



REALTIME LOG

Gamma Ray

BAKER HUGHES a GE company				REALTIME LOG																																																																					
<div><div><div><div><div><div>Scale:</div><div>1:240</div><div>Measured Depth</div></div></div><div><div>Depth Reference:</div><div>Driller's Depth</div></div><div><div>Status:</div><div>Final Print</div></div><div><div>API No:</div><div>051234923500</div></div><div><div>Job ID:</div><div>109687129</div></div><div><div>Permanent Datum (P.D.):</div><div>Ground Level</div></div><div><div>Log Measured From:</div><div>Rig Floor</div></div></div></div><div><div><div>Dates</div><div>From: 2019-05-11</div><div>To: 2019-05-16</div><div>Spud: 2019-05-11</div></div><div><div>Borehole Record</div><div>Casing Record</div></div></div></div>				<div><div>Company: Anadarko</div><div>Well: MAB 15-12HZ</div><div>Field: Wattenburg</div><div>Country: Weld</div><div>State: Colorado</div><div>Country: United States</div></div> <div><div>Surface Location:</div><div>Latitude: 040° 02' 44.898" N</div><div>Longitude: 104° 45' 41.936" W</div><div>Directional</div></div> <div><div>Other Services:</div></div>																																																																					
<div><div>SEC: 15</div><div>TWN: 1N</div><div>RGE: 66W</div></div> <div><div>Elevation: 5113.00 ft</div><div>Above P.D.: 17.00 ft</div><div>Elev. KB: N/A</div><div>Elev. DF: 5130.00 ft</div><div>Elev. GL: 5113.00 ft</div></div>																																																																									
<div><div>Dates</div><div>From: 2019-05-11</div><div>To: 2019-05-16</div><div>Spud: 2019-05-11</div></div> <div><div>Interval</div><div>Drilled (ft): 1879.00</div><div>Logged (ft): 1879.00</div><div>Azi Reference North: True</div><div>Dip Angle: (deg) 66.18</div><div>Total Magnetic Field Strength: (nT) 52119</div><div>Mag to Reference North Correction: (deg) 7.87</div></div> <div><div>Magnetic Field Reference</div></div>																																																																									
<div><div>Borehole Record</div><div>Casing Record</div></div>																																																																									
<table><tr><th>Hole Size (in)</th><th>From (ft)</th><th>To (ft)</th><th>Size (in)</th><th>Weight (lb/ft)</th><th>From (ft)</th><th>To (ft)</th></tr><tr><td>13.500</td><td>17.00</td><td>1879.00</td><td>9.625</td><td>25.00</td><td>17.00</td><td>1869.00</td></tr><tr><td>7.875</td><td>1879.00</td><td>18911.00</td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>				Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)	13.500	17.00	1879.00	9.625	25.00	17.00	1869.00	7.875	1879.00	18911.00																																																					
Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)																																																																			
13.500	17.00	1879.00	9.625	25.00	17.00	1869.00																																																																			
7.875	1879.00	18911.00																																																																							
<div><div>Mud Record</div><div>Devaton Record</div></div>																																																																									
<table><tr><th>Type</th><th>From (ft)</th><th>To (ft)</th><th>Hole Size (in)</th><th>Interval (ft)</th><th>Inc Azi (Start)</th><th>Inc Azi (End)</th></tr><tr><td>Diesel-Oil Based Mud</td><td>1879.00</td><td>18911.00</td><td>7.875</td><td>17302.00</td><td>13.84 22.69</td><td>91.76 177.92</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>				Type	From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Inc Azi (Start)	Inc Azi (End)	Diesel-Oil Based Mud	1879.00	18911.00	7.875	17302.00	13.84 22.69	91.76 177.92																																																								
Type	From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Inc Azi (Start)	Inc Azi (End)																																																																			
Diesel-Oil Based Mud	1879.00	18911.00	7.875	17302.00	13.84 22.69	91.76 177.92																																																																			
<div><div>Acquisition System</div><div>Software Version</div><div>Other</div></div>																																																																									
<div><div>Baker Hughes Cadence</div><div>Prior Studio</div></div> <div><div>RT 5.1</div><div>5.1.8355.1</div></div> <div><div>Rig: Aktia 522</div><div>Contractor: Aktia Drilling</div><div>District: RMA</div><div>Unit: D&E</div></div>																																																																									

© 2018 Baker Hughes, a GE company, LLC – All rights reserved. Baker Hughes, a GE company, LLC and its affiliates (“BHGE”) provides this information on an “as is” basis for general information 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	7.875	PDC	3.00	Steerable	1879.00	18869.00	1879.00	18911.00	2019-05-11 01:09	2019-05-15 20:18	81.29

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
John Mason	2019-05-11	2019-05-12	Joshua Monroe	2019-05-11	2019-05-15	Teni Onafowokan	2019-05-13	2019-05-15

Mud Properties Record

Date / Time	Run No.	Depth (ft)	Mud Type	Density (ppg)	Viscosity (cP)	pH	Fluid Loss (cm3)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
2019-05-11 18:00	1	1879.00	Diesel-Oil Based Mud	9.5	15	N/A	N/A	69/20	Active Pit	32000	0.00
2019-05-12 07:00	1	4029.00	Diesel-Oil Based Mud	9.4	15	N/A	N/A	69/21	Active Pit	29000	0.00
2019-05-13 18:00	1	10878.00	Diesel-Oil Based Mud	9.1	14	N/A	N/A	69/21.5	Active Pit	35000	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	NaviGamma	13312567	Gamma (single)	11.47	41.74	6.500	3.250
1	NaviGamma	13312567	VSS	14.89	45.16	6.500	3.250
1	NaviGamma	13312567	Directional (mag)	14.89	45.16	6.500	3.250

Service and Tool Mnemonics

Mnemonic	Name	Description
GAM	NaviGamma	Probe Based Gamma Module, NaviTrak Platform

Comments

- Depth measurements were obtained from a depth control system not supplied by Baker Hughes. Due to lack of control by Baker Hughes logging engineers depth calibrations and measurements could not be independently verified and the unverified depths as supplied to Baker Hughes are being used to represent logging data.
- A sliding indicator is shown on the left side of track 1 as a heavy line. This indicator has been depth-shifted to the Gamma Ray sensor offset to correspond with Gamma Ray data acquired while sliding.
- Baker Hughes run 1 utilized 6 1/2 inch Evo One services (Directional and Gamma Ray) behind a 7 7/8 inch bit and steerable assembly from 1879 to 18911 feet MD (1852 to 2683 feet TVD).



- (1852 to 1863 feet TVD).
- 4 Gamma Ray (GRAX) scale is presented from a 0 to 200 API scale at the request of the customer.
- 5 Numerous gaps are present throughout the log due to surveying while on bottom drilling ahead.

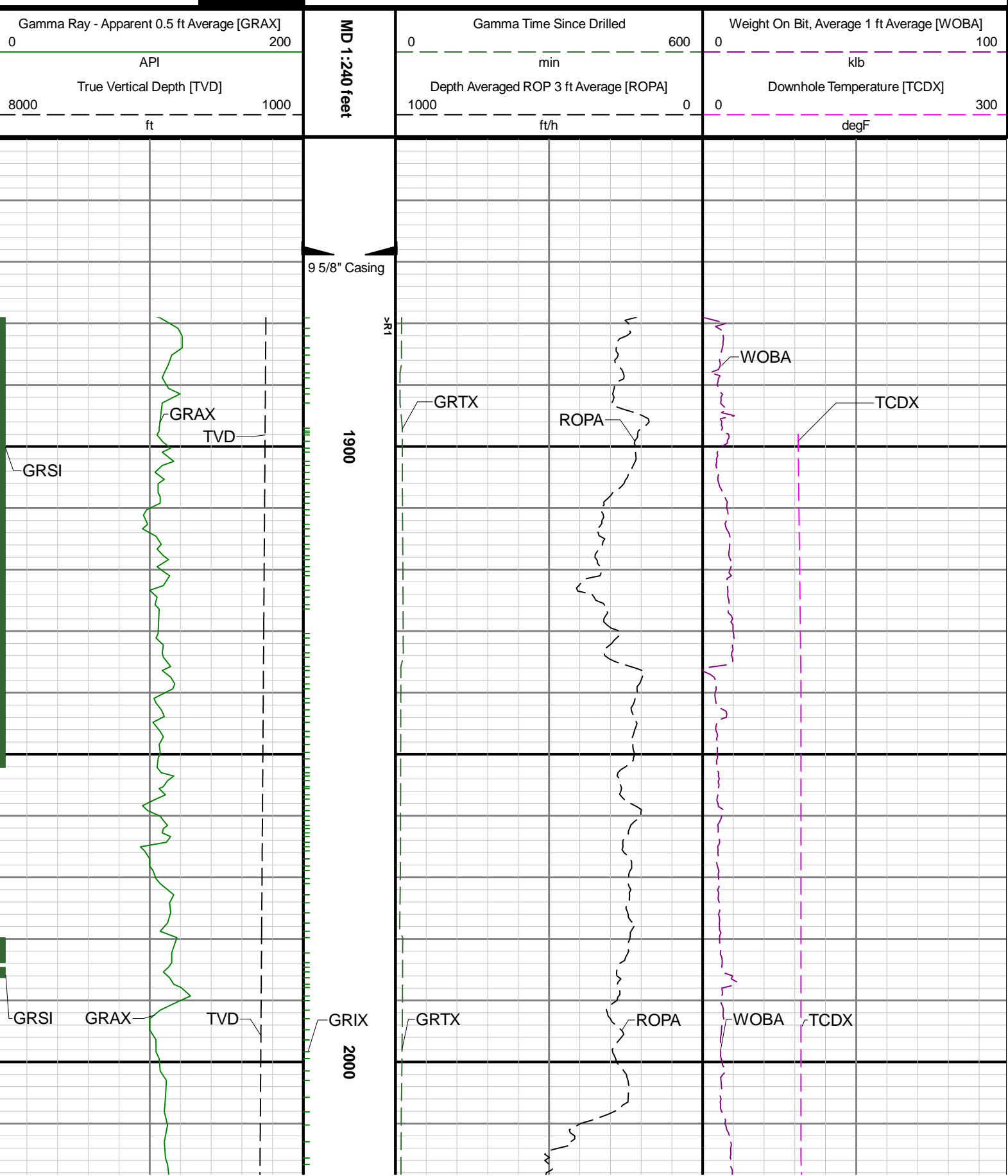
Remarks

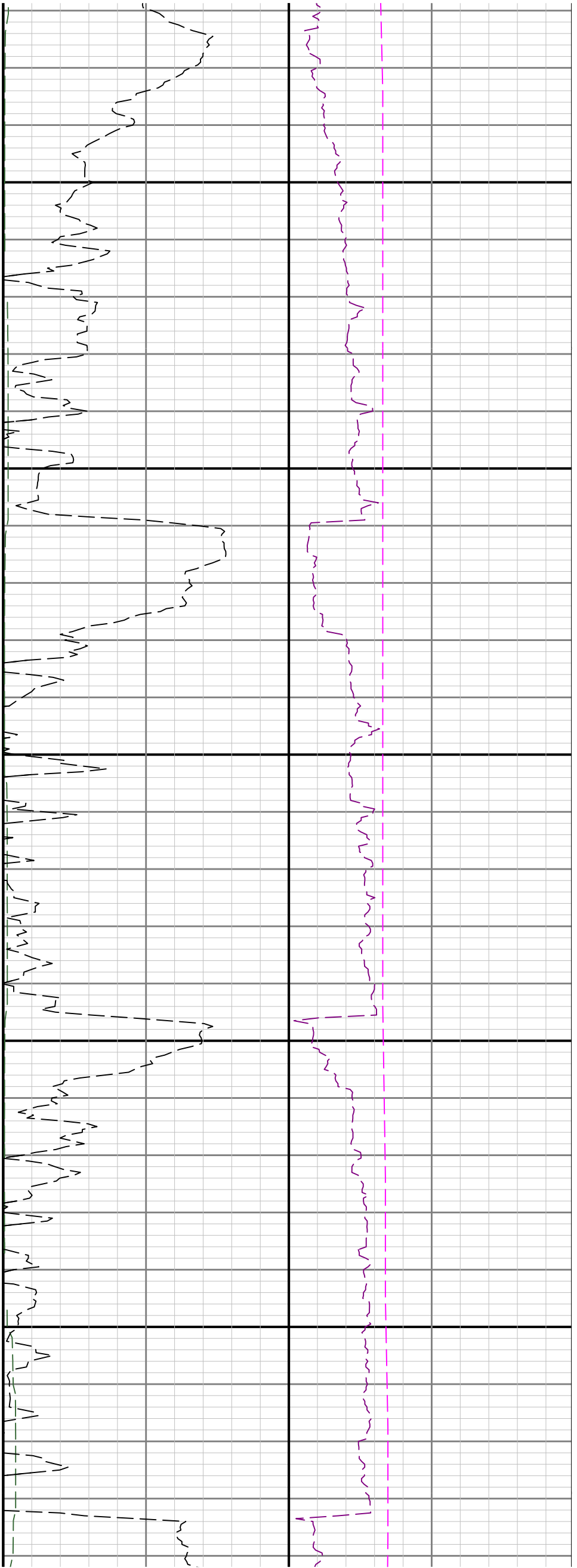
Number	Depth (ft)	Hole Section (in)	Run No.	Remark
1	18880.00	7.875	1	The interval from 18869 to 18911 feet MD (7683 feet TVD) was not logged due to sensor to bit offset at well TD.

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
GRSI	Sliding Indicator Flag	unitless

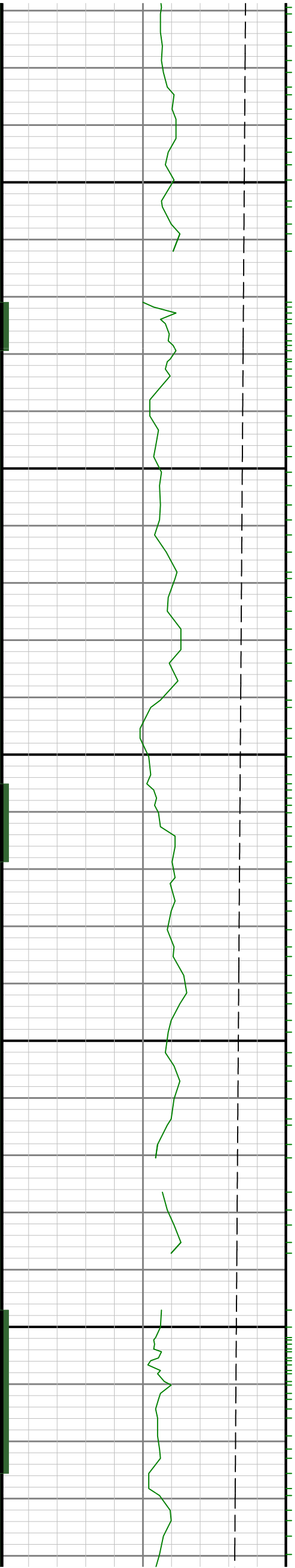
 	Company	Anadarko			
	Well	MAB 15-12HZ			
	Interval	Date From:	2019-05-11 21:34	Interval Drilled: (ft)	1879.00 - 18910.85
		Date To:	2019-05-16 00:04	Interval Logged: (ft)	1879.00 - 18869.00
	Created	2019-05-16 00:05:01			

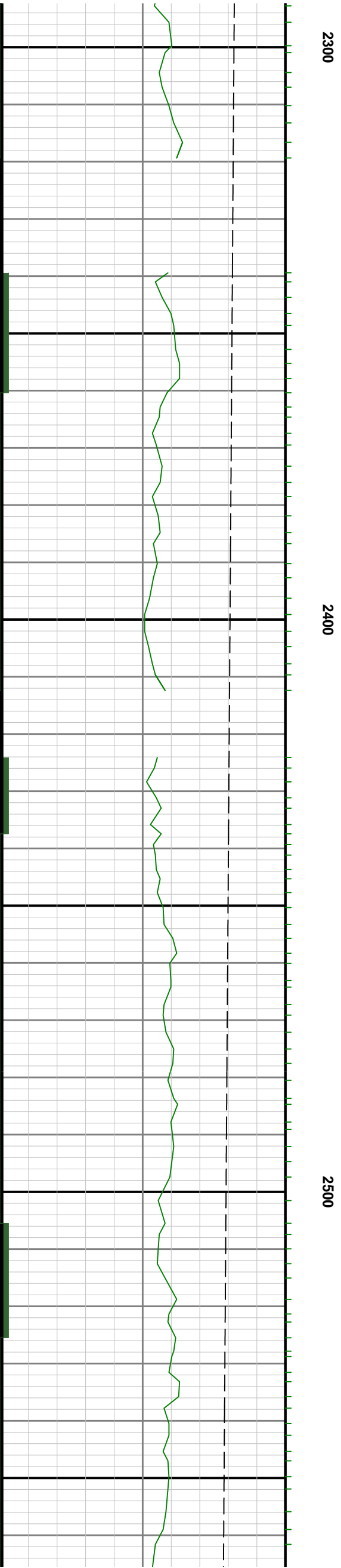
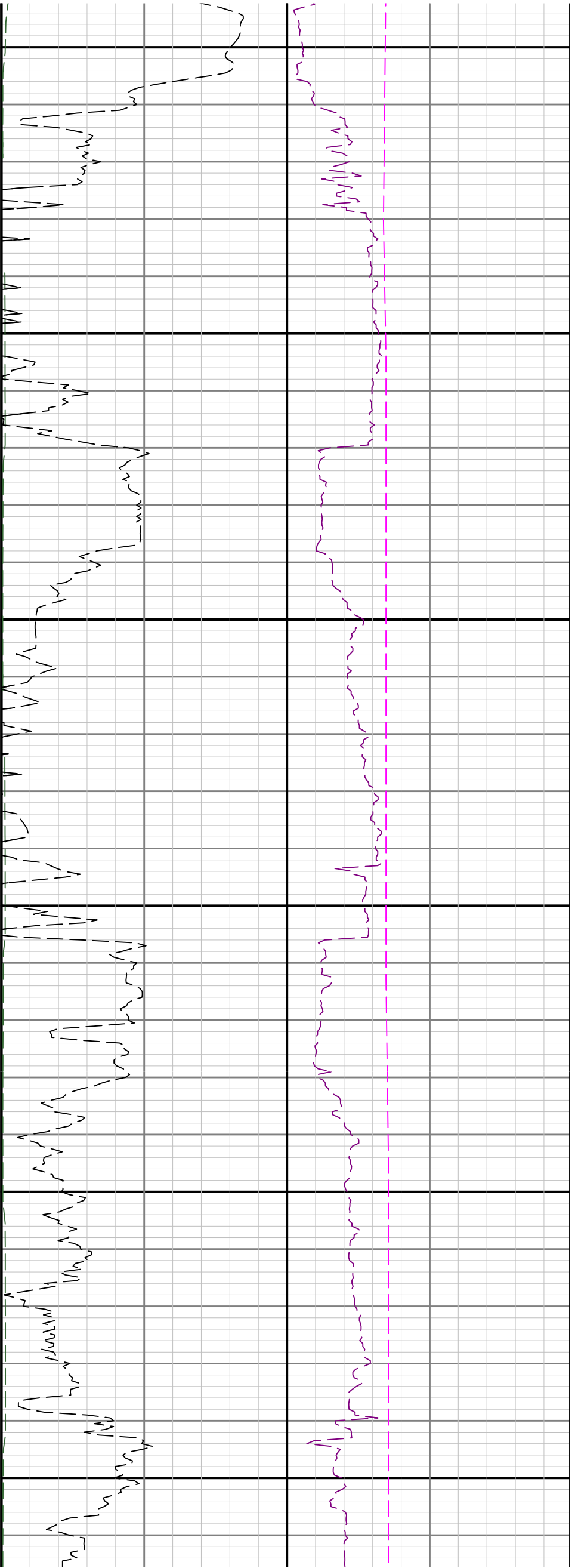


