



LWD REALTIME LOG

Gamma Ray

Scale:					
1:240 MD			Company: Great Western		
Depth Reference:			Well: B-Farm LD 18-037HC		
Driller's Depth			Field: Wattenberg		
Status:			Country: United States		
Final Print			State: Colorado		
API No: Job ID:			Surface Location: <div>Latitude: Longitude:</div>		
Permanent Datum (P.D.): Log Measured From:			Other Services: <div>Elevation: Elev. DF: Elev. GL:</div>		
Dates	Interval Logged		Magnetic Field Reference		
Date From:	2018-01-25	Top: (ft)	1721.00	Azi Reference North:	True
Date To:	2018-01-28	Bottom: (ft)	14122.00	Total Magnetic Field Strength: (nT)	52096
Spud Date:	2018-01-01	Mag to Reference North Correction: (deg) 8.40 E			
Borehole Record					
Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	Casing Record From (ft) To (ft)
13.500	20.00	1721.00	9.625	36.00	20.00
8.500	1721.00	14122.00			1711.00
Mud Record					
Type	From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Incl Azi (Start) Inc Az (End)
Oil Based Mud	1721.00	14122.00	8.500	12401.00	0.41 76.66 89.35 186.63
Acquisition System					
Baker Hughes Cadence		Software Version RT4.1		Other Rig: PD#60	
PlotStudio		4.1.7763.3		Contractor: Precision Drilling District: US Land Unit: RMA	

©"4239"Dcmgt"JwiJgu."c"IG"eqorcp{"NNE"ö"Cnn"tkijvu"tgugtXgf0"Dcmgt"JwiJgu."c"IG"eqorcp{"NNE"cpf"kvu"chhknkcvgu"*öDJIGö+"rtgxkfgu"vjku"kphqtocvkqp"qp"cp"öcu"kuö"dcuku"hqt"igpgtcn"kphqtocvkqp" purposes and believes it to be accurate as of the date of publication. BHGE does not make any representation as to the accuracy or completeness of the information and makes no warranties of any kind, specific, implied or oral, to the fullest extent permissible by law, including those of merchantability and fitness for a particular purpose or use. BHGE hereby disclaims any and all liability for any direct, indirect, consequential or special damages, claims for lost profits, or third party claims arising from the use of the information, whether a claim is asserted in contract, tort, or otherwise. The BHGE logo is a trademark of Baker Hughes, a GE company, LLC. GE and the GE monogram are trademarks of General Electric Company used under trademark license.

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	3.00	AutoTrak Curve	1721.00	1979.00	1721.00	1992.00	2018-01-25 08:24	2018-01-25 10:06	2.05

2	2	8.500	PDC	3.00	AutoTrak Curve	1979.00	9791.00	1992.00	9804.00	2018-01-25 18:20	2018-01-26 21:14	22.98
3	3	8.500	PDC	3.00	AutoTrak Curve	9791.00	14109.00	9804.00	14122.00	2018-01-28 00:50	2018-01-28 21:20	18.30

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Andrew Clancy	2018-01-24	2018-01-29	Bryan Severson	2018-01-24	2018-01-29			

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+ (%)
2018-01-24 07:00	1	1721.00	Oil Based Mud	10.4	27	0	0.0	75/25	Active Pit	22000	0.00
2018-01-25 15:00	2	1992.00	Oil Based Mud	10.5	27	0	0.0	75/25	Active Pit	21000	0.00
2018-01-26 09:10	2	5098.00	Oil Based Mud	10.4	32	0	0.0	72/28	Active Pit	19000	0.00
2018-01-26 19:00	2	7629.00	Oil Based Mud	10.4	33	0	0.0	73/27	Active Pit	21000	0.00
2018-01-27 19:00	3	9804.00	Oil Based Mud	10.4	21	0	0.0	74/26	Active Pit	21000	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	14306238	Near Bit VSS	5.93	6.73	7.000	4.330
1	ATC_SU	14306238	Near Bit Inclination	5.93	6.73	7.000	4.330
1	ATC_MWD	14313881	Gamma (single)	2.20	12.35	7.000	3.250
1	ATC_MWD	14313881	Directional (mag)	12.27	22.42	7.000	3.250
2	ATC_SU	12161973	Near Bit VSS	5.93	6.73	7.000	4.330
2	ATC_SU	12161973	Near Bit Inclination	5.93	6.73	7.000	4.330
2	ATC_MWD	12141334	Gamma (single)	2.75	12.90	7.000	3.250
2	ATC_MWD	12141334	Directional (mag)	12.27	22.42	7.000	3.250
3	ATC_SU	12161973	Near Bit VSS	5.93	6.91	7.000	4.330
3	ATC_SU	12161973	Near Bit Inclination	5.93	6.91	7.000	4.330
3	ATC_MWD	12141334	Gamma (single)	2.75	13.08	7.000	3.250
3	ATC_MWD	12141334	Directional (mag)	12.27	22.60	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 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.
2	Correlation of depth measurements from 1721 to 14122 feet MD (1721 to 7965 feet TVD).
3	Gaps in Gamma Ray data are present throughout the log due to downlinking while drilling ahead.


Remarks

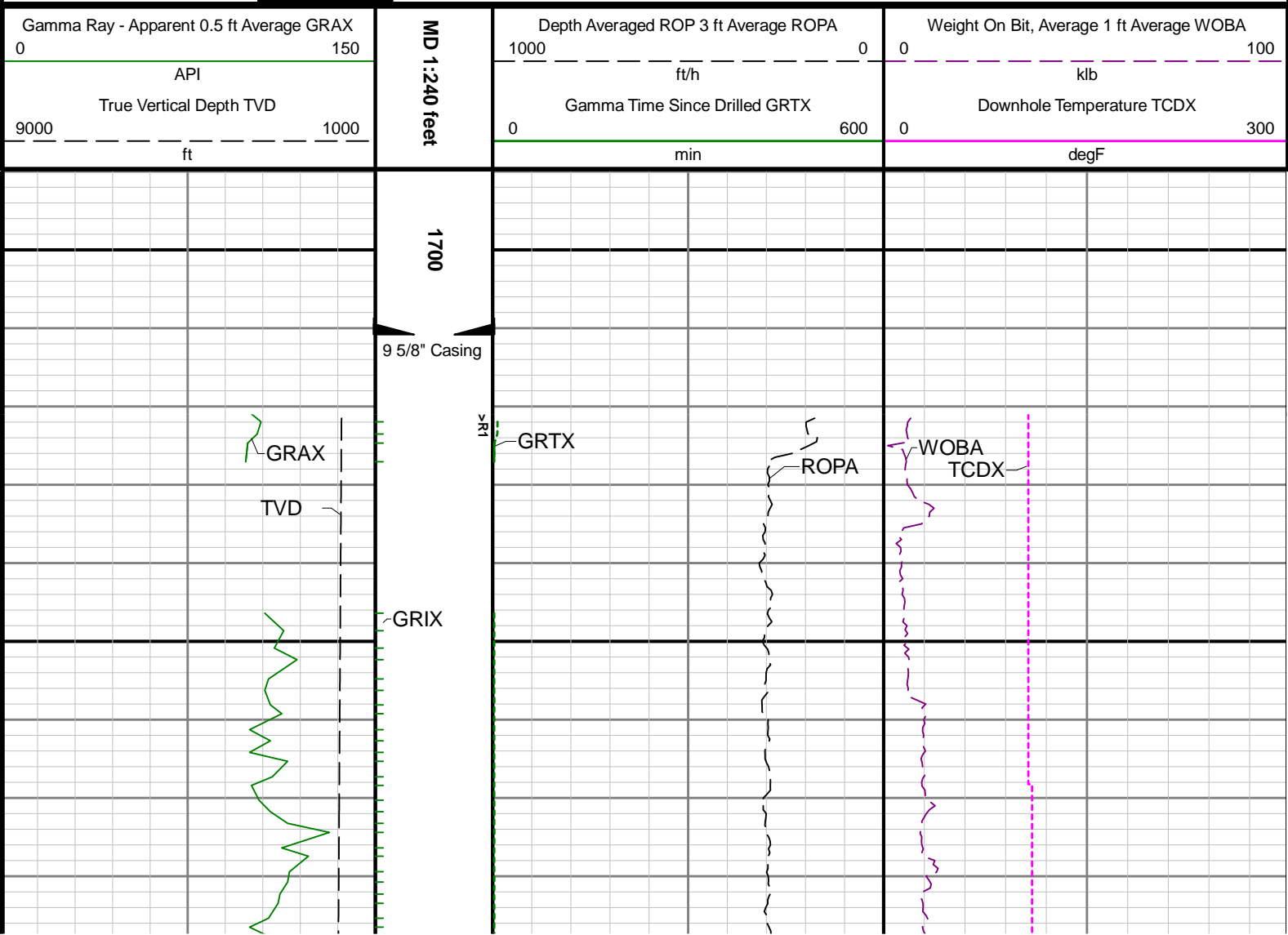
Number	Measured Depth	Hole Section	Run No.	Remark
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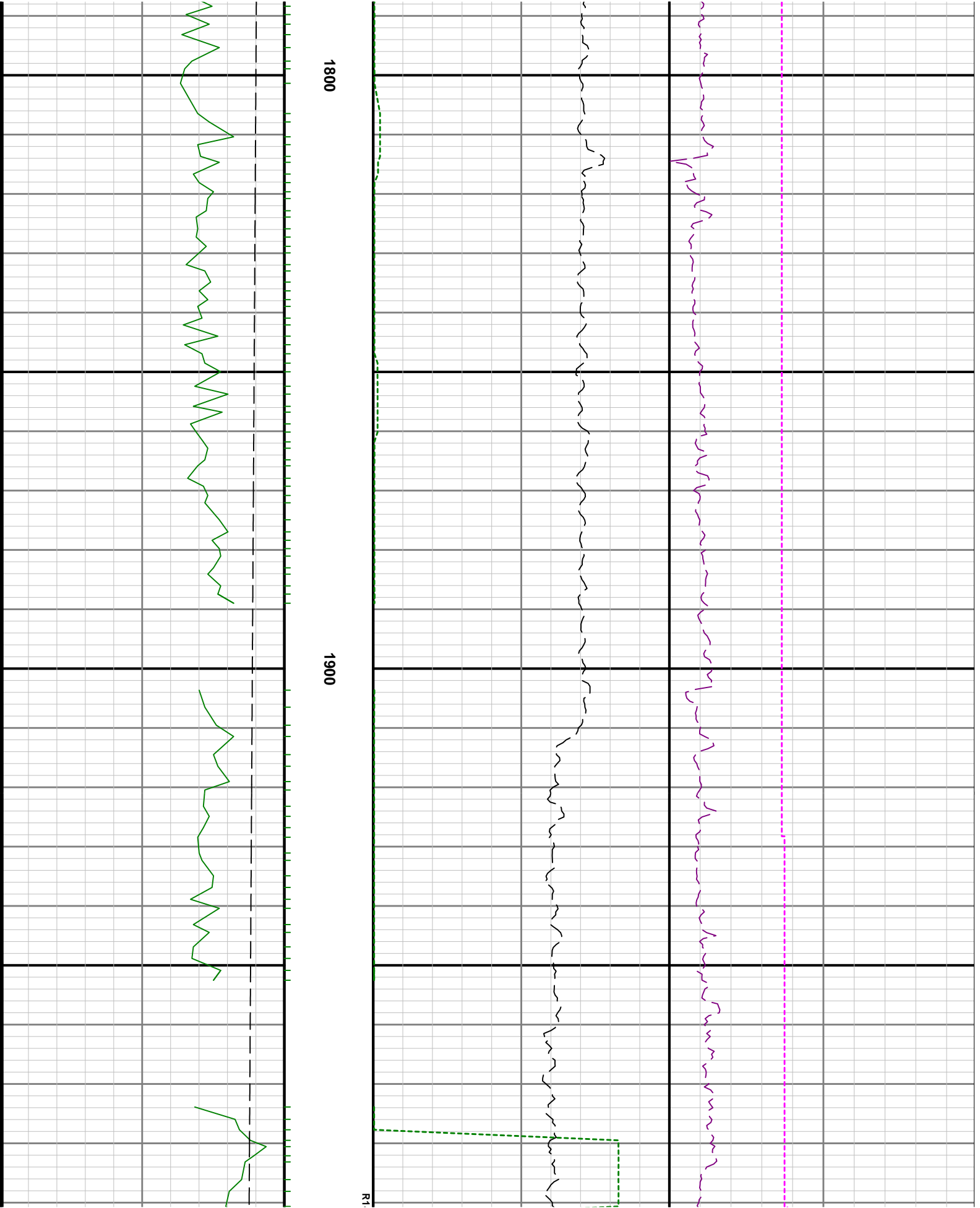
	(ft)	(in)		
1	9792.00	8.500	3	The interval from 9792 to 9805 feet MD (7979 feet TVD) was logged up to 9.75 hours after being drilled due to a trip out of hole to change out Bit.
2	14109.00	8.500	3	The interval from 14109 to 14122 feet MD (7965 feet TVD) was not logged due to sensor to bit offset at well TD.

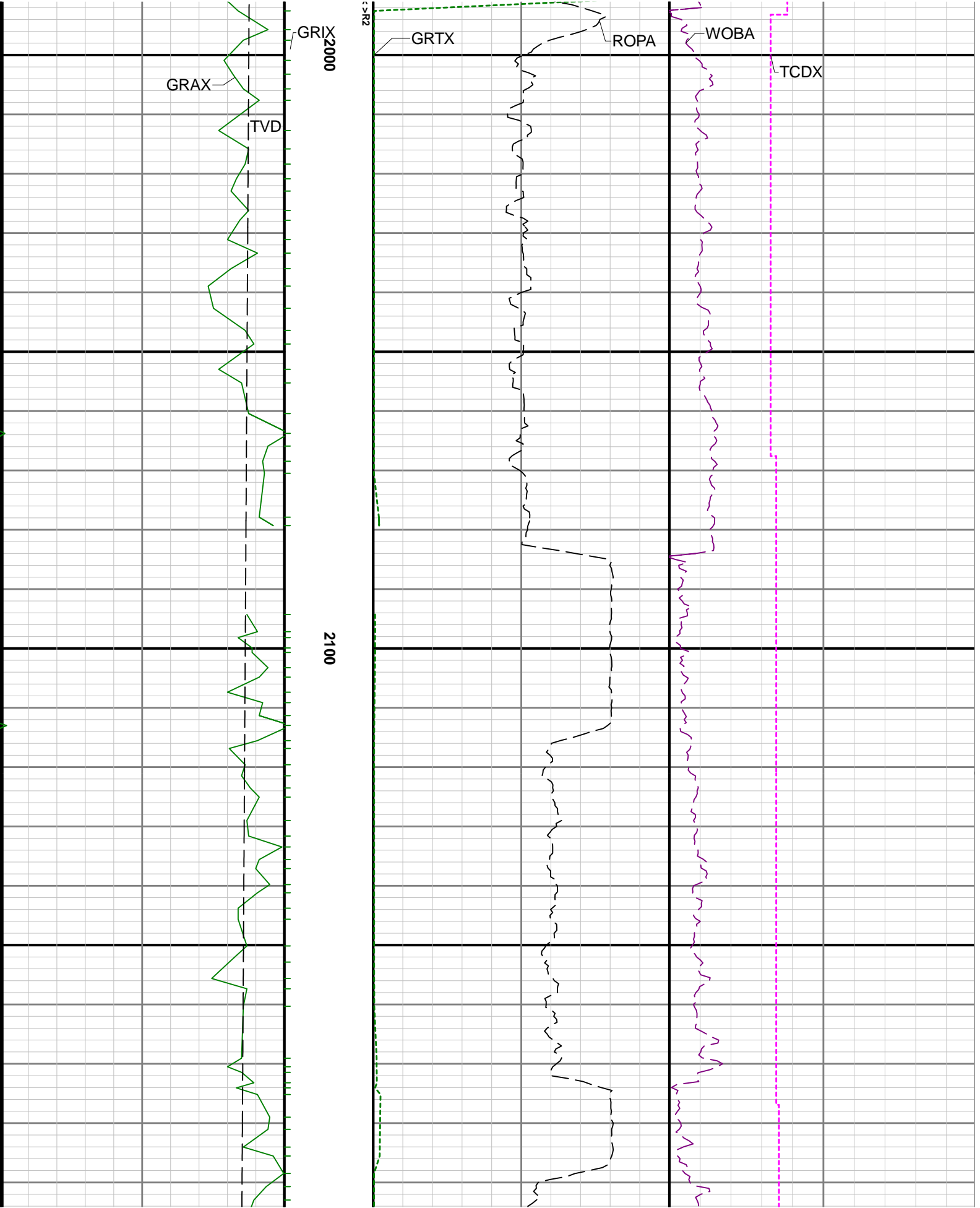
Curve Mnemonics

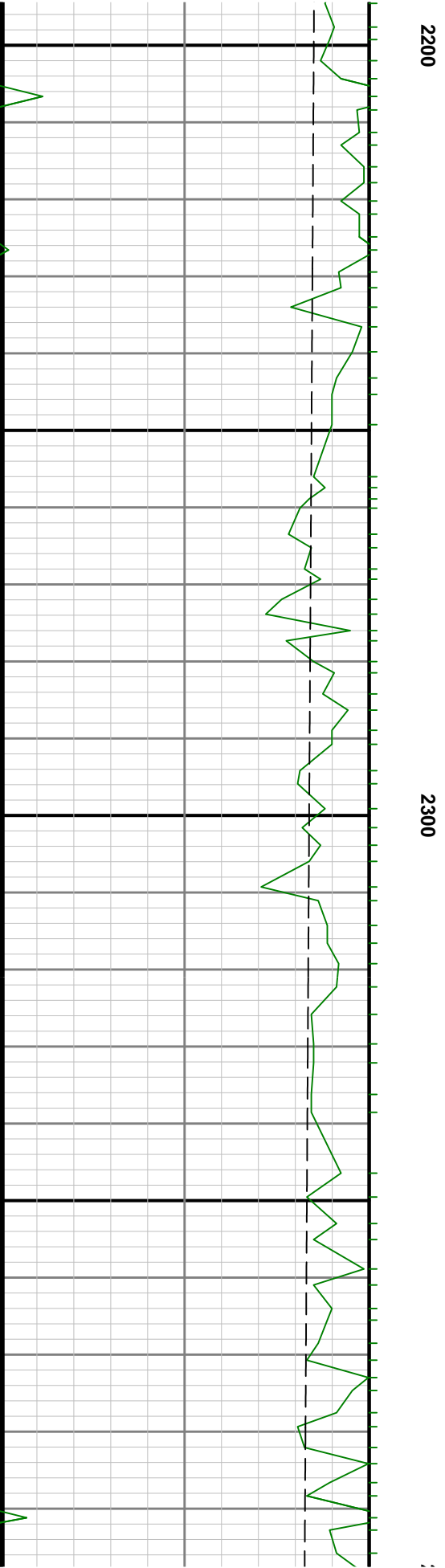
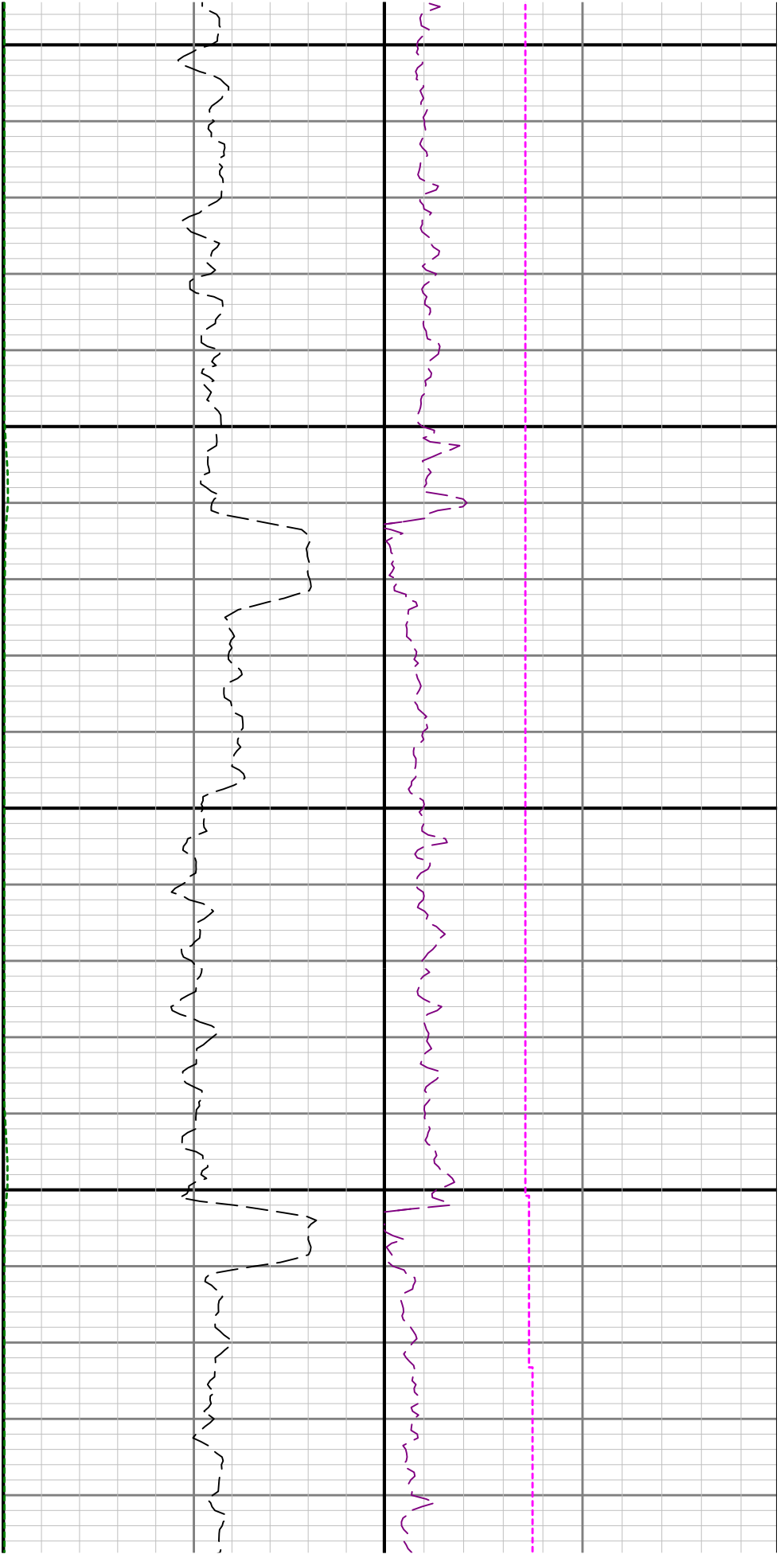
Presented Curves	Description	Units
TCDX	Downhole Temperature	degF
ROPA	Depth Averaged ROP 3 ft Average	ft/h
TVD	True Vertical Depth	ft
WOBA	Weight On Bit, Average 1 ft Average	klb
GRAX	Gamma Ray - Apparent - Real-Time 0.5 ft Average	API
GRIX	Gamma Ray - Data Point Indicator - Real-Time	unitless
GRTX	Gamma Ray - Time Since Drilled - Real-Time	min

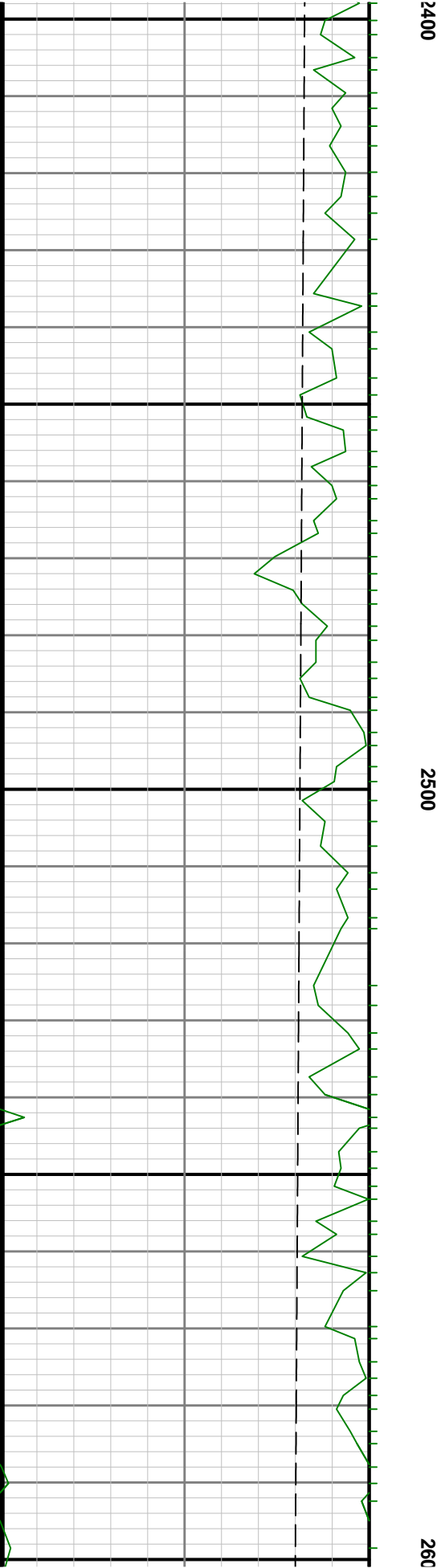
<div> <div> <div>BAKER HUGHES</div> <div>a GE company</div> </div> <div>  </div> </div>	Company	Great Western		
	Well	B-Farm LD 18-037HC		
	Interval	Date From:	2018-01-25 01:24:43	Top: 1721.00
		Date To:	2018-01-28 14:20:27	Bottom: 14122.00
	Created	2018-01-28 21:56:50		

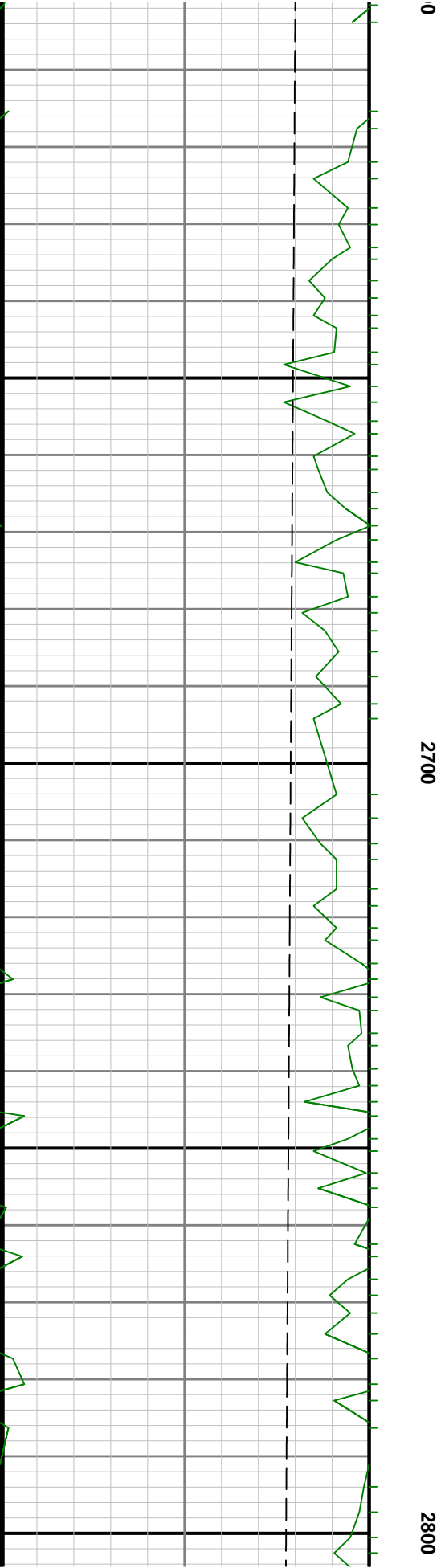


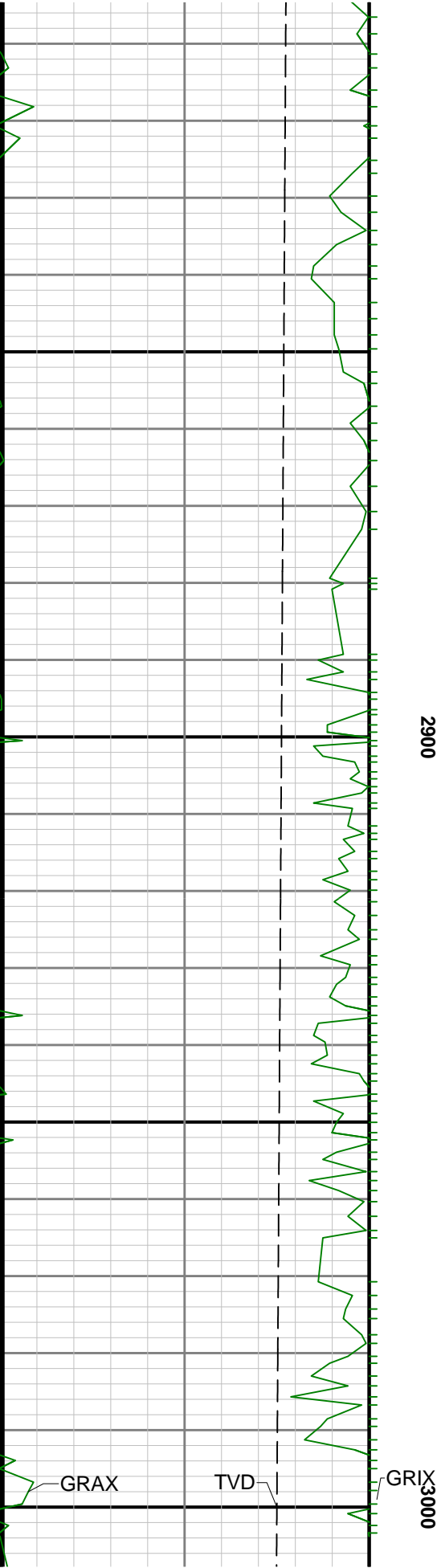


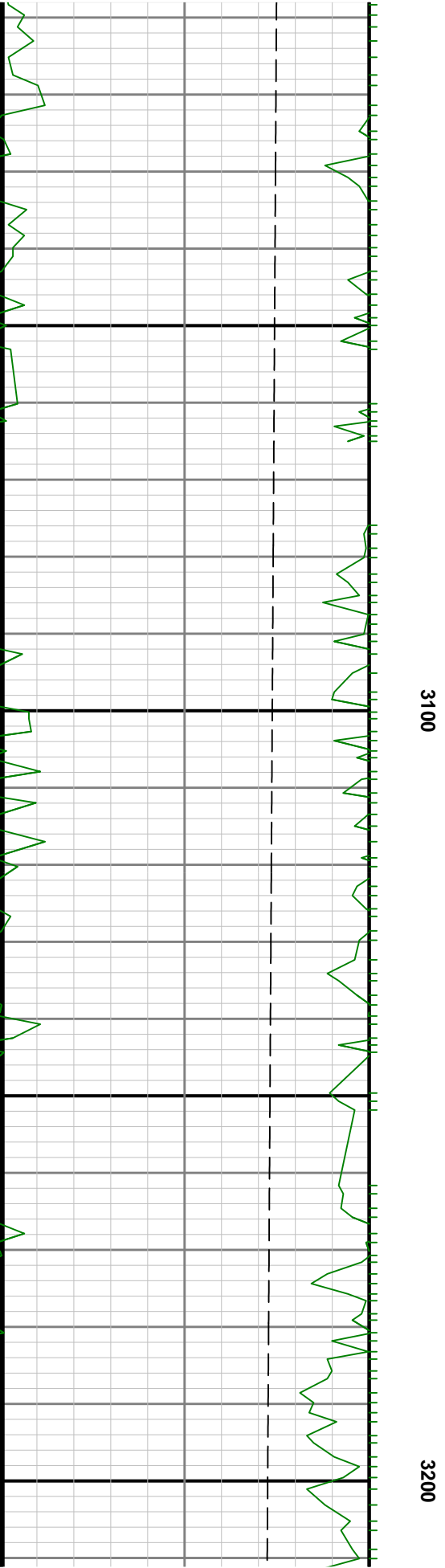
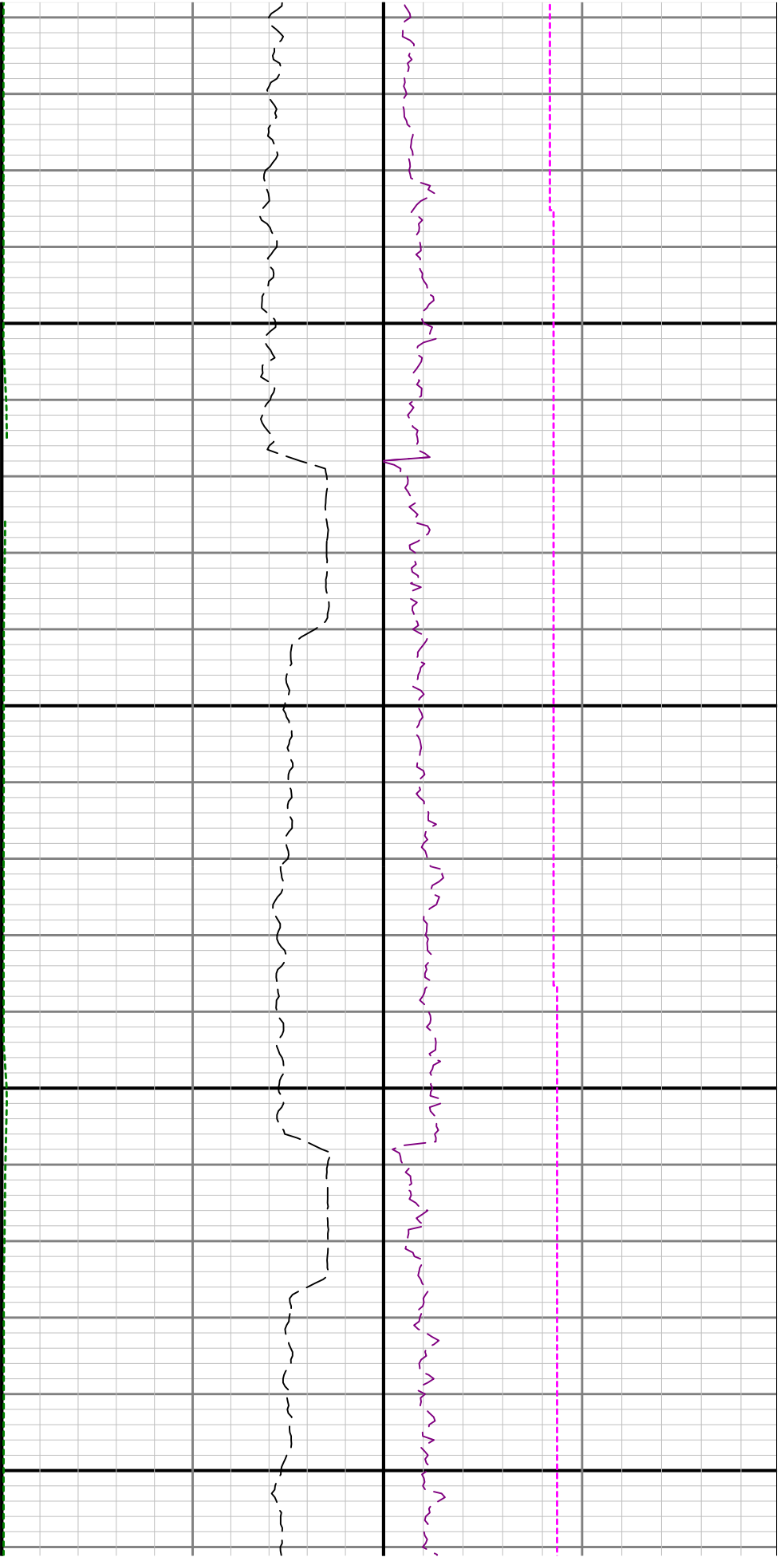


