



LWD MEMORY LOG

Gamma Ray,Propagation Resistivity

Scale:

1:240 MD

Company: Verdad Oil & Gas Corporation

Well: WARNER 01N-64W-17-1H

Depth Reference:

Field: Weld County

Driller's Depth

County: Weld Country: United States

State: Colorado

Status:

Final Print

Surface Location:

Latitude:

Longitude:

Other Services:

040° 02' 40.844" N

104° 34' 32.743" W

API No: 05-123-45162

Job ID: 8741985

Permanent Datum (P.D.): Mean Sea Level

Log Measured From: Rig Floor

Elevation:

Above P.D.

0.00 ft

5083.00 ft

Elev. KB:

Elev. DF:

5083.00 ft

Elev. GL: 5067.00 ft

Dates

Interval Logged

Magnetic Field Reference

Date From: 2017-09-08

Date To: 2017-09-10

Spud Date: 2017-09-07

Top: (ft)

Bottom: (ft)

162.68

17437.02

Azi Reference North:

Total Magnetic Field Strength: (nT)

True

Mag to Reference North Correction: (deg)

66.61

52187

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

Deviation 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

Software Version

Other

Baker Hughes Cadence

RT4.1

PlotStudio

4.1.7763.3

Rig:

Xtreme 20

Contractor:

Xtreme Drilling

Unit:

D&E

District:

Xtreme 20

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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
						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	-8997.53	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

Date / Time	Run No.	Measured Depth (ft)	Surface Temp (degF)	Surface			BHCT (degF)	Downhole		
				Rm	Rmf	Rmc		Rm @ BHCT	Rmf @ BHCT	Rmc @ BHCT
				(ohm.m)	(ohm.m)	(ohm.m)		(ohm.m)	(ohm.m)	(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
2	OnTrak	12858682	Pressure	2.75	10712.60	6.750	0.000
2	OnTrak	12858682	Gamma (double)	3.64	10713.49	6.750	0.000
2	OnTrak	12858682	Resistivity (4tx)	7.68	10717.53	6.750	0.000
2	OnTrak	12858682	Directional (mag)	13.47	10723.32	6.750	0.000


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
OTK	OnTrak	Sensor Sub (Inc, Azi, Temp, Azimuthal GR, Res, AP, VSS), OnTrak Platform

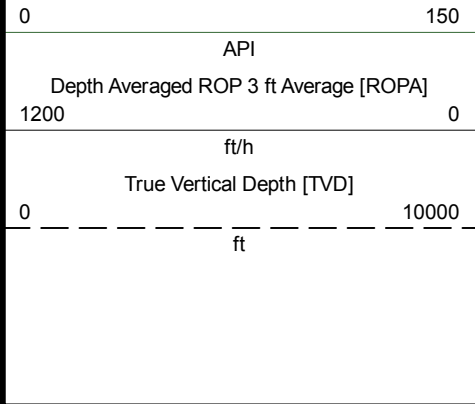
Comments
<div>1</div> <div>Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.</div> <div>2</div> <div>Baker Hughes LWD Runs 2 utilized 6 3/4 inch Navigamma services (Gamma Ray and Directional) and a 6 3/4 inch OnTrak services (Multiple Propagation Resistivity, 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).</div>

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	6483.00	8.500	2	The interval from 6483 to 17436 feet MD (6256 to 7138 feet TVD) was not logged with OnTrak services due to sensor to bit offset at Well TD

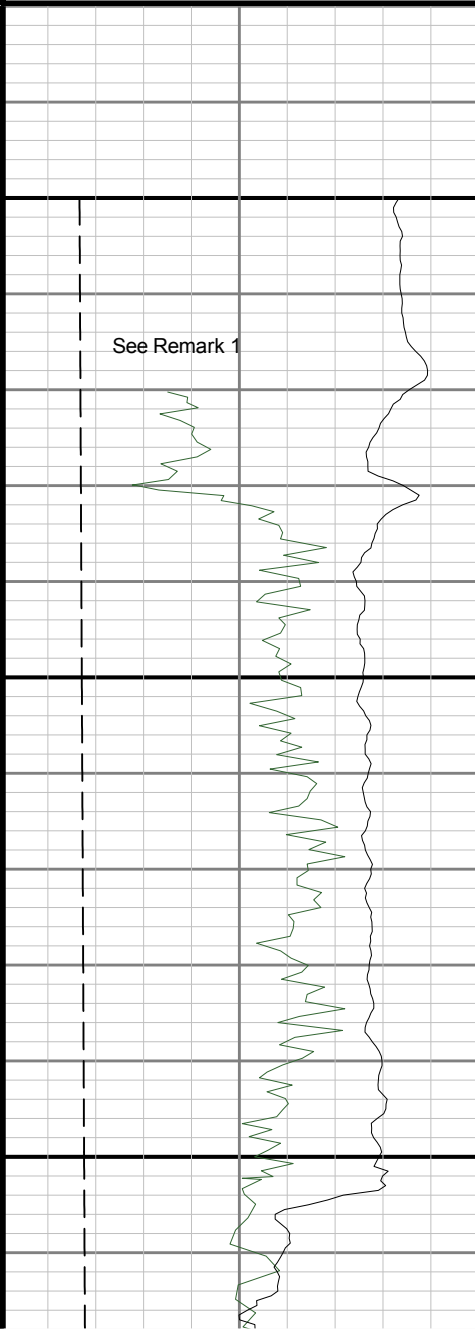
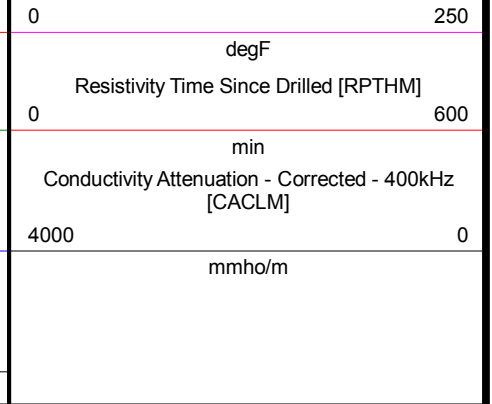
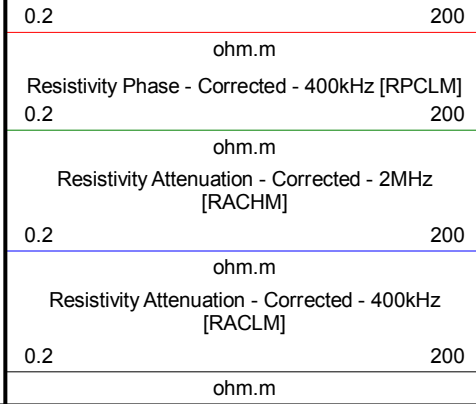
Curve Mnemonics		
Presented Curves	Description	Units
CACLM	Conductivity Attenuation - Corrected - 400kHz	mmho/m
RACHM	Resistivity Attenuation - Corrected - 2MHz	ohm.m
RACLM	Resistivity Attenuation - Corrected - 400kHz	ohm.m
RPCHM	Resistivity Phase - Corrected - 2MHz	ohm.m
RPCLM	Resistivity Phase - Corrected - 400kHz	ohm.m
RPTHM	Resistivity Time Since Drilled	min
ROPA	Depth Averaged ROP 3 ft Average	ft/h
TVD	True Vertical Depth	ft
GRAM	OnTrak - Gamma Ray - Apparent - Memory	API
GRIM	OnTrak - Gamma Ray - Data Point Indicator - Memory	unitless
TCDM	Downhole Temperature	degF

<div> <div>BAKER HUGHES</div> <div>a GE company</div> </div> <div>  </div>	Company	Verdad Oil & Gas Corporation		
	Well	WARNER 01N-64W-17-1H		
	Interval	<div>Date From:</div> <div>2017-09-08 13:58:48</div>	<div>Top:</div> <div>1700.00</div>	
	Created	<div>Date To:</div> <div>2017-09-10 20:47:46</div>	<div>Bottom:</div> <div>6800.00</div>	

Gamma Ray Apparent 3.0 ft Avg [GRAM]	≡	Resistivity Phase - Corrected - 2MHz [RPCHM]	Downhole Temperature [TCDM]
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D 1:240 Feet

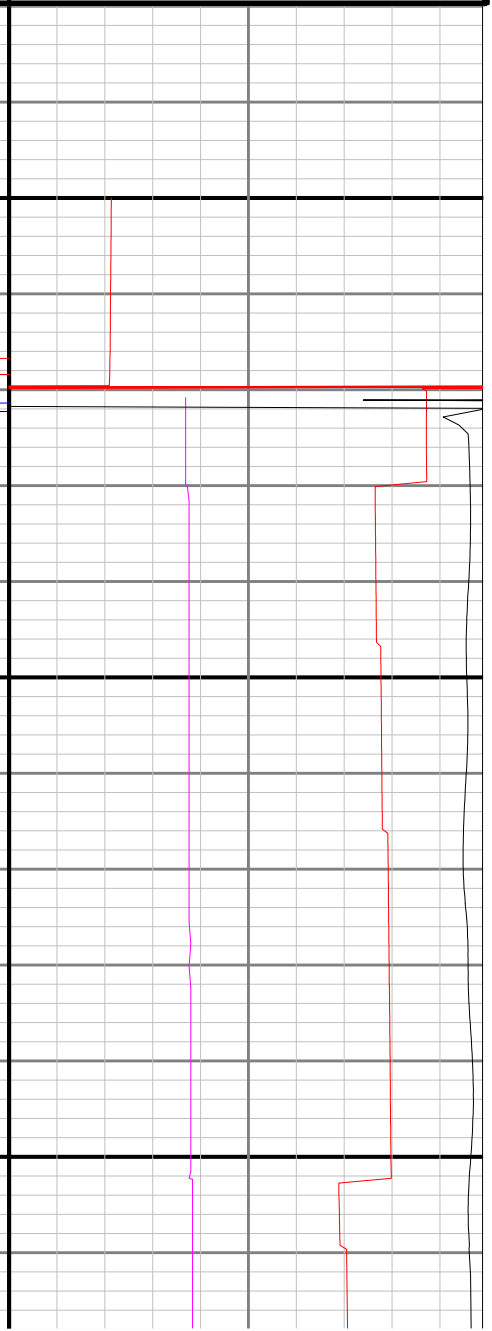
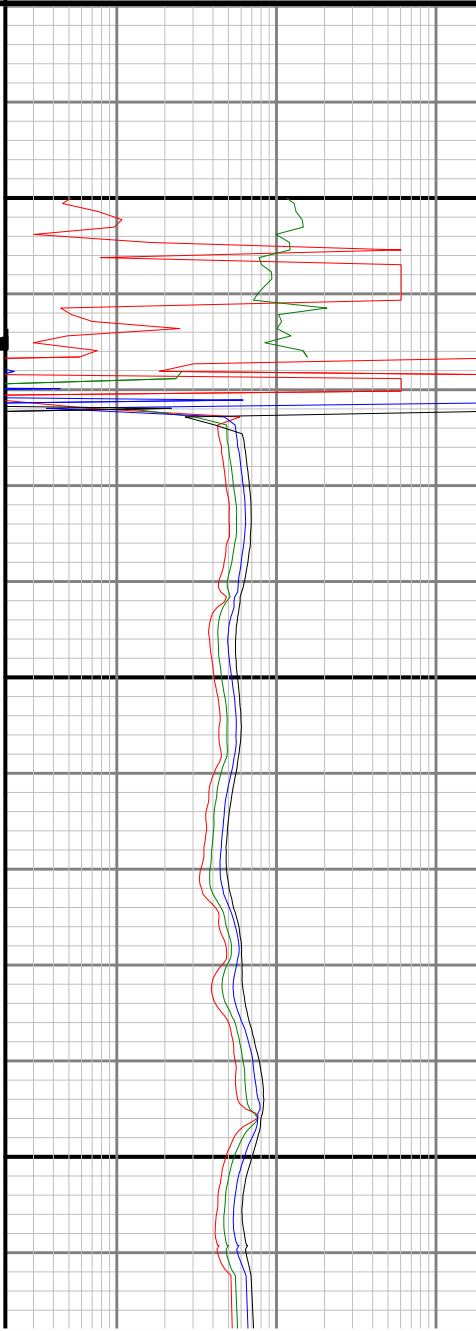


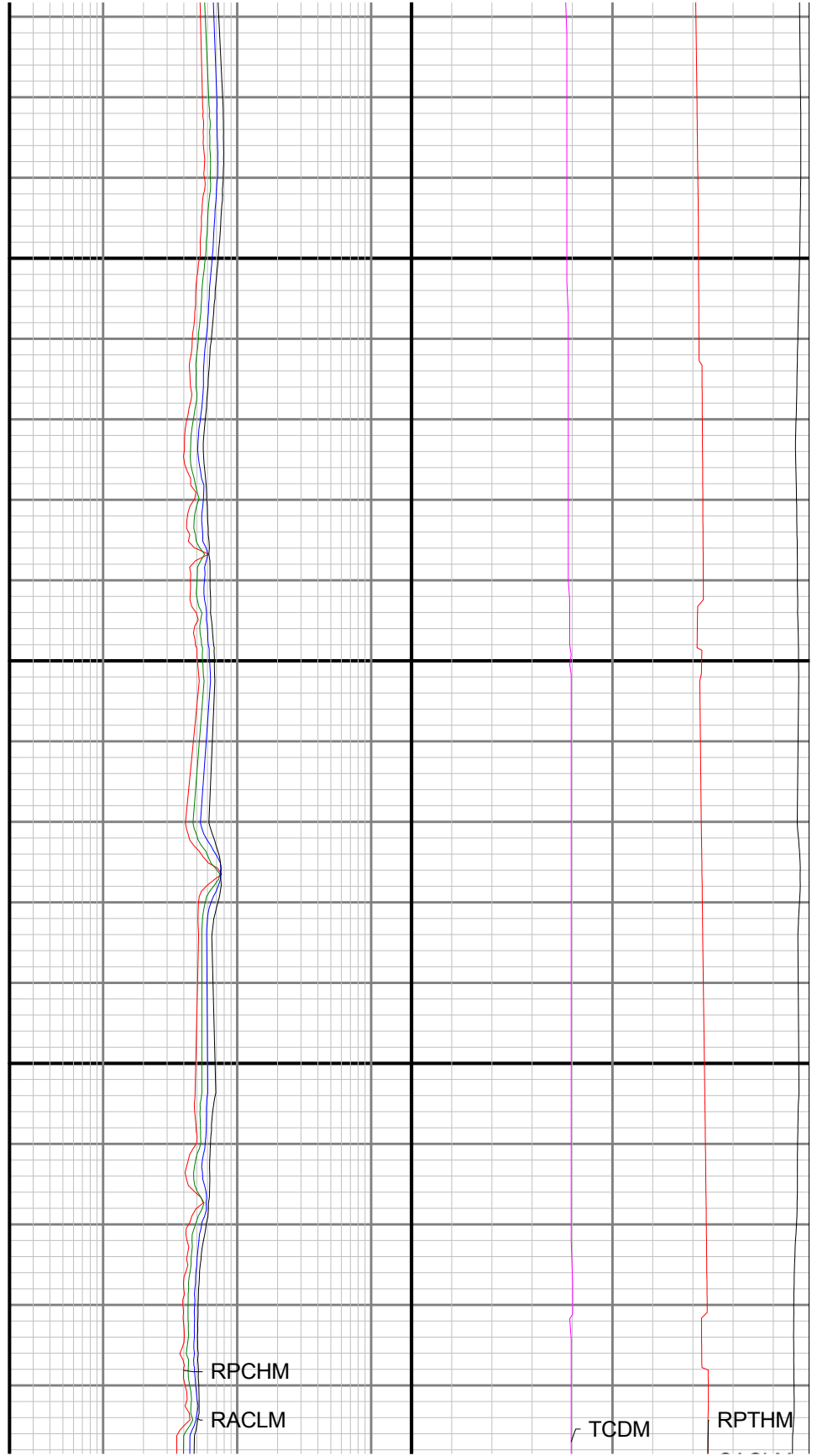
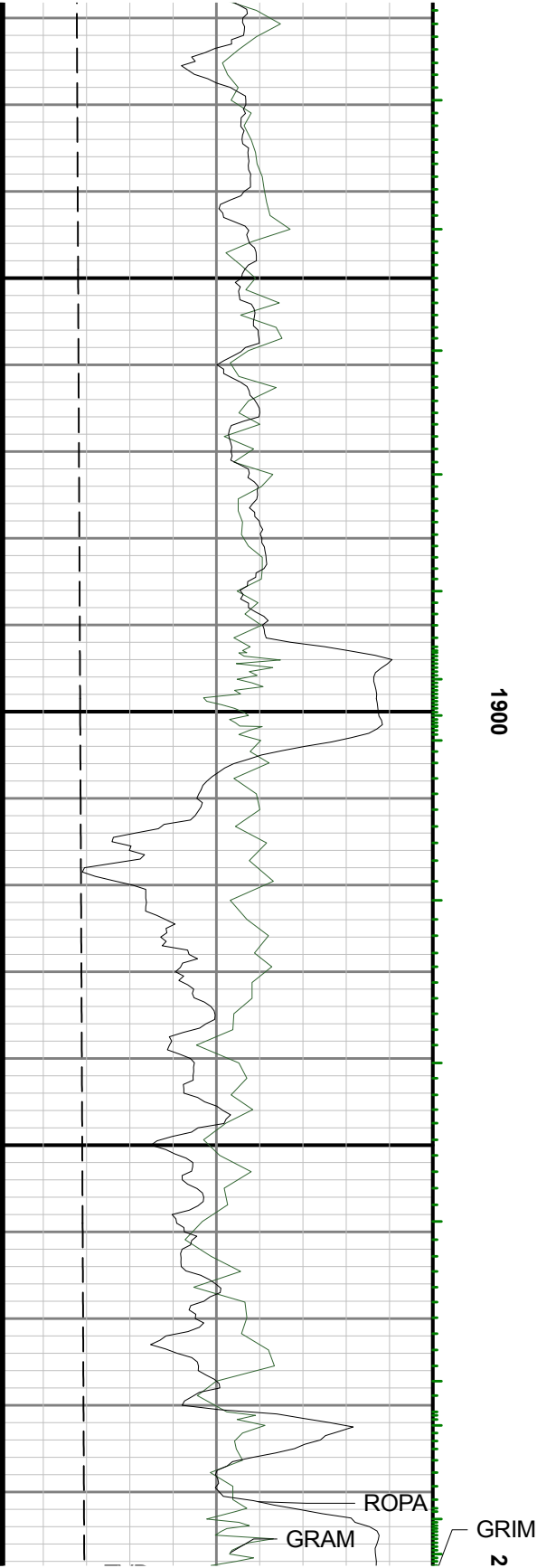
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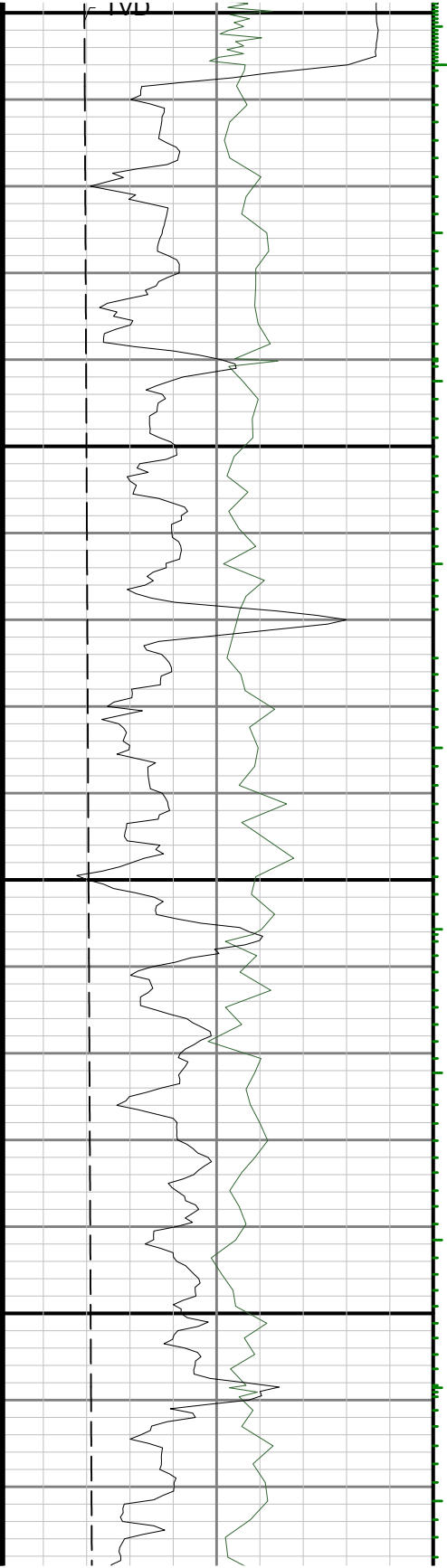
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>R2

