



Drilling Dynamics

Gamma Ray

LWD REALTIME LOG

Scale:		Company: Anadarko				
1:240 MD		Well: Alvin 26C-29HZ				
Depth Reference:		Field: DJ Basin				
Driller's Depth		County:	Weld	State:	United States	
Status:	Surface Location:		Other Services:			
Final Print		Latitude:		040° 06' 11.802" N		
API No: 05123422060000		Longitude:		104° 40' 45.575" W		
Job ID: 7693377		SEC: 29	TMN: 2N	RGE: 65W		
Permanent Datum (P.D.): Ground Level		Elevation:		4909.00 ft		
Log Measured From: Rig Floor		Above P.D.		16.00 ft		
Dates		Interval Logged		Magnetic Field Reference		
Date From: 2015-12-30		Top: (ft) 6000.00		Azi Reference North: True		
Date To: 2016-01-01		Bottom: (ft) 12870.00		Total Magnetic Field Strength: (nT) 52640		
Spud Date: 2015-12-21				Mag to Reference North Correction: (deg) 8.10 E		
Borehole Record			Casing Record			
Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)
8.500	1928.00	12869.52	9.625	35.00	16.00	1918.00
Mud Record						
Type	From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Inc Az (Start)	Inc Az (End)
Oil Based Mud	1928.00	12869.52	8.500	10941.52	12.46 186.19	90.80 3.50
Acquisition System						
Baker Hughes Cadence	G3.2		Xtreme 24		Other	
Pilot Studio	3.2.7268.7		Rig:	Contractor:	Unit:	Weld County
			District:	RMA		

"These interpretations and analyses ("Interpretations") are opinions provided by Baker Hughes Oilfield Operations, Inc ("Baker Hughes"), based upon industry practice, empirical relationships, assumptions and measurements, (many of which may be provided by the customer). The Interpretations are not infallible and may be subject to different opinions. Thus, Baker Hughes does not warrant their accuracy, correctness, or completeness, or that the customer's and/or any third party's reliance on such Interpretations will accomplish any particular results. The customer assumes full responsibility for the use of the Interpretations and for decisions based thereon and the customer agrees to release, defend and indemnify Baker Hughes, its parent, subsidiaries and affiliated or related entities, and subcontractors, together with its and their officers, directors, employees, agents and invitees against, any and all claims, losses, damages, or expenses sustained by the customer or any third party arising out of reliance upon or use of the Interpretations, without regard to the cause(s) thereof, including without limitation any form of negligence on the

part of Baker Hughes. Unless other contract terms have been agreed to by the parties, each party's liabilities and obligations shall be governed by Baker Hughes Incorporated's Worldwide Terms and Conditions."

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	8.500	PDC	2.00	Motor	-41.81	12827.71	0.00	12869.52	2015-12-30 03:15	2016-01-01 03:33	53.76

Crew

Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite
Chad Hough		2015-12-29	2016-01-01	Matthew Leopold		2015-12-29	2016-01-01	Michael Cleary		2015-12-29	2016-01-01
Ryan Kielian		2015-12-29	2016-01-01								

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+ (%)
2015-12-29 06:45		1	1928.00	Oil Based Mud	9.2	17	N/A	0.0	71.3/28.7	Active Pit	39500	0.00
2015-12-31 21:28		1	12386.41	Oil Based Mud	9.5	18	N/A	0.0	71.6/28.4	Active Pit	47000	0.00
2015-12-30 18:00		1	8713.53	Oil Based Mud	9.2	17	N/A	0.0	70.8/29.2	Active Pit	43500	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	10350730	Gamma (single)	11.39	41.81	6.750	3.250
1	NaviGamma	10350730	Directional (mag)	14.80	45.22	6.750	3.250
1	NaviGamma	10350730	VSS	14.80	45.22	6.750	3.250

Comments

- 11 Baker Hughes run 1 utilized a 6.75 inch NaviGamma (Directional and Gamma Ray) tool ran behind an 8.5 inch bit with a steerable assembly from 1918 to 12868 feet MD (1895 to 7265 feet TVD).
- 22 A sliding indicator is shown on the left side of track 1 as a heavy line. The indicator has been shifted to the Gamma Ray sensor offset to correspond with Gamma Ray data acquired while sliding.


Remarks

	Measured	Hole	Run	
--	----------	------	-----	--

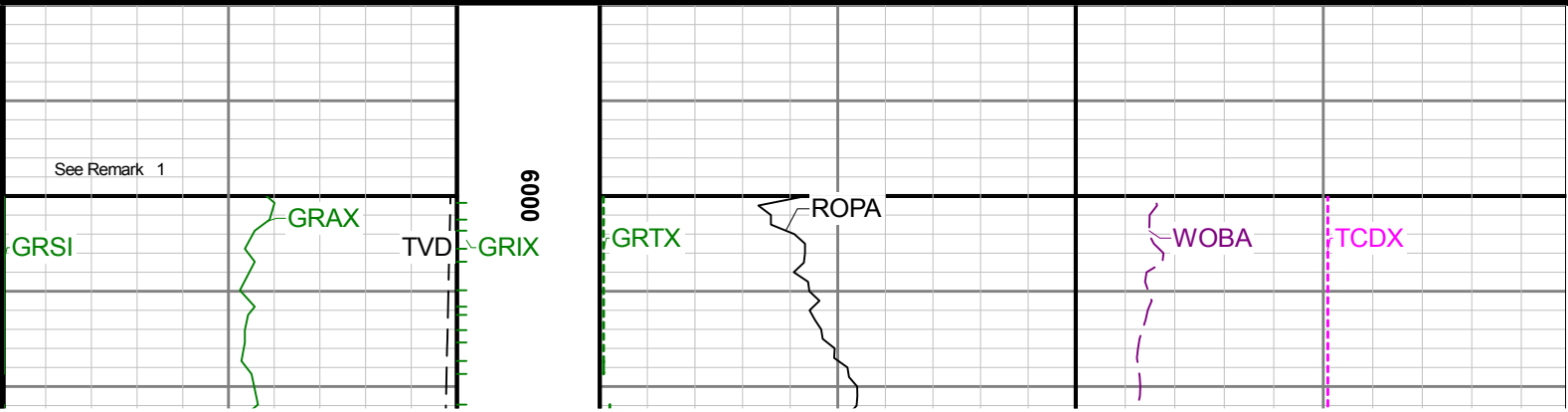
Number	Depth (ft)	Section (in)	No.	Remark
1	5995.00	8.500	1	The interval from Surface to 6000 feet MD (5880 feet TVD) was not logged due to directional only services required in the vertical section.
2	12855.00	8.500	1	The interval from 12827 to 12868 feet MD (7265.6 to 7265.1 feet TVD) has no GRAX, GRIX or GRTX due to the Gamma Ray sensor offset to bit.

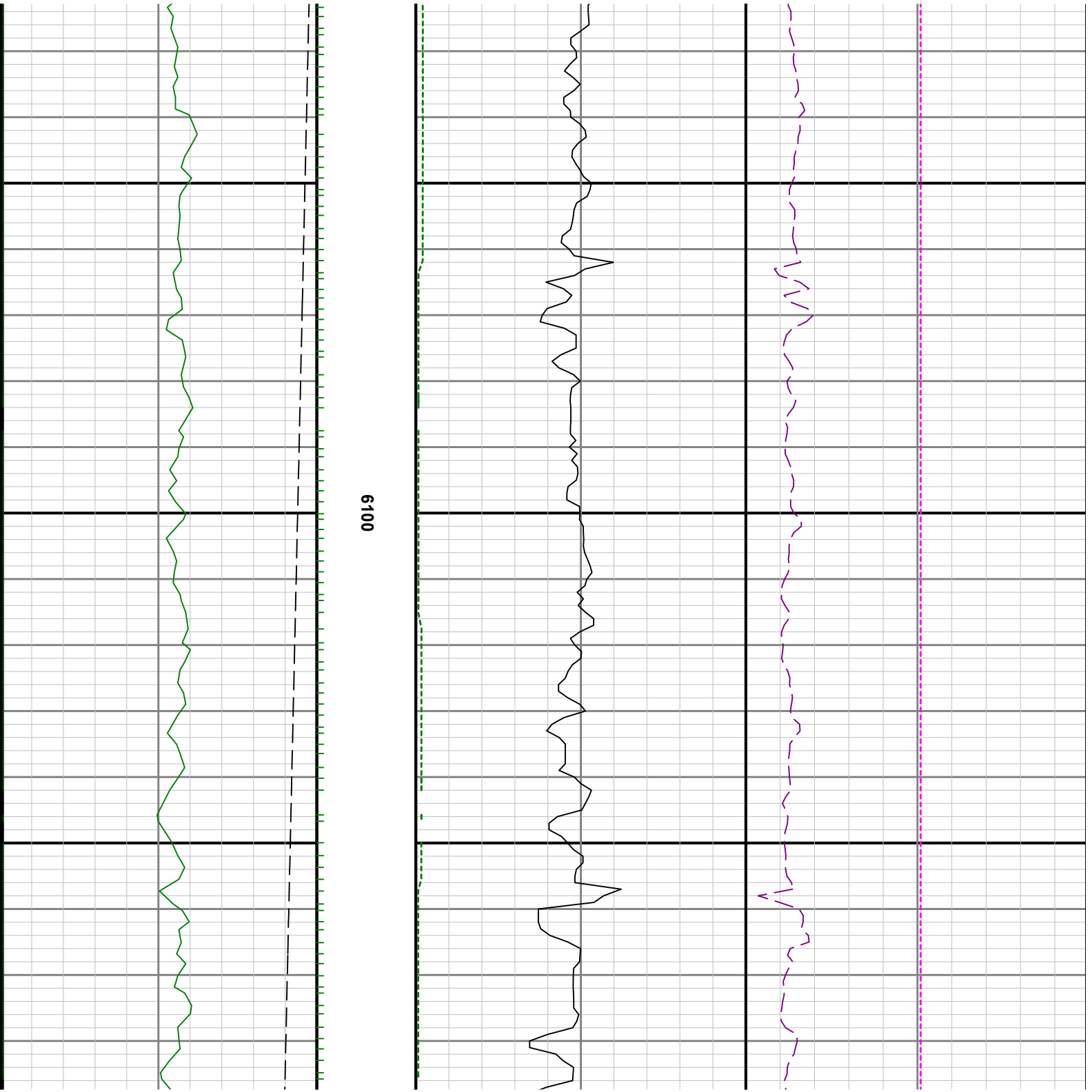
Curve Mnemonics

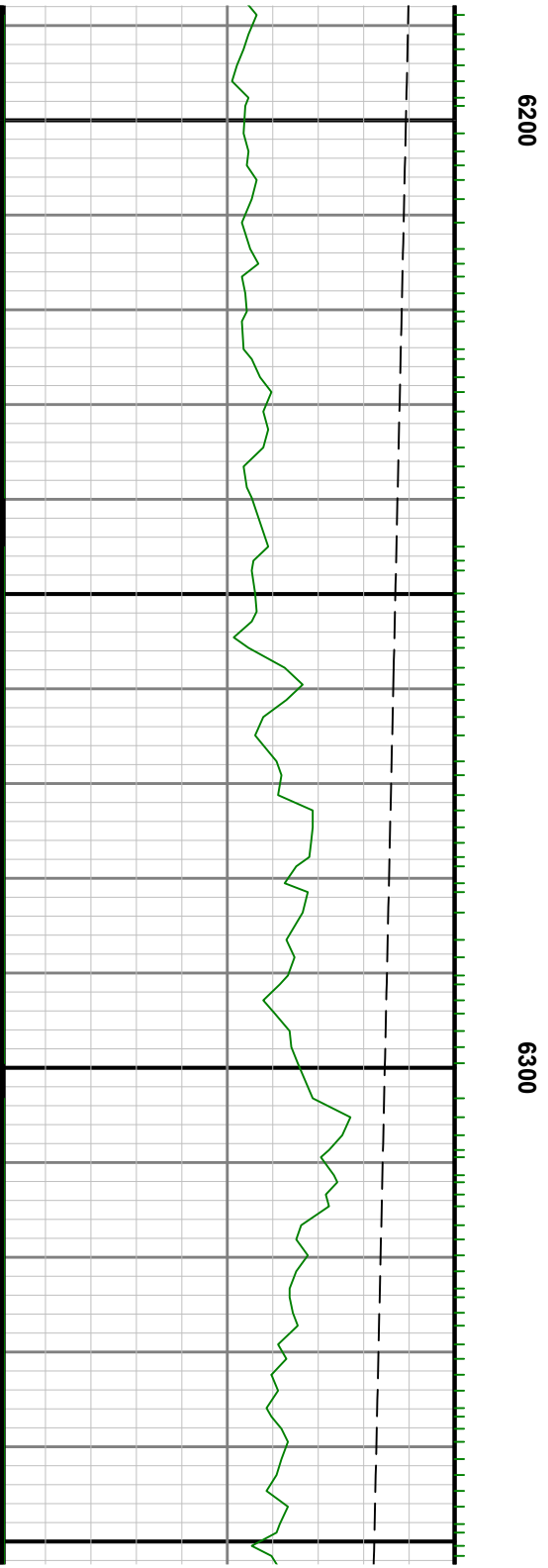
Presented Curves	Description	Units
ROPA	Depth Averaged ROP 3 ft Average	ft/h
GRAX	Gamma Ray - Apparent 0.5 ft Average	API
GRIX	Gamma Ray - Data Point Indicator	unitless
GRTX	Gamma Time Since Drilled	min
GRSI	Sliding Indicator Flag	unitless
TCDX	Downhole Temperature	degF
TVD	True Vertical Depth	ft
WOBA	Weight On Bit, Average 1 ft Average	klb

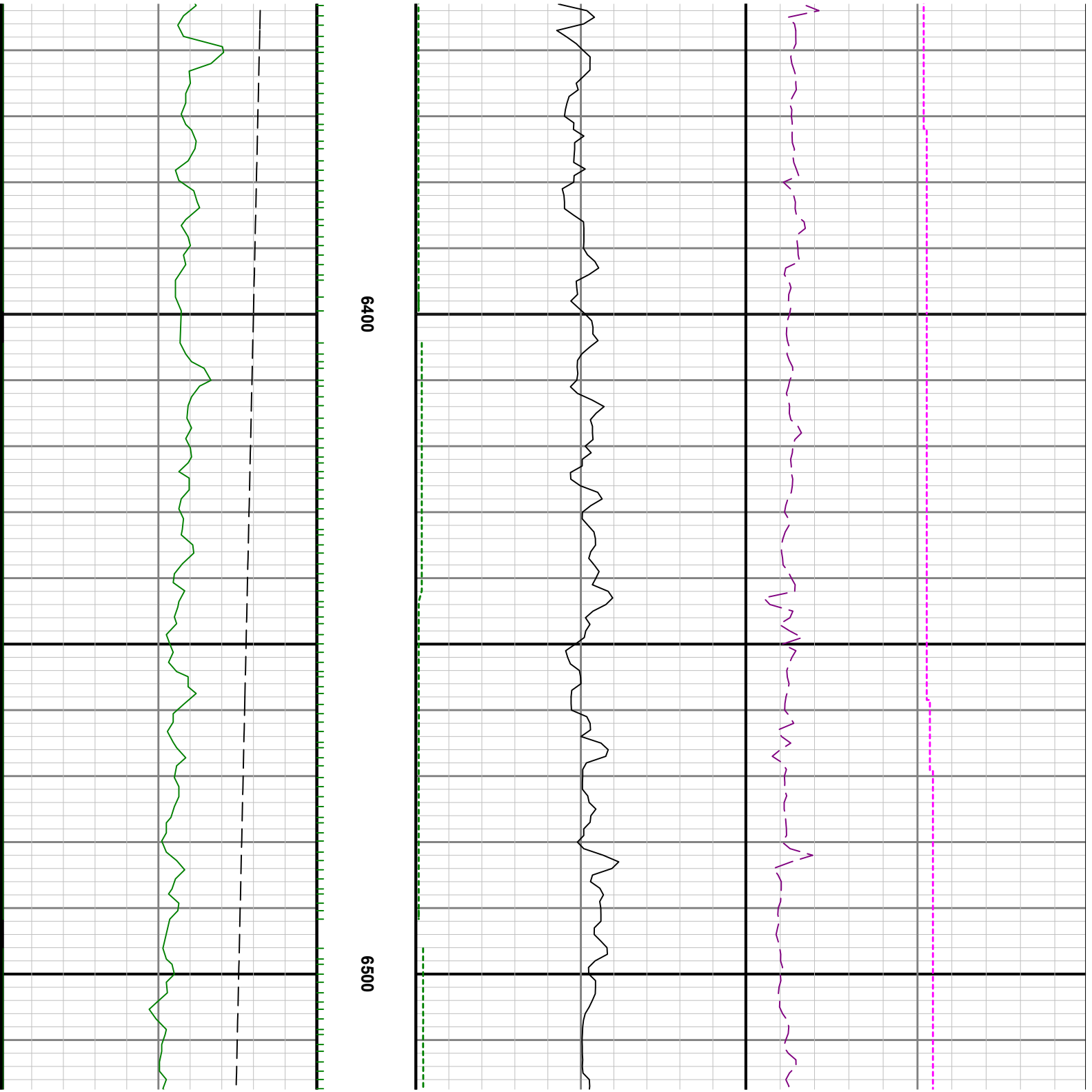
	Company	Anadarko			
	Well	Alvin 26C-29HZ			
	Interval	Date From:	2015-12-30 03:04	Top:	6000.00
	Created	Date To:	2016-01-01 03:33	Bottom:	12870.00
		2016-01-01 05:41			

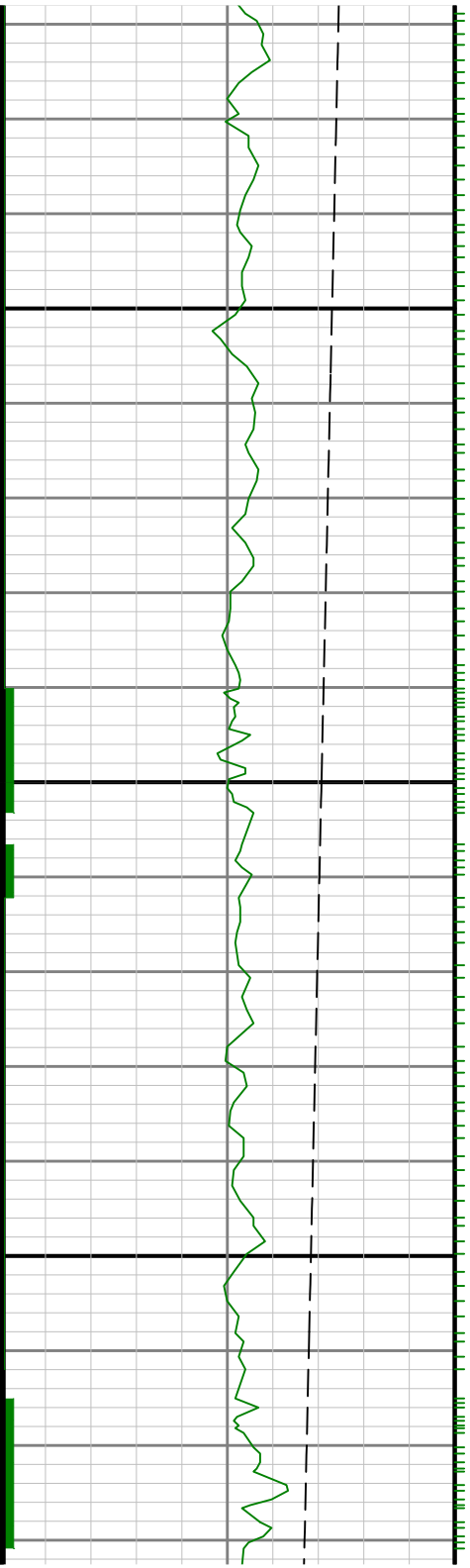
Gamma Ray Apparent 0.5 ft Average GRAX	MD 1:240 feet	Rate of Penetration 3 ft Average ROPA	Surface Weight On Bit 1 ft Average WOBA
0 200		1000 0	0 100
API		ft/h	klb
True Vertical Depth TVD		Gamma Ray Time Since Drilled GRTX	Downhole Temperature TCDX
8000 5850		0 600	0 300
ft		min	degF



