



Mud Properties Record

Date / Time		LWD Run No.	Measured Depth (ft.)	Mud Type	Density (ppg)	Viscosity (cp)	pH	Fluid Loss (cc)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
07/Feb/14	21:00	1	1337	Water Based	8.4	29	8.3	N/A	0.0/99.3	Active Mud Pits	1300	N/A
08/Feb/14	21:00	1	6219	Water Based	9.8	36	8.0	N/A	0.0/91.0	Active Mud Pits	1300	N/A
09/Feb/14	21 :00	2	7820	Water Based	9.9	36	8.5	N/A	0.0/91.0	Active Mud Pits	1500	N/A
11/Feb/14	21 :00	3	8552	Water Based	9.2	37	8.5	N/A	0.0/94.0	Active Mud Pits	1300	N/A
12/Feb/14	21 :00	3	12091	Water Based	9.1	41	9.0	N/A	1.6/92.3	Active Mud Pits	1400	N/A

Mnemonics

Curve	Description	Units
GRAX	Gamma Ray Apparent, 0.5 ft. Avg.	API
GRIX	Gamma Ray Data Density	point
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	degF
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 (m.)	Max O.D. (in.)	Min I.D. (in.)
1	DIR	12440863	Directional	45.50	6.750	3.250
1	SRIG	12600751	Gamma	42.45	6.750	3.250
2	DIR	12617359	Directional	53.09	4.750	2.750
2	SRIG	11714036	Gamma	49.74	4.750	2.750
3	DIR	12592563	Directional	53.13	4.750	2.750
3	SRIG	11814653	Gamma	49.75	4.750	2.750

Service and Tool Mnemonics

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

Comments

1.) Depth measurements obtained from a depth control system not supplied or operated by Baker Hughes. Due to the lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
2.) Baker Hughes runs 1 utilized 6 3/4 inch NaviTrak services (Directional only) behind an 8 3/4 inch bit and steerable assembly from 1351 to 6739 feet MD (1351 to 6674 feet TVD).
3.) Baker Hughes run 1 utilized 6 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 8 3/4 inch bit and steerable assembly from 6740 to 7820 feet MD (6675 to 7351 feet TVD).
4.) Baker Hughes run 2 utilized 4 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 6 1/8 inch bit and steerable assembly from 7820 to 8218

feet MD (7351 to 7357 feet TVD).

4.) Baker Hughes run 3 utilized 4 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 6 1/8 inch bit and steerable assembly from 8218 to 12743 feet MD (7357 to 7341 feet TVD).

6.) The interval from 1351 to 6739 feet MD (1351 to 6674 feet TVD) was not logged due to directional only services being provided through the straight-hole and nudge section for Baker Hughes runs 1.

## Remarks

Number	Measured Depth (ft.)	Hole Section (in.)	LWD Run No.	Remark
1	7800	8.750	1	The interval from 7800 to 7820 feet MD (7349 to 7351 feet TVD) was logged up to 24 hours after being drilled due to a trip out of the hole to lay down the curve assembly, intermediate casing and cement operations, and to pick up the lateral assembly.
2	8170	6.125	2	The interval from 8168 to 8219 feet MD (7357 to 7357 feet TVD) was logged up to 24 hours after being drilled due to a trip out of the hole to change BHA.
3	12740	6.125	3	The interval from 12692 to 12743 feet MD (7342 to 7342 feet TVD) was not logged due to sensor to bit offsets at well TD.