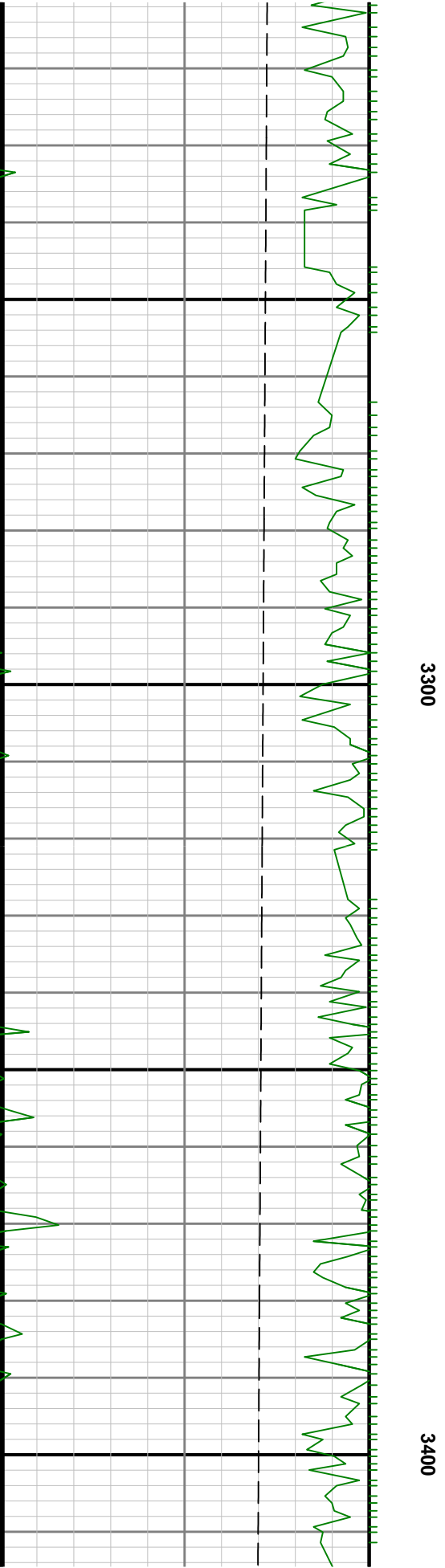
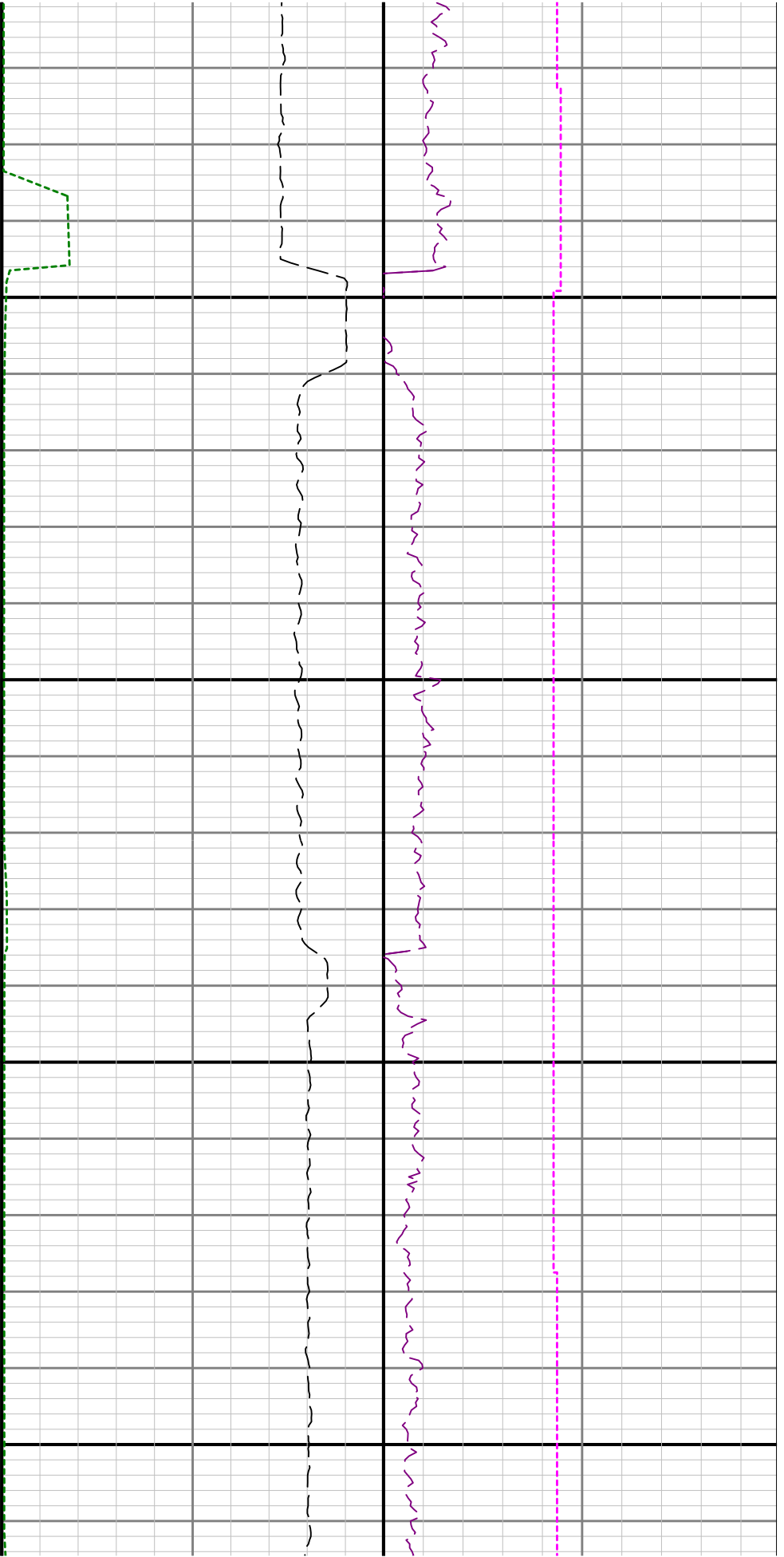


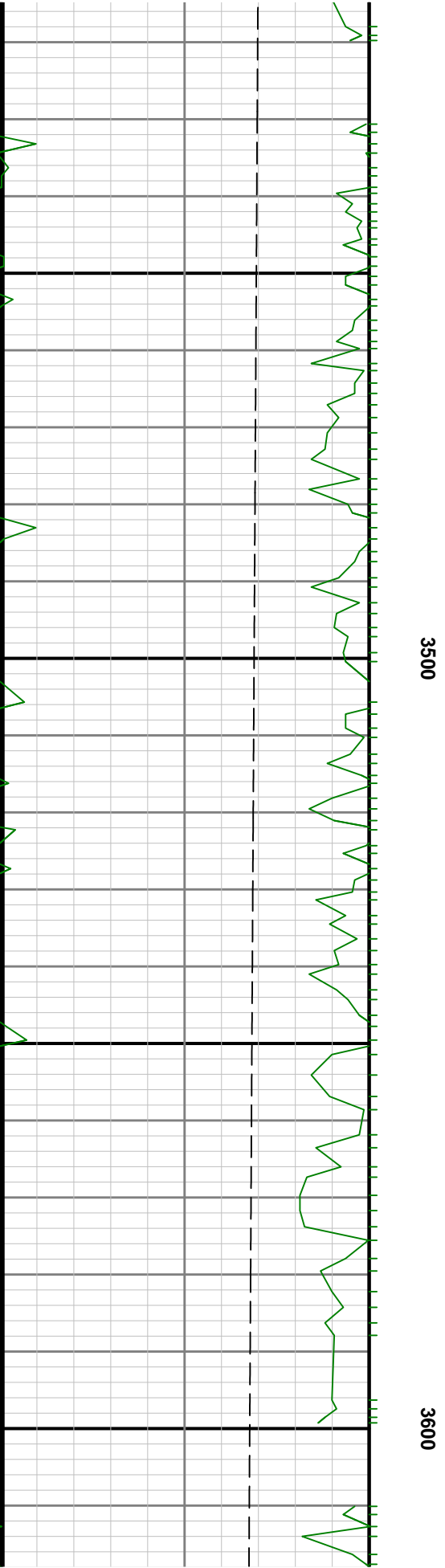


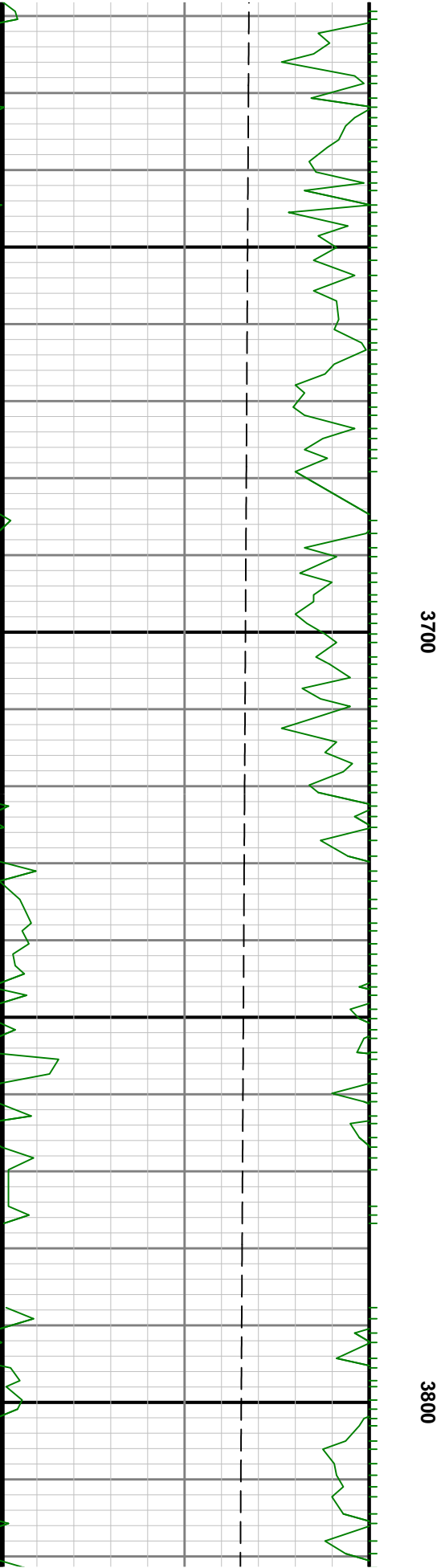
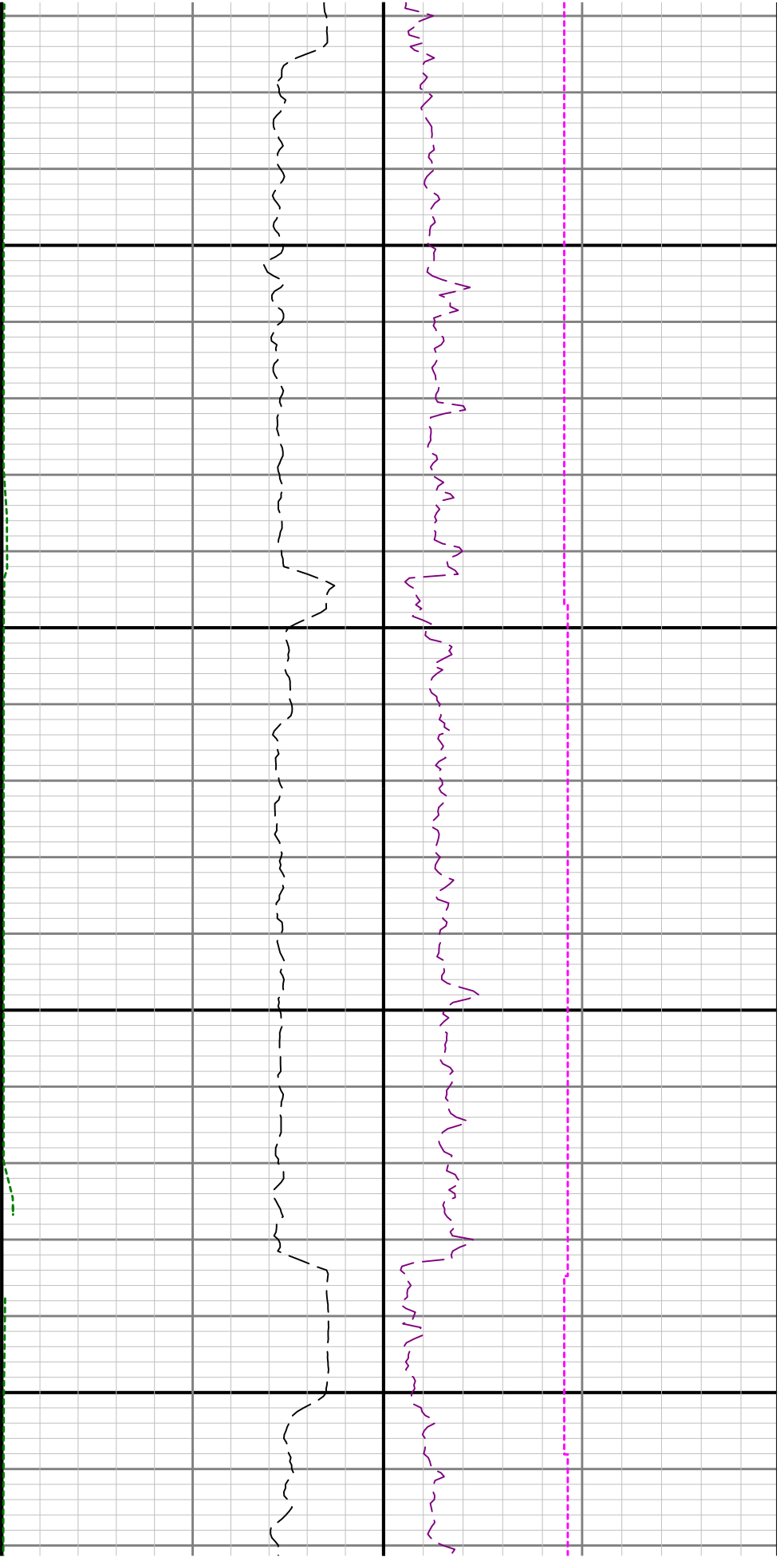


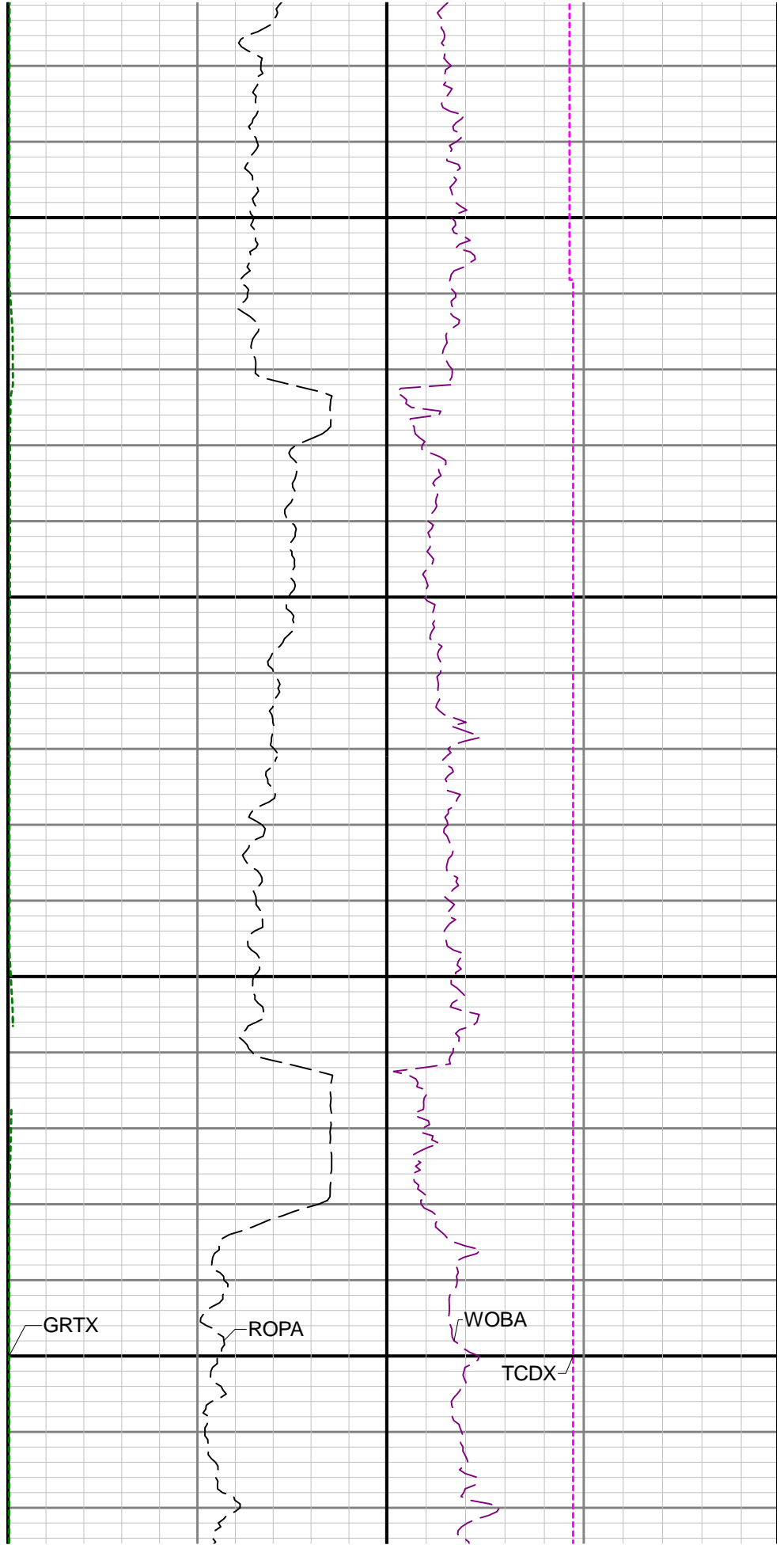
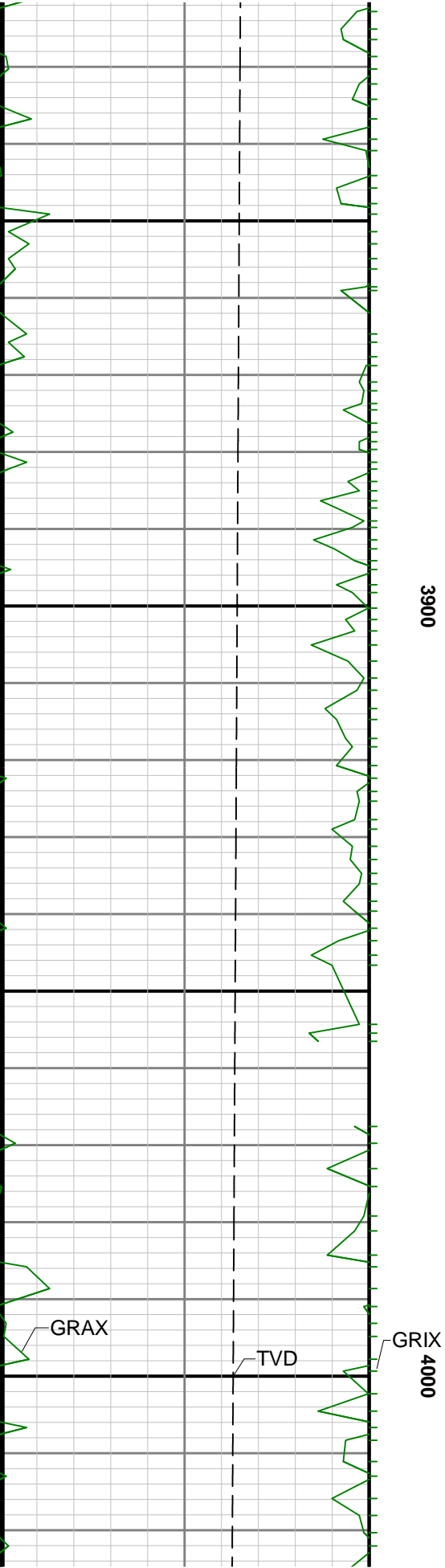


