



LWD REALTIME/MEMORY LOG

Gamma Ray

Scale:	Company: Anadarko	
1:240 MD	Well:	Speak Fed 32N2-5HZ
Depth Reference:	Field:	Wattenberg
Driller's Depth	County:	Weld
State:	Colorado	Country: United States
Status:	Surface Location:	Other Services:
Final Print	Latitude:	
API No: 512345461	Longitude:	Directional
Job ID: 8974533		
Permanent Datum (P.D.):	Ground Level	Elevation: 4955.00 ft
Log Measured From:	Rig Floor	Above P.D. 21.00 ft
		Elev. KB: N/A
		Elev. DF: 4976.00 ft
		Elev. GL: 4955.00 ft
Dates	Interval Logged	Magnetic Field Reference
Date From: 2018-02-13	Top: (ft) 1883.00	Azi Reference North: True
Date To: 2018-02-17	Bottom: (ft) 18591.00	Total Magnetic Field Strength: (nT) 52466
Spud Date: 2018-02-13		Mag to Reference North Correction: (deg) 8.18 E
Borehole Record		
Hole Size (in)	From (ft)	To (ft)
13.500	21.00	1883.00
8.500	1883.00	18591.00
Mud Record		
Type	From (ft)	To (ft)
Oil Based Mud	1883.00	18591.00
Deviation Record		
	Hole Size (in)	Interval (ft)
	8.500	16708.00
		19.91 353.59
		1.29 18.23
Acquisition System		
Baker Hughes Cadence	Software Version RT4.1	Rig: Precision 464
PlotStudio	4.1.7763.3	Contractor: Precision Drilling
		District: RMA
		Unit: D & E

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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	2.50	Rotary Steerable	1883.00	6644.00	1883.00	6702.00	2018-02-13 12:21	2018-02-14 09:30	19.28
2	1	8.500	PDC	2.50	Rotary Steerable	6690.00	18579.00	6702.00	18591.00	2018-02-14 20:22	2018-02-17 15:00	60.22

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Alexis Bejarano	2018-02-13	2018-02-18	Mohammad Odetallah	2018-02-13	2018-02-18	Wayne Burje	2018-02-13	2018-02-18

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+ (%)
2018-02-13 05:00	1	1833.00	Oil Based Mud	9.4	18	N/A	3.6	78/22	Active Pit	29815	0.00
2018-02-14 05:00	1	6416.00	Oil Based Mud	9.2	16	N/A	3.6	76/24	Active Pit	31853	0.00
2018-02-15 05:00	2	8048.00	Oil Based Mud	9.3	17	N/A	3.8	77/23	Active Pit	30888	0.00
2018-02-16 05:00	2	12755.00	Oil Based Mud	9.4	17	N/A	3.2	80/20	Active Pit	30888	0.00
2018-02-17 05:00	2	17111.00	Oil Based Mud	9.4	20	N/A	3.0	78/22	Active Pit	29923	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	12662918	Gamma (single)	7.09	57.89	6.500	3.250
1	NaviGamma	12662918	Directional (mag)	10.55	61.35	6.500	3.250
1	NaviGamma	12662918	VSS	10.55	61.35	6.500	3.250
2	ATC_SU	14192925	Near Bit VSS	5.93	6.71	7.000	4.330
2	ATC_SU	14192925	Near Bit Inclination	5.93	6.71	7.000	4.330
2	ATC_MWD	12168749	Gamma (single)	2.17	12.33	7.000	3.250
2	ATC_MWD	12168749	Directional (mag)	12.27	22.43	7.000	3.250

Service and Tool Mnemonics

Mnemonic	Name	Description
GAM	NaviGamma	Probe Based Gamma Module, NaviTrak Platform
ATC_SU	ATC_SU	Auto Trak Curve Steering Unit
ATC_MWD	ATC_MWD	Auto Trak Curve MWD
ATC_LCPM	ATC_LCPM	Auto Trak Curve LCPM

Comments


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.
2	Baker Hughes LWD run 1 and run2 utilized a 6.75 inch NaviGamma service (Directional and Gamma Ray) behind a 8.5 inch bit and rotary steerable assembly from 1883 to 18591 feet MD (1841 to 7333 feet TVD).
3	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.
4	Gamma Ray (GRAX and GRAM) scales is presented 0 to 200 API per customer request.
5	There are numerous gaps throughout the log due to surveying while on bottom drilling ahead.

Remarks

Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	1883.00	8.500	1	Baker Hughes began logging at 1883 feet MD (1841 feet TVD) as requested by the client.
2	6650.00	8.500	1	The interval from 6644 to 6690 feet MD (6564 to 6610 feet TVD) was not logged due to sensor offset from the bit.
3	6690.00	8.500	1	The interval from 6644 to 6702 feet MD (6564 to 6622 feet TVD) was logged more than 10 hours after being drilled due to a trip out of hole to pick up AutoTrak Curve assembly.
4	18591.00	8.500	2	The interval from 18579 to 18591 feet MD (7333 feet TVD) was not logged after being drilled due to sensor to bit offset at well TD.

Curve Mnemonics

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



Company Well

Interval

Created

Anadarko

Speak Fed 32N2-5HZ

Date From: 2018-02-13 12:21:19

Date To: 2018-02-17 14:59:02

2018-02-18 15:22:09

Top: 1883.00

Bottom: 18591.00

Gamma Ray - Apparent 0.5 ft Average GRAM

0200

API

MD 1:24

Depth Averaged ROP 3 ft Average ROPA

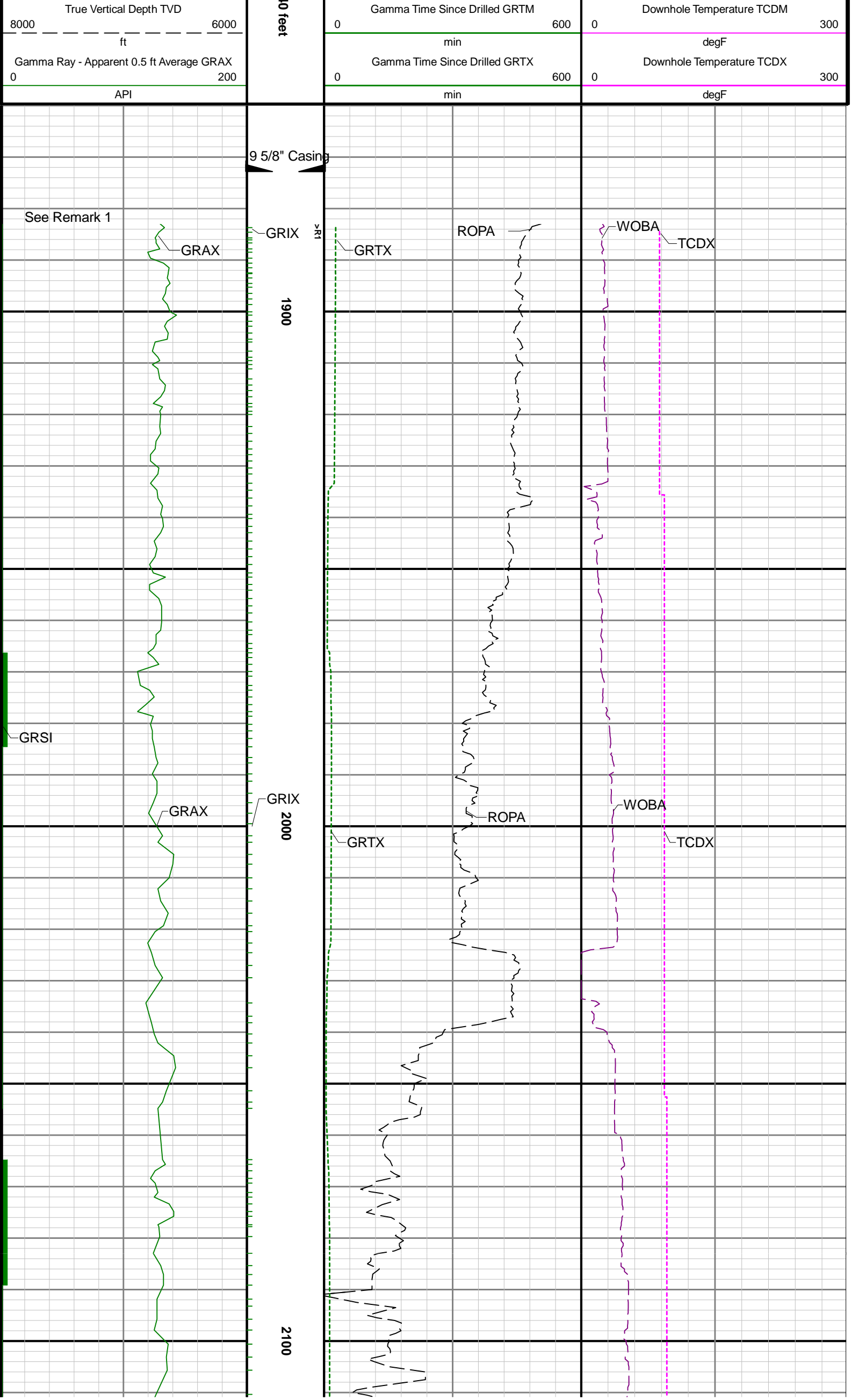
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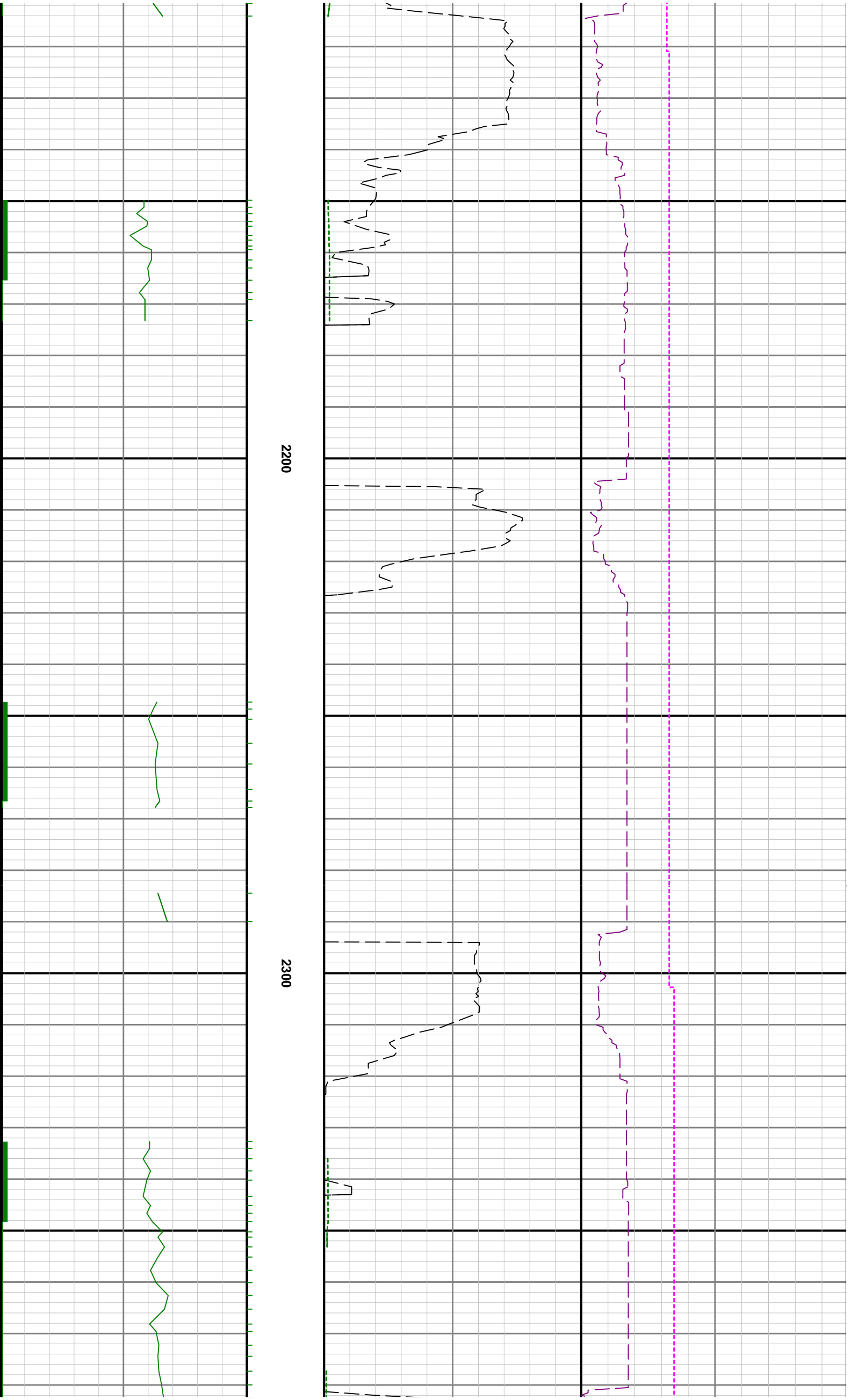
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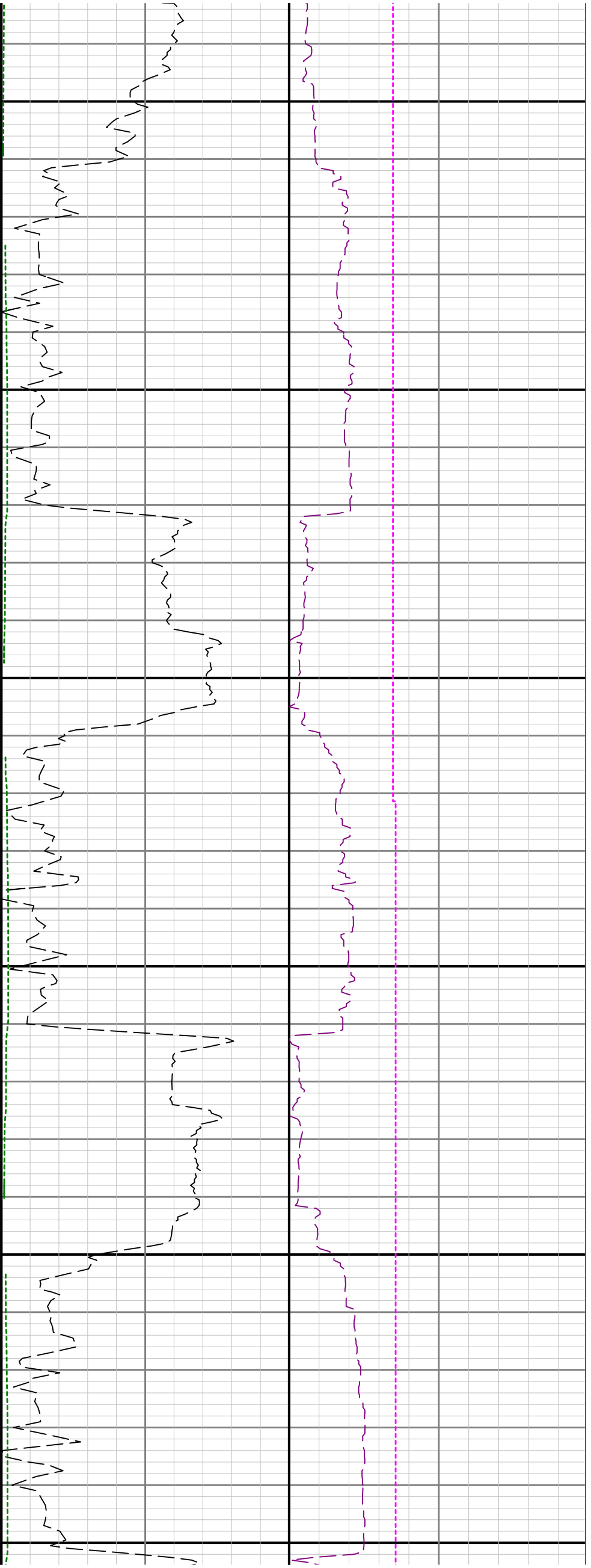
Weight On Bit, Average 1 ft Average WOBA

