



**Natural Formation Evaluation  
Multiple Propagation Resistivity  
Gamma Ray**

**Redlime and Memory Log**

Scale: **1:240**  
**MEASURED DEPTH**

Company: **Anadarko Oil & Gas LP**  
Well: **Shurview 13N-3HZ**  
Field: **Weld County (Kerr McGee)**  
Region: **Continental US** Country: **United States**

Status: **FIELD PRINT**  
API Number: **05-123-36122**

Surface Location:  
Latitude: **40° 25' 36.448" N**  
Longitude: **104° 52' 22.116" W**  
Section: **3** TOWN: **5N** Range: **67E**

Other Services:  
Directional

Permanent Datum (P.D.): **Ground Level** Elevation: **17.00 ft.**  
Log Measured From: **Kelly Bushing** 4905.00 ft. Above P.D. KB: 4905.00 ft.  
Depth Reference: **Driller's Depth** DF: 0.00 ft.  
GL: 4888.00 ft.

**Interval Logged** **Dates** **Magnetic Field Reference**

Top: **6540.0 ft.** Date From: **04/Apr/13** Dip Angle: **66.97°** Azi Reference North: **True**  
Bottom: **11325.0 ft.** Date To: **12/Apr/13** Total Mag to Reference  
Spud Date: **02/Apr/13** Field Strength: **52848.9 nT** North Correction: **8.73°**

Borehole Record			Casing Record			
Hole Size	From	To	Size	Weight	From	To
13,500 in.	Surface	1317.0 ft.	9,600 in.	36.00 lb/ft	Surface	1307.0 ft.
8,500 in.	1317.0 ft.	7518.0 ft.	7,000 in.	26.00 lb/ft	Surface	7503.0 ft.
6,125 in.	7518.0 ft.	11325.0 ft.				

Mud Record			Deviation Record			
Type	From	To	Hole Size	Interval	Inc / Az (Start)	Inc / Az (End)
Water Based	Surface	1317.0 ft.	13,500 in.	Surface	0.0° / 0.0°	0.1° / 180.5°
Water Based	1317.0 ft.	7518.0 ft.	8,500 in.	Vertical	0.1° / 180.5°	0.9° / 294.2°
Water Based	7518.0 ft.	11325.0 ft.	8,500 in.	Curve	0.9° / 294.2°	80.8° / 268.8°
			6,125 in.	Lateral	80.8° / 268.8°	90.5° / 270.0°

Acquisition System		Software Version		Other	
Advantage	2.20U4	Rigi / Contractor:	Xtreme 8	/ Xtreme Coil Drilling	
PATS	6.4.1.34	Job No:	5325436	/	
		District / Unit:	Rocky Mountains	/	

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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 (m.)	Bottom (m.)	From (m.)	To (m.)	Start	End	
1	1	2	8.500	PDC	3.000	Steer Bent Sub	6480.0	6758.0	1317.0	6823.0	02/Apr/2013 19:30	05/Apr/2013 22:15	55.6
2	2	3	8.500	PDC	3.000	Steer Bent Sub	6758.0	7458.0	6823.0	7518.0	05/Apr/2013 20:36	07/Apr/2013 18:36	19.75
3	3	4	6.125	PDC	4.500	Steer Bent Sub	7458.0	11259.0	7518.0	11325.0	09/Apr/2013 23:30	12/Apr/2013 09:19	32.99

**Crew**

Name	Arrive	Depart	Name	Arrive	Depart	Name	Arrive	Depart
	Wellsite	Wellsite		Wellsite	Wellsite		Wellsite	Wellsite
Nicholas Roosen	01 Apr 2013	12 Apr 2013	Kevin Sheridan	01 Apr 2013	11 Apr 2013	Gregory Dore	11 Apr 2013	12 Apr 2013

**Mud Properties Record**

Date / Time	LWD Run No.	Measured Depth (m.)	Mud Type	Density (sg)	Viscosity (cp)	pH	Fluid Loss (cc)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
04/Apr/2013 22:30	2	6628.0	Water Based	9.5	35	9.0	0.0	0/94	Mud Pit	1700	0.0
10/Apr/2013 22:30	3	9890.0	Water Based	9.6	40	8.5	0.0	0/95	Mud Pit	1400	0.0

**Mud Resistivity Record**

Date / Time	LWD Run No.	Measured Depth (m.)	Surface Temp (deg C)	Surface			BHCT (deg C)	Downhole		
				Rm (ohm.m)	Rmf (ohm.m)	Rmc (ohm.m)		Rm @ BHCT (ohm.m)	Rmf @ BHCT (ohm.m)	Rmc @ BHCT (ohm.m)
10/Apr/2013 16:56	3	7600.0	77	1.00	N/A	N/A	172	0.46	N/A	N/A
11/Apr/2013 09:36	3	9976.0	69	1.08	N/A	N/A	204	0.38	N/A	N/A
11/Apr/2013 23:24	3	11325.0	71	1.04	N/A	N/A	206	0.37	N/A	N/A

**Mnemonics**

Curve	Description	Units
CACHM	Conductivity (AT) (LS) 2 MHZ - Compensated Borehole Corrected	mho/o
GRAX	Gamma Ray Apparent, 0.5 ft. Avg	API
GRIX	Gamma Ray Data Density	points
GRAM	Gamma Ray Apparent, 0.5 ft. Avg	API
GRIM	Gamma Ray Data Density	points
GRTX	Gamma Time Since Drilled	min
RACHM	Resistivity (AT) (LS) 2 MHZ - Compensated Borehole Corrected	ohm.m
RACLM	Resistivity (AT) (LS) 400 kHz - Compensated Borehole Corrected	ohm.m
RPCHM	Resistivity (PD) (LS) 2 MHZ - Compensated Borehole Corrected	ohm.m
RPCLM	Resistivity (PD) (LS) 400 kHz - Compensated Borehole Corrected	ohm.m
RPSIHM	Resistivity Slide Indicator	unitless
RPTHM	Time Since Drilled (RPCHM)	min
TCDM	Downhole Temperature	degF
TCDX	Downhole Temperature	degF
ROP_AVG	Rate of Penetration, 3.0 ft. Avg	ft/hr

**Equipment and Service Data**

LWD Run No.	Tool	Serial Number	Measurement	Bit Offset (m.)	Max O.D. (in.)	Min I.D. (in.)
1	DIR	12456790	Directional	64.33	6.750	0.000
1	SRIG	12595022	Gamma	59.29	6.750	0.000
2	DIR	10307183	Directional	60.01	6.750	0.000
2	SRIG	12679494	Gamma	56.63	6.750	0.000
3	CS	11812699	-	84.26	5.070	1.750
3	BCPM	12426121	Telemetry	73.25	5.070	1.750
3	STAB	11826085	-	70.06	5.325	1.750
3	OTK	12150047	Directional	65.56	5.700	1.750



ft/hr

Gamma Ray Apparent 0.5 ft Avg [GRAM]

0 150

API

ohm.m

Res AT LS 2MHz Corr [RACHM]

0.2 200

ohm.m

Res AT LS 400kHz Corr [RACLM]

0.2 200

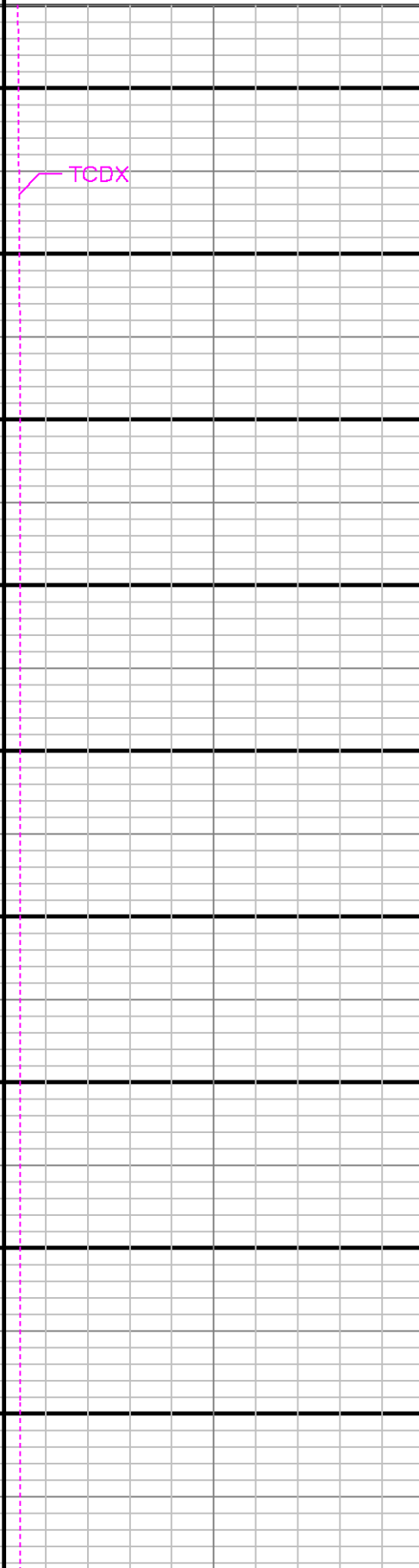
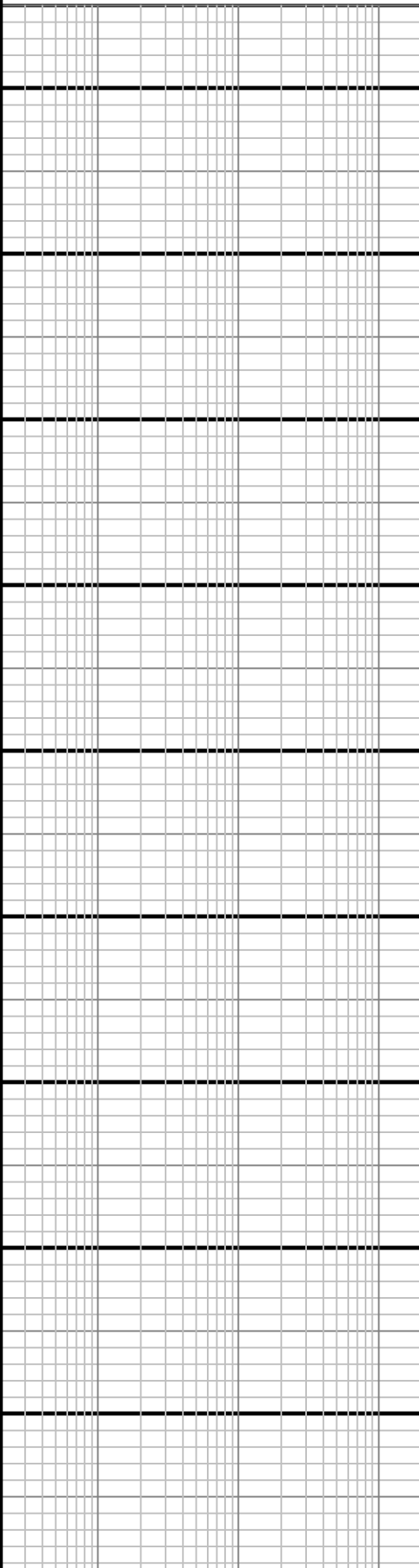
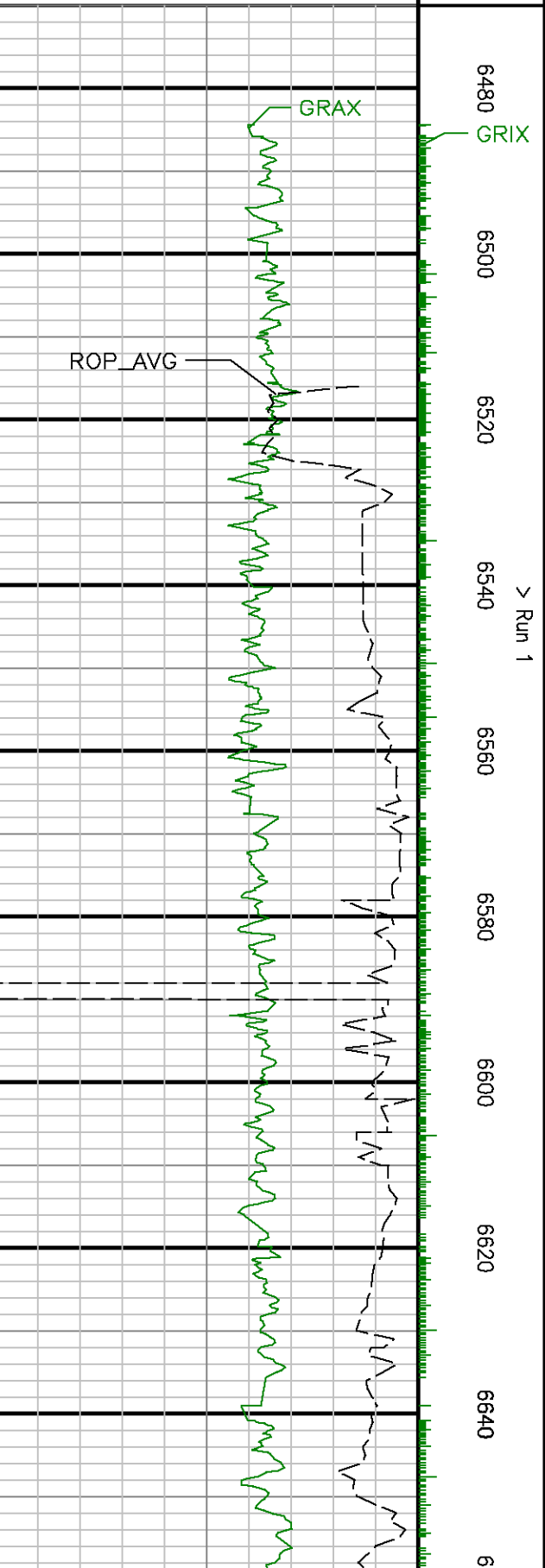
ohm.m

