



Real Time Log

Natural Formation Evaluation  
Gamma Ray

Scale:

Company: Anadarko

1:240

Well: Berry Farms 31C-8HZ

Measured Depth

Field: Weld County

Region: RMD Country: U.S.A.

Status: Final Print

Surface Location:

Latitude: 40° 14' 38.170" N

Longitude: 104° 54' 21.226" W

Other Services:

SEC: 8 TWN: 3N RNG: 67W

Directional  
VSS

API Number:  
05-123-38896

Permanent Datum (P.D.): Ground Level Elevation: 4820.00 ft.

Log Measured From: Rig Floor 13.00 ft. Above P.D.

Depth Reference:

KB: Elevations:  
DF: 4833.00 ft.  
GL: 4820.00 ft.

Interval Logged

Dates

Magnetic Field Reference

Top: 6549.0 ft. Date From: 31/May/2014 Dip Angle: 66.87° Azi Reference North: True

Bottom: 11856.0 ft. Date To: 08/Jun/2014 Total Mag to Reference

Spud Date: 31/May/2014 Field Strength: 52557.0 nT North Correction: 8.62°

Borehole Record

Casing Record

Hole Size	From	To	Size	Weight	From	To
13.500 in.	0.0 ft.	826.0 ft.	9.625 in.	36.00 lb/ft	0.0 ft.	816.0 ft.
8.750 in.	826.0 ft.	7563.0 ft.	7.000 in.	26.00 lb/ft	0.0 ft.	7558.0 ft.
6.125 in.	7563.0 ft.	11918.0 ft.				

Mud Record

Deviation Record

Type	From	To	Hole Size	Interval	Inc / Az (Start)	Inc / Az (End)
Water Based Mud	0.0 ft.	7563.0 ft.	8.750 in.	7563.0 ft.	0.2 / 92.5°	88.1° / 270.5°
Water Based Mud	7563.0 ft.	11919.0 ft.	6.125 in.	4356.0 ft.	90.6° / 171.8°	90.4° / 271.2°
					/	/
					/	/
					/	/
					/	/

Acquisition System

Software Version

Other

Advantage	2.20U4	Rig / Contractor:	Ensign 145	/ Advance Drilling
PAIS	6.4.1.34	Job No:	6323626	
		District / Unit:	RMD	/ D&E

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Log Run Summary

LWD	BHA	Bit	Bit	Bit	Bit	Assembly	Logged Interval		Bit Depth Interval		Date / Time				Circ.
Run	Run	Run	Size	Type	Gauge	Type	Top	Bottom	From	To	Start		End		Time
No.	No.	No.	(in.)		(in.)		(ft.)	(ft.)	(ft.)	(ft.)					(hrs.)
1	1	1	8.750	PDC	1.000	Steerable	6549.0	7507.0	826.0	7563.0	31/May/2014	15:00	03/Jun/2014	08:00	42.9
2	2	2	6.125	PDC	3.000	Steerable	7507.0	7597.0	7563.0	7660.0	04/Jun/2014	12:00	05/Jun/2014	07:00	3.7
3	3	3	6.125	PDC	3.000	Steerable	7597.0	11856.0	7660.0	11918.0	05/Jun/2014	08:00	08/Jun/2014	02:15	44.7

Crew

Name	Arrive	Depart	Name	Arrive	Depart	Name	Arrive	Depart
	Wellsite	Wellsite		Wellsite	Wellsite		Wellsite	Wellsite
Donald Delay	31/May/2014	08/Jun/2014	Michael Gurnsey	31/May/2014	08/Jun/2014			
Jason Williams	31/May/2014	04/Jun/2014	Alexander Janorschke	31/May/2014	08/Jun/2014			

Jimmy Nguyen	05/Jun/2014	08/Jun/2014	Jason Weltin	31/May/2014	08/Jun/2014							

### Mud Properties Record

Date / Time	LWD Run No.	Measured Depth (ft.)	Mud Type	Density (ppg)	Viscosity (cp)	pH	Fluid Loss (cc/30min)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
01/Jun/2014 21:00	1	5876.0	Water Based Mud	9.7	4	8.9	7.8	0 / 93	Active Mud Pit	1100	N/A
02/Jun/2014 19:00	2	7553.0	Water Based Mud	10.2	10	9.1	4.3	0 / 91	Active Mud Pit	1100	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	deg. F
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	10170879	Directional	59.82	6.750	2.625
1	SRIG	12131406	Gamma	56.45	6.750	2.625
2	DIR	10170012	Directional	66.72	4.750	2.625
2	SRIG	12586753	Gamma	63.34	4.750	2.625
3	DIR	10170012	Directional	66.66	4.750	2.625
3	SRIG	12586753	Gamma	63.28	4.750	2.625

### Service and Tool Mnemonics

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

### Comments

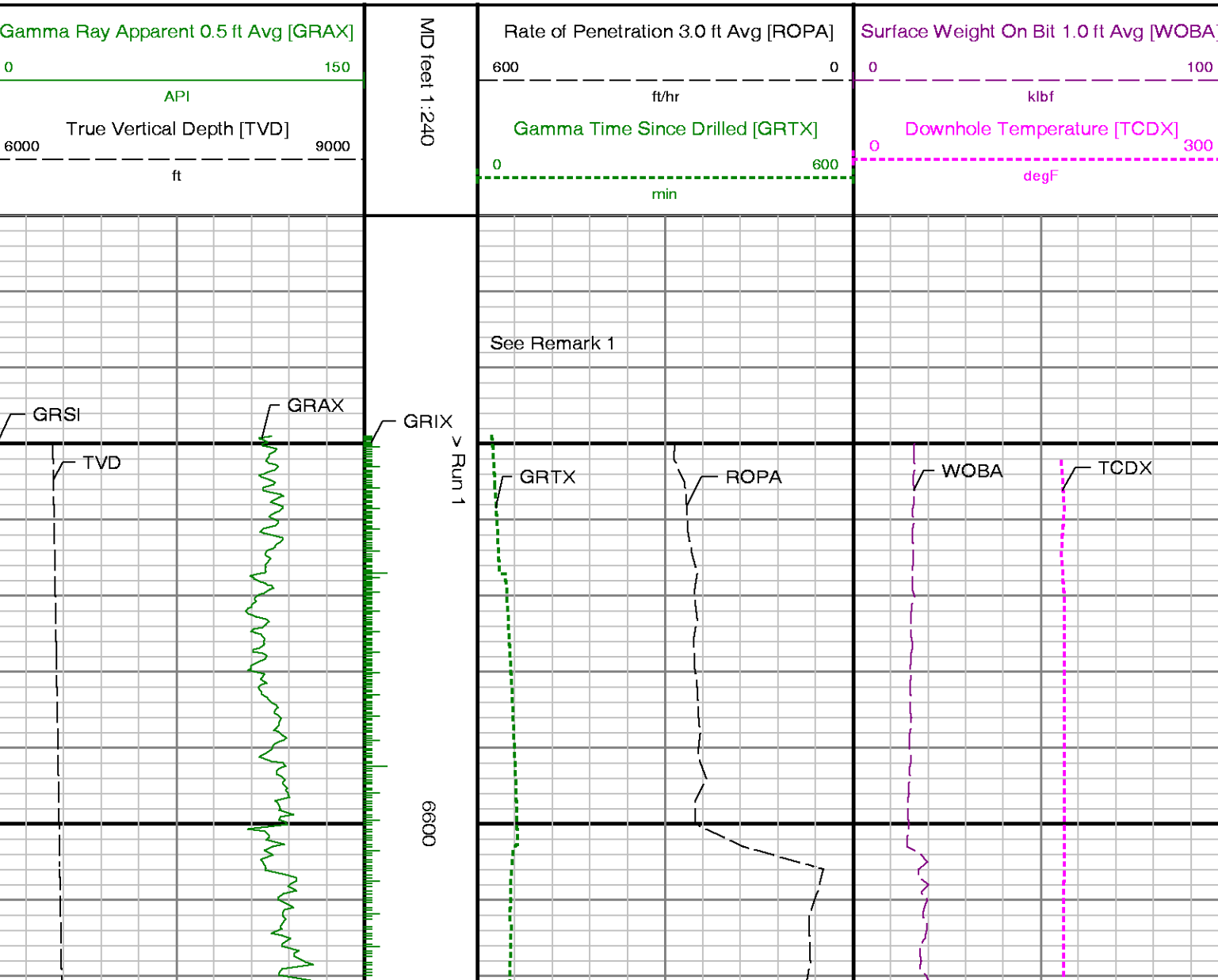
<p>1. Depth measurements were obtained from a depth tracking system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes LWD logging engineers, depth calibrations could not be independently verified and the unverified depths as supplied to Baker Hughes are being used to present logging data.</p> <p>2. Baker Hughes run 1 utilized a 6.75 inch NaviGamma (Gamma Ray and Directional) tool behind a 8.75 inch bit and steerable assembly from 826 feet to 7563 feet MD 825.98 feet to 7137.62 feet TVD).</p> <p>3. Baker Hughes runs 2 and 3 utilized a 4.75 inch NaviGamma (Gamma Ray and Directional) tool behind a 6.125 inch bit and steerable assembly from 7563 feet to 11919 feet MD (7137.62 feet to 7135.31 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 shifted to the gamma ray sensor offset to correspond with gamma ray data aquired while sliding.</p>
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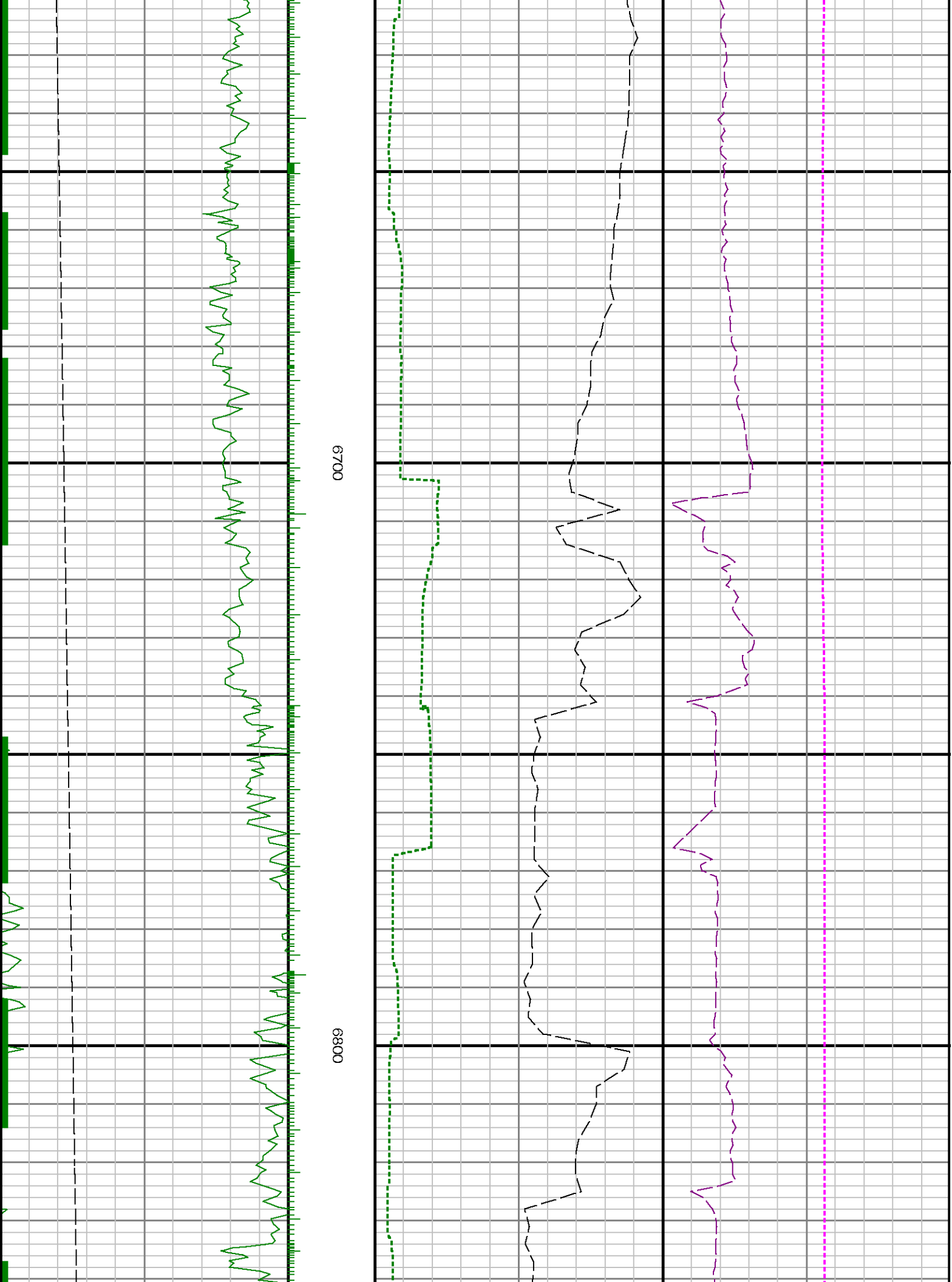
Remarks

