

Company: Noble Energy Inc.

Well: SLW Ranch State BB07-660

Field: Wattenberg

County: Weld

State: Colorado

Country: United States

Section: 7 APIN: 05-123-47007

Township: 5N Rig Name: H&P 571

Range: 63W Rig Type: Land Rig - Top Drive

FL: NAD83 Colorado State Plane, Northern Zone, US Feet

FL1: Northing: 1396345.915 ftUS

FL2: Easting: 3282338.348 ftUS

Log Measured From: - Drill Floor: 4661.00 ft

Ground Level: 4631.00 ft

Permanent Datum: - Mean Sea Level

Acquisition Dates: 16-Jul-2019 -- 19-Jul-2019

Log Interval: 1936.00 (ft) -- 17038.00 (ft)

Index Types: Measured Depth

Index Scales: 1:240 5" / 100'

Depth Source: Driller's Depth

Depth Sensor: 3rd Party Depth

Print Type: Final

Spud Date: 15-Jul-2019

Other Services:

Well Planning

Direction and Inclination

Directional Drilling

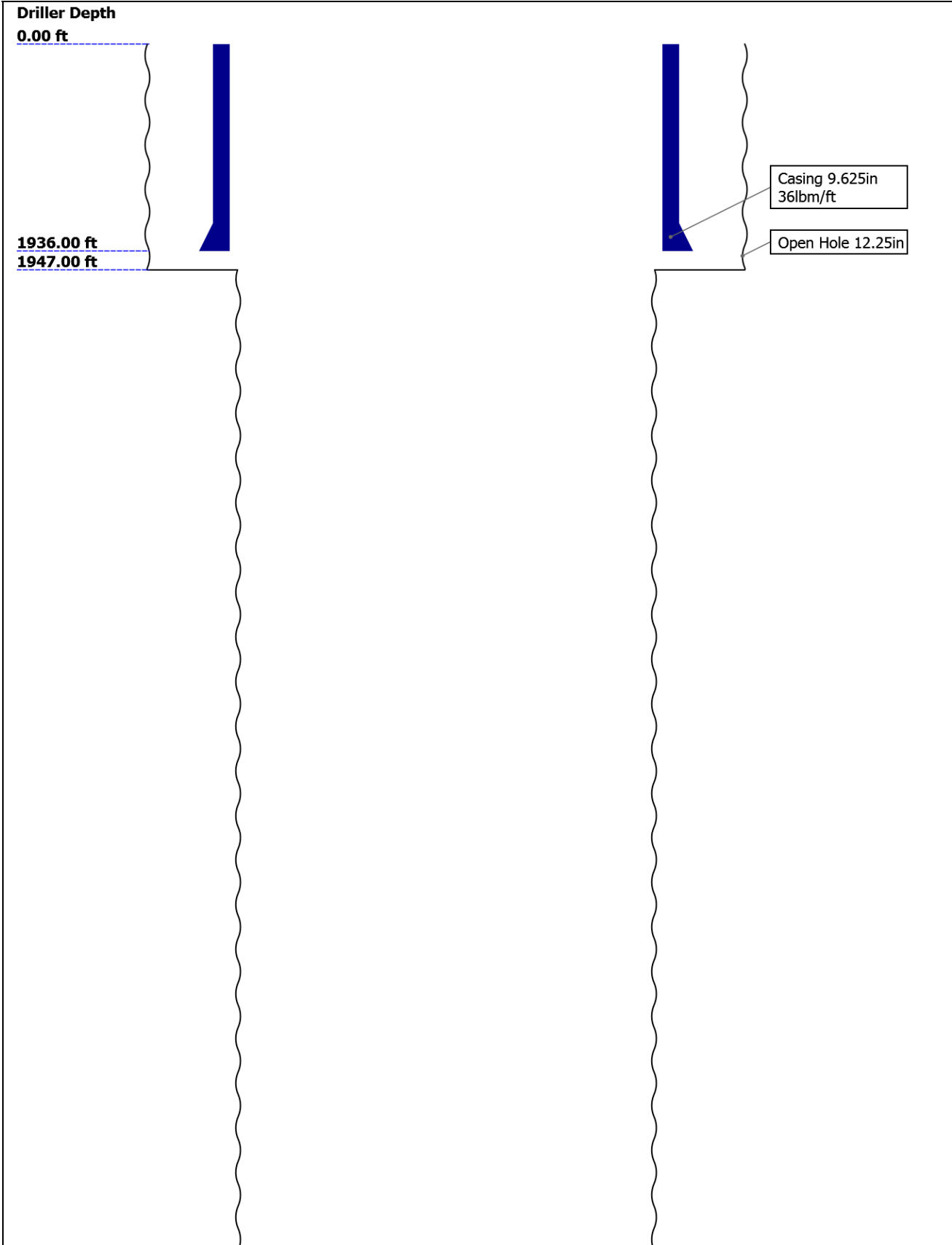
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Well Sketch





Borehole Size/Casing Record

Bit						
Bit Size (in)	12.25	8.5				
Top Driller (ft)	0	1947				
Bottom Driller (ft)	1947	17038				
Casing						
Size (in)	9.625					
Weight (lbm/ft)	36					
Inner Diameter (in)	8.921					
Grade	J55					
Top Driller (ft)	0					
Bottom Driller (ft)	1936					

Operational Run Summary

Parameter (unit)	Run001					
Date Log Started	16-Jul-2019					
Time Log Started	07:26:29					
Date Log Finished	19-Jul-2019					
Time Log Finished	04:53:38					
Bit Size (in)	8.500					
Bit Start Depth (ft)	1947.00					
Bit Stop Depth (ft)	17038.00					
Top Log Interval (ft)	1936.00					
Bottom Log Interval (ft)	17038.00					
Max Hole Deviation (deg)	91.08					
Azimuth of Max Deviation (deg)	91.10					
Logging Unit Number	Trailer					
Logging Unit Location	Zone 2					
Recorded By	M. Armstrong/RO					
Witnessed By	J. Drahota					
Service Order Number	19CCO1238					

Borehole Fluids

Parameter(unit)	Run001					
Fluid Type	Oil					
Fluid Name	Diesel					
Max Recorded Temperatures (degF)	267					
Source of Sample	Active Tank					
Salinity (ppm)	0					
Density (lbm/gal)	9.5					
Funnel Viscosity (s)	41					
Fluid Loss (cm3)	0					
PH						
Source RMF						
RMC	Pressed					
RM @ Meas Temp (ohm.m@degF)	N/A					
RMF @ Meas Temp (ohm.m@degF)	N/A					
RMC @ Meas Temp (ohm.m@degF)	N/A					
RM @ BHT (ohm.m@degF)	N/A					
RMF @ BHT (ohm.m@degF)	N/A					
RMC @ BHT (ohm.m@degF)	N/A					
Electricity Stability (V)	618					
Oil/Water	80/20 (3.88)					
Total Solid (%)	10.7					
High Gravity Solids (%)	2.3					

Run001: Toolstring				Run001: Remarks
Equip name Fitr Sub: 6 3/4":SD 17871	Length 125.46	MP name Diffuser Sub	Offset	All data presented is from tool memory and acquired while drilling.
Fit Sub: 6 3/4":SD1 01247	120.00	Double Bore Float		Depth is referenced to Driller's Depth.
Motor: 6 3/4":7089 117.22	Hunting Vortex Motor			Barite was presented in the mud.
				Run Objective: Drill vertical, curve and lateral to Well TD
				Reason to POOH: Well TD.
				Drill Interval: 1947 ft MD to 17038 ft MD.
				Log Interval: 1936 ft MD to 17012 ft MD.
				MWD Personnel: Michael Armstrong Remote Operations
Flex DC: 6 3/4":SD 56377	78.36	Archer Flex Pony		

Run001: Remarks
All data presented is from tool memory and acquired while drilling.
Depth is referenced to Driller's Depth.
Barite was presented in the mud.
Run Objective: Drill vertical, curve and lateral to Well TD
Reason to POOH: Well TD.
Drill Interval: 1947 ft MD to 17038 ft MD.
Log Interval: 1936 ft MD to 17012 ft MD.
MWD Personnel: Michael Armstrong Remote Operations



XEM650:SD56523 **42.73**

GAP650:GSBR0604
XEM650DC:SD56523
DPG:DDRP073
XHOP:XHOP1019
XTX:HVTX0864
DYN:SOCD1274
BAT:DOBA2185
XGM:XGM0763
DNI:SOCD1274

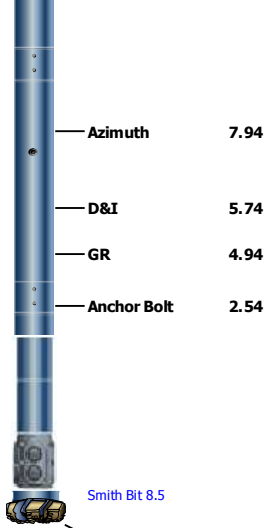
XEM MWD

INT PRES	40.31
ANN PRES	40.16
TEMP	40.16

— GR 25.16

— D&I 20.57

ENP-073
PD675CC:54721
Gamma Set
Impeller Set
PDCU
PDCOPTIBANA675BU:E
NP-073



Bit: 8 1/2":JP3773 0.6
Smith Bit 8.5
TOOL_ZERO
Lengths are in ft
Maximum Outer Diameter = 8.500 in
Line: Sensor Location, Value: Gating Offset
All measurements are relative to TOOL_ZERO

Well Composite

Software Version

Acquisition System	Version
Maxwell 2018 SP2	8.2.104493.3100

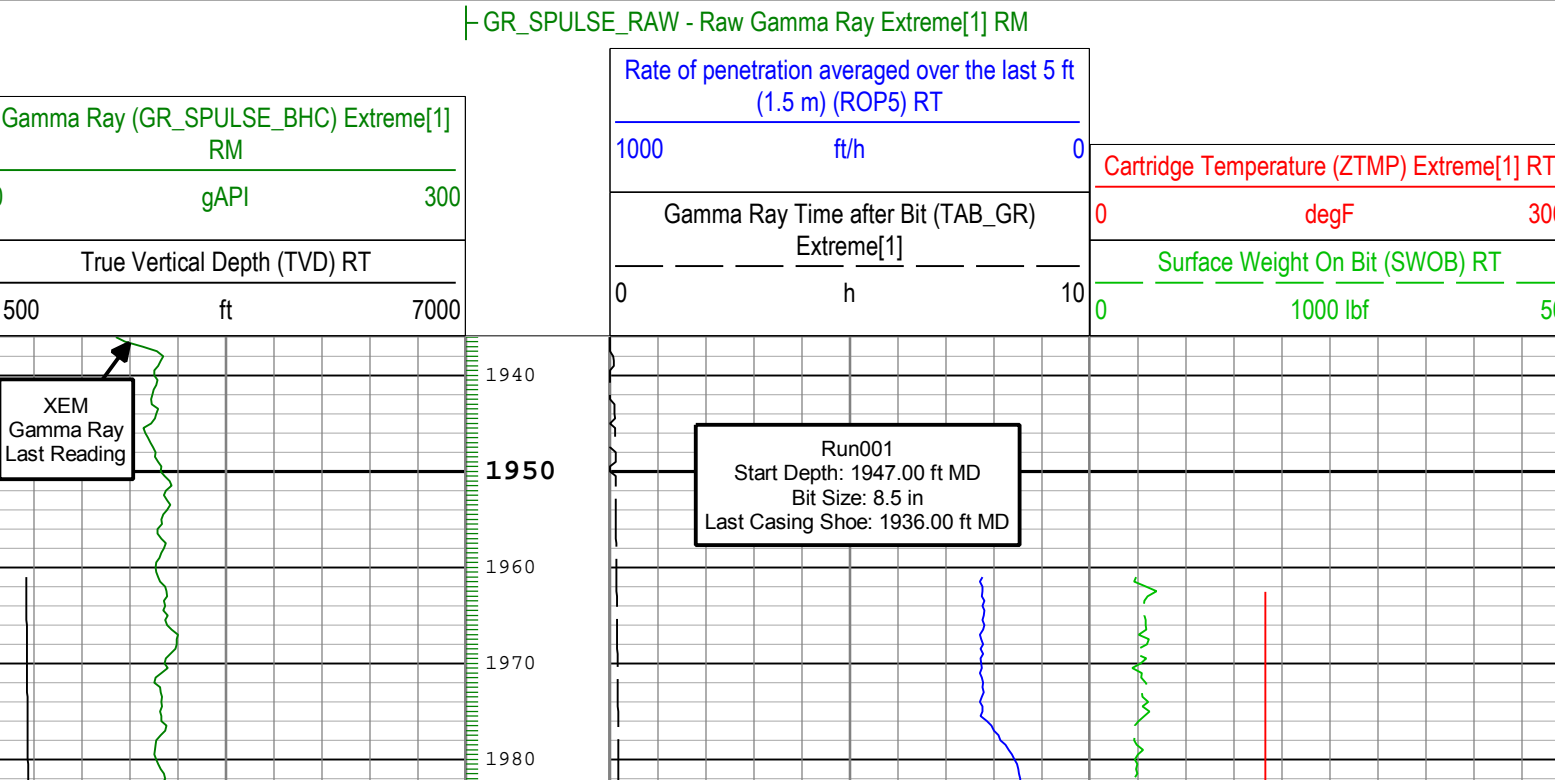
Composite Summary

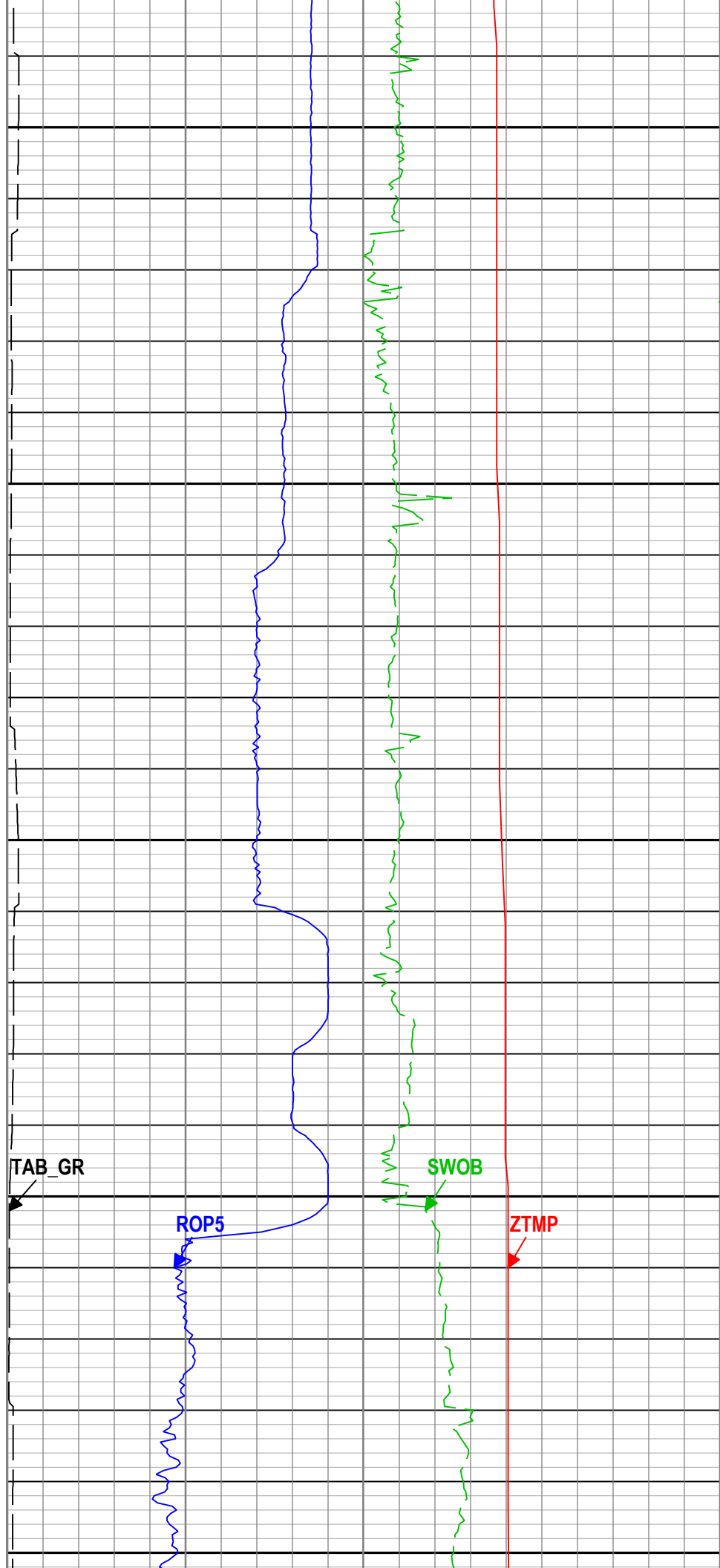
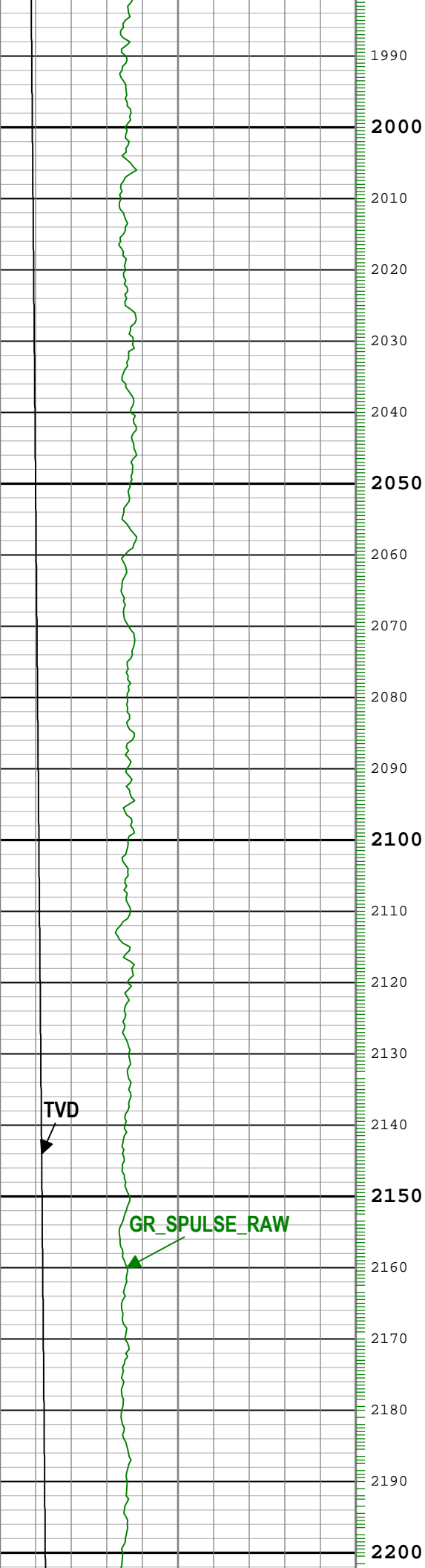
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Include Parallel Data
Run001	Ream Down 1	Down	5897.75 ft	5926.92 ft	16-Jul-2019 10:16:05 PM	16-Jul-2019 10:28:54 PM	No
Run001	Drilling	Down	1928.42 ft	17037.92 ft	16-Jul-2019 9:36:12 AM	19-Jul-2019 4:53:38 AM	No

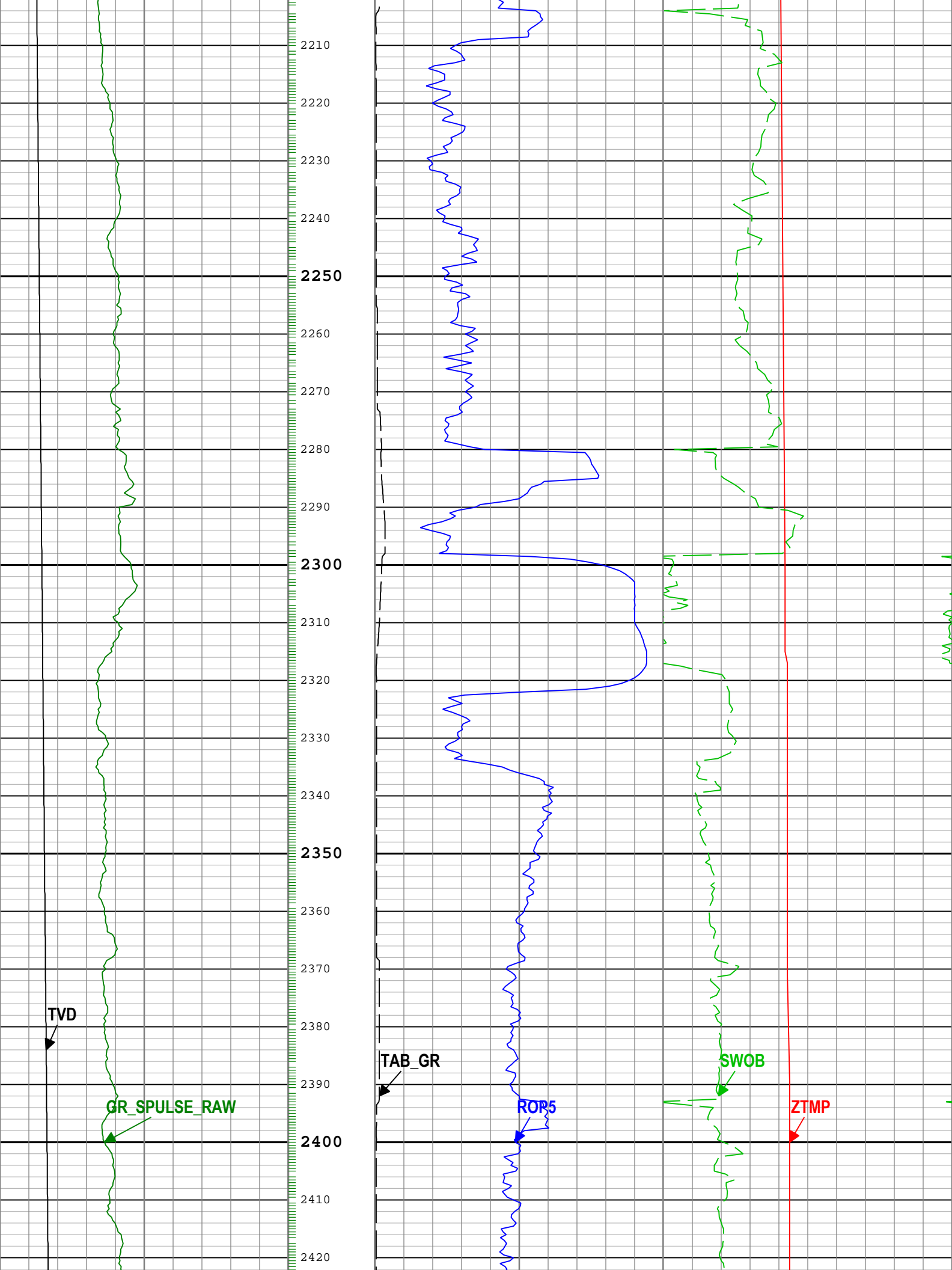
All depths are referenced to toolstring zero

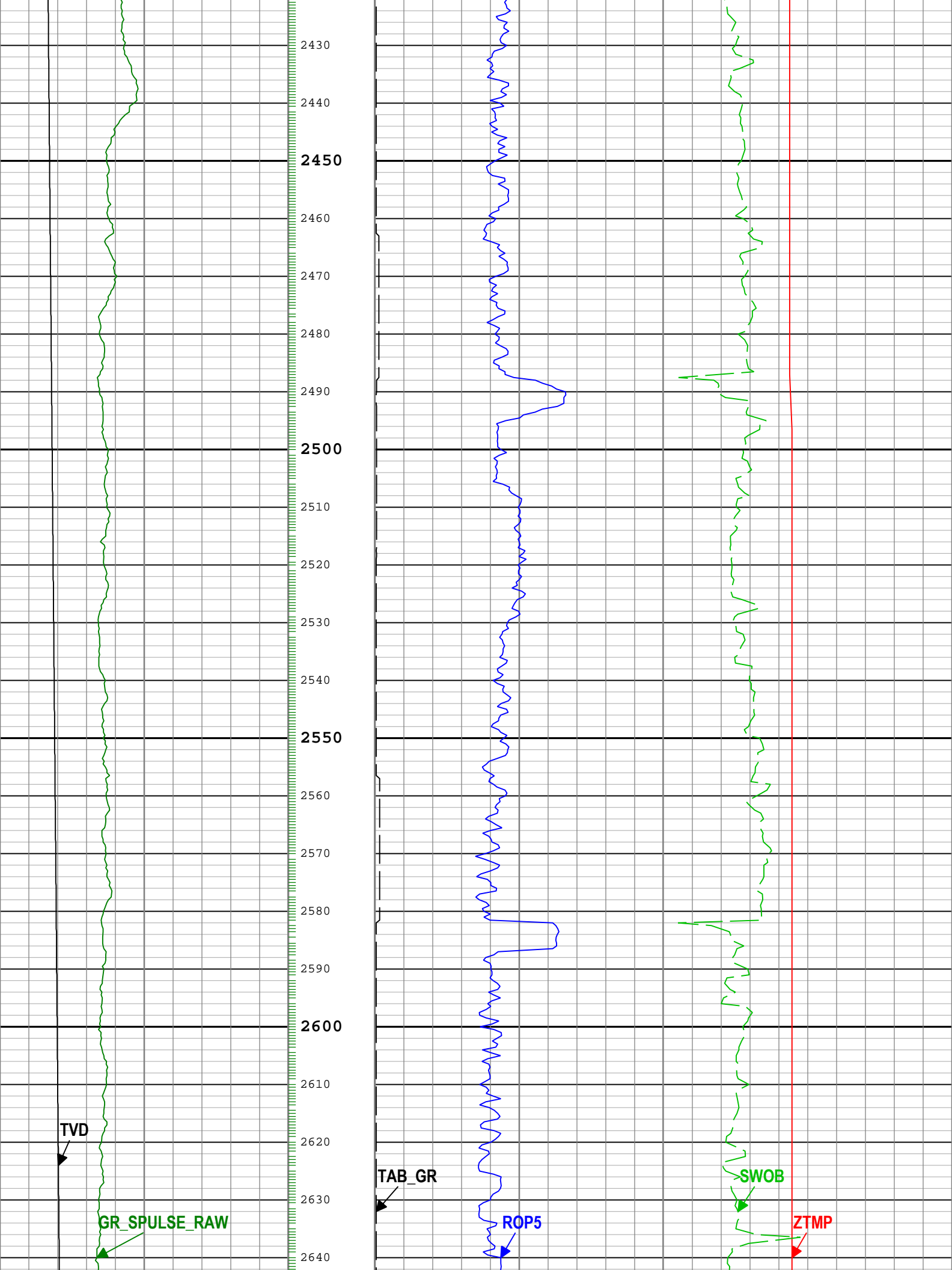
Log	Company:Noble Energy Inc. Well:SLW Ranch State BB07-660 Well Composite:S345
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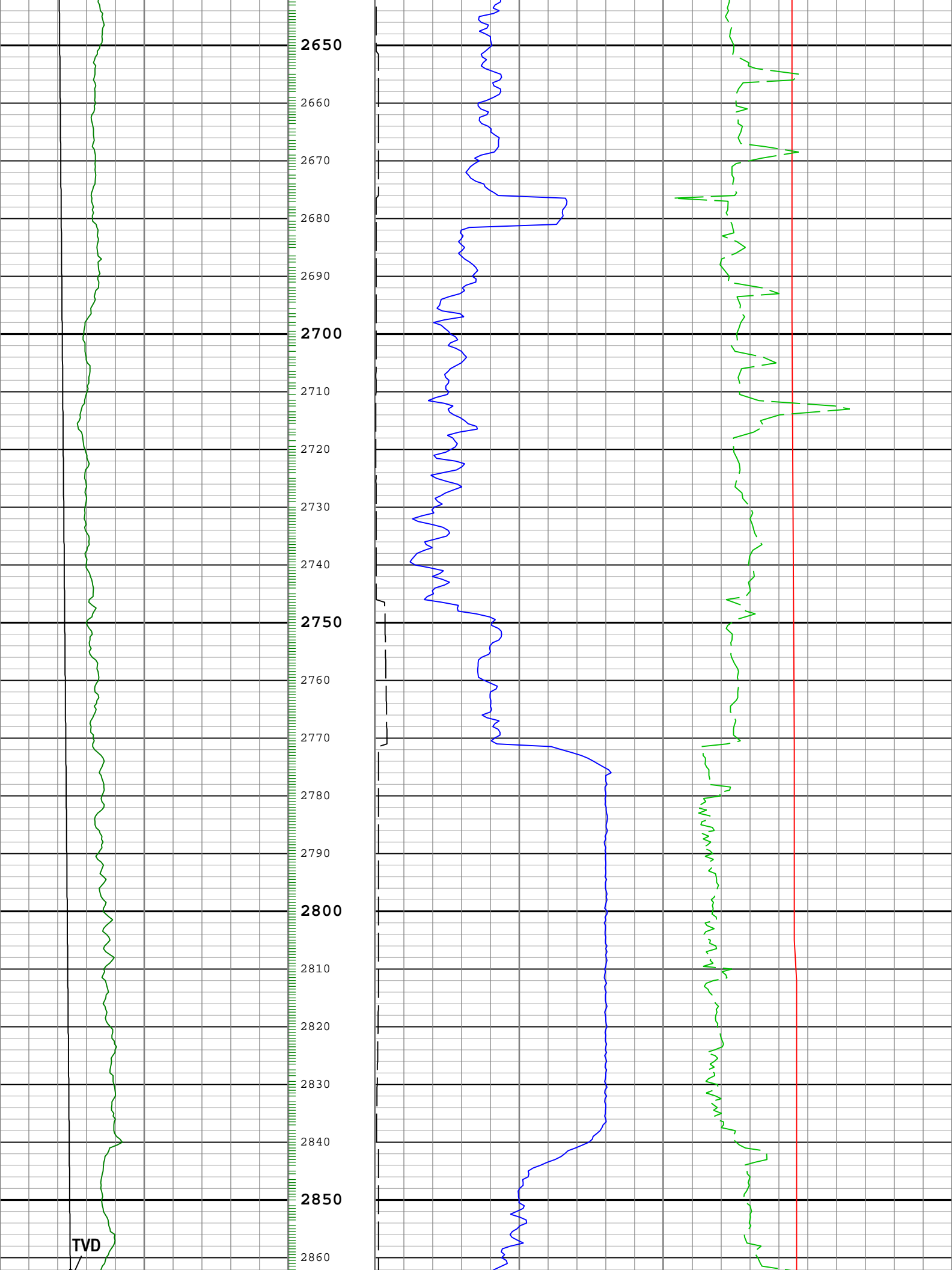
Description: Extreme Gamma Ray 1 RT Format: Log (KKW_EOW_XEM-RM_5MD) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured
Depth Creation Date: 22-Jul-2019 16:04:25

