

SlimPulse - Gamma Ray

2 in / 100 ft & 5 in / 100 ft Measured Depth

Recorded Mode, Composite Log



Company: Noble Energy Inc

Well: Heartland State H01-74-1HN ST1

Field: Wettenberg

County: WELD

State: CO

Country: USA

Section: 25 APIN: 05-123-39550-01

Township: 04N Rig Name: PRECISION DRILLING 829

Range: 65W Rig Type: Top Drive

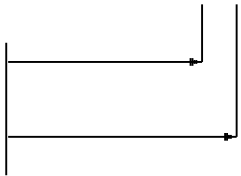
FL: NAD83 Colorado State Plane, Northern Zone US Feet

FL1: Latitude: 40° 16' 36.23" N, Northing 1344913.85 ft

FL2: Longitude: 104° 36' 18.54" W, Easting 3249673.92 ft

Log Measured From: - Drill Floor: 4850.00 ft
Ground Level: 4834.00 ft

Permanent Datum: - Mean Sea Level



Acquisition Dates: 24-Aug-2014 -- 28-Aug-2014

Other Services:

Log Interval: 11969.00(ft) to 17477.00(ft)

Directional Drilling

Index Types: Measured Depth

Surveys / Continuous D&I

Index Scales: 1:600 2" / 100'; 1:240 5" / 100'

Downhole Temperature

Depth Source: Driller's Depth

Downhole Shocks

Depth Sensor: 3rd Party Depth

Print Type: Final

Spud Date: 03-AUG-2014



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.

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Borehole Size/Casing Record

Bit						
Bit Size (in)	6.125					
Top Driller (ft)	12014					
Bottom Driller (ft)	17522					
Casing						
Size (in)	9.625	7				
Weight (lbm/ft)	36	26				
Inner Diameter (in)	8.921	6.276				
Grade	J55	P110				
Top Driller (ft)	0	0				
Bottom Driller (ft)	735	7168				

Operational Run Summary

Parameter (unit)	RUN001					
Date Log Started	24-Aug-2014					
Time Log Started	08:30:12					
Date Log Finished	28-Aug-2014					
Time Log Finished	07:24:00					
Bit Size (in)	6.125					
Bit Start Depth (ft)	12014.00					
Bit Stop Depth (ft)	17522.00					
Top Log Interval (ft)	11969.00					
Bottom Log Interval (ft)	17477.00					
Max Hole Deviation (deg)	91.62					
Azimuth of Max Deviation (deg)	180.76					
Logging Unit Number	Command Center					
Logging Unit Location	Zone 2					
Recorded By	Scott Kingrey					
Witnessed By	John Drahota					
Service Order Number						

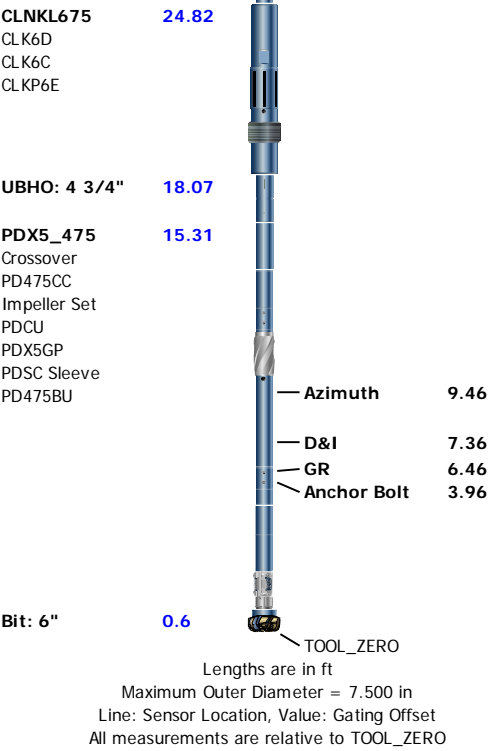
Borehole Fluids

Parameter(unit)	RUN001					
Fluid Type	Water					
Fluid Name	Salt Brine					
Max Recorded Temperatures (degF)	269.6					
Source of Sample	Active Tank					

Salinity (ppm)	34972.17					
Density (lbm/gal)	9.8					
Funnel Viscosity (s)	36					
Fluid Loss (cm3)						
PH	9					
Source RMF						
RMC	Pressed					
RM @ Meas Temp (ohm.m@degF)	0.2 @ 68					
RMF @ Meas Temp (ohm.m@degF)	0.15 @ 68					
RMC @ Meas Temp (ohm.m@degF)						
RM @ BHT (ohm.m@degF)	0.07 @ 212					
RMF @ BHT (ohm.m@degF)	0.05 @ 212					
RMC @ BHT (ohm.m@degF)	NaN @ 212					
Total Solid (%)	7.7					
High Gravity Solids (%)	3.9					

Remarks and Equipment Summary

[illegible]



Composite 1

2 in / 100 ft Measured Depth Log

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Include Parallel Data
RUN001	Drilling	Down	12003.33 ft	17530.67 ft	24-Aug-2014 9:02:54 AM	28-Aug-2014 7:24:00 AM	No

All depths are referenced to toolstring zero

Log	Company:Noble Energy Inc	Well:Heartland State H01-74-1HN ST1
	Composite 1:S167	

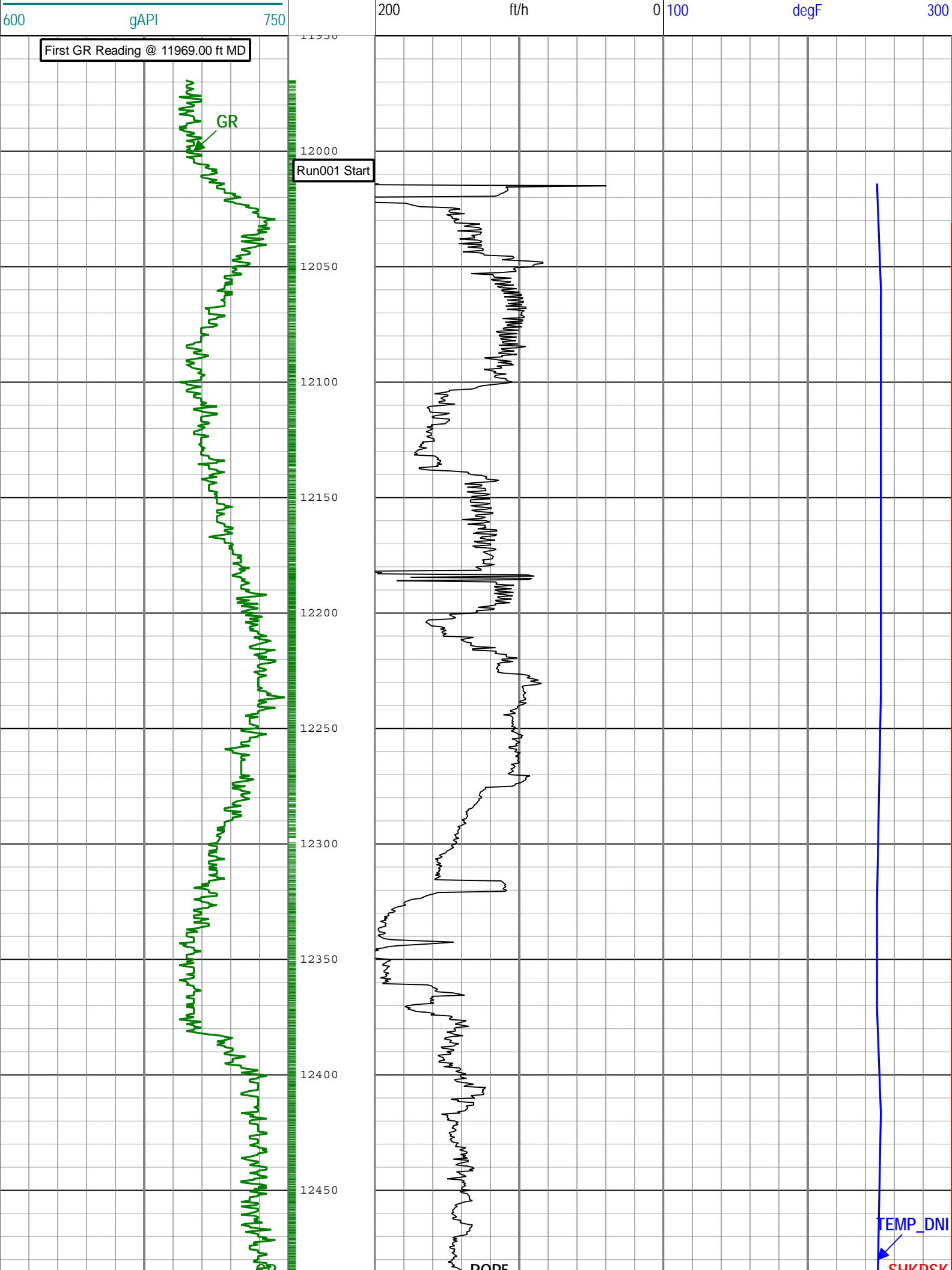
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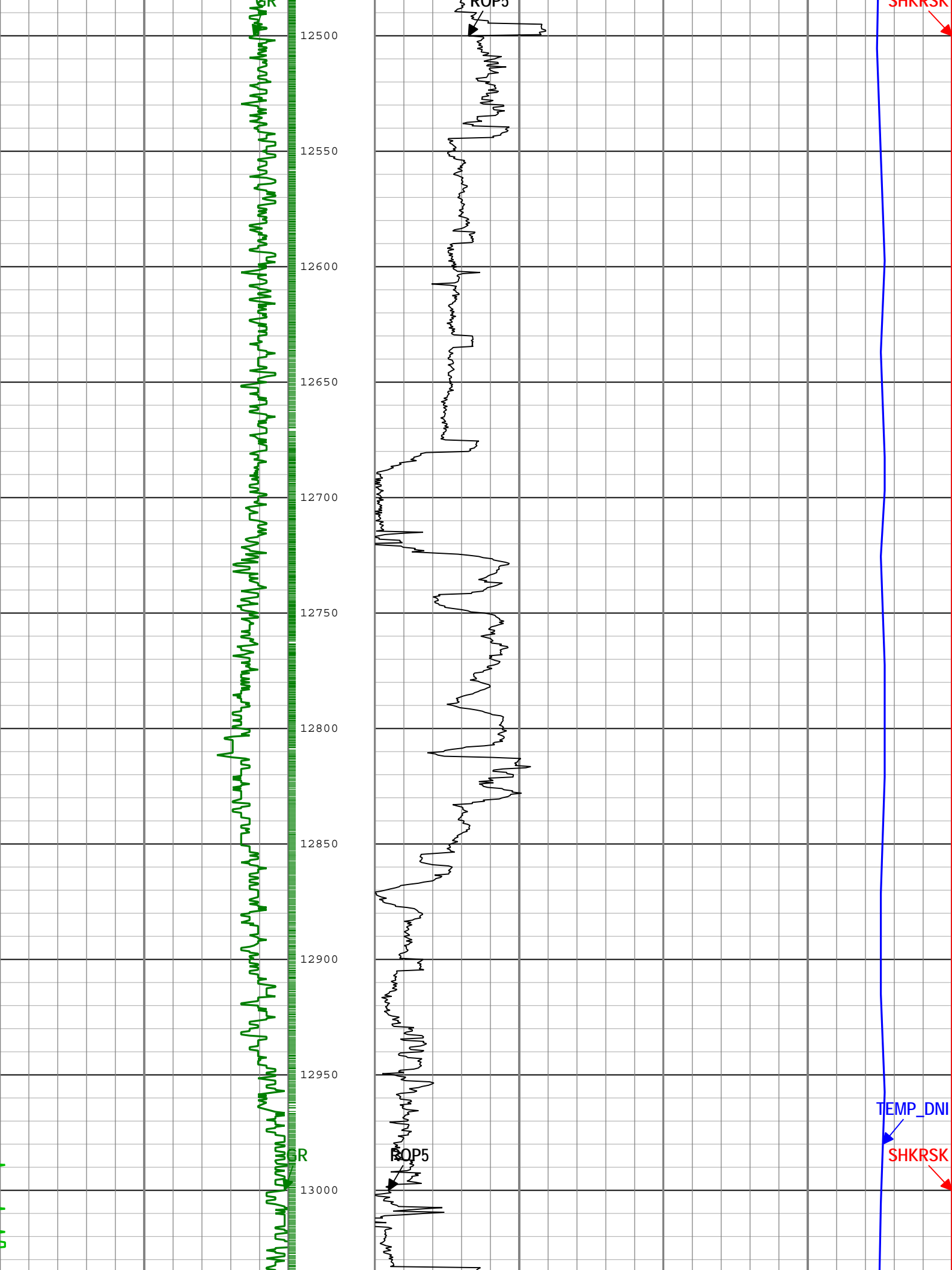
TICKS_GR - Gamma Ray Tick Marks SlimPulse[1] RM

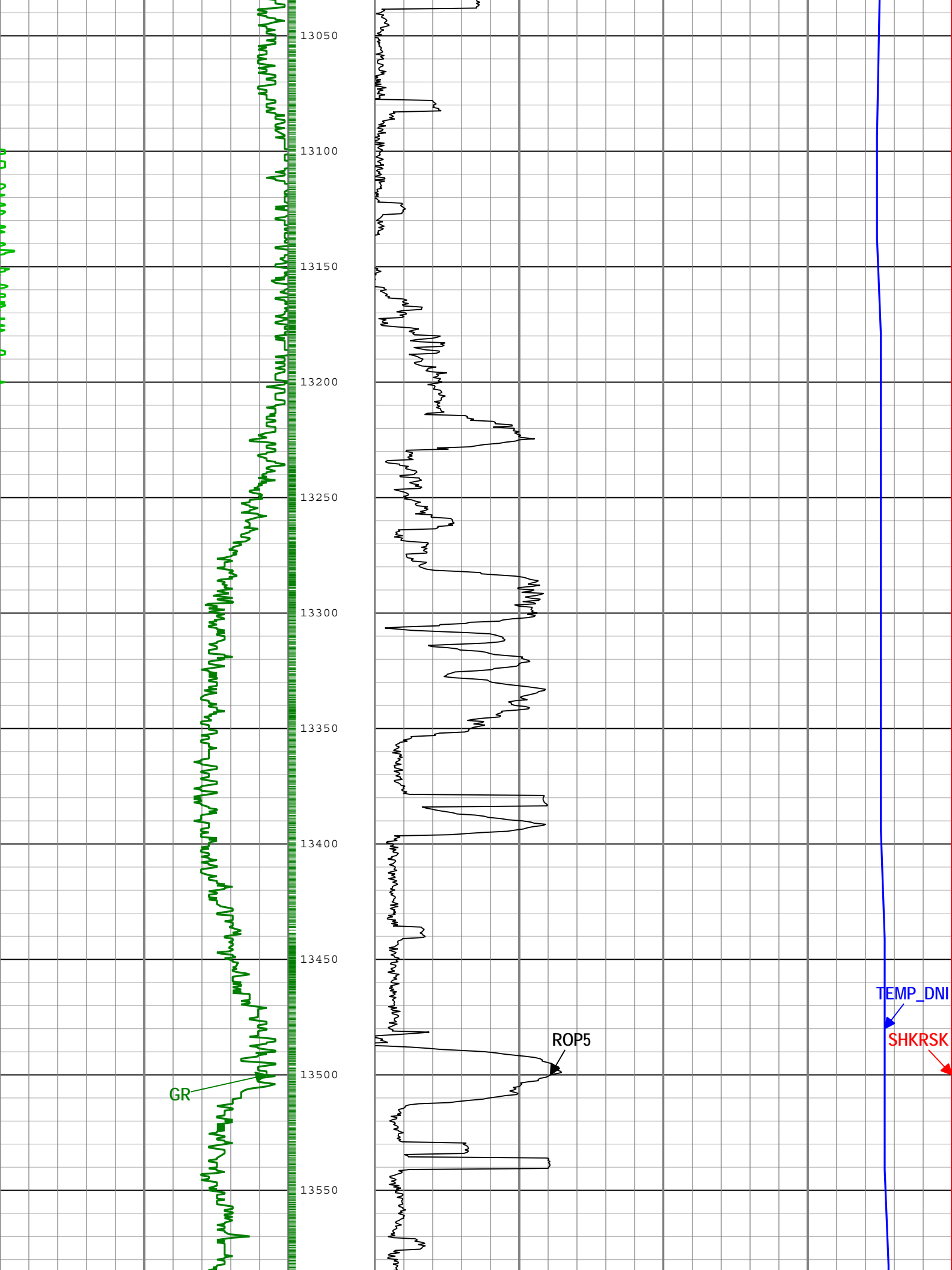
Gamma Ray (GR) SlimPulse[1] RM		
0	gAPI	150
Gamma Ray (GR) SlimPulse[1] RM		
150	gAPI	300
Gamma Ray (GR) SlimPulse[1] RM		
300	gAPI	450
Gamma Ray (GR) SlimPulse[1] RM		
450	gAPI	600
Gamma Ray (GR) SlimPulse[1] RM		

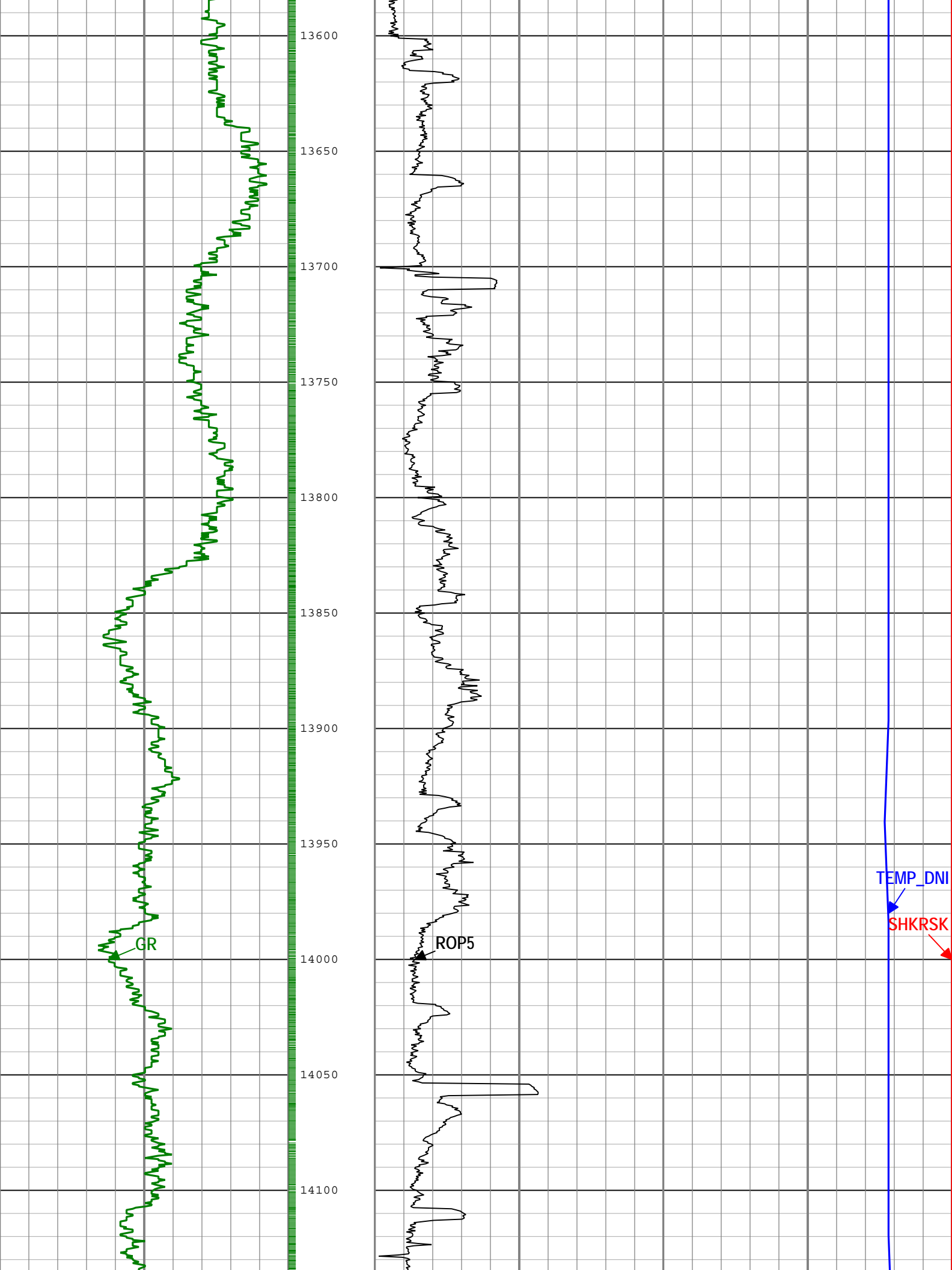
Rate of penetration averaged over the last 5 ft
(1.5 m) (ROP5) RT

