



Real Time Log

Natural Formation Evaluation
Gamma Ray

Scale:

1:240

Measured Depth

Company: Anadarko

Well: Howard Federal 40N-22HZ

Field: Weld County(Kerr McGee)

County: Weld County State: Colorado

Status:

Final Print

Surface Location:

Latitude: 40° 1' 1.988" N

Longitude: 104° 52' 13.670" W

Other Services:

Directional

API Number:
05123382350000

SEC: 27 TWP: 1N RNG: 67W

Permanent Datum (P.D.): Ground Level Elevation: 5068.00 ft.

Log Measured From: Rig Floor 16.00 ft. Above P.D.

Depth Reference: Driller's Depth GL: KB: N/A
DF: 5084.00 ft.
GL: 5068.00 ft.

Interval Logged

Dates

Magnetic Field Reference

Top: 6957.0 ft. Date From: 12 Nov 2013 Dip Angle: 66.37° Azi Reference North: True

Bottom: 13886.0 ft. Date To: 15 Nov 2014 Total Mag to Reference

Spud Date: 10 Nov 2013 Field Strength: 52773.0 nT North Correction: 8.46°

Borehole Record

Casing Record

Hole Size	From	To	Size	Weight	From	To
8.750 in.	1232.0 ft.	7956.0 ft.	9.265 in.	36.00 lb/ft	Surface	1222.0 ft.
6.125 in.	7956.0 ft.	13938.0 ft.	7.000 in.	26.00 lb/ft	Surface	7946.0 ft.

Mud Record

Deviation Record

Type	From	To	Hole Size	Interval	Inc / Az (Start)	Inc / Az (End)
LSND	Surface	13938.0 ft.	8.750 in.	85.0 ft.	0.2° / 252.8°	1.0° / 16.3°
			8.750 in.	42.0 ft.	1.0° / 16.3°	84.3° / 357.8°
			6.125 in.	85.0 ft.	84.3° / 357.8°	92.3° / 2.1°
					/	/
					/	/
					/	/
					/	/

Acquisition System Software Version

Other

Advantage	2.20U4	Rig:	Xtreme 24	/ Xtreme Oil Drilling Corp
PATS	6.4.1.34	Job No:	5868931	/ D & E
		District / Unit:	RMD	

INTEQ does not guarantee the accuracy or correctness of interpretations provided in or from this log. Since all interpretations are opinions based on measurements, INTEQ shall under no circumstances be responsible for consequential damages or any other loss, costs, damages or expenses incurred or sustained in connection with the use of any such interpretations. INTEQ disclaims all expressed and implied warranties related to this service. INTEQ's liabilities and obligations shall be governed by INTEQ's Standard Terms and Conditions.

Log Run Summary

LWD Run No.	BHA Run No.	Bit Run No.	Bit Size (in.)	Bit Type	Bit Gauge Length (in.)	Assembly Type	Logged Interval		Bit Depth Interval		Date / Time		Circ. Time (hrs.)
							Top	Bottom	From	To	Start	End	
							(ft.)	(ft.)	(ft.)	(ft.)			
1	1	1	8.750	PDC	2.000	Steerable	6957.0	7902.0	7008.0	7956.0	12 Nov 2013 01:17	12 Nov 2013 12:54	35
2	2	2	6.125	PDC	6.000	Steerable	7902.0	13886.0	7956.0	13938.0	13 Nov 2013 22:44	15/Nov/2013 17:00	42.3

Crew

Name	Arrive	Depart	Name	Arrive	Depart	Name	Arrive	Depart
	Wellsite	Wellsite		Wellsite	Wellsite		Wellsite	Wellsite
Jason Williams	12 Nov 213	15 Nov 2013	Austin Small	09 Nov 2013	16 Nov 2013			

Mud Properties Record

Date / Time		LWD Run No.	Measured Depth (ft.)	Mud Type	Density (ppg)	Viscosity (cp)	pH	Fluid Loss (cc)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
12 Nov 2013	06:00	1	7399.0	LSND	9.8	12	8.5	N/A	0.6/91.5	Active Pits	1600	N/A
13 Nov 2013	06:00	2	7956.0	LSND	9.8	12	8.7	N/A	1/91	Active Pits	1600	N/A
14 Nov 2013	06:00	2	9160.0	LSND	9.0	10	8.5	N/A	1.3/94.0	Active Pits	1500	N/A
14 Nov 2013	18:00	2	10896.0	LSND	9.8	10	8.5	N/A	2.7/92.0	Active Pits	1500	N/A

Mnemonics		
Curve	Description	Units
GRAX	Gamma Ray Apparent, 0.5 ft. Avg	API
GRIX	Gamma Ray Data Density	points
GRSI	Gamma Ray Sliding Indicator	unitless
GRTX	Gamma Ray Time Since Drilled	min
ROPA	Rate of Penetration, 3.0 ft. Avg	ft/hr
TCDX	Downhole Temperature	degF
TVD	True Vertical Depth	ft.
WOBA	Surface Weight on Bit, 1.0 ft. Avg.	klbs

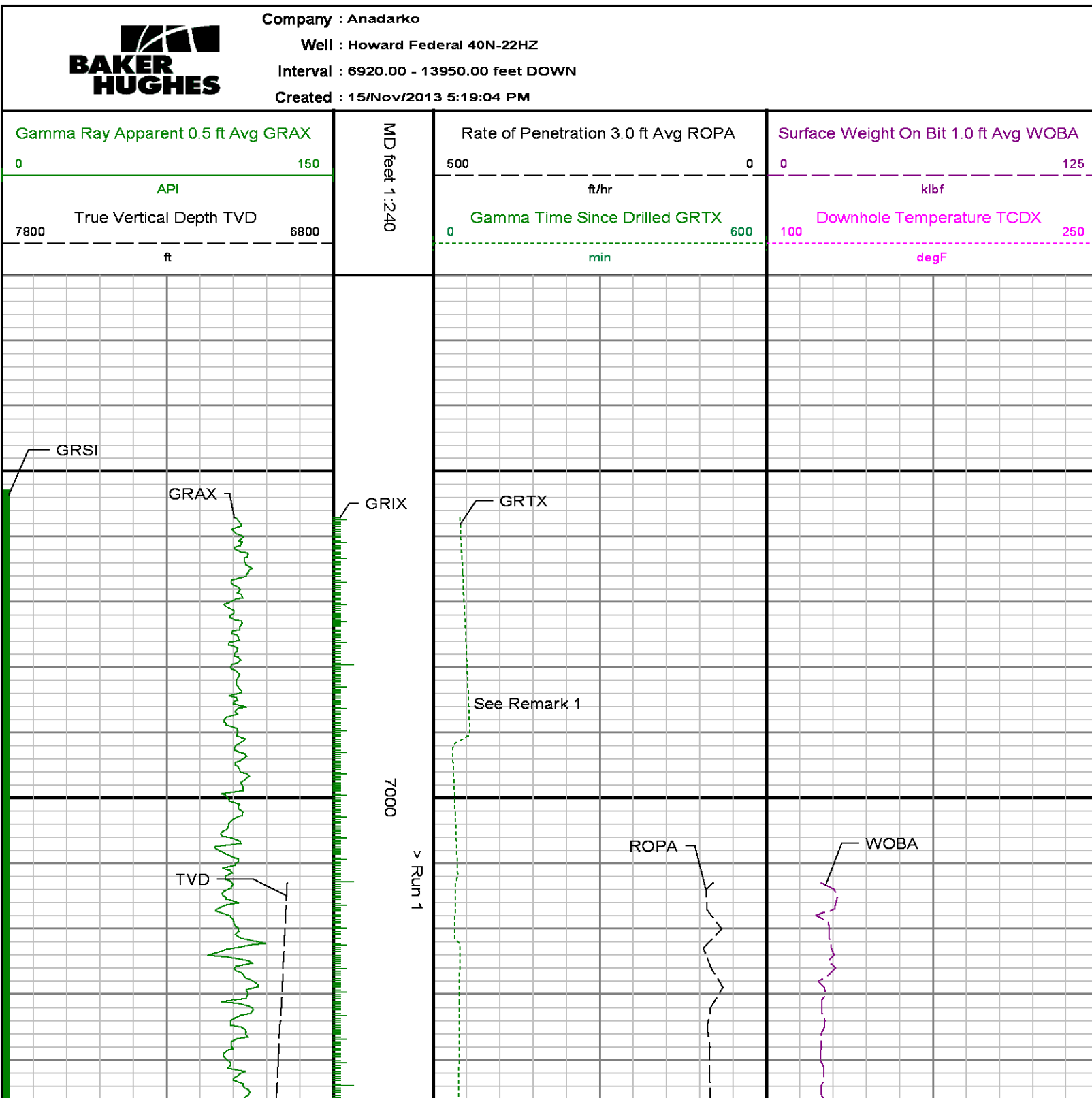
Equipment and Service Data						
LWD Run No.	Tool	Serial Number	Measurement	Bit Offset (ft)	Max O.D. (in.)	Min I.D. (in.)
1	DIR	12456790	Directional	58.11	6.750	2.813
1	SRIG	10658452	Gamma	54.73	6.750	2.813
2	DIR	12440863	Directional	53.26	4.750	2.813
2	SRIG	12604926	Gamma	49.88	4.750	2.813

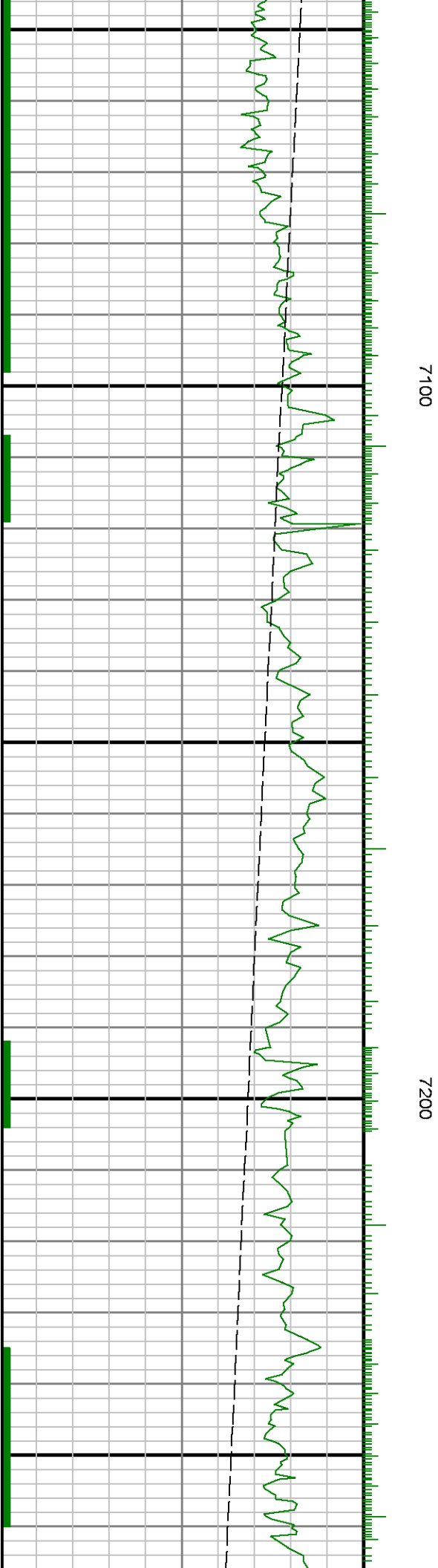
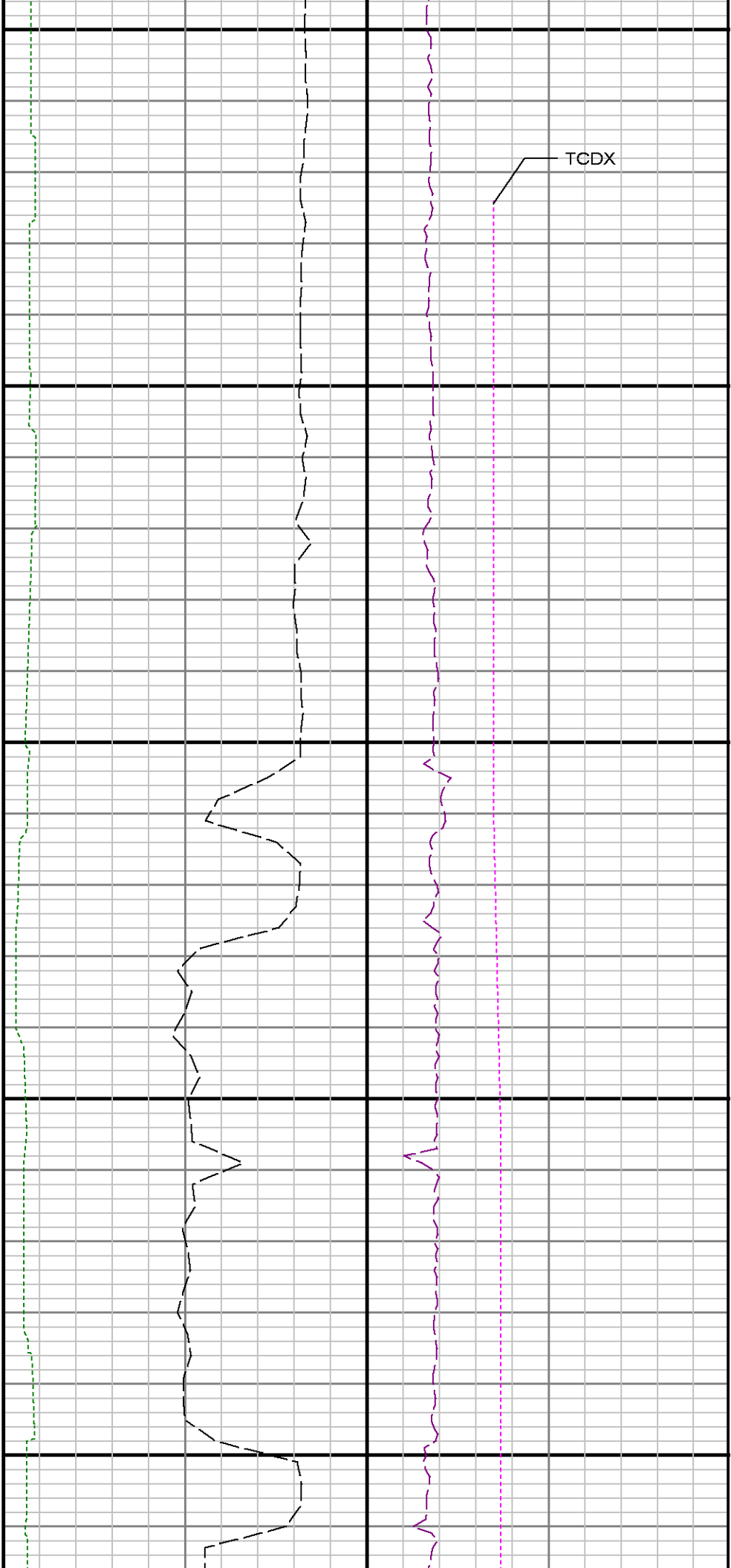
Service and Tool Mnemonics		
Mnemonic	Name	Description
DIR	Directional	Wellbore directional survey
SRIG	Inclination and Gamma	Probe based gamma ray and inclination module

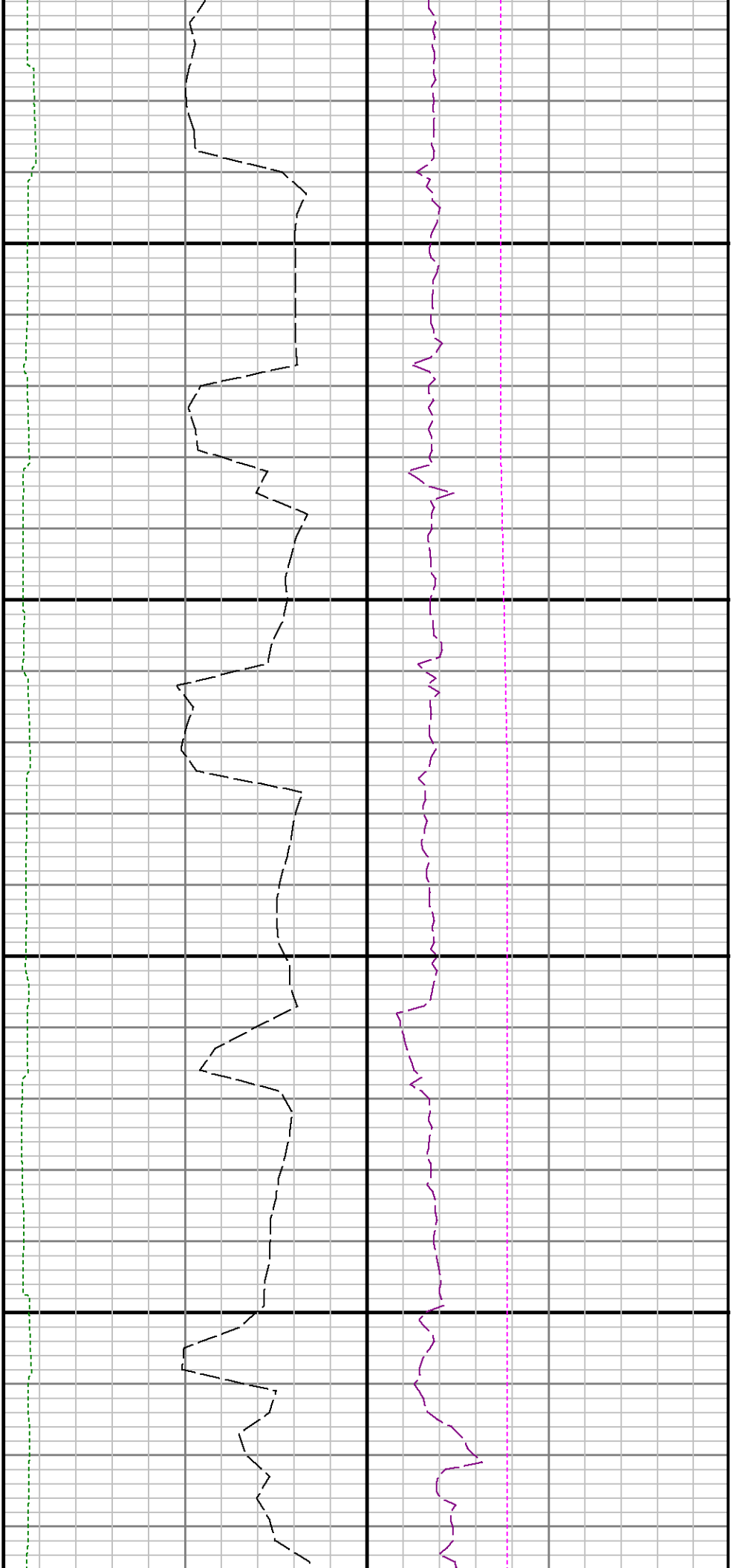
Comments
<p>1.) Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified and the unverified depths as supplied to Baker Hughes are being used to represent logging data.</p> <p>2.) Baker Hughes Run 1 utilized a 6 1/2 inch NaviGamma (Directional and Gamma Ray) tool behind an 8 3/4 inch bit and steerable assembly from 7008 feet to 7956 feet MD (6934 feet to 7545 feet TVD).</p> <p>3.) Baker Hughes Run 2 utilized a 4 3/4 inch NaviGamma (Directional and Gamma Ray) tool behind a 6 1/8 inch bit and steerable assembly from 7956 feet to 13938 feet MD (7545 feet to 7482 feet TVD).</p> <p>4.) 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.</p>

Remarks				
Number	Measured	Hole	LWD	Remark

	Depth (ft)	Section (in.)	Run No.	
1	6957	8.750	1	The interval from surface to 6957 feet MD (6882 feet TVD) was not logged since logging services began at kick off point.
2	7902	8.750	1	The Interval from 7902 feet to 7956 feet MD (7541 feet to 7545 feet TVD) was logged more than 34 hours after drilling due to tripping for casing and a new BHA.
3	13886	6.125	2	The interval from 13886 feet to 13938 feet MD (7484 feet to 7482 feet TVD) was not logged due to bit sensor offset at TD.