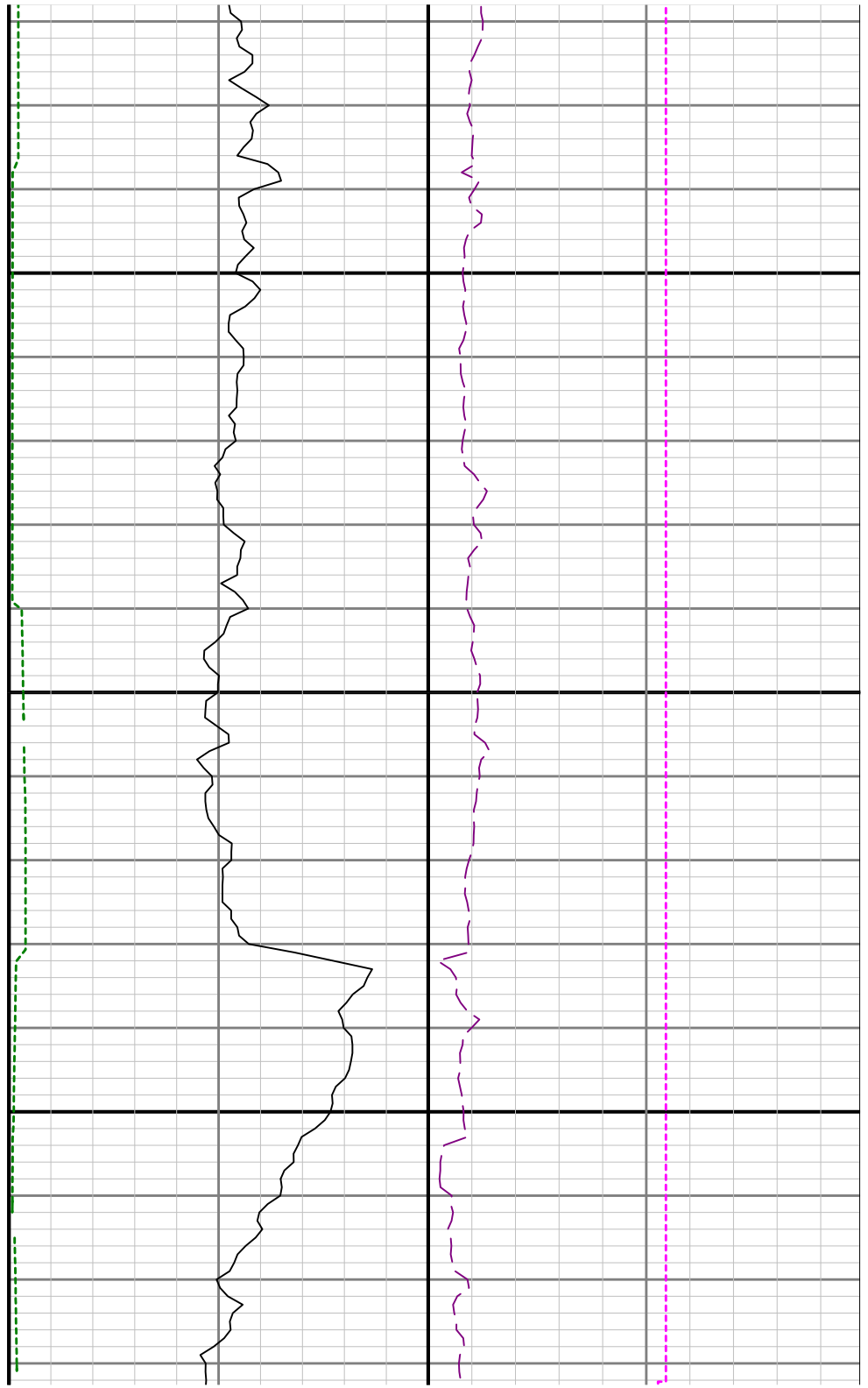


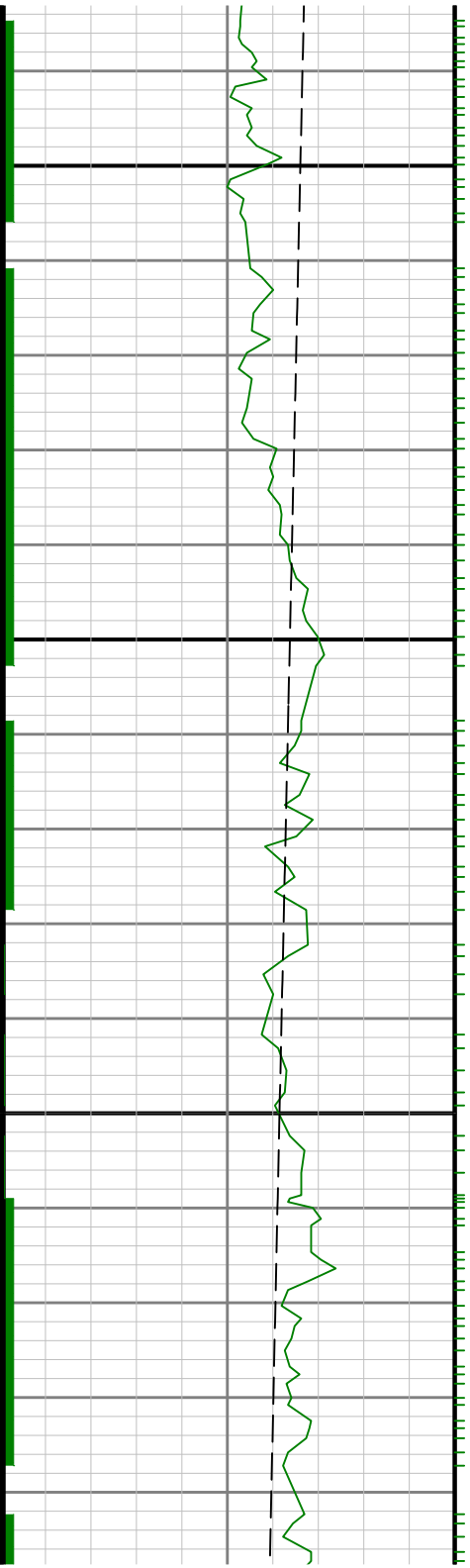






0099

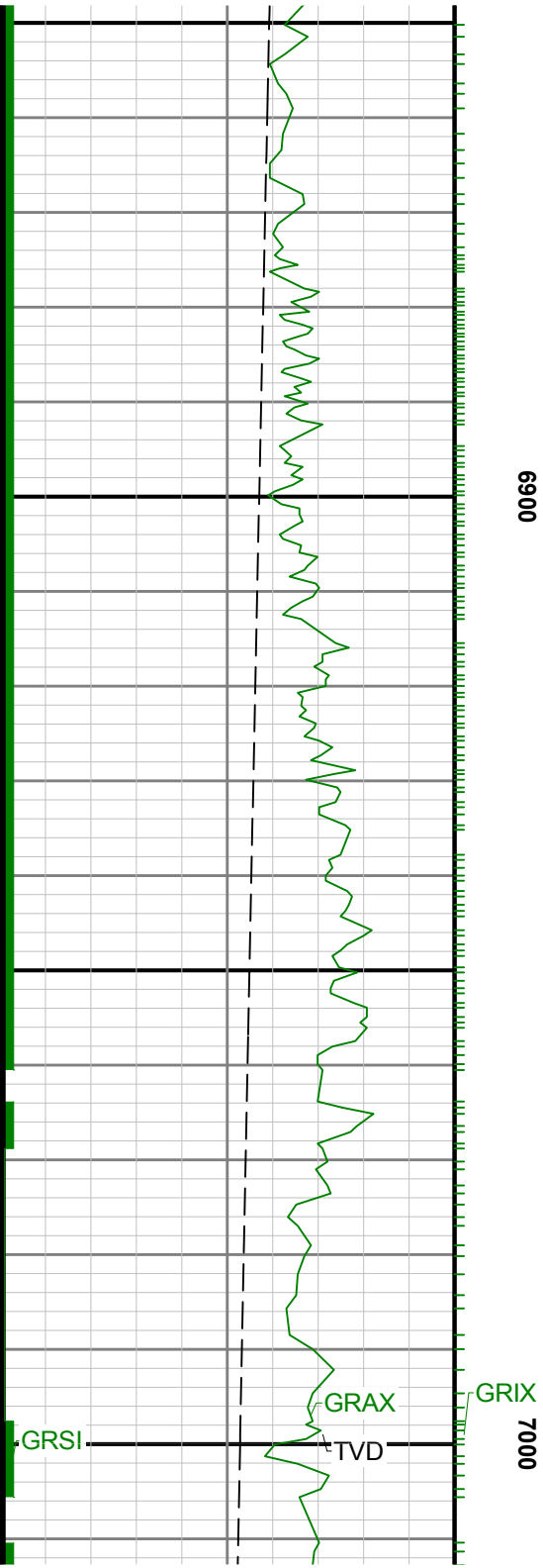


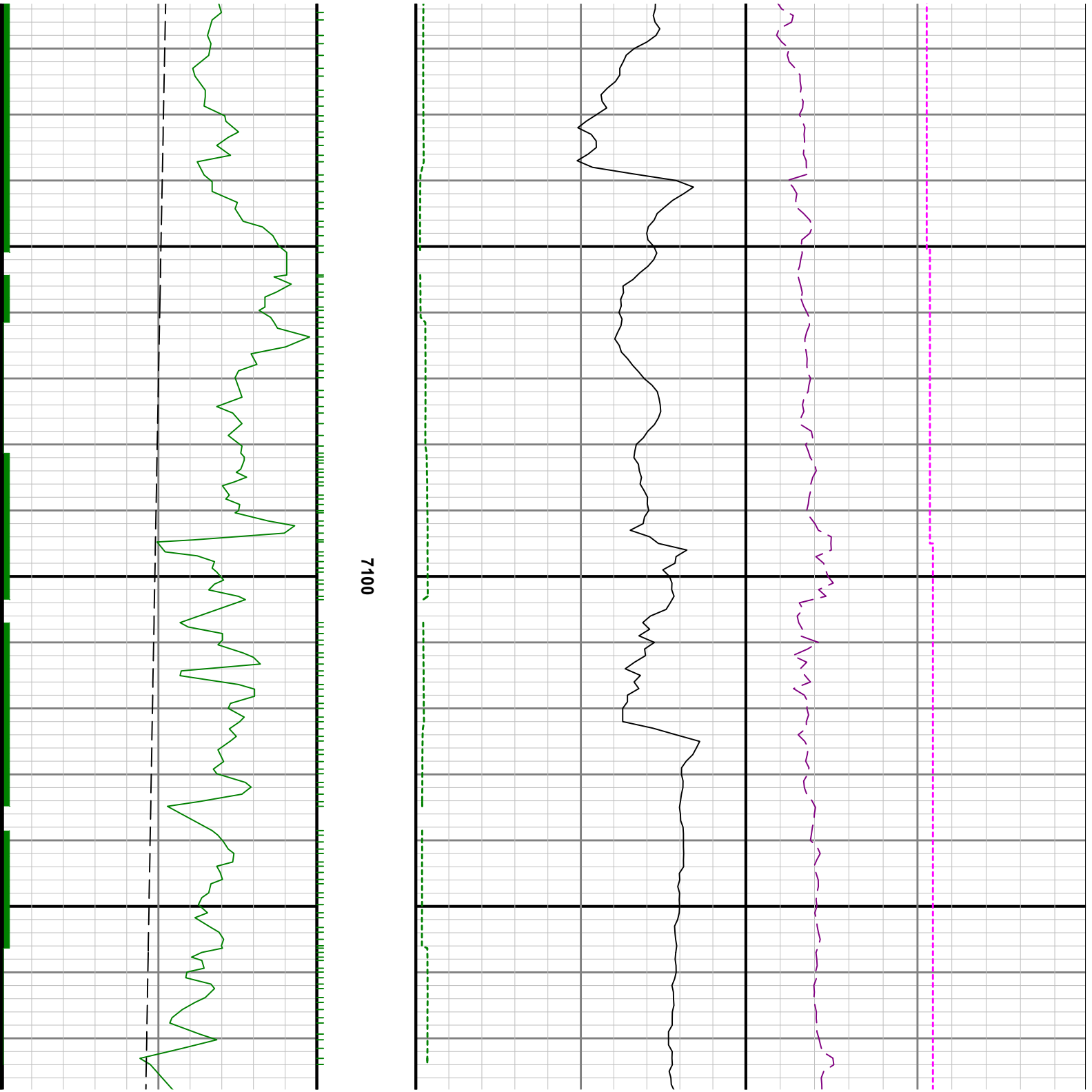


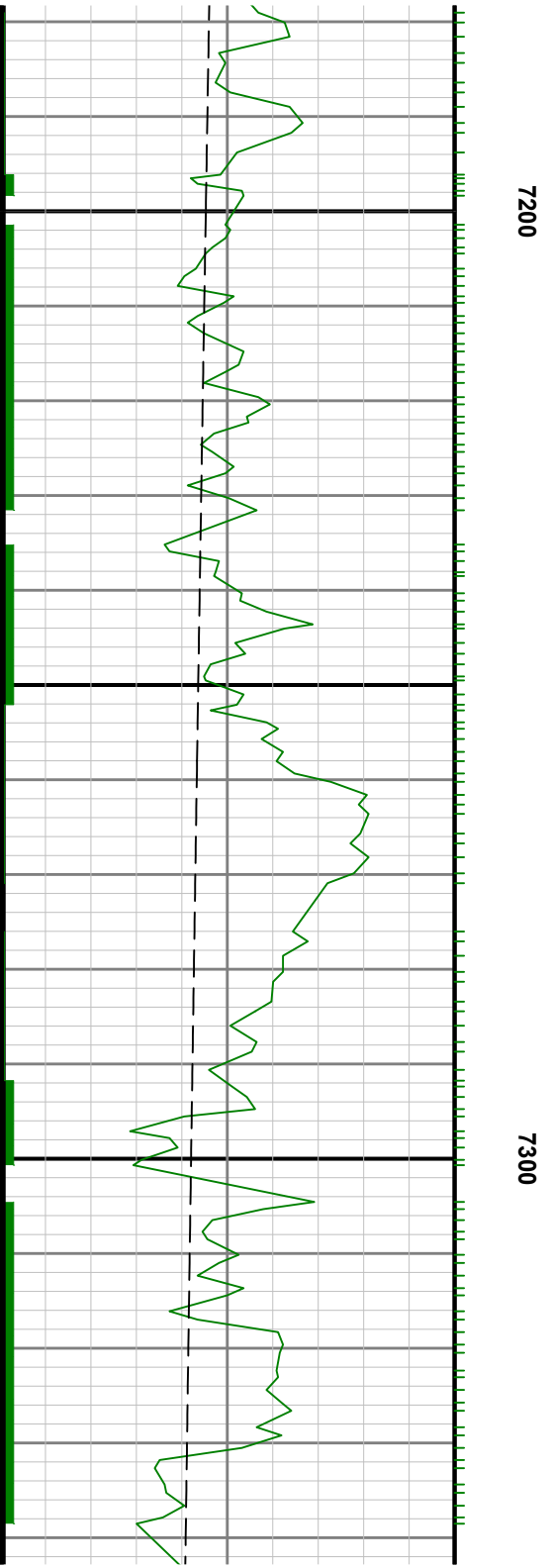
6700

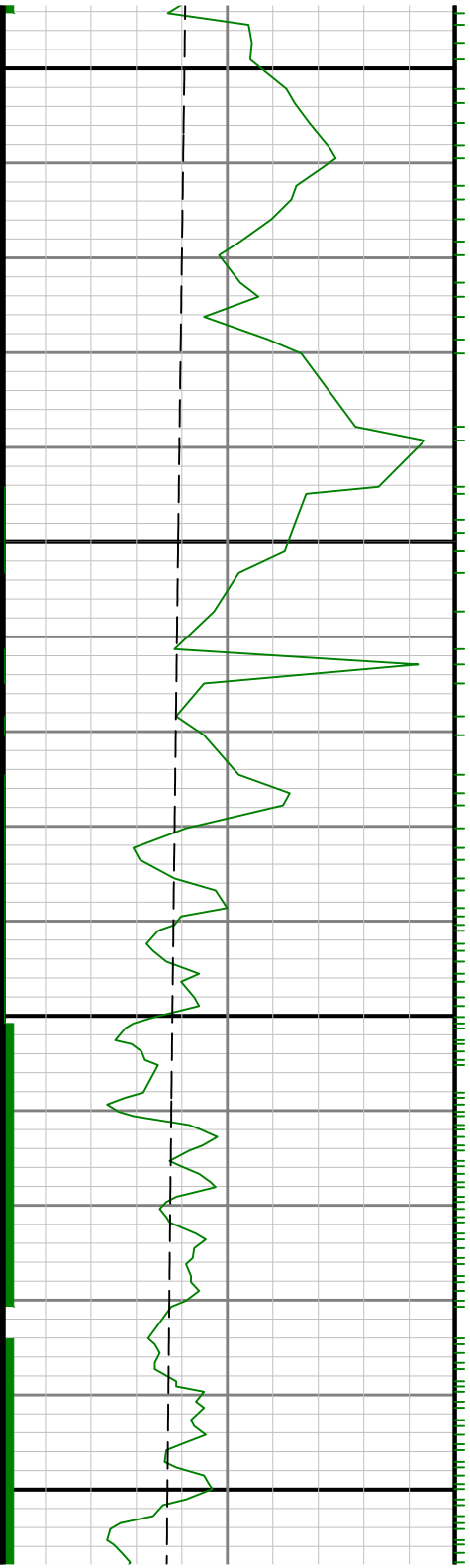
6800







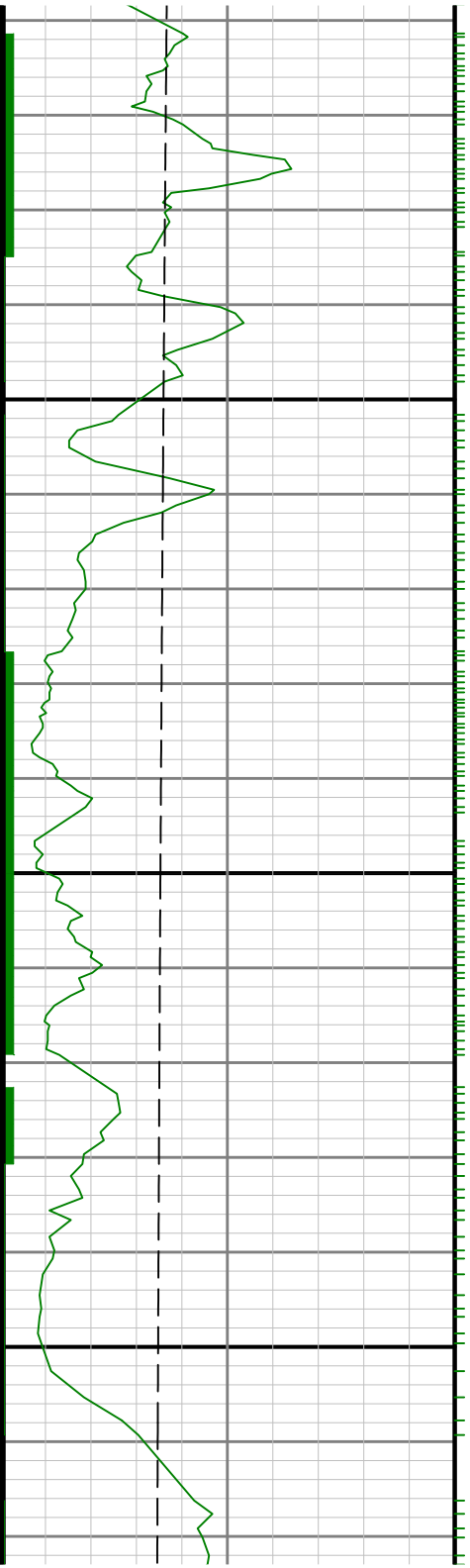




