

Company: Synergy

Well: Fagerberg 15N-7A-M

Field: WATTENBURG

County: WELD

State: CO

Country: USA

Section: 12

UWID: 05-123-43181

Township: 06N

Rig Name: PRECISION DRILLING 462

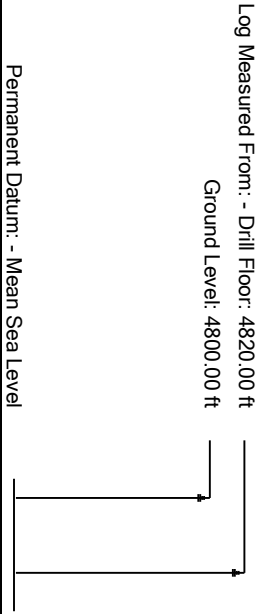
Range: 66W

Rig Type: TOP DRIVE

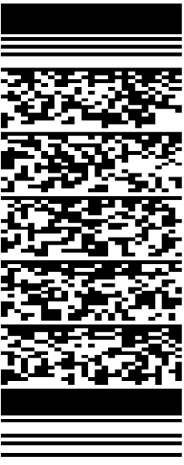
FL: NAD83 COLORADO STATE PLANE, NORTHERN ZONE, US FEET

FL1: LATITUDE: 40° 29' 56.61" N, NORTHING: 1425567.840 ftUS

FL2: LONGITUDE: 104° 44' 2.85" E, EASTING: 3212989.786 ftUS



Acquisition Dates:	19-Jun-2016 -- 24-Jun-2016	Other Services:
Log Interval:	6000.00 ft - 15130.00 ft	Directional Drilling
Index Types:	Measured Depth	Downhole Shocks
Index Scales:	1:240 5" / 100'	Downhole Temperature
Depth Source:	Driller's Depth	
Depth Sensor:	PASON	
Print Type:	Final	
Spud Date:		



Disclaimer

THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

Contents

- Header
- Disclaimer
- Contents
- Borehole Size/Casing/Tubing Record
- Operational Run Summary
- Borehole Fluids
- Remarks and Equipment Summary
- Well Composite
 - Integration Summary
 - Software Version
 - Composite Summary
 - Log (5MD EOW)
 - Parameter Listing
- Calibration Report
- Tail

Borehole Size/Casing Record						
Bit						
Bit Size (in)	13.5	8.75	8.5			
Top Driller (ft)	0	1770	7541			
Bottom Driller (ft)	1770	7541	15130			
Casing						
Size (in)	9.625					
Weight (lbm/ft)	32					
Inner Diameter (in)	9.001					
Grade	J55					
Top Driller (ft)	0					
Bottom Driller (ft)	1756					

Operational Run Summary						
Parameter (unit)	RUN02	RUN03	RUN004			
Date Log Started	19-Jun-2016	20-Jun-2016	22-Jun-2016			
Time Log Started	17:34:29	17:11:01	05:29:35			
Date Log Finished	20-Jun-2016	21-Jun-2016	24-Jun-2016			
Time Log Finished	12:32:00	17:43:23	16:41:51			
Bit Size (in)	8.750	8.750	8.500			
Bit Start Depth (ft)	1770.00	5368.00	7541.25			
Bit Stop Depth (ft)	5368.00	7541.00	15130.00			
Top Log Interval (ft)						
Bottom Log Interval (ft)						
Max Hole Deviation (deg)	12.66	85.69	90.69			
Azimuth of Max Deviation (deg)	179.77	94.80	89.01			
Logging Unit Number	COMMAND CENTER	COMMAND CENTER	COMMAND CENTER			
Logging Unit Location	ZONE 2	ZONE 2	ZONE 2			
Recorded By	Scott Kingrey	Scott Kingrey	Scott Kingrey			
Witnessed By	Michael Love	Michael Love	Michael Love			
Service Order Number						

Borehole Fluids						
Parameter(unit)	RUN02	RUN03	RUN004			
Fluid Type	Water	Water	Water			
Fluid Name	Fresh Water	Fresh Water	Fresh Water			
Max Recorded Temperatures	212	168	244			

(degF)						
Source of Sample	Active Tank	Active Tank	Active Tank			
Salinity (ppm)	34972.17	34972.17	1700			
Density (lbm/gal)	9.2	9.7	9.9			
Funnel Viscosity (s)	37	41	40			
Fluid Loss (cm3)	8.5	5.5				
PH	10	9				
Date/Time Circulation Stopped	NaN	NaN	NaN			
Source RMF						
RMC	Pressed	Pressed	Pressed			
RM @ Meas Temp (ohm.m@degF)	0.2 @ 68	0.2 @ 68	0.2 @ 68			
RMF @ Meas Temp (ohm.m@degF)	0.15 @ 68	0.15 @ 68	0.15 @ 68			
RMC @ Meas Temp (ohm.m@degF)						
RM @ BHT (ohm.m@degF)	0.07 @ 212	0.07 @ 212	0.07 @ 212			
RMF @ BHT (ohm.m@degF)	0.05 @ 212	0.05 @ 212	0.05 @ 212			
RMC @ BHT (ohm.m@degF)	NaN @ 212	NaN @ 212	NaN @ 212			
Total Solid (%)	4.7	7.1	8.6			
High Gravity Solids (%)	1.8	3.2	4.5			

Remarks and Equipment Summary

Data presented is from tool memory and acquired while drilling from 1750.00 ft. MD to 15130.00 ft. MD.

Depth Reference: Driller's Depth

Gamma Ray is corrected for bit size, mud weight, and tool collar thickness. Barite and potassium affect Gamma Ray readings.

RUN02: Remarks	RUN03: Remarks	RUN004: Remarks
Run Objective: Drill Intermediate and curve section.	Run Objective: Drill Intermediate and curve section.	Run Objective: Drill lateral section
Bit to GR: 64.20 ft Bit to D&I: 61.17 ft	Bit to GR: 64.14 ft Bit to D&I: 61.11 ft	Bit to GR: 41.49 ft Bit to D&I: 38.46 ft
Drilled from: 1770.00 ft MD to 5368.00 ft MD Logged from: 1705.00 ft MD to 5303.00 ft MD	Drilled from: 5368.00 ft MD to 7541.00 ft MD Logged from: 5303.00 ft MD to 7476.00 ft MD	Drilled from: 7541.00 ft MD to 15130.00 ft MD Logged from: 7476.00 ft MD to 15088.00 ft M
SlimPulse Software Version 11 SlimPulse UDI Calibrated: Feb. 22, 2016 SlimPulse UGR Calibrated: Apr. 11, 2016	SlimPulse Software Version 11 SlimPulse UDI Calibrated: Feb. 22, 2016 SlimPulse UGR Calibrated: Apr. 11, 2016	SlimPulse Software Version 11 SlimPulse UDI Calibrated: Dec. 16, 2015 SlimPulse UGR Calibrated: Feb. 5, 2016
Schlumberger Personnel: DD: Charles Bell, Preston Roth MWD: Michael Love, Scott Kingrey	Schlumberger Personnel: DD: Charles Bell, Preston Roth MWD: Michael Love, Scott Kingrey	Schlumberger Personnel: DD: Charles Bell, Preston Roth MWD: Michael Love, Scott Kingrey
Reason for POOH: Change Motor	Reason for POOH: Section TD	Reason for POOH: Well TD

RUN02: Toolstring	RUN03: Toolstring	RUN004: Toolstring
<div> <div> <div>Equip name</div> <div>Filtr Sub: 6 3/4":DR 30153</div> </div> <div> <div>Length</div> <div>140.25</div> </div> <div> <div>MP name</div> <div>FILTER SUB</div> </div> <div>Offset</div> </div> <div> <div>Flex DC: 6 3/4":DR 21933</div> <div>137.00</div> <div>NMFC</div> </div>	<div> <div> <div>Equip name</div> <div>Filtr Sub: 6 3/4":DR 30153</div> </div> <div> <div>Length</div> <div>140.19</div> </div> <div> <div>MP name</div> <div>FILTER SUB</div> </div> <div>Offset</div> </div> <div> <div>Flex DC: 6 3/4":DR 21933</div> <div>136.94</div> <div>NMFC</div> </div>	<div> <div> <div>Equip name</div> <div>NMDC: 6 3/4":DR2 8045</div> </div> <div> <div>Length</div> <div>123.46</div> </div> <div> <div>MP name</div> <div>NMDC</div> </div> <div>Offset</div> </div>

NMDC: 6 3/4"[2]:D 106.38
R28045

NMDC

SPULSE-GEN:DR21 77.4
171

FLWSUB:DR27300
SPCOLLAR:DR21171
SPMA:551
SPEC:6026
SPBA:Q05248
UBHO:675U156

NMDC MWD

GR 64.2

D&I 61.17

NMDC: 6 3/4"[2]:D 106.32
R28045

NMDC

SPULSE-GEN:DR21 77.34
171

FLWSUB:DR27300
SPCOLLAR:DR21171
SPMA:551
SPEC:6026
SPBA:Q05248
UBHO:675U156

NMDC MWD

GR 64.14

D&I 61.11

Motor:2246

94.48

HUNTING MOTOR

Filtr Sub: 6 3/4":DR 63.59
20243

FILTER SUB

Stabilizer:DR29540 60.57

IBS

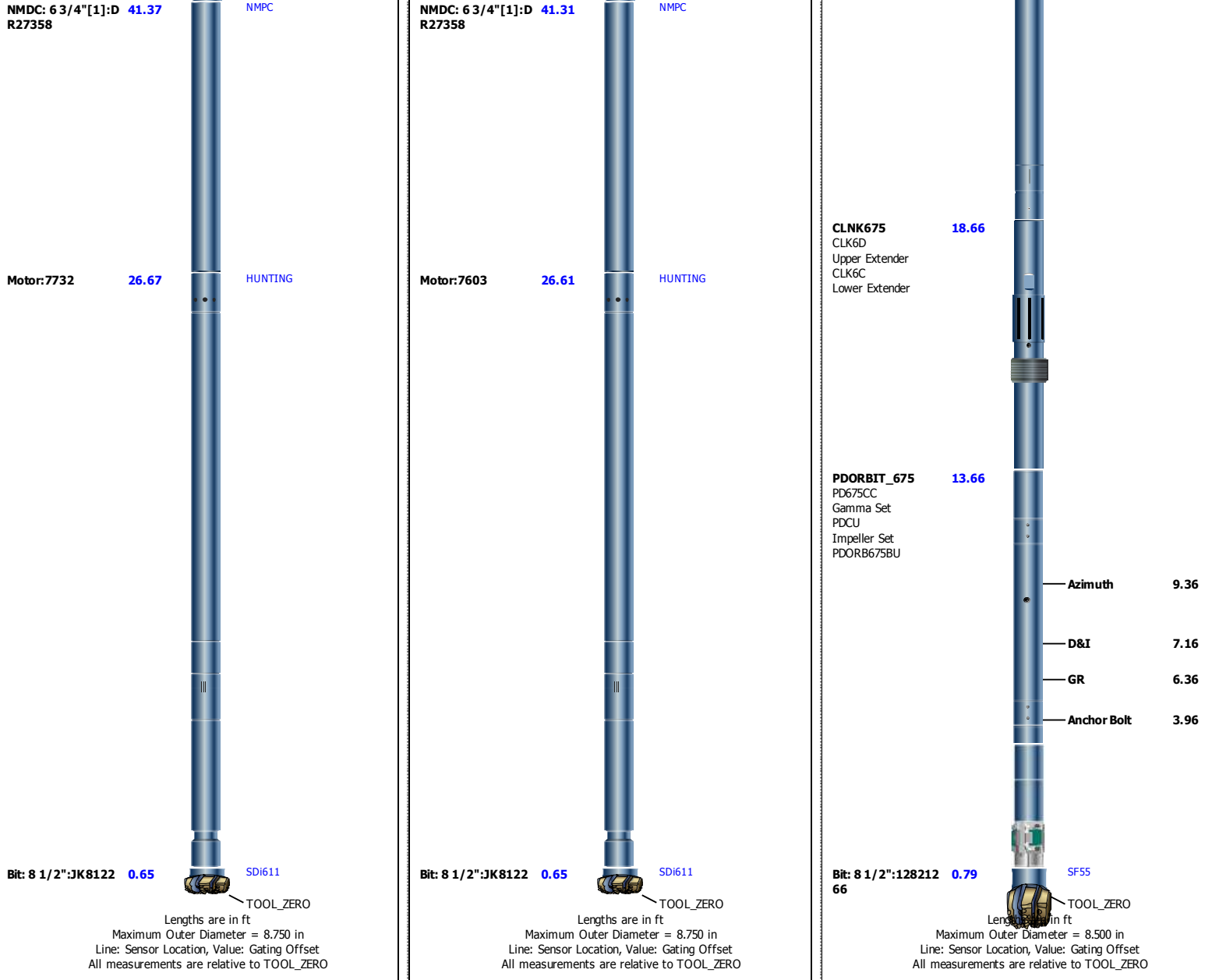
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171

FLWSUB:DR27300
SPCOLLAR:DR21171
SPMA:7050
SPEC:635
SPBA:02591
UBHO:675U156

NMDC MWD

GR 41.49

D&I 38.46



Well Composite

Software Version

Acquisition System	Version
Maxwell 2016 SP2	6.2.64464.3100

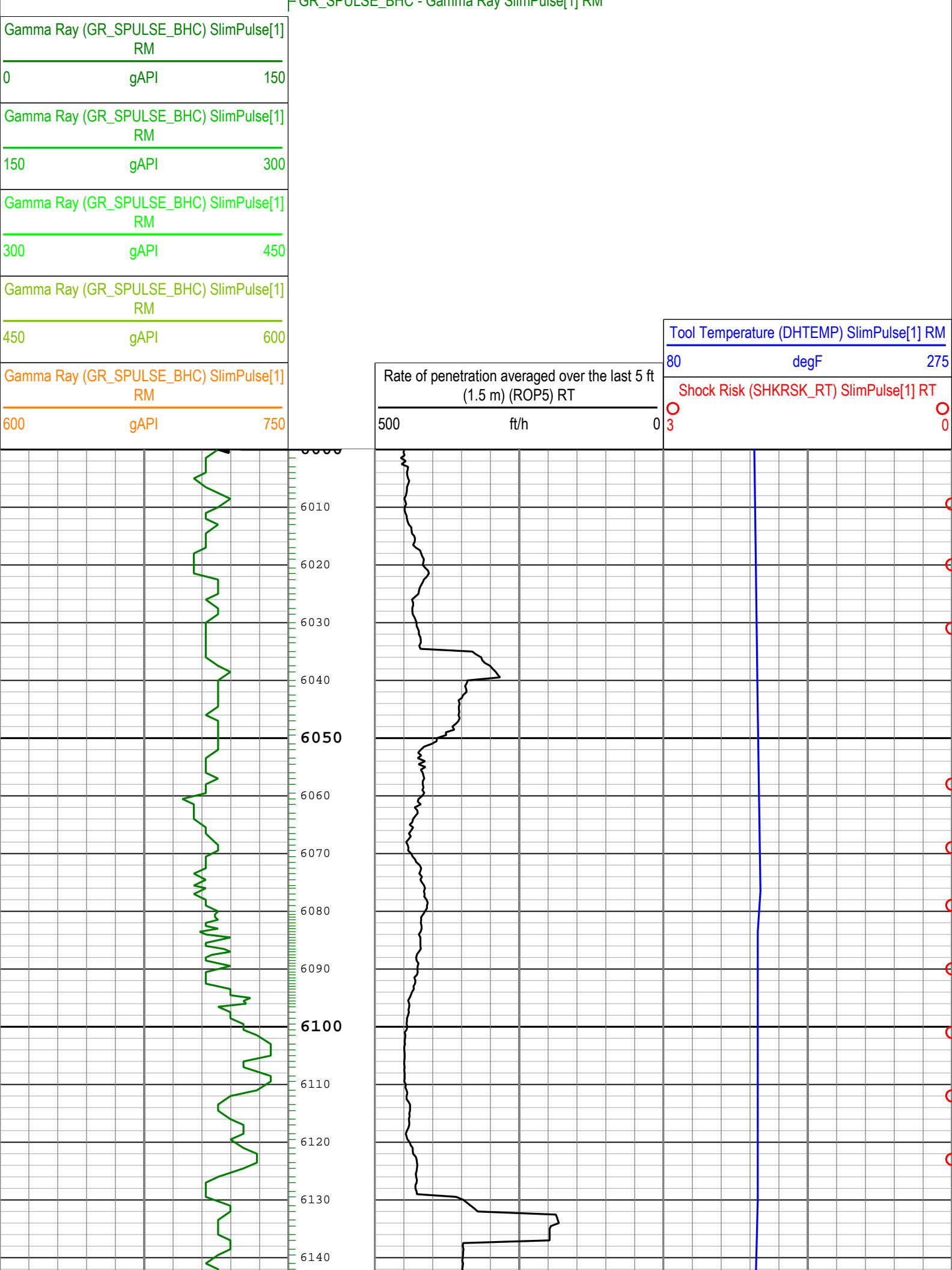
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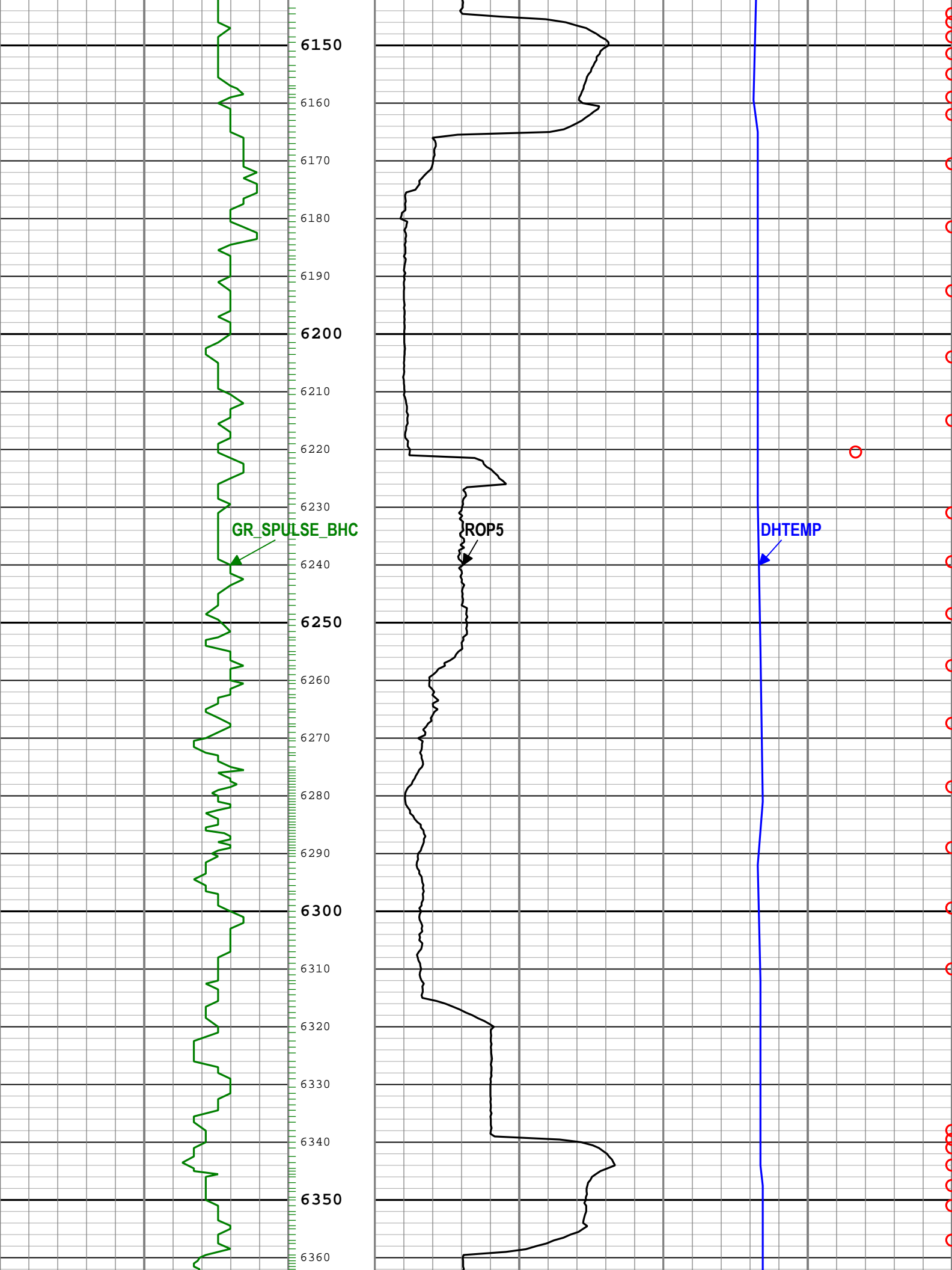
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Include Parallel Data
RUN02	Drilling	Down	1769.00 ft	5368.25 ft	19-Jun-2016 5:34:29 PM	20-Jun-2016 12:32:00 PM	Yes
RUN03	Drilling	Down	5388.58 ft	7541.08 ft	20-Jun-2016 5:11:01 PM	21-Jun-2016 5:43:23 PM	Yes
RUN004	Ream Down 1	Down	6369.67 ft	7534.00 ft	22-Jun-2016 6:46:00 AM	22-Jun-2016 10:15:00 AM	Yes
RUN004	Drilling	Down	7541.25 ft	15130.00 ft	22-Jun-2016 10:49:53 AM	24-Jun-2016 4:41:51 PM	Yes

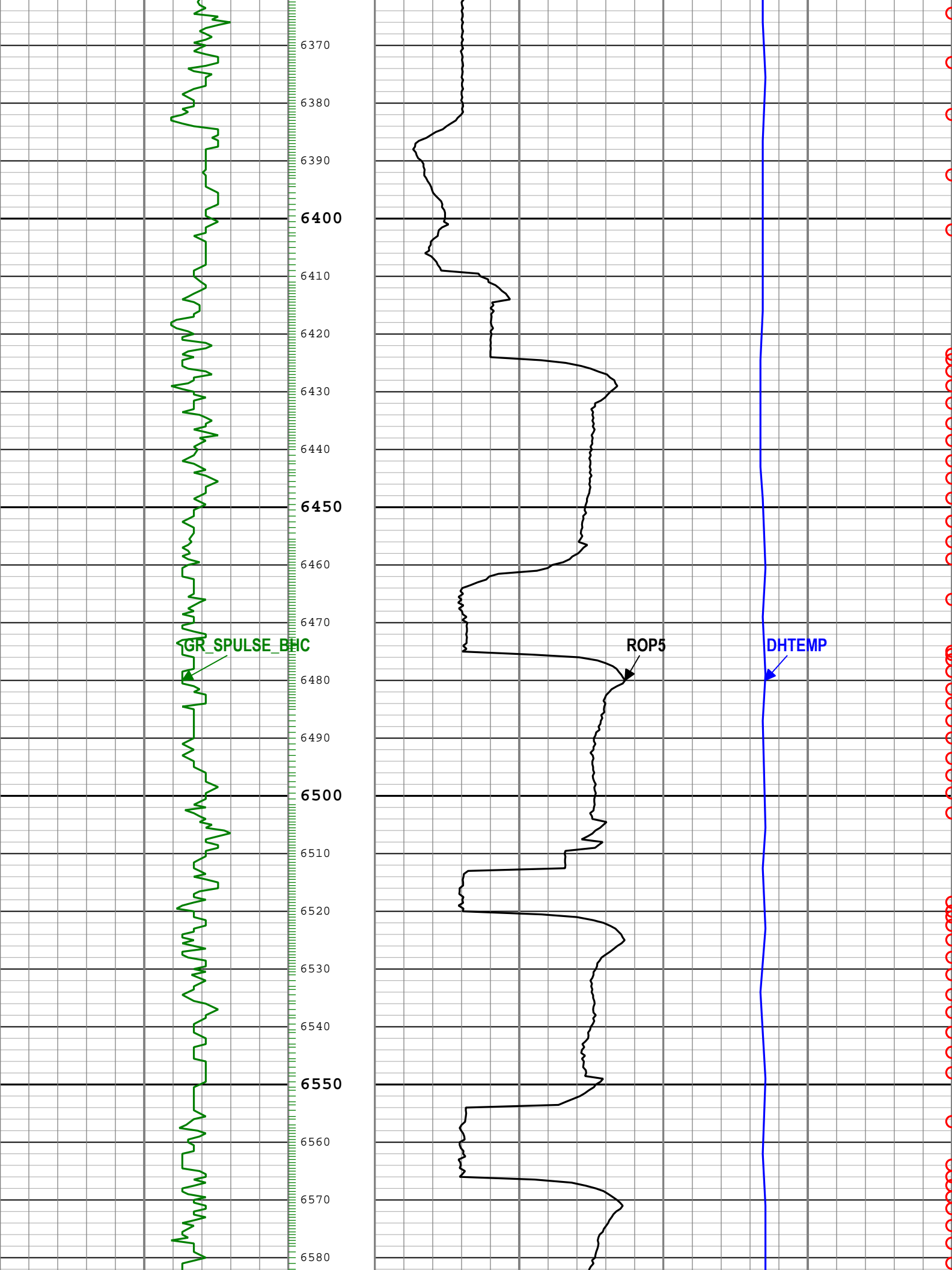
All depths are referenced to toolstring zero

