

Gamma Ray

Scale: **1:240**

Measured Depth

Depth Reference: **Driller's Depth**

Company: **Great Western Operating Company LLC**

Well: **Rio LC 12-366HNX**

Field: **Adams County**

County: **Adams** Country: **United States**

Status: **Final Print**

Surface Location:
Latitude: 39° 59' 58.034" N
Longitude: 104° 56' 23.212" W

Other Services:
Directional

API No: 05-001-10467

Job ID: 109935292

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

Log Measured From: Rig Floor

Dates	Interval	Magnetic Field Reference
From: 2019-09-02	Drilled (ft)	Azi Reference North: True Dip Angle: (deg) 66.43
To: 2019-09-05	Top: 1790.00	Total Magnetic Field Strength: (nT) 51897
Spud: 2019-07-03	Bottom: 17780.00	Mag to Reference North Correction: (deg) 8.24

Borehole Record

Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)
13.500	20.00	1790.00	9.625	36.00	20.00	1790.00
8.500	1790.00	17780.00				

Casing Record

Date / Time	Logged Interval	Bit Depth Interval	Date / Time					
Run No.	Top (ft)	Bottom (ft)	From (ft)	To (ft)	Start Logging	End Logging	Circ. Hours (h)	
1	2.00	1790.00	17767.00	1790.00	17780.00	2019-09-02 15:55	2019-09-05 10:25	60.39

(C) 2019 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 (ft)	Bottom (ft)	From (ft)	To (ft)	Start Logging	End Logging	
1	1	8.500	PDC	2.00	AutoTrak Curve	1790.00	17767.00	1790.00	17780.00	2019-09-02 15:55	2019-09-05 10:25	60.39

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Alain Atemoh	2019-09-02	2019-09-06	Garrett Gerdzen	2019-09-02	2019-09-06			

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+ (%)
2019-09-02 00:00	1	1790.00	Diesel-Oil Based Mud	10.5	32	N/A	10.0	71/29	Active Pit	24295	0.00
2019-09-02 21:00	1	3360.00	Diesel-Oil Based Mud	10.5	25	N/A	10.0	70/30	Active Pit	24295	0.00
2019-09-03 21:00	1	9155.00	Diesel-Oil Based Mud	10.5	24	N/A	10.6	71/29	Active Pit	26239	0.00
2019-09-04 21:00	1	14170.00	Diesel-Oil Based Mud	10.6	23	N/A	10.6	74/26	Active Pit	24295	0.00
2019-09-05 02:00	1	15752.00	Diesel-Oil Based Mud	10.5	23	N/A	10.6	74/26	Active Pit	24295	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	AutoTrak Curve Steering Unit	14262244	Near Bit Inclination	5.93	6.77	7.000	4.330
1	AutoTrak Curve Steering Unit	14262244	Near Bit VSS	5.93	6.77	7.000	4.330
1	AutoTrak Curve MWD	14371850	Gamma (single)	2.76	12.94	7.000	3.250
1	AutoTrak Curve MWD	14371850	Directional (mag)	12.27	22.45	7.000	3.250

Service and Tool Mnemonics

Mnemonic	Name	Description
----------	------	-------------

Acquisition System Cadence Plot Studio

Software Version RT 5.4

Rig: PD 460

Contractor: Precision Drilling

District: RMA

Unit: D&E

ATC SU	AutoTrak Curve SU	Auto Trak Curve Steering Unit
ATC MWD	AutoTrak Curve MWD	Auto Trak Curve MWD
ATC LCPM	AutoTrak Curve LCPM	Auto Trak Curve LCPM

Comments

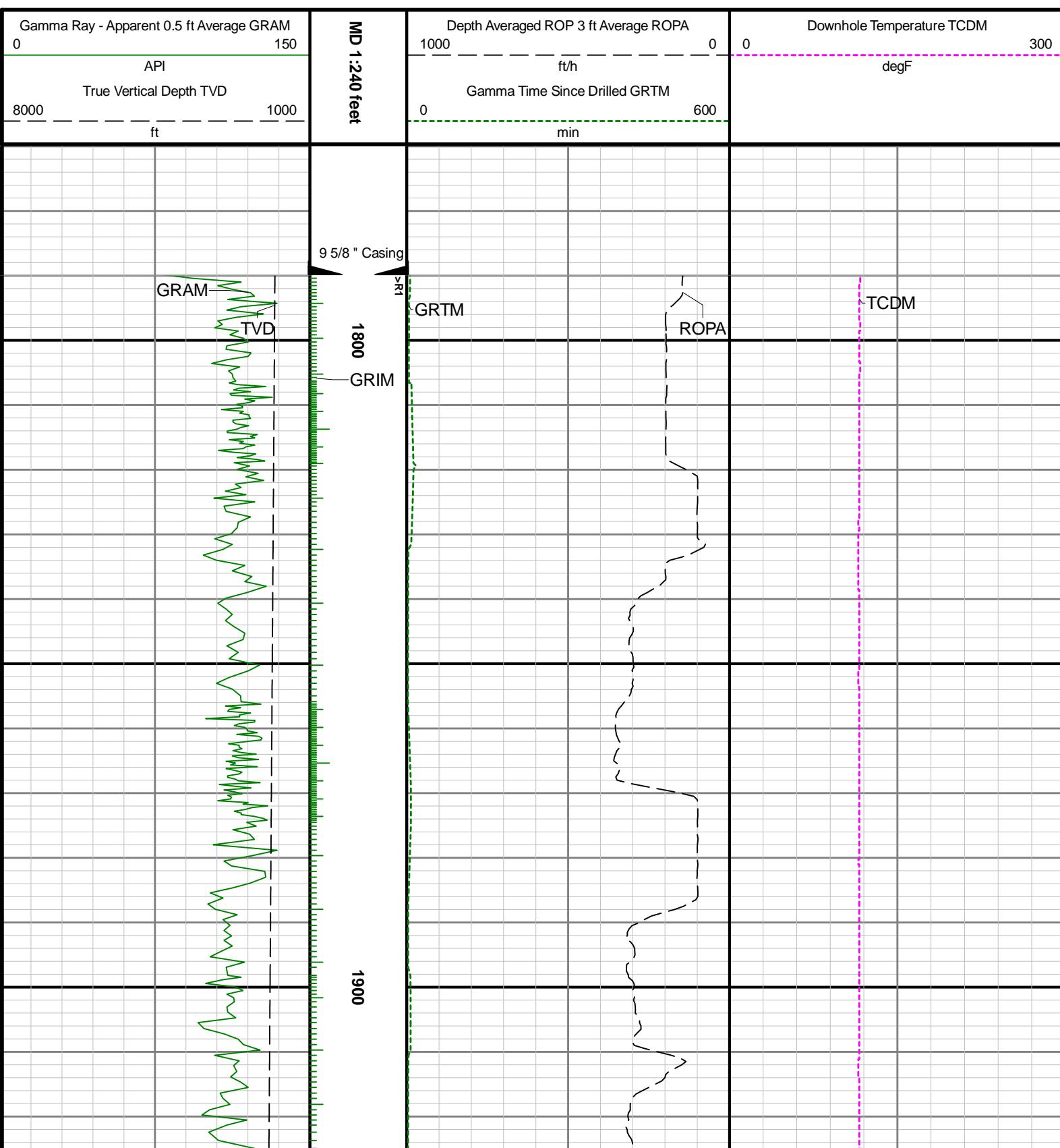
- 1 Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes, a GE Company (BHGE). Due to the lack of control by Baker Hughes, depth calibrations and measurements could not be independently verified.
- 2 BHGE LWD run 1 utilized a 6.75 inch NaviGamma service (Directional and Gamma Ray) behind a 8.5 inch bit and rotary steerable assembly from 1790 to 17780 feet MD (1790 to 7561 feet TVD).
- 3 "Date To" indicates the date and time the well reached Total Depth (TD) and logging services ended.

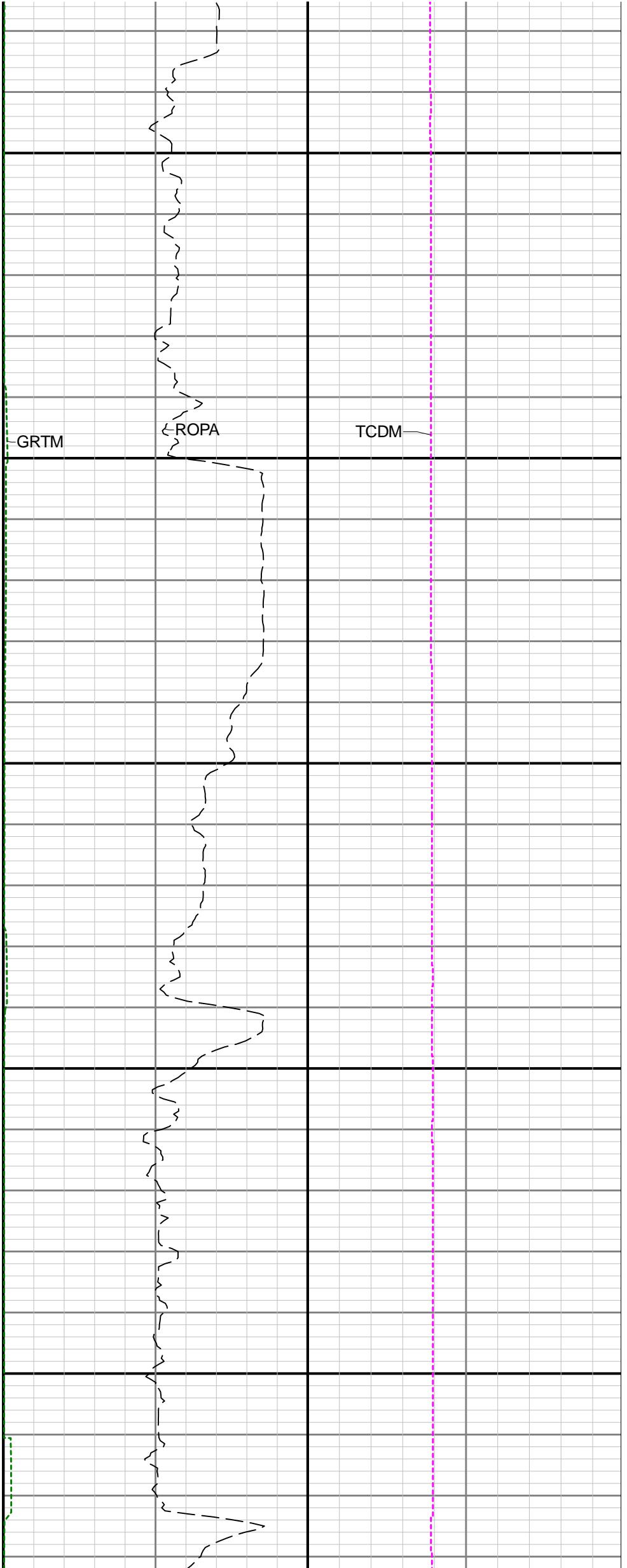
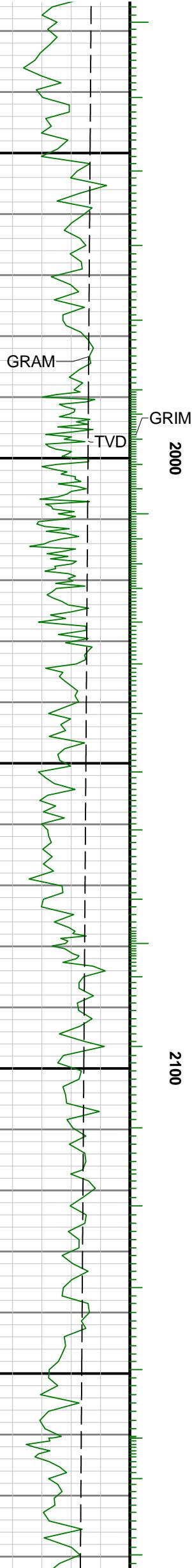
Remarks

Number	Depth (ft)	Hole Section (in)	Run No.	Remark
1	17772.00	8.500	1	The interval from 17767 to 17780 feet MD (7561 feet TVD) was not logged after being drilled 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
GRAM	Gamma Ray - Apparent - Memory 0.5 ft Average	API
GRIM	Gamma Ray - Data Point Indicator - Memory	unitless
GRTM	Gamma Ray - Time Since Drilled - Memory	min
TCDM	Directional Real-Time Survey Temperature	degF