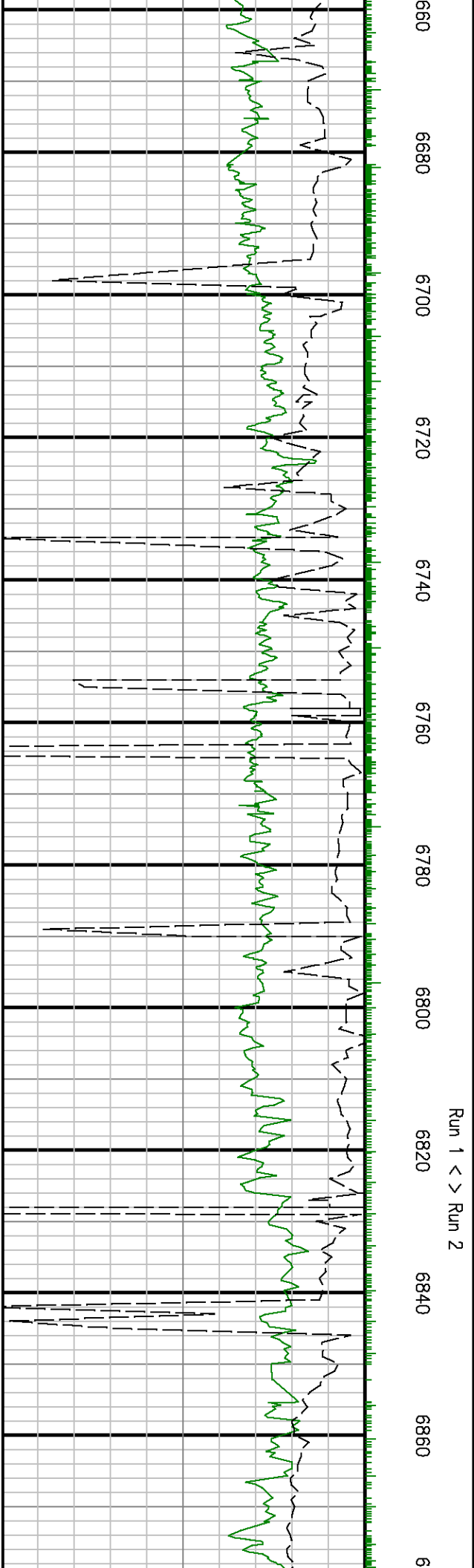
Con AT LS 2MHz Corr CACHM 40 0

mmho/m

Downhole Temperature [TCDM] 0 250

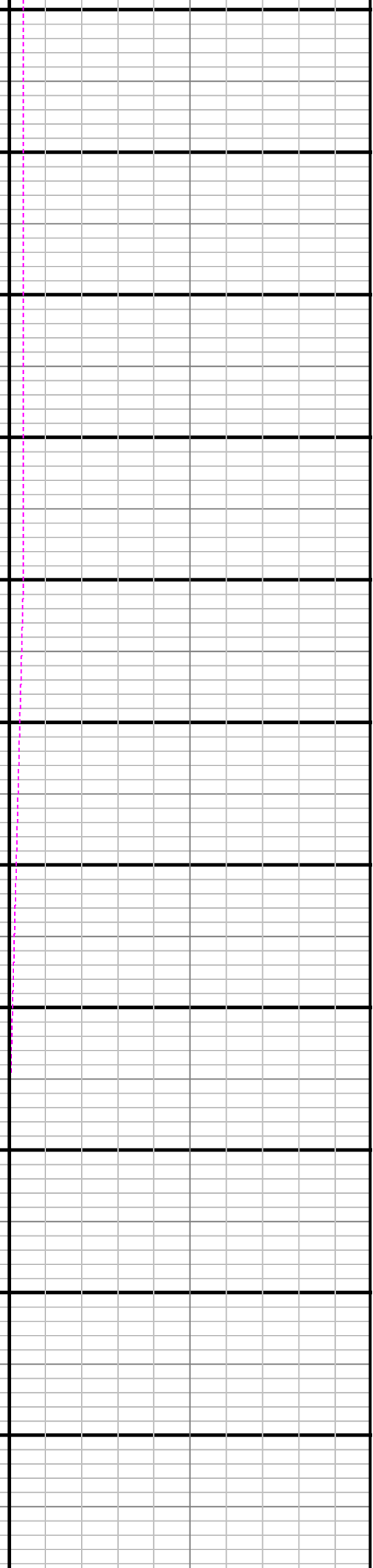
degF

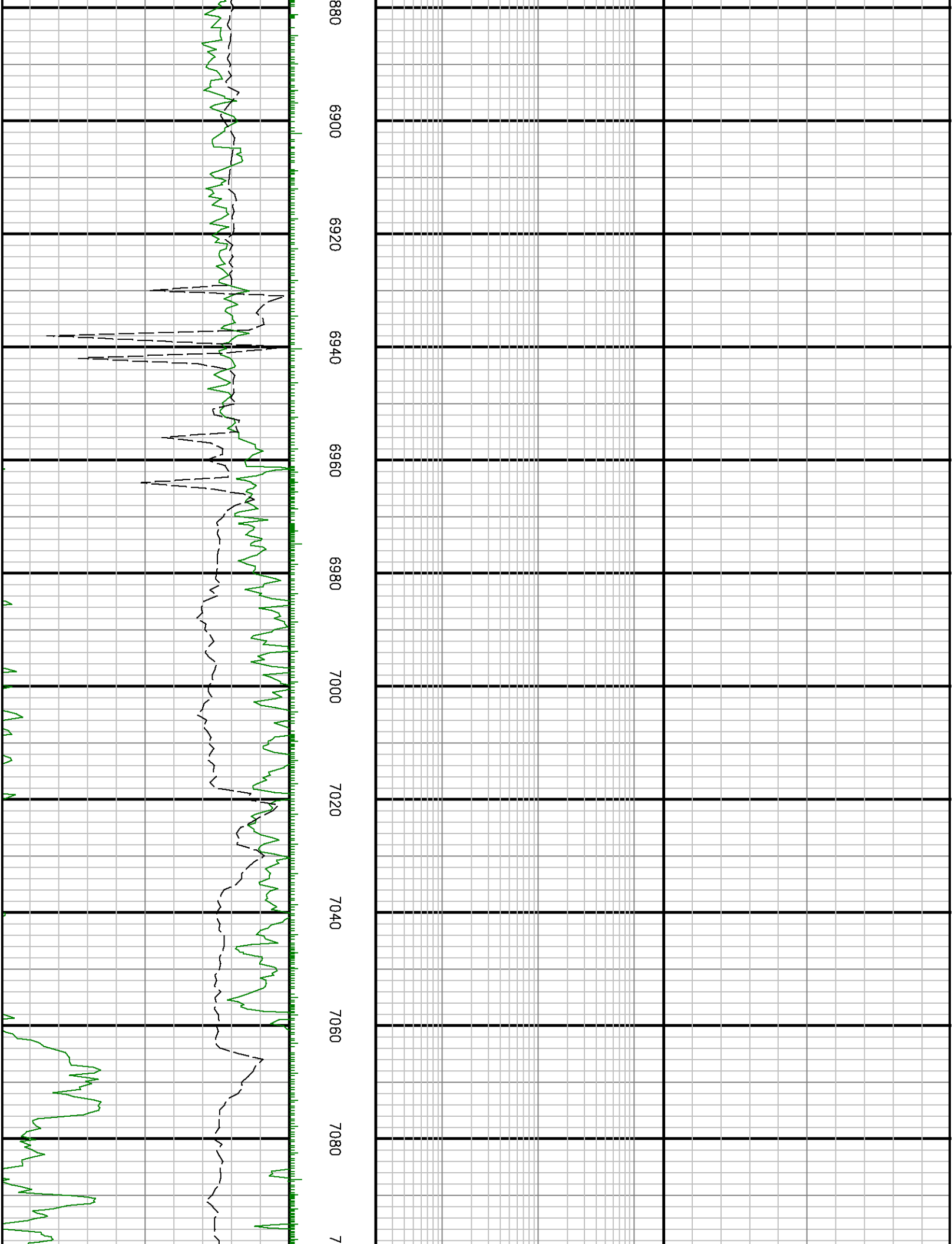


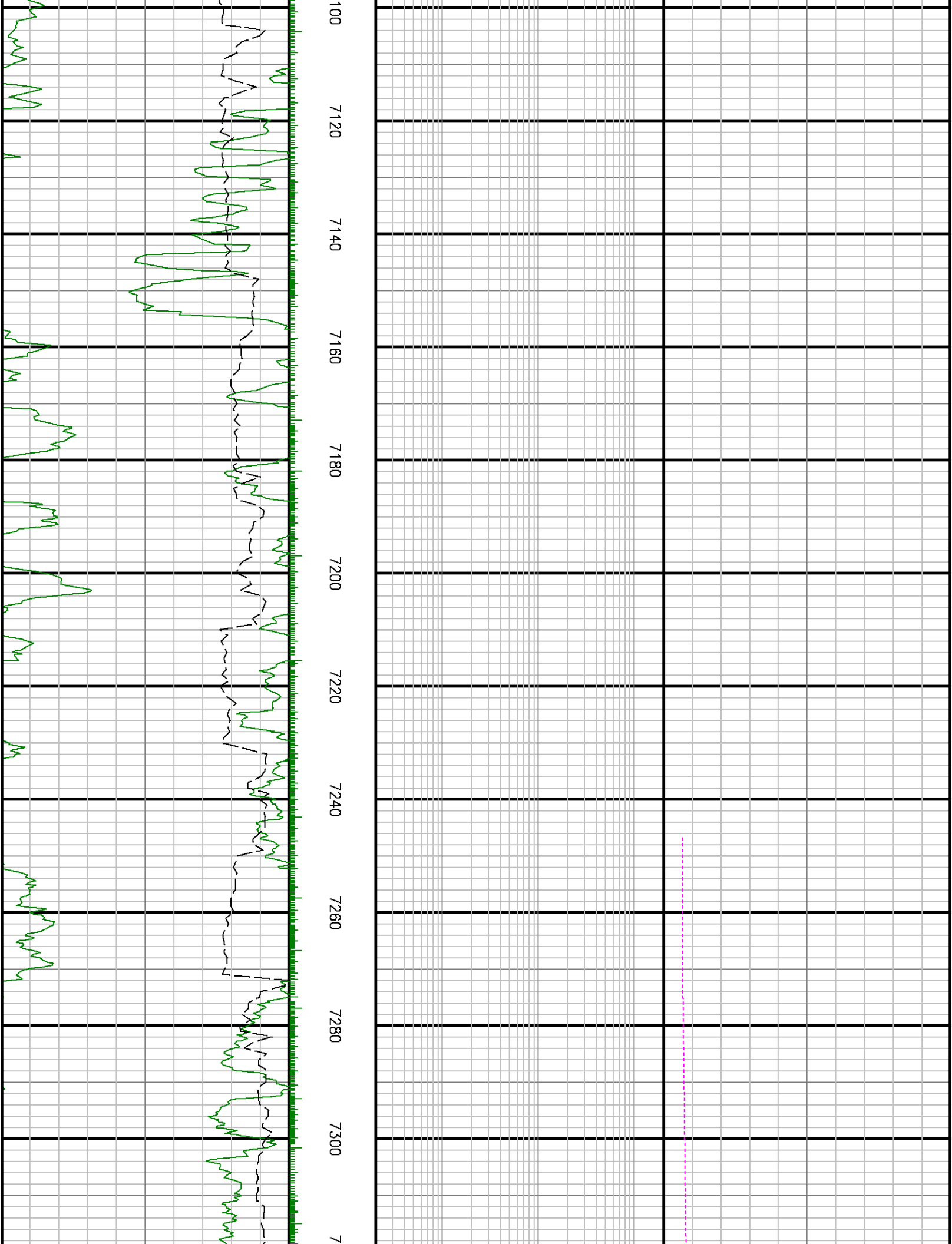


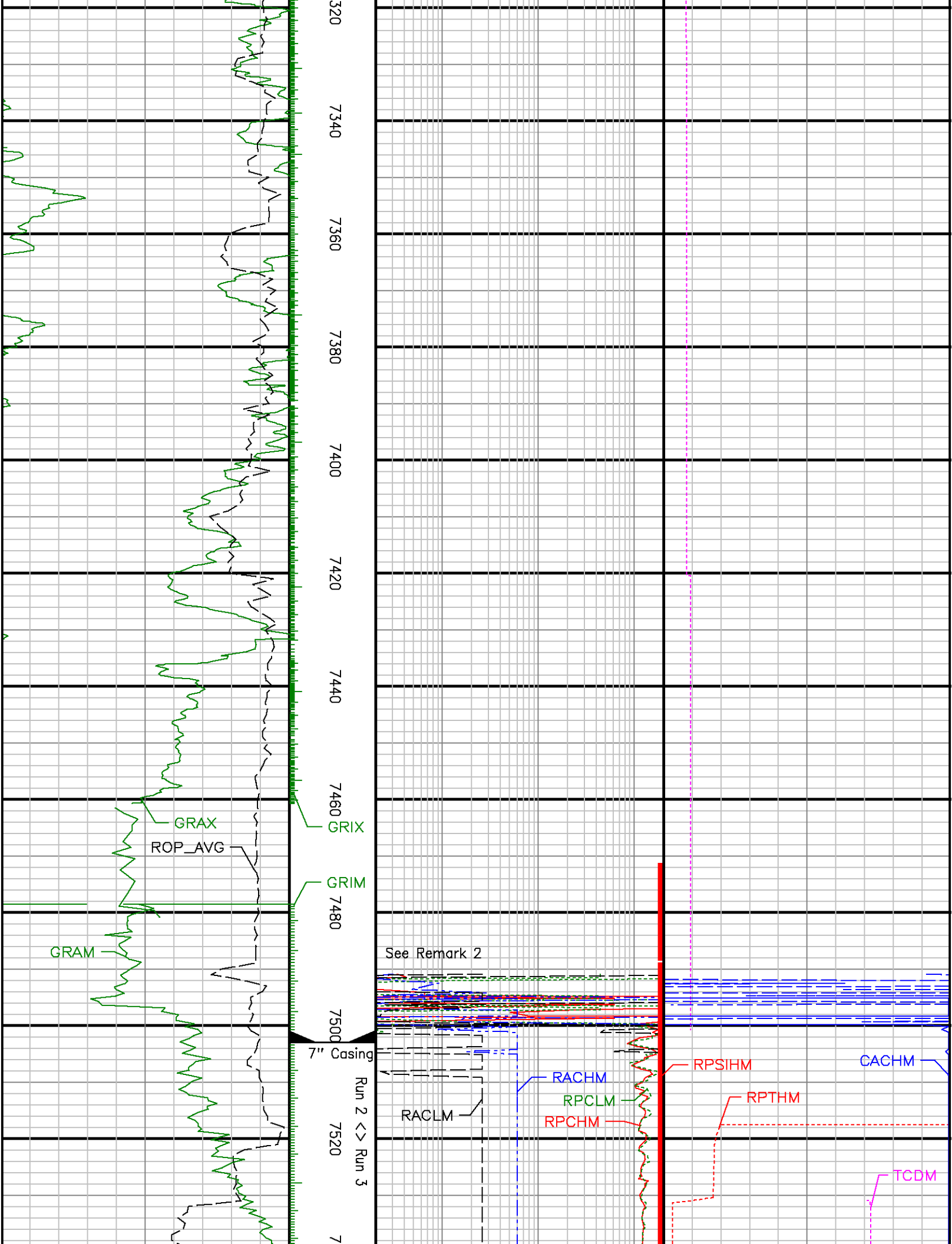
Run 1 < > Run 2

See Remark 1