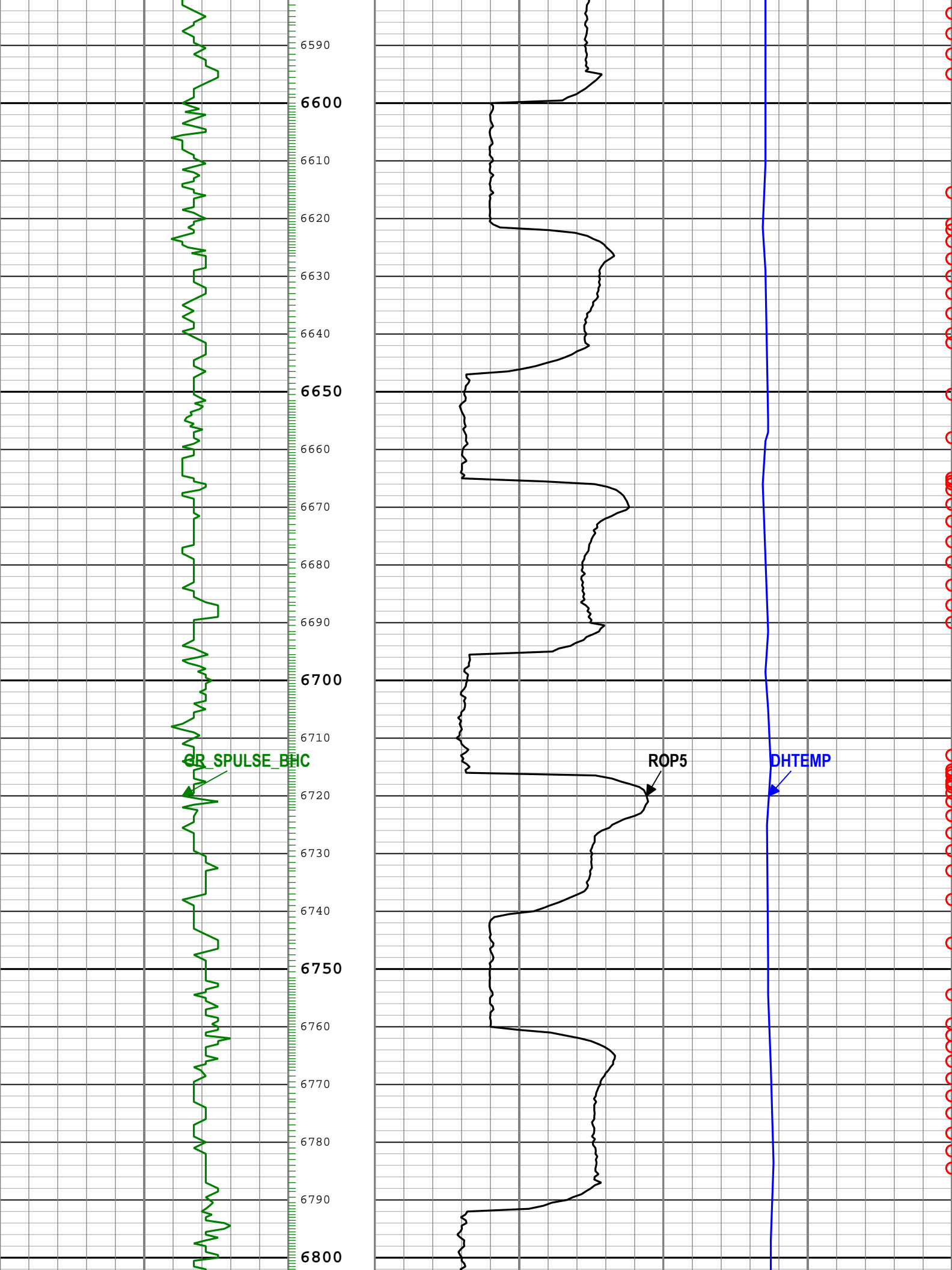
Log	Company:Synergy Well:Fagerberg 15N-7A-M Well Composite:S170
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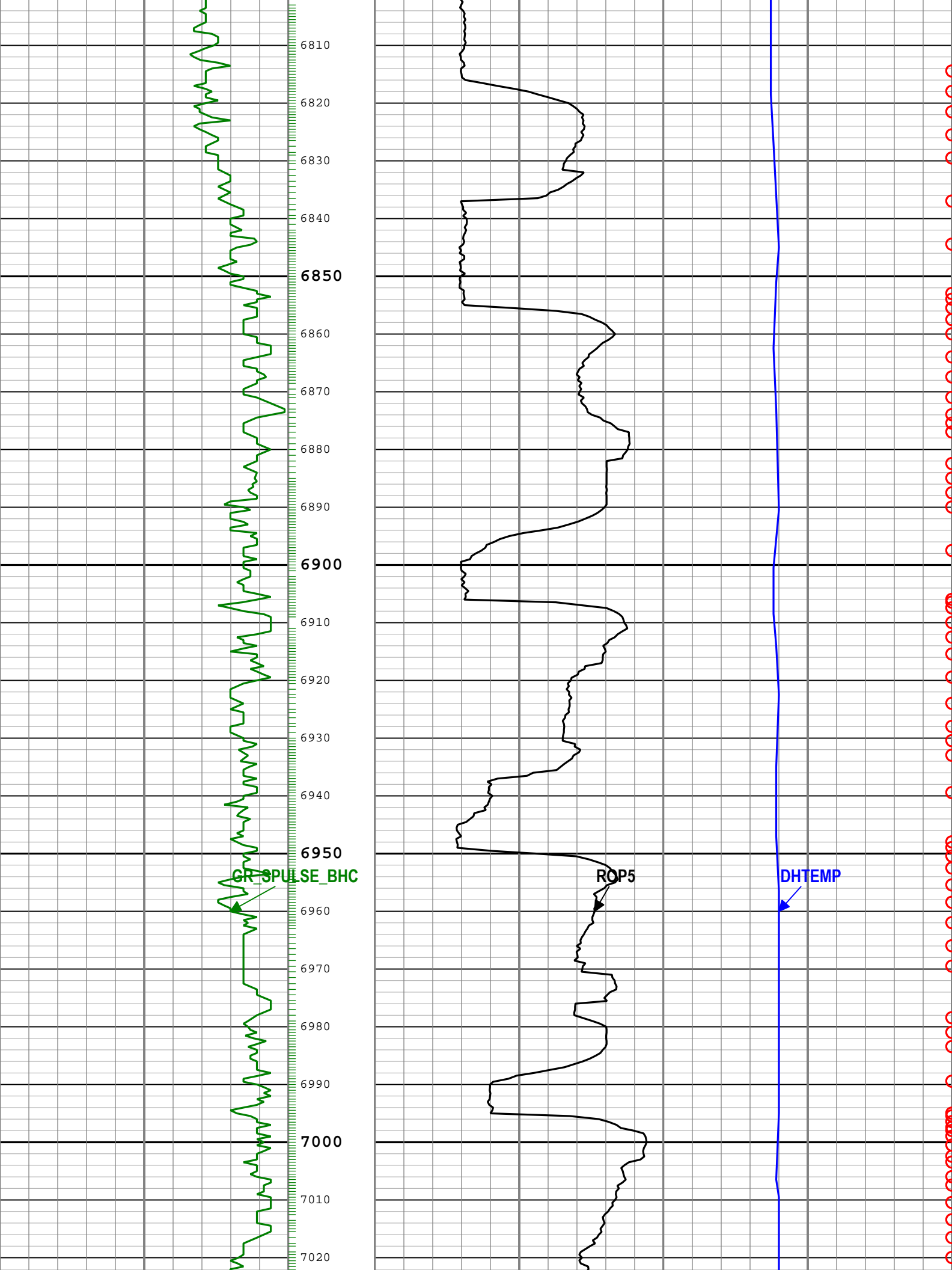
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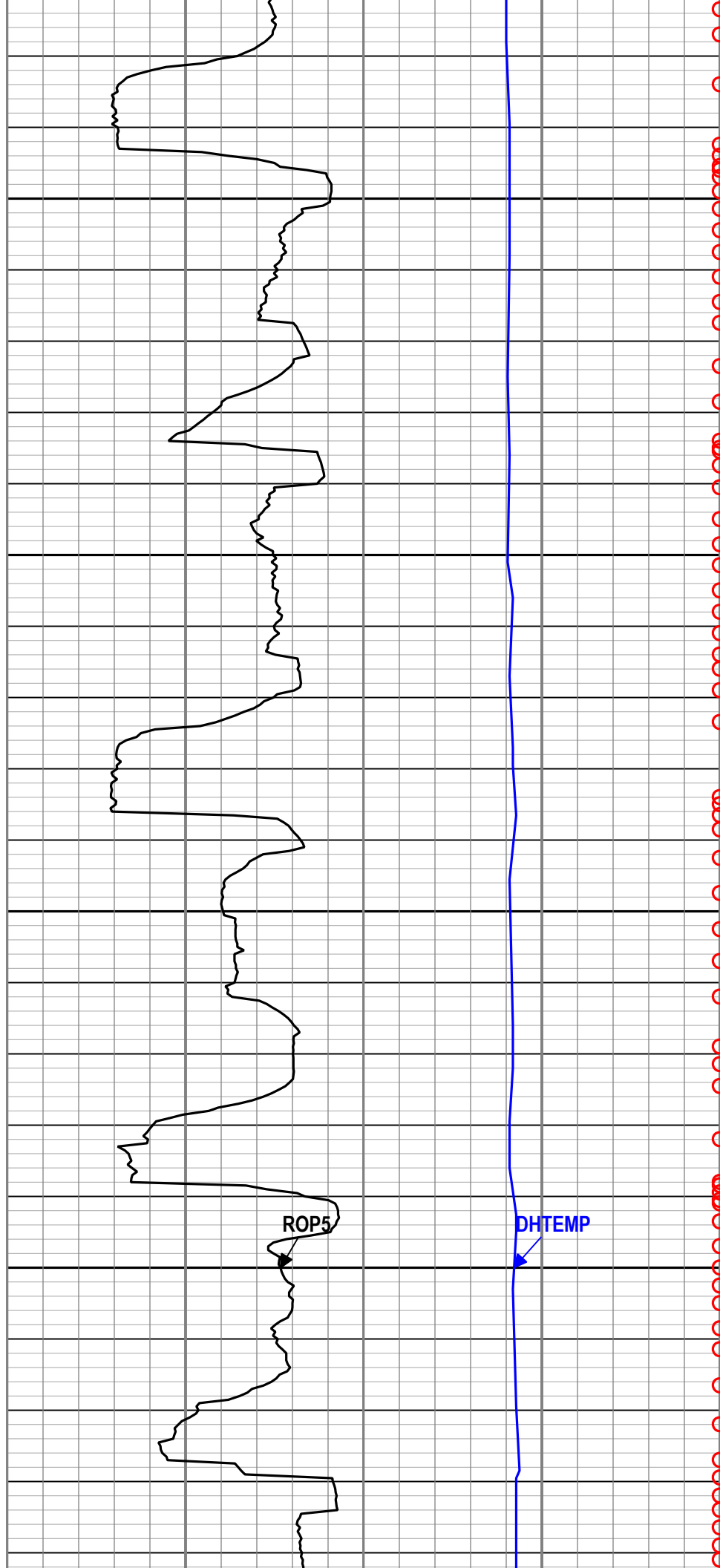
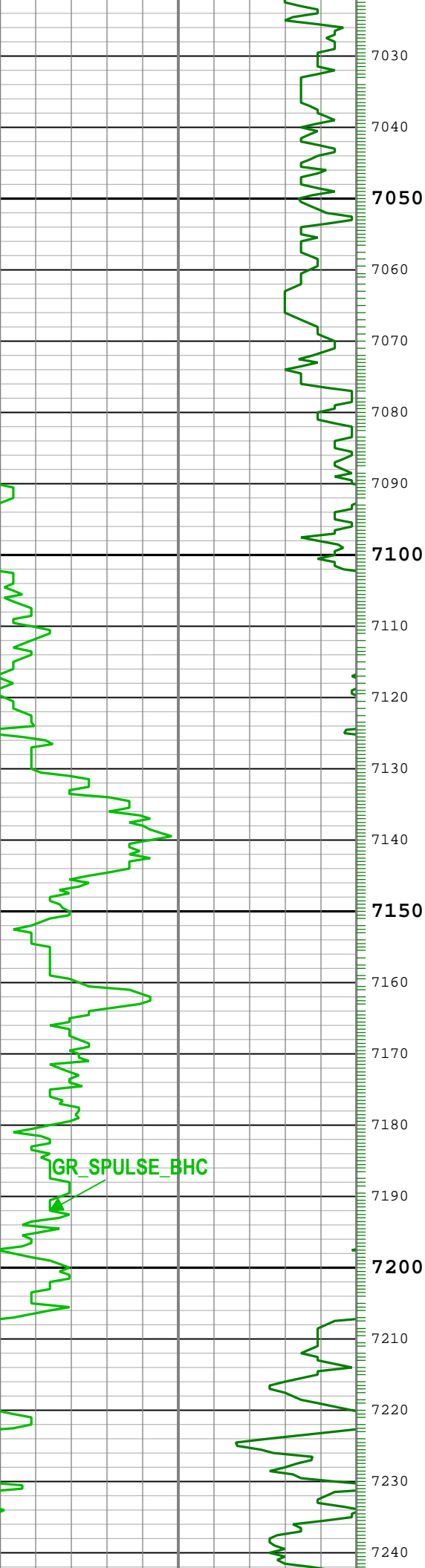


