



Memory and Realtime Log

Natural Formation Evaluation
Multiple Propagation Resistivity
Gamma Ray

Scale: 1:240

Company: Anadarko

Well: UNDERHILL 27C-17HZ

Measured Depth

Field: WELD COUNTY (KERR MCGEE)

Region: Rocky Mountains Country: United States

Status: Surface Location:

Field Print

Latitude: 40° 2' 46.298" N

Longitude: 104° 54' 30.967" W

API Number: 051233690200

SEC: 17 TWN: 1N RGE: 67W

Other Services:

Directional

Permanent Datum (P.D.): Mean Sea Level Elevation: 5103.00 ft.

Elevations: N/A

Log Measured From: Rig Floor 16.00 ft. Above P.D.

KB: 5119.00 ft.

Depth Reference: Driller's Depth

DF: 5103.00 ft.

GL: 5103.00 ft.

Interval Logged

Dates

Magnetic Field Reference

Top: 7130 ft. Date From: 26/Jul/2013 Dip Angle: 66.50° Azi Reference North: True

Bottom: 12321 ft. Date To: 10/Aug/2013 Total Mag to Reference

Spud Date: 24/Jul/2013 Field Strength: 52930.0 nT North Correction: 8.51°

Borehole Record

Casing Record

Hole Size	From	To	Size	Weight	From	To
8.750 in.	926 ft.	8170 ft.	9.625 in.	36.00 lb/ft	Surface	916 ft.
6.125 in.	8170 ft.	12362 ft.	7.000 in.	26.00 lb/ft	Surface	8160 ft.

Mud Record

Deviation Record

Type	From	To	Hole Size	Interval	Inc / Az (Start)	Inc / Az (End)
Water Based	Surface	7555 ft.	8.750 in.	85 ft.	1.5° / 23.8°	2.1° / 353.5°
LSND	7555 ft.	12362 ft.	8.750 in.	43 ft.	2.1° / 353.5°	85.2° / 2.4°
			6.125 in.	85 ft.	85.2° / 2.4°	89.2° / 356.4°
					/	/
					/	/
					/	/
					/	/
					/	/
					/	/

Acquisition System Software Version Other

Advantage 2.20U4 Rpt: / Contractor: Xtreme 24 / Xtreme Coil Drilling

PATS 6.4.1.34 Job No: 5589925 / D & E

District: / Unit: RMD

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Log Run Summary

LWD Run No.	BHA Run No.	Bit Run No.	Bit Size (in.)	Bit Type	Bit Gauge Length (in.)	Assembly Type	Logged Interval		Bit Depth Interval		Date / Time				Circ. Time (hrs.)
							Top	Bottom	From	To	Start		End		
							(ft.)	(ft.)	(ft.)	(ft.)					
1	1	1	8.750	PDC	2.000	Steerable	7130	7559	943	7615	26/Jul/2013 12:30	26/Jul/2013 18:20	27.4		
2	2	2	8.750	PDC	2.000	Steerable	7559	8123	7615	8170	27/Jul/2013 06:20	27/Jul/2014 16:40	10.9		
3	3	3	6.125	PDC	6.000	Steerable	8123	12321	8170	12362	09/Aug/2013 06:05	10/Aug/2013 11:50	28.9		

Crew

Name	Arrive	Depart	Name	Arrive	Depart	Name	Arrive	Depart
	Wellsite	Wellsite		Wellsite	Wellsite		Wellsite	Wellsite
Osagie Otoikhine	24/Jul/2013	28/Jul/2013	Marcus Boucher	24/Jul/2013	28/Jul/2013	Austin Small	07/Aug/2013	11/Aug/2013
Osagie Otoikhine	07/Aug/2013	11/Aug/2013						

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+ (%)
25/Jul/2013	18:00	1	3581	Drill Water	8.6	2	8.0	N/A	0.0/97.8	Active Pit	1300	N/A
26/Jul/2013	06:00	1	5978	Drill Water	8.5	2	8.2	N/A	0.0/98.5	Active Pit	1300	N/A
26/Jul/2013	18:00	1	7555	LSND	10.0	14	8.9	N/A	0.4/91.0	Active Pit	1600	N/A
27/Jul/2013	06:00	2	8030	LSND	10.3	13	9.0	N/A	1.2/89.0	Active Pit	1600	N/A
09/Aug/2013	06:00	3	8170	LSND	9.8	6	8.6	N/A	0.0/92..3	Active Pit	1400	N/A
09/Aug/2013	18:00	3	9901	LSND	9.7	15	9.0	N/A	0.0/92.6	Active Pit	1200	N/A

Mud Resistivity Record

				Surface				Downhole			
Date / Time		LWD Run No.	Measured Depth (ft.)	Surface Temp (deg F)	Rm (ohm.m)	Rmf (ohm.m)	Rmc (ohm.m)	BHCT (deg F)	Rm @ BHCT (ohm.m)	Rmf @ BHCT (ohm.m)	Rmc @ BHCT (ohm.m)
09/Aug/2013	05:14	3	8170	73	1.35	1.35	1.35	205	0.50	0.50	0.50
09/Aug/2013	08:43	3	8535	72	1.60	1.60	1.60	188	0.63	0.63	0.63
09/Aug/2013	13:52	3	9296	70	1.64	1.64	1.64	198	0.60	0.60	0.60
09/Aug/2013	20:23	3	10319	71	1.66	1.66	1.66	212	0.57	0.57	0.57
10/Aug/2013	04:15	3	11339	72	1.69	1.69	1.69	225	0.56	0.56	0.56

Mnemonics

Curve	Description	Units
ROPA	Rate of Penetration, 3.0 ft. Avg.	ft/hr
GRAX	Gamma Ray Apparent, 0.5 ft Avg.	API
GRAM	Gamma Ray Apparent, 0.5 ft. Avg.	API
GRIX	Gamma Ray Data Density	points
GRIM	Gamma Ray Data Density	points
RACLM	Resistivity (AT) (LS) 400kHz – Compensated Borehole Corrected	ohm.m
RACHM	Resistivity (AT) (LS) 2MHz – Compensated Borehole Corrected	ohm.m
RPCLM	Resistivity (PD) (LS) 400kHz – Compensated Borehole Corrected	ohm.m
RPCHM	Resistivity (PD) (LS) 2MHz – Compensated Borehole Corrected	ohm.m
CACLM	Conductivity (AT) (LS) 400kHz – Compensated Borehole Corrected	mho/m
RPTHM	Time Since Drilled [RPCHM]	mins
RPSHIM	Resistivity Slide Indicator	unitless

Equipment and Service Data

LWD Run No.	Tool	Serial Number	Measurement	Bit Offset (ft.)	Max O.D. (in.)	Min I.D. (in.)
1	DIR	11605175	Directional	57.51	6.750	3.850
1	SRIG	12521741	Gamma	54.13	6.750	3.850

2	DIR	11605175	Directional	54.13	6.750	3.850
2	SRIG	12521741	Gamma	50.75	6.750	3.850
3	CS	10392799	-	74.05	5.000	2.060
3	BCPM	10364042	Telemetry	63.14	5.000	2.060
3	STAB	11781606	-	59.93	5.625	2.060
3	OTK	10095221	Directional	55.41	4.843	2.569
3	OTK	10095221	Resistivity	49.44	4.843	2.569
3	OTK	10095221	Gamma	42.25	4.843	2.569
3	OTK	10095221	Pressure	44.88	4.843	2.569
3	CS	11712923	-	37.47	5.000	2.060

Service and Tool Mnemonics

Mnemonic	Name	Description
BCPM	BCPM	Mud pulse telemetry and downhole tool power module
DIR	Directional	Wellbore directional survey
OTK	OnTrak	Propagation resistivity, propagation conductivity, gamma ray, directional, annular pressure, system memory and VSS
SRIG	Inclination and Gamma	Probe based gamma ray and inclination module
STAB	Stabilizer	Stabilizer assembly
CS	Closure Sub	BHA power ring isolator allowing insertion of inert sub into electrically powered BHA

Comments

<p>(1) Baker Hughes INTEQ runs 1 and 2 utilized 6 3/4 NaviGamma services (Gamma Ray and Directional) behind a 8 3/4 inch bit and steerable assembly from 7130 feet to 8170 feet MD (7058 feet to 7783 feet TVD).</p> <p>(2) Baker Hughes INTEQ run 3 utilized 4 3/4 inch OnTrak services (Multiple Propagation Resistivity, Gamma Ray, and Directional) behind a 6 1/8 inch bit and steerable assembly from 8170 feet to 12362 feet MD (7783 feet to 7783 feet TVD).</p> <p>(3) A sliding indicator is shown on the right edge of track 2 as a heavy line. The indicator has been depth-shifted to the resistivity sensor offset to correspond with resistivity data acquired while sliding.</p>

Remarks

Number	Measured Depth (ft.)	Hole Section (in.)	LWD Run No.	Remark
1	7130	8.750	1	The interval from surface to 7130 feet MD (7058 feet TVD) was not logged since logging services began at the kick off point.
2	7615	8.750	2	The interval from 7559 feet to 7615 feet MD (7475 feet to 7524 feet TVD) was logged up 12 hours after being drilled due to trip out of the hole to pick up new curve motor to finish building the curve.
3	8170	8.750	3	The interval from 8123 feet to 8170 feet MD (7780 feet to 7783 feet TVD) was logged up to 12 days and 13 hours after being drilled due to trip out of the hole for casing and cementing operations and rig skid to drill the next well before drilling lateral in batch drilling operations.
4	10500	6.125	3	The interval from 10502 feet to 10530 feet MD (7779 feet to 7779 feet TVD) has no data present due to the 3rd party depth tracking being down and proceeding to drill ahead with no relog against request.
5	12321	6.125	3	The interval from 12321 feet to 12362 feet MD (7783 feet to 7783 feet TVD) was not logged due to to bit sensor offset at TD.