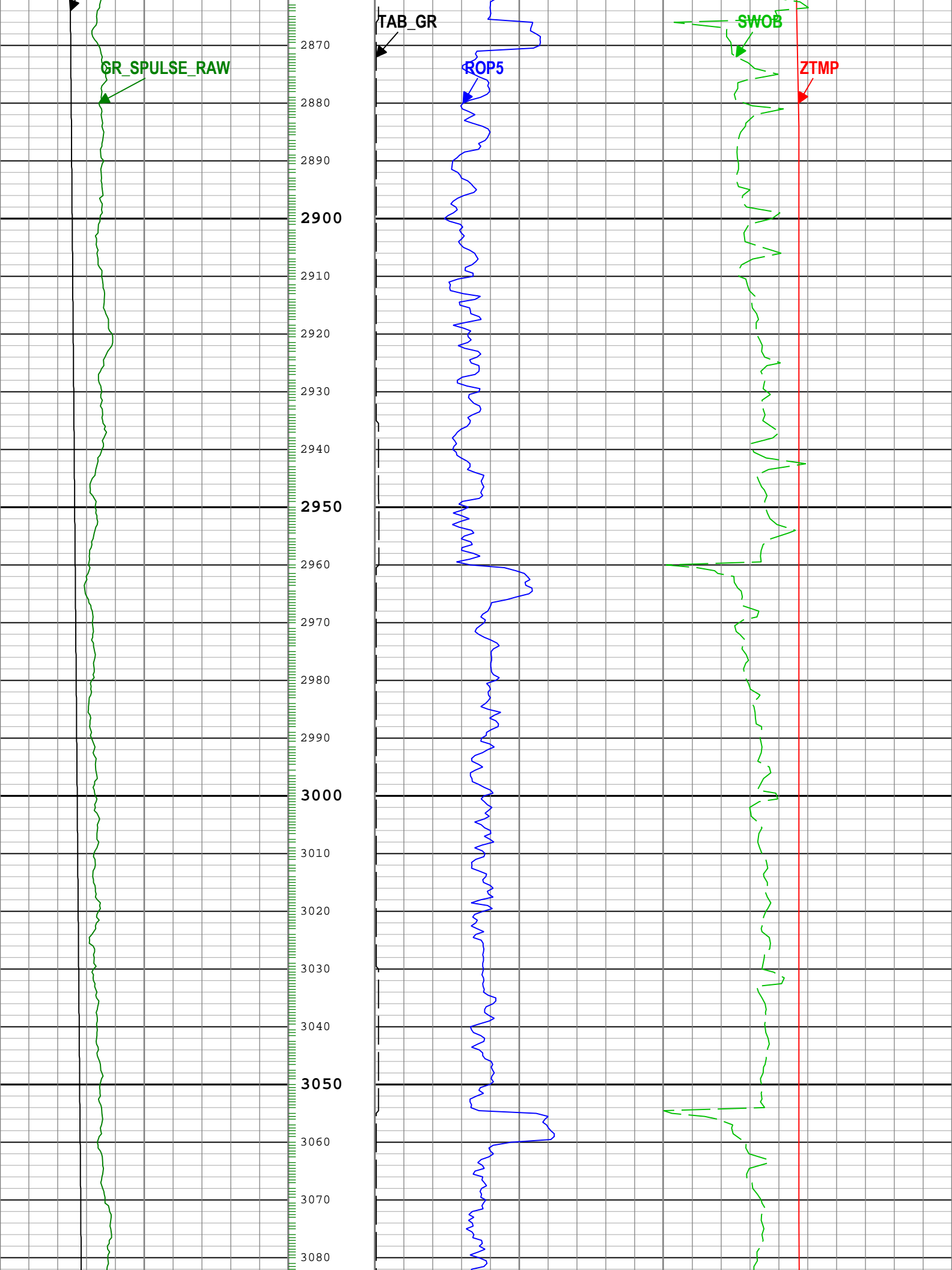


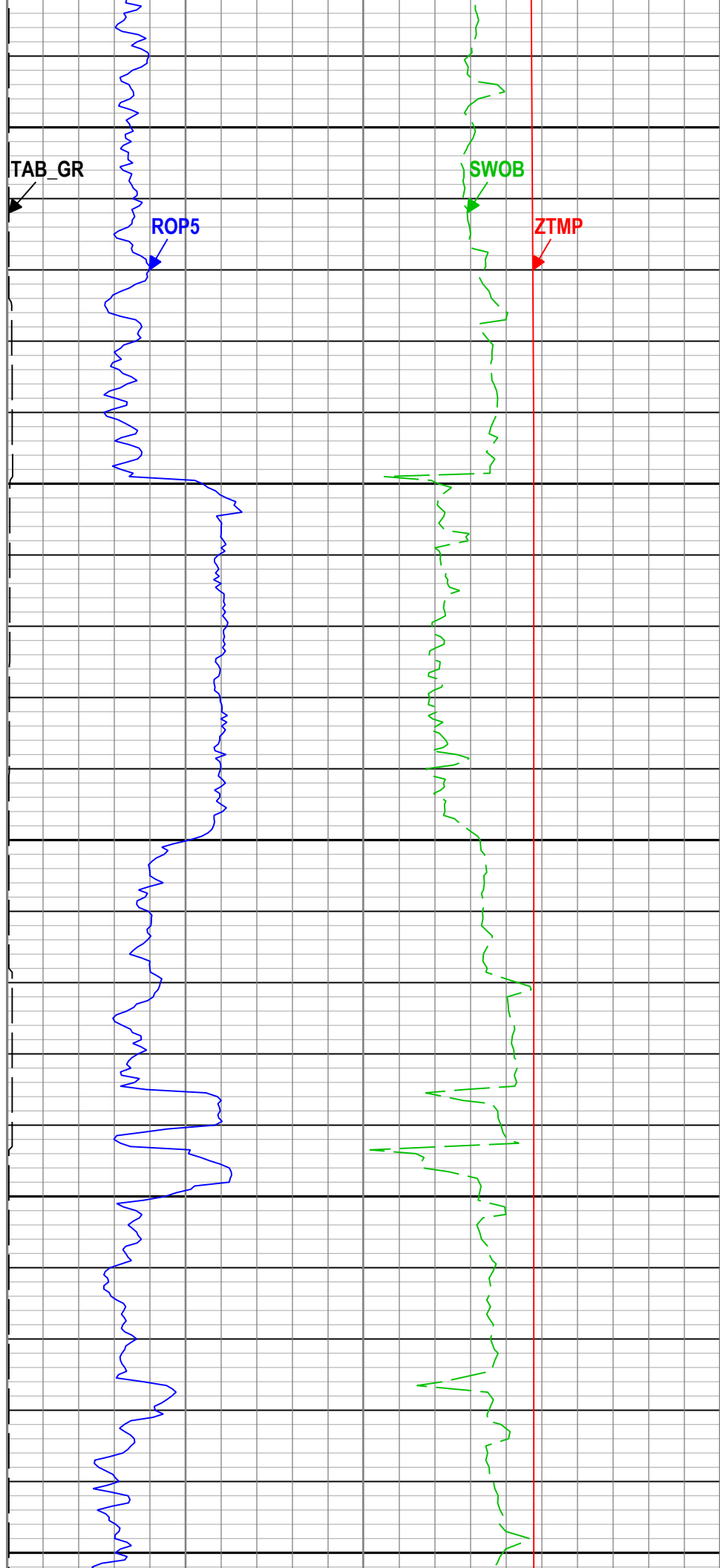
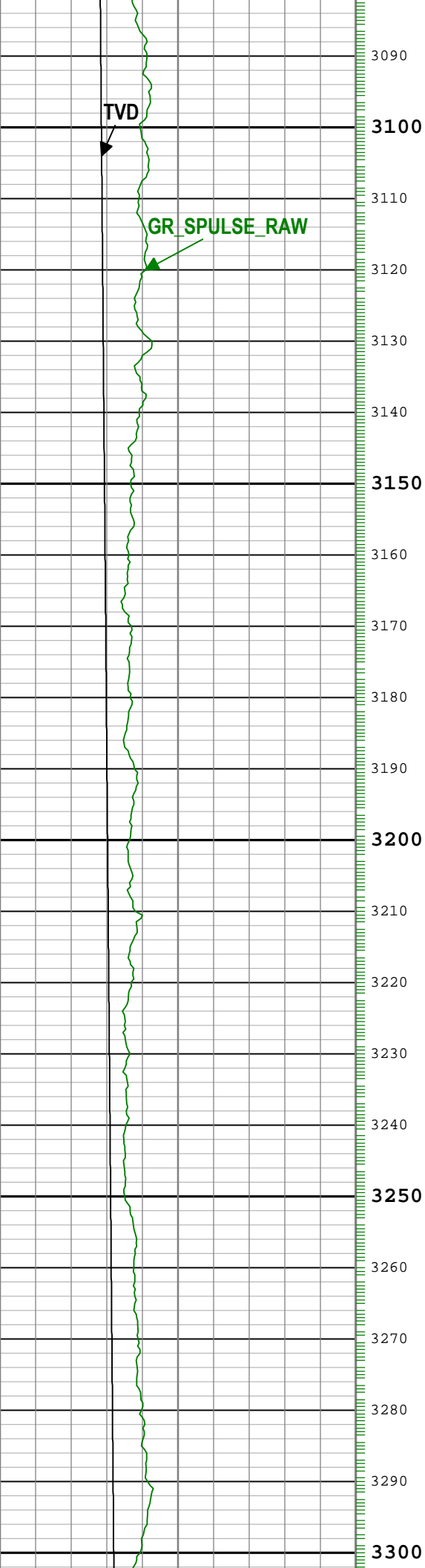












TVD

GR SPULSE_RAW

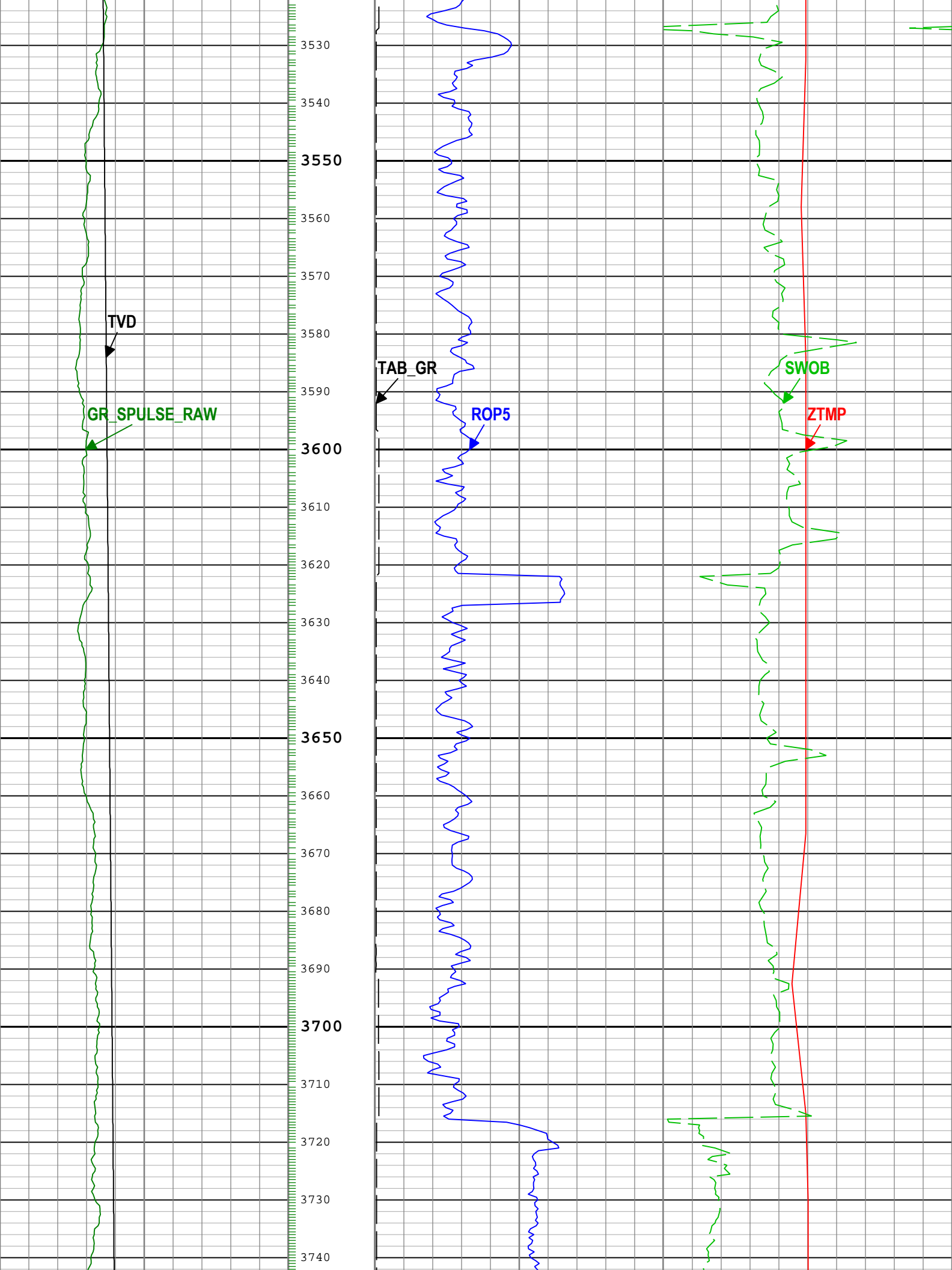
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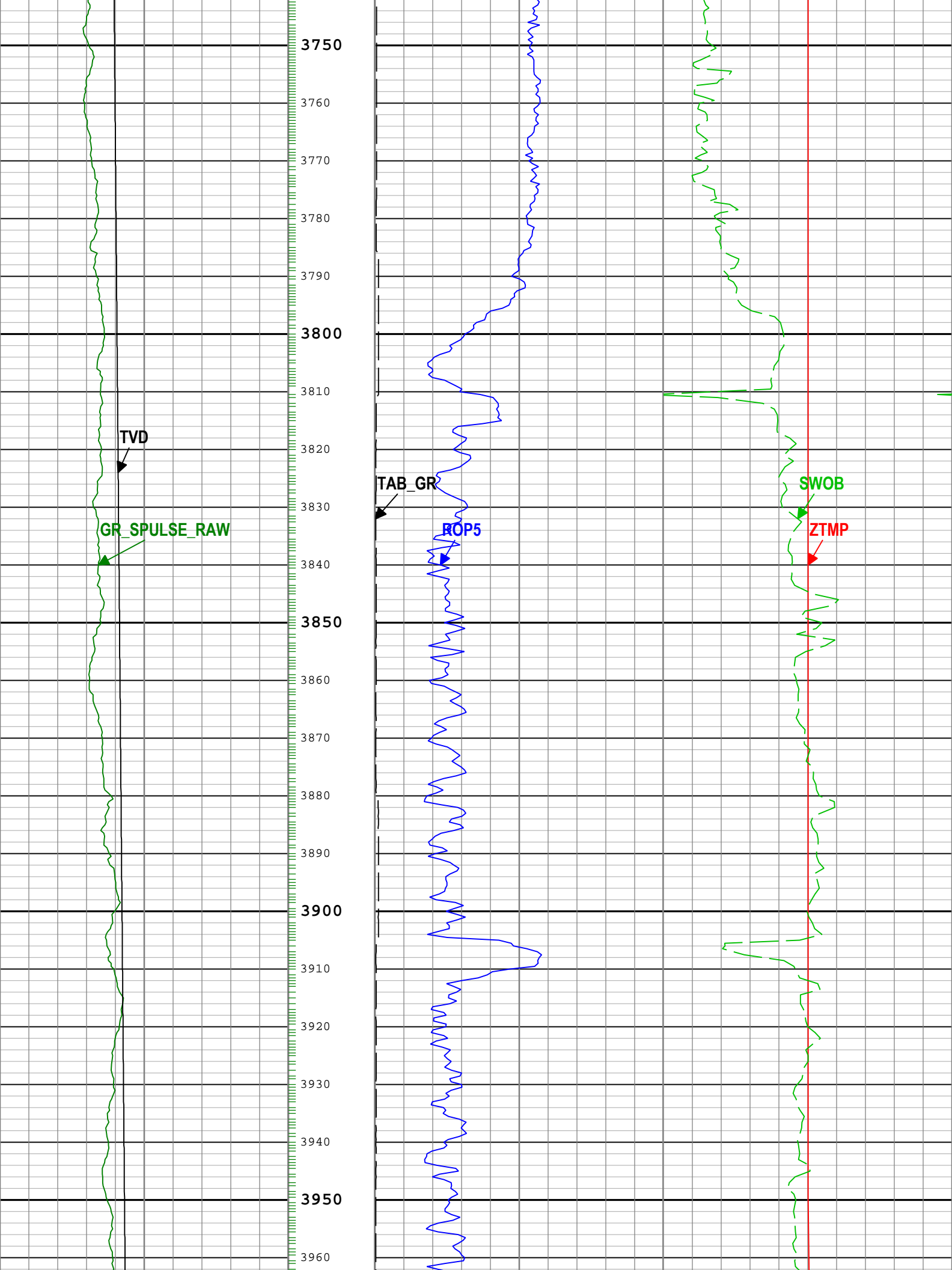
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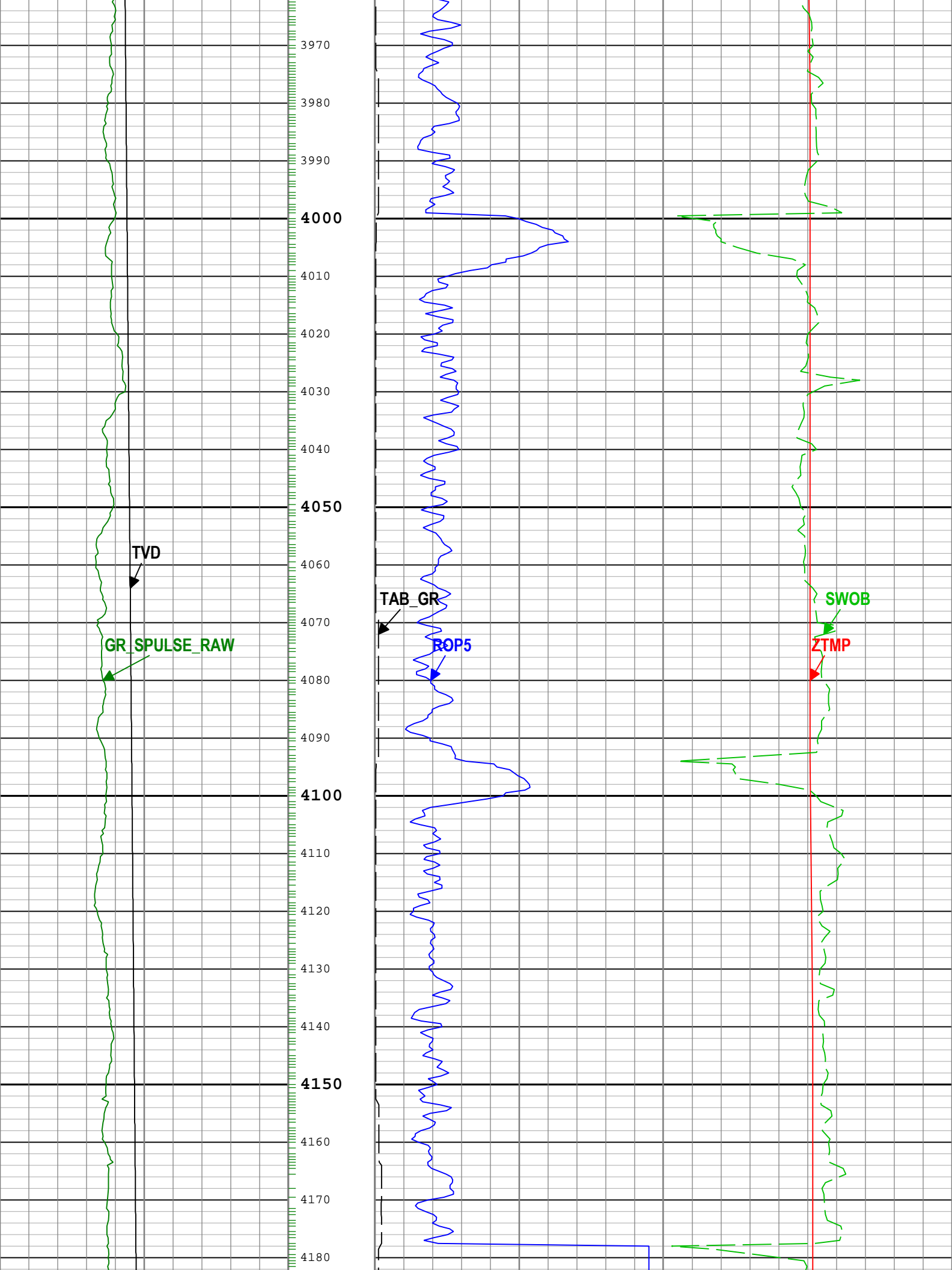
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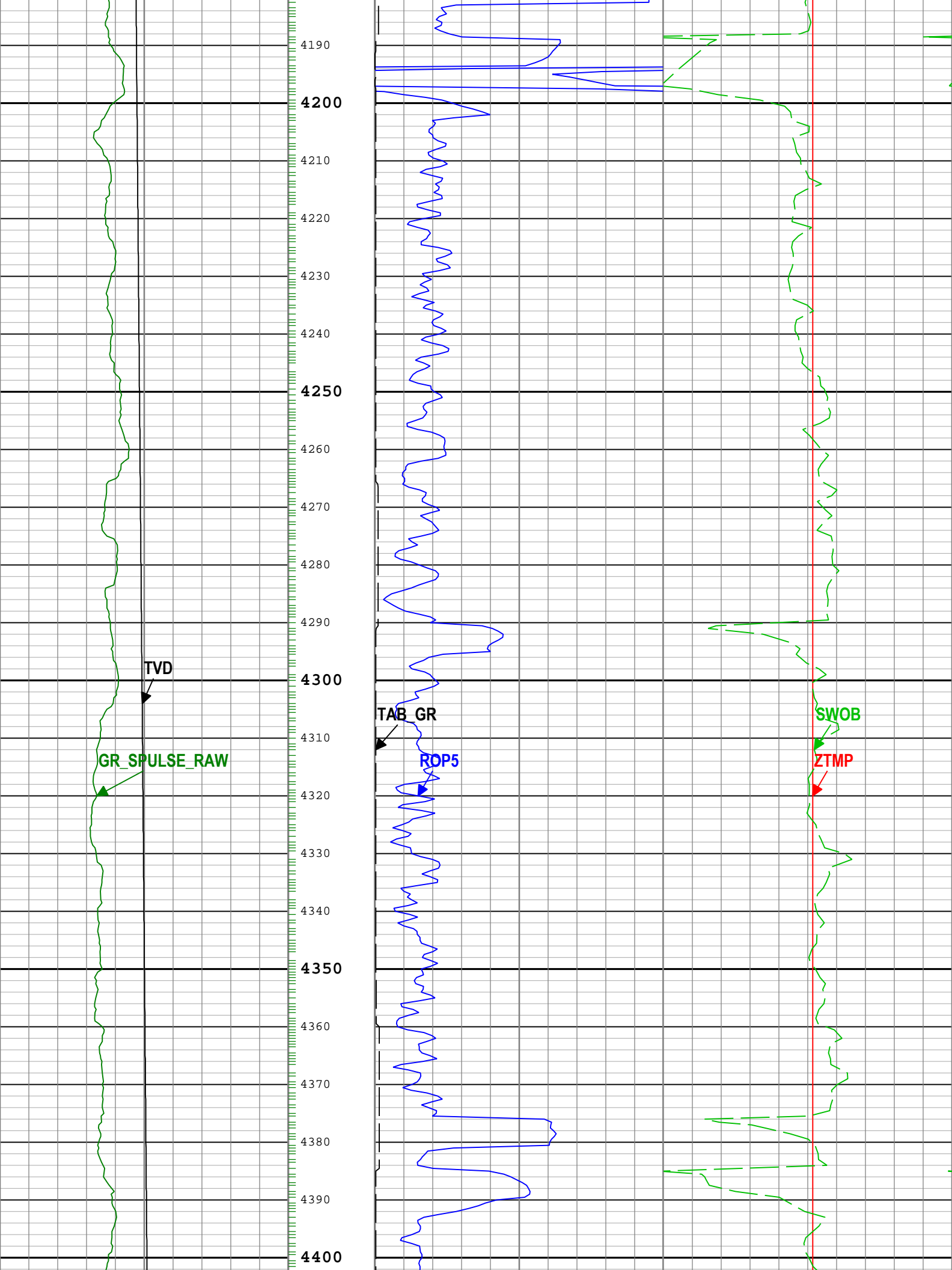
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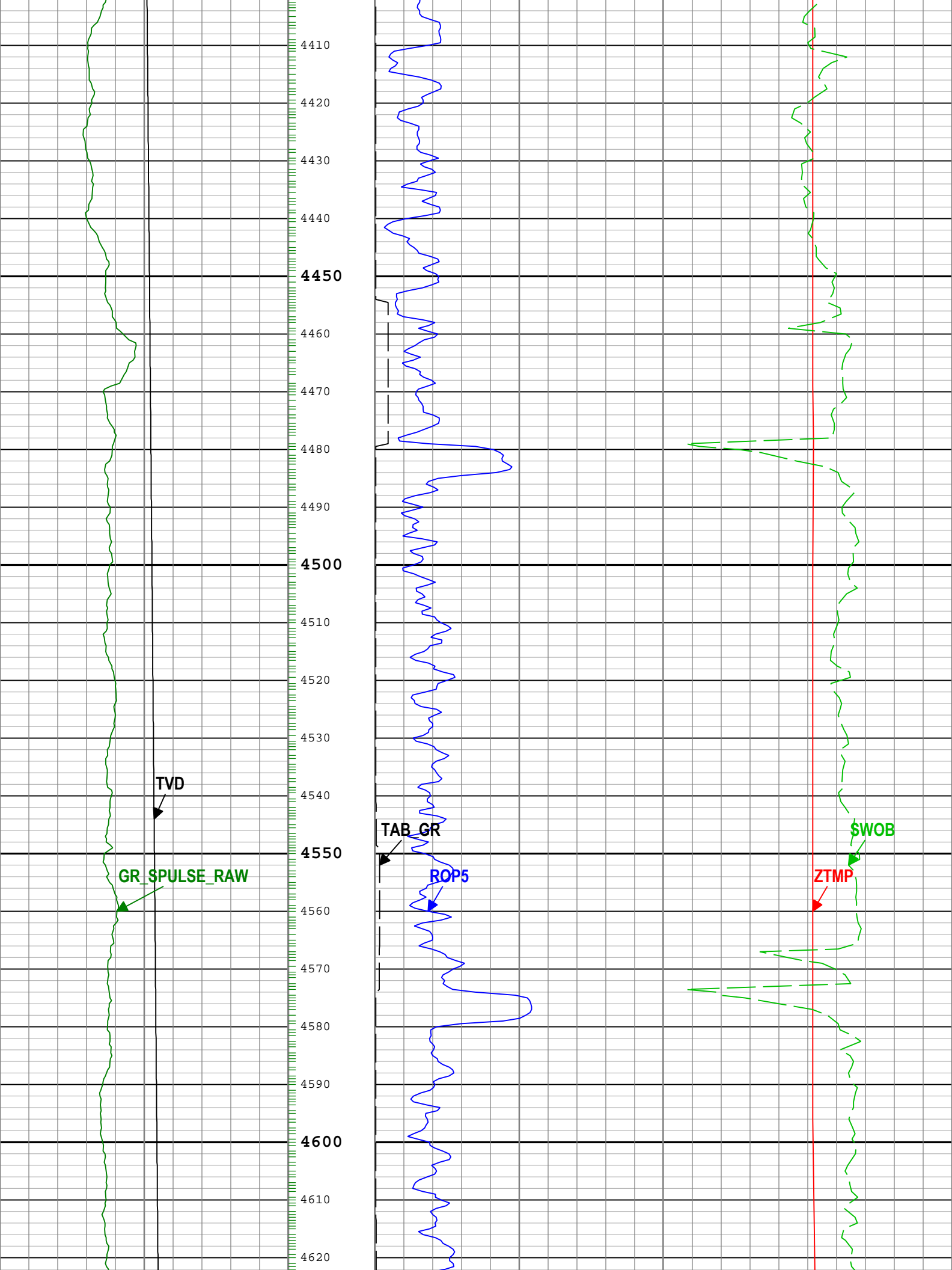
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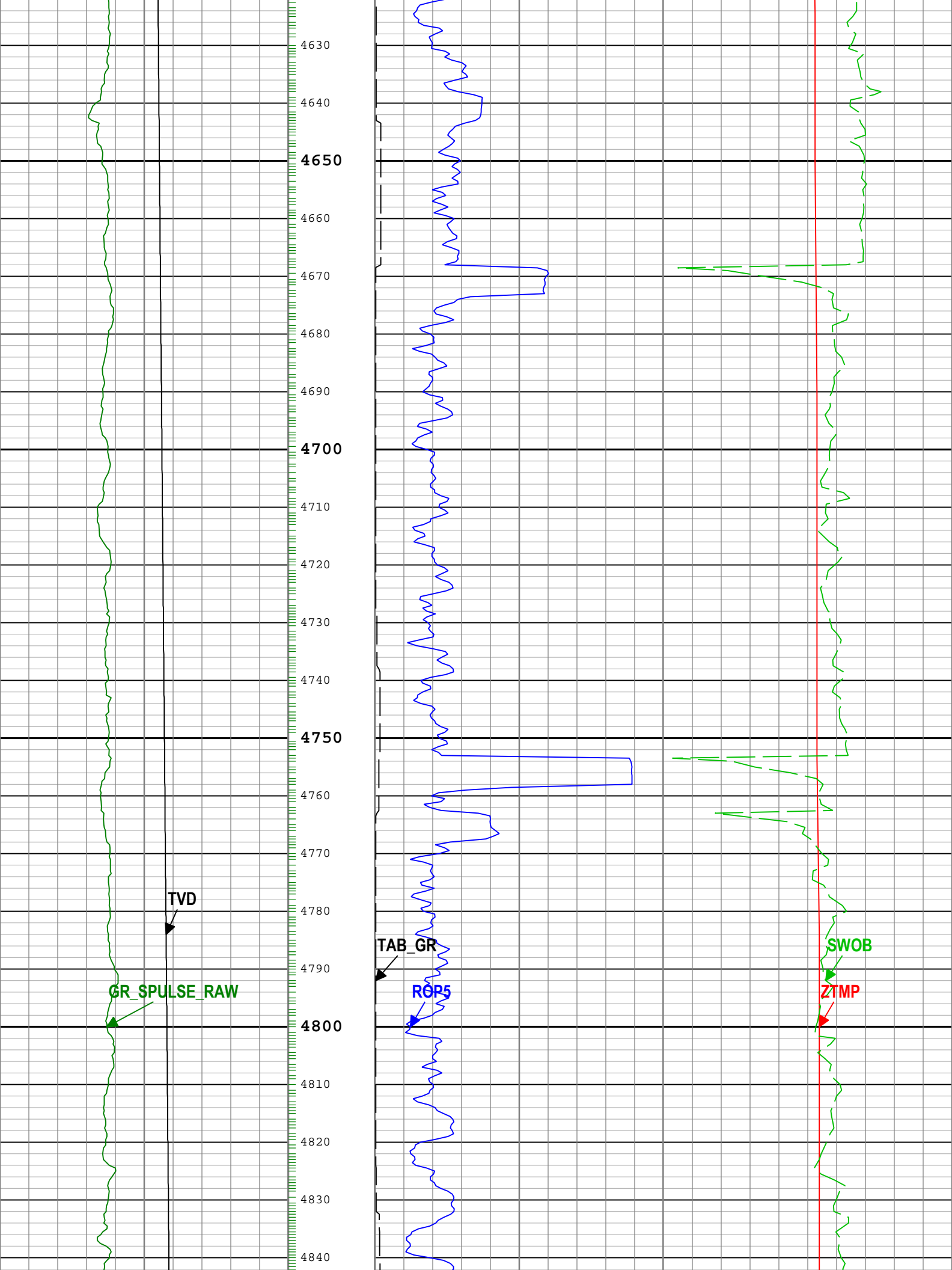