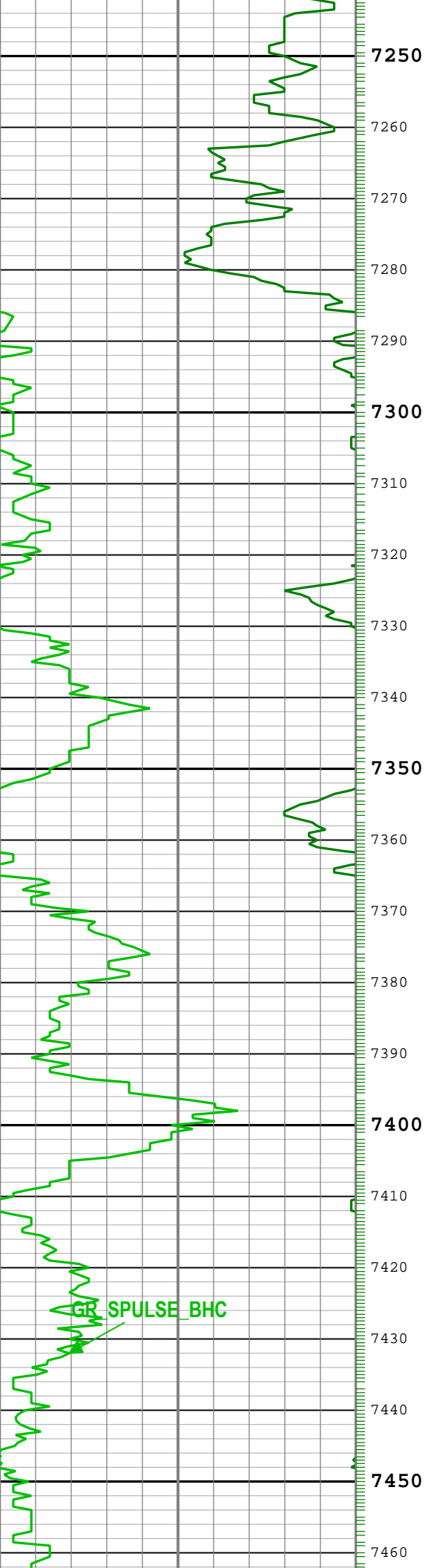


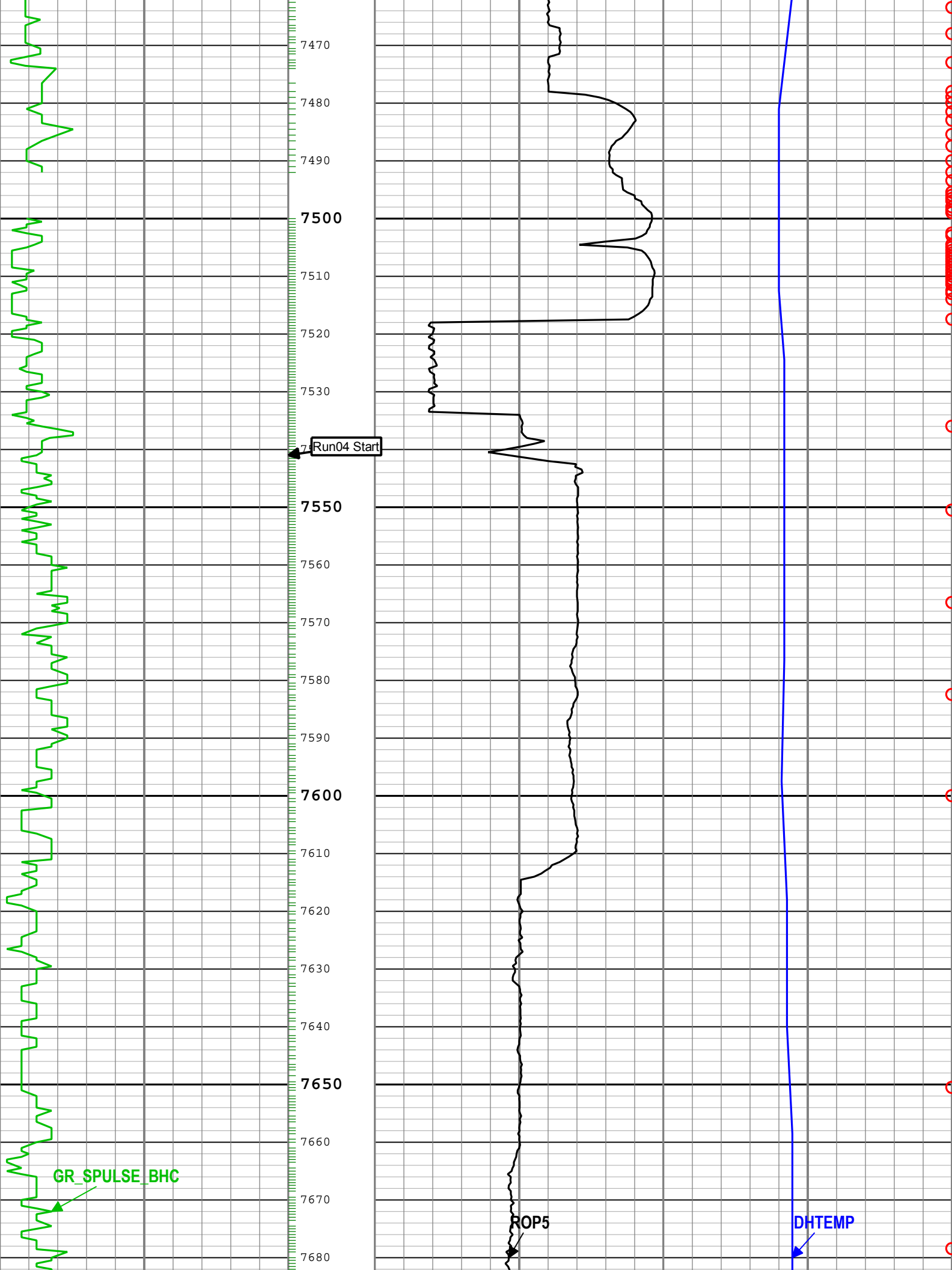


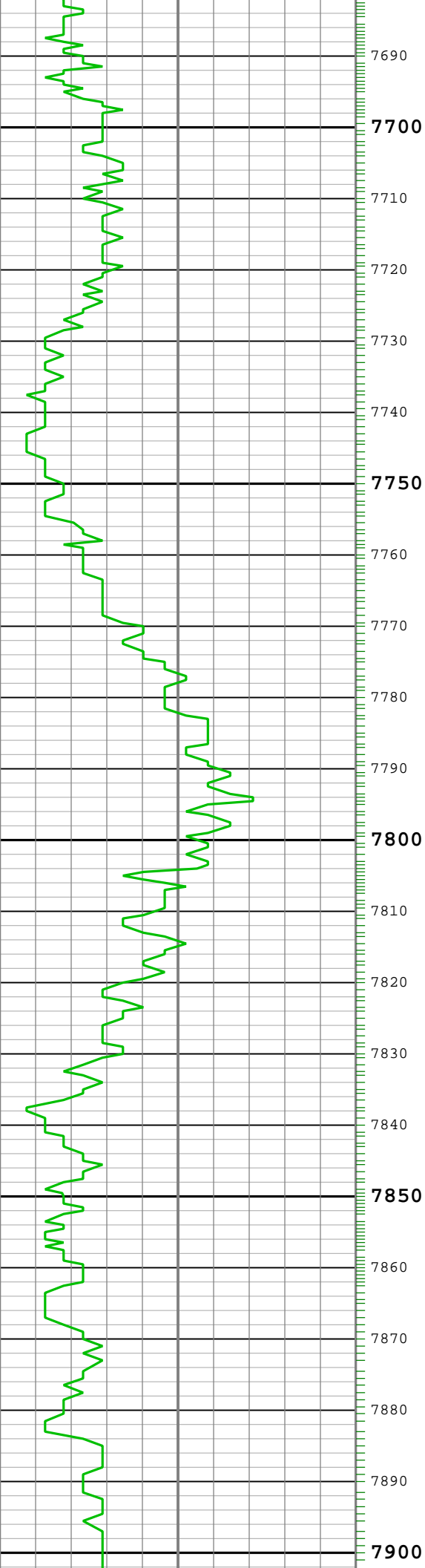


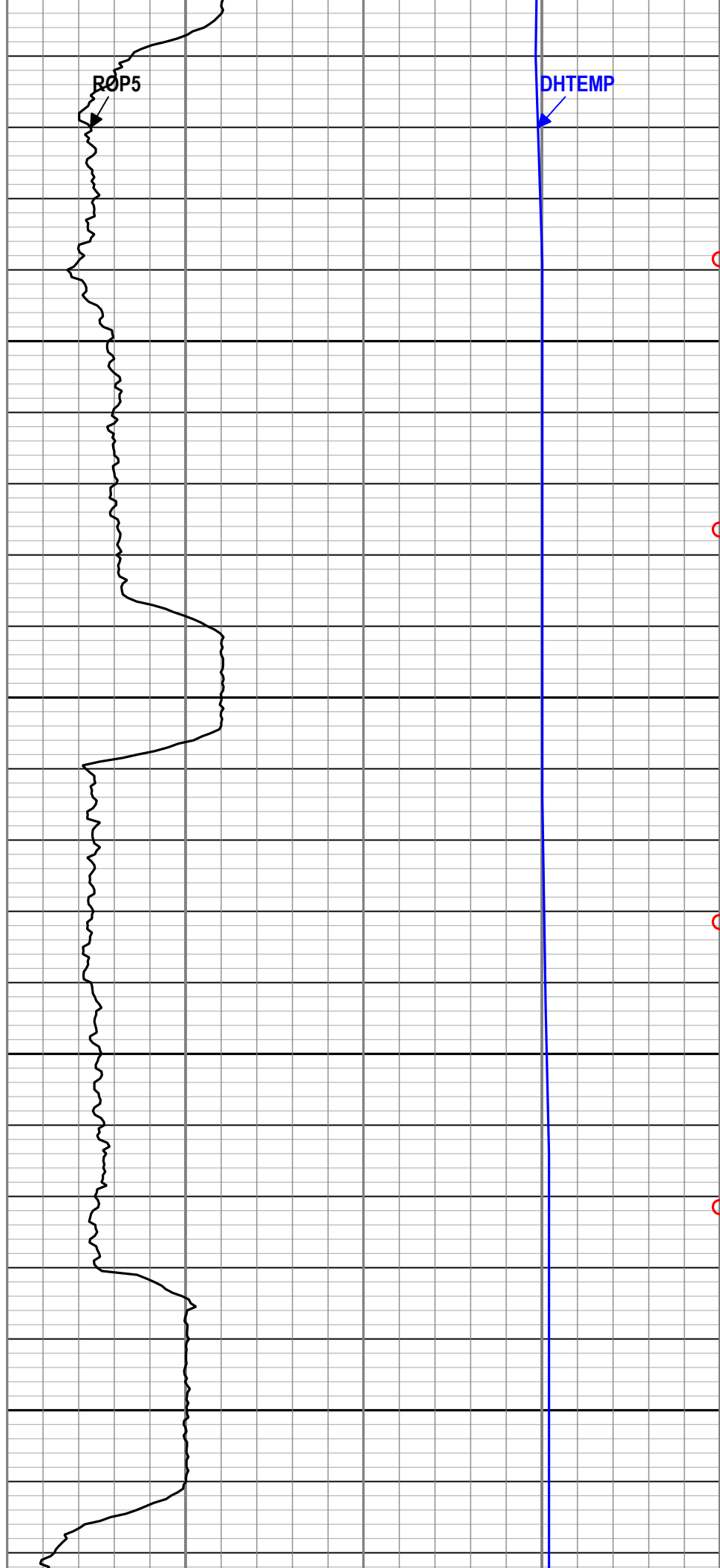
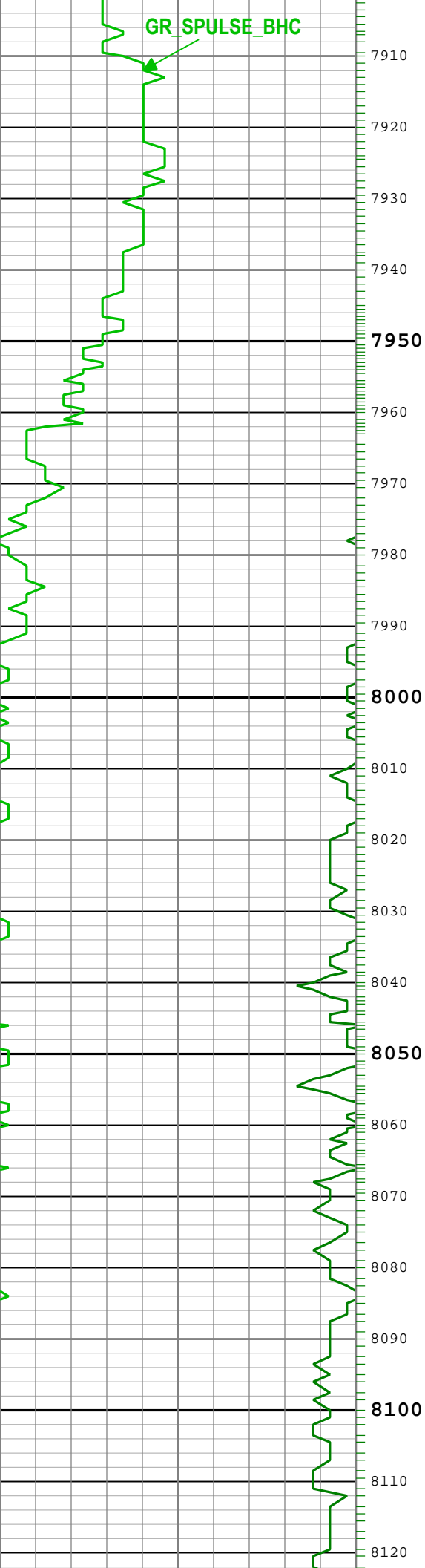


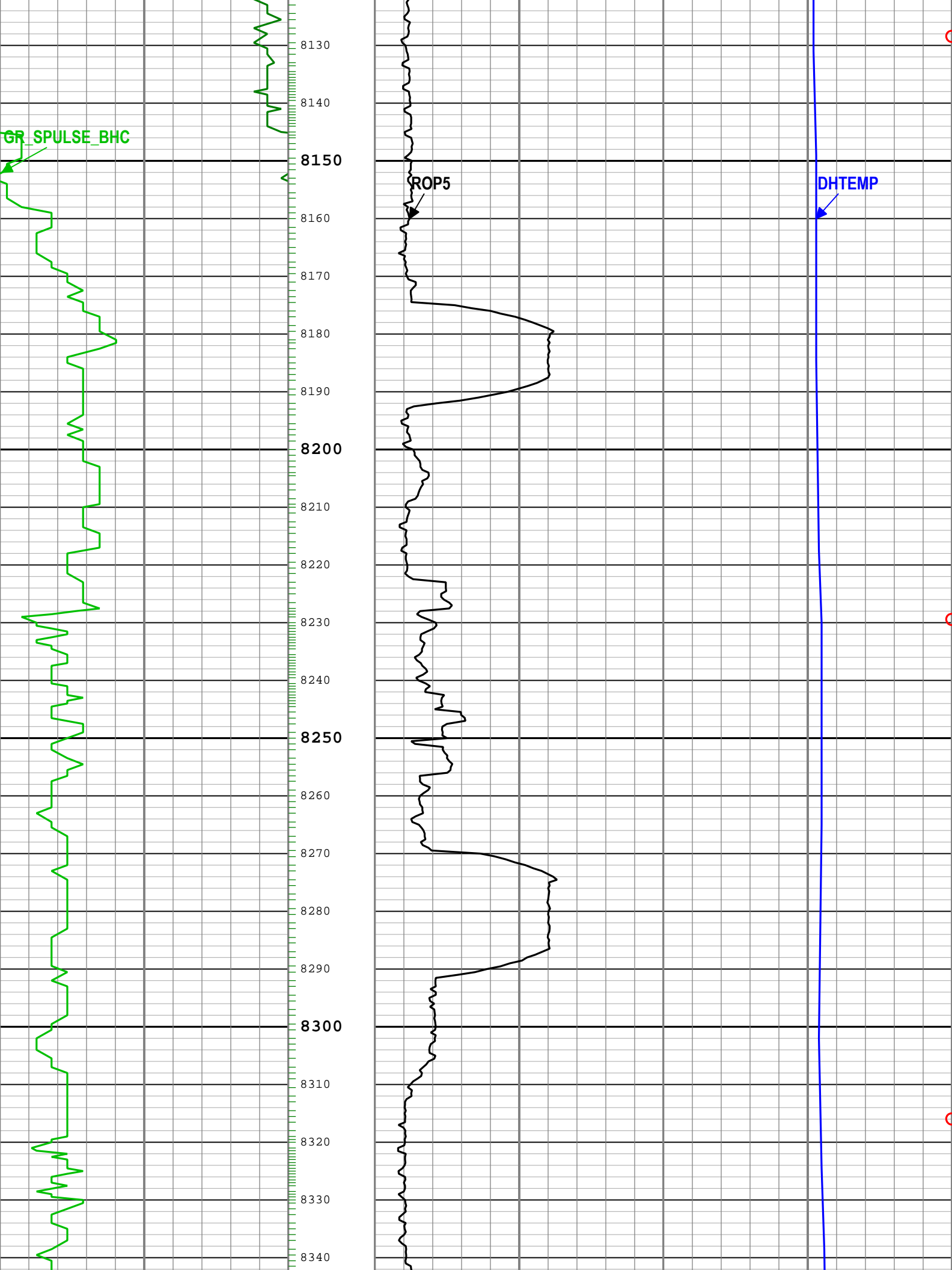


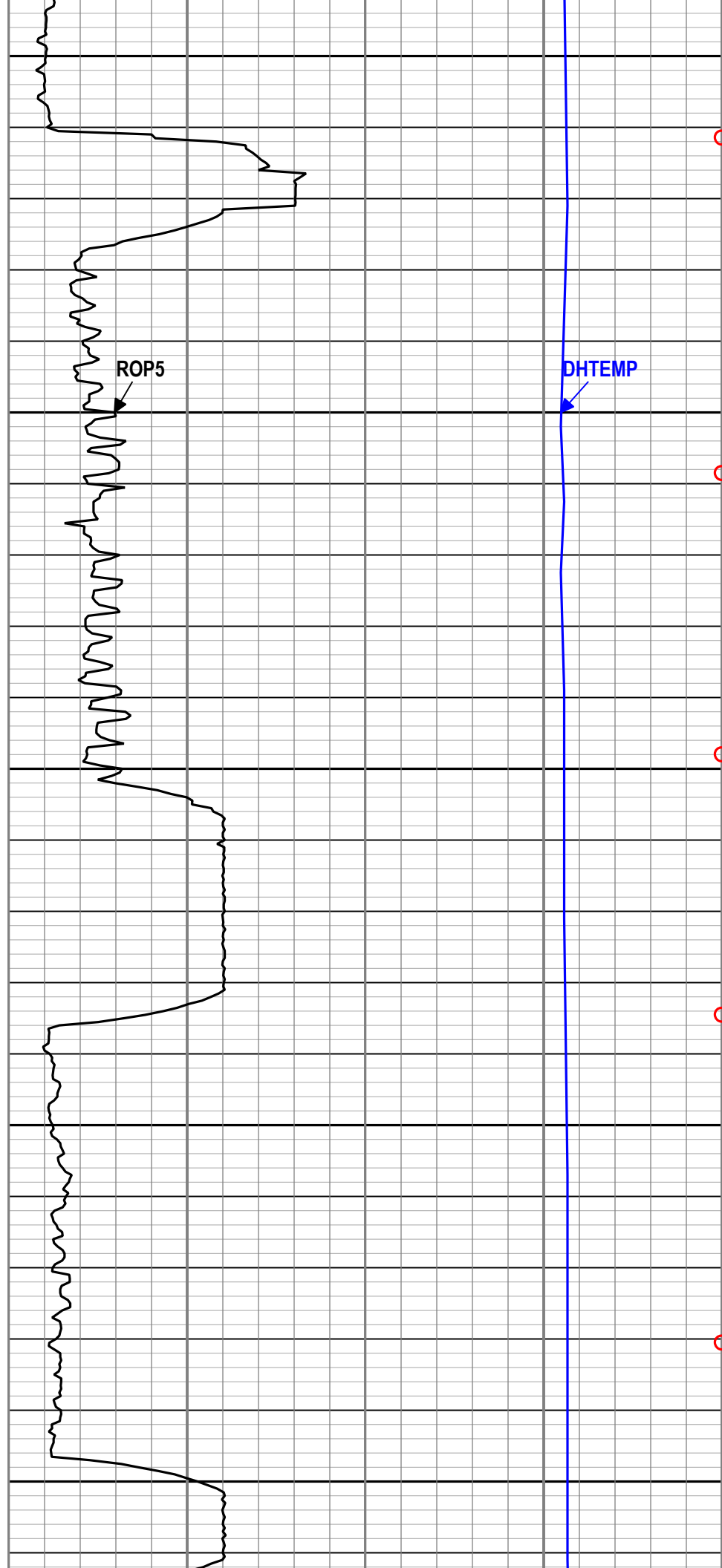
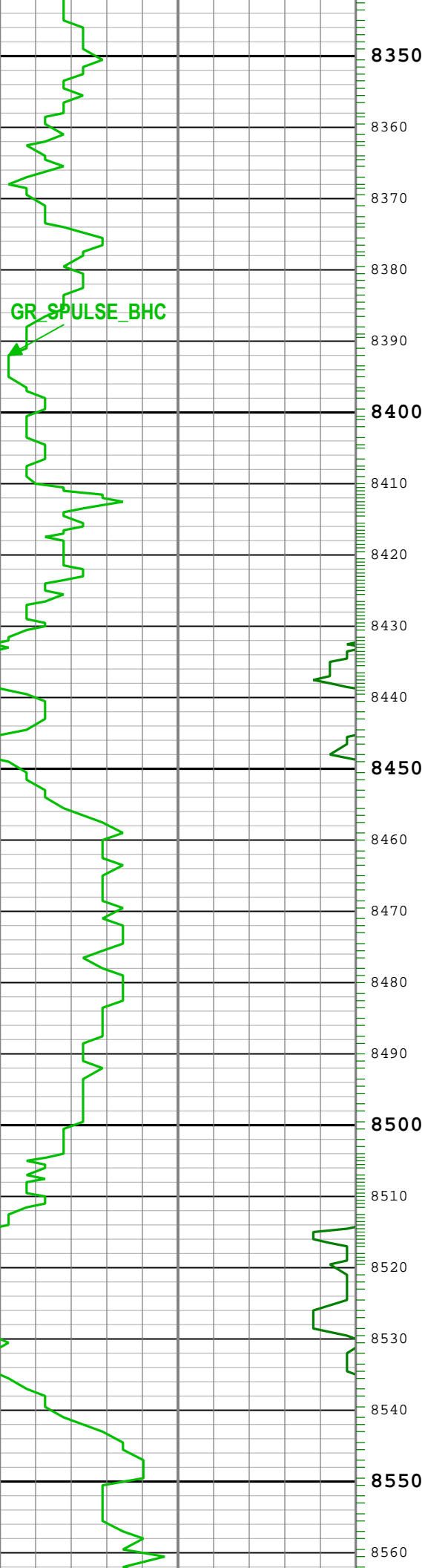


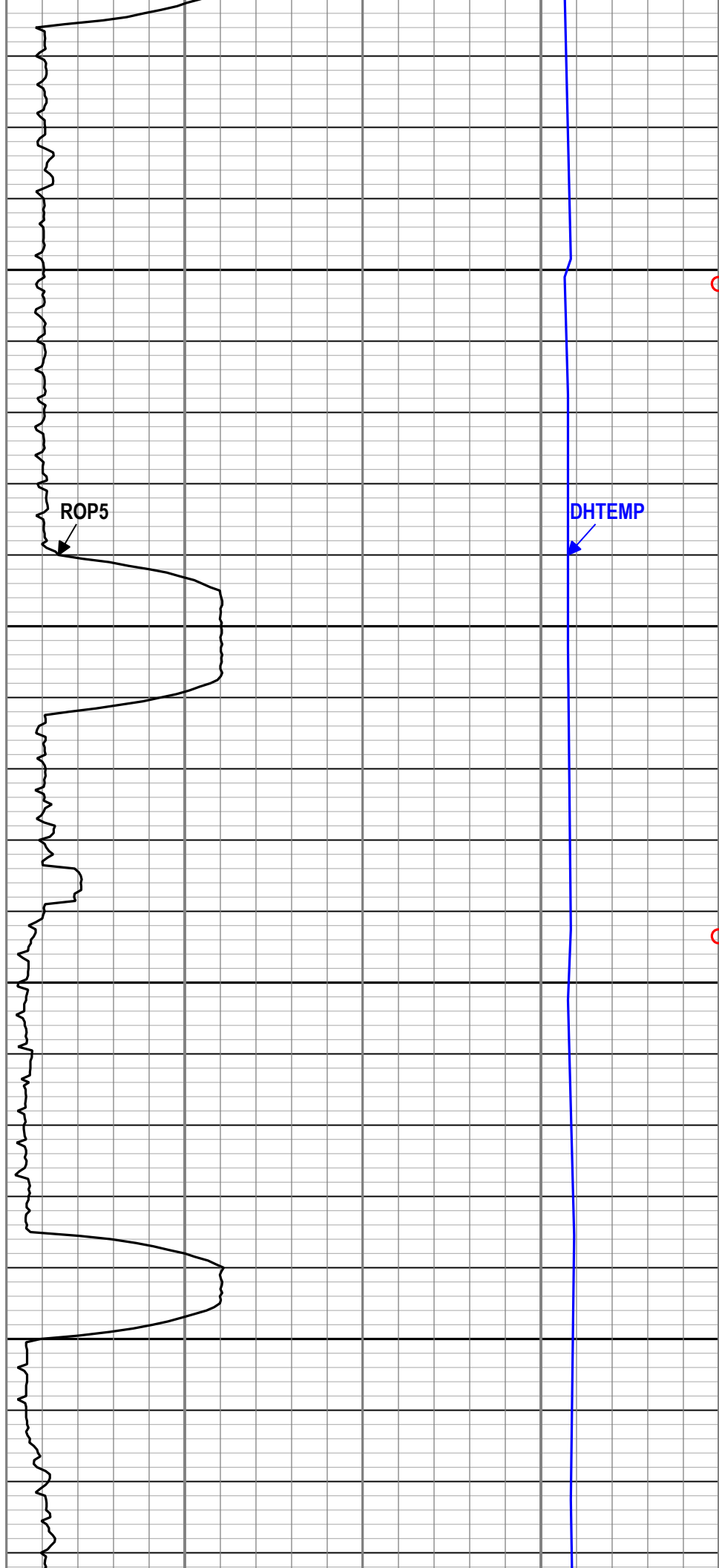
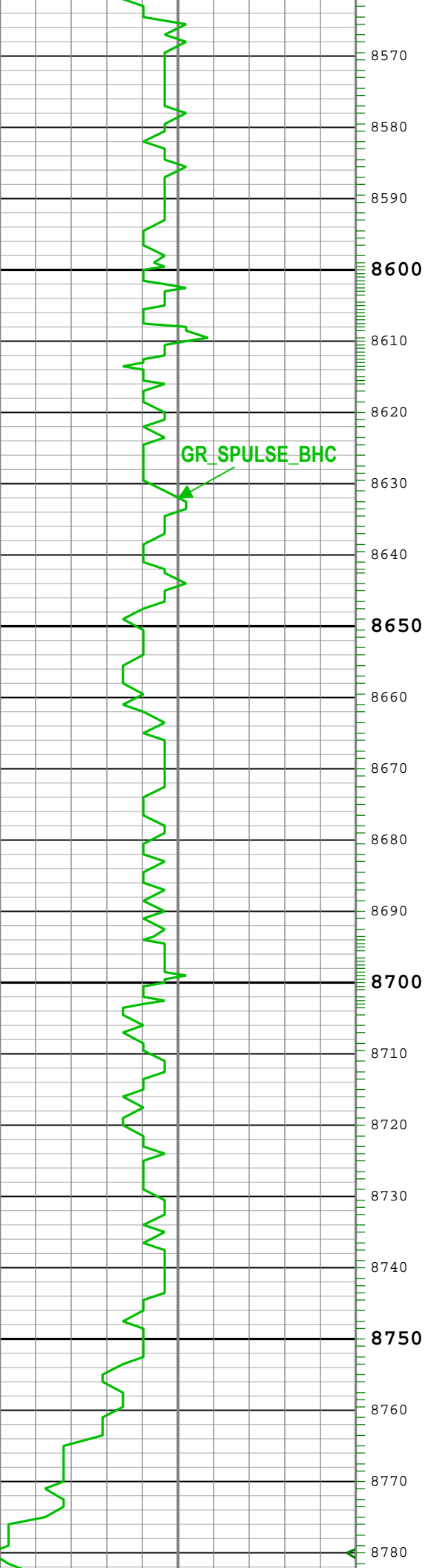