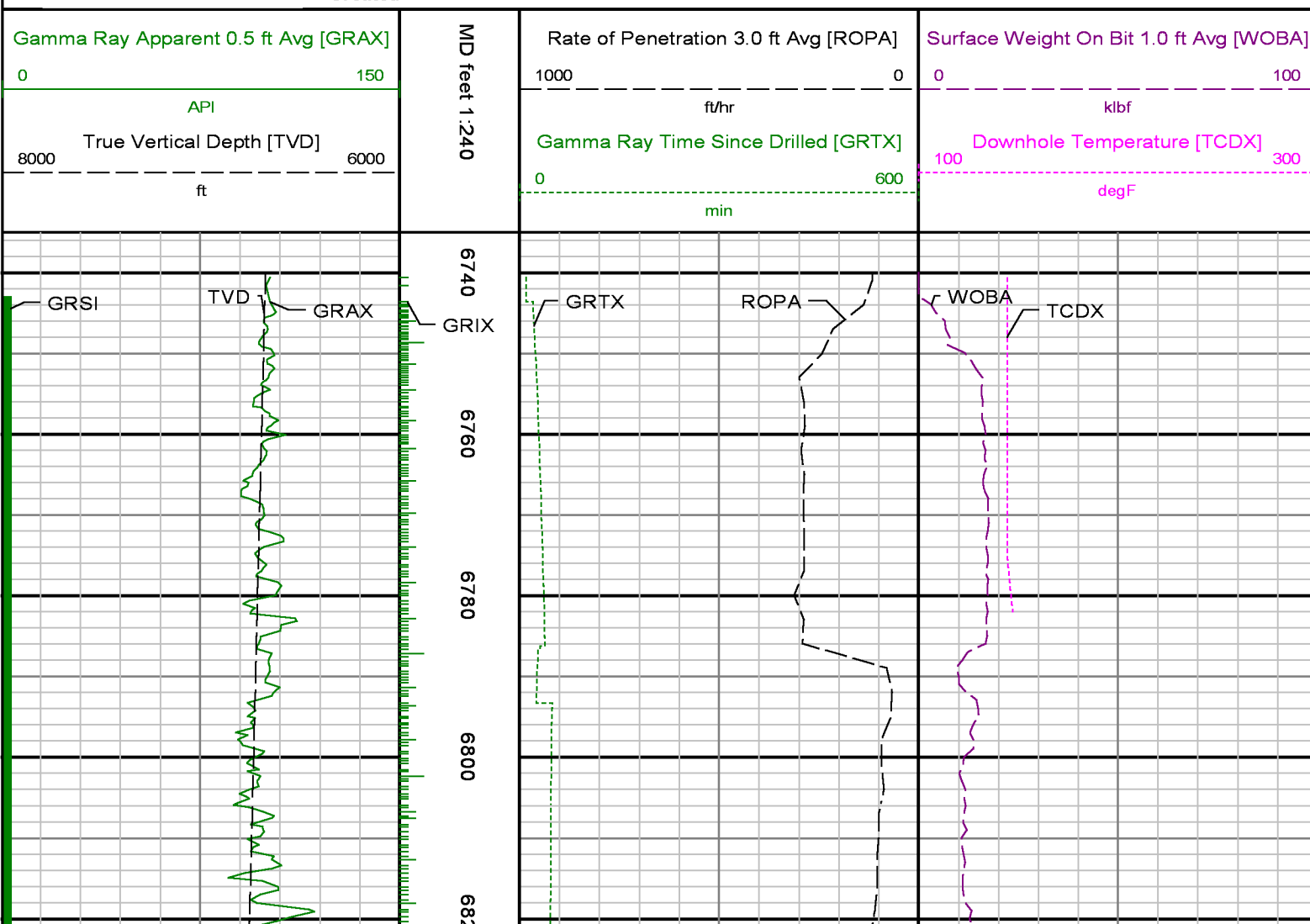


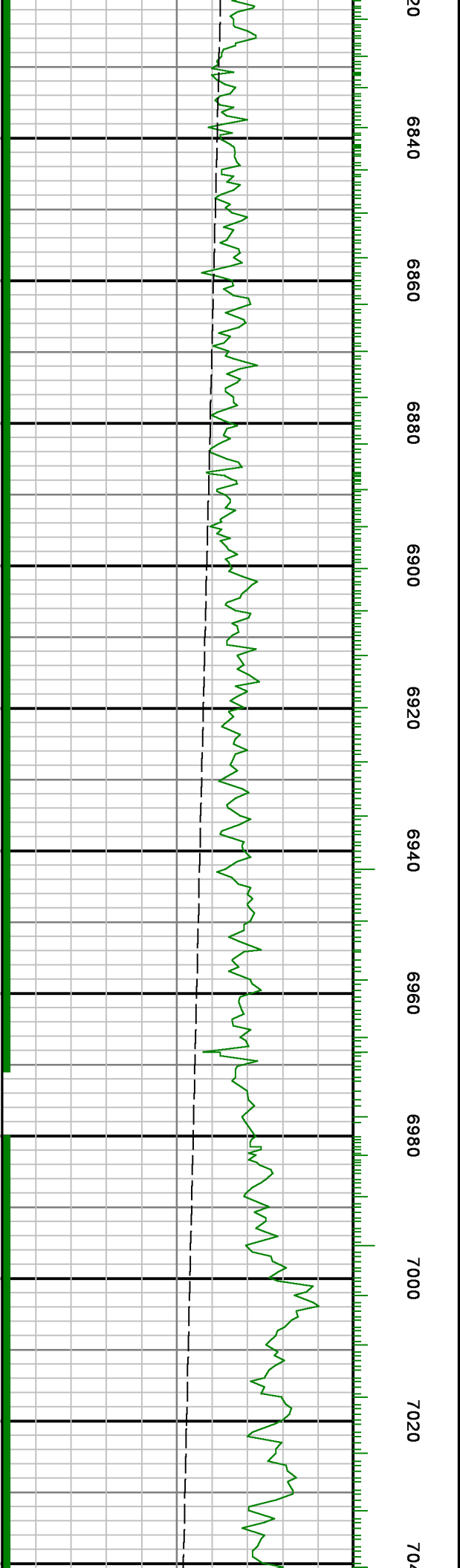
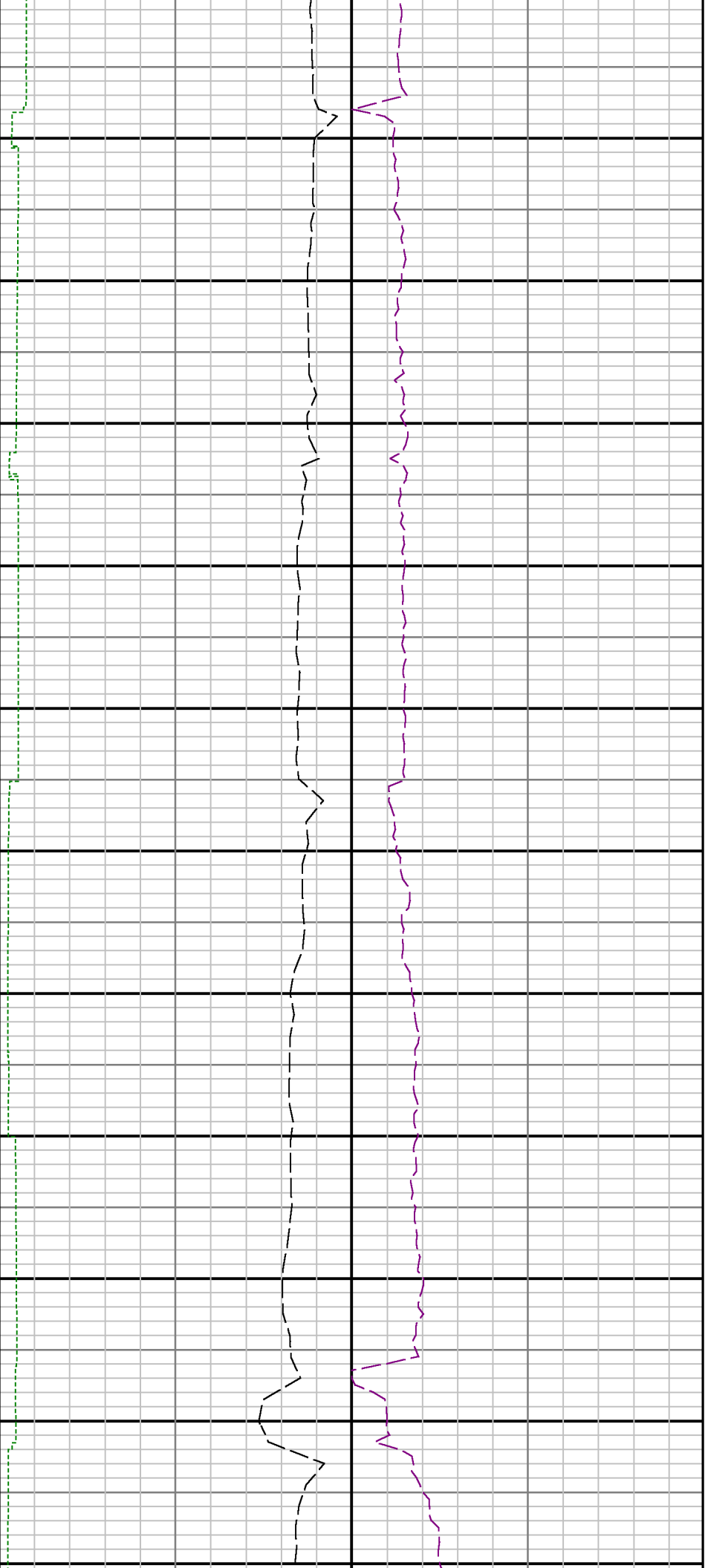
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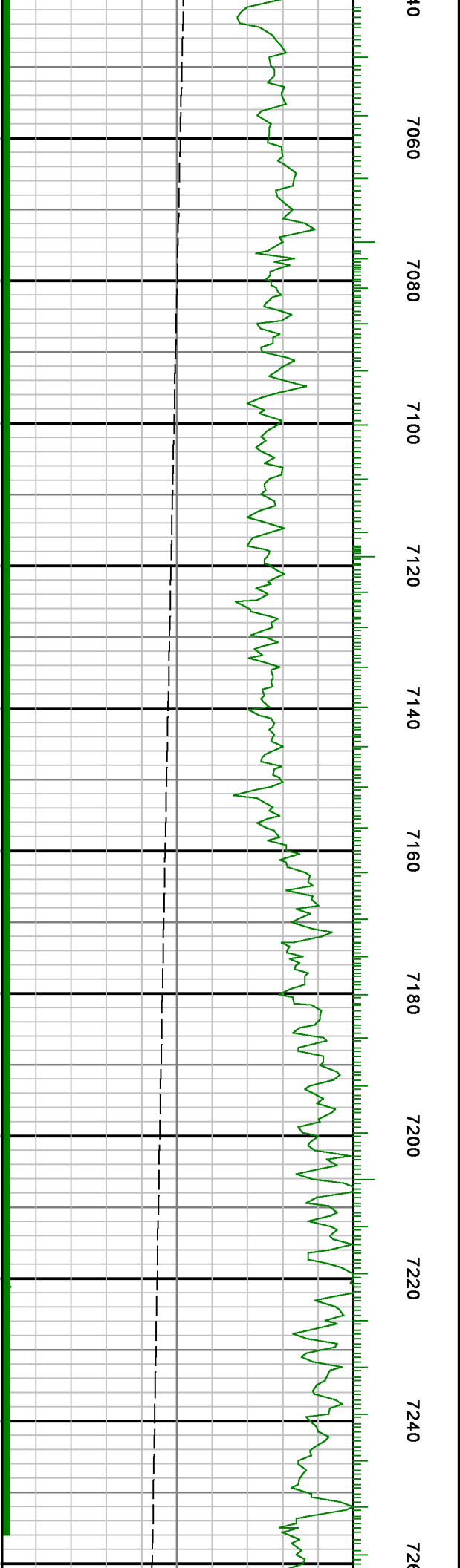
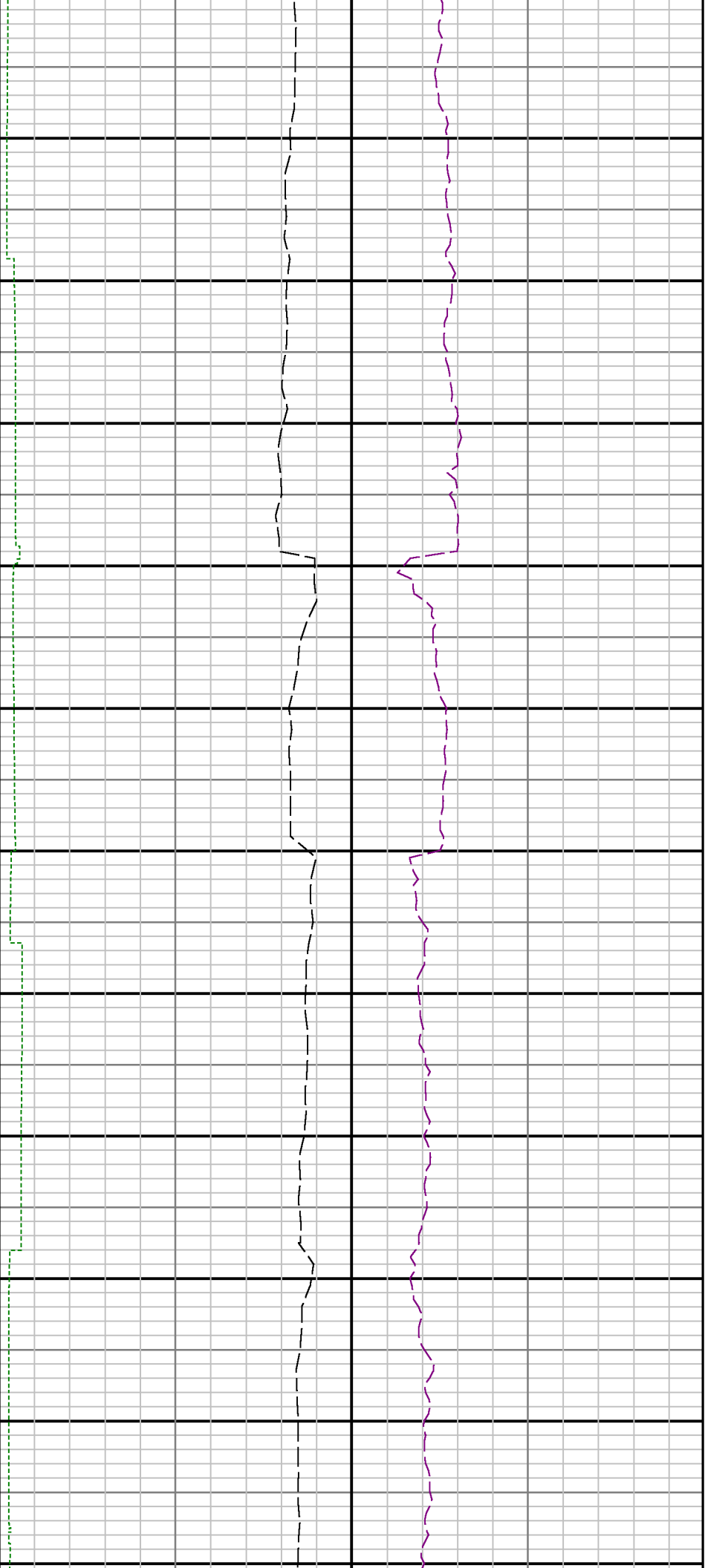