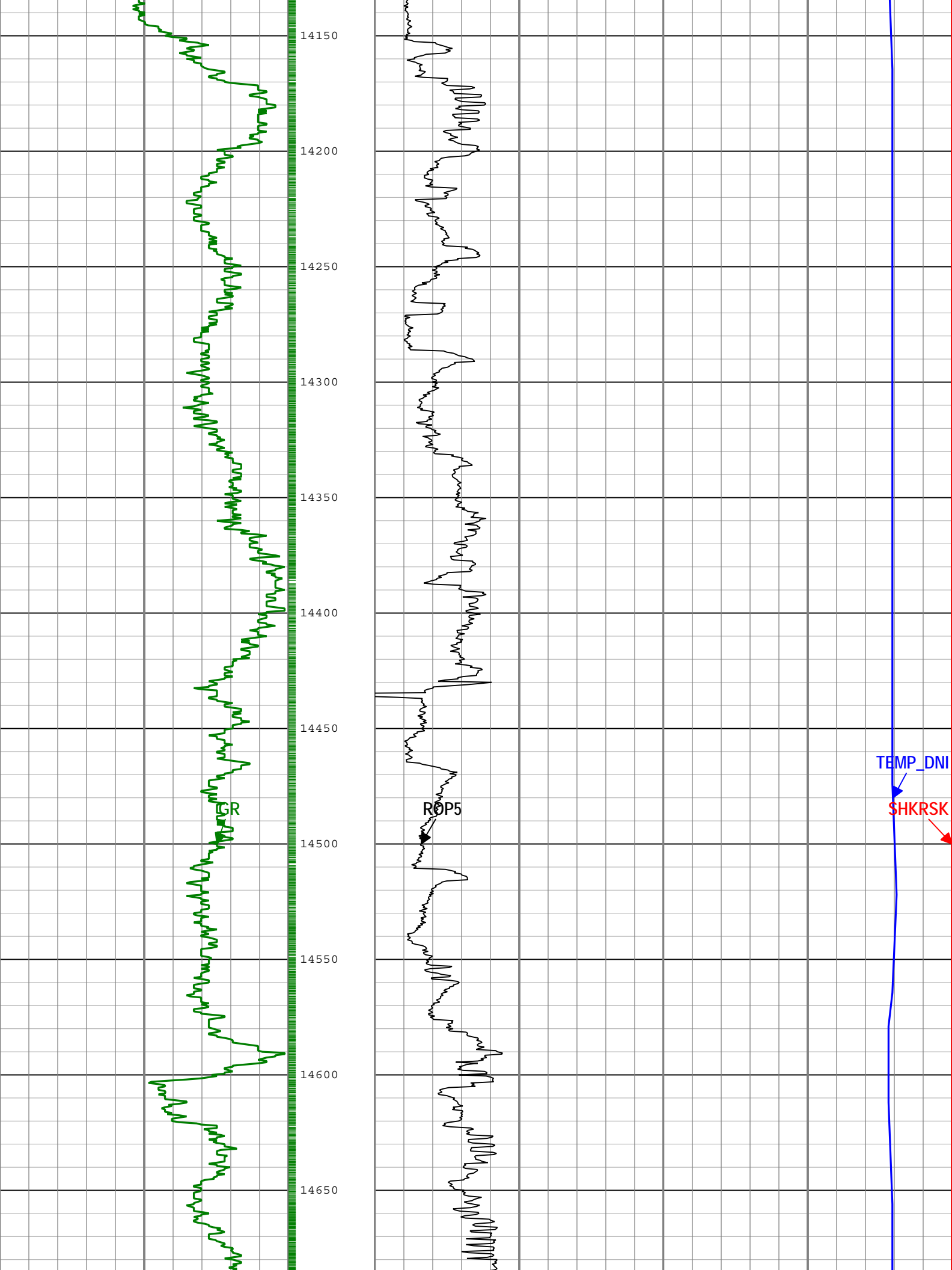
Shock Risk (SHKRSK) SlimPulse[1] RT	
3	0
Direction and Inclination Sensor Temperature (TEMP_DNI) SlimPulse[1] RT	

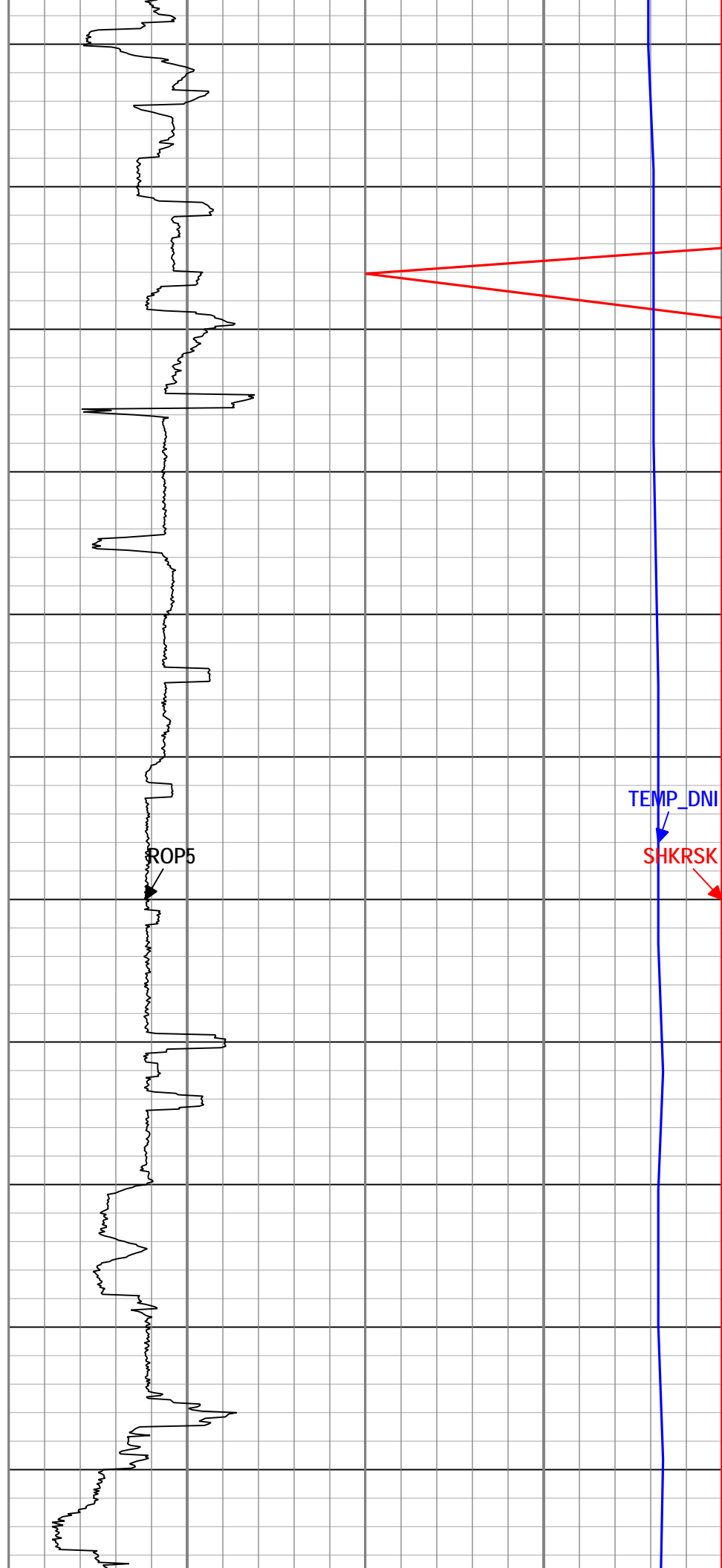
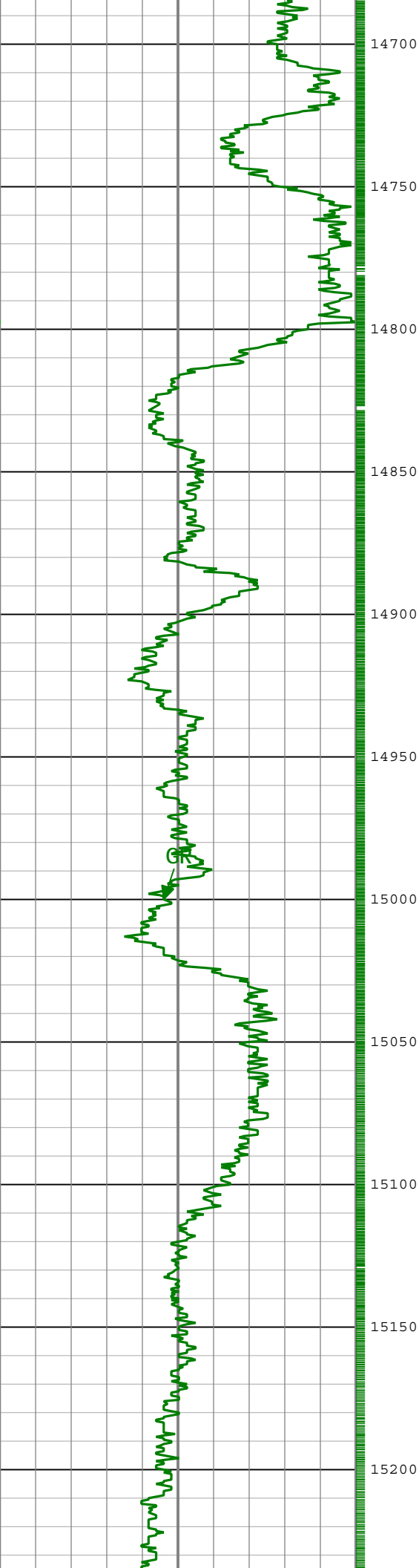


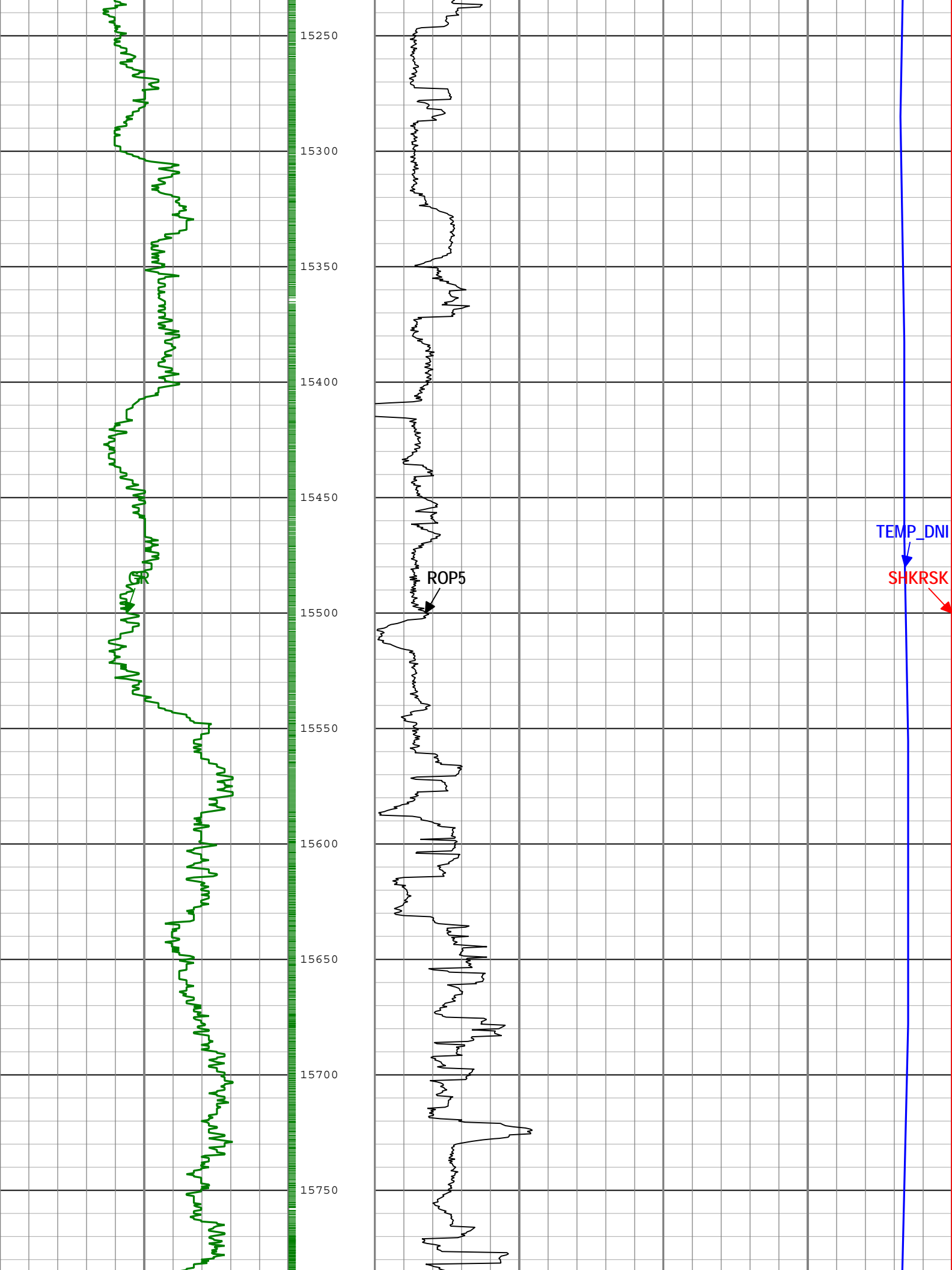


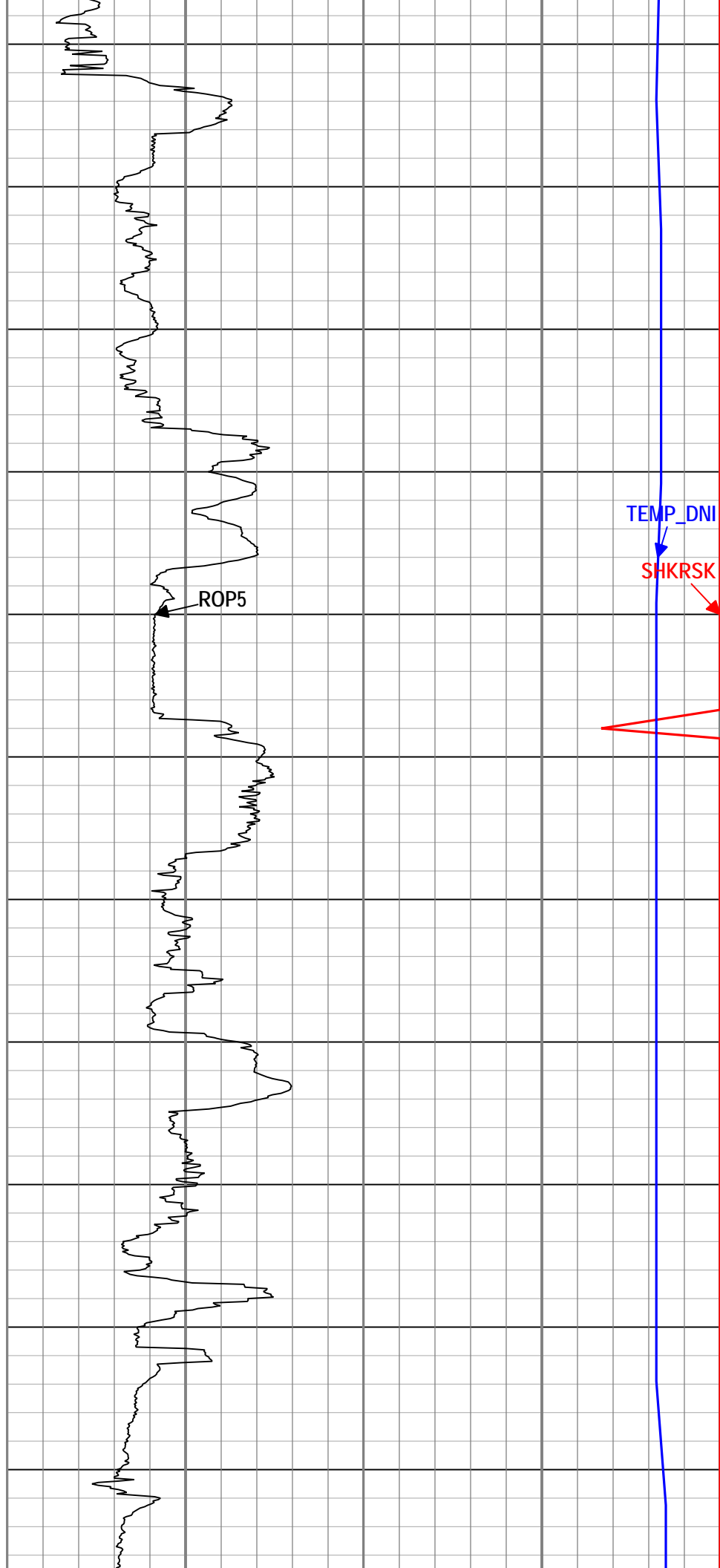
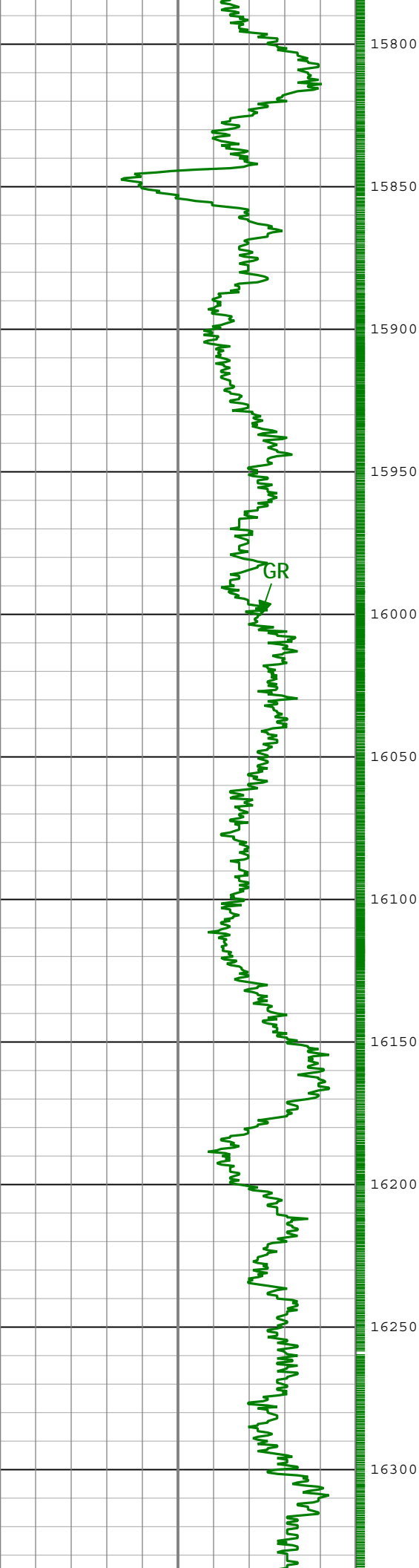