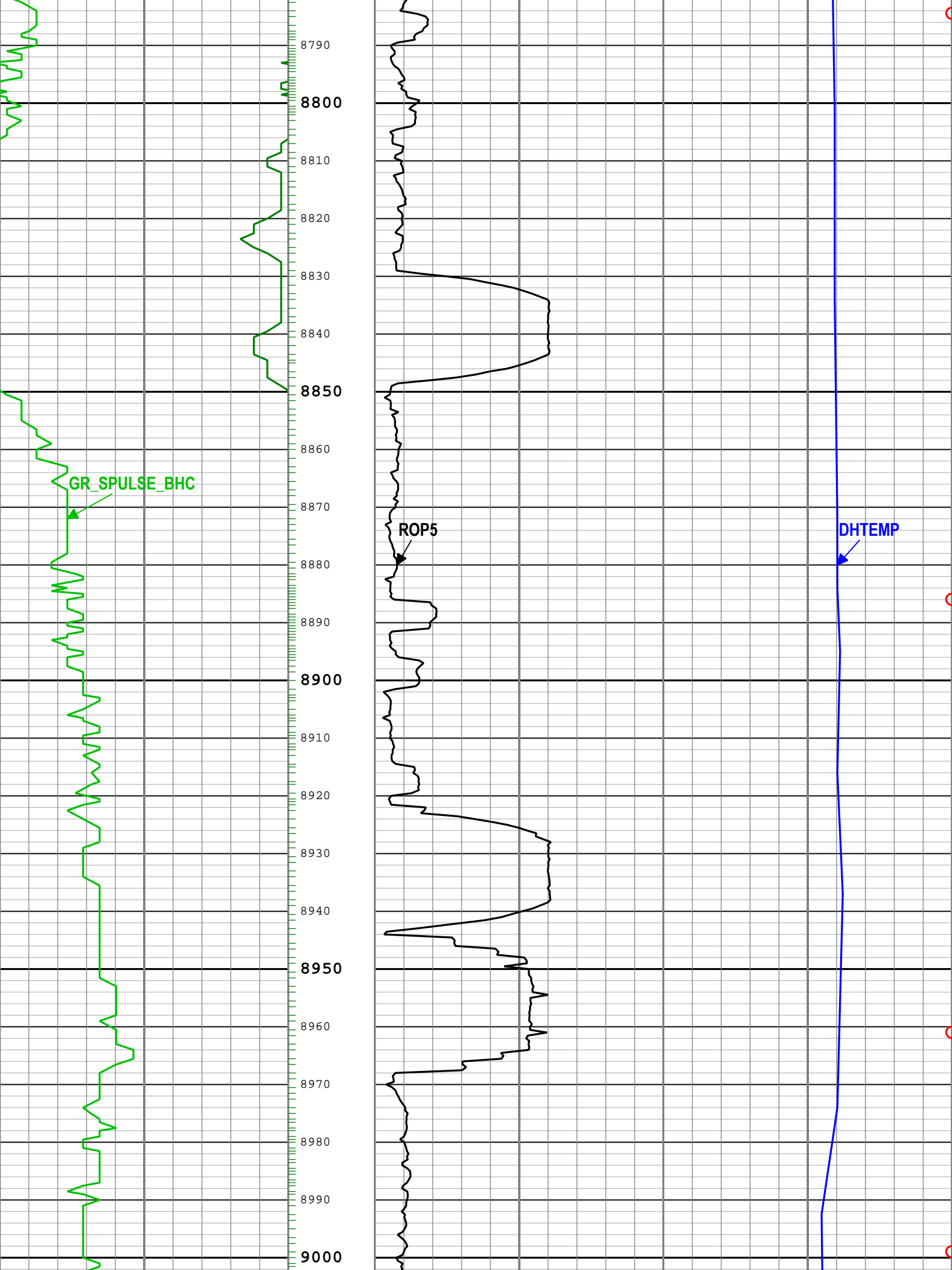


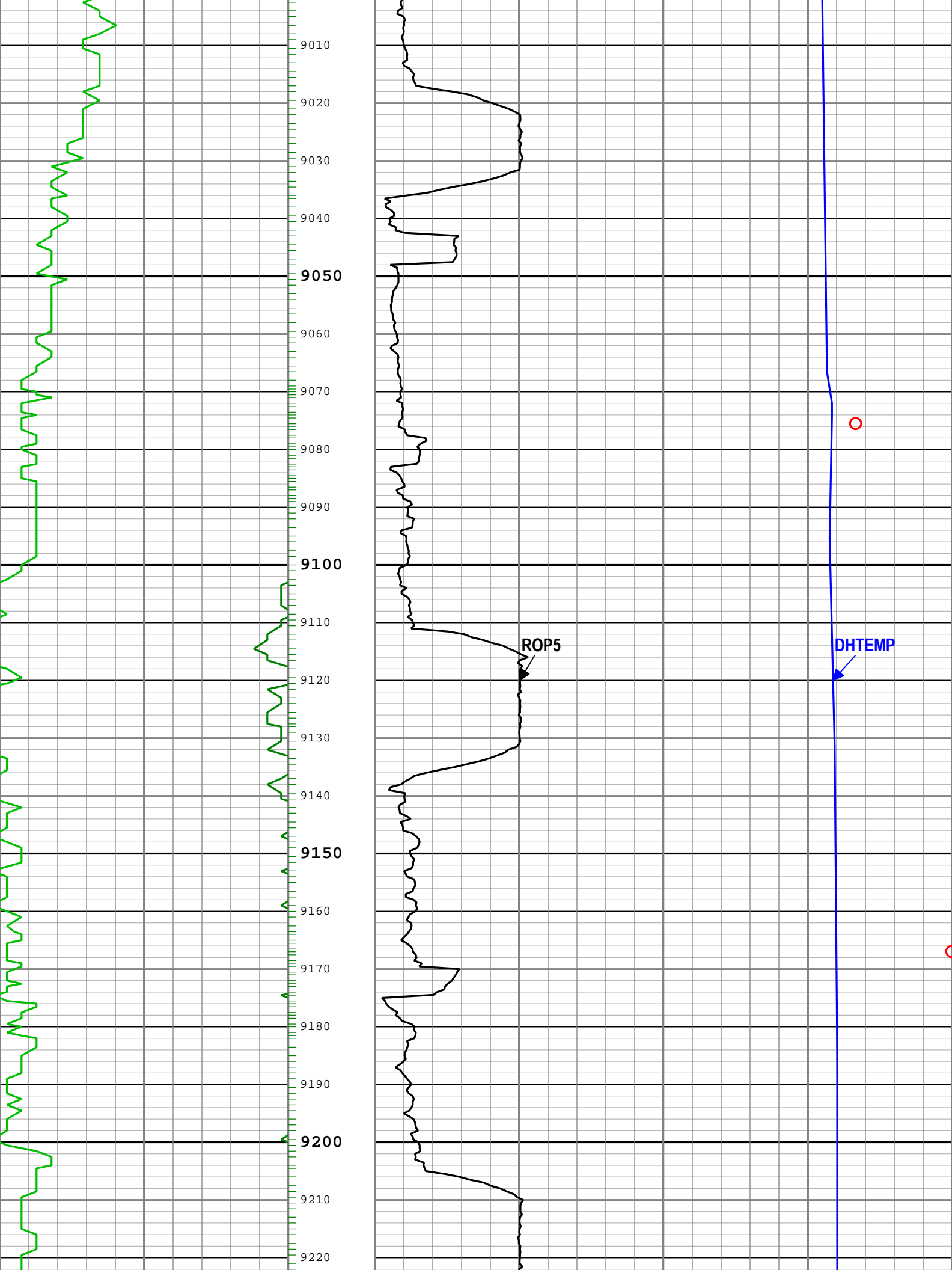


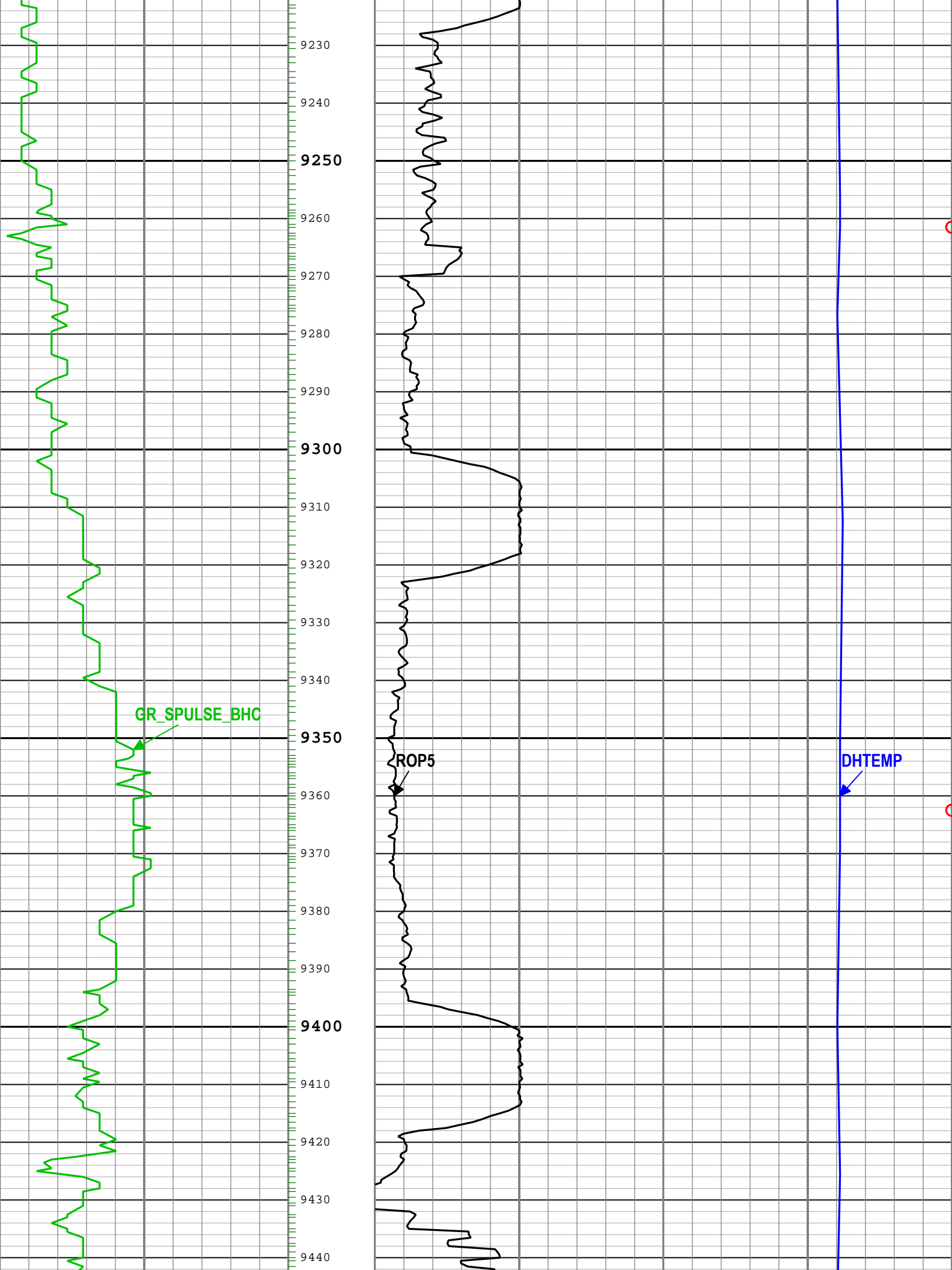


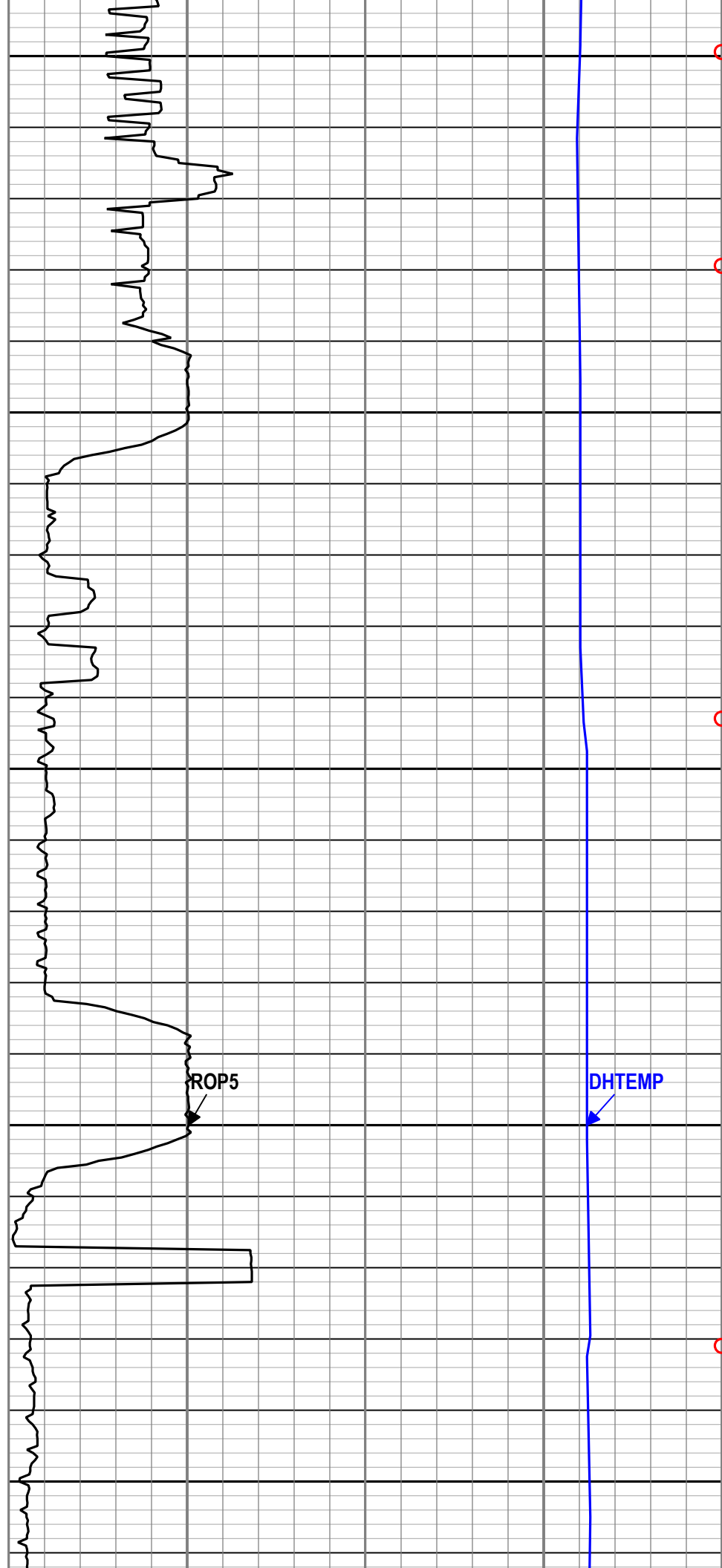
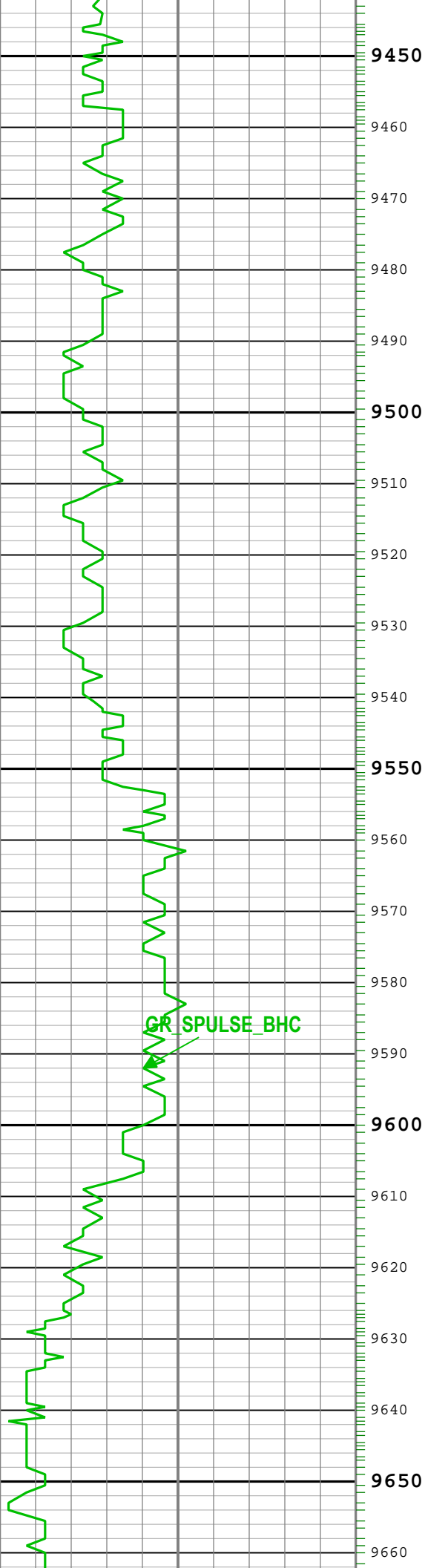


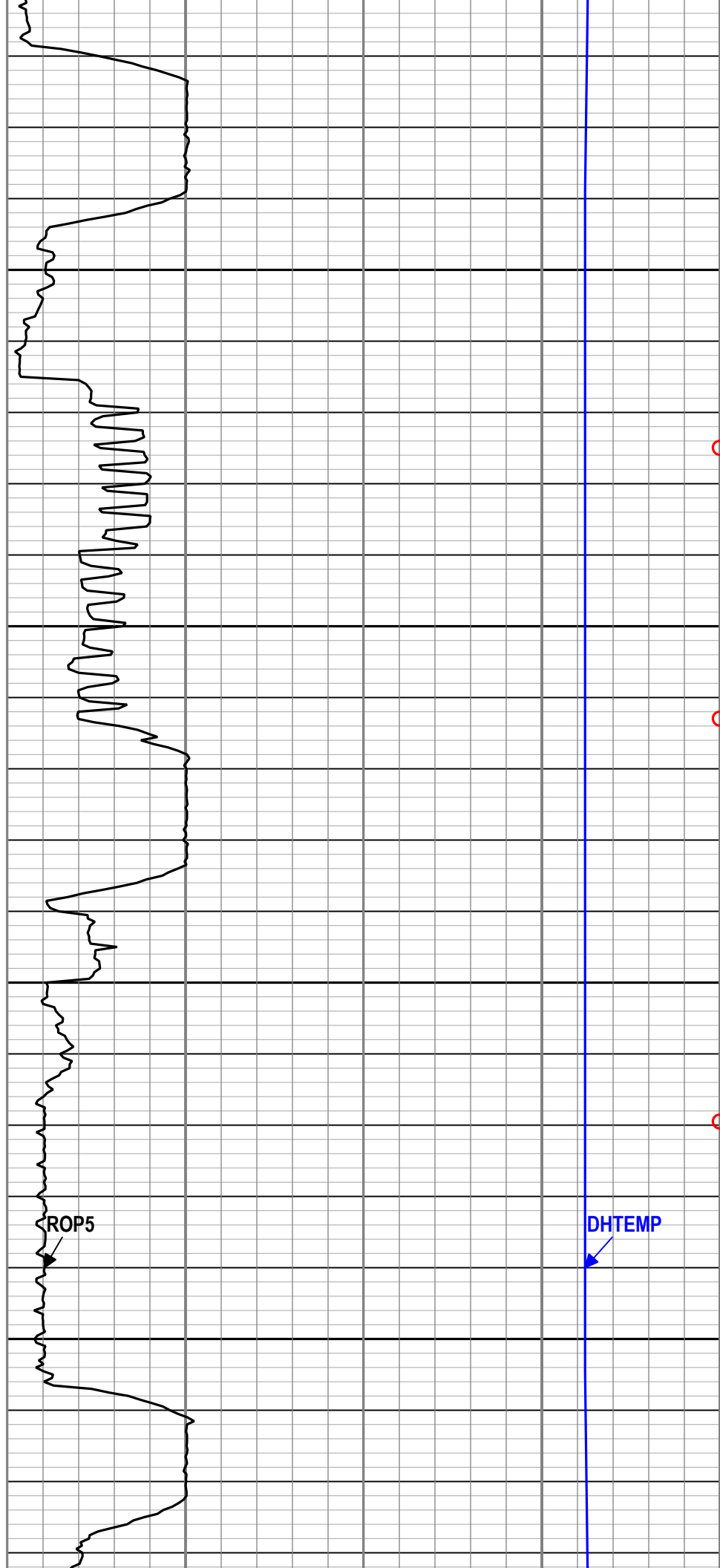
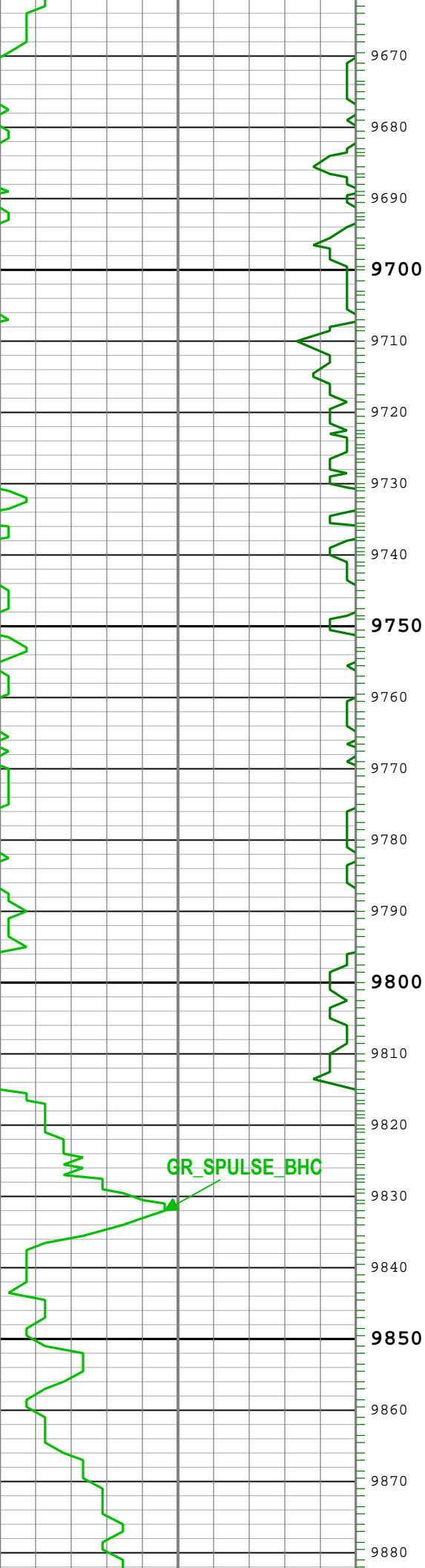


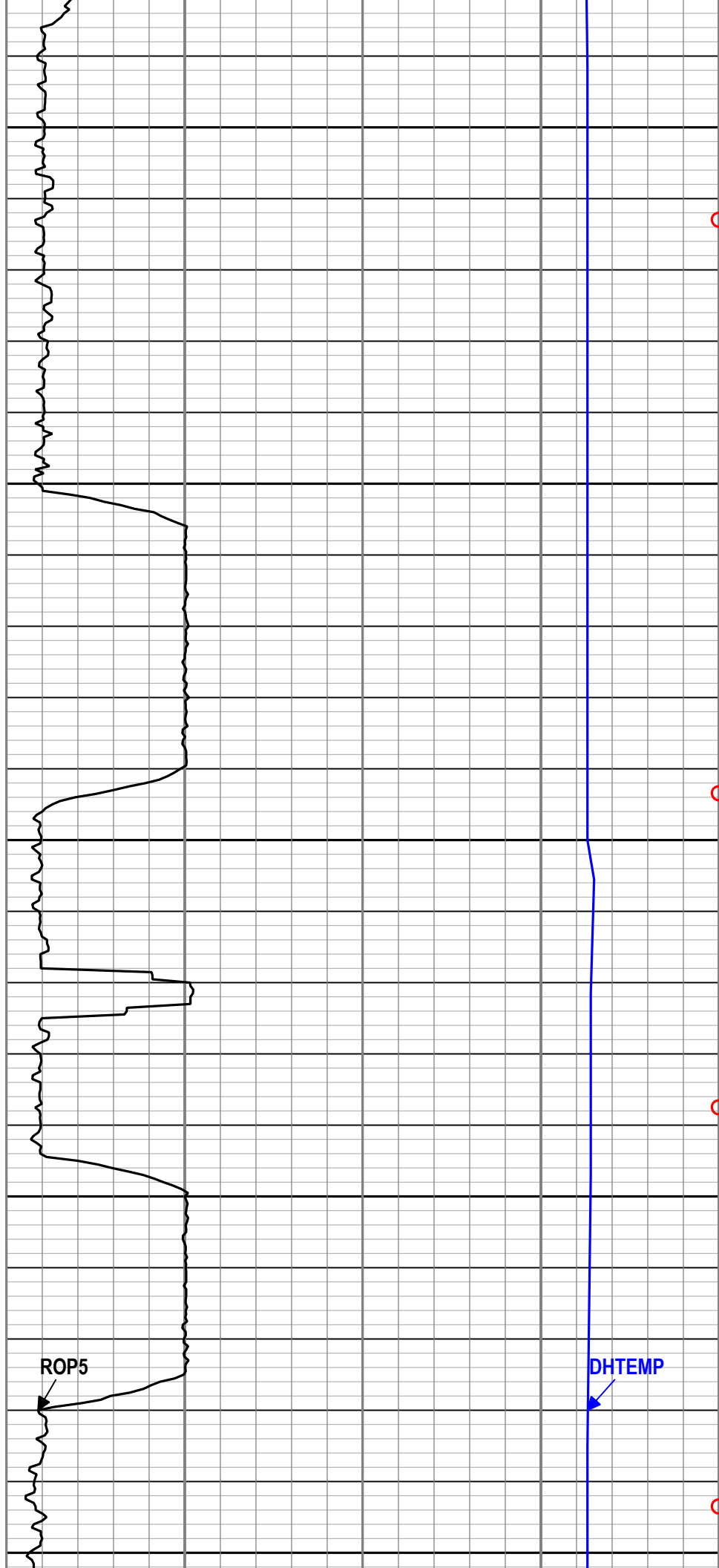
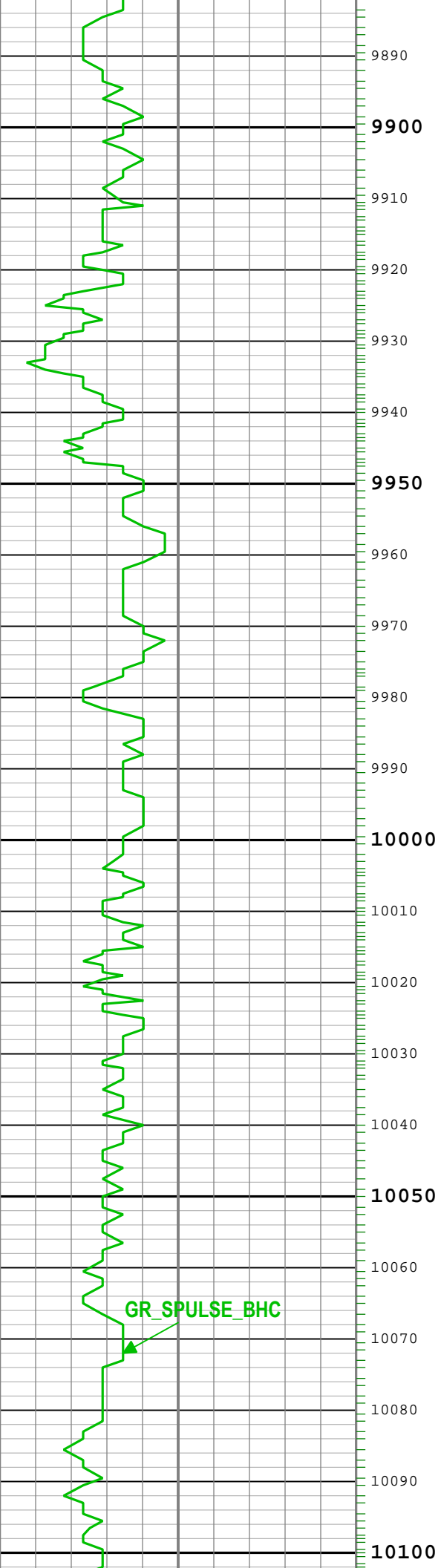


