



REALTIME LOG

Gamma Ray

Scale: Company: Anadarko

1:240 MD Well: Leinweber 37N-11HZ

Depth Reference: Field: Wattenburg

Driller's Depth Country: Weld Country: United States

State: Colorado

Status: Surface Location: Other Services:

Final Print Latitude: Longitude: Directional

API No: 051234419900 SEC: 11 TWN: 1N RGE: 67W

Job ID: 8949250 Elevation: 0.00 ft Elev. KB: N/A

Permanent Datum (P.D.): Mean Sea Level Above P.D. 4982.00 ft Elev. DF: 4982.00 ft

Log Measured From: Rig Floor 4982.00 ft Elev. GL: 4965.00 ft

Dates Interval Logged Magnetic Field Reference

Date From: 2018-02-04 Top: (ft) 1522.00 Azi Reference North: True Dip Angle: (deg) 66.44

Date To: 2018-02-08 Bottom: (ft) 12971.00 Total Magnetic Field Strength: (nT) 52428

Spud Date: 2018-02-05 Mag to Reference North Correction: (deg) 8.13 E

Borehole Record Casing Record

Hole Size (in) From (ft) To (ft) Size (in) Weight (lb/ft) From (ft) To (ft)

13.500 17.00 1522.00 9.625 25.00 17.00 1511.00

8.500 1522.00 6105.00 7.000 17.00 17.00 6095.00

6.125 6105.00 12971.00 17.00 17.00

Mud Record Deviation Record

Type From (ft) To (ft) Hole Size (in) Interval (ft) Inc | Az (Start) Inc | Az (End)

Diesel-Oil Based Mud 1522.00 12971.00 8.500 4583.00 19.80 | 328.91 0.51 | 36.74

6.125 6866.00 0.51 | 36.74 88.95 | 177.45

Acquisition System Software Version Other

Baker Hughes Cadence RT4.1

PlotStudio 4.1.7763.3

Rig: Xtreme 22 Contractor: Xtreme District: RMD Unit: D & E

©"4239"Dcmgt"Jwi jgu."c"IG"eqorcp{."NNE"ó"Cnn"tki jvu"tgugt xgf0"Dcmgt"Jwi jgu."c"IG"eqorcp{."NNE"cpf"kvu"chhknkcvgu"\*öDJIGö+"rtq xkfgu"vjku"kphqtocvkqp"qp"cp"öcu"kuö"dcuku"hqt"igpgtcn"kphqtocvkqp"purposes and believes it to be accurate as of the date of publication. BHGE does not make any representation as to the accuracy or completeness of the information and makes no warranties of any kind, specific, implied or oral, to the fullest extent permissible by law, including those of merchantability and fitness for a particular purpose or use. BHGE hereby disclaims any and all liability for any direct, indirect, consequential or special damages, claims for lost profits, or third party claims arising from the use of the information, whether a claim is asserted in contract, tort, or otherwise. The BHGE logo is a trademark of Baker Hughes, a GE company, LLC. GE and the GE monogram are trademarks of General Electric Company used under trademark license.

Log Run Summary

Run	Bit	Bit	Bit	Bit	Assembly	Logged Interval	Bit Depth Interval	Date / Time	Circ.
-----	-----	-----	-----	-----	----------	-----------------	--------------------	-------------	-------

No	Run No.	Size (in)	Type	Gauge Length (in)	Type	Top (ft)	Bottom (ft)	From (ft)	To (ft)	Start Logging	End Logging	Hours (h)
1	1	8.500	PDC	3.00	Steerable	1522.00	6068.00	1522.00	6105.00	2018-02-05 13:59	2018-02-06 07:51	15.18
2	2	6.125	PDC	3.00	Steerable	6068.00	12929.00	6105.00	12971.00	2018-02-07 07:35	2018-02-09 05:53	41.91

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Jeff Roth	2018-02-05	2018-02-09	Teni Onafowokan	2018-02-05	2018-02-09			

Mud Properties Record

Date / Time	Run No.	Measured Depth (ft)	Mud Type	Density (ppg)	Viscosity (cP)	pH	Fluid Loss (cm3)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
2018-02-05 10:11	1	2831.00	Diesel-Oil Based Mud	9.1	14	N/A	N/A	74.7/25.3	Active Pit	35000	0.00
2018-02-06 13:20	2	6105.00	Diesel-Oil Based Mud	8.9	15	N/A	N/A	73.9/26.1	Active Pit	36000	0.00
2018-02-07 20:00	2	7316.00	Diesel-Oil Based Mud	8.9	14	N/A	N/A	72.8/27.2	Active Pit	39000	0.00
2018-02-08 20:09	2	10895.00	Diesel-Oil Based Mud	9.0	14	N/A	N/A	71.4/28.6	Active Pit	45000	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	10341483	Gamma (single)	6.54	37.09	6.500	3.250
1	NaviGamma	10341483	VSS	10.49	41.04	6.500	3.250
1	NaviGamma	10341483	Directional (mag)	10.49	41.04	6.500	3.250
2	NaviGamma	10350731	Gamma (single)	11.94	41.87	5.100	2.687
2	NaviGamma	10350731	Directional (mag)	15.36	45.29	5.100	2.687
2	NaviGamma	10350731	VSS	15.36	45.29	5.100	2.687

Service and Tool Mnemonics

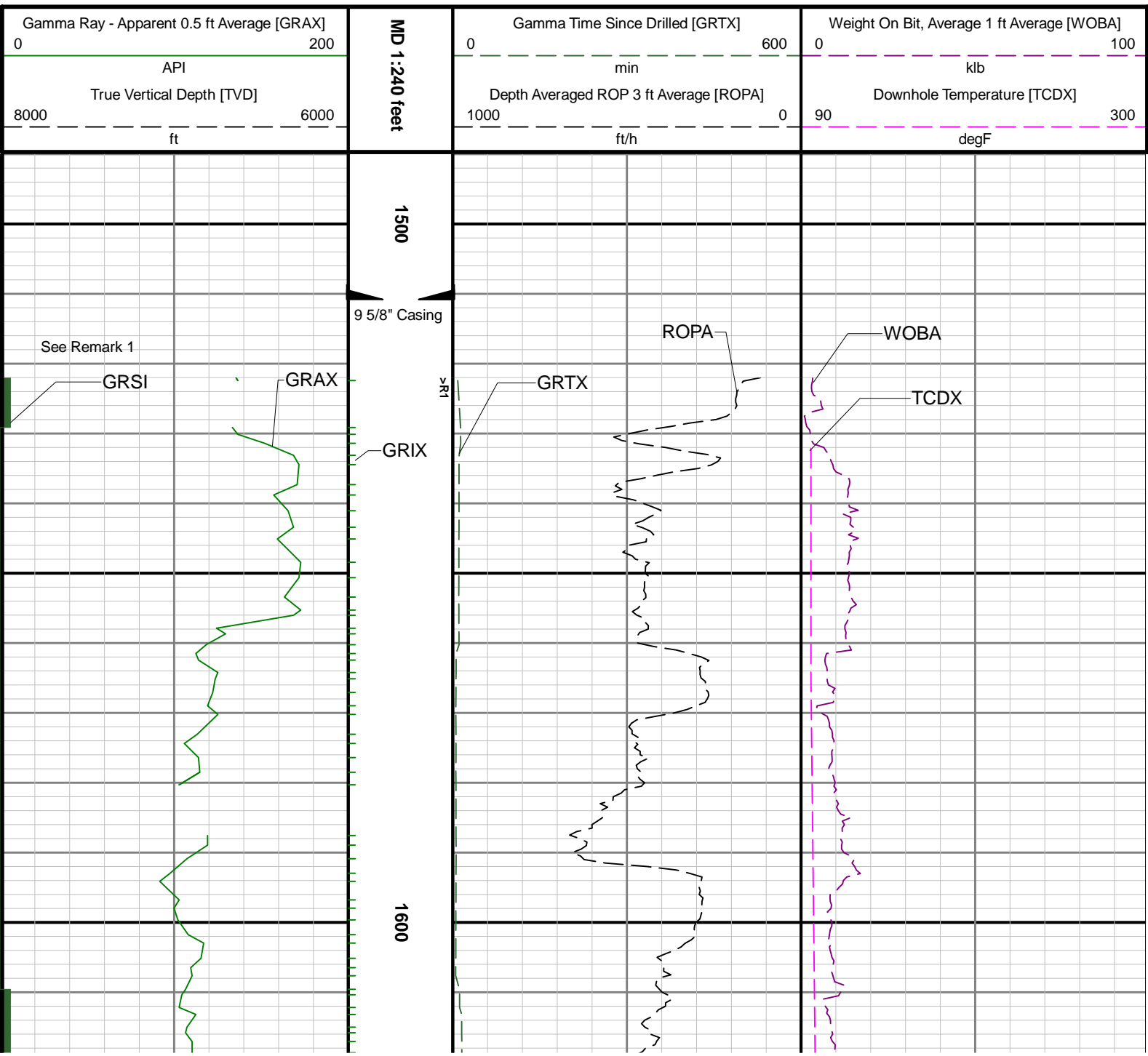
Mnemonic	Name	Description
GAM	NaviGamma	Probe Based Gamma Module, NaviTrak Platform

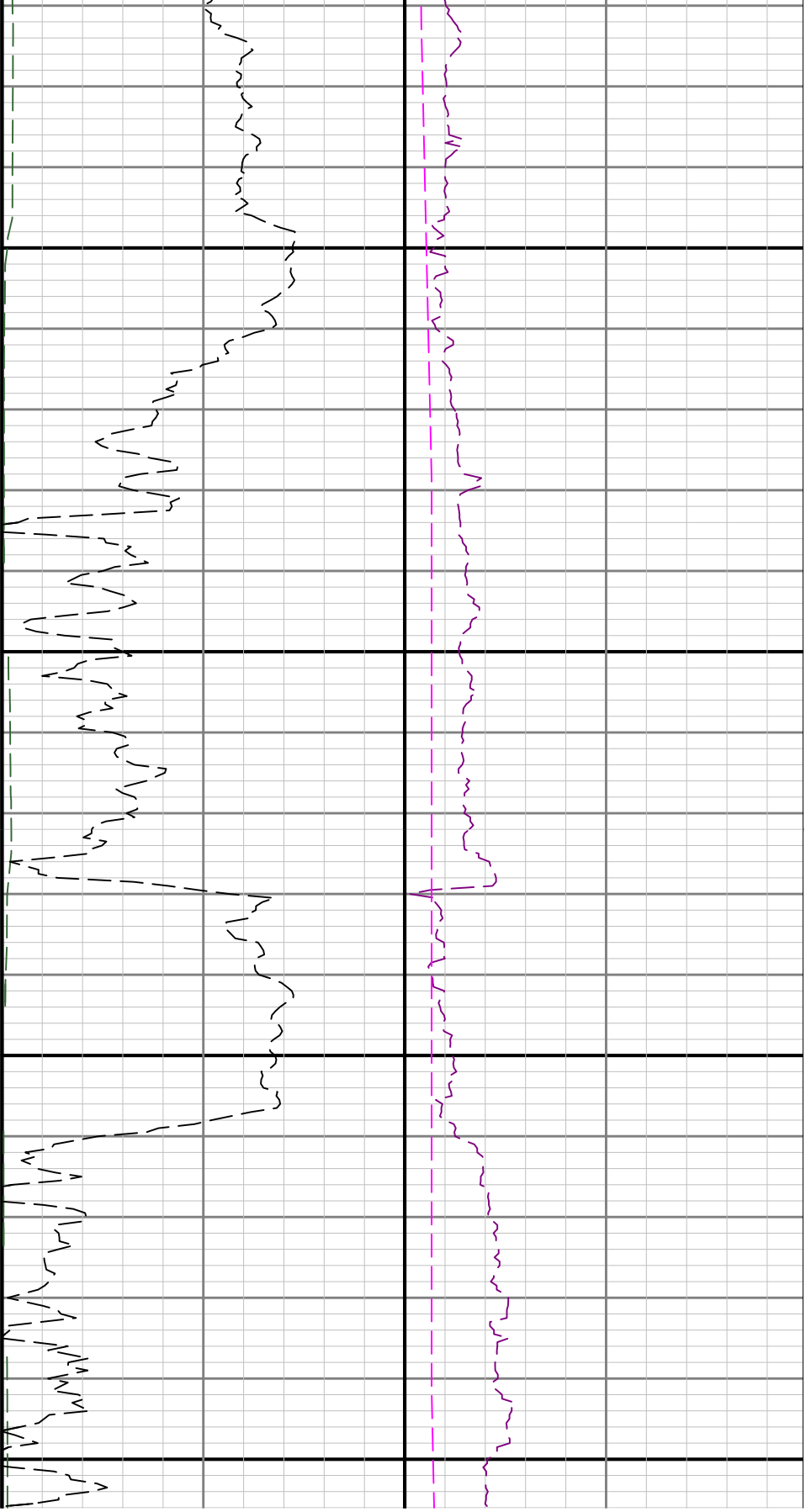
Comments

1	Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to the lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
2	A sliding indicator is shown to the left edge of track 1 as a heavy line. The indicator has been depth-shifted to the Gamma Ray sensor offset to correspond with Gamma Ray data acquired while sliding.
3	Baker Hughes run 1 utilized 6.50 inch NaviGamma services (Gamma Ray and Directional) behind a 8.5 inch bit and steerable assembly from 1522 to 6105 feet MD (1489 to 5945 feet TVD).
4	Baker Hughes run 2 utilized 4.75 inch NaviGamma services (Gamma Ray and Directional) behind a 6.125 inch bit and steerable assembly from 6105 to 12971 feet MD (5945 to 7348 feet TVD).
5	Gamma Ray (GRAX) scale is presented 0 to 200 API per customer request.
6	Numerous gaps are present throughout the log due to surveying while on bottom drilling ahead.

Remarks

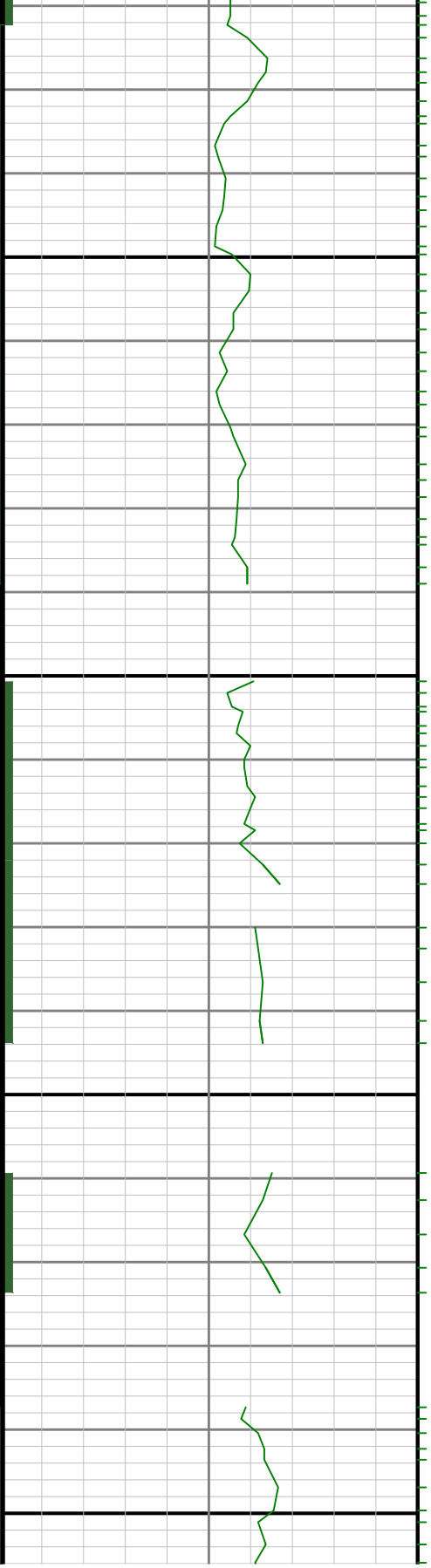
Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	1522.00	8.500	1	Baker Hughes logging services began 1522 feet MD (1489 feet TVD) per customer request.
2	6100.00	6.125	2	The interval from 6068 to 6105 feet MD (5908 to 5945 feet TVD) was logged up to 23.75 hours after being drilled due drilling ahead without command center power and to trip out of the hole to run casing.
3	12940.00	6.125	2	The interval from 12929 to 12971 feet MD (7348 feet TVD) was not logged due to sensor to bit offset at well TD.

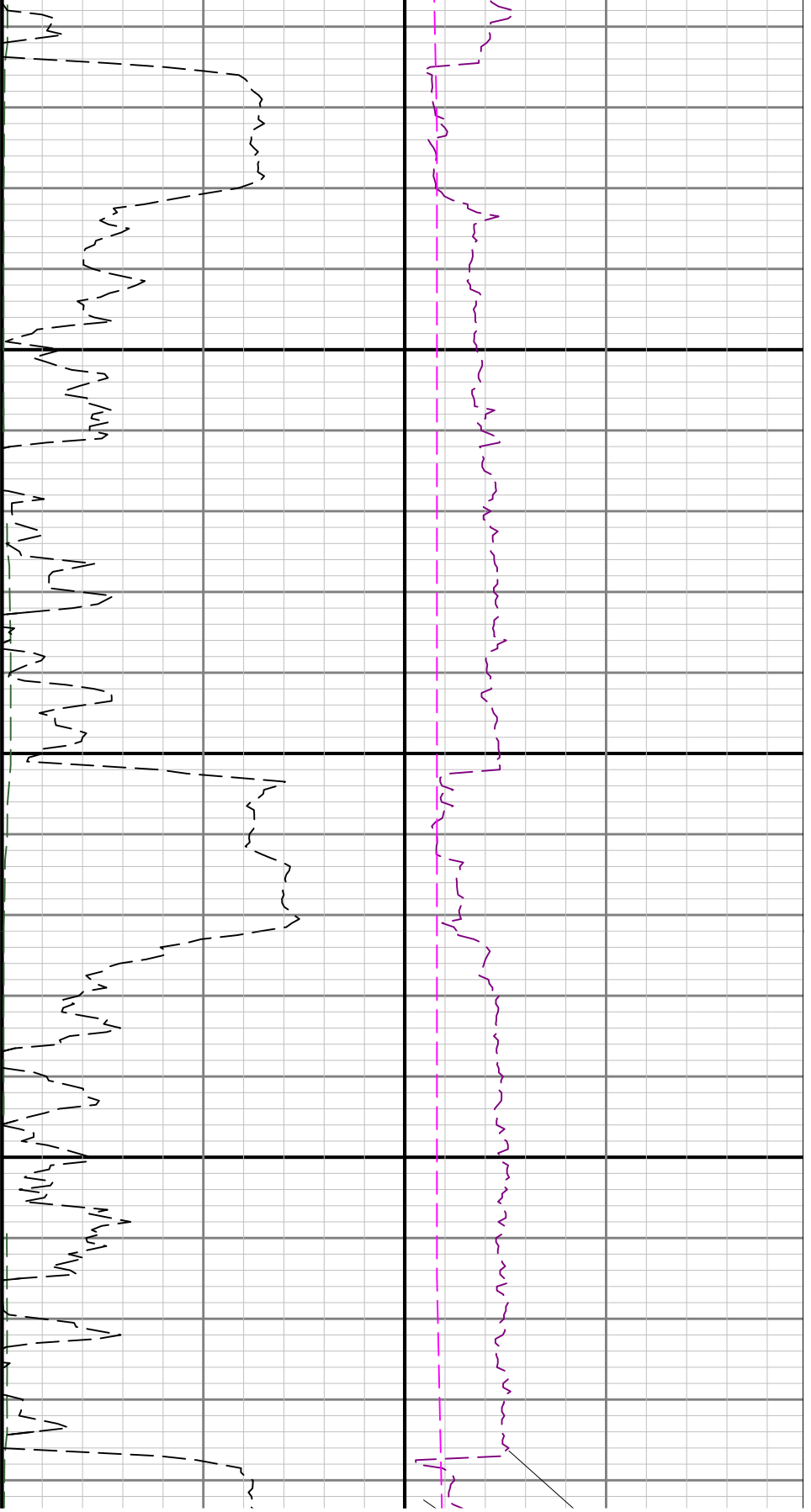




1700

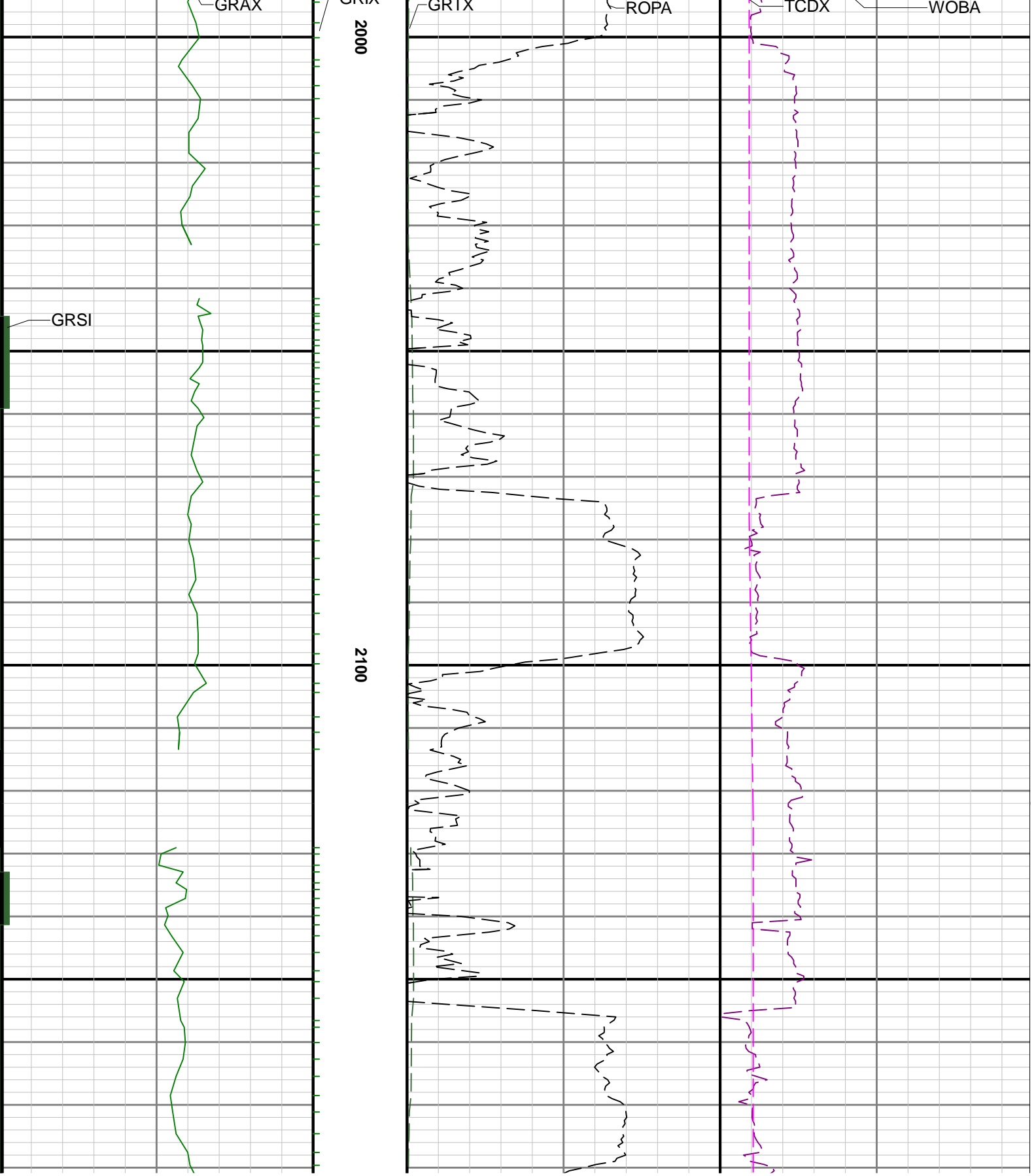
1800

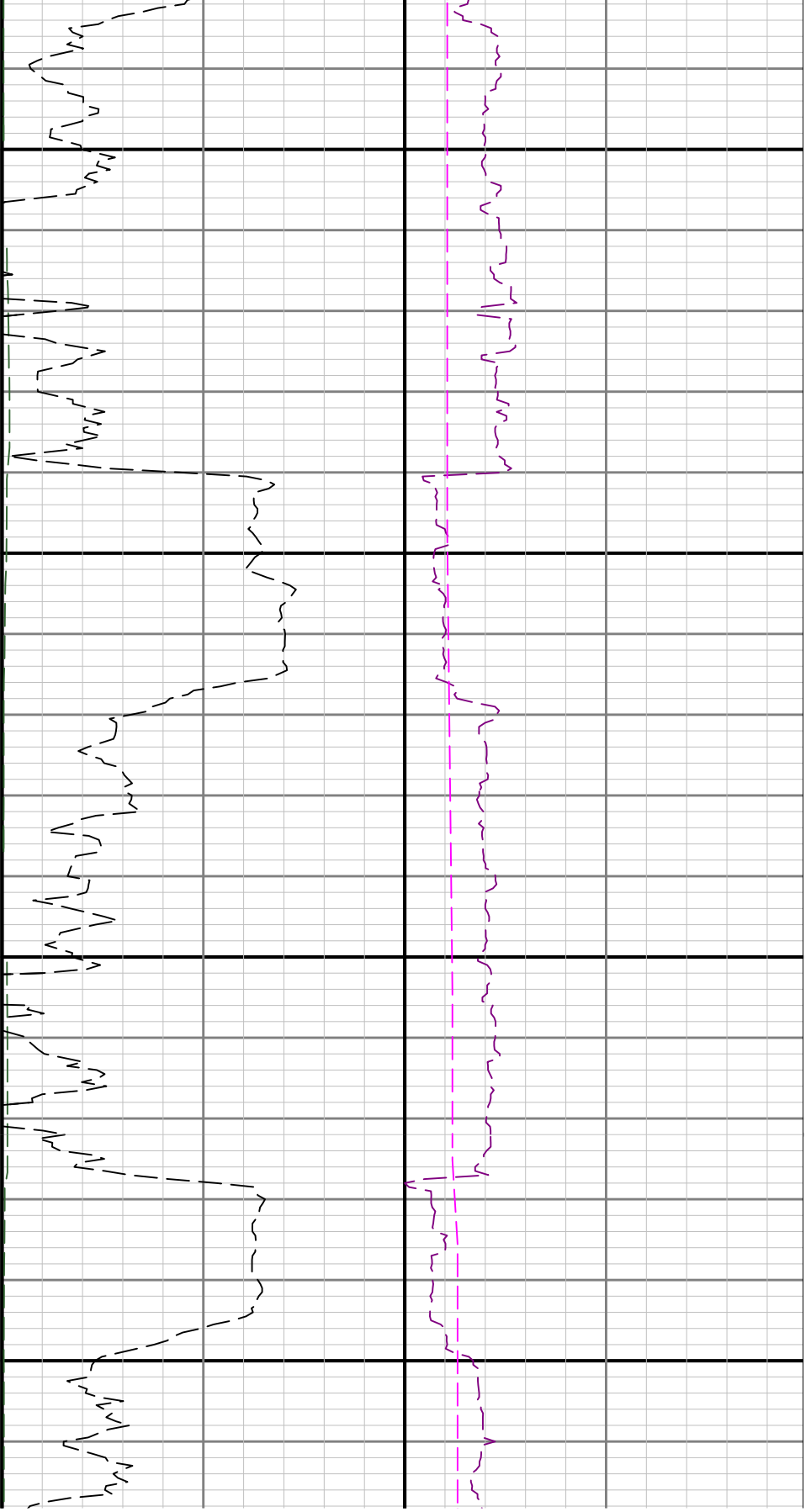




1900

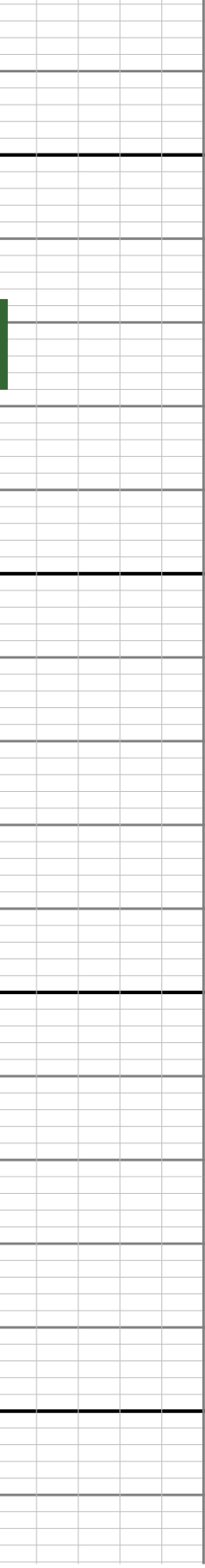
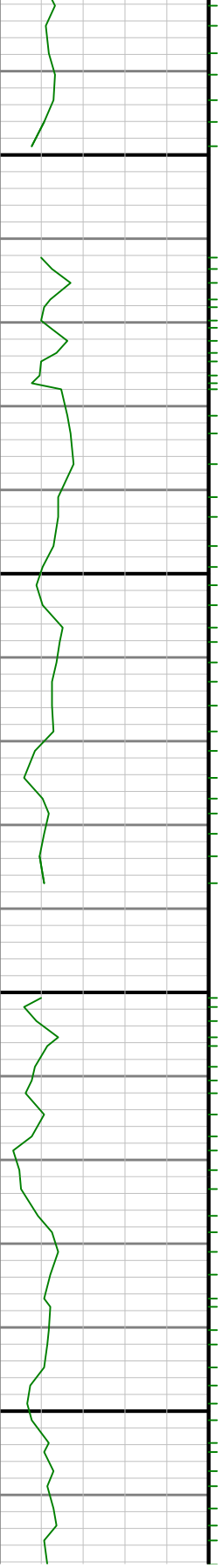