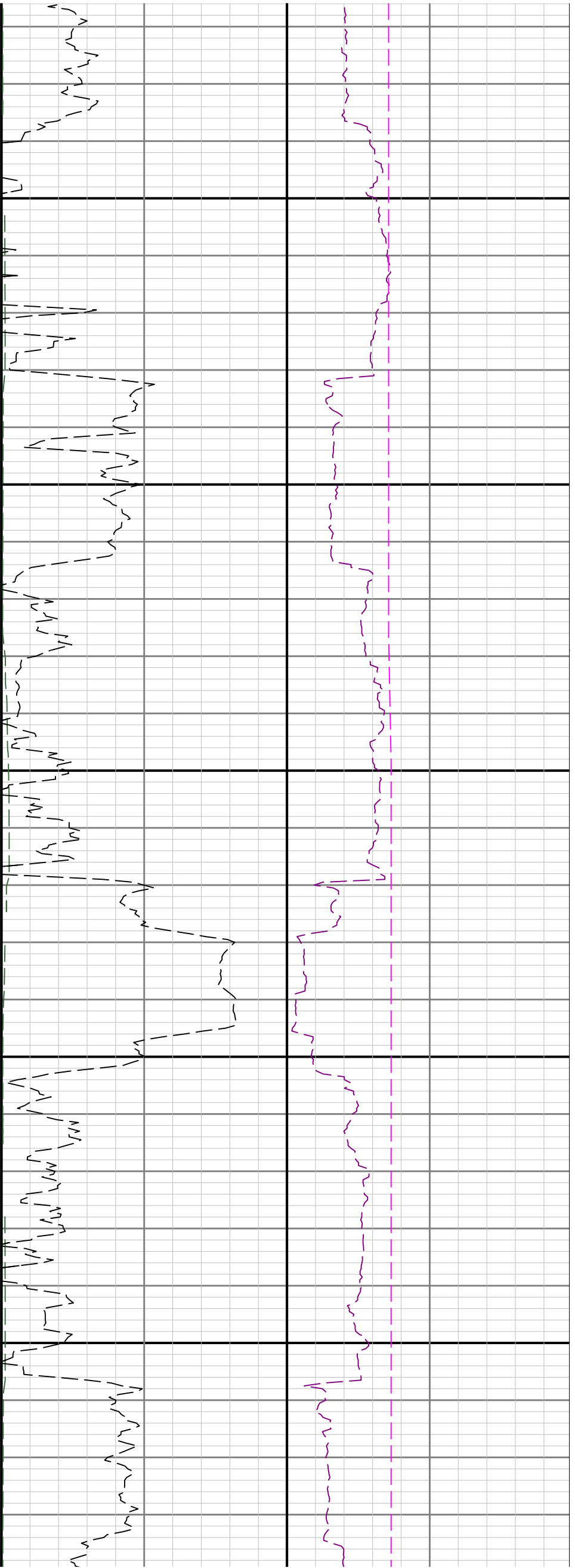


2100

2200



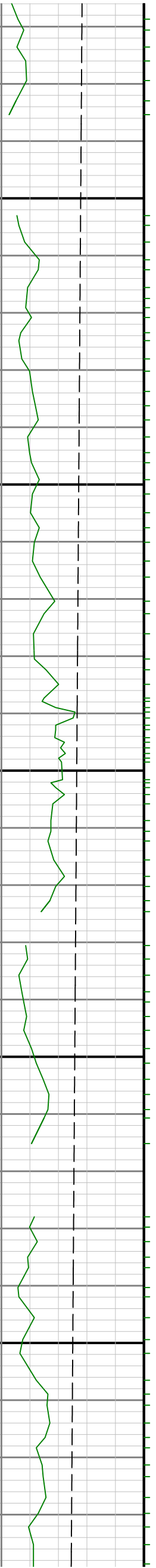


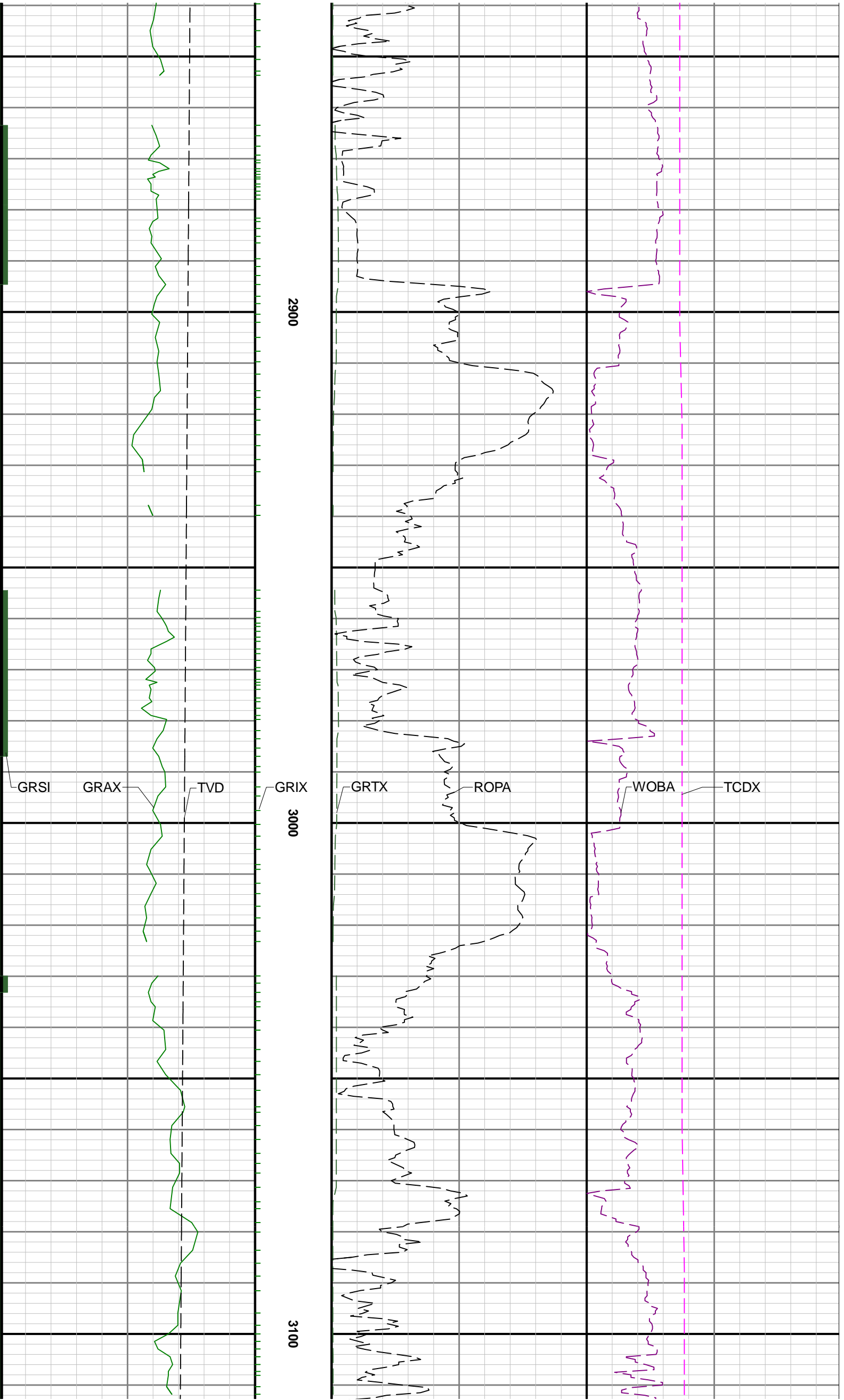


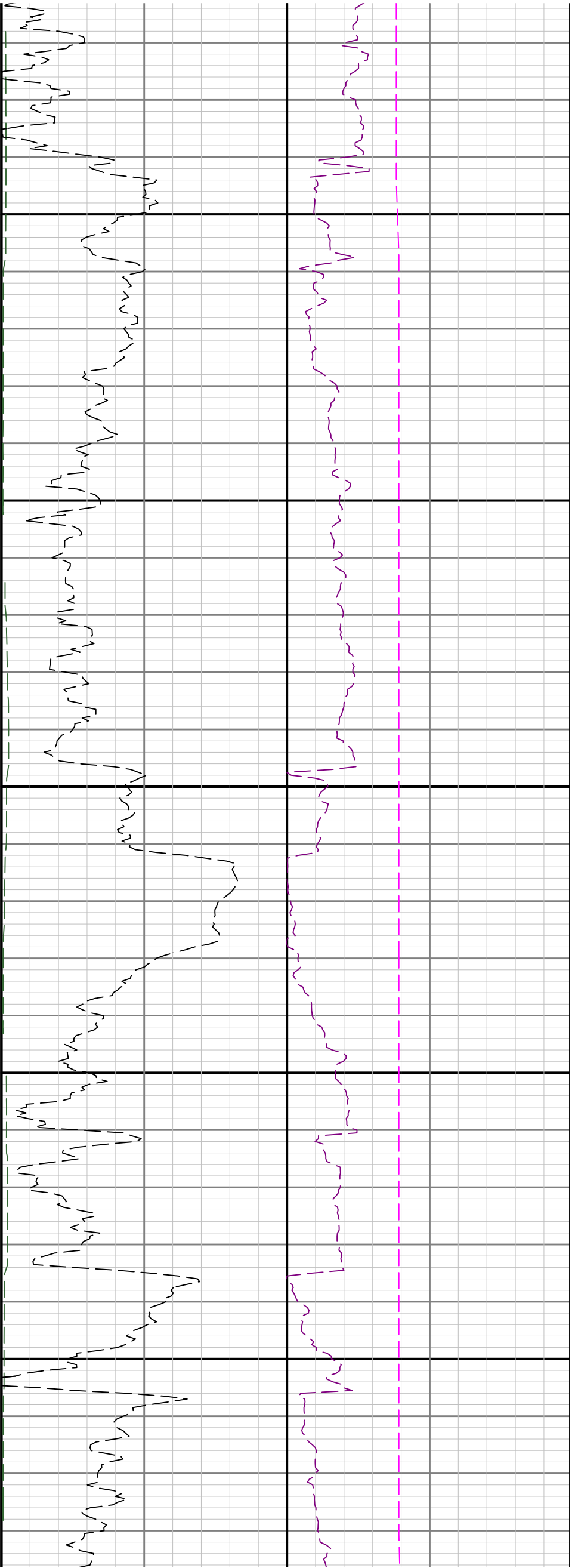
2600

2700

2800

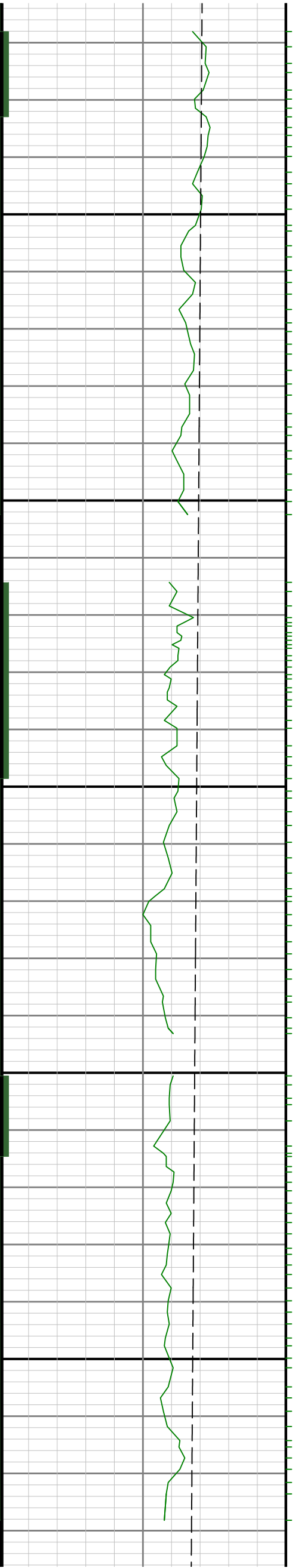


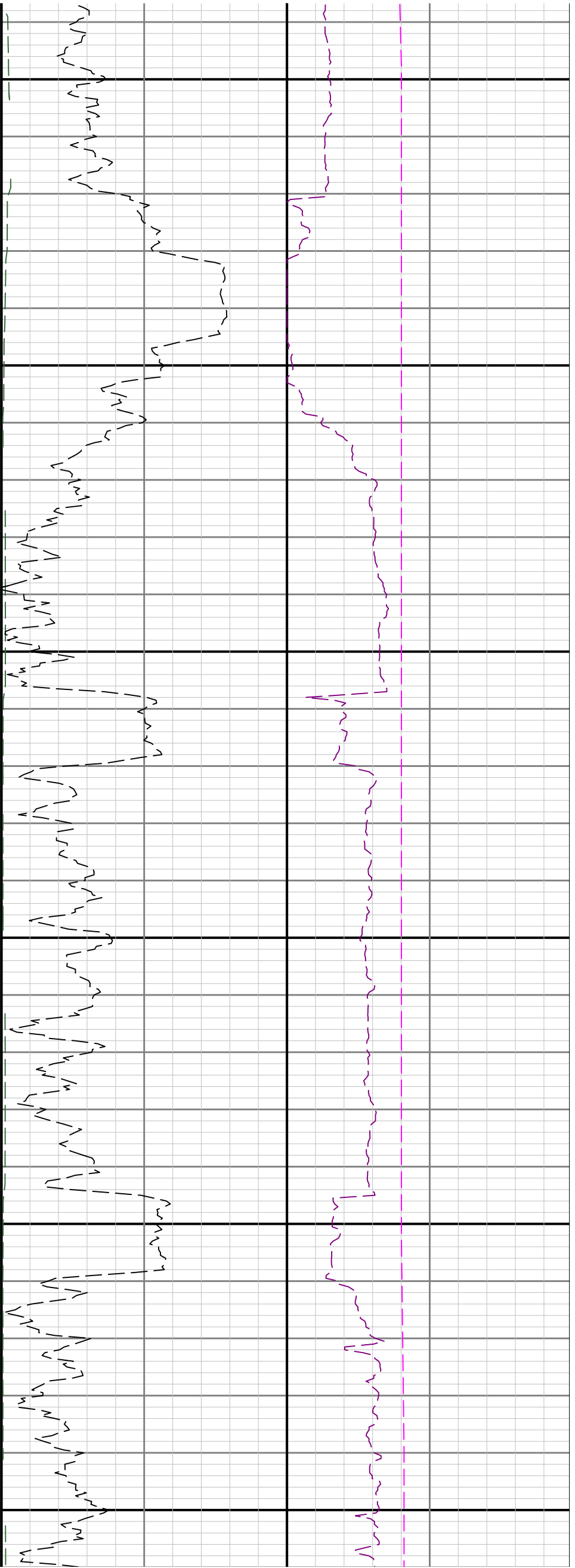




3200

3300

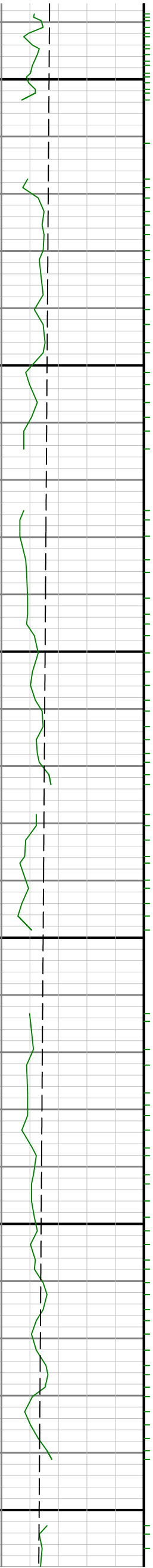


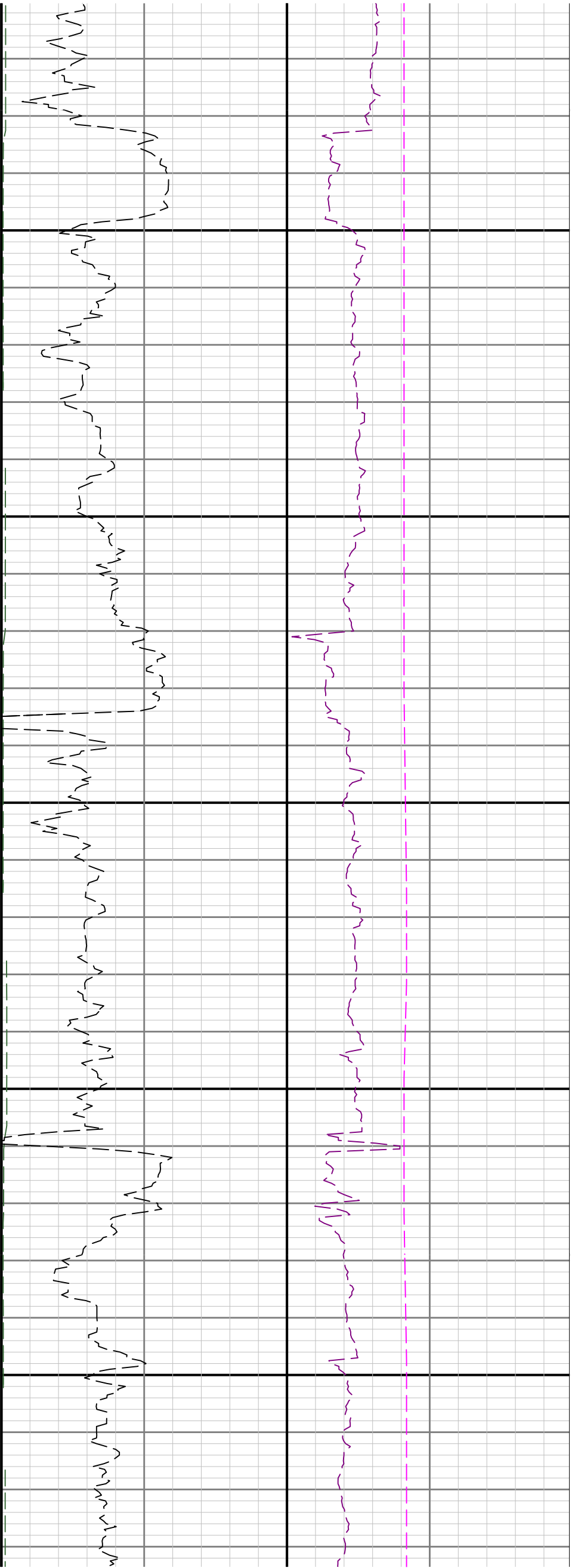


3400

3500

3600

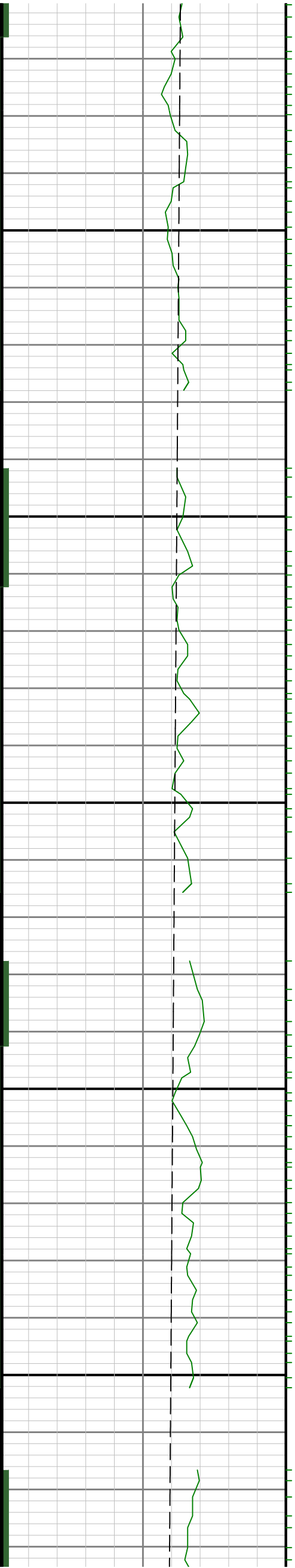


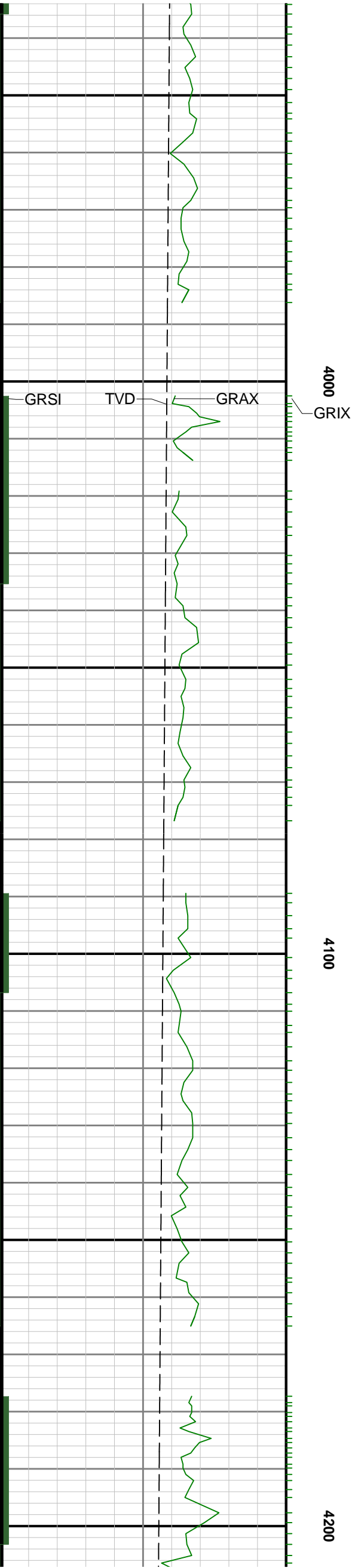
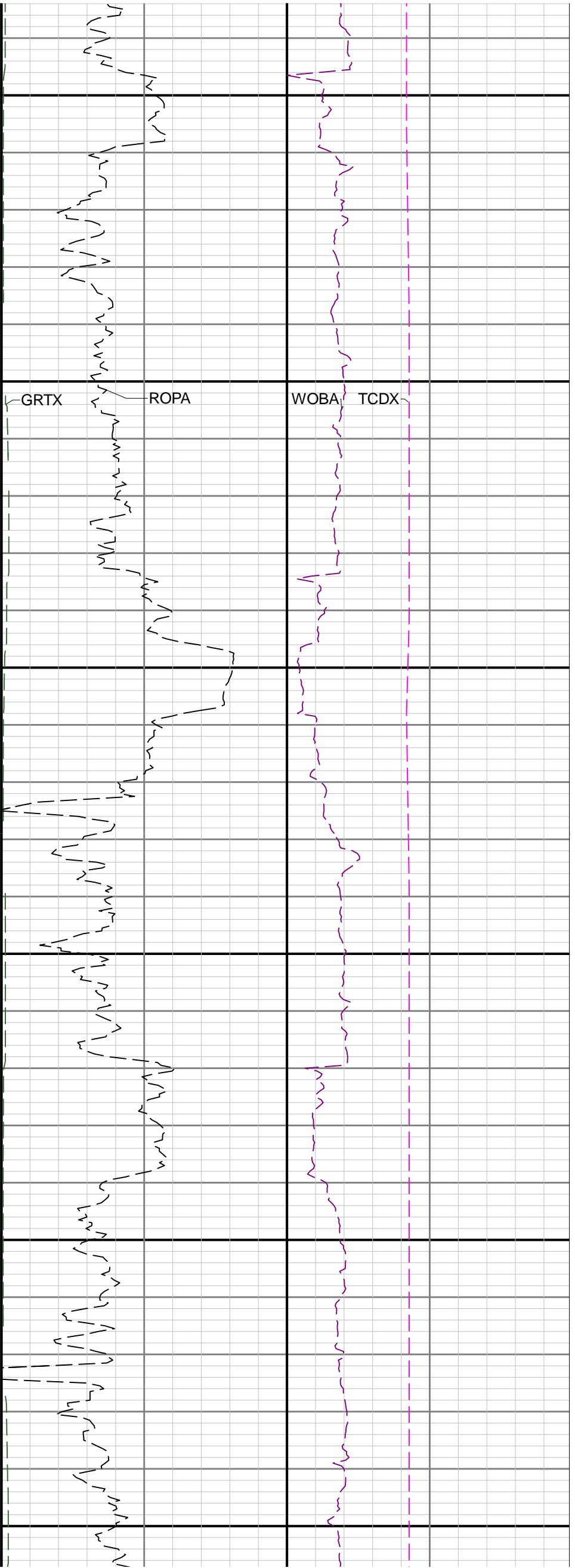


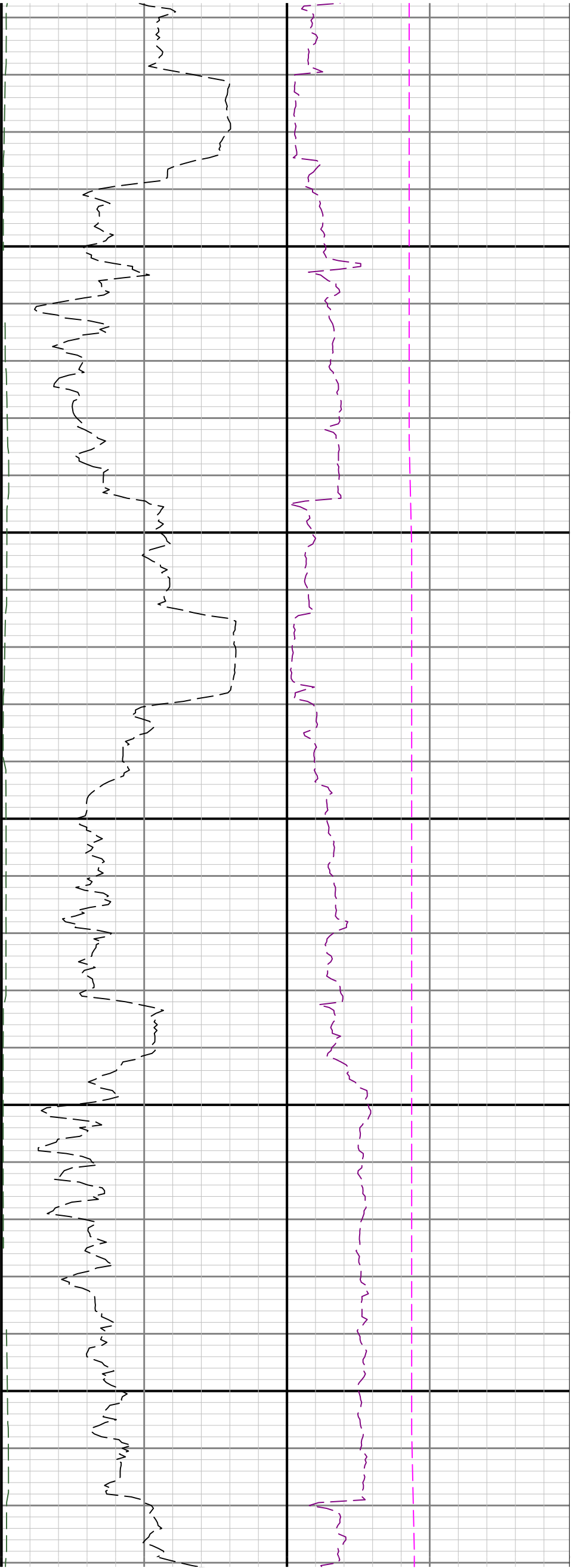
3700

3800

3900

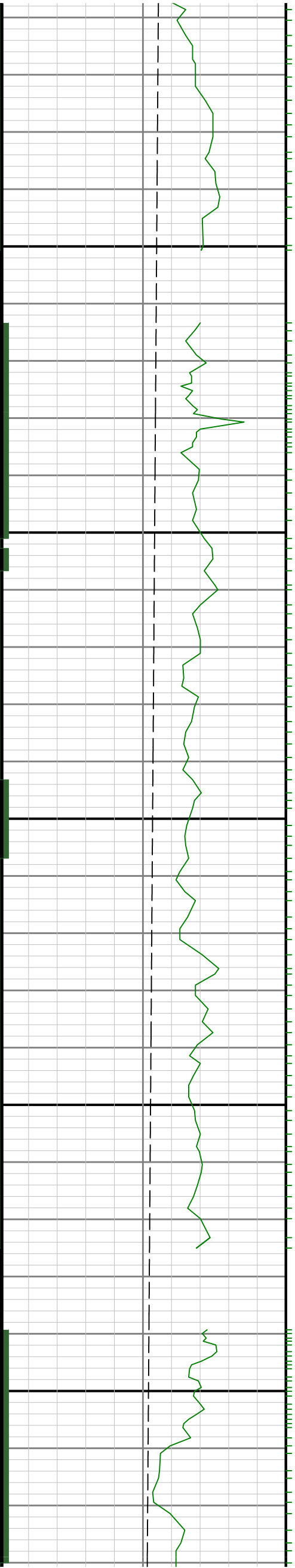


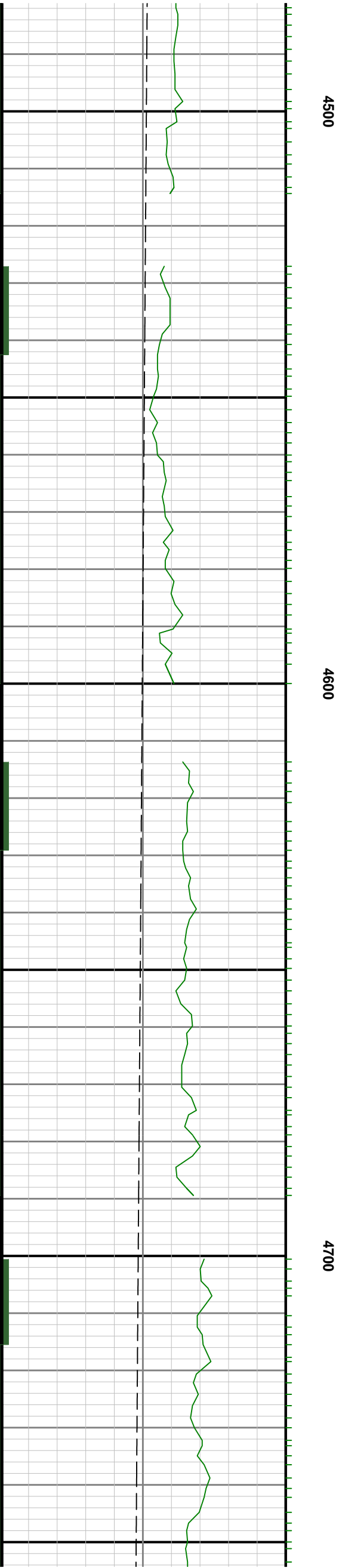
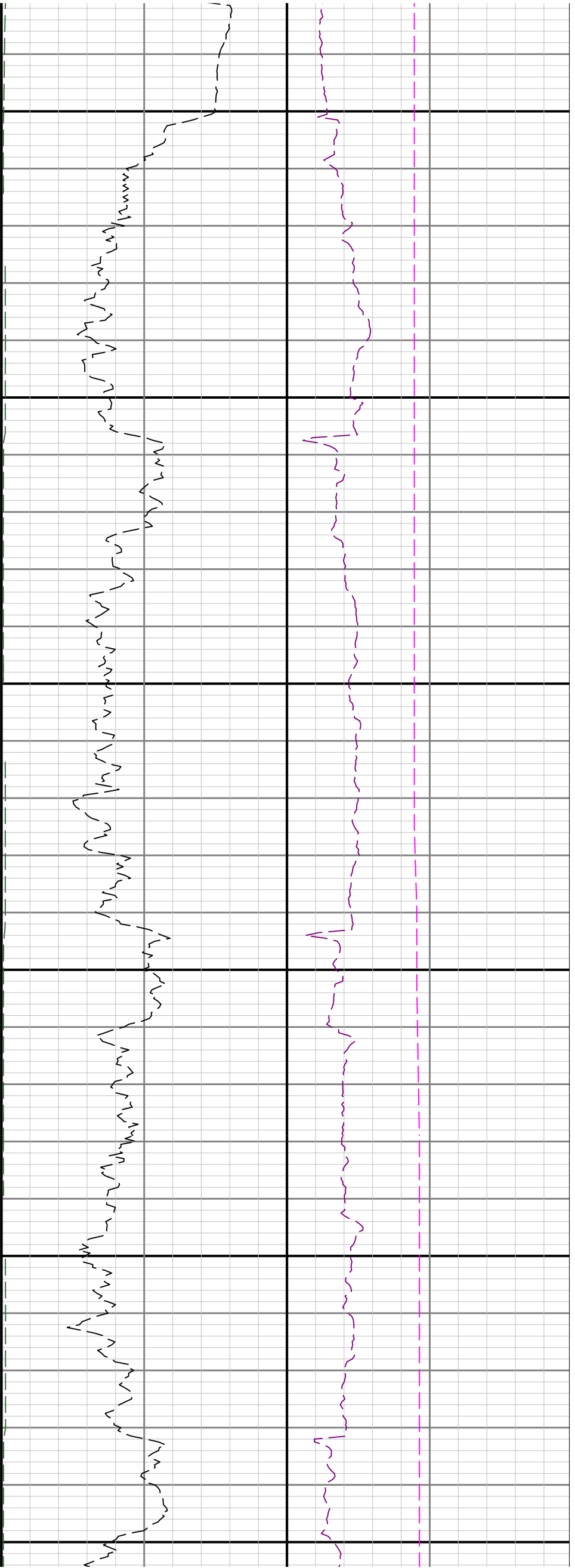


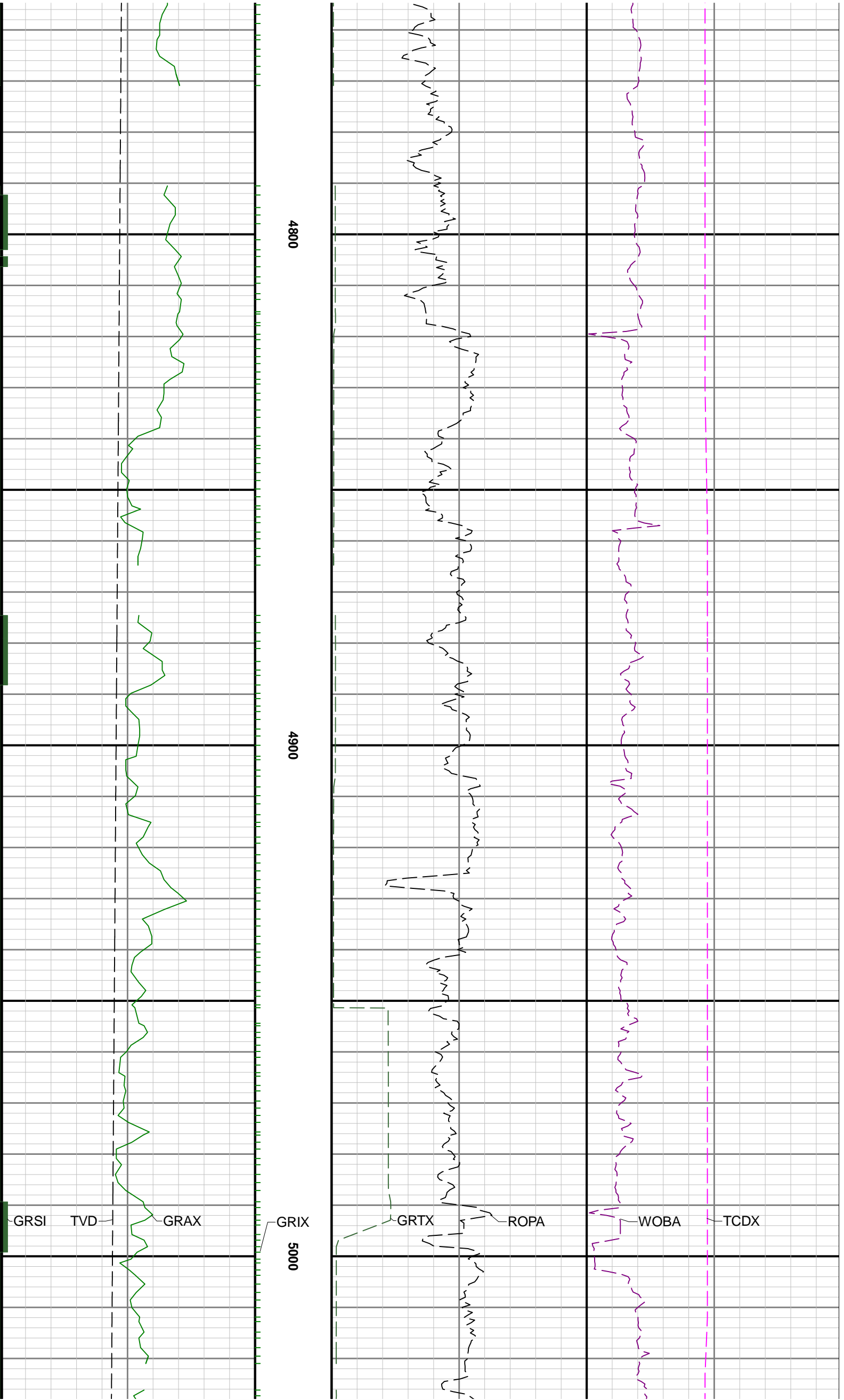


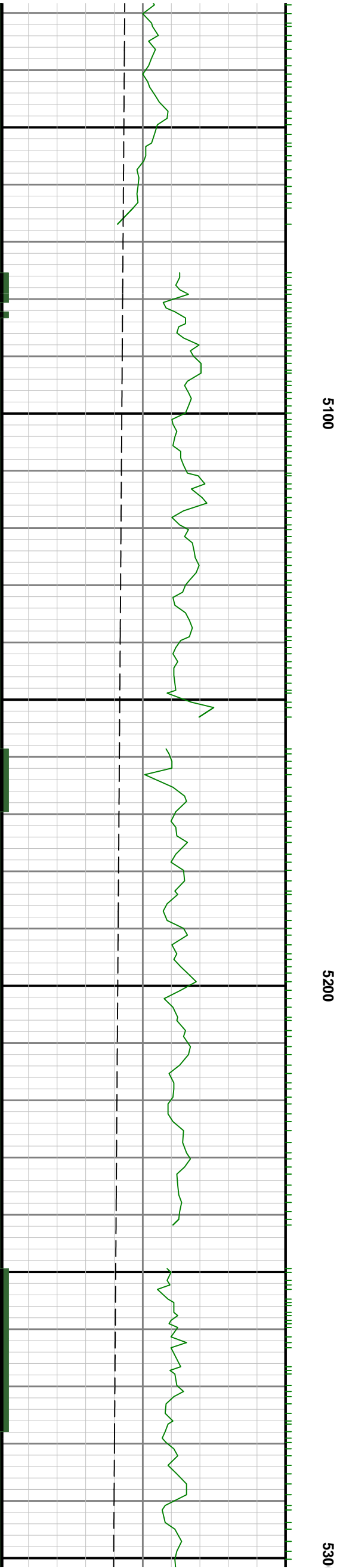
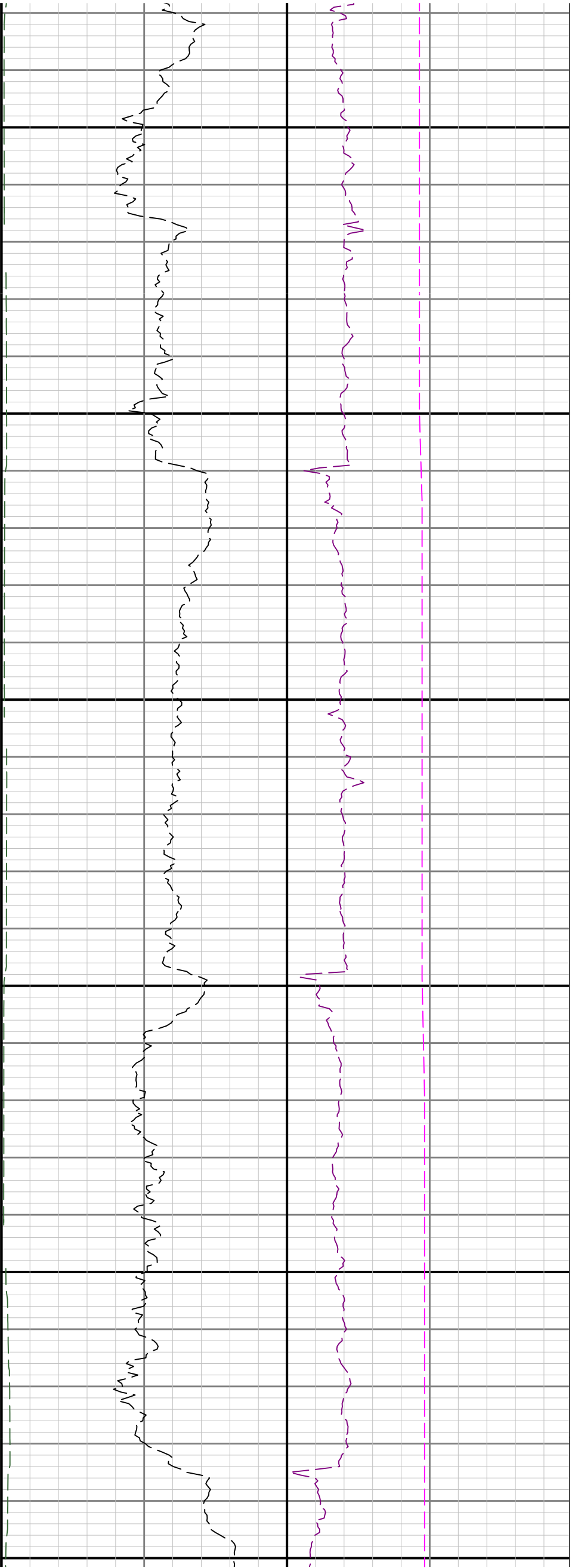
4300