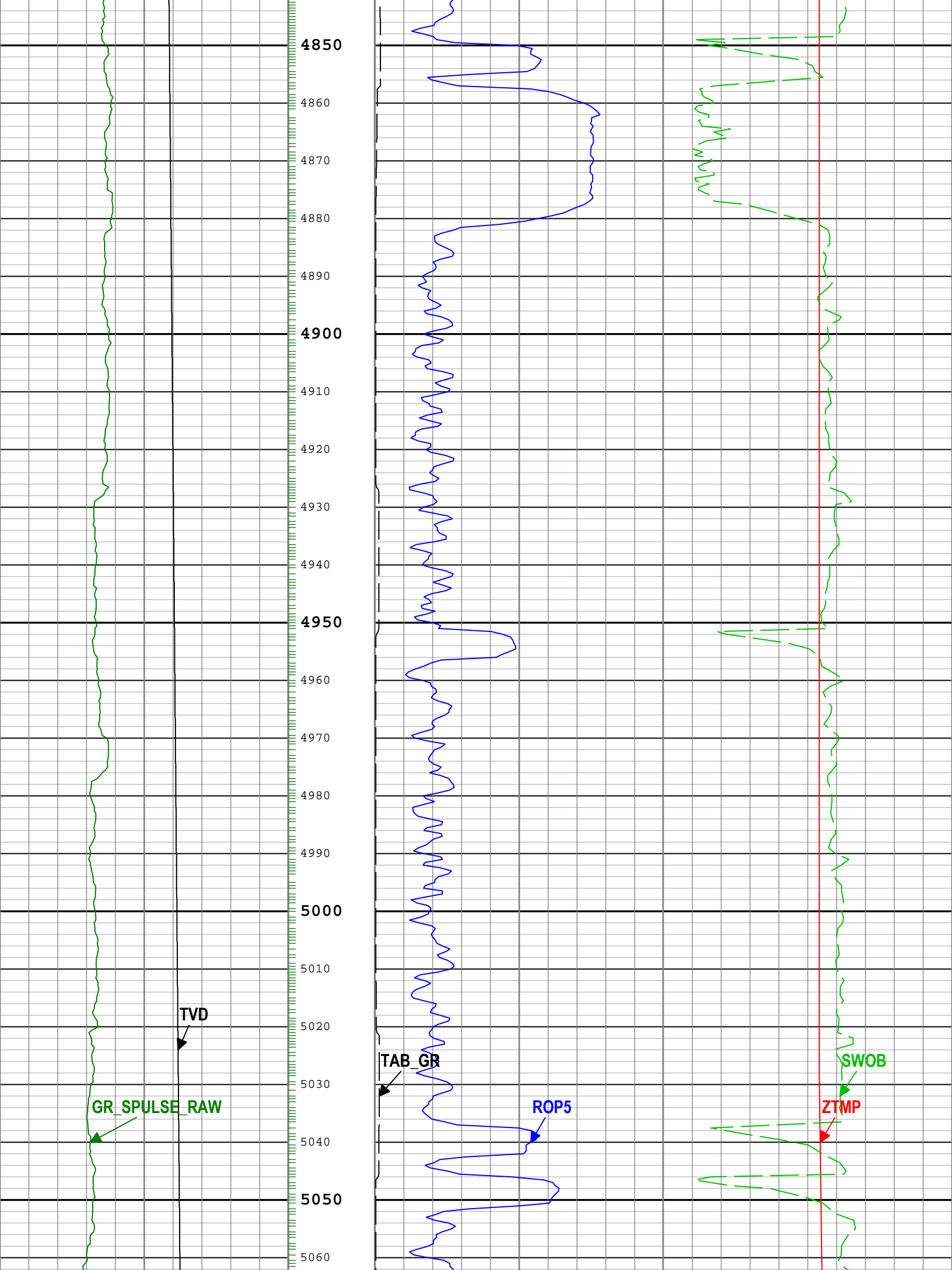


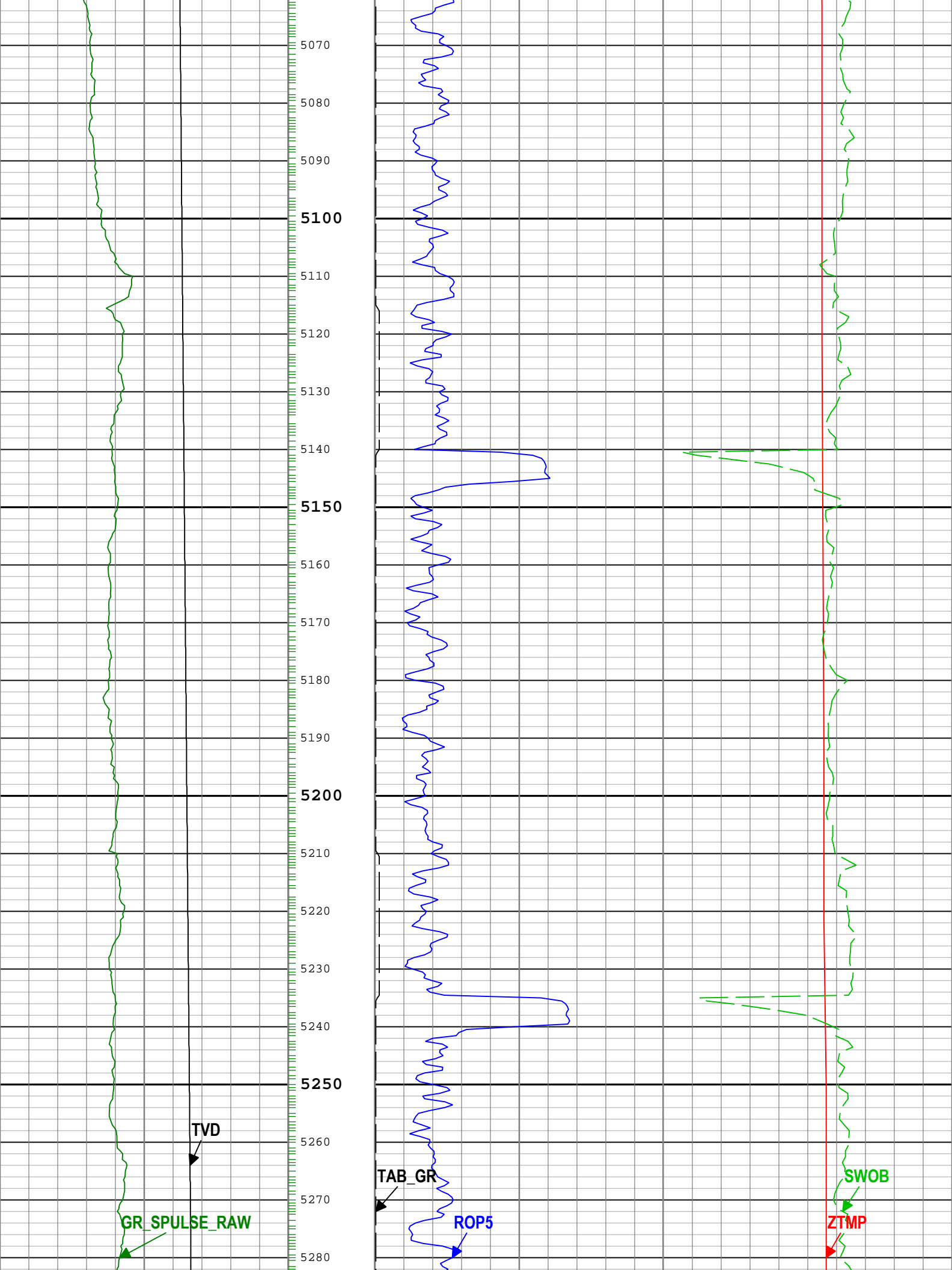


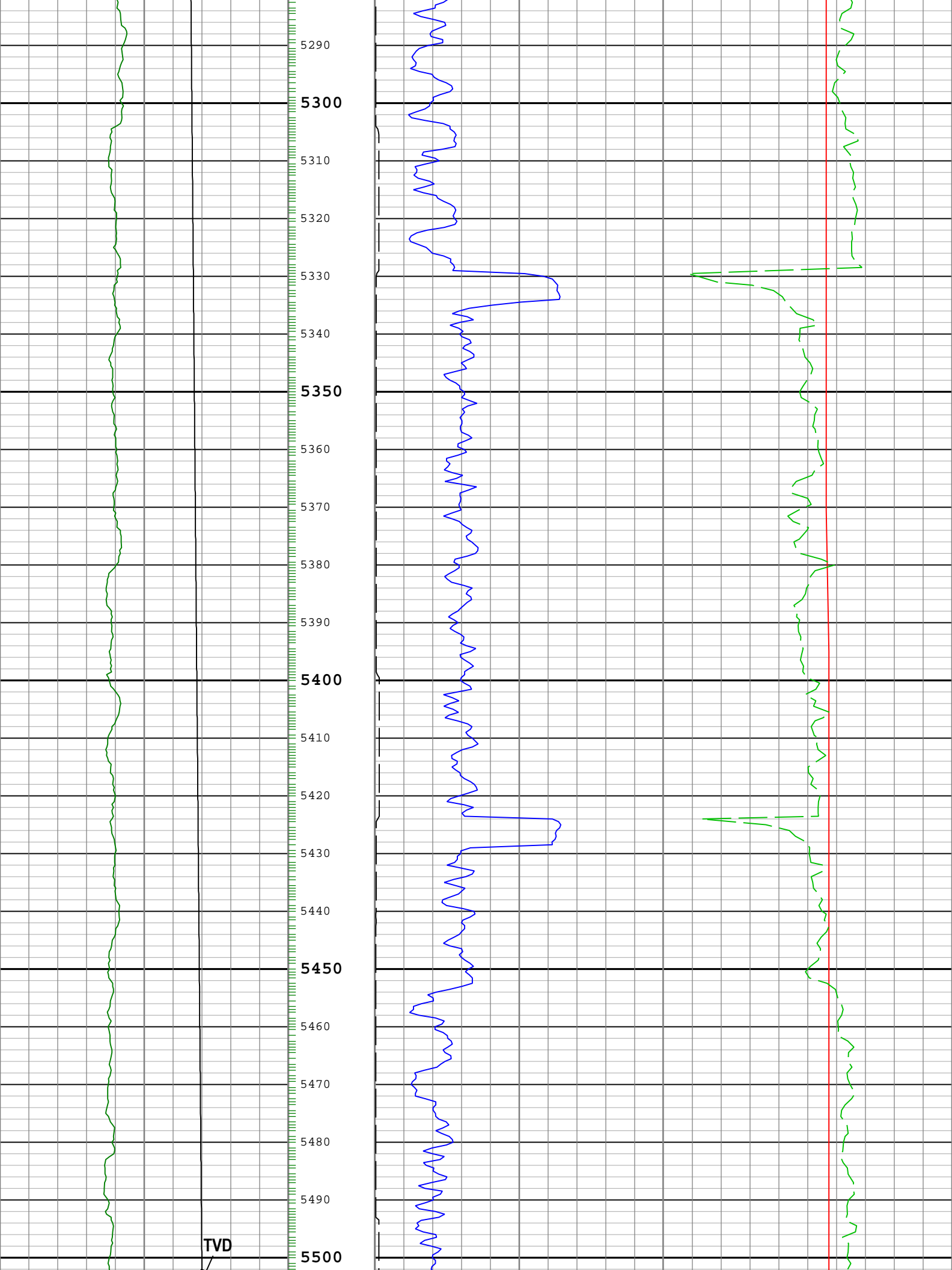


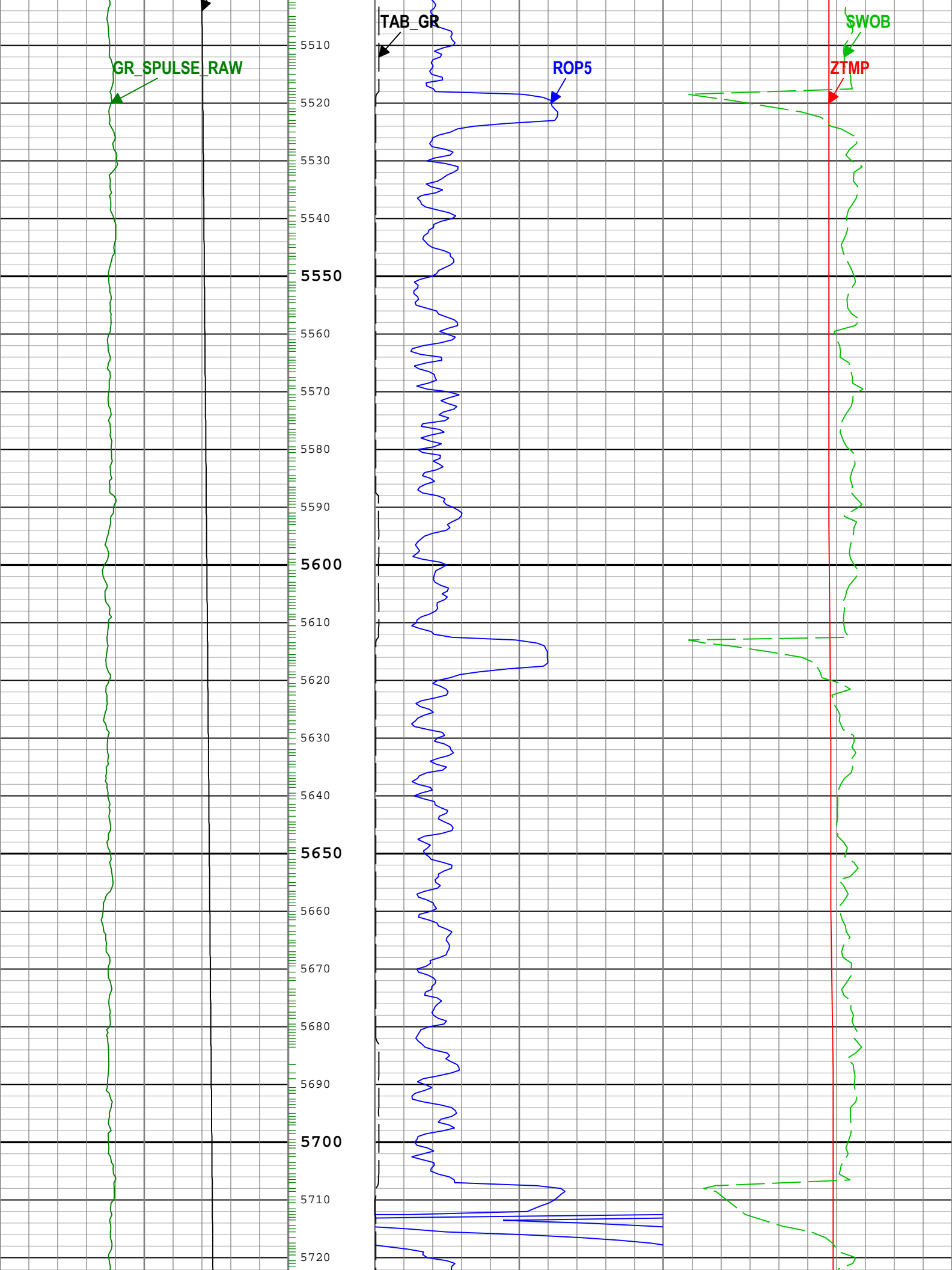


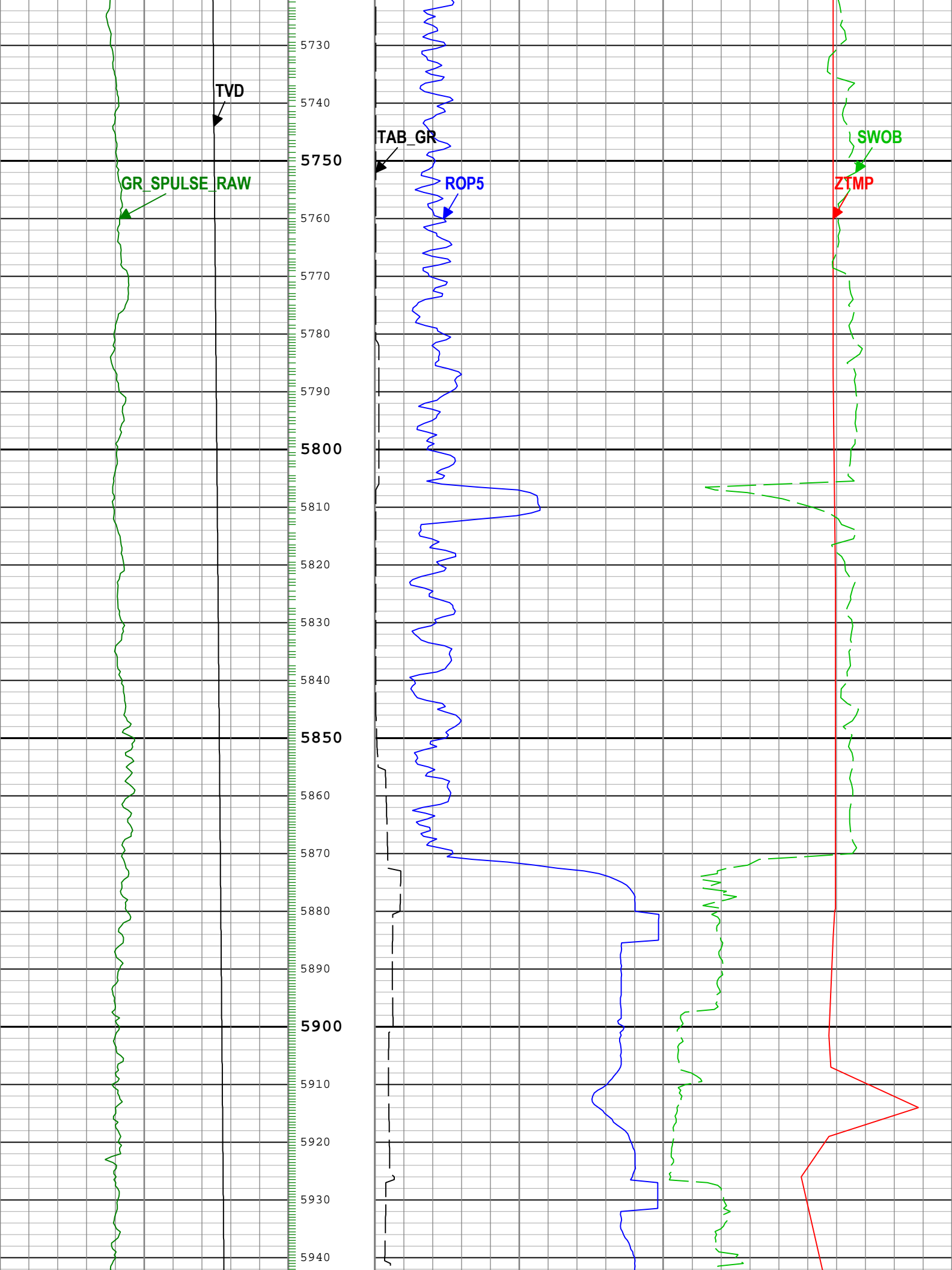


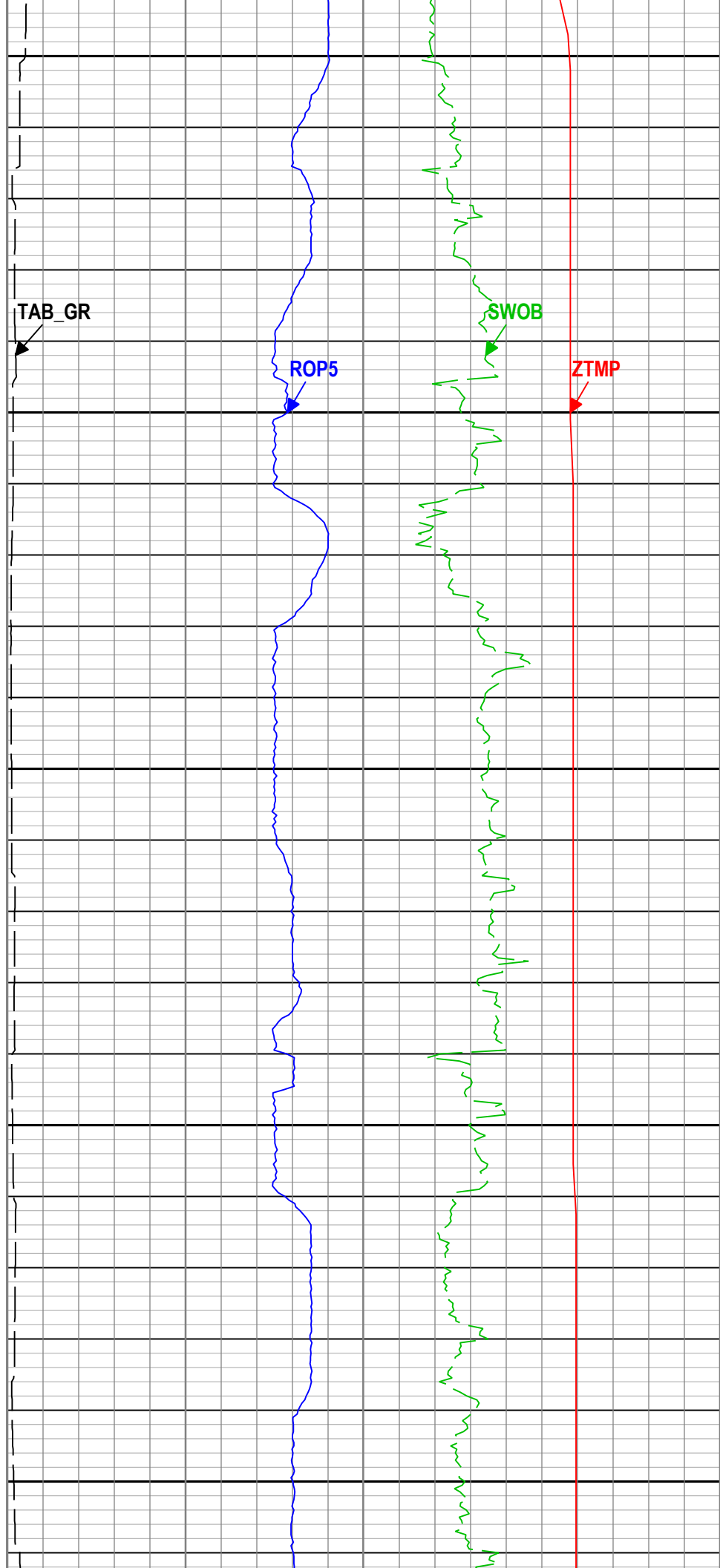
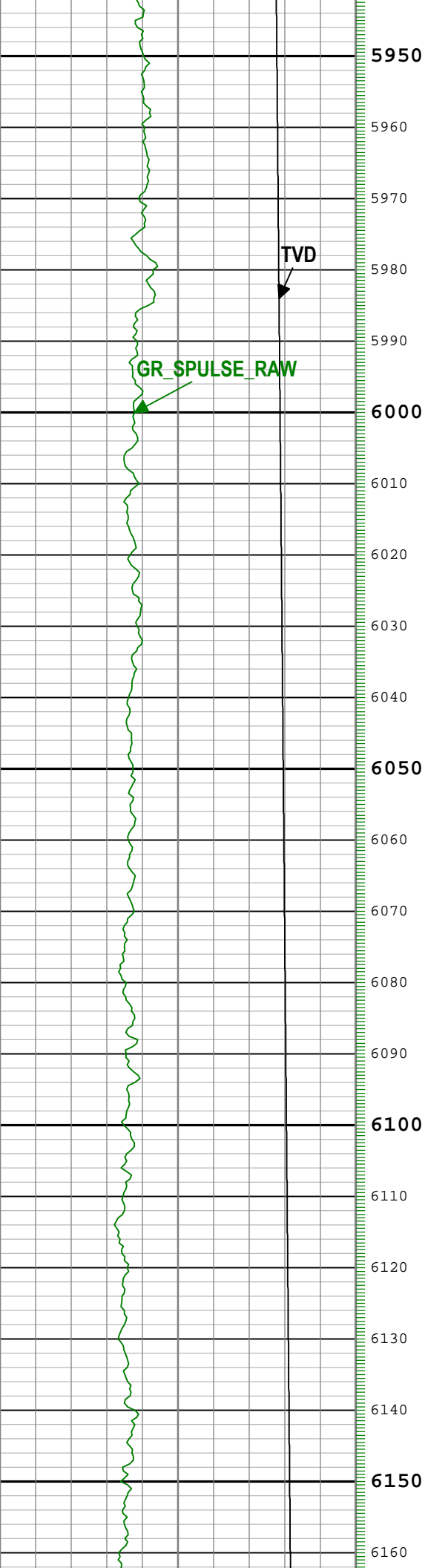


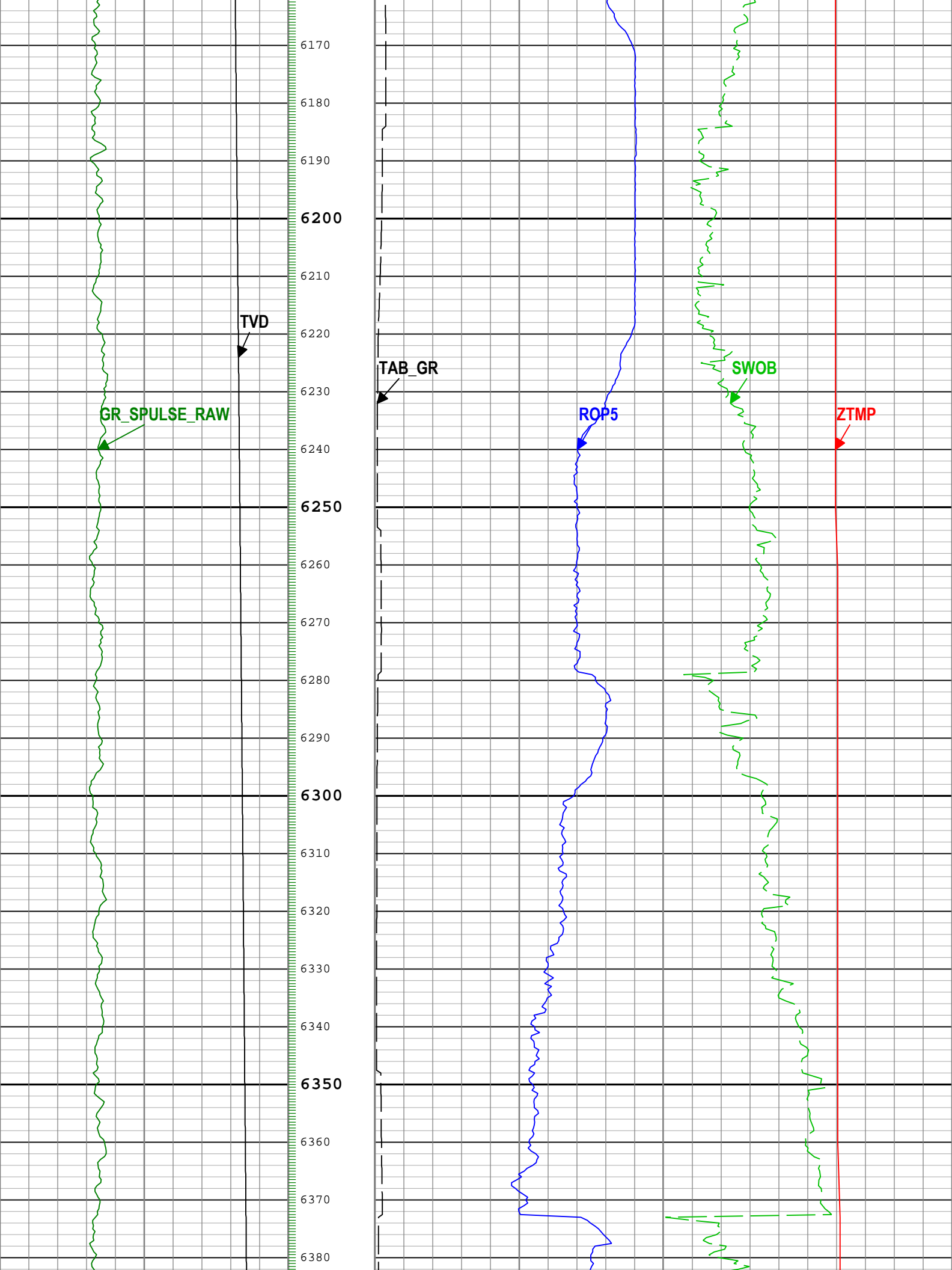


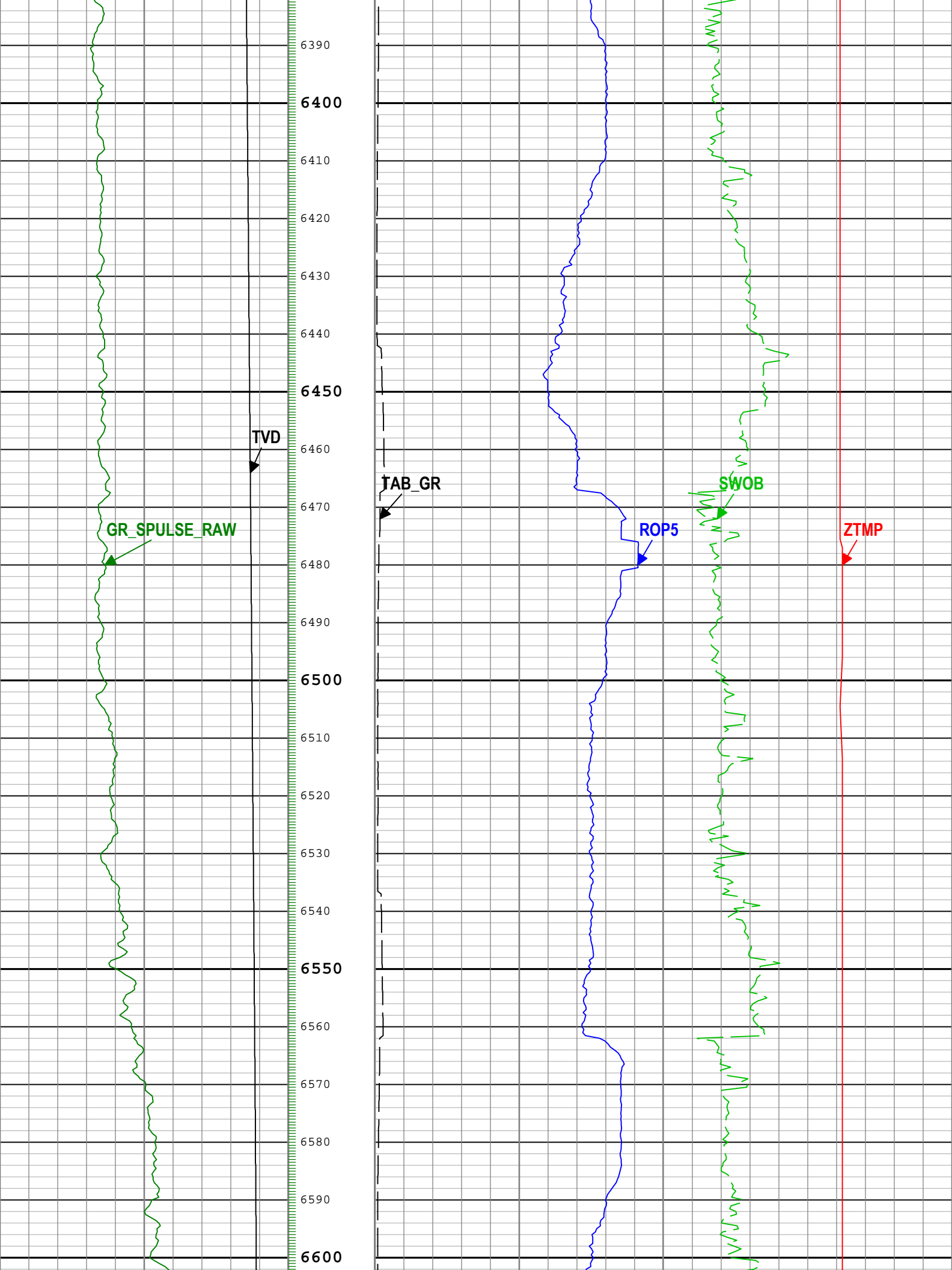


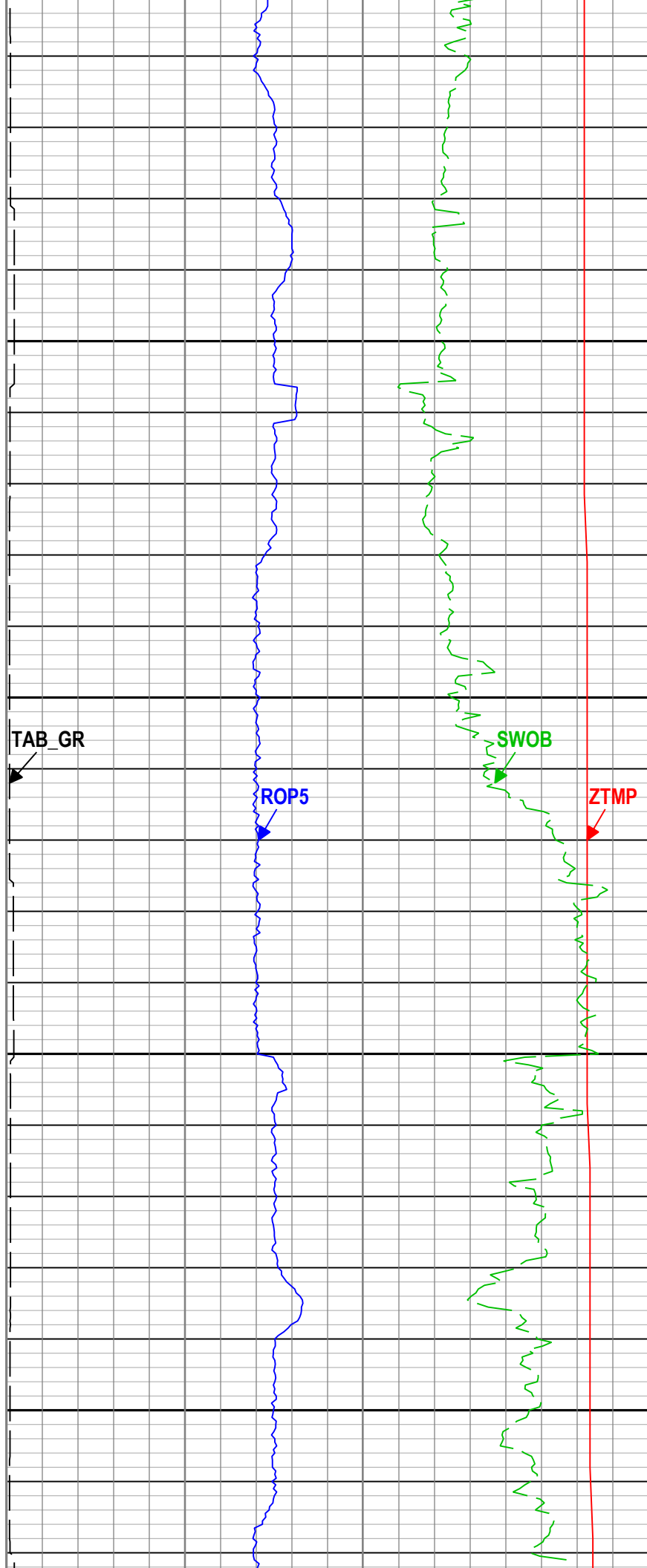
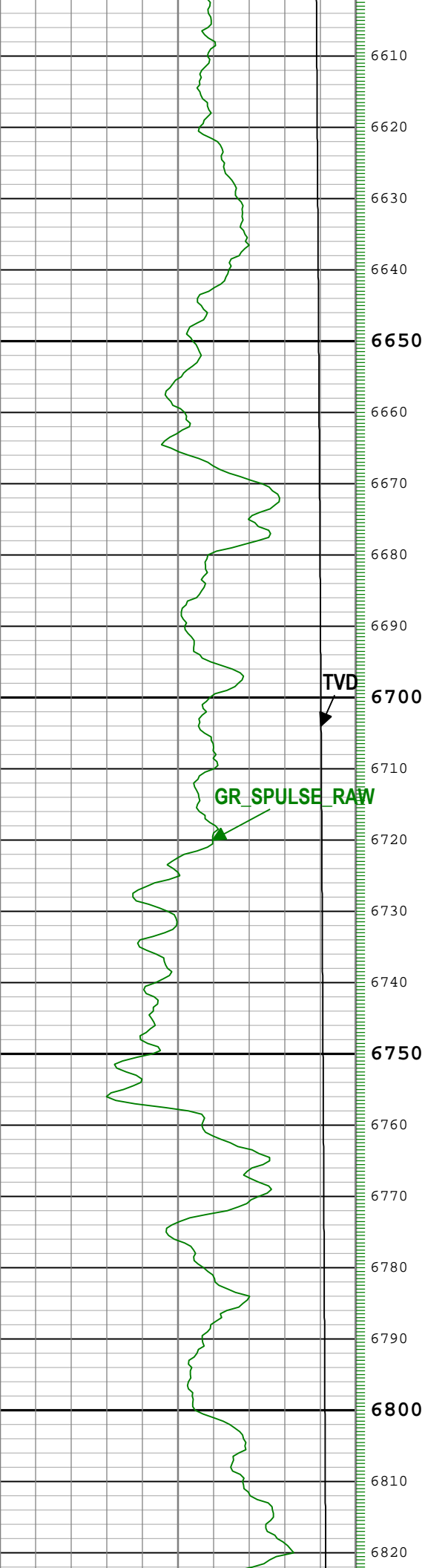


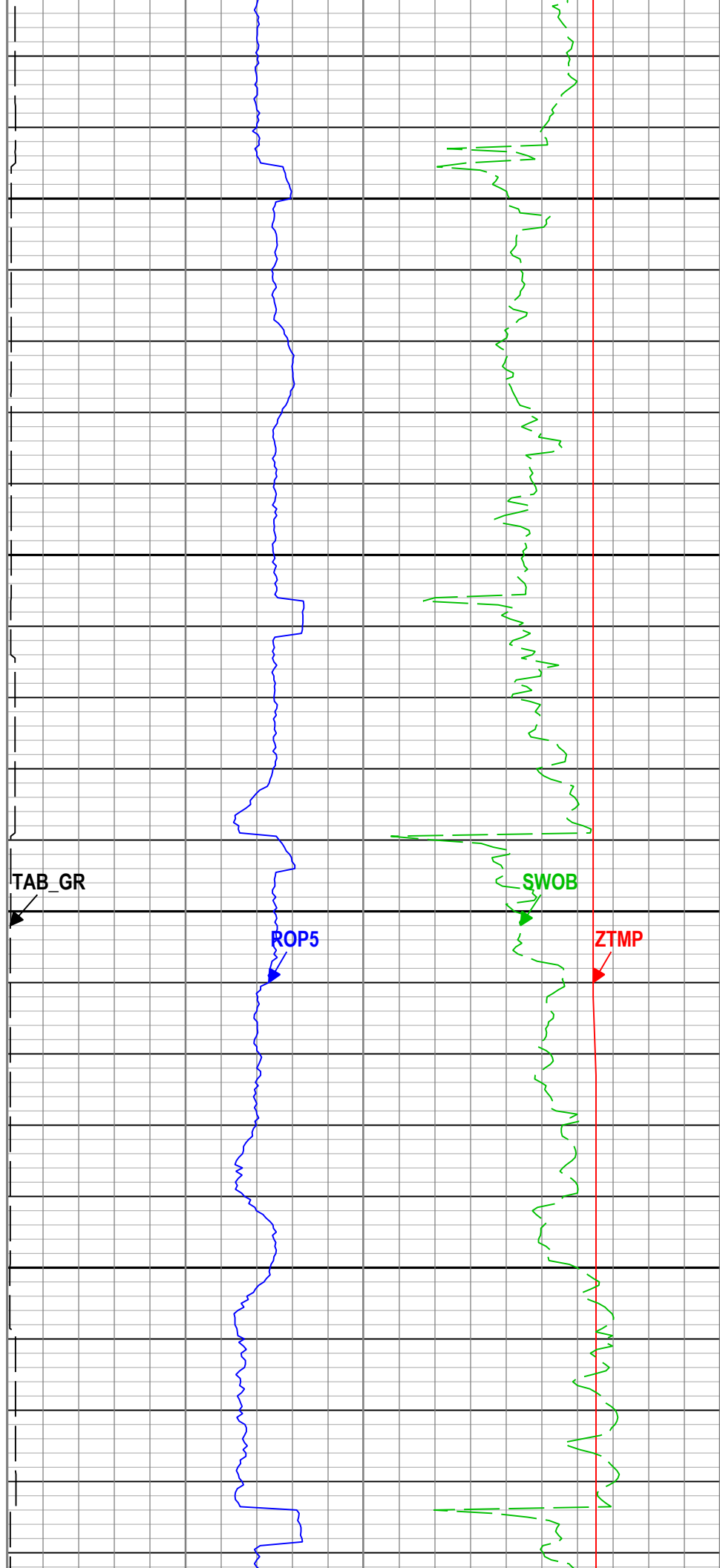
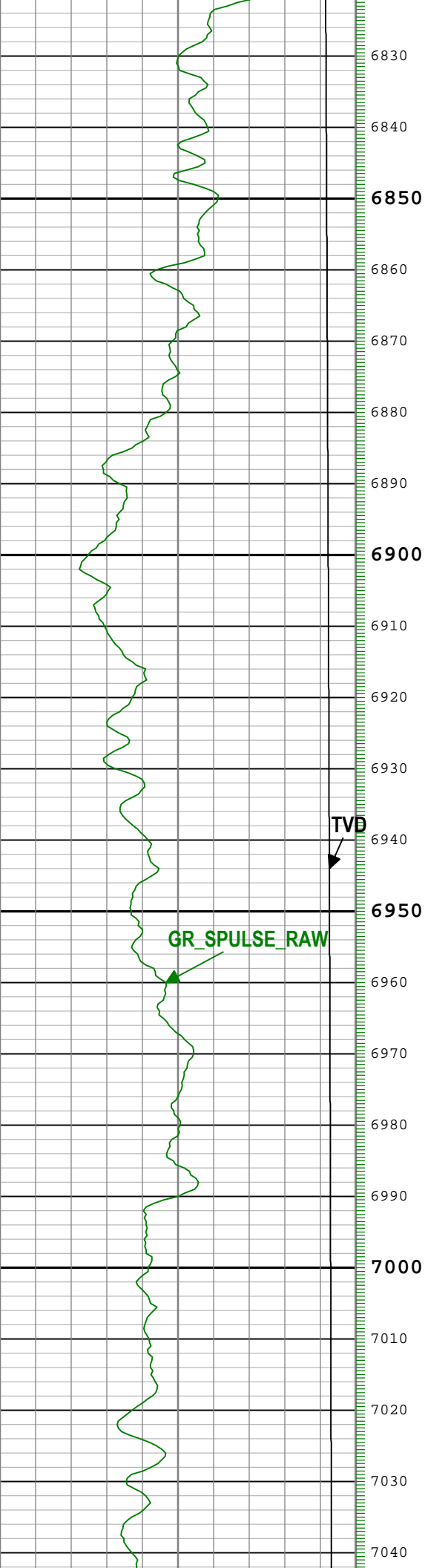