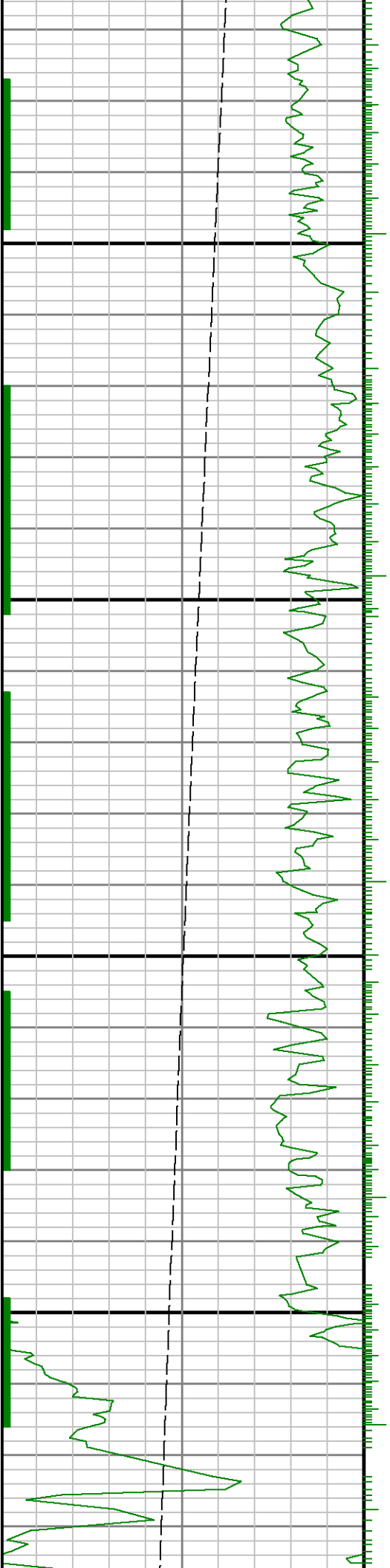


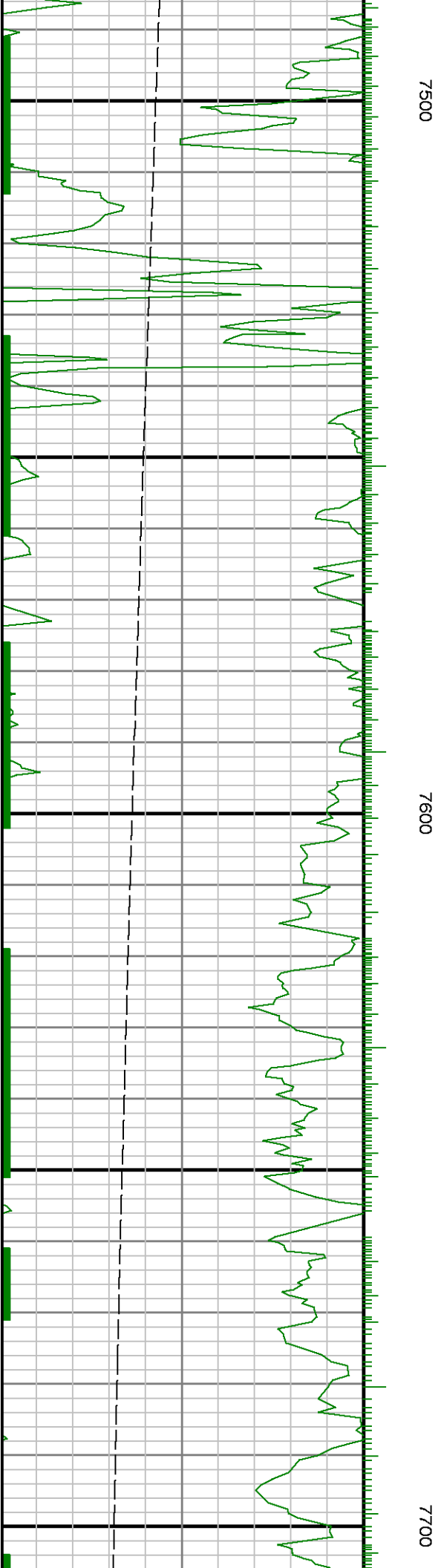
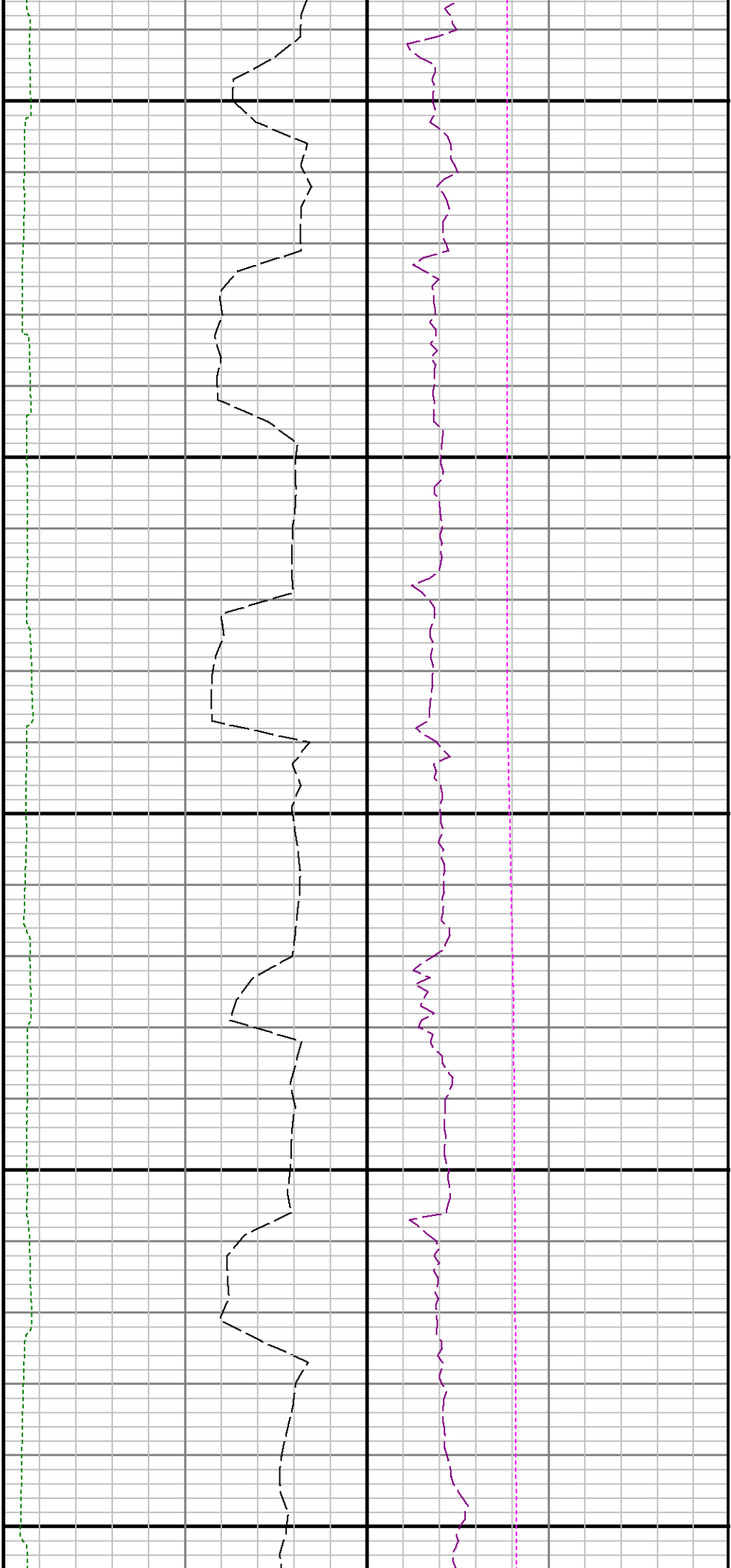


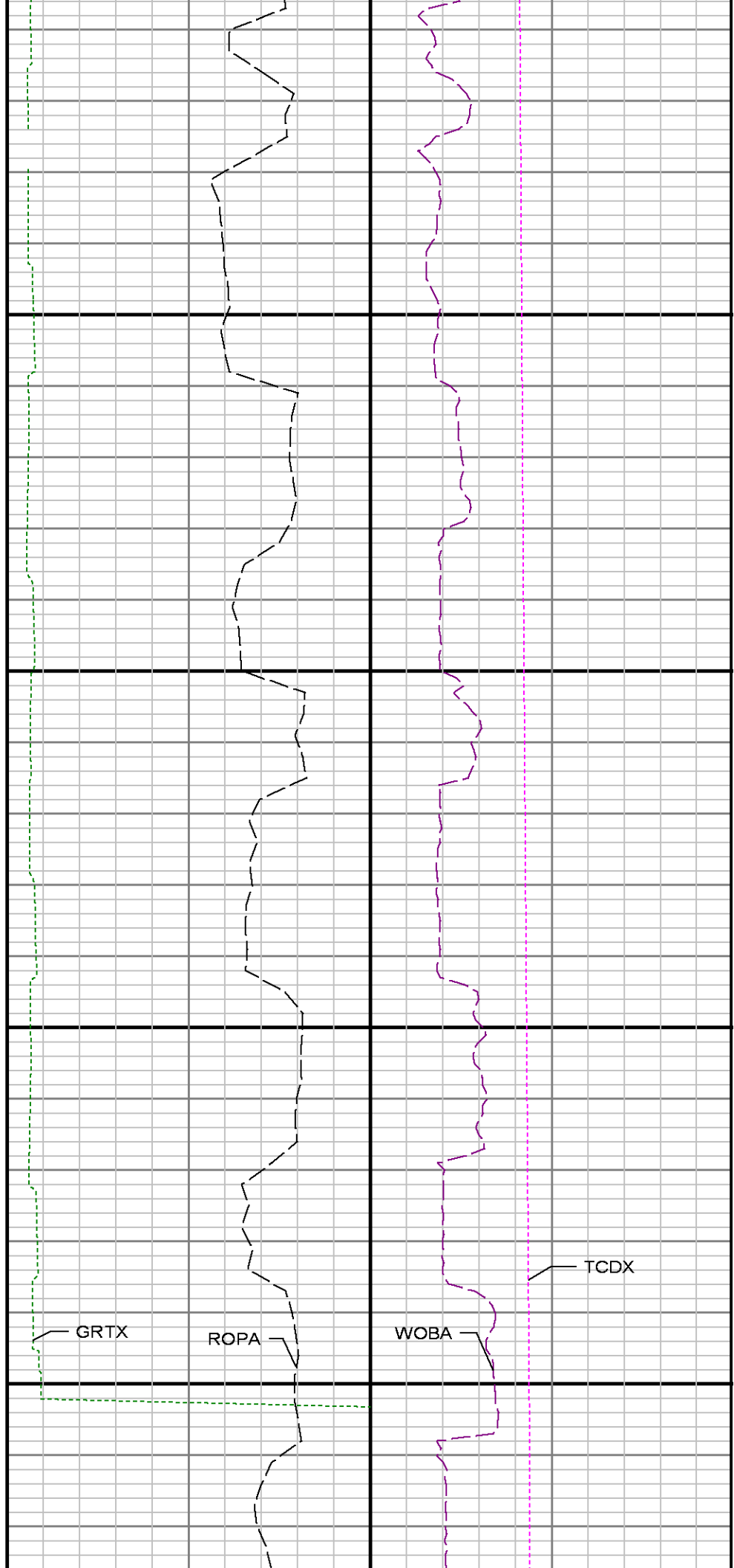
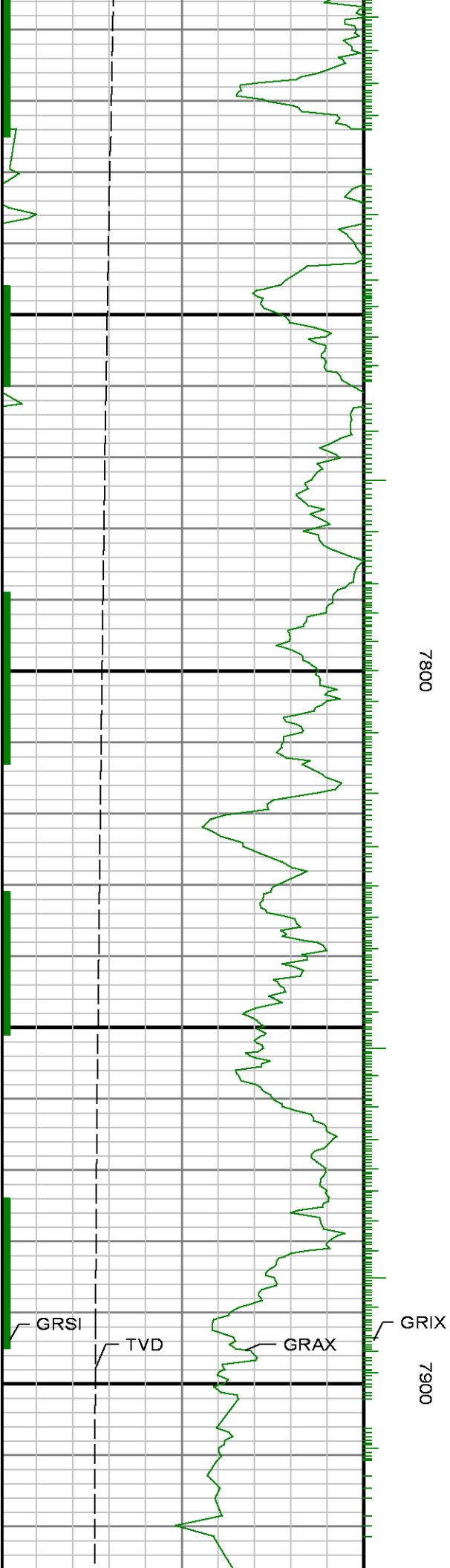