0150

klb



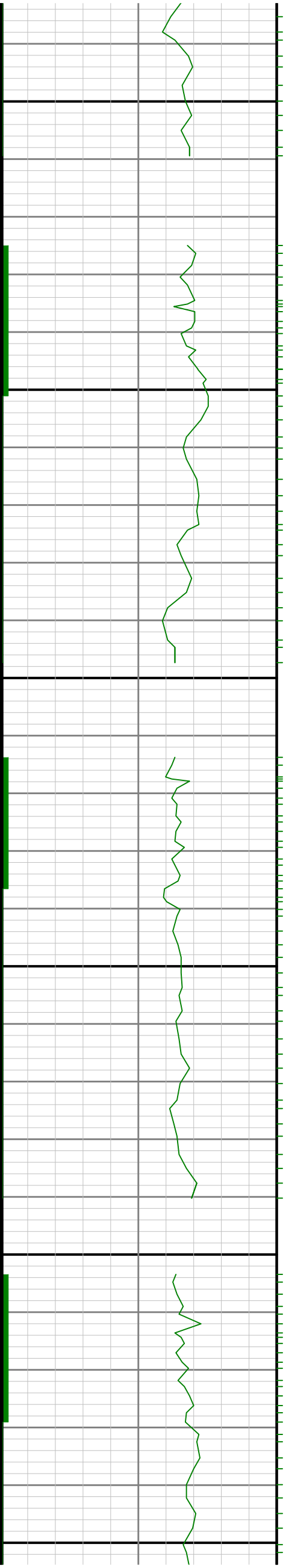


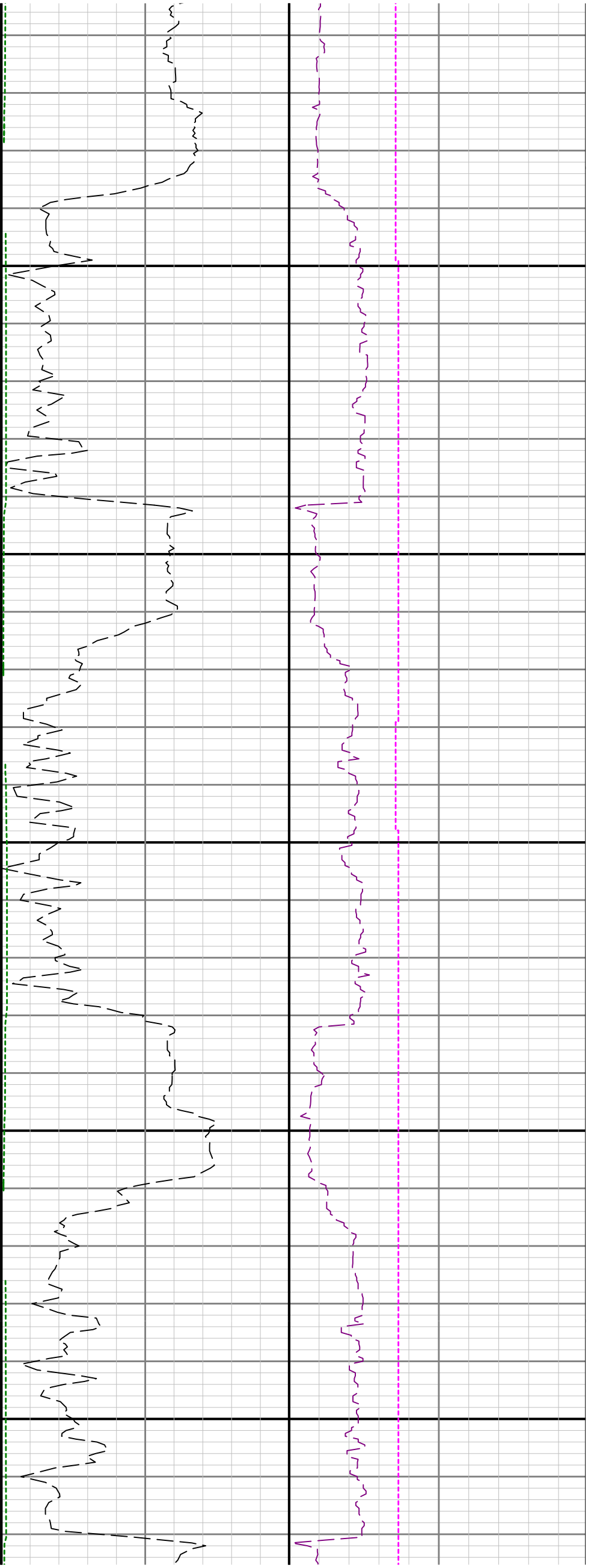


2400

2500

2600

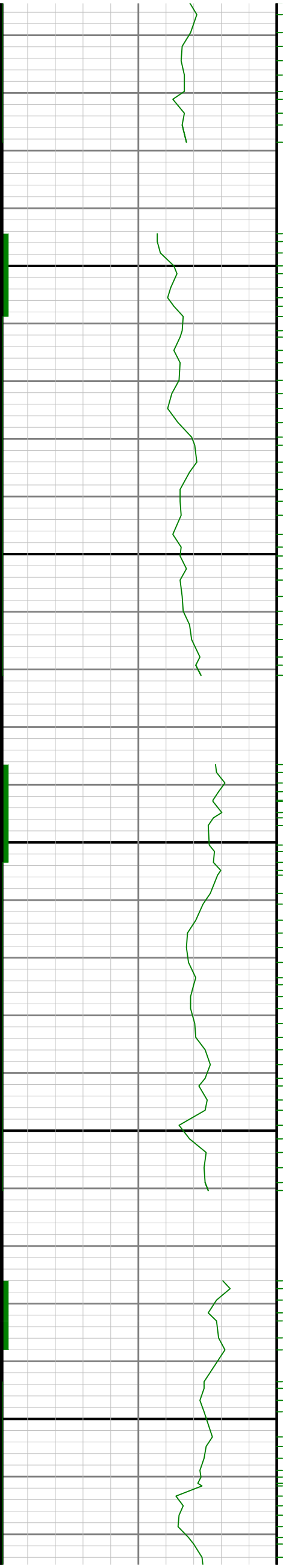


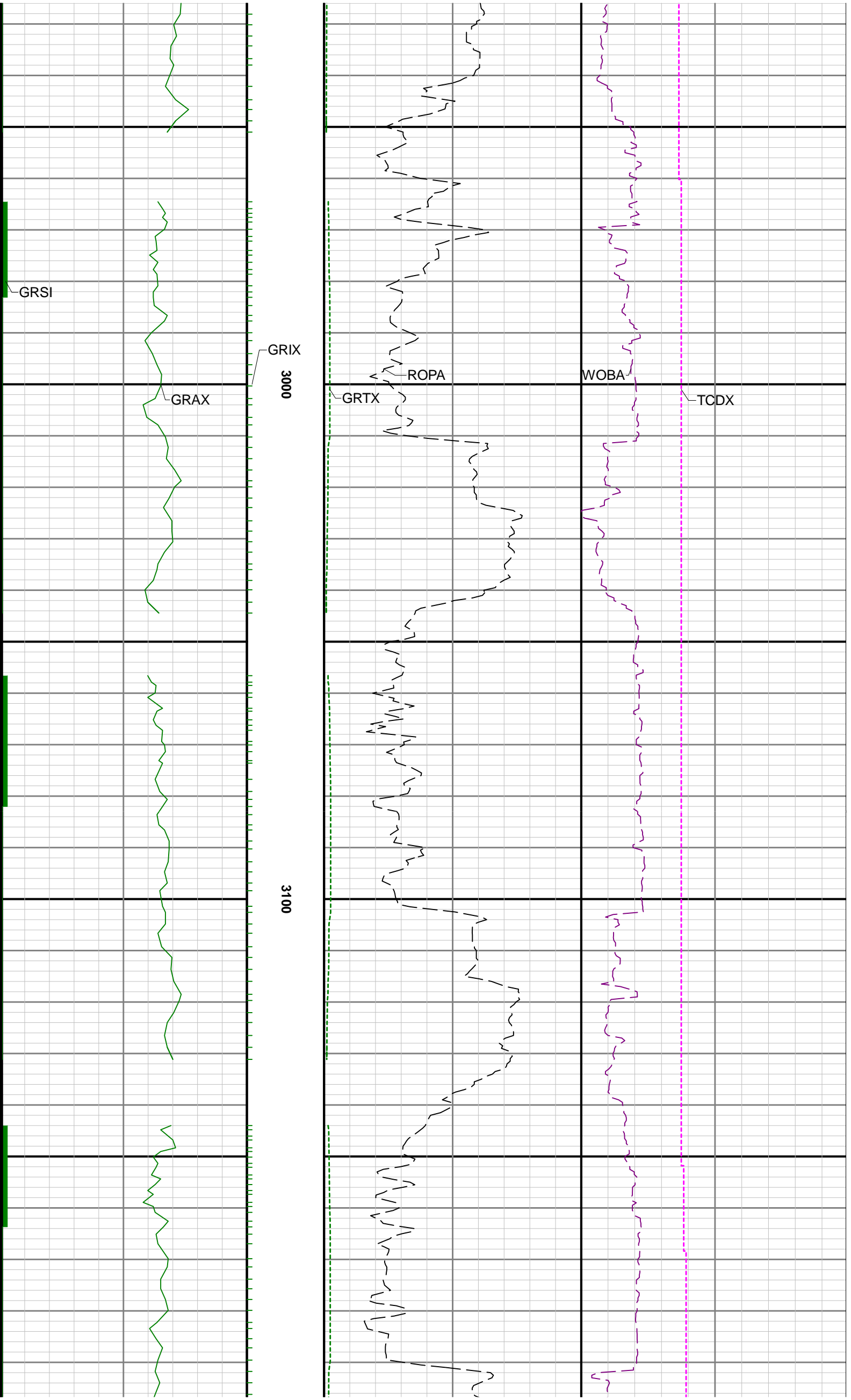


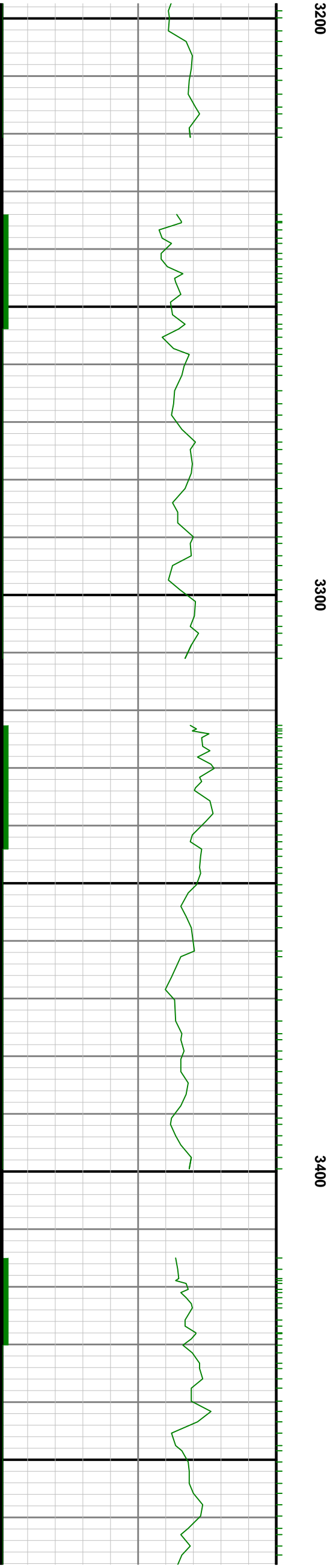
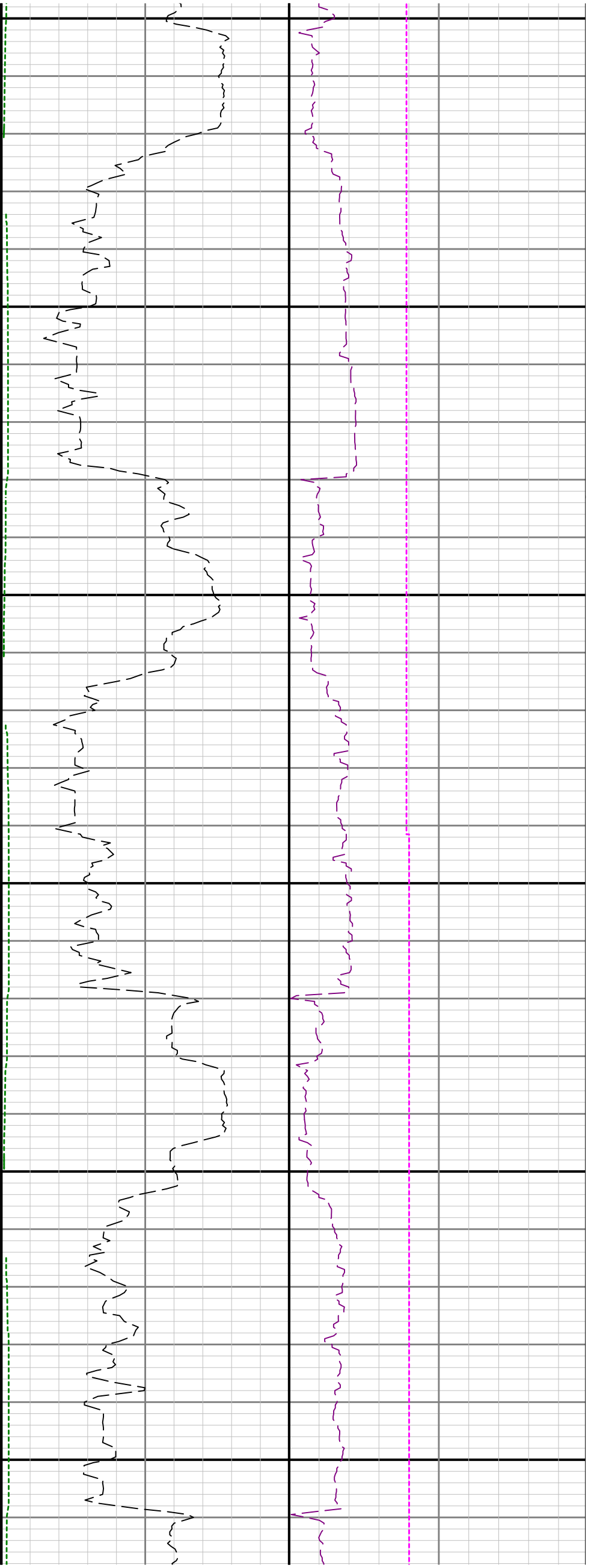
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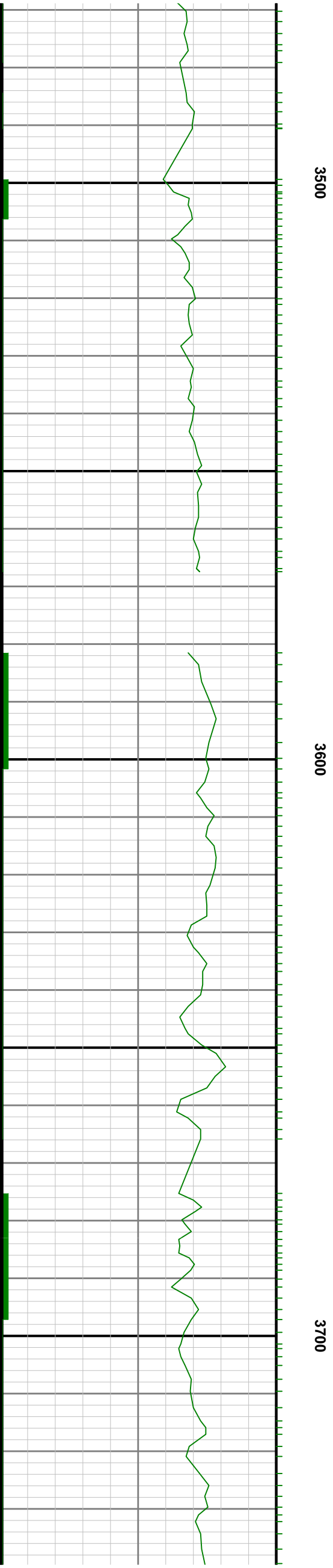
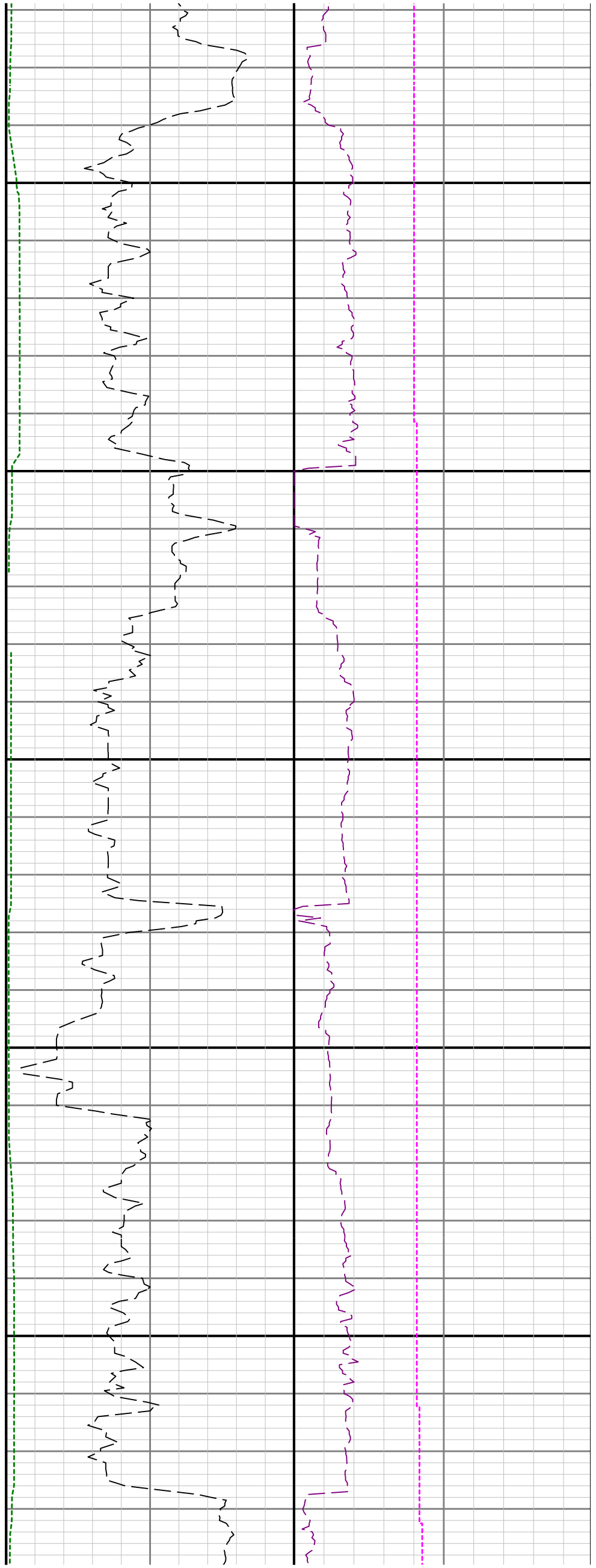
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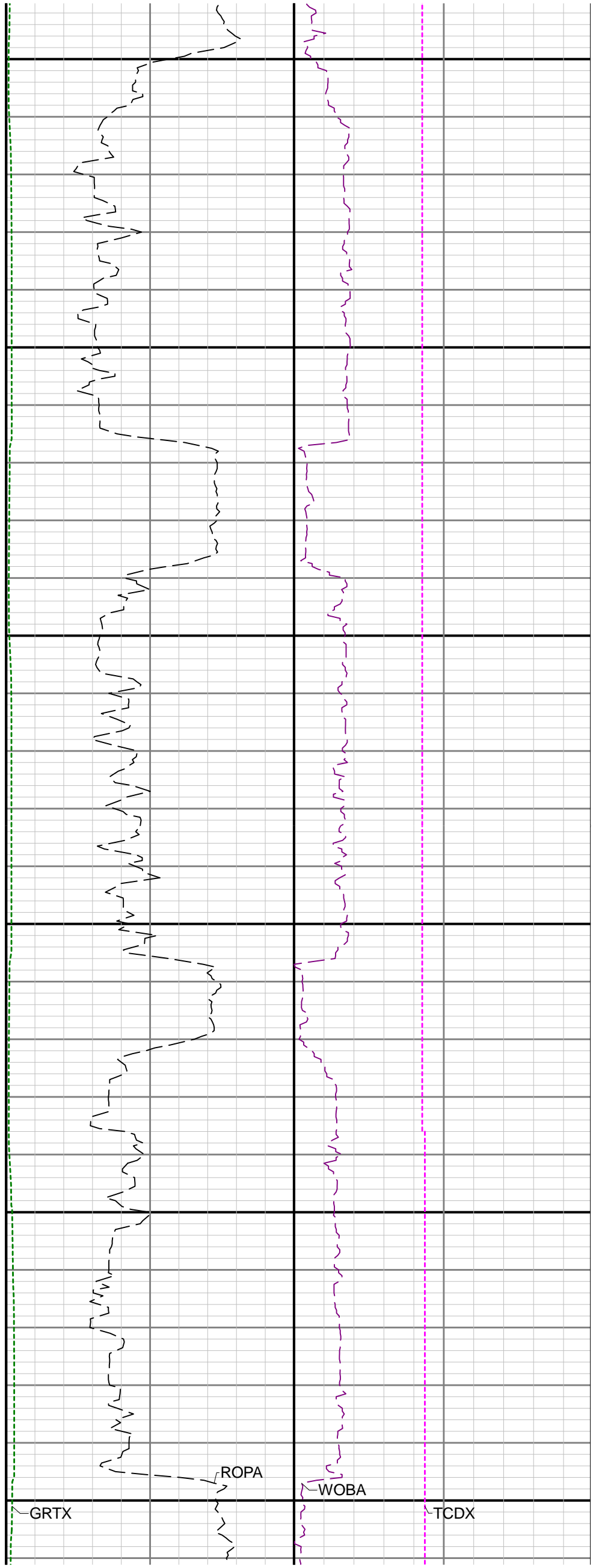
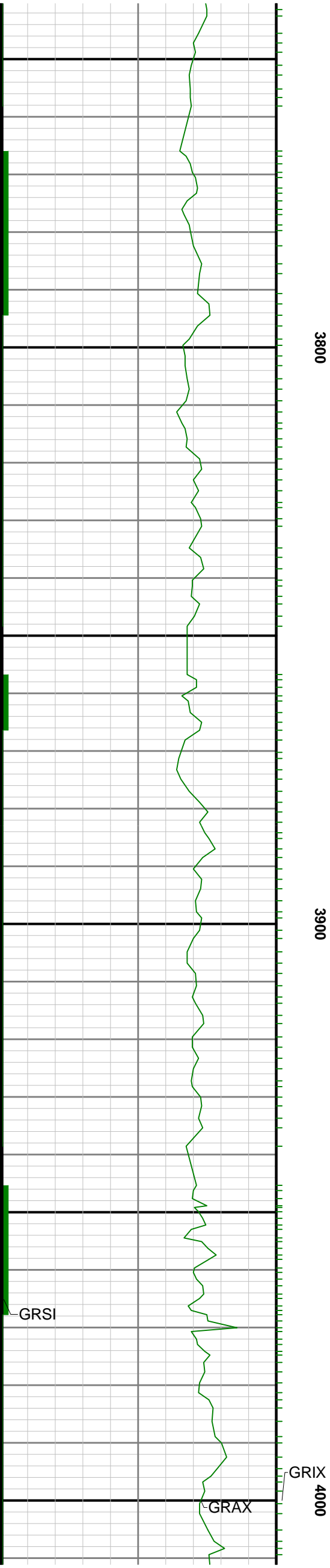
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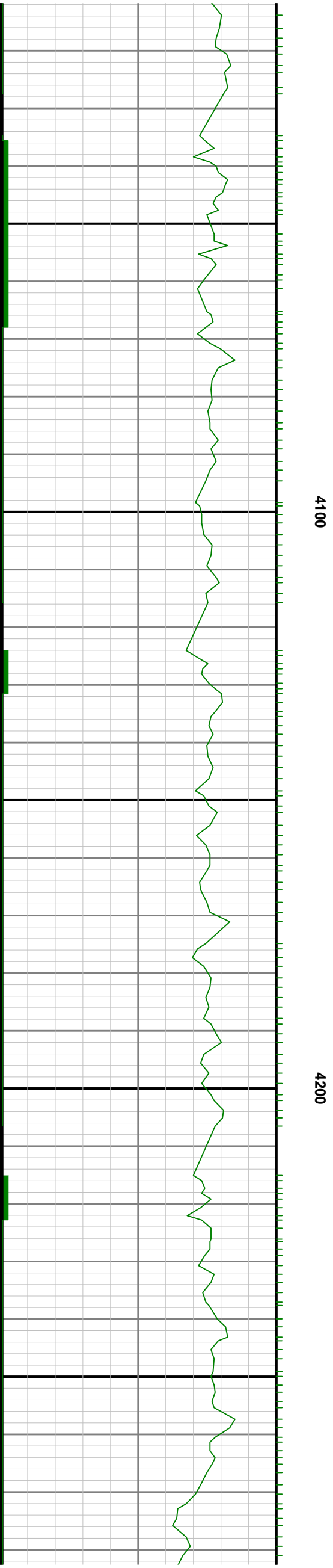
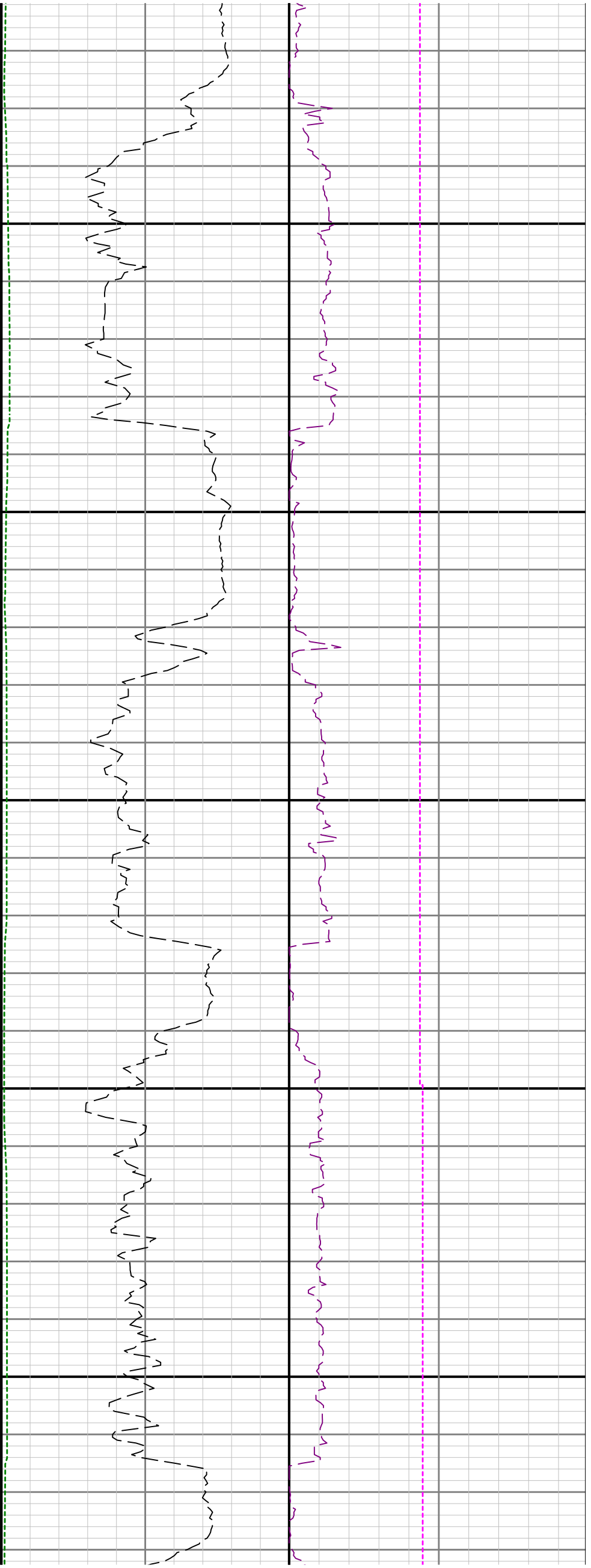


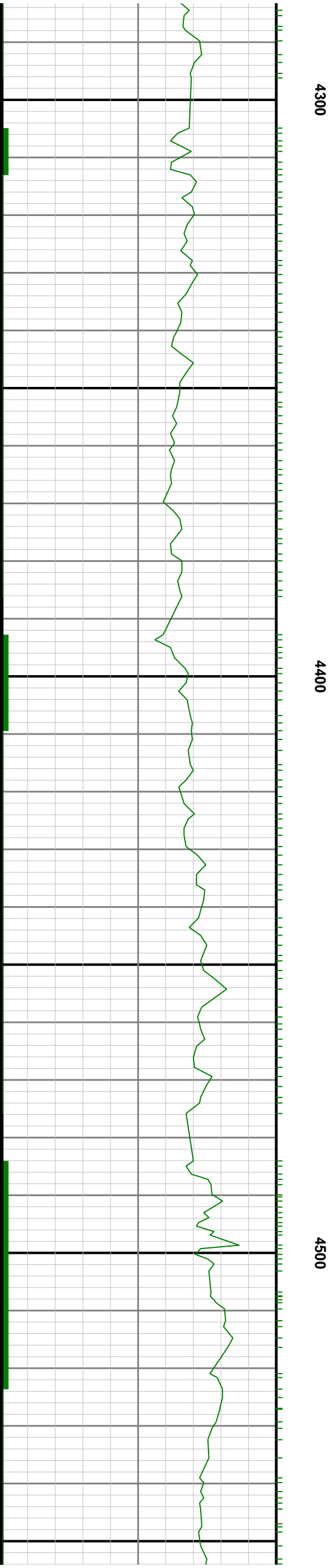


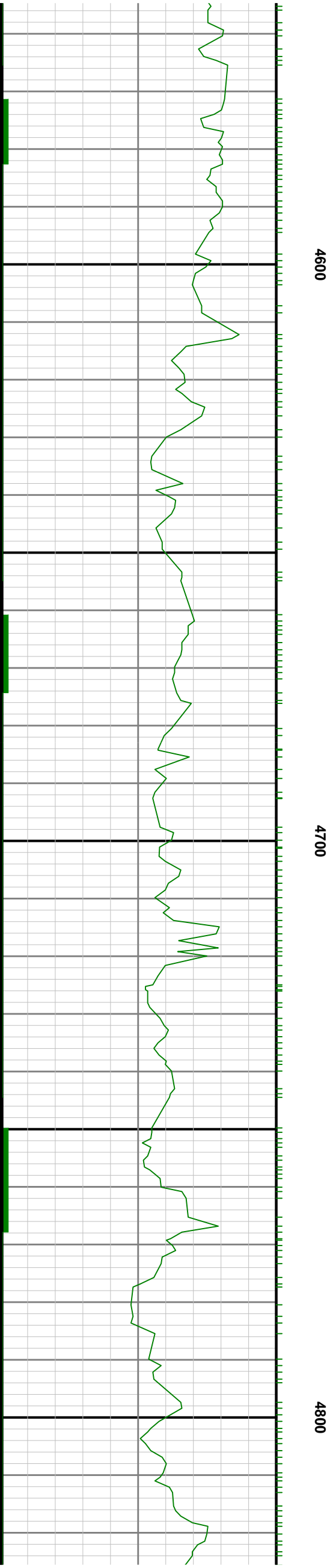


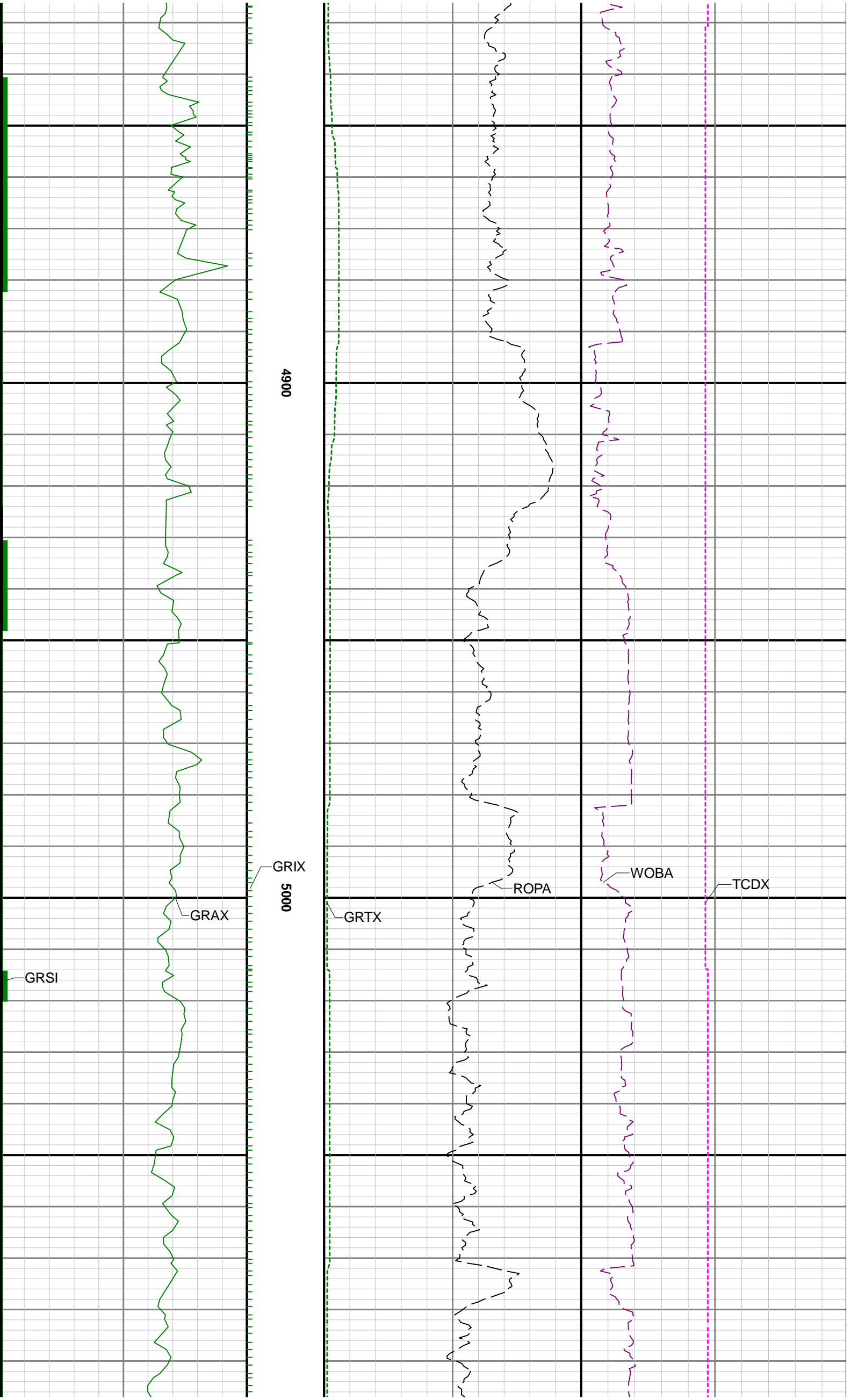


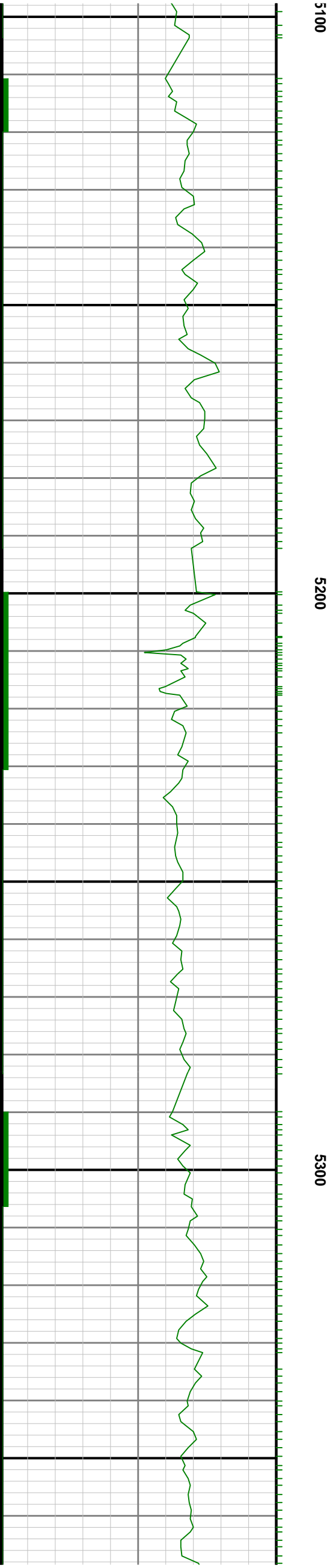
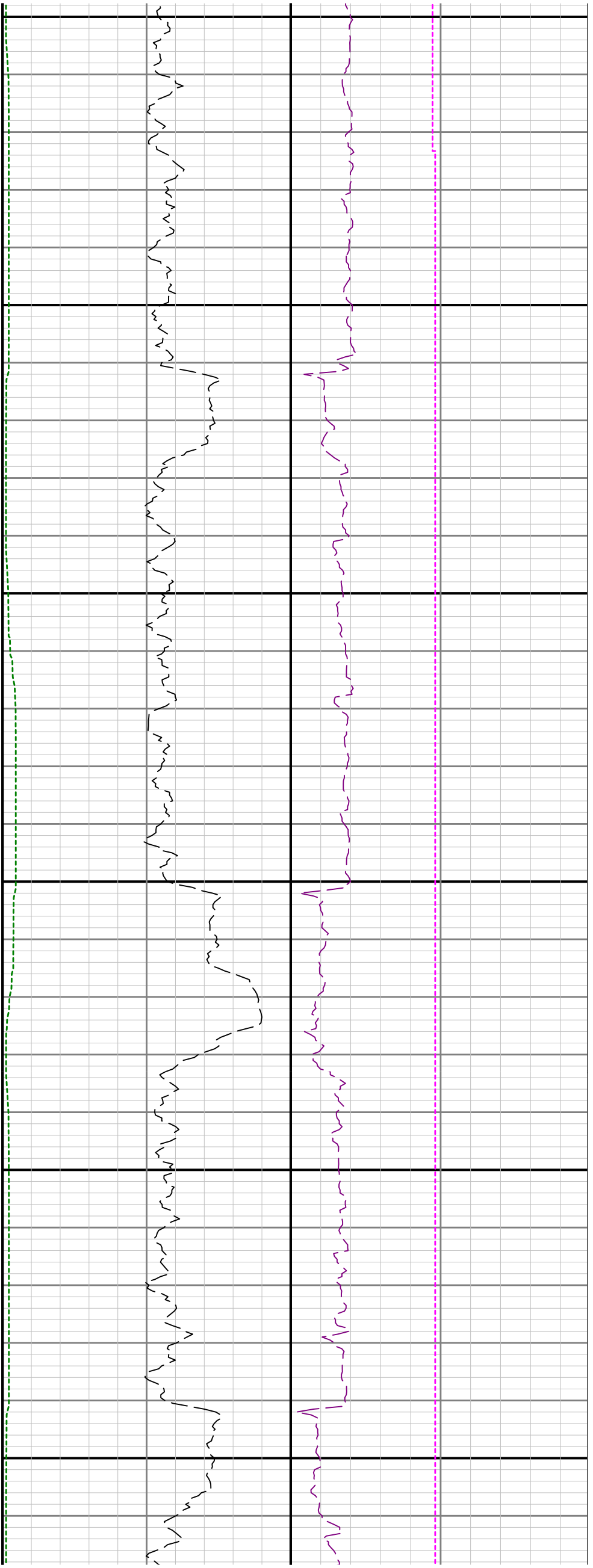