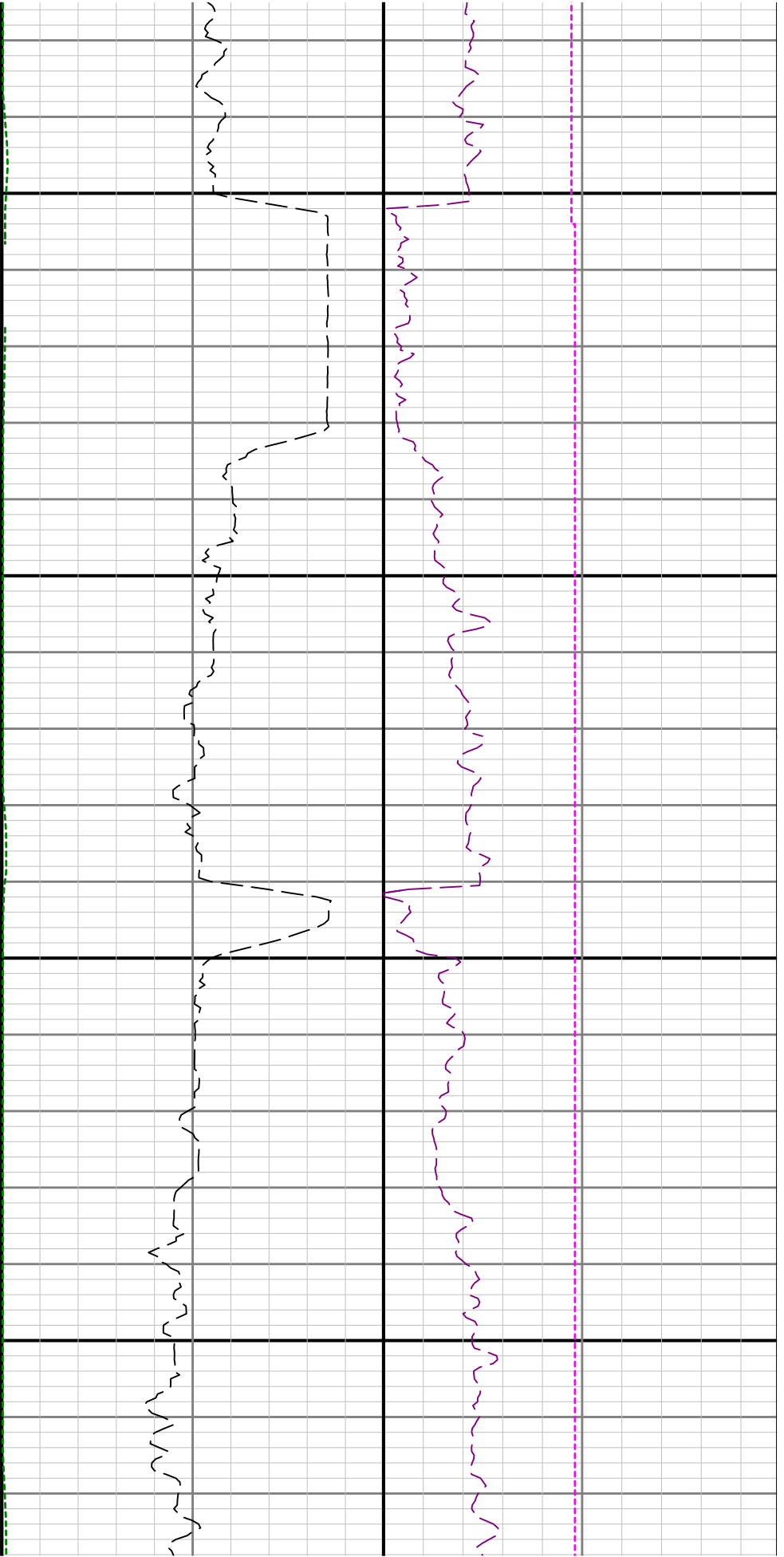






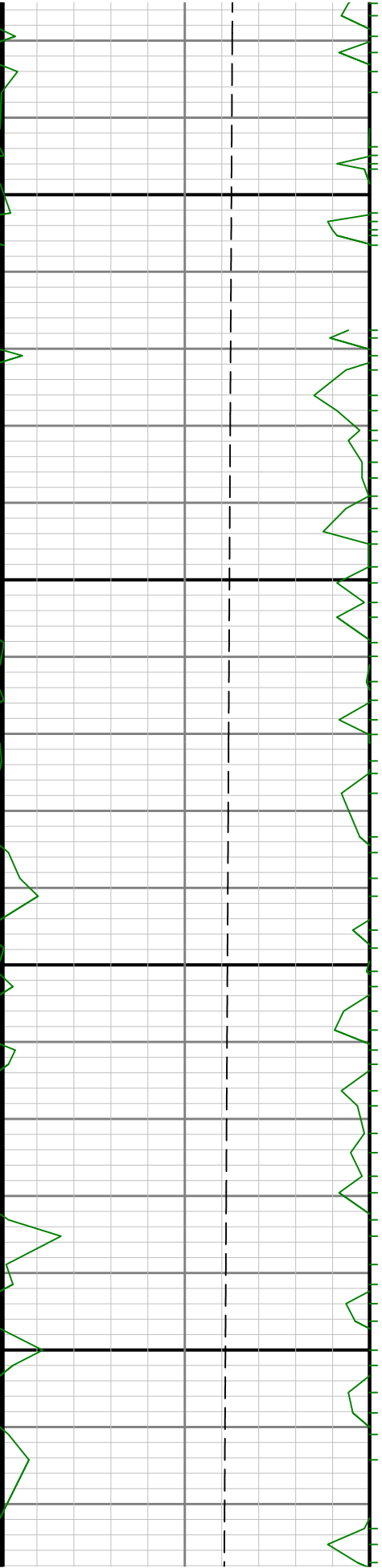


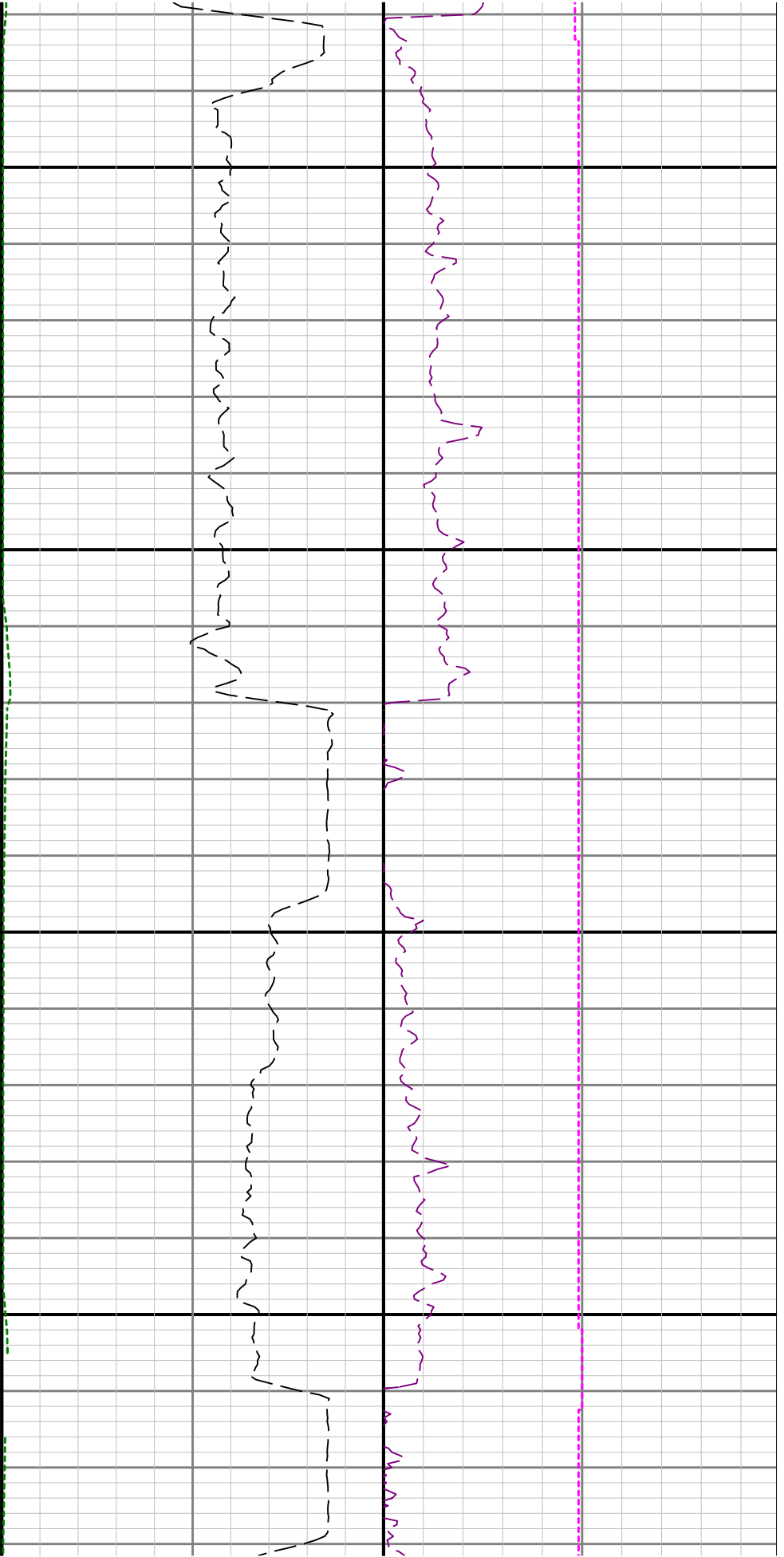




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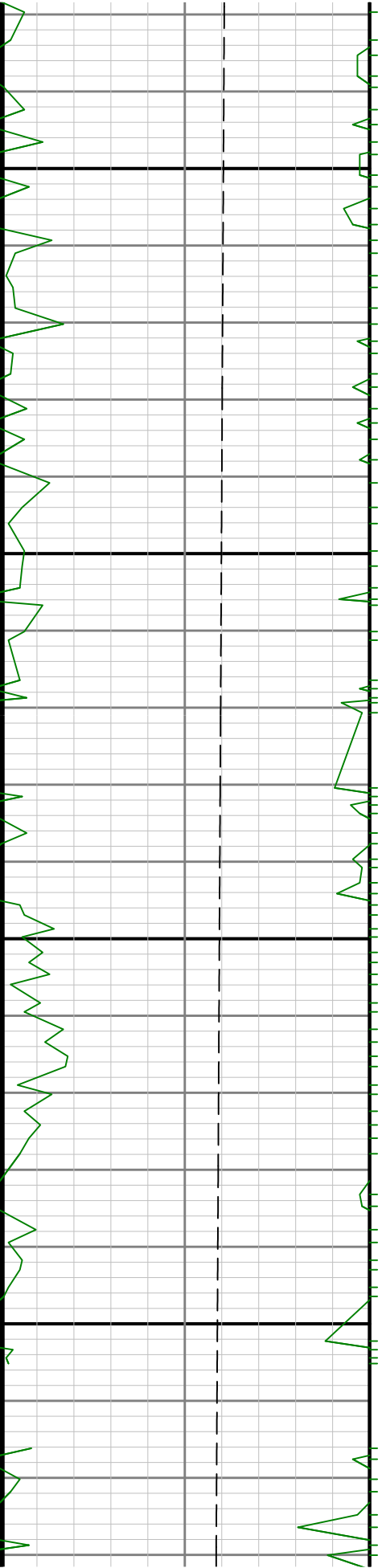
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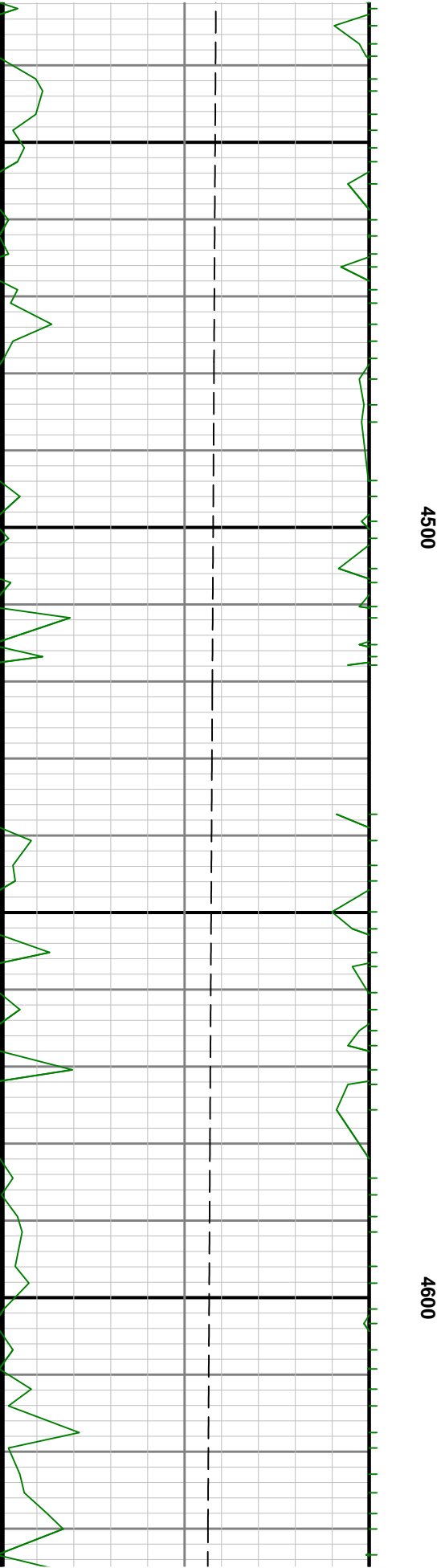
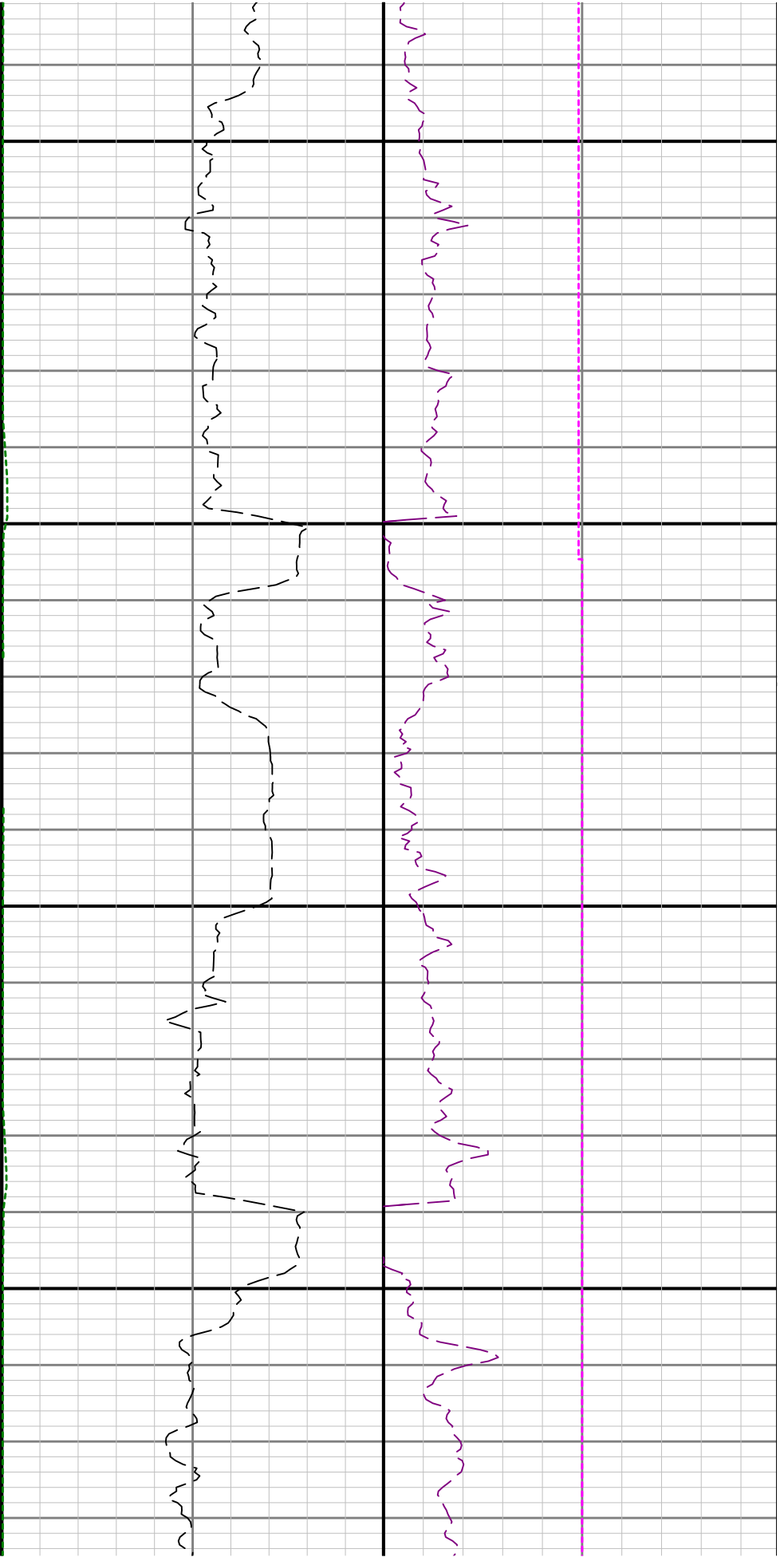


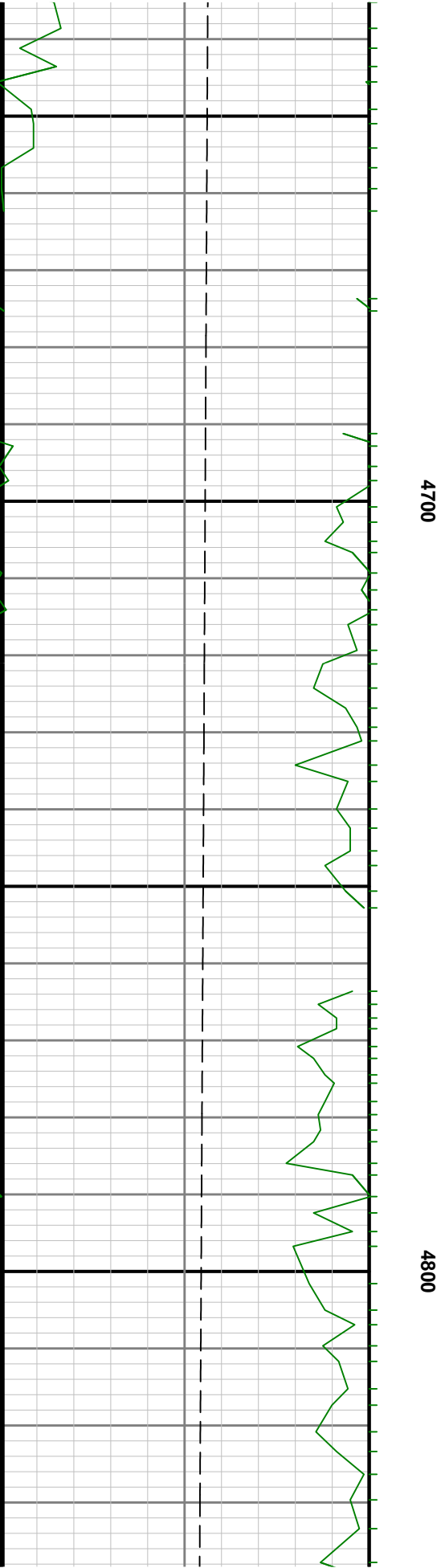
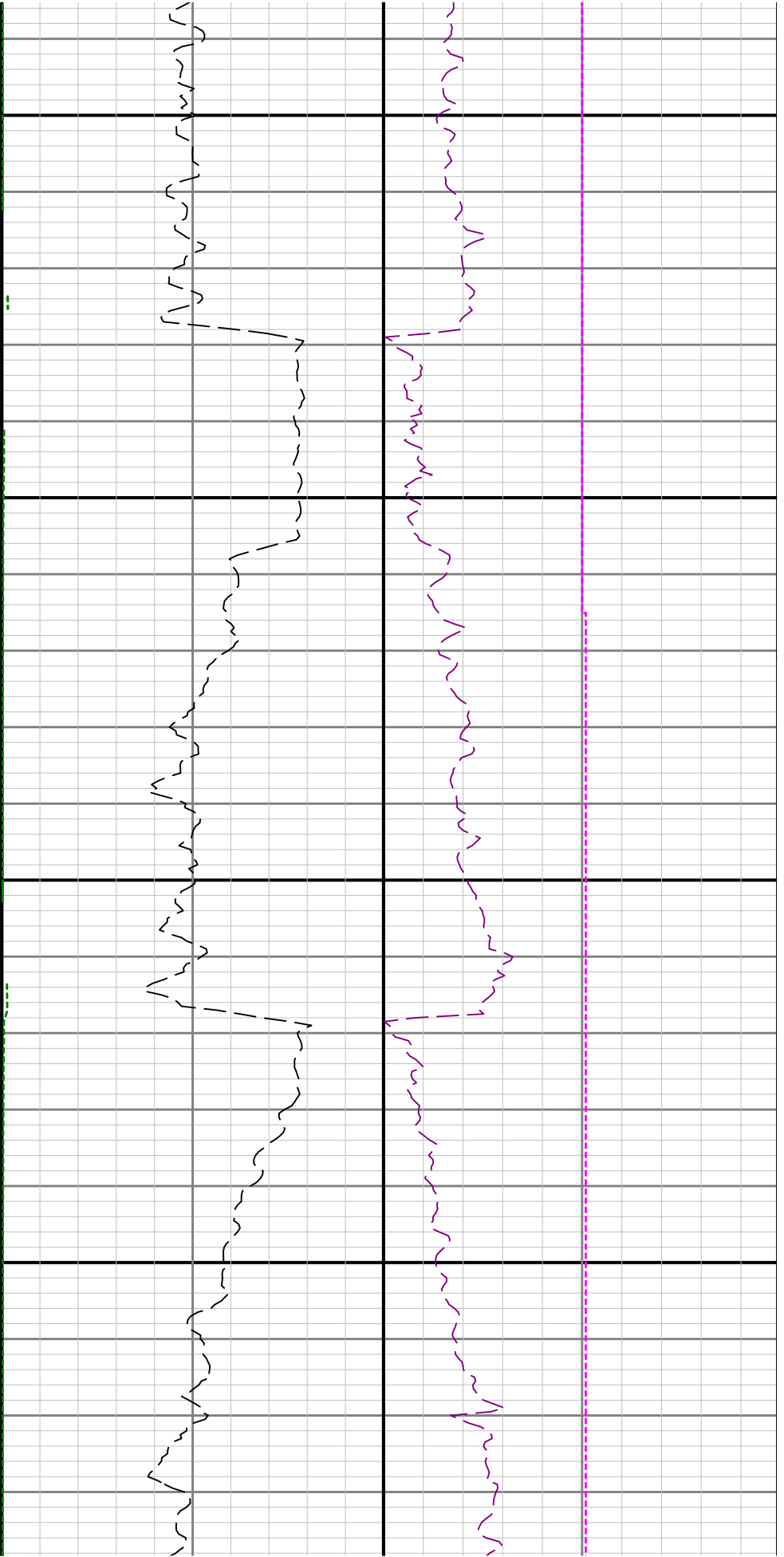


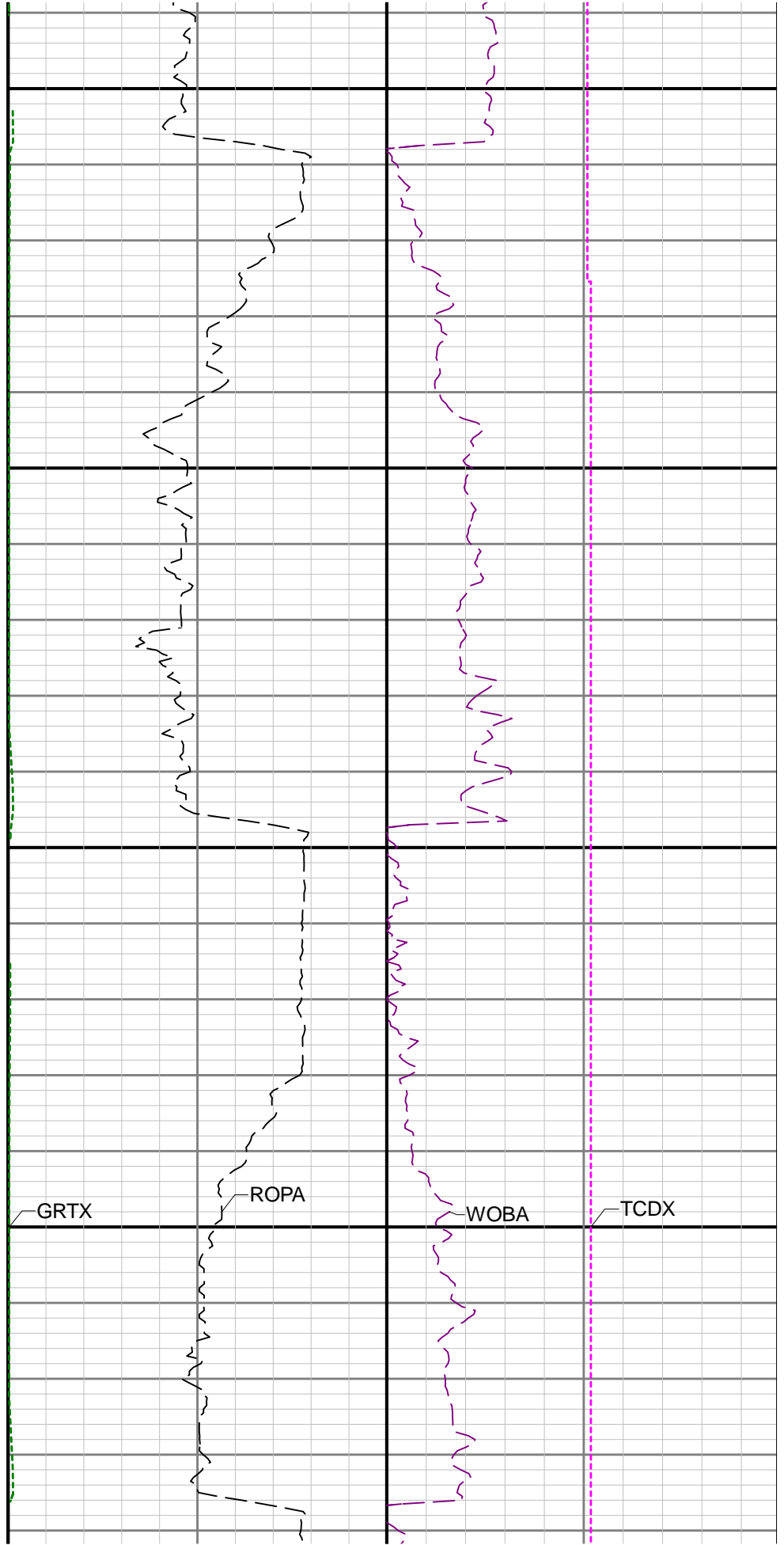
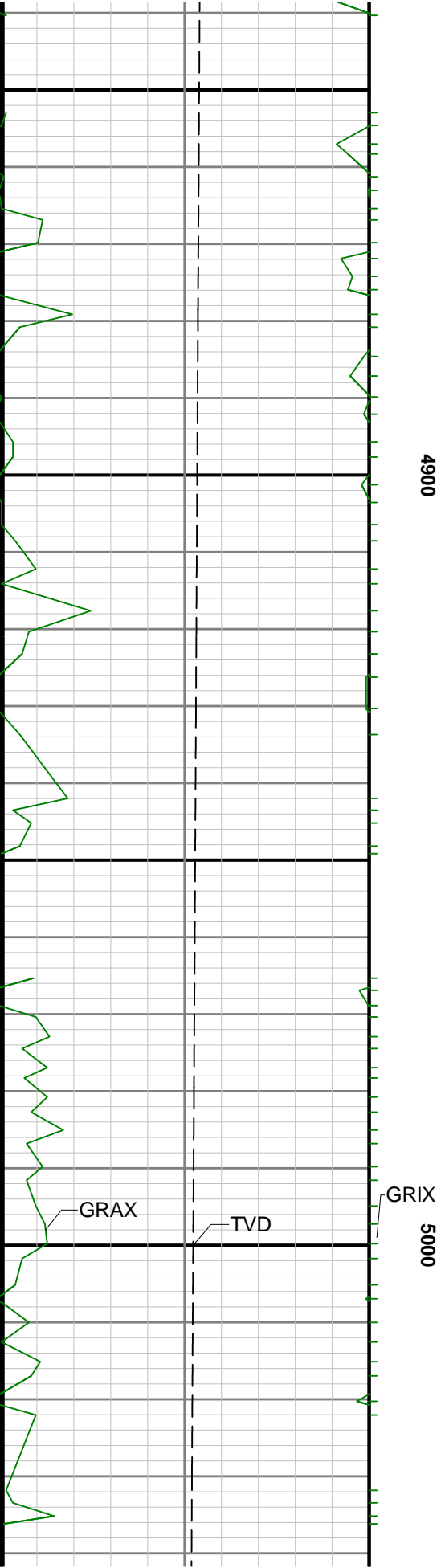
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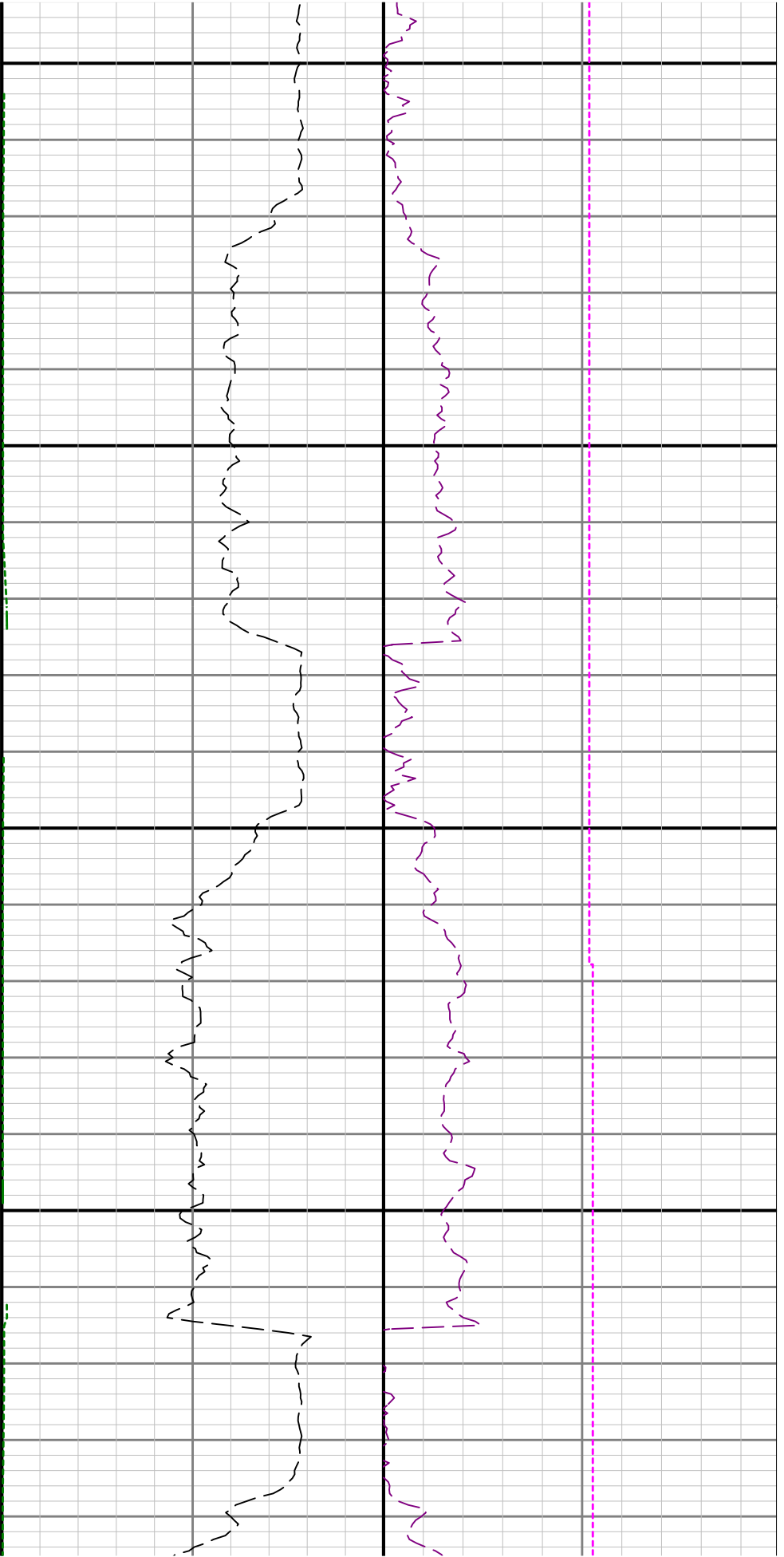
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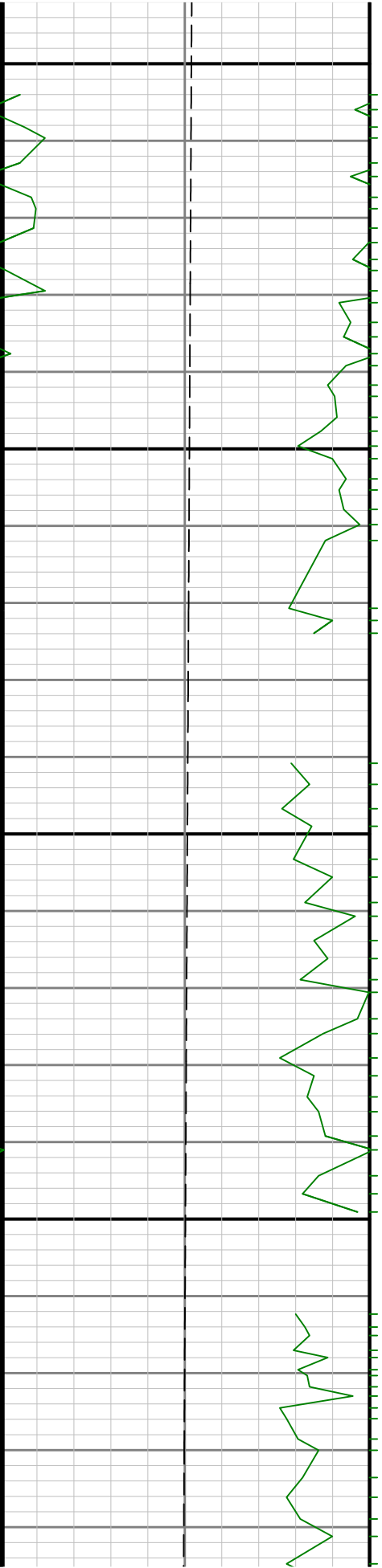


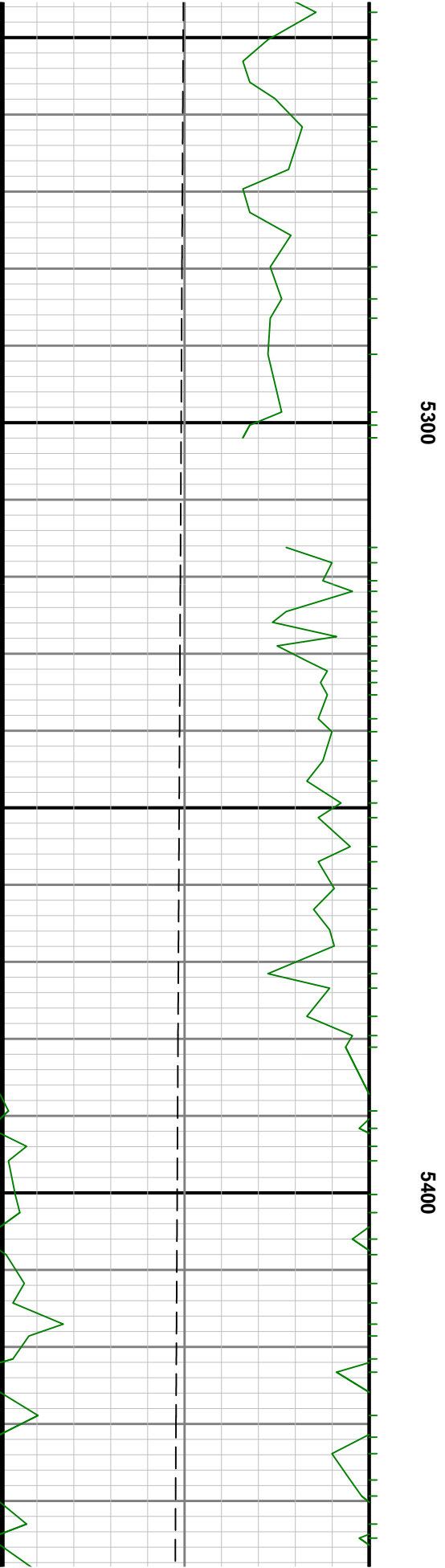
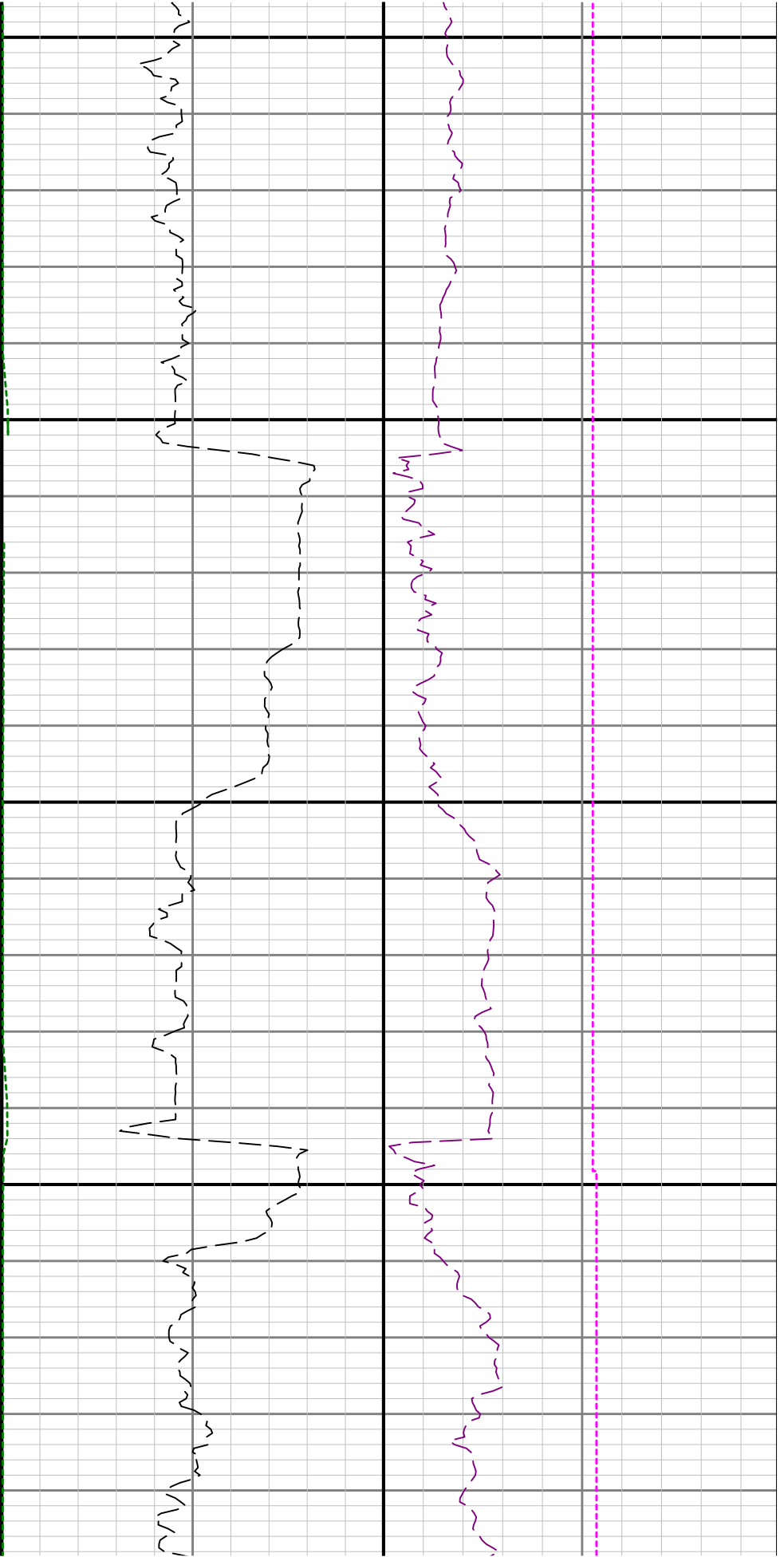


