



LWD MEMORY LOG

Gamma Ray

Scale:	<div>Company: Verdad Oil & Gas Corporation</div>					
1:240 MD	<div>Well: WARNER 01N-64W-17-1H</div>					
Depth Reference:	<div>Field:</div>		<div>Weld Country</div>			
Driller's Depth	<div>County:</div>		<div>Weld</div>		<div>Country: United States</div>	
Status:	<div>State: Colorado</div>				<div>Other Services:</div>	
Final Print	<div>Surface Location: Latitude: 040° 02' 40.844" N Longitude: 104° 34' 32.743" W</div>				<div>Directional</div>	
API No: 05-123-45162						
Job ID: 8741985						
Permanent Datum (P.D.): Mean Sea Level	Elevation: 0.00 ft	Elev. KB: N/A				
Log Measured From: Rig Floor	Above P.D.	5083.00 ft	Elev. DF: 5083.00 ft	5067.00 ft		
Dates	Interval Logged		Magnetic Field Reference			
Date From: 2017-09-08	Top: (ft) 162.68	Azi Reference North: True	Dip Angle: (deg)	66.61		
Date To: 2017-09-13	Bottom: (ft) 17437.02	Total Magnetic Field Strength: (nT)		52187		
Spud Date: 2017-09-07		Mag to Reference North Correction: (deg)		8.24 E		
Borehole Record						Casing Record
Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)
13.500	16.00	1720.00	9.625	36.00	16.00	1716.00
8.500	1720.00	17436.00				
Mud Record						
Type	From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Inc Az (Start)	Inc Az (End)
Oil Based Mud	162.68	17437.02	13.500	1557.32	0.06 125.90	16.17 261.55
			8.500	15717.02	16.17 261.55	90.15 1.70
Acquisition System						
Baker Hughes Cadence	Software Version RT4.1		Rig: Xtreme 20	Other		
PlotStudio	4.1.7763.3		Contractor: Xtreme Drilling	District: Xtreme 20	Unit: D&E	

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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	13.500	PDC	3.00	Steerable	162.68	1719.21	162.68	1719.21	2017-09-08 03:40	2017-09-08 14:05	9.11
2	2	8.500	PDC	3.00	AutoTrak Curve	1707.13	17424.15	1720.00	17437.02	2017-09-09 23:33	2017-09-13 16:04	76.88

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Eugene Igwe	2017-09-09	2017-09-14	Ryan Hull	2017-09-09	2017-09-14			

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+ (%)
2017-09-09 20:09	2	1720.00	Oil Based Mud	9.5	30	N/A	8.0	70/30	Active Pit	32500	0.00
2017-09-10 07:12	2	3130.35	Oil Based Mud	10.0	60	N/A	10.0	62/38	Active Pit	36913	0.00

2017-09-11 05:42	2	7803.17	Oil Based Mud	9.7	65	N/A	10.0	73/27	Active Pit	37872	0.00
2017-09-12 05:55	2	10997.00	Oil Based Mud	9.9	53	N/A	10.0	73/27	Active Pit	37872	0.00
2017-09-13 07:09	2	15994.86	Oil Based Mud	9.8	62	N/A	10.0	73/27	Active Pit	37872	0.00

Mud Resistivity Record				Surface				Downhole		
Date / Time	Run No.	Measured Depth (ft)	Surface Temp (degF)	Rm (ohm.m)	Rmf (ohm.m)	Rmc (ohm.m)	BHCT (degF)	Rm @ BHCT (ohm.m)	Rmf @ BHCT (ohm.m)	Rmc @ BHCT (ohm.m)
2017-09-11 16:58	2	1720.00	180.0	100.000	N/A	N/A	180.0	100.000	N/A	N/A
2017-09-13 16:59	2	17436.42	230.0	100.000	N/A	N/A	230.0	100.000	N/A	N/A



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	NaviTrak	13191954	Directional (mag)	12.89	54.52	8.000	0.000
1	NaviTrak	13191954	VSS	12.89	54.52	8.000	0.000
2	ATC_SU	1215165	Near Bit VSS	5.93	6.70	7.000	4.330
2	ATC_SU	1215165	Near Bit Inclination	5.93	6.70	7.000	4.330
2	ATC_MWD	12211066	Gamma (single)	2.73	12.87	7.000	3.250
2	ATC_MWD	12211066	Directional (mag)	12.26	22.40	7.000	3.250

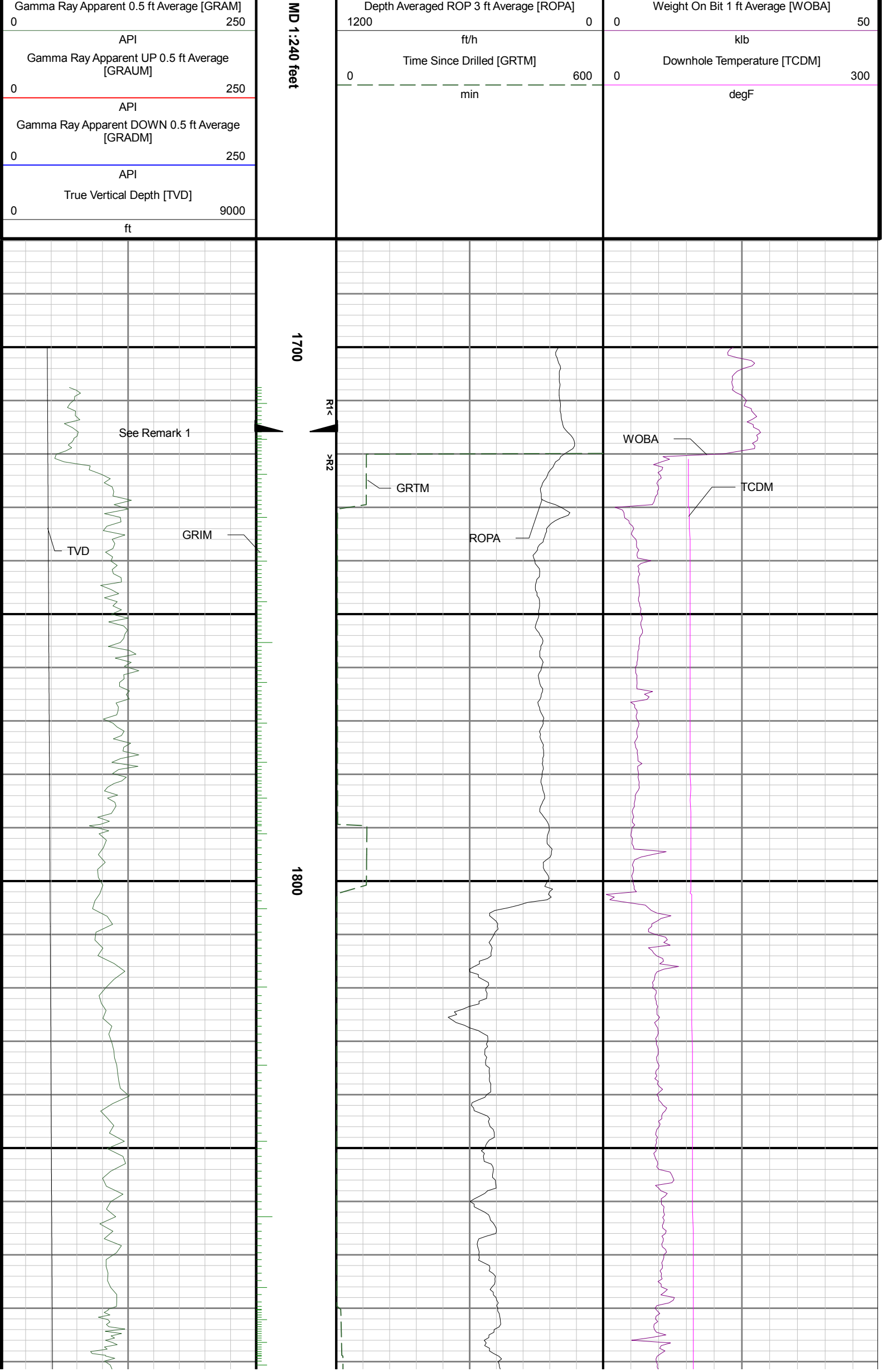
Service and Tool Mnemonics		
Mnemonic	Name	Description
NTK	NaviTrak	Probe Based Directional Module, NaviTrak Platform
ATC_SU	ATC_SU	Auto Trak Curve Steering Unit
ATC_MWD	ATC_MWD	Auto Trak Curve MWD
ATC_LCPM	ATC_LCPM	Auto Trak Curve LCPM

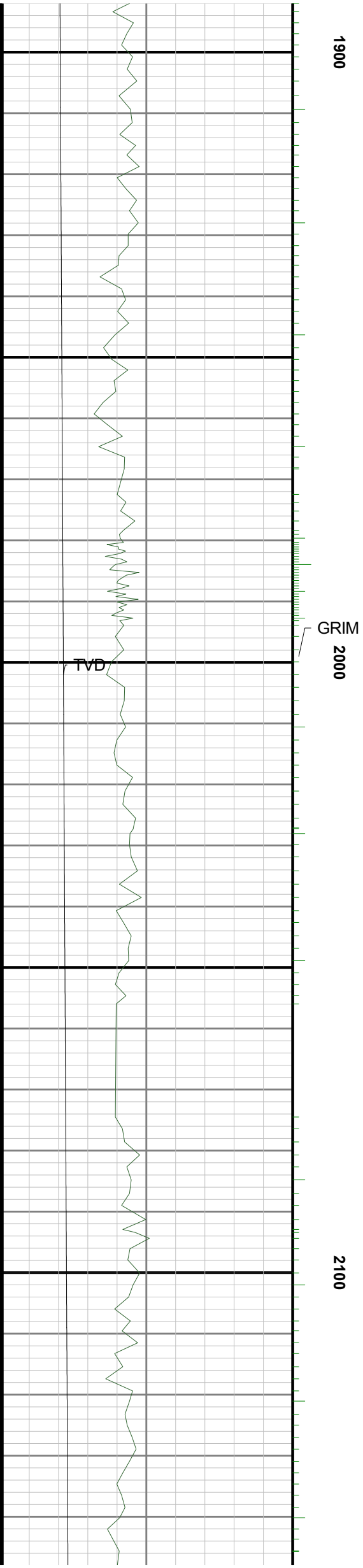
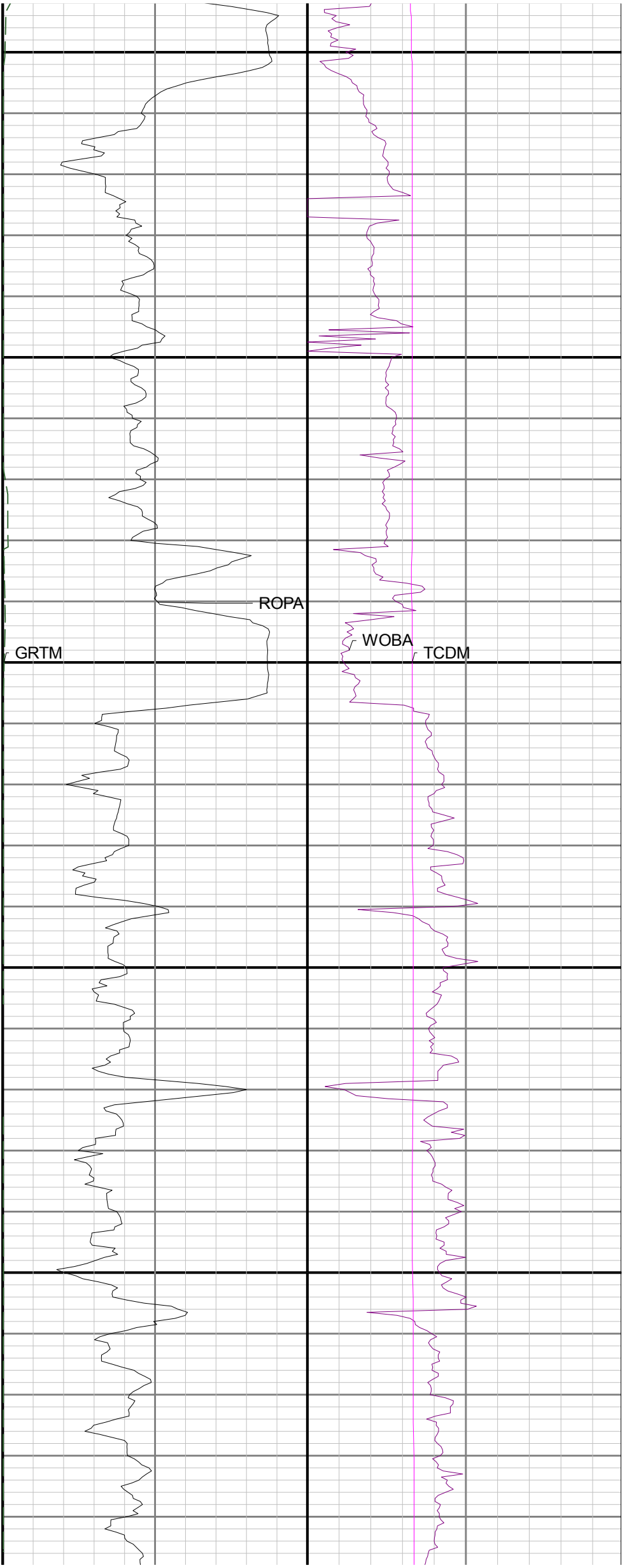
Comments	
1	Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
2	Baker Hughes LWD Runs 2 utilized 6 3/4 inch Navigamma services (Gamma Ray and Directional) behind an 8 1/2 inch bit and rotary steerable assembly from 1720 to 17436 feet MD (1680 to 7138 feet TVD).
3	Due to instances of loss of communication with Pason WITS computer, there were some gaps on the logs.

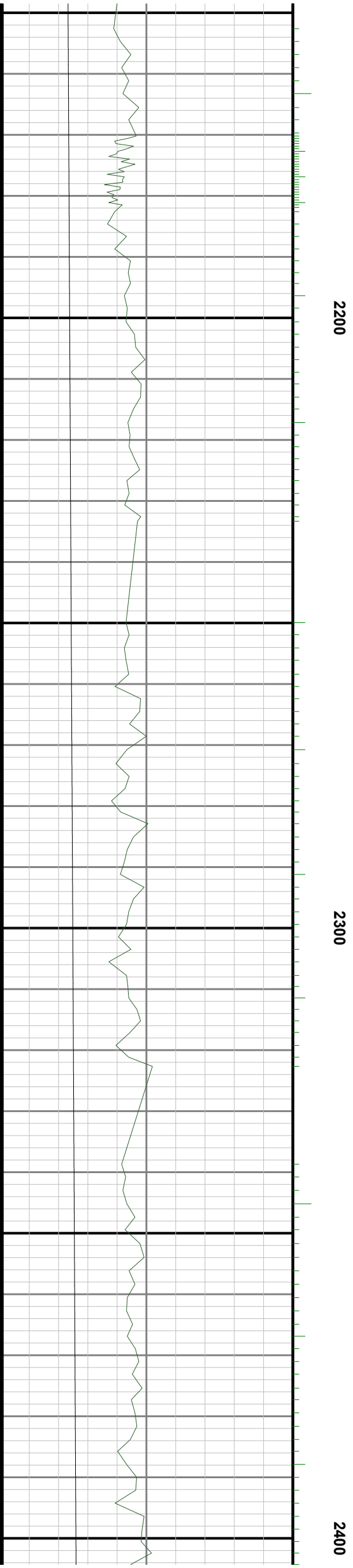
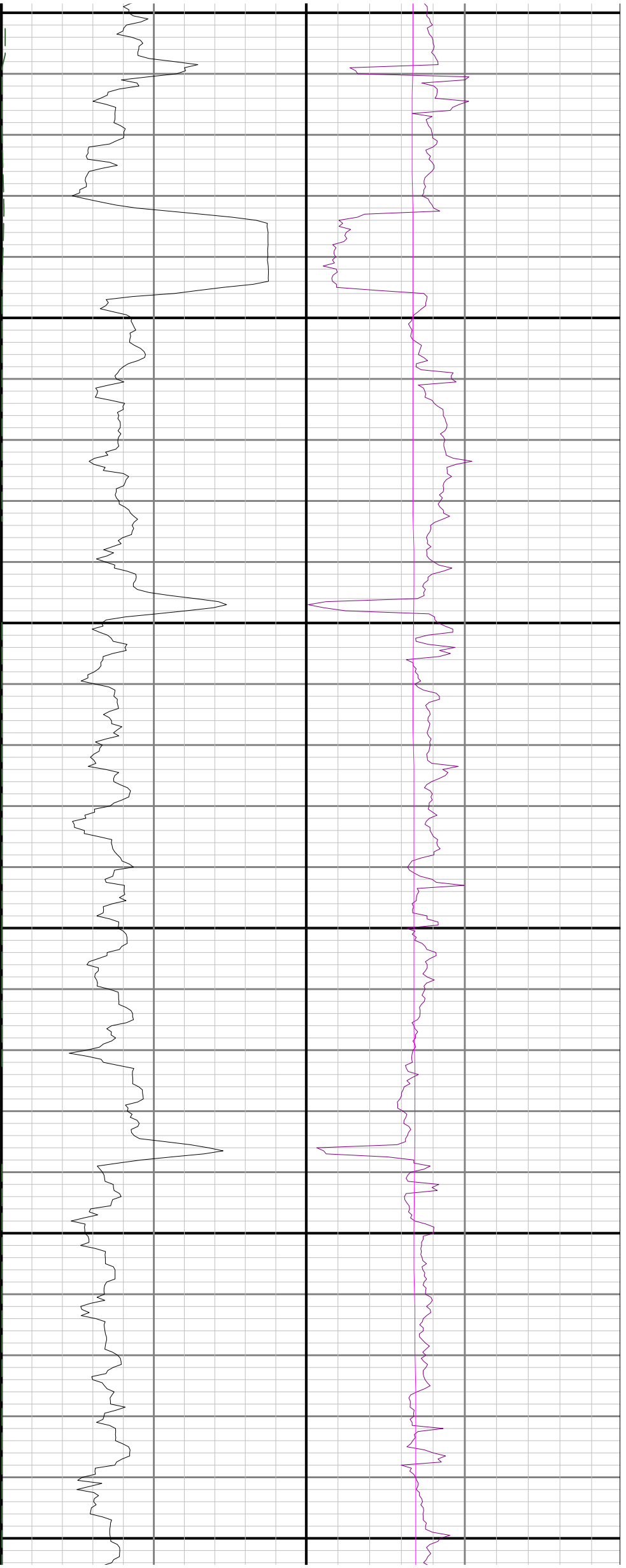
Remarks				
Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	1720.00	8.500	2	Baker Hughes LWD began logging services at 1720 feet MD (1680 feet TVD) per client request.
2	10250.00	8.500	2	Region drilled when WITS reception problems from Pason Computer led to big depth gap.
3	17423.00	8.500	2	The interval from 17423 to 17436 feet MD (7138 feet TVD) was not logged due to sensor to bit offset at well TD.

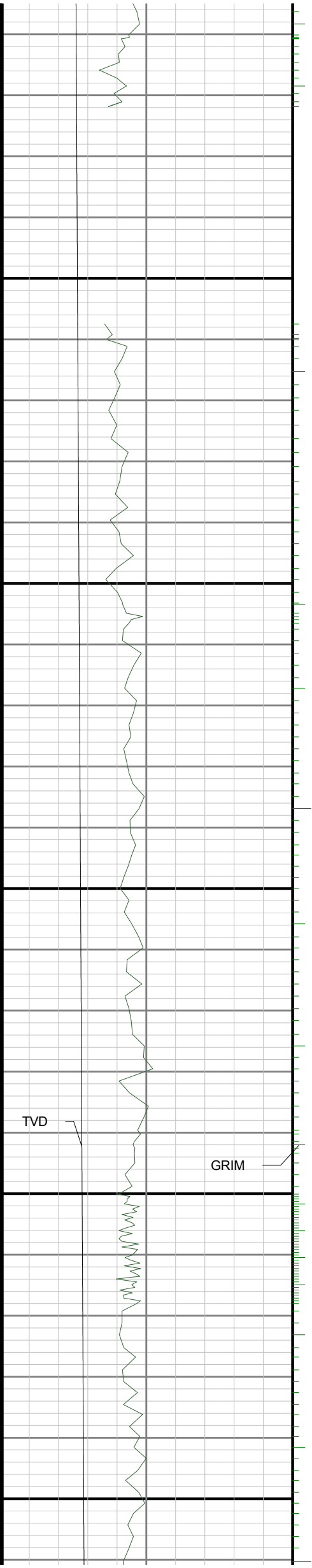
Curve Mnemonics		
Presented Curves	Description	Units
ROPA	Depth Averaged ROP 3 ft Average	ft/h
TVD	True Vertical Depth	ft
WOBA	Weight On Bit, Average 1 ft Average	klb
GRAM	OnTrak - Gamma Ray - Apparent - Memory 0.5 ft Average	API
GRIM	OnTrak - Gamma Ray - Data Point Indicator - Memory	unitless
GRTM	OnTrak - Gamma Ray - Time Since Drilled - Memory	min
GRADM	OnTrak - Gamma Ray - Apparent - Down Quadrant - Memory 0.5 ft Average	API
GRAUM	OnTrak - Gamma Ray - Apparent - Up Quadrant - Memory 0.5 ft Average	API
TCDM	Downhole Temperature	degF

 	Company	Verdad Oil & Gas Corporation			
	Well	WARNER 01N-64W-17-1H			
	Interval	Date From: 2017-09-08 13:58:48	Date To: 2017-09-13 16:01:27	Top: 1700.00	Bottom: 17436.00
	Created	2017-09-15 10:39:05			



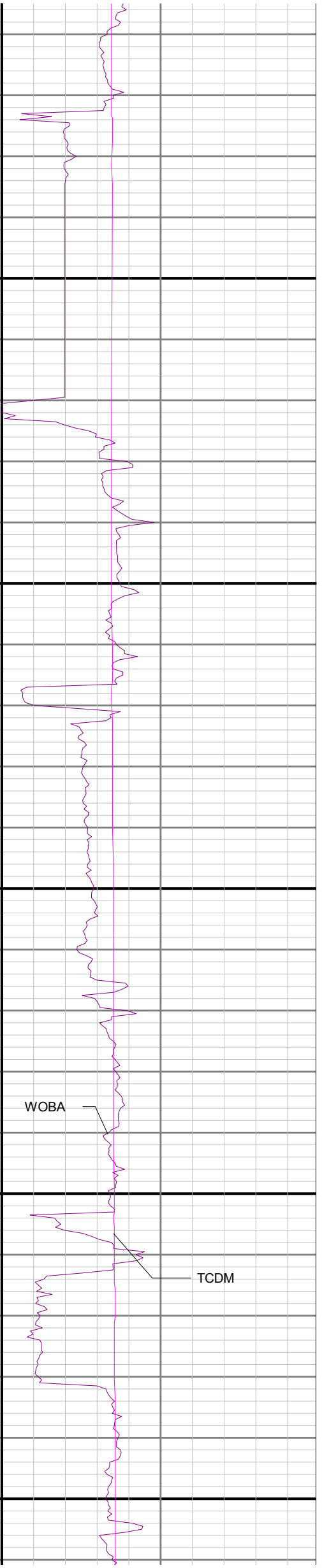
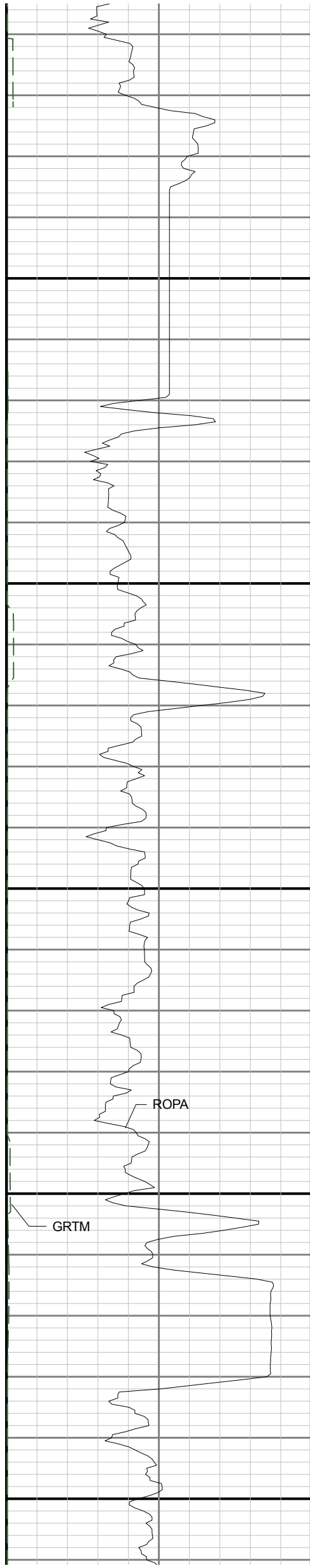


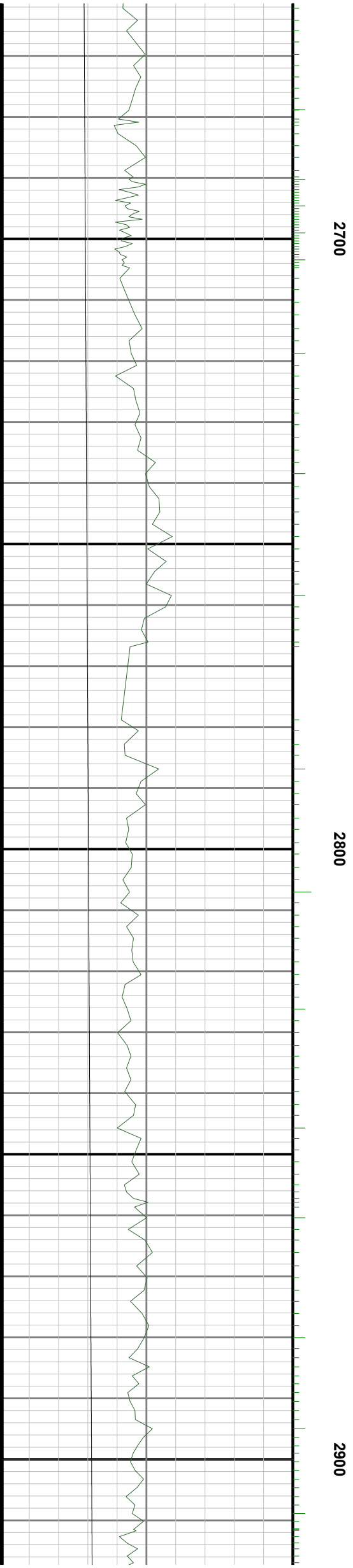
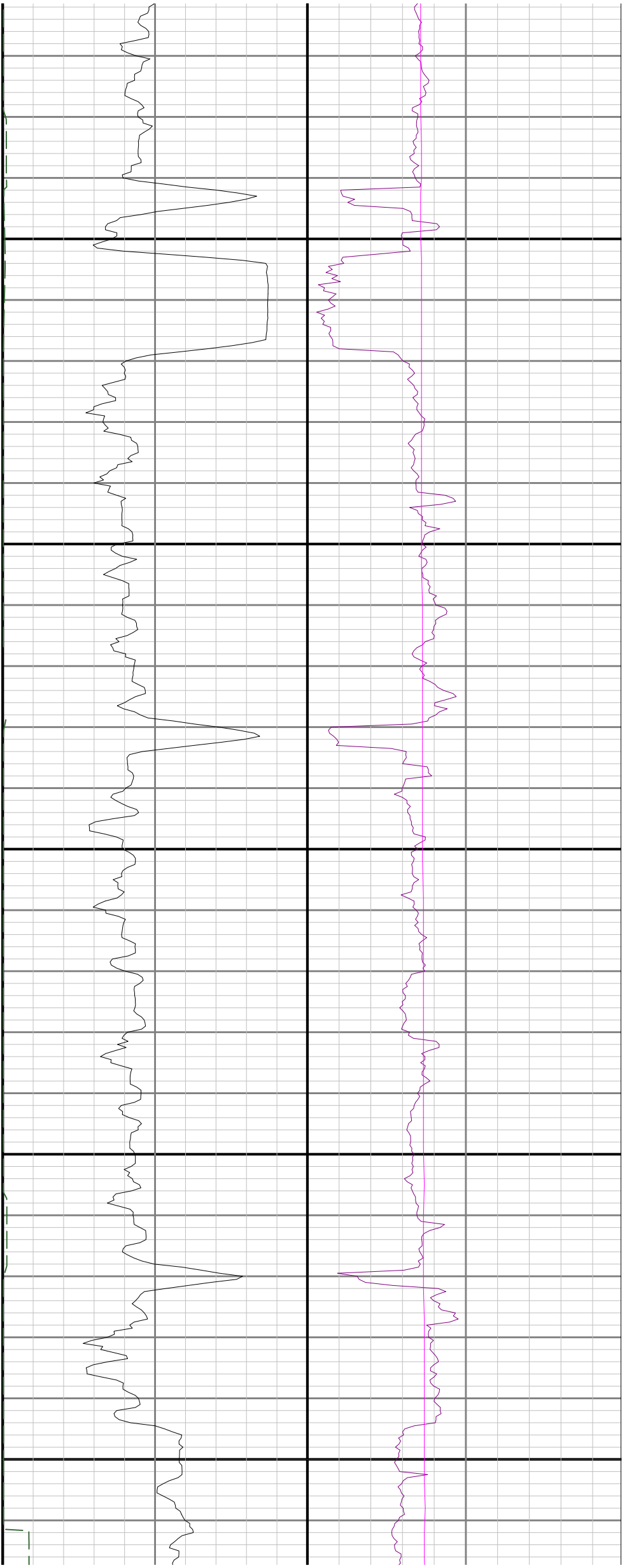