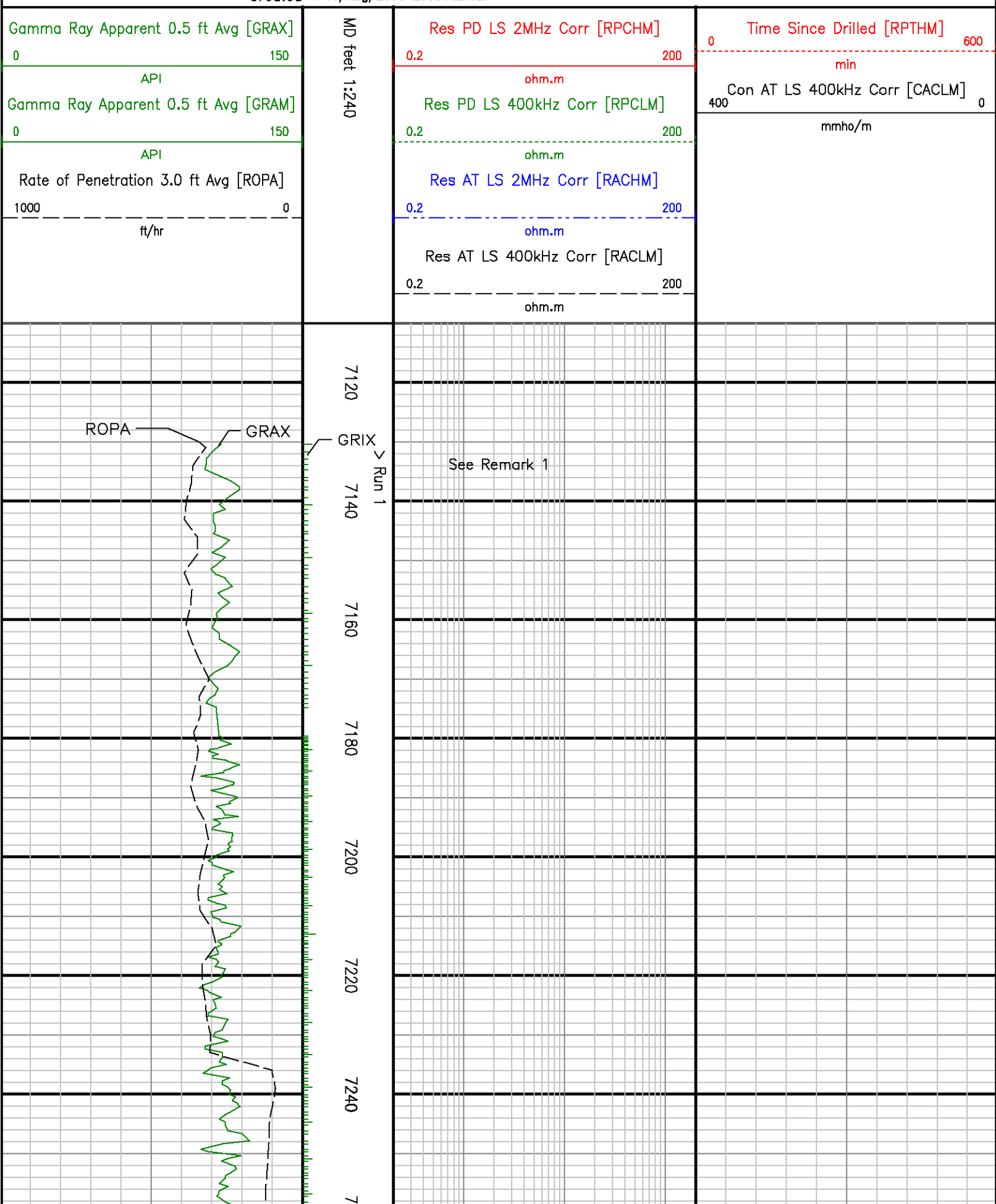


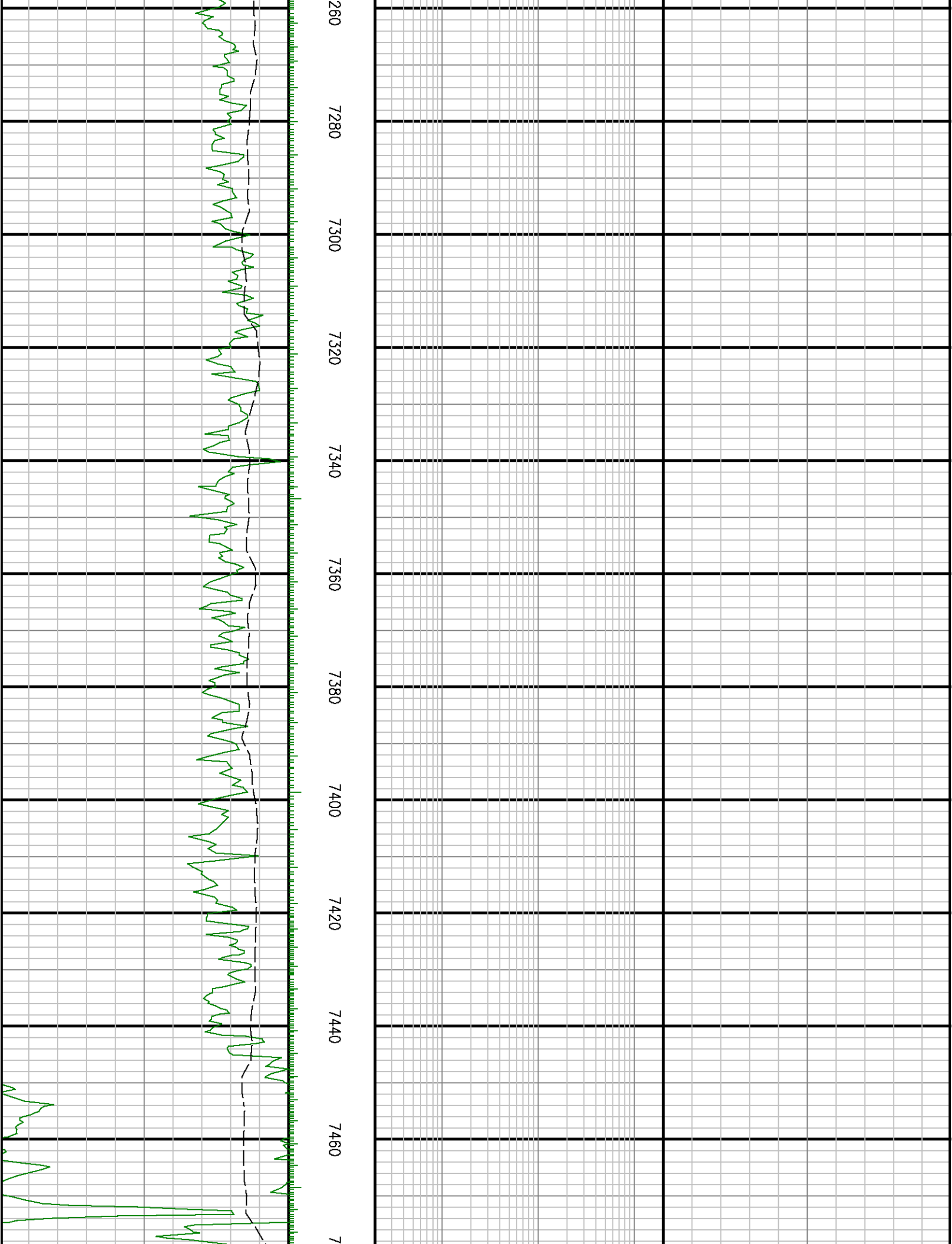
Company : Anadarko

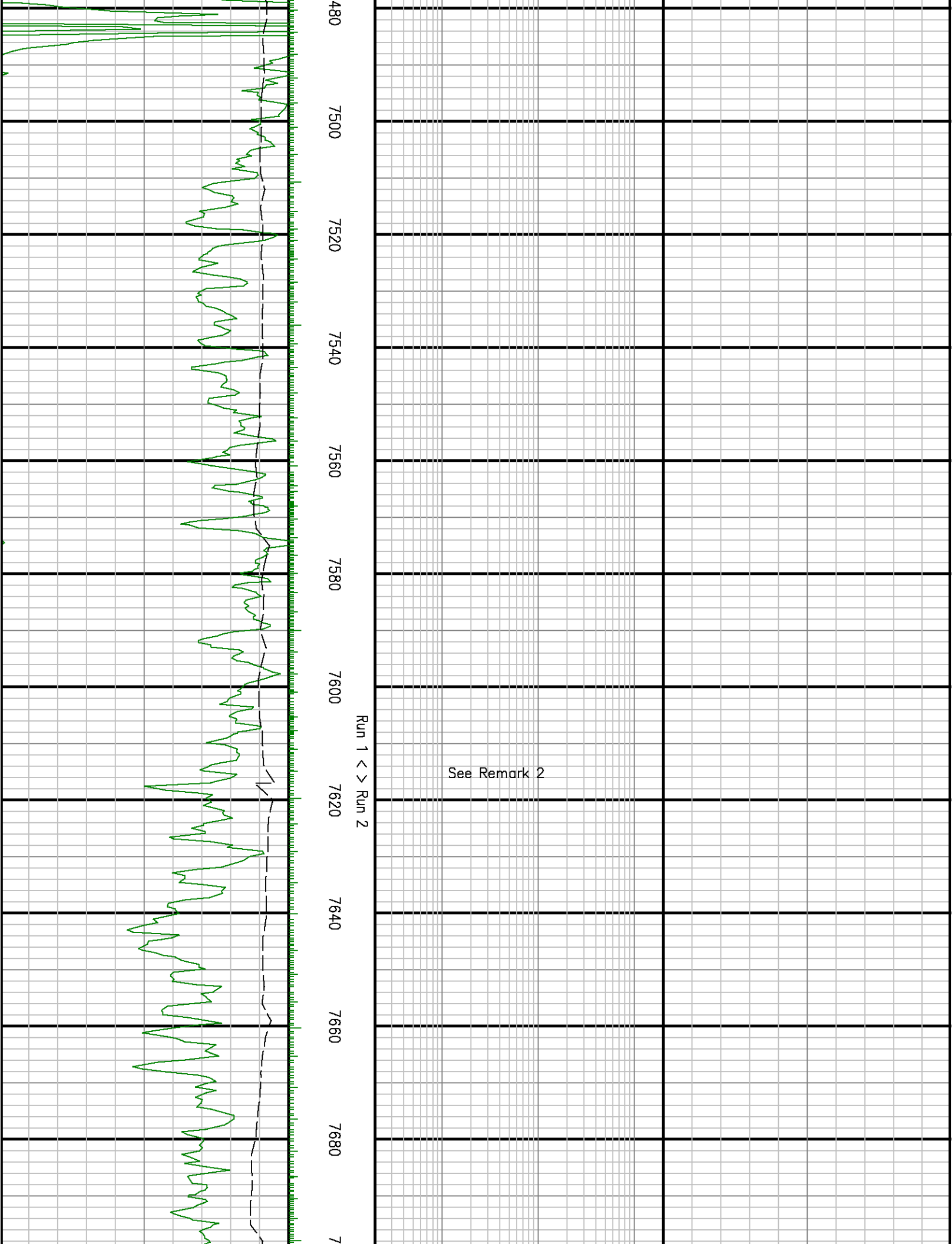
Well : UNDERHILL 27C-17HZ

Interval : 7110.00 - 12390.00 feet

