

Company: Noble Energy Inc.

Well: SLW Ranch State BB07-668

Field: Wattenberg

County: Weld

State: Colorado

Country: United States

Section: 7 APIN: 05-123-47110

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: 1396367.772 ft US

FL2: Easting: 3282338.098 ft US

Log Measured From: - Drill Floor: 4661.00 ft
Ground Level: 4631.00 ft

Permanent Datum: - Mean Sea Level

Acquisition Dates: 20-Jul-2019 -- 23-Jul-2019

Log Interval: 1900.00 (ft) -- 16921.00 (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: 14-Jul-2019

Other Services:

Well Planning

Direction and Inclination

Directional Drilling

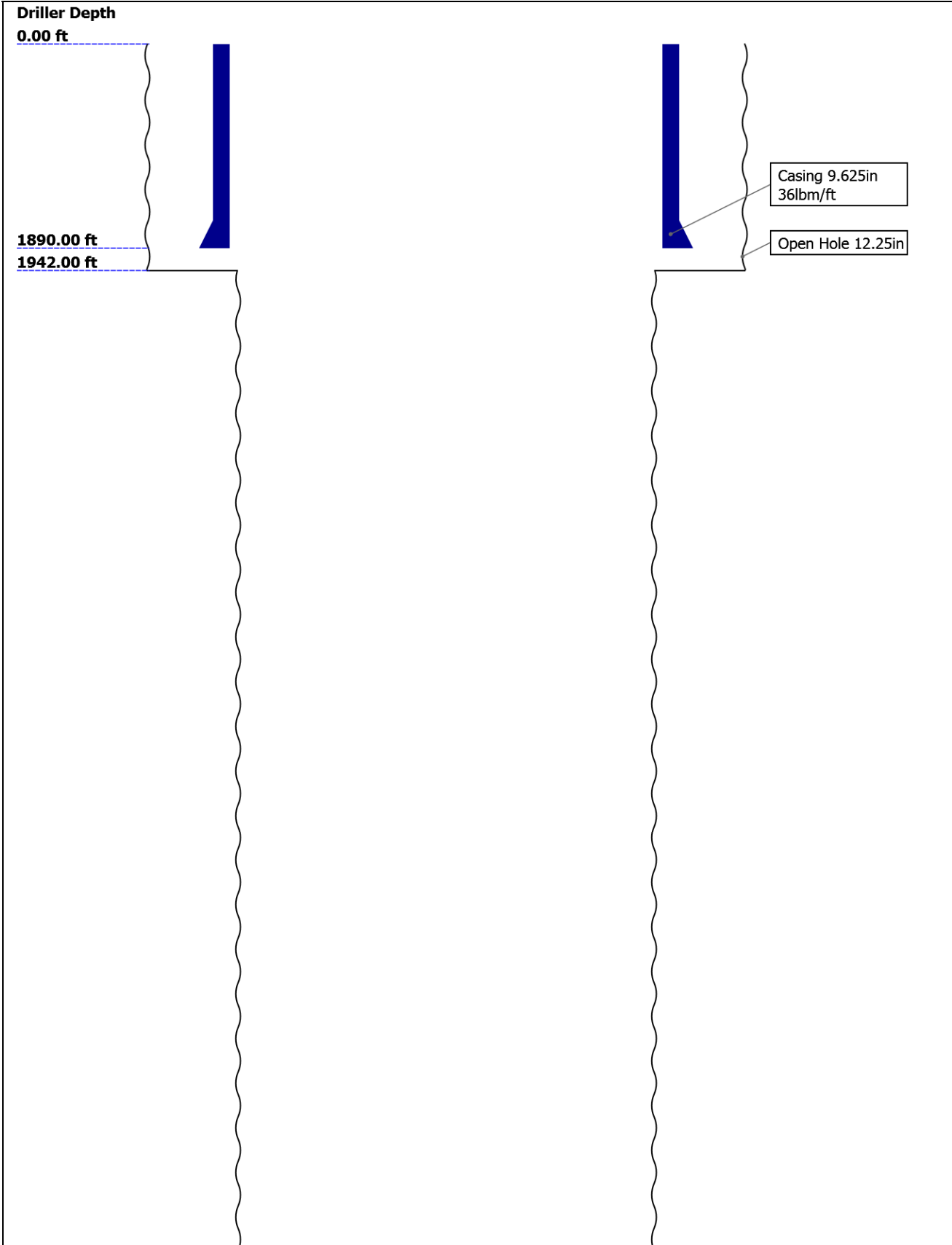
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Well Sketch