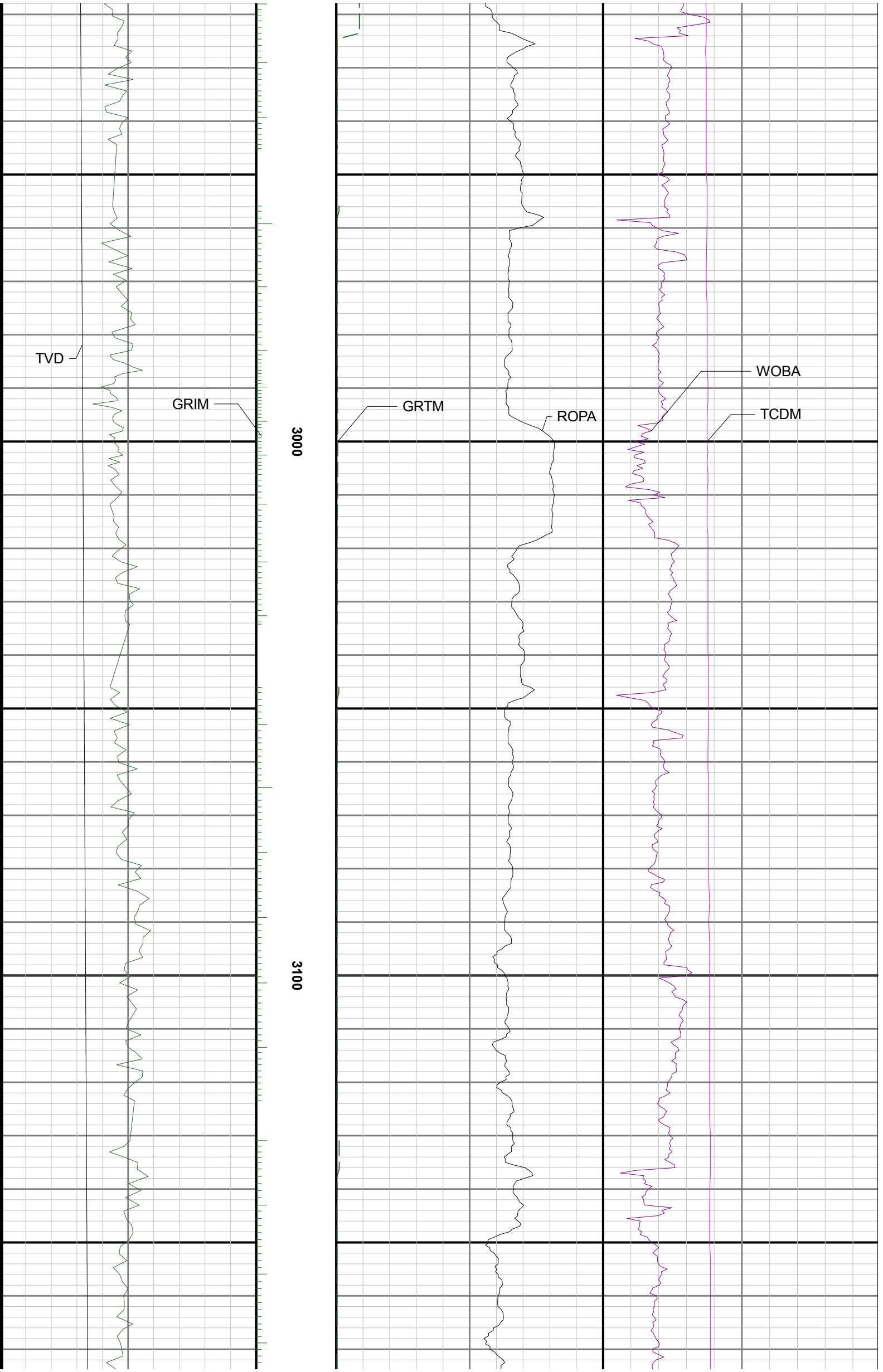


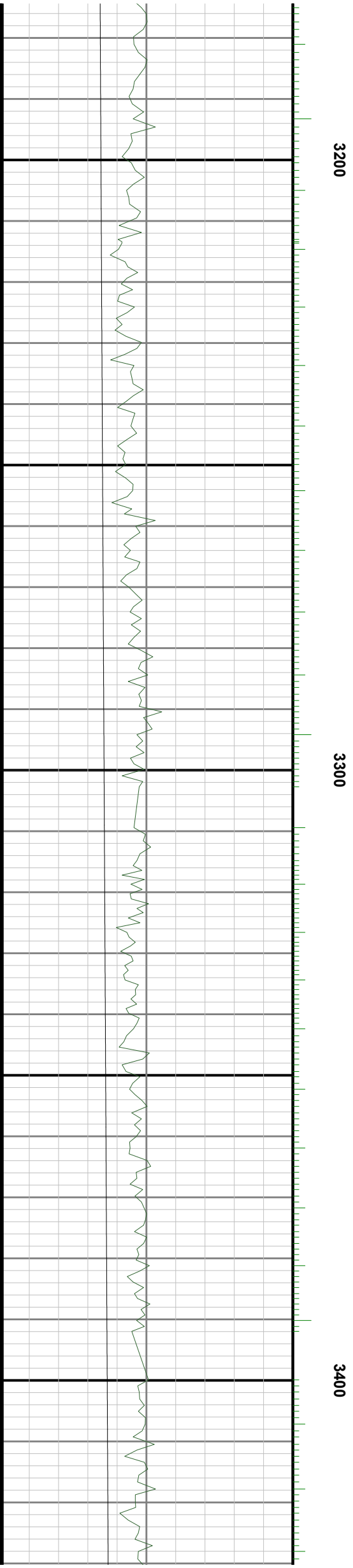
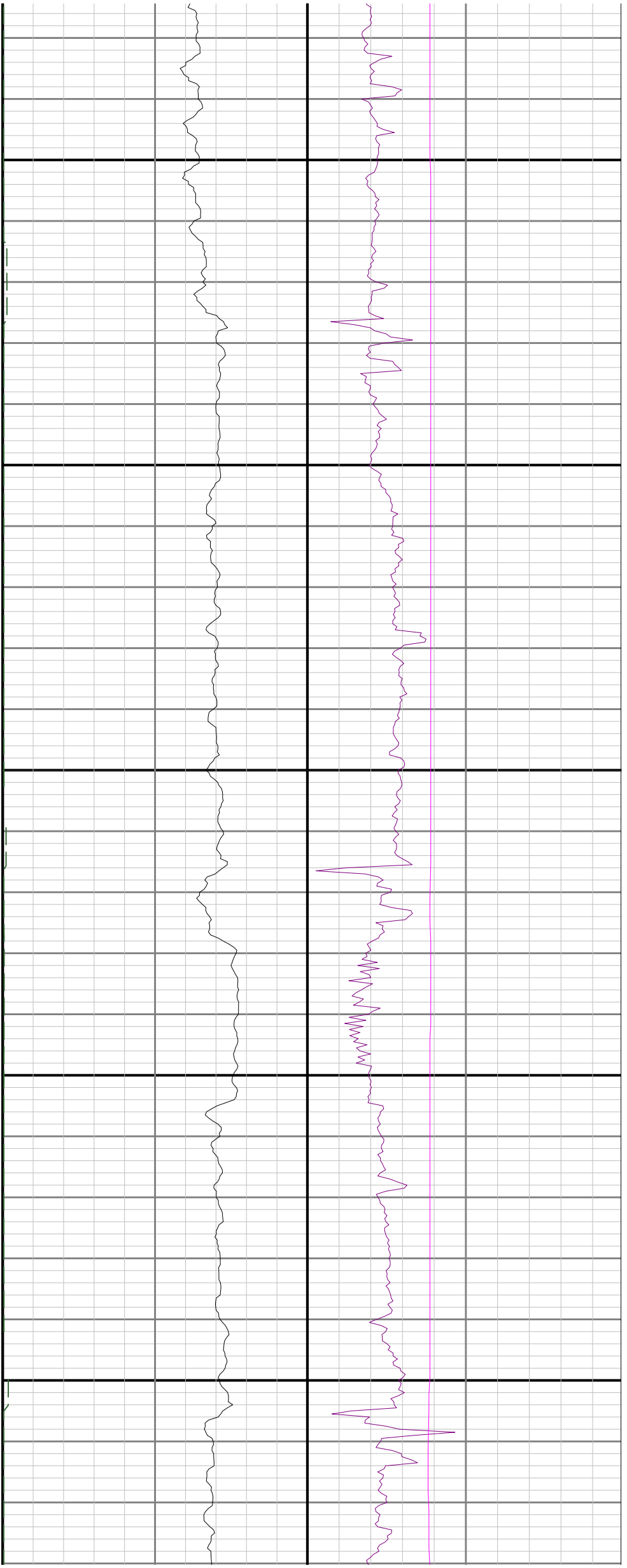
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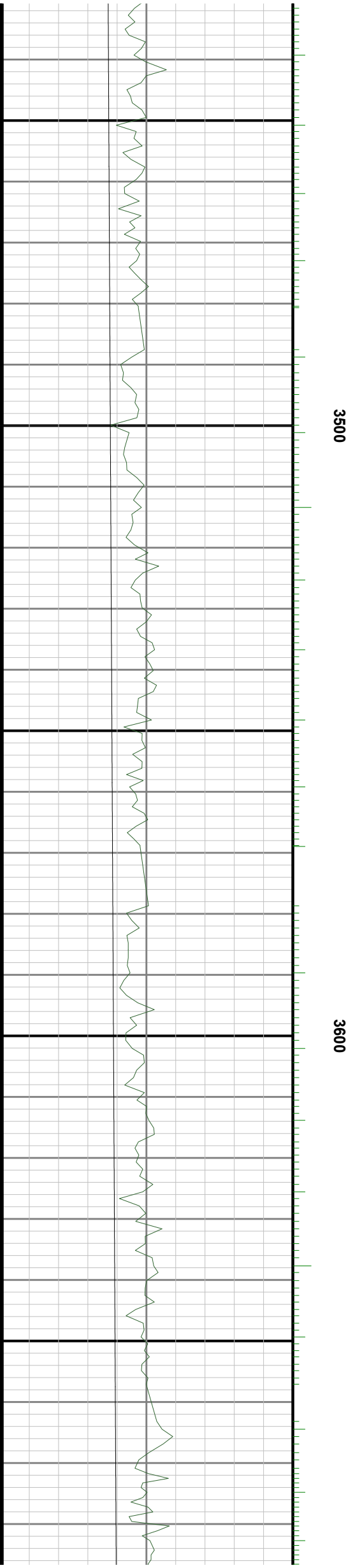
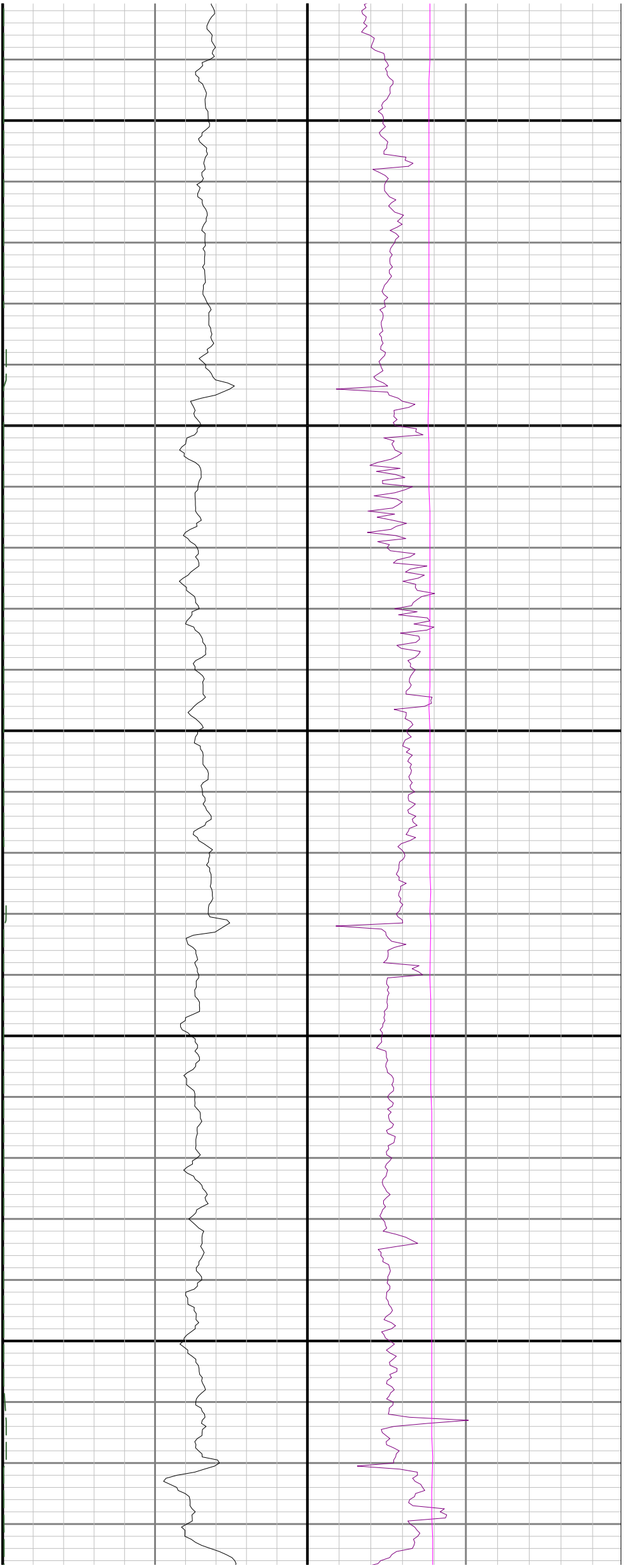
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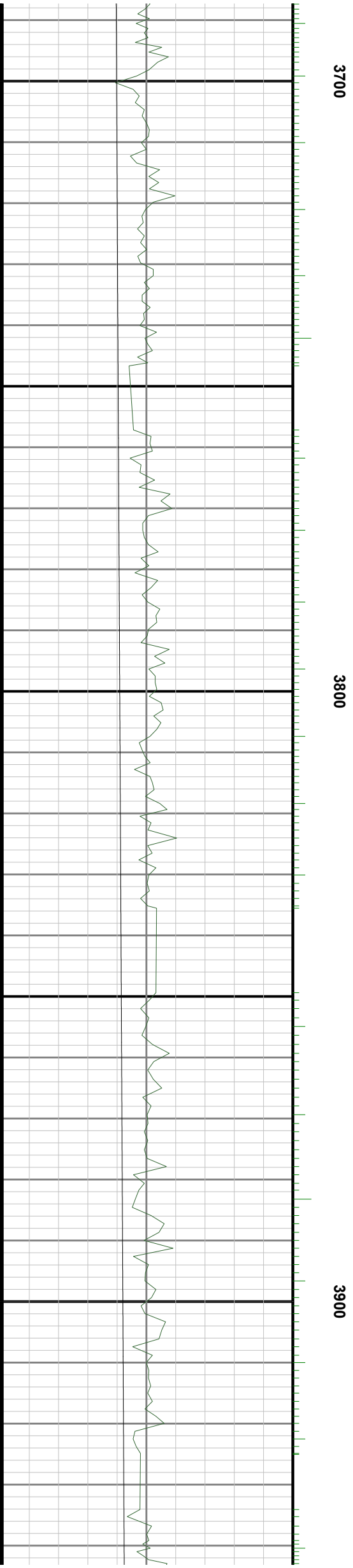
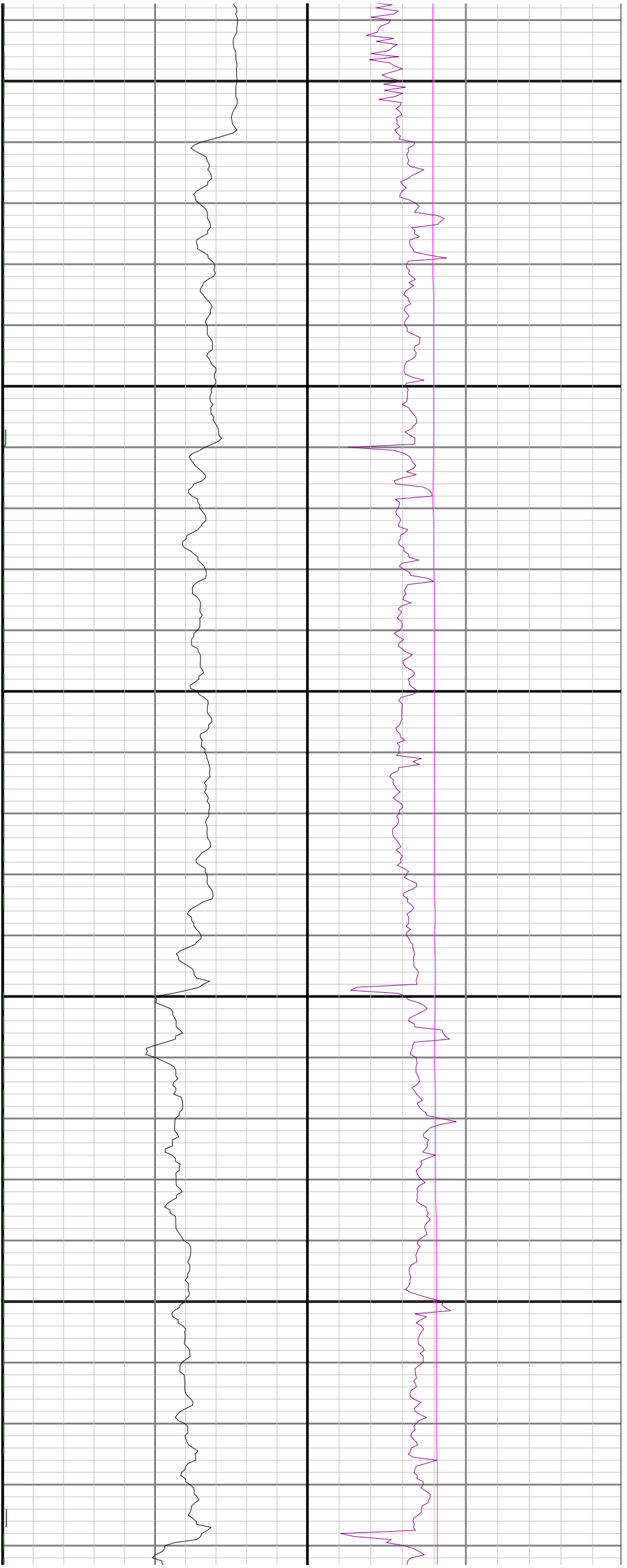


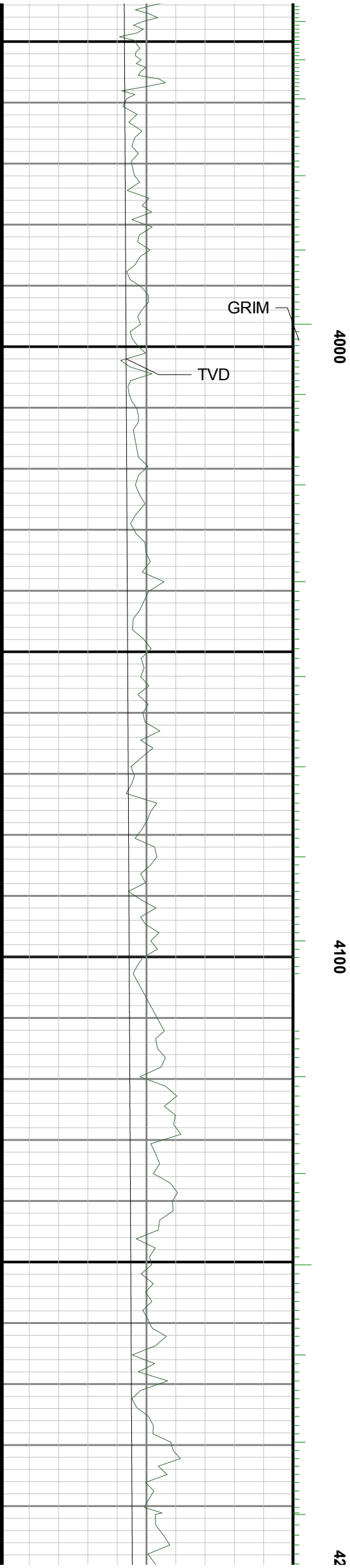
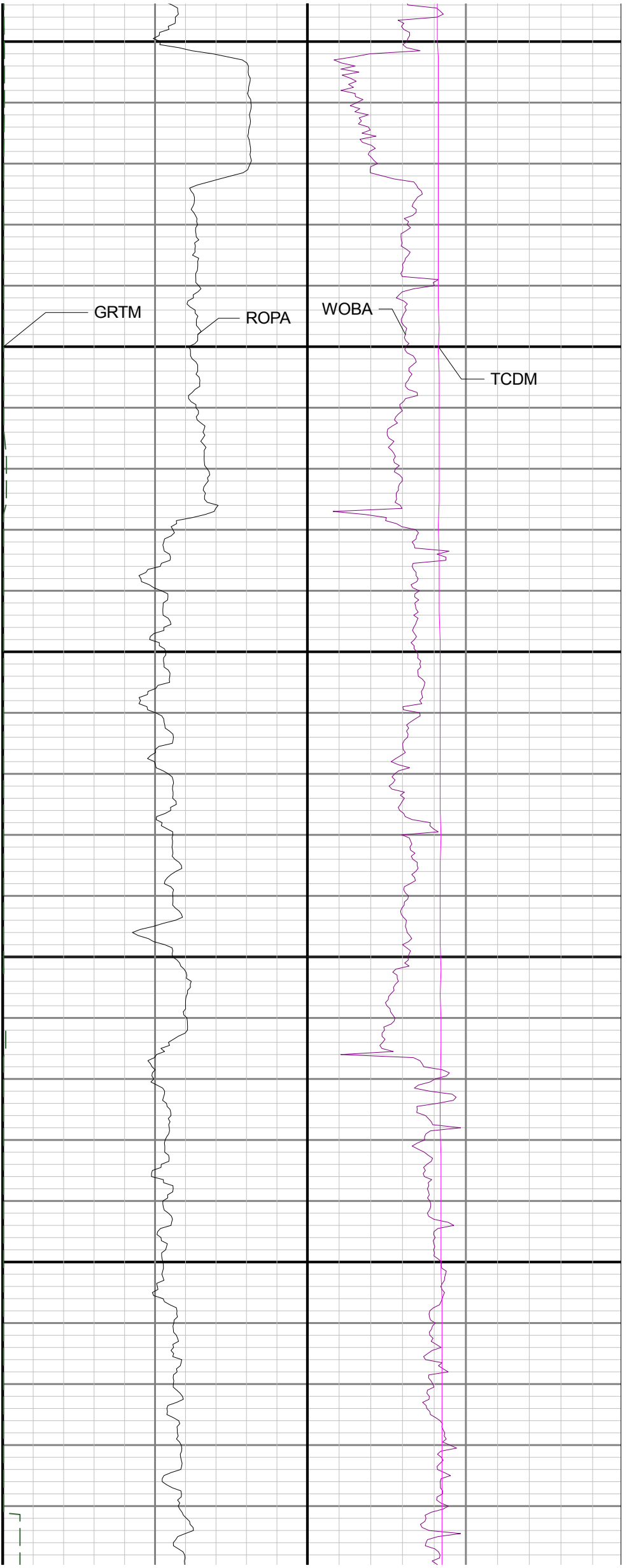


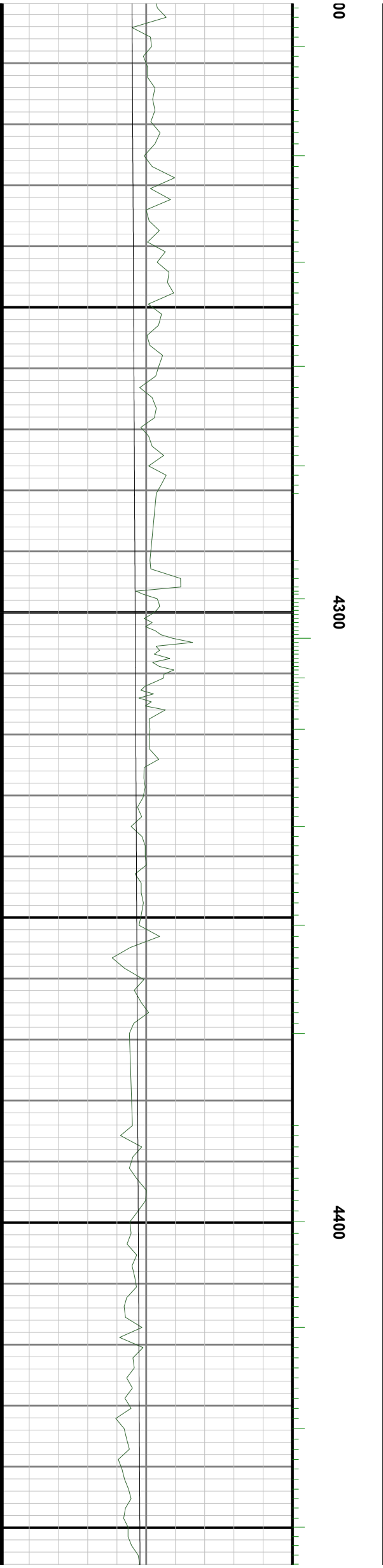
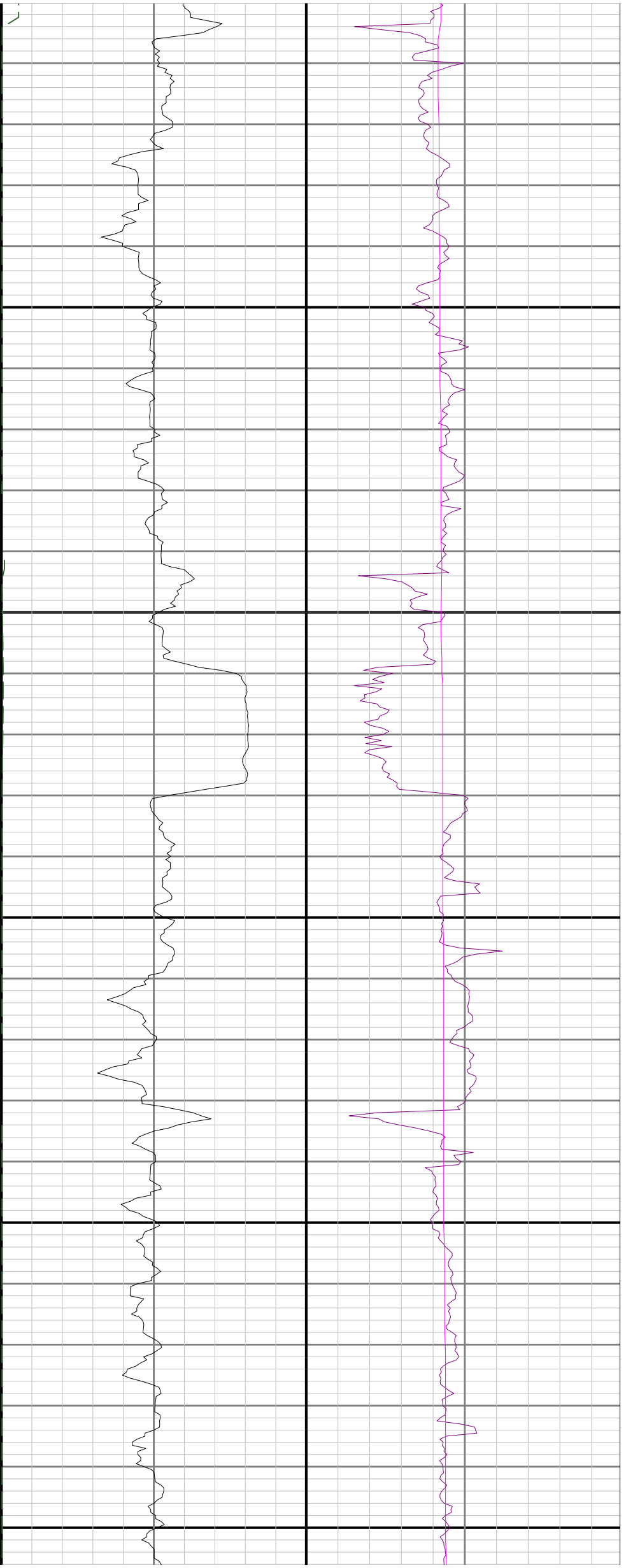


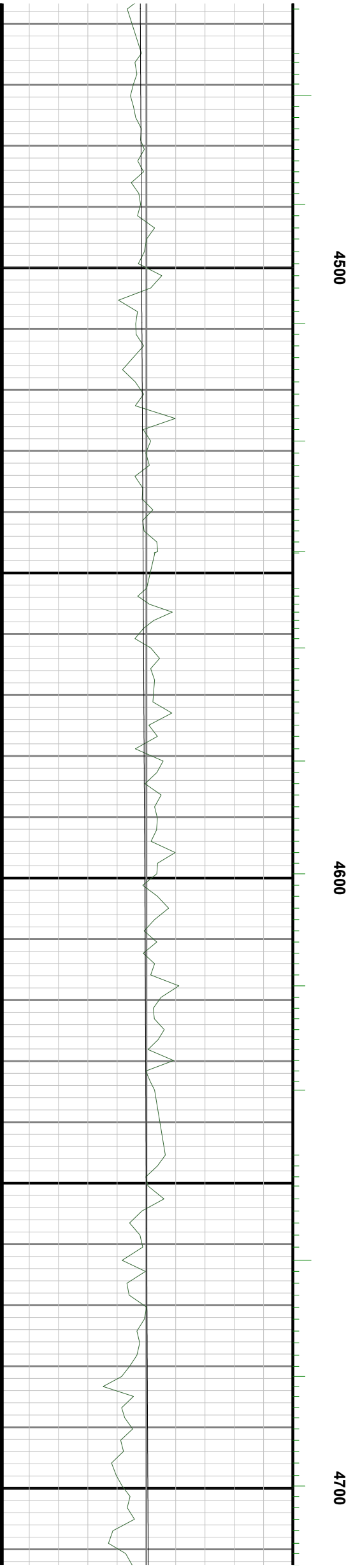


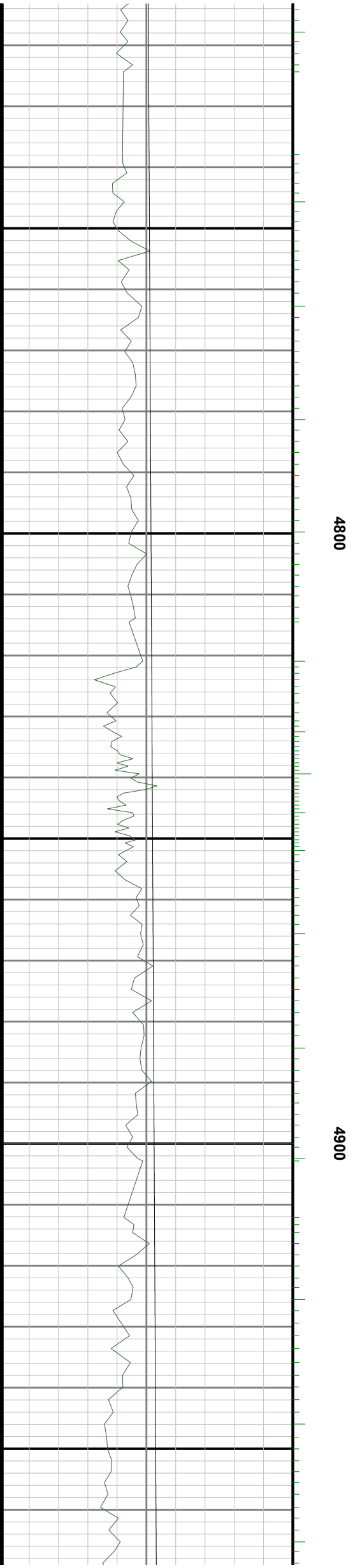


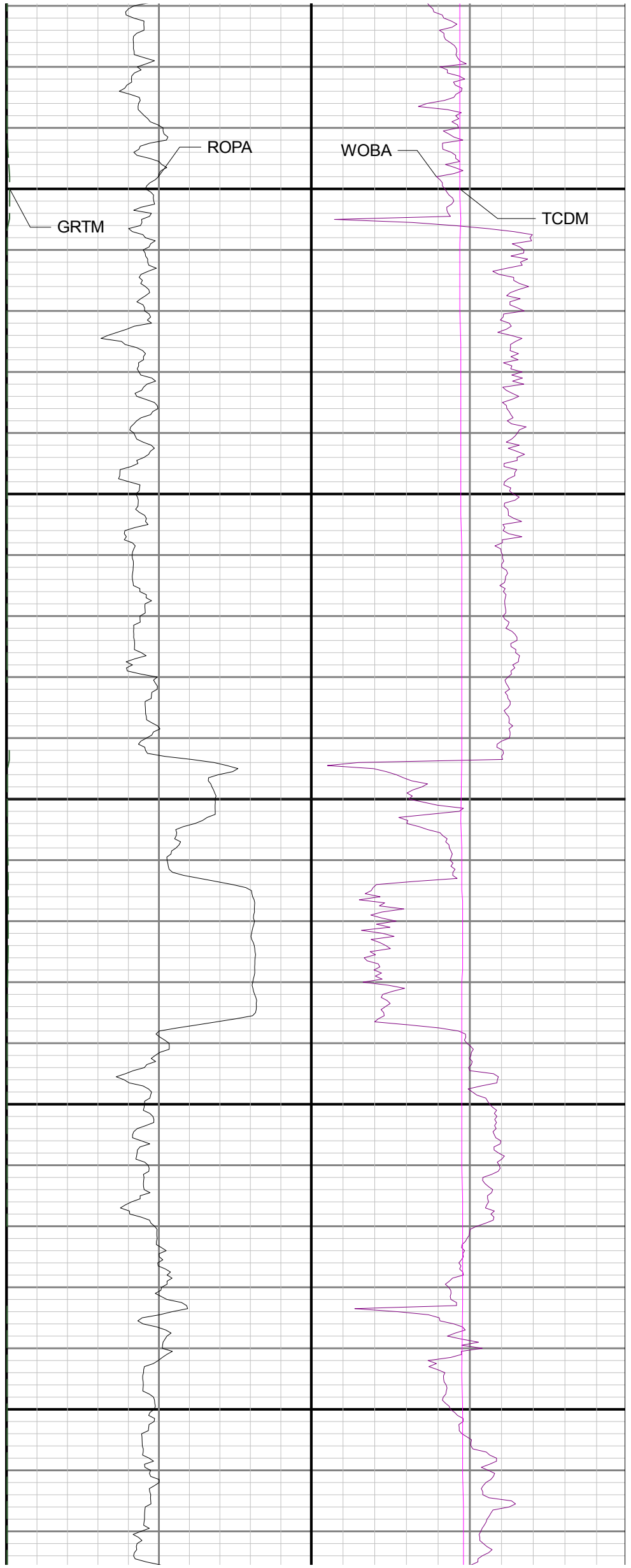
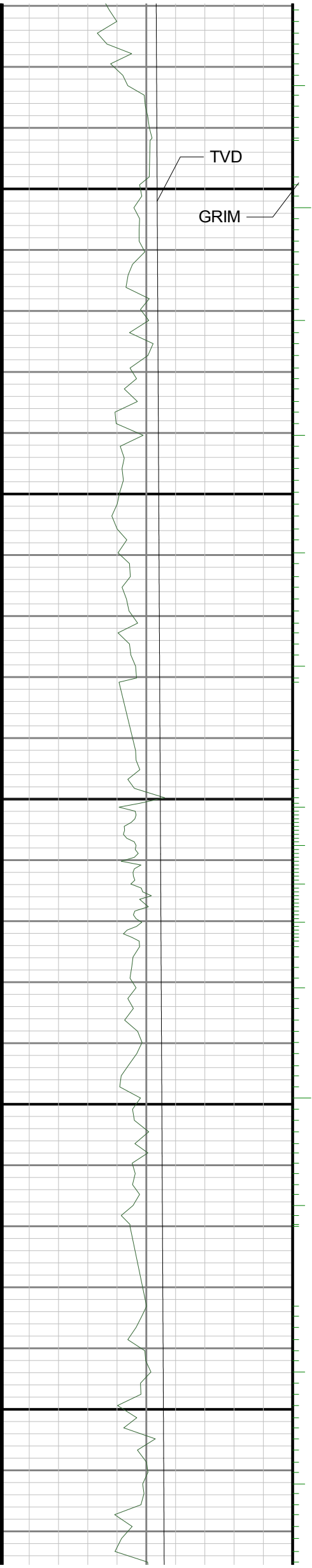