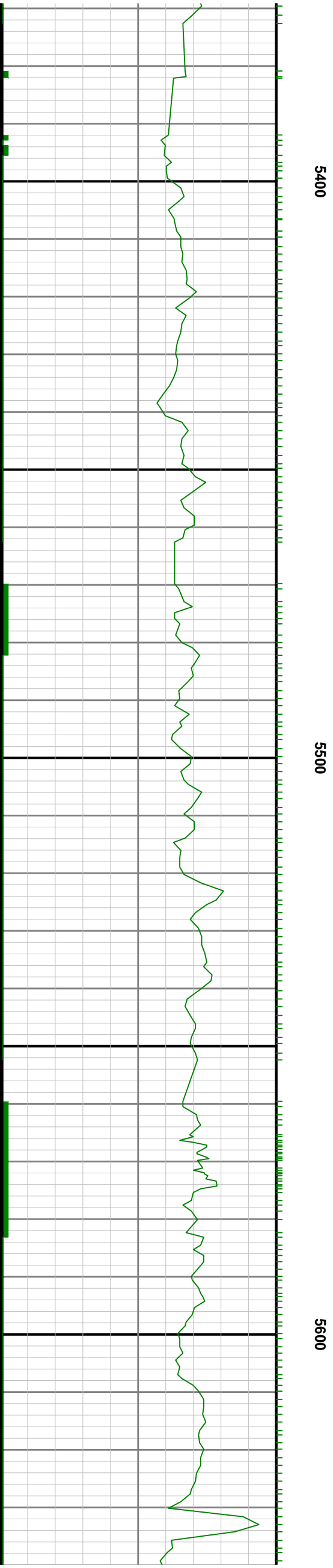
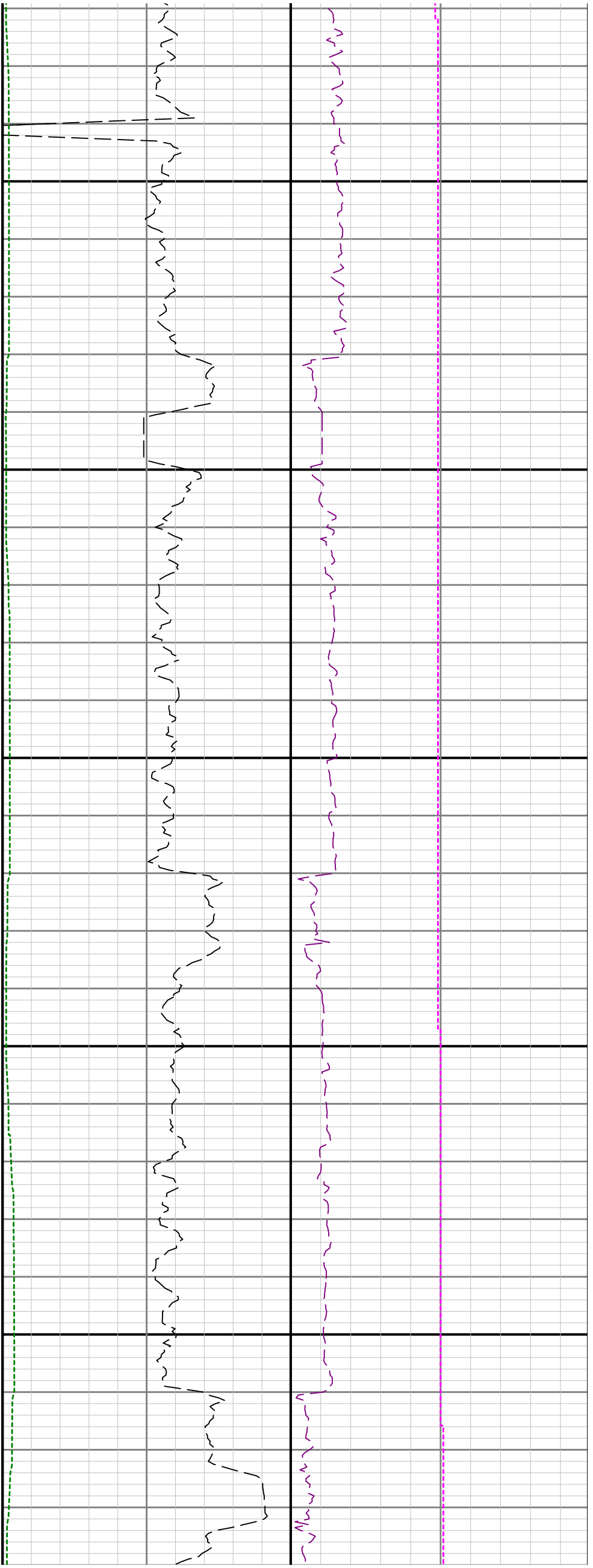


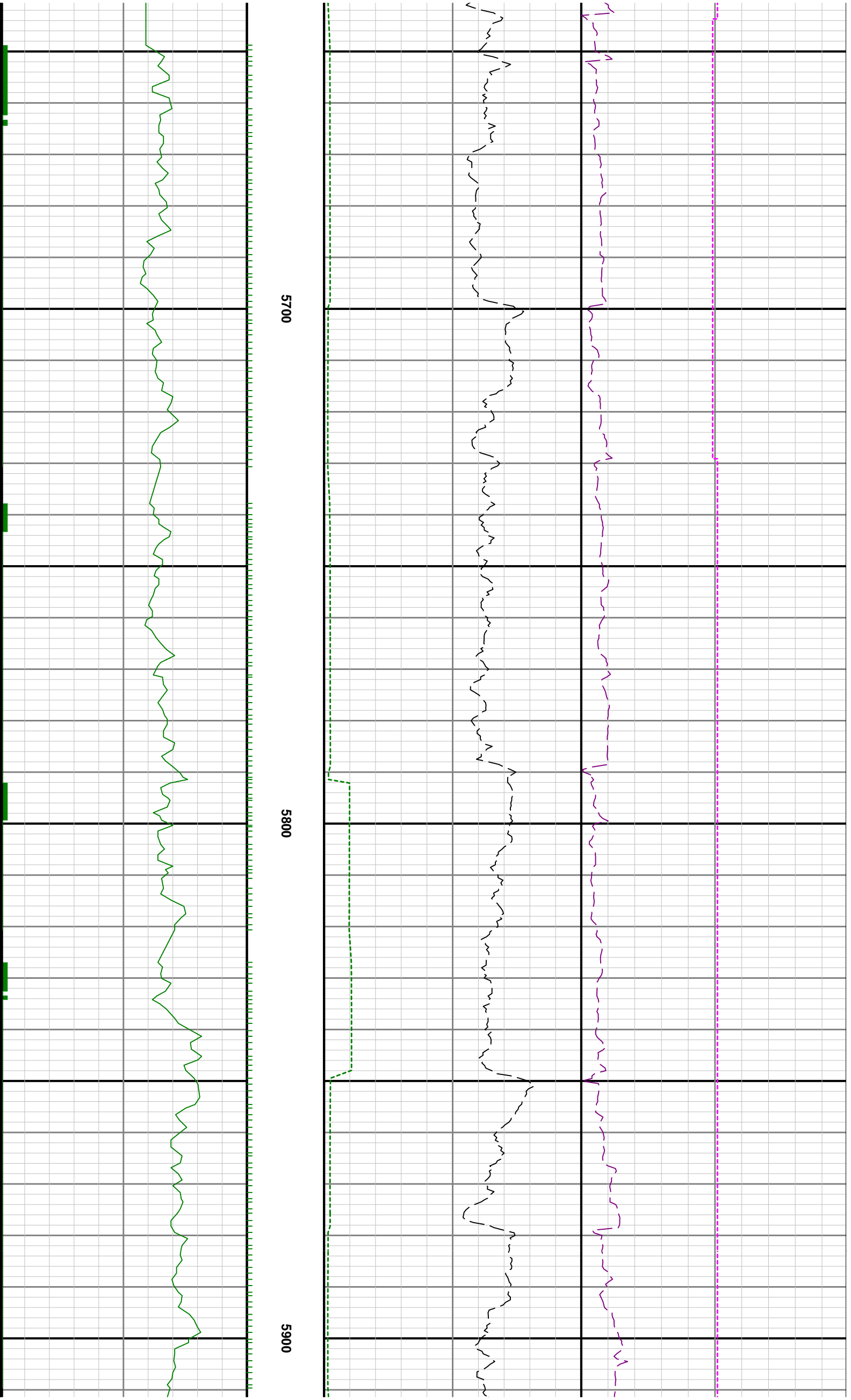


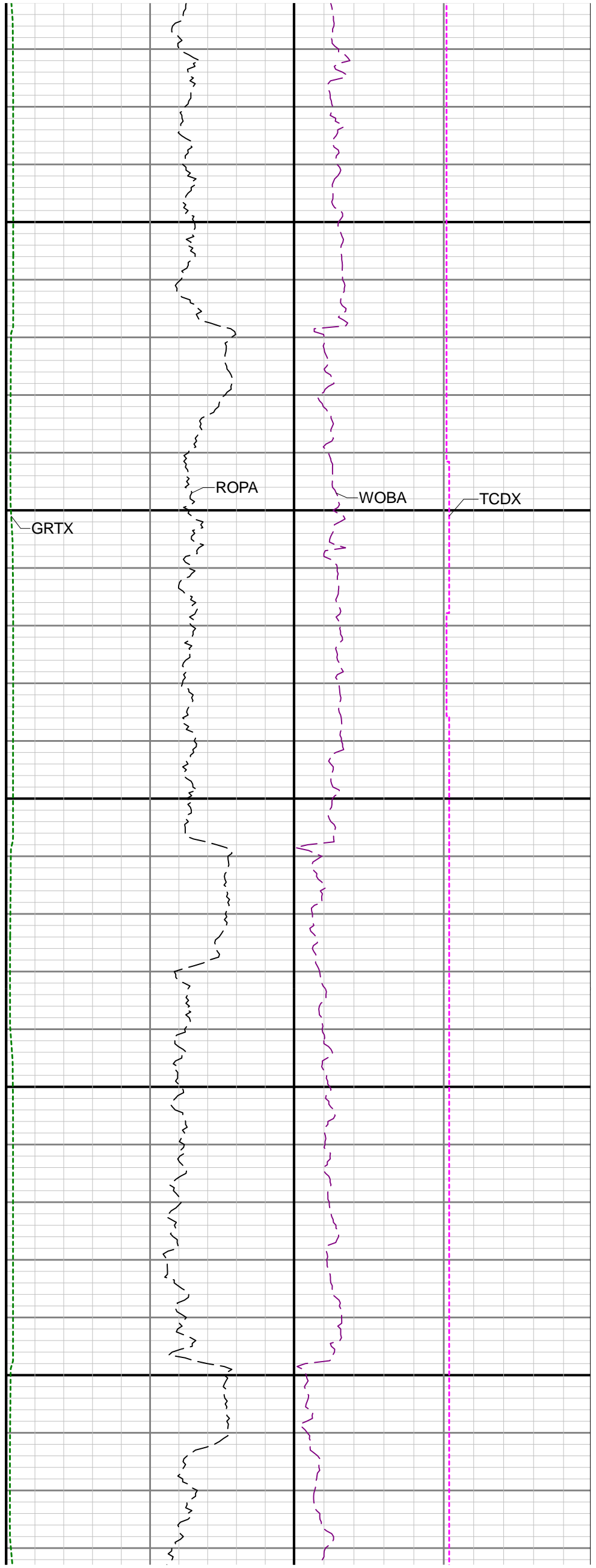
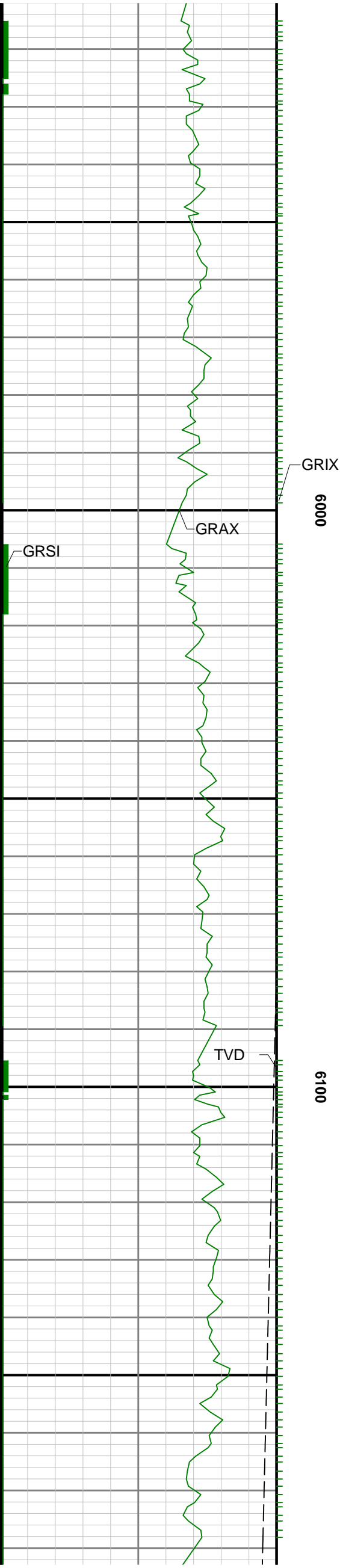


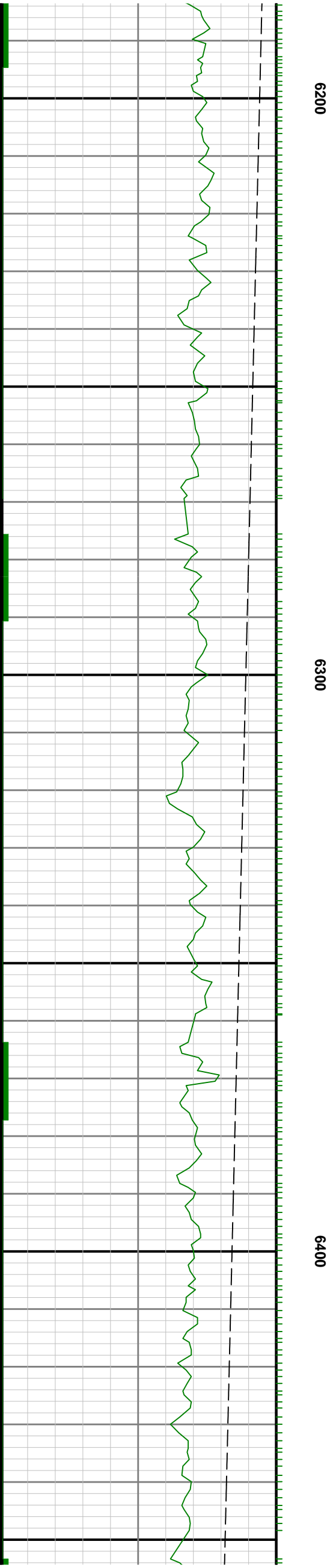
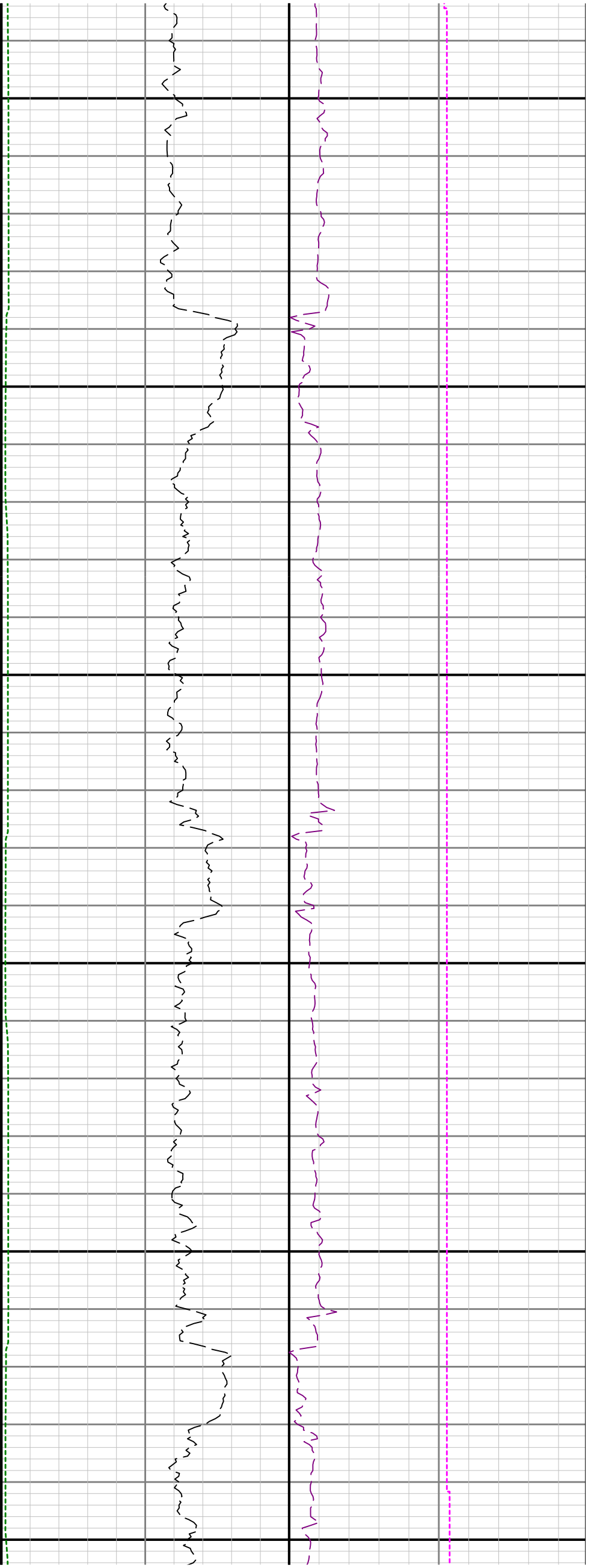


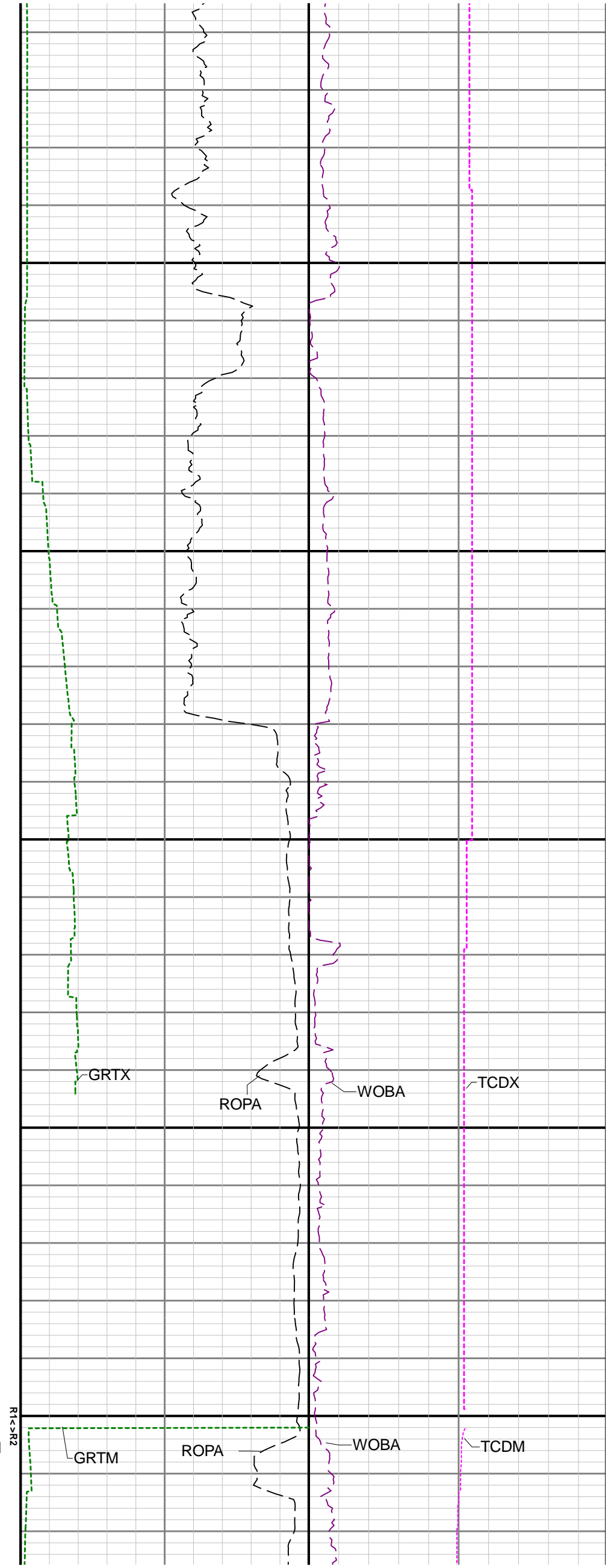
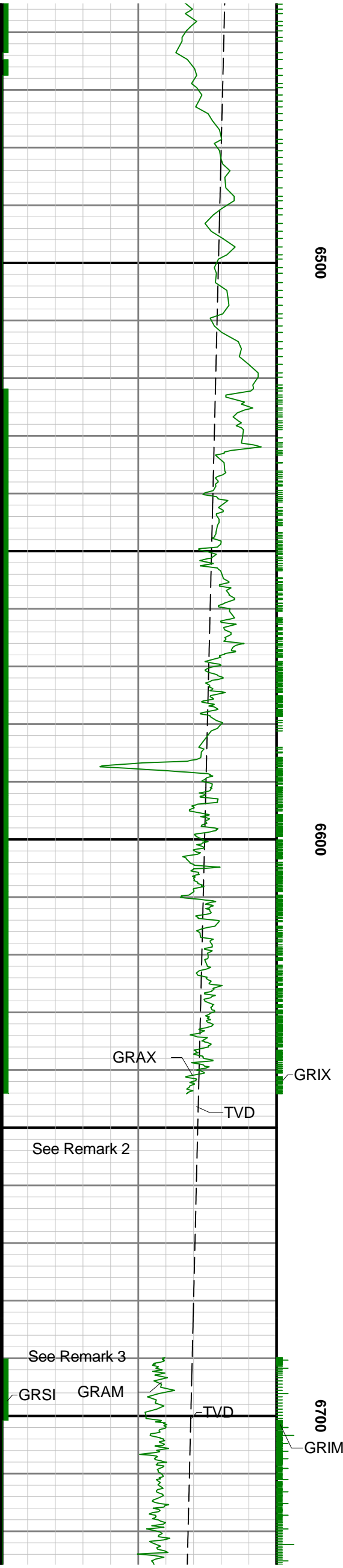


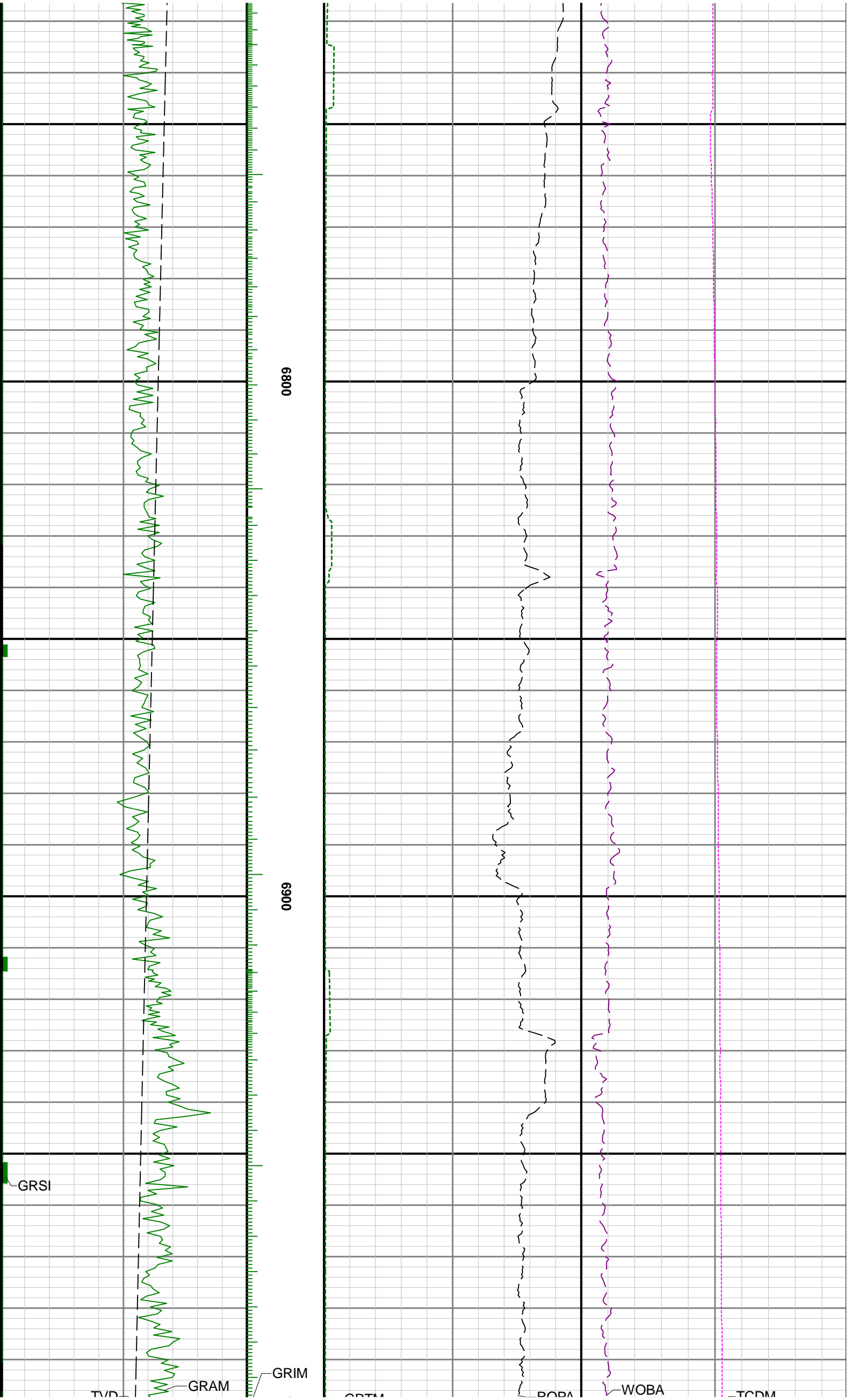


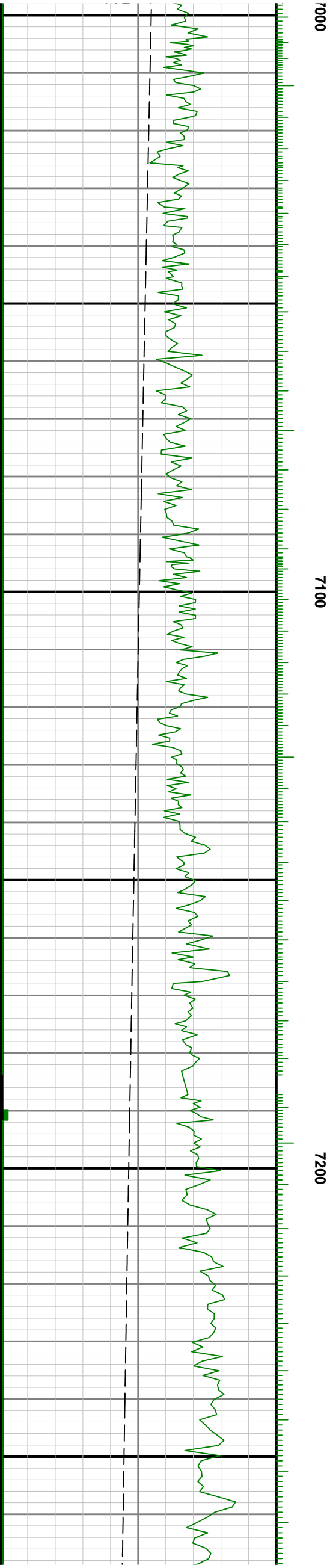


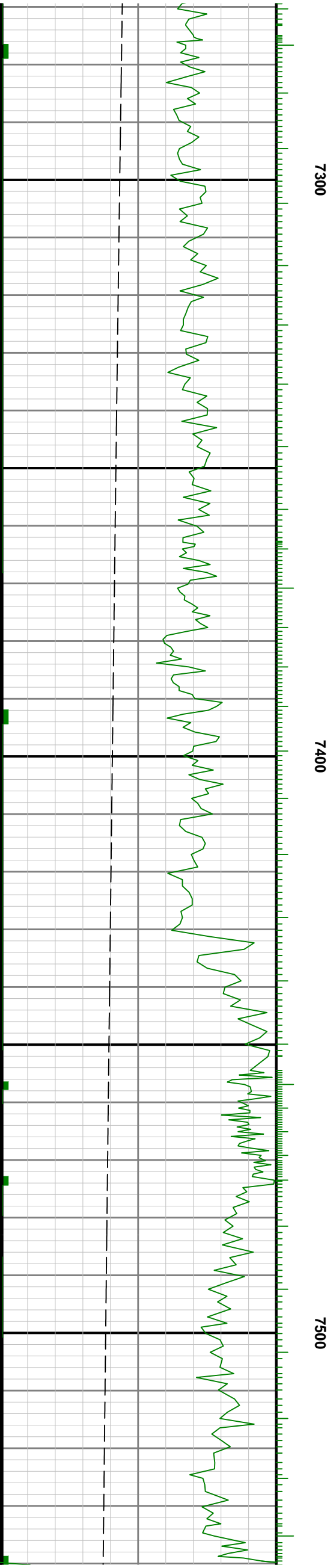
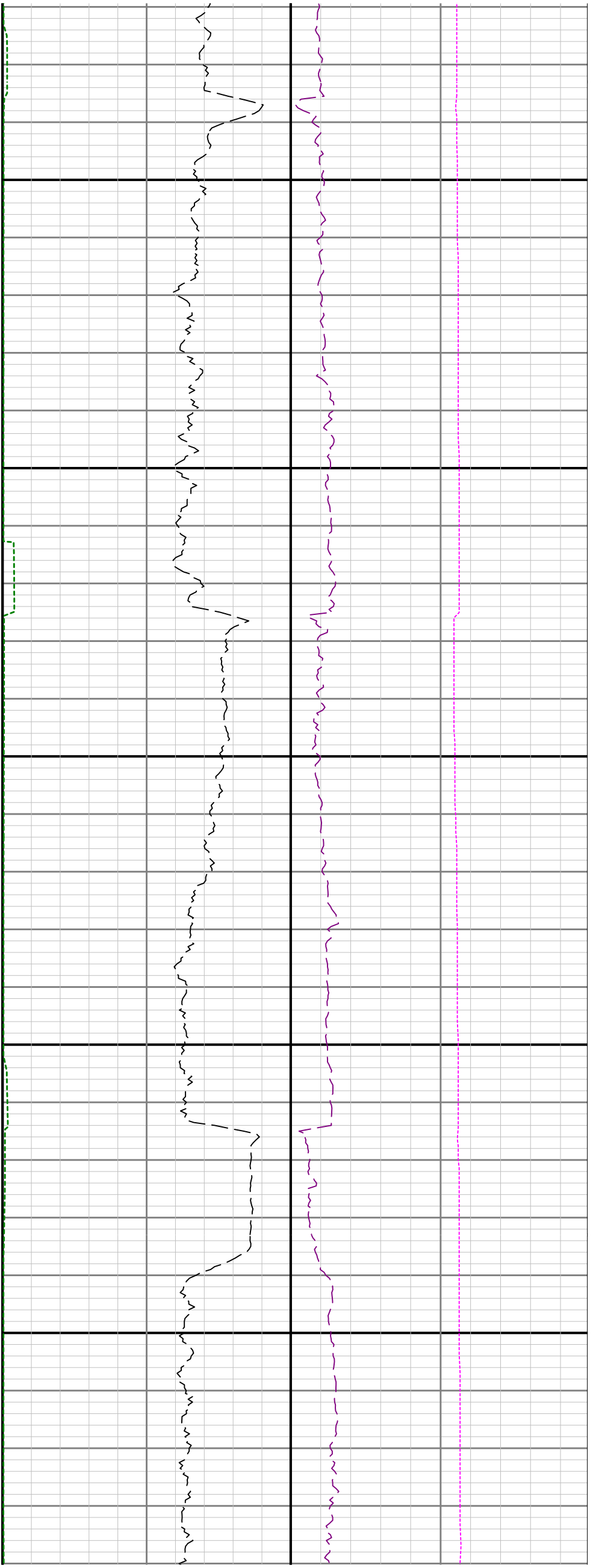