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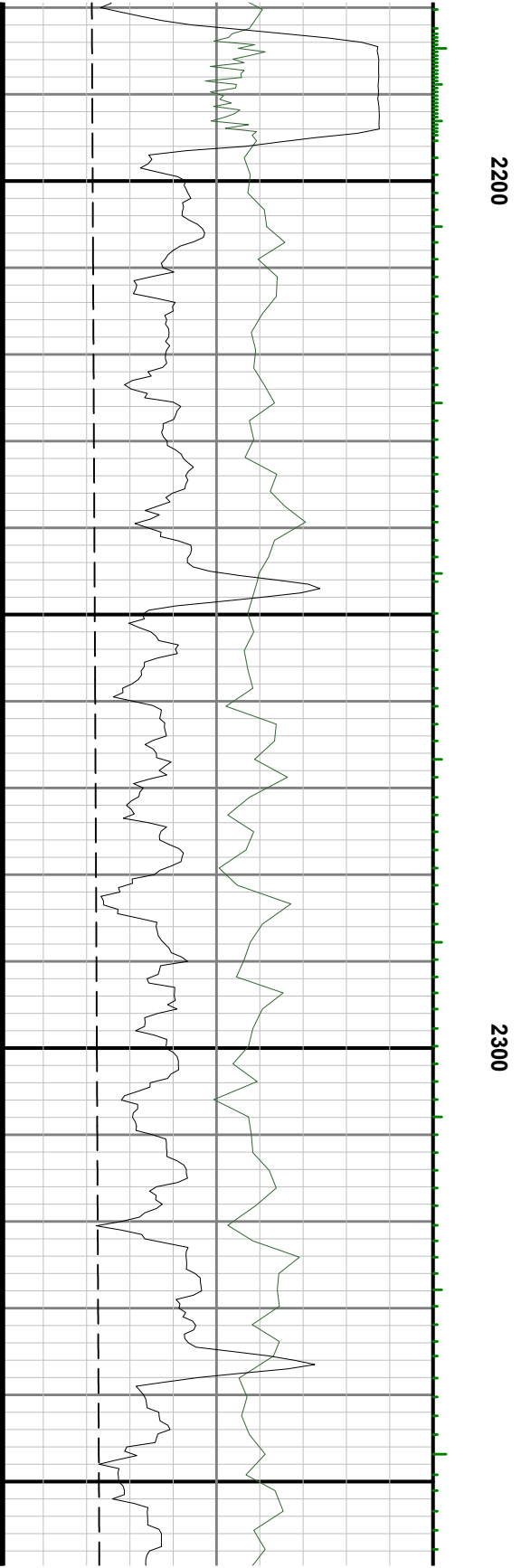
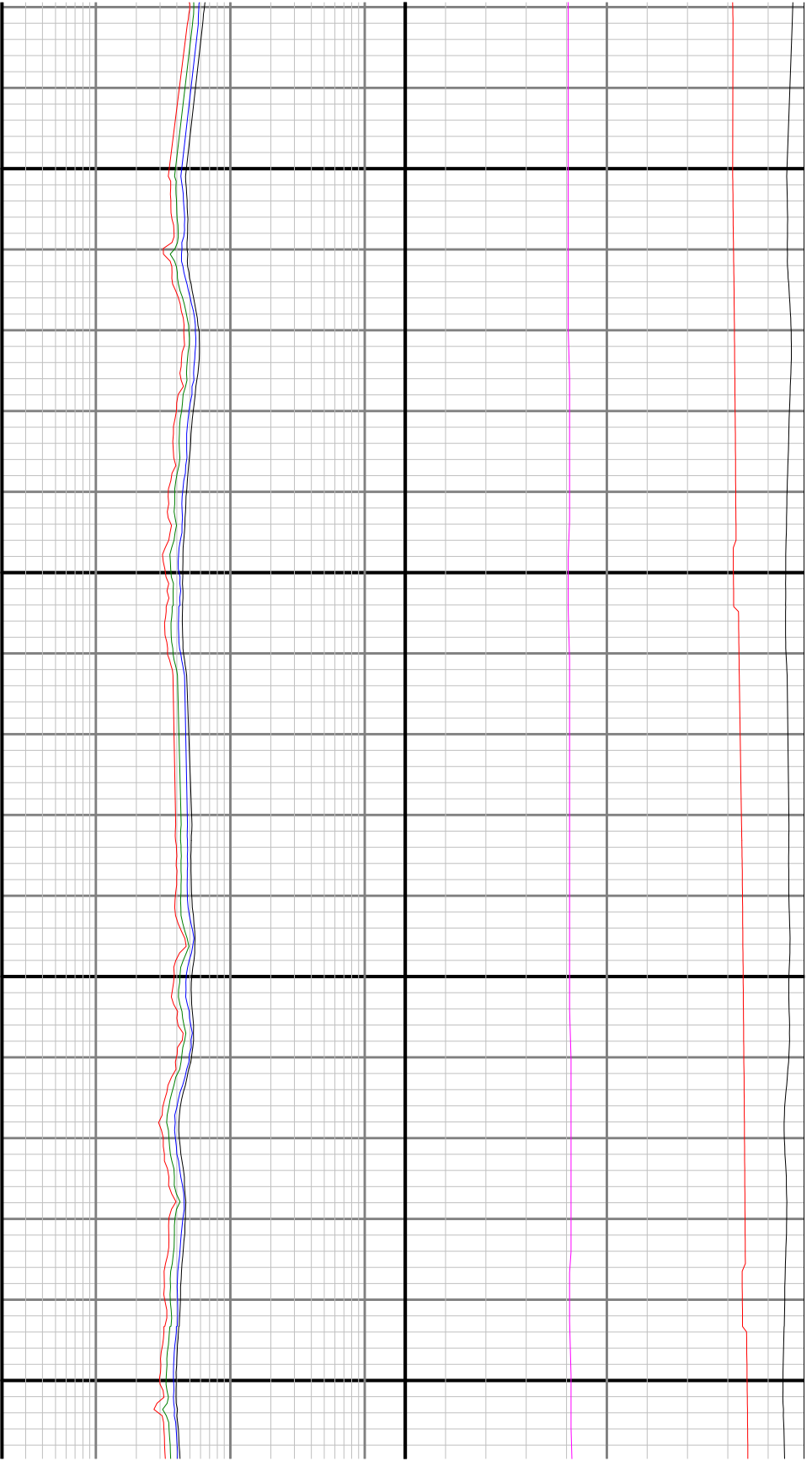


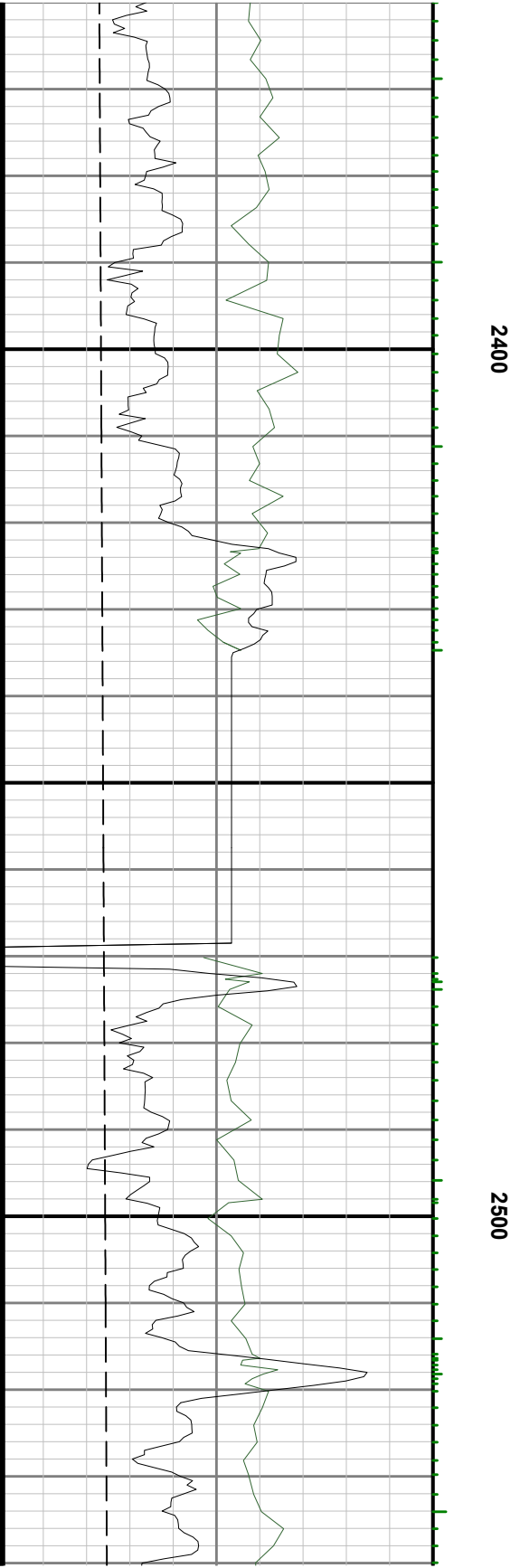
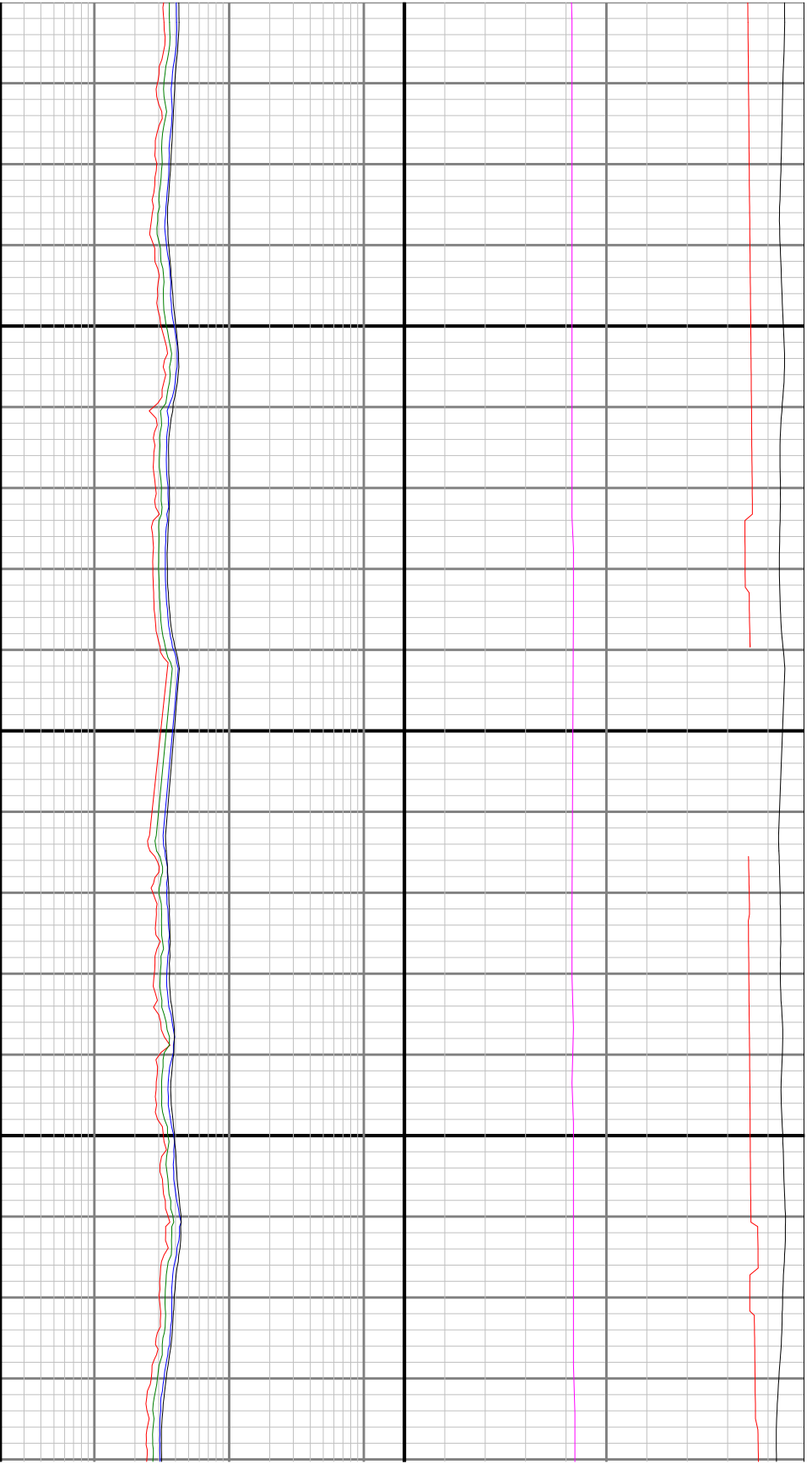
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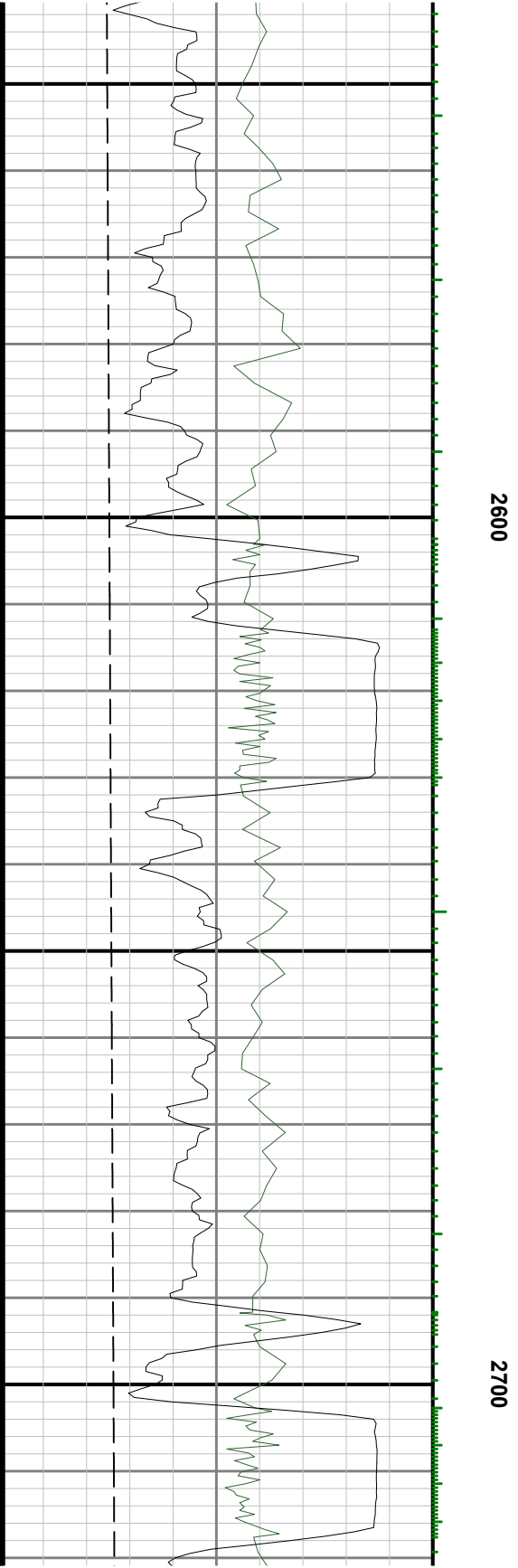
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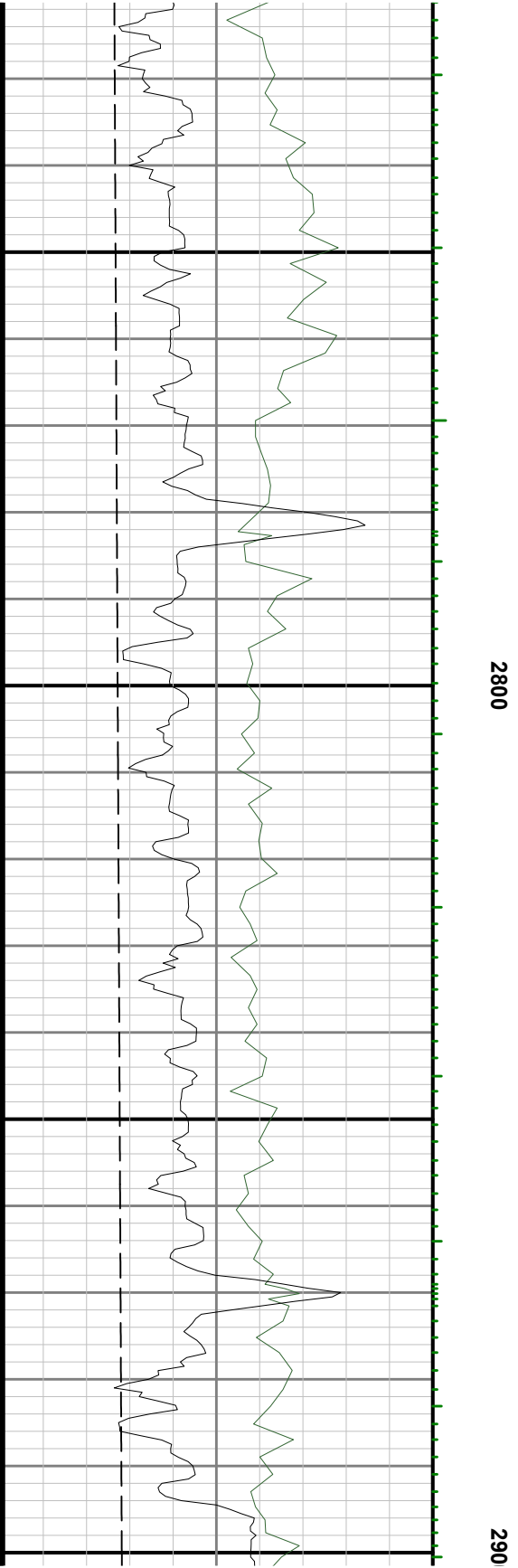
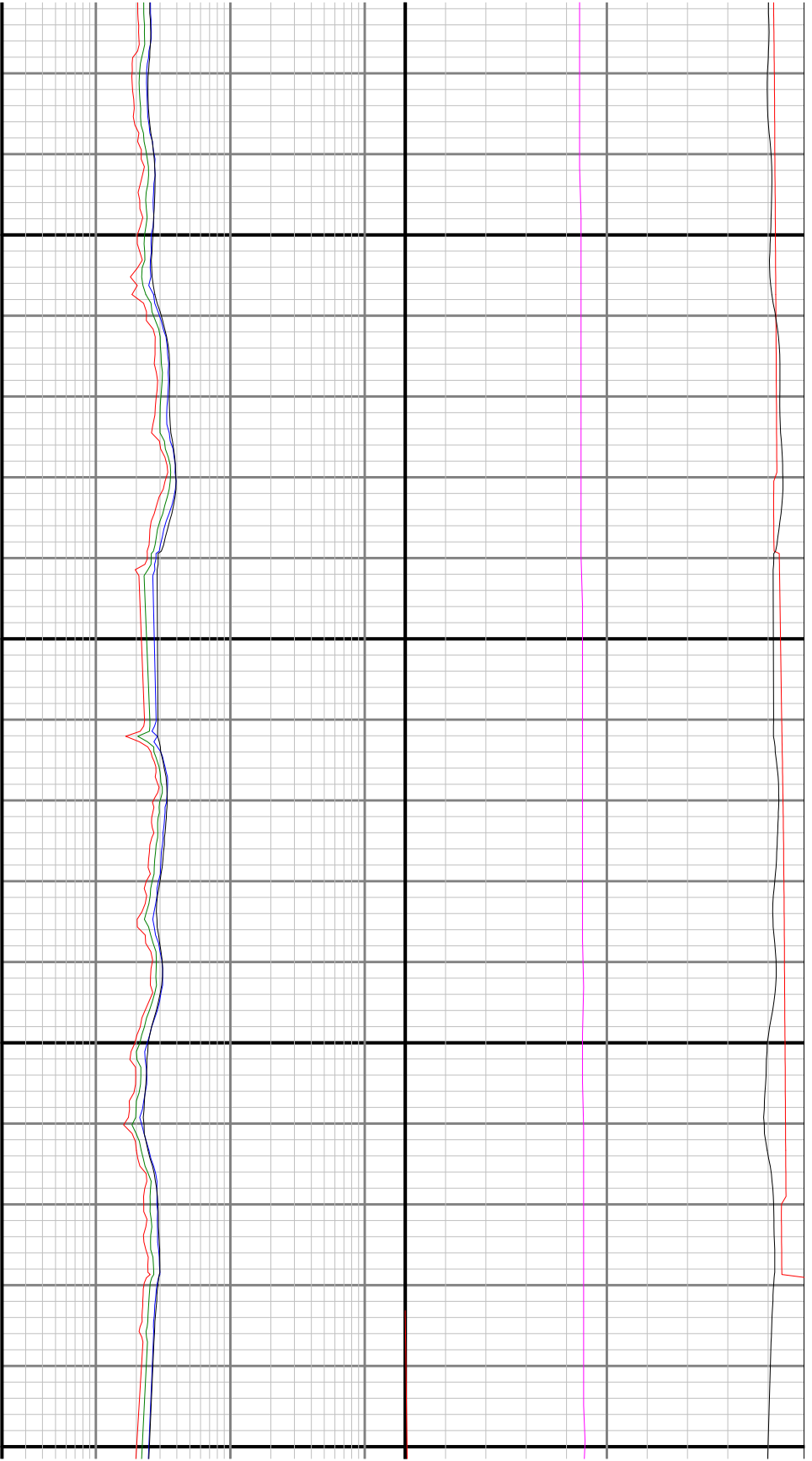
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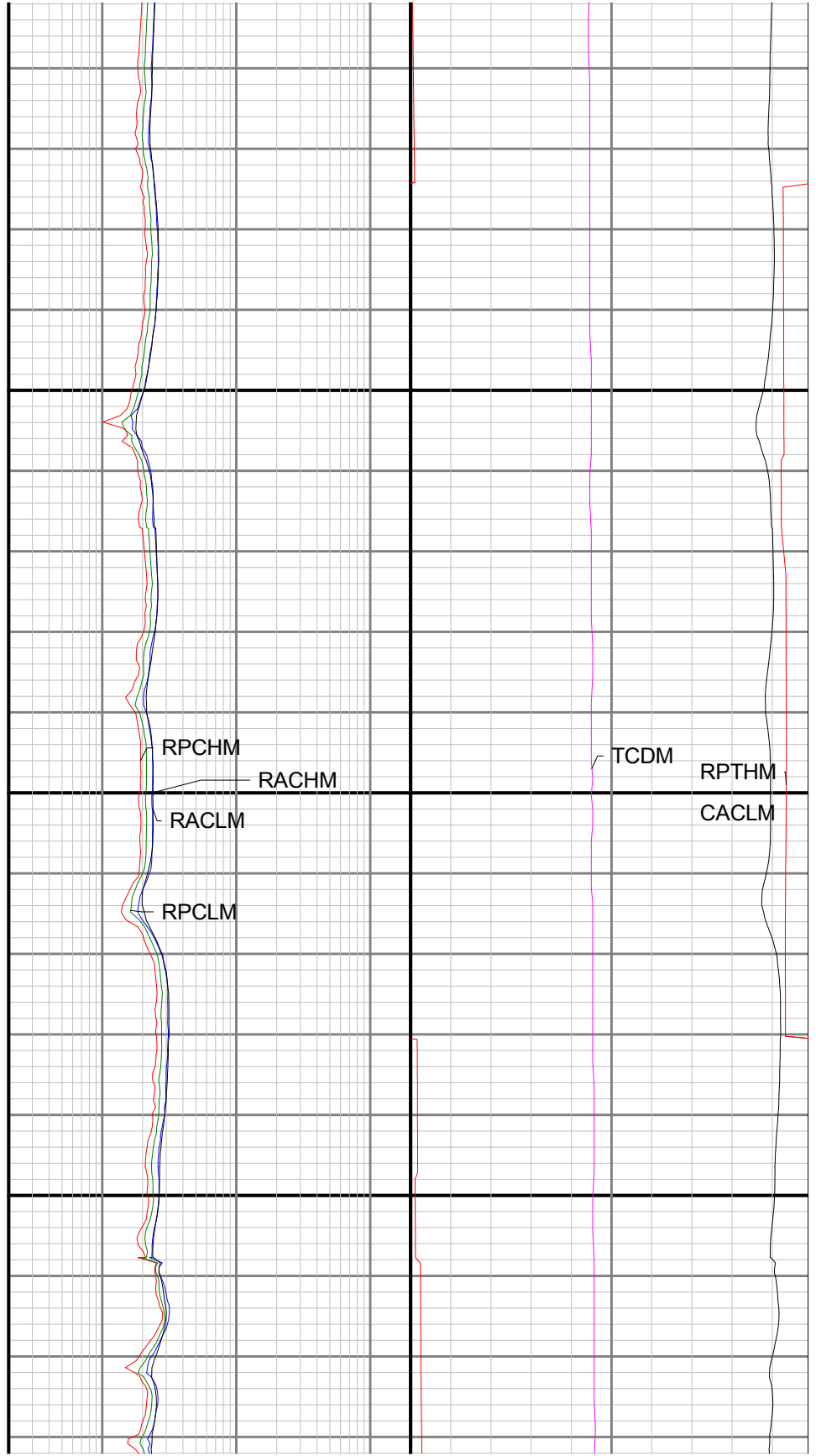
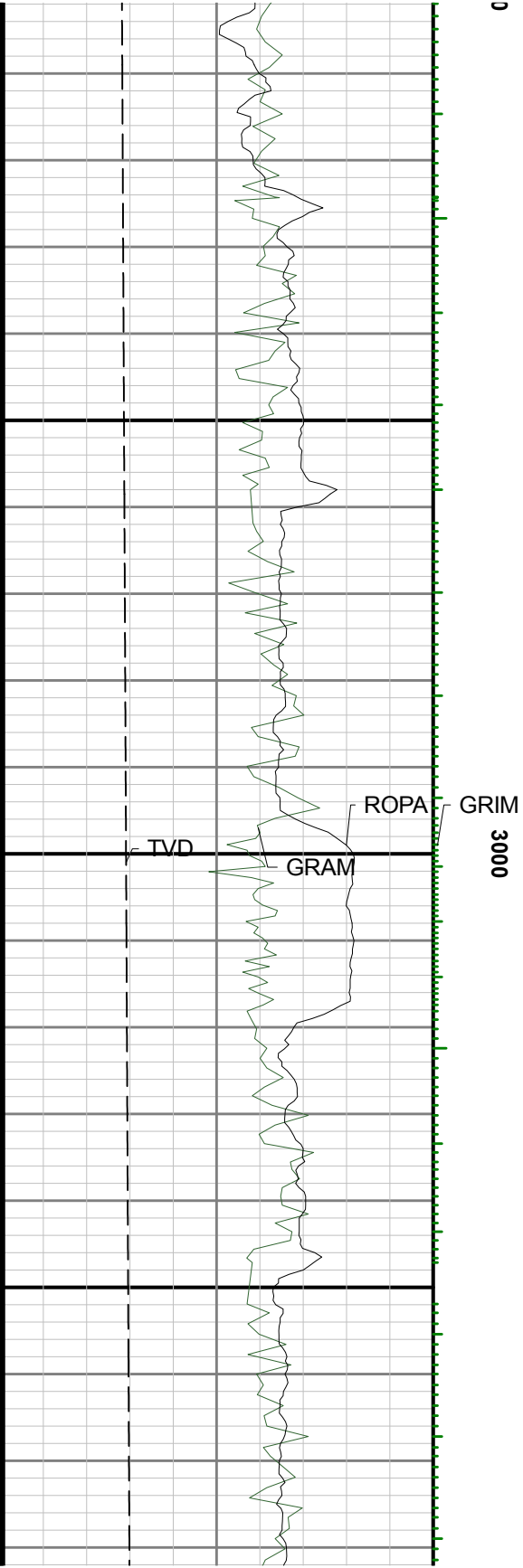
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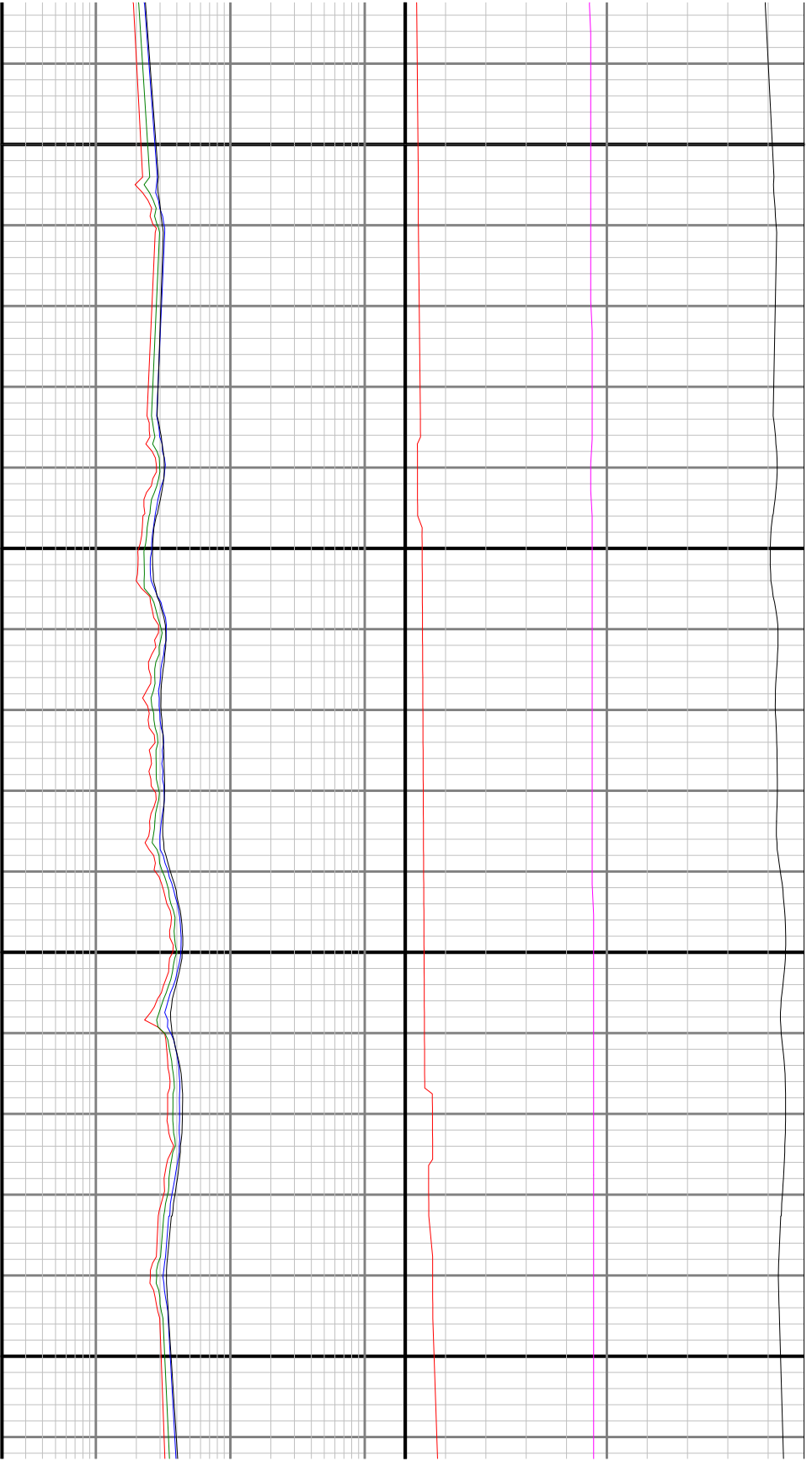