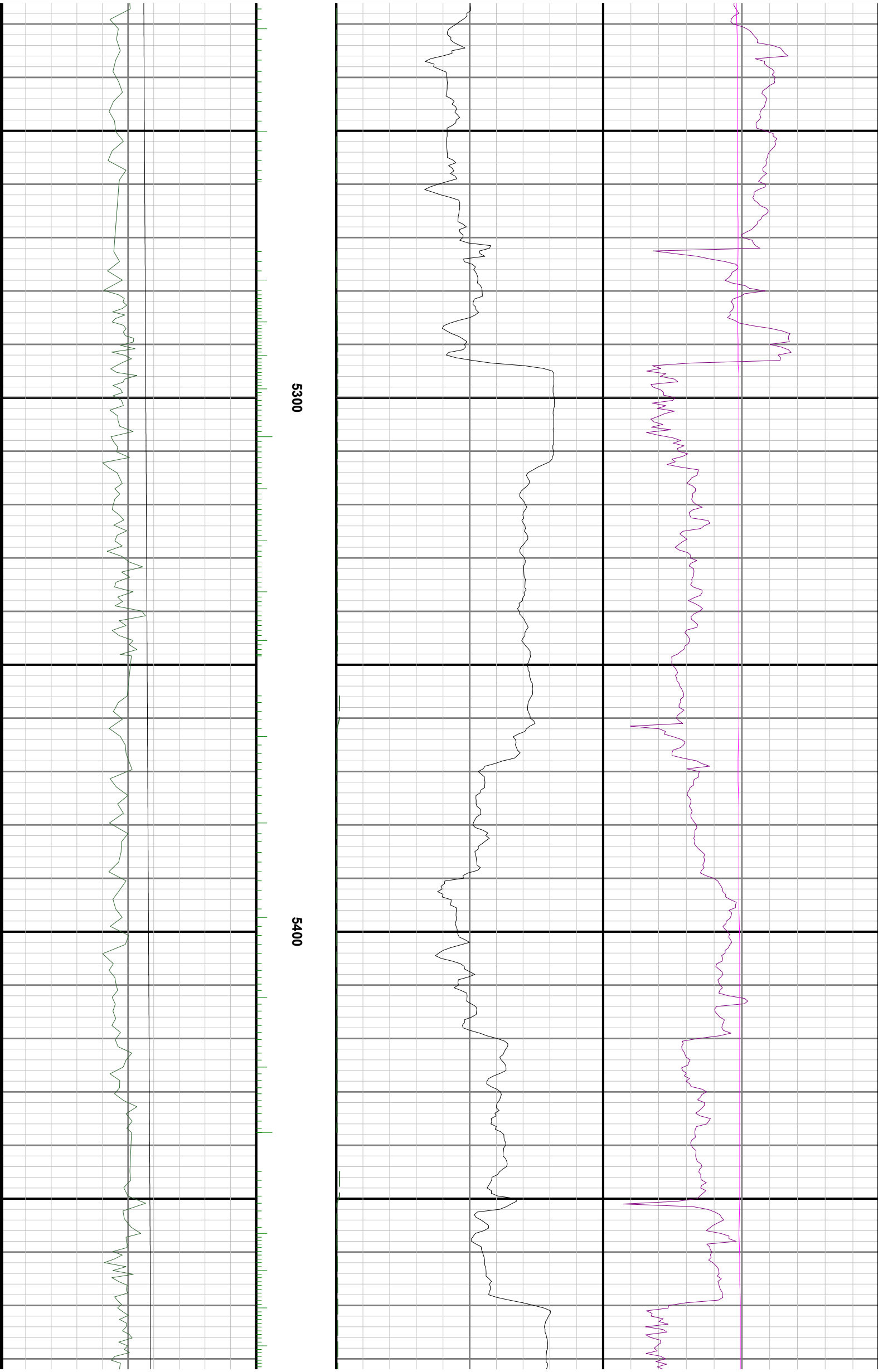


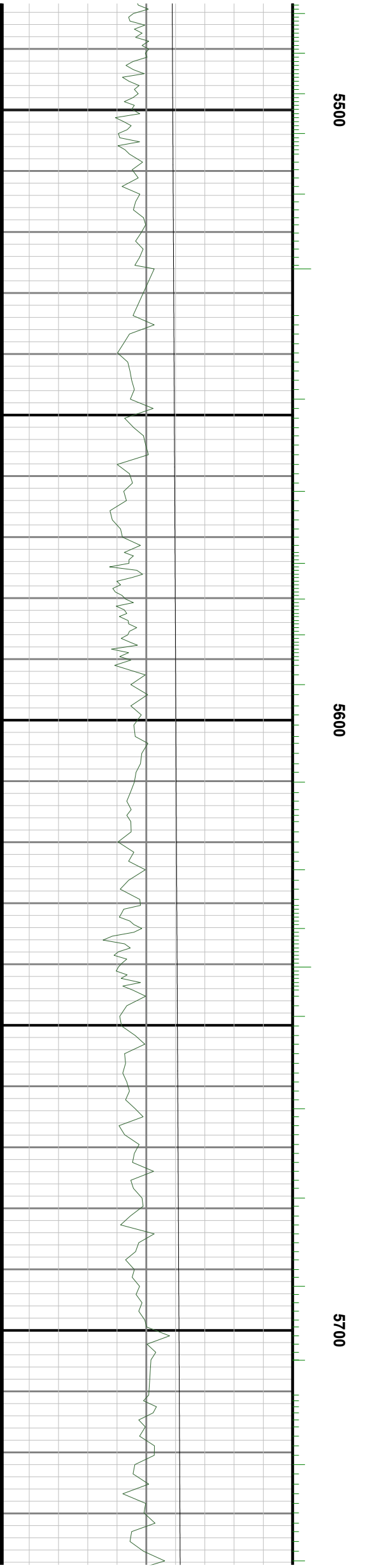
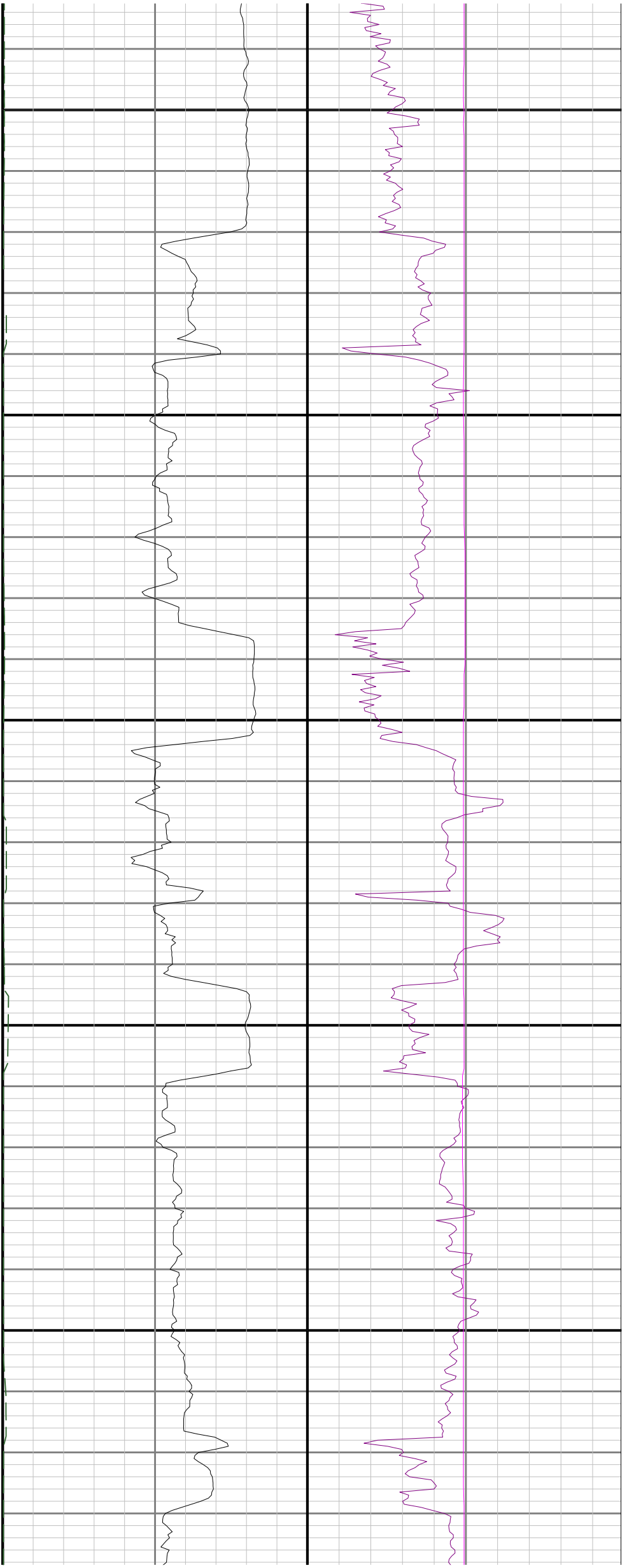




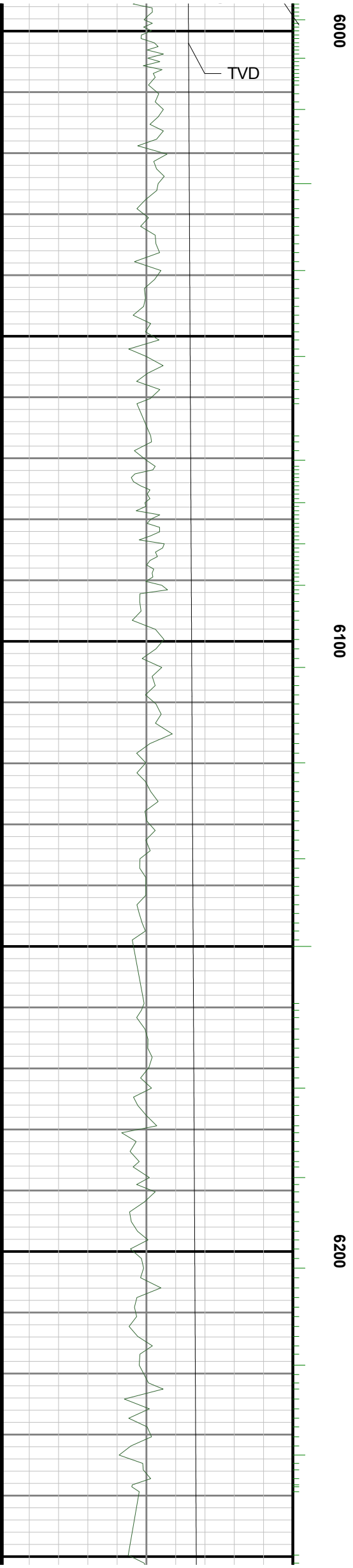
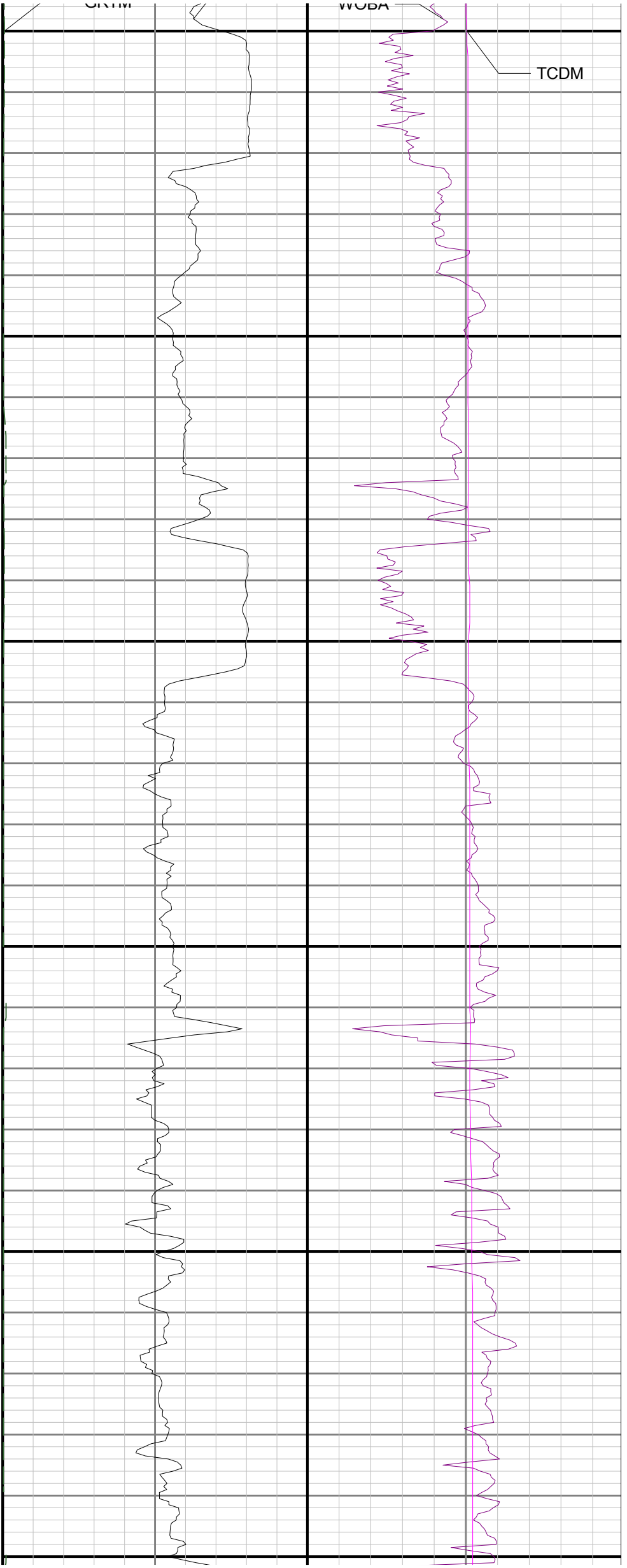


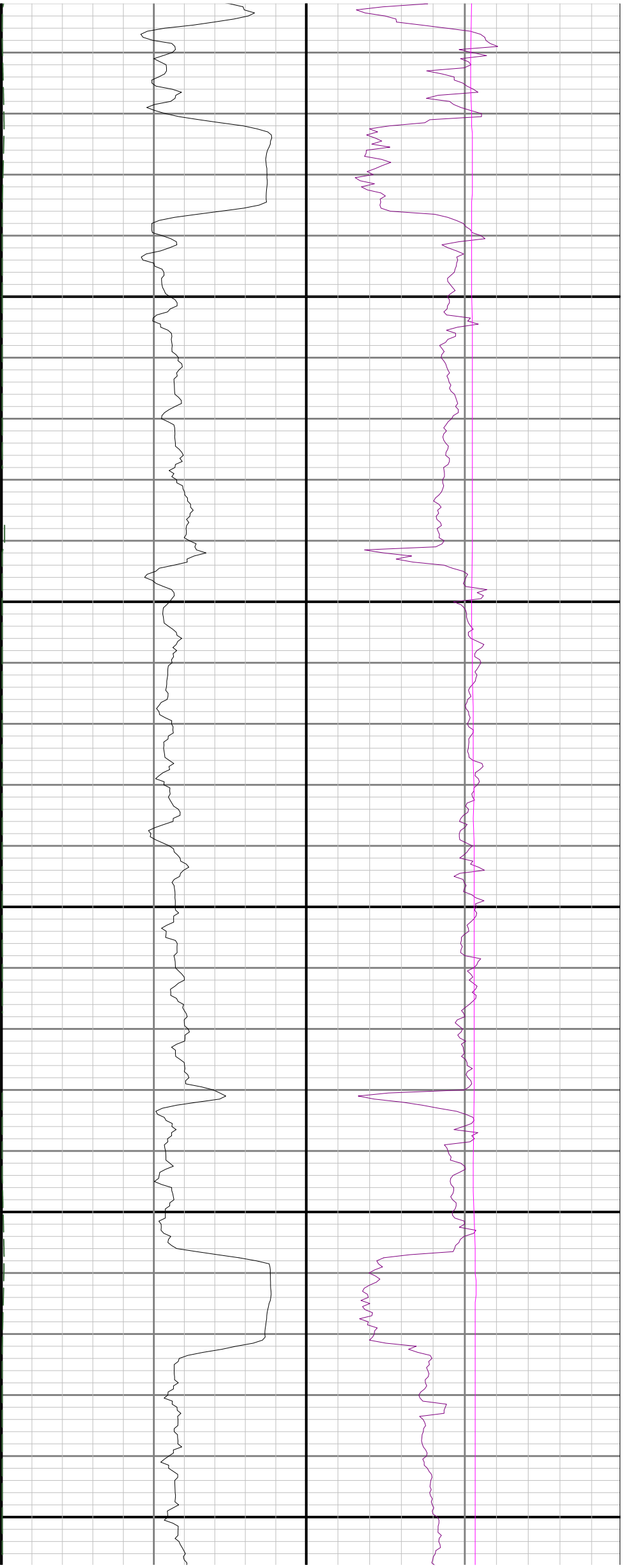








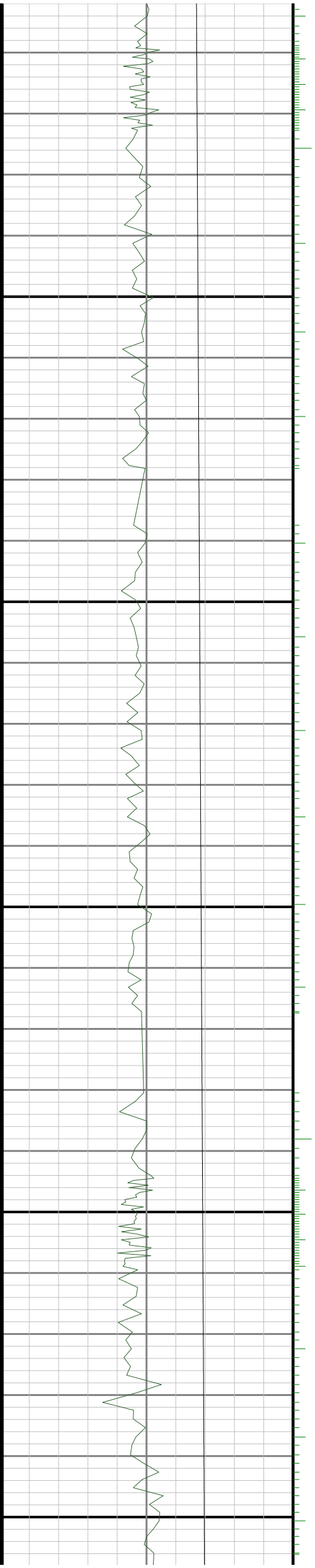


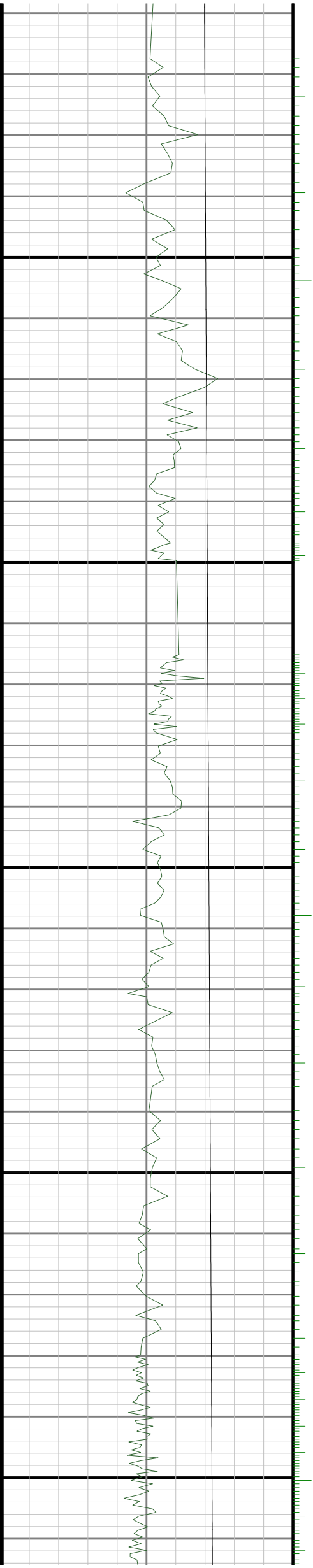


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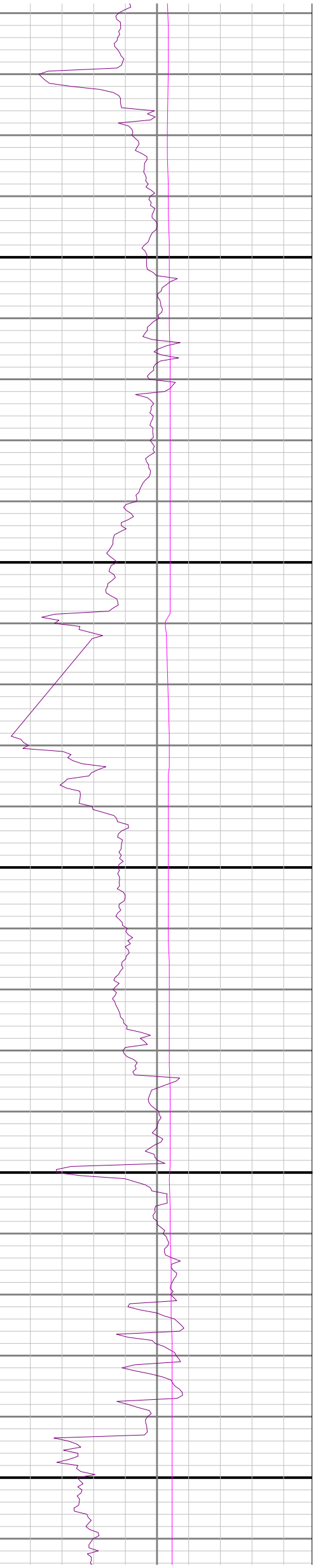
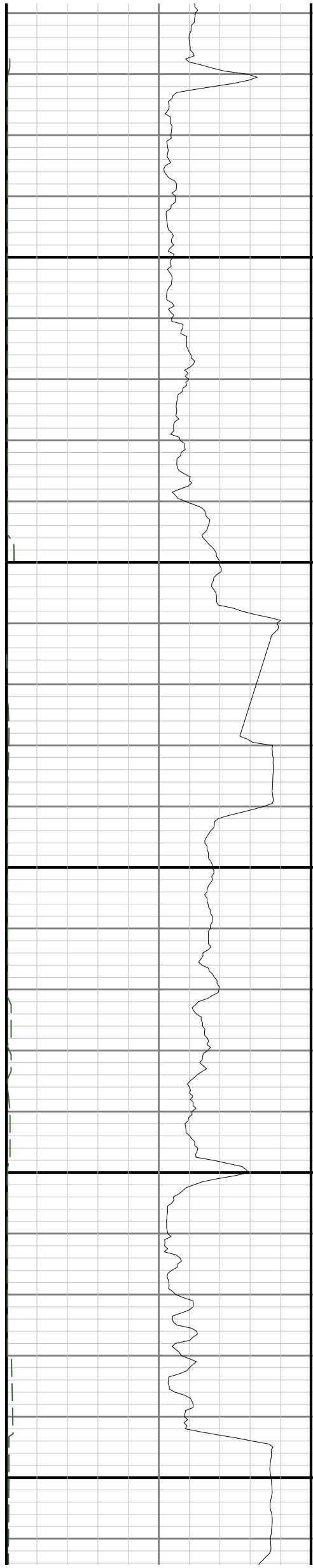
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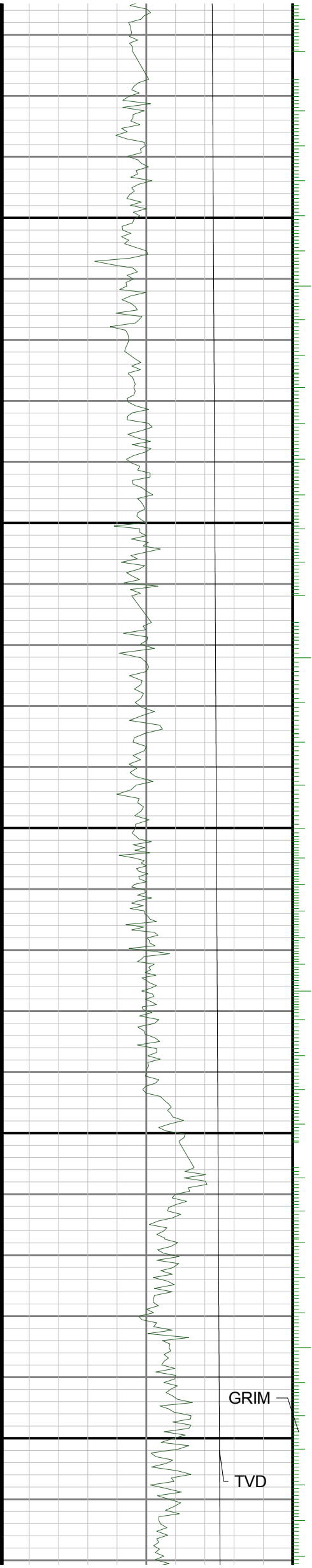




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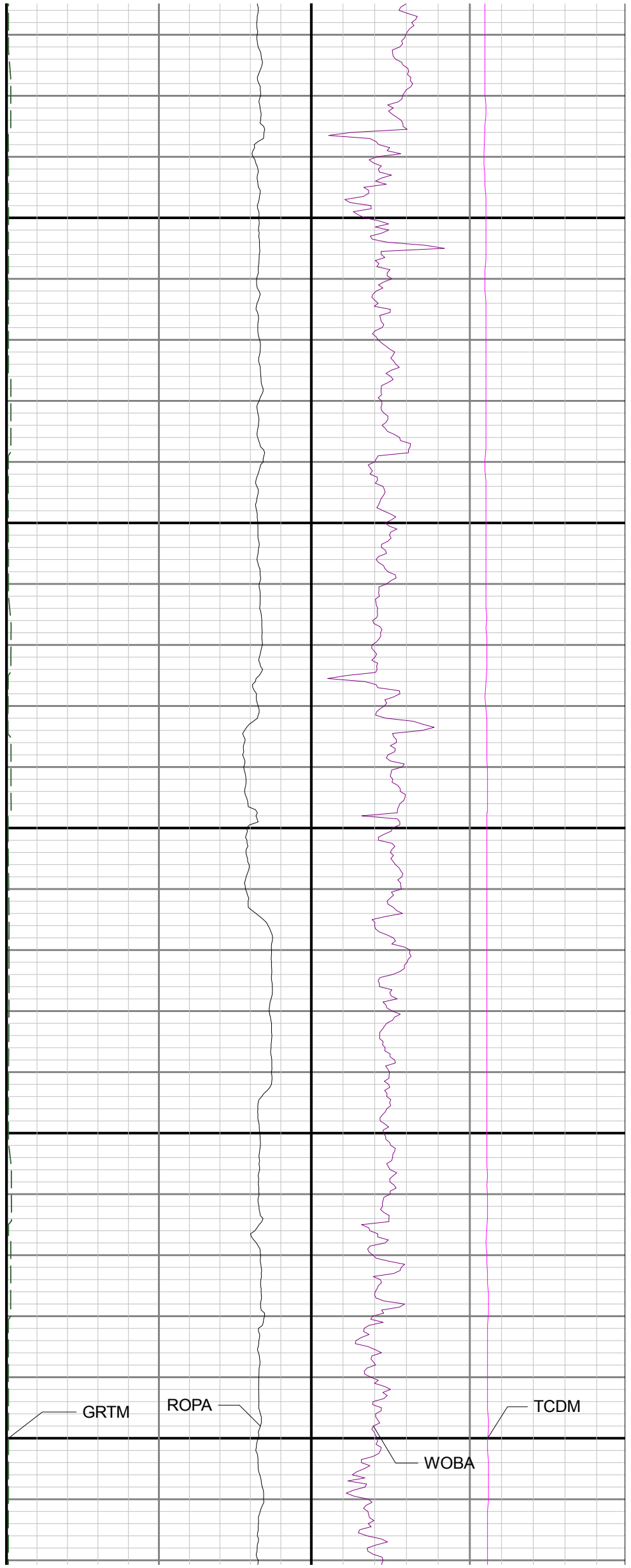


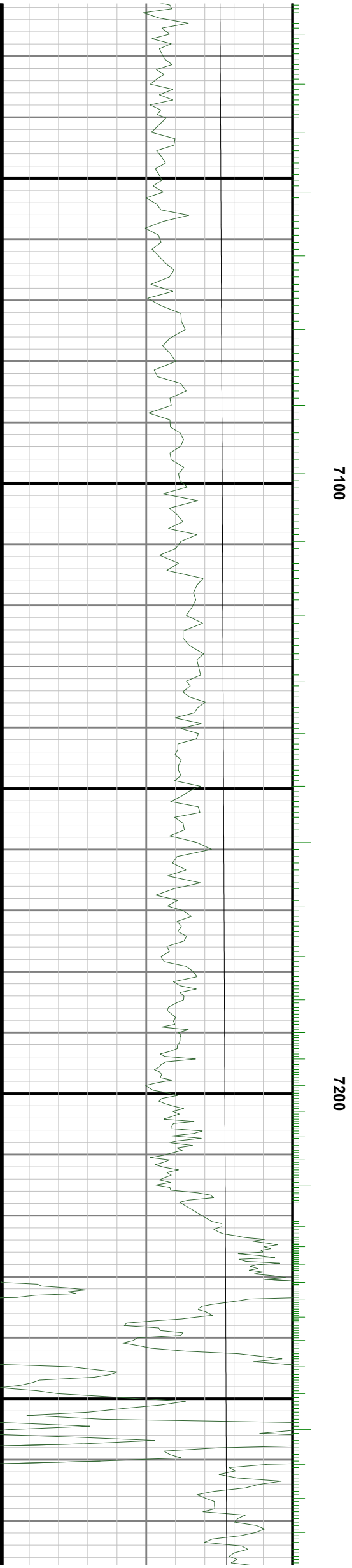
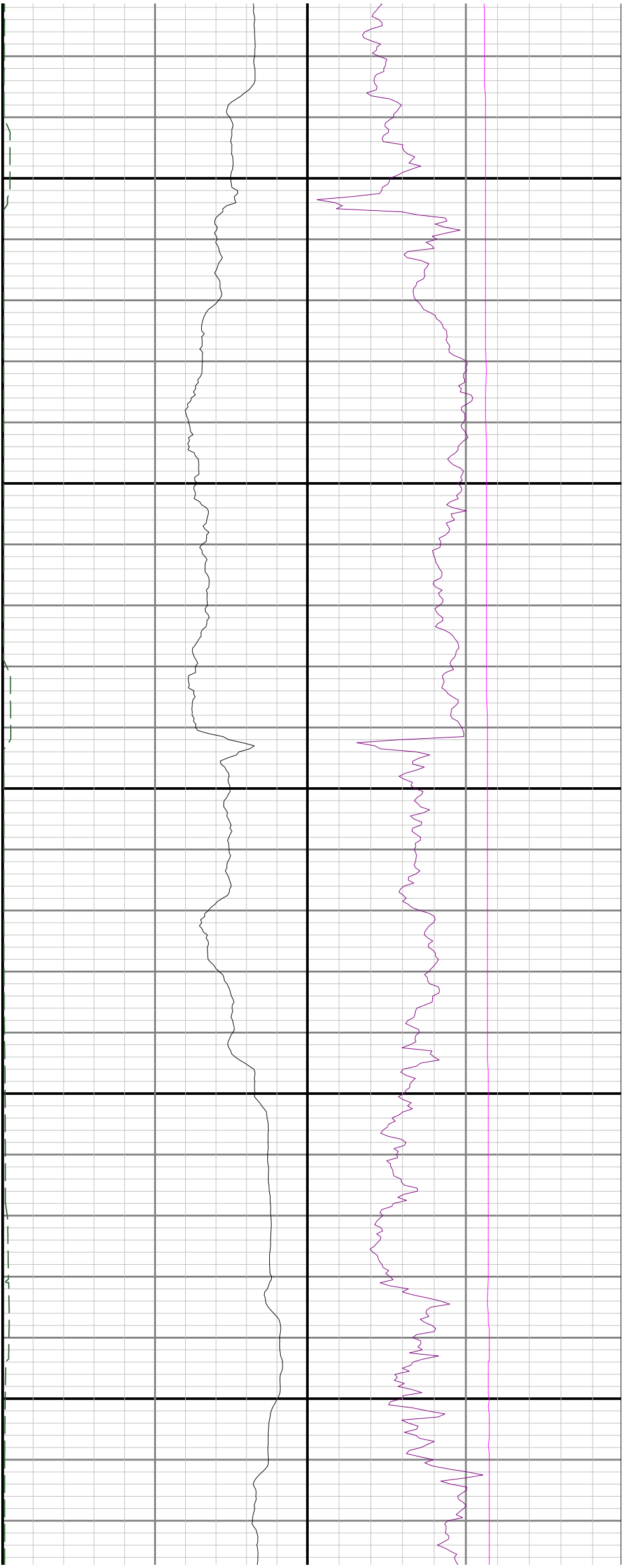


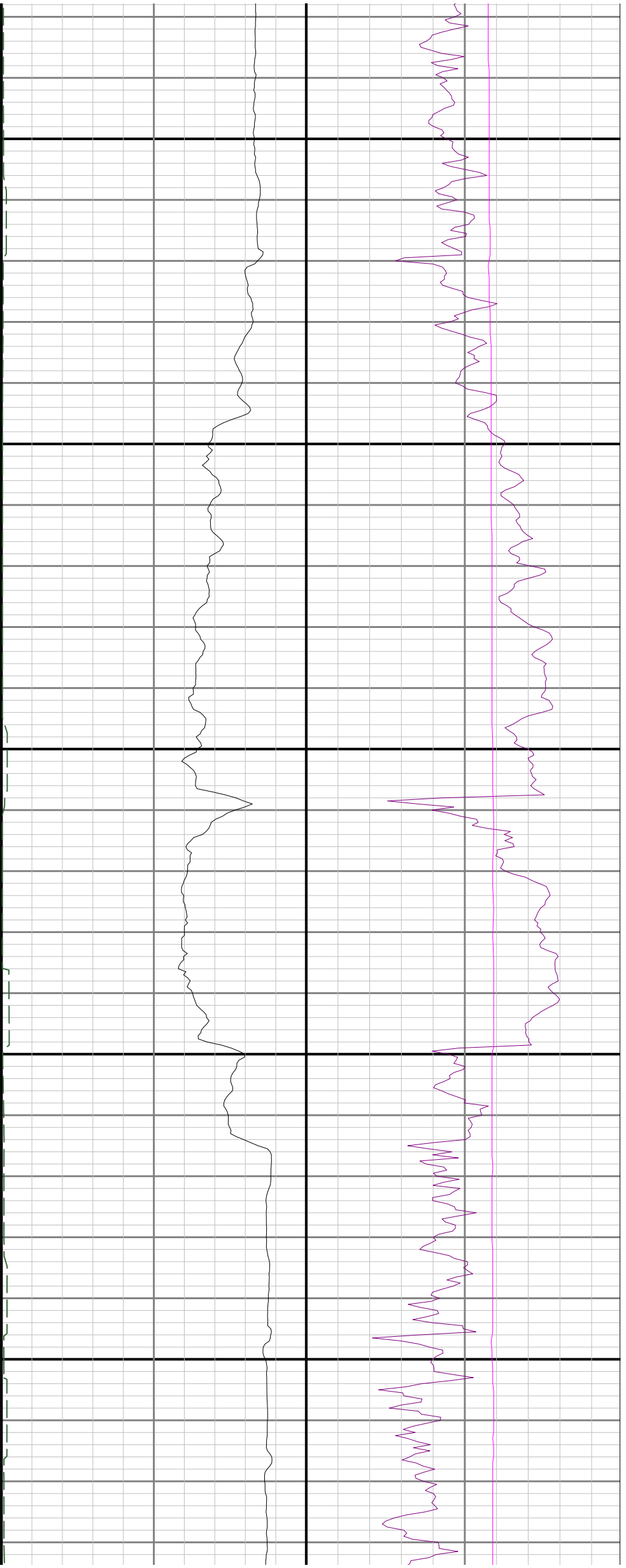
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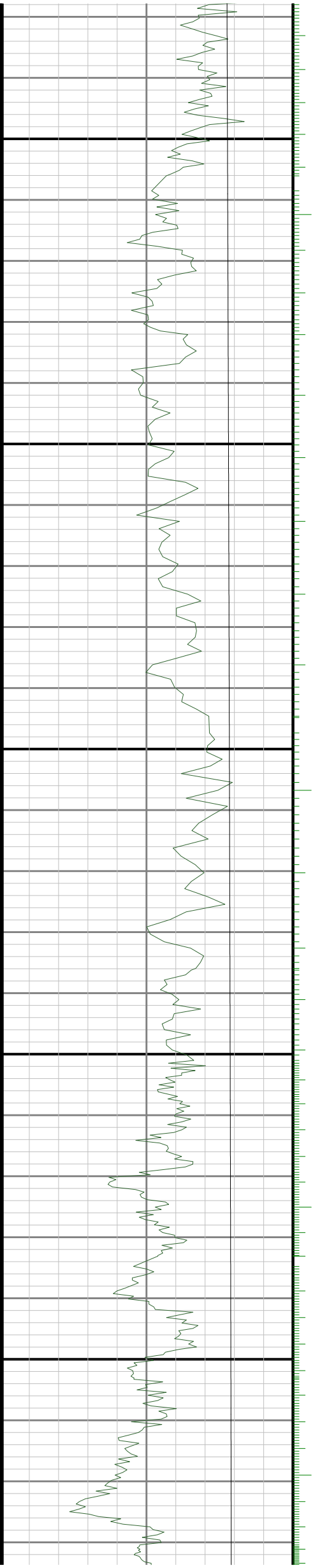