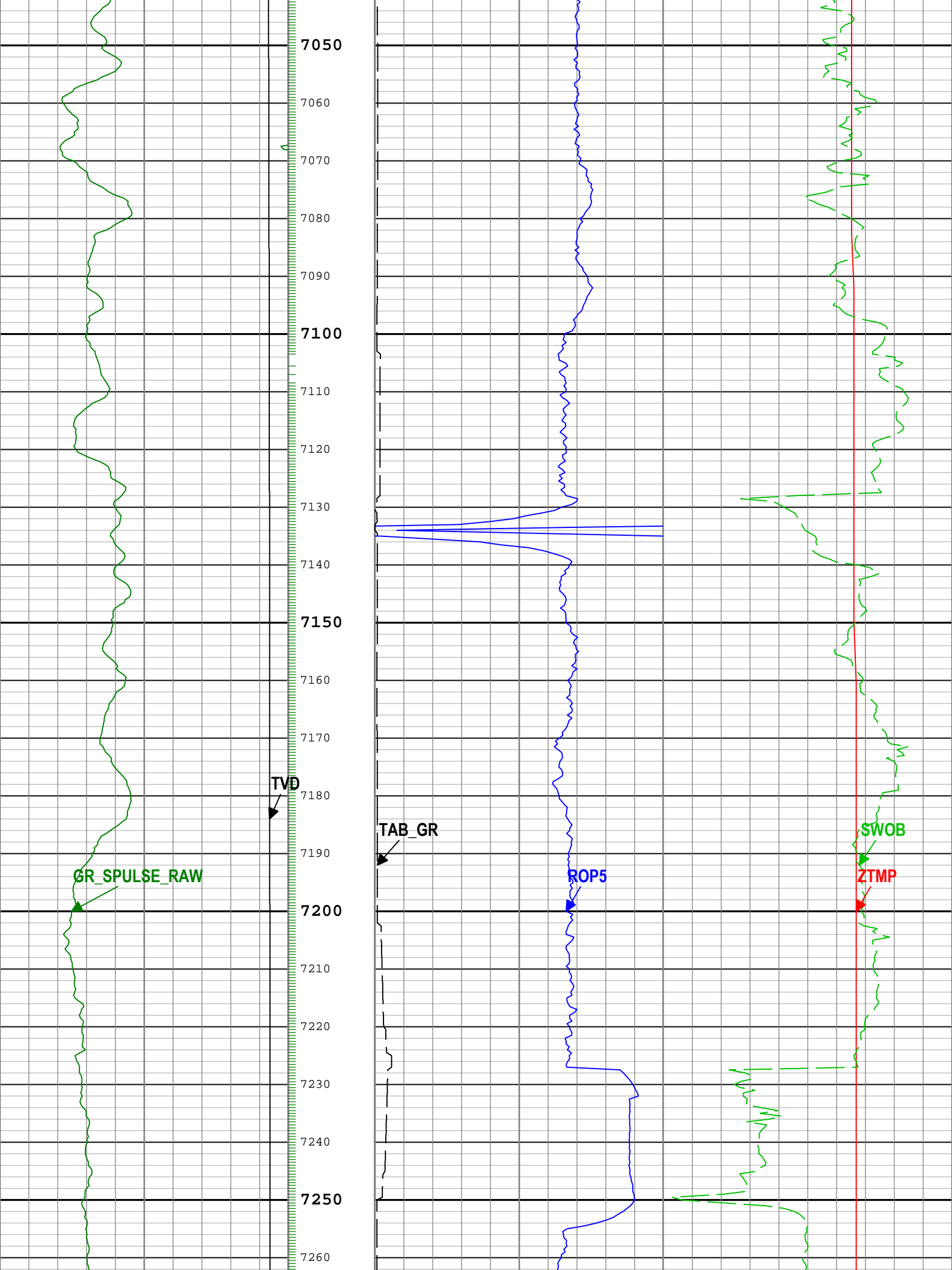


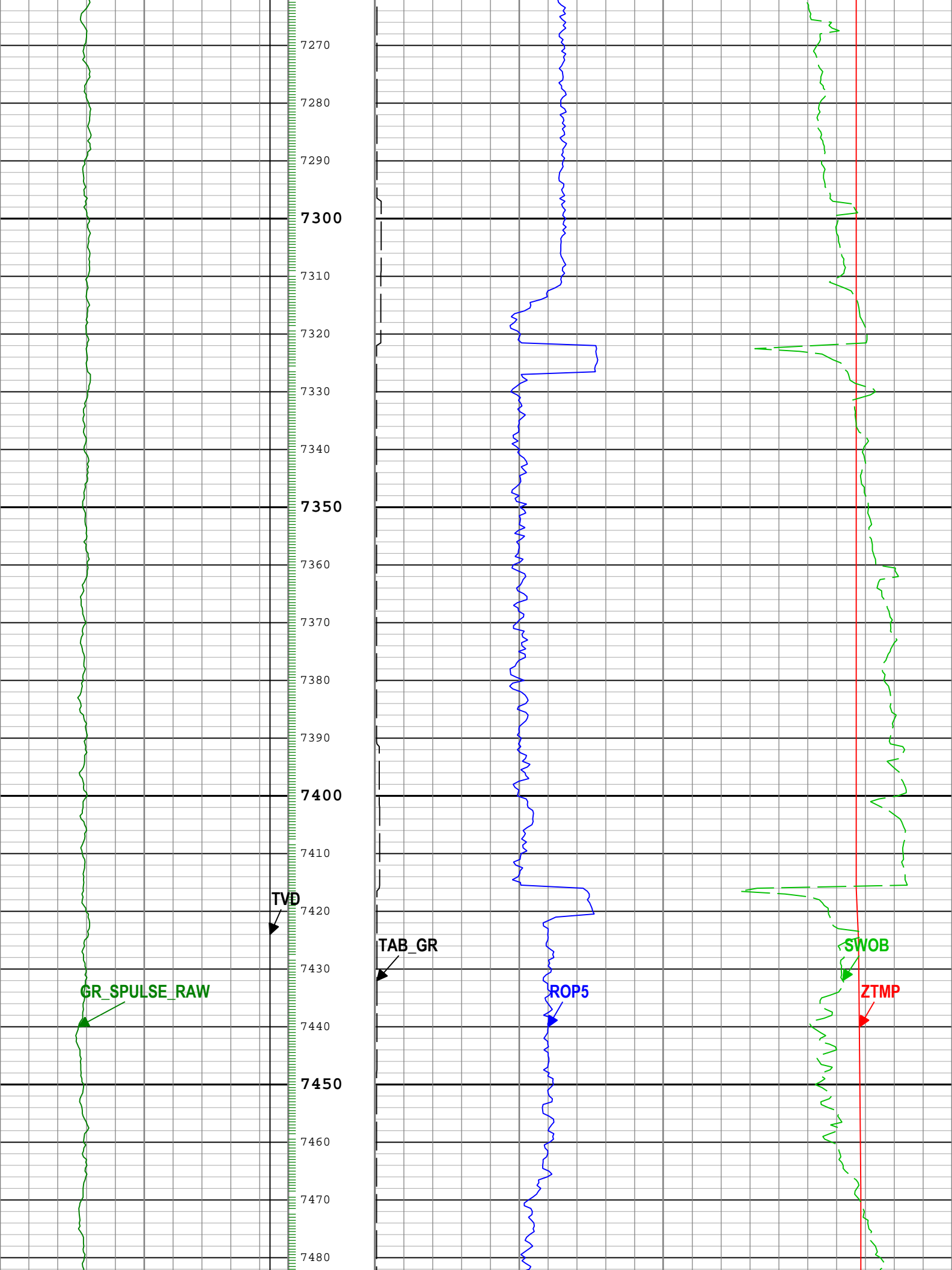


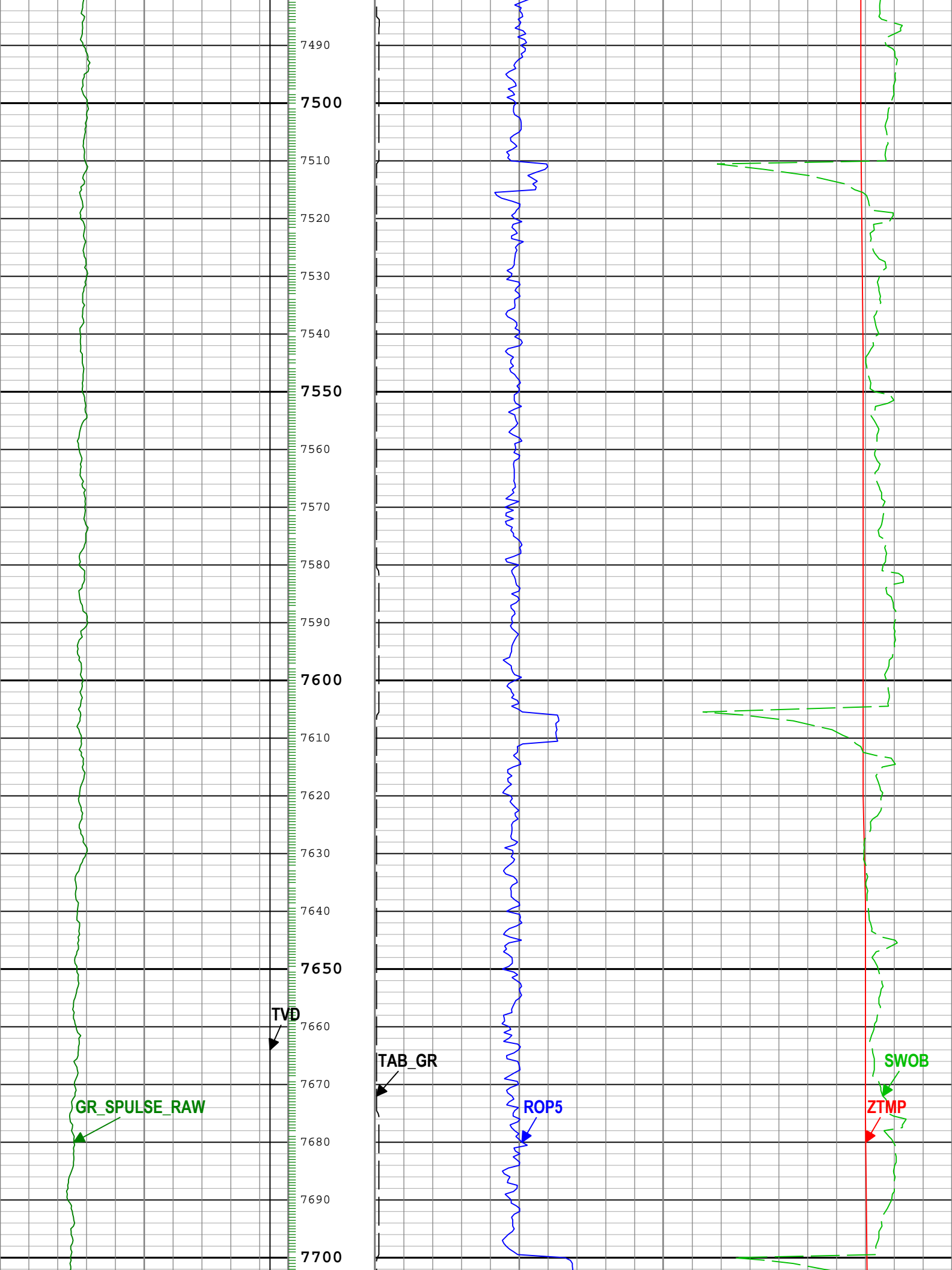


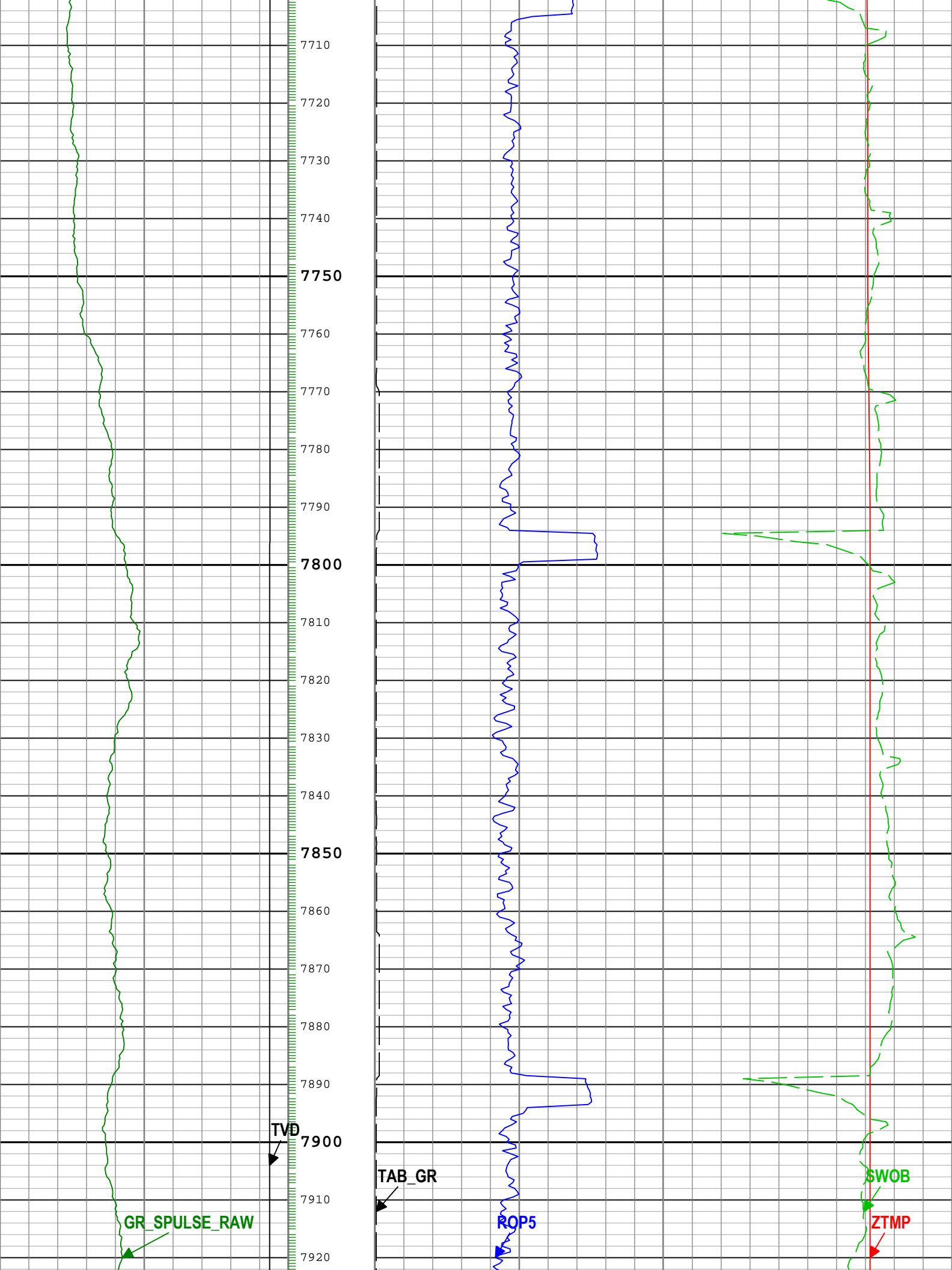


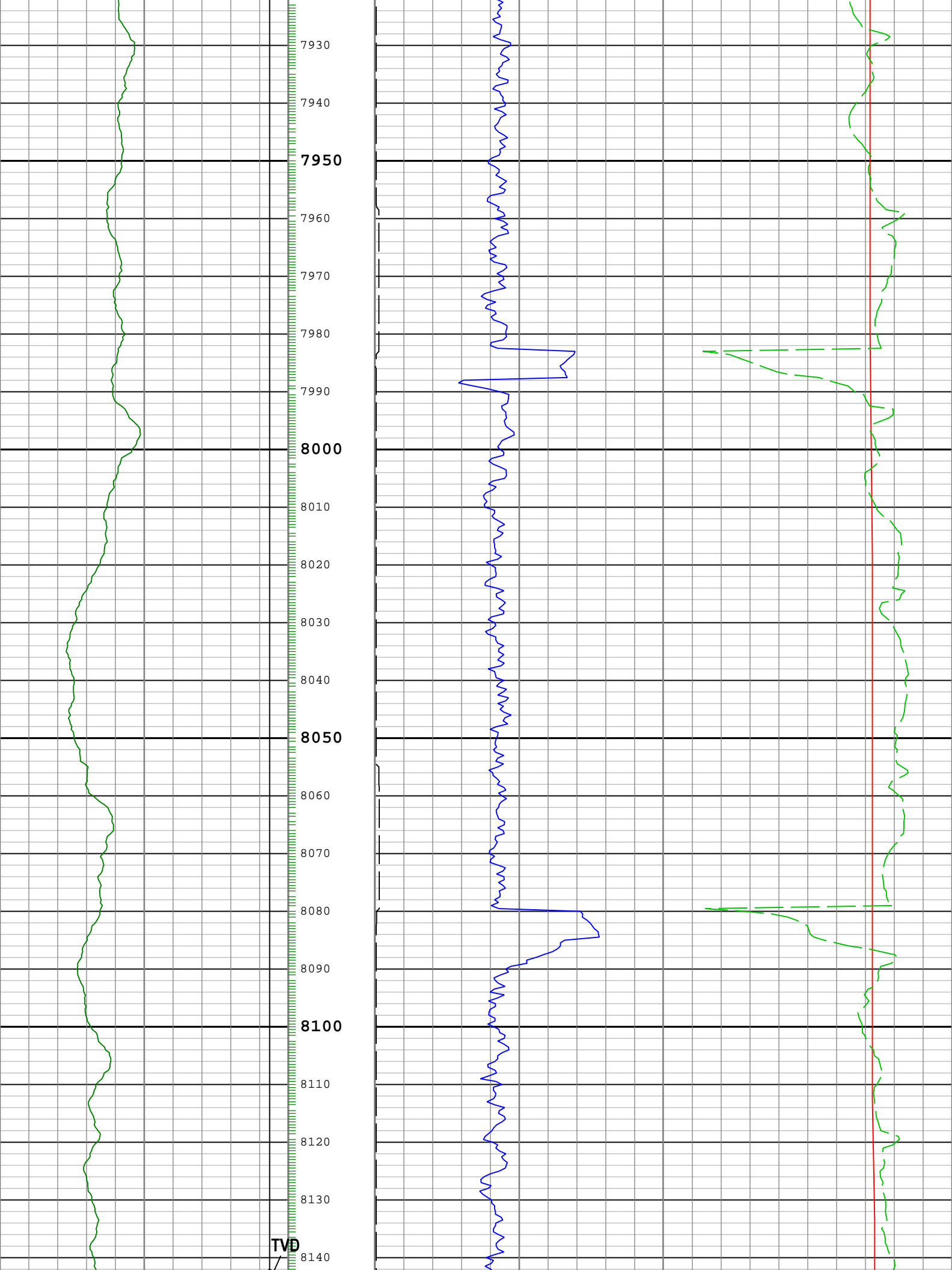


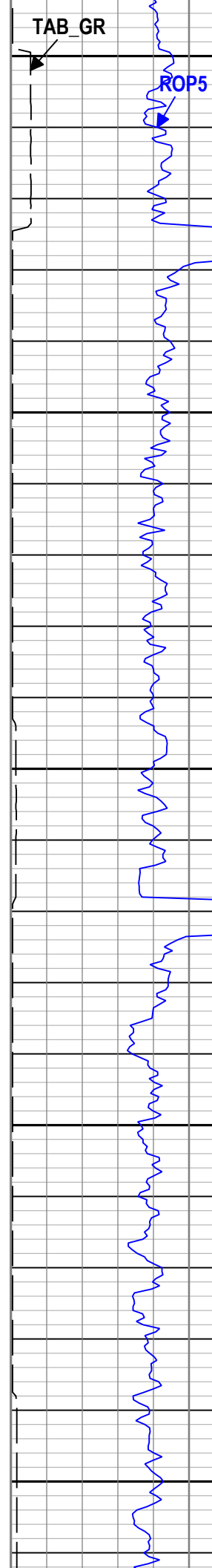
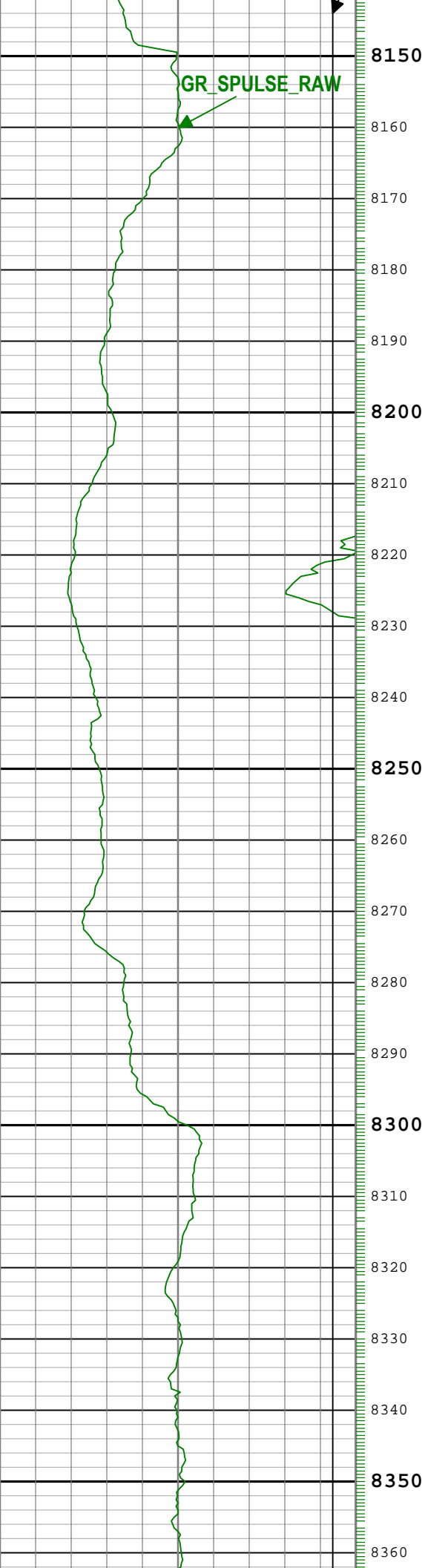


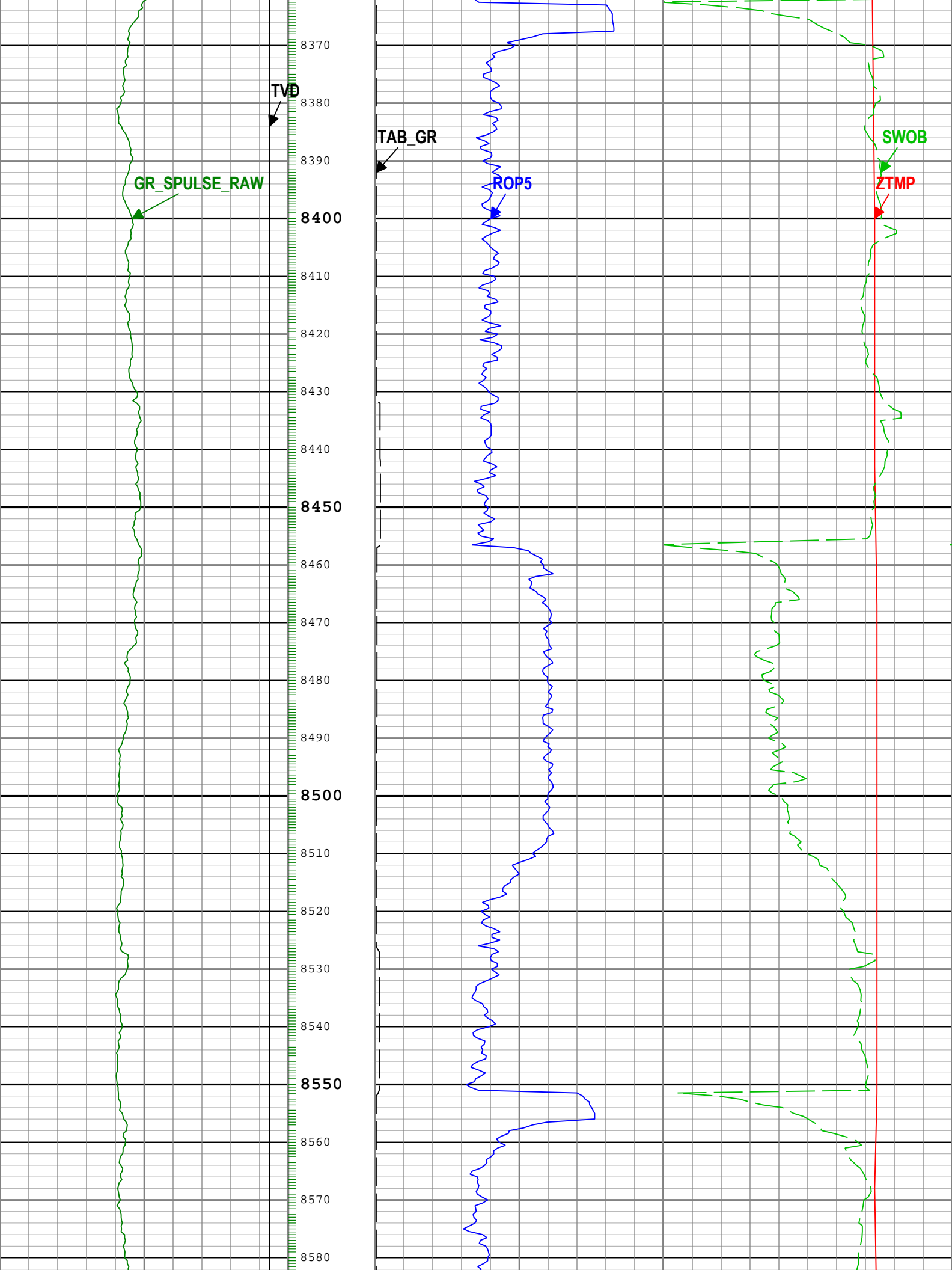


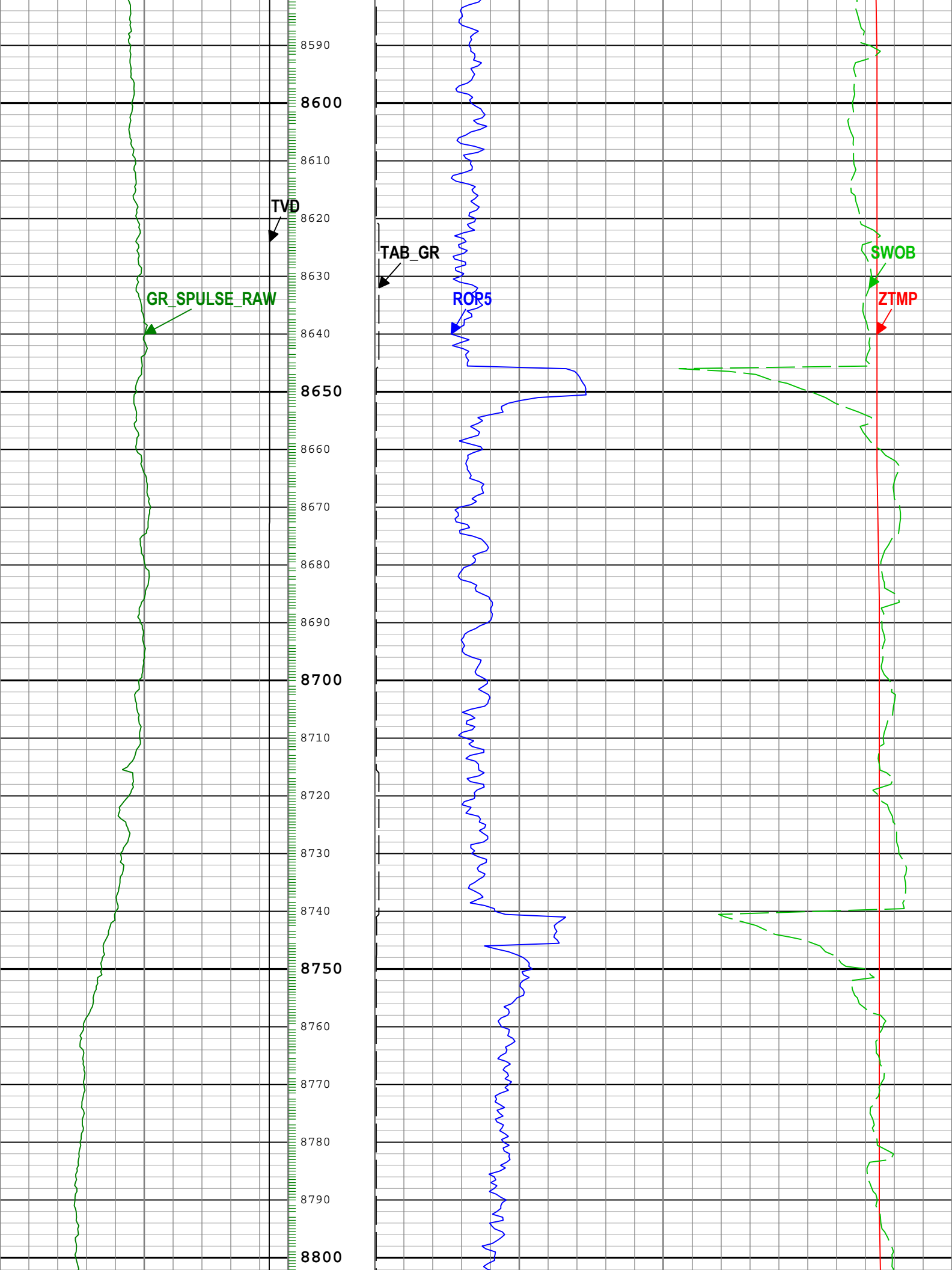


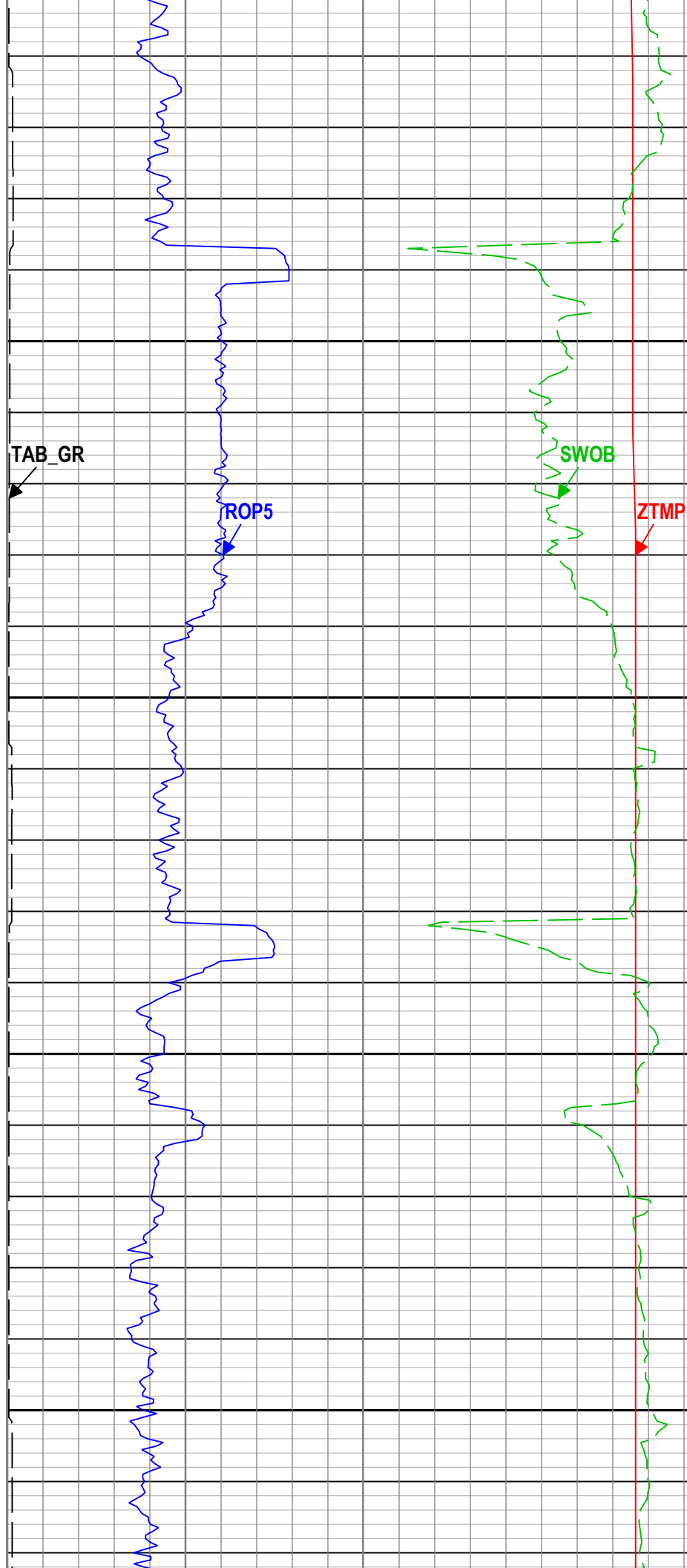
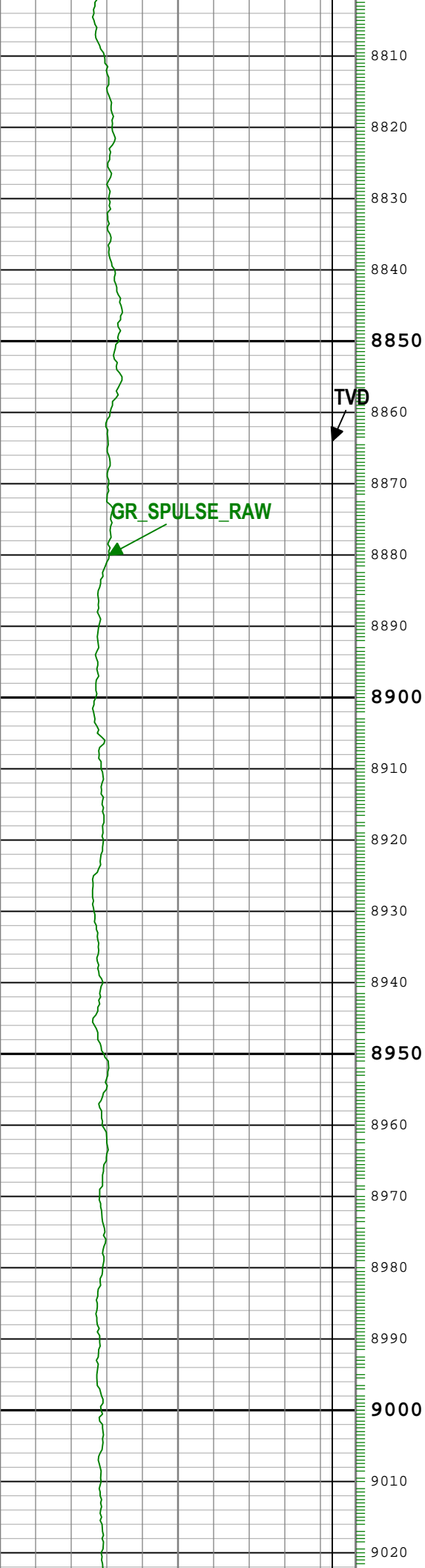