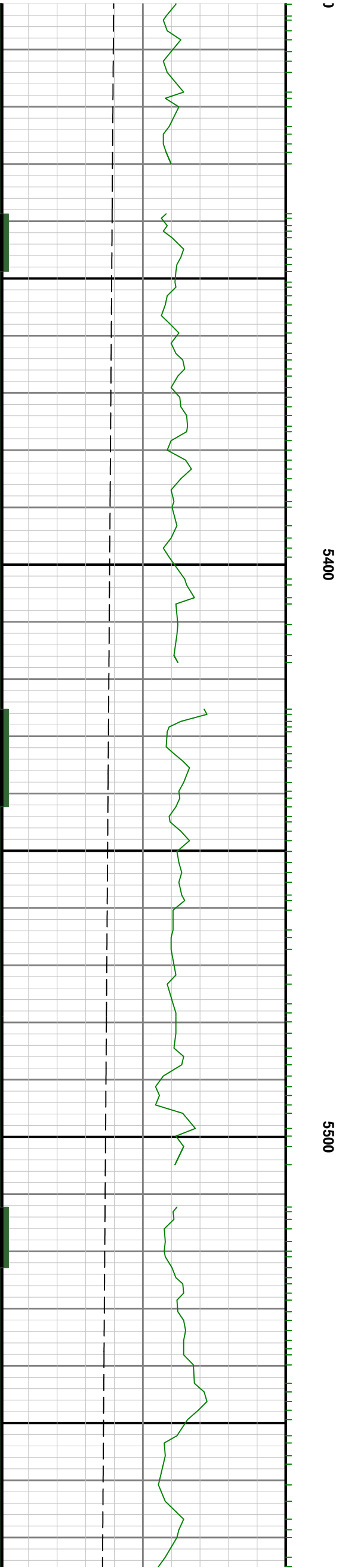
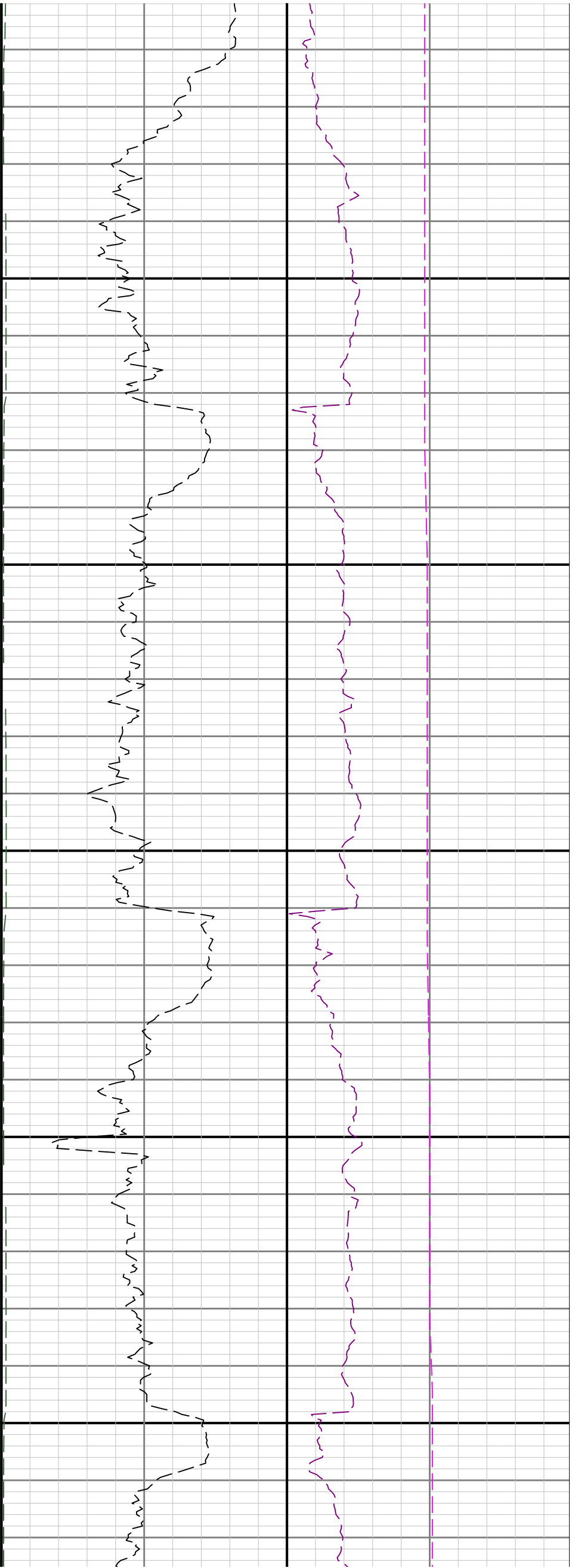
4400

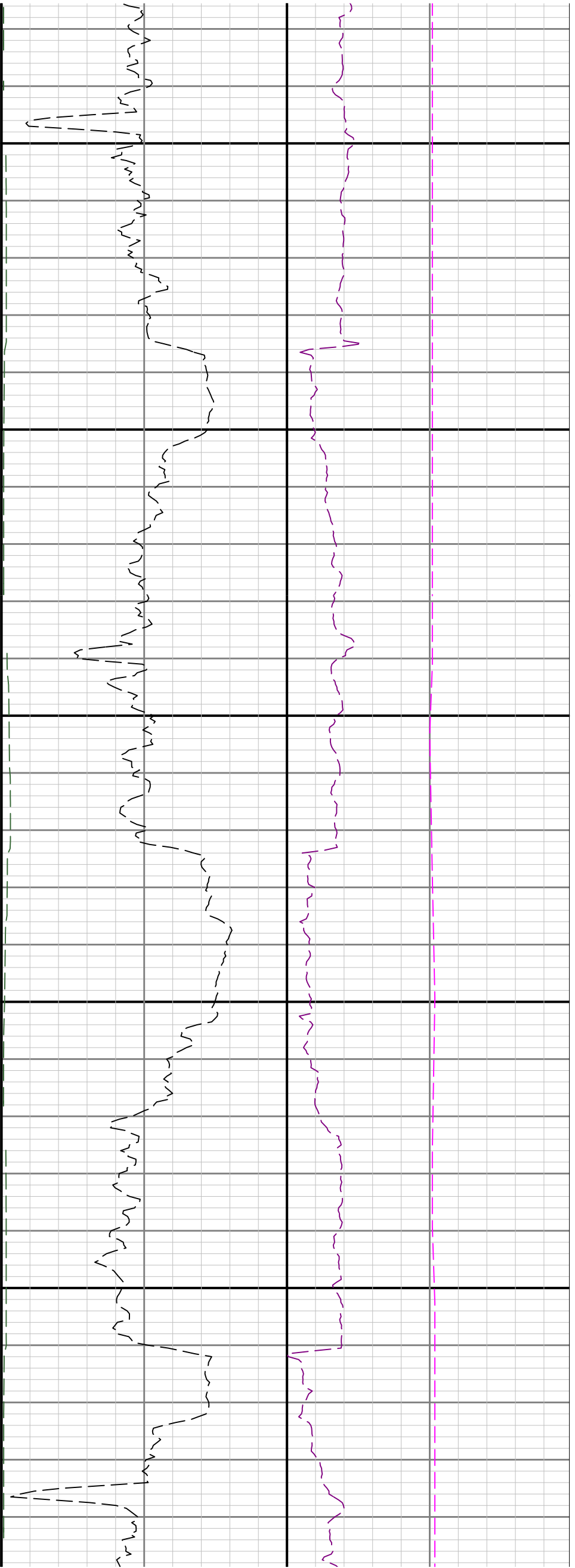








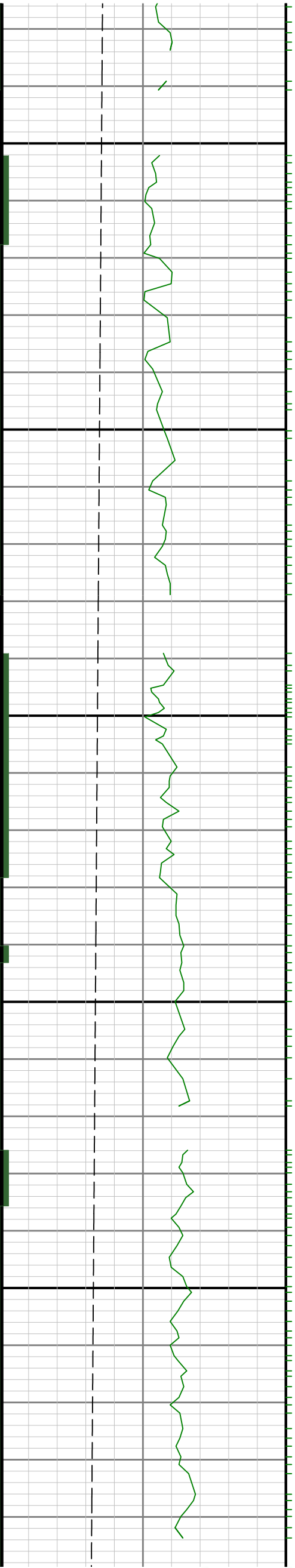


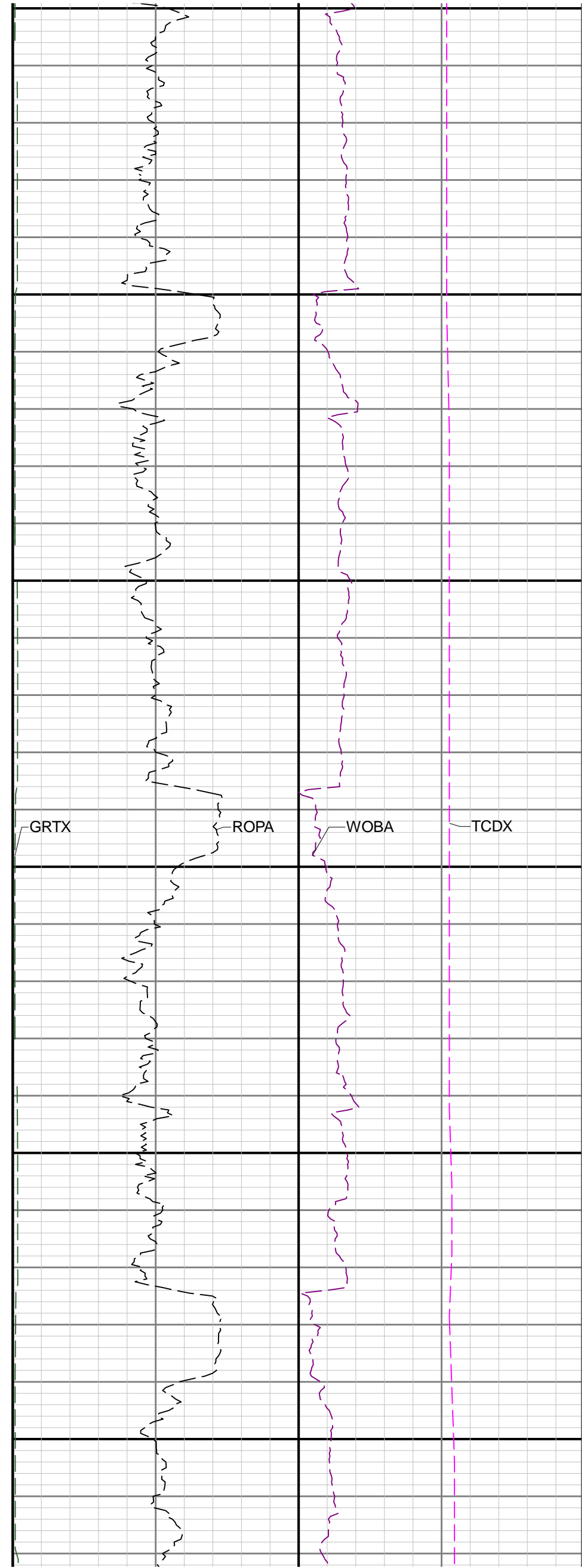
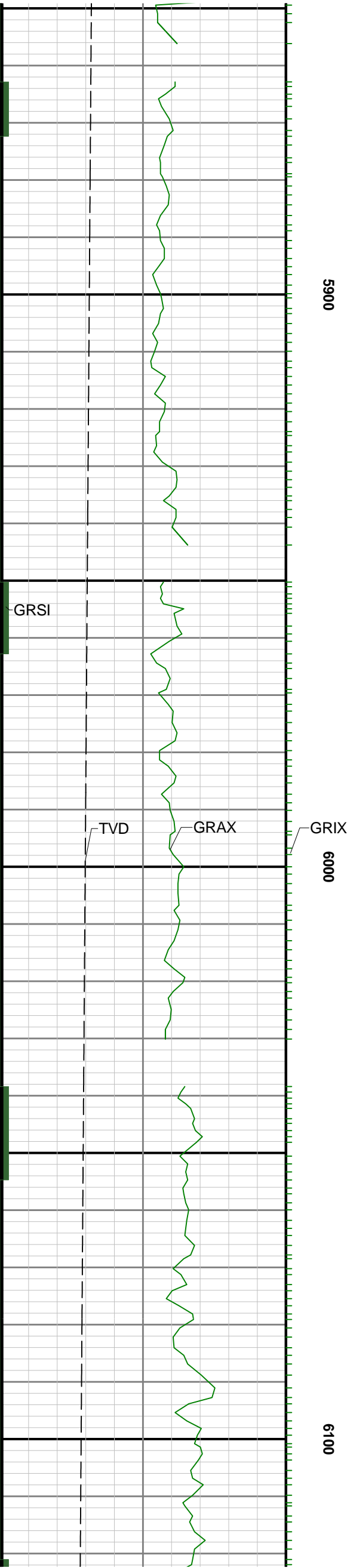


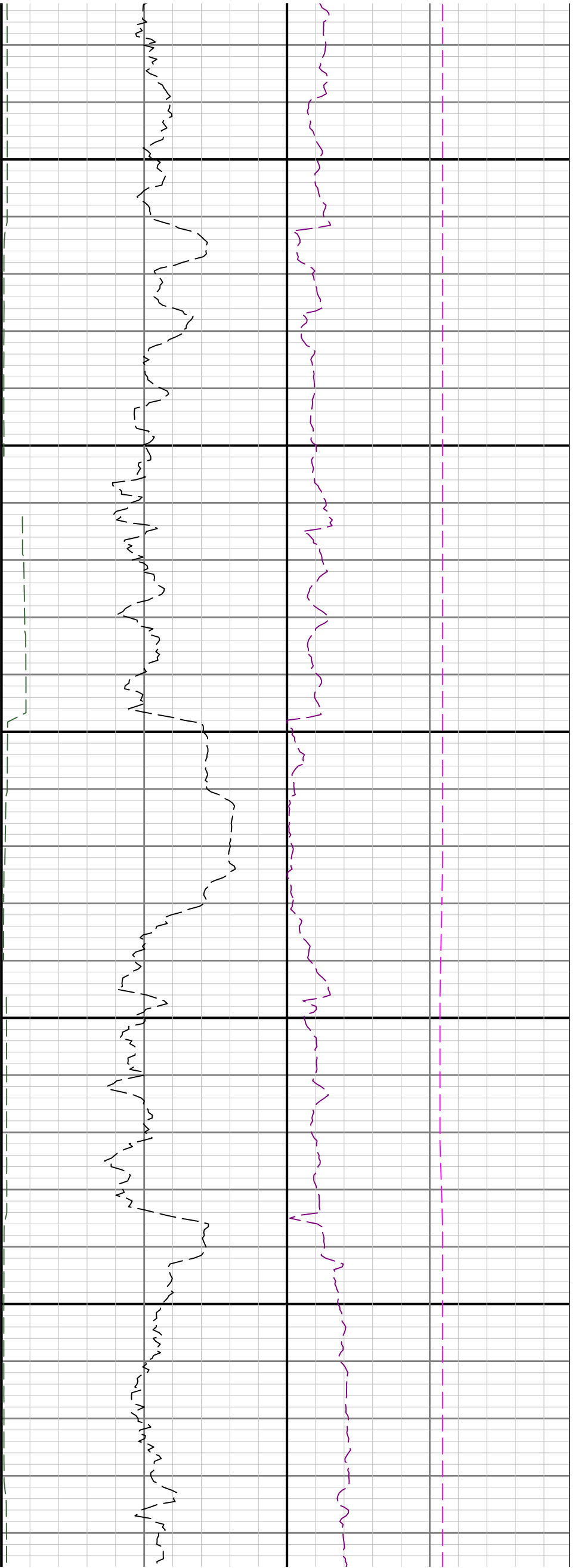
5600

5700

5800

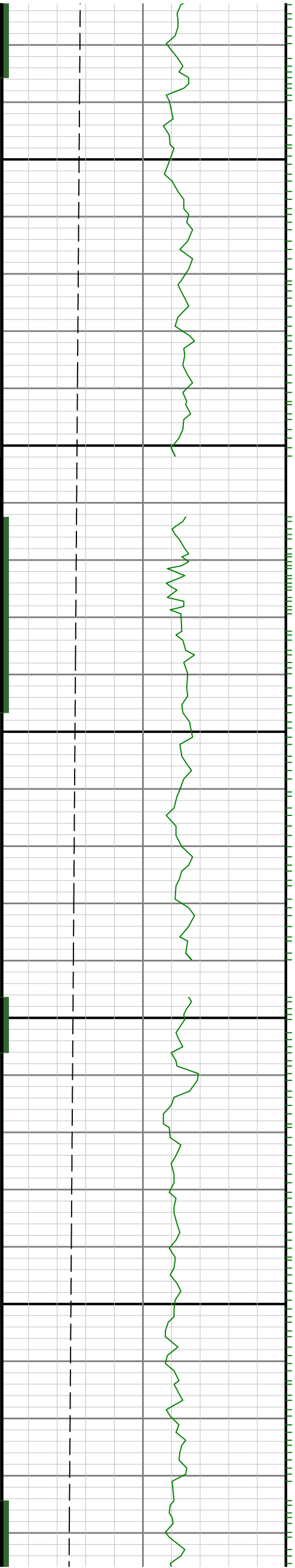


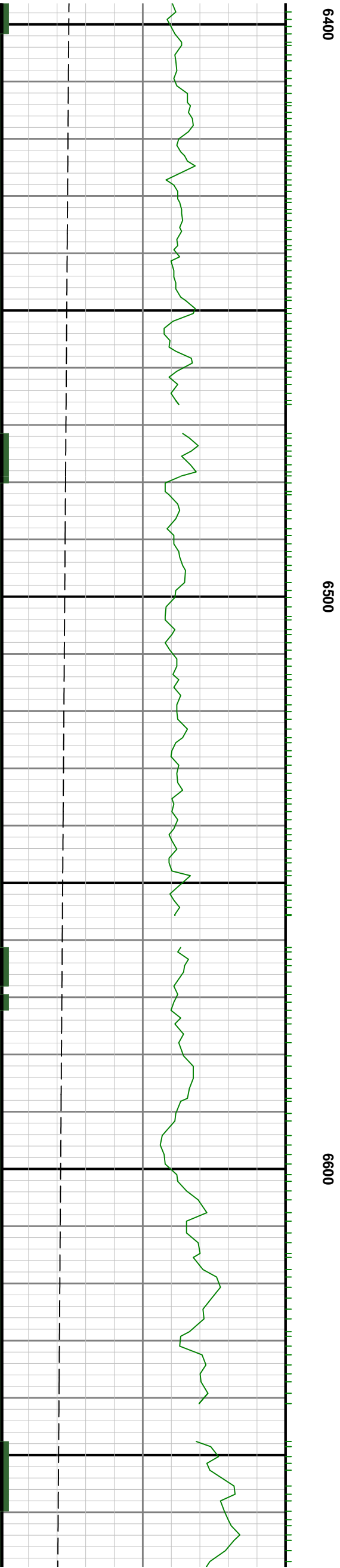
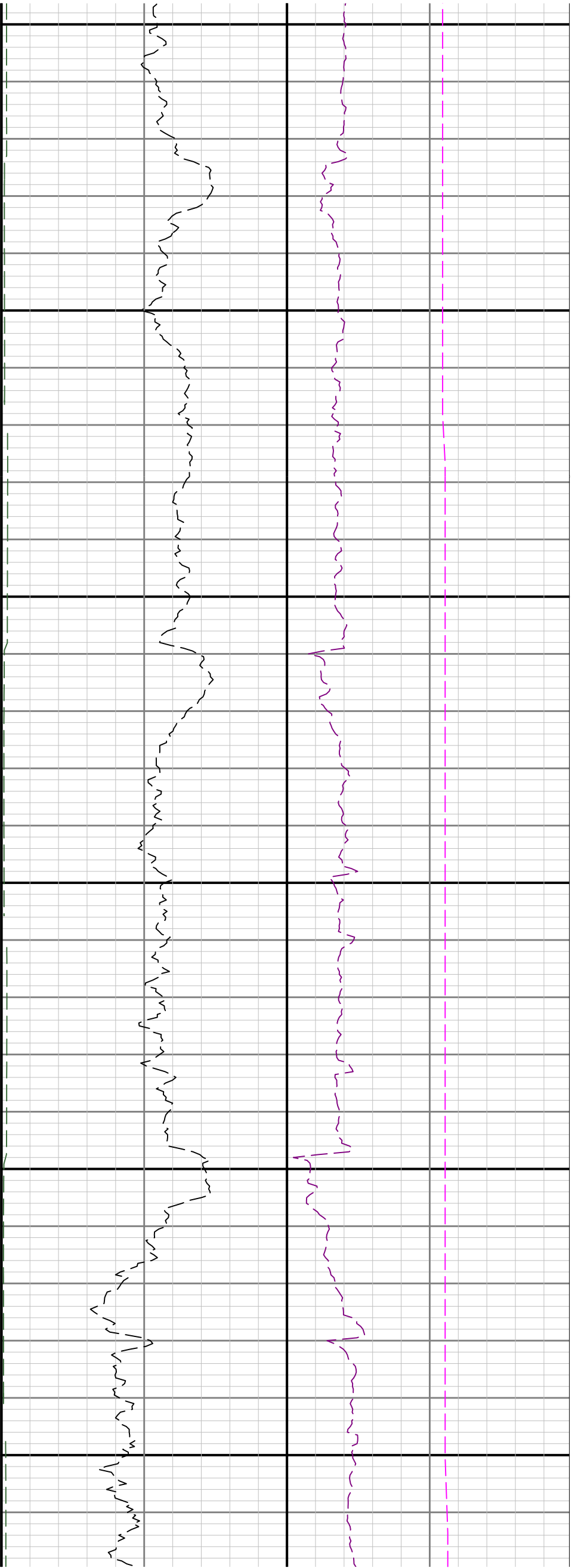