Created : 11/Aug/2013 2:08:42 AM

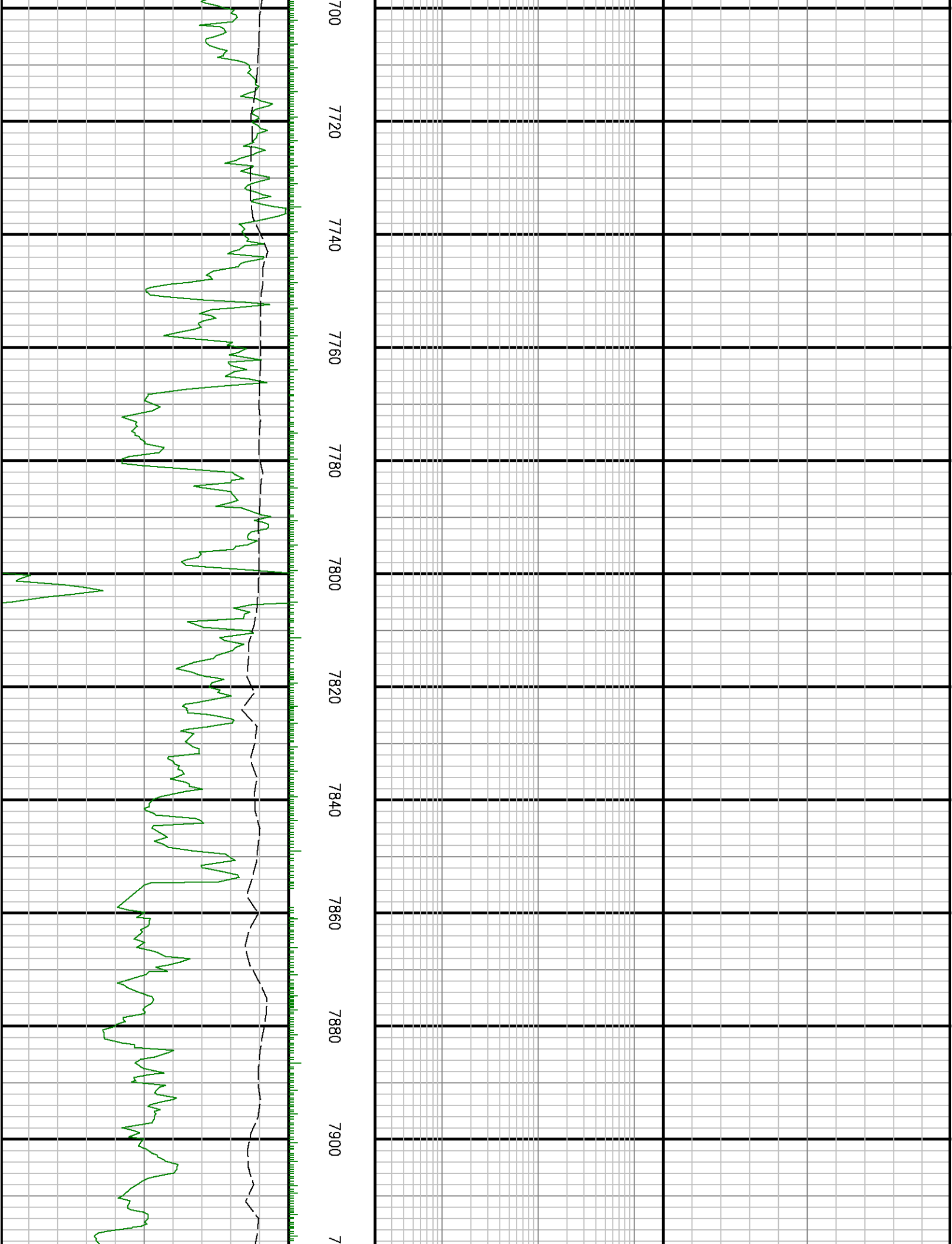


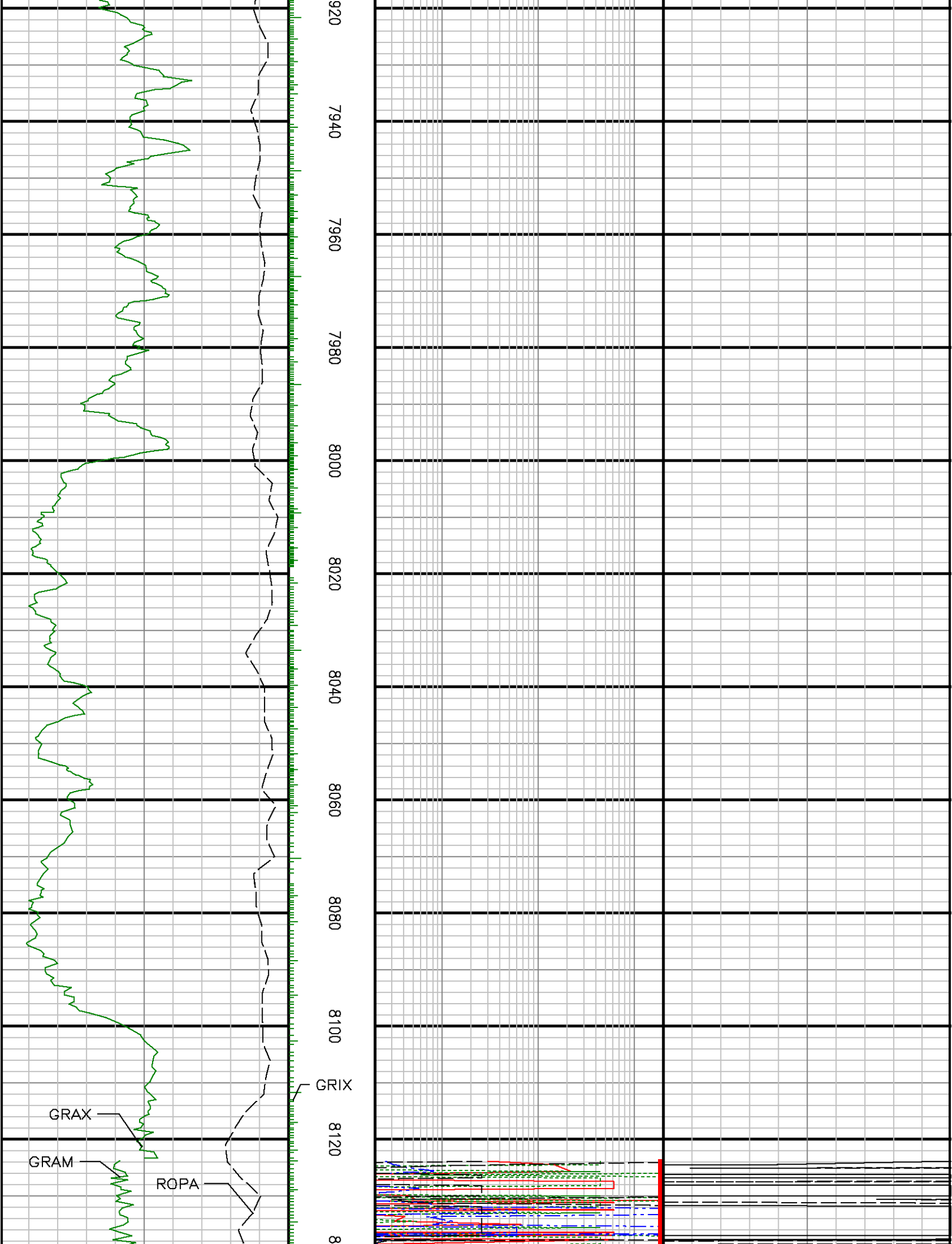


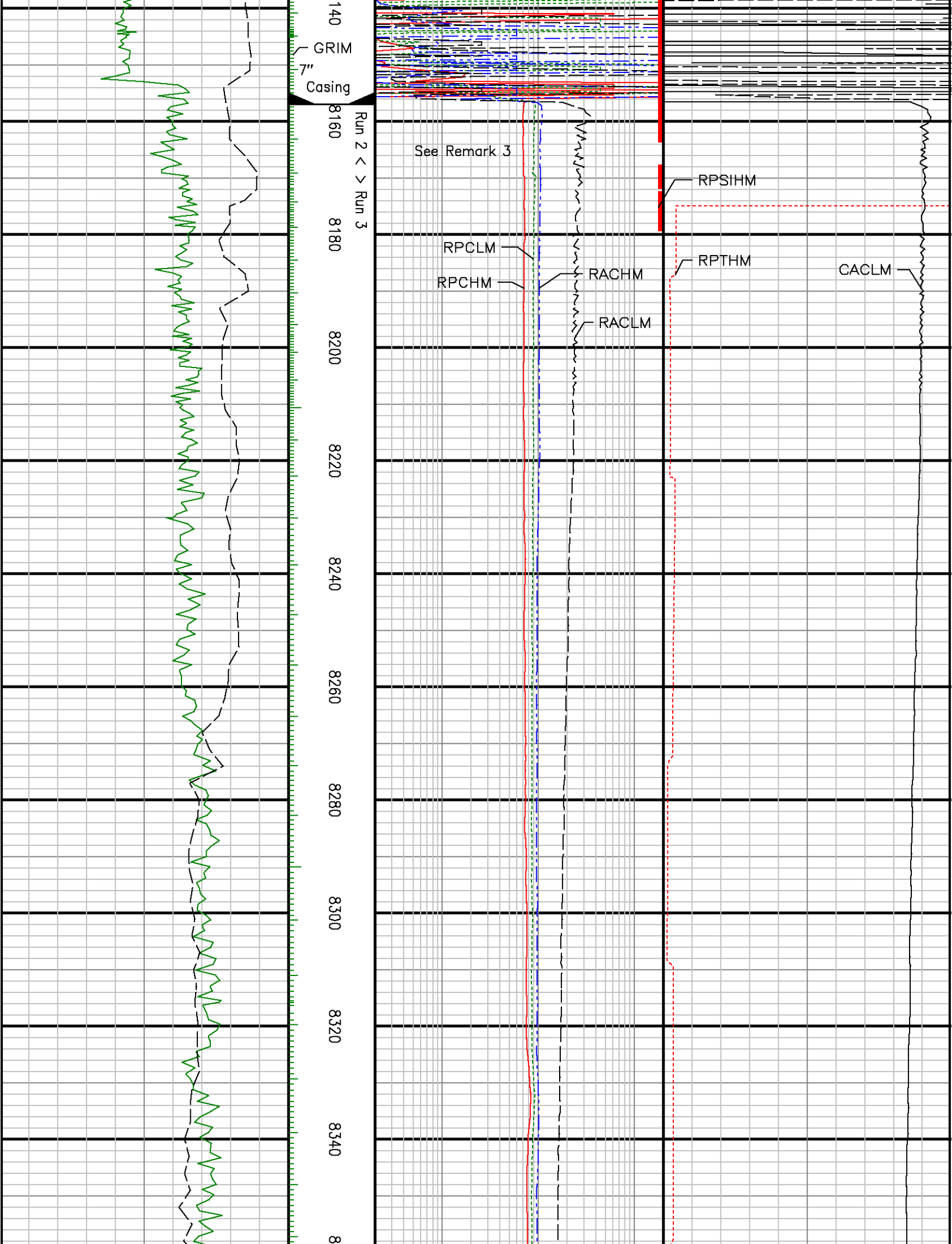


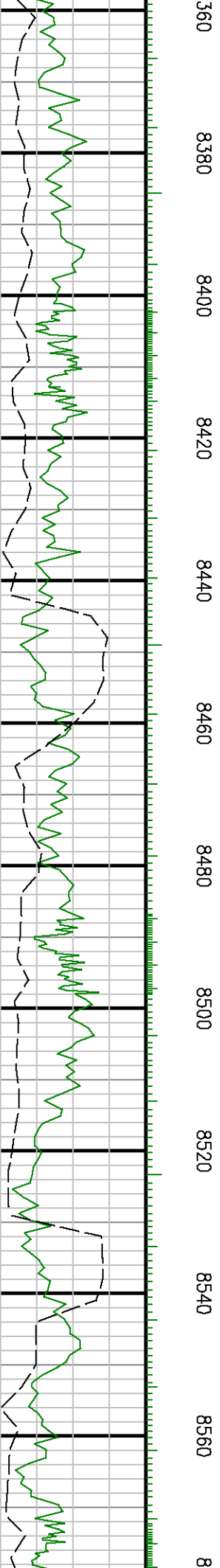