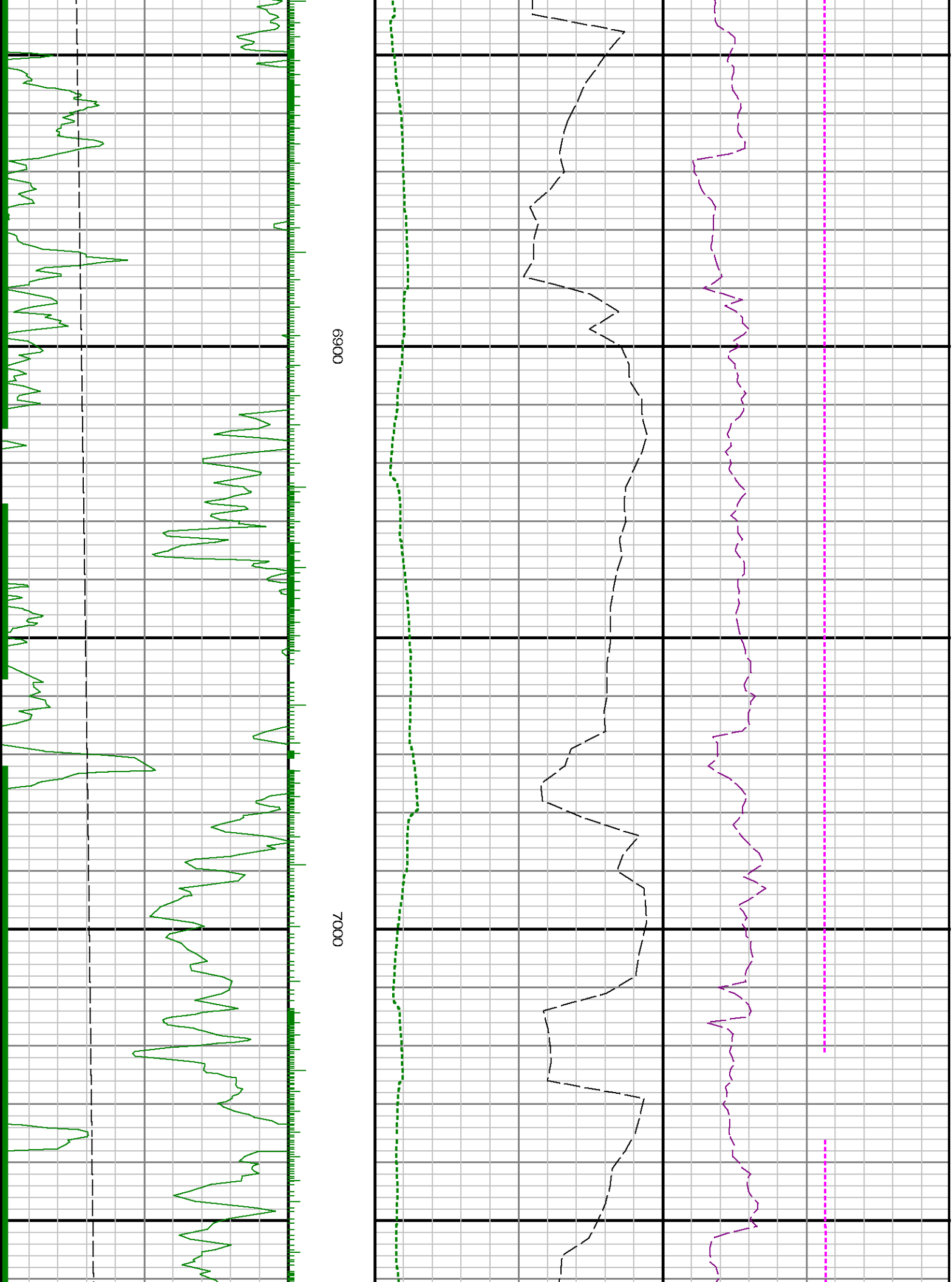
Number	Measured Depth (ft.)	Hole Section (in.)	LWD Run No.	Remark
1	6549	8.750	1	Logging services begin at 6549 feet MD (6514.25 feet TVD) as per client request to begin logging at kickoff point.
2	7563	6.125	2	The interval from 7503 feet to 7563 feet MD (7136.80 feet to 7137.62 feet TVD) was logged up to 56 hours after being drilled due to tripping to run casing, cement and lateral assembly.
3	7660	6.125	3	The interval from 7593 feet to 7660 feet MD (7137.34 feet to 7136.75 feet TVD) was logged up to 14 hours after being drilled due to tripping out to change the motor.
4	11919	6.125	3	The interval from 11856 feet to 11919 feet MD (7135.09 feet to 7135.31 feet TVD) was not logged due to offset to bit at TD.

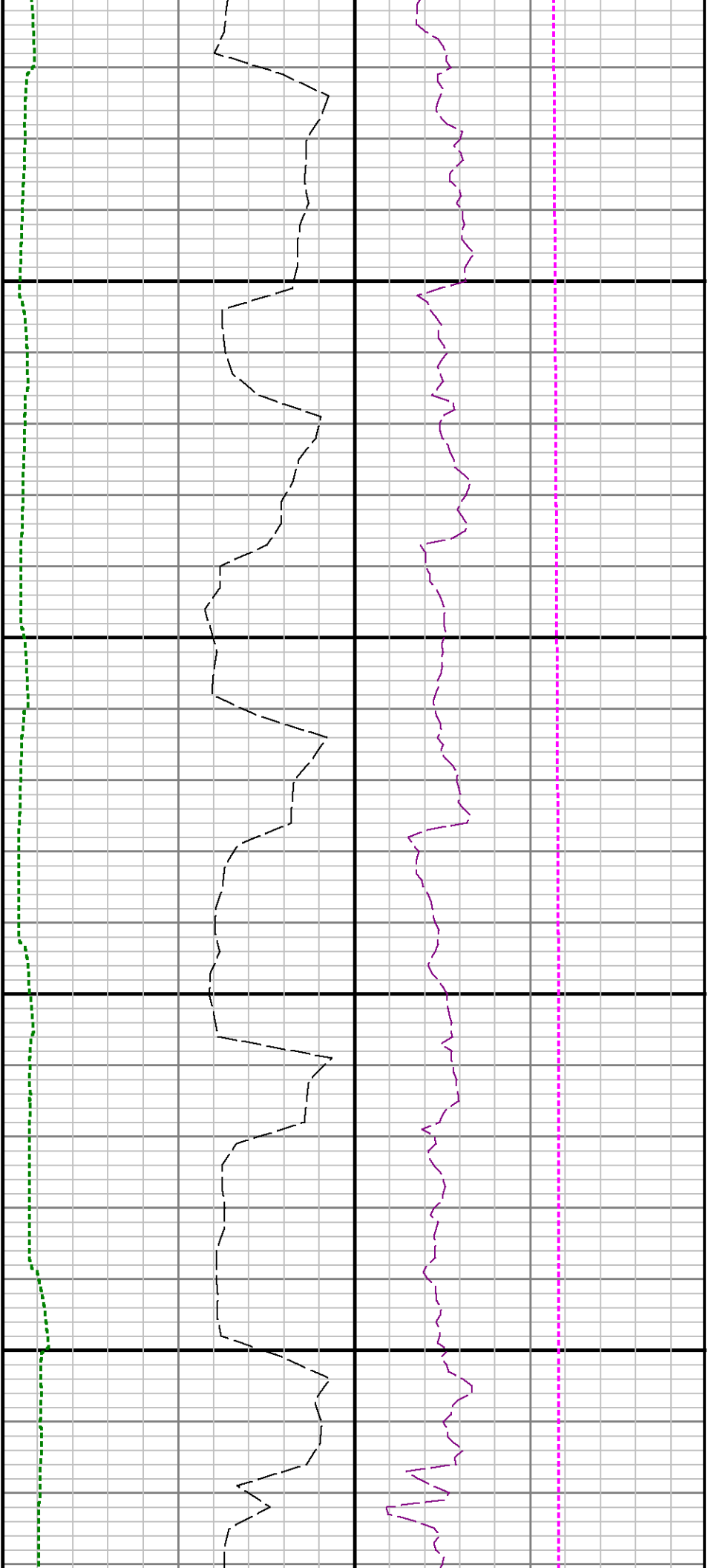


Company : Anadarko  
Well : Berry Farms 31C-8HZ  
Interval : 6520.00 - 11950.00 feet  
Created : 08/Jun/2014 4:19:27 AM