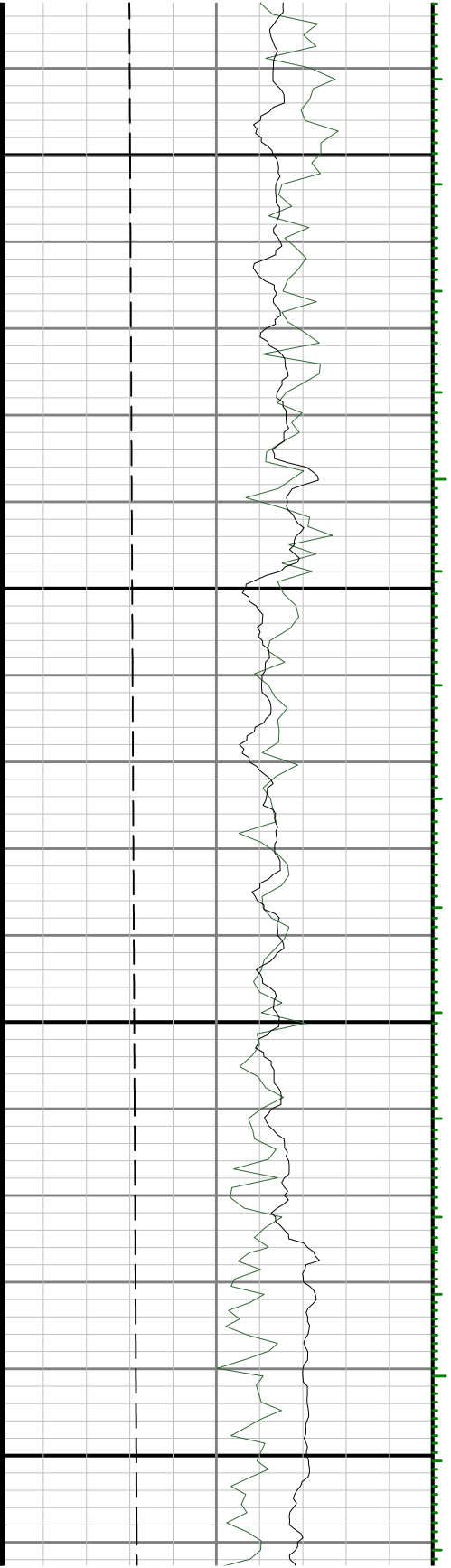


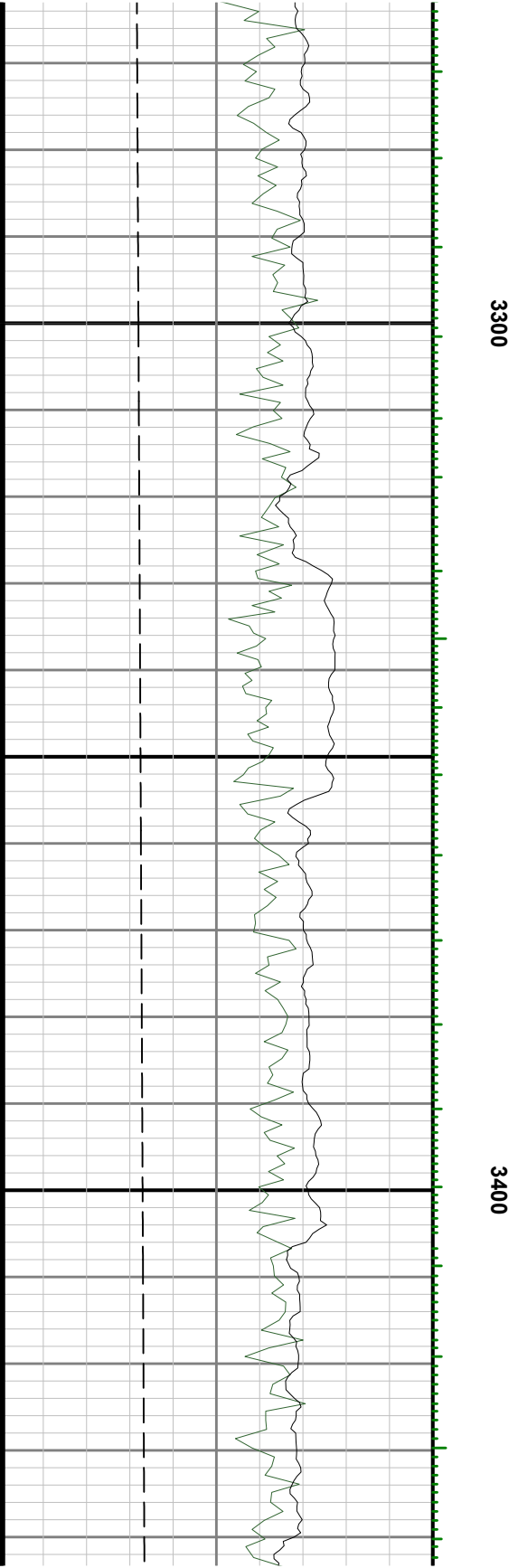
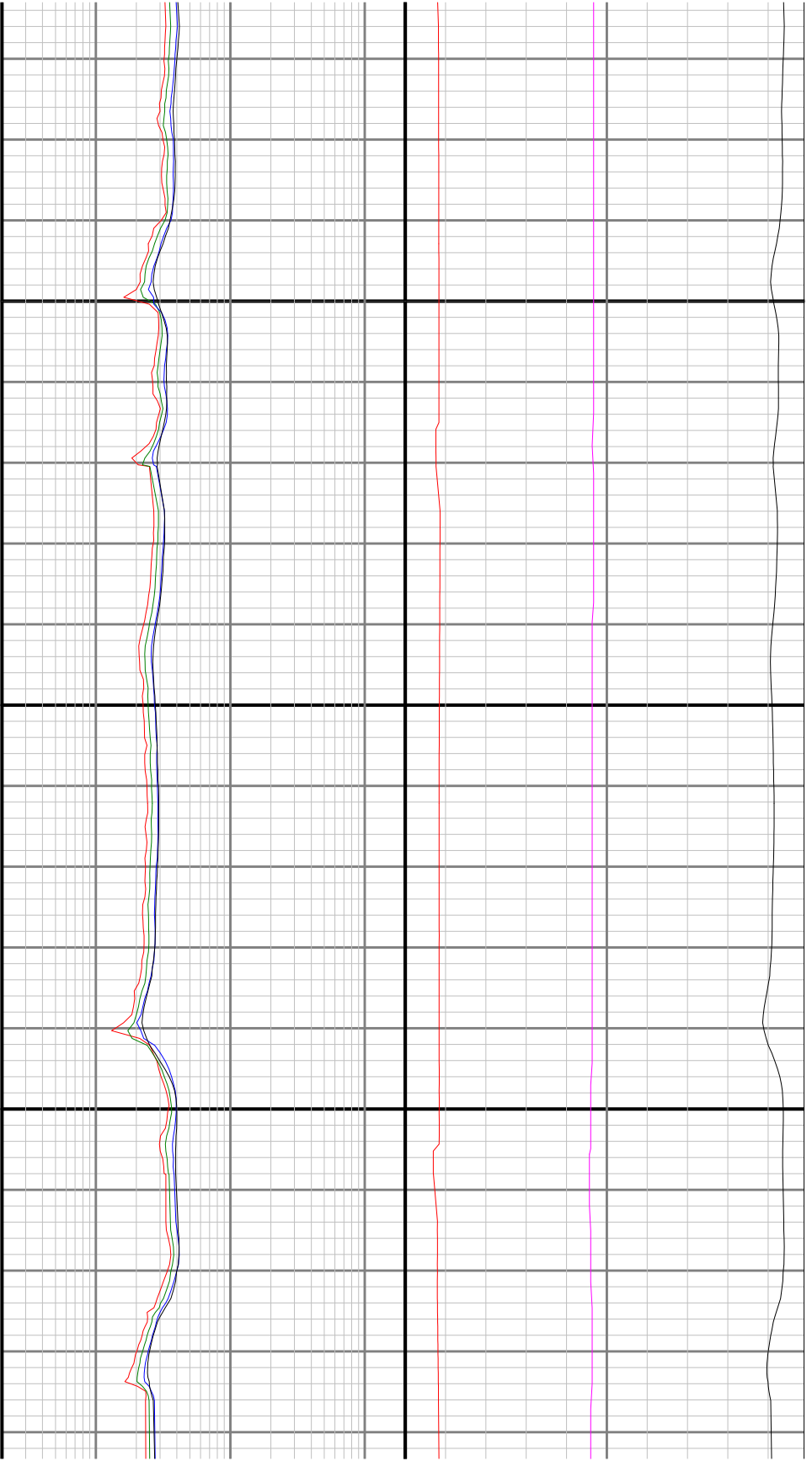


