



Natural Formation Evaluation

Gamma Ray

LWD REALTIME LOG

Scale:	<div>Company: Anadarko</div>					
1:240 MD	<div>Well: Thermo 15C-33HZ</div>					
Depth Reference:	<div>Field: DJ Basin</div>					
Driller's Depth	County:		Weld		State: United States	
Status:	Surface Location:			Other Services:		
Final Print	Latitude:			☐ ☒ ☓ ☔ ☕ ☖ ☗ ☘ ☙ ☚ ☛ ☜ ☝ ☞ ☟ ☠ ☡ ☢ ☣ ☤ ☥ ☦ ☧ ☨ ☩ ☪ ☫ ☬ ☭ ☮ ☯ ☰ ☱ ☲ ☳ ☴ ☵ ☶ ☷ ☸ ☹ ☺ ☻ ☼ ☽ ☿ ♀ ♂ ♁ ♃ ♄ ♅ ♆ ♇ ♈ ♉ ♊ ♋ ♌ ♍ ♎ ♏ ♐ ♑ ♒ ♓ ♀ ♂ ♁ ♃ ♄ ♅ ♆ ♇ ♈ ♉ ♊ ♋ ♌ ♍ ♎ ♏ ♐ ♑ ♒ ♓		
API No: 05123420580000	Longitude:			FEL ° AI DAT BEI GAY Directional VSS		
Job ID: 75693860	SEC: 33		TMN: 2N RGE: 66W			
Permanent Datum (P.D.): Ground Level	Elevation:		4990.00 ft		KB: N/A	
Log Measured From: Rig Floor	Above P.D.		16.00 ft		D.F: 5006.00 ft GL: 4990.00 ft	
Dates	Interval Logged			Magnetic Field Reference		
Date From: 2015-11-19	Top: (ft) 7000.00		Azi Reference North: True		Dip Angle: (deg) 66.73	
Date To: 2015-11-21	Bottom: (ft) 12957.00		Total Magnetic Field Strength: (nT)		52746	
Spud Date: 2015-11-16			Mag to Reference North Correction: (deg)		8.32 E	
Borehole Record			Casing Record			
Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)
7.875	1940.00	12957.88	9.625	36.00		1930.00
Mud Record						
Type	From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Inc Az (Start)	Inc Az (End)
Synthetic Based Mud	1940.00	12957.88	7.875	11017.88	22.67 332.01	91.85 178.93
Acquisition System						
Baker Hughes Cadence	Software Version G3.1			Rig: Xtreme 24	Other	
Pilot Studio	2.0.7102.1			Contractor: Xtreme	Unit: D&E	
			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. Vjwu. "Dcmgt"JwiJgu"fqgu"pqv"ycttcpv"vjgkt"ceewtce{. "eqttgevpguu. "qt"eqorngvgpguu. "qt"vjcv"vjg"ewuvqogtøu"cpflqt"cp{" vjktf"rctv{øu"tgnkcepg"qp"uwej"Kpvgtrtgvcvkqpu"yknn"ceeQornkuj"cp{"rctvkewmct"tguwnvu0"Vjg"ewuvqogt"cuuwogu"hwnn" 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 not be limited by the fact that the contract is labeled as a "leasehold agreement" or "contract for leasehold services".

Log Run Summary

Run No	Bit Run No.	Bit Size (in)	Bit Type	Bit Gauge Length (in)	Assembly Type	Logged Interval		Bit Depth Interval		Date / Time		Circ. Hours (h)
						Top	Bottom	From	To	Start Logging	End Logging	
						(ft)	(ft)	(ft)	(ft)			
1	1	7.875	PDC	2.00	Steerable	1897.70	12915.58	1940.00	12957.00	2015-11-18 23:18	2015-11-21 12:11	54.95

Crew

Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite
Adam Harris		2015-11-18	2015-11-20	Jason Cross		2015-11-18	2015-11-21	Marcus Boucher		2015-11-18	2015-11-21
Matthew Leopold		2015-11-18	2015-11-19	Andrew Overbey		2015-11-20	2015-11-21	Ryan Kielian		2015-11-20	2015-11-21

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+ (%)
2015-11-20 18:00	1	10895.76	Synthetic Based Mud	9.5	17	N/A	0.0	68.2/31.8	Active Pit	54000	0.00
2015-11-19 18:00	1	7205.91	Synthetic Based Mud	9.5	16	N/A	0.0	68.2/31.8	Active Pit	52000	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)	11.54	42.30	6.500	3.250
1	NaviGamma	10350730	Directional (mag)	14.87	45.63	6.500	3.250
1	NaviGamma	10350730	VSS	14.87	45.63	6.500	3.250

Comments

- 1 1.) Baker Hughes run 1 utilized 6 1/2 inch NaviGamma services (Gamma Ray and Directional) behind an 7 7/8 inch bit and steerable assembly from 1940 to 12957 feet MD (1892.02 to 7493.56 feet TVD).
- 2 2.) A sliding indicator is shown on the right side of track 2 as a heavy line. This indicator has been depth shifted to the resistivity sensor offset to correspond with resistivity data acquired while sliding.


Remarks

Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
--------	---------------------	-------------------	---------	--------

	(ft)	(in)		
1	7000.00	7.875	1	The interval from 0 to 7000 feet MD (0 to 6580.39 feet TVD) was not logged due to directional only services being provided in the vertical.
2	12957.00	7.875	1	The interval from 12915 to 12957 feet MD (7494.92 to 7493.56 feet TVD) has no GRAX, GRIX, or GRTX due to Gamma Ray sensor offset to bit at well TD.

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

Well

Interval

Created

Anadarko

Thermo 15C-33HZ

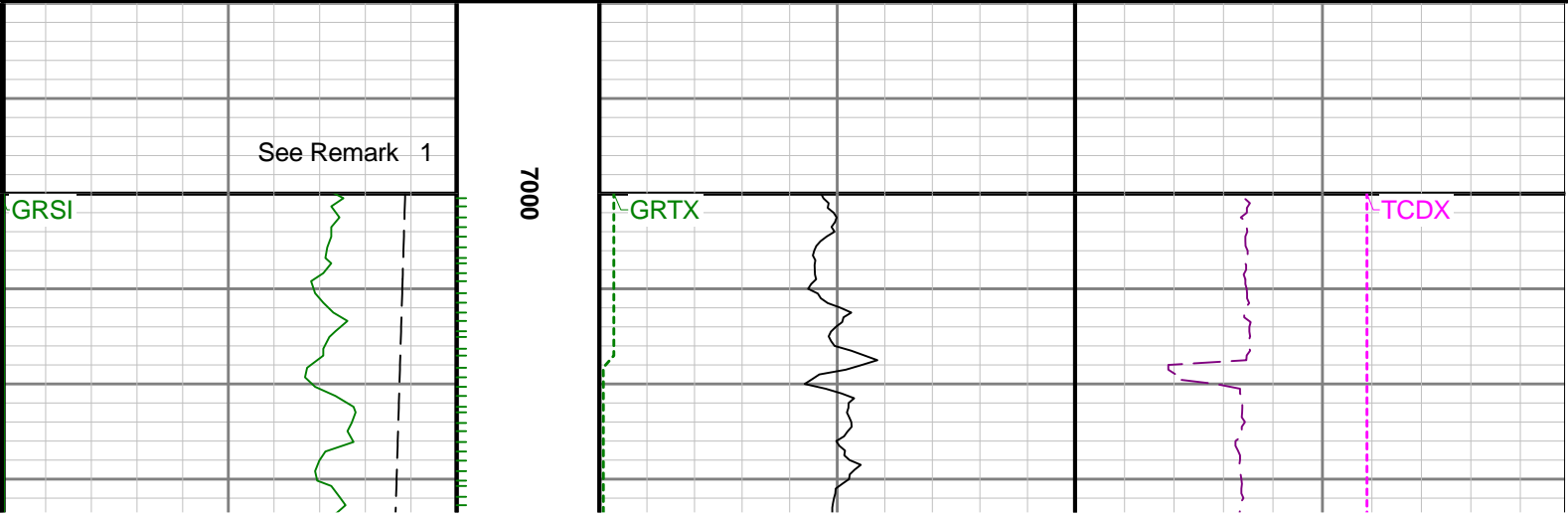
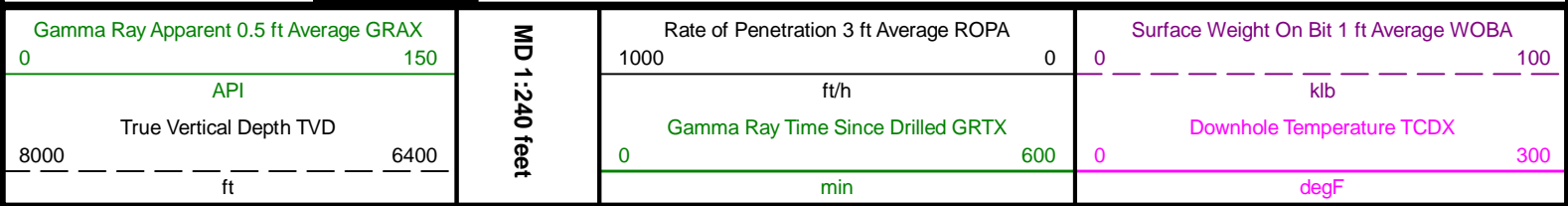
Date From: 2015-11-19 16:58