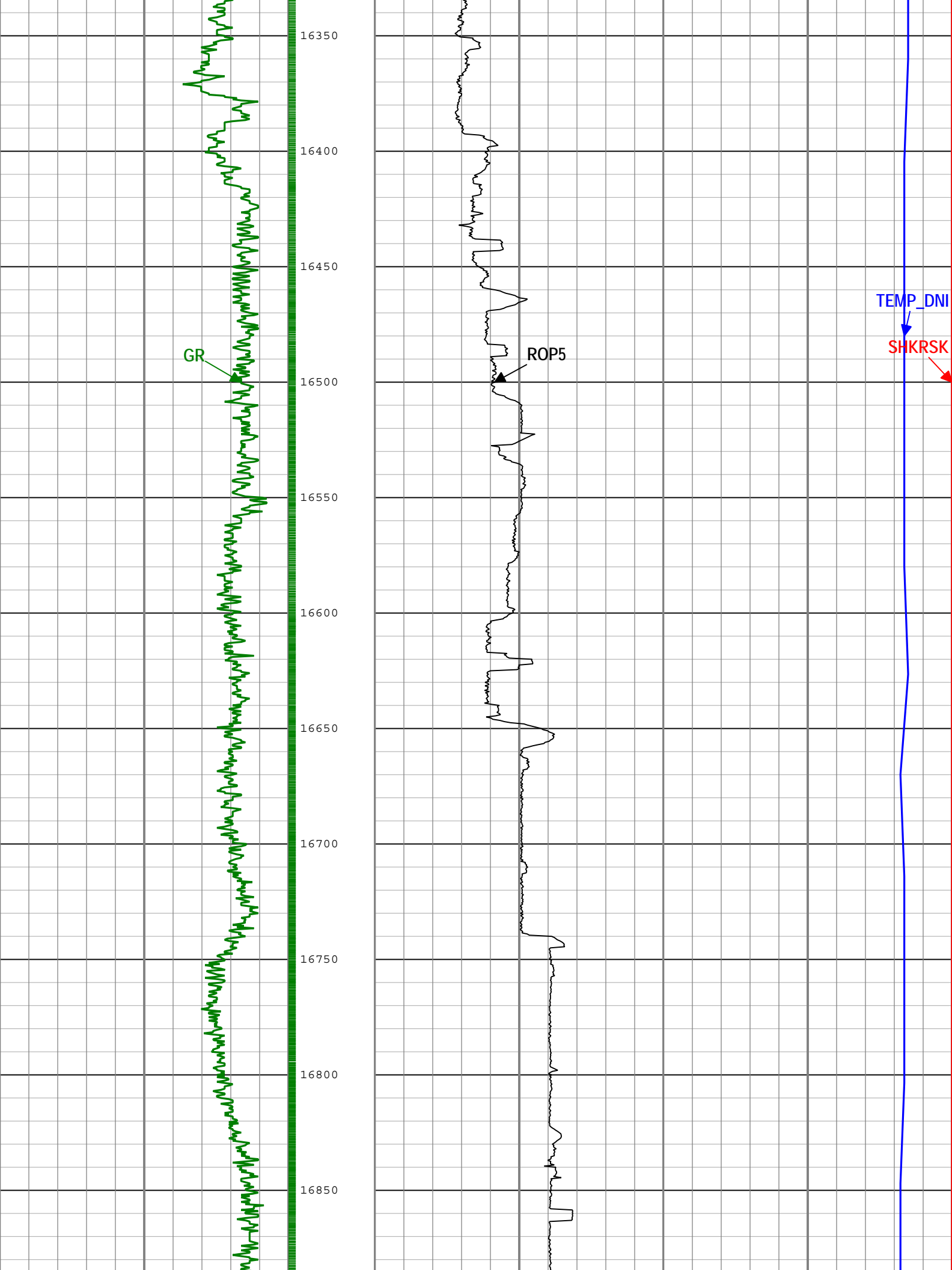


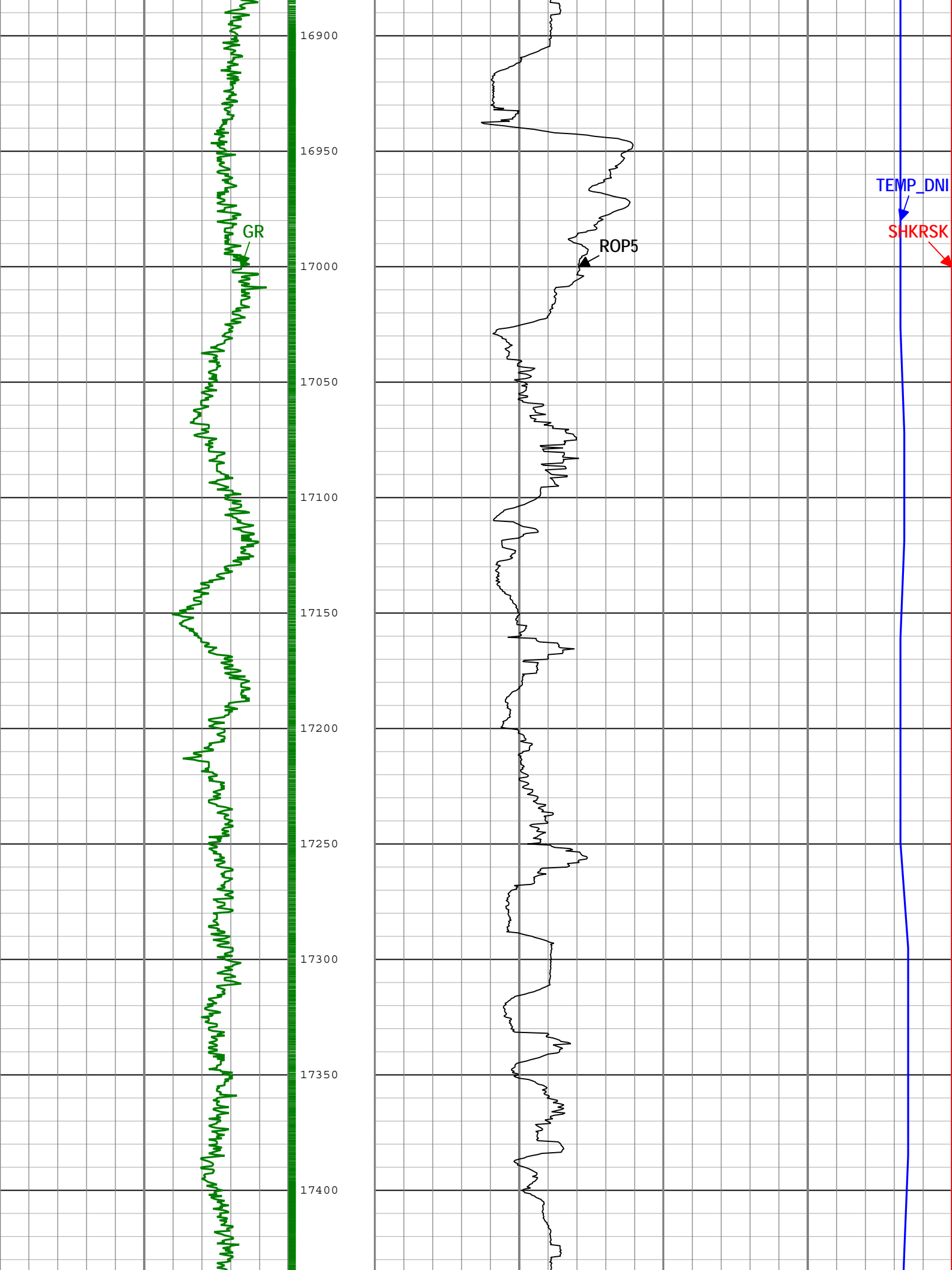


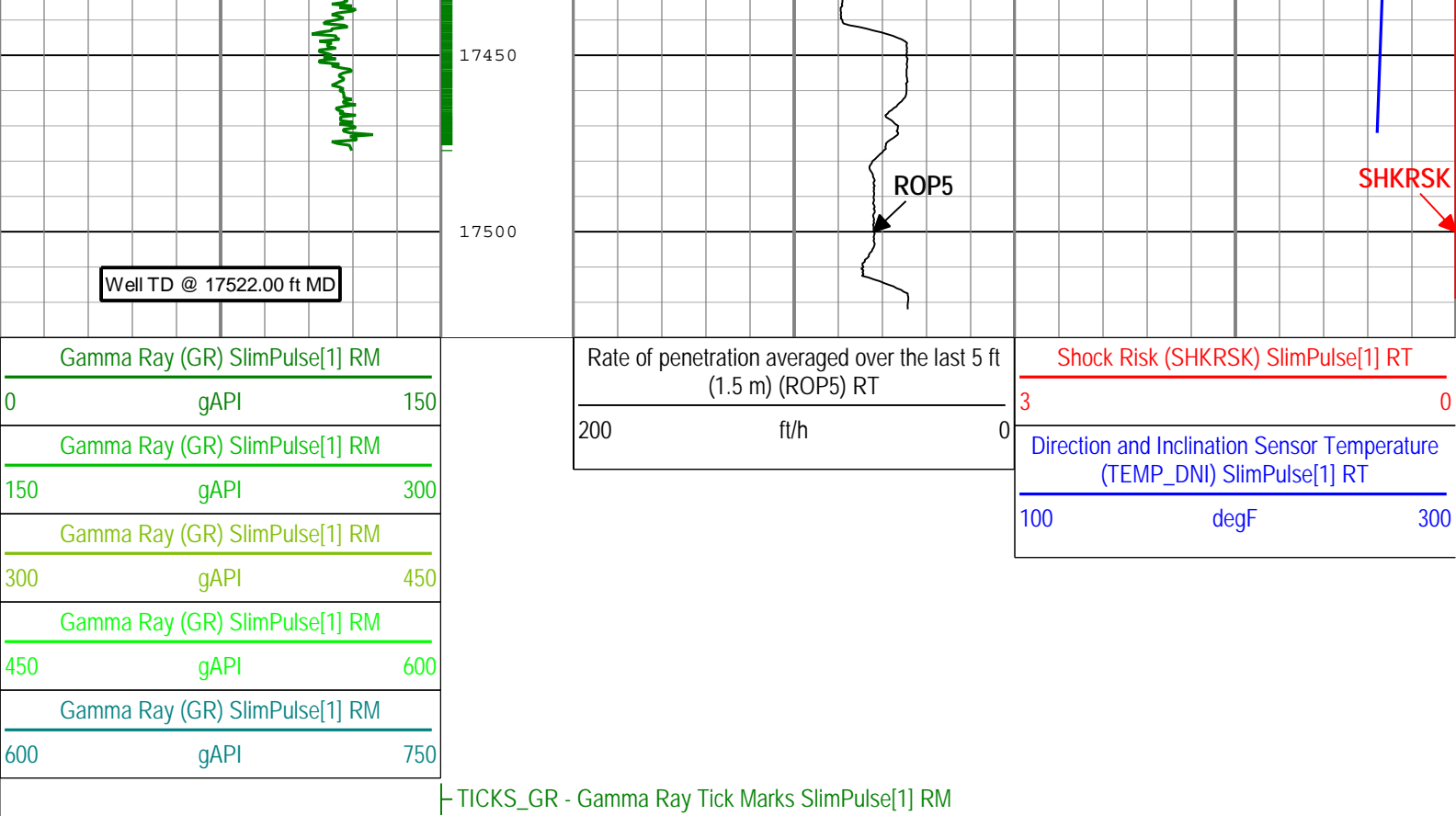












Description: SlimPulse Gamma Ray 1 Format: Log (SlimPulse Gamma Ray Final MD) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 01-Sep-2014 12:24:19

Channel Processing Parameters

RUN001: Parameters				
Parameter	Description	Tool	Value	Unit
BS	Bit Size	DNMSESSION	6.125	in
DFD	Drilling Fluid Density	Borehole	9.8	lbm/gal
GR_SRC	GR Source Selection	SPULSE-GEN	GAMMA_EXT	

Tool Control Parameters

Composite 1

5 in / 100 ft Measured Depth

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Include Parallel Data
RUN001	Drilling	Down	12003.33 ft	17530.67 ft	24-Aug-2014 9:02:54 AM	28-Aug-2014 7:24:00 AM	No

All depths are referenced to toolstring zero

Log

Company:Noble Energy Inc Well:Heartland State H01-74-1HN ST1 Composite 1:S167

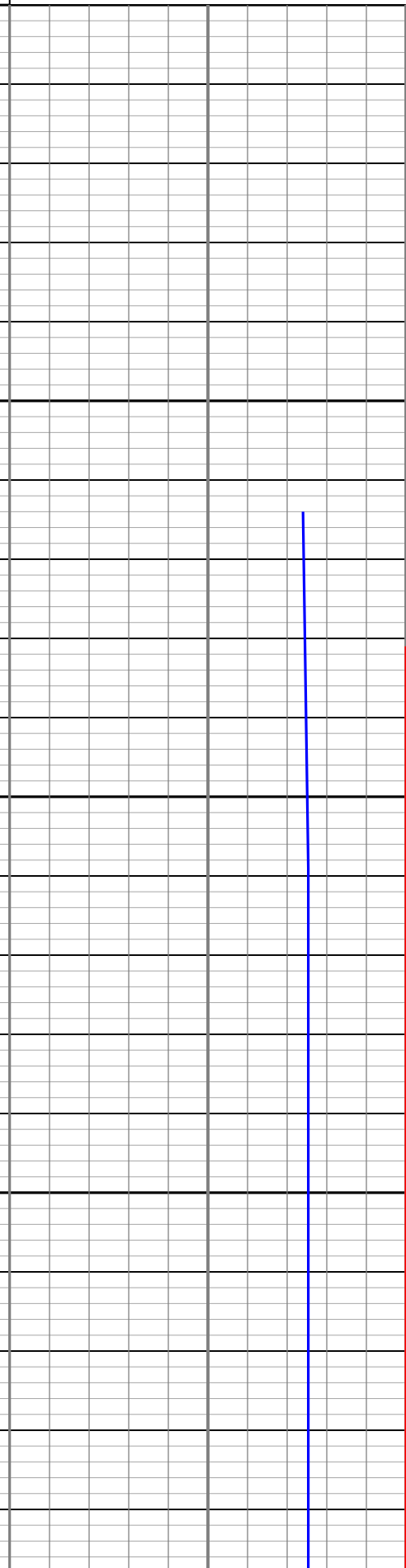
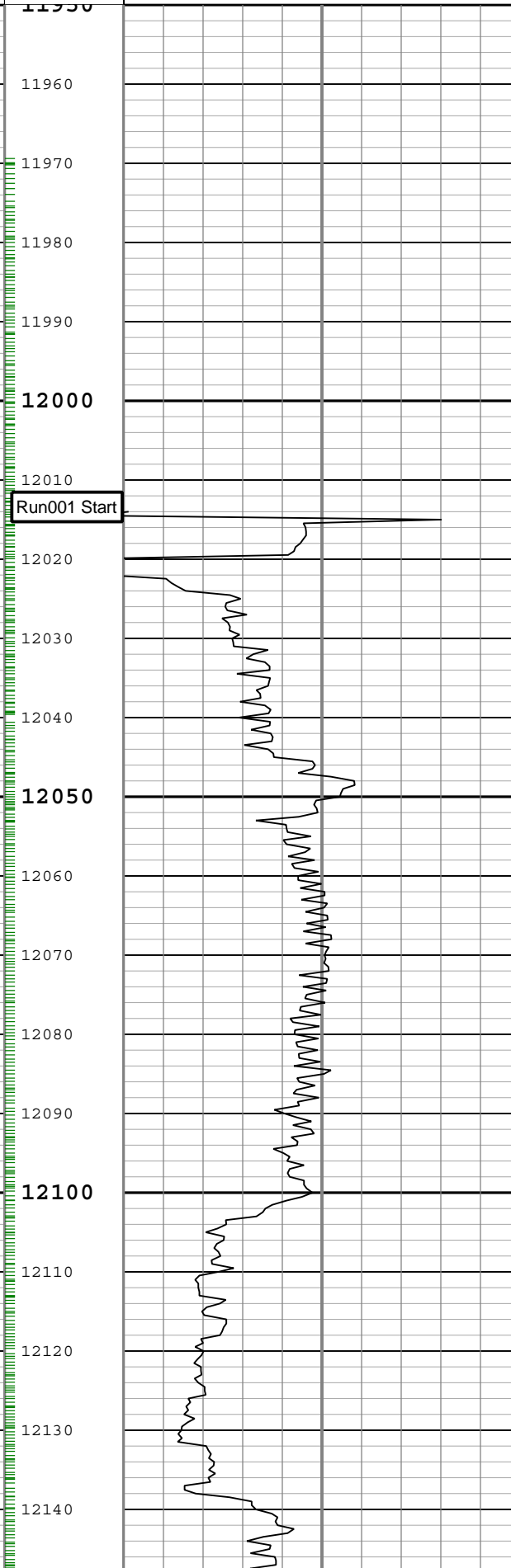
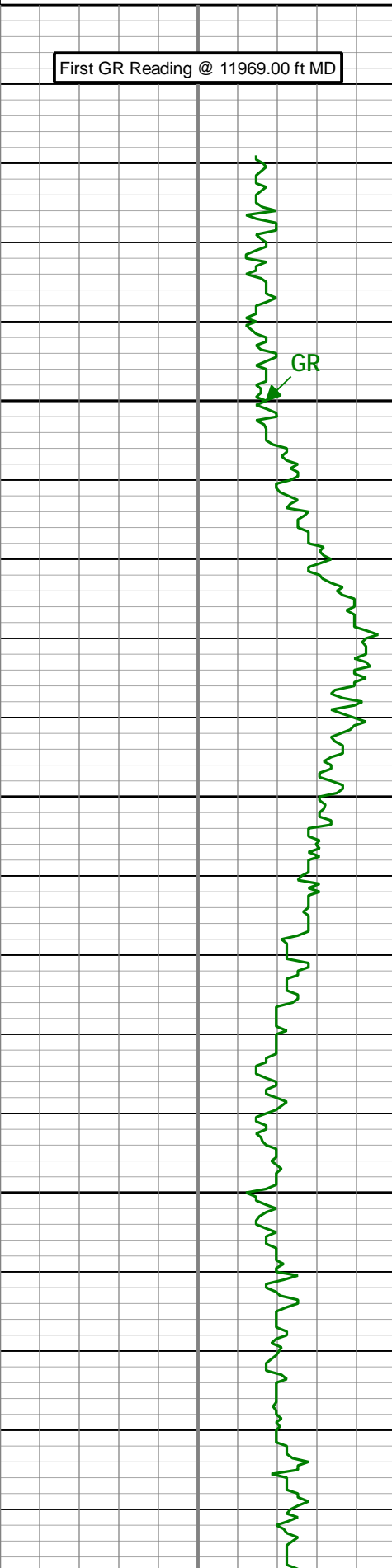
Description: SlimPulse Gamma Ray 1 Format: Log (SlimPulse Gamma Ray Final MD) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 01-Sep-2014 12:24:20