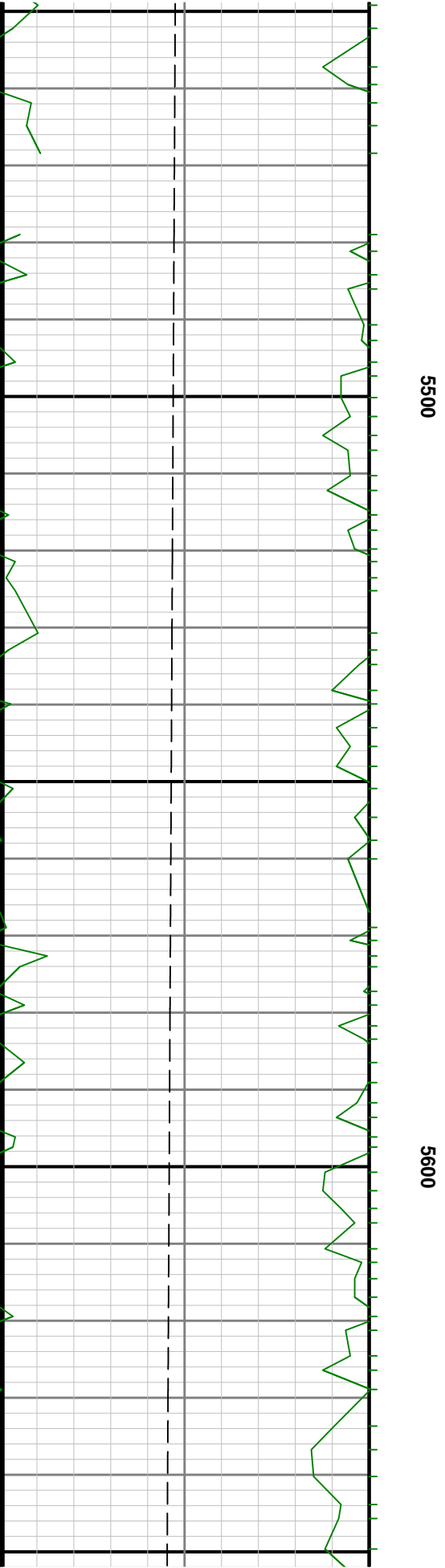
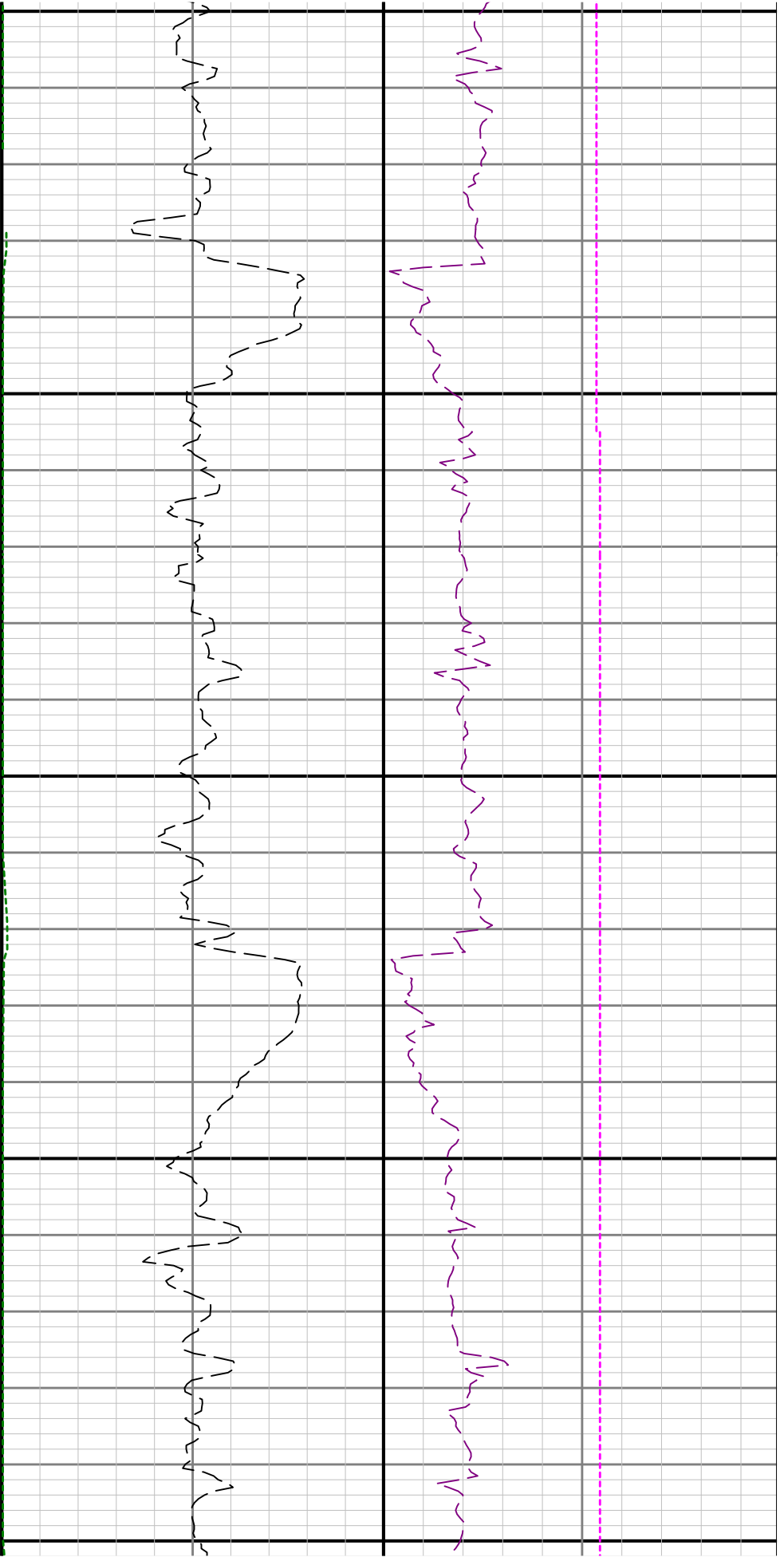


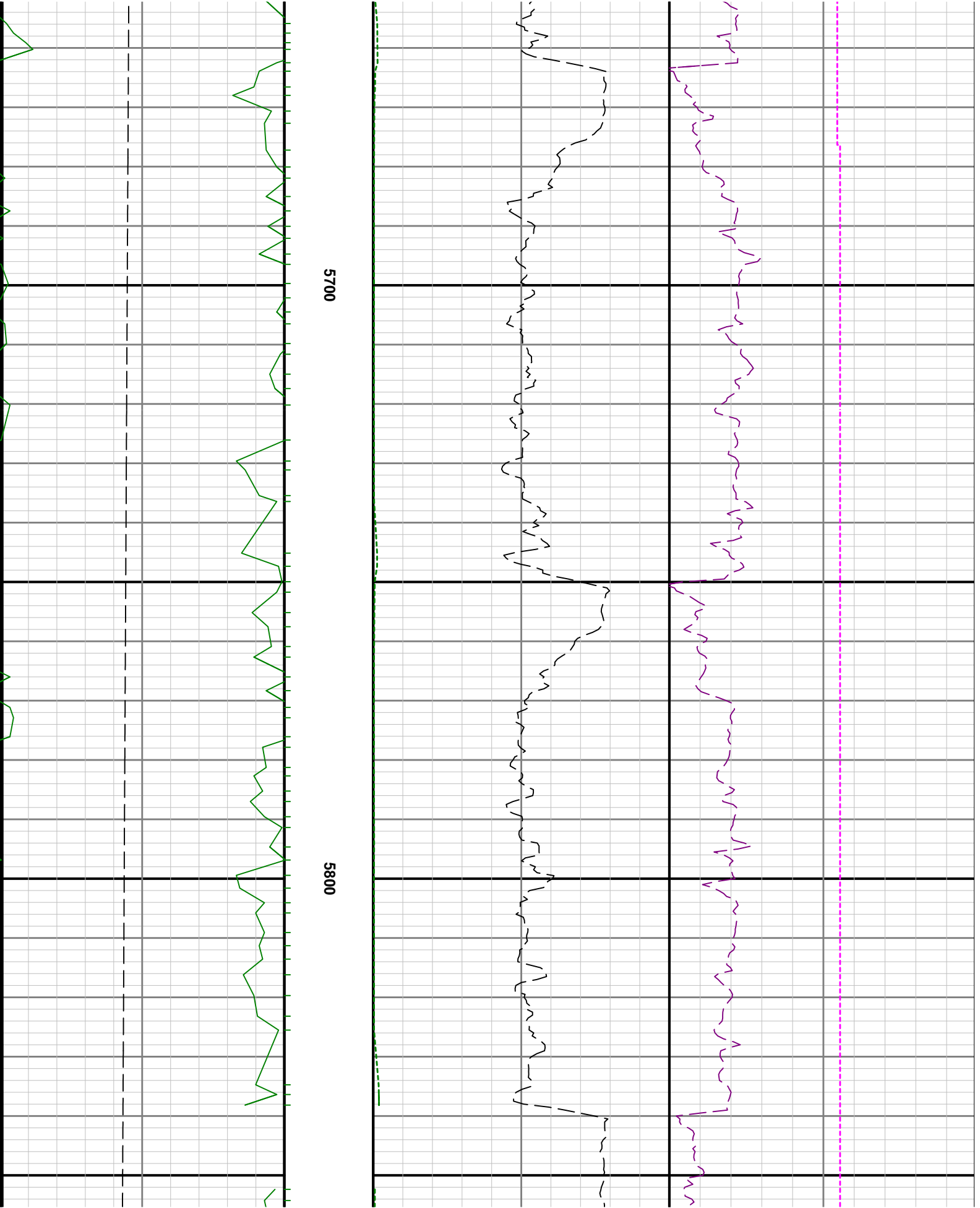
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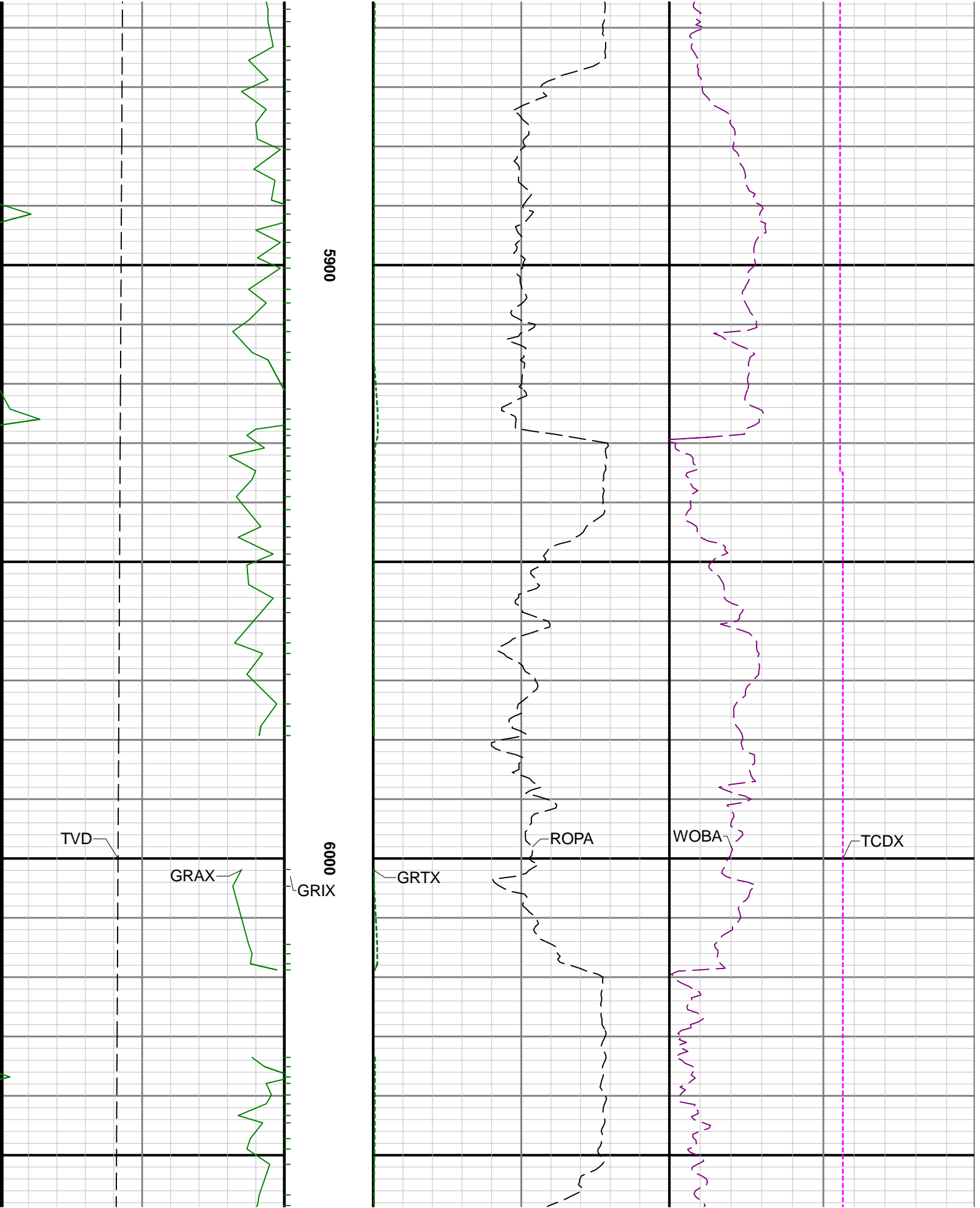
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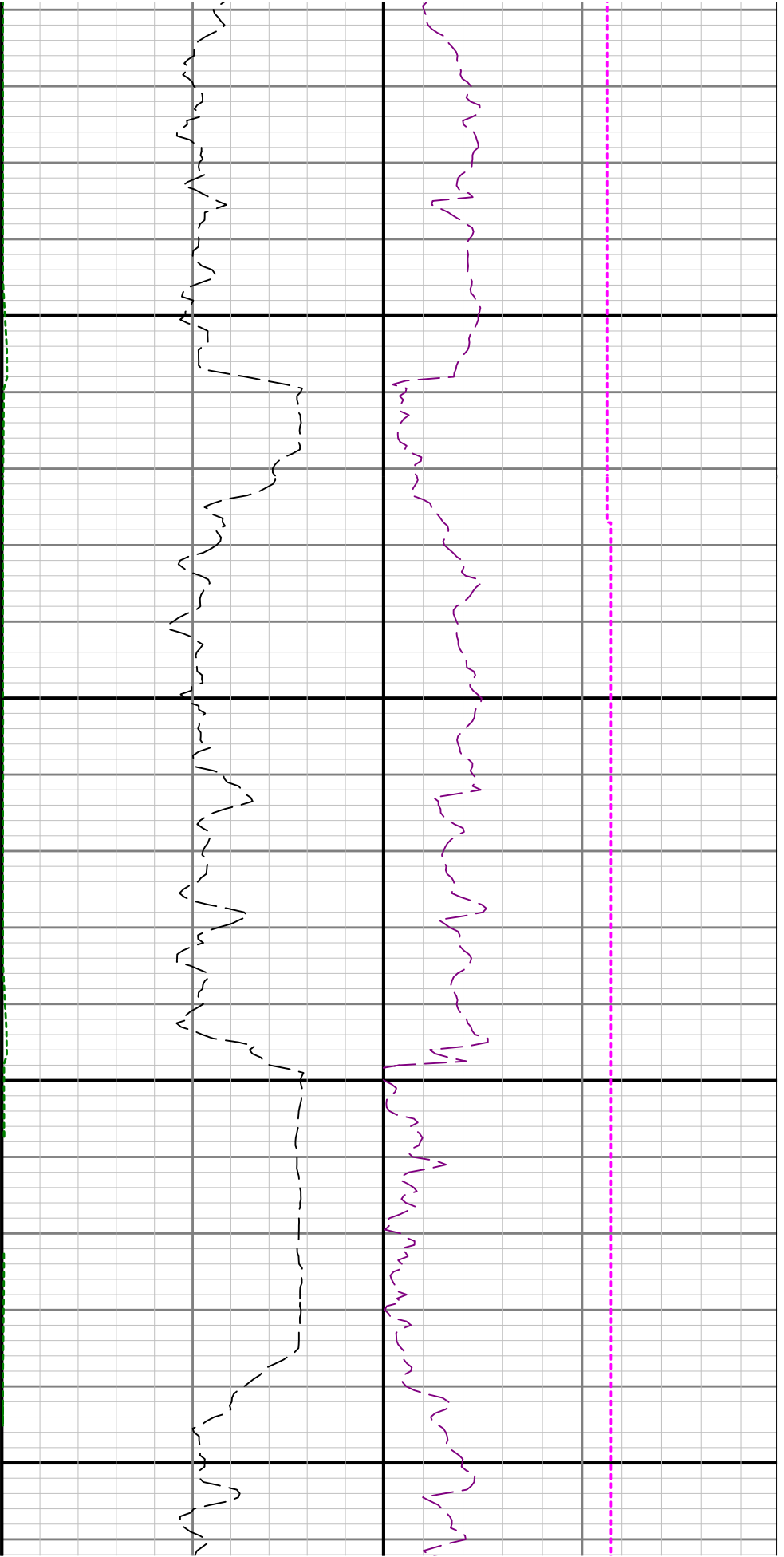






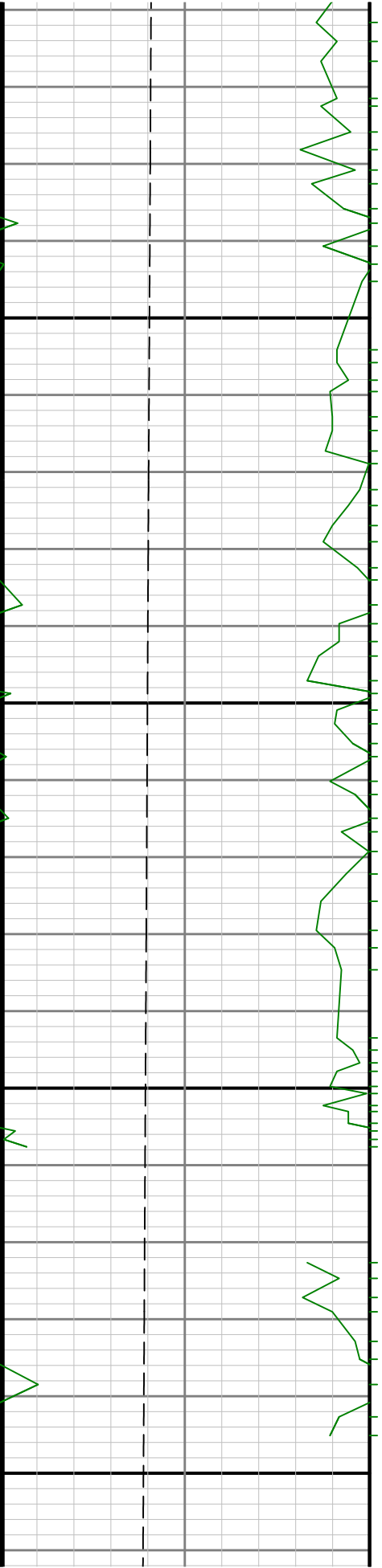


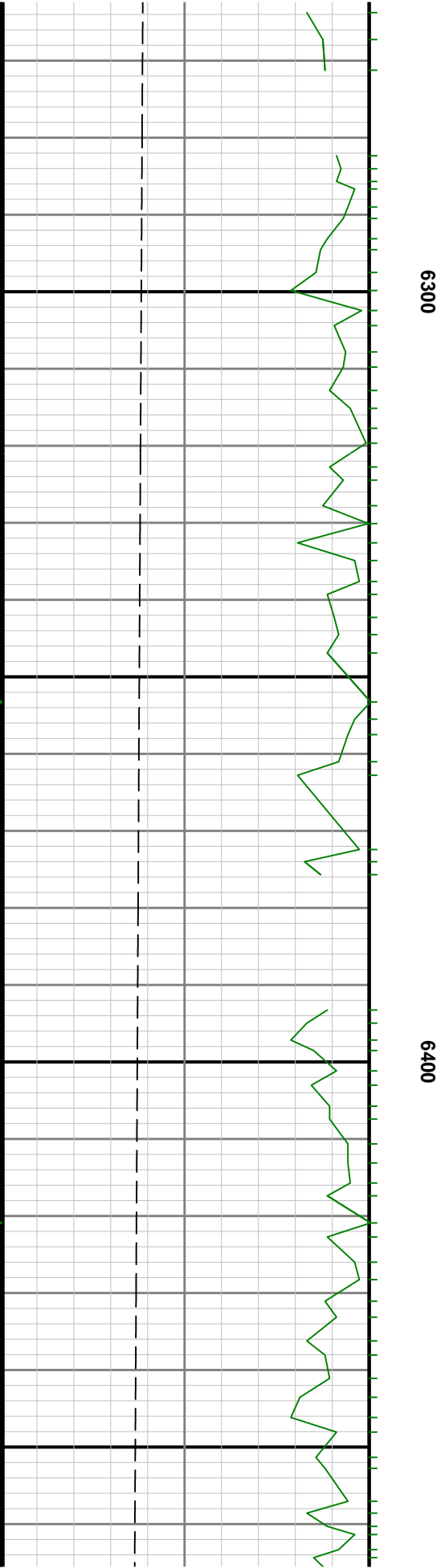
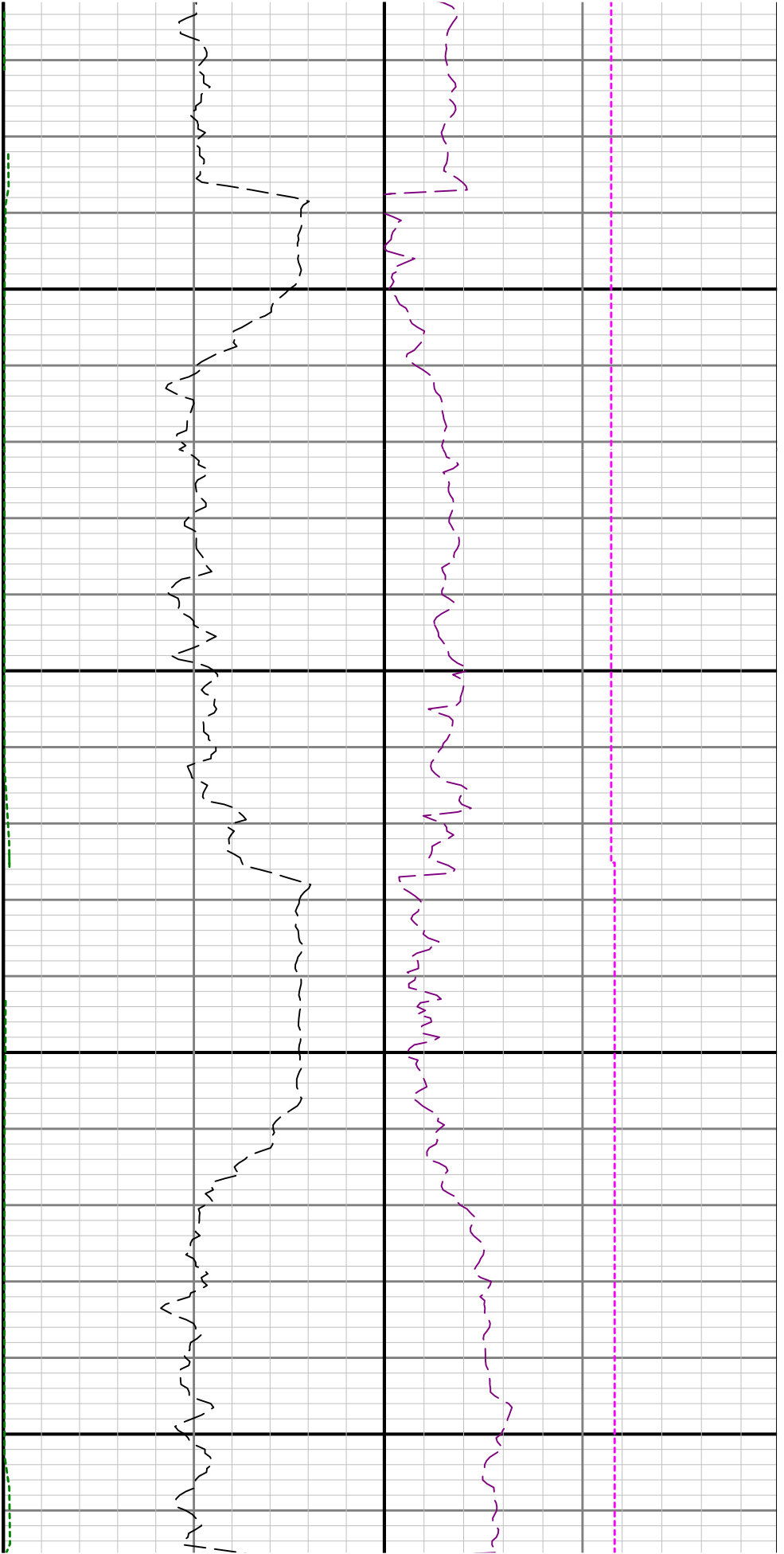


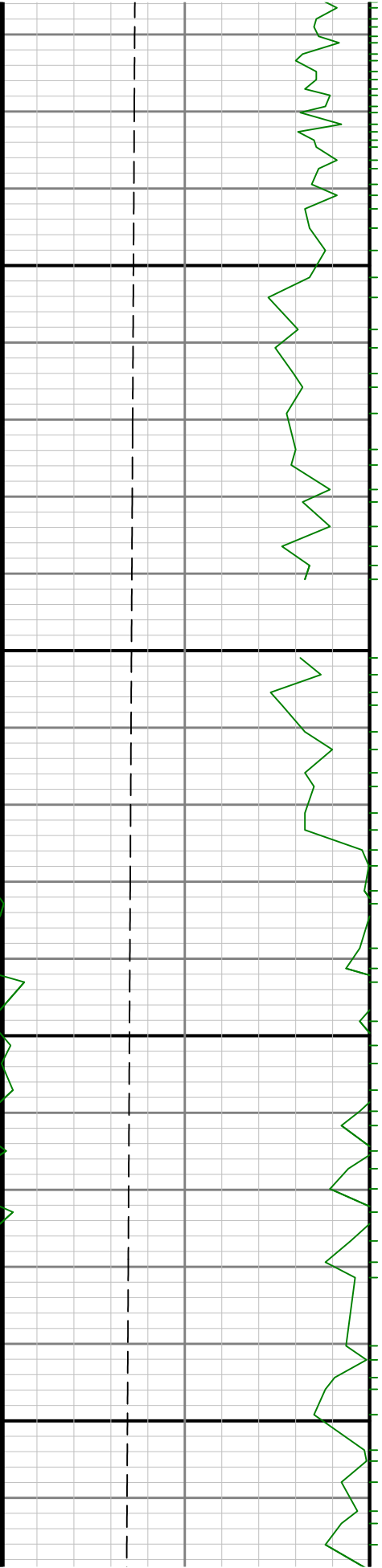


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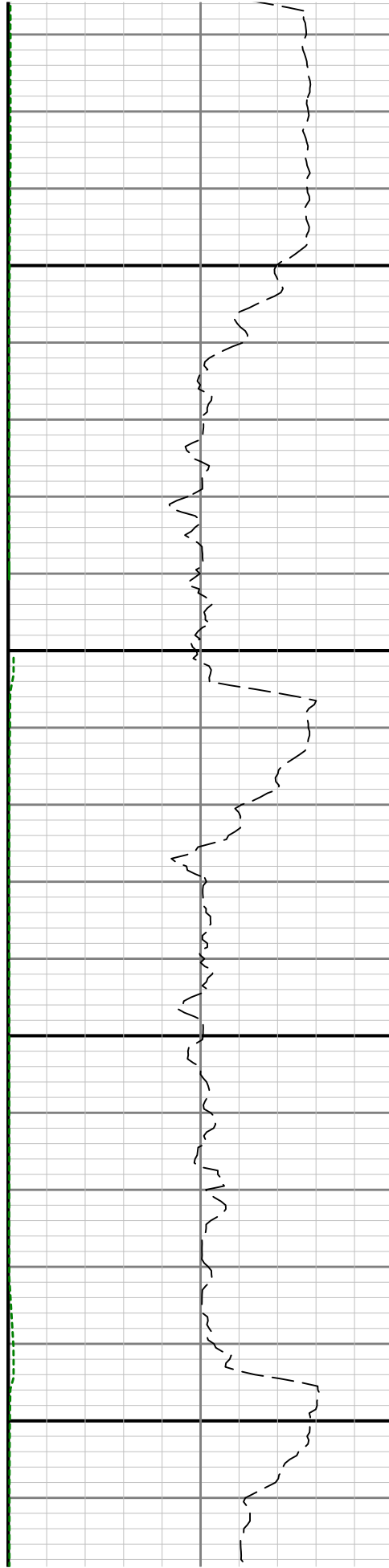


