD).

Remarks


Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	16751.00	8.500	1	The interval from 16751 to 16763 feet MD (6616 feet TVD) was not logged due to sensor to bit offset at well TD.

Curve Mnemonics

Presented Curves	Description	Units
ROPA	Depth Averaged ROP 10 ft Average	ft/h
TVD	True Vertical Depth	ft
WOBA	Weight On Bit, Average 1 ft Average	klb
GRAM	Gamma Ray - Apparent 3 ft Average	API
GRTX	Gamma Time Since Drilled	min
TCDM	Downhole Temperature	degF

Gamma Ray Calibration Summary

Tool Size:	6.750 in	Tool Type:	ATC_MWD	Asset No:	12271697	Build No:	N/A	Date/Time:	N/A
Tool Firmware:	N/A	Location:	N/A	Calibrator Asset No:	N/A				
Test Software:	N/A	Unit:	Shop	Detector:	Scintillator	Calibrator Value:	N/A		
Background	Calibrator	CR	API	HV	Background	Calibrator	Calibrator		
	On	Differential	Correction			On			
(cps)	(cps)	(cps)	Factor	(V)	(gAPI)	(gAPI)	(gAPI)		



Company

Well

Interval

Created

Noble Energy

Wells Ranch State AA33-790

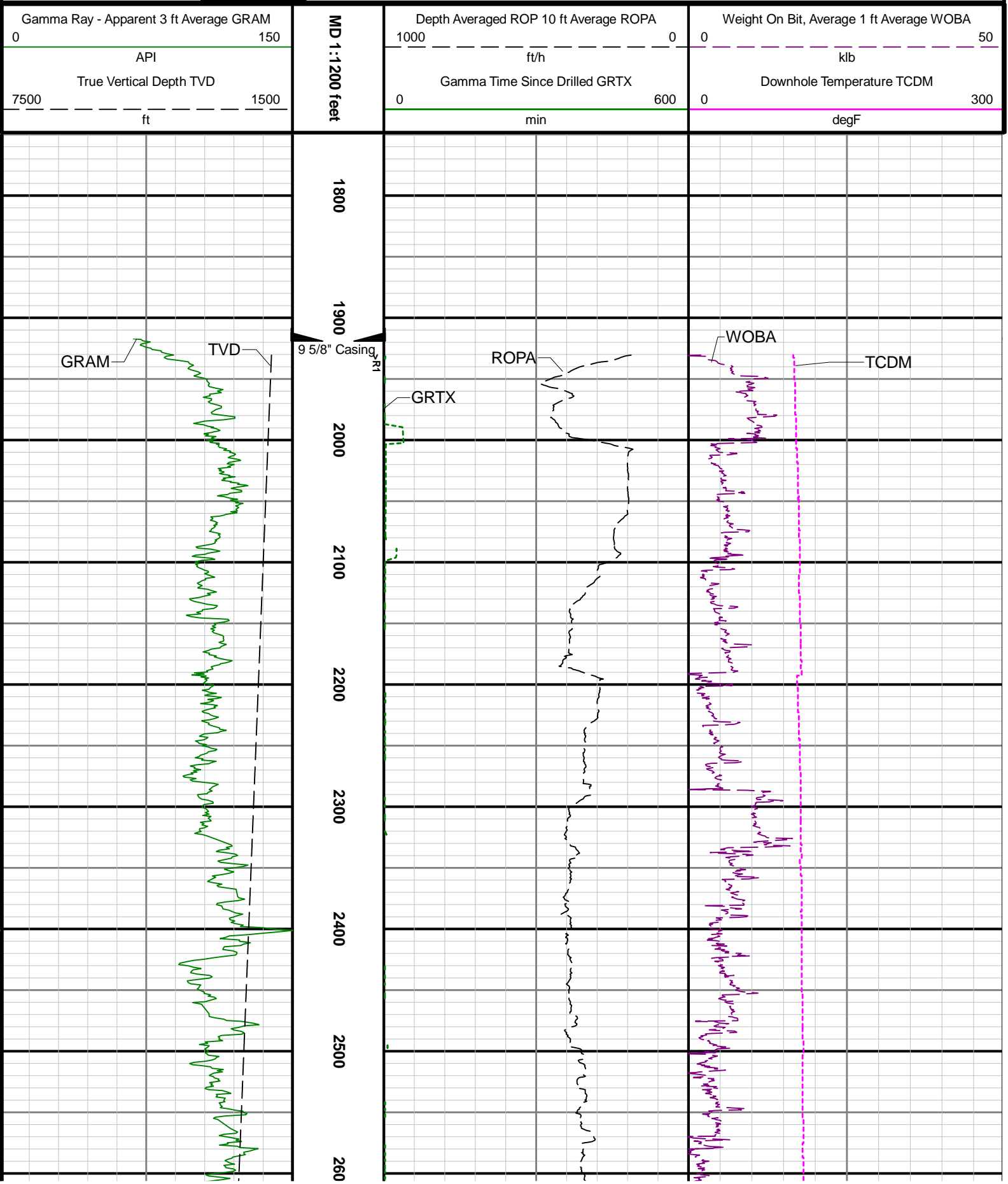
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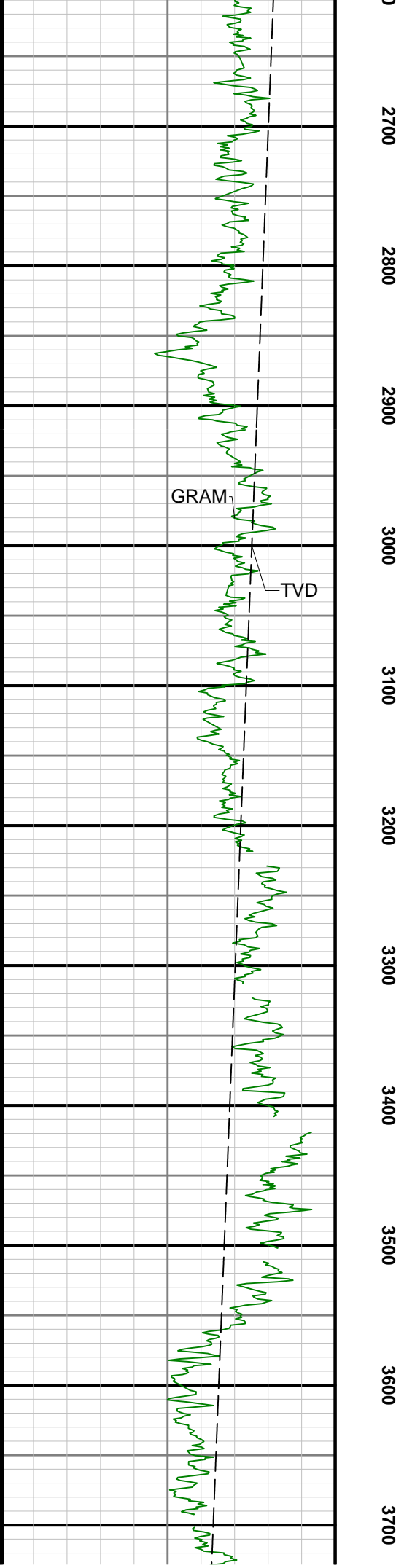