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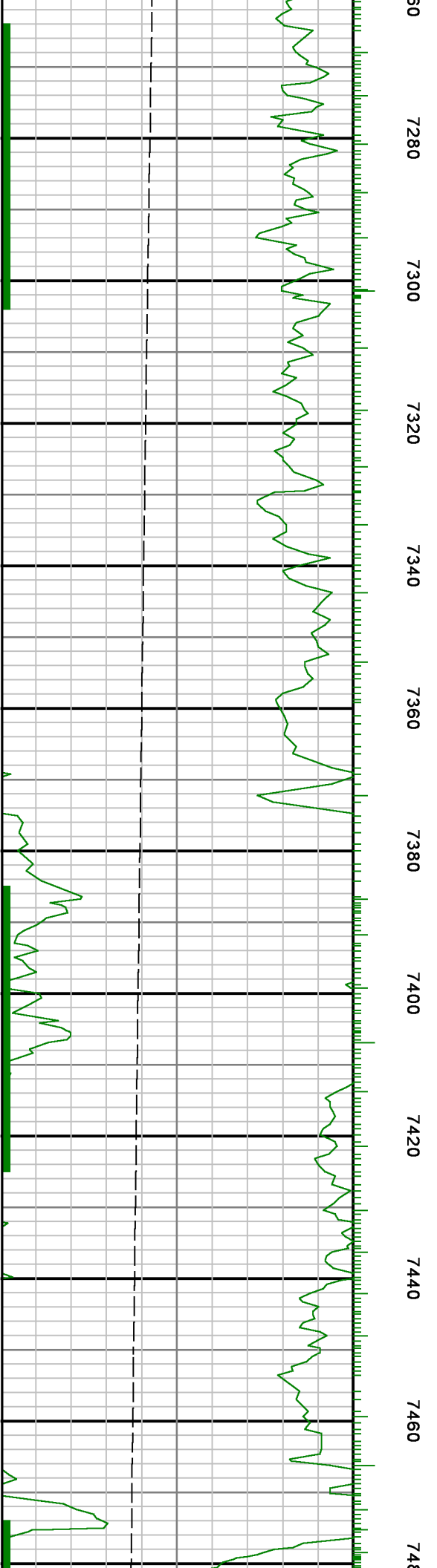
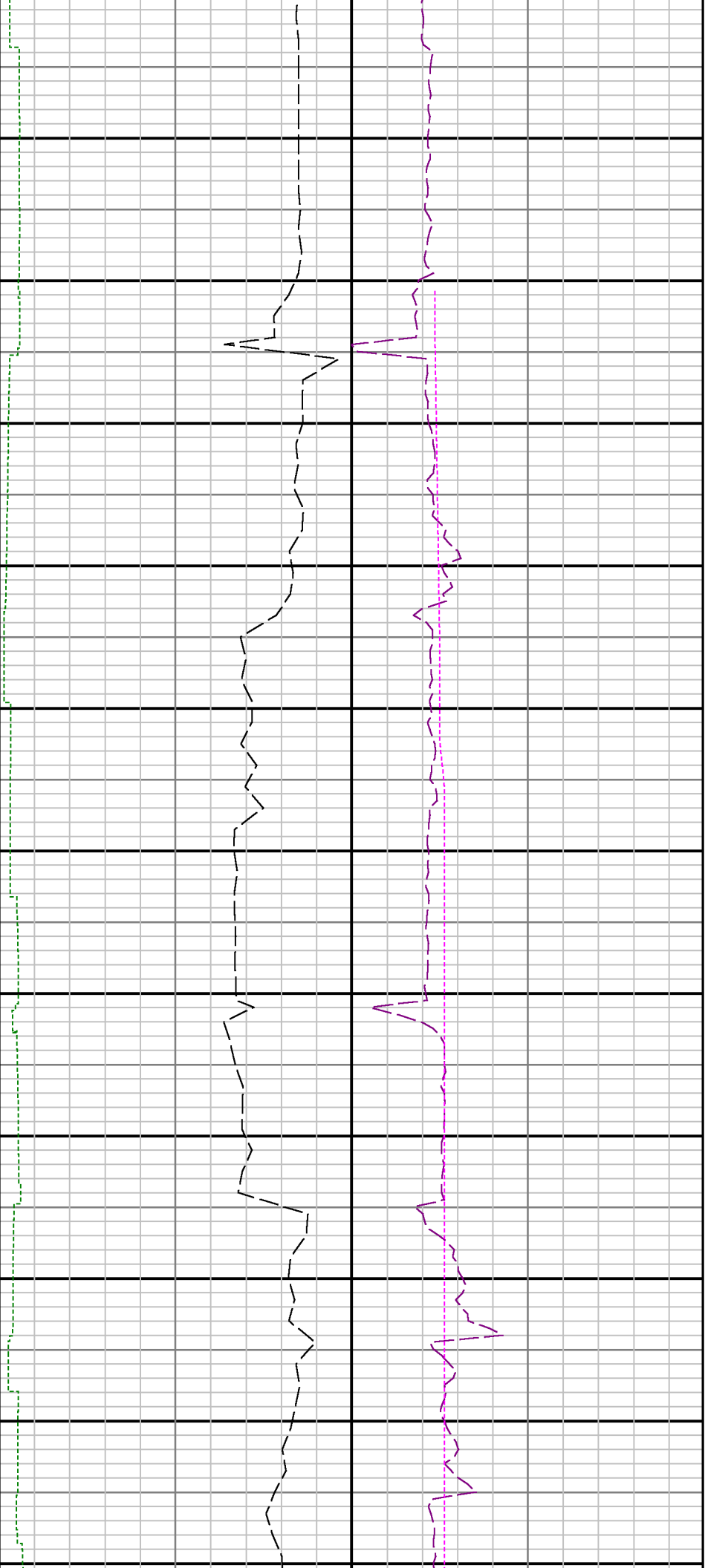
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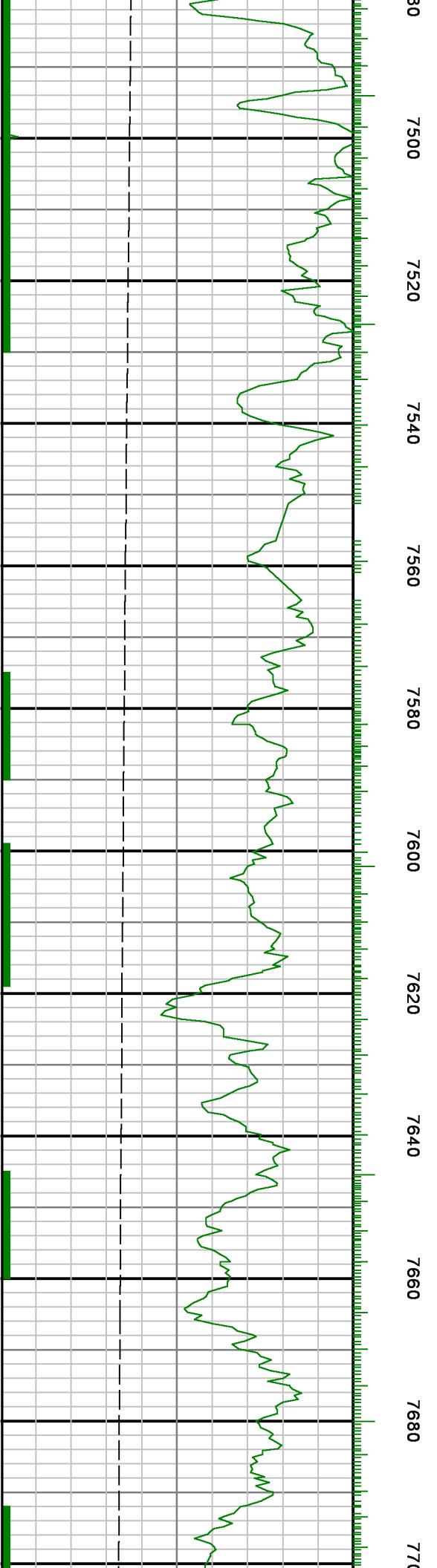
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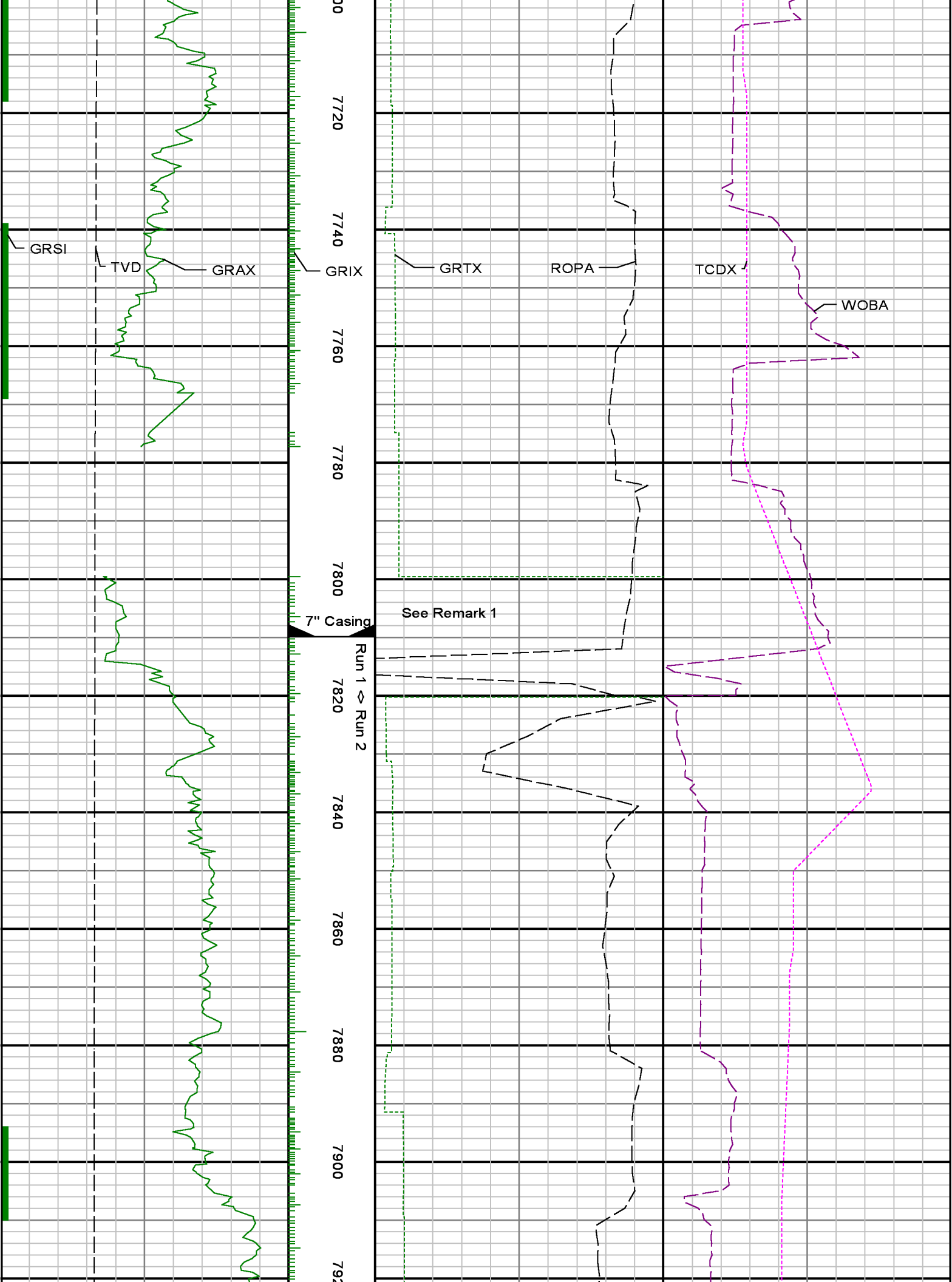