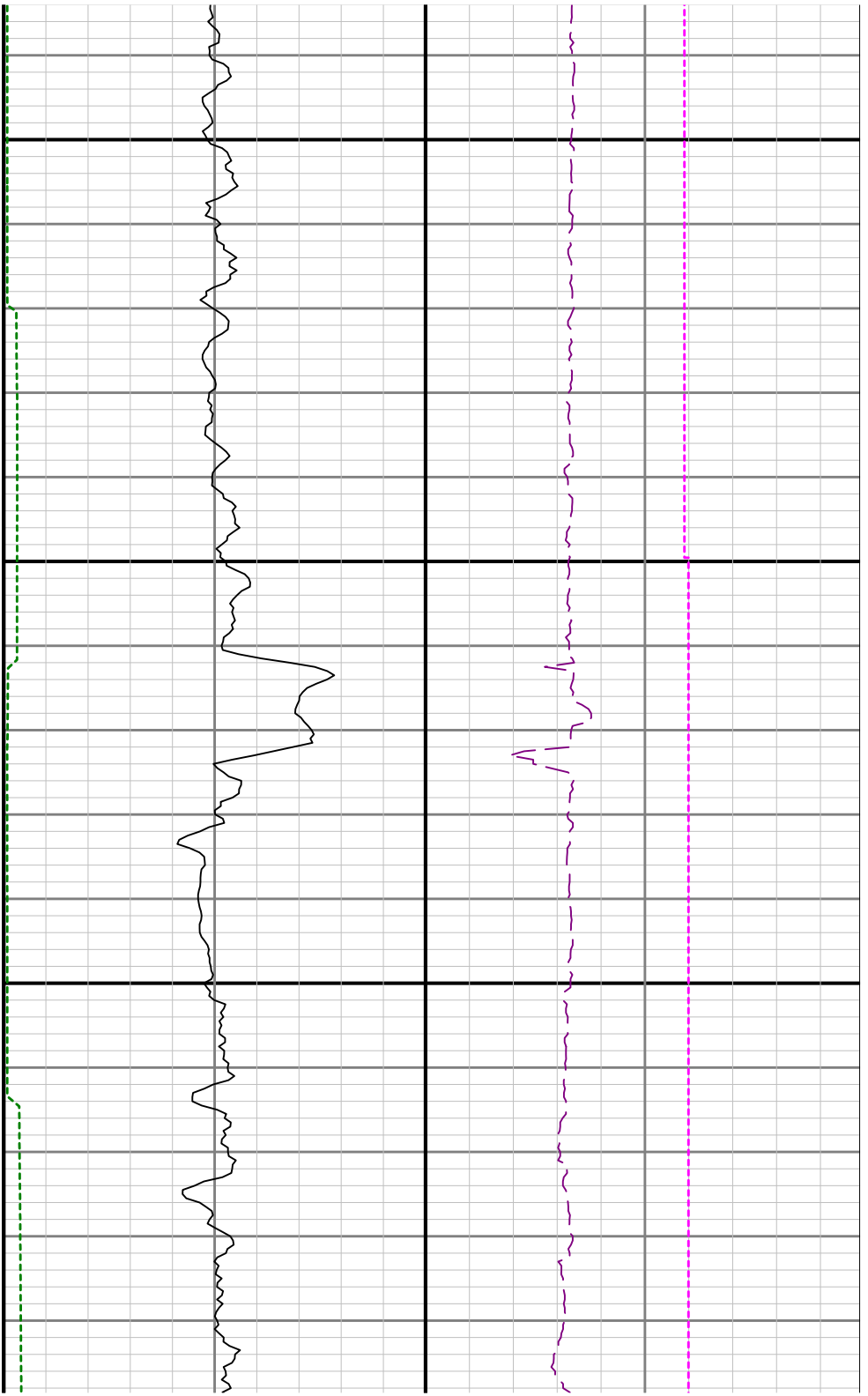
Date To: 2015-11-21 12:10

Created: 2015-11-21 14:48

Top: 7000.00

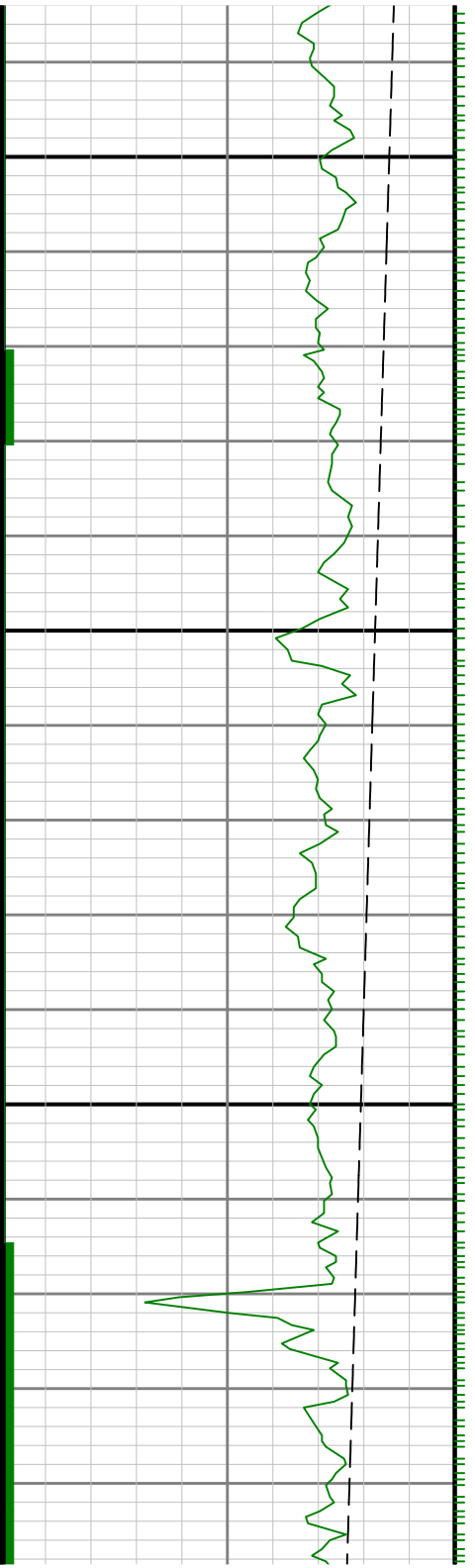
Bottom: 12957.00

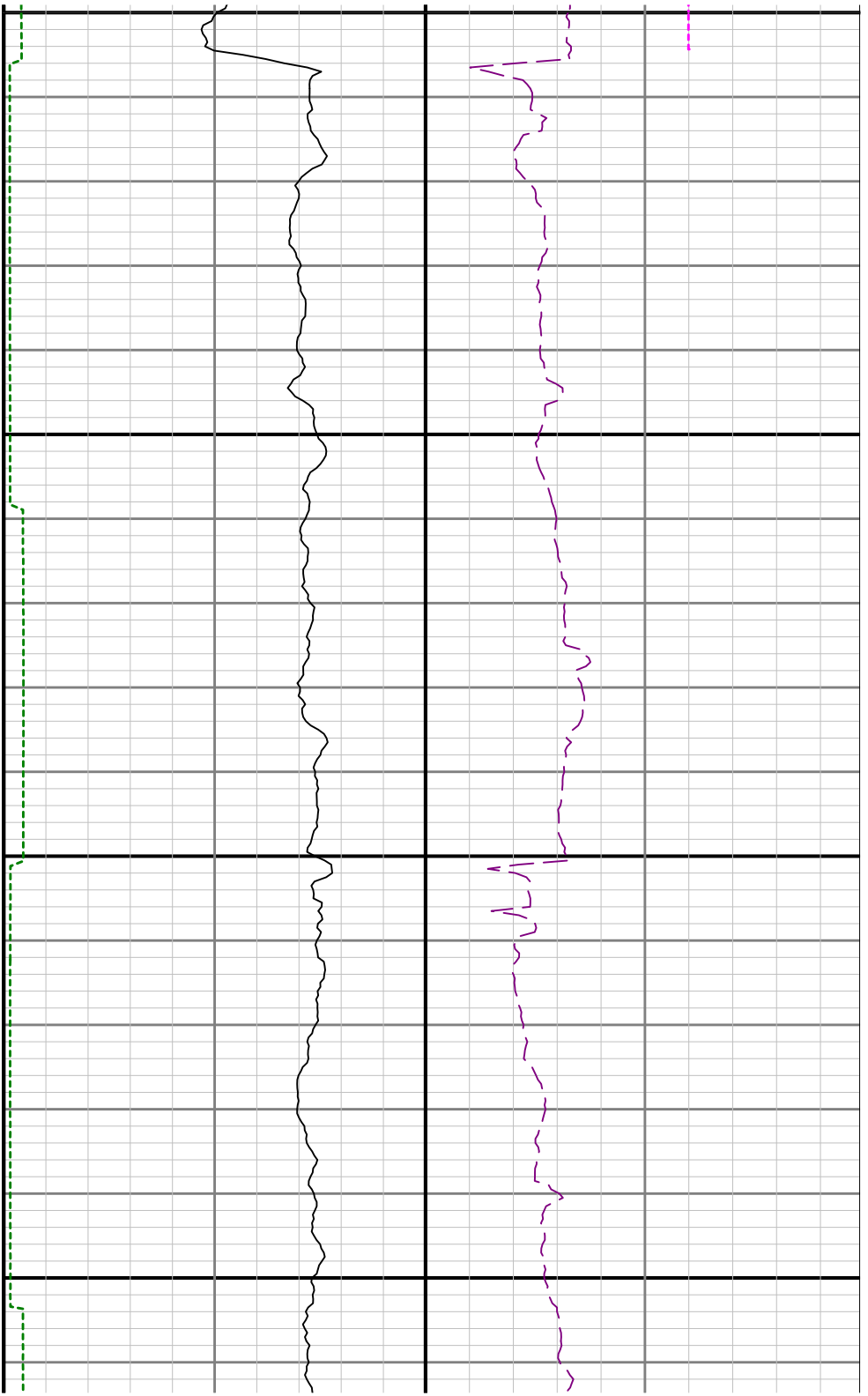




7100

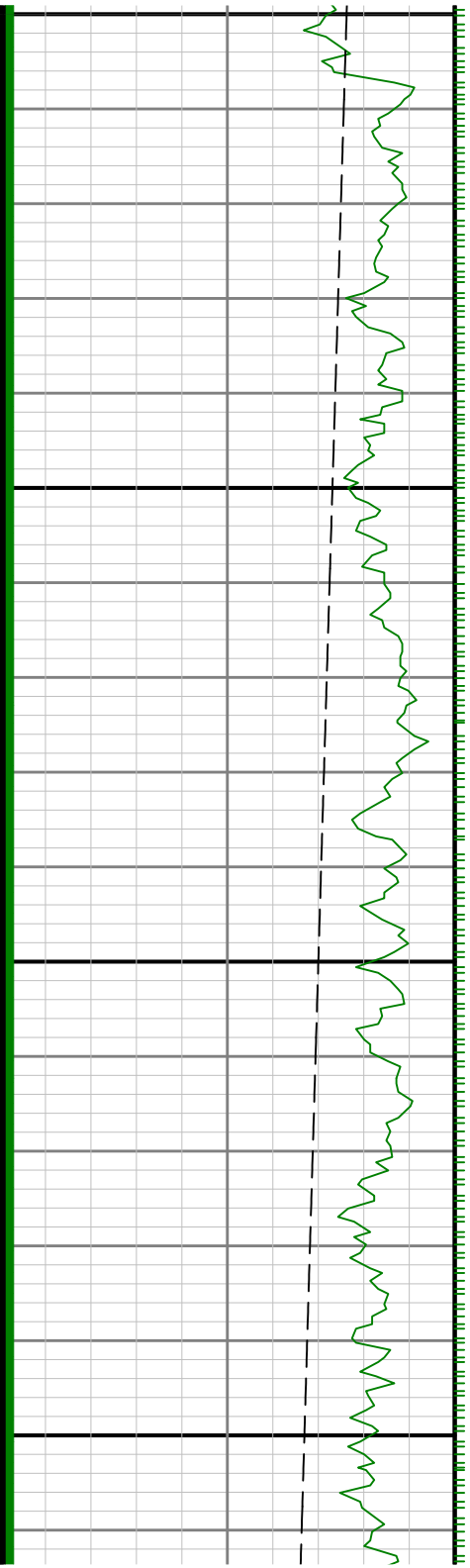
7

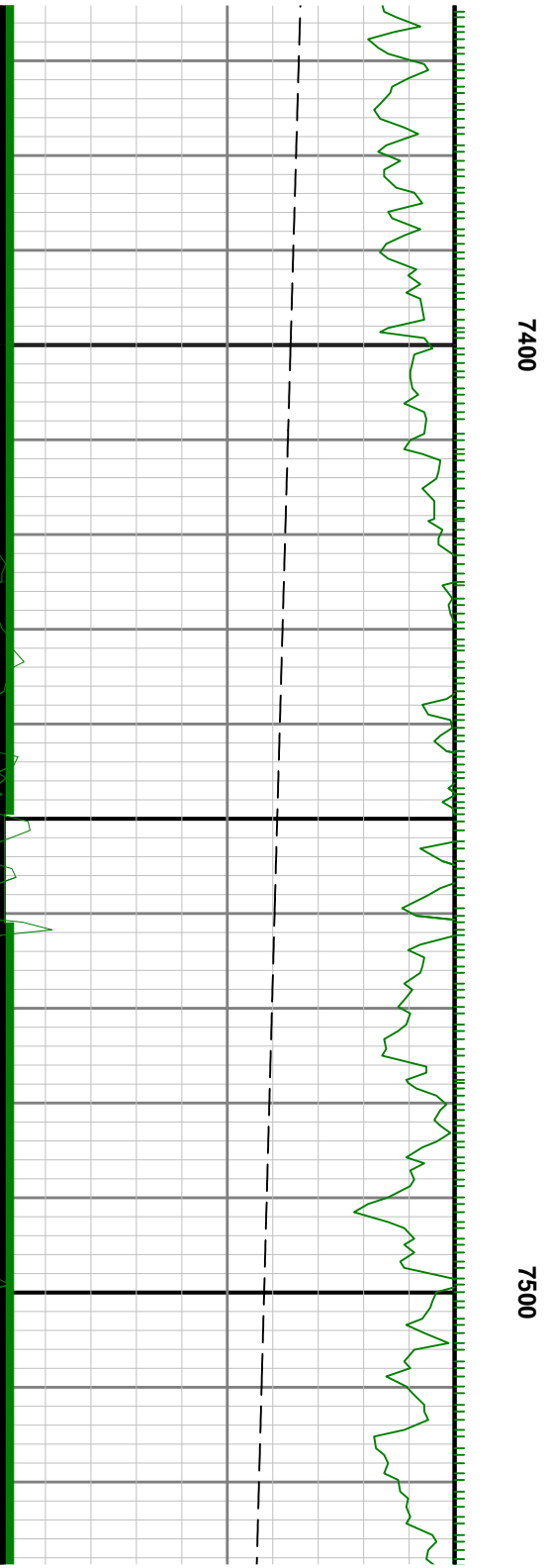
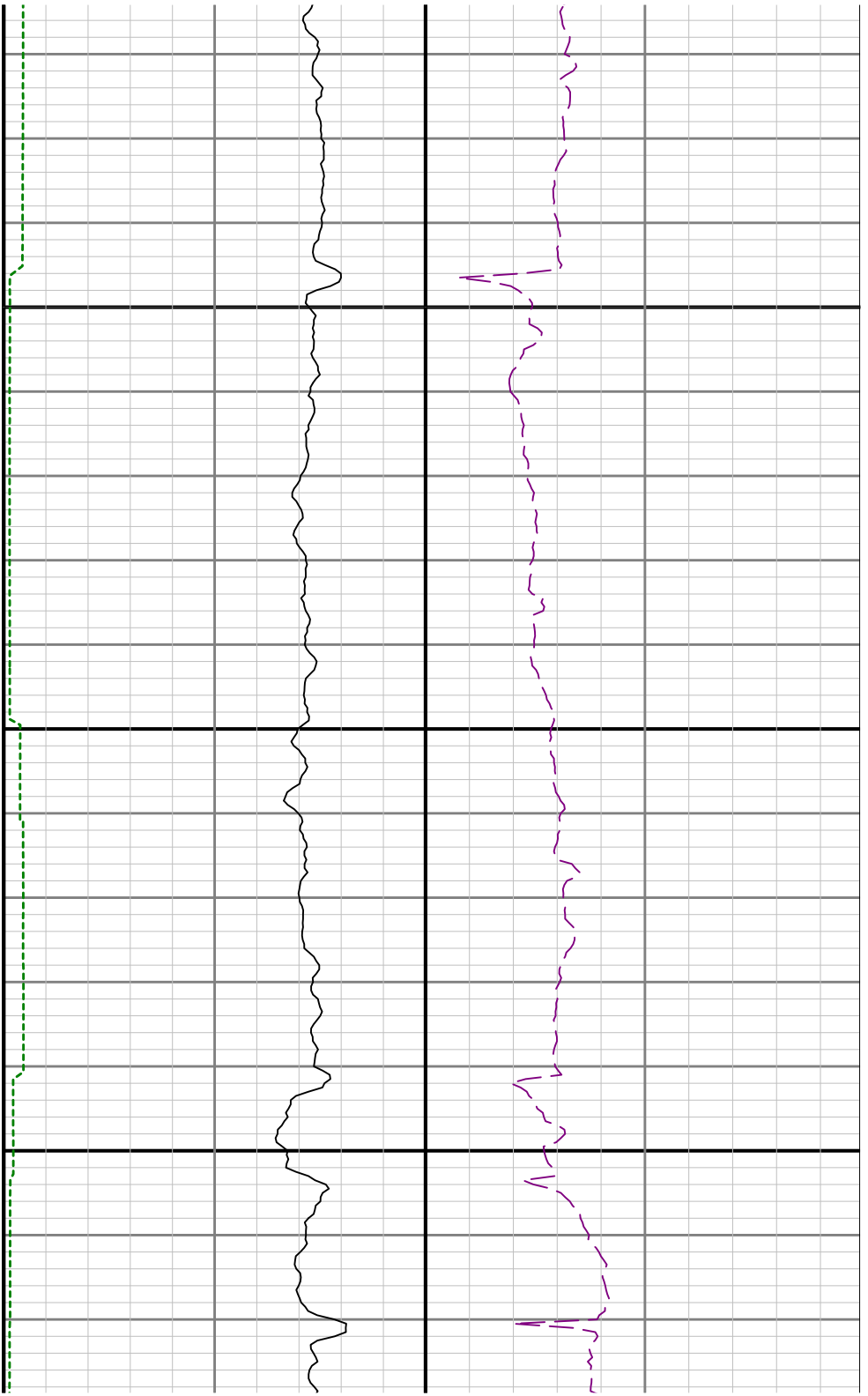


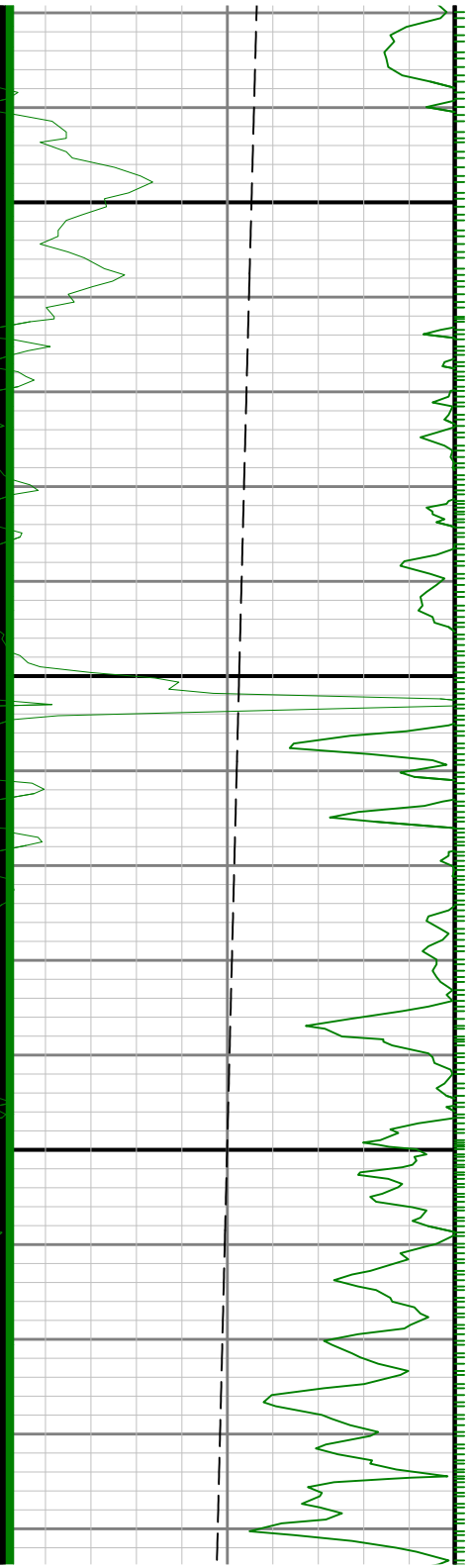


200

7300

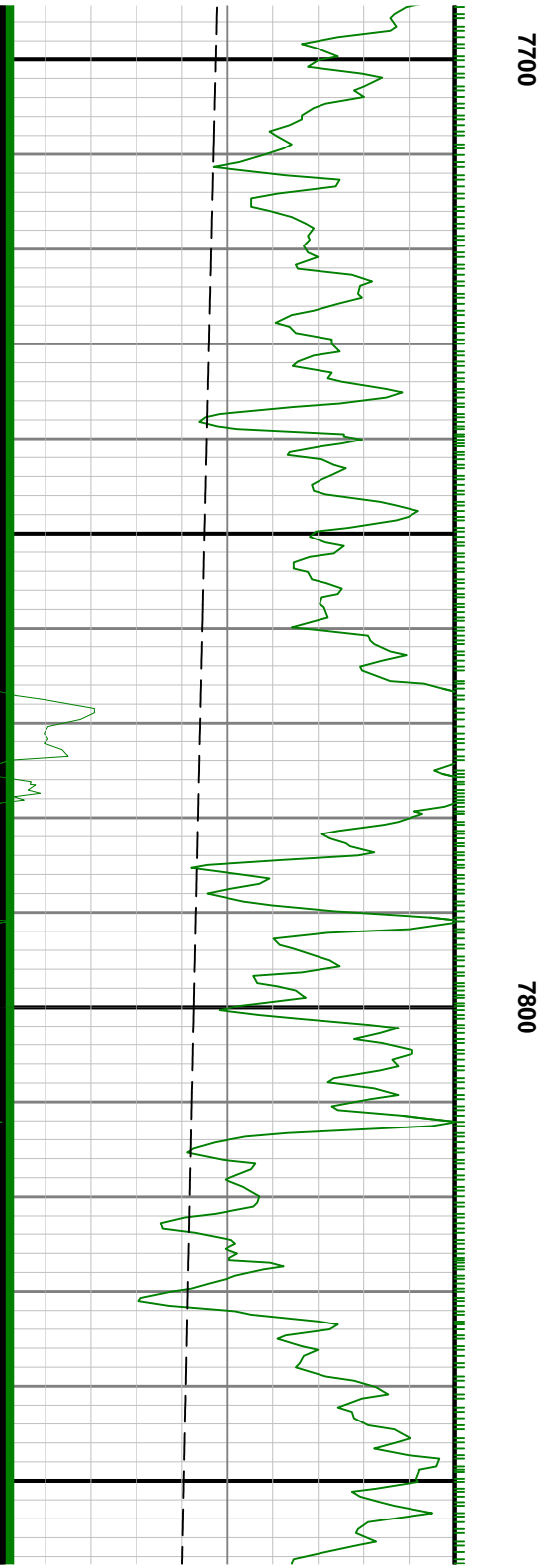
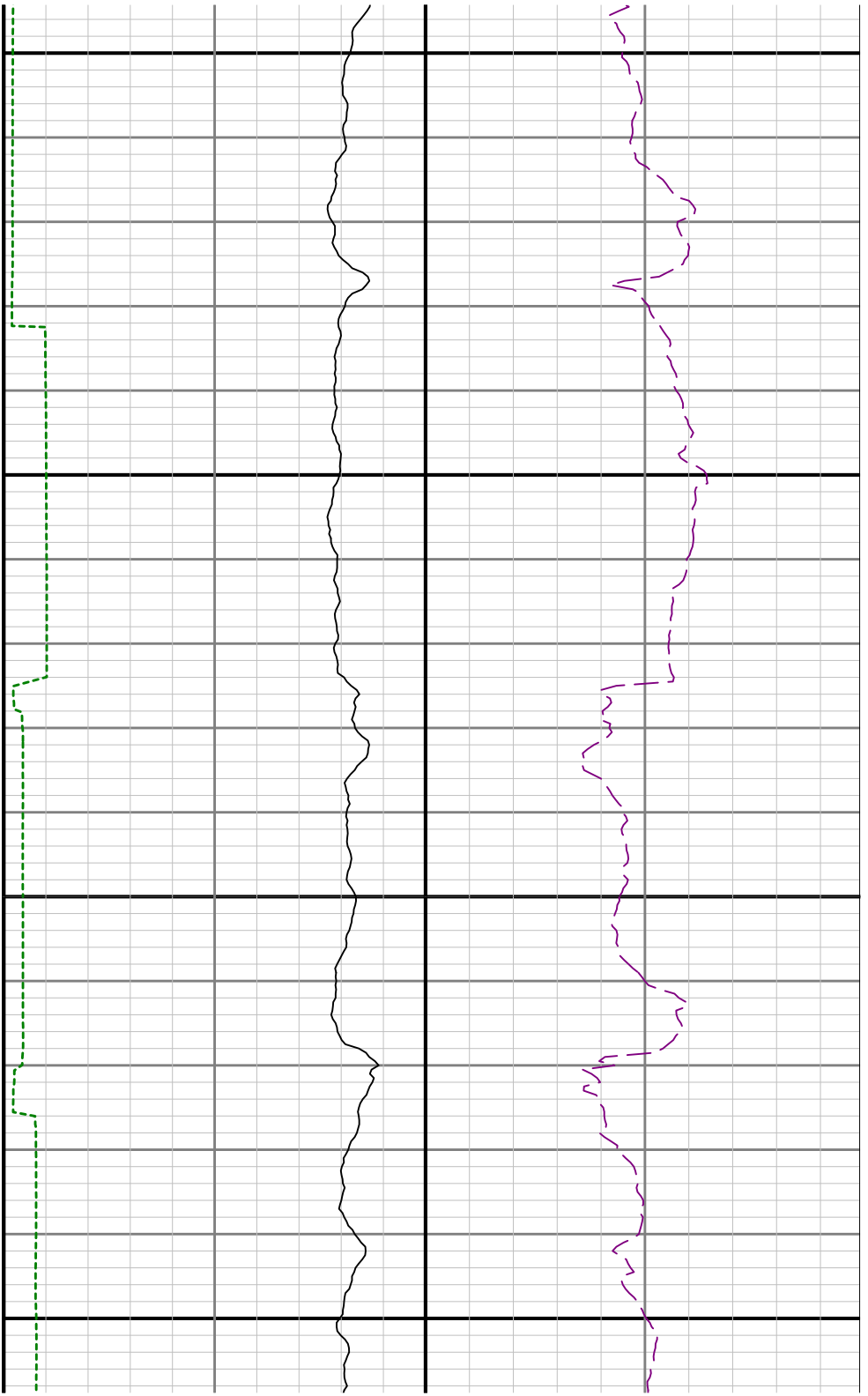


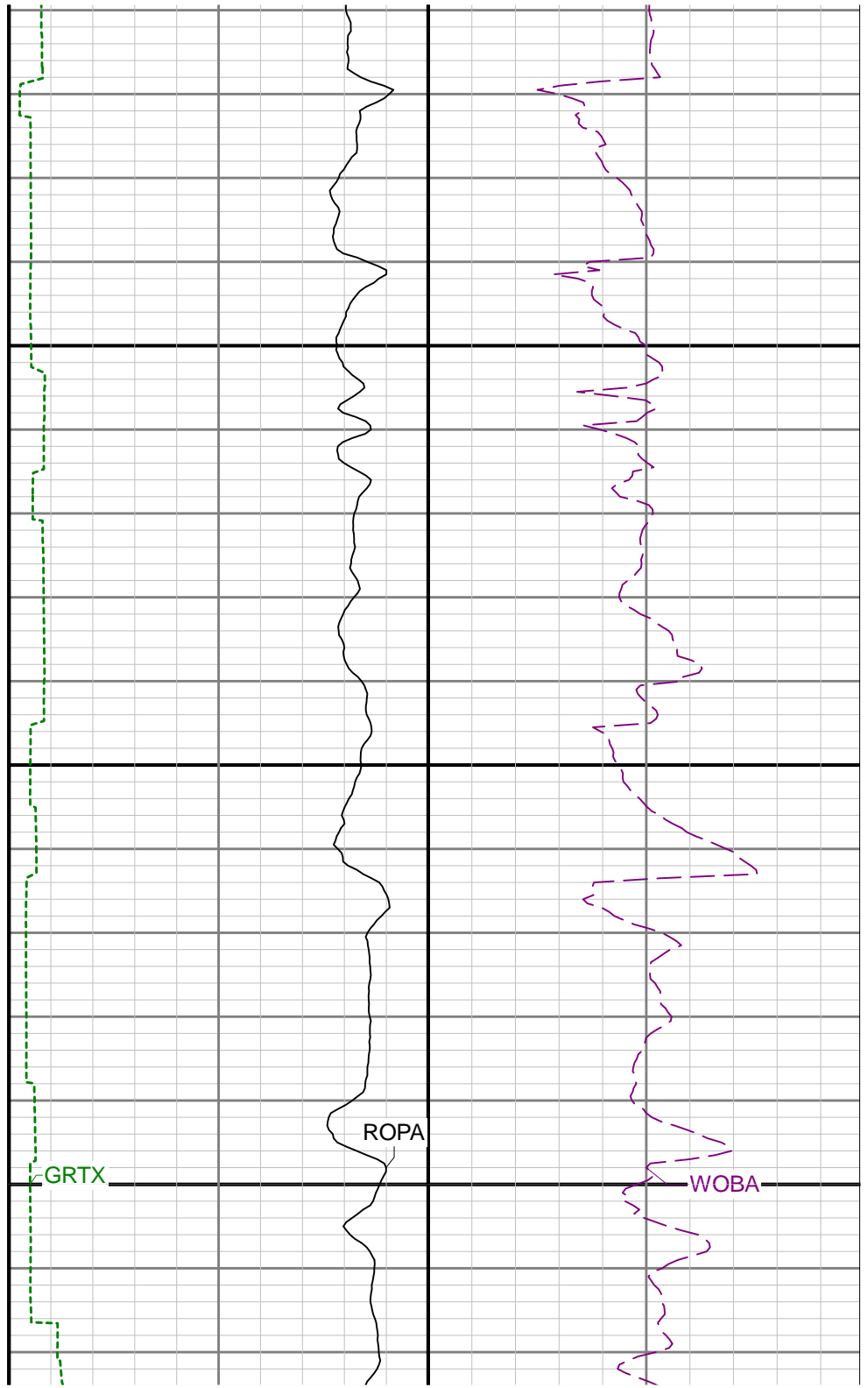
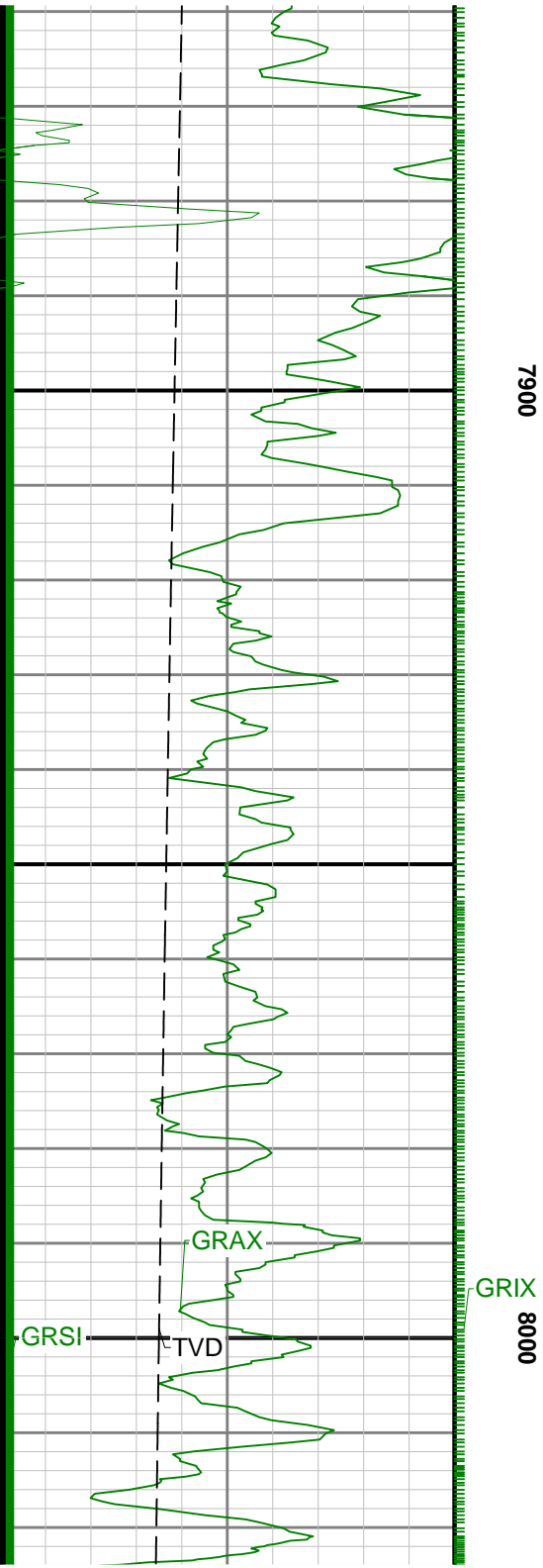