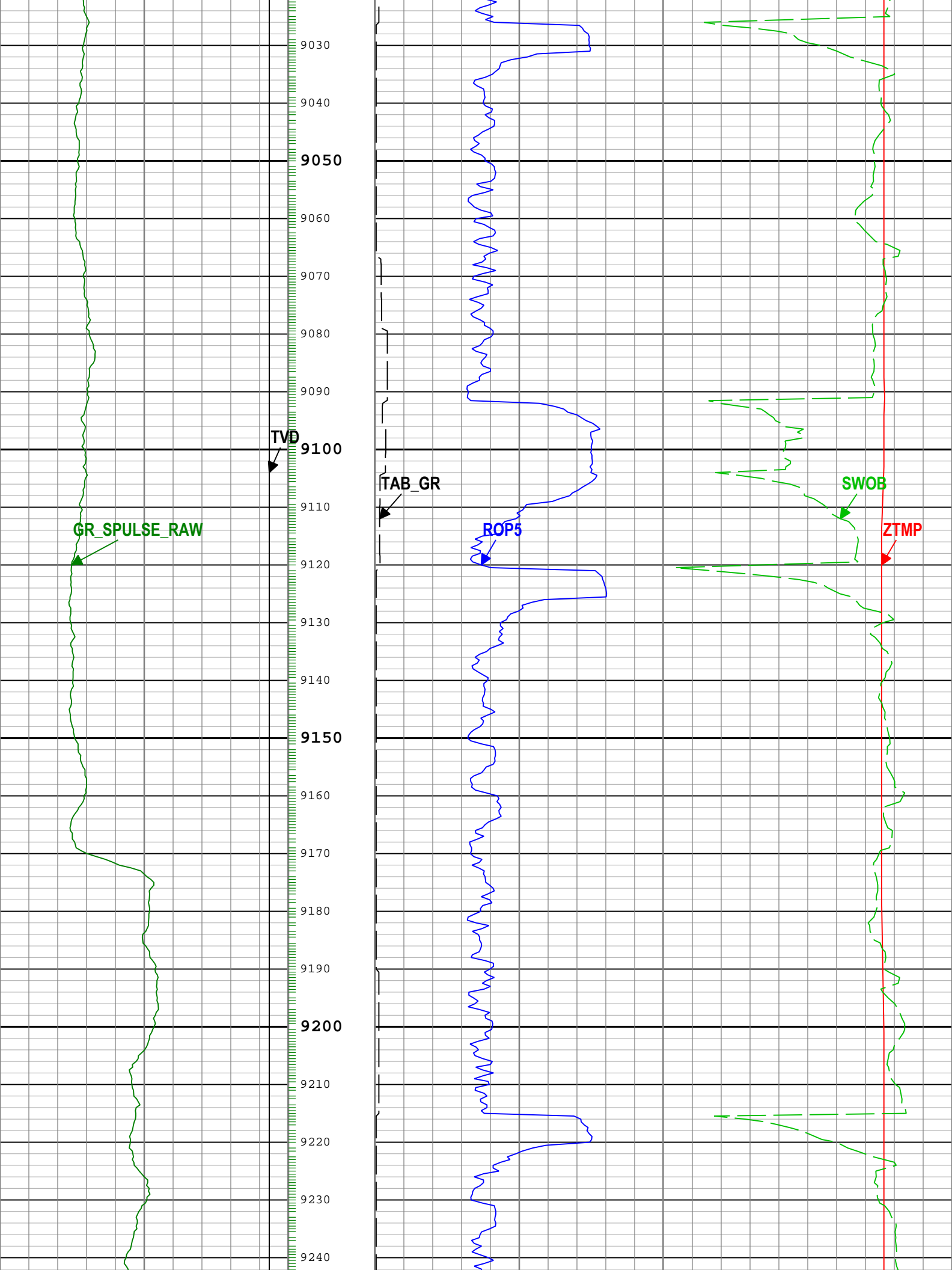


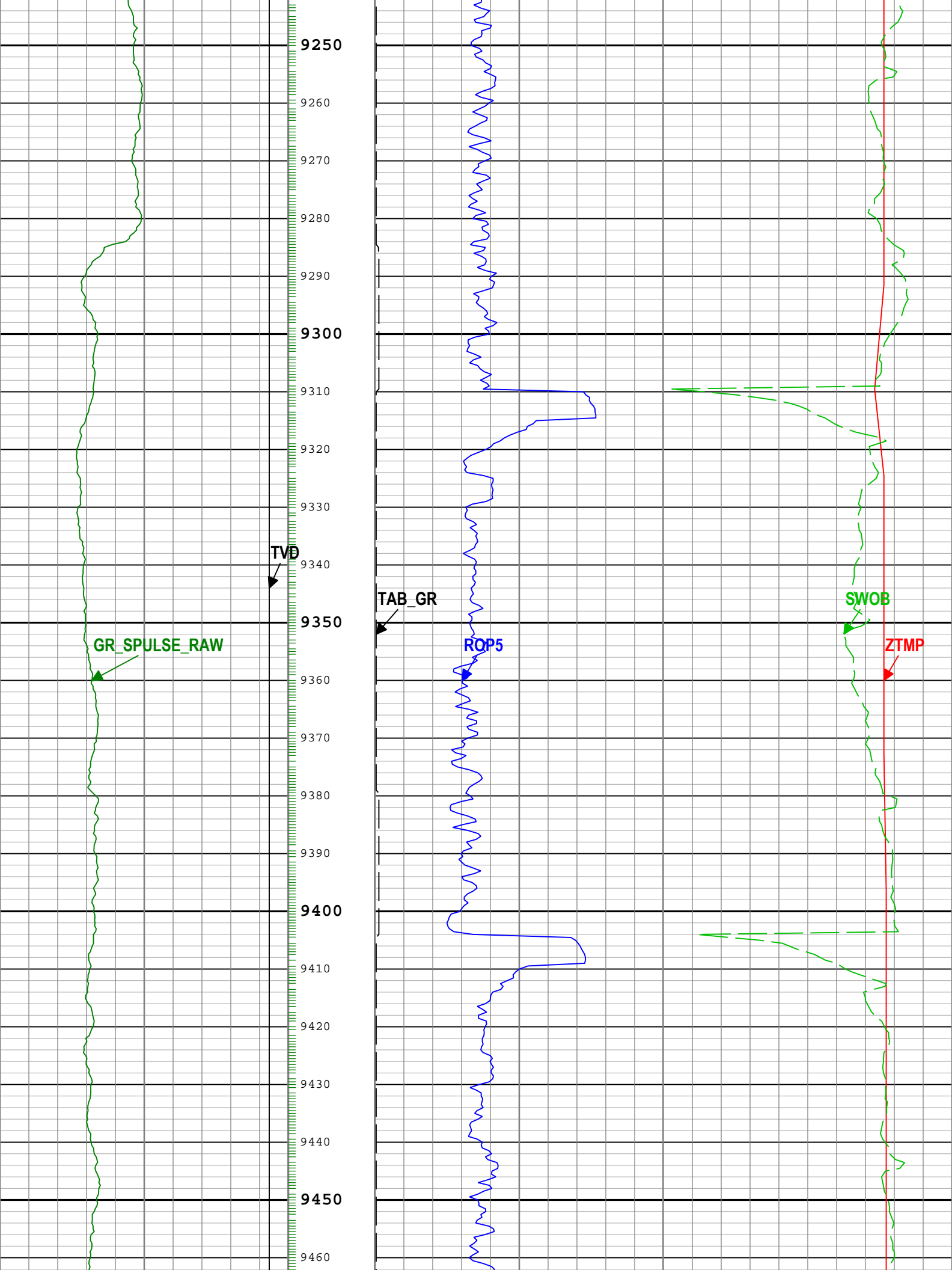


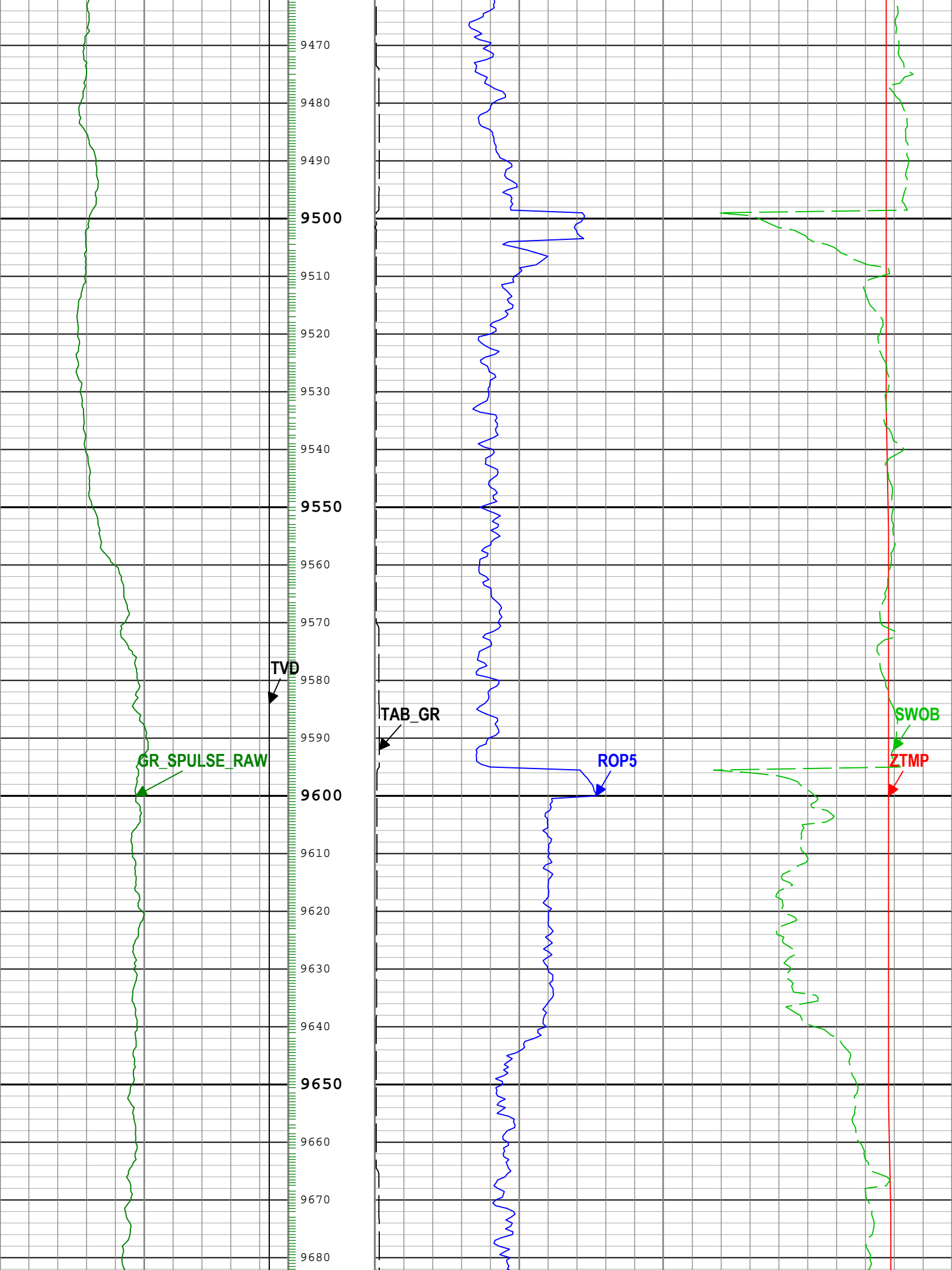


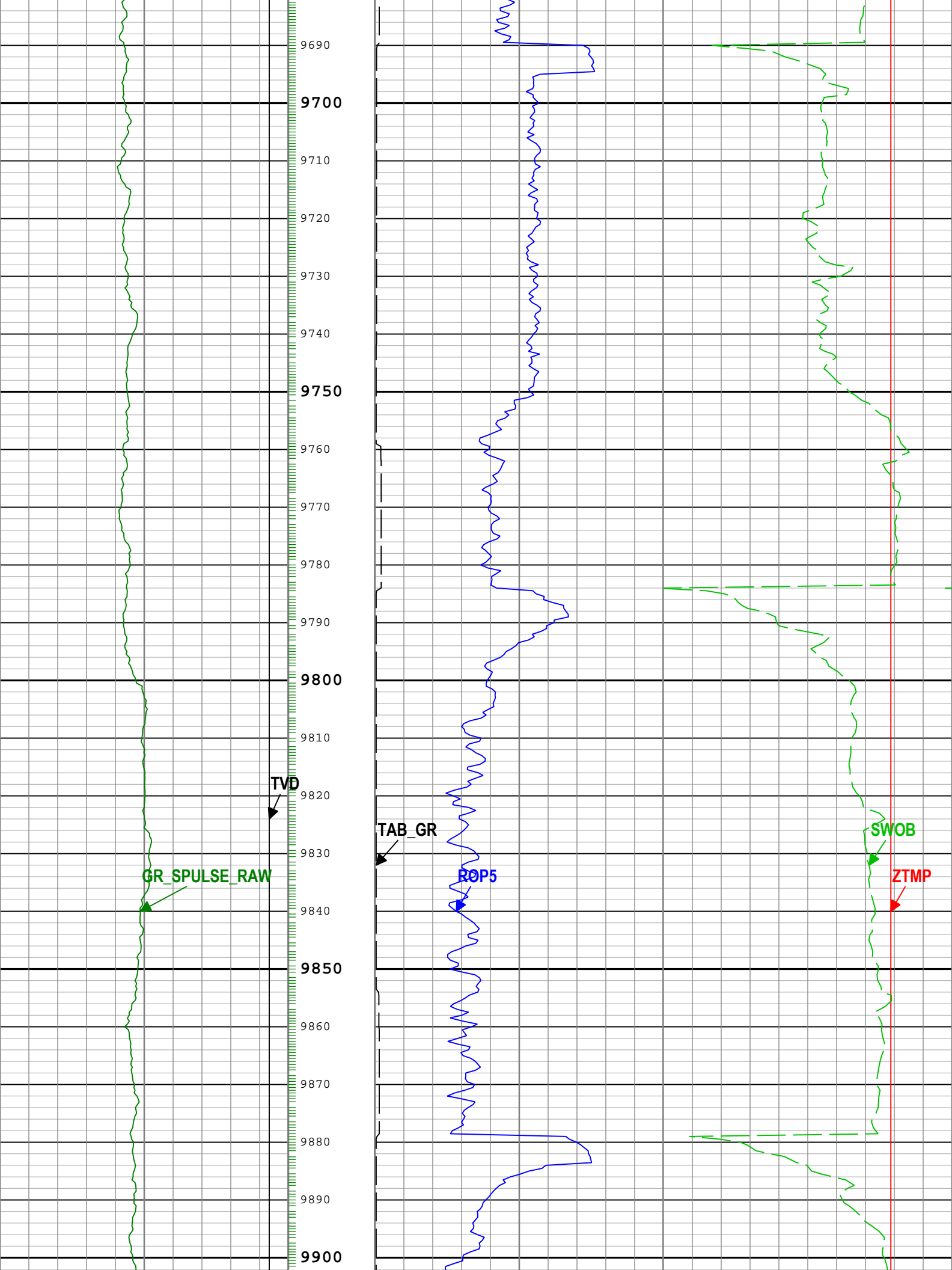


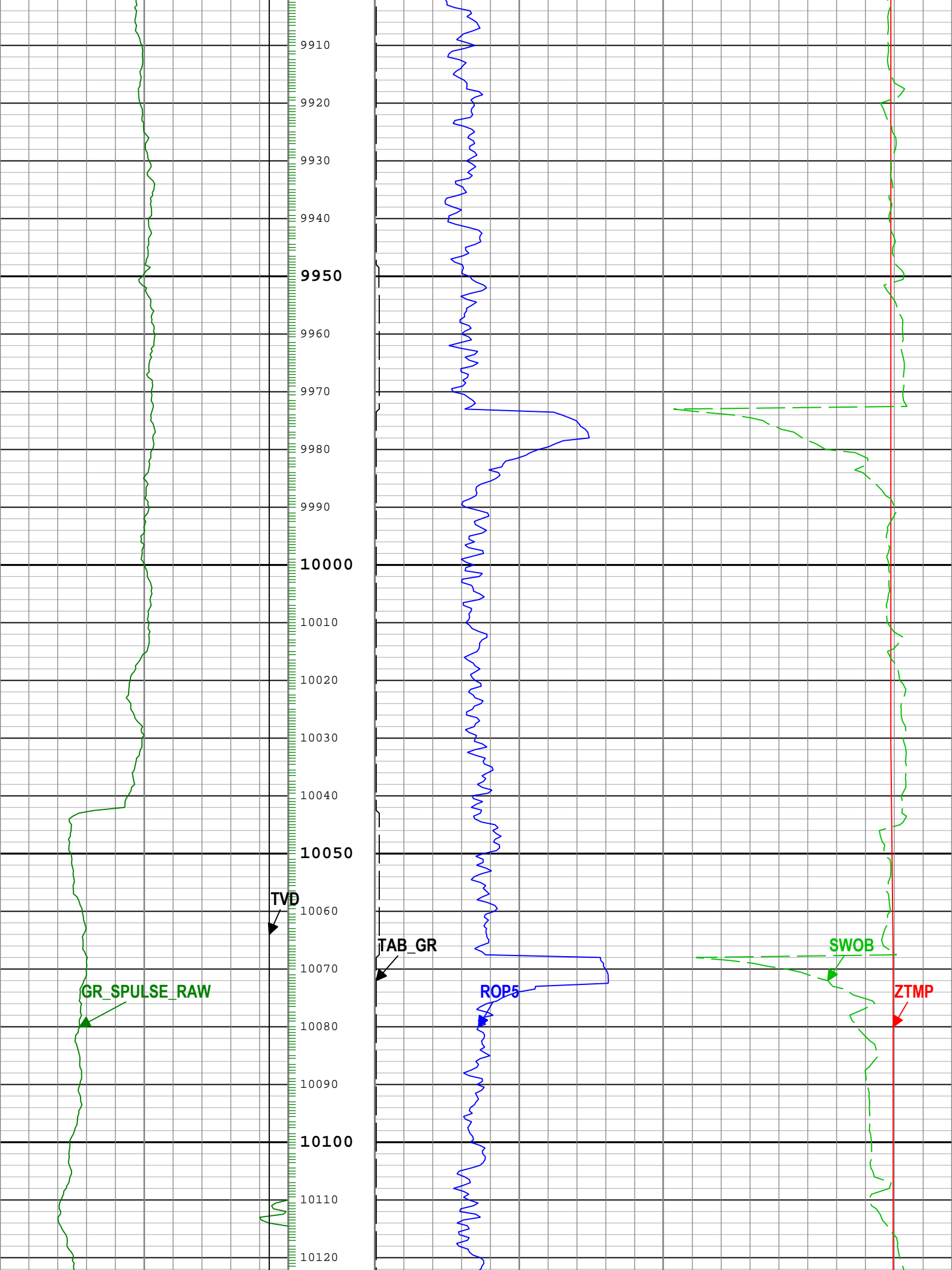


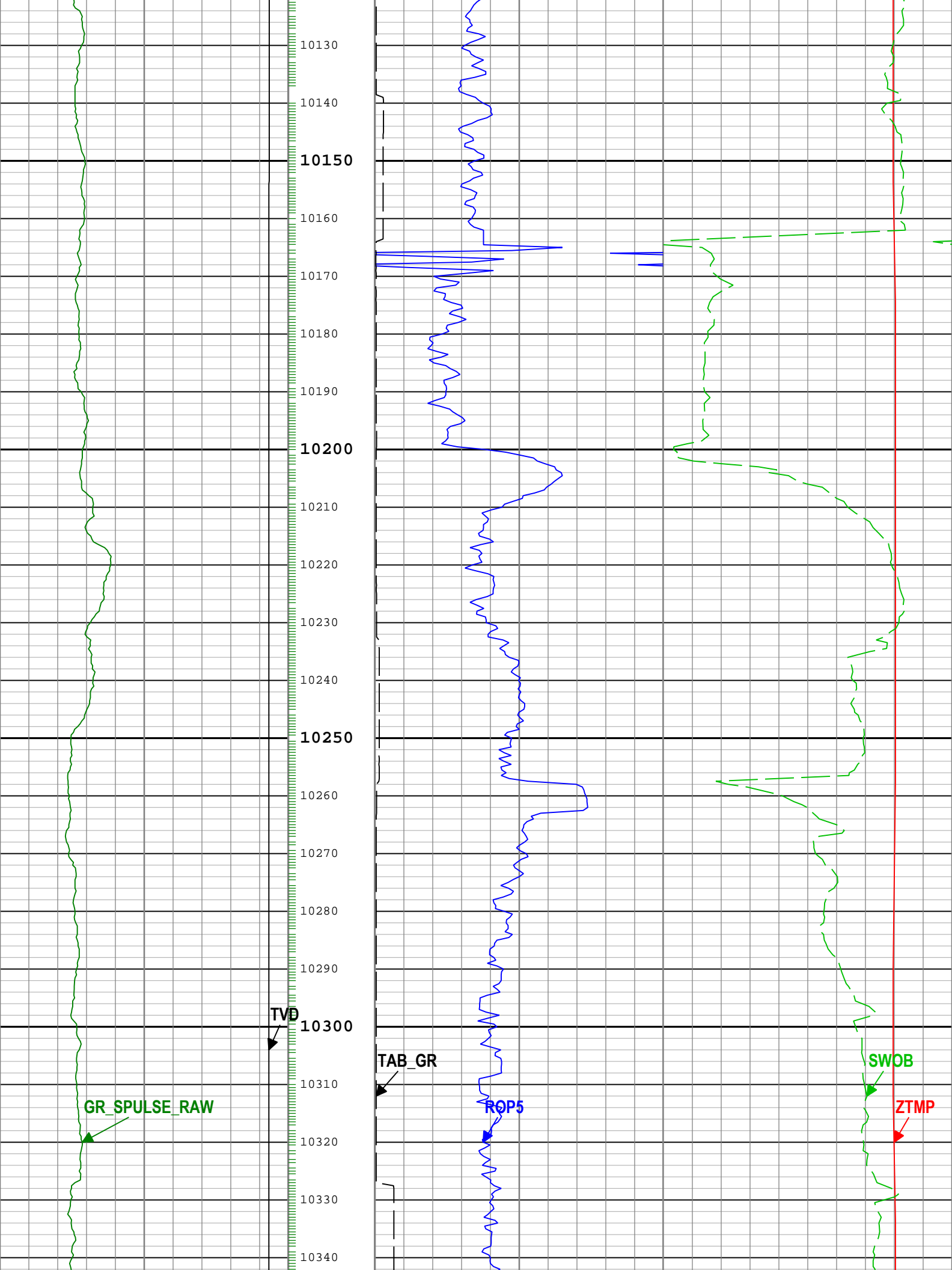


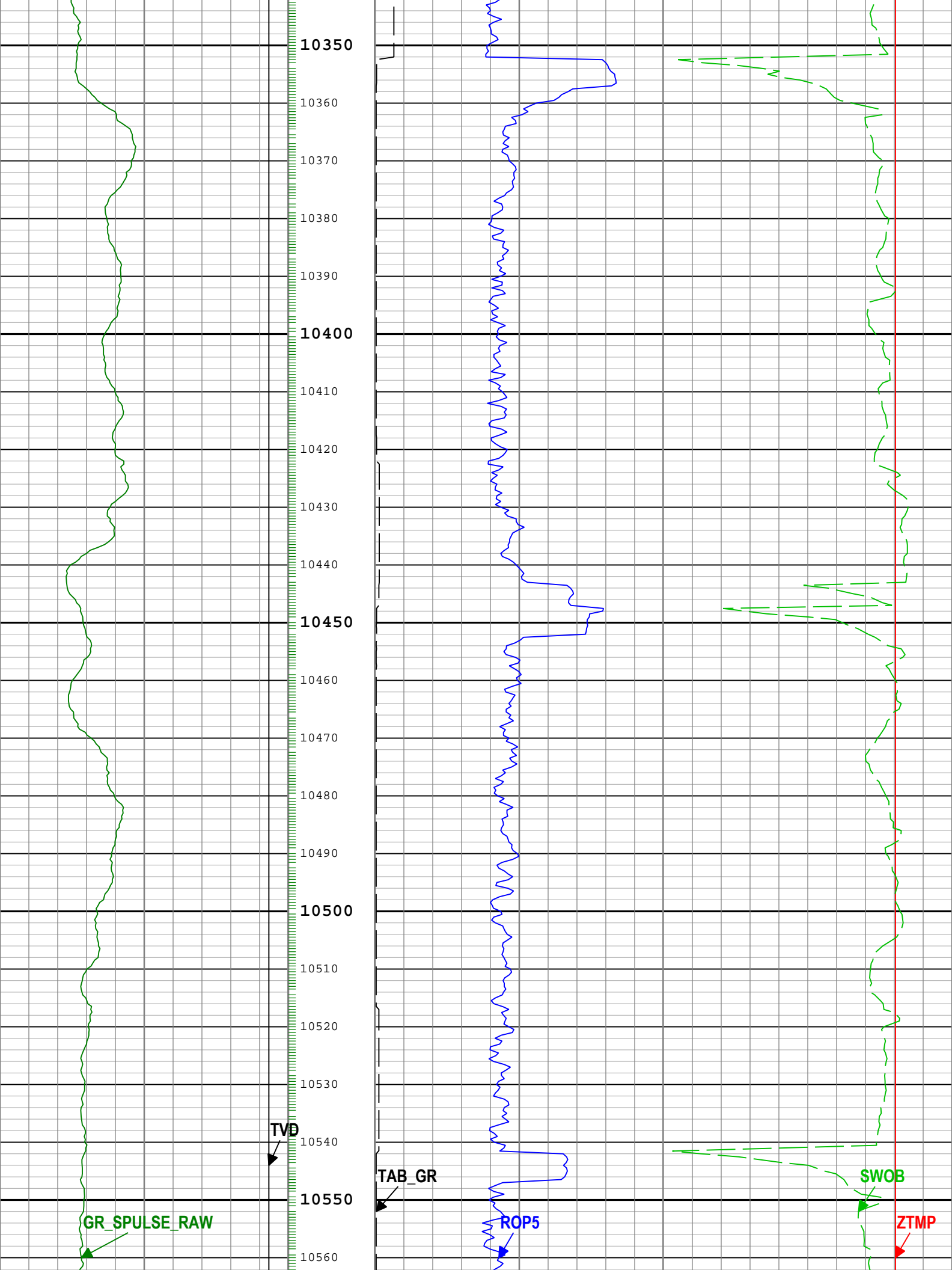


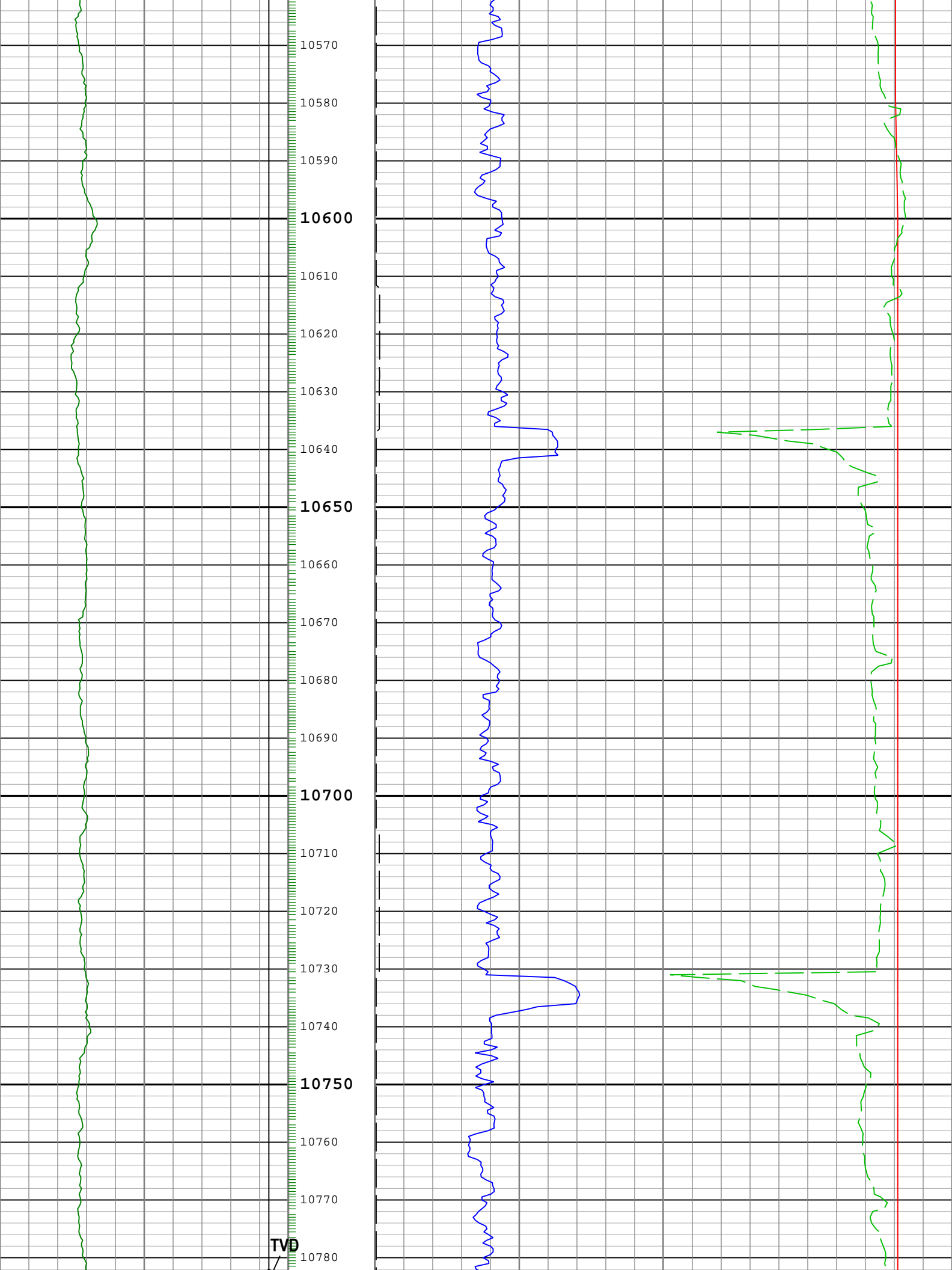


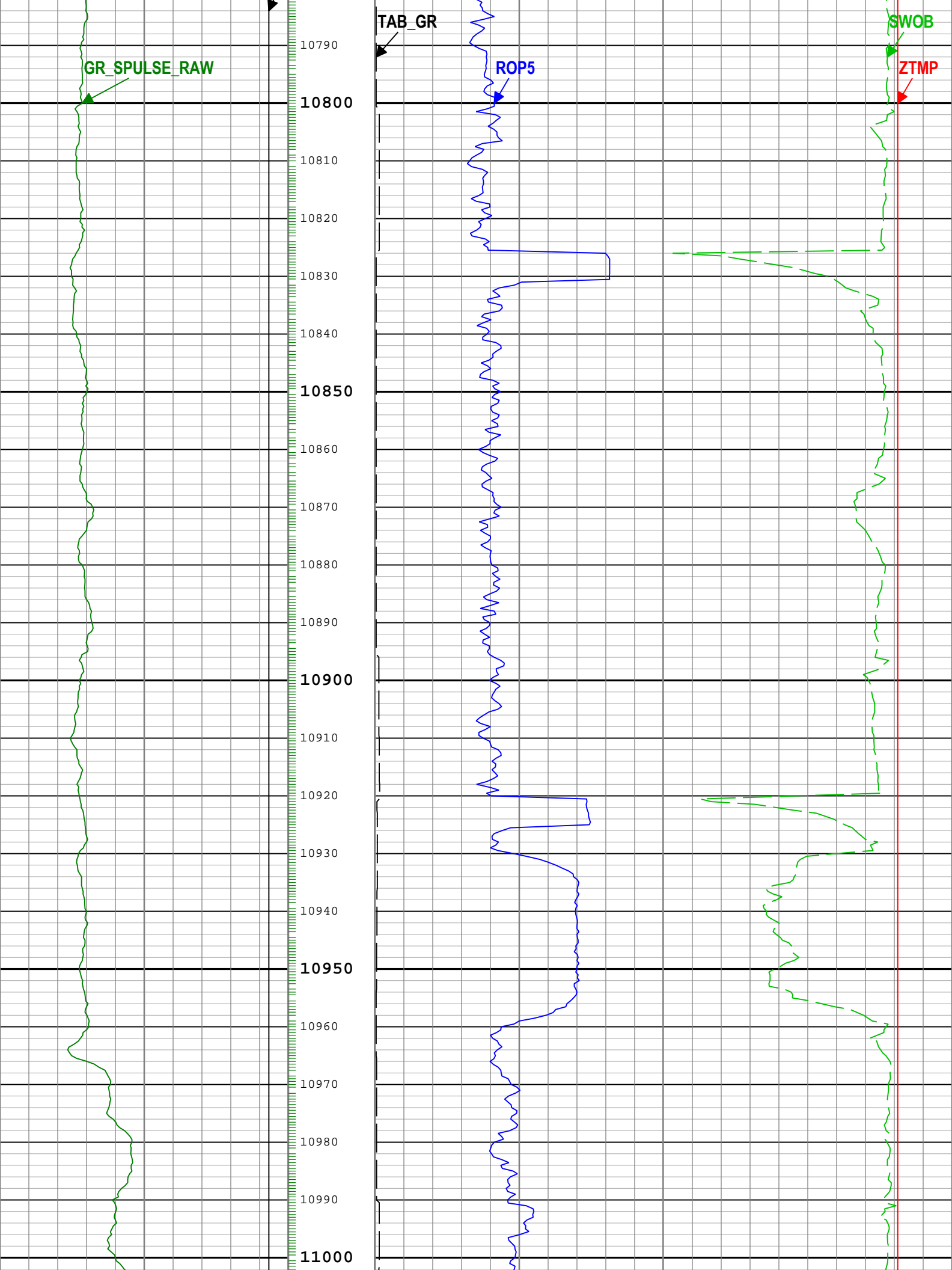


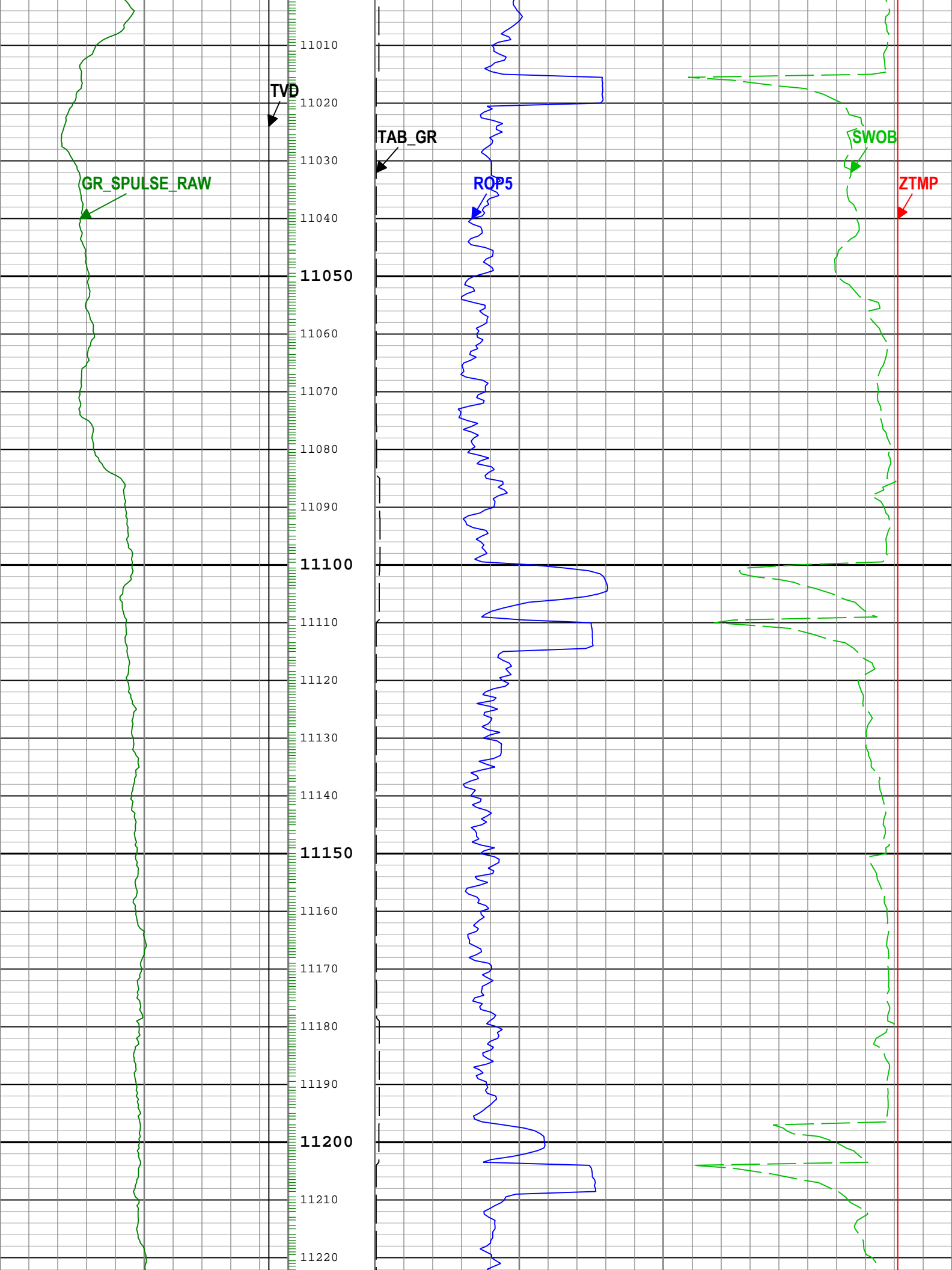


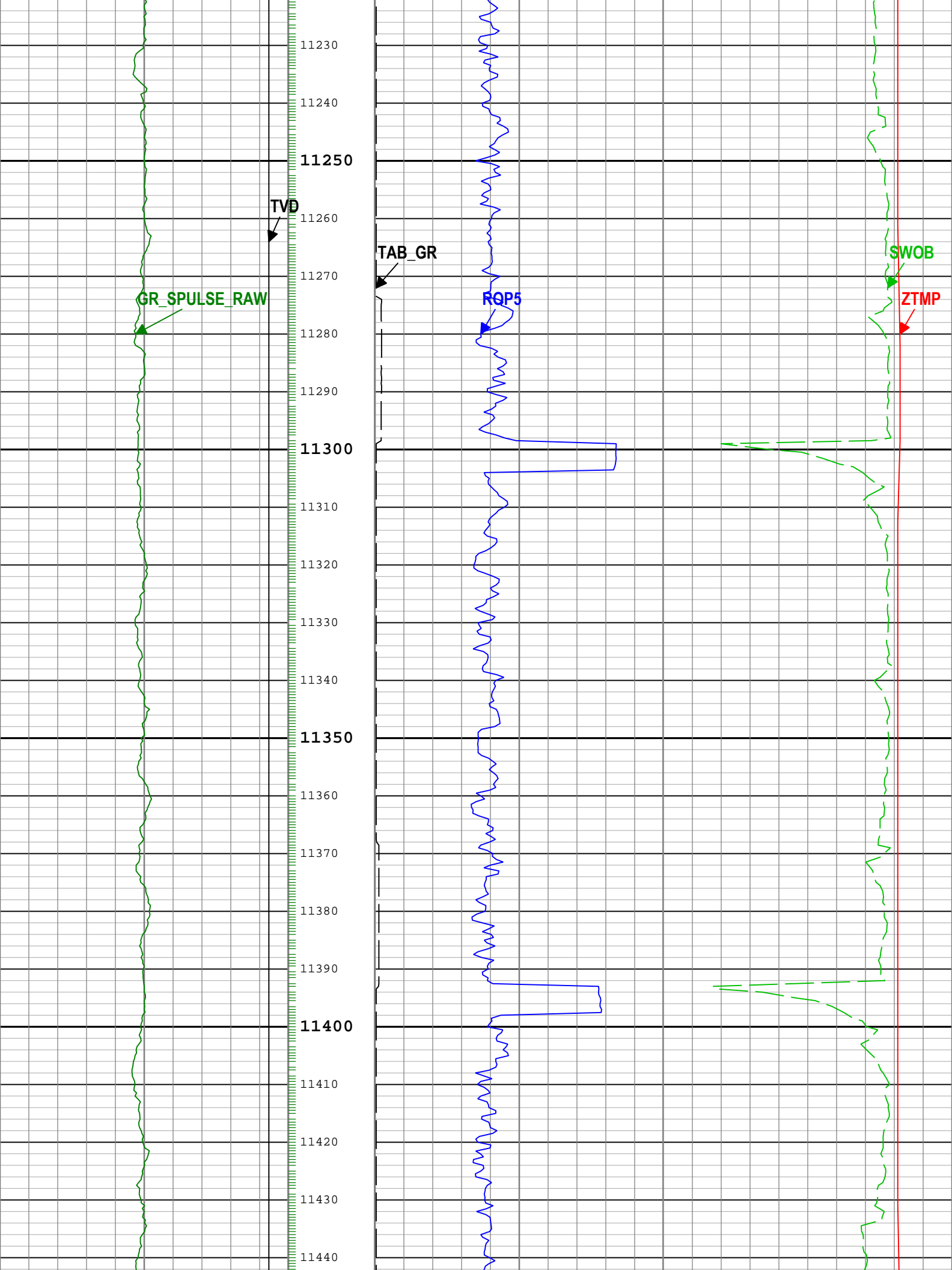


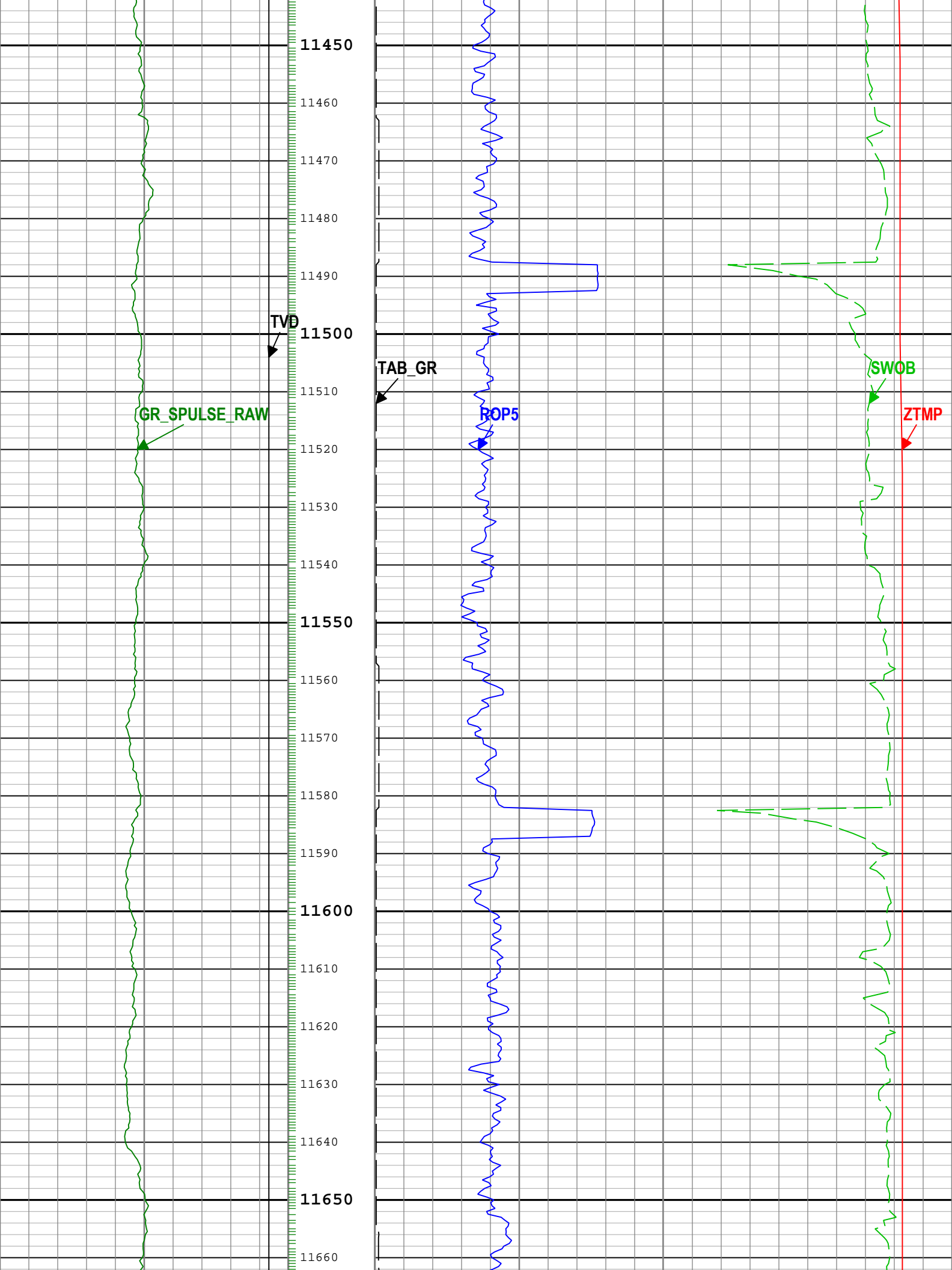


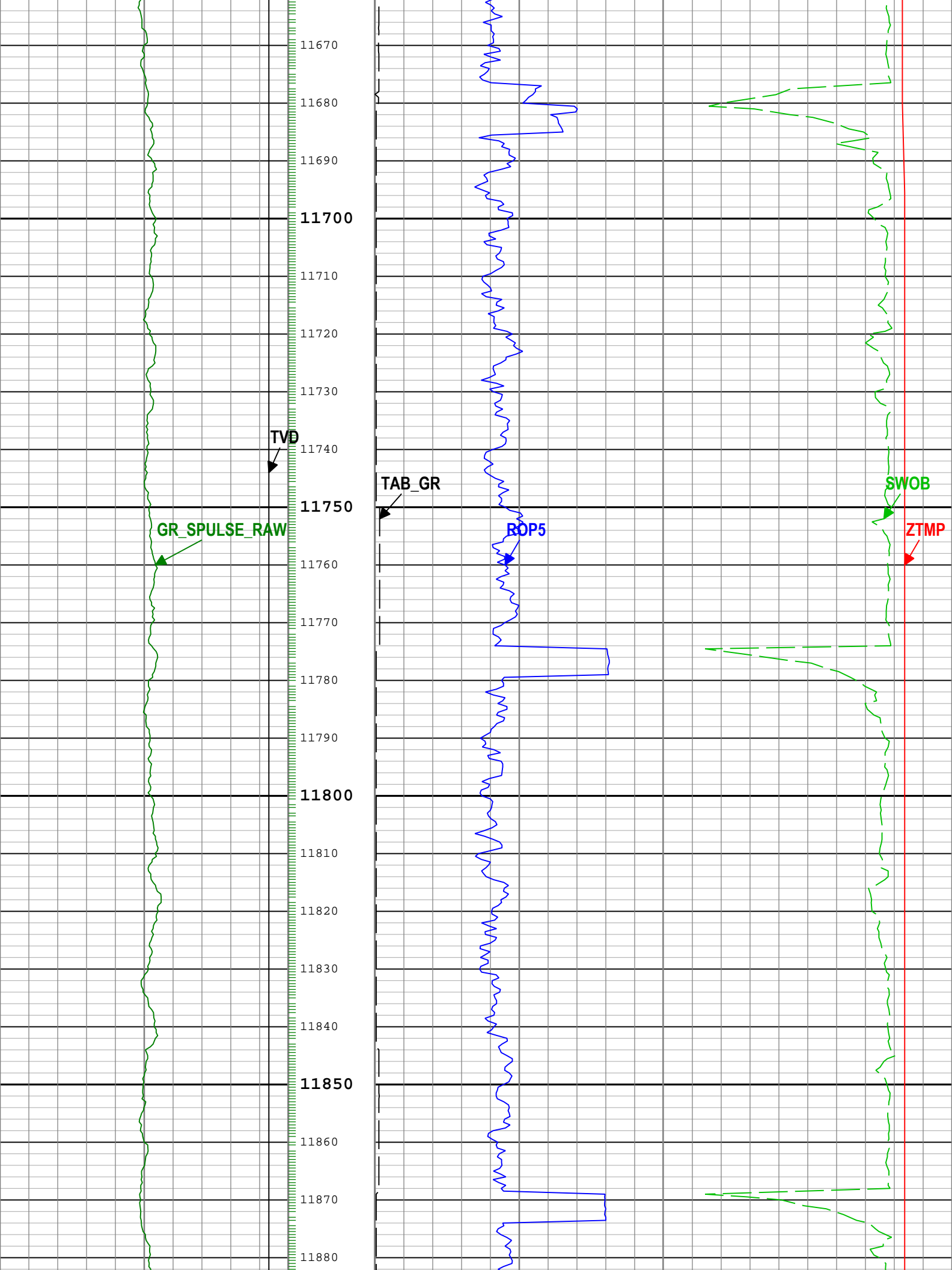


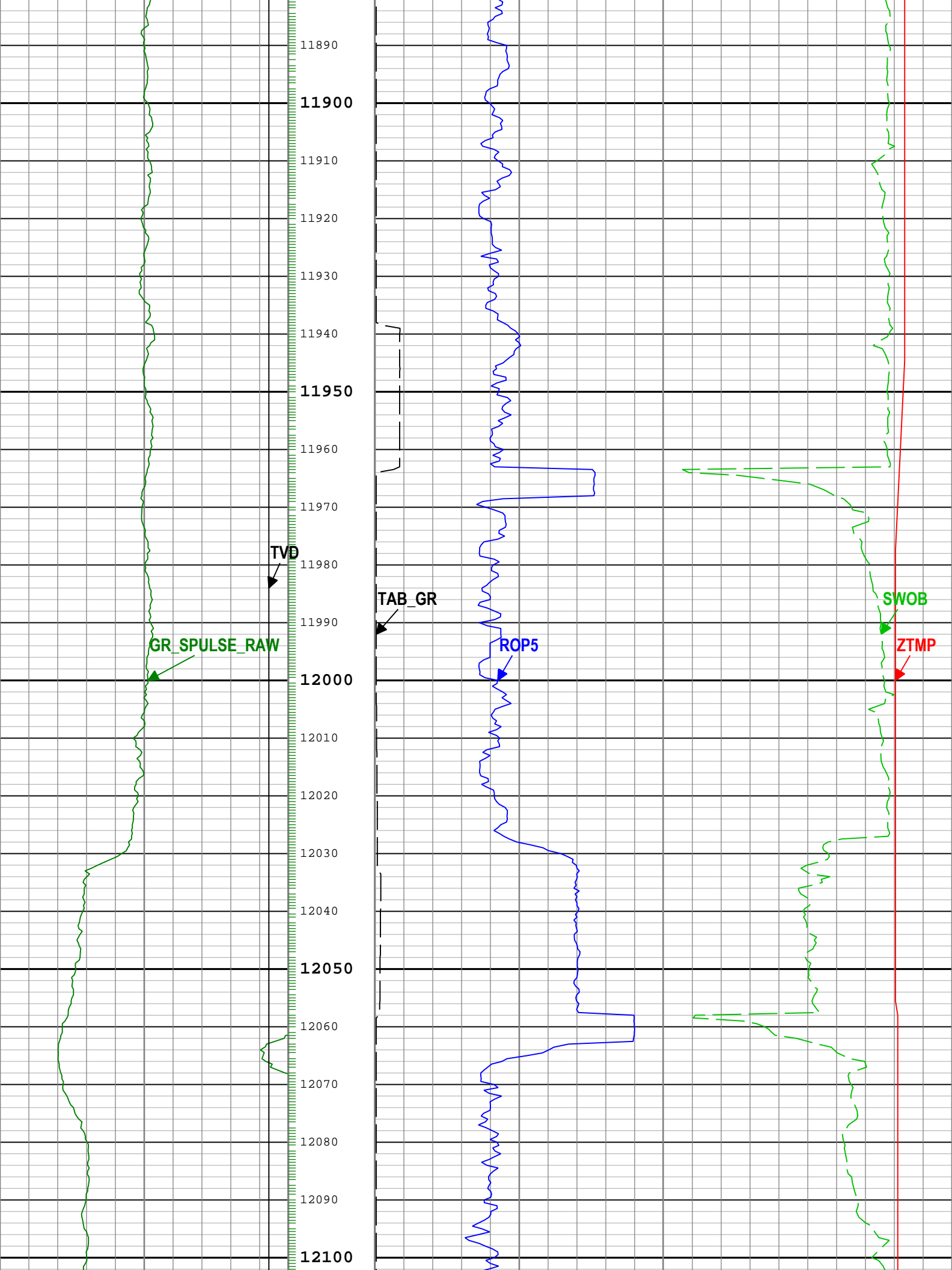


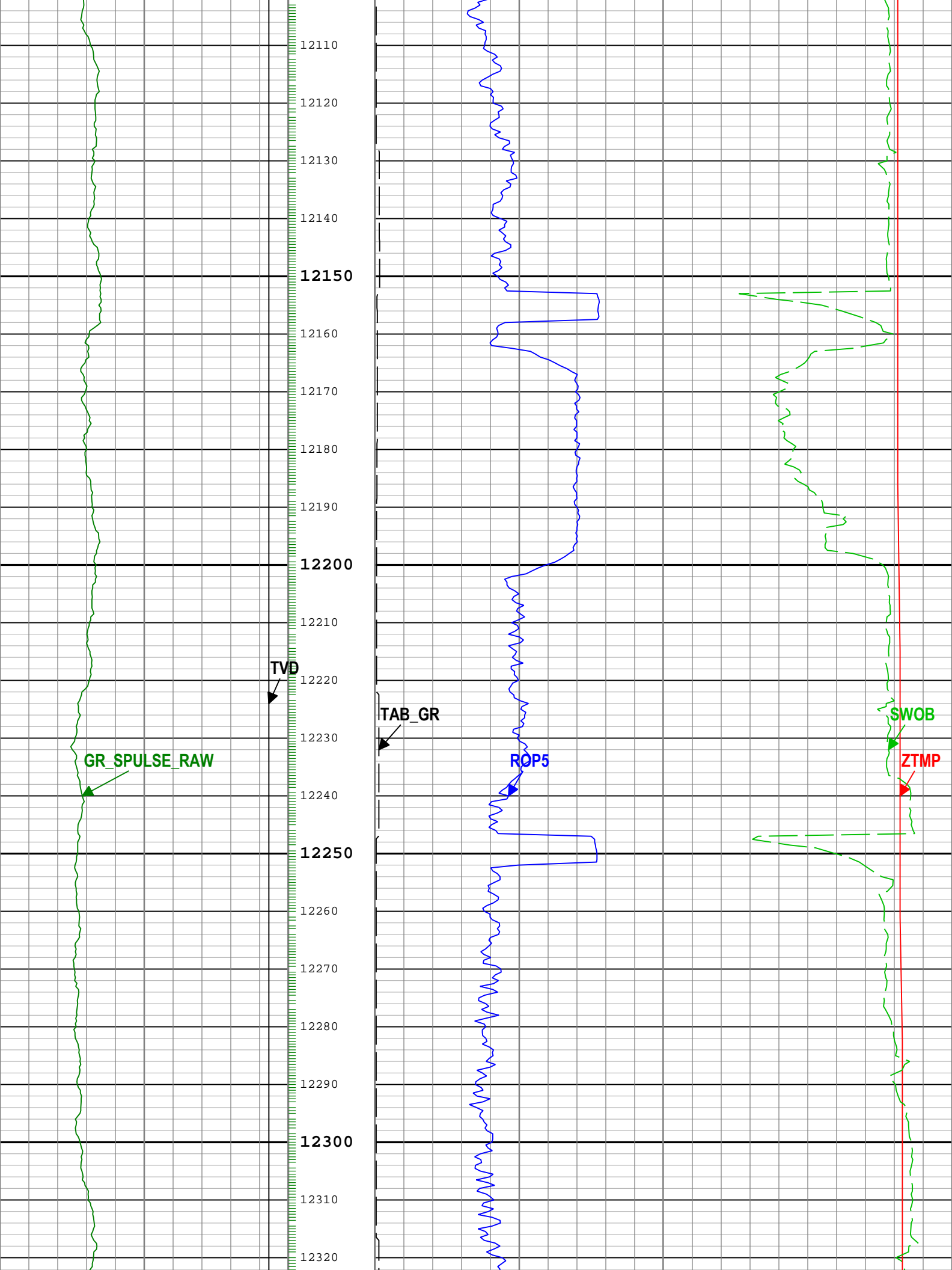


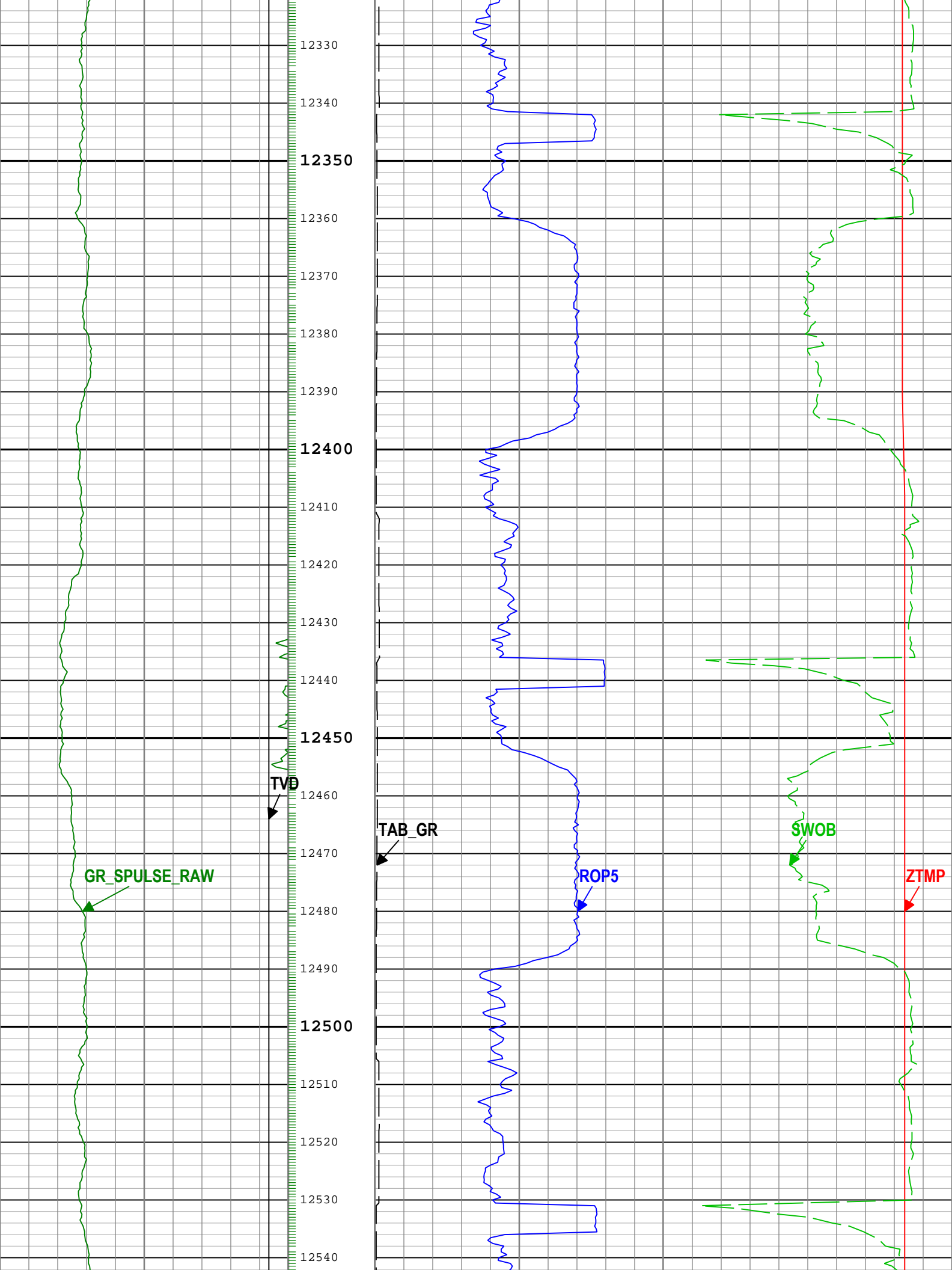


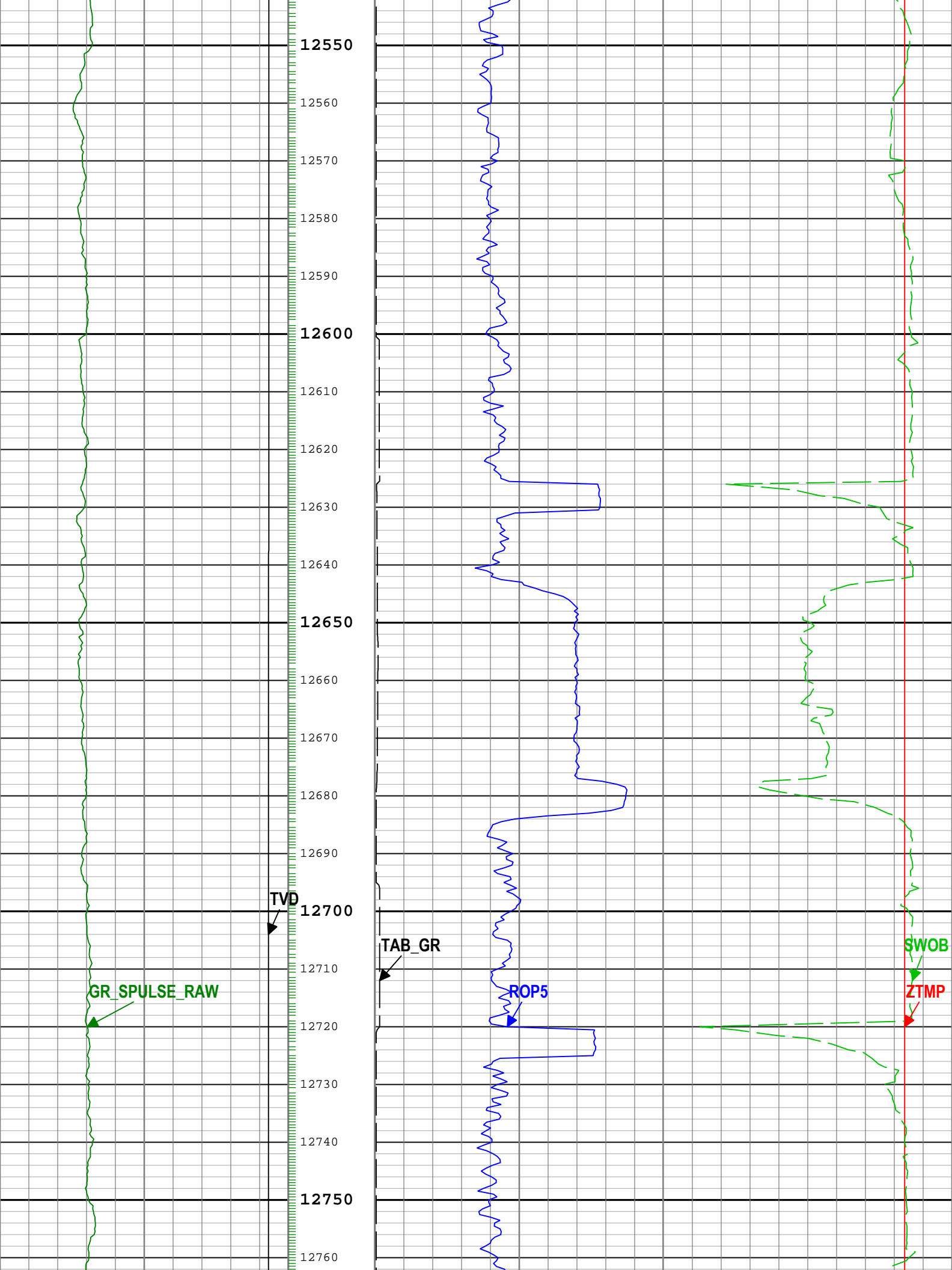