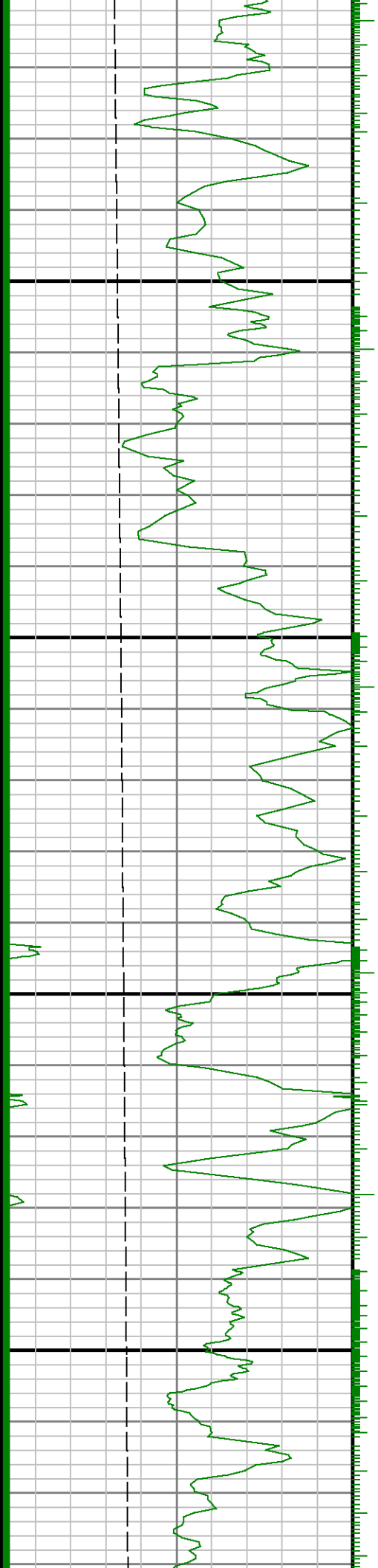


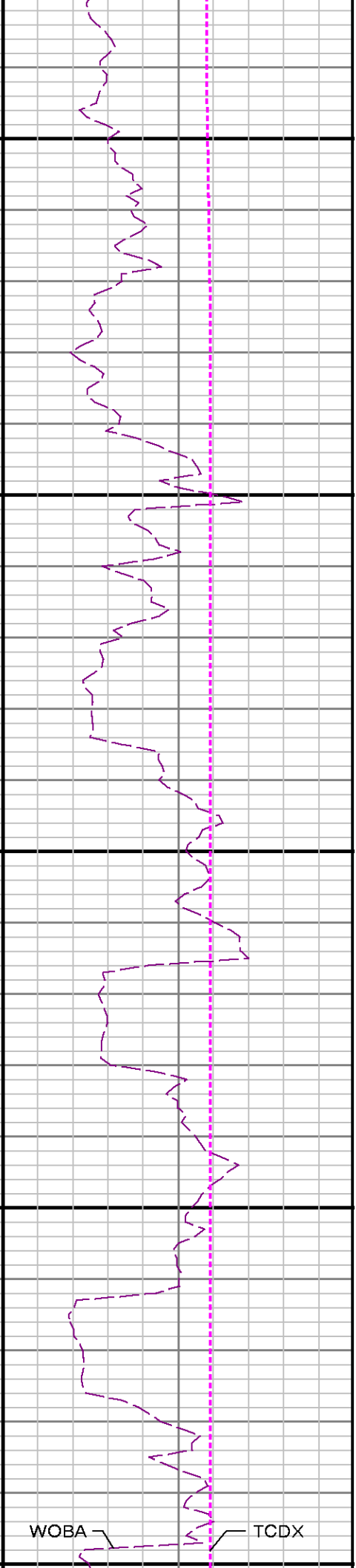
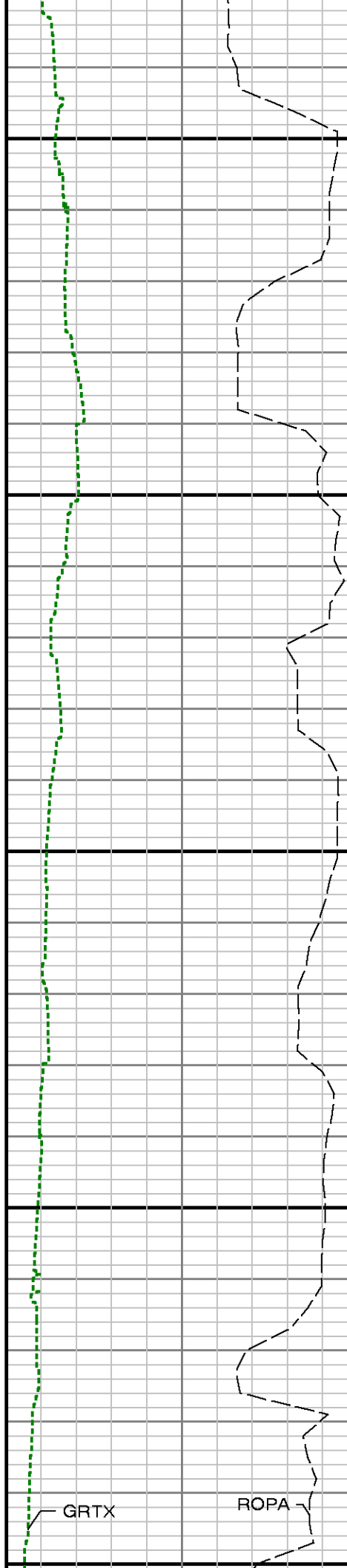
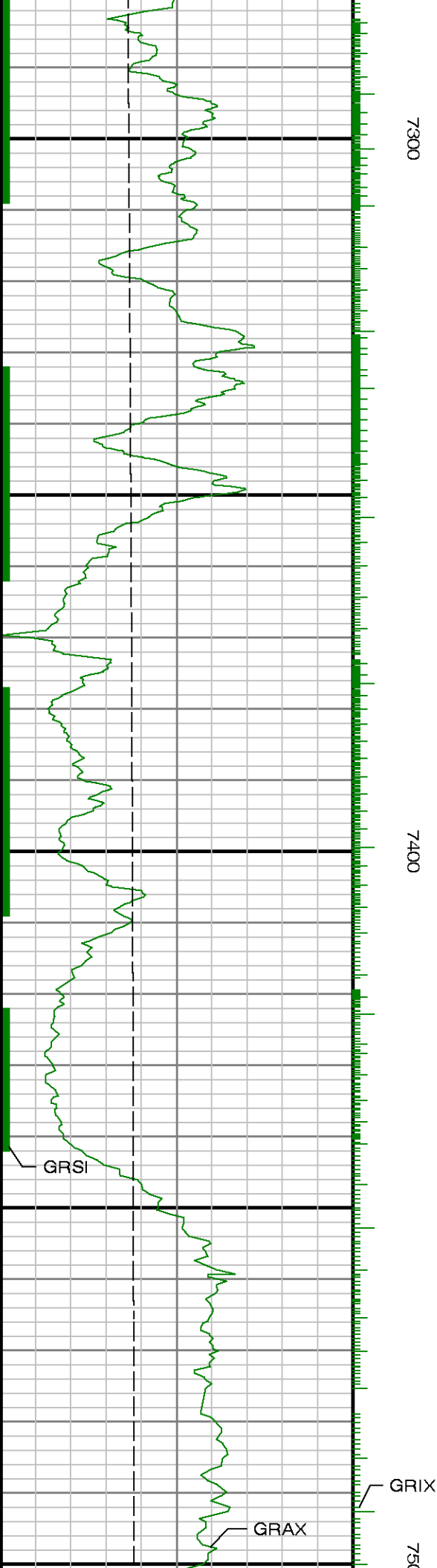


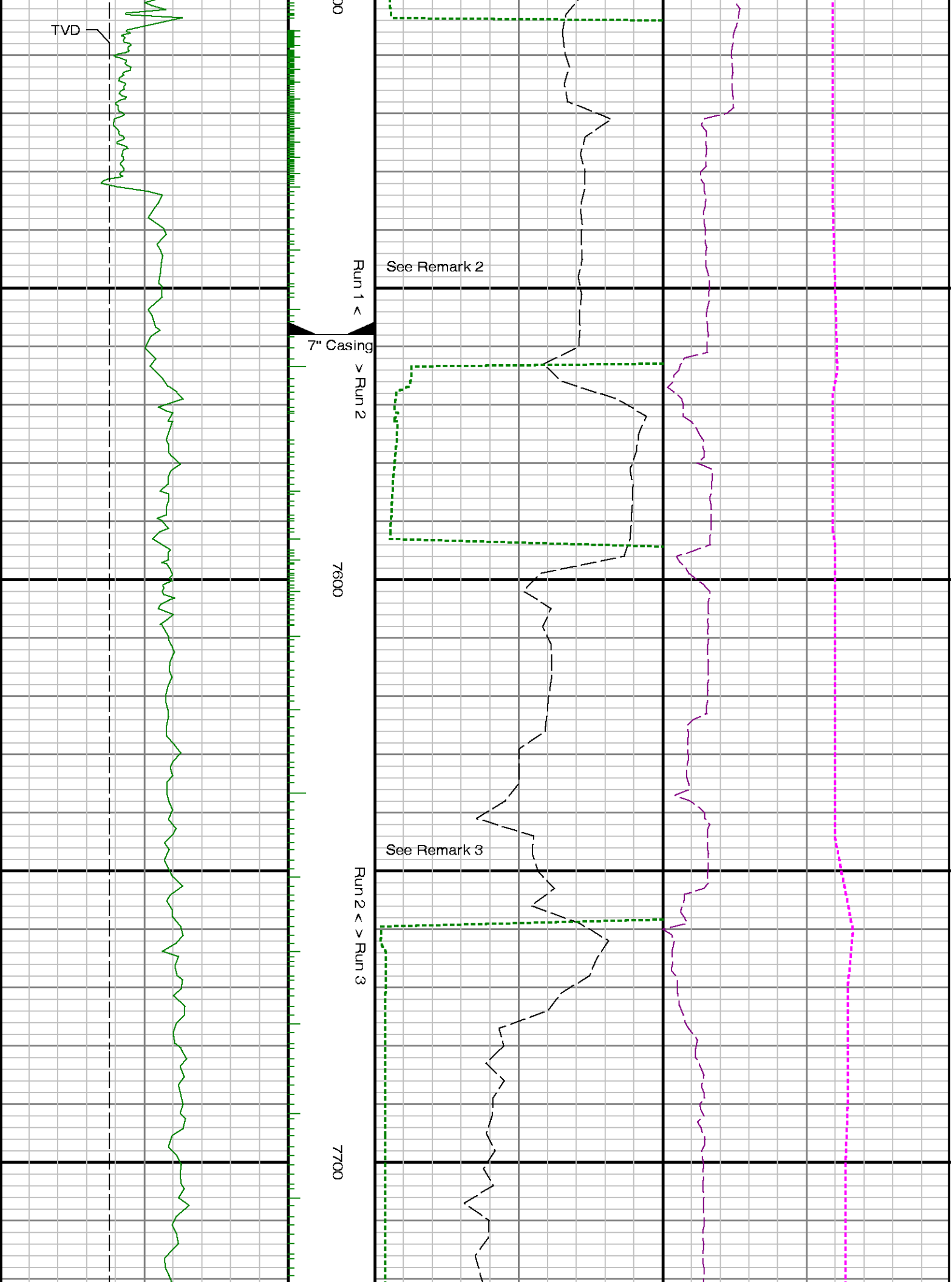


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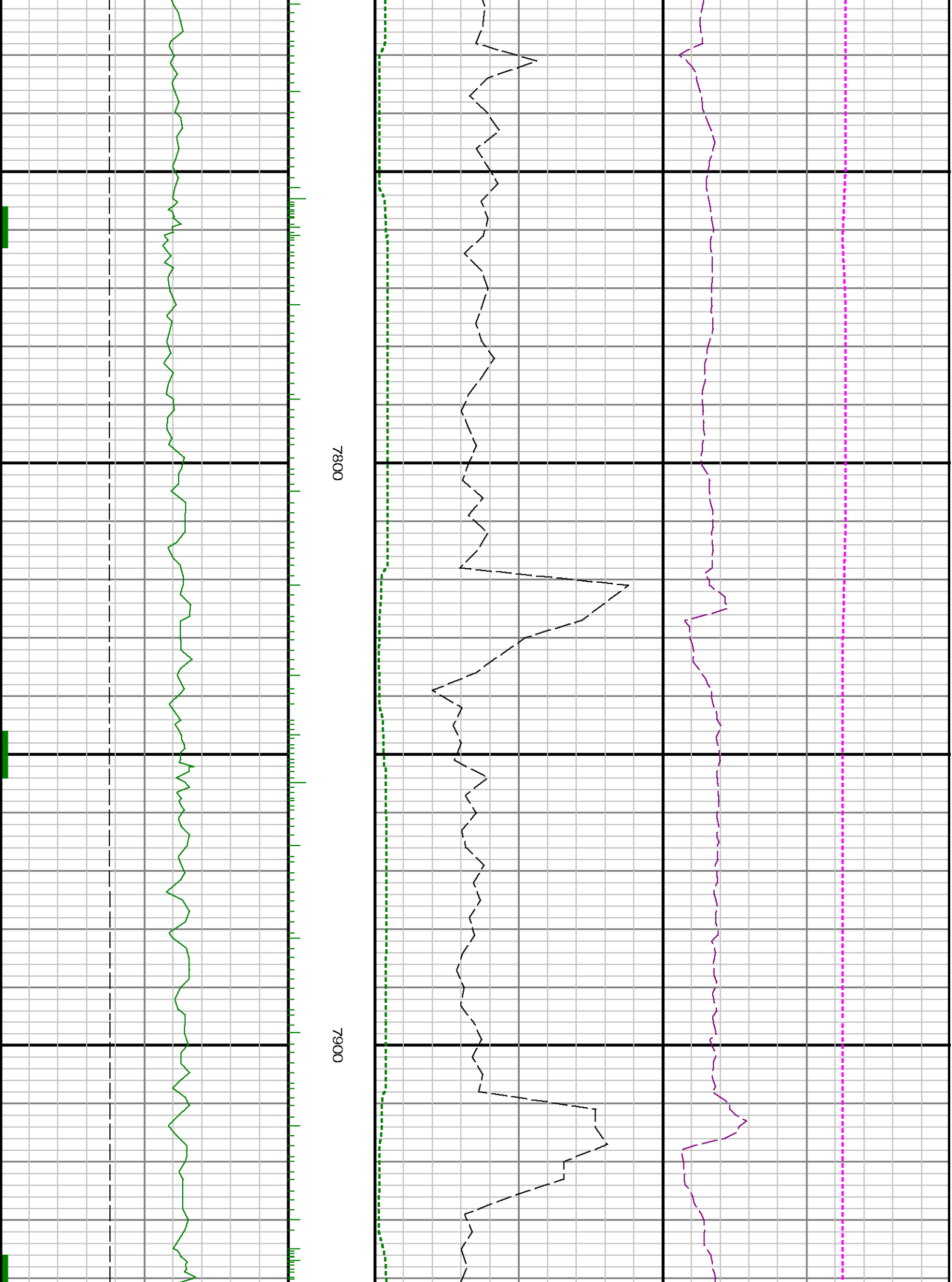
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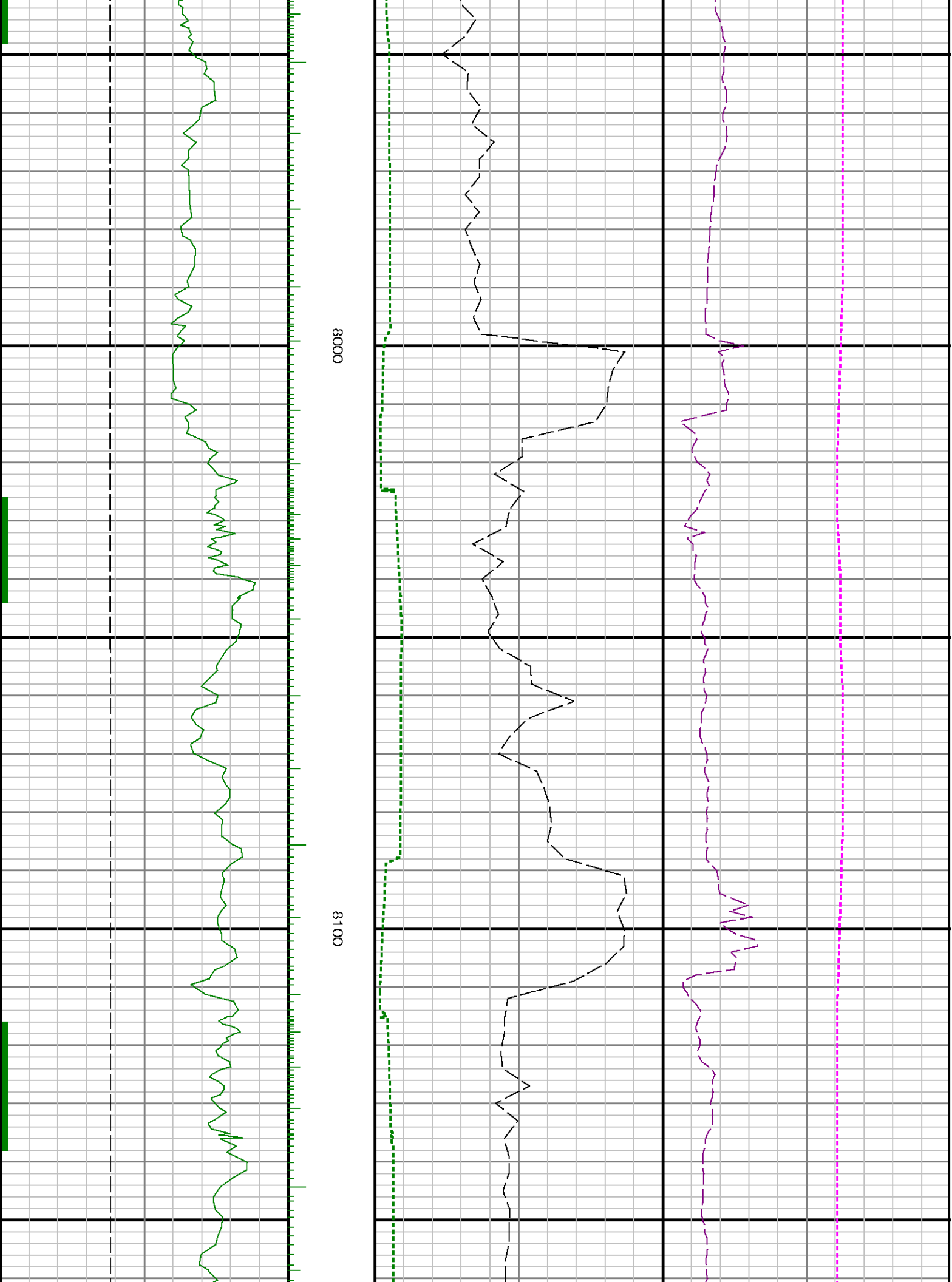