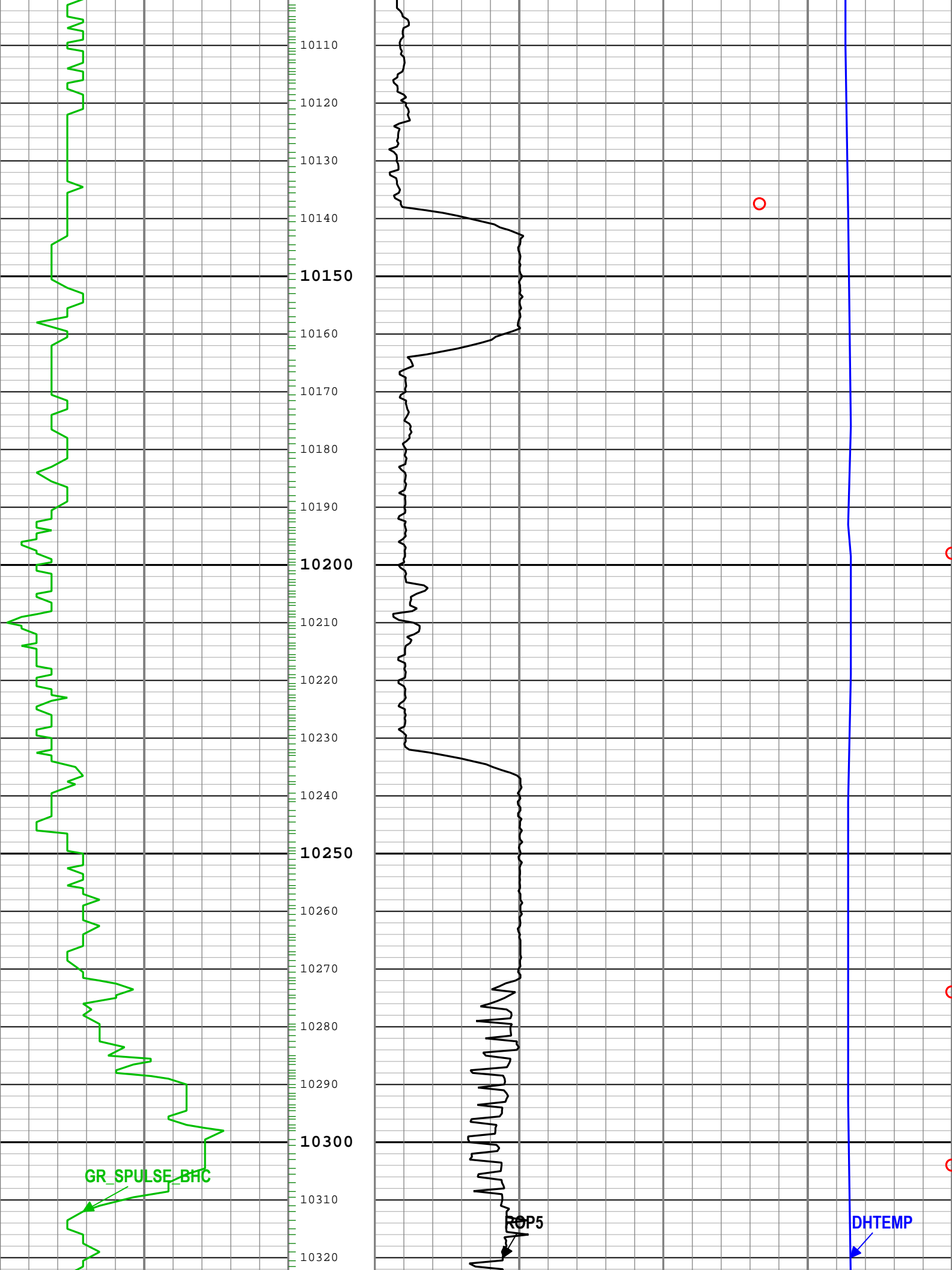


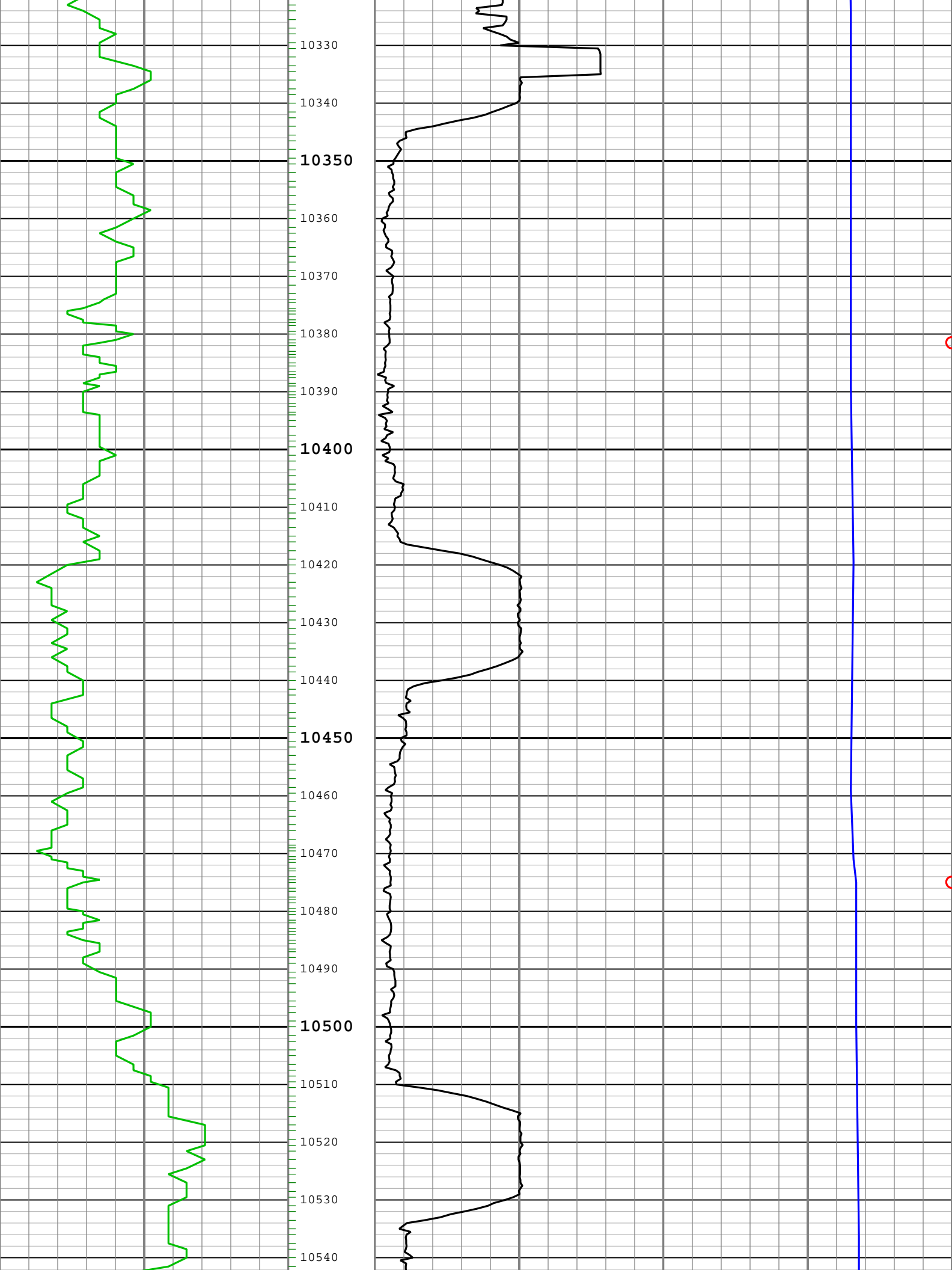


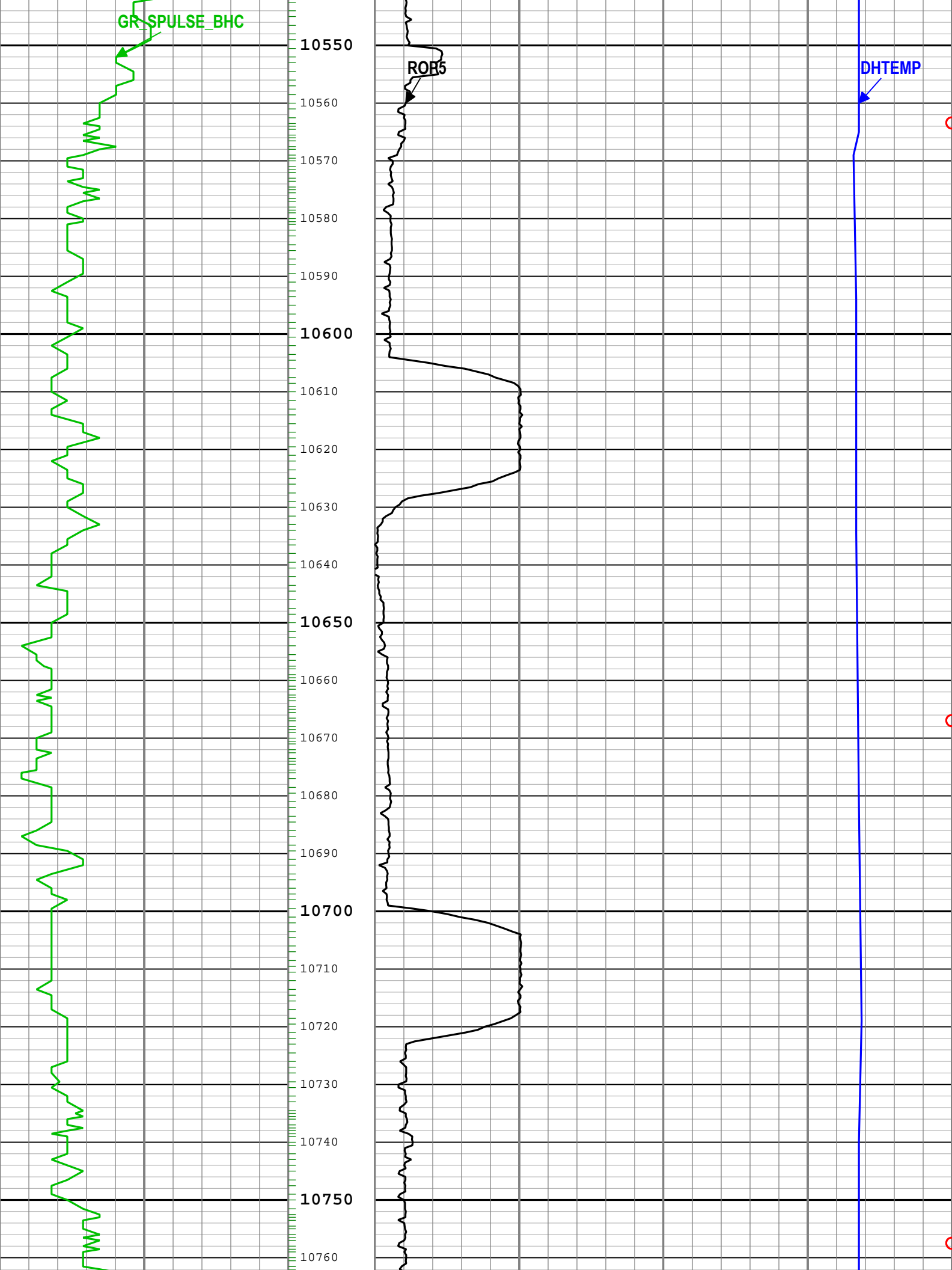


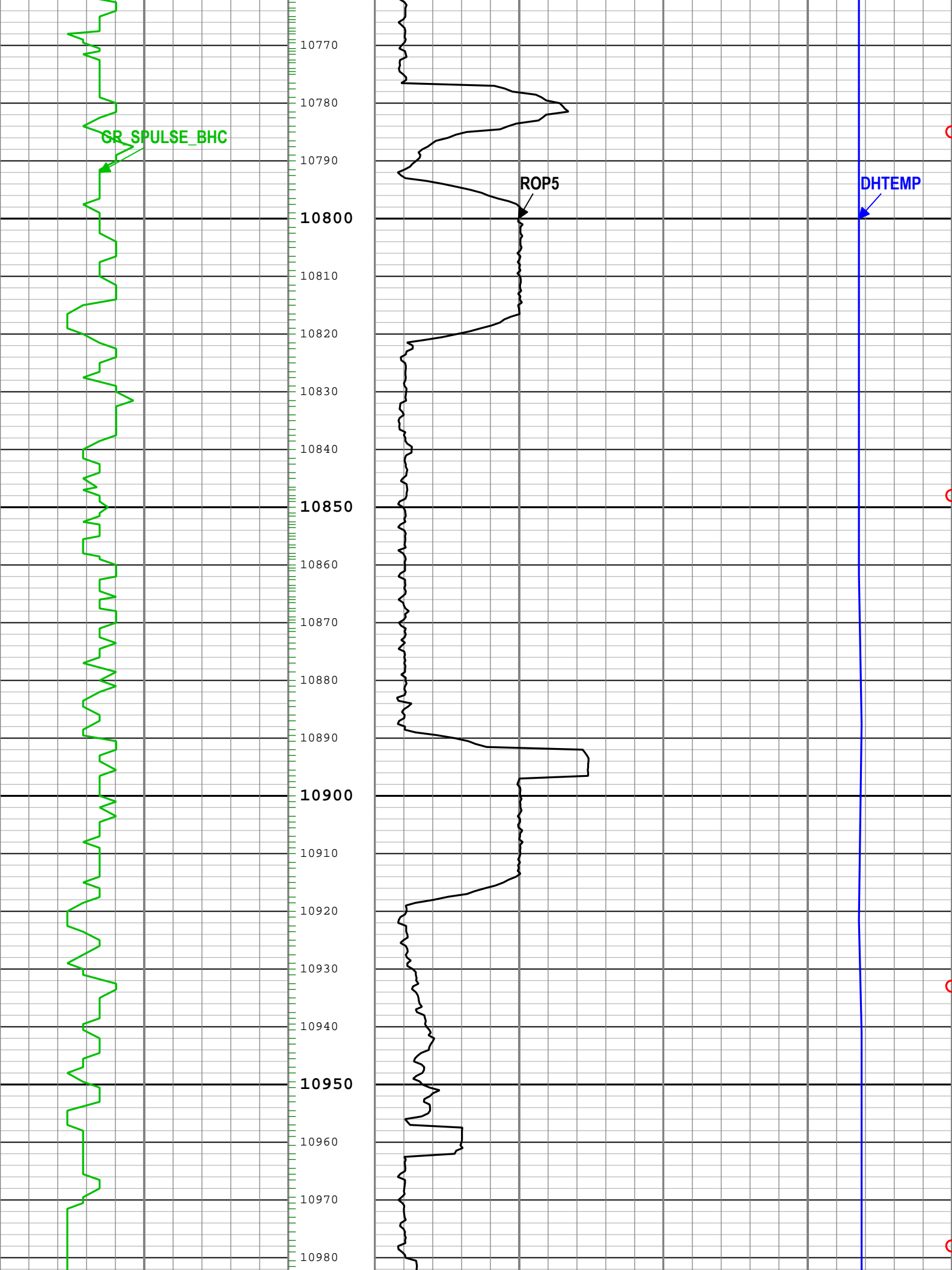


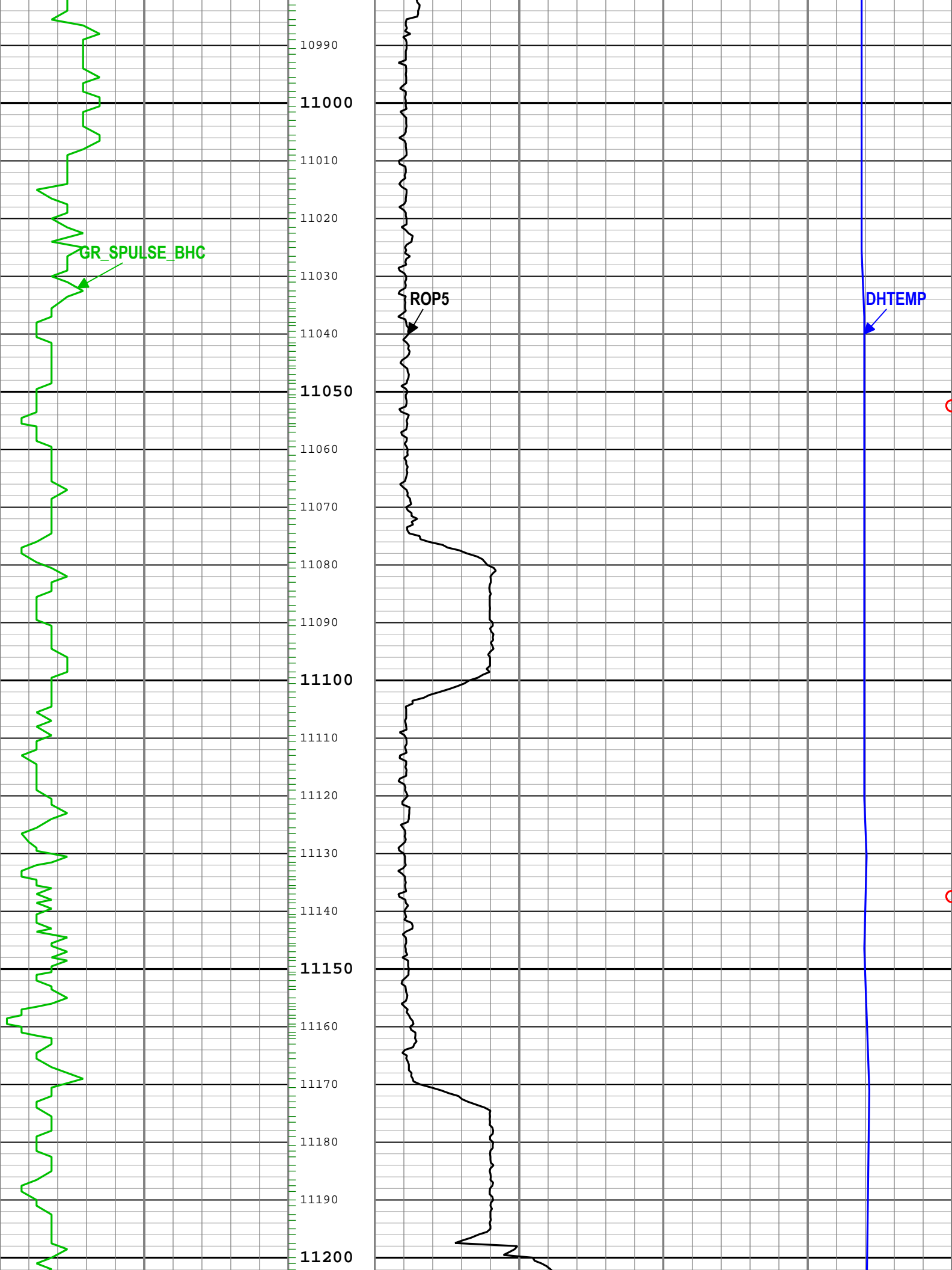


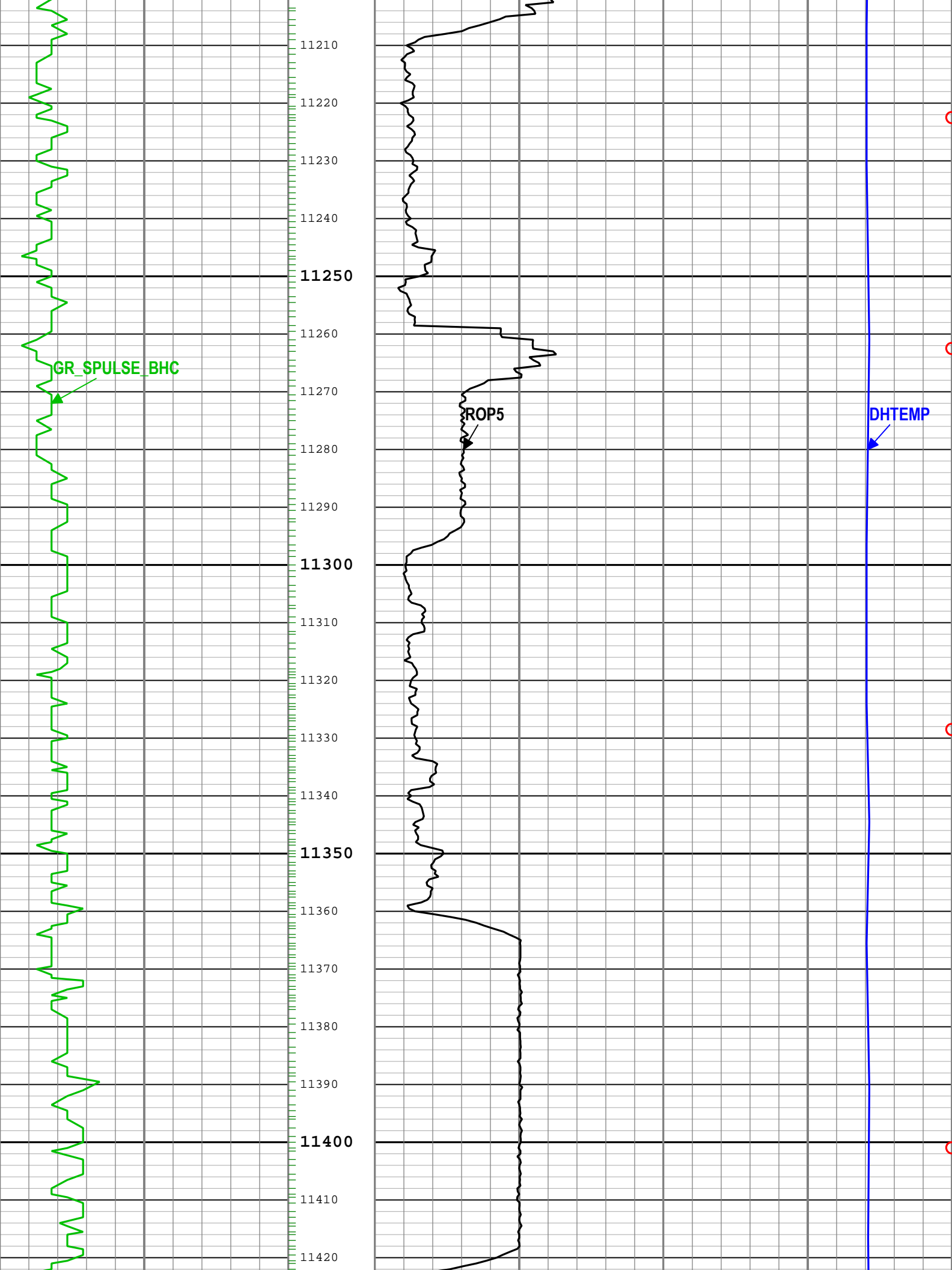


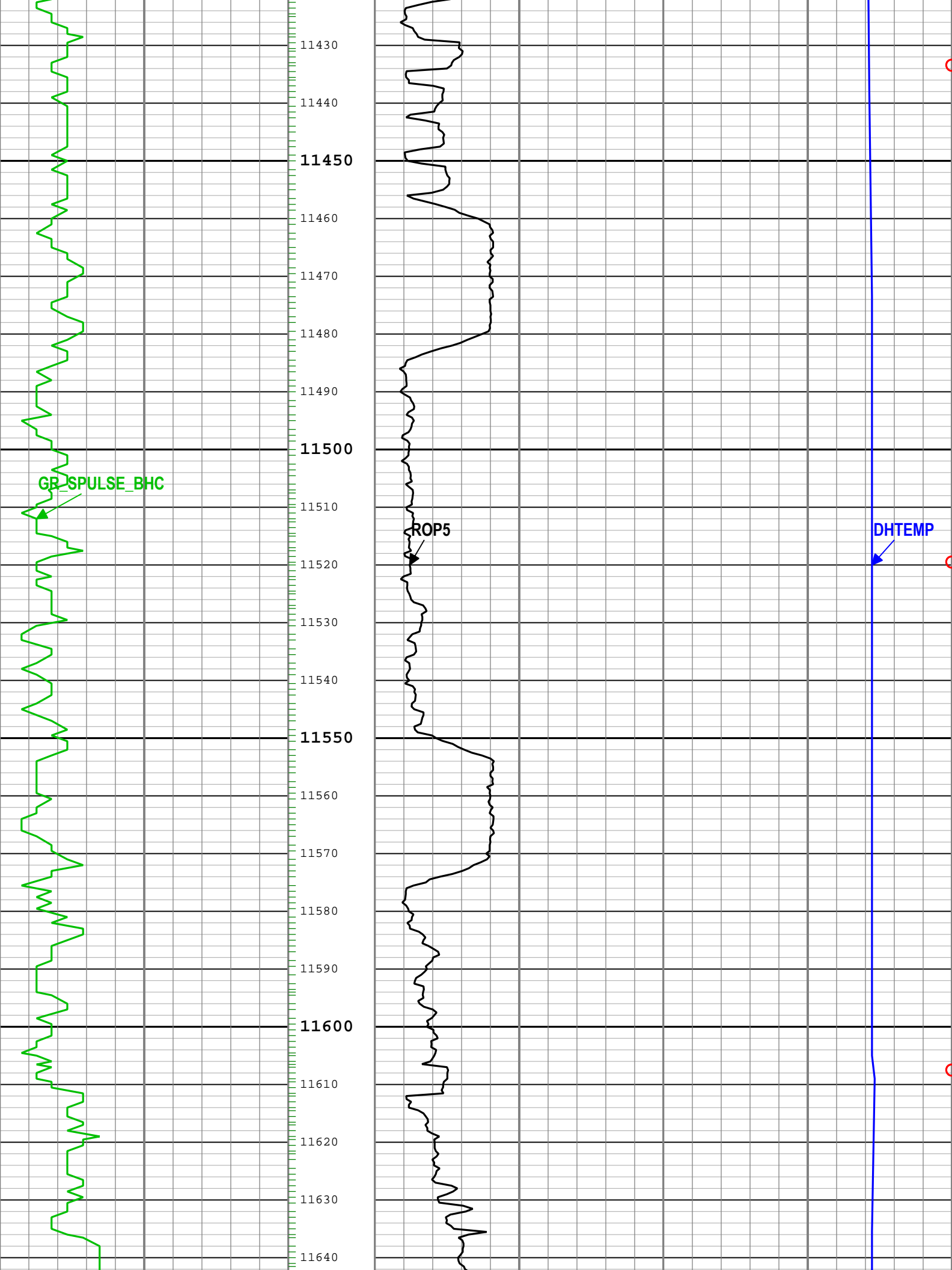