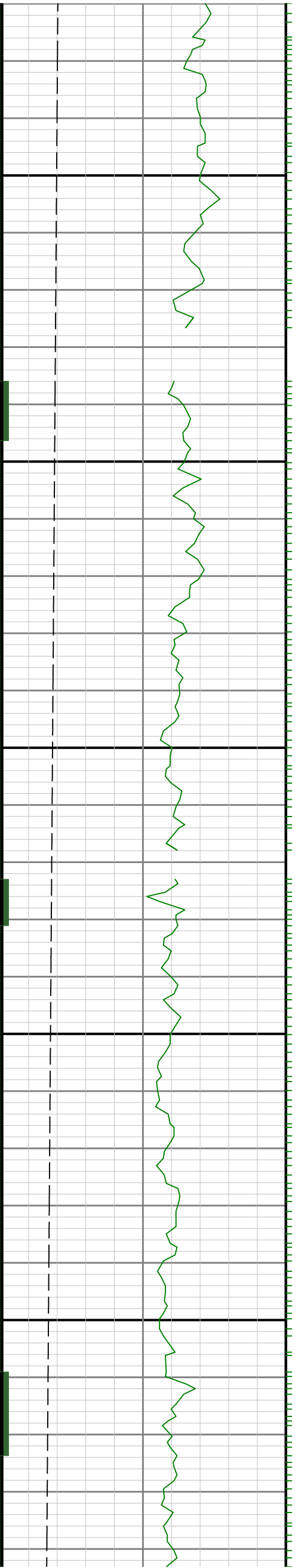


6200

6300



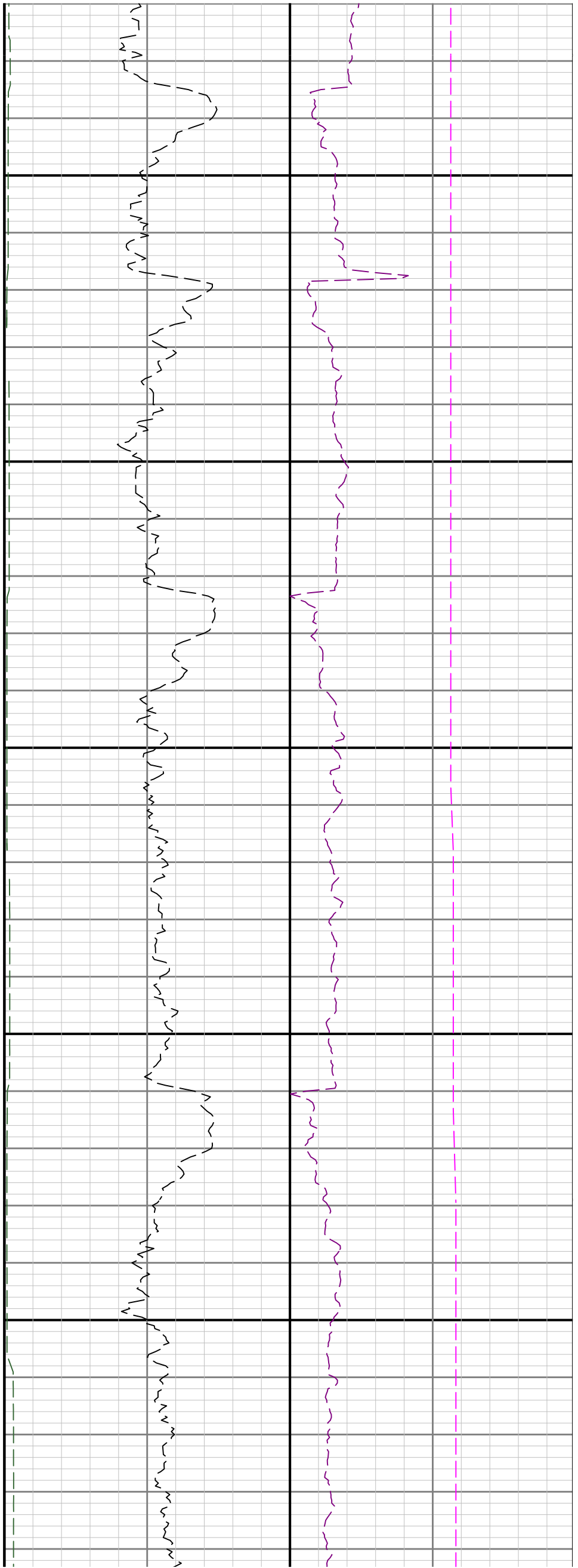


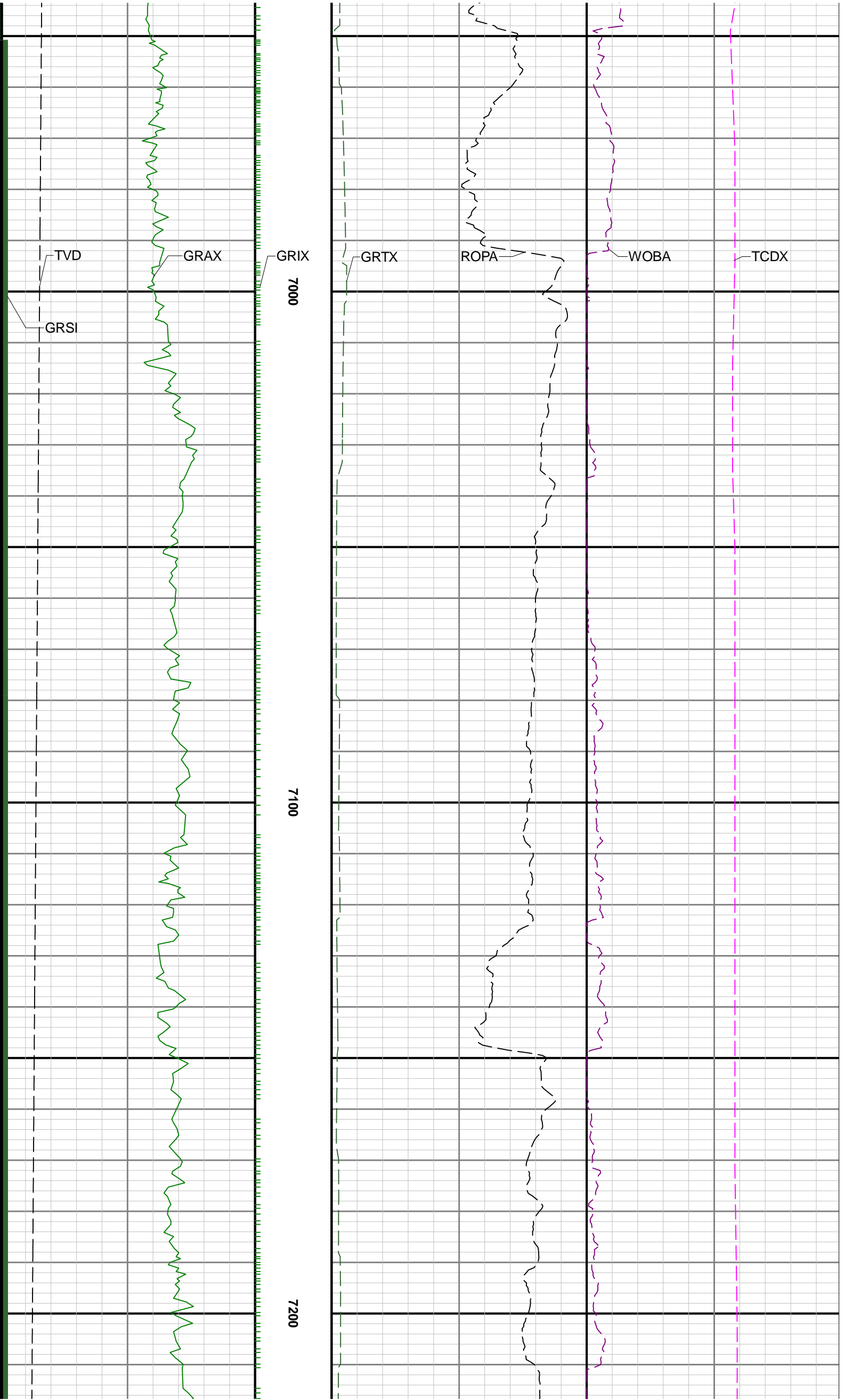


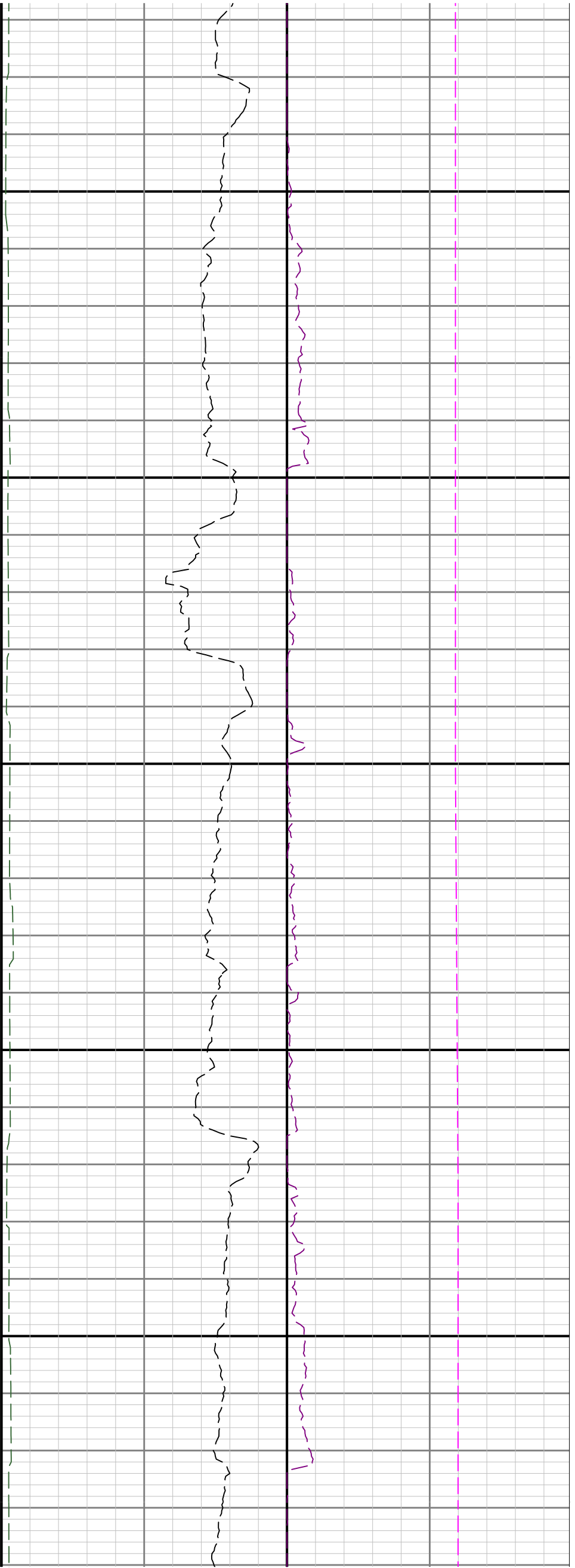
0069

0089

00700

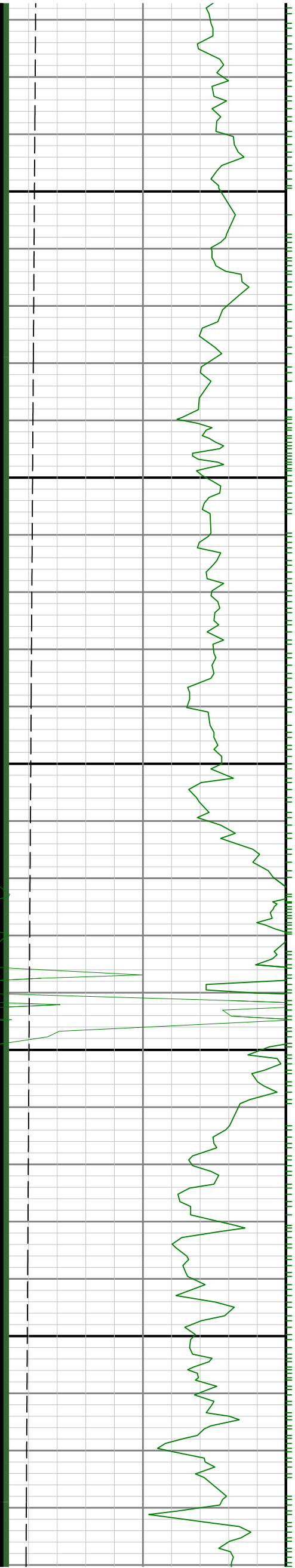


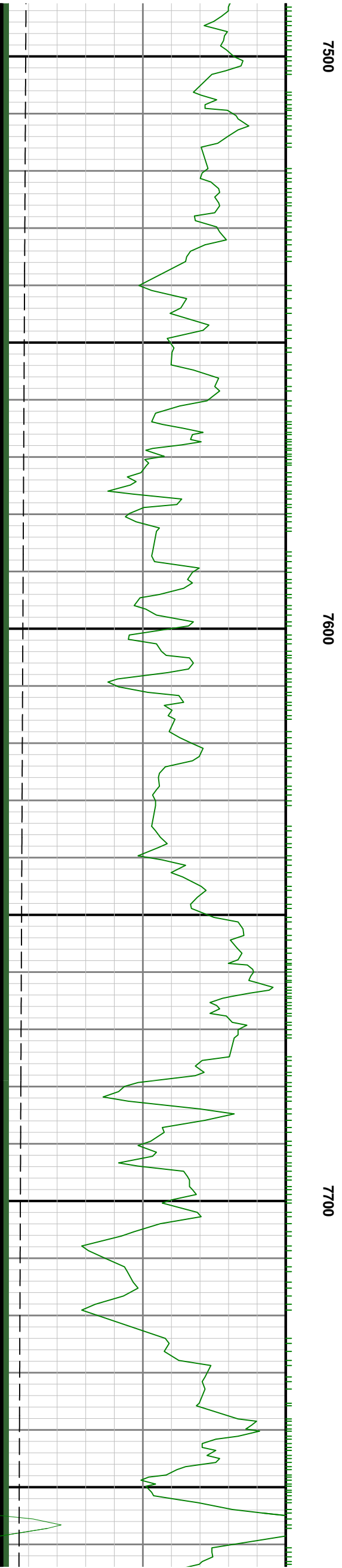
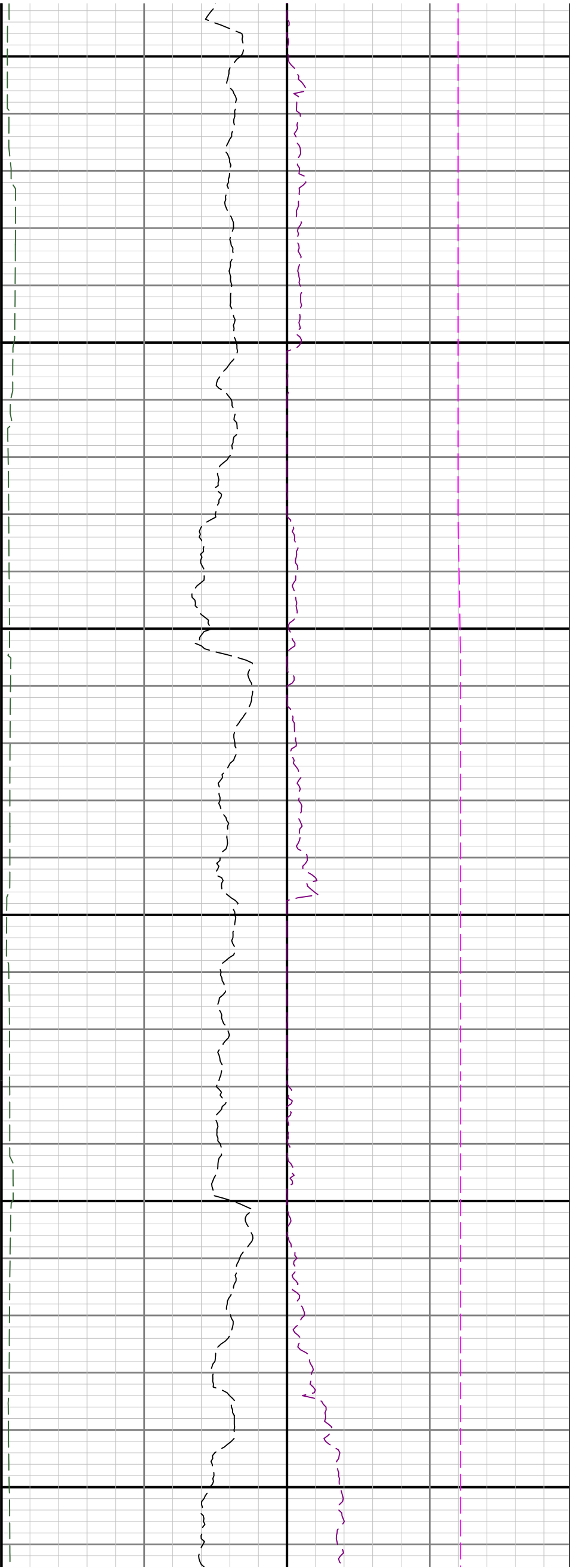


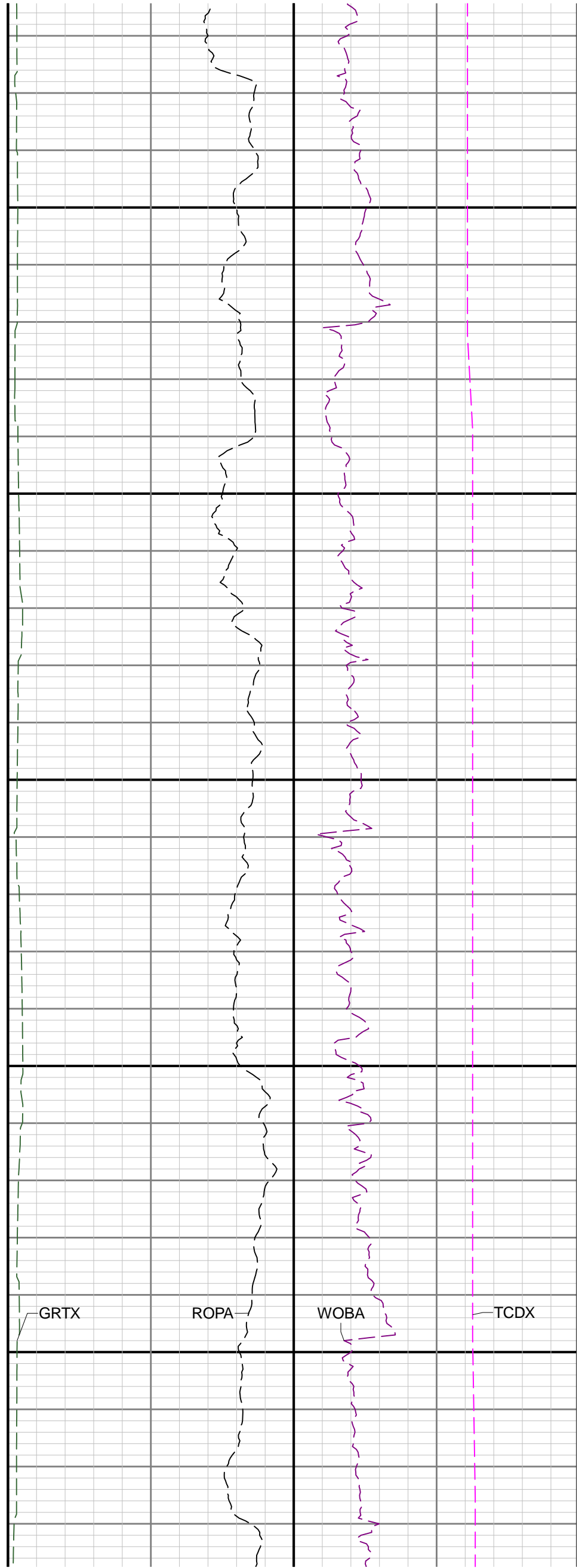
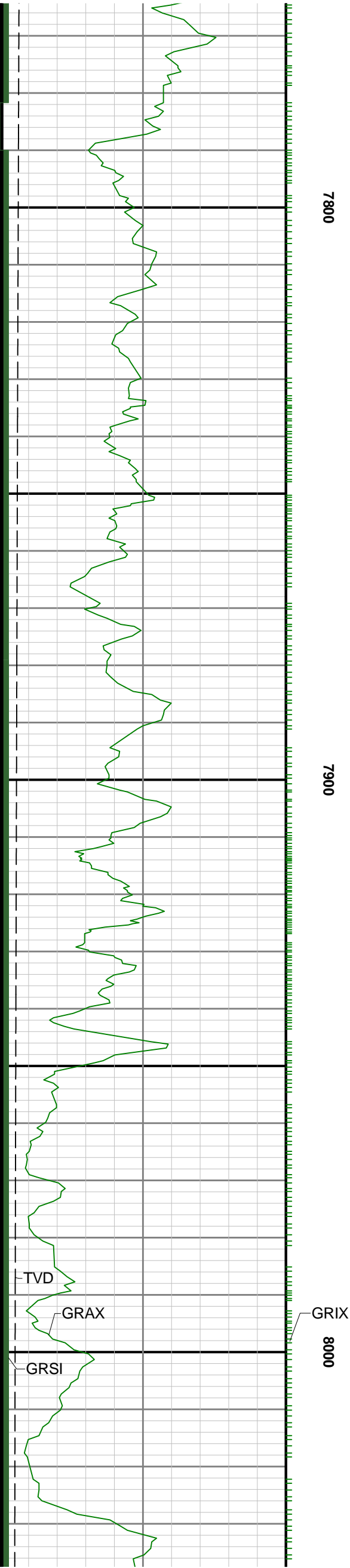