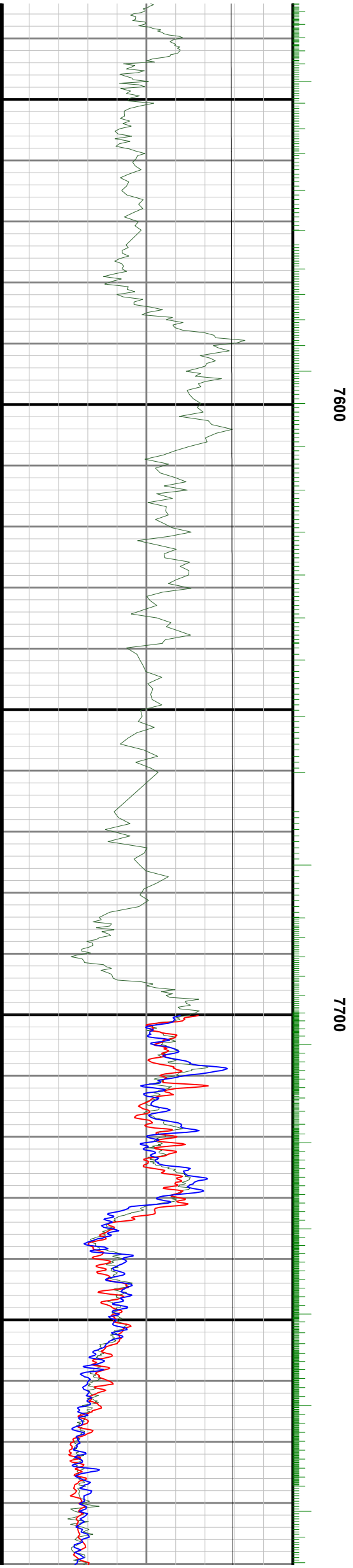


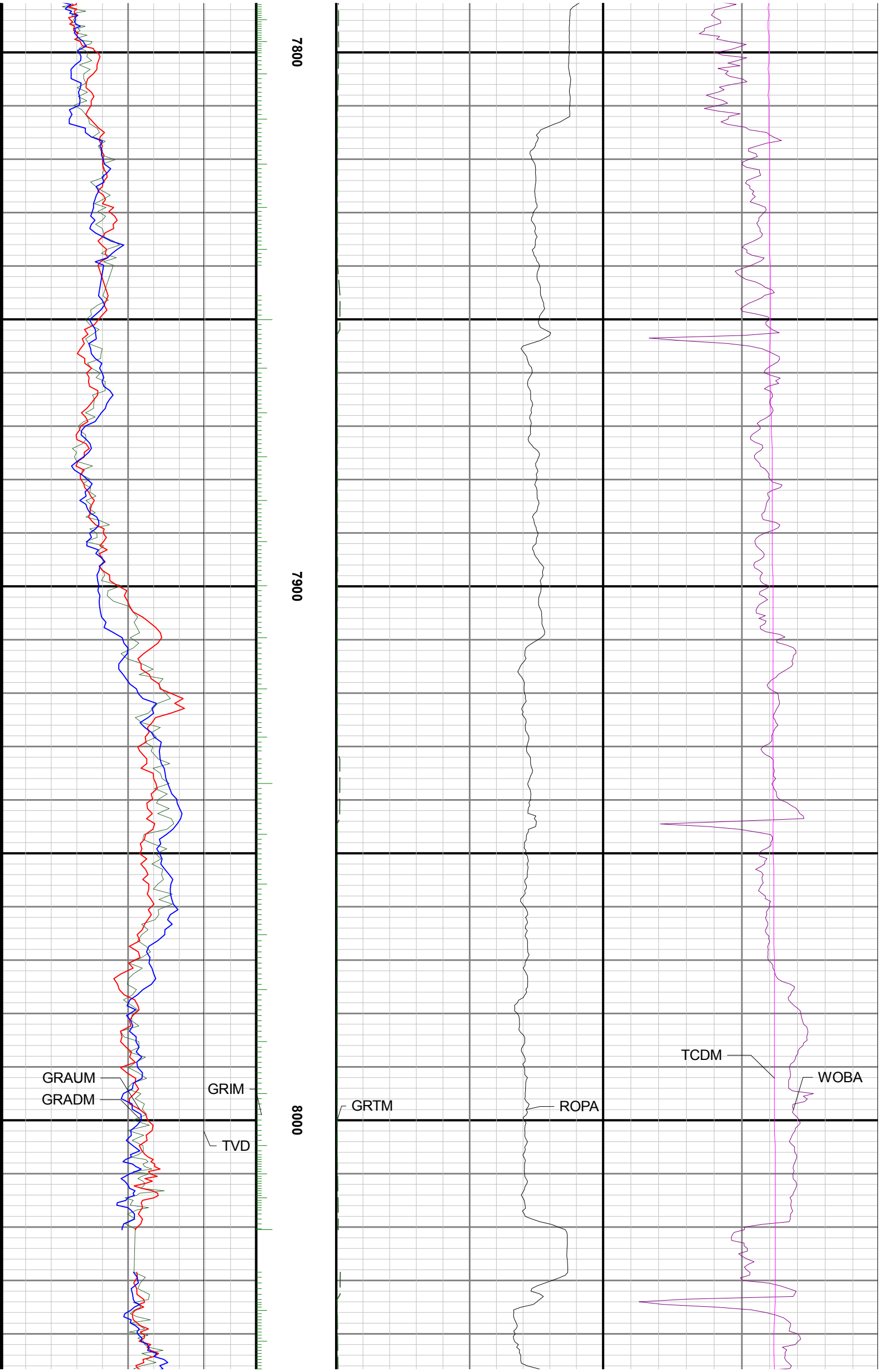
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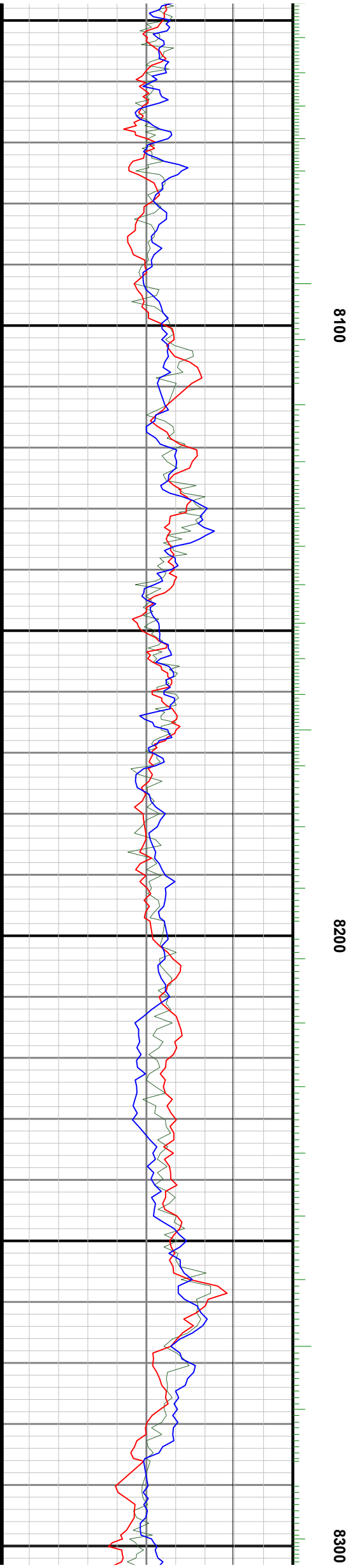
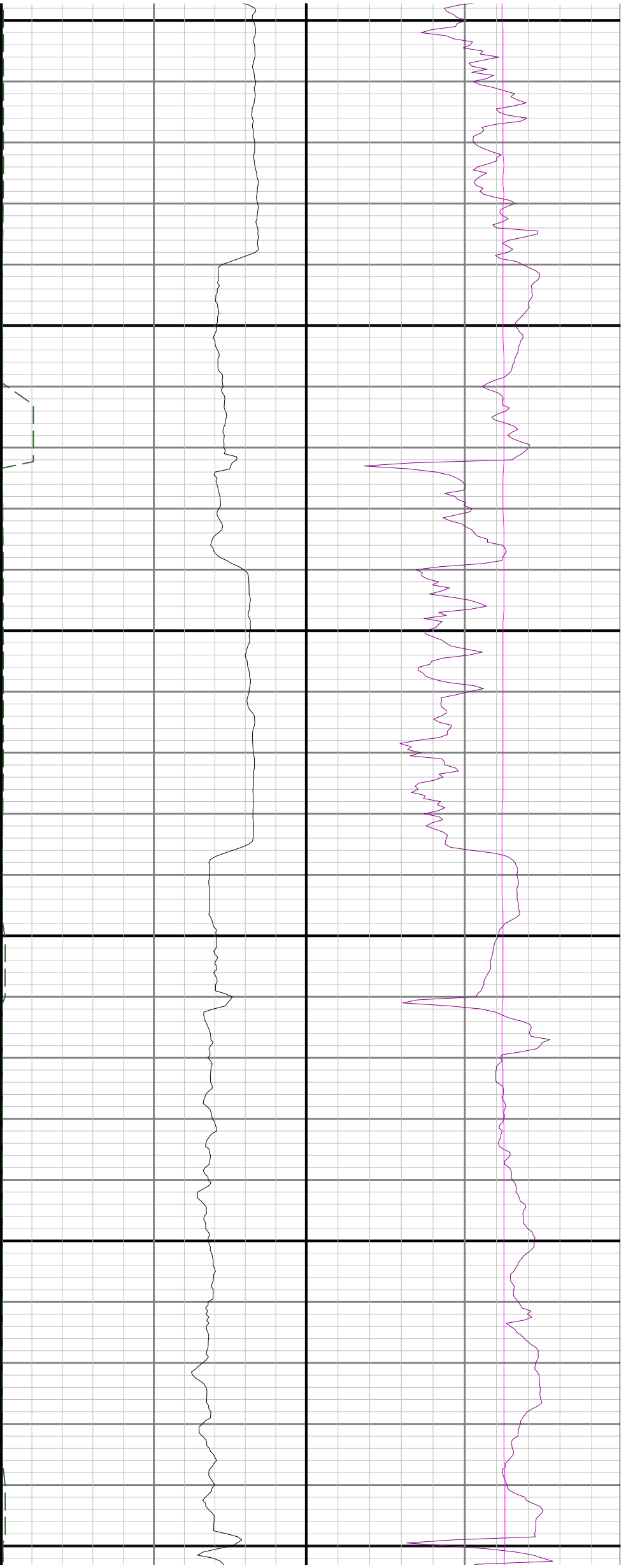
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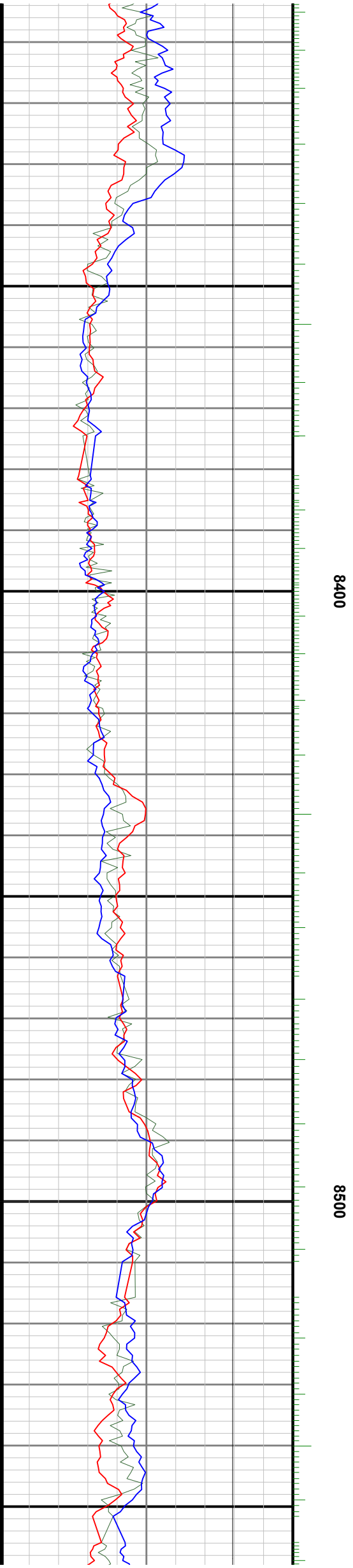
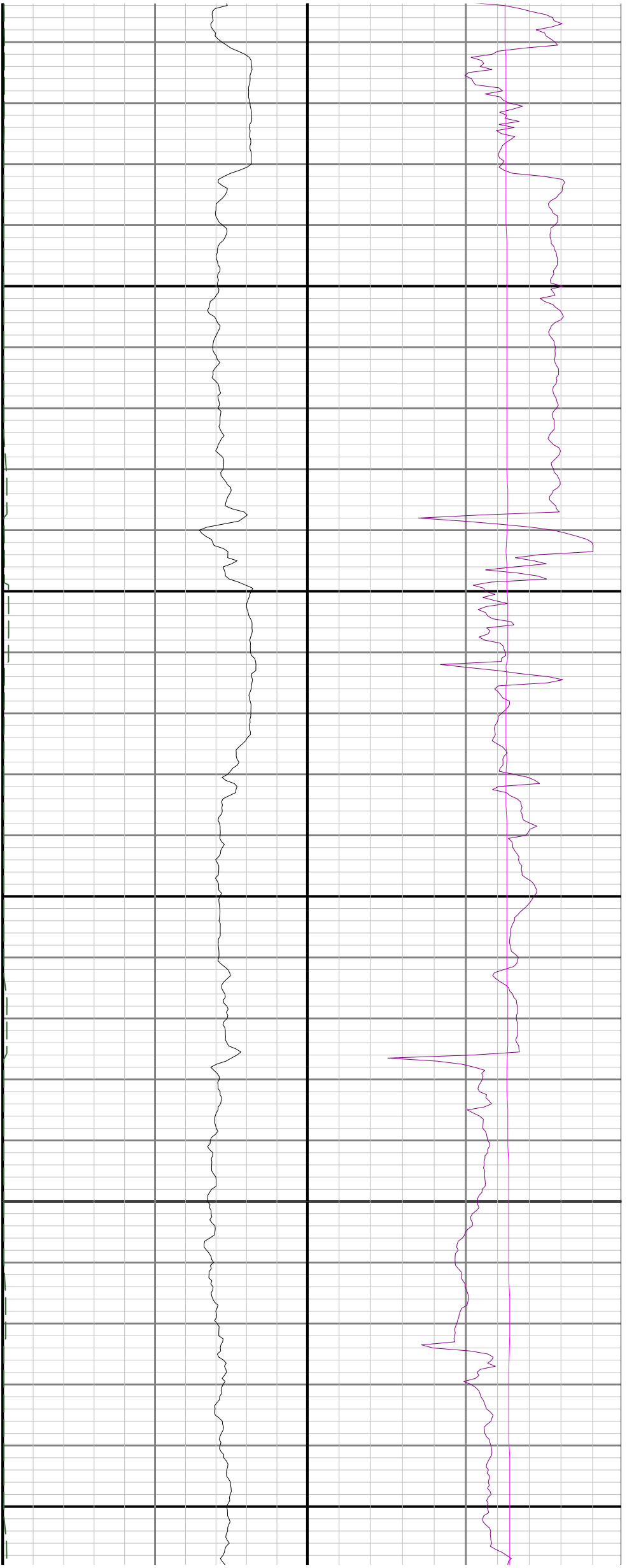
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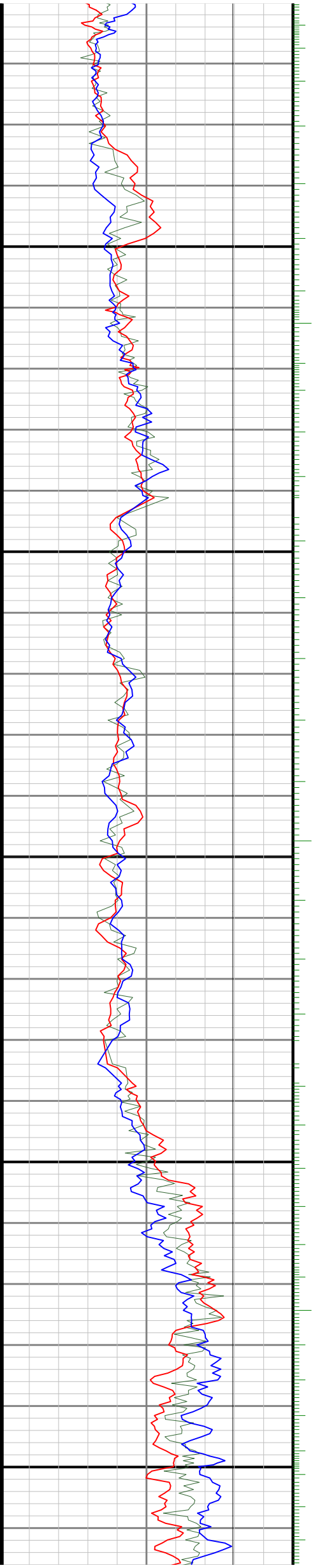








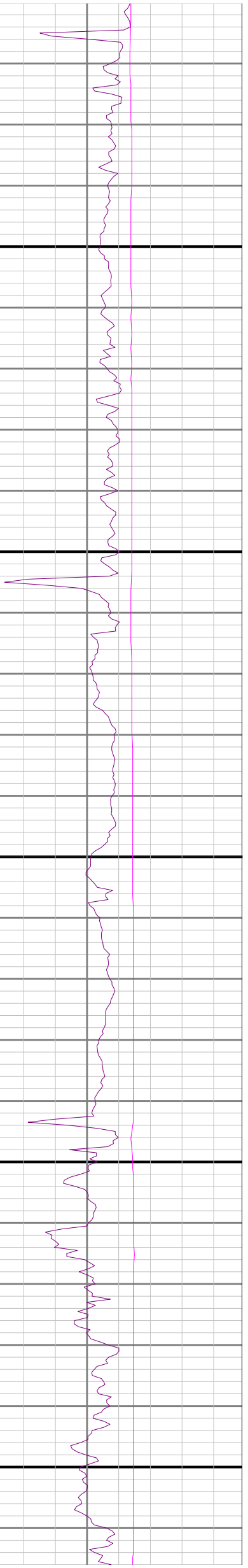
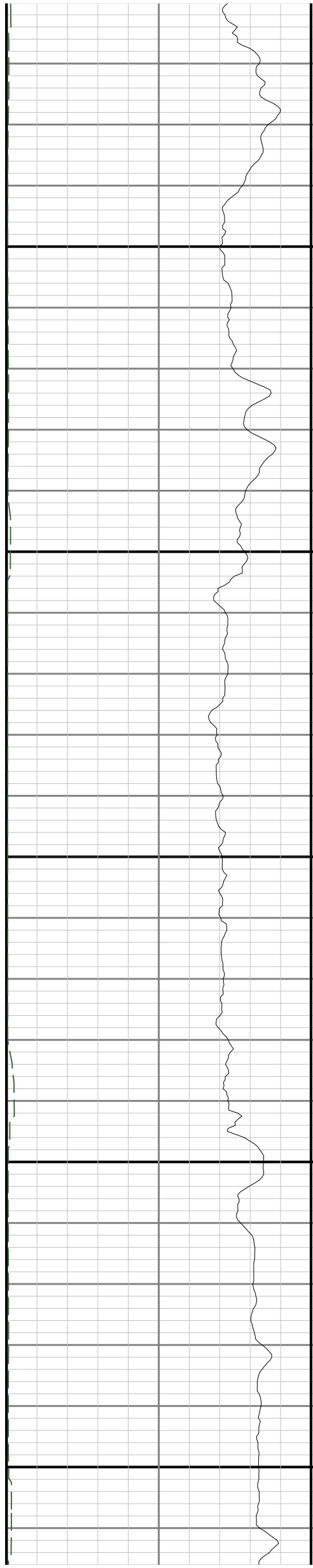


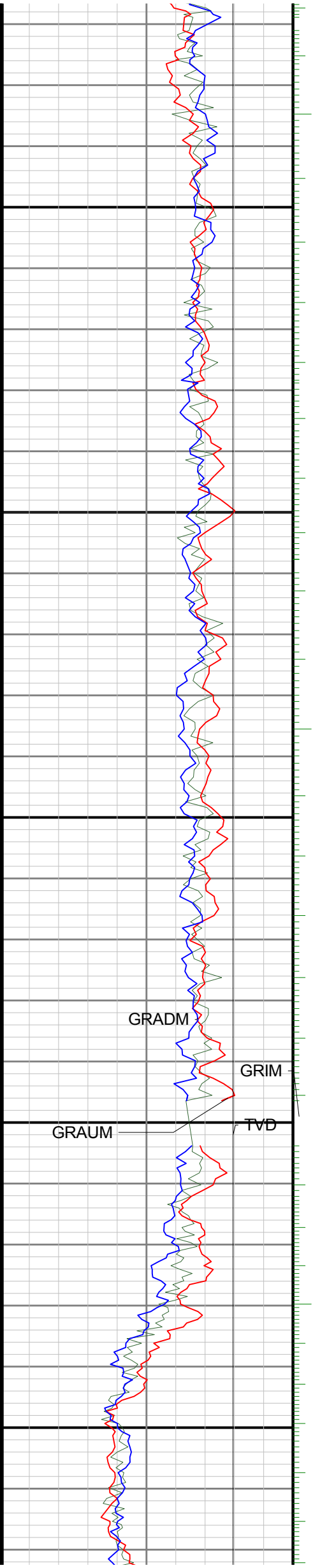


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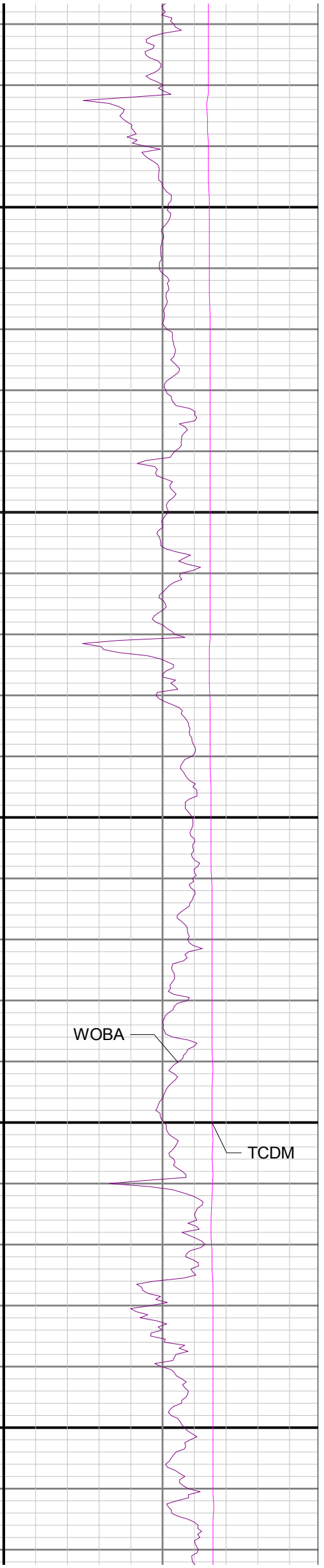
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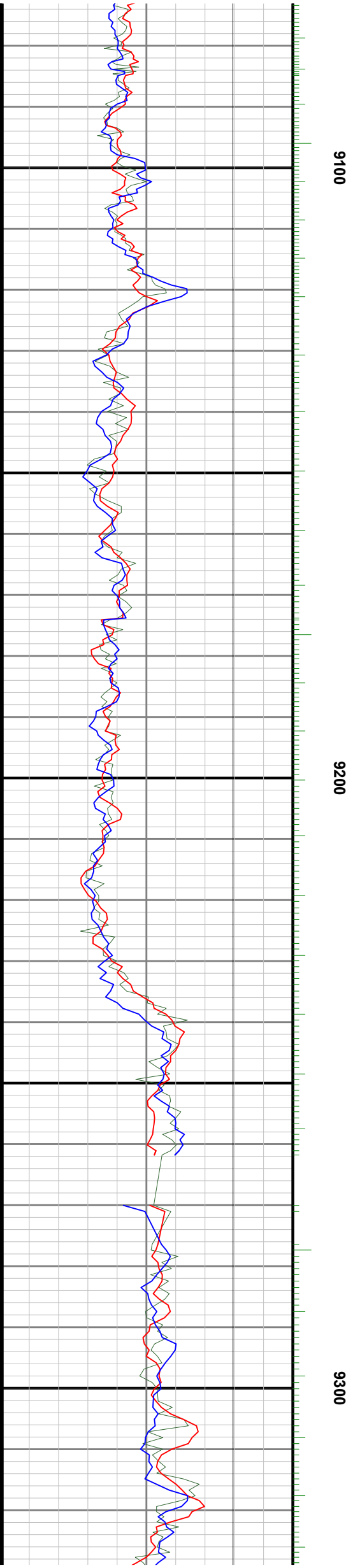
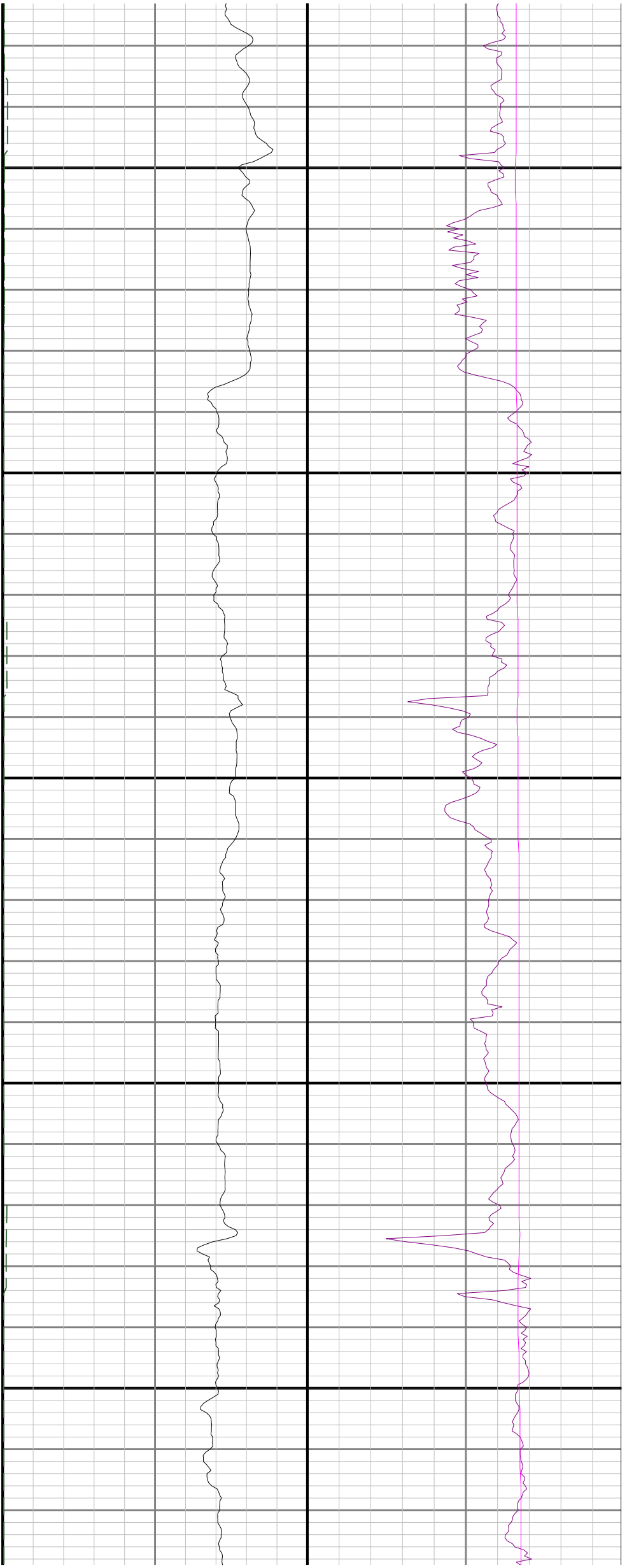
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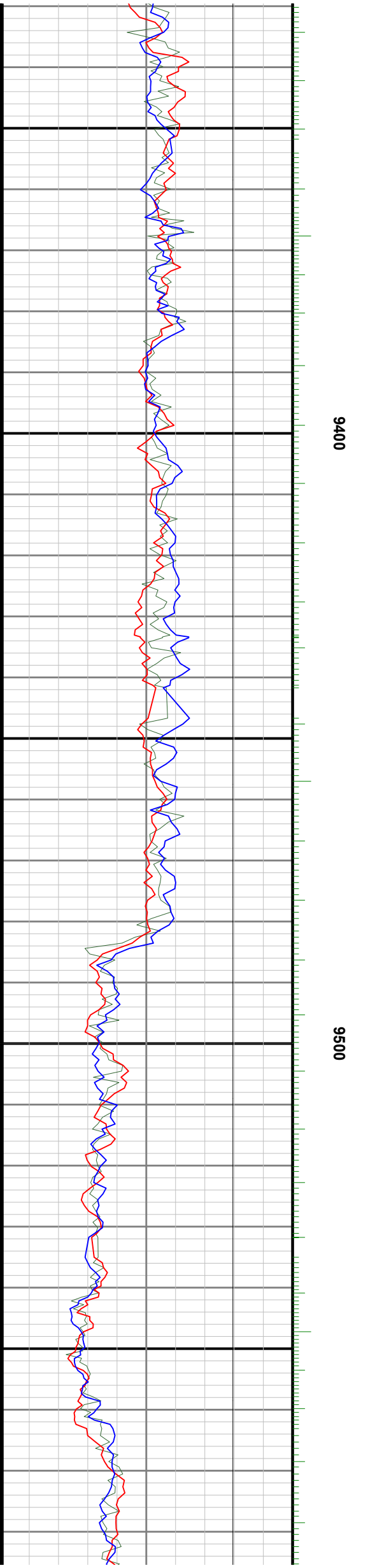
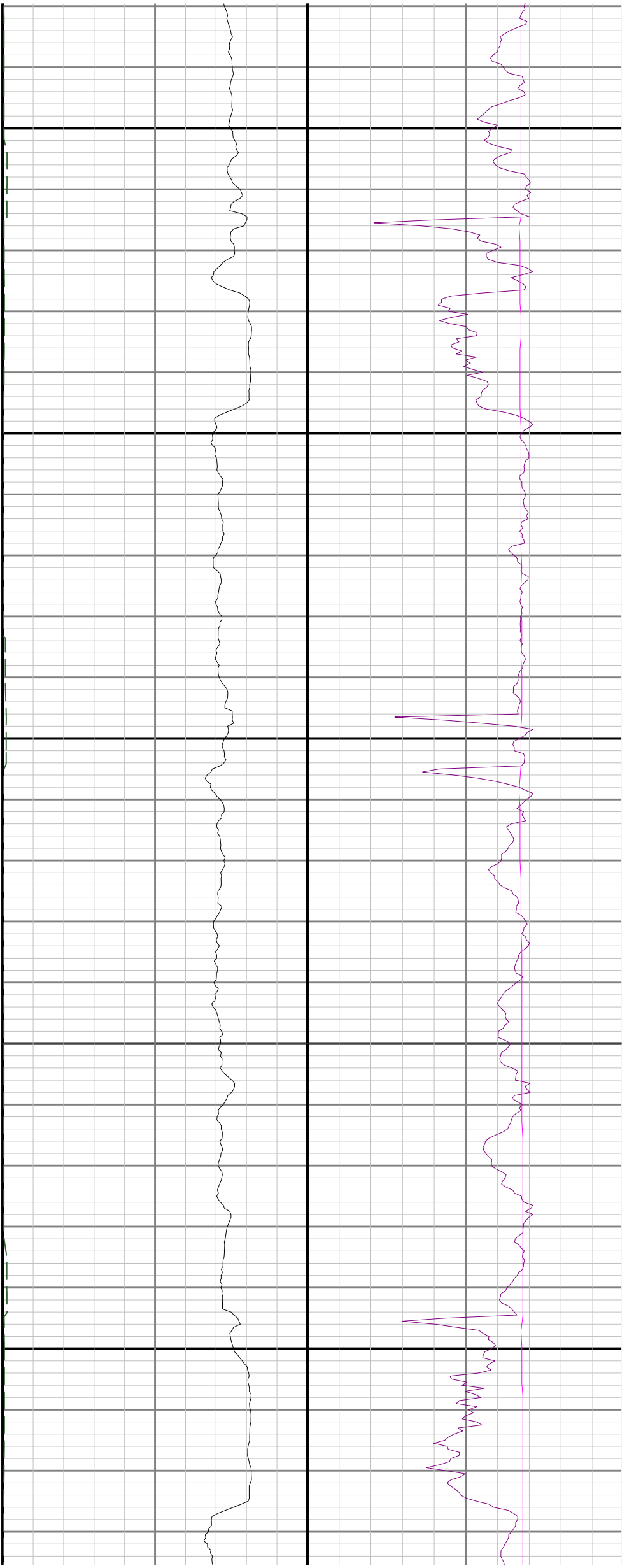
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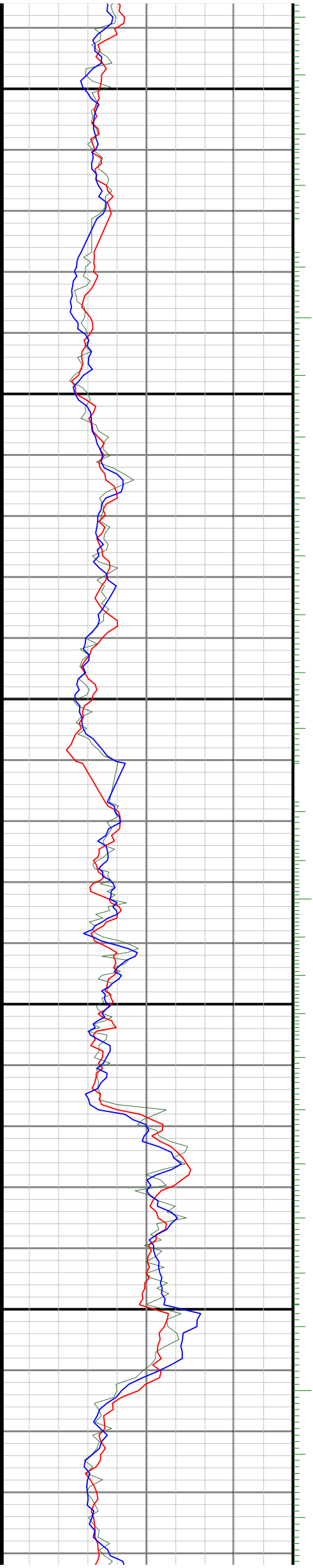
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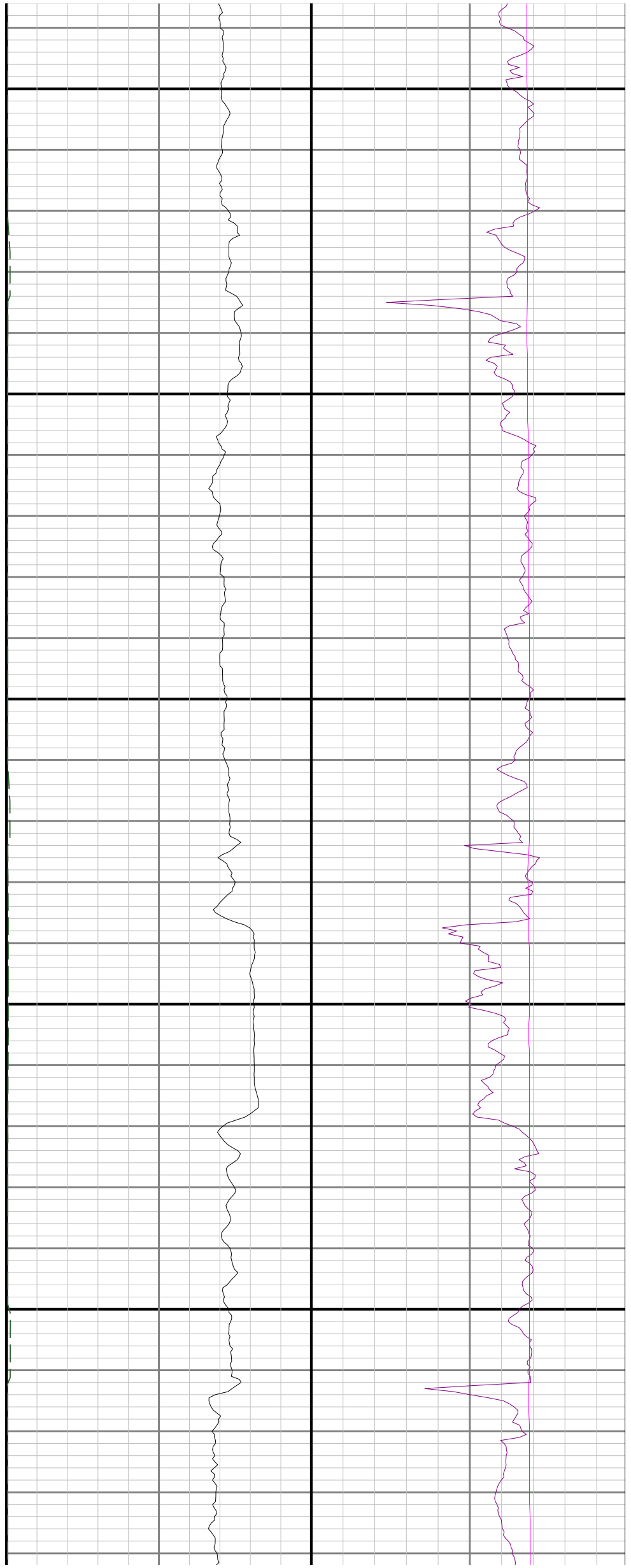