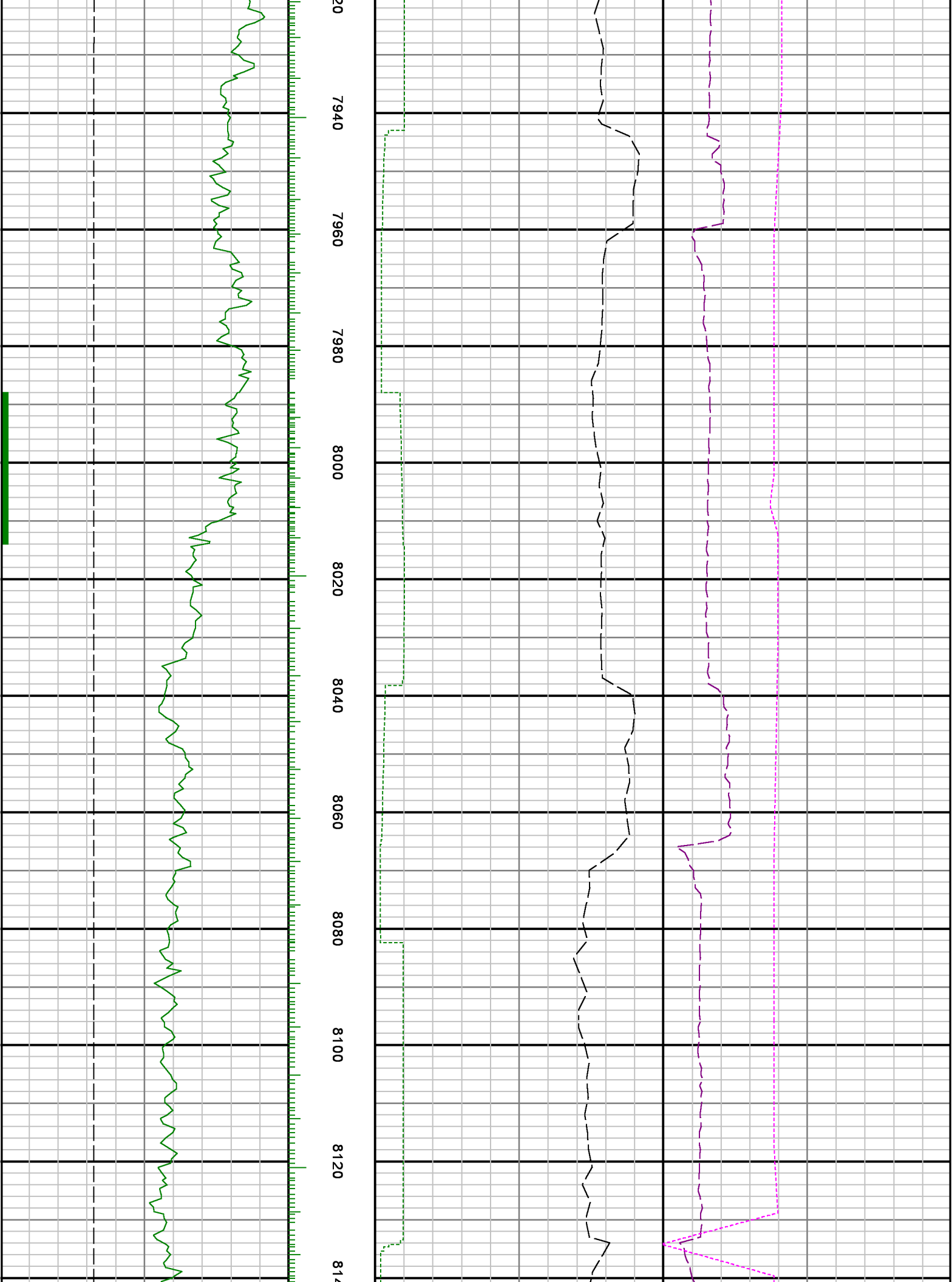






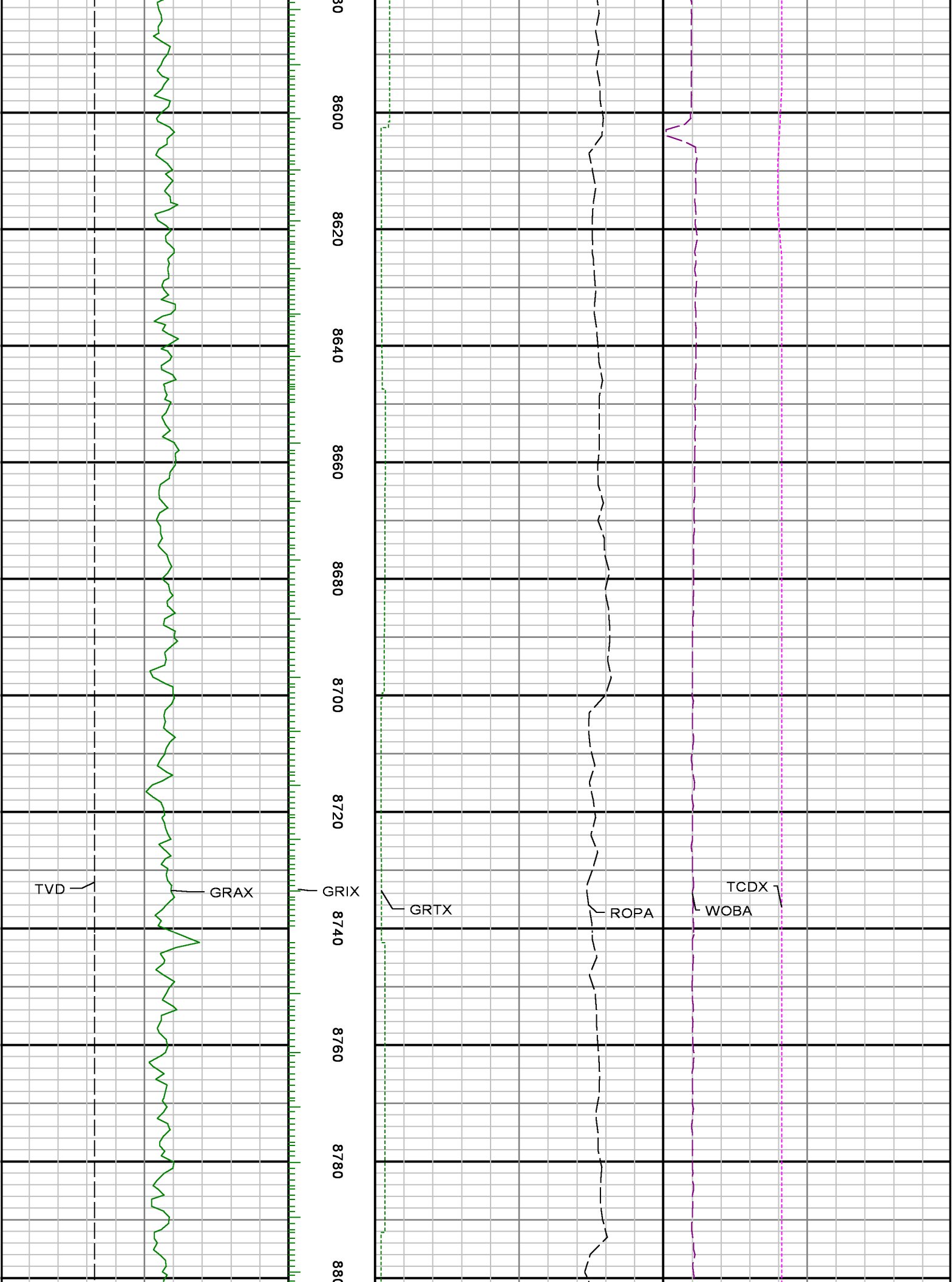


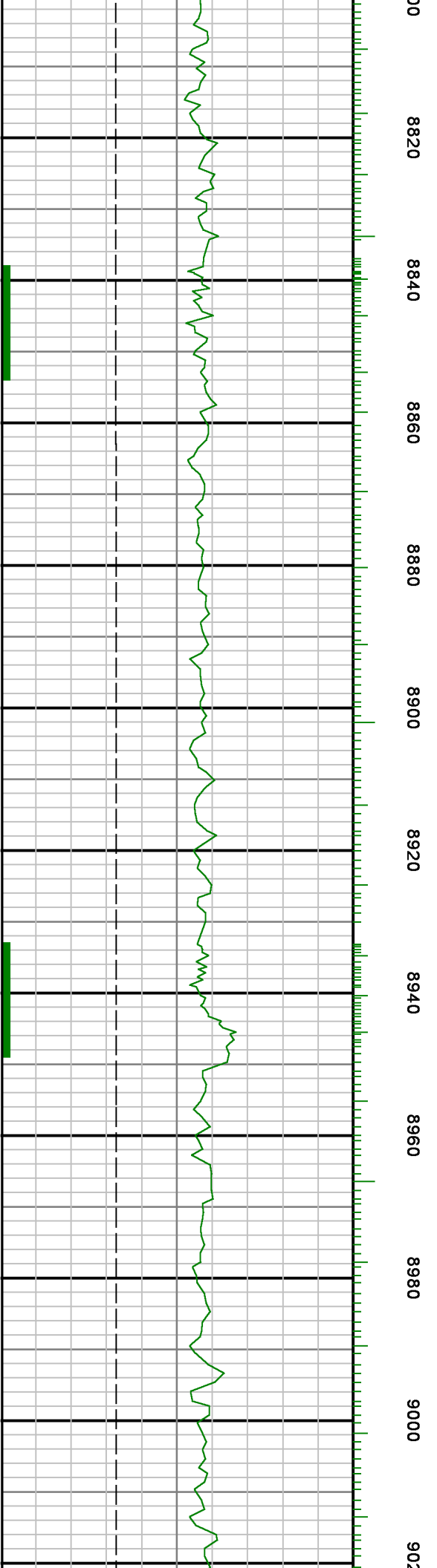
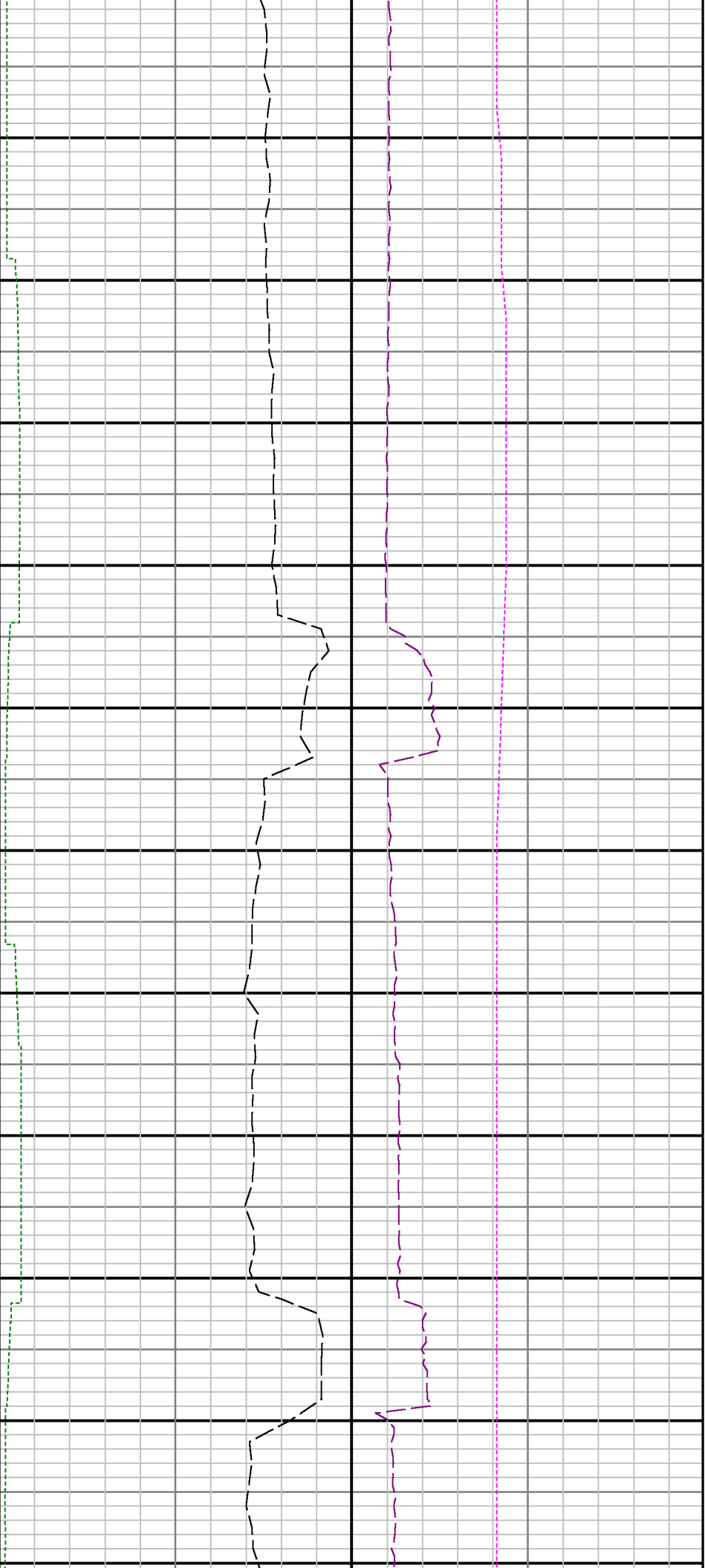


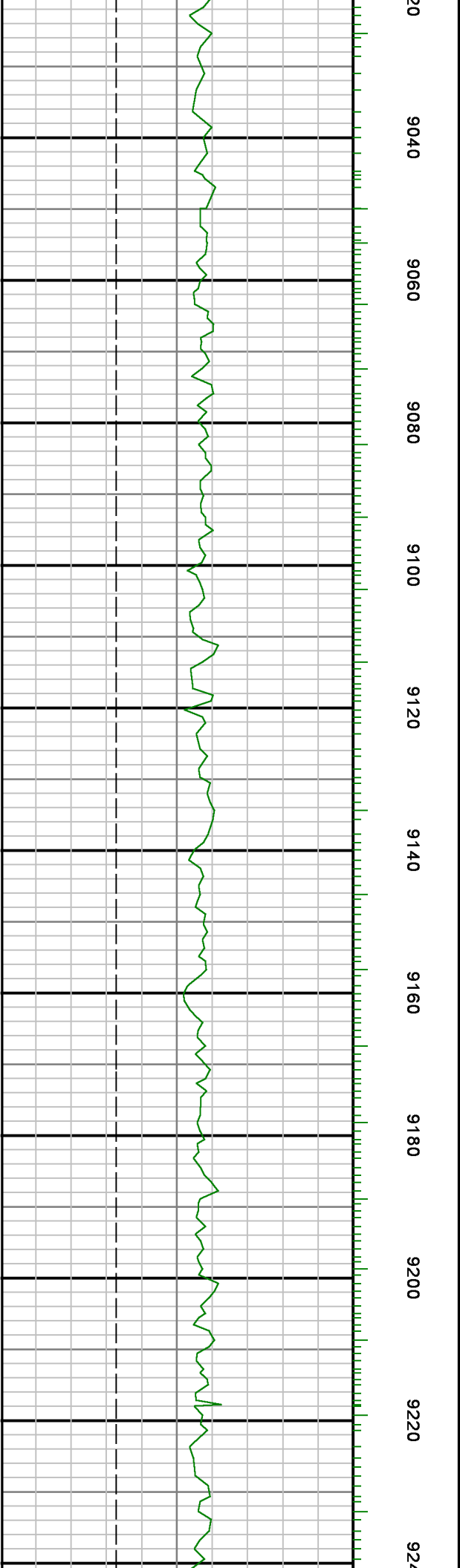
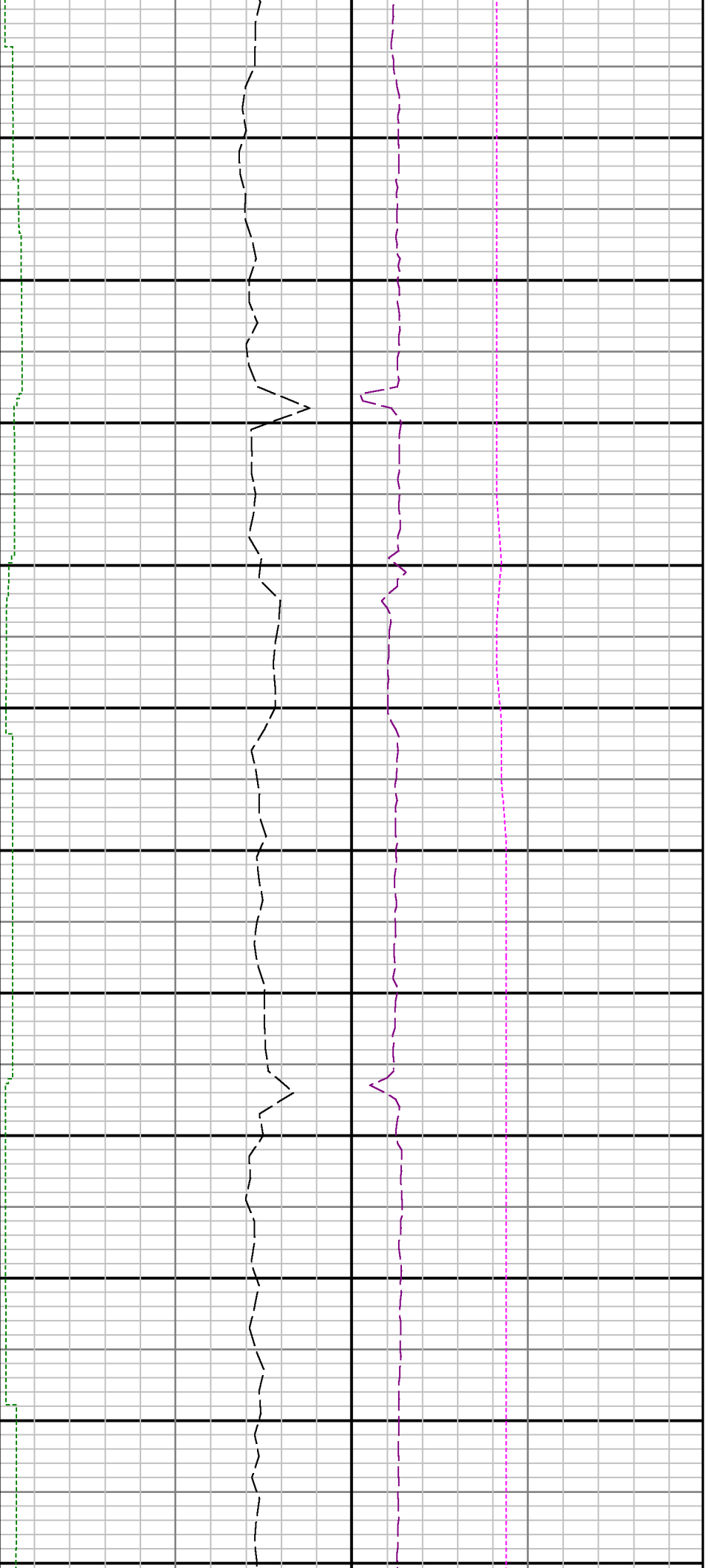