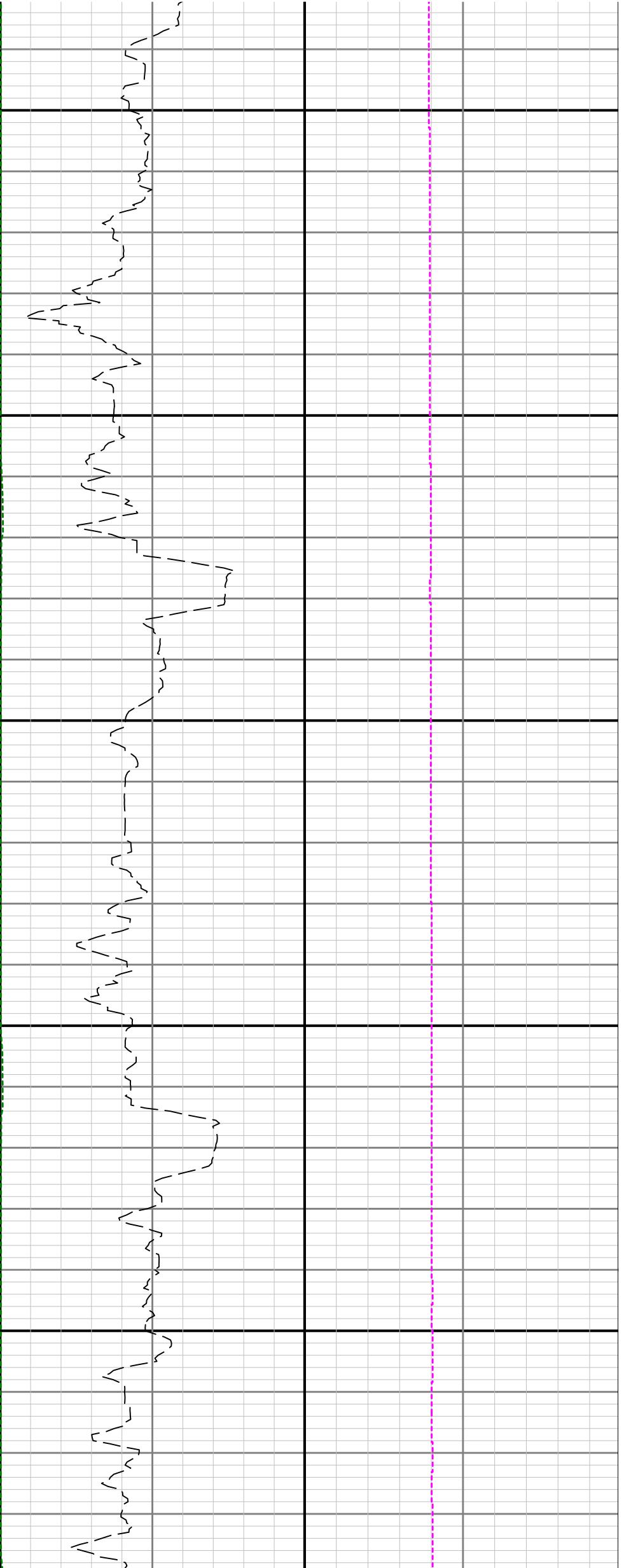


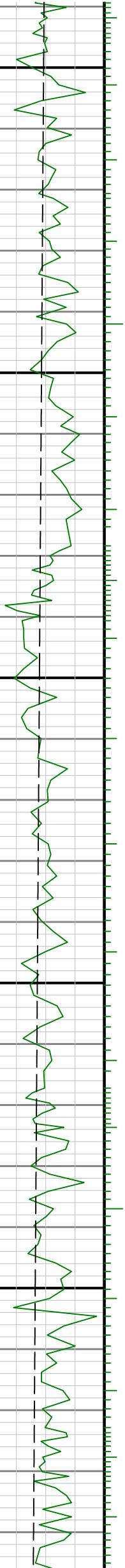


2200

2300

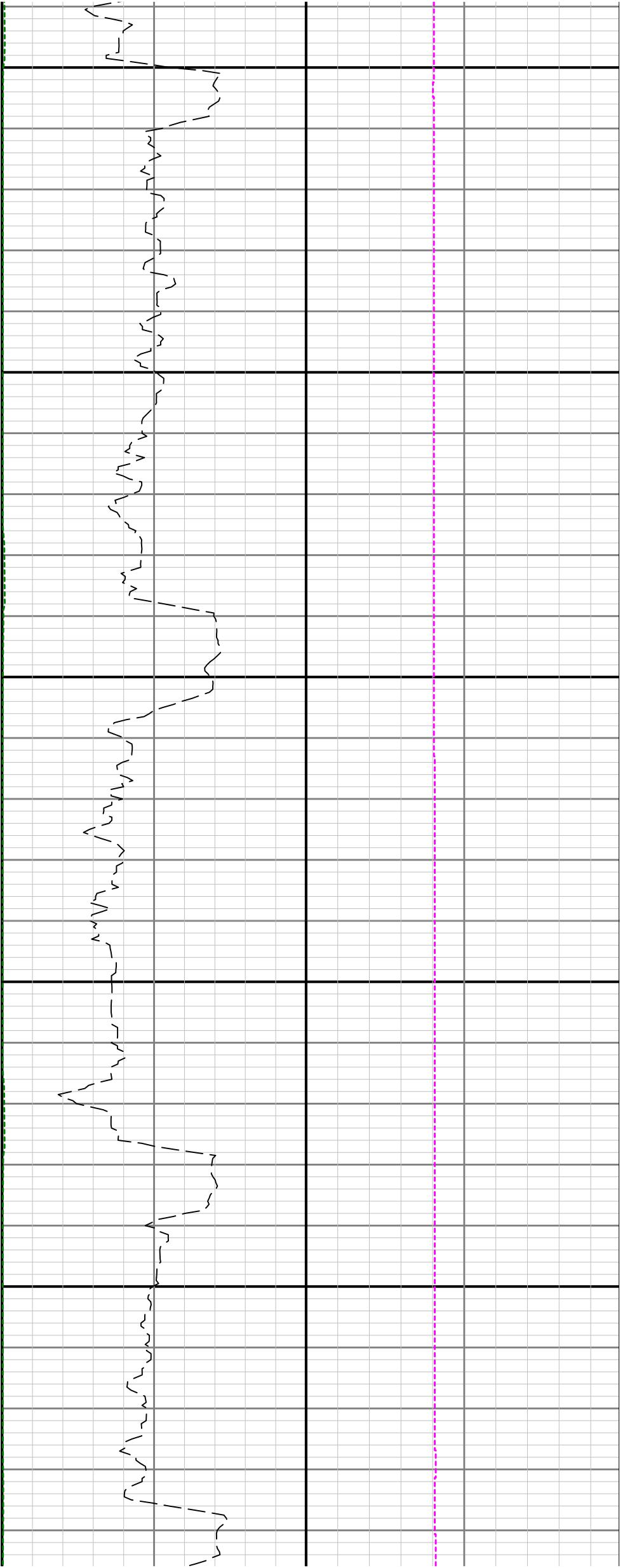
2400

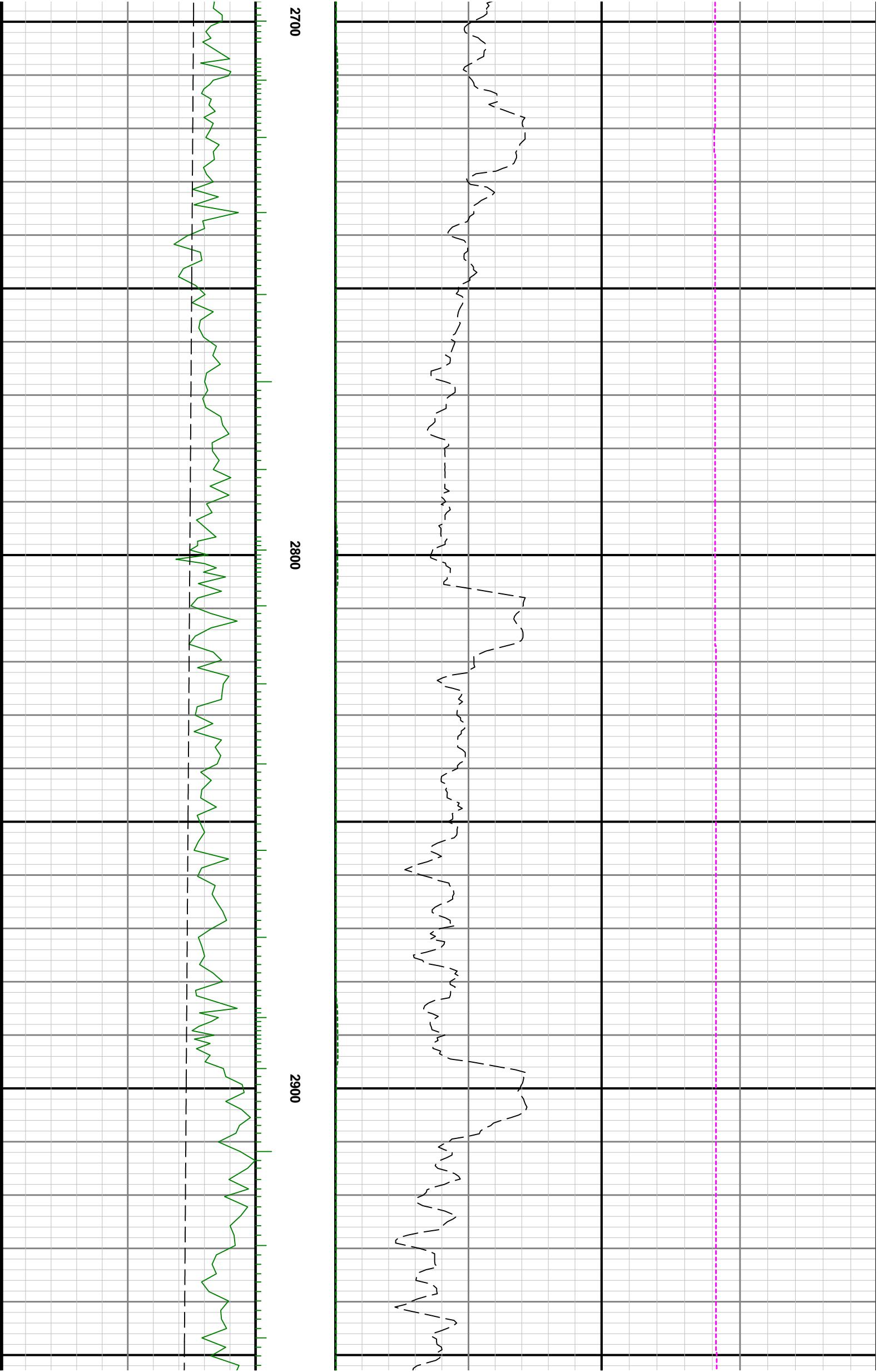


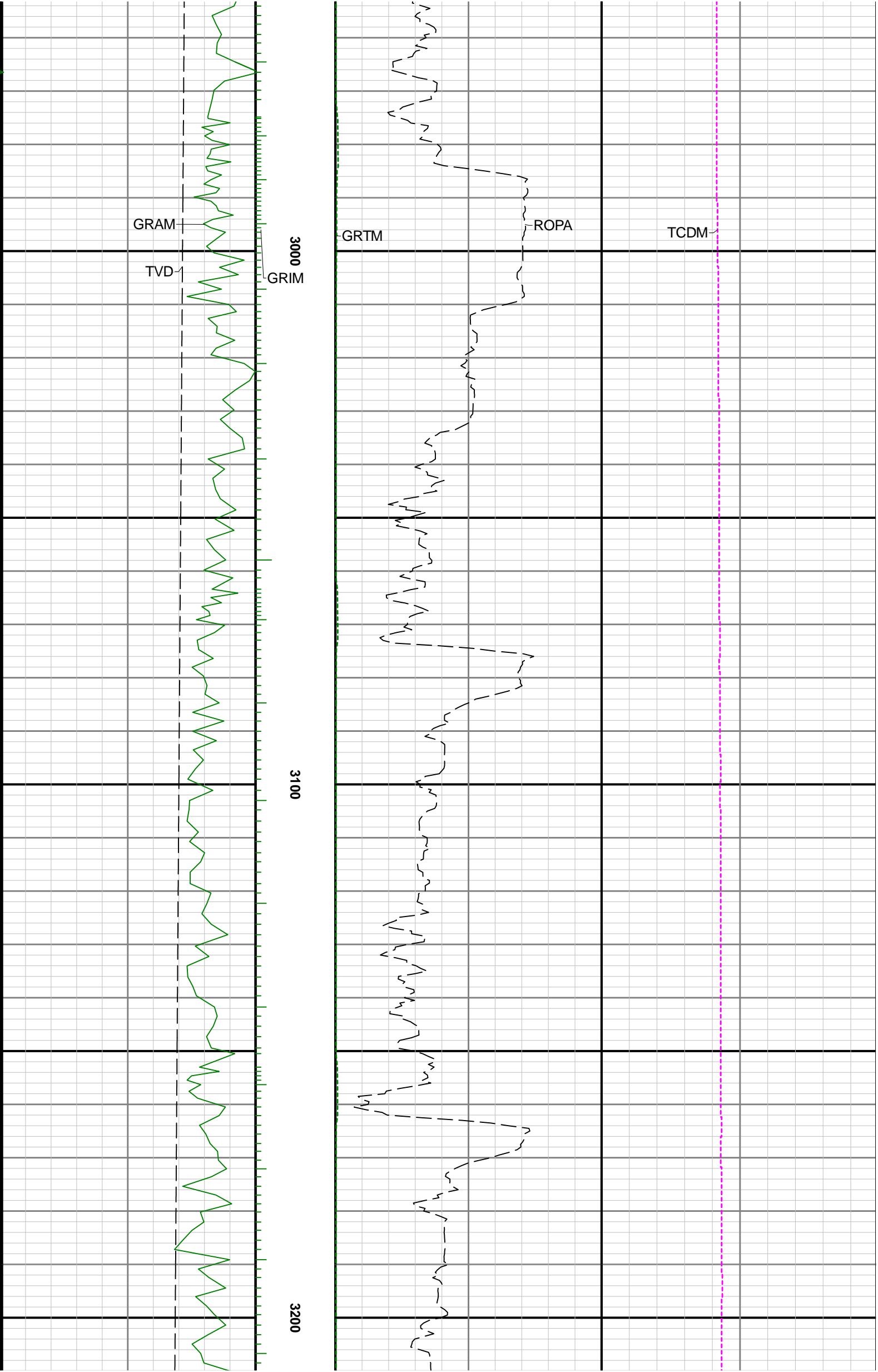


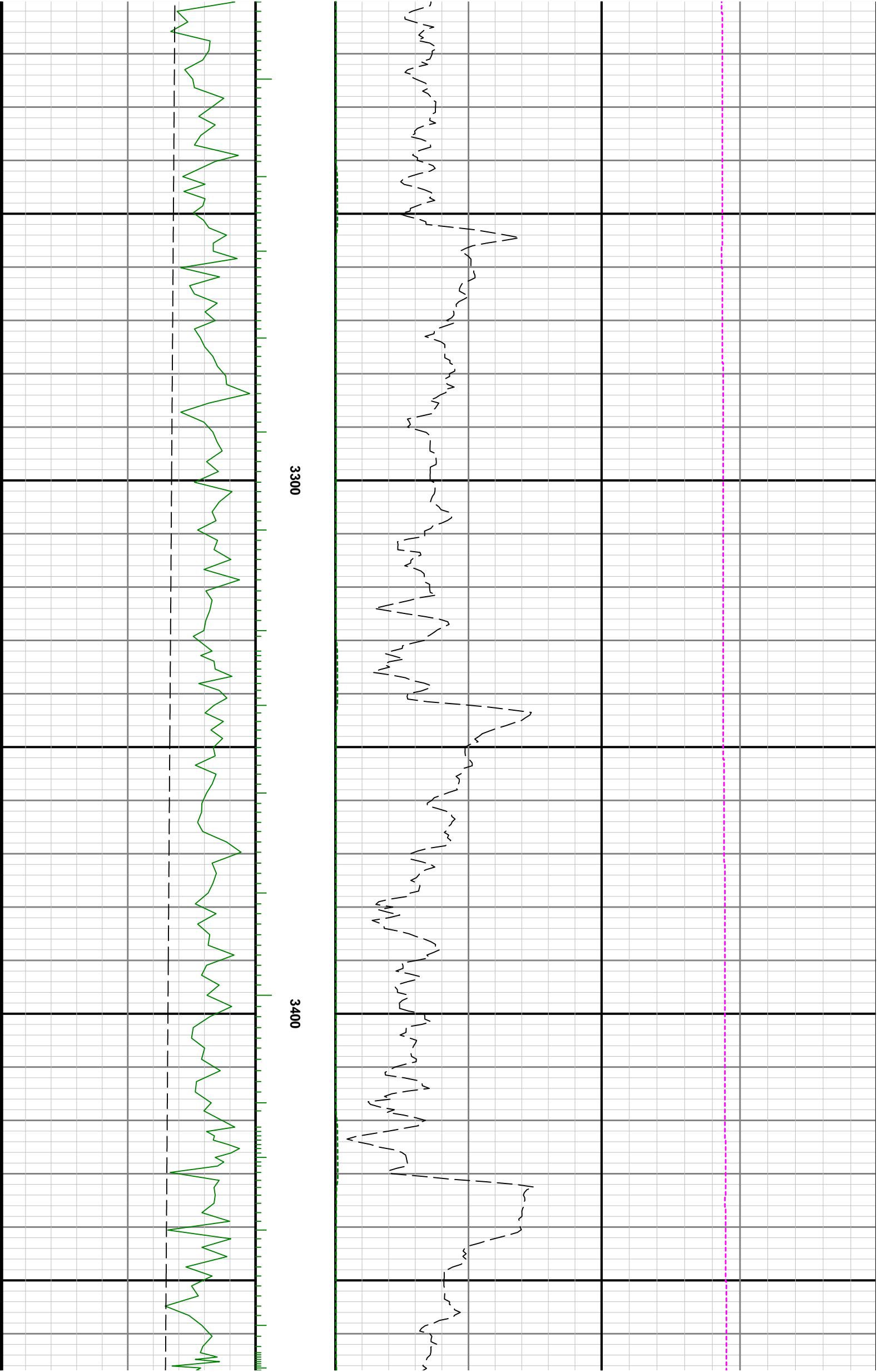
2500

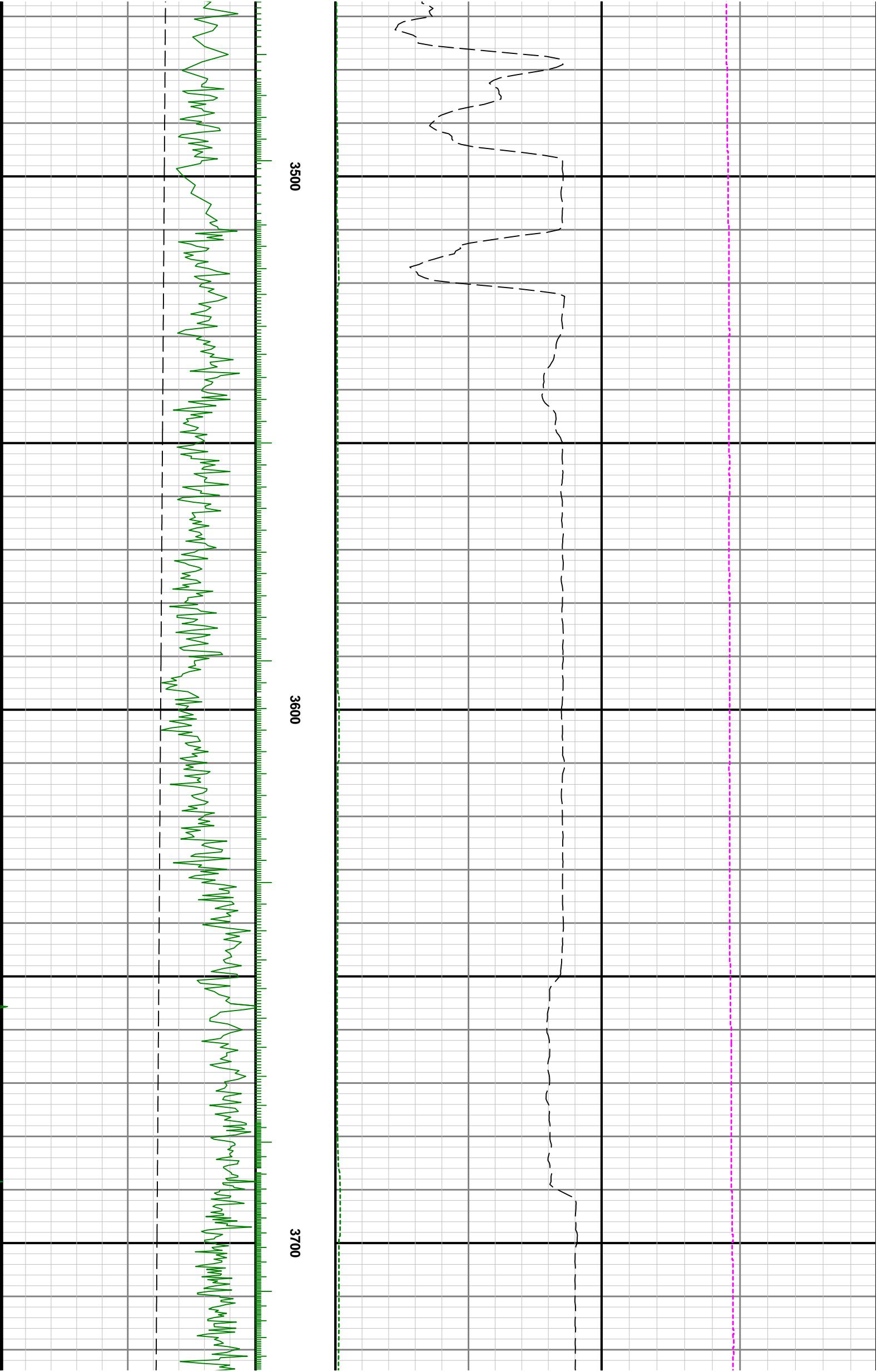
2600

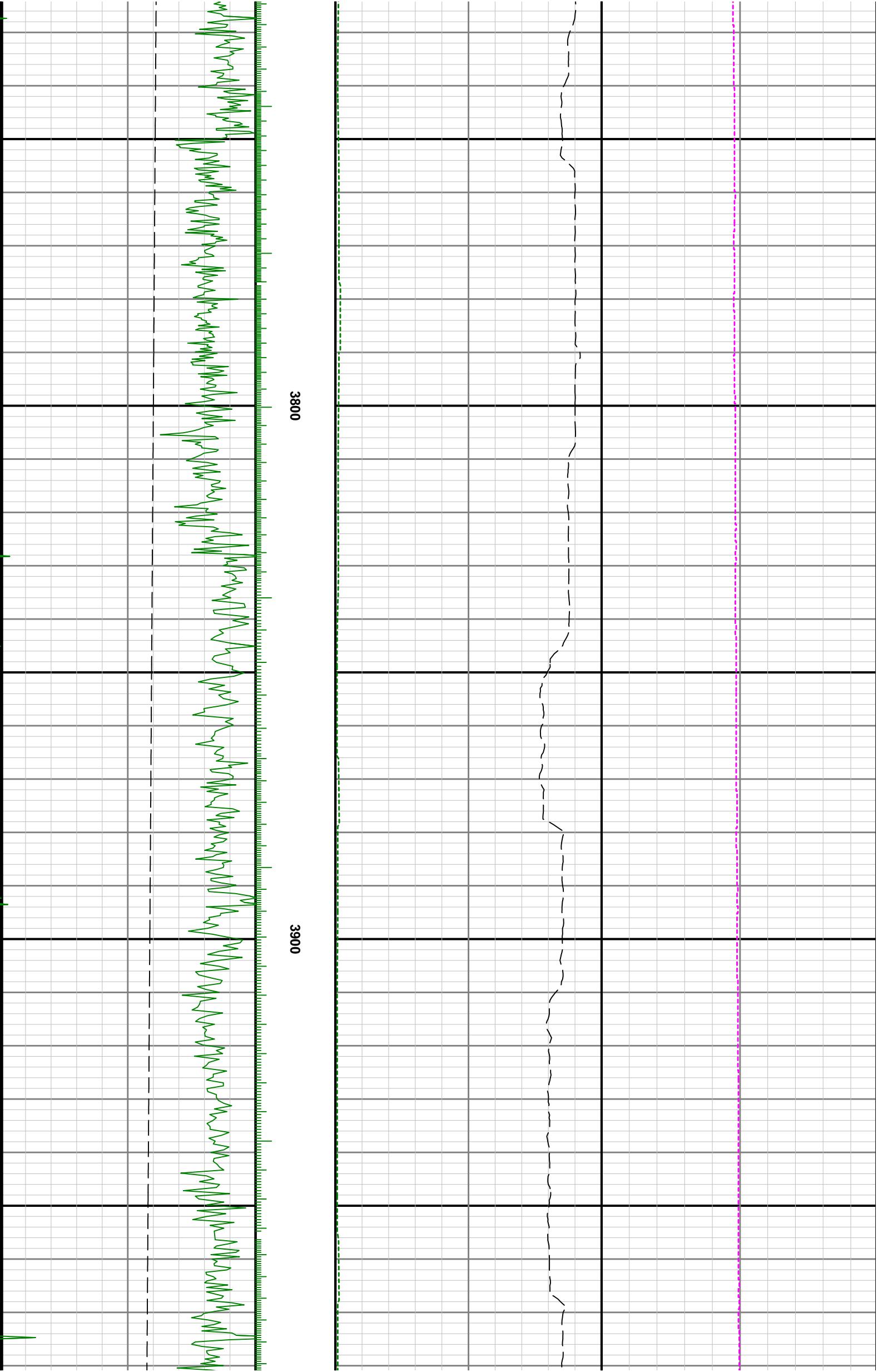


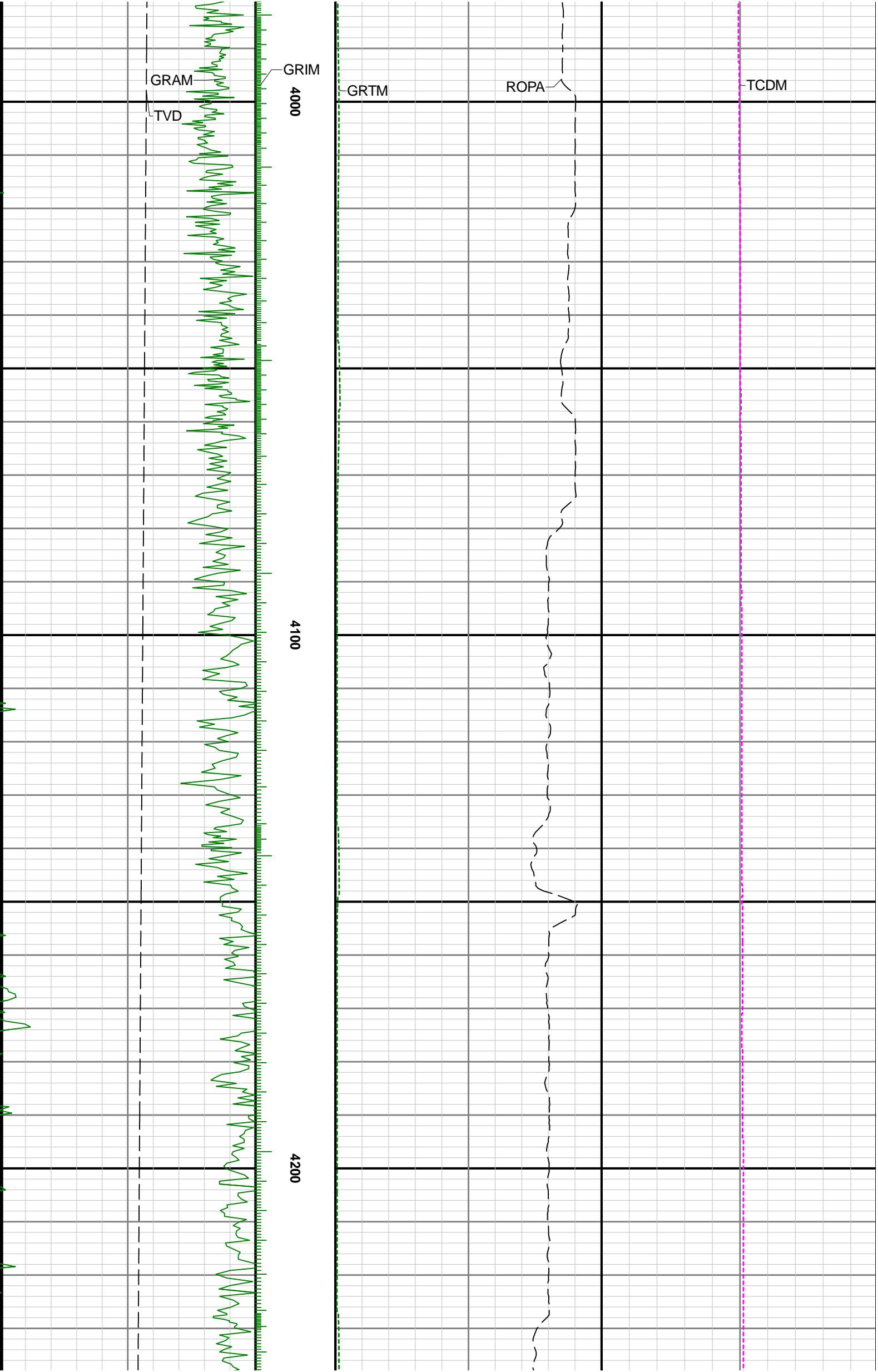


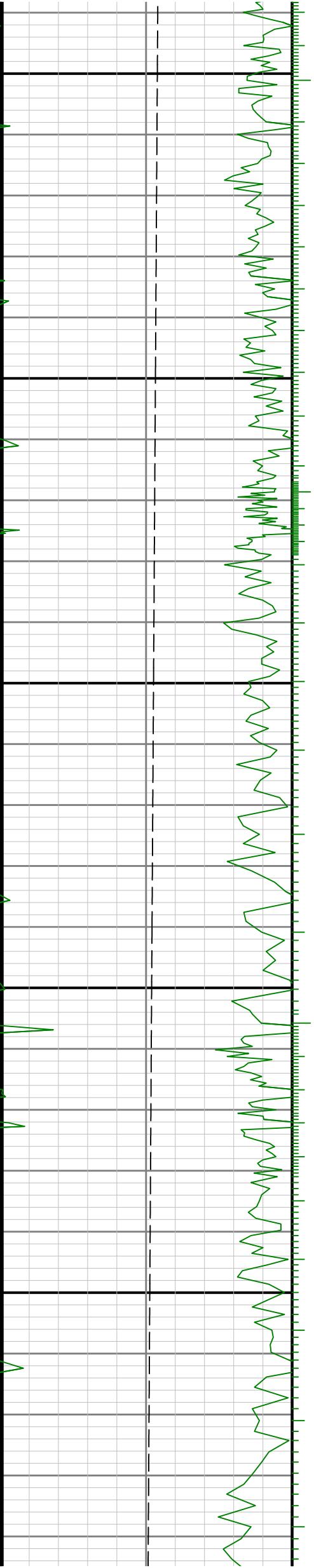




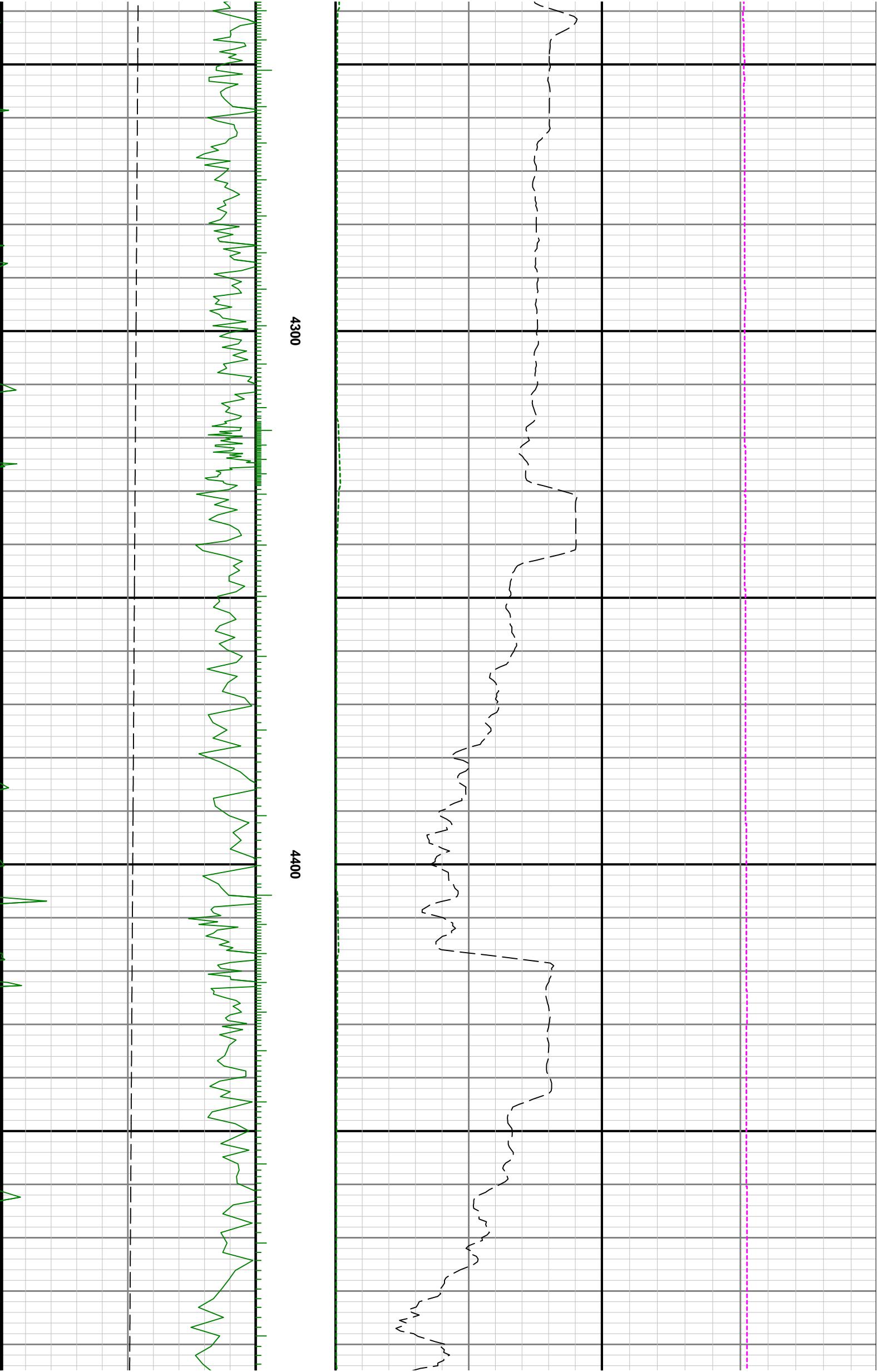




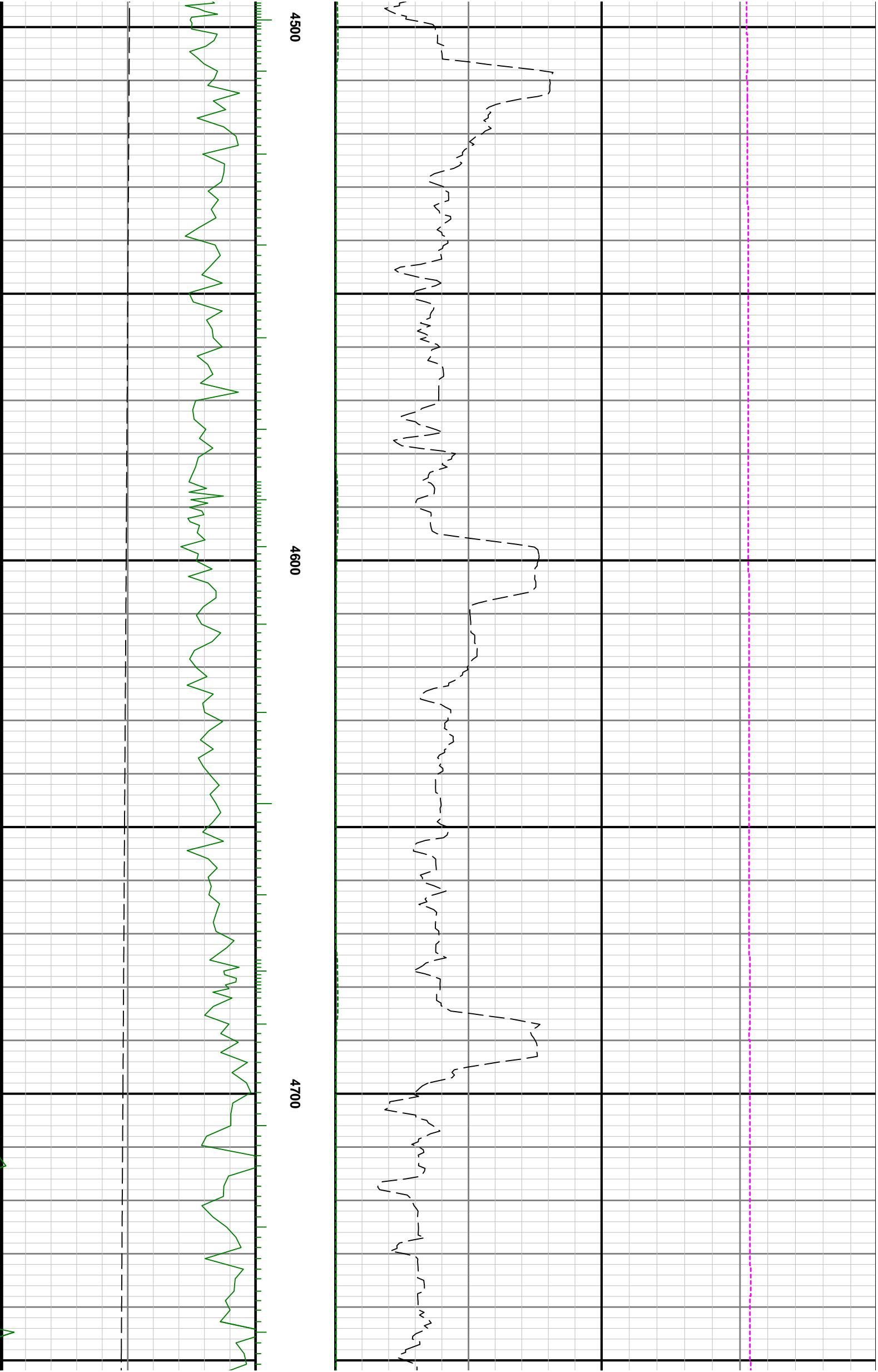




4300



4400



TVD

GRAM

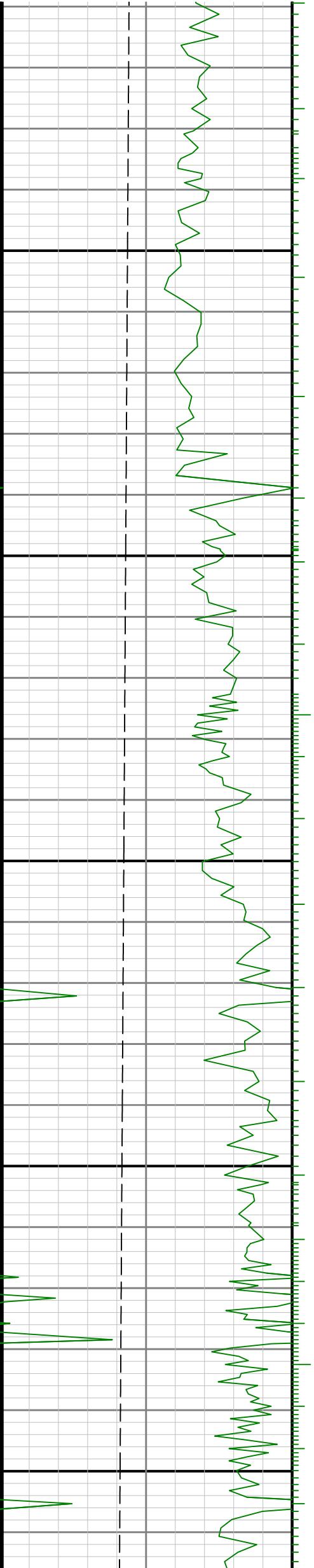