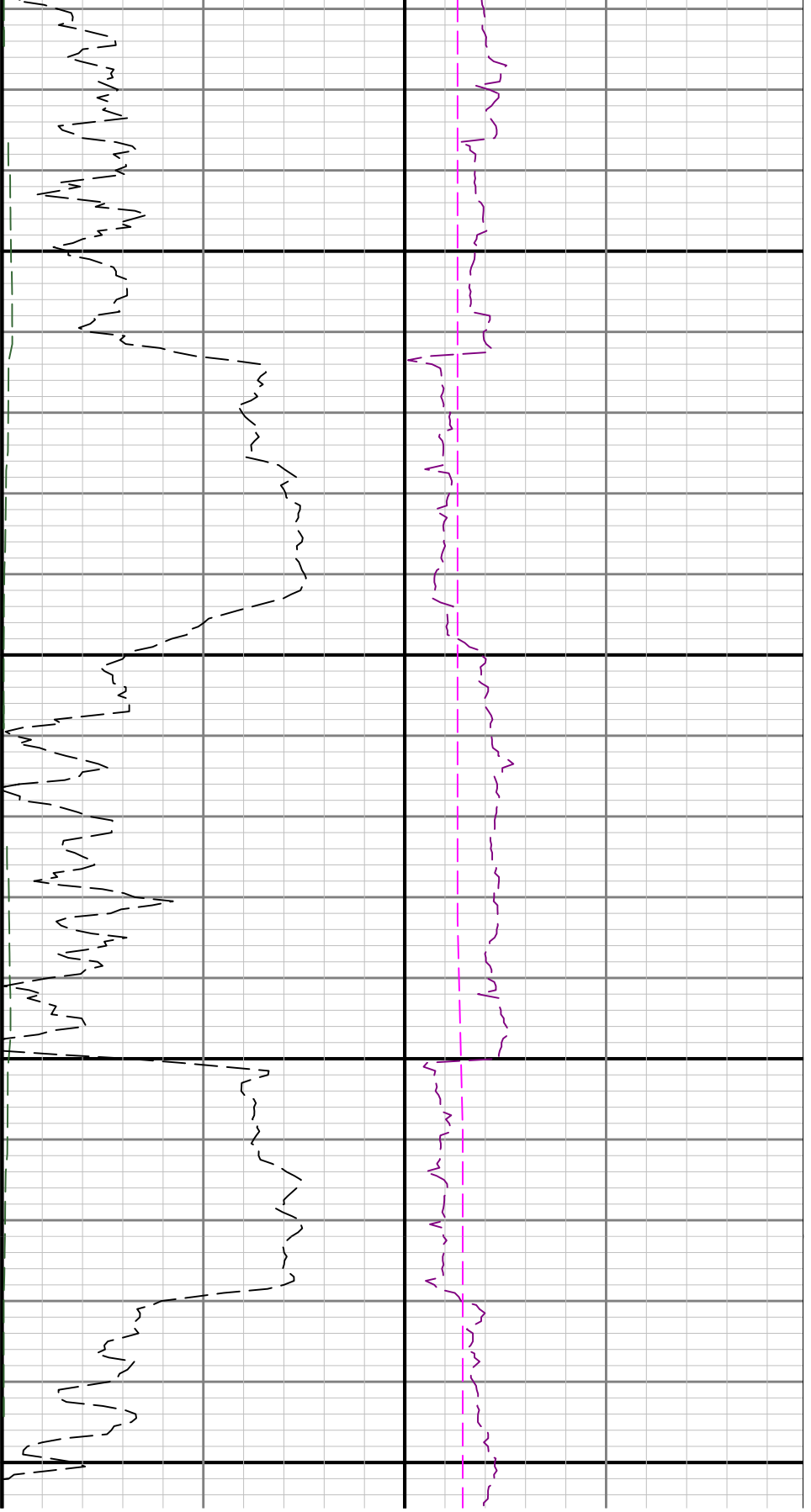




2200

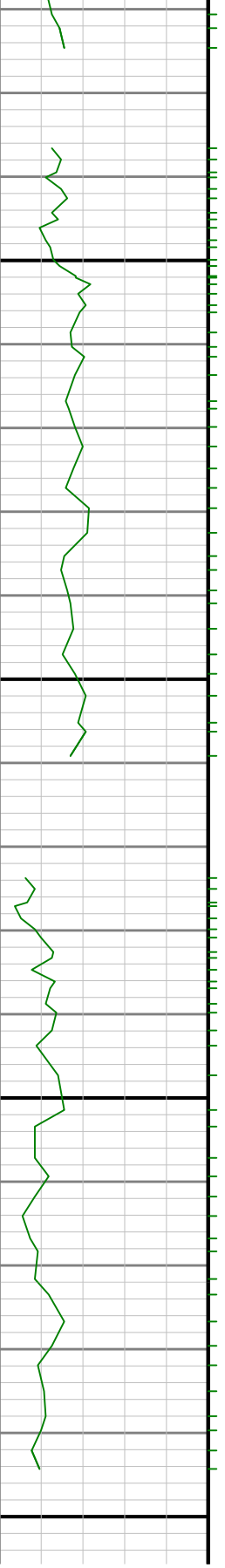
2300



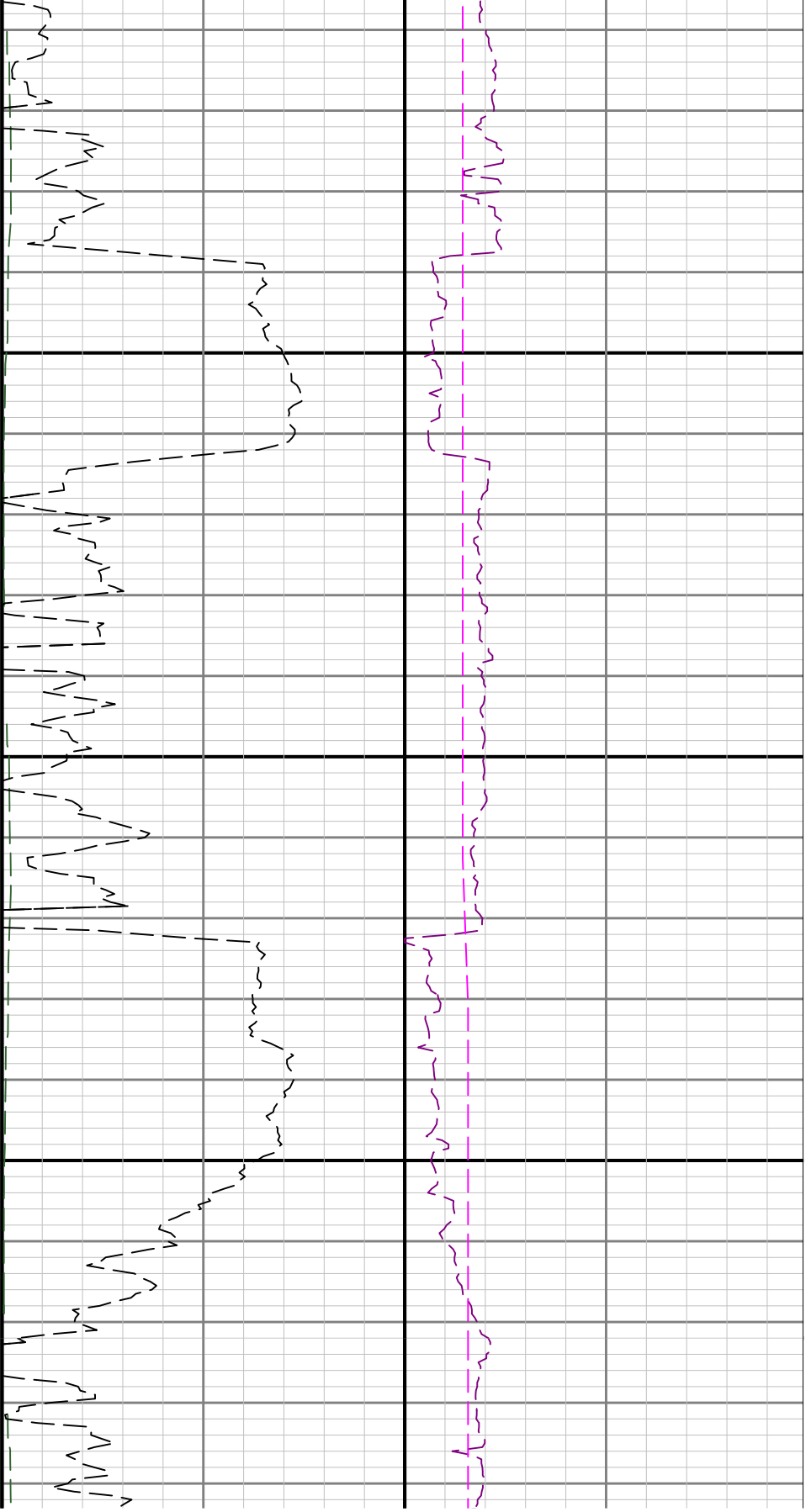


2400

2500

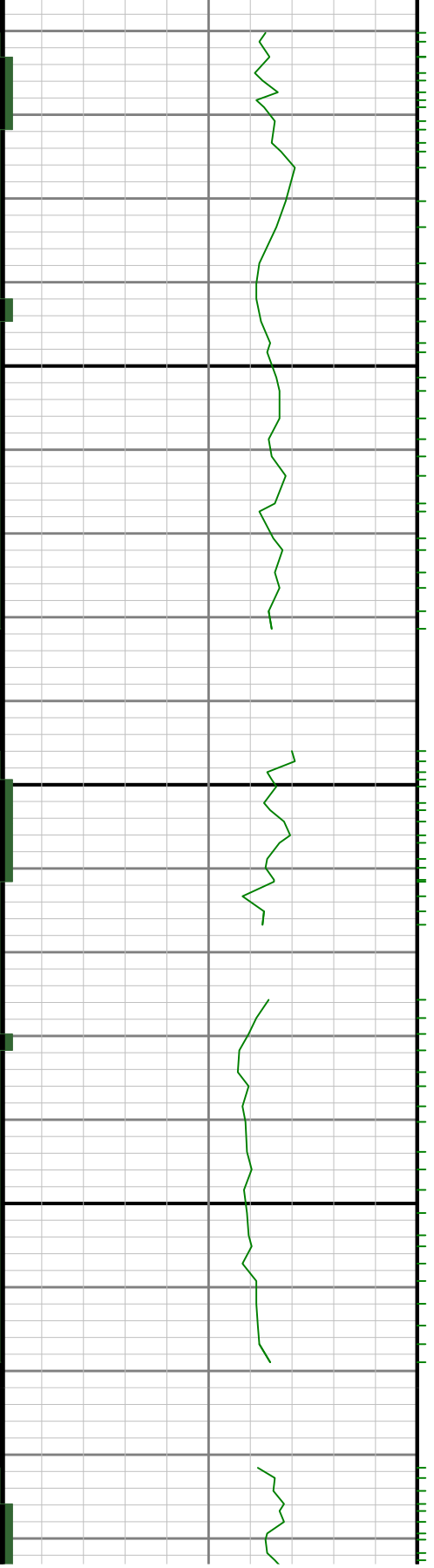


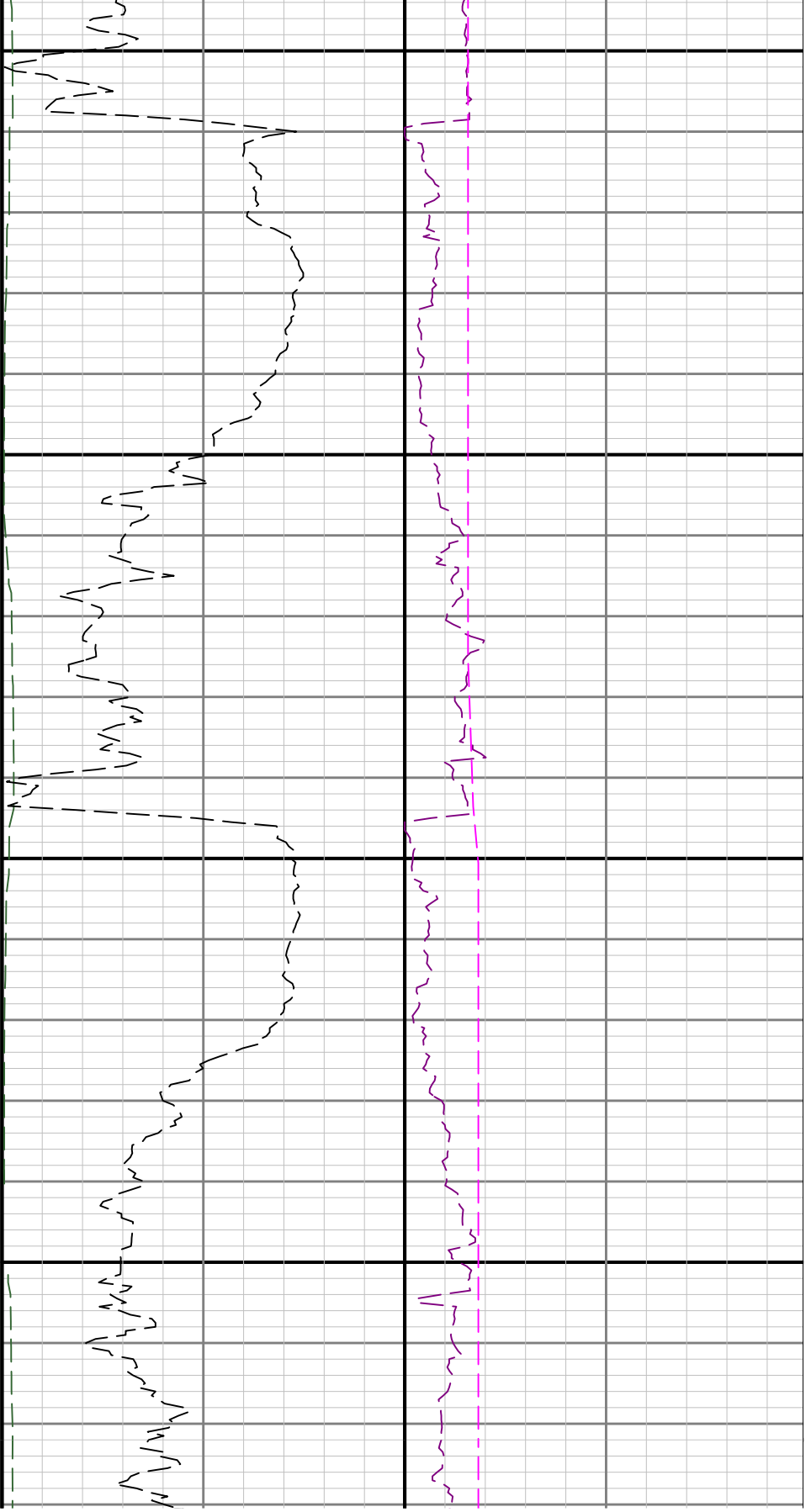




2600

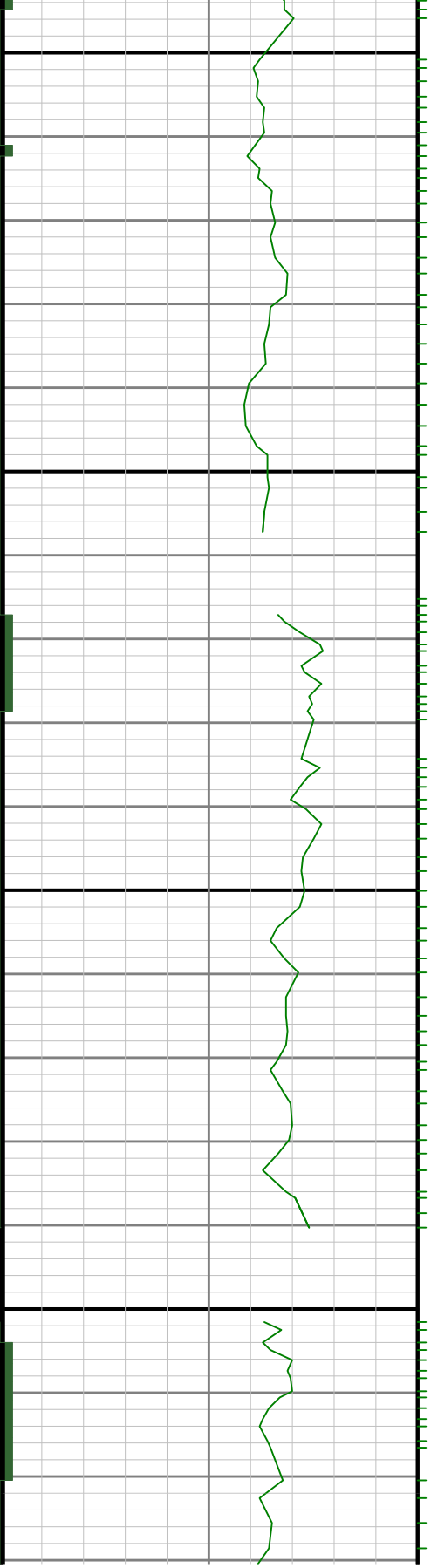
2700

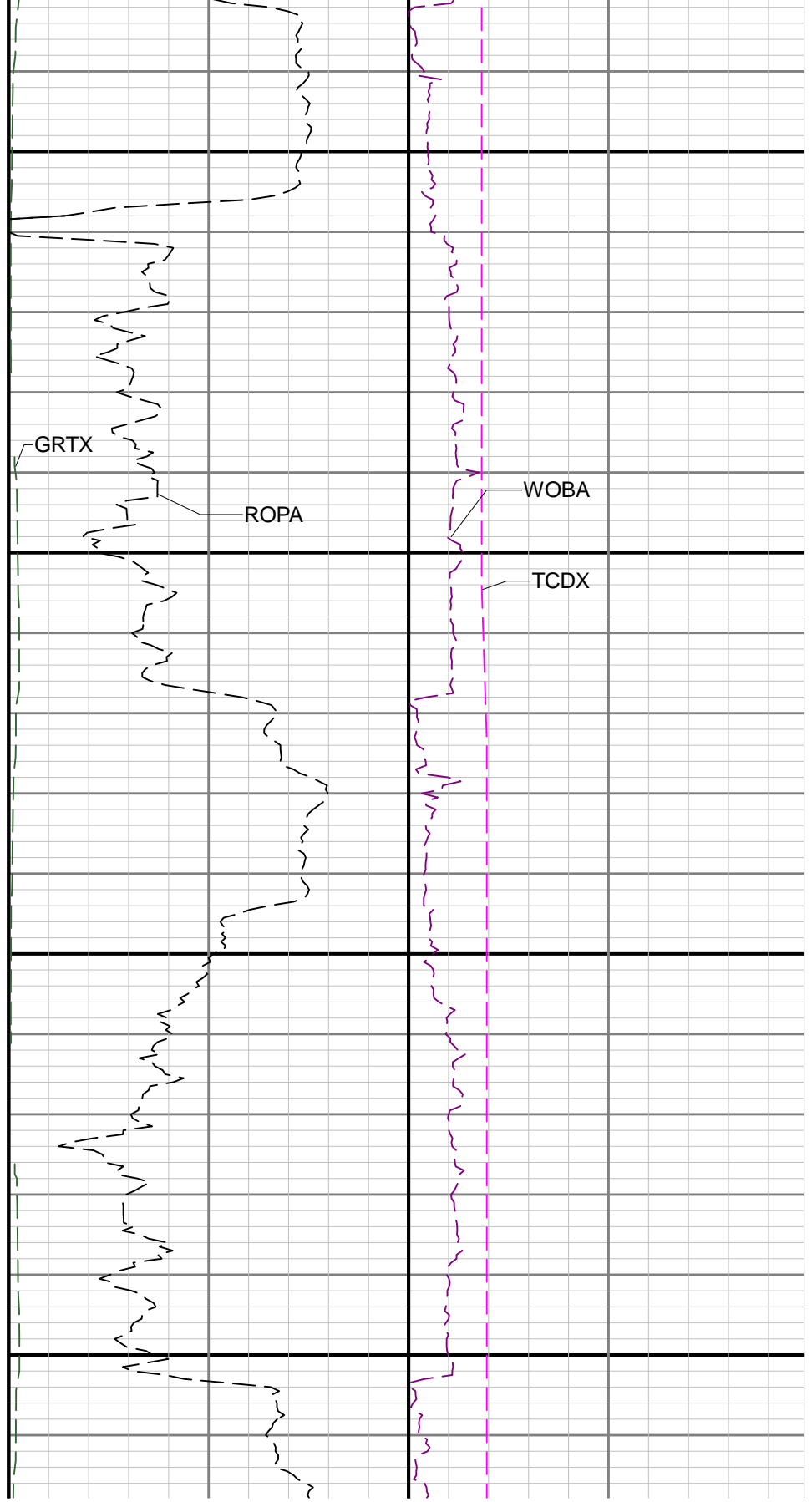
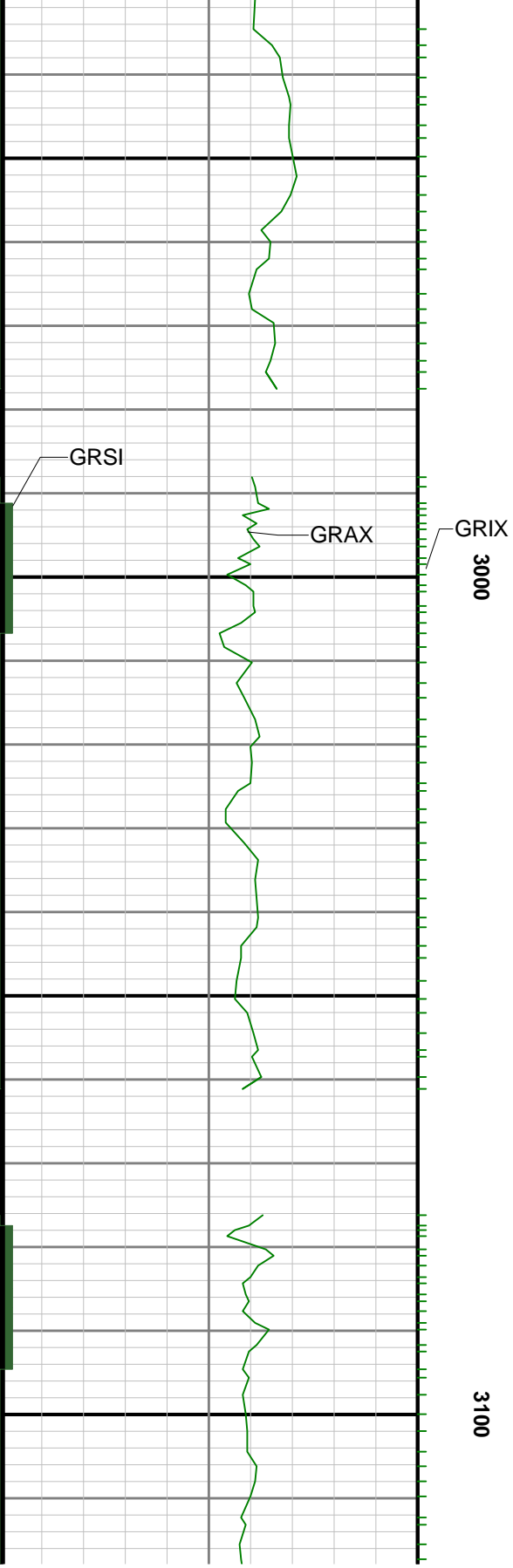


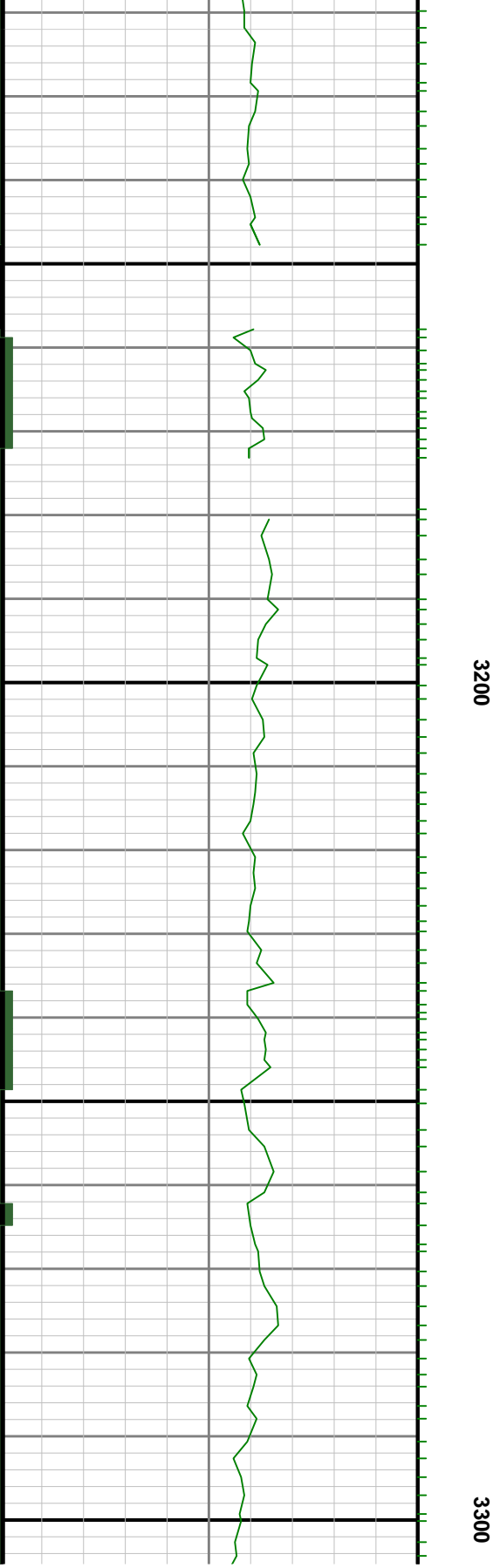
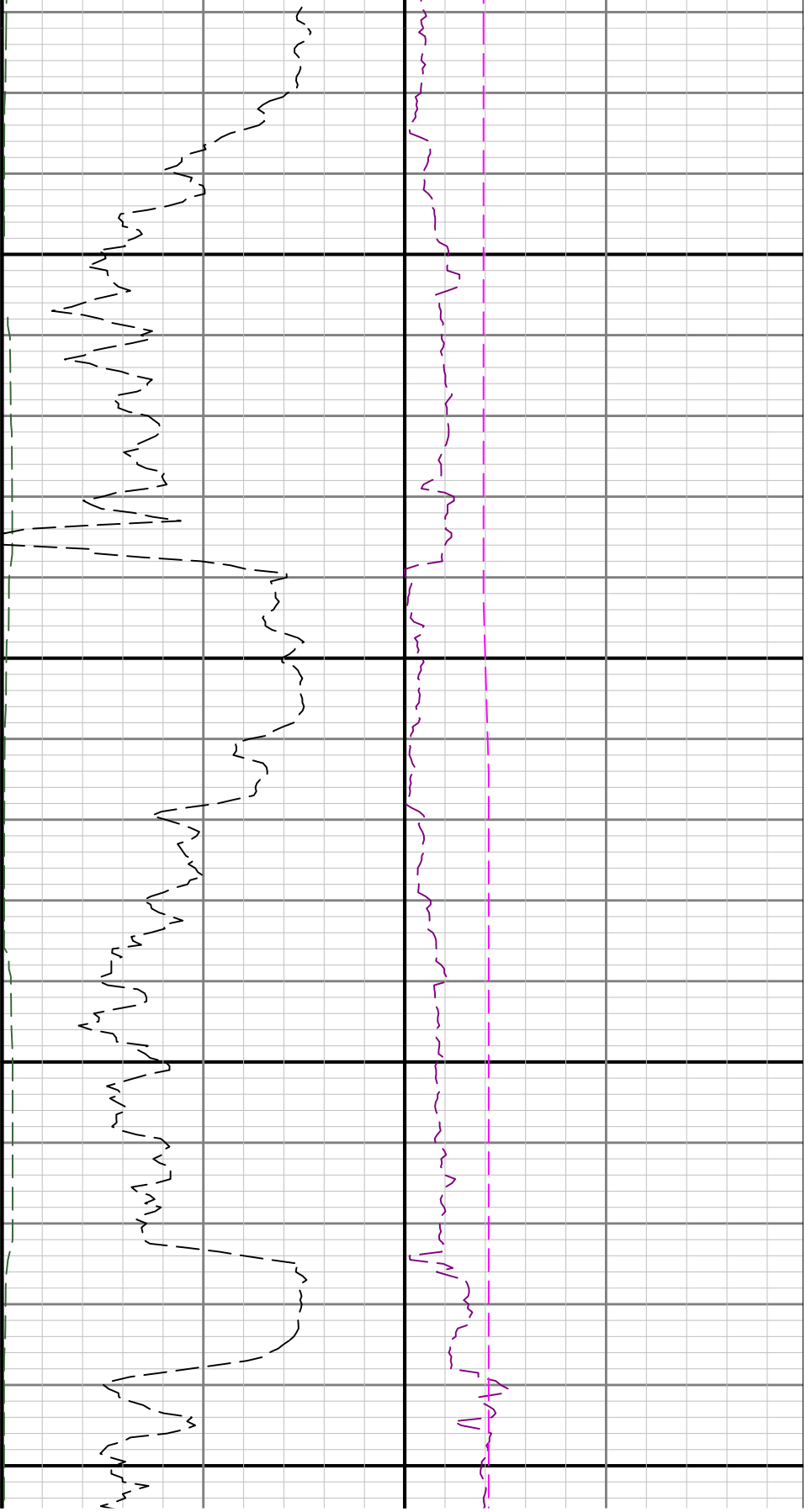


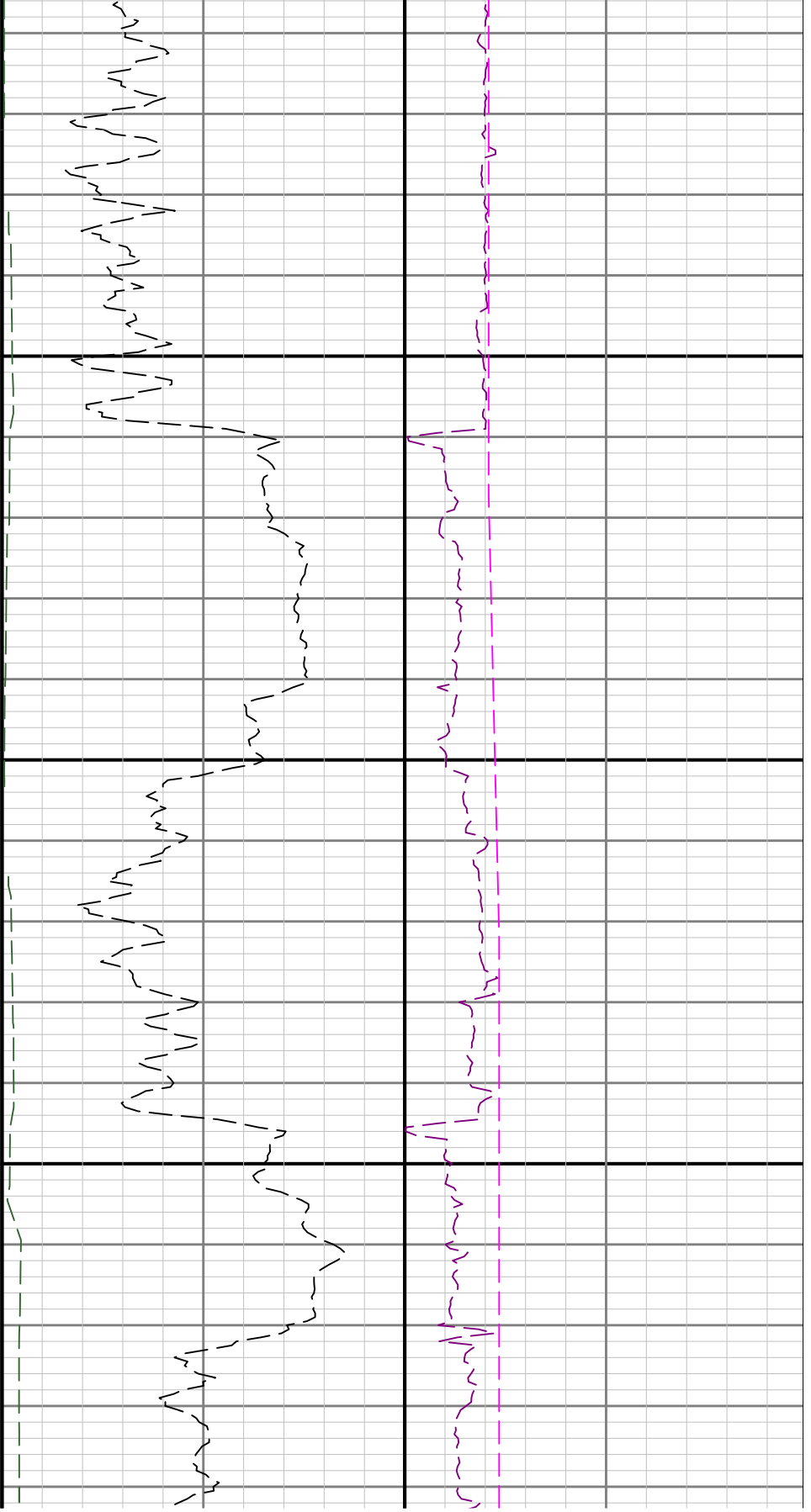
2800

2900

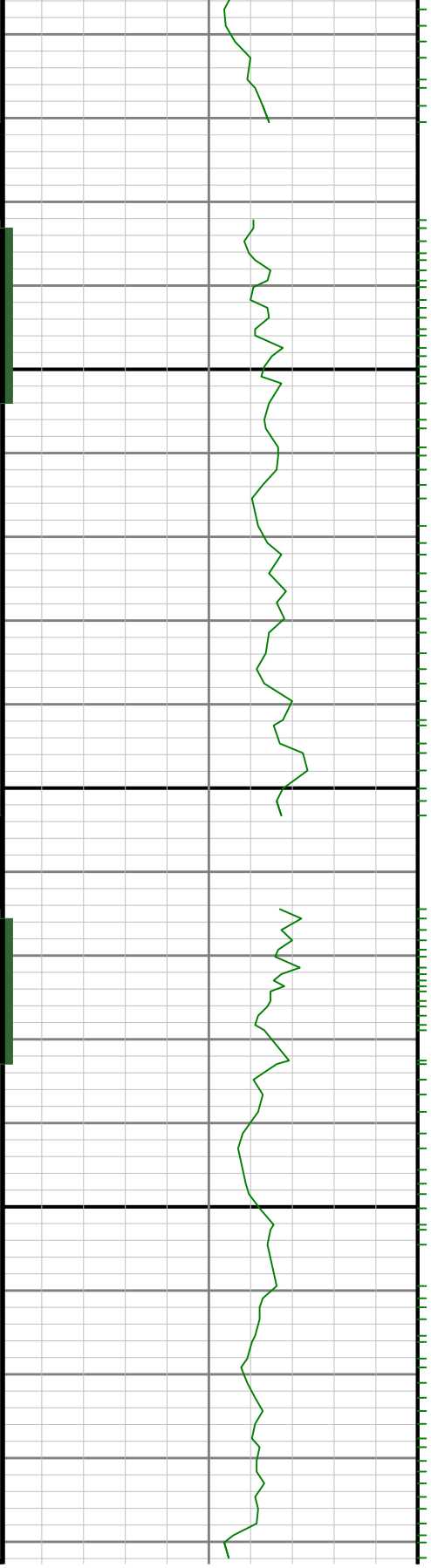


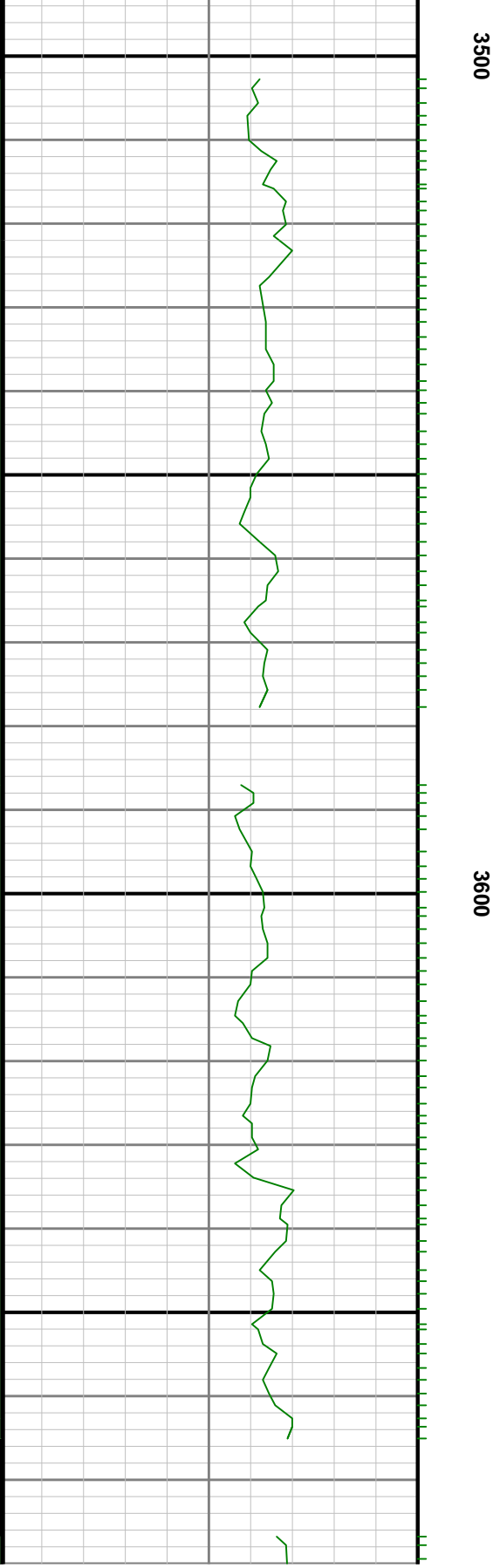
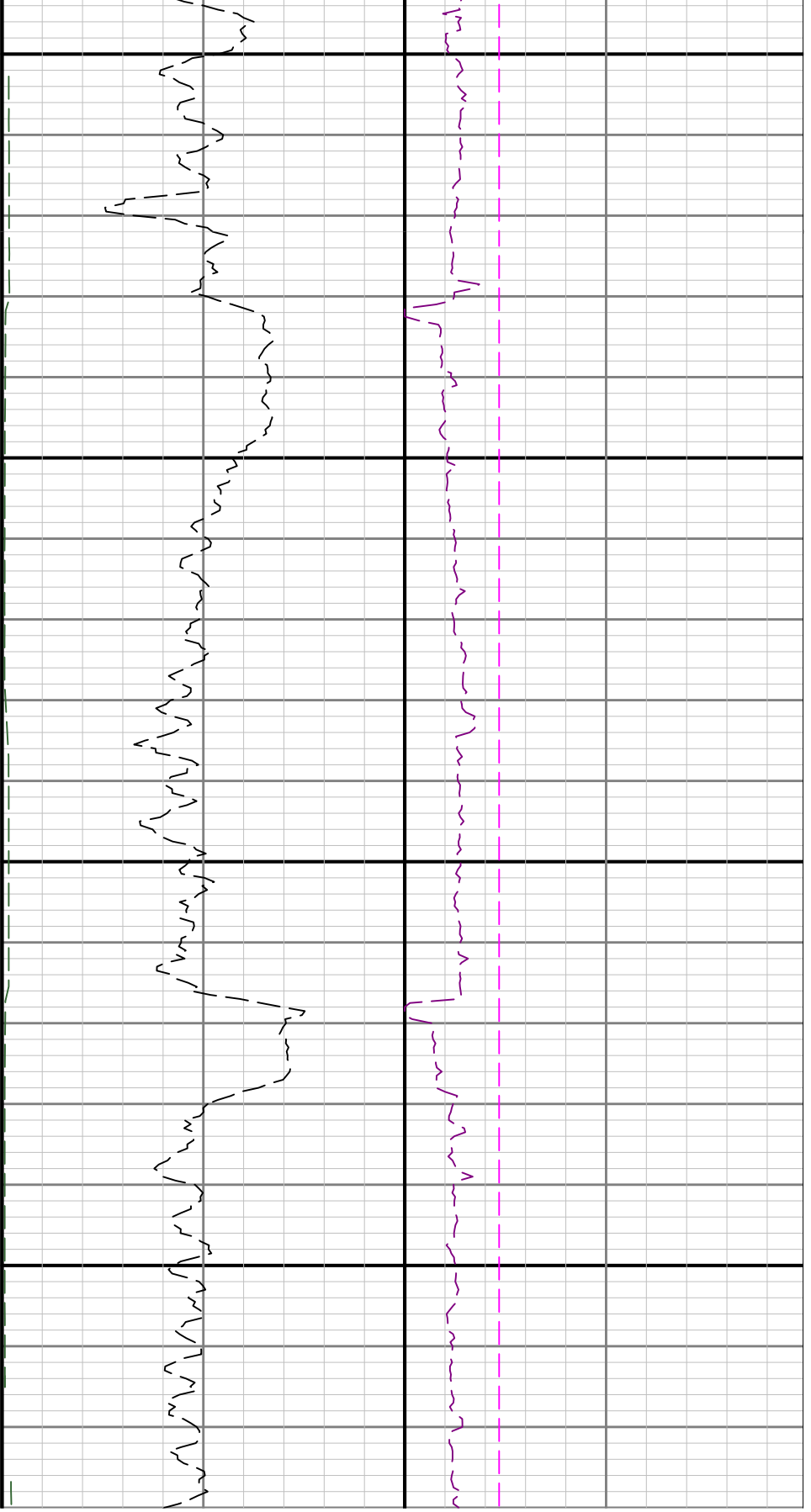