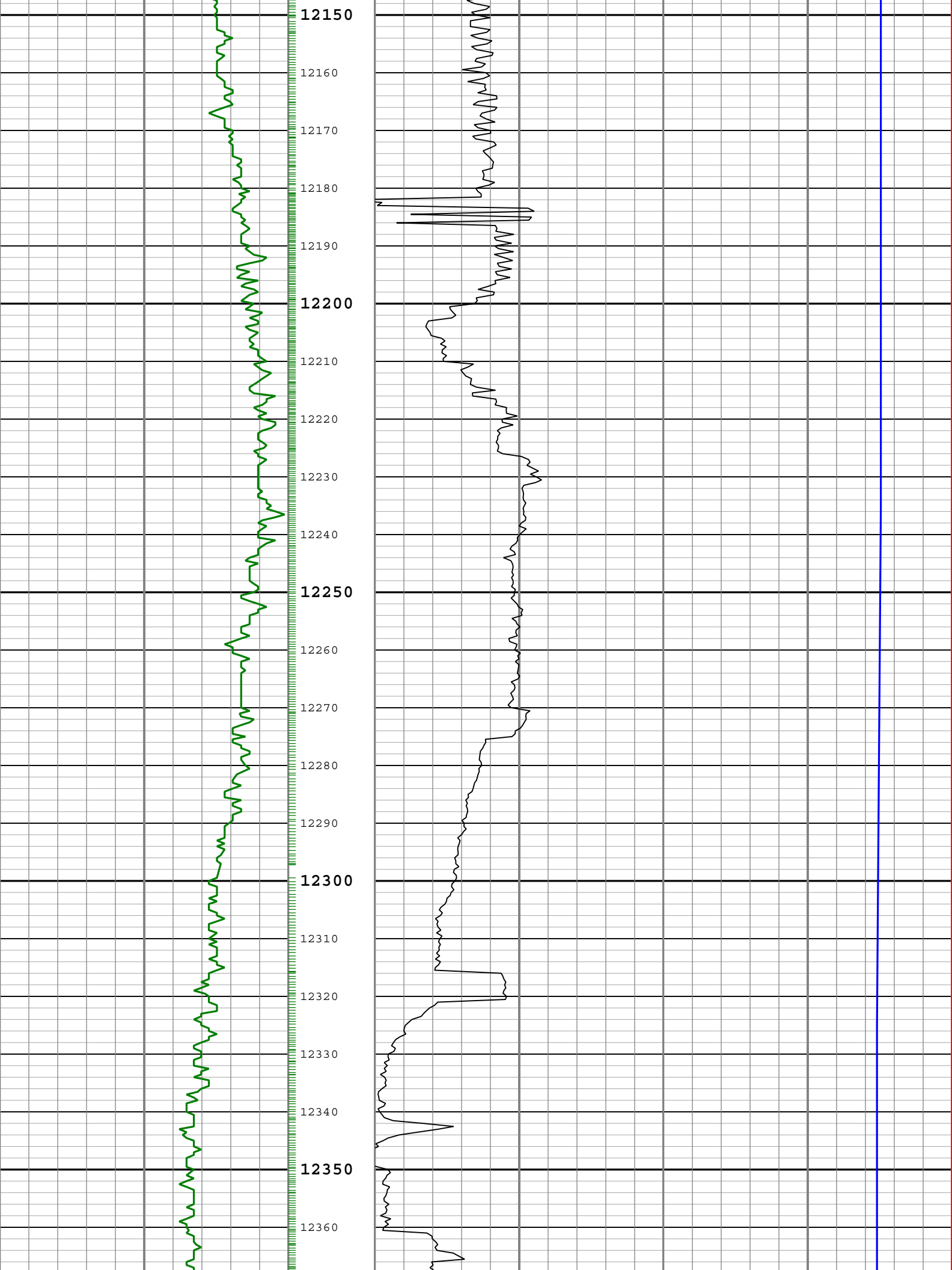


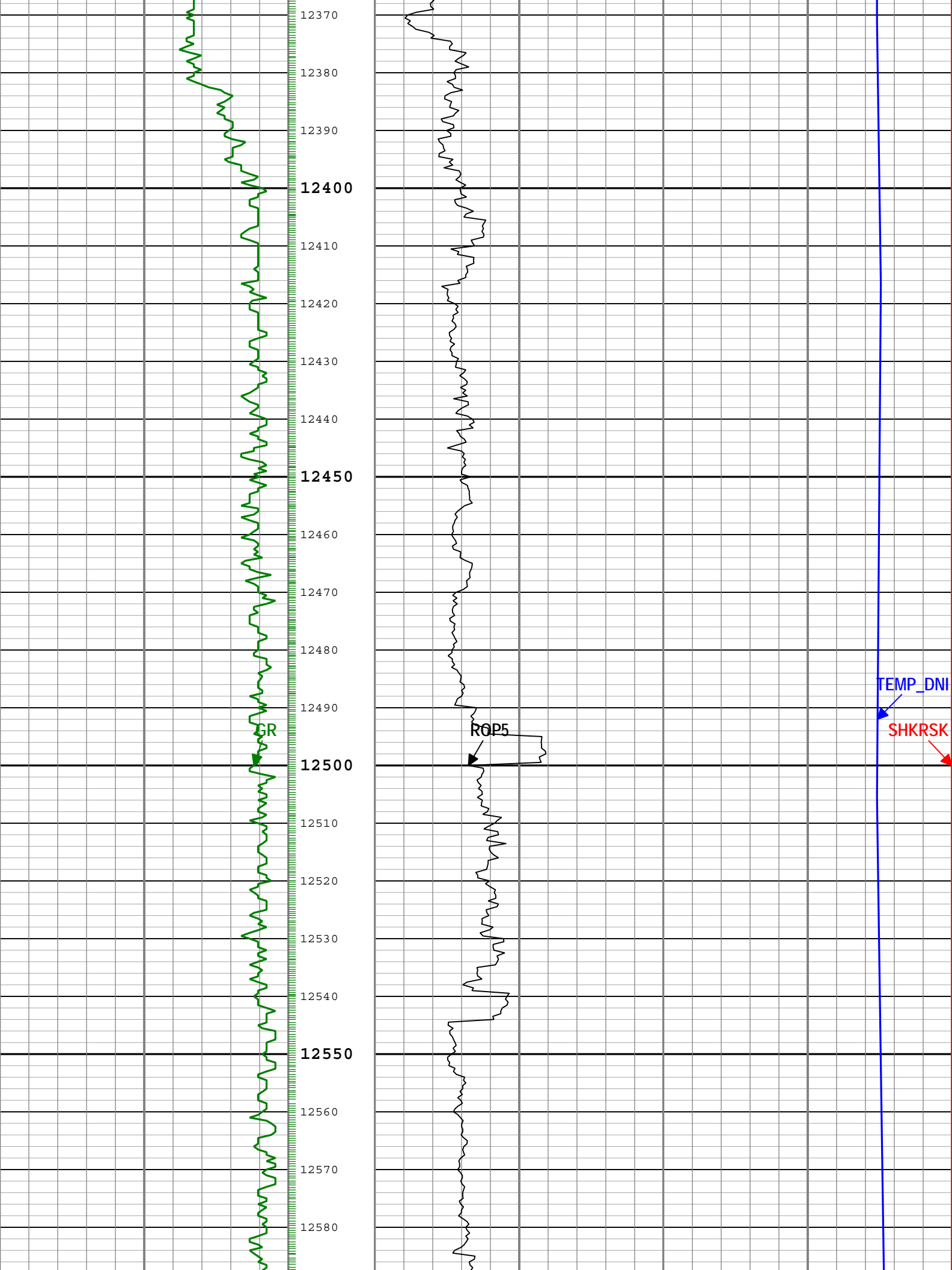
Gamma Ray (GR) SlimPulse[1] RM		
450	gAPI	600
Gamma Ray (GR) SlimPulse[1] RM		
600	gAPI	750

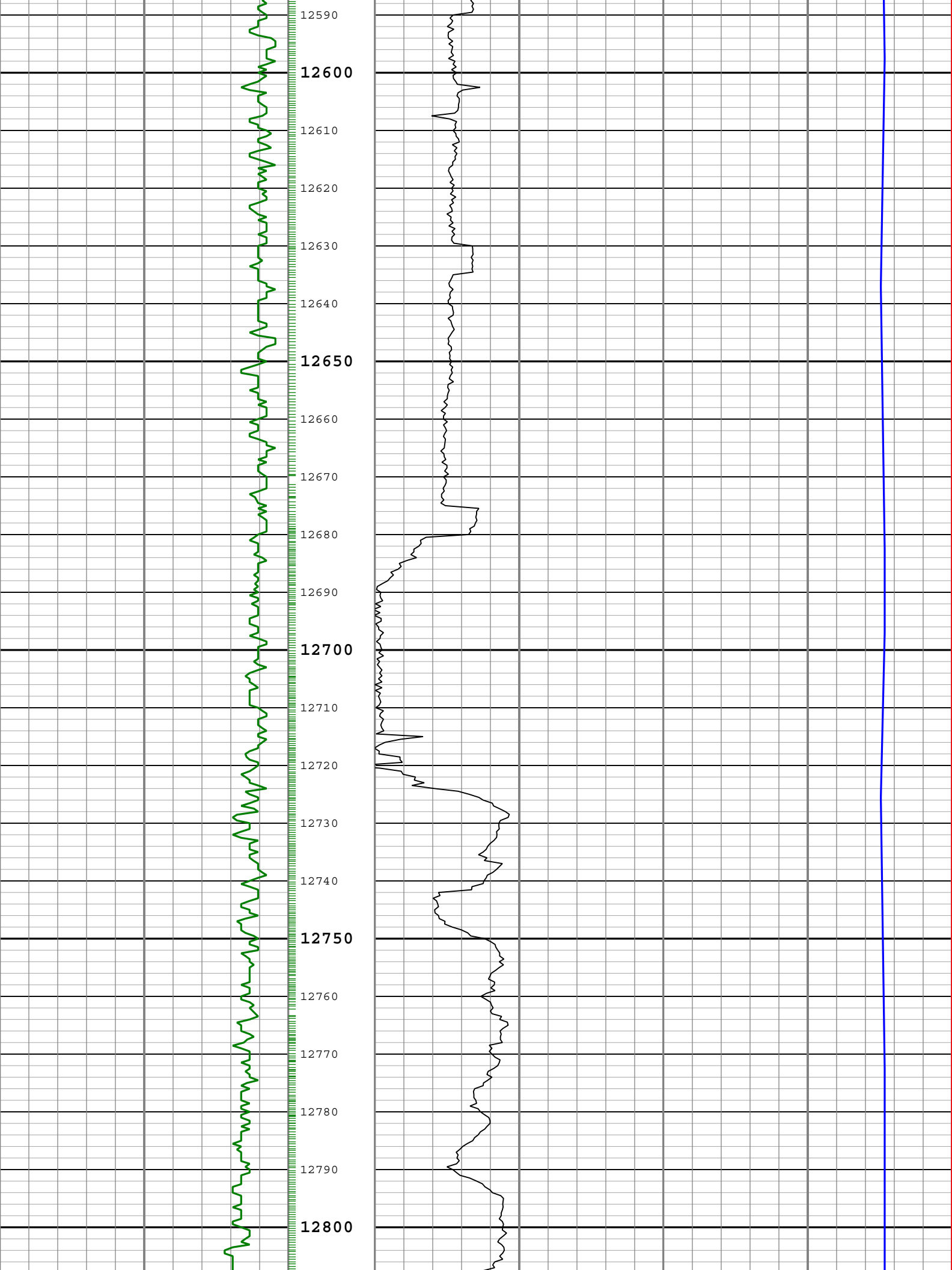
Rate of penetration averaged over the last 5 ft (1.5 m) (ROP5) RT		
200	ft/h	0

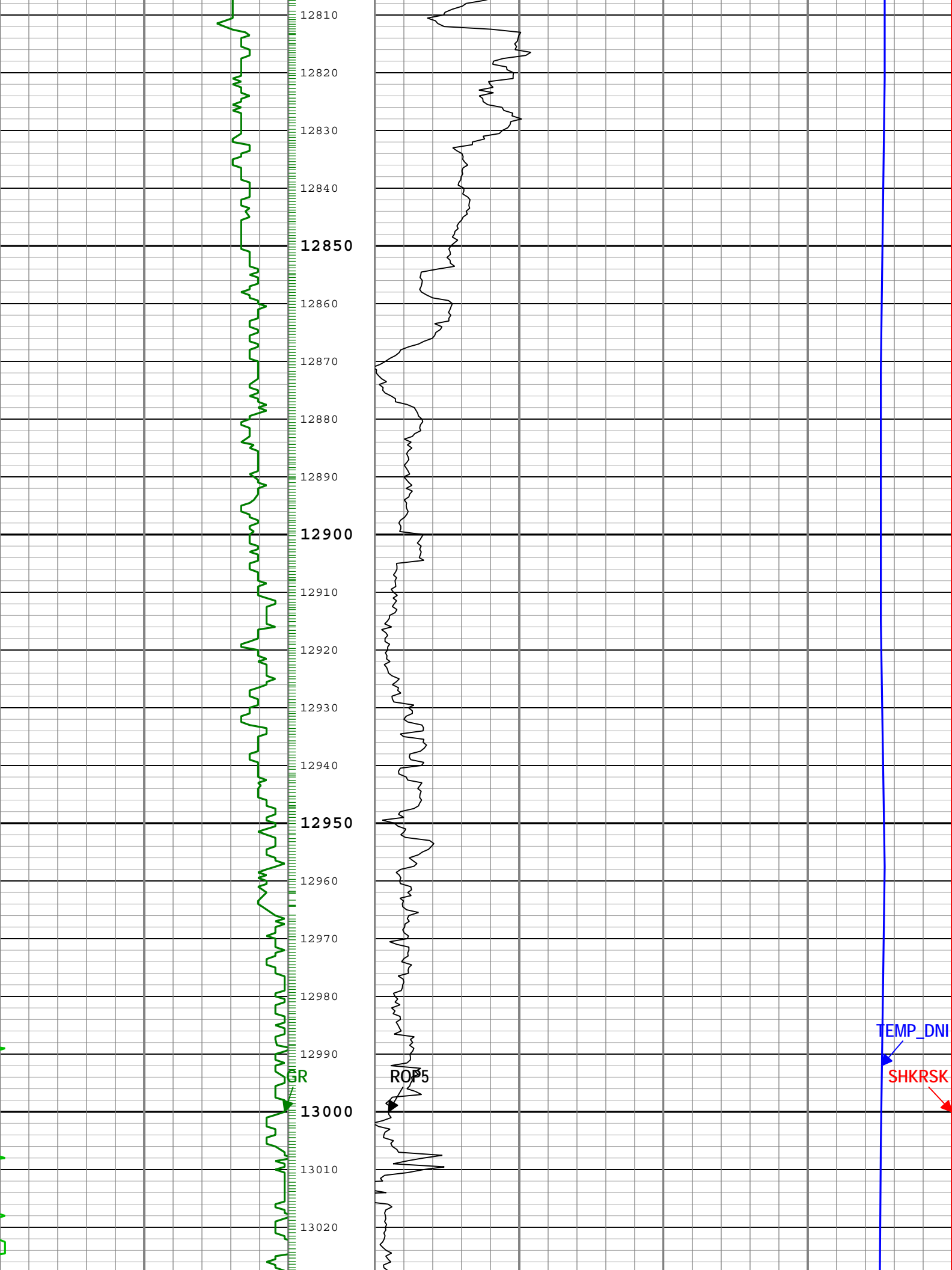
Direction and Inclination Sensor Temperature (TEMP_DNI) SlimPulse[1] RT		
100	degF	300