Borehole Size/Casing Record

| | | | | | | |
|-----------------------|-------|-------|--|--|--|--|
| Bit | | | | | | |
| Bit Size (in) | 12.25 | 8.5 | | | | |
| Top Driller (ft) | 0 | 1942 | | | | |
| Bottom Driller (ft) | 1942 | 16921 | | | | |
| Casing | | | | | | |
| Size (in) | 9.625 | | | | | |
| Weight (lbm/ft) | 36 | | | | | |
| Inner Diameter (in) | 8.921 | | | | | |
| Grade | J55 | | | | | |
| Top Driller (ft) | 0 | | | | | |
| Bottom Driller (ft) | 1890 | | | | | |

Operational Run Summary

| Parameter (unit) | Run001 | Run002 | | | | |
|----------------------------------|-------------------------|-------------------------|--|--|--|--|
| Date Log Started | 20-Jul-2019 | 21-Jul-2019 | | | | |
| Time Log Started | 08:40:17 | 01:42:28 | | | | |
| Date Log Finished | 20-Jul-2019 | 23-Jul-2019 | | | | |
| Time Log Finished | 20:05:25 | 08:25:55 | | | | |
| | | | | | | |
| Bit Size (in) | 8.500 | 8.500 | | | | |
| Bit Start Depth (ft) | 1942.00 | 3344.00 | | | | |
| Bit Stop Depth (ft) | 3344.00 | 16921.00 | | | | |
| Top Log Interval (ft) | 1900.00 | 3320.00 | | | | |
| Bottom Log Interval (ft) | 3320.00 | 16921.00 | | | | |
| | | | | | | |
| Max Hole Deviation (deg) | 19.09 | 90.86 | | | | |
| Azimuth of Max Deviation (deg) | 270.07 | 88.53 | | | | |
| | | | | | | |
| Logging Unit Number | Trailer | Trailer | | | | |
| Logging Unit Location | Zone 2 | Zone 2 | | | | |
| Recorded By | Michael Armstrong/RO | Michael Armstrong/RO | | | | |
| Witnessed By | J. Drahota | J. Drahota | | | | |
| Service Order Number | 19CCO1239 | 19CCO1239 | | | | |

| Parameter(unit) | Run001 | Run002 | | | | |
|------------------------------------|--------------|--------------|--|--|--|--|
| Fluid Type | Oil | Oil | | | | |
| Fluid Name | Diesel | Diesel | | | | |
| Max Recorded Temperatures (degF) | 151 | 266 | | | | |
| Source of Sample | Active Tank | Active Tank | | | | |
| Salinity (ppm) | 41250 | 47025 | | | | |
| Density (lbm/gal) | 9.3 | 9.6 | | | | |
| Funnel Viscosity (s) | 45 | 44 | | | | |
| Fluid Loss (cm3) | 0 | 0 | | | | |
| PH | | | | | | |
| Source RMF | Pressed | Pressed | | | | |
| RMC | Pressed | Pressed | | | | |
| RM @ Meas Temp (ohm.m@degF) | N/A | N/A | | | | |
| RMF @ Meas Temp (ohm.m@degF) | N/A | N/A | | | | |
| RMC @ Meas Temp (ohm.m@degF) | N/A | N/A | | | | |
| RM @ BHT (ohm.m@degF) | N/A | N/A | | | | |
| RMF @ BHT (ohm.m@degF) | N/A | N/A | | | | |
| RMC @ BHT (ohm.m@degF) | N/A | N/A | | | | |
| Electricity Stability (V) | 754 | 652 | | | | |
| Oil/Water | 80/20 (3.95) | 78/22 (3.58) | | | | |
| Total Solid (%) | 9.7 | 9.9 | | | | |
| High Gravity Solids (%) | 1.8 | 1.8 | | | | |

Remarks and Equipment Summary

| All data presented is from tool memory and acquired while drilling. | |
|---|--|
| Depth is referenced to driller's depth. | |
| Barite was presented in the mud. | |
| Run001: Remarks | Run002: Remarks |
| Run Objective: Drill vertical, curve and lateral to Well TD. | Run Objective: Drill vertical, curve and lateral to Well TD. |
| Reason for POOH: PowerDrive Failure. | Reason for POOH: Well TD. |
| Drill Interval: 1942 ft MD to 3344 ft MD. | Drill Interval: 3344 ft MD to 16921 ft MD. |
| Log Interval: 1900 ft MD to 3320 ft MD. | Log Interval: 3320 ft MD to 16921 ft MD. |
| MWD Personnel: Michael Armstrong Remote Operations | MWD Personnel: Michael Armstrong Remote Operations |

| Run001: Toolstring | | | | Run002: Toolstring | | | |
|----------------------------|--------|----------------------|--------|----------------------------|--------|----------------------|--------|
| Equip name | Length | MP name | Offset | Equip name | Length | MP name | Offset |
| Filtr Sub: 6 3/4":SD 17871 | 125.6 | Diffuser Sub | | Filtr Sub: 6 3/4":SD 17871 | 125.13 | Diffuser Sub | |
| Flt Sub: 6 3/4":SD1 01247 | 120.14 | Double Bore Float | | Flt Sub: 6 3/4":SD1 01247 | 119.67 | Double Bore Float | |
| Motor: 6 3/4":7085 | 117.36 | Hunting Vortex Motor | | Motor: 6 3/4":7106 | 116.89 | Hunting Vortex Motor | |