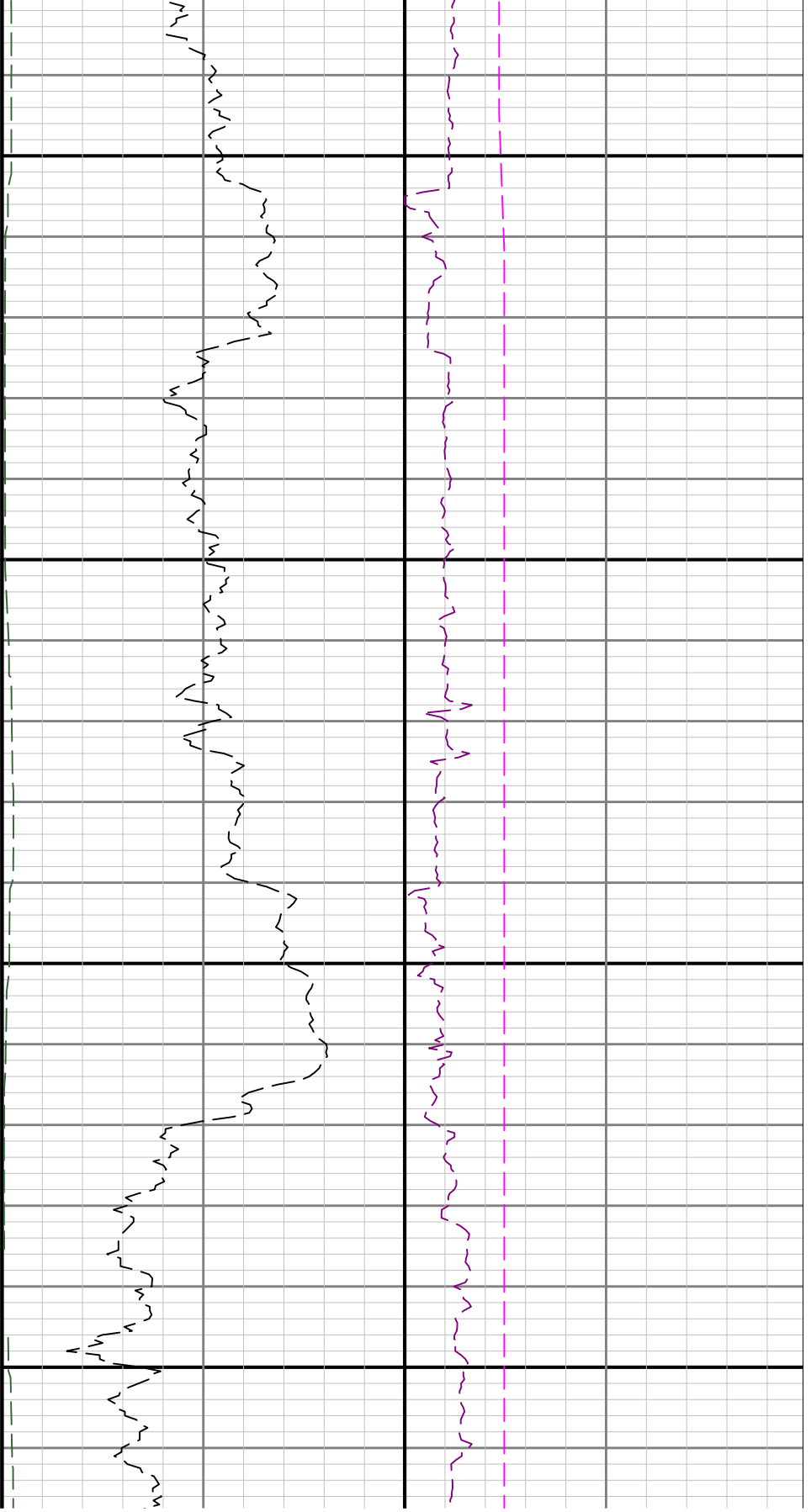




3400

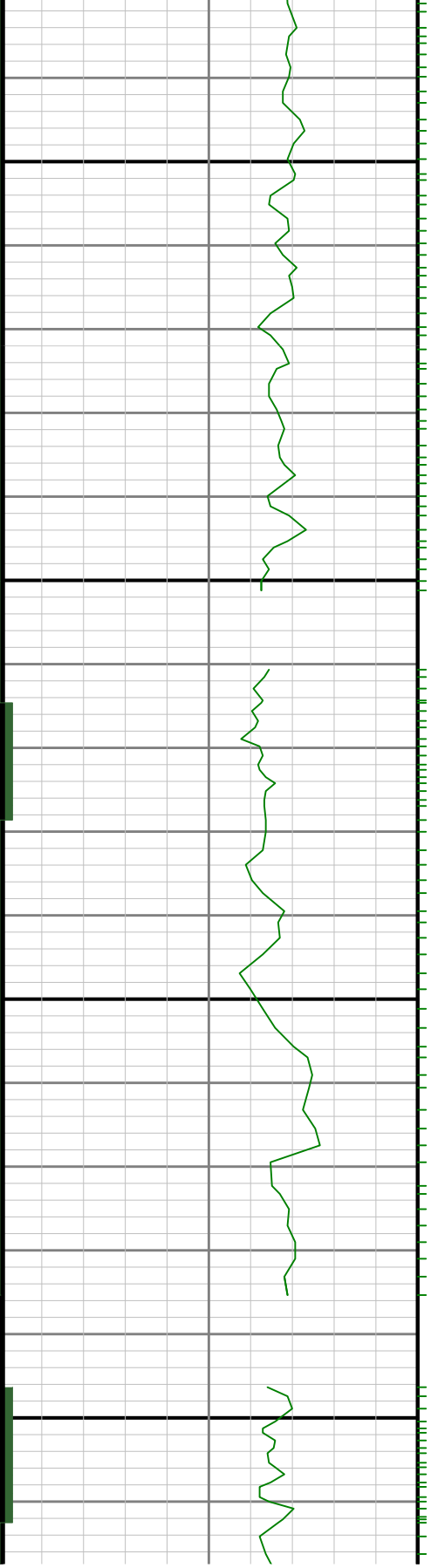


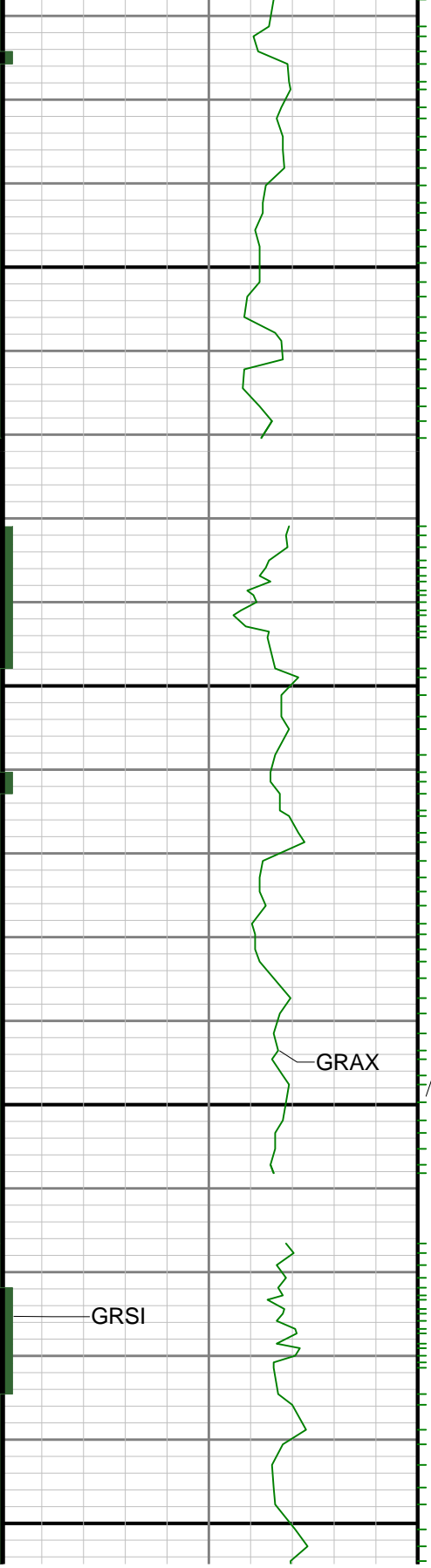




3700

3800





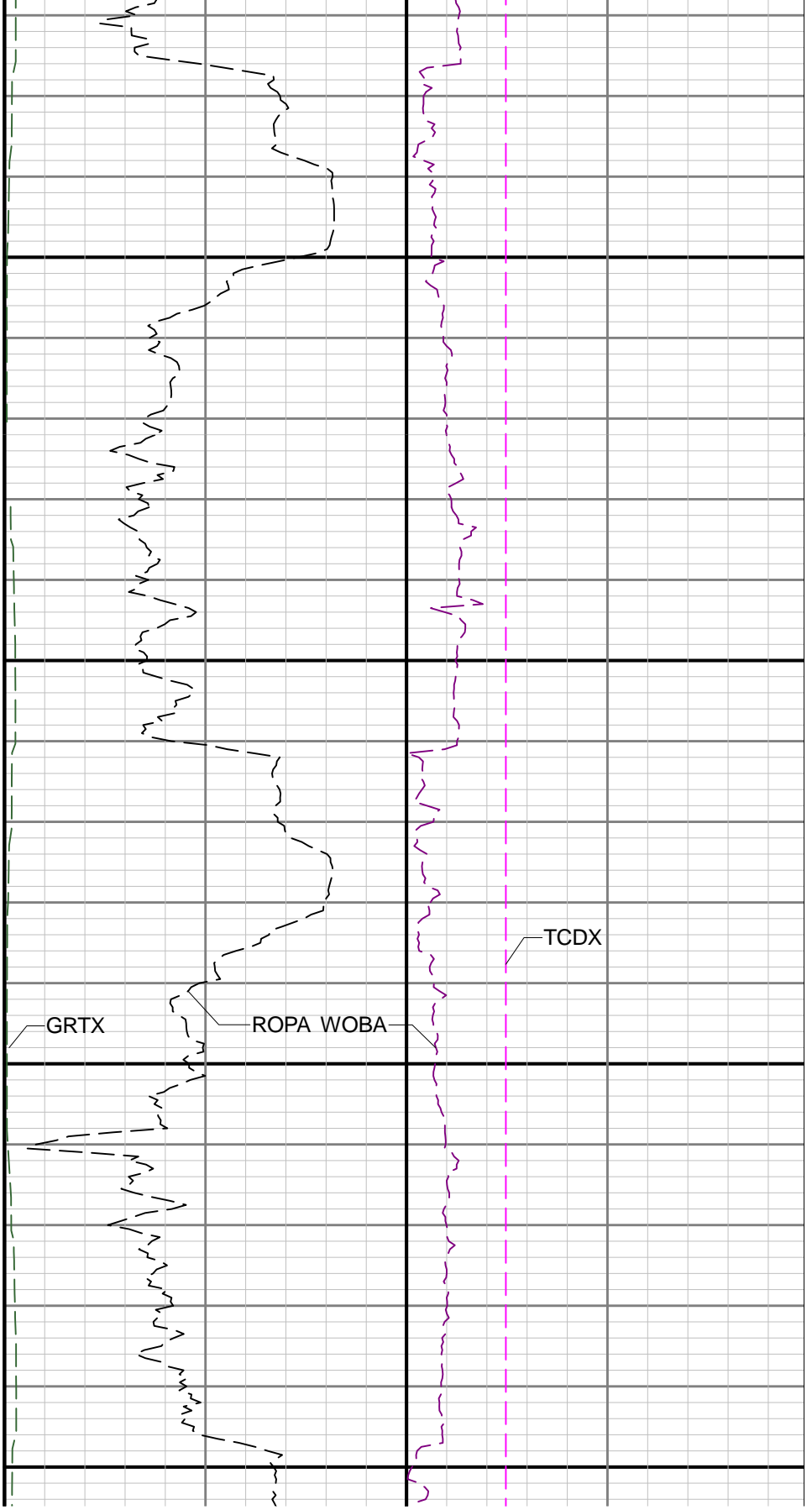
3900

GRAX

GRIX

4000

GRSI

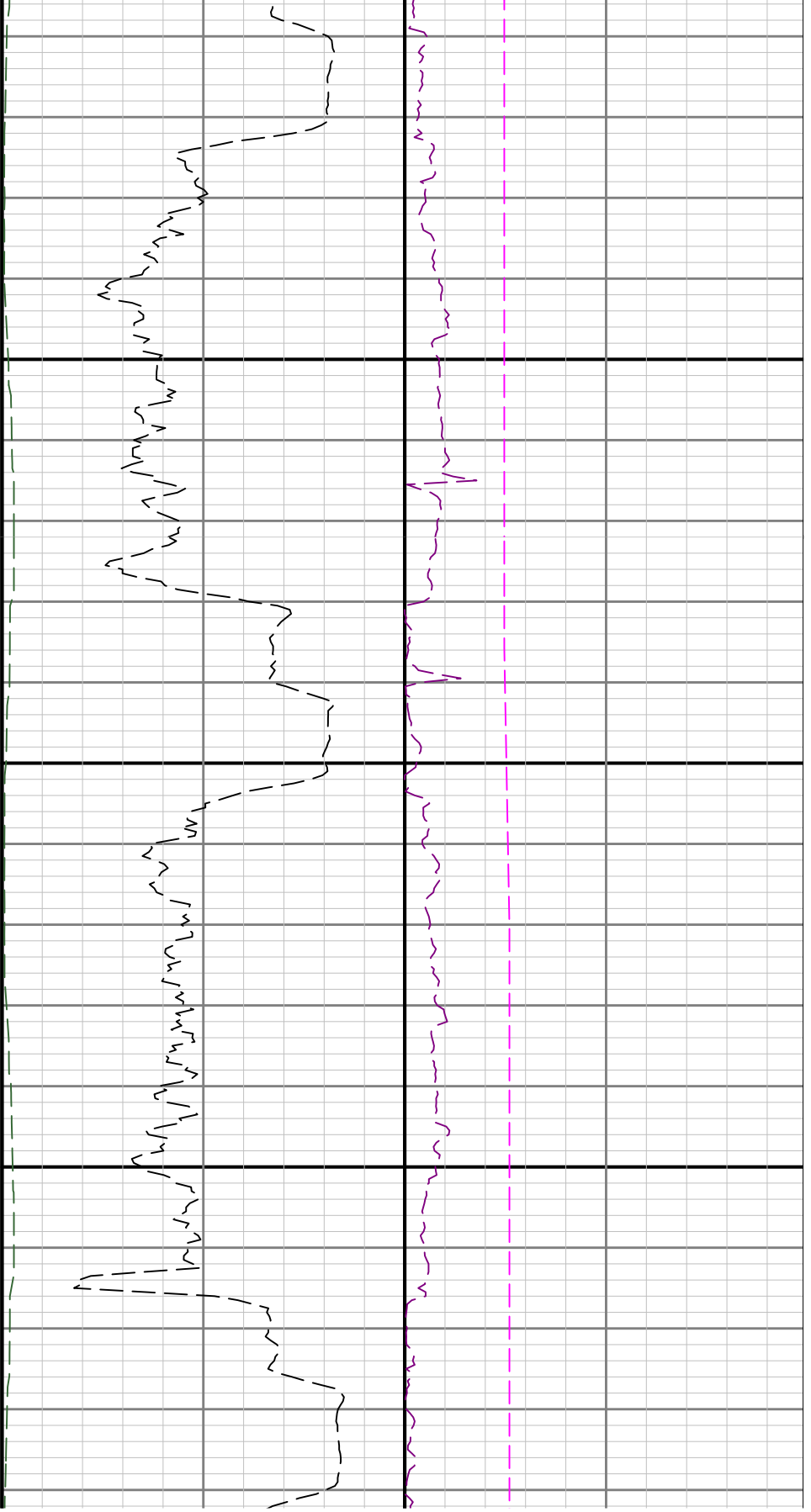


TCDX

GRTX

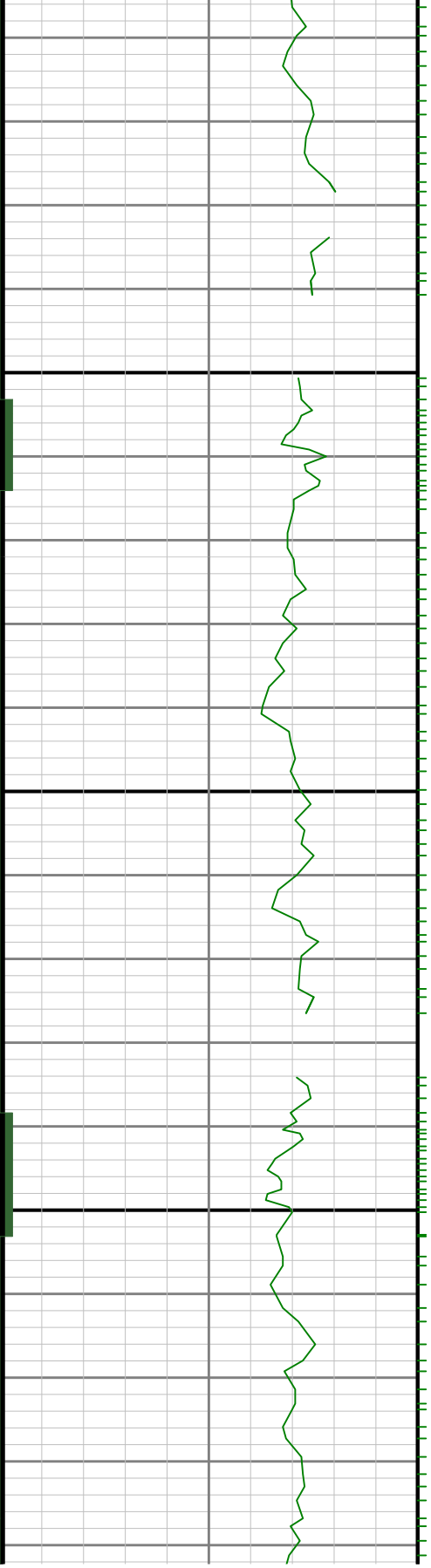
ROPA WOB

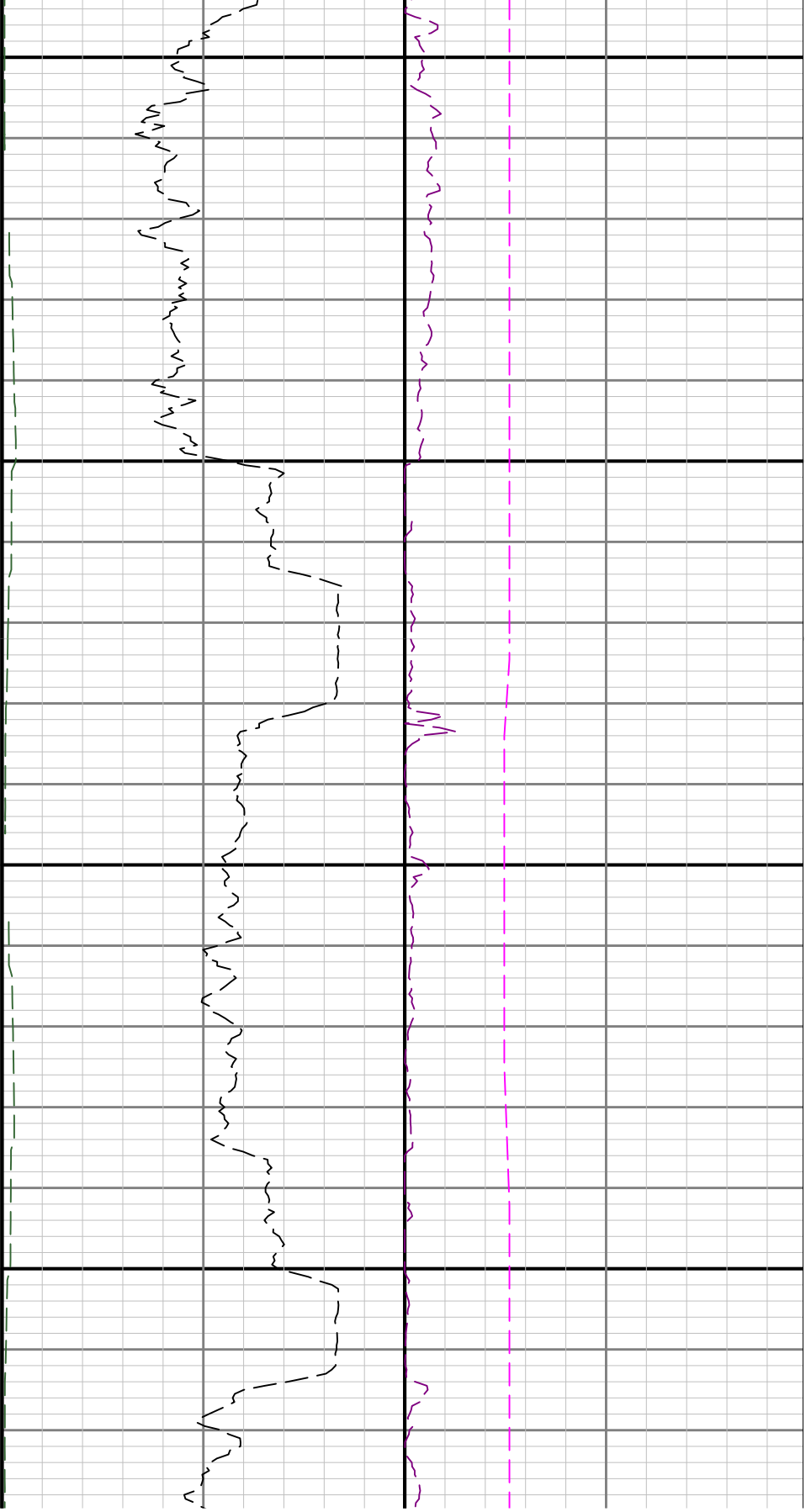




4100

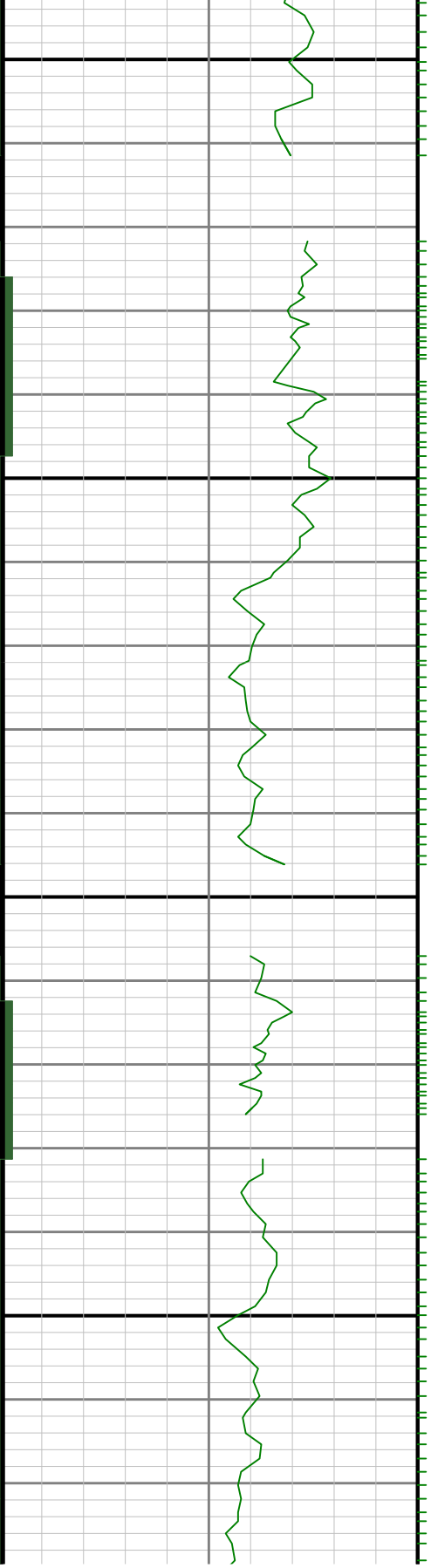
4200

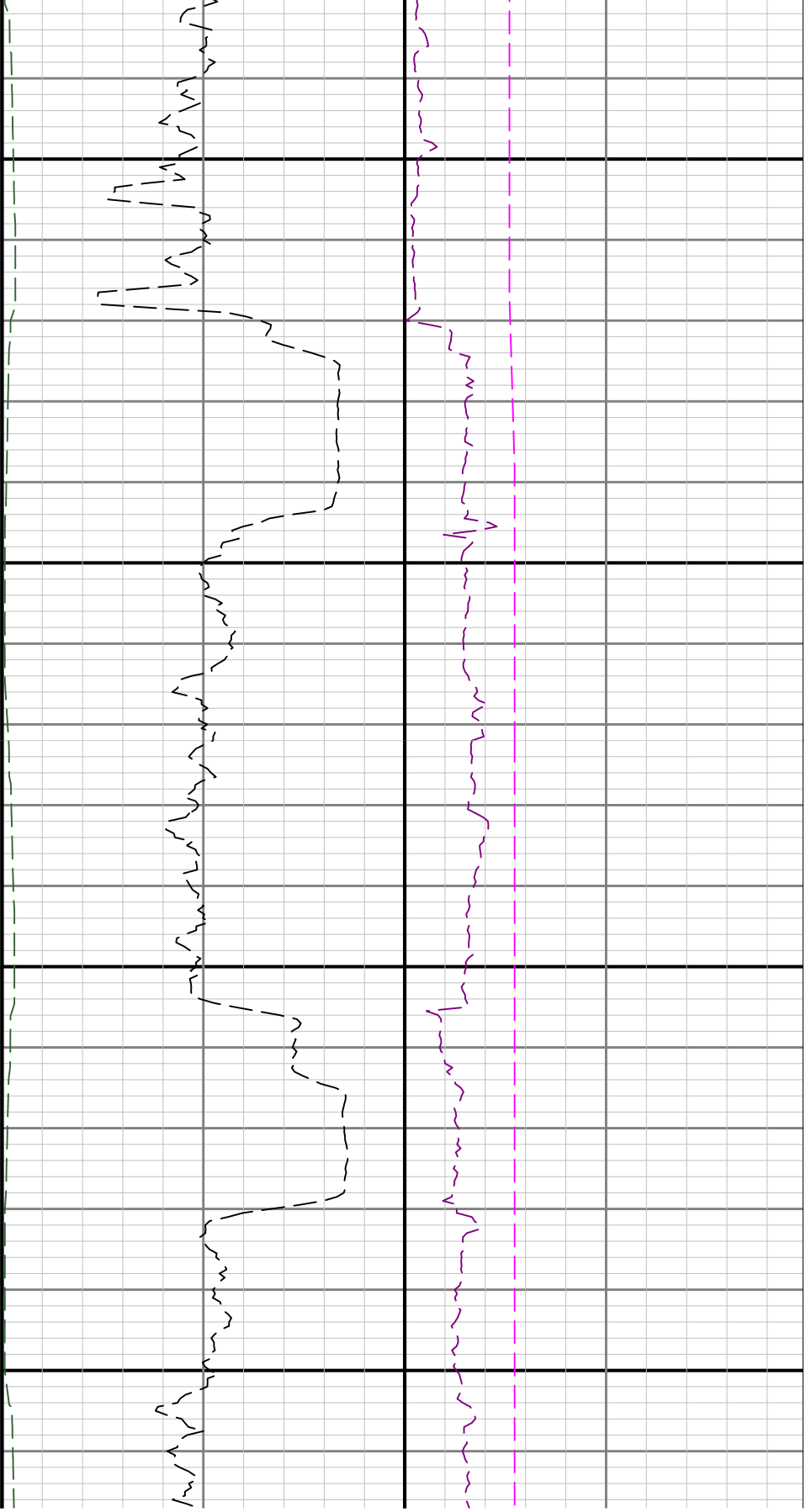




4300

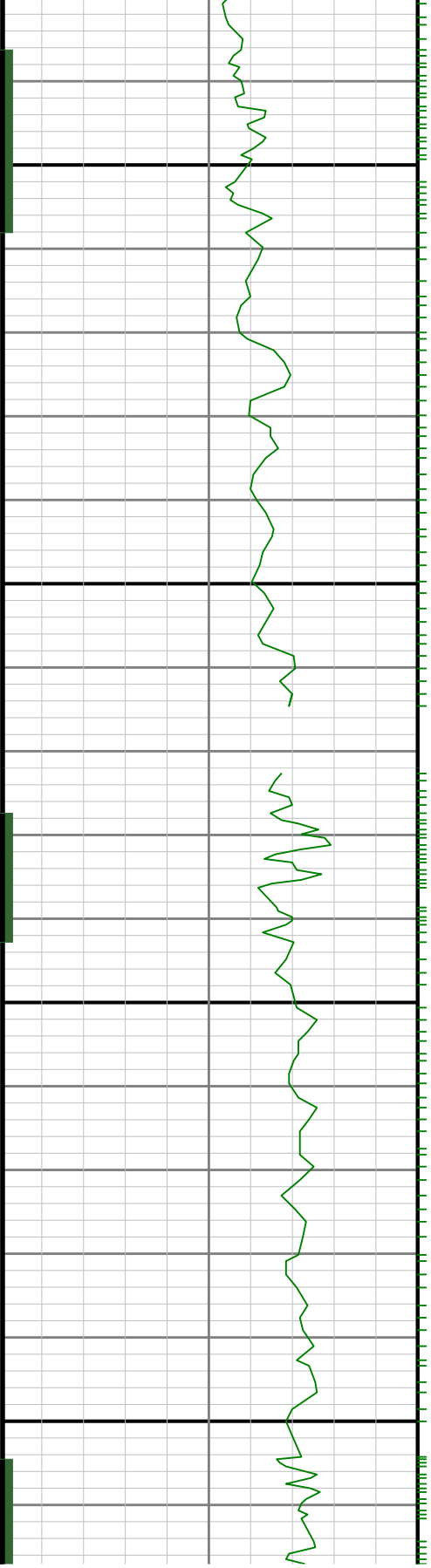
4400

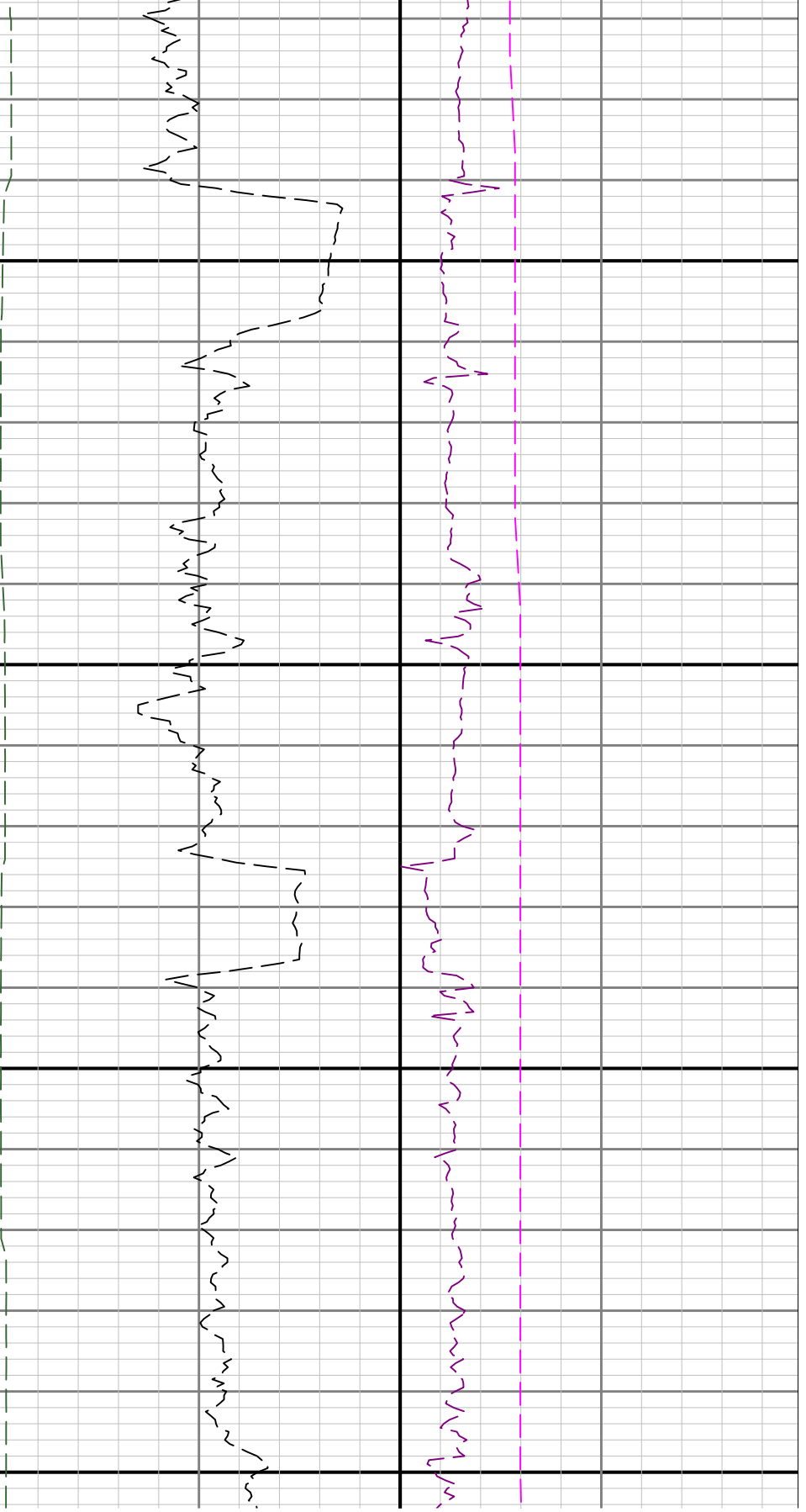




4500

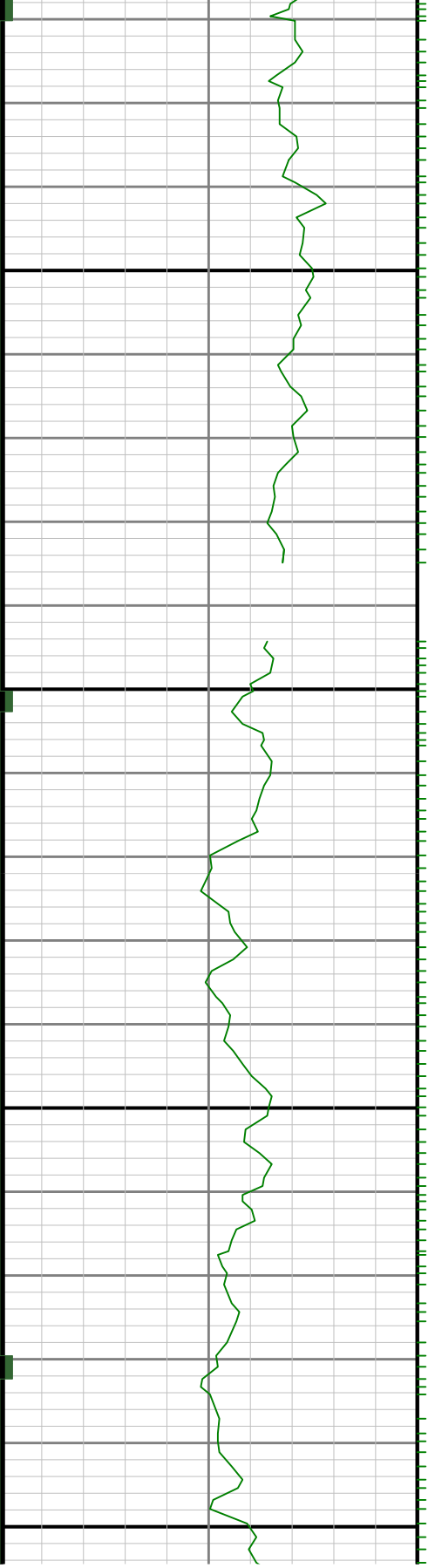
4600

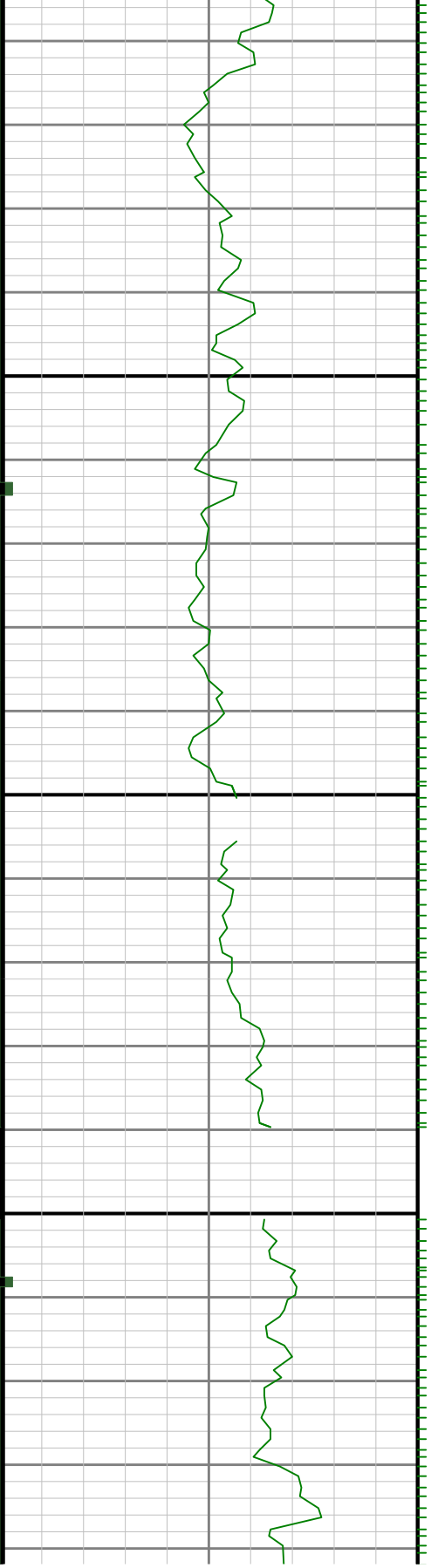
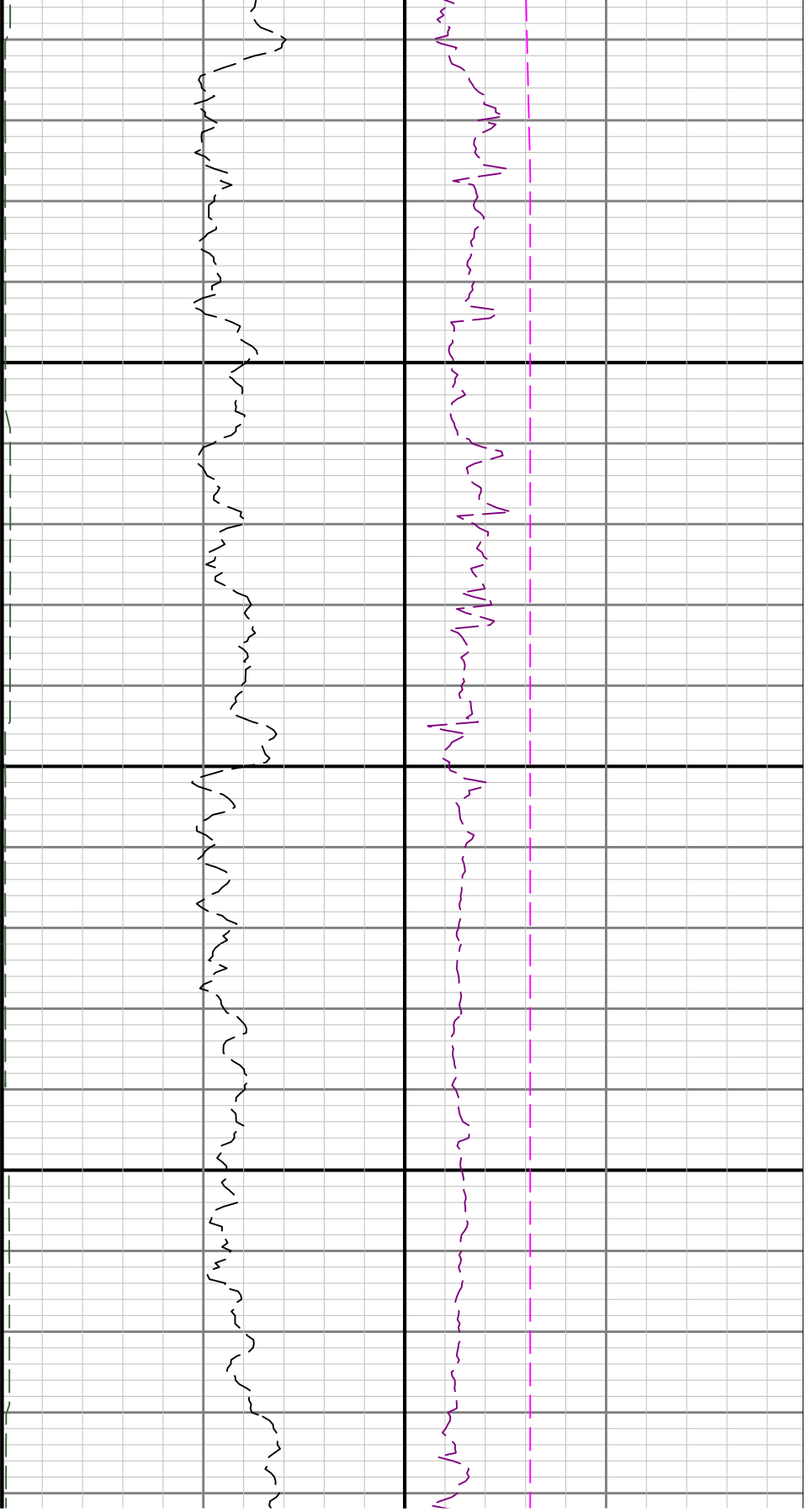


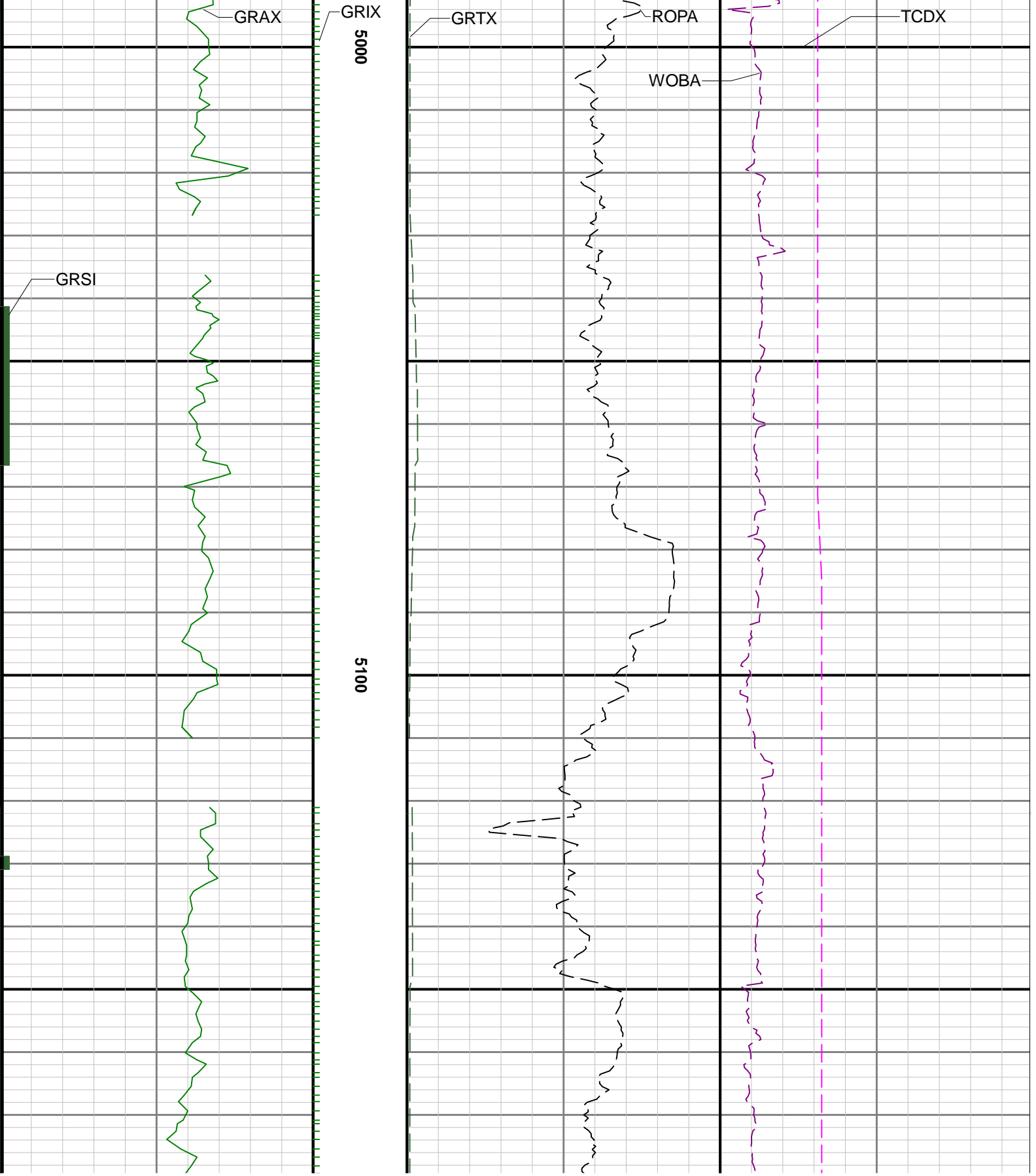


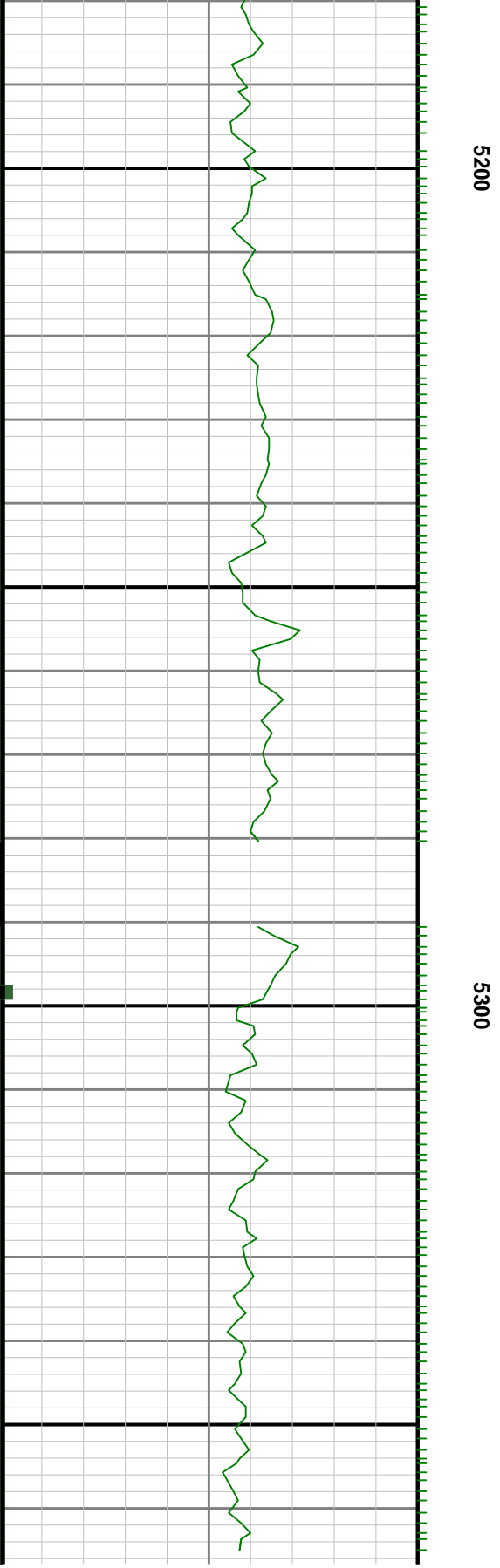
4700

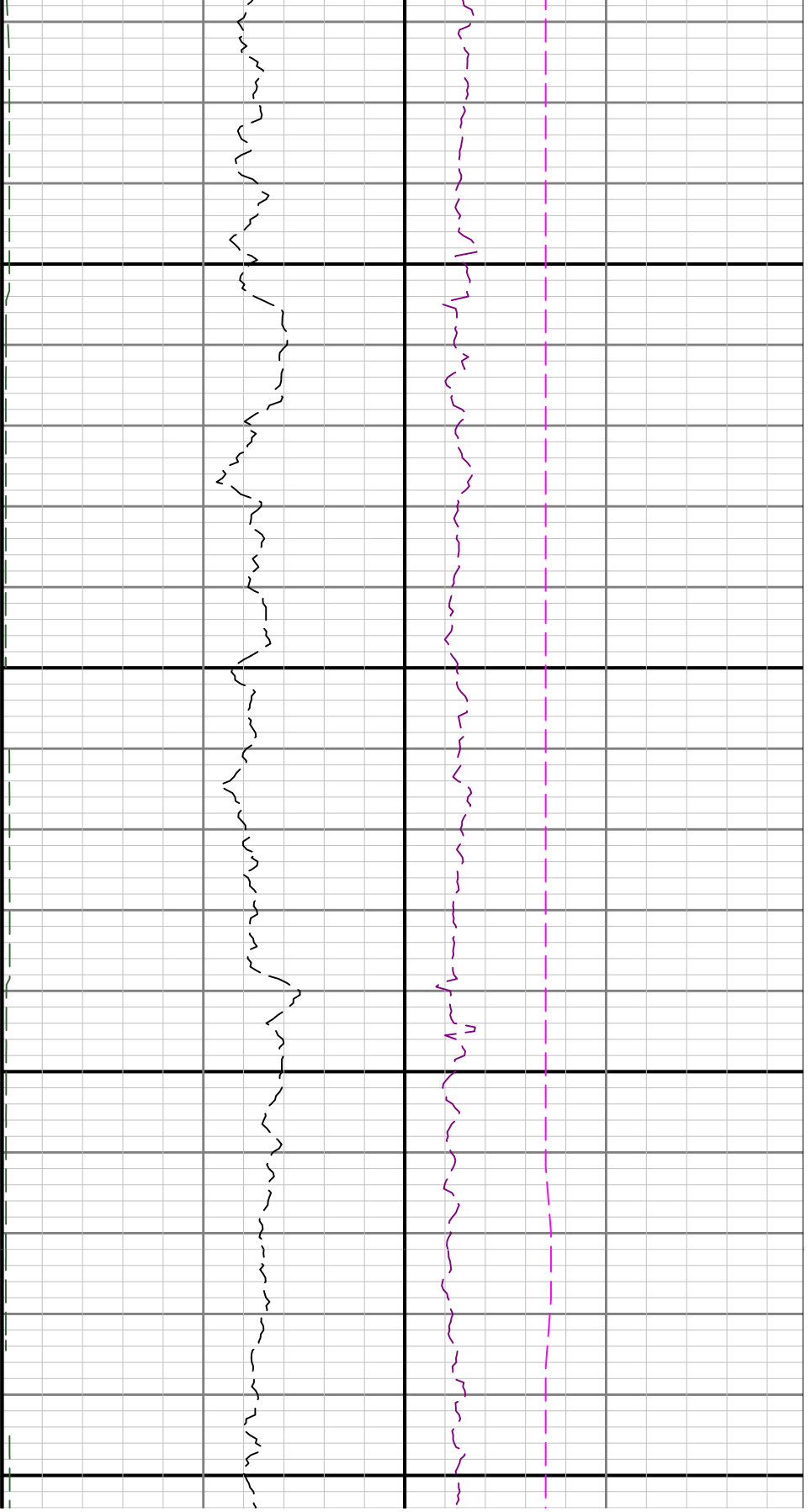
4800





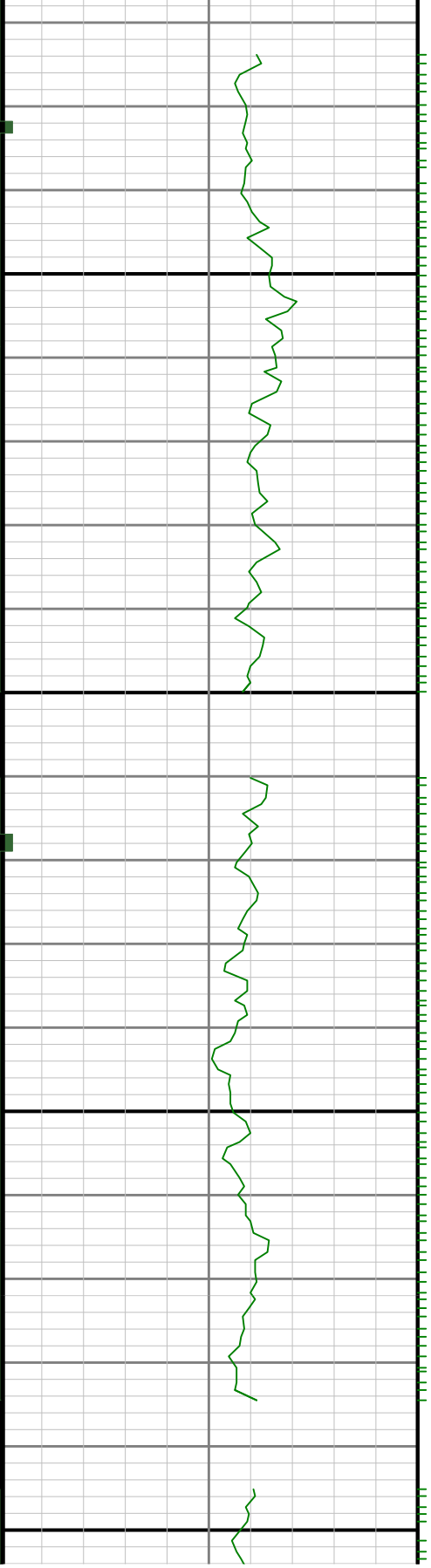




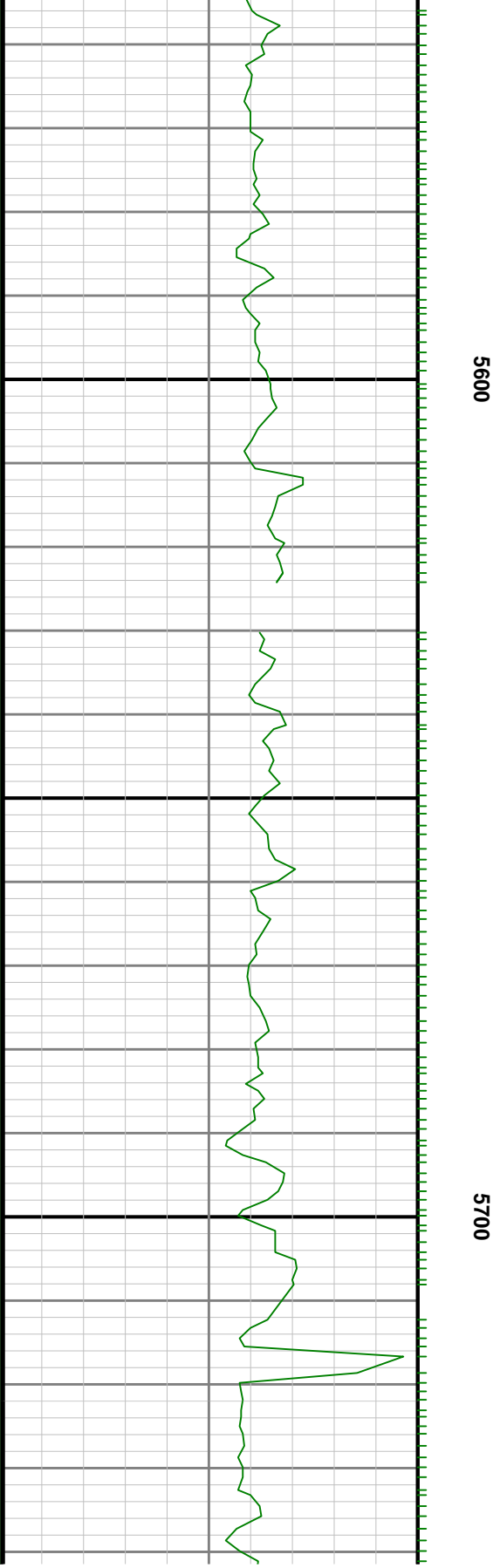
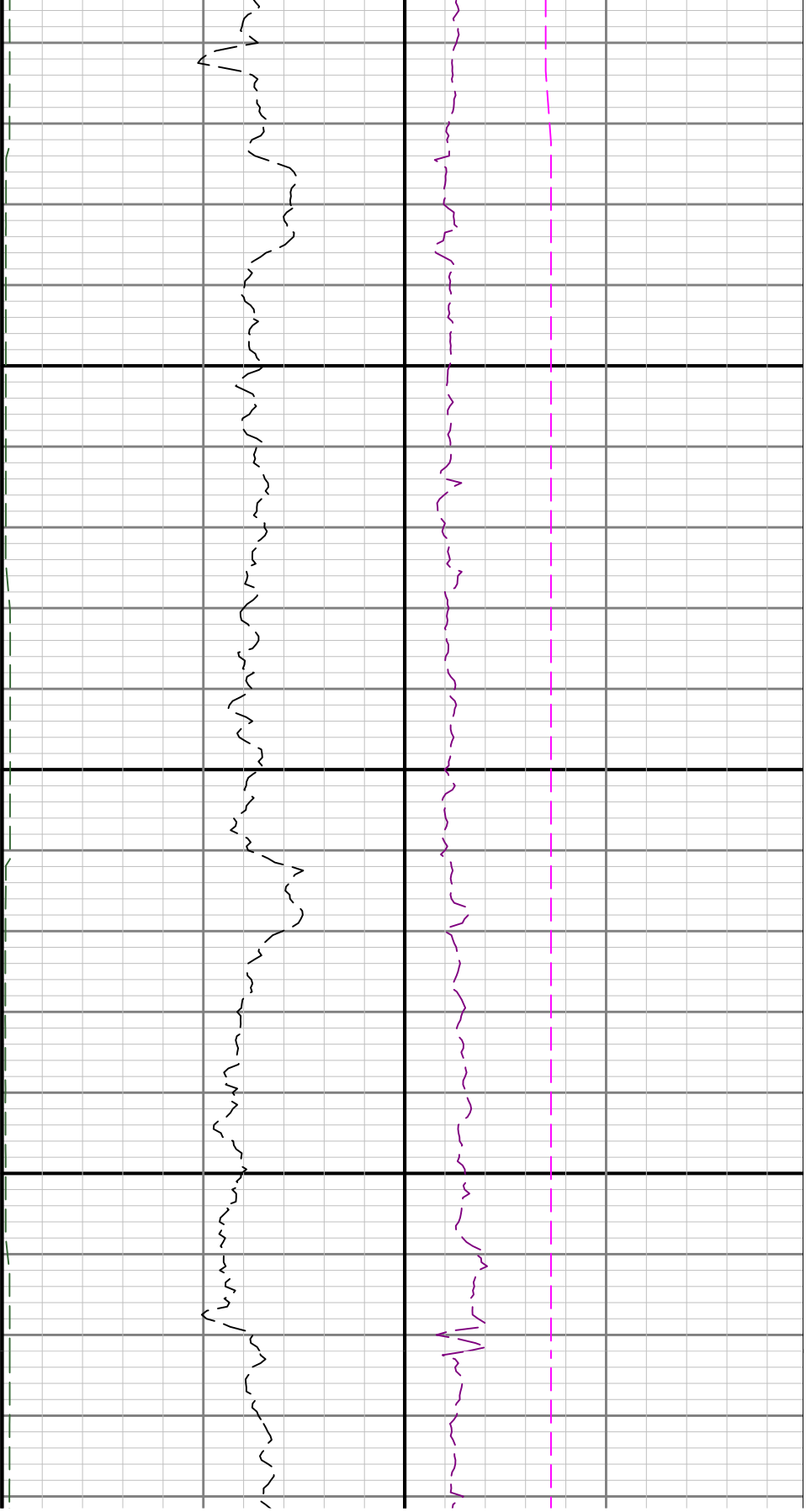