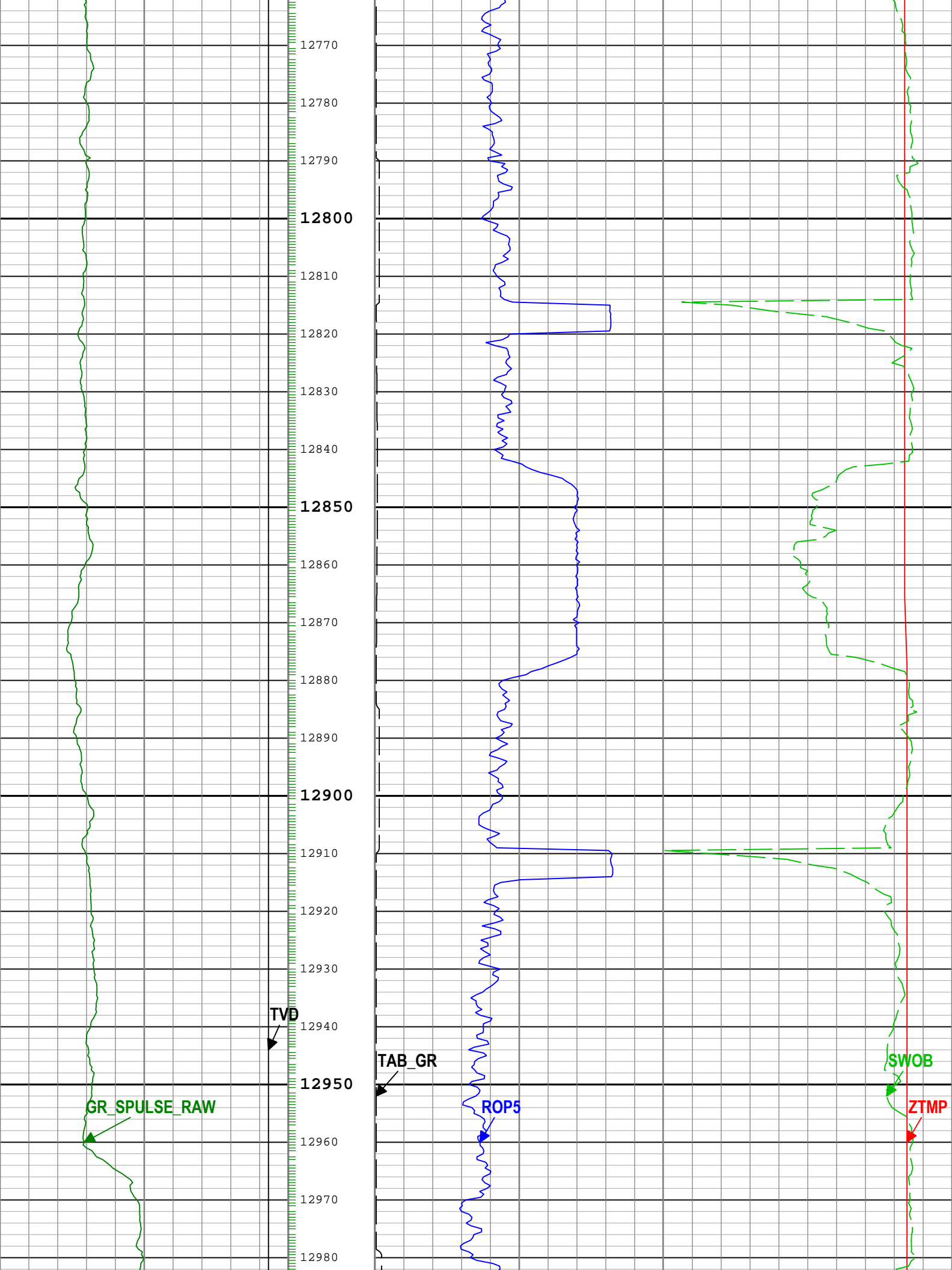


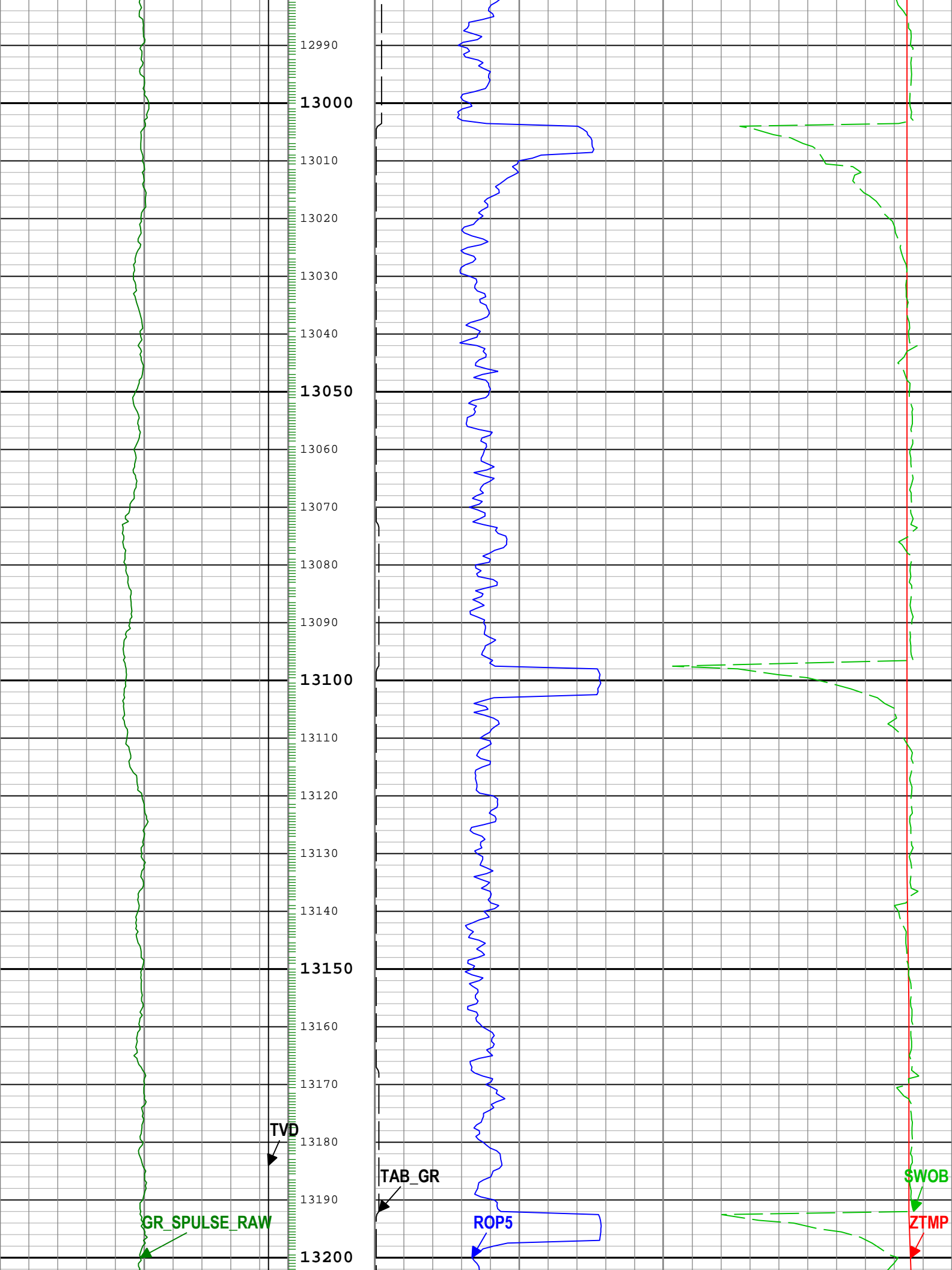


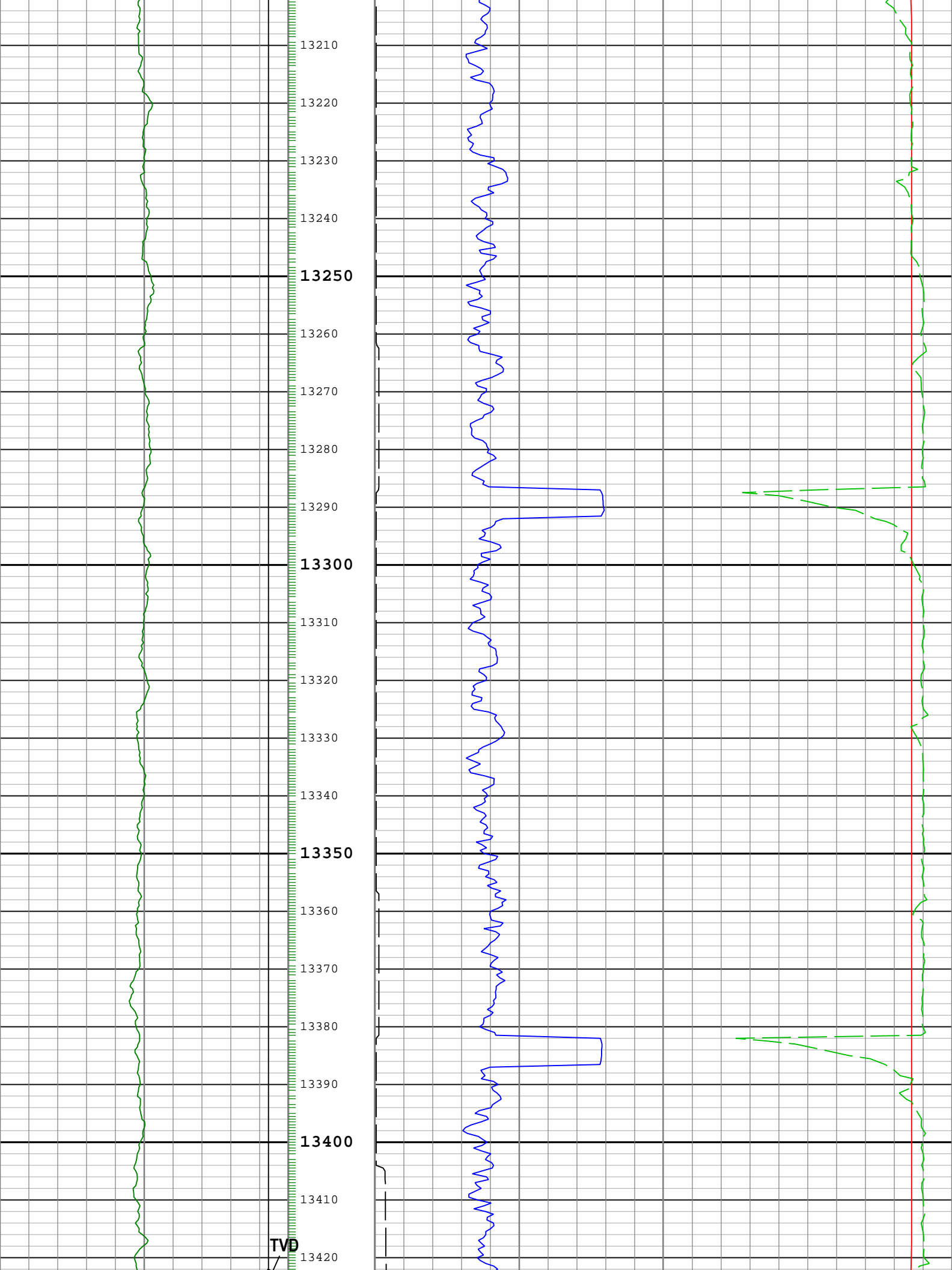


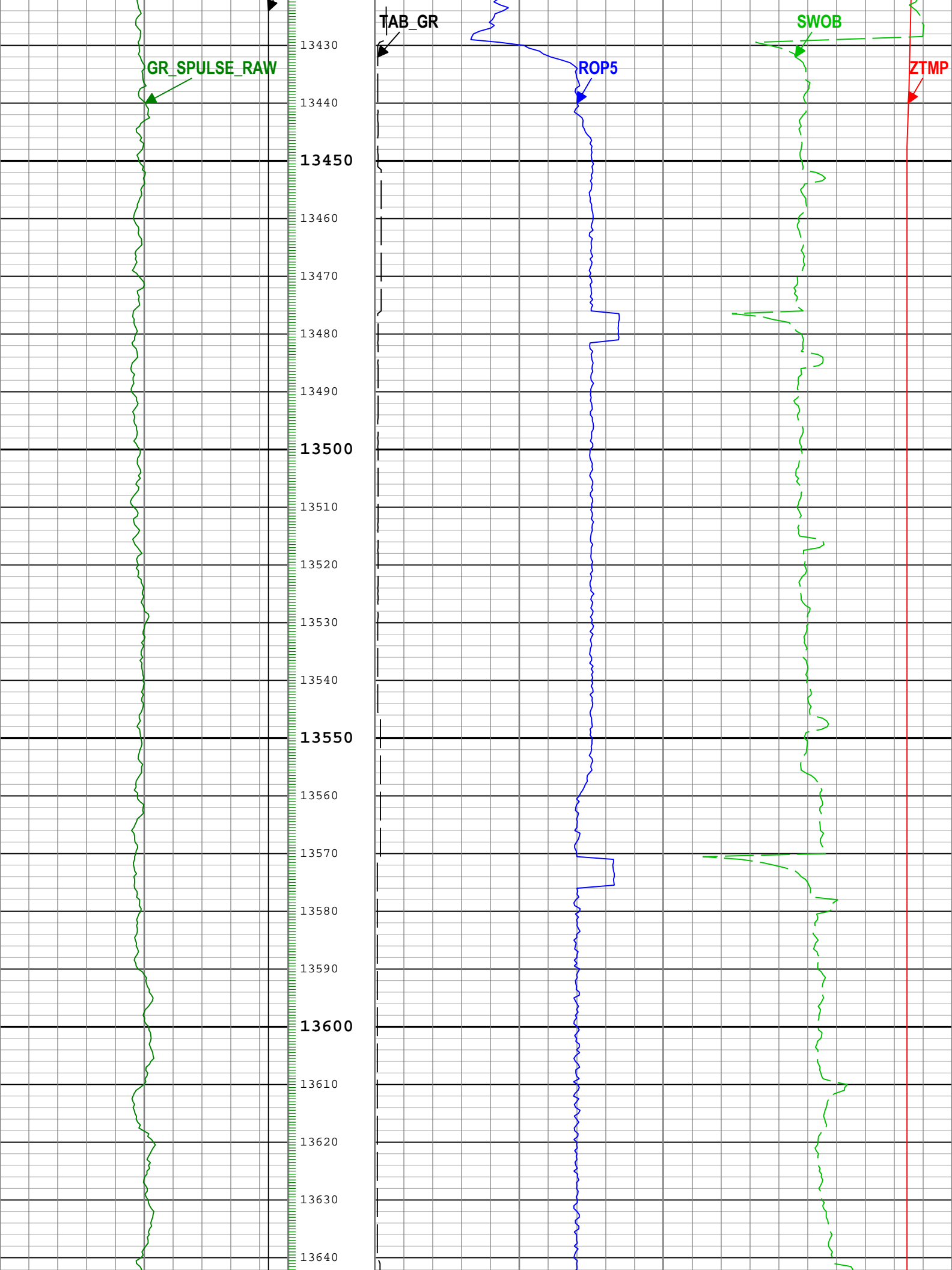


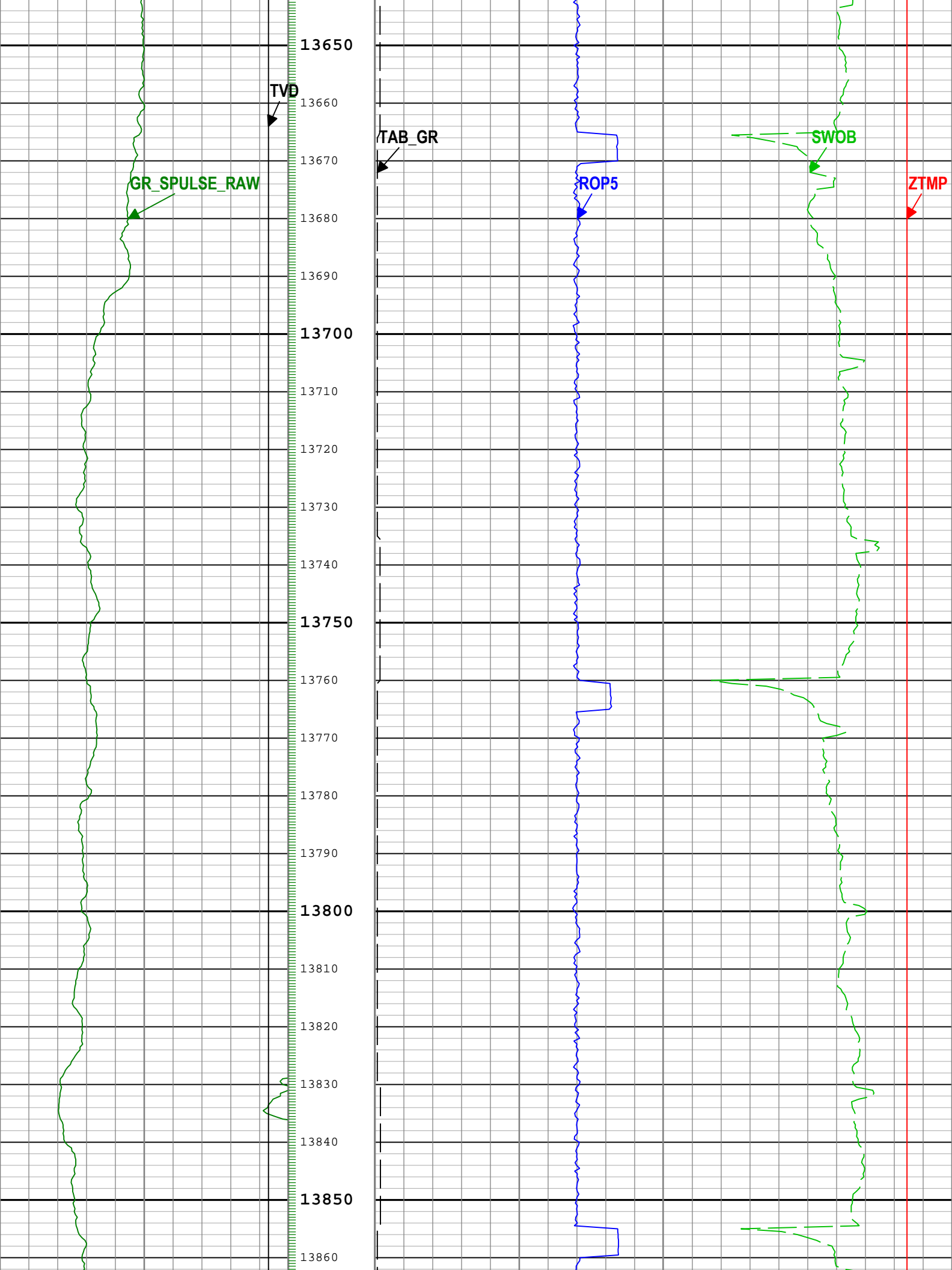


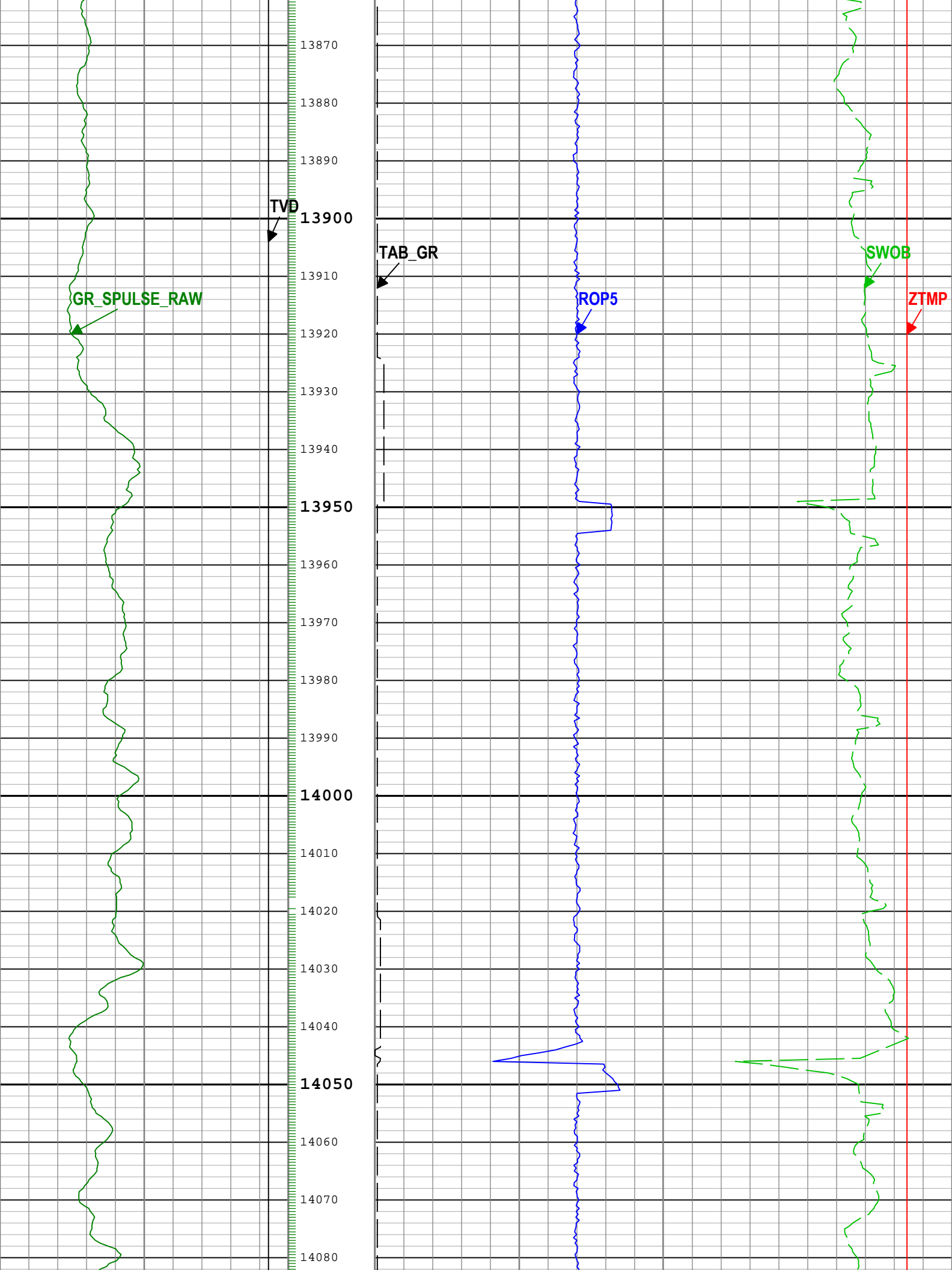


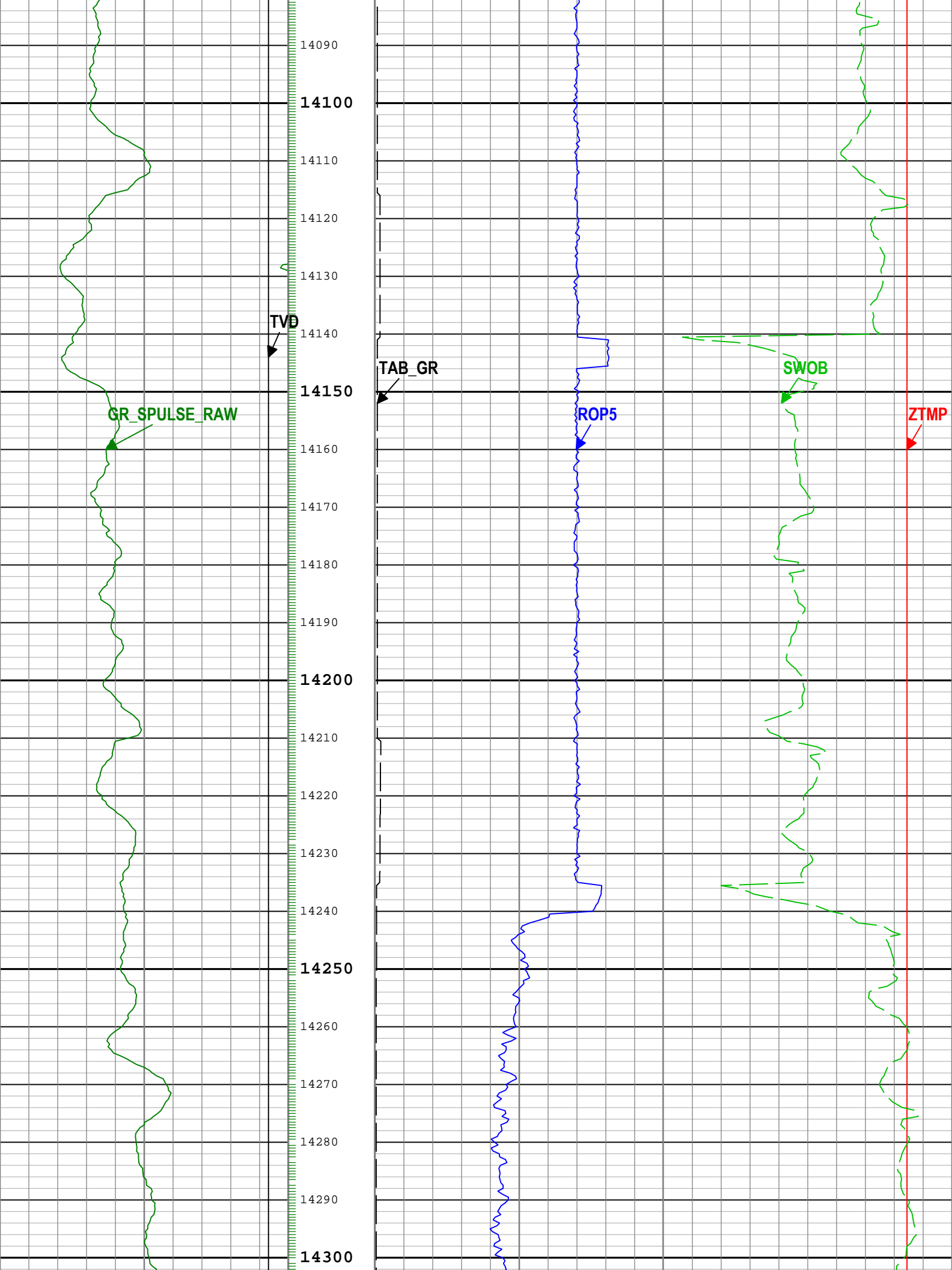


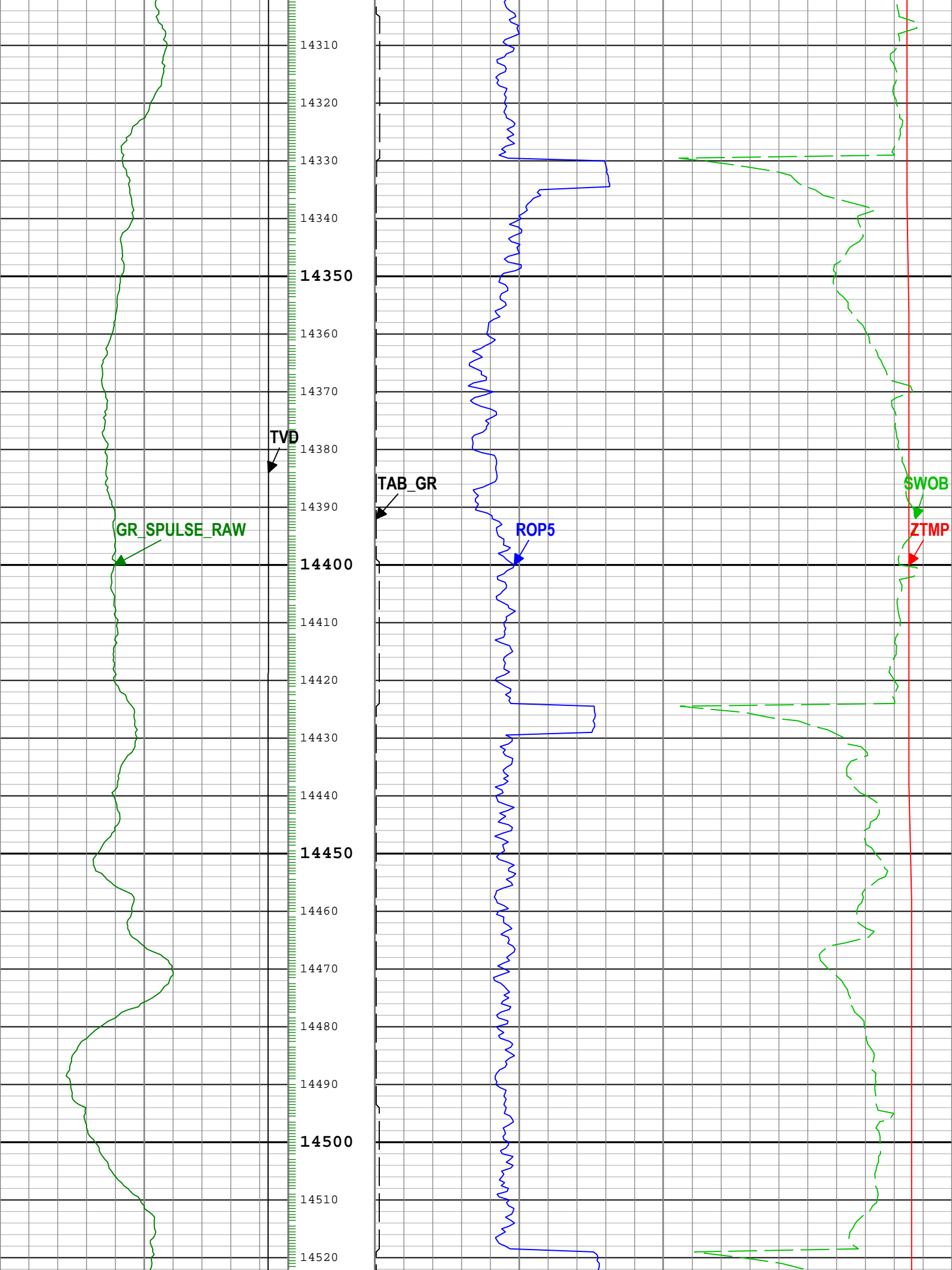


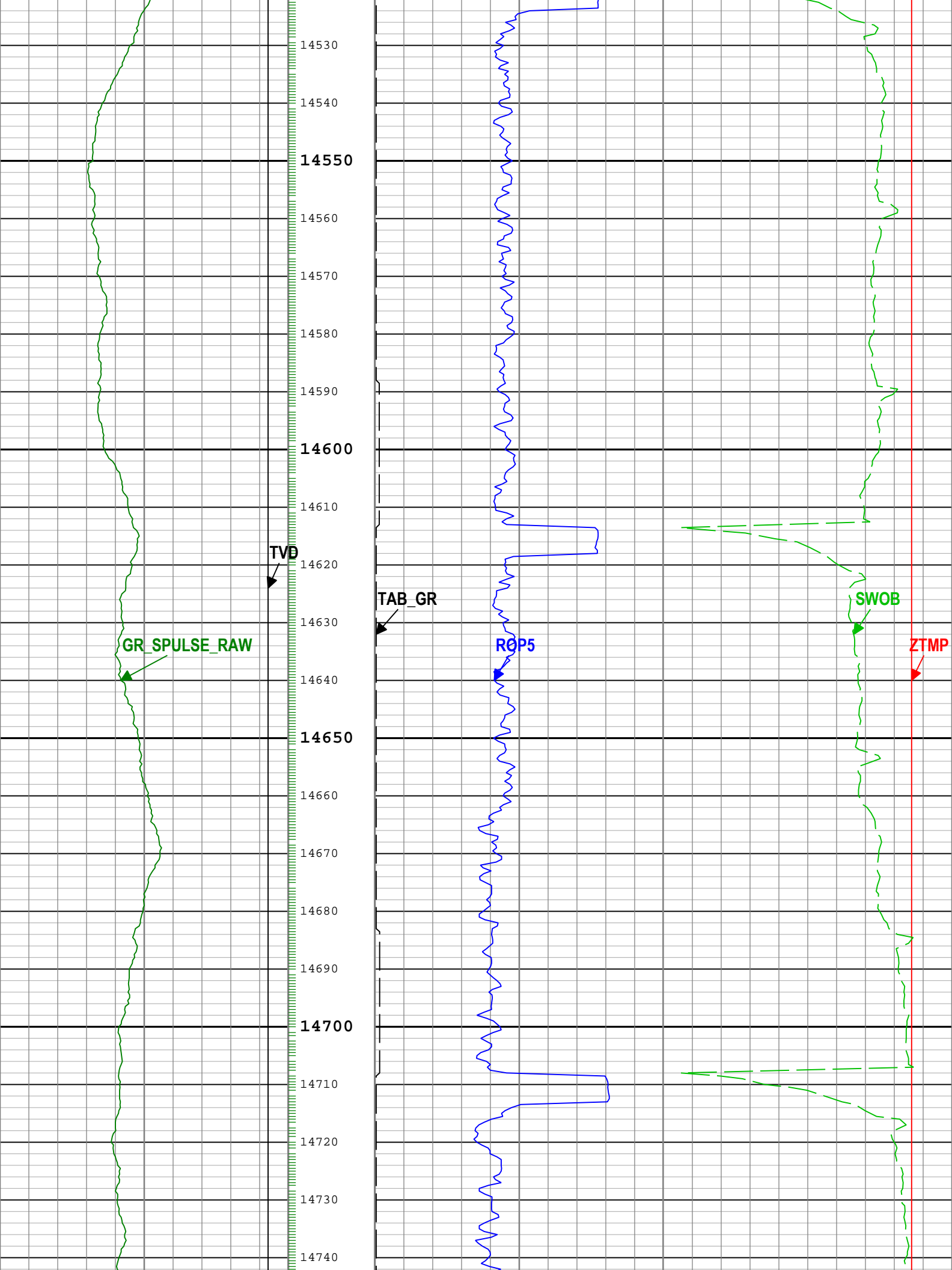


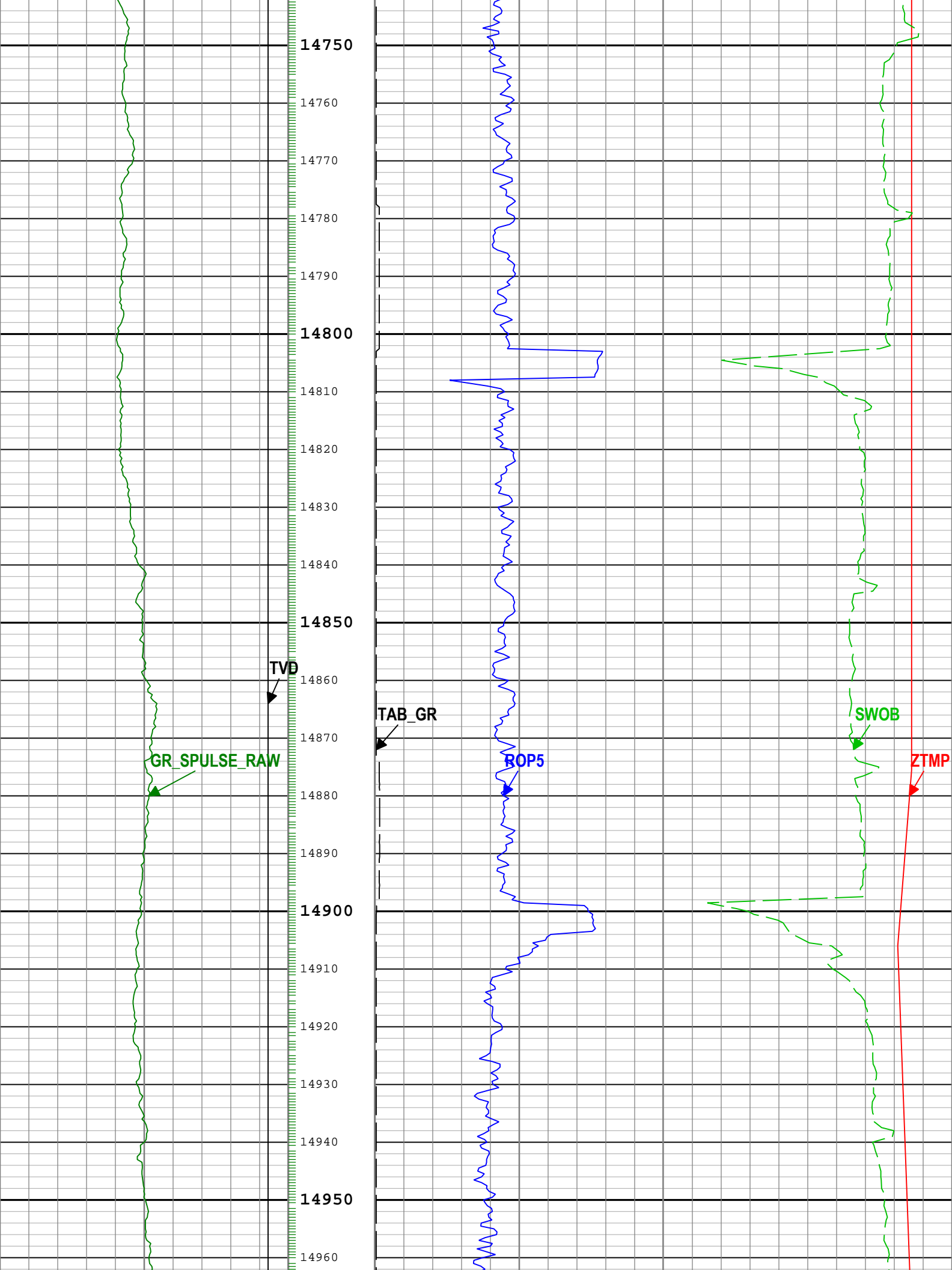


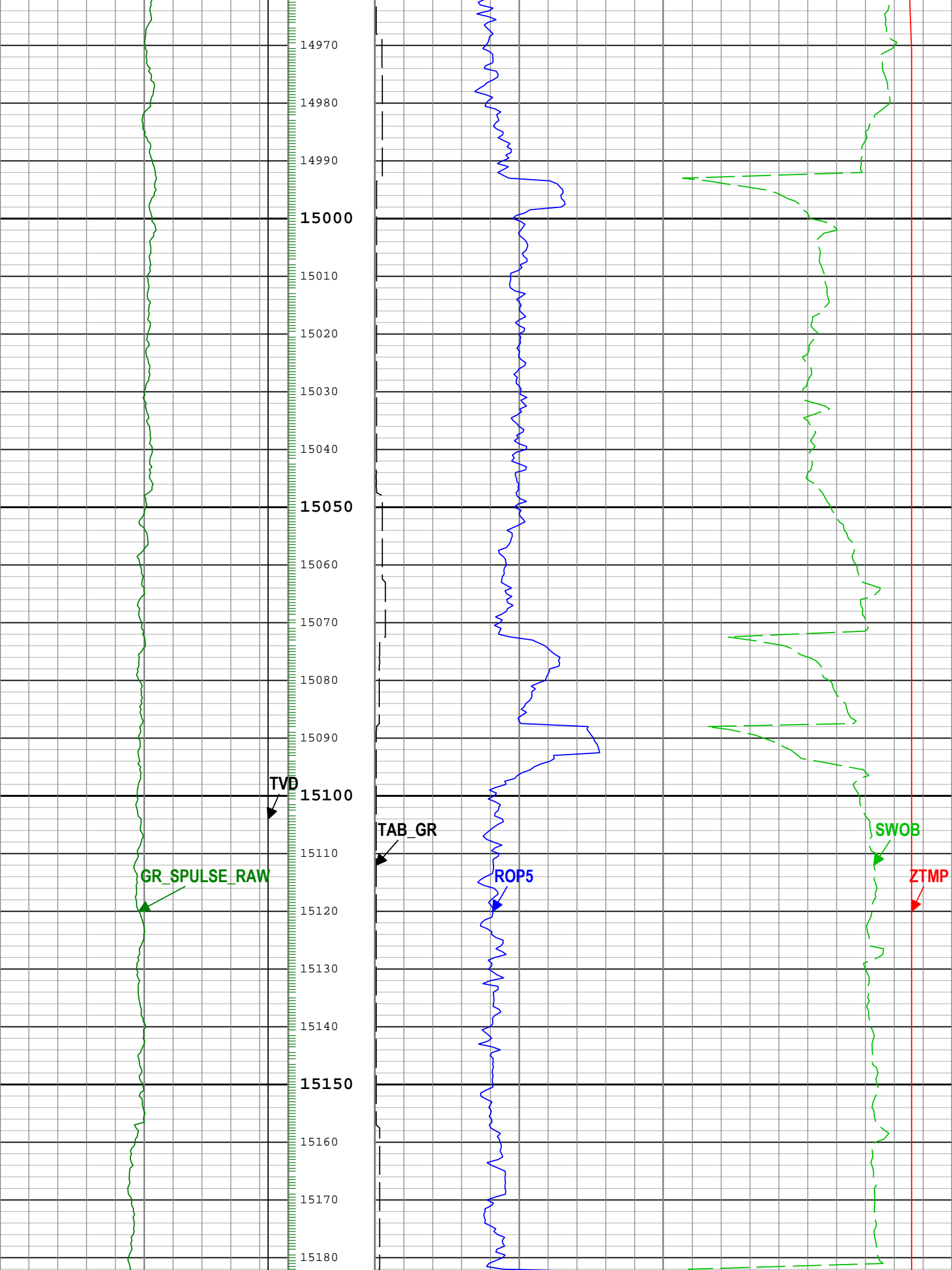


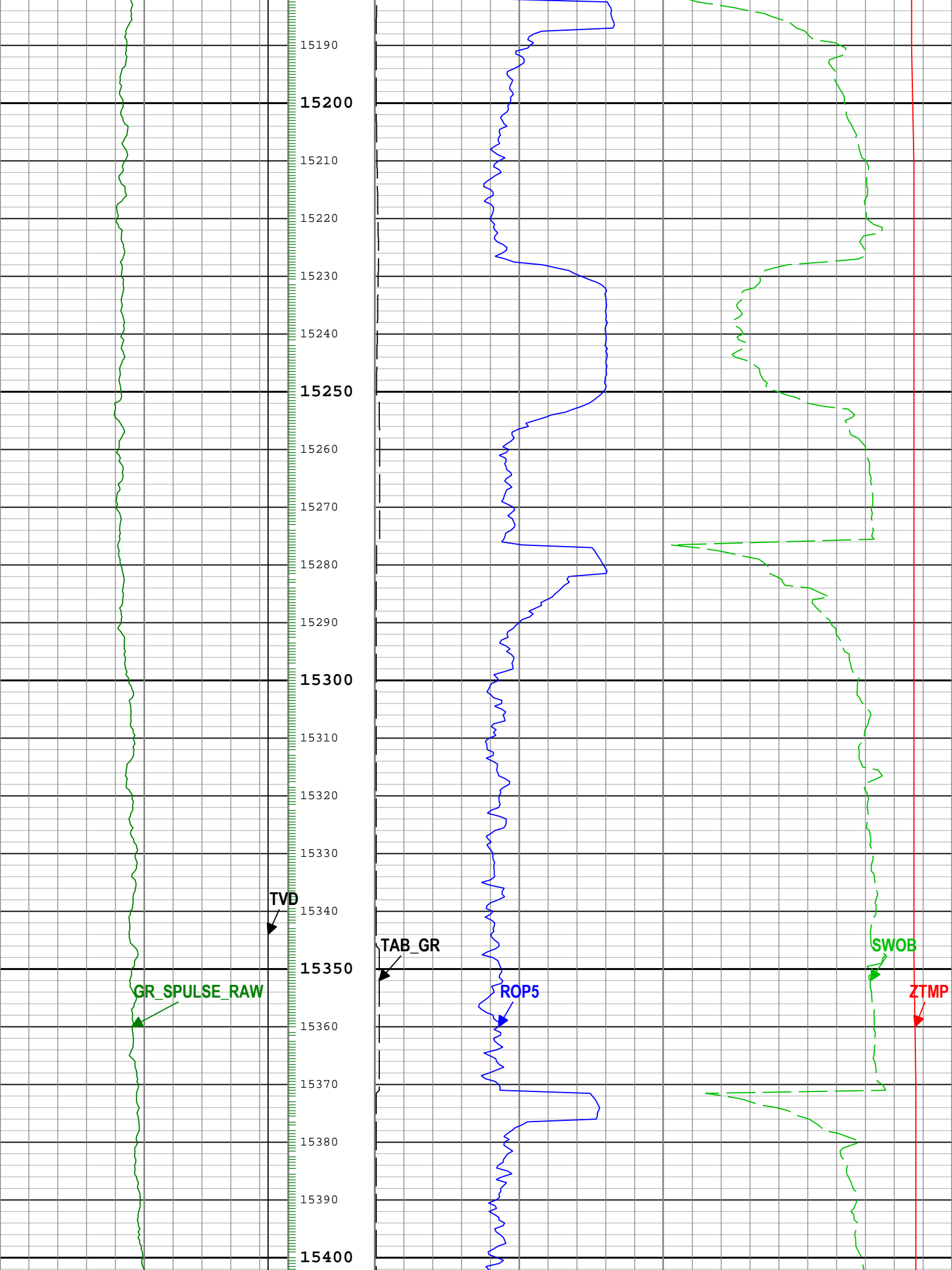


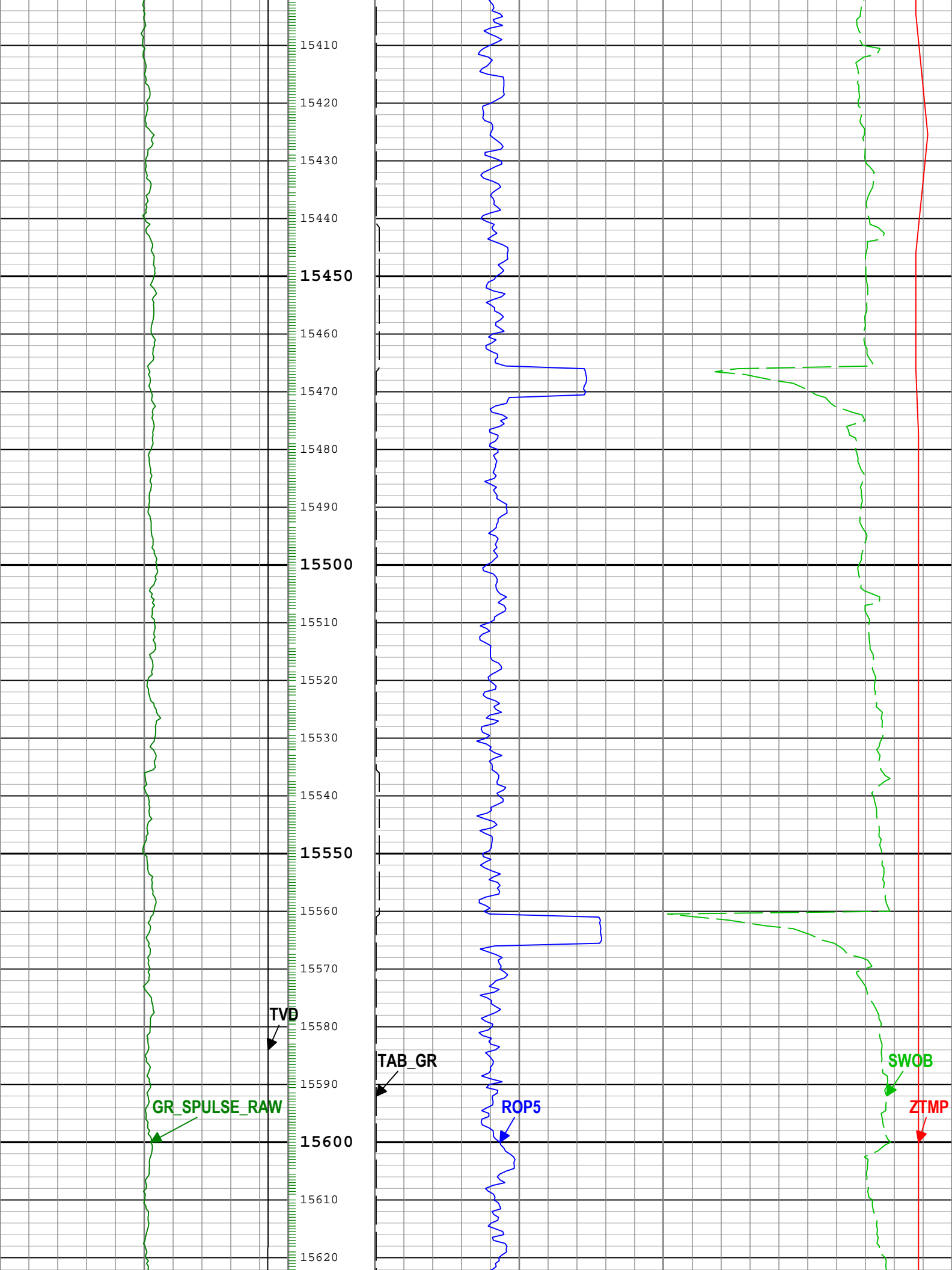


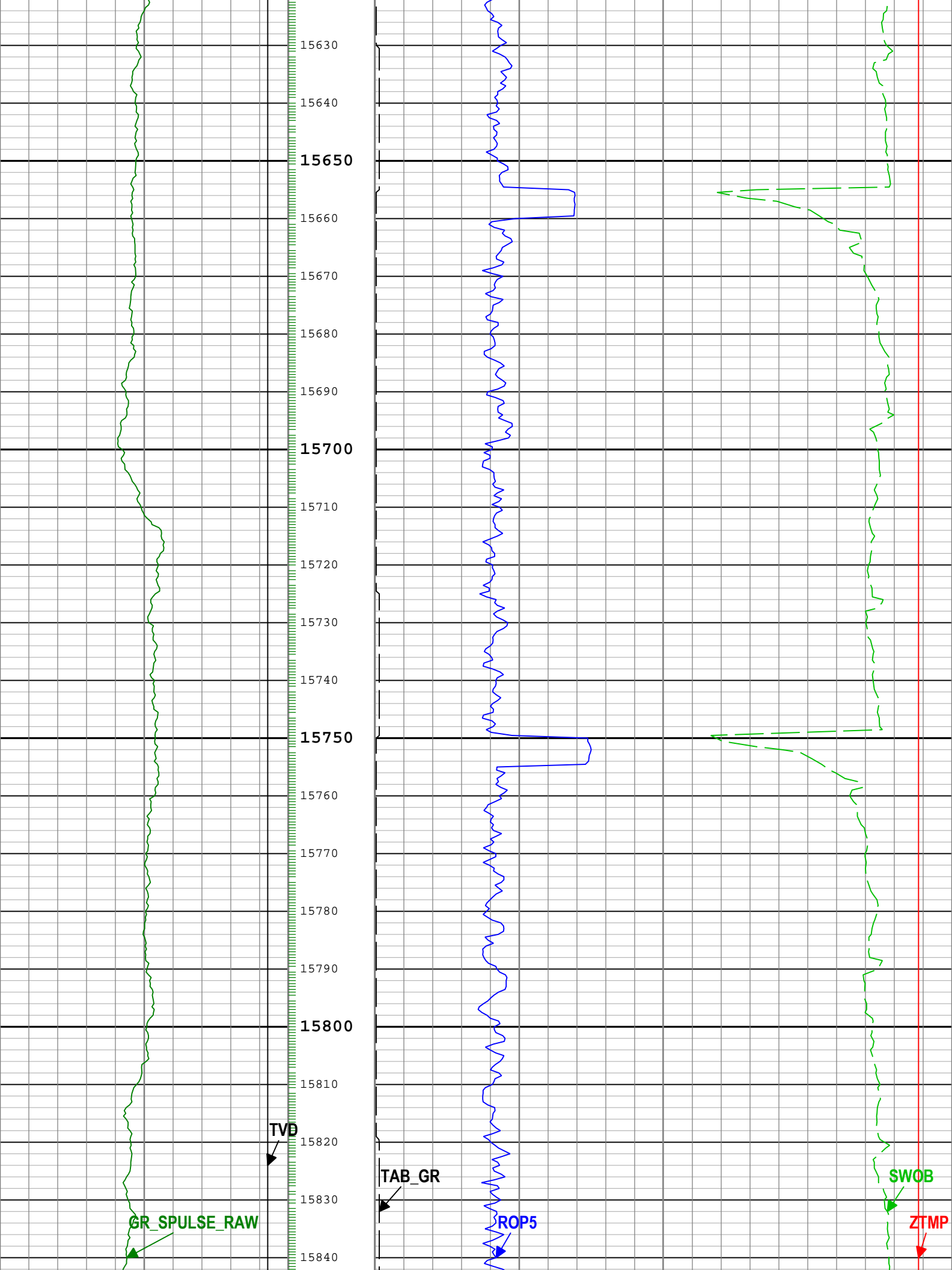


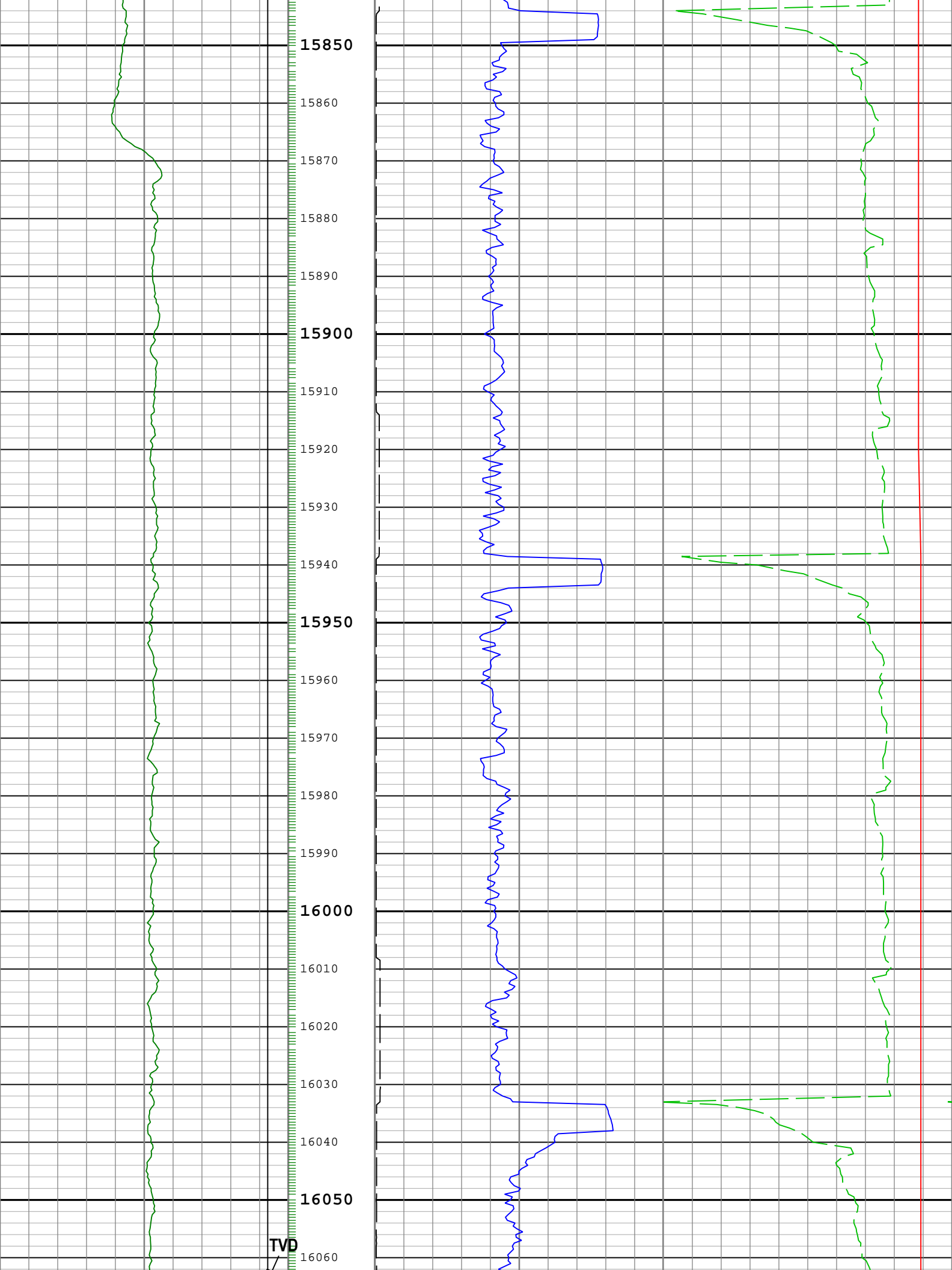


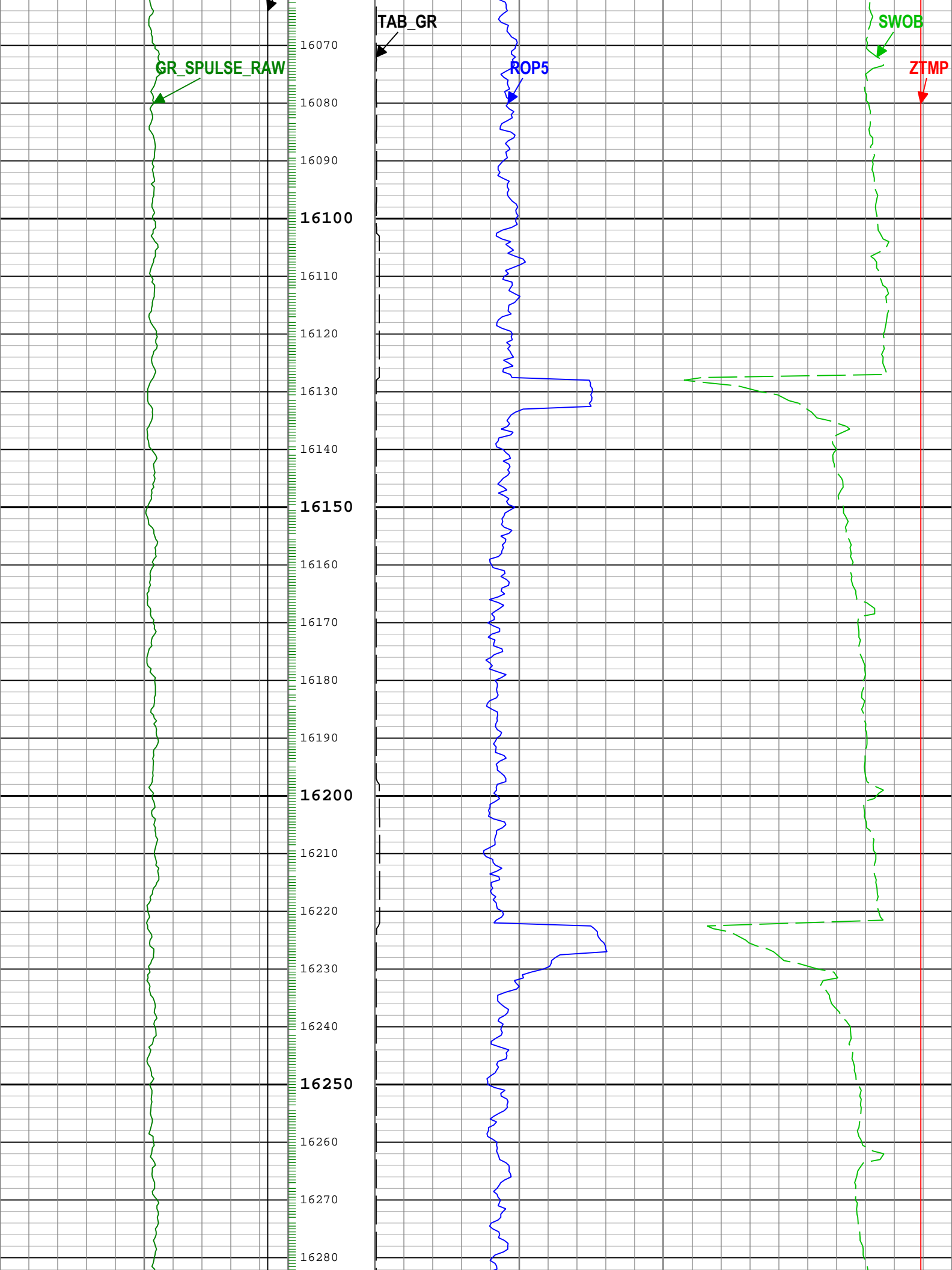