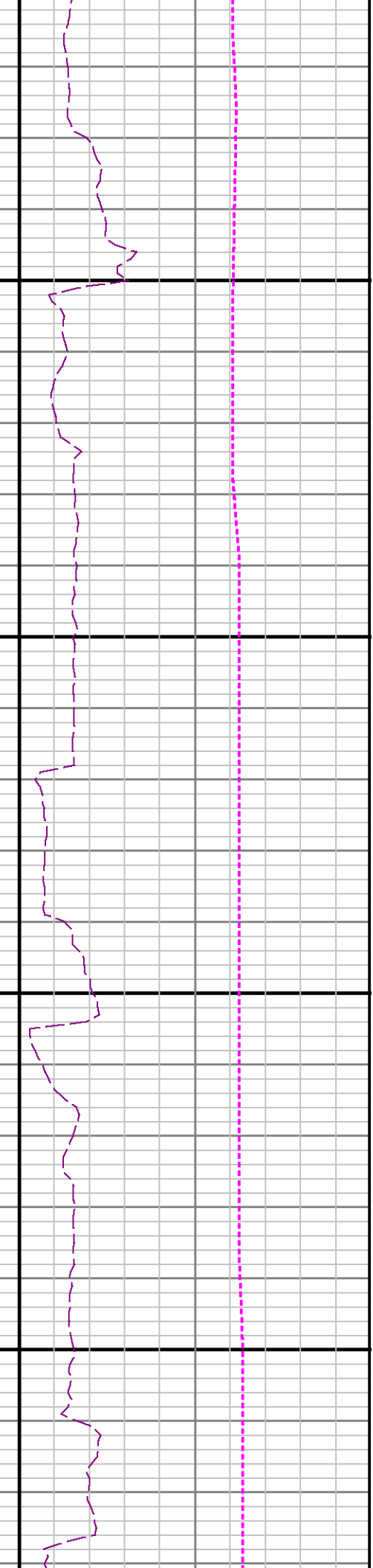
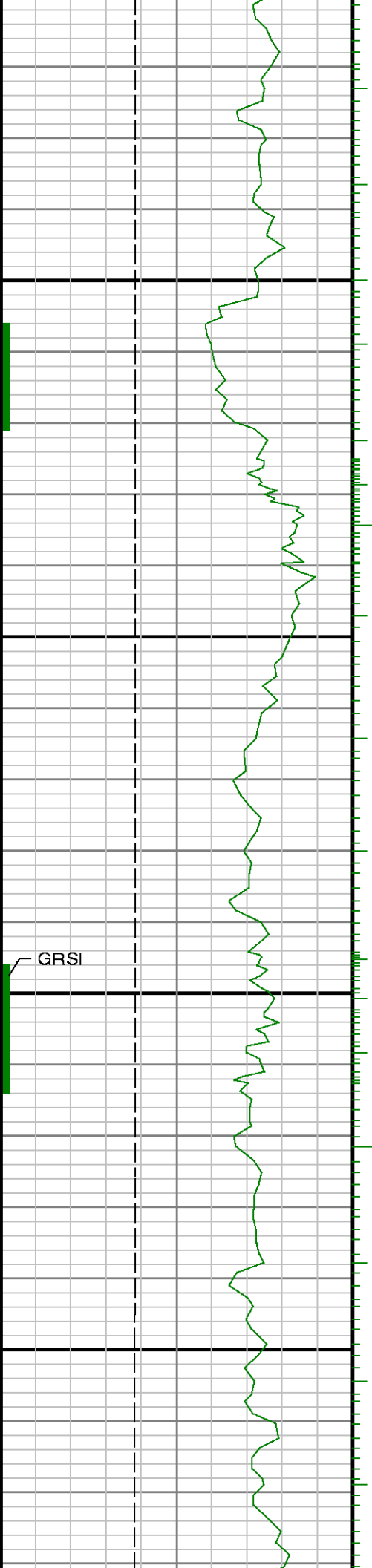