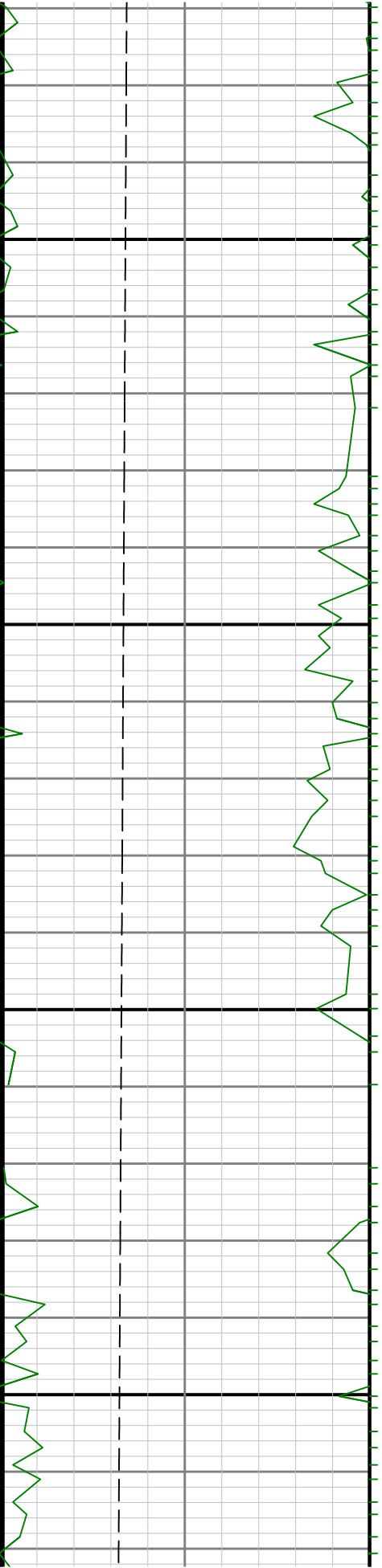




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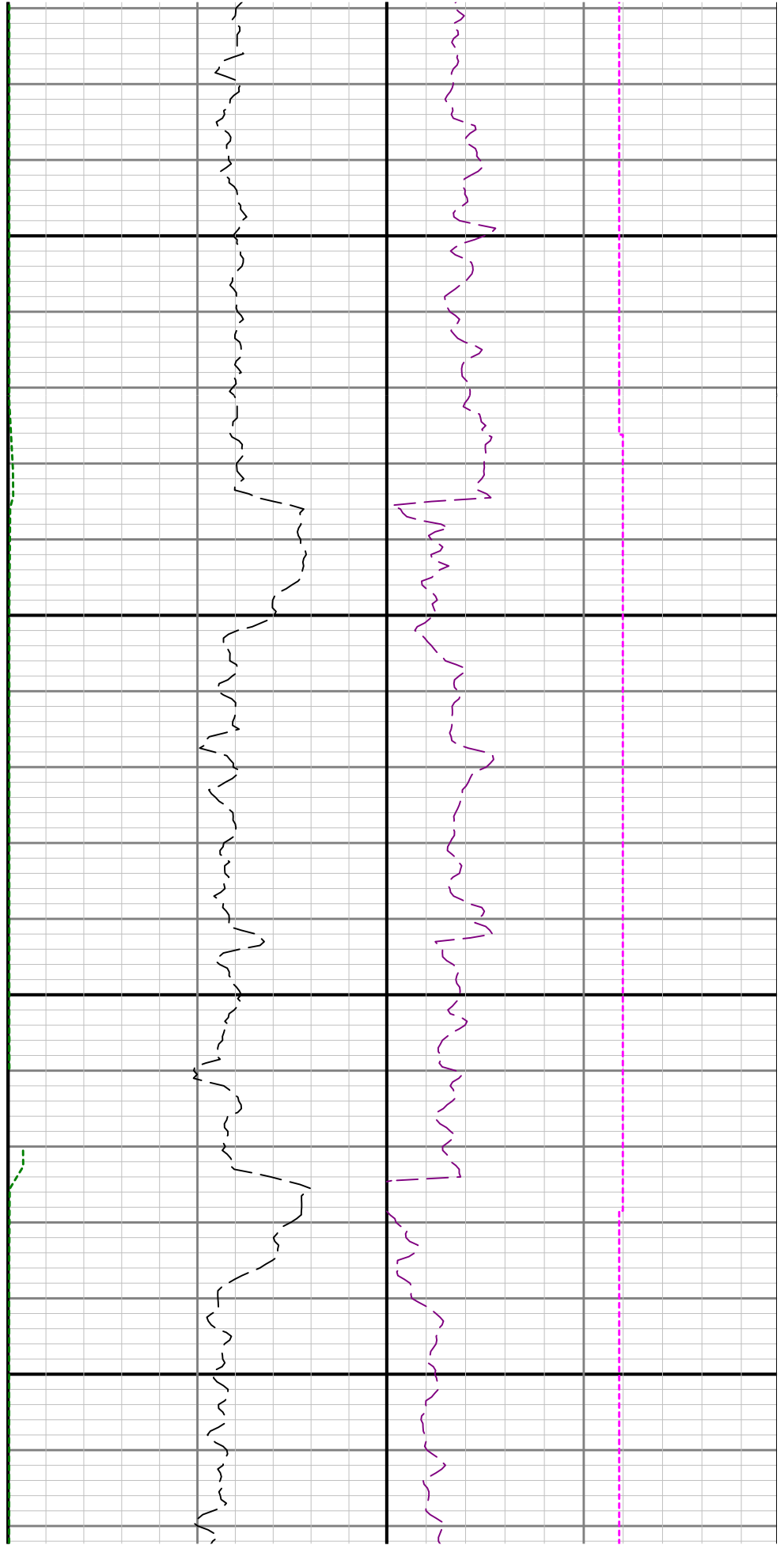
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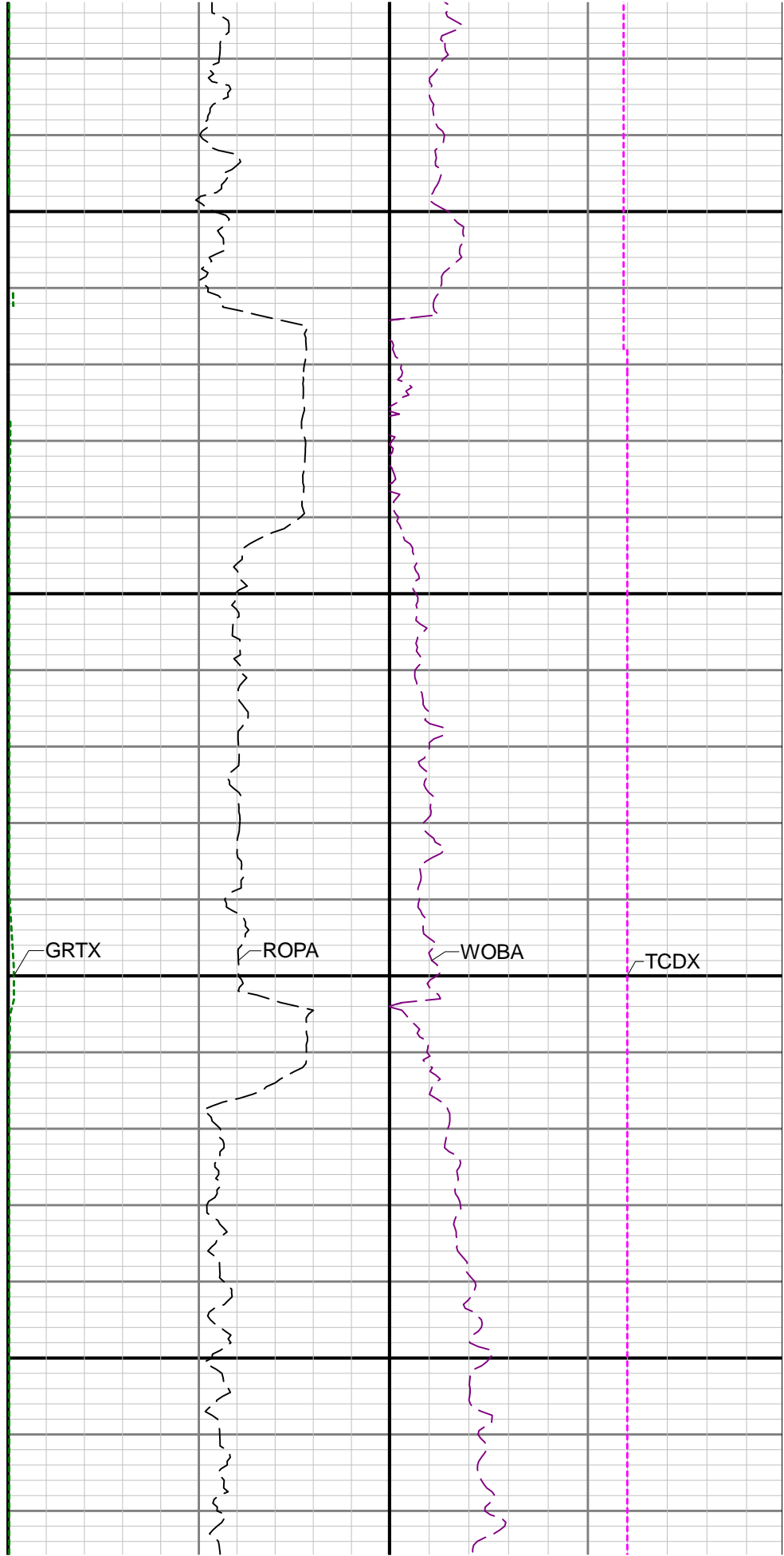
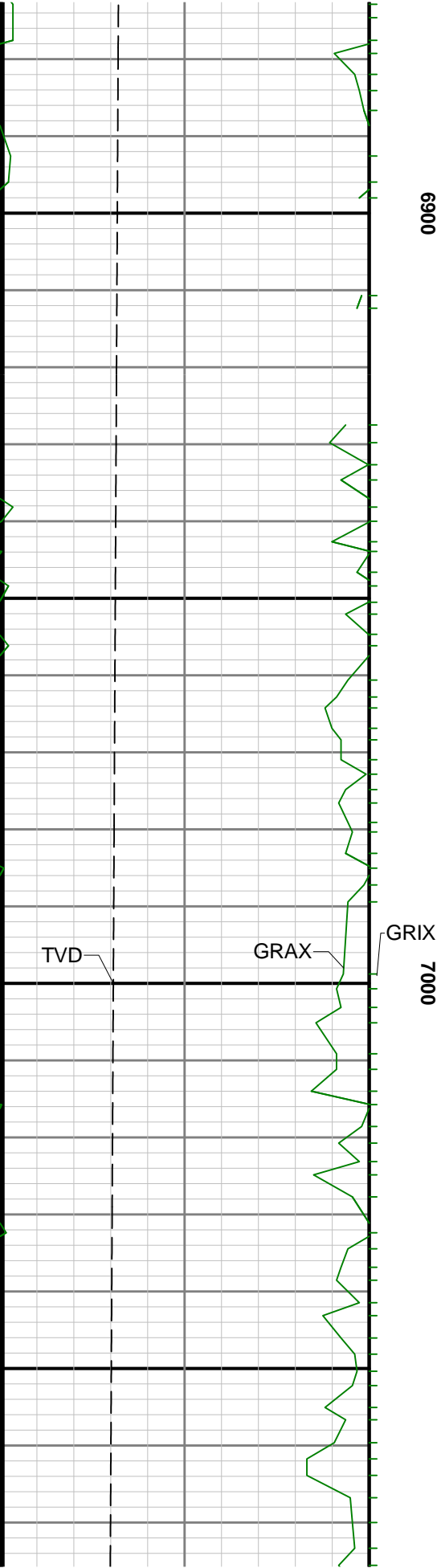


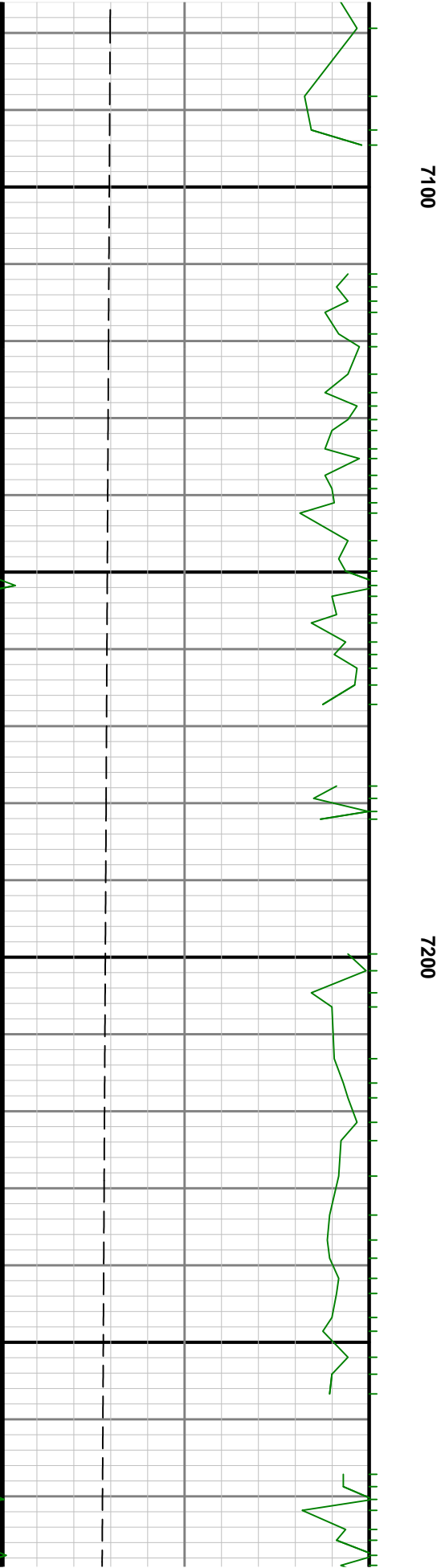
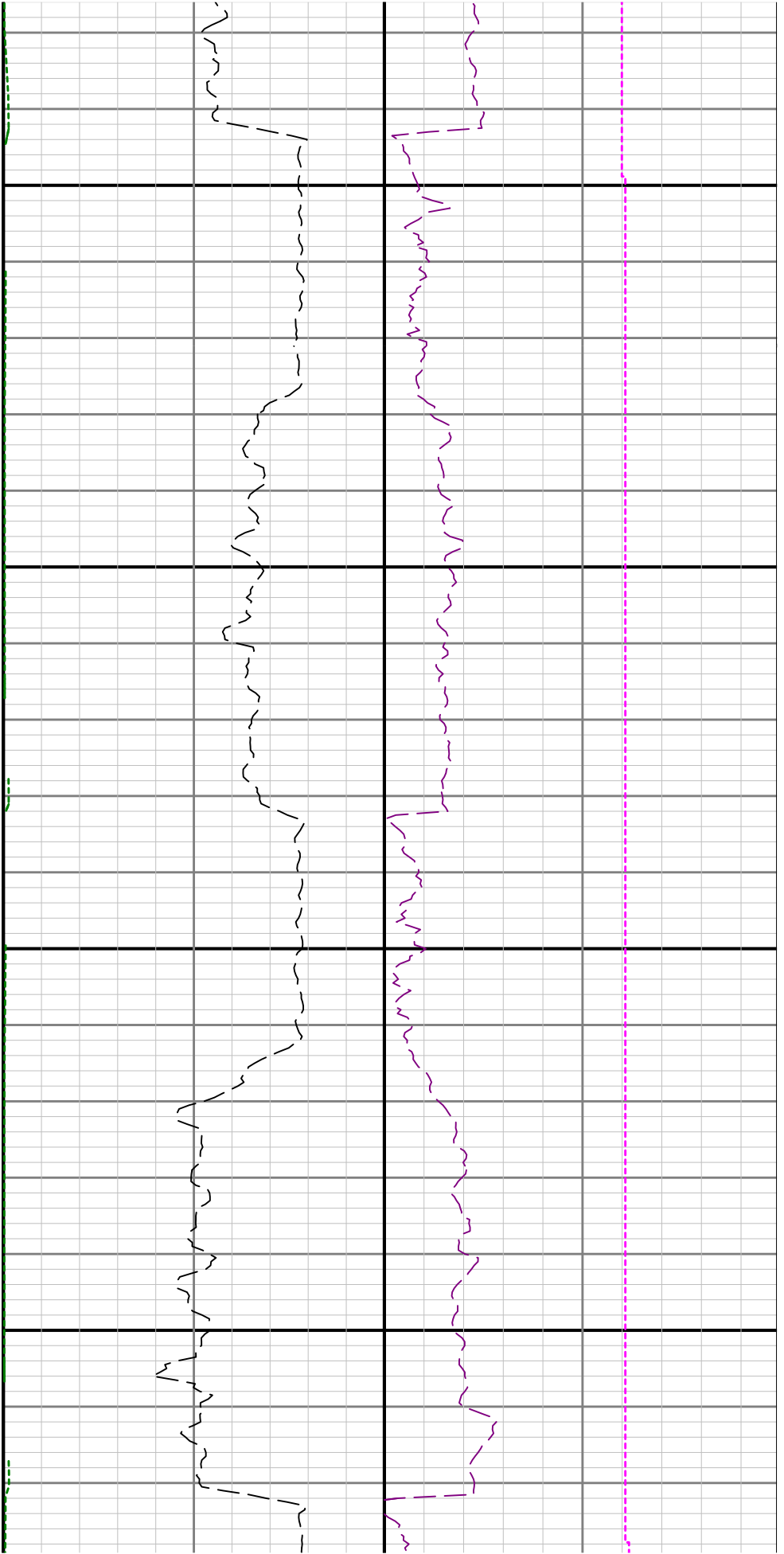


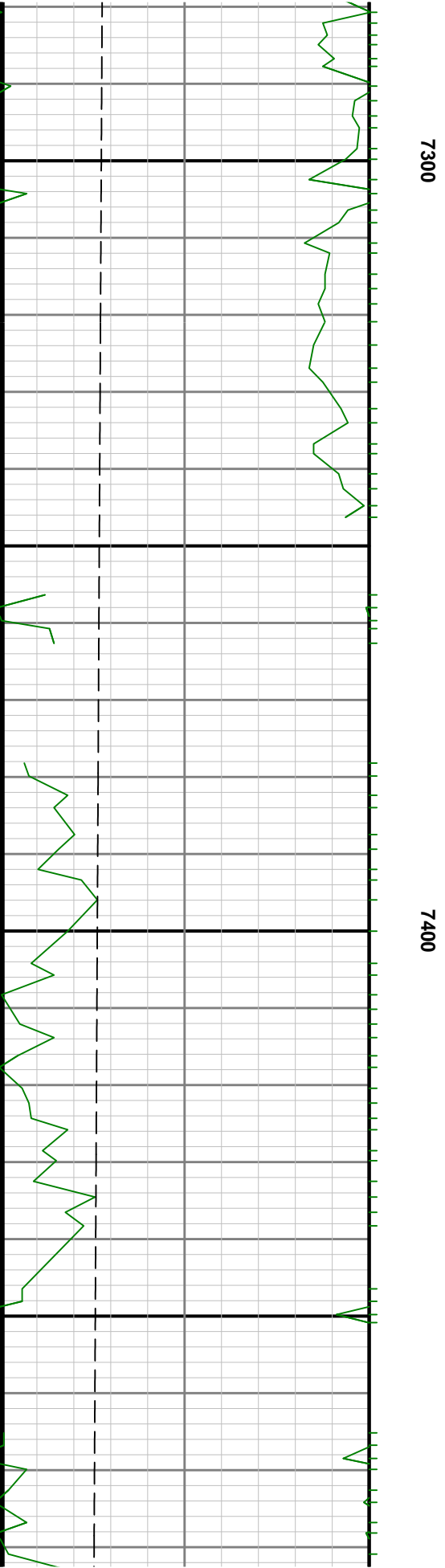
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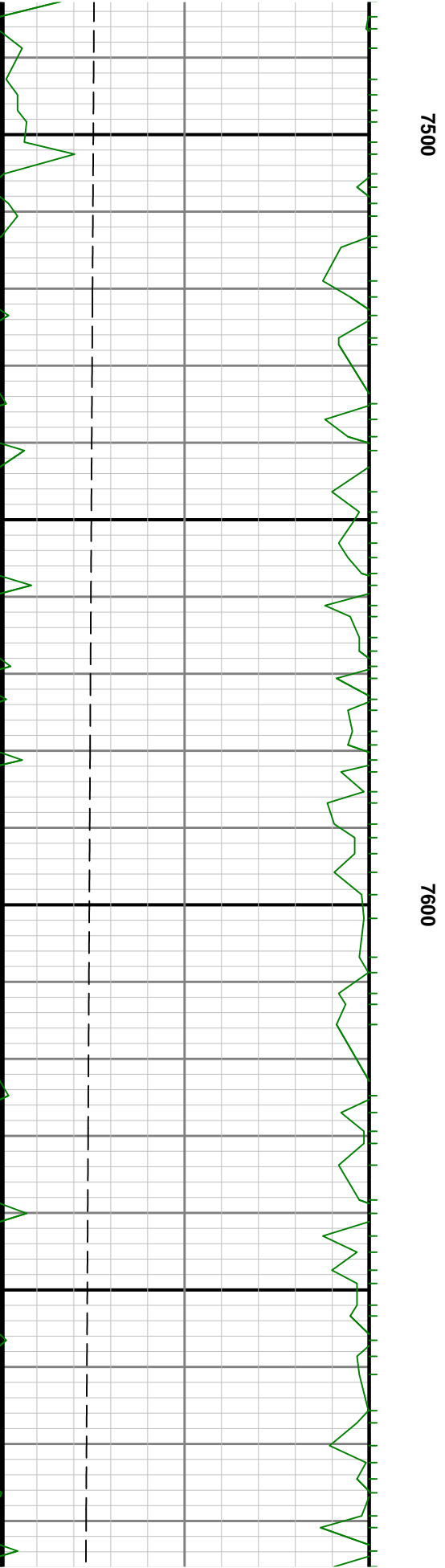
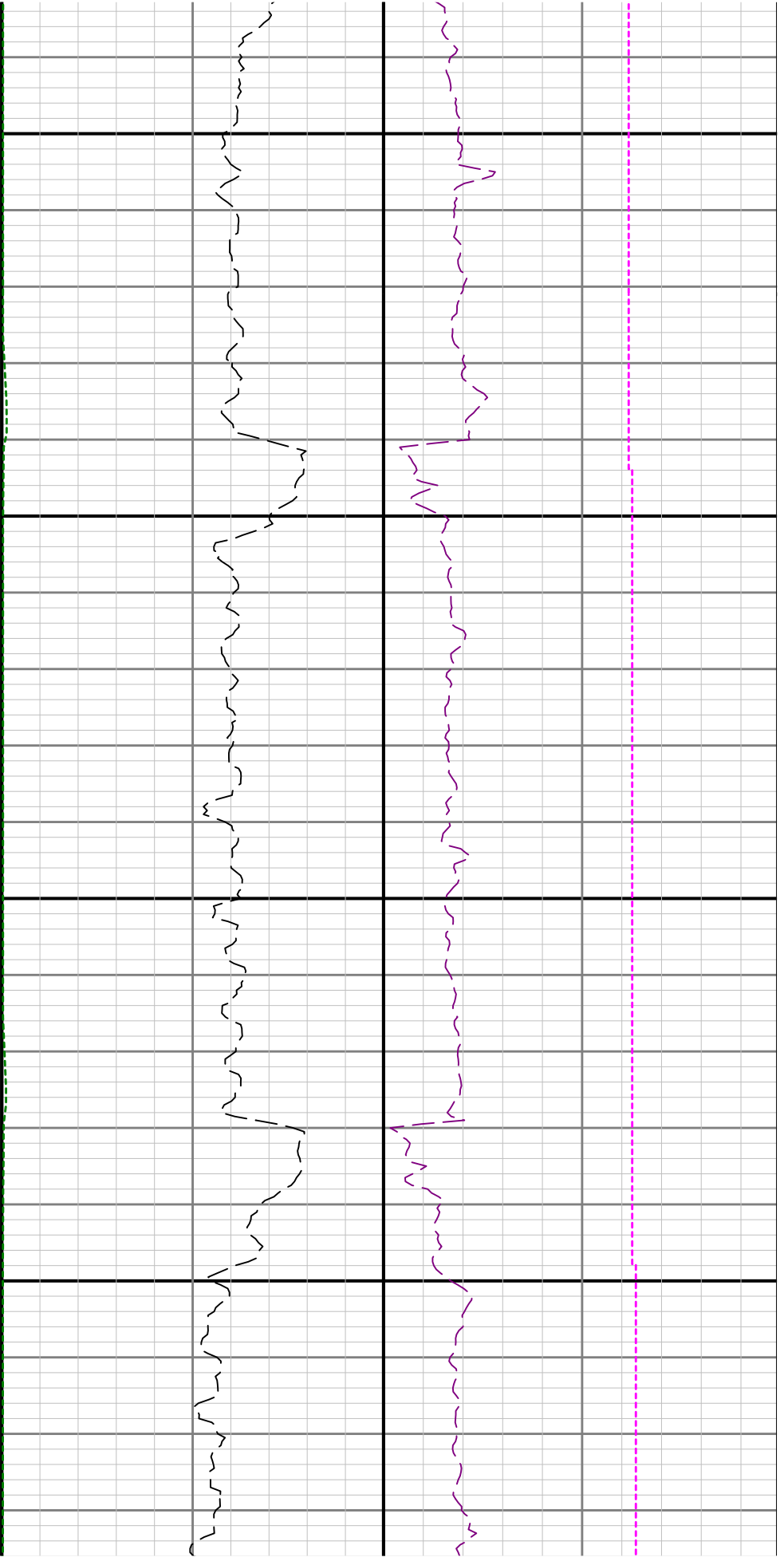
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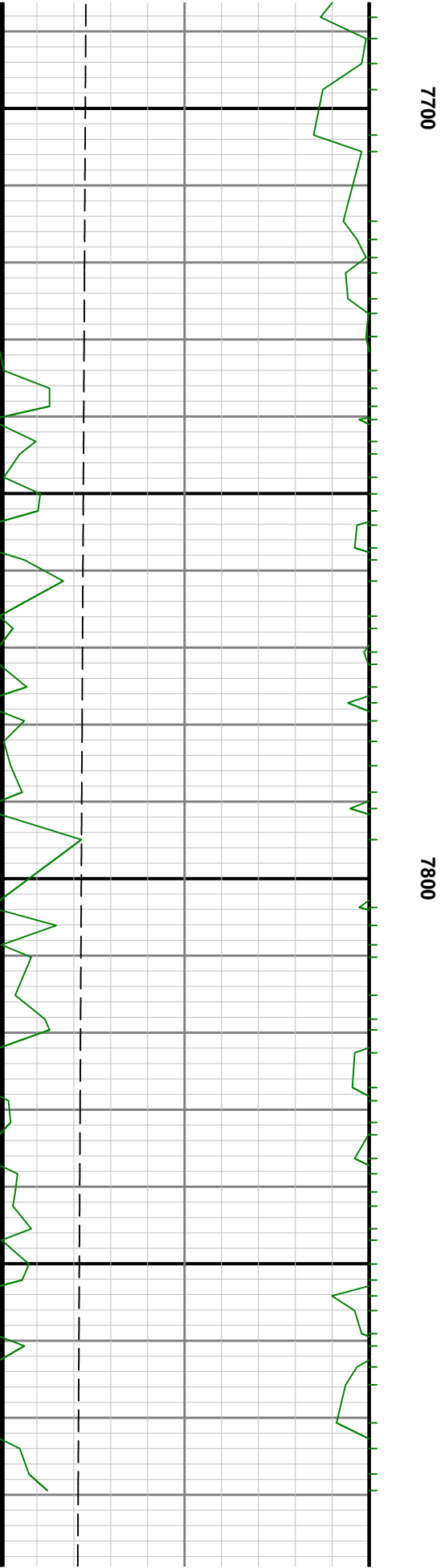
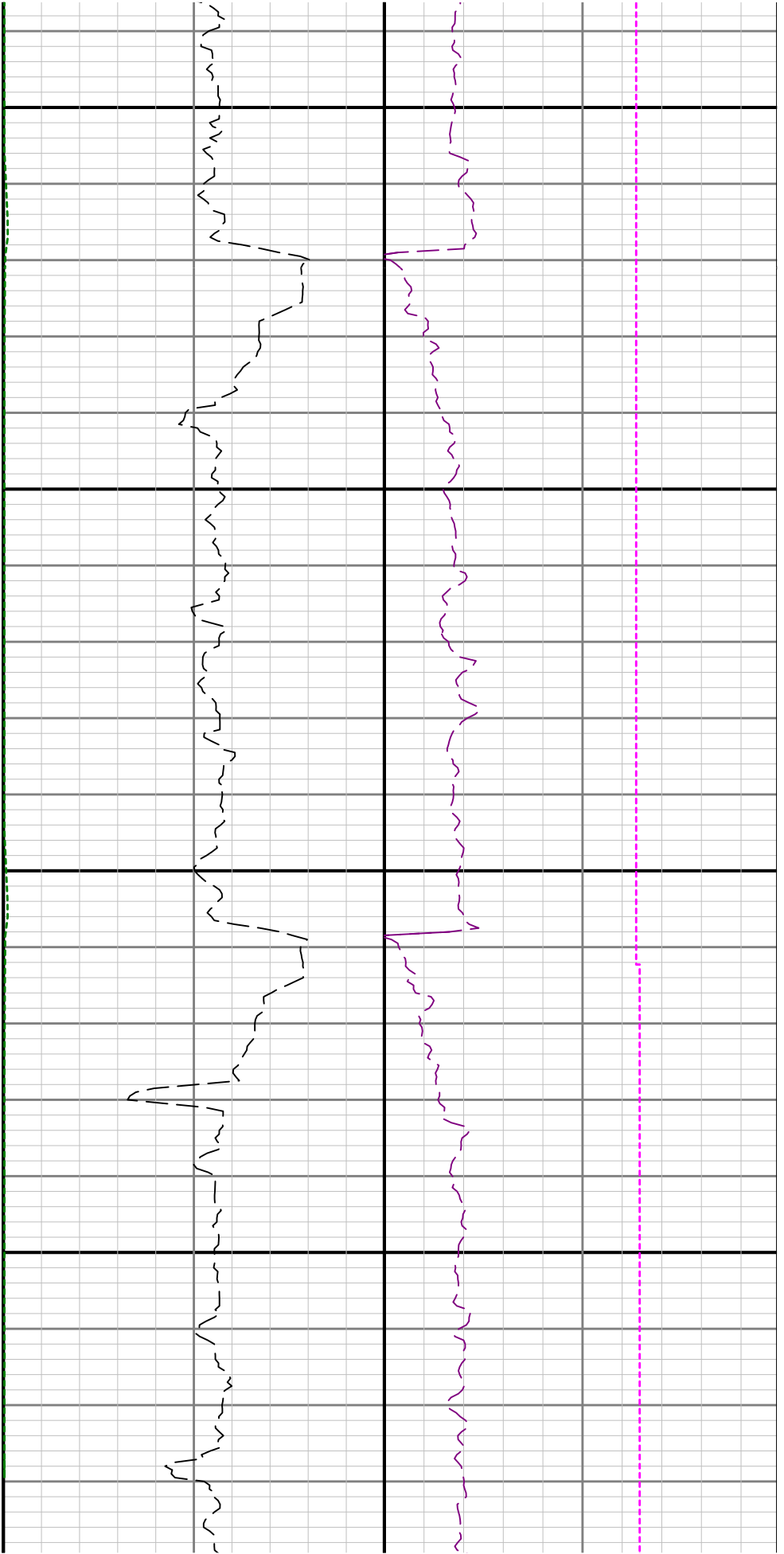




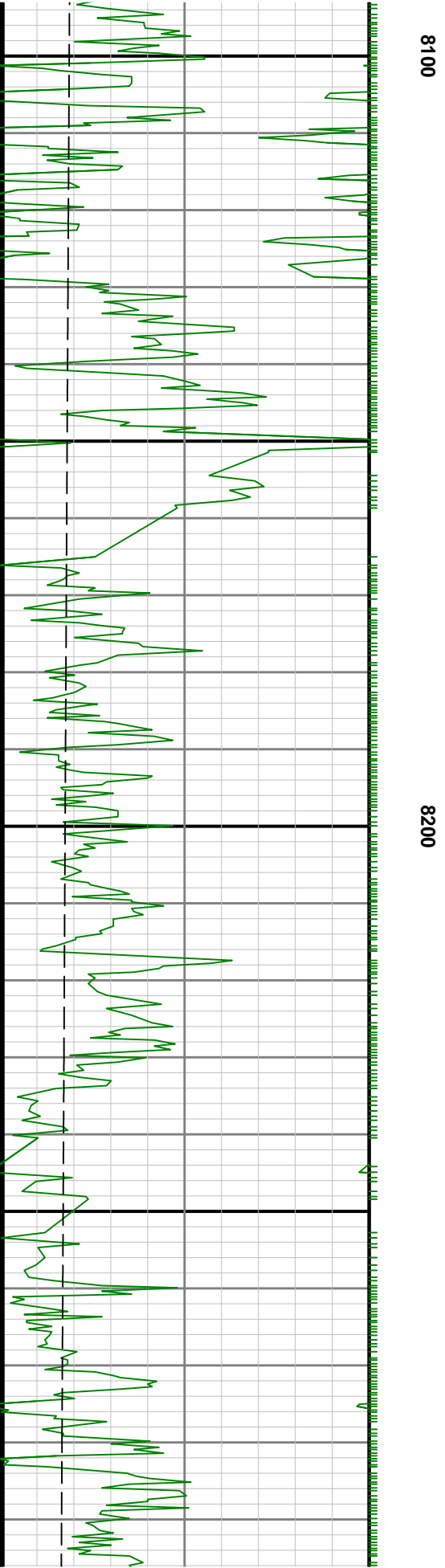


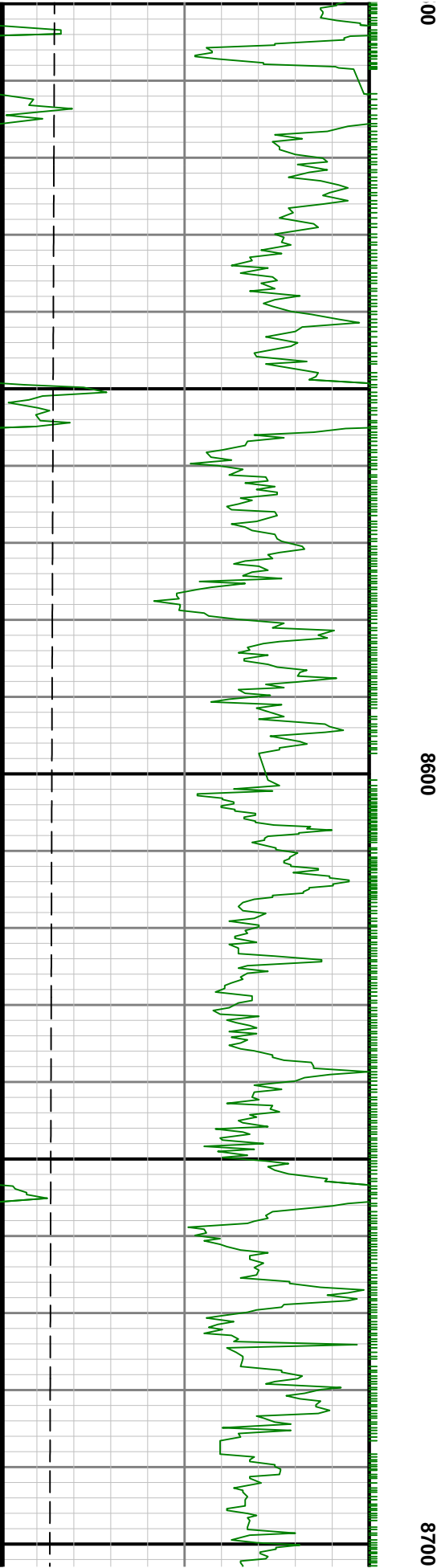
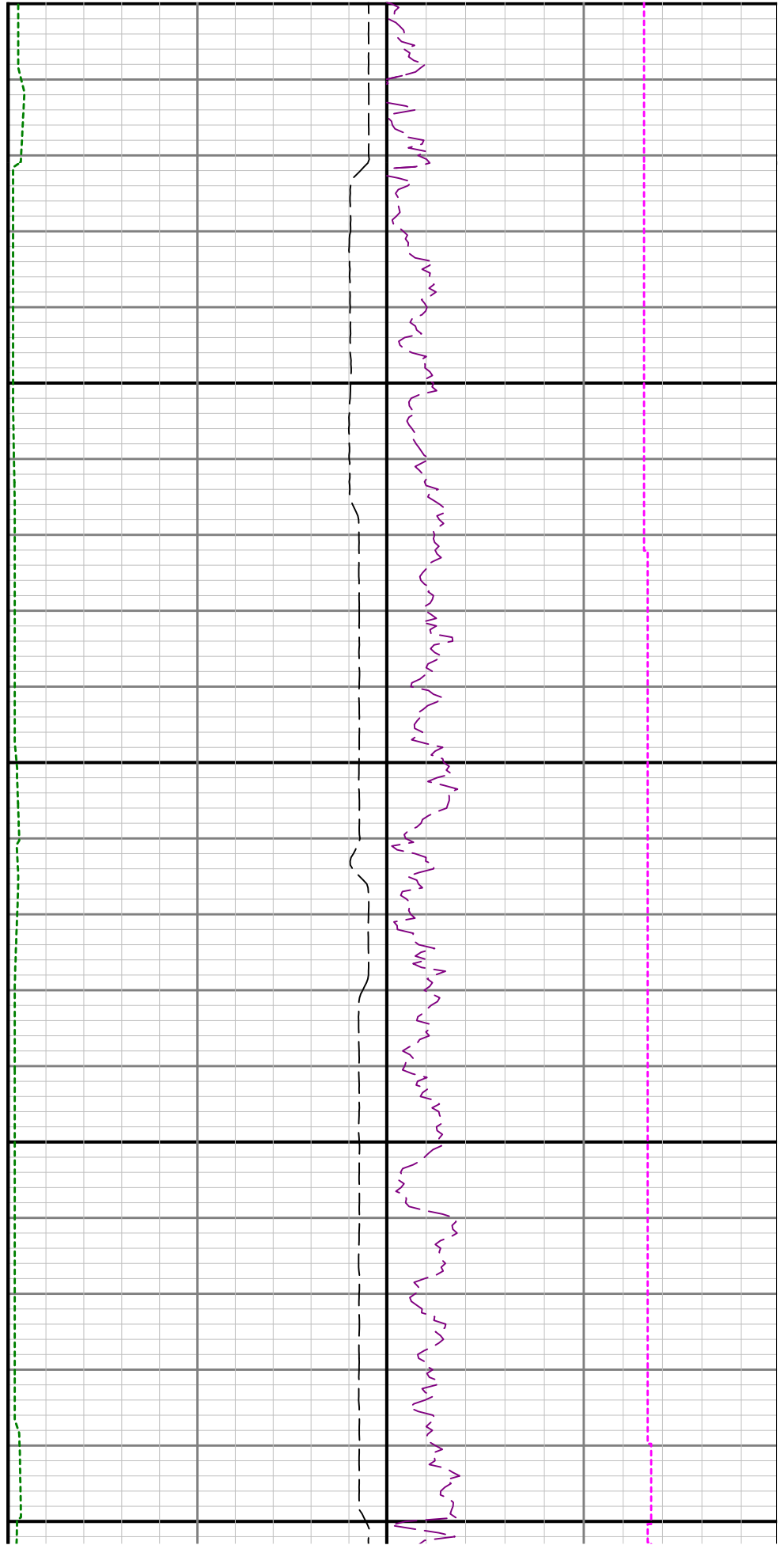