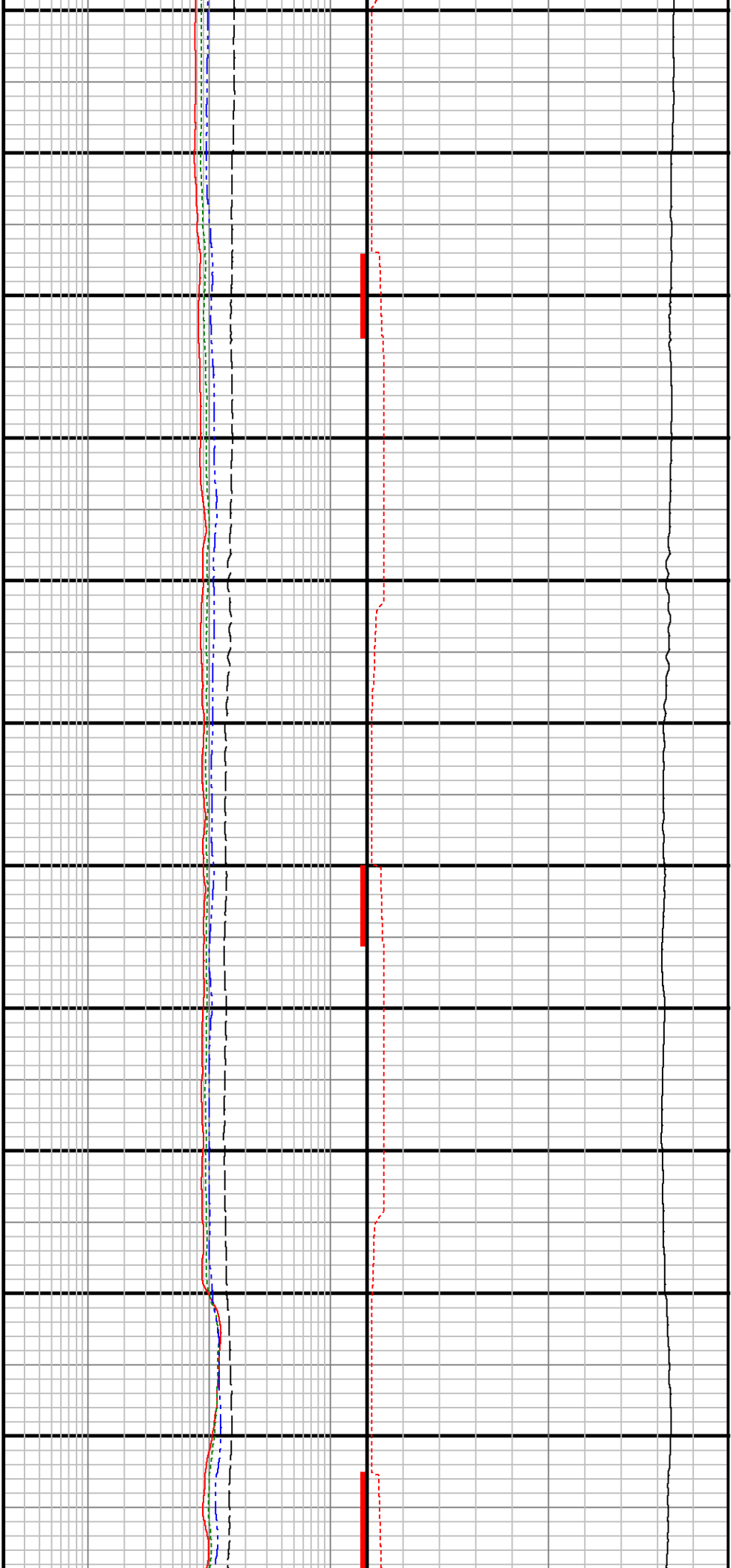
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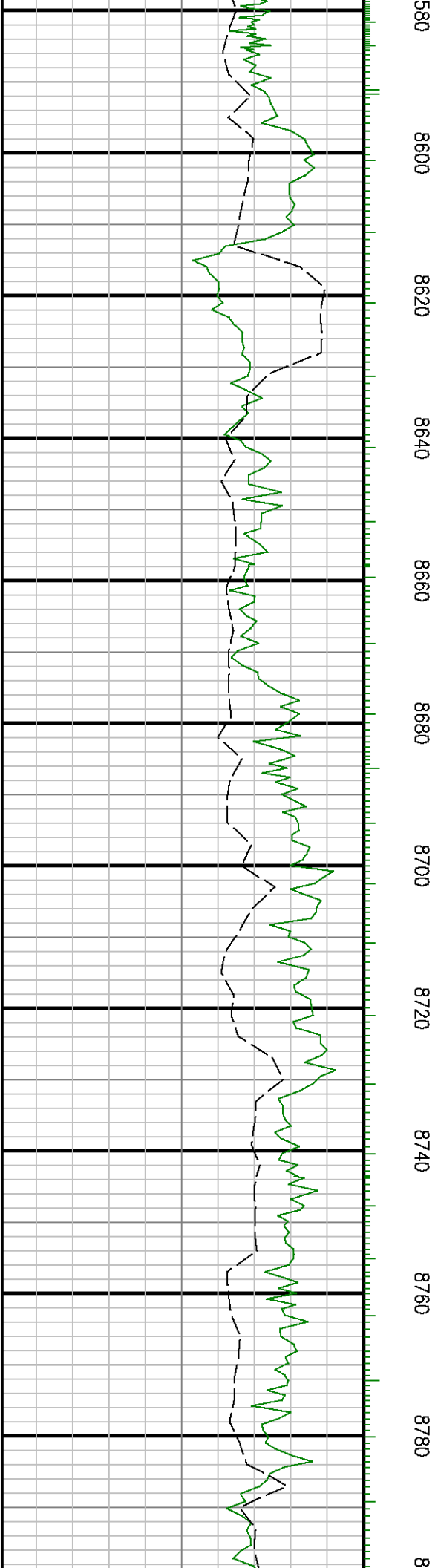
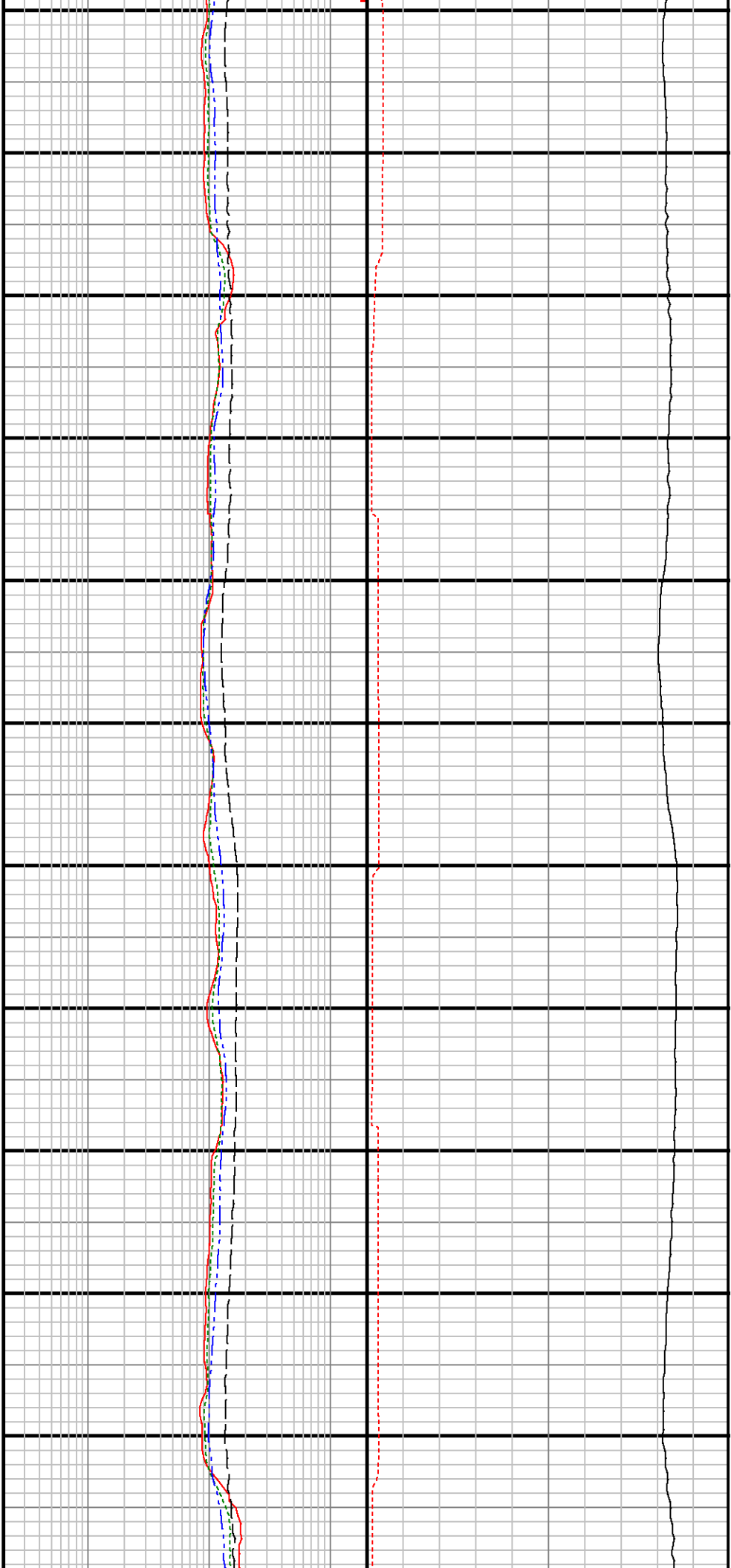
Run 1 < > Run 2