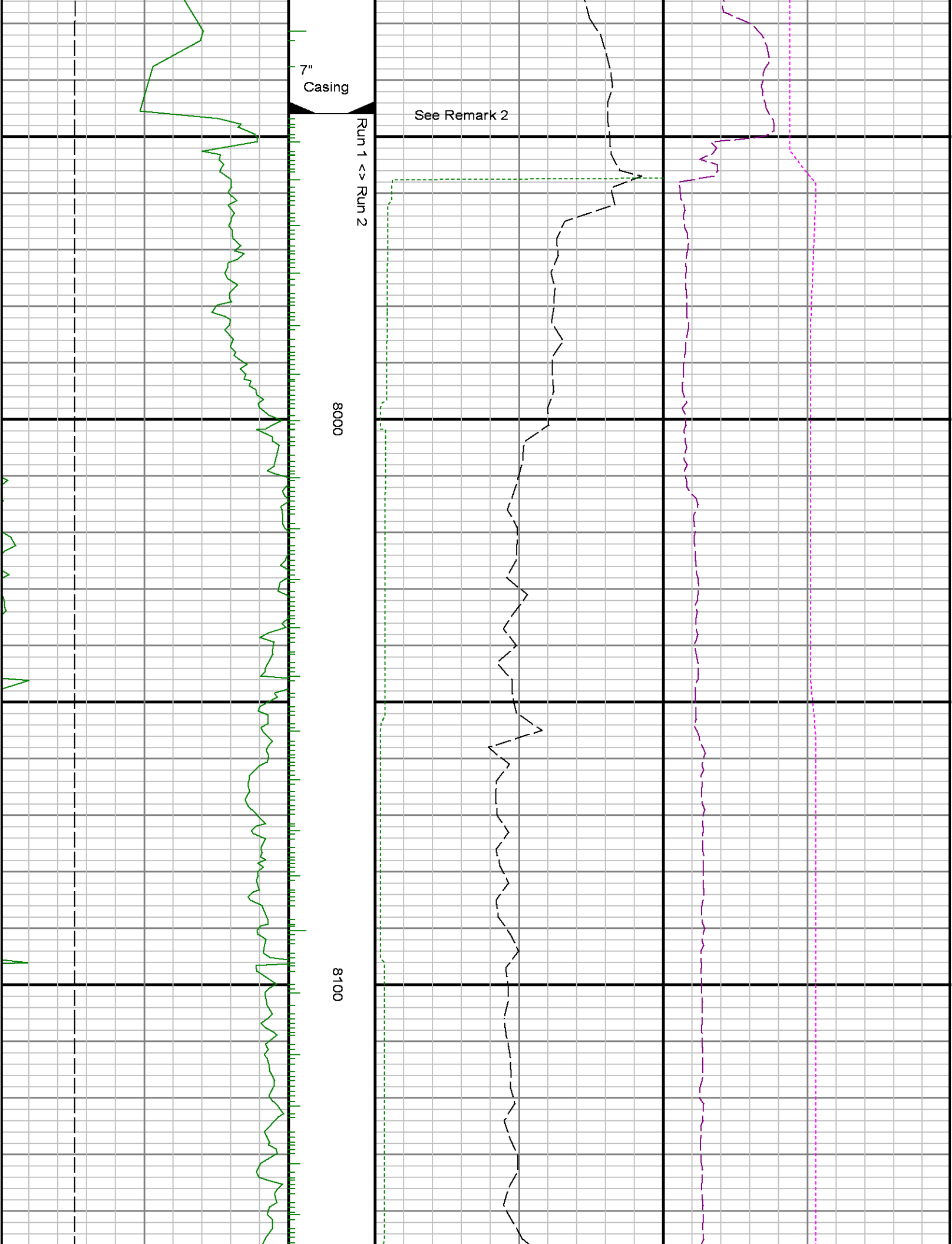
7300

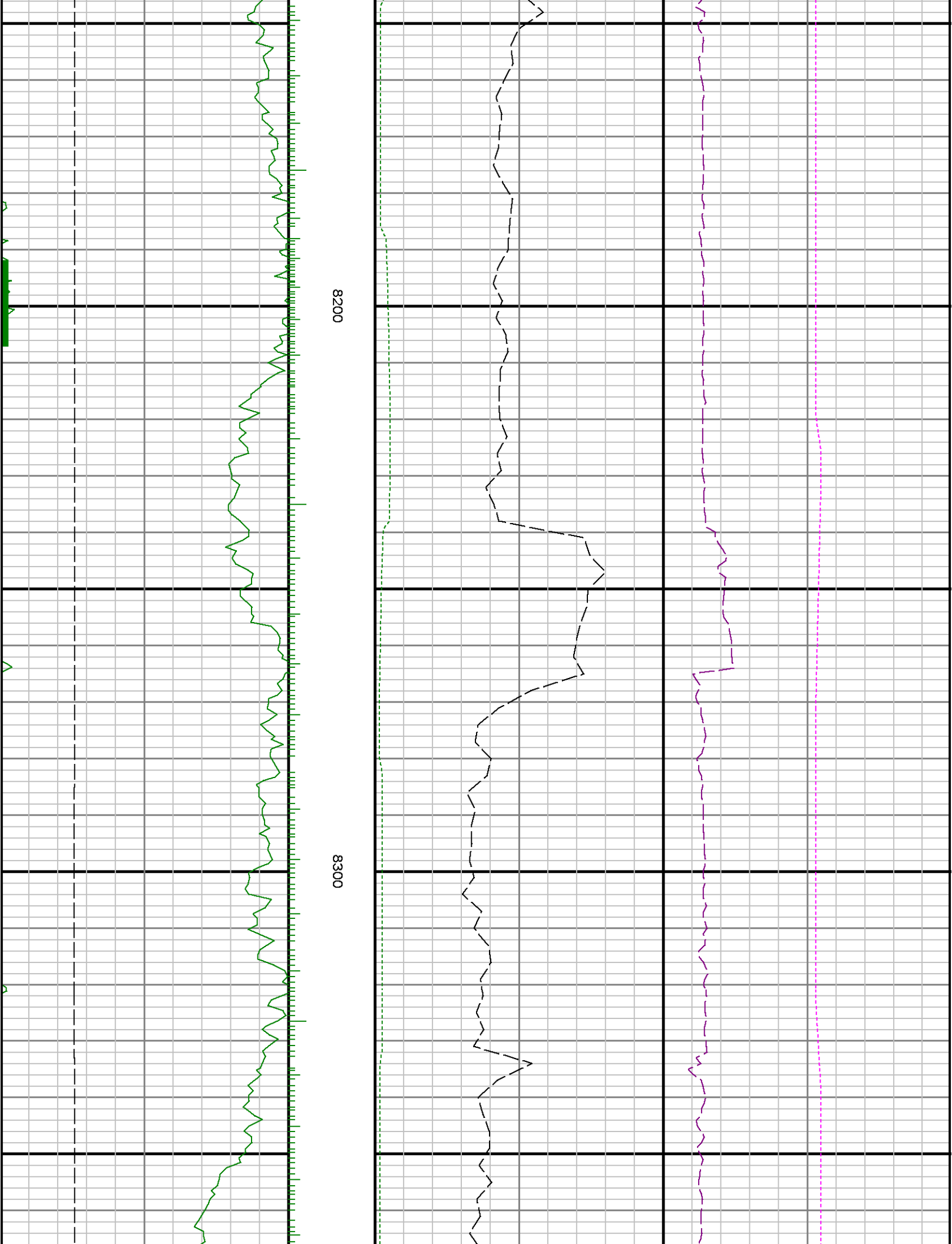
7400

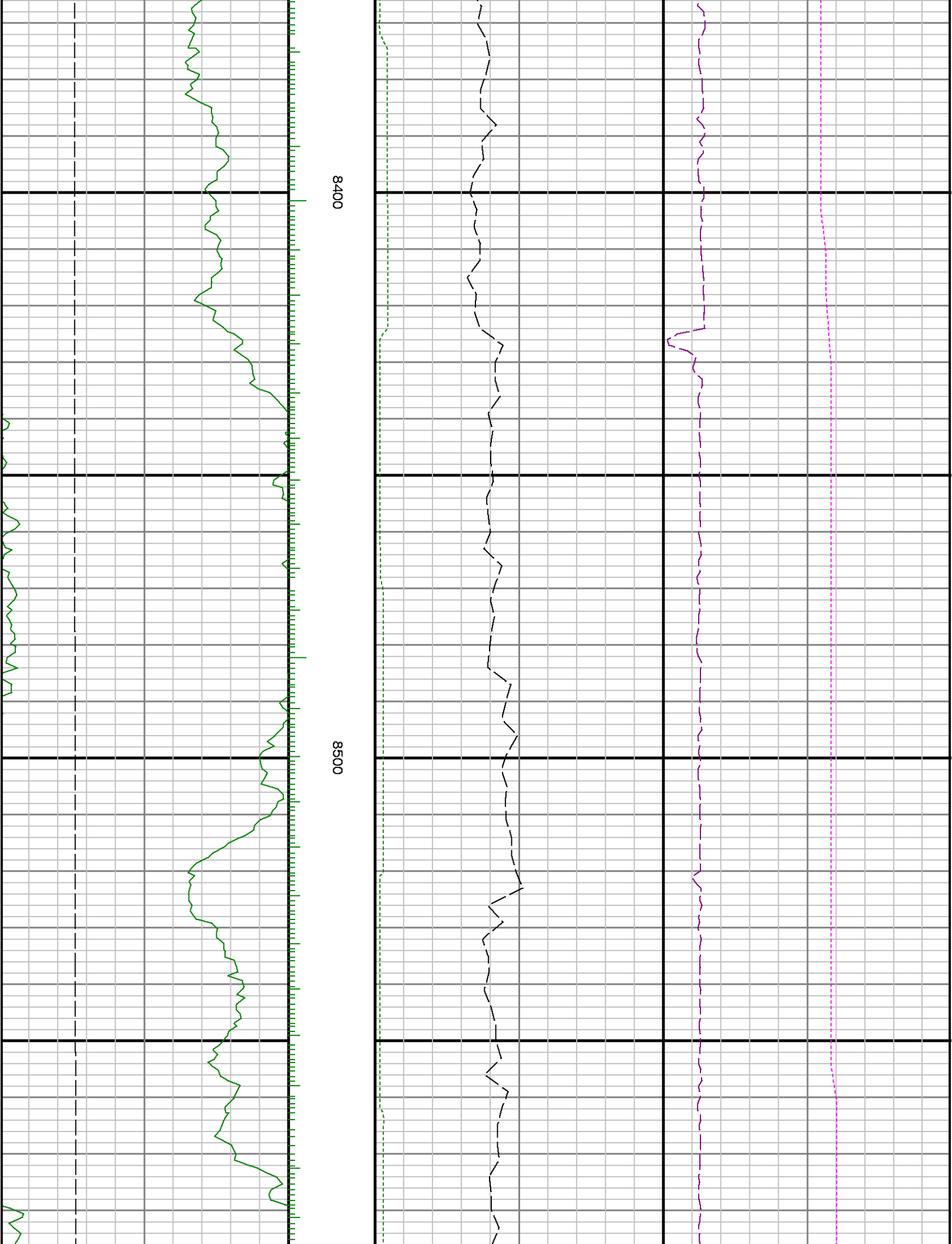


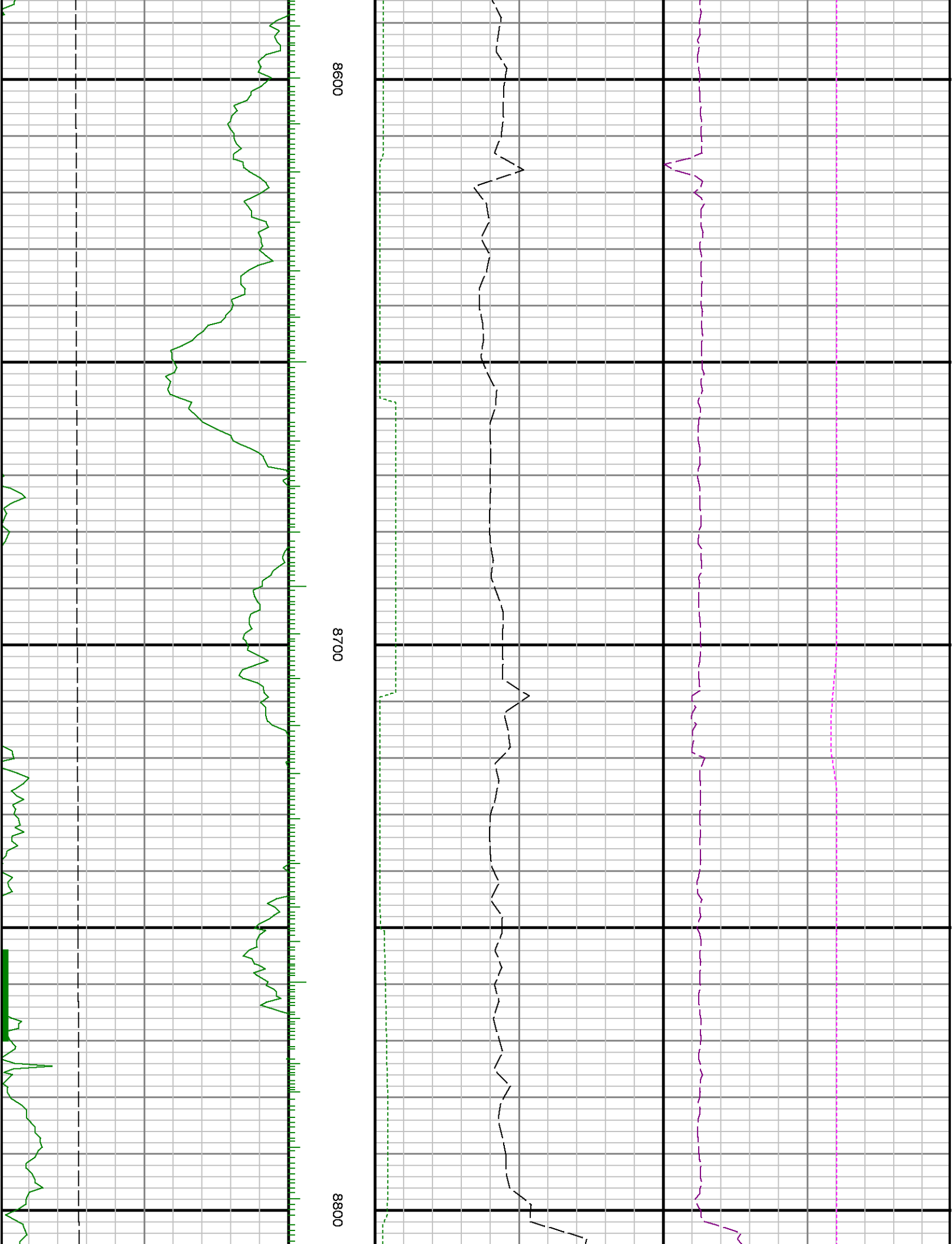


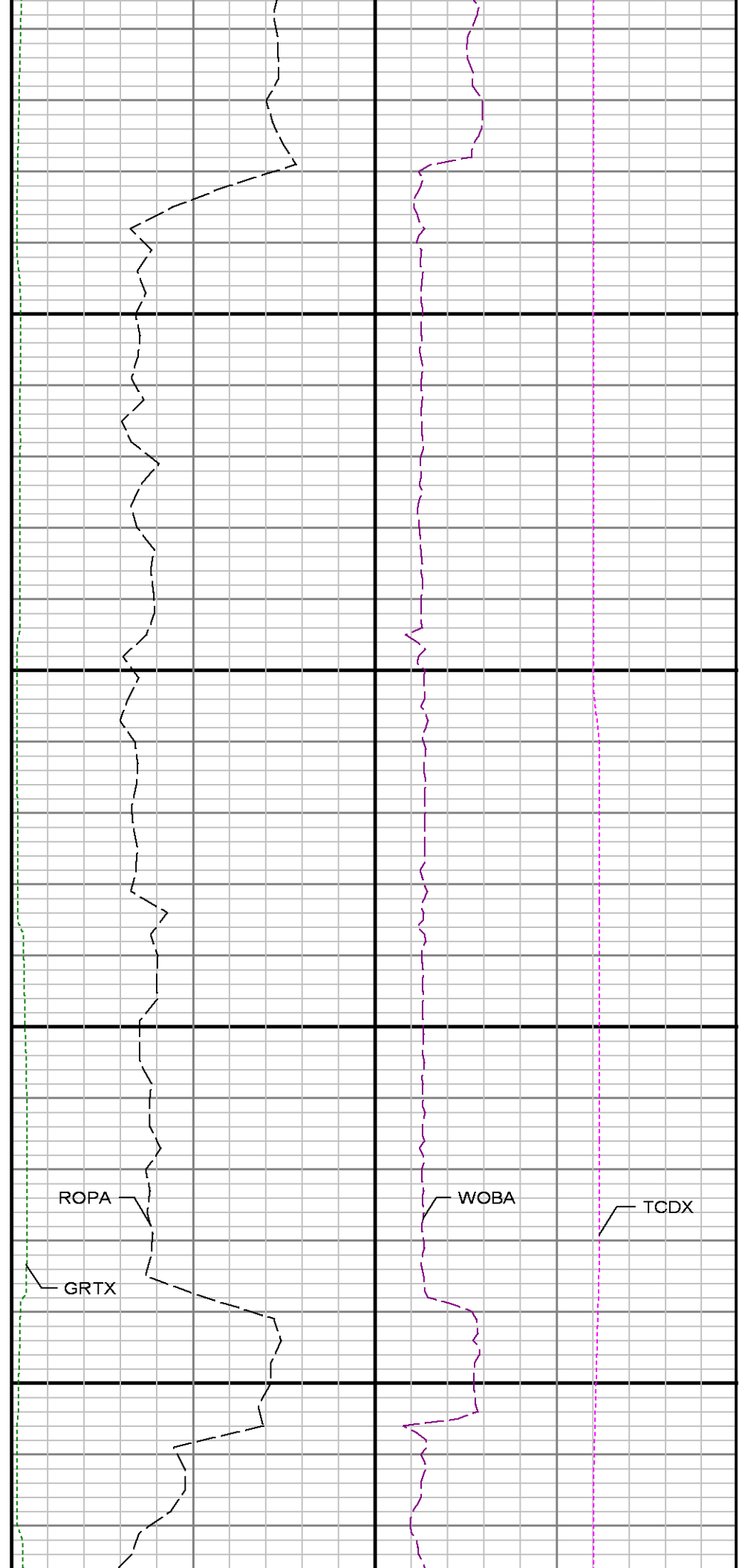
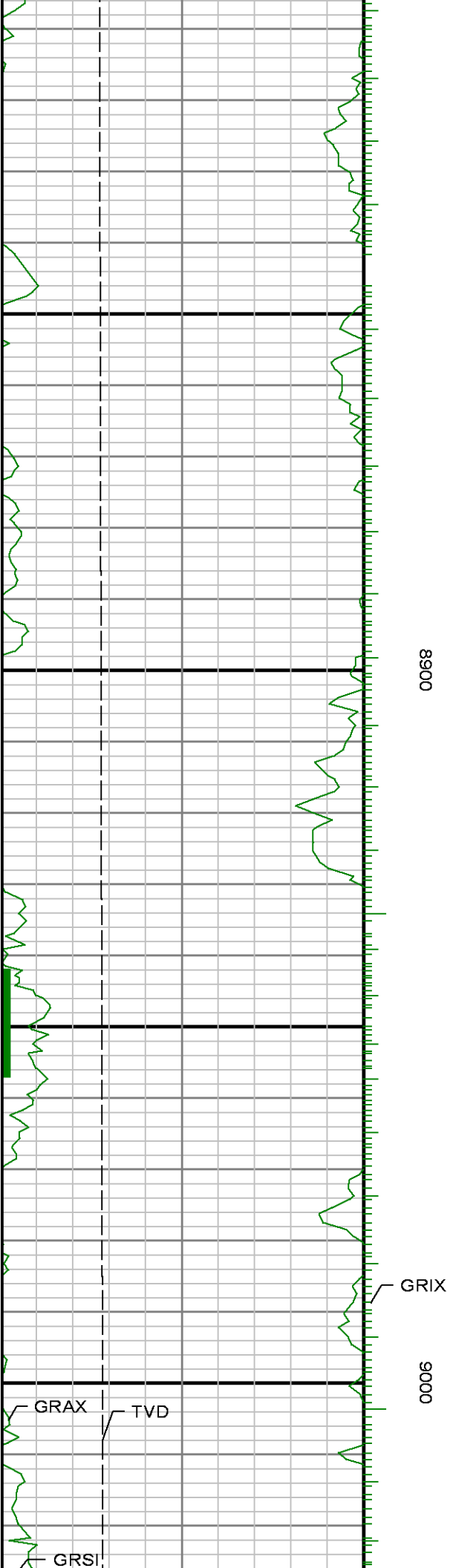