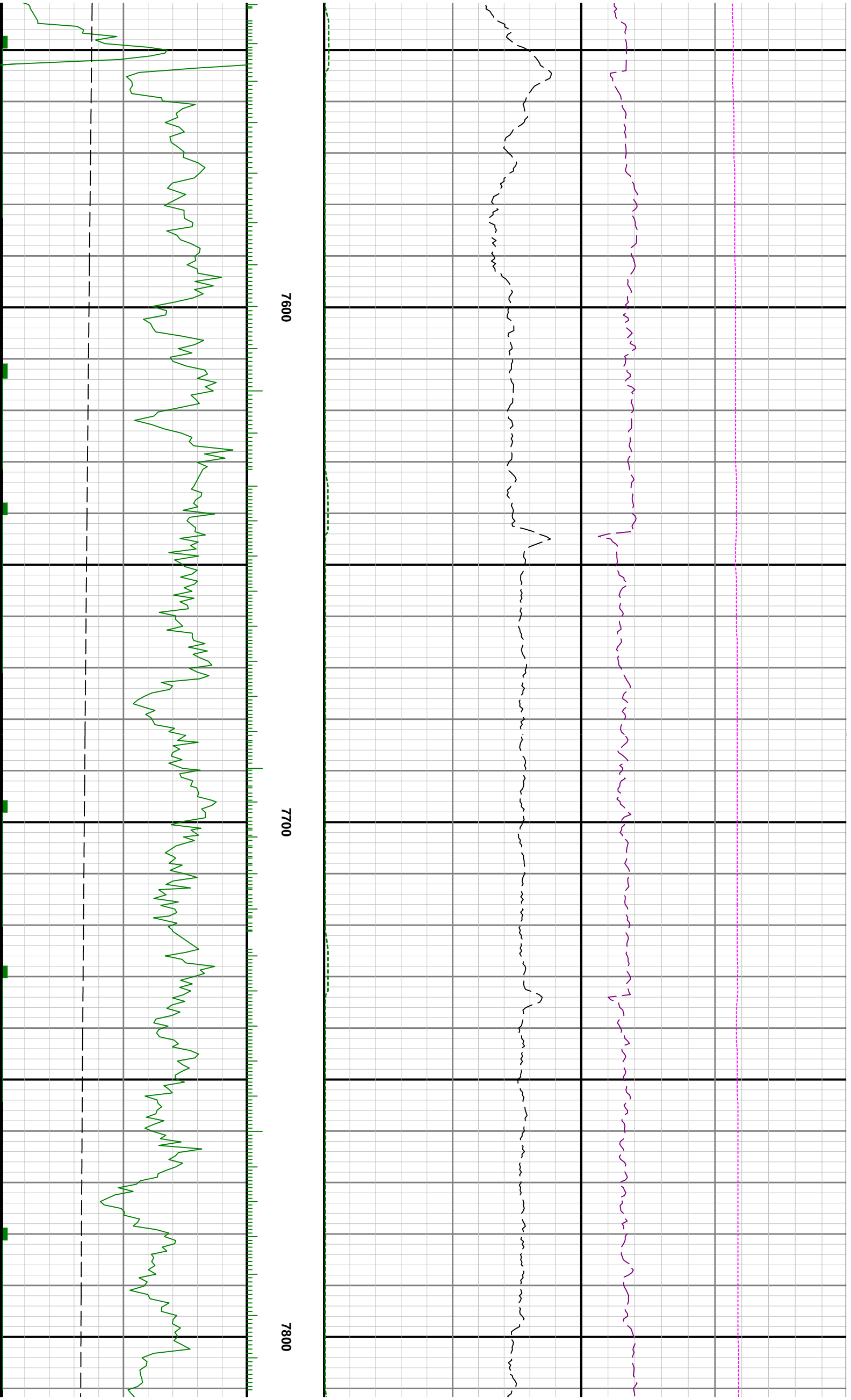


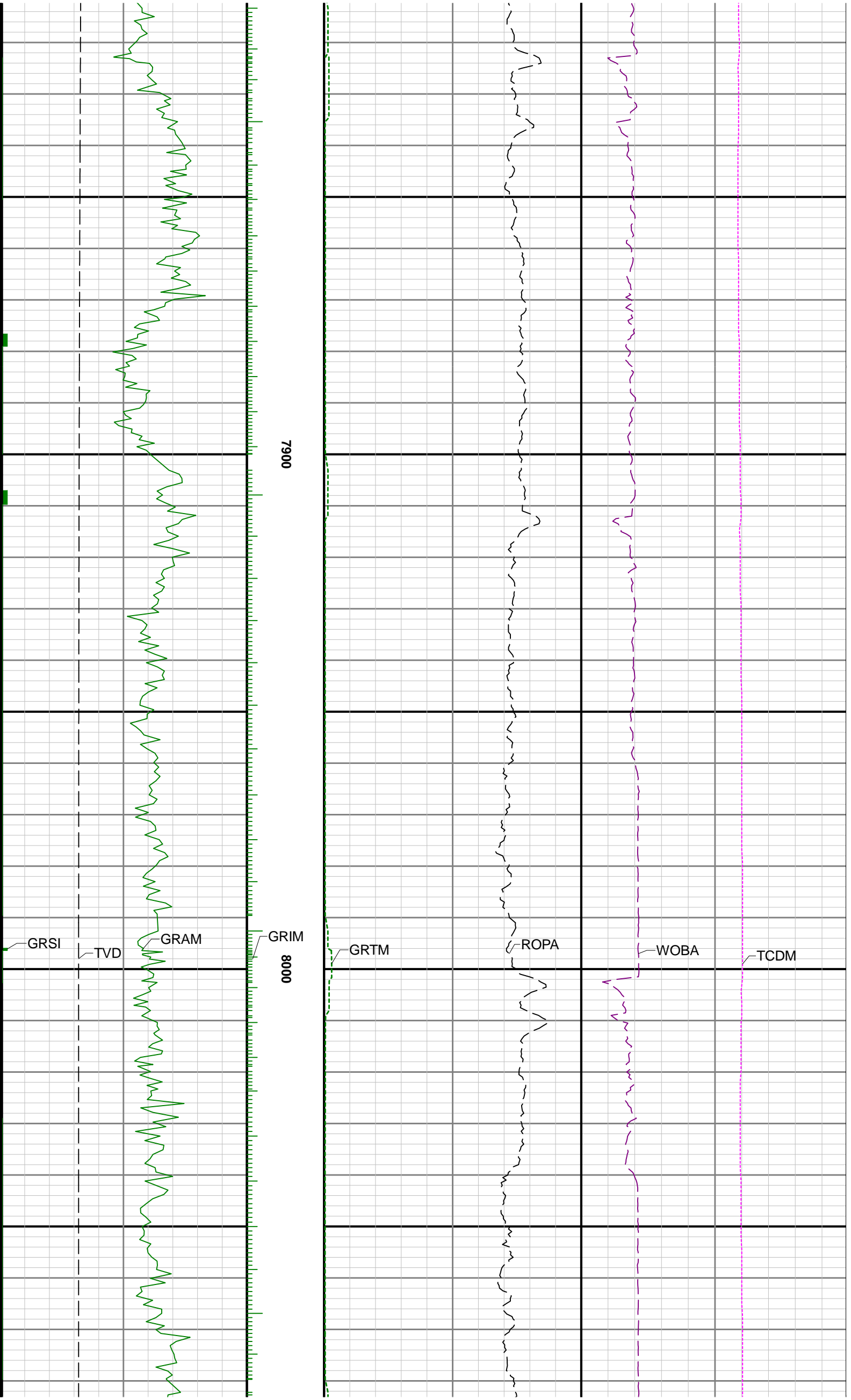


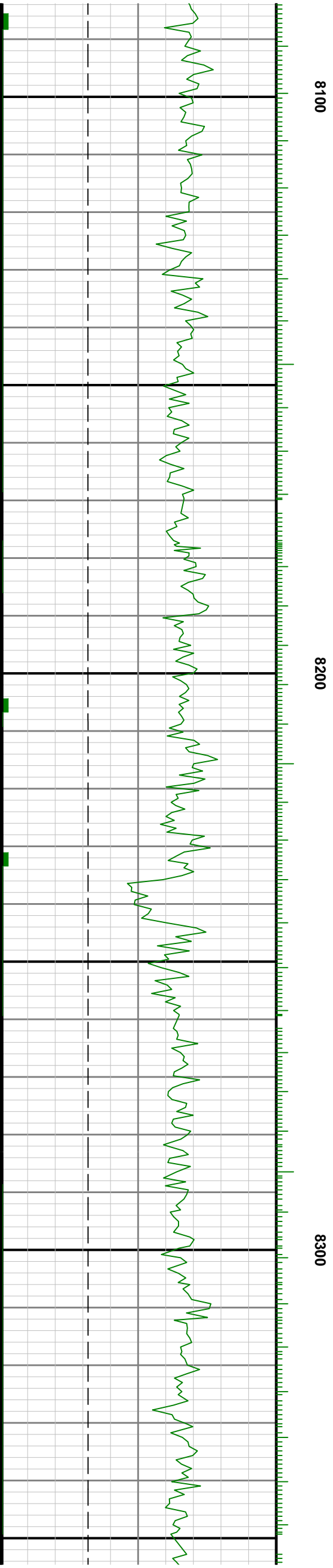


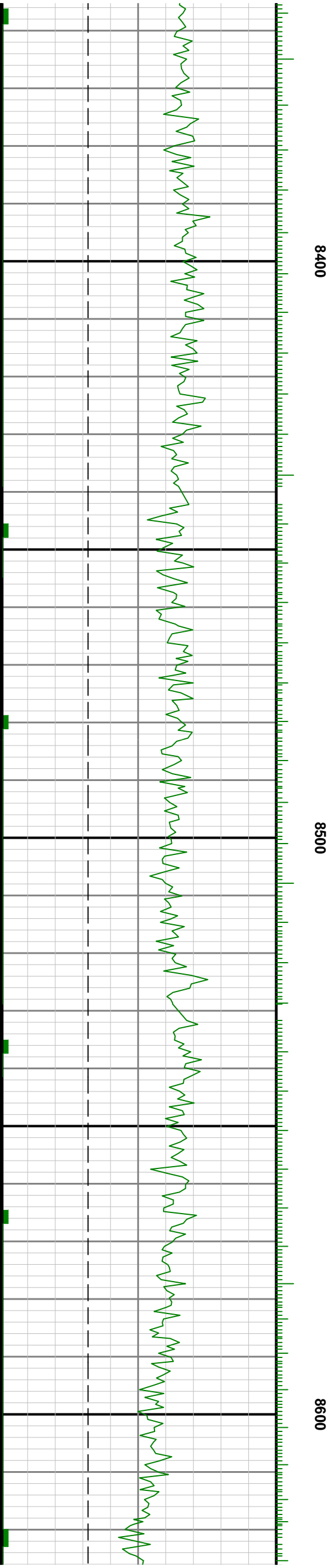
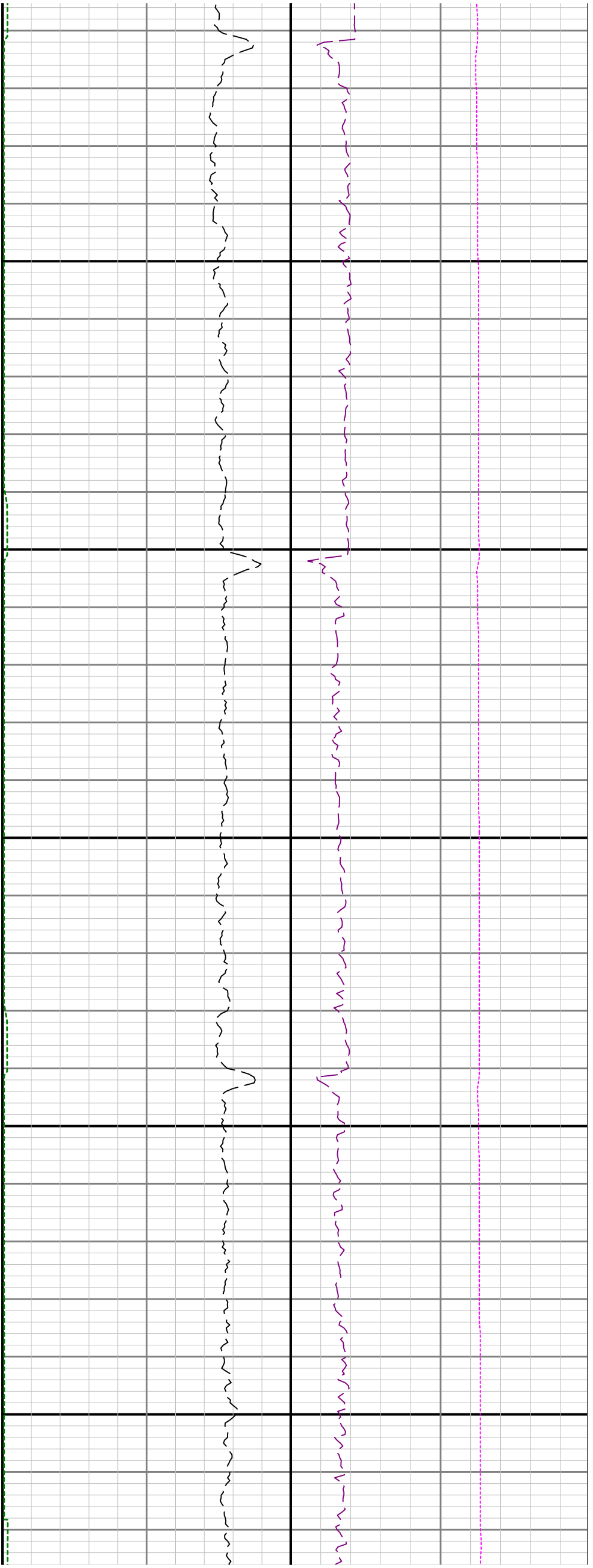


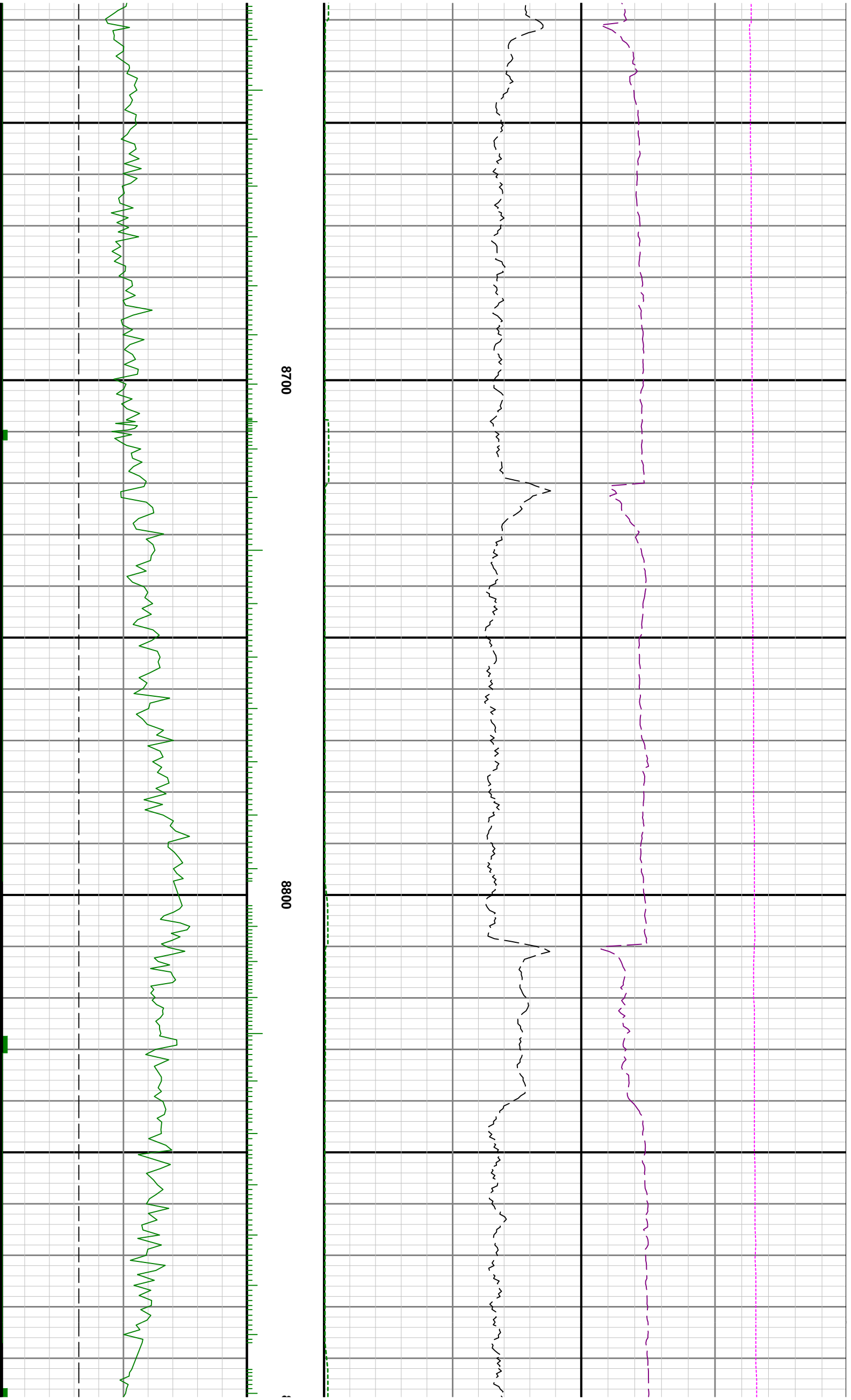


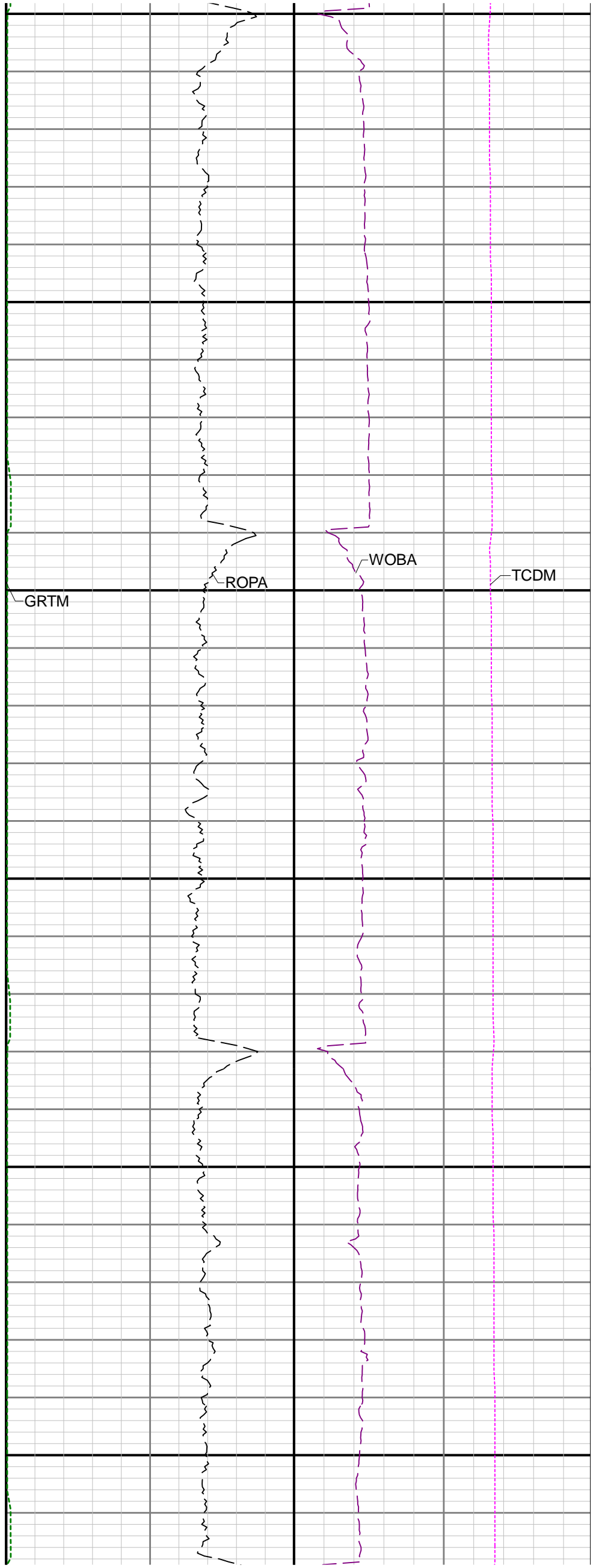
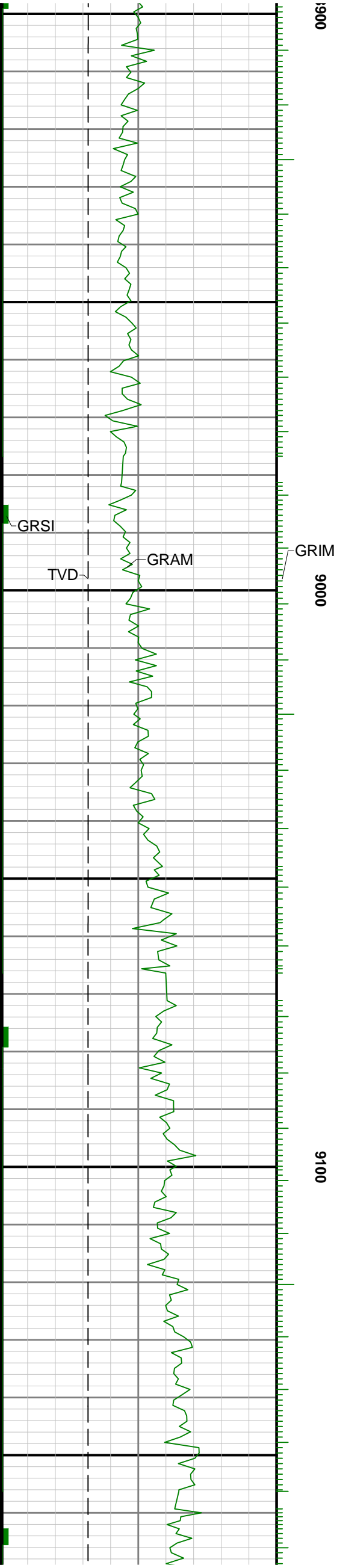