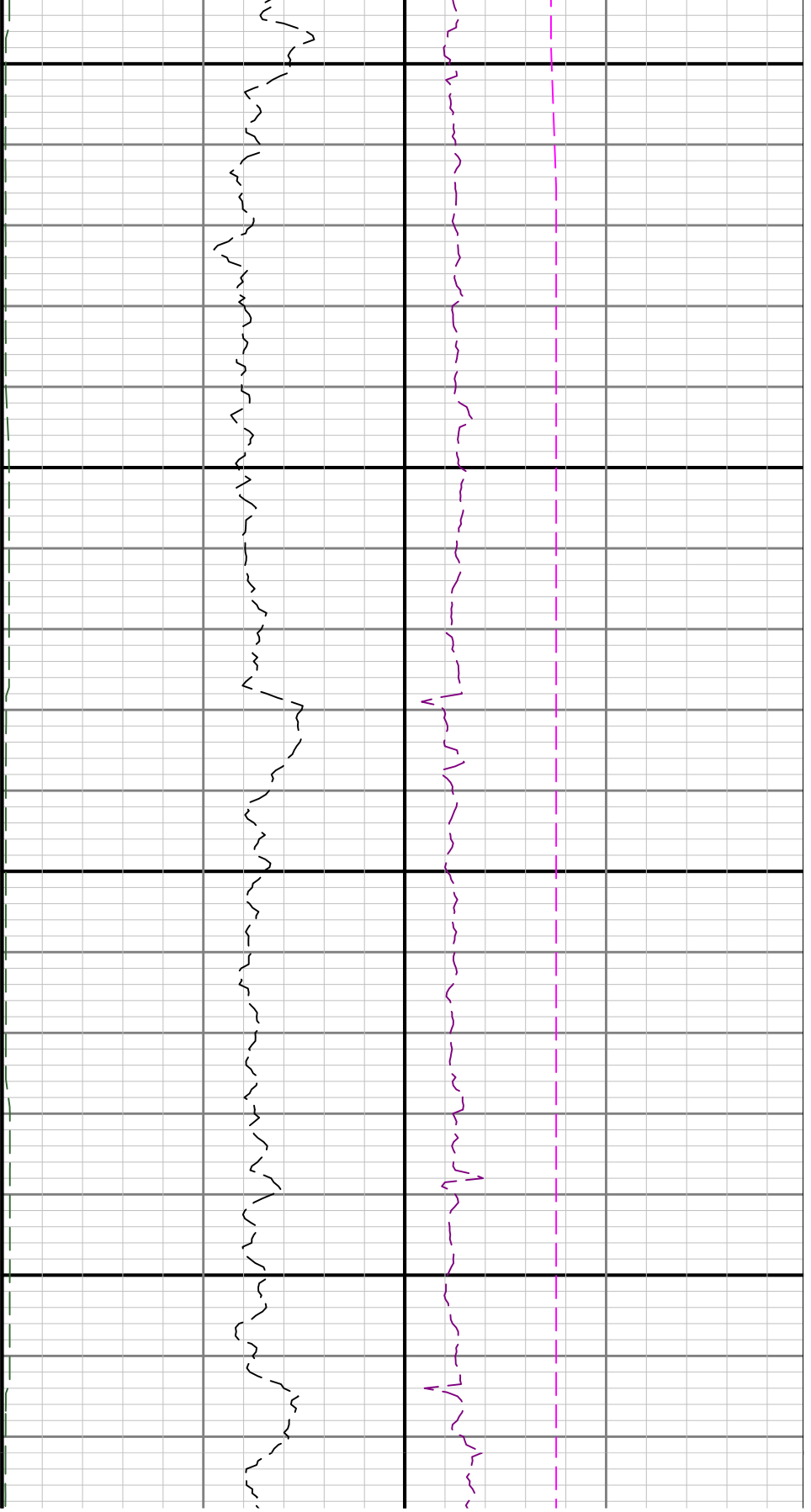
5400

5500



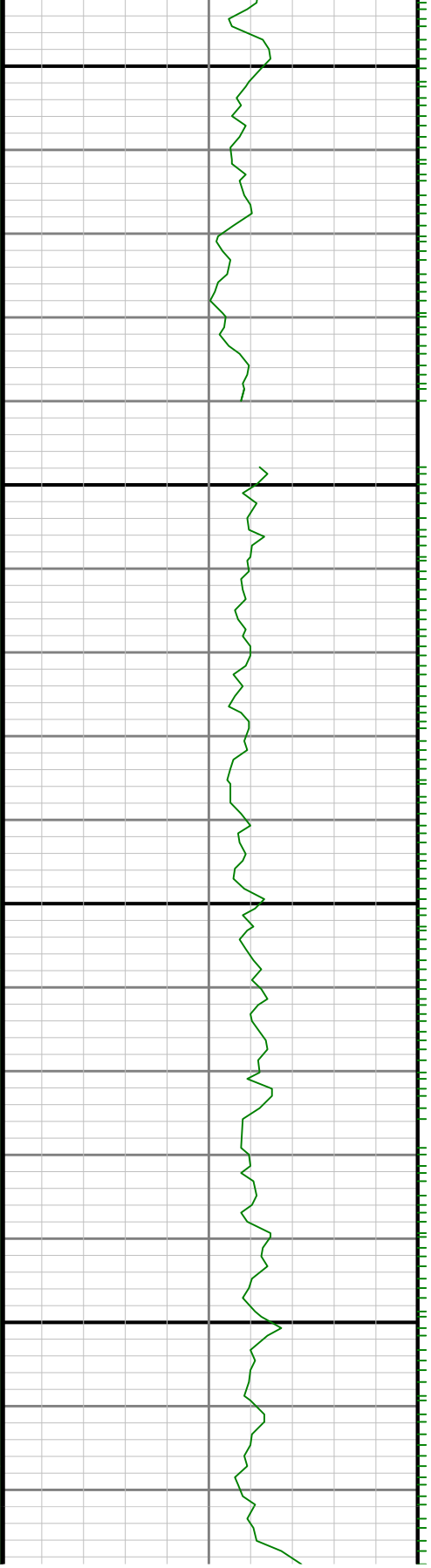


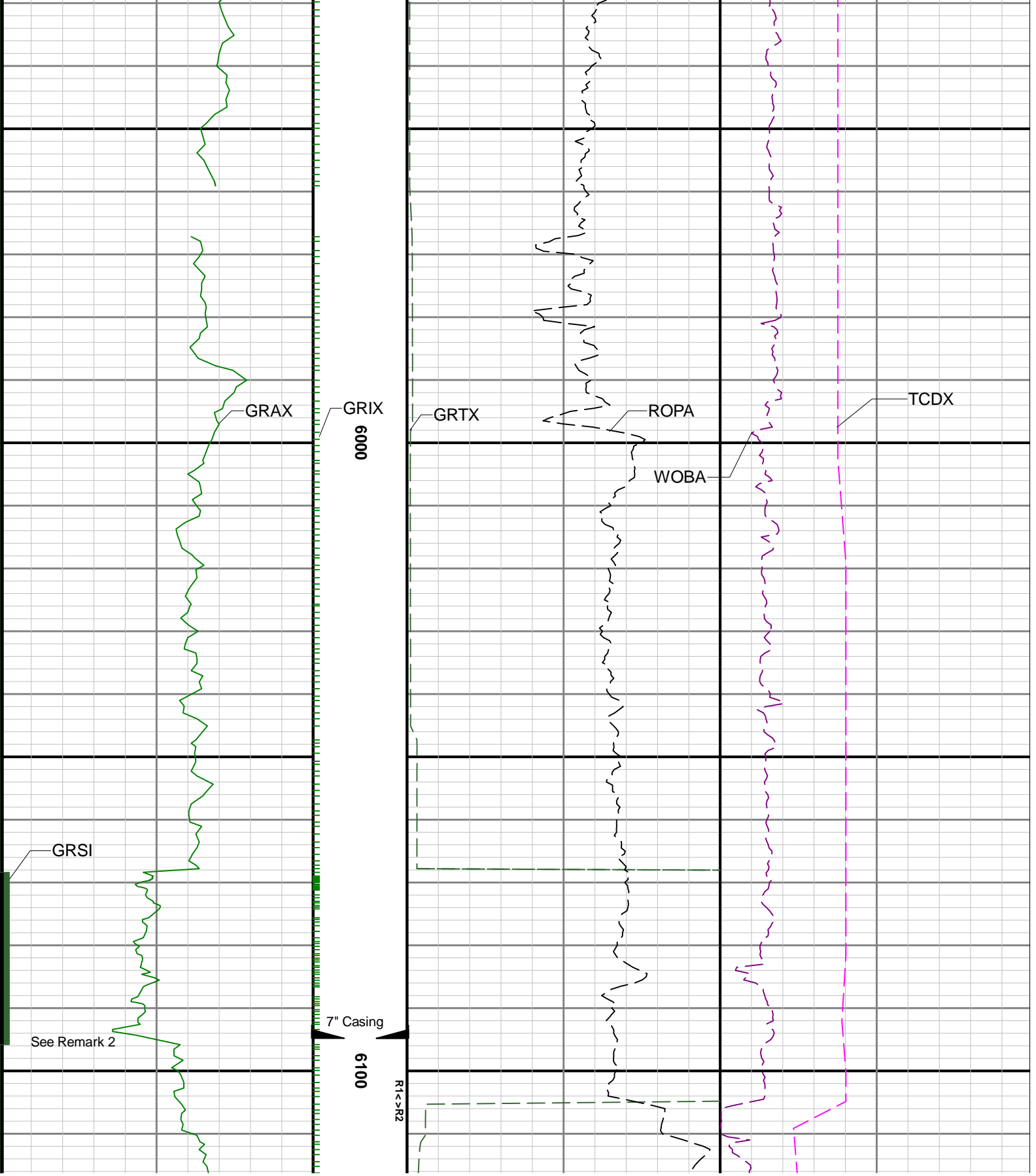


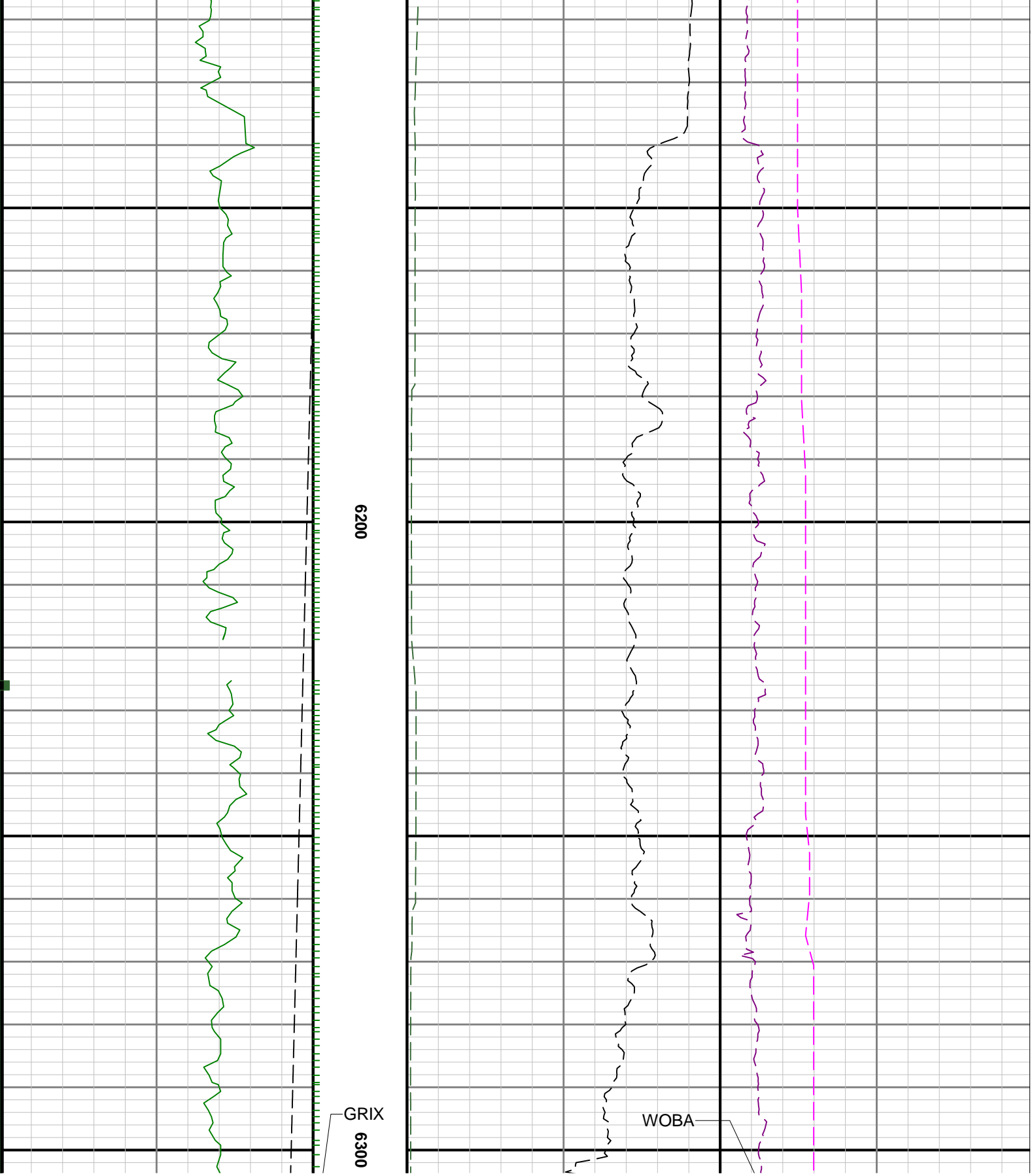


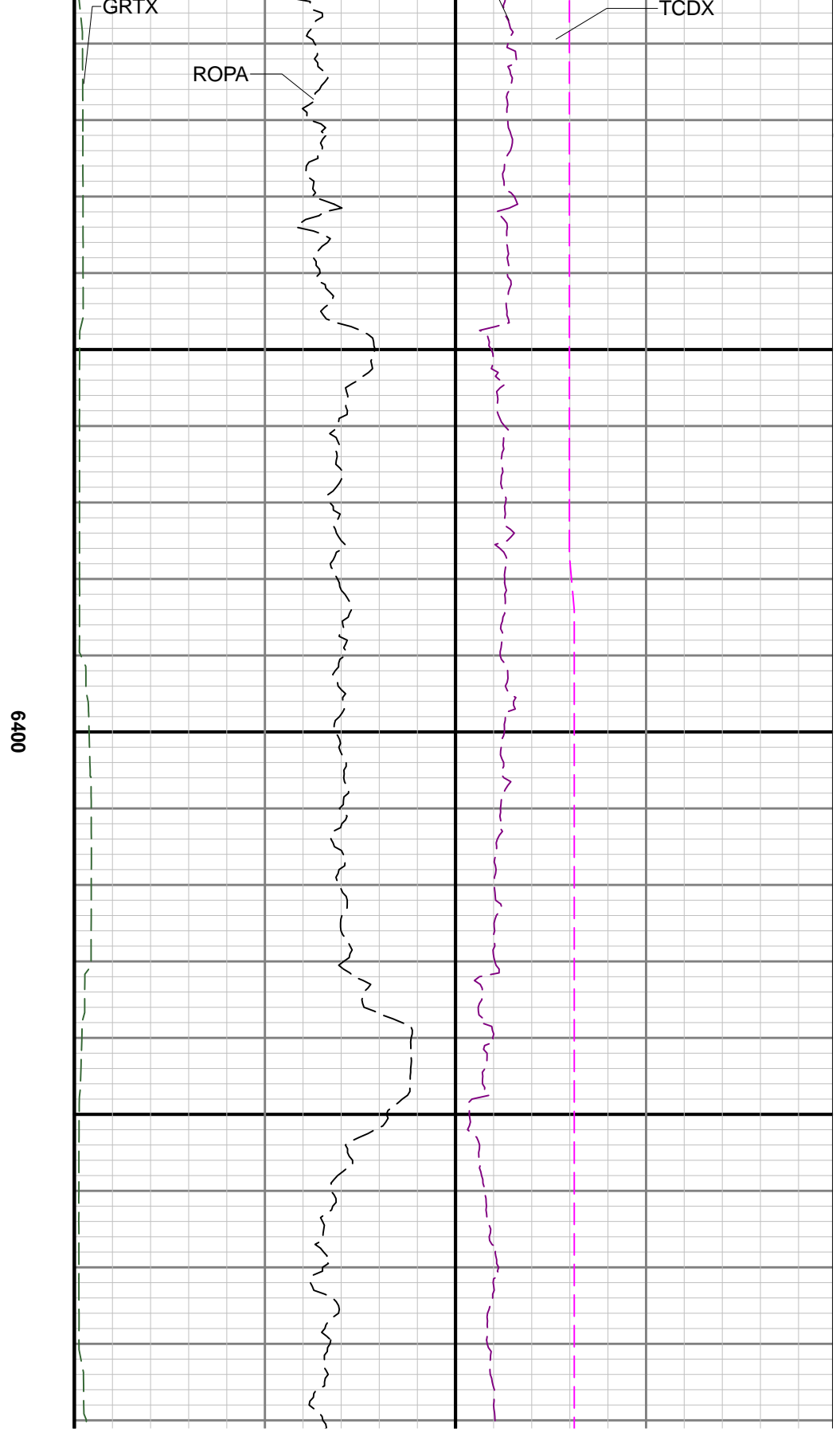
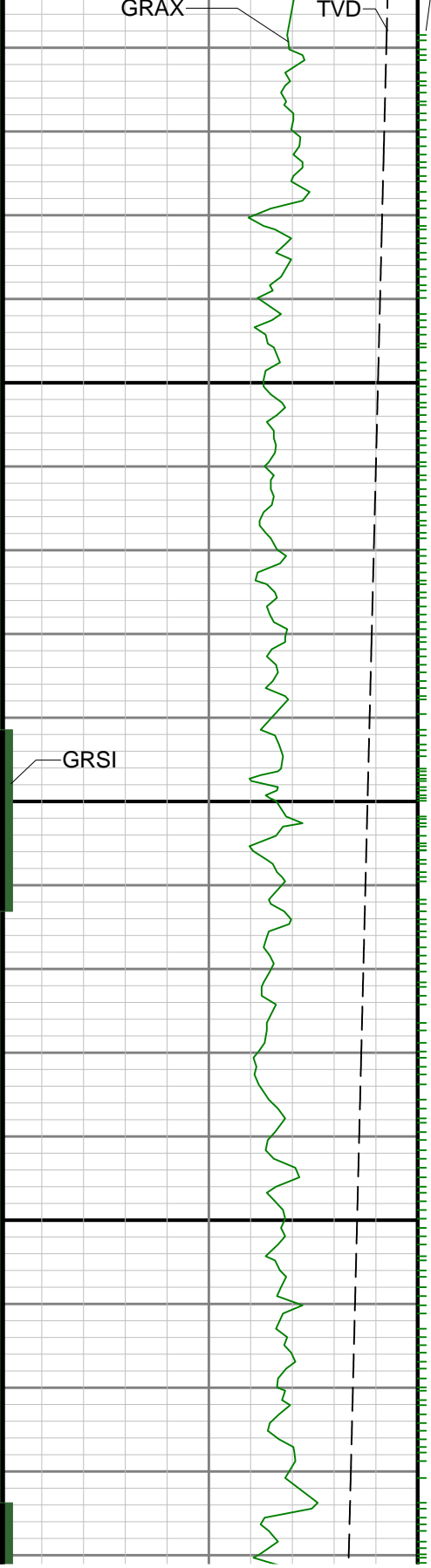
5800

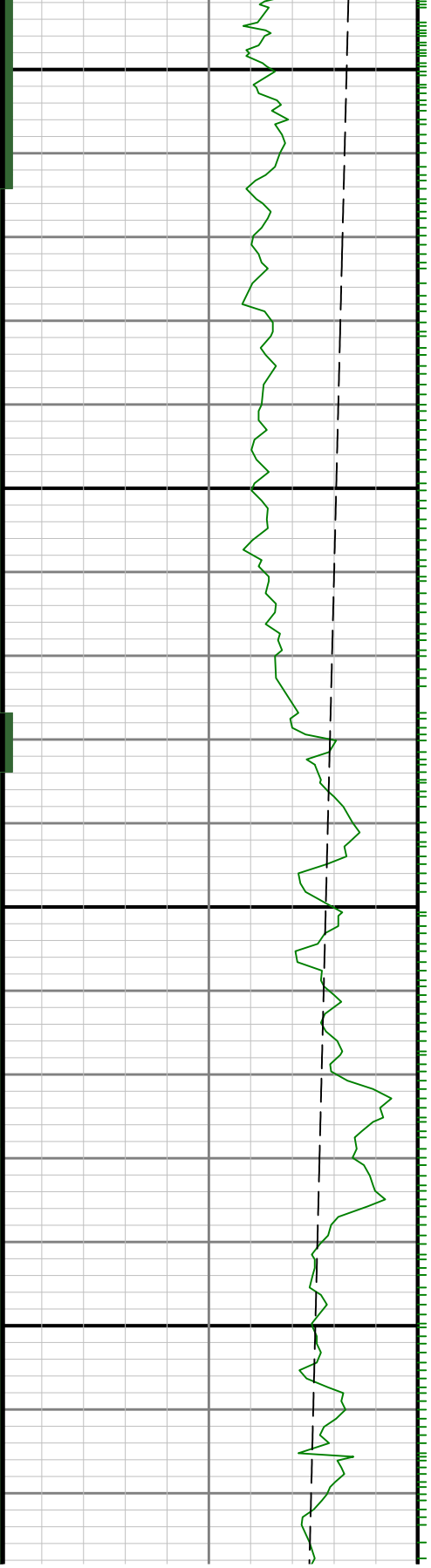
5900





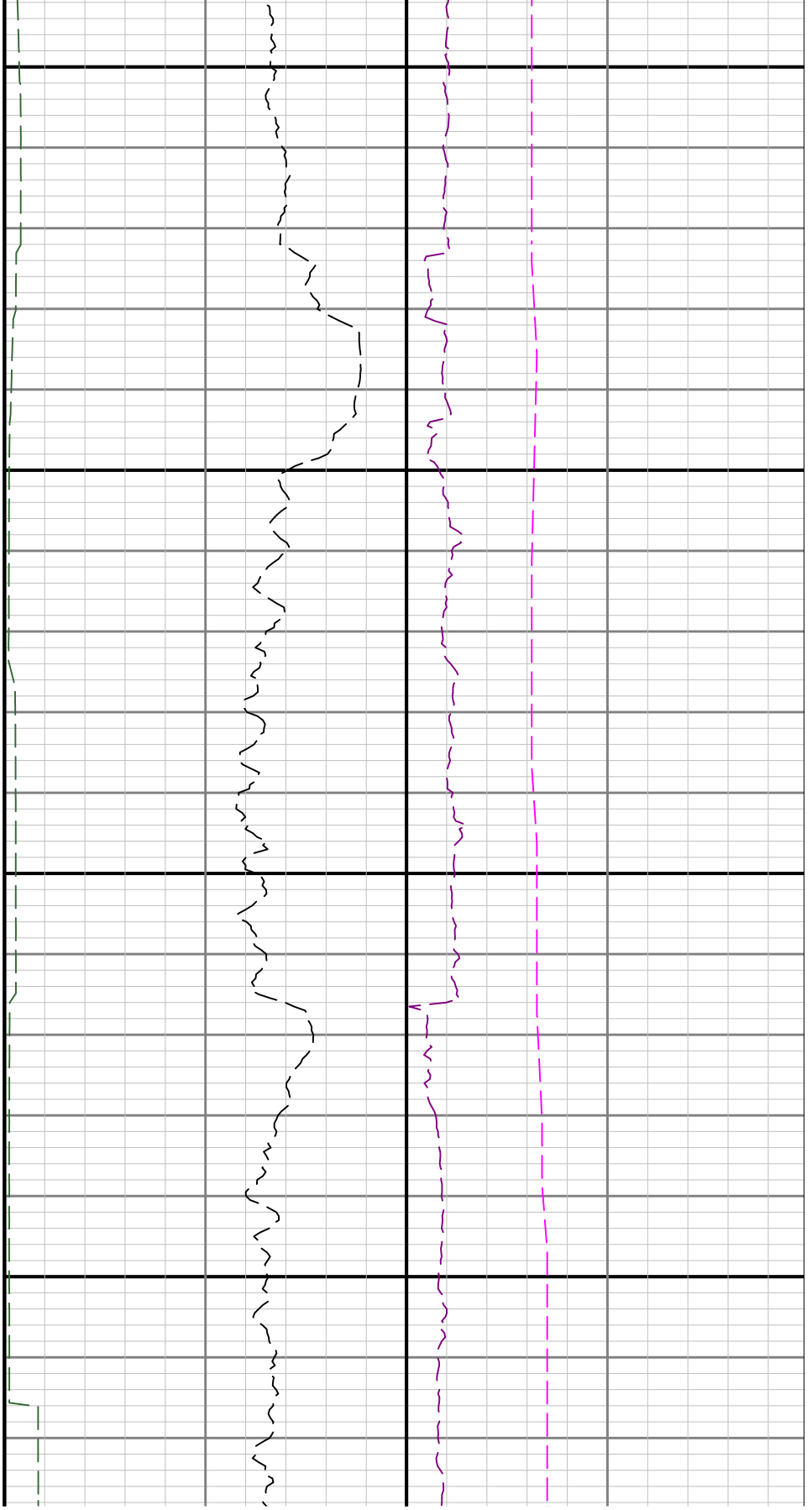


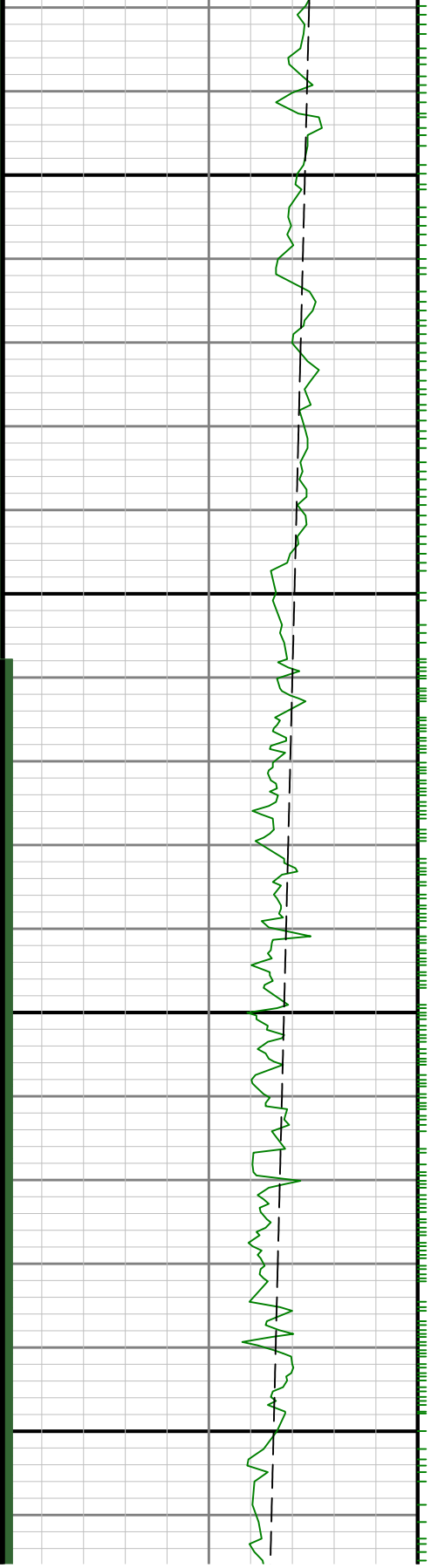




6500

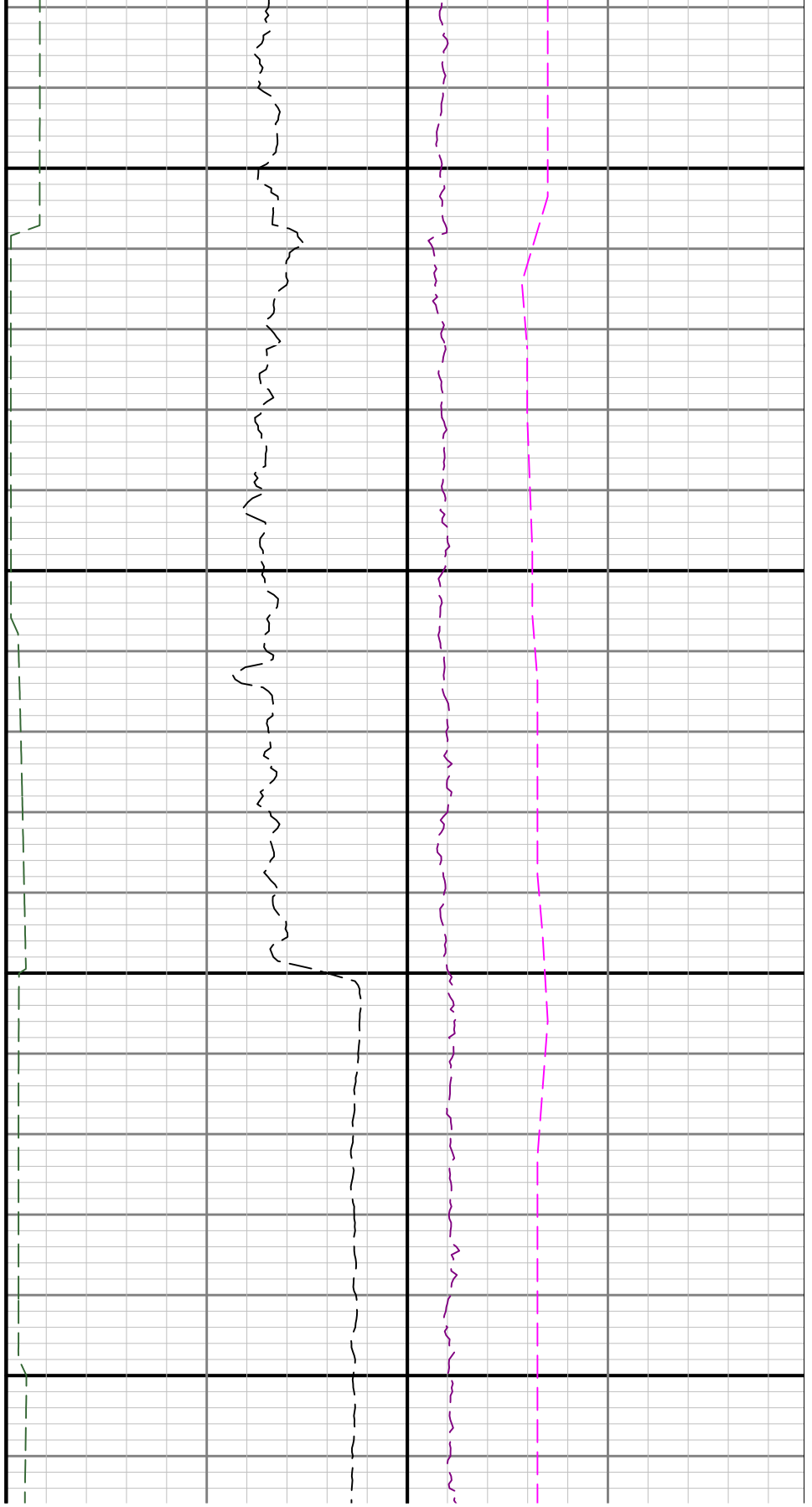
0099

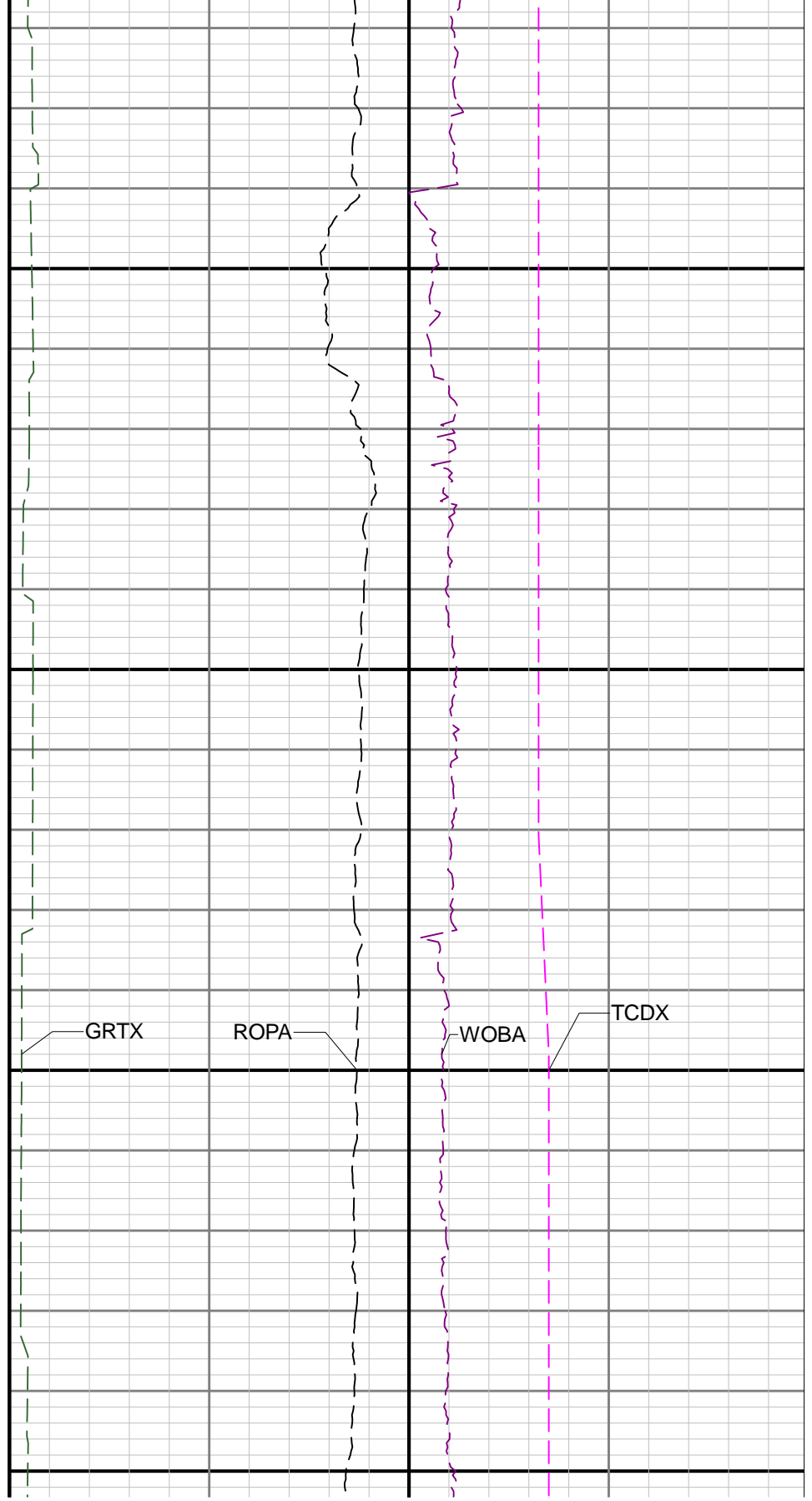
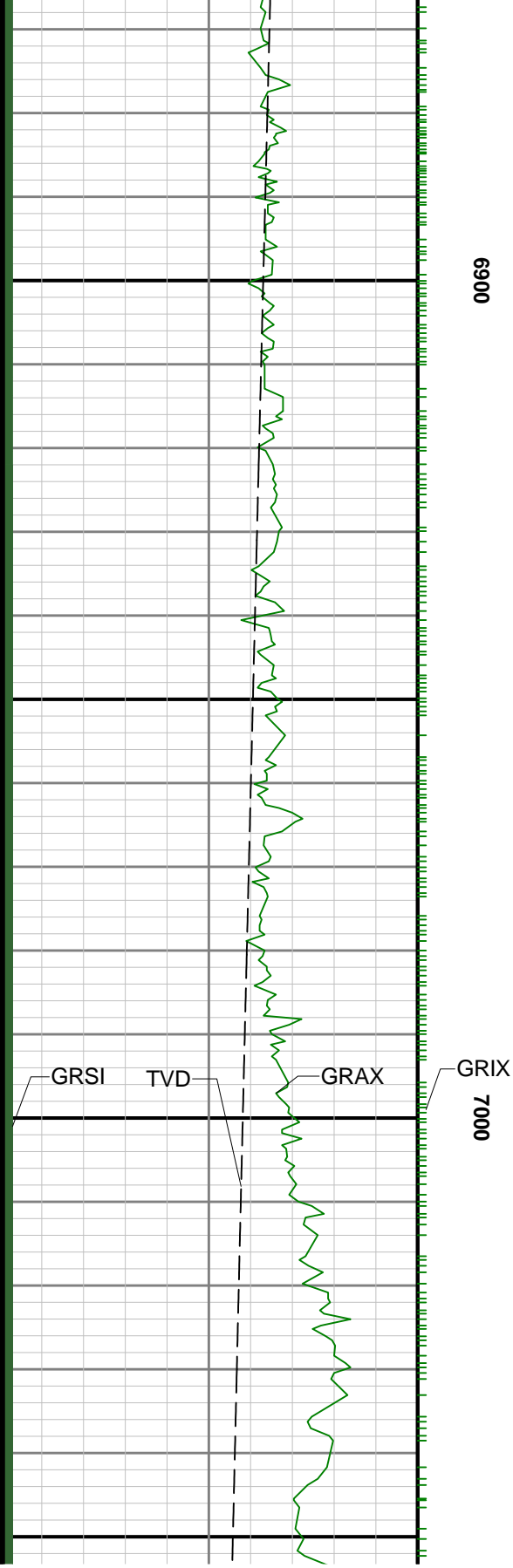