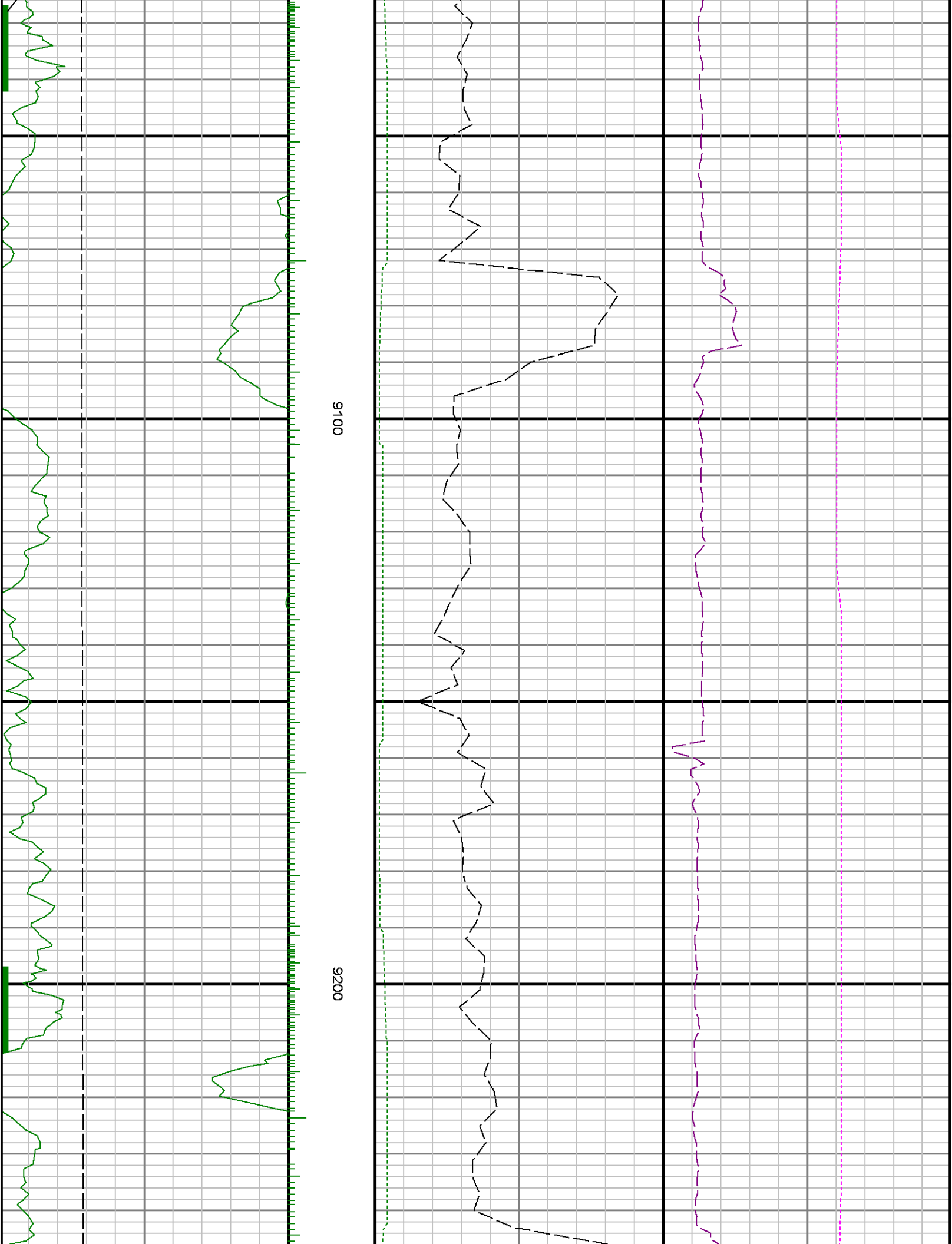


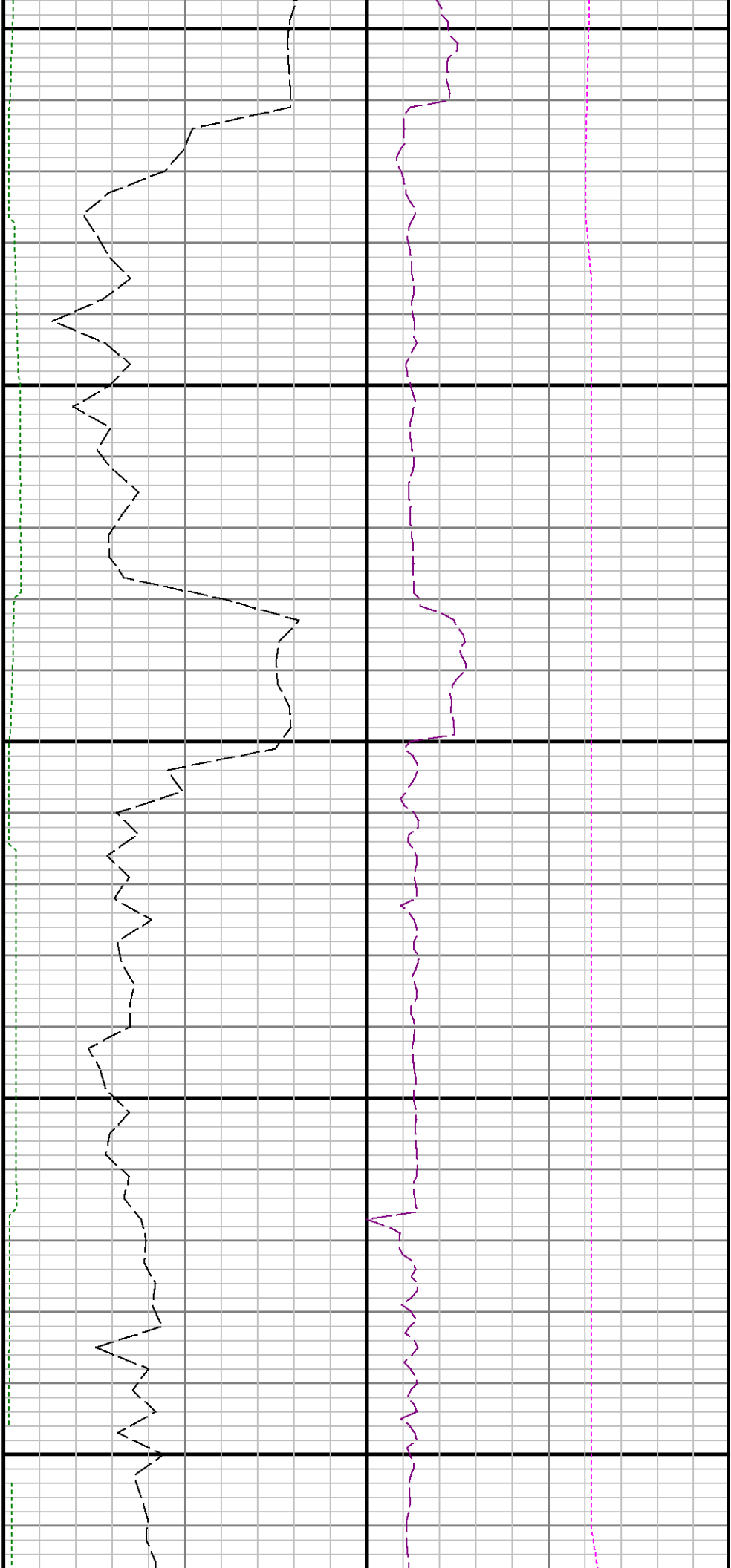






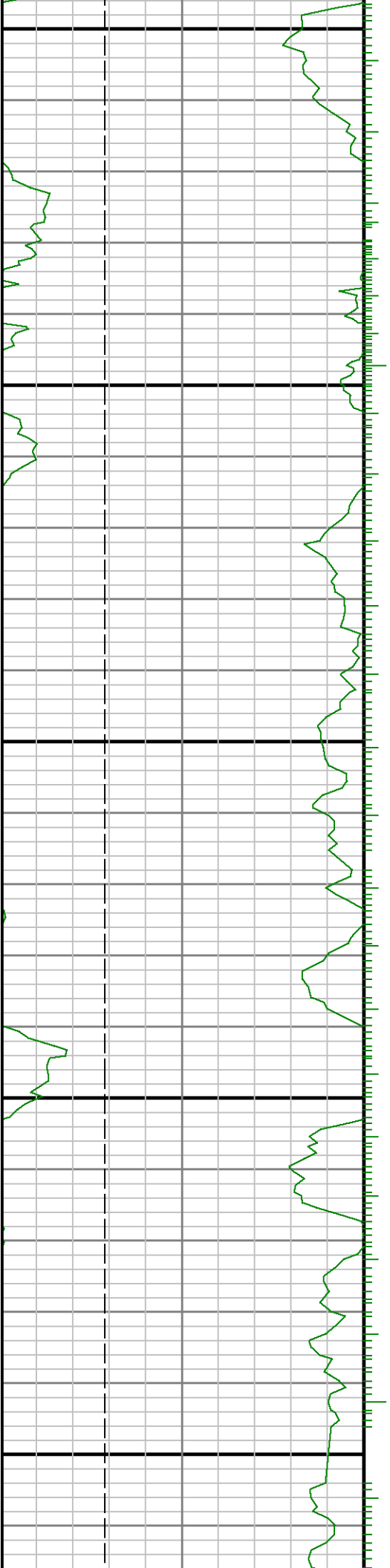


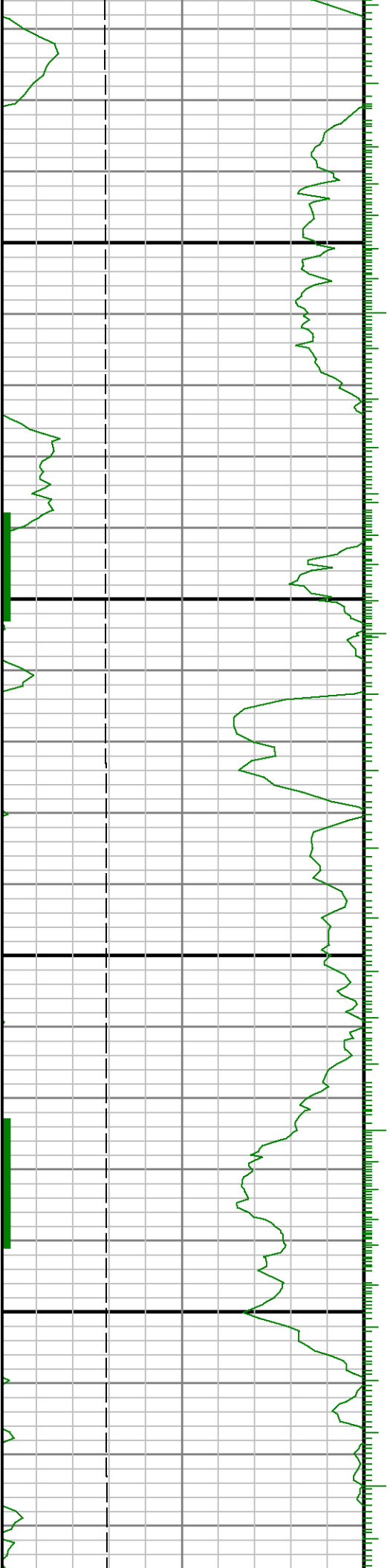




9300

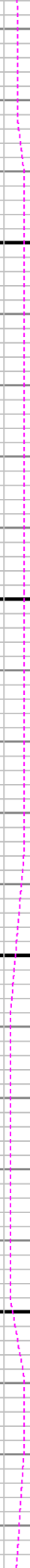
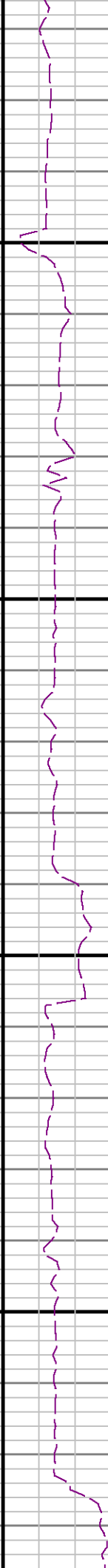
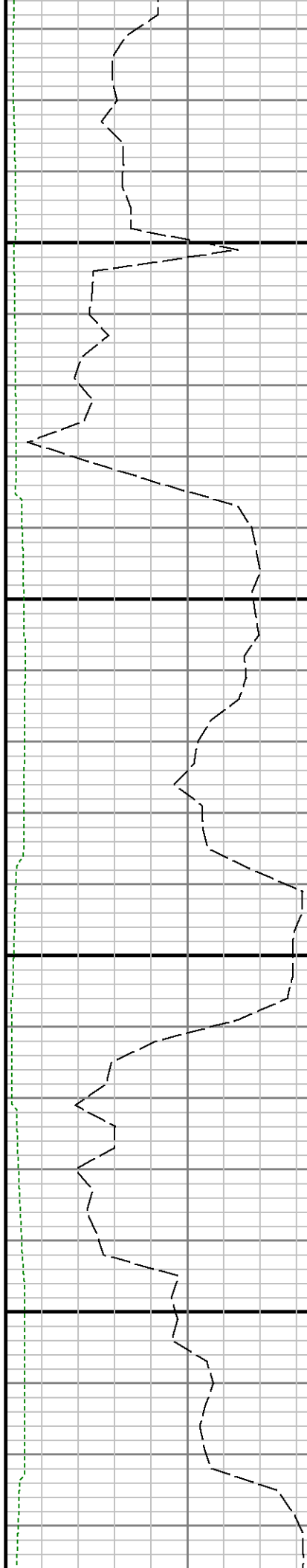
9400