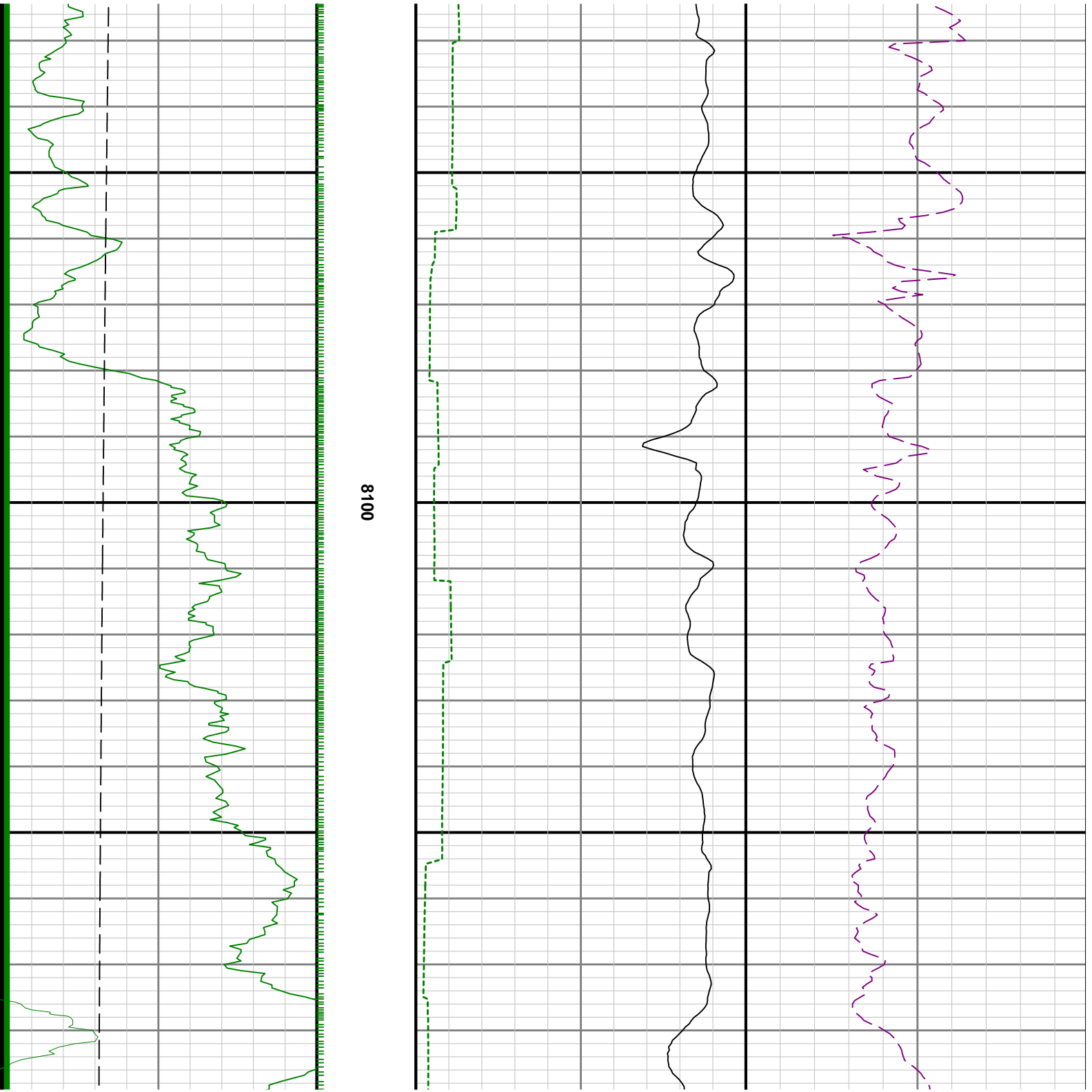


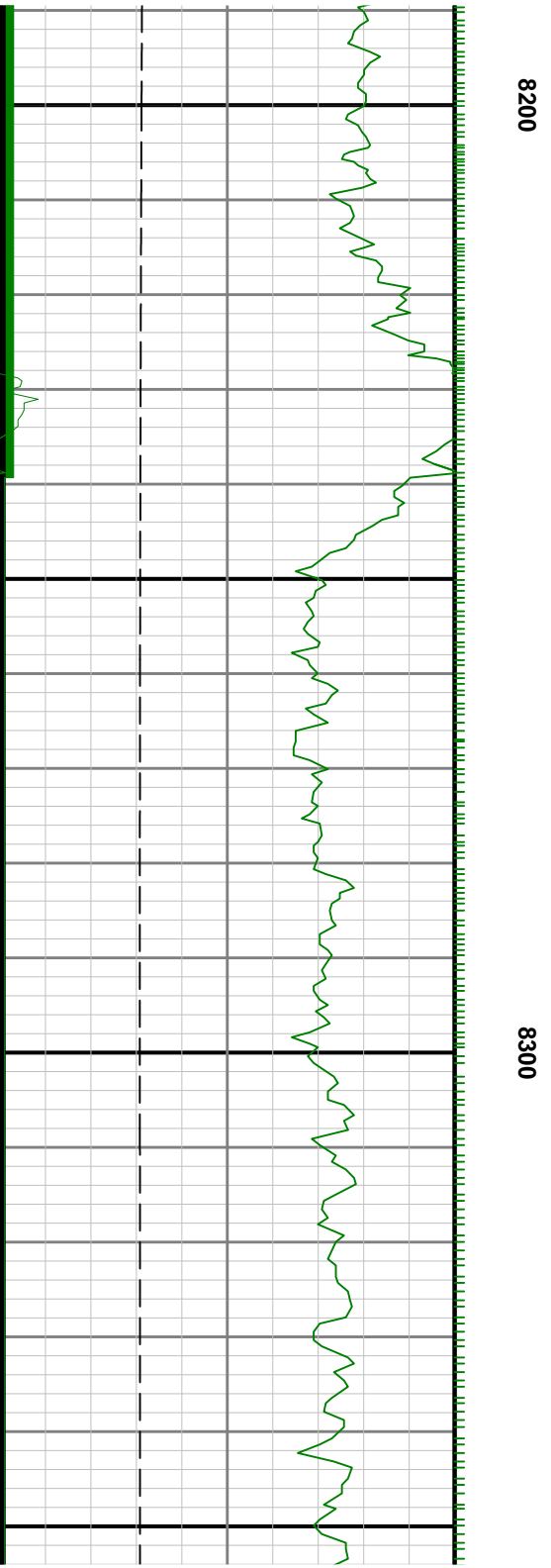
7600

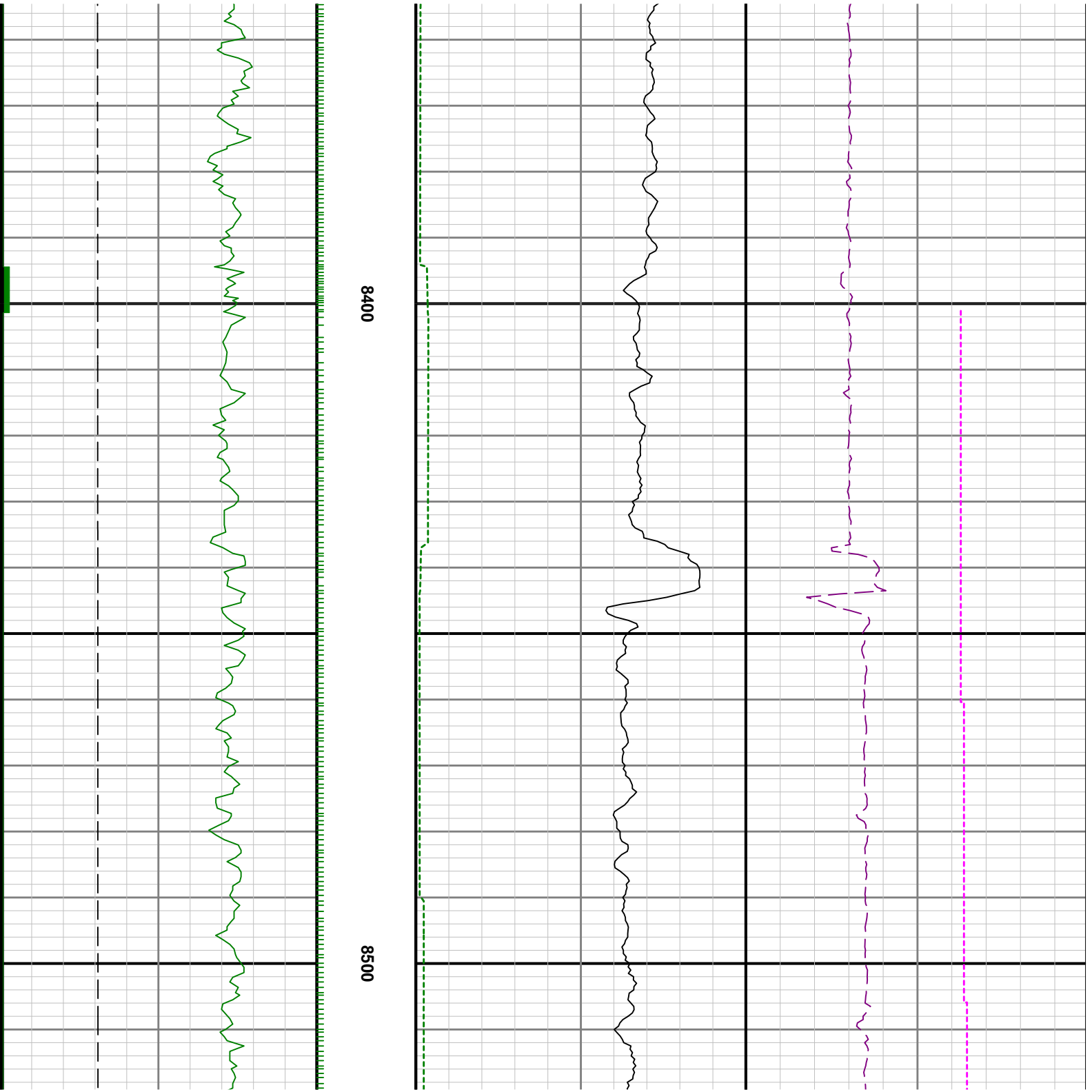


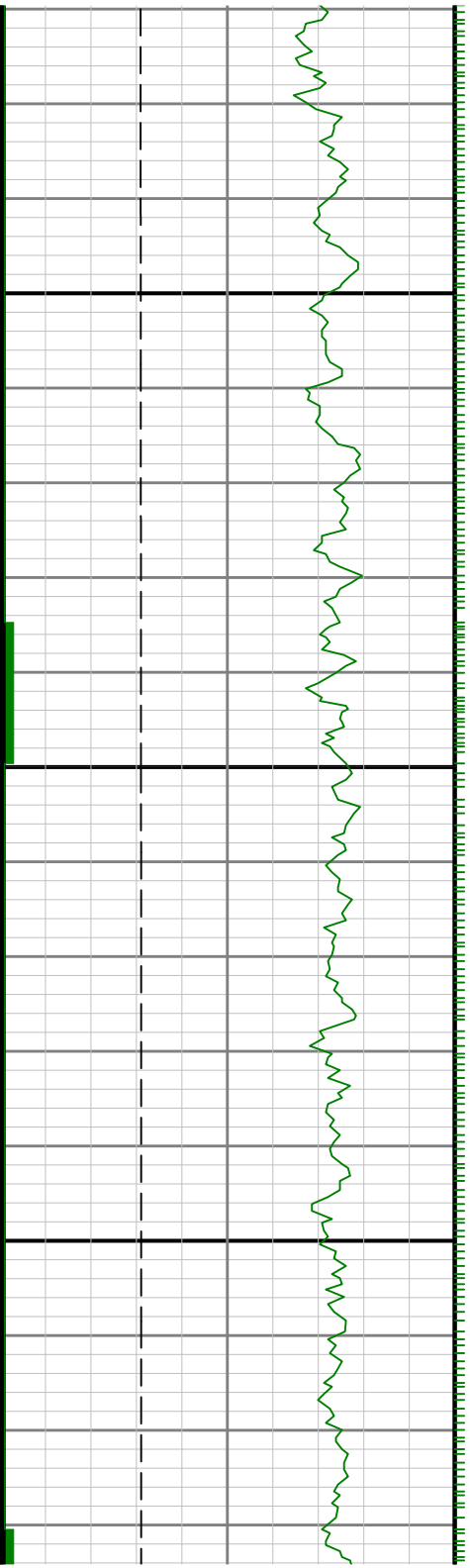




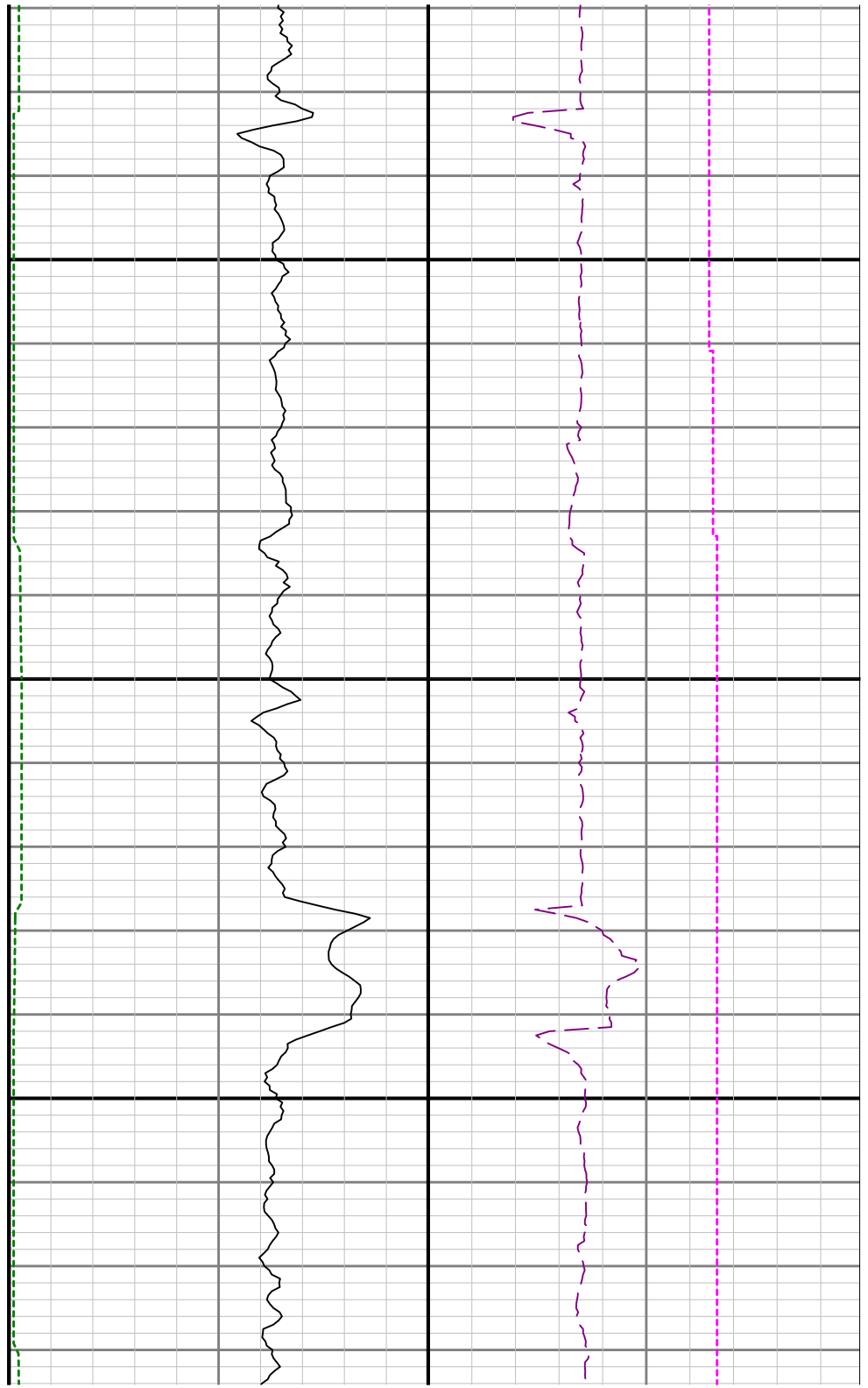


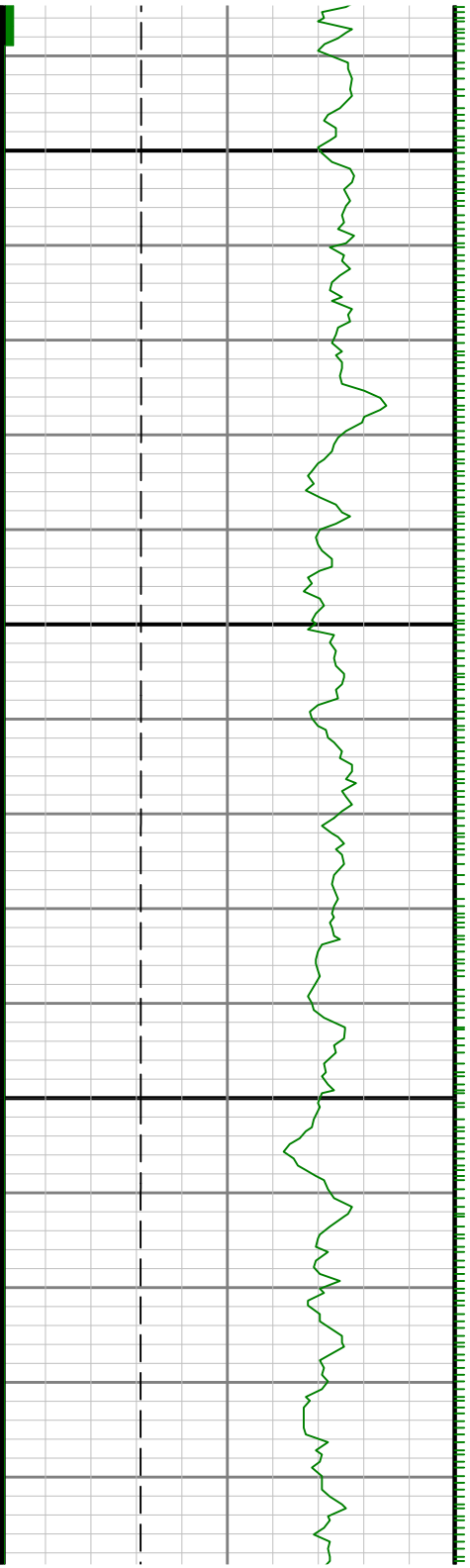






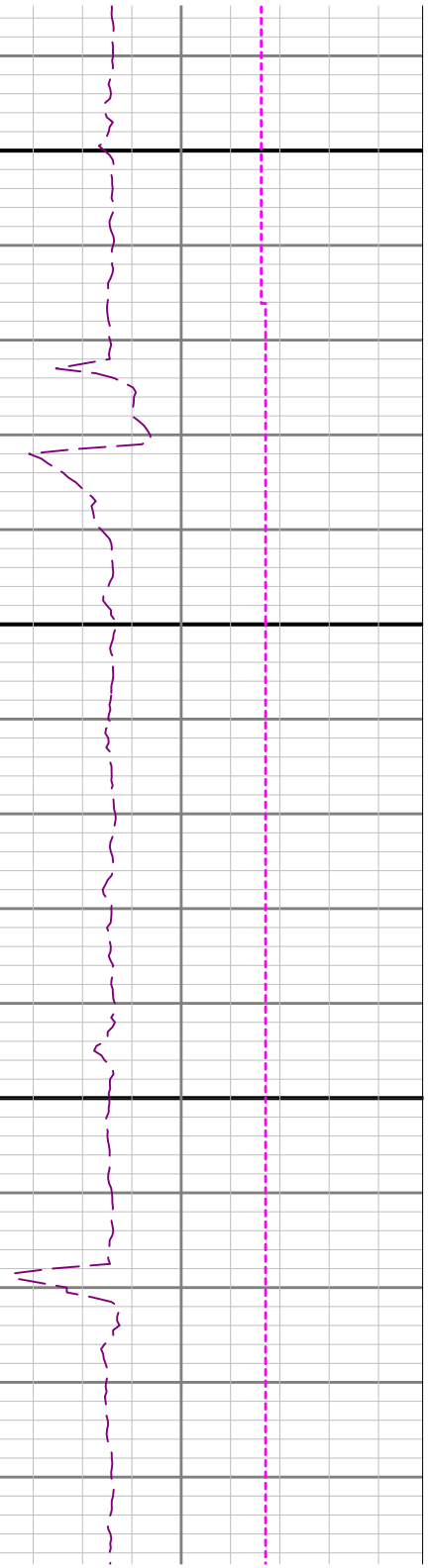
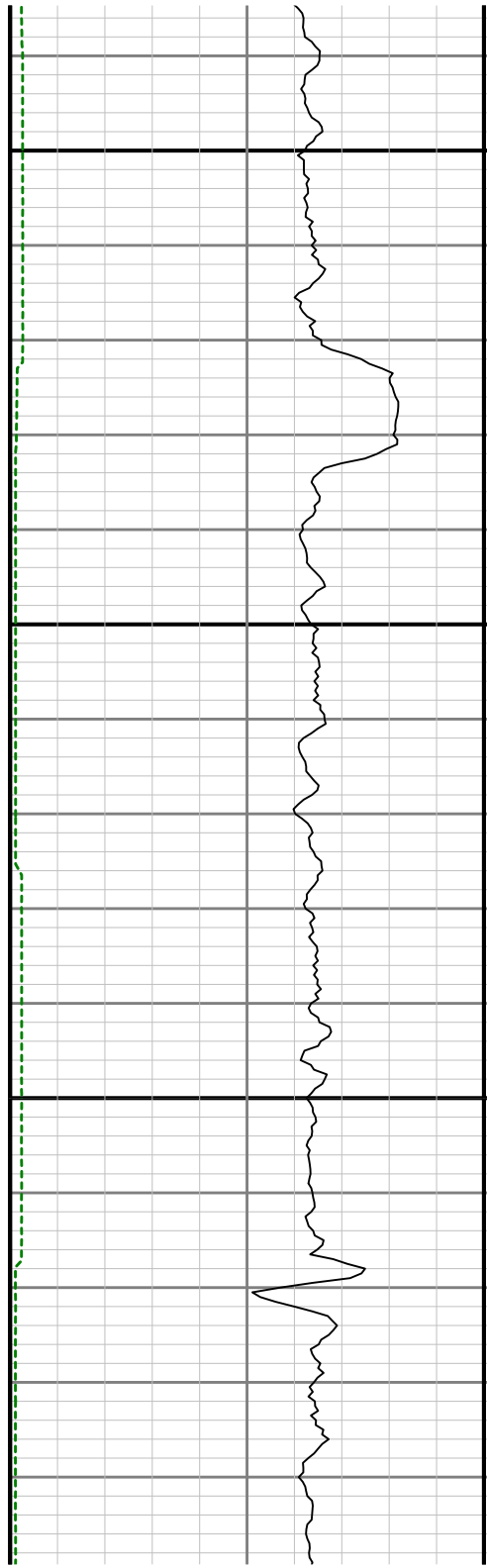
0098