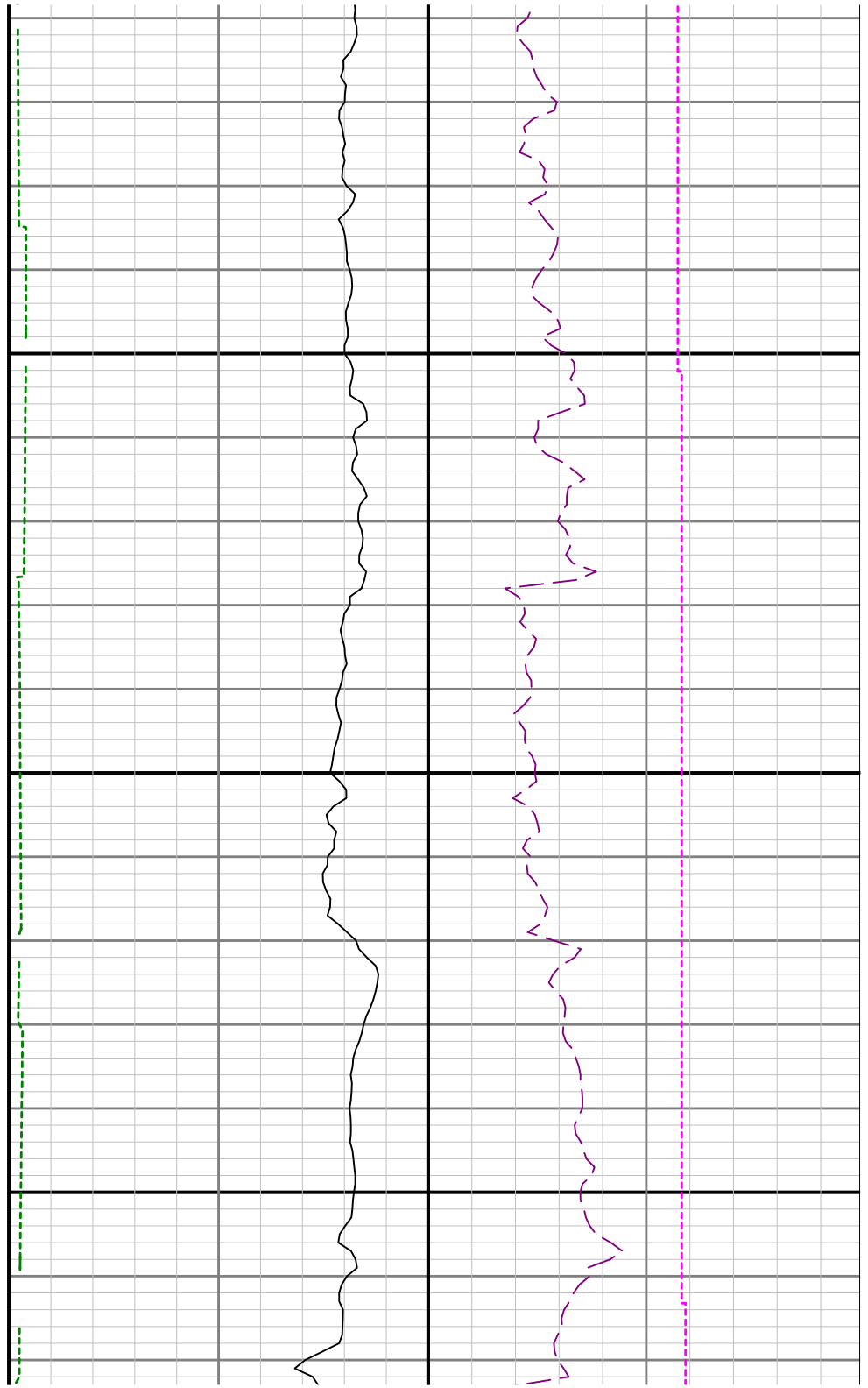
7400

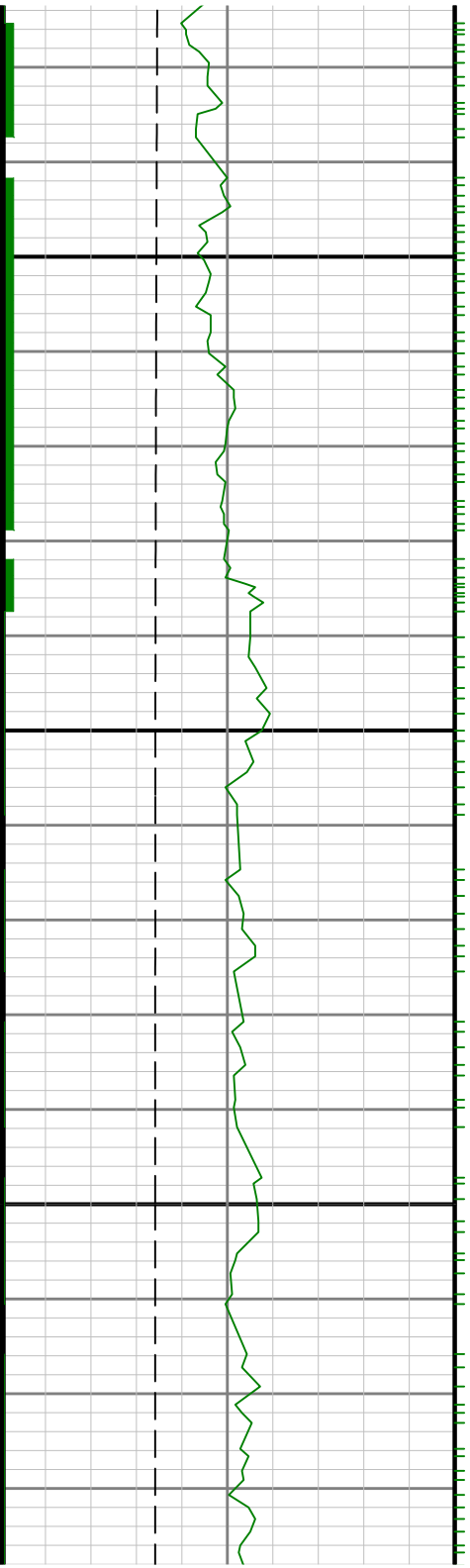
7500





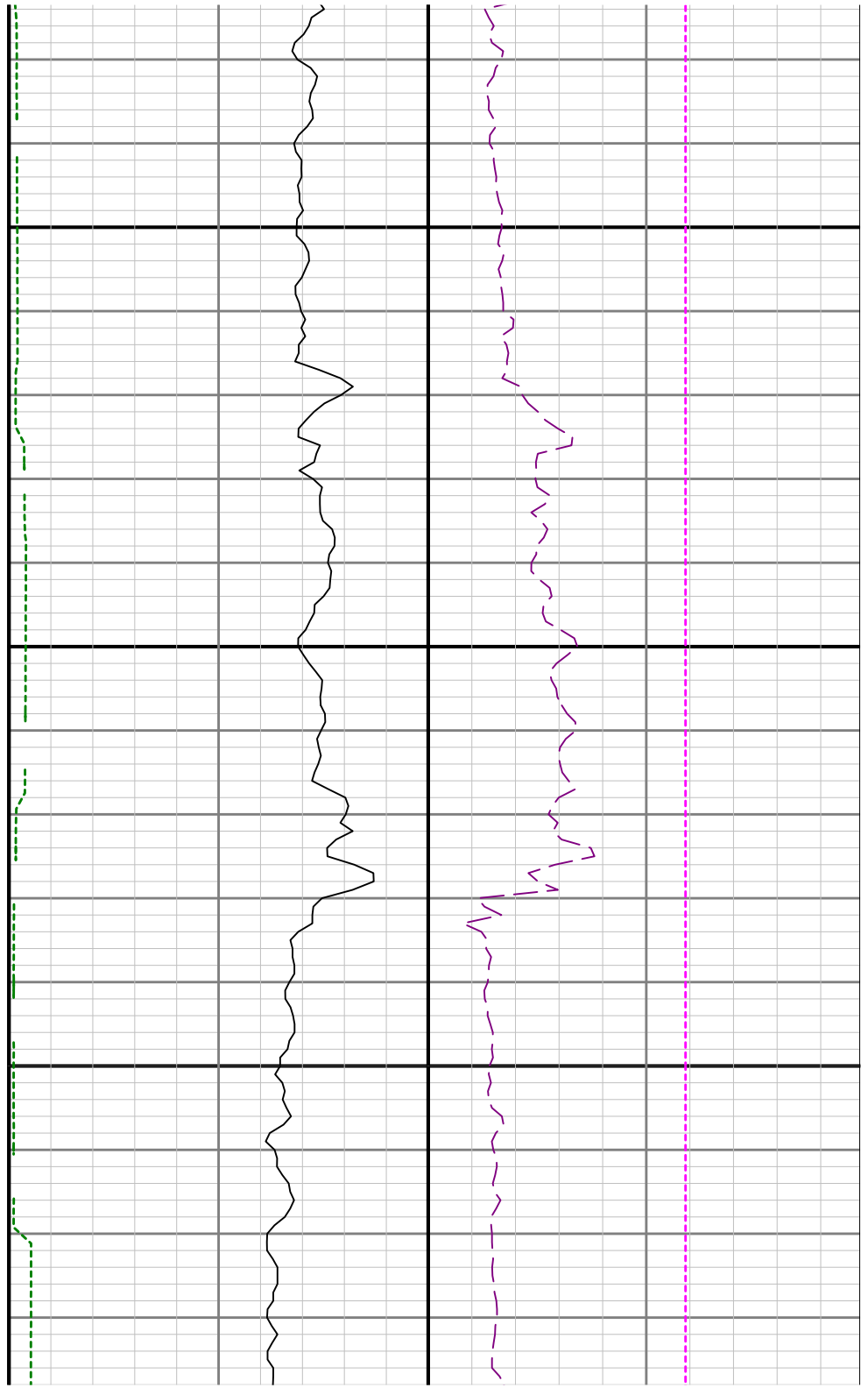
7600

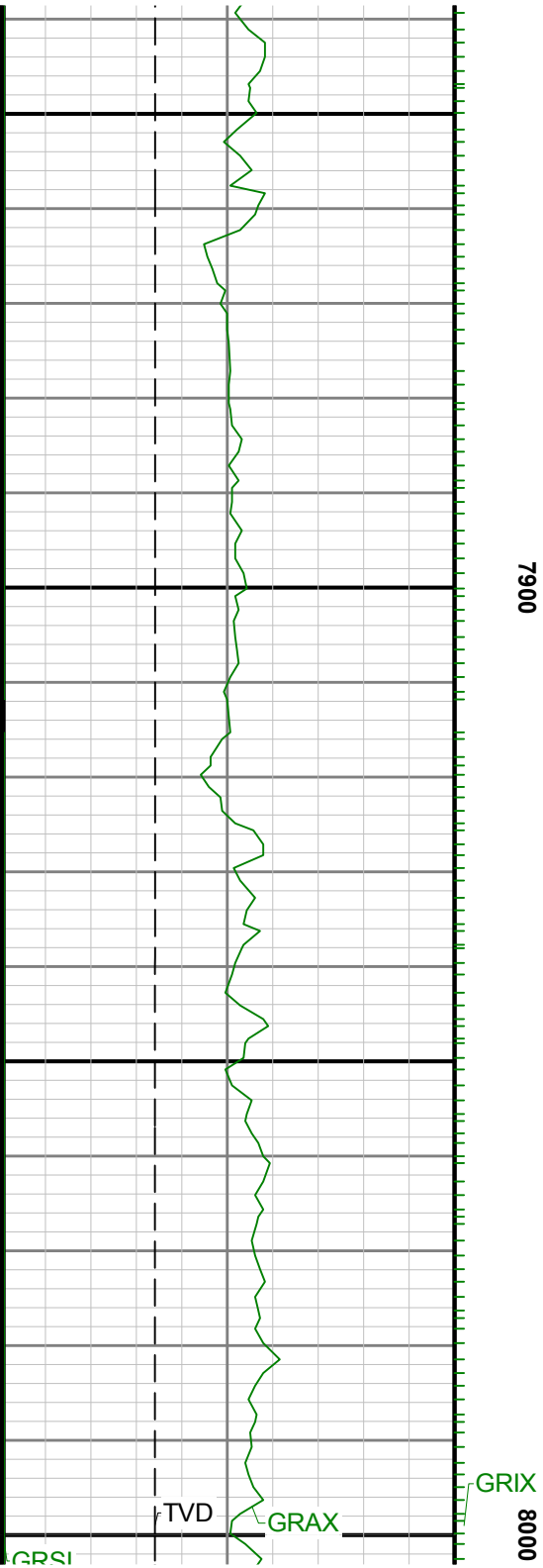


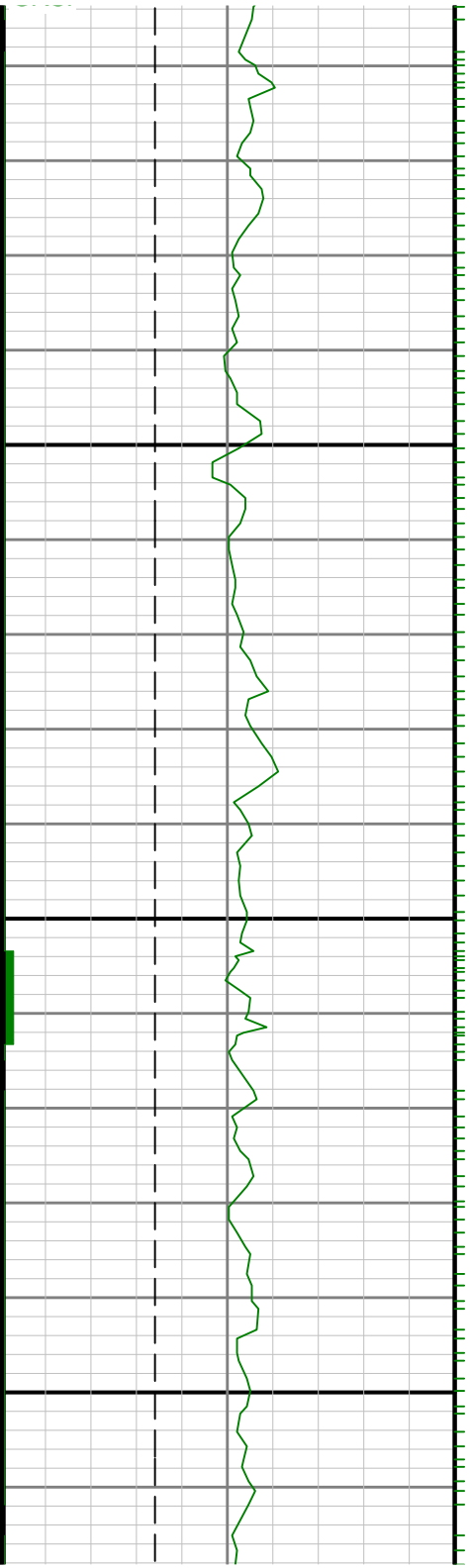


7700

7800

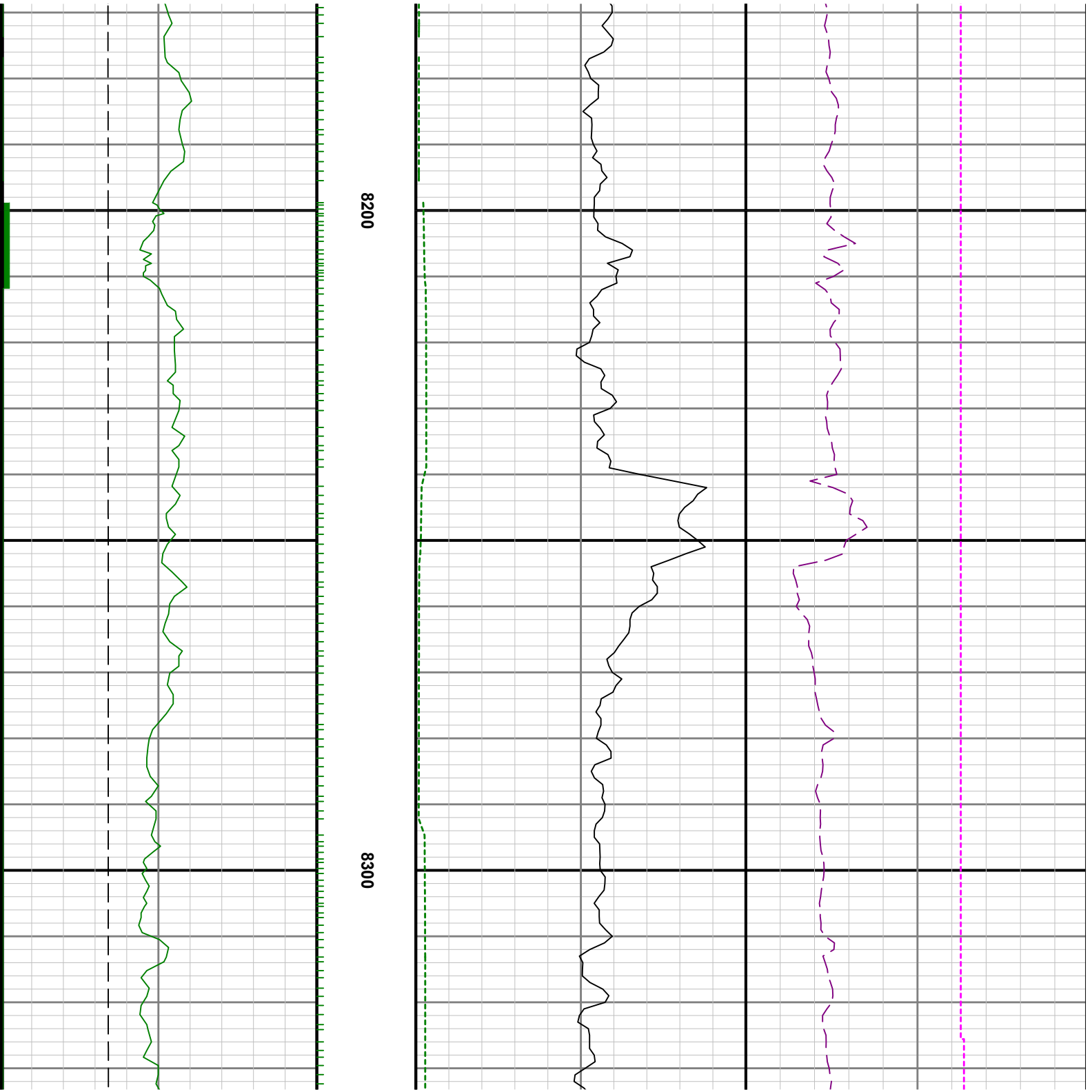


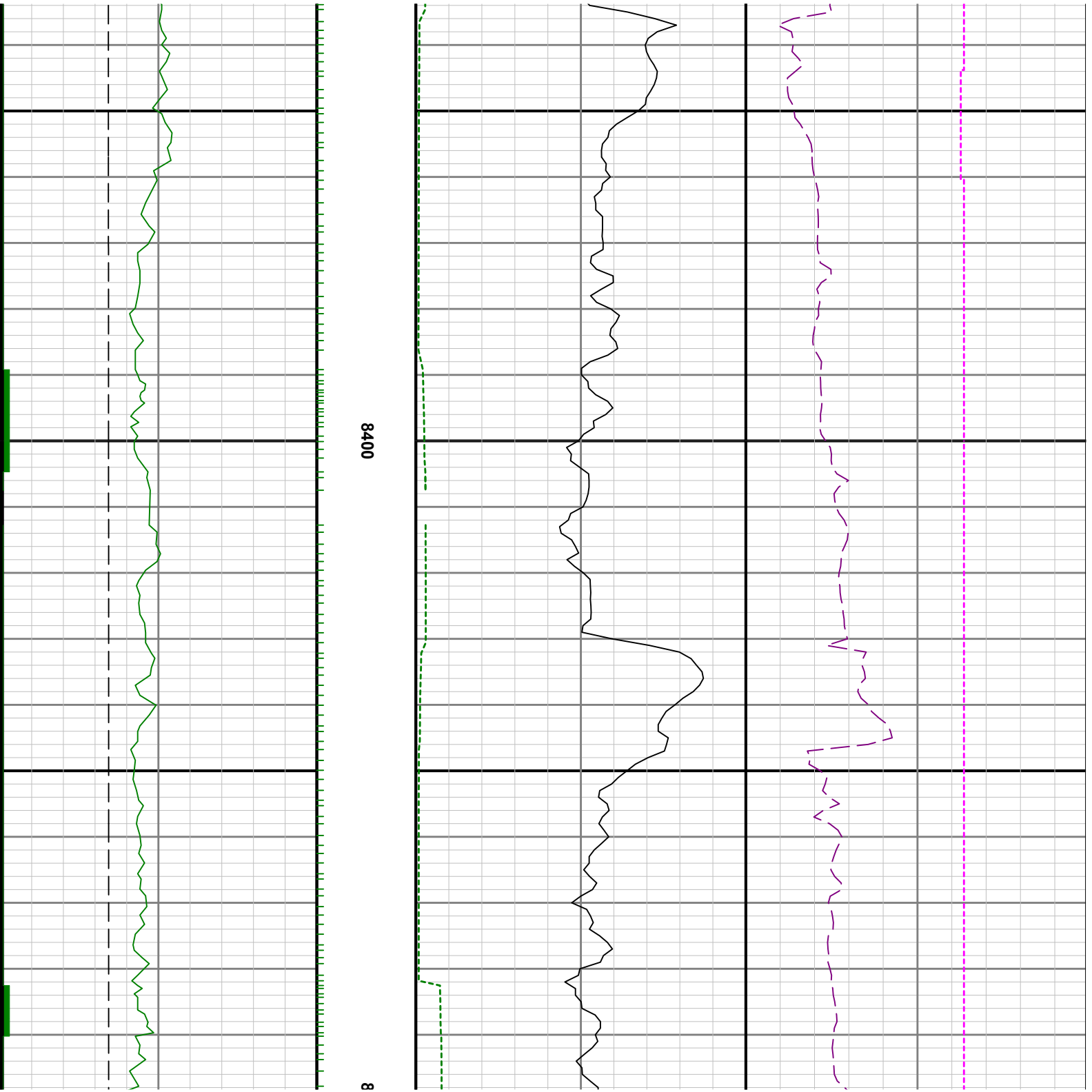


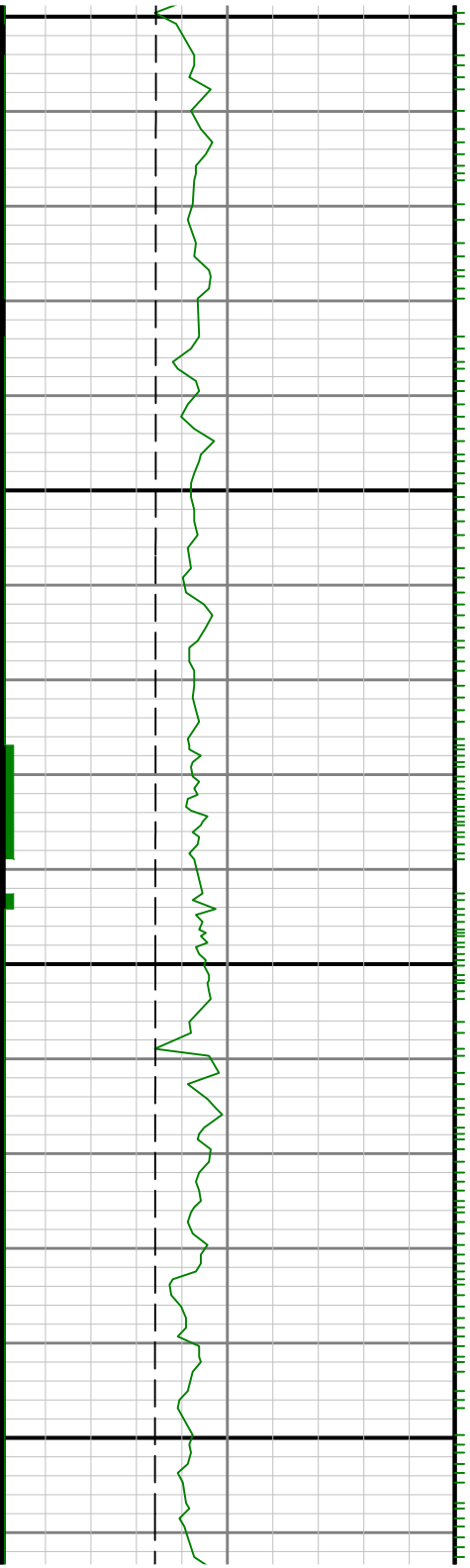