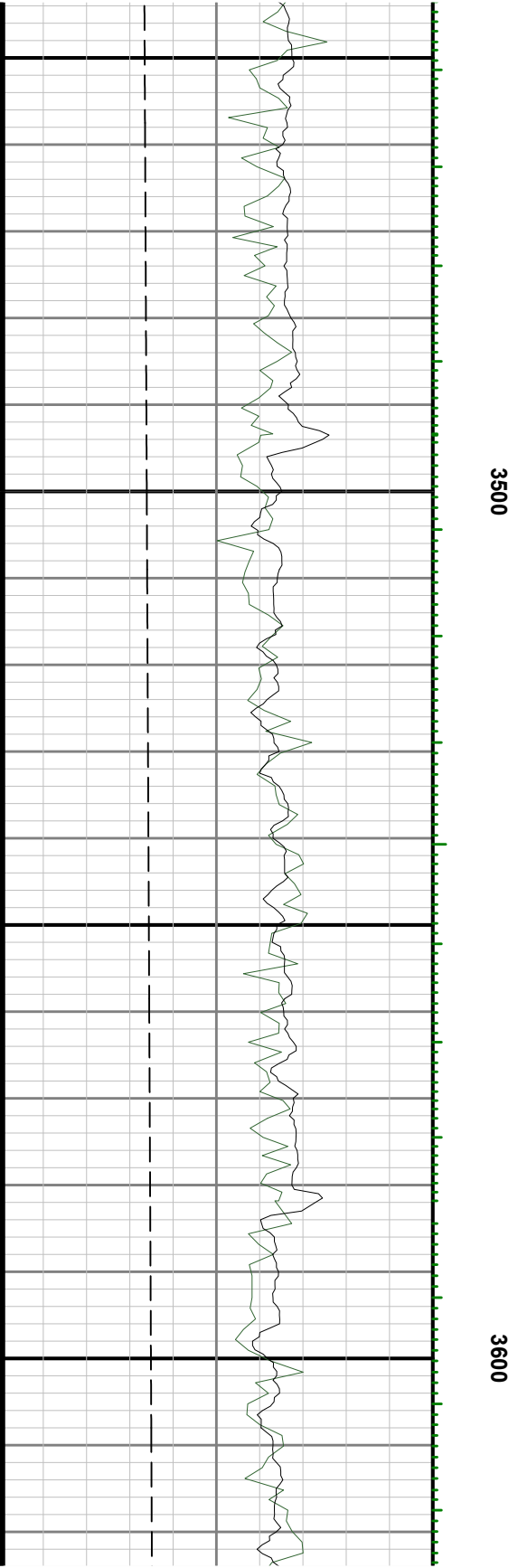
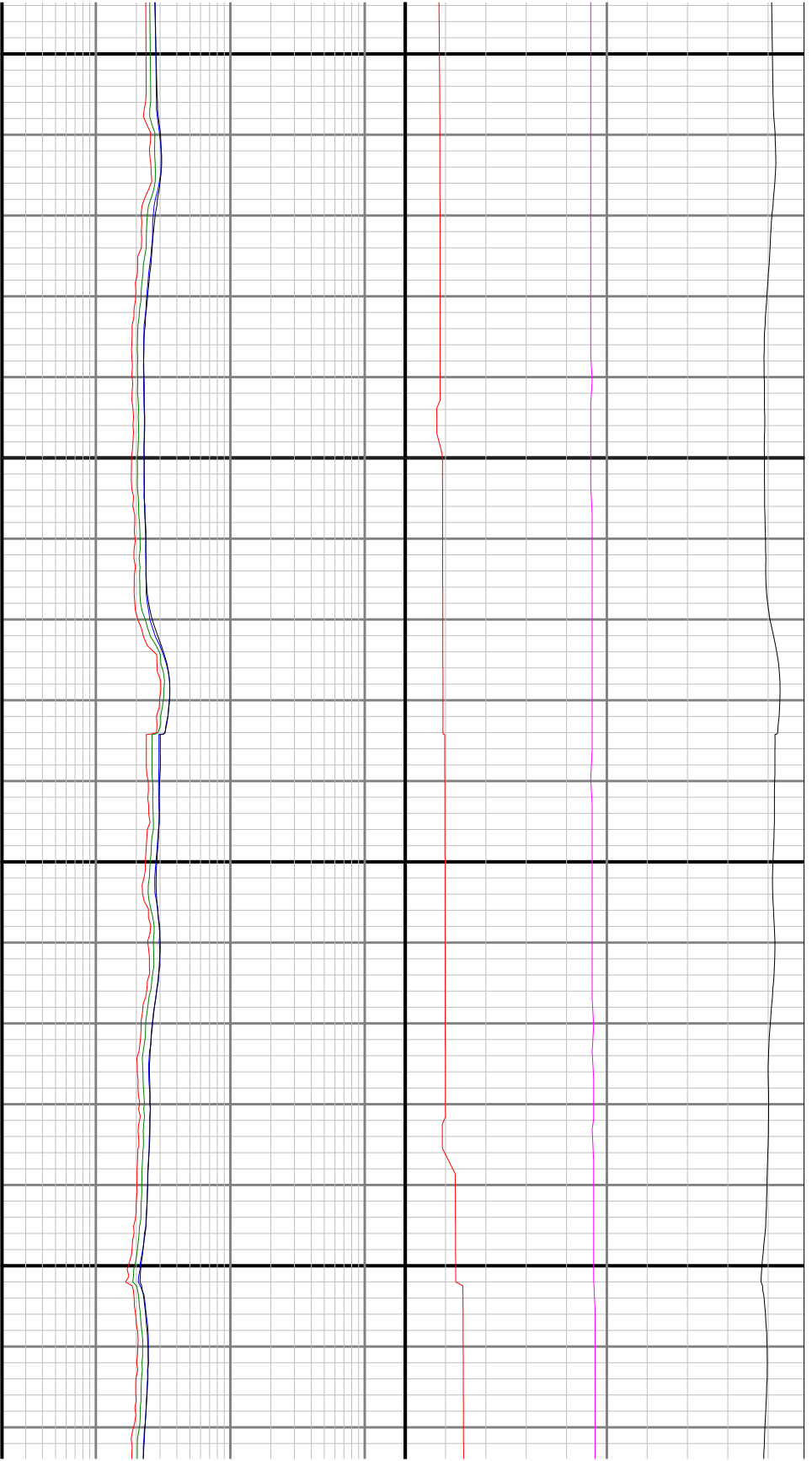


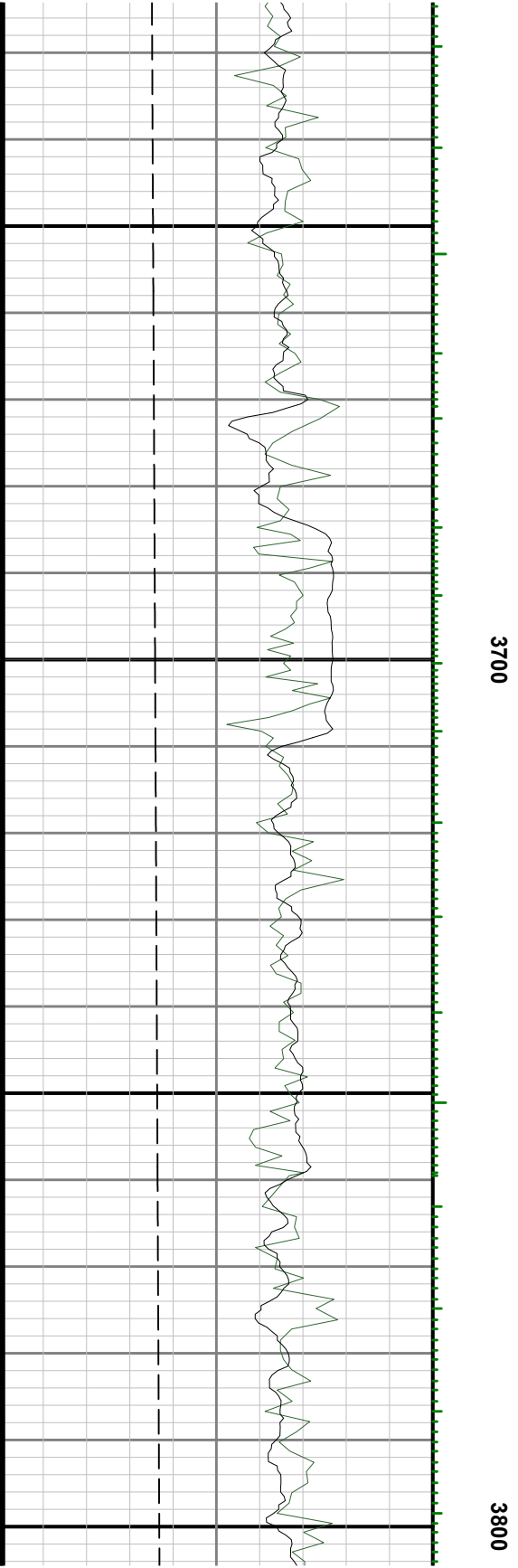
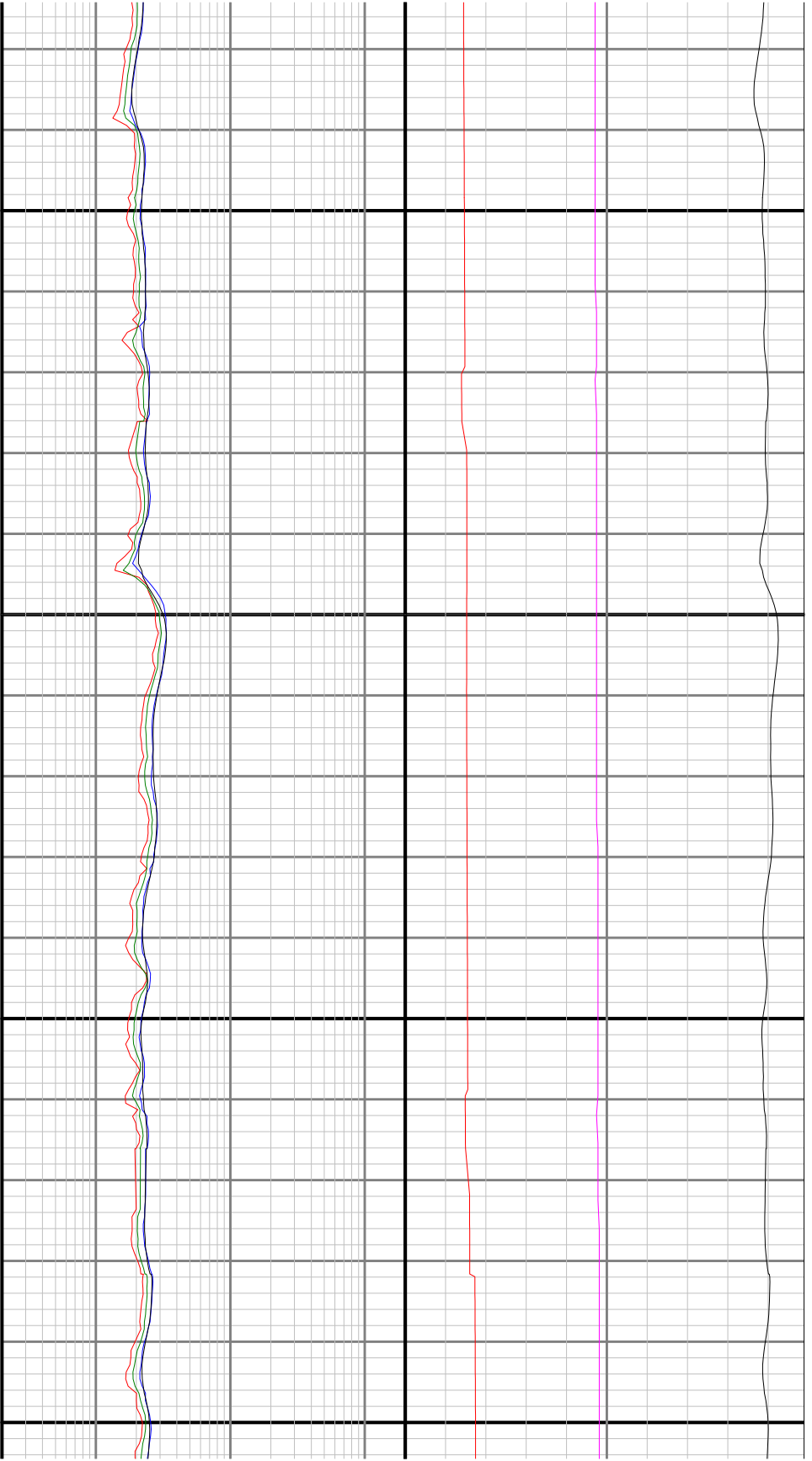
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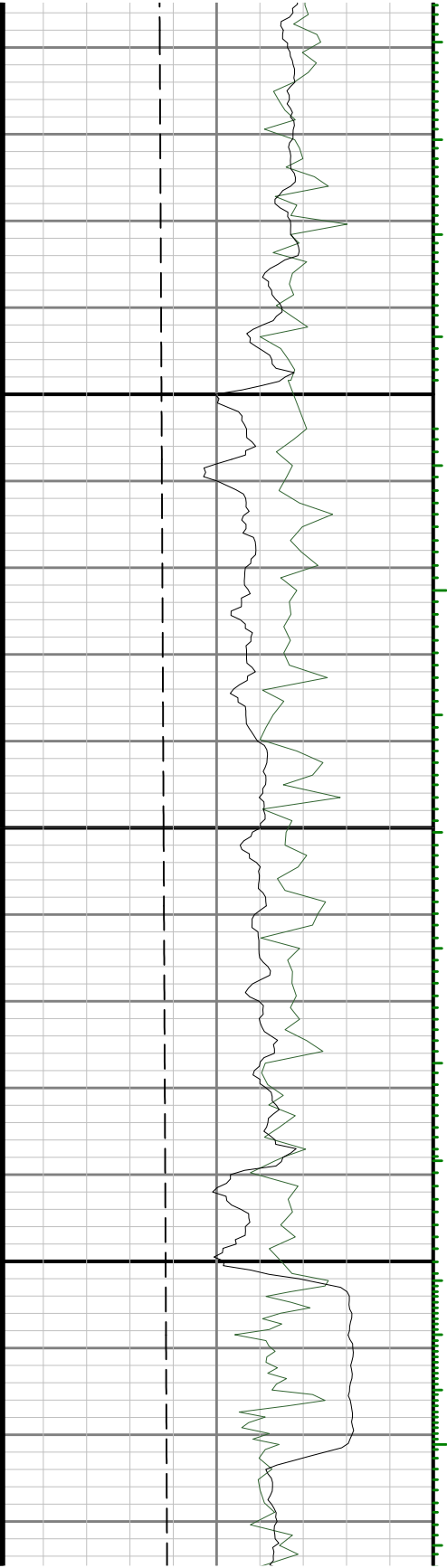
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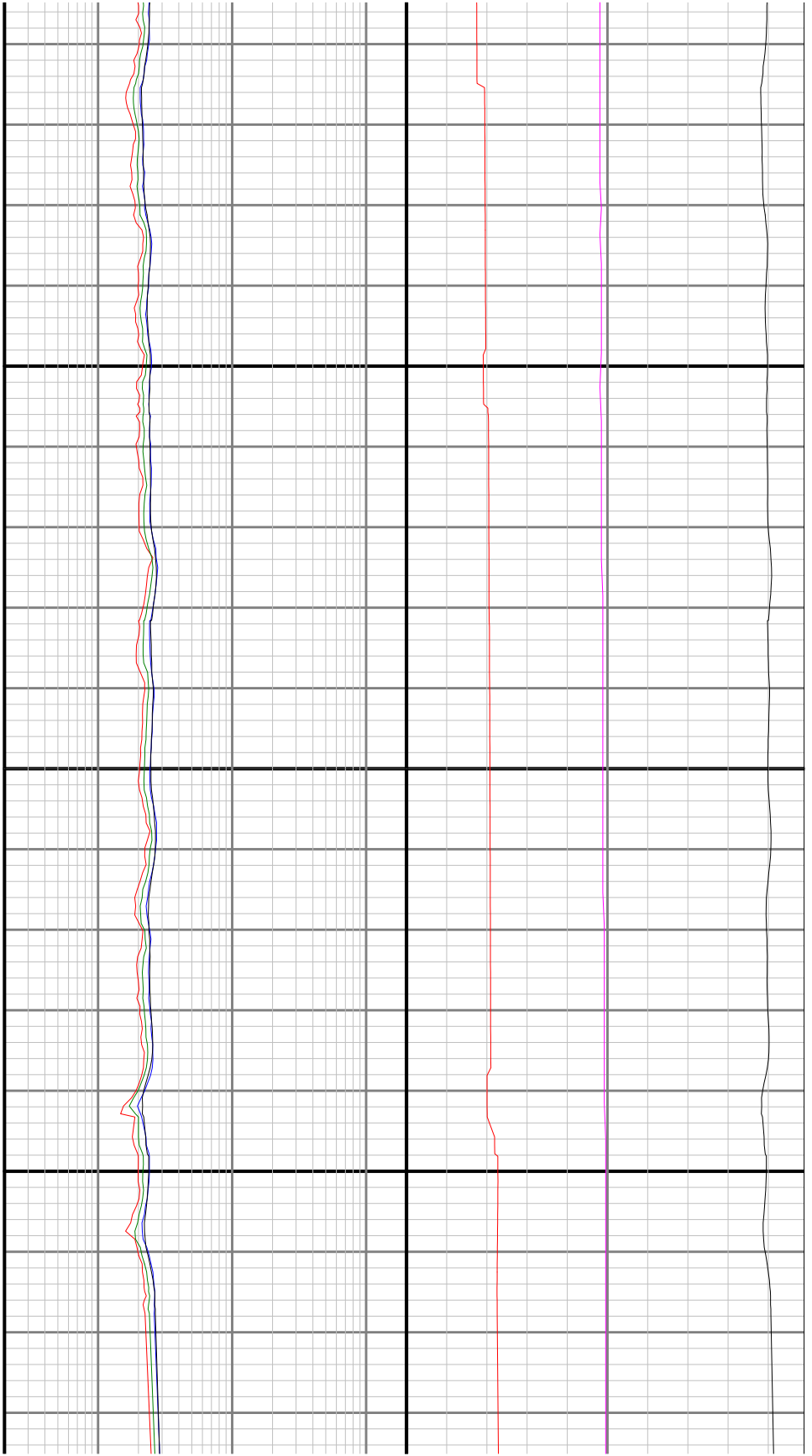