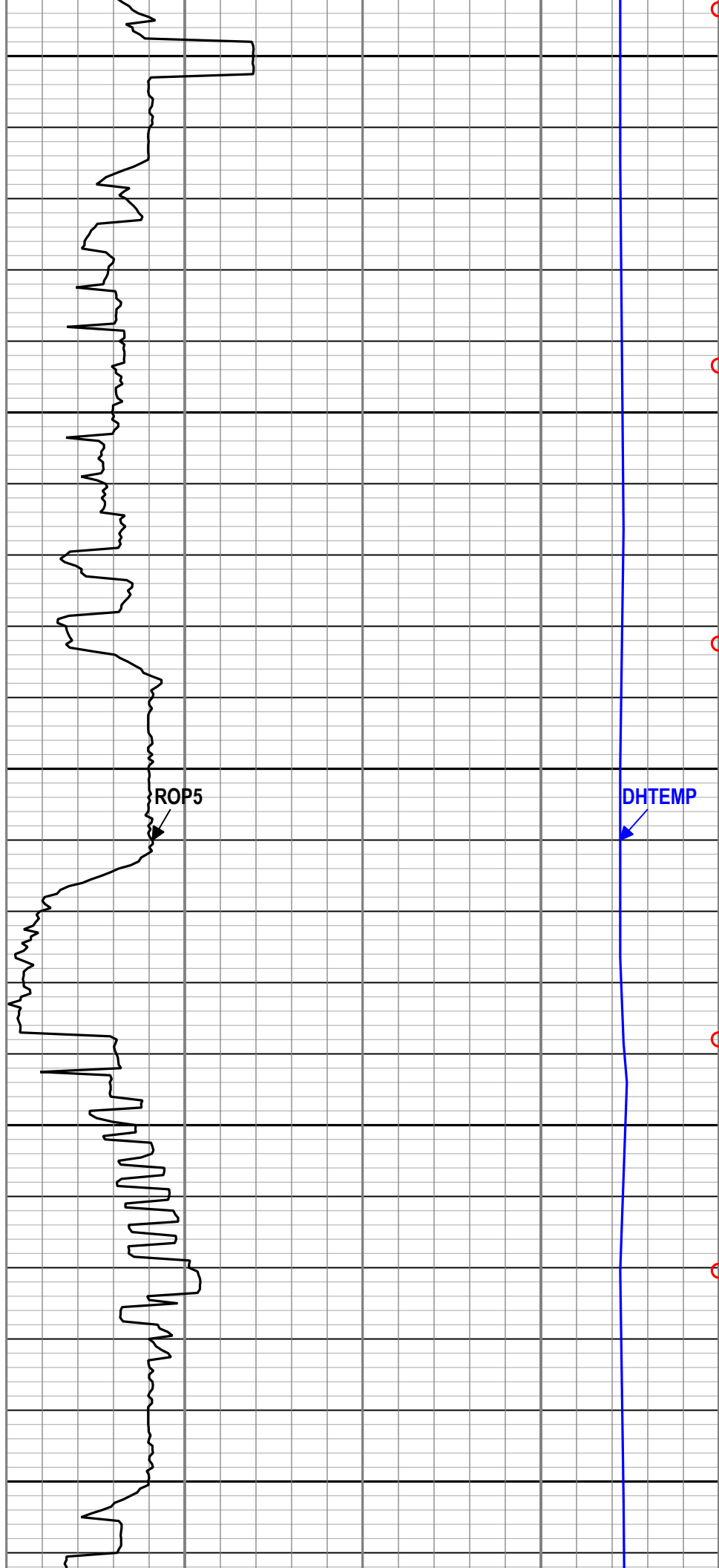
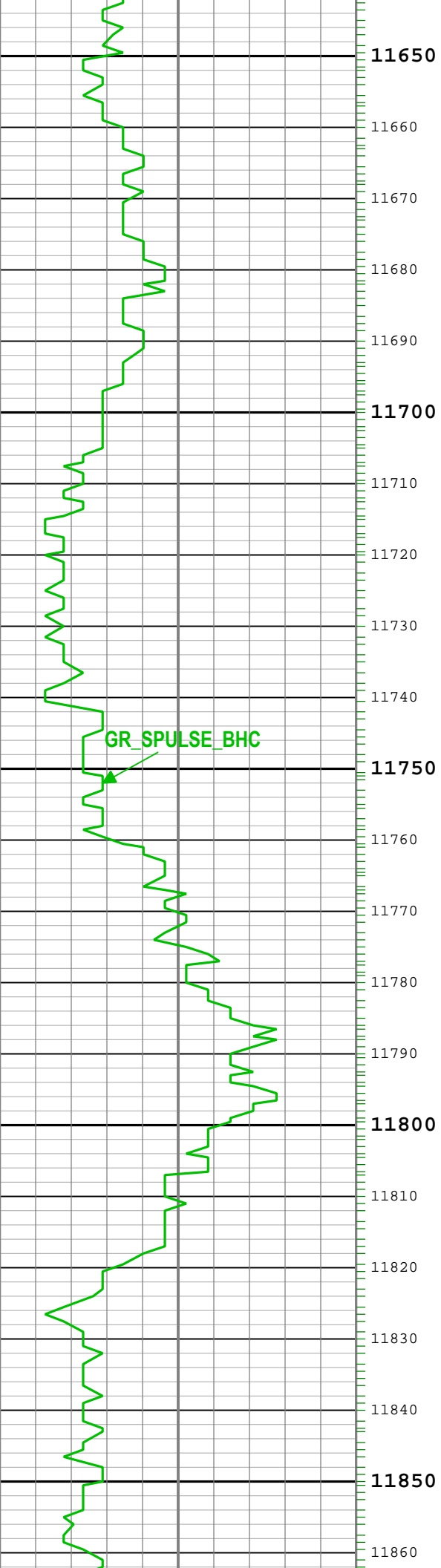


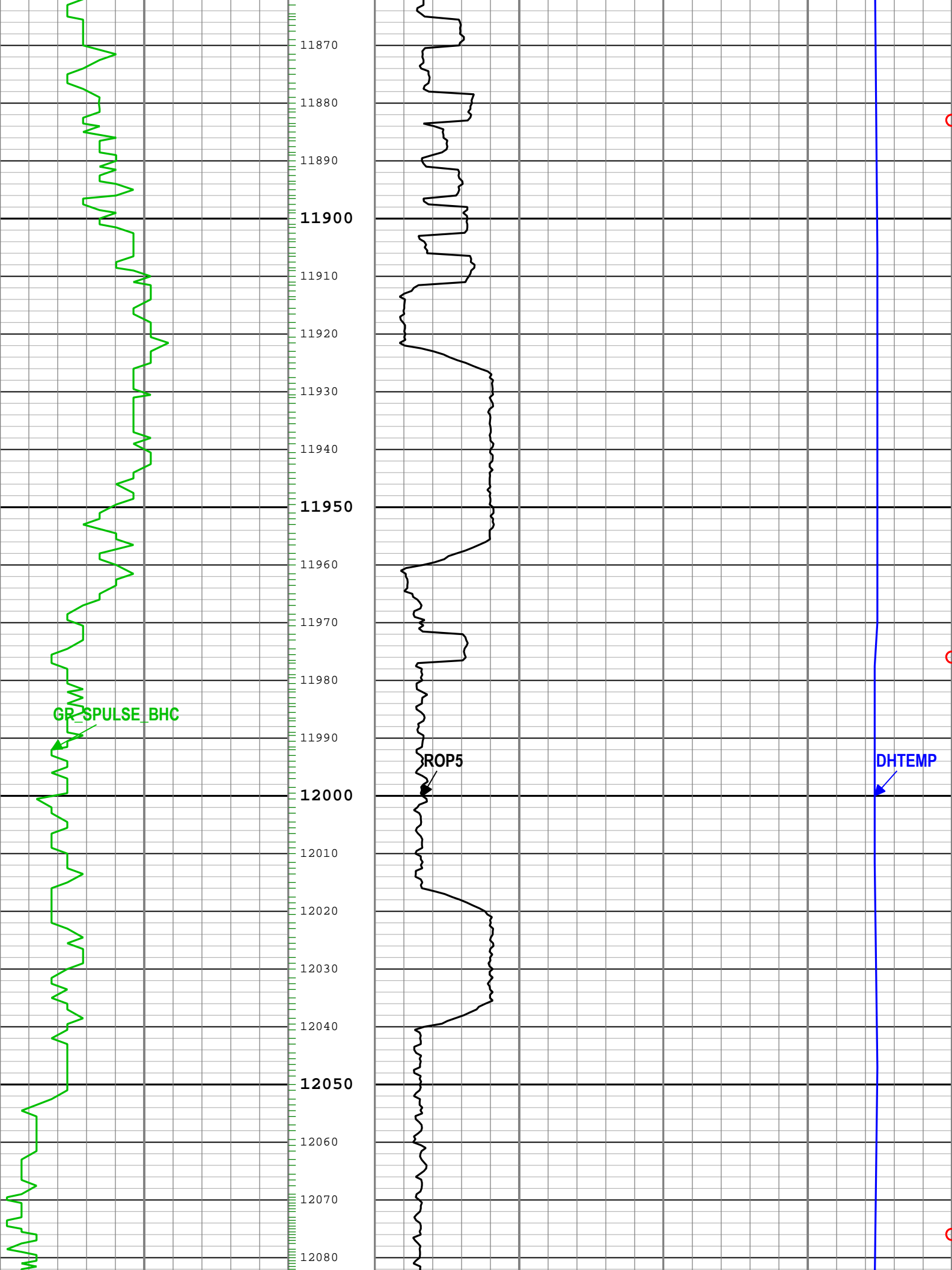


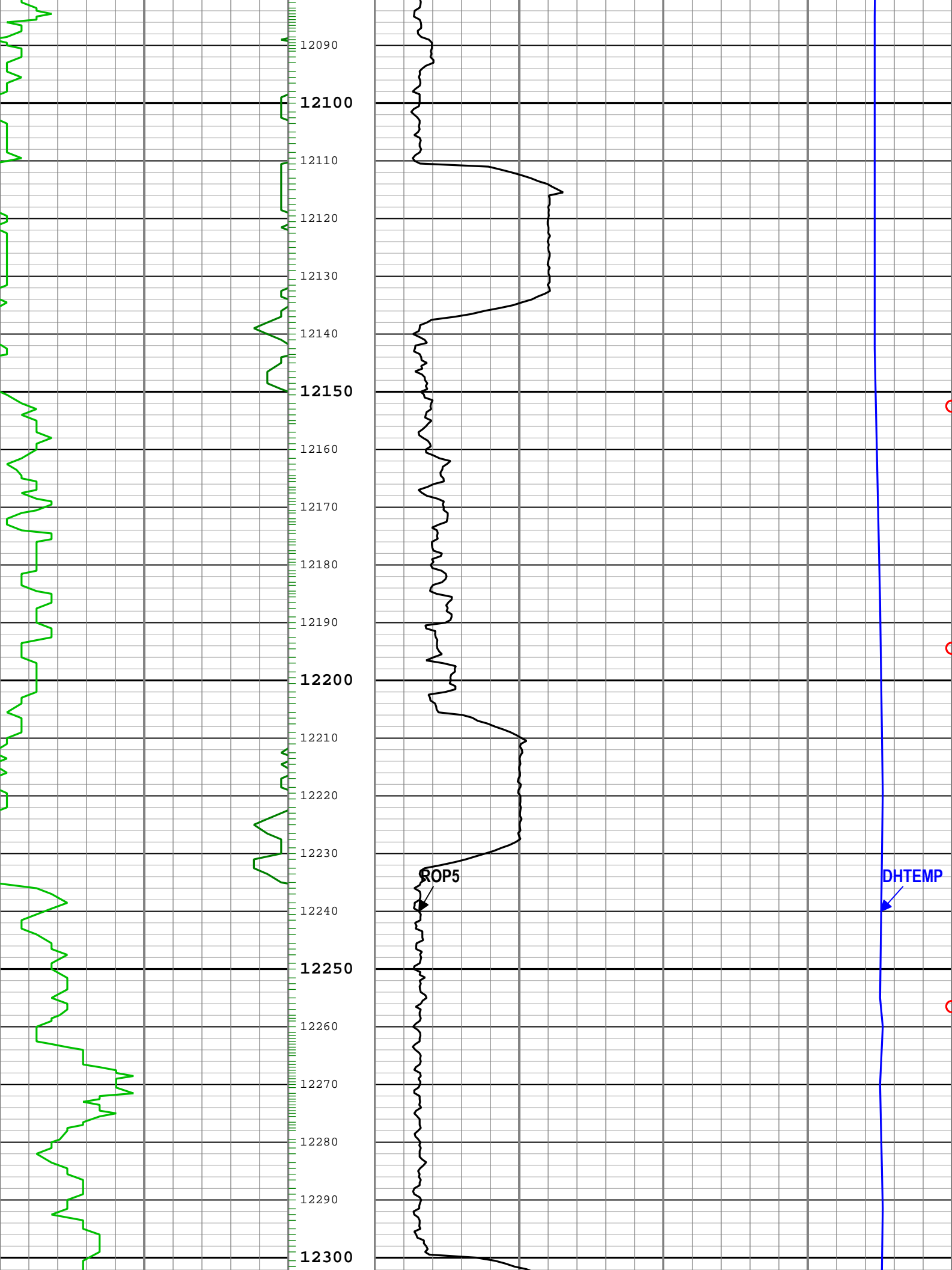


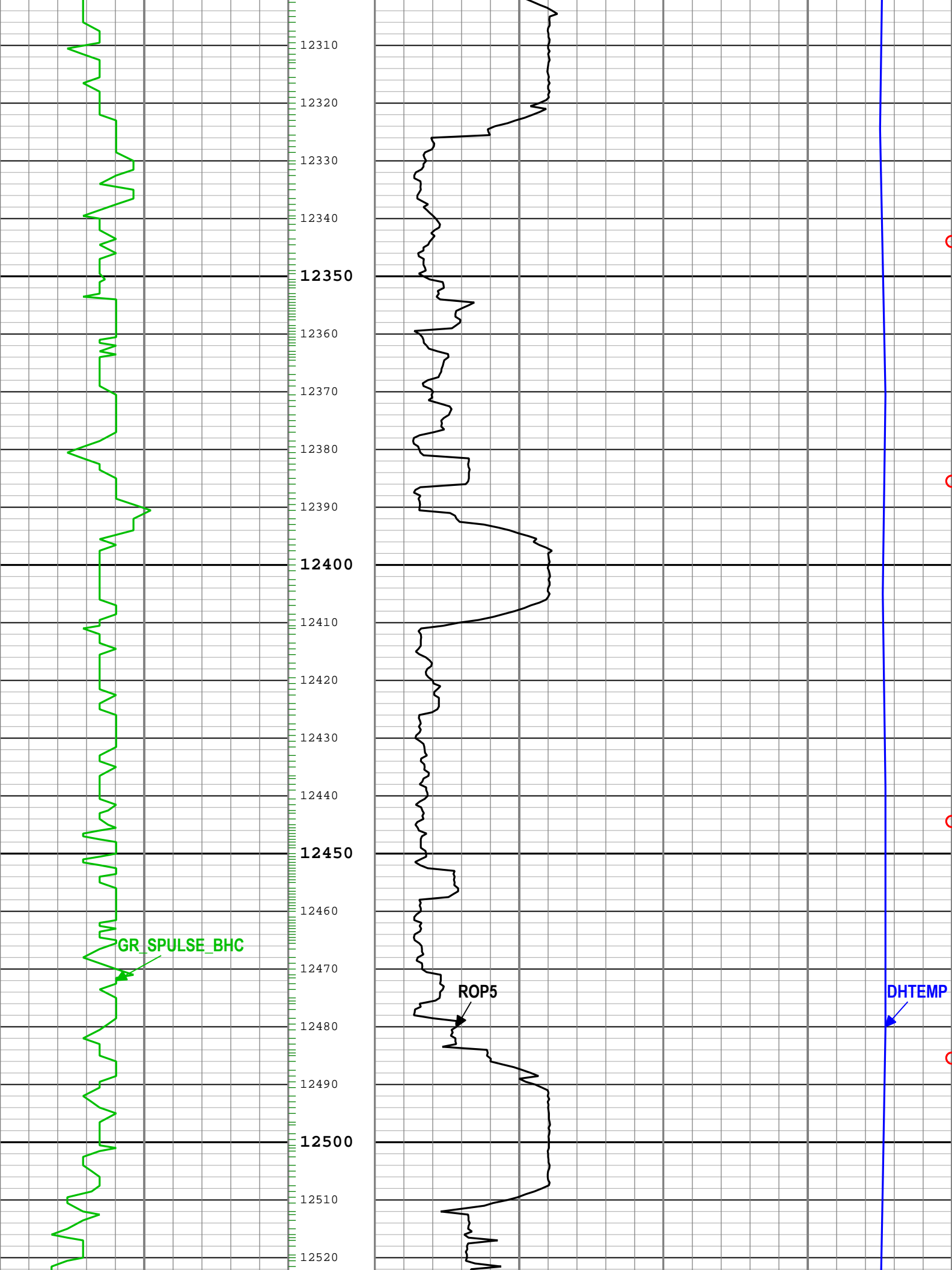


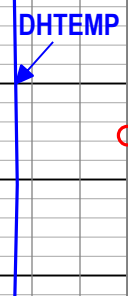
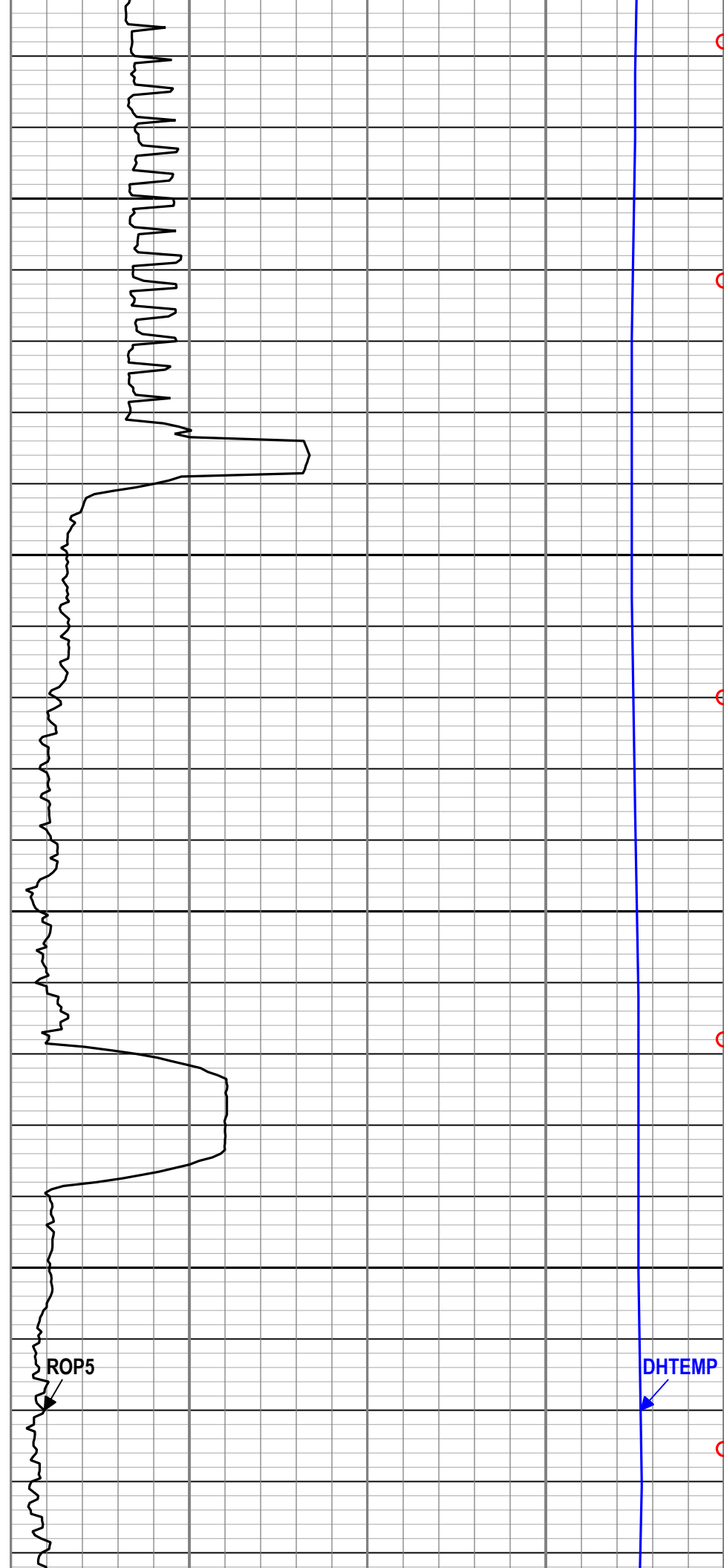
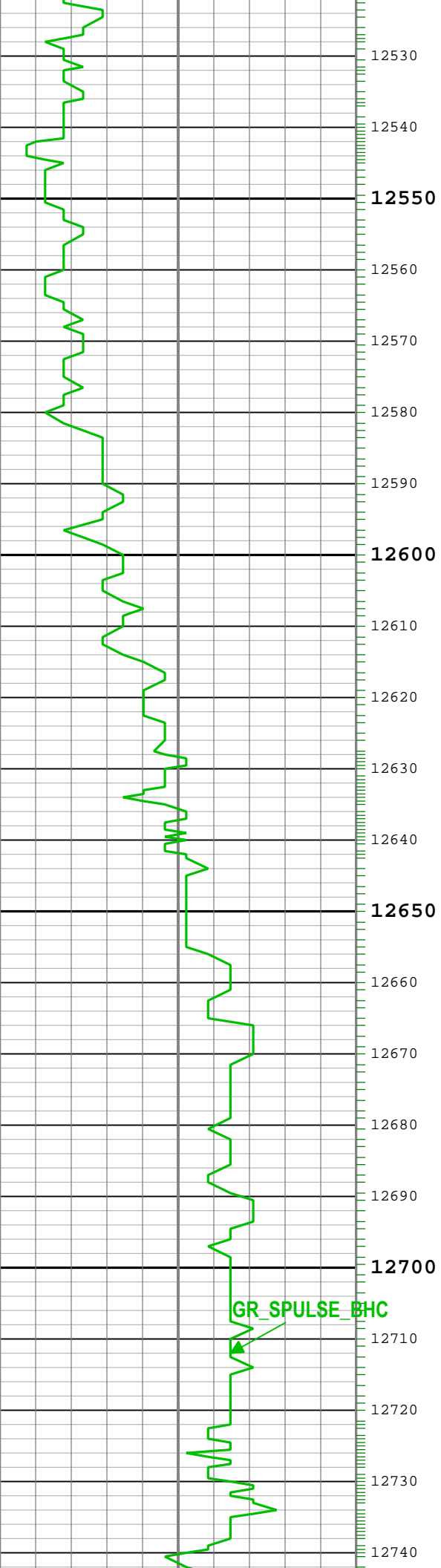