8100



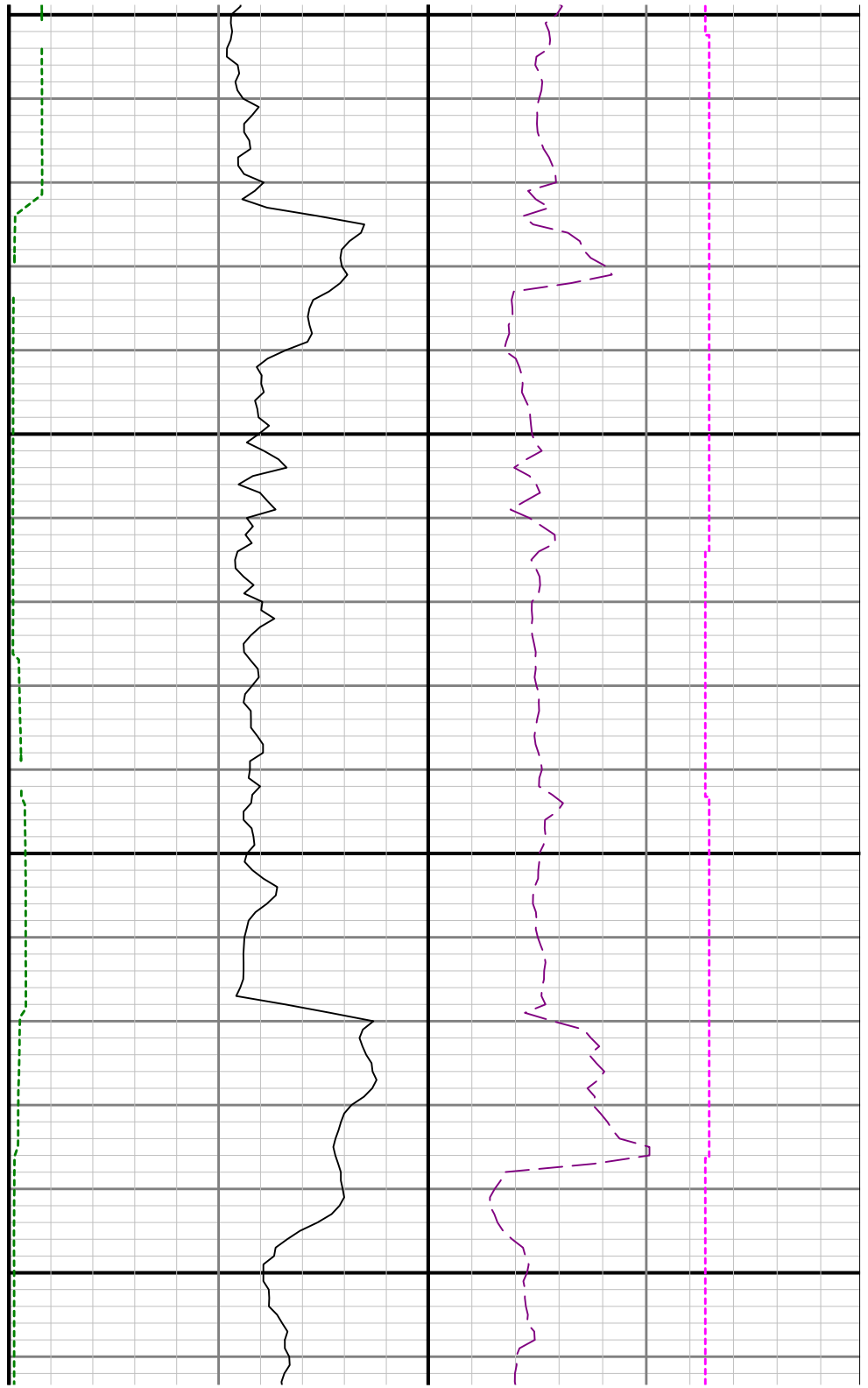


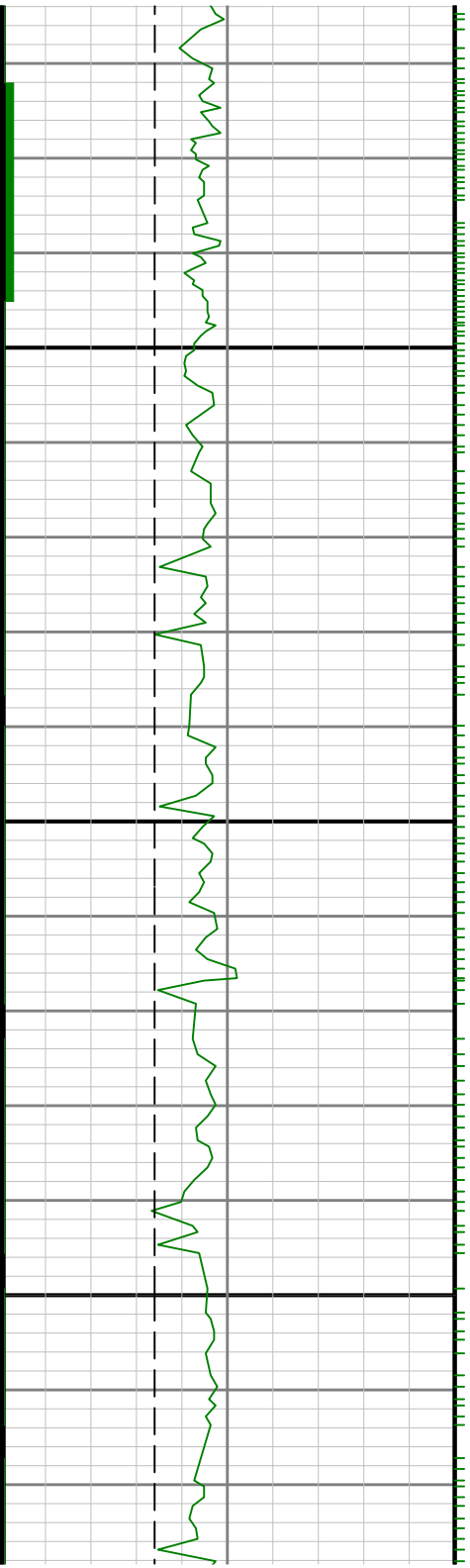




500

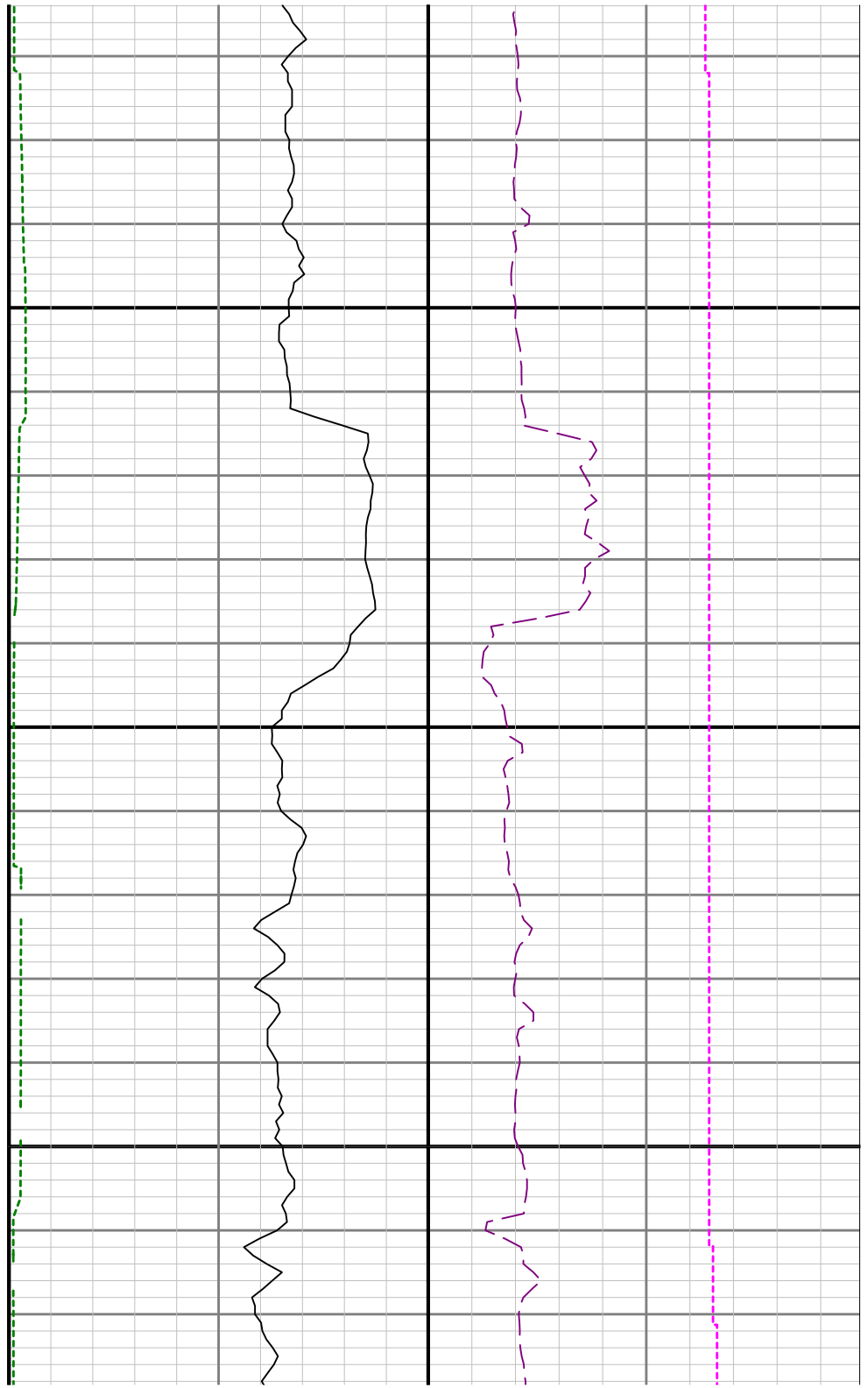
8600

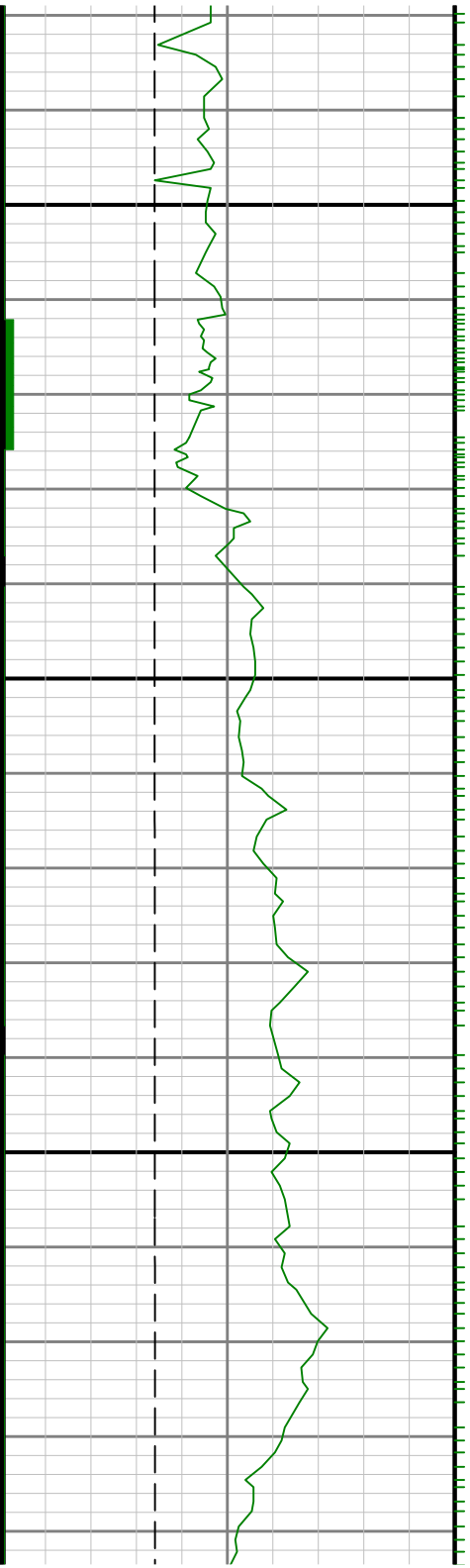




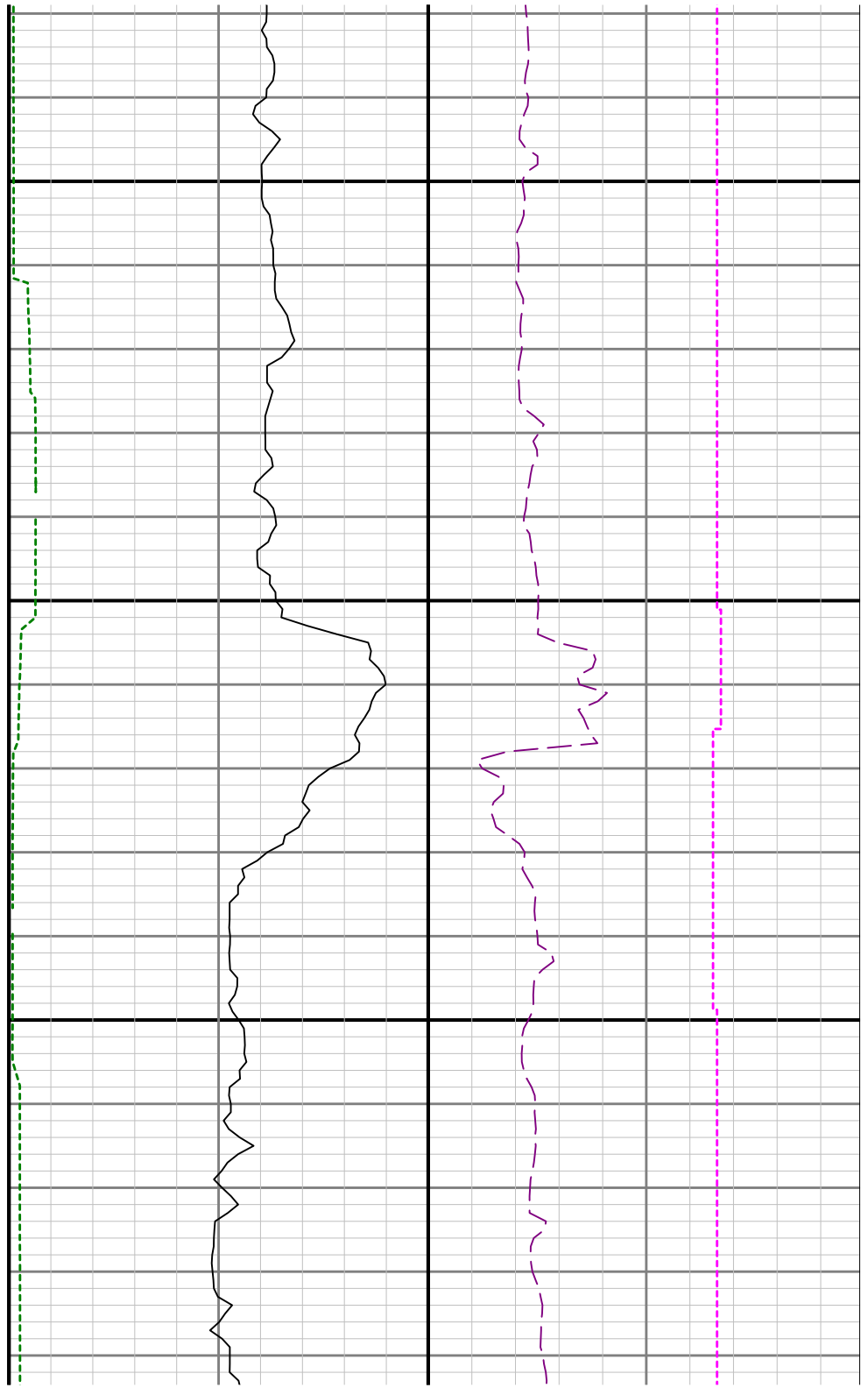
8700

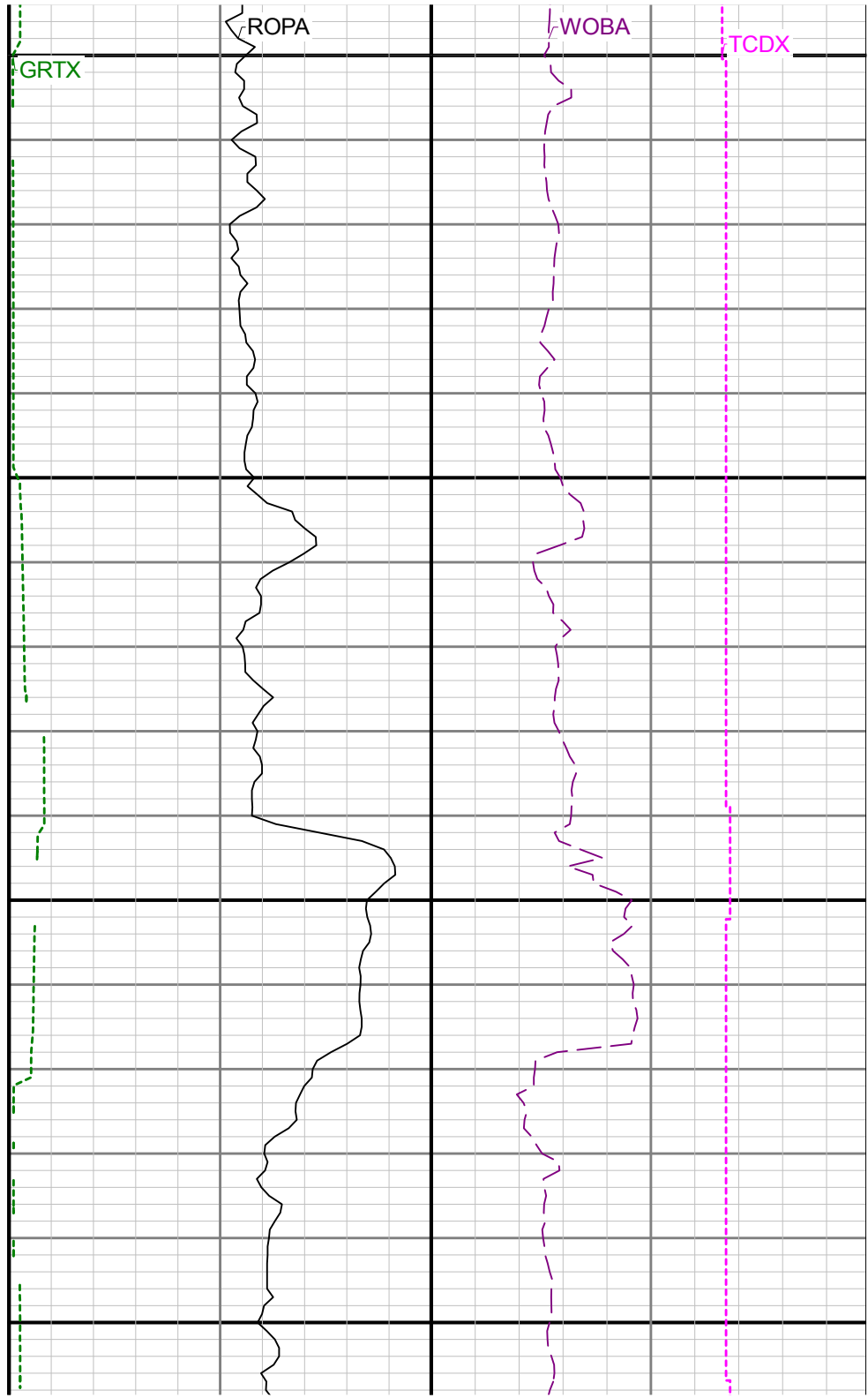
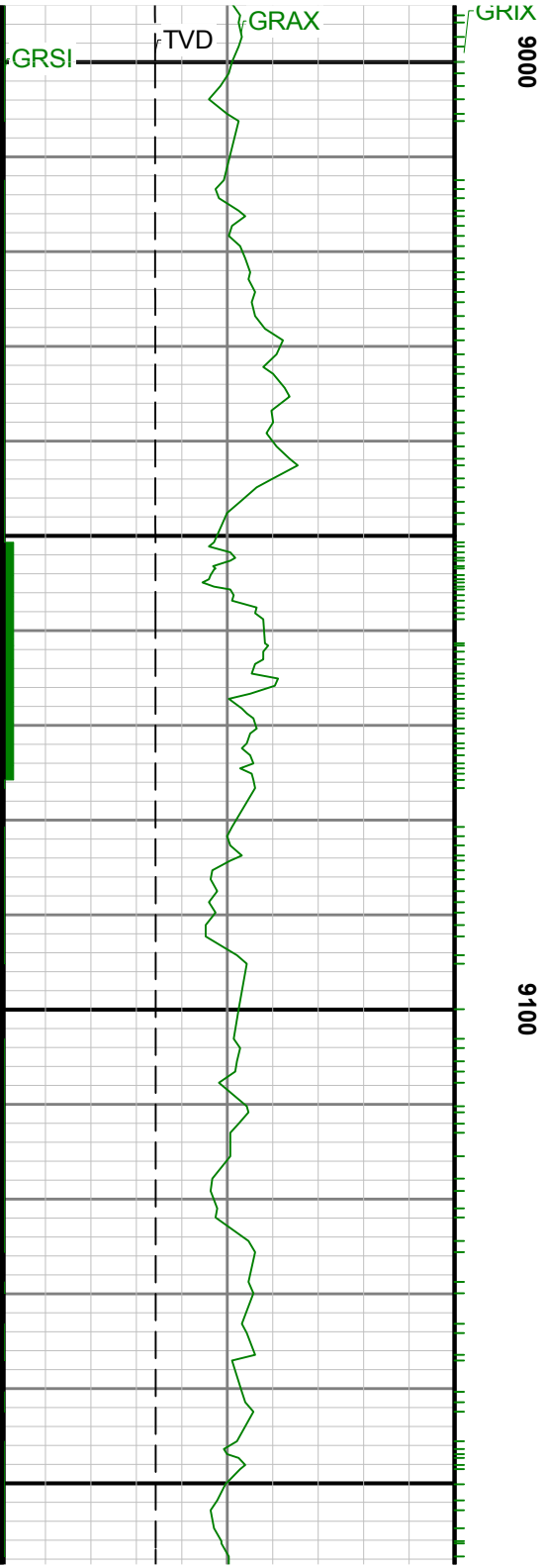
8800