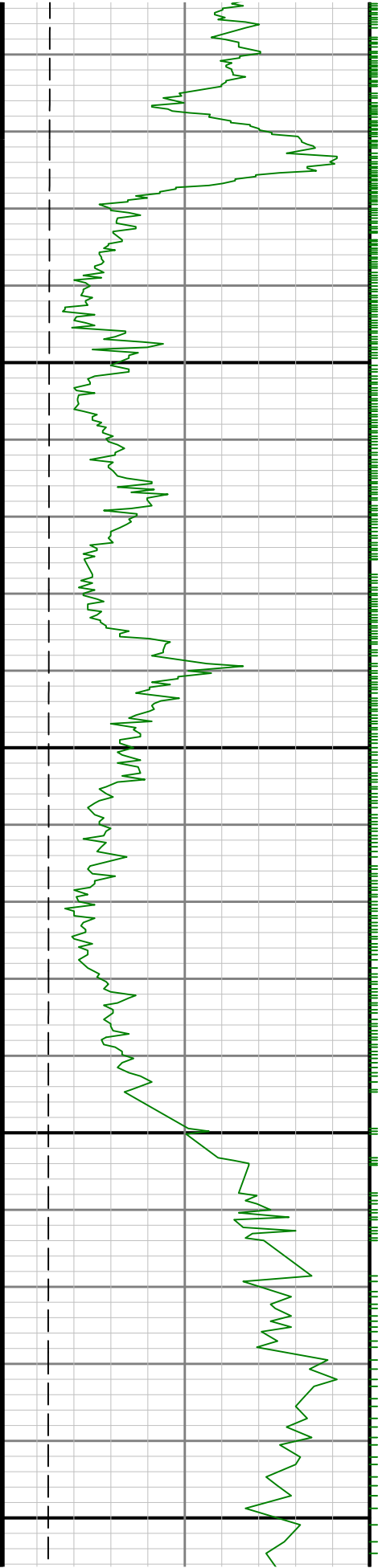








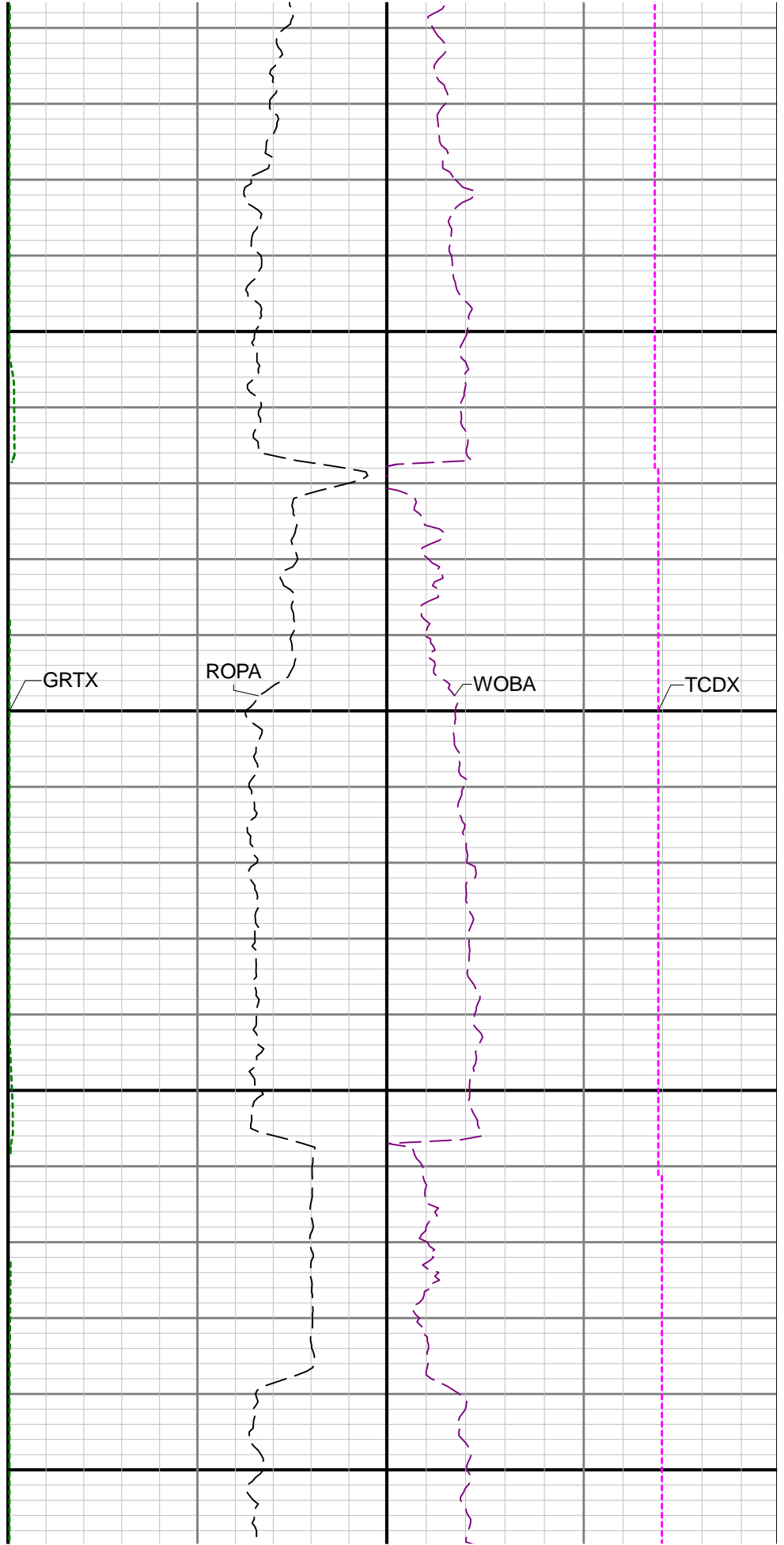
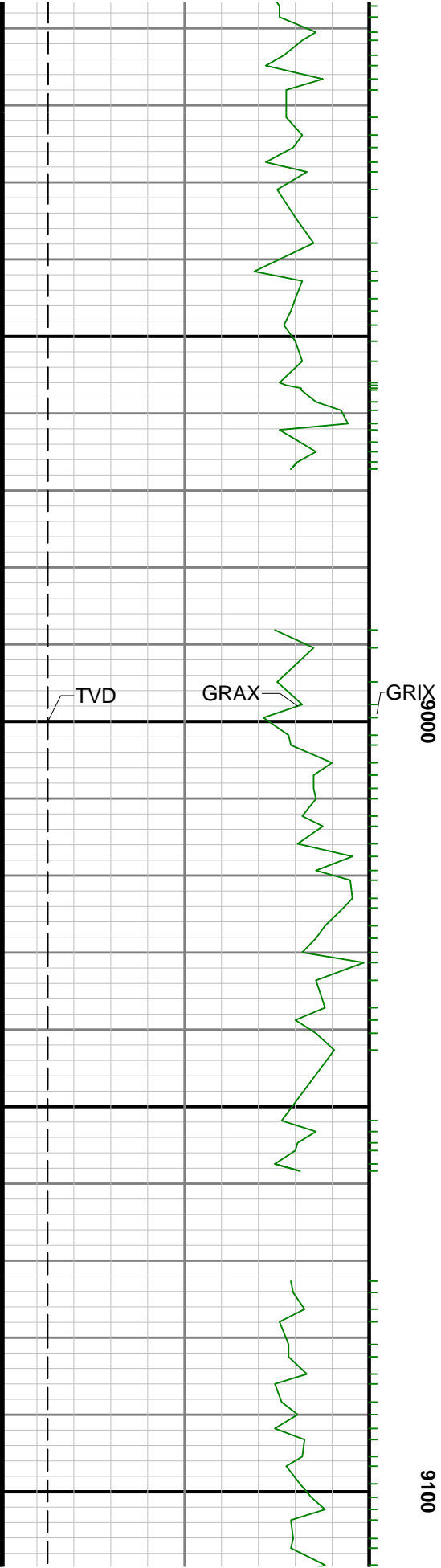


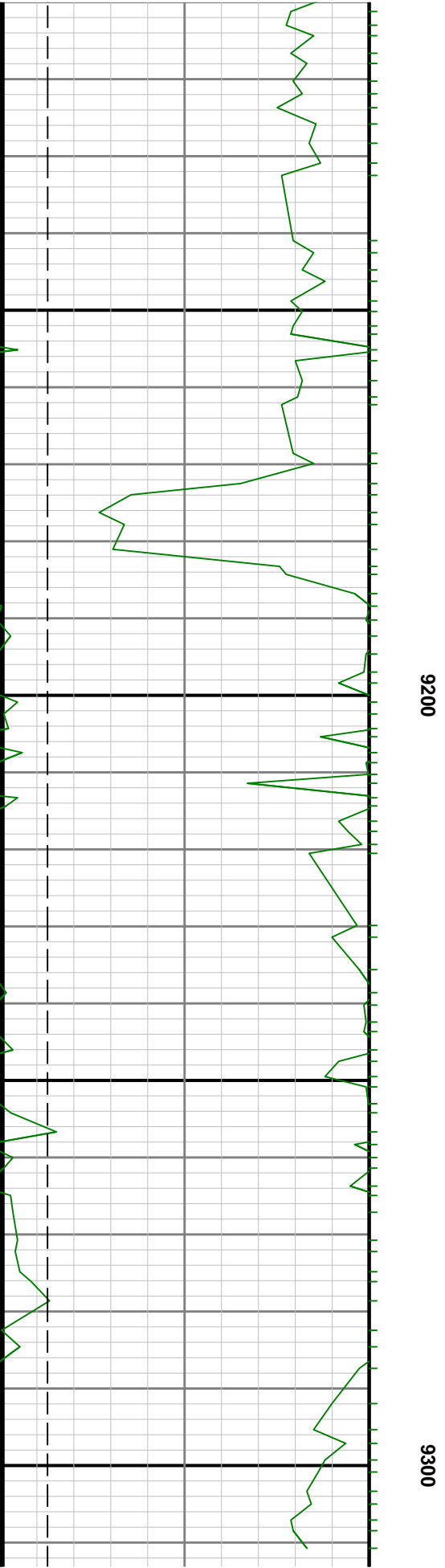
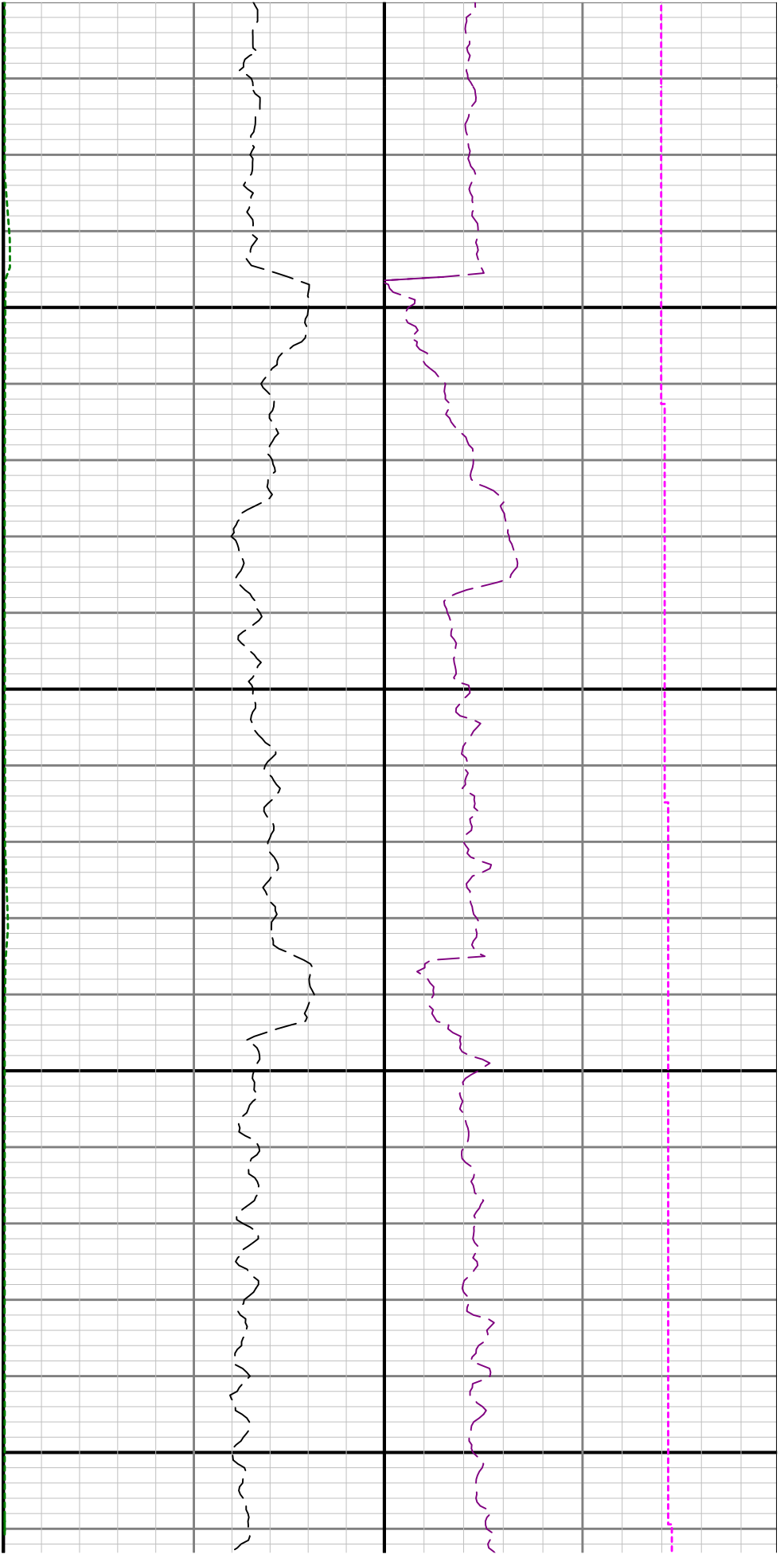


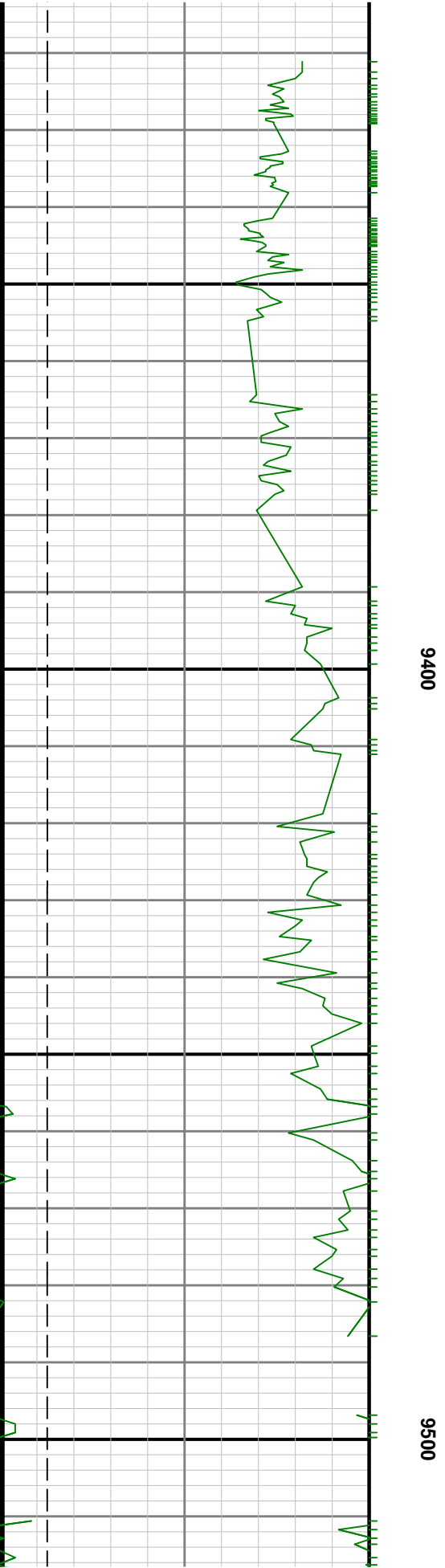
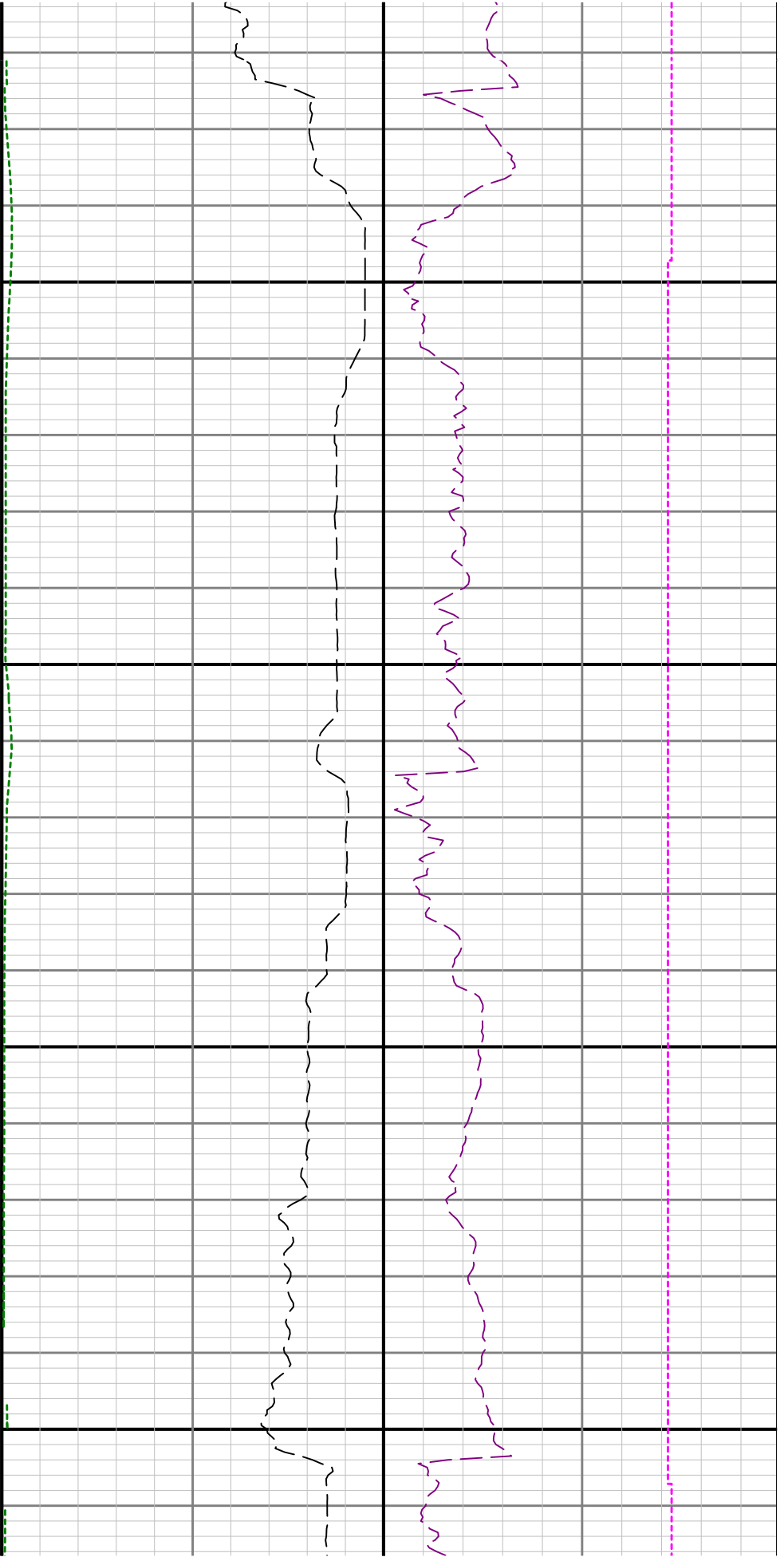
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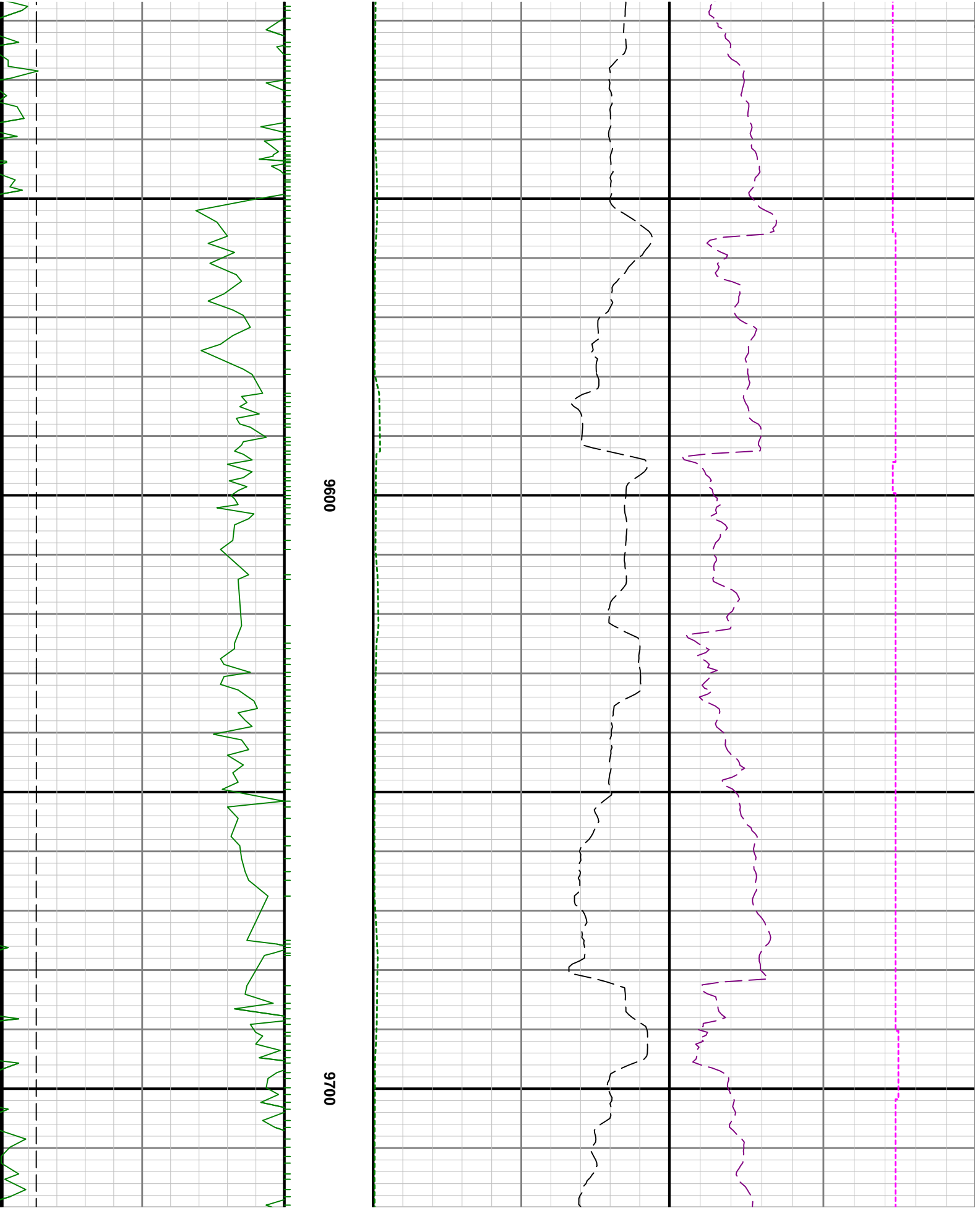
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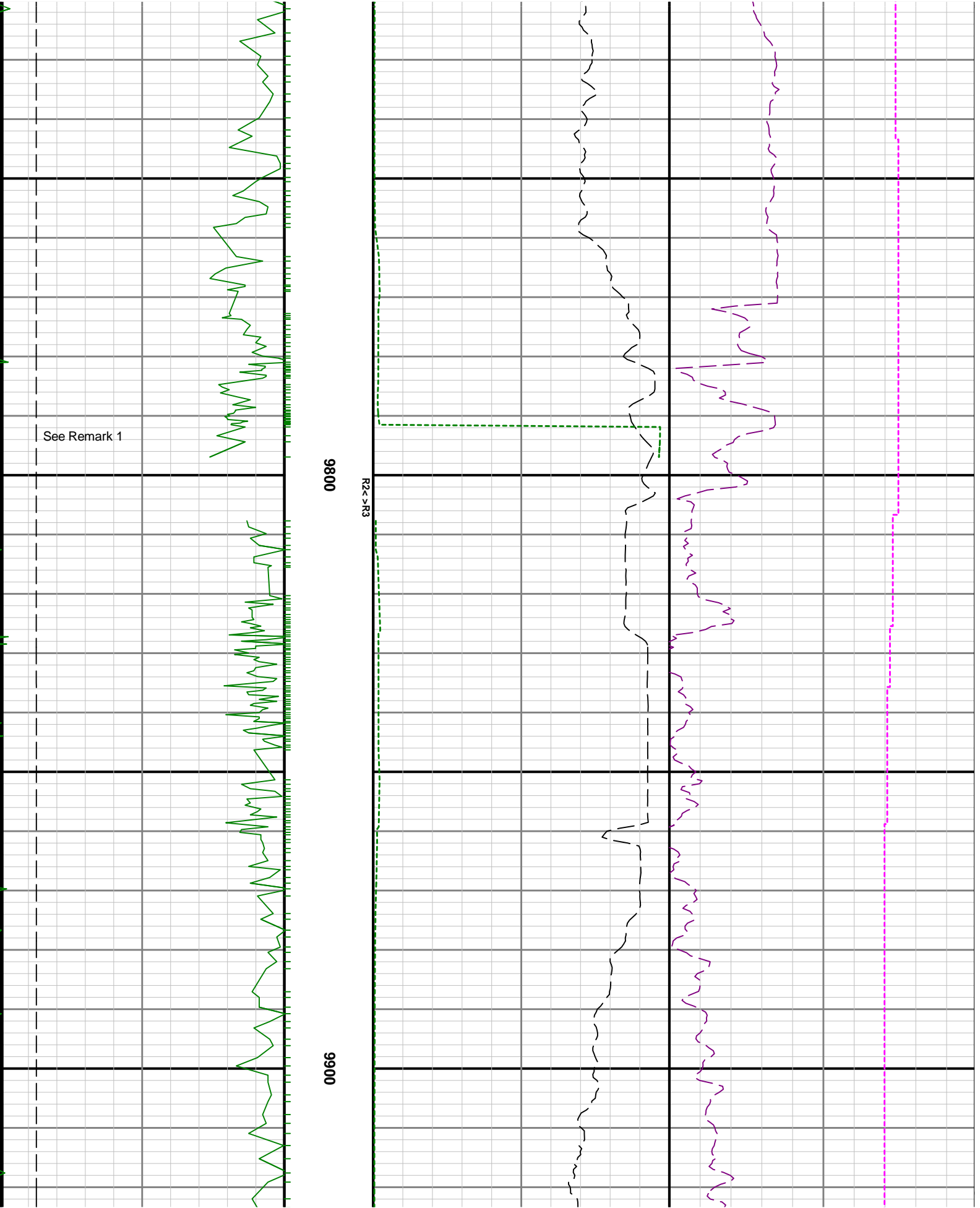