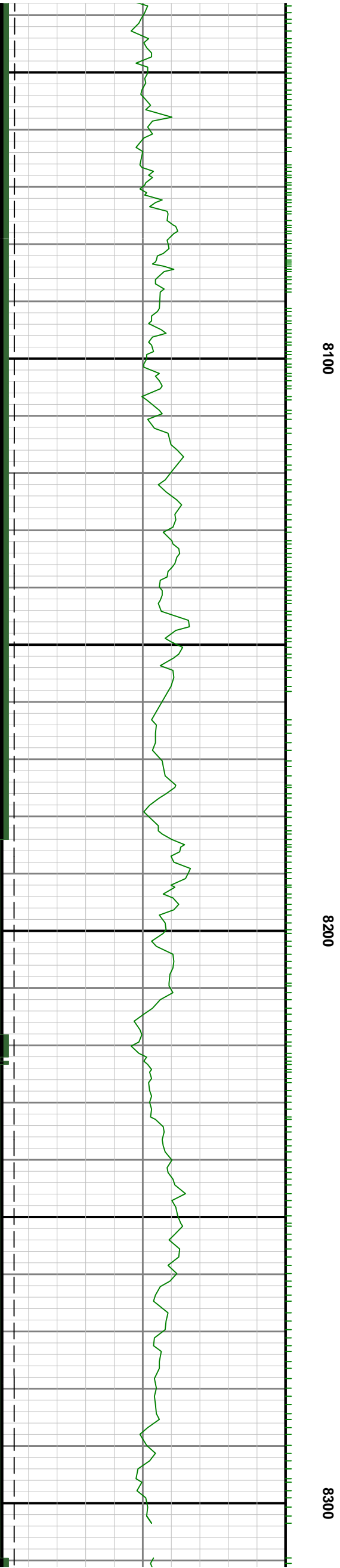
7300

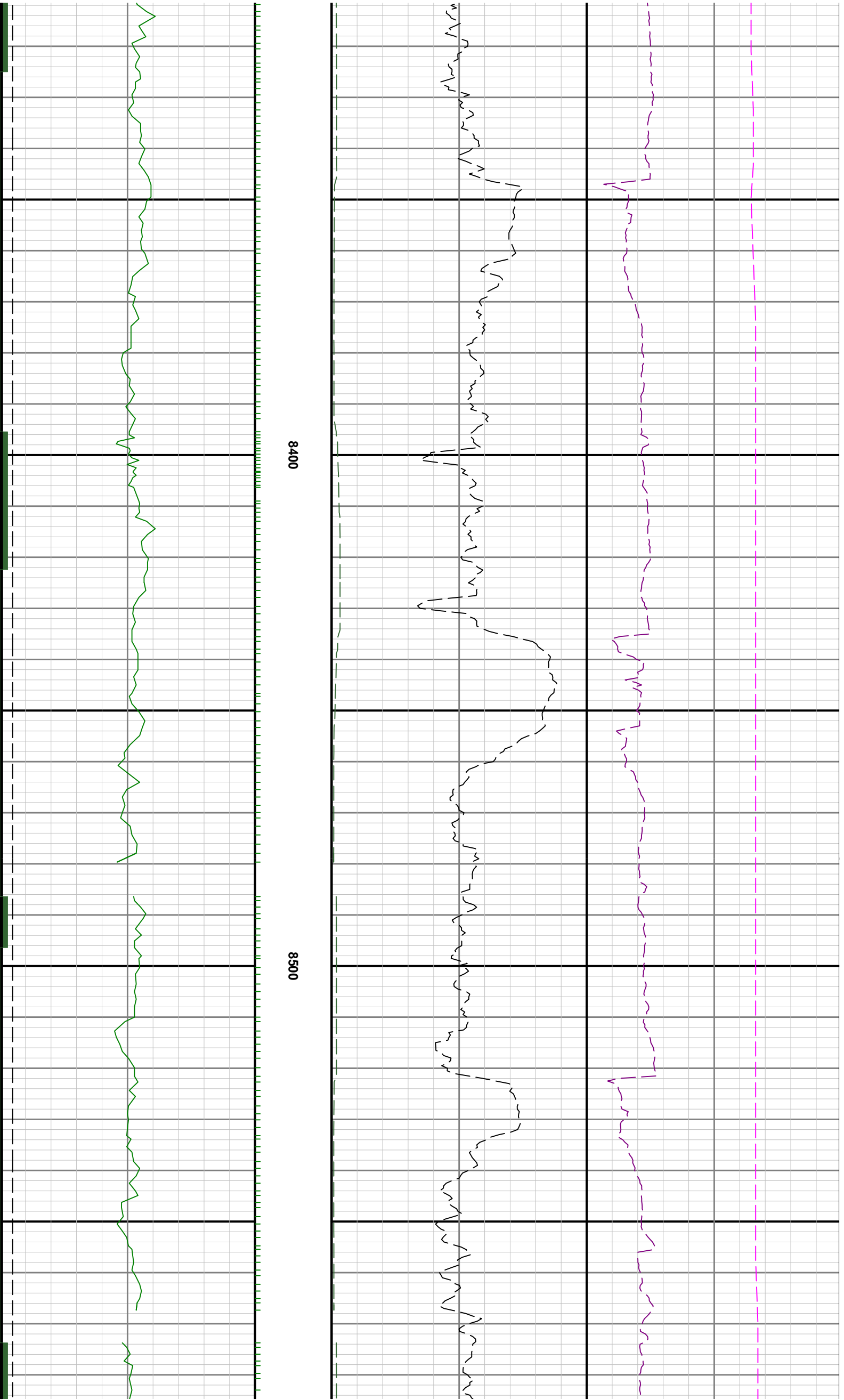
7400

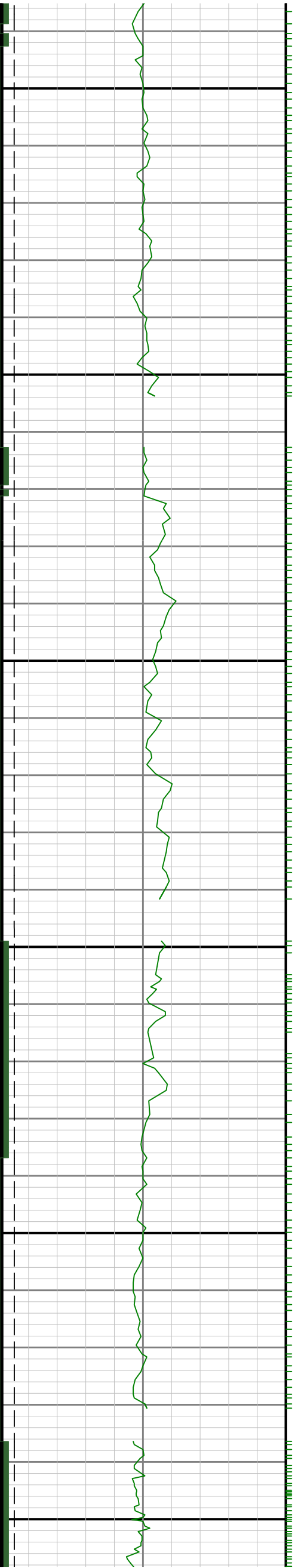








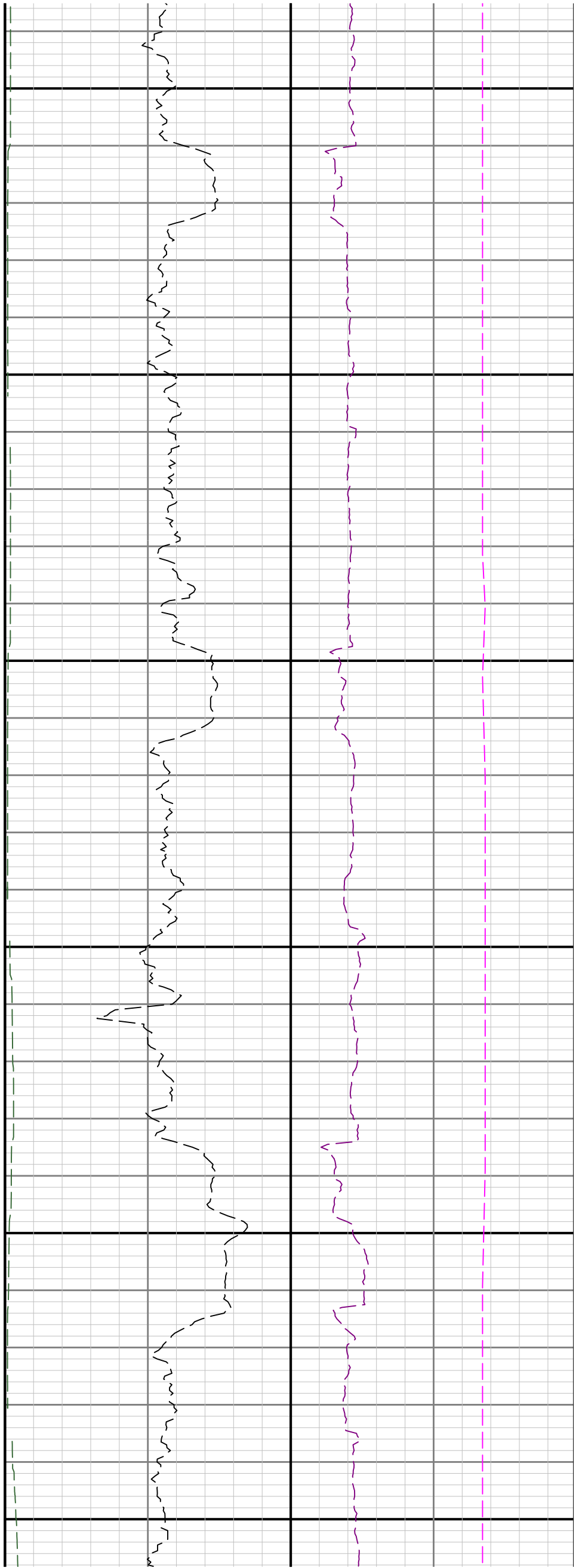


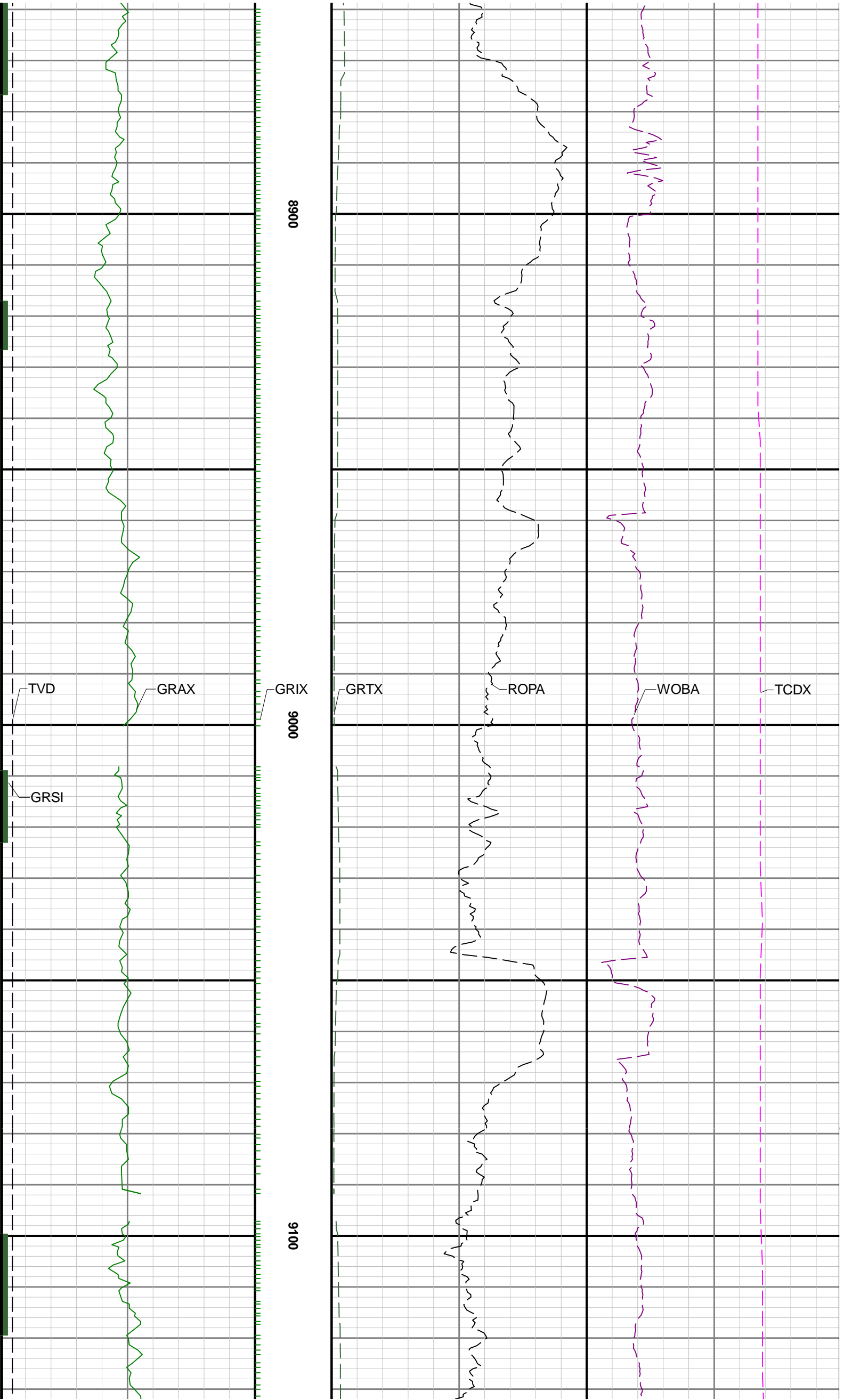


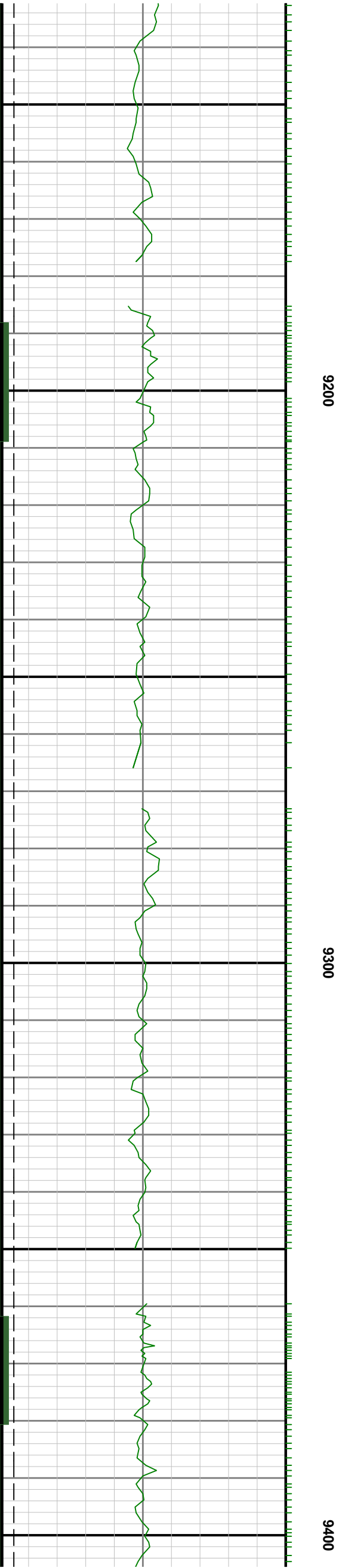
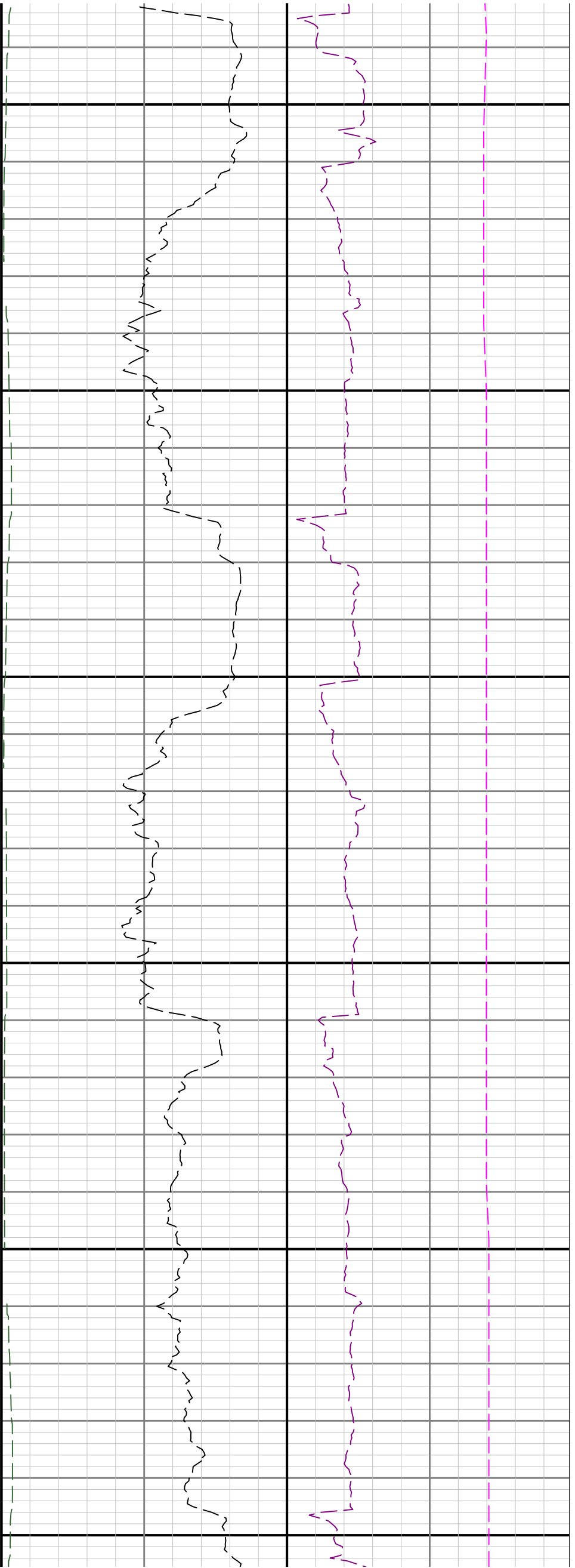
0098

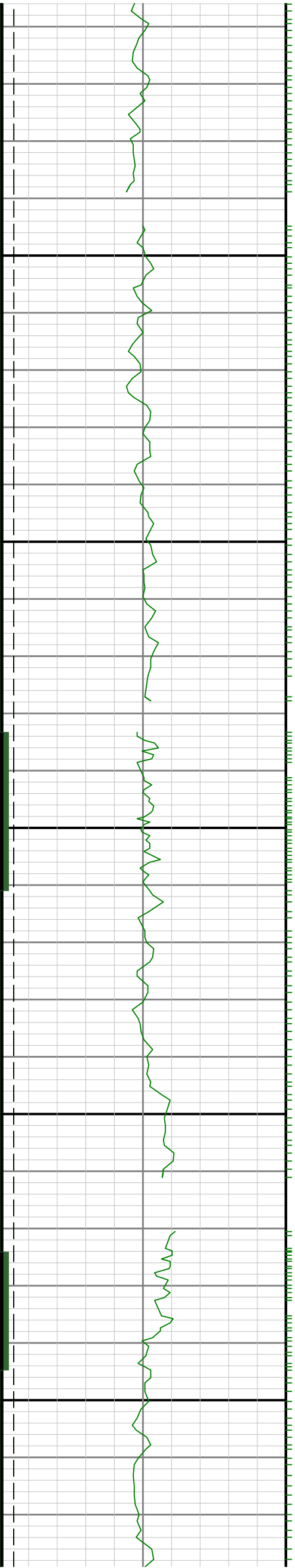
8700

8800



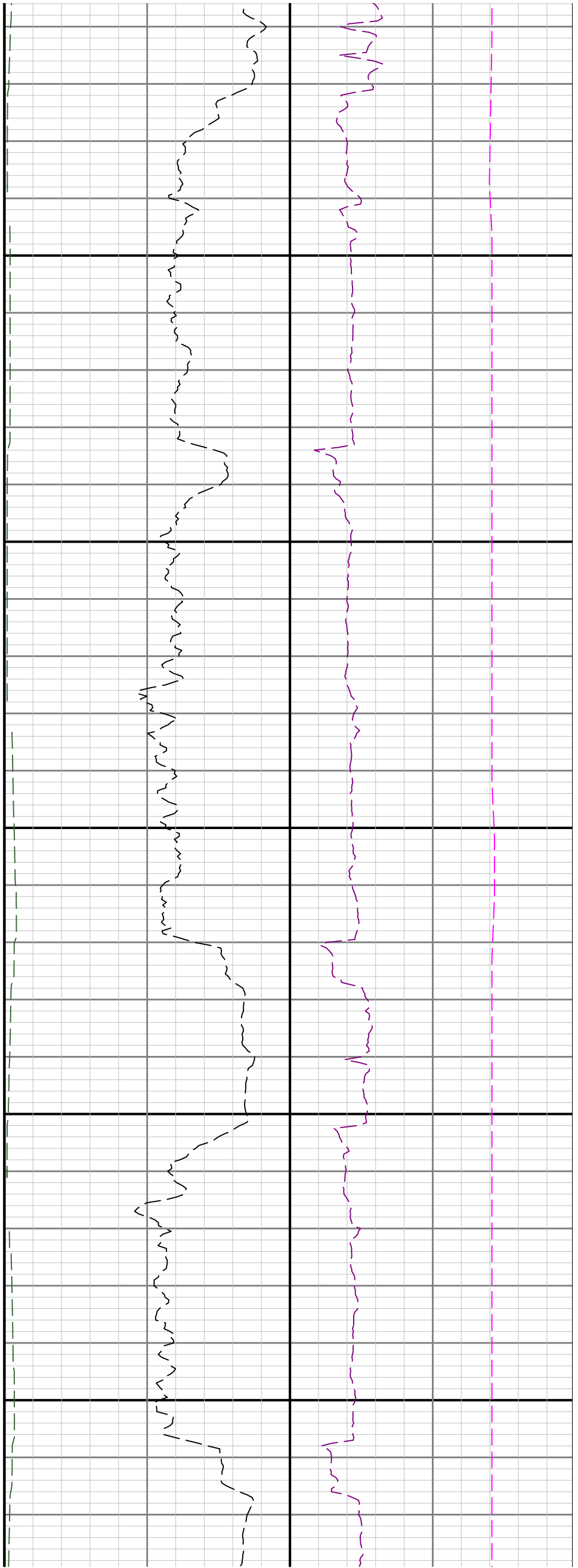


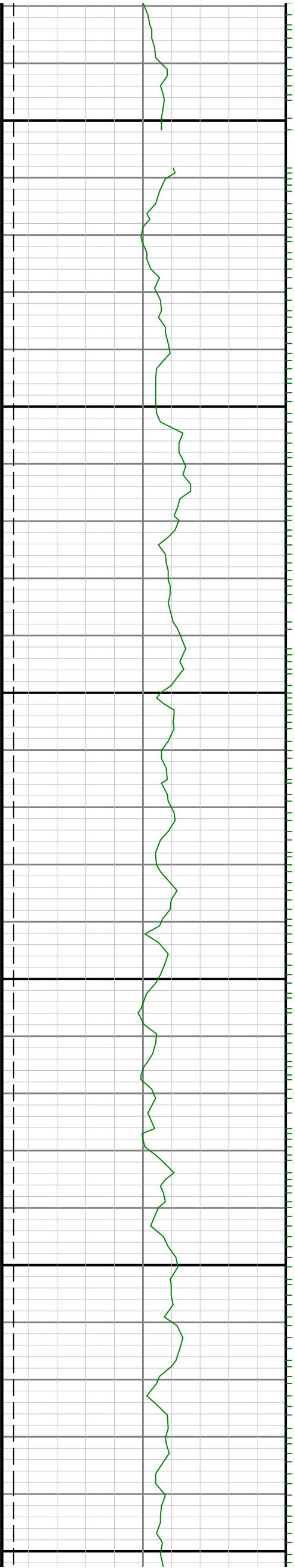




9500

0096

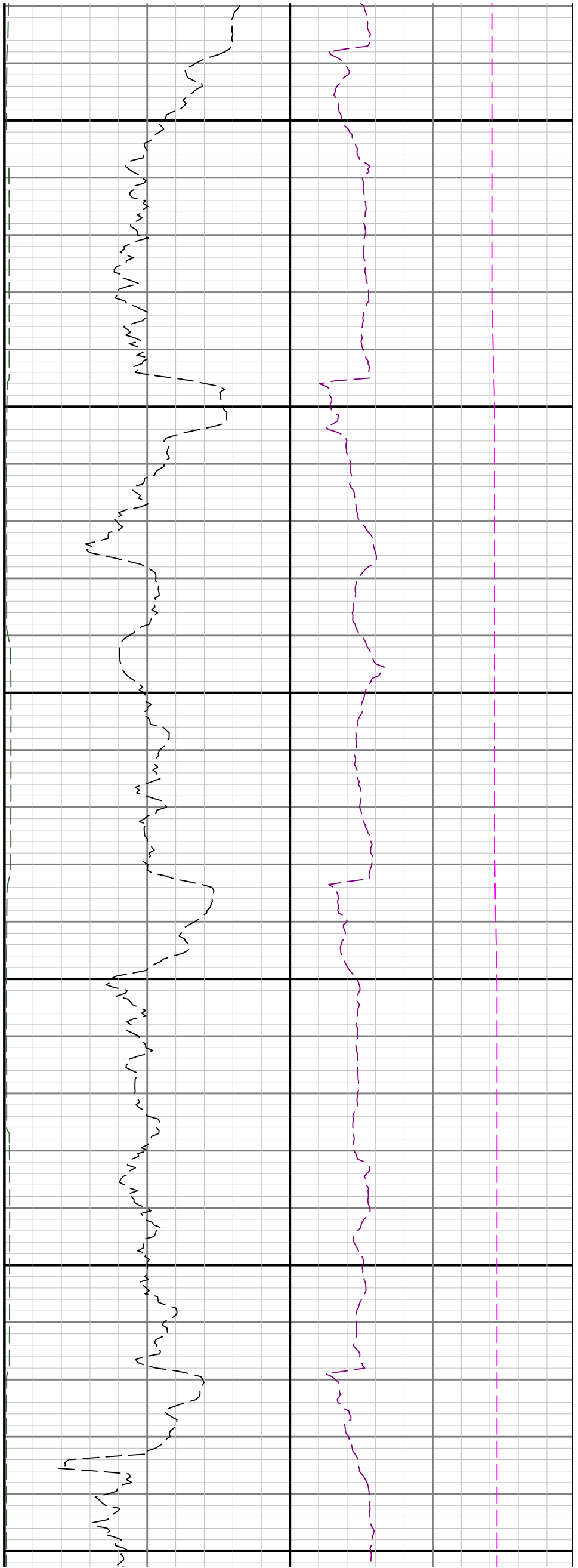


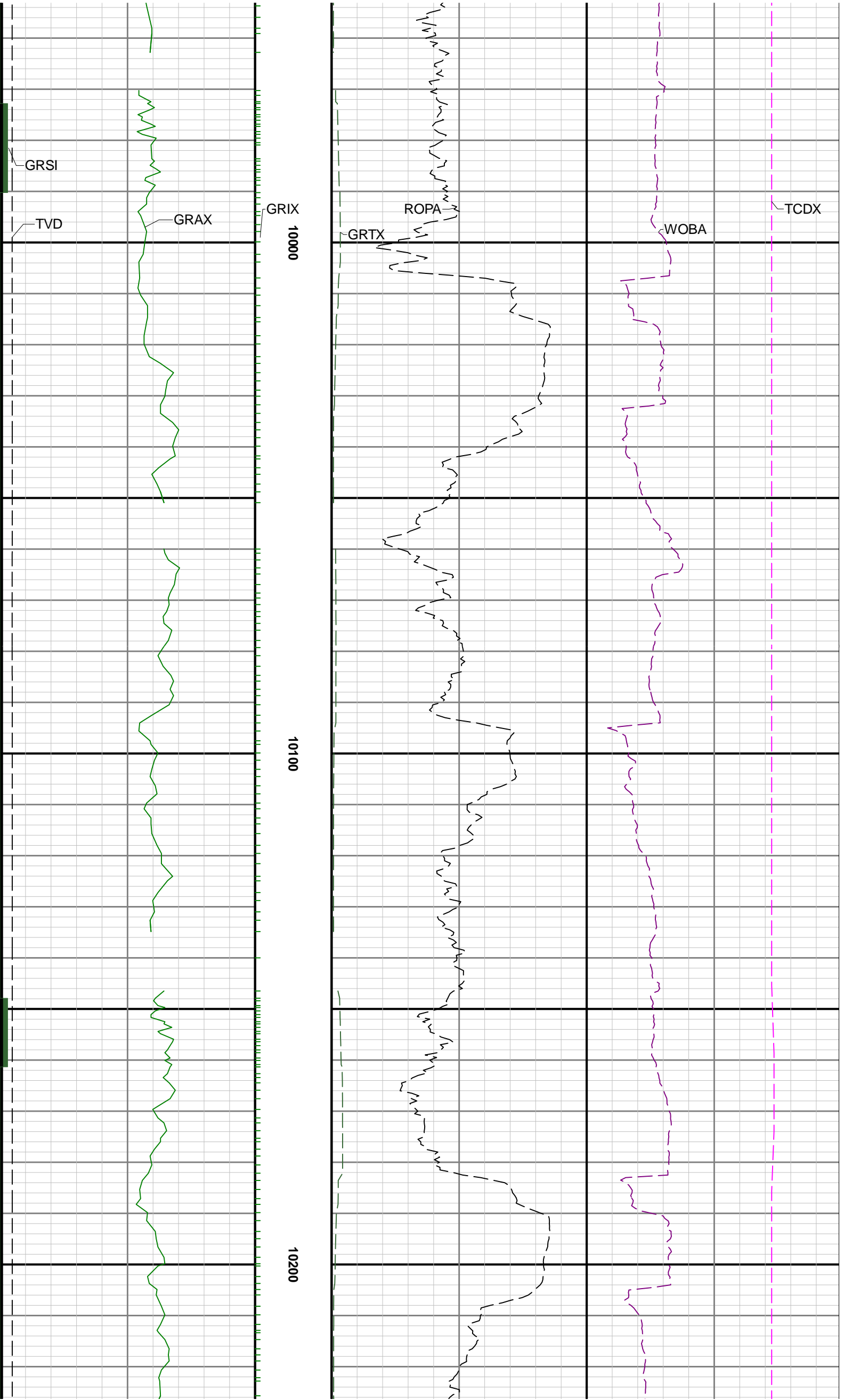


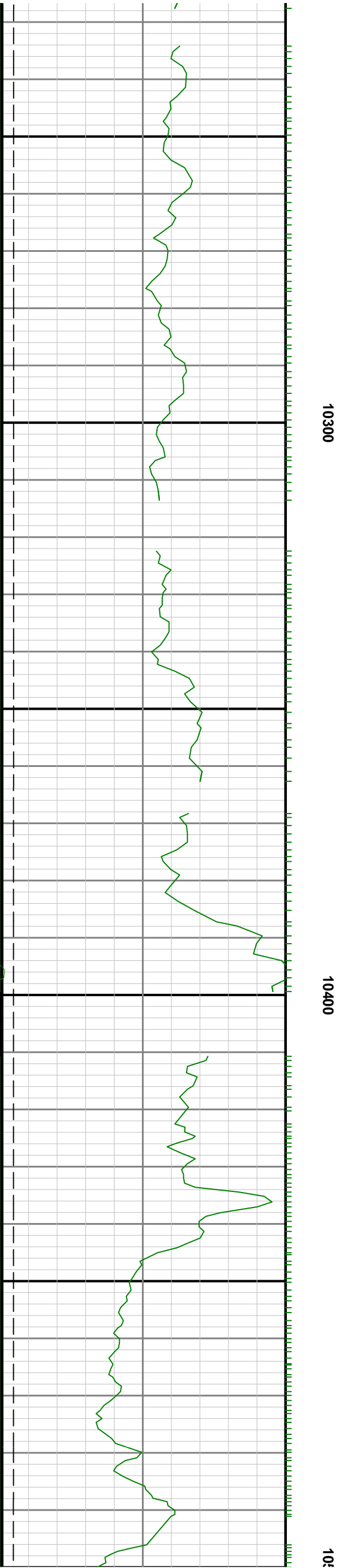
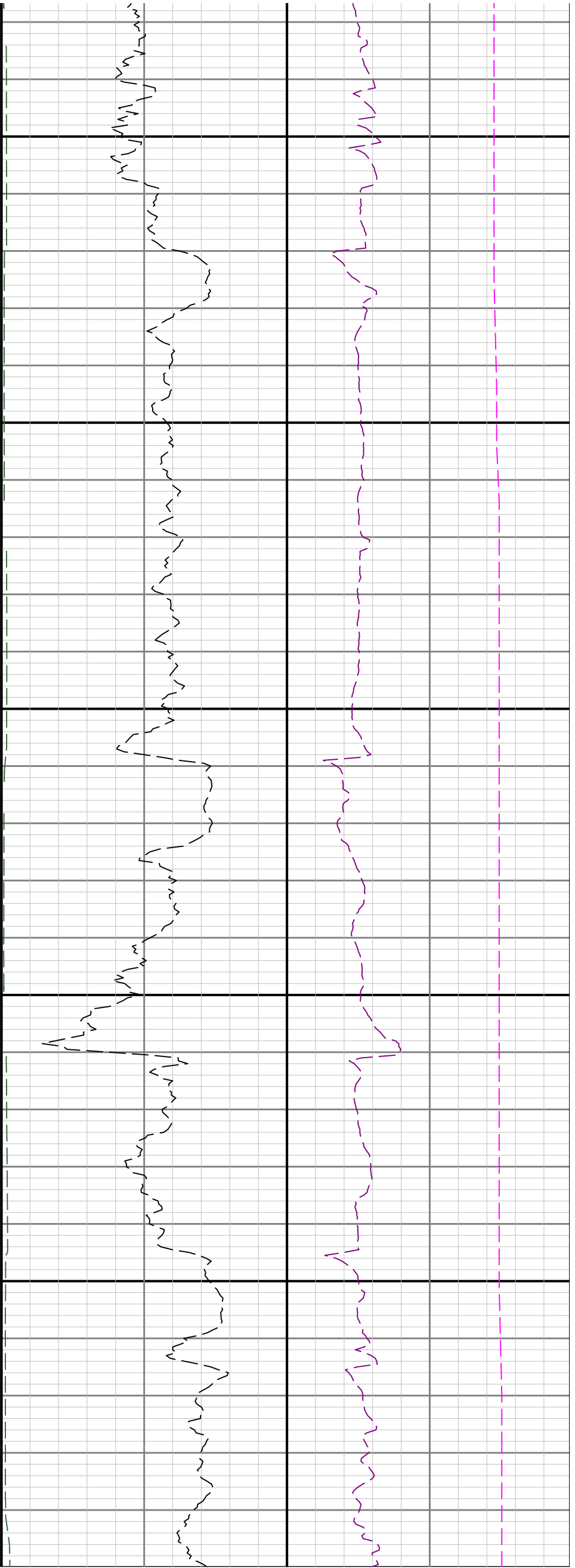
9700

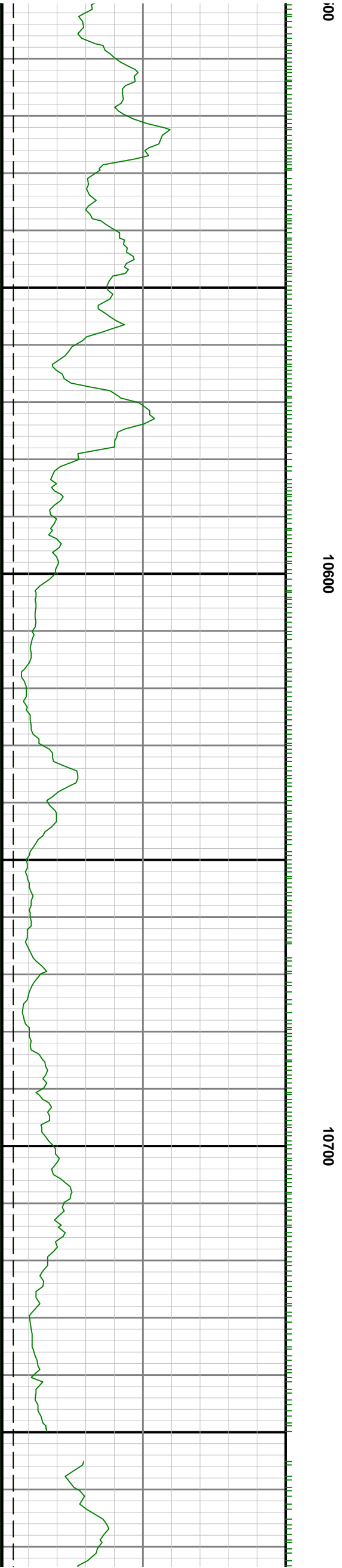
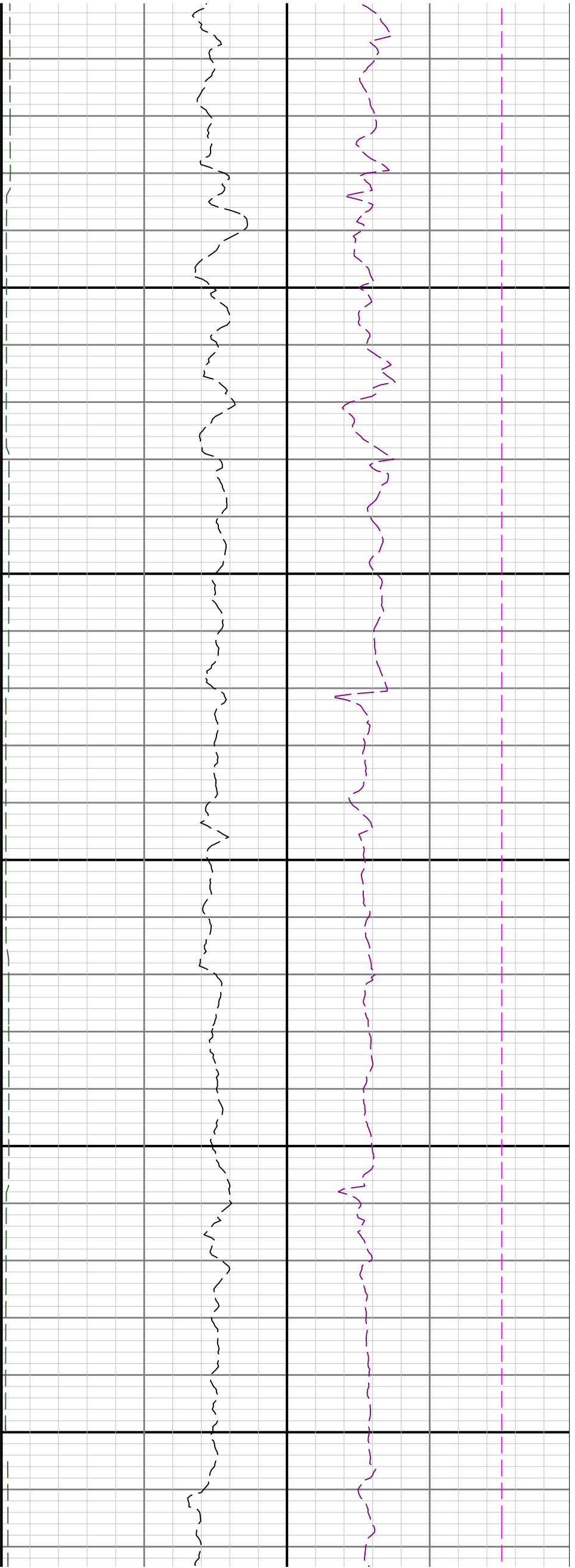
9800