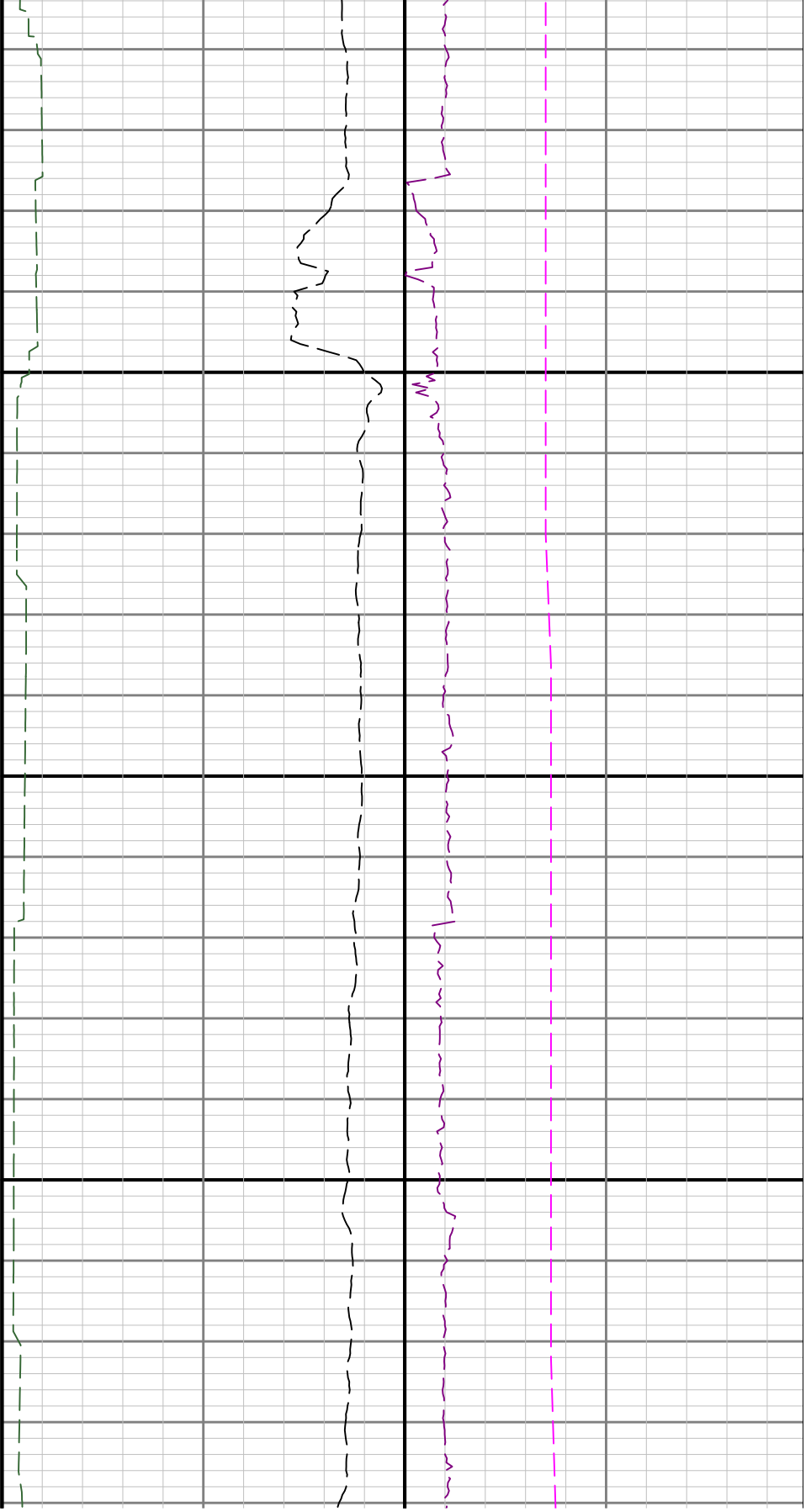
0079

0089



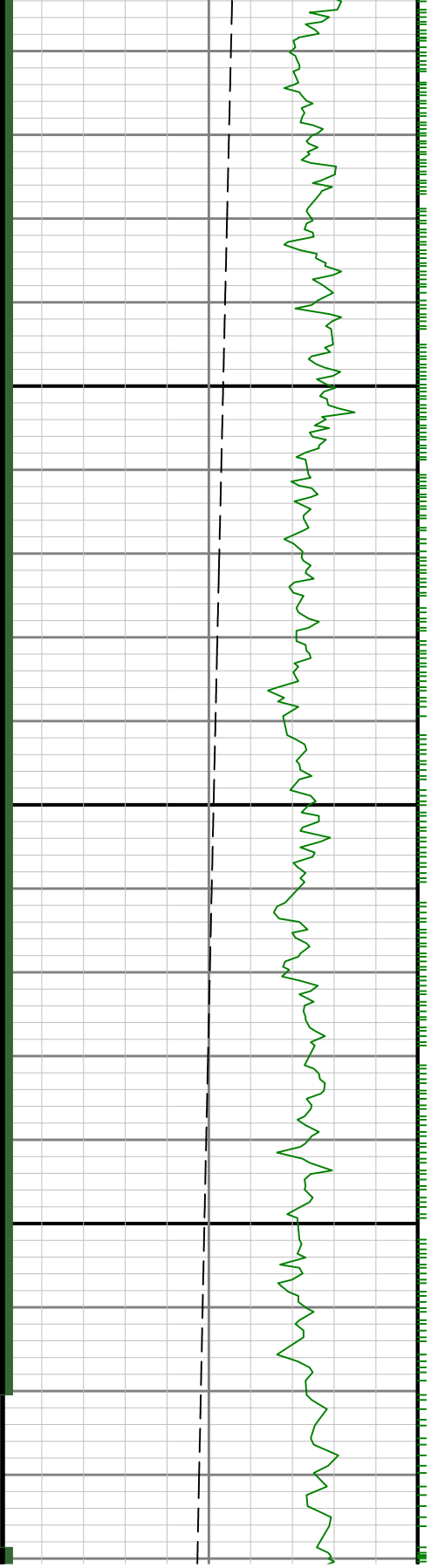


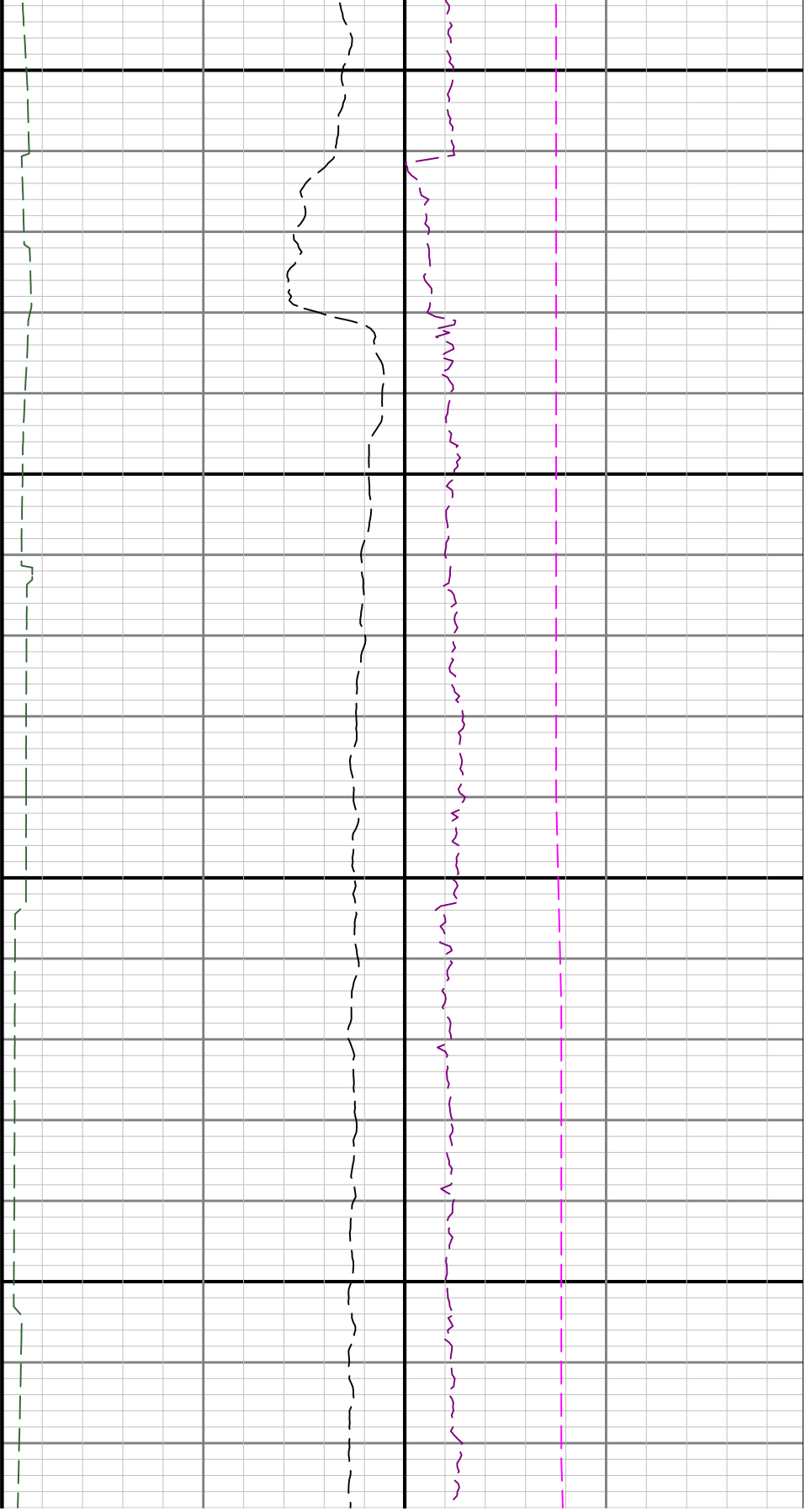




7100

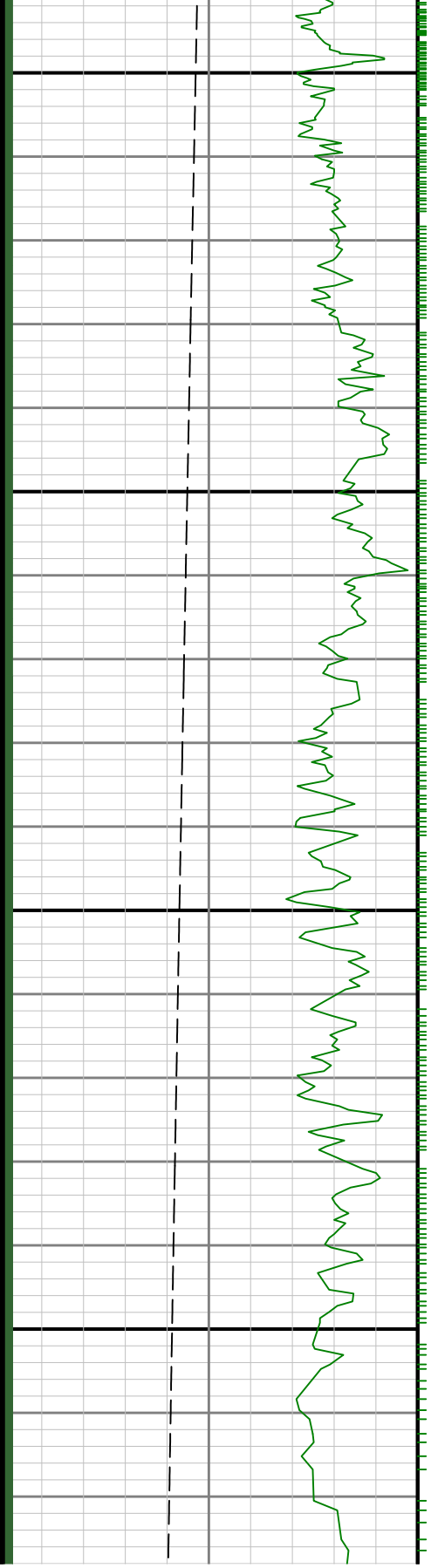
7200

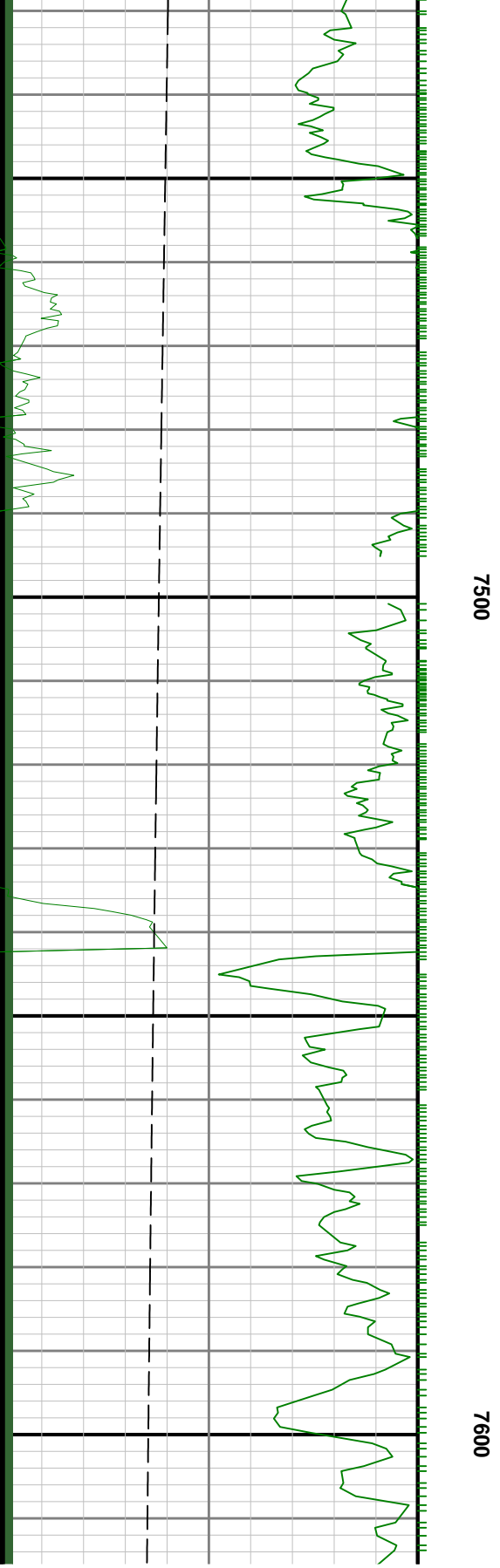
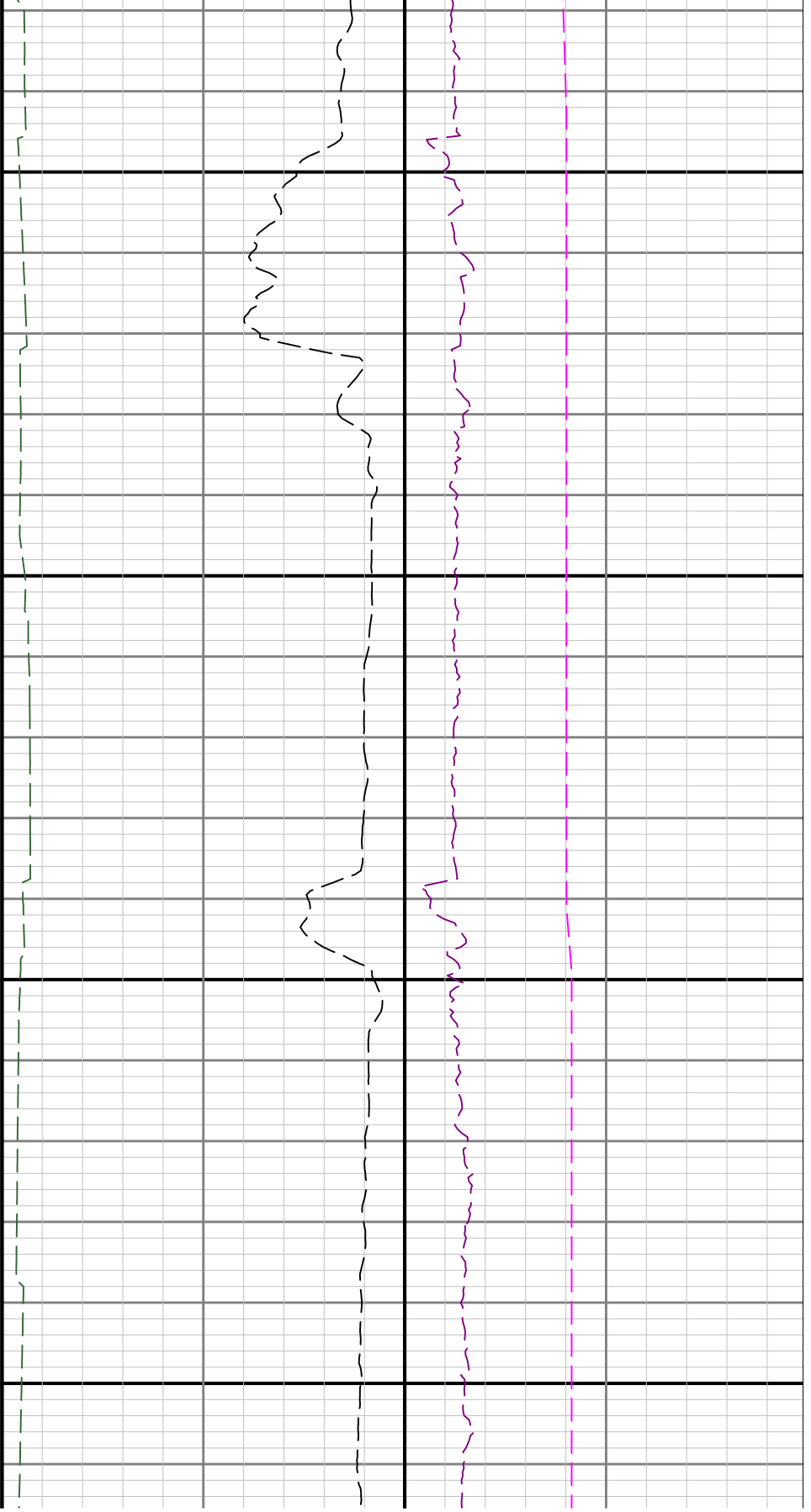


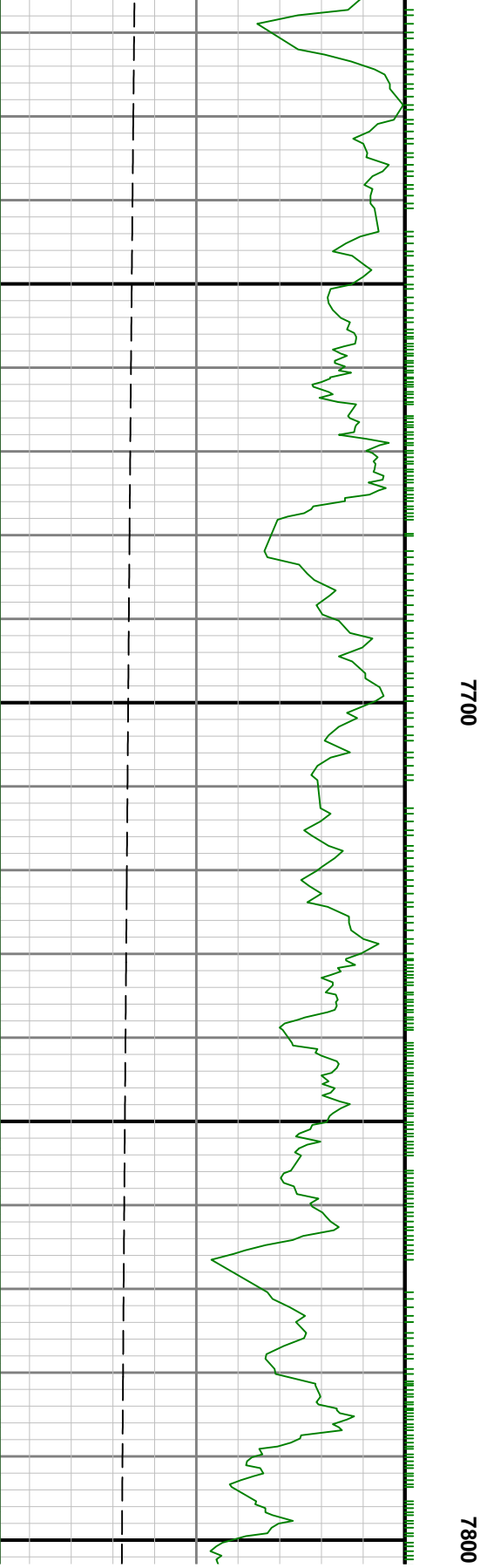


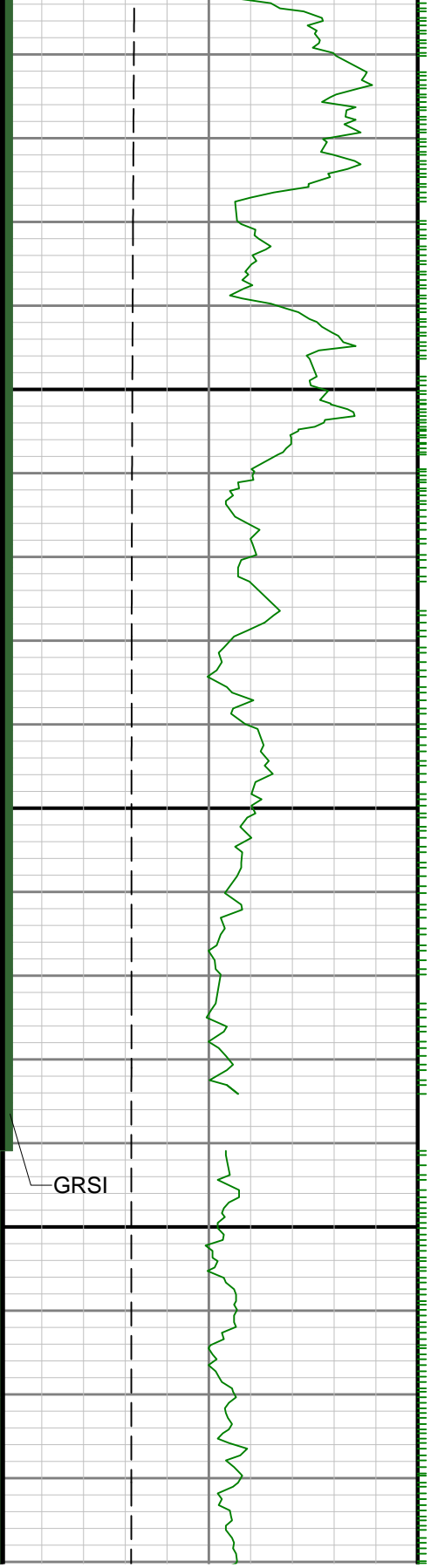
7300

7400

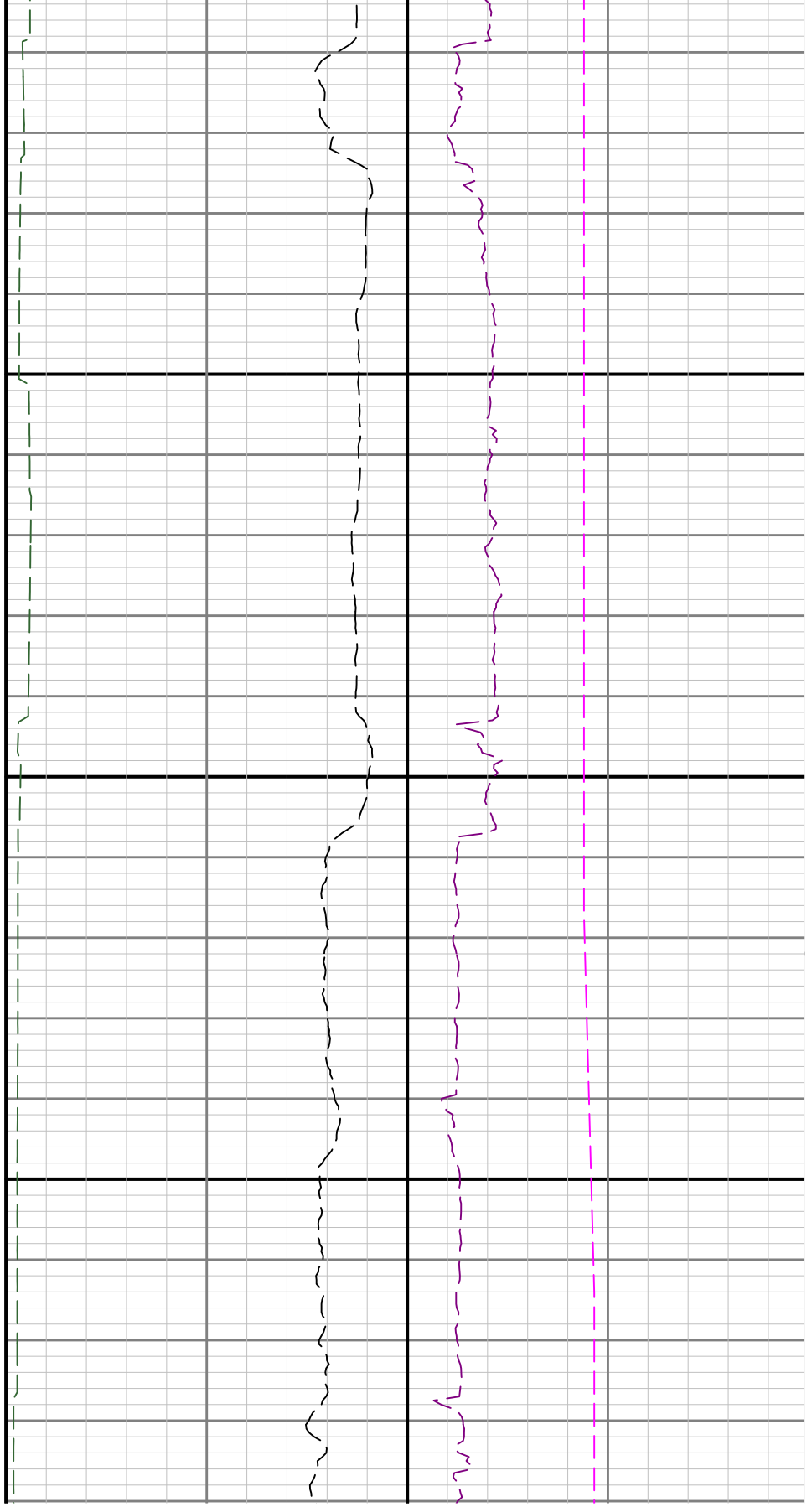




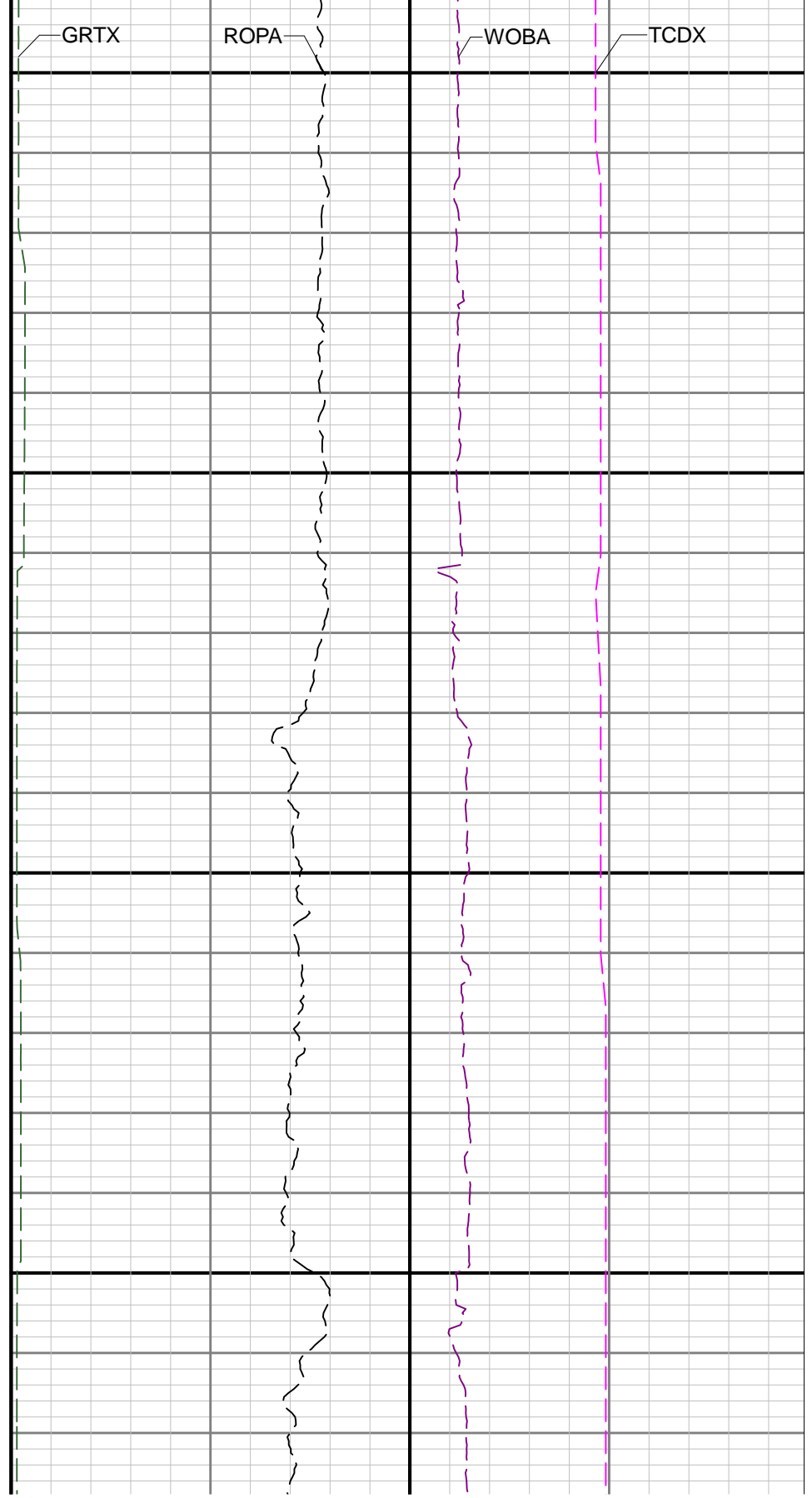
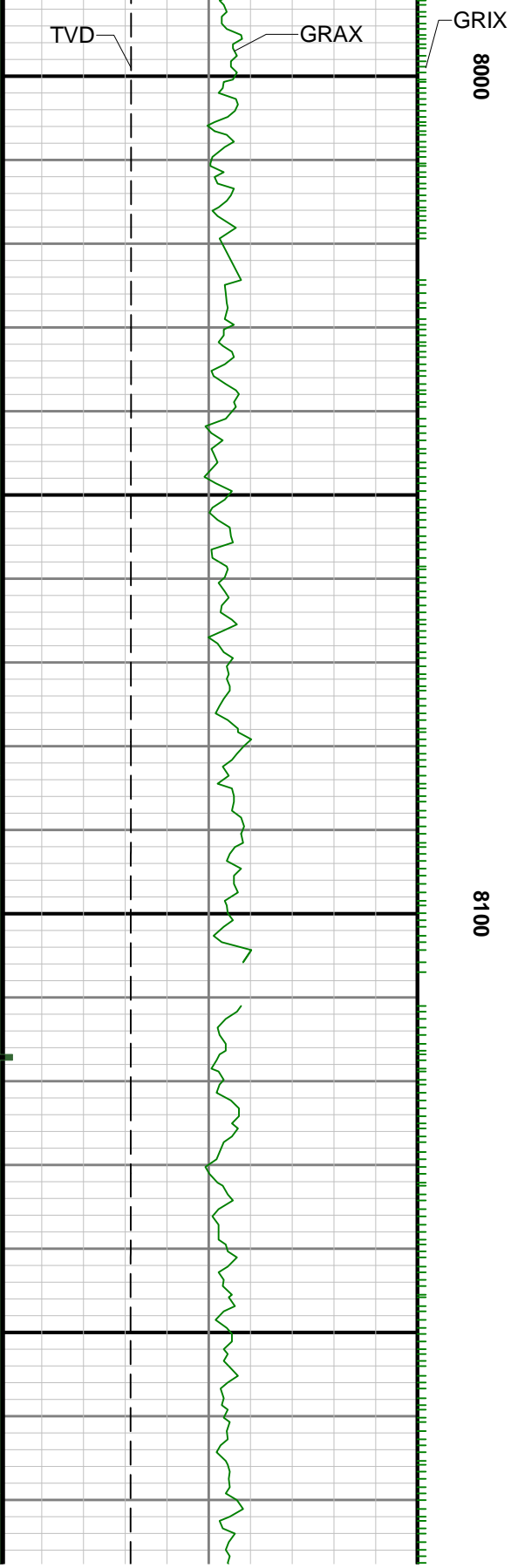


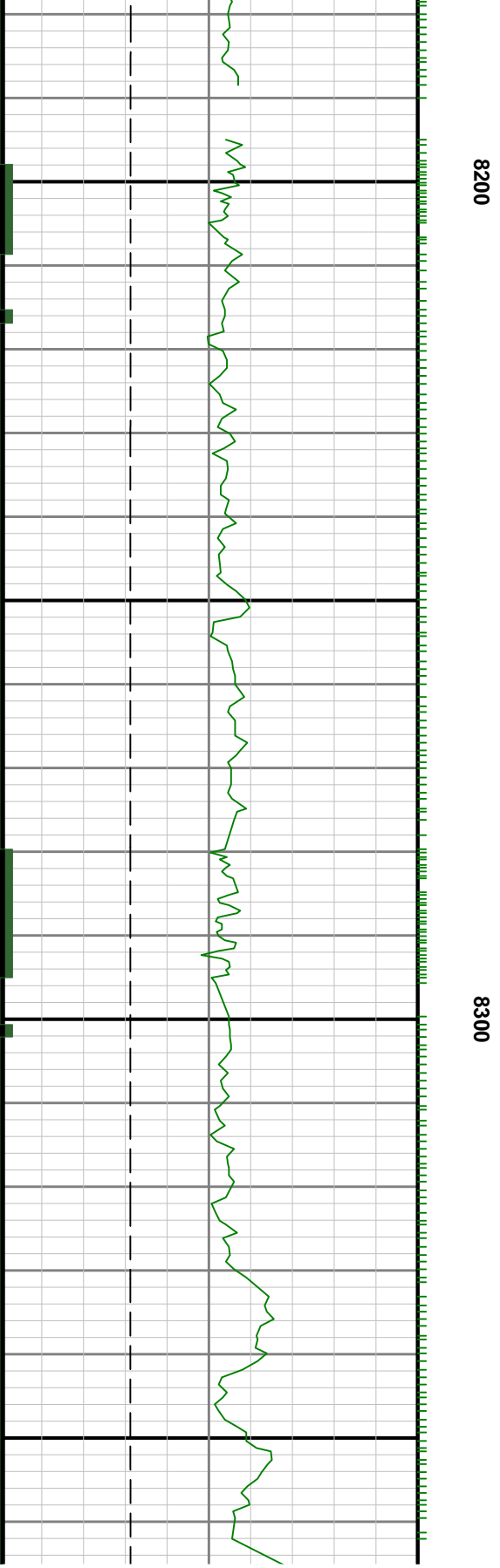
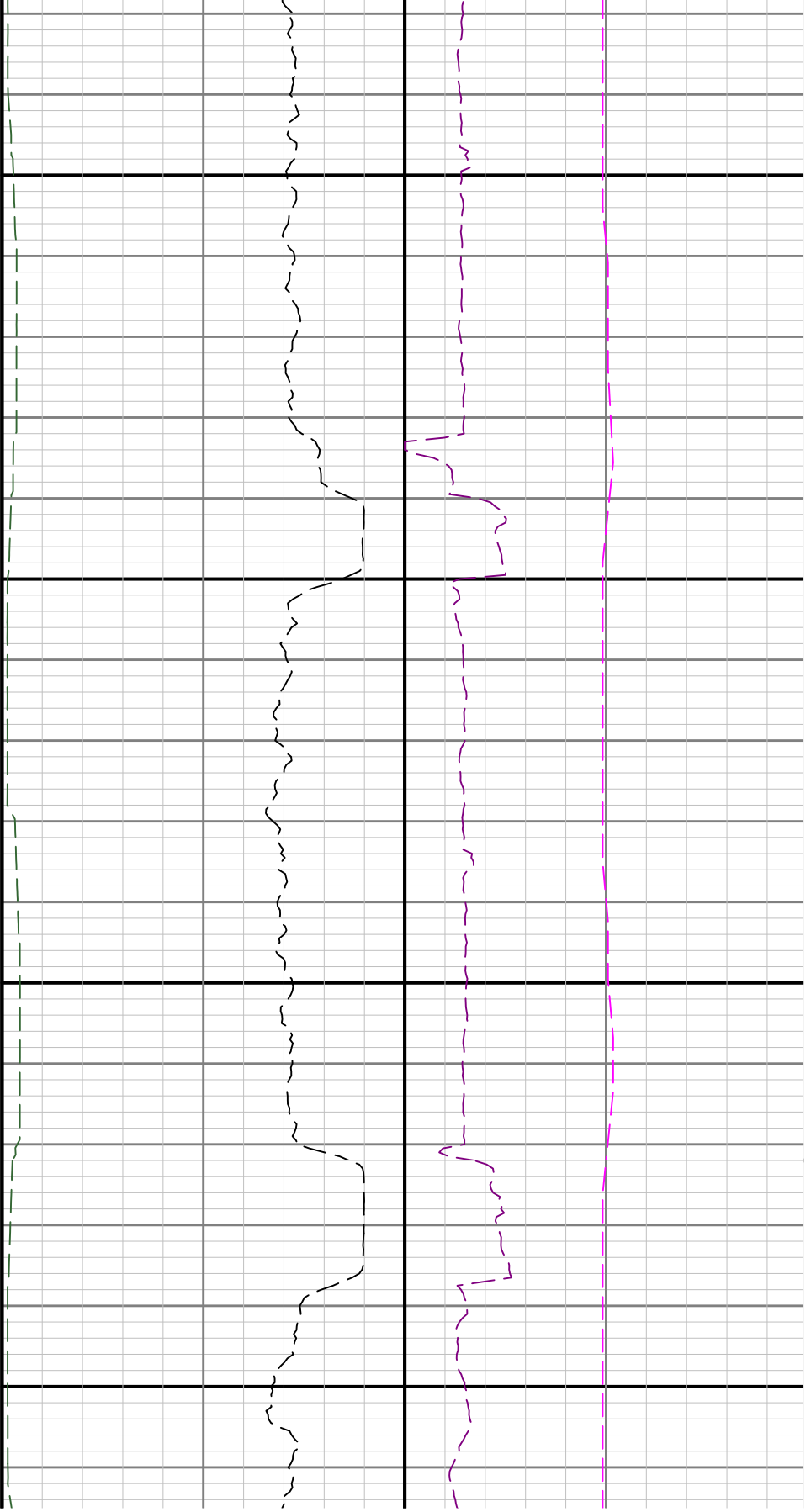