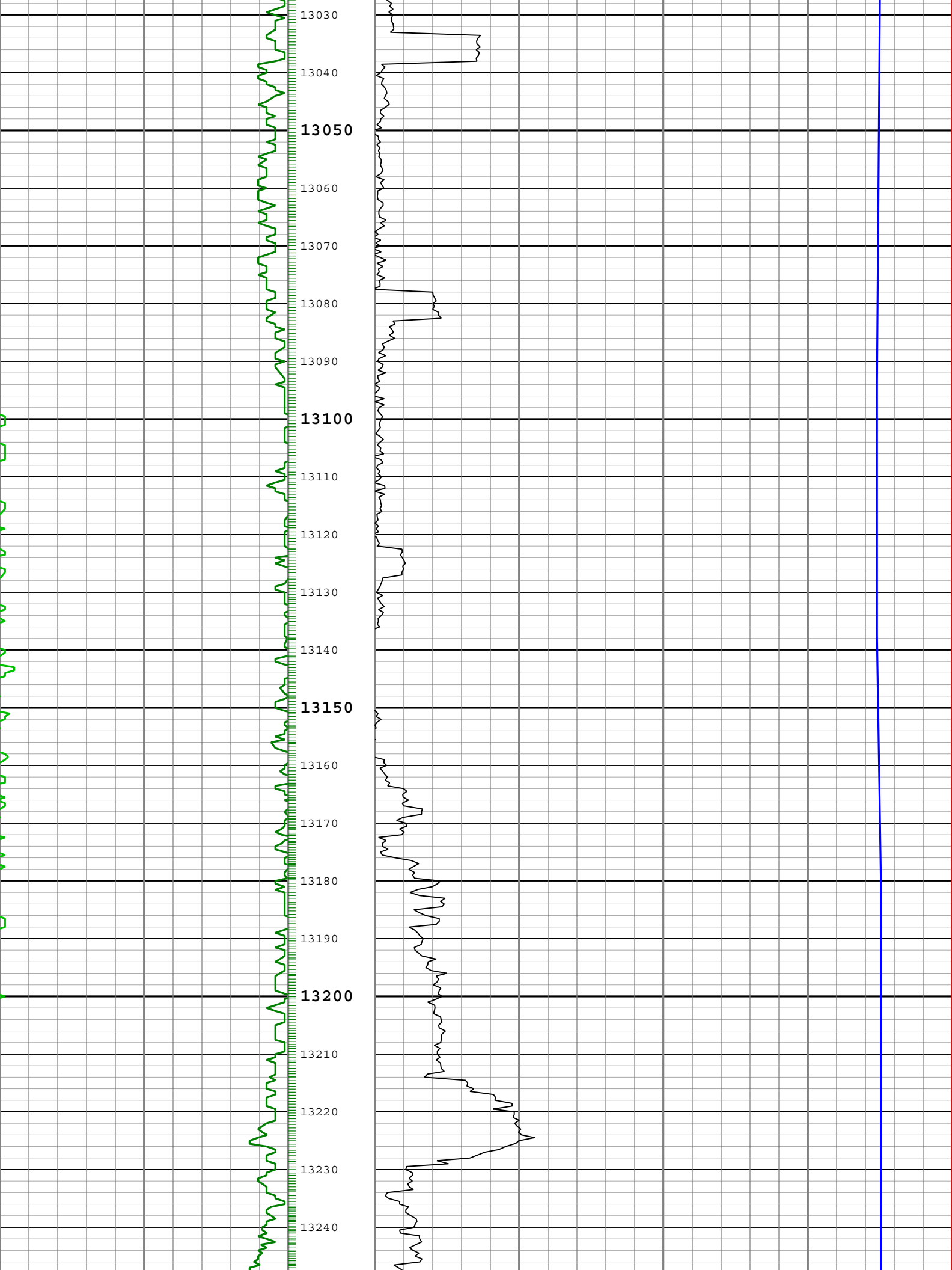


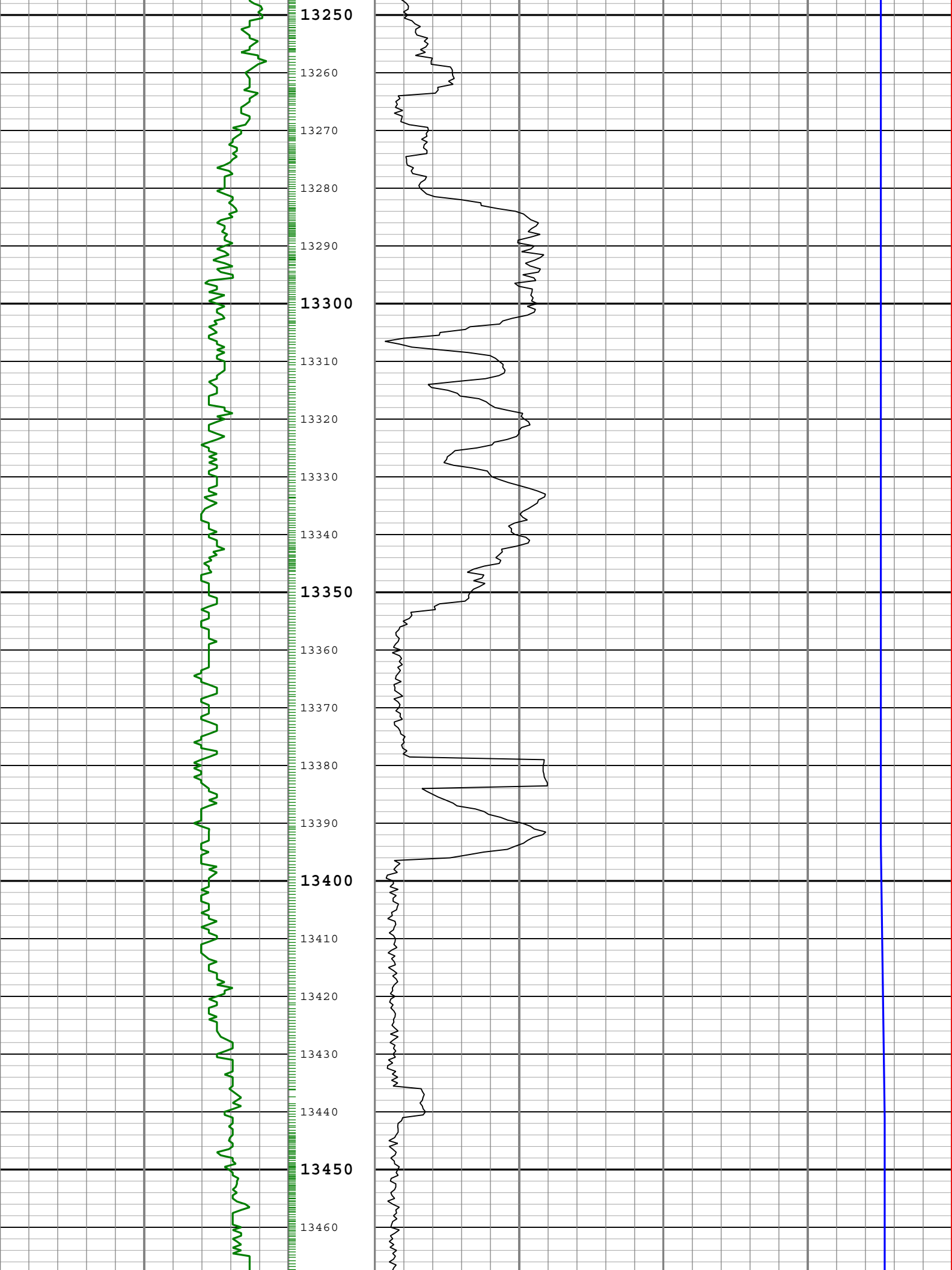


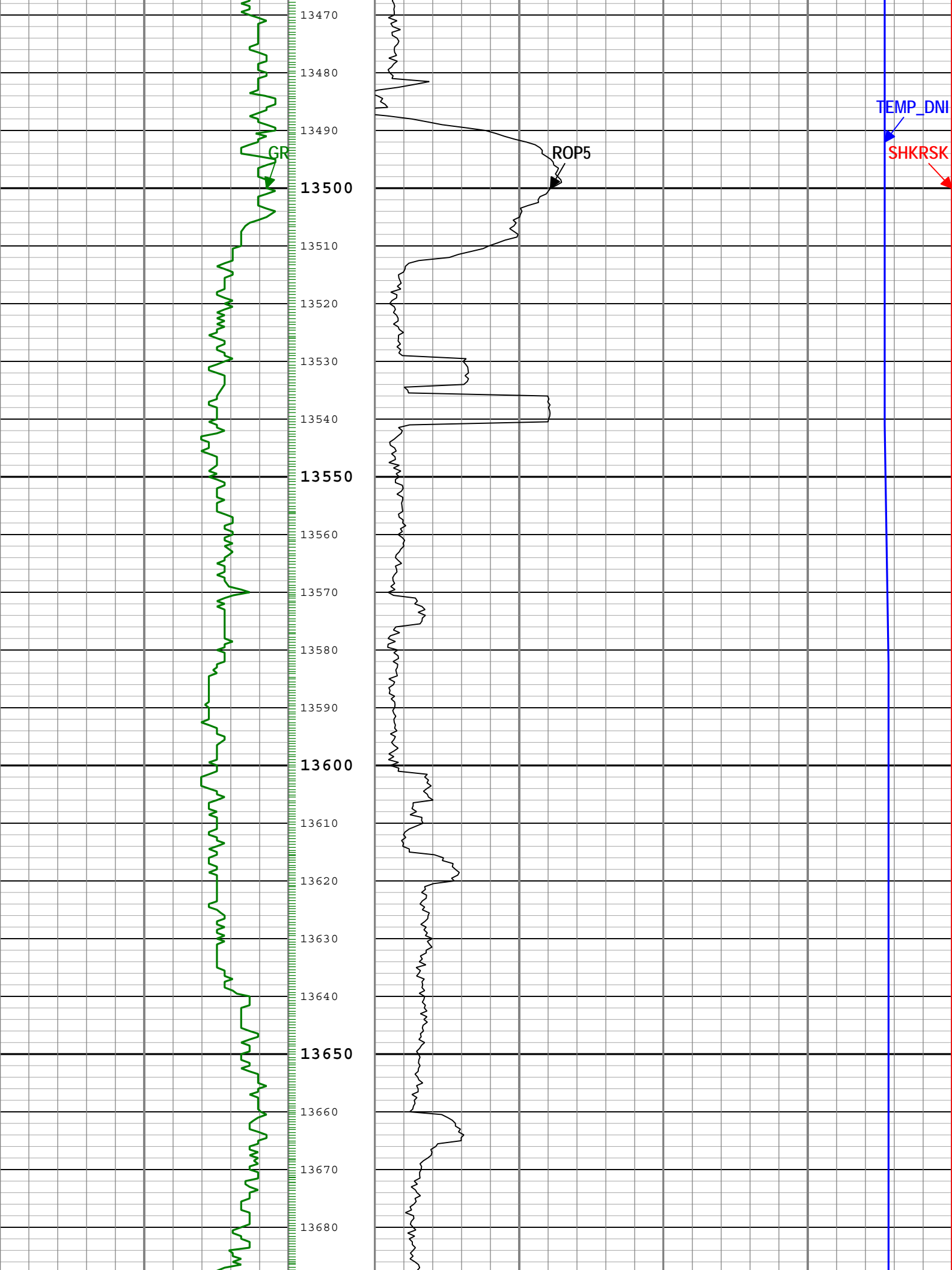


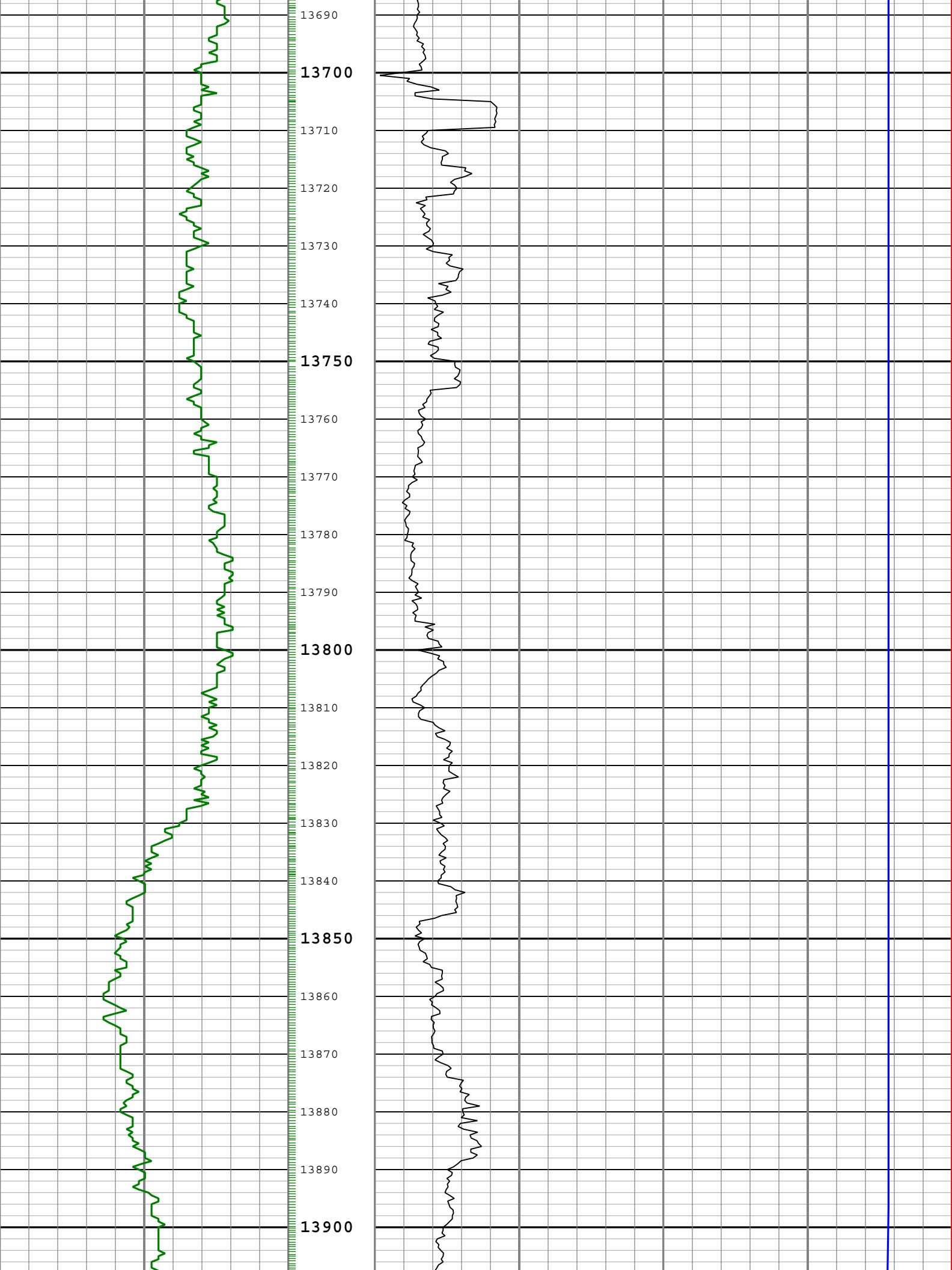


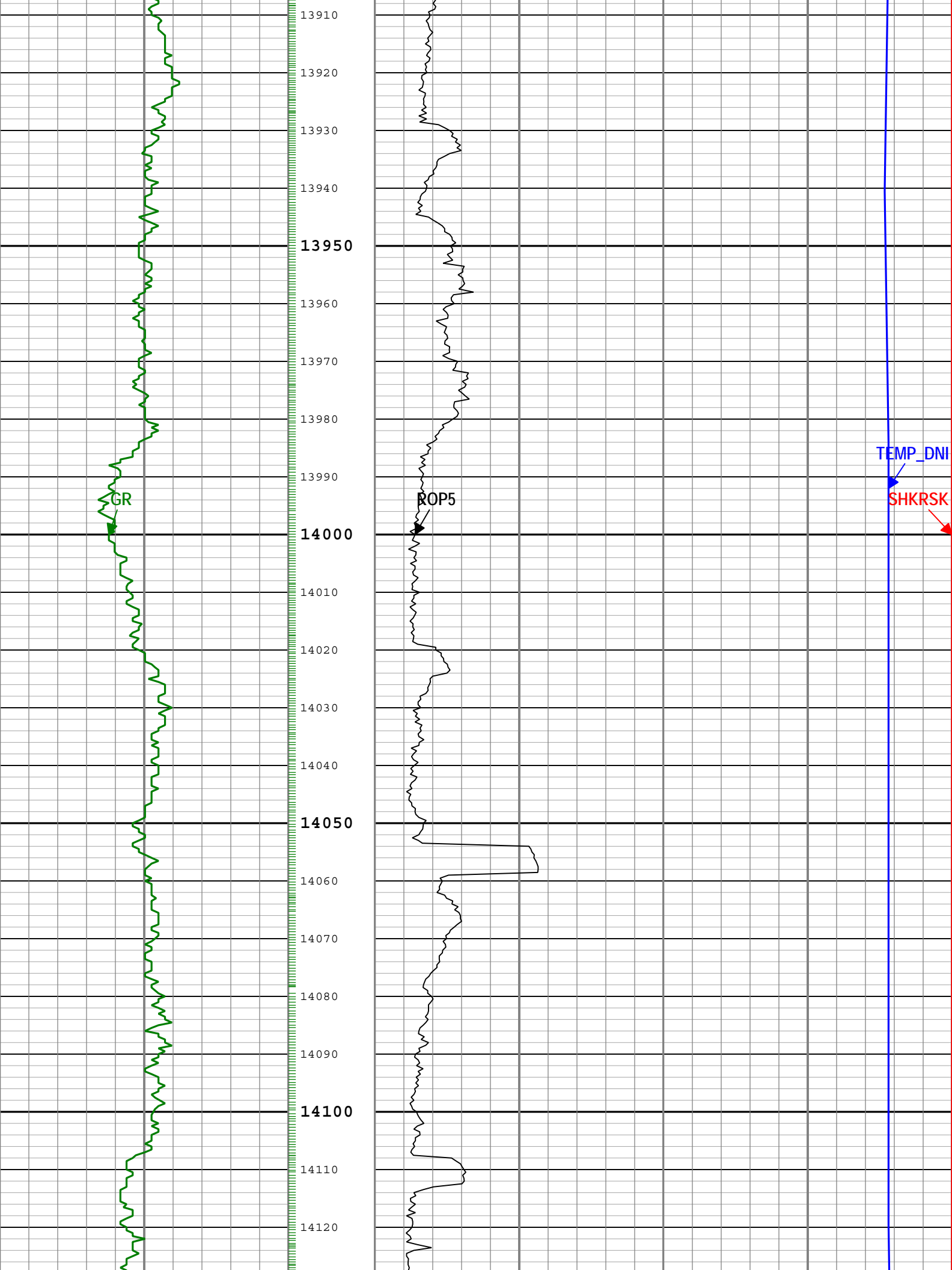


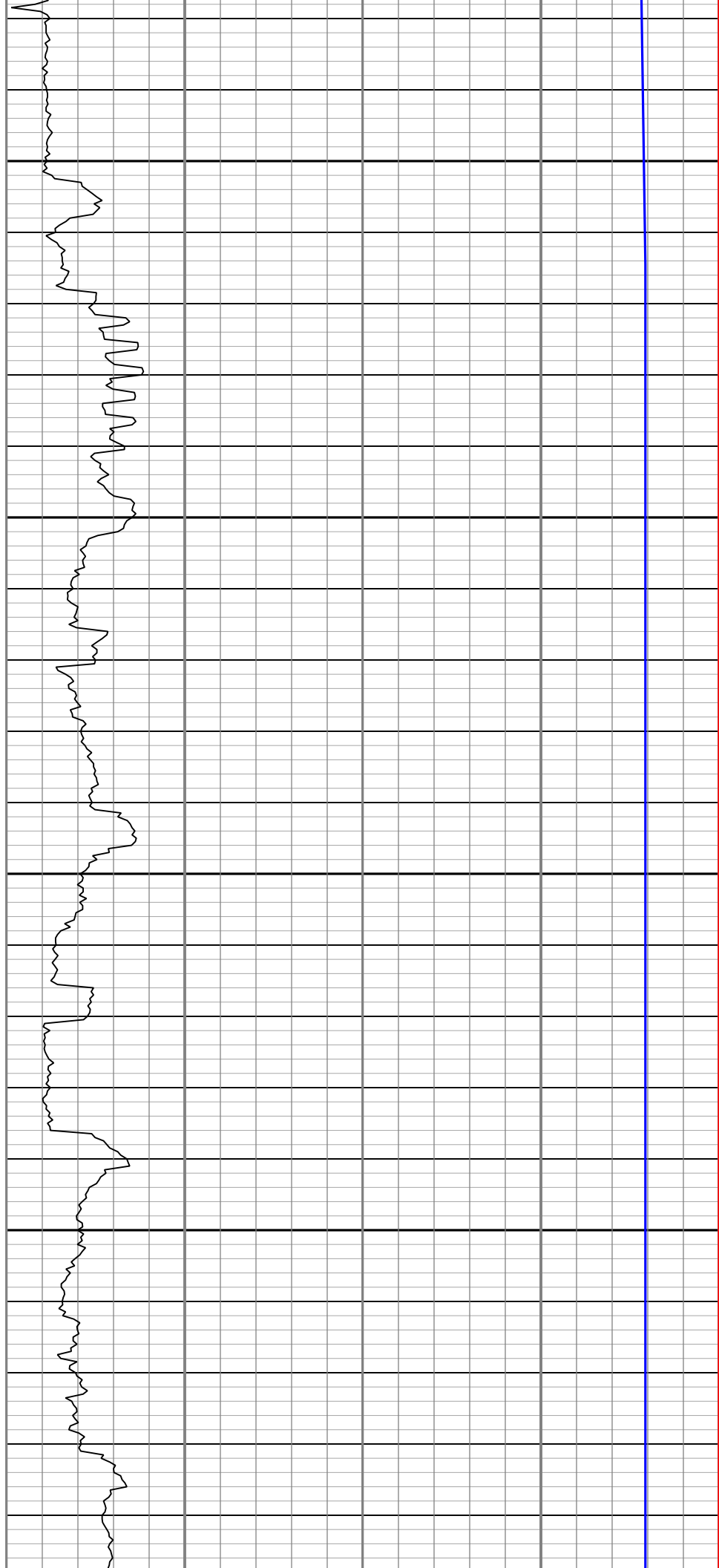
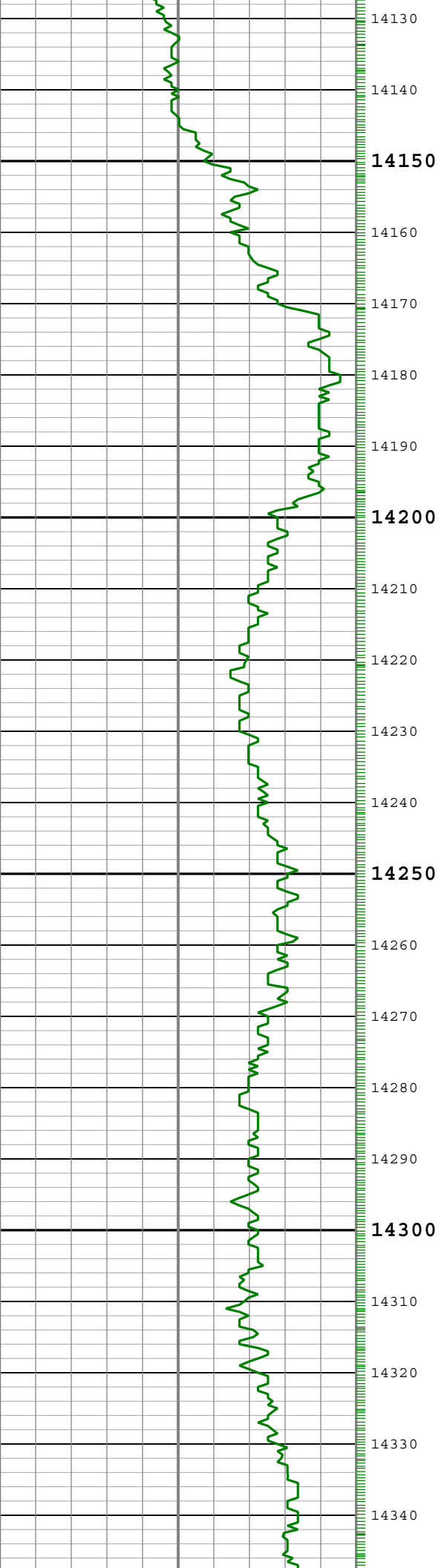