GRIM
5000

4800

4900

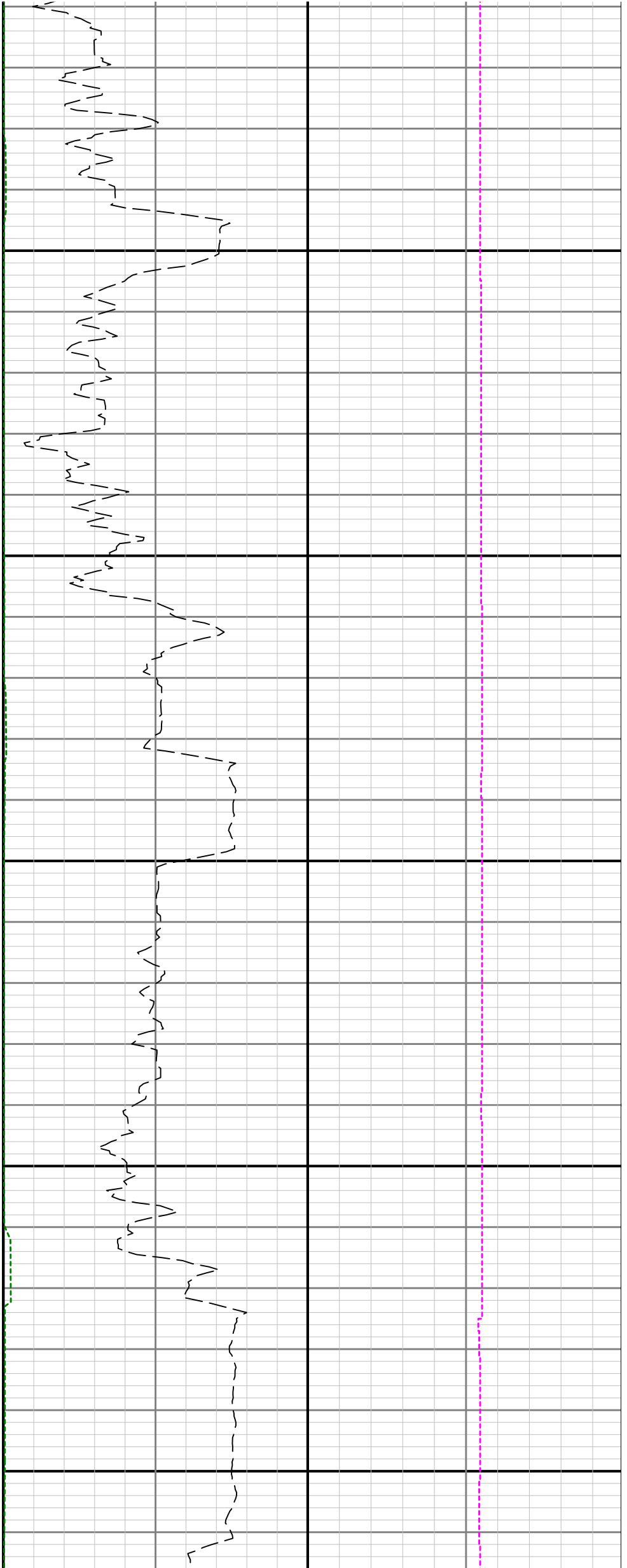
GRTM
ROPA

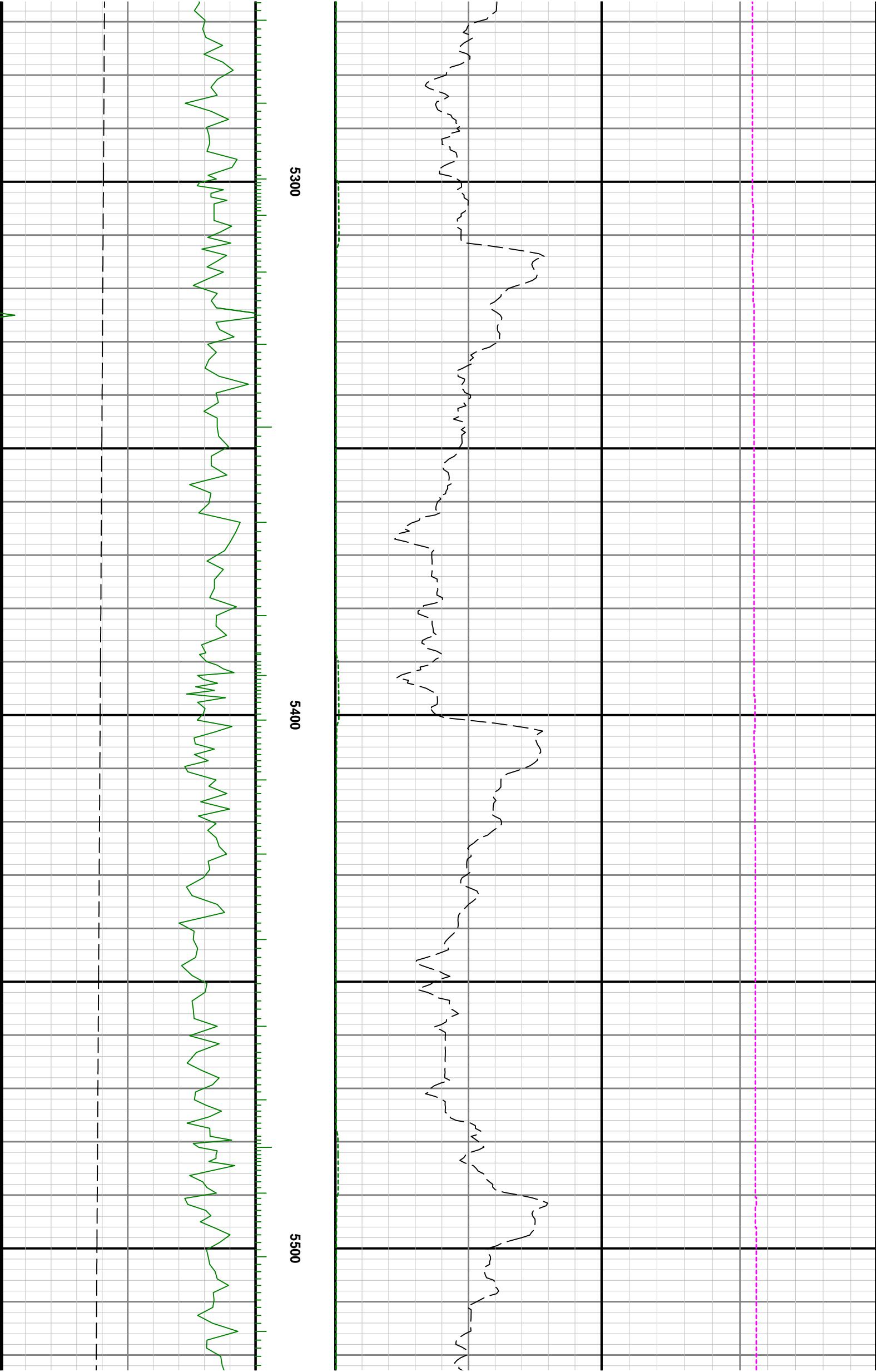
TCDM

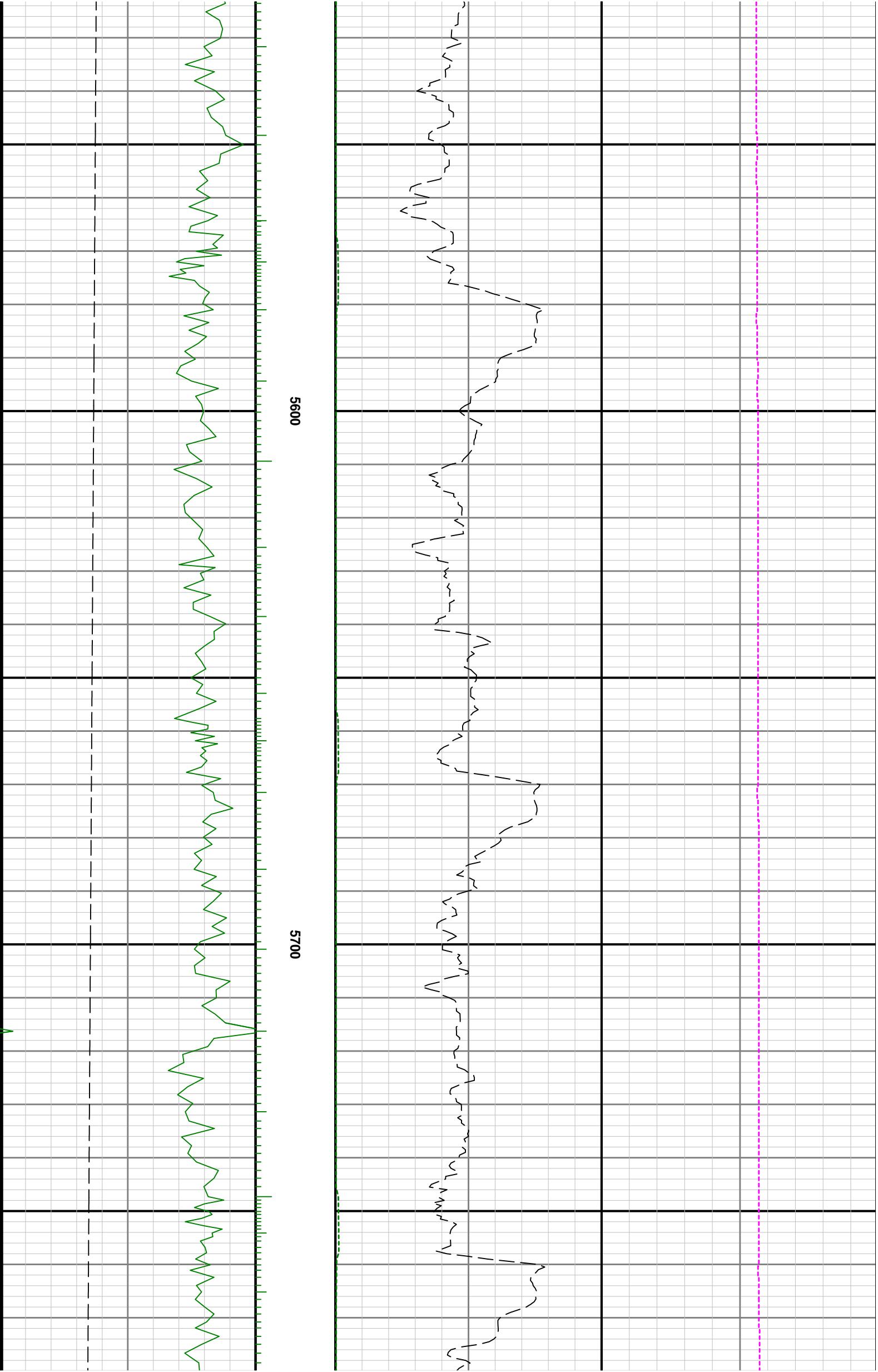


5100

5200







TVD

GRAM

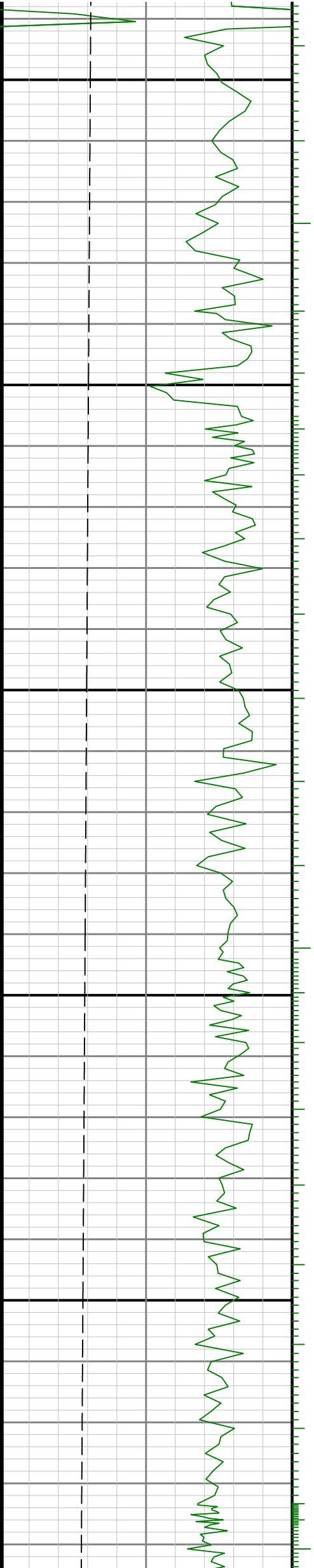
GRIM

5800
5900

GRTM

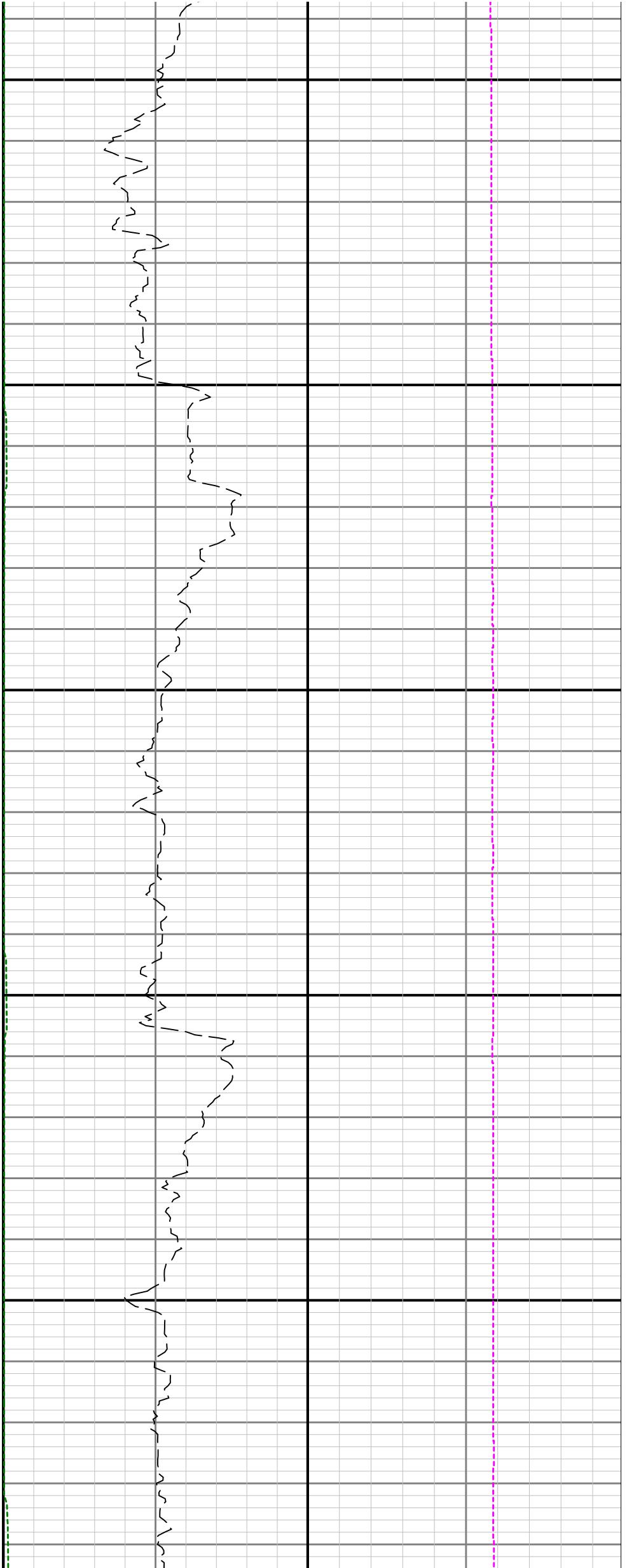
ROPA

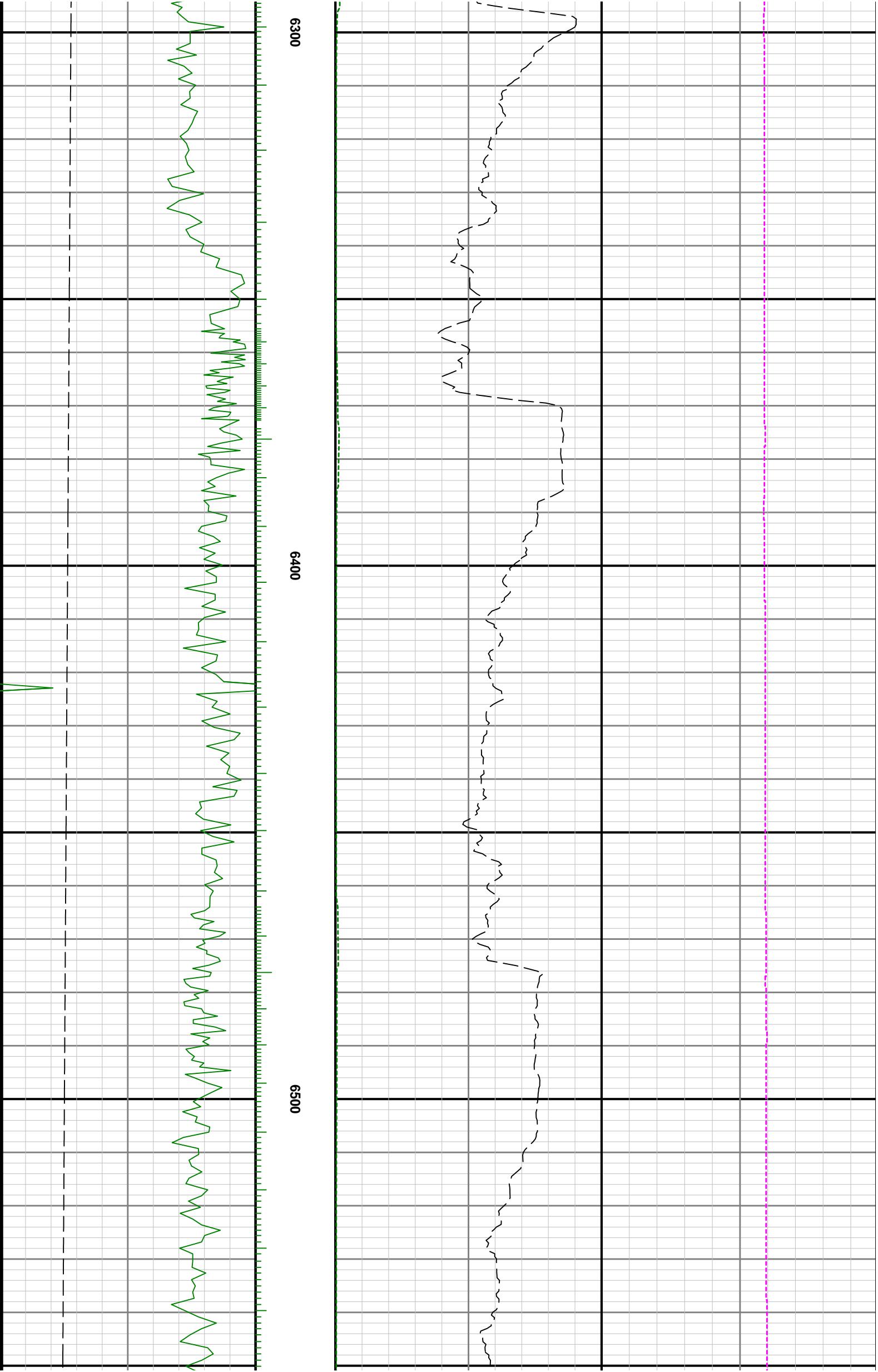
TCDM

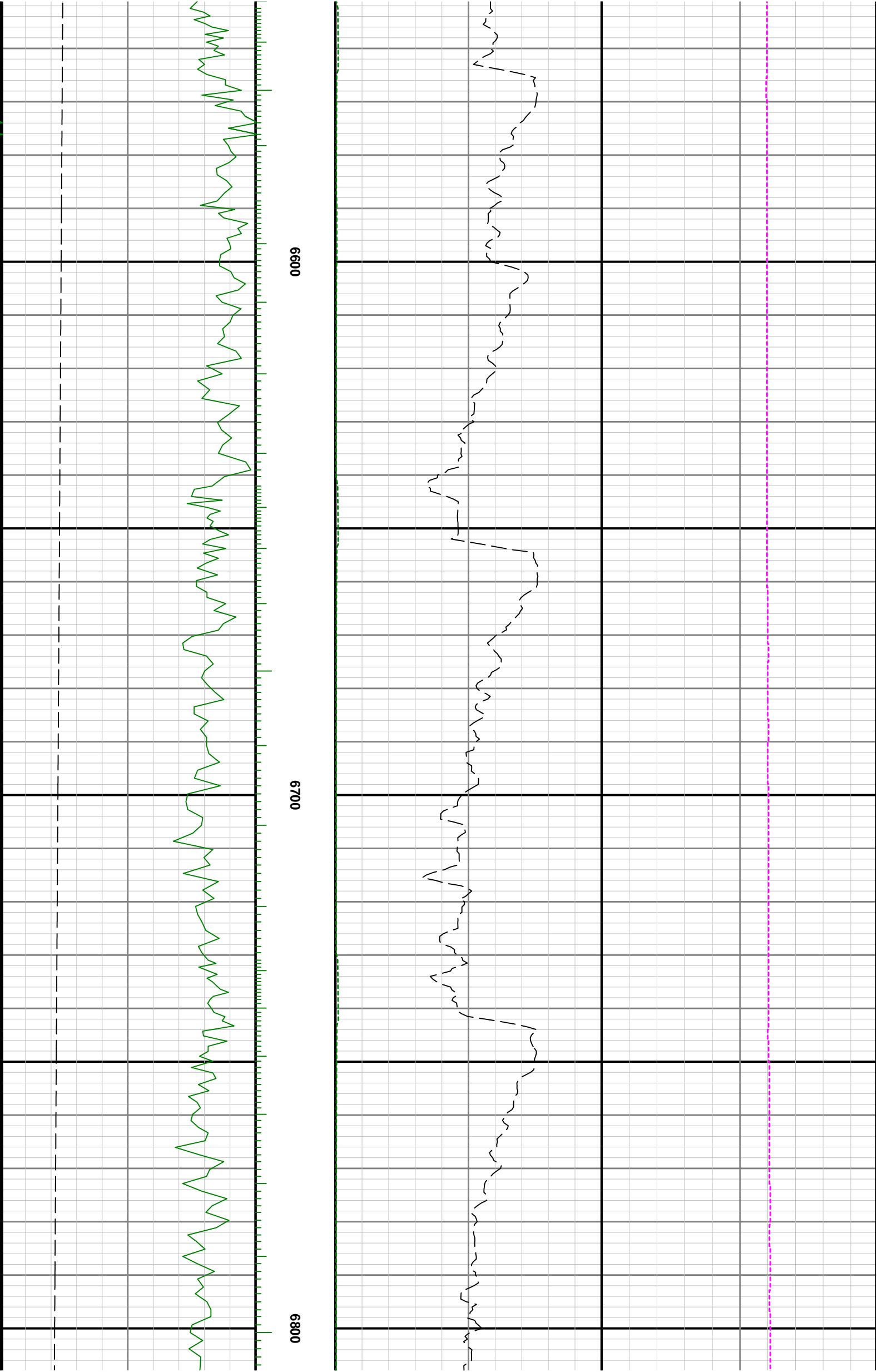


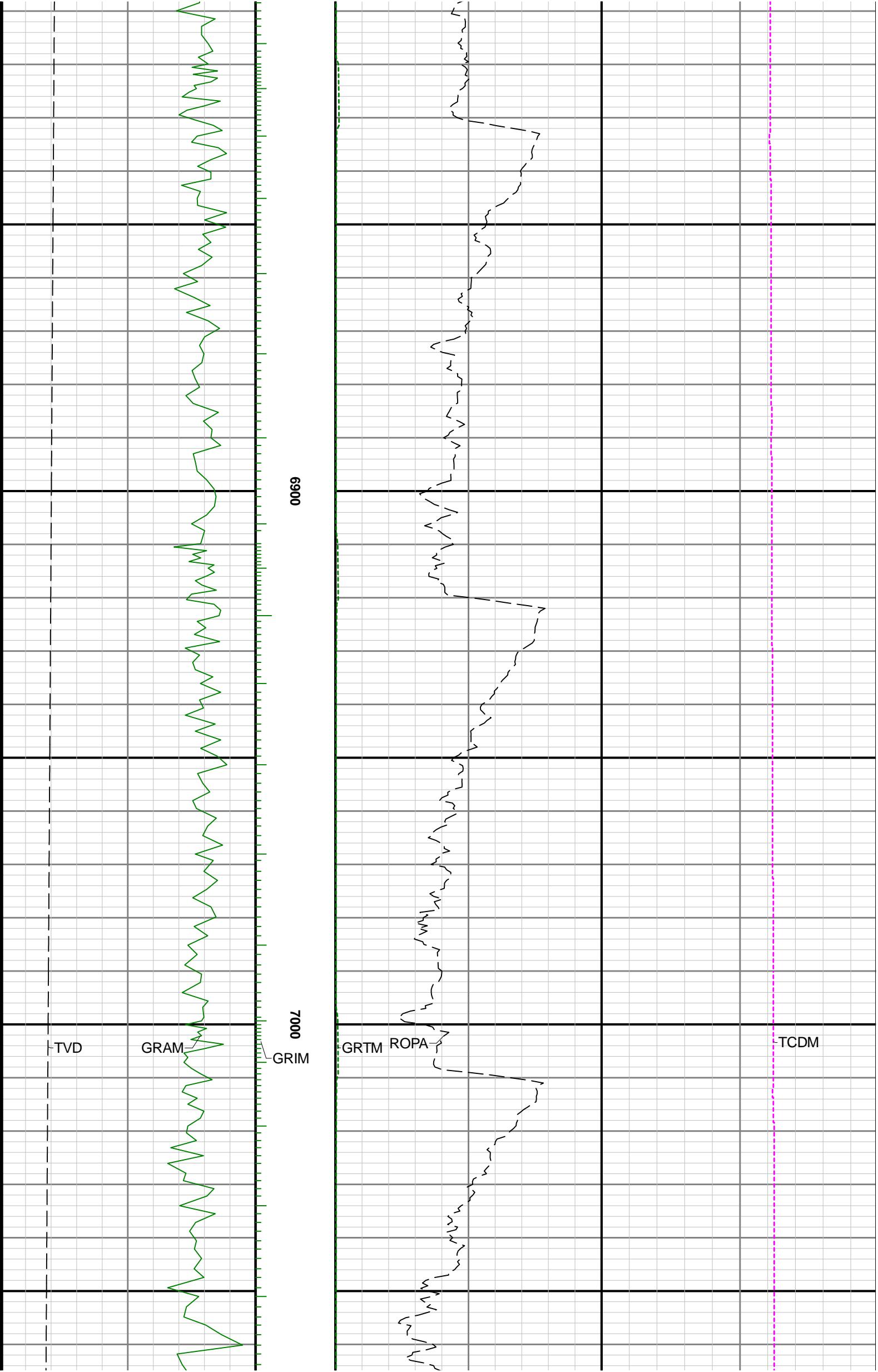
6100

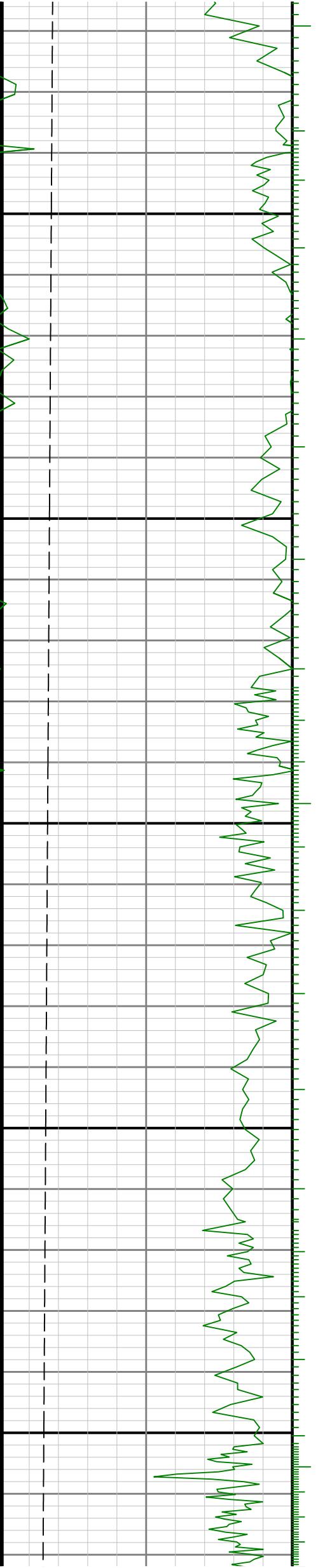
6200







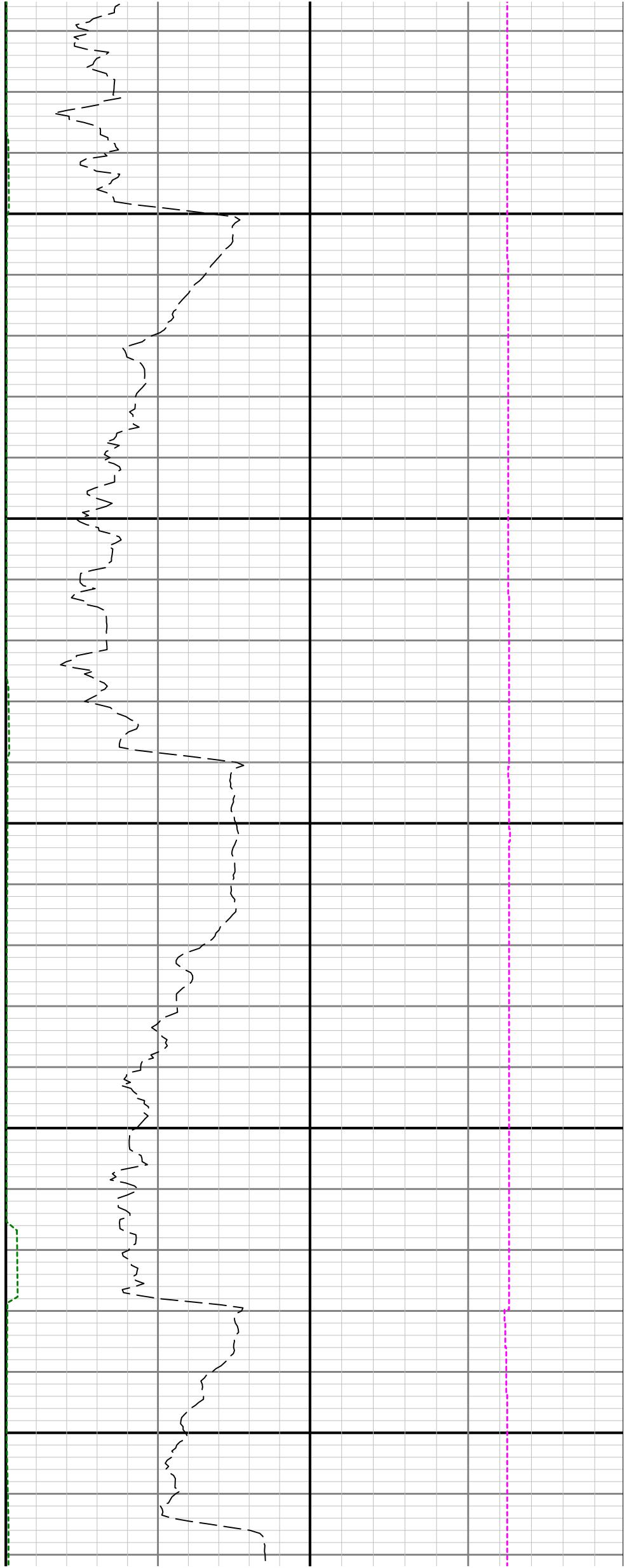


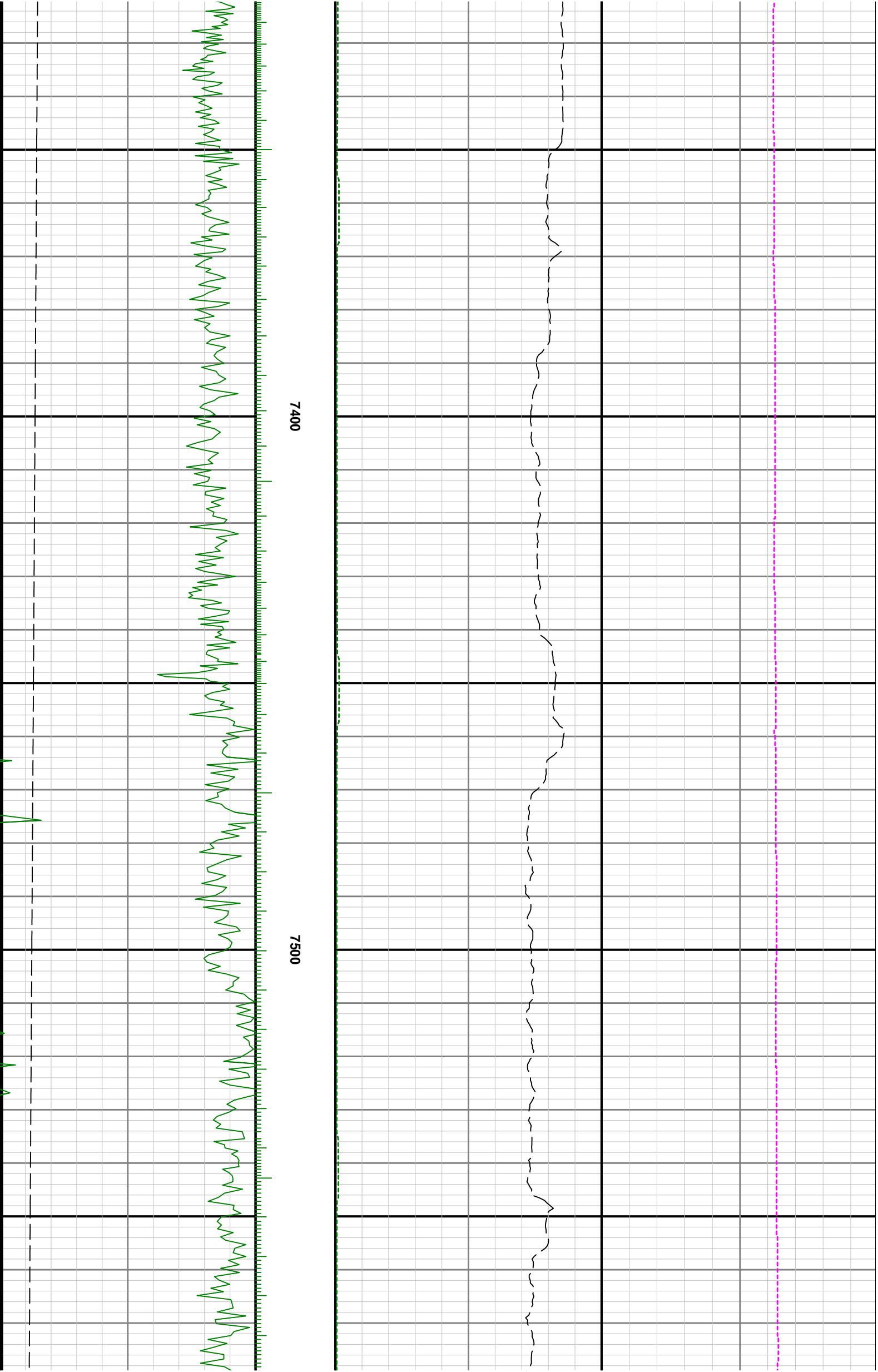