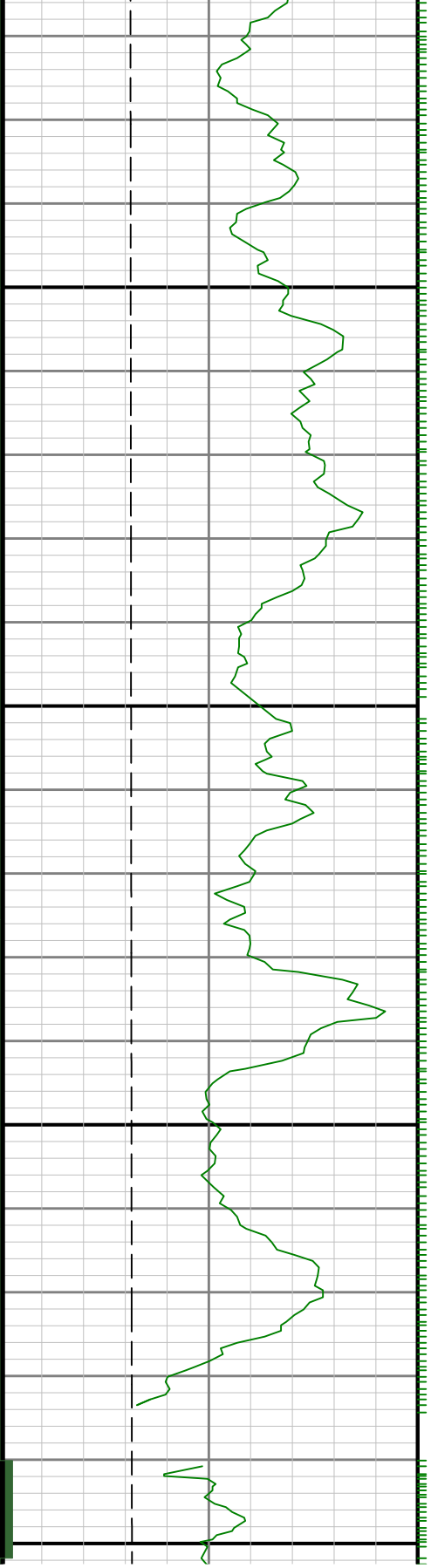
7900



GRSI

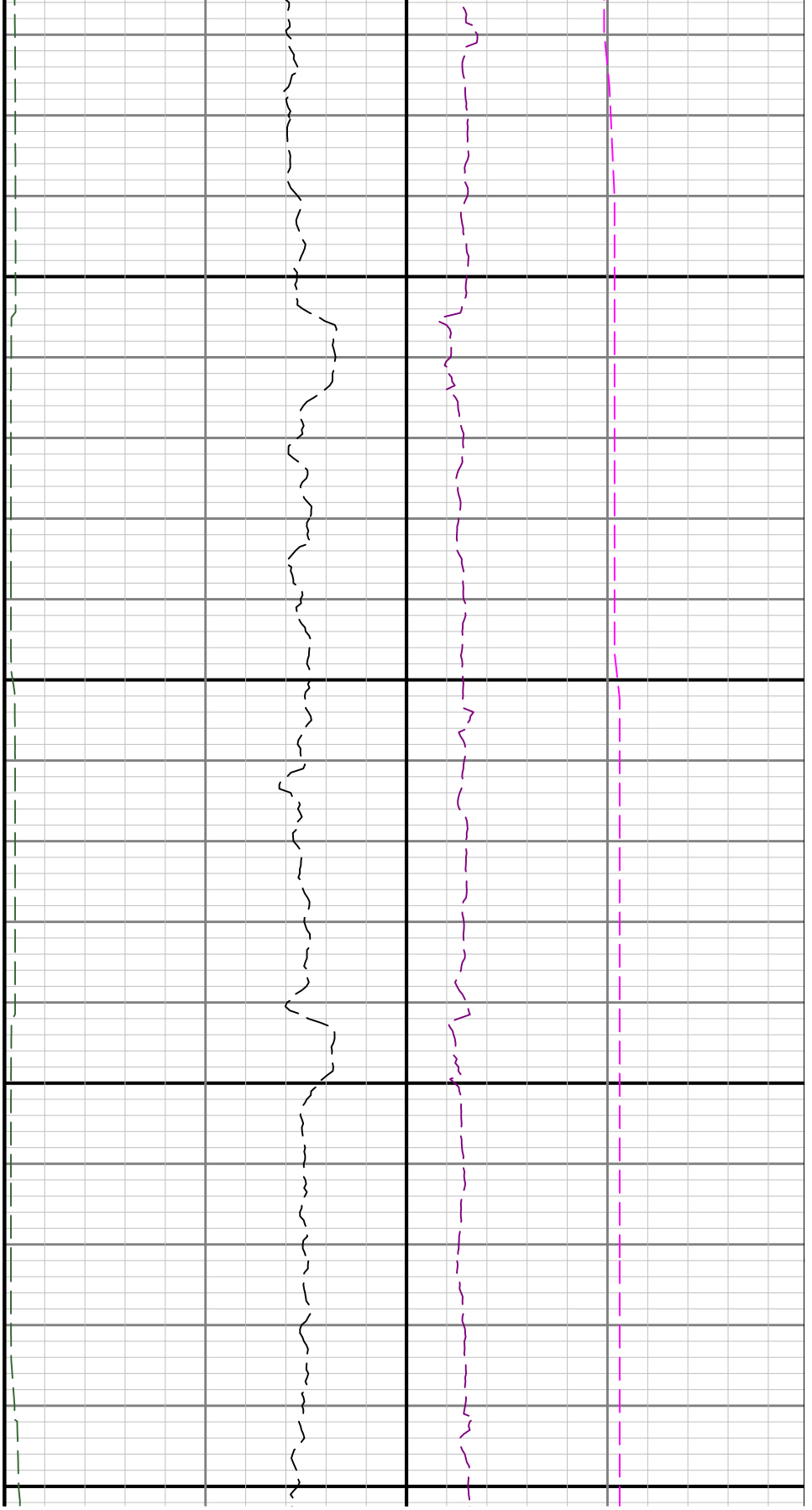




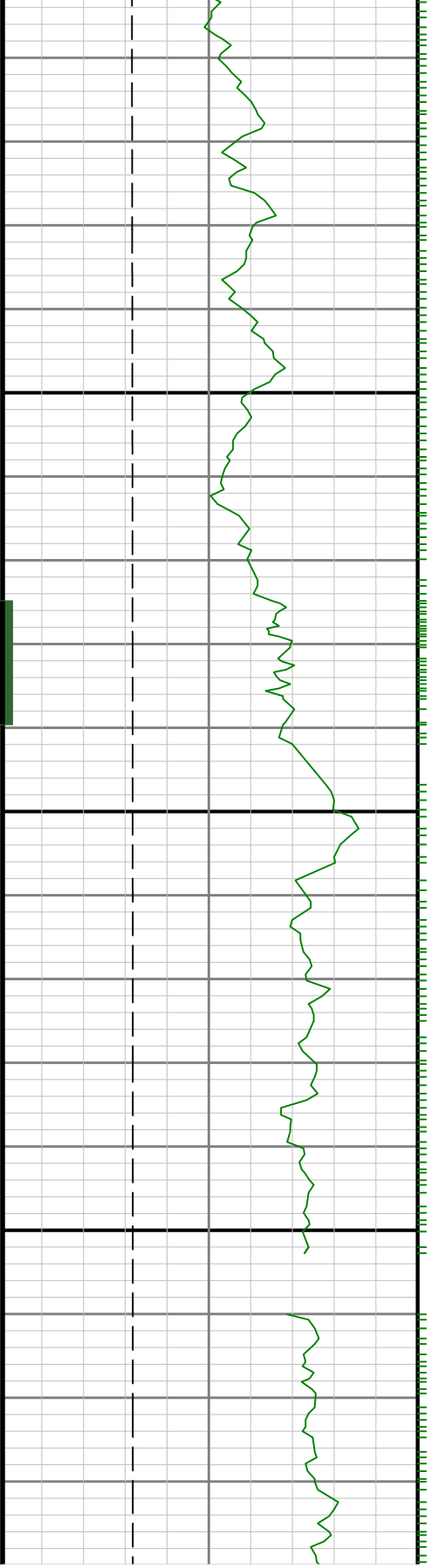


8400

8500

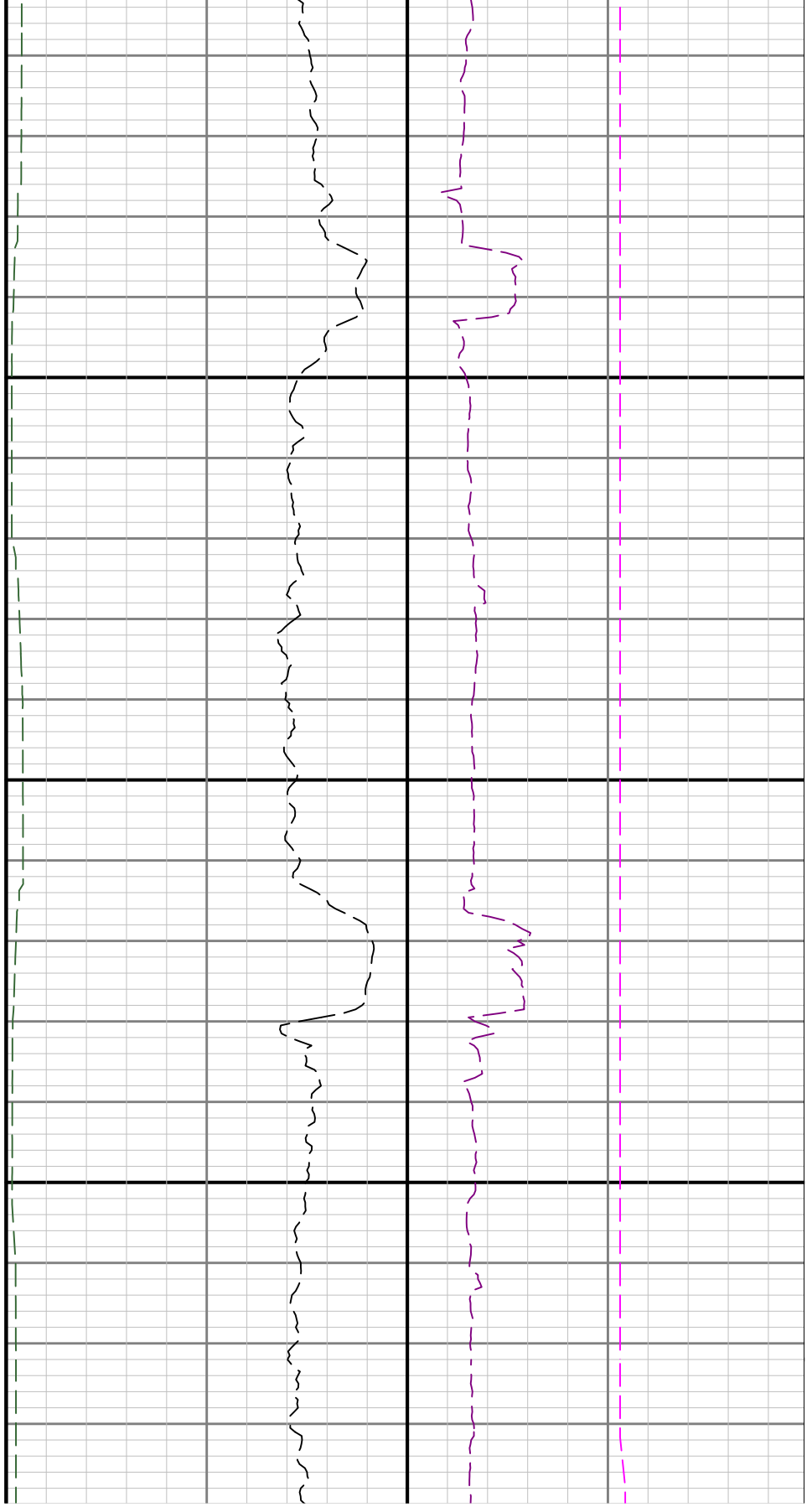


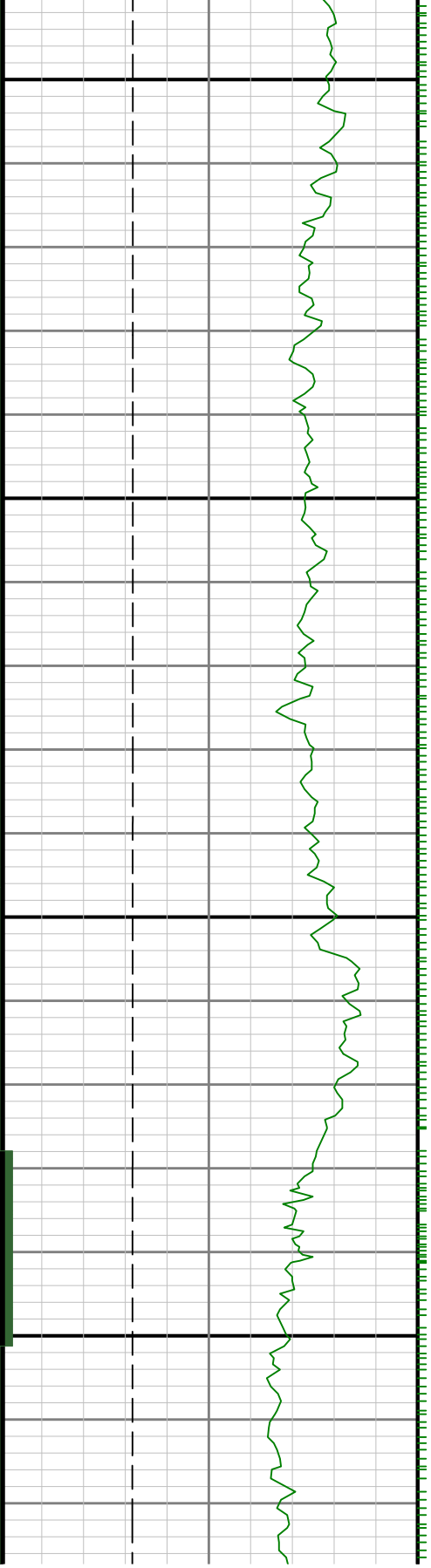




0098

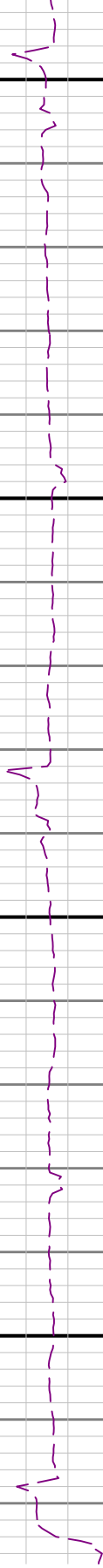
8700

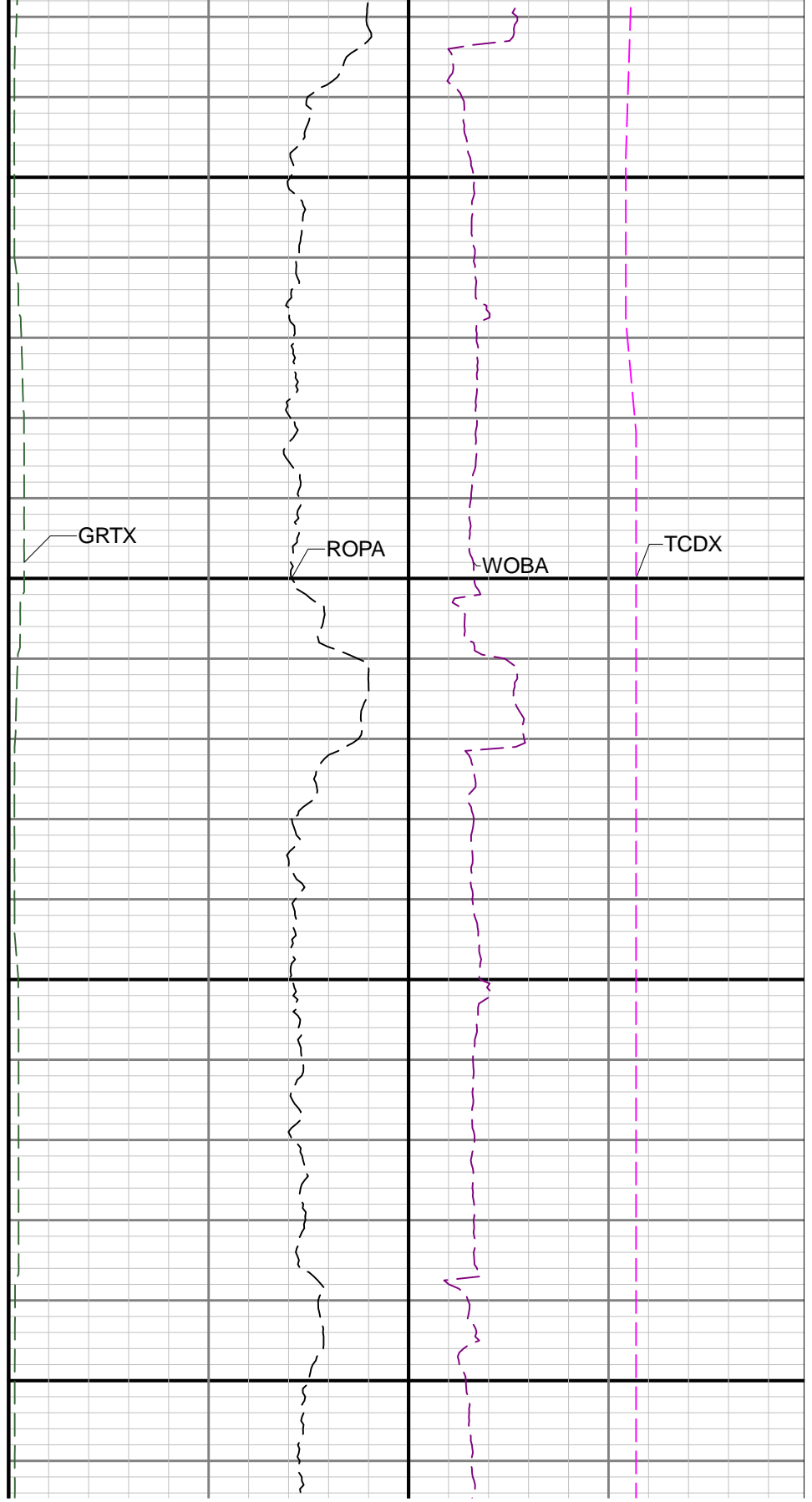
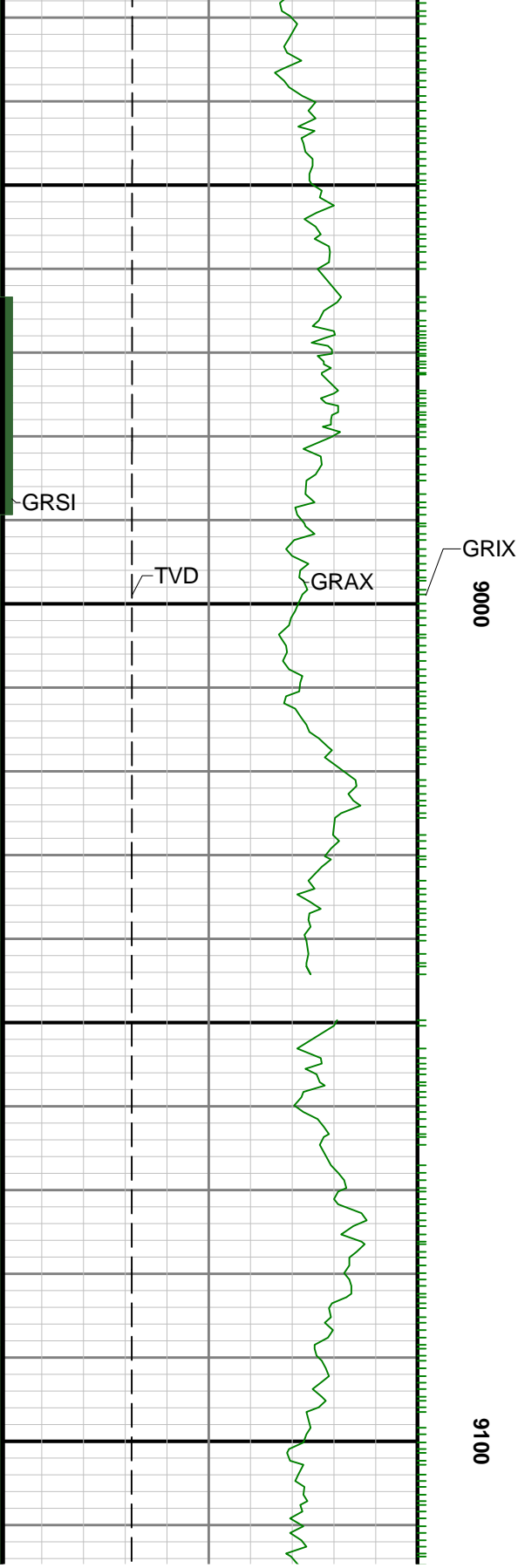


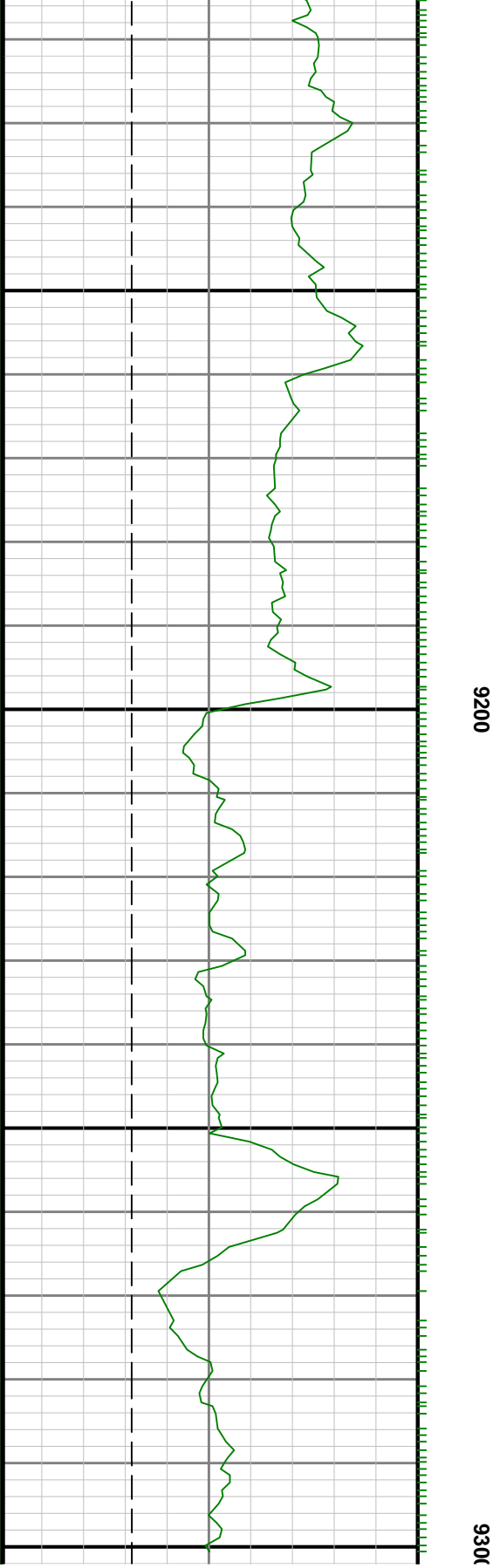
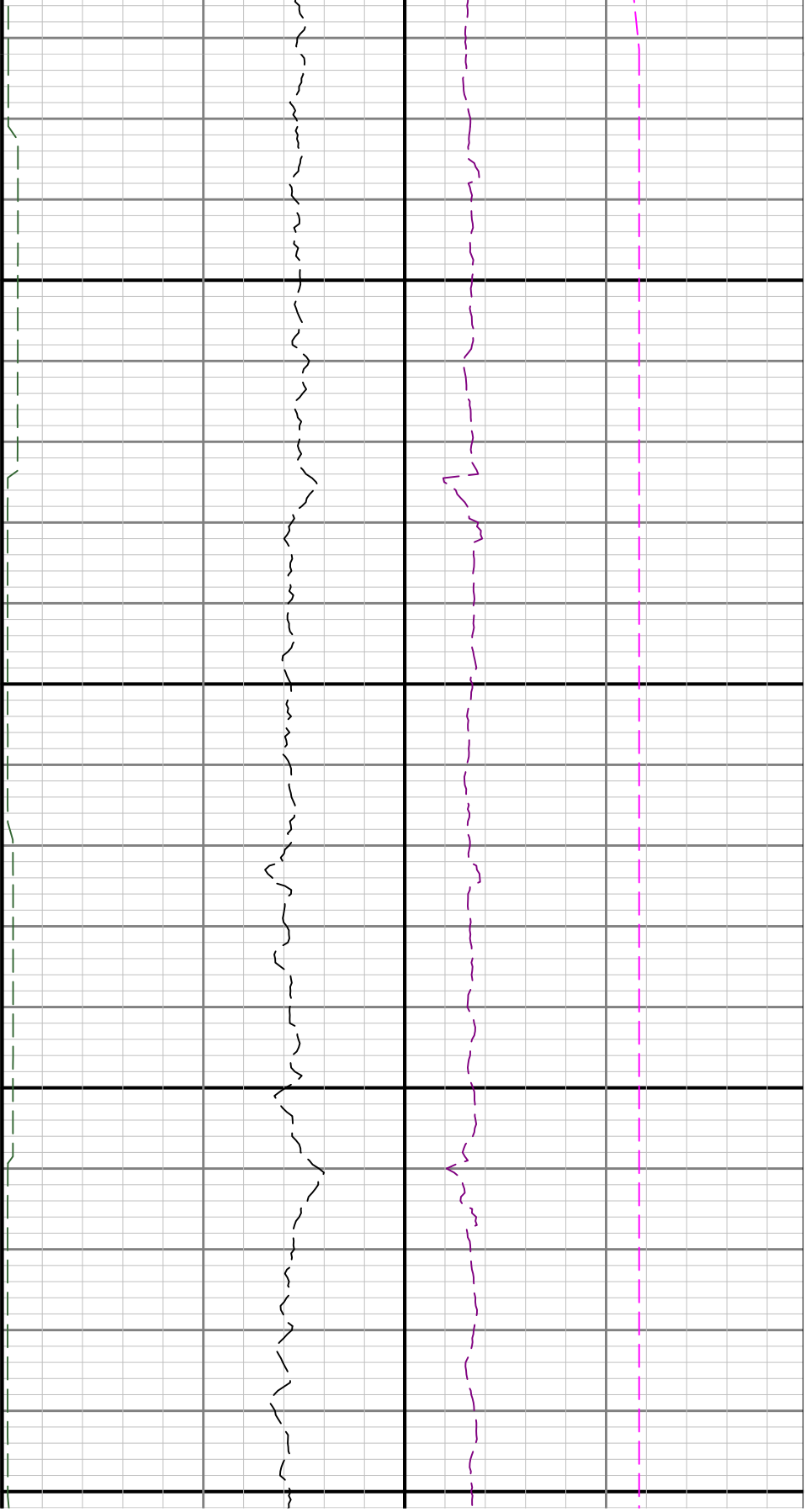


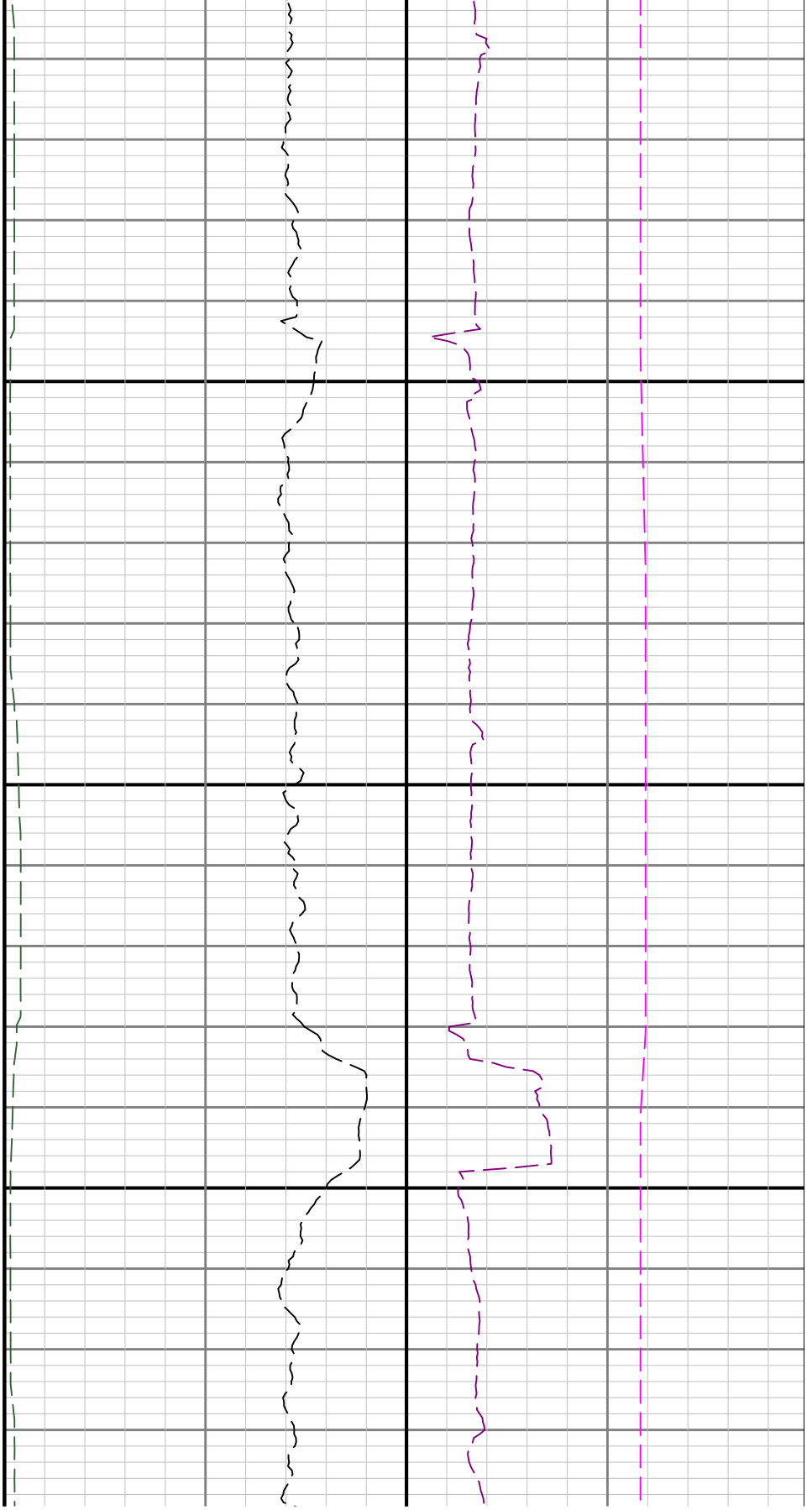
0068

0088

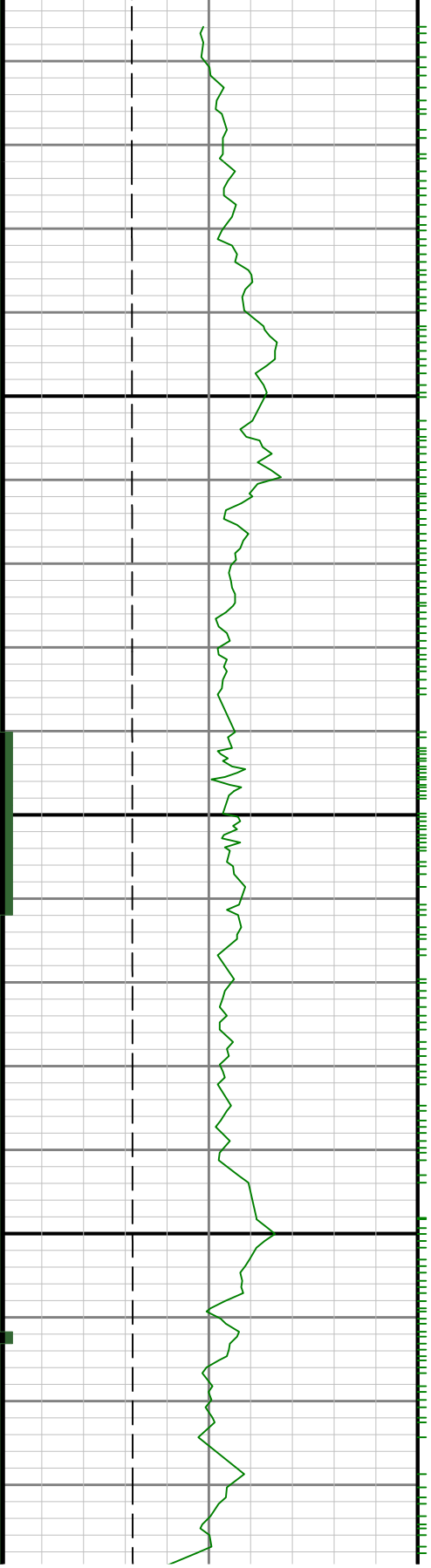


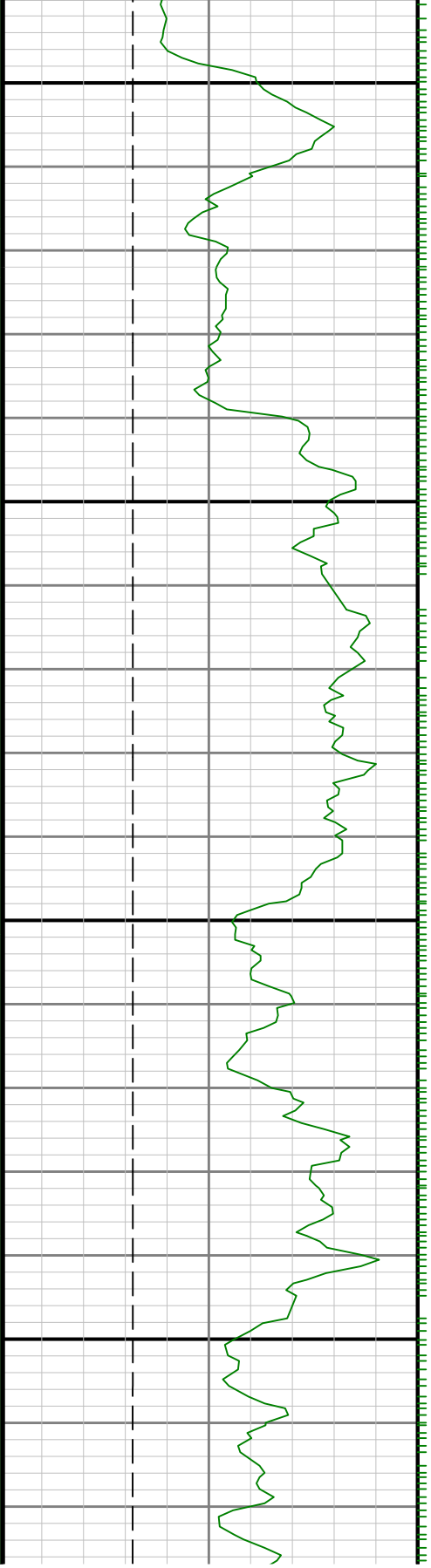






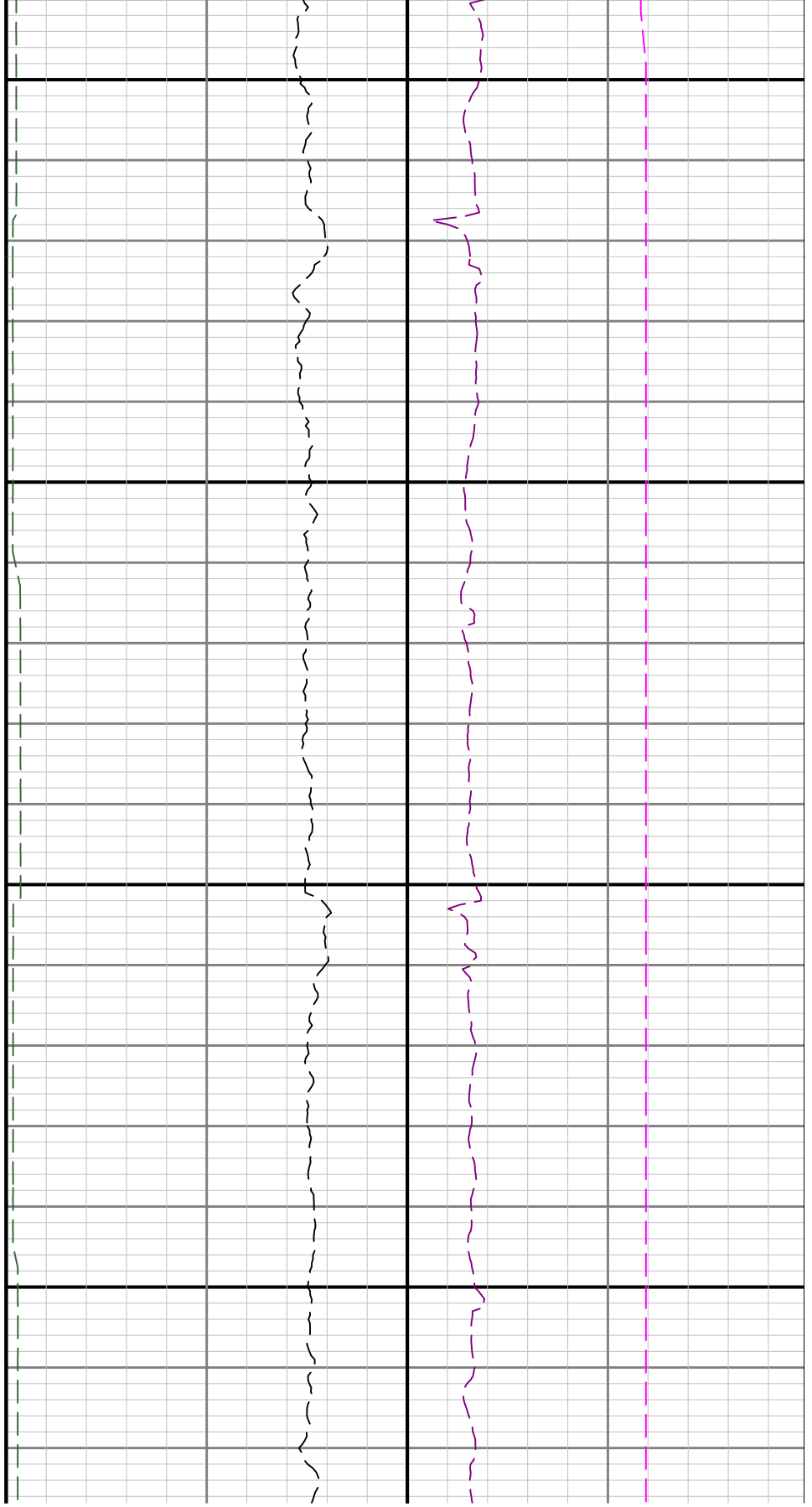
9400

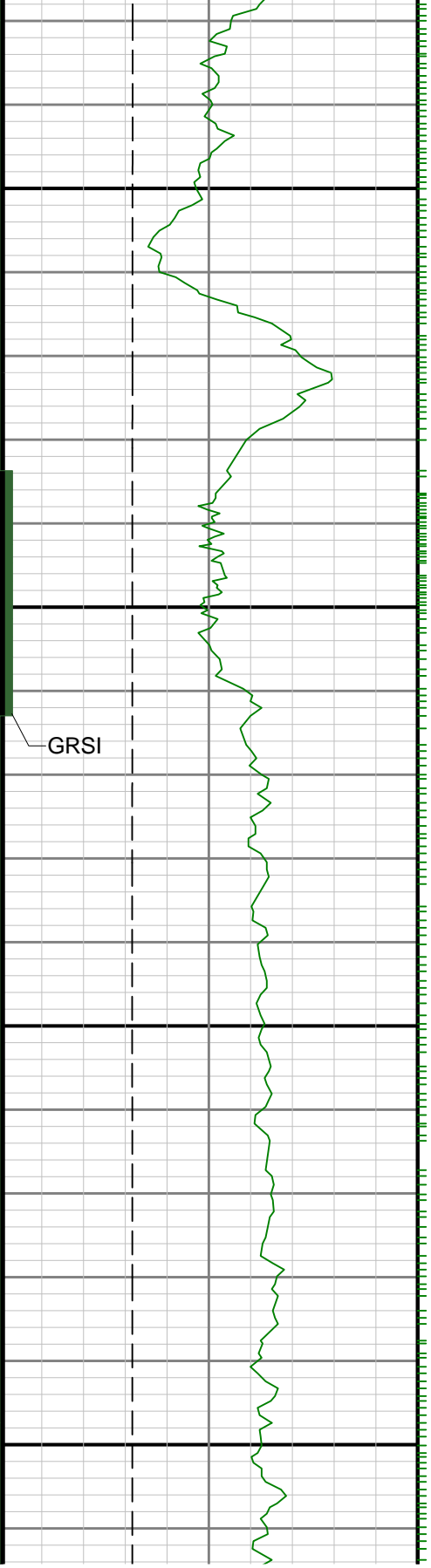




9500

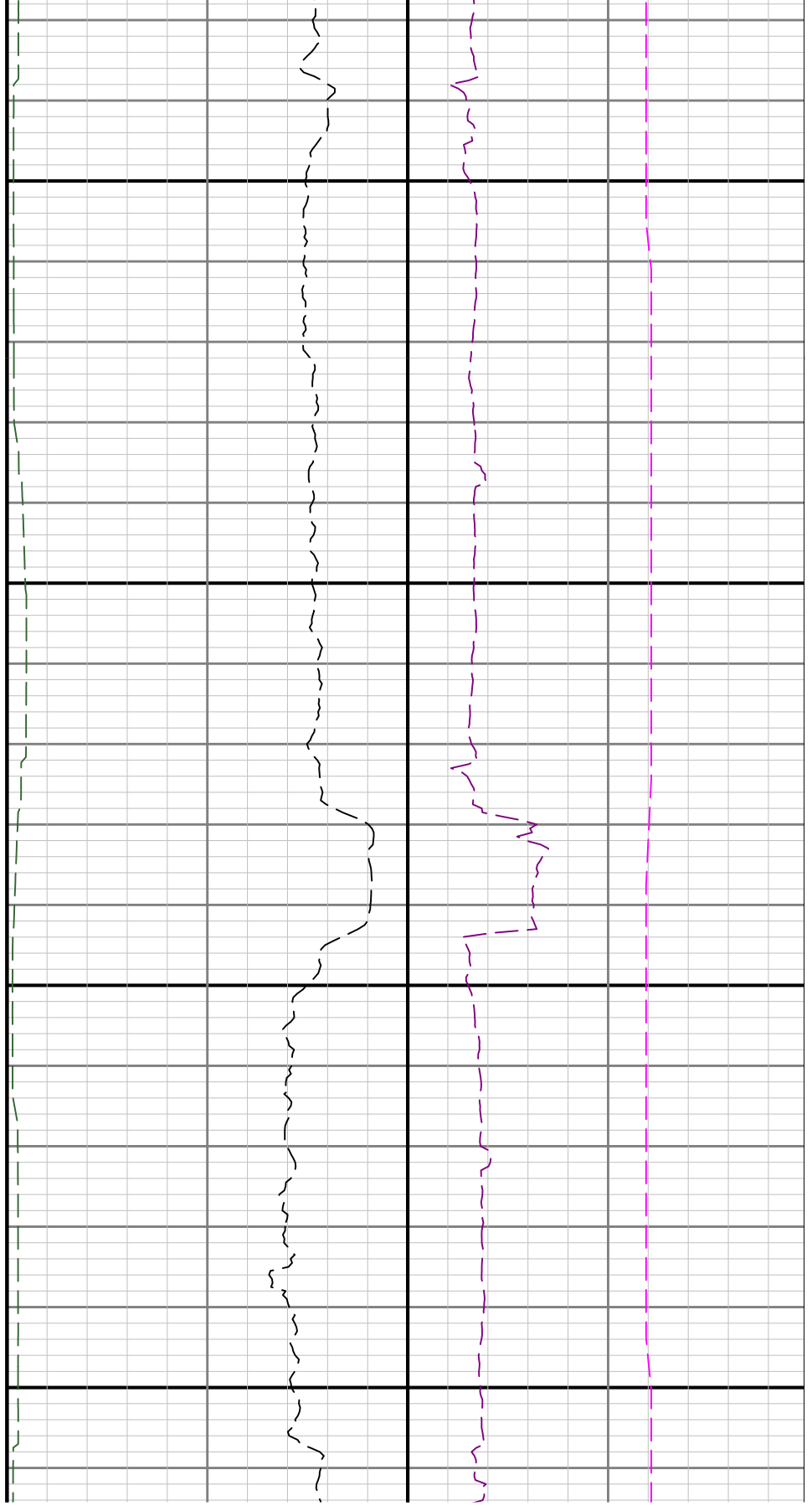
9600

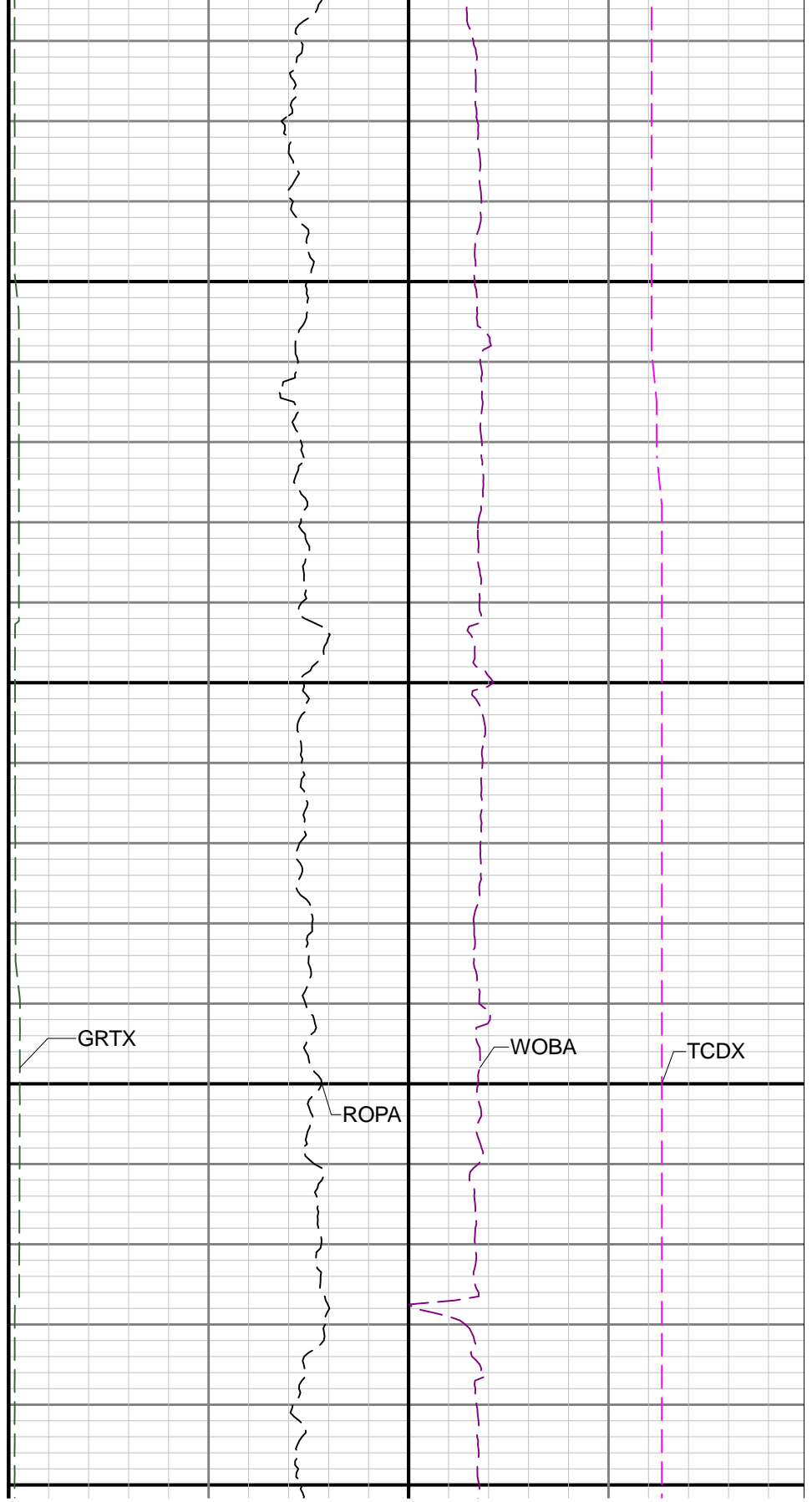
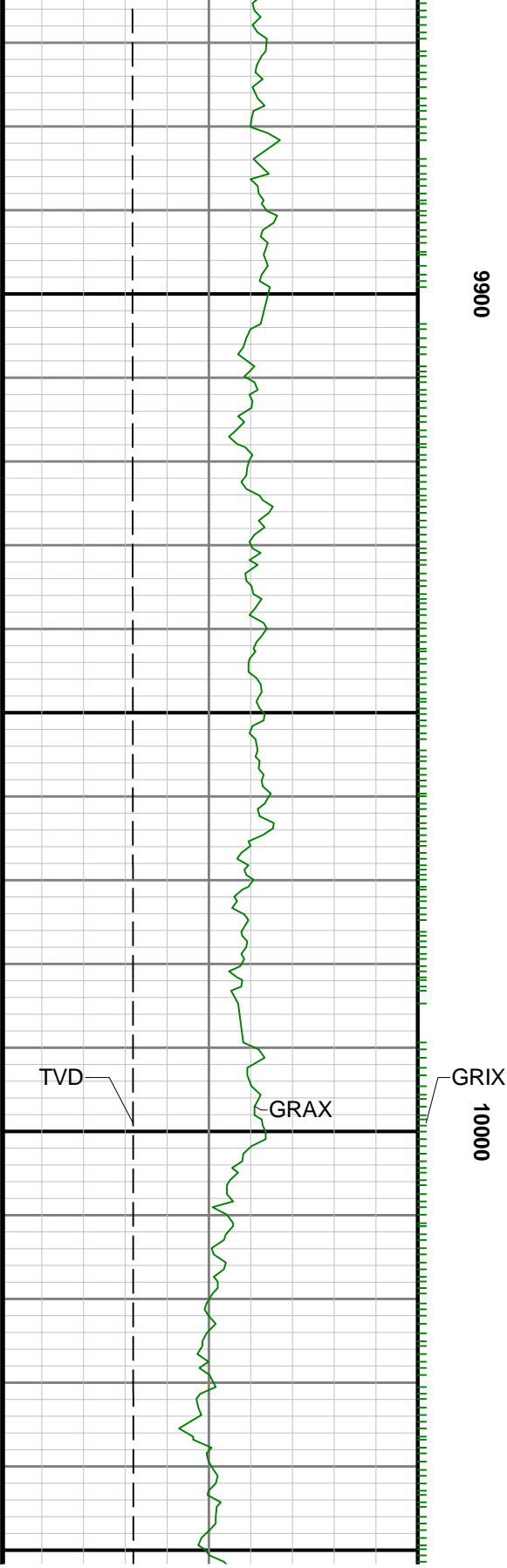