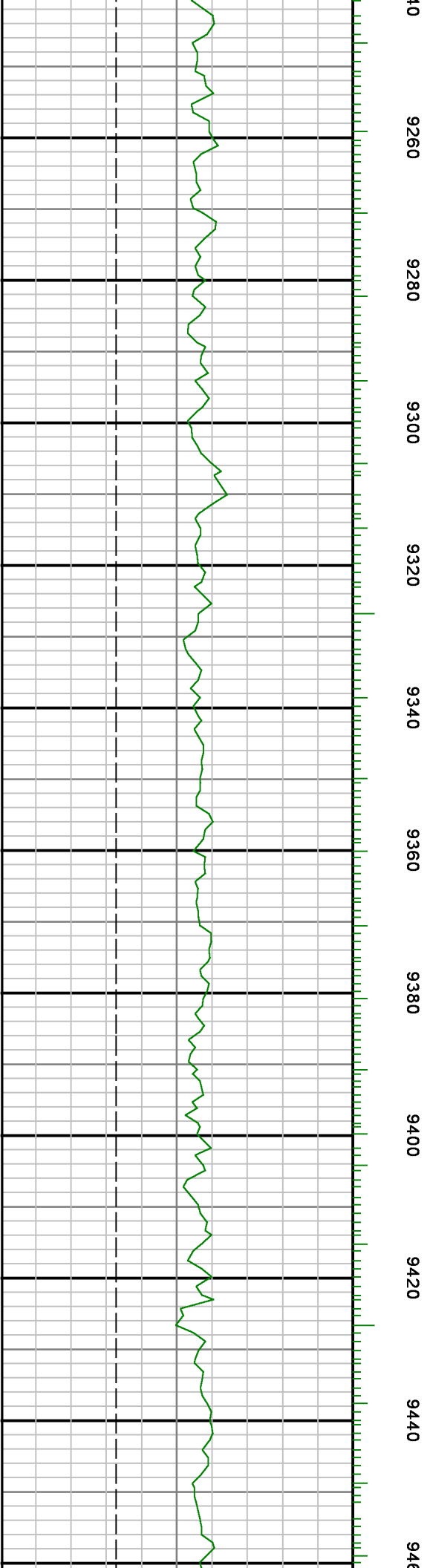
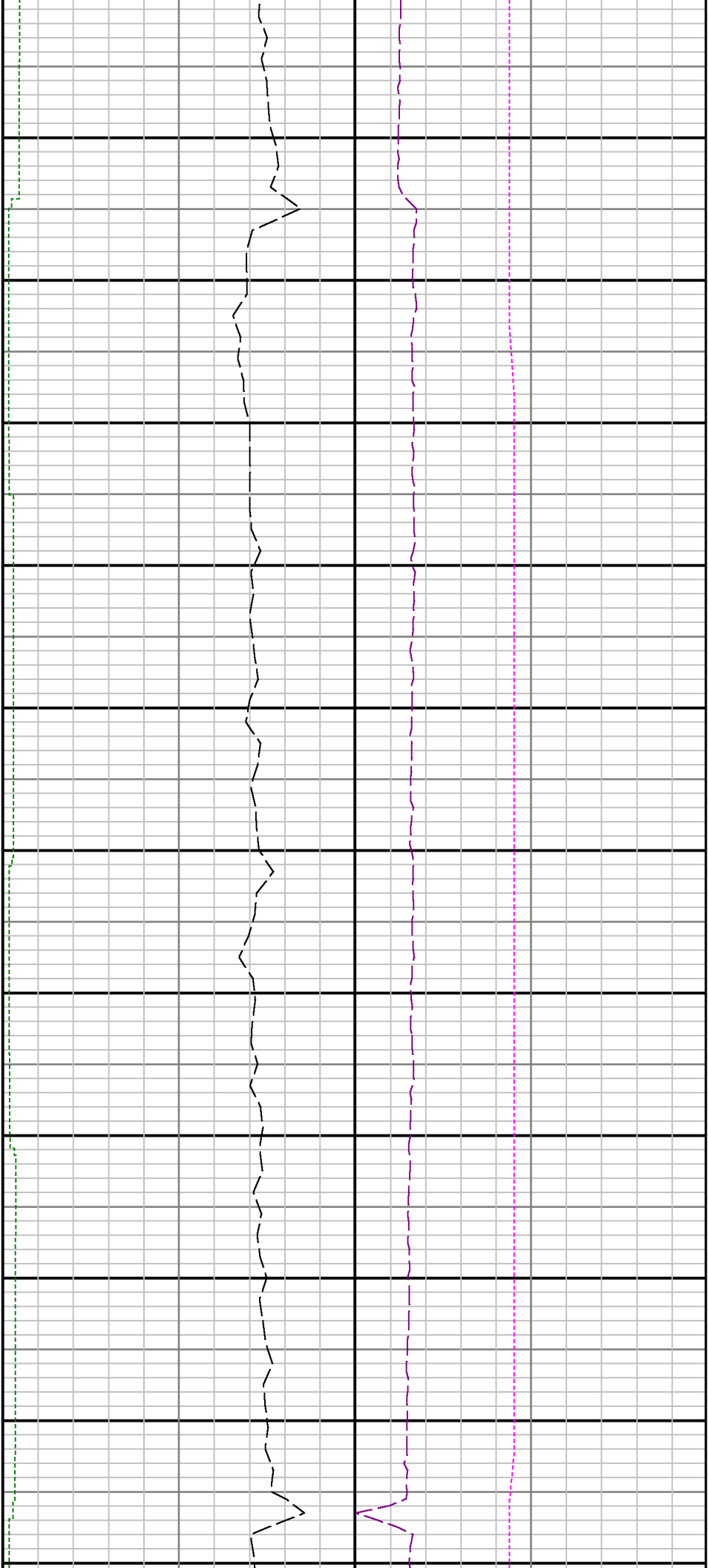