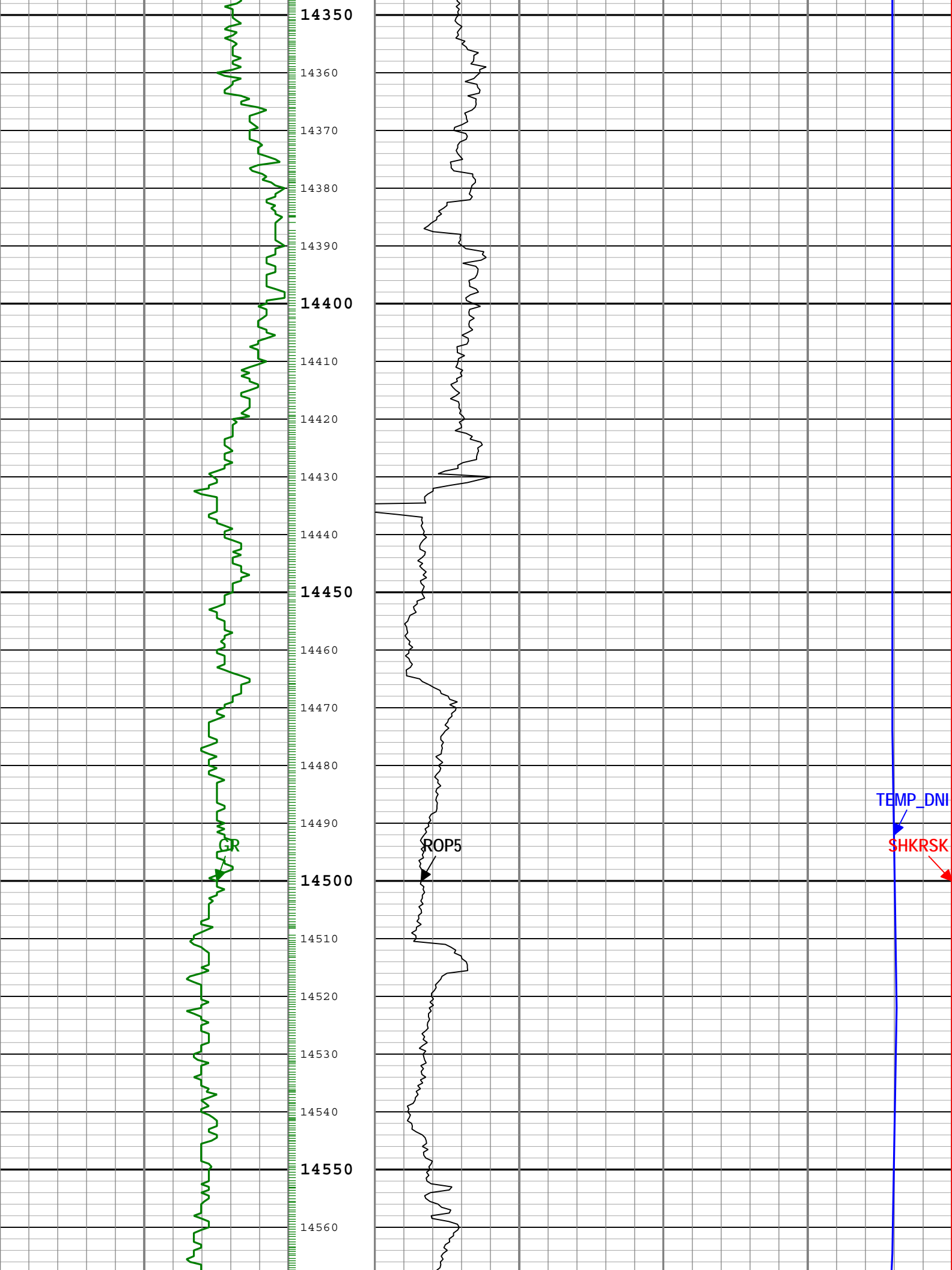


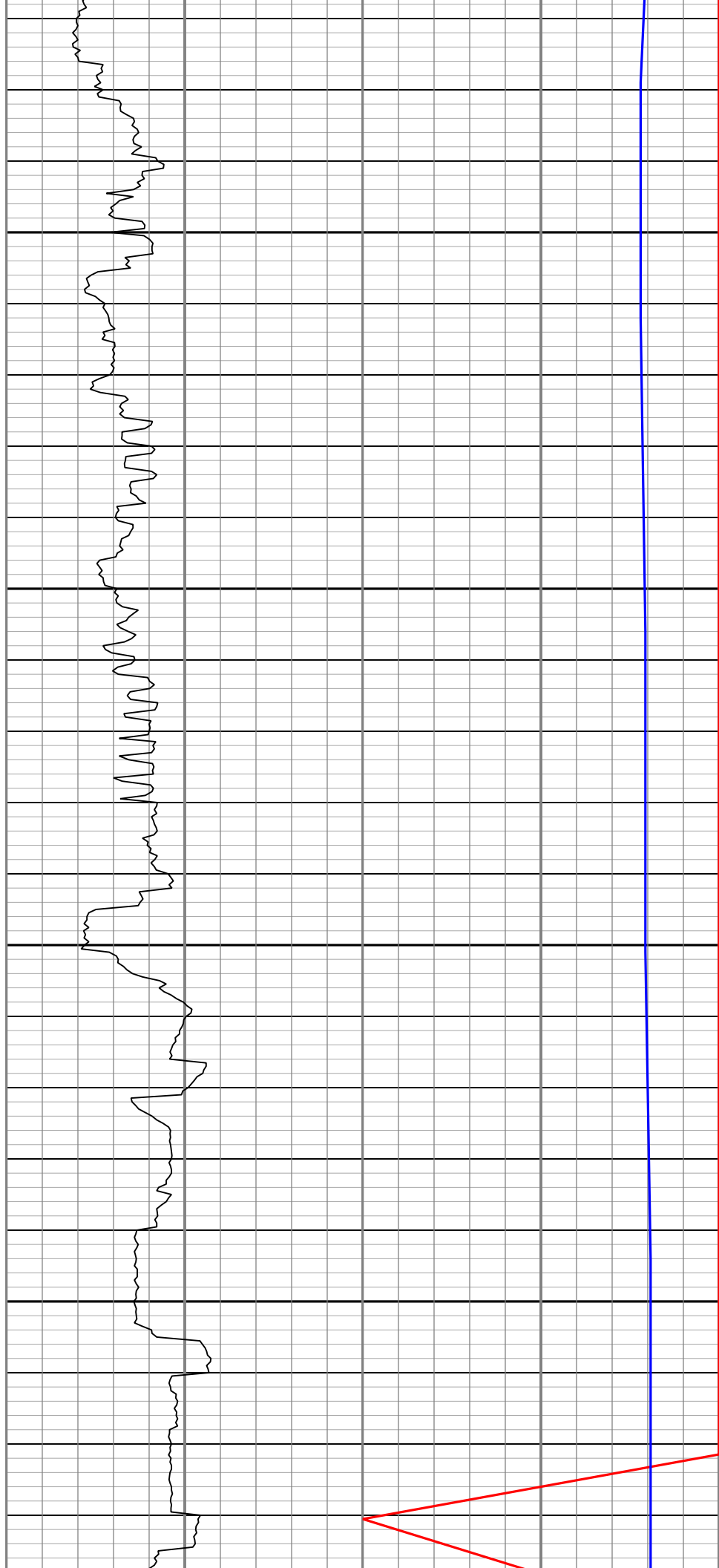
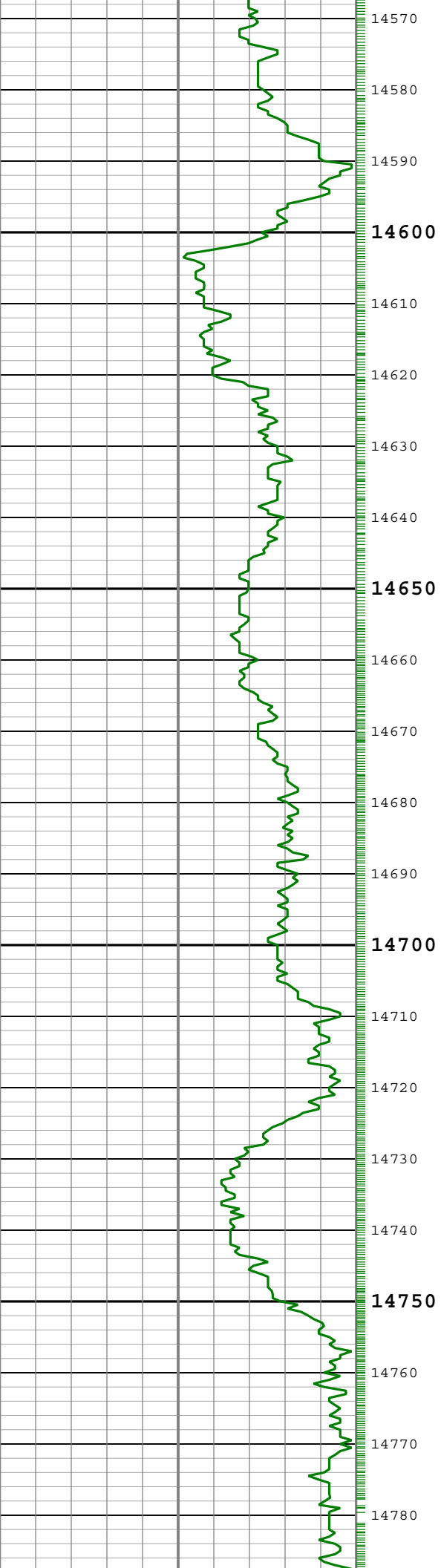