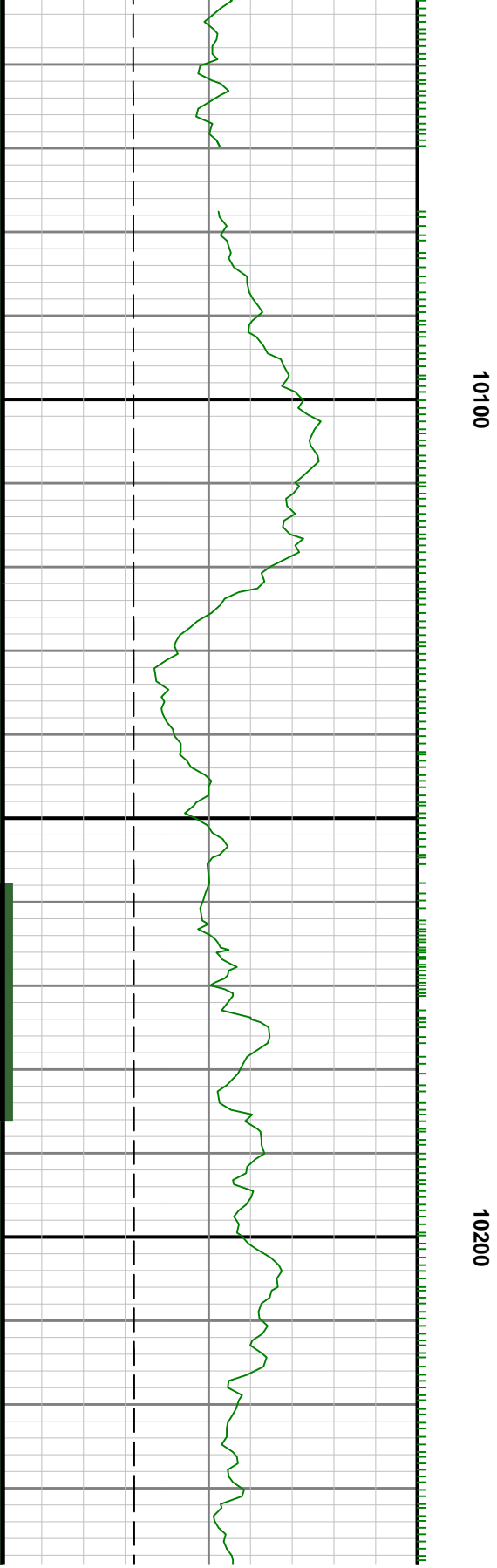
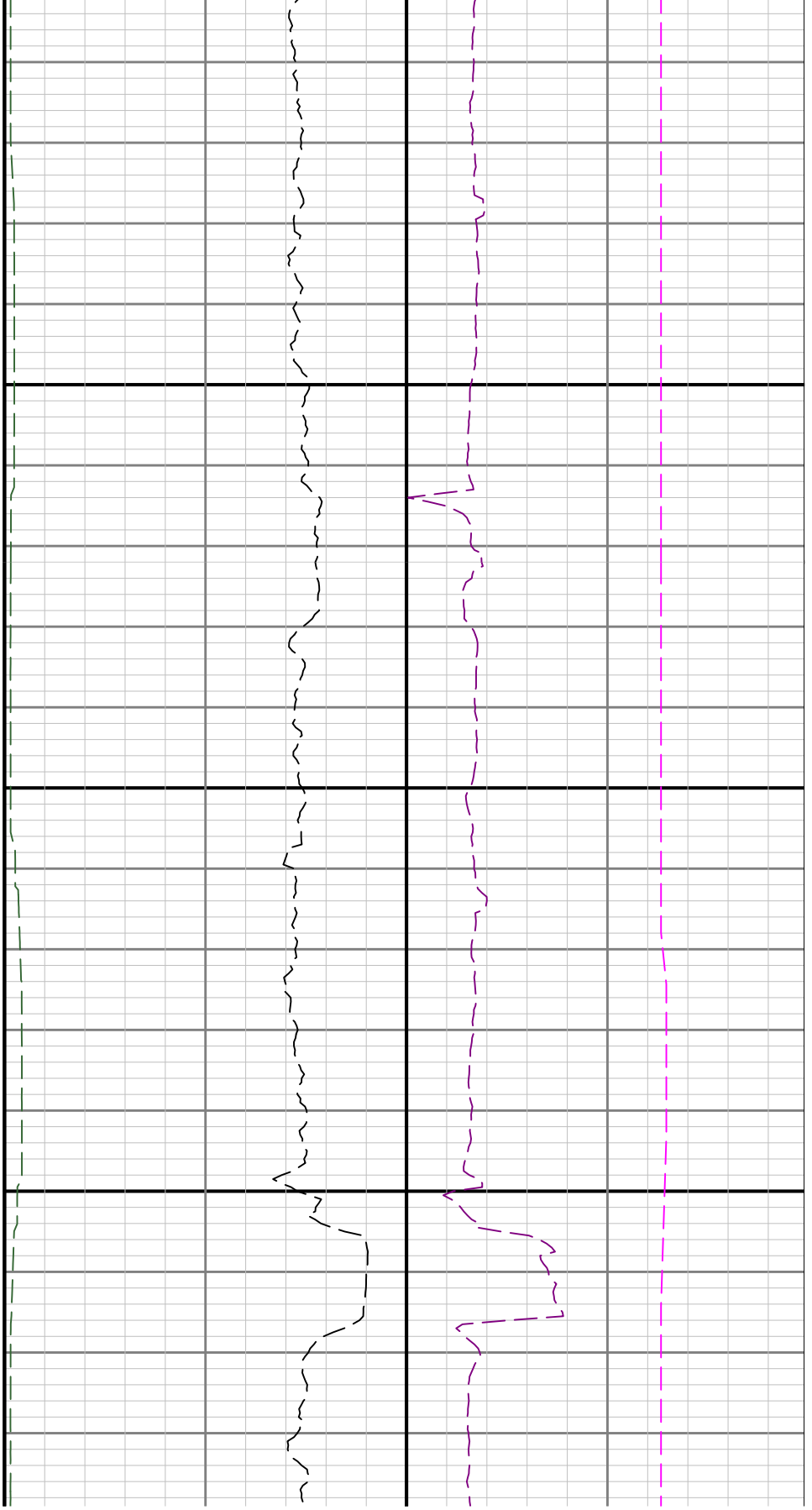
9700

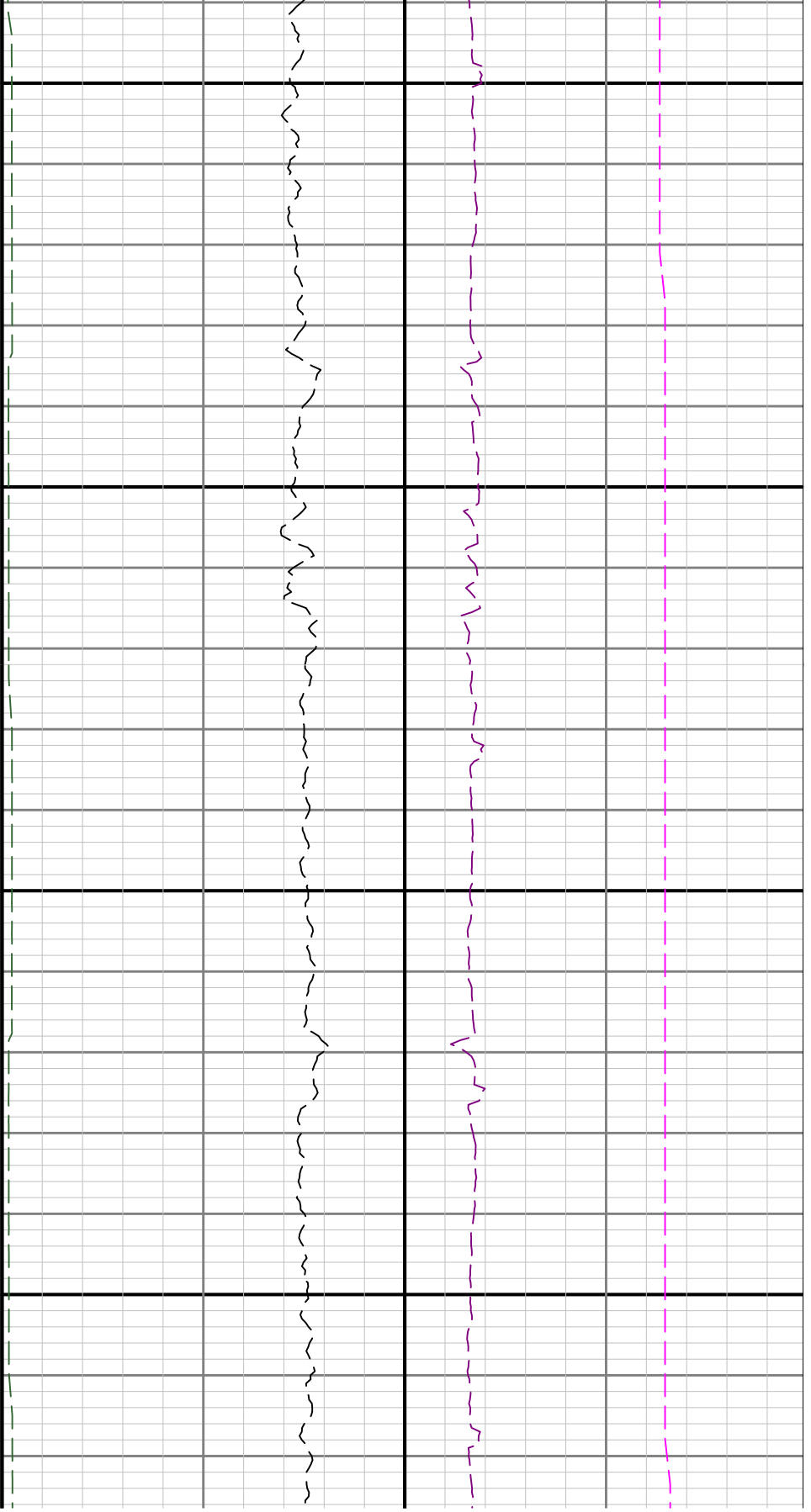
9800





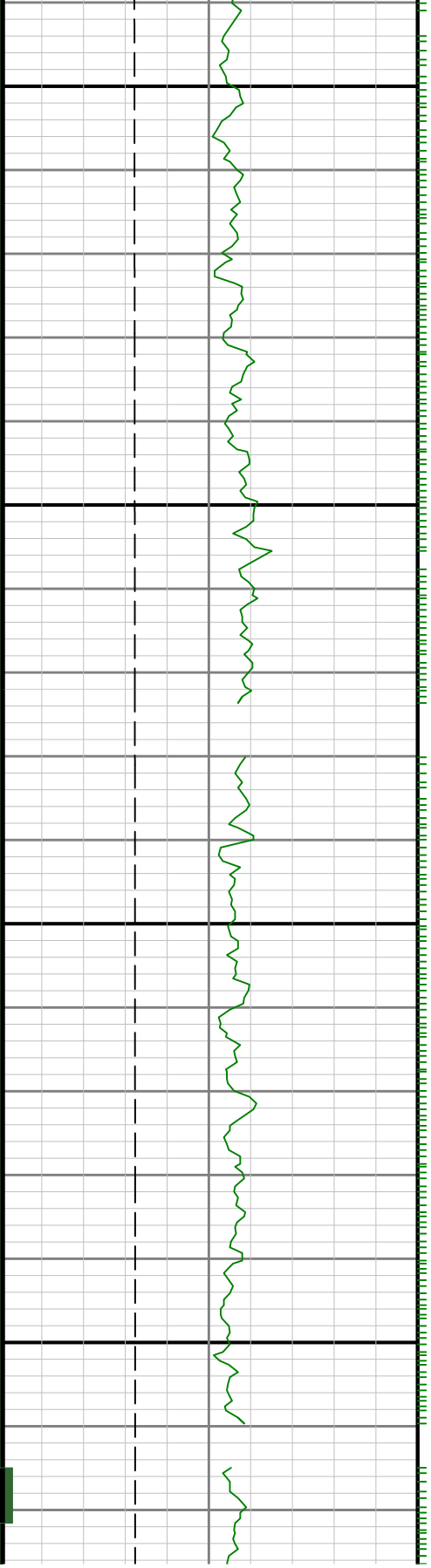


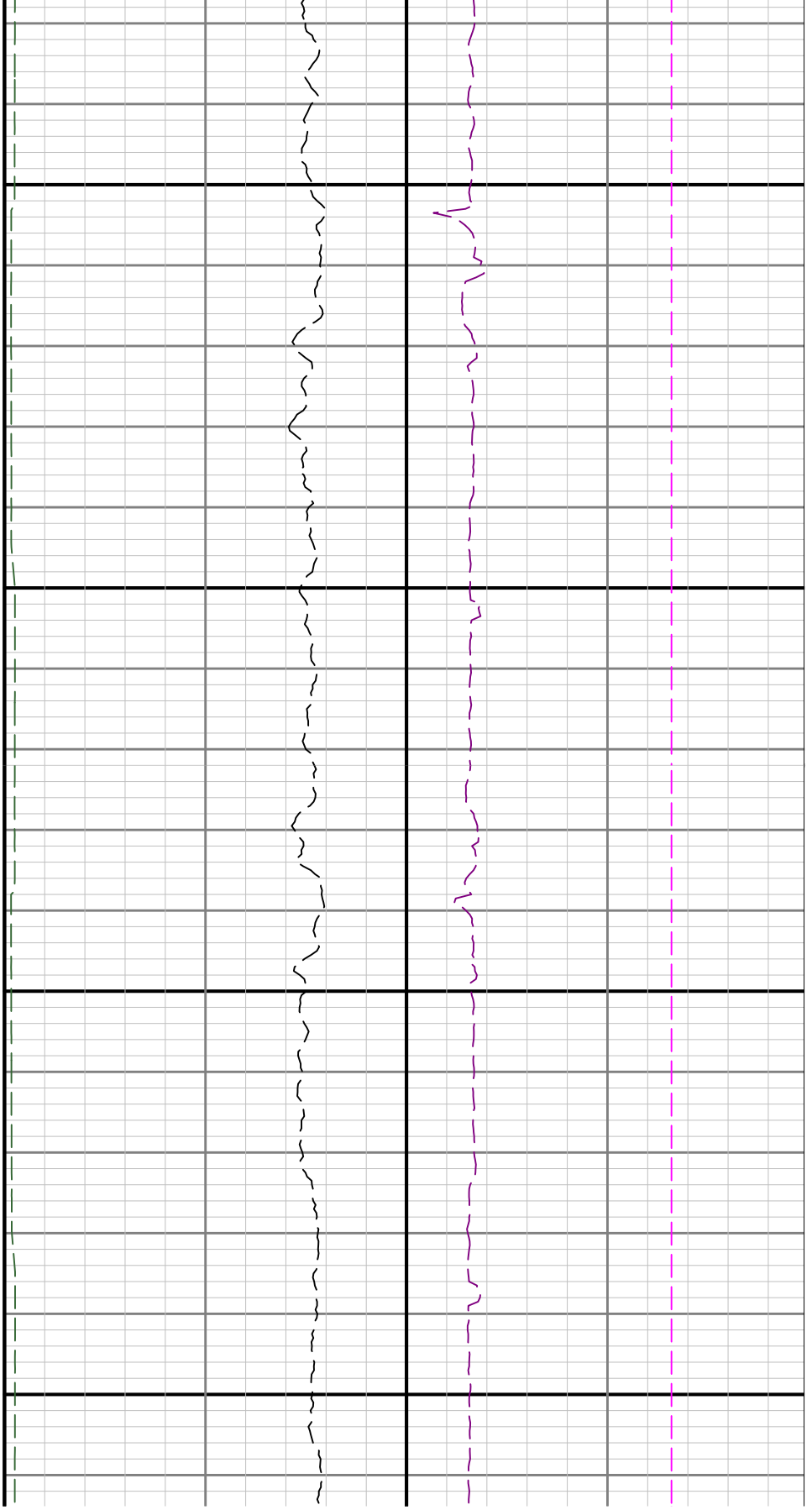




10300

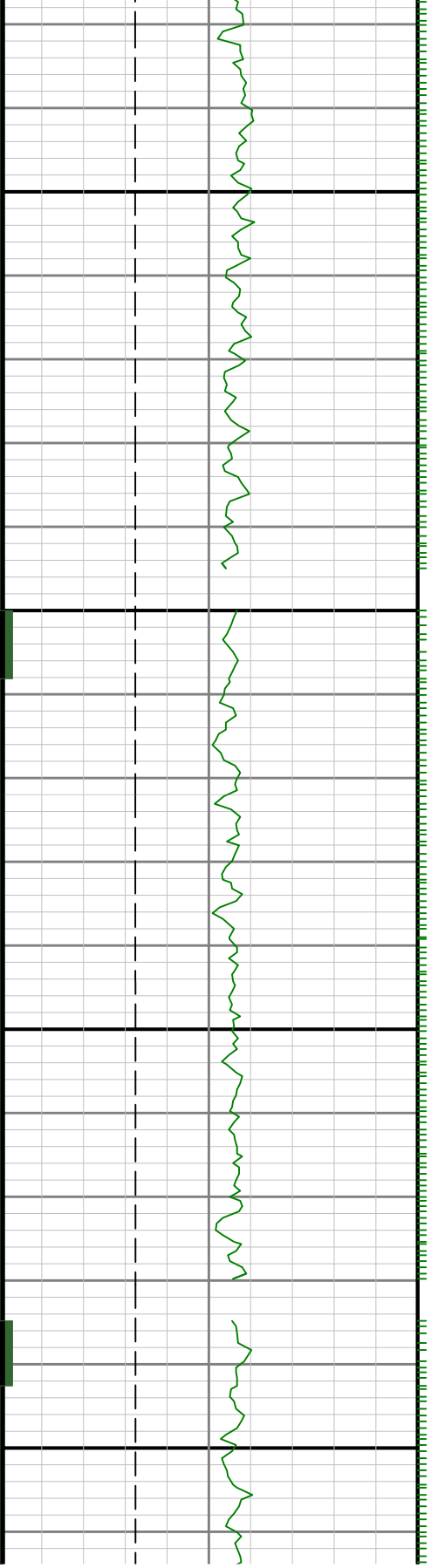
10400

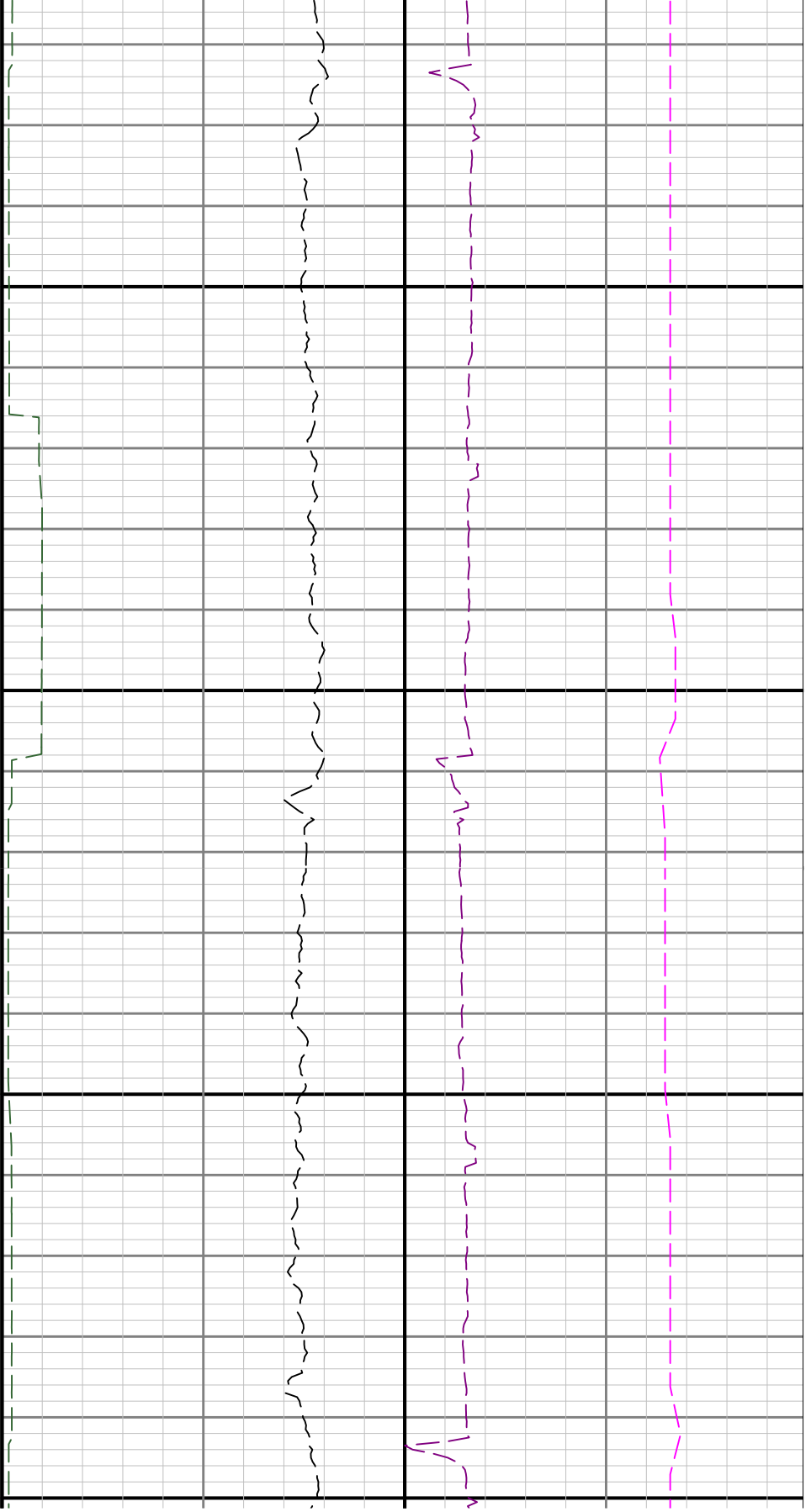




10500

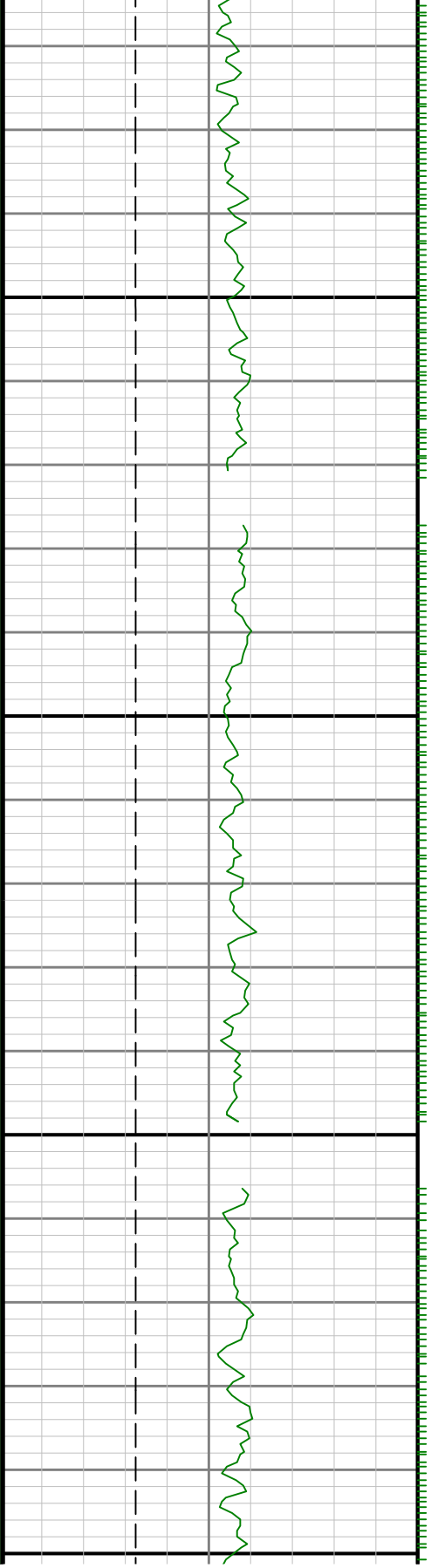
10600

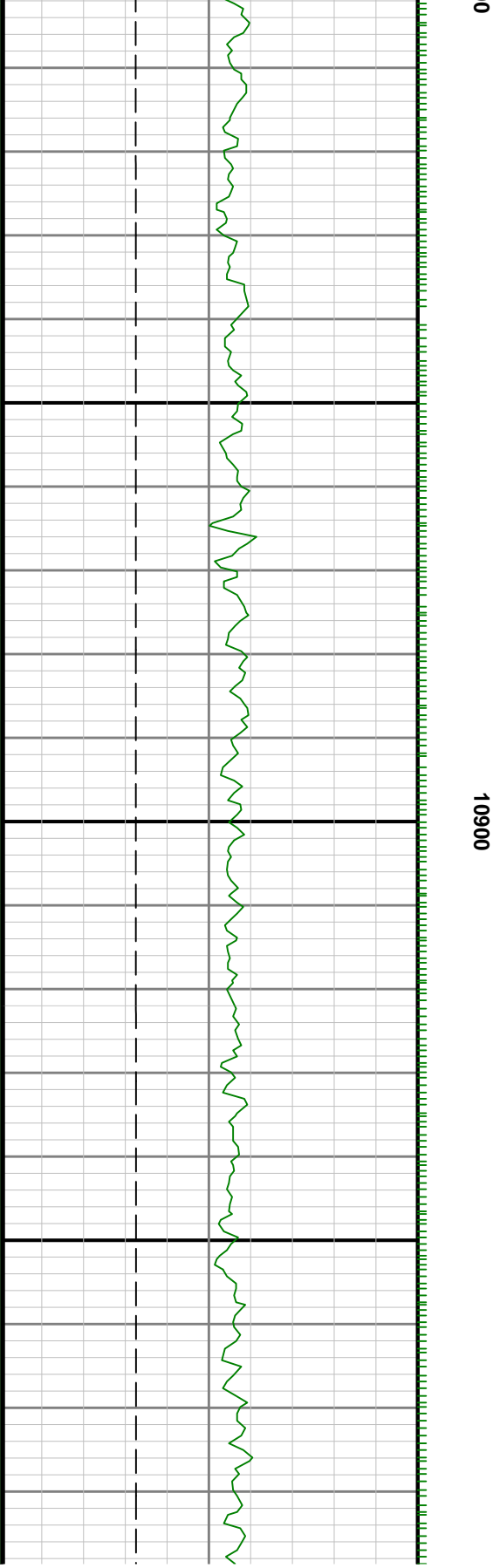
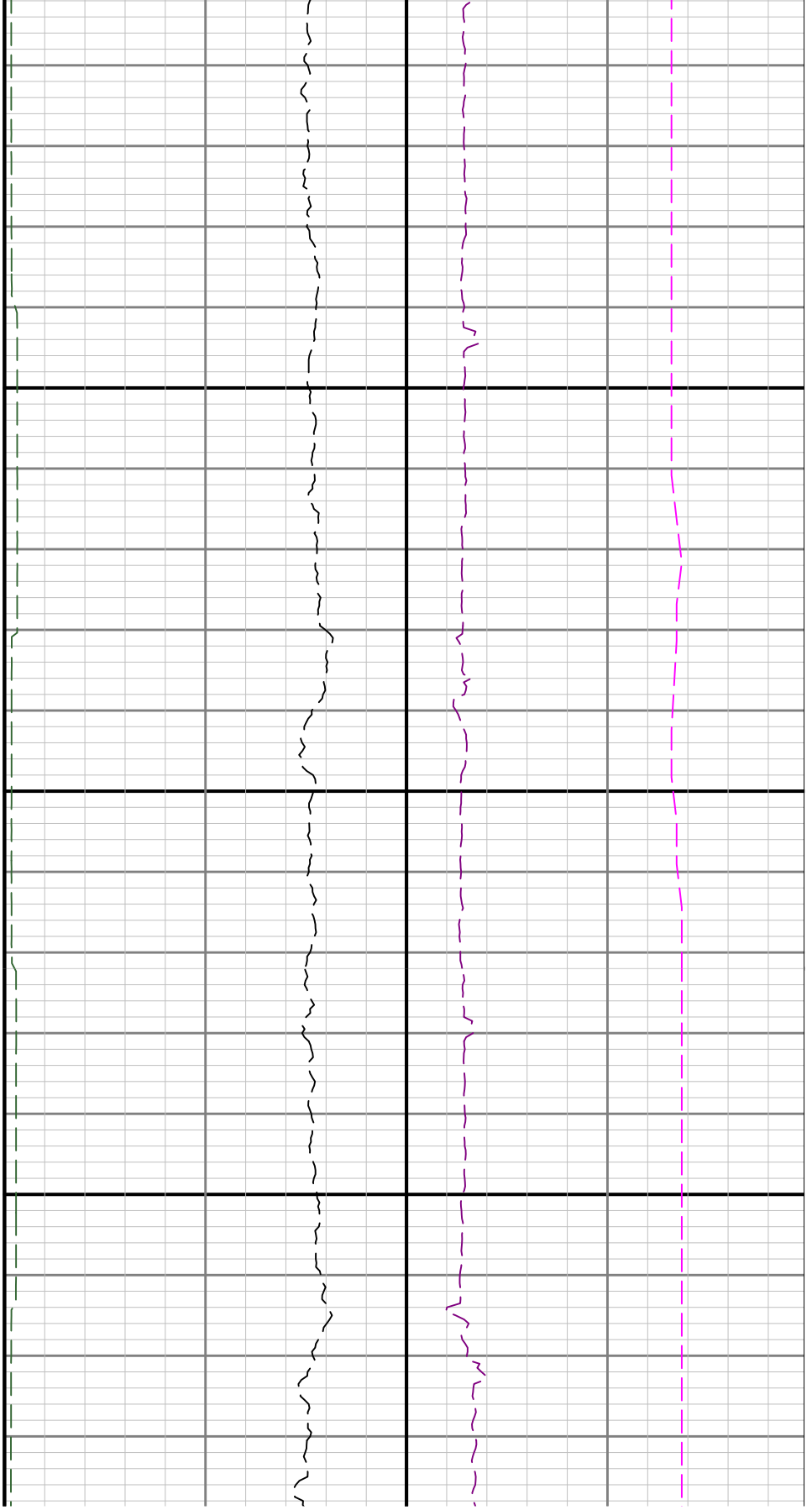