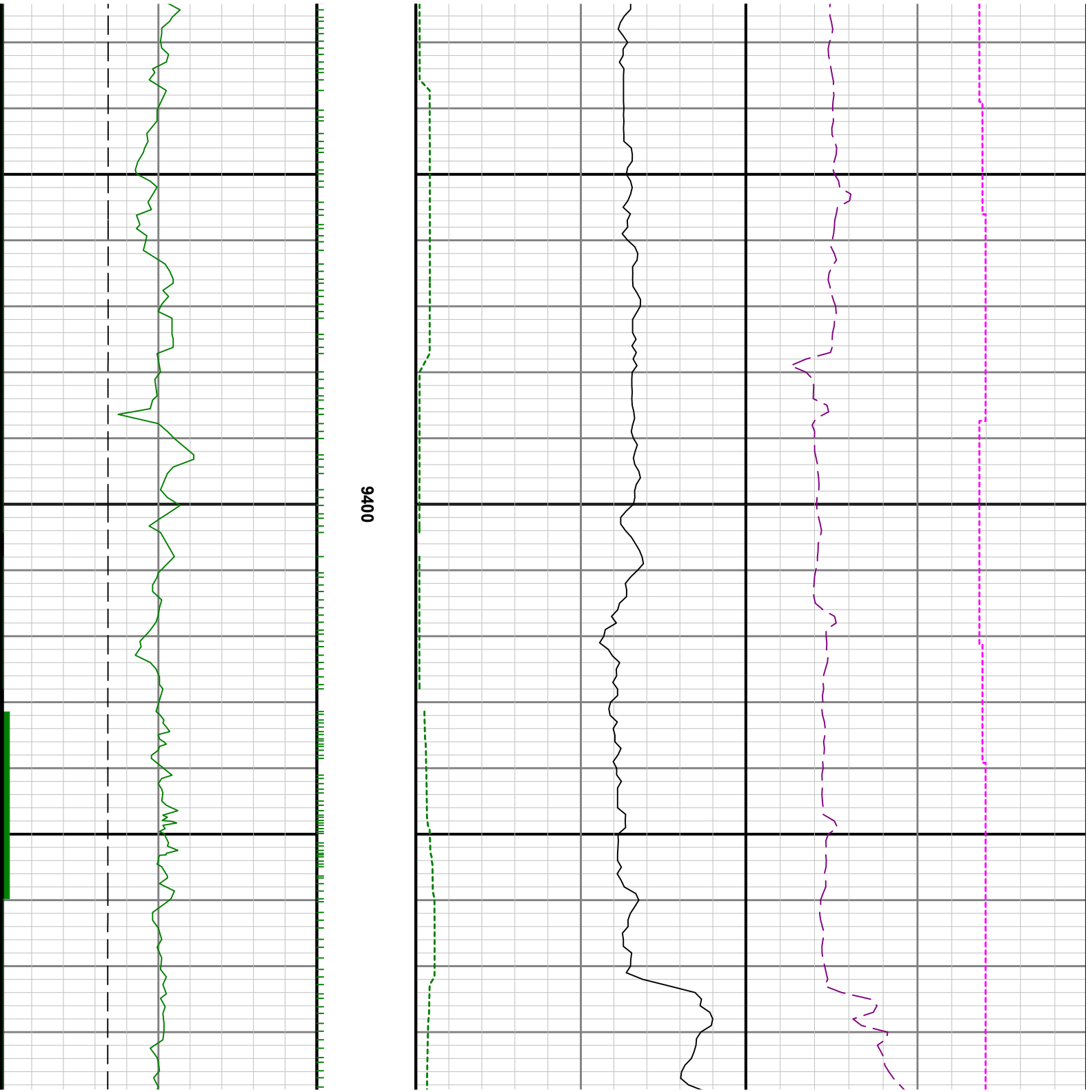


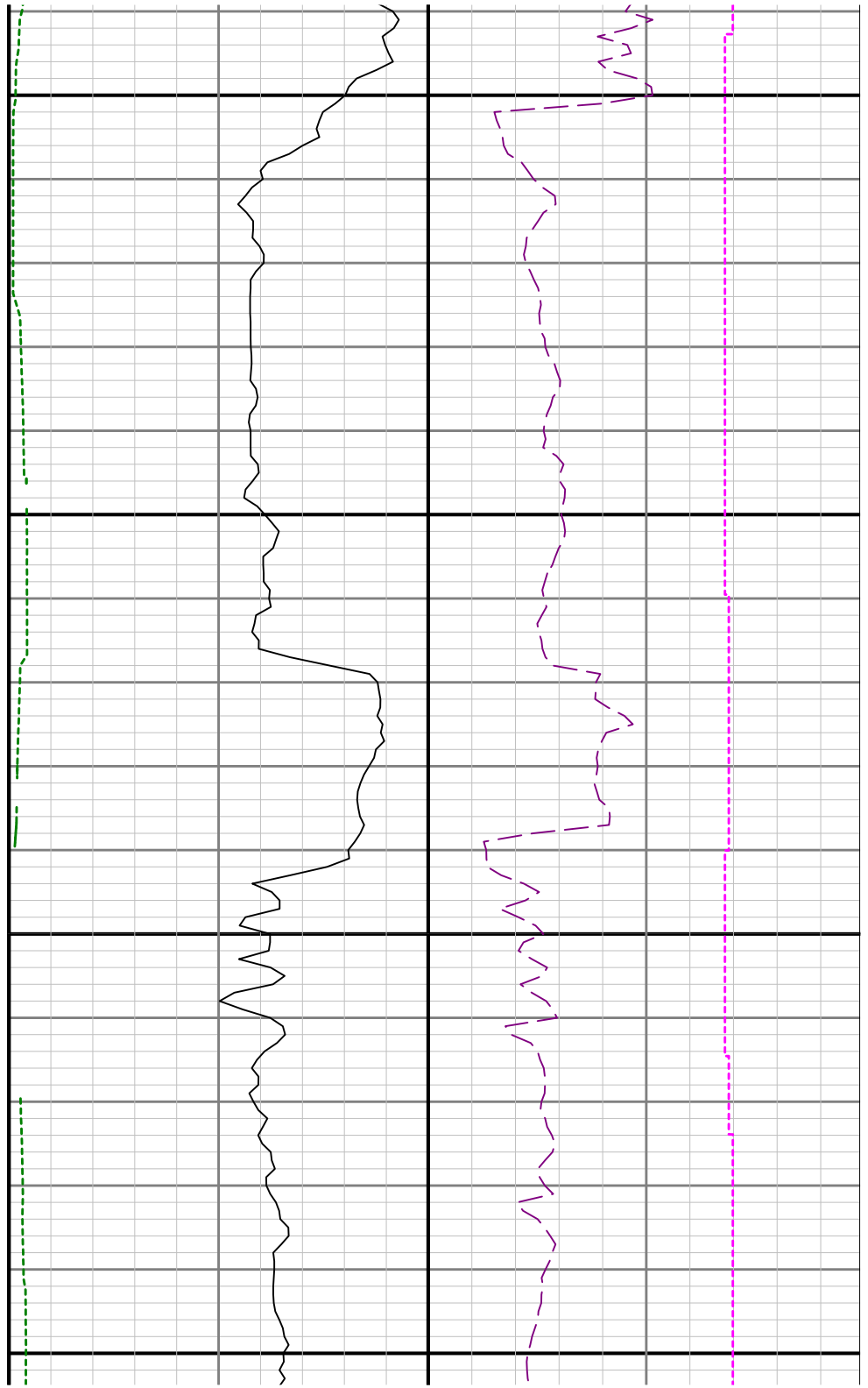
0068

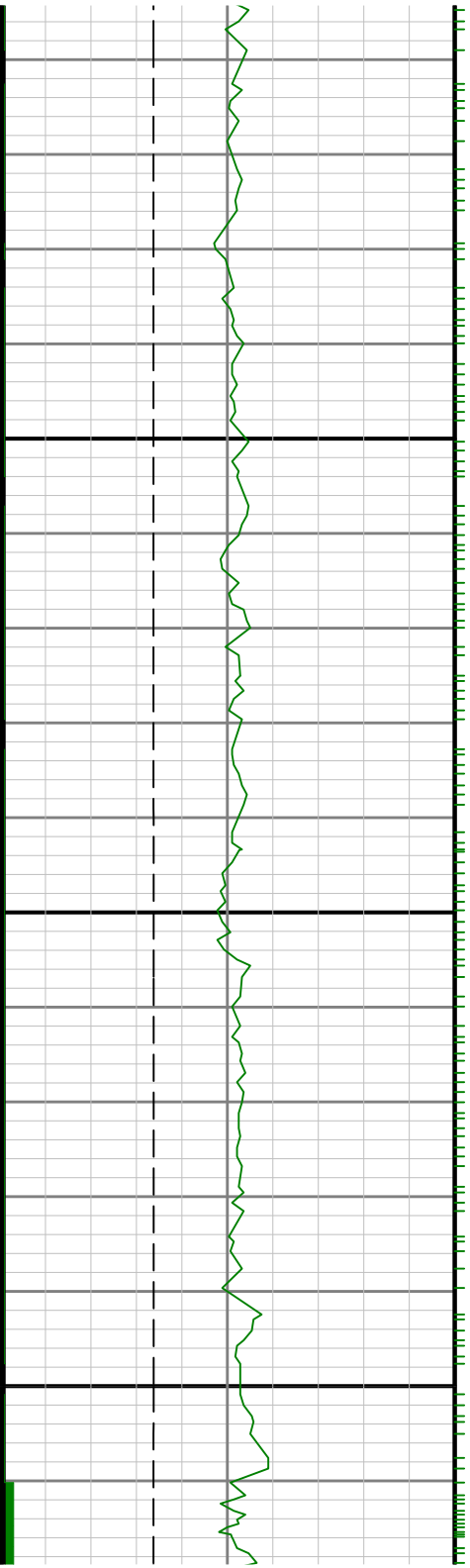






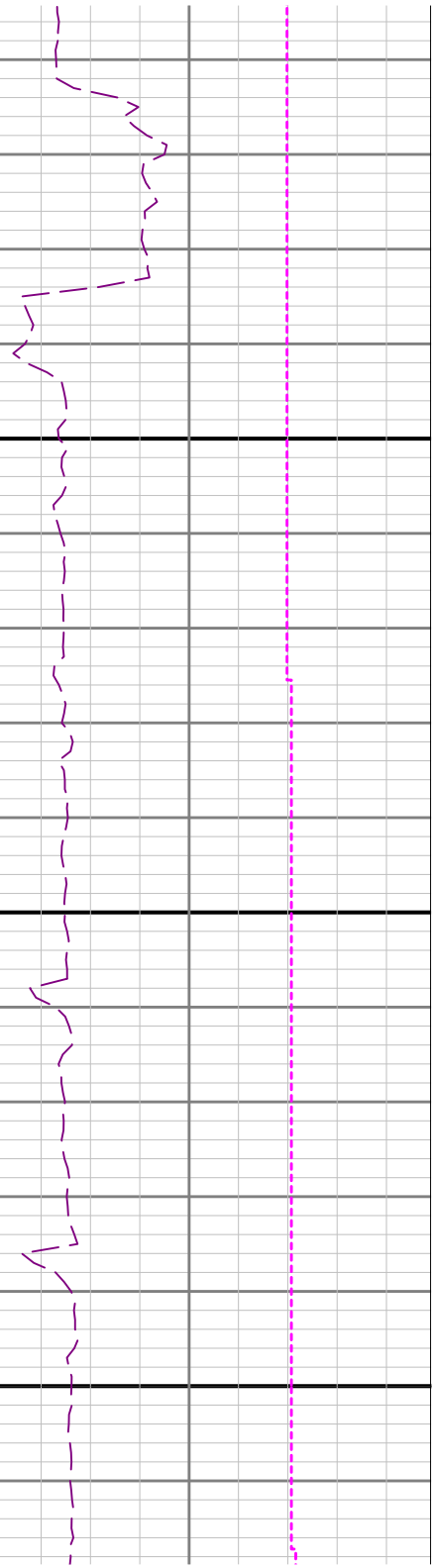
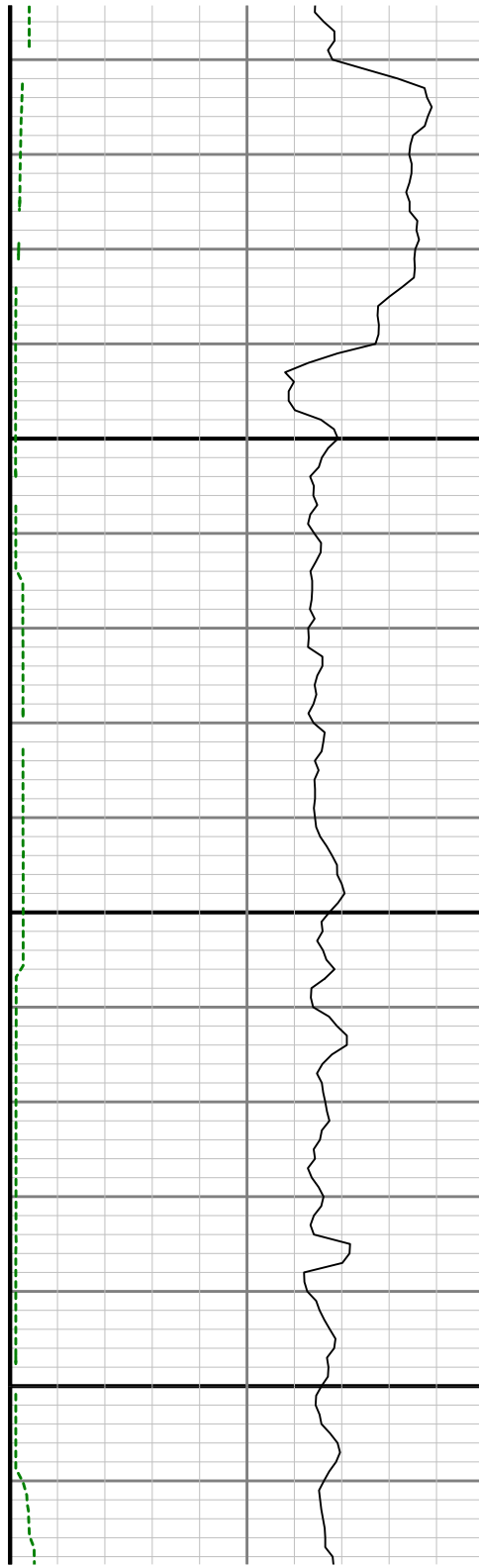