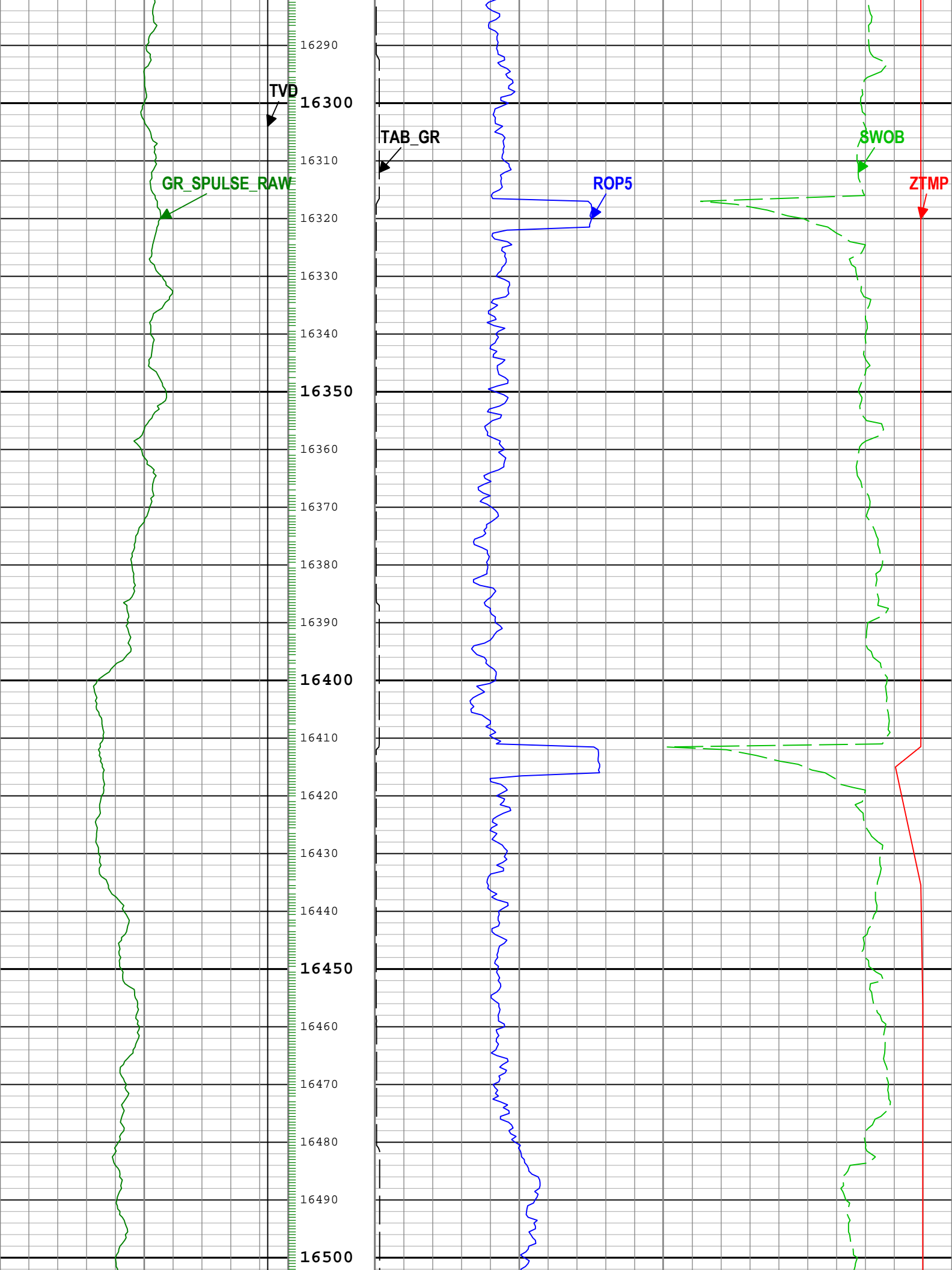


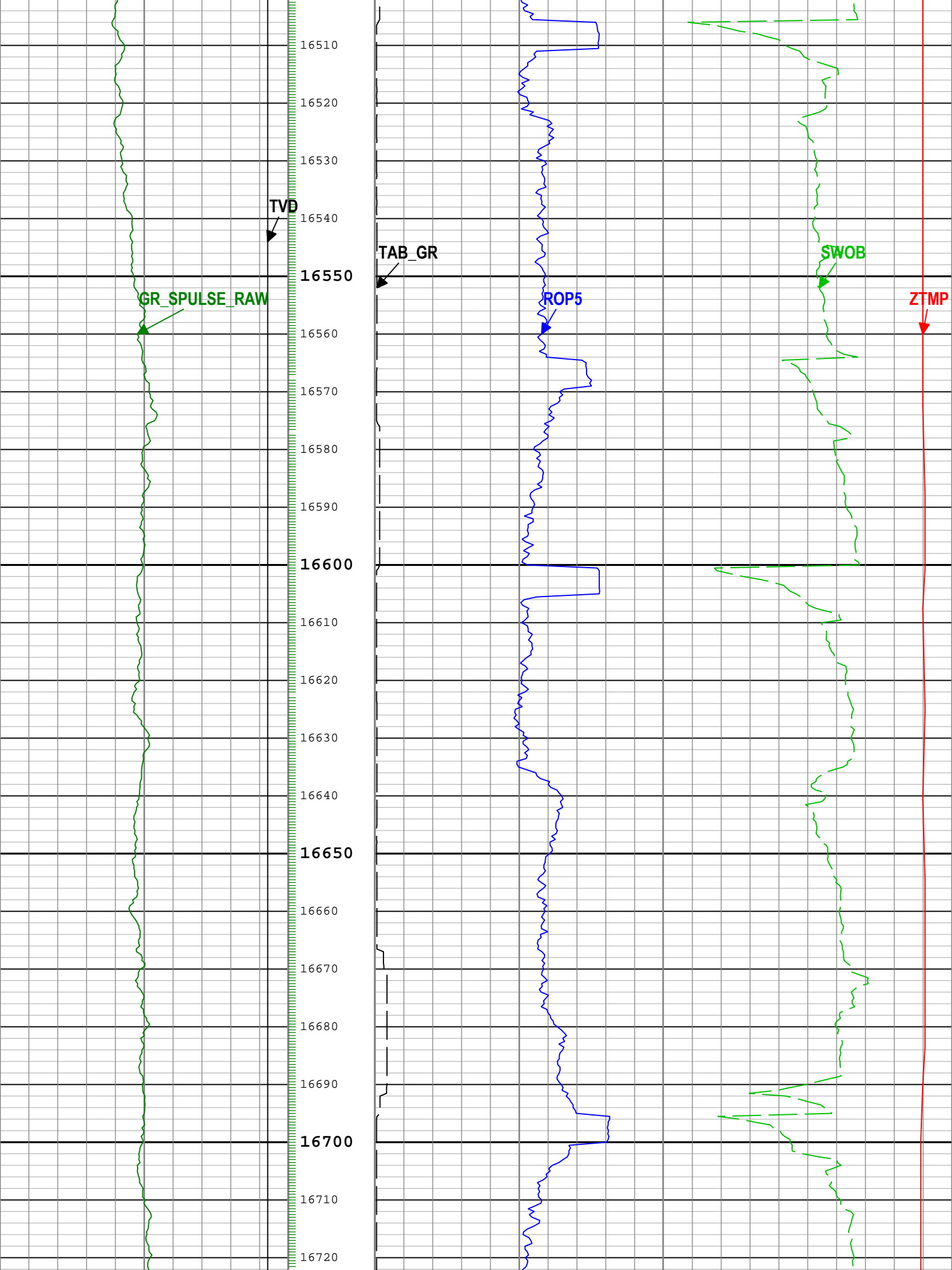


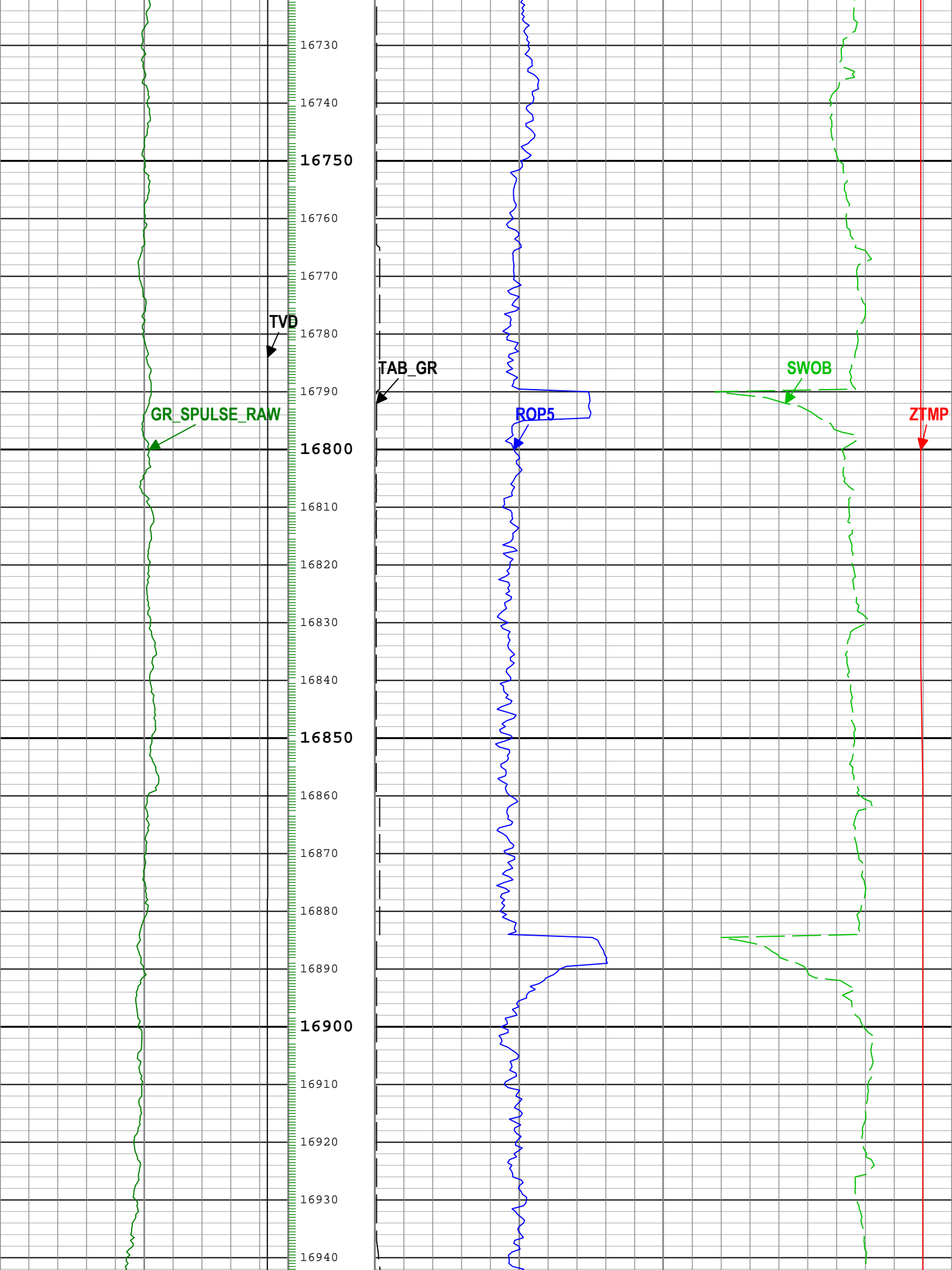


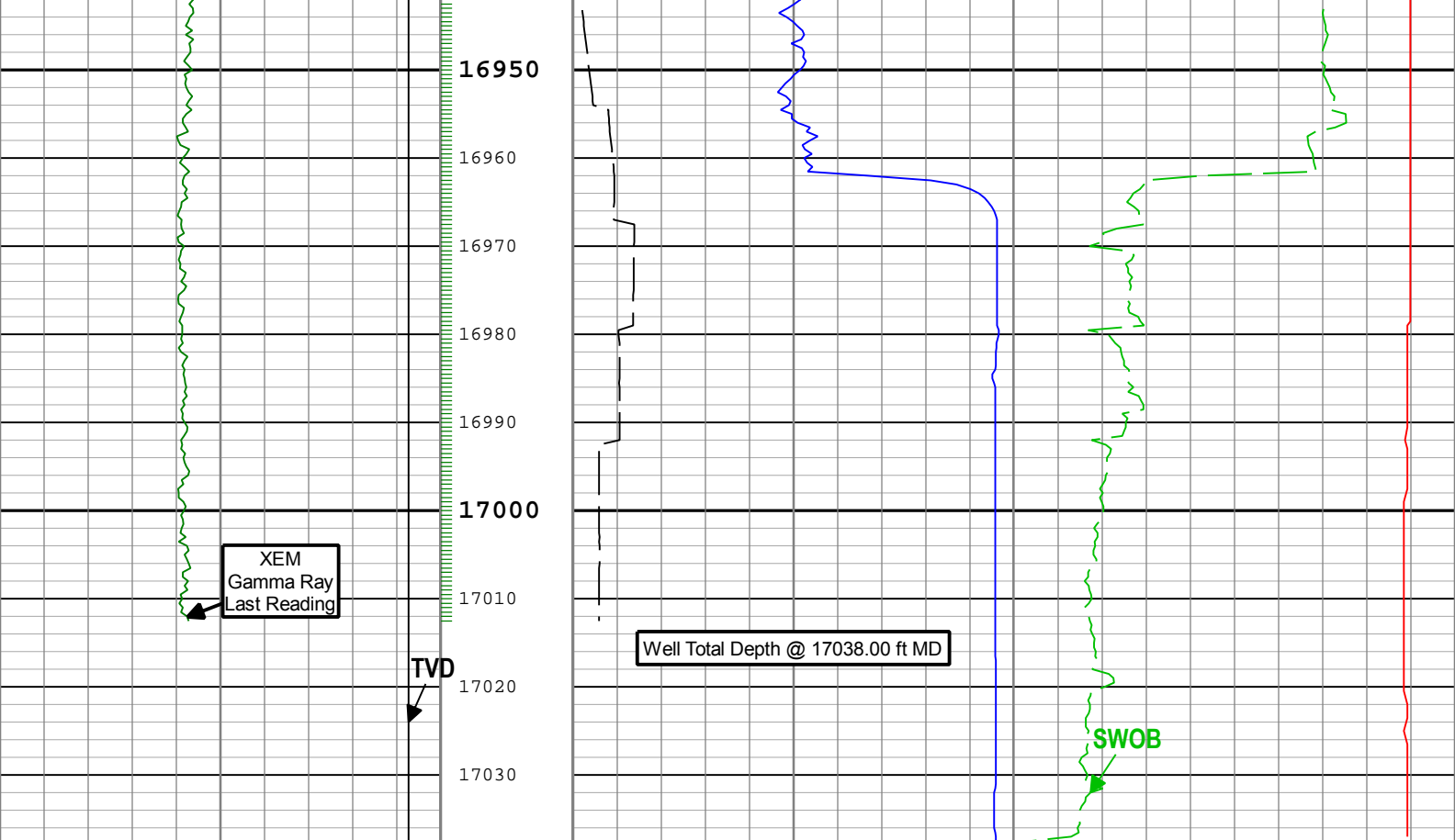












Gamma Ray (GR_SPULSE_BHC) Extreme[1] RM		
0	gAPI	300
True Vertical Depth (TVD) RT		
1500	ft	7000

Rate of penetration averaged over the last 5 ft (1.5 m) (ROP5) RT		
1000	ft/h	0
Gamma Ray Time after Bit (TAB_GR) Extreme[1]		
0	h	10

Cartridge Temperature (ZTMP) Extreme[1] RT		
0	degF	300
Surface Weight On Bit (SWOB) RT		
0	1000 lbf	50

GR_SPULSE_RAW - Raw Gamma Ray Extreme[1] RM

Description: Extreme Gamma Ray 1 RT Format: Log (KKW_EOW_XEM-RM_5MD) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 22-Jul-2019 16:04:25

Channel Processing Parameters

Run001: Parameters

Parameter	Description	Tool	Value	Unit
BS	Bit Size	DNMSESSION	Depth Zoned	in
DEPTH_SEL	Depth Selection Parameter	DNMSESSION	Driller's Depth	
DFD	Drilling Fluid Density	Borehole	9.5	lbm/gal

Run001Depth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	12.25	1936	1947
BS	8.5	1947	17037.5

All depth are actual.

Tool Control Parameters

Run001: Parameters

Parameter	Description	Tool	Value	Unit
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Calibration Report

Company: Noble Energy Inc.

Well: SLW Ranch State BB07-660

Field: Wattenberg

County: Weld

State: Colorado

Country: United States





Schlumberger

XEM - Gamma Ray

5 in / 100 ft Measured Depth

Recorded Mode, Composite Log