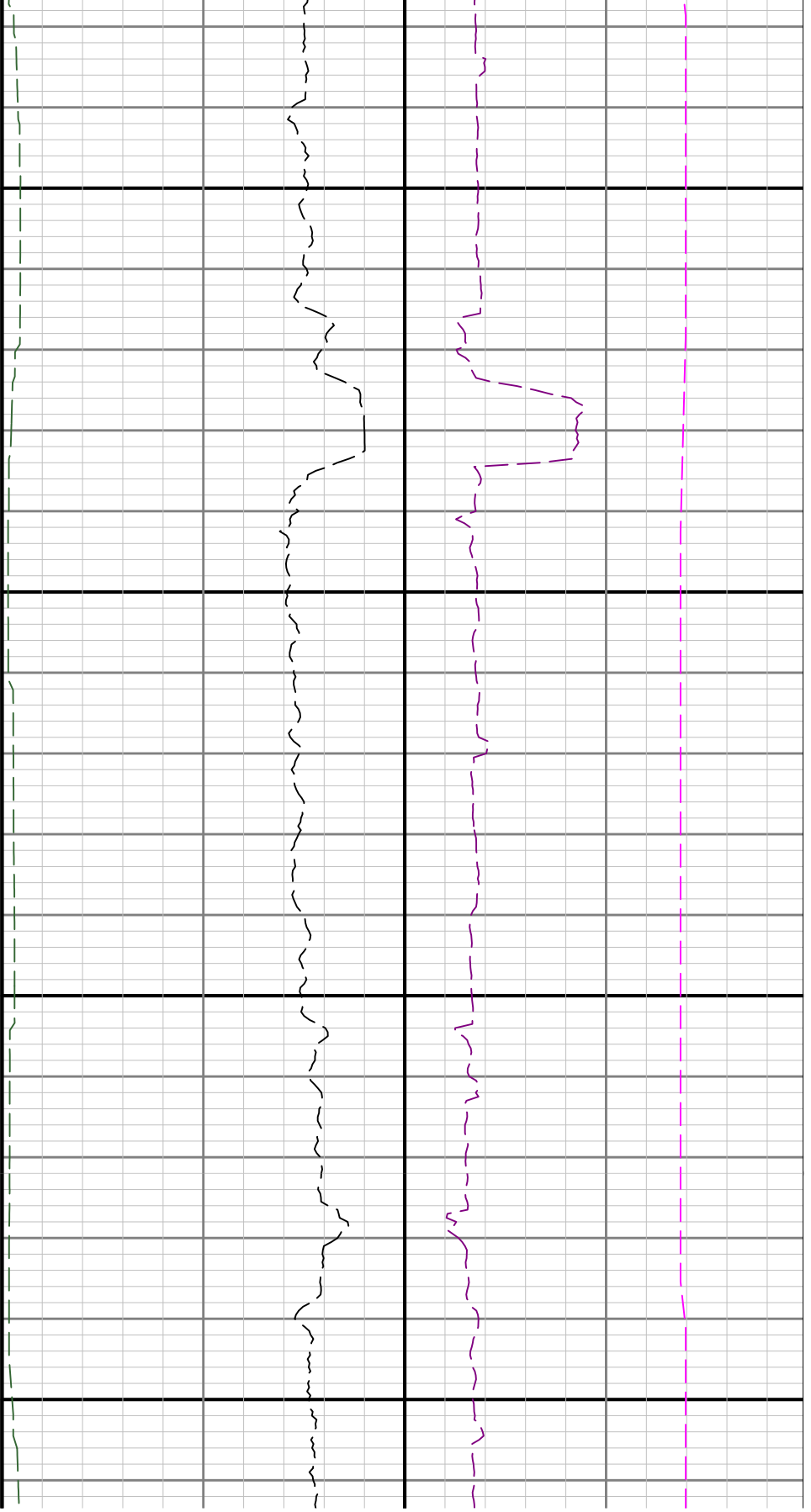
10700

10800



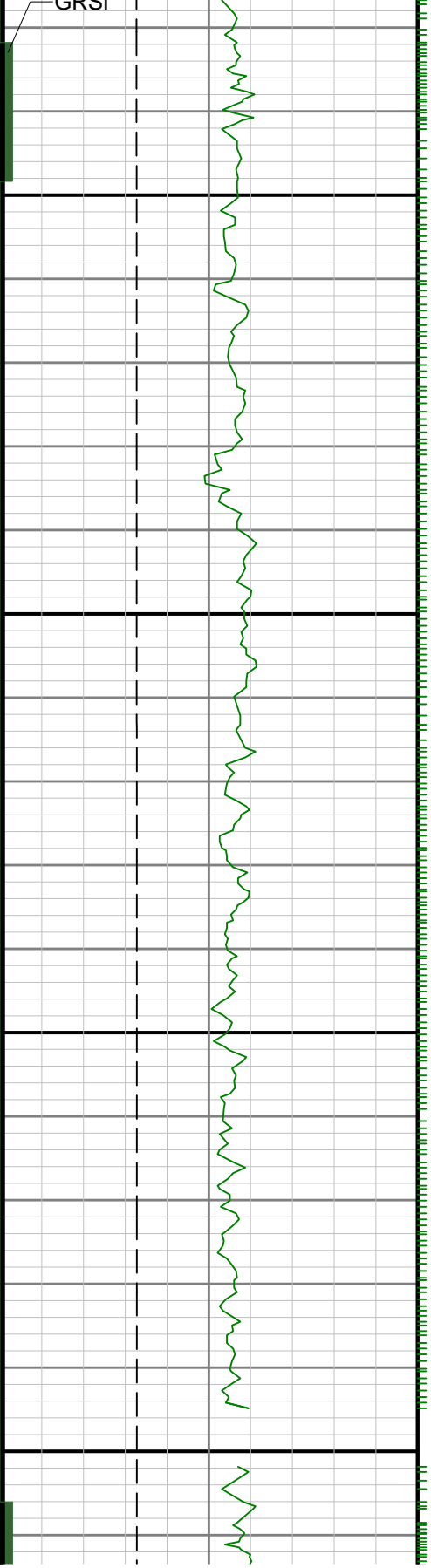




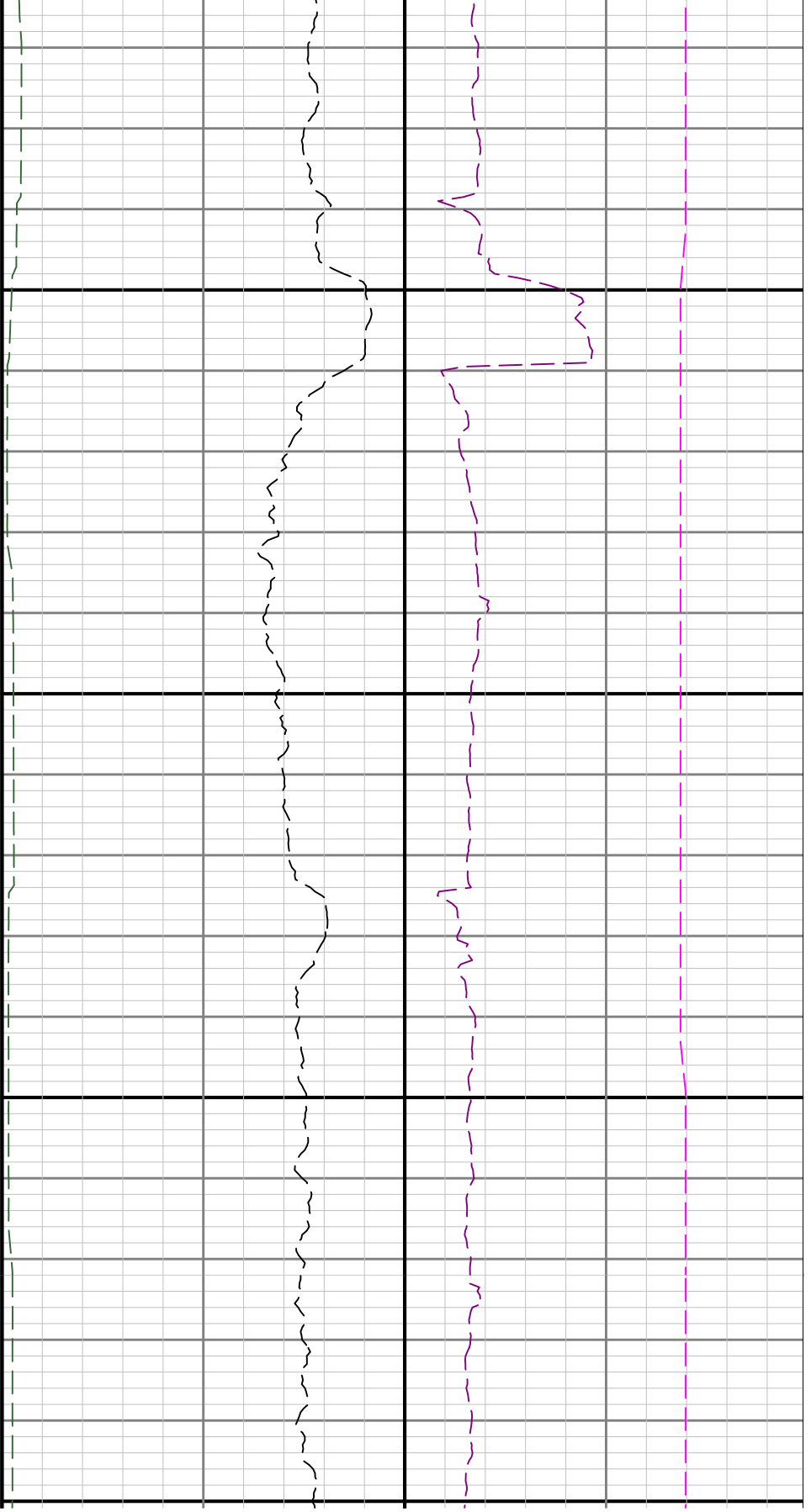


11200

11300

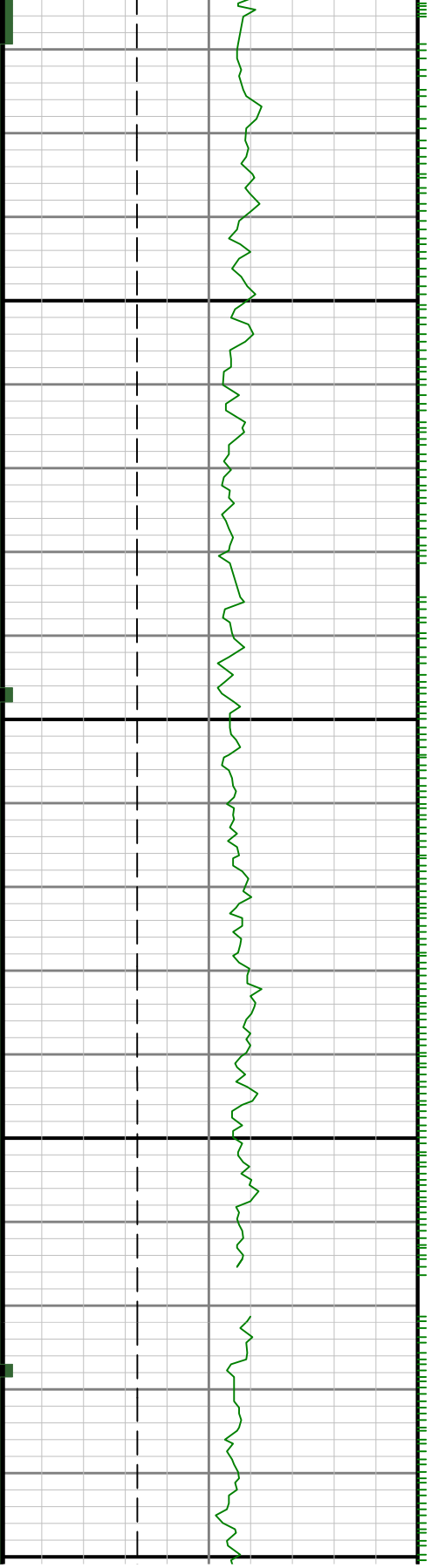


GRSI

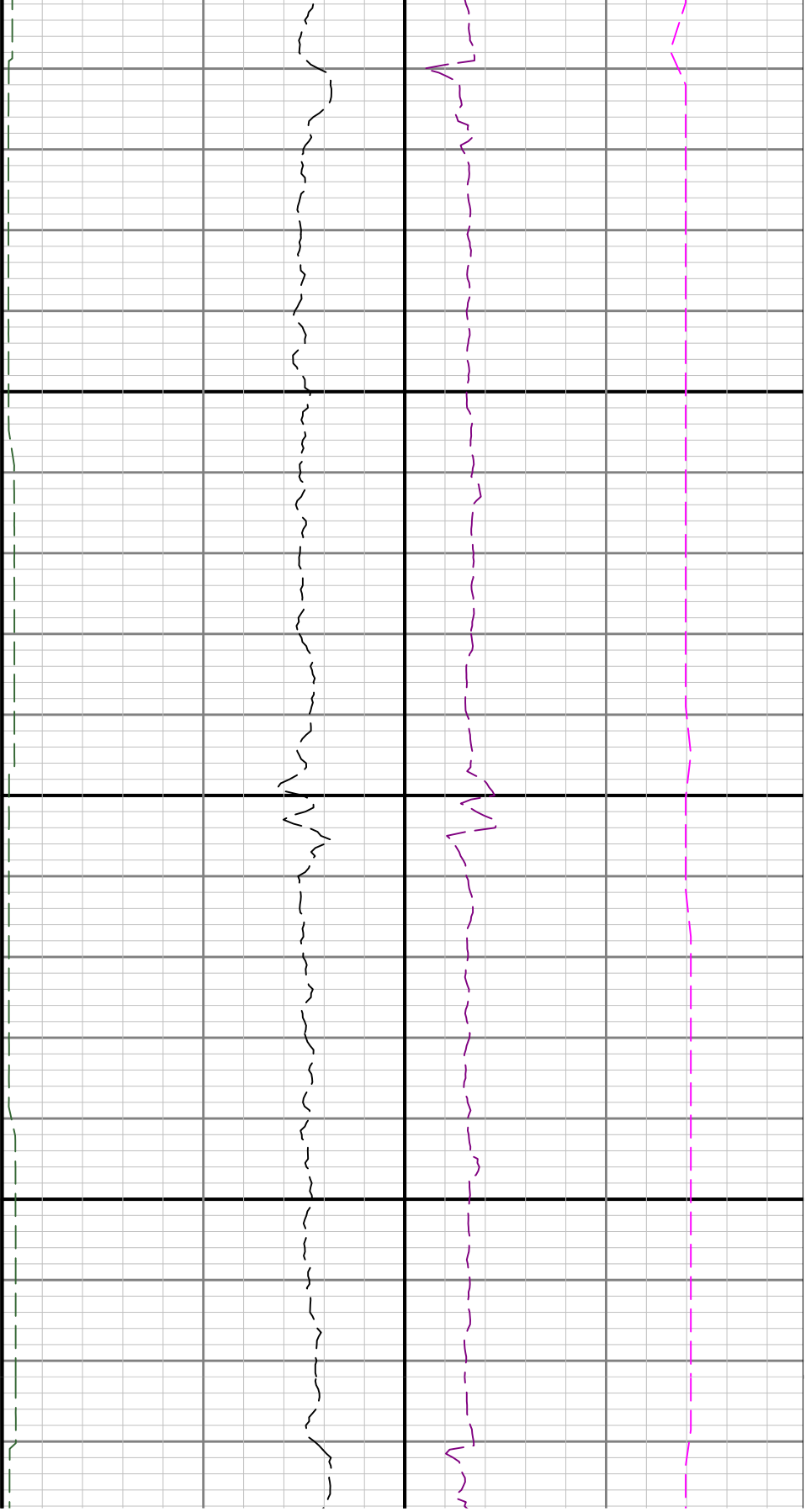


11400

11500

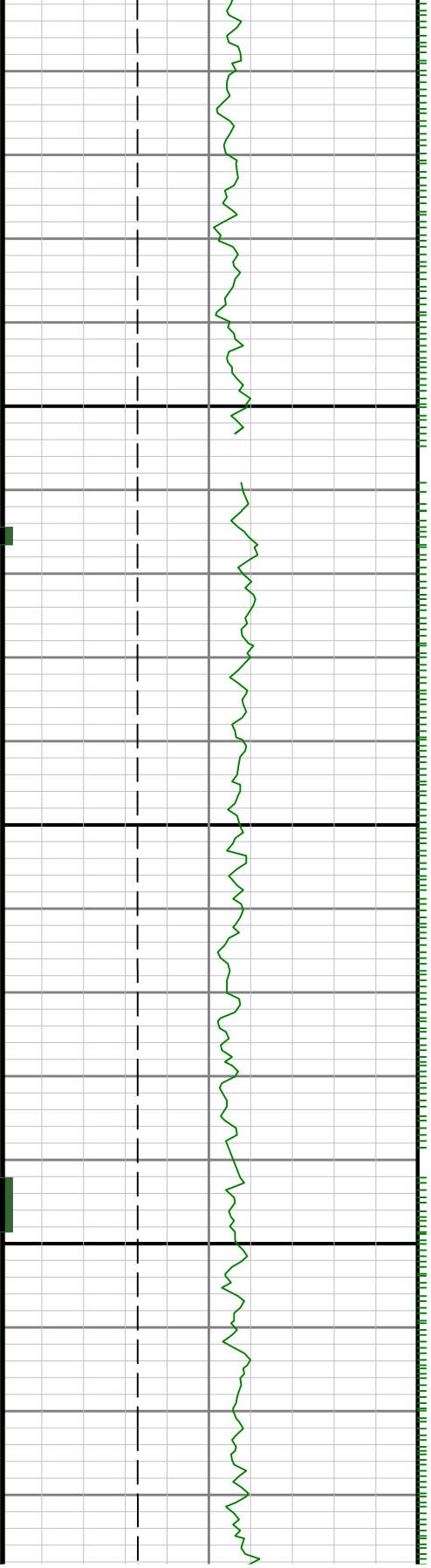


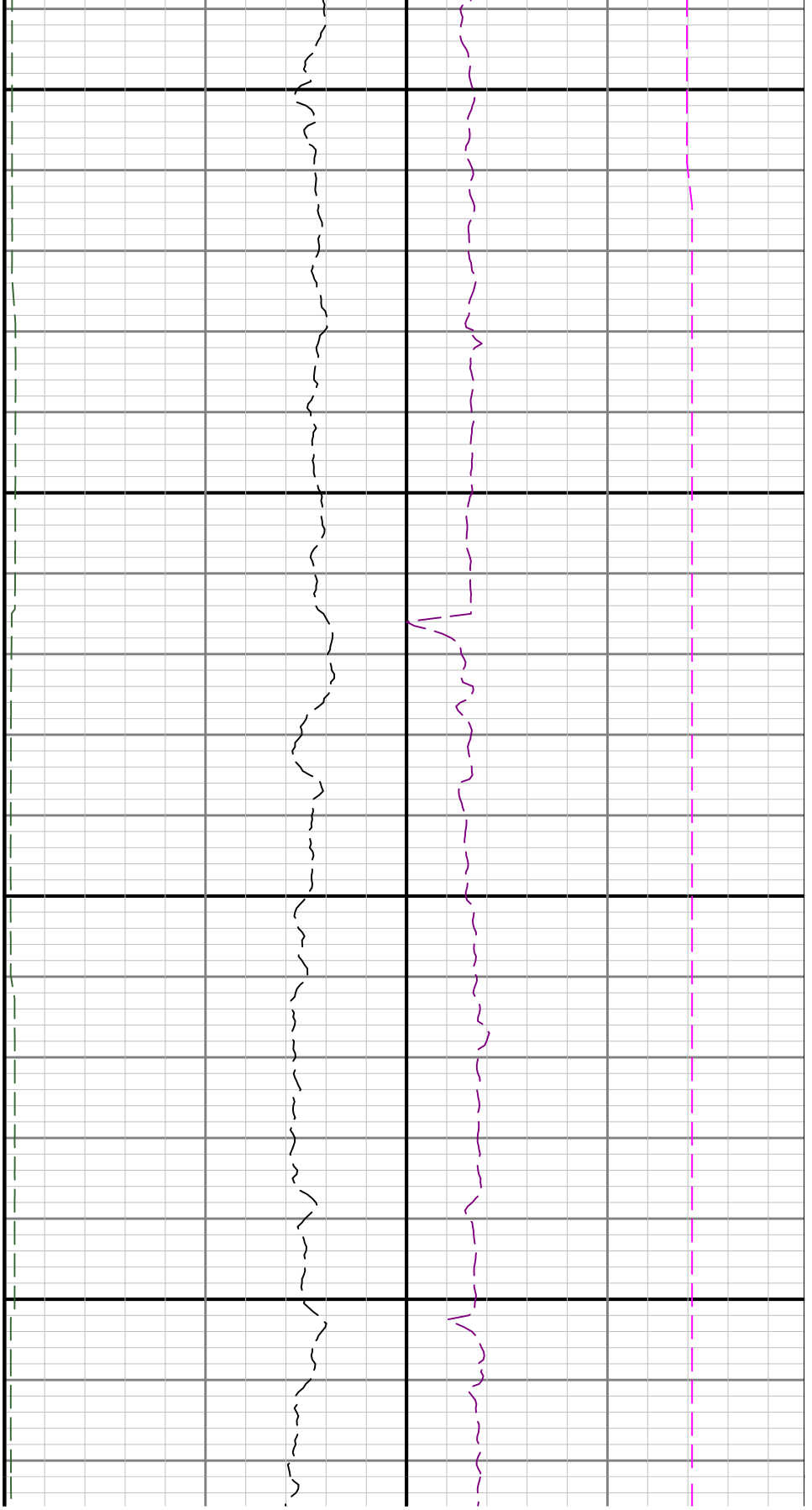




11600

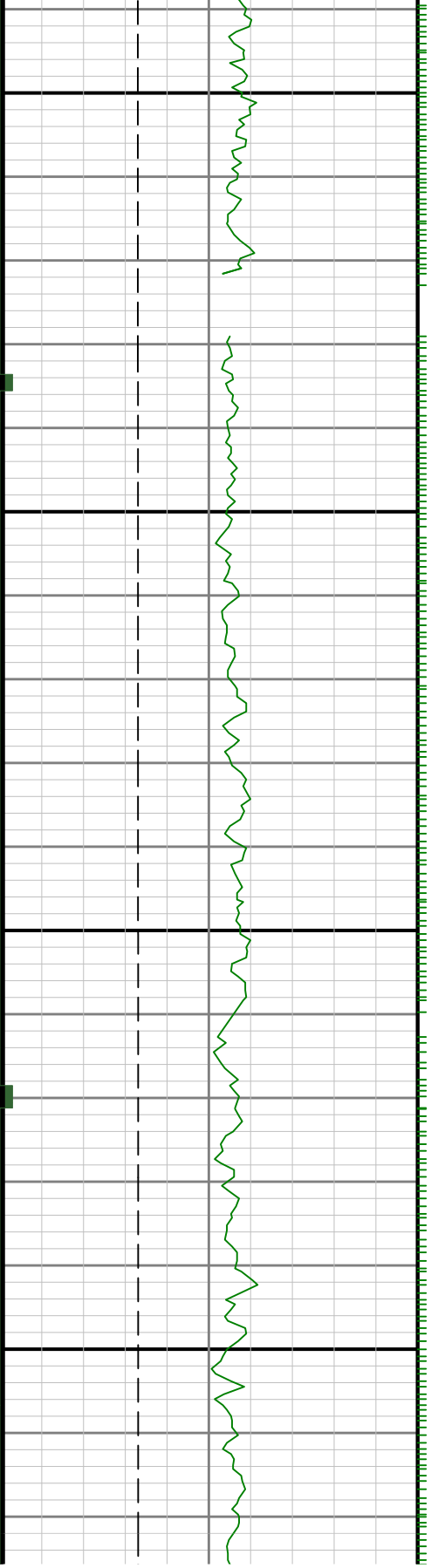
11700

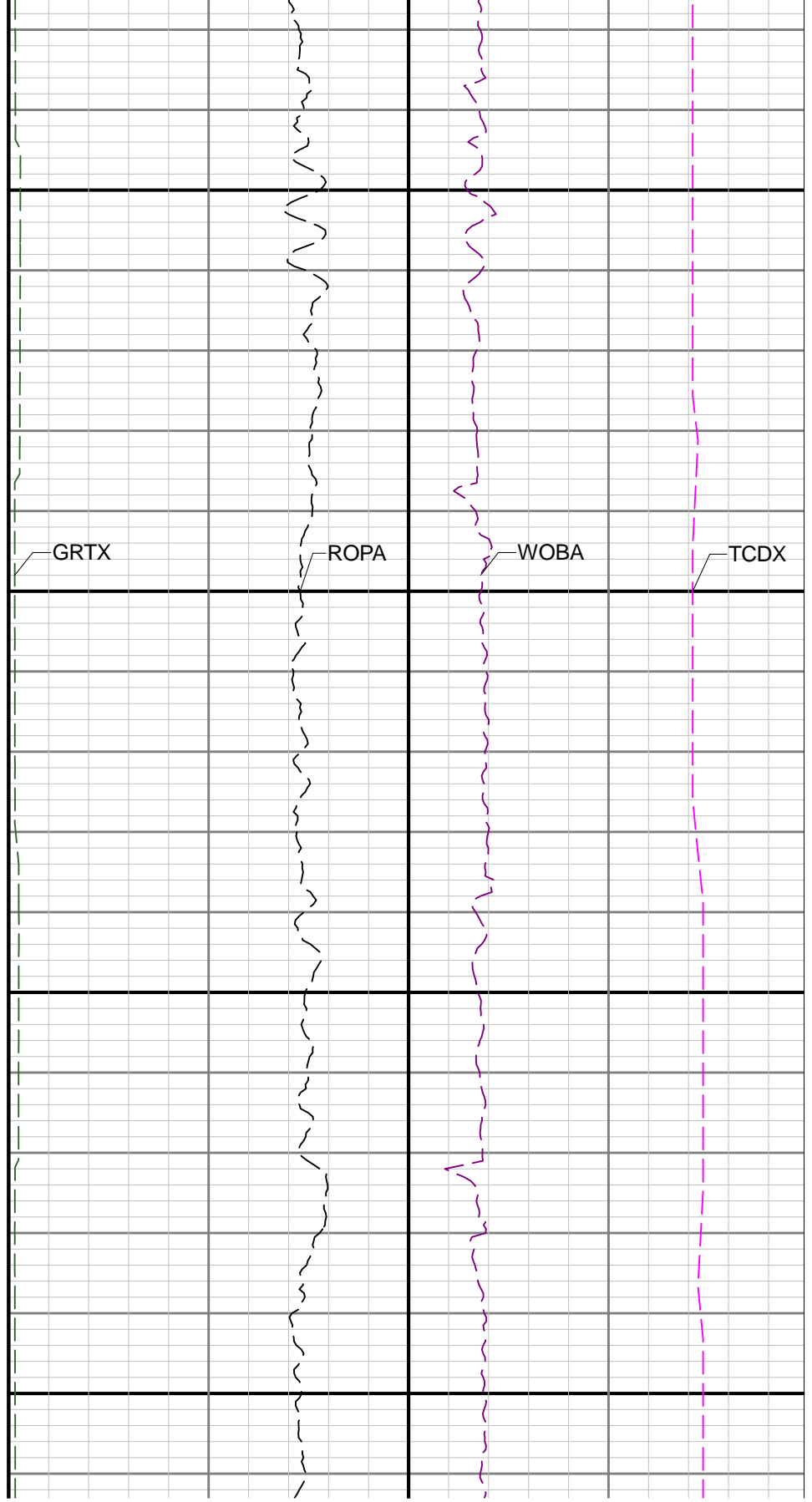
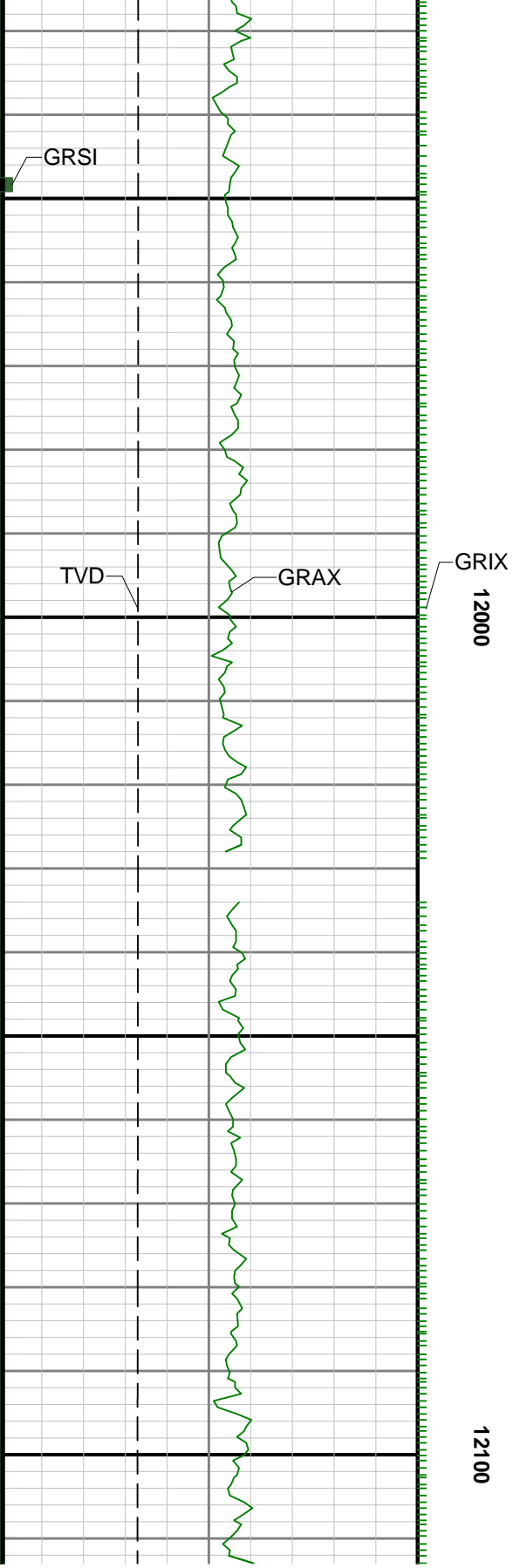


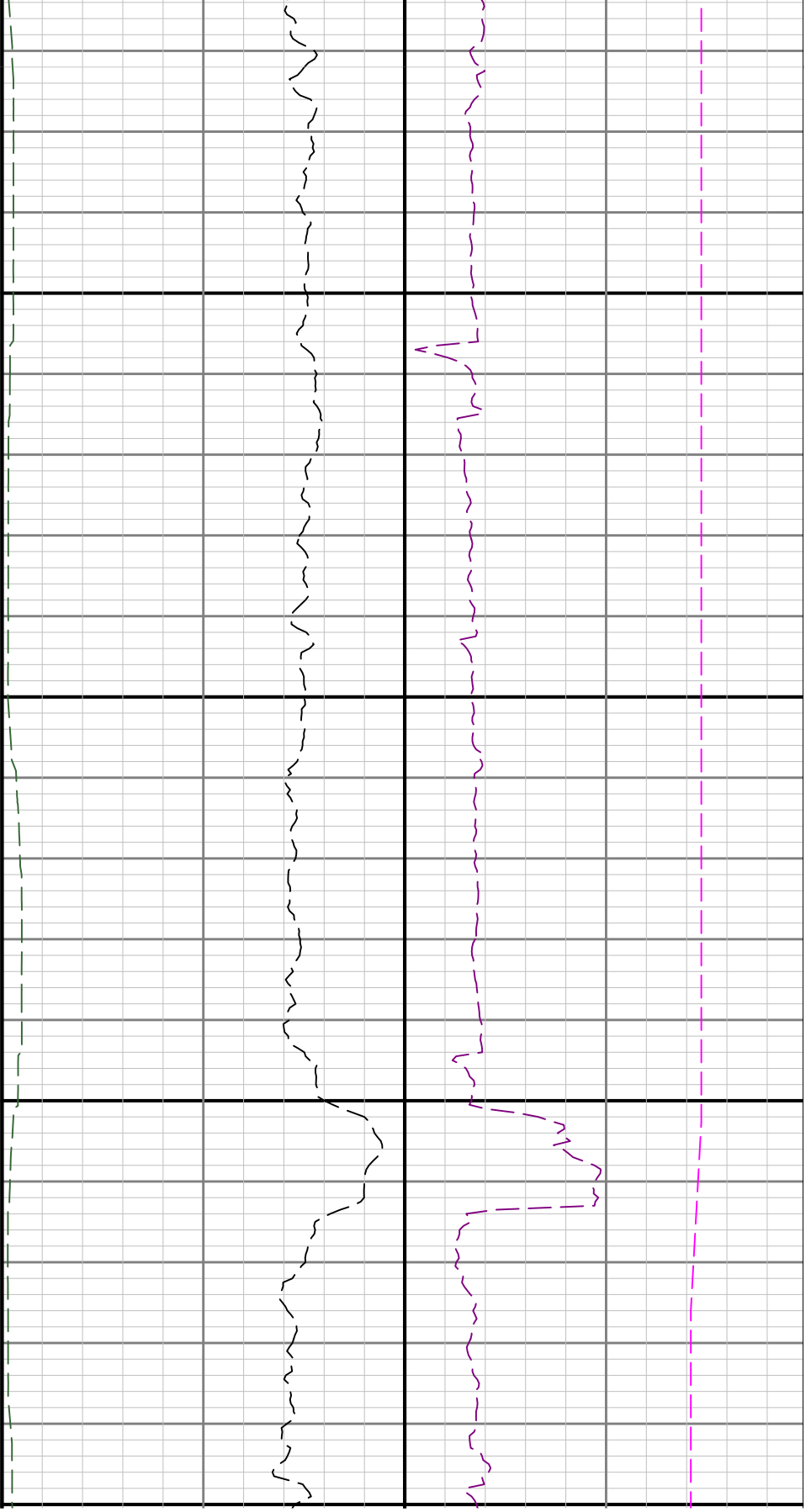


11800

11900

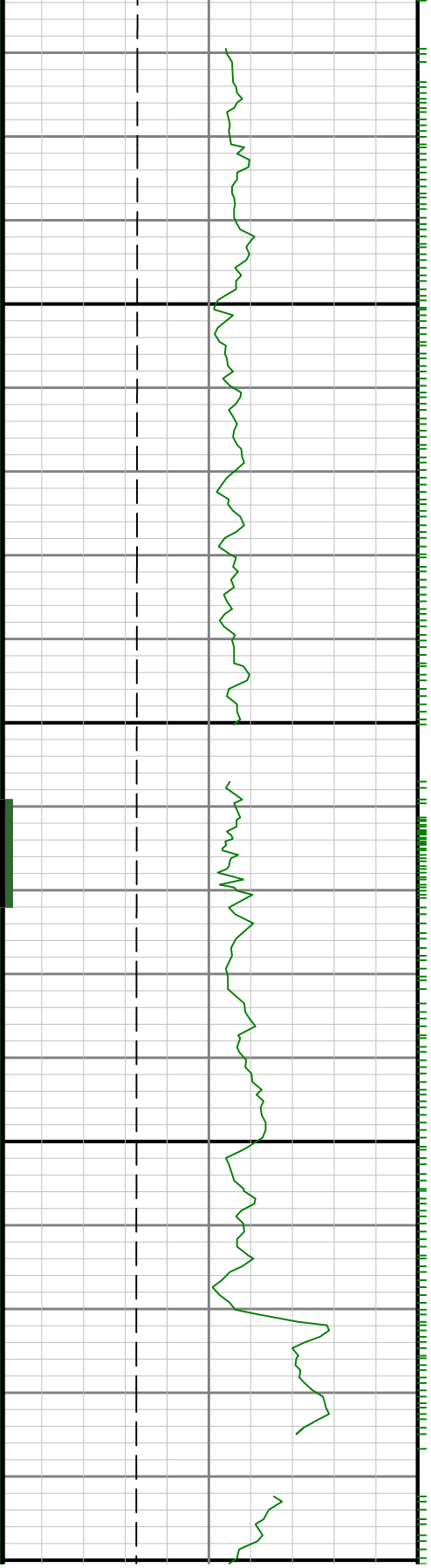


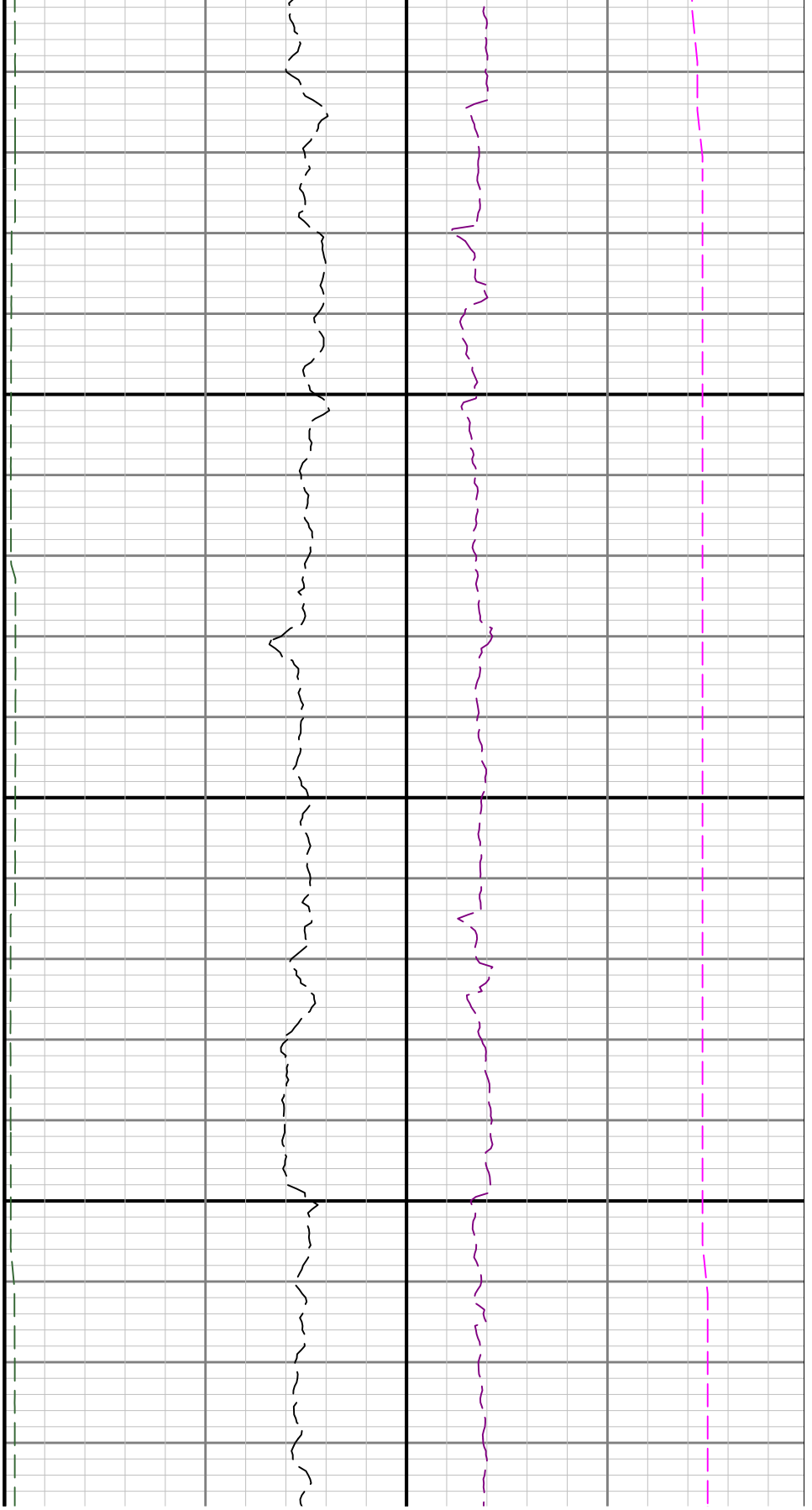




12200

123

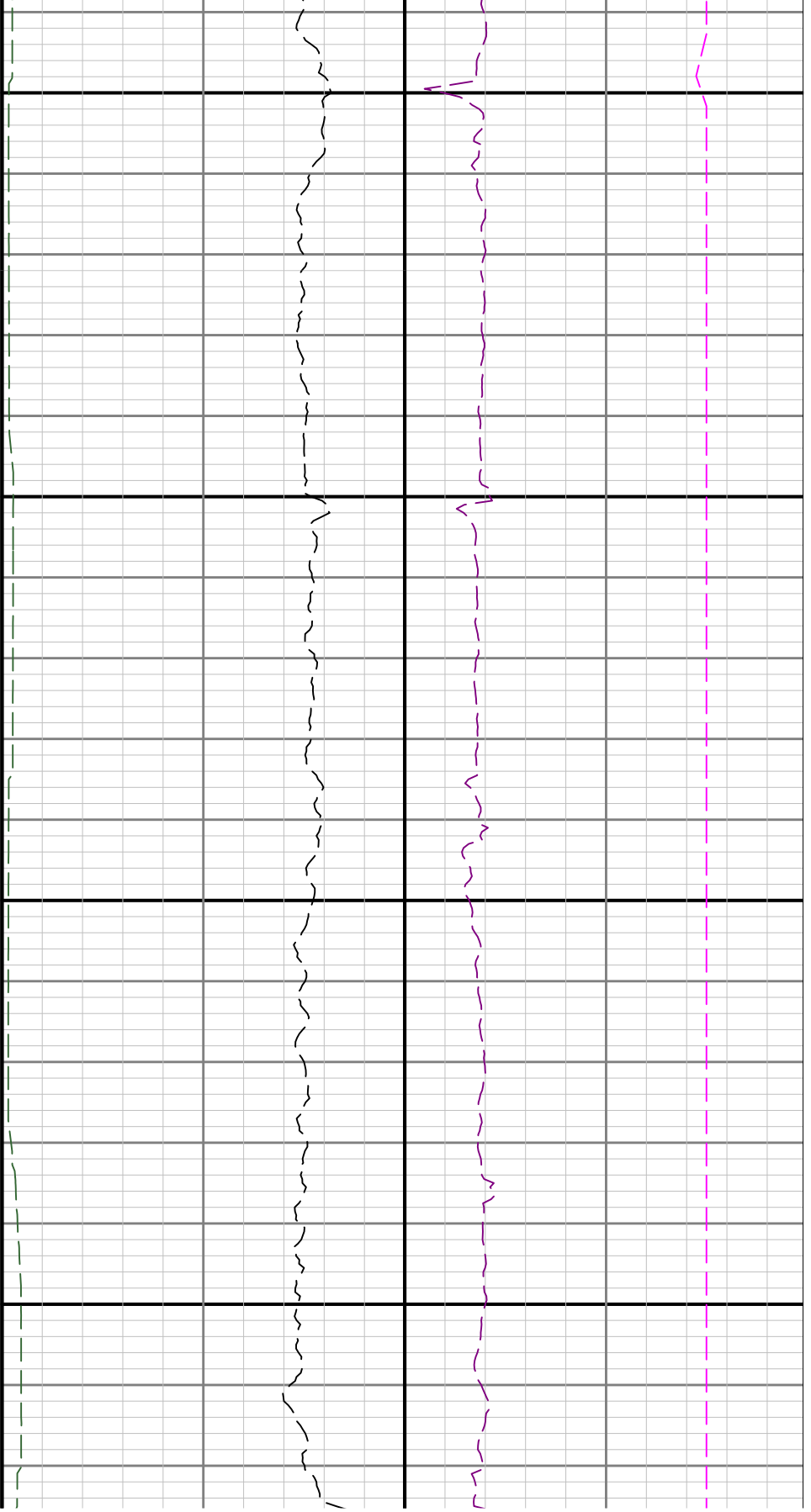




00

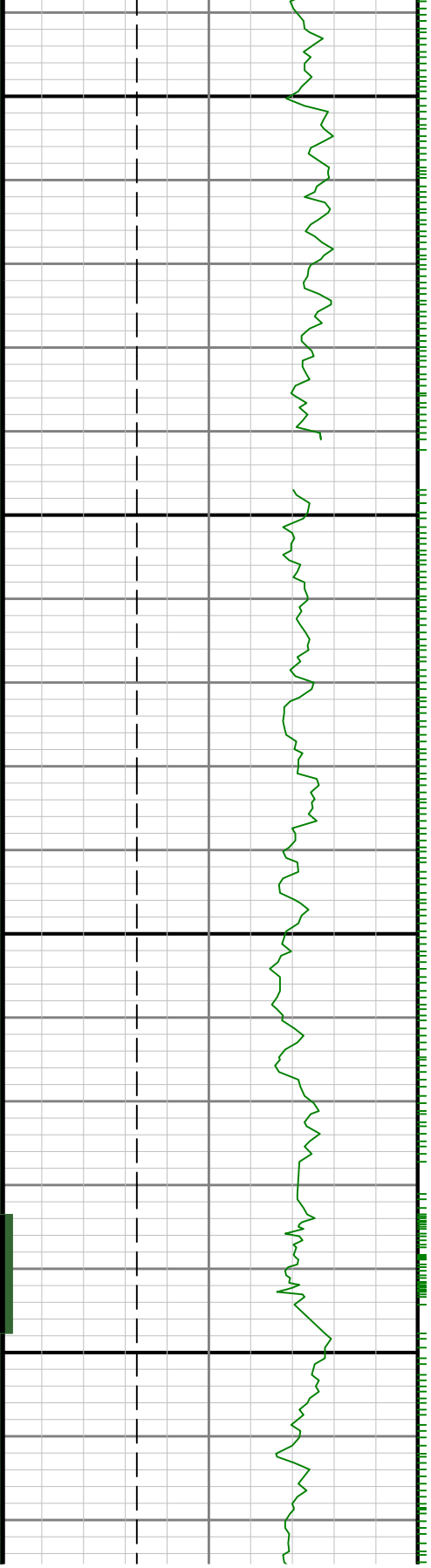
12400

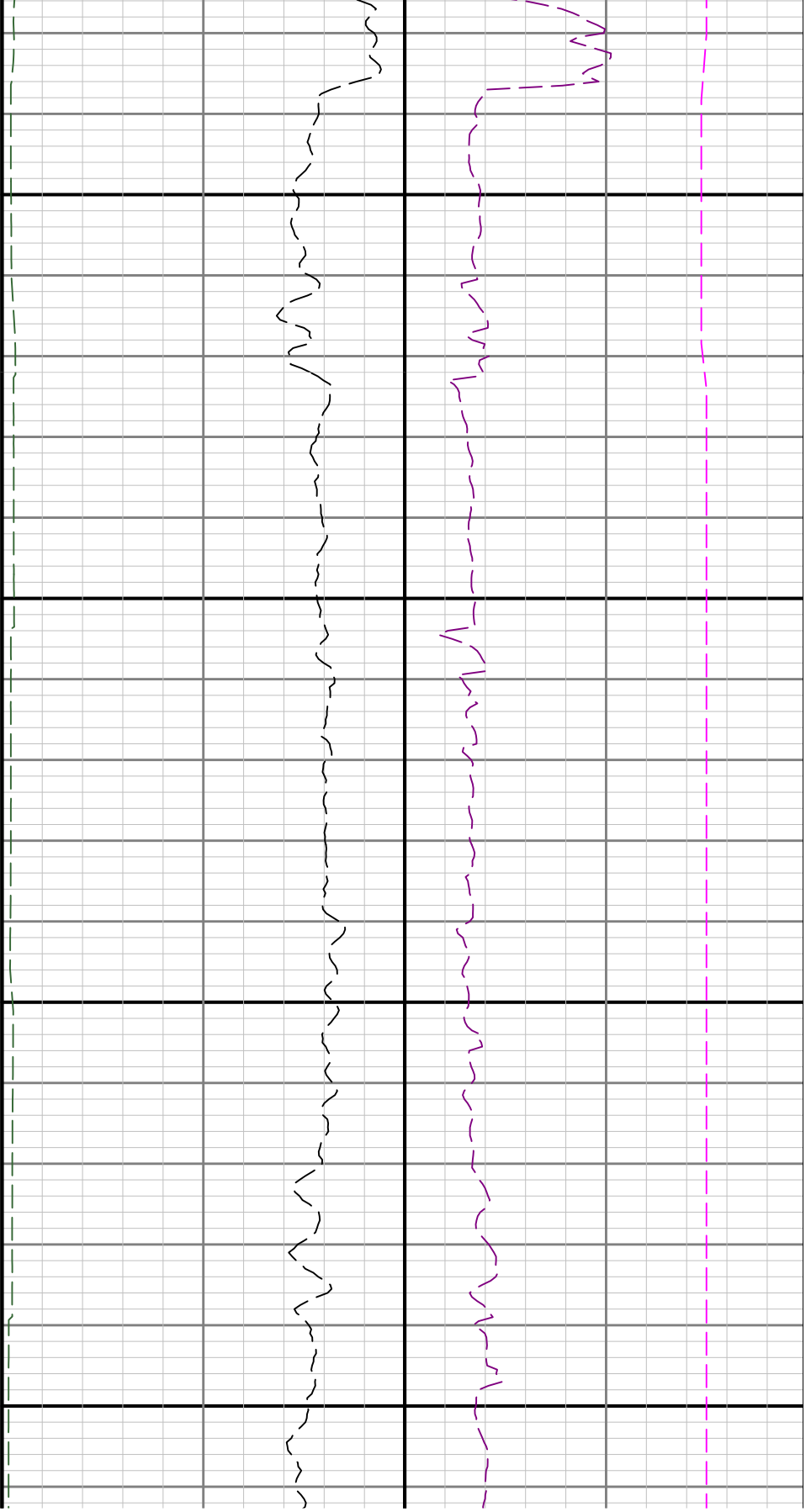




12500

12600





12700

**12800**