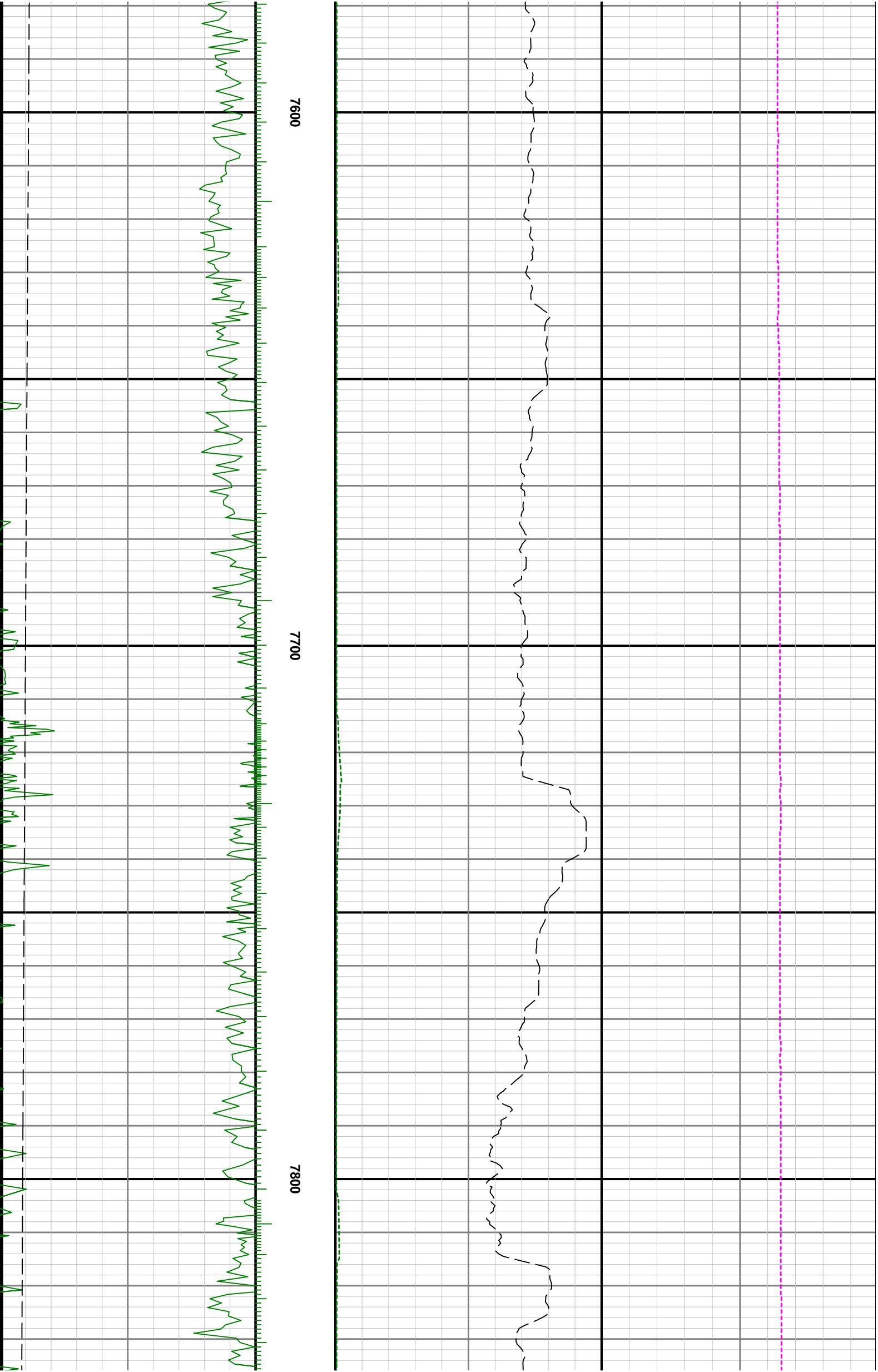
7100

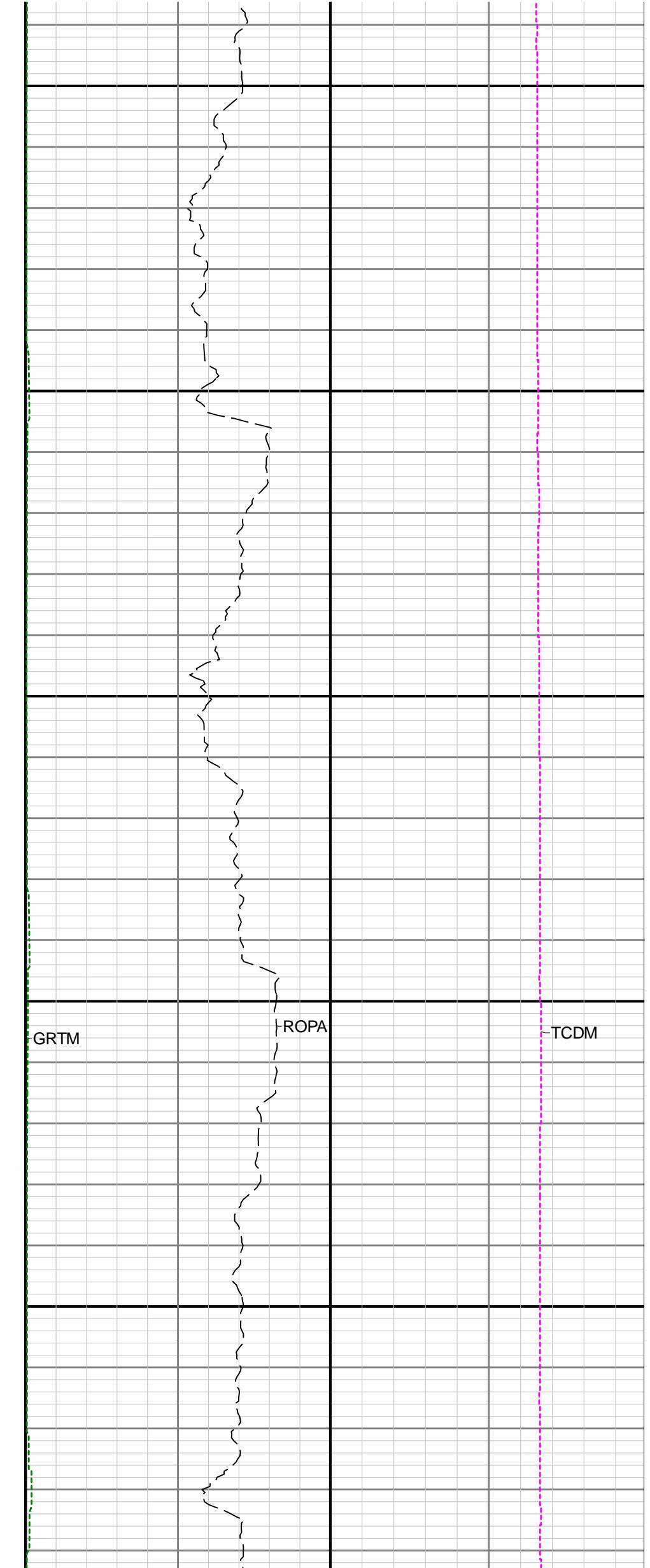
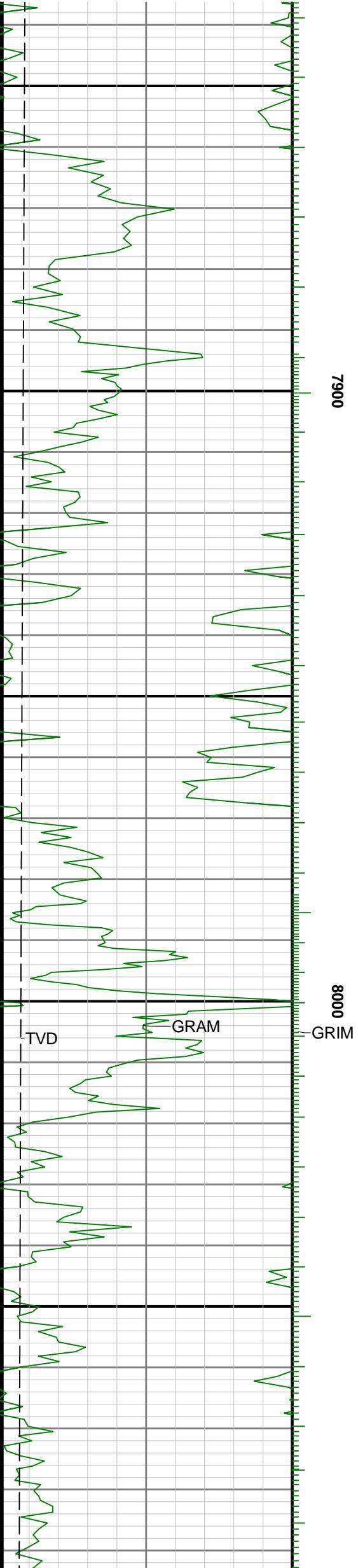
7200

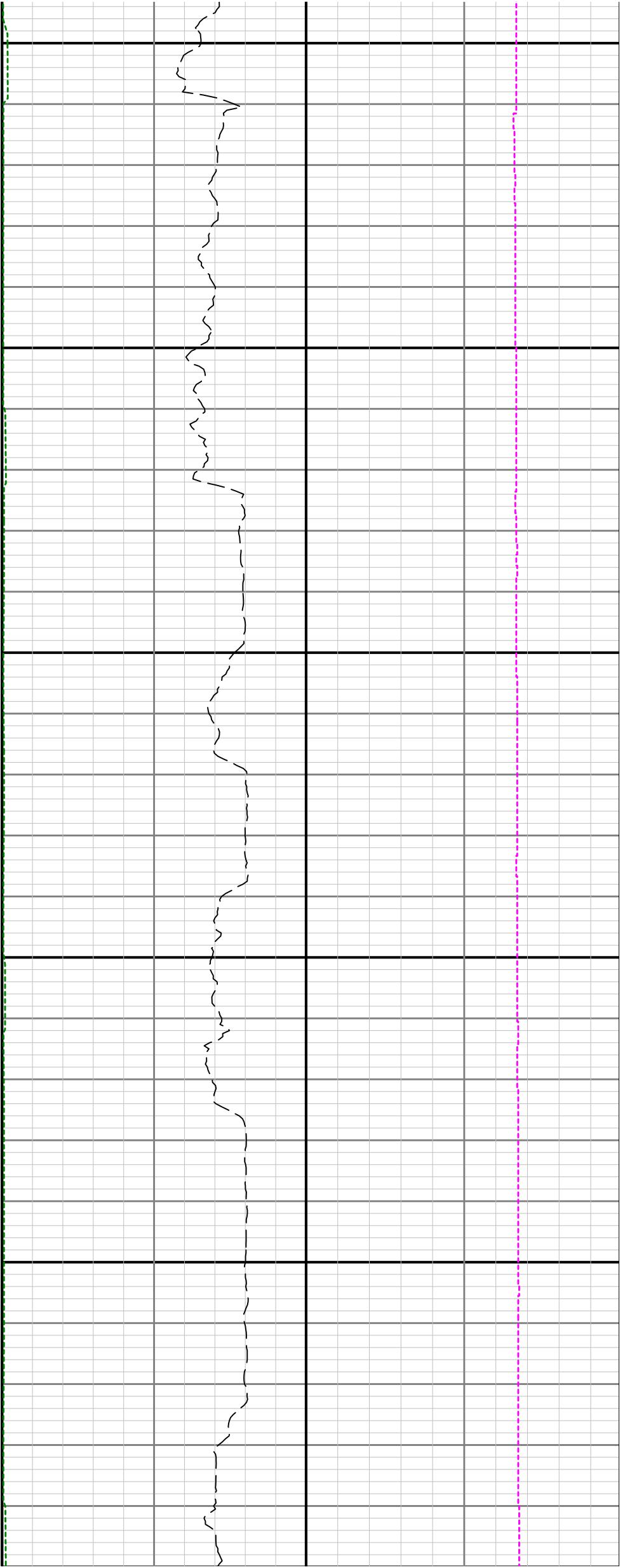
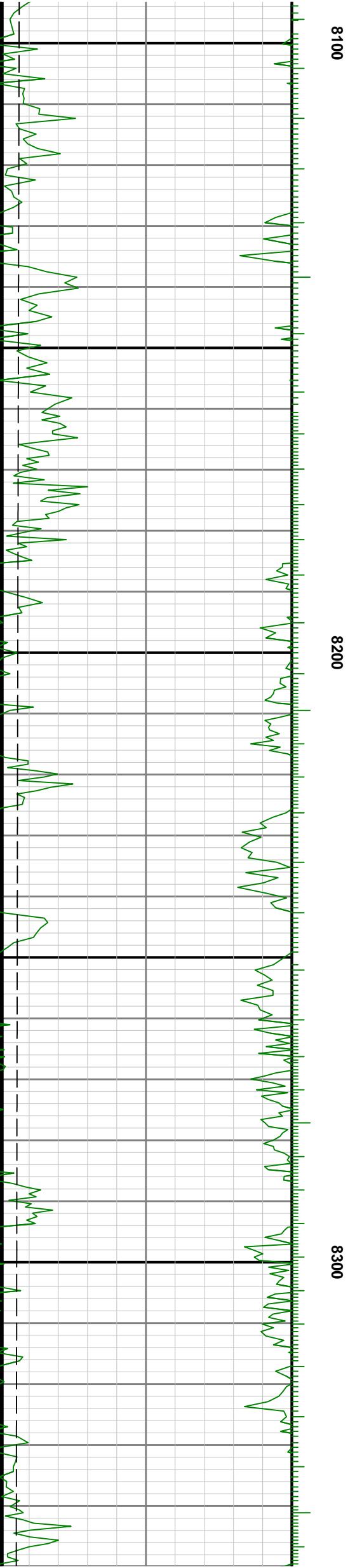
7300

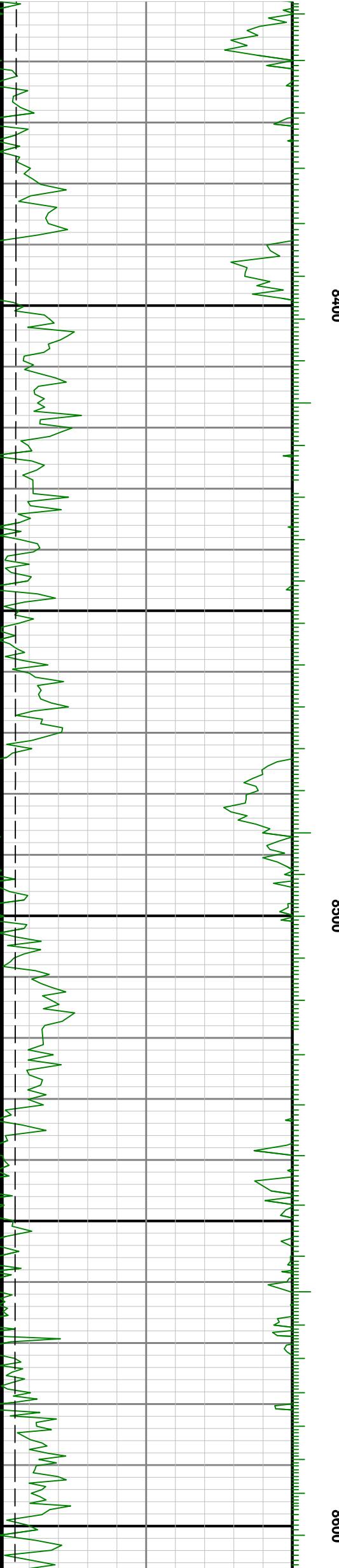








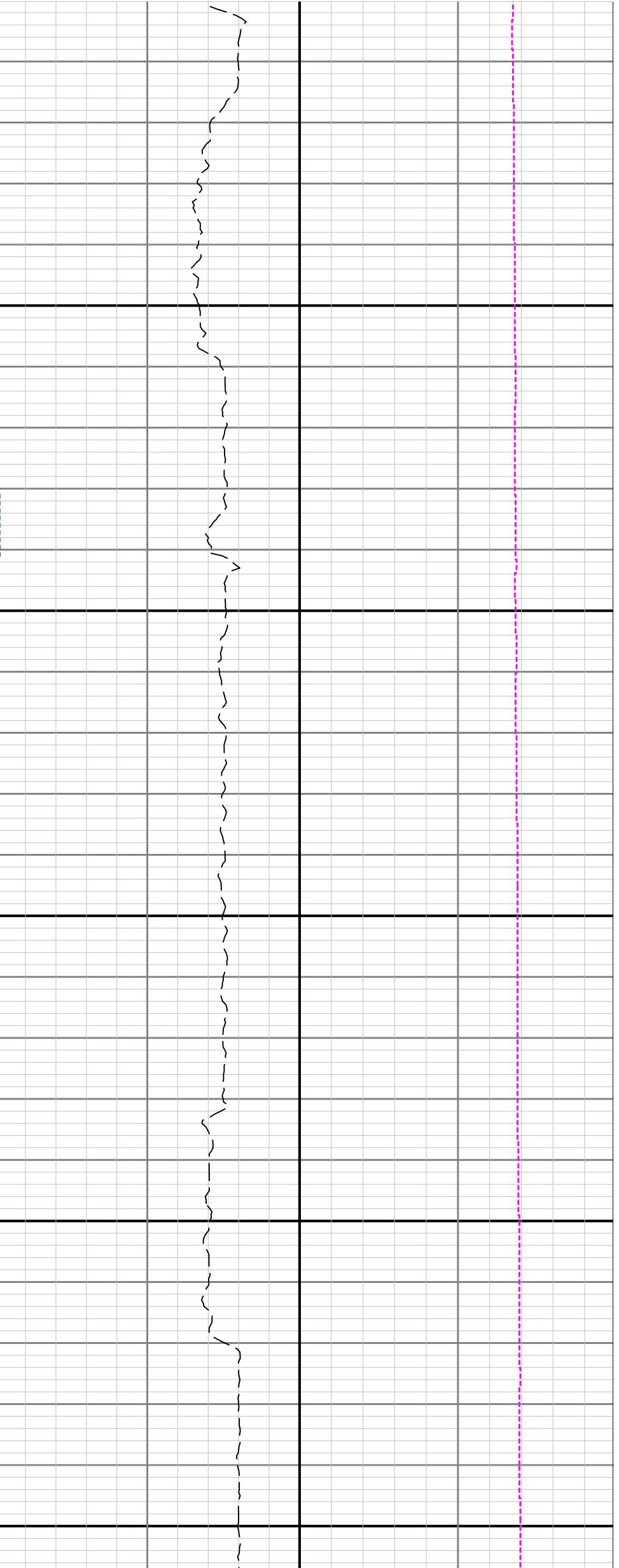




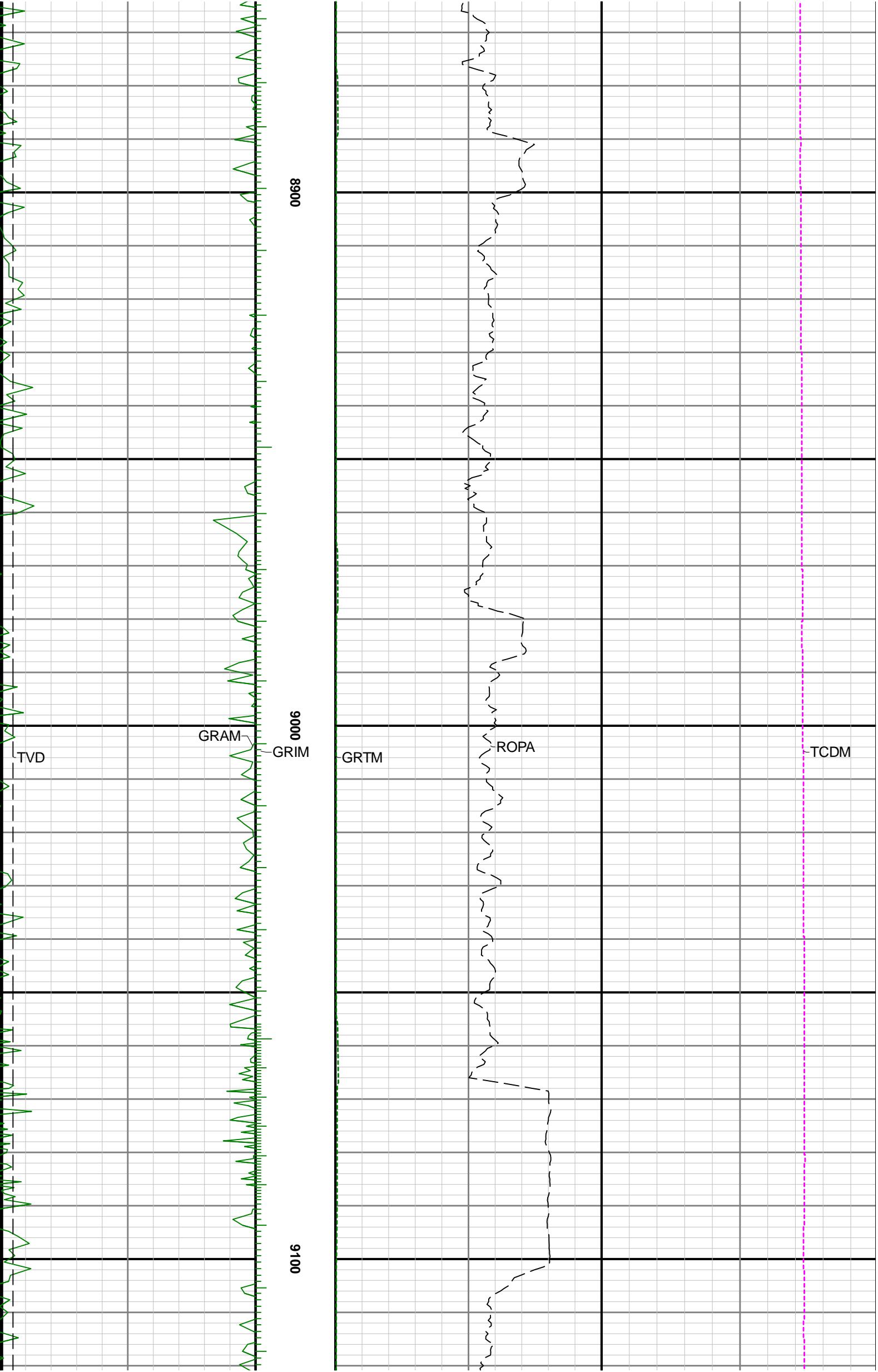
8400

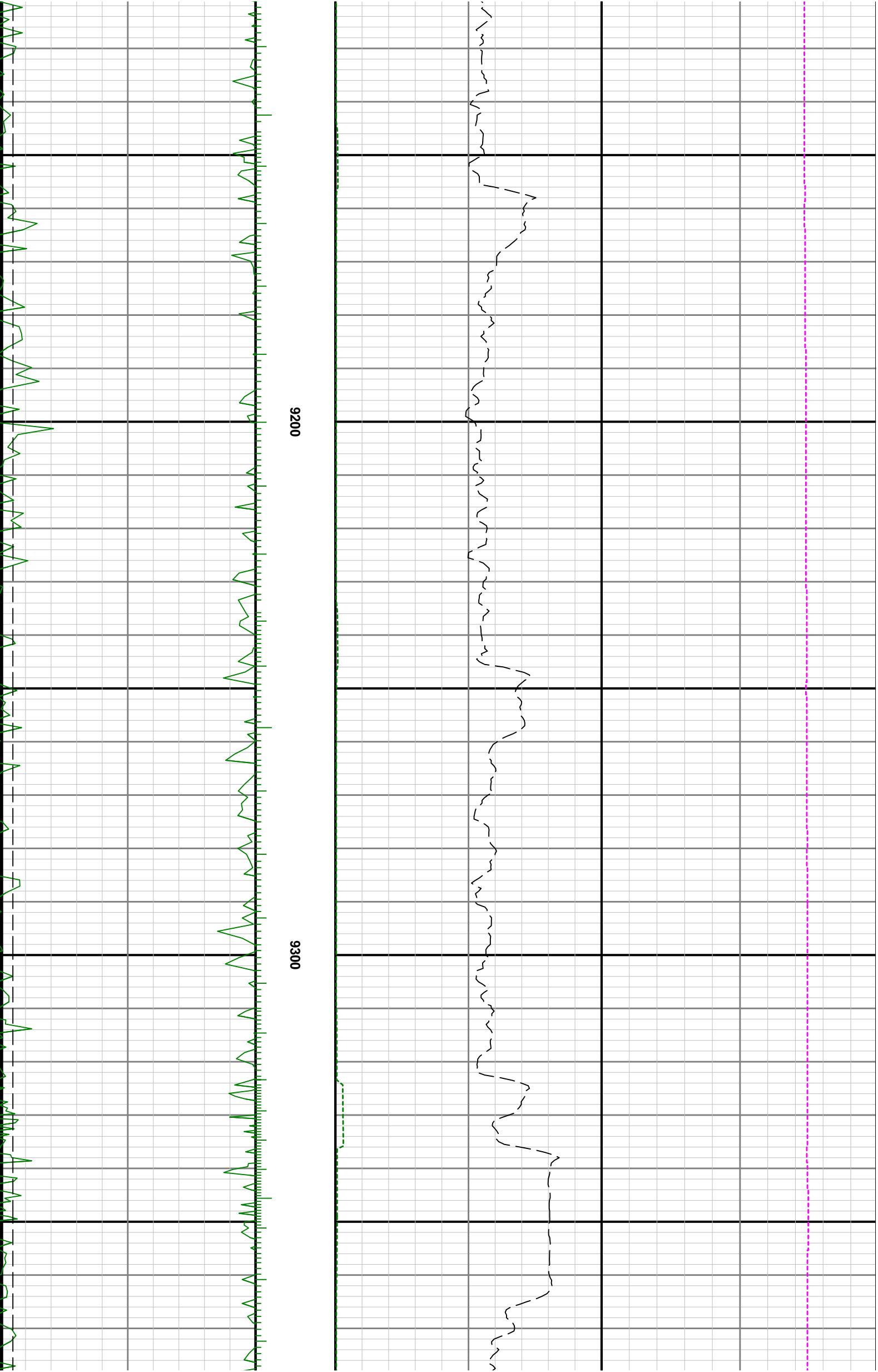
8500

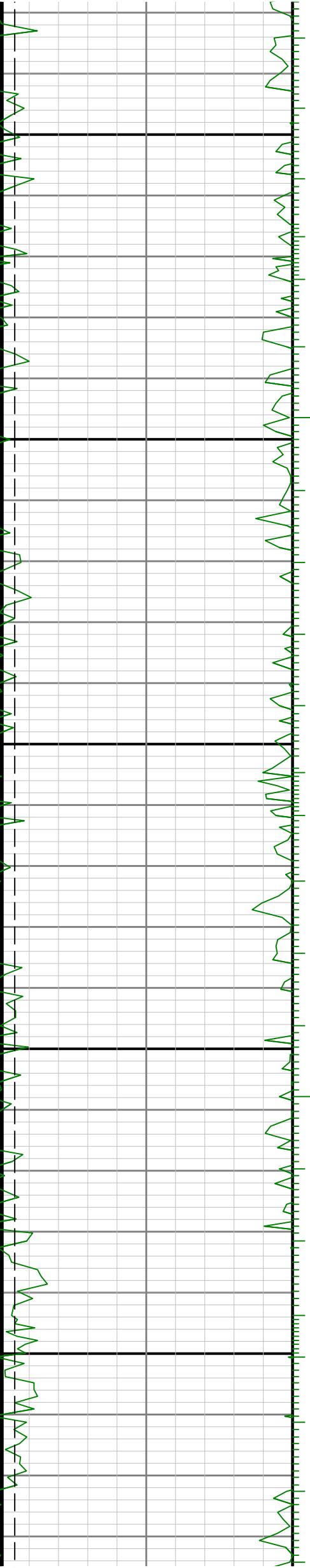
8600

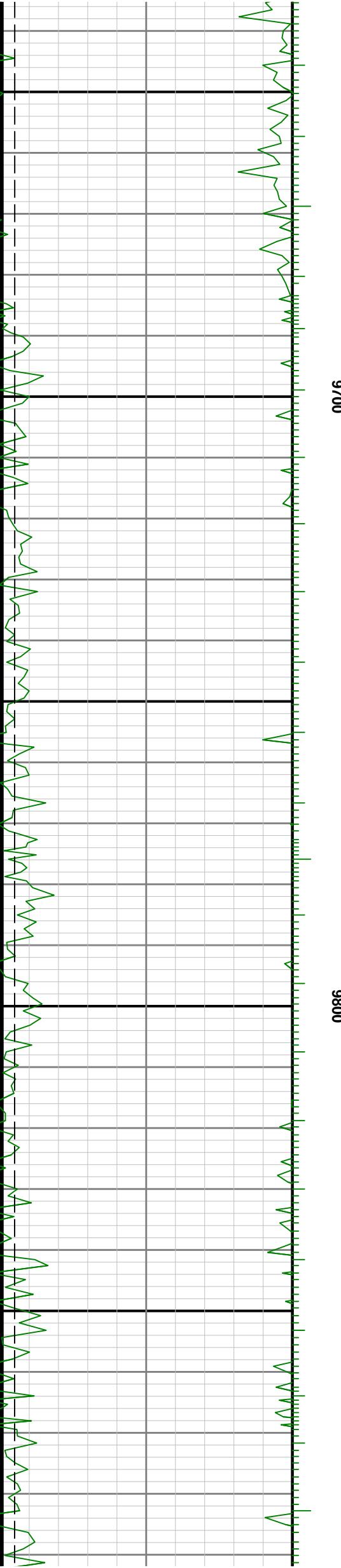






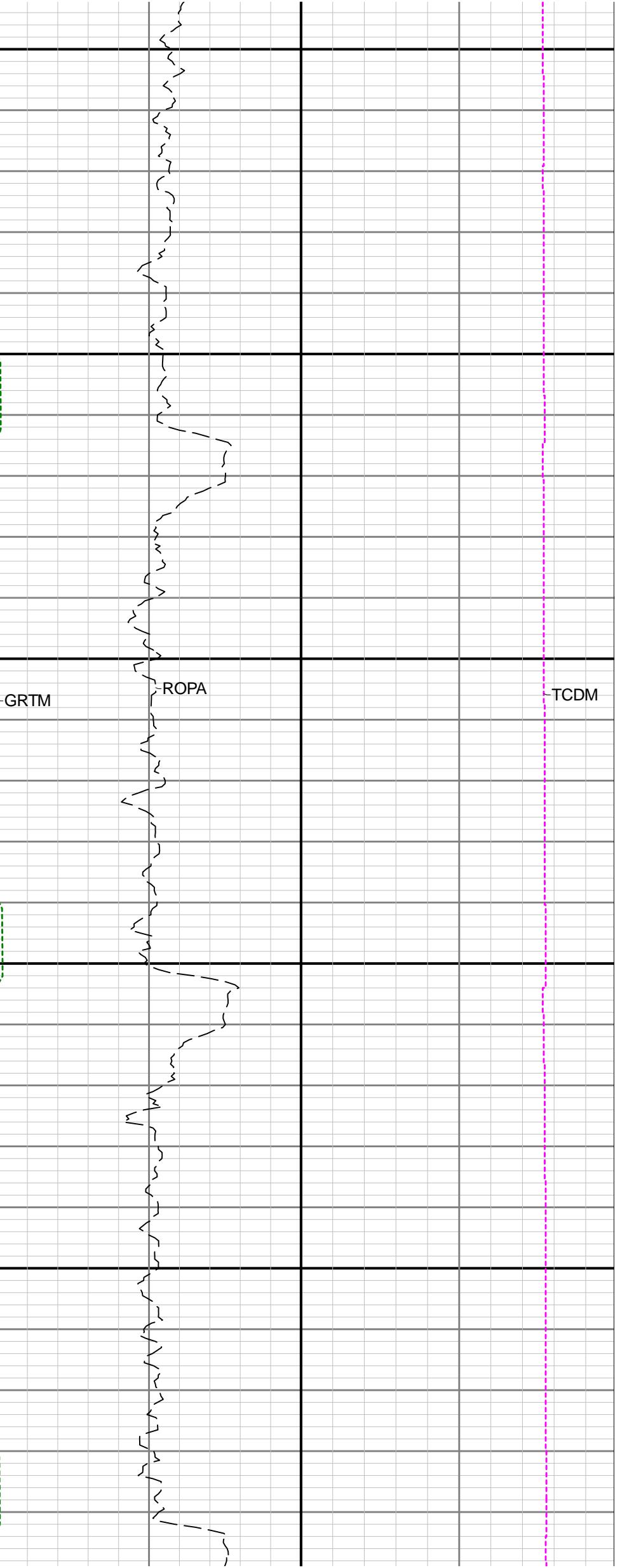
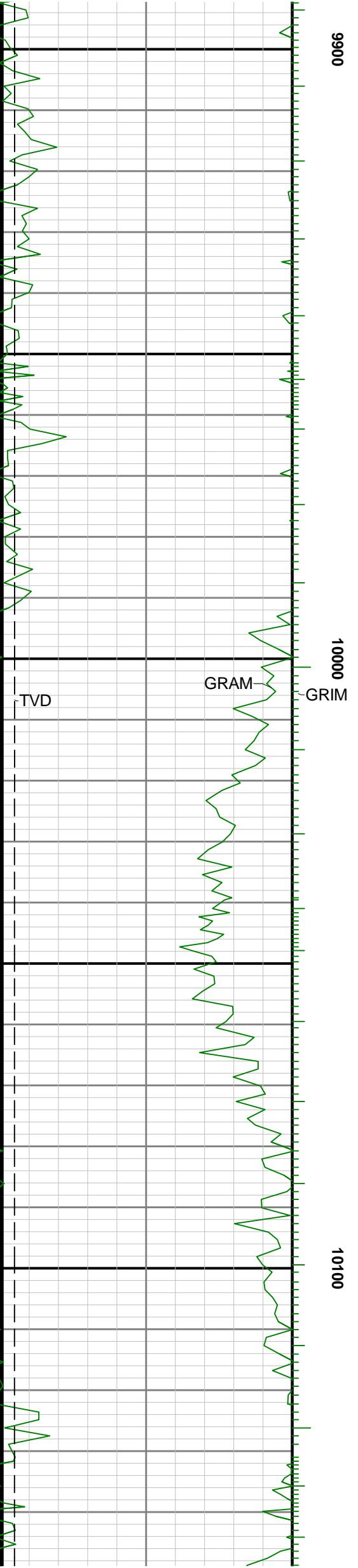