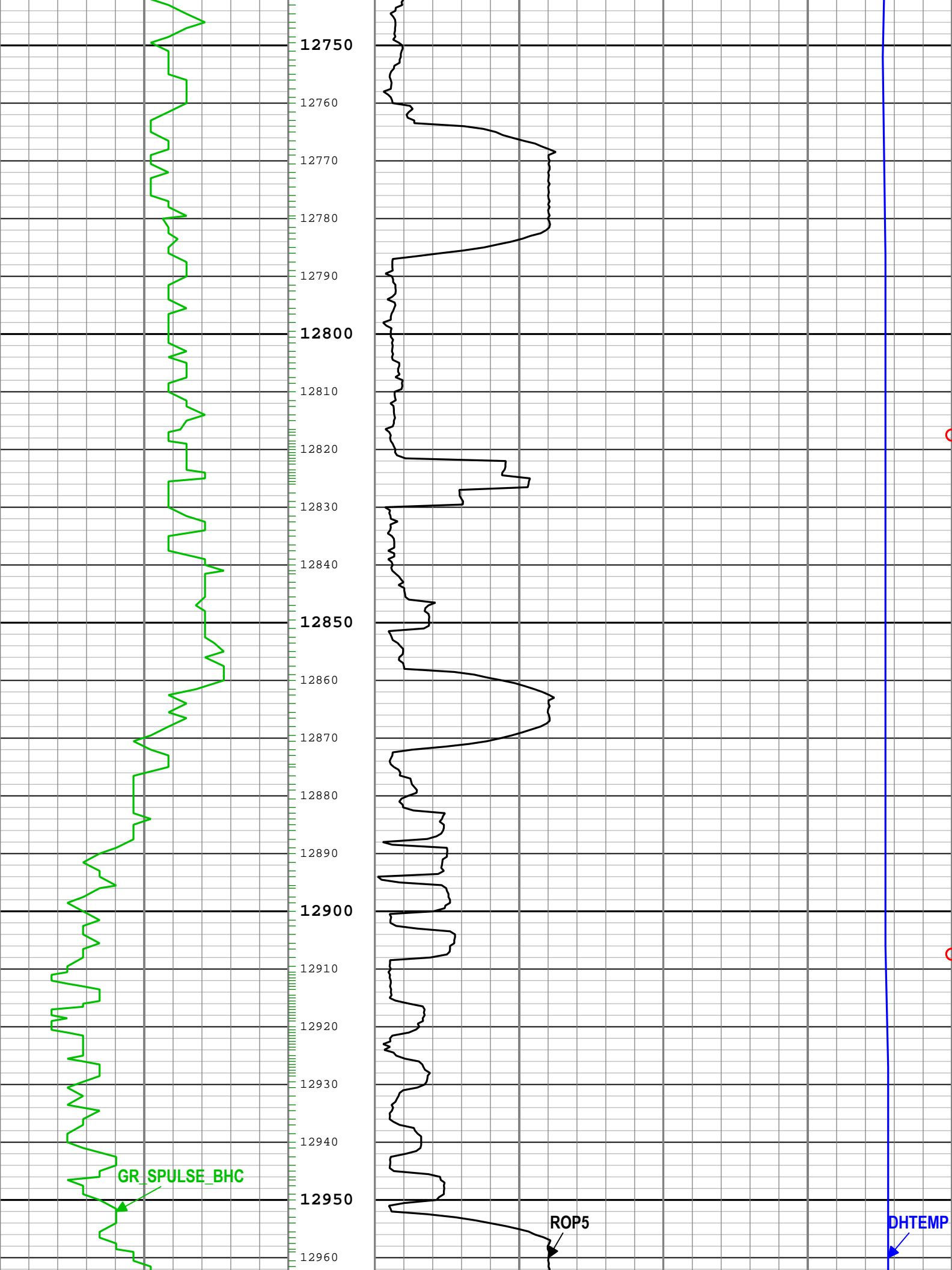


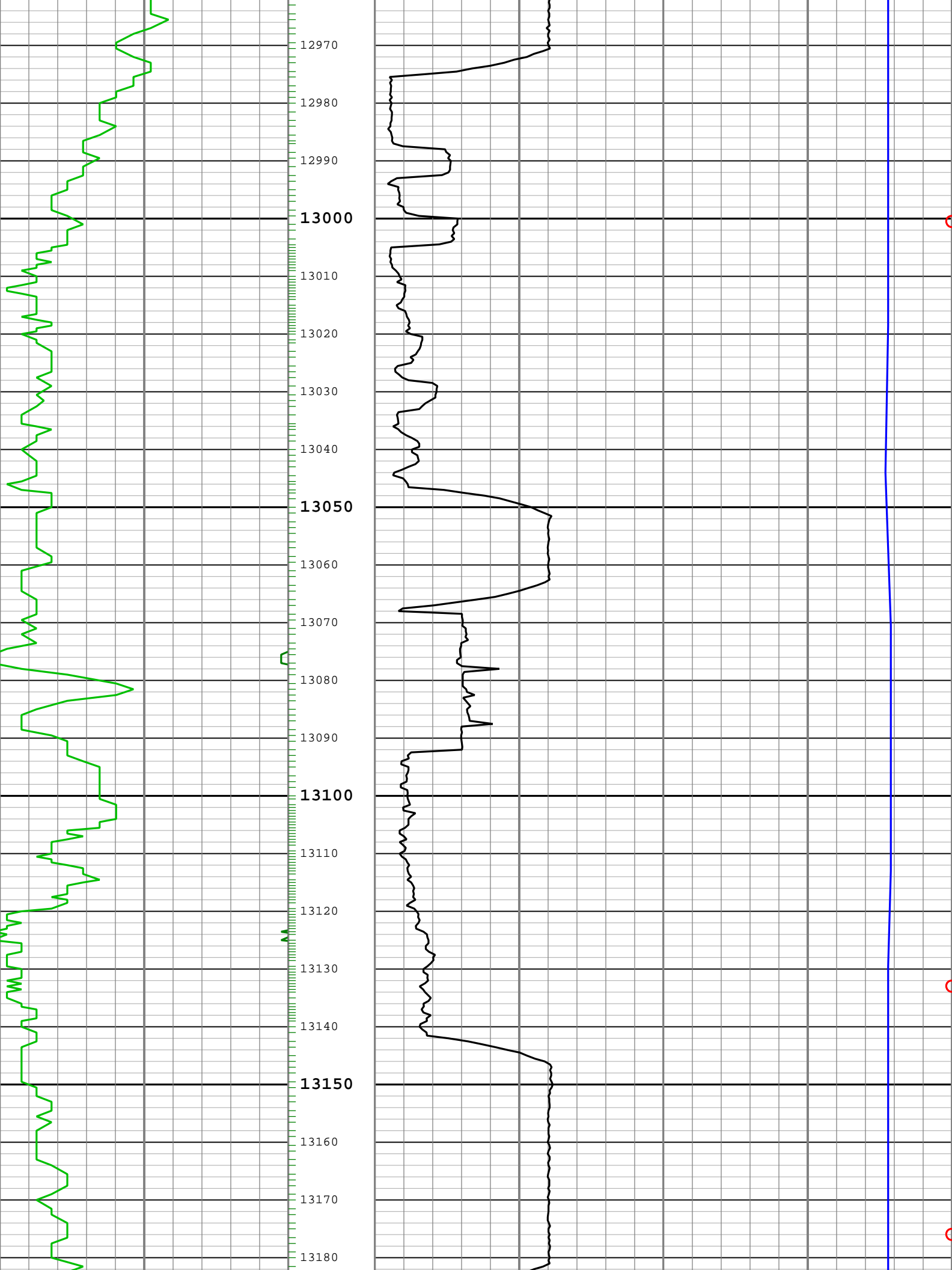


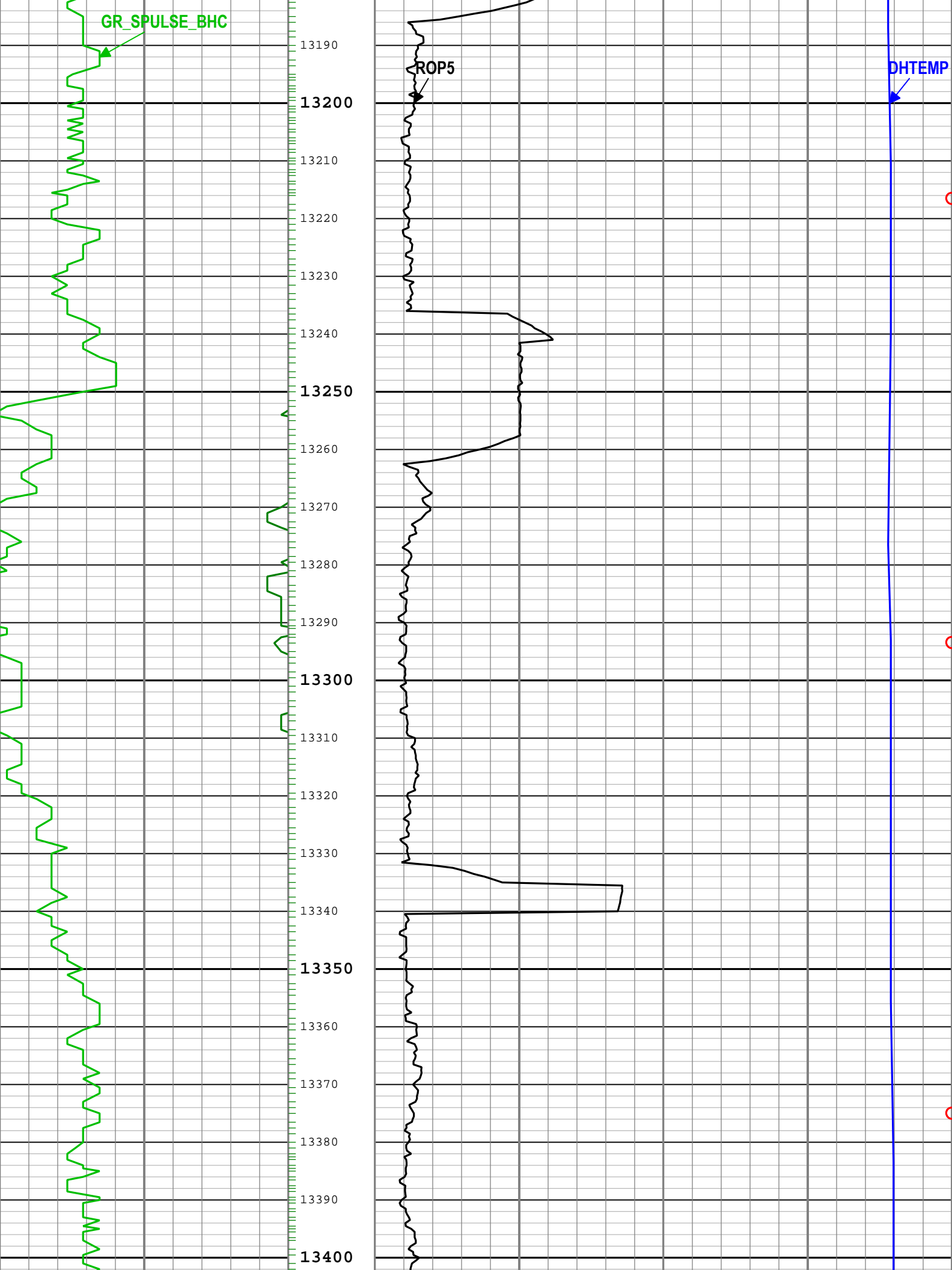


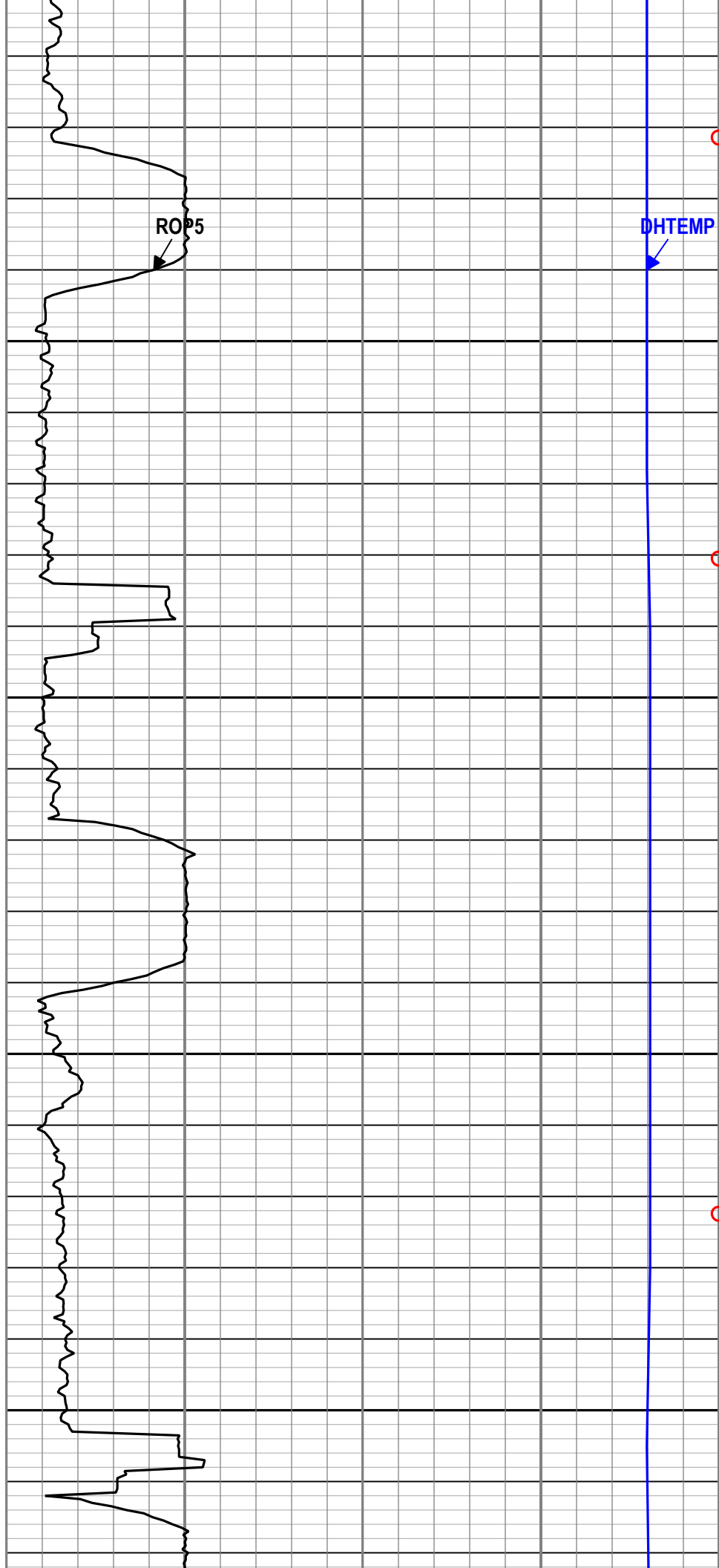
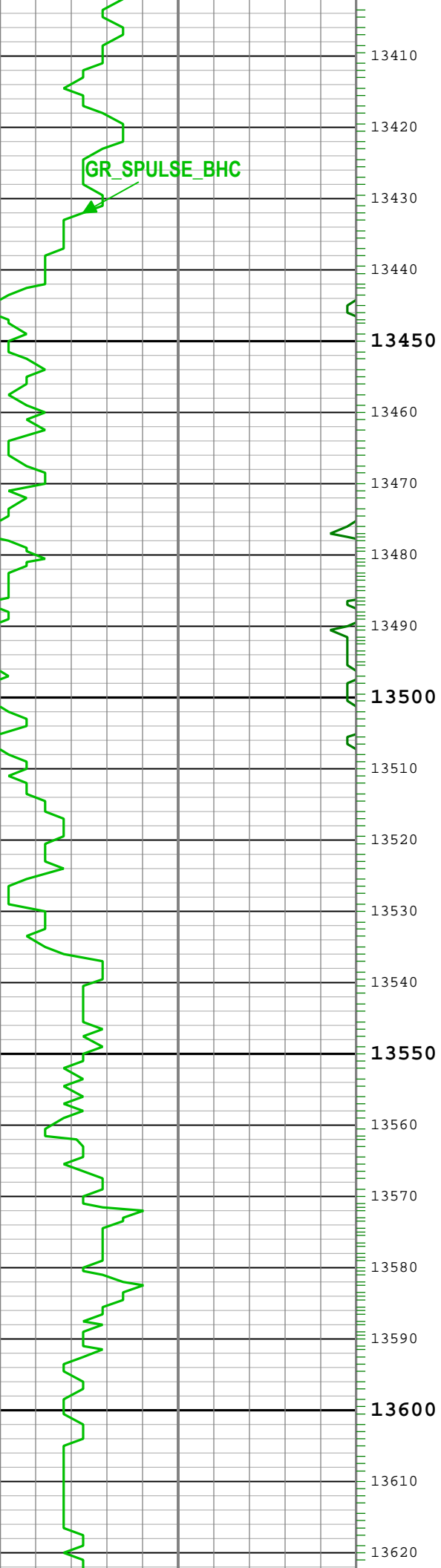