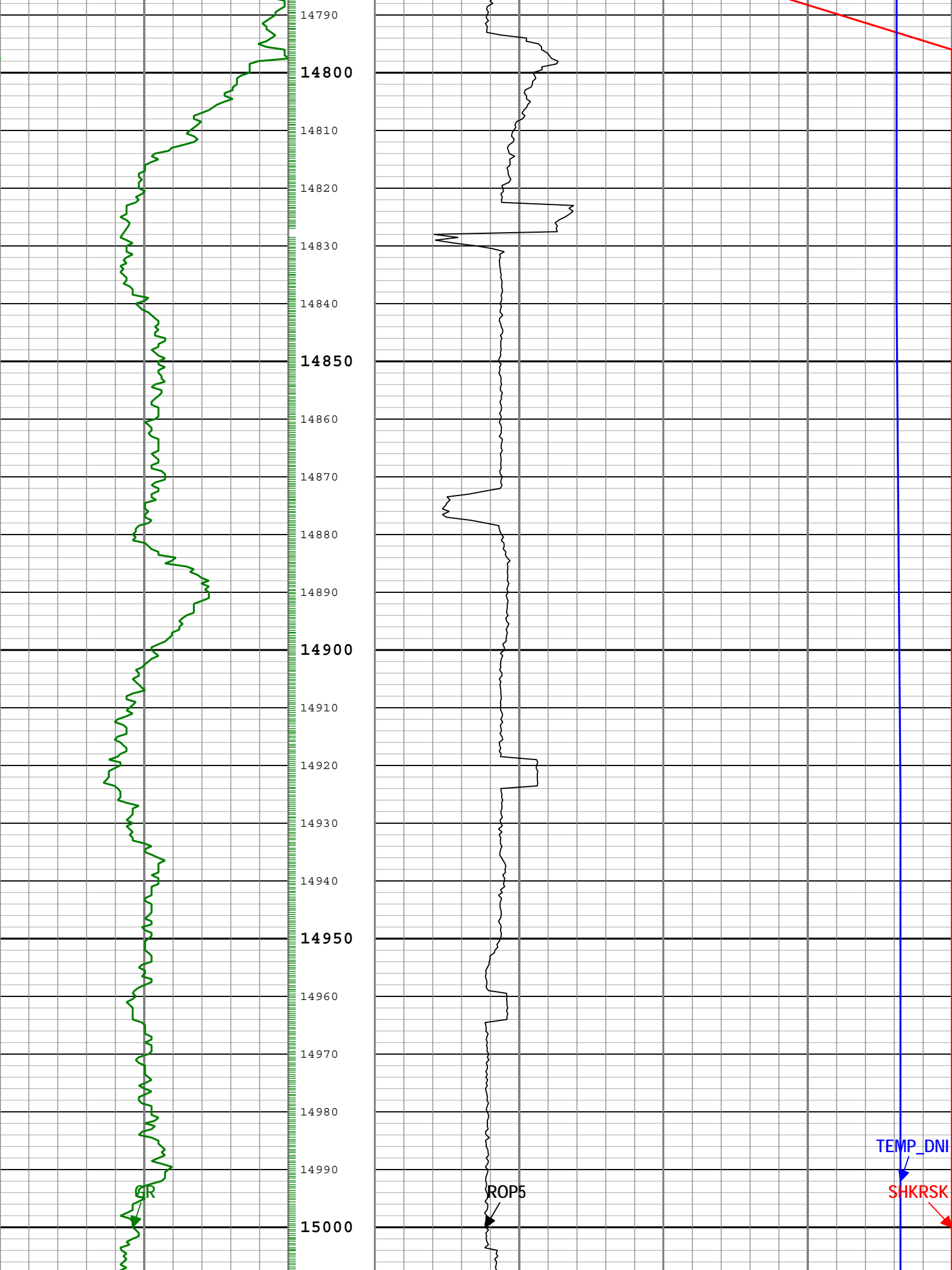


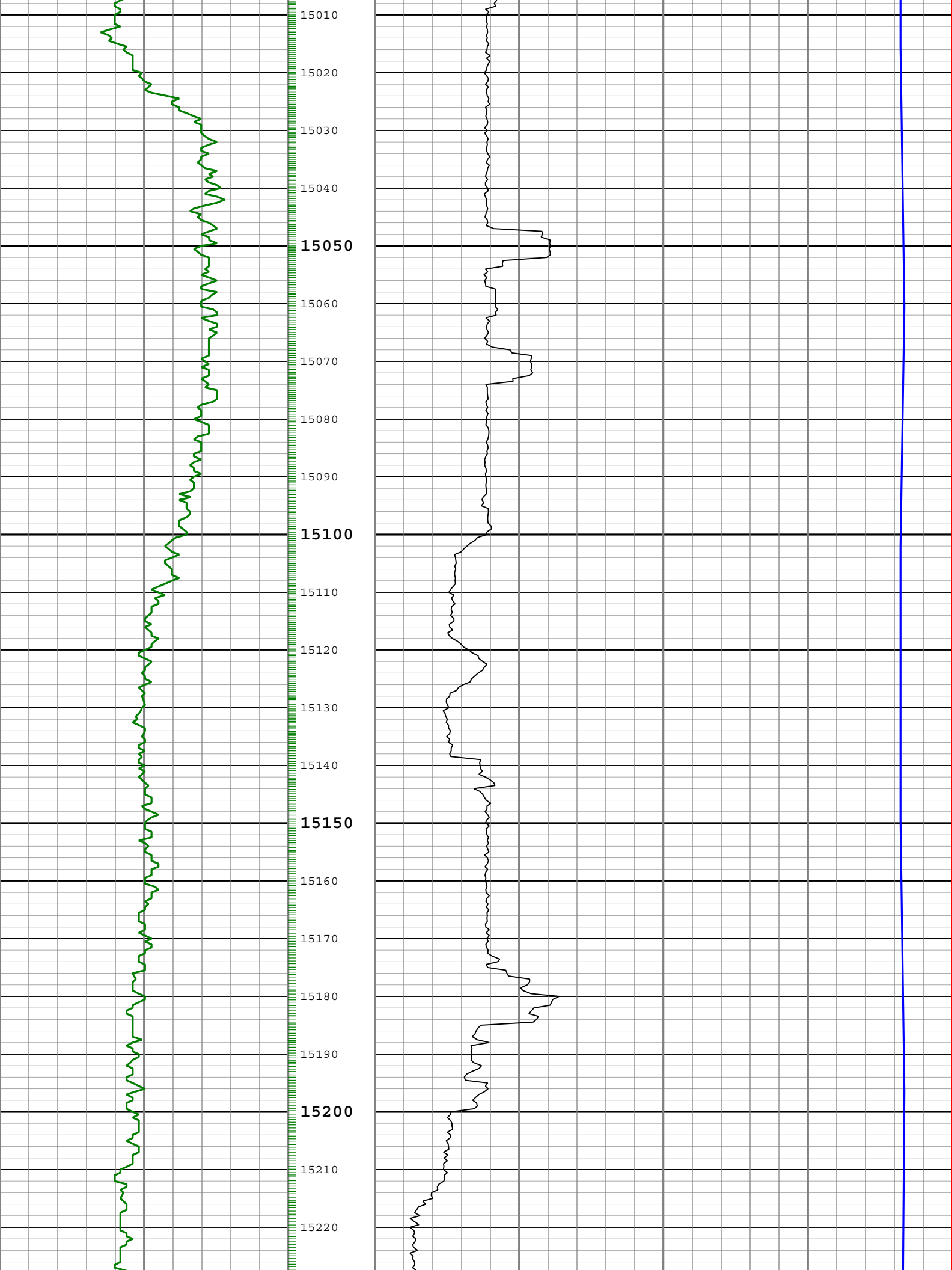


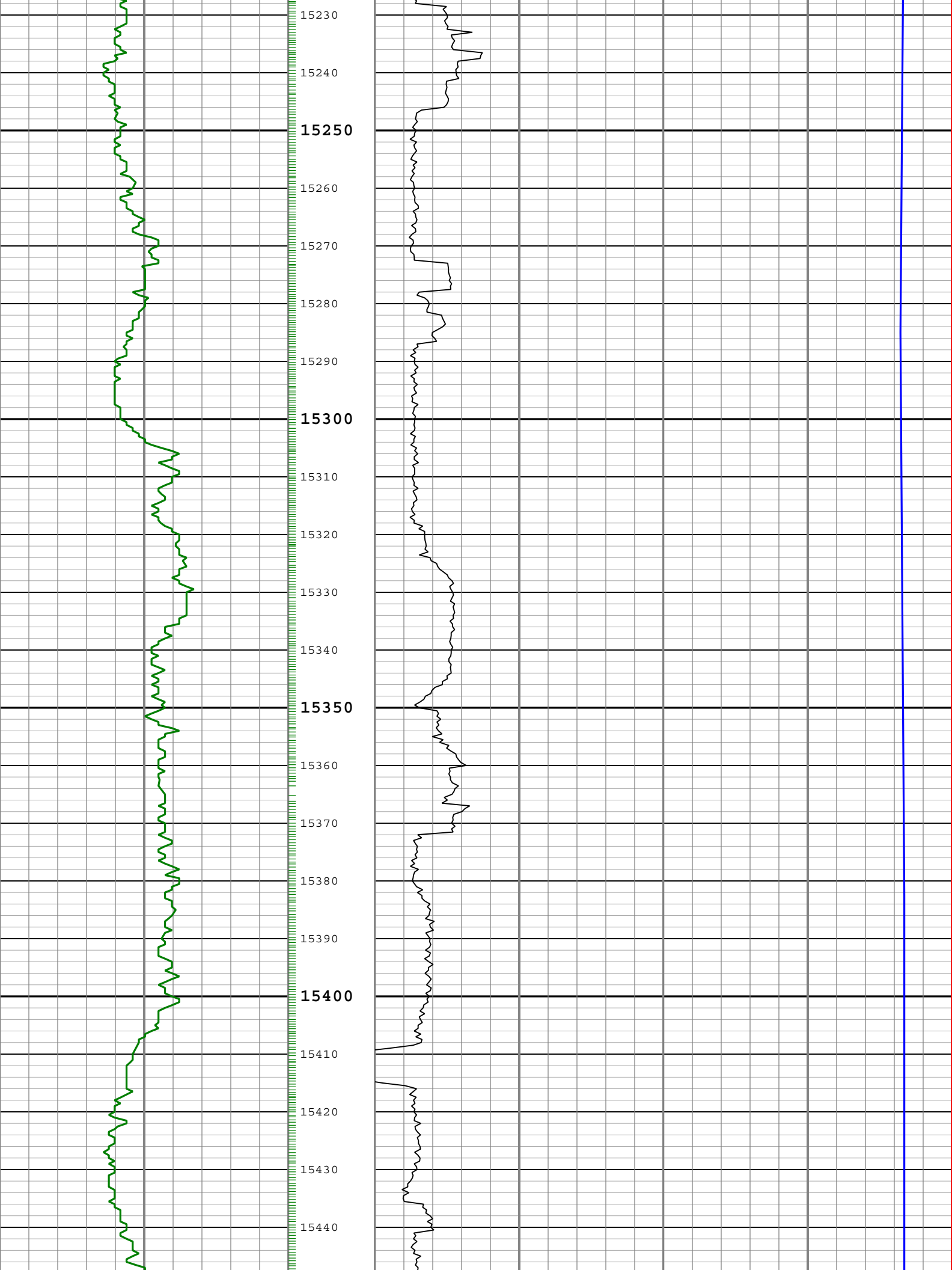


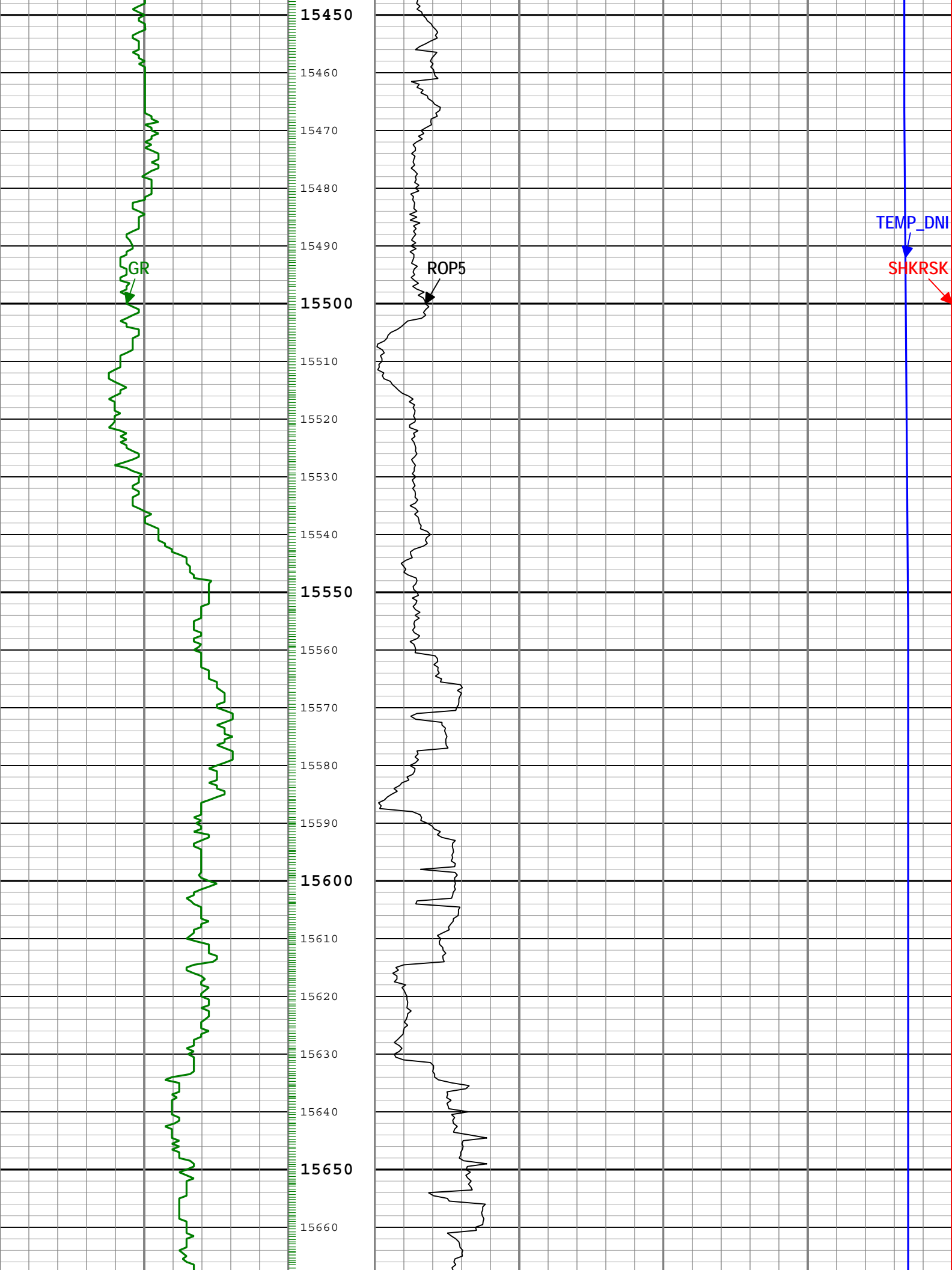


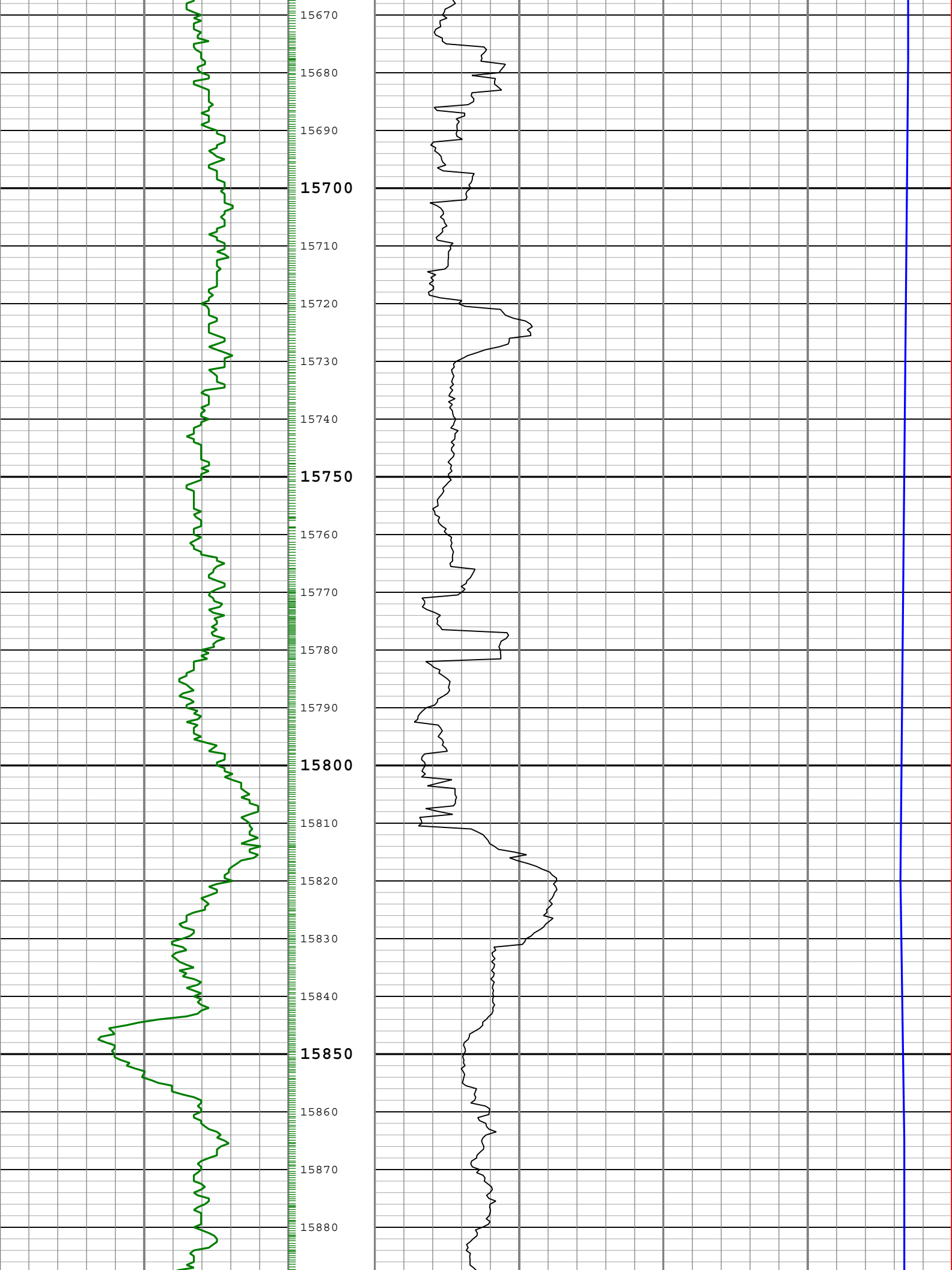


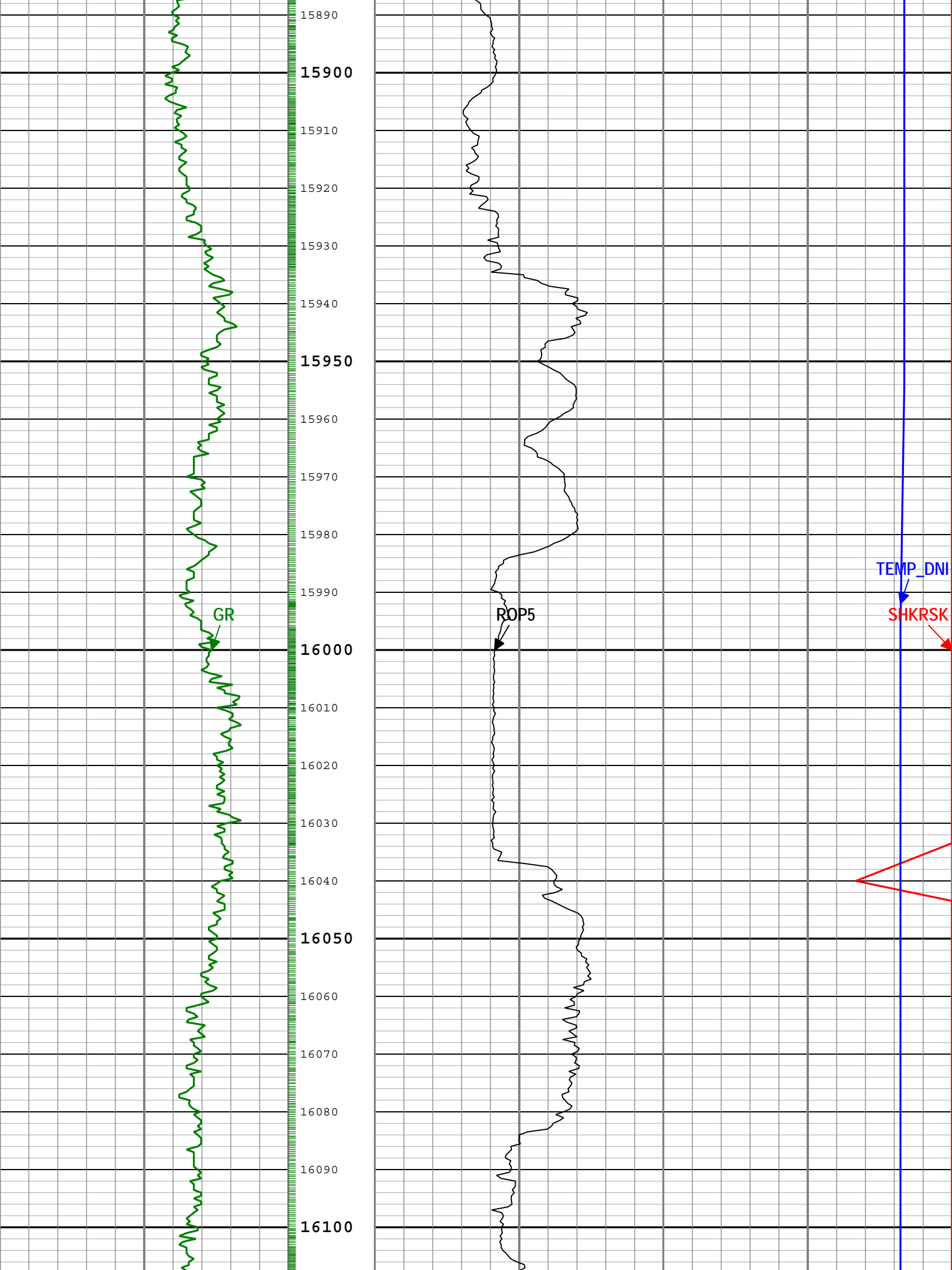


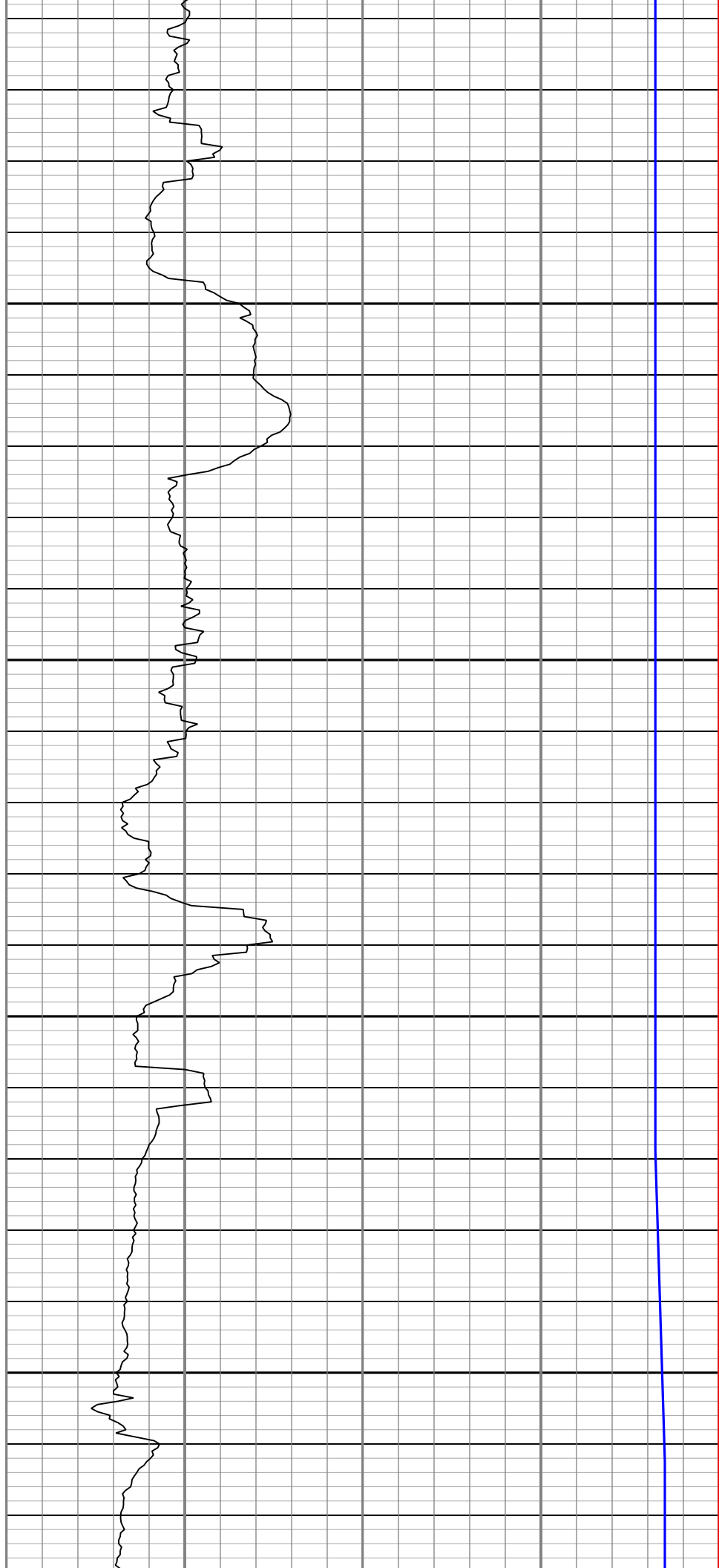
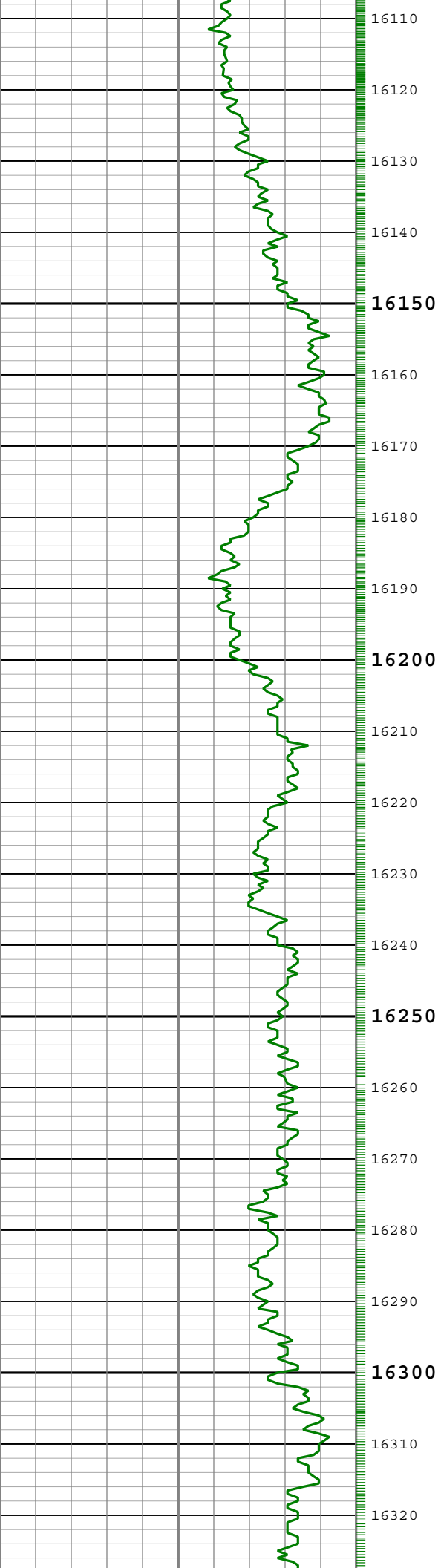