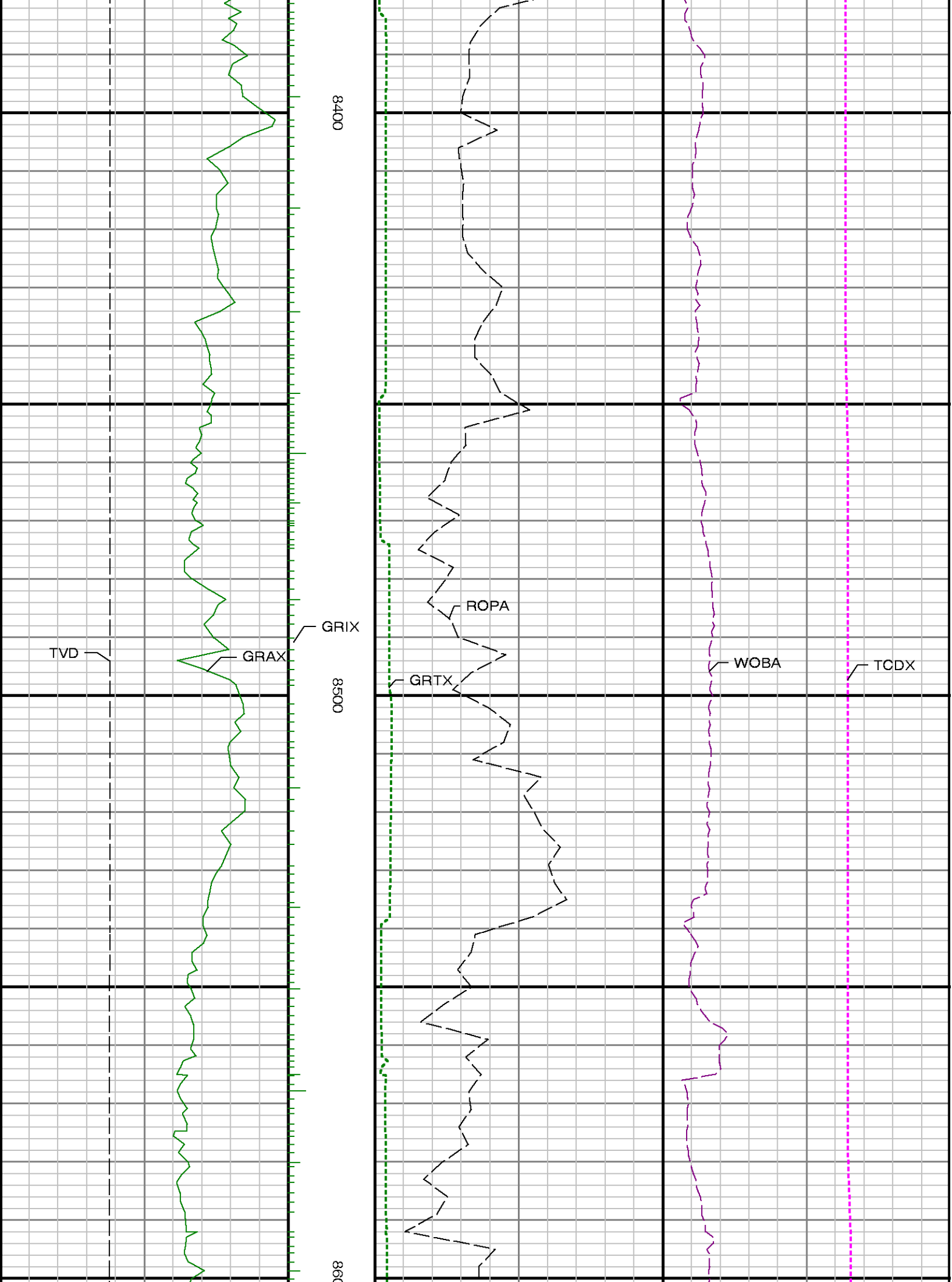


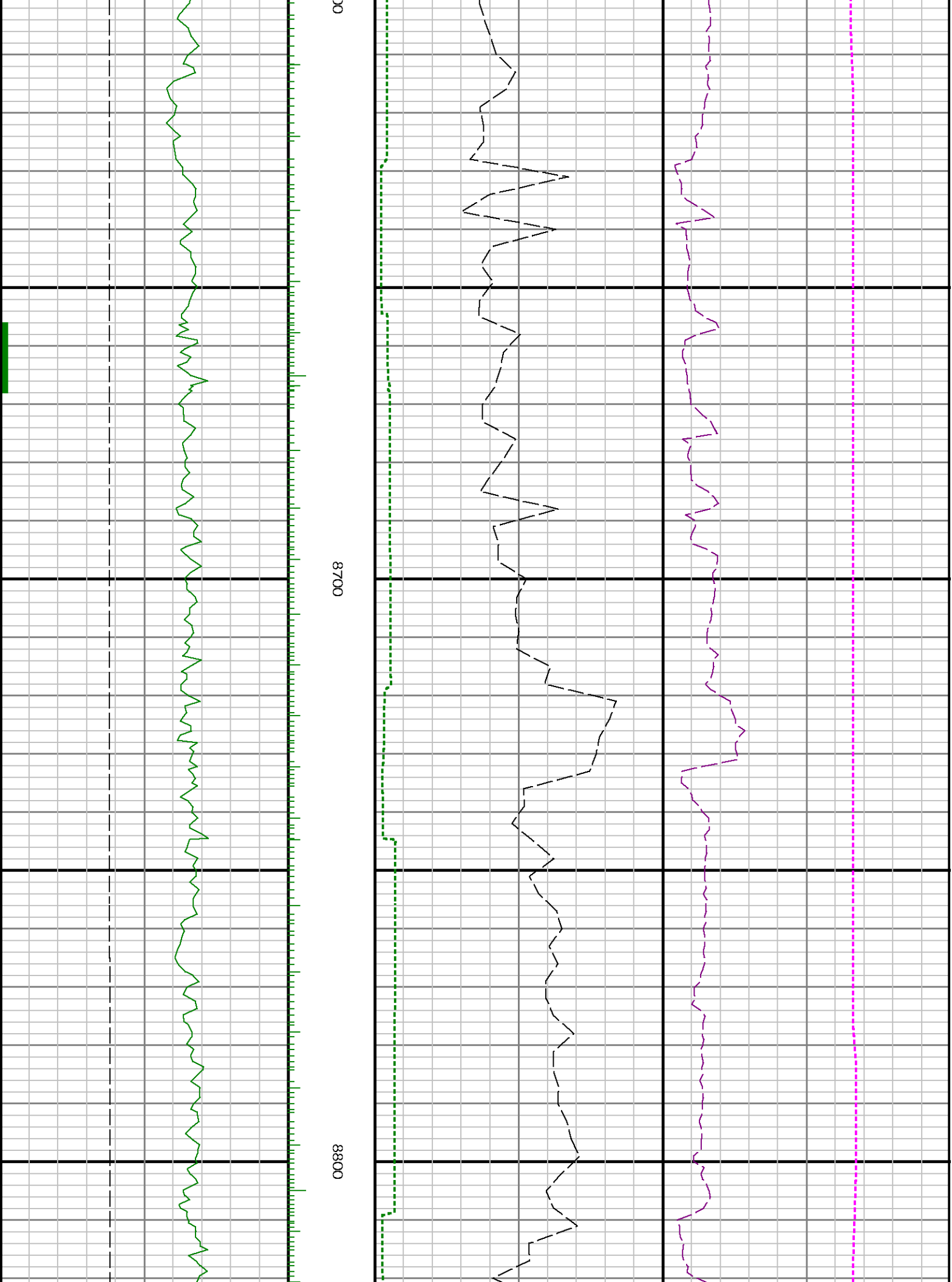


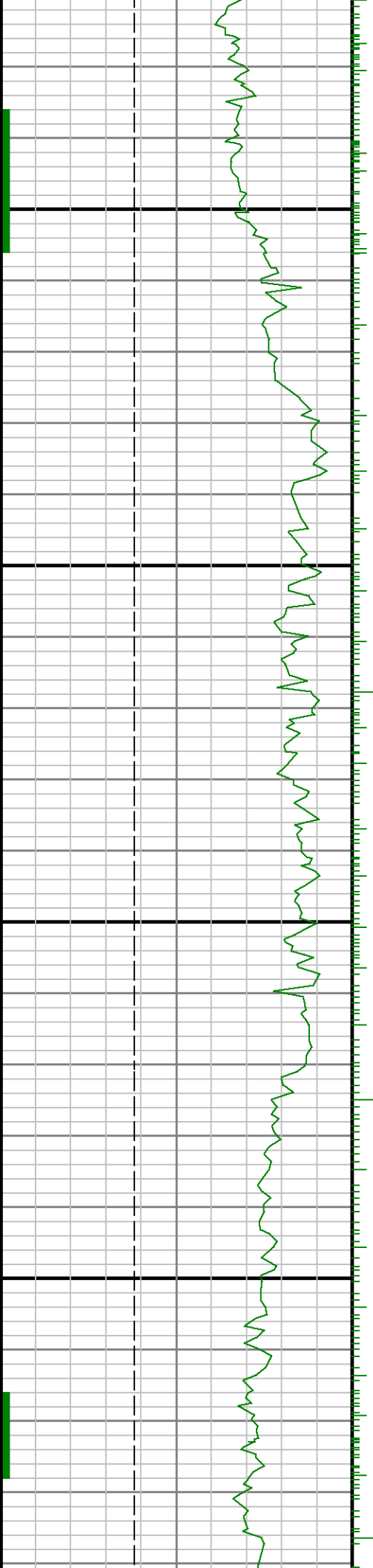






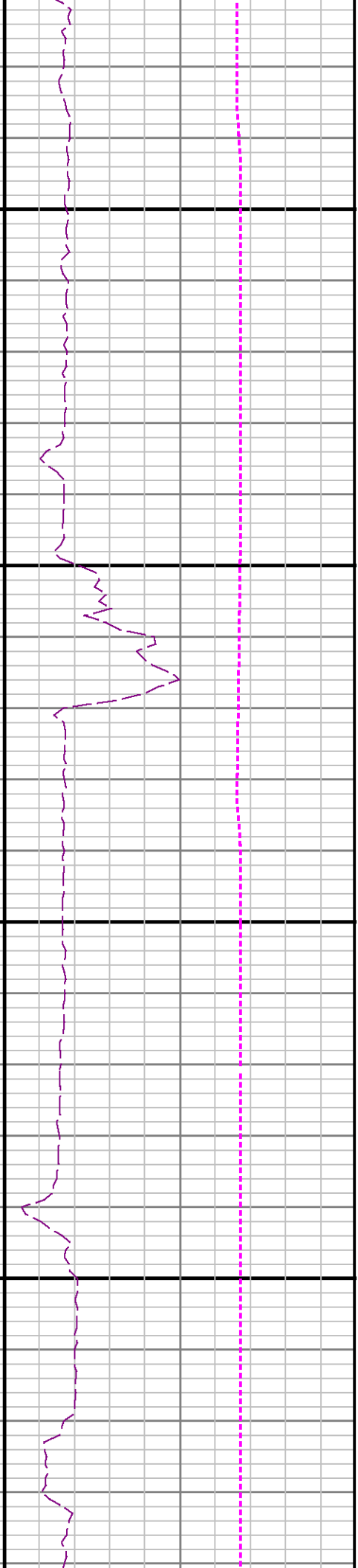
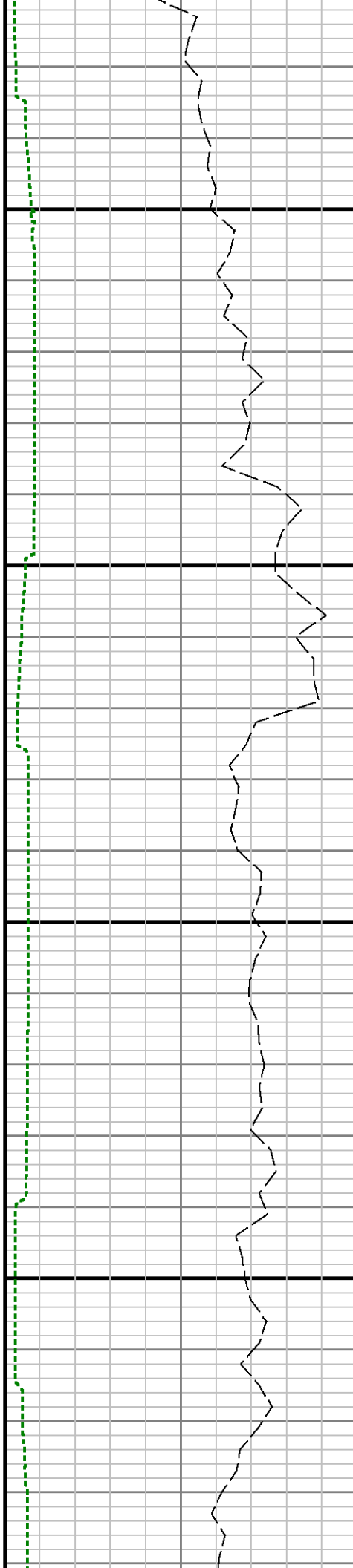