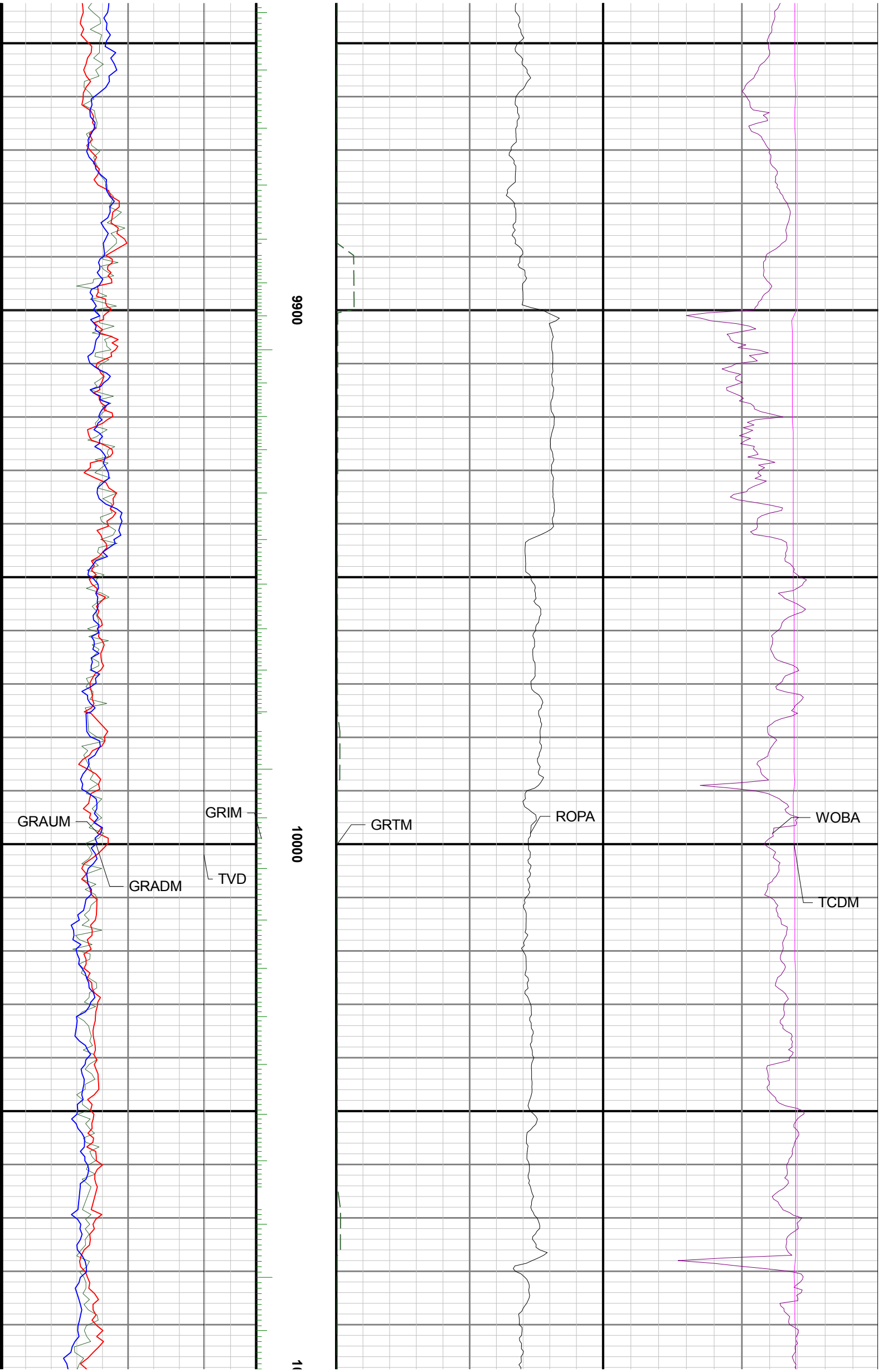


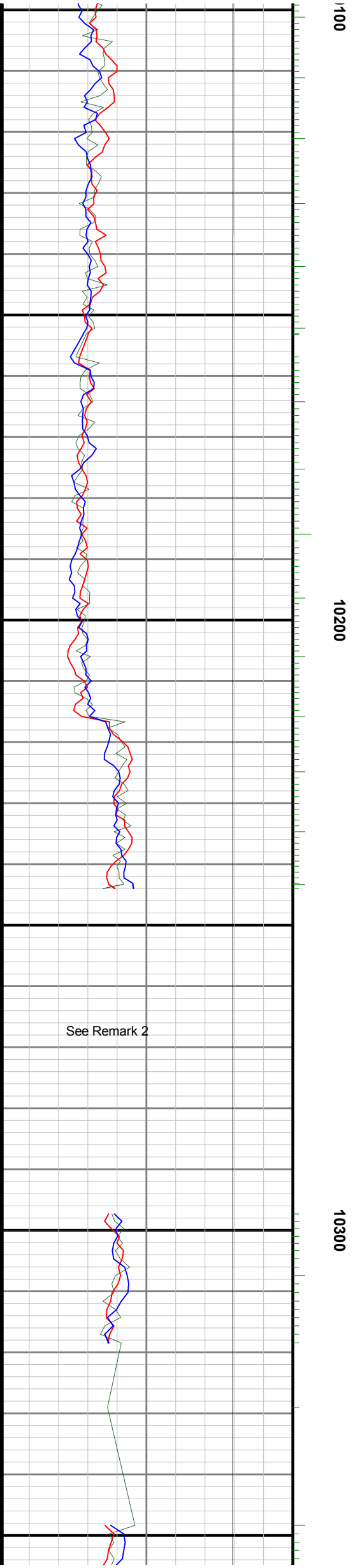
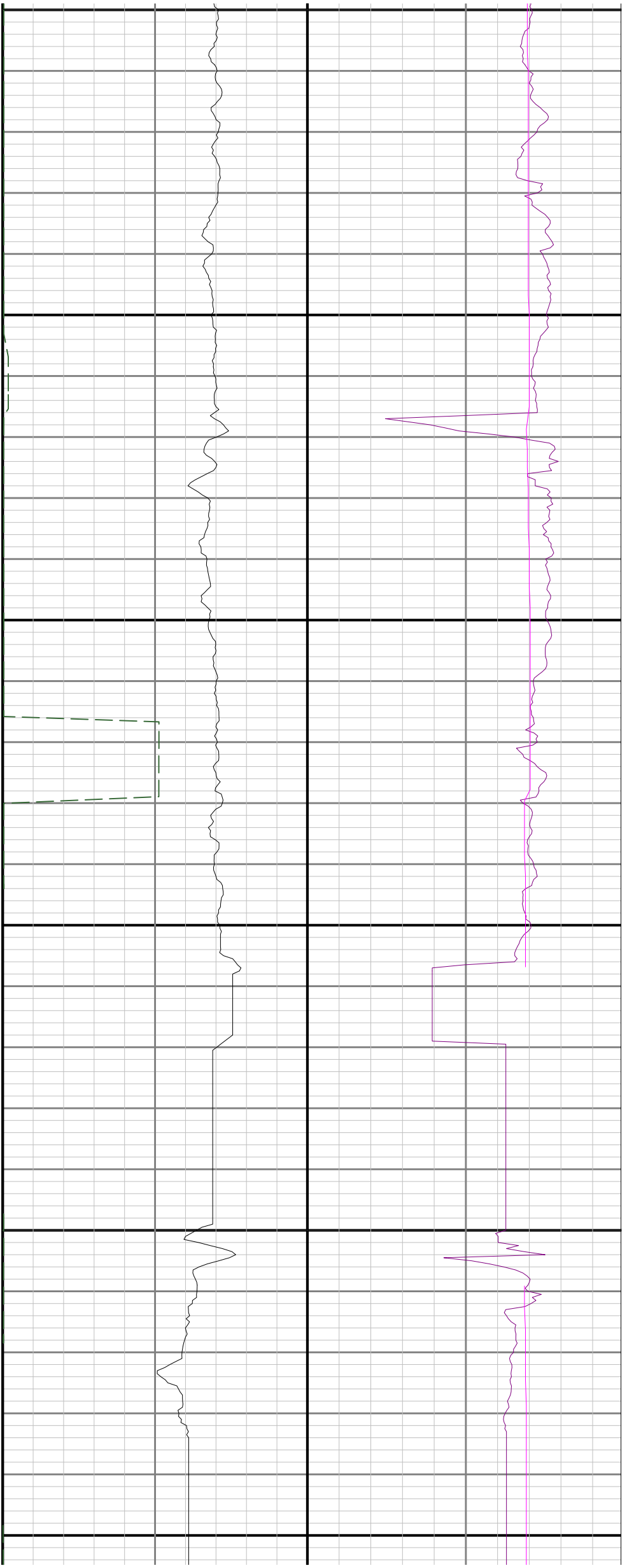
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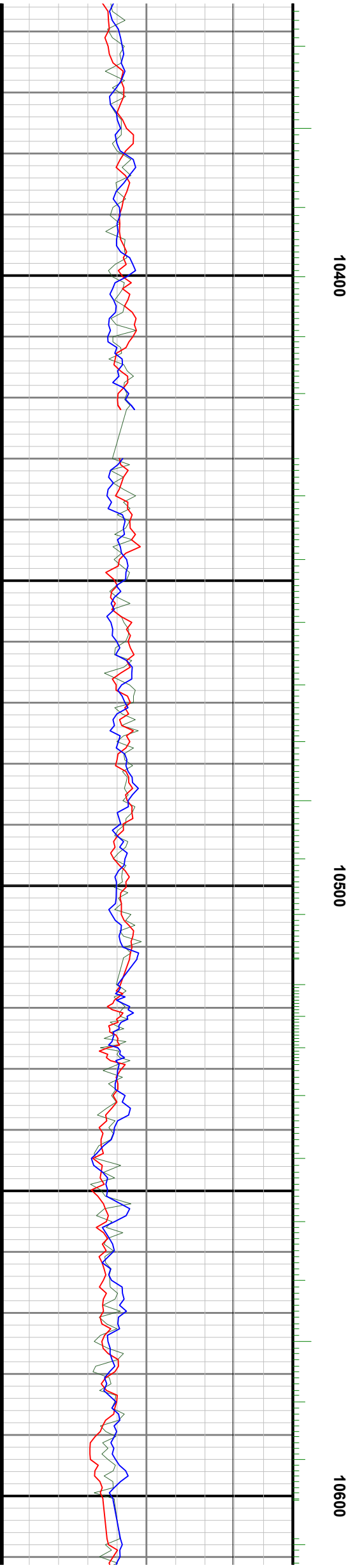
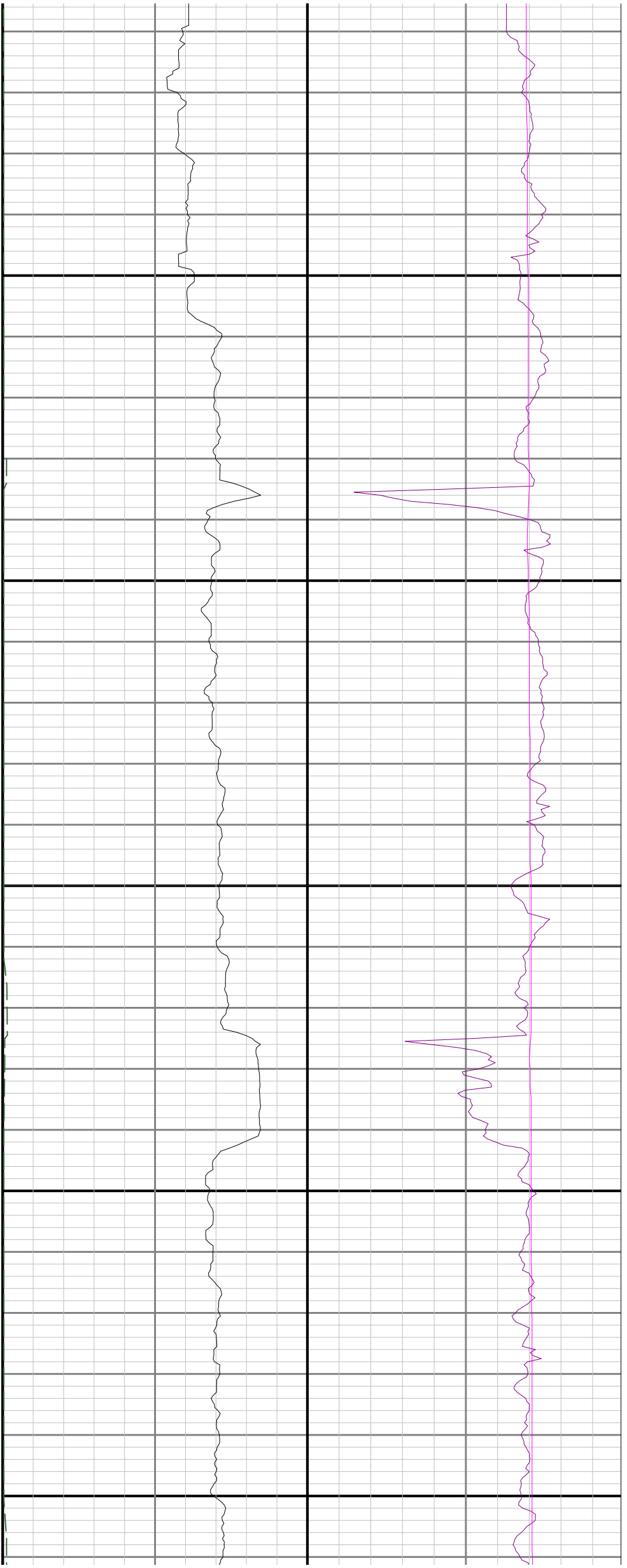
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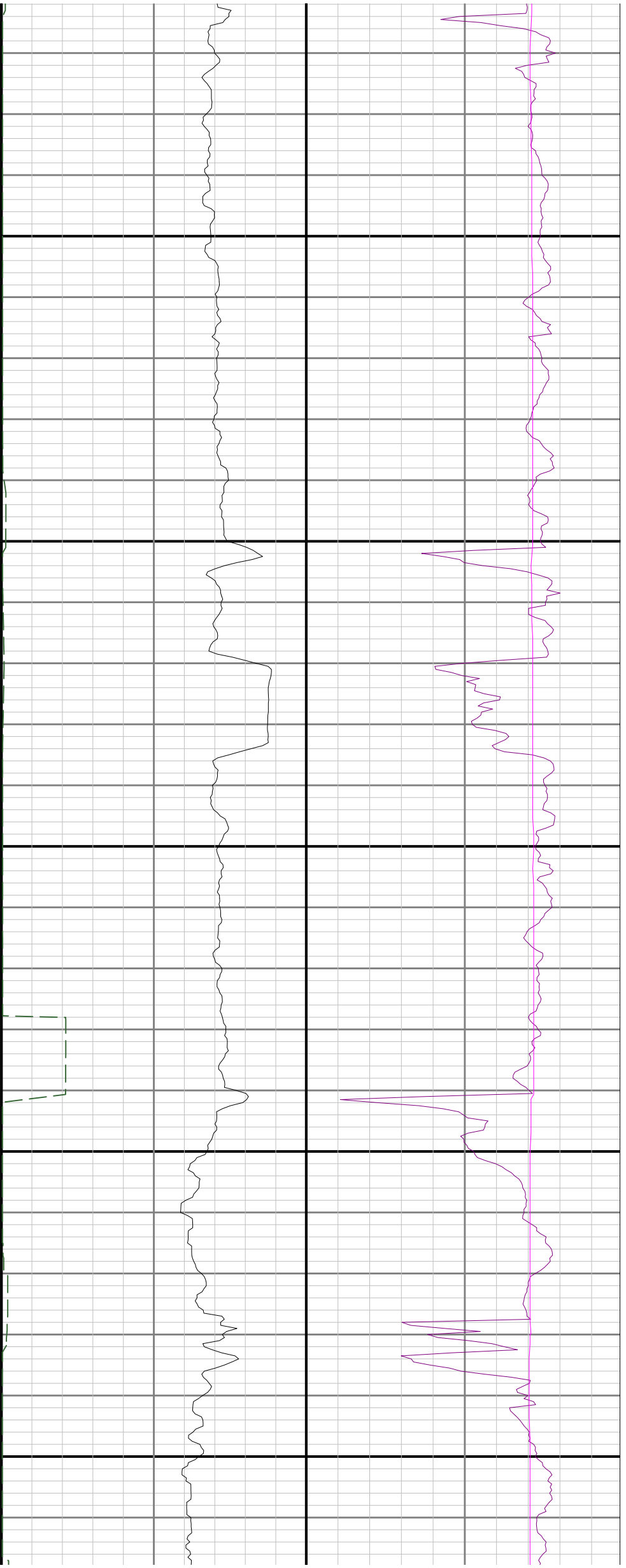
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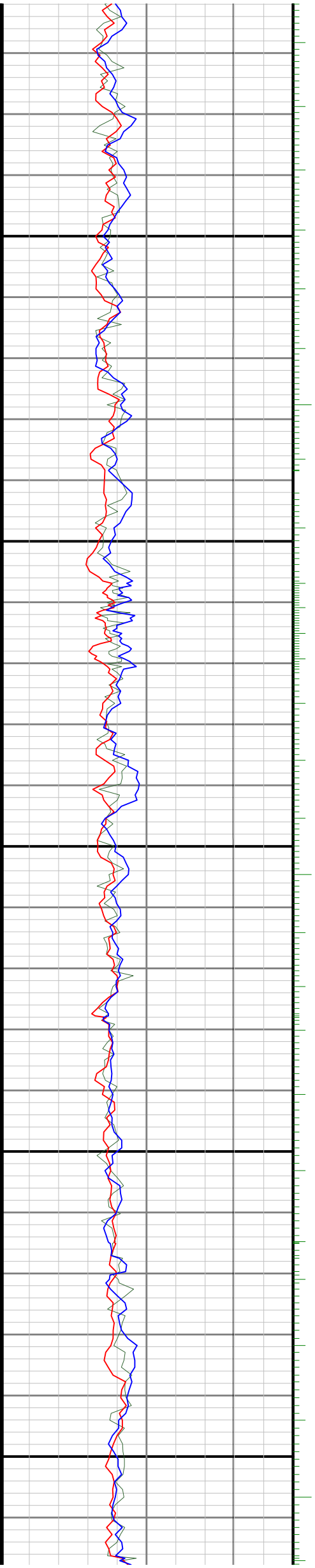


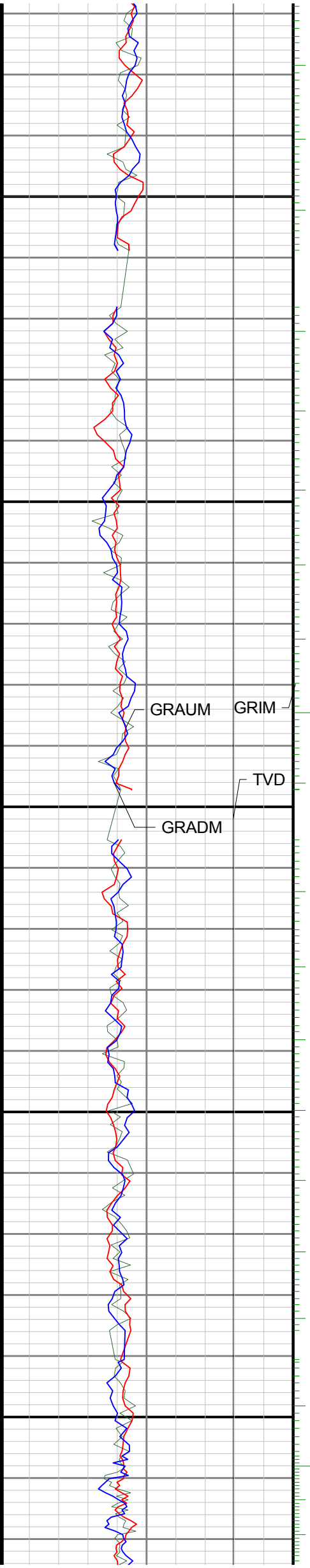




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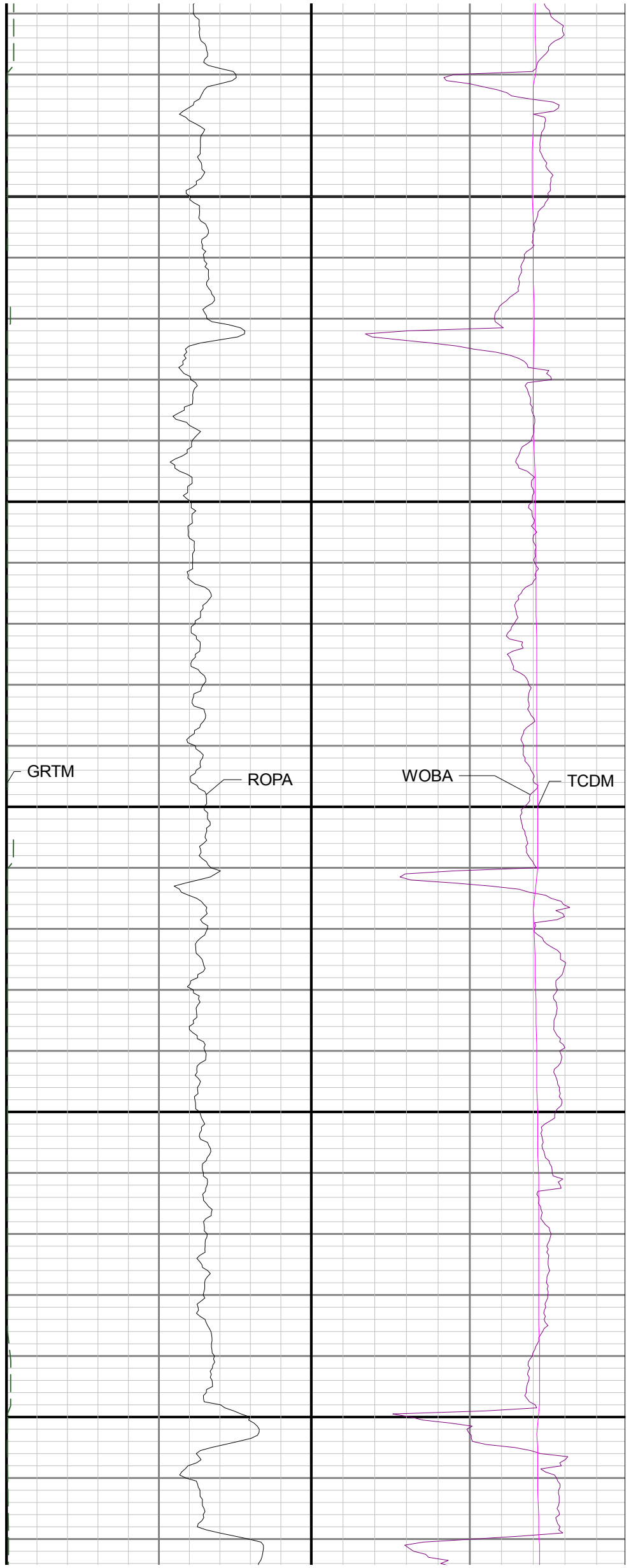




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11000

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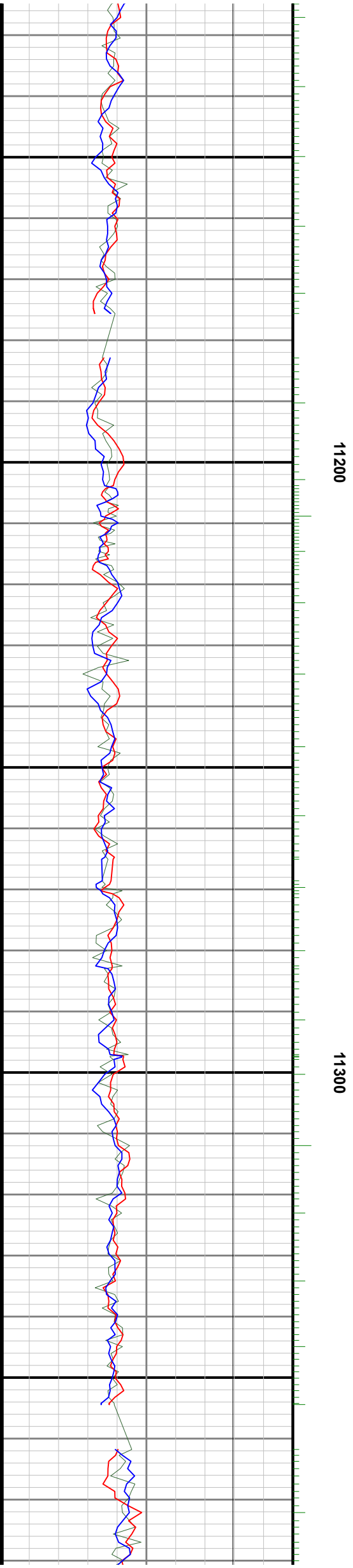
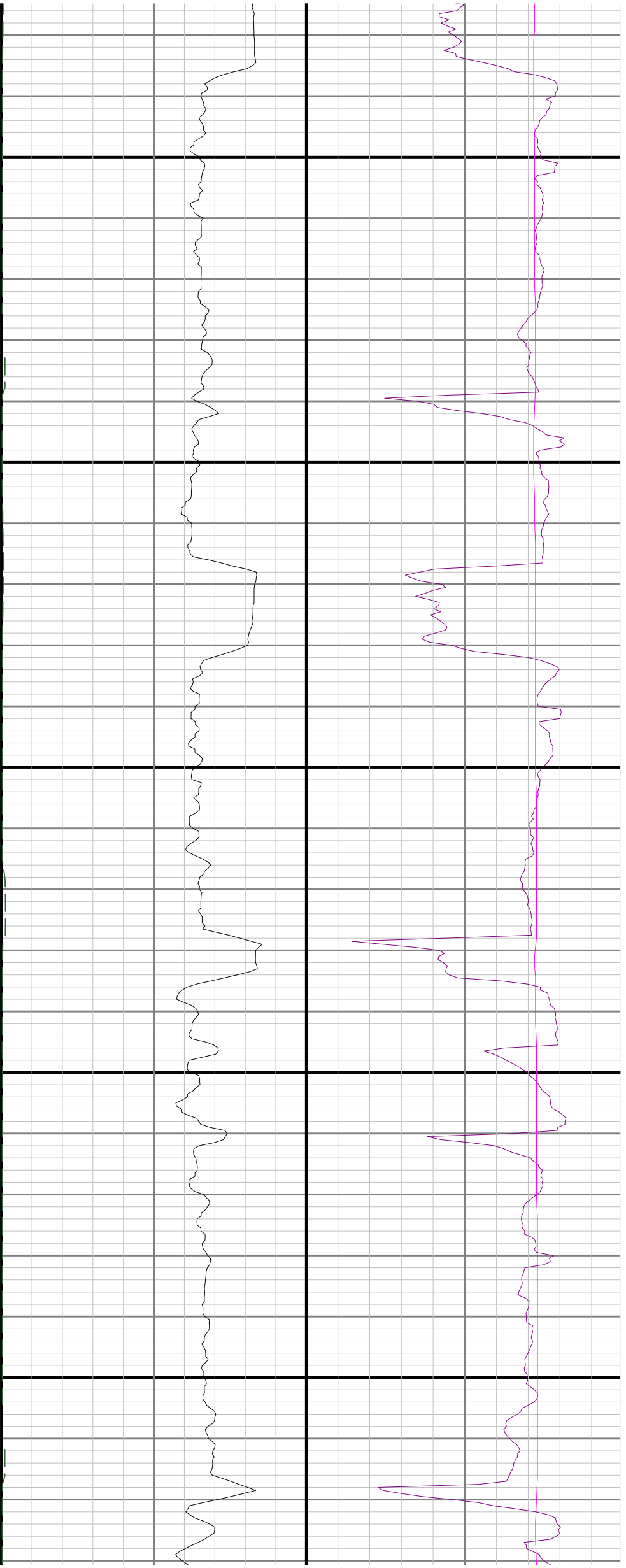