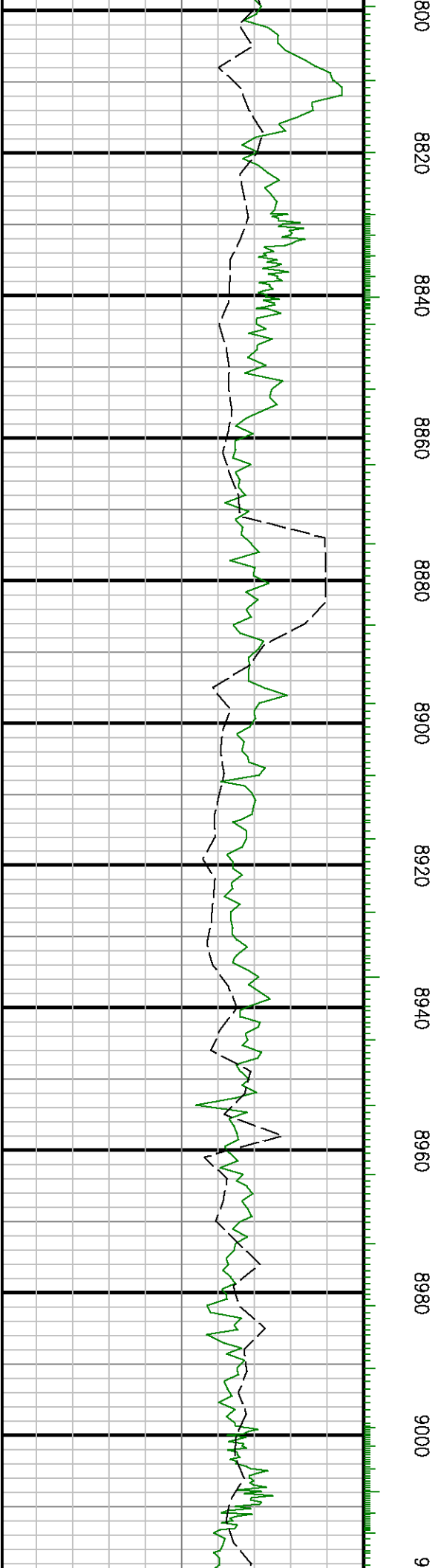
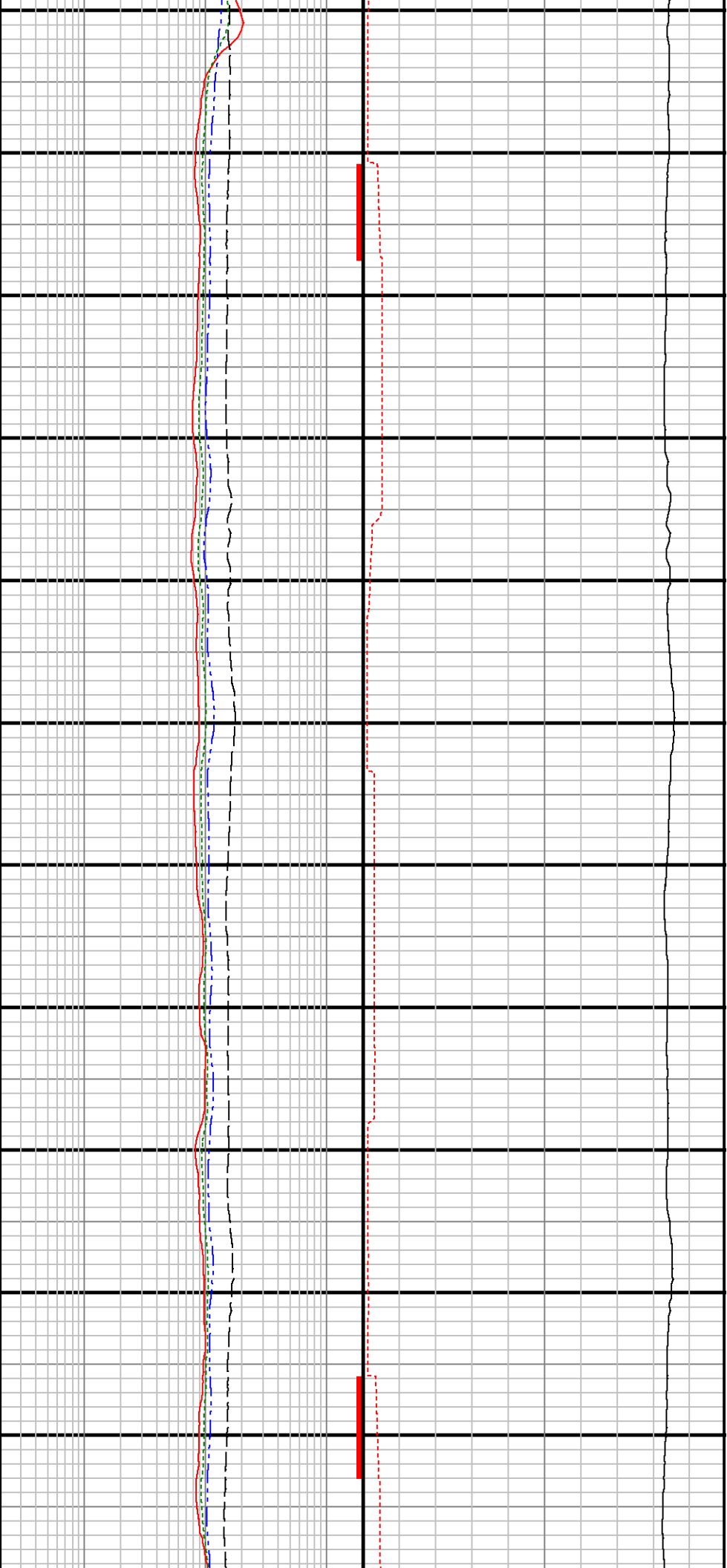