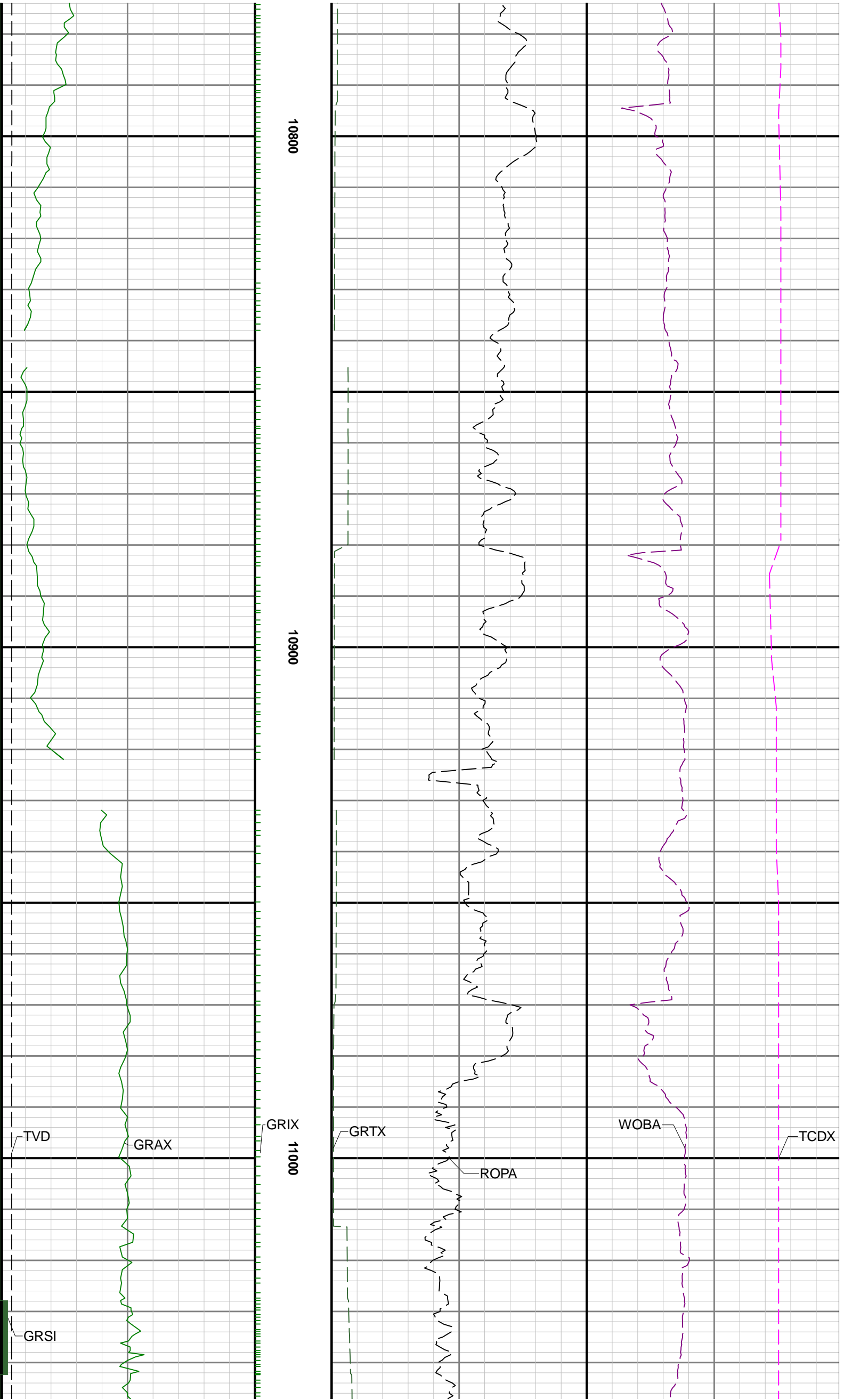
9900

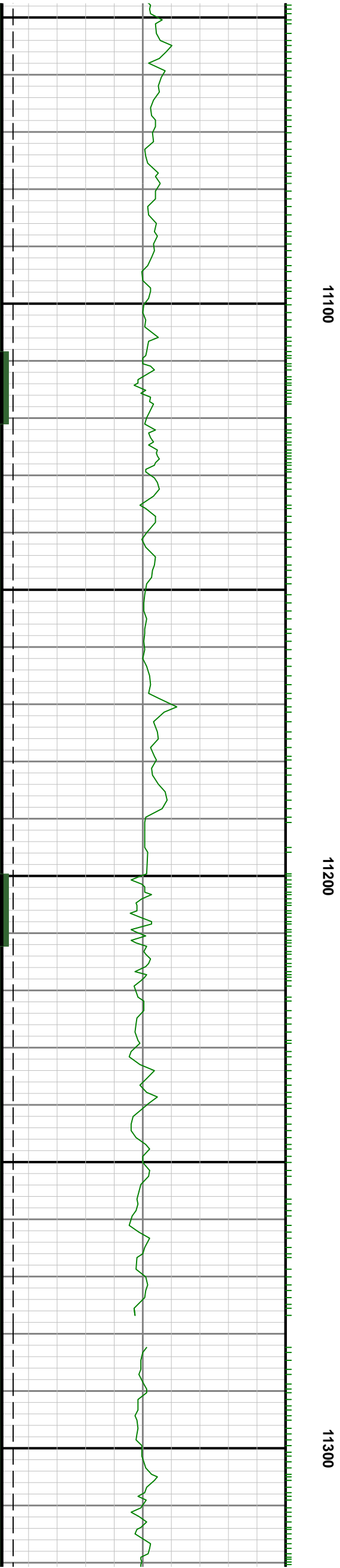
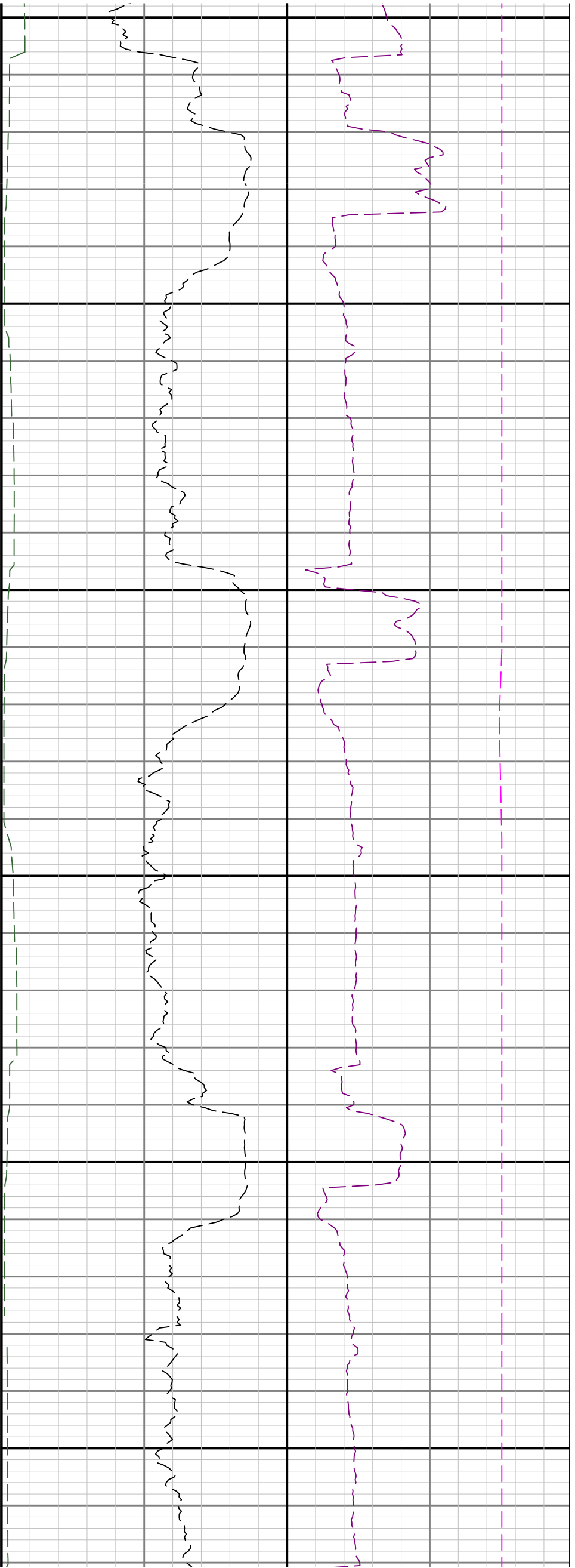


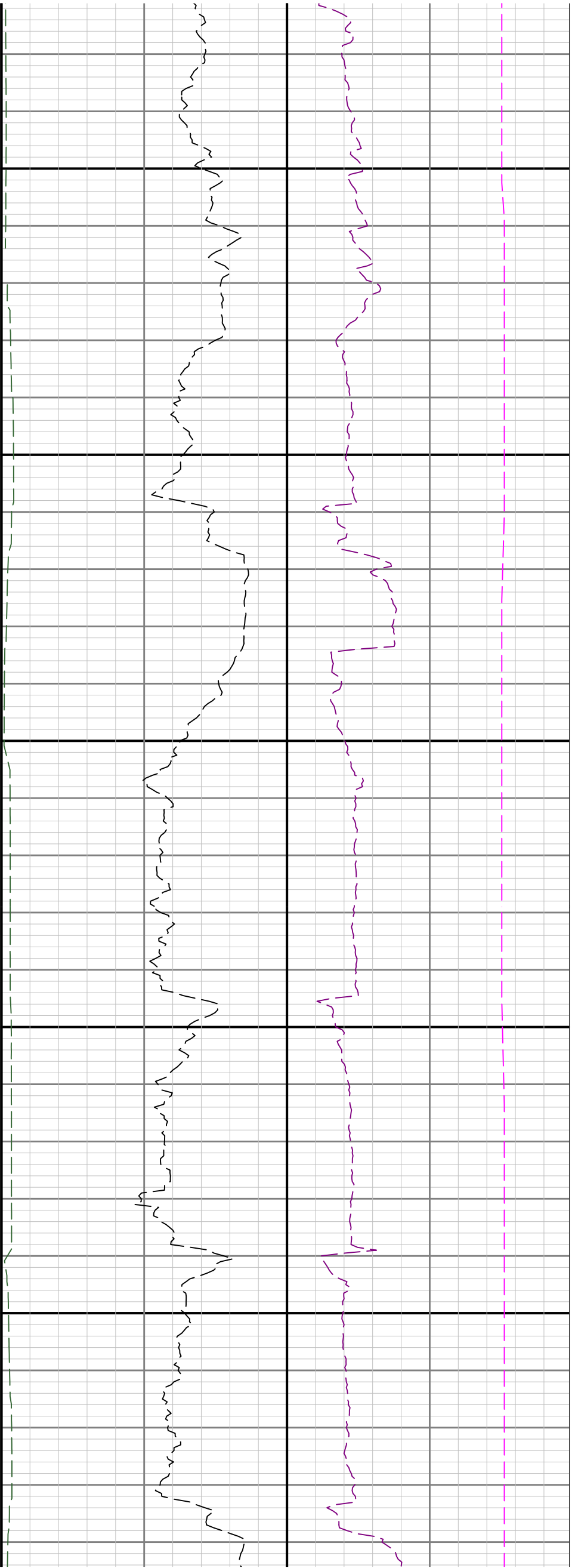






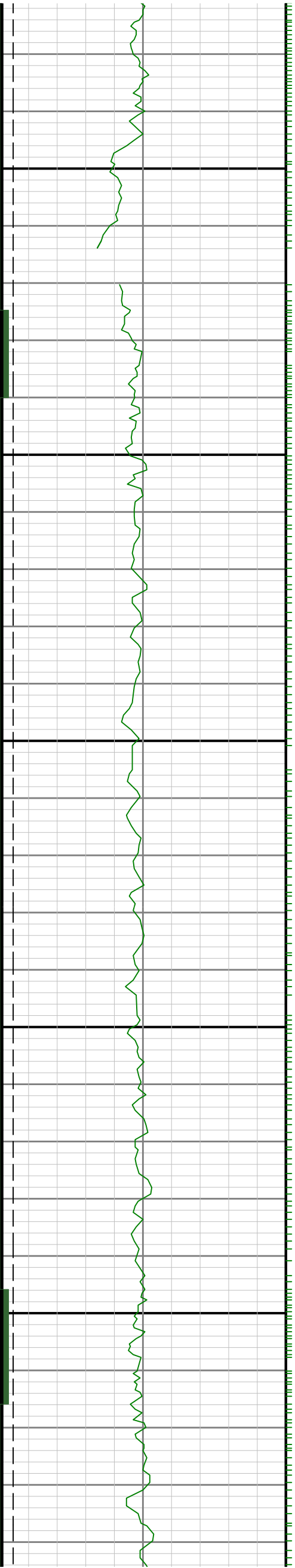


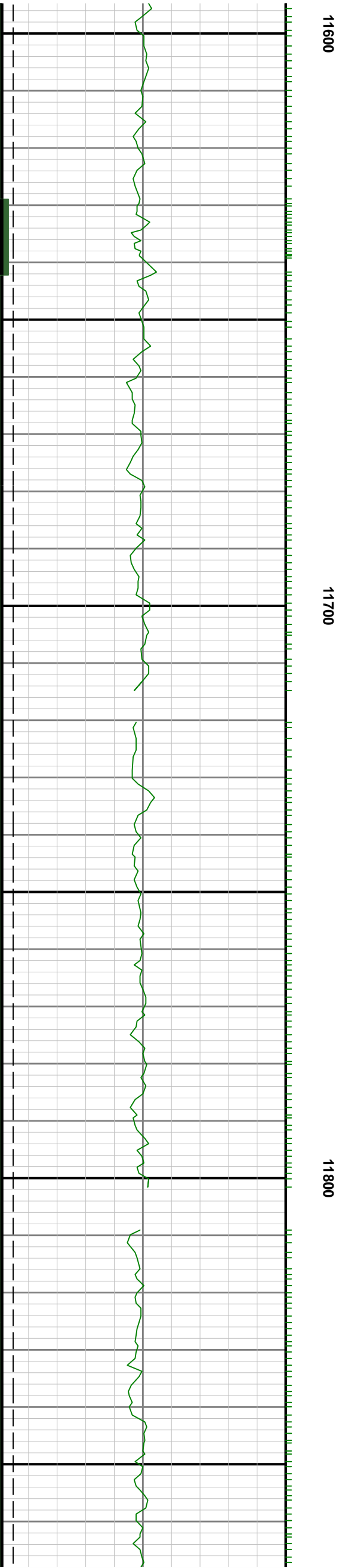
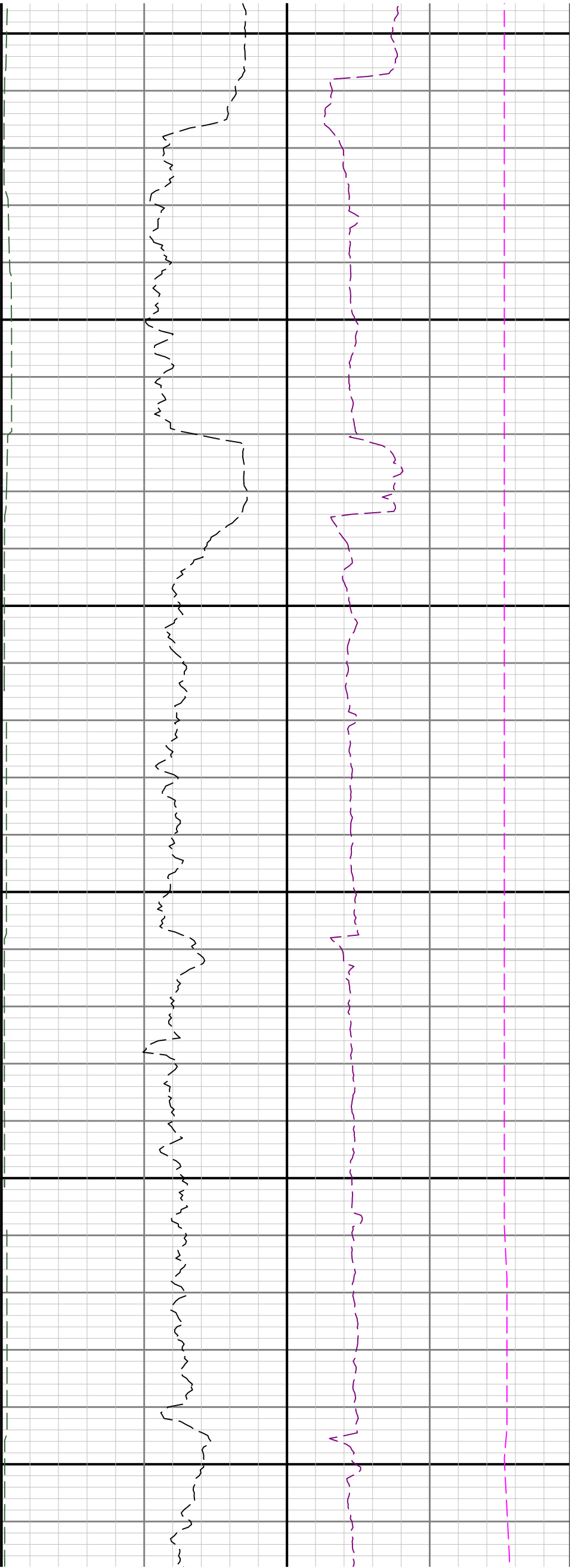


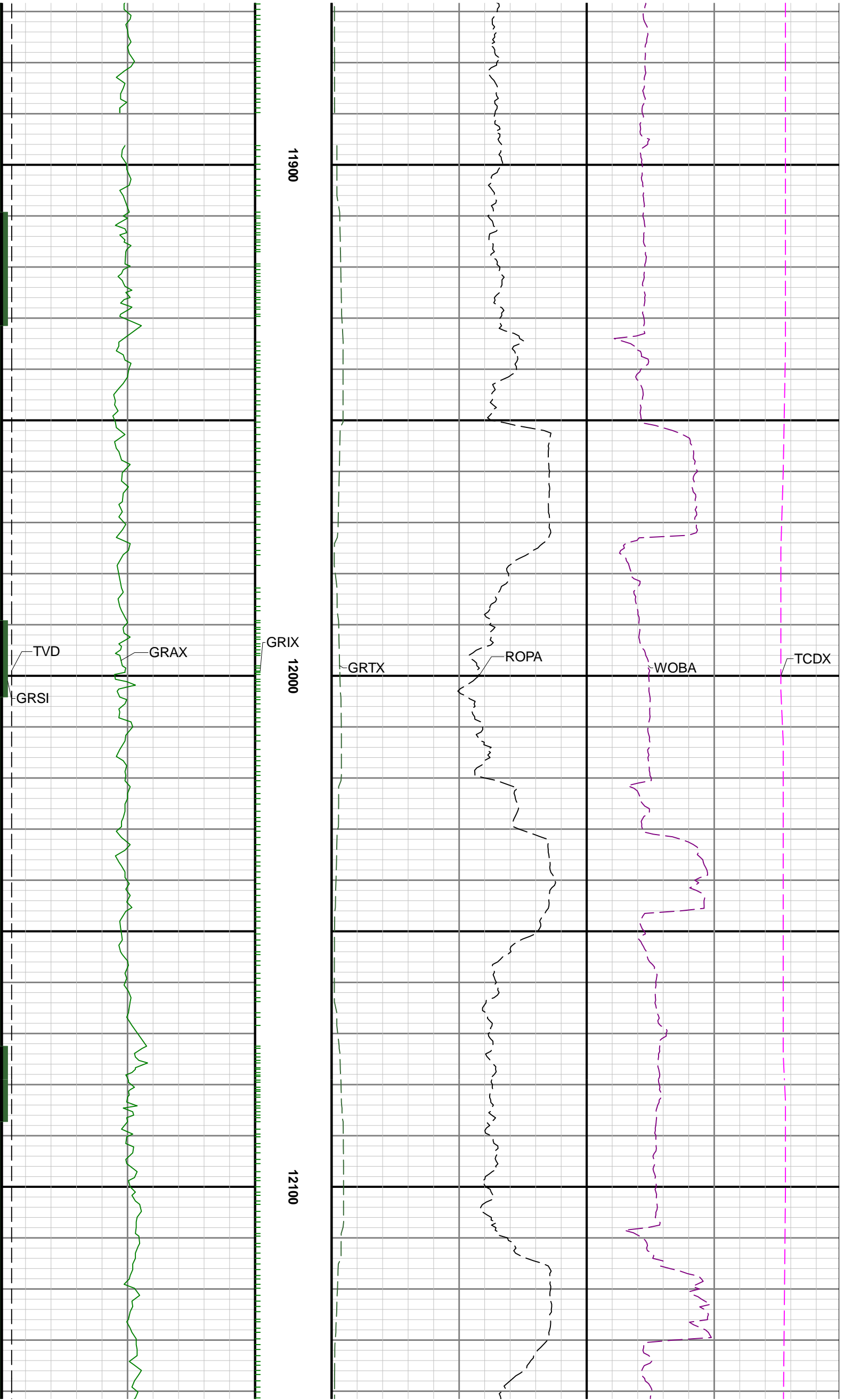


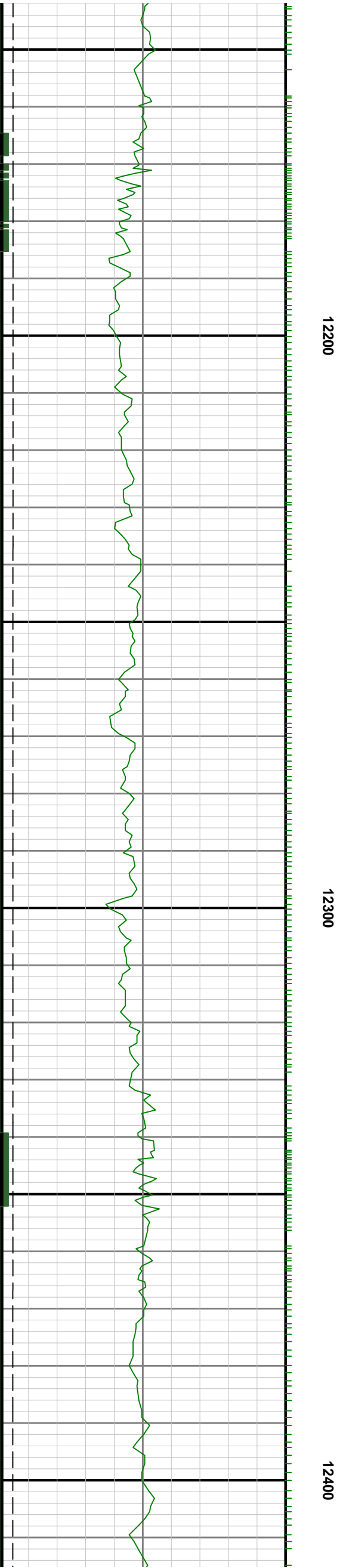
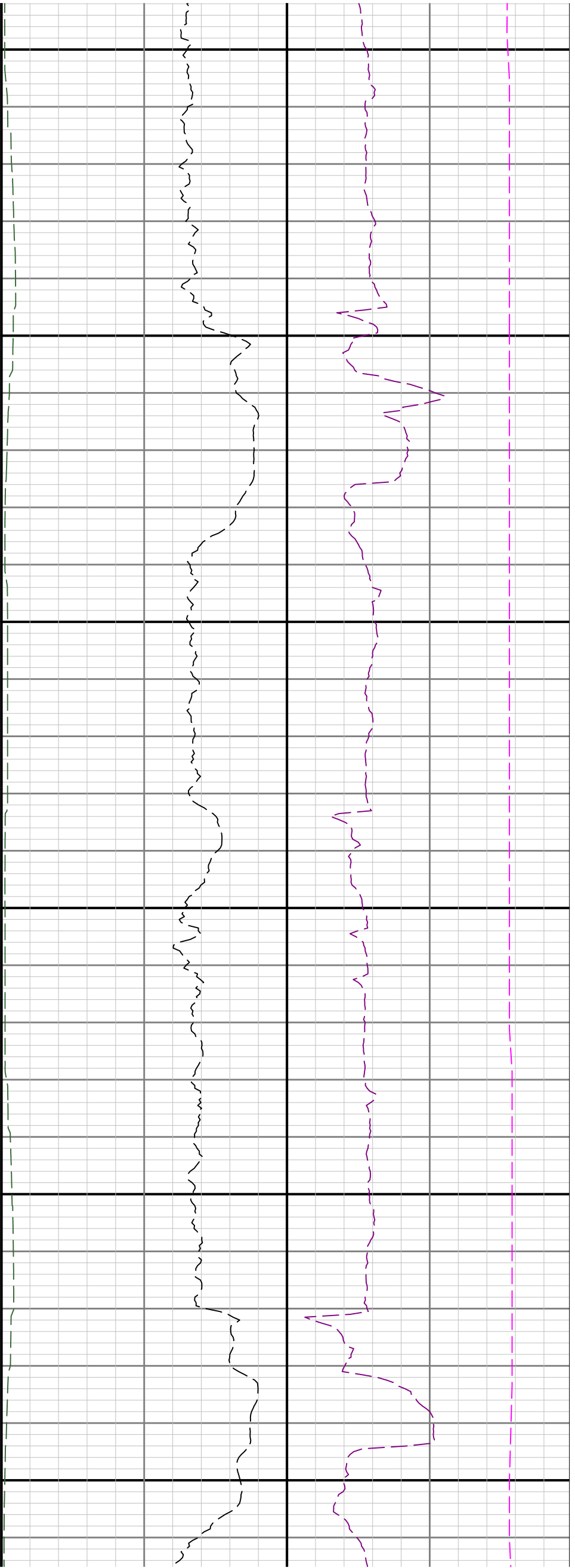
11400

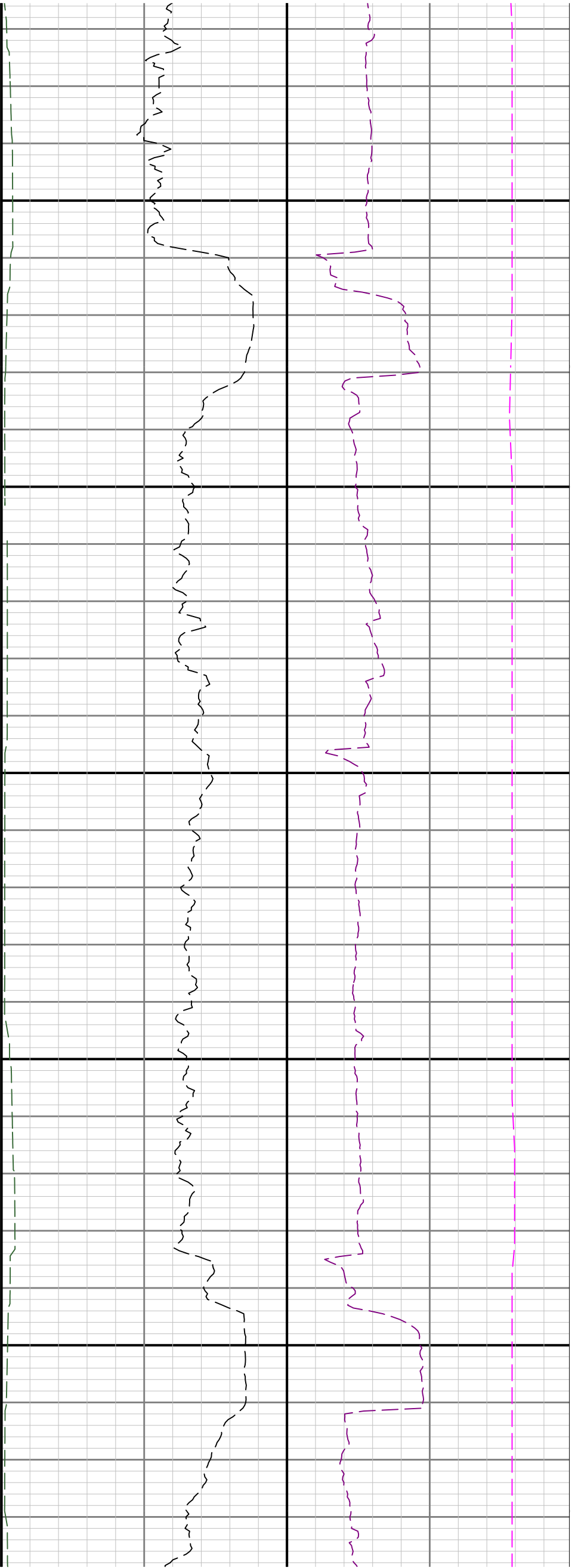
11500





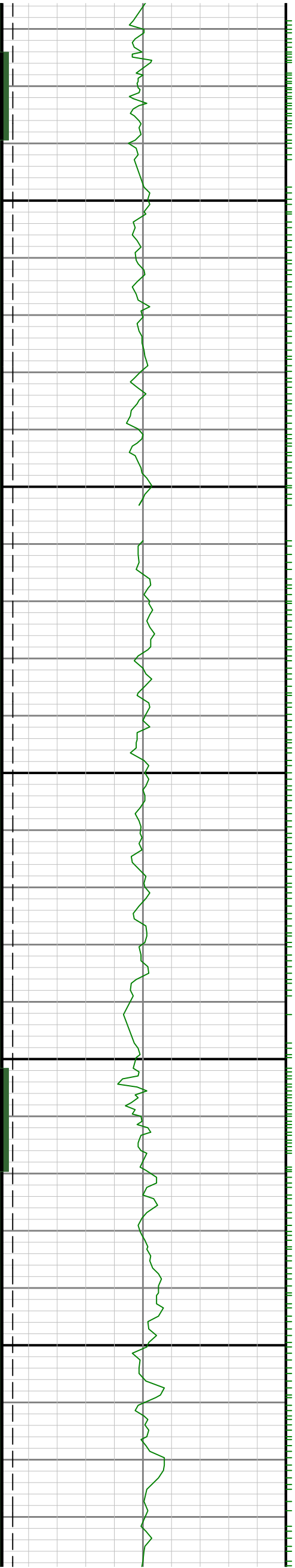


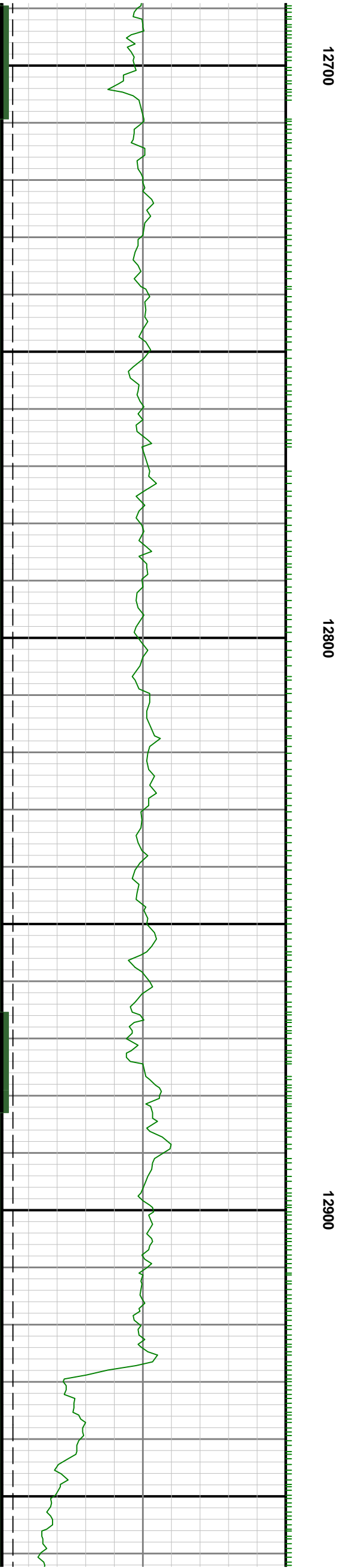
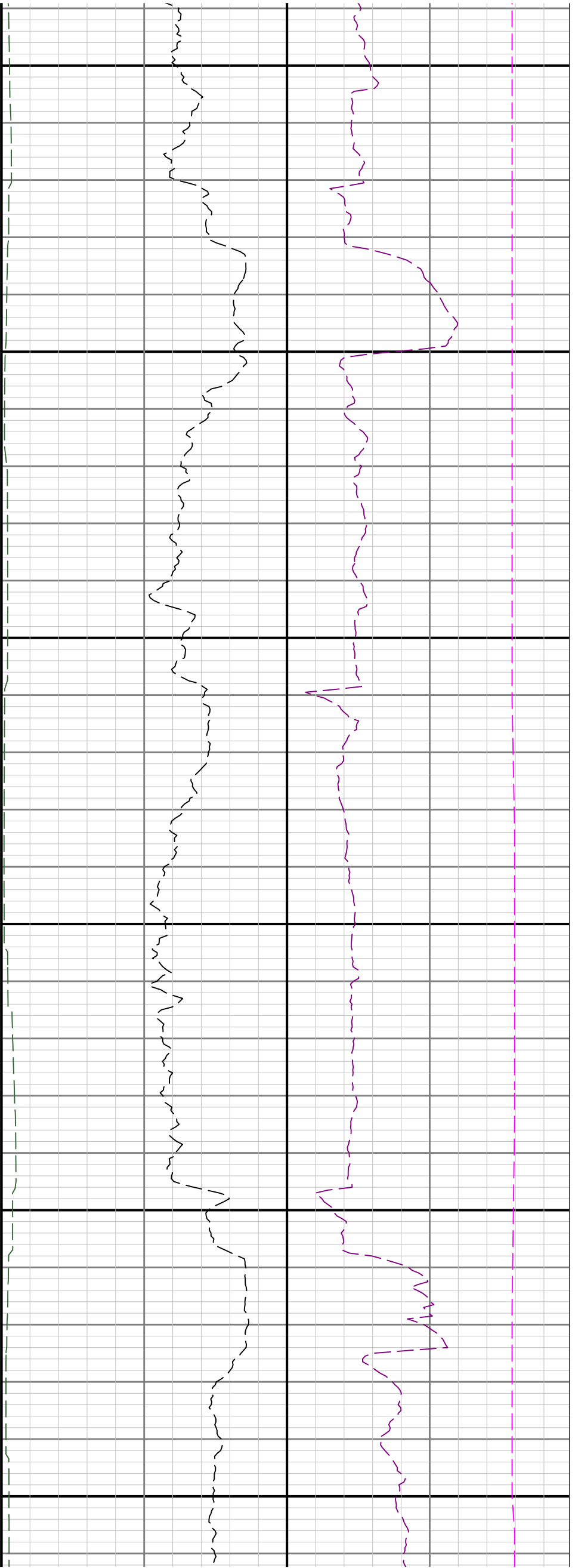