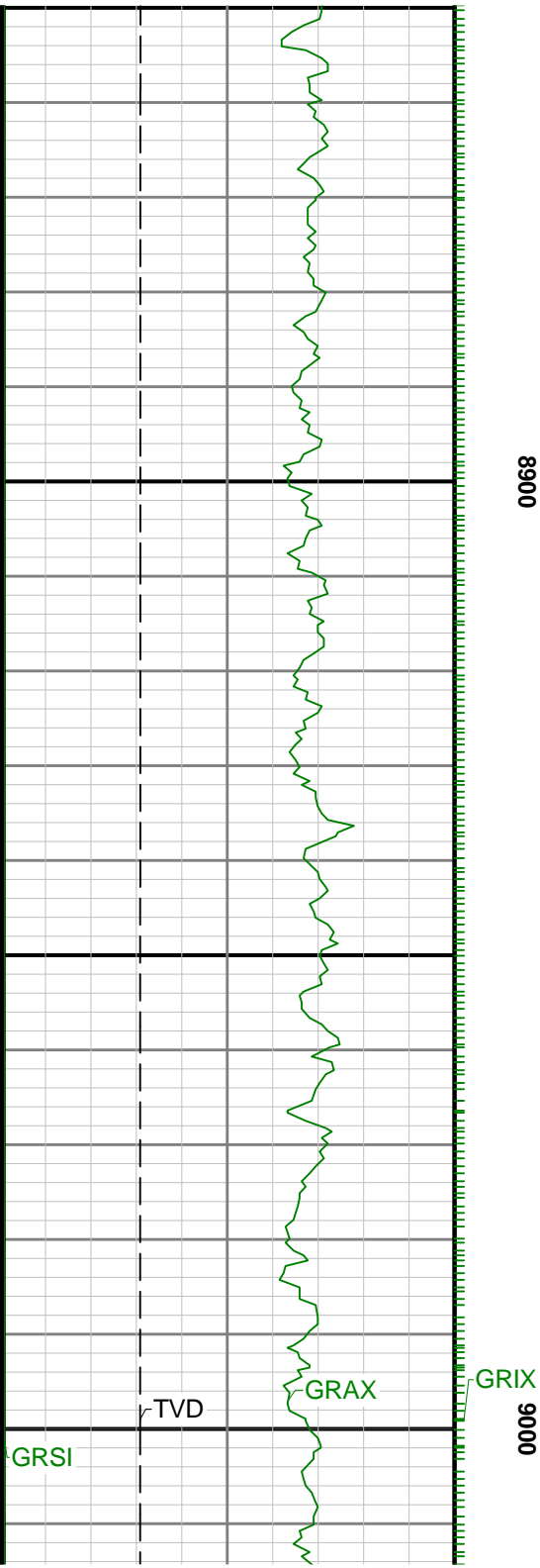


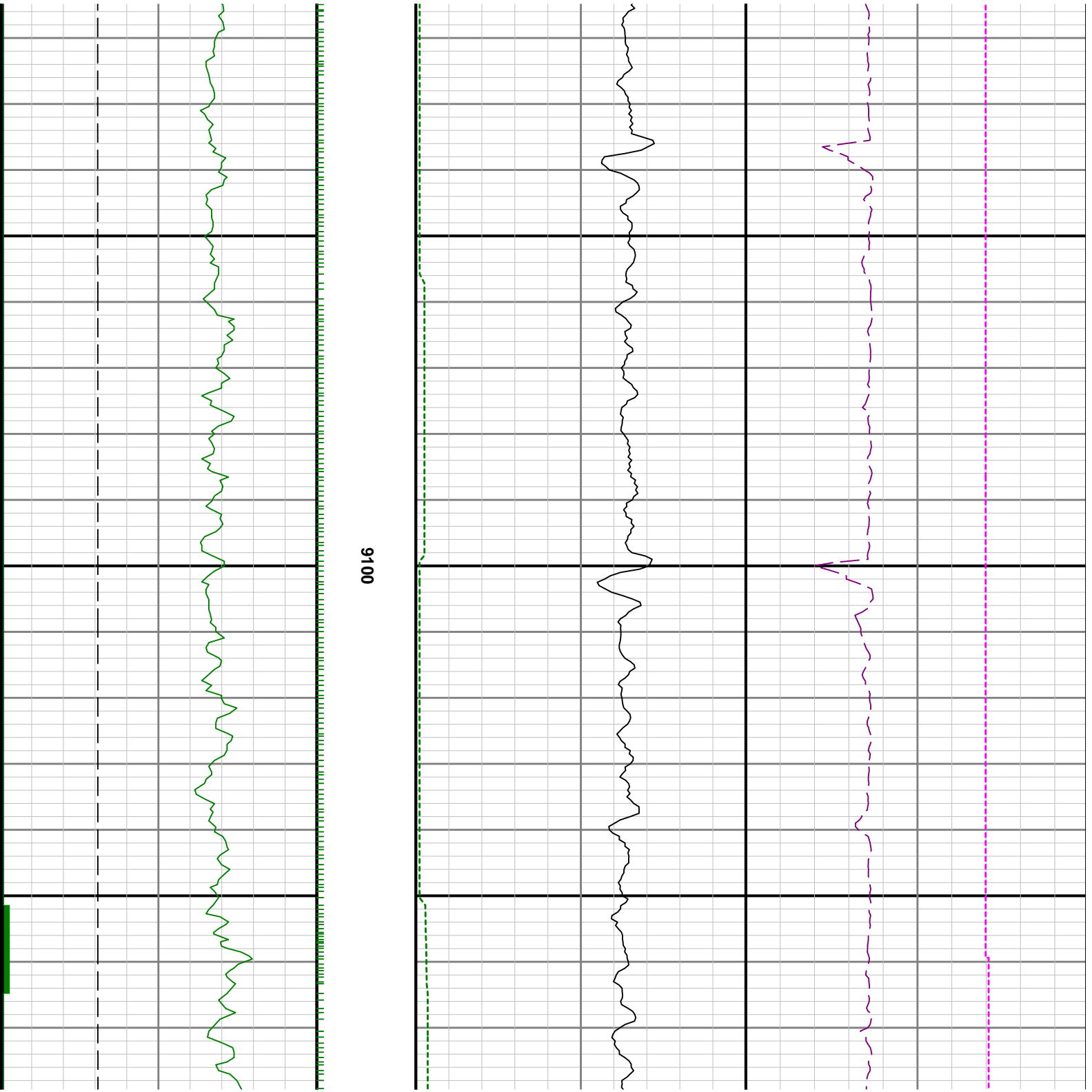


8700

8800



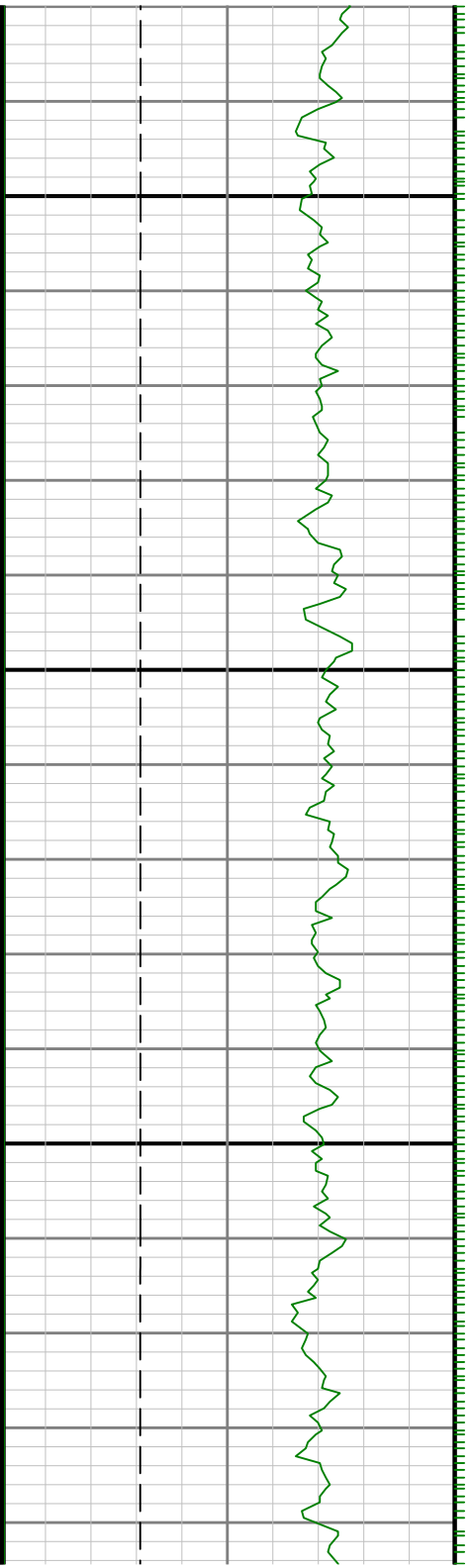


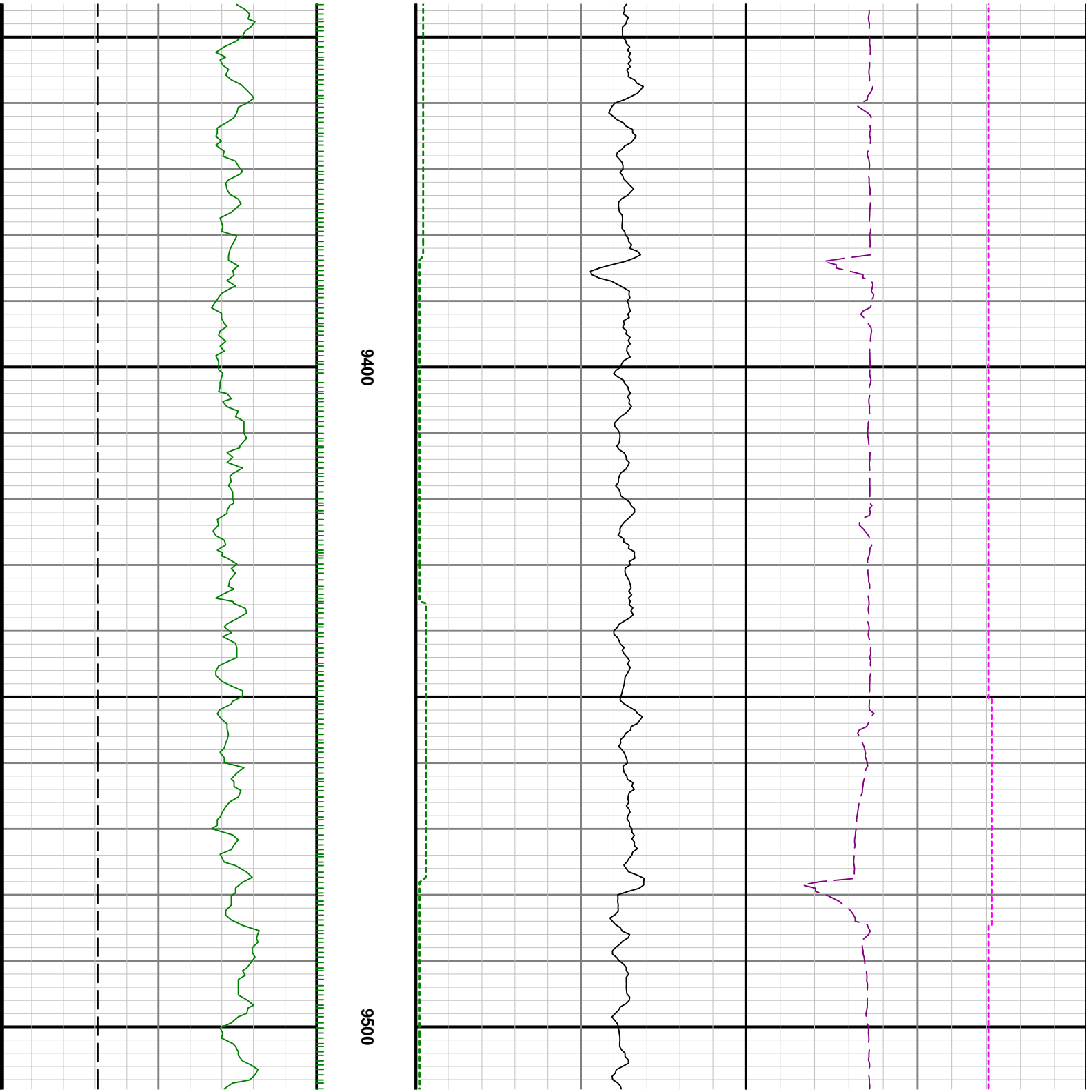


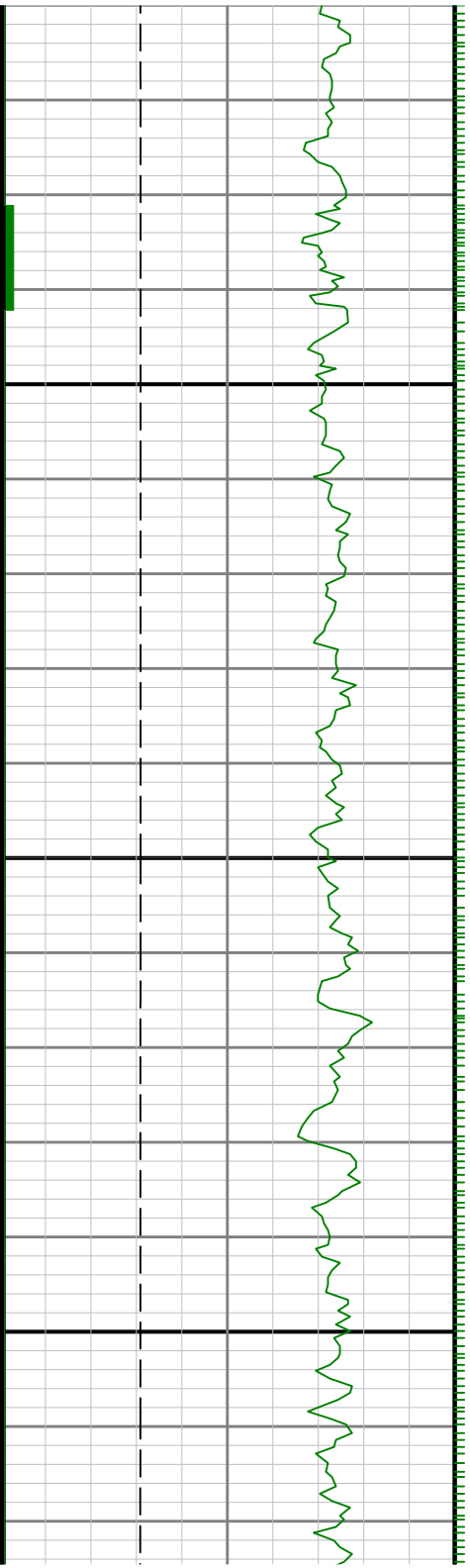


9200

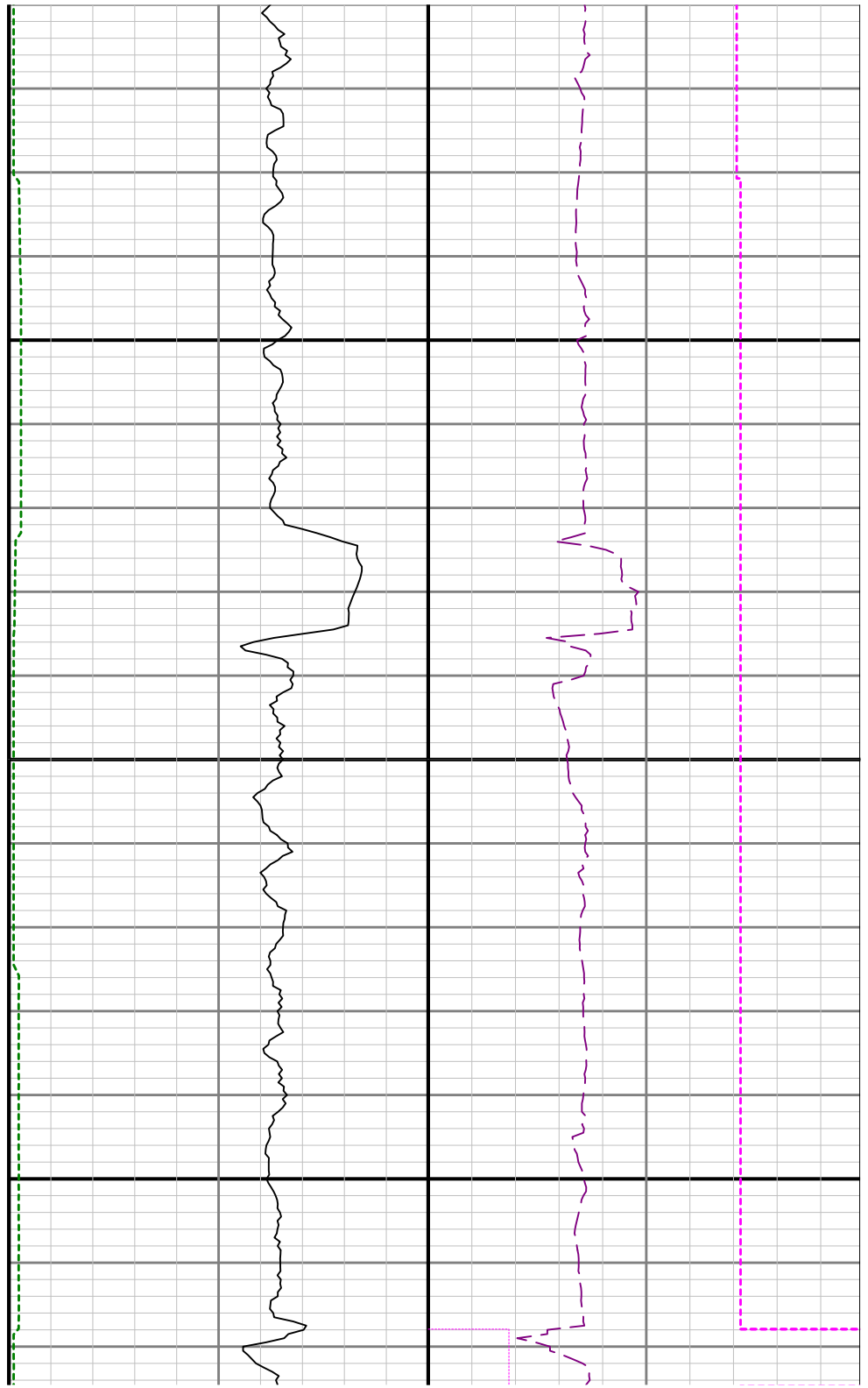
9300

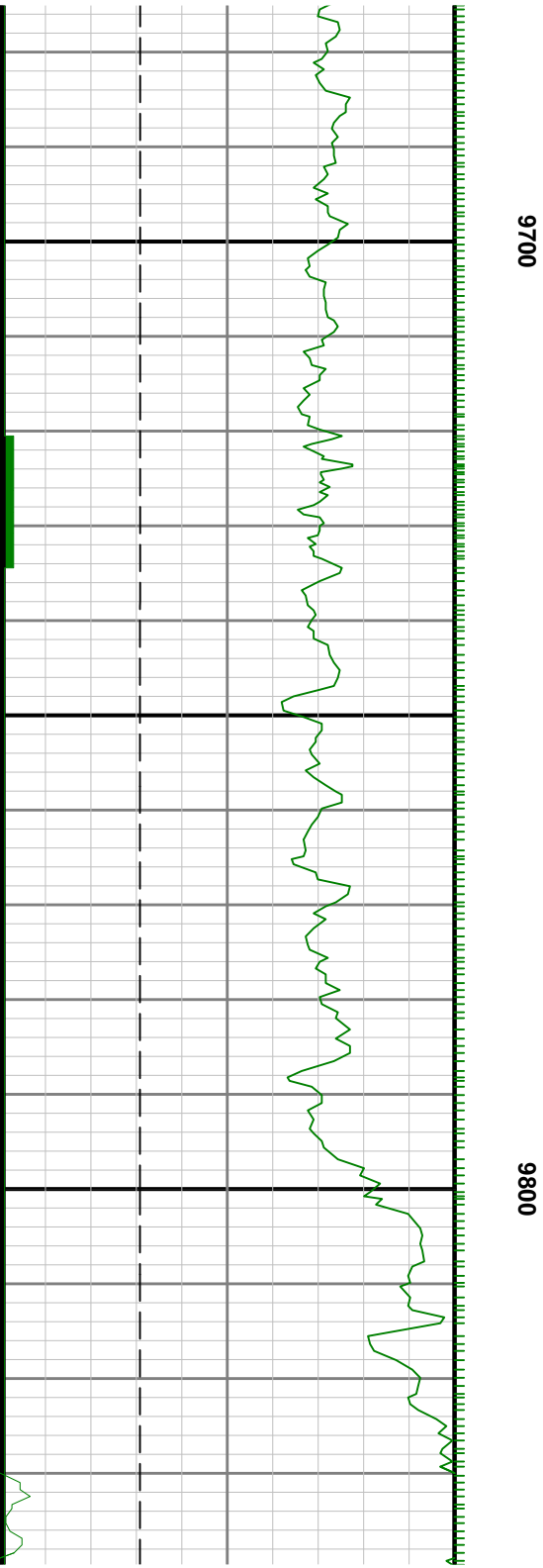


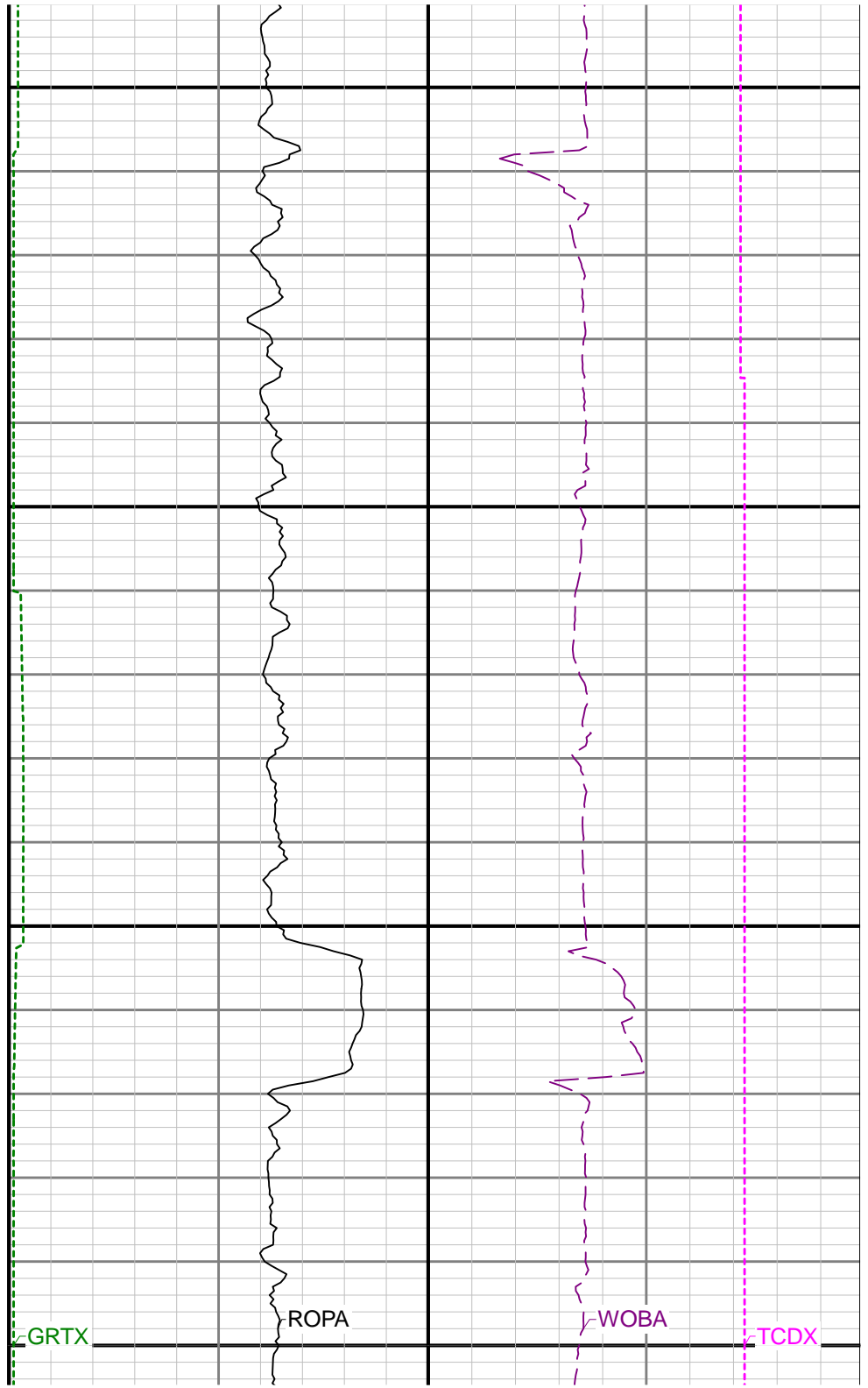
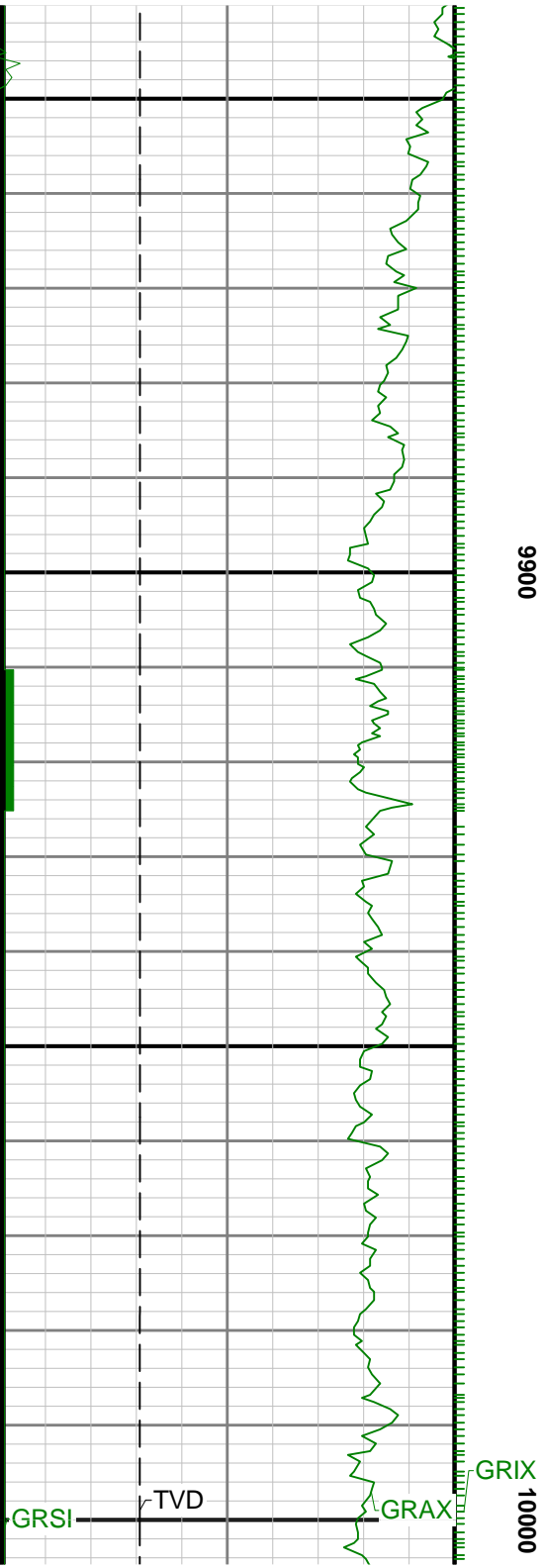