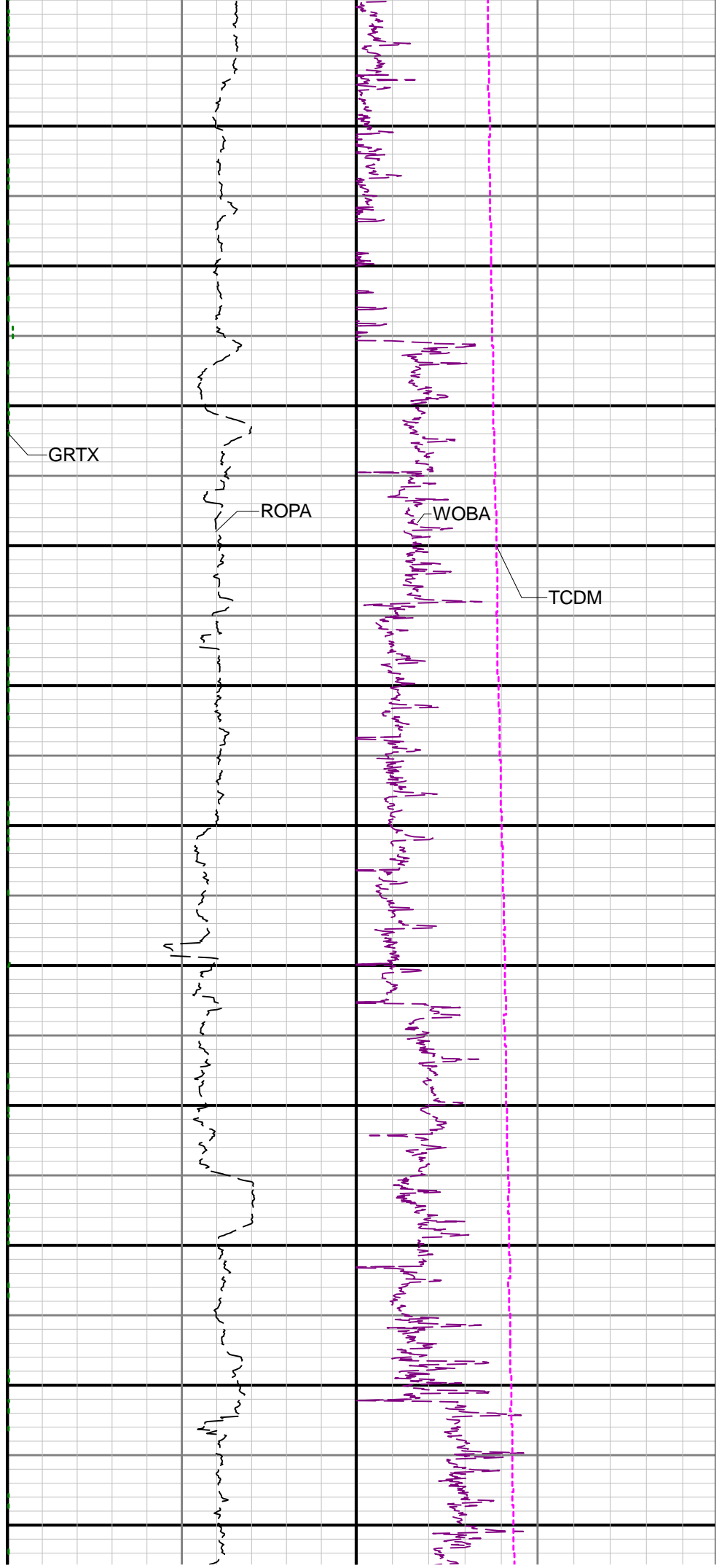
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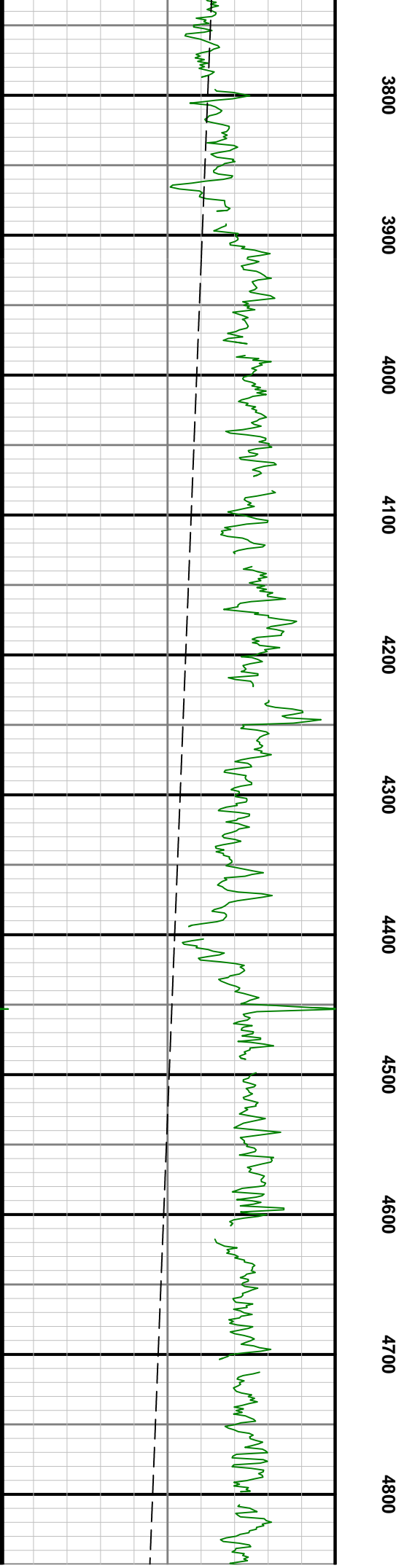
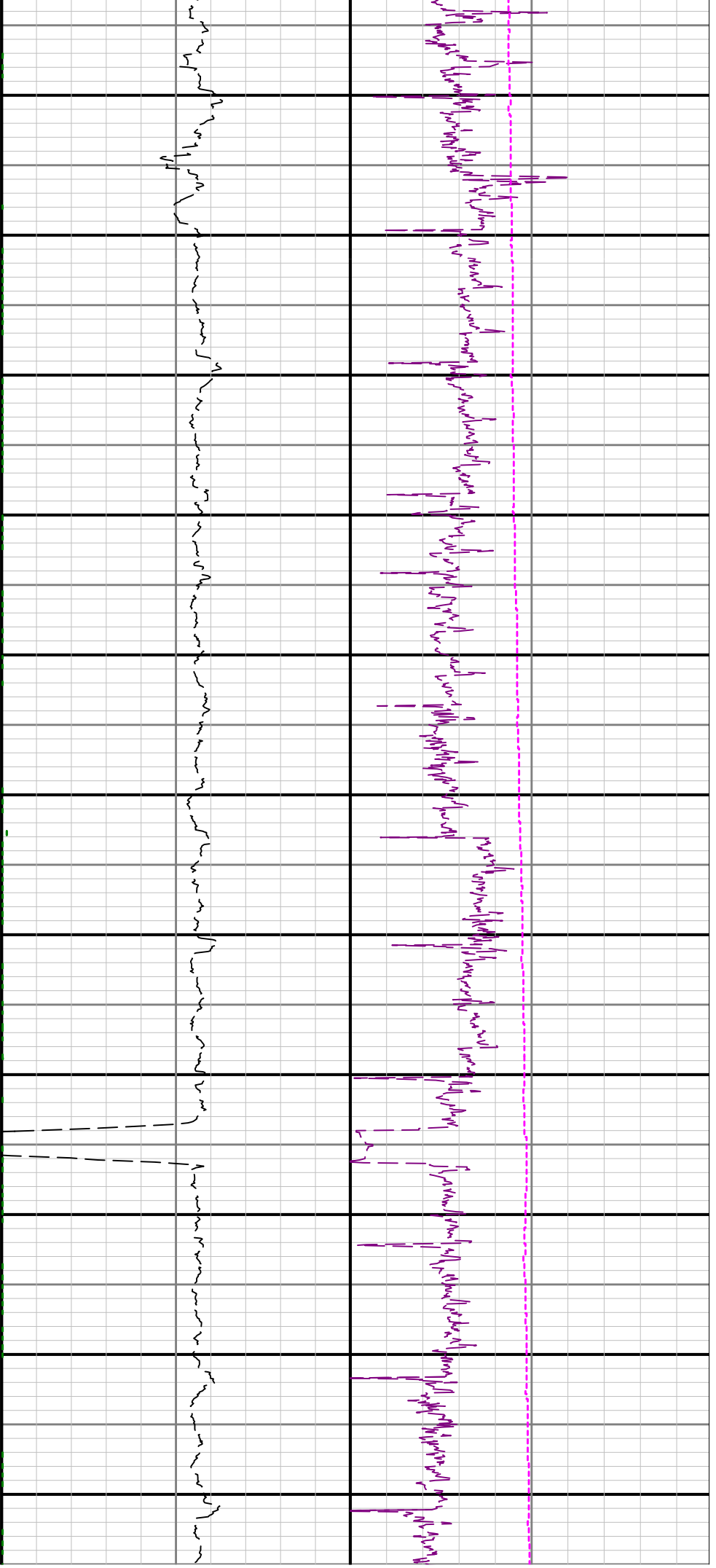
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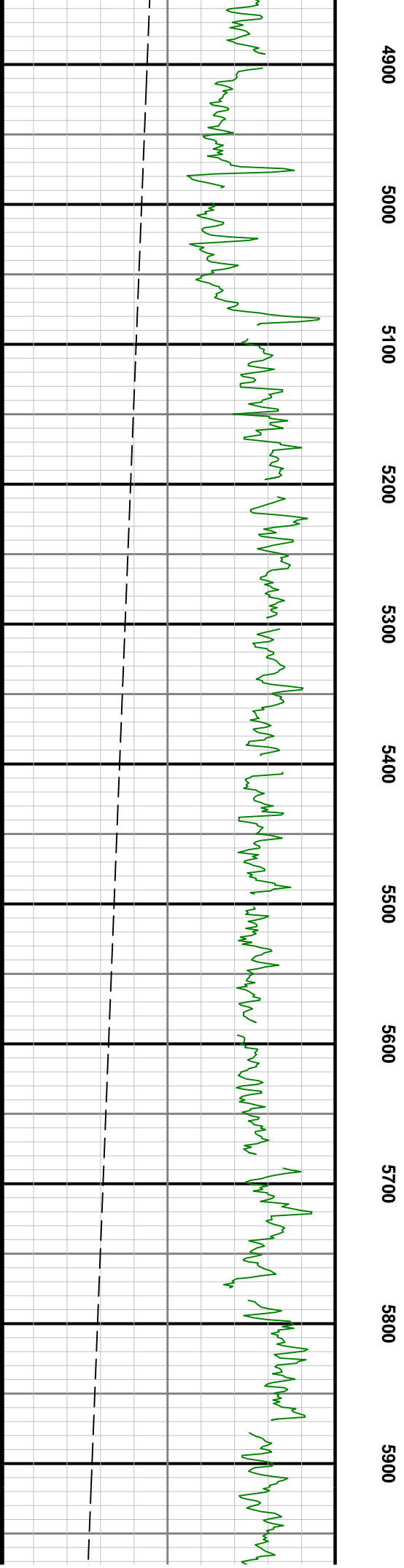