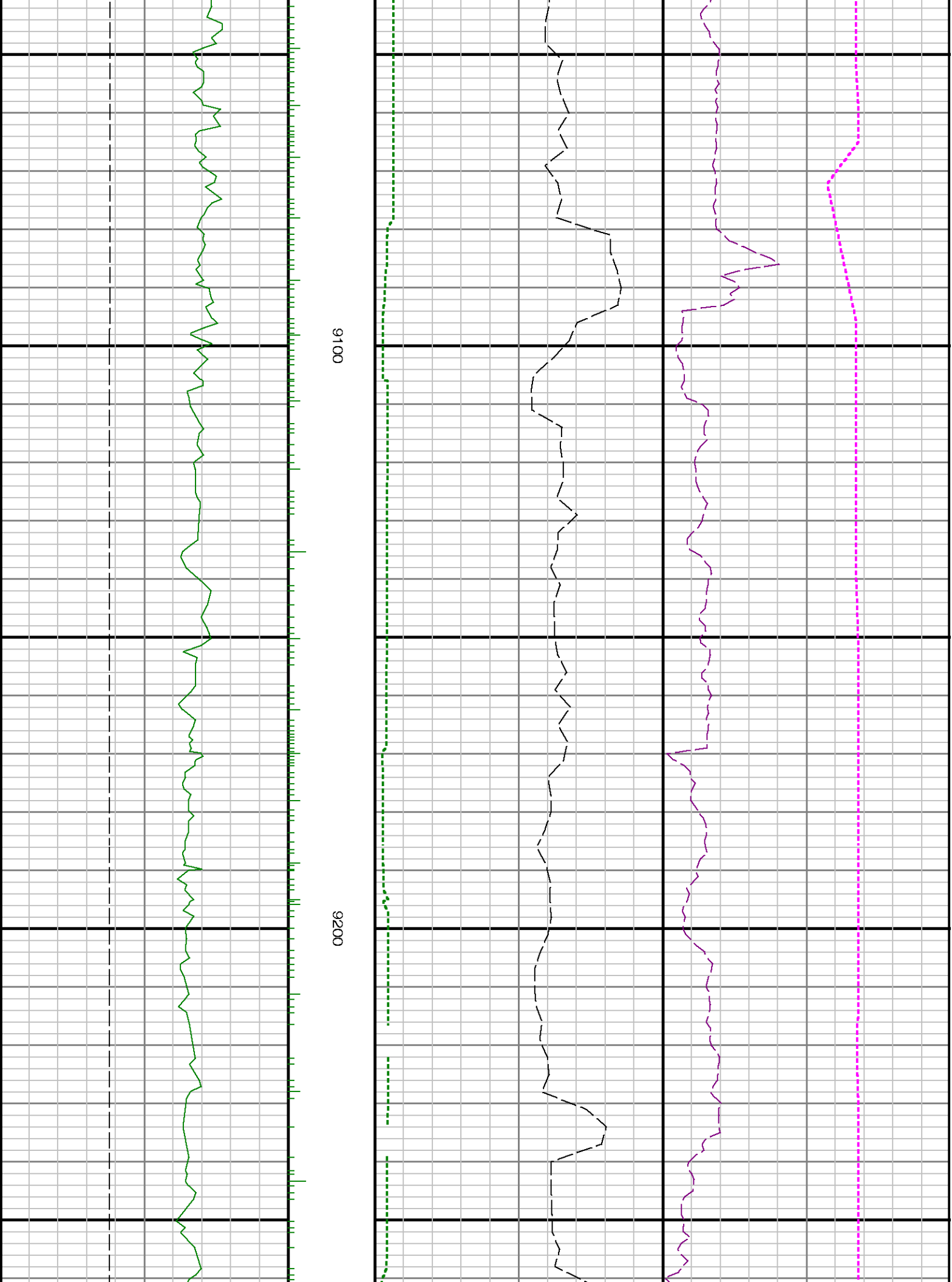


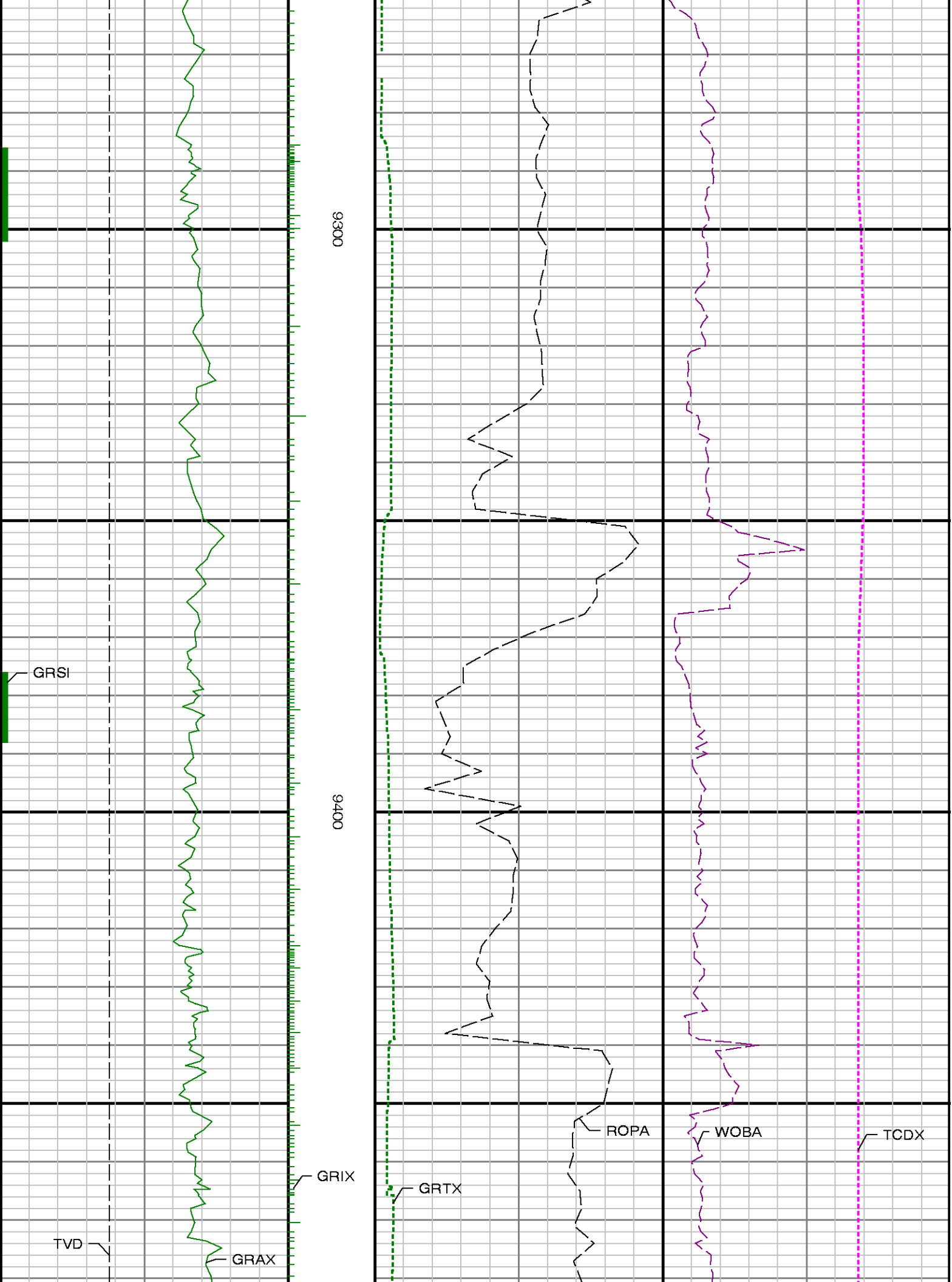


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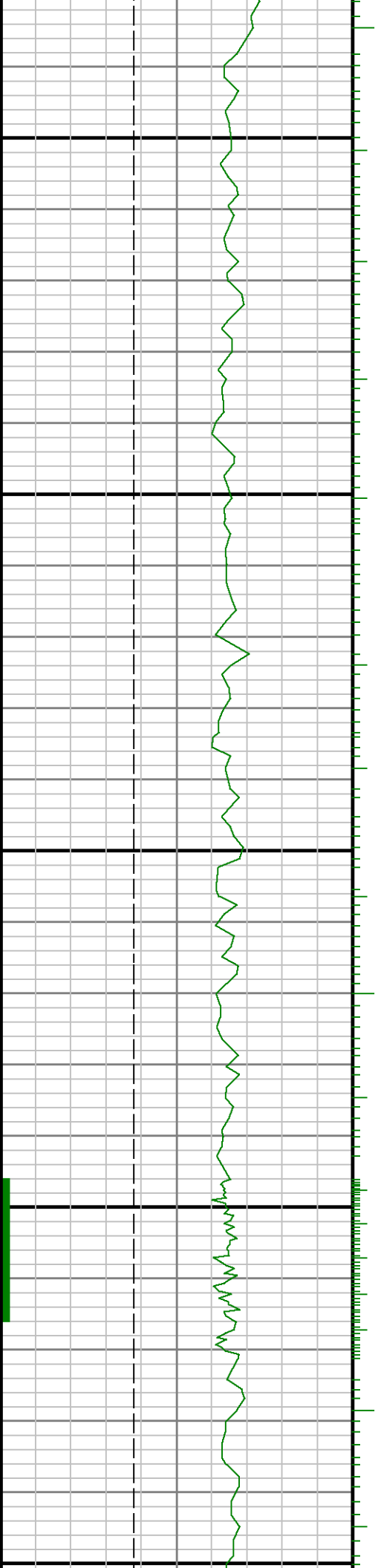
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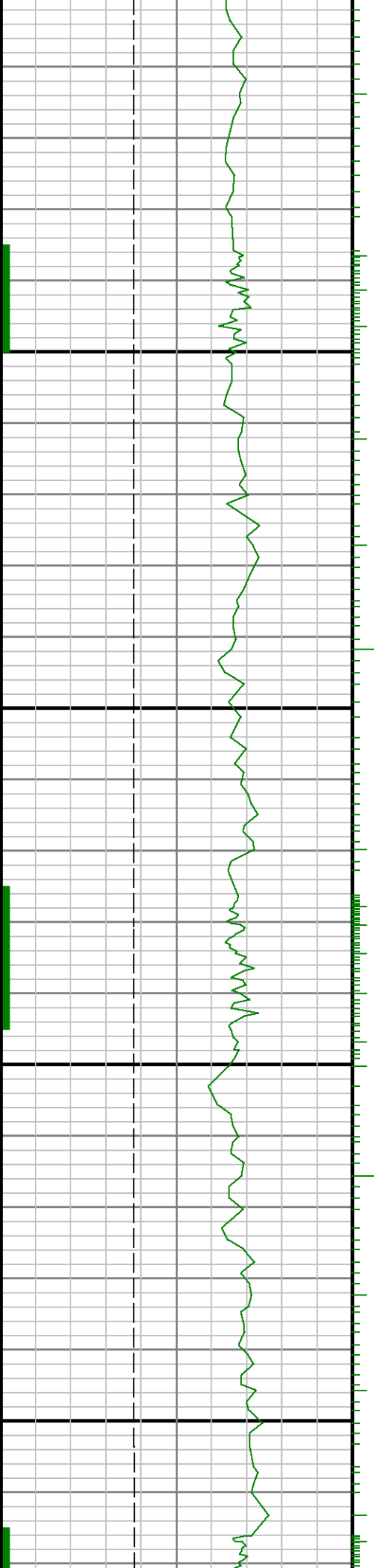




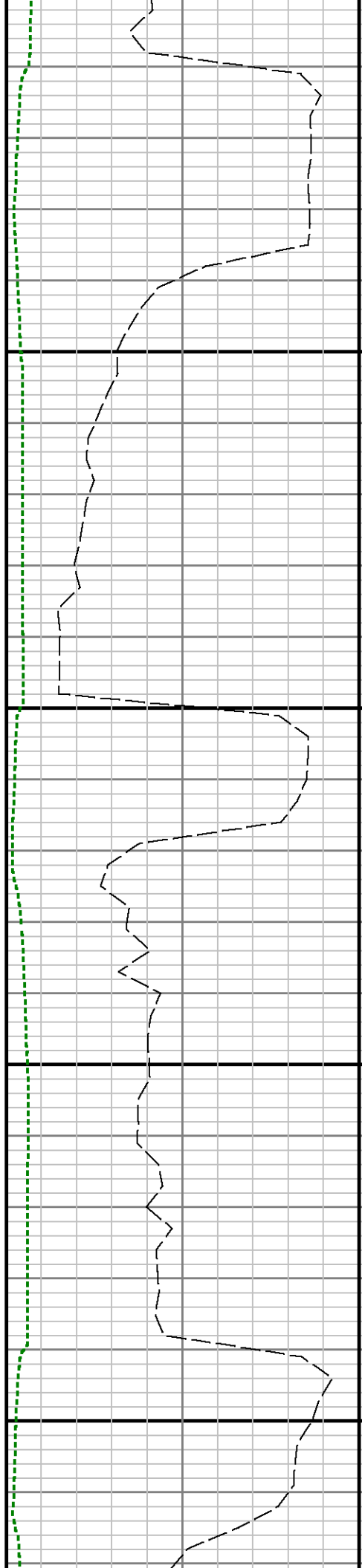


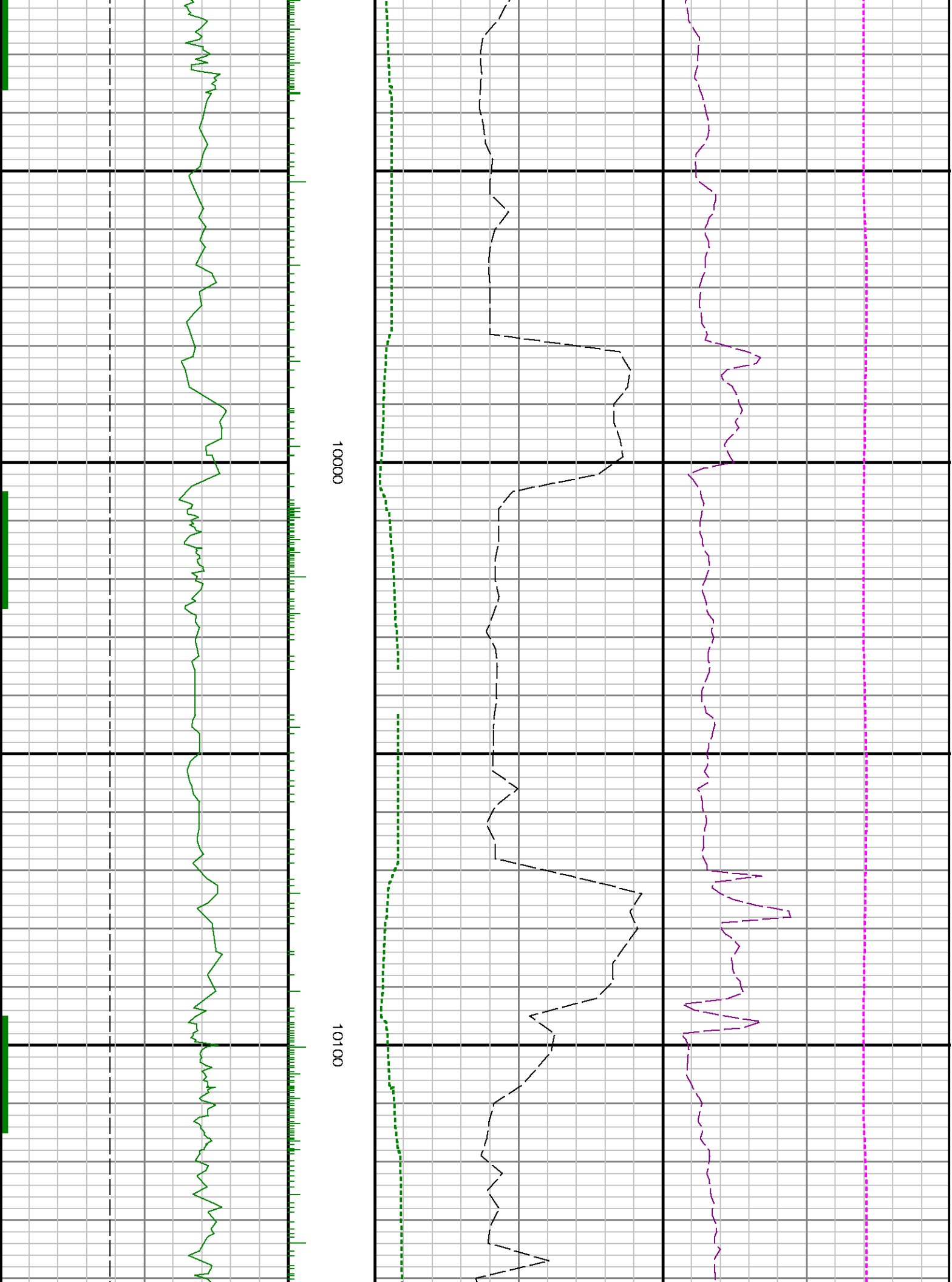
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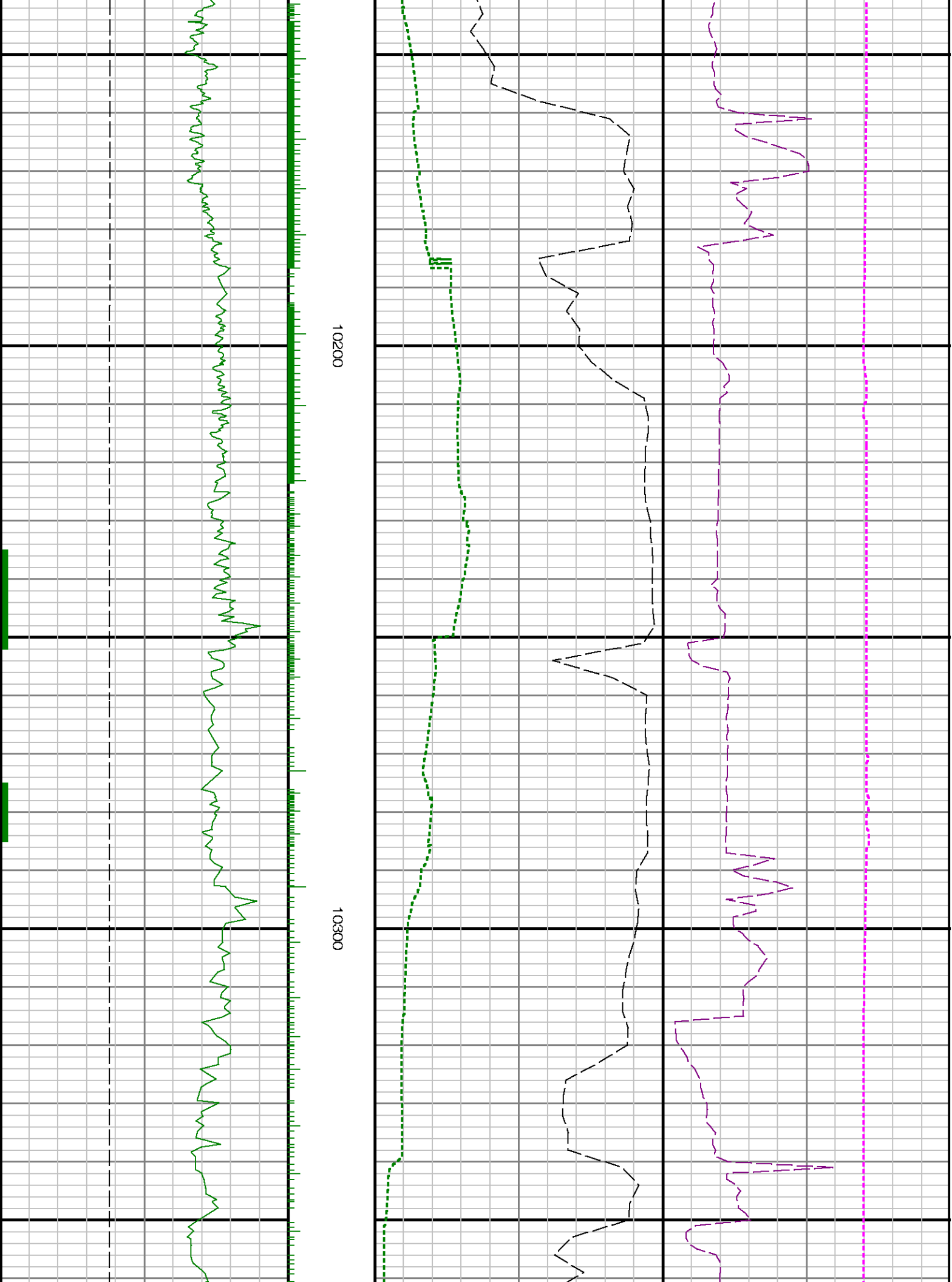