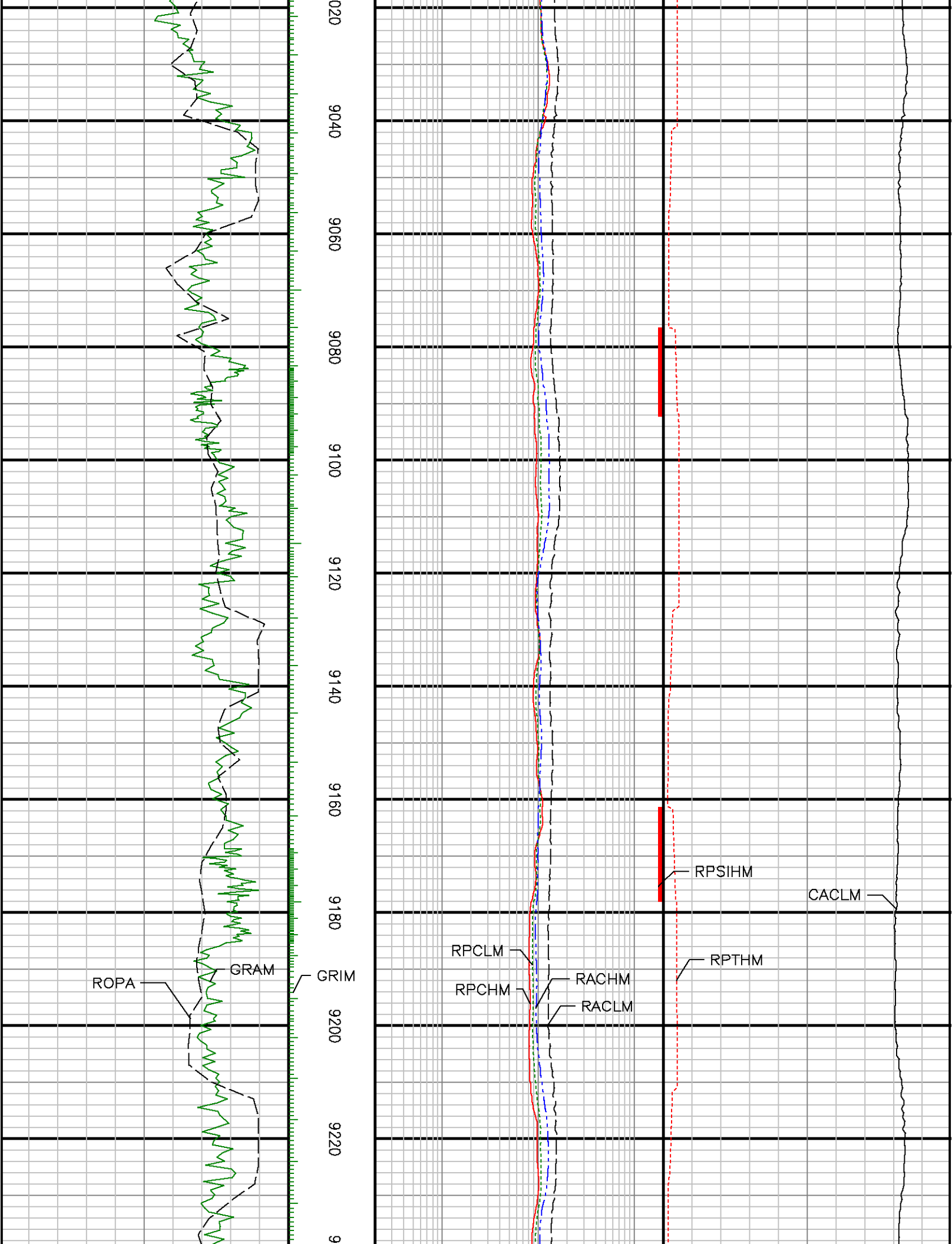


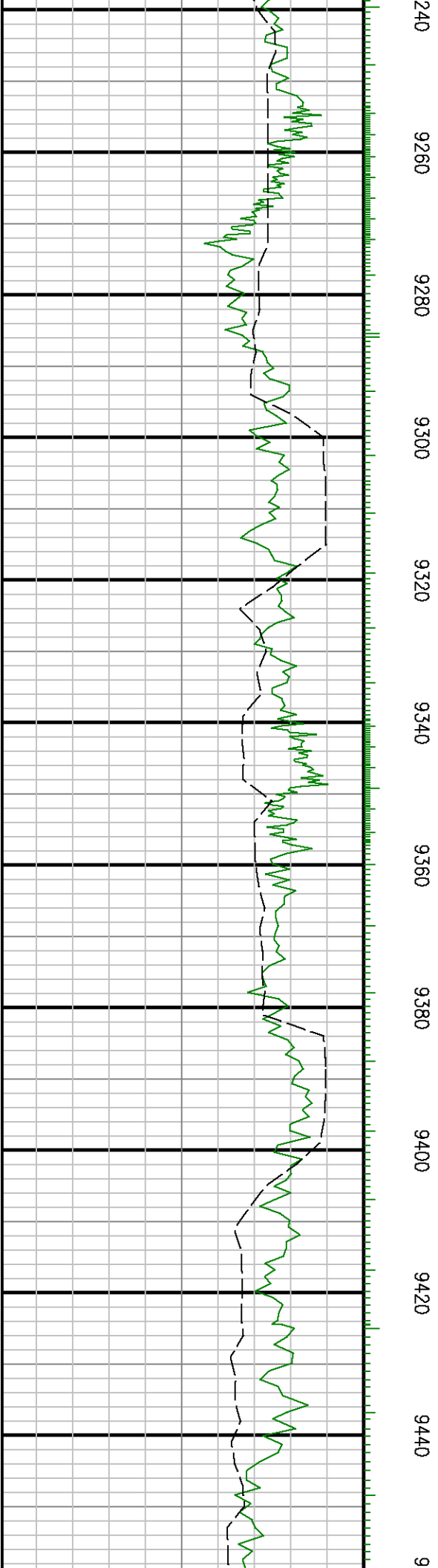
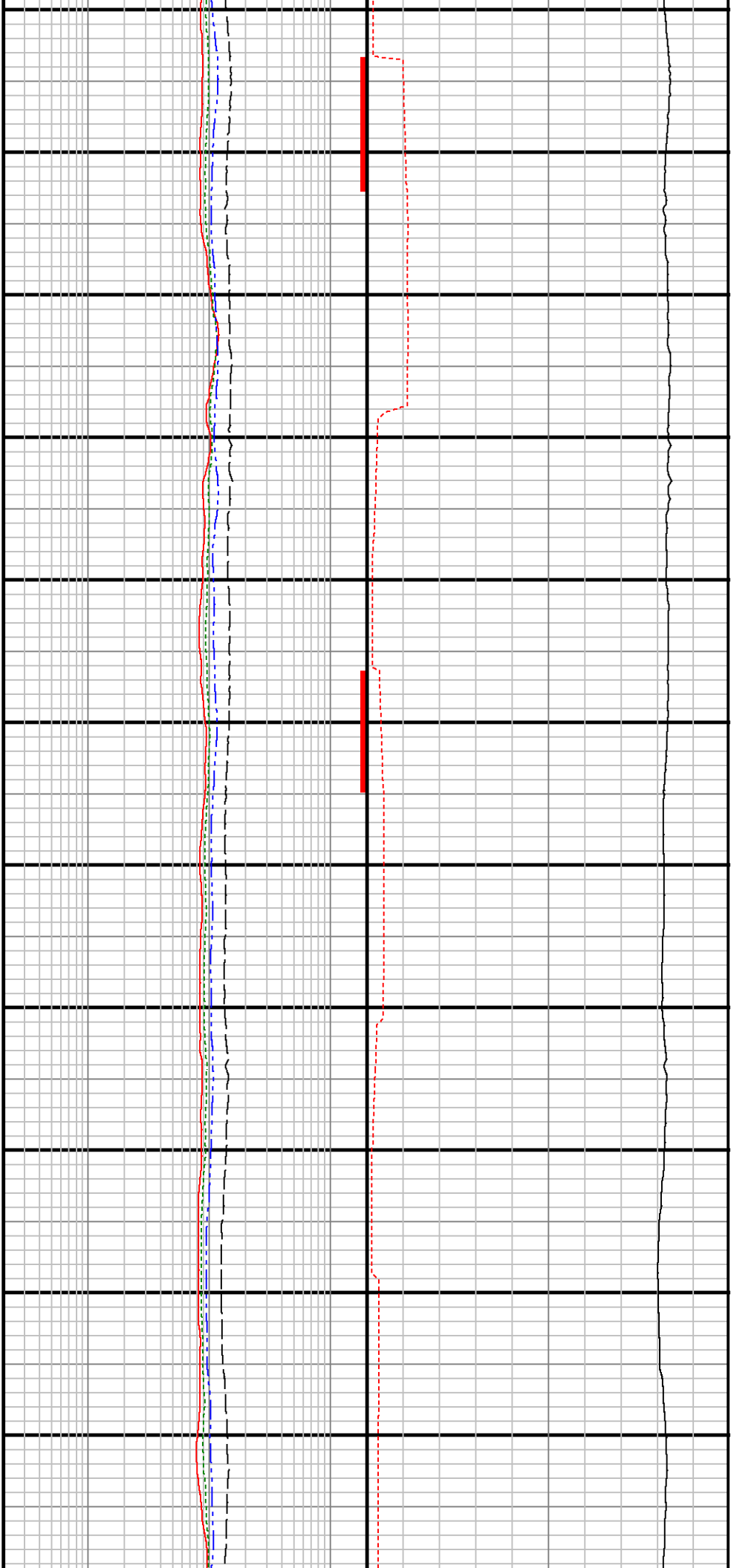