320  
7340  
7360  
7380  
7400  
7420  
7440  
7460  
7480  
7500  
7520  
7

GRAX  
ROP\_AVG

GRIX  
GRIM

GRAM

See Remark 2

7" Casing

Run 2 <> Run 3

RACLM

RACHM

RPCLM

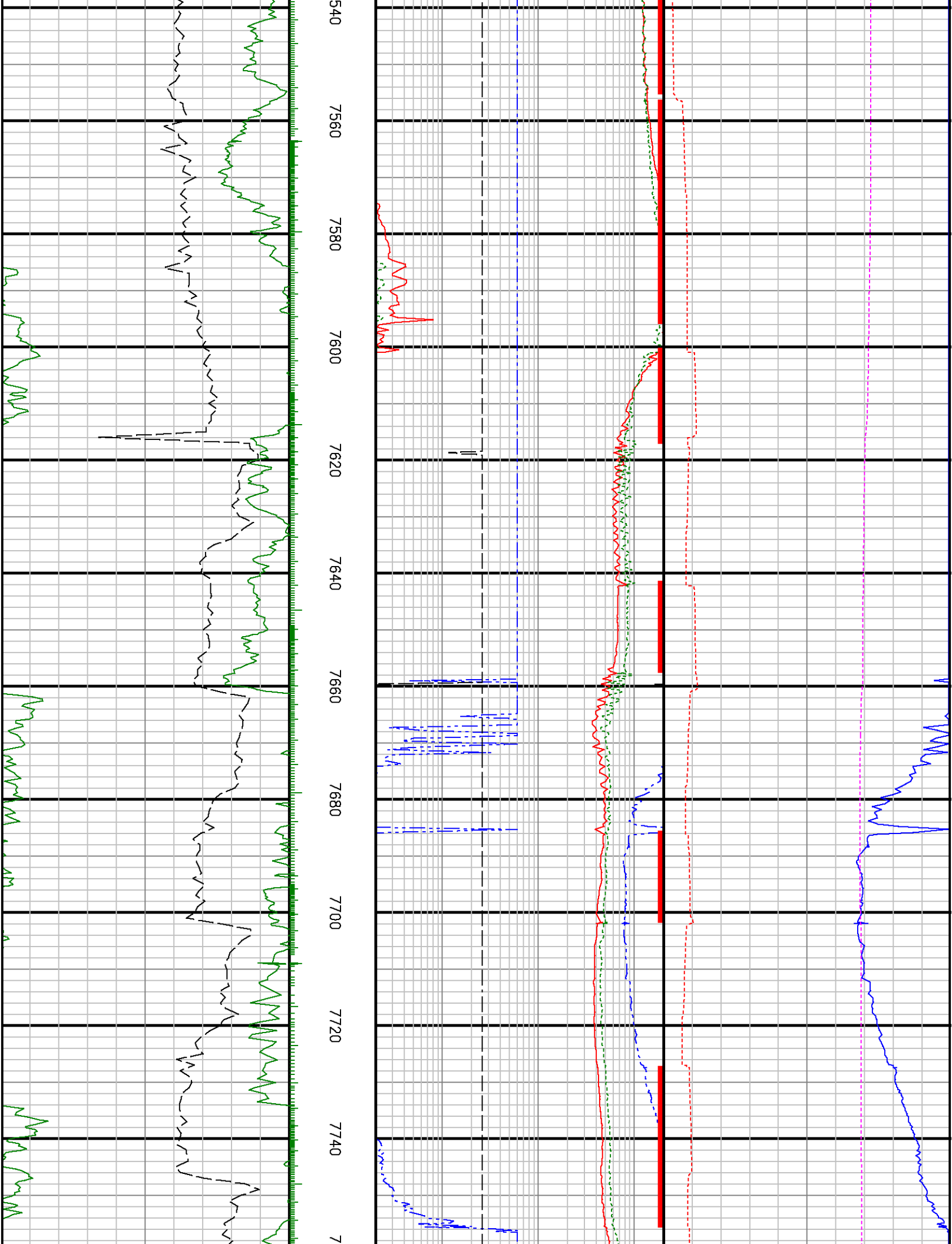
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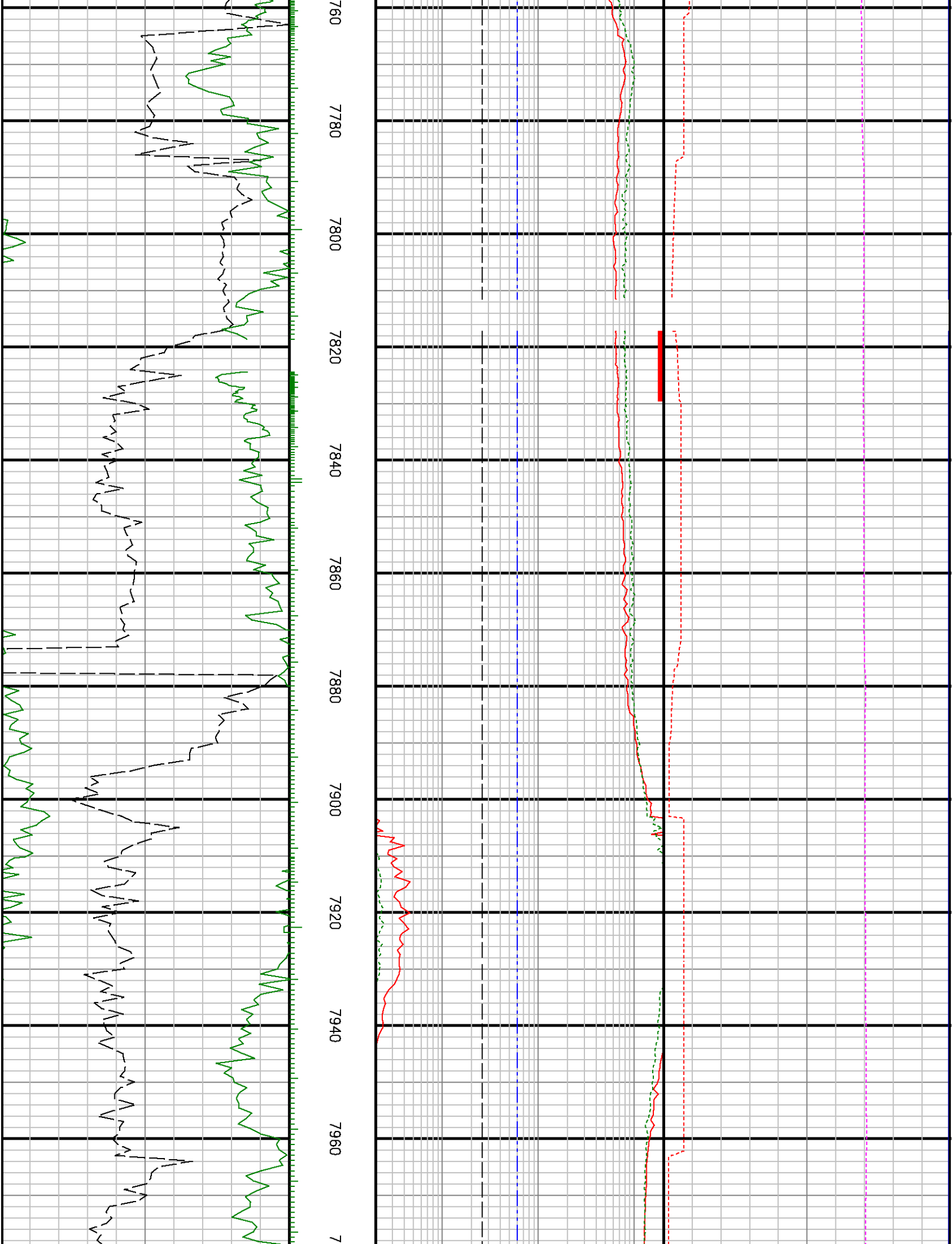
RPSIHM