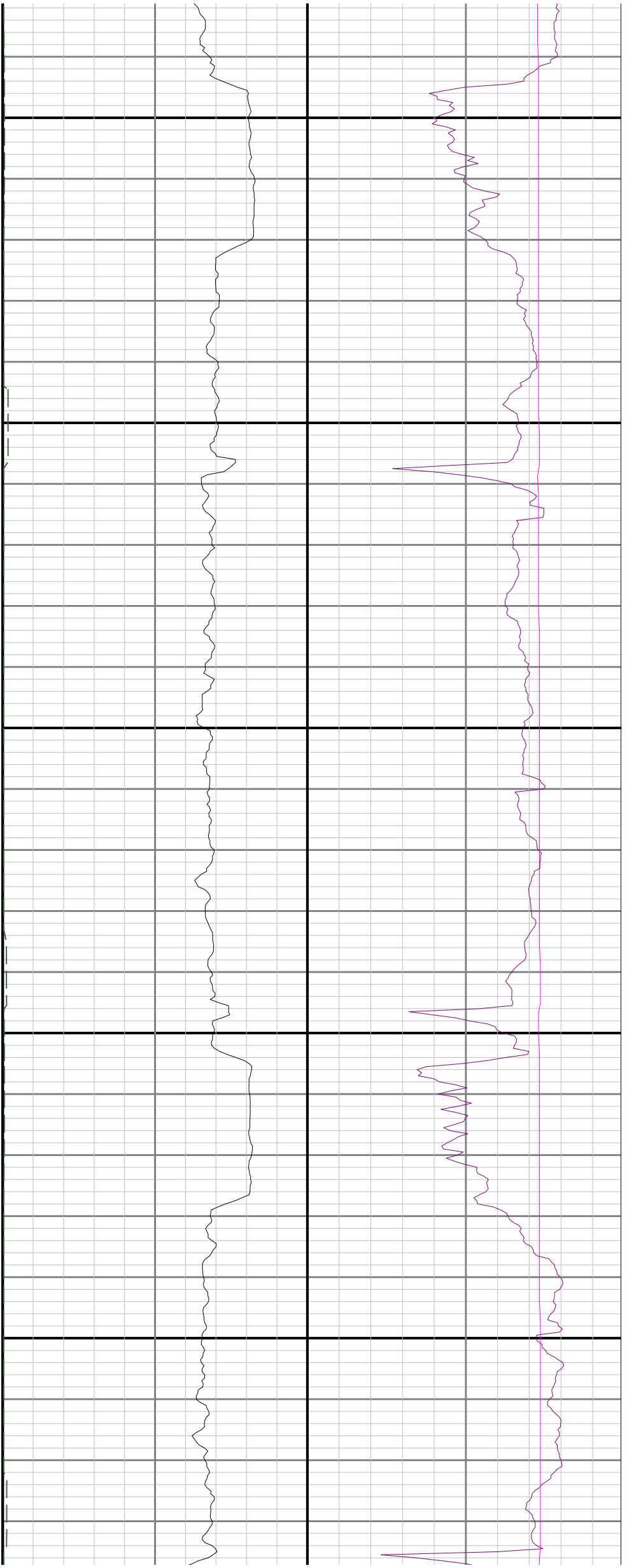
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ROPA

WOBA

TCDM

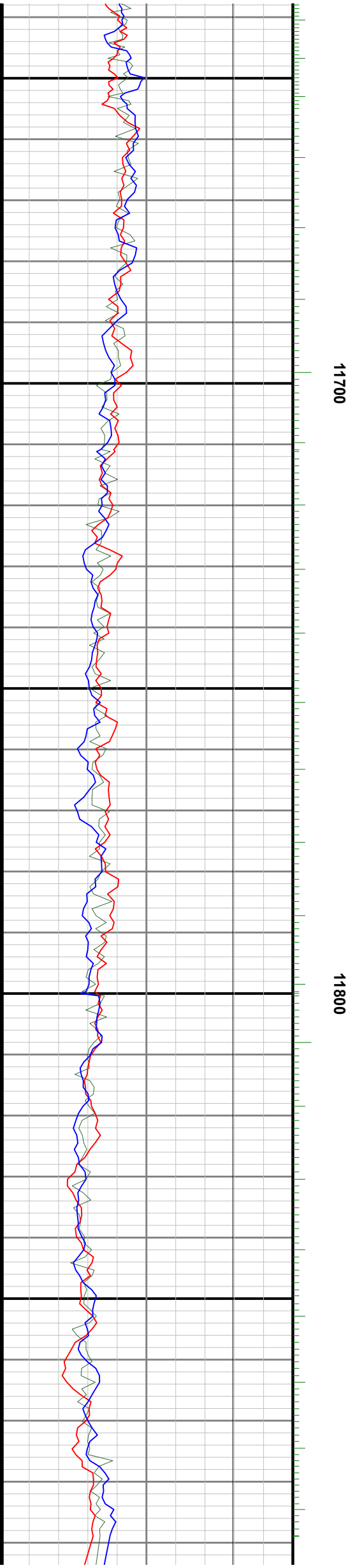
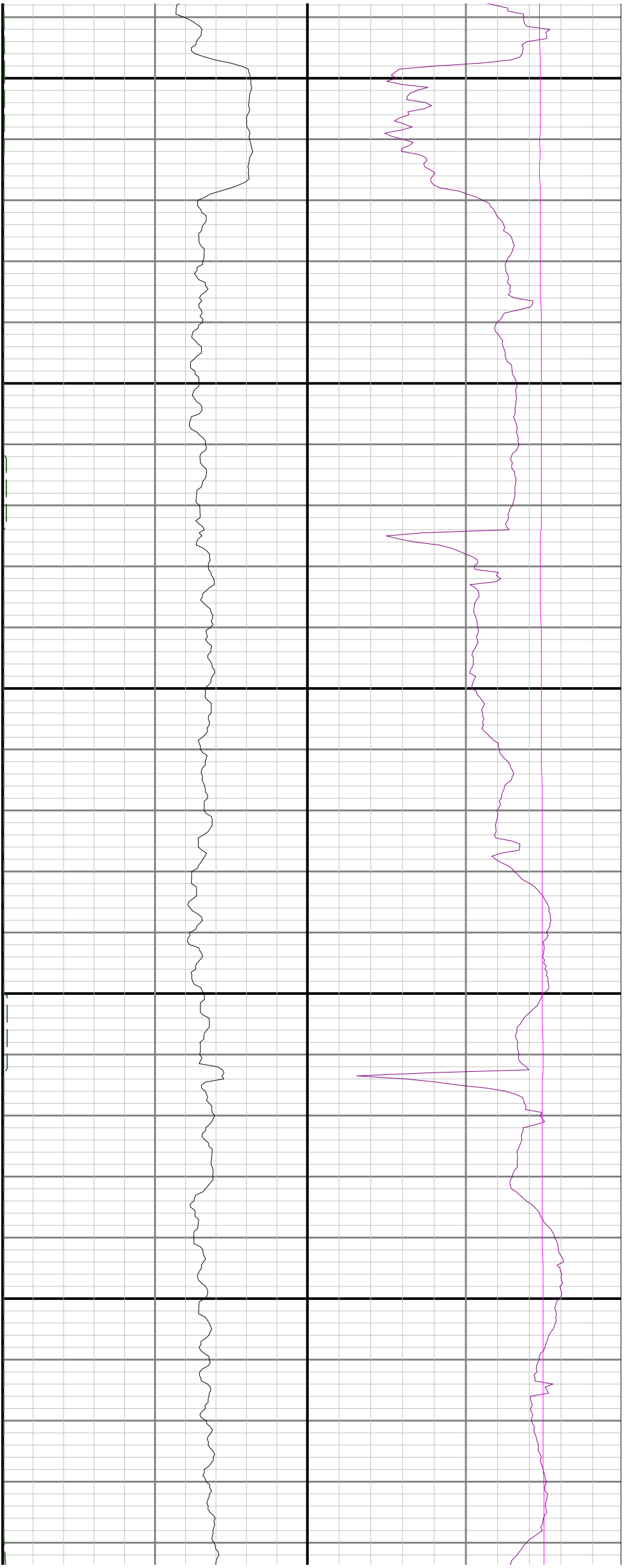


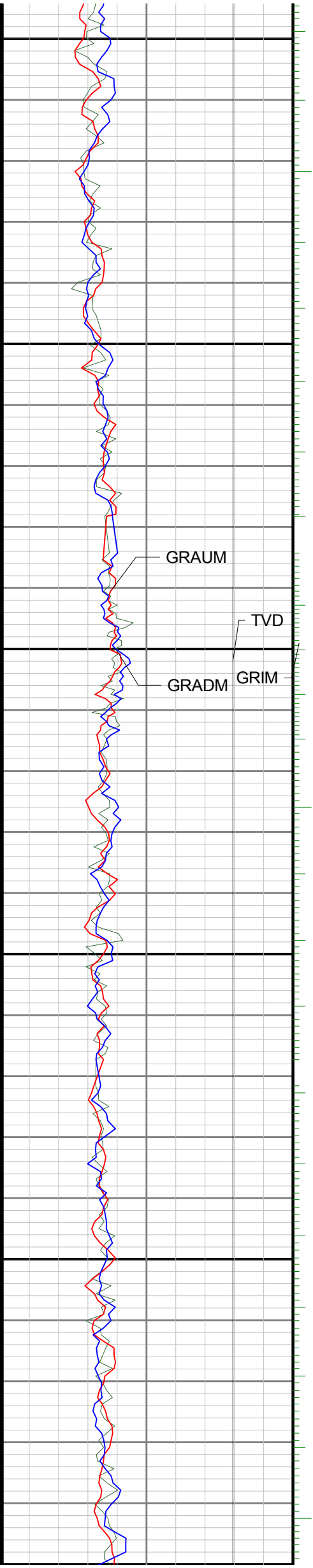


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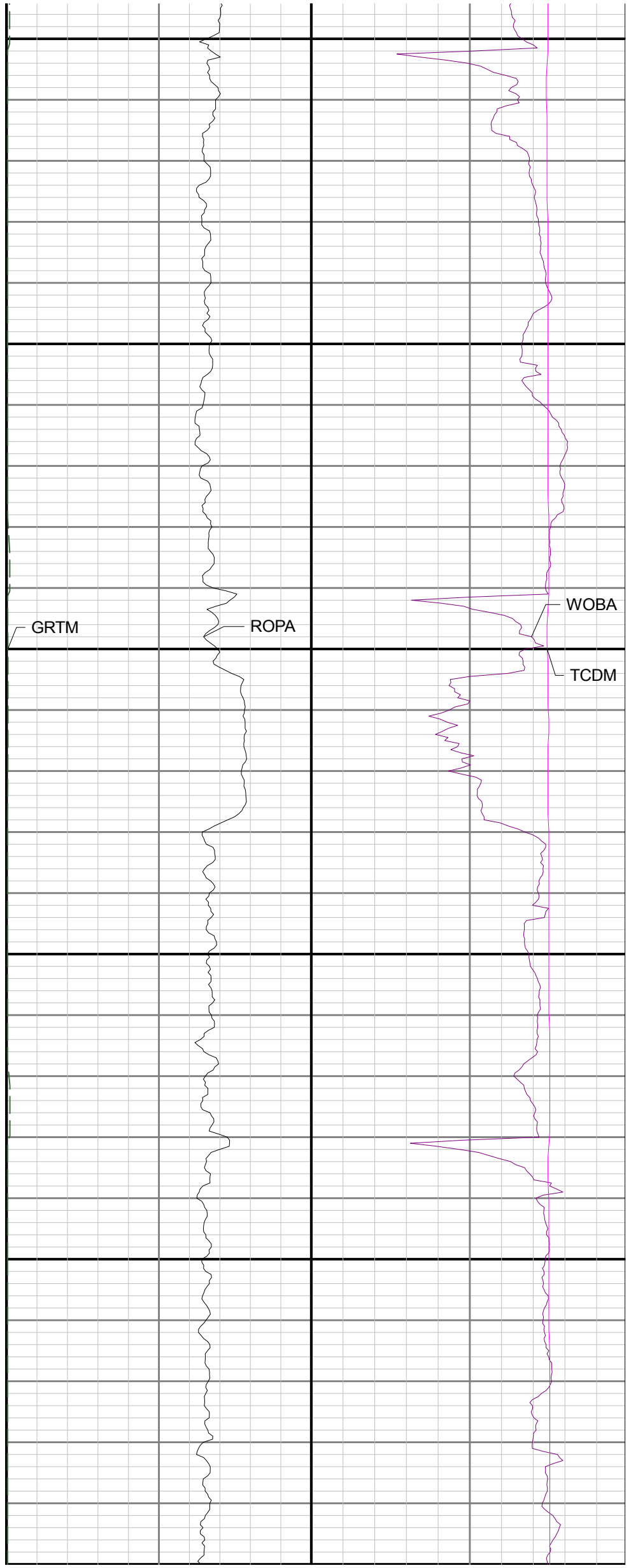




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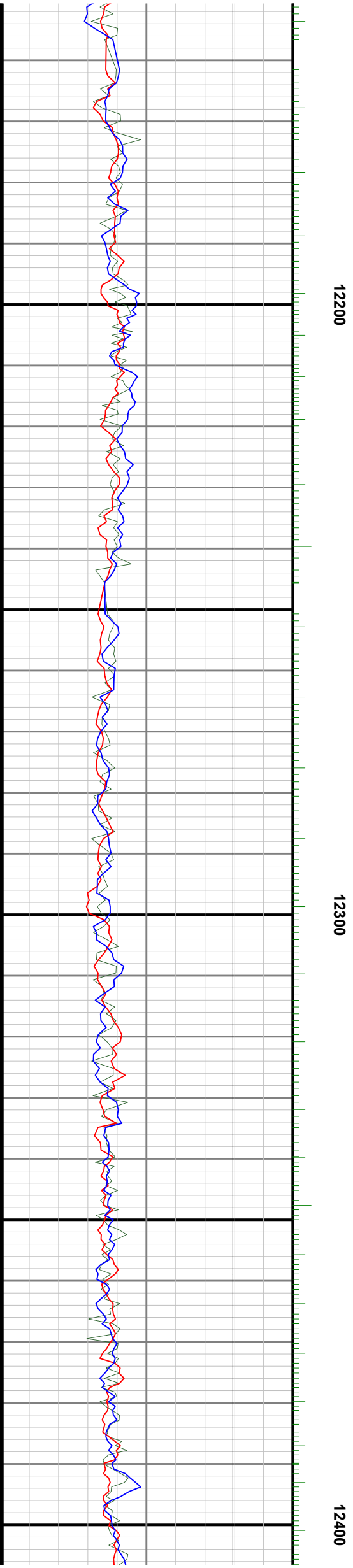
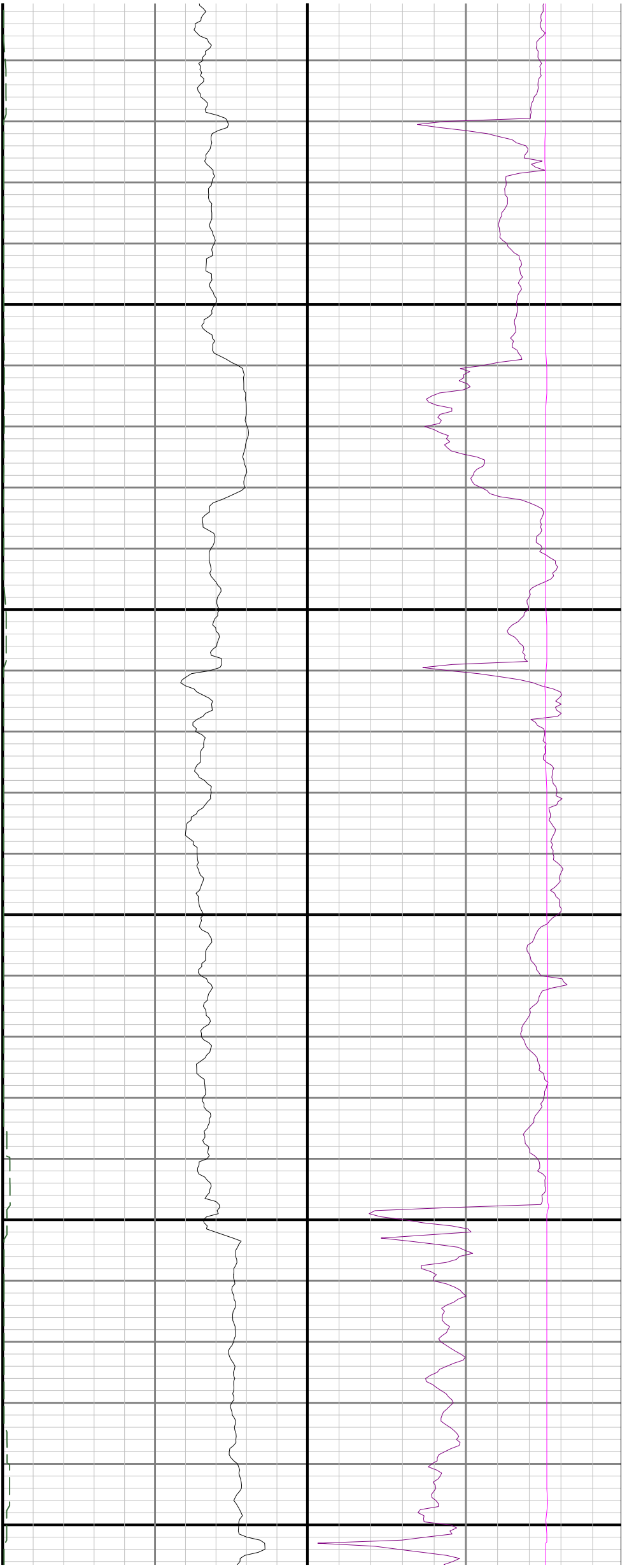


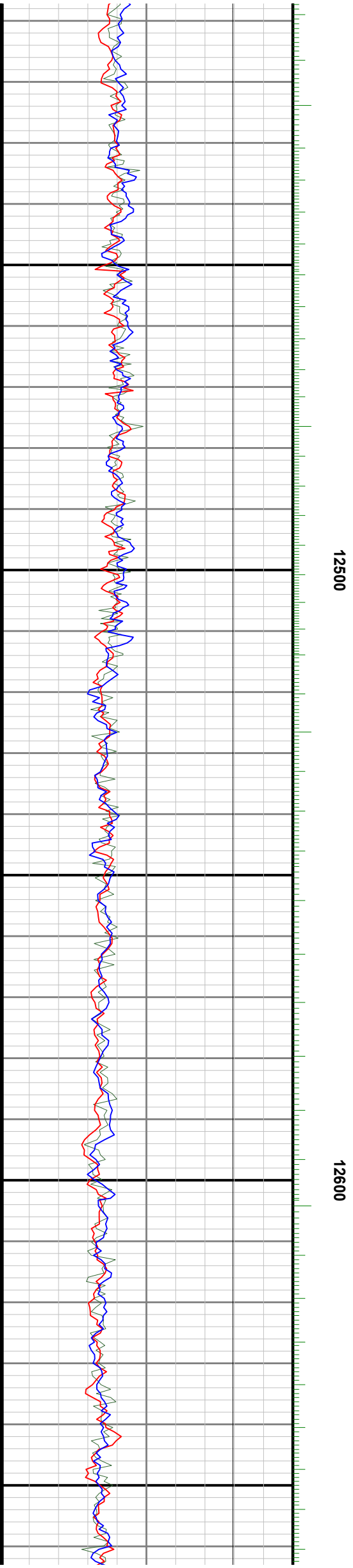
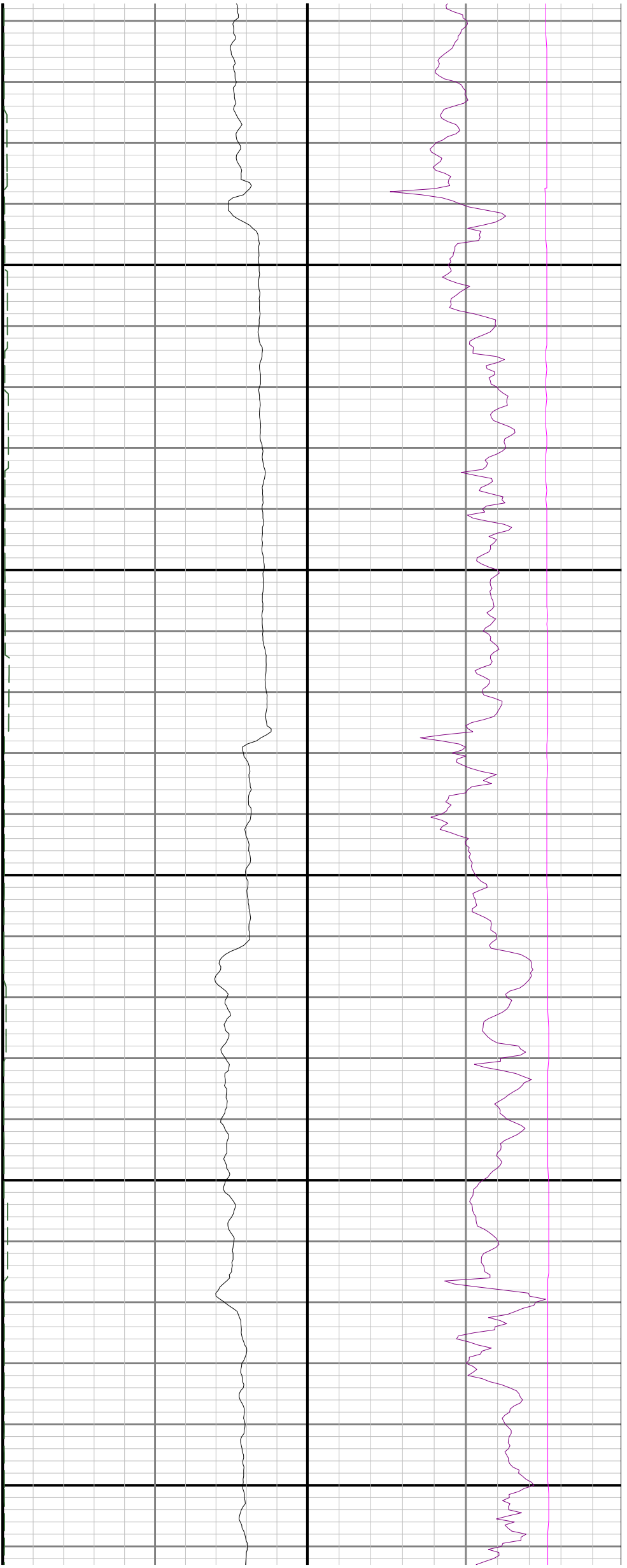
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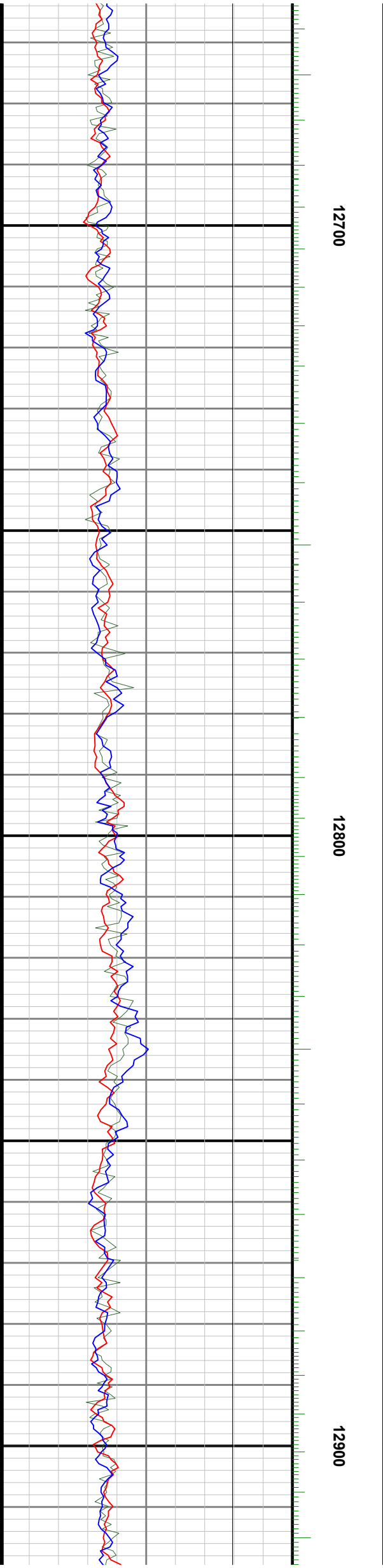
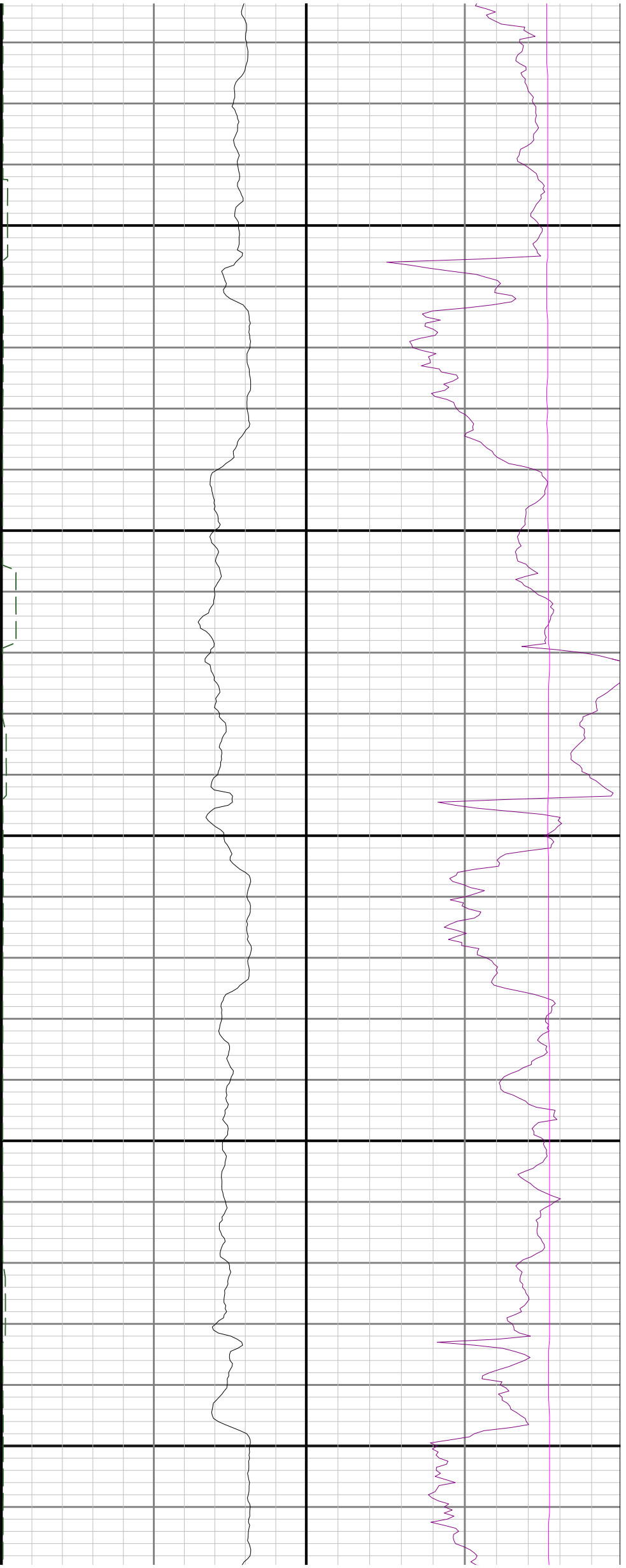
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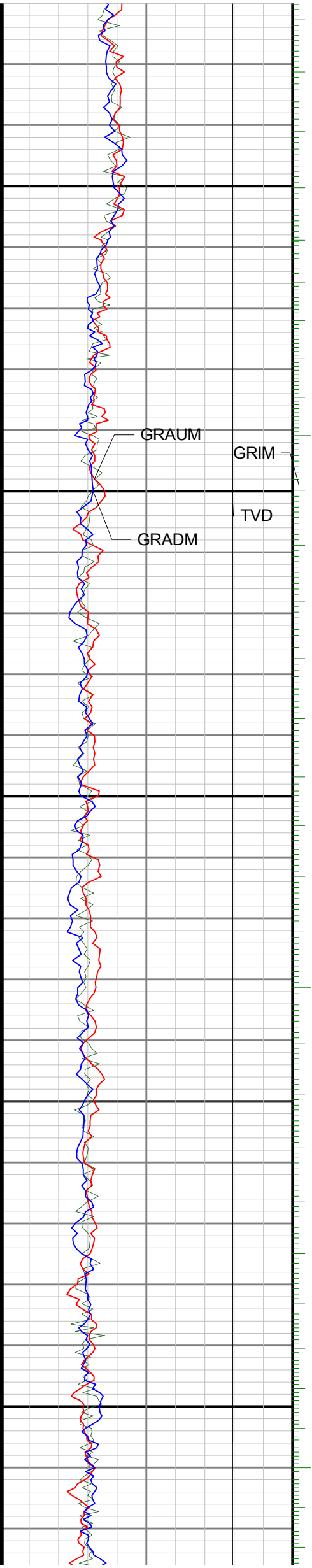
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TCDM



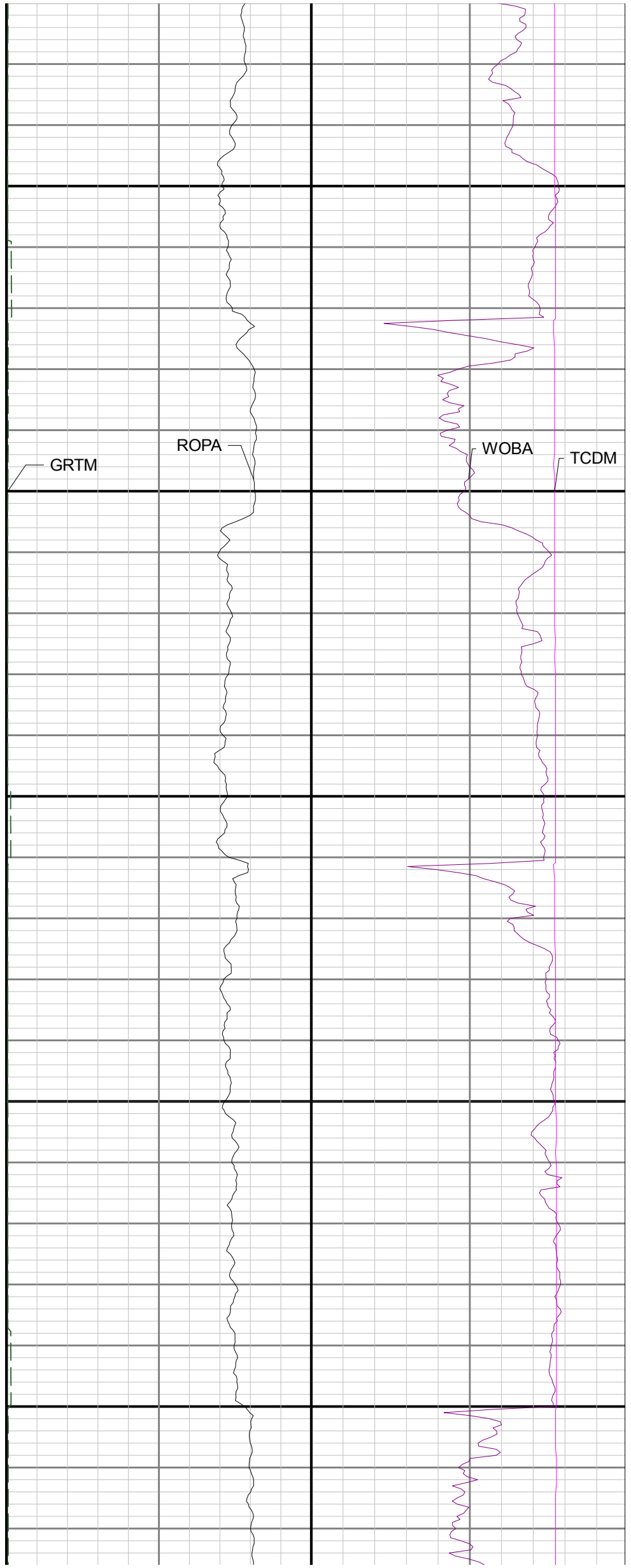






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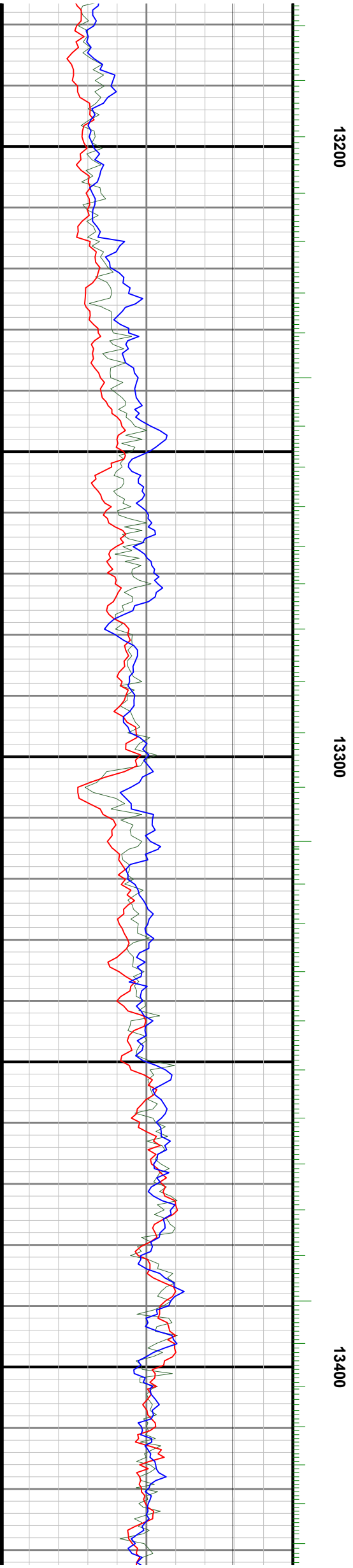
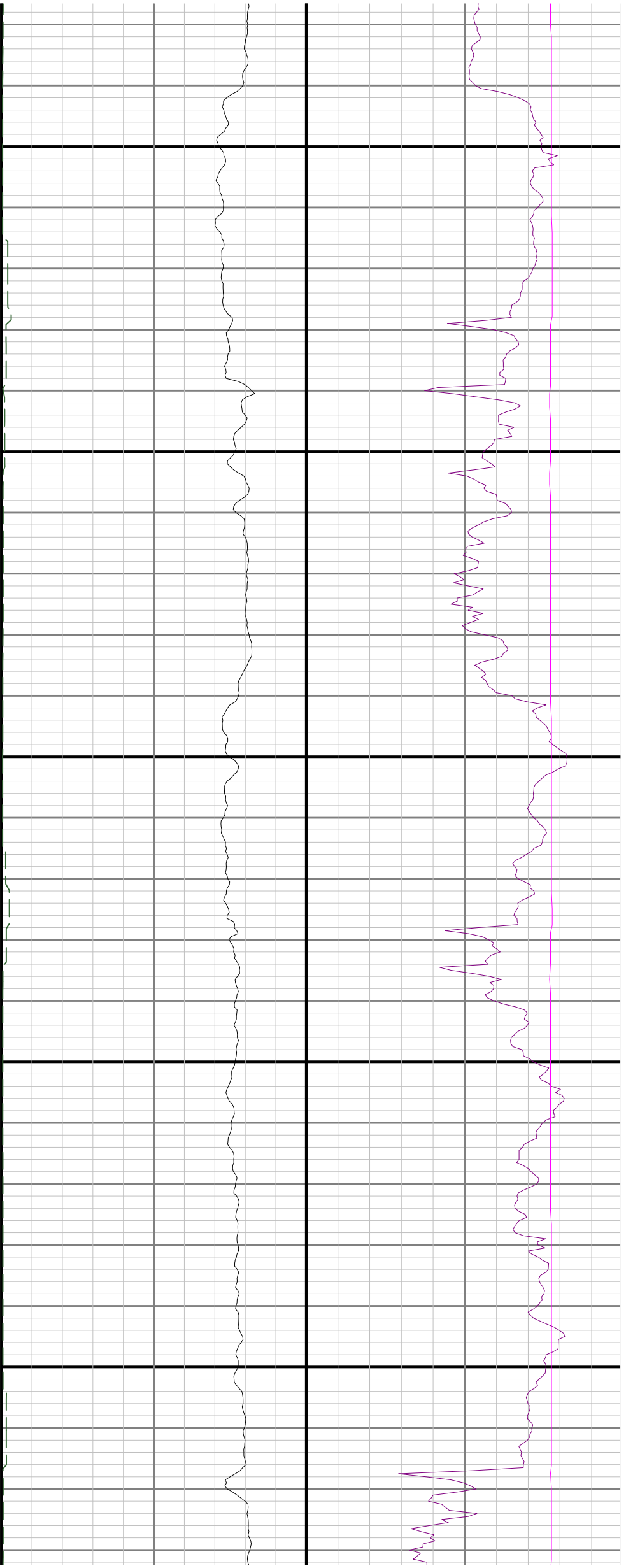