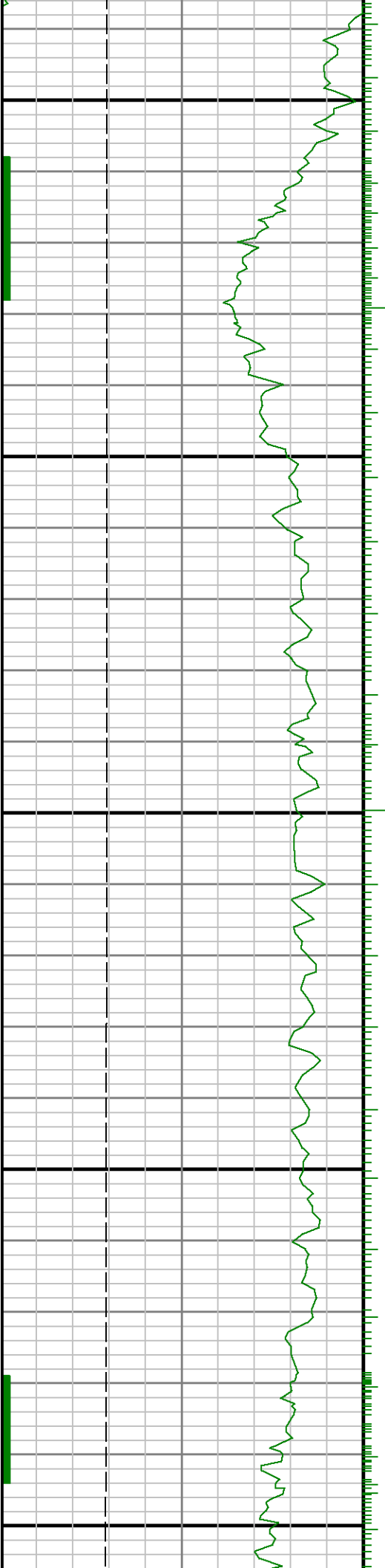




9500

9600



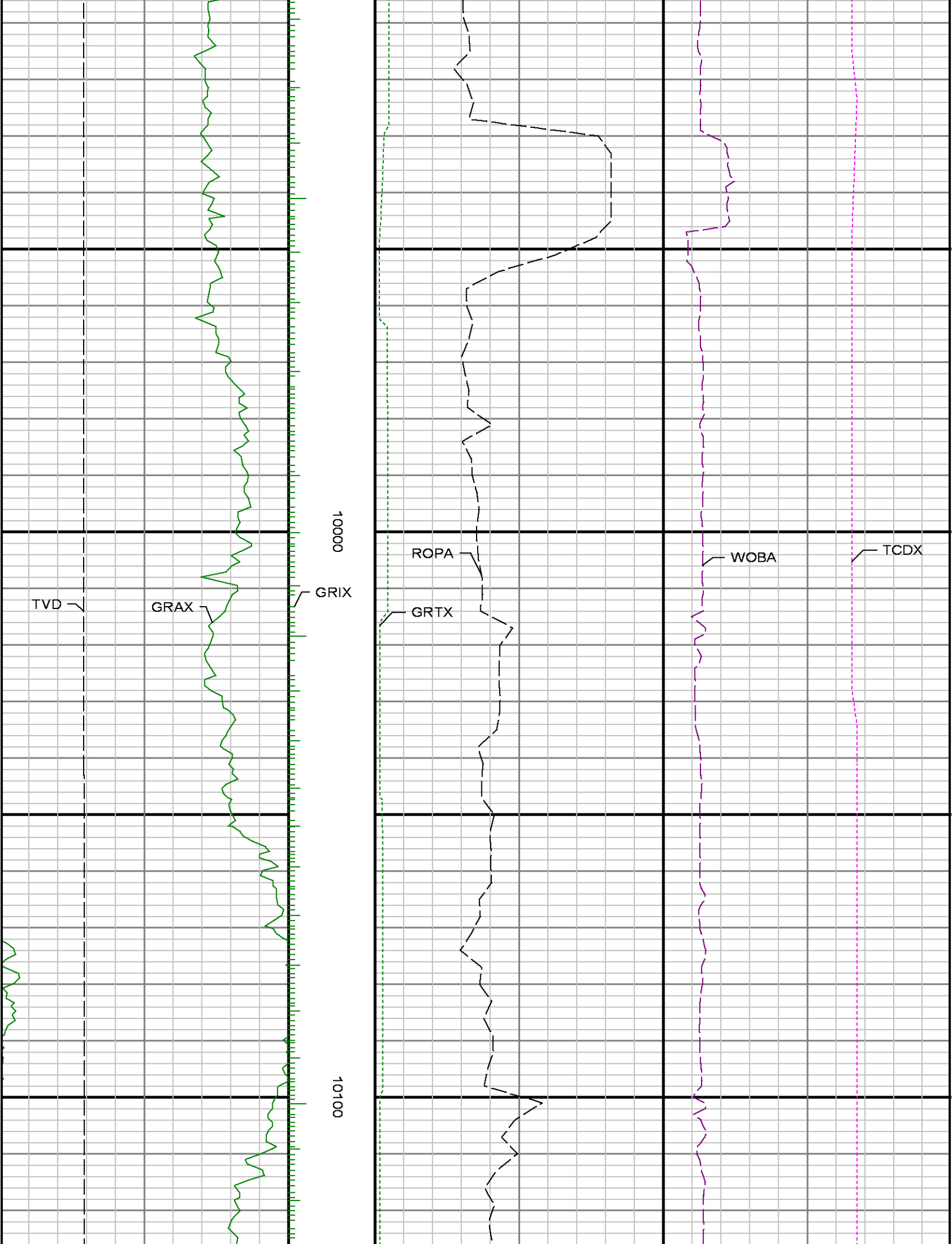


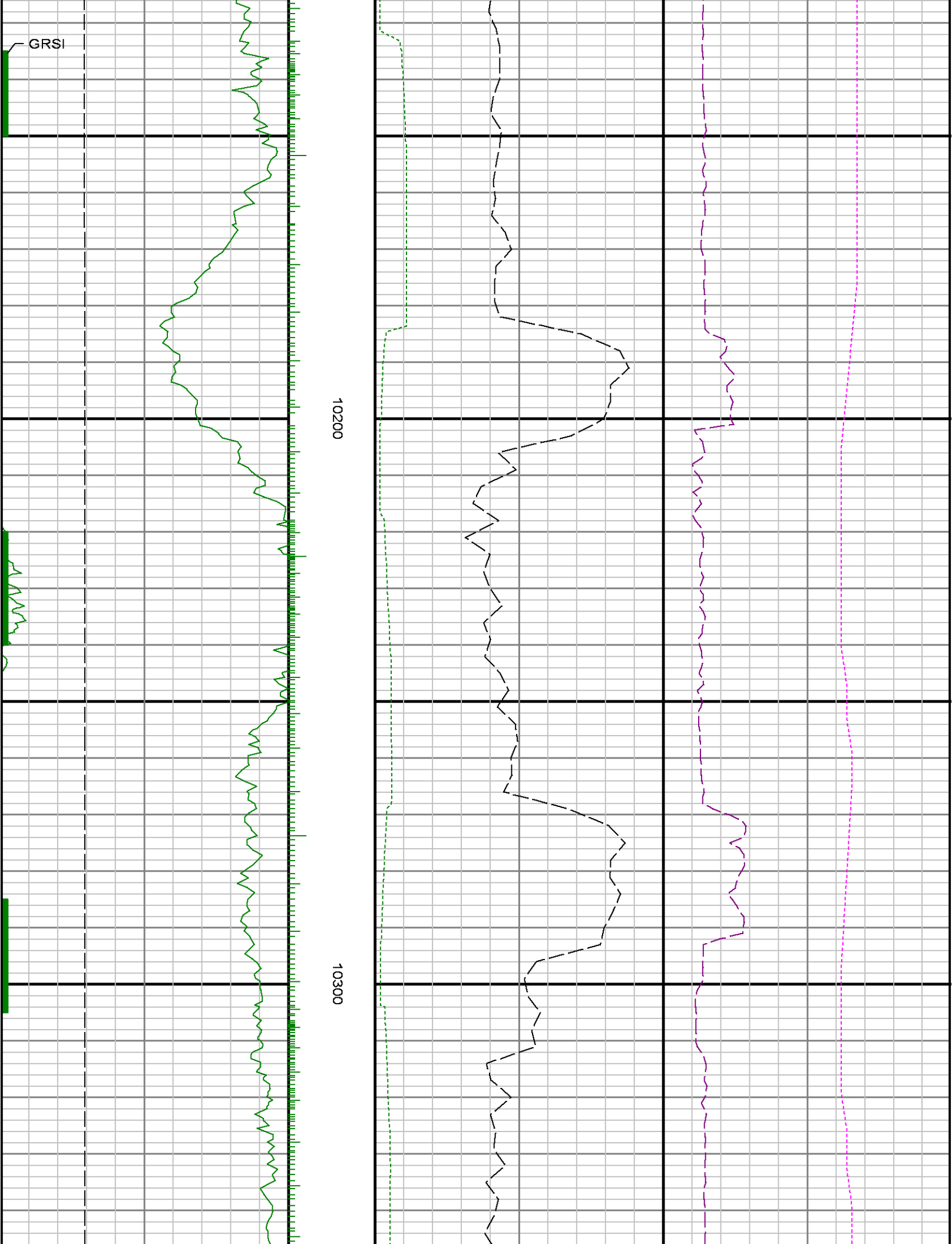
9700

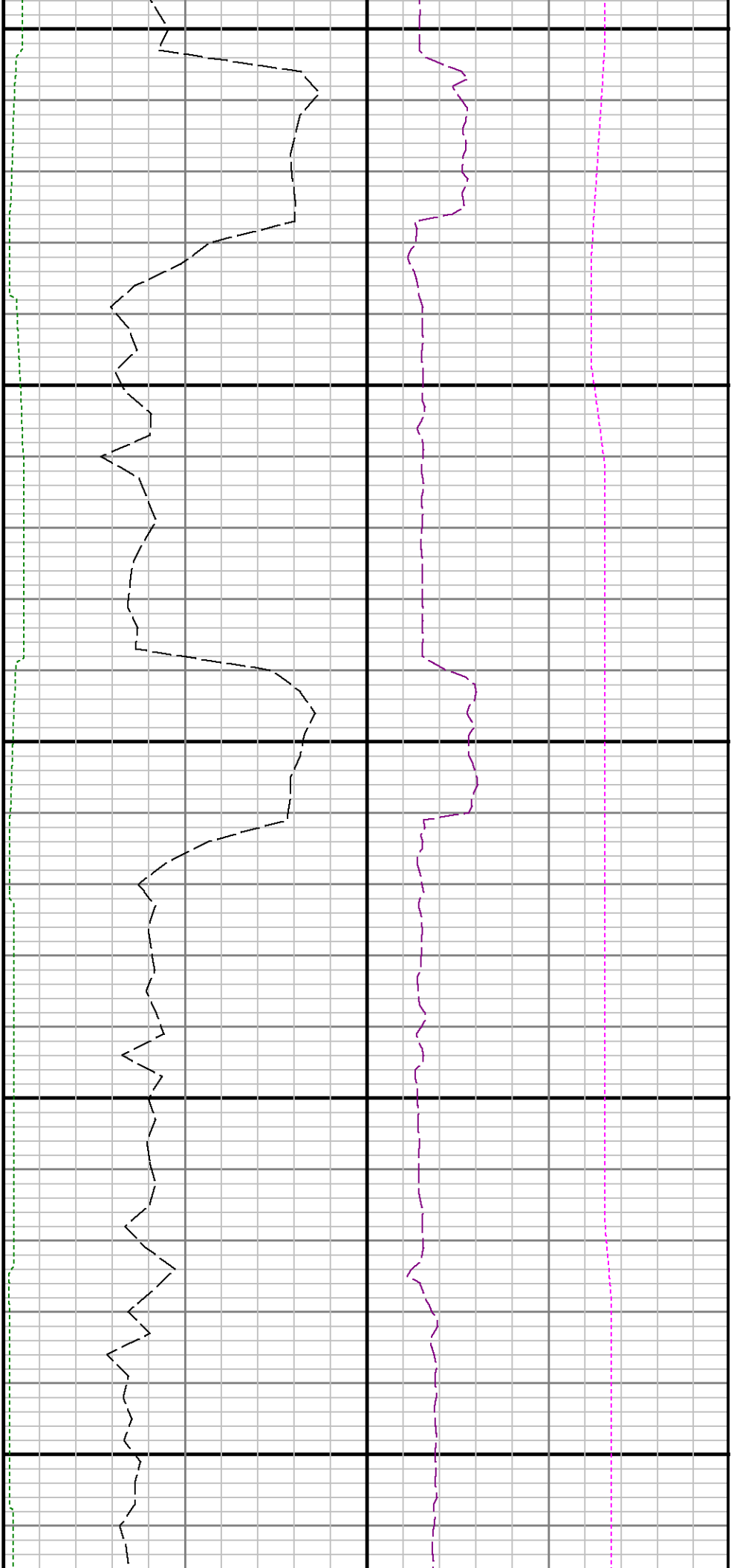
9800

9900



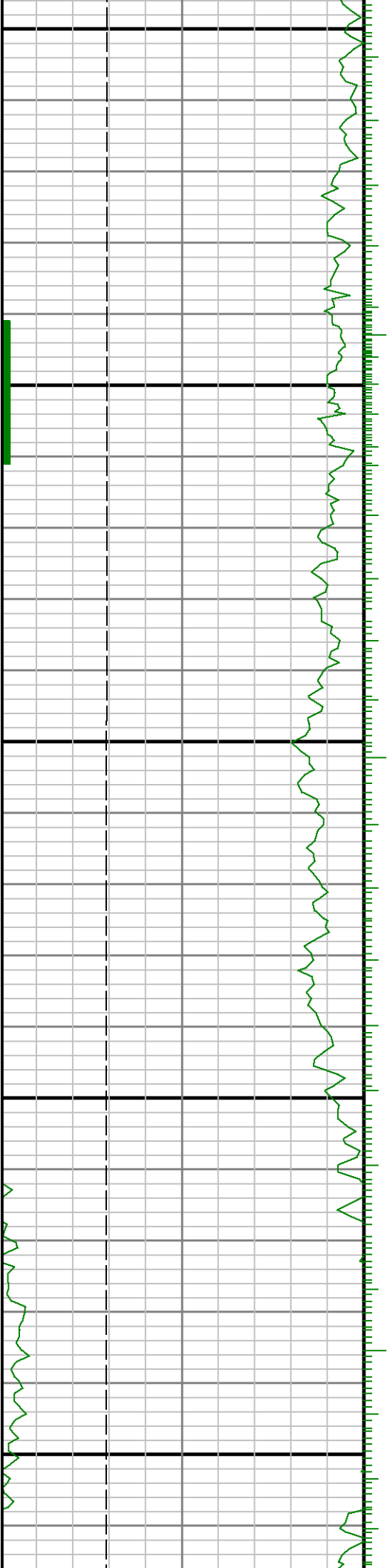