RPTHM

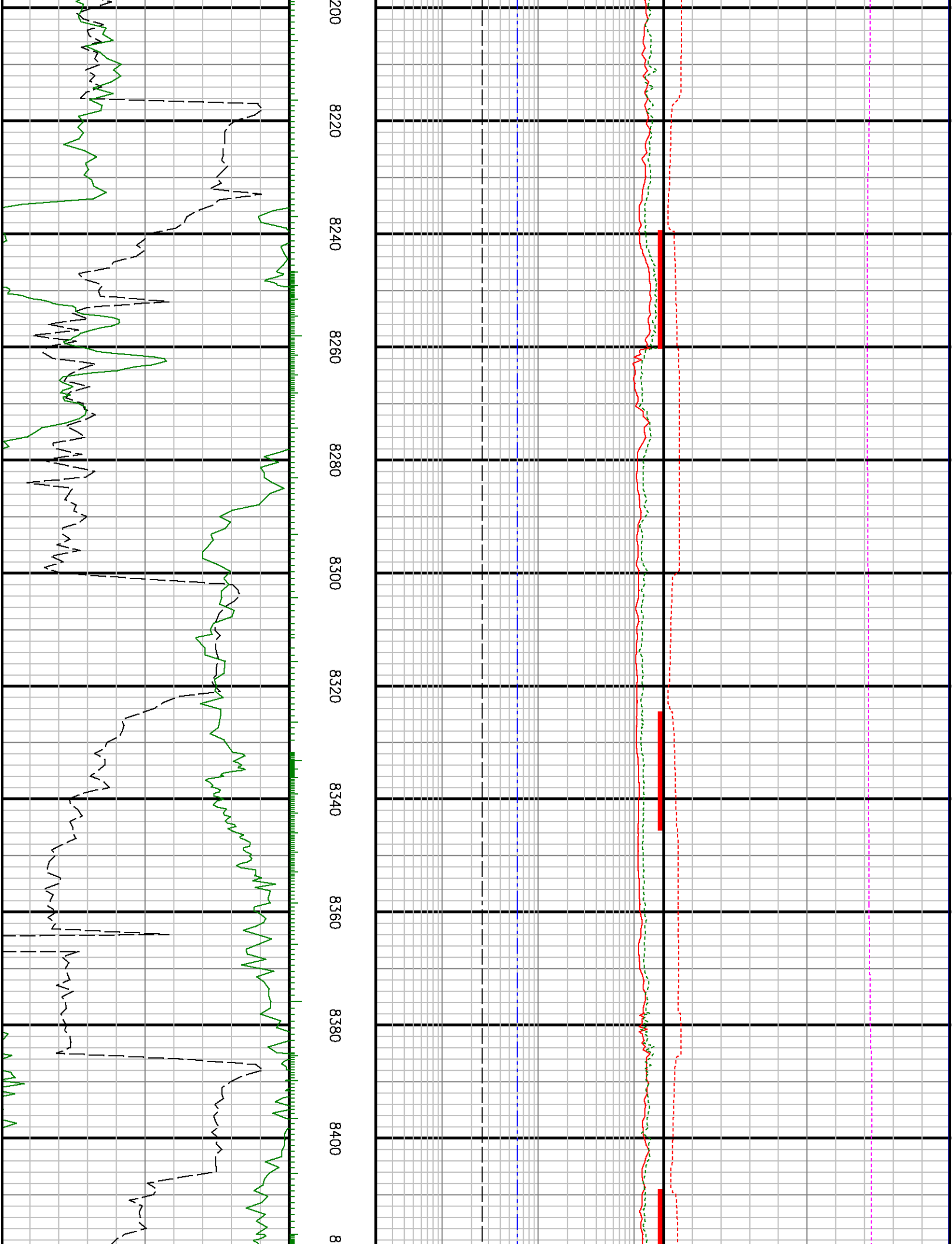
CACHM

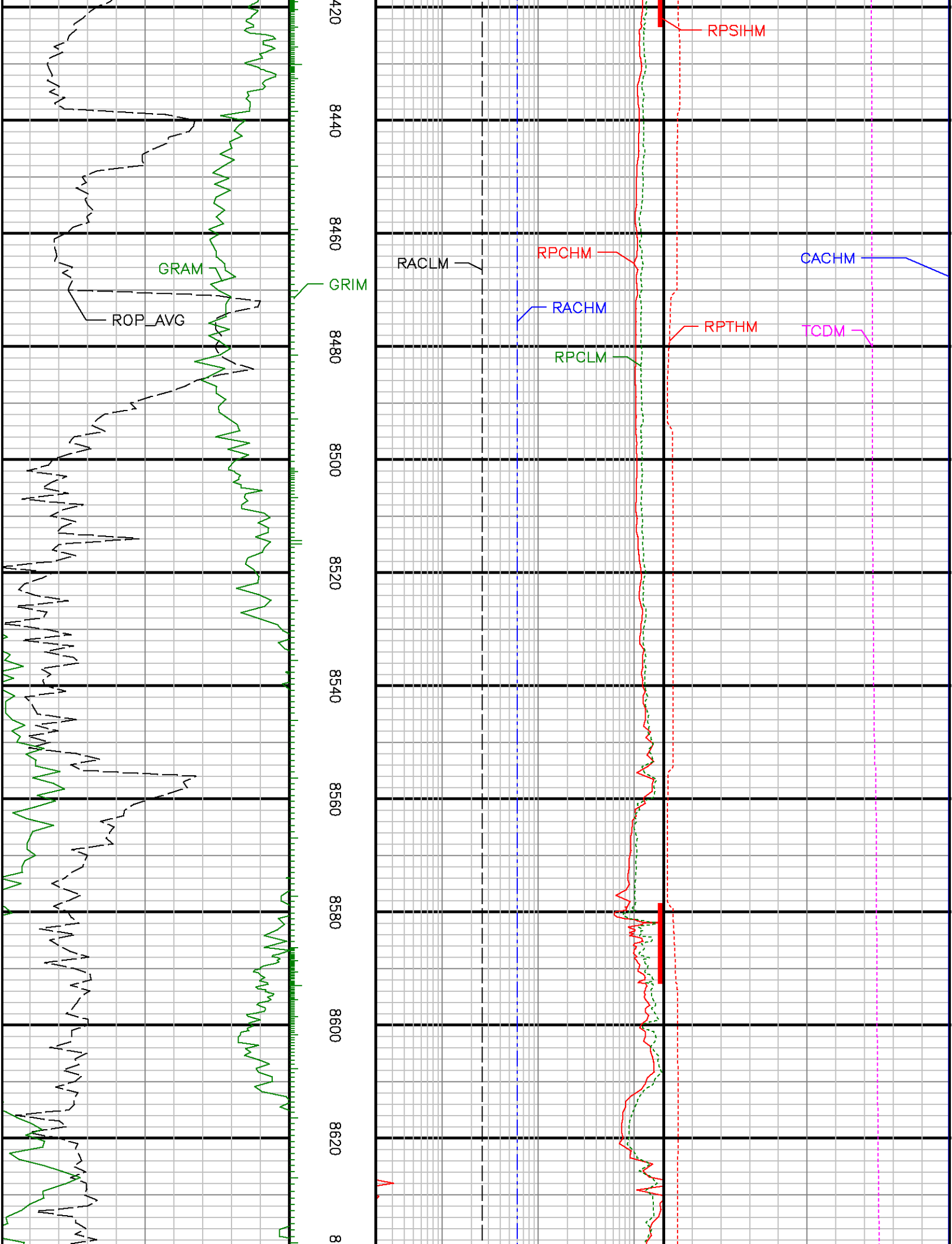
TCDM

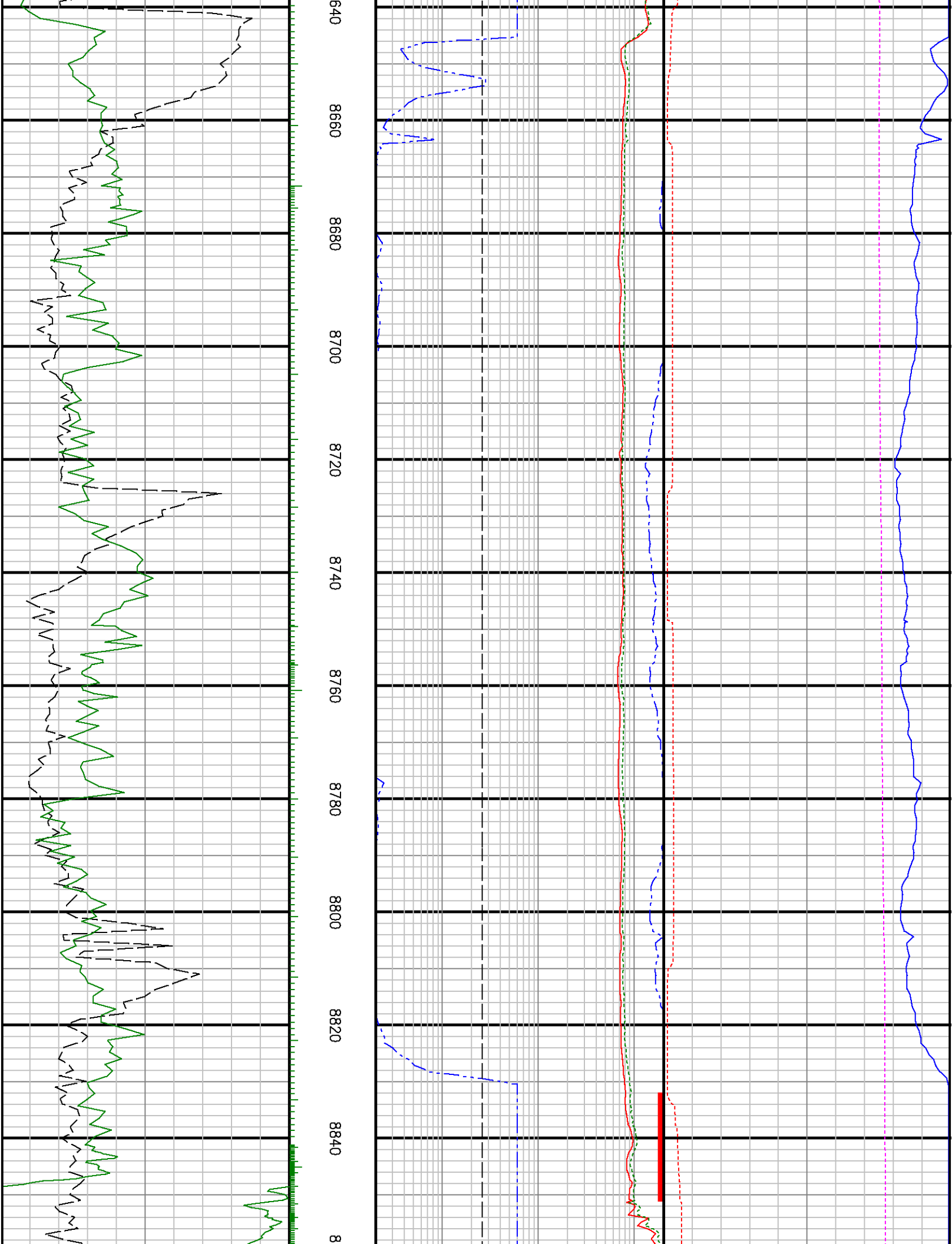


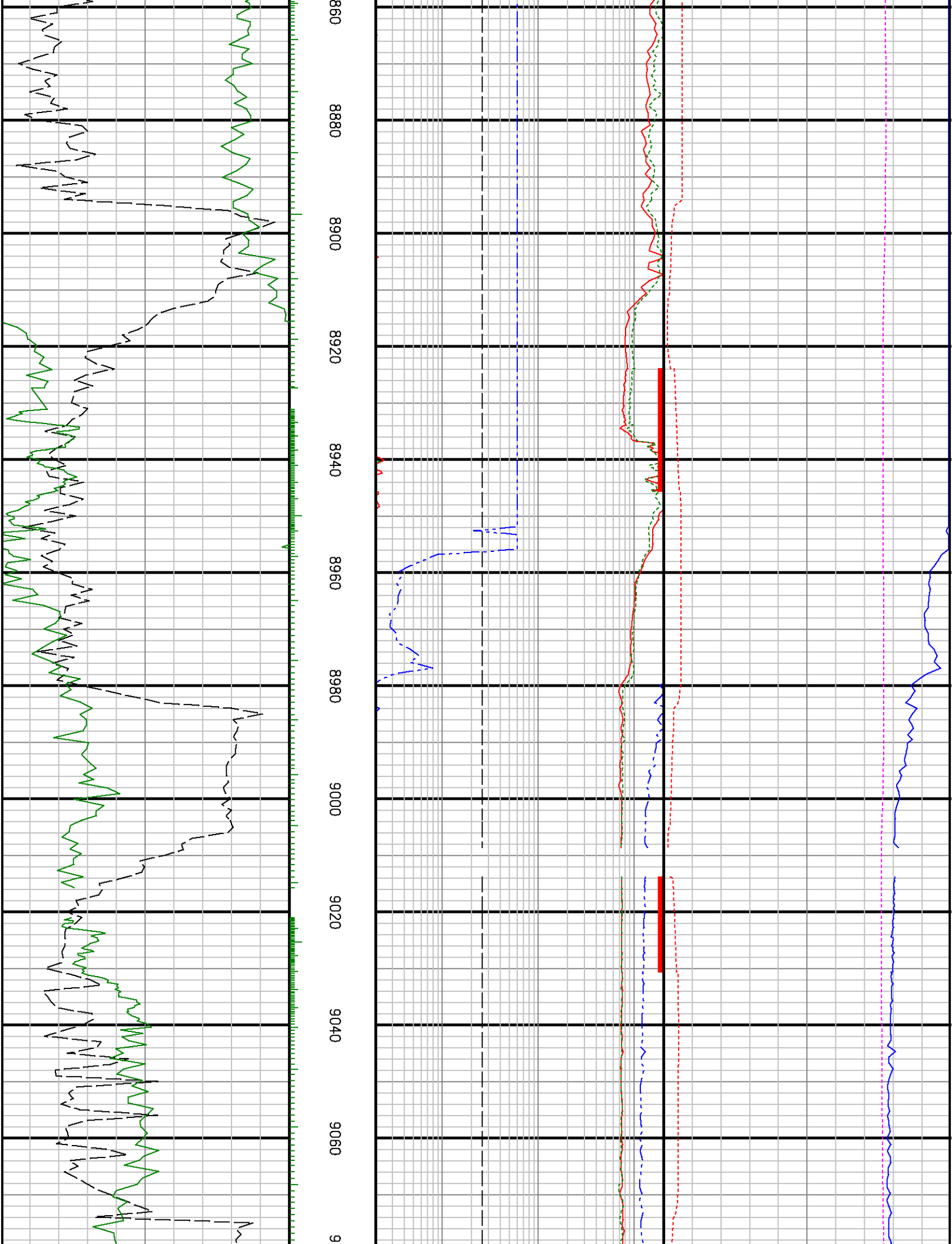


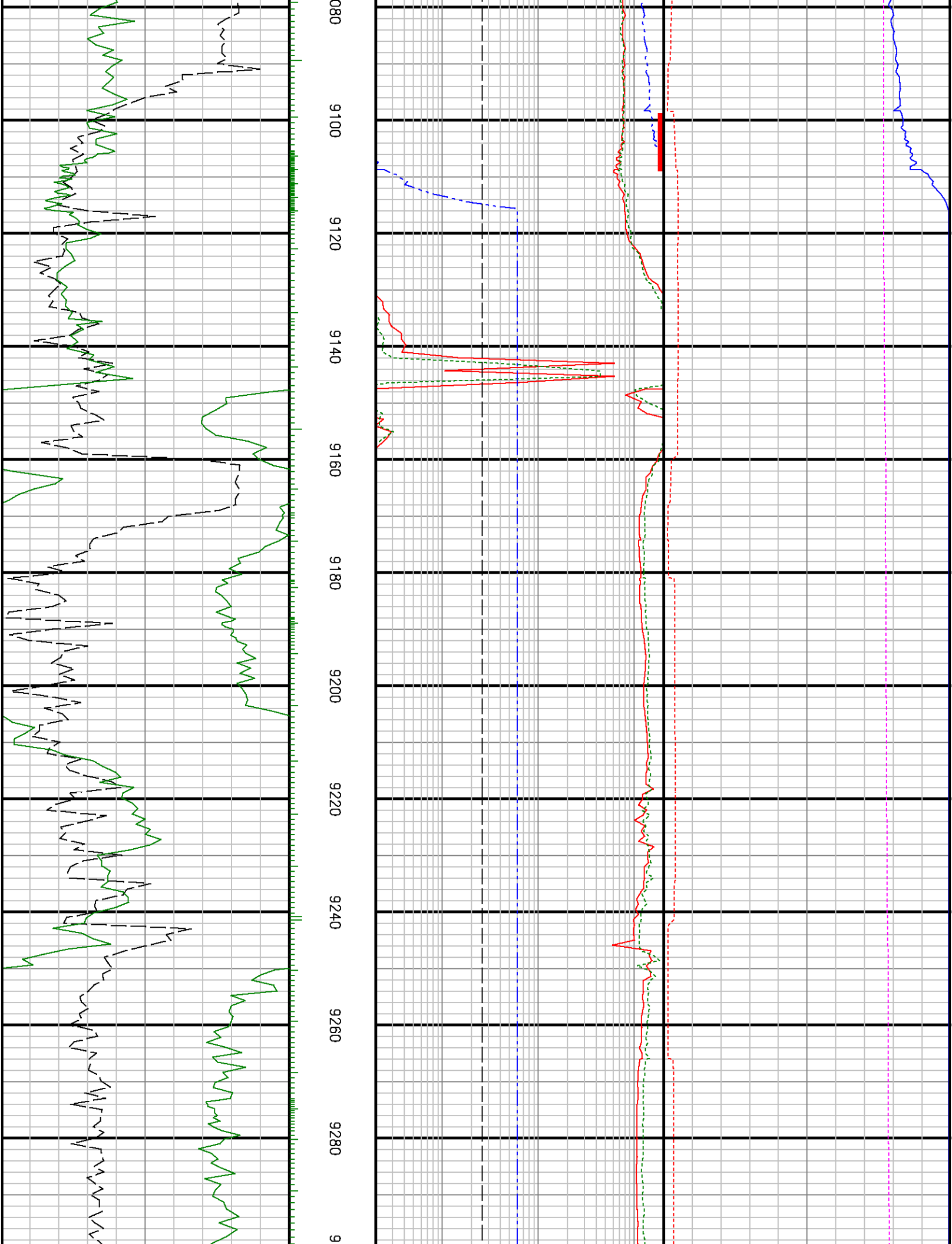