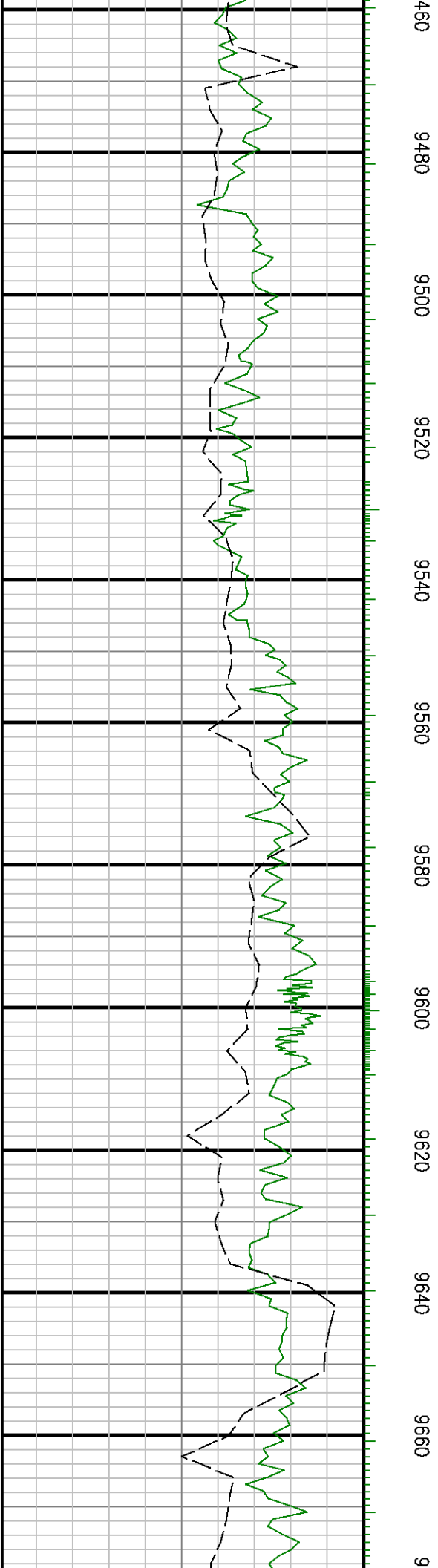
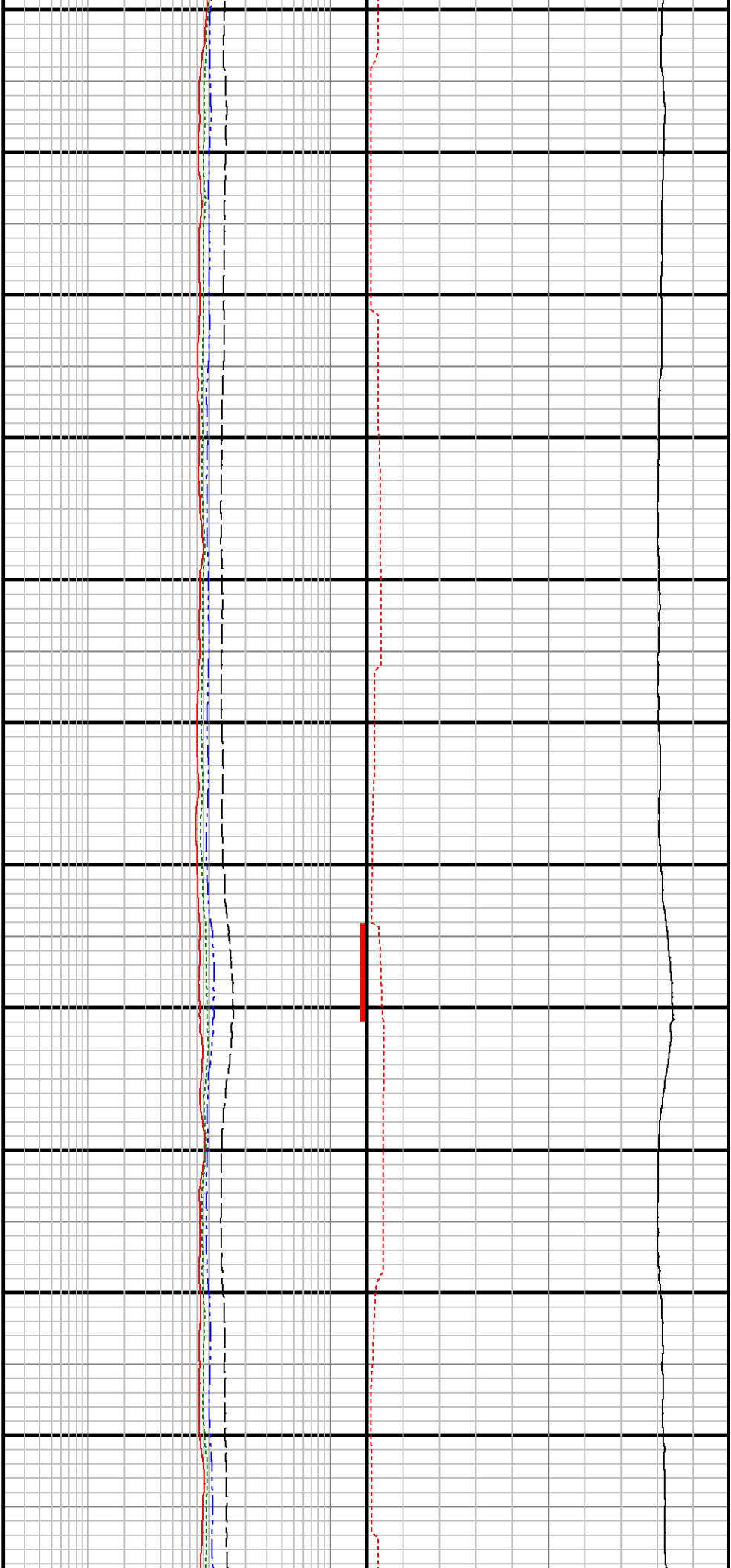