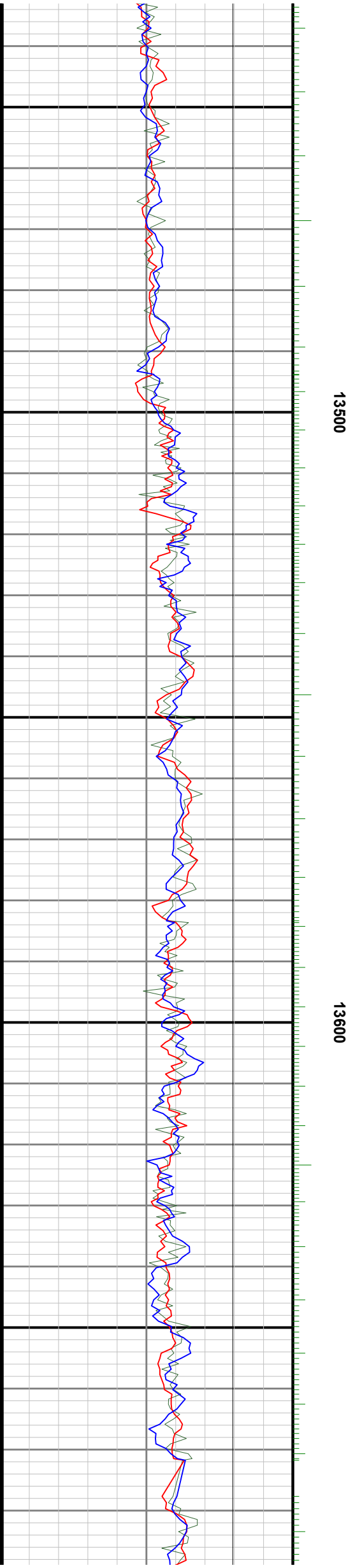
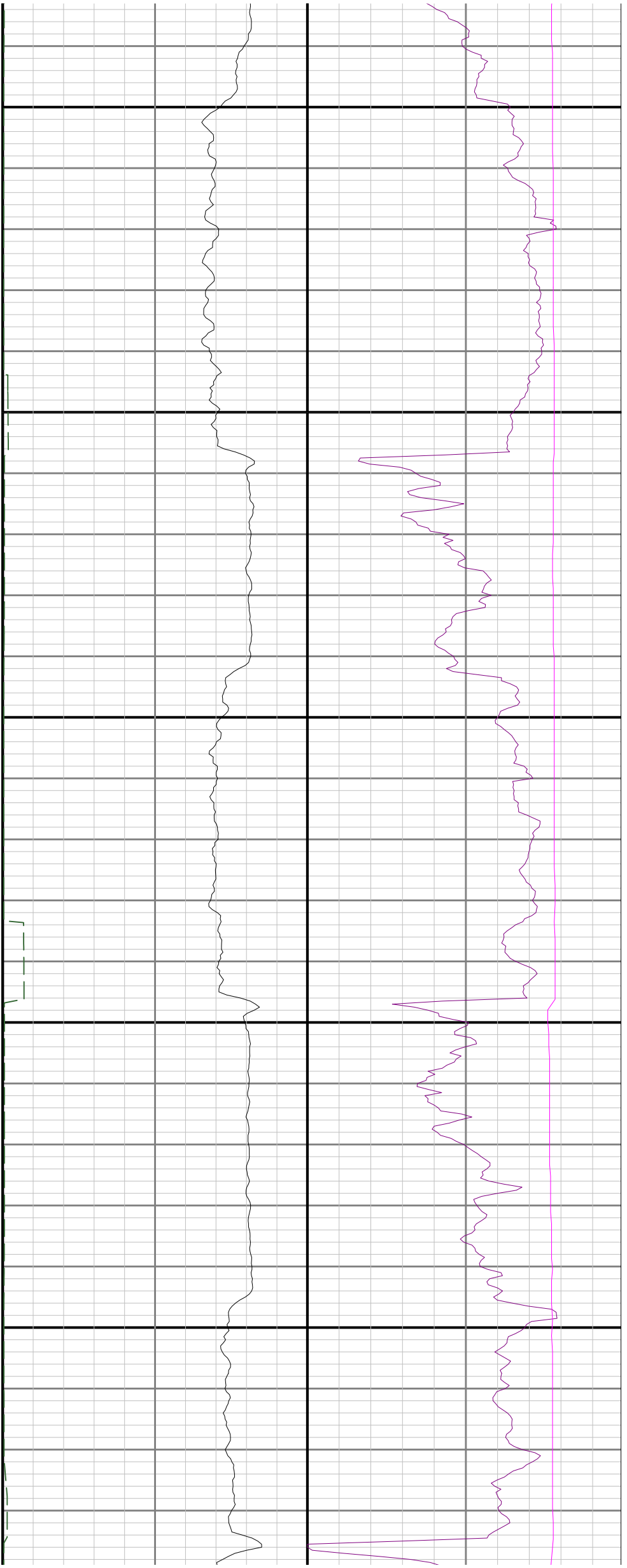
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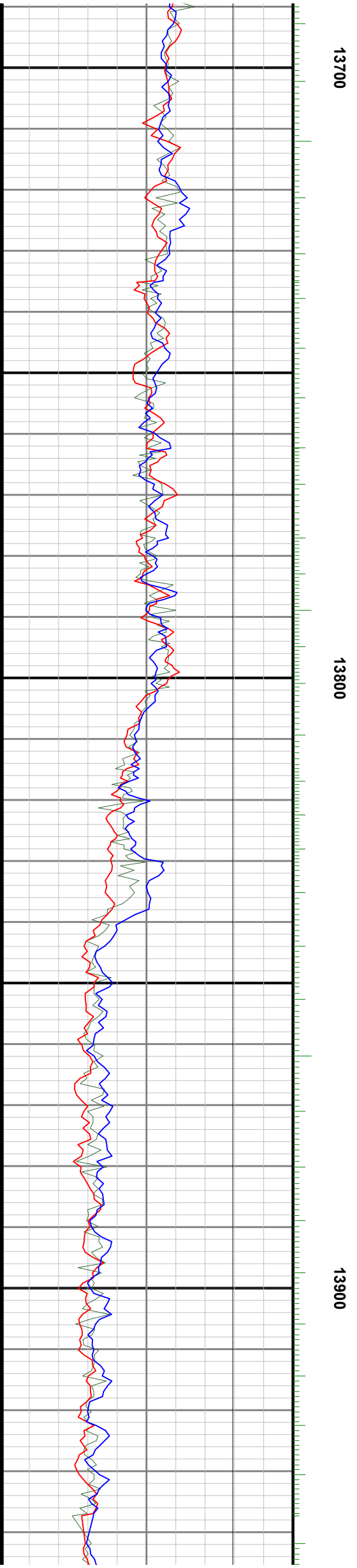
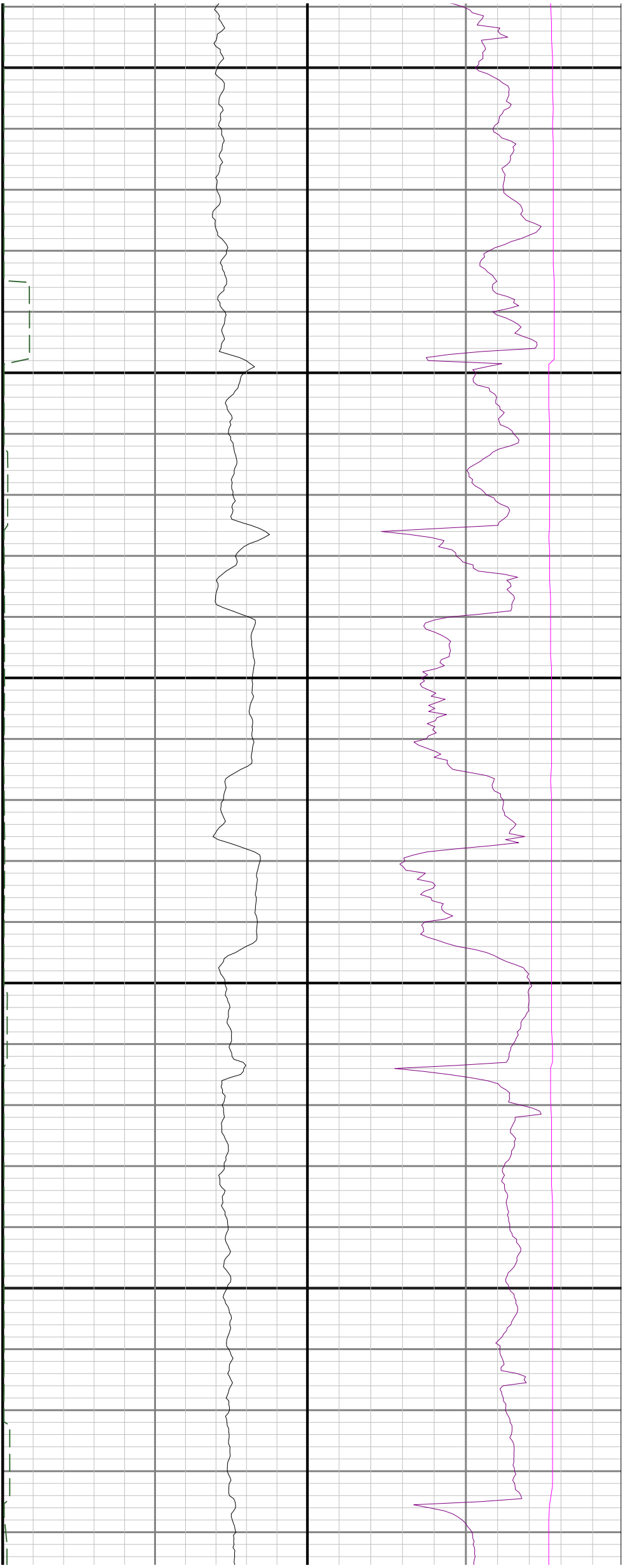
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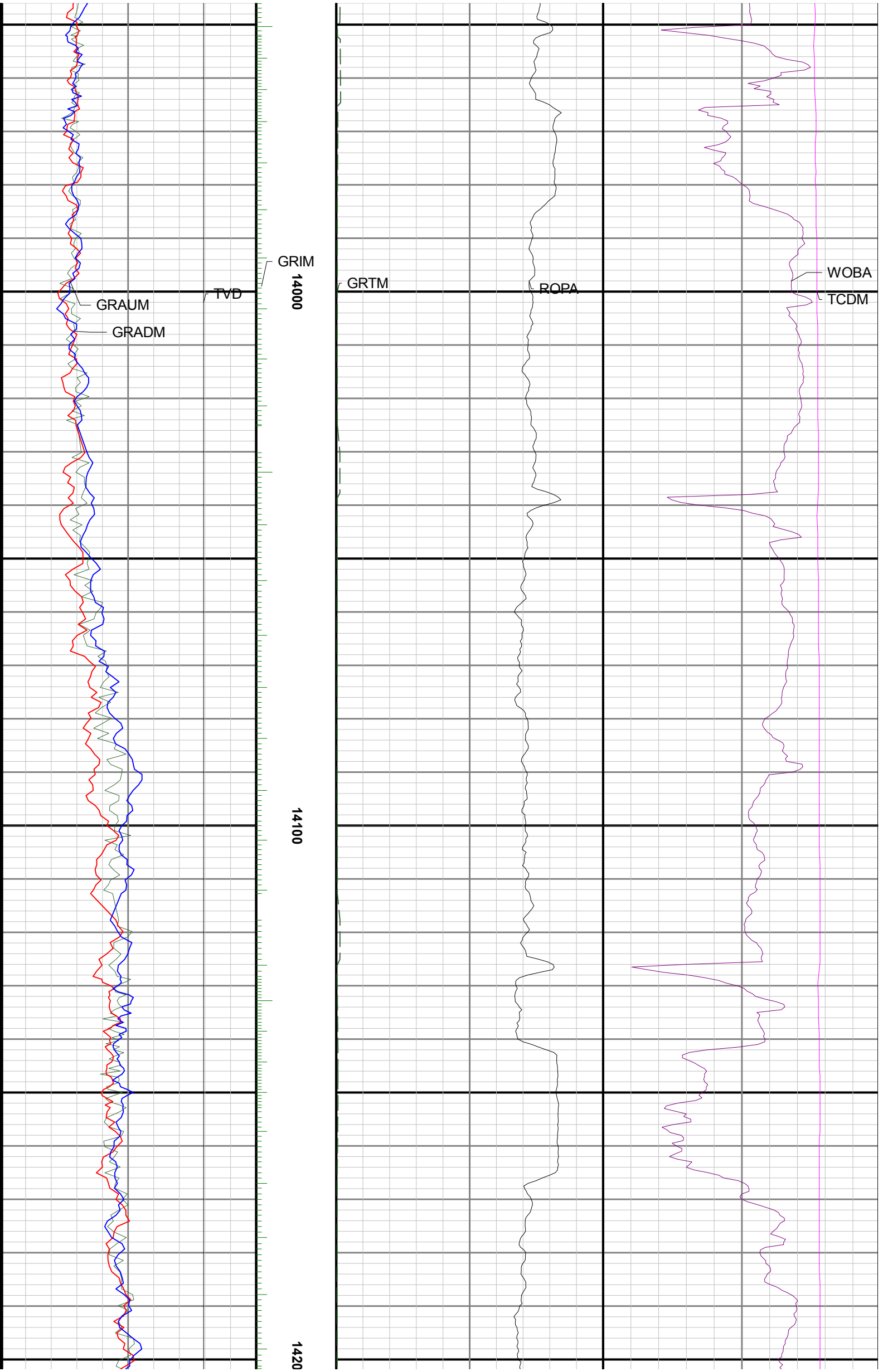
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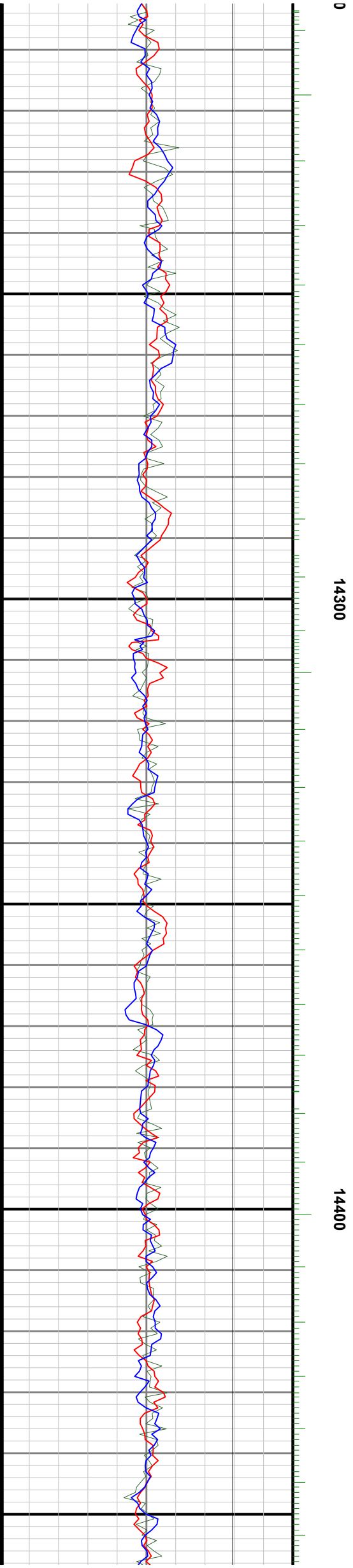
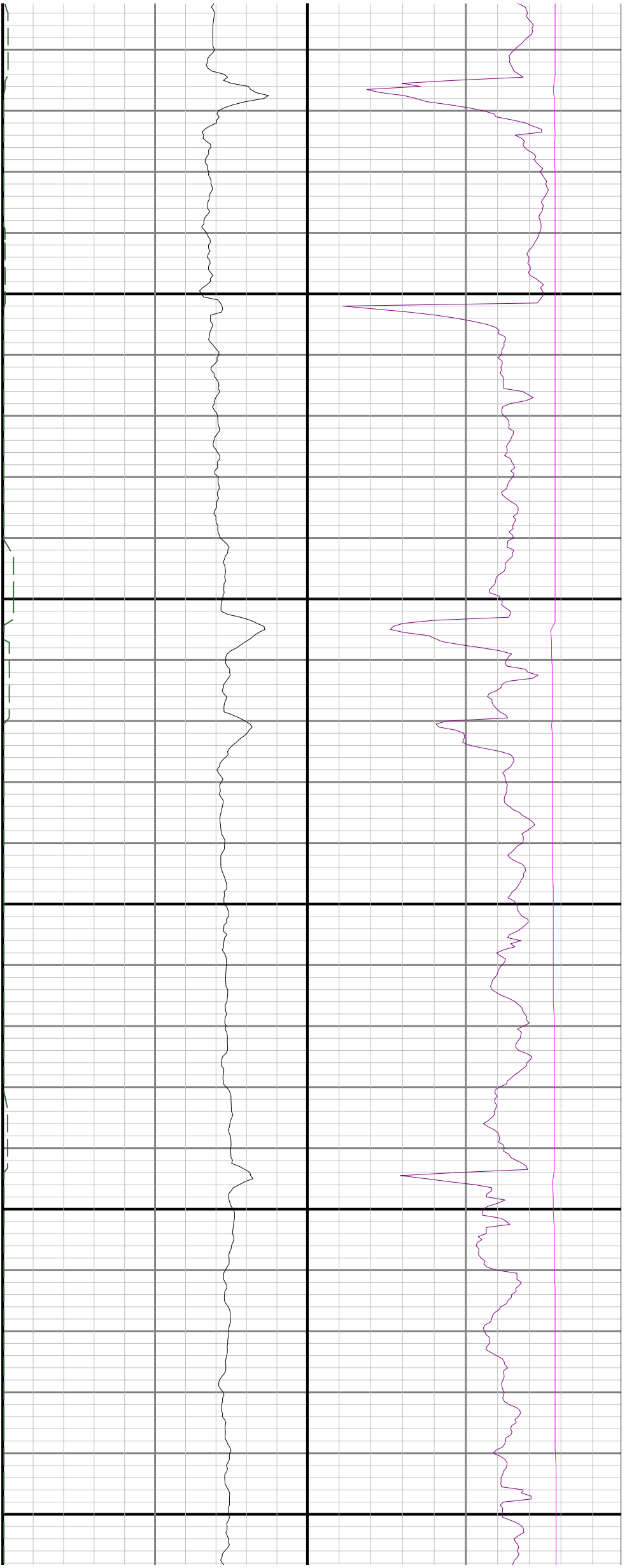
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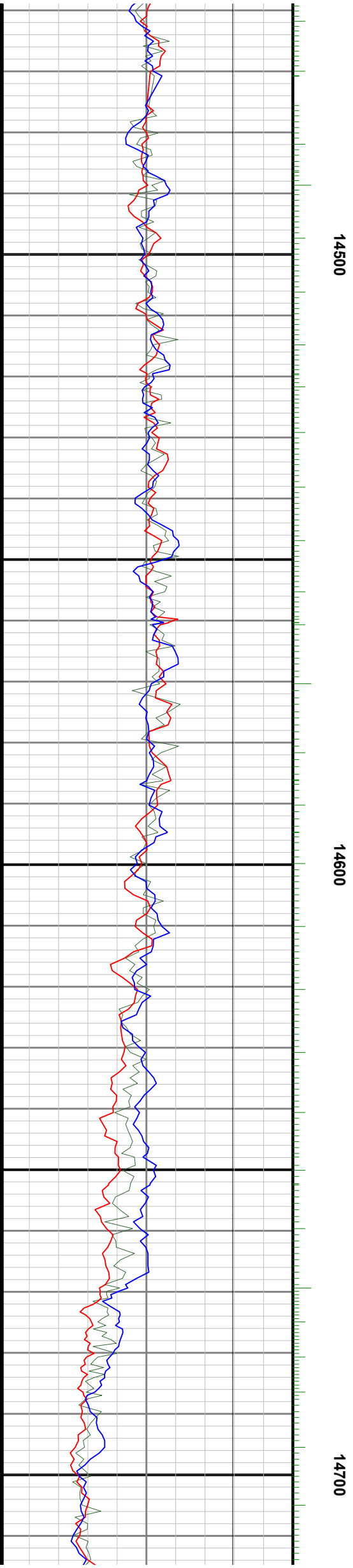
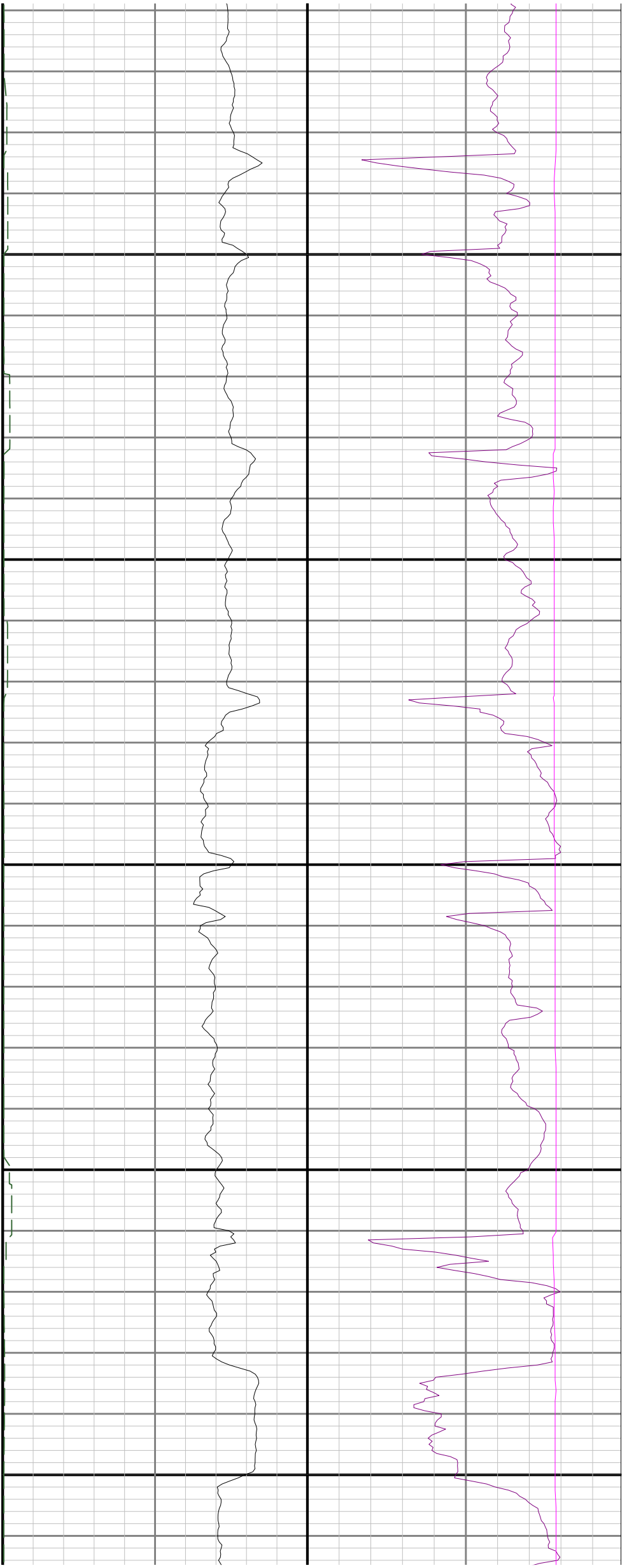


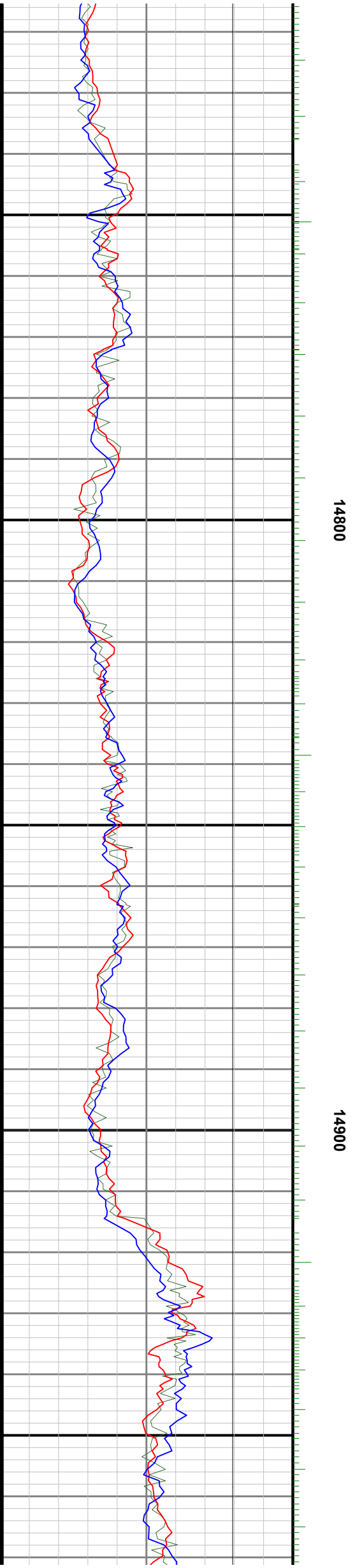
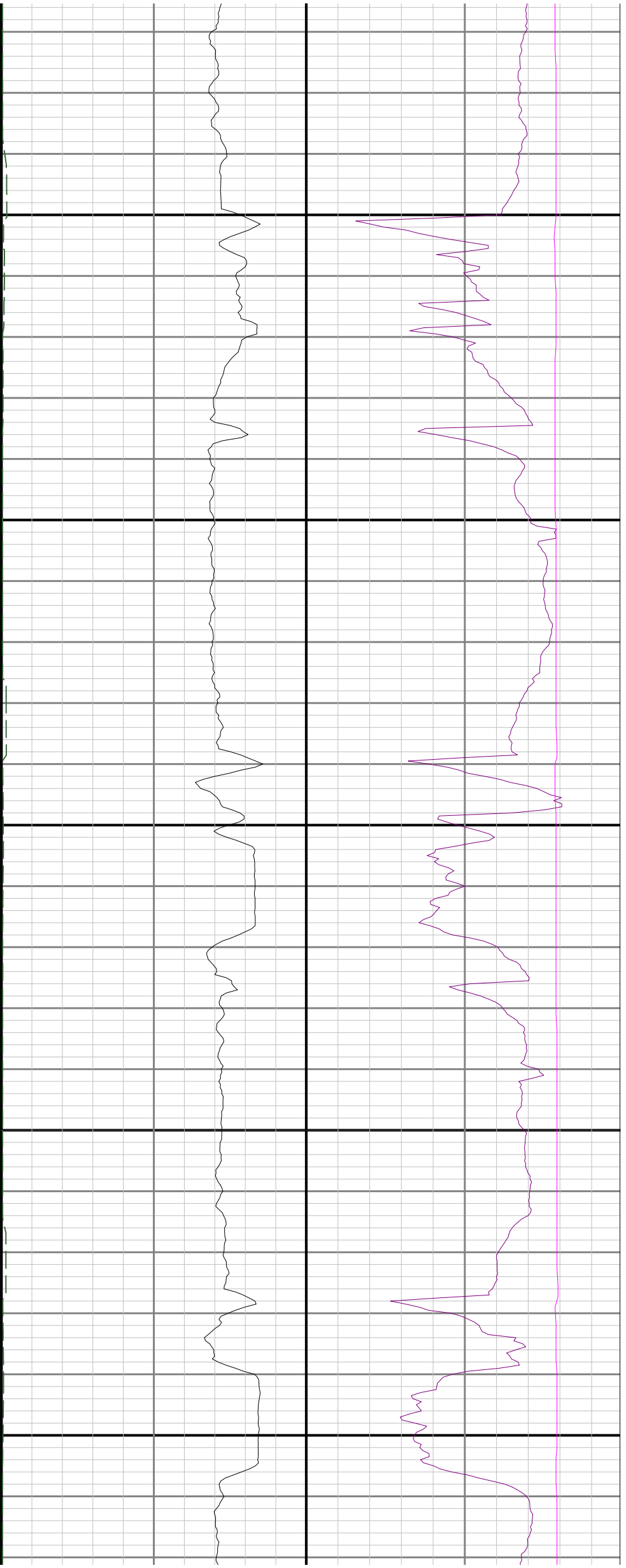