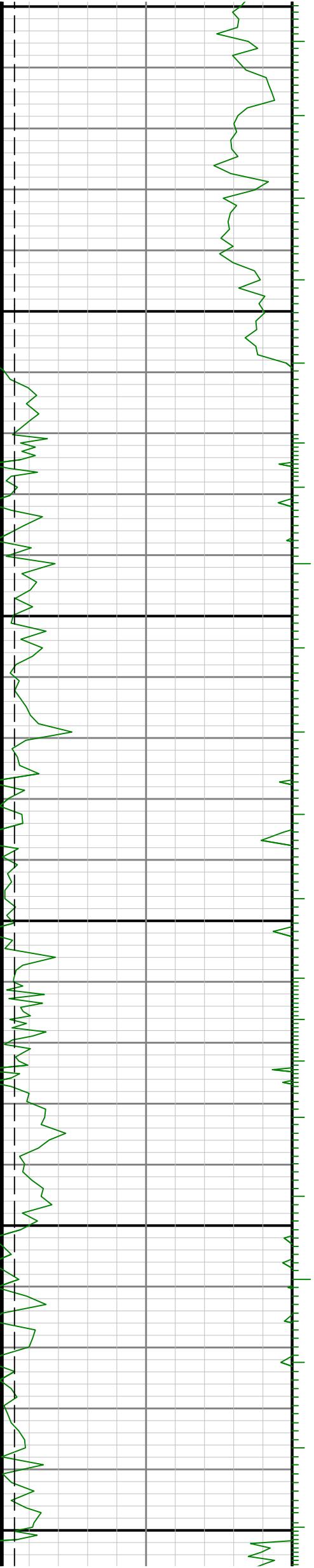




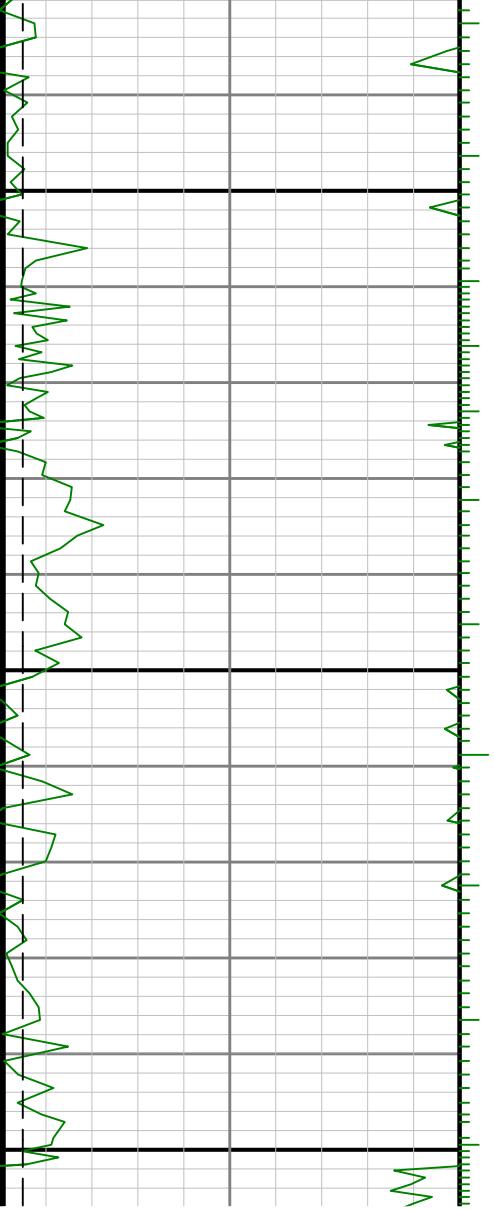
9700
9800







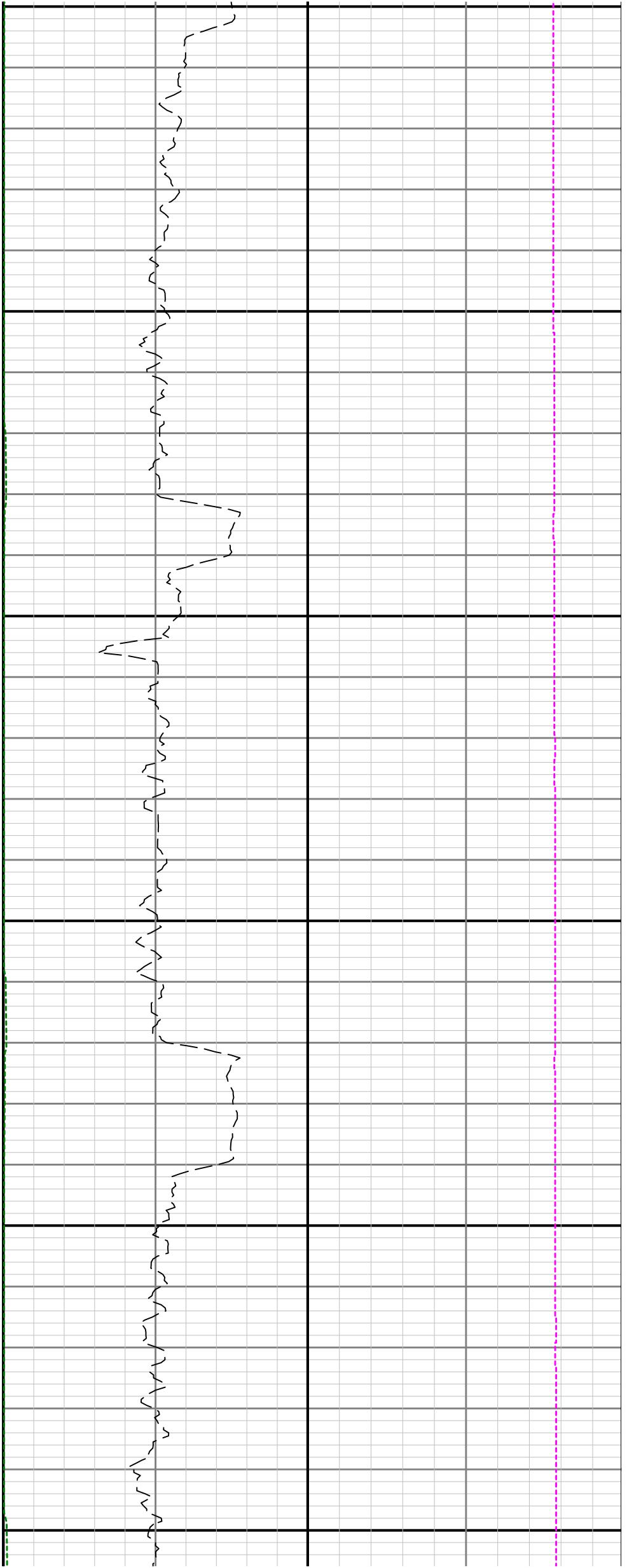
10200

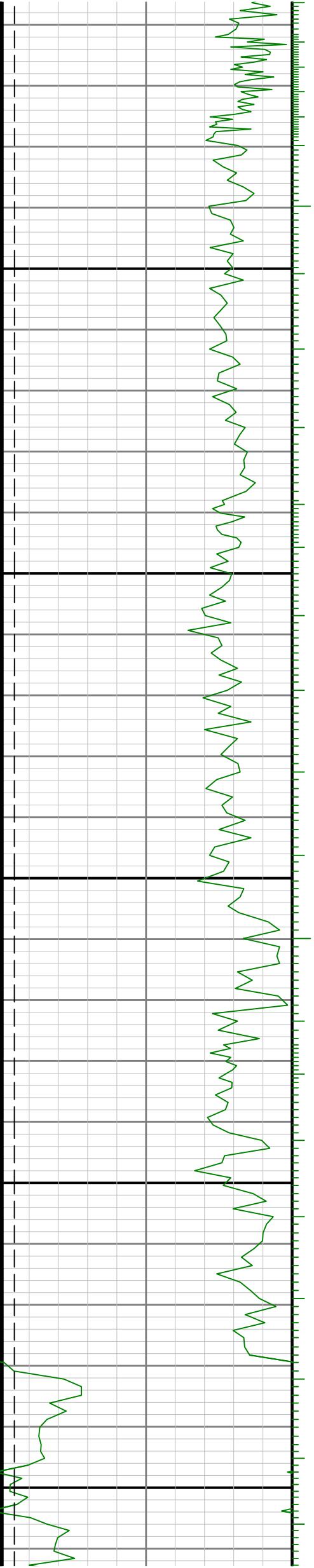


10300



10400



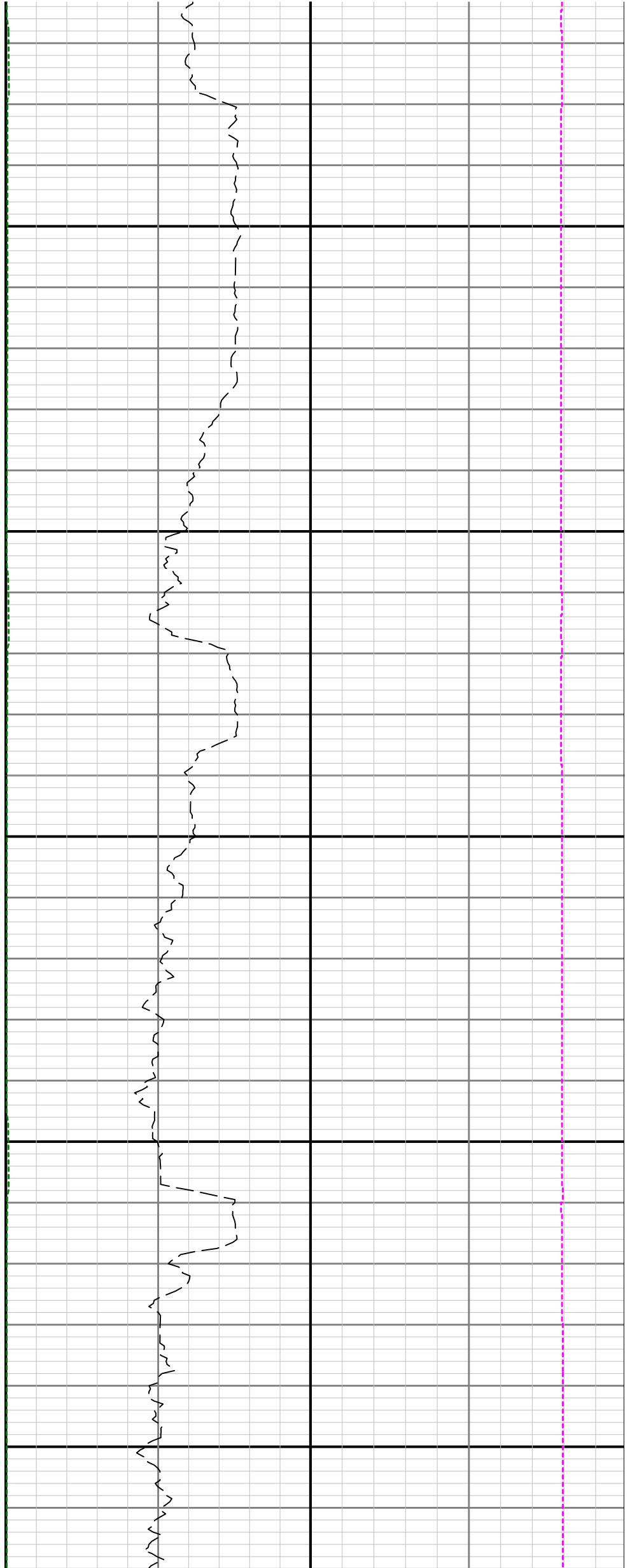
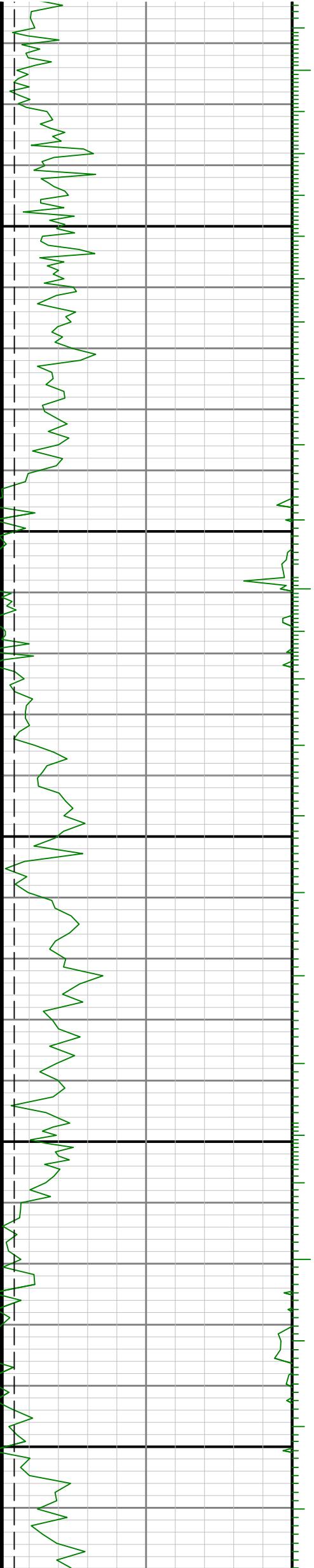


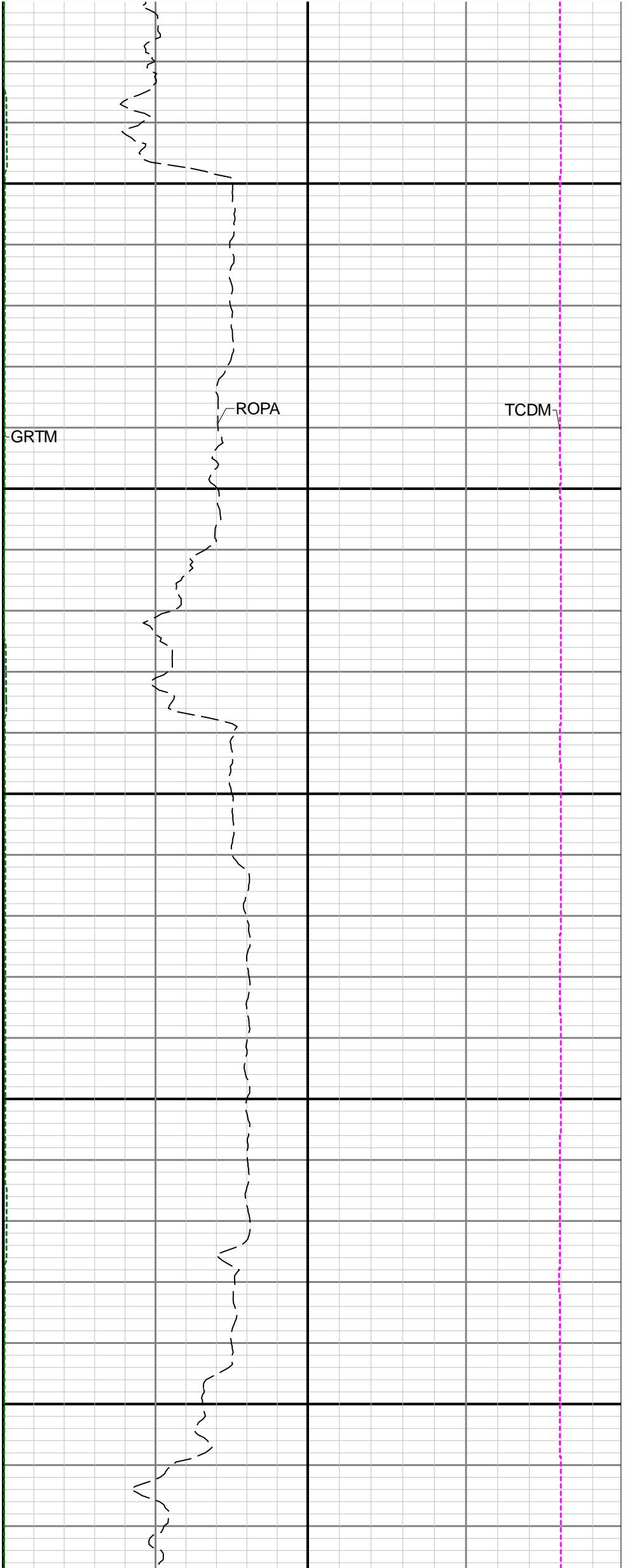
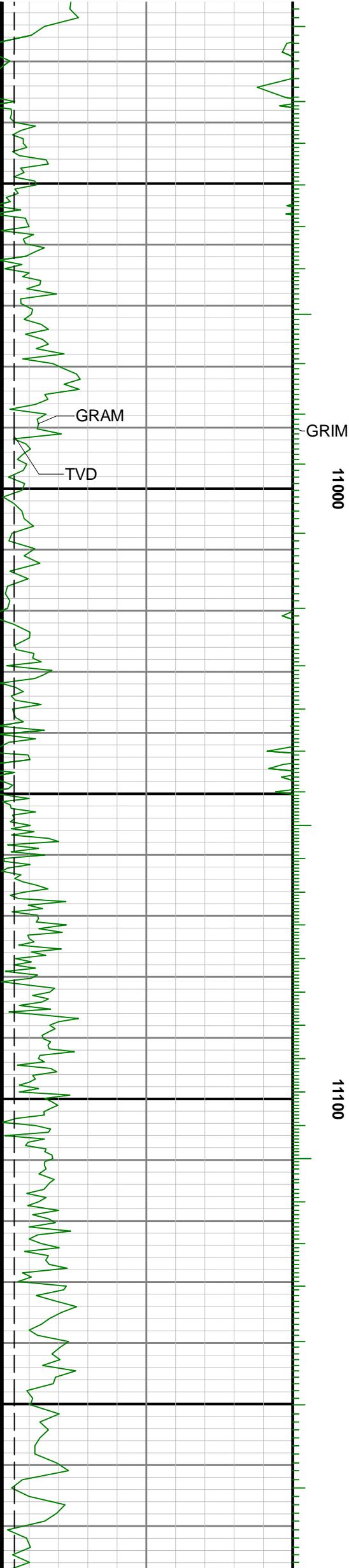
10500