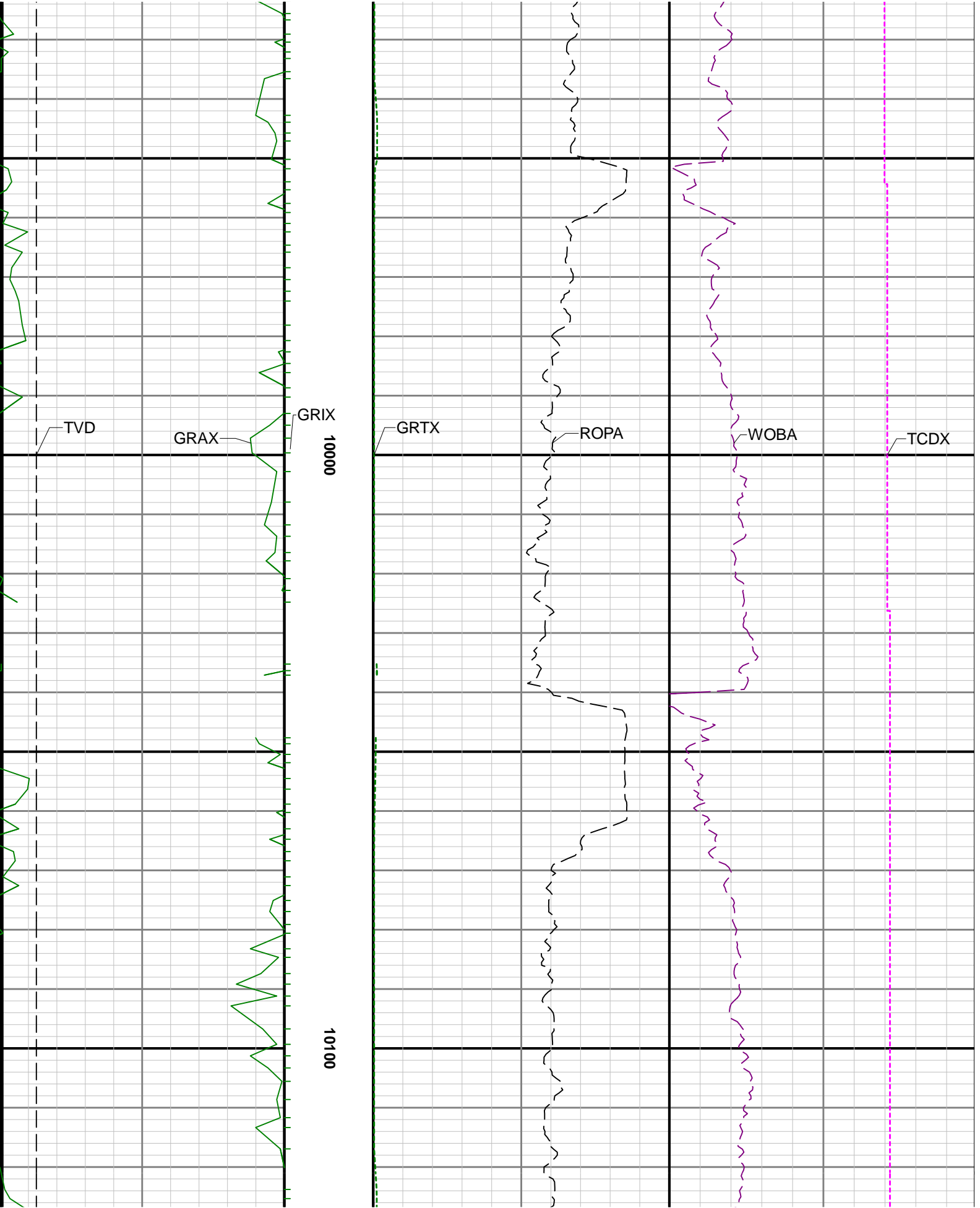


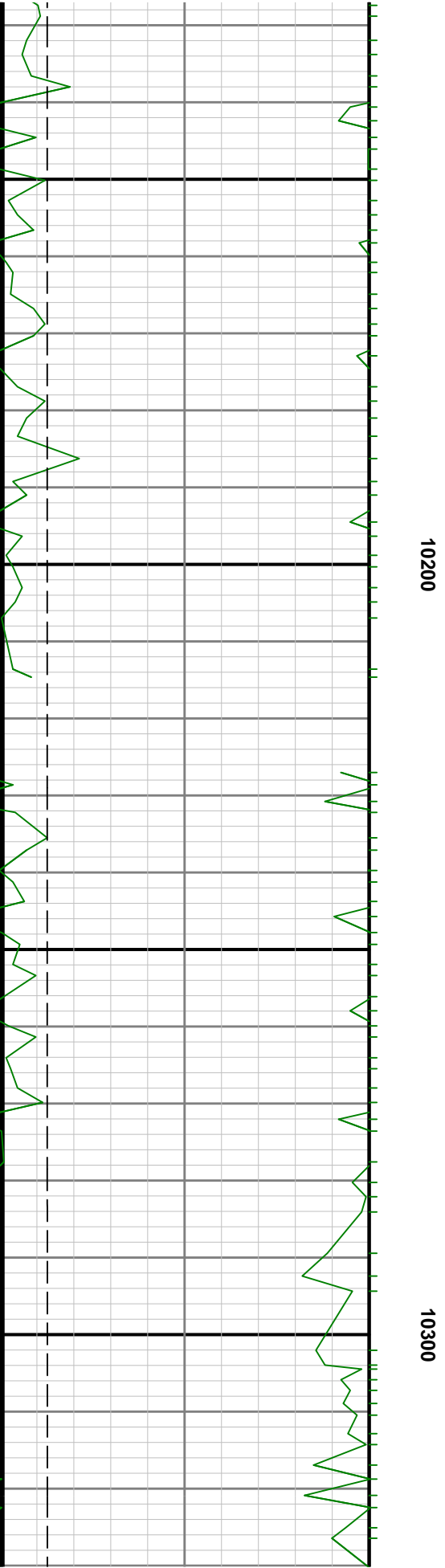
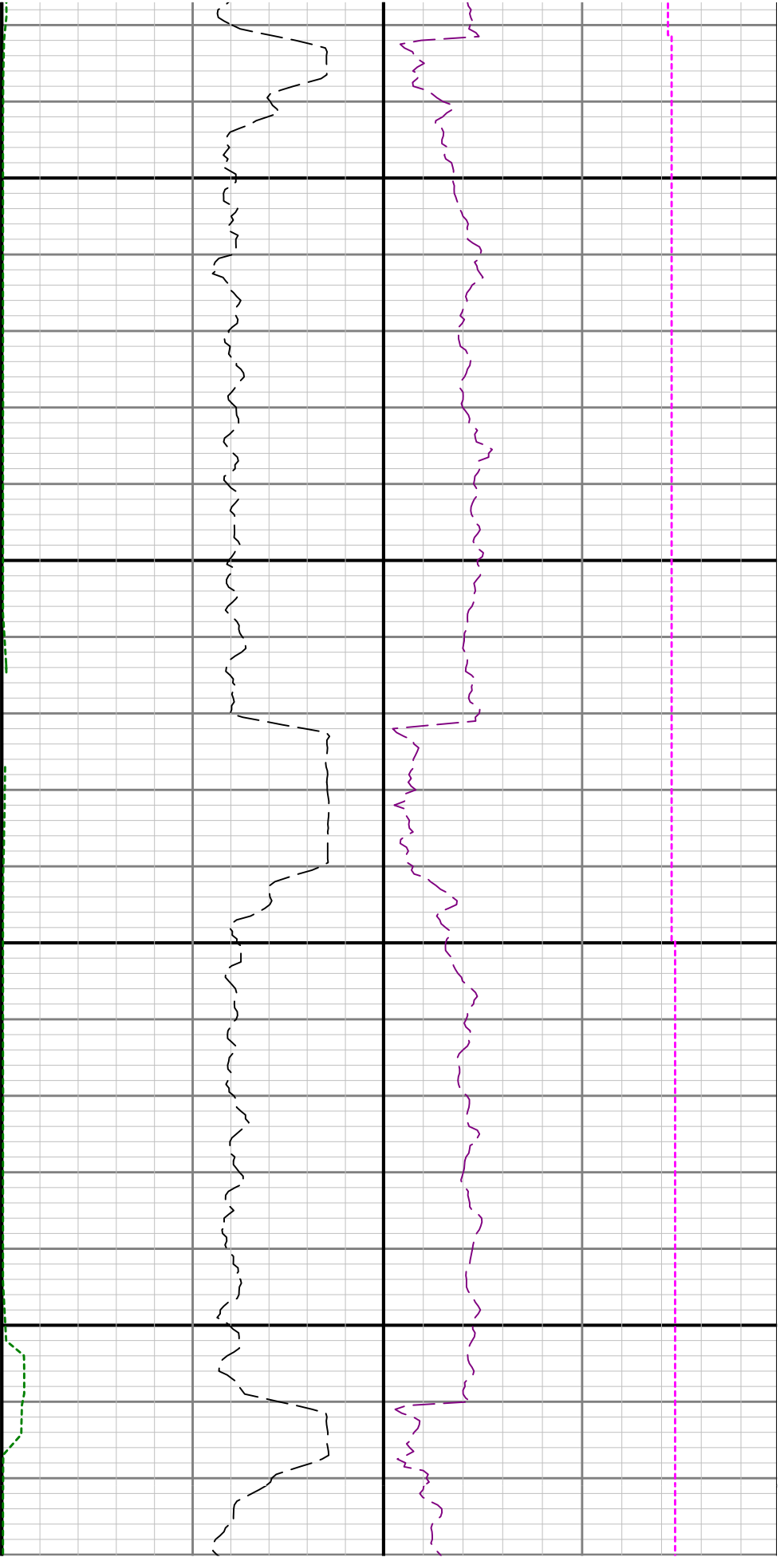


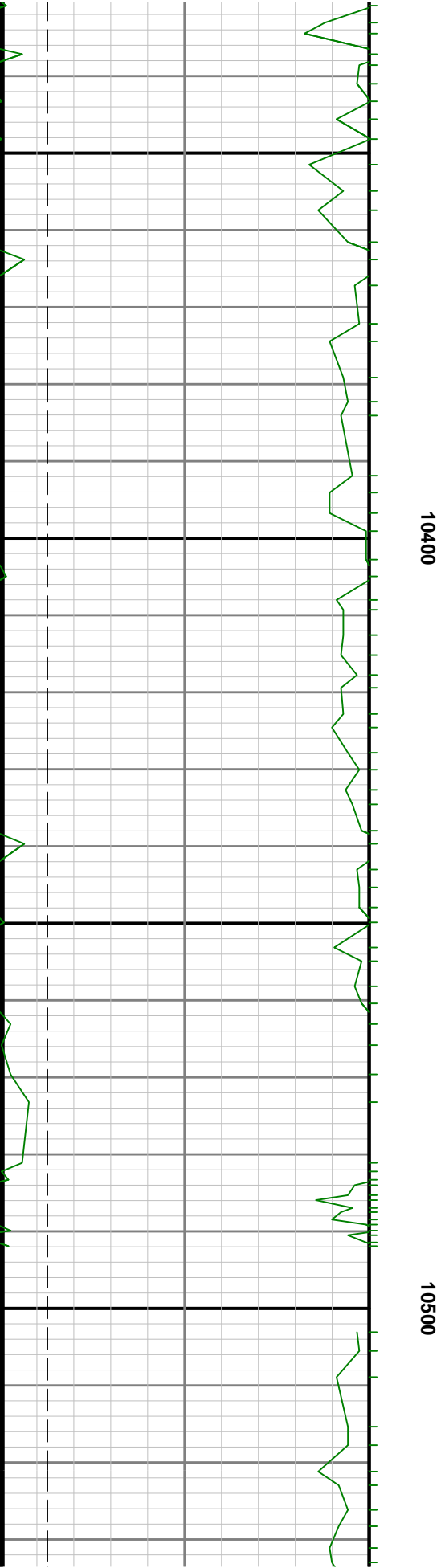
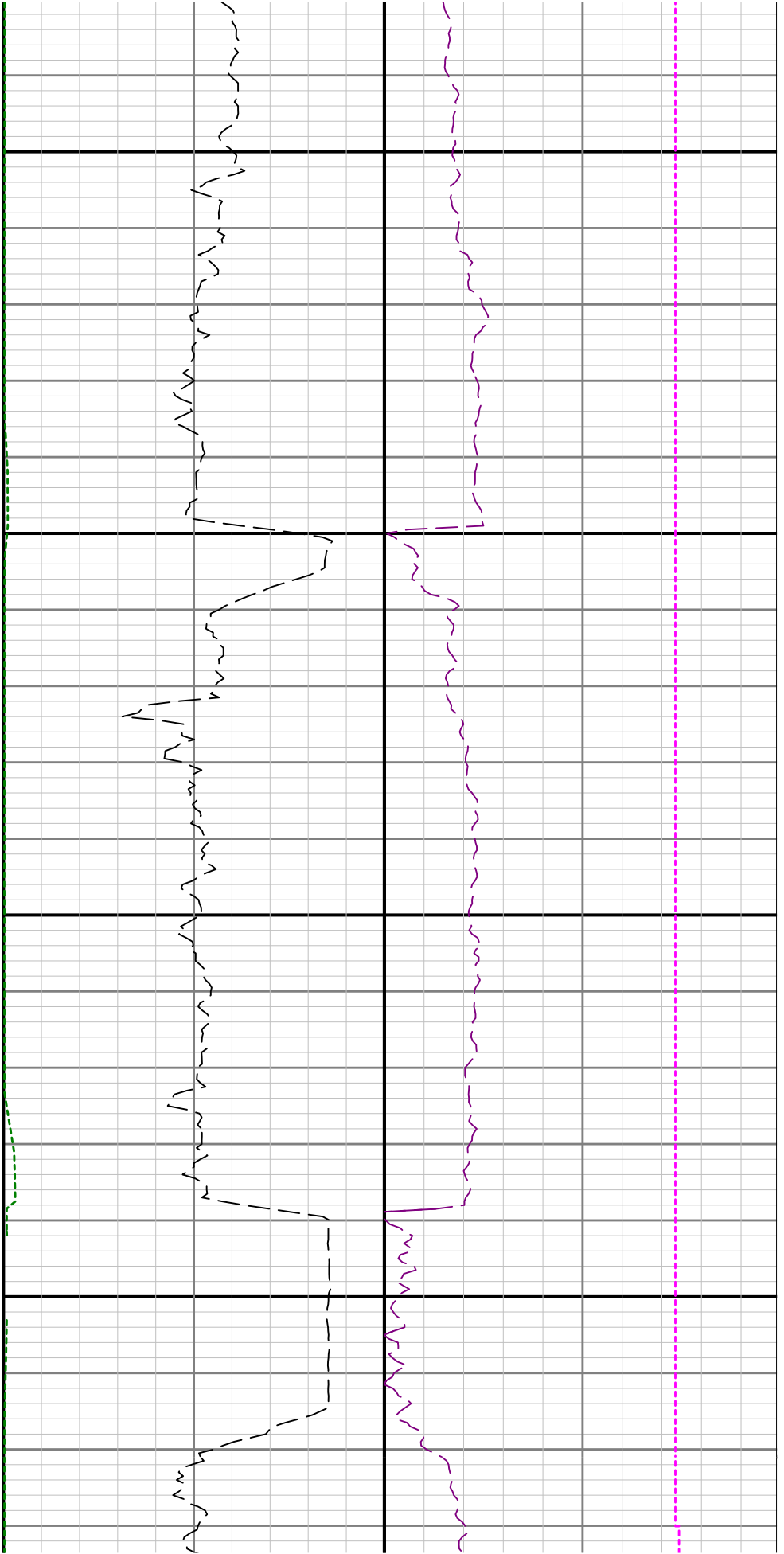