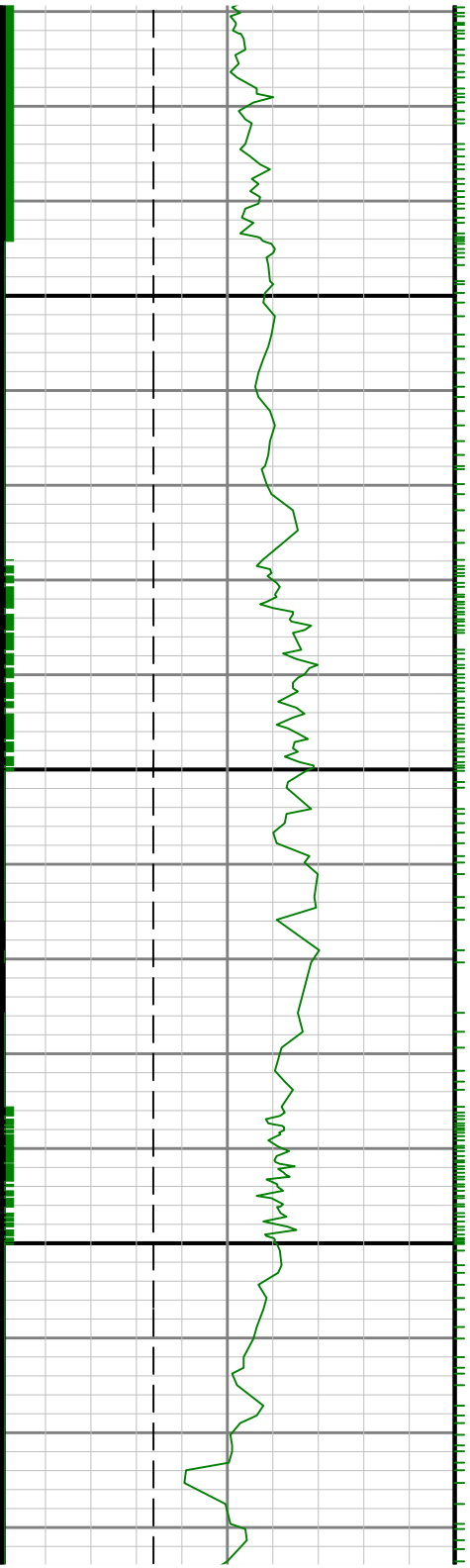




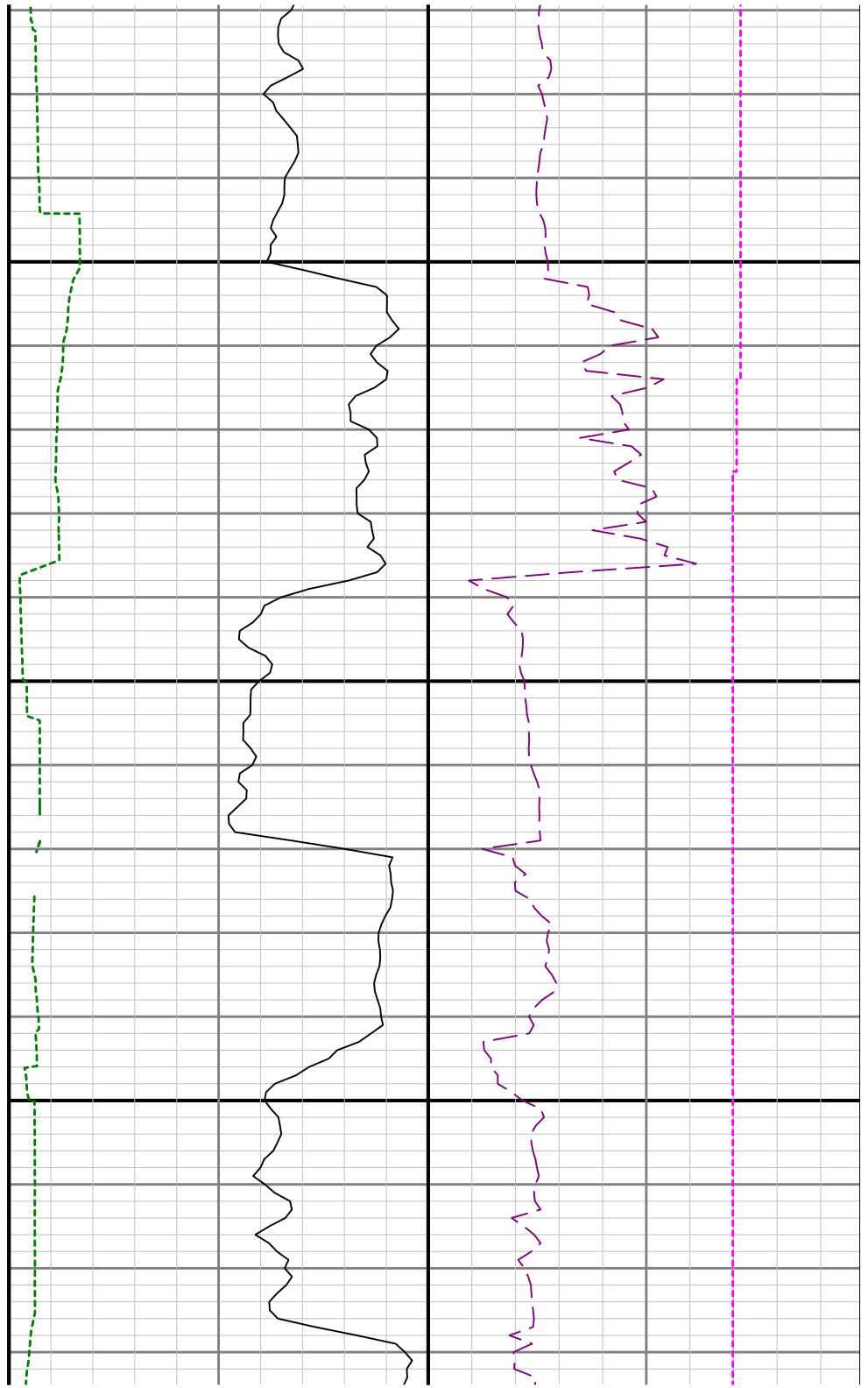
9700

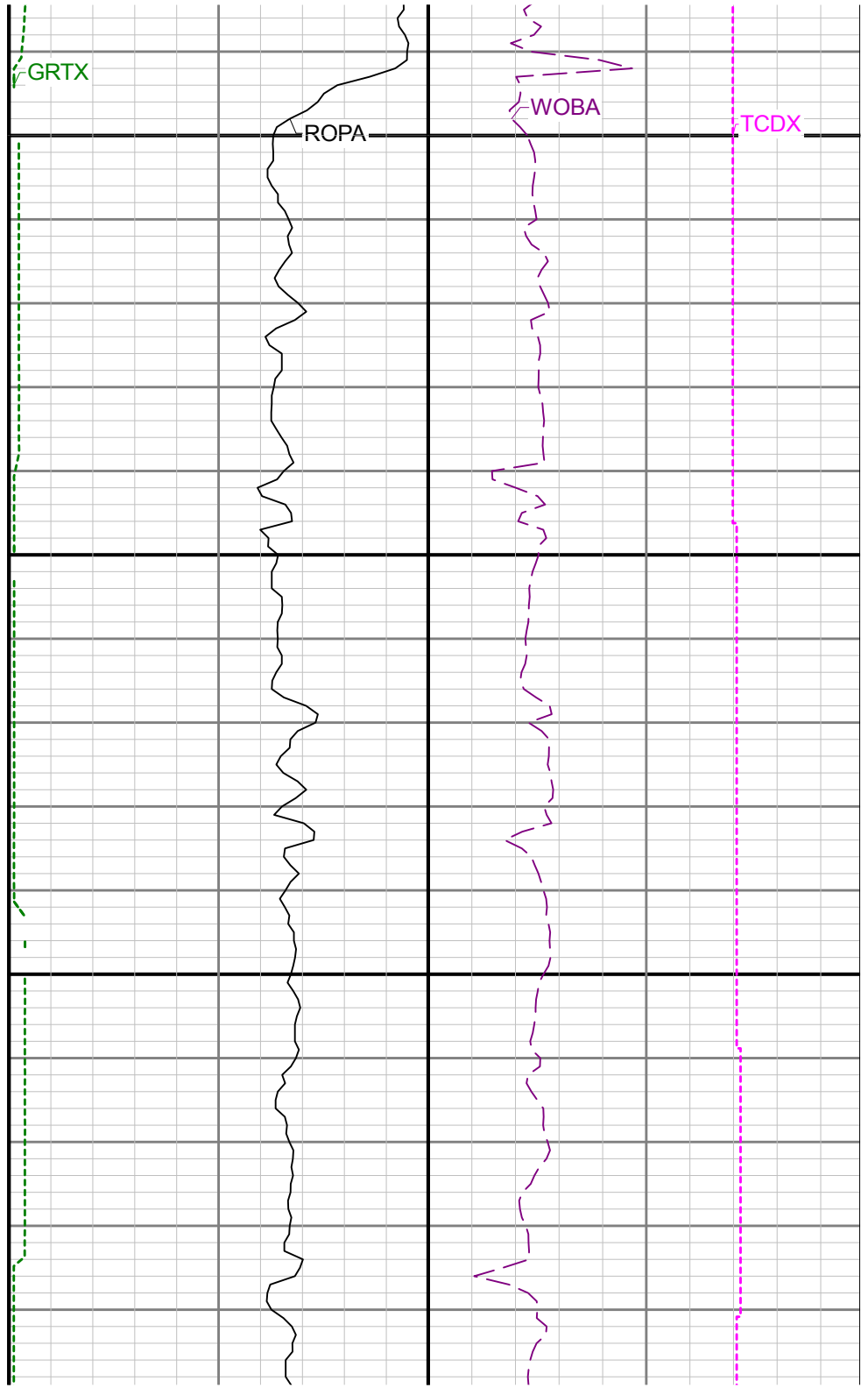
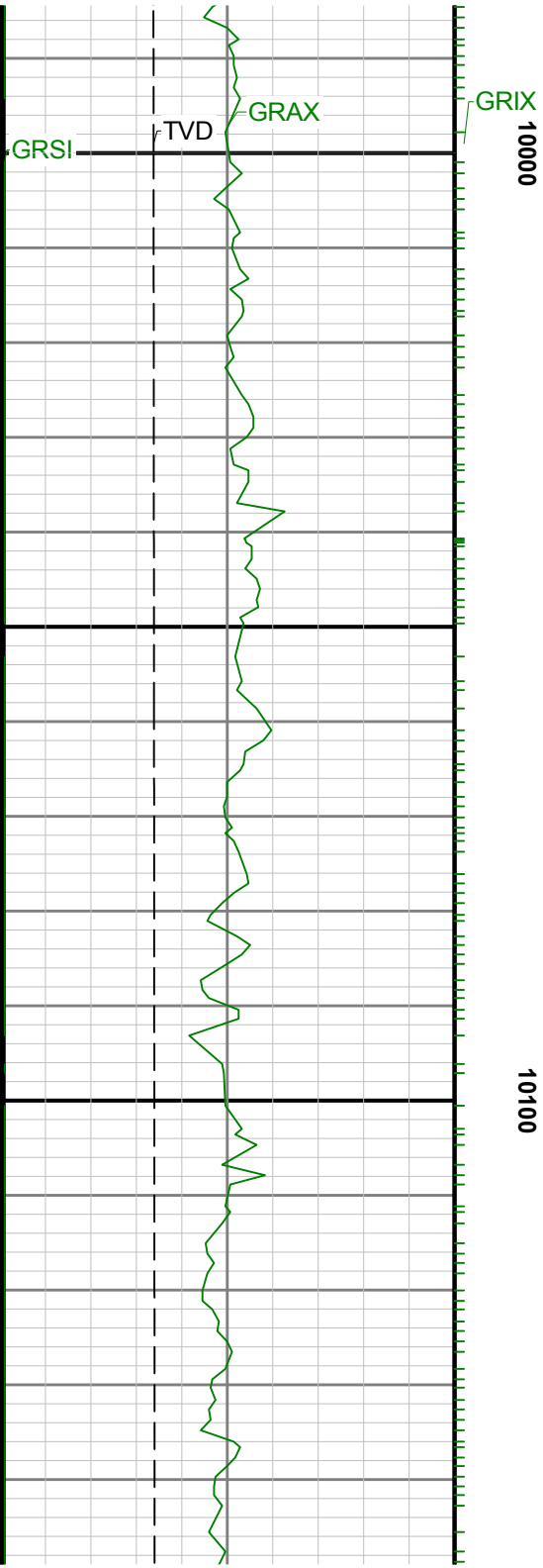
9800