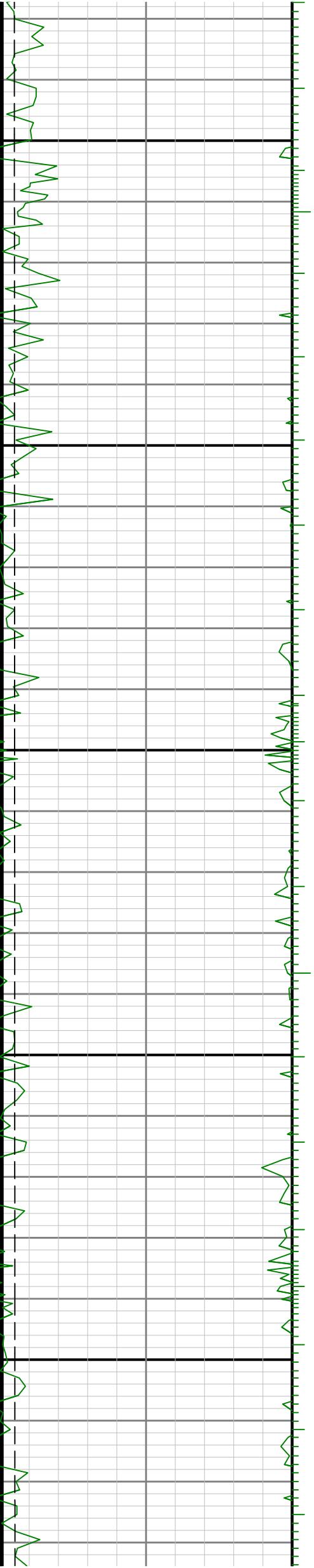


10600







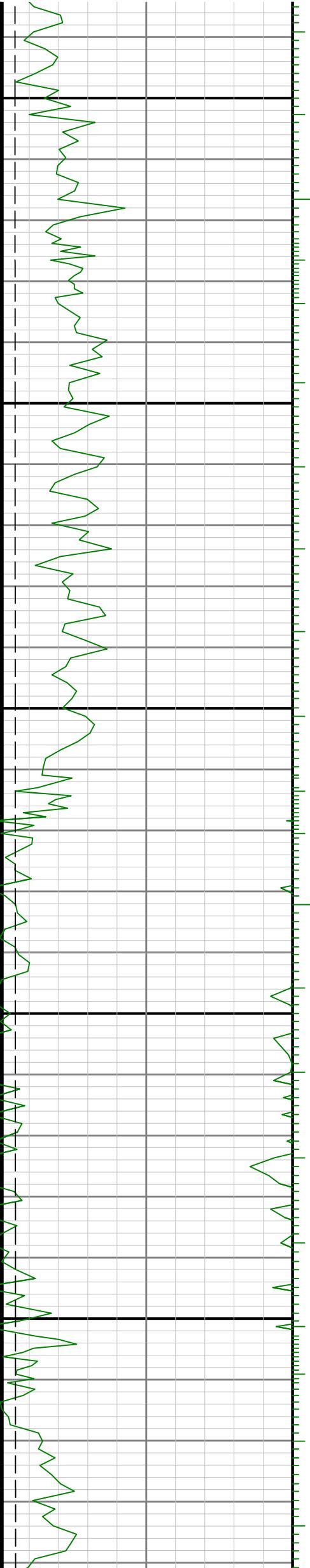


11200

11300

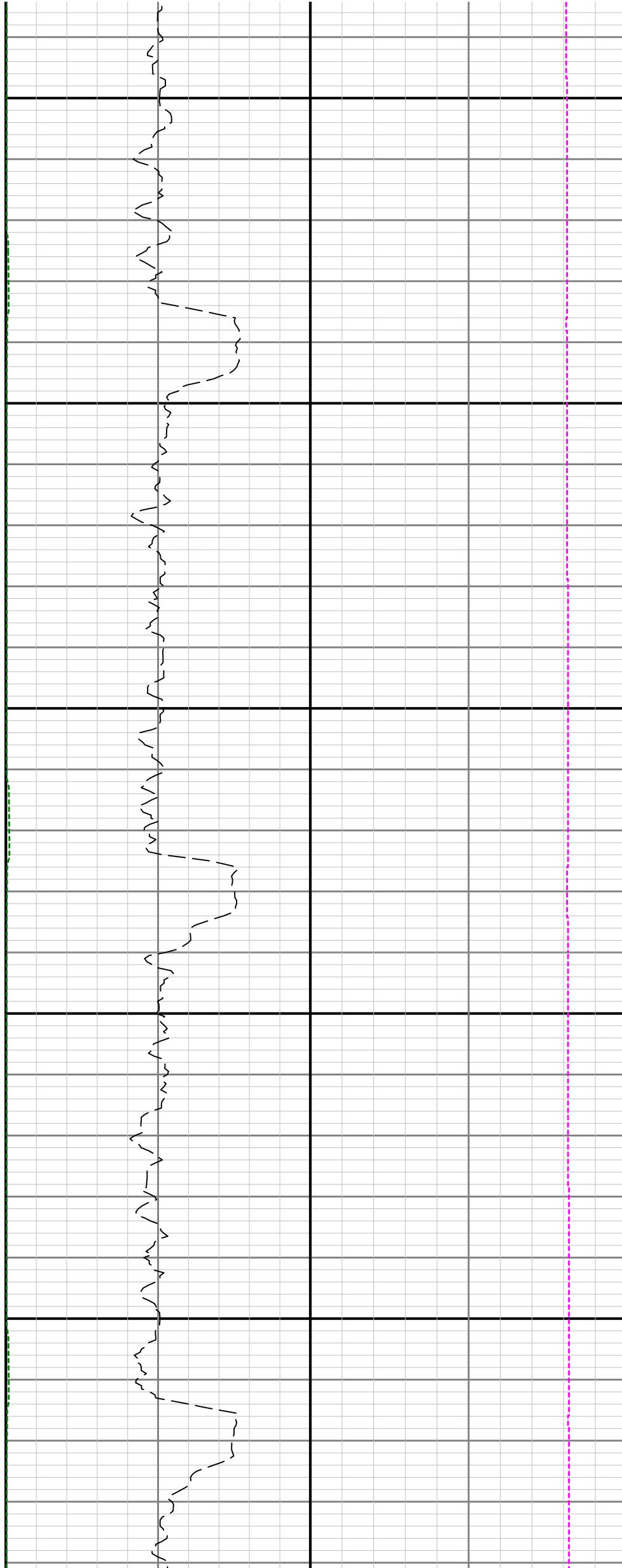
11400

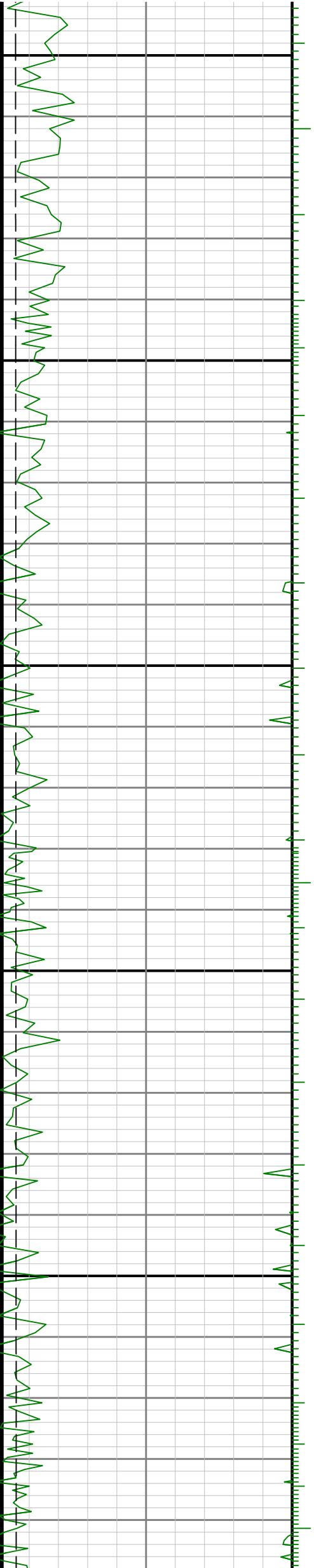




11500

11600

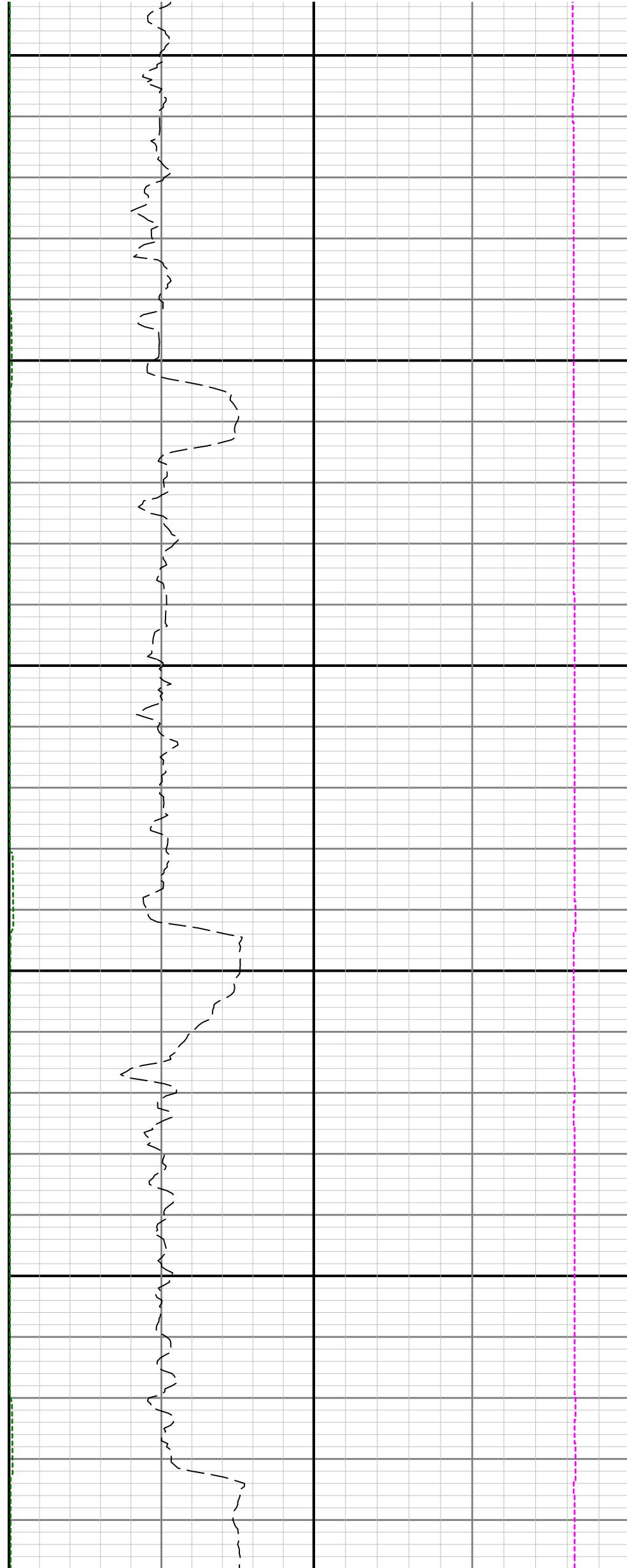


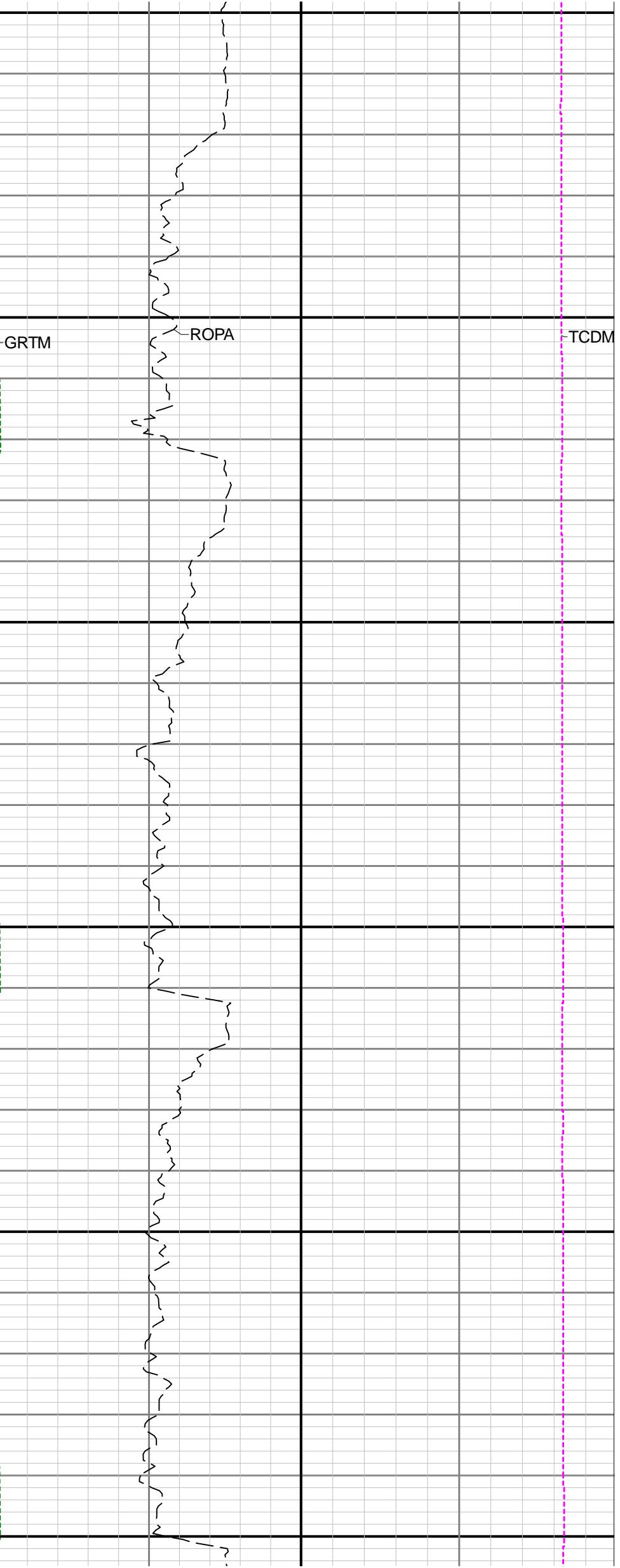
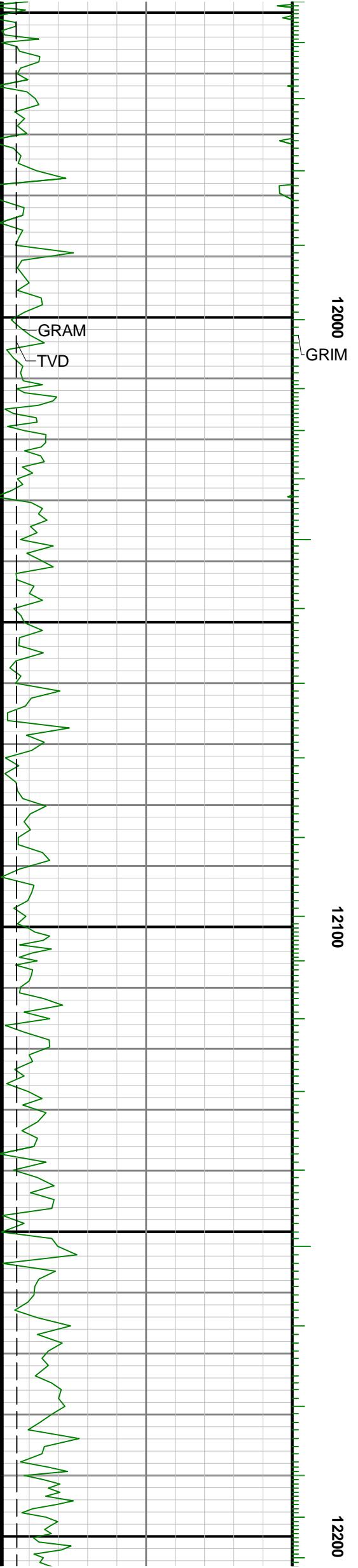


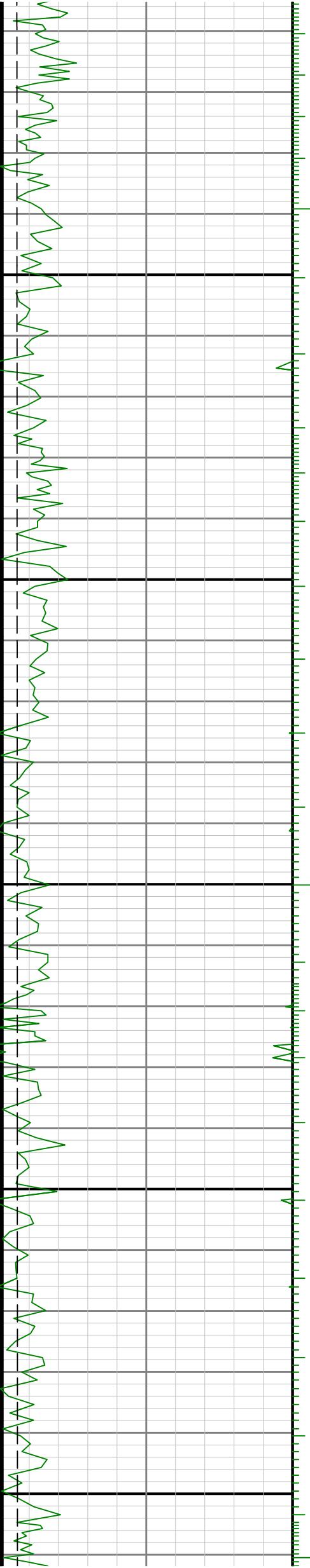
11700

11800

11900

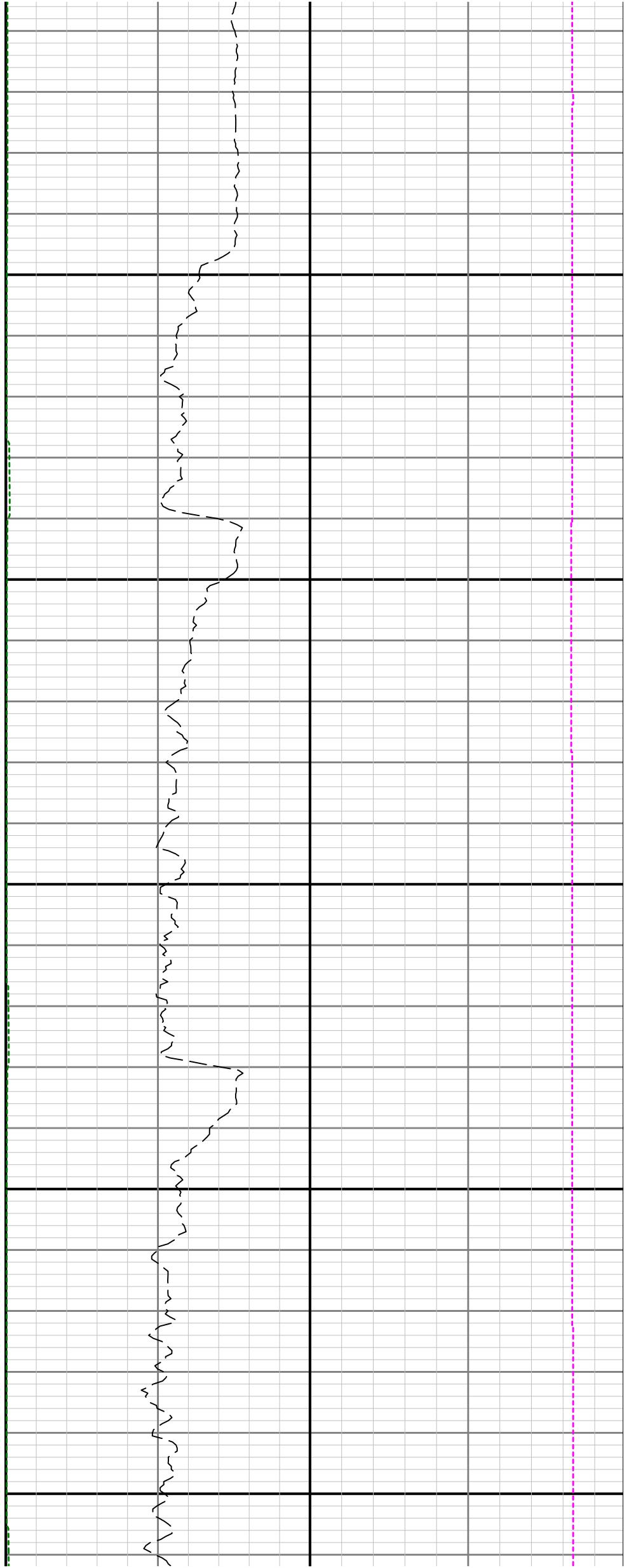


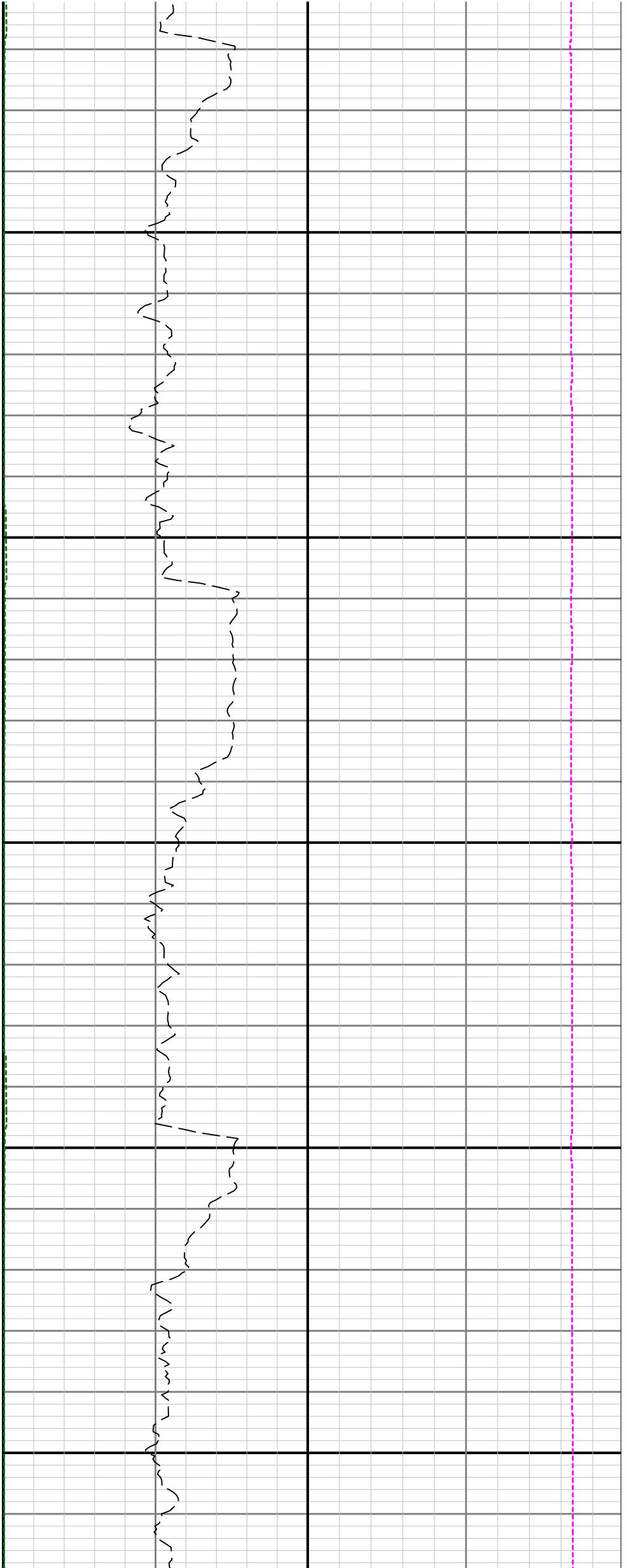
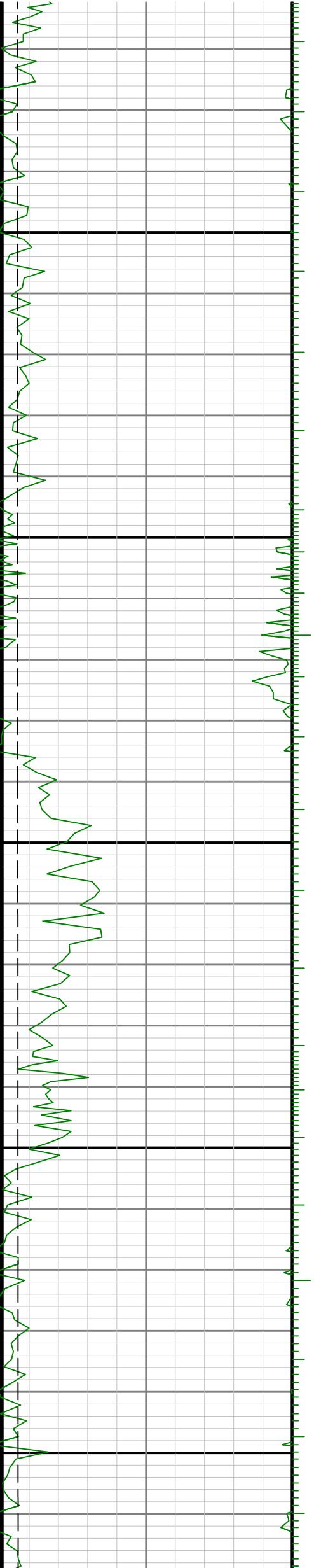


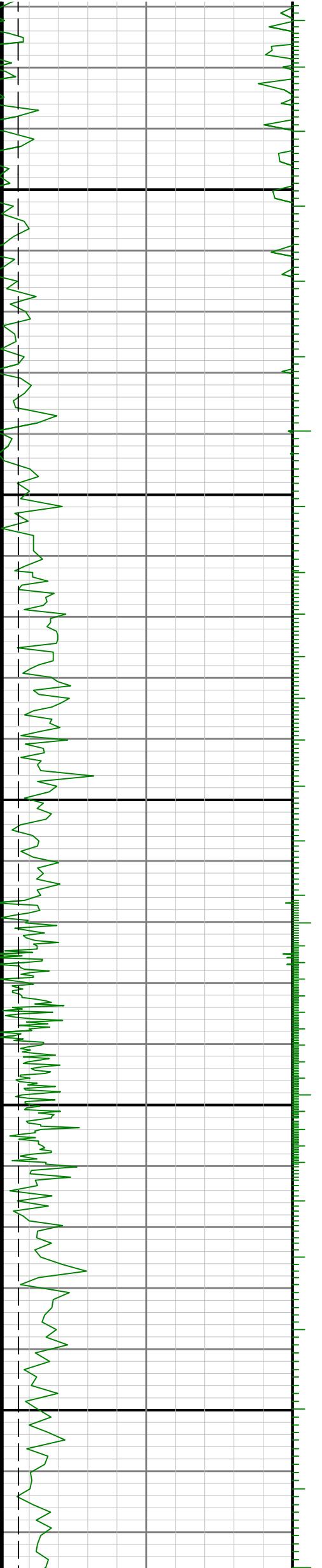


12300

12400

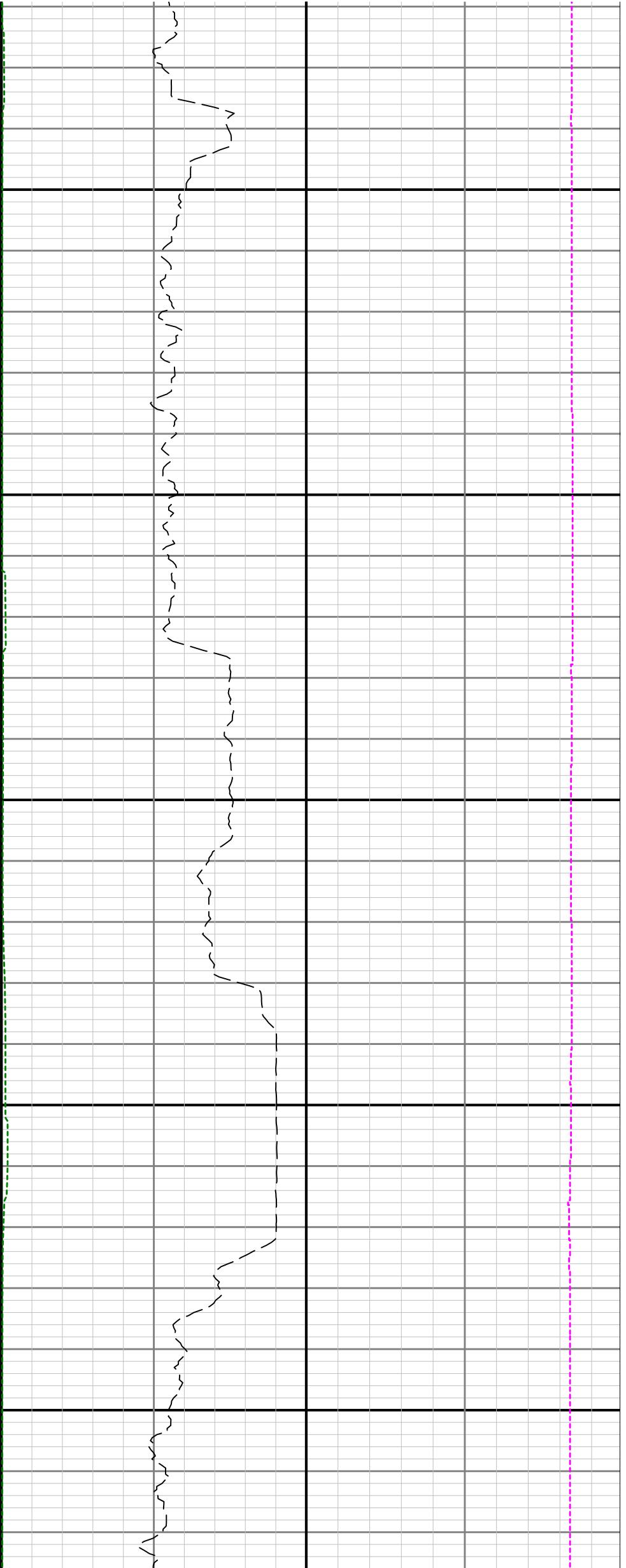




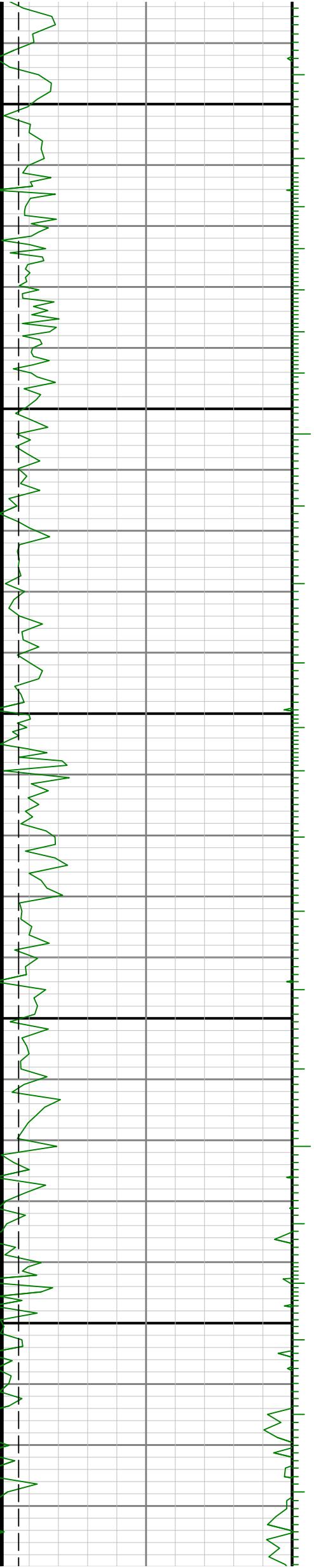


12800

12900

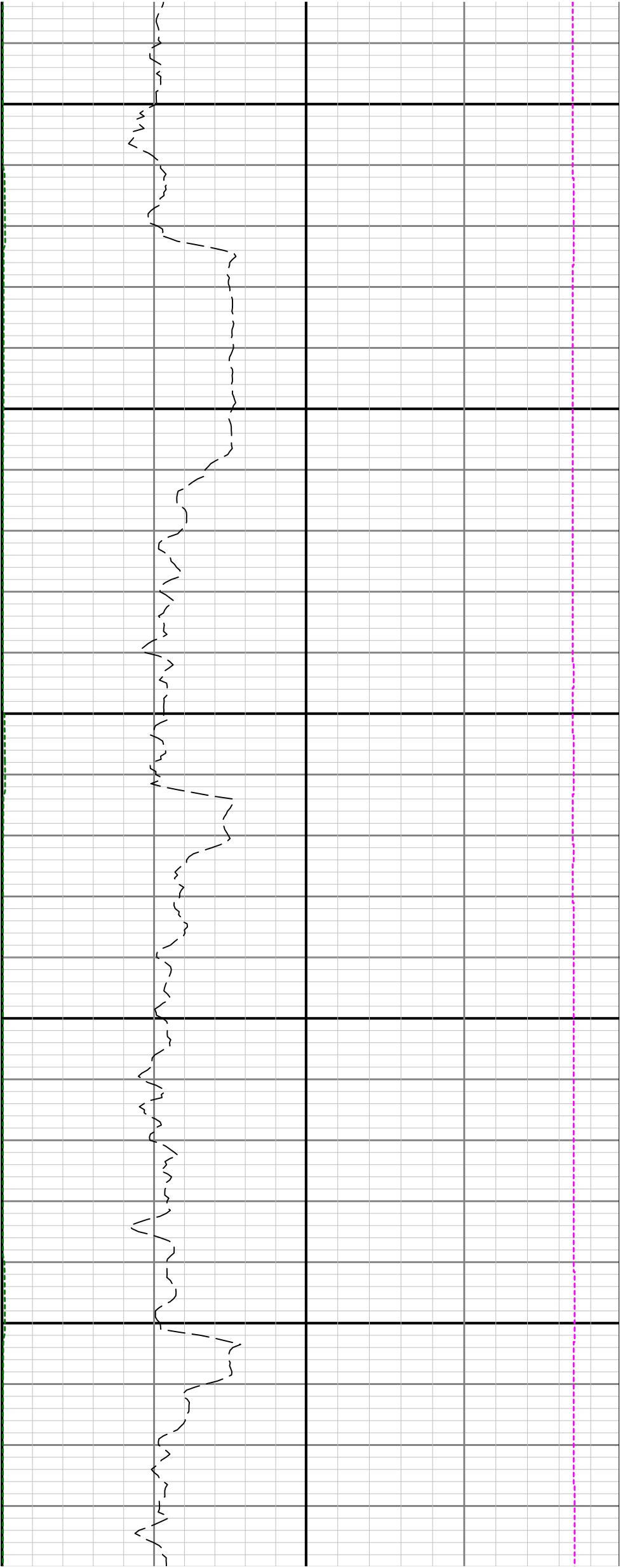




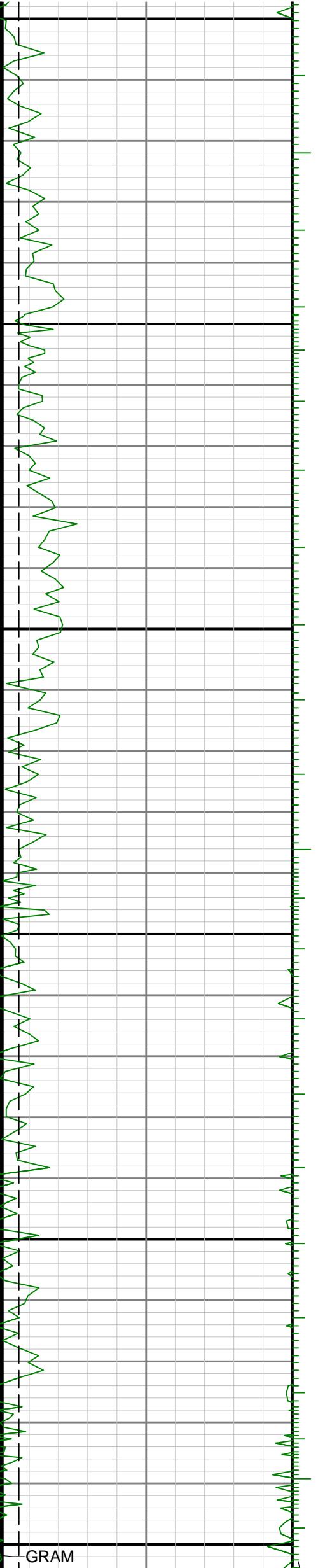


13300

13400







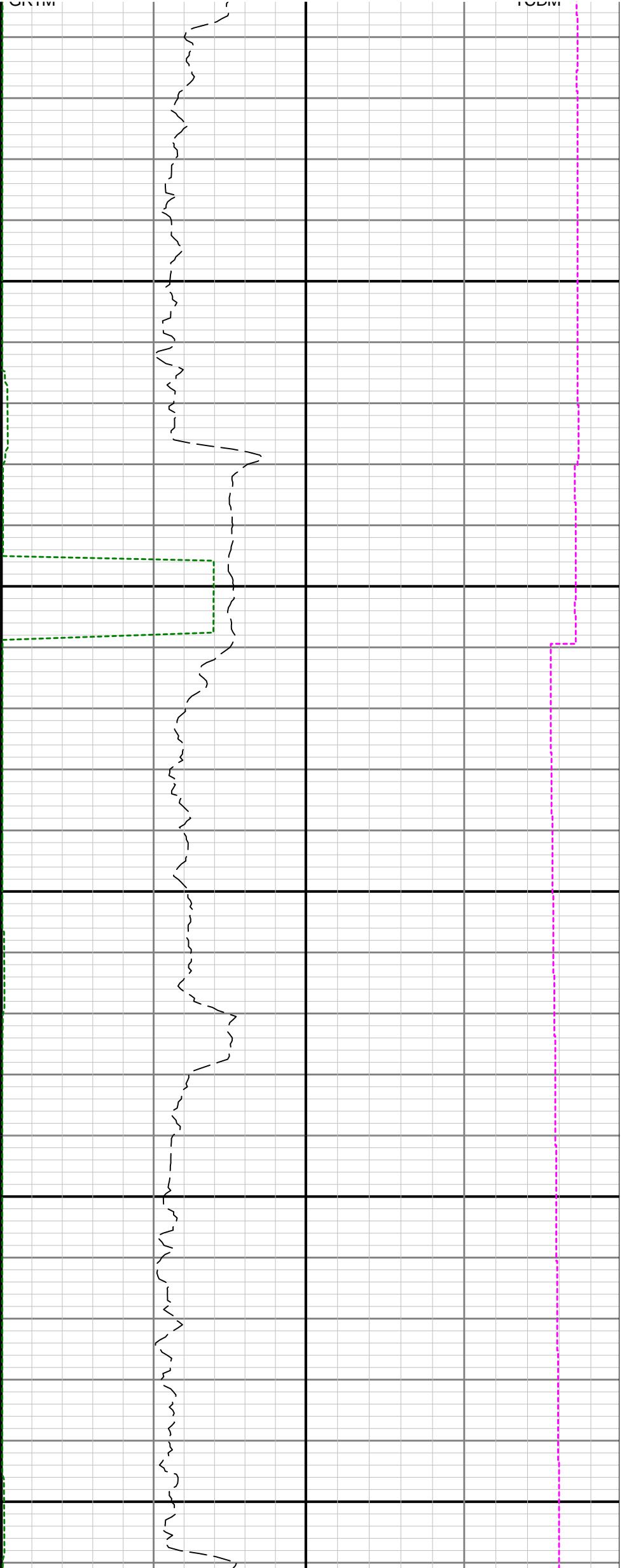
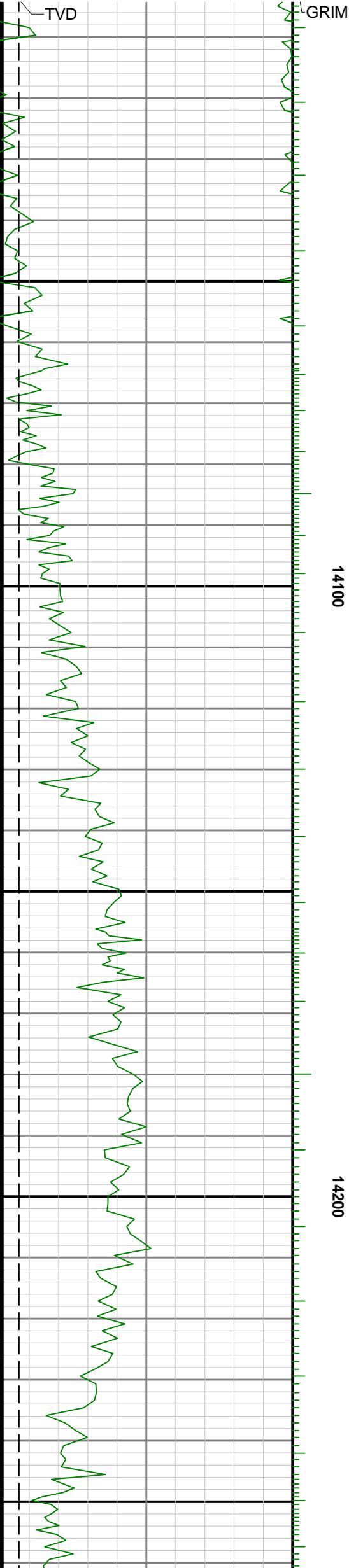
13800