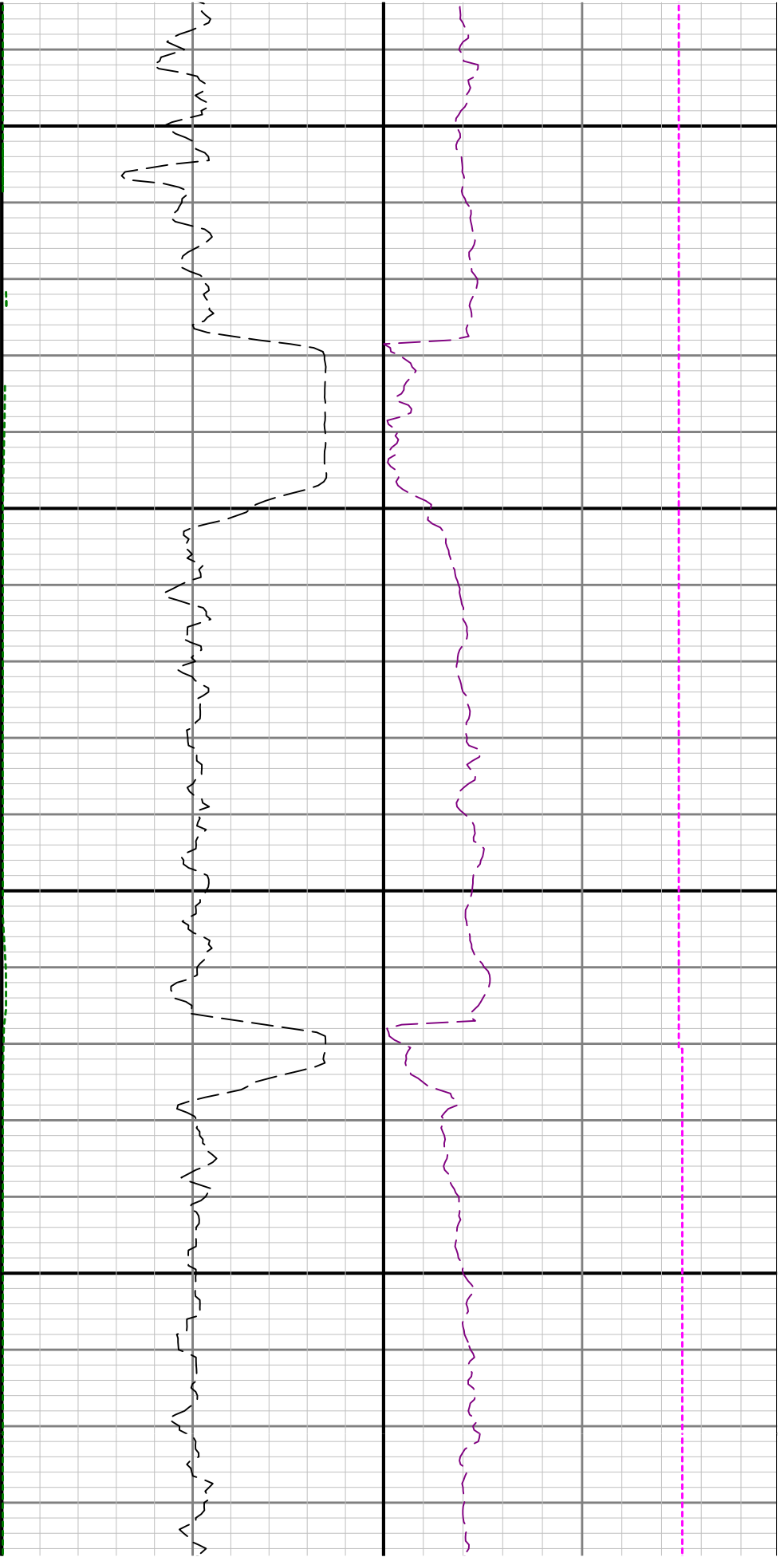






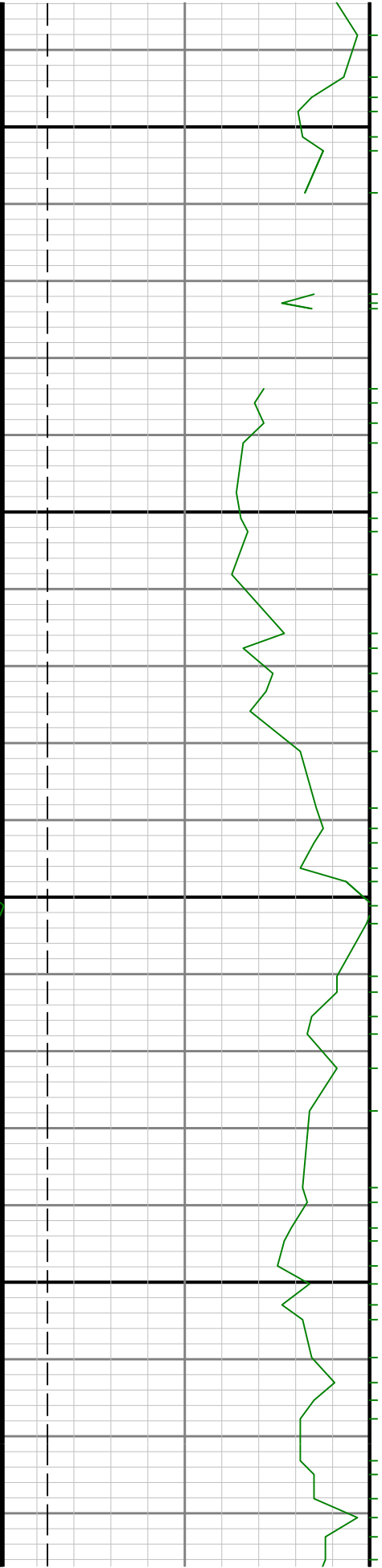


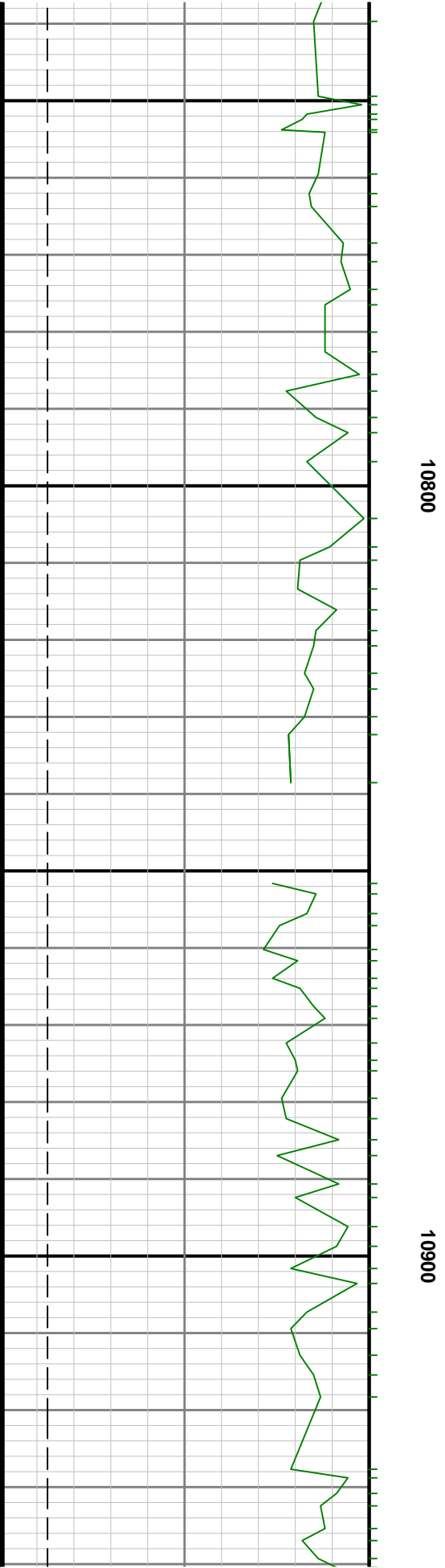


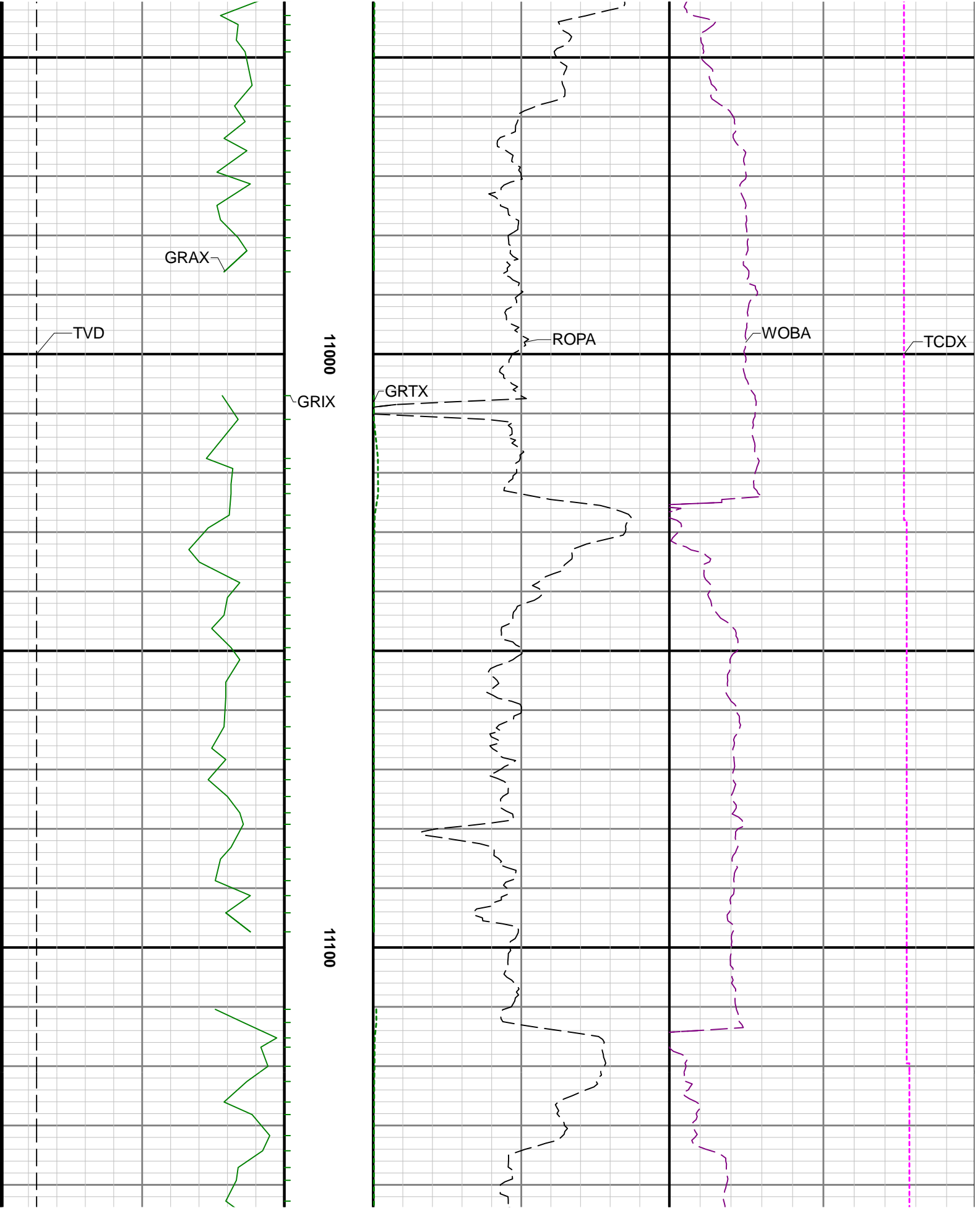


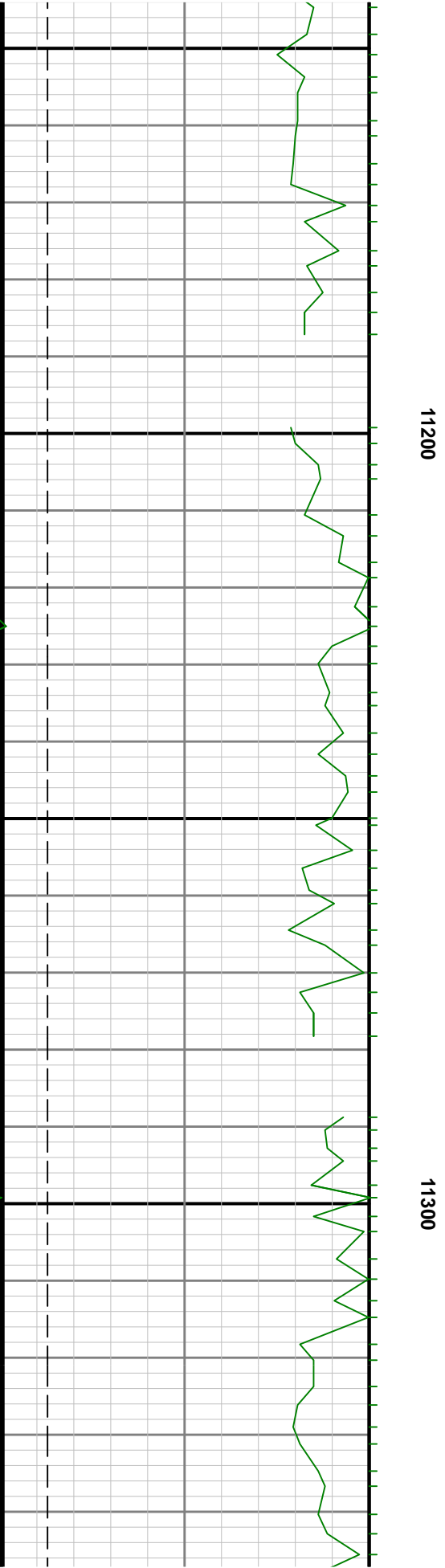
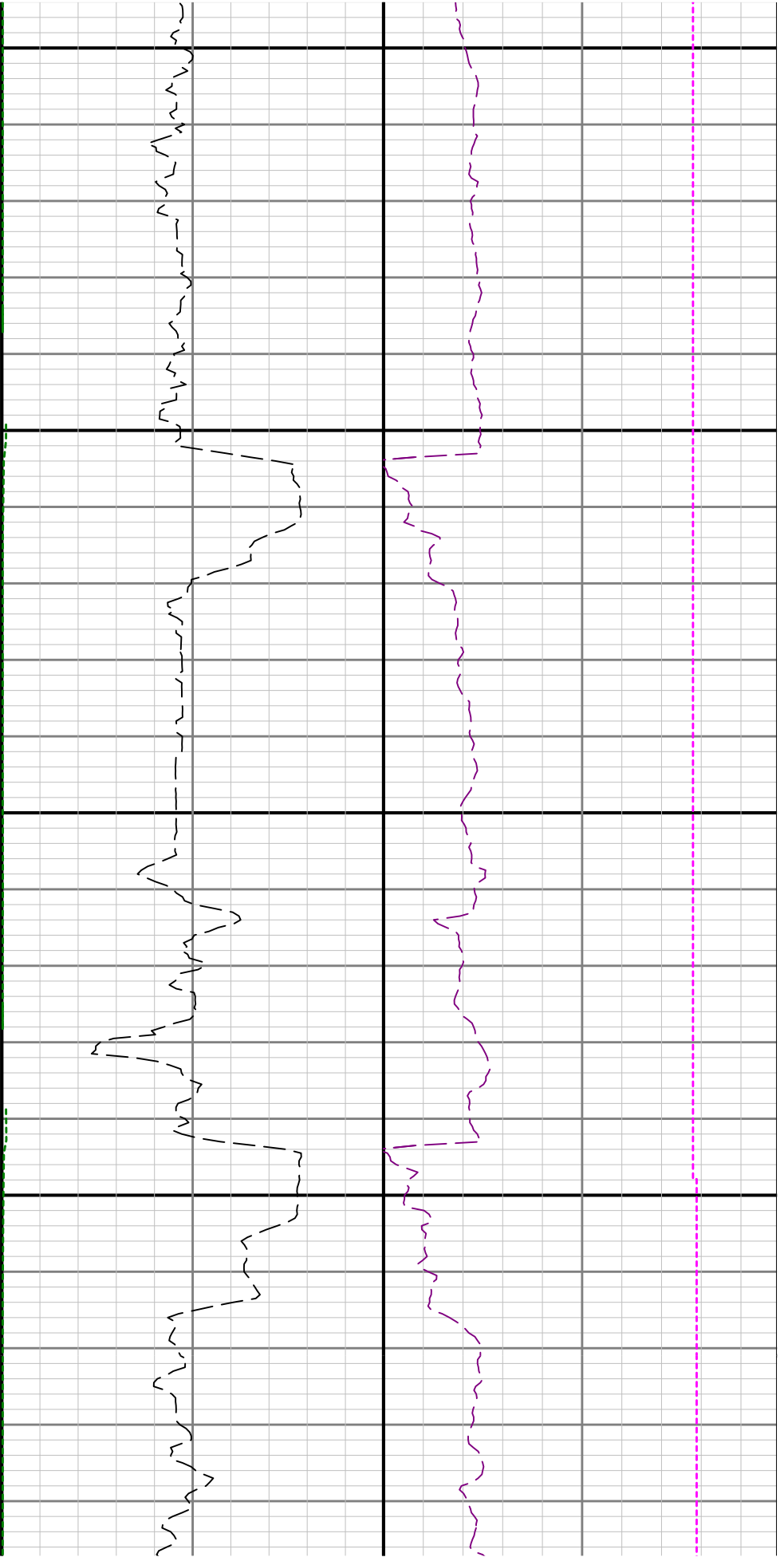
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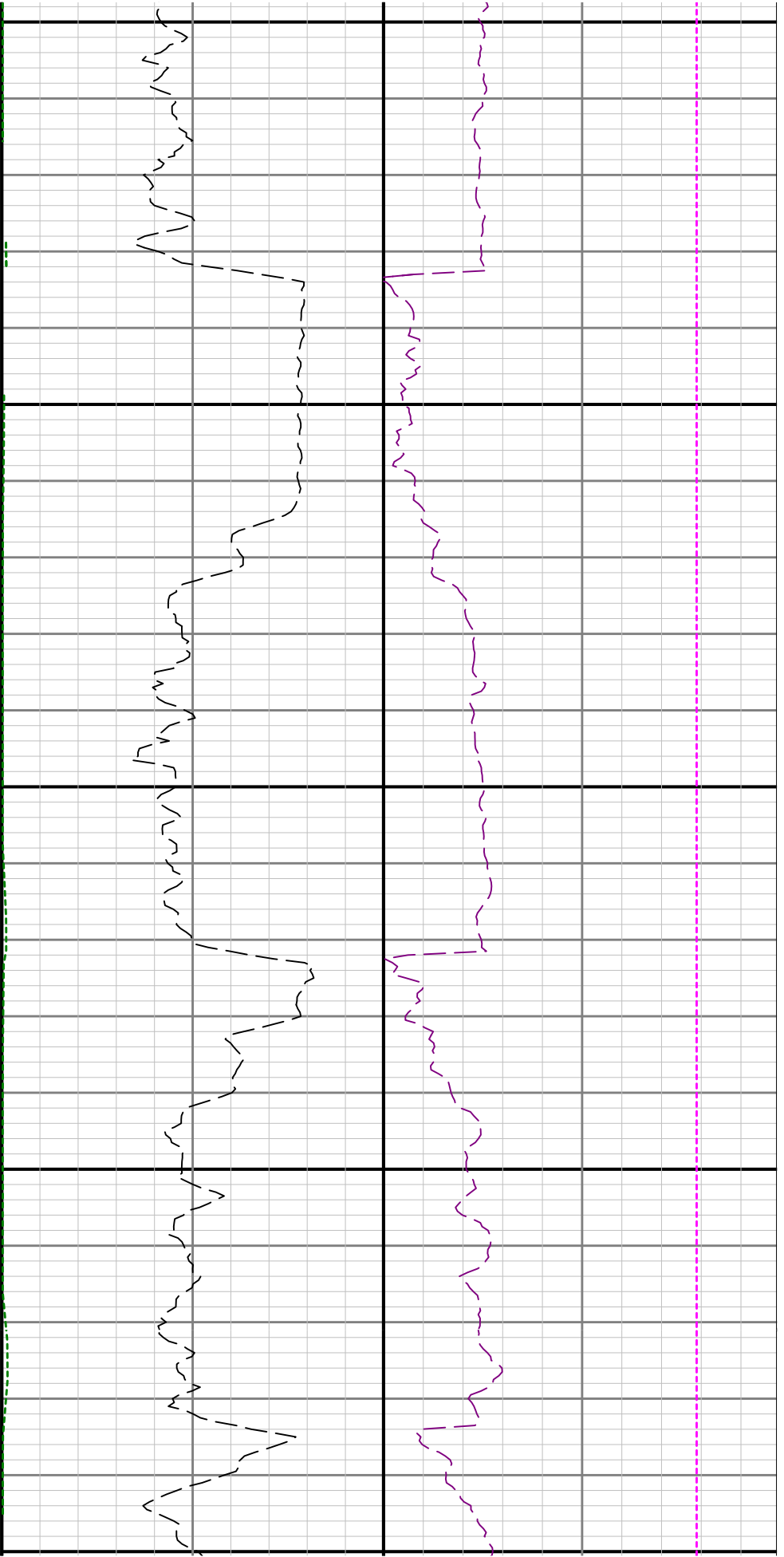
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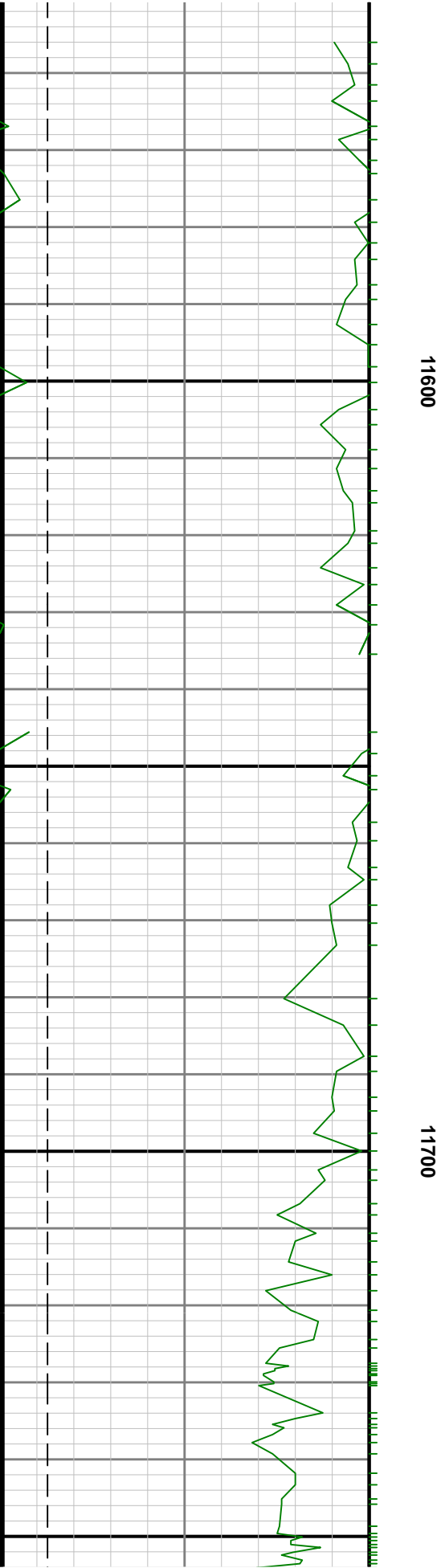
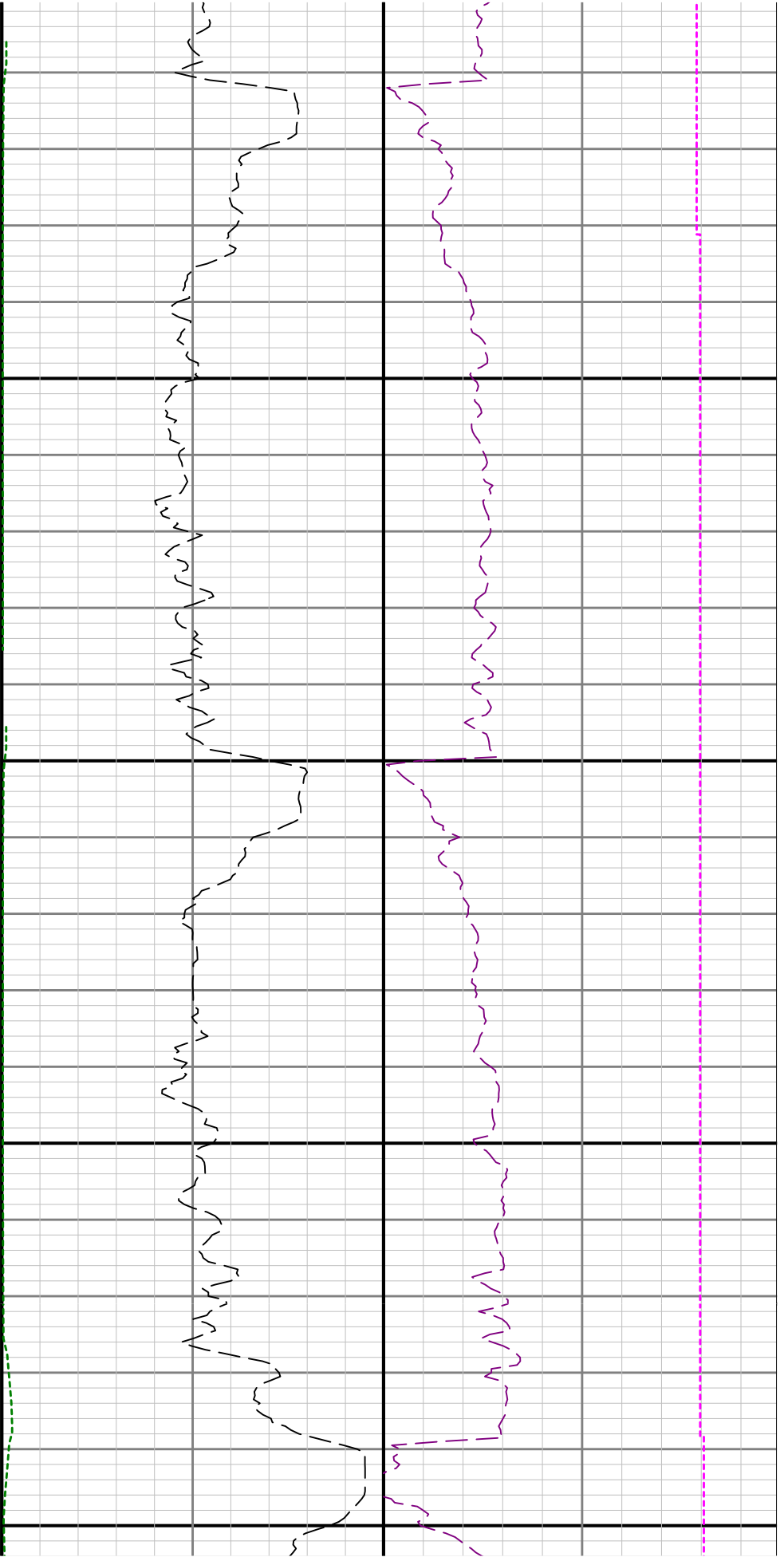


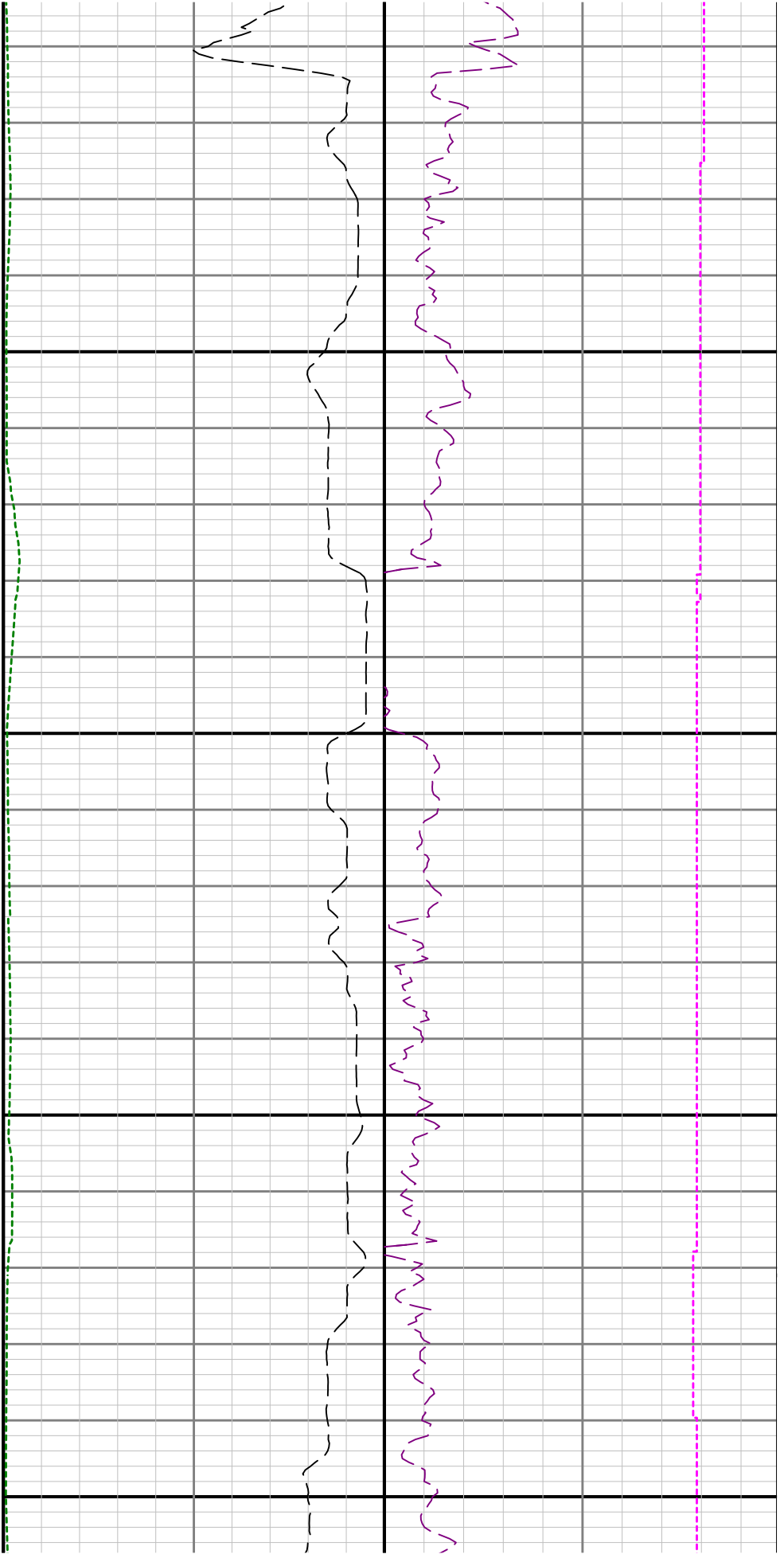






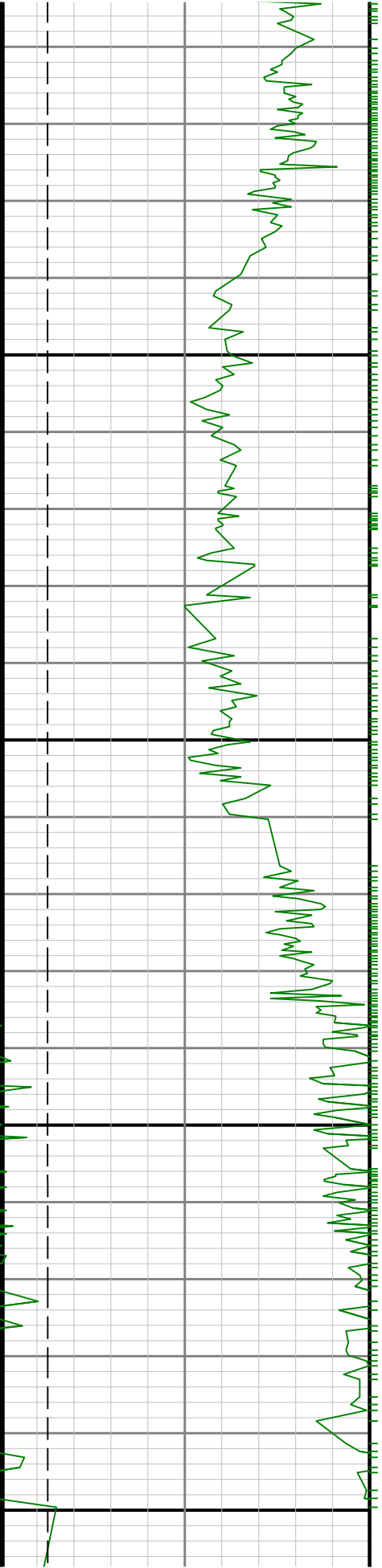


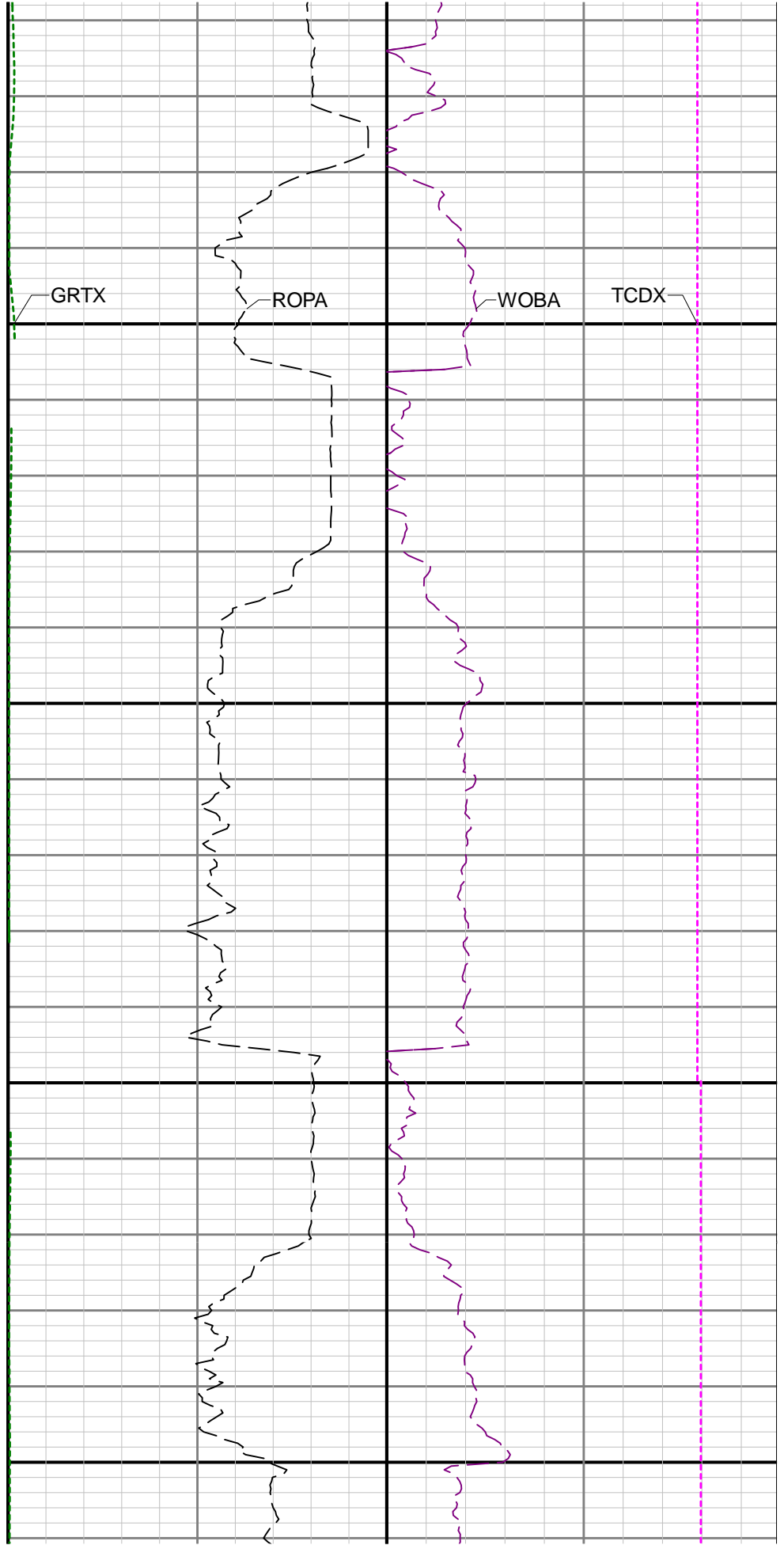
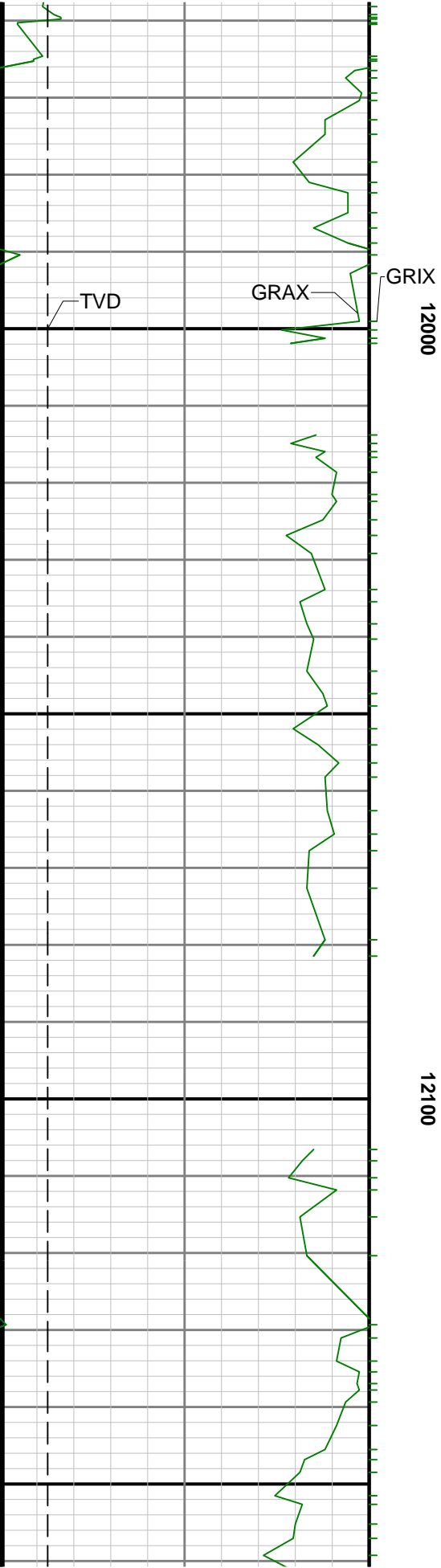


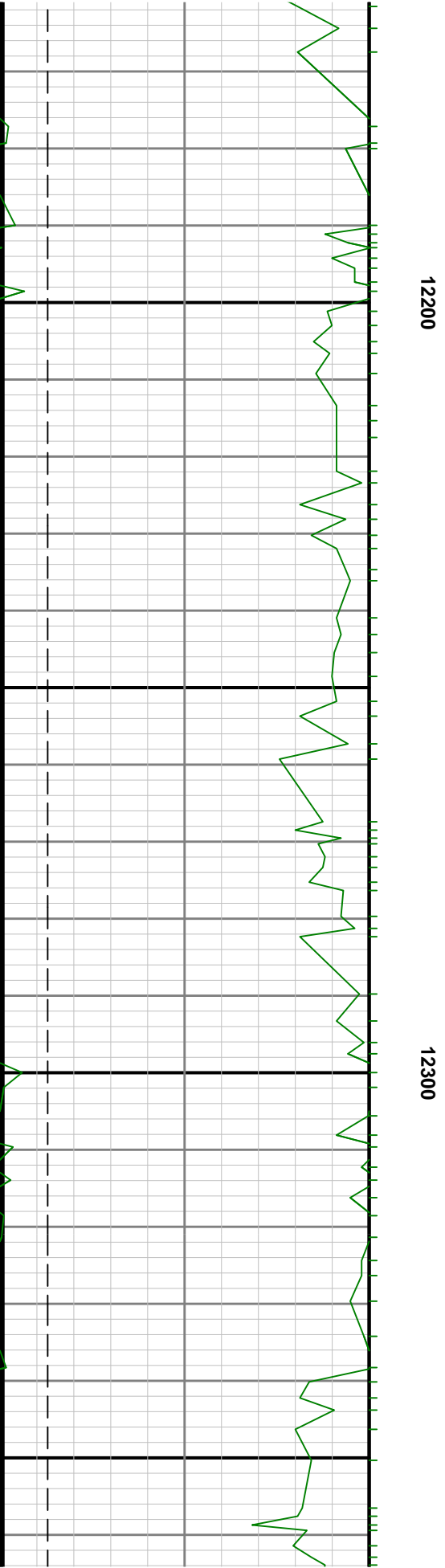
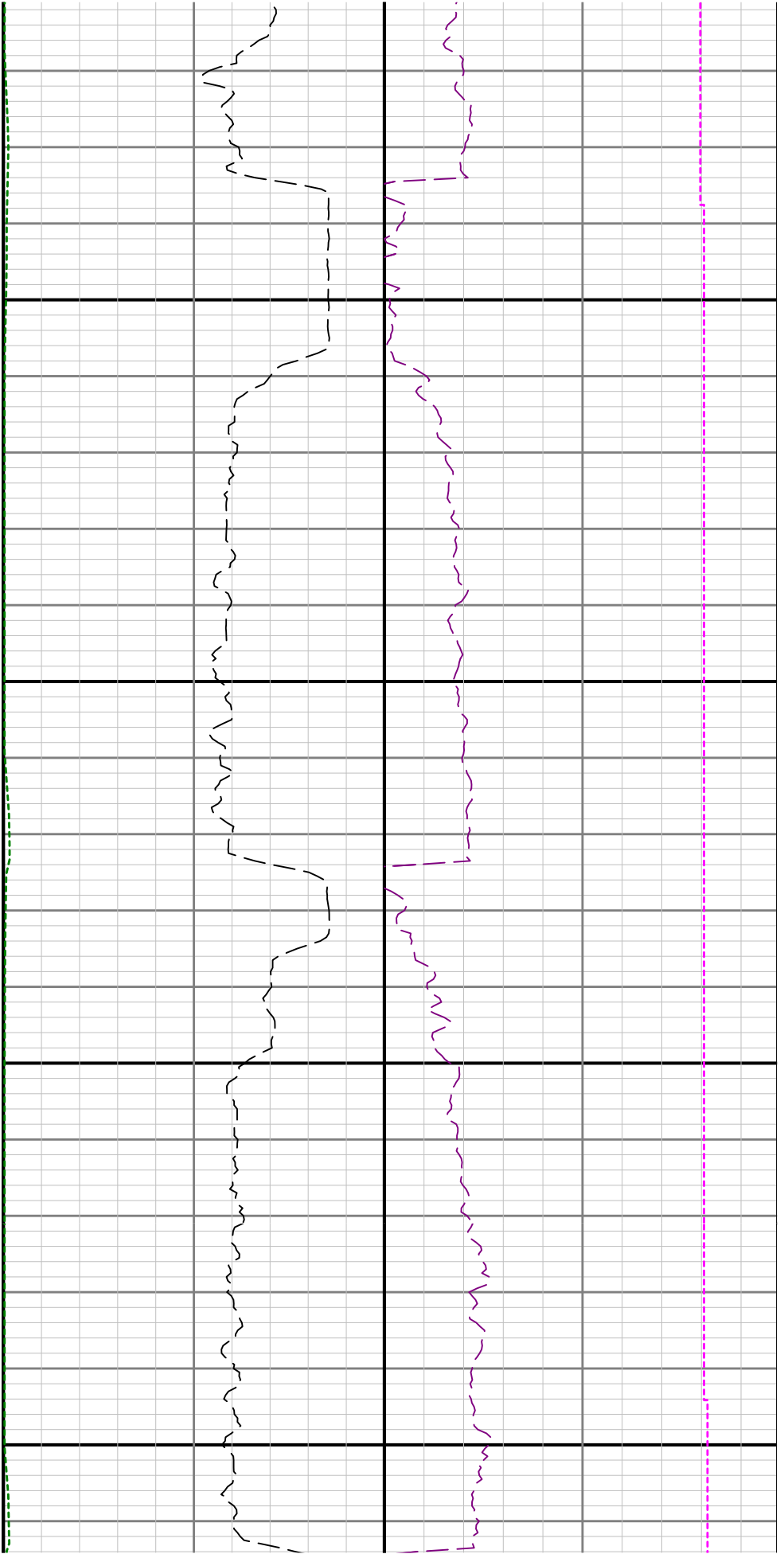


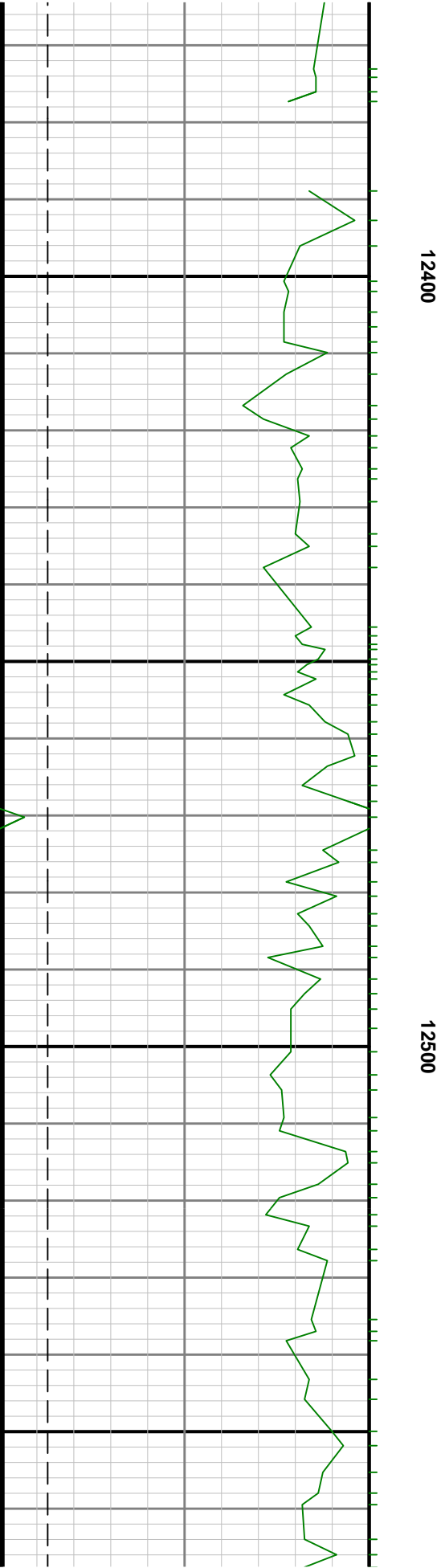
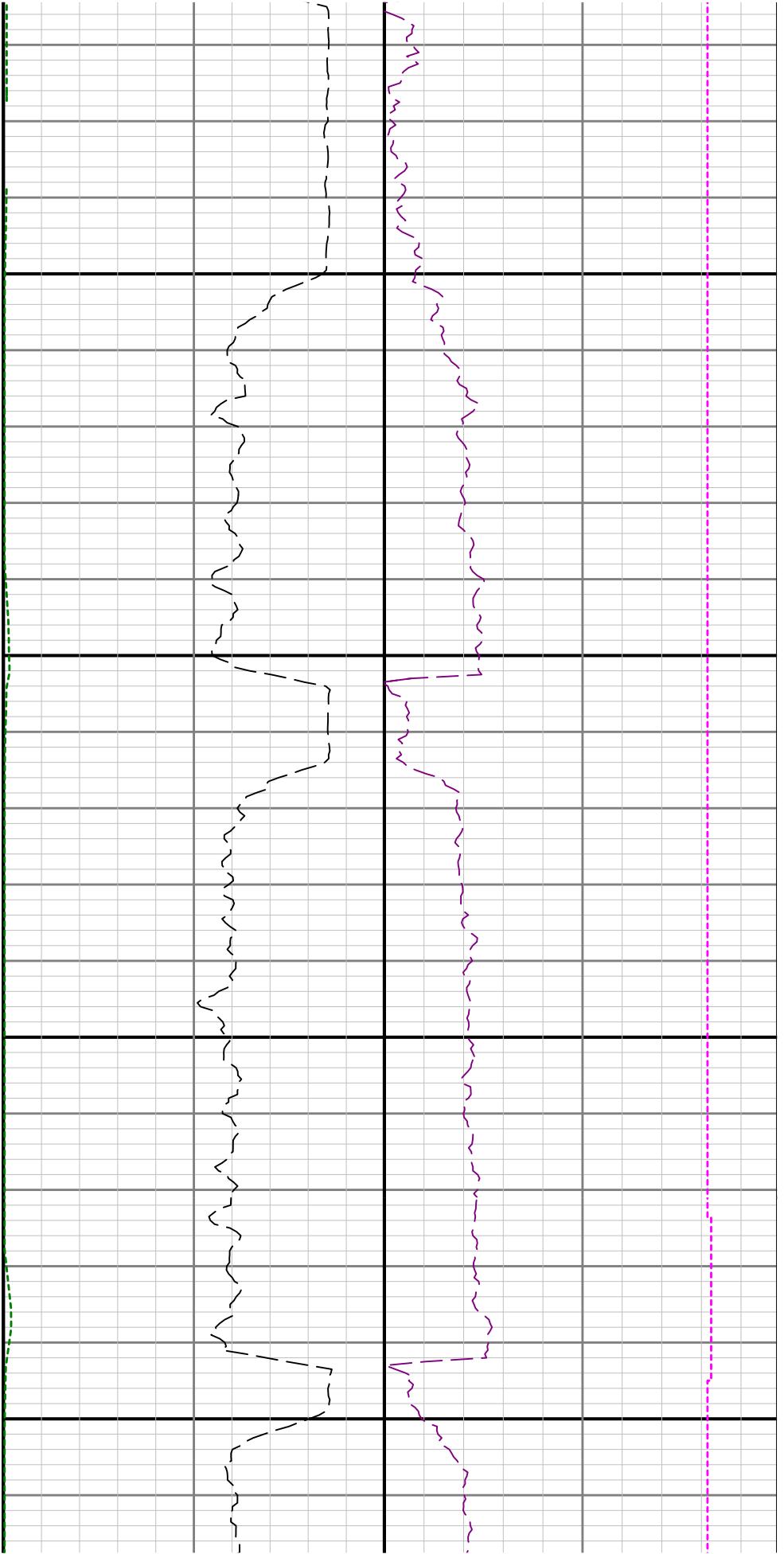
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