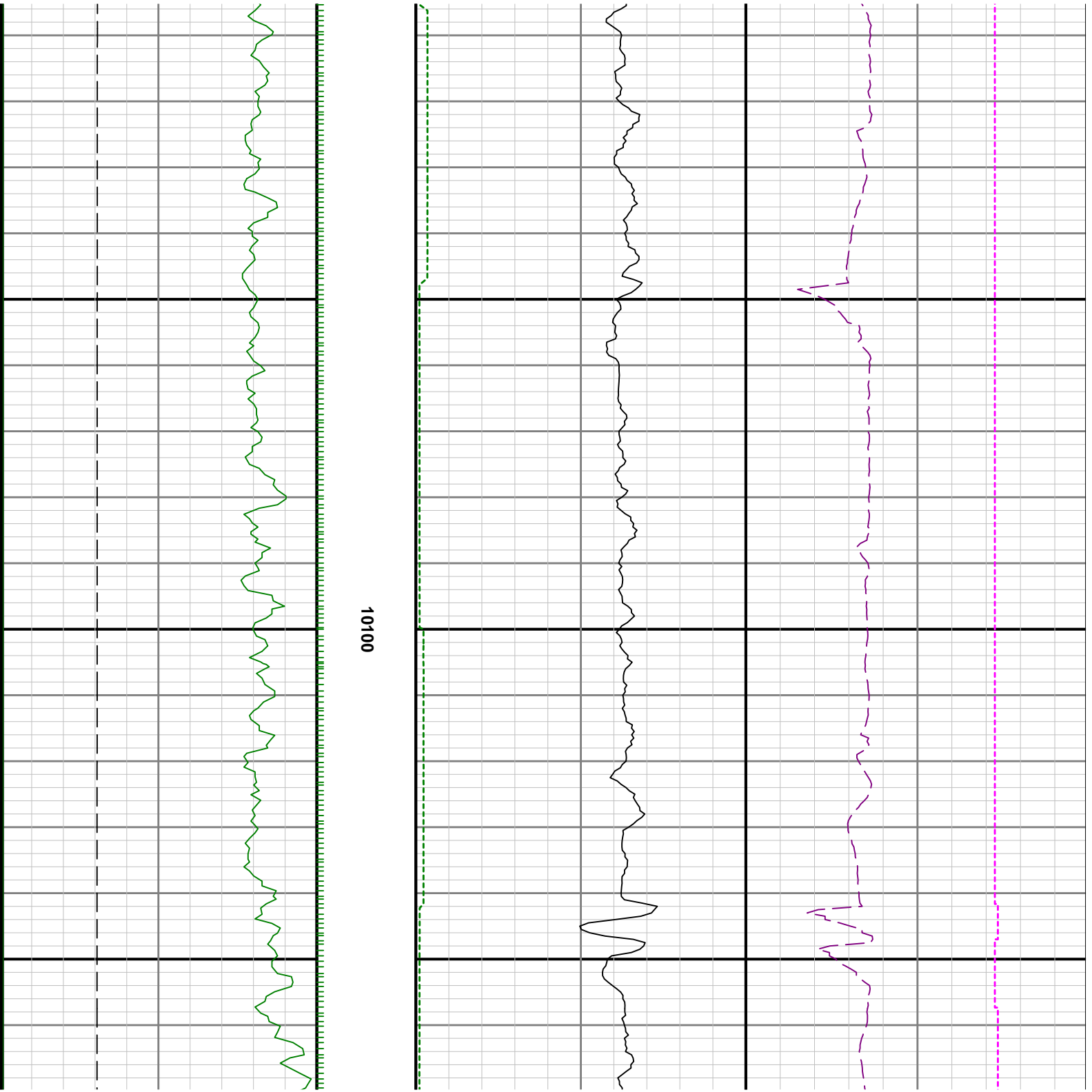


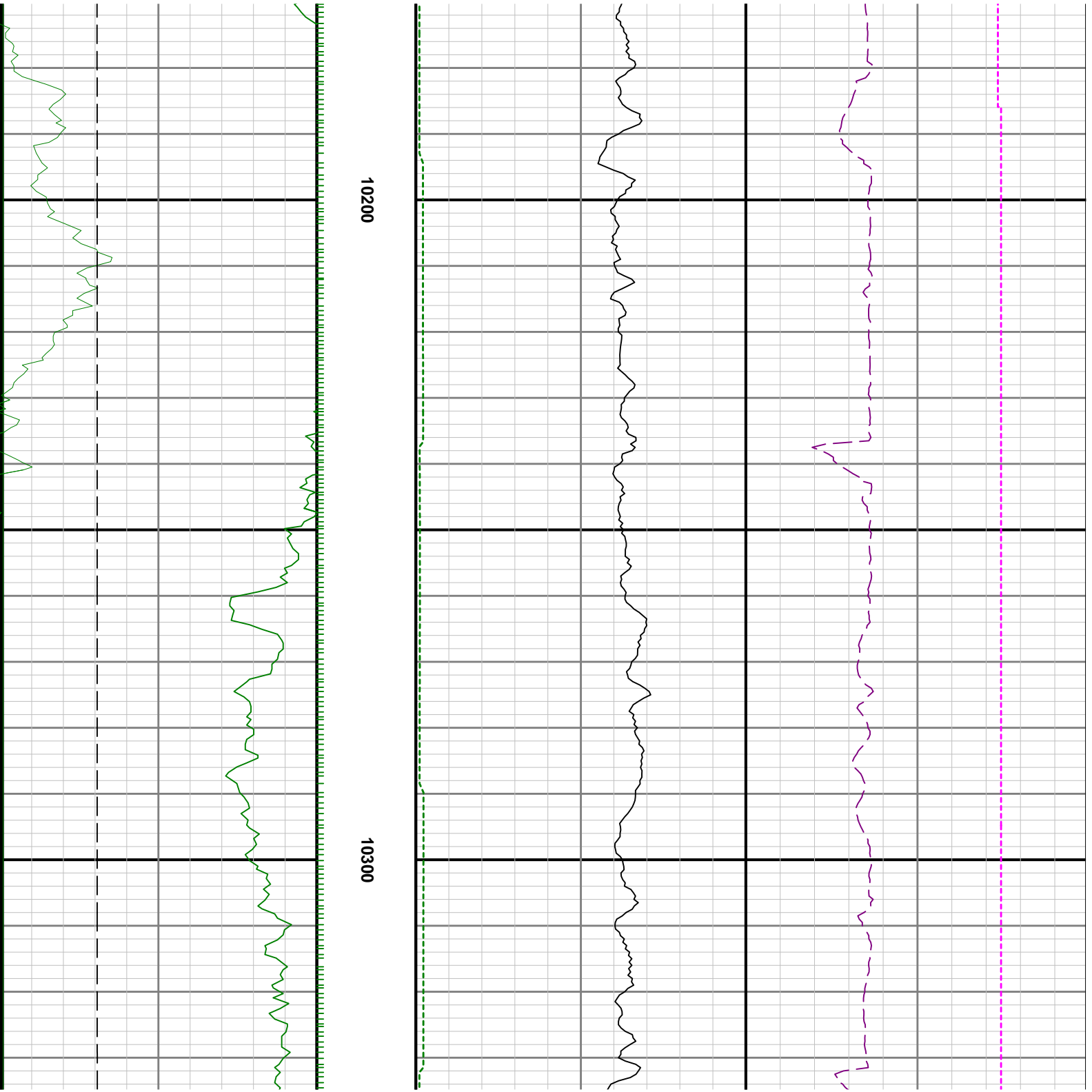
0096

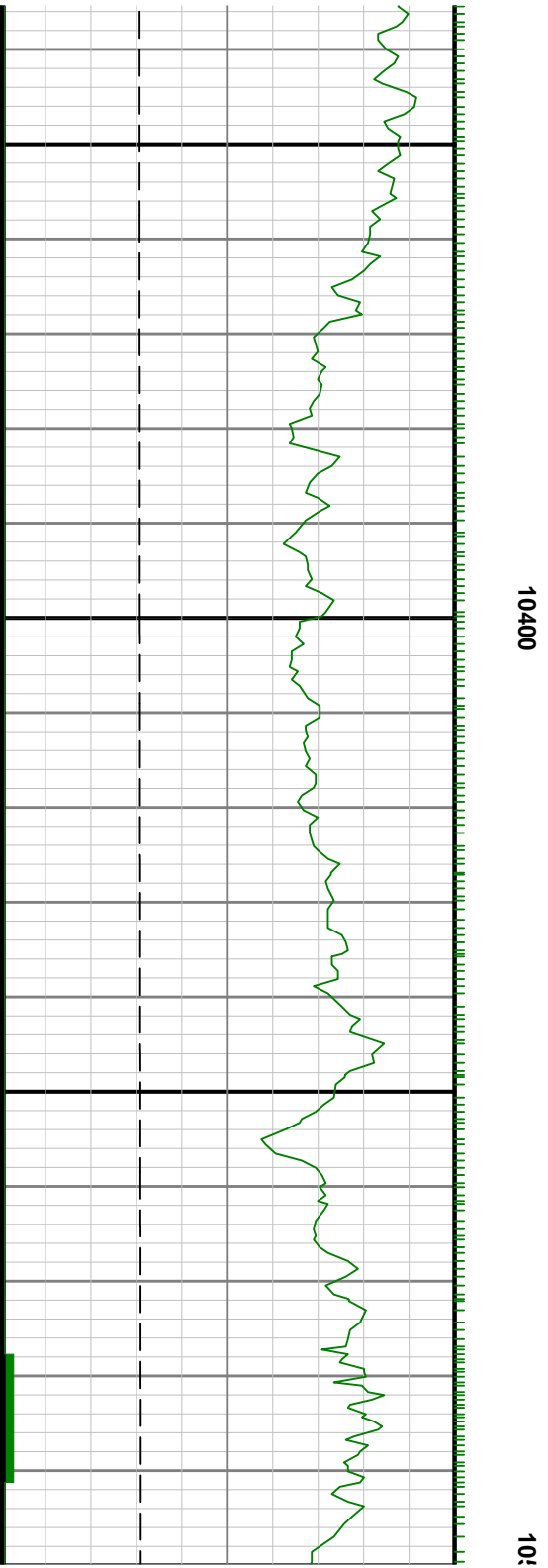


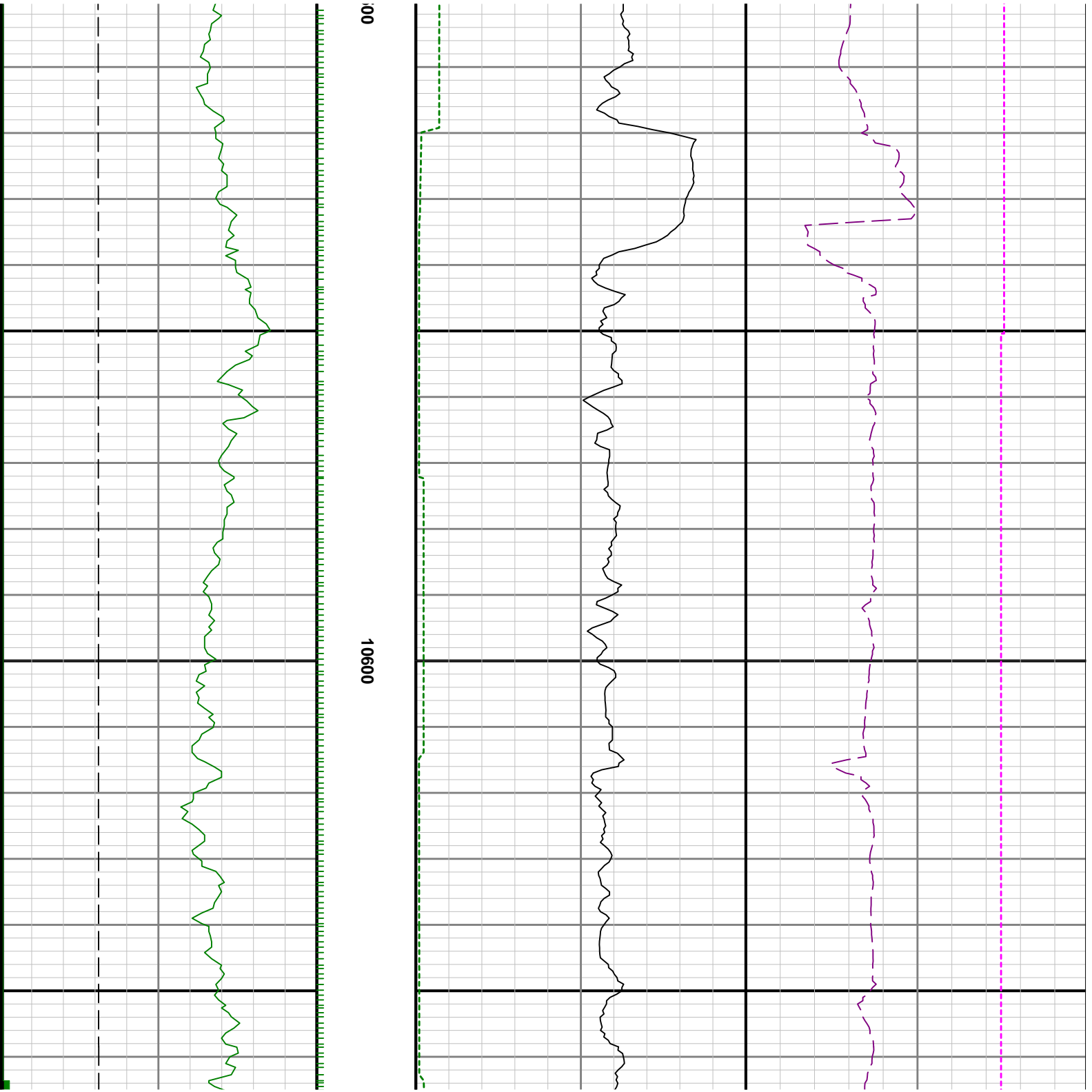


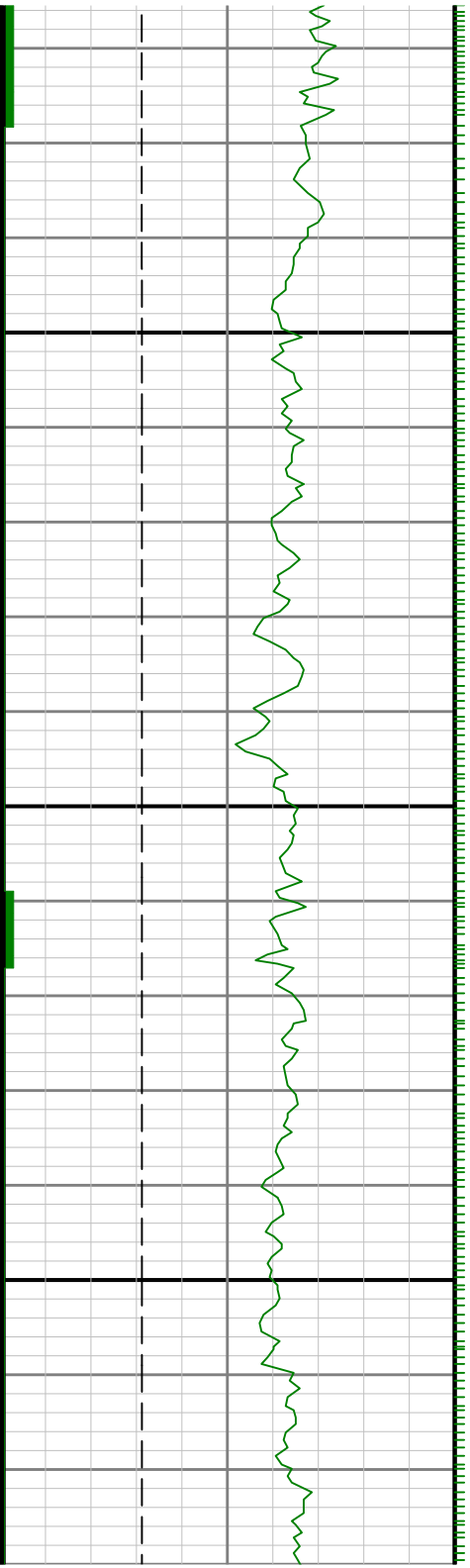






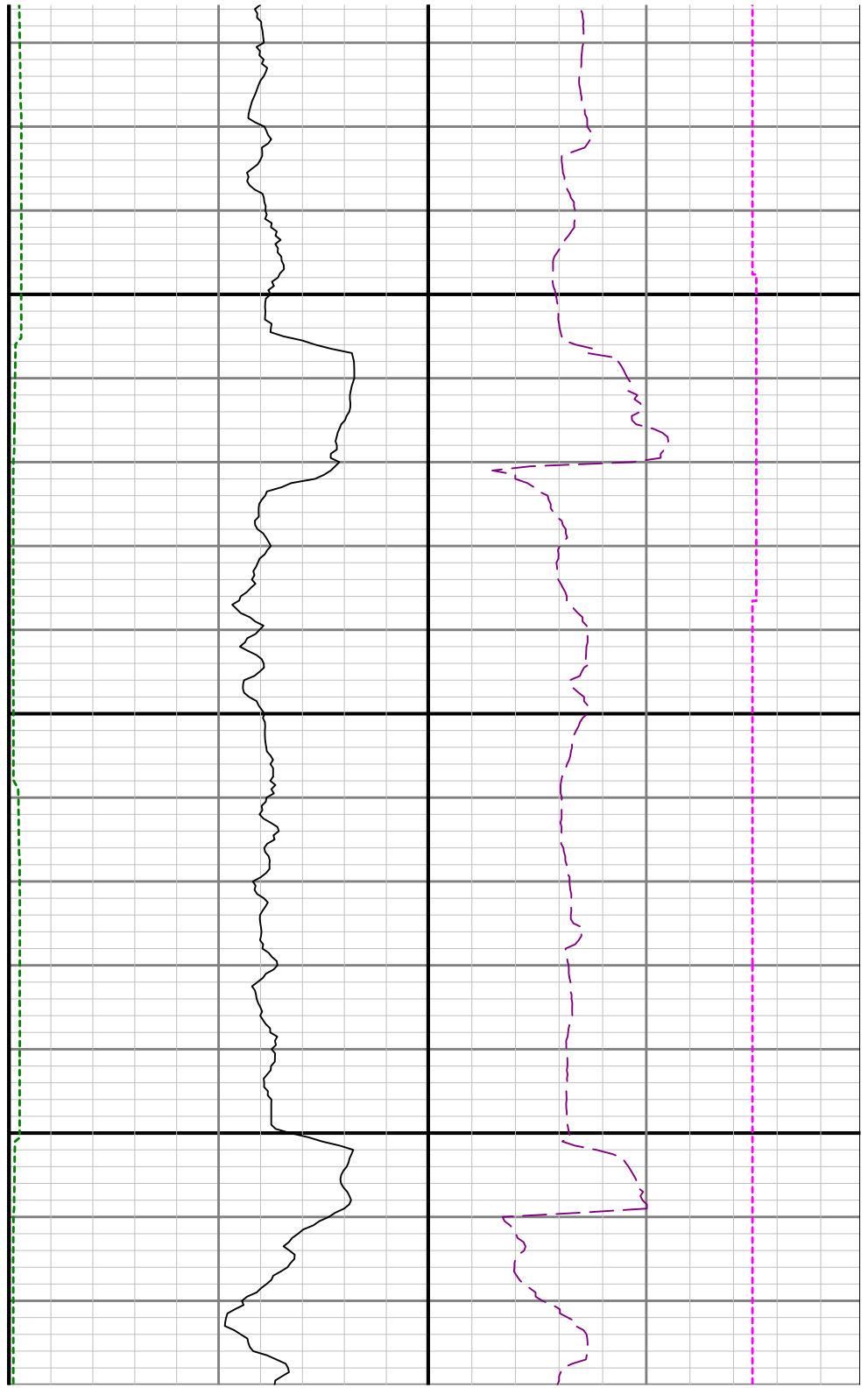


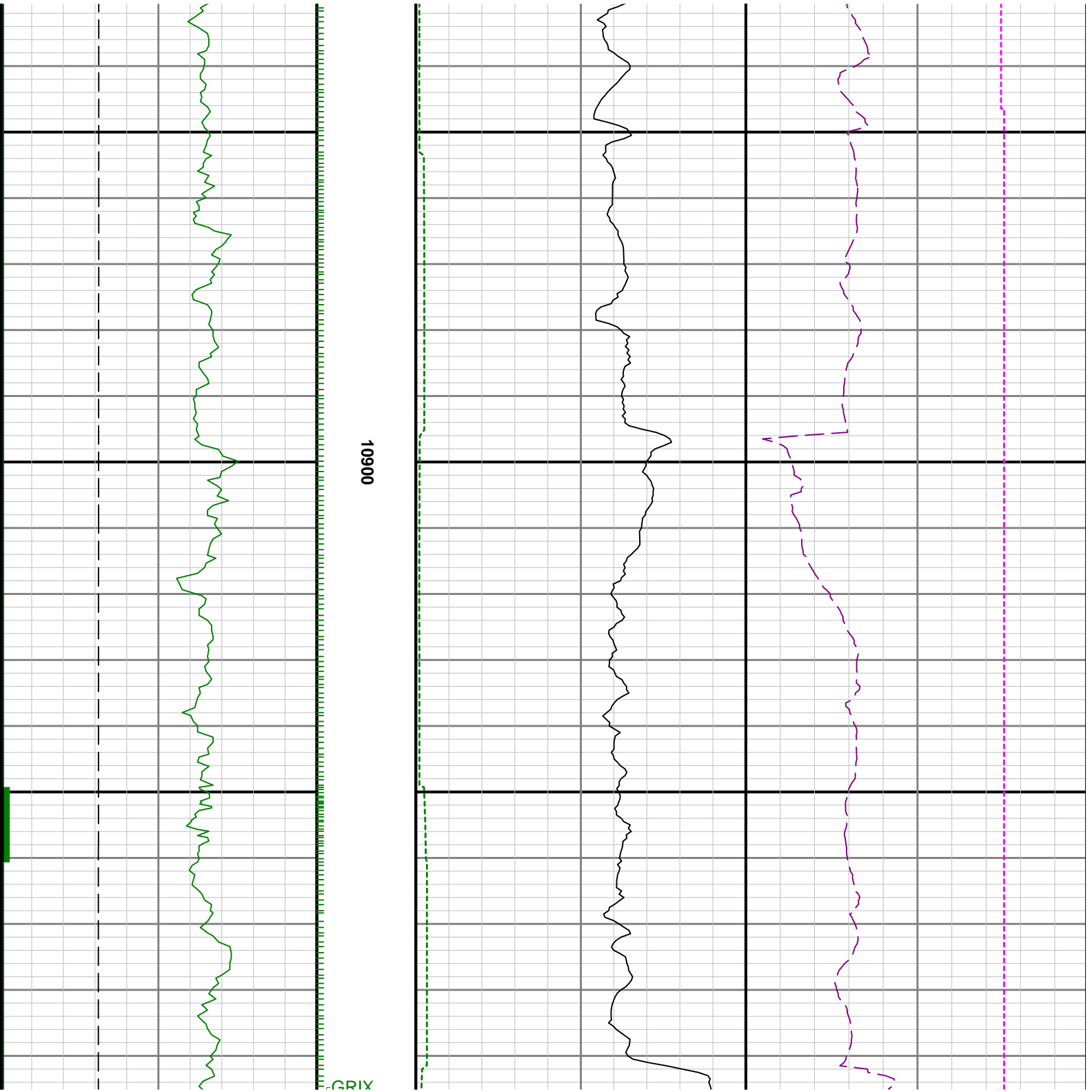