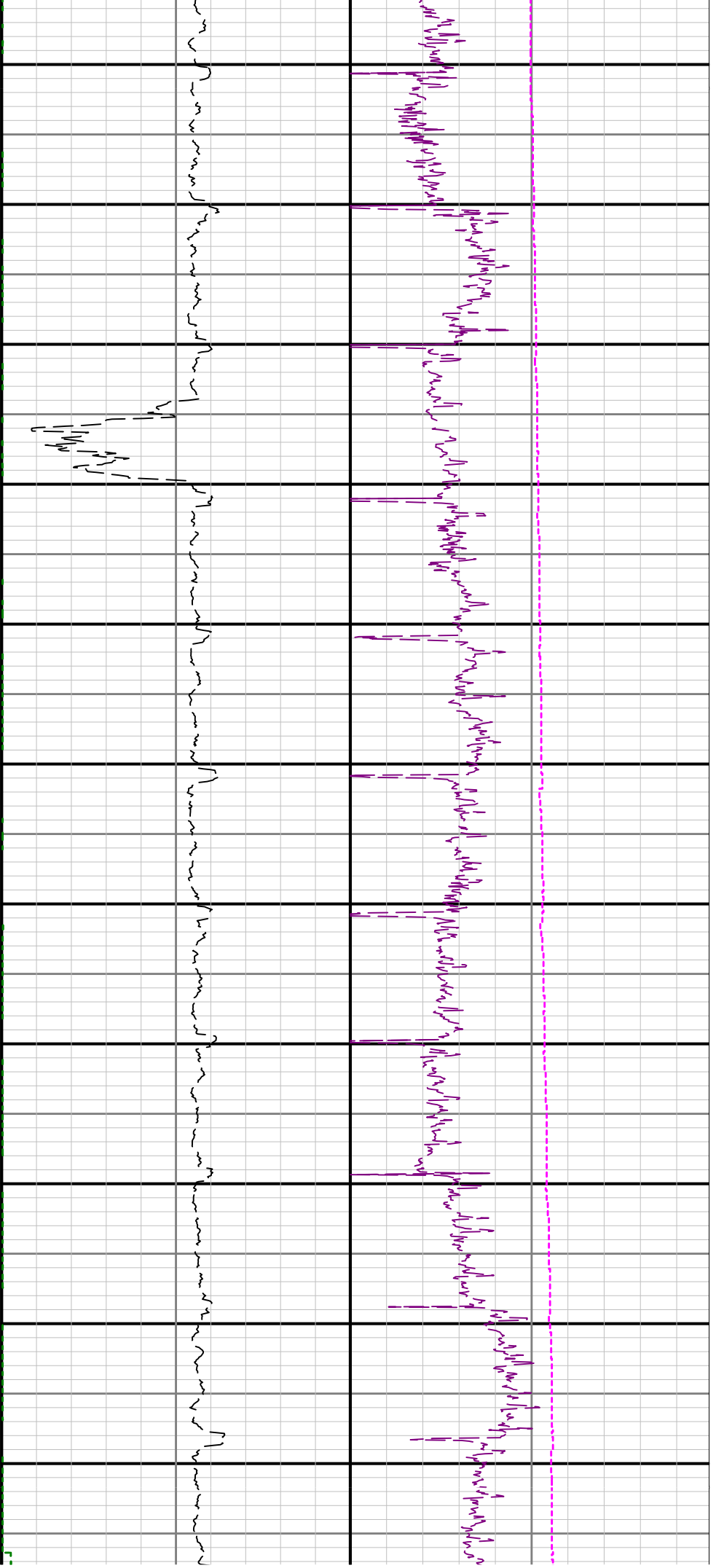
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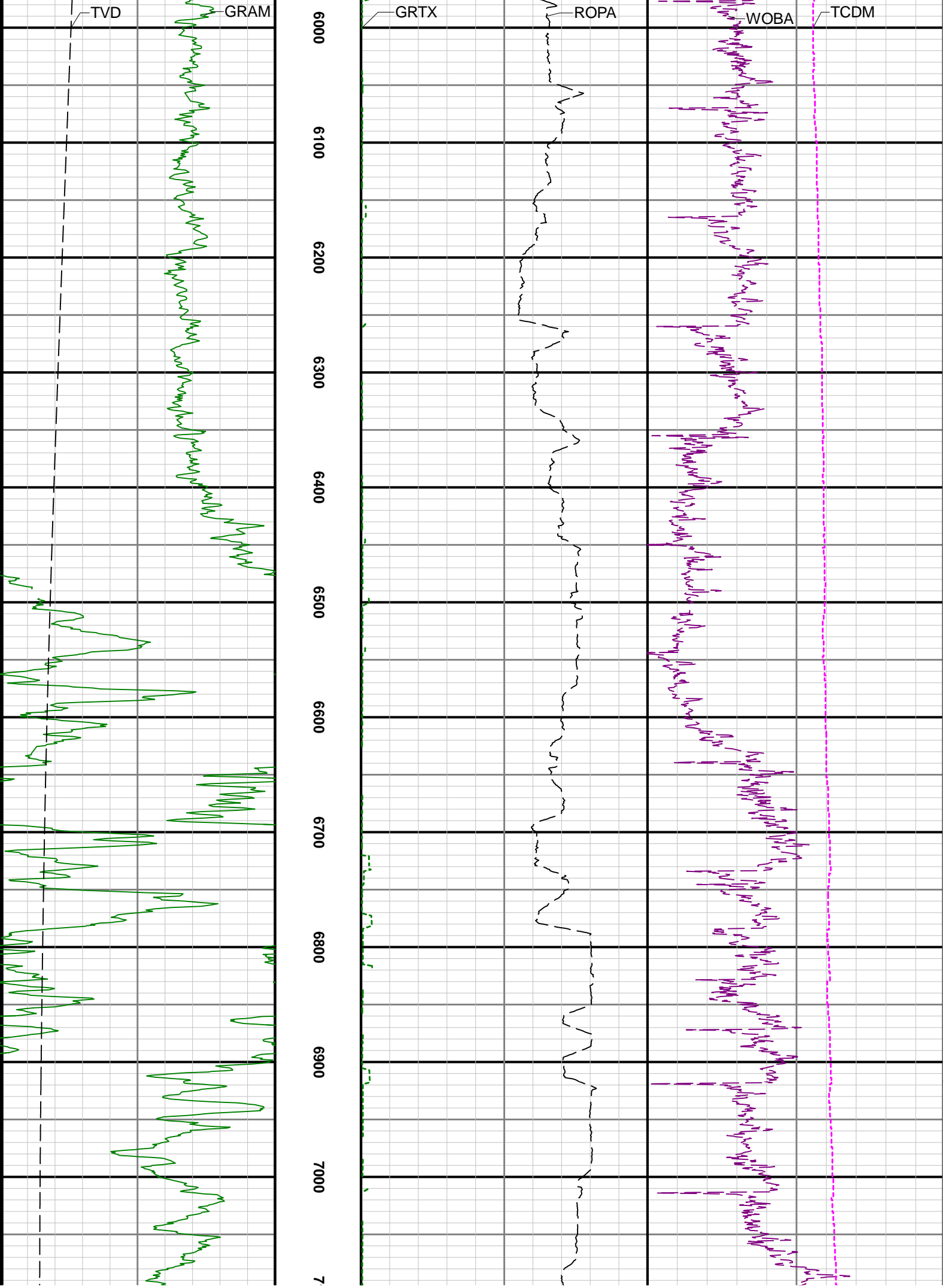
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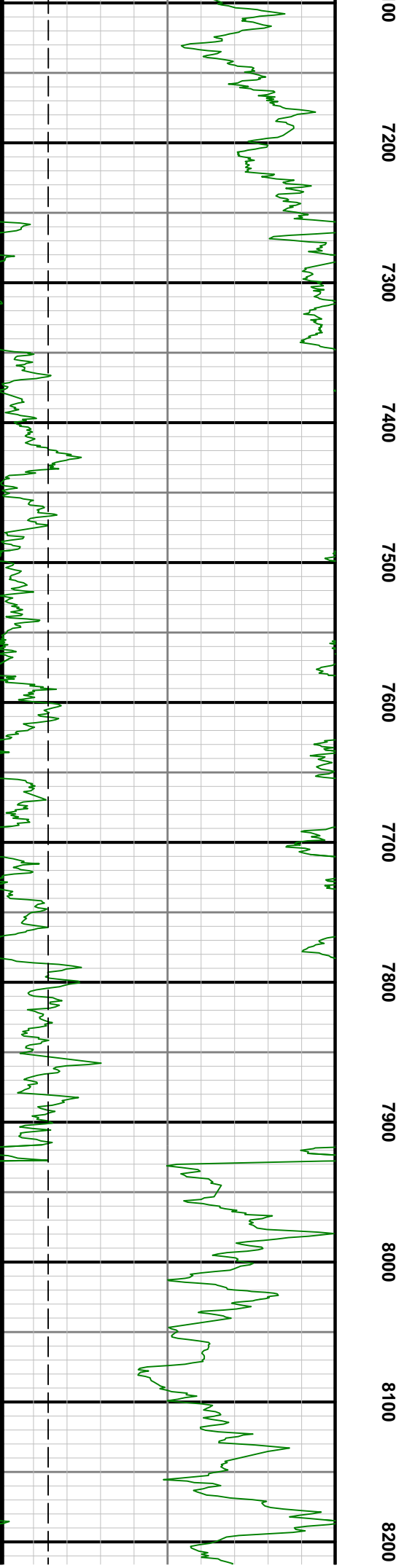
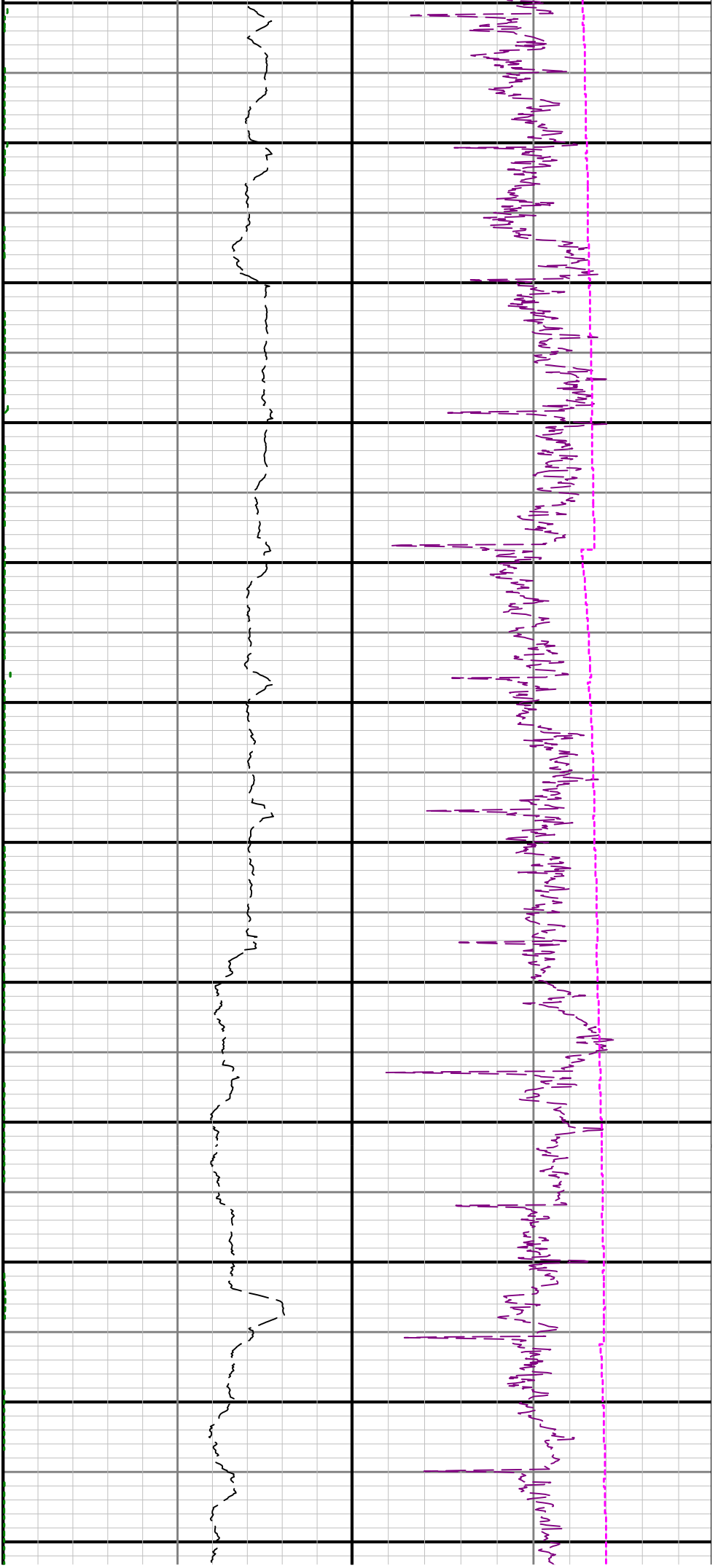