Flex DC: 6 3/4":SD 78.83
56377

Ardher Flex Pony

XEM650:SD56523 42.44
GAP650:GSBR0845
XEM650DC:SD56523
DPG:DDRP073
XHOP:XHOP1019
XTX:HVTX0864
DYN:SOCD1274
BAT:DOBA2348
XGM:XGM0763
DNI:SOCD1274

XEM MWD

INT PRES
ANN PRES
TEMP

40.02
39.87
39.87

GR

24.45

Flex DC: 6 3/4":SD 78.35
56377

Ardher Flex Pony

XEM650:SD56523 43.12
GAP650:GSBR0845
XEM650DC:SD56523
DPG:DDRP073
XHOP:XHOP1019
XTX:HVTX0864
DYN:SOCD1274
BAT:DOBA2348
XGM:XGM0763
DNI:SOCD1274

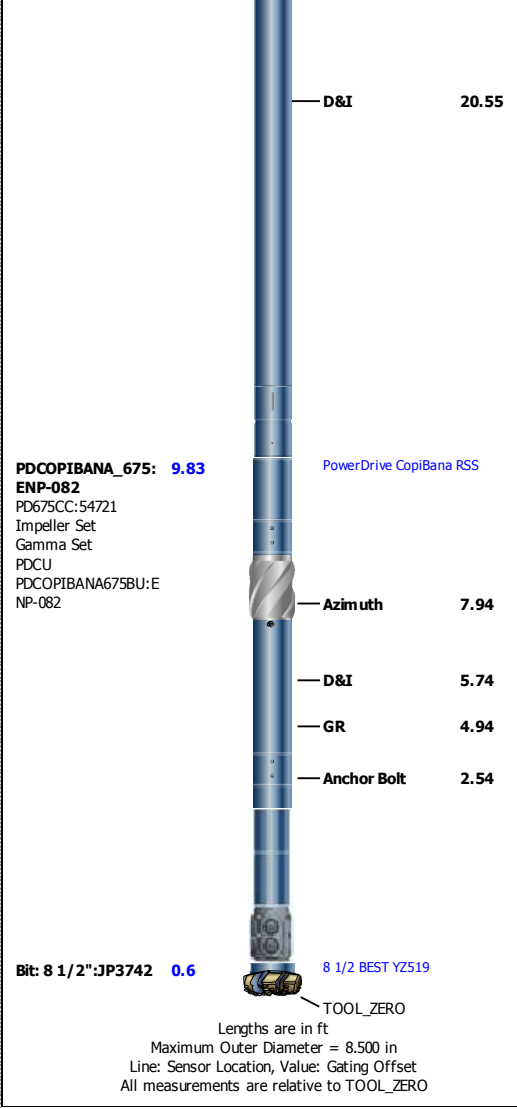
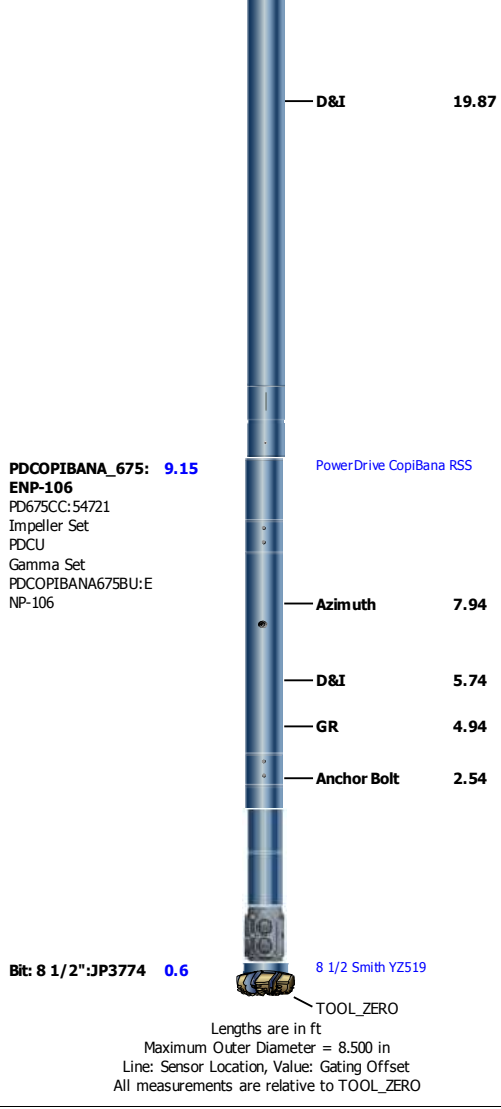
XEM MWD

