LWD REALTIME LOG

Gamma Ray

Scale:	1:240 MD
Depth Reference:	Driller's Depth
Company:	Anadarko
Well:	AZUL 13-30HZ
Field:	Weld
County:	Weld
Country:	United States
State:	Colorado
Status:	Final Print
API No:	0512346114
Job ID:	9041550

Surface Location:
Latitude: 040° 02' 46.198" N
Longtitude: 104° 43' 34.370" W
SEC: 13 TWN: 1N RGE: 66W

Other Services:
Directional

Permanent Datum (P.D.):	Ground Level	Elevation:	5050.00 ft
Log Measured From:	Rig Floor	Above P.D.	21.00 ft

Elev. KB:	N/A
Elev. DF:	5071.00 ft
Elev. GL:	5050.00 ft

Dates		Interval Logged	
Date From:	2018-04-04	Top: (ft)	1930.00
Date To:	2018-04-06	Bottom: (ft)	13406.00
Spud Date:	2018-04-04		

Magnetic Field Reference			
Azi Reference North:	True	Dip Angle: (deg)	66.35
Total Magnetic Field Strength: (nT)			52370
Mag to Reference North Correction: (deg)			7.78 E

Borehole Record

Hole Size (in)	From (ft)	To (ft)
13.500	21.00	1930.00
7.875	1930.00	13406.00

Casing Record

Size (in)	Weight (lb/ft)	From (ft)	To (ft)
9.625	36.00	21.00	1933.00

Mud Record

Type	From (ft)	To (ft)
Oil Based Mud	1930.00	13406.00

Deviation Record

Hole Size (in)	Interval (ft)	Inc | Az (Start)	Inc | Az (End)
7.875	11477.00	31.33 | 113.57	89.38 | 356.53
		|	|
		|	|
		|	|
		|	|
		|	|

Acquisition System	Software Version
Baker Hughes Cadence	RT4.1
PlotStudio	4.1.7763.3

Other

Rig:	Precision 464		
Contractor:	Precision Drilling		
District:	RMA	Unit:	D&E

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	3.500	PDC	2.50	Steerable	1888.00	13365.00	1930.00	13406.00	2018-04-04 12:33	2018-04-07 01:06	52.19

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Alexis Bejarano	2018-04-04	2018-04-07	Mohammad Odetallad	2018-04-04	2018-04-07			

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+ (%)
2018-04-03 18:27	1	1880.00	Oil Based Mud	9.1	65	N/A	0.0	80/20	Active Pit	28000	0.00
2018-04-04 15:00	1	2801.00	Oil Based Mud	9.0	21	N/A	3.0	78/22	Active Pit	27211	0.00
2018-04-05 15:00	1	8049.00	Oil Based Mud	9.1	27	N/A	3.0	77/23	Active Pit	27211	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	12366169	Gamma (single)	11.90	42.39	6.500	3.250
1	NaviGamma	12366169	Directional (mag)	15.32	45.81	6.500	3.250
1	NaviGamma	12366169	VSS	15.32	45.81	6.500	3.250

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 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 There are numerous gaps throughout the log due to bad decoding after picking agitator

Remarks

Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	1950.00	7.875	1	Baker Hughes began logging at 1930 feet MD (1840 feet TVD) as requested by the client.
2	13400.00	7.875	1	The interval from 13365 to 13406 feet MD (7461 to 7461 feet TVD) was not logged due to sensor offset from the bit.

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
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

BAKER HUGHES

Company Anadarko

Well AZUL 13-30HZ

Interval

Date From: 2018-04-04 06:33:13 **Top:** 1930.00

Date To: 2018-04-06 19:05:40 **Bottom:** 13407.00

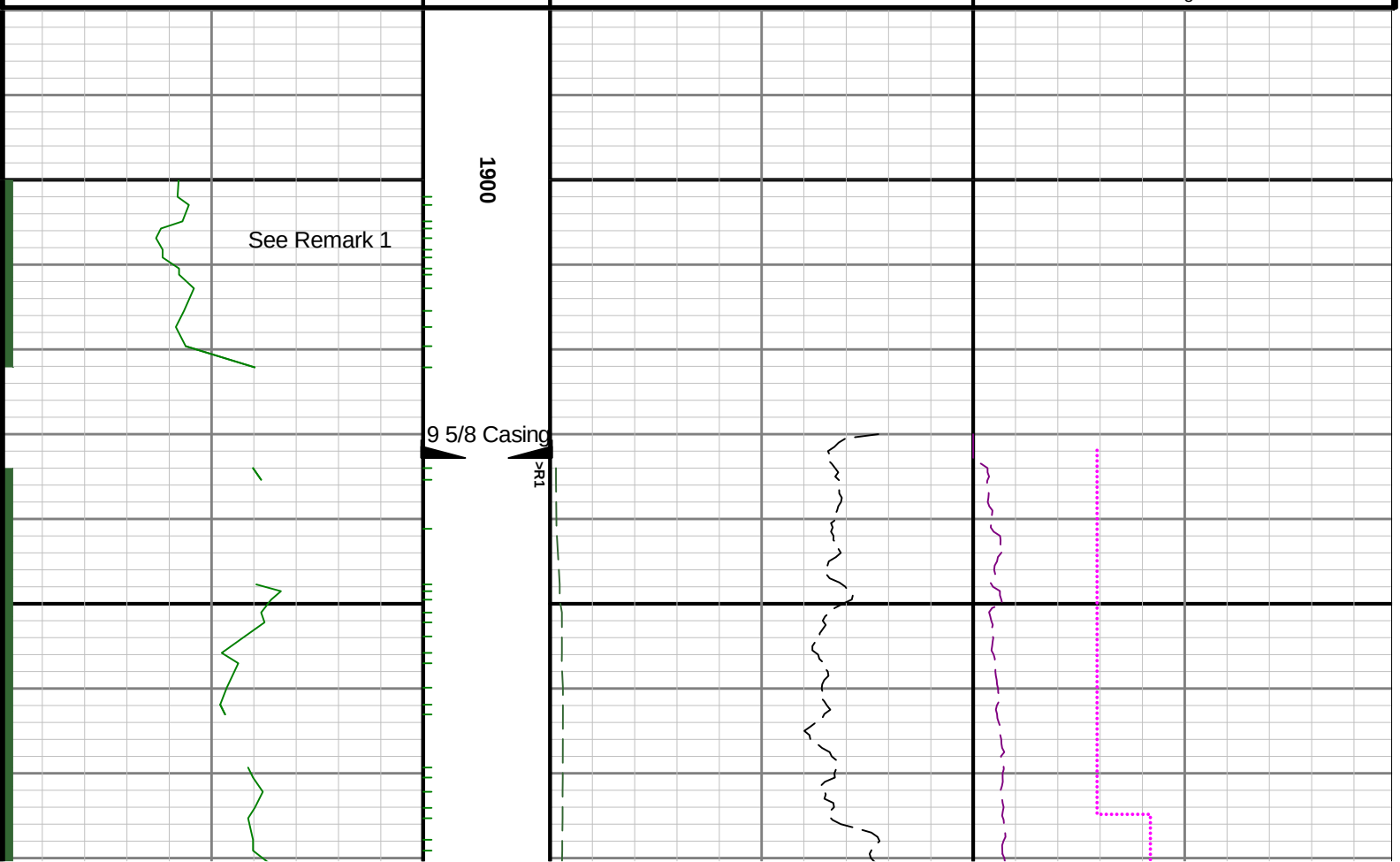
Created 2018-04-07 04:33:28

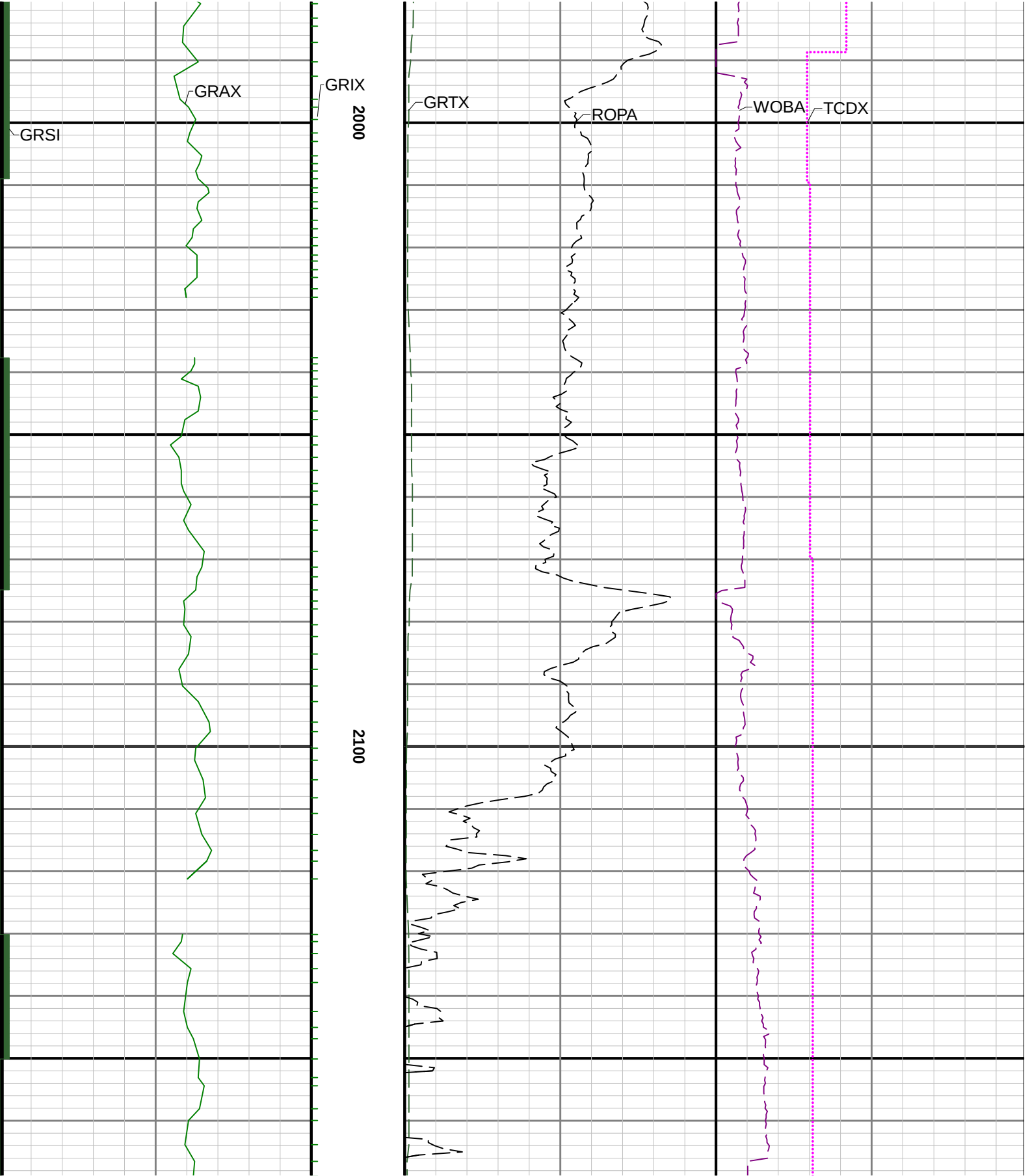
Gamma Ray - Apparent 0.5 ft Average [GRAX]
0 200
API
True Vertical Depth [TVD]
8000 6000
ft

MD 1:240 feet

Gamma Time Since Drilled
0 600
min
Depth Averaged ROP 3 ft Average [ROPA]
900 0
ft/h

Weight On Bit, Average 1 ft Average [WOBA]
0 150
klb
Downhole Temperature [TCDX]
0 300
degF

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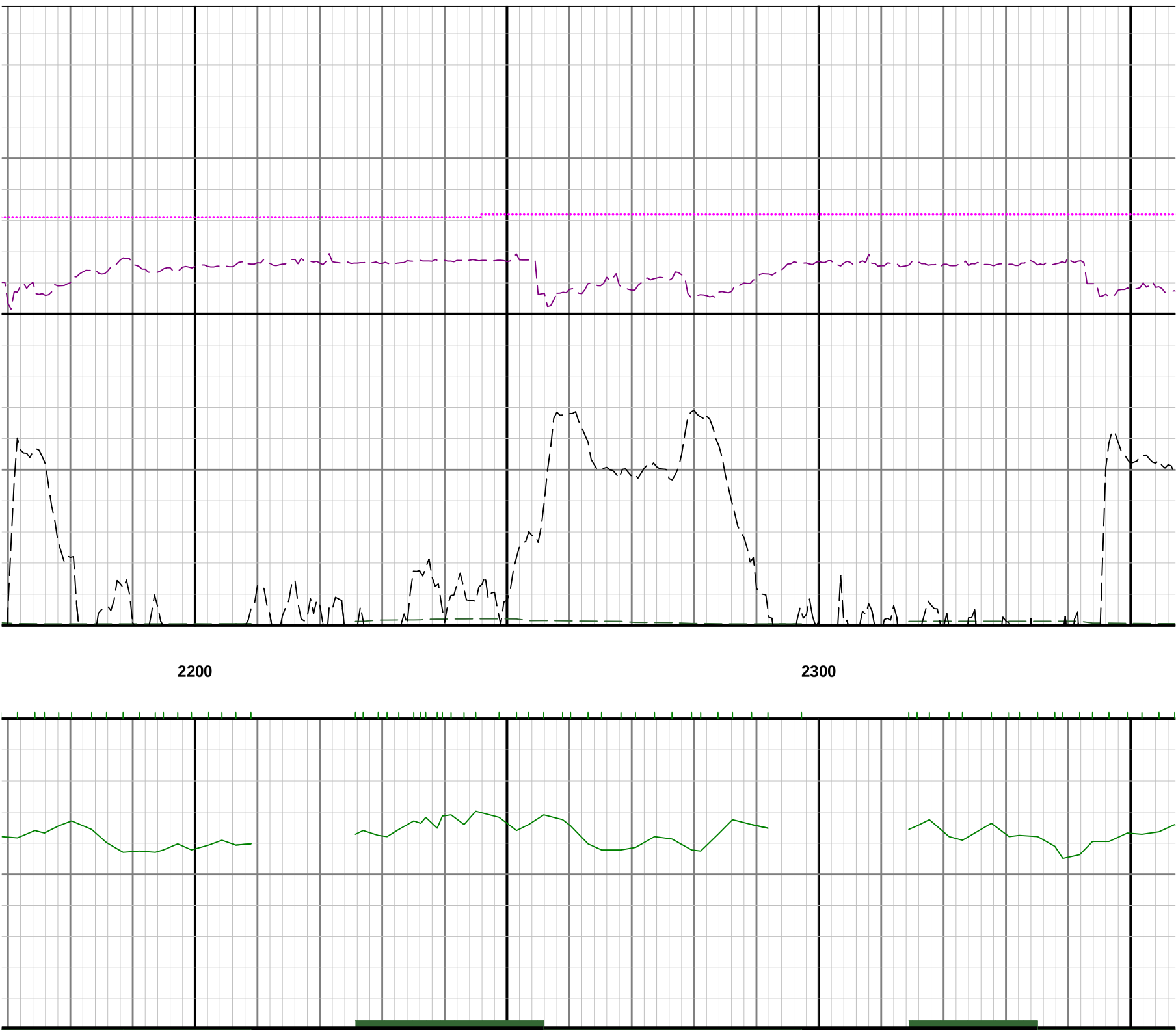
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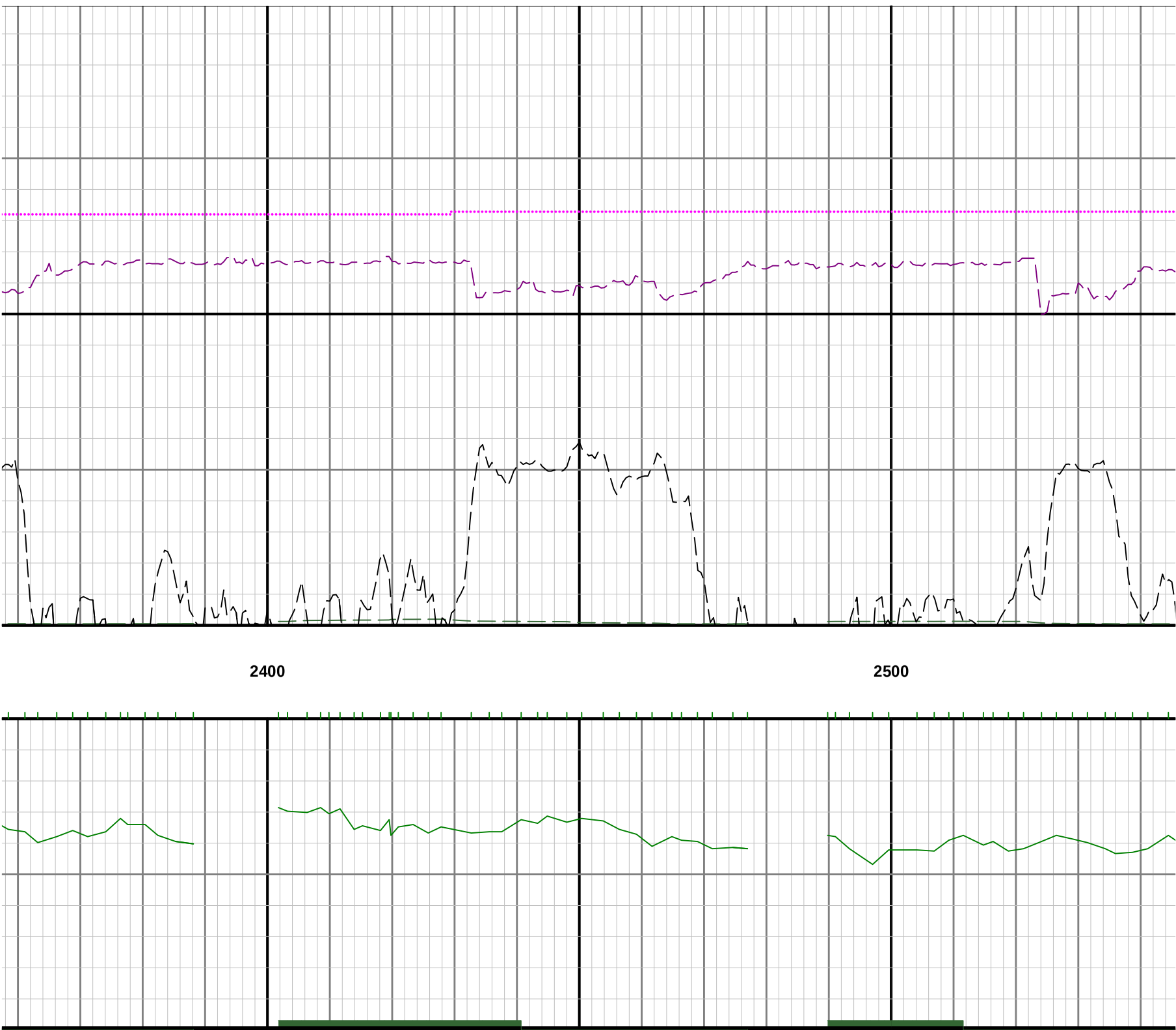
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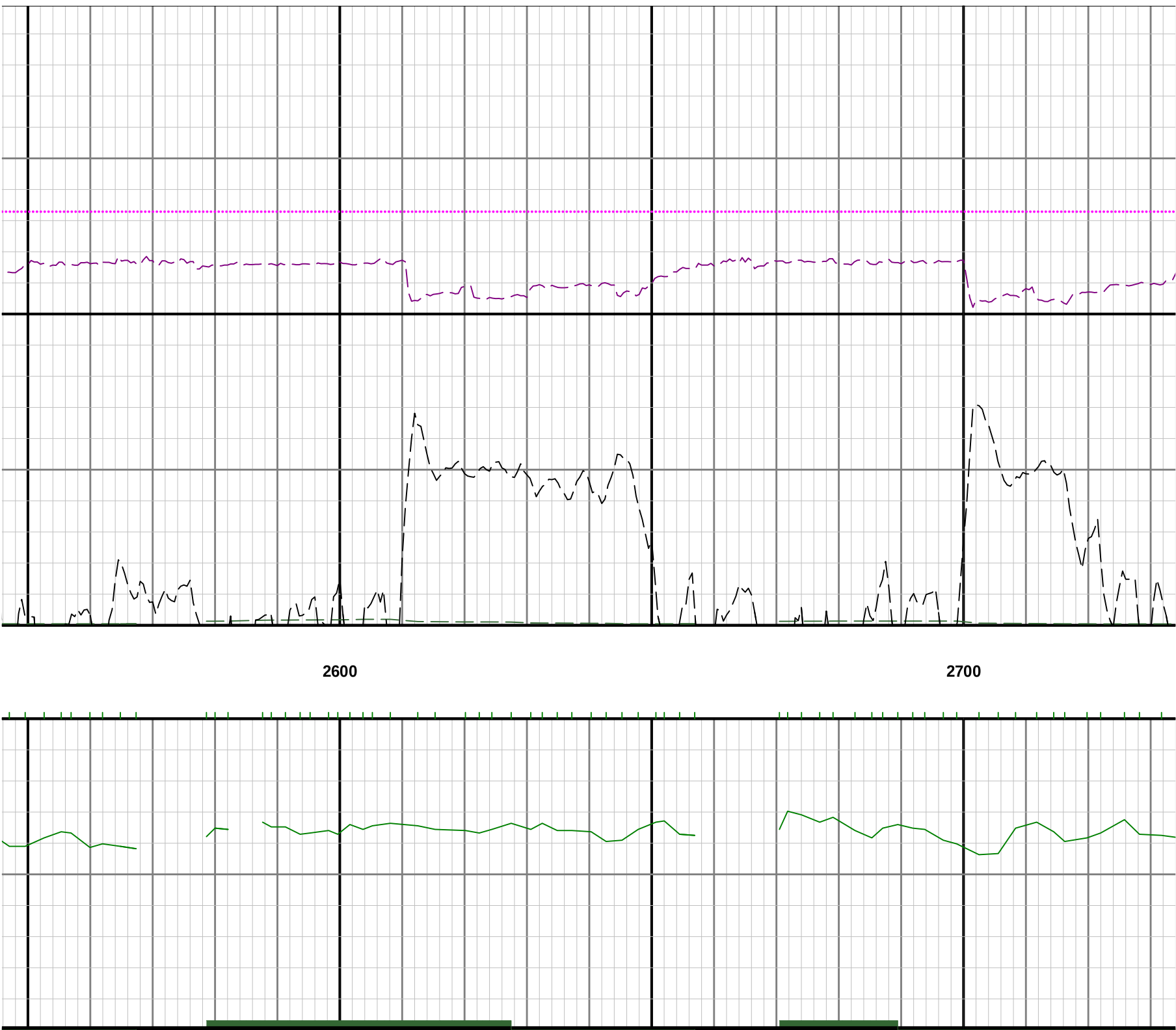
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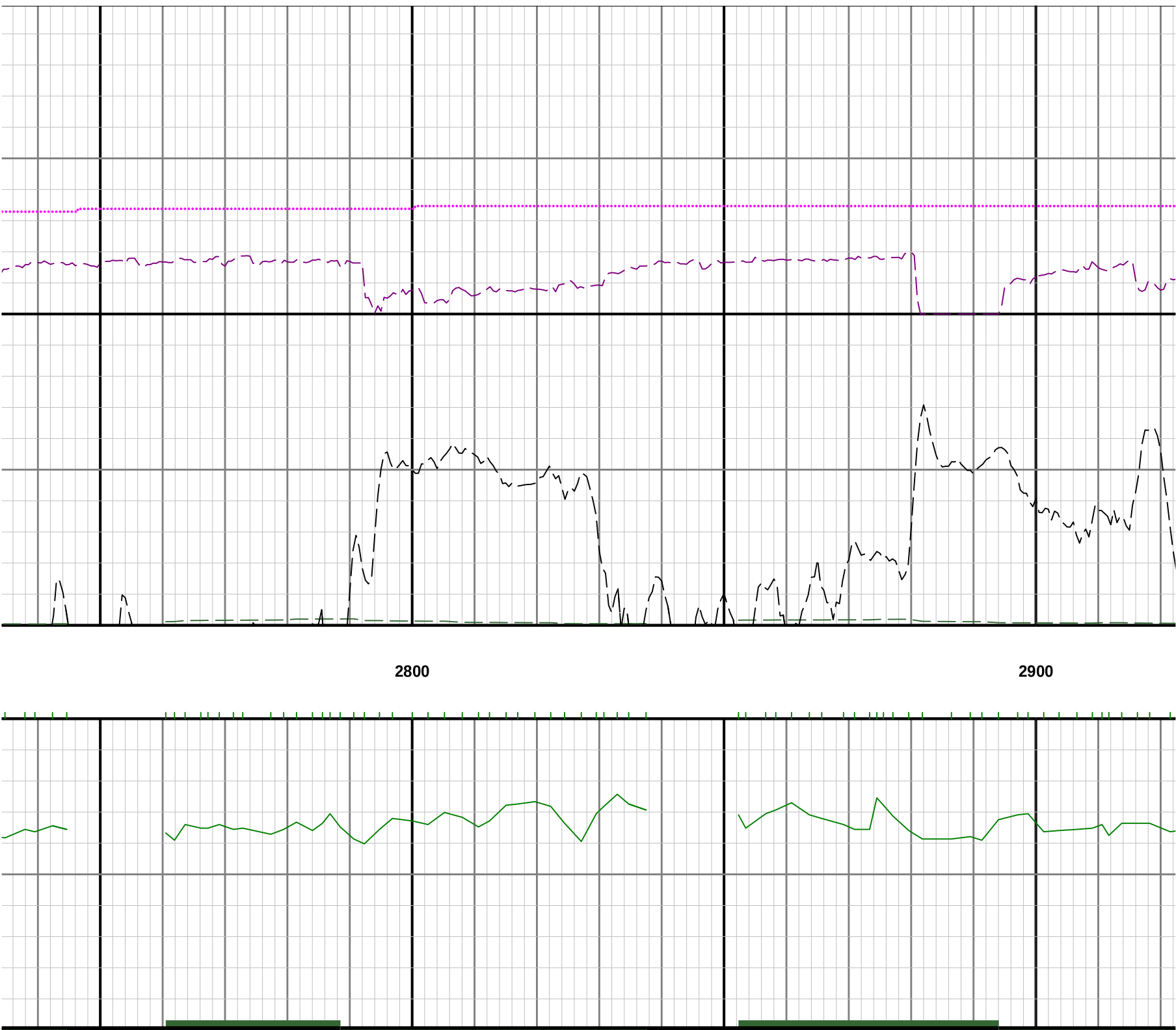
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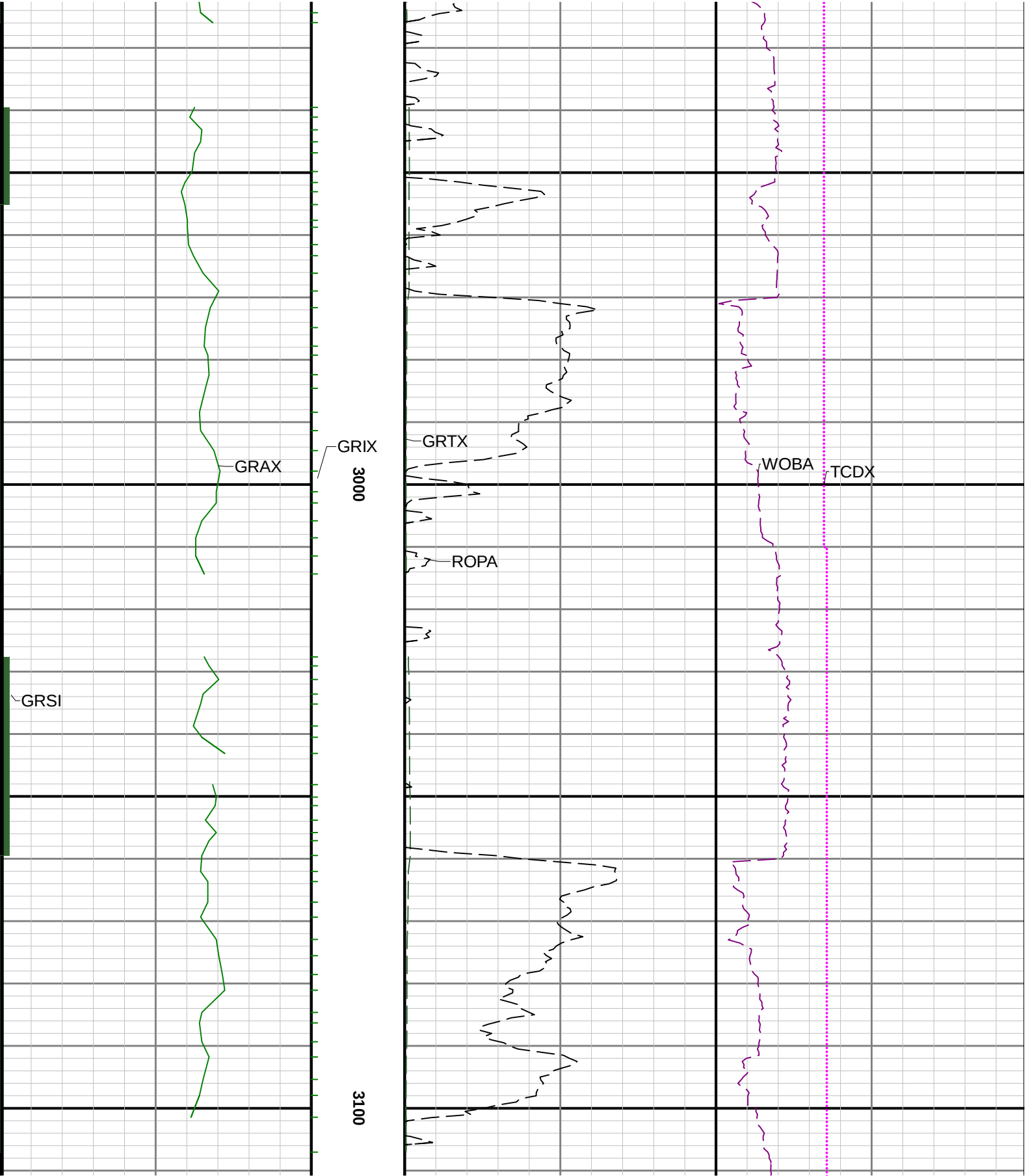
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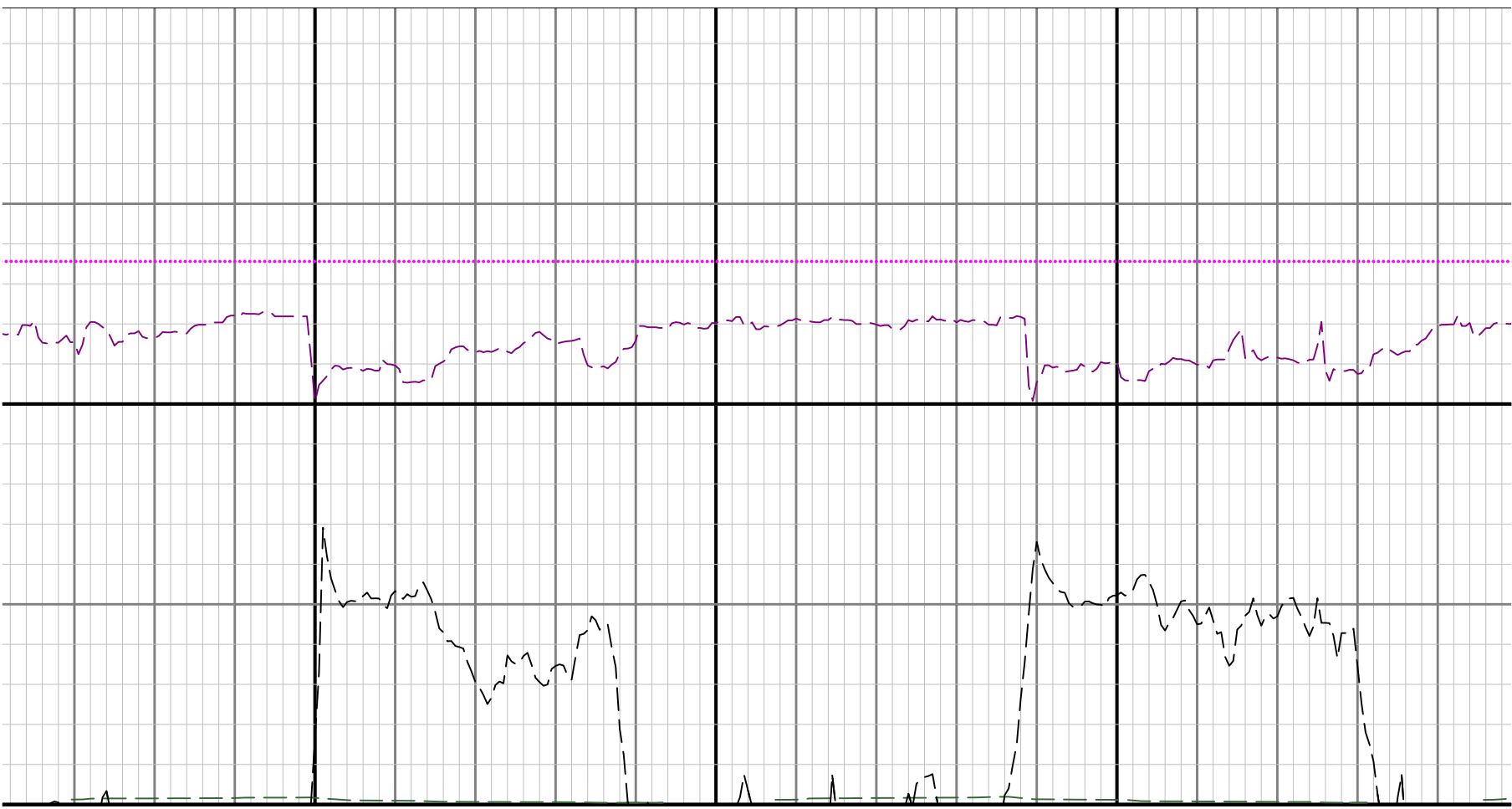