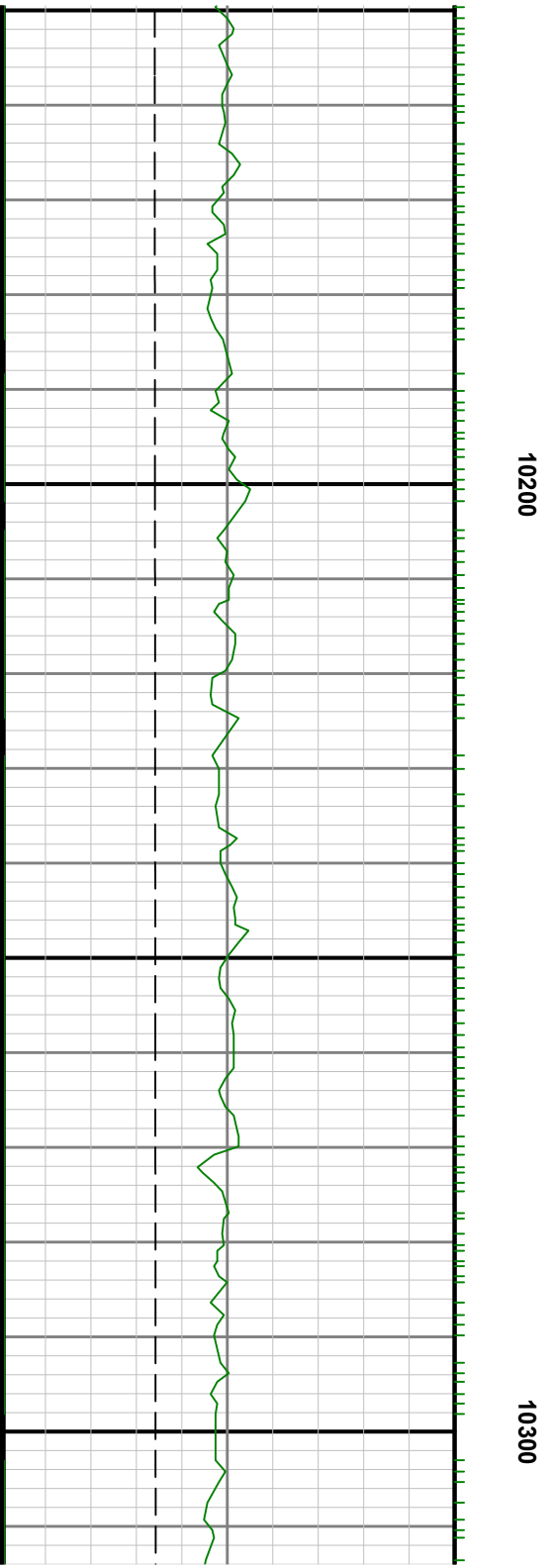


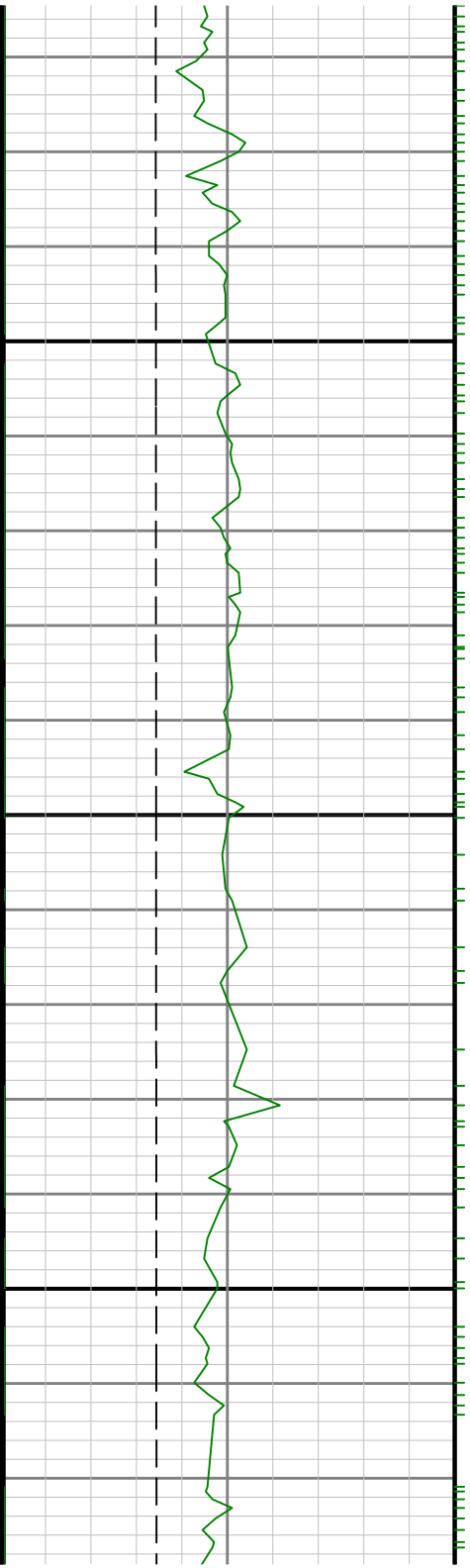


0066



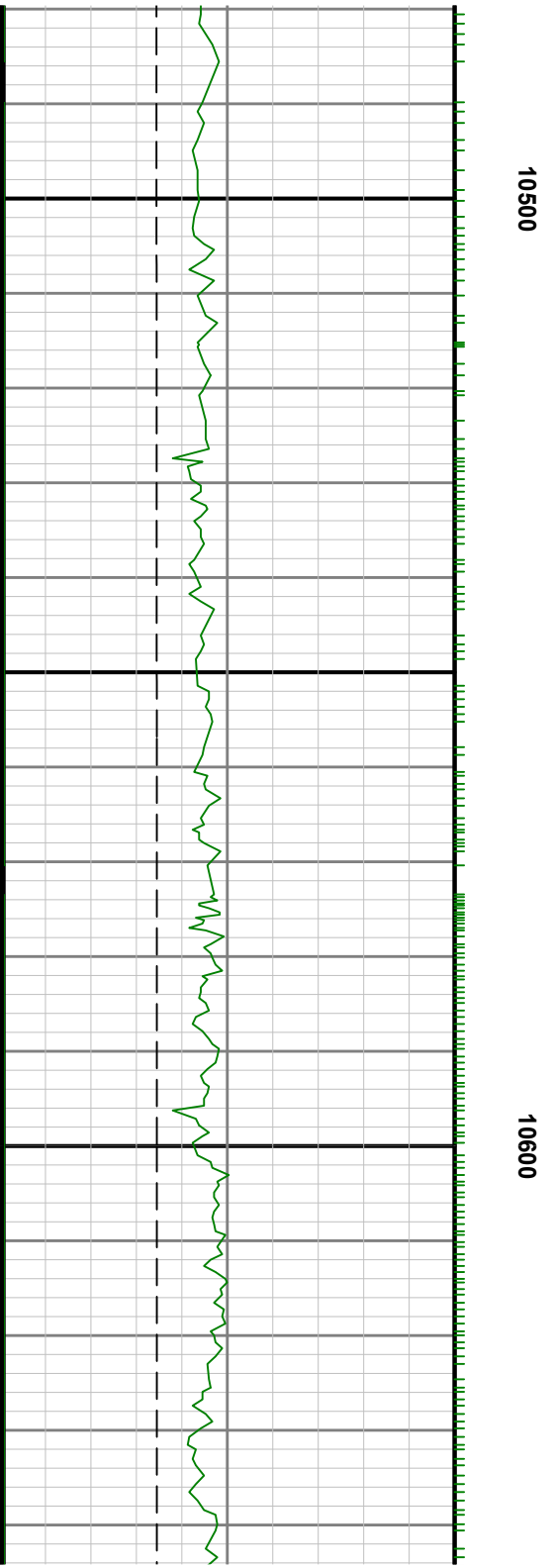


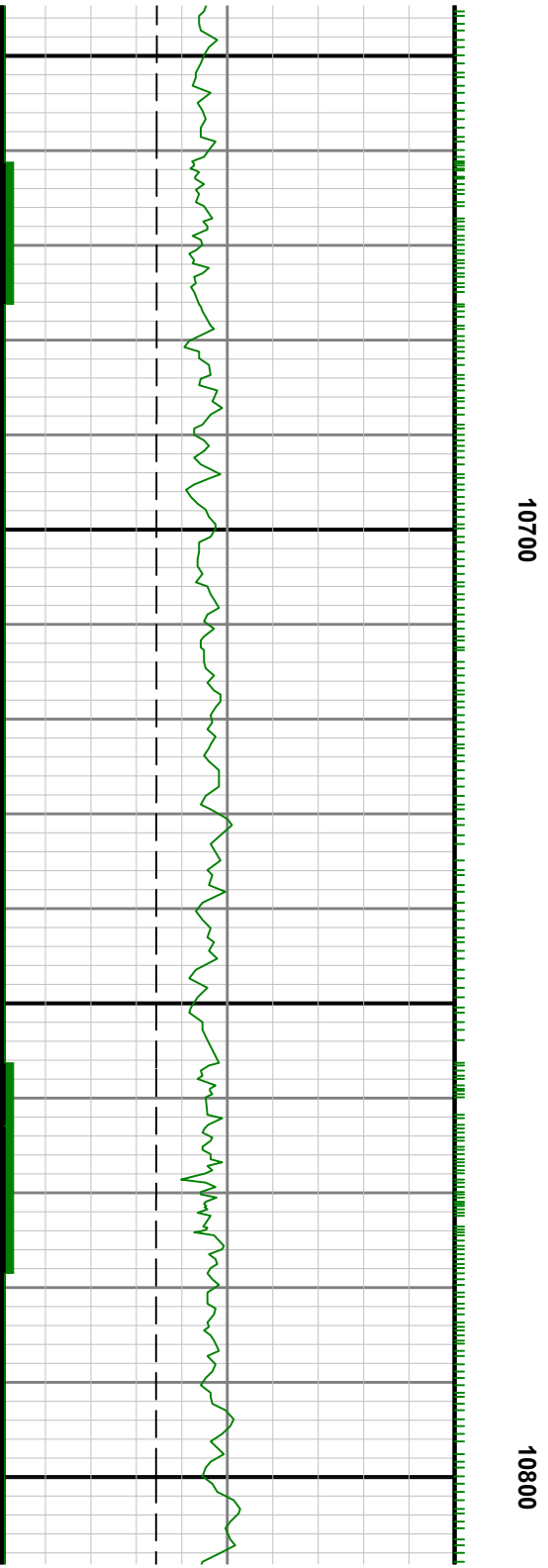


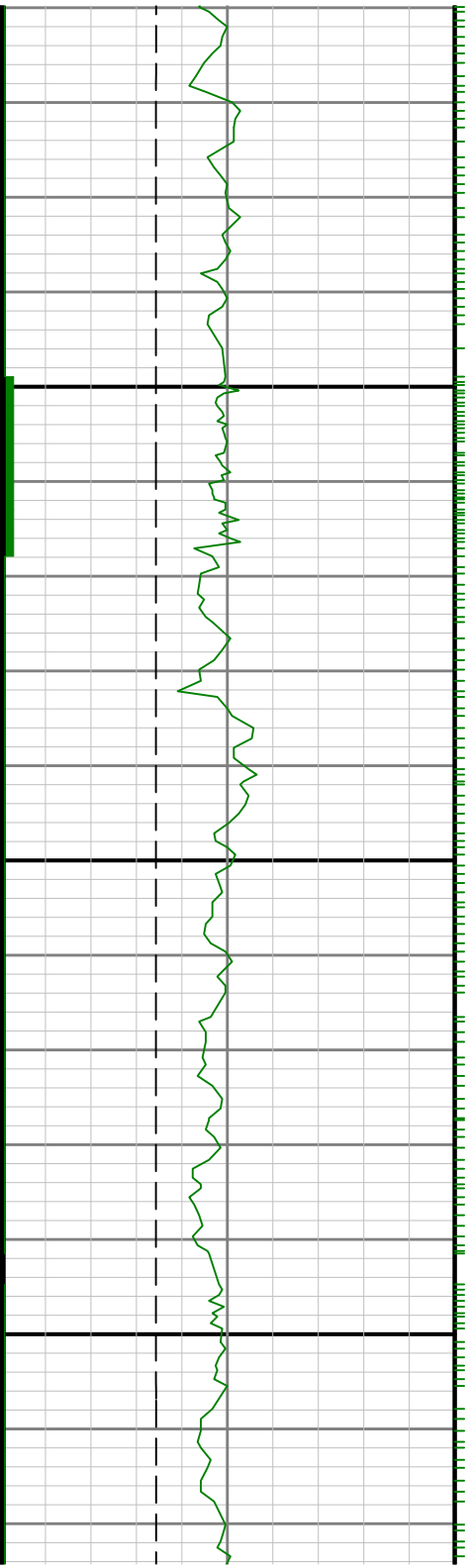


10400

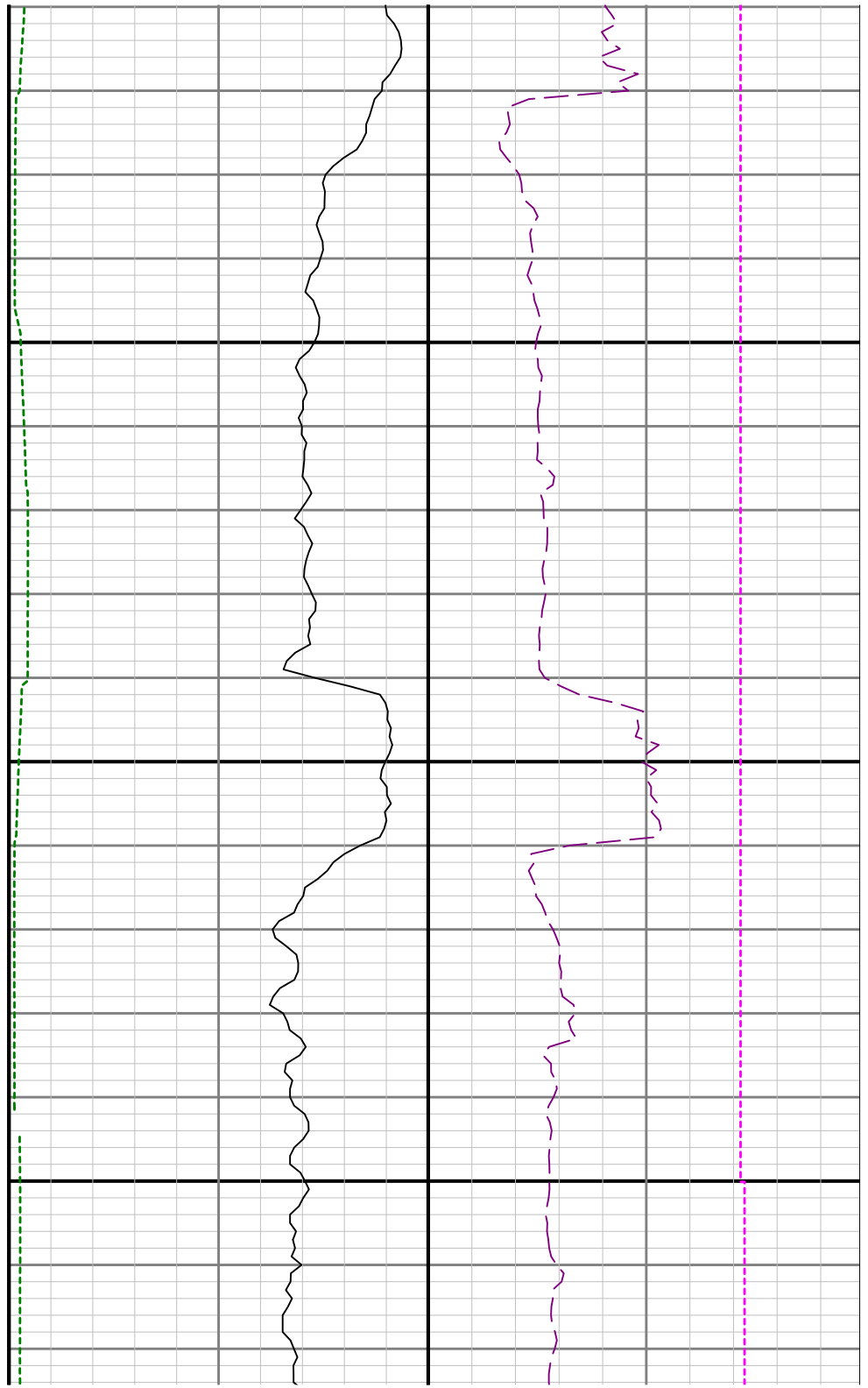


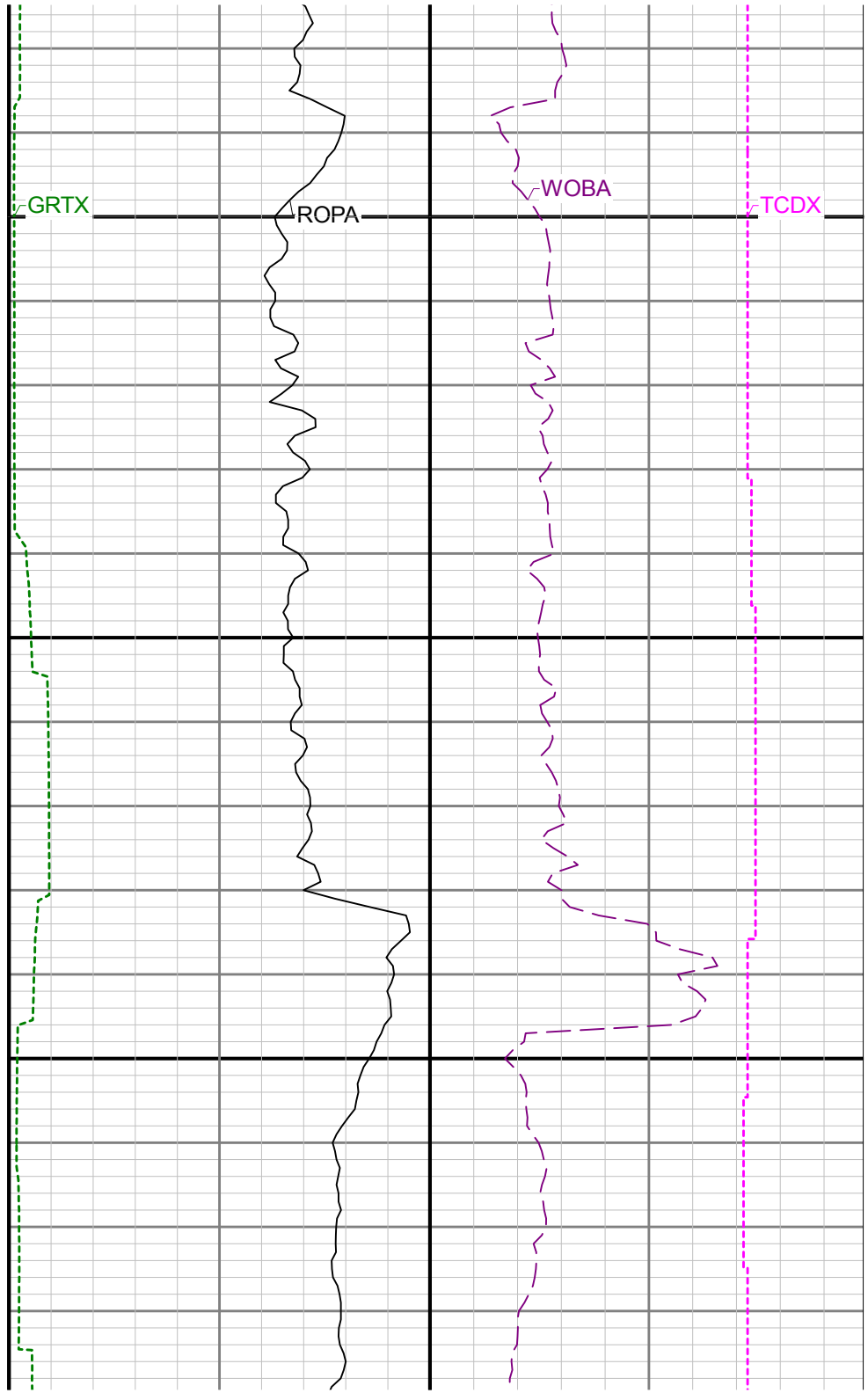
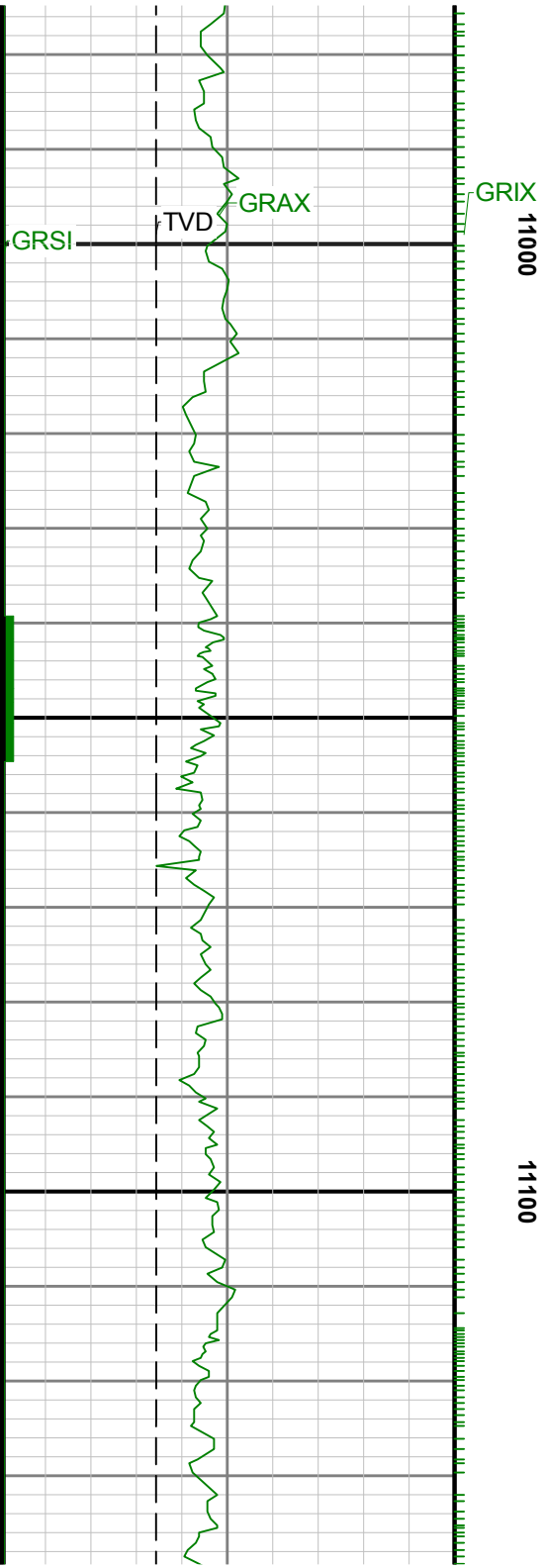