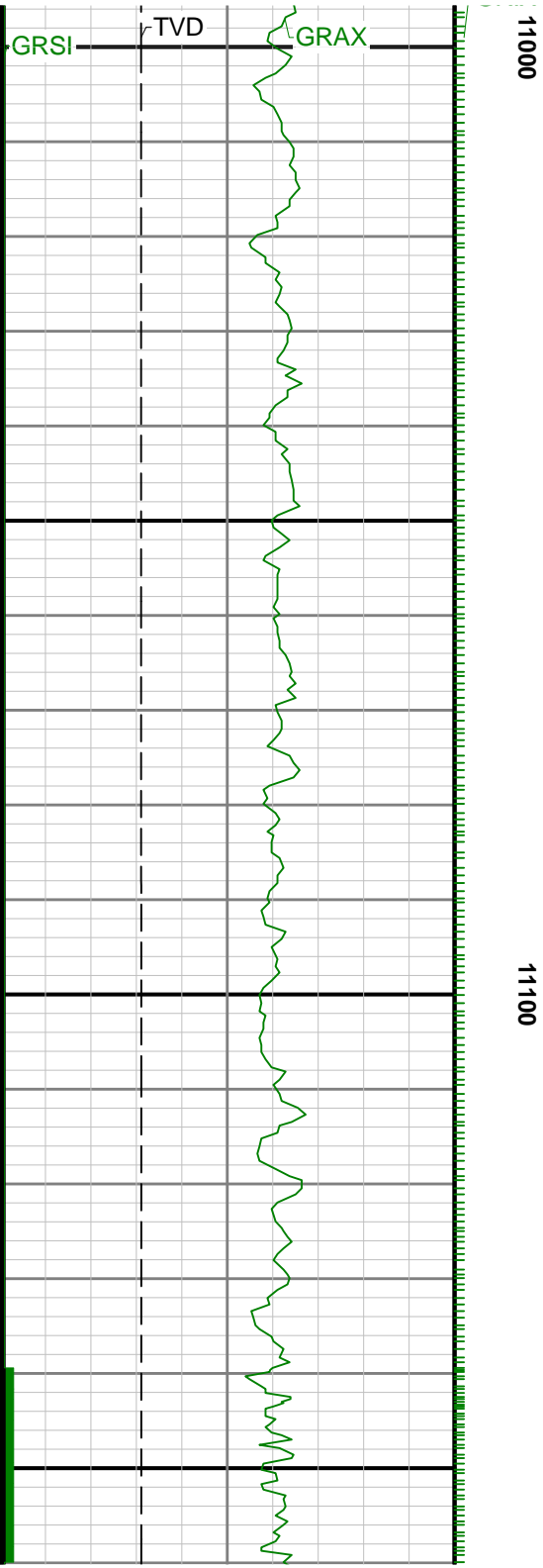


10700

10800

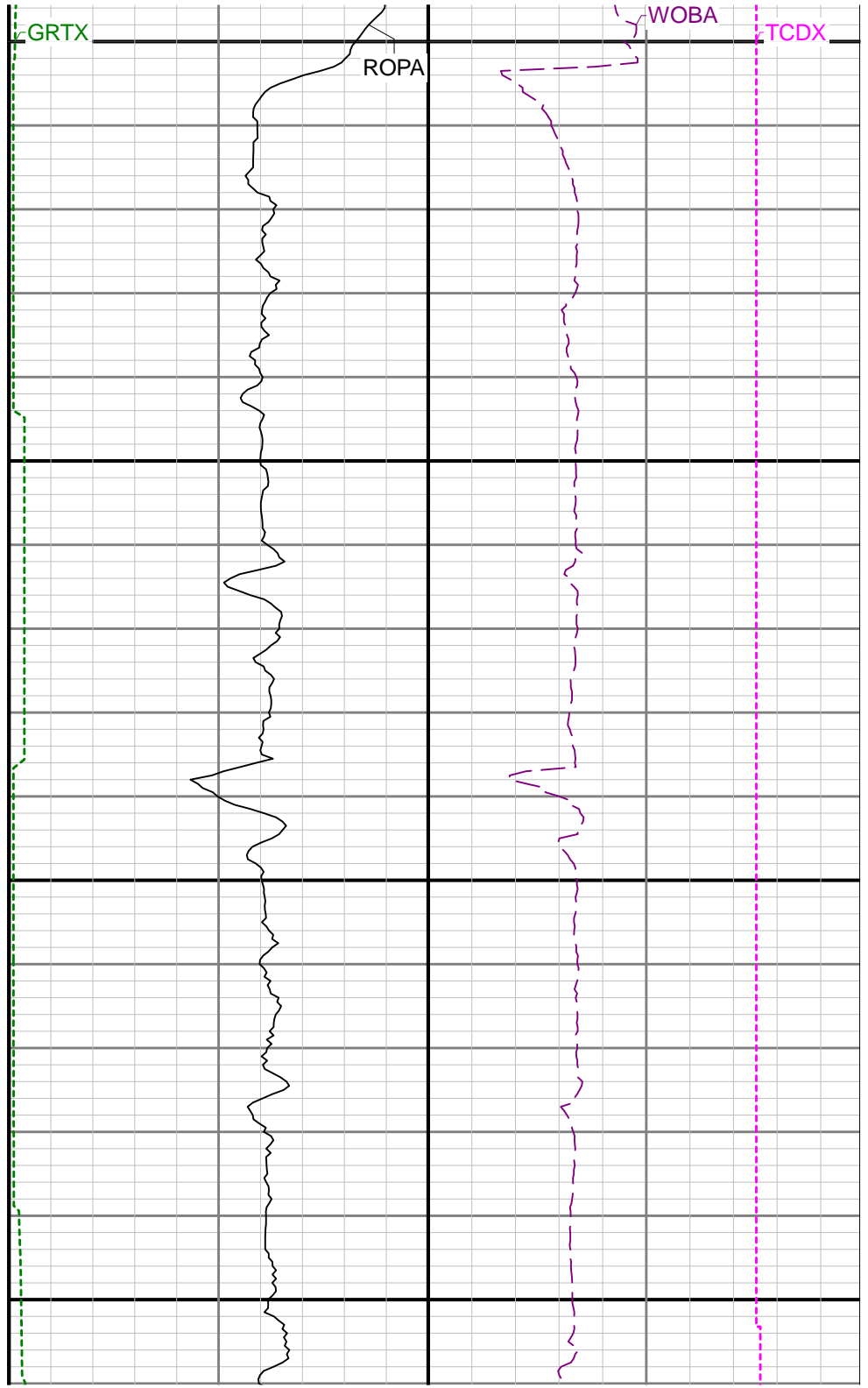






11000

11100

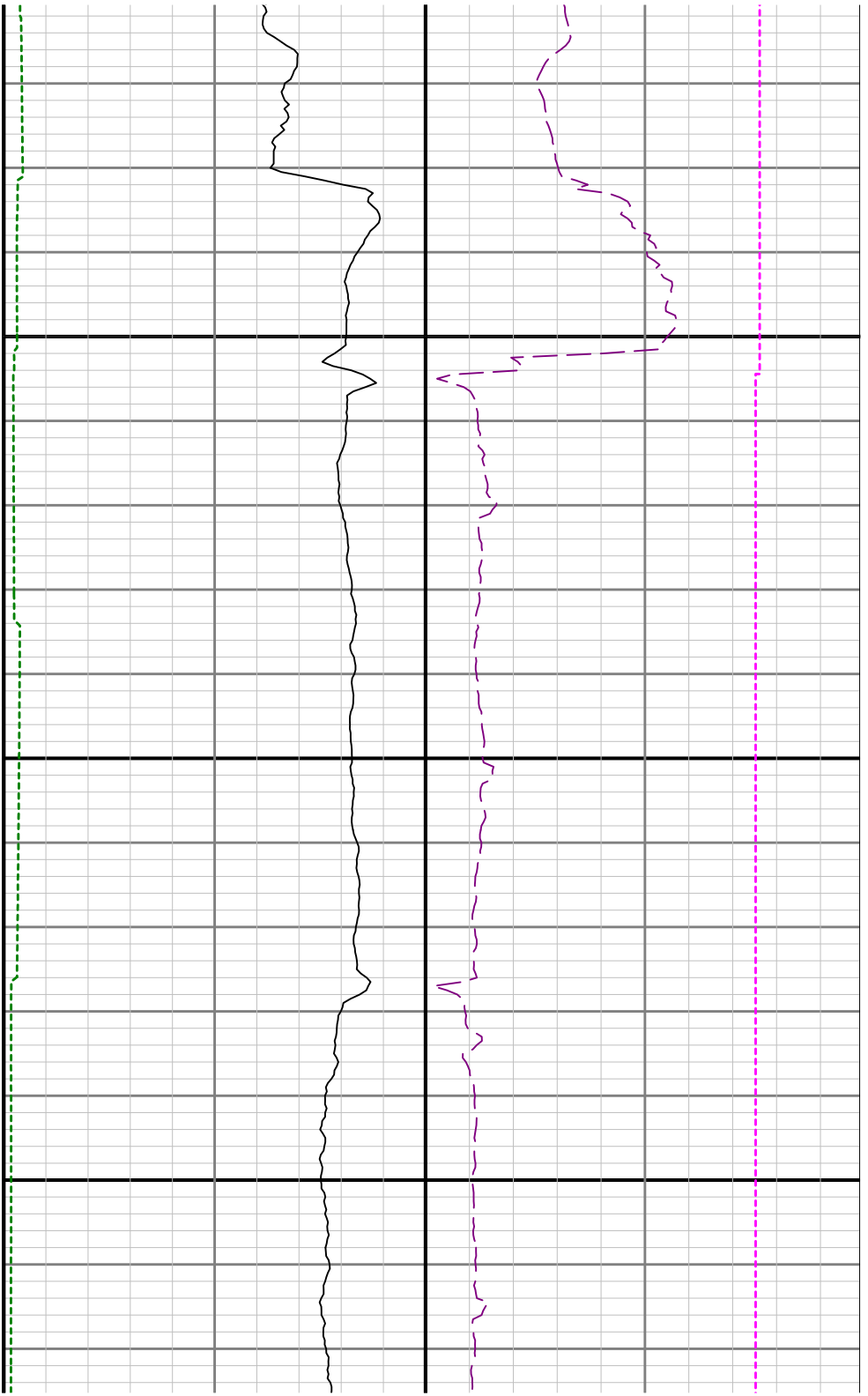


GRTX

ROPA

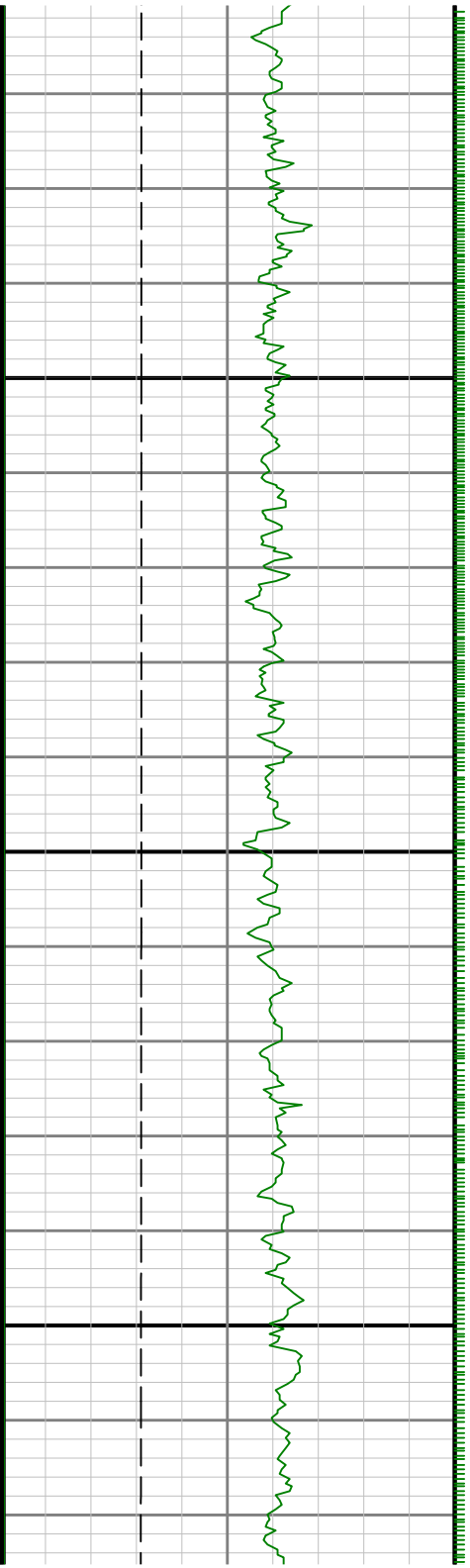
WOPA

TCDX



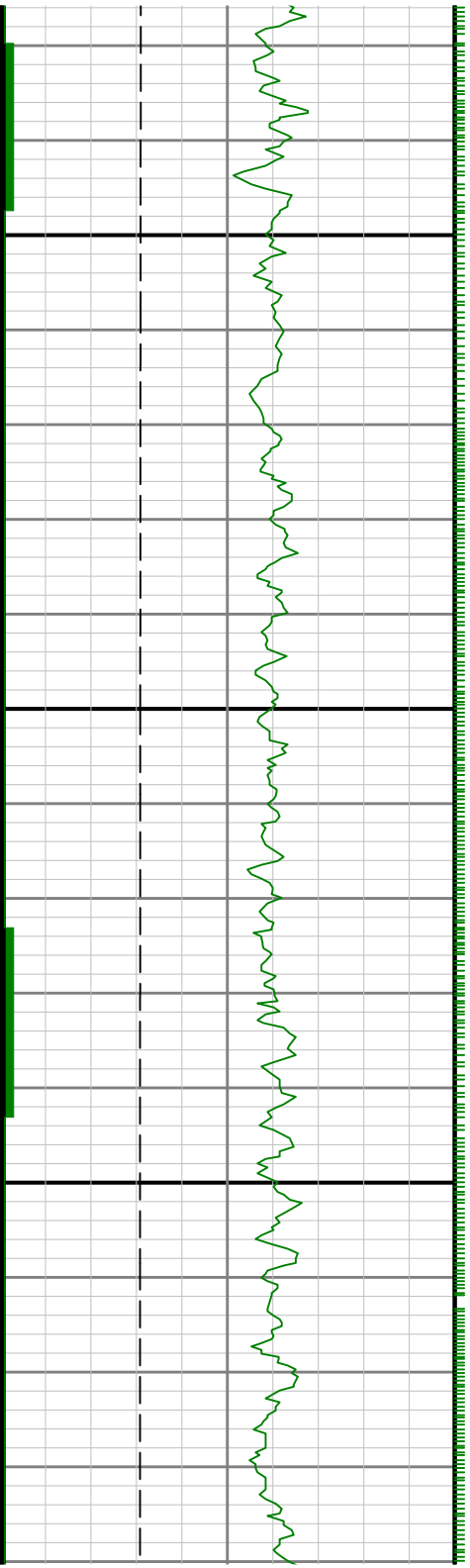
11200

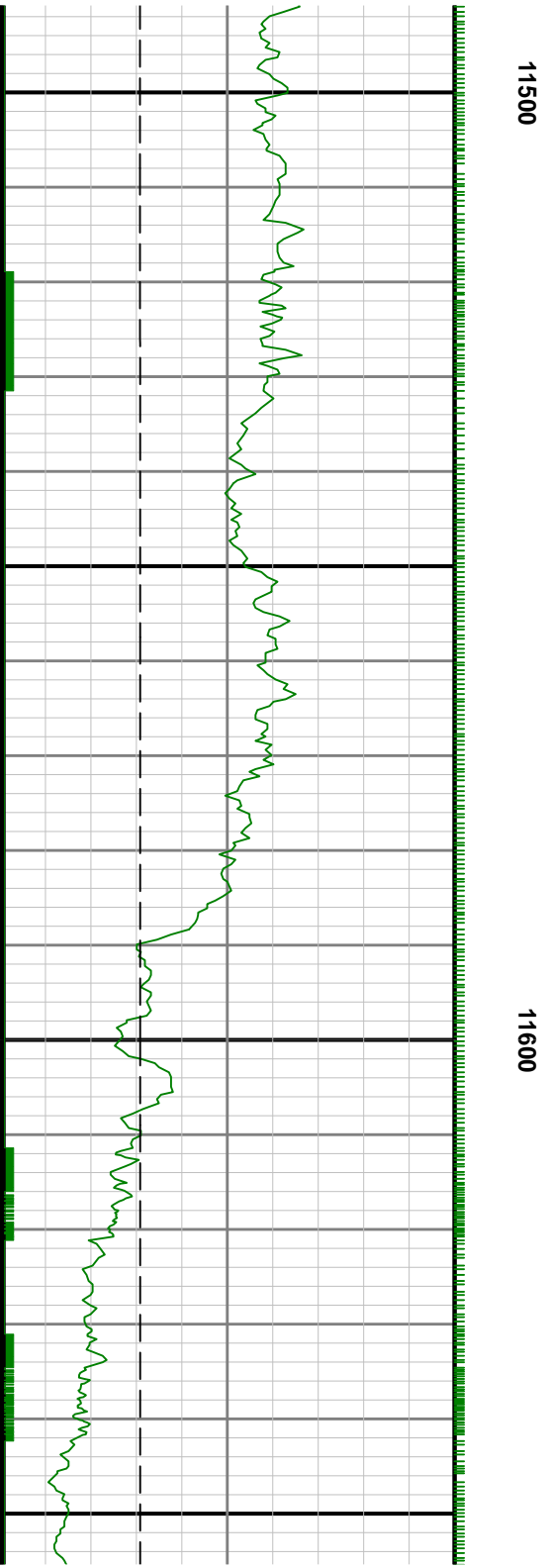
11300