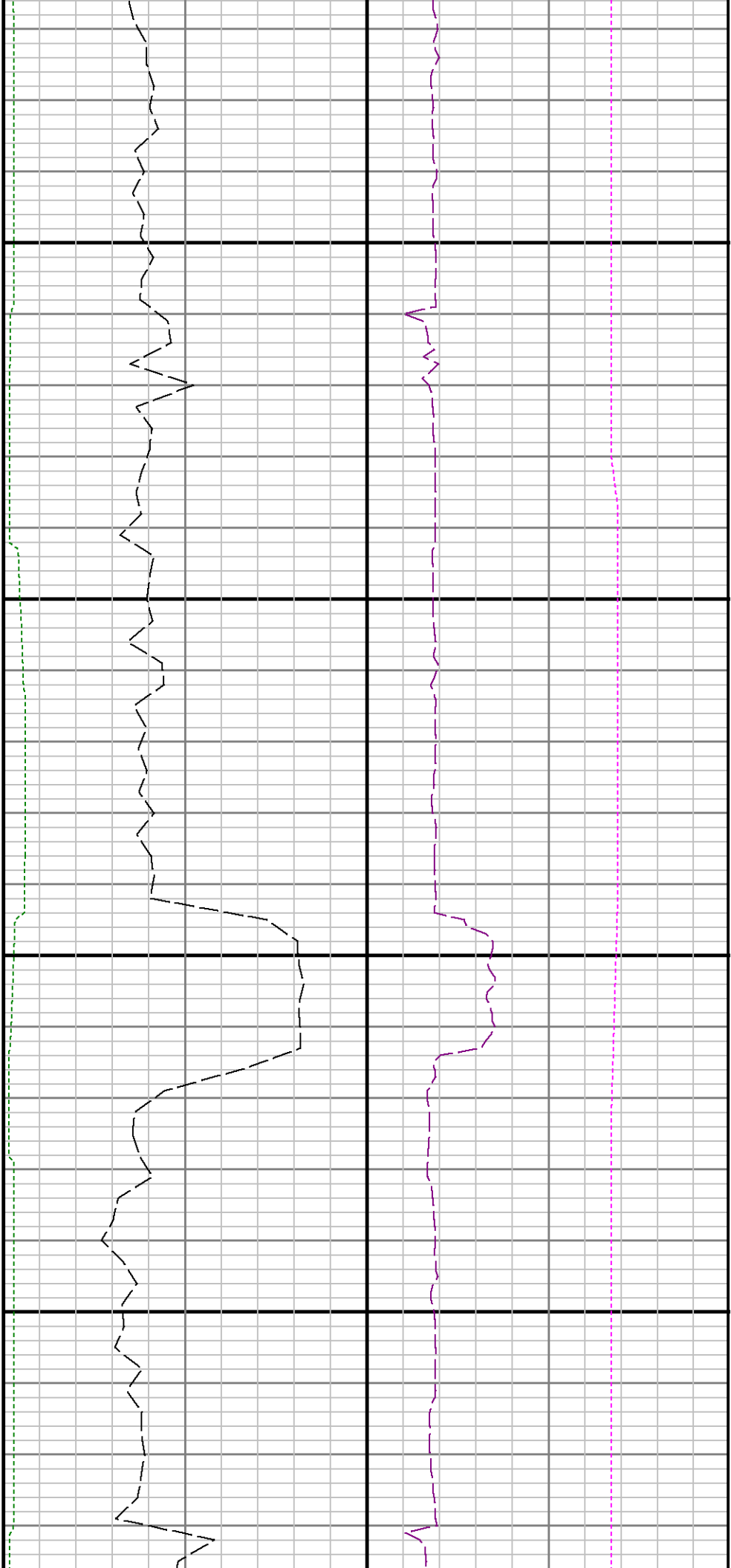




10400

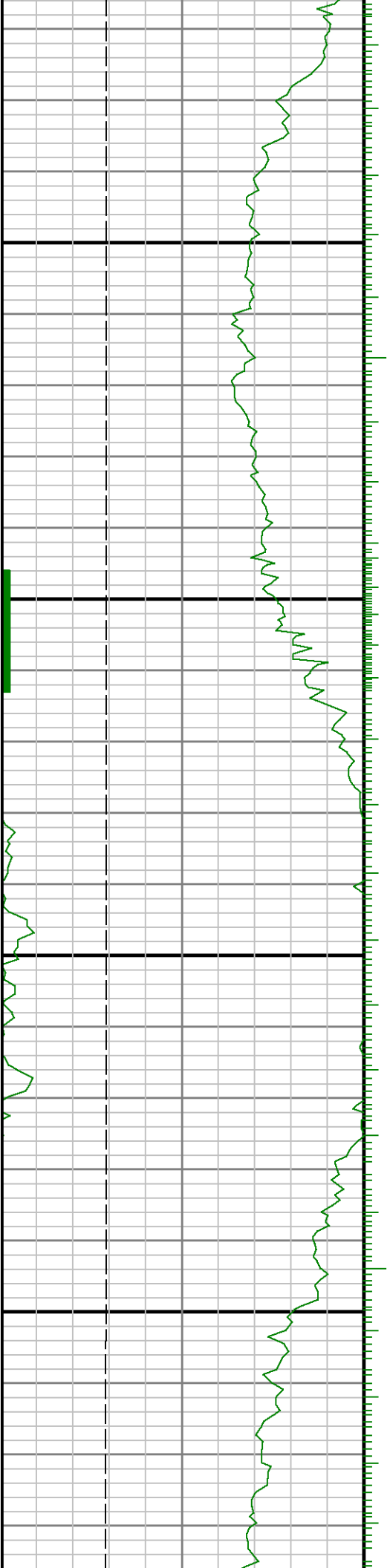
10500

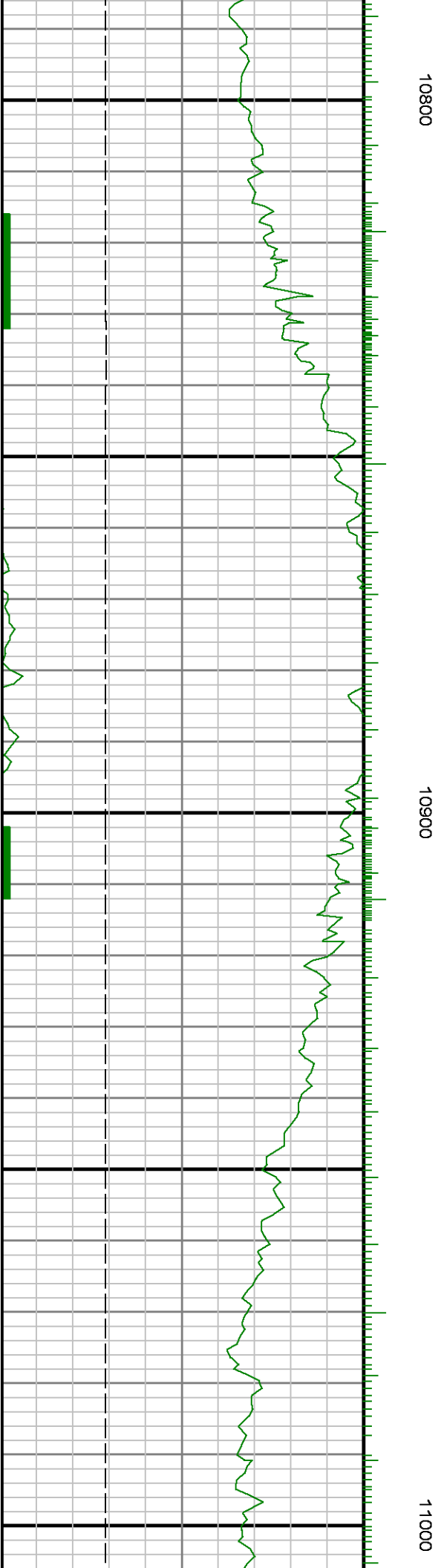
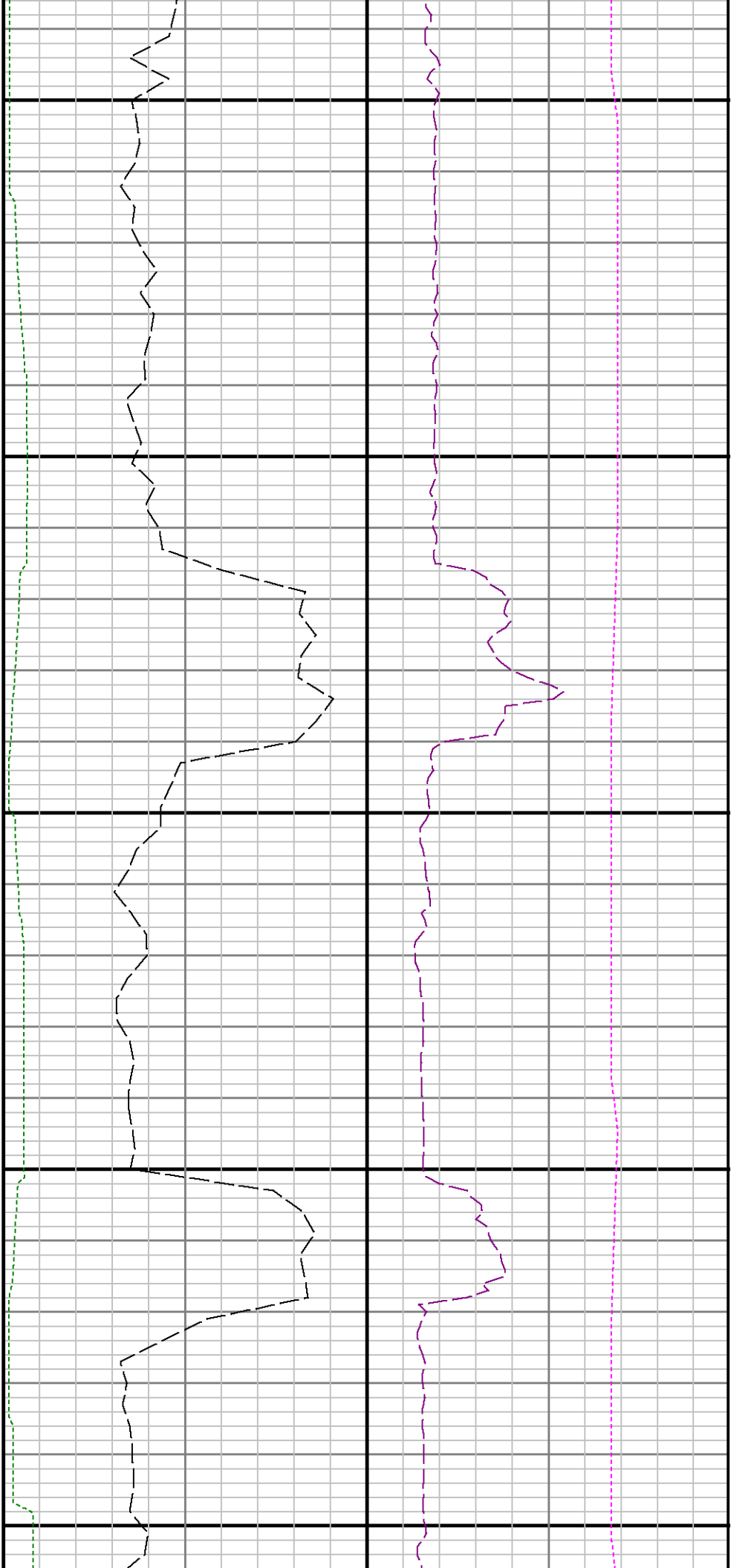


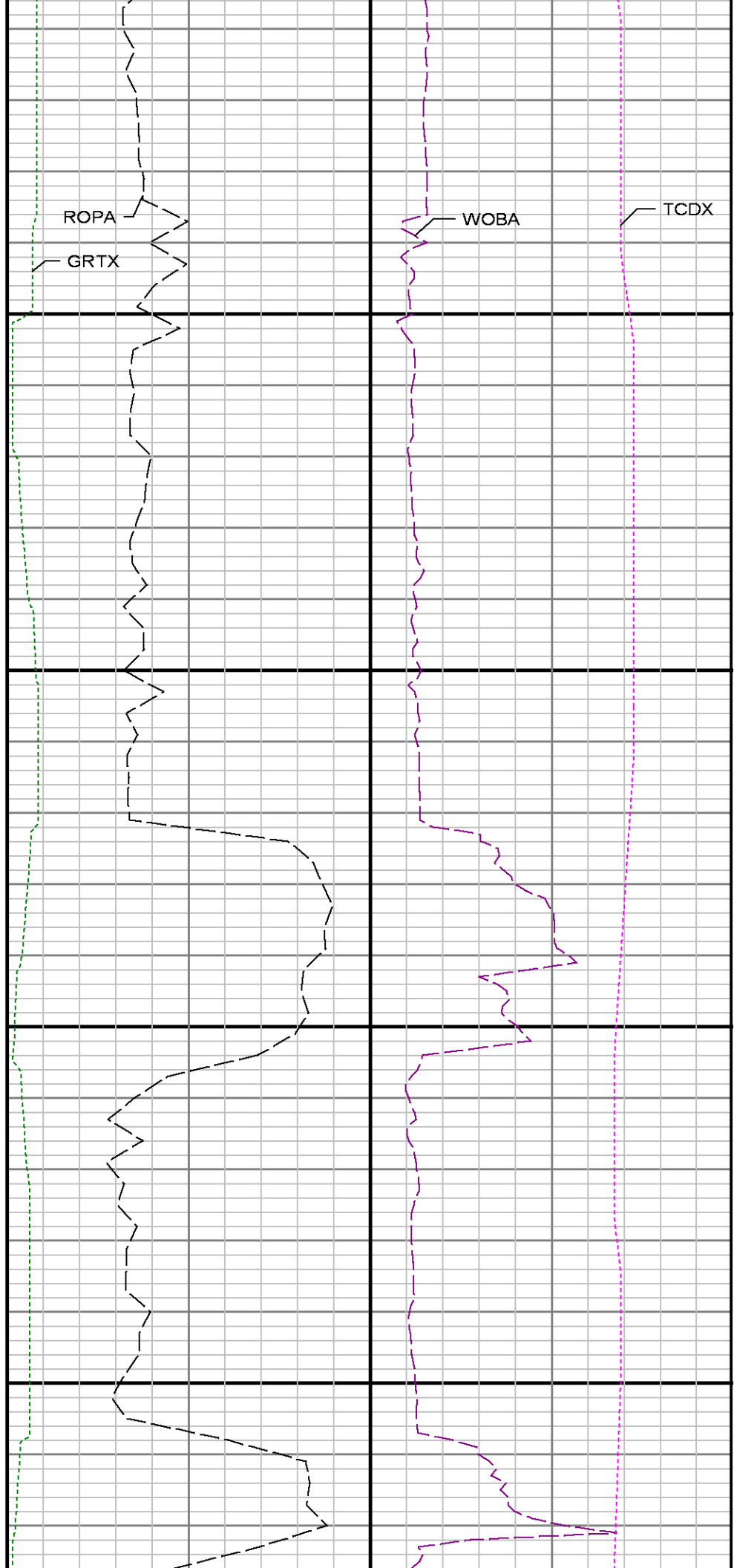
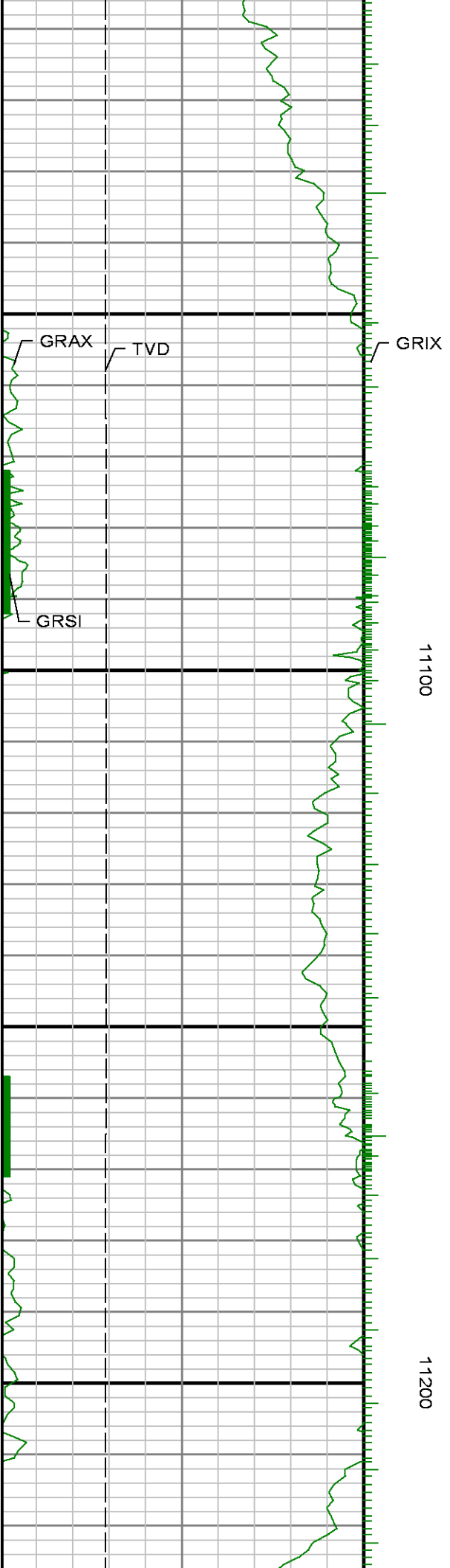