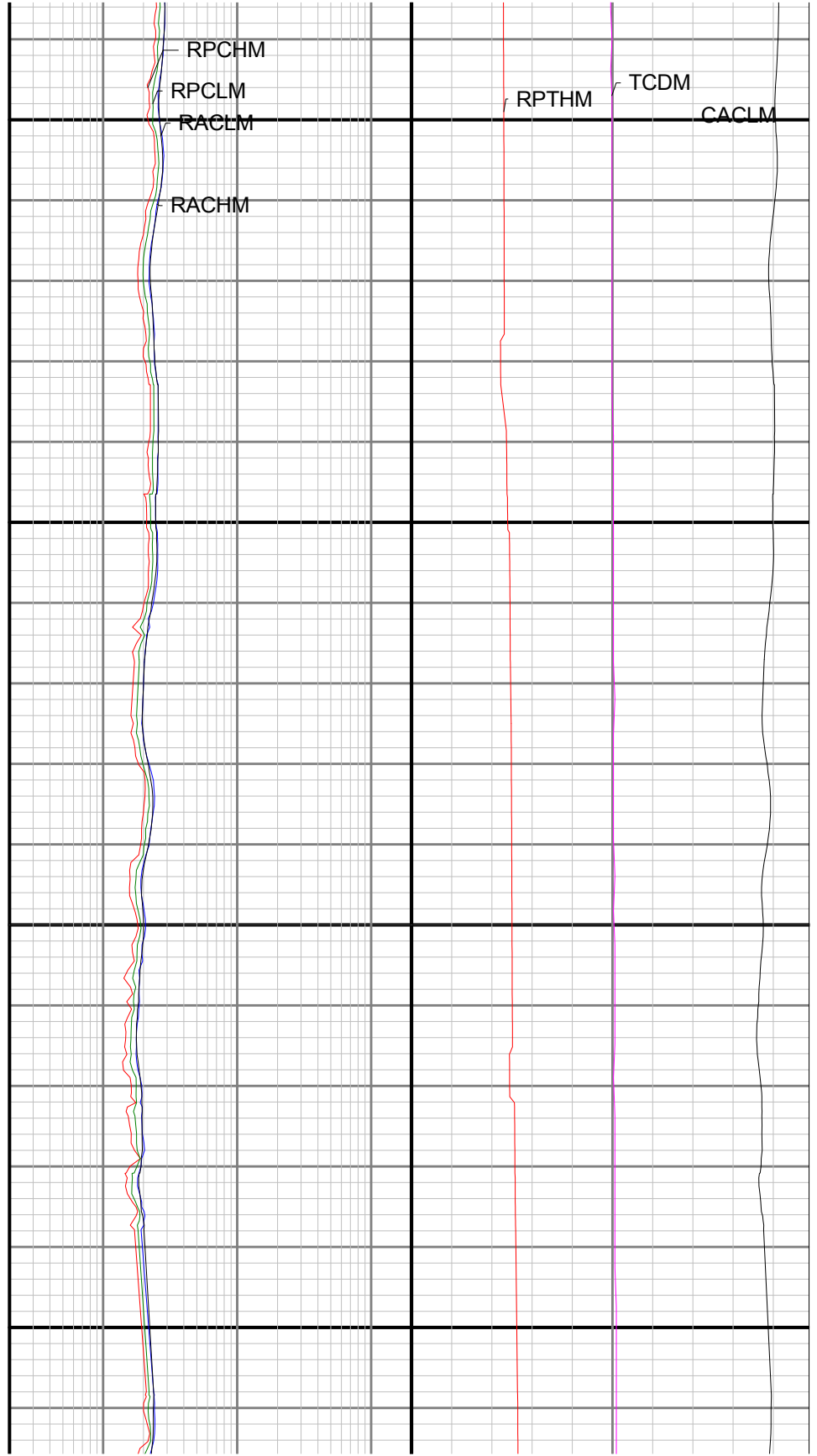
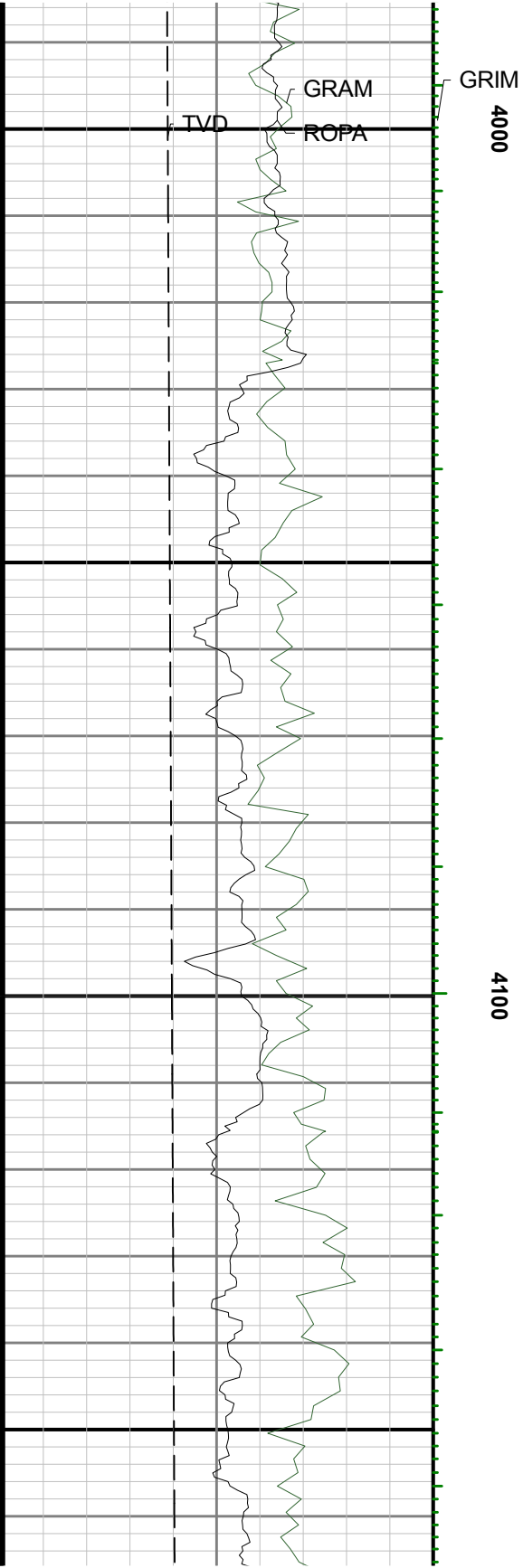


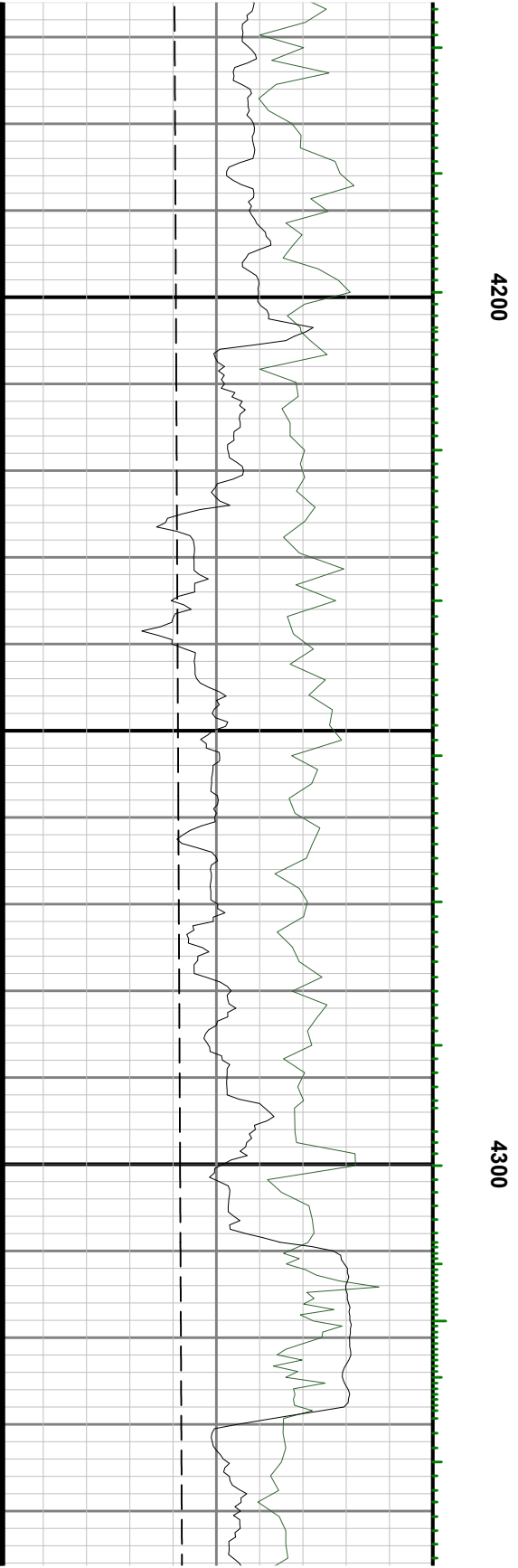
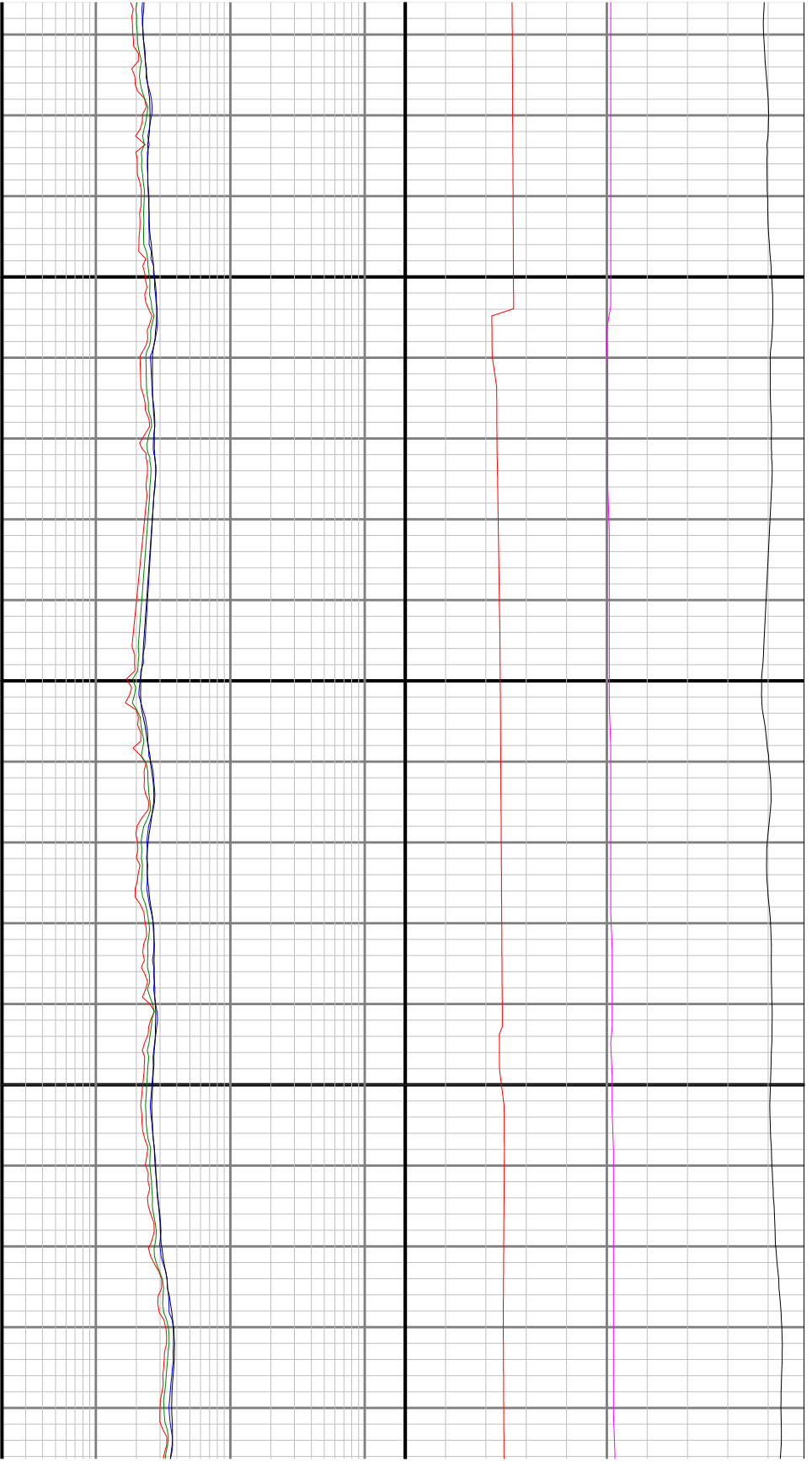


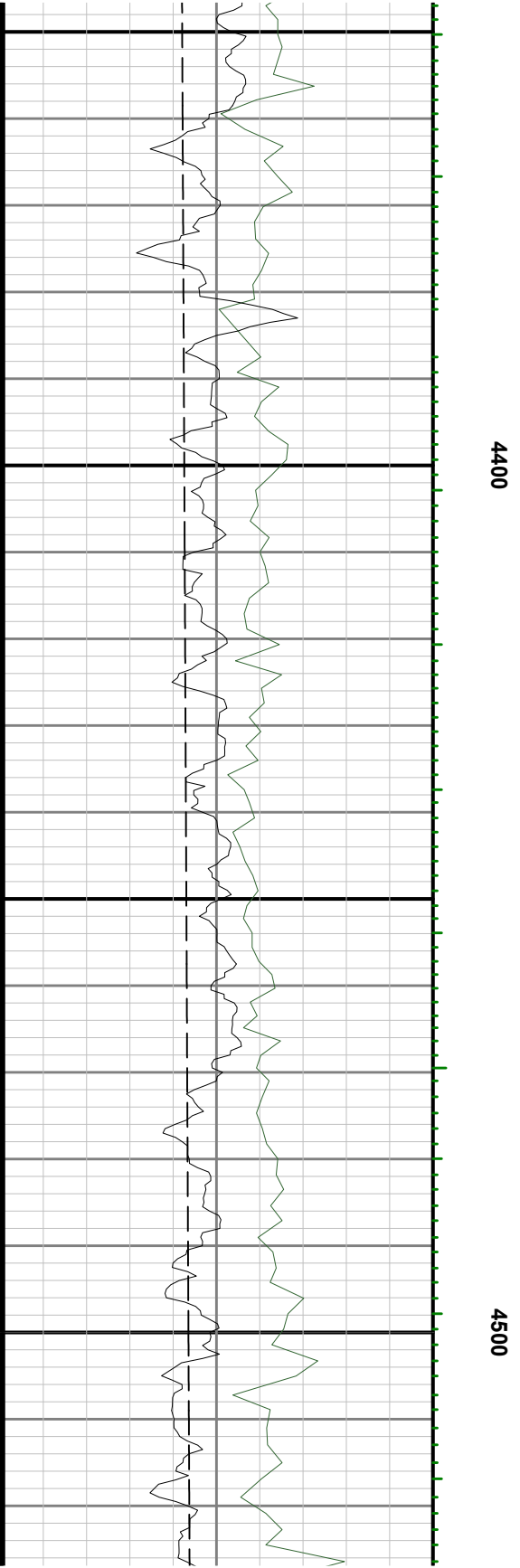
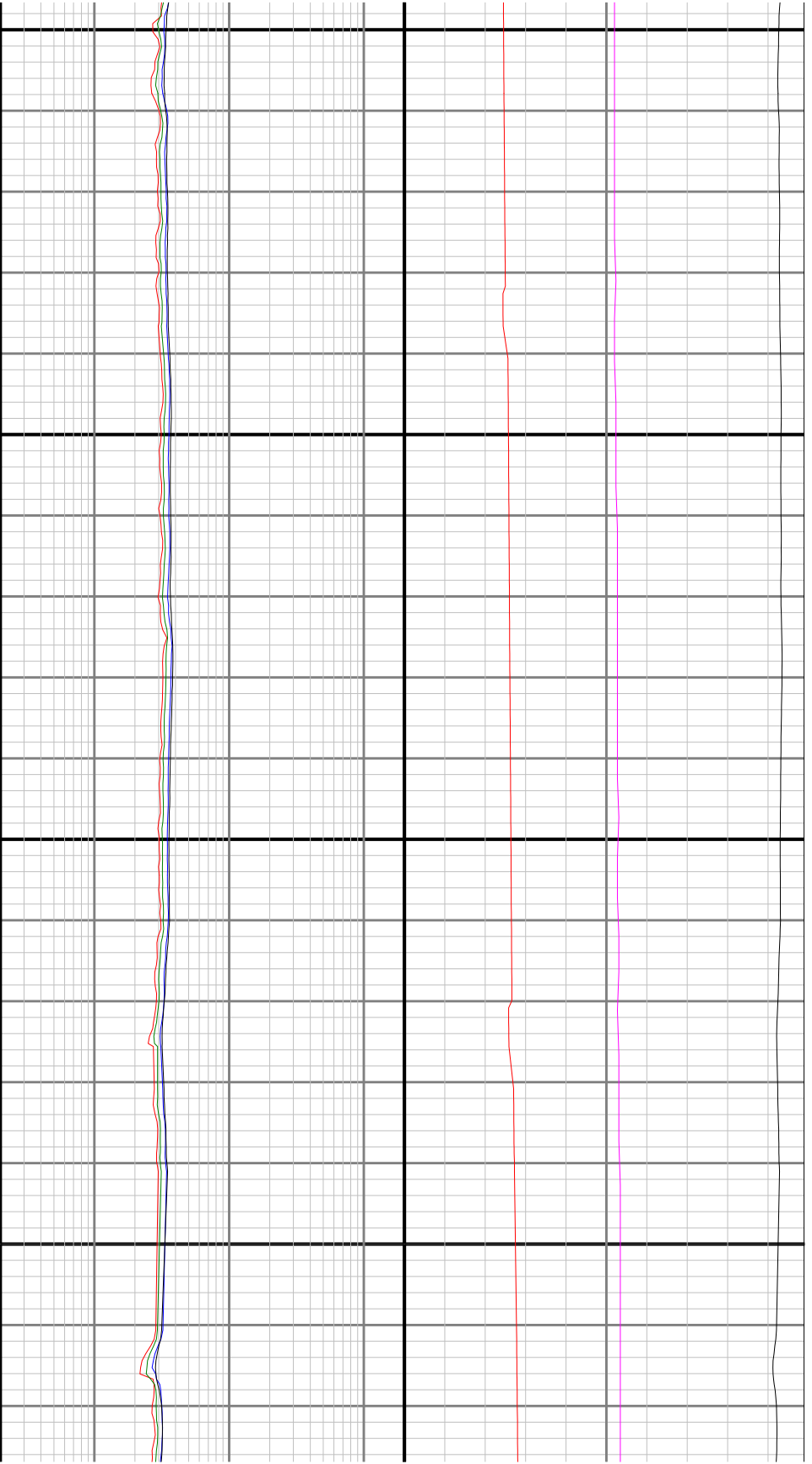