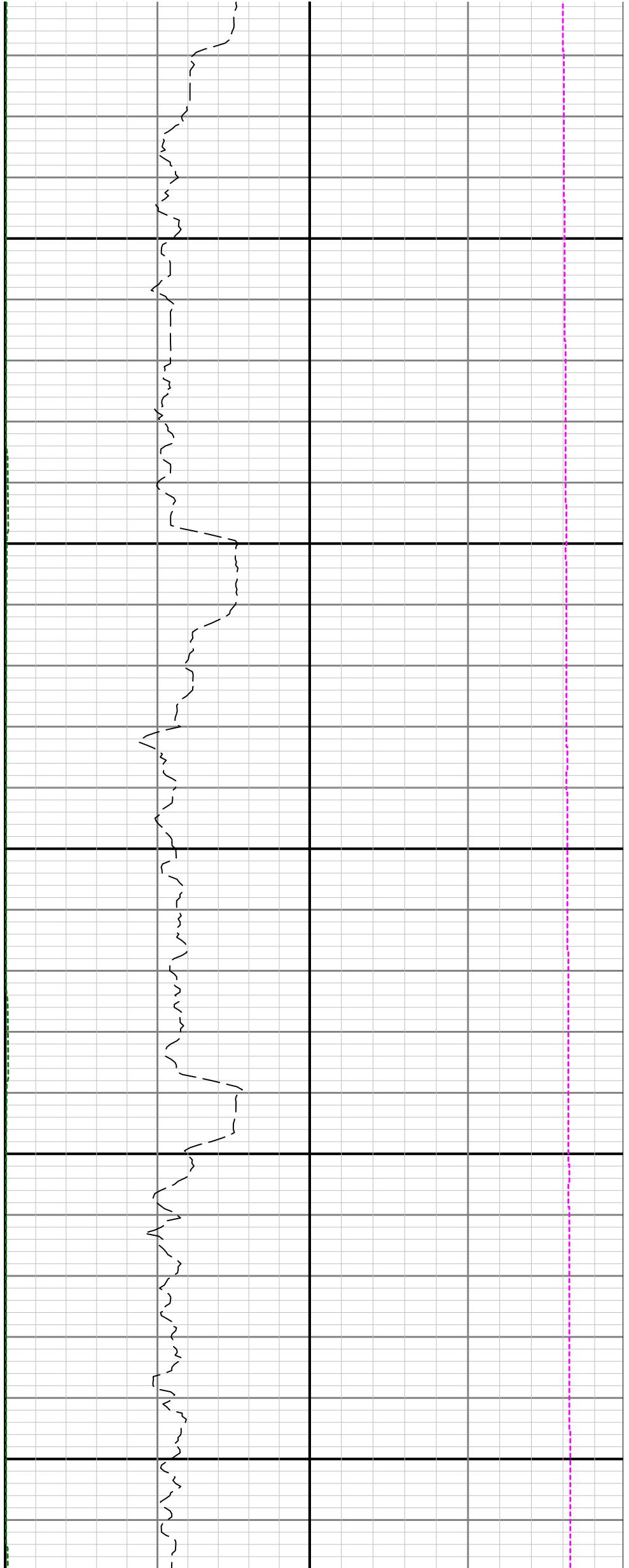
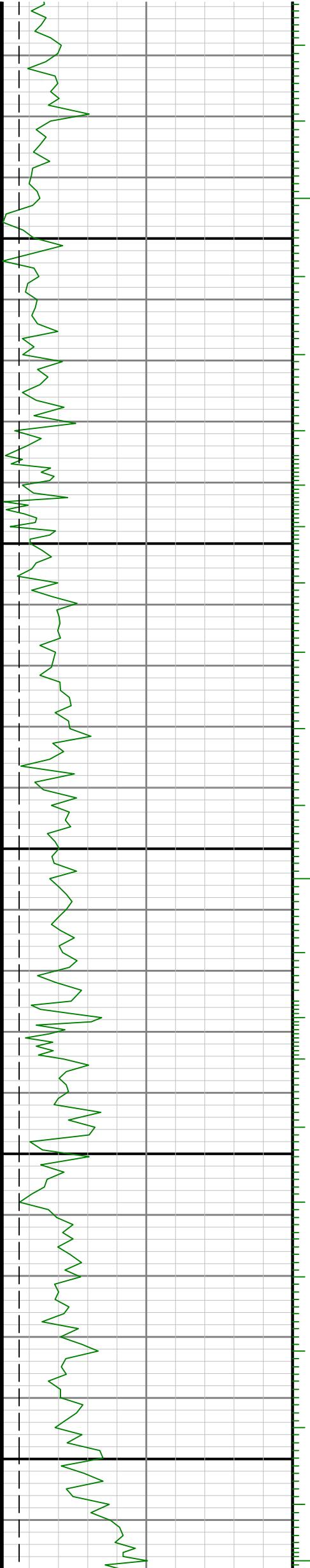
13900

14000

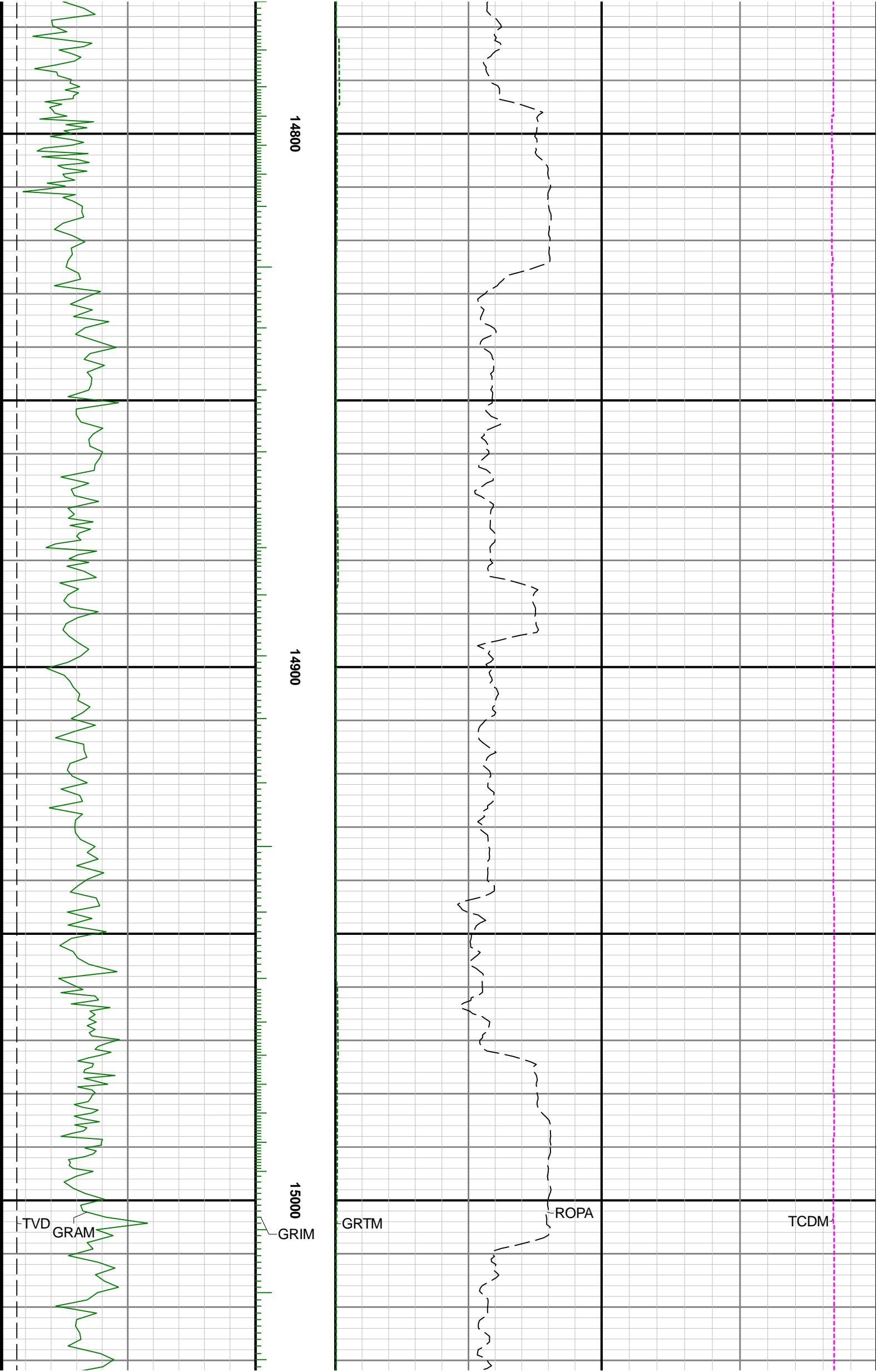


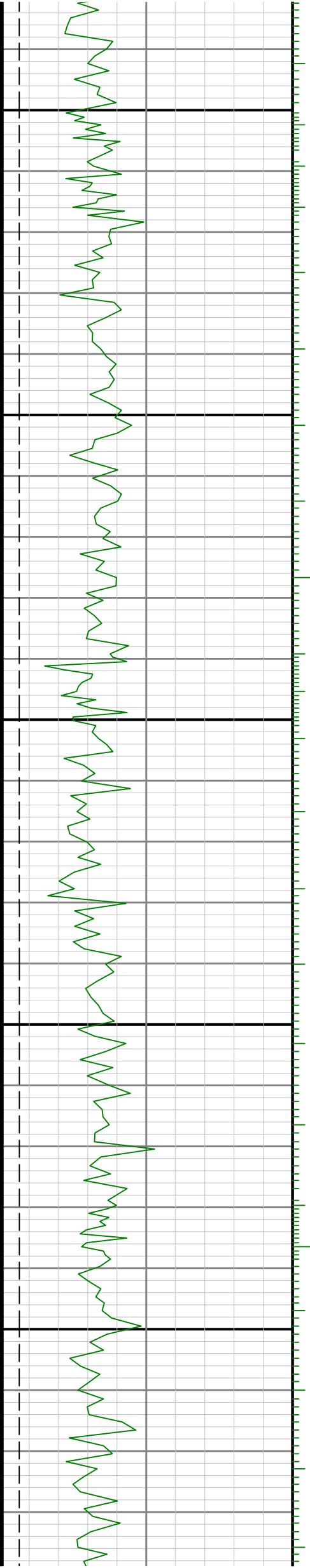
TCDM





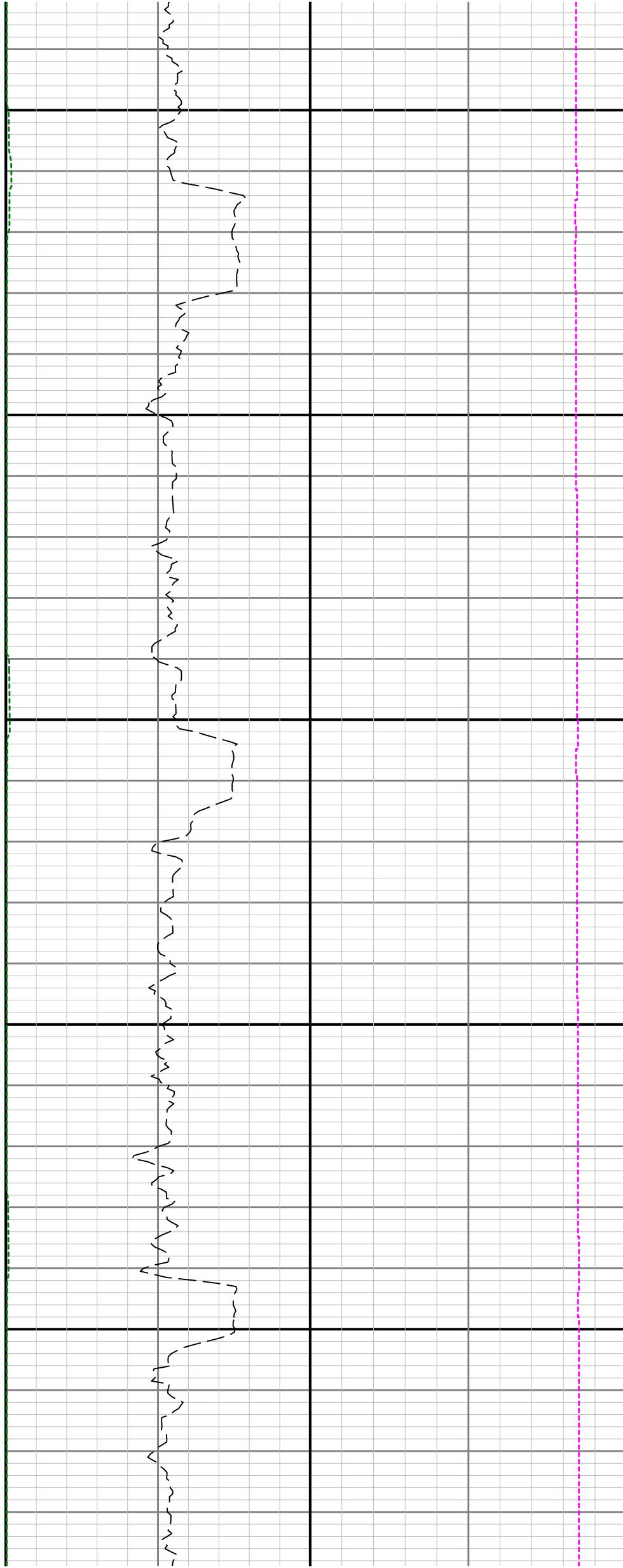


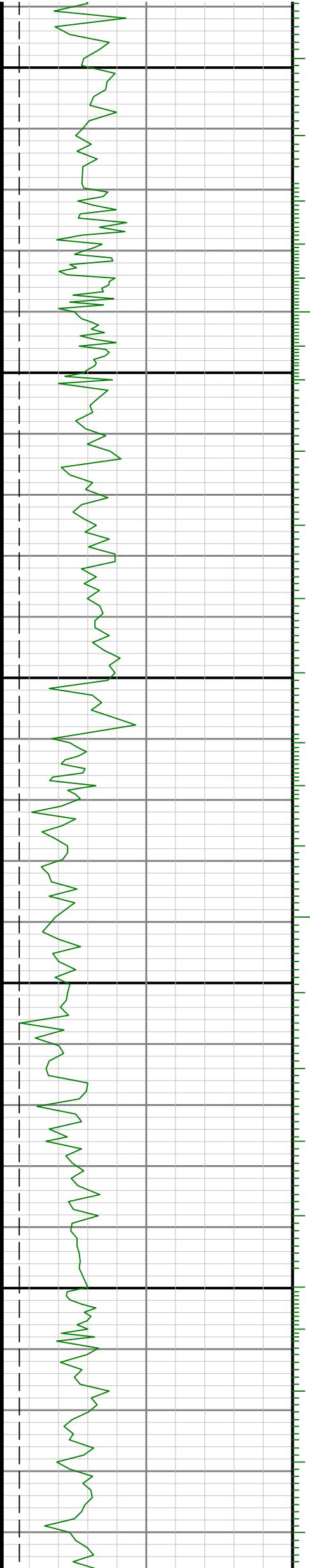




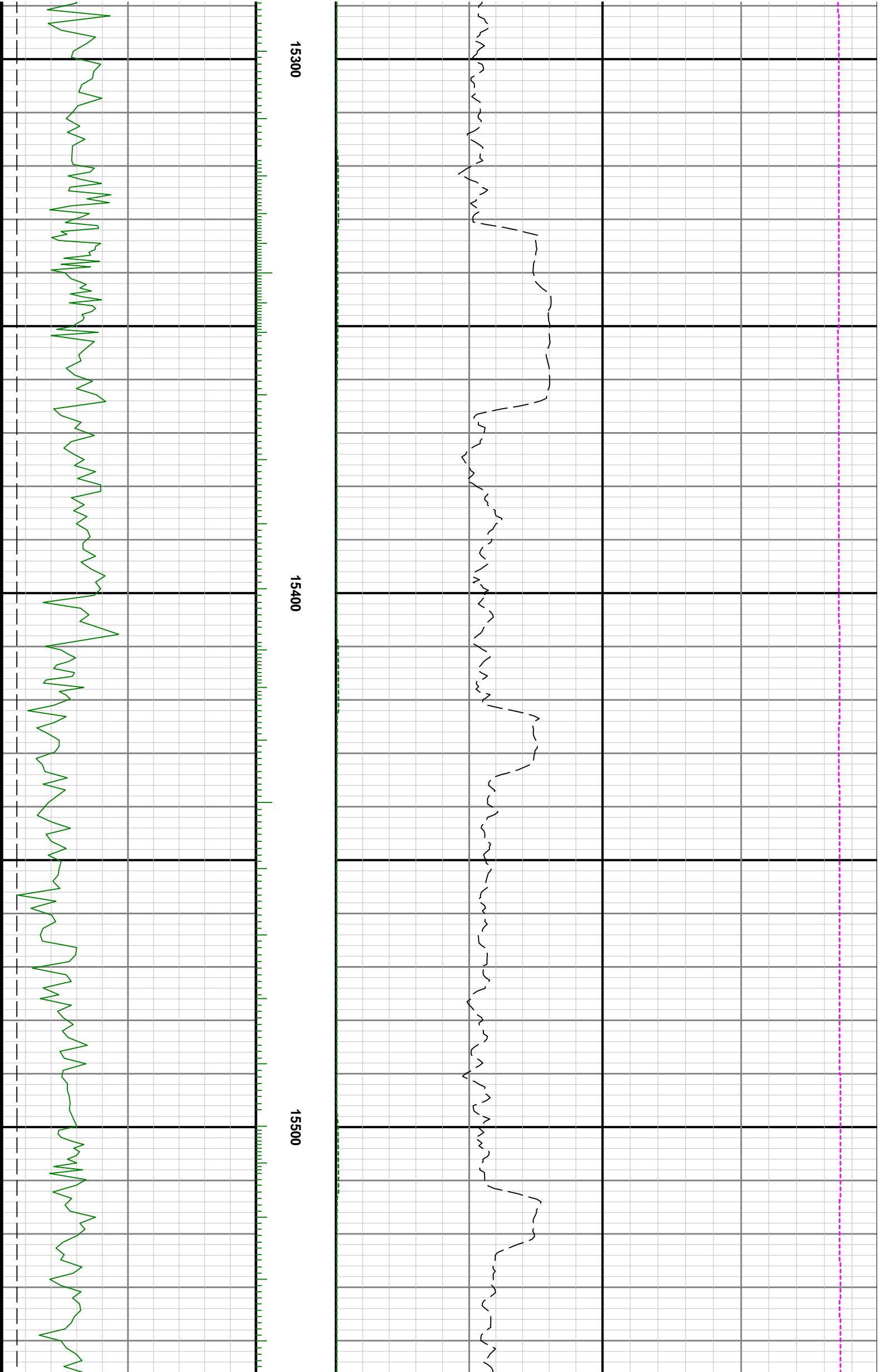
15100

15200



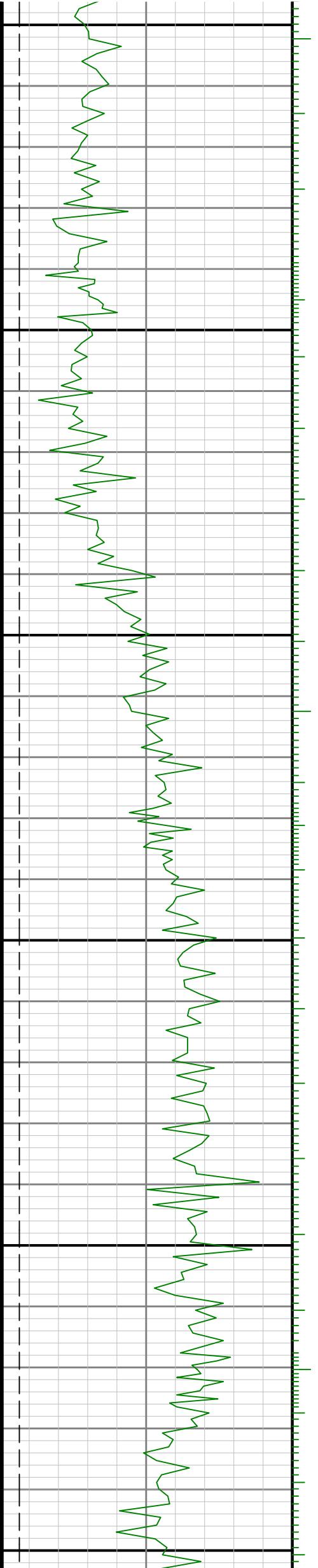


15300



15400

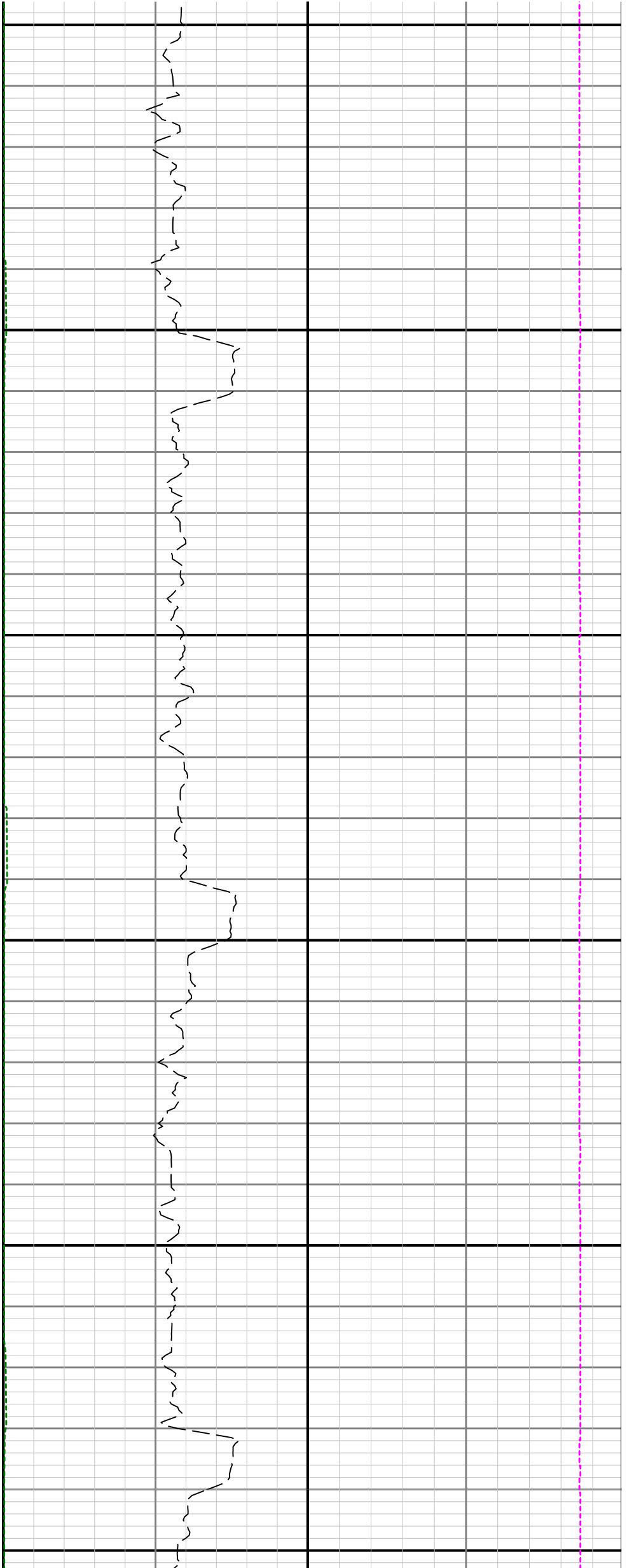
15500

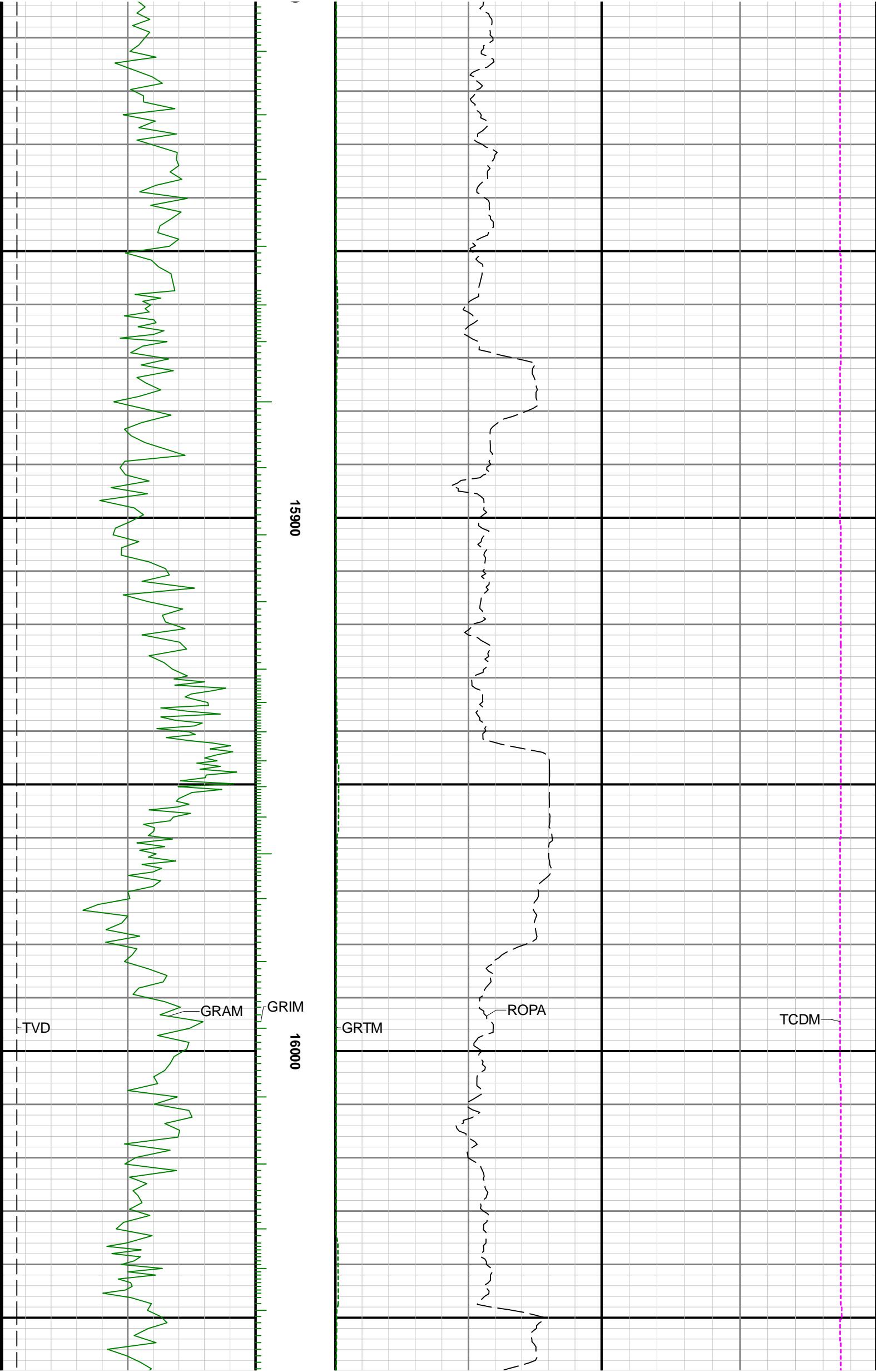


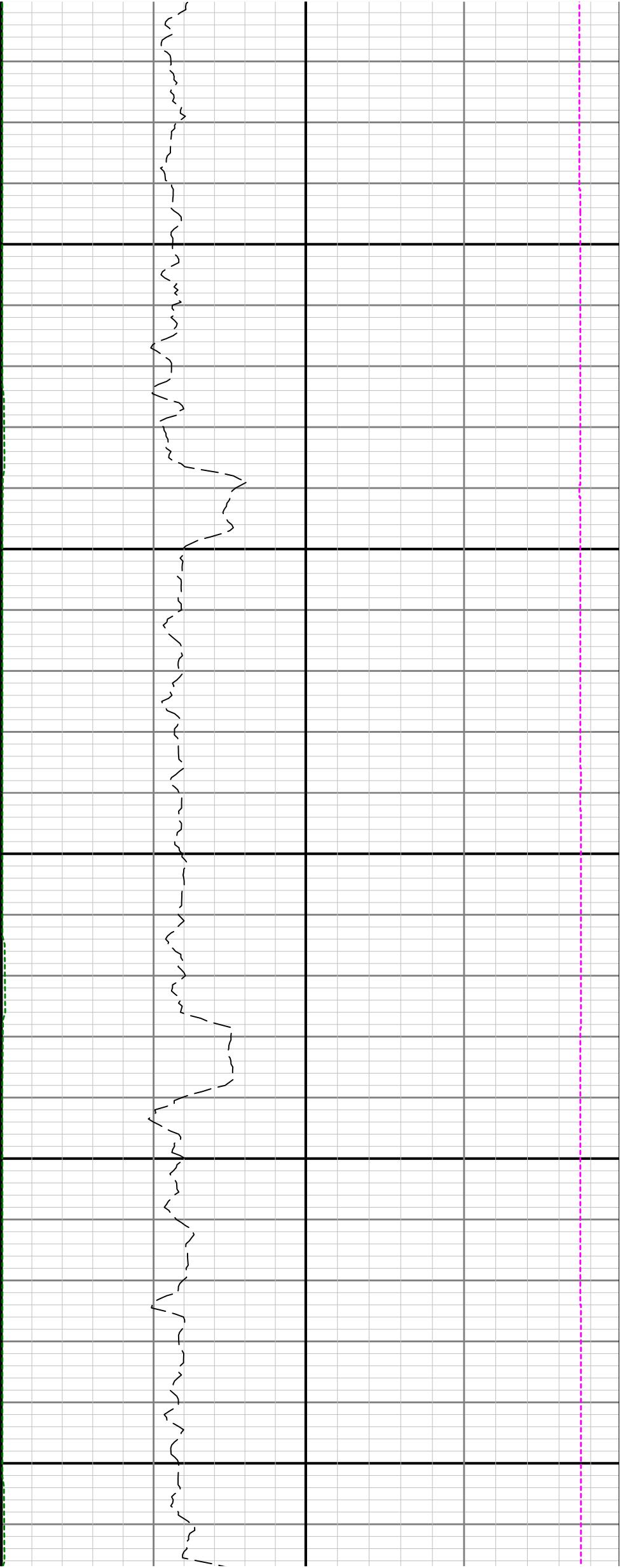
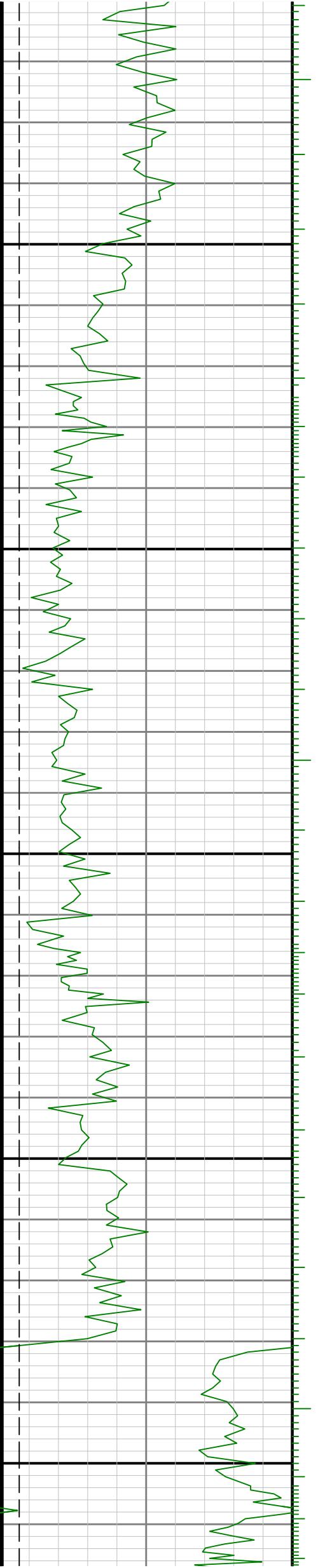
15600