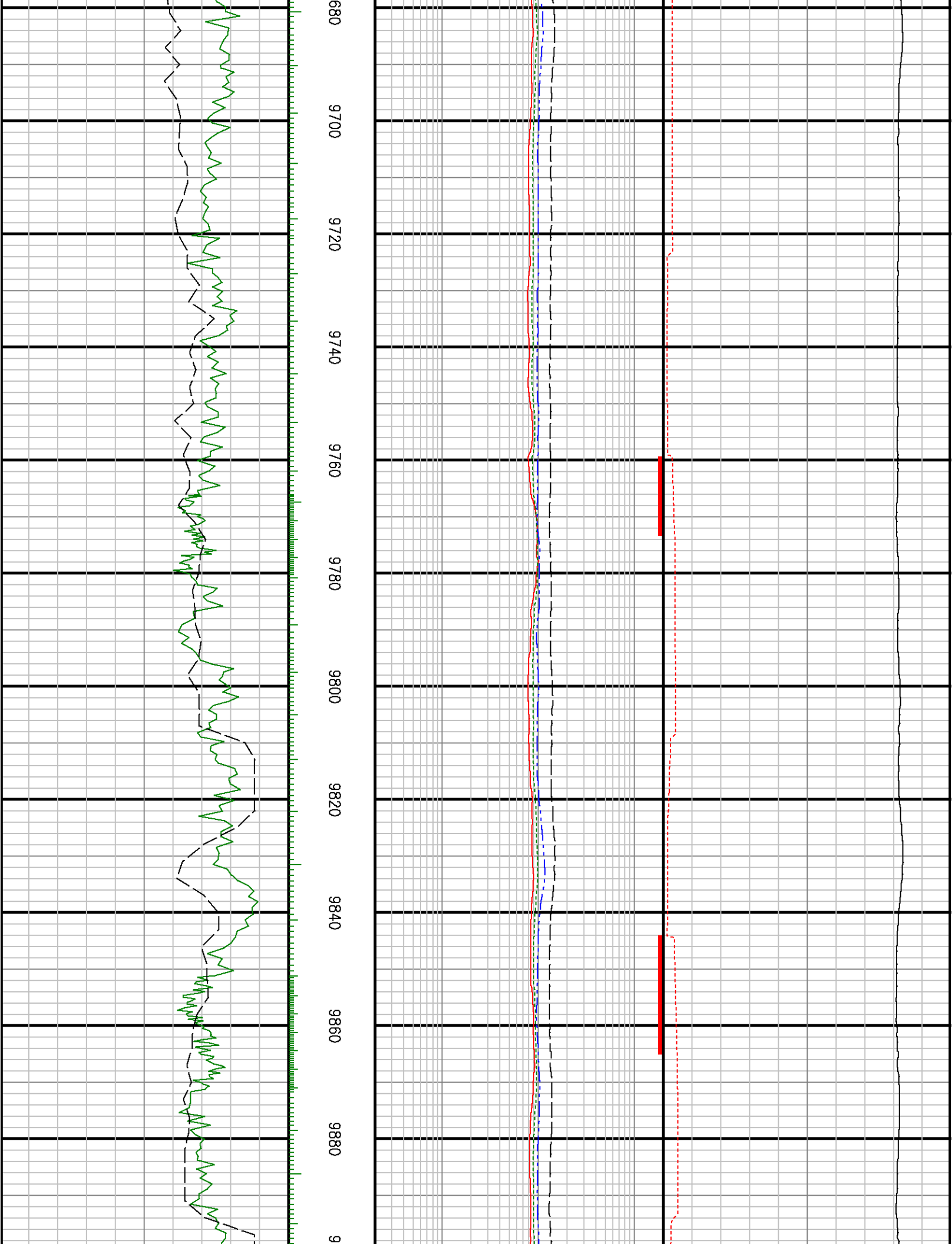


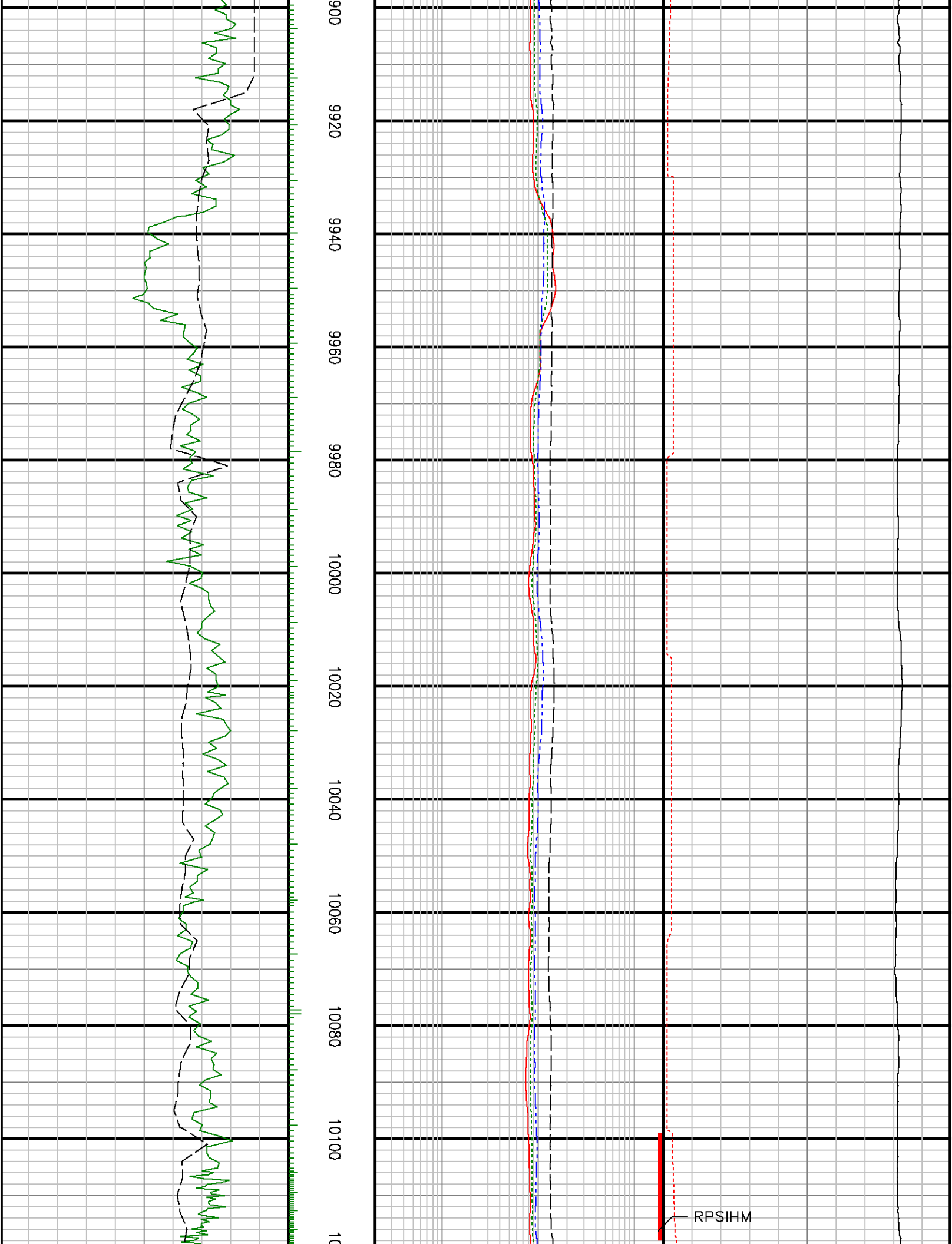


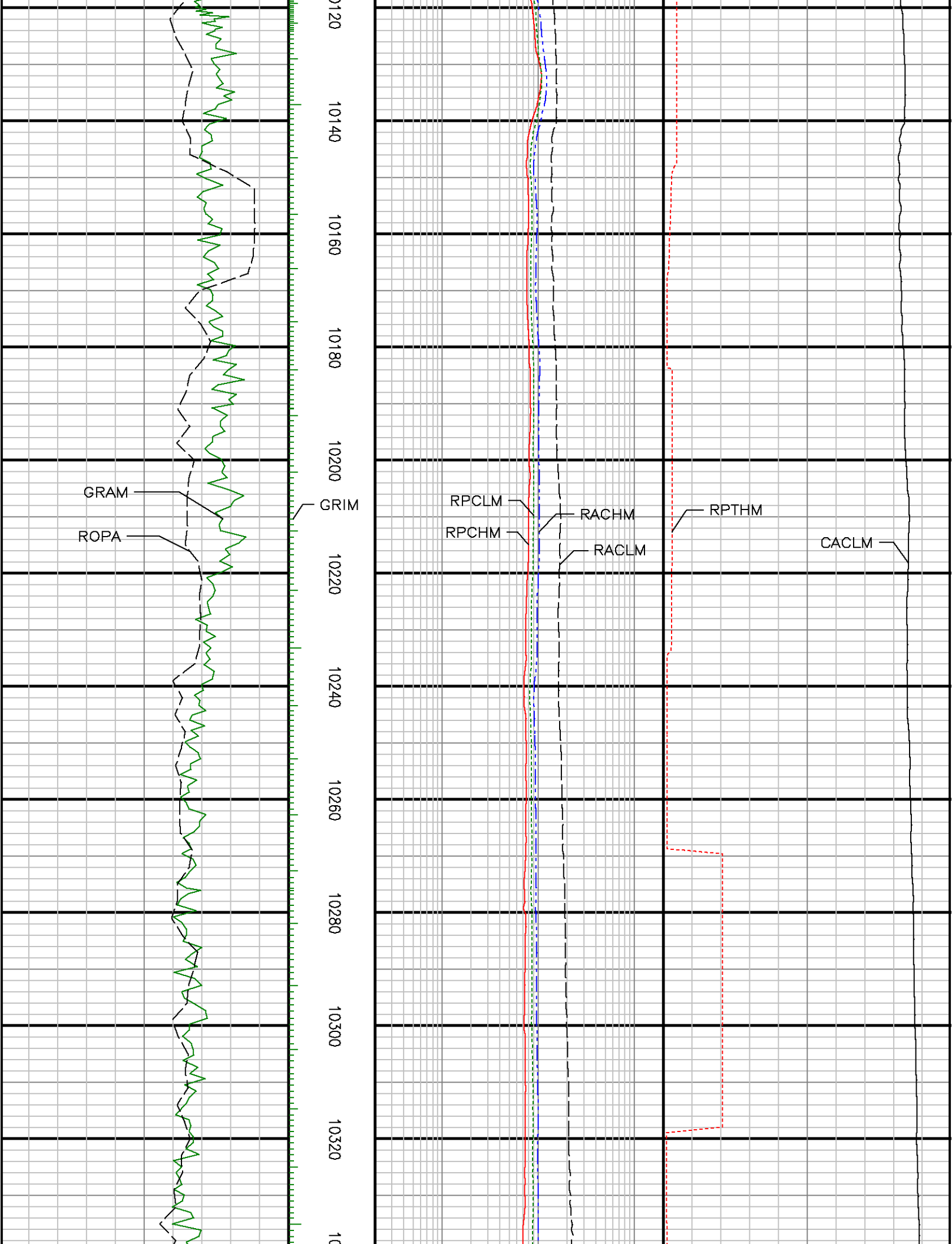


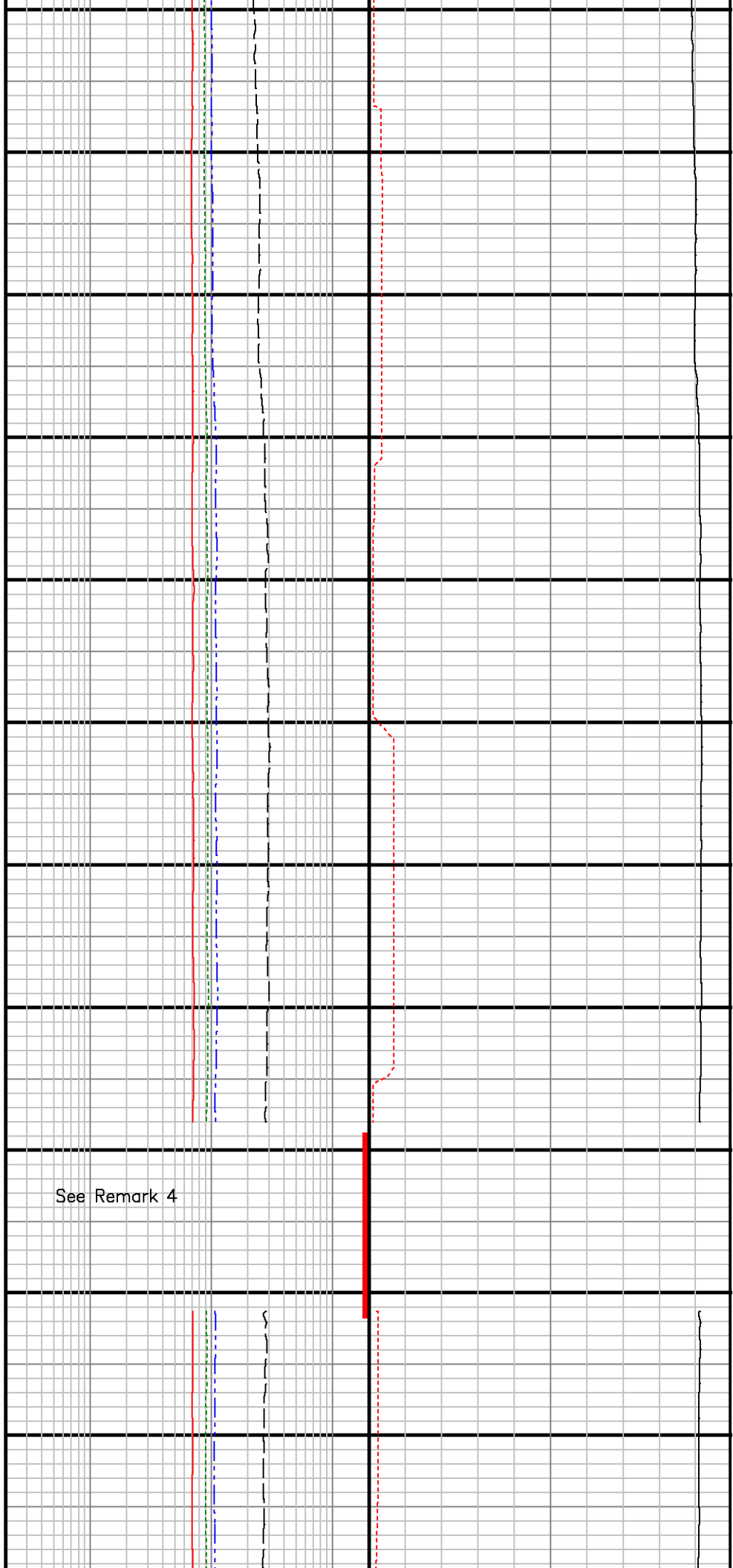












See Remark 4