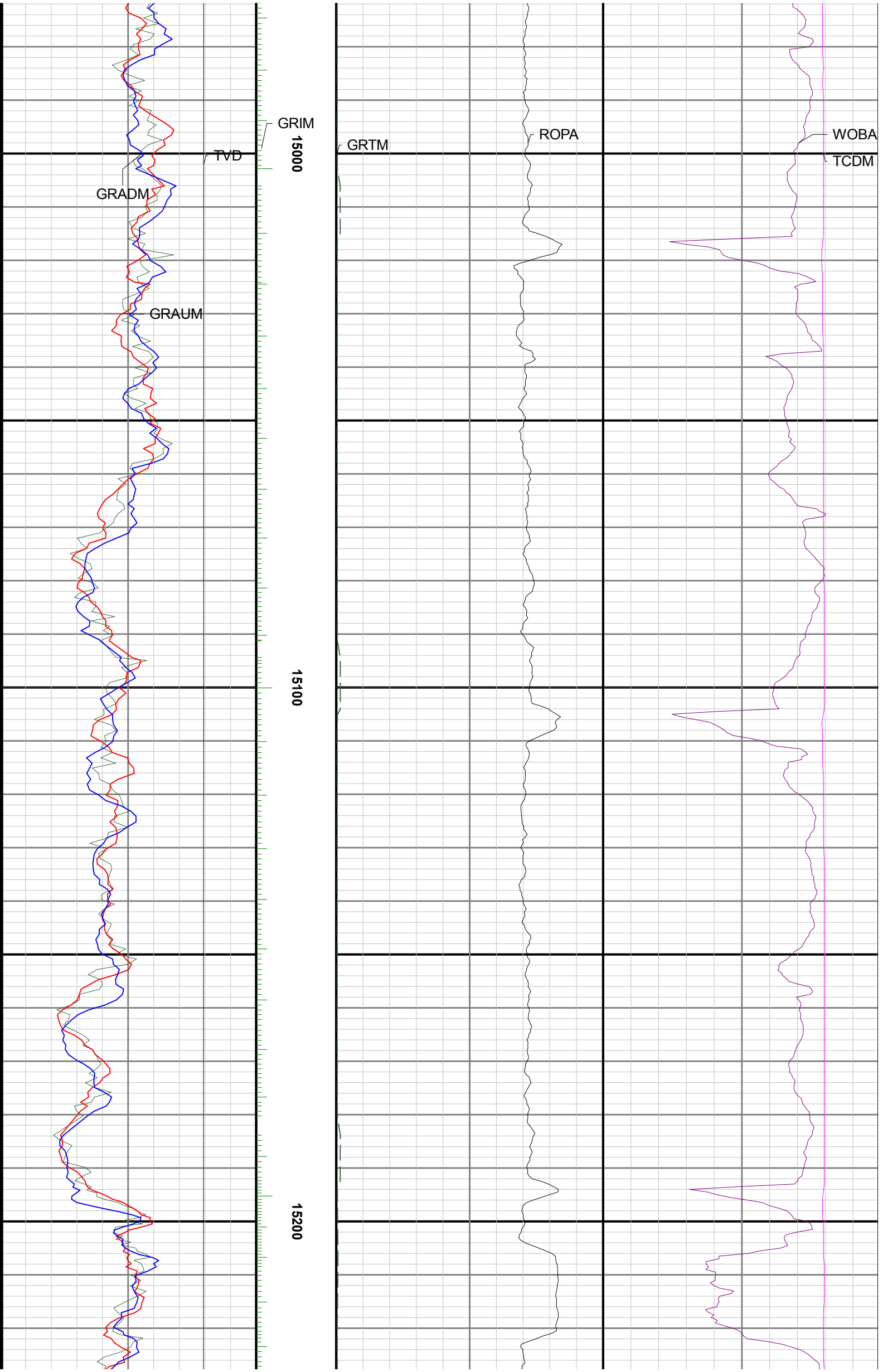


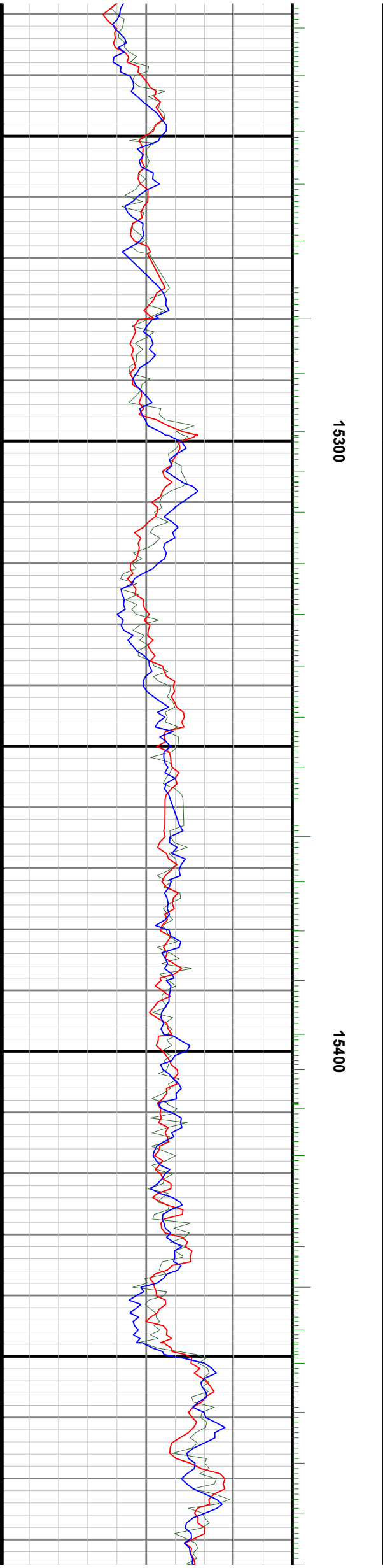
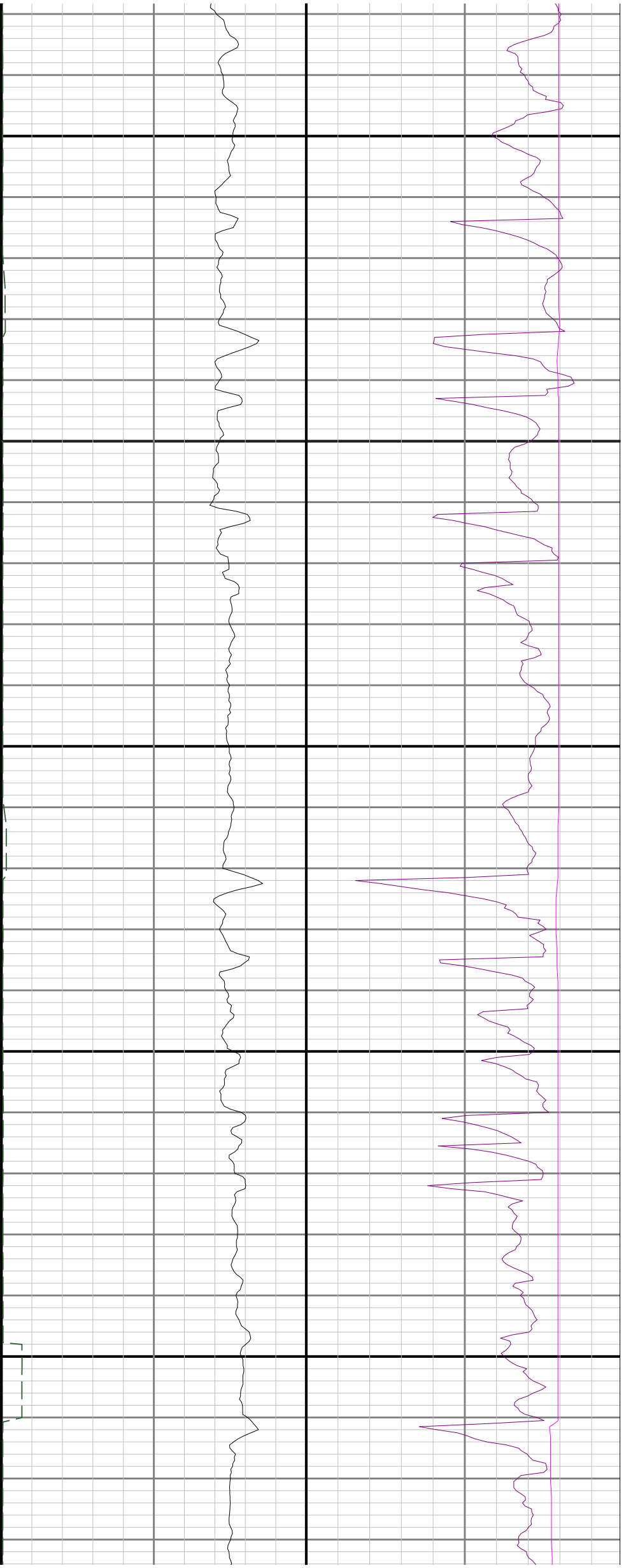


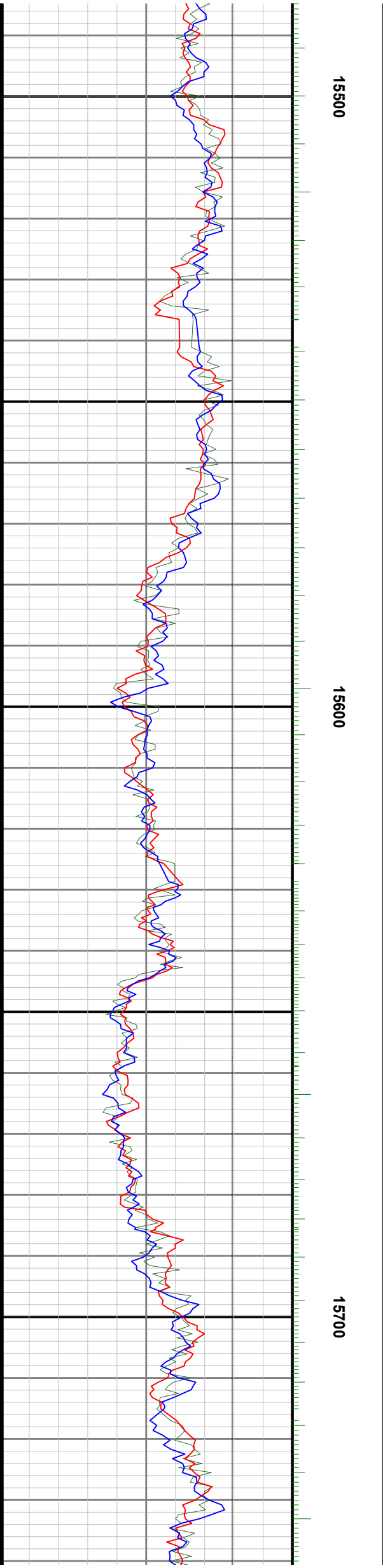
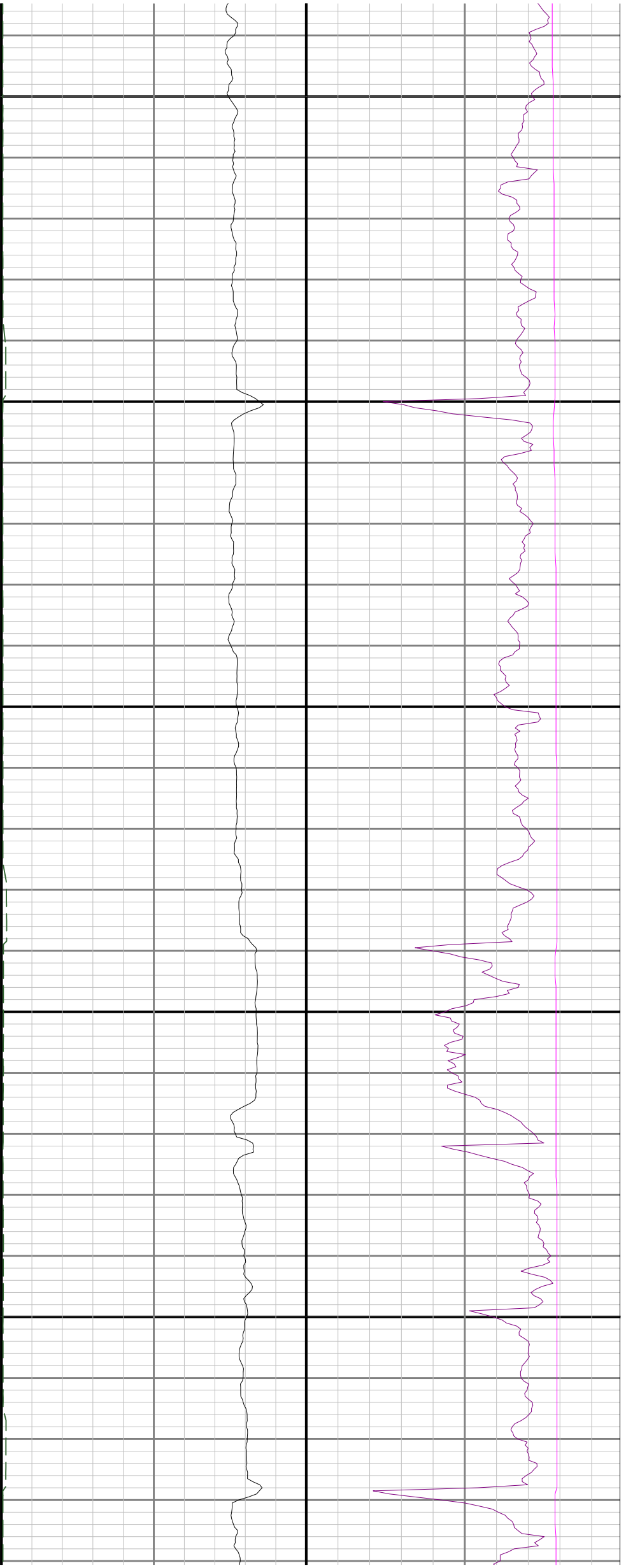


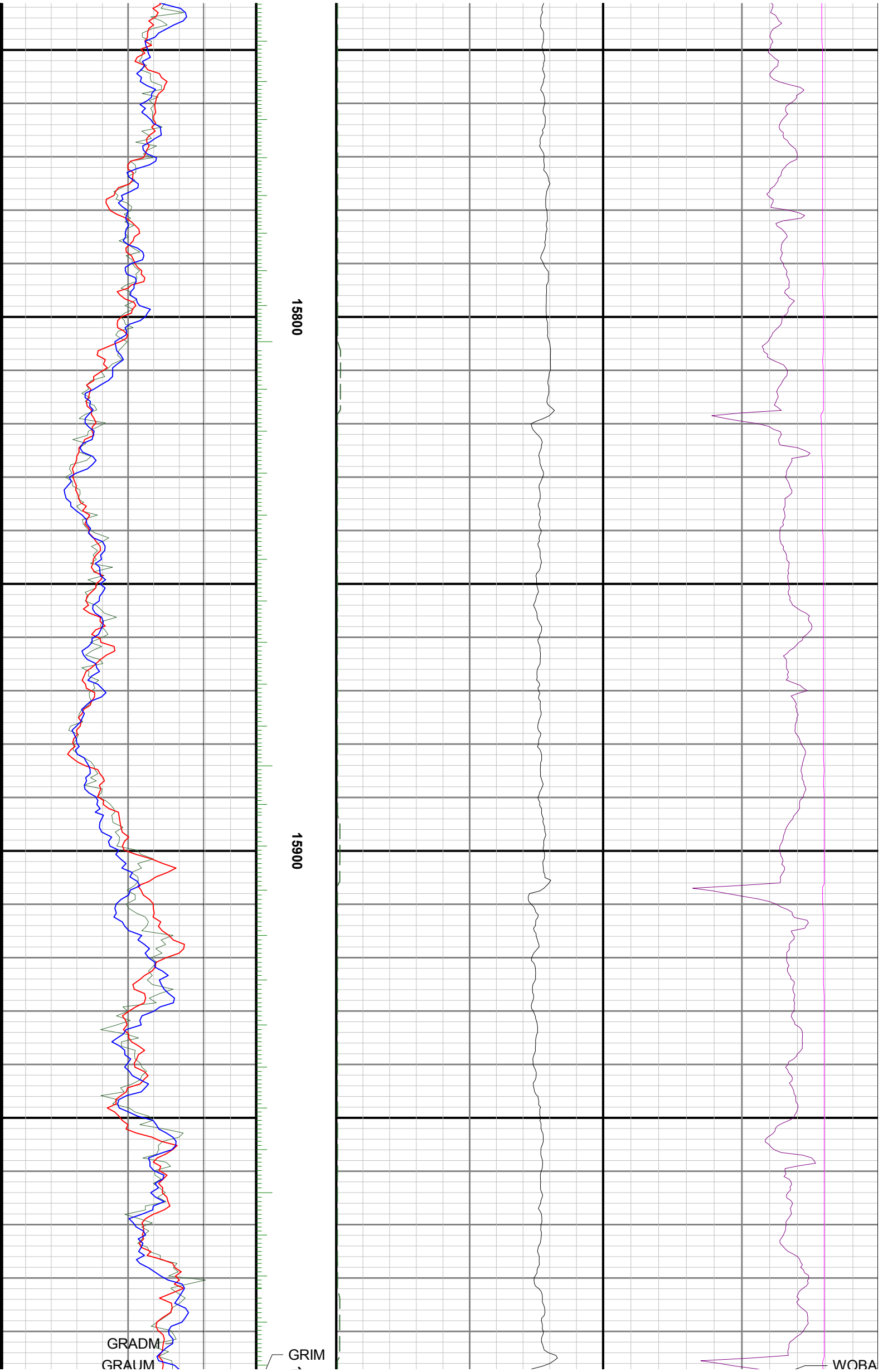


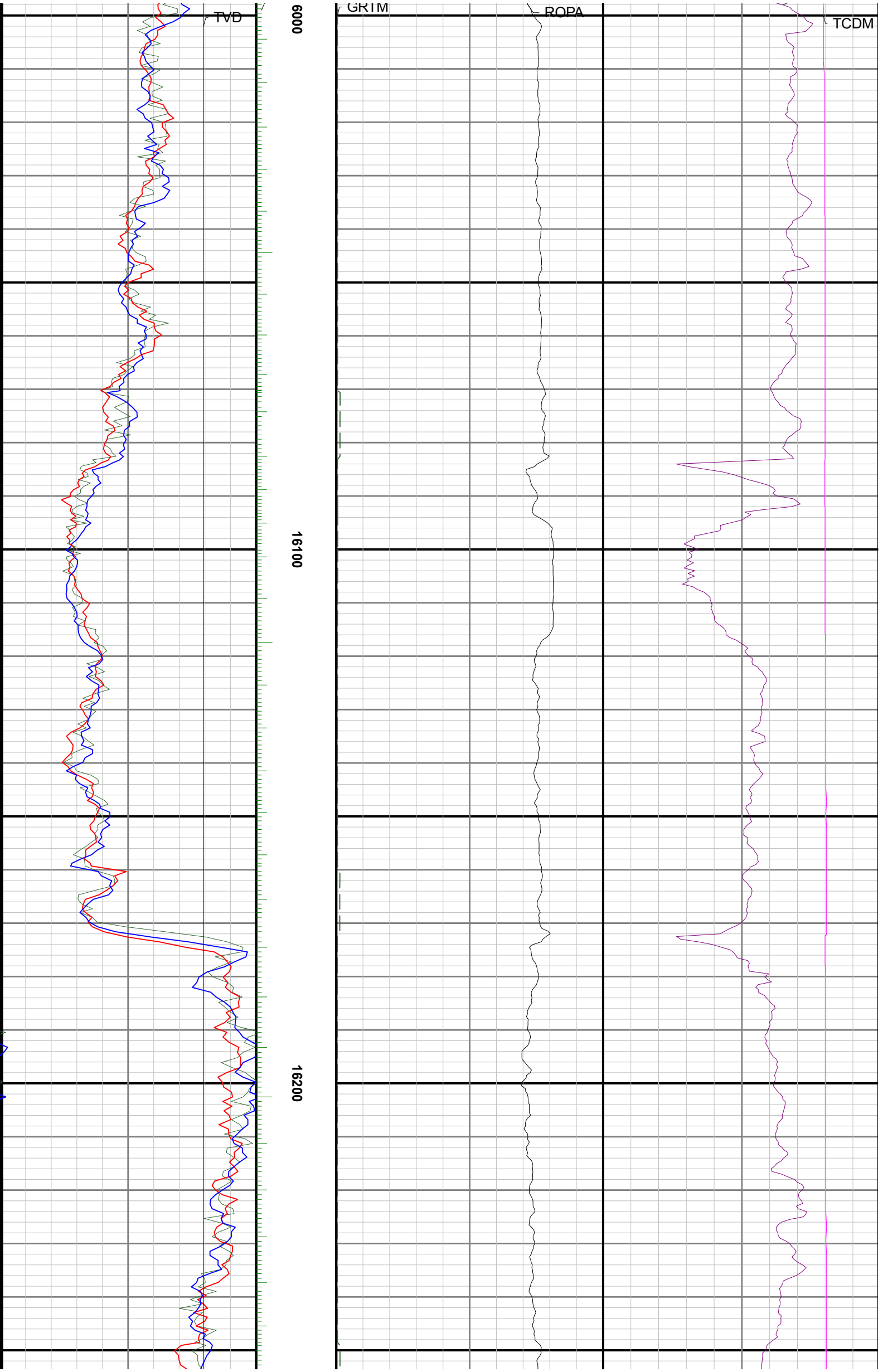


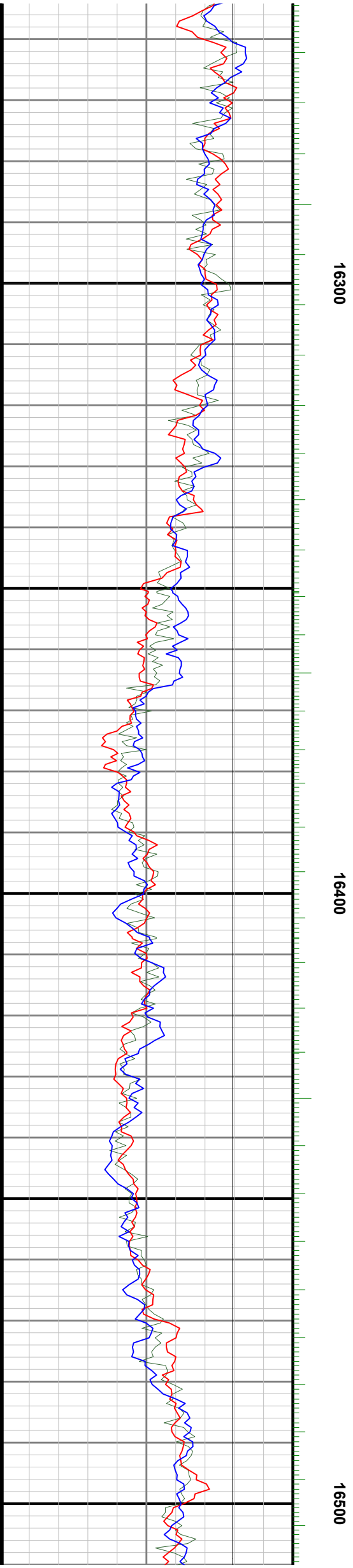
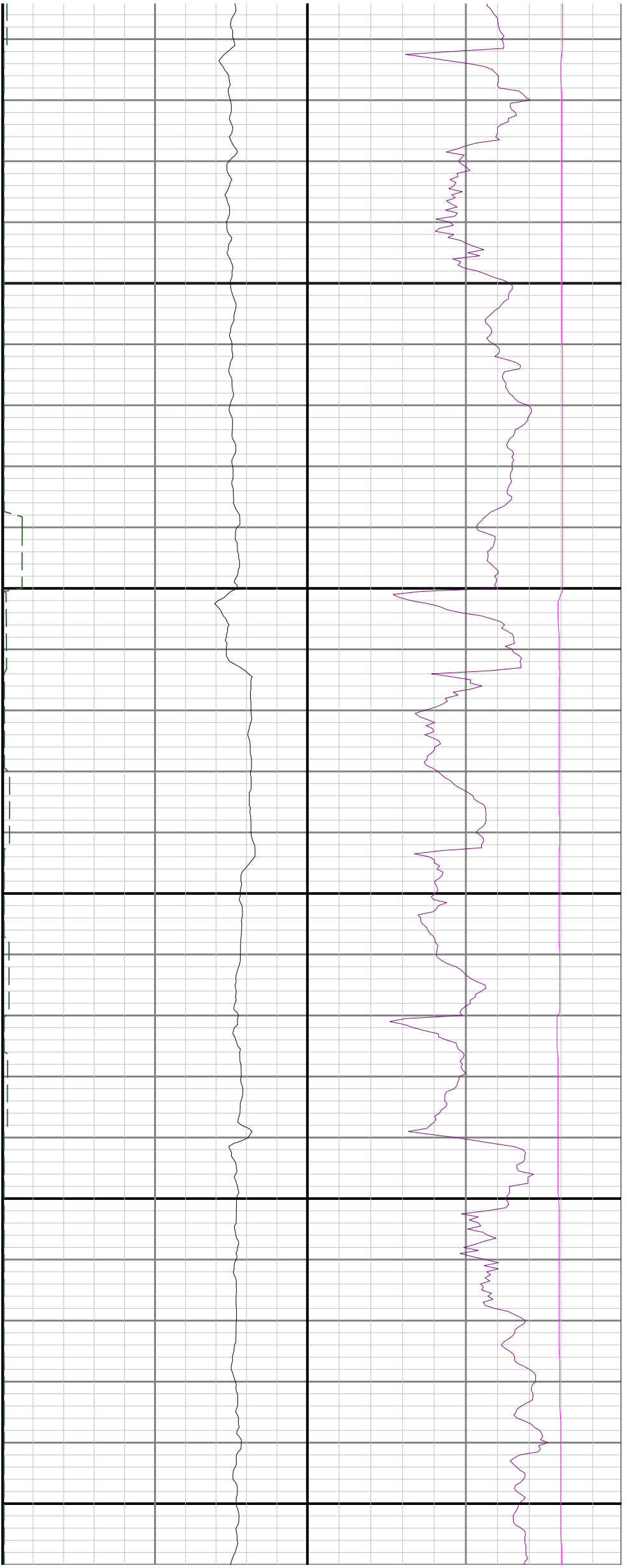


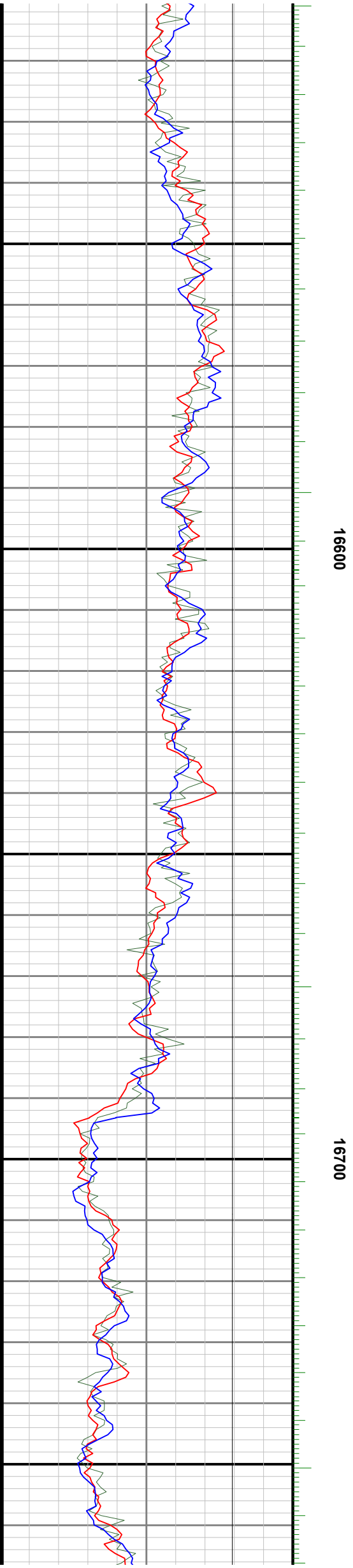
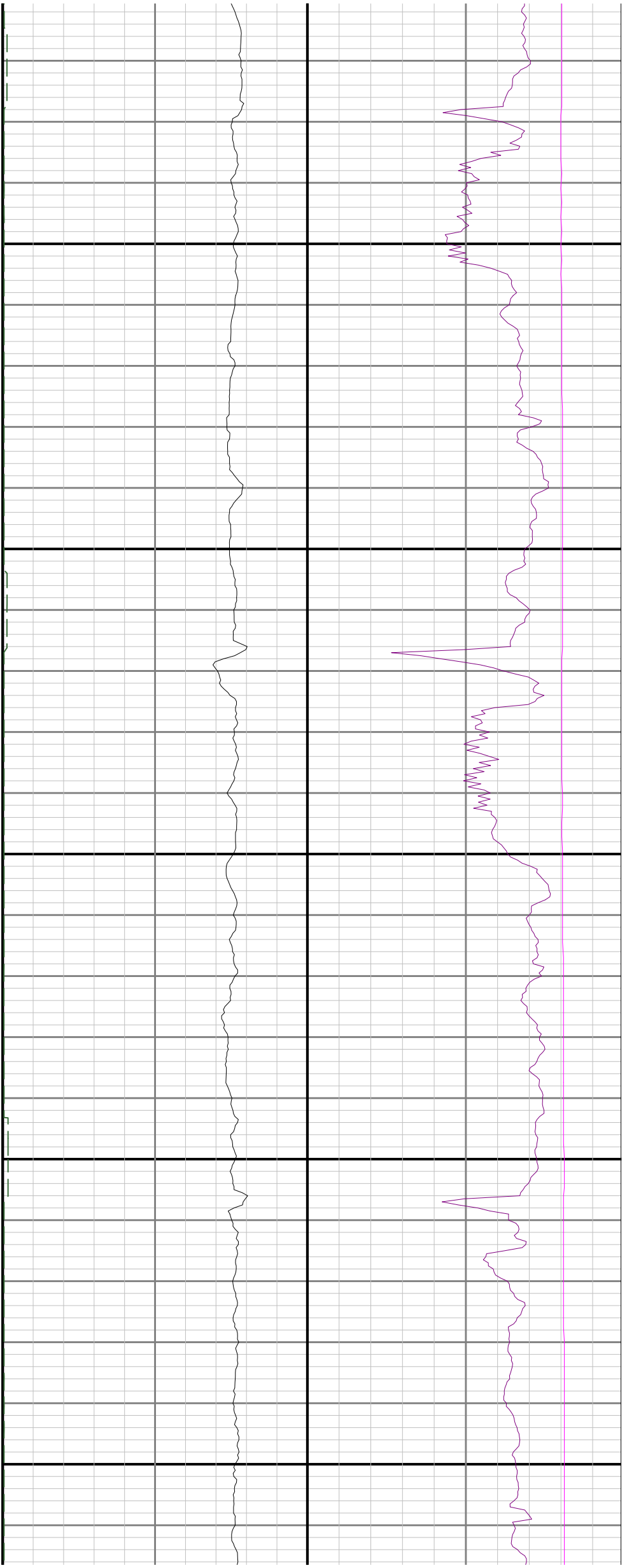


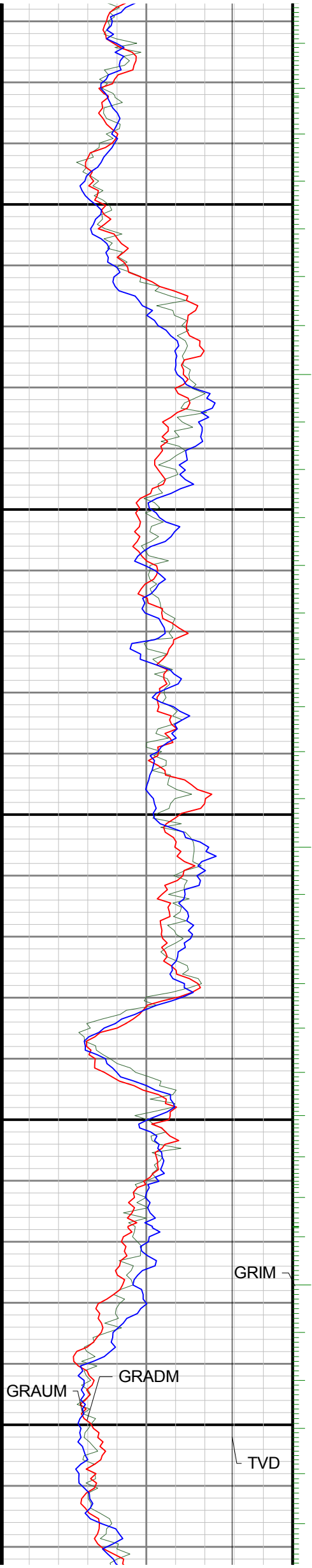












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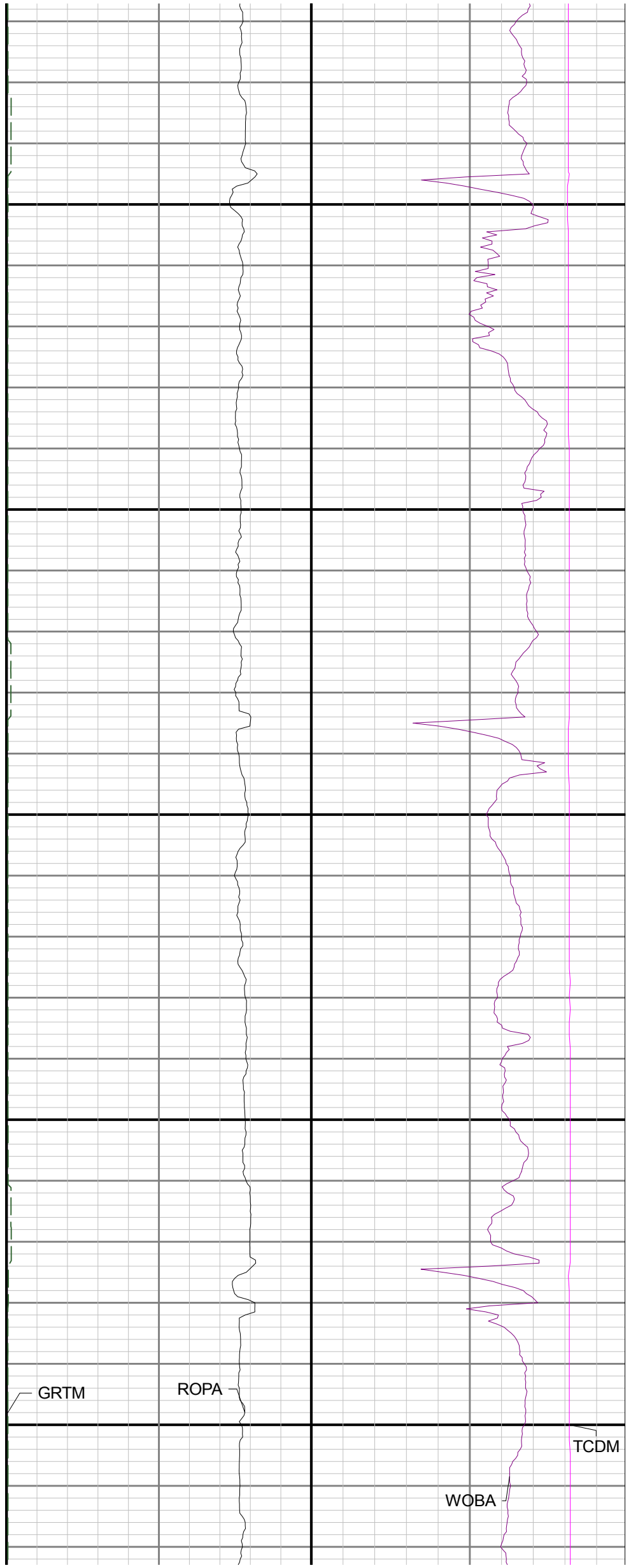
17000

GRIM

GRADM

GRAUM

TVD



GRTM

ROPA

Woba

TCDM