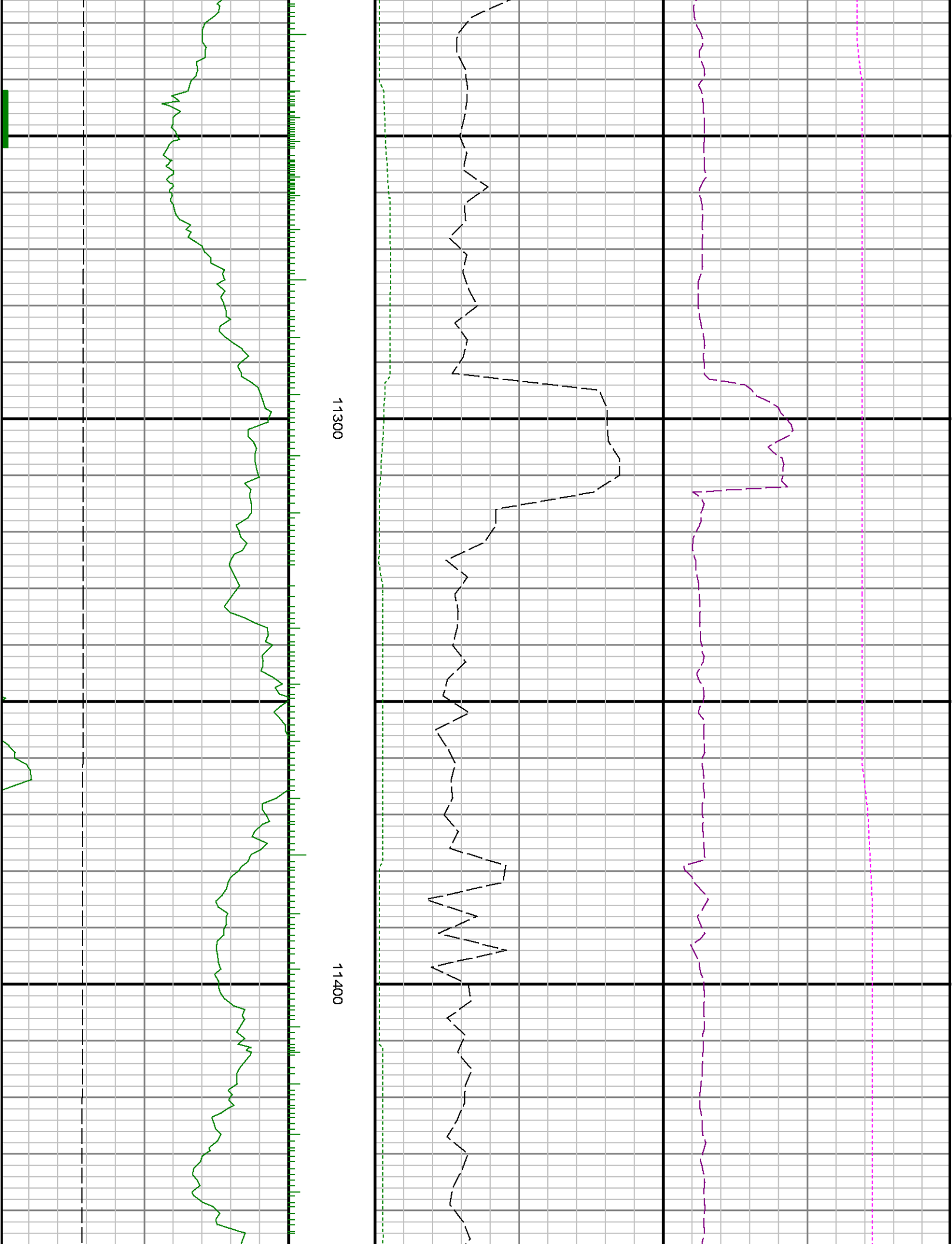
10600

10700





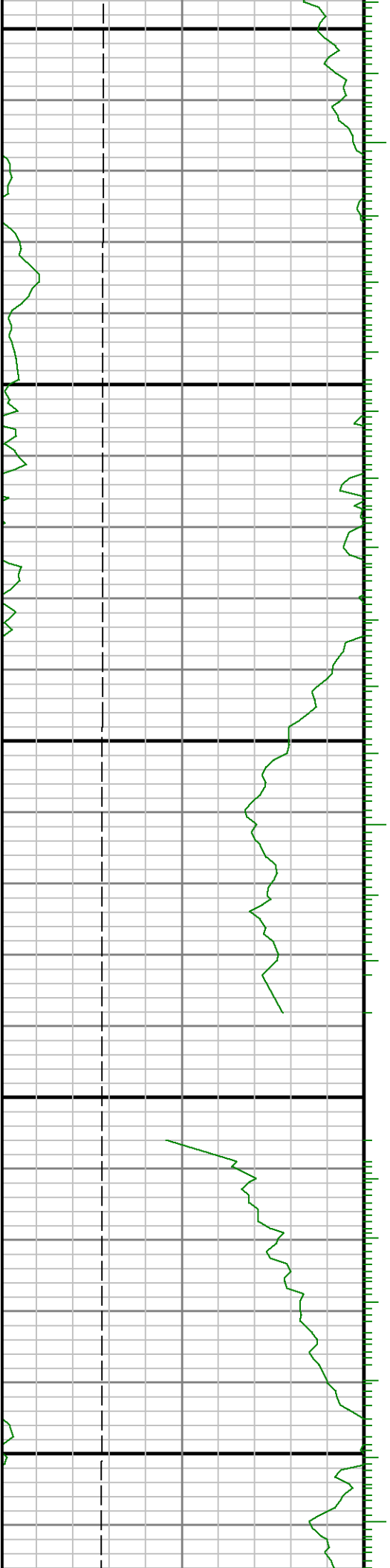


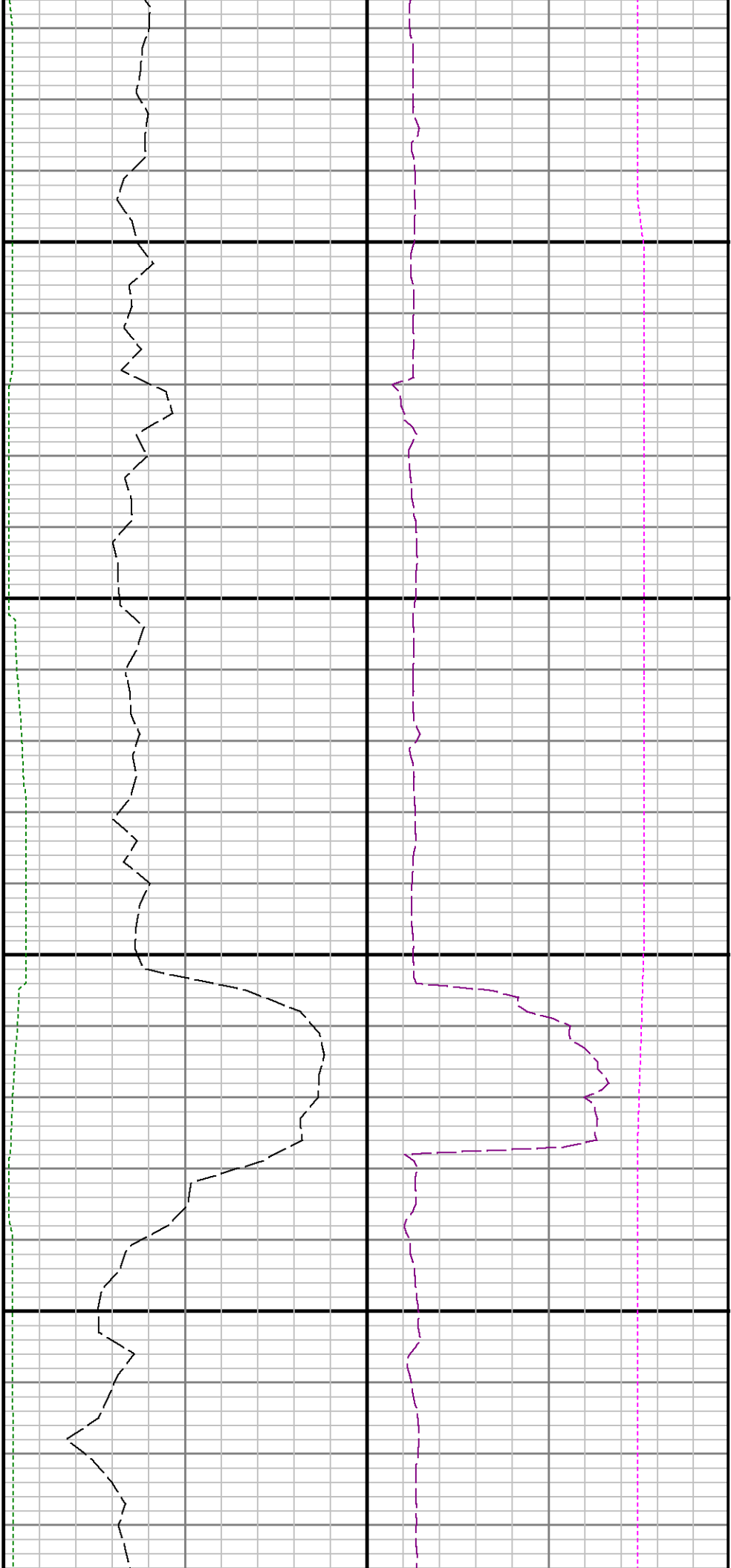




11500

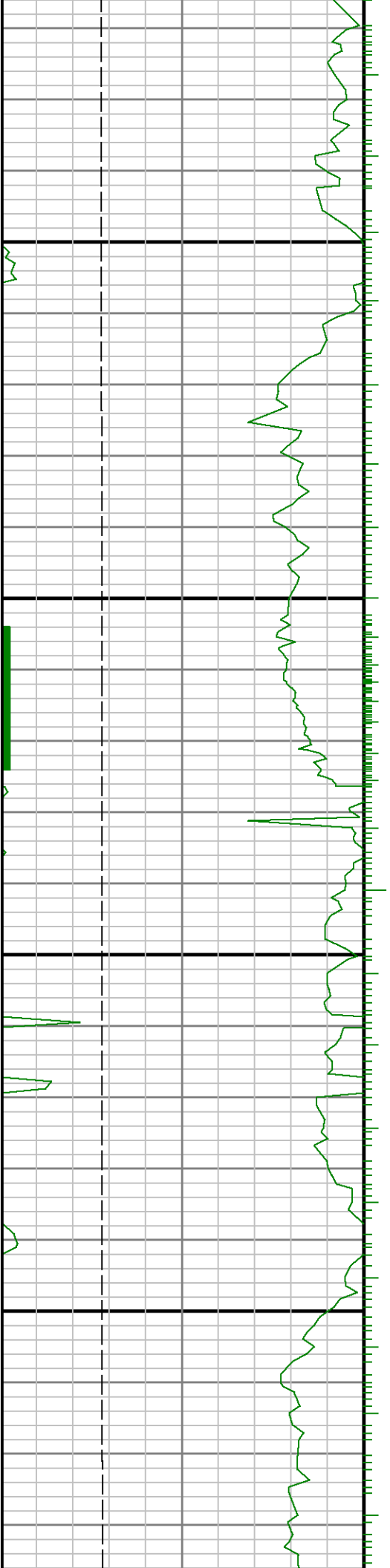
11600

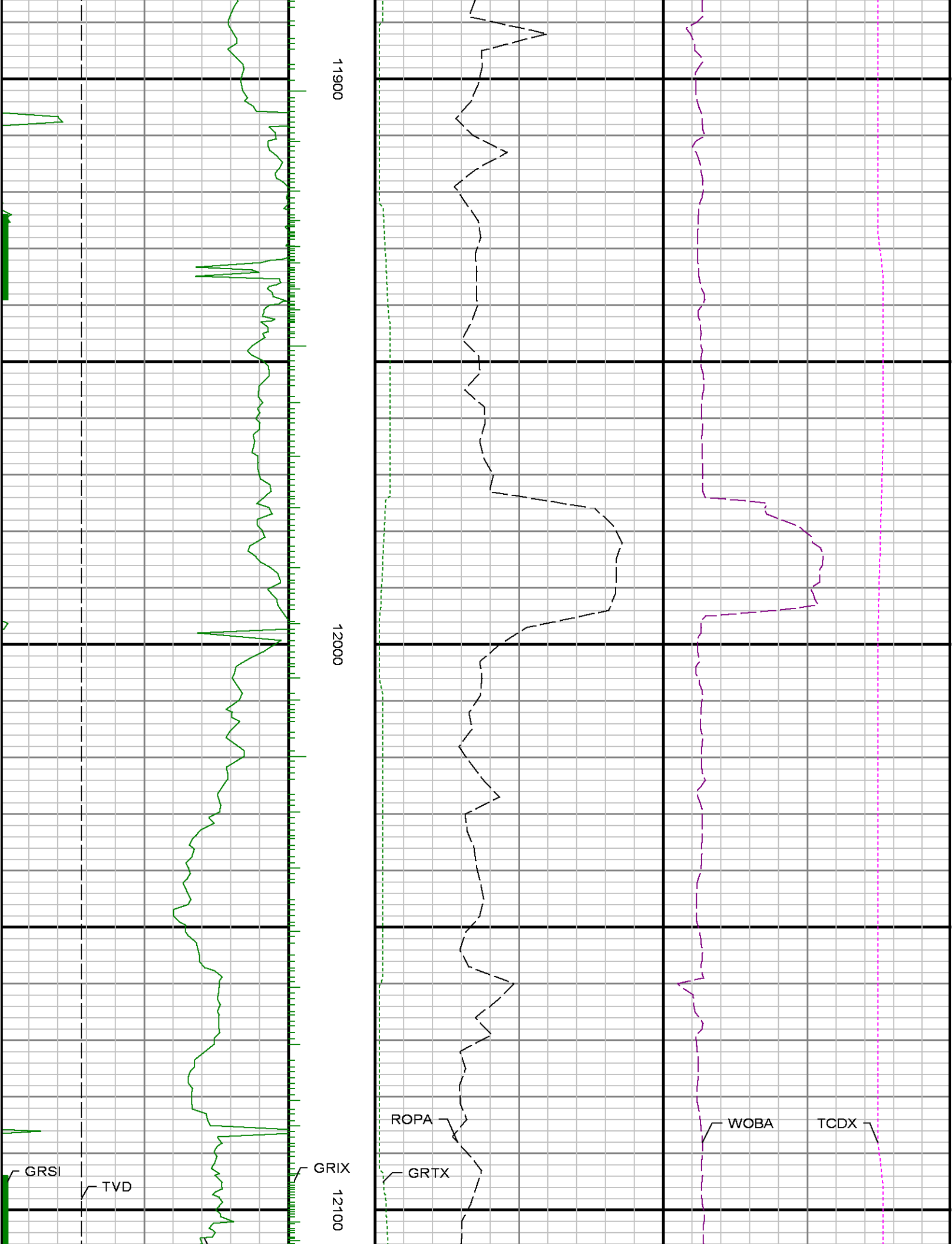


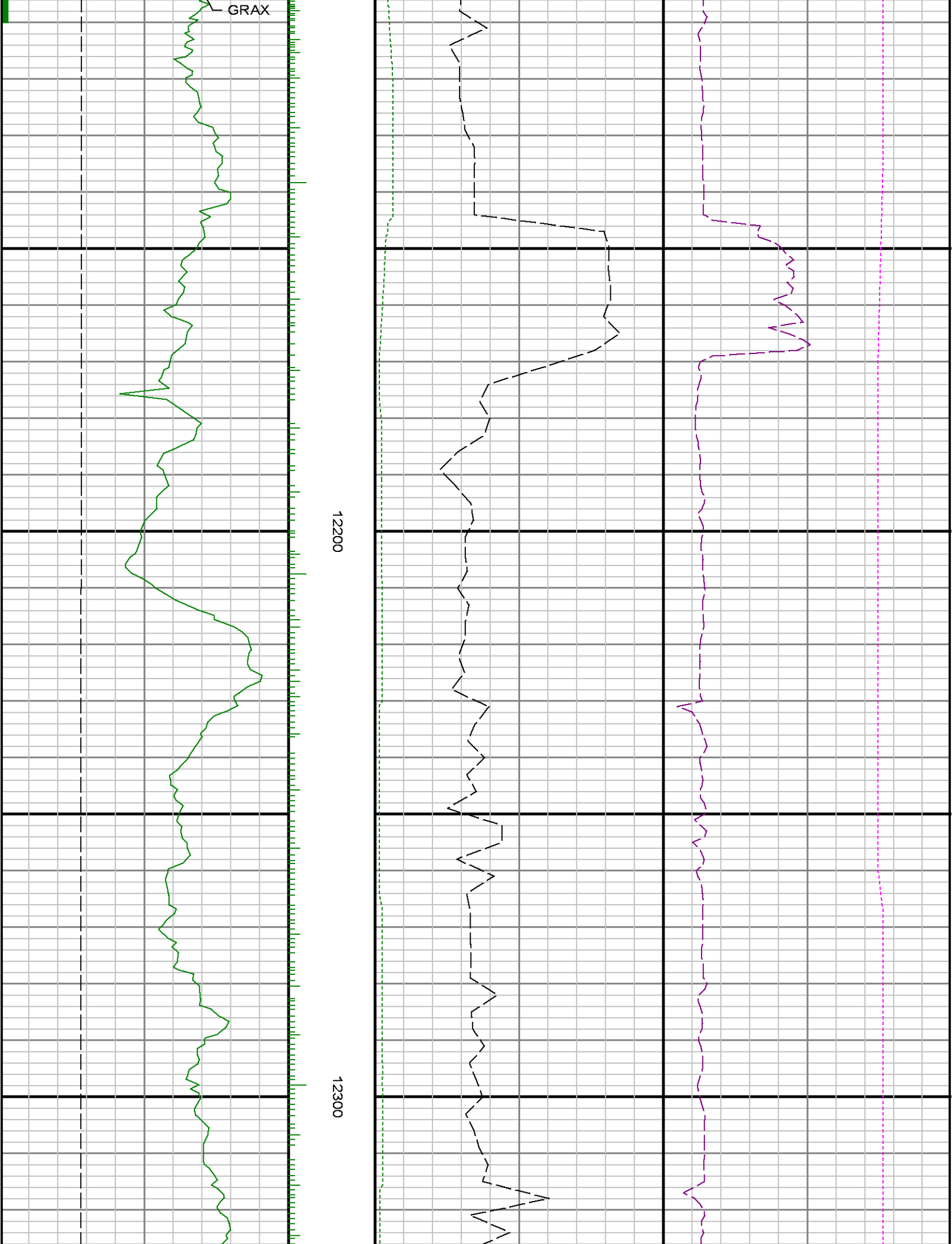


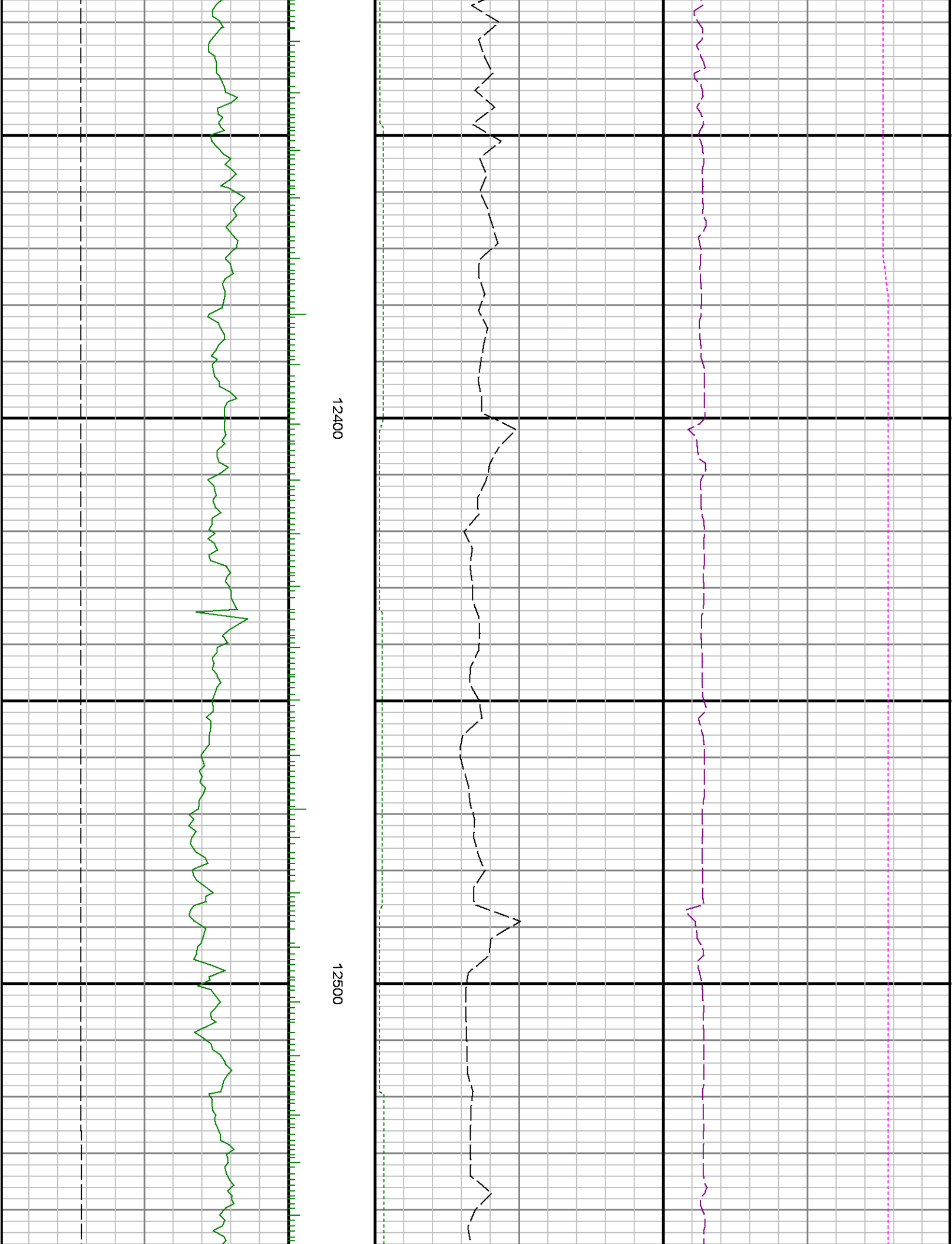
11700

11800