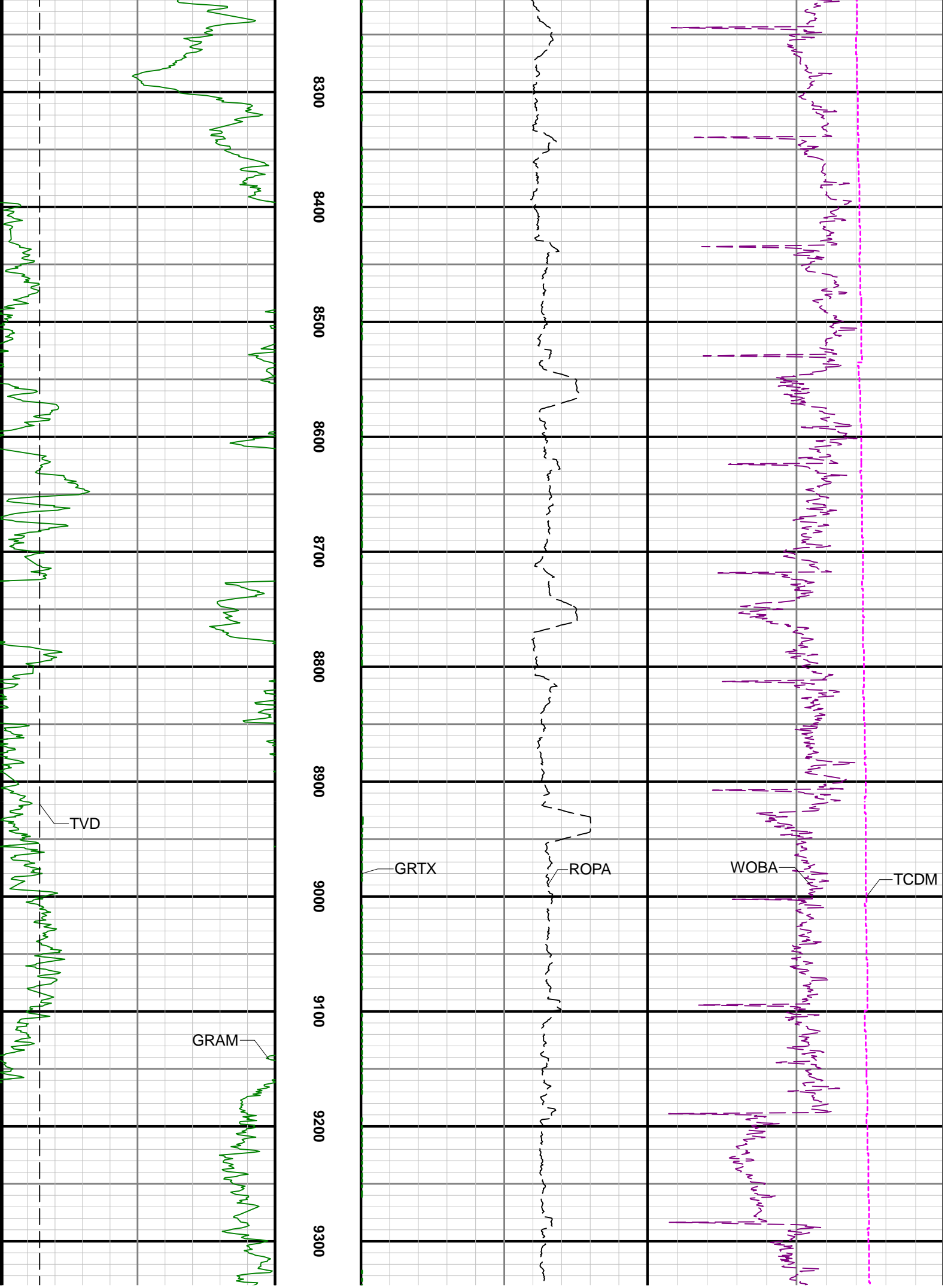


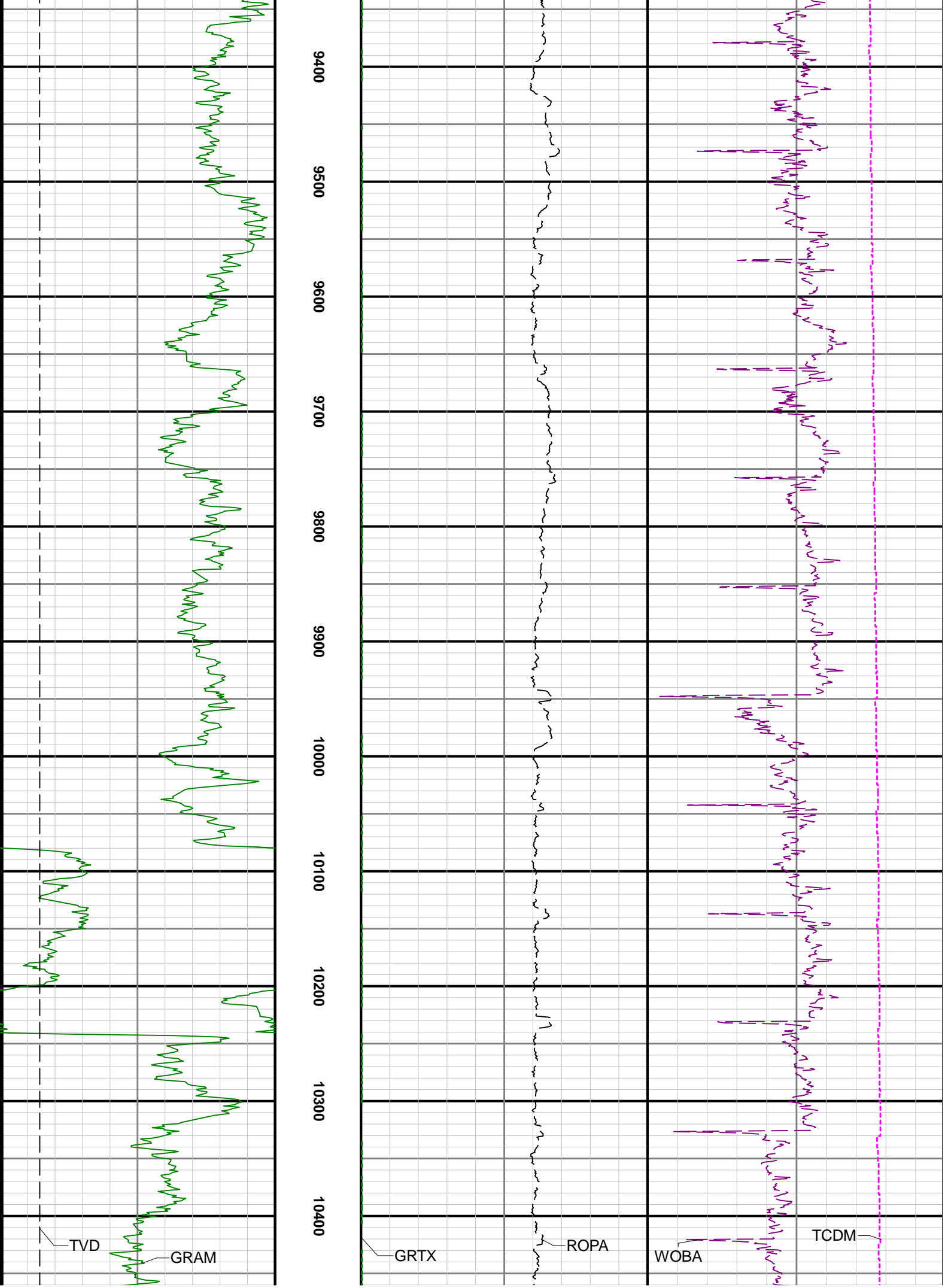