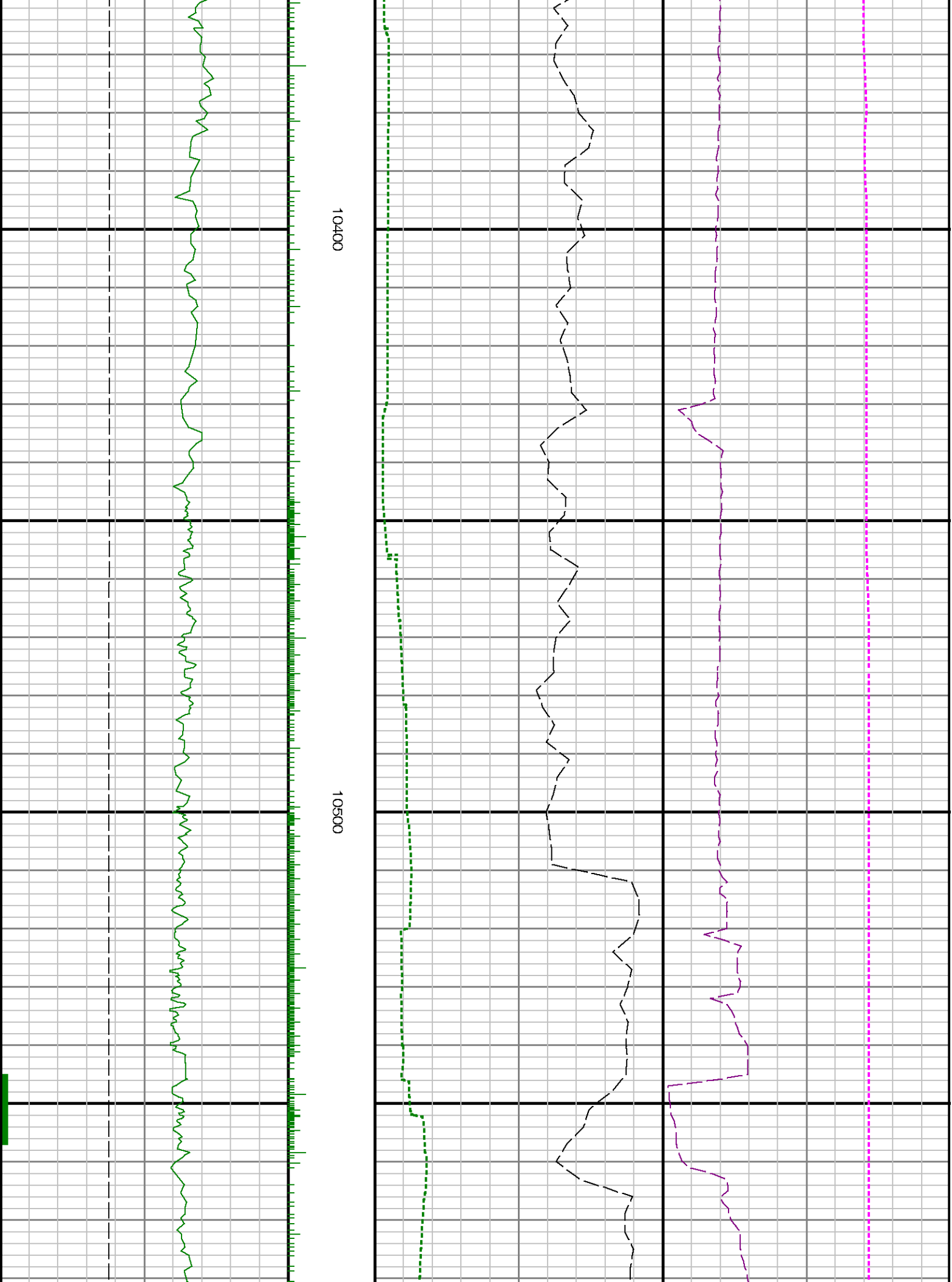


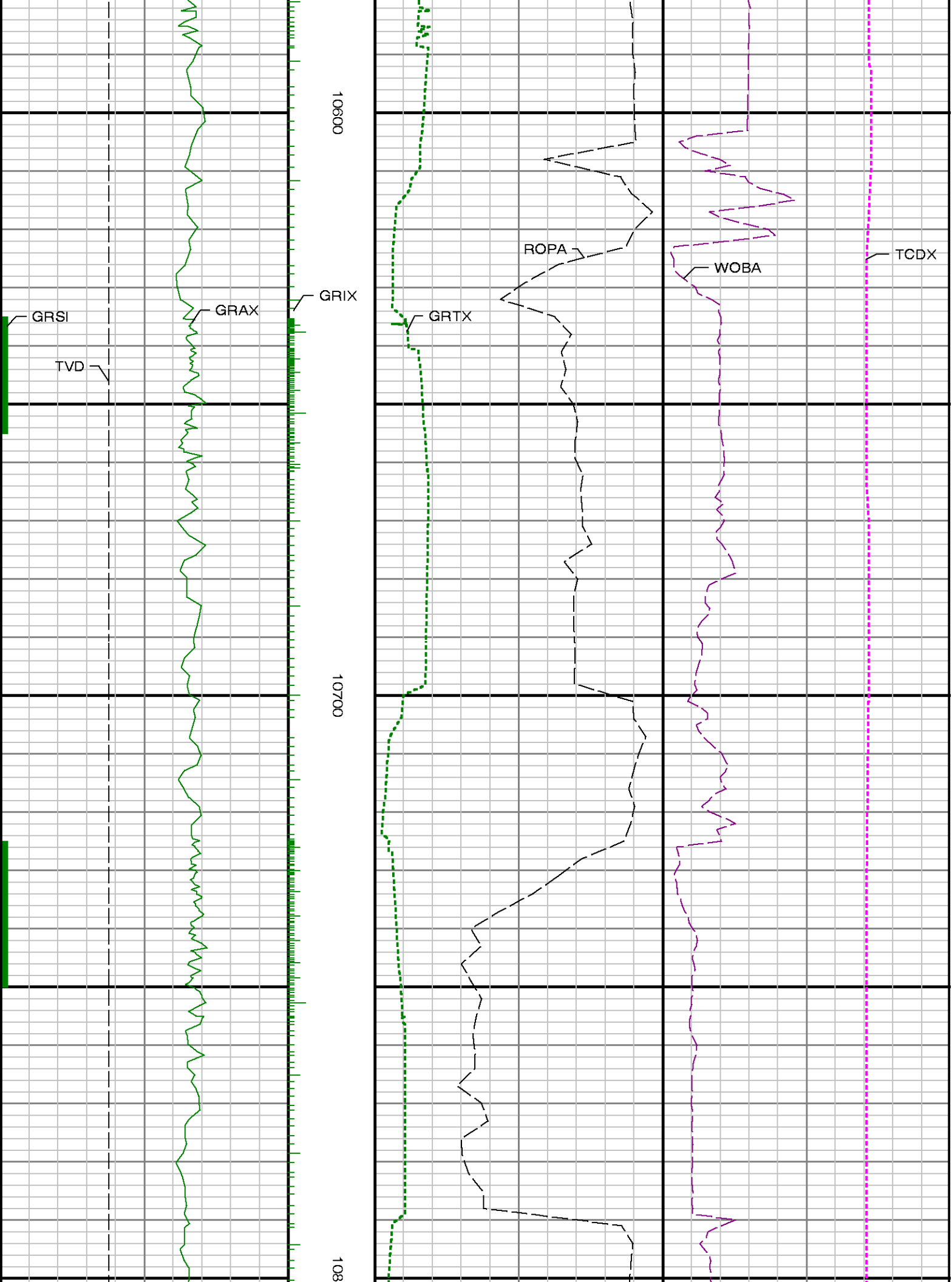
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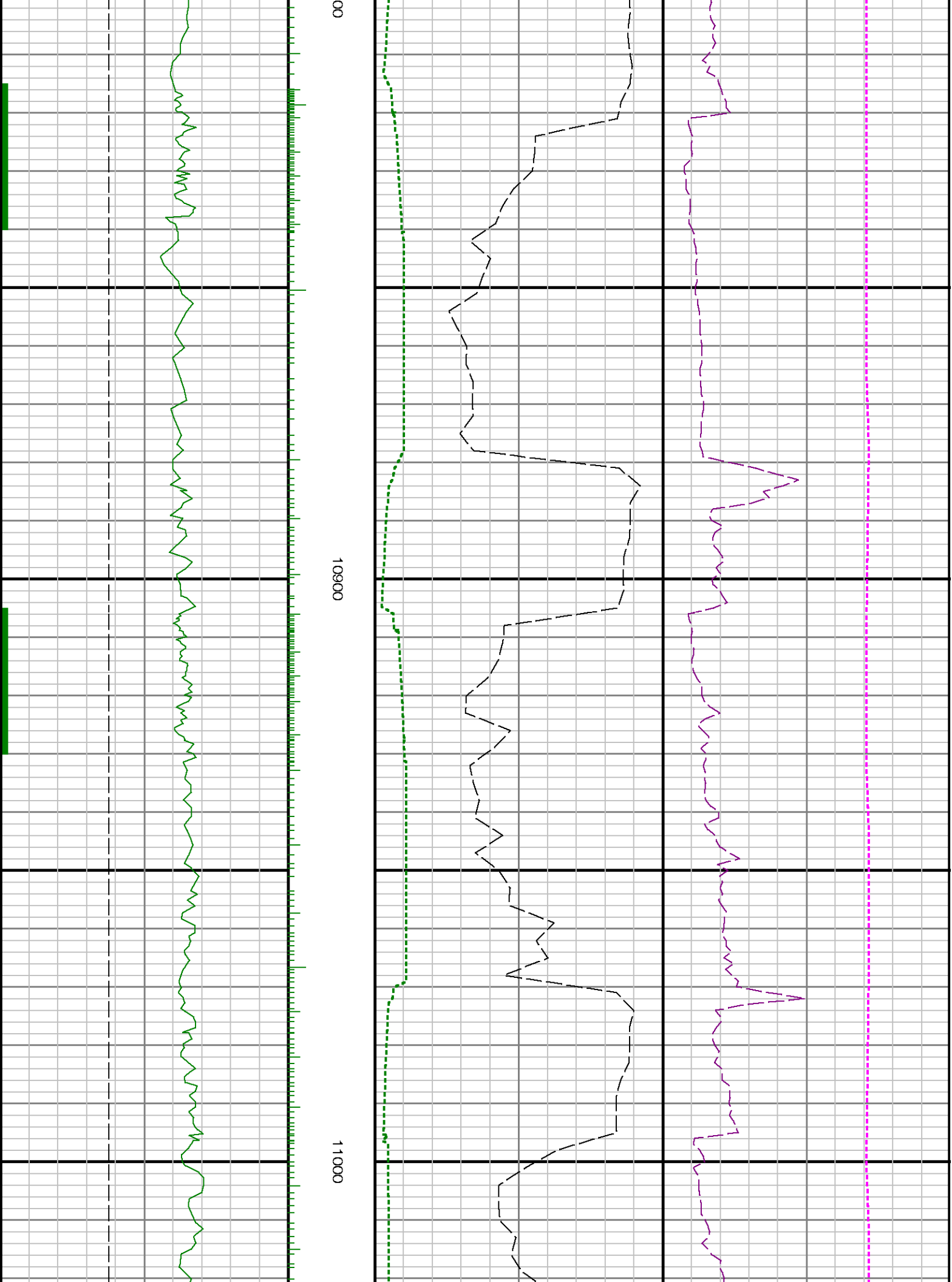