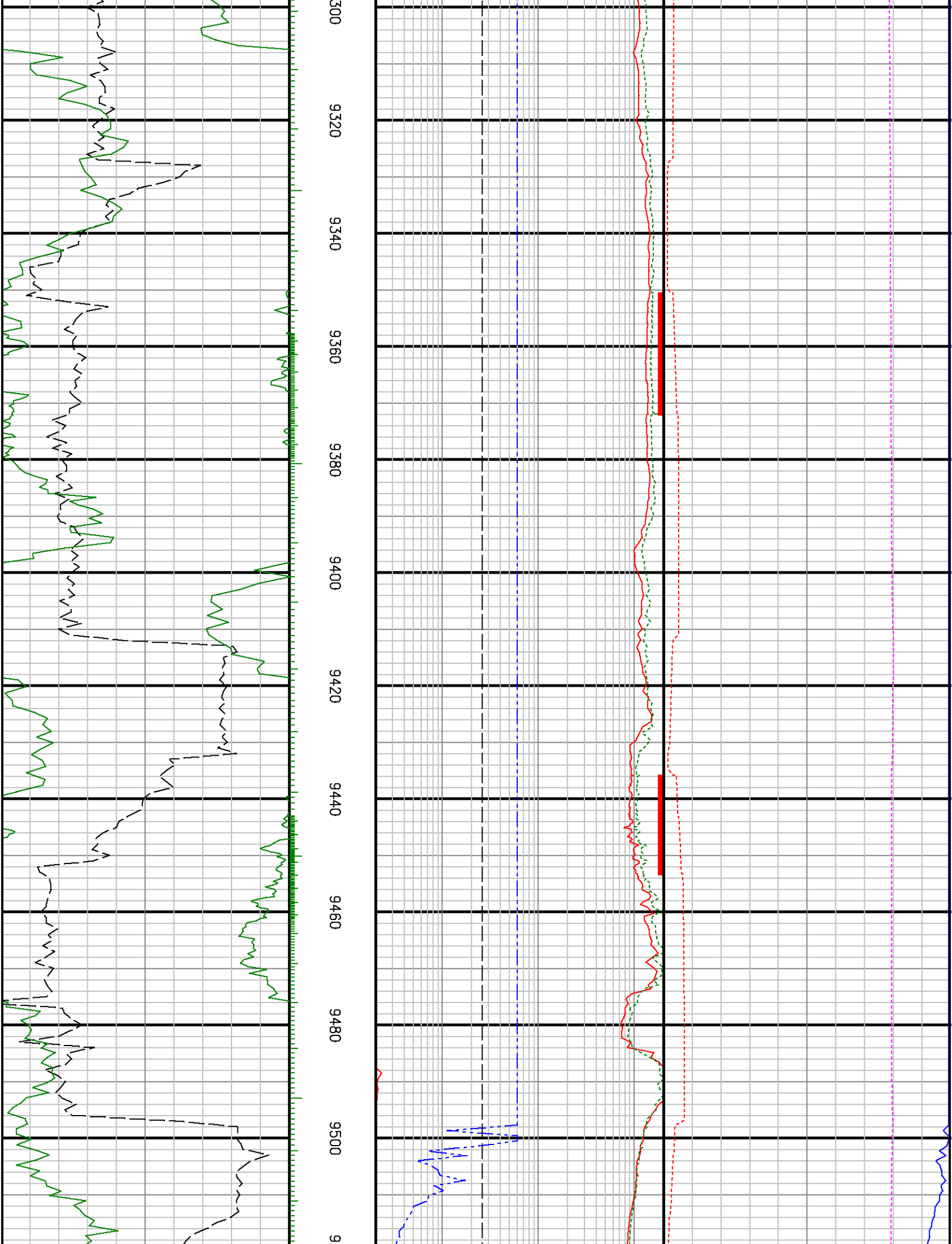


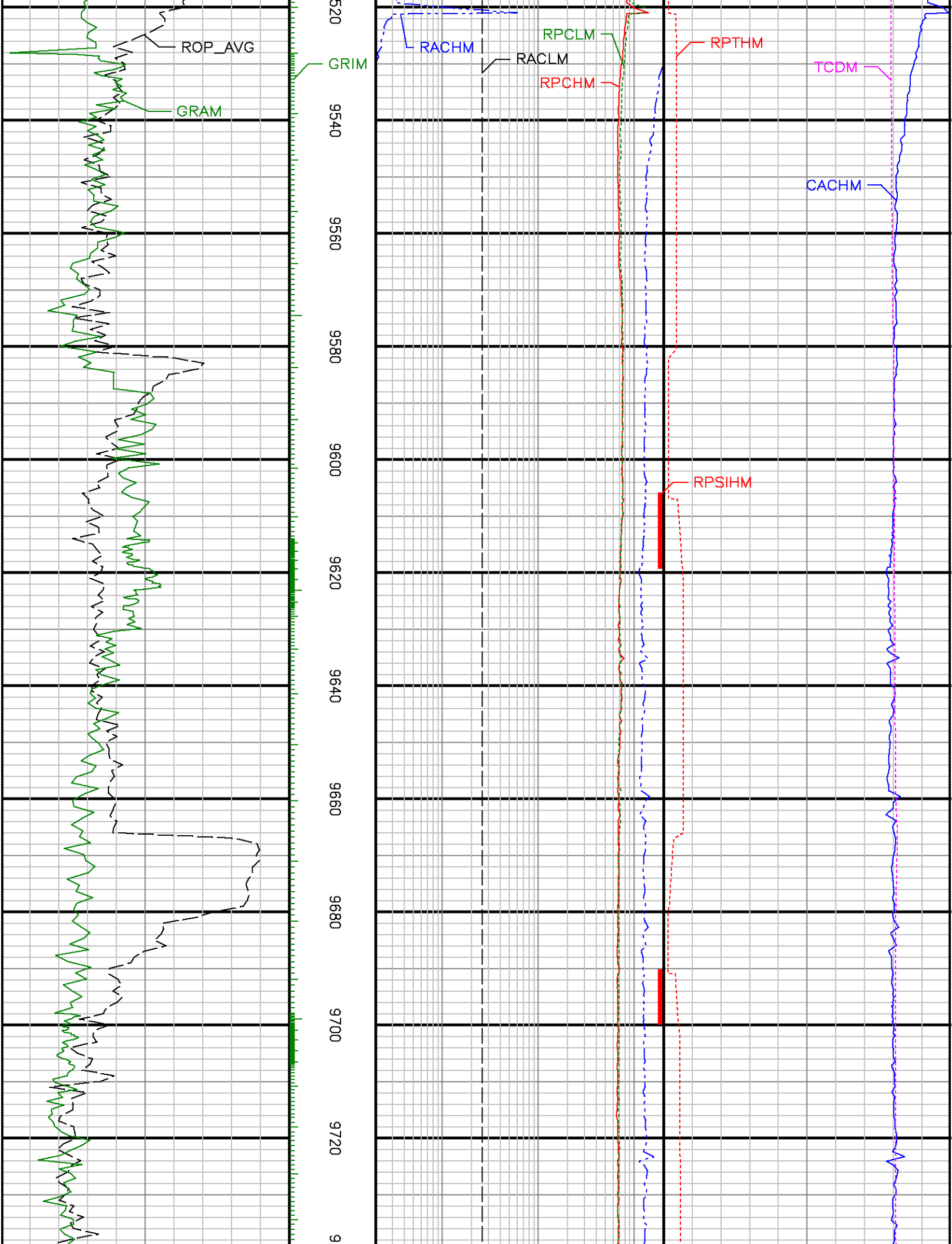


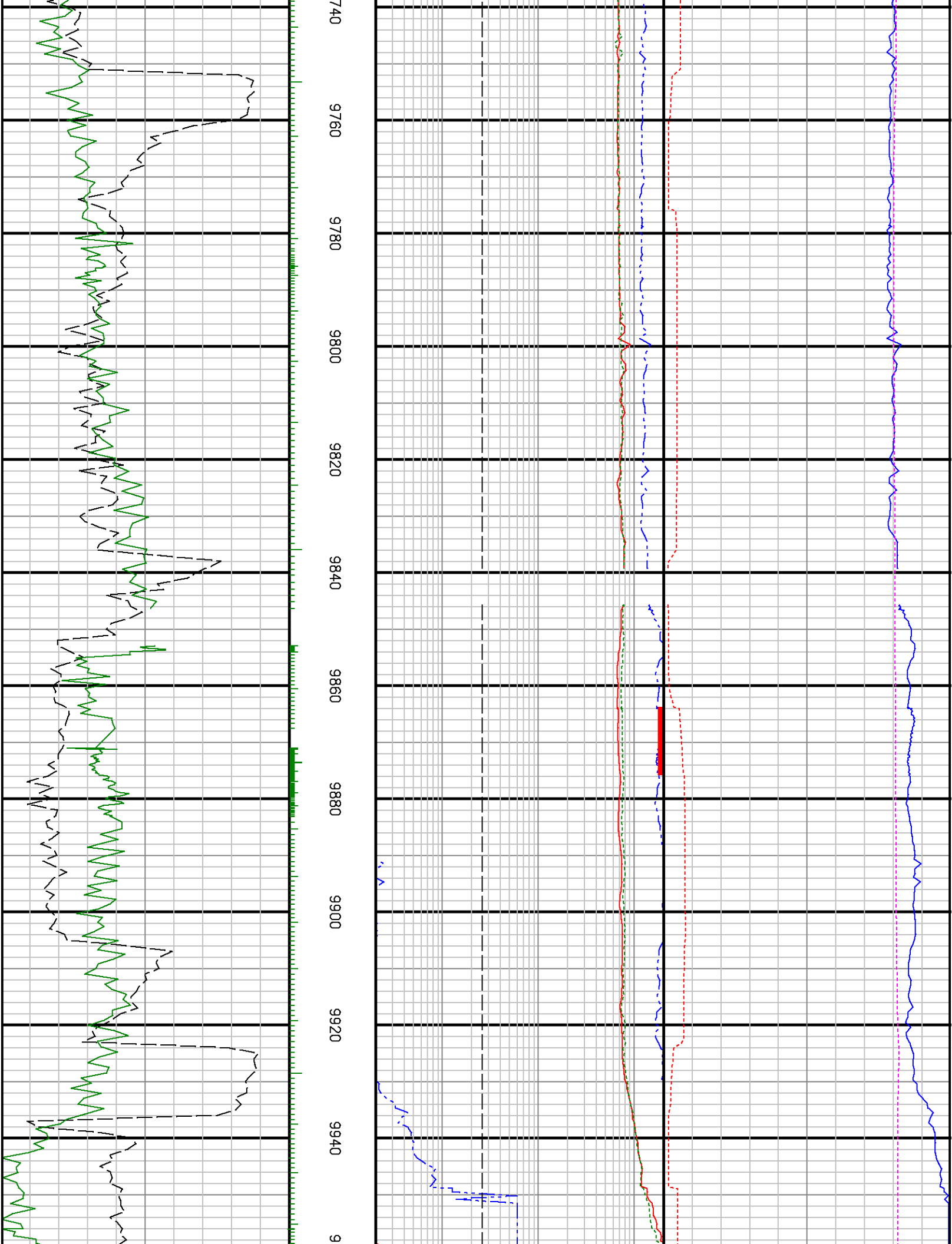


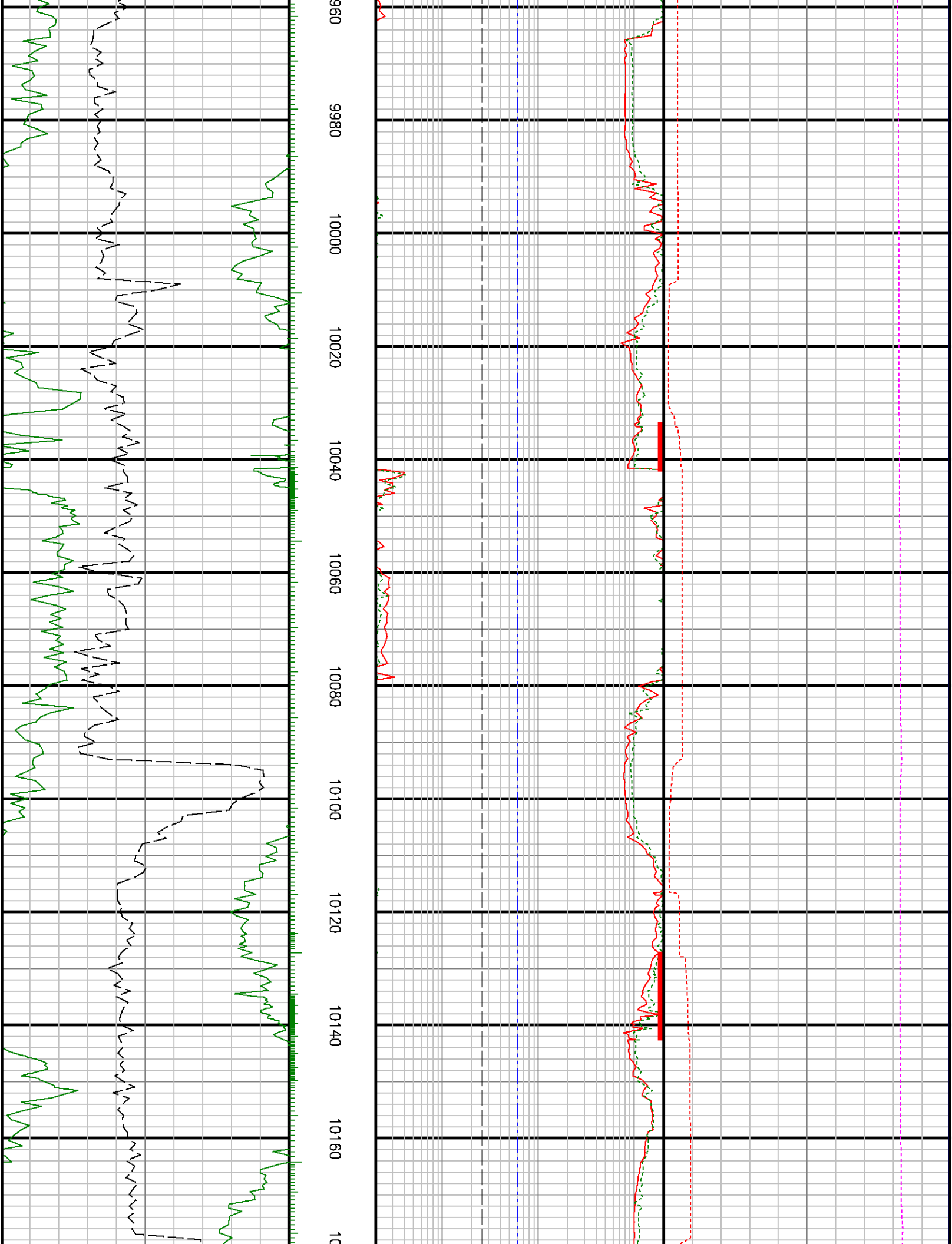


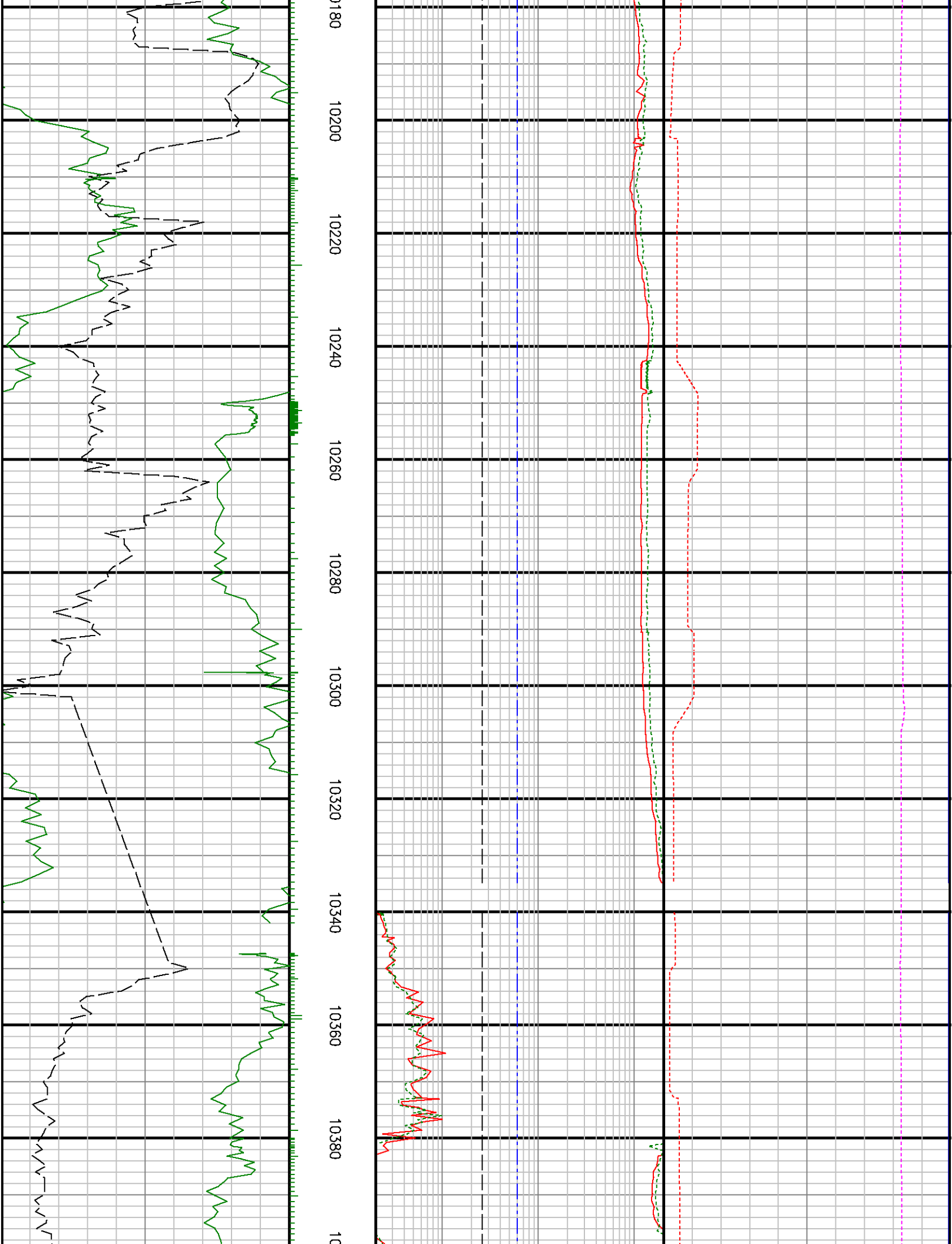


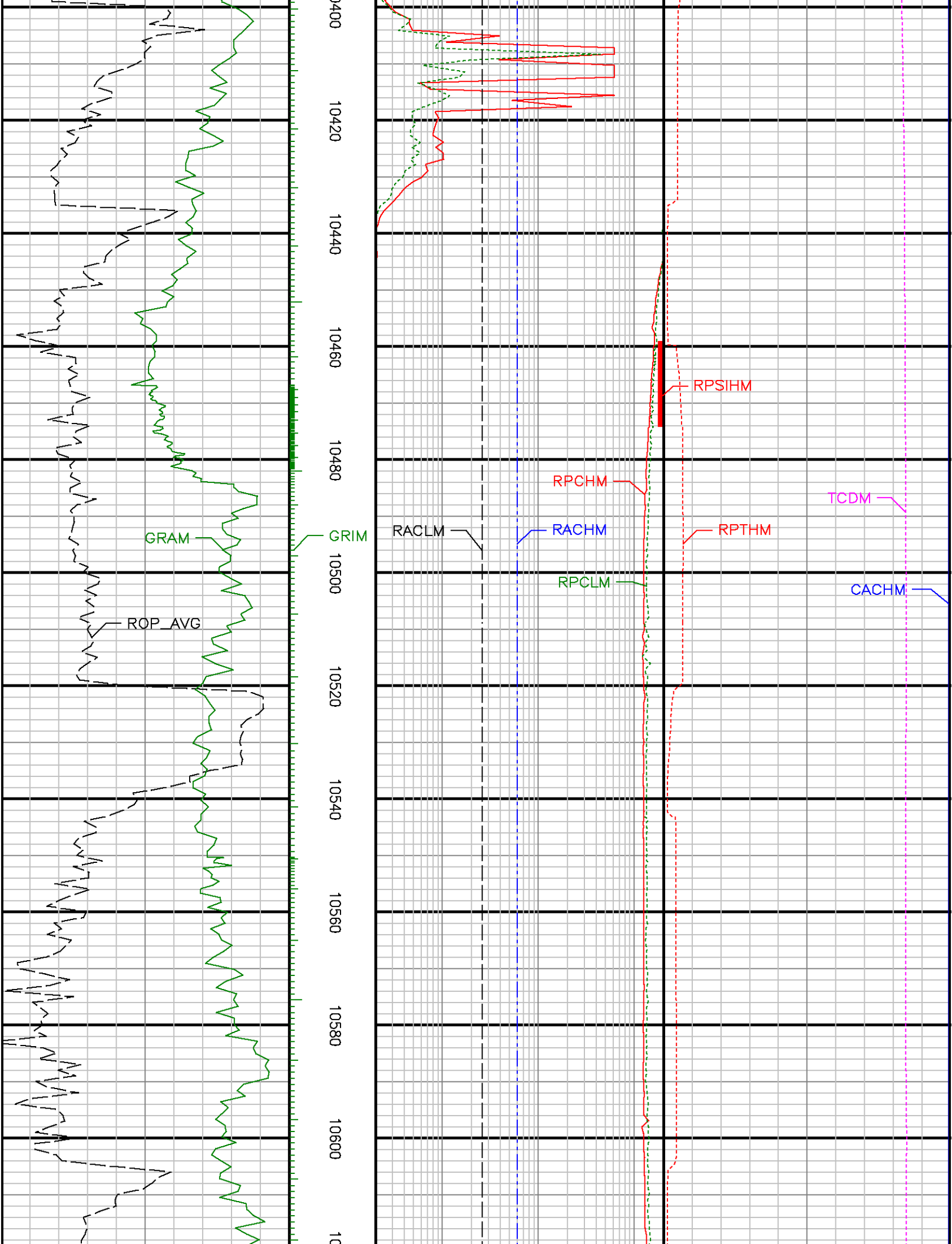