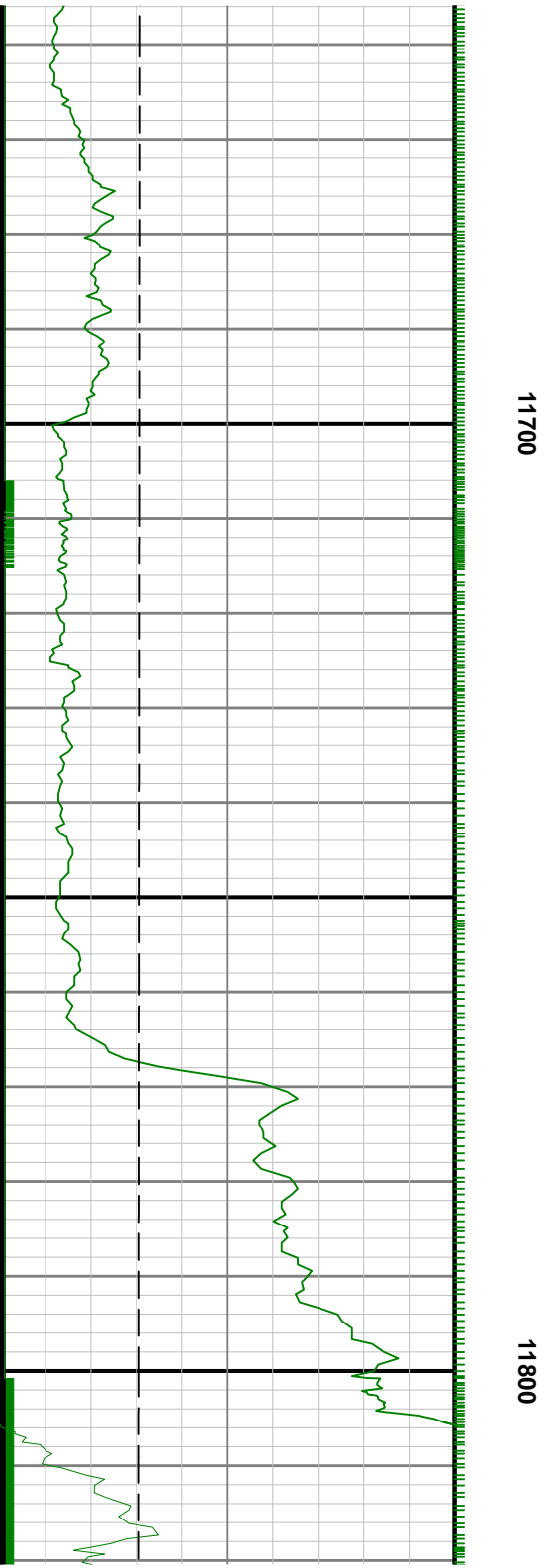
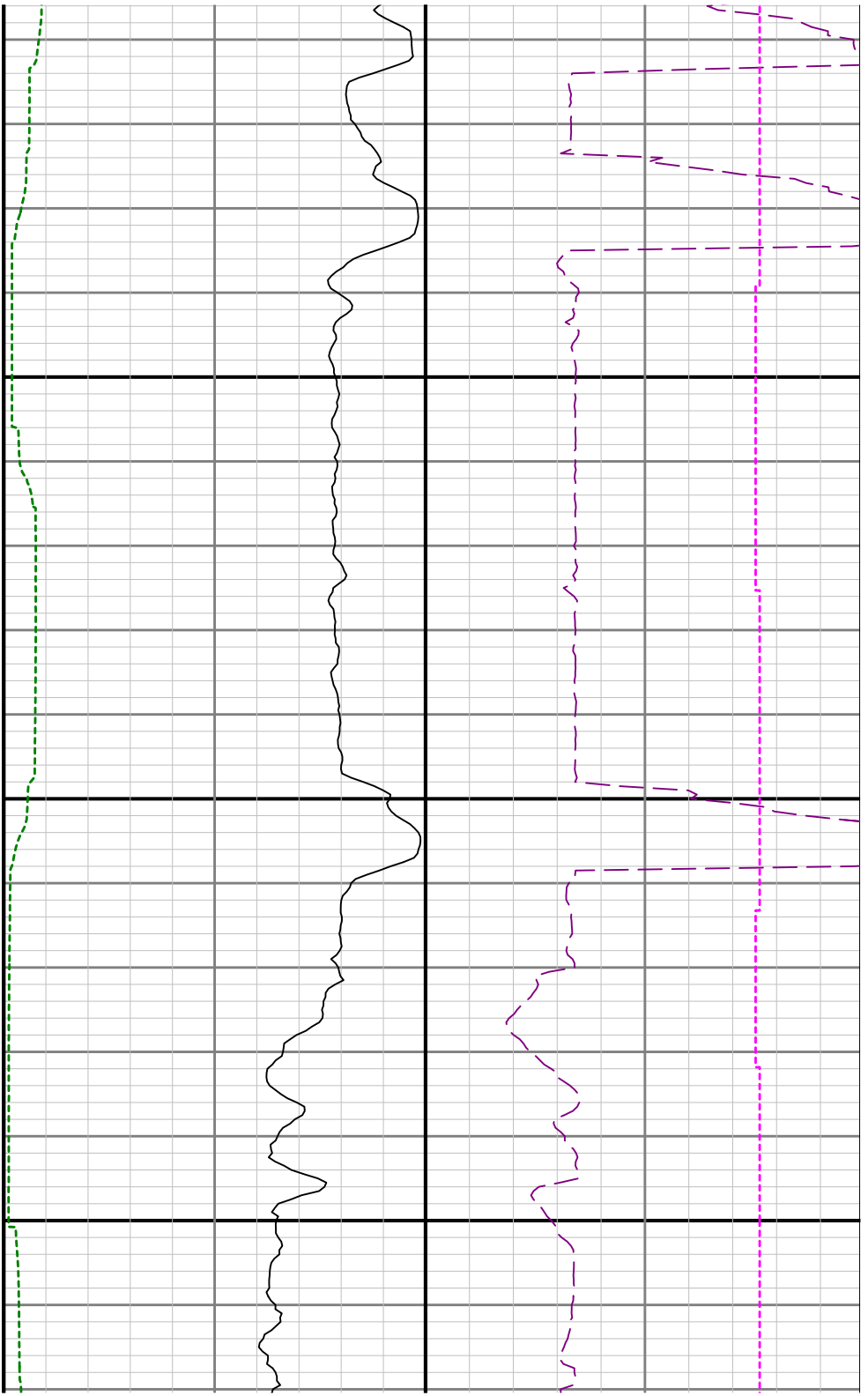


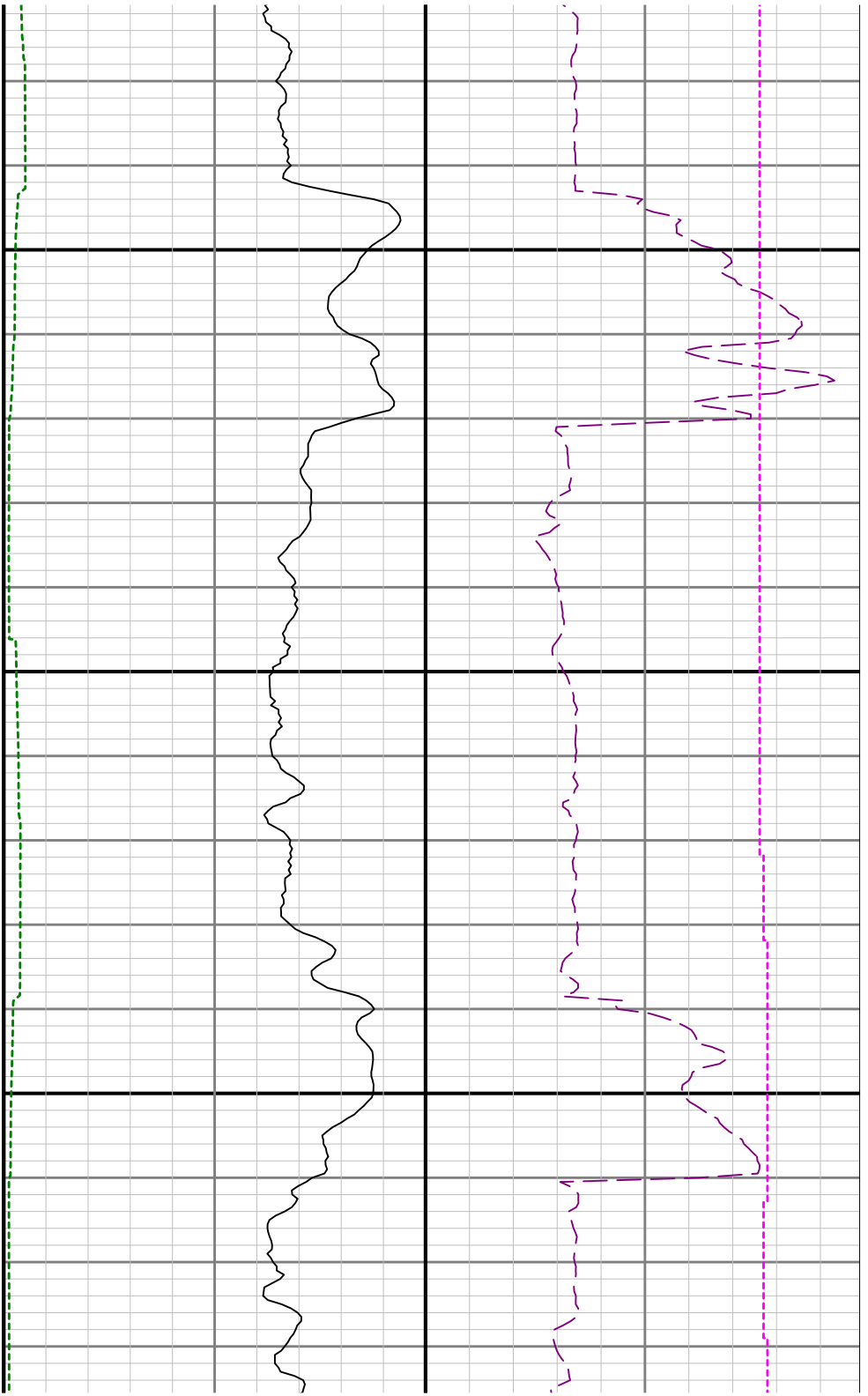


11400

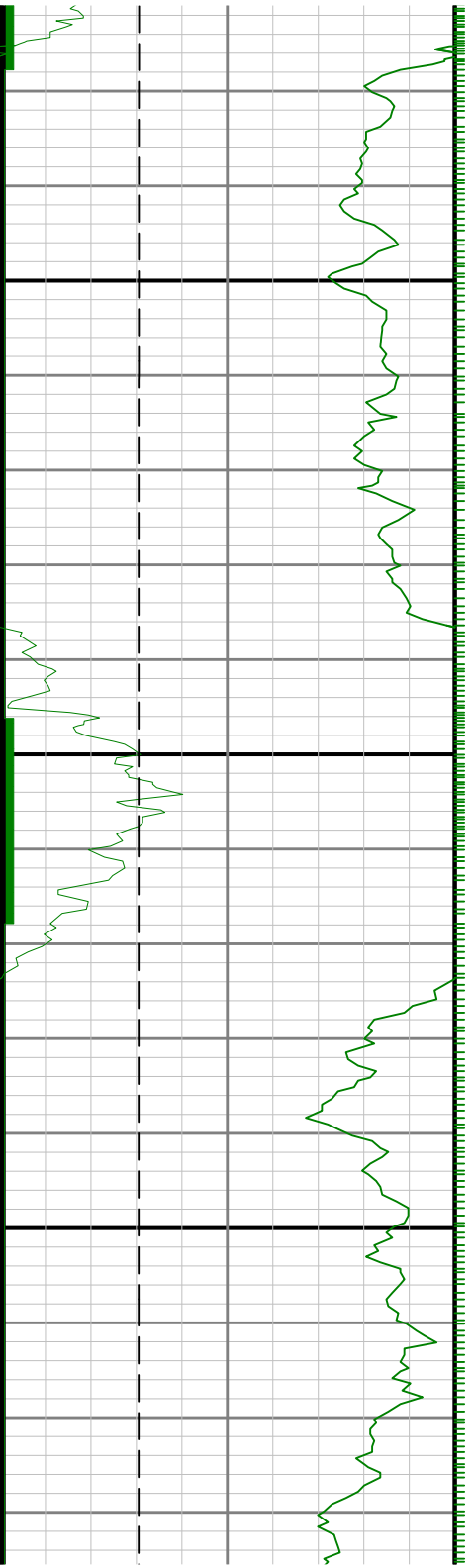


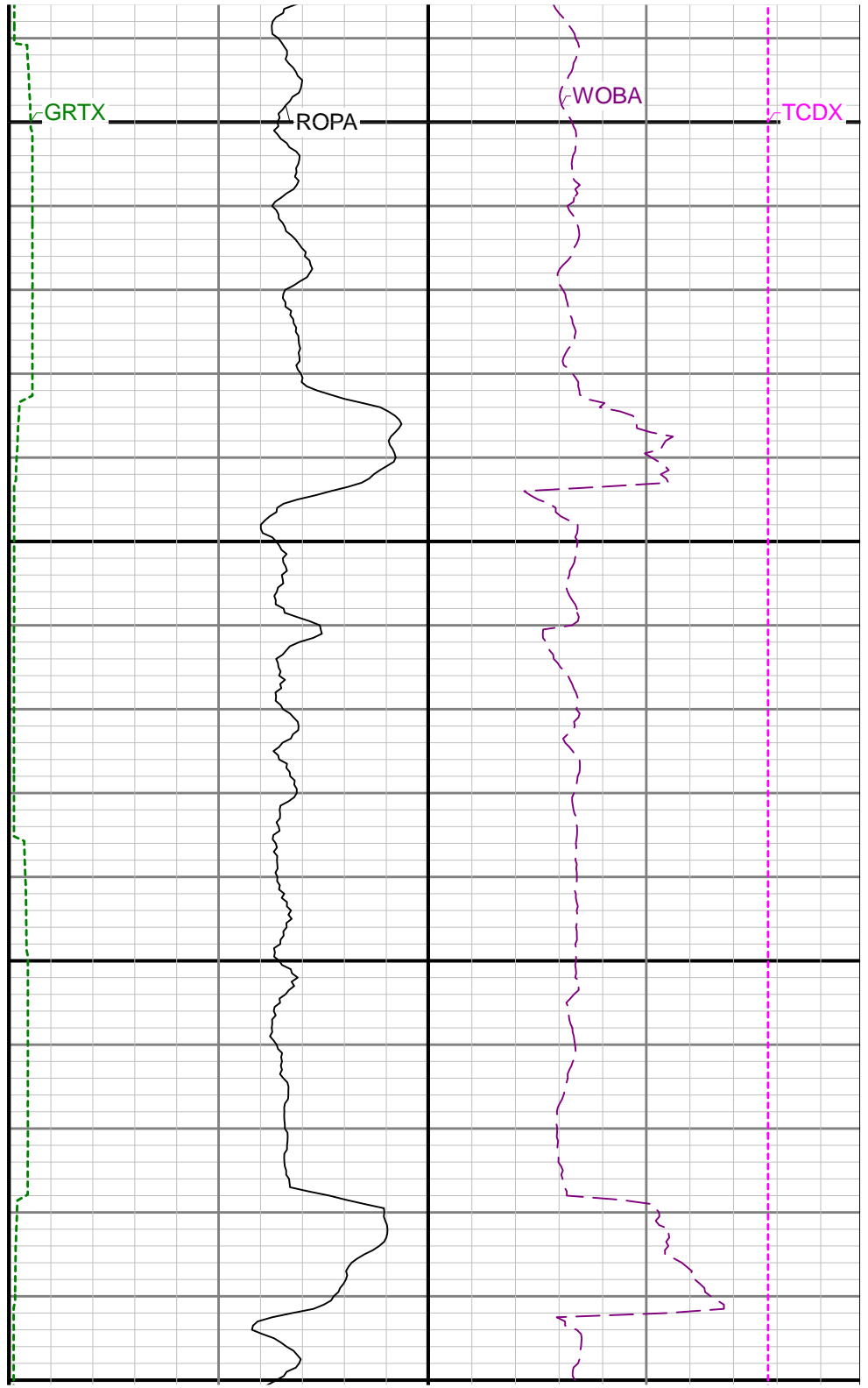
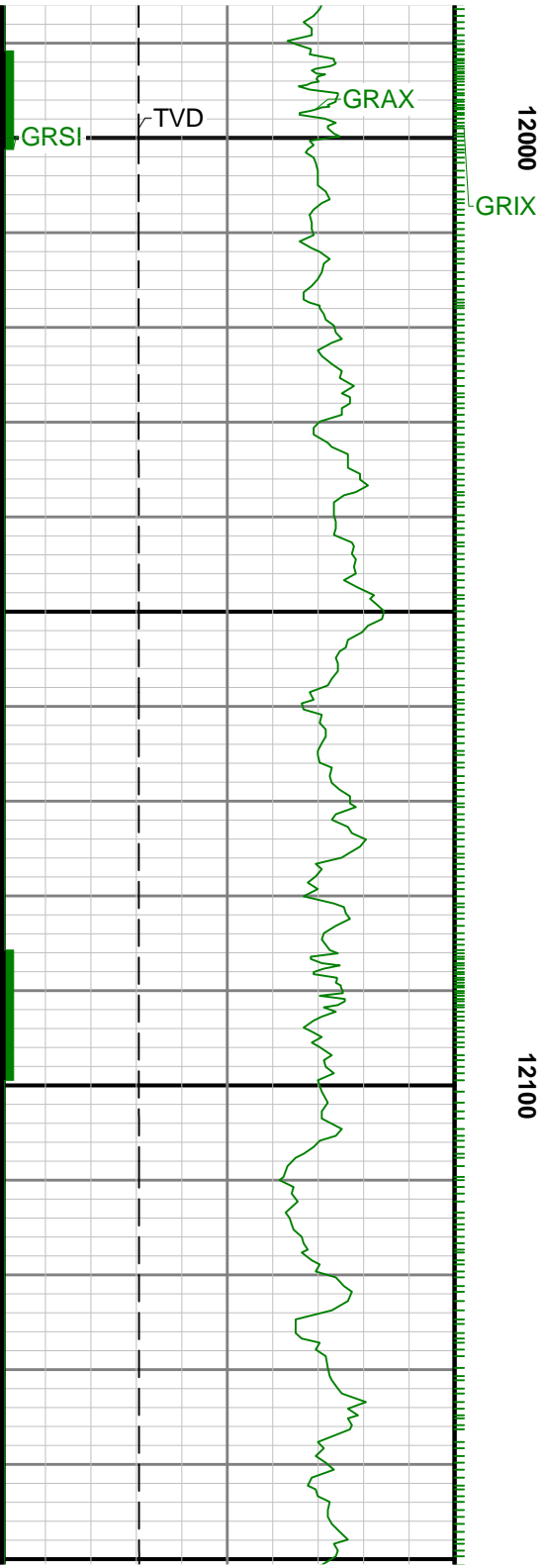


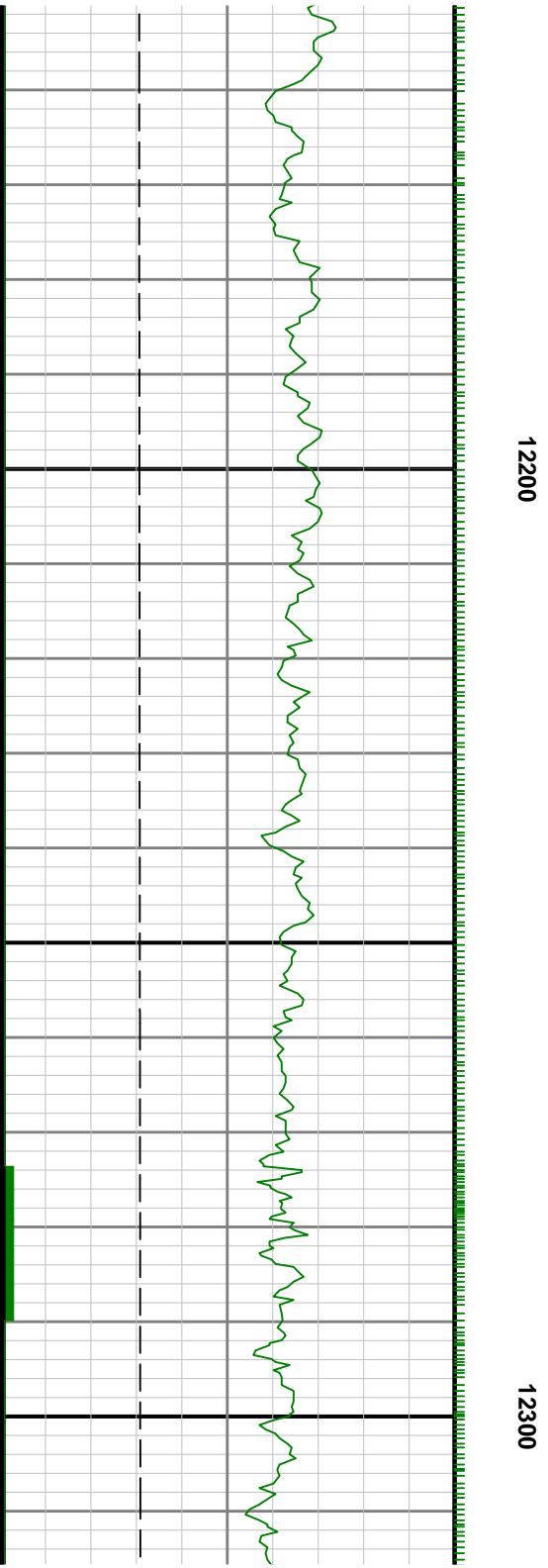
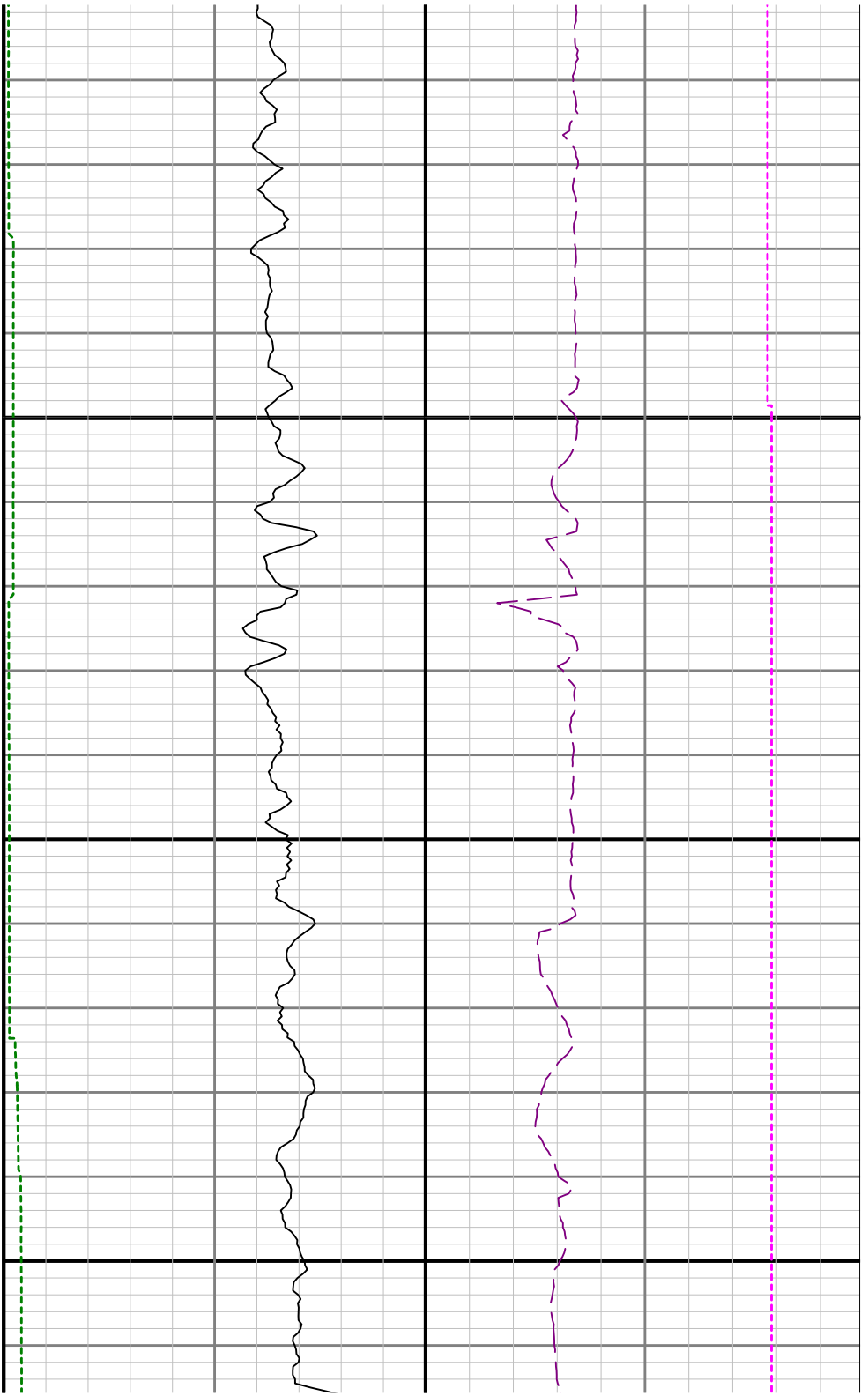