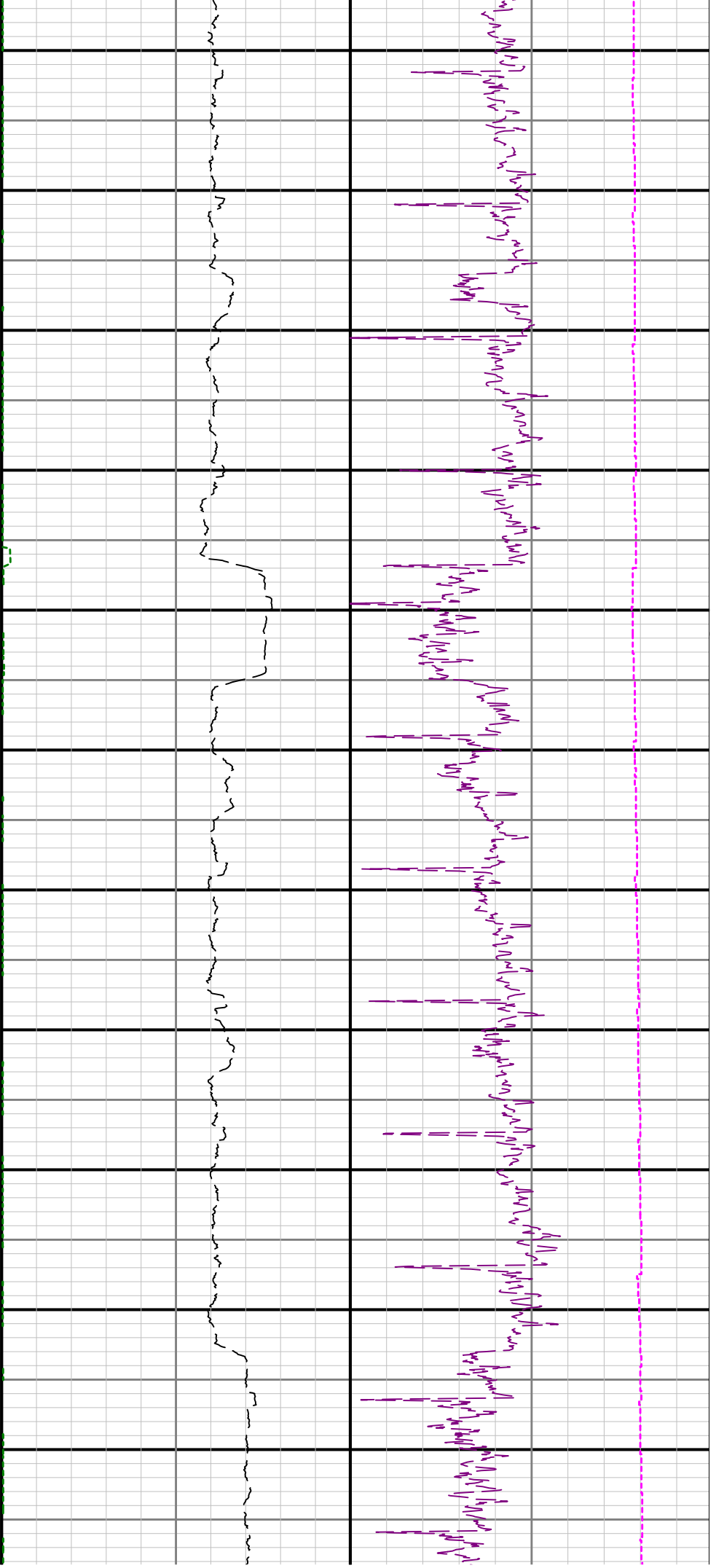












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