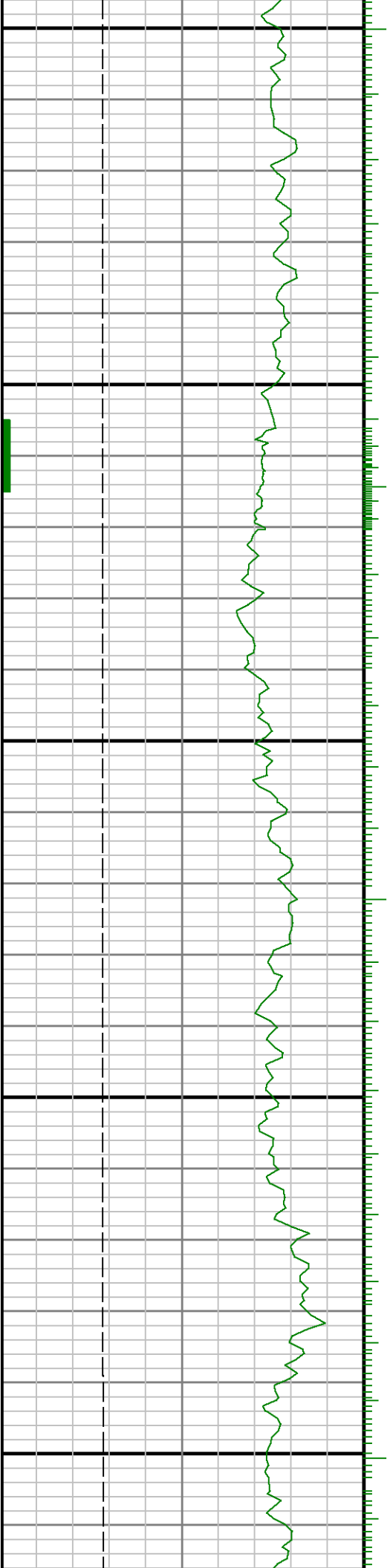


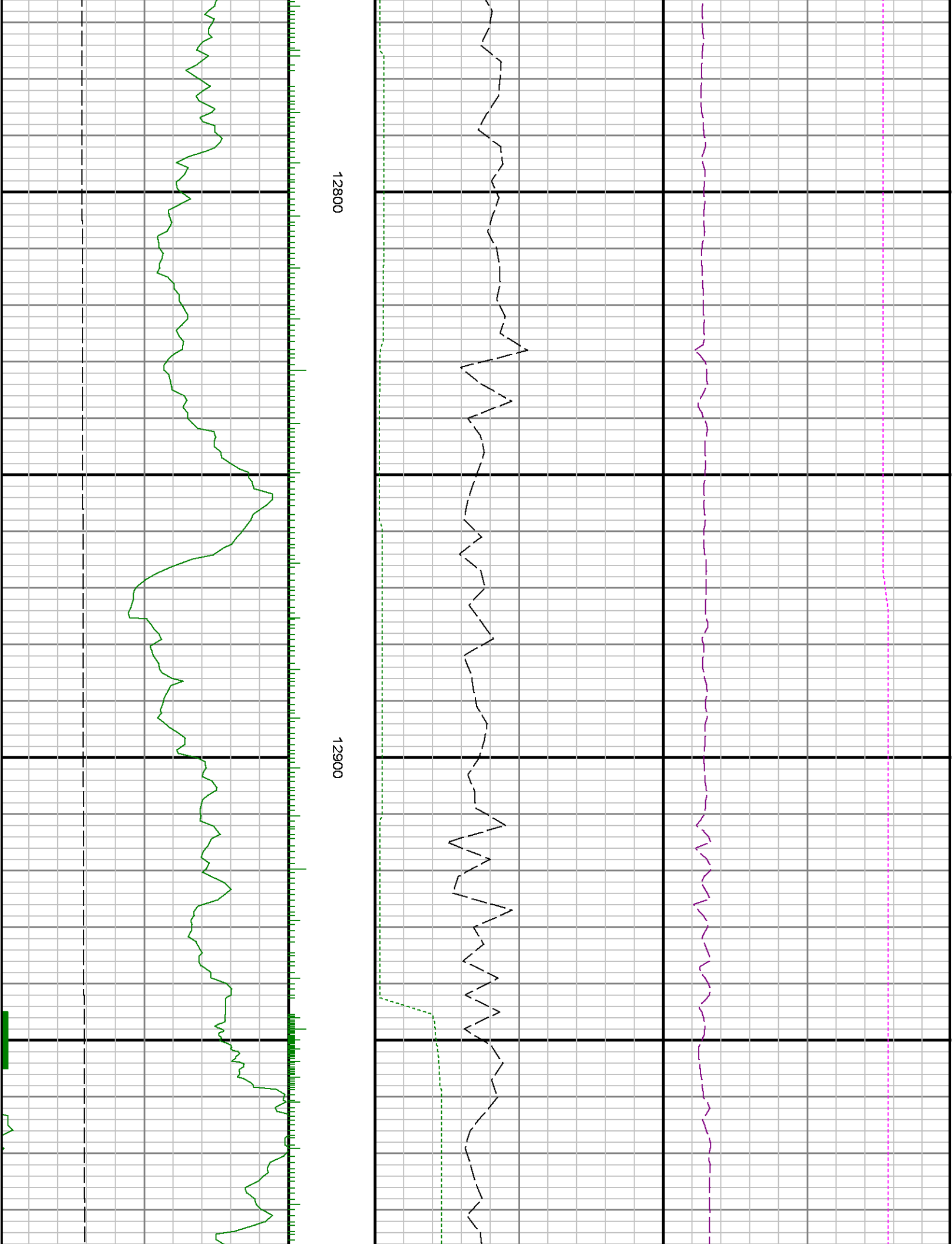


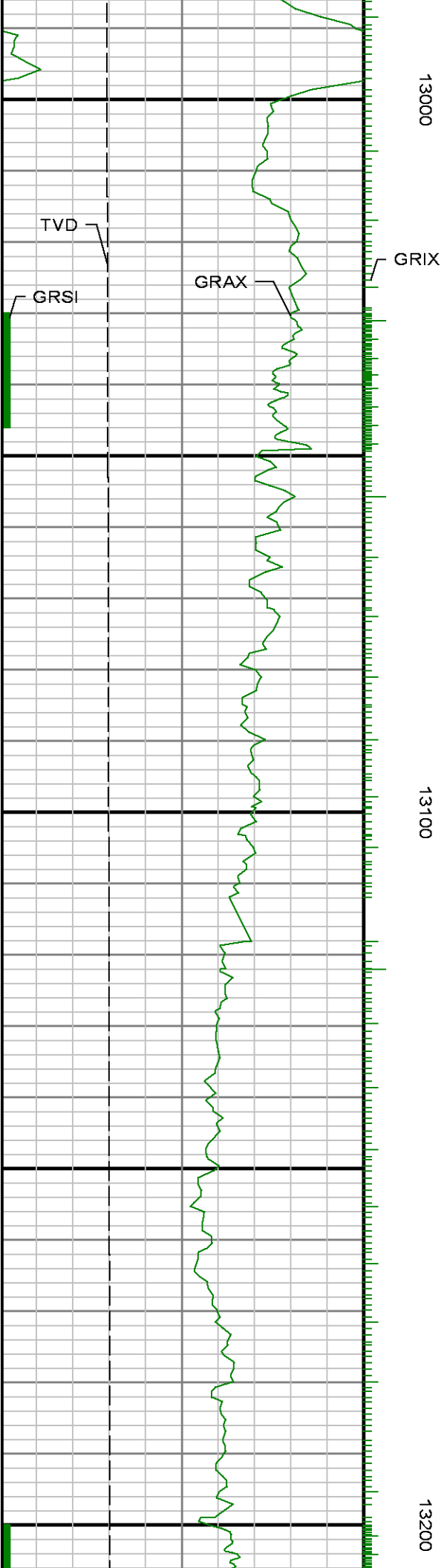


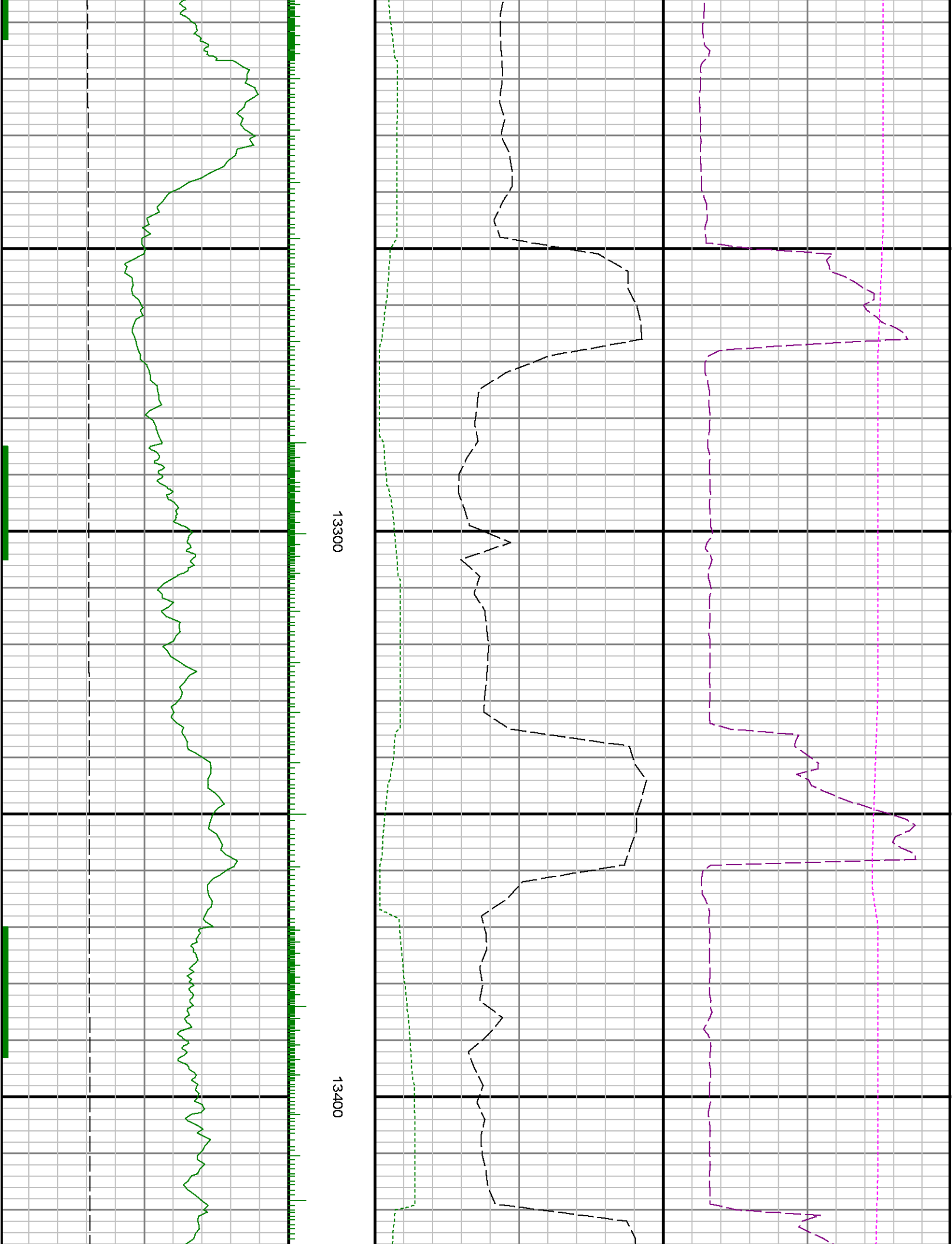
12600

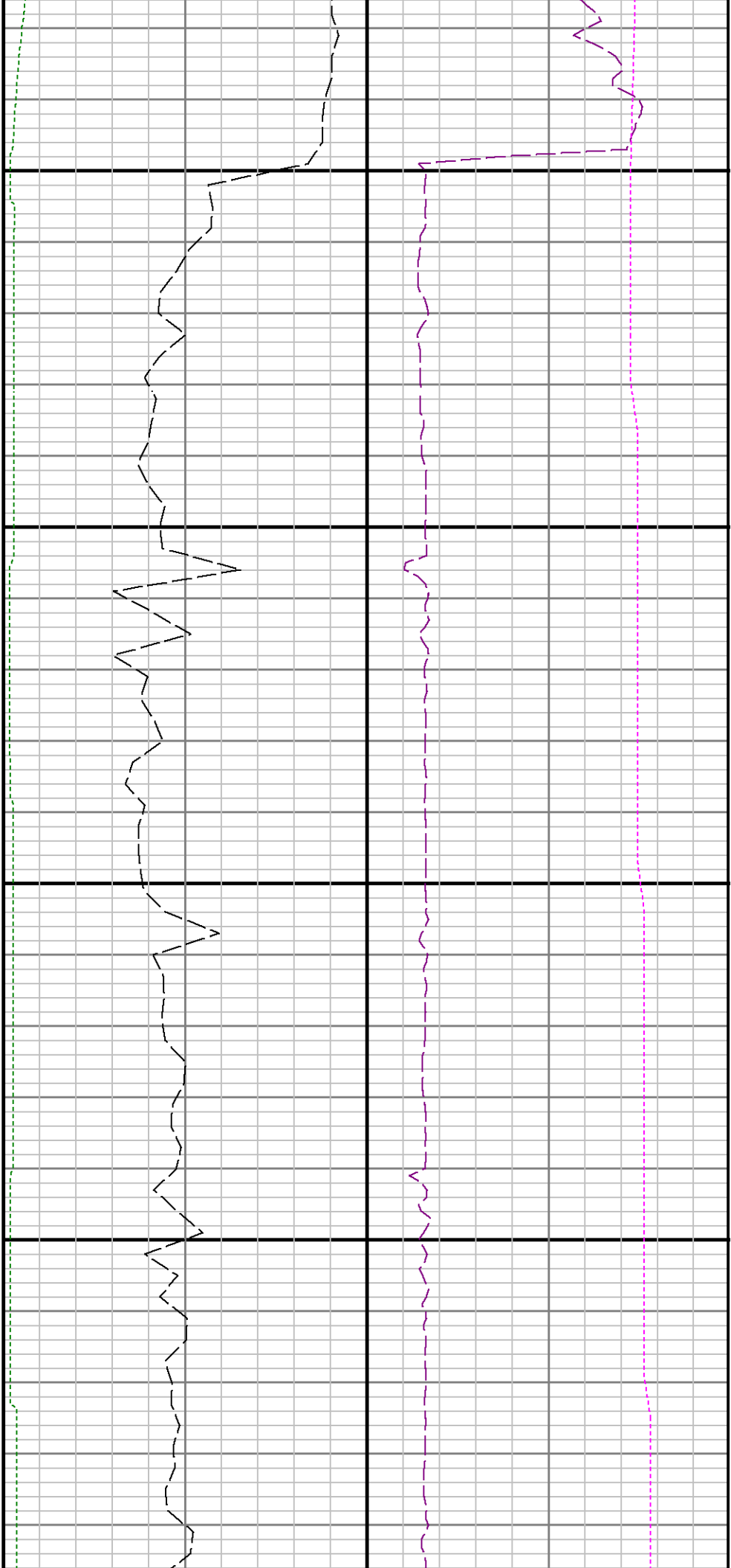
12700





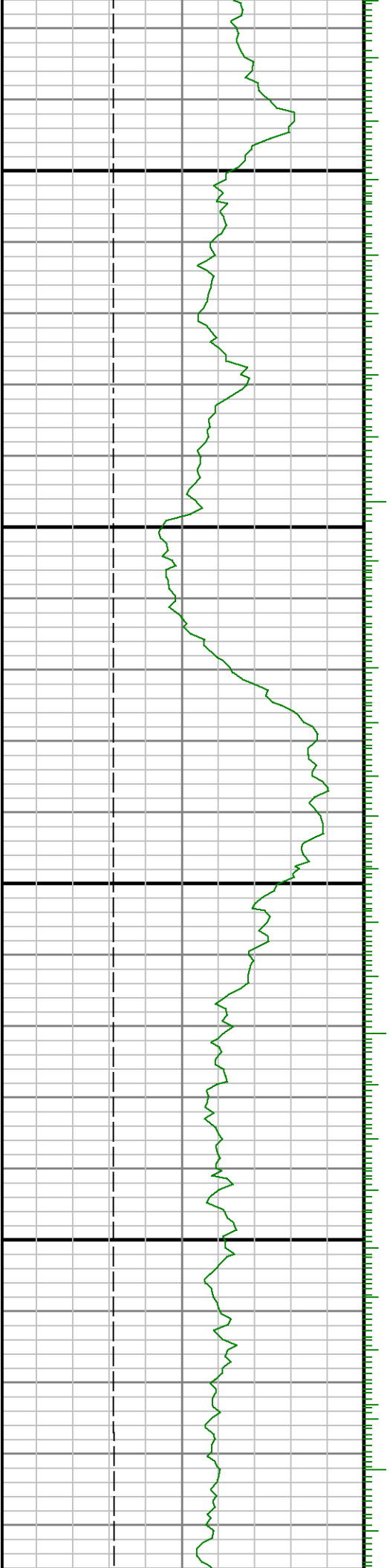


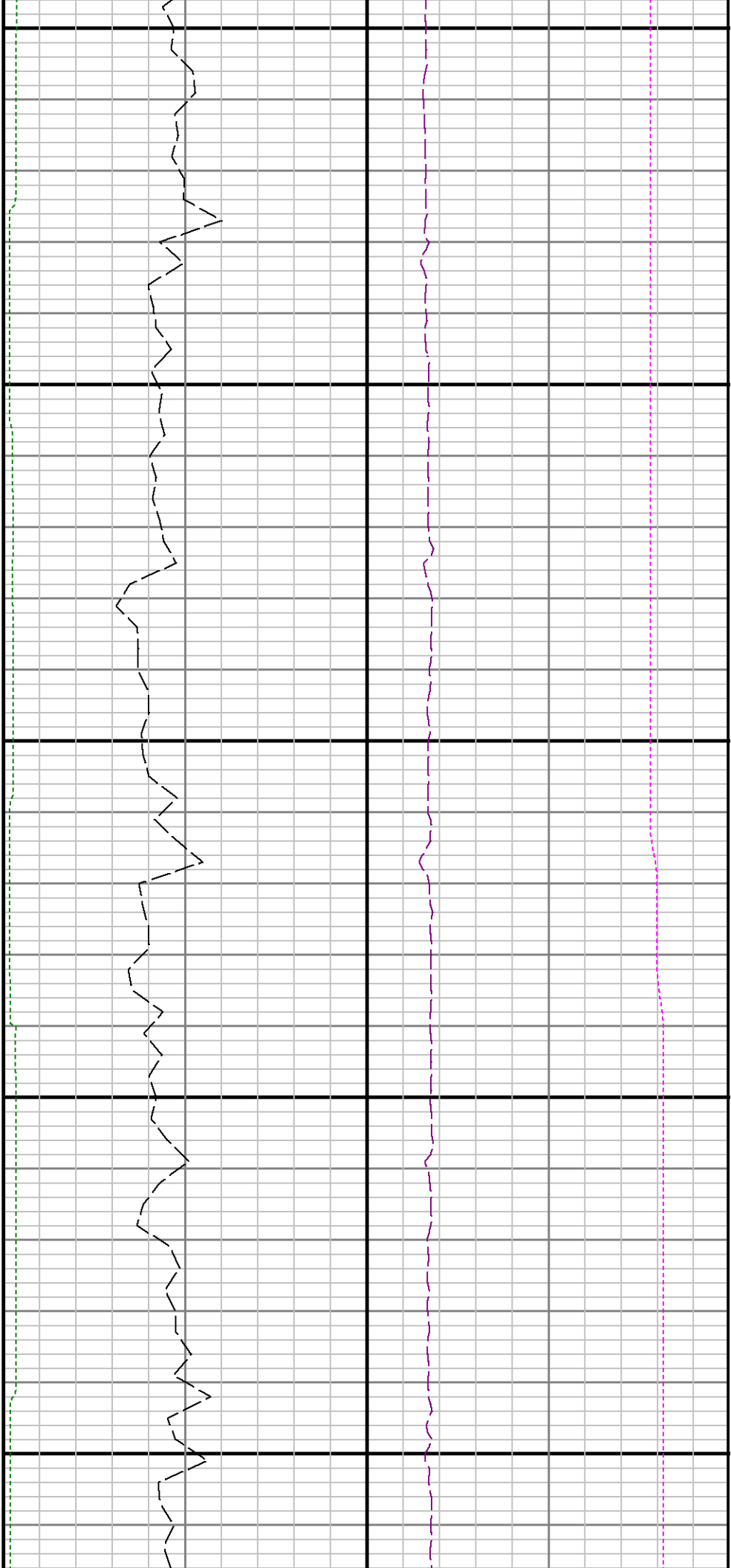




13500

13600





13700

13800