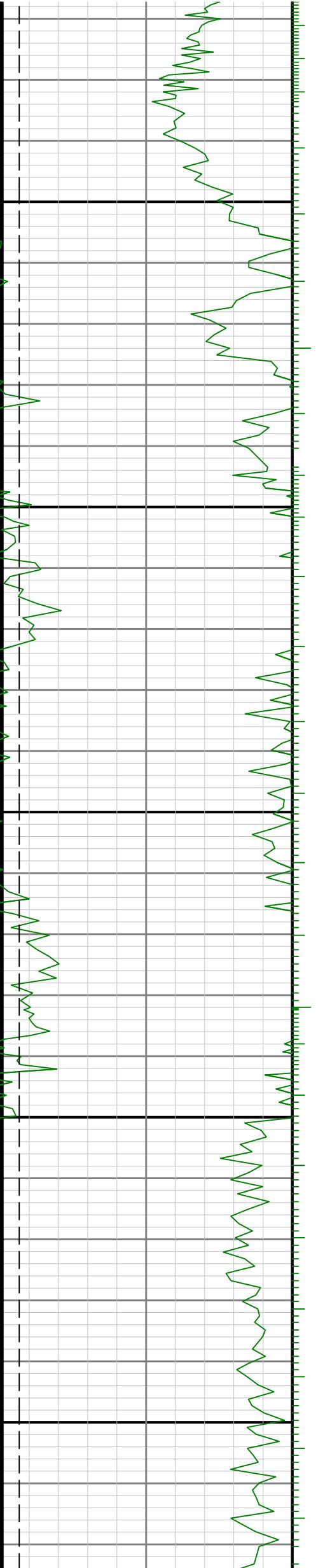
15700

1580c



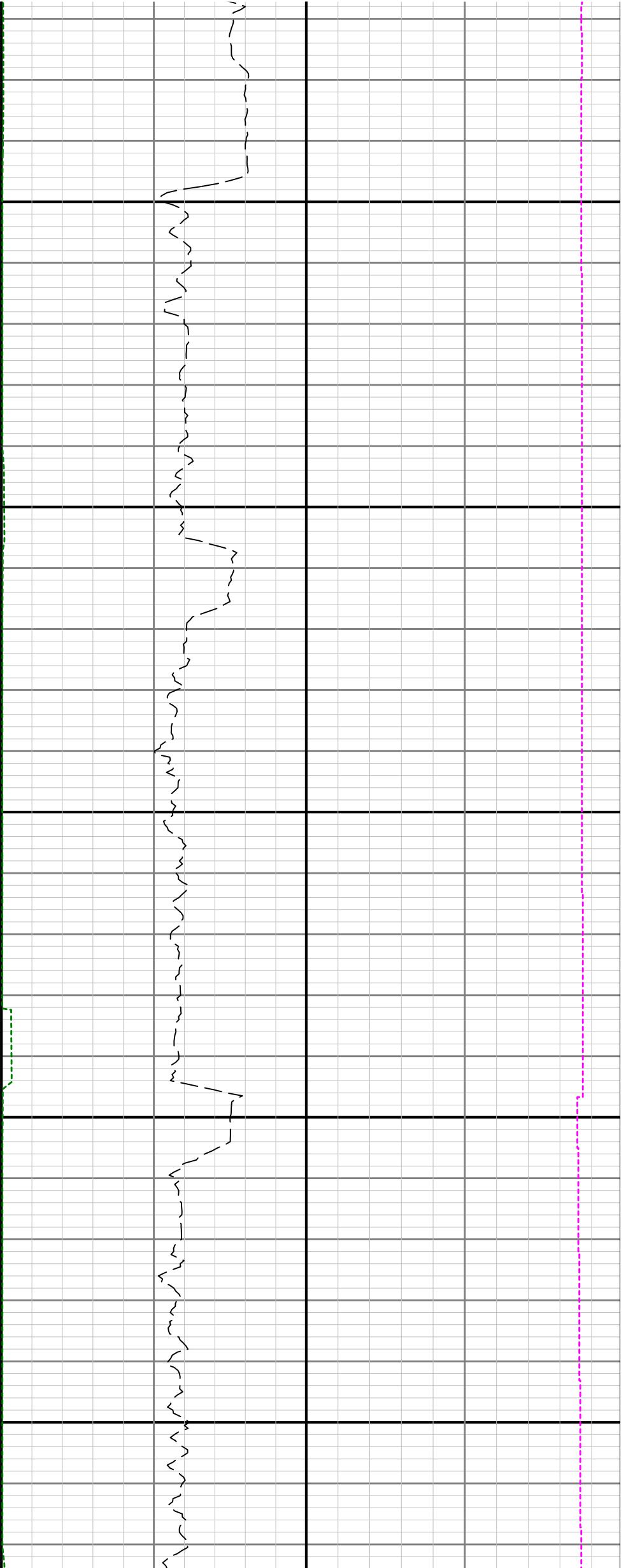


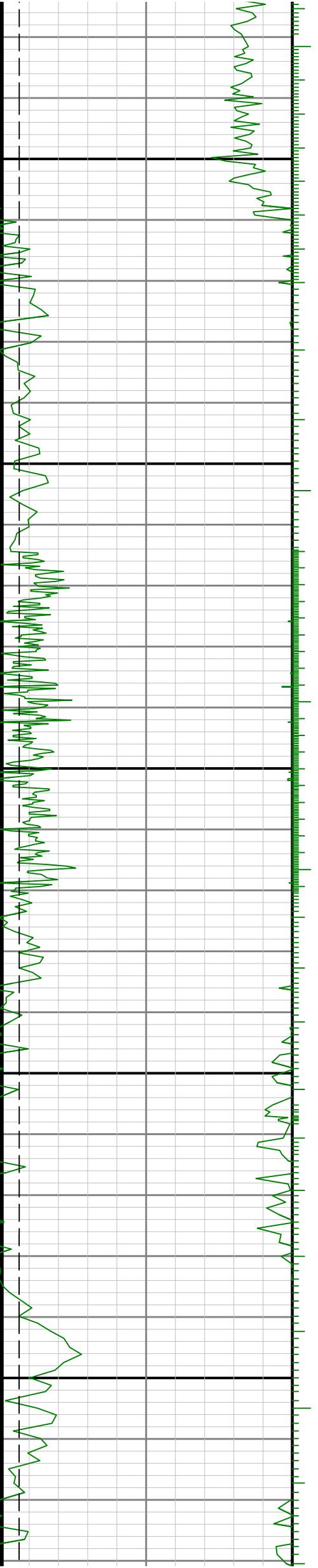




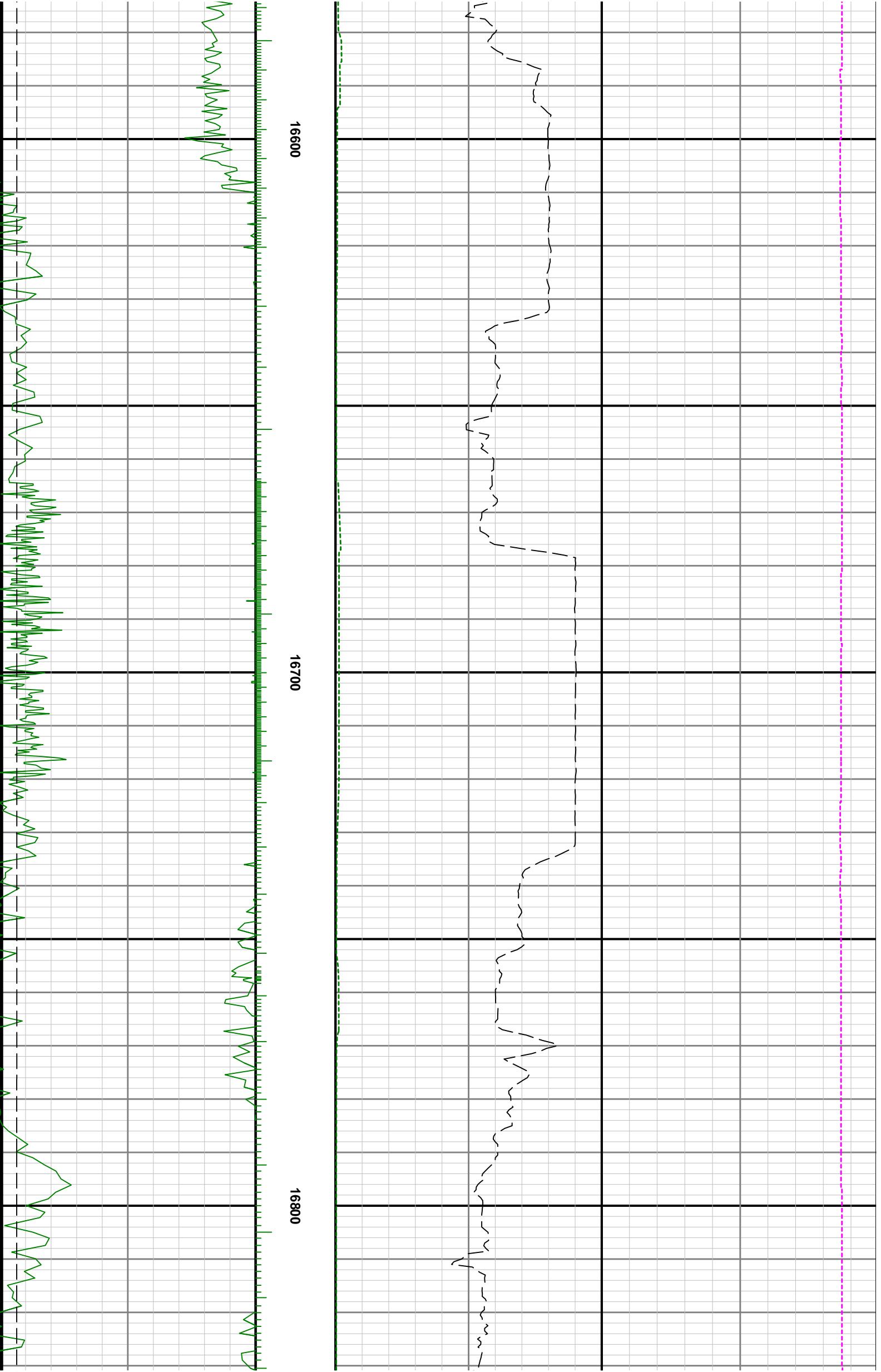
16400

16500

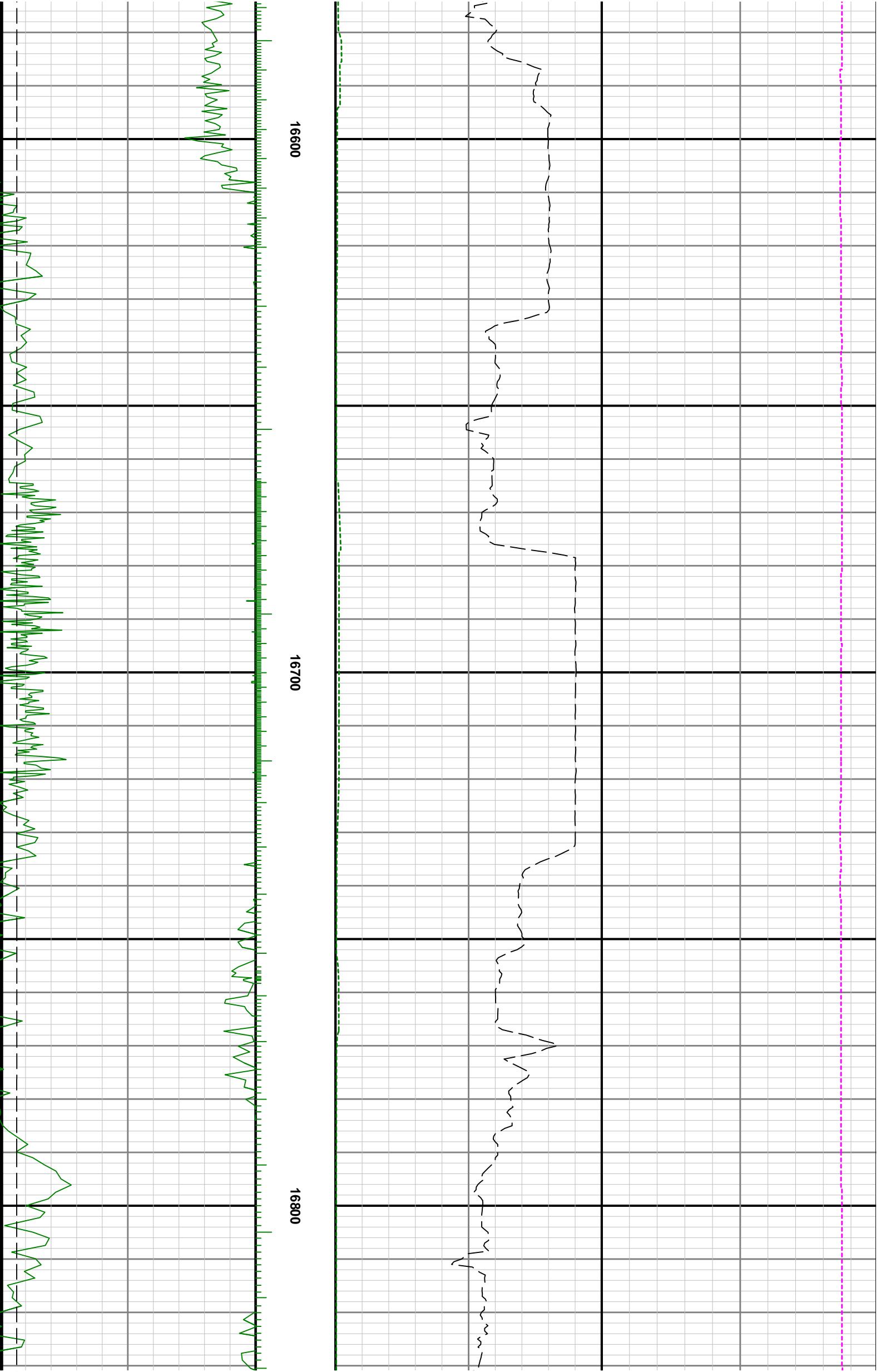




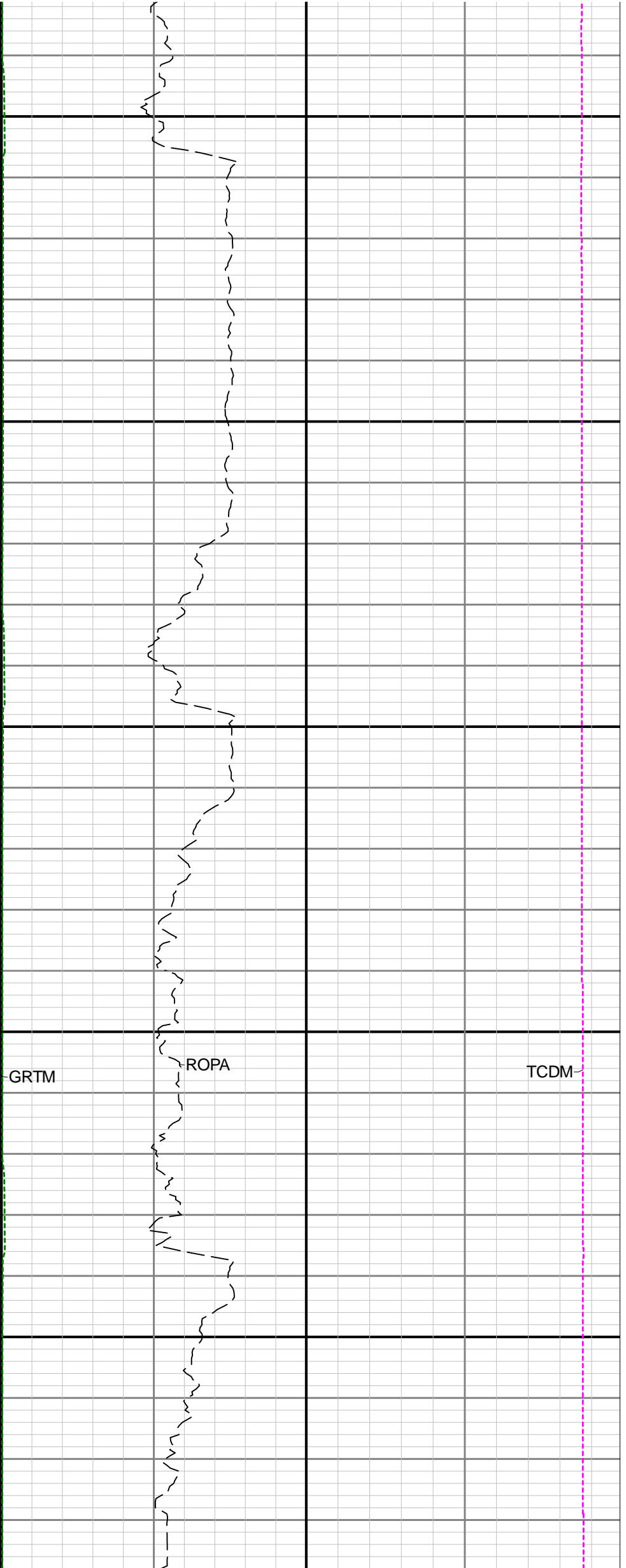
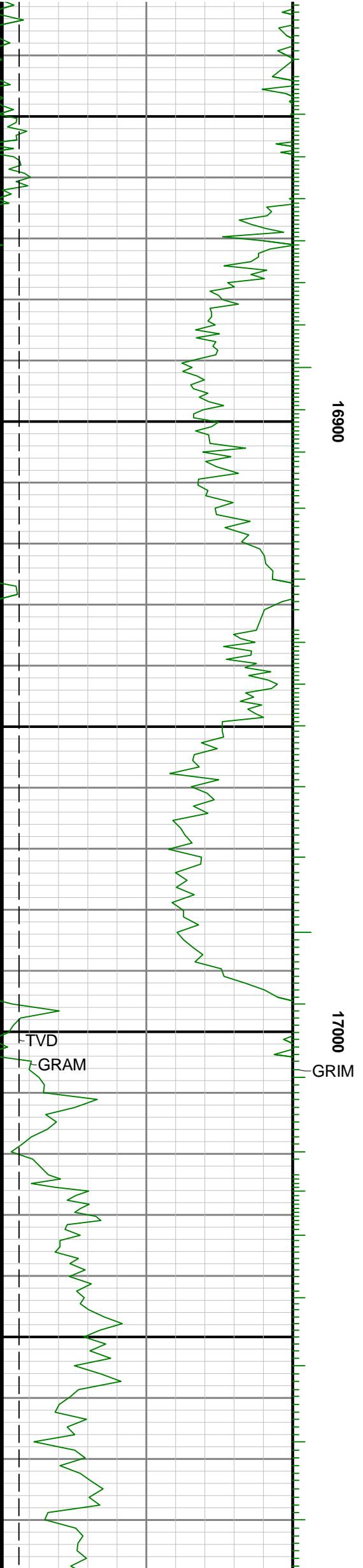
16600

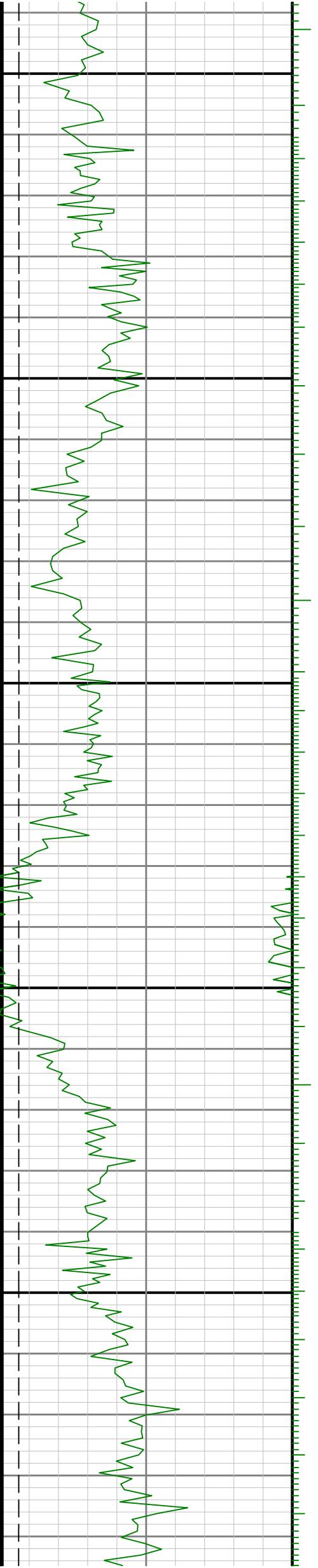


16700

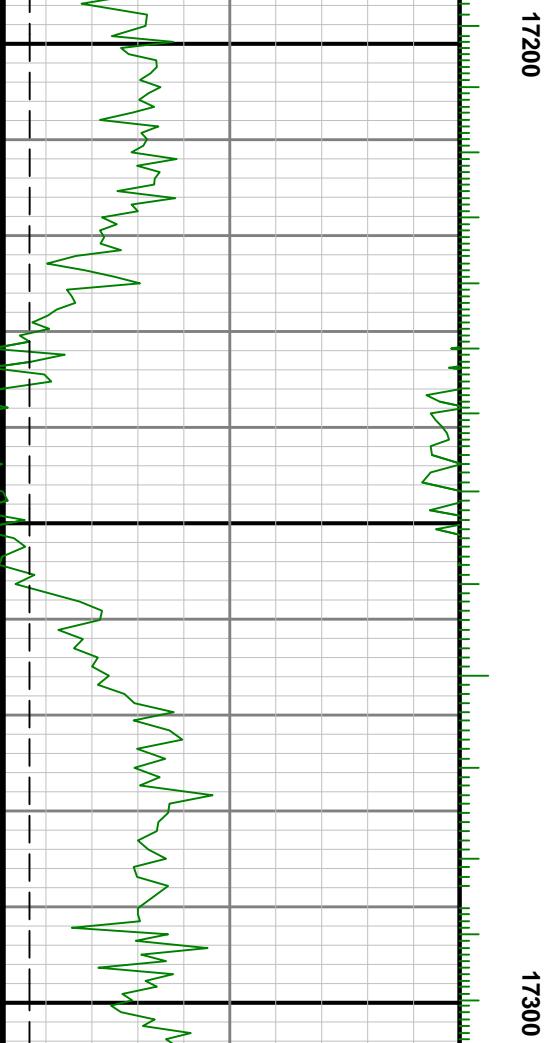


16800

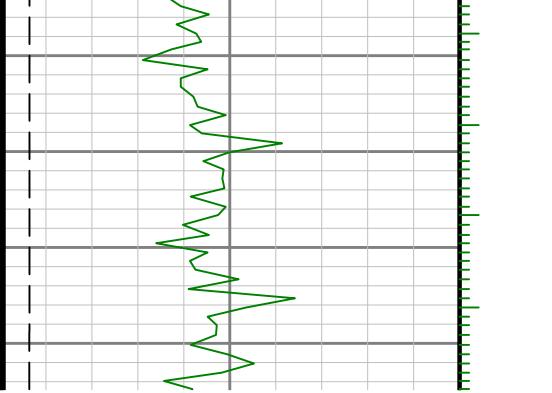




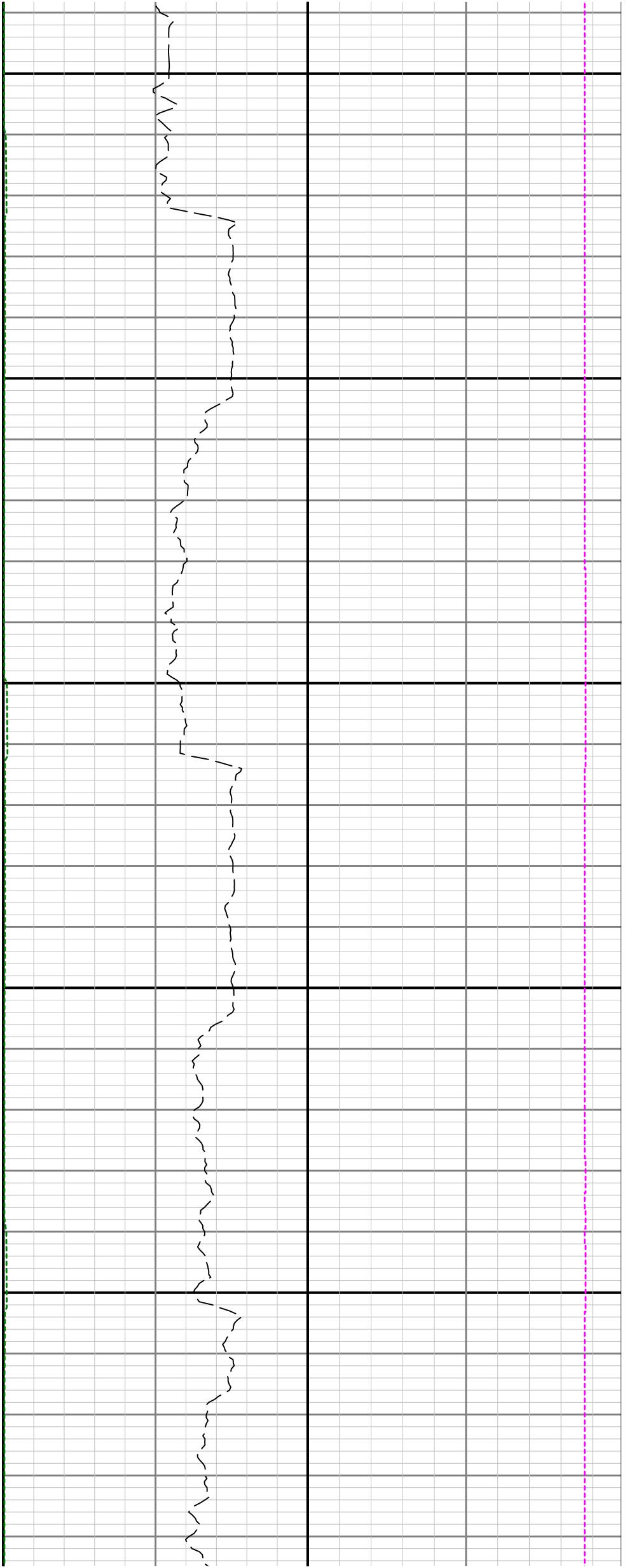
17100

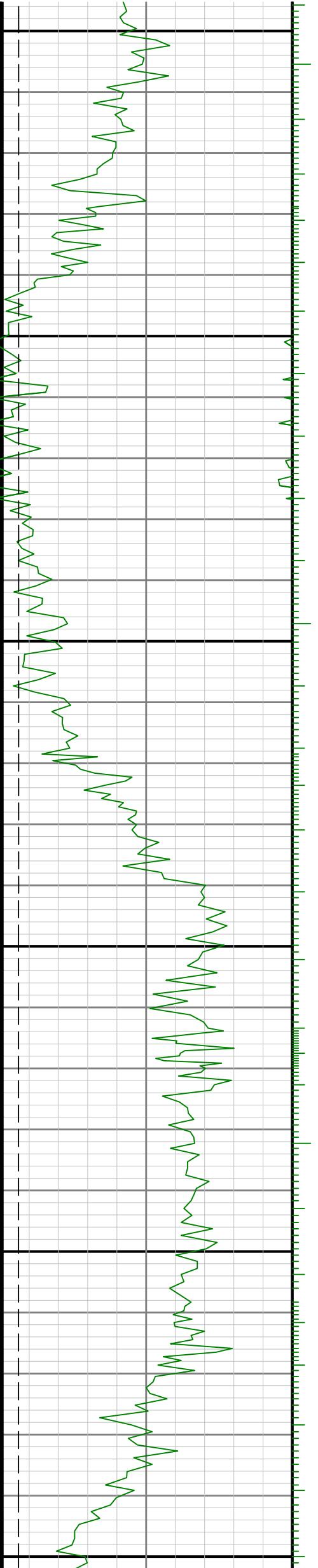


17200



17300





17400

17500

1760