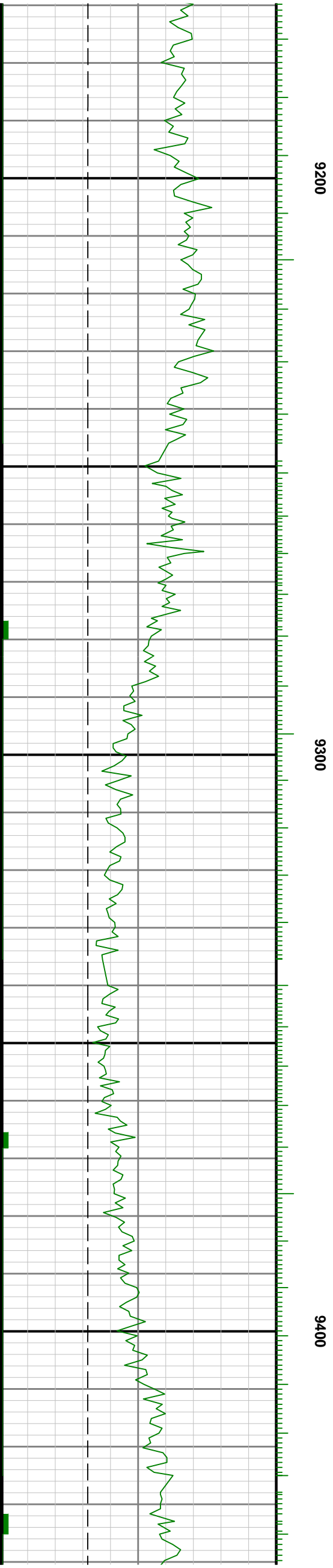
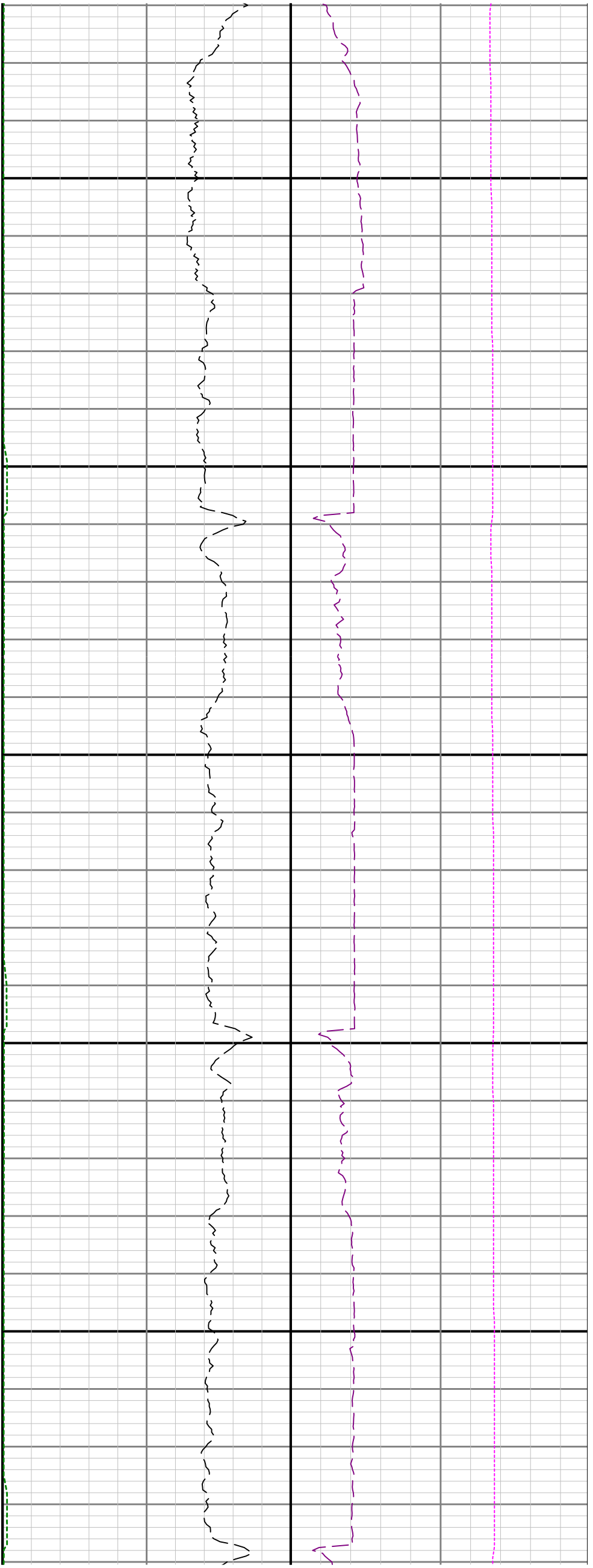


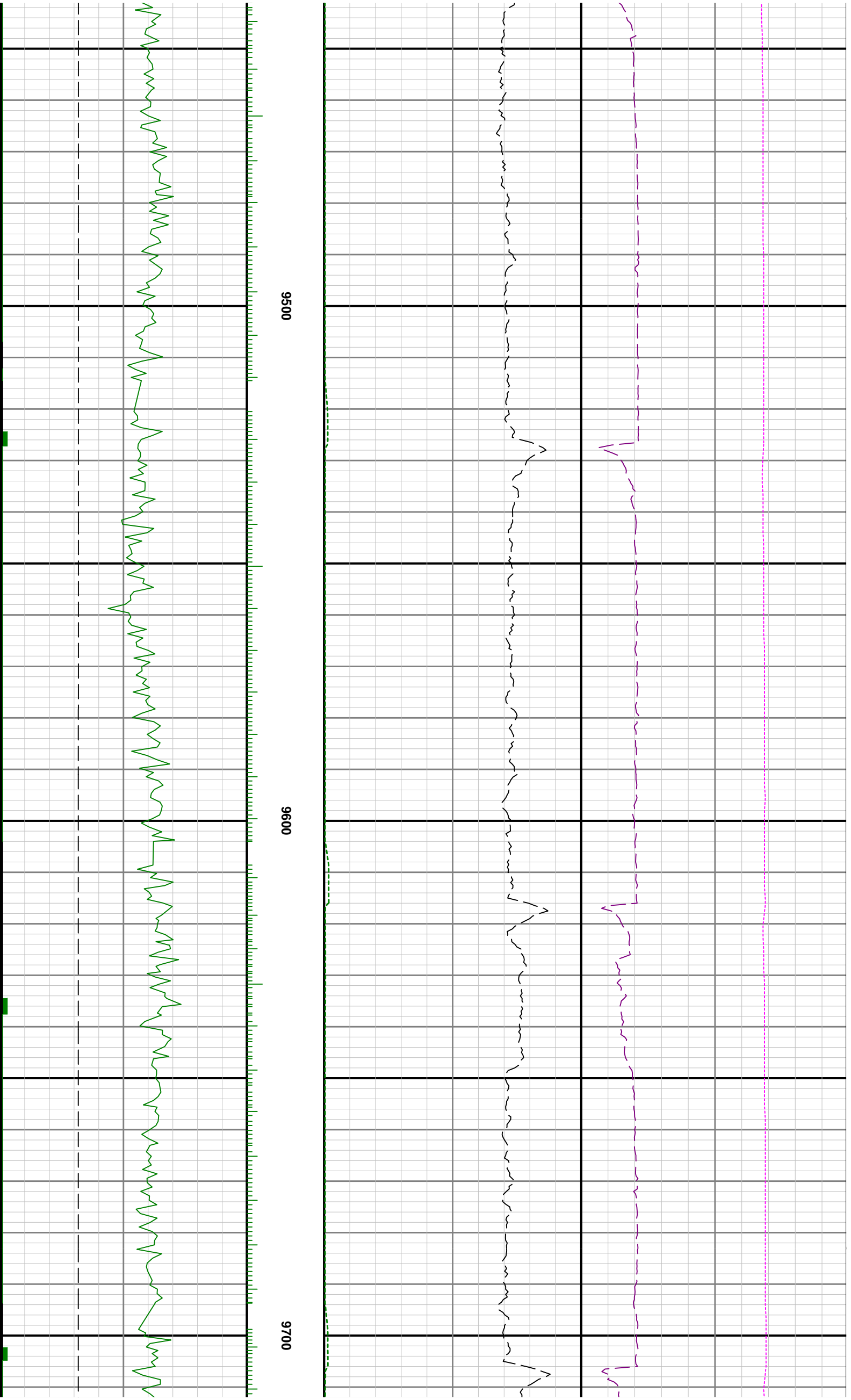


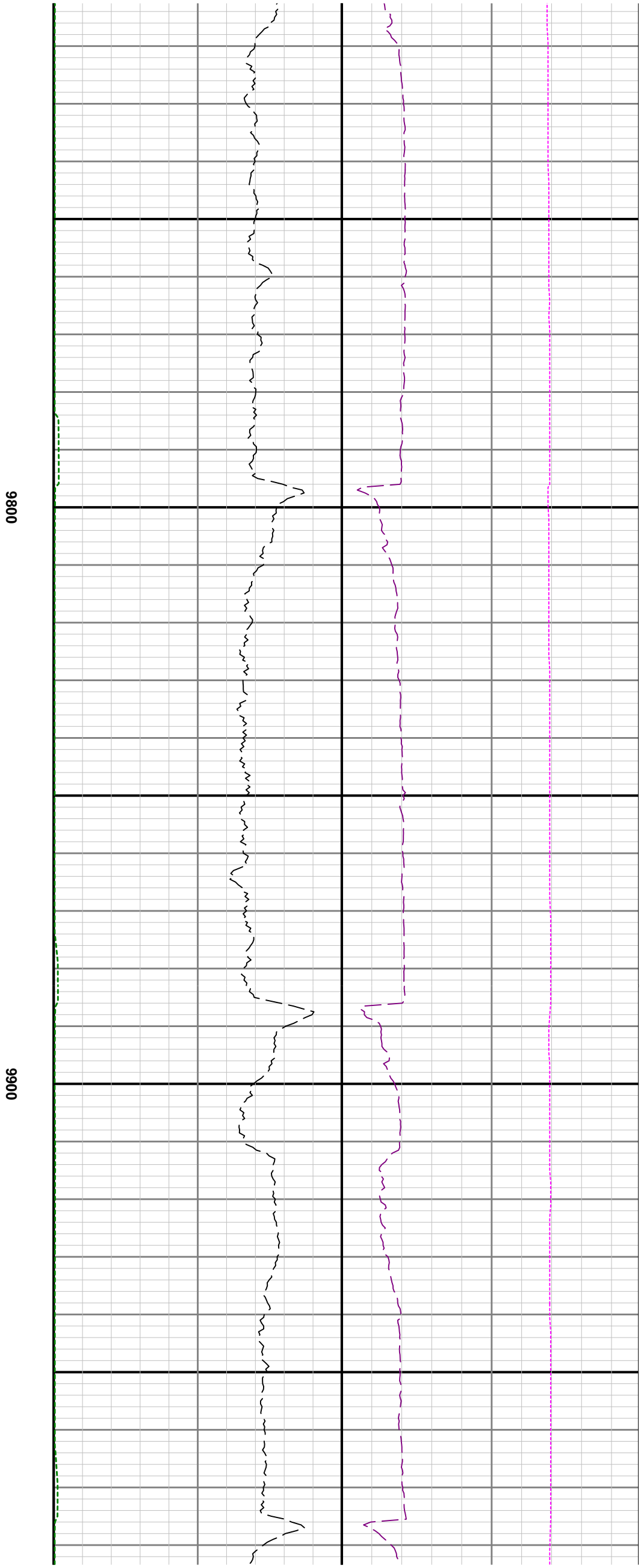
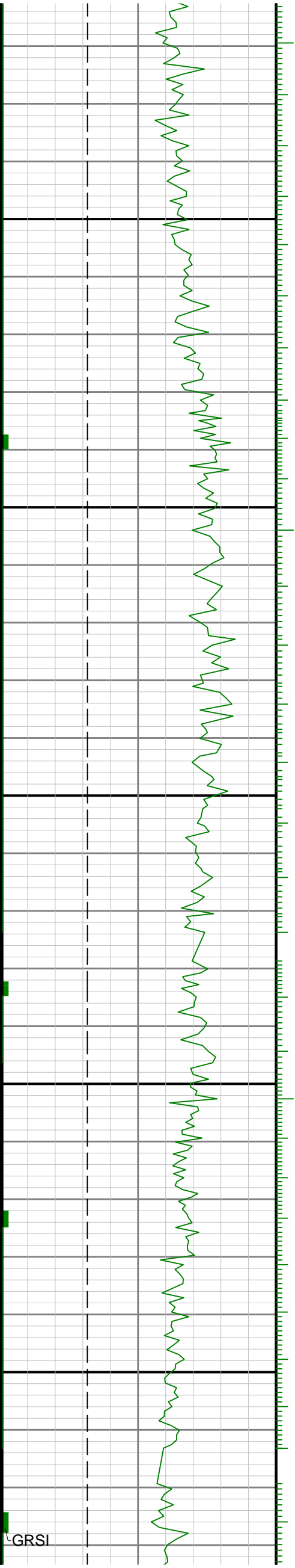




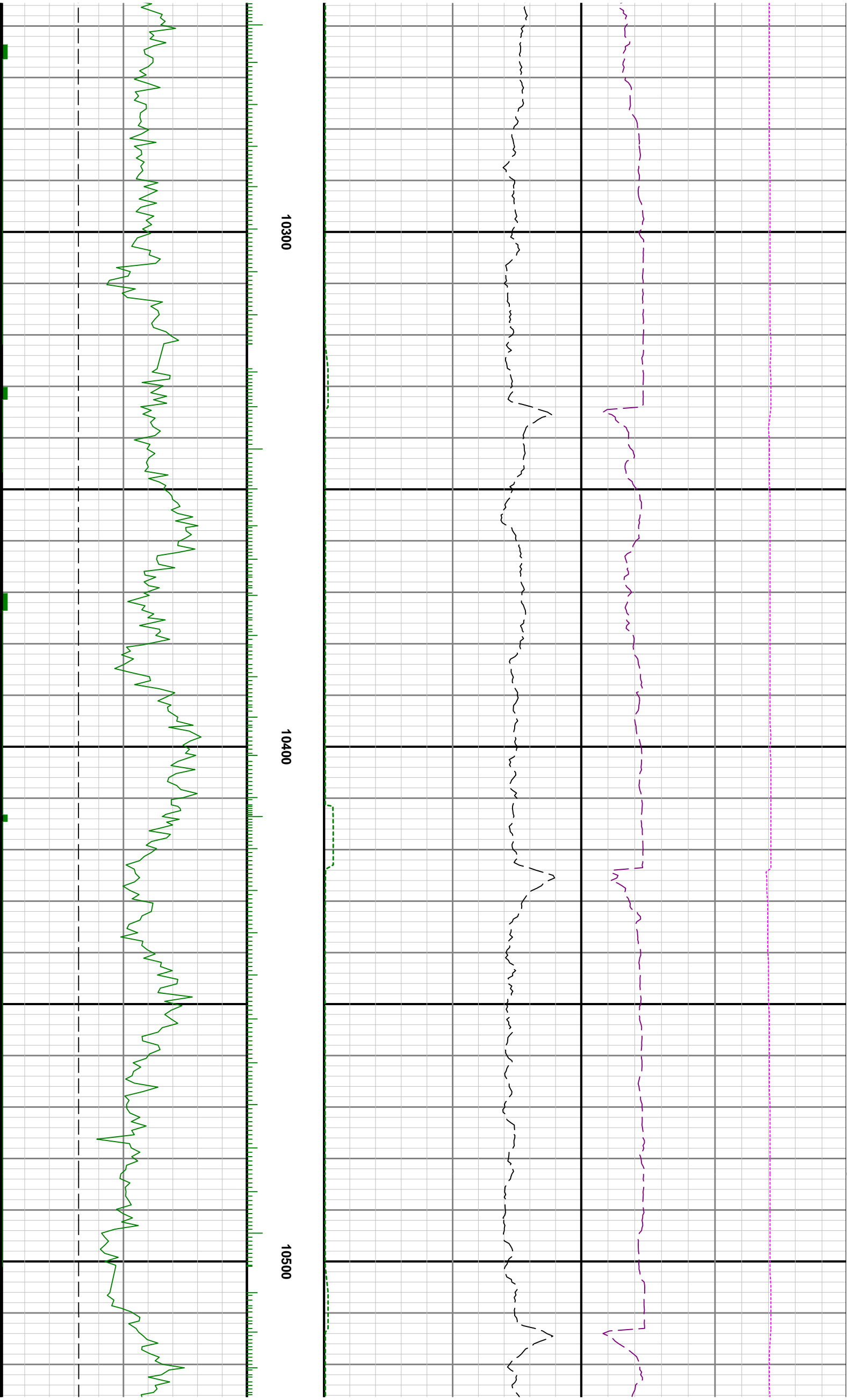


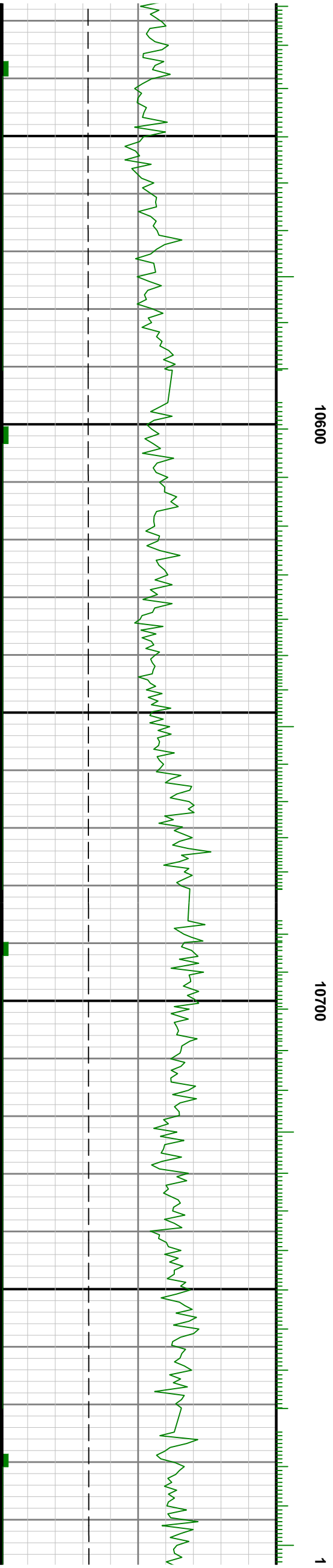


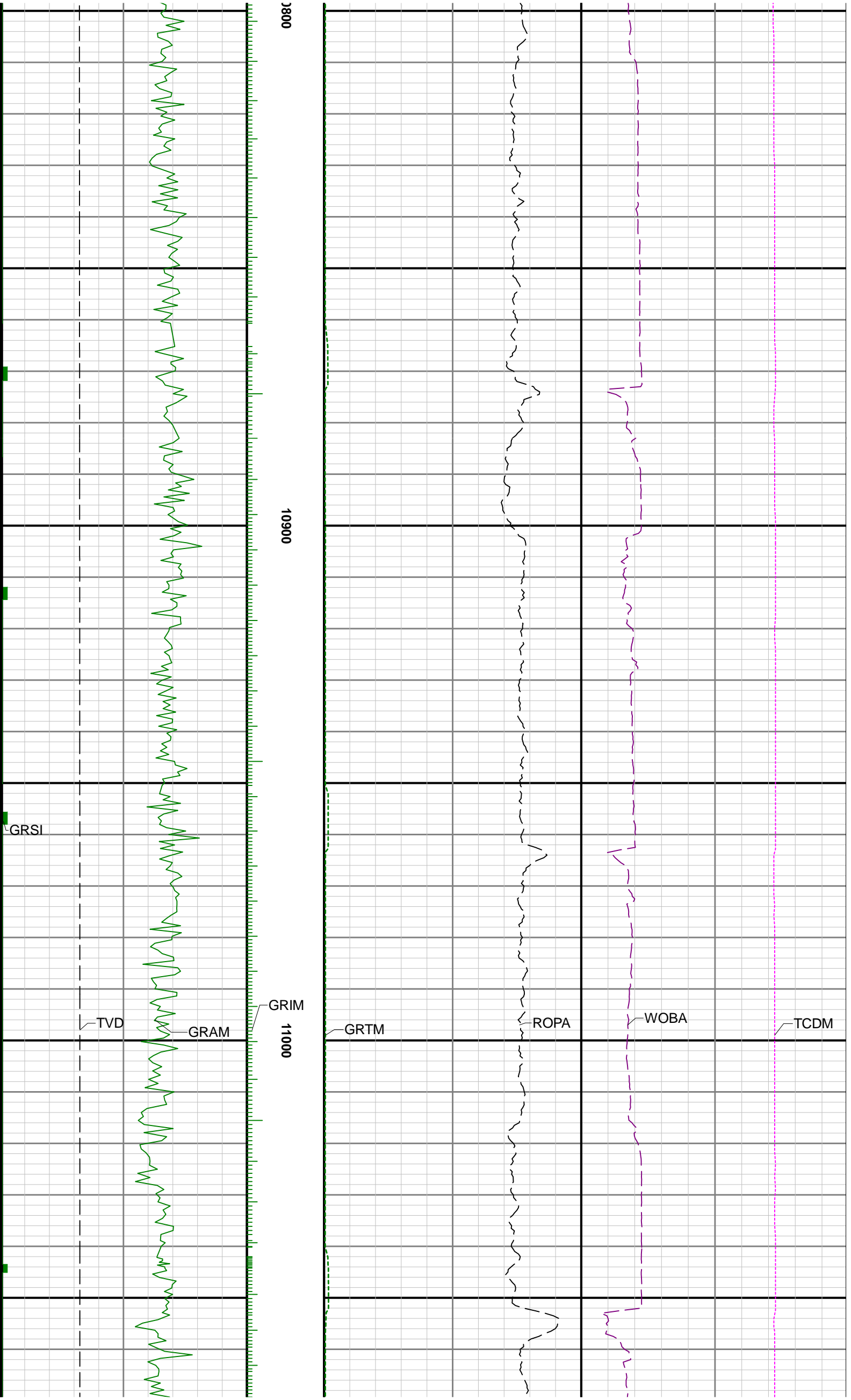


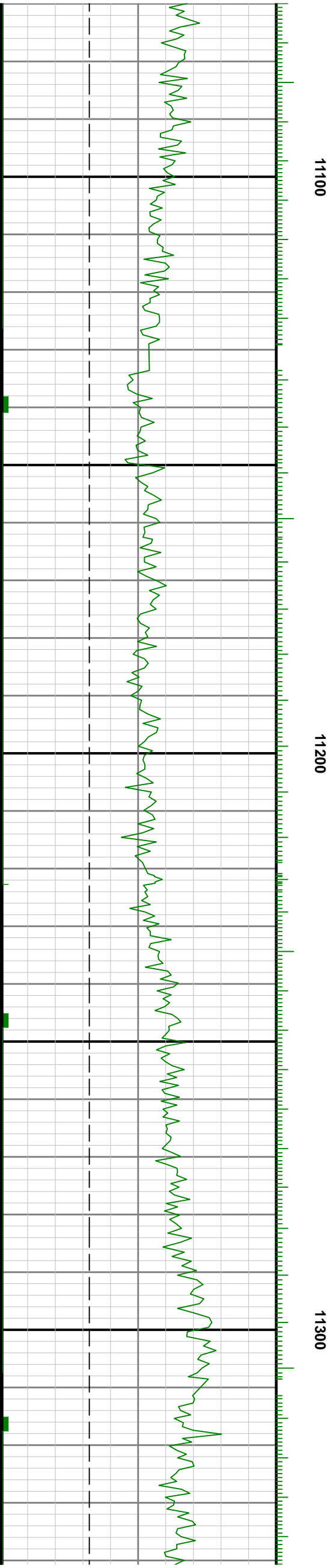
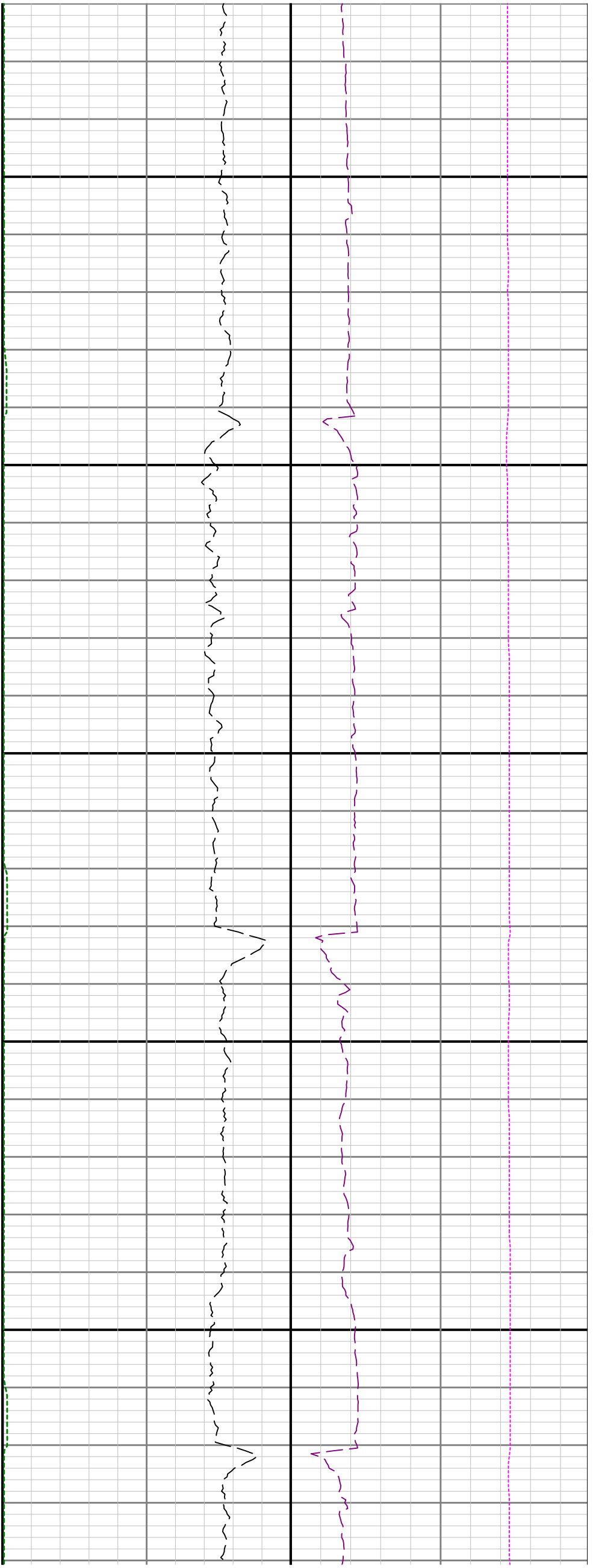


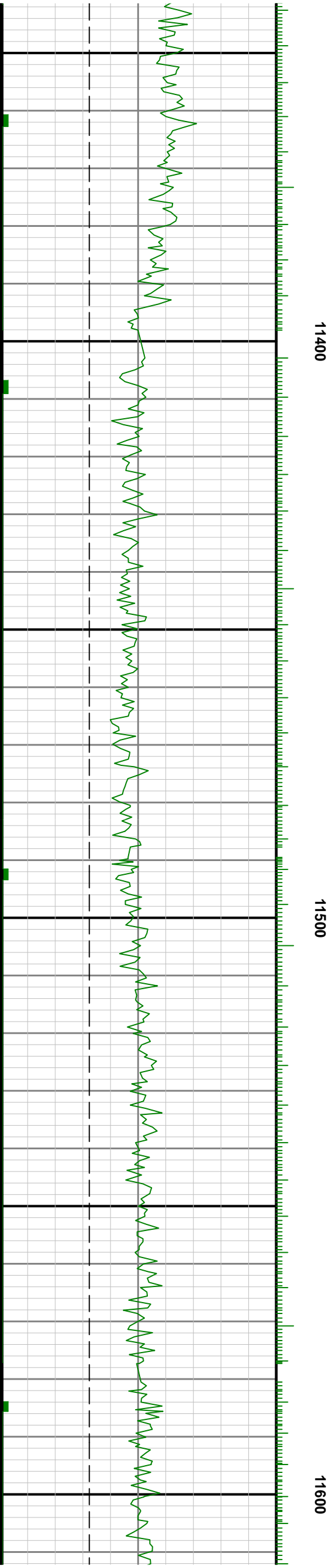
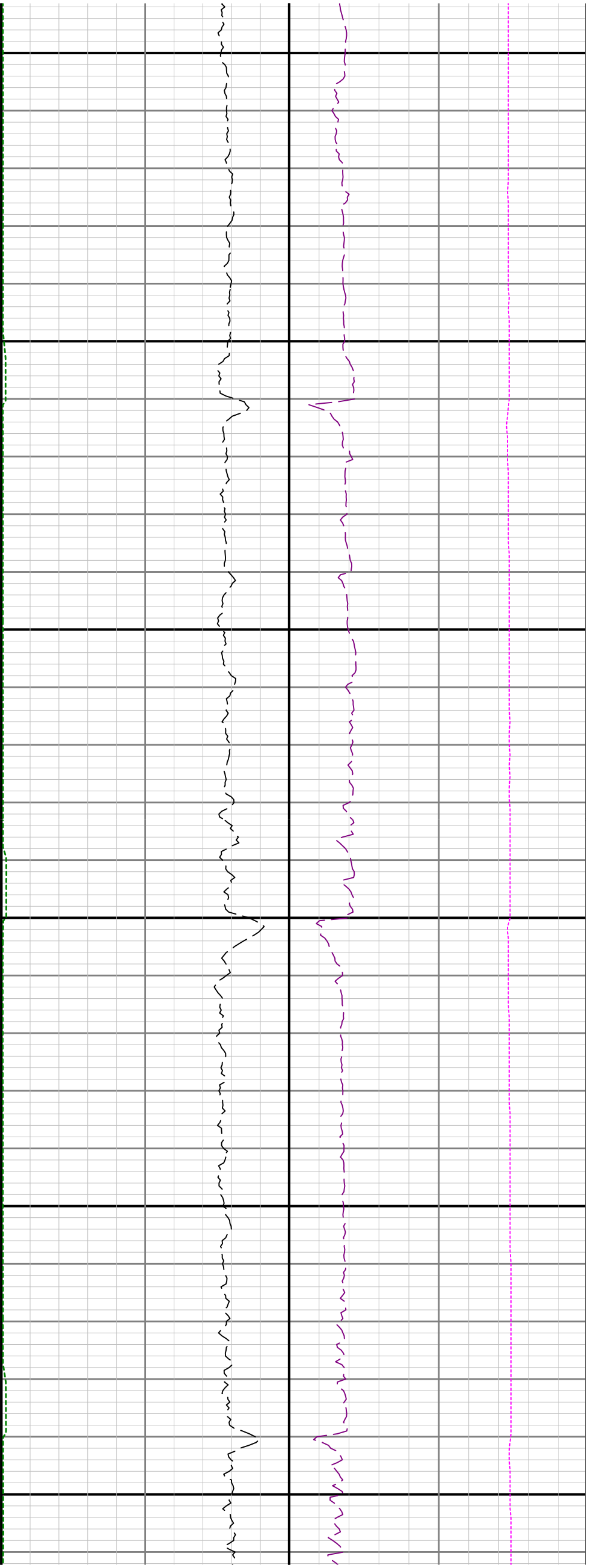