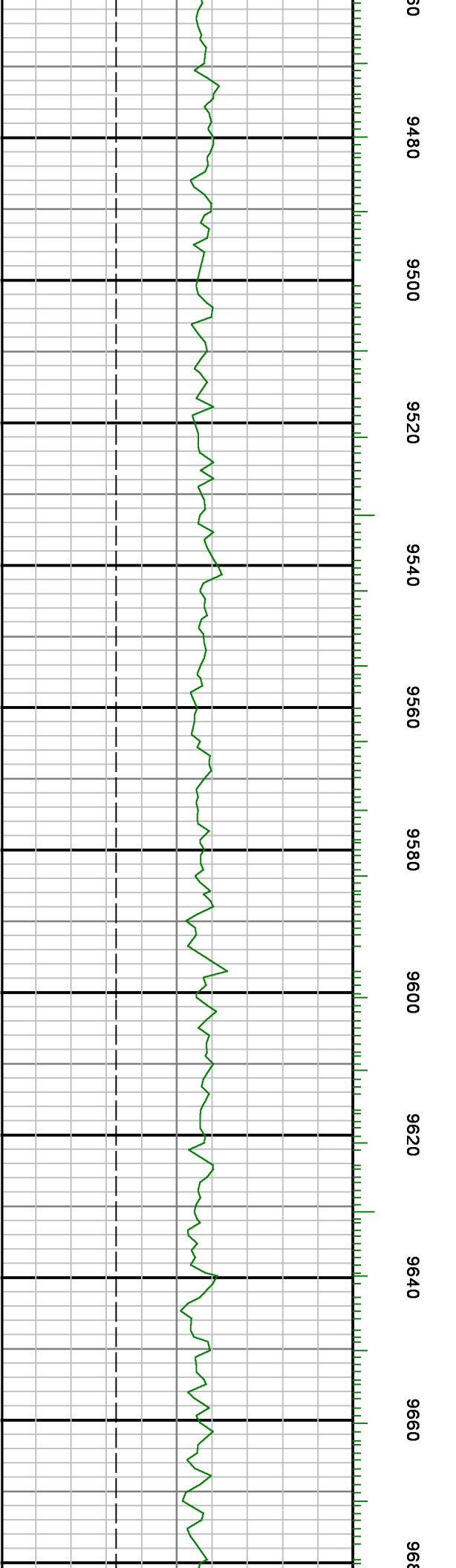




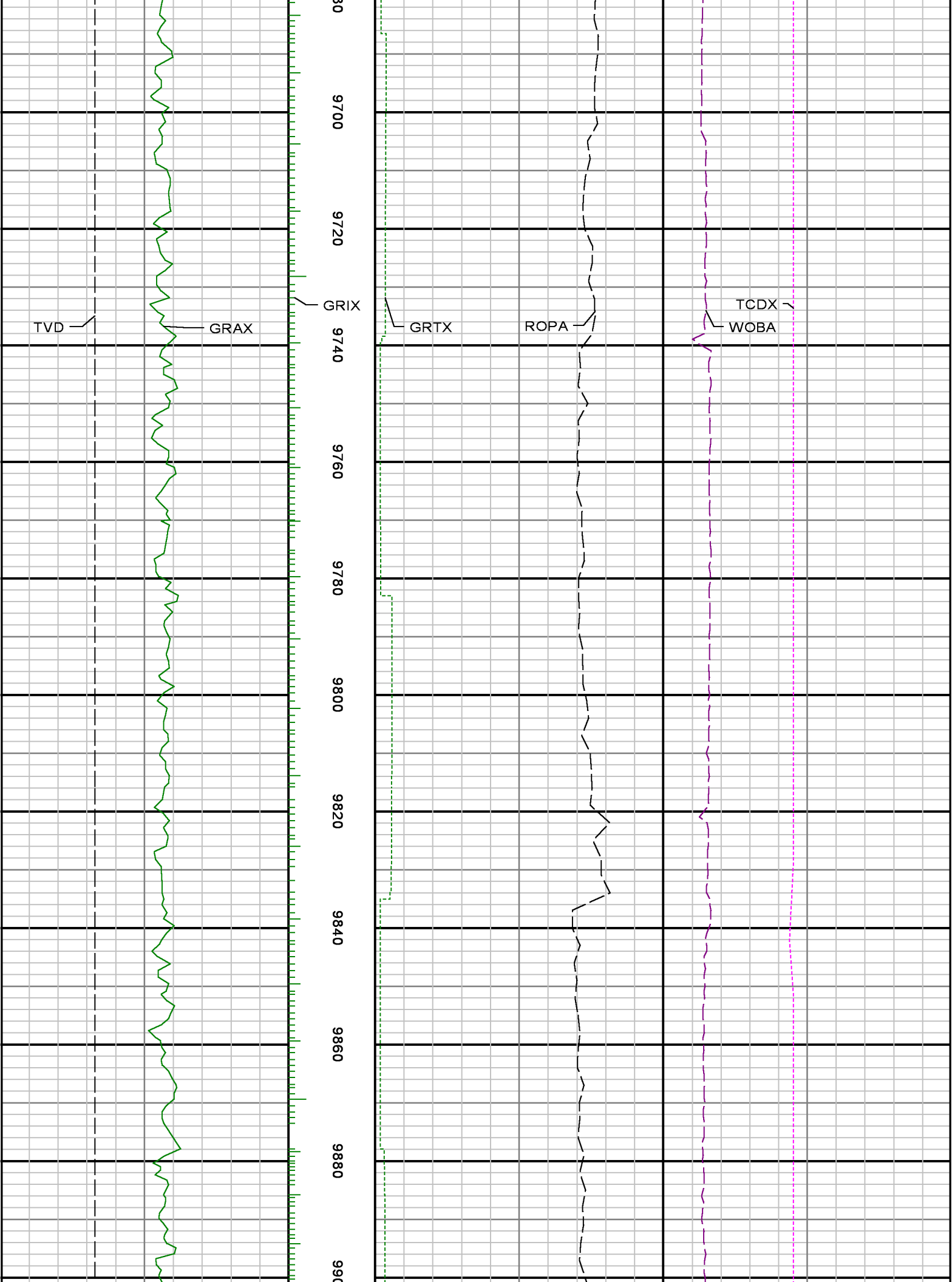




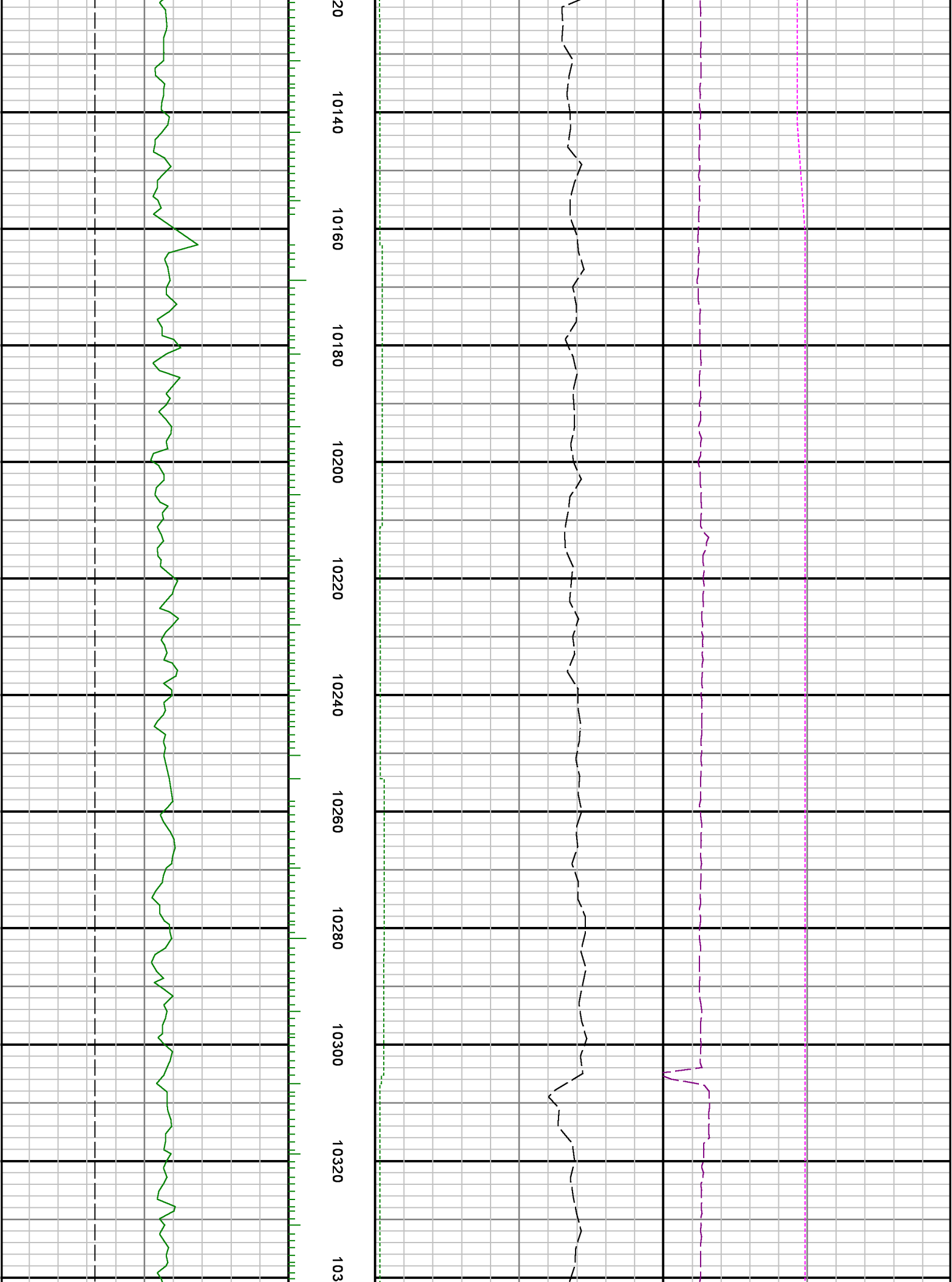




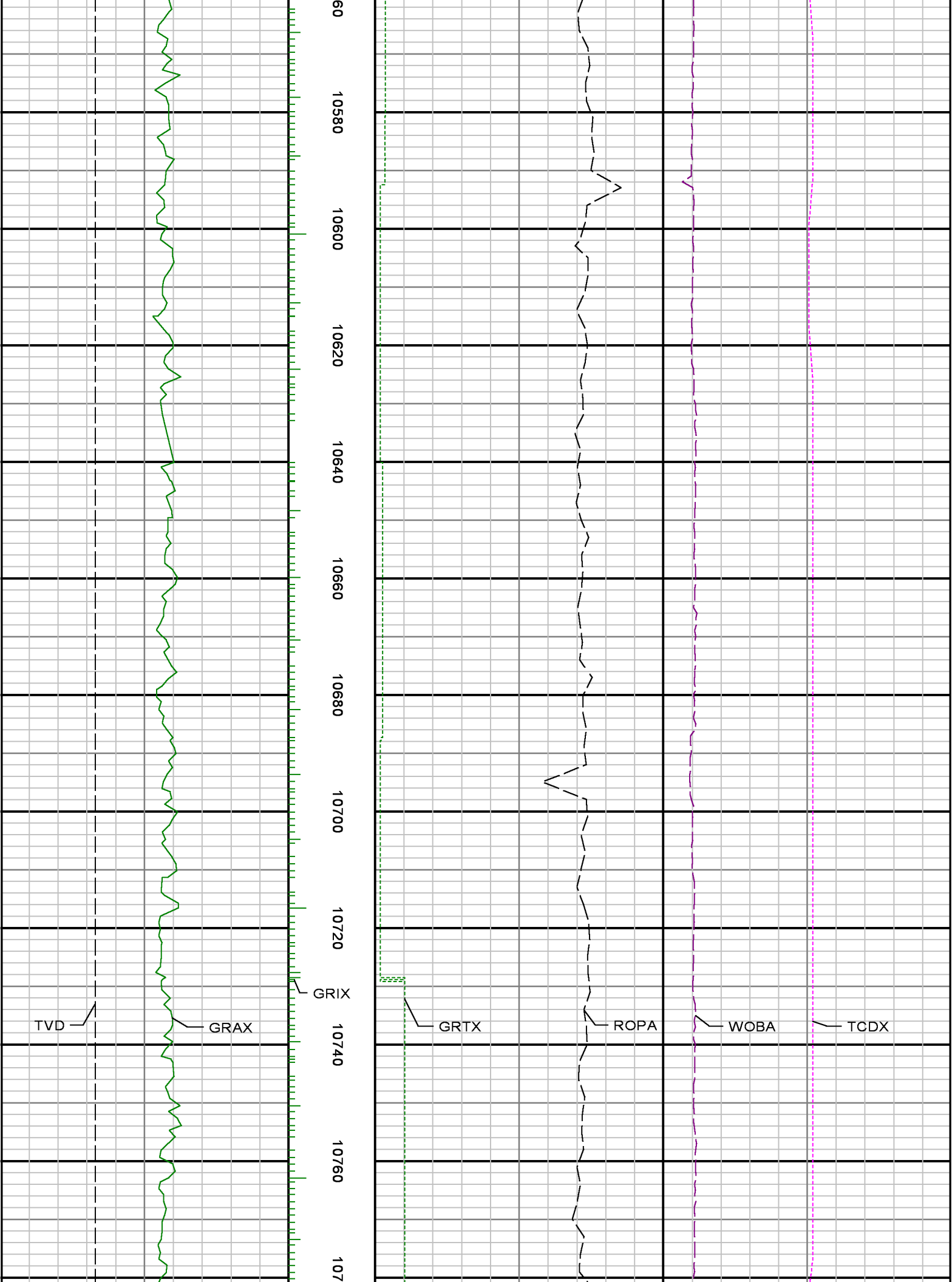


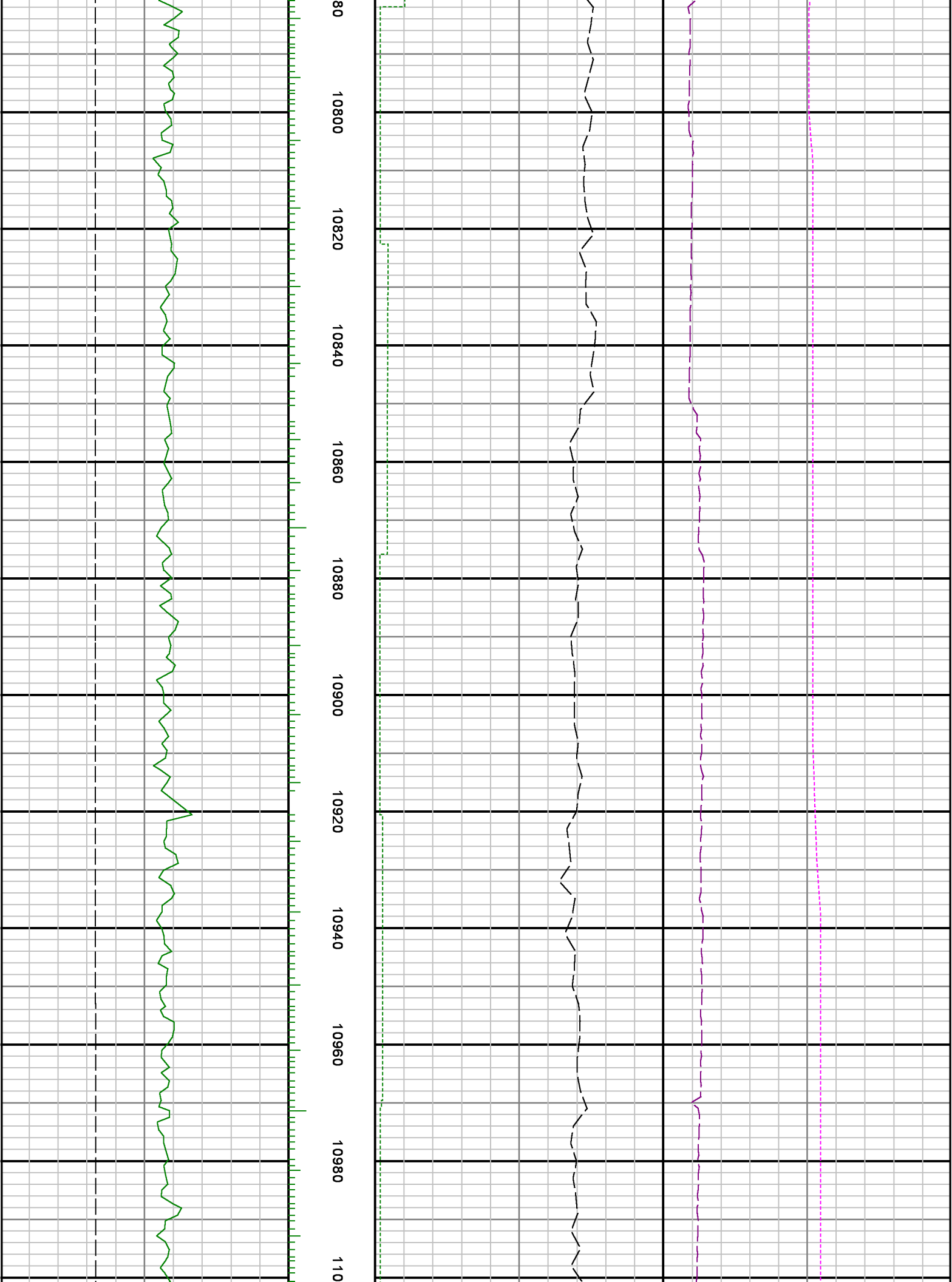




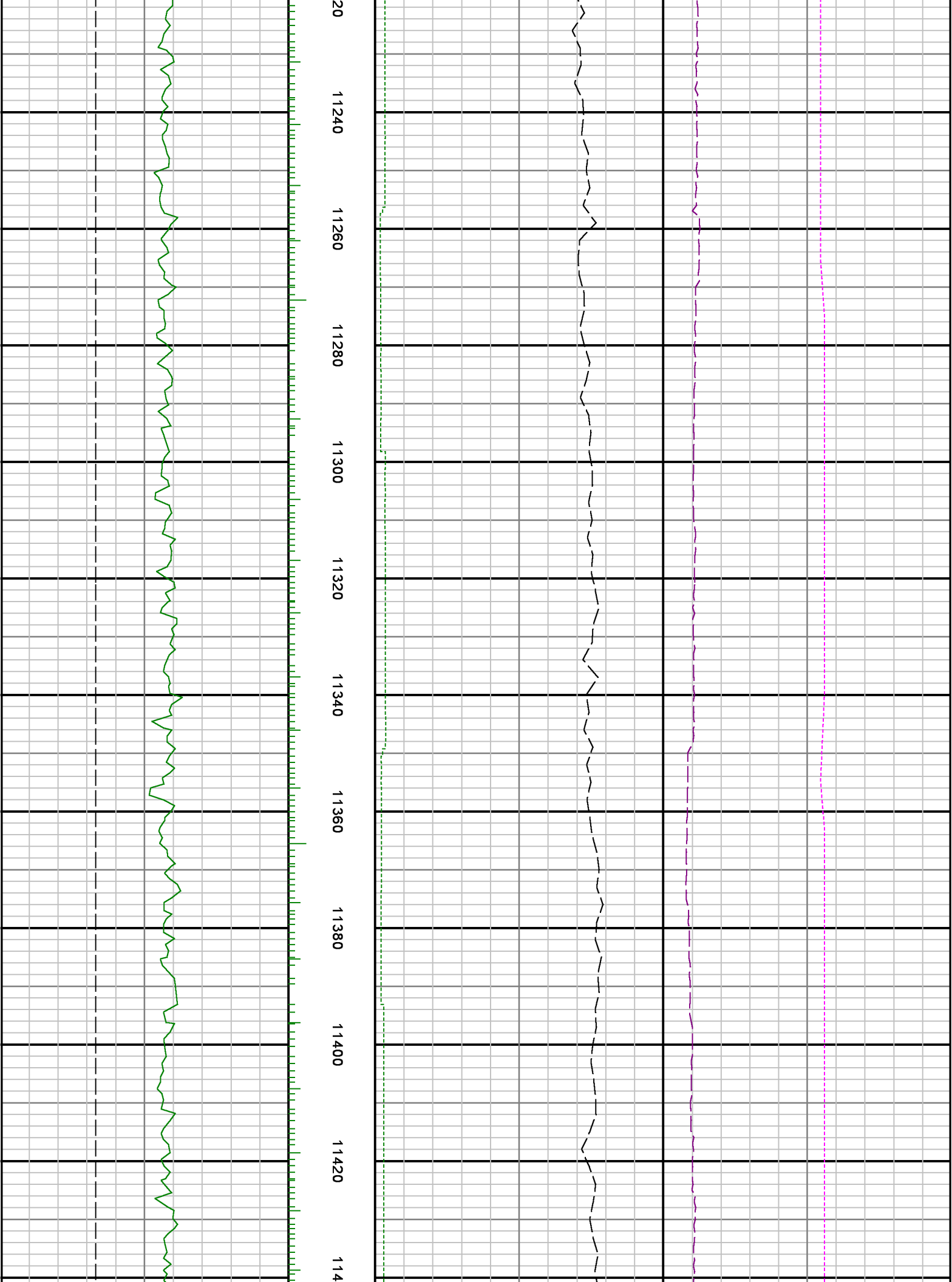




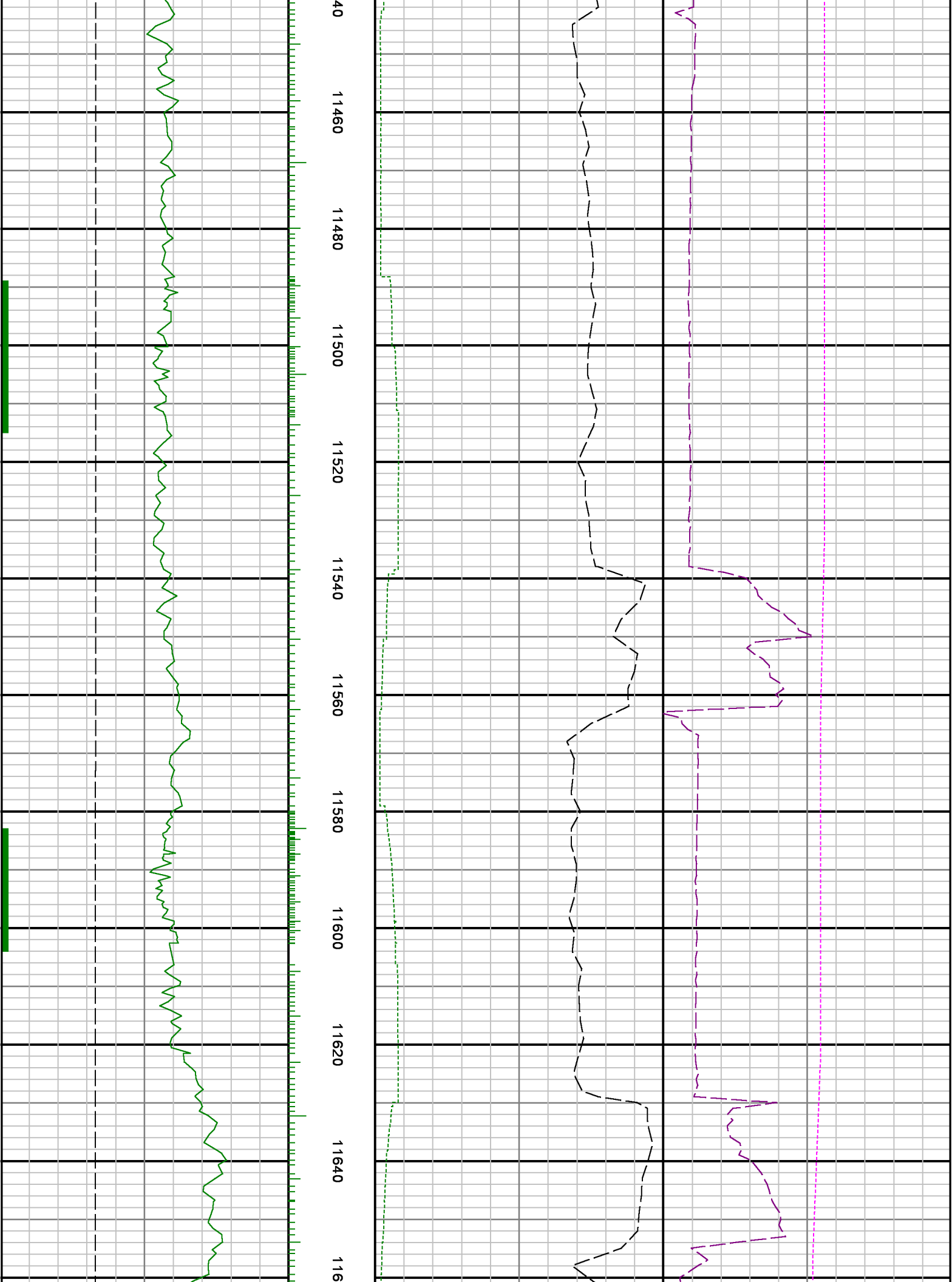