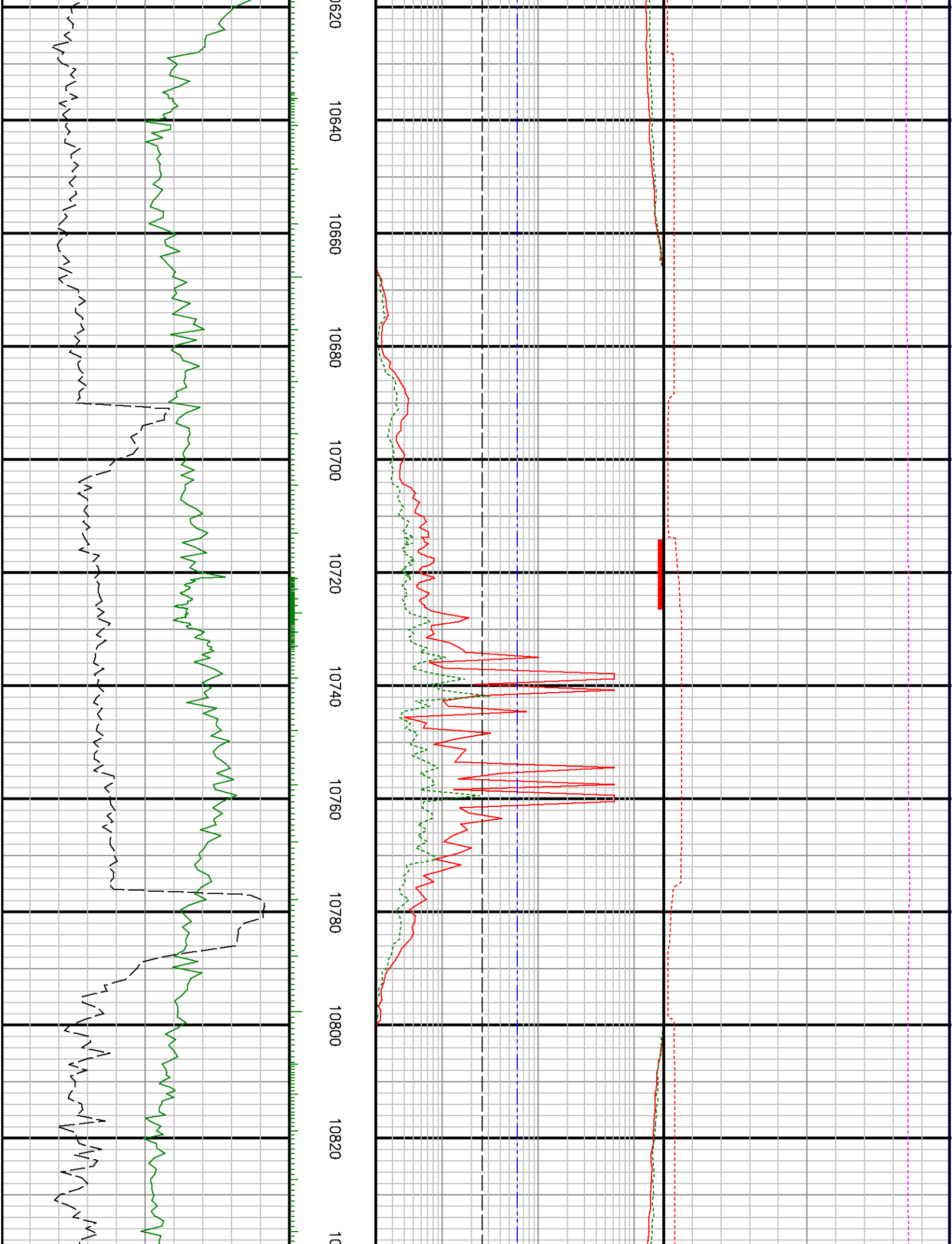


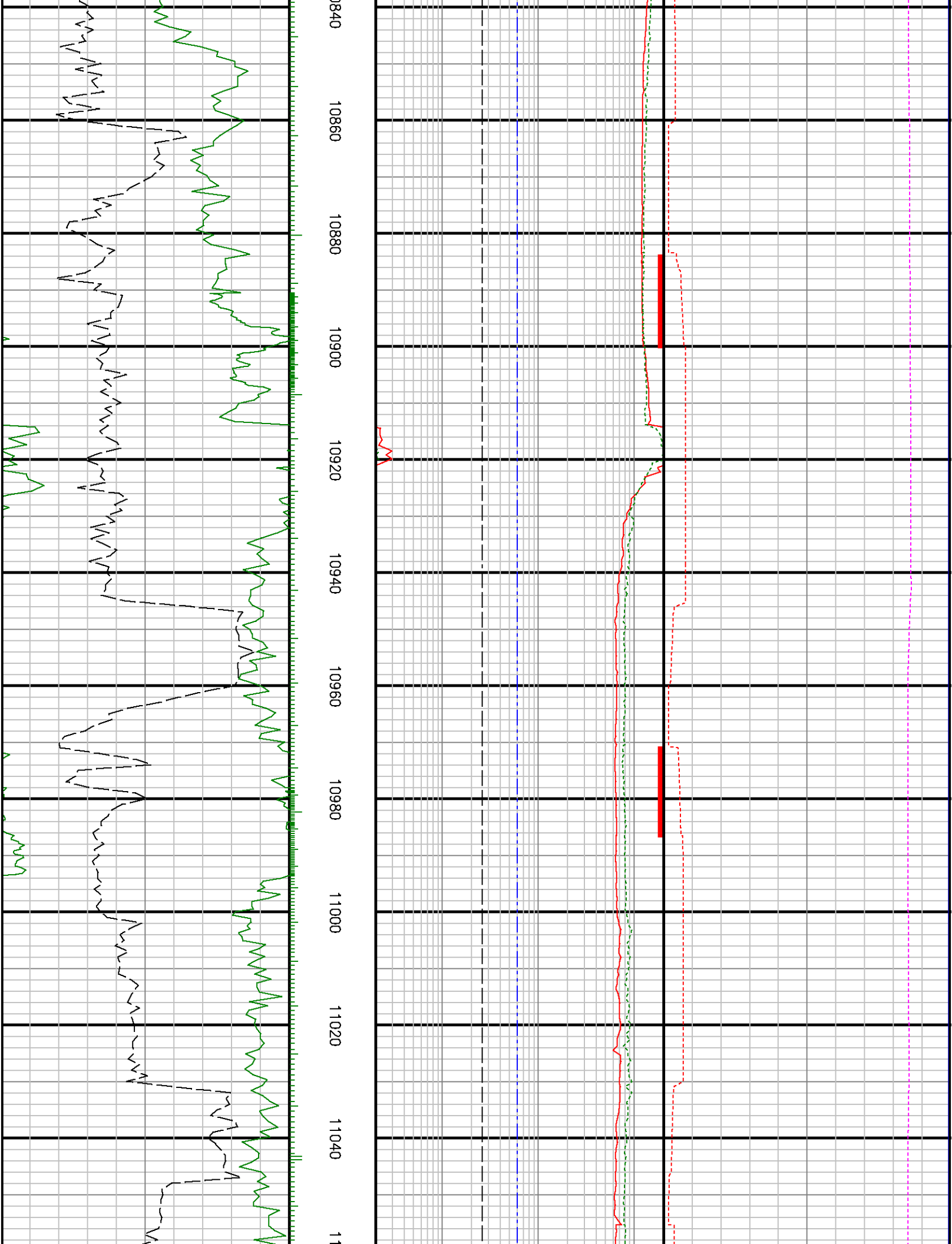


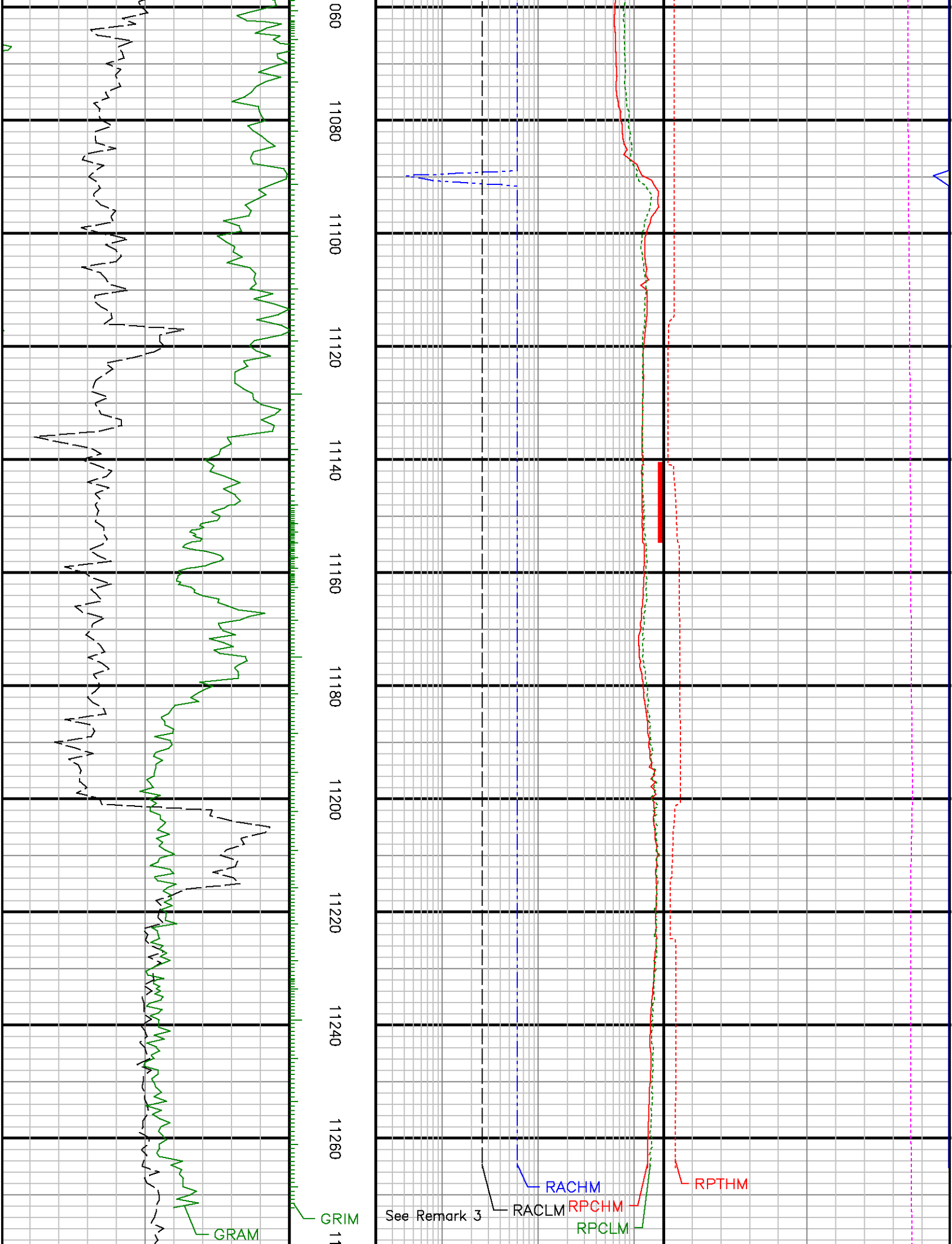


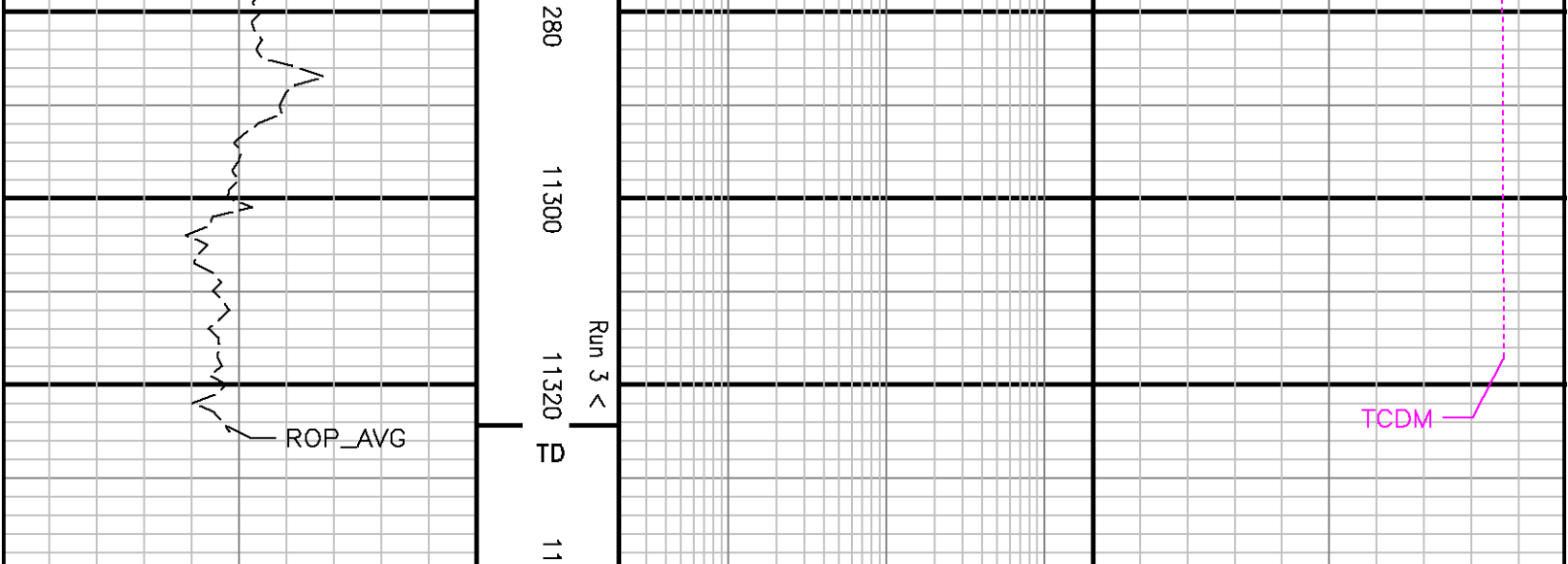












Gamma Ray Apparent 0.5 ft Avg [GRAX]	0	150
API		
Rate of Penetration 3.0 ft Avg [ROP_AVG]	500	0
ft/hr		
Gamma Ray Apparent 0.5 ft Avg [GRAM]	0	150
API		

Res PD LS 2MHz Corr [RPCHM]	0.2	200
ohm.m		
Res PD LS 400kHz Corr [RPCLM]	0.2	200
ohm.m		
Res AT LS 2MHz Corr [RACHM]	0.2	200
ohm.m		
Res AT LS 400kHz Corr [RACLM]	0.2	200
ohm.m		

Time Since Drilled [RPTHM]	0	600
min		
Downhole Temperature [TCDX]	150	350
degF		
Con AT LS 2MHz Corr CACHM	40	0
mmho/m		
Downhole Temperature [TCDM]	0	250
degF		

11320

TD

11340

feet 1:240