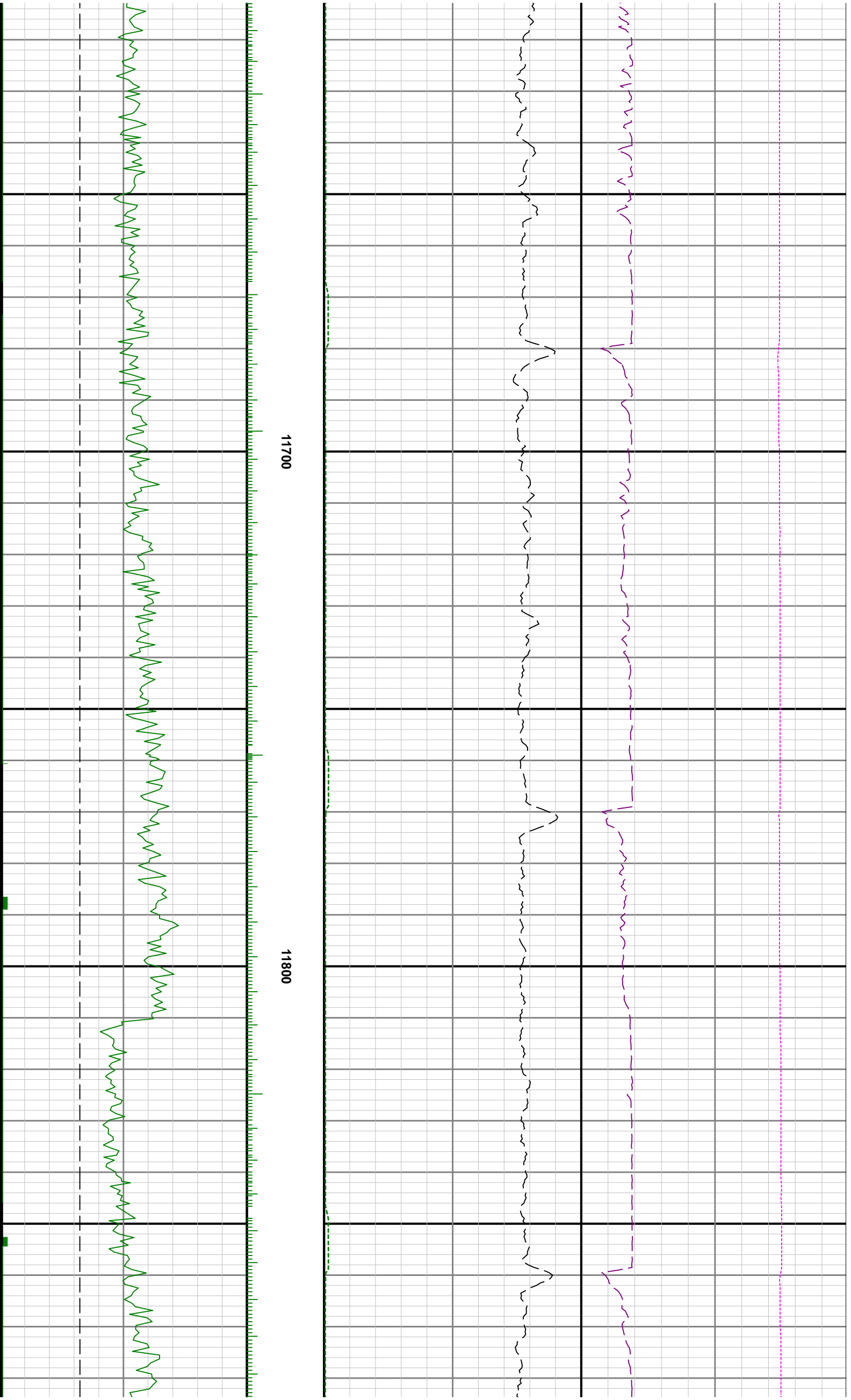


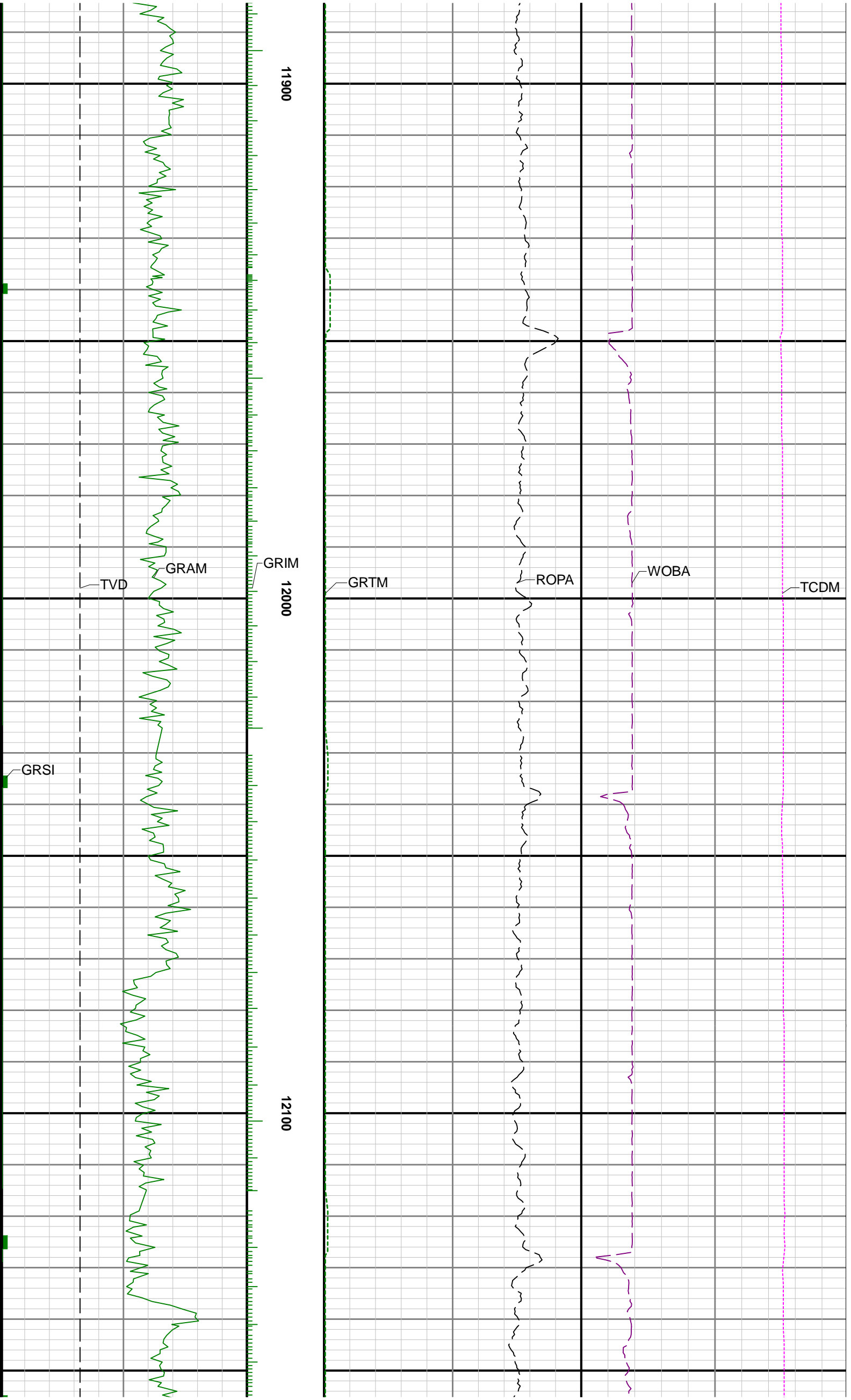


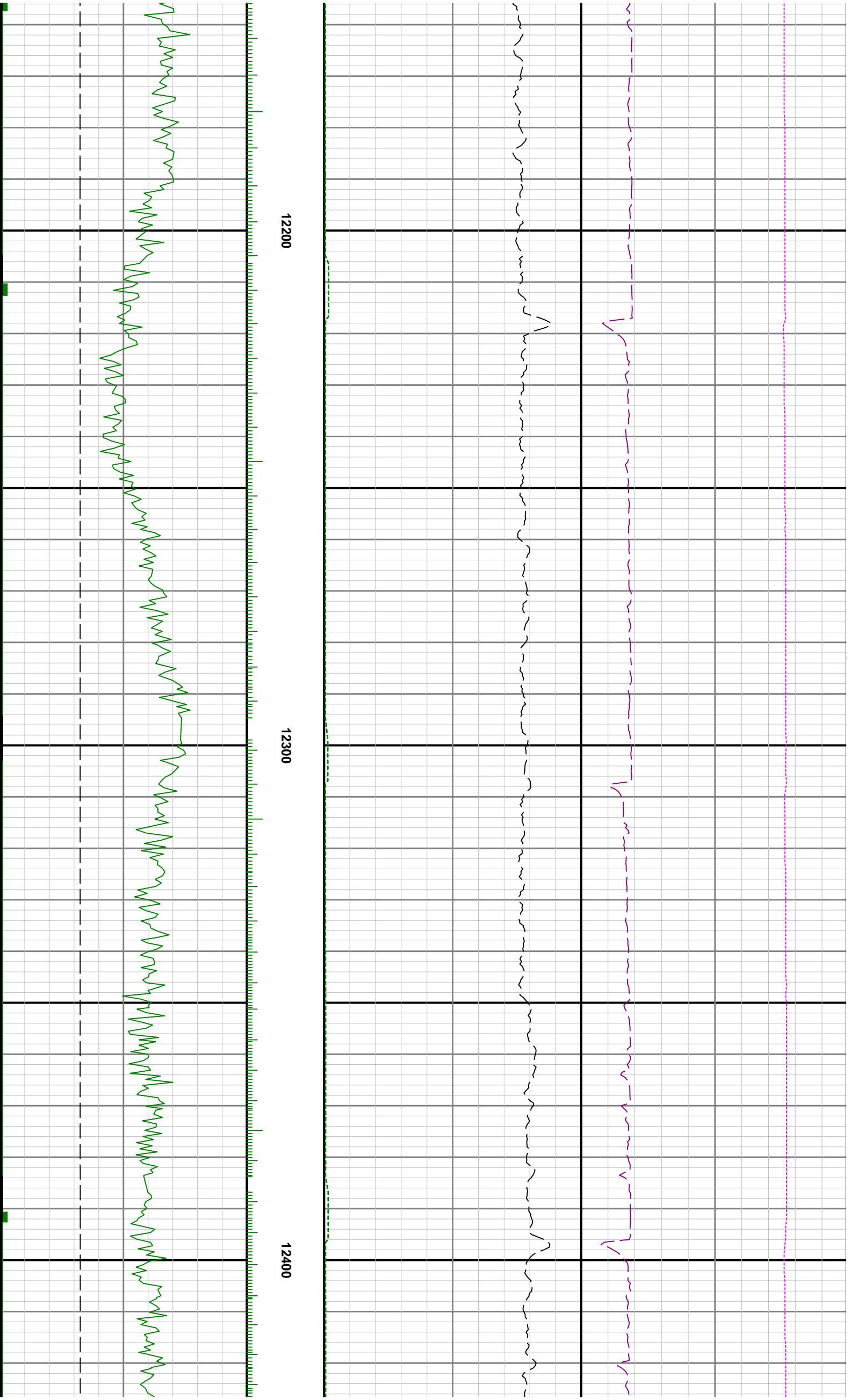


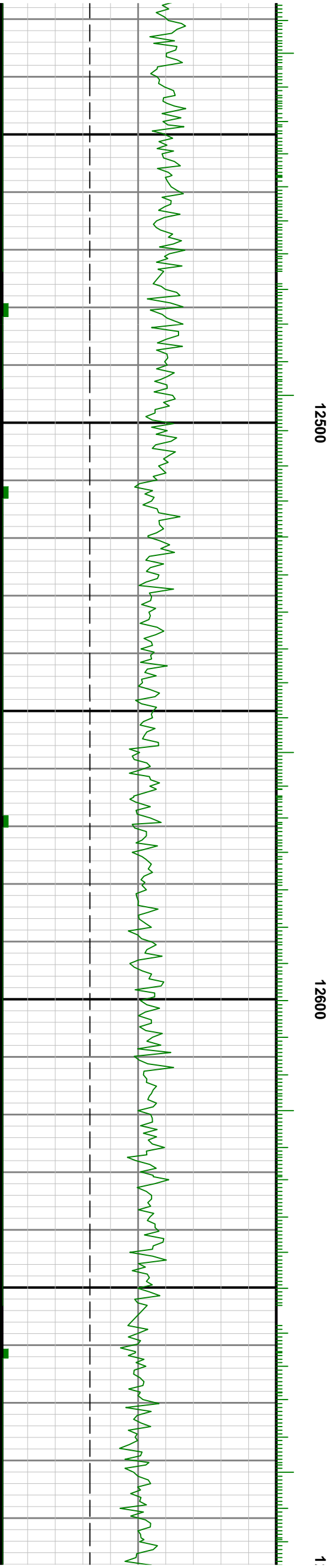


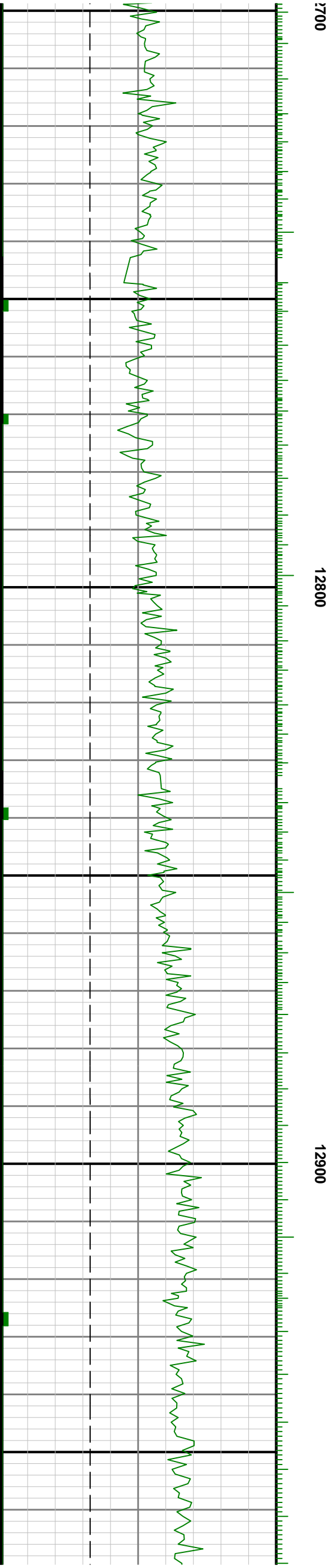
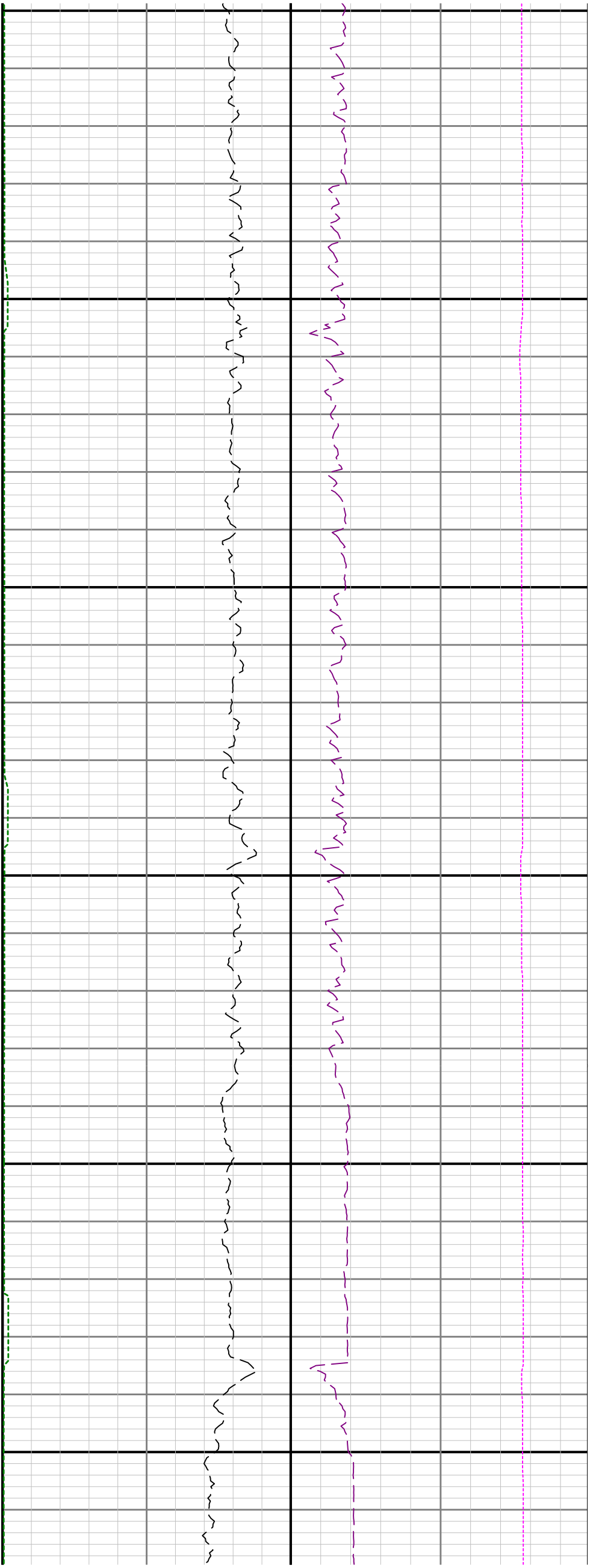