INT PRES
ANN PRES
TEMP

40.7
40.55
40.55

GR

25.14



Composite 1

| Software Version | |
|--------------------|-----------------|
| Acquisition System | Version |
| Maxwell 2018 SP2 | 8.2.104493.3100 |

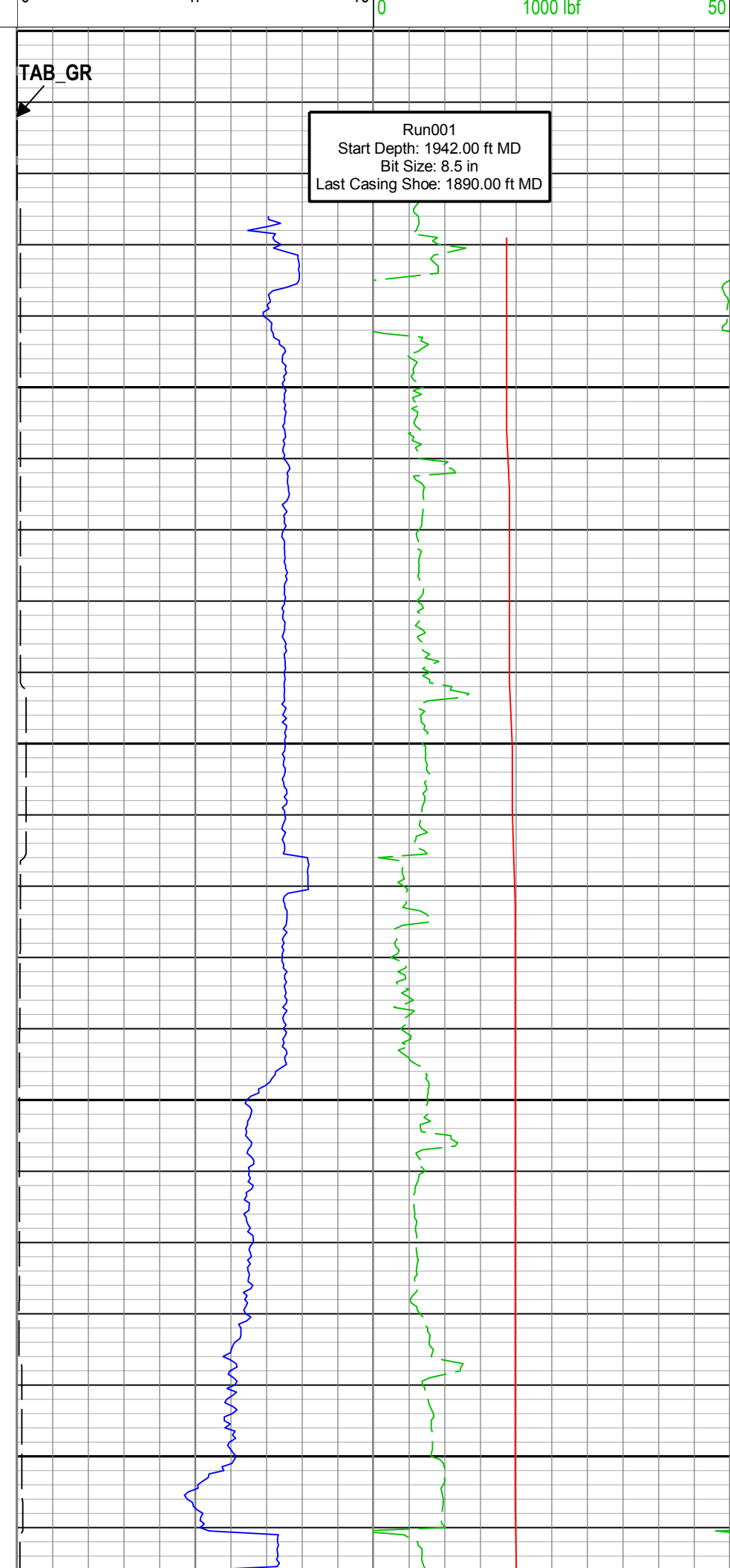