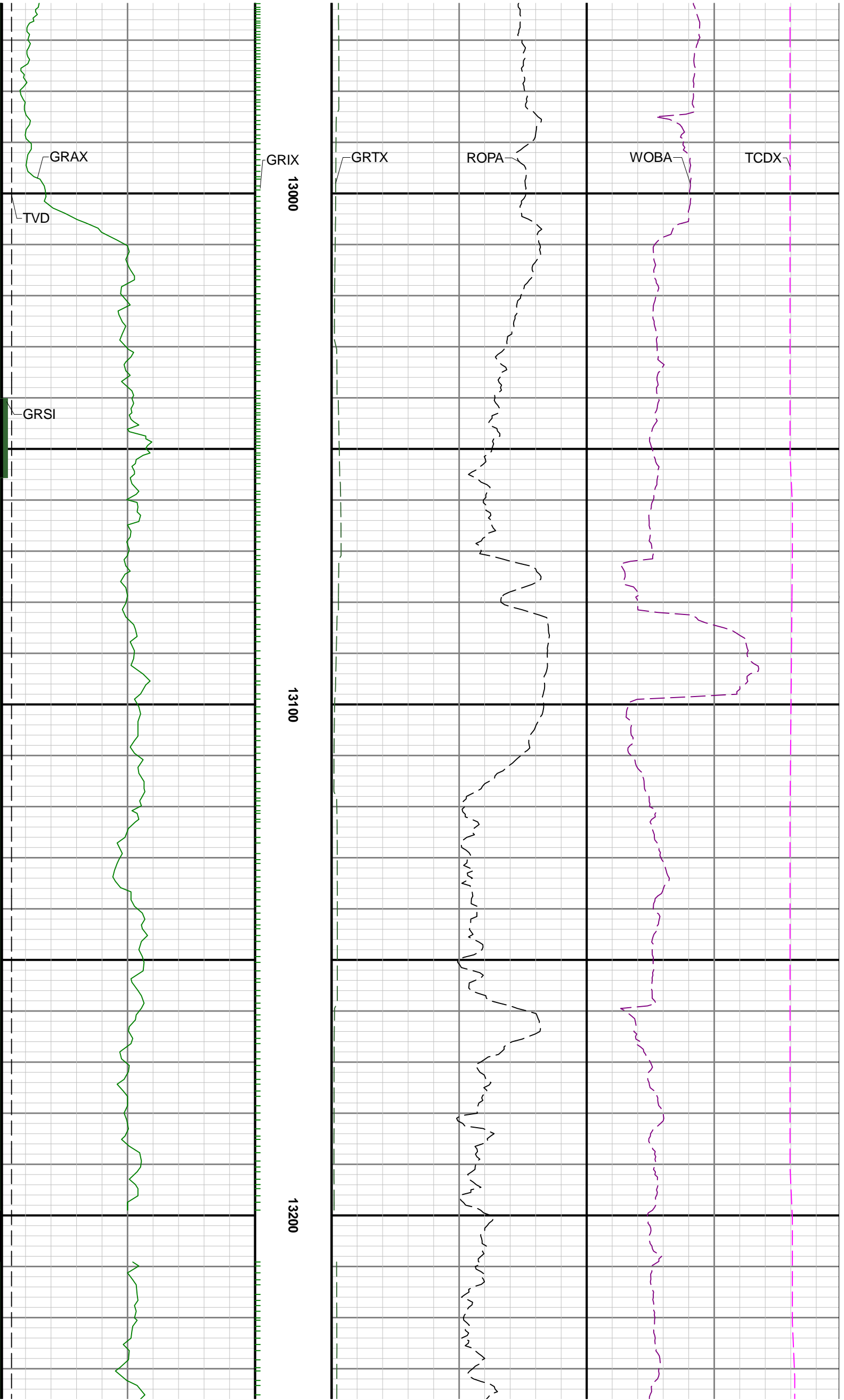


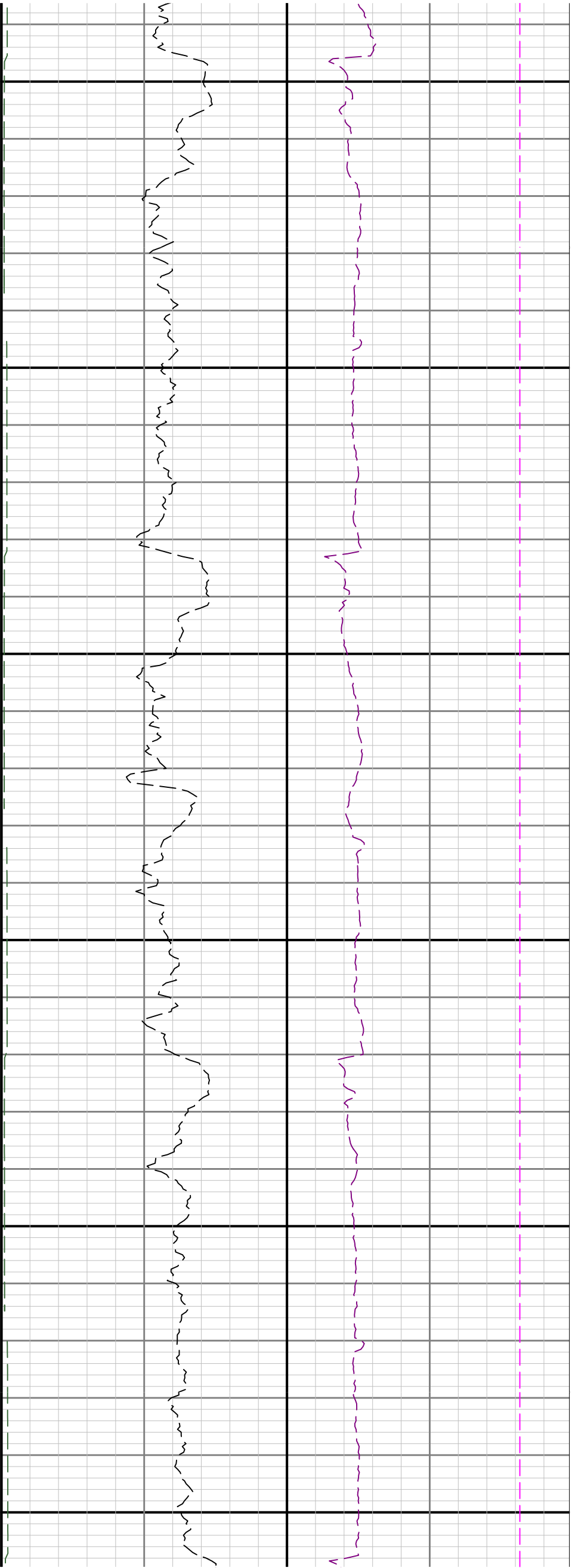
12500

12600





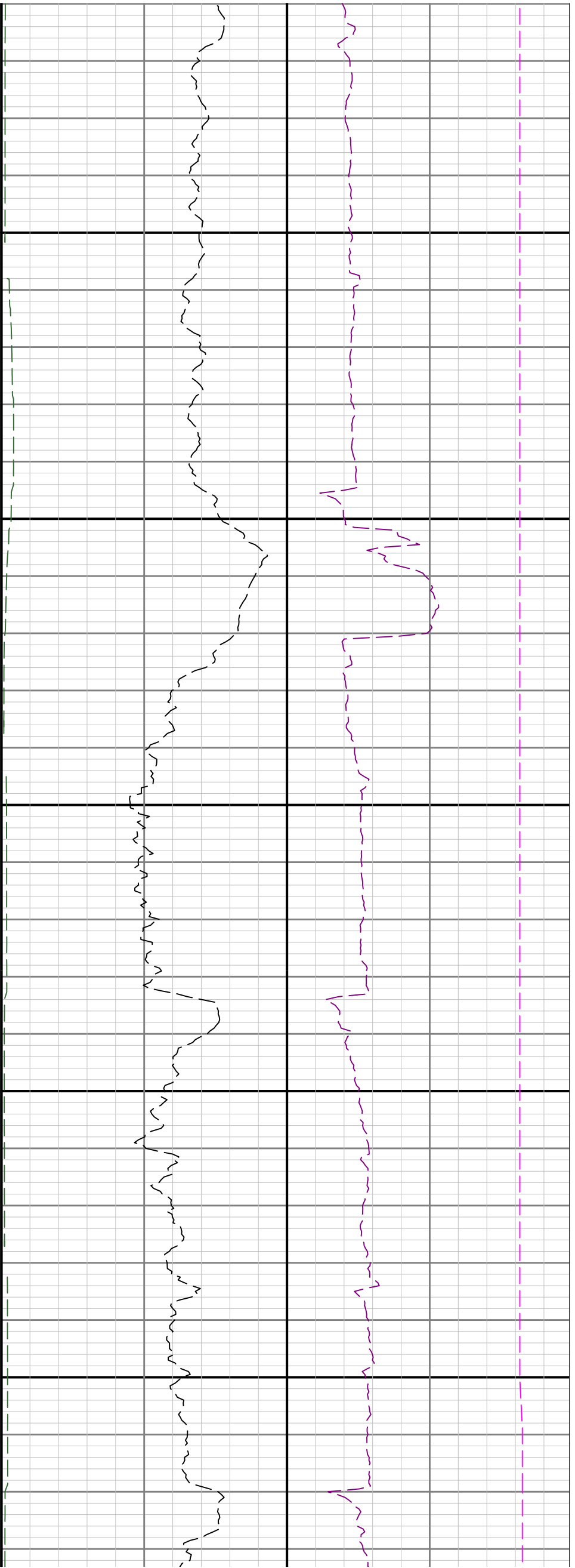




13300

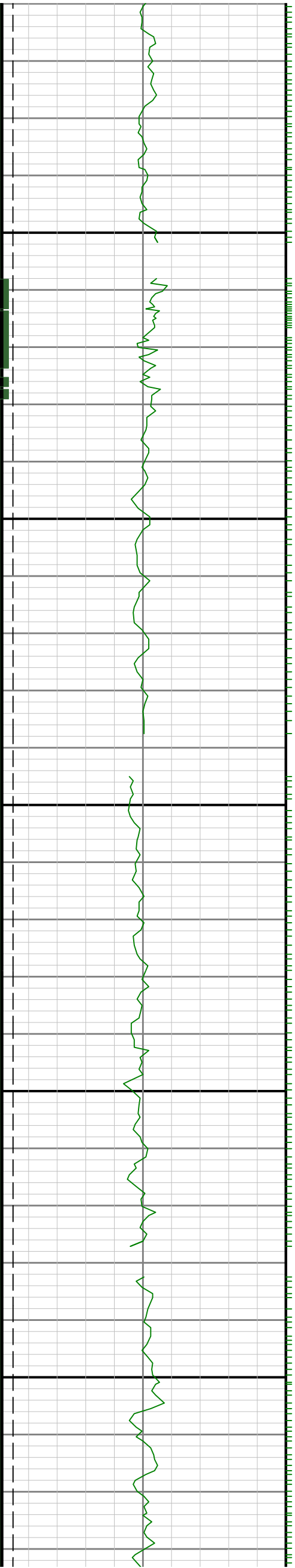
13400

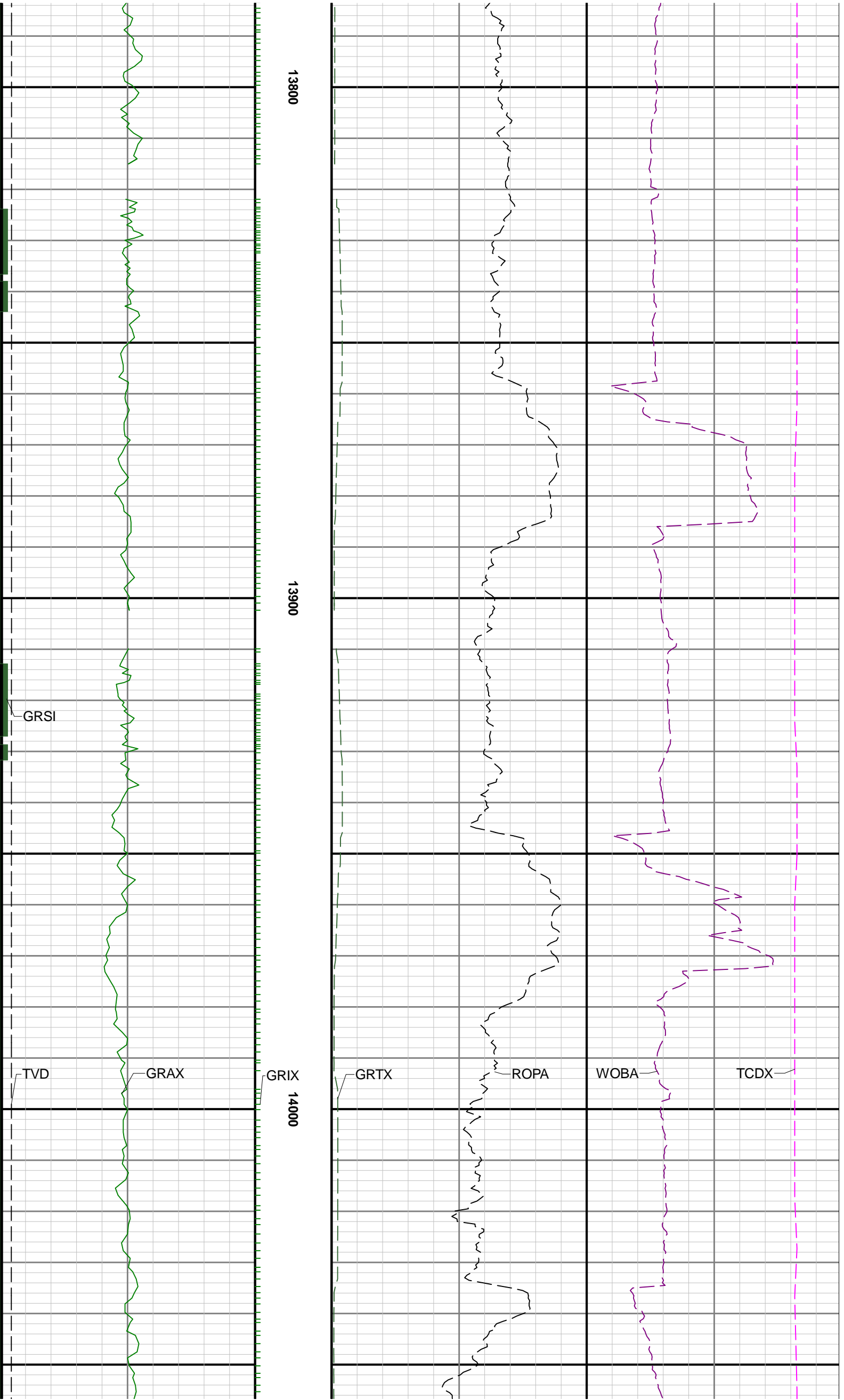
13500

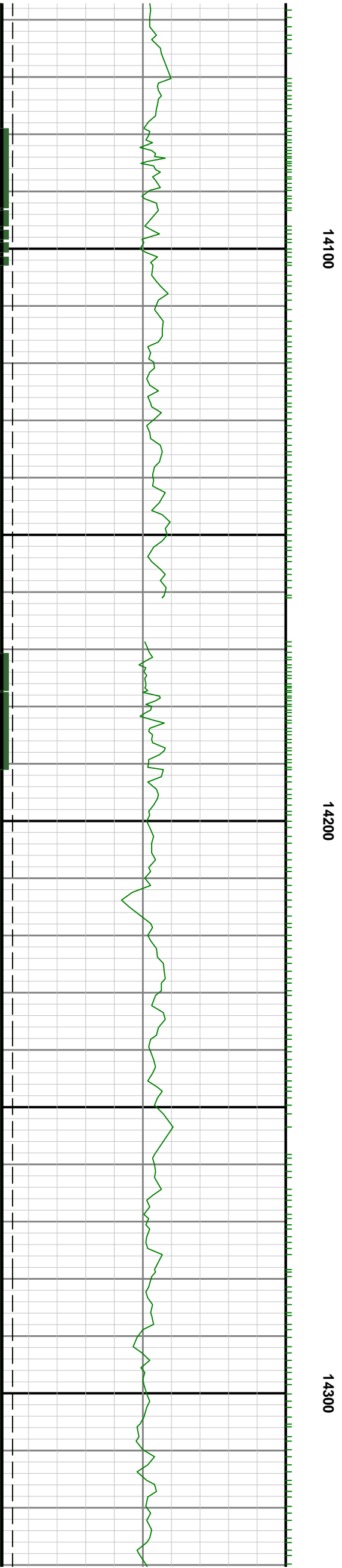
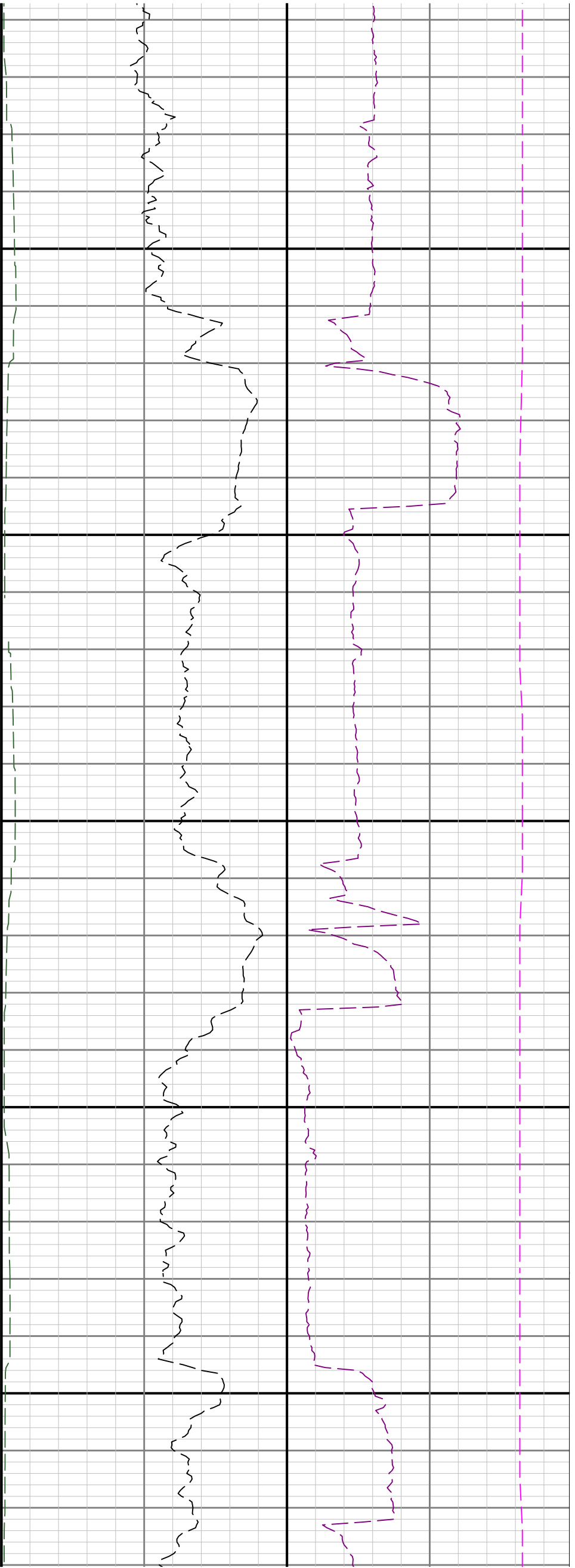