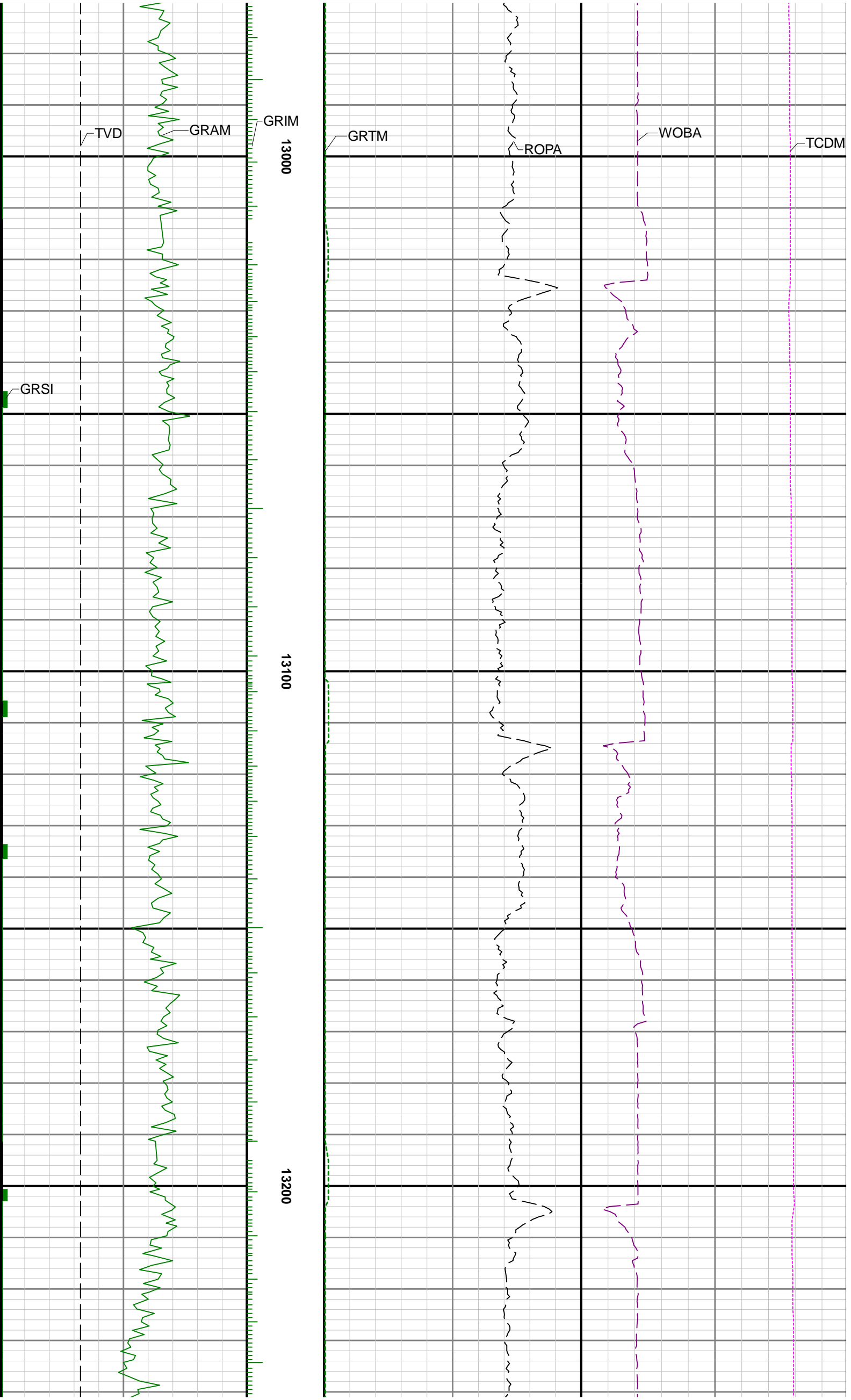


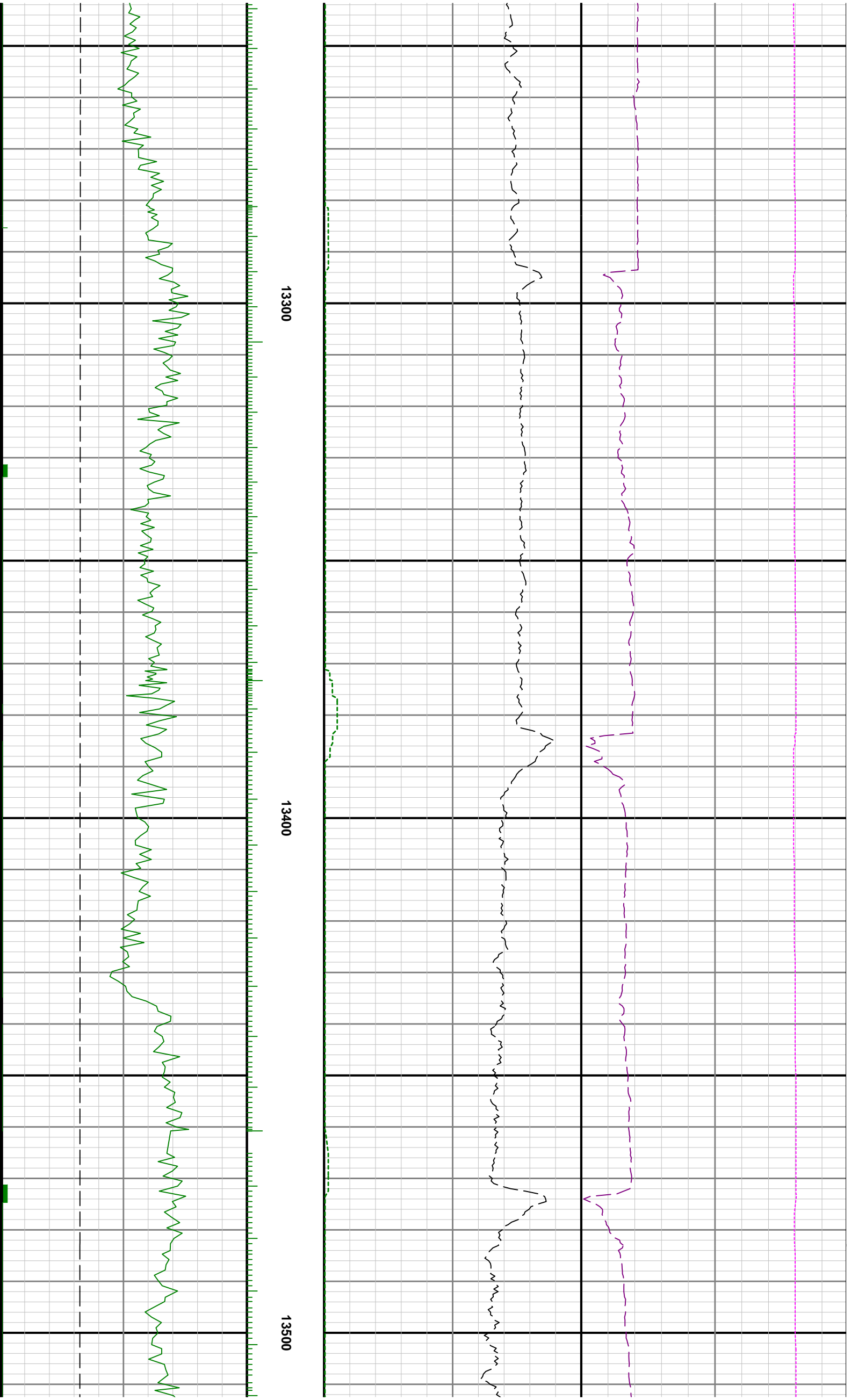








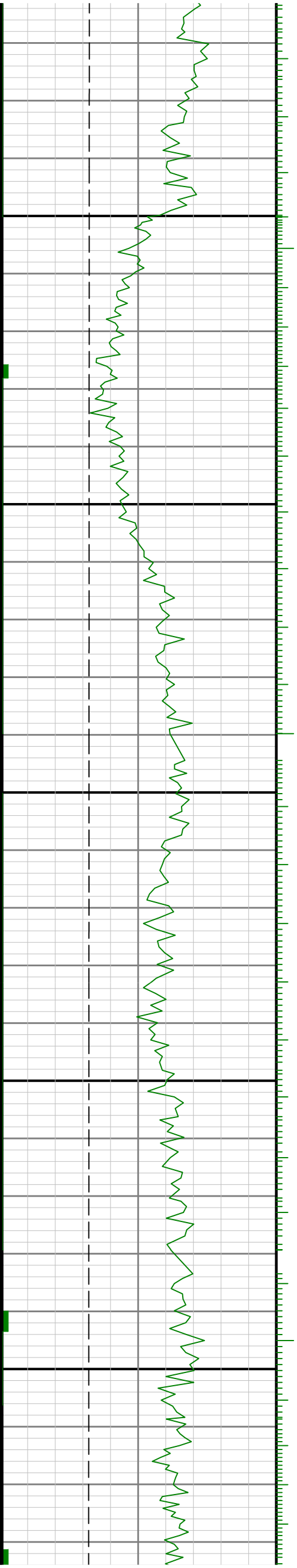


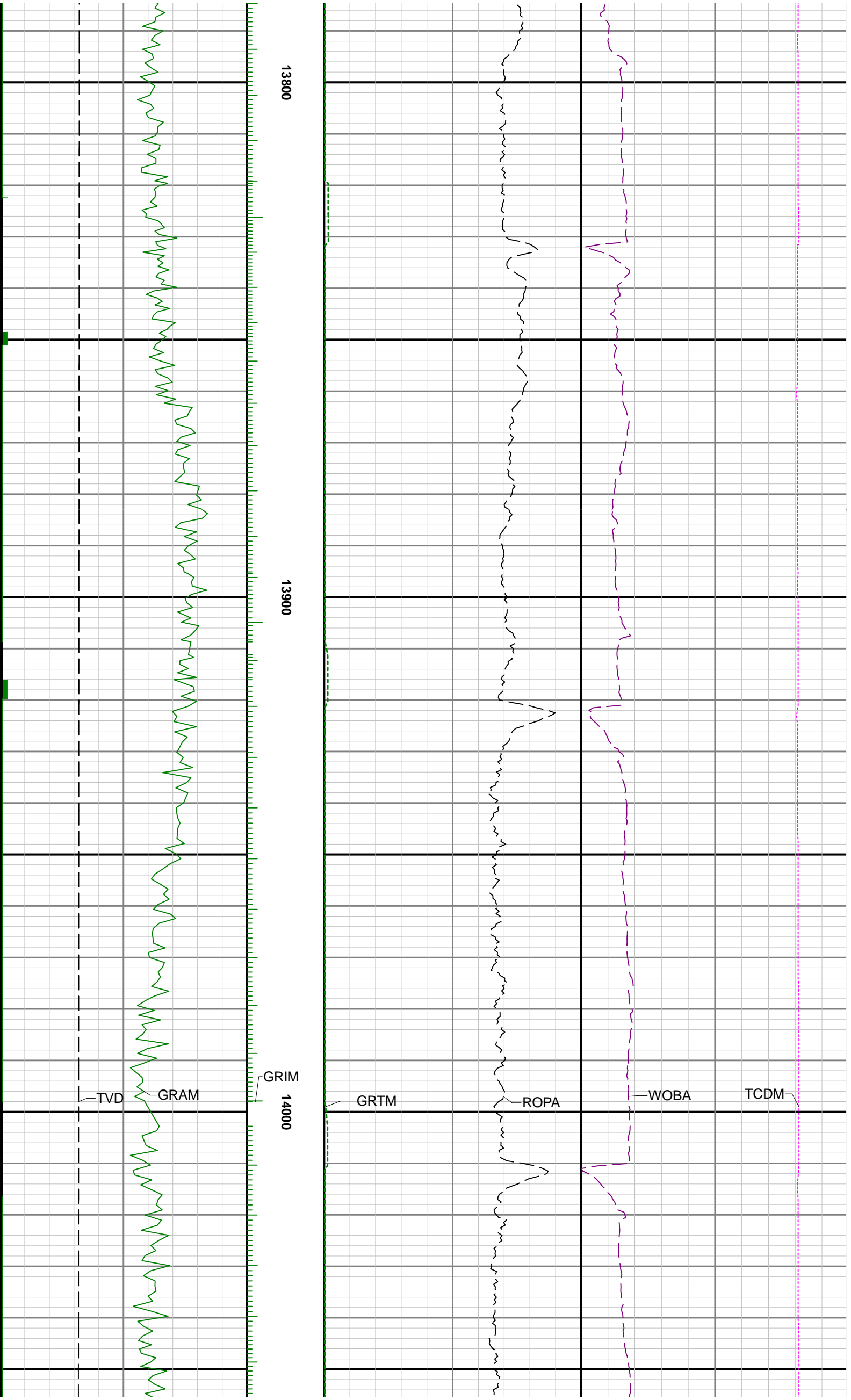


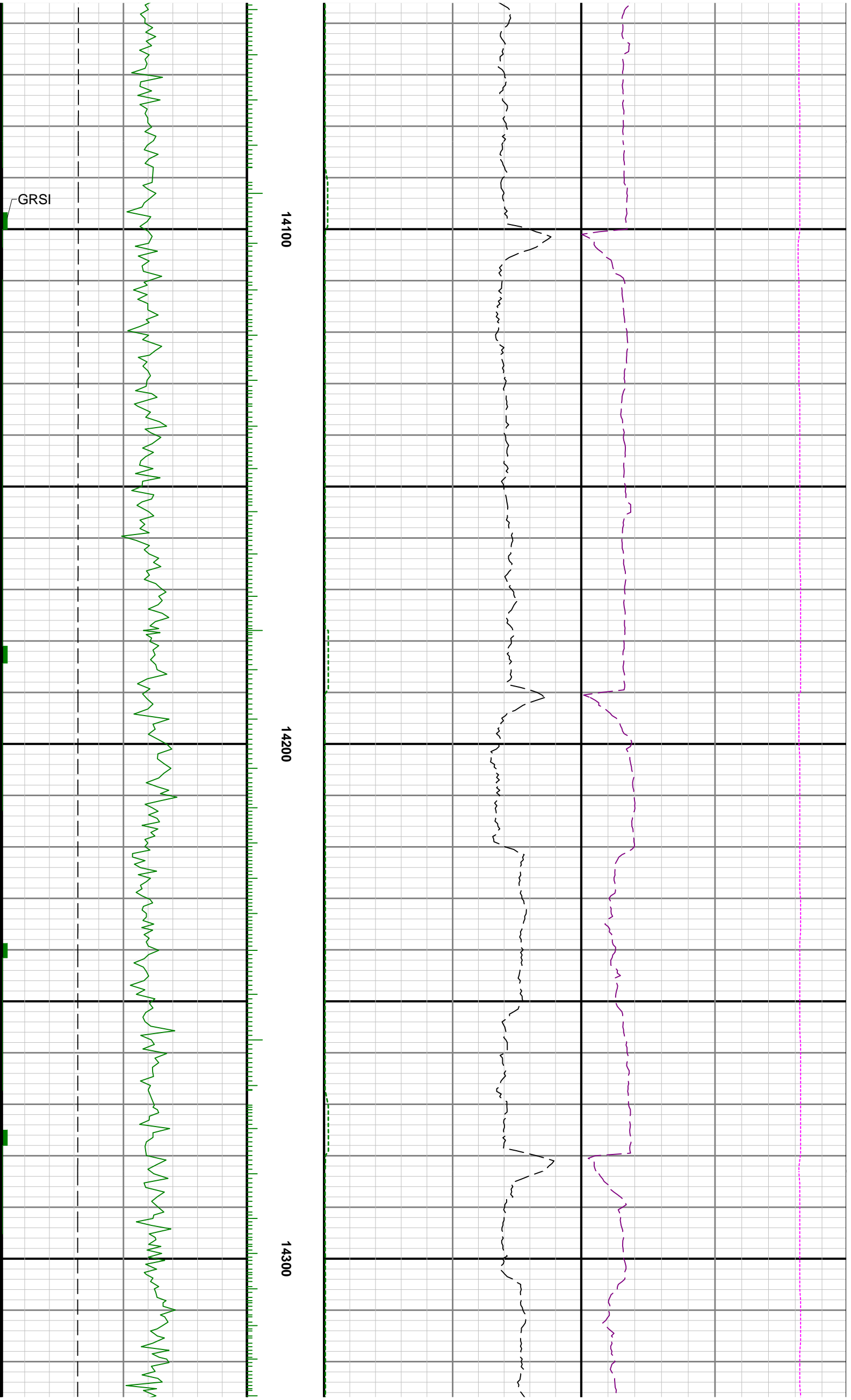


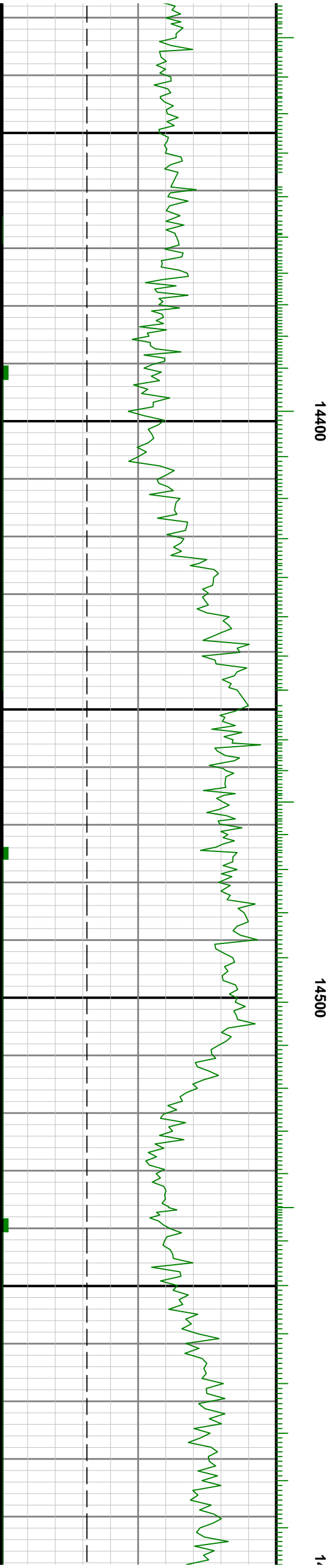
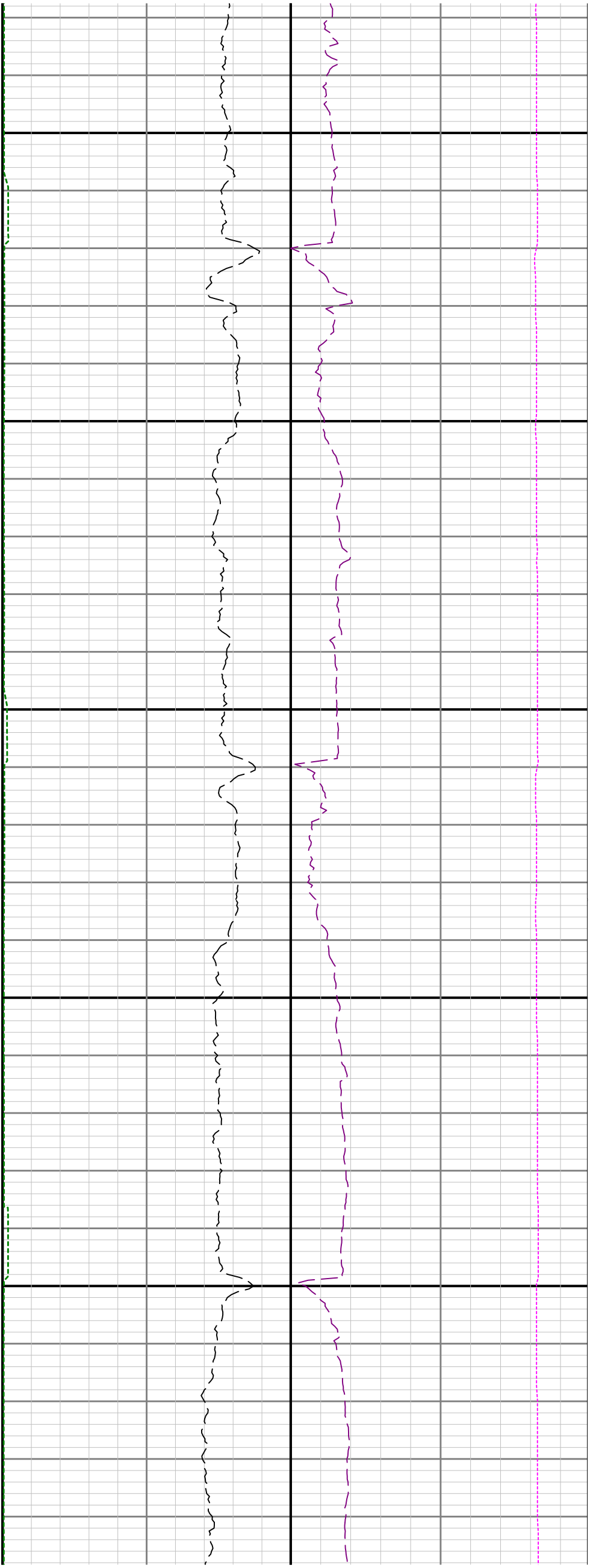
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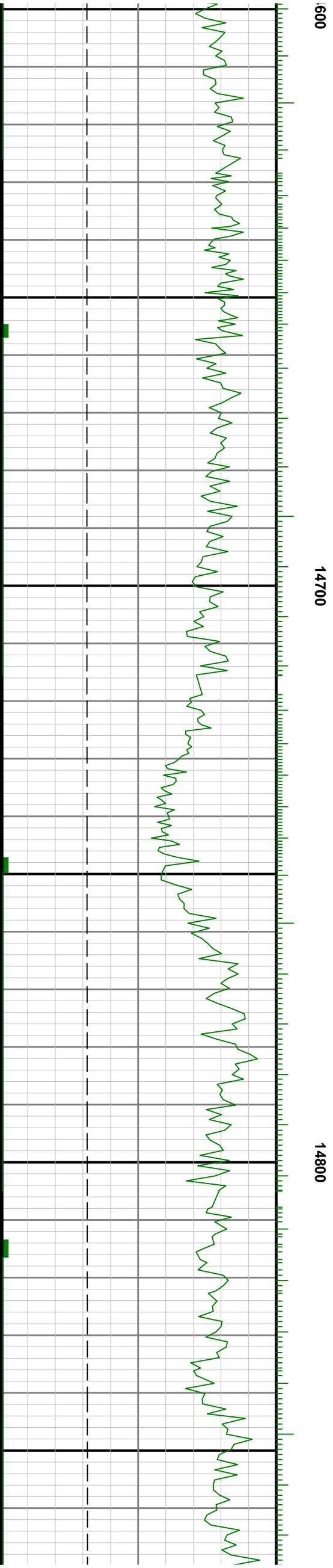
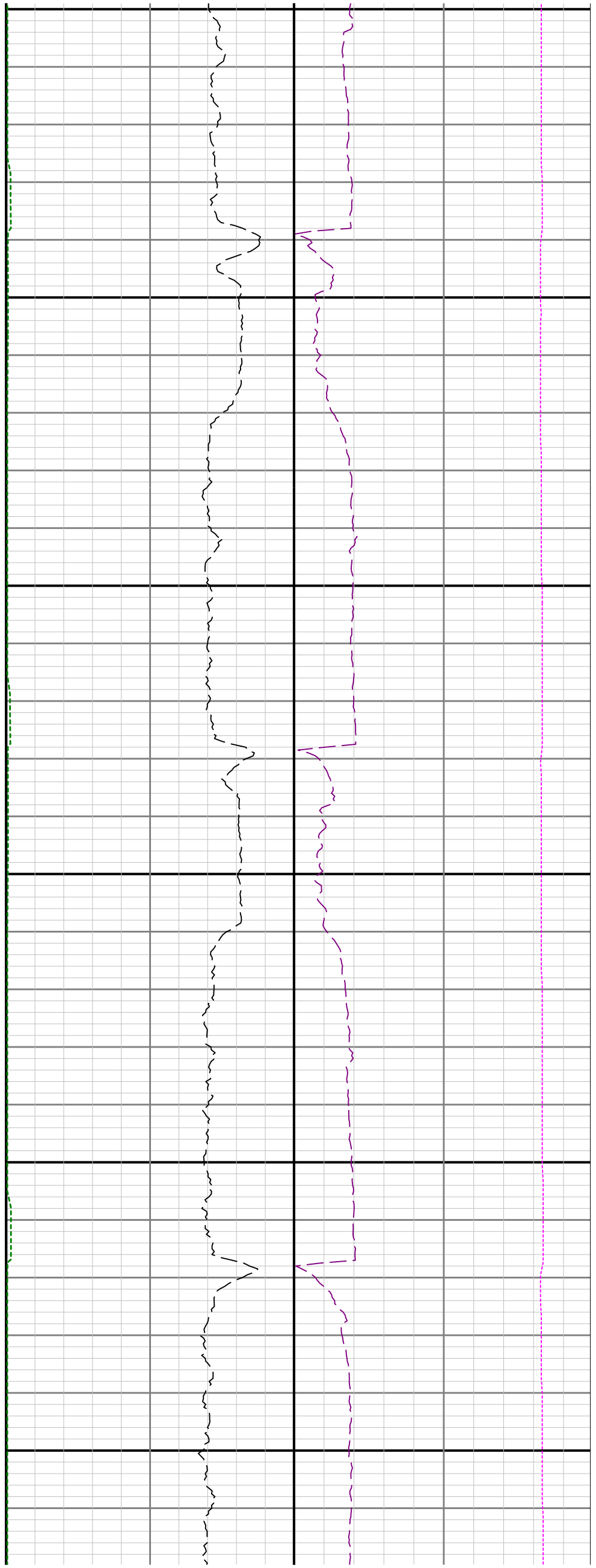
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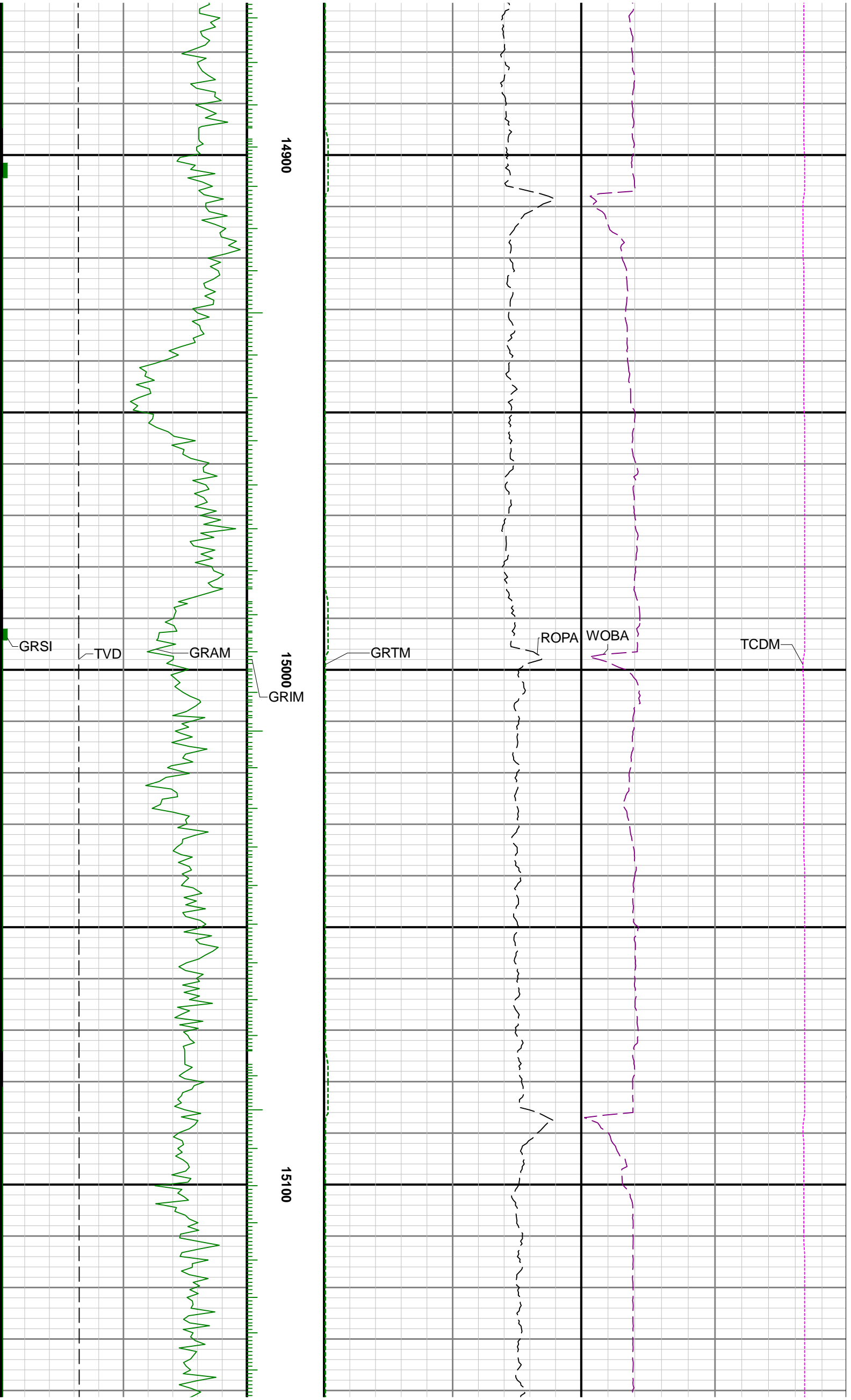