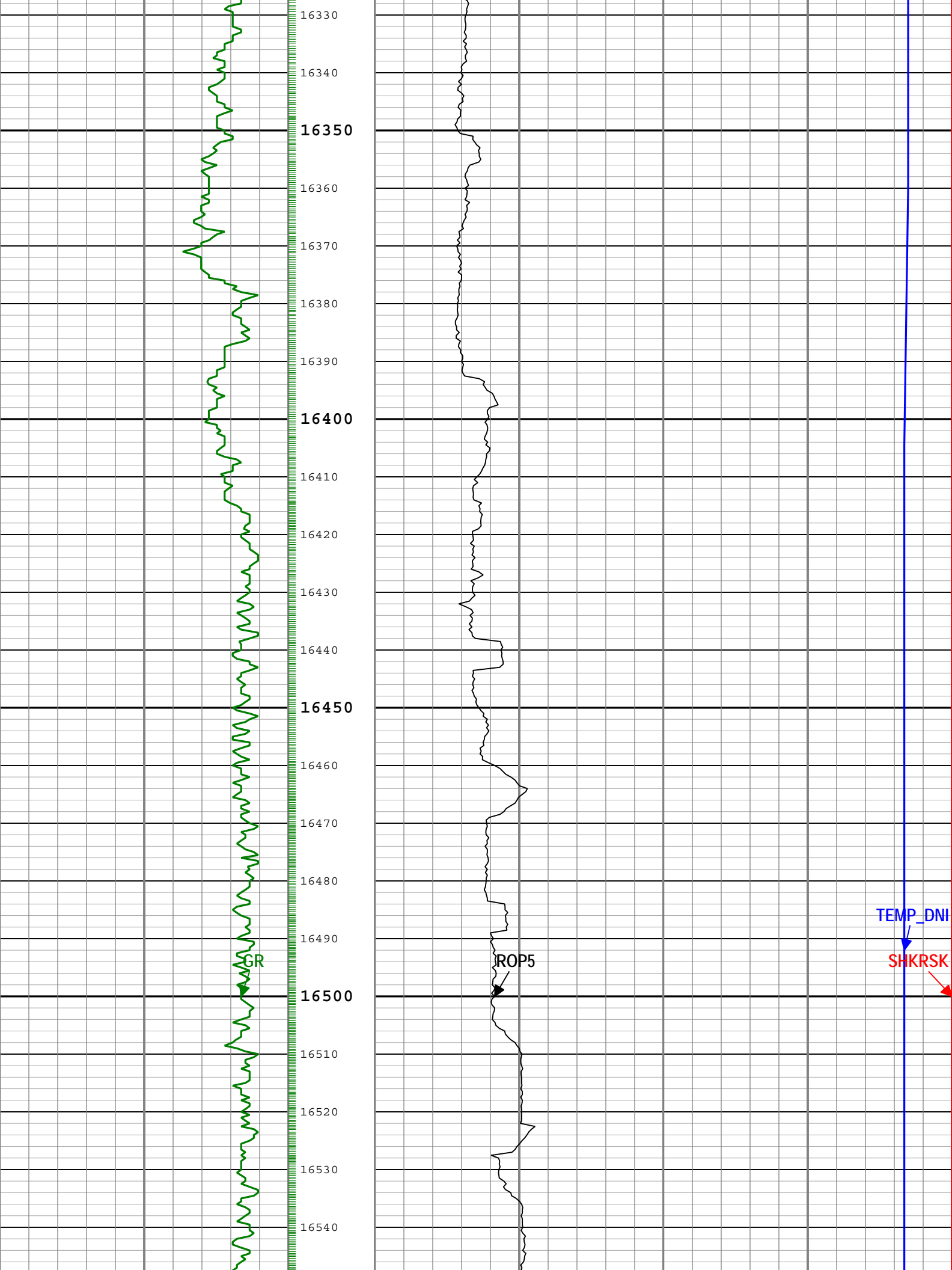


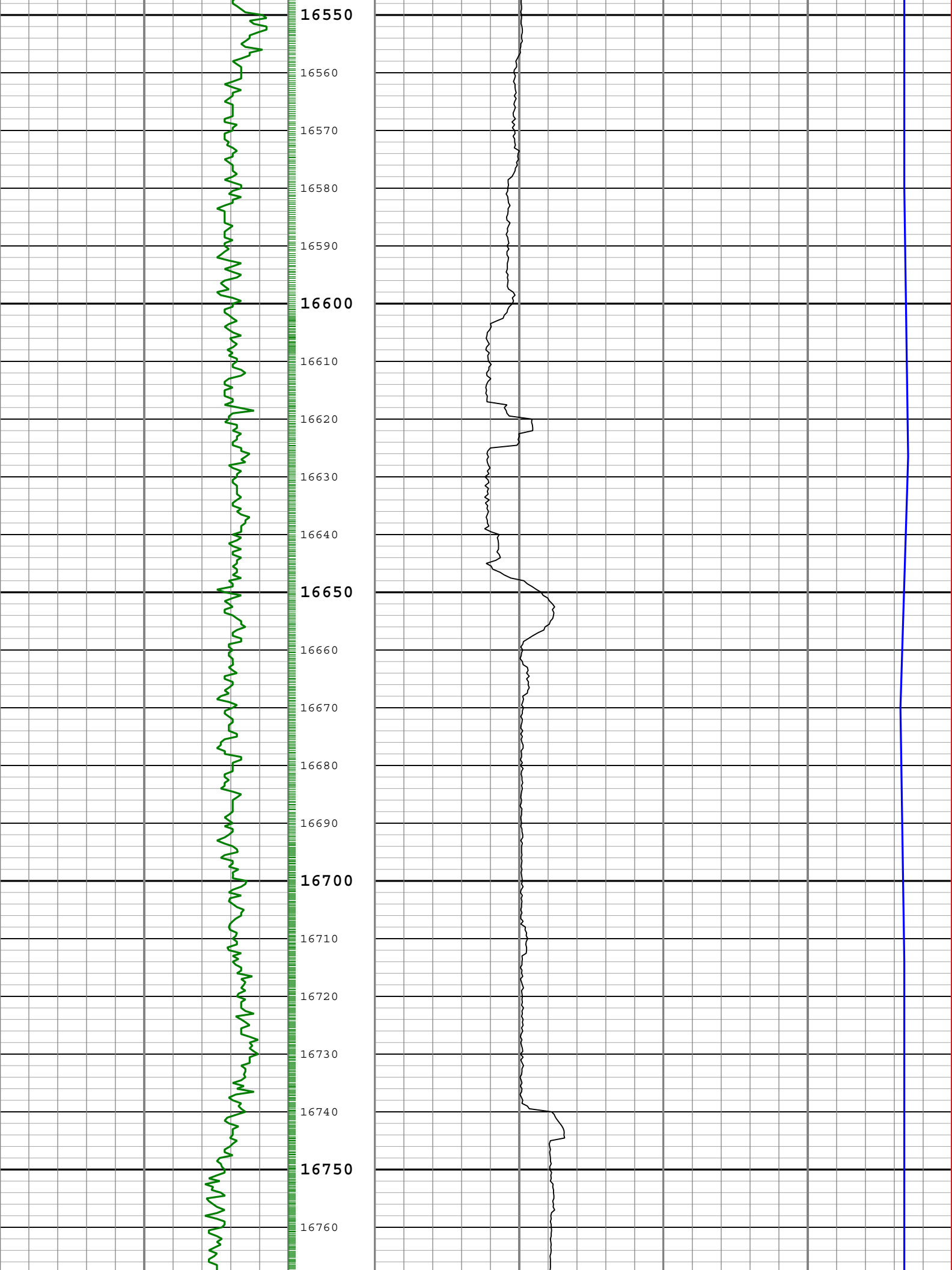


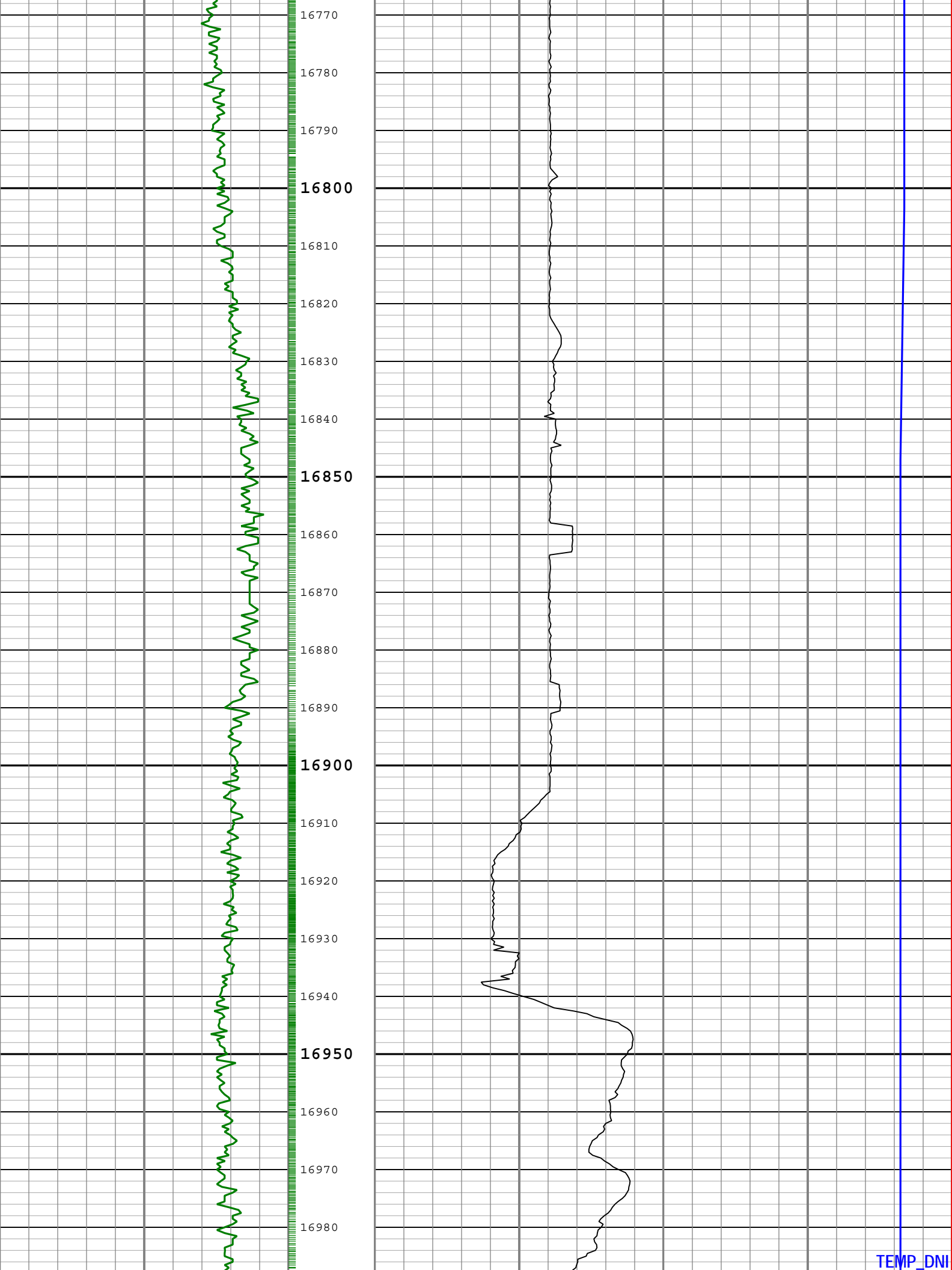


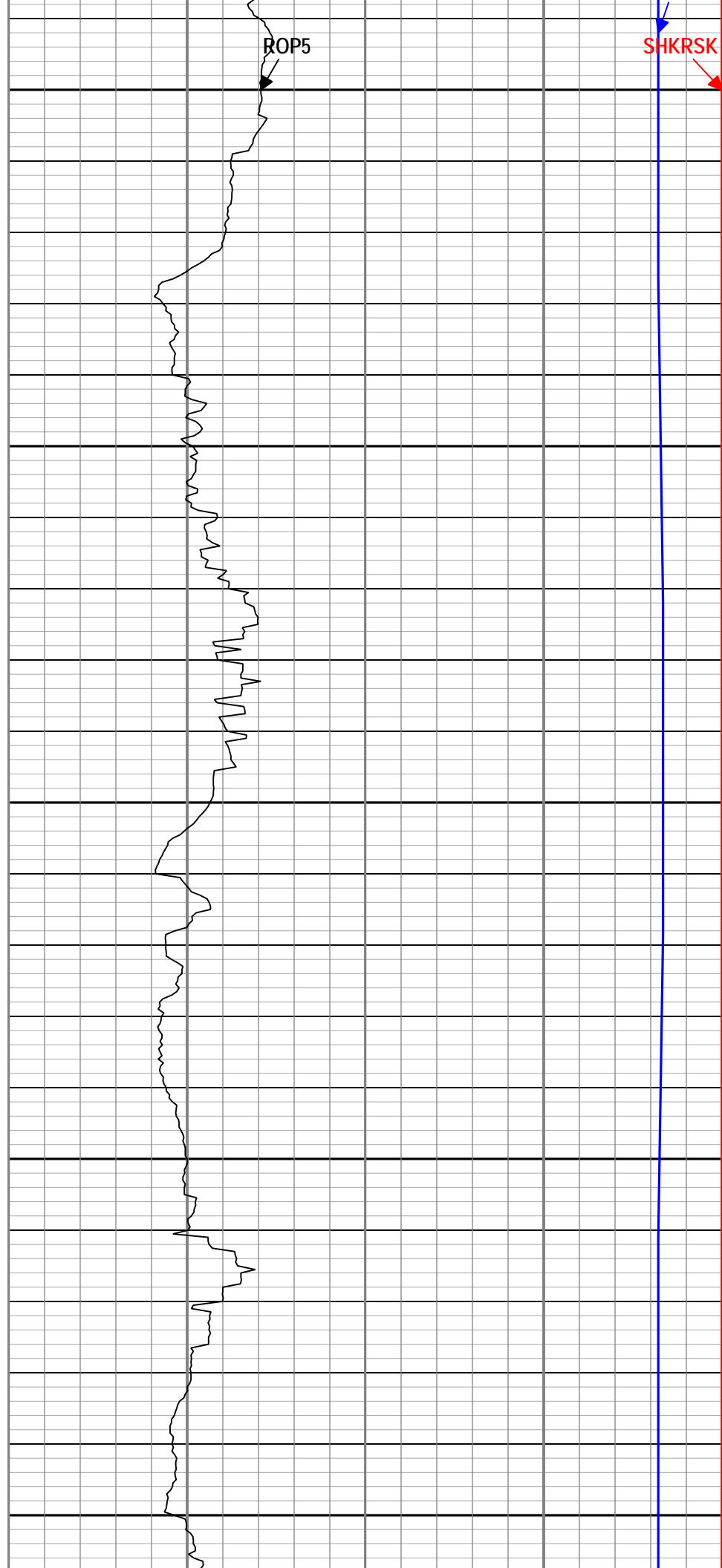
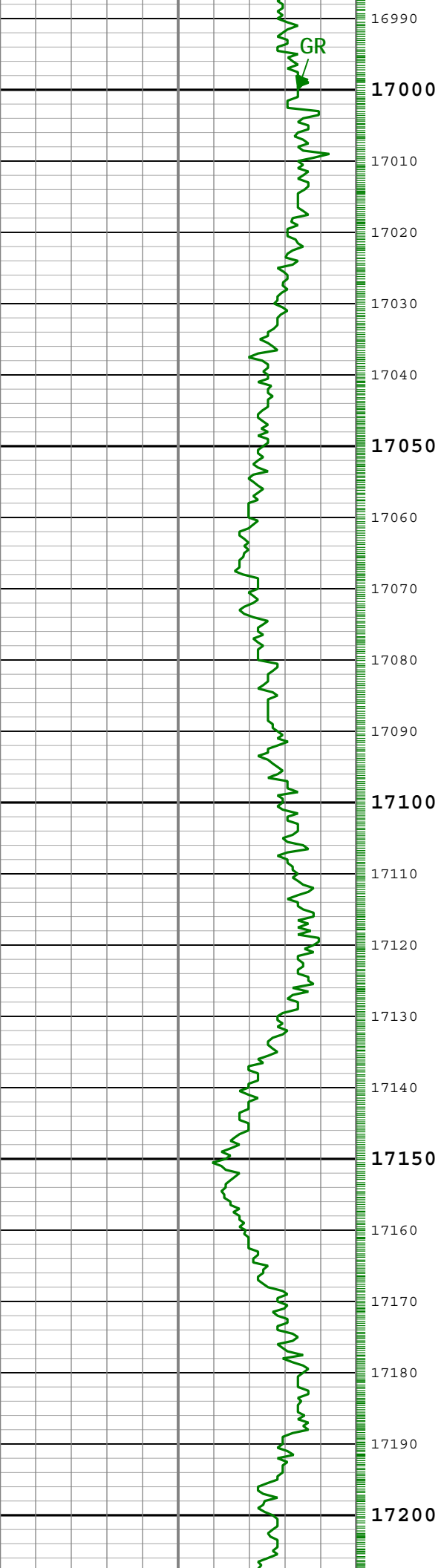


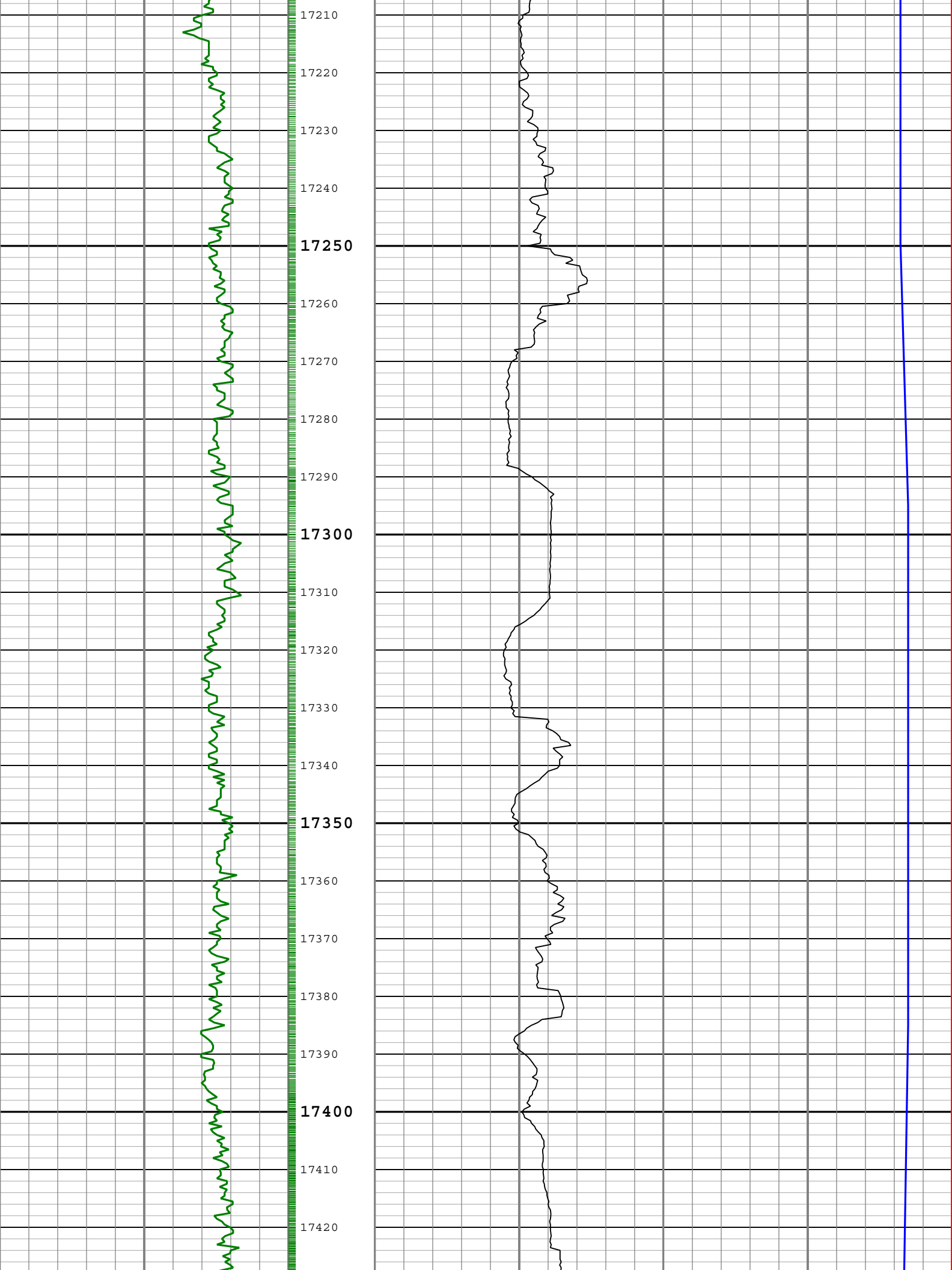


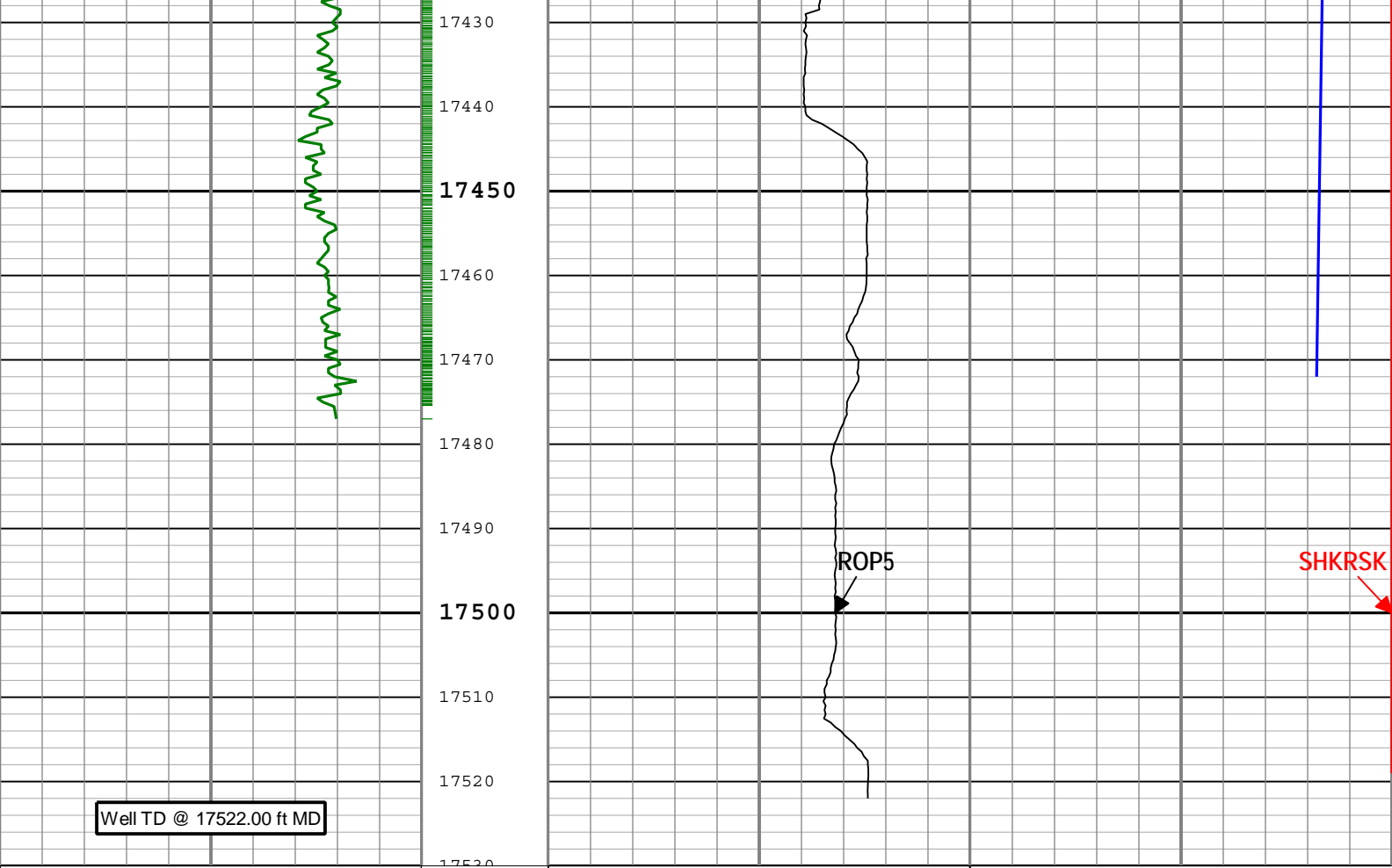












Gamma Ray (GR) SlimPulse[1] RM		
0	gAPI	150
Gamma Ray (GR) SlimPulse[1] RM		
150	gAPI	300
Gamma Ray (GR) SlimPulse[1] RM		
300	gAPI	450
Gamma Ray (GR) SlimPulse[1] RM		
450	gAPI	600
Gamma Ray (GR) SlimPulse[1] RM		
600	gAPI	750

Rate of penetration averaged over the last 5 ft (1.5 m) (ROP5) RT		
200	ft/h	0

Shock Risk (SHKRSK) SlimPulse[1] RT		
3		0
Direction and Inclination Sensor Temperature (TEMP_DNI) SlimPulse[1] RT		
100	degF	300

TICKS_GR - Gamma Ray Tick Marks SlimPulse[1] RM

Description: SlimPulse Gamma Ray 1 Format: Log (SlimPulse Gamma Ray Final MD) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured
Depth Creation Date: 01-Sep-2014 12:24:20

Channel Processing Parameters				
RUN001: Parameters				
Parameter	Description	Tool	Value	Unit
BS	Bit Size	DNMSESSION	6.125	in
DFD	Drilling Fluid Density	Borehole	9.8	lbm/gal
GR_SRC	GR Source Selection	SPULSE-GEN	GAMMA_EXT	
Tool Control Parameters				
Calibration Report				
SPULSE-GEN (SlimPulse with Generic Collar) Calibration - Run RUN001				
Primary Equipment :				
Elec. cartridge, 150C max with GR		SPEC		

GRGain - Gamma Ray: Blanket

Master (Time Frame File): 12:00:00 04-Jun-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit		
Gamma Ray Calibration Gain		Master	1.0000	0.9000	1.0830	1.1000		

Company: Noble Energy Inc

Well: Heartland State H01-74-1HN ST1

Field: Wettenberg

County: WELD

State: CO

Country: USA



SlimPulse - Gamma Ray

Schlumberger

2 in / 100 ft & 5 in / 100 ft Measured Depth