11900

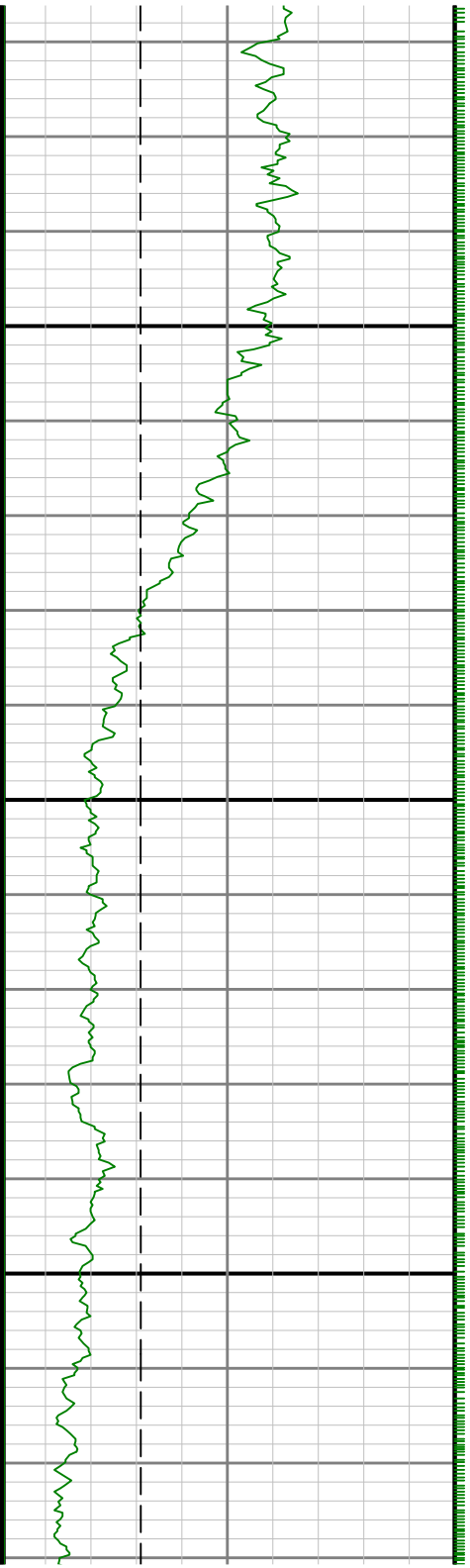


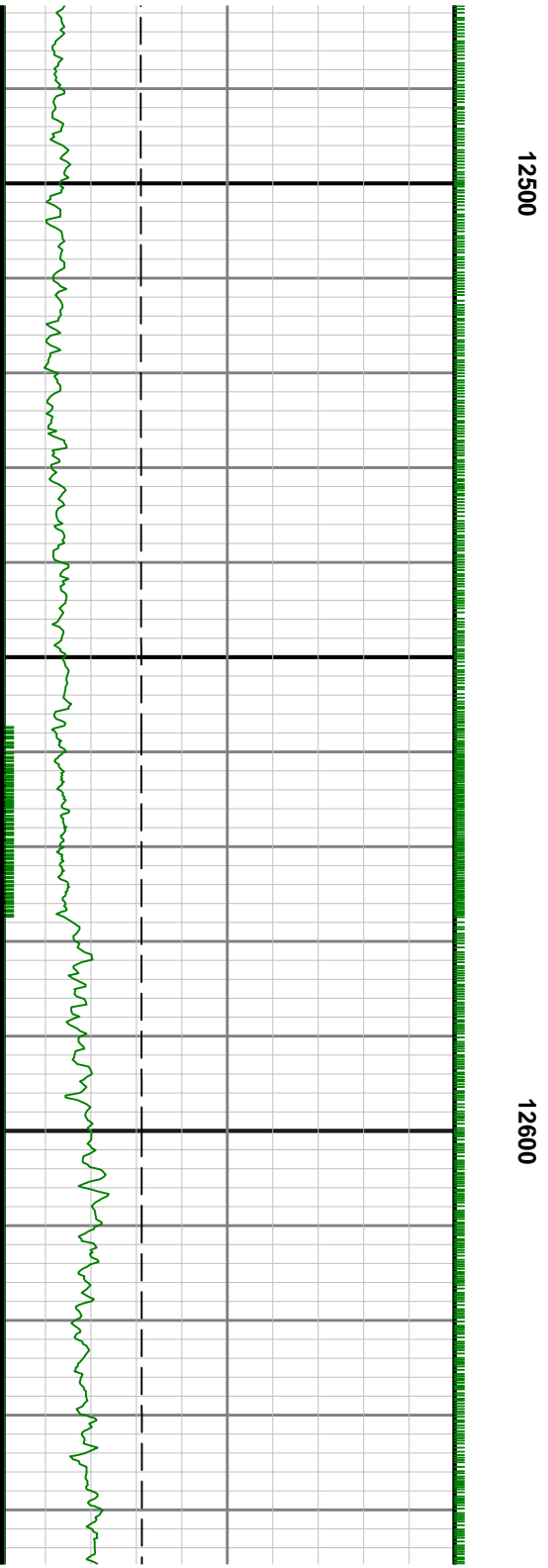
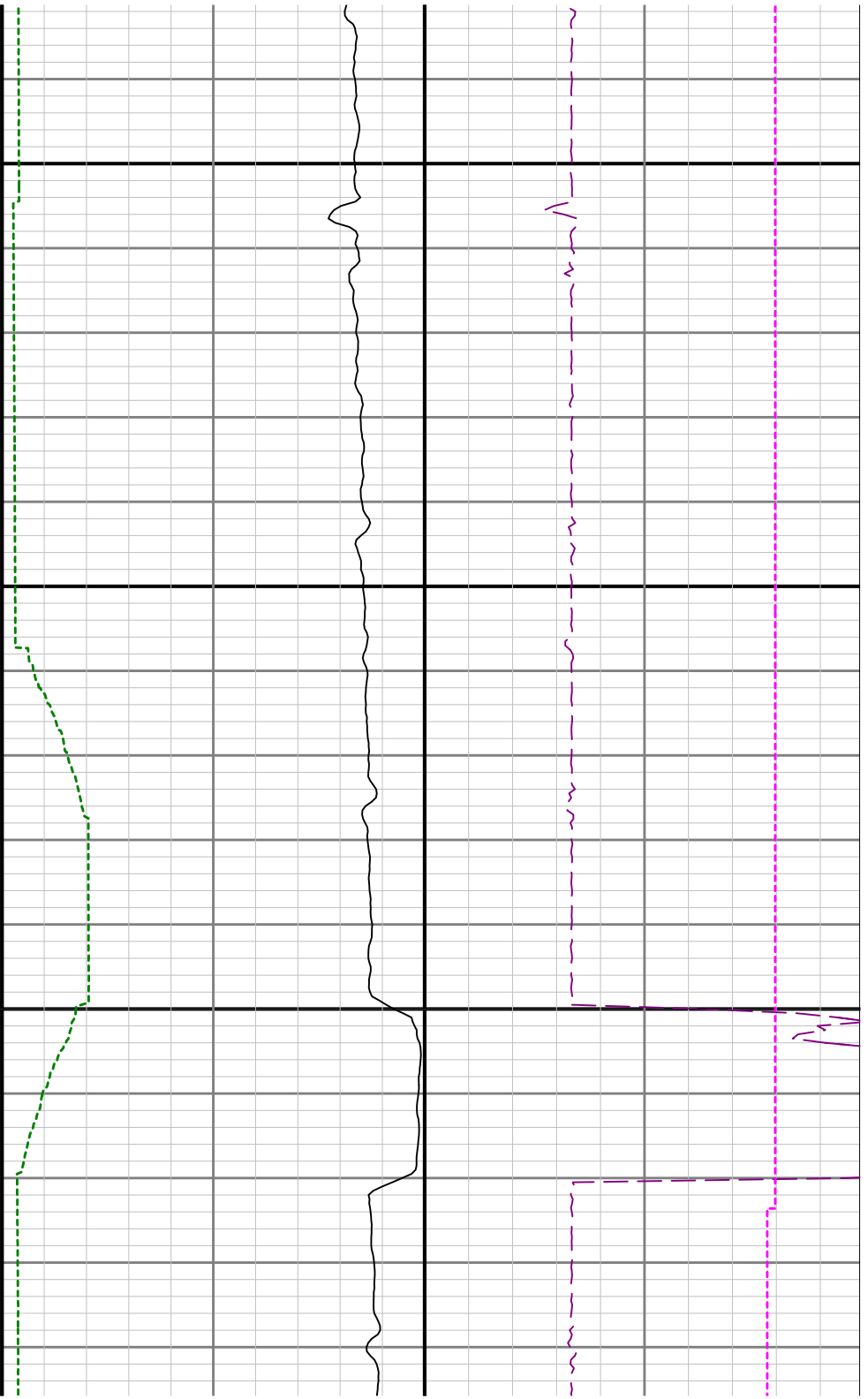


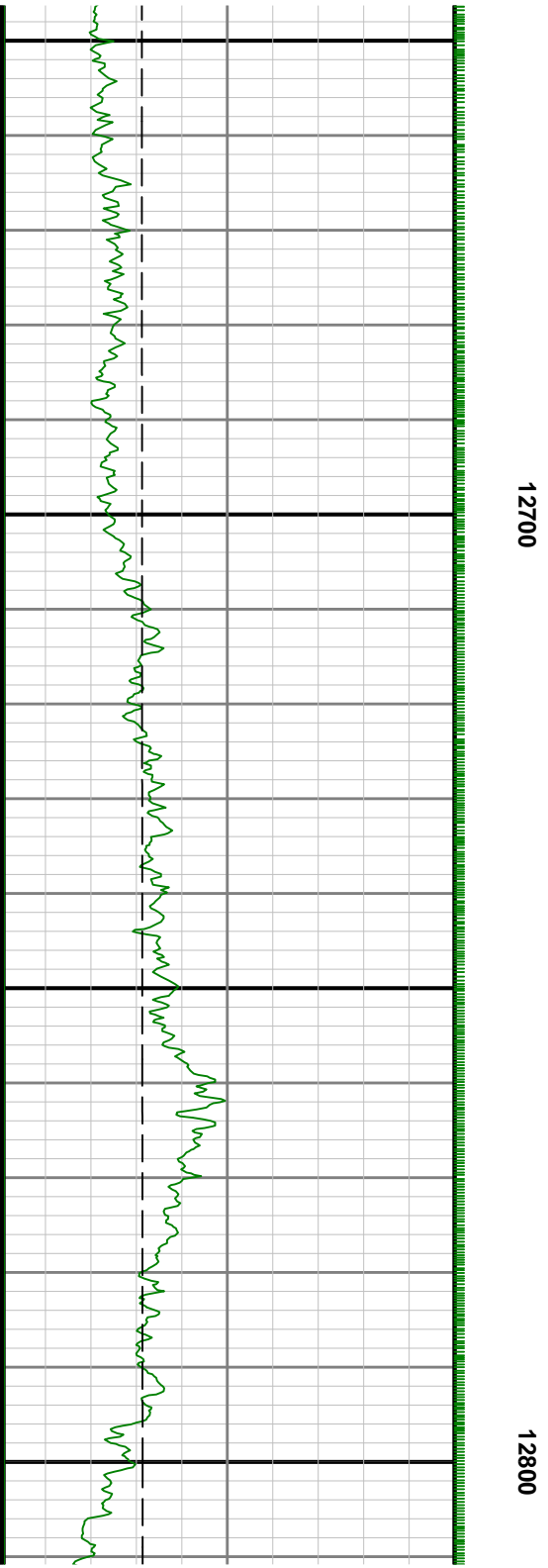
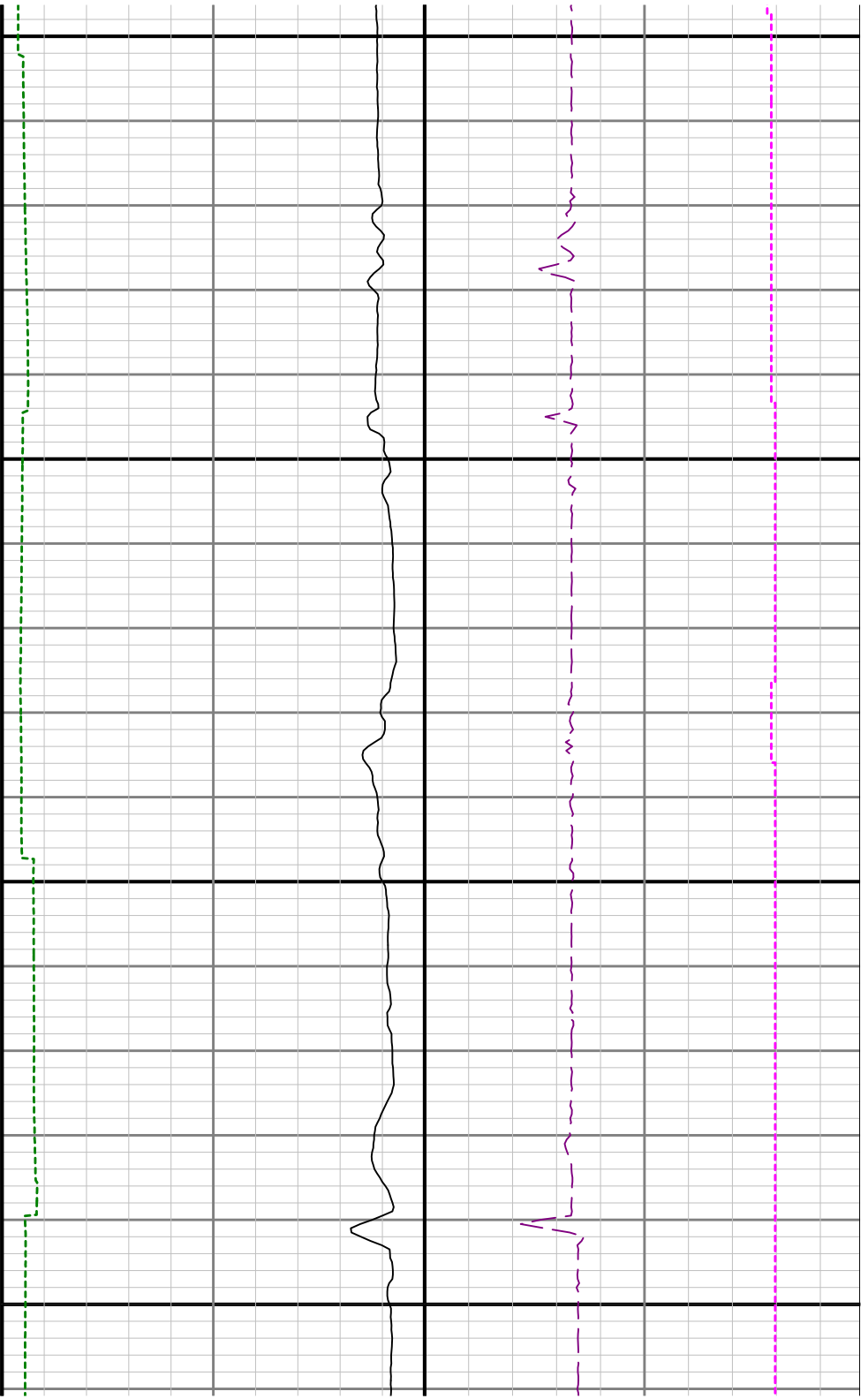


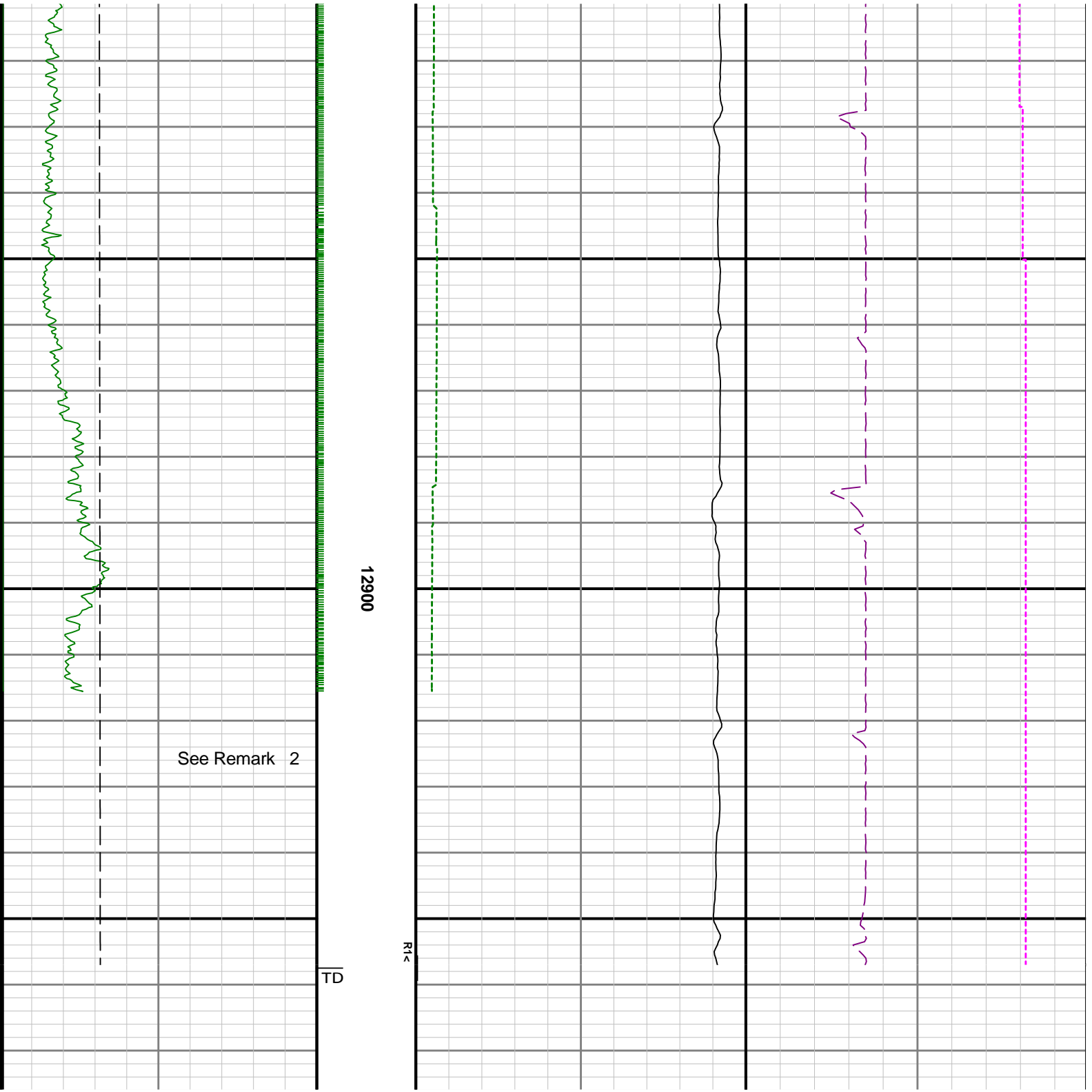


12400









<div> <div>Gamma Ray Apparent 0.5 ft Average GRAX</div> <div>0150</div> </div> <div> <div>API</div> <div>80006400</div> <div>ft</div> </div>	MD 1:240 feet	<div> <div>Rate of Penetration 3 ft Average ROPA</div> <div>10000</div> </div> <div> <div>ft/h</div> <div>0600</div> <div>min</div> </div>	<div> <div>Surface Weight On Bit 1 ft Average WOBA</div> <div>0100</div> </div> <div> <div>klb</div> <div>0300</div> <div>degF</div> </div>