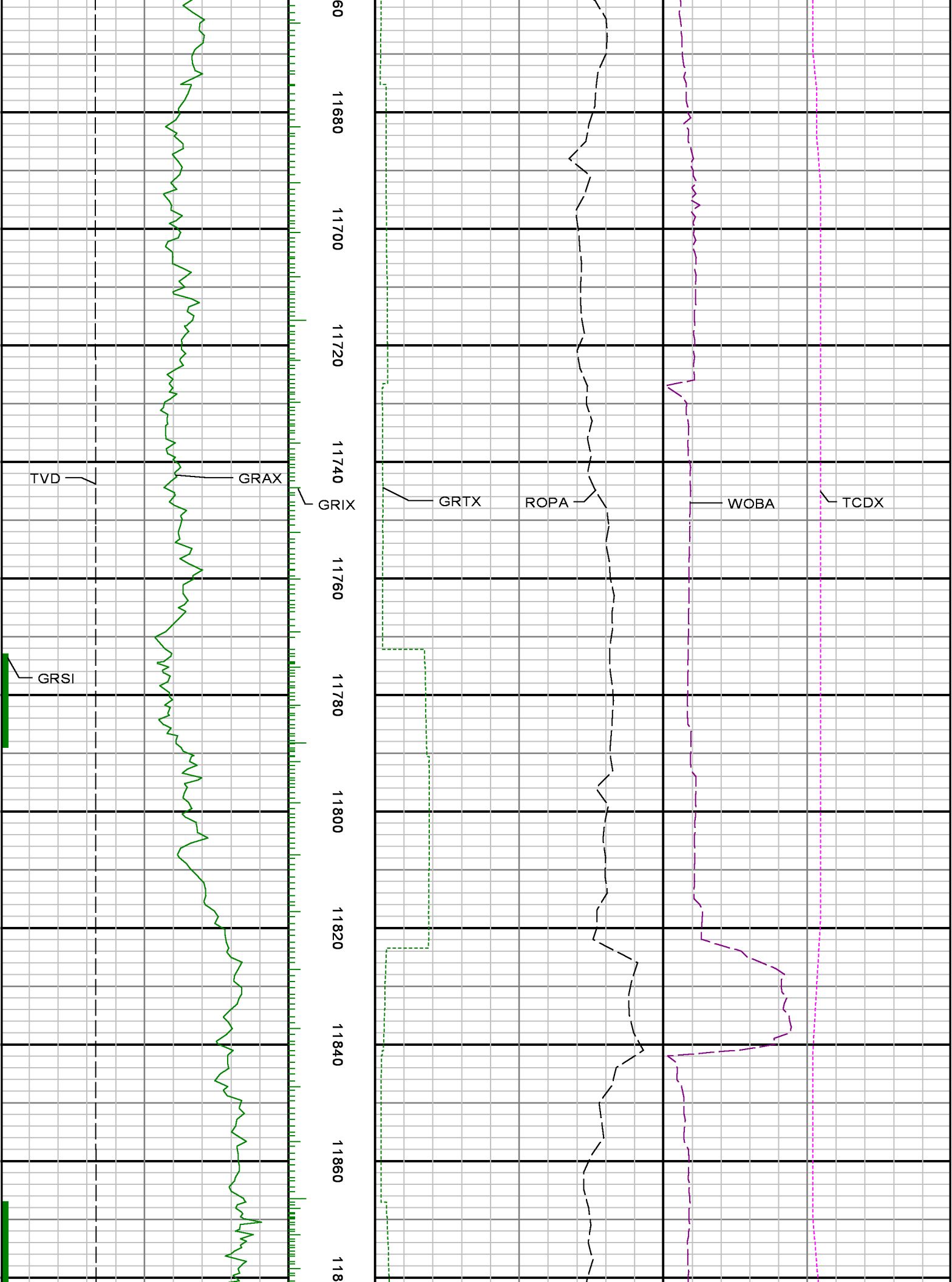


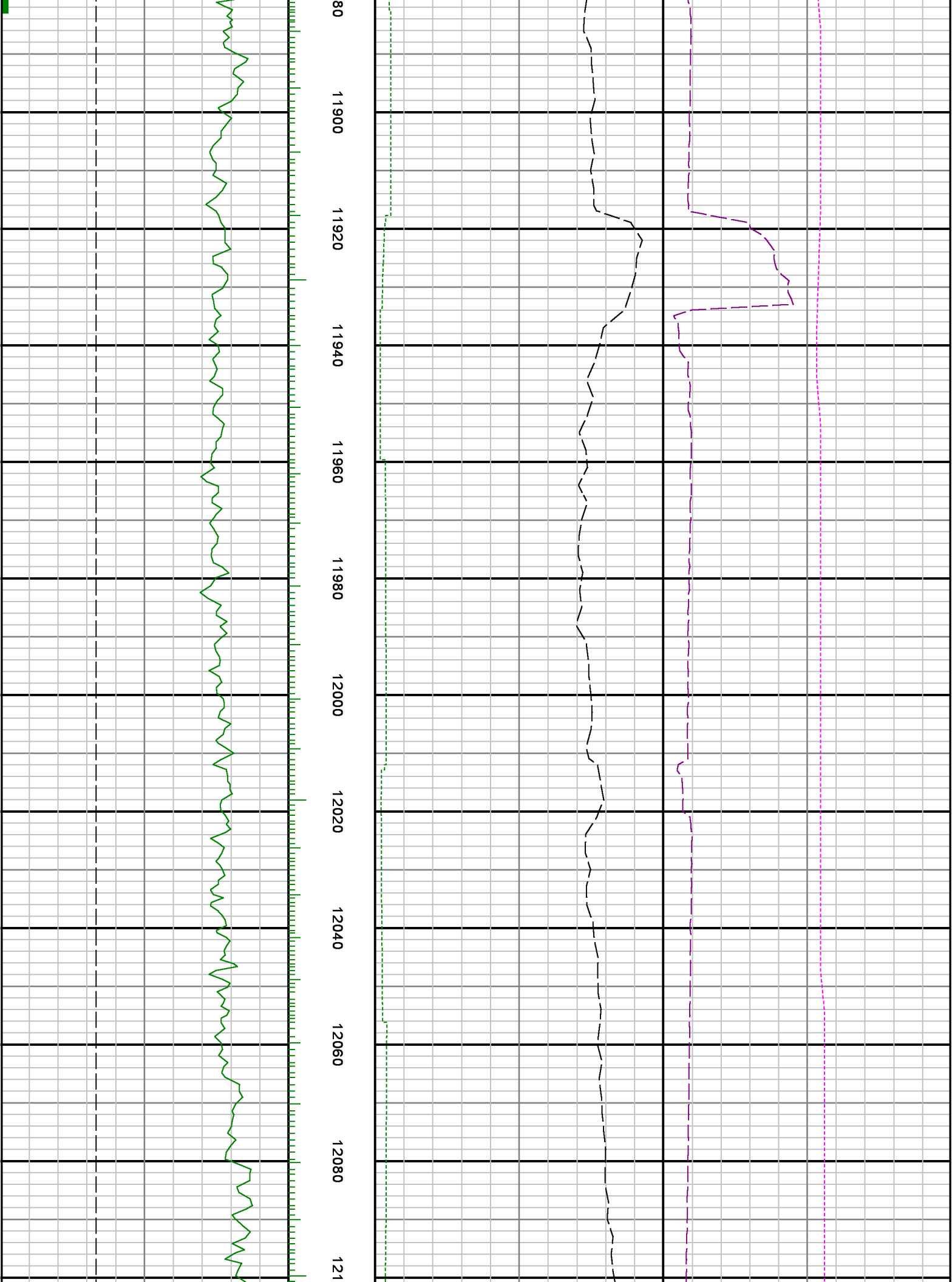


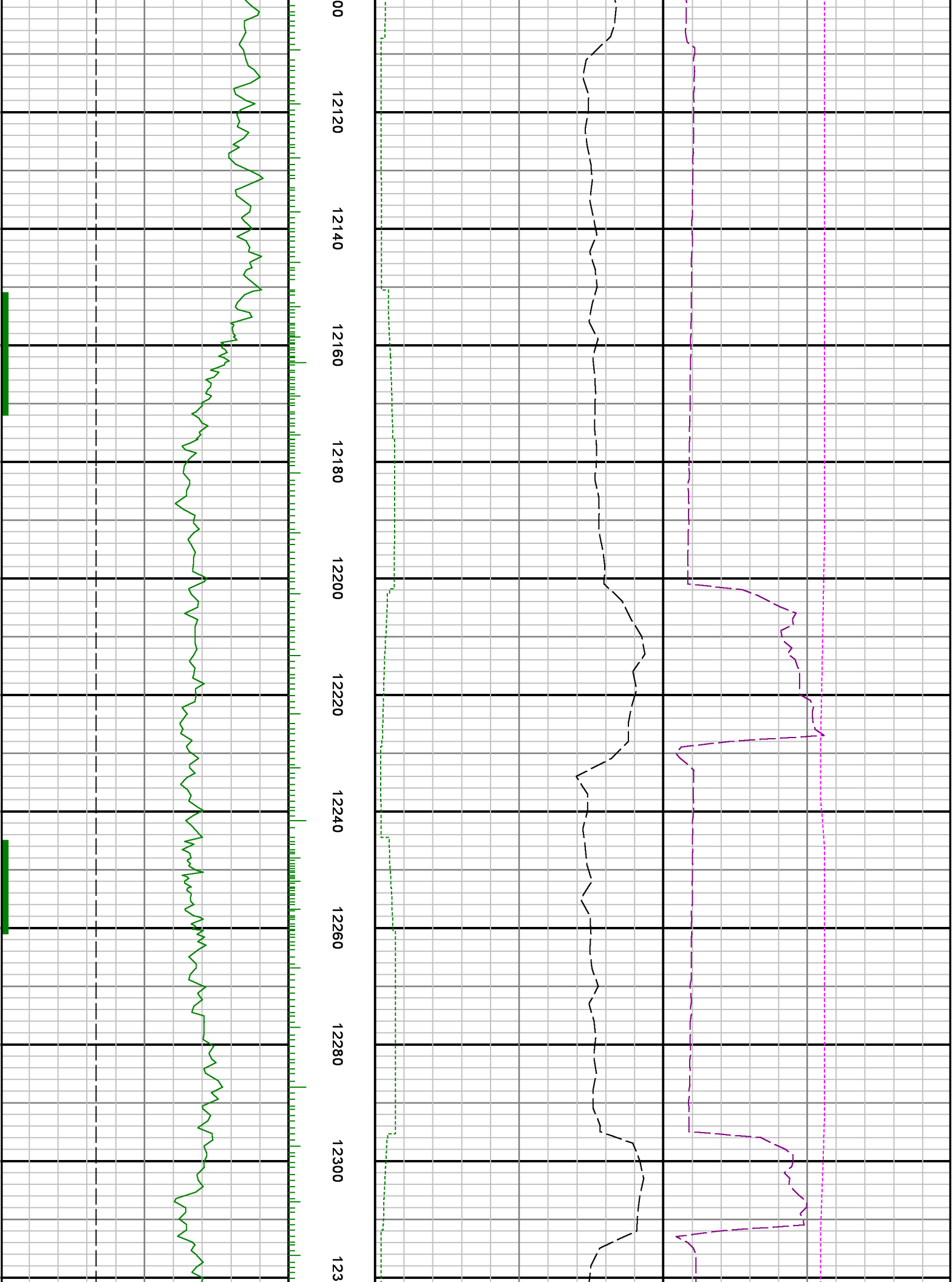


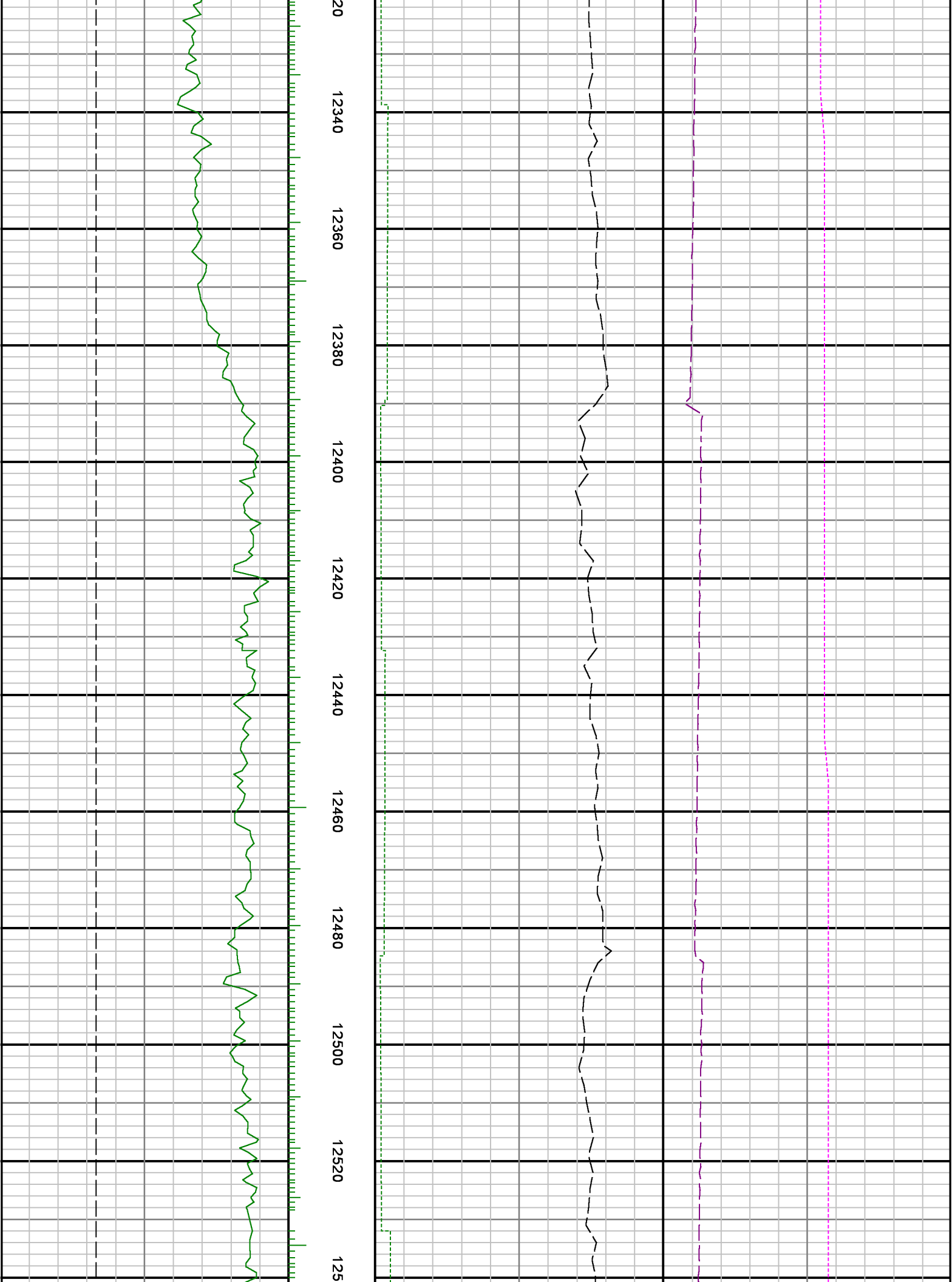


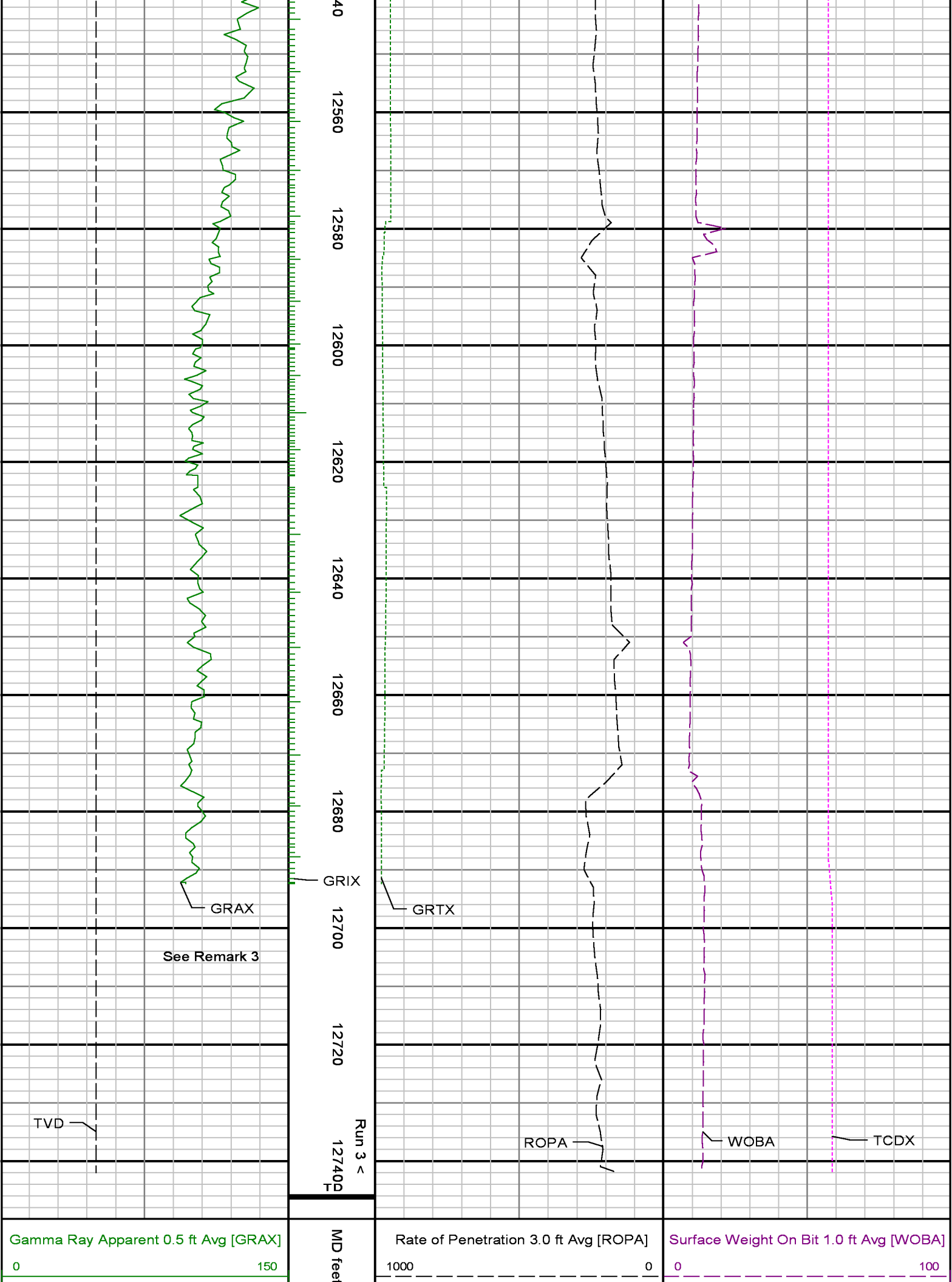












<div>API</div> <div>True Vertical Depth [TVD]</div> <div>80006000</div> <div>ft</div>	<div>1:240</div>	<div>ft/hr</div> <div>Gamma Ray Time Since Drilled [GRTX]</div> <div>0600</div> <div>min</div>	<div>kbf</div> <div>Downhole Temperature [TCDX]</div> <div>100300</div> <div>degF</div>
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