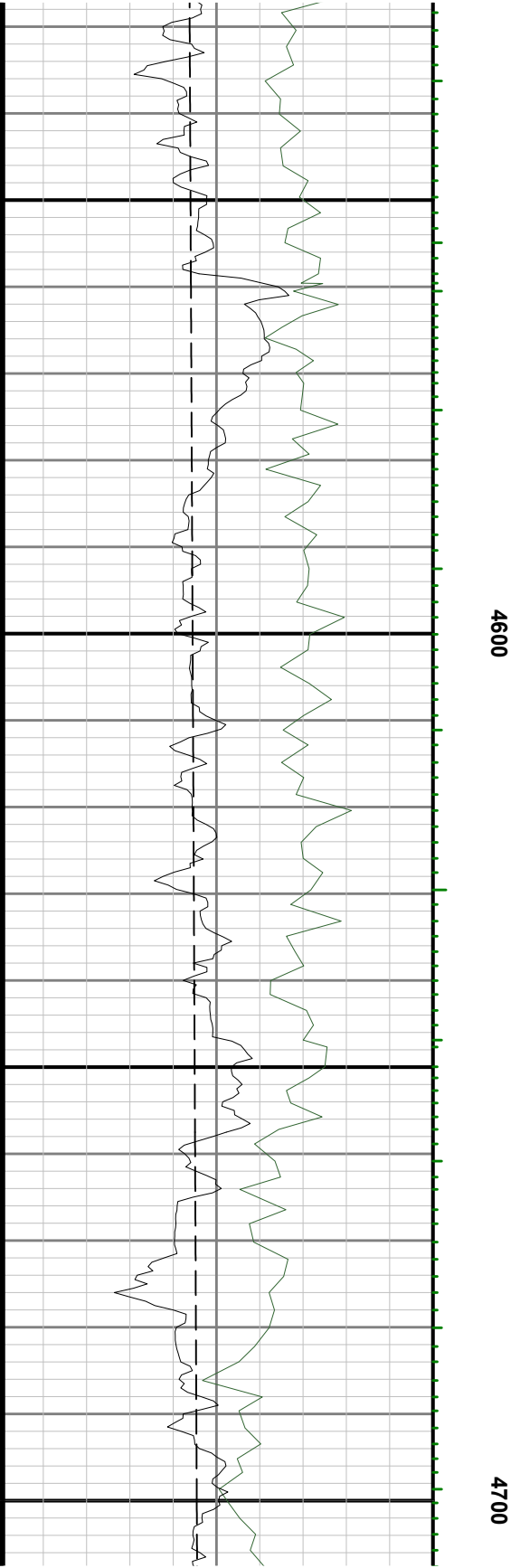
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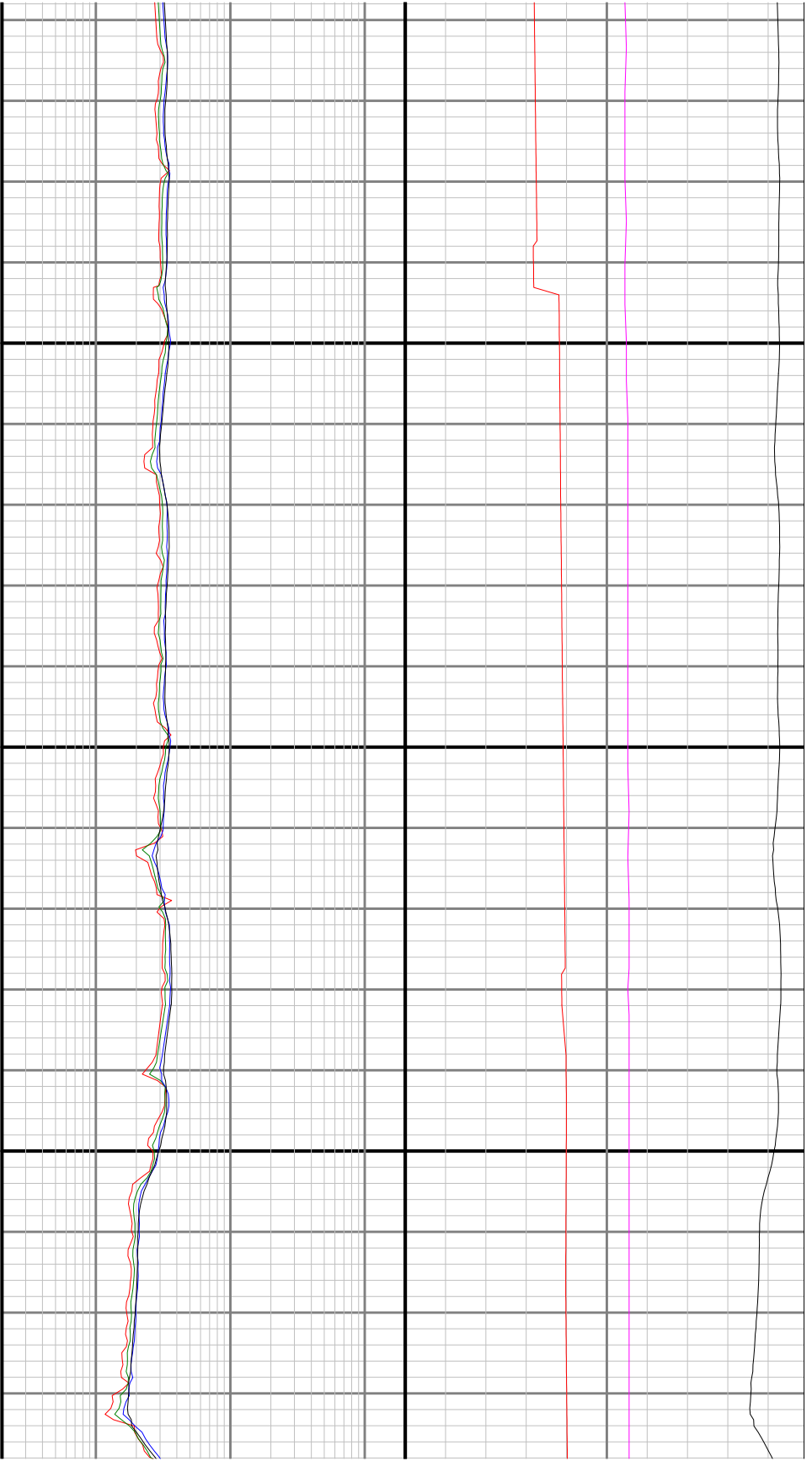




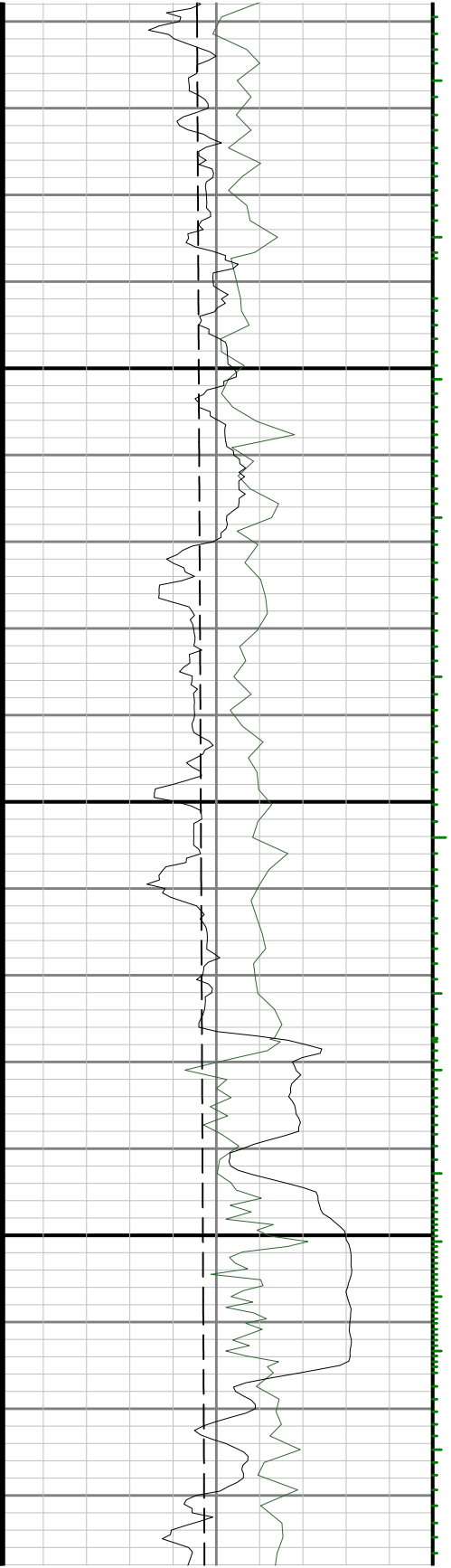


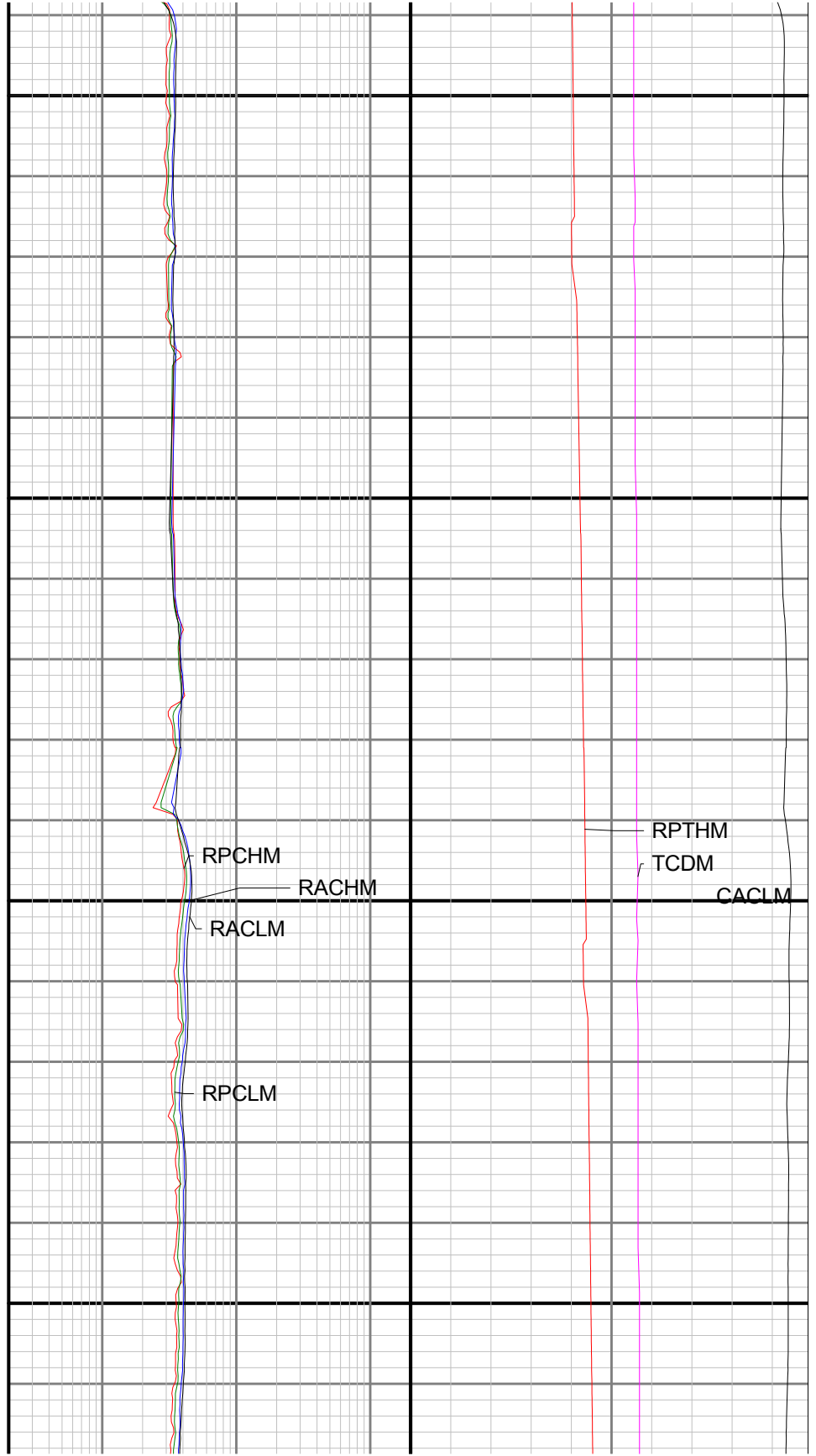
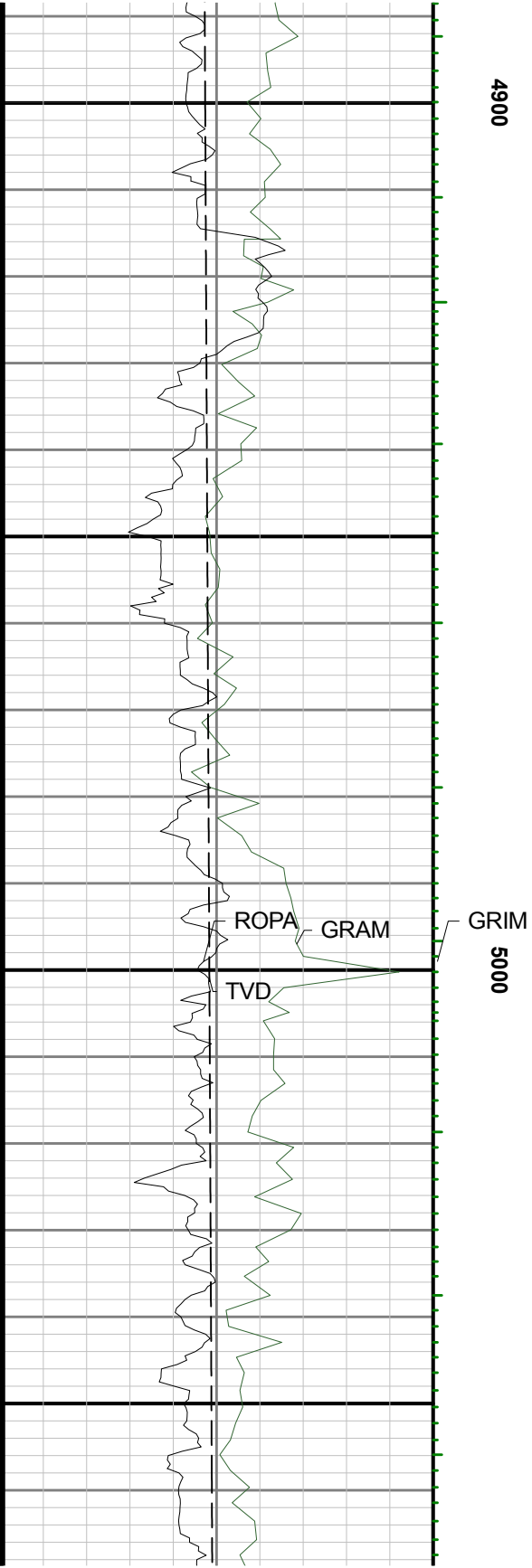


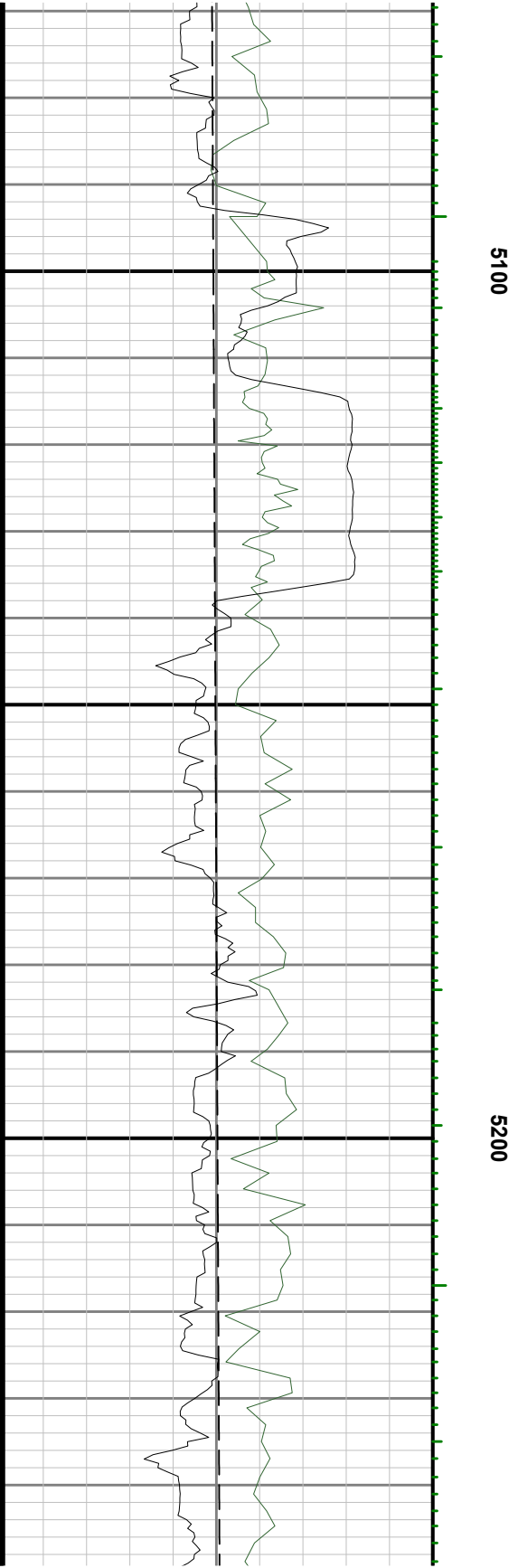
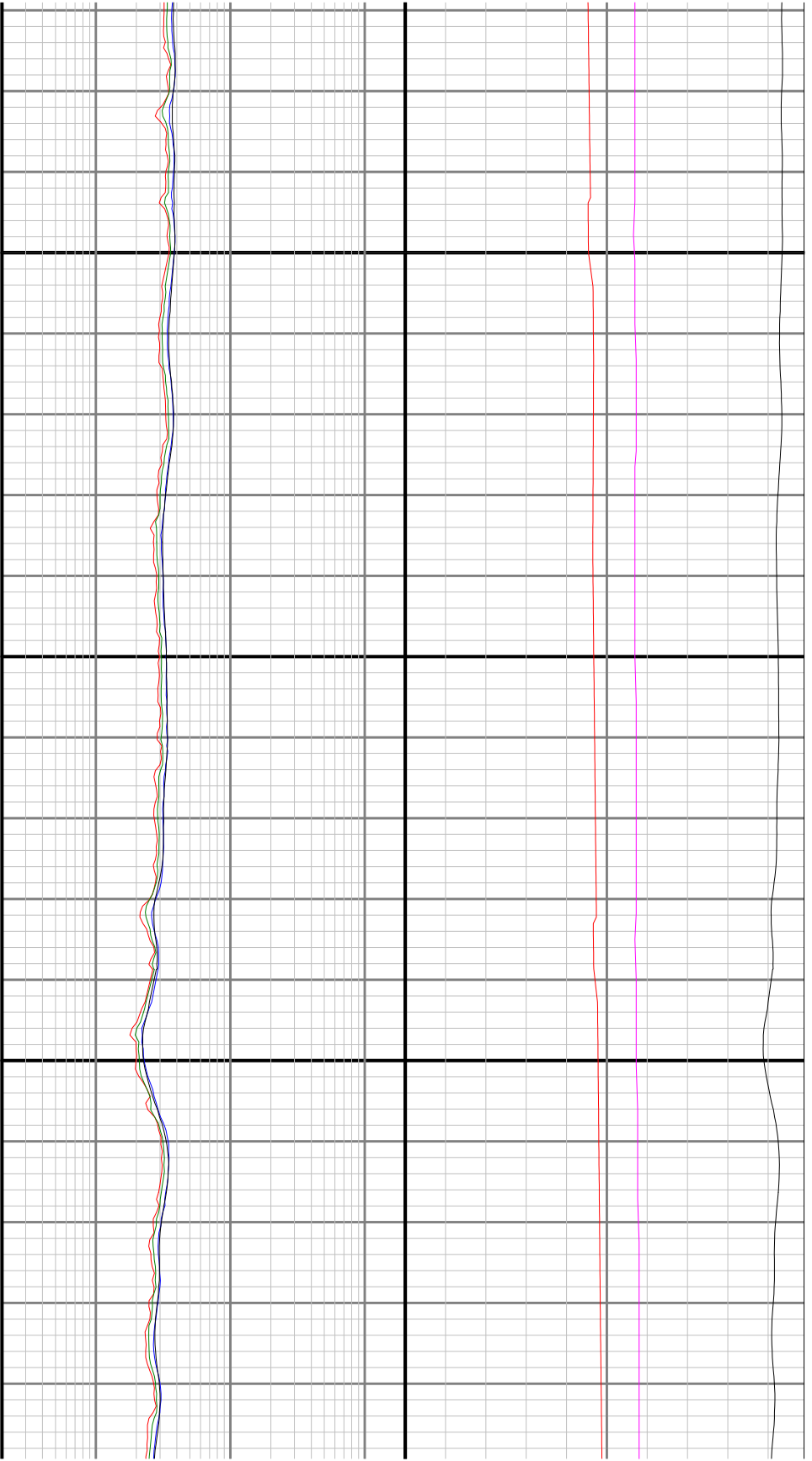