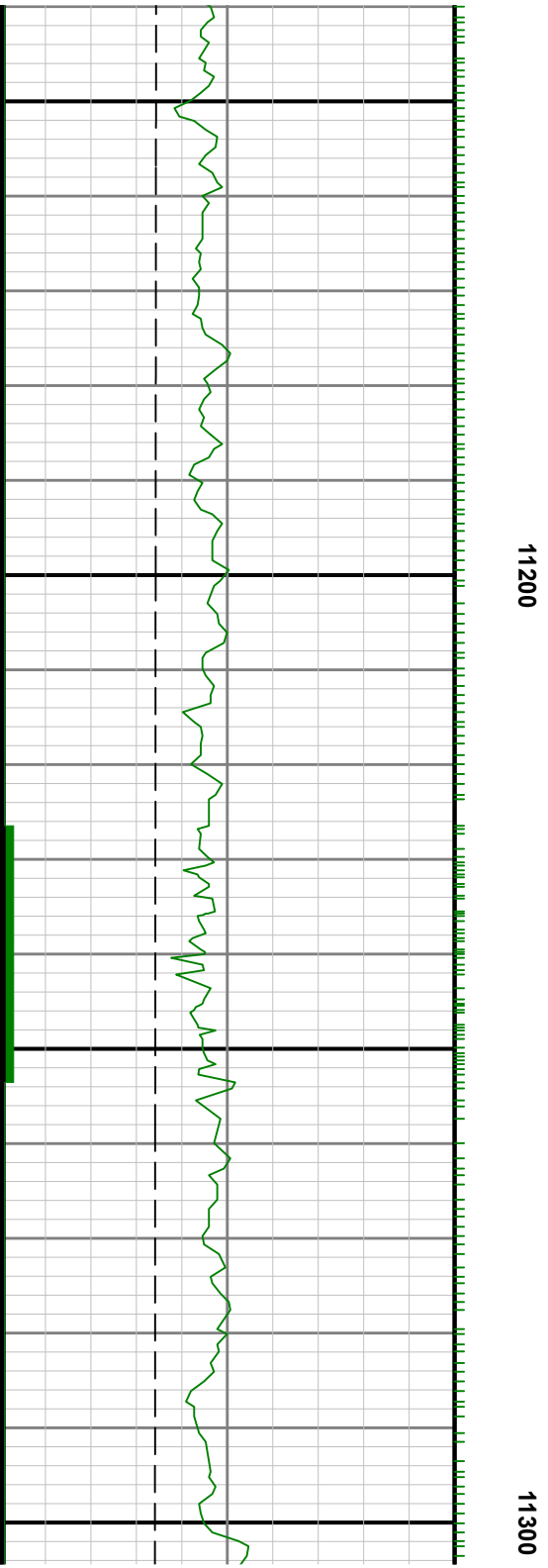




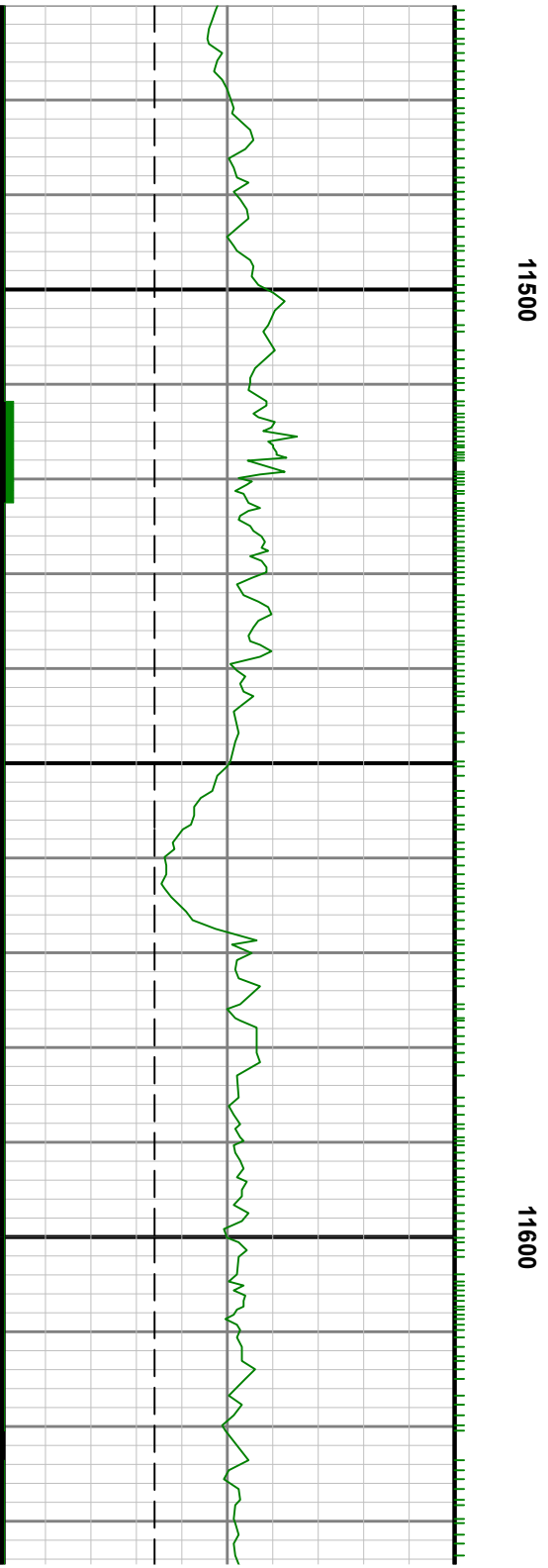
10900

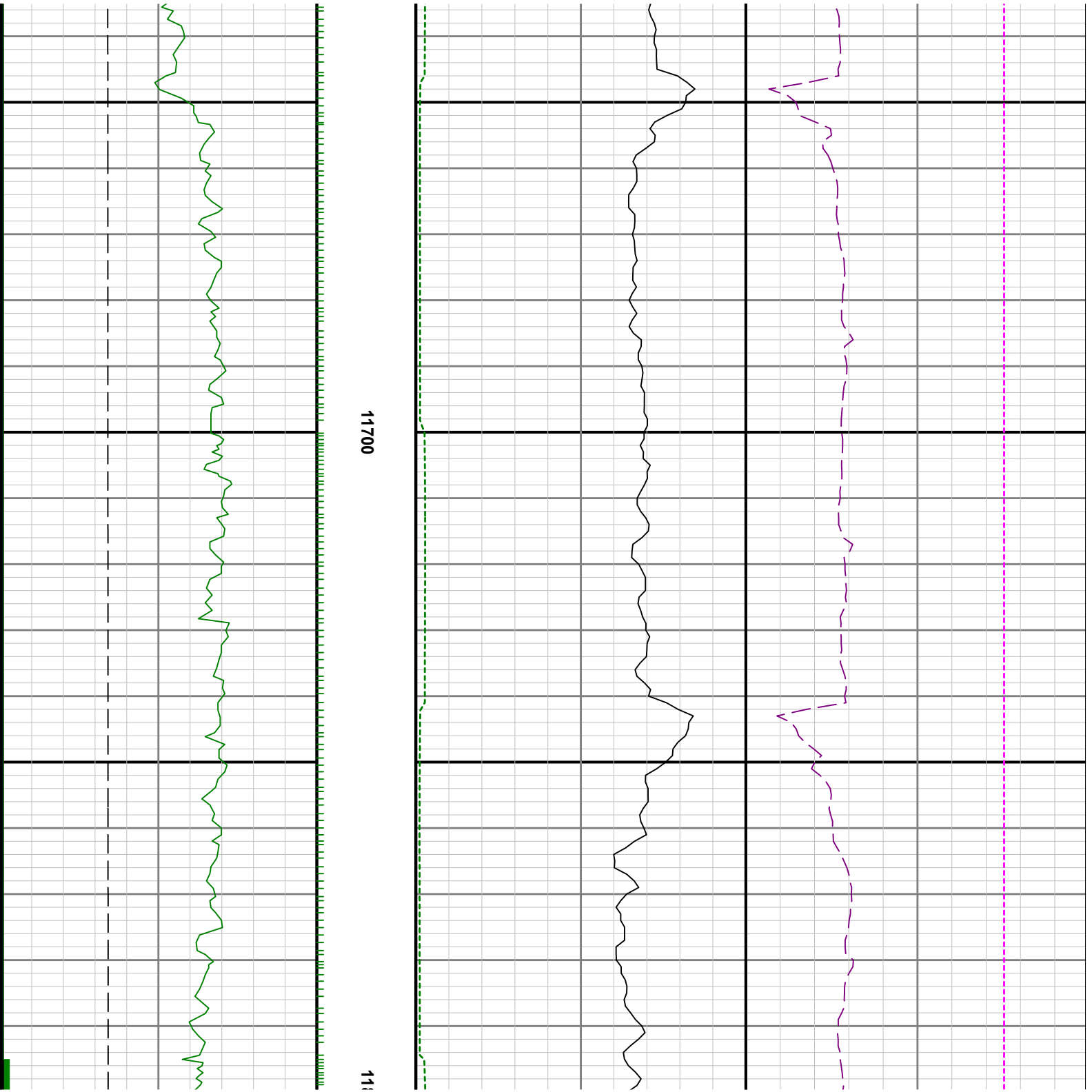


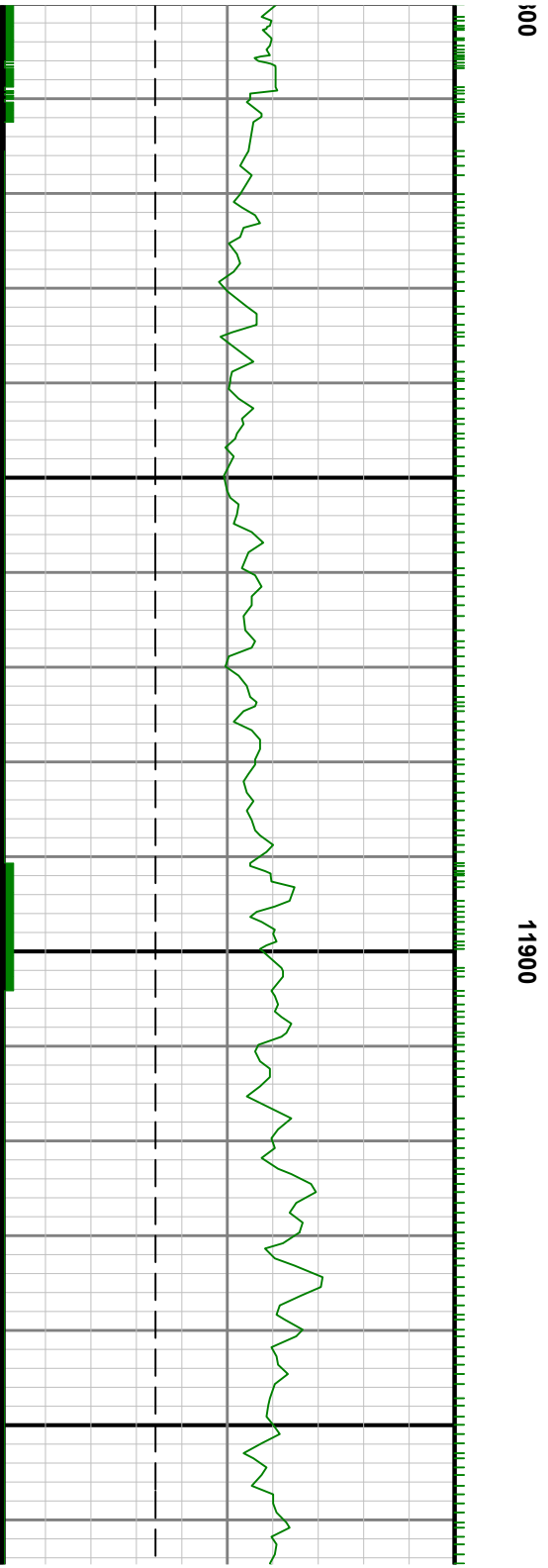


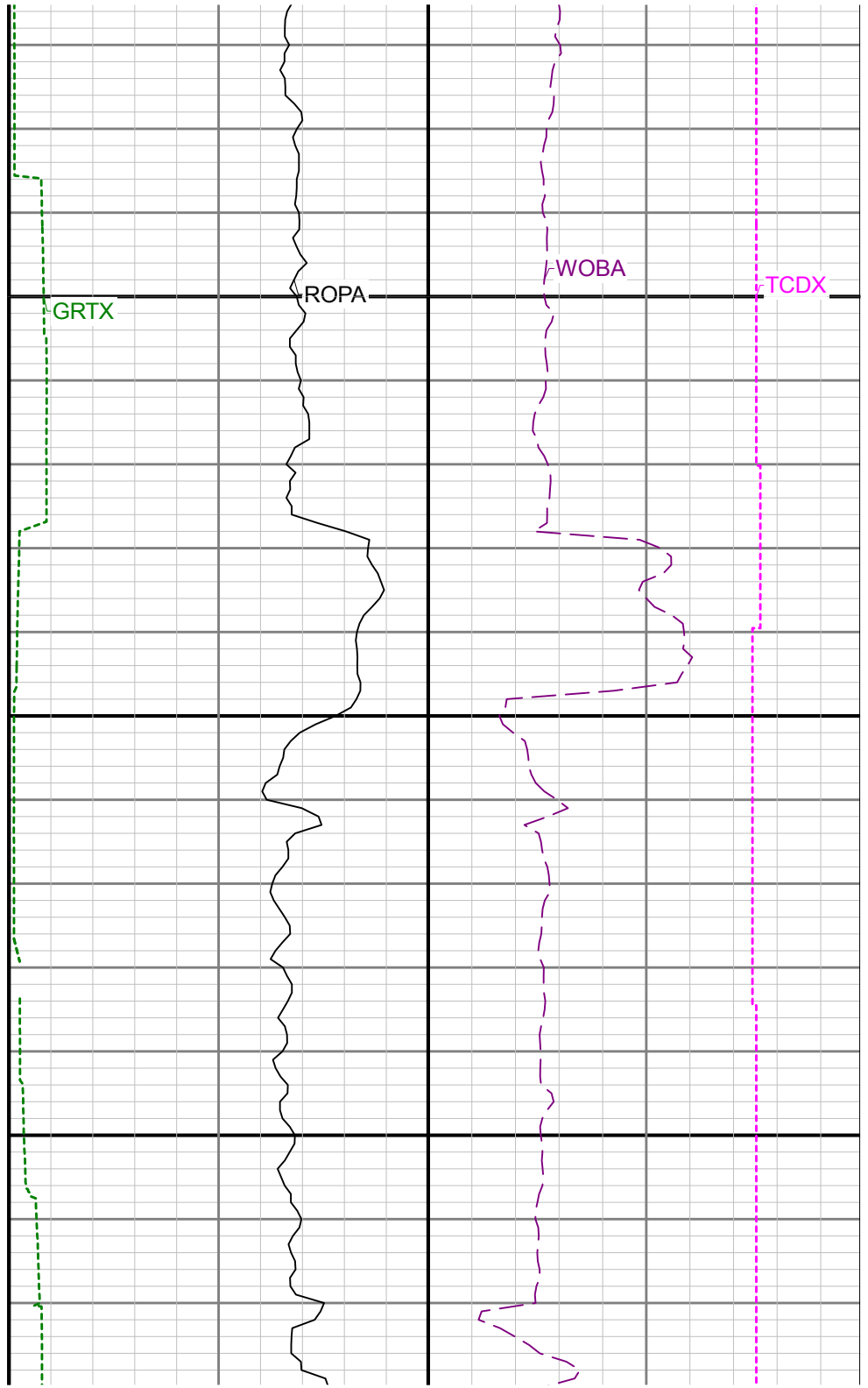
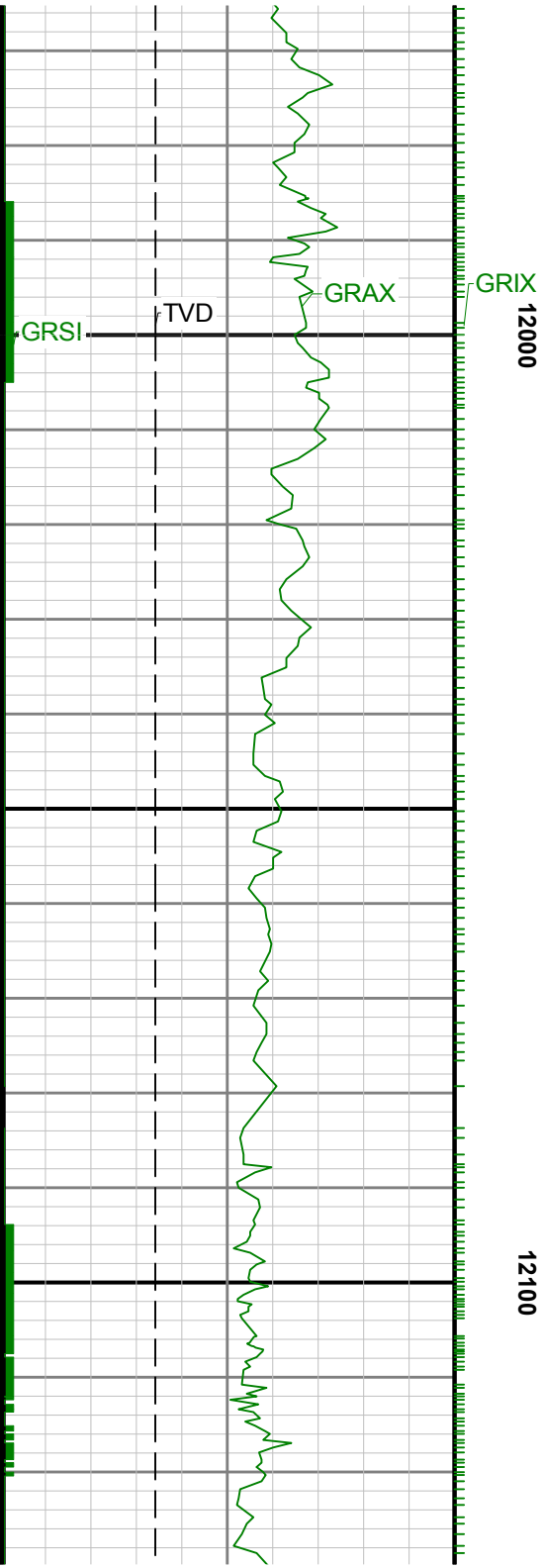


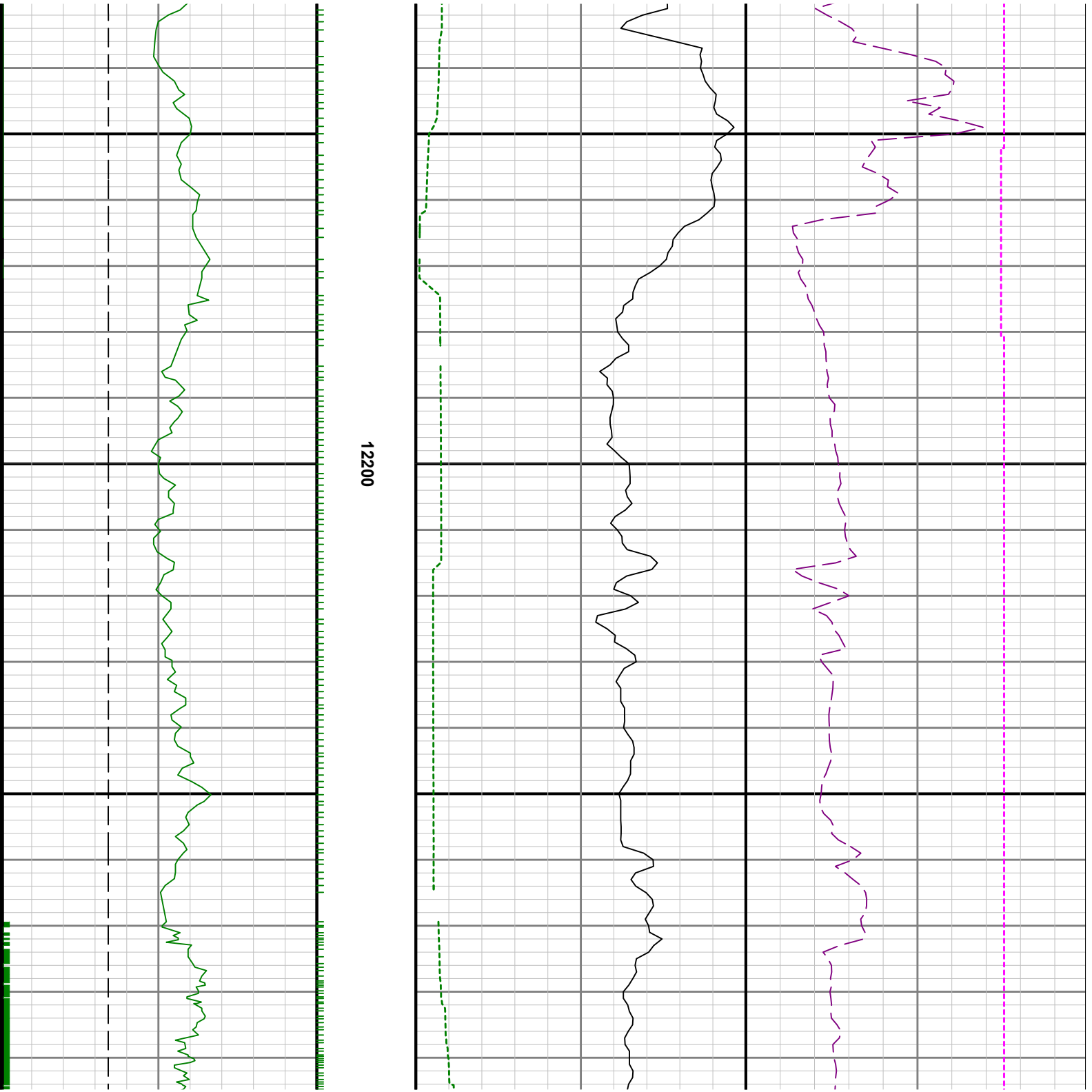


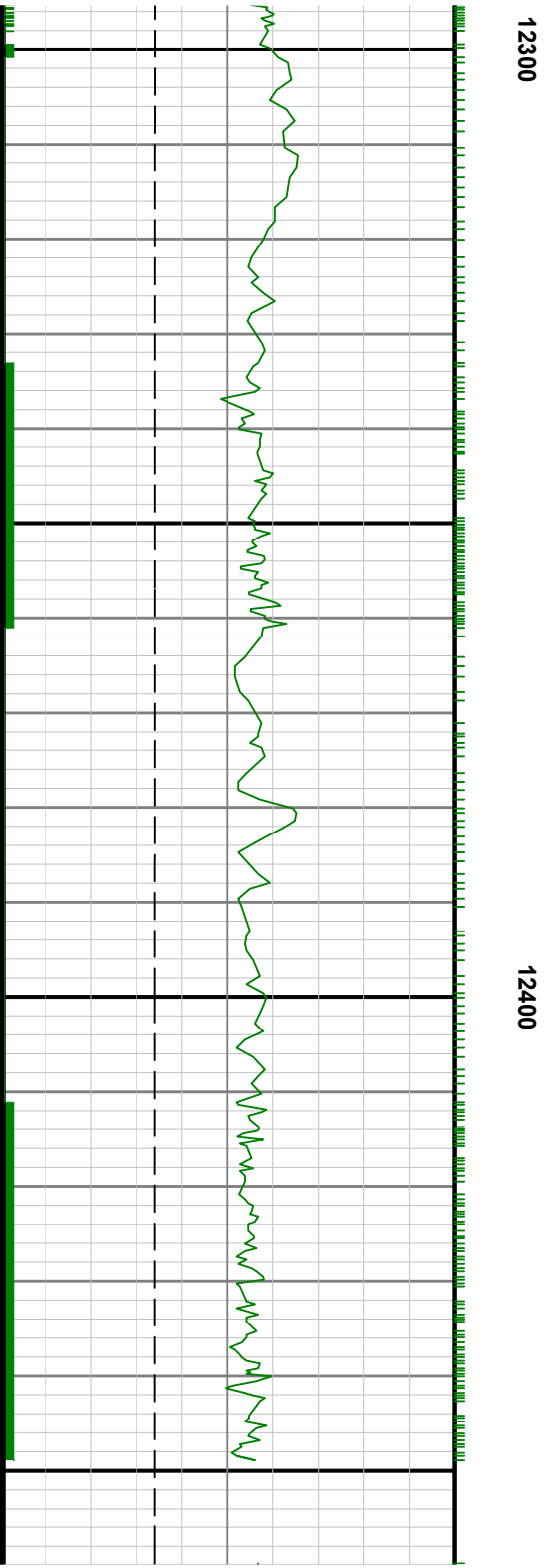
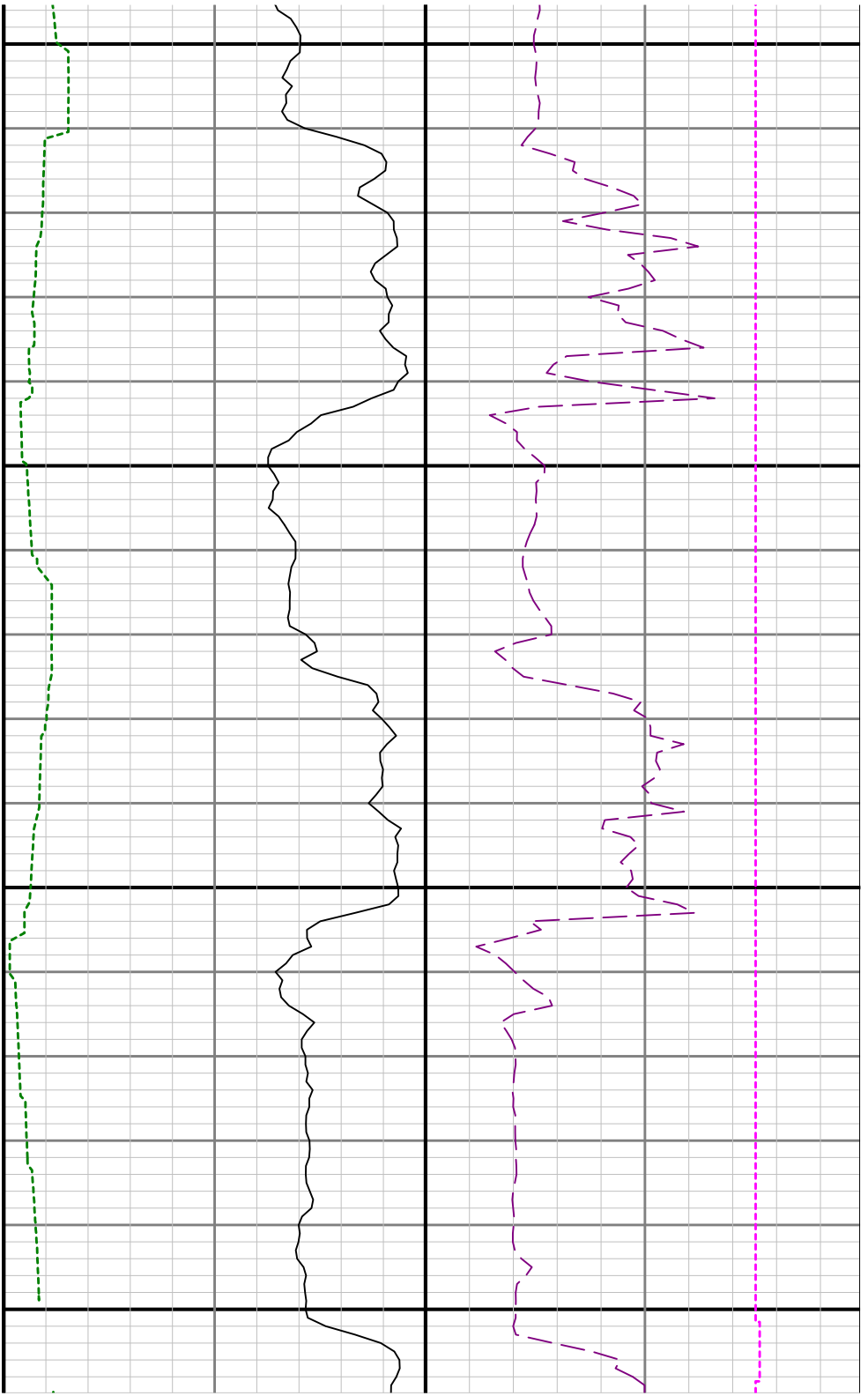




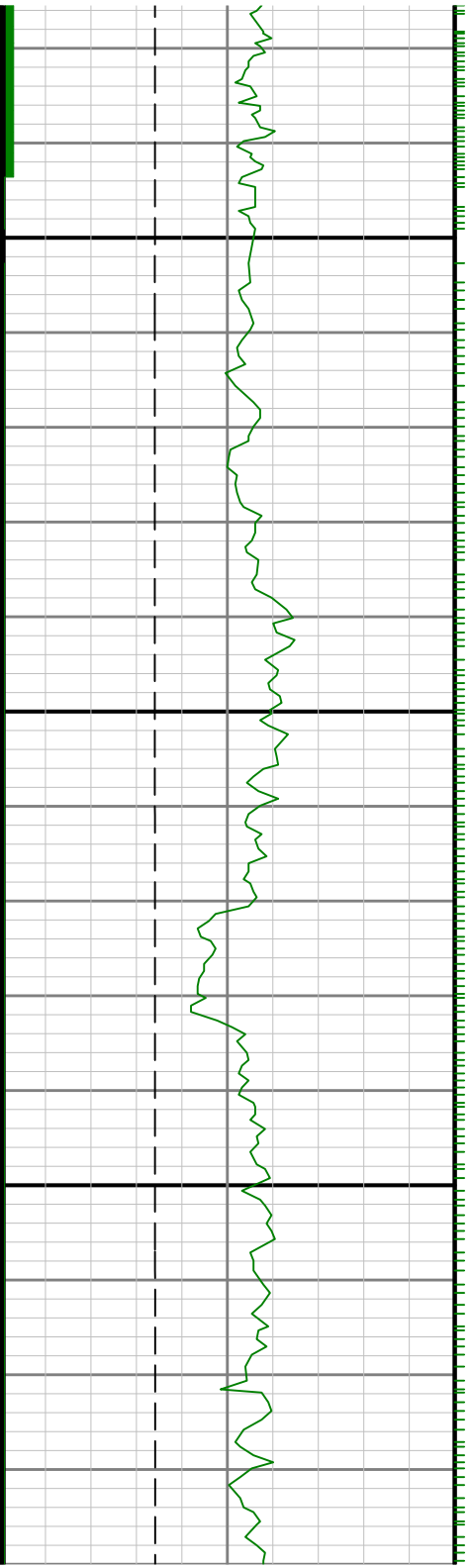












12700