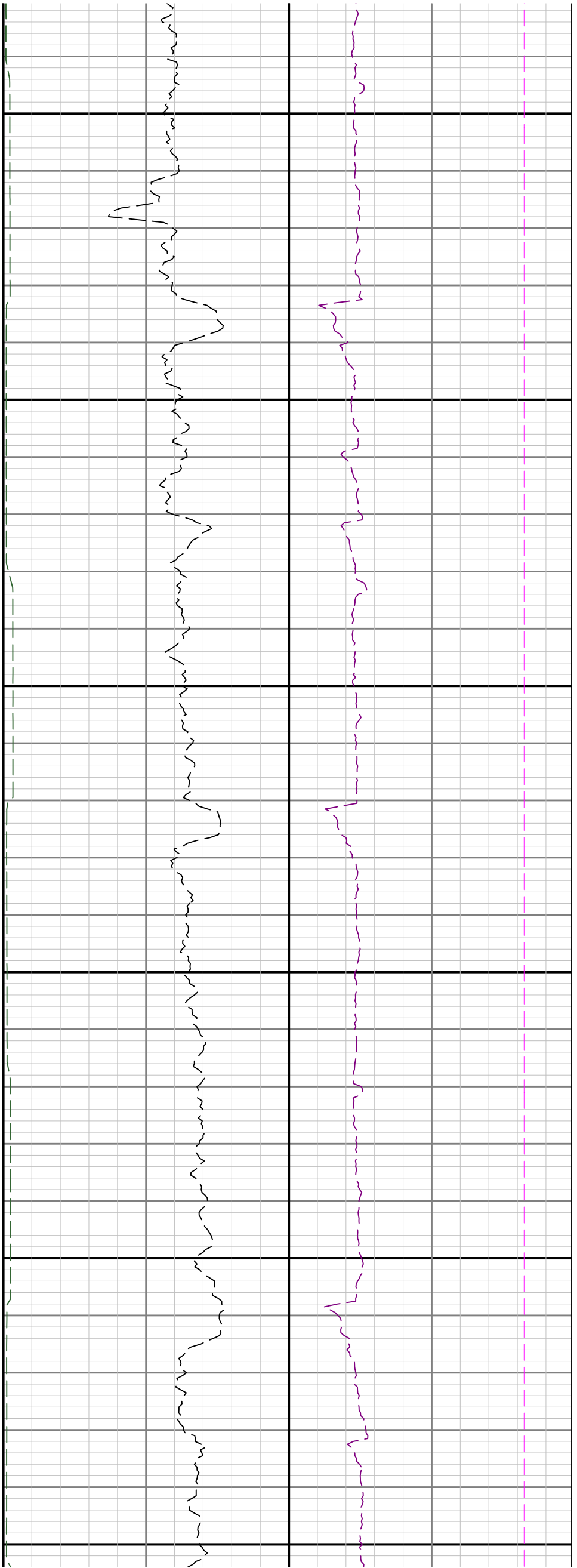
13600

13700





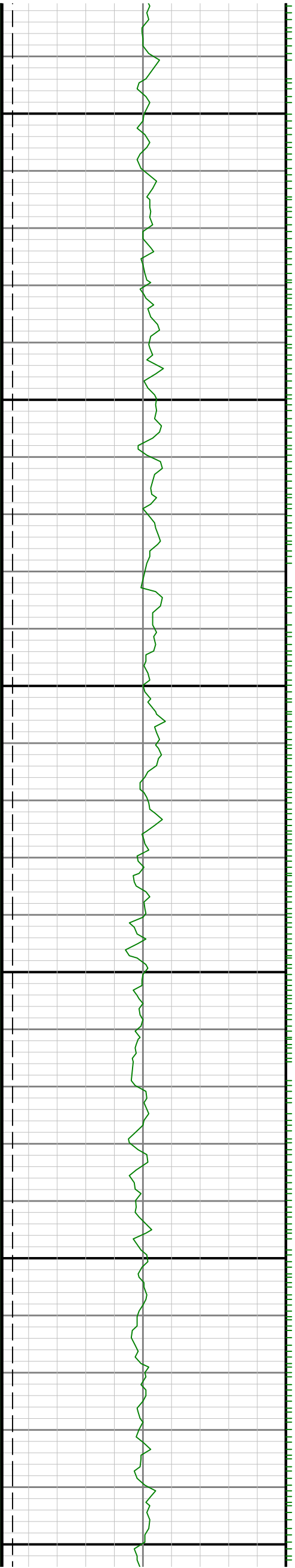


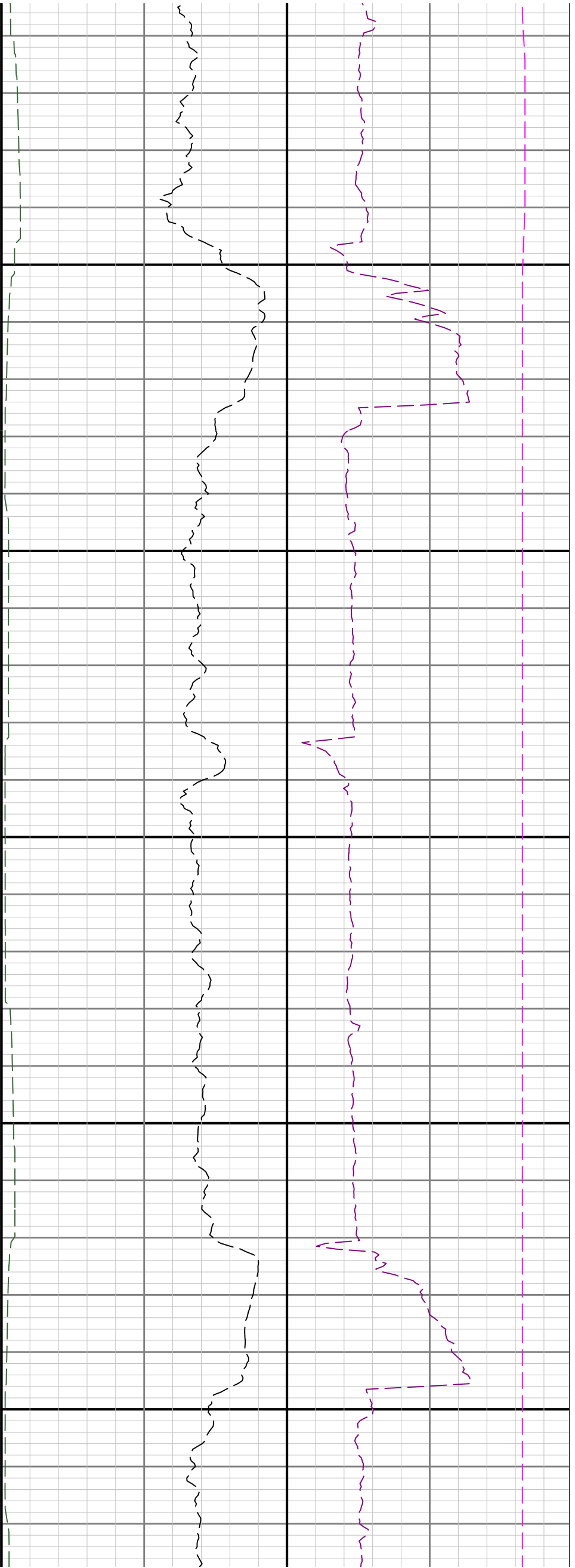


14400

14500

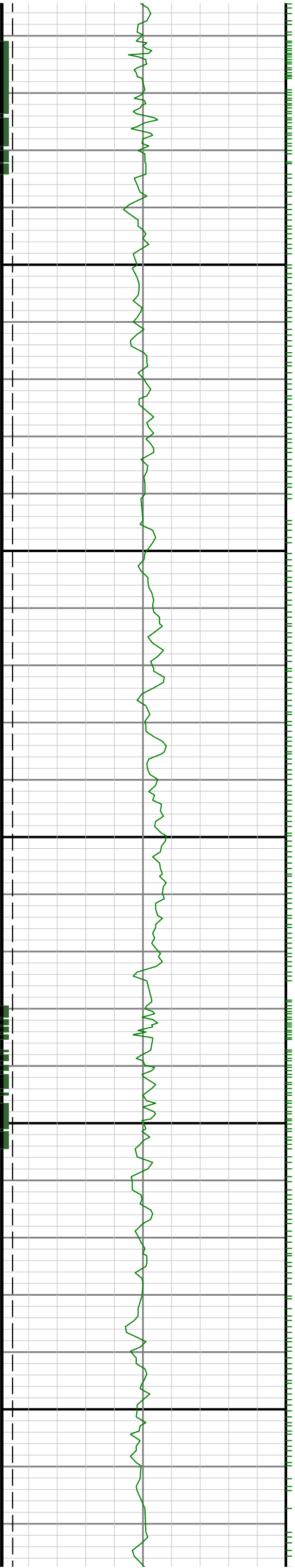
14600

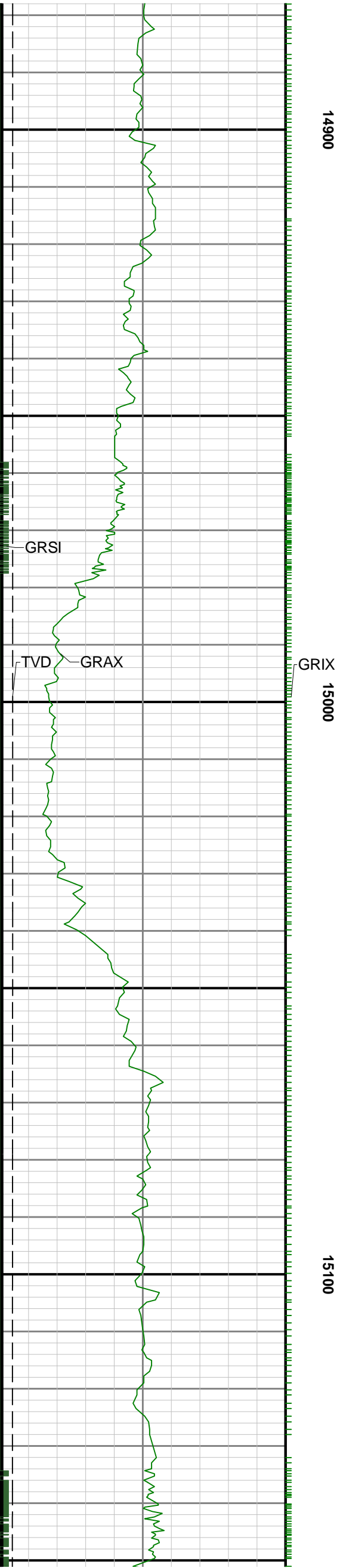
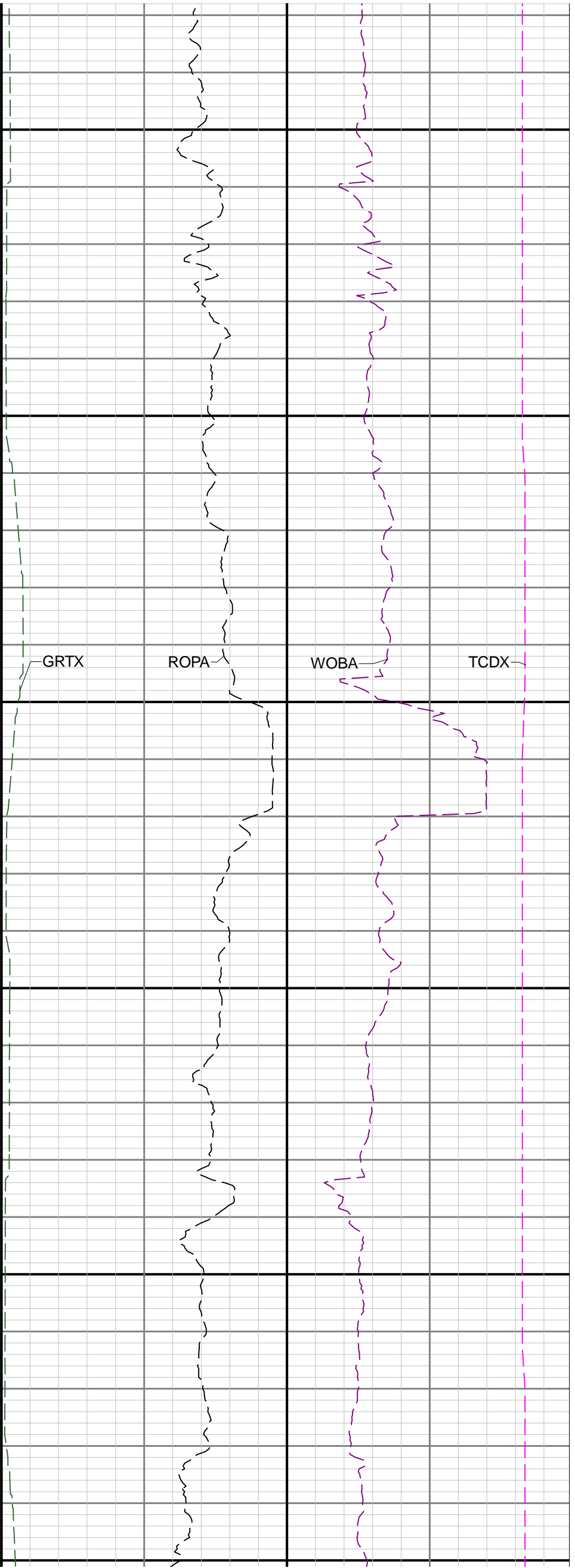


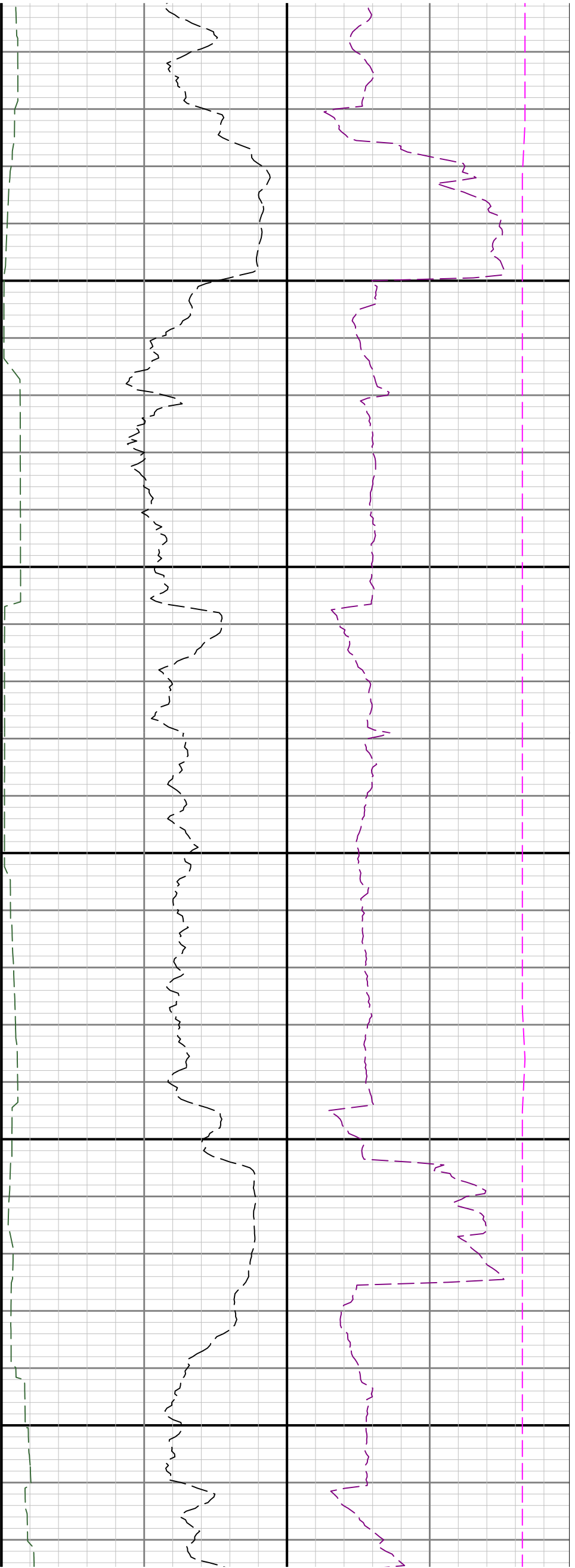


14700

14800



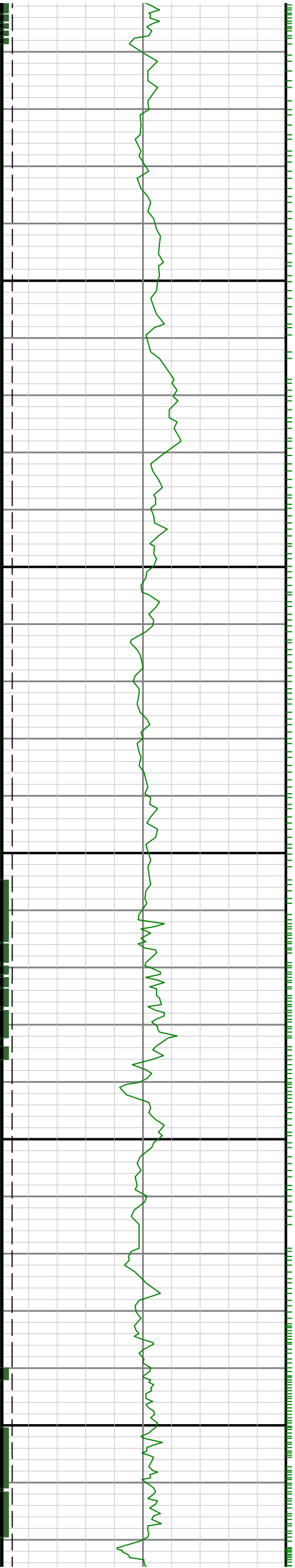


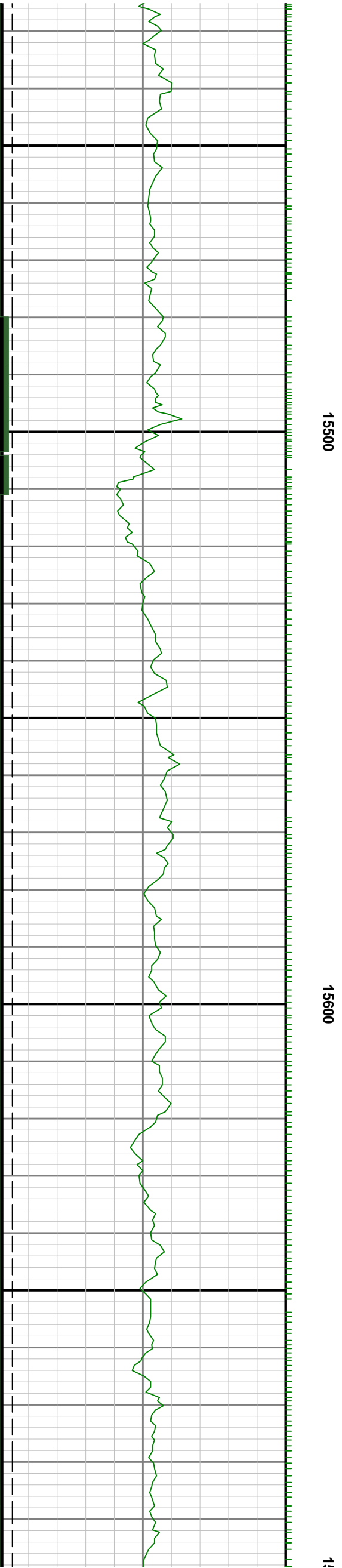
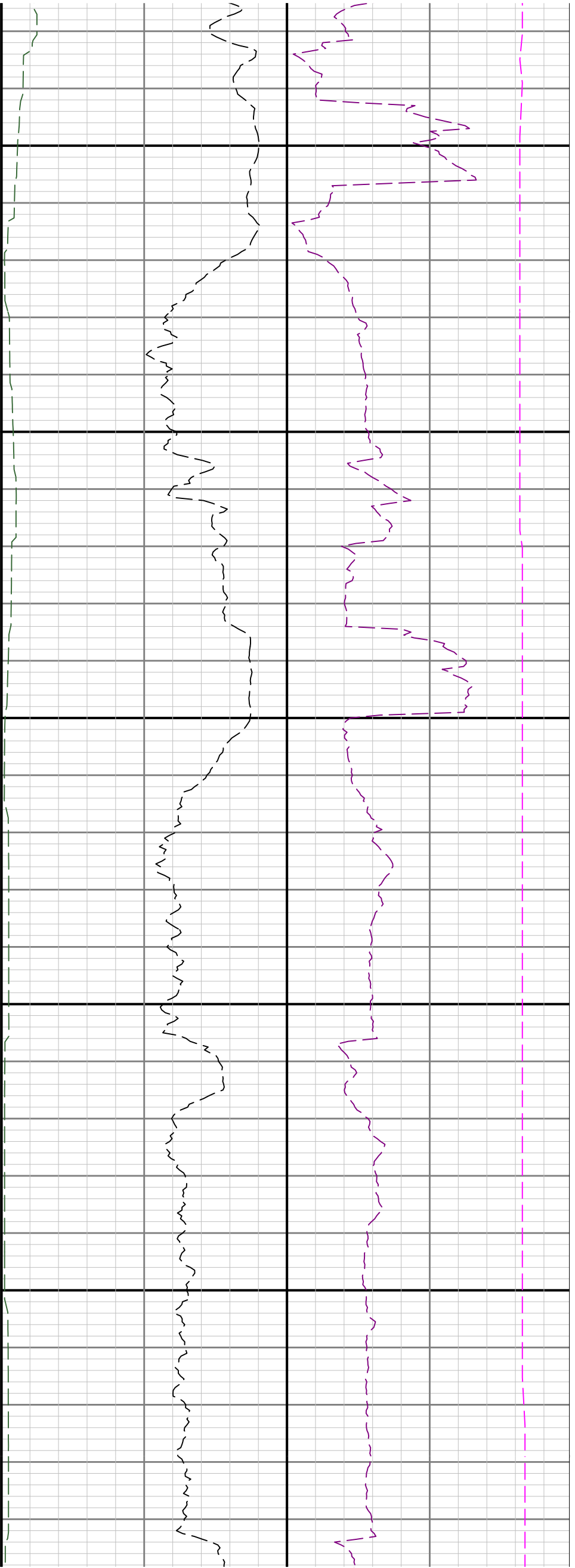


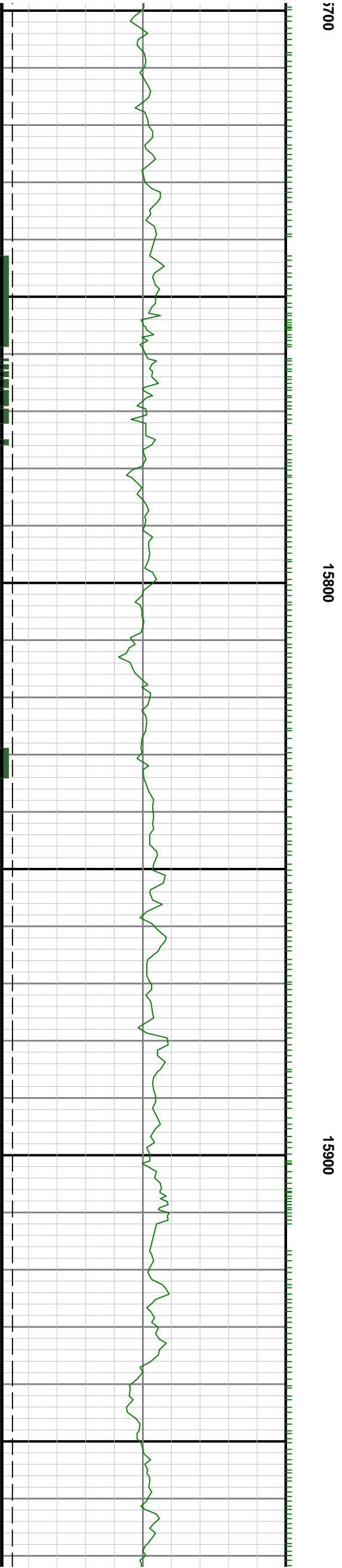
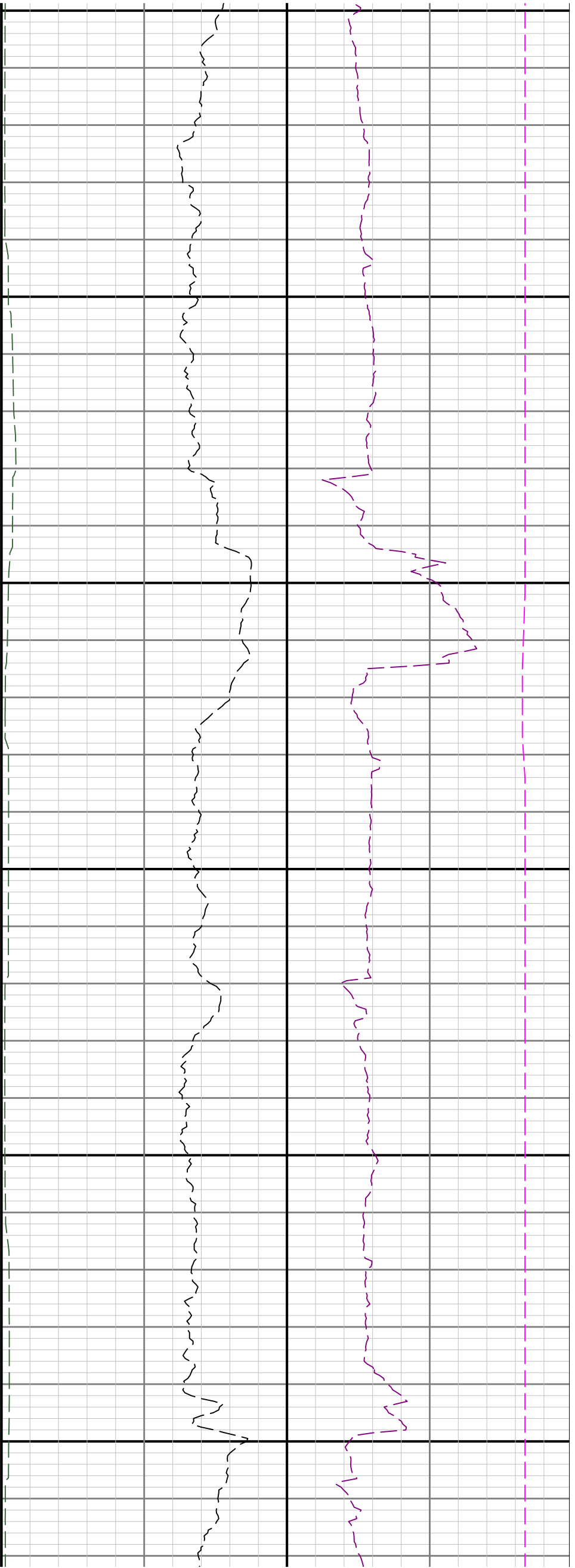
15200

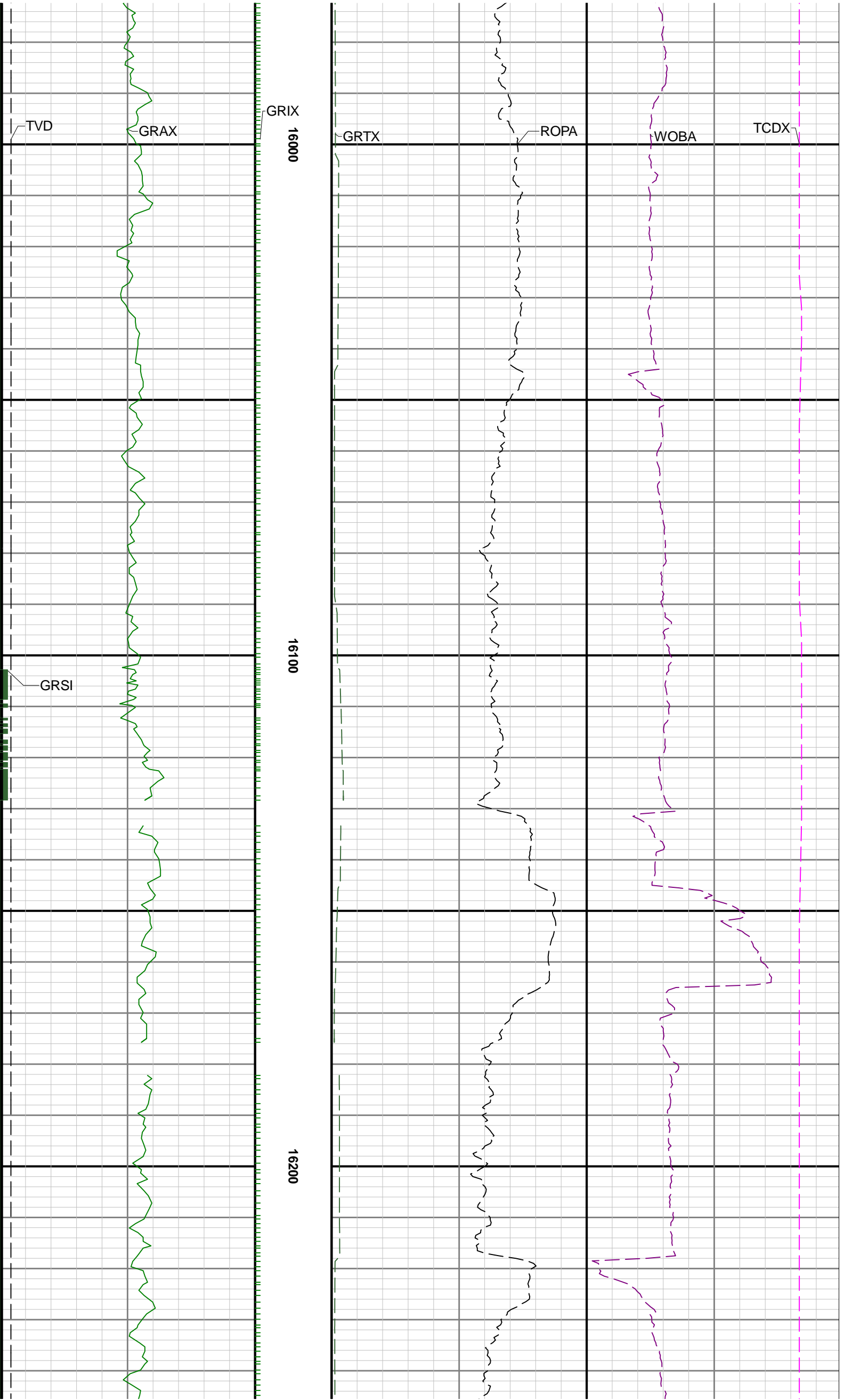
15300

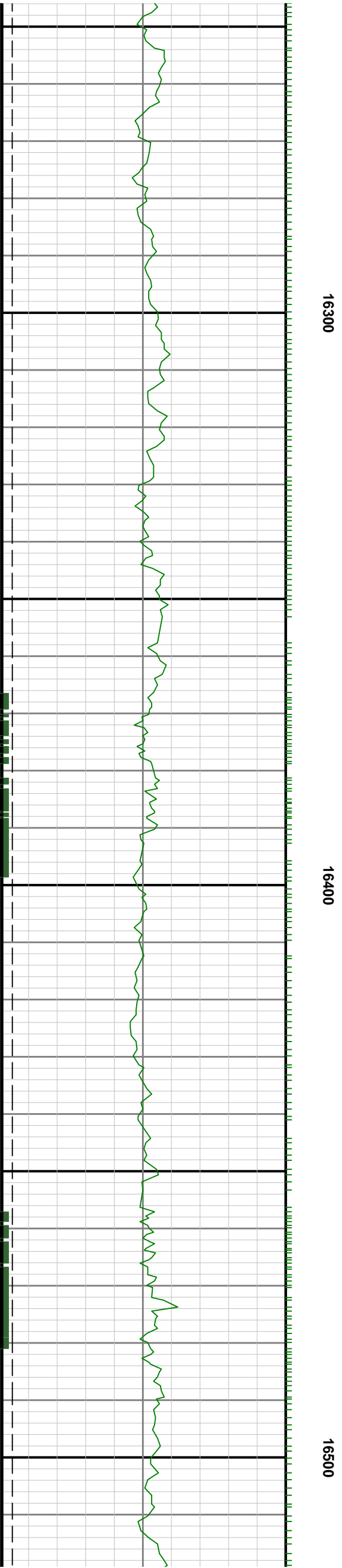
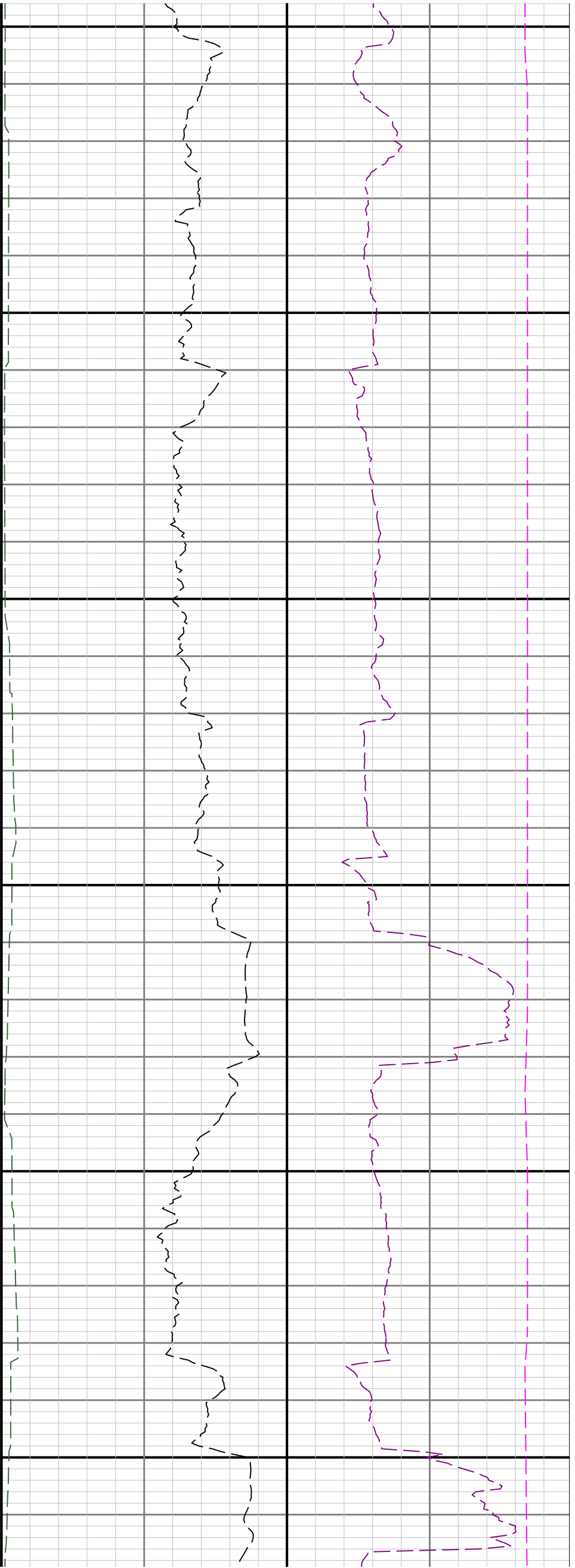
15400

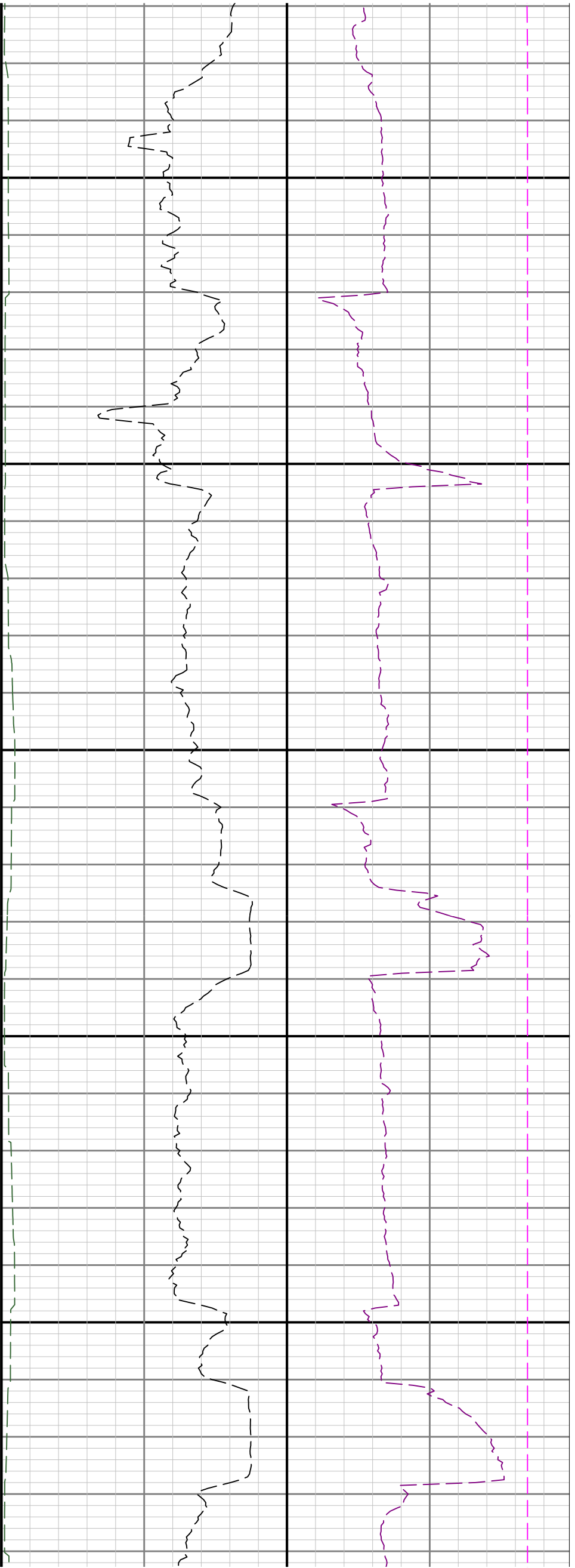












16600

16700