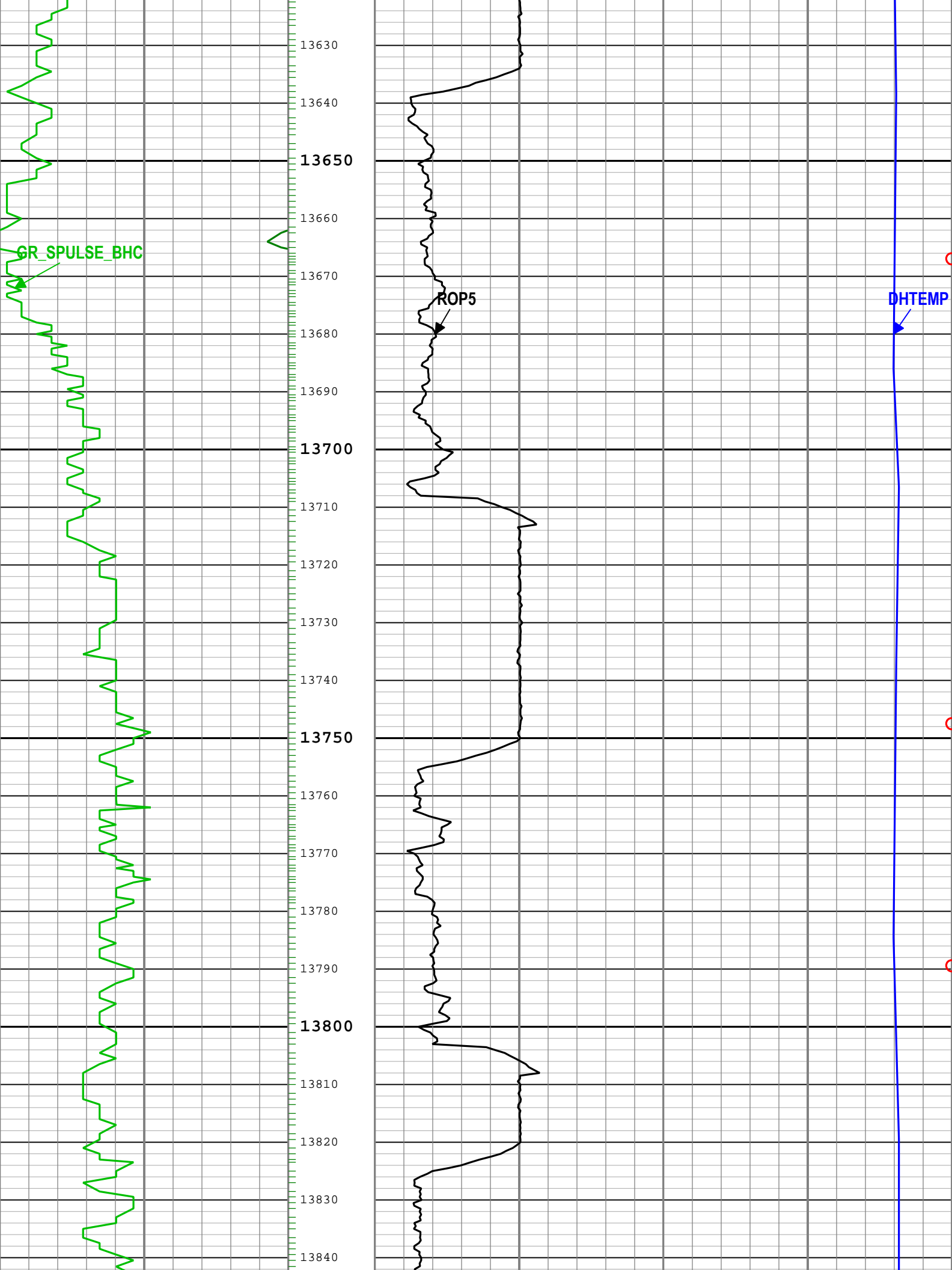


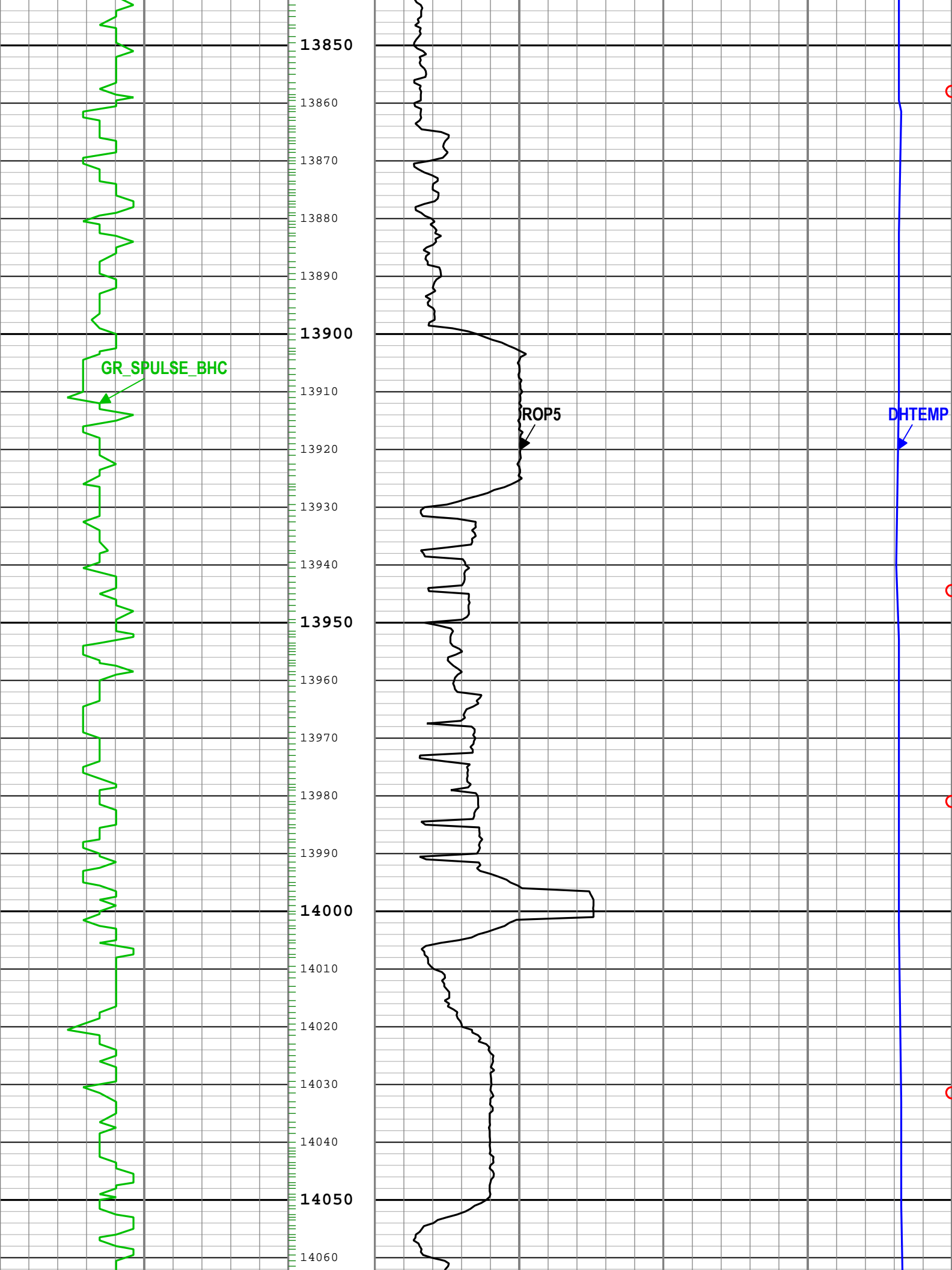


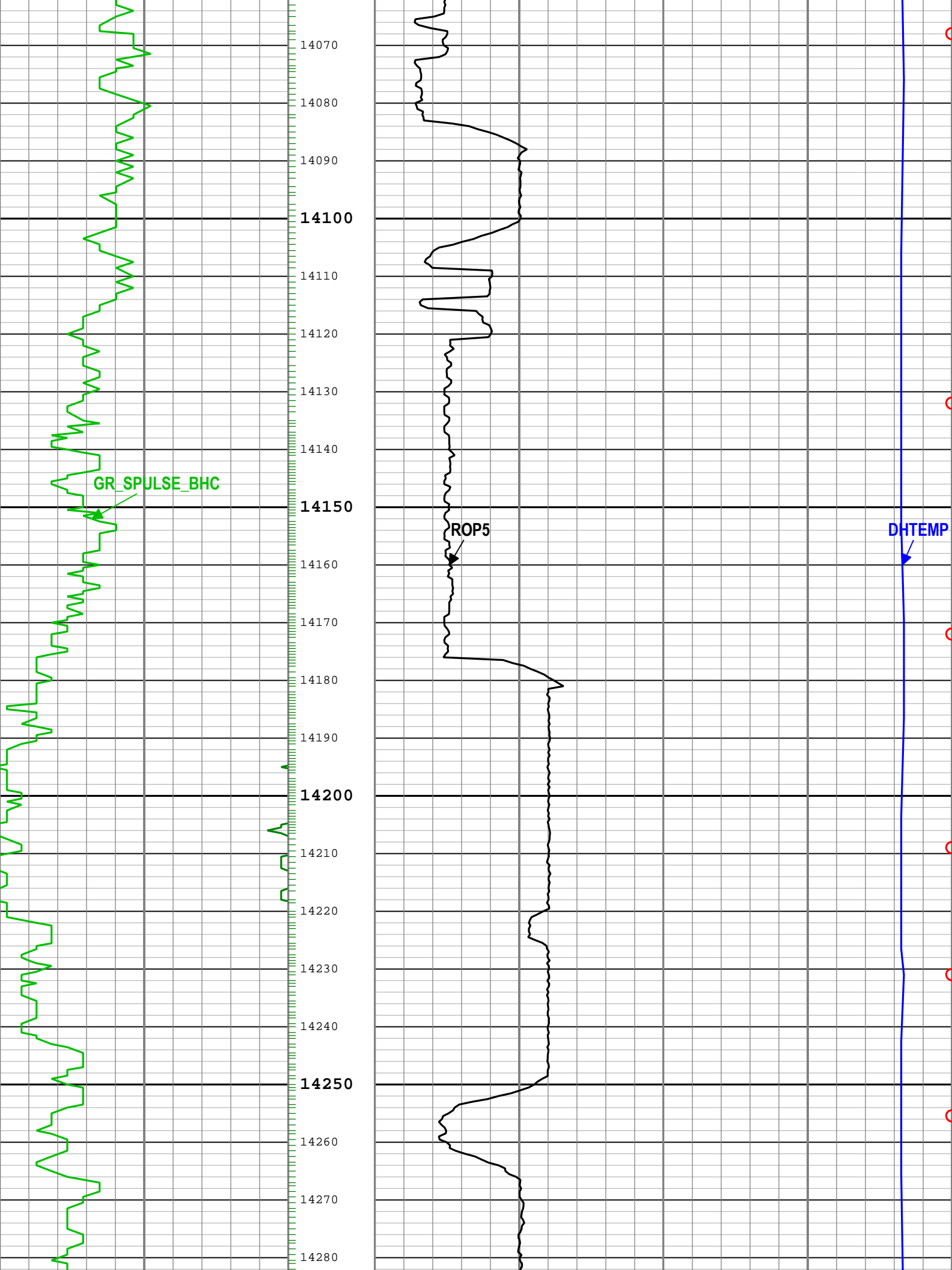


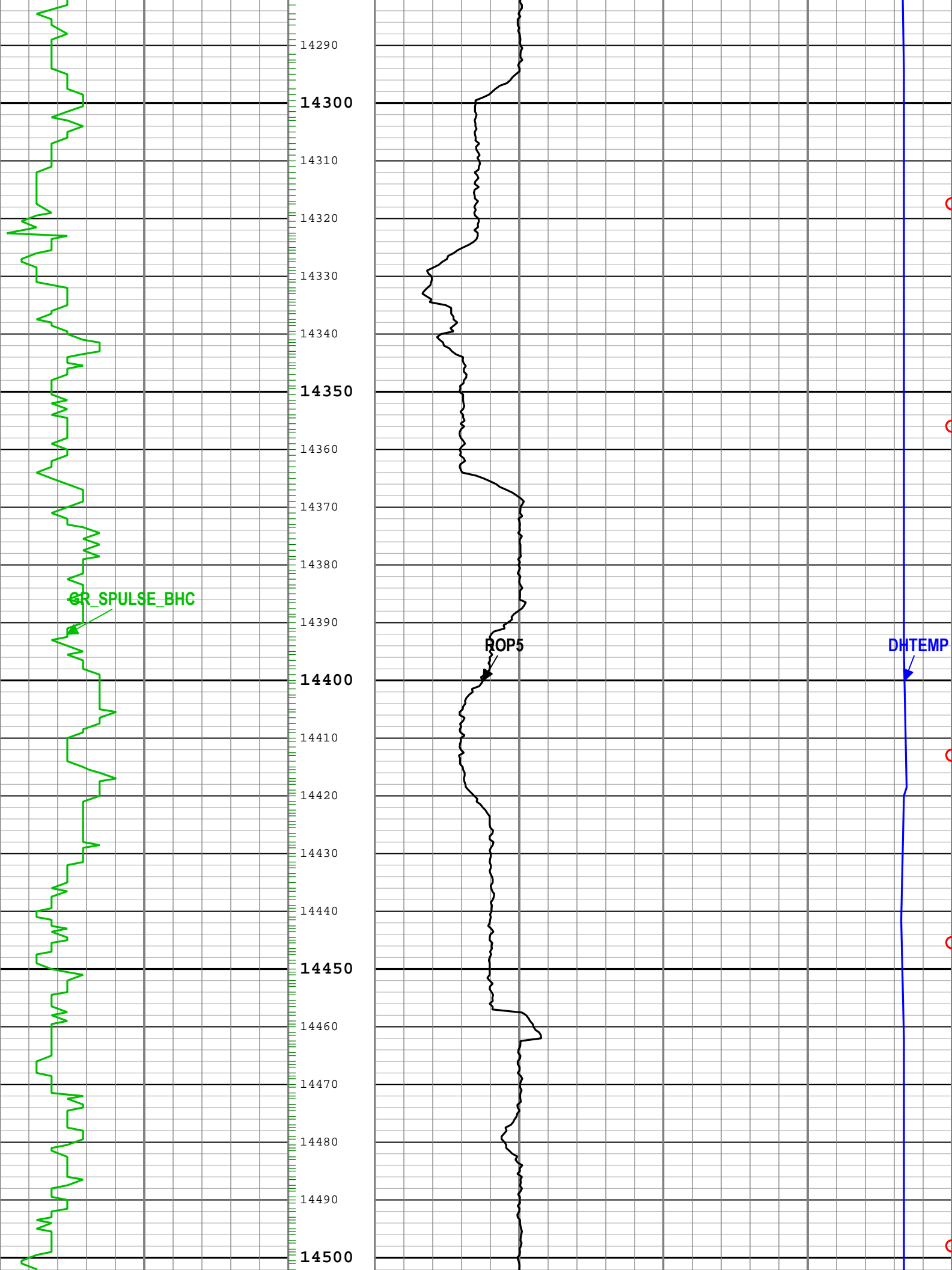


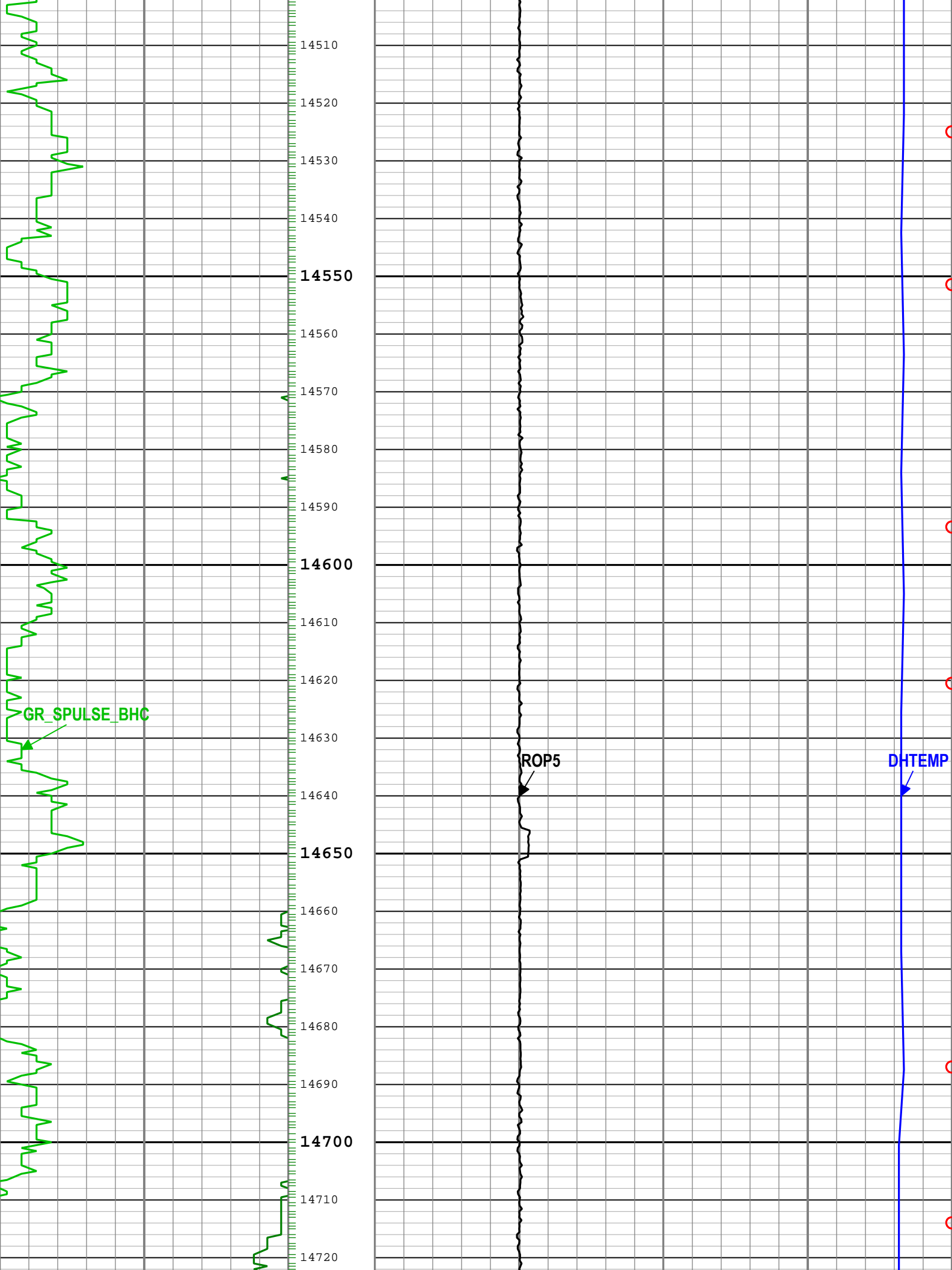


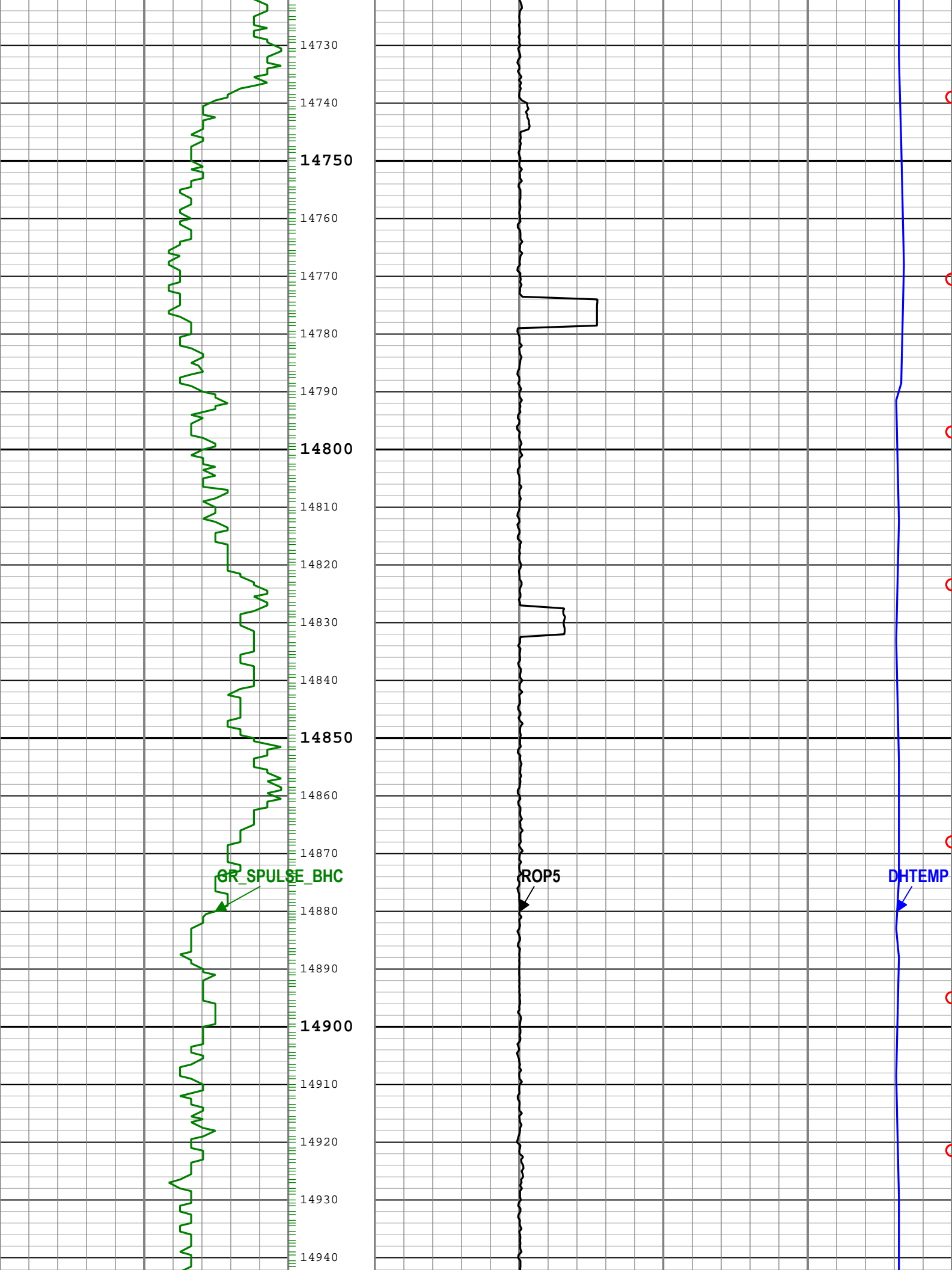


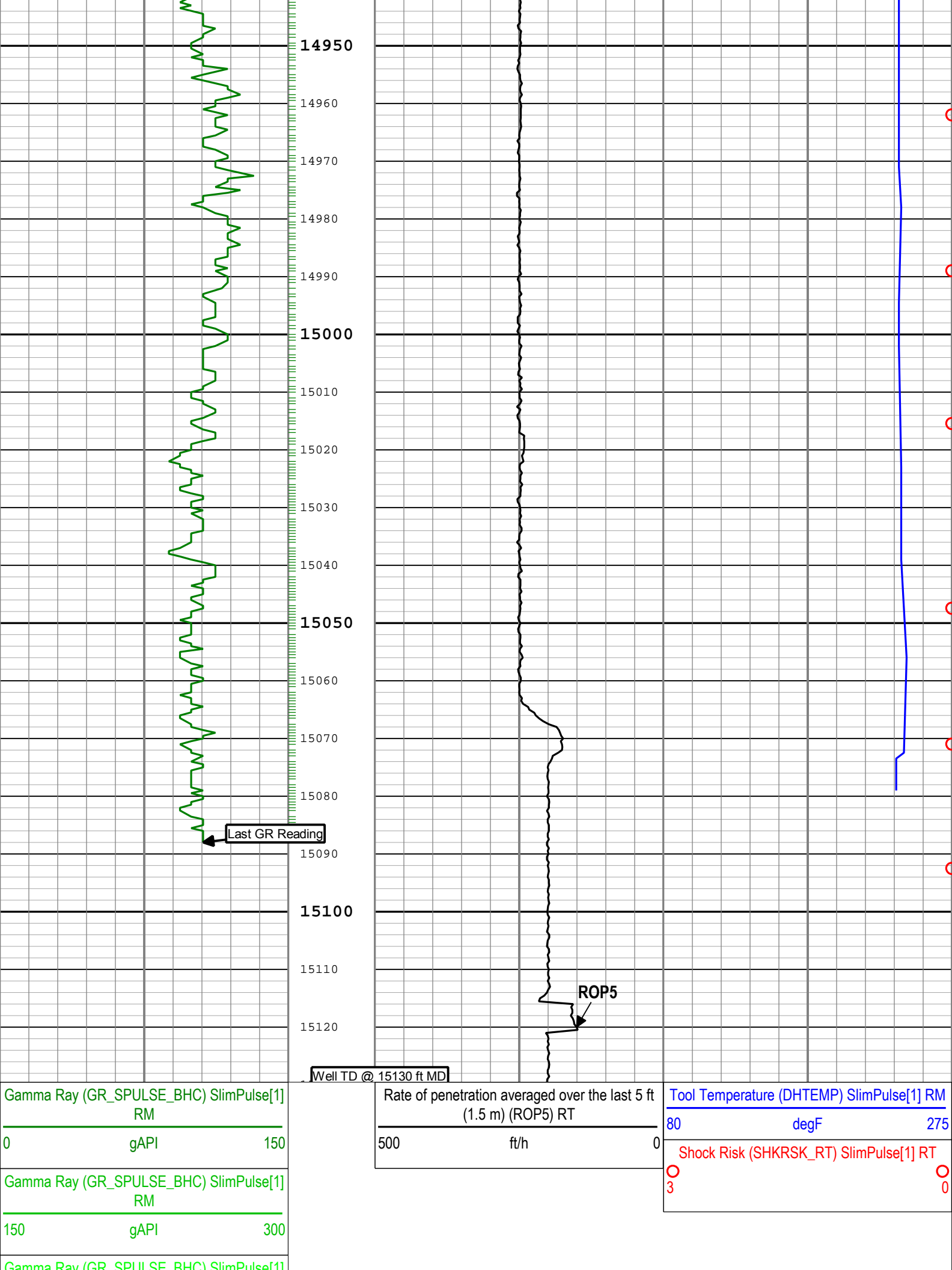












Gamma Ray (GR_SPULSE_BHC) SlimPulse[1] RM		
300	gAPI	450
Gamma Ray (GR_SPULSE_BHC) SlimPulse[1] RM		
450	gAPI	600
Gamma Ray (GR_SPULSE_BHC) SlimPulse[1] RM		
600	gAPI	750

└ GR_SPULSE_BHC - Gamma Ray SlimPulse[1] RM

Description: SlimPulse Gamma Ray 1 Format: Log (5MD EOW) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 25-Jun-2016 13:45:45

Channel Processing Parameters

RUN02: Parameters

Parameter	Description	Tool	Value	Unit
BS	Bit Size	DNMSESSION	Depth Zoned	in
DFD	Drilling Fluid Density	Borehole	9.2	lbm/gal
GR_SRC	GR Source Selection	SPULSE-GEN	GAMMA_EXT	

RUN03: Parameters

Parameter	Description	Tool	Value	Unit
BS	Bit Size	DNMSESSION	8.75	in
DFD	Drilling Fluid Density	Borehole	9.7	lbm/gal
GR_SRC	GR Source Selection	SPULSE-GEN	GAMMA_EXT	

RUN004: Parameters

Parameter	Description	Tool	Value	Unit
BS	Bit Size	DNMSESSION	Depth Zoned	in
DFD	Drilling Fluid Density	Borehole	9.9	lbm/gal
GR_SRC	GR Source Selection	SPULSE-GEN	GAMMA_EXT	

RUN004Depth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	8.75	6246.21	7541
BS	8.5	7541	15129.5

All depth are actual.

Tool Control Parameters

Calibration Report

SPULSE-GEN (SlimPulse with Generic Collar) Calibration - Run RUN02

Primary Equipment :		
Elec. cartridge, 150C max with GR	SPEC	6026

GRGain - Gamma Ray: Blanket

Master (Time Frame File): 12:00:00 11-Apr-2016

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Gamma Ray Calibration Gain		Master	1.0000	0.9000	1.0378	1.1000	<div><div></div><div></div><div></div><div></div><div></div></div>

SPULSE-GEN (SlimPulse with Generic Collar) Calibration - Run RUN03

Primary Equipment :		
Elec. cartridge, 150C max with GR	SPEC	6026

GRGain - Gamma Ray: Blanket

Master (Time Frame File): 12:00:00 11-Apr-2016

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Gamma Ray Calibration Gain		Master	1.0000	0.9000	1.0378	1.1000	

SPULSE-GEN (SlimPulse with Generic Collar) Calibration - Run RUN004

Primary Equipment :

Elec. cartridge, 150C max with GR

SPEC

635

GRGain - Gamma Ray: Blanket

Master (Time Frame File): 12:00:00 05-Feb-2016

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Gamma Ray Calibration Gain		Master	1.0000	0.9000	1.0718	1.1000	

Company: Synergy

Well: Fagerberg 15N-7A-M

Field: WATTENBURG

County: WELD

State: CO

Country: USA

**Schlumberger**

SlimPulse - Gamma Ray
5 in. / 100 ft., Mearsured Depth
Composite Log, Recorded Mode