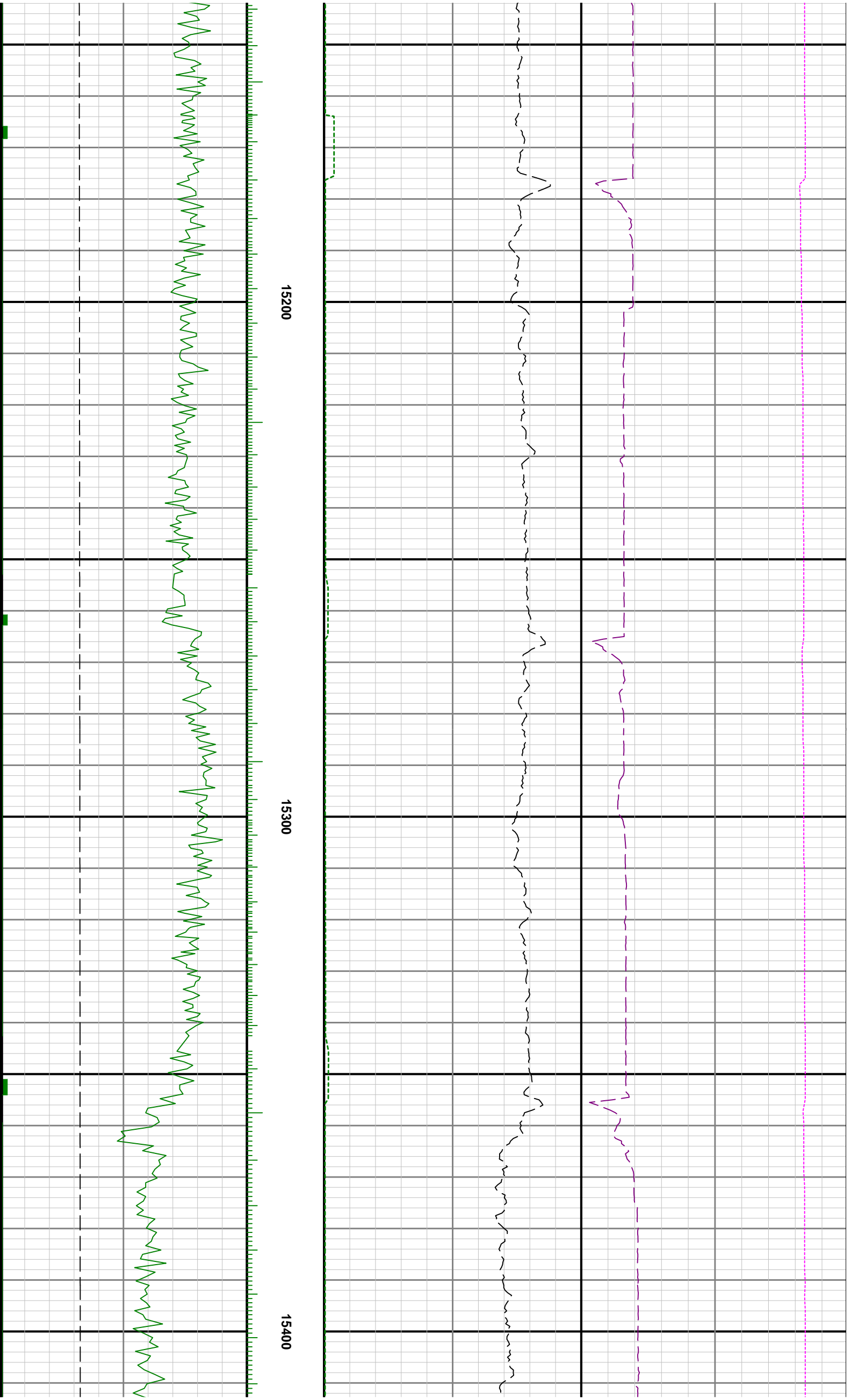


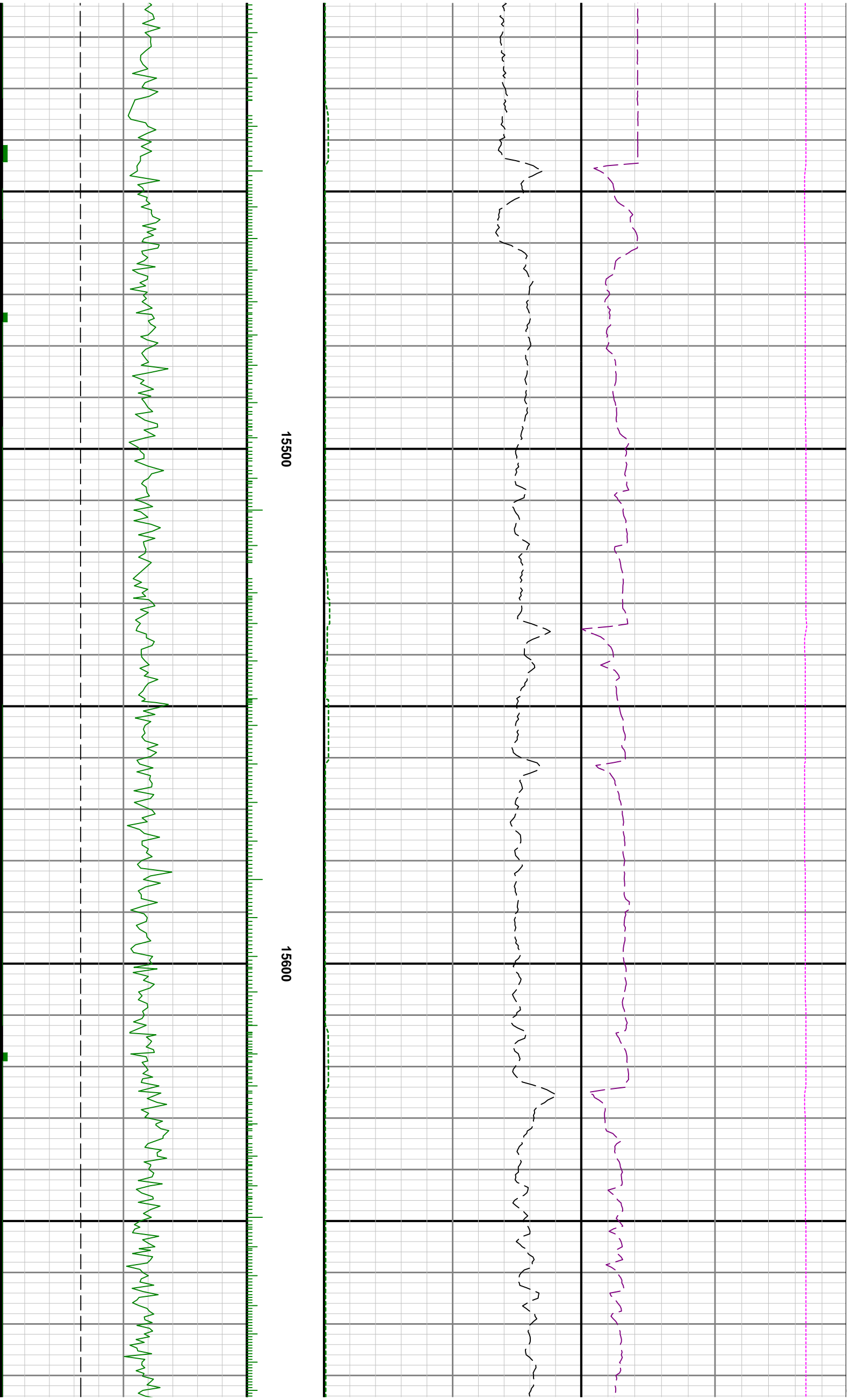


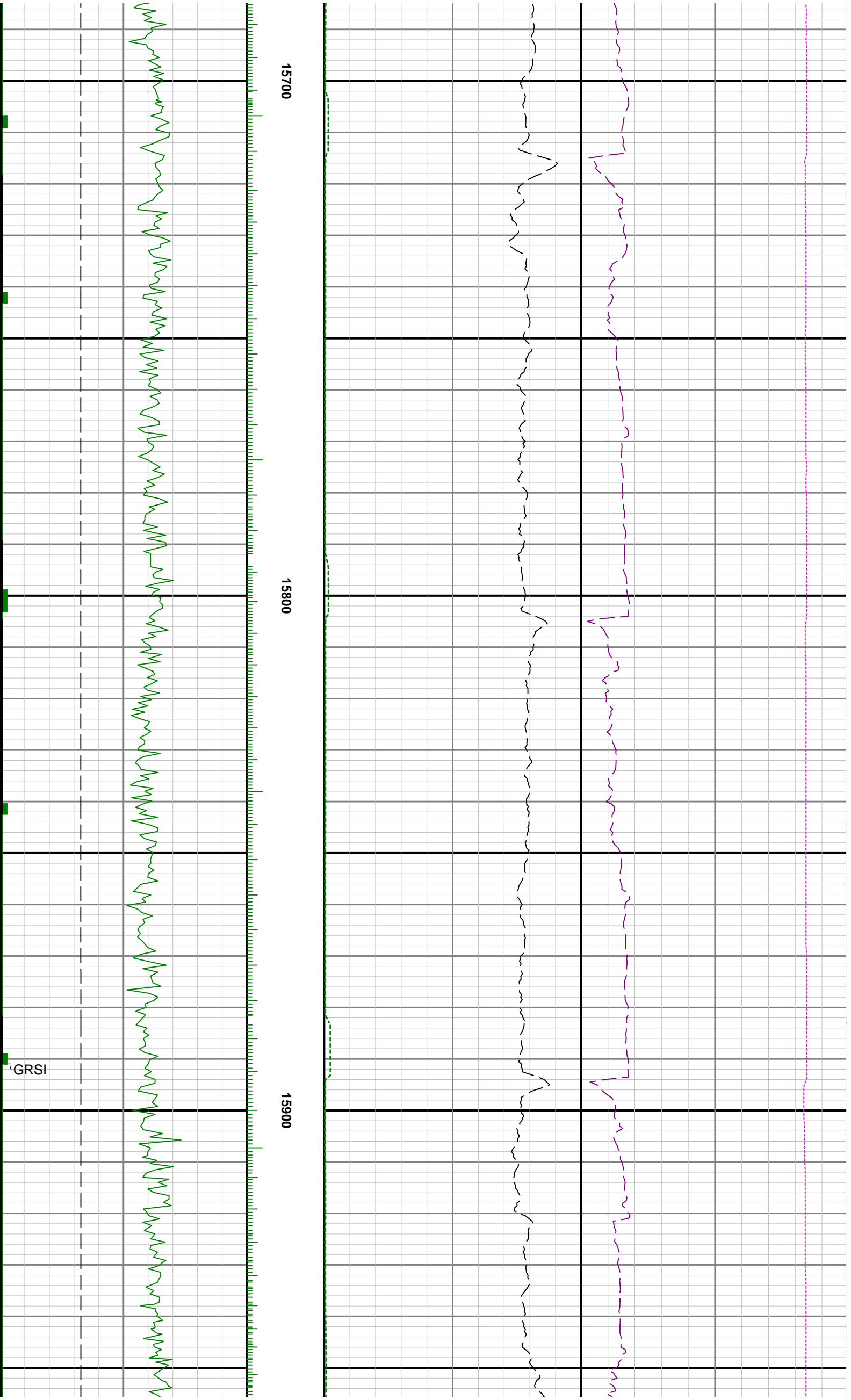


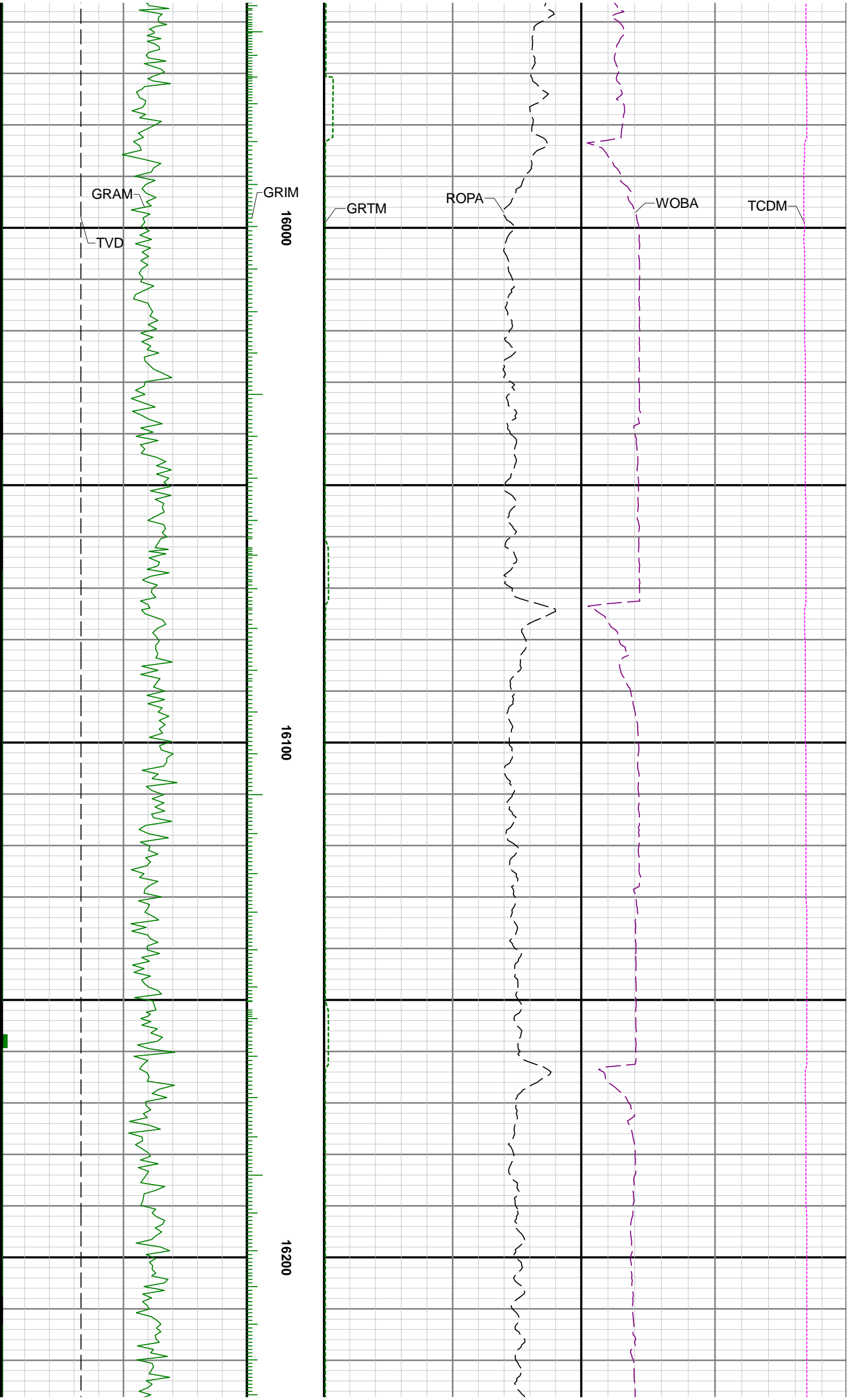


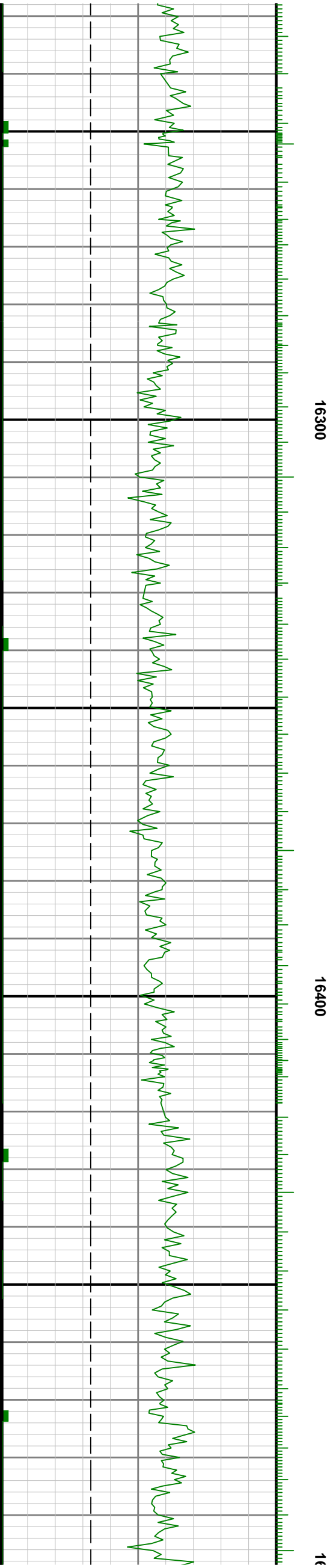
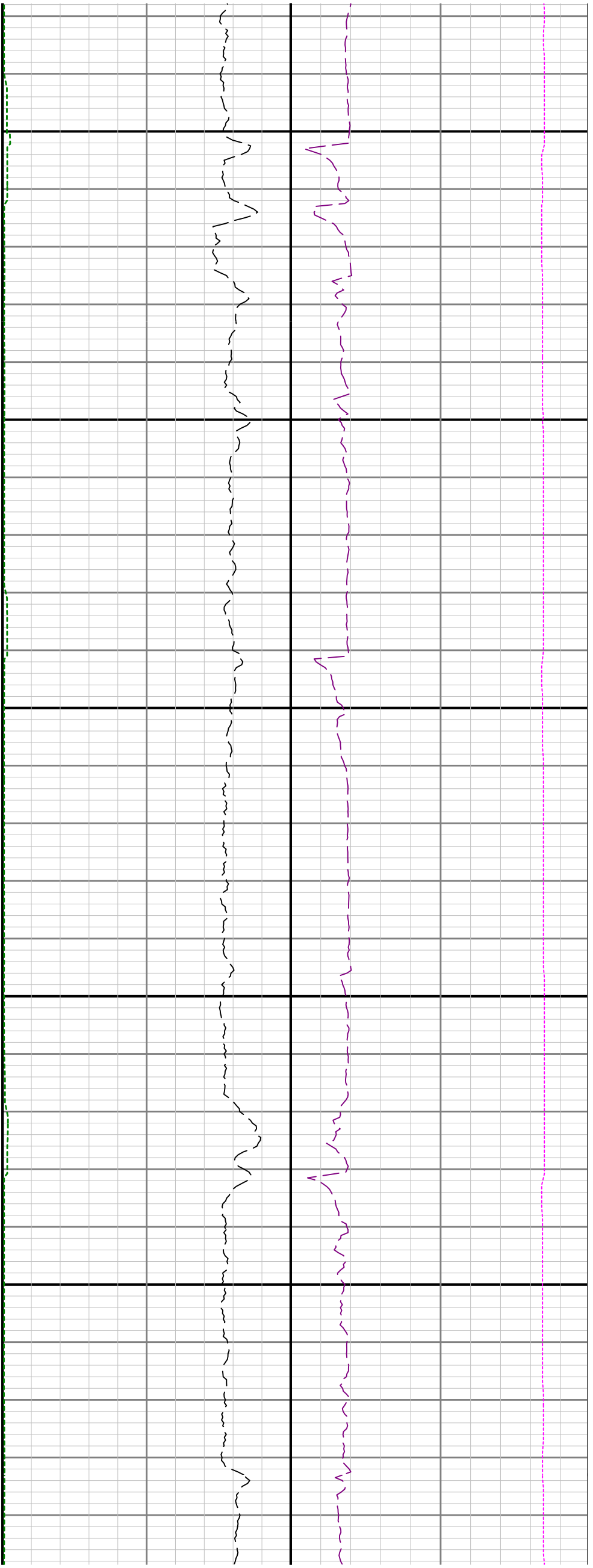


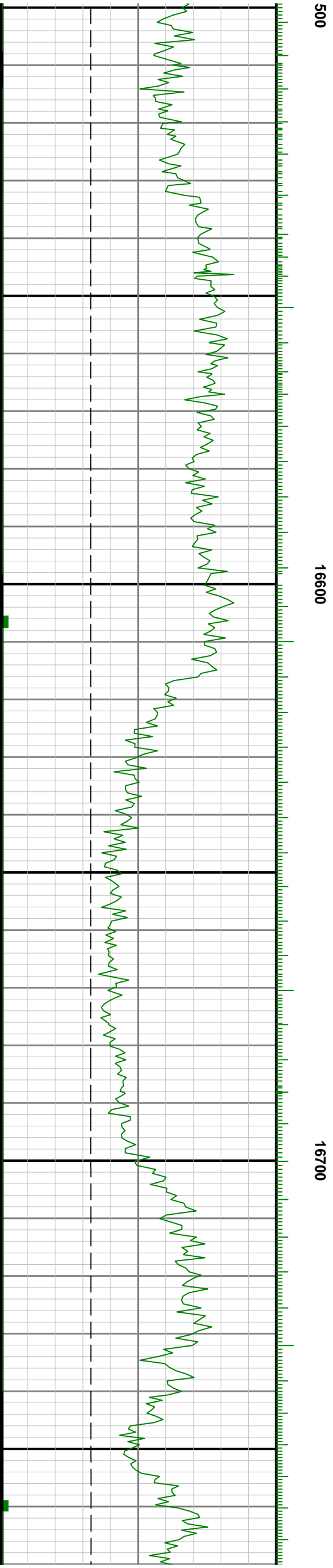


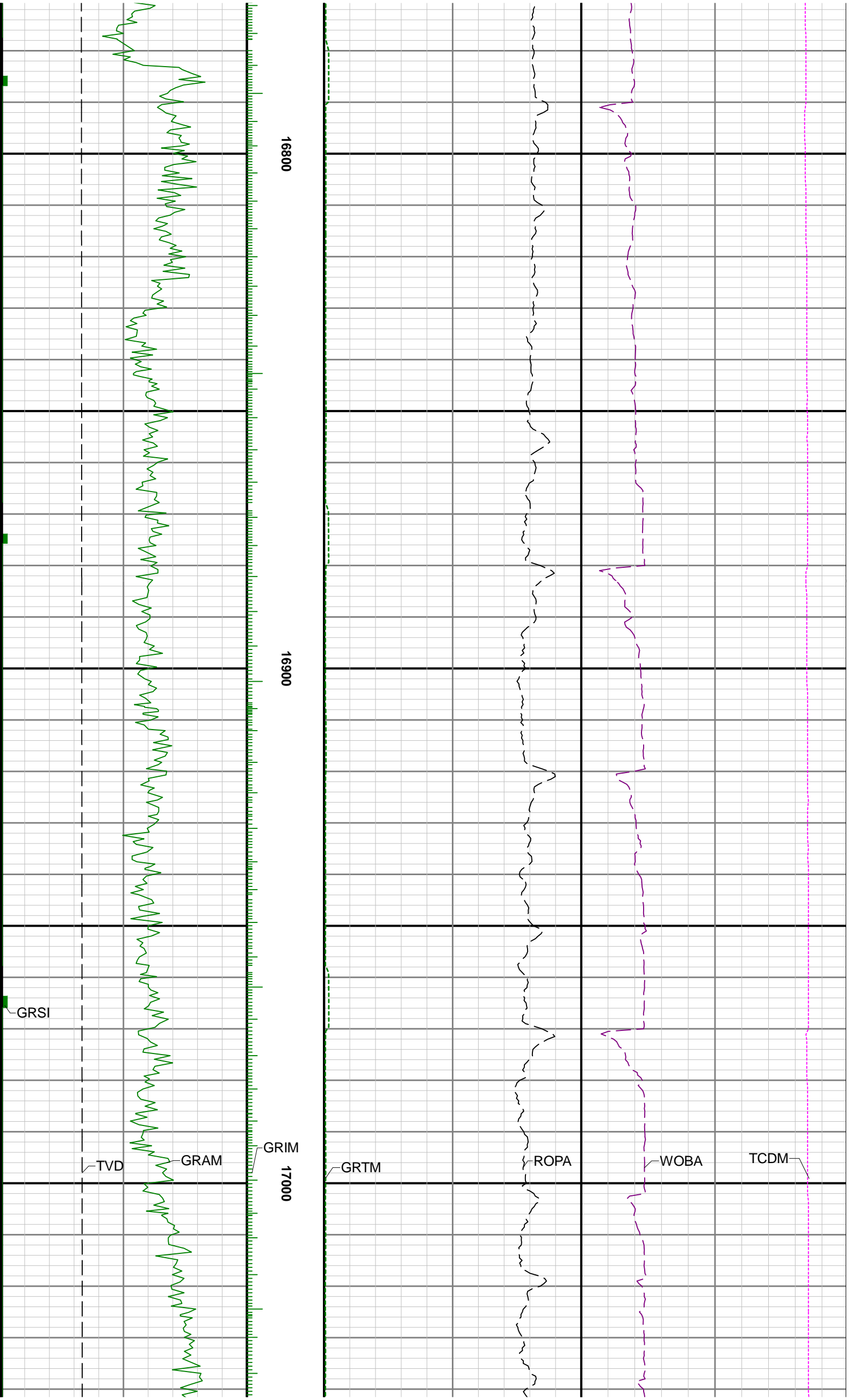


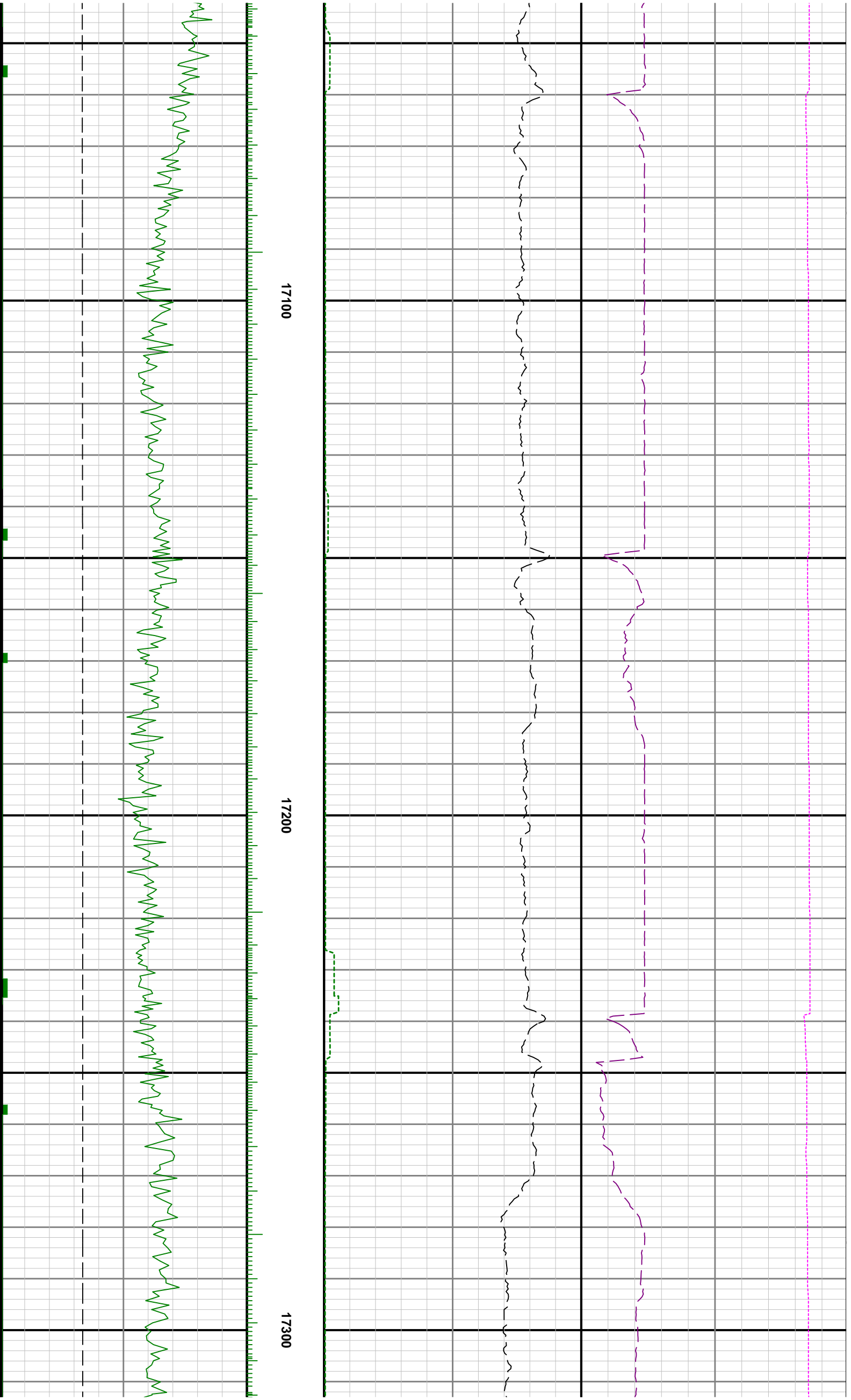


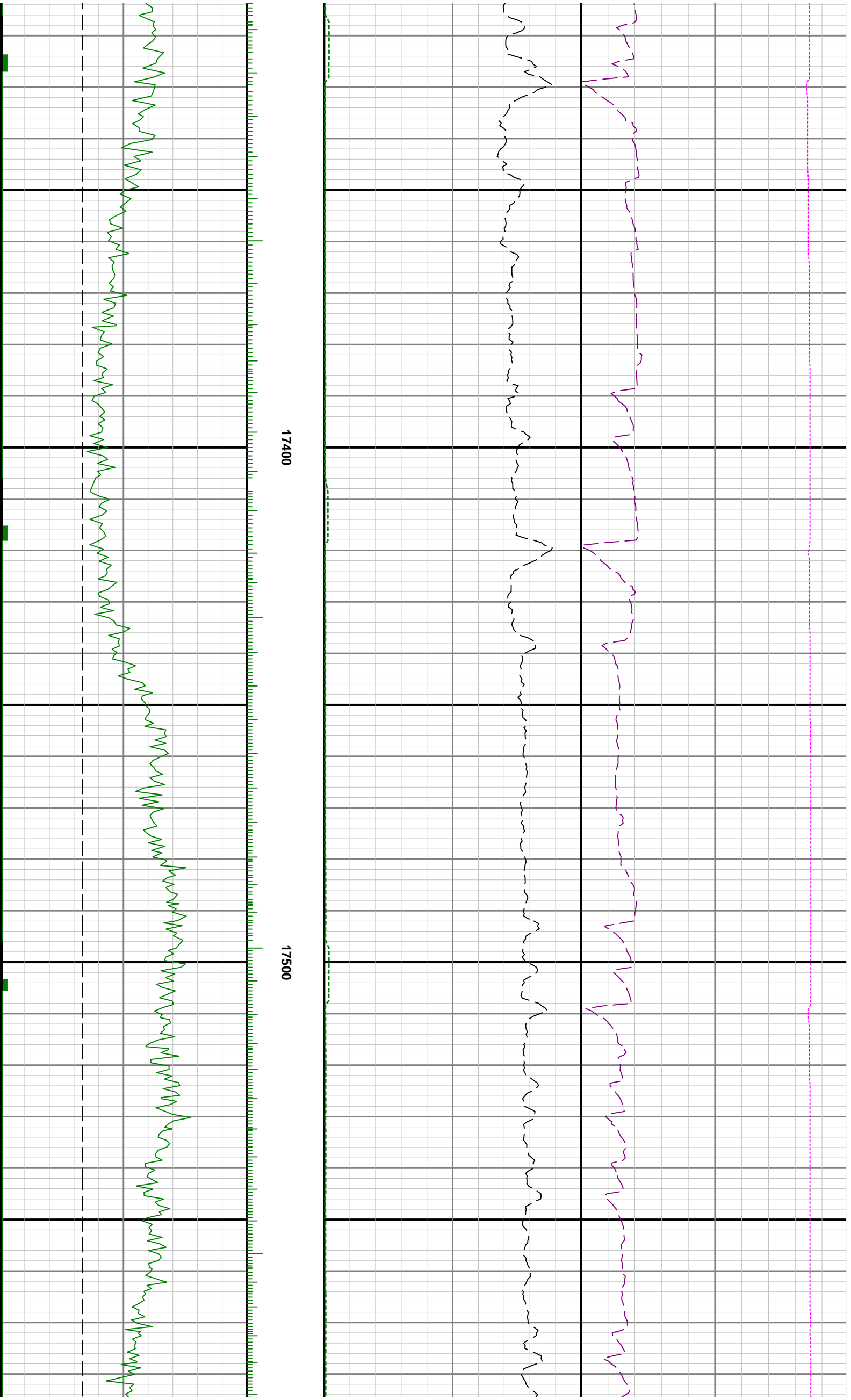


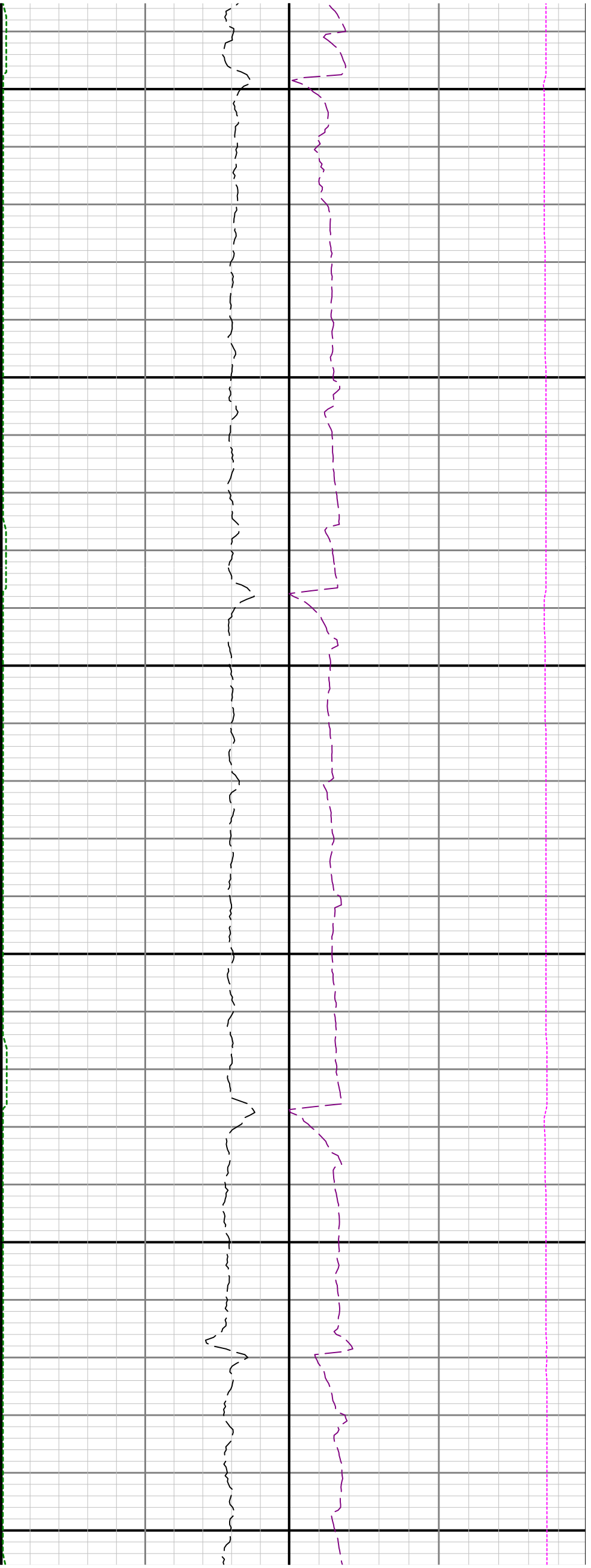












17600

17700

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