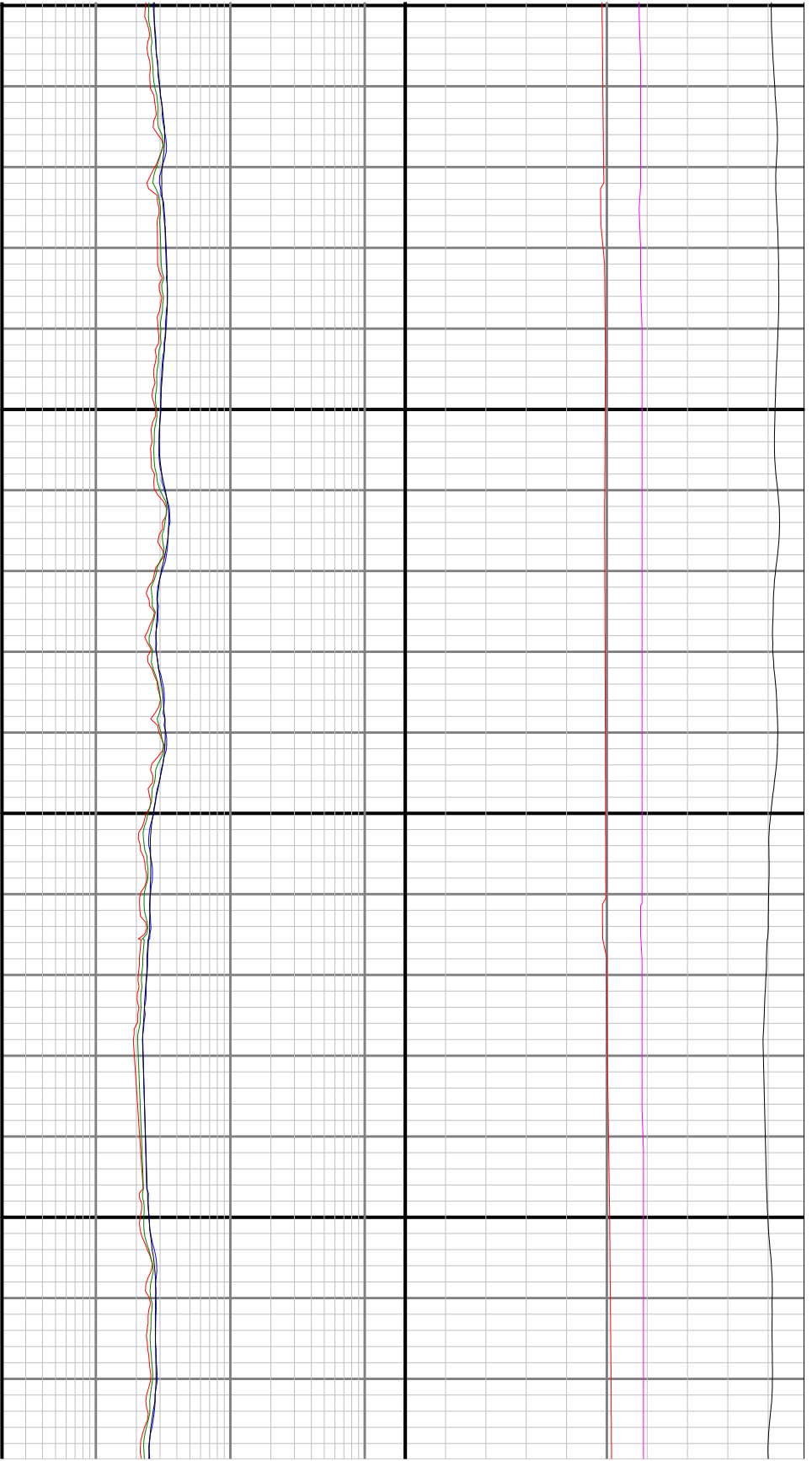


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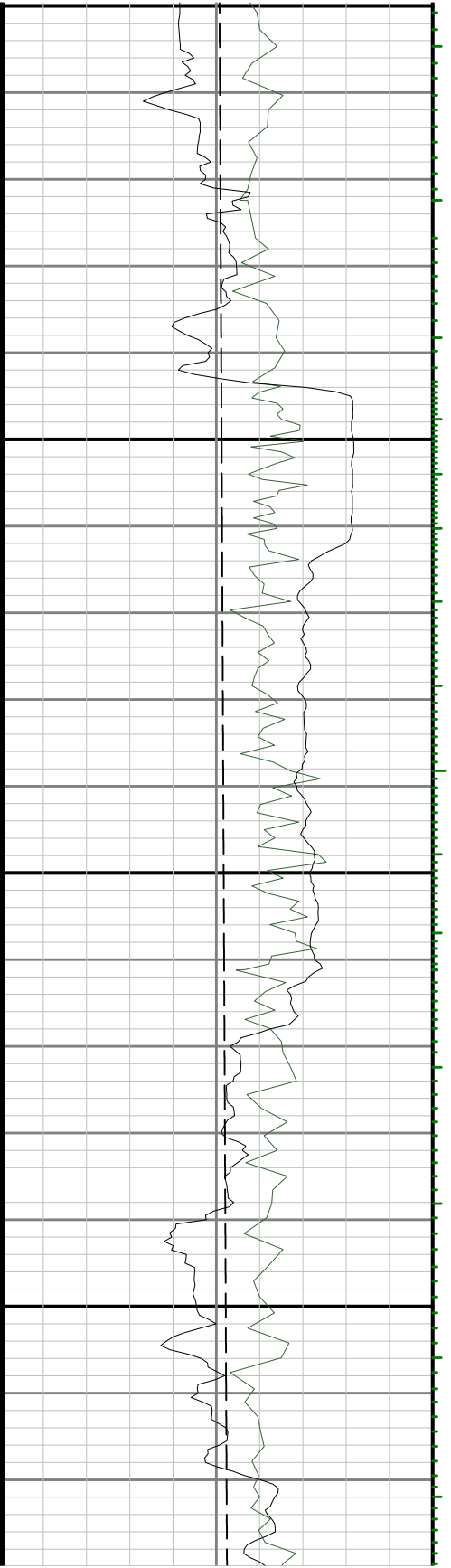


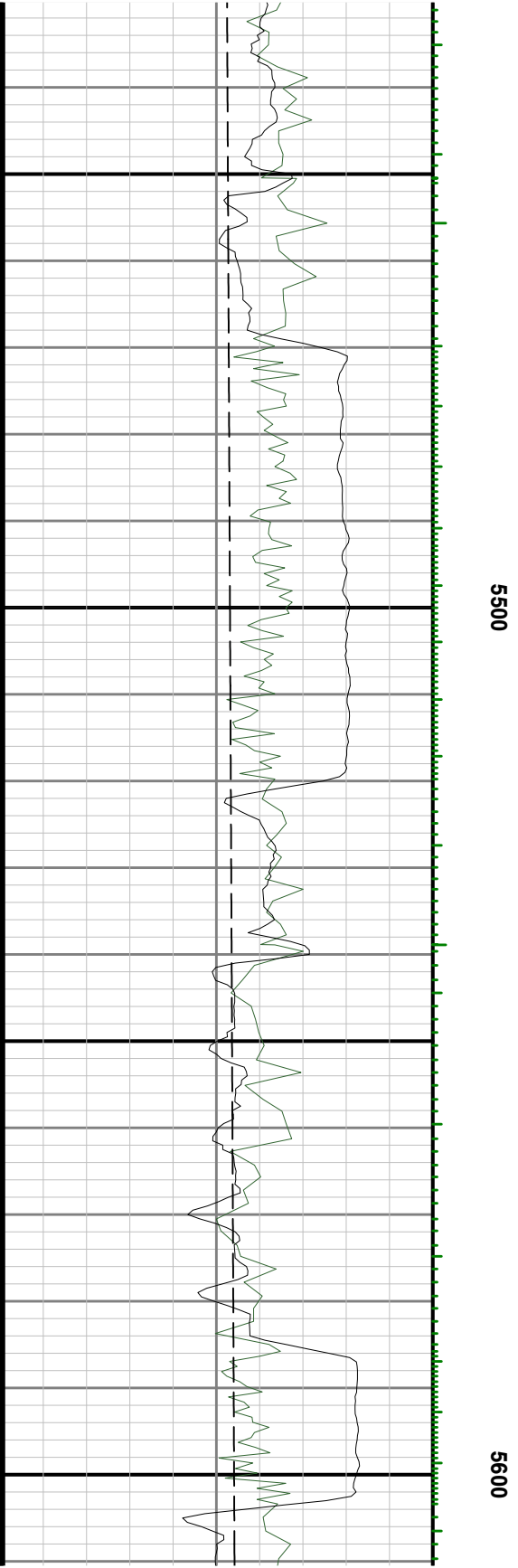


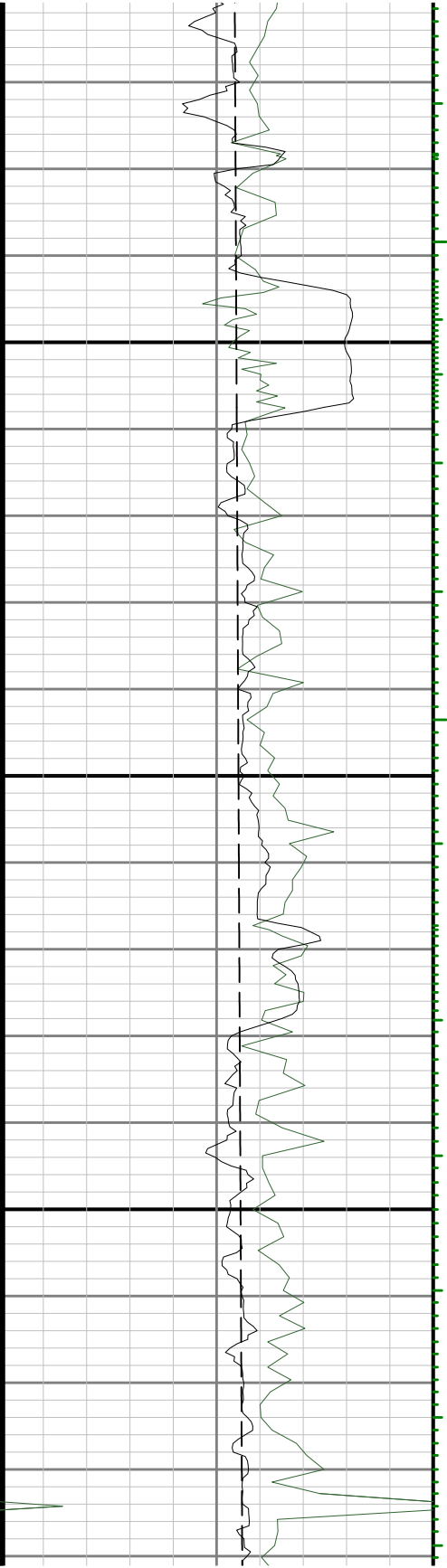


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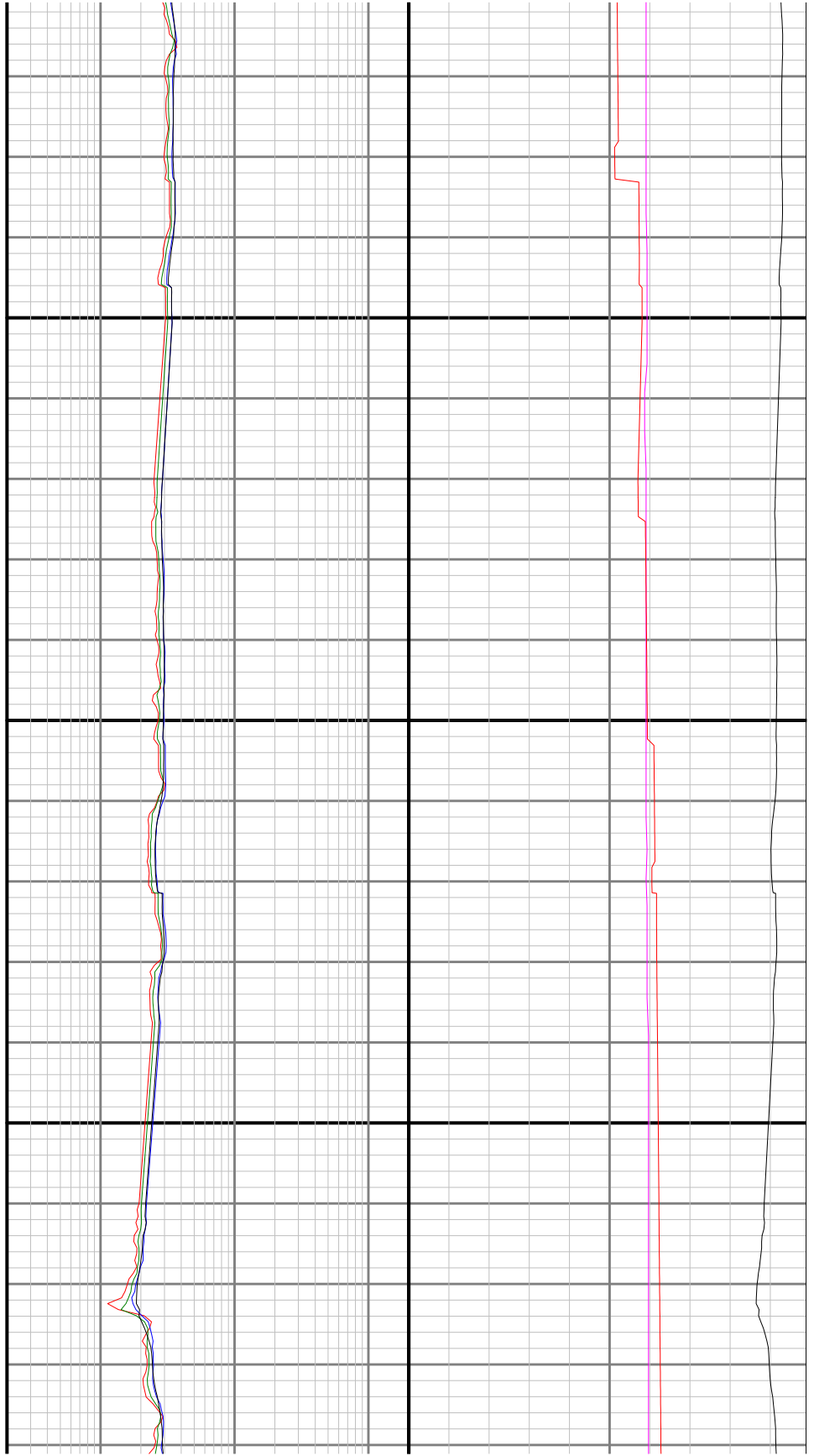
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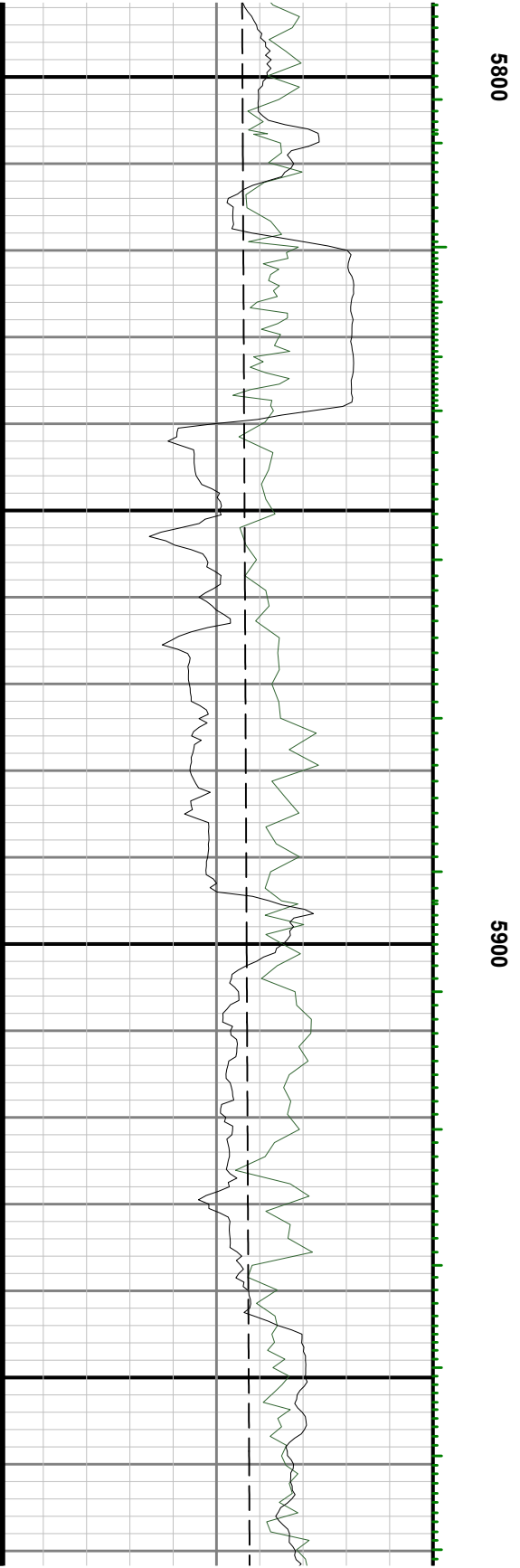
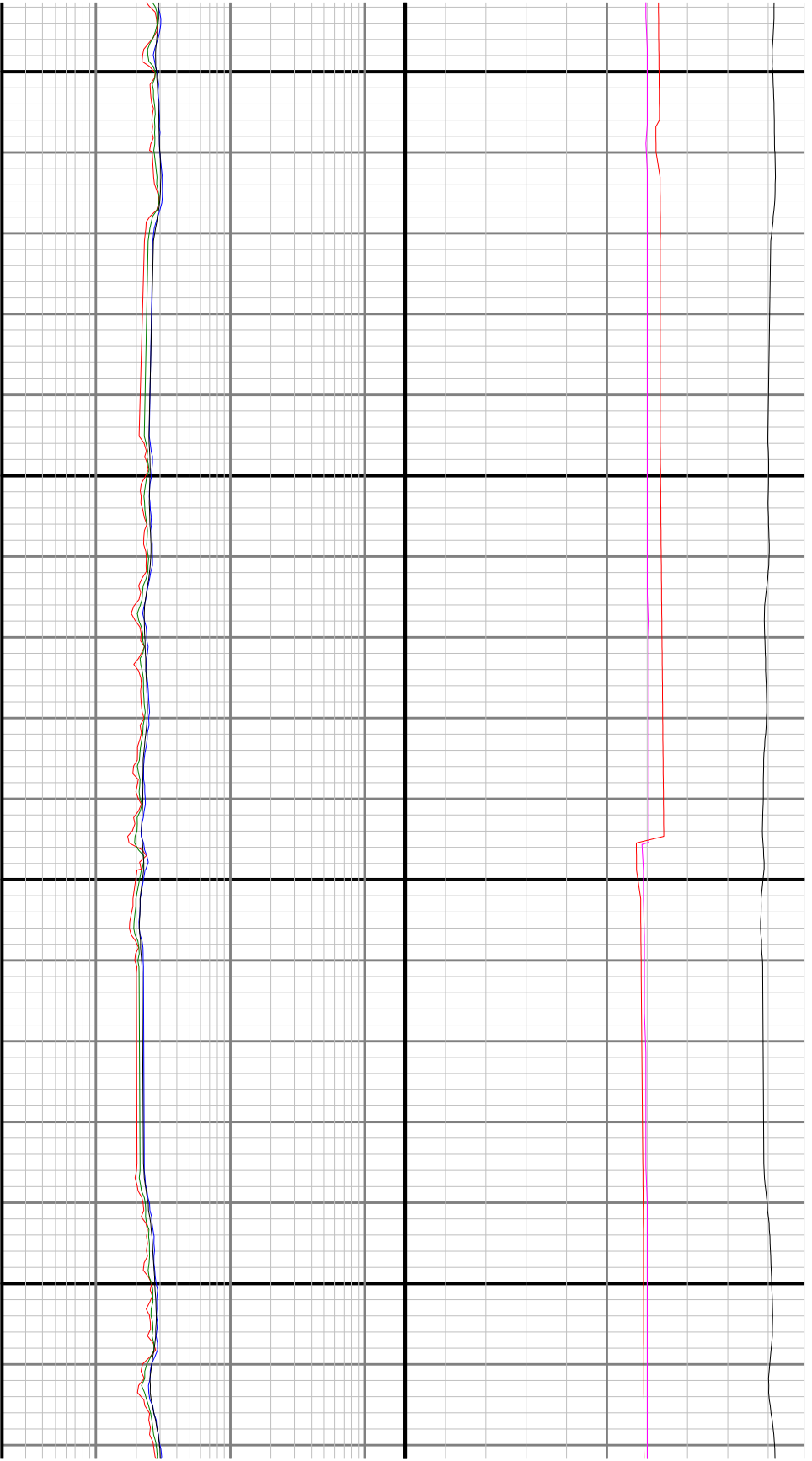