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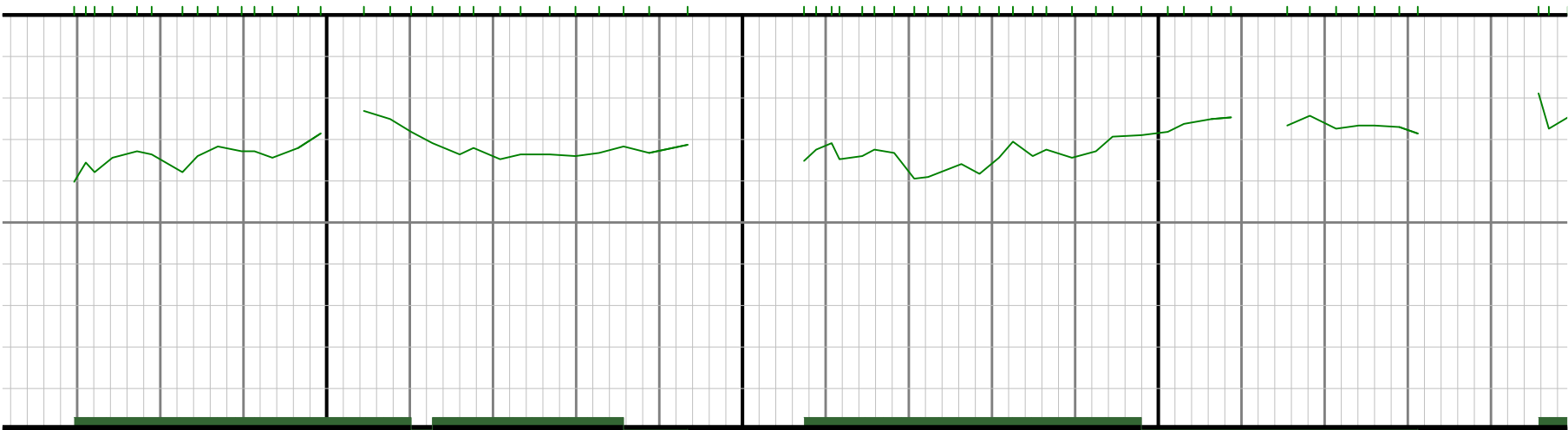

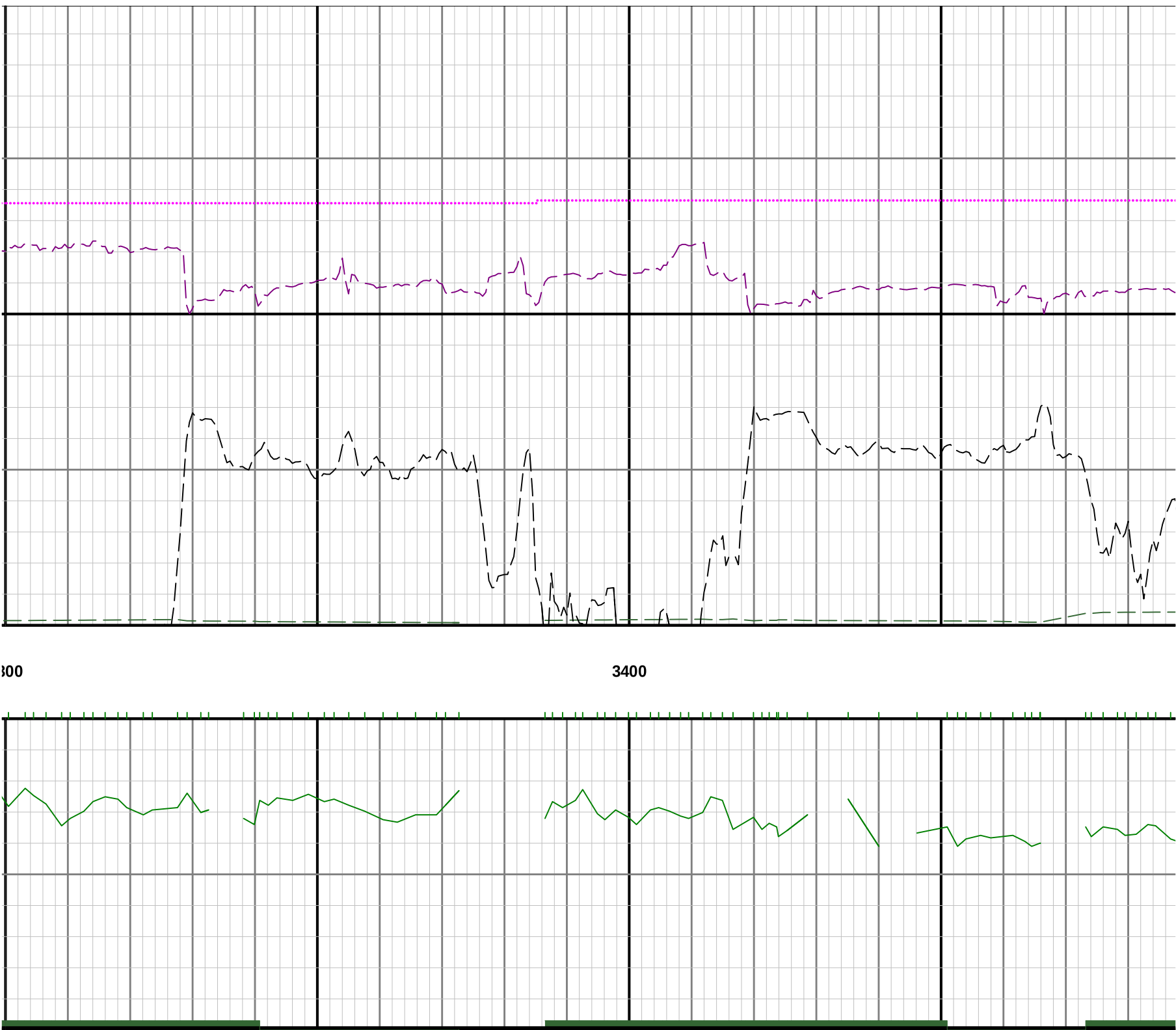
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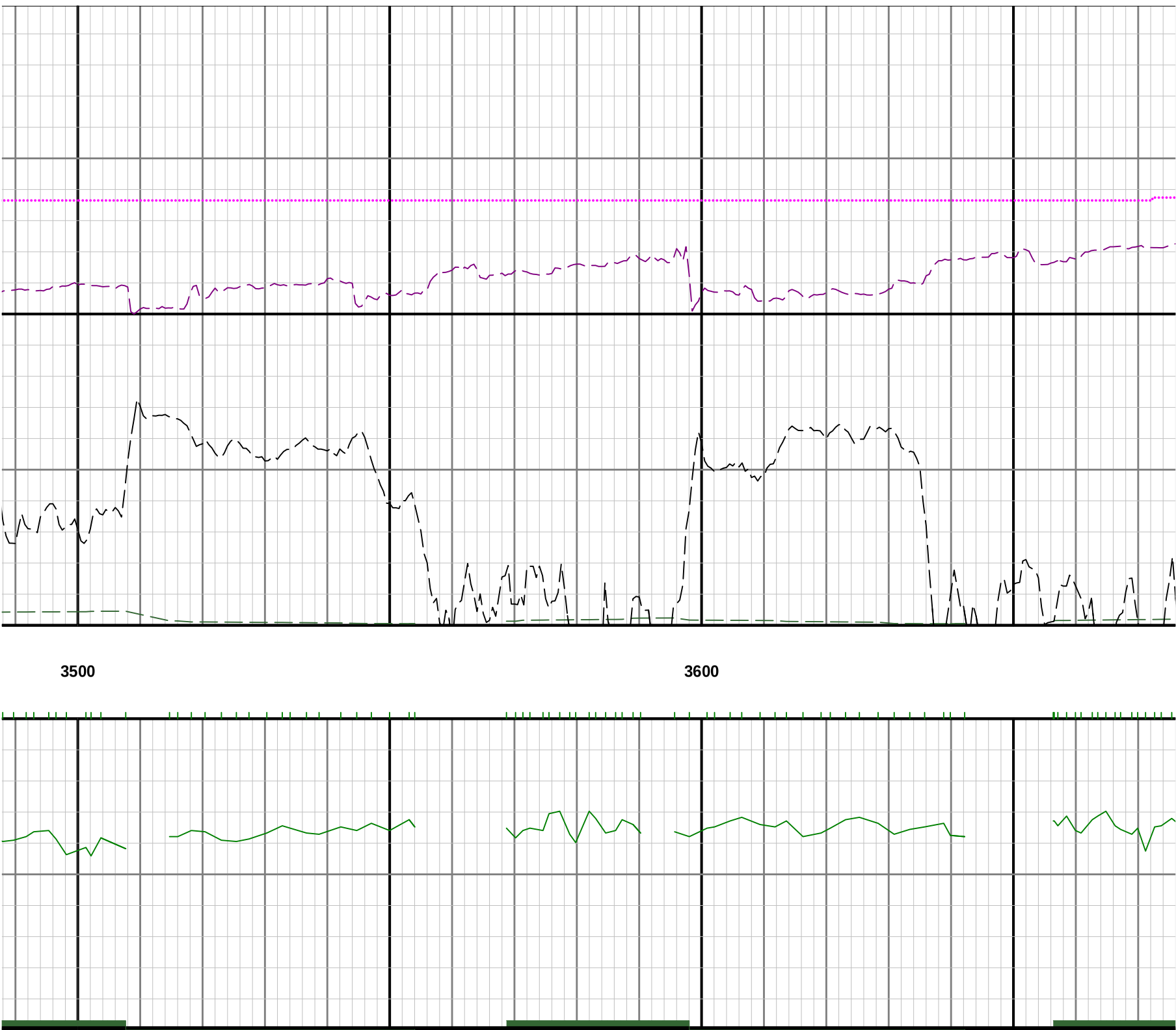
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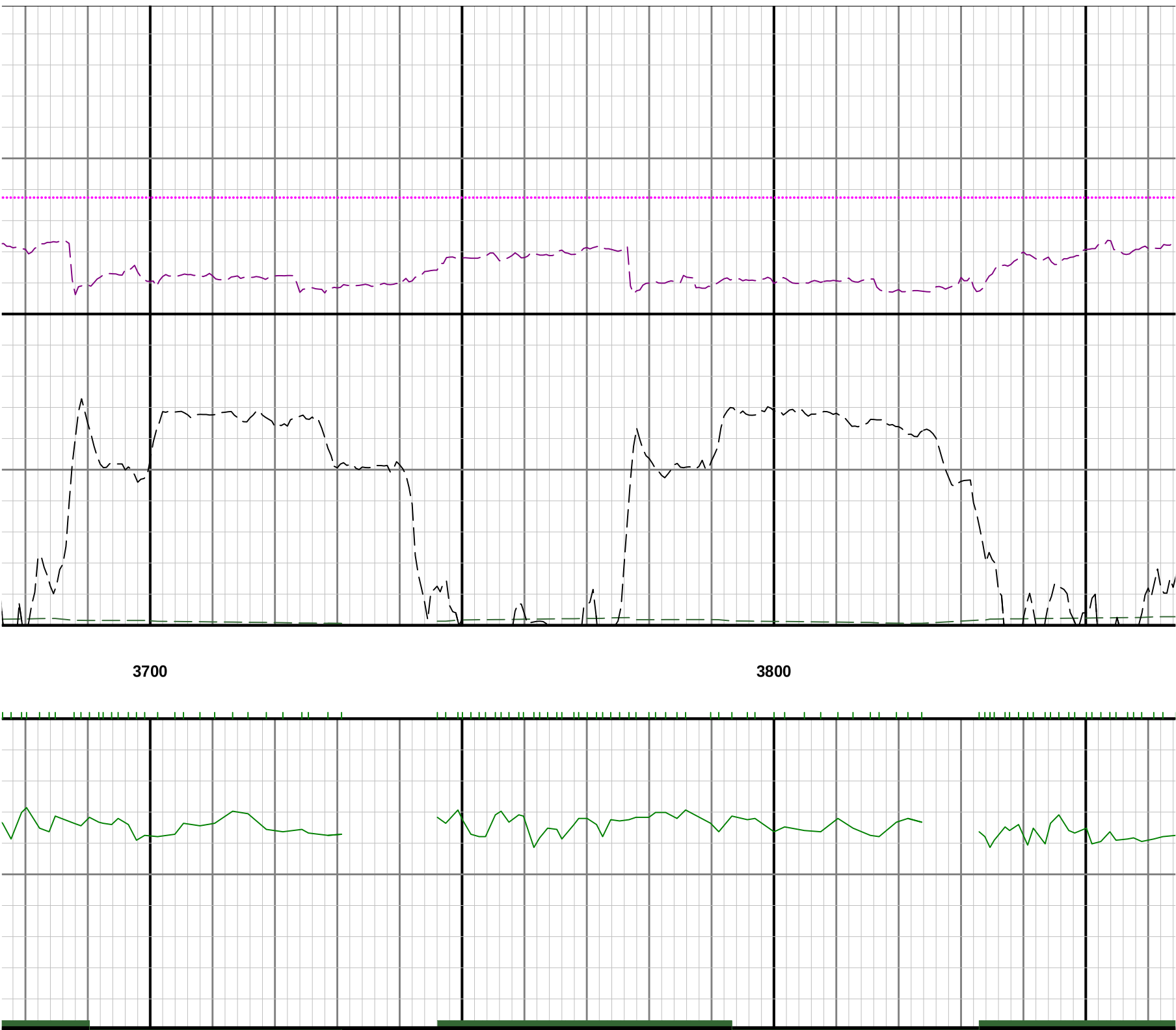
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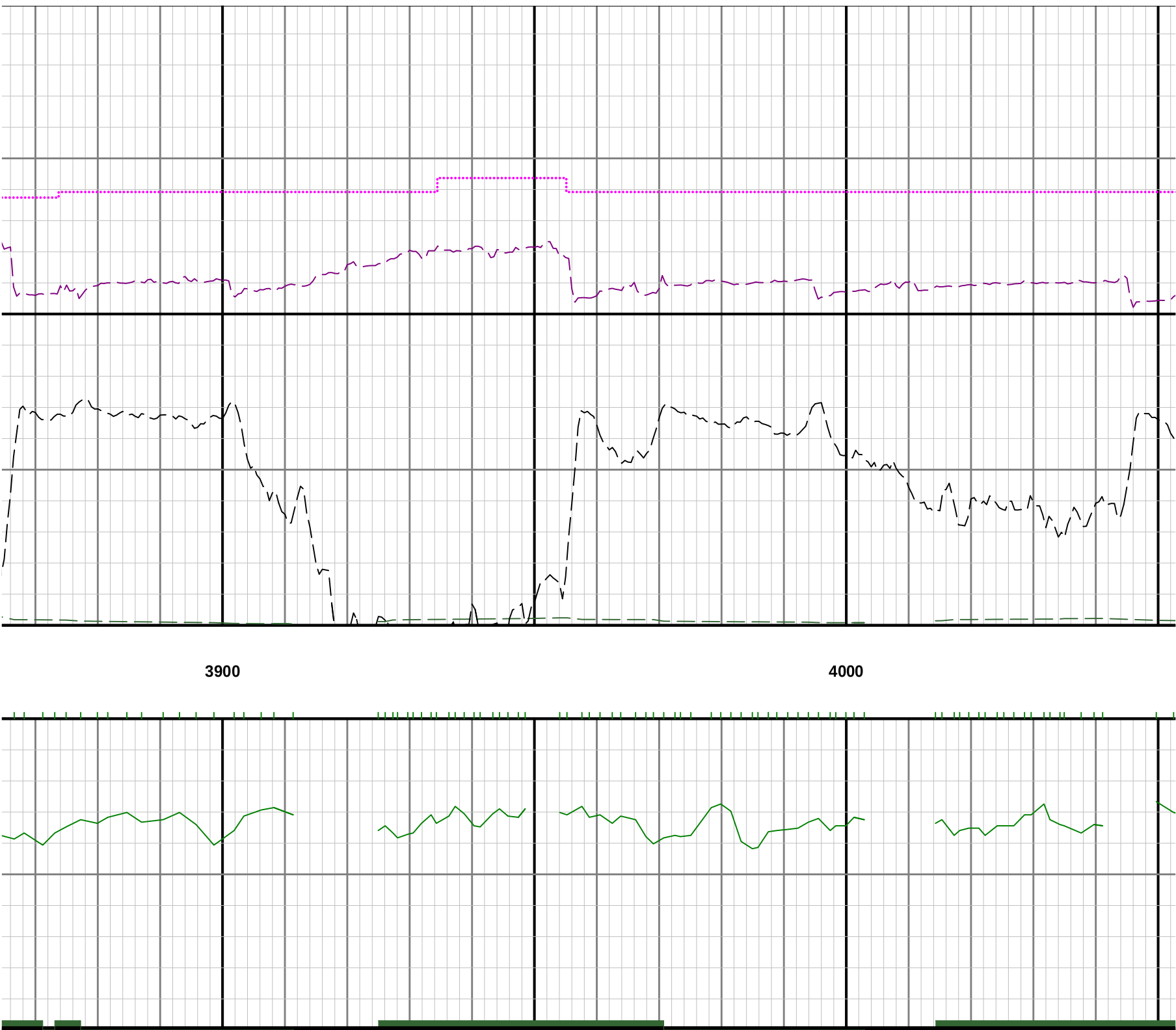
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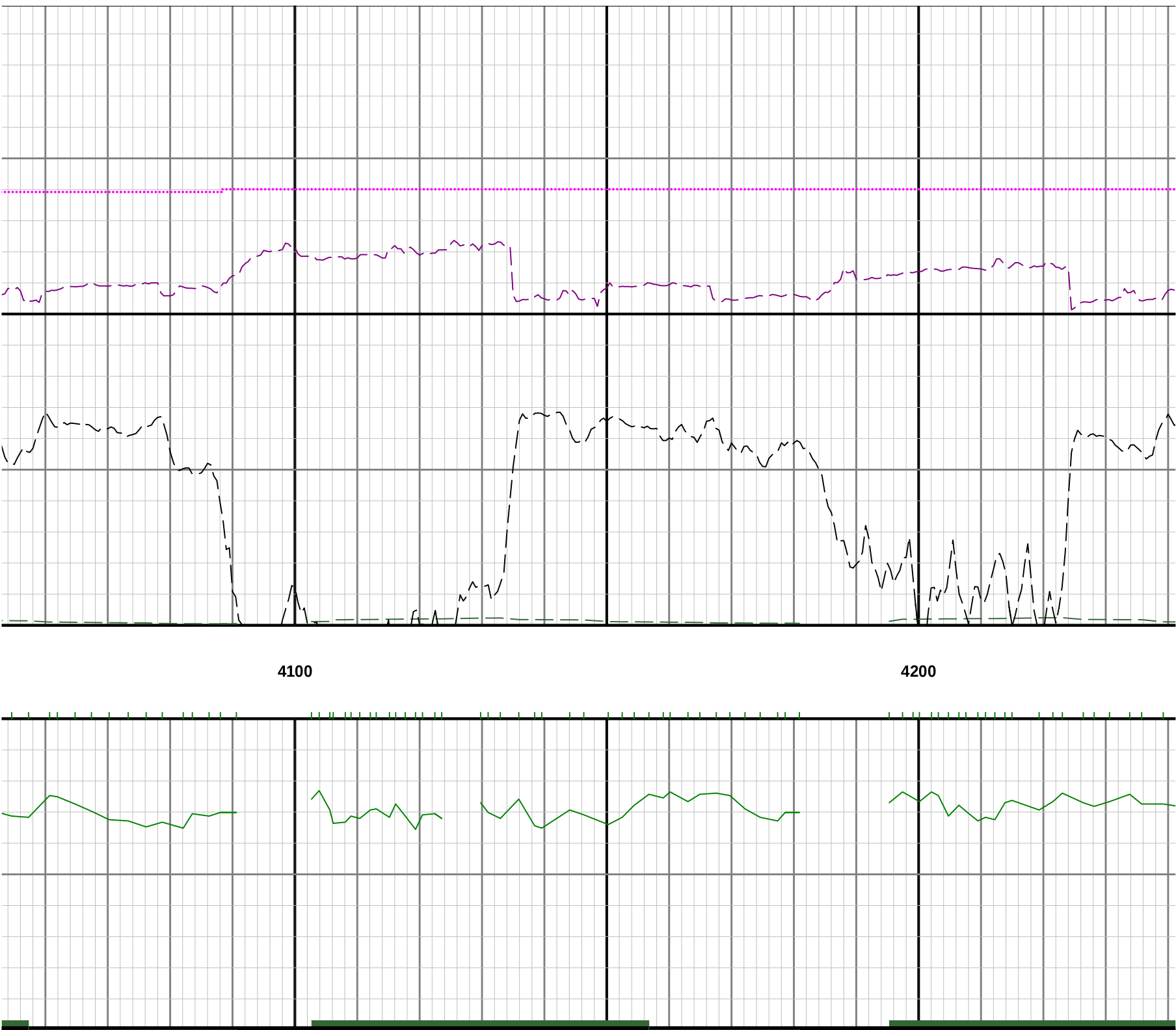
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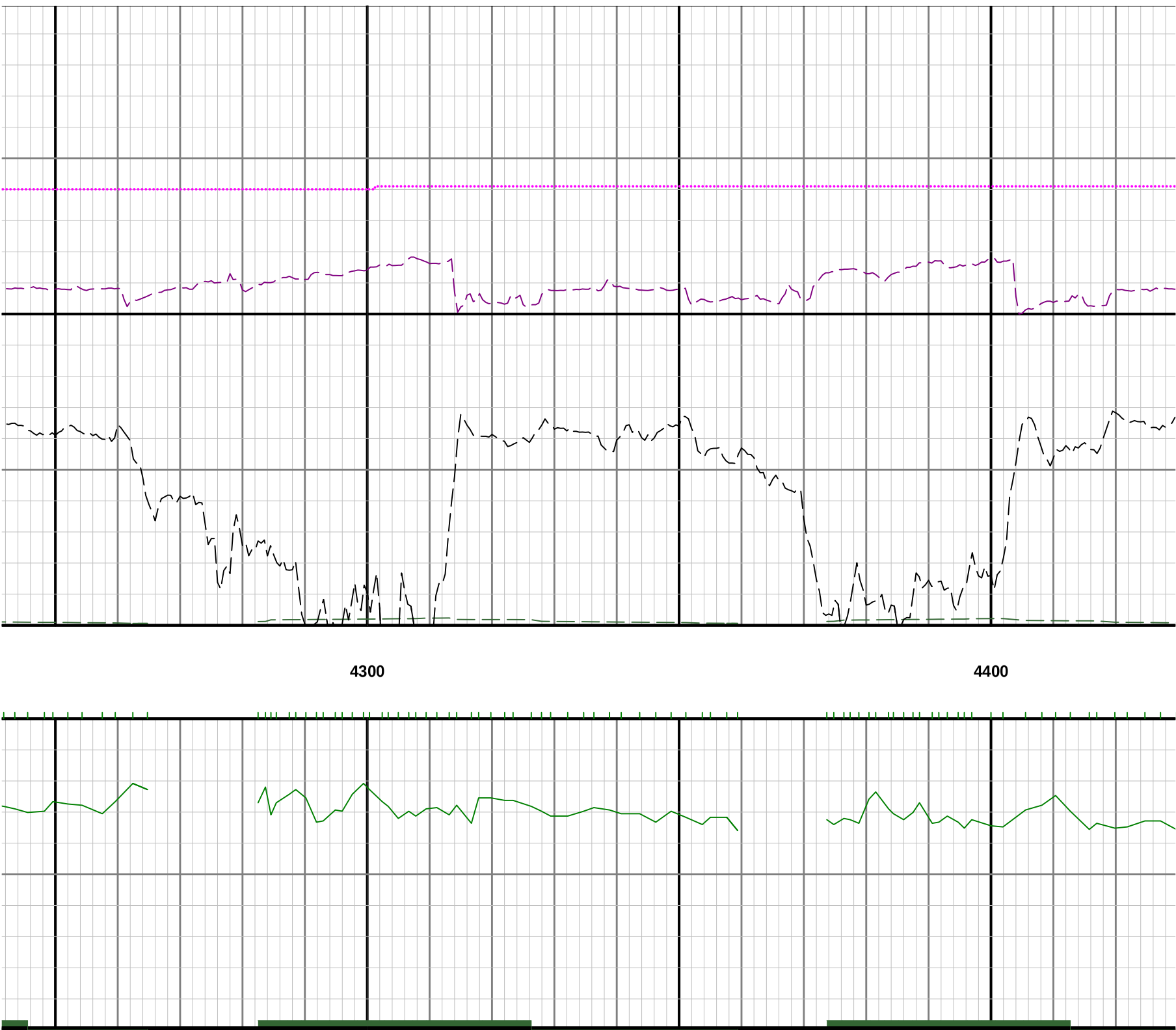
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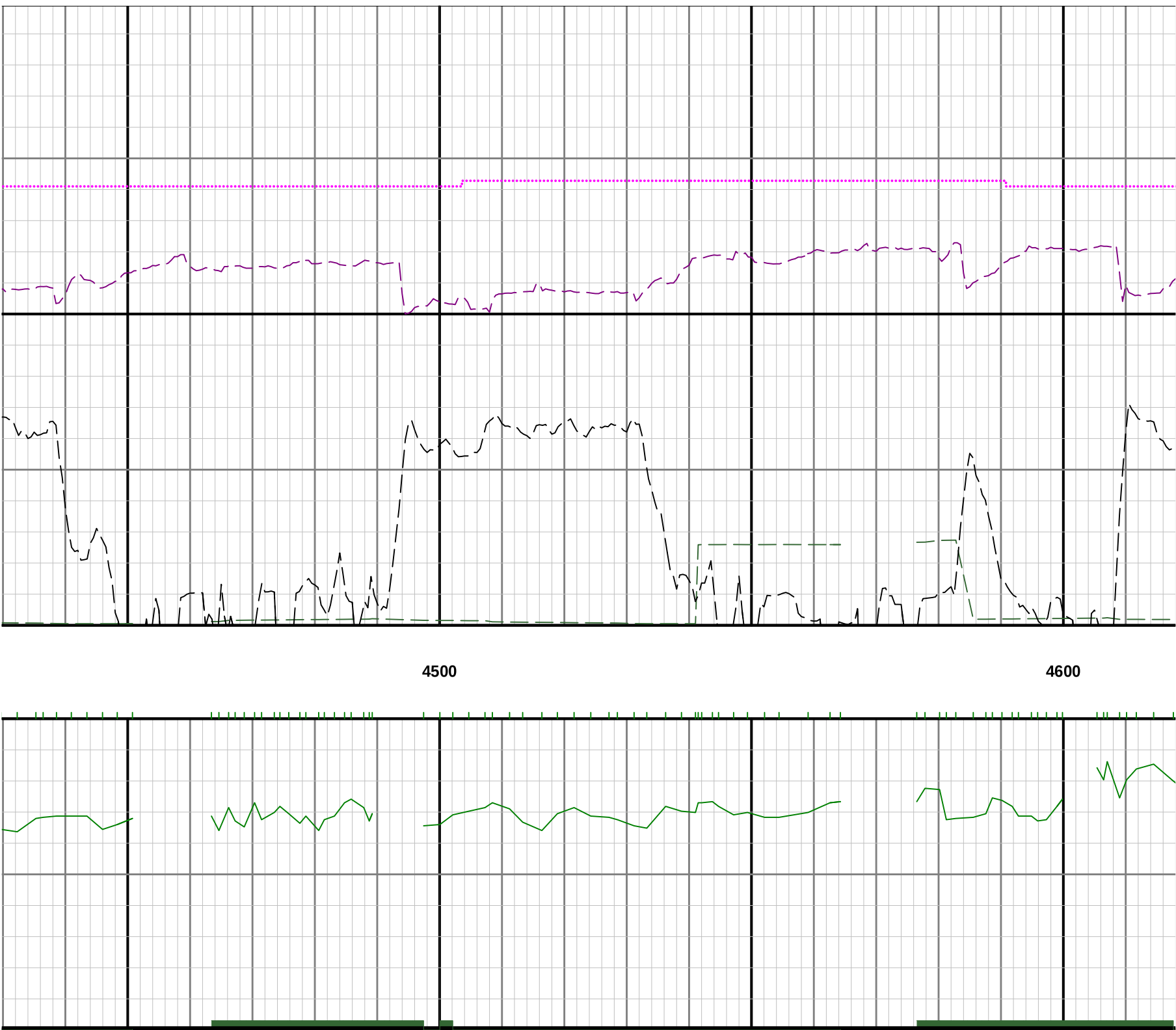
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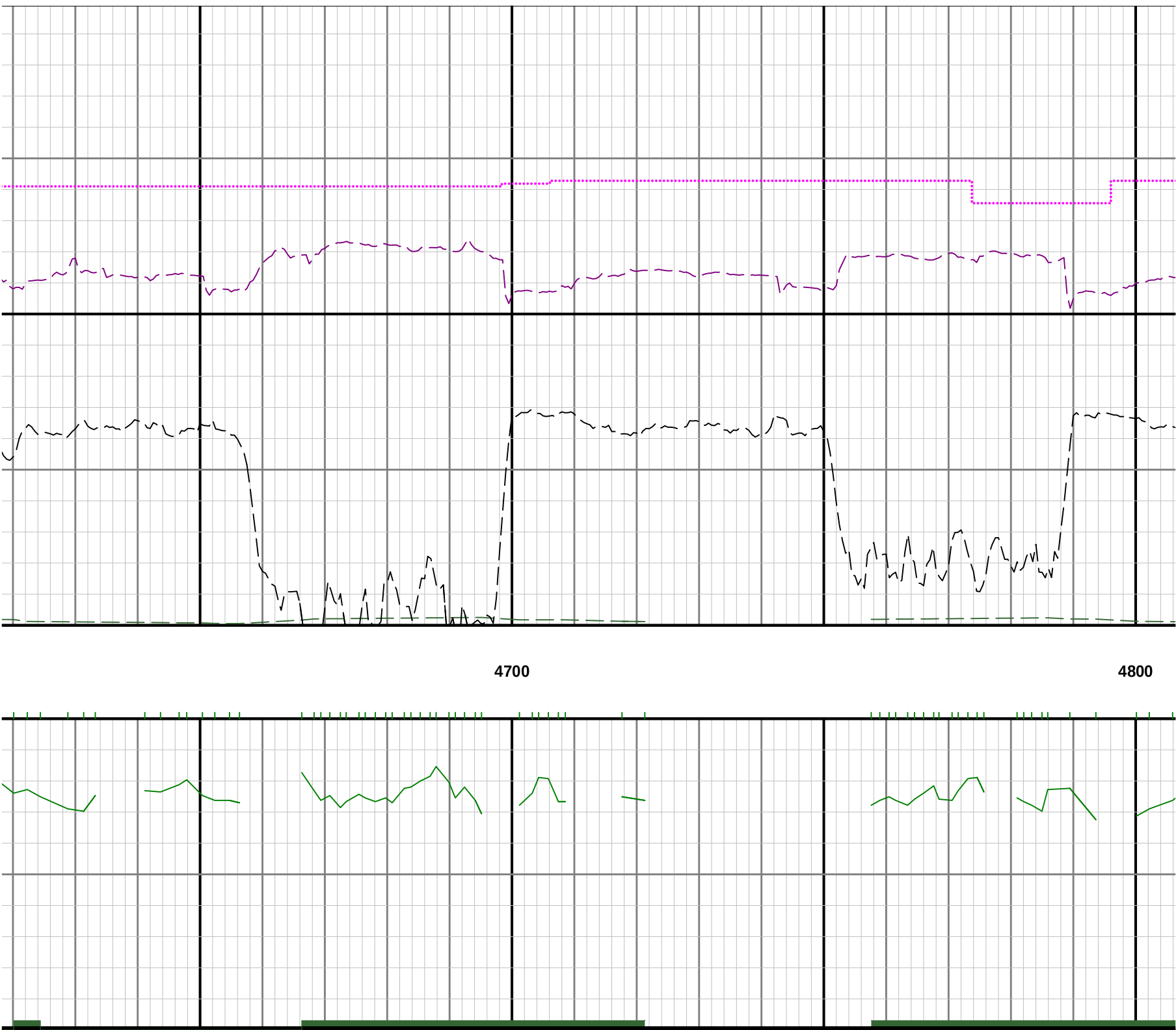
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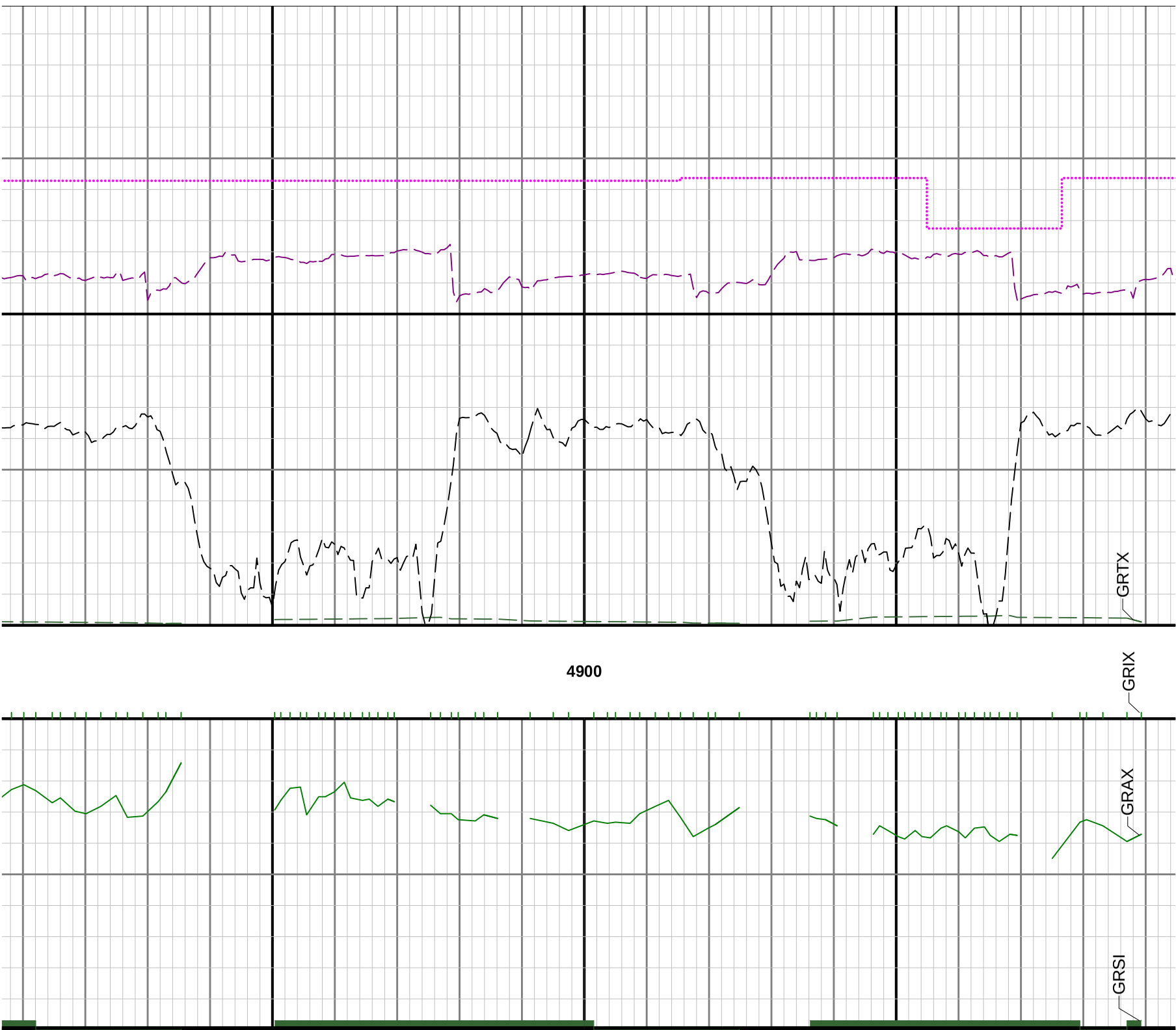
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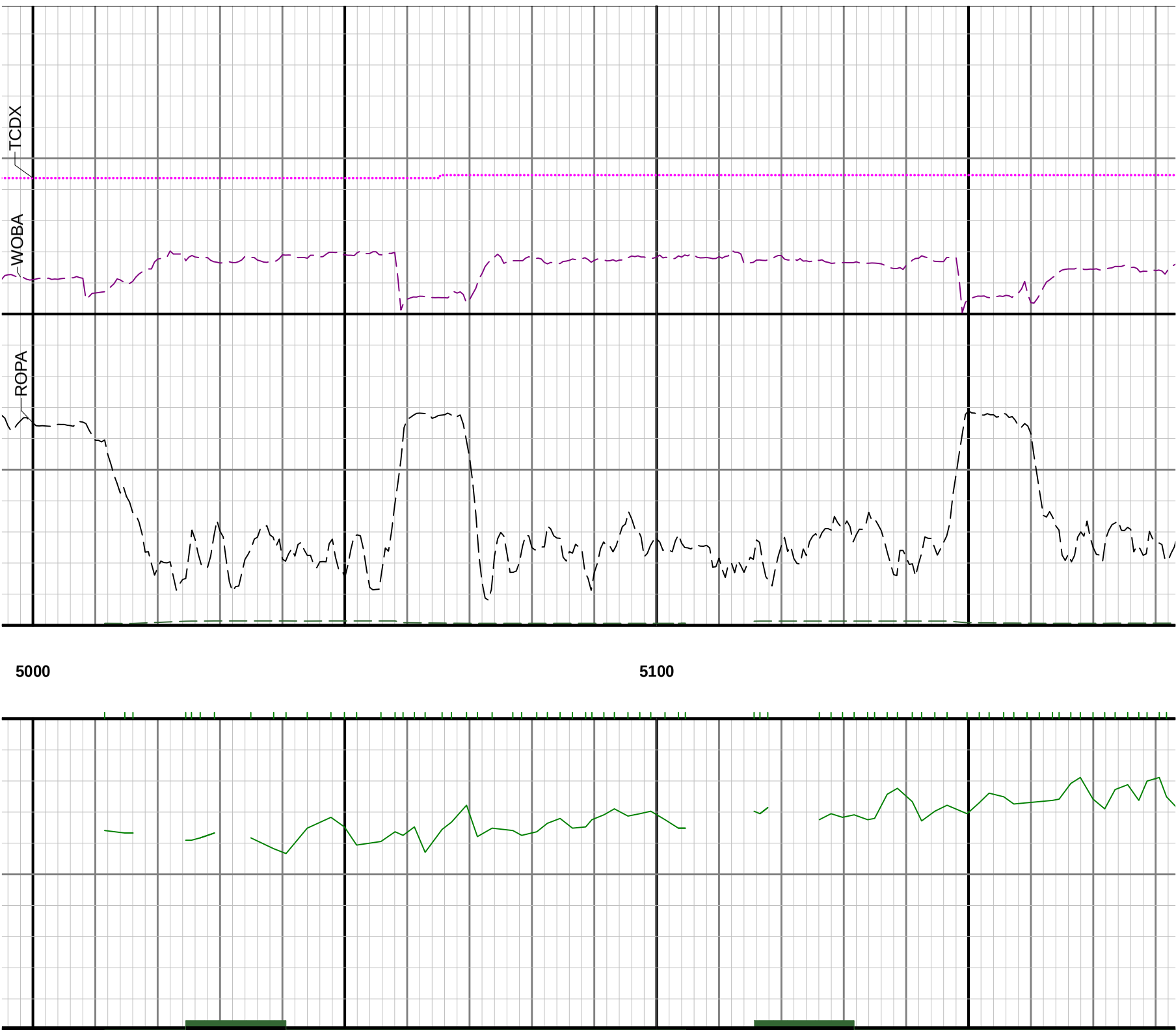
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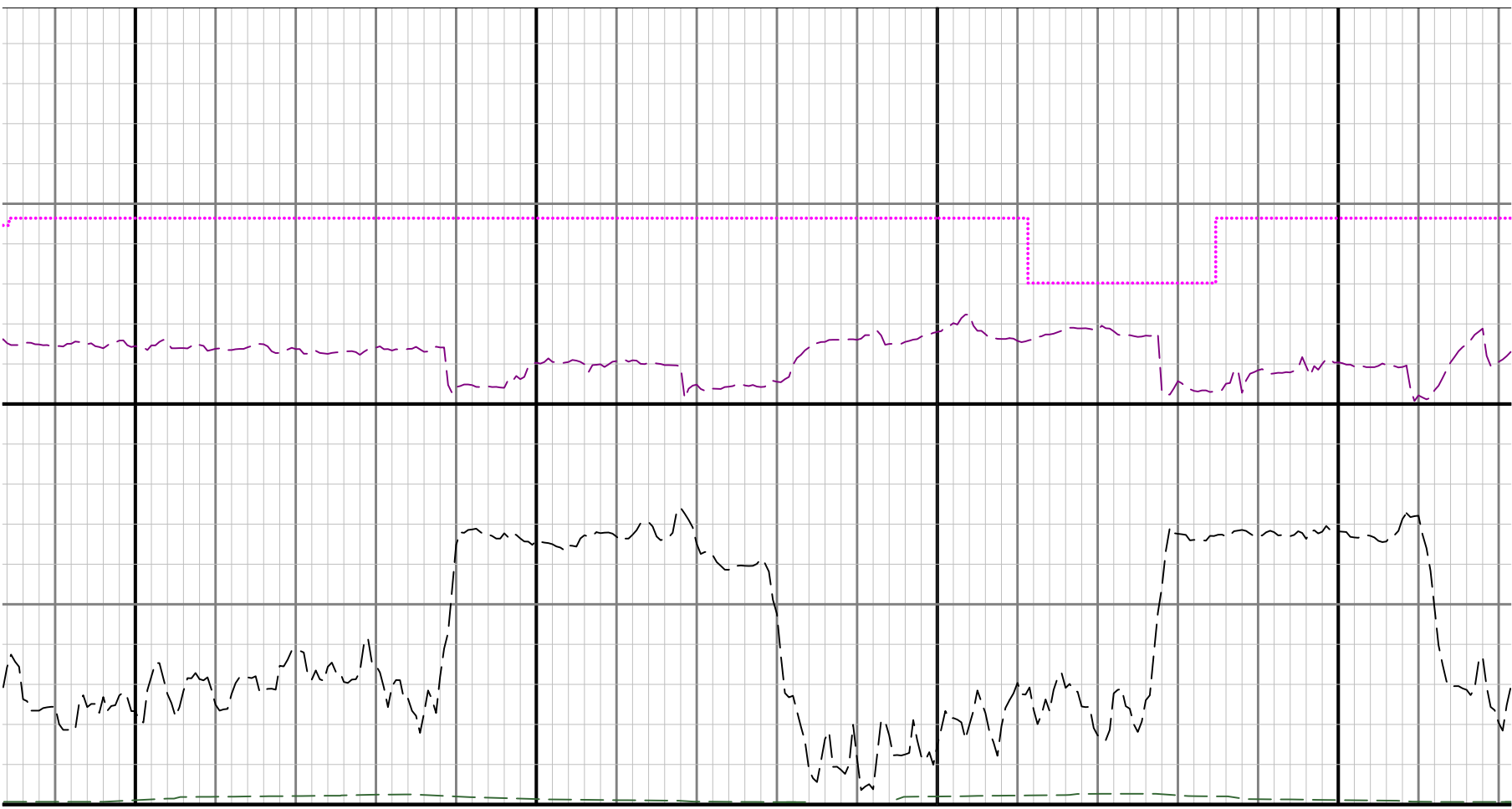

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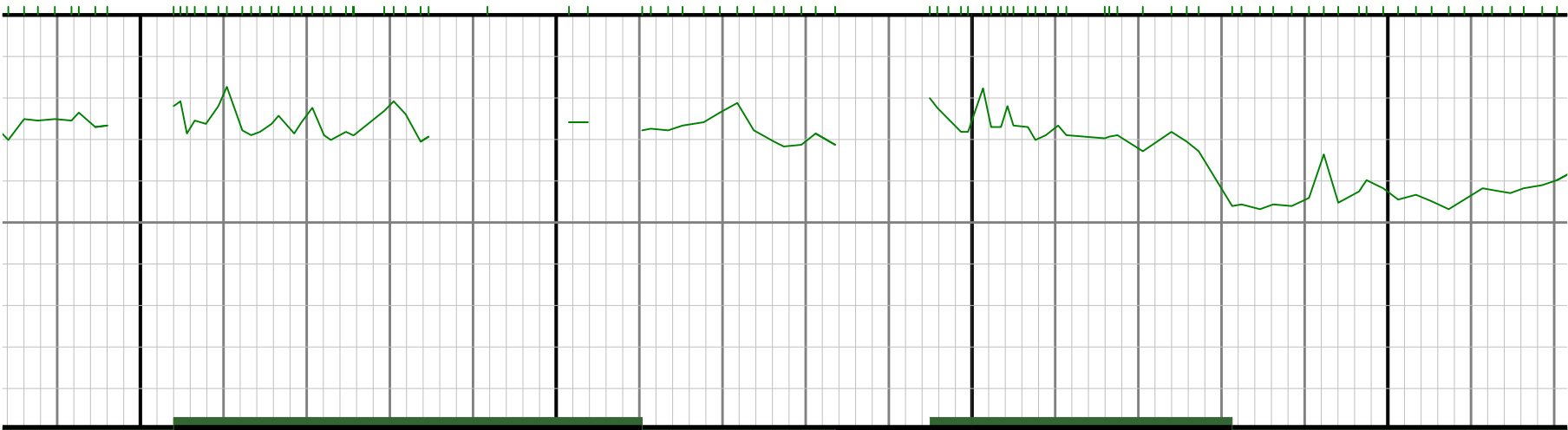

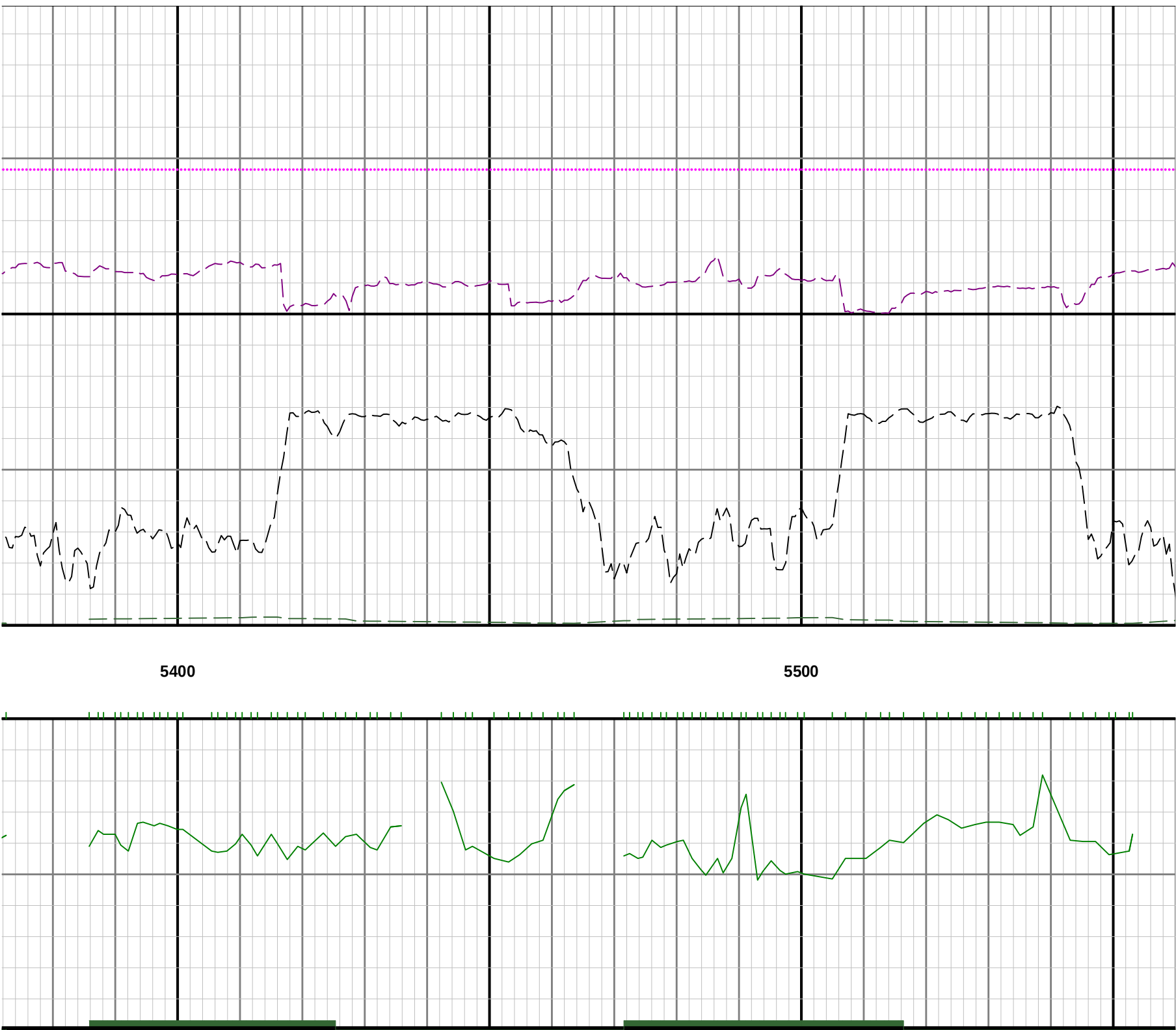
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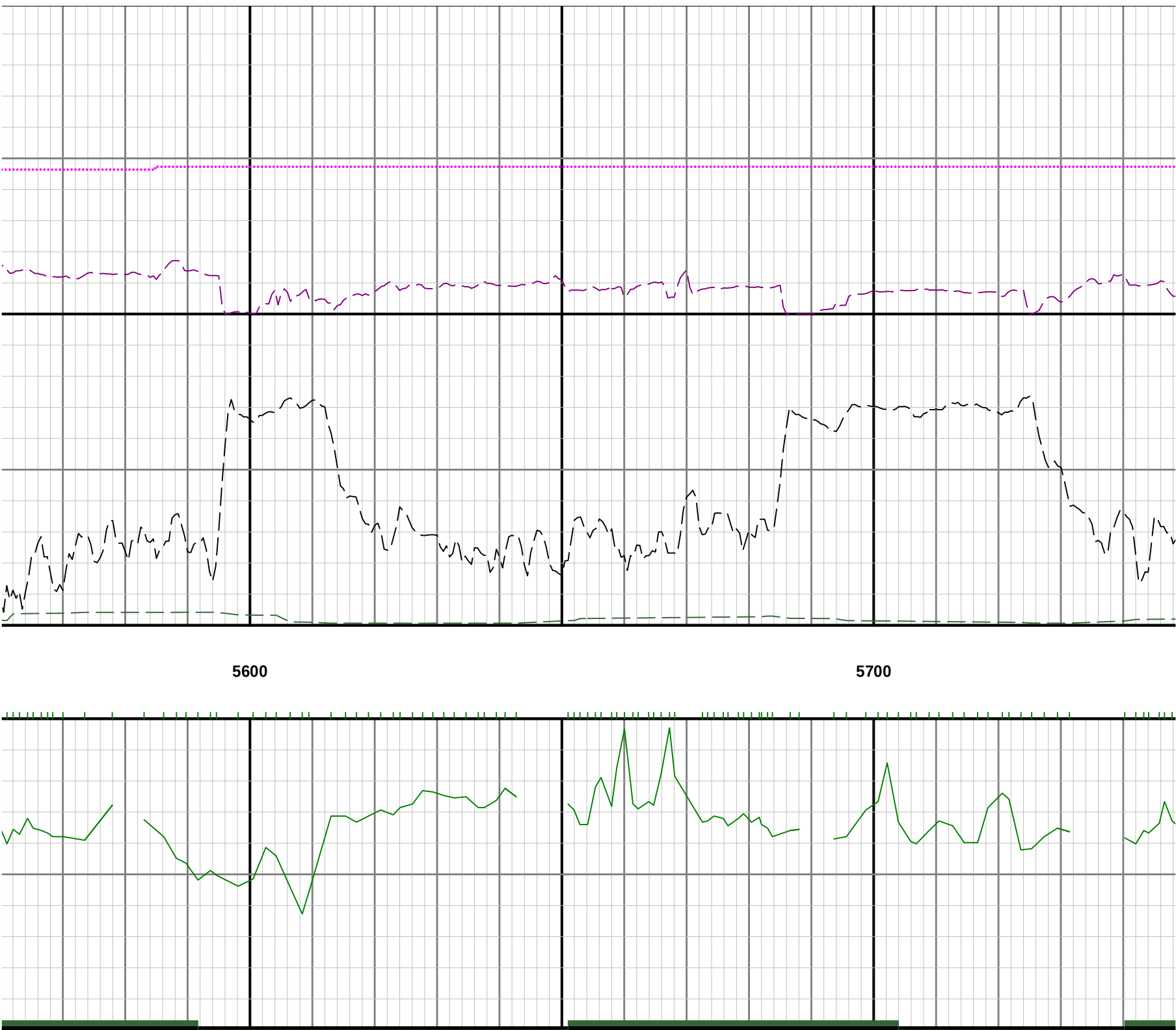
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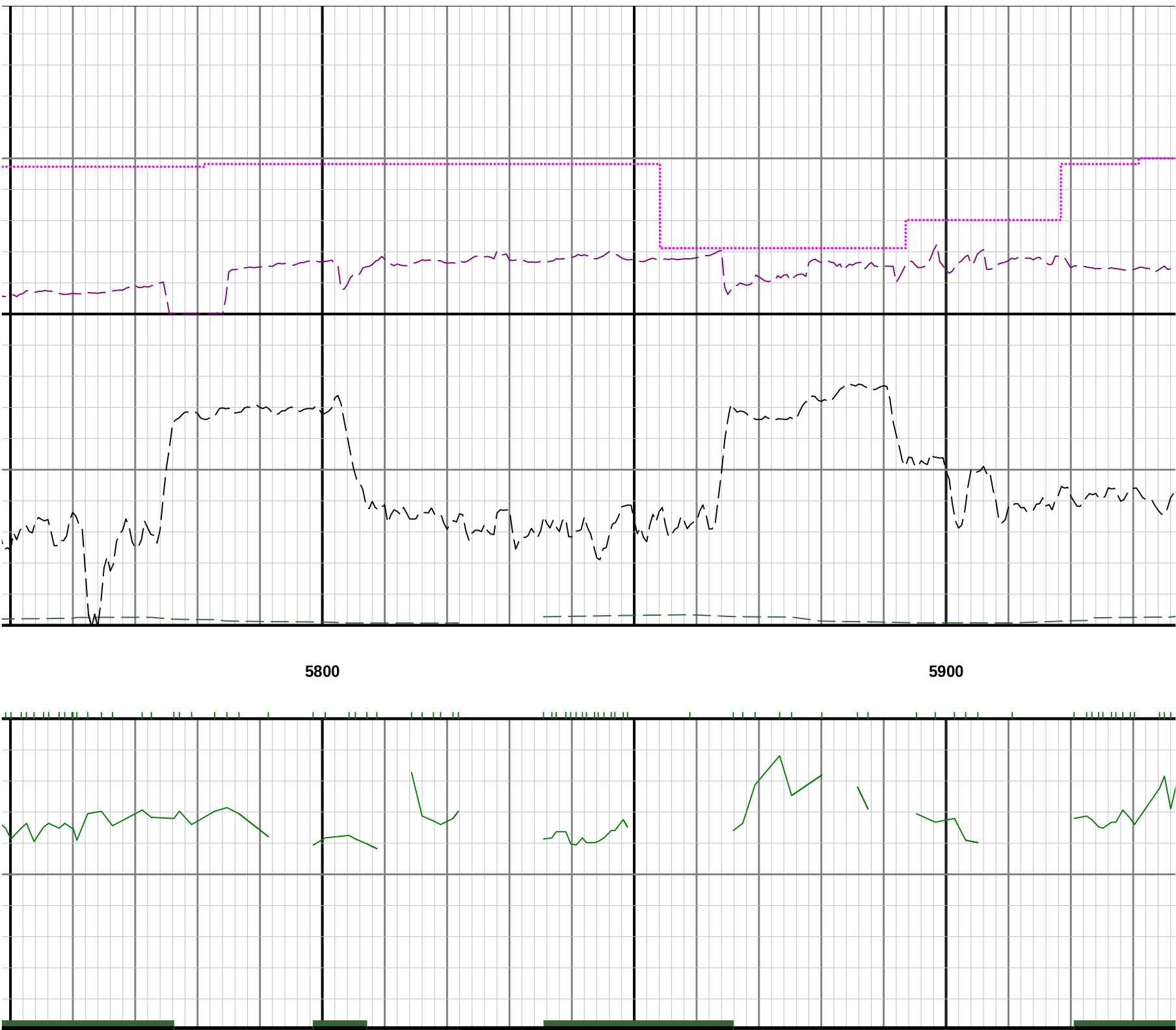
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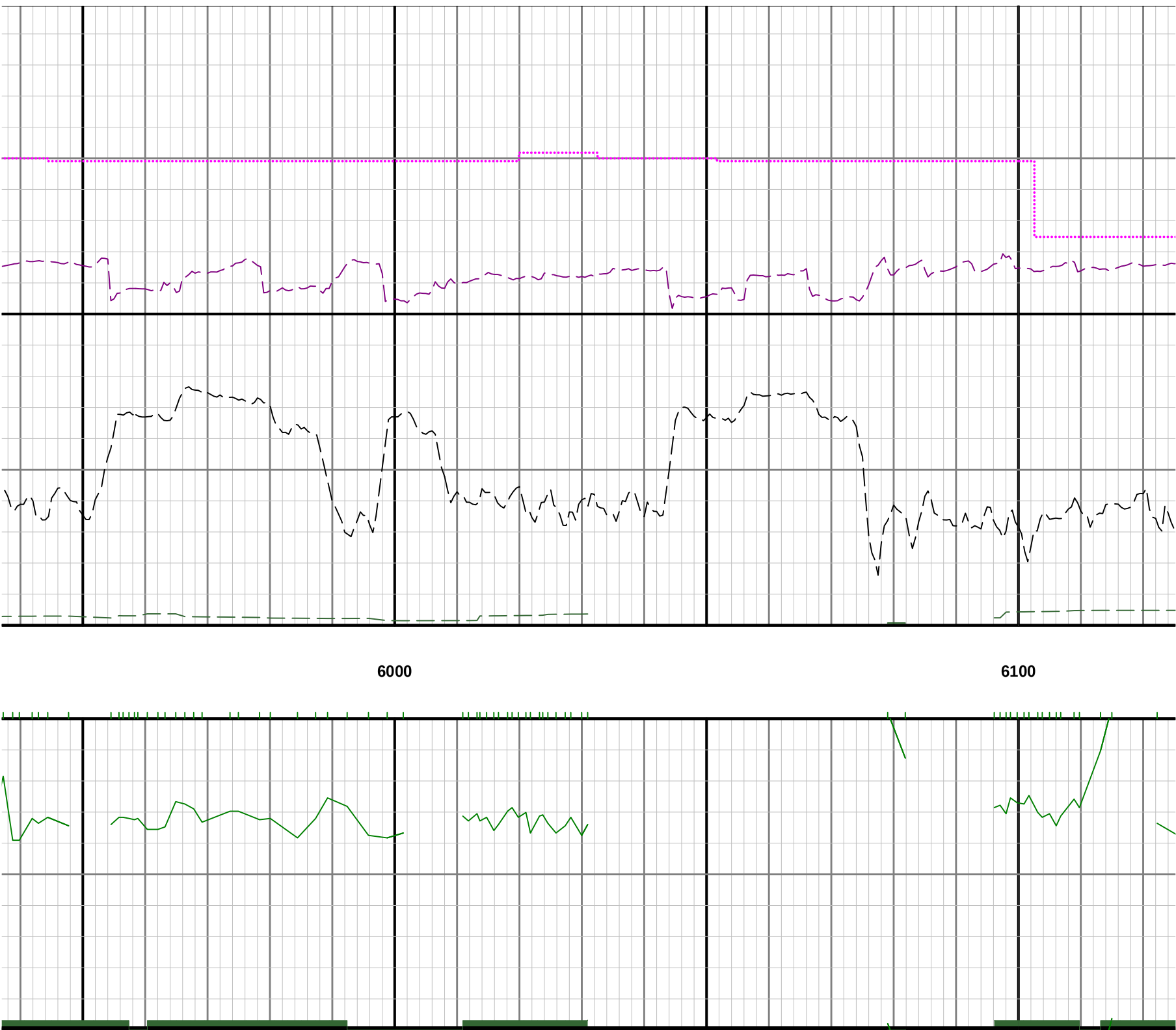
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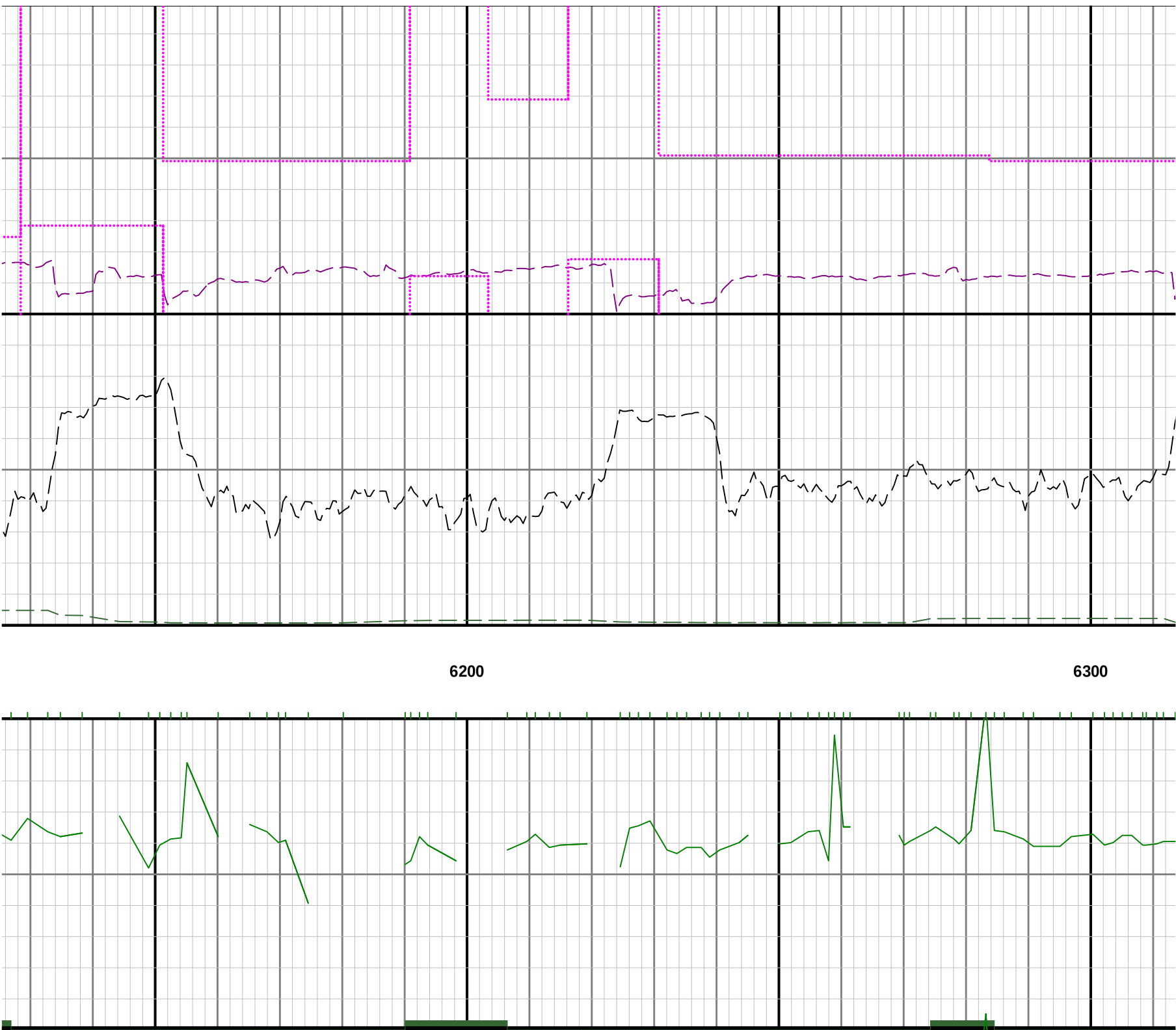
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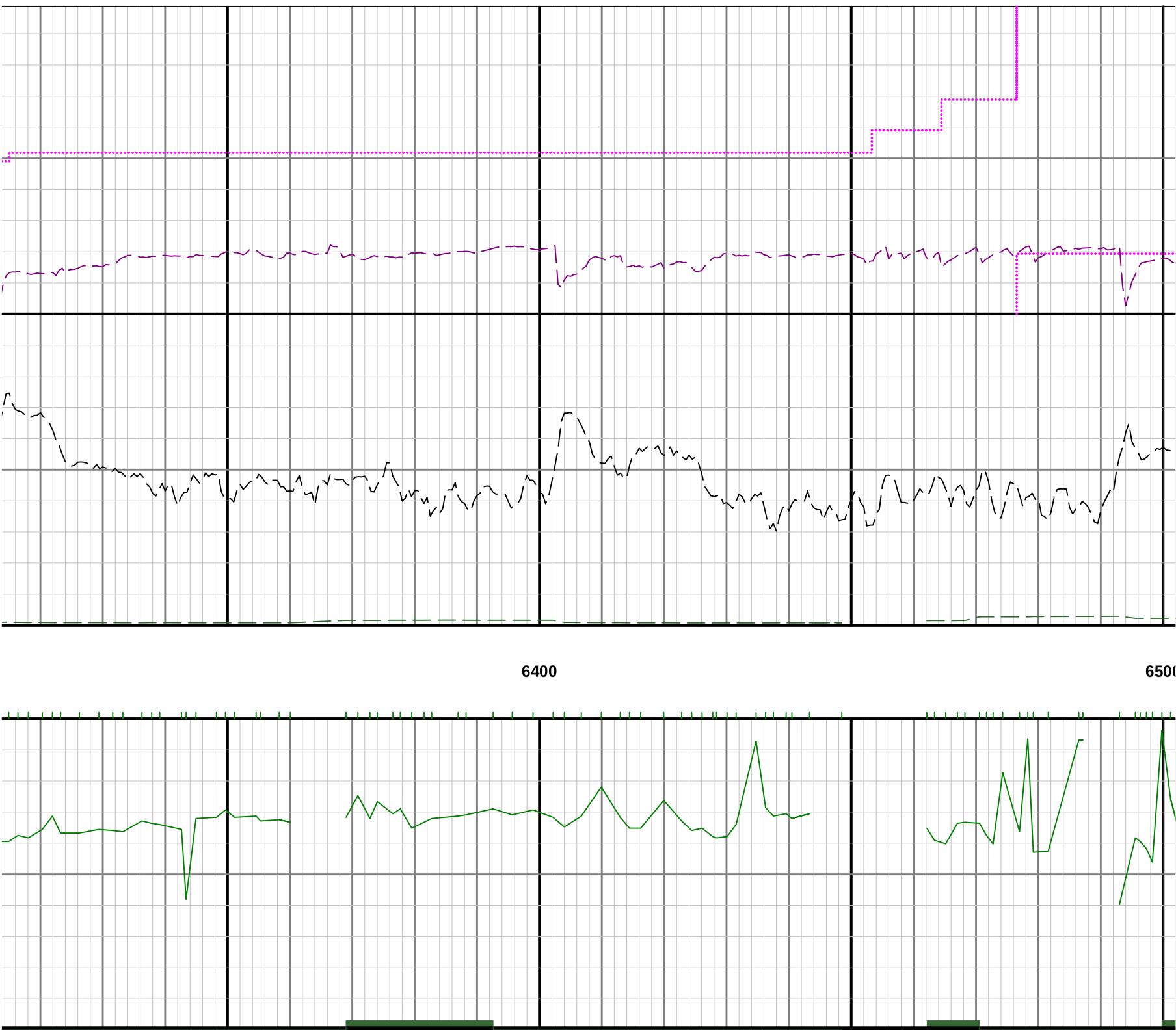
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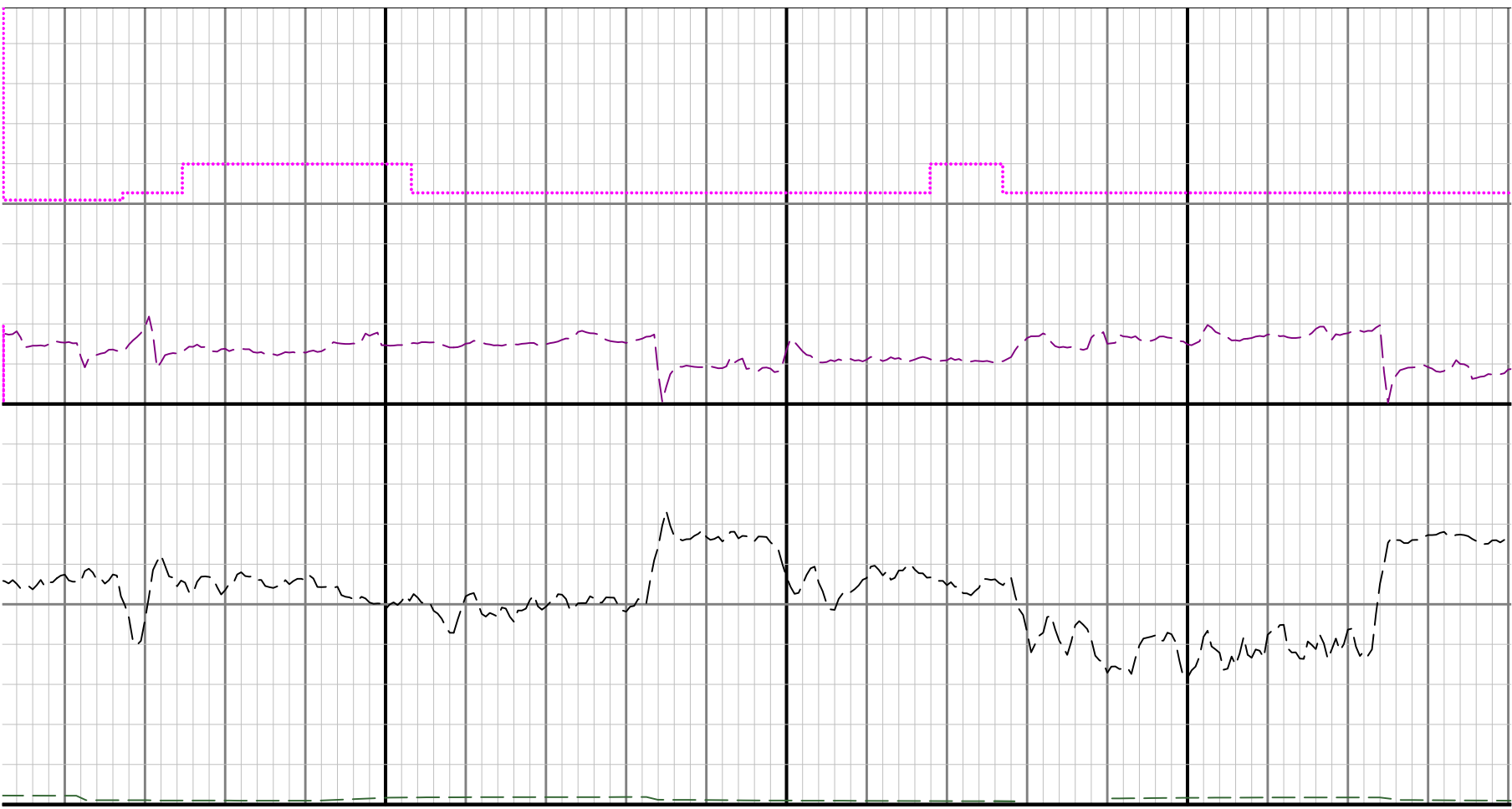

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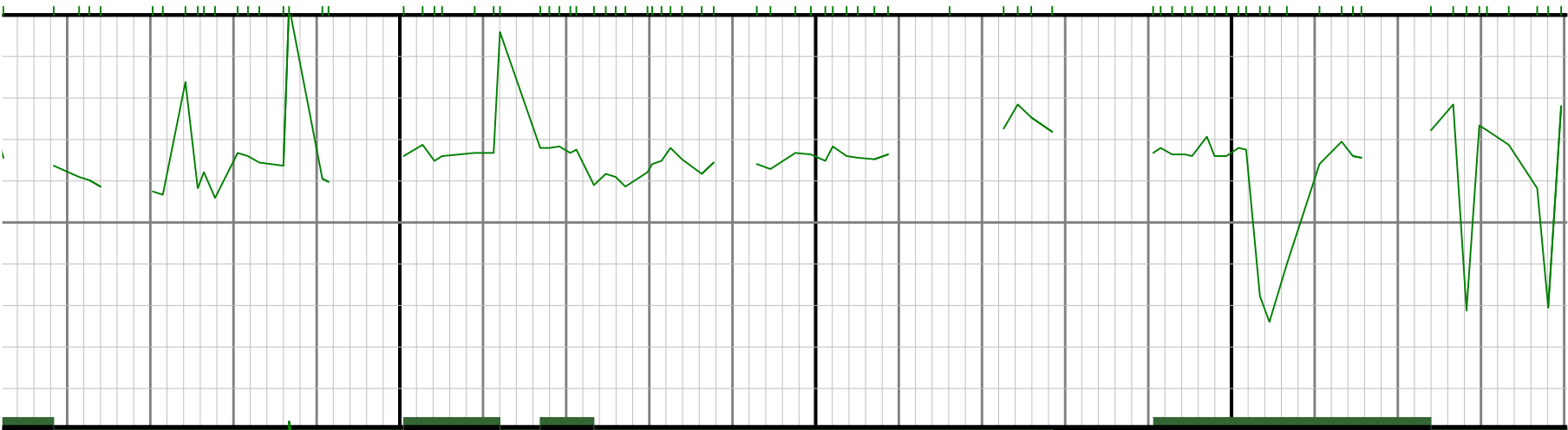

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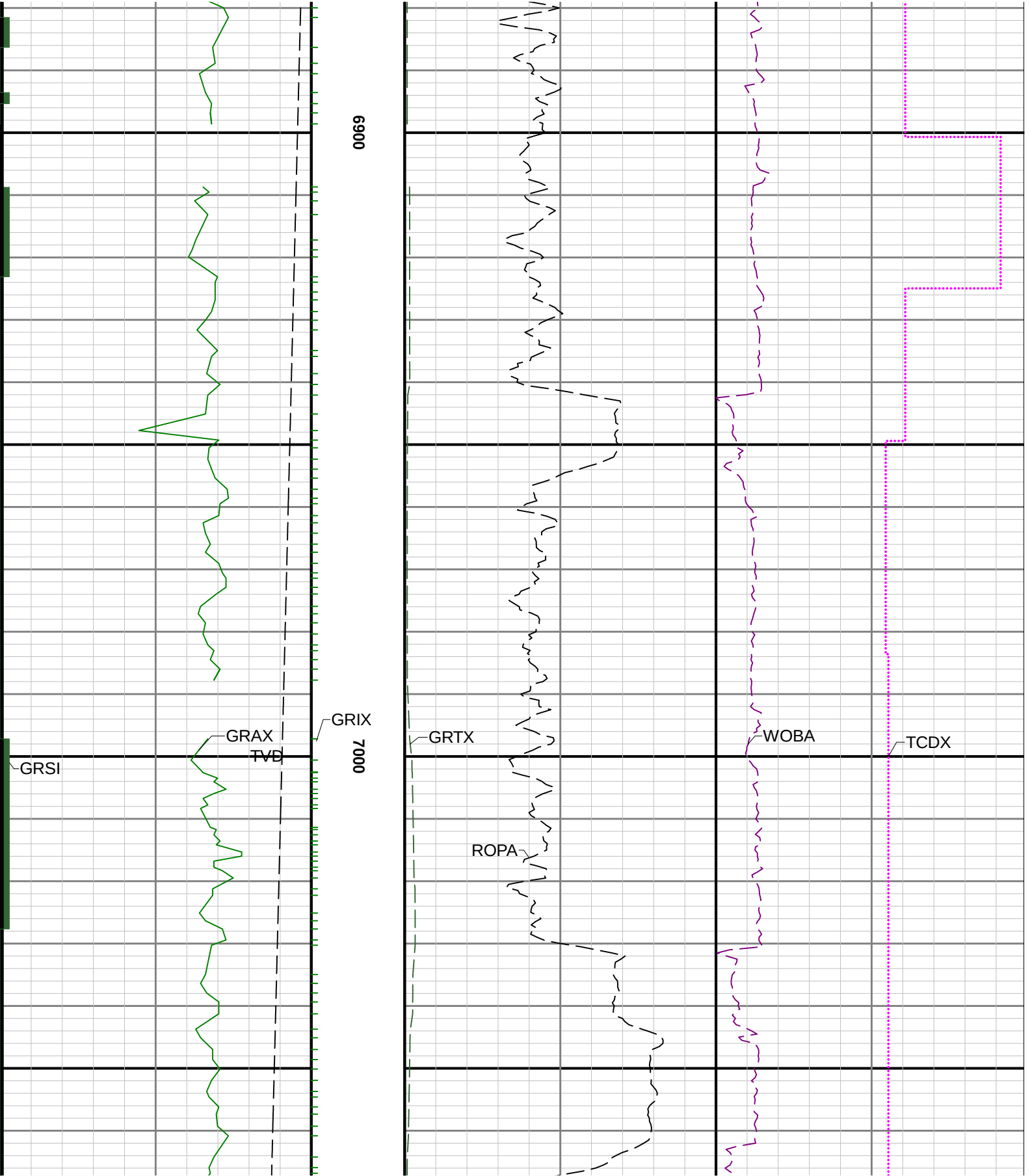
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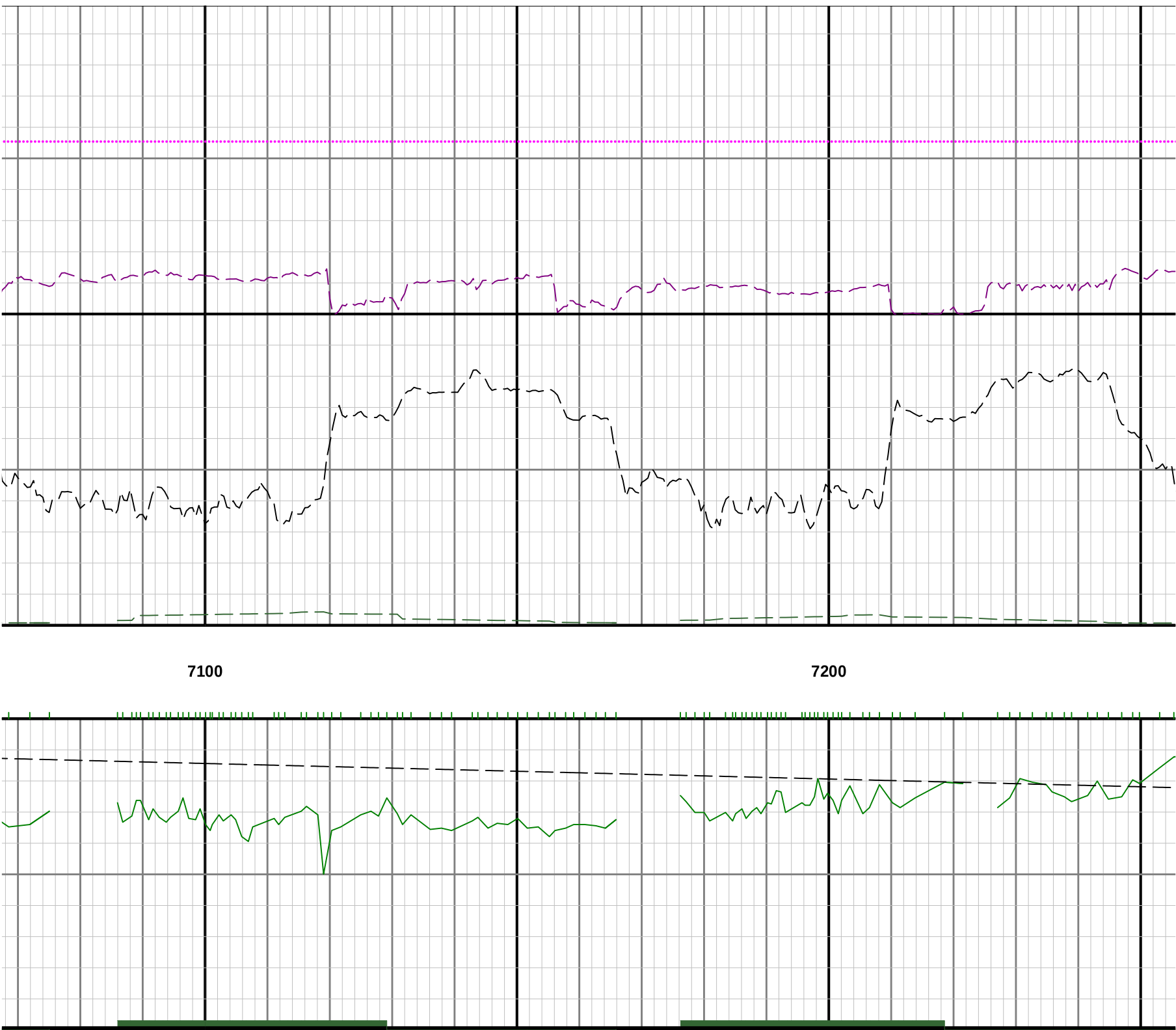
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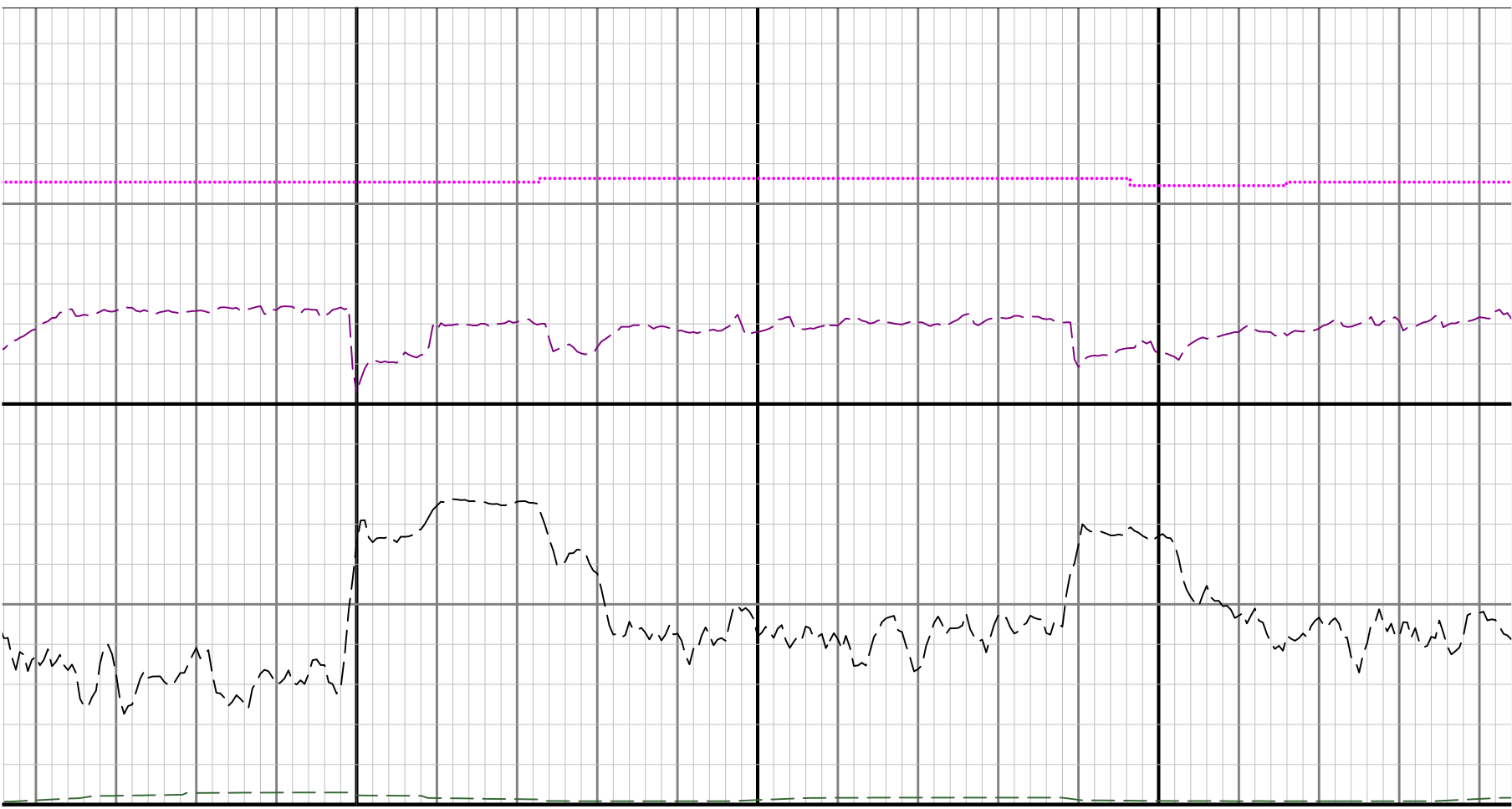

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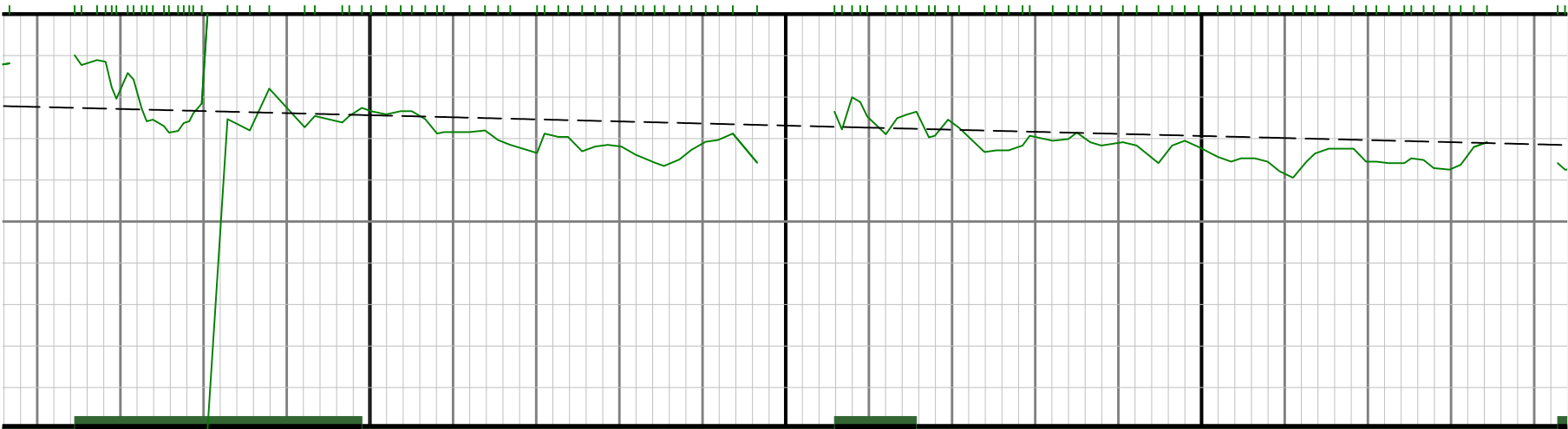

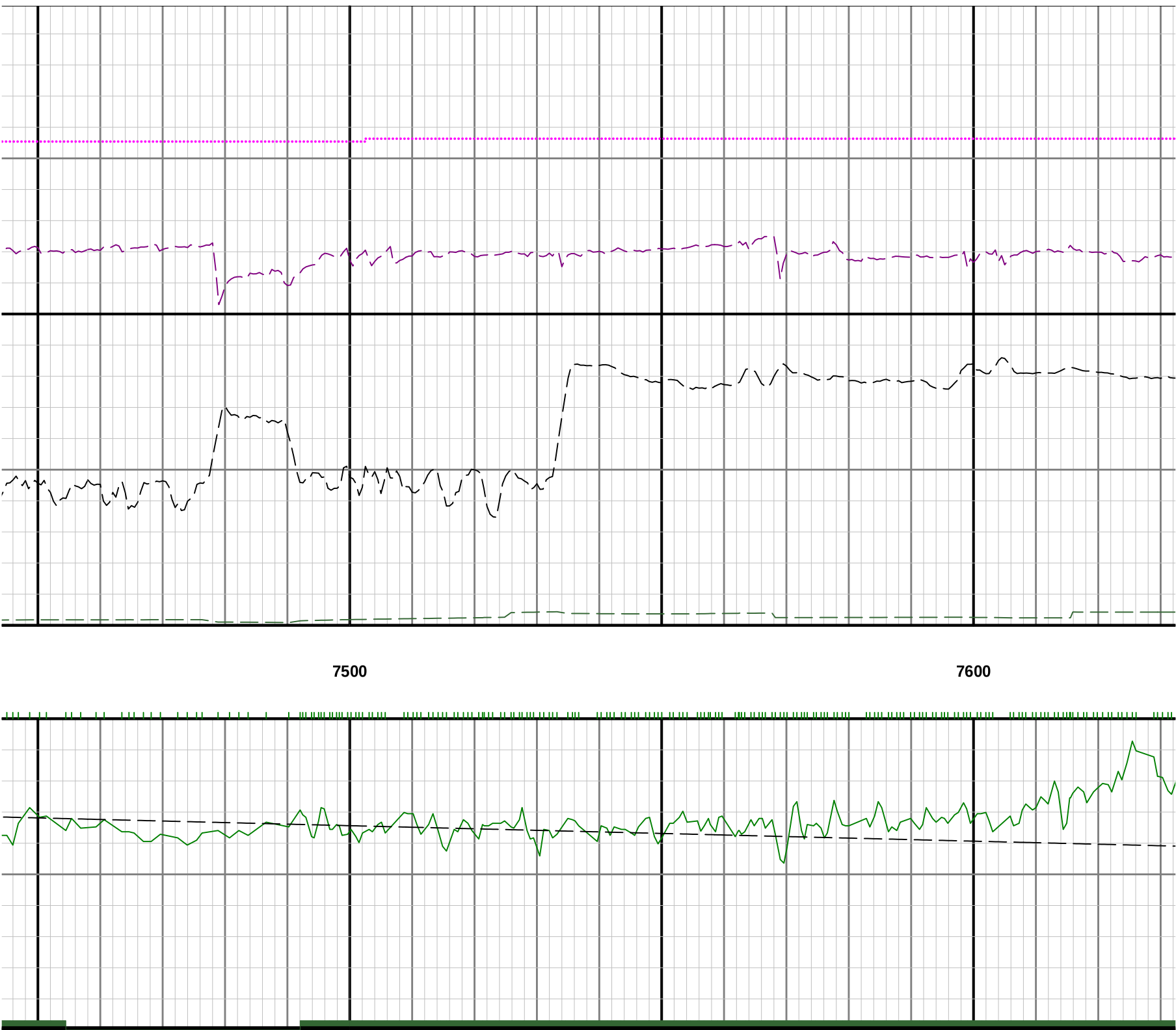
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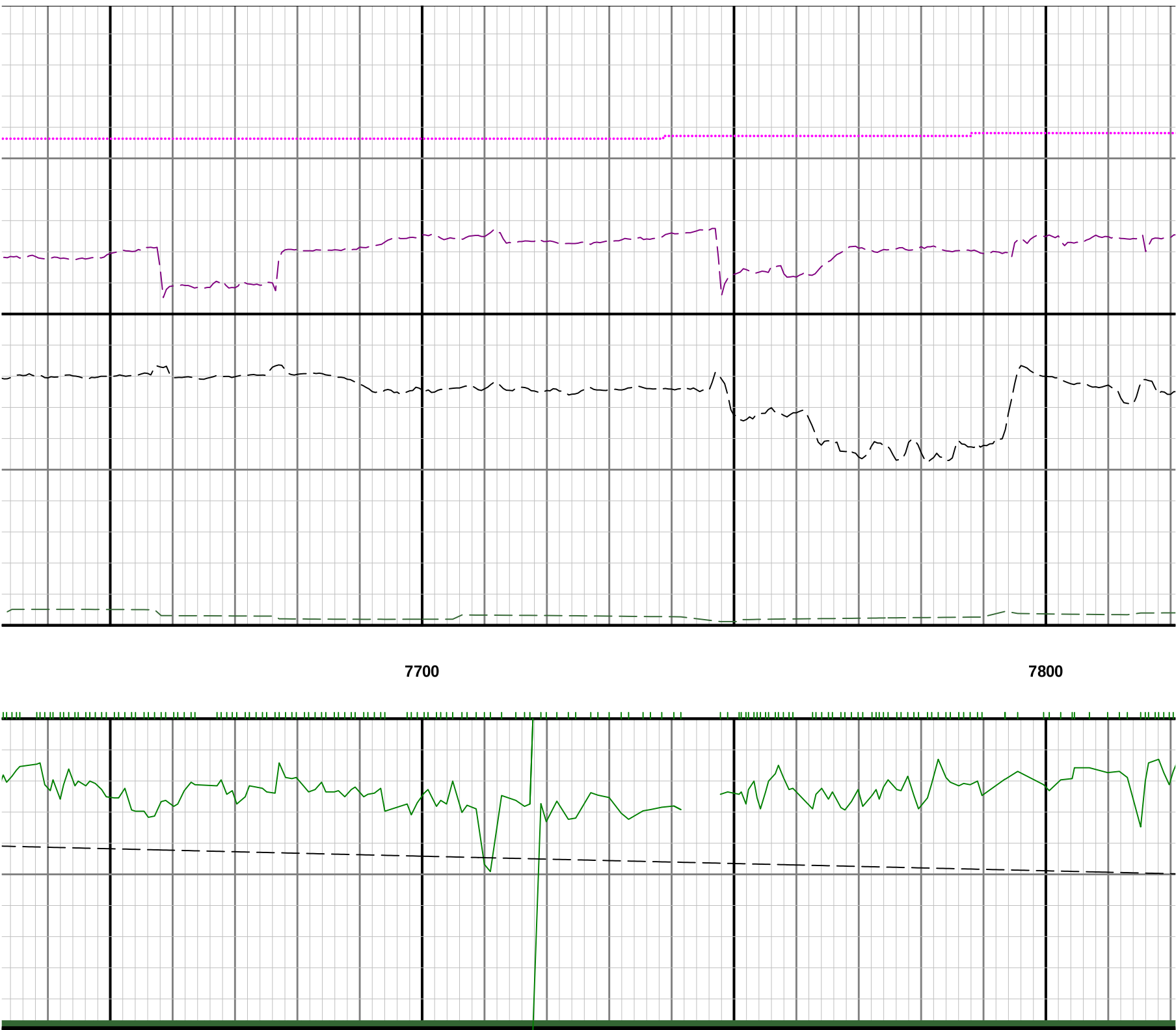
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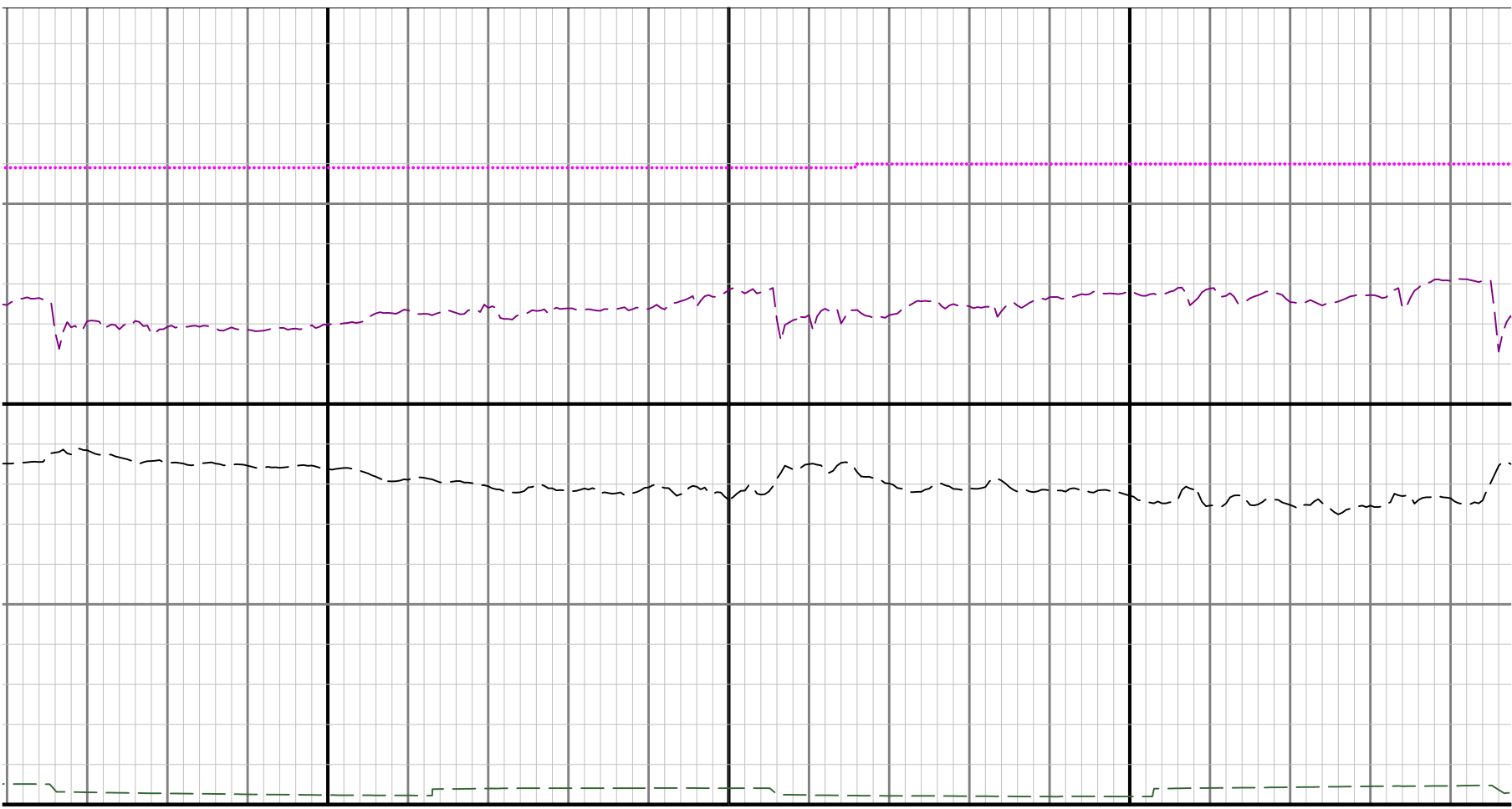

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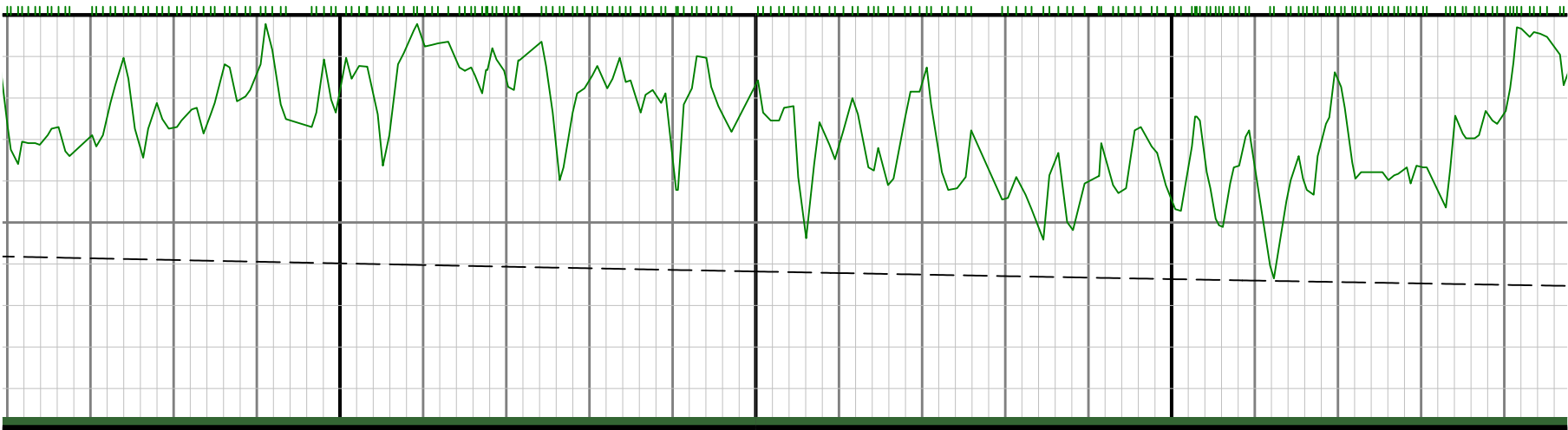

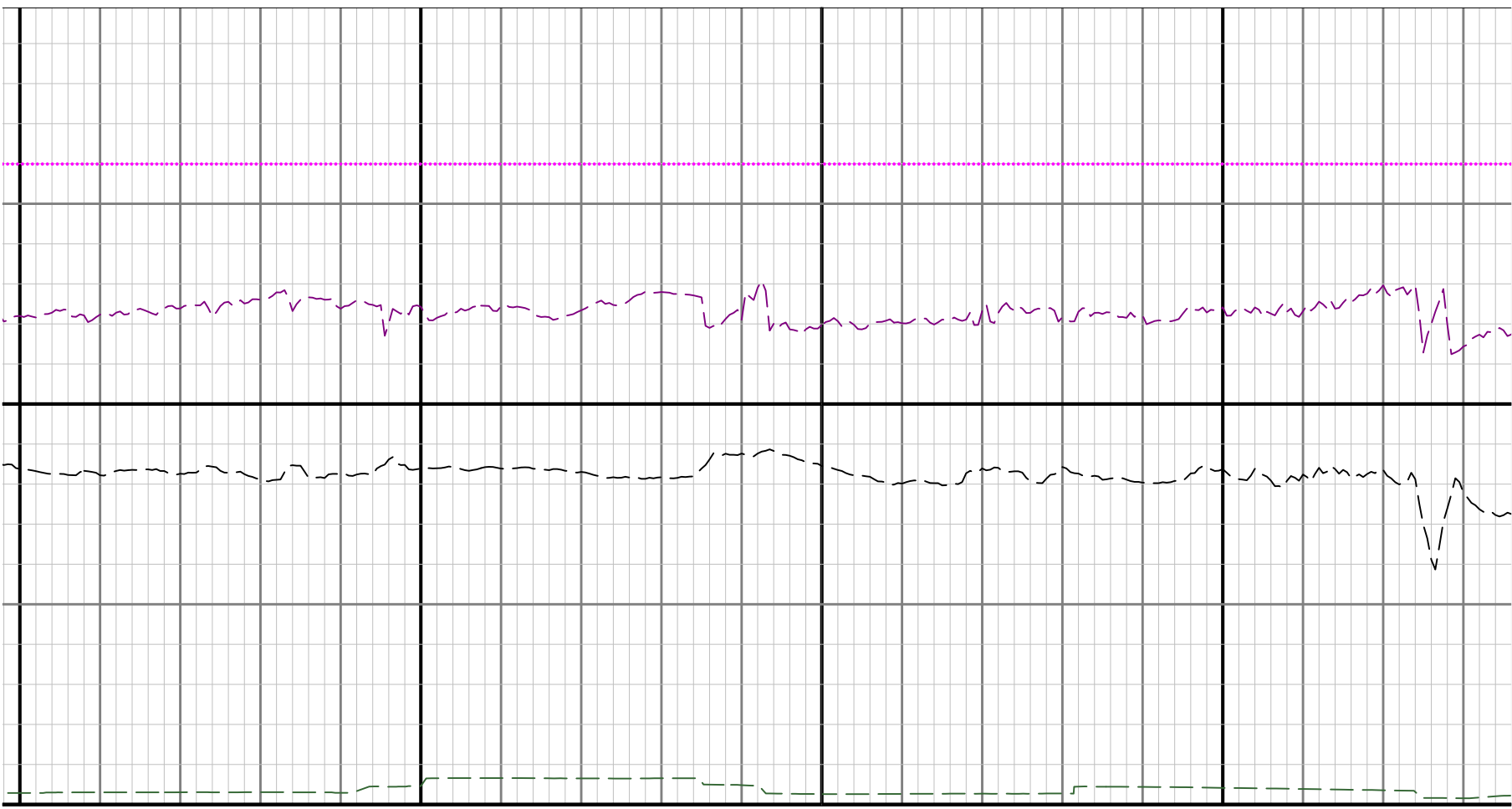

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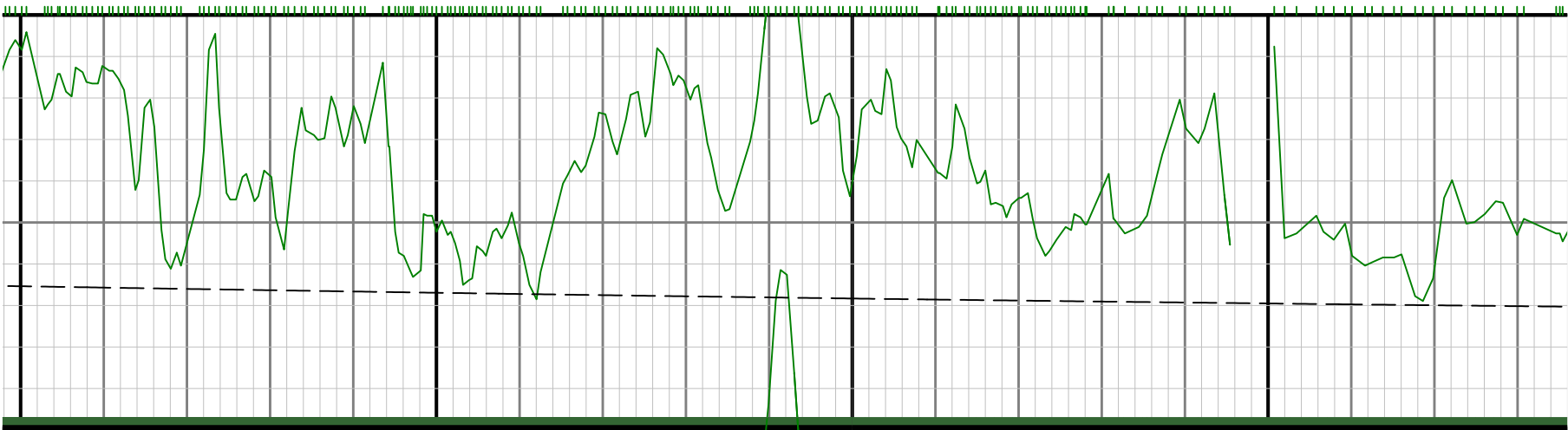

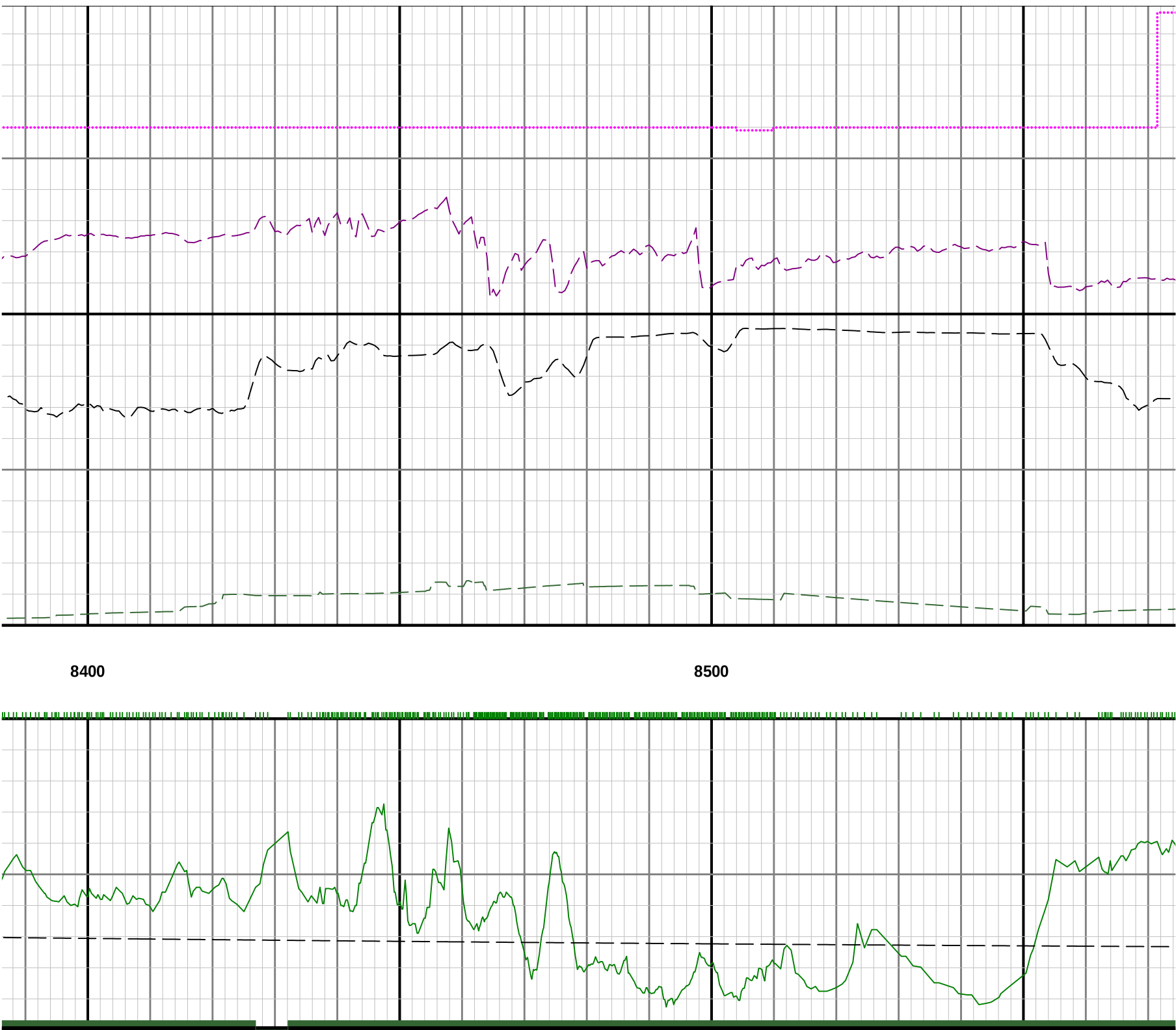
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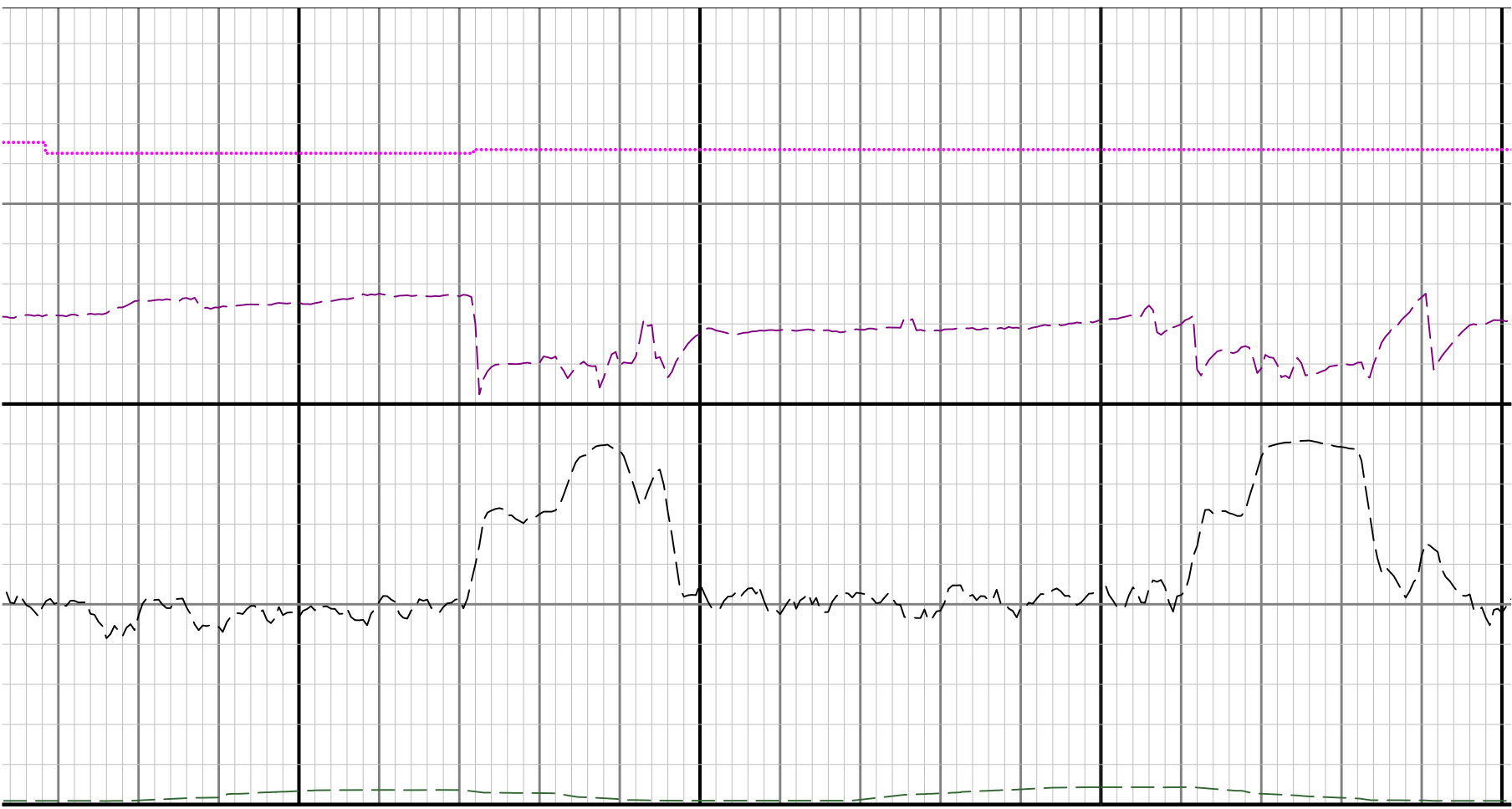

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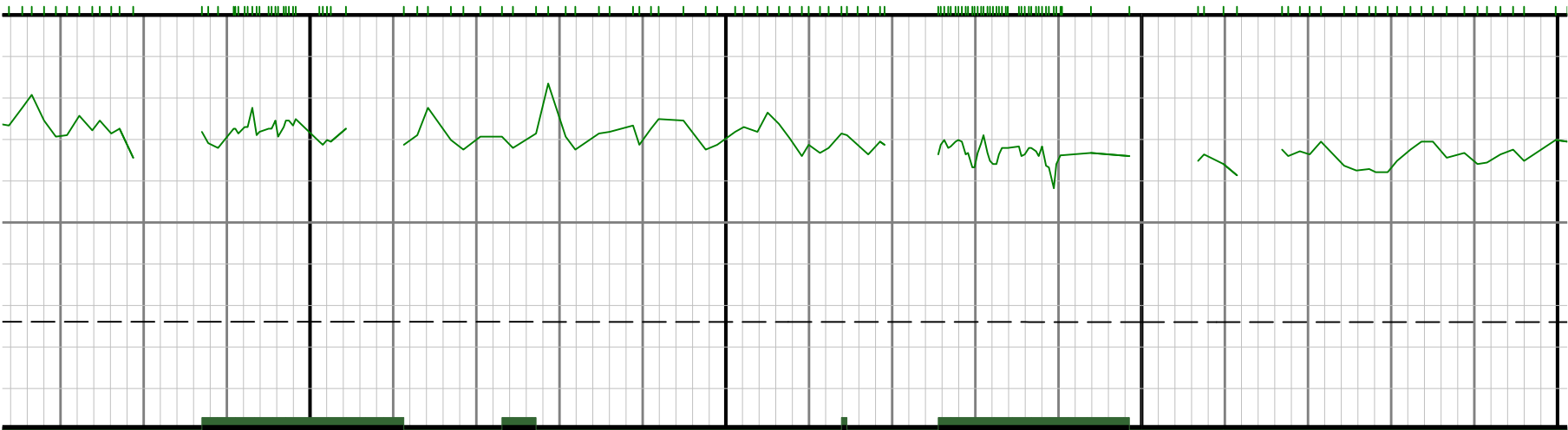

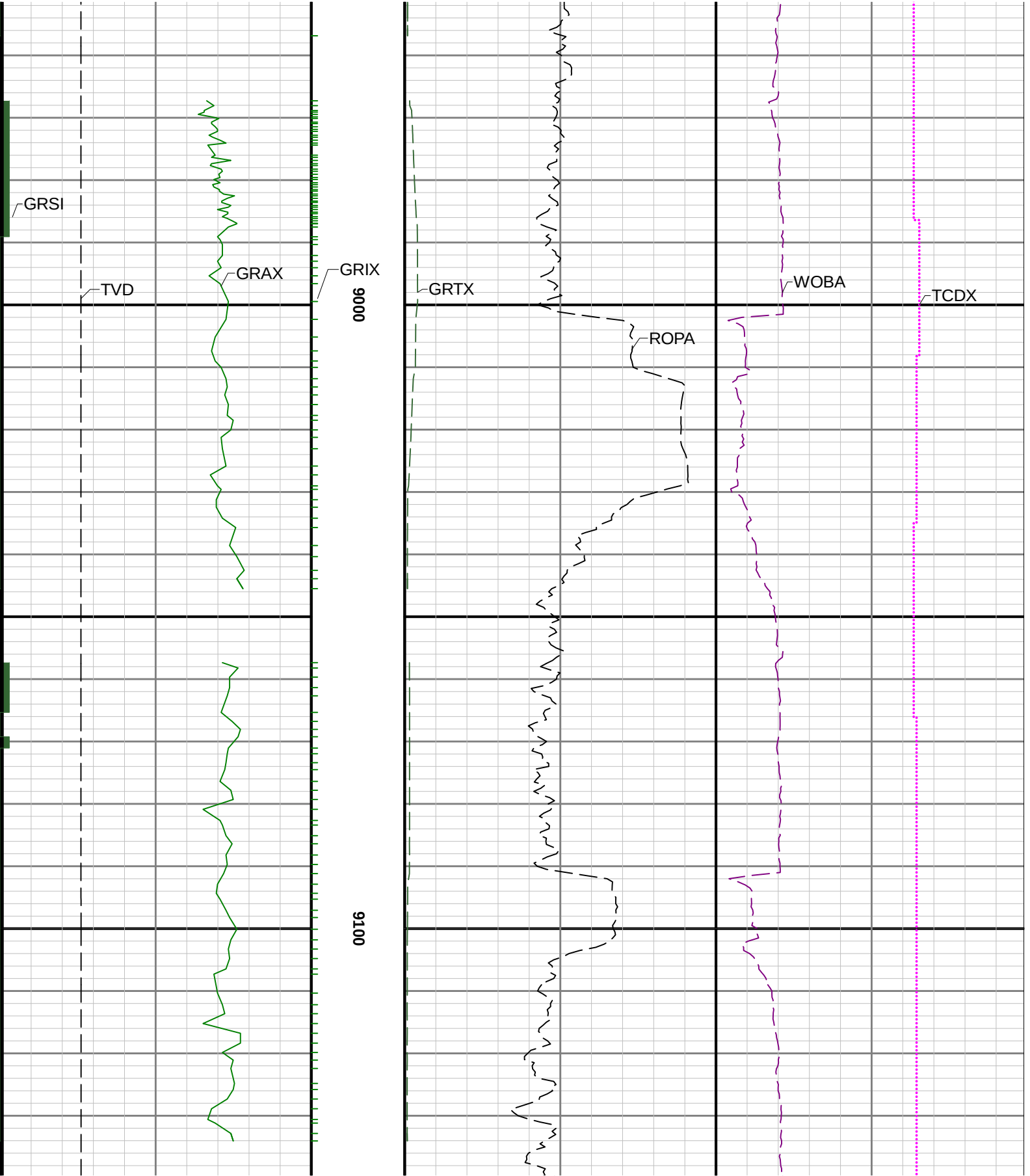
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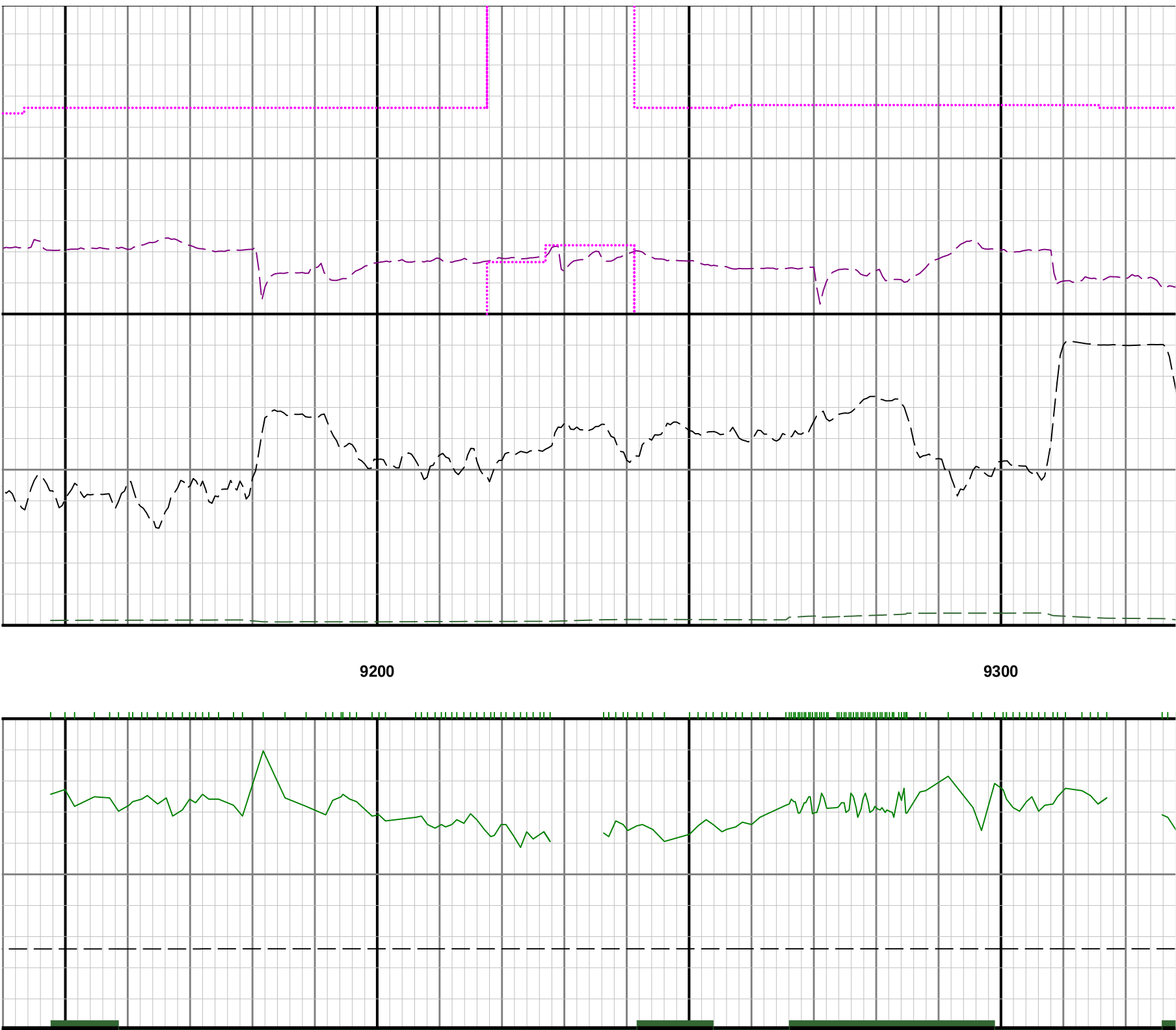
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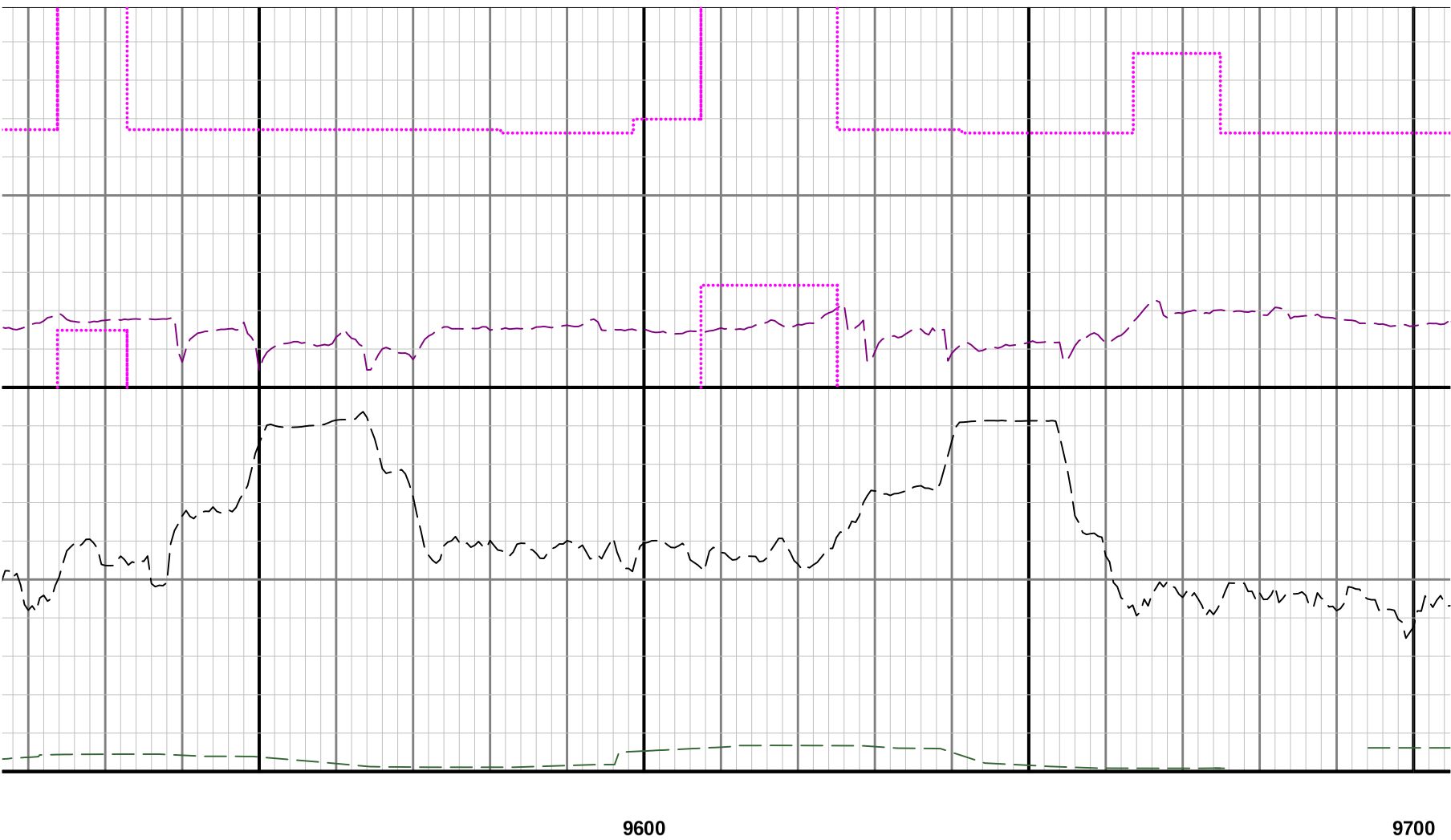

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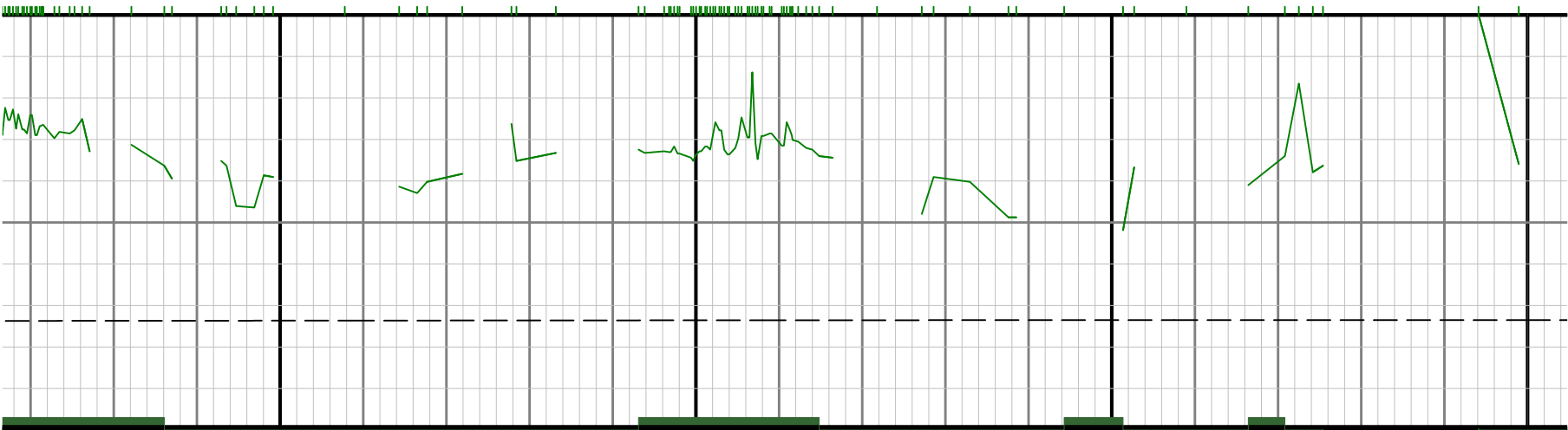

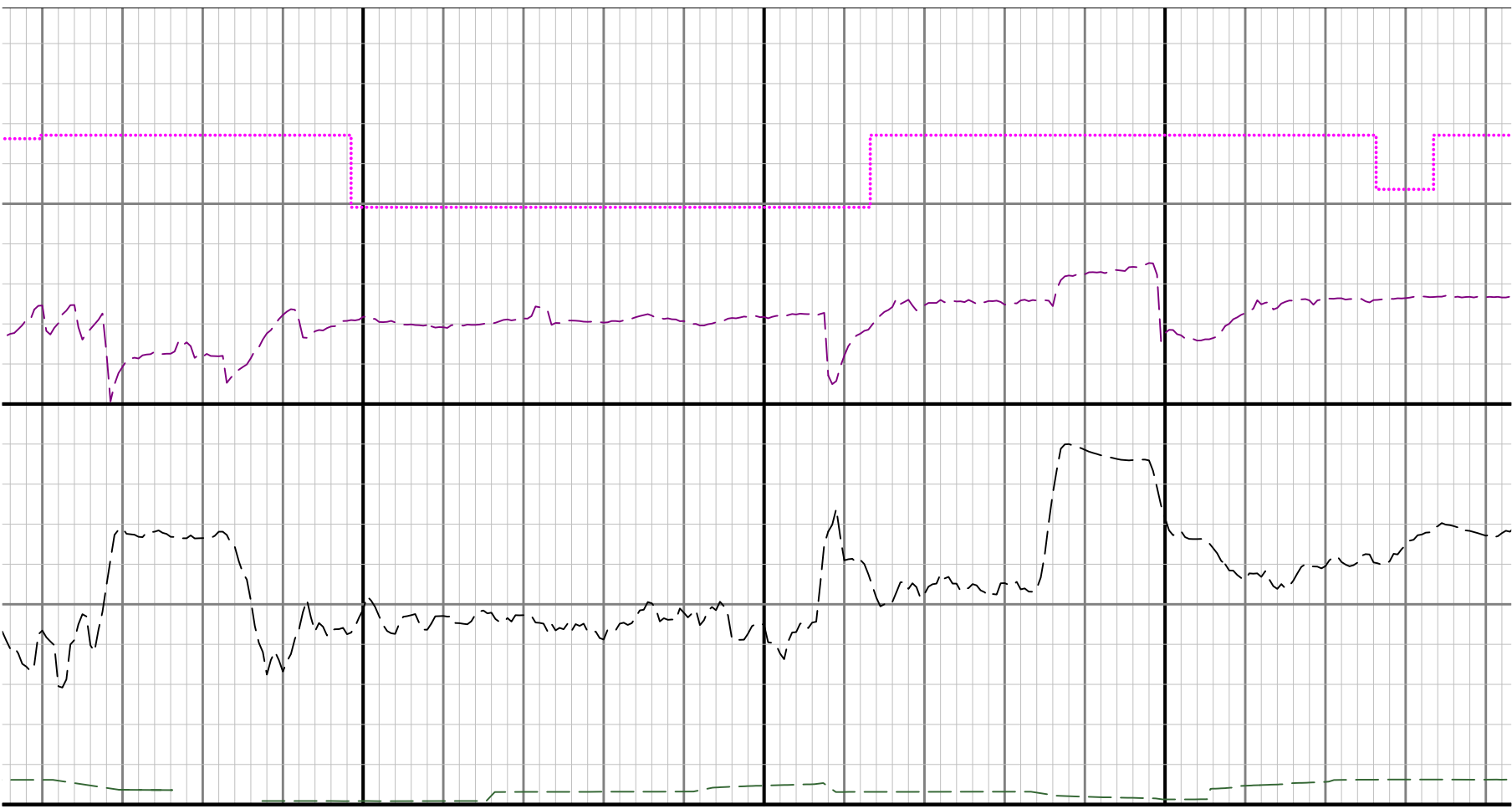

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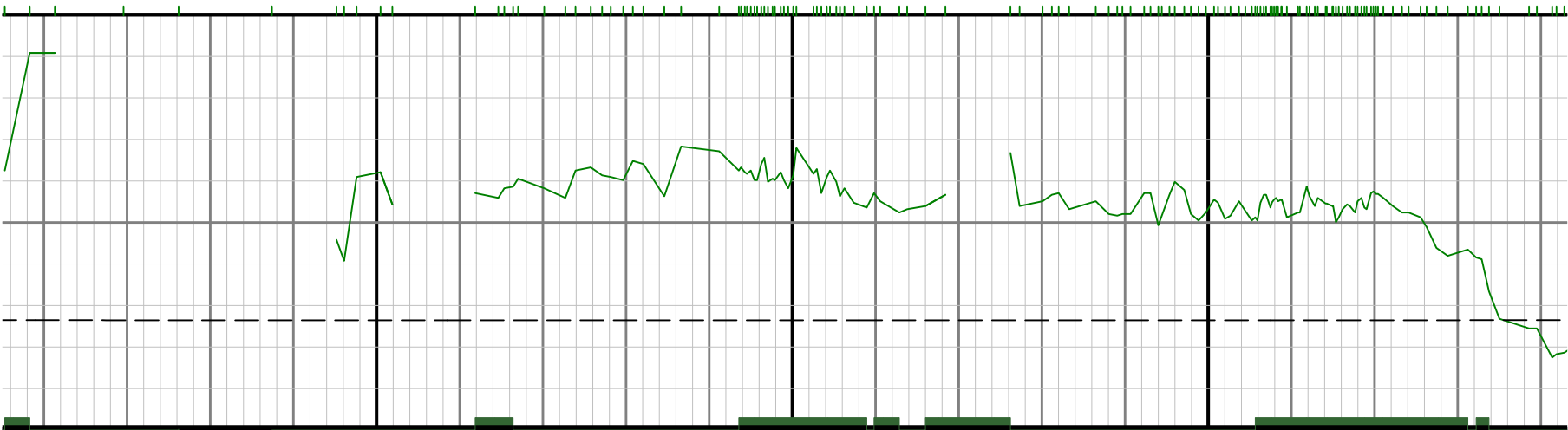

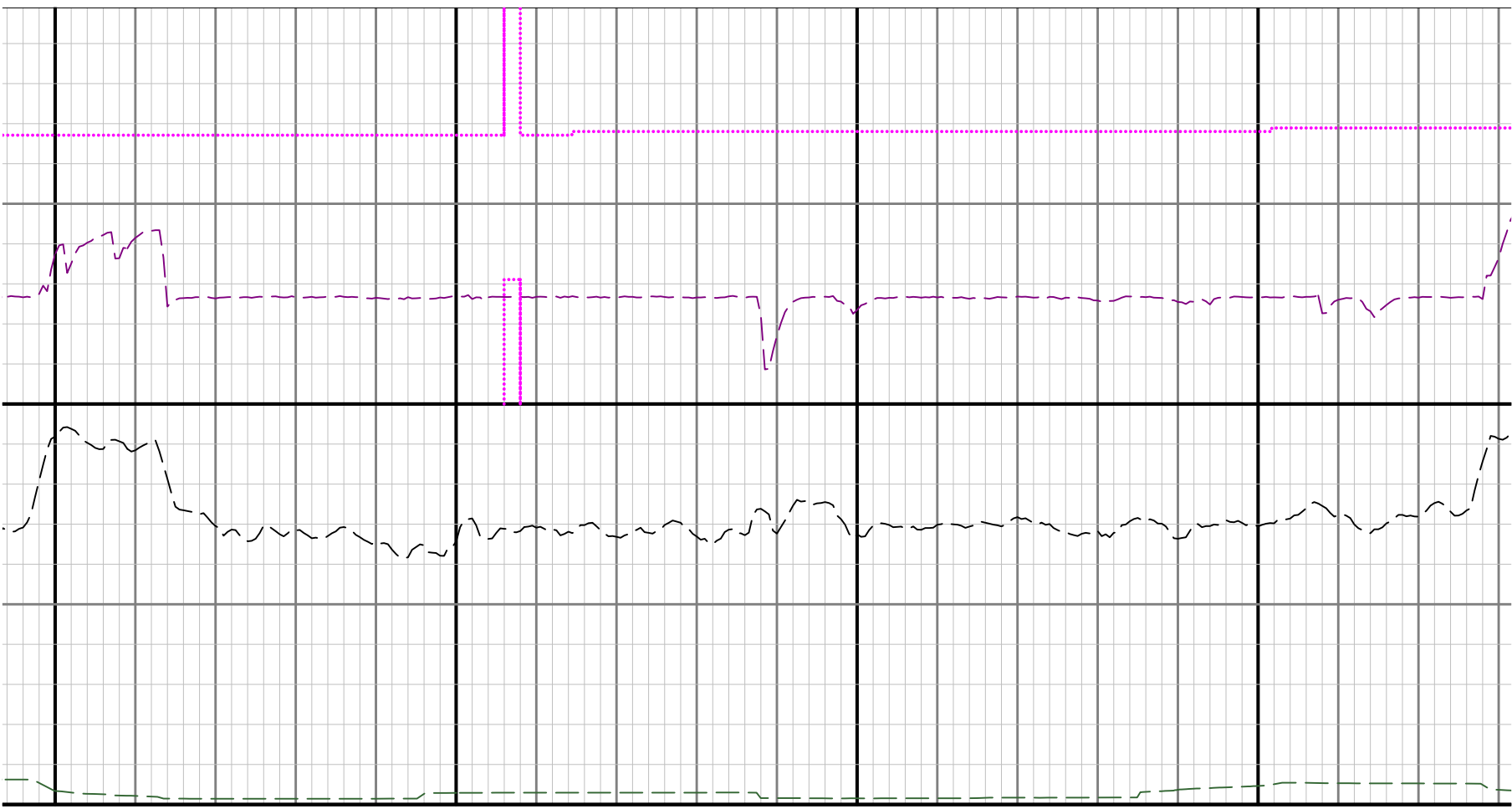

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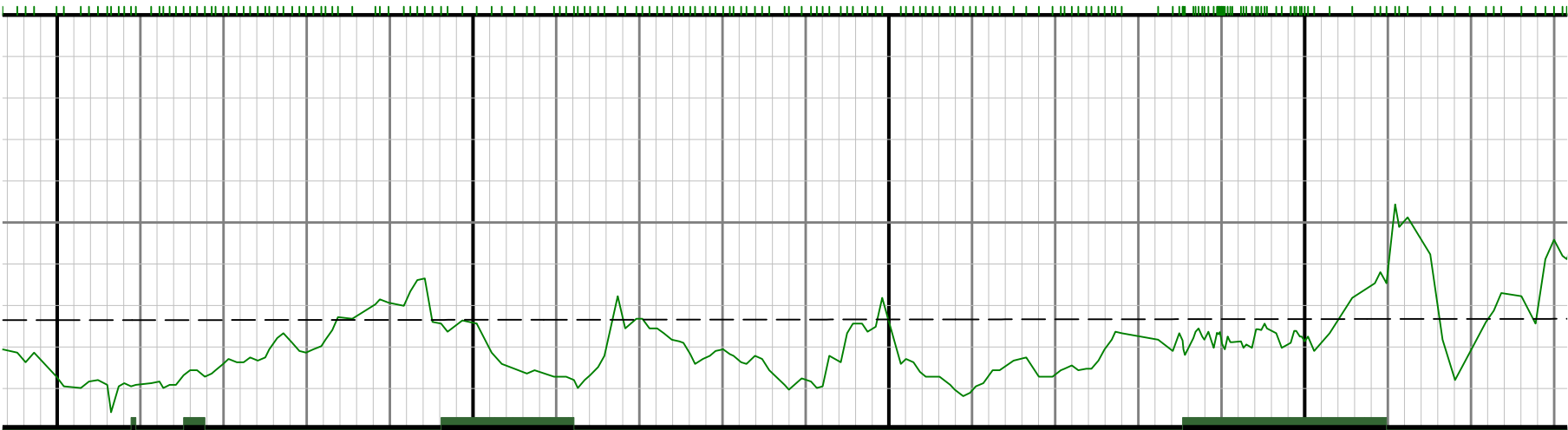

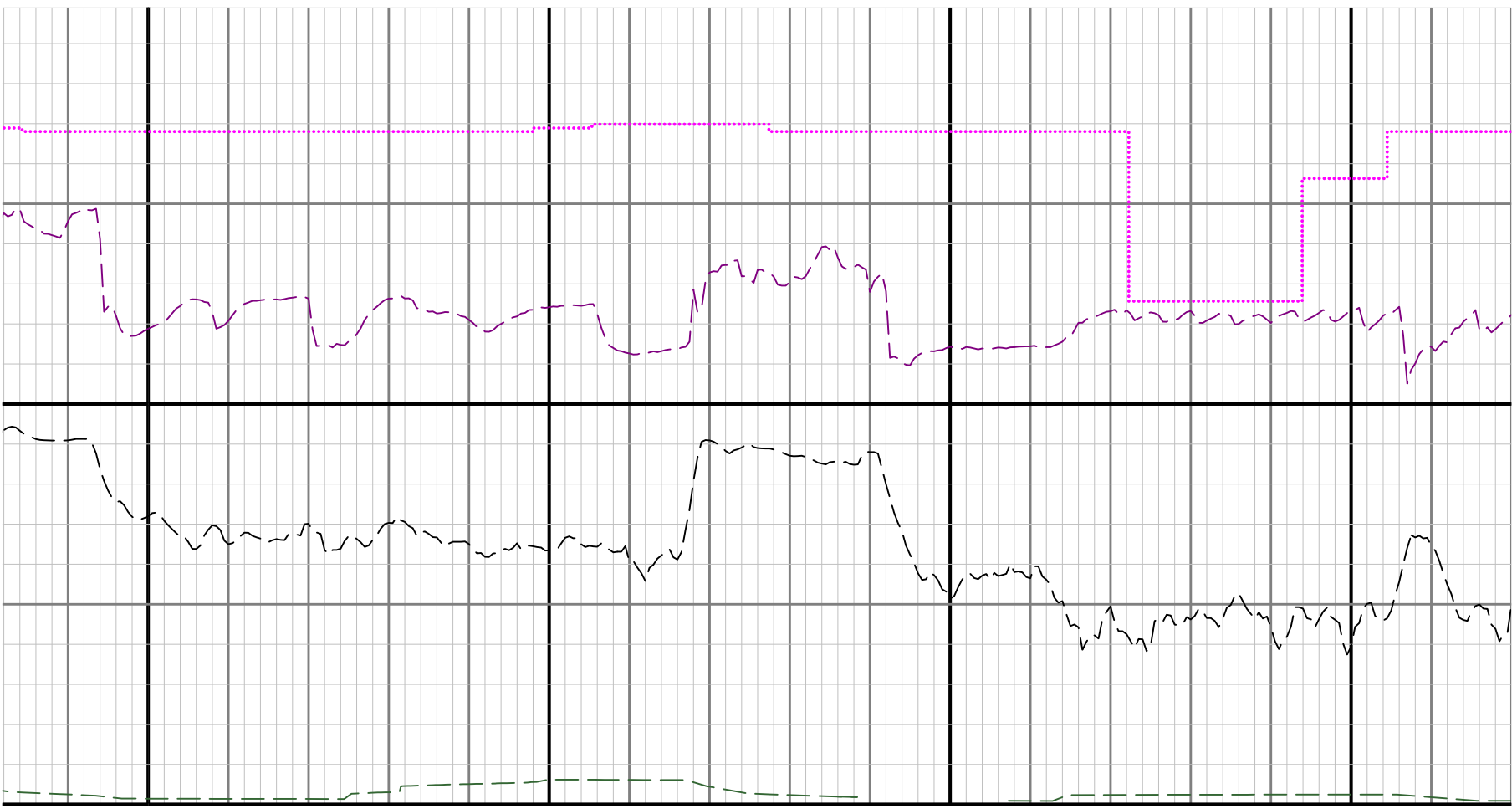

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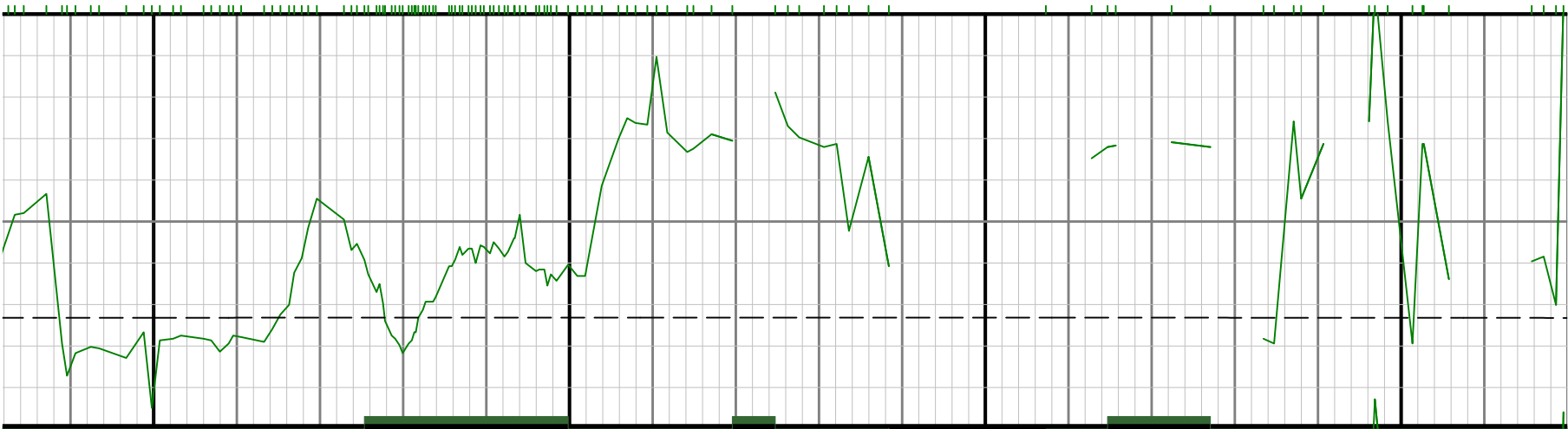

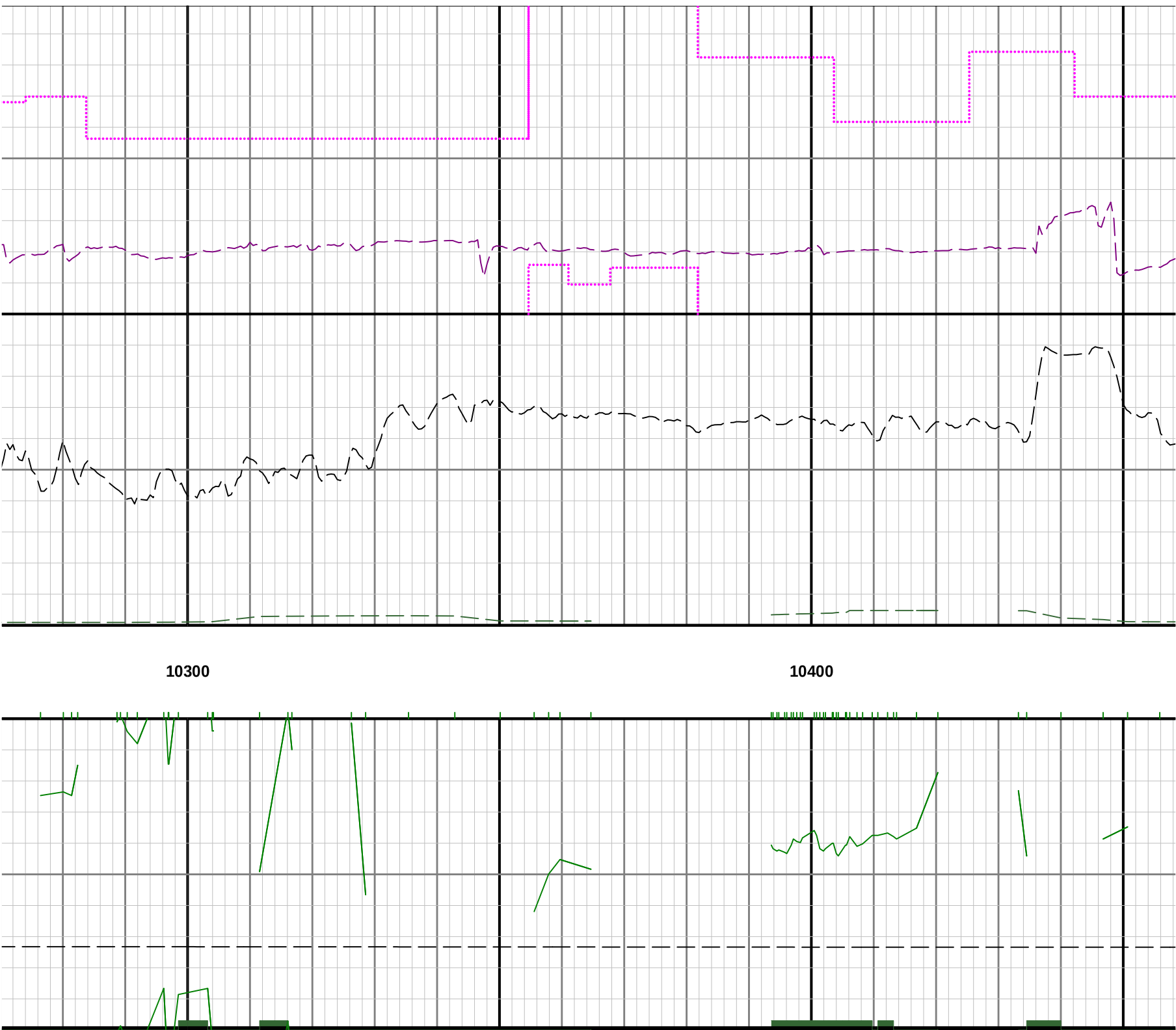
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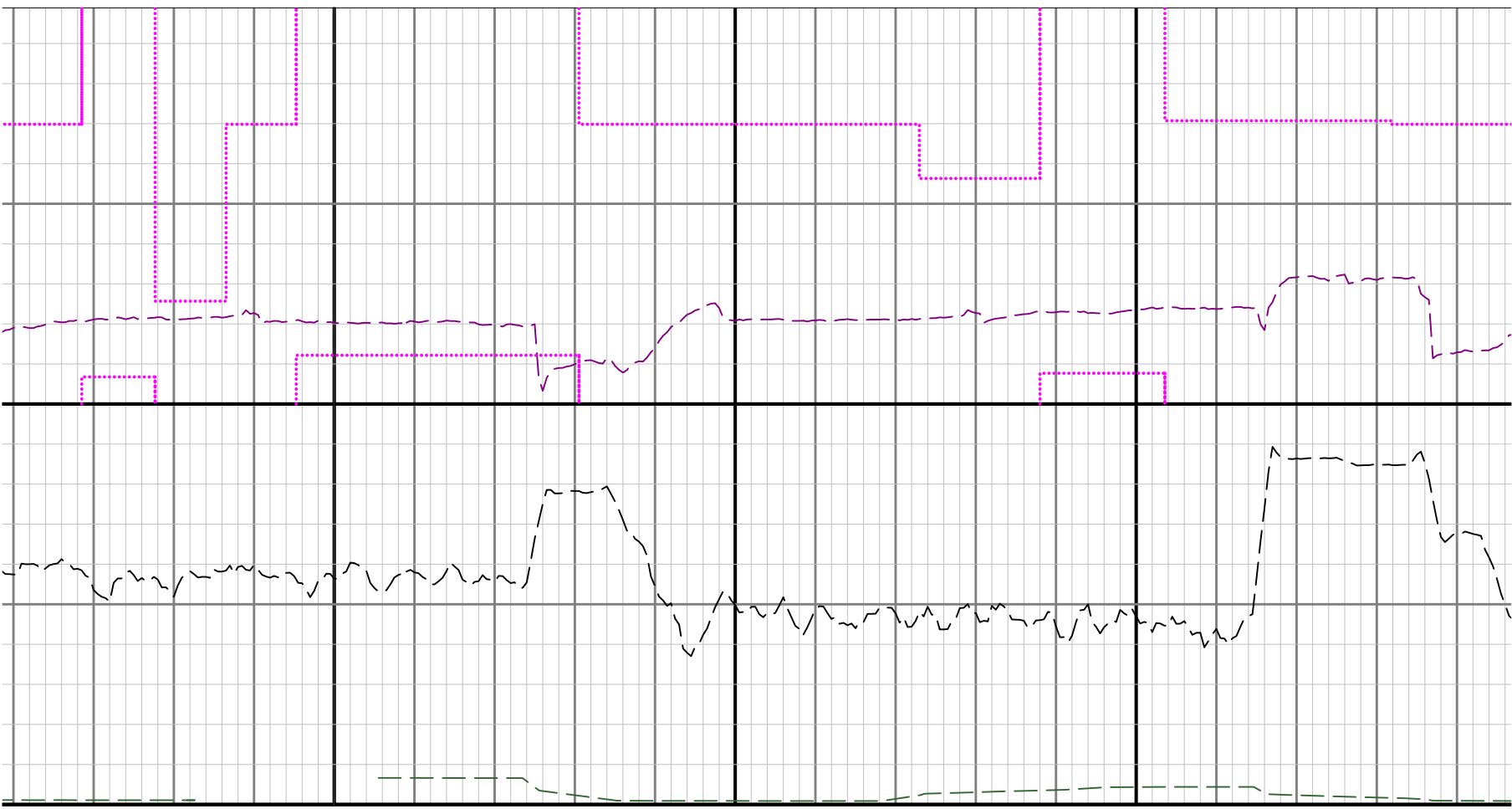

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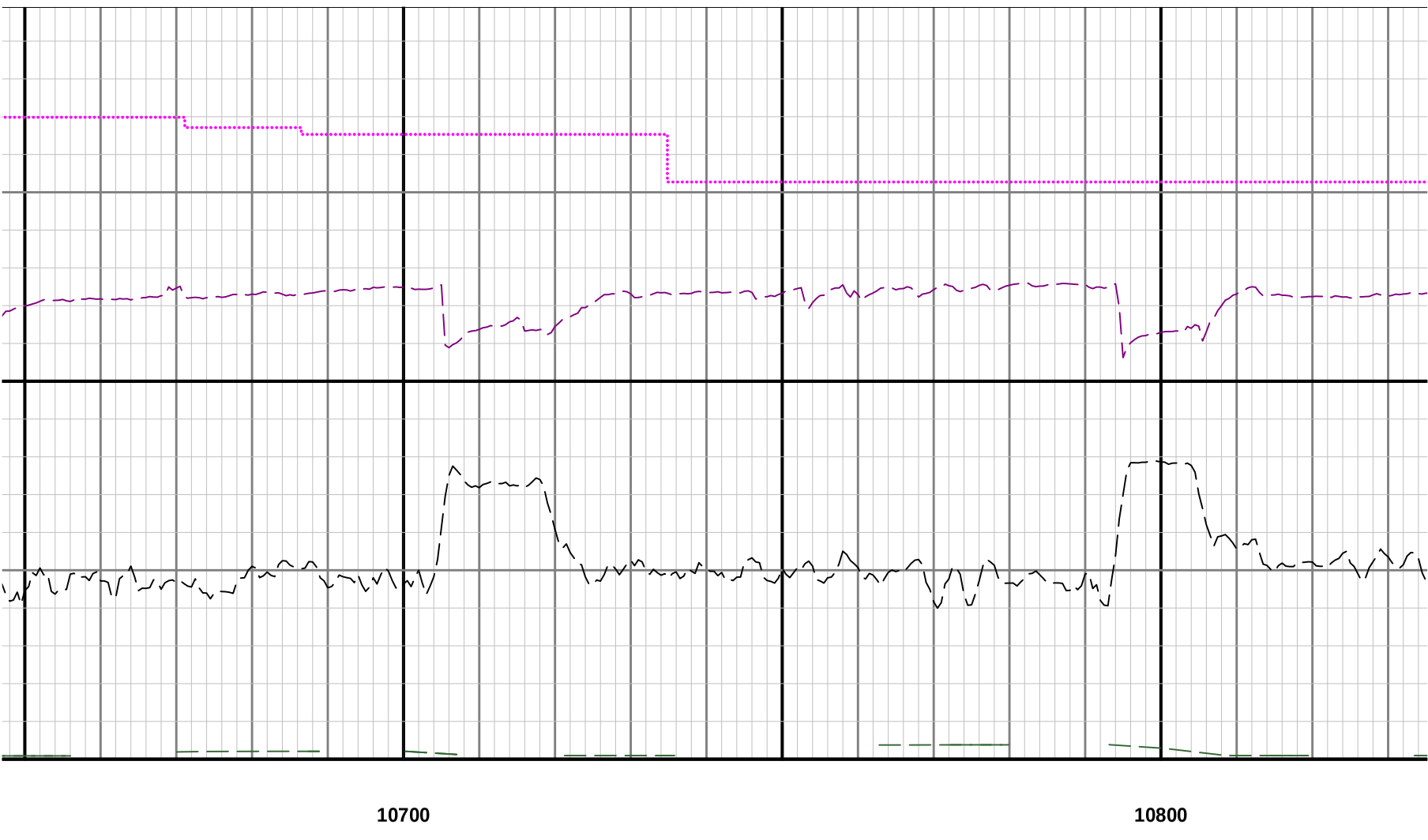
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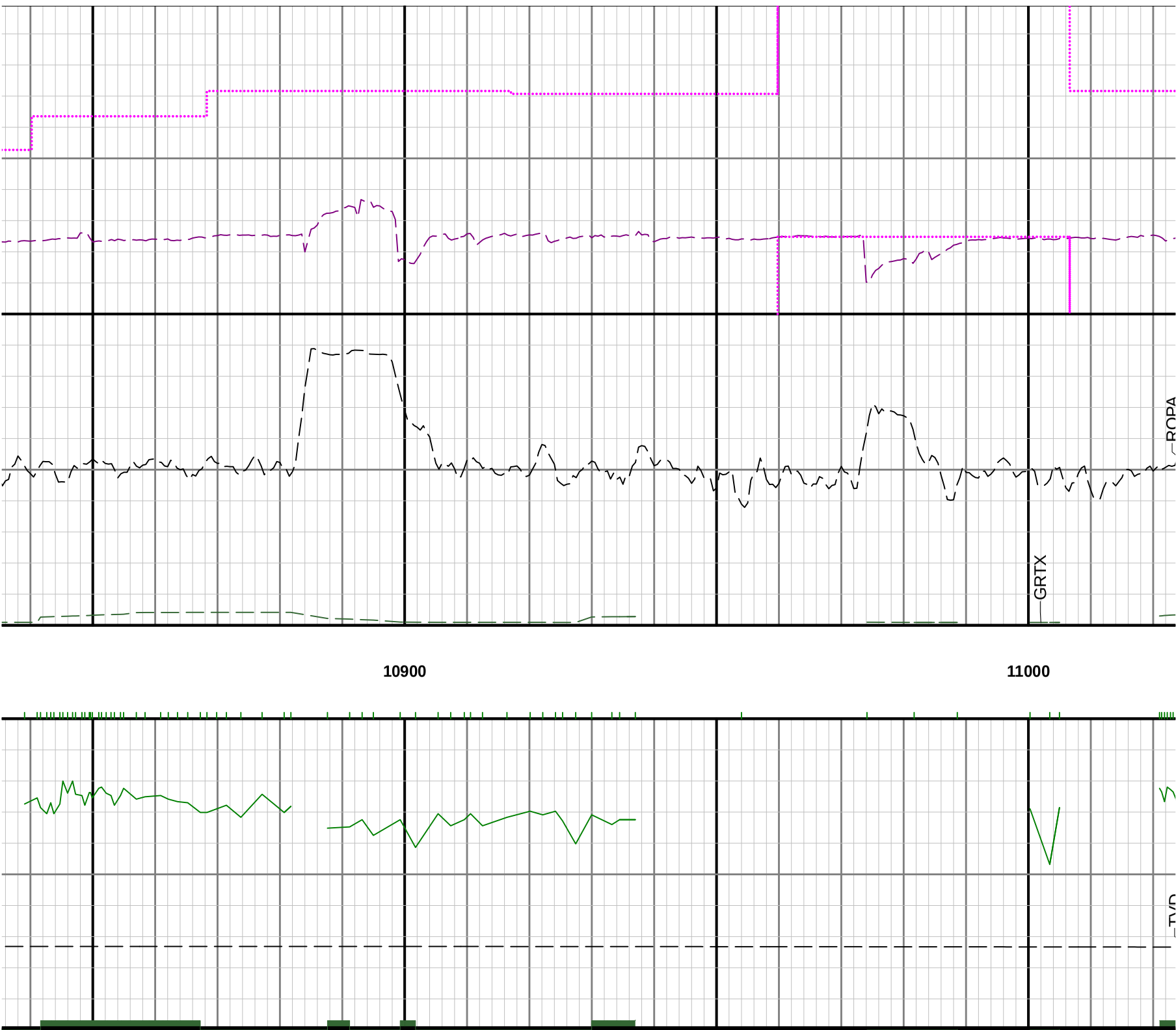
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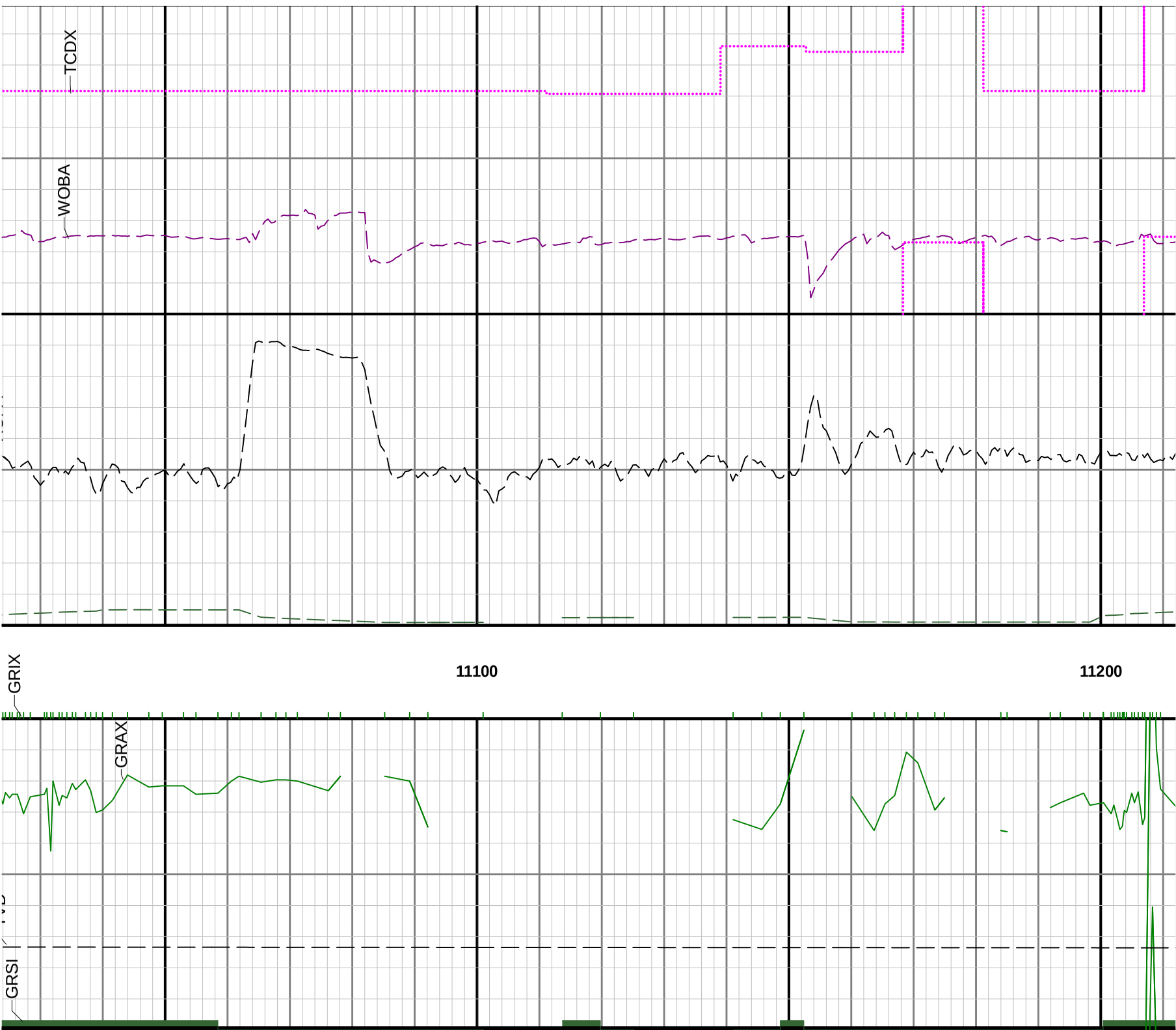
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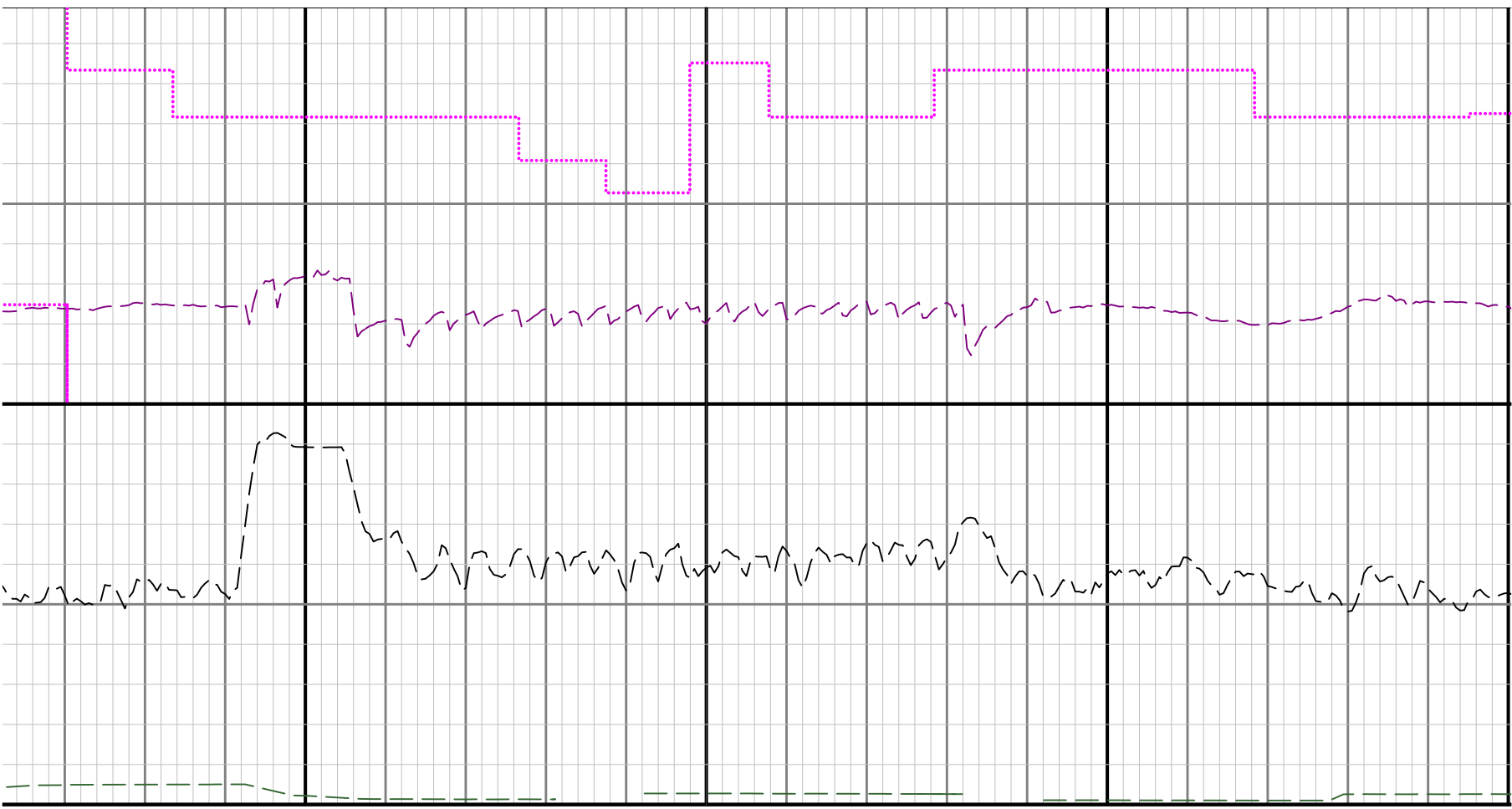

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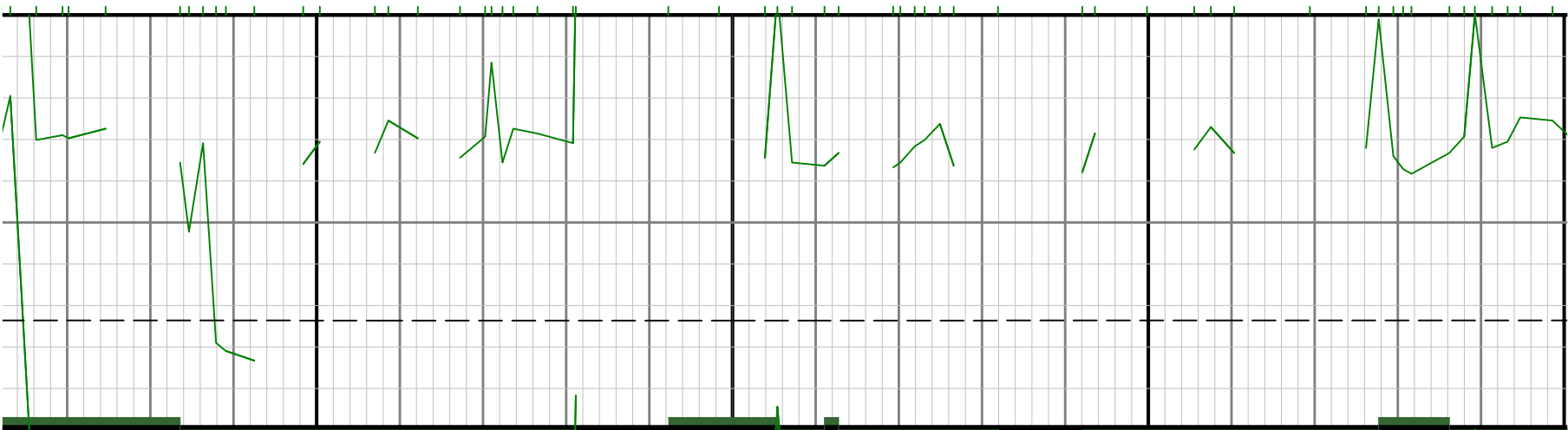

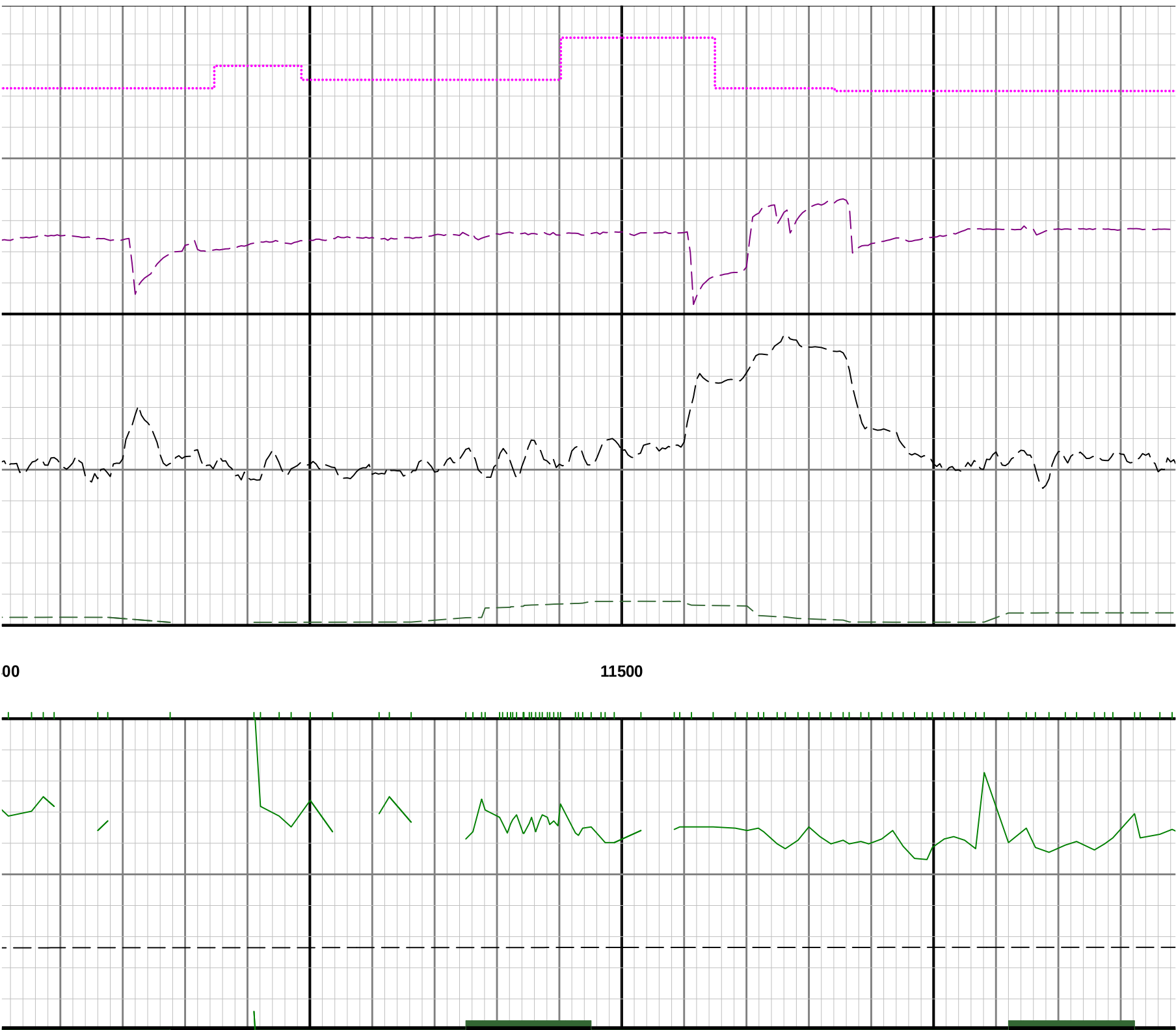
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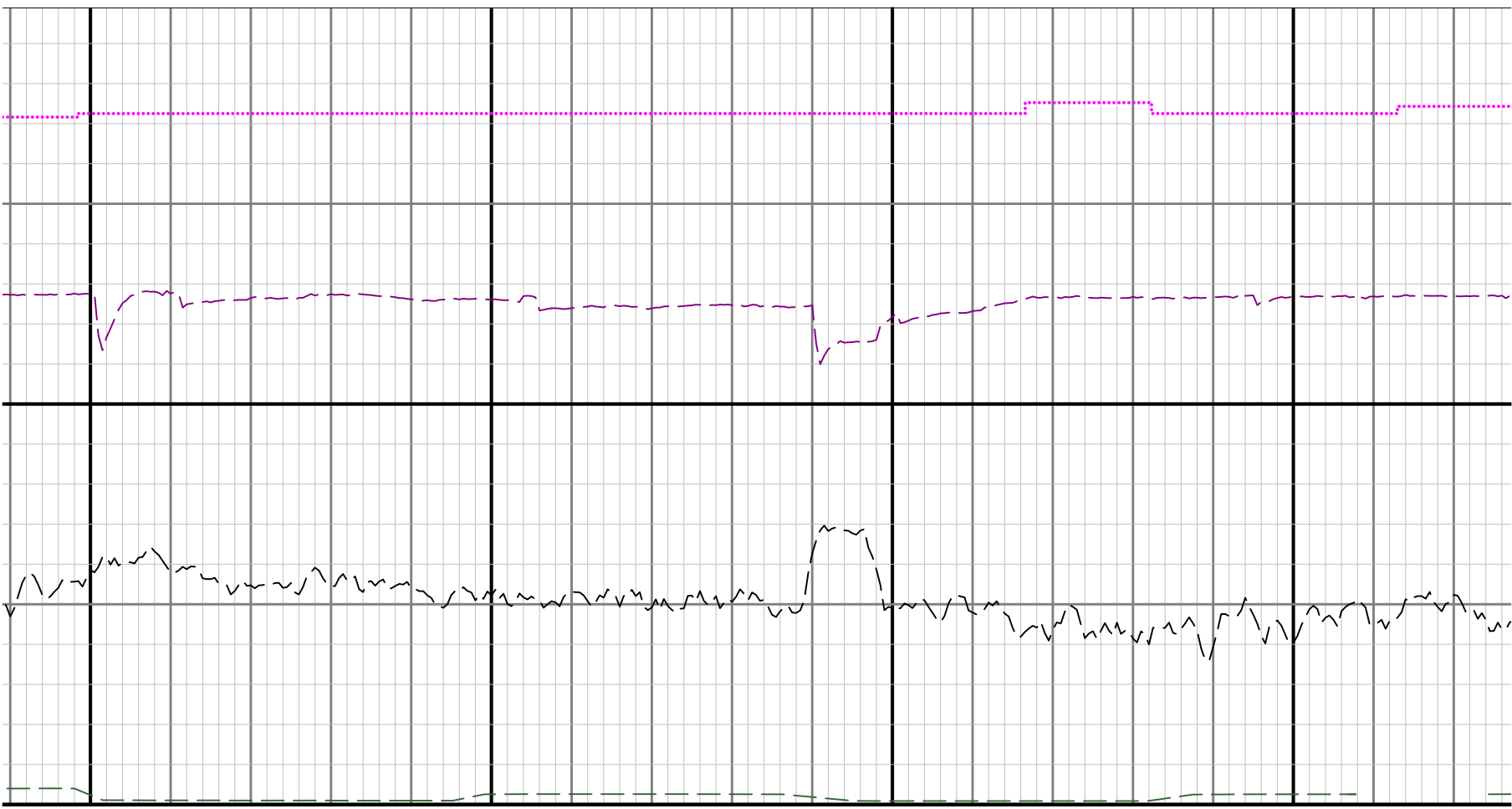

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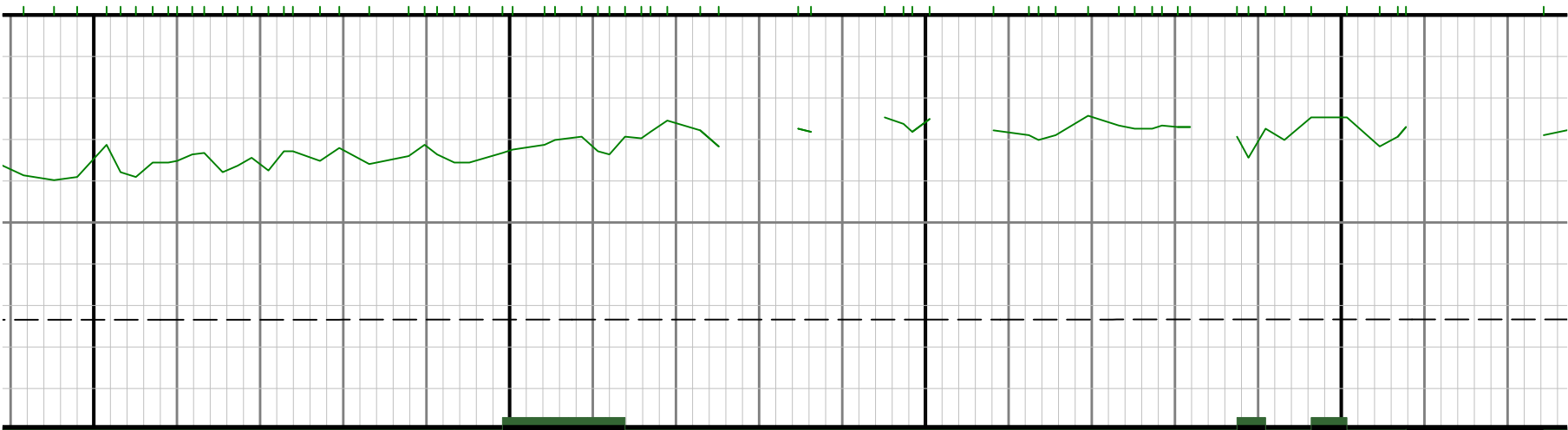

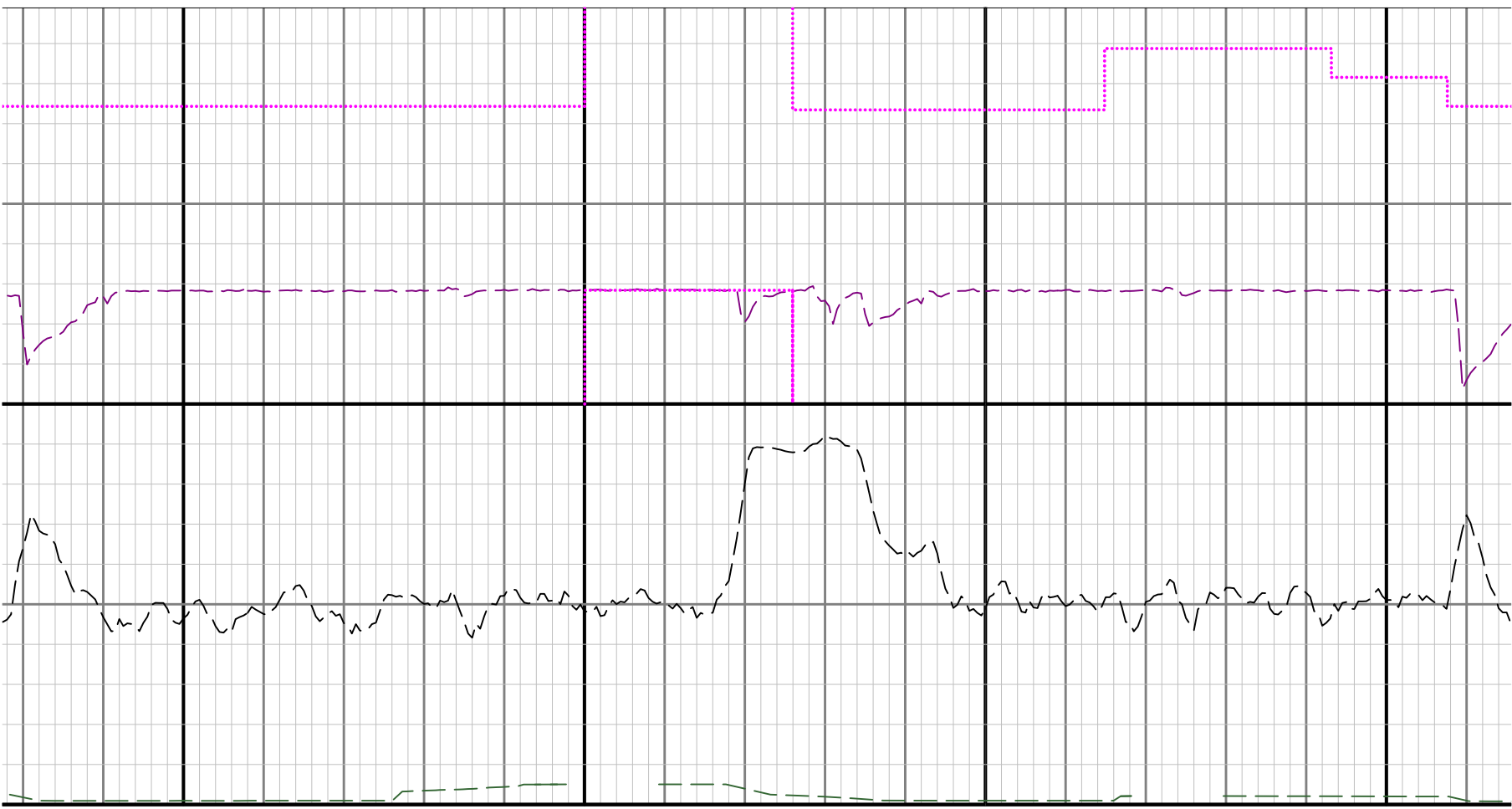

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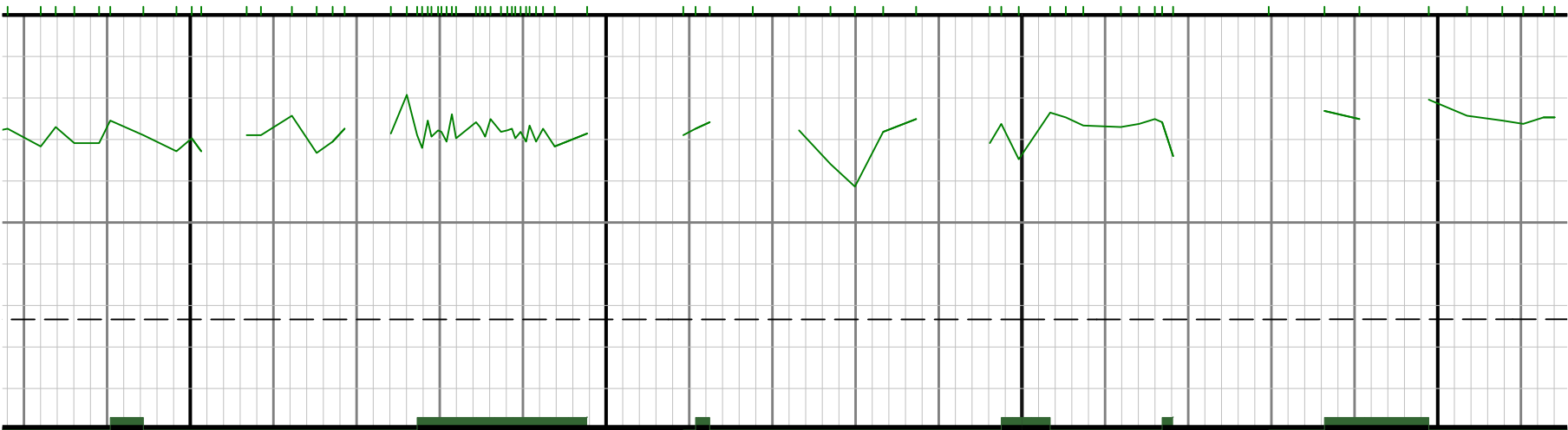

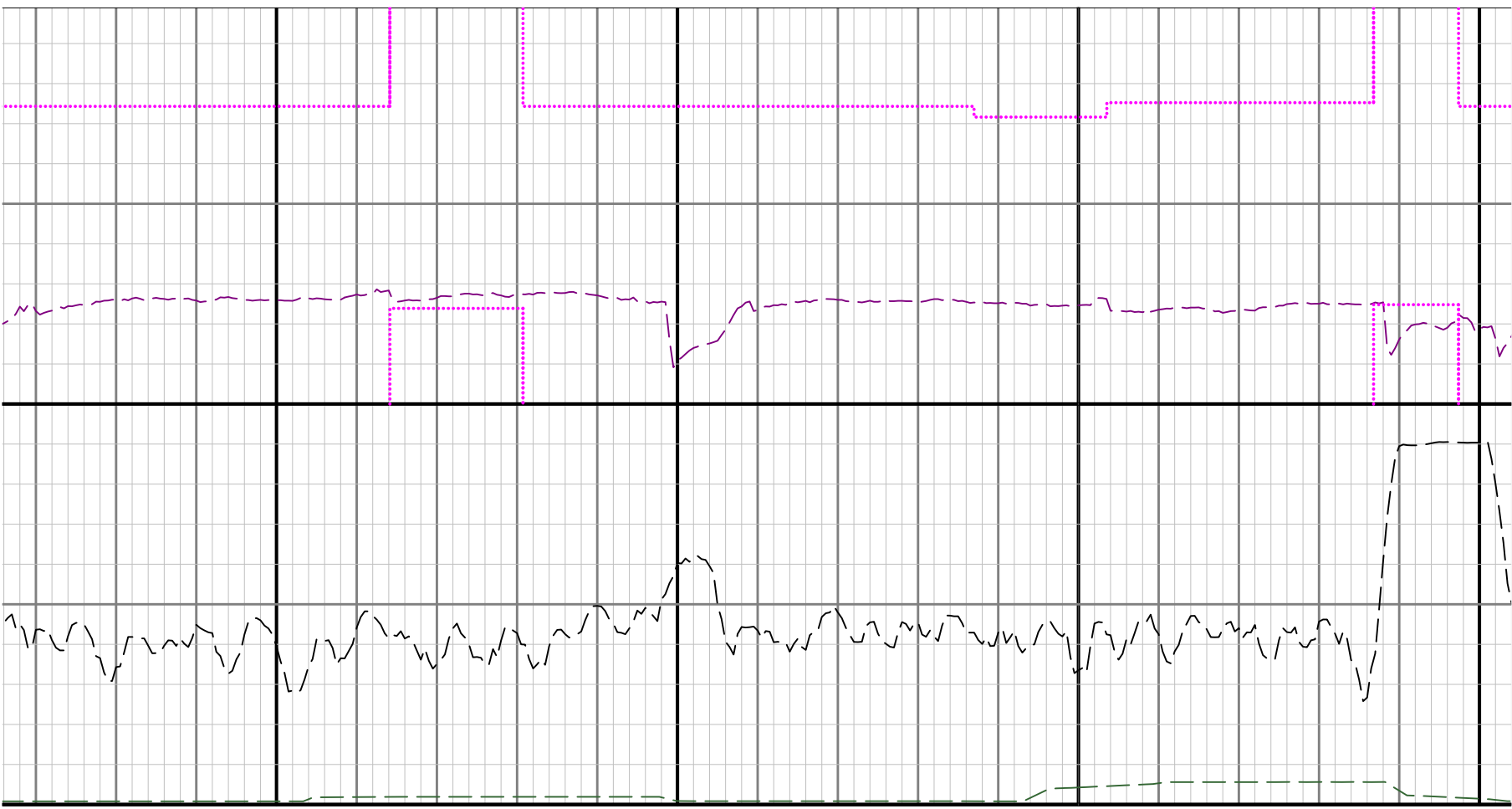

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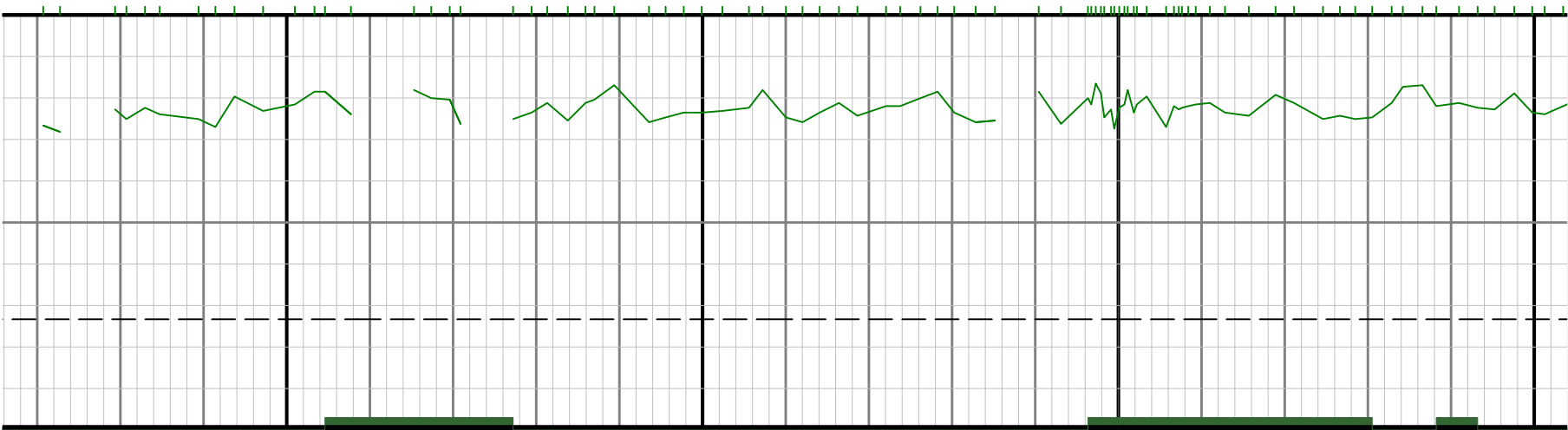

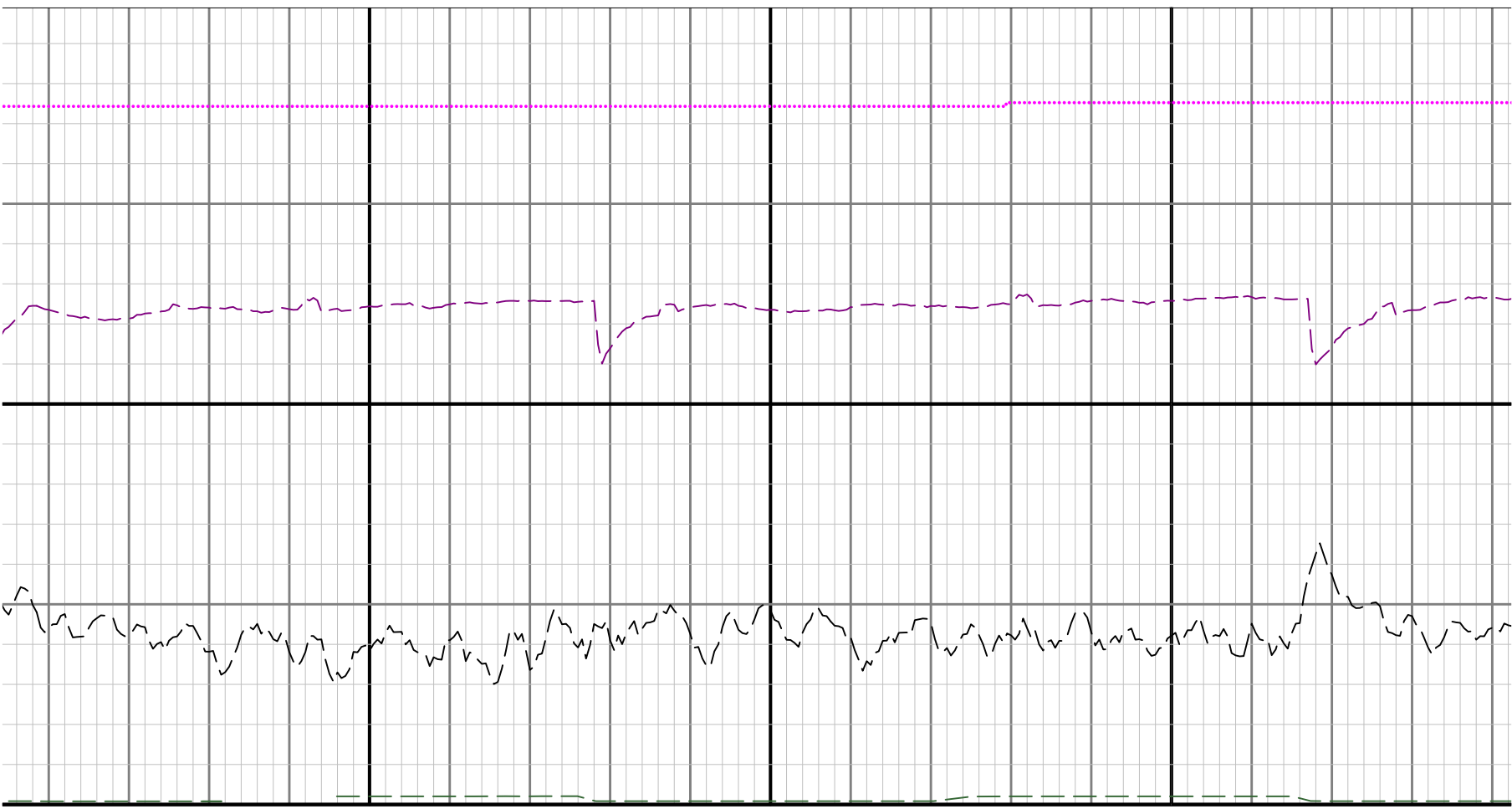

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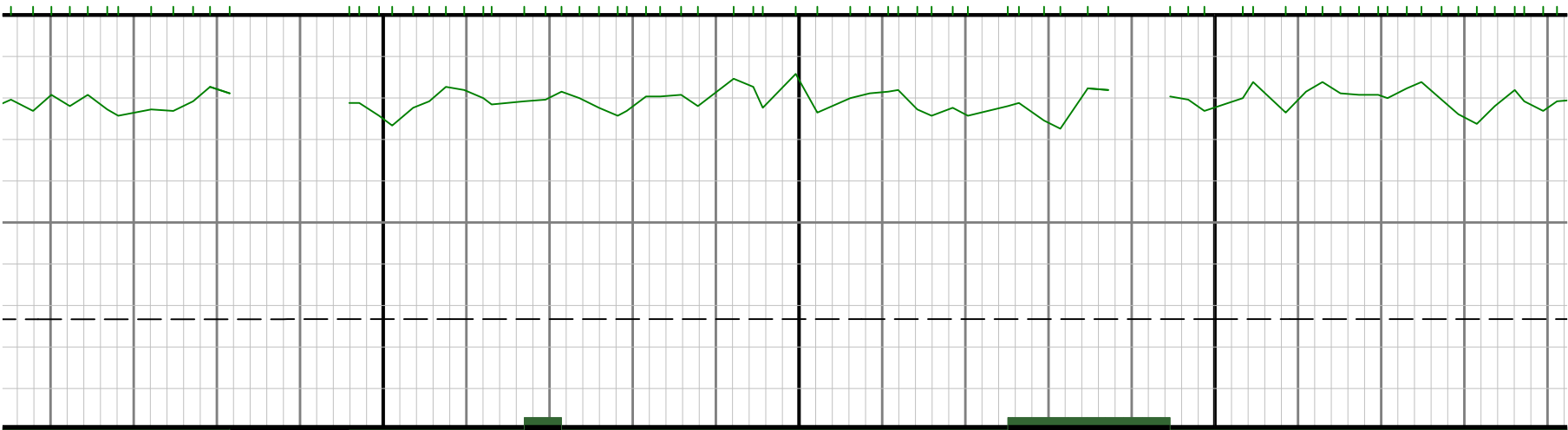

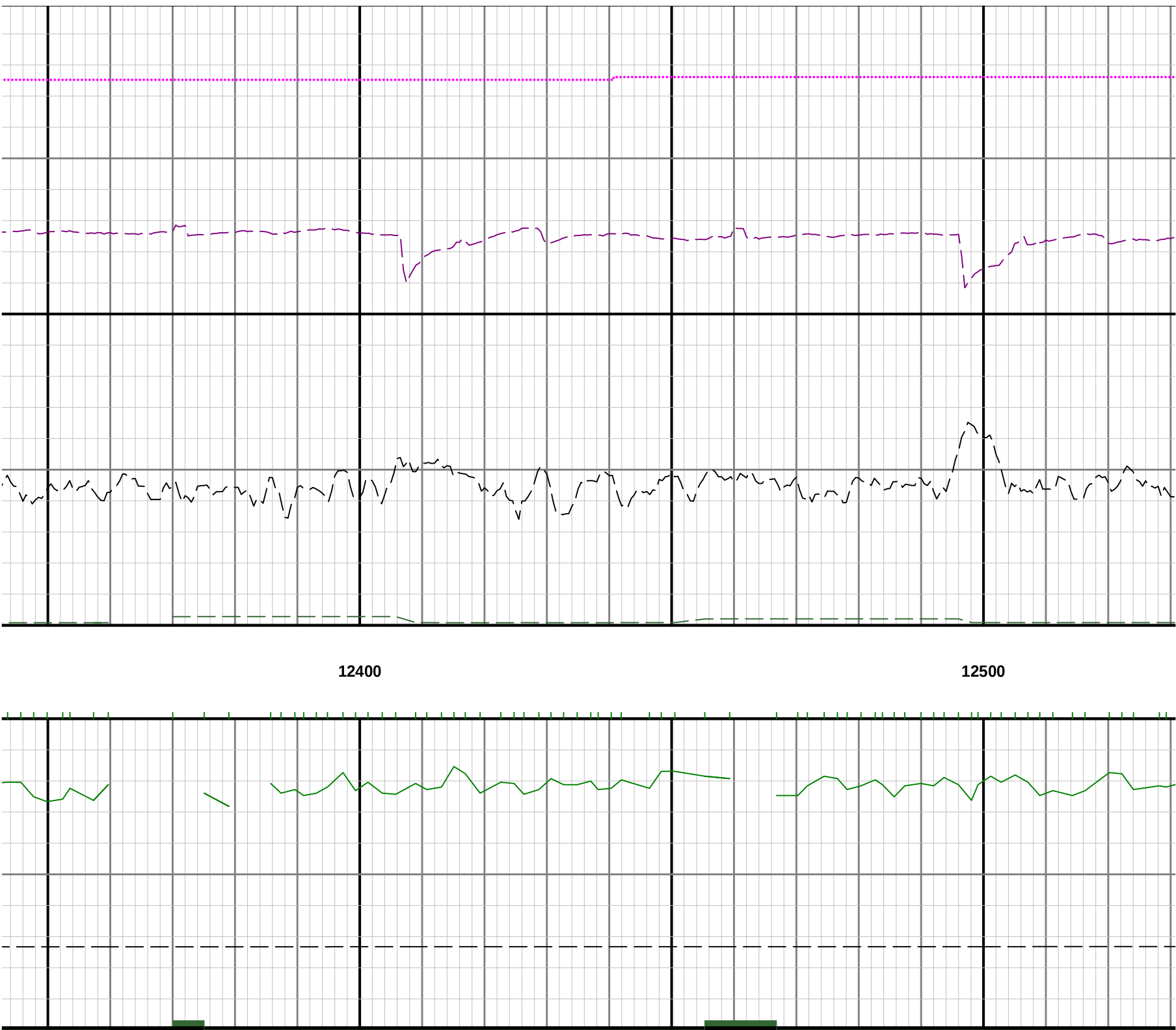
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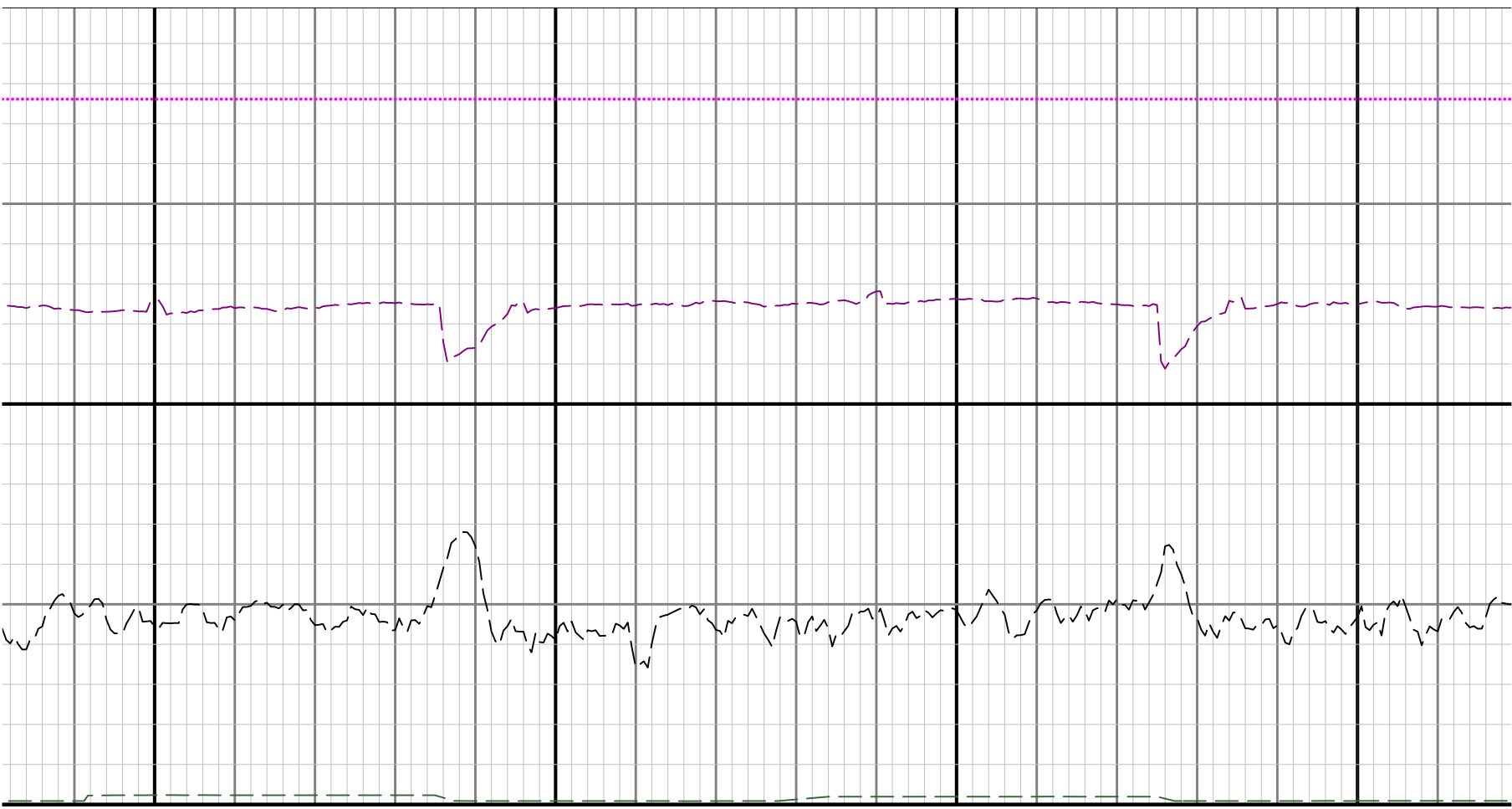

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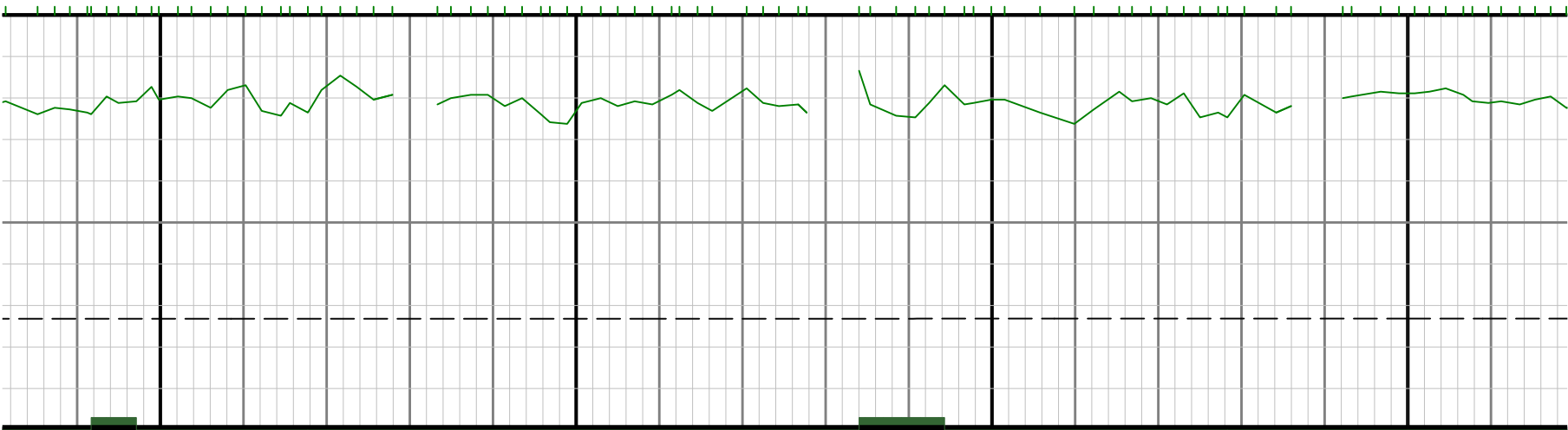

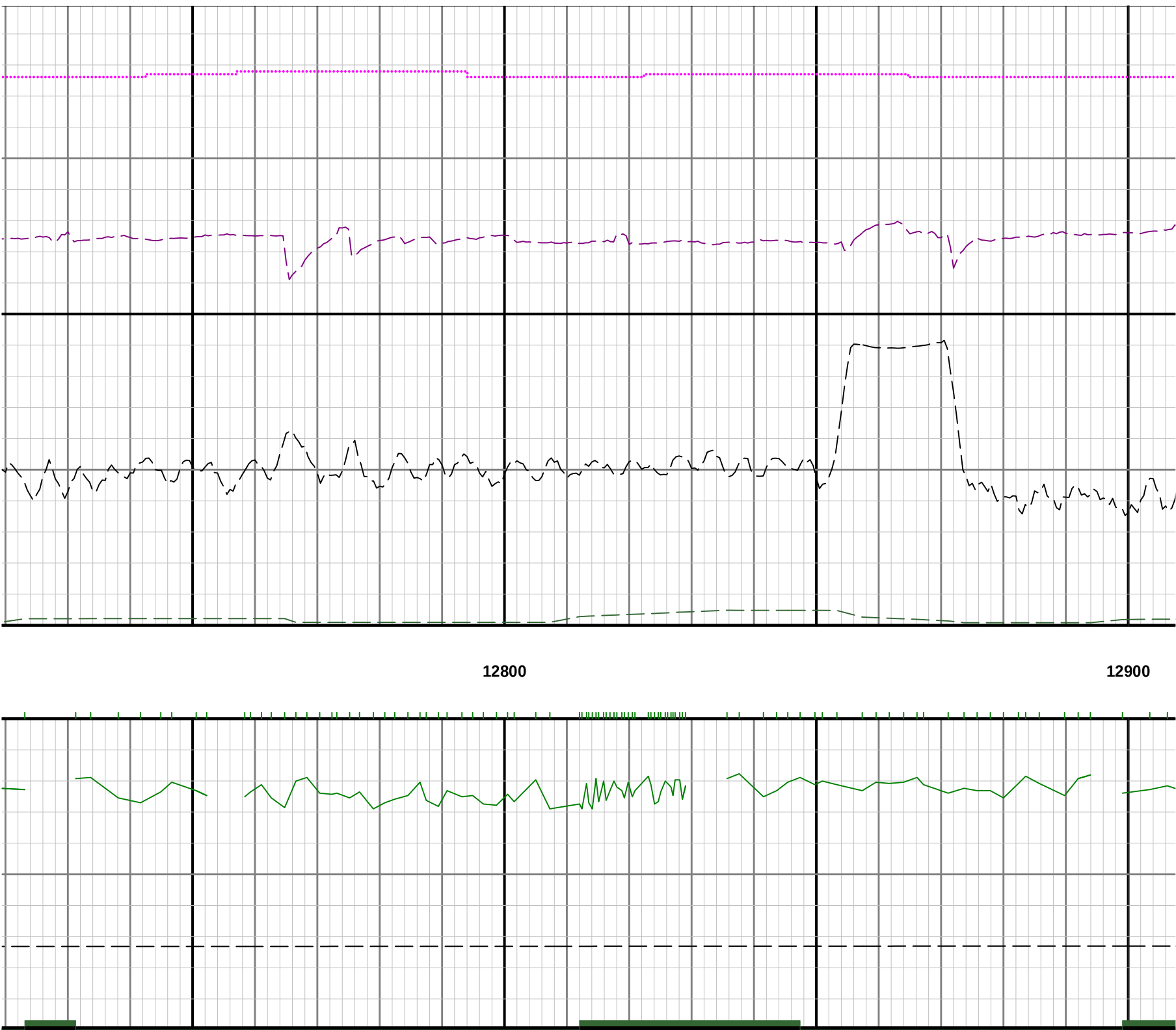
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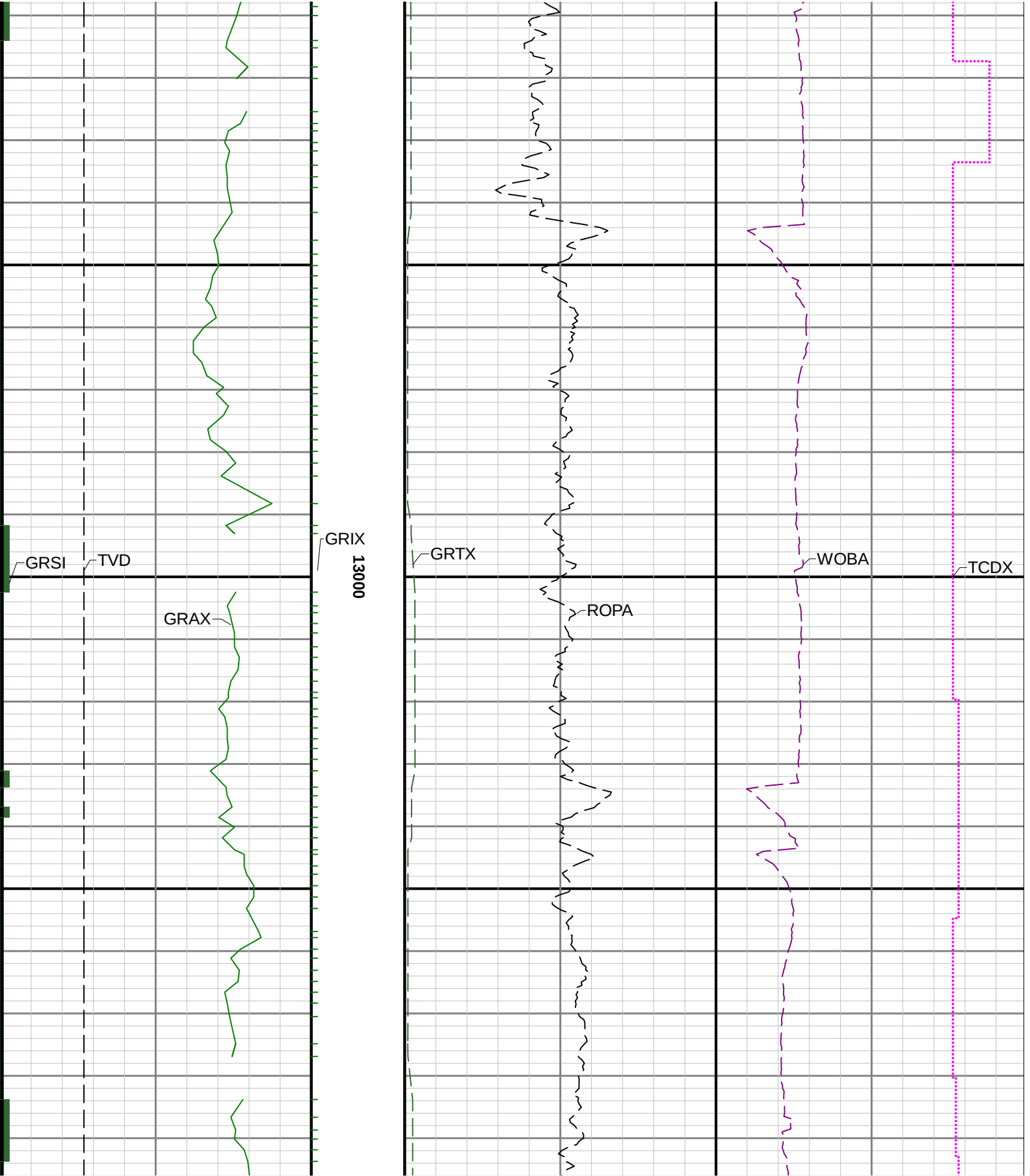
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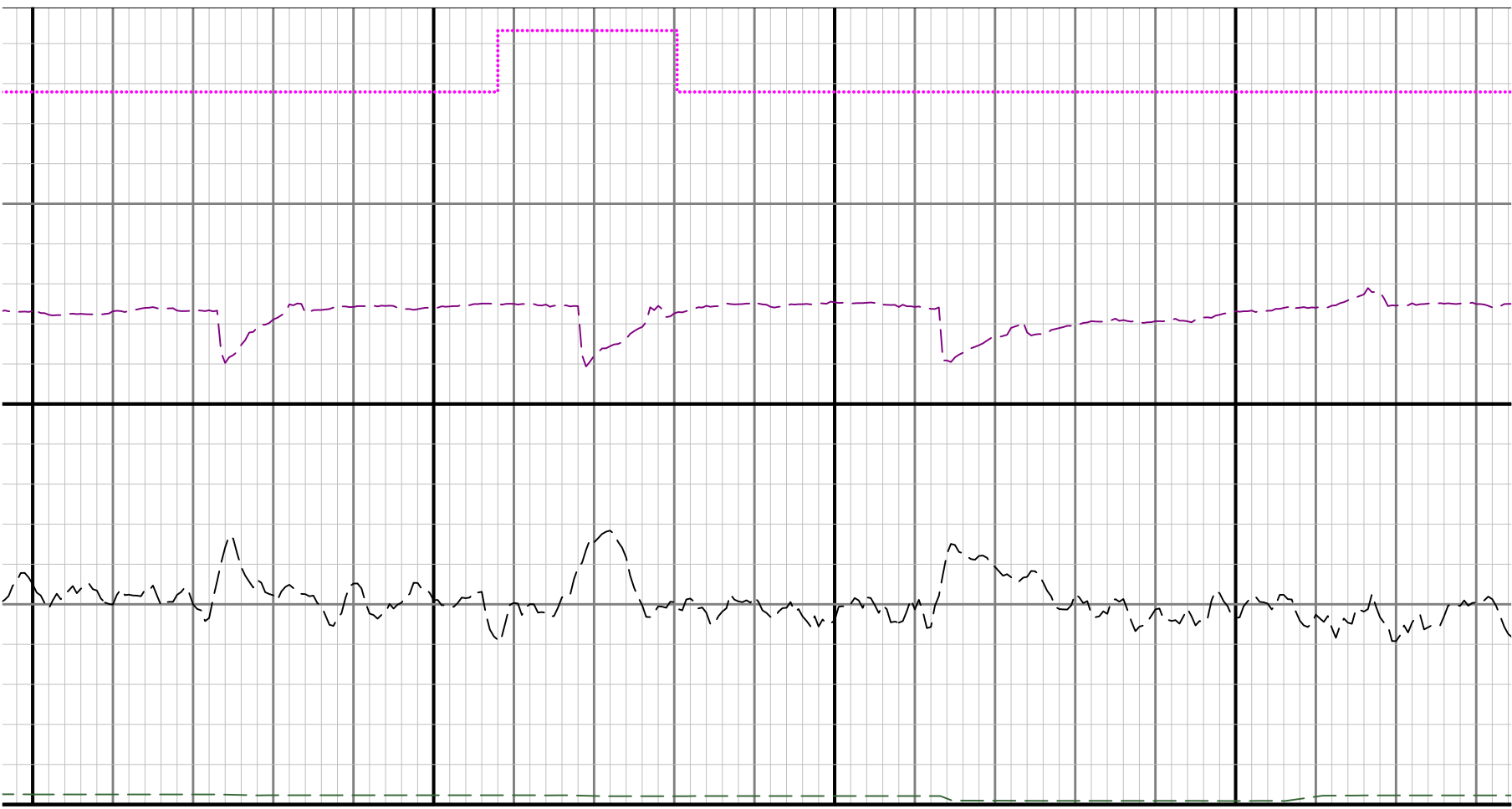
TCDX



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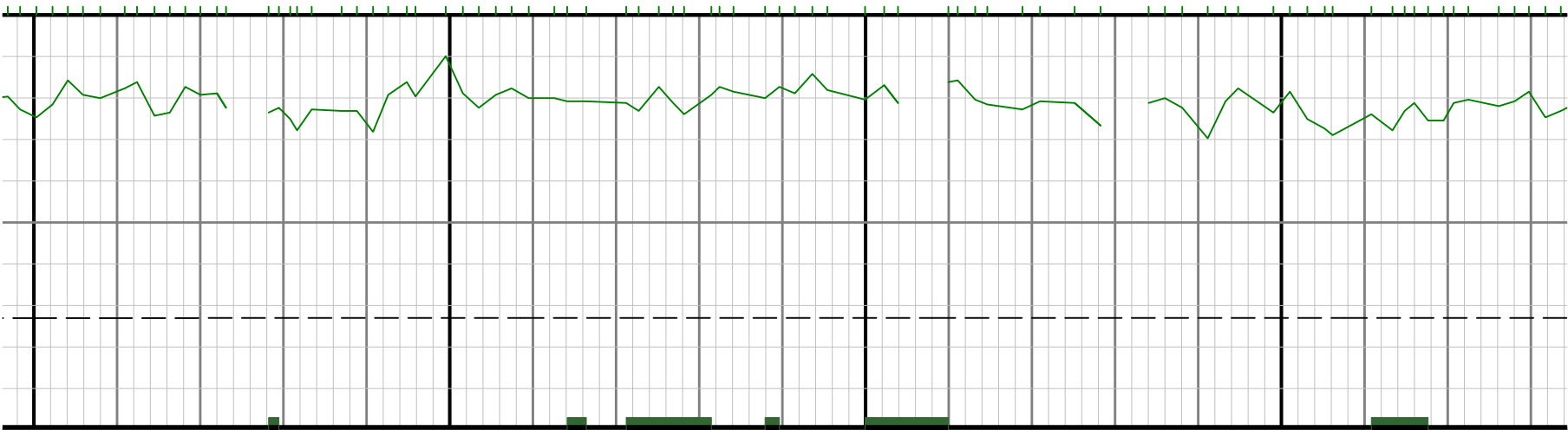

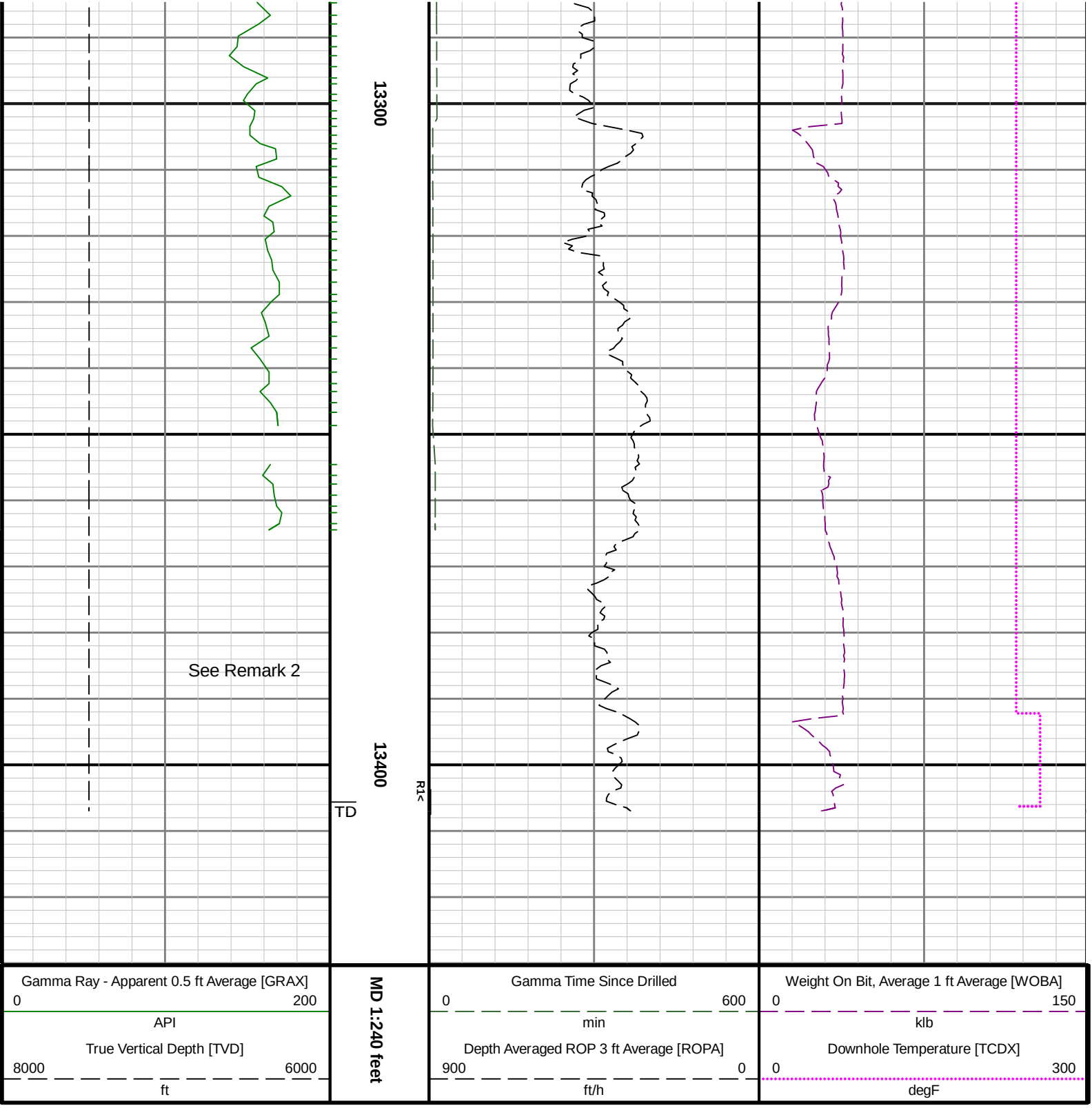
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13400
TD
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Gamma Ray - Apparent 0.5 ft Average [GRAX]
0
200
API
True Vertical Depth [TVD]
8000
6000
ft
MD 1:240 feet
Gamma Time Since Drilled
0
600
min
Depth Averaged ROP 3 ft Average [ROPA]
900
0
ft/h
Weight On Bit, Average 1 ft Average [WOBA]
0
150
klb
Downhole Temperature [TCDX]
0
300
degF