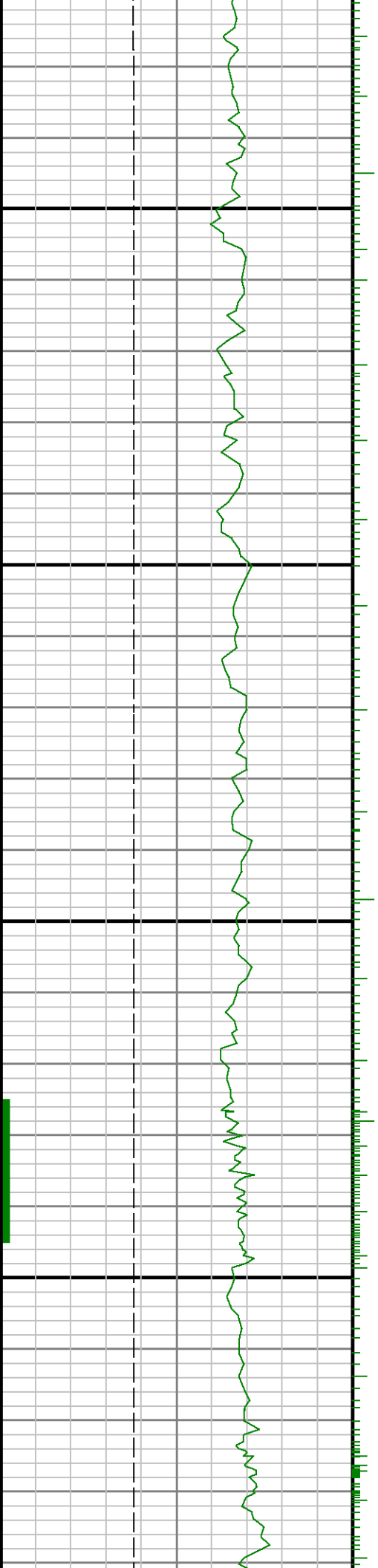




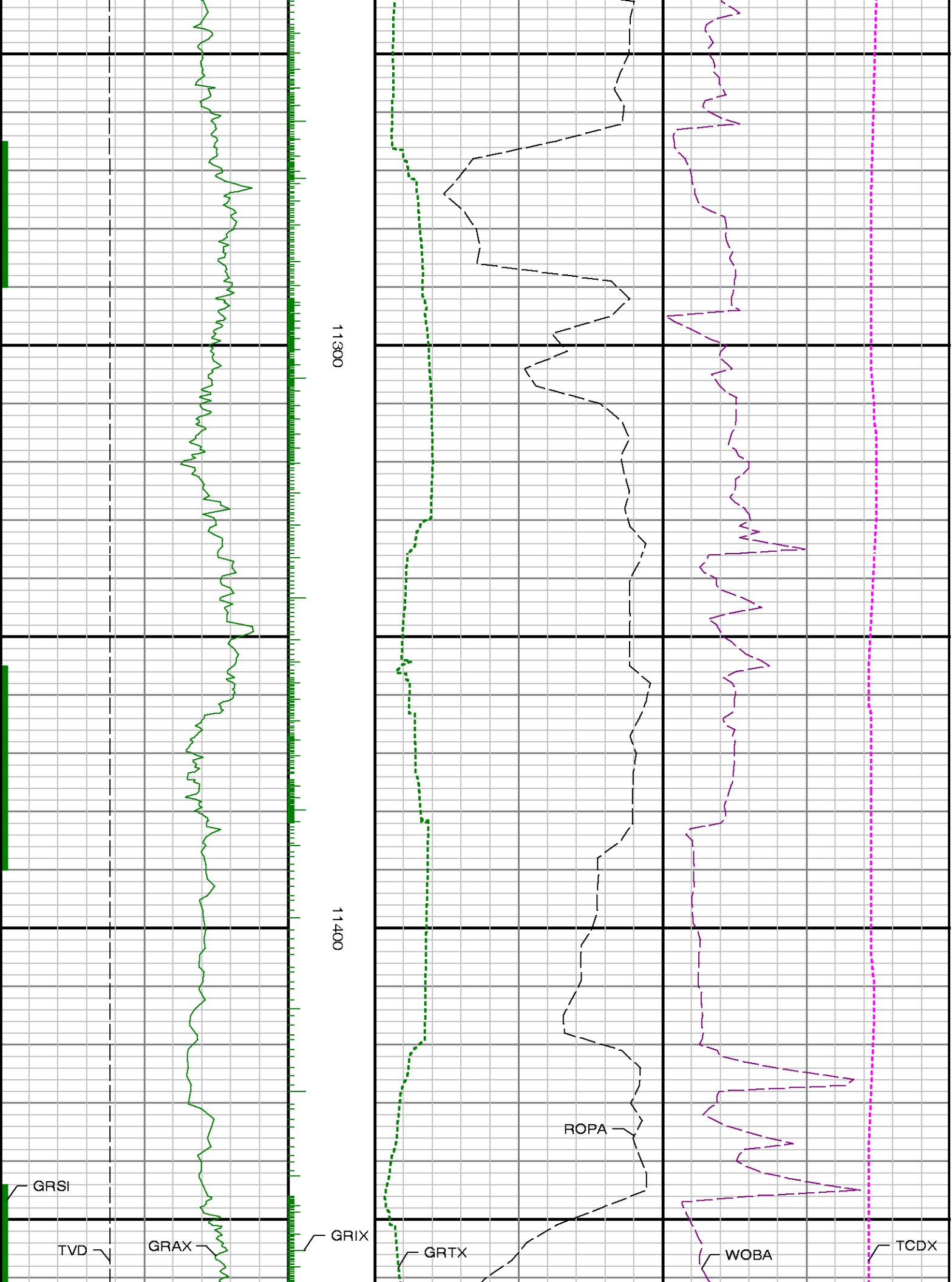


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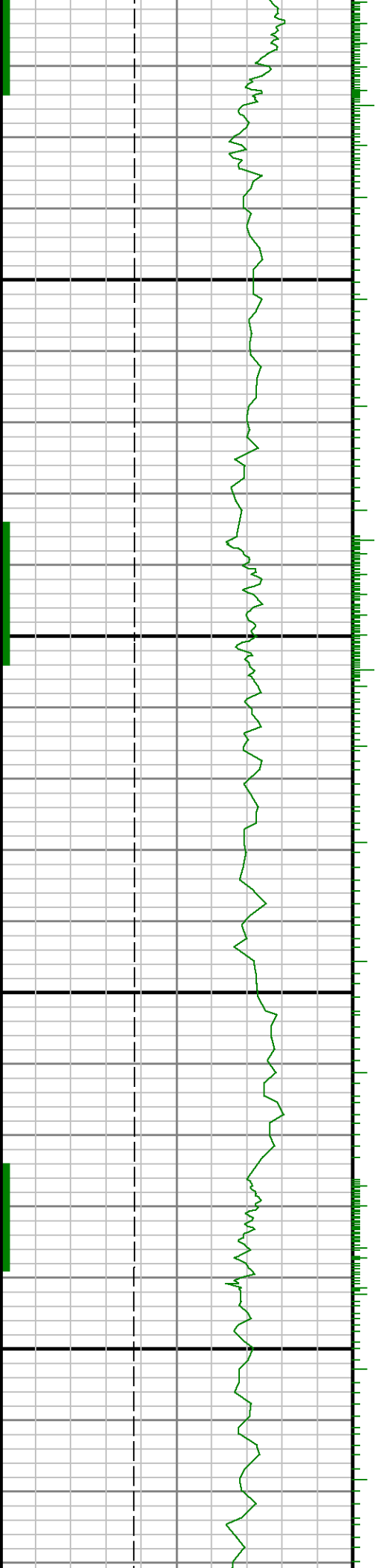


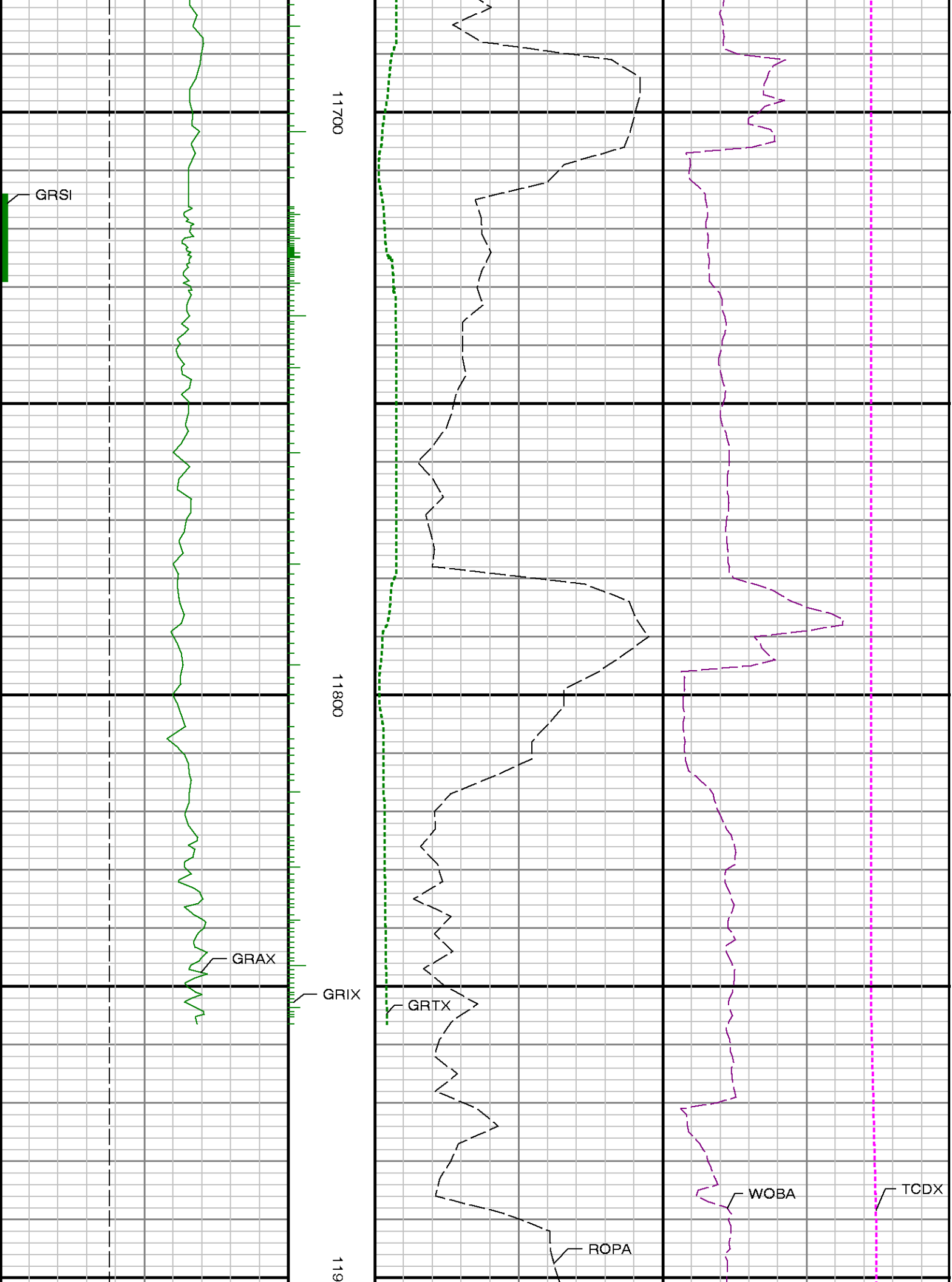


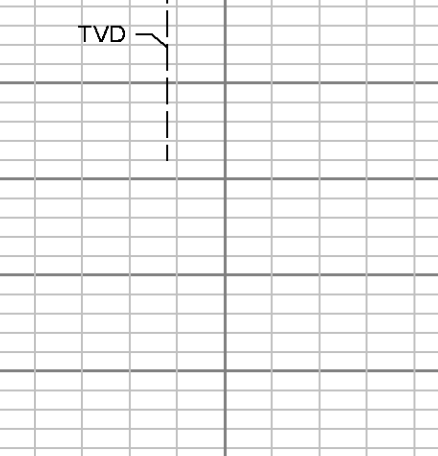
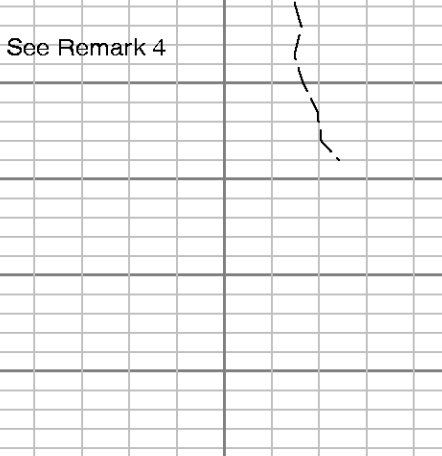



11500

11600





 <p>TVD</p>	<p>Run 3 &lt; 1000</p>	<p>See Remark 4</p> 	
<p>Gamma Ray Apparent 0.5 ft Avg [GRAX]</p> <p>0 150</p> <p>API</p> <p>True Vertical Depth [TVD]</p> <p>6000 9000</p> <p>ft</p>	<p>MD feet 1 : 240</p>	<p>Rate of Penetration 3.0 ft Avg [ROPA]</p> <p>600 0</p> <p>ft/hr</p> <p>Gamma Time Since Drilled [GRTX]</p> <p>0 600</p> <p>min</p>	<p>Surface Weight On Bit 1.0 ft Avg [WOBA]</p> <p>0 100</p> <p>klbf</p> <p>Downhole Temperature [TCDX]</p> <p>0 300</p> <p>degF</p>