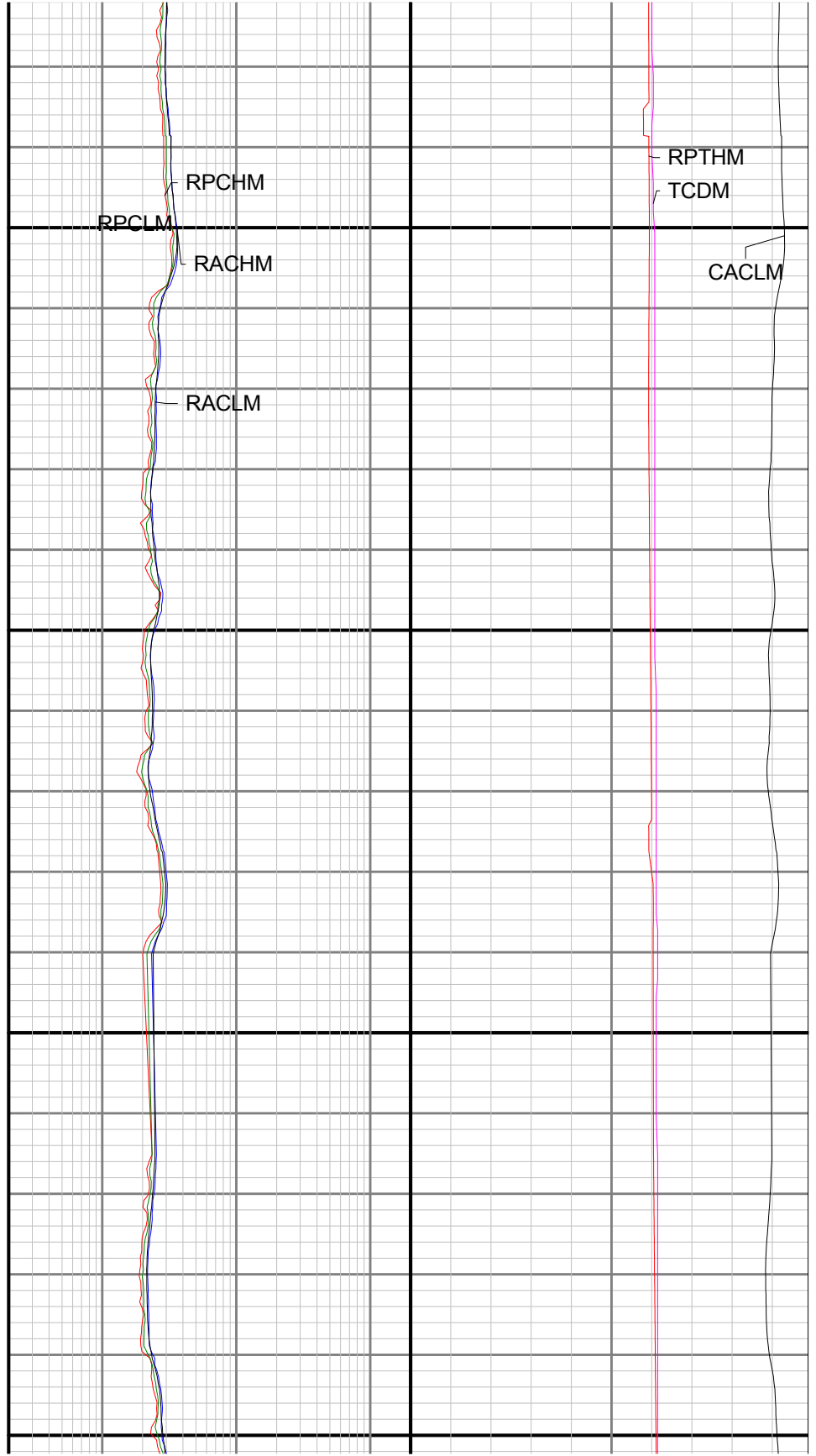
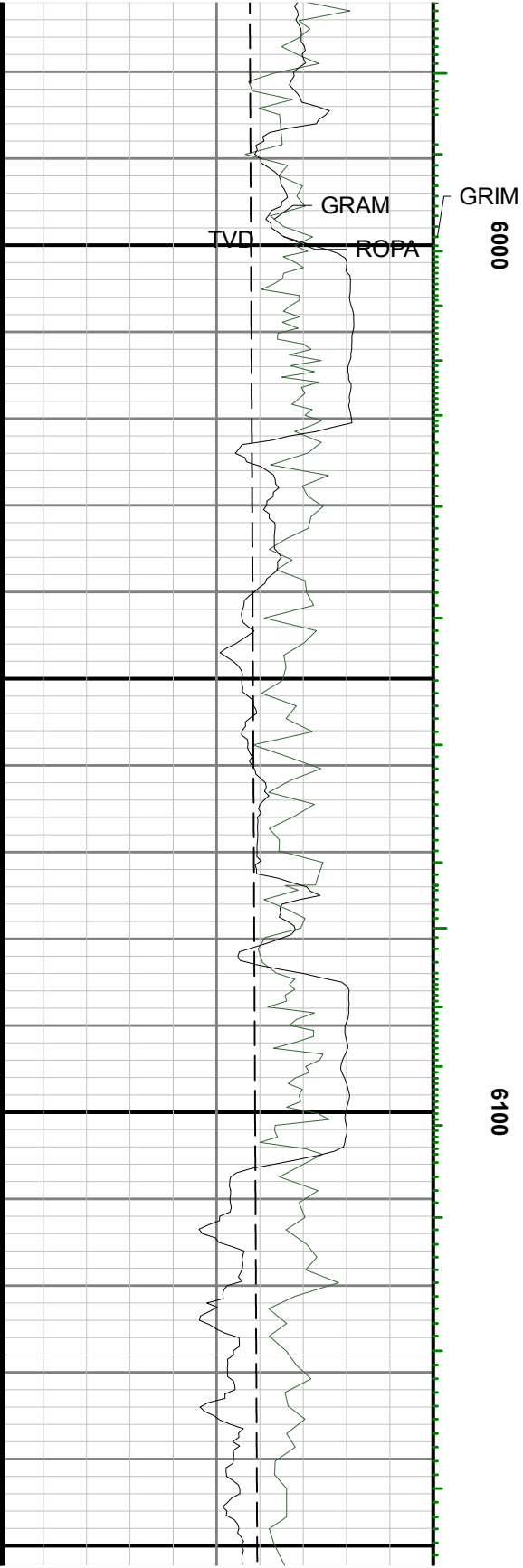


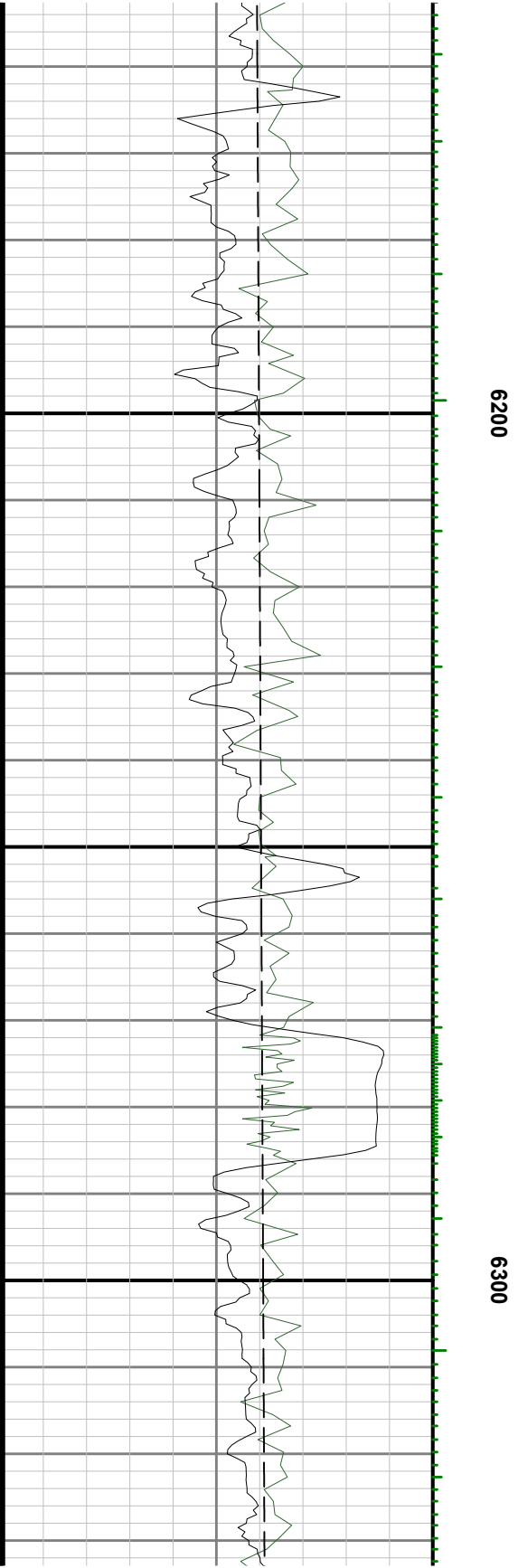
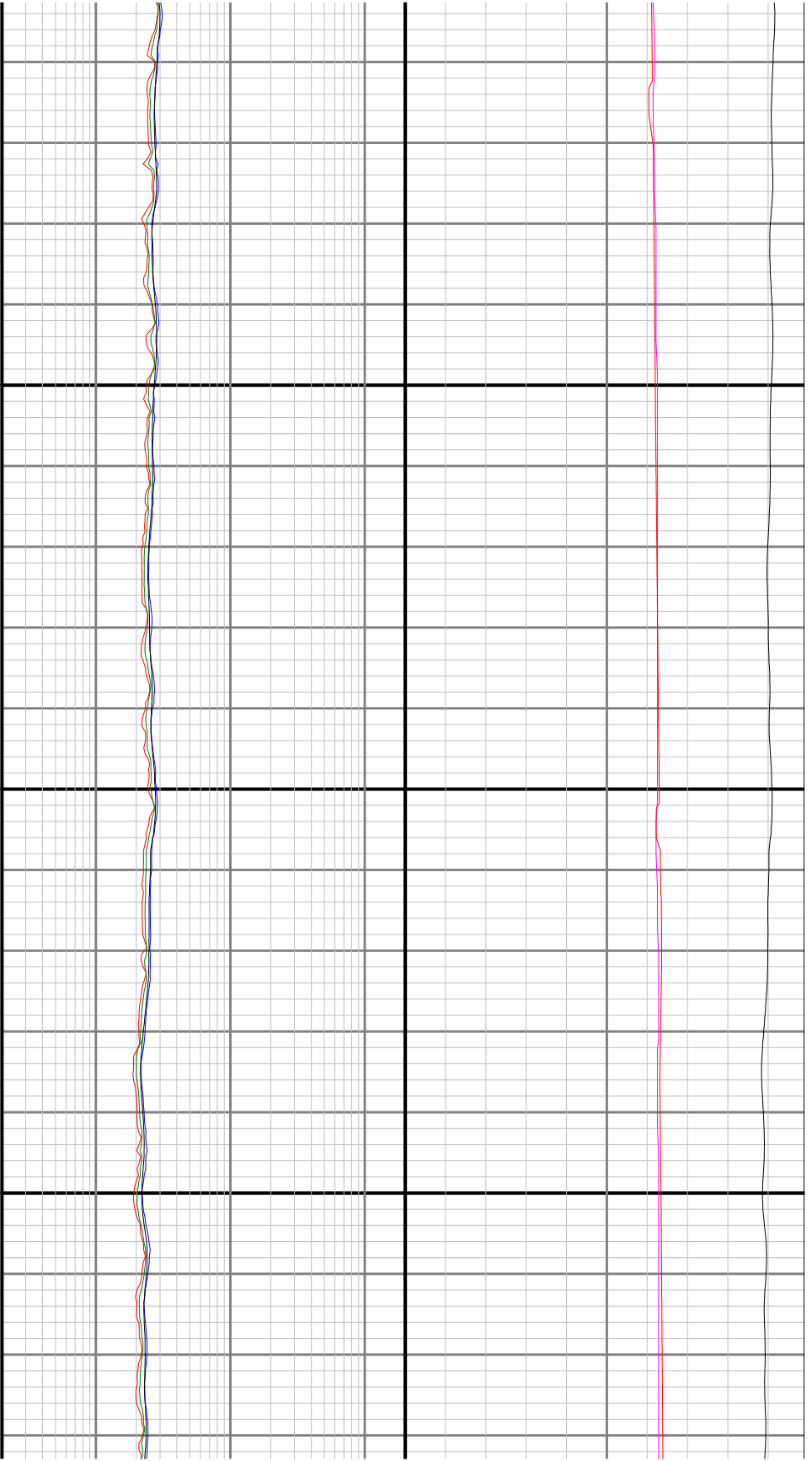


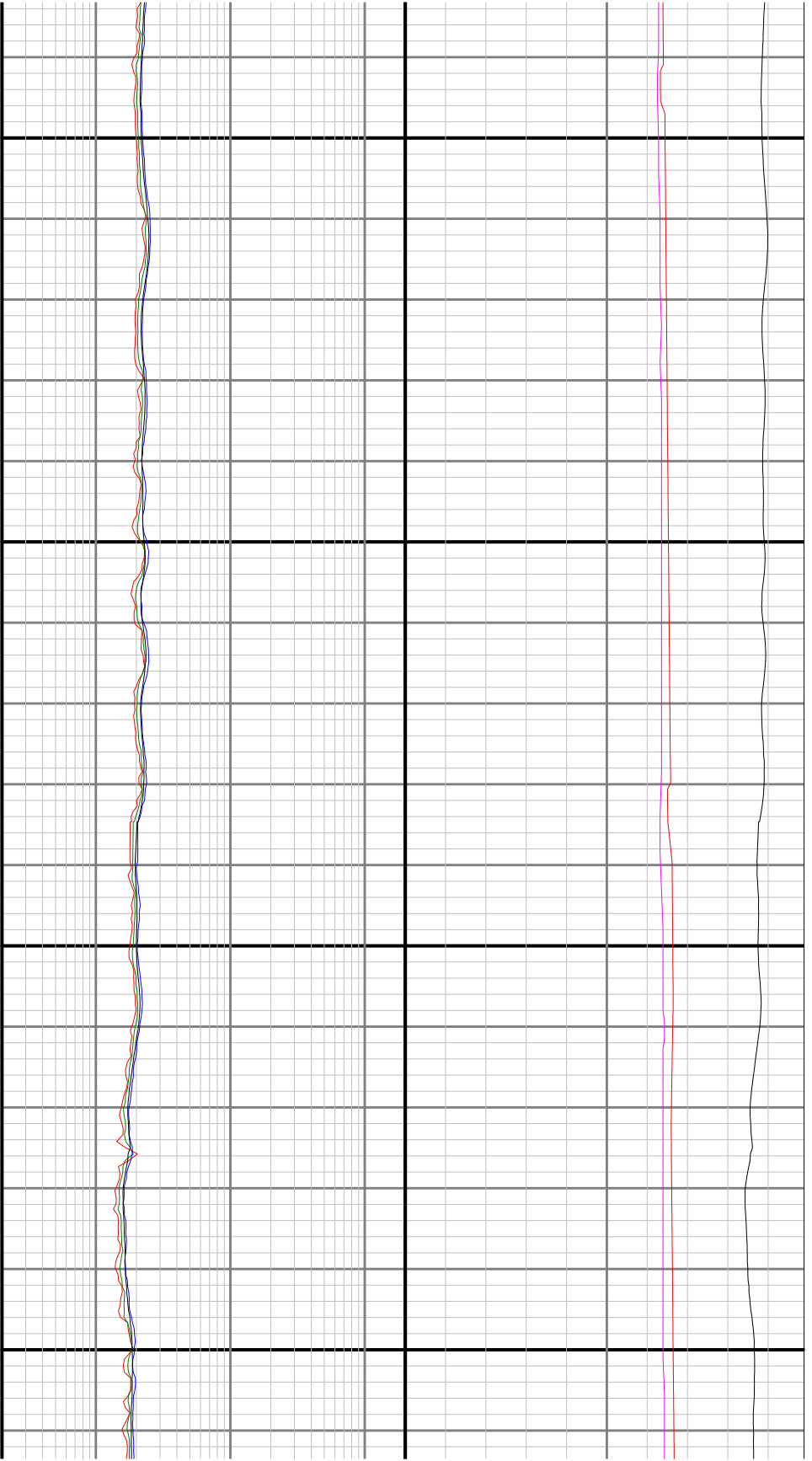
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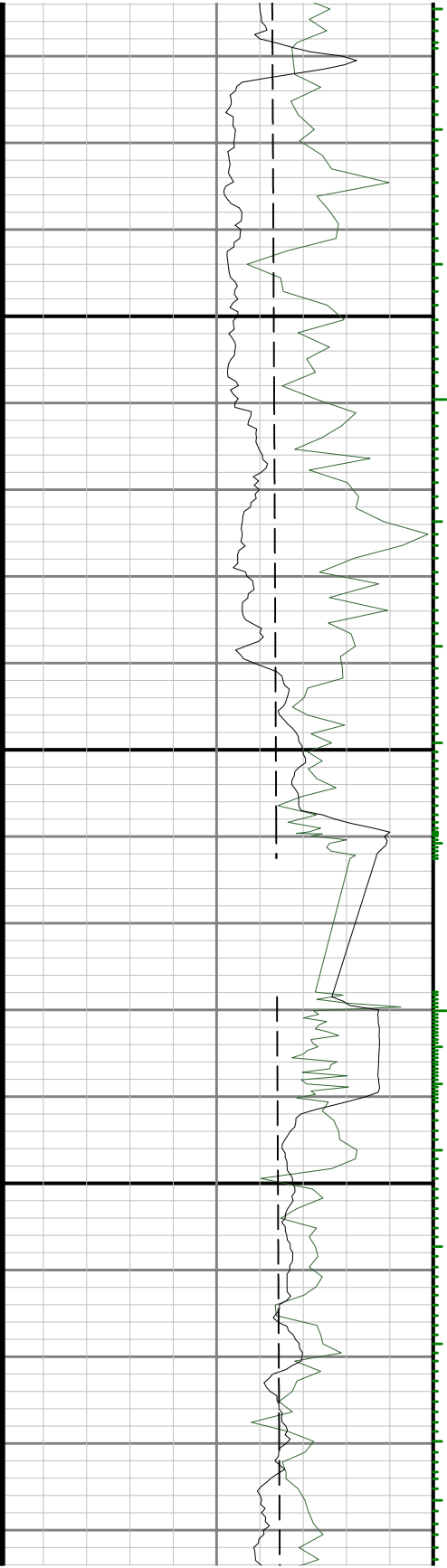




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6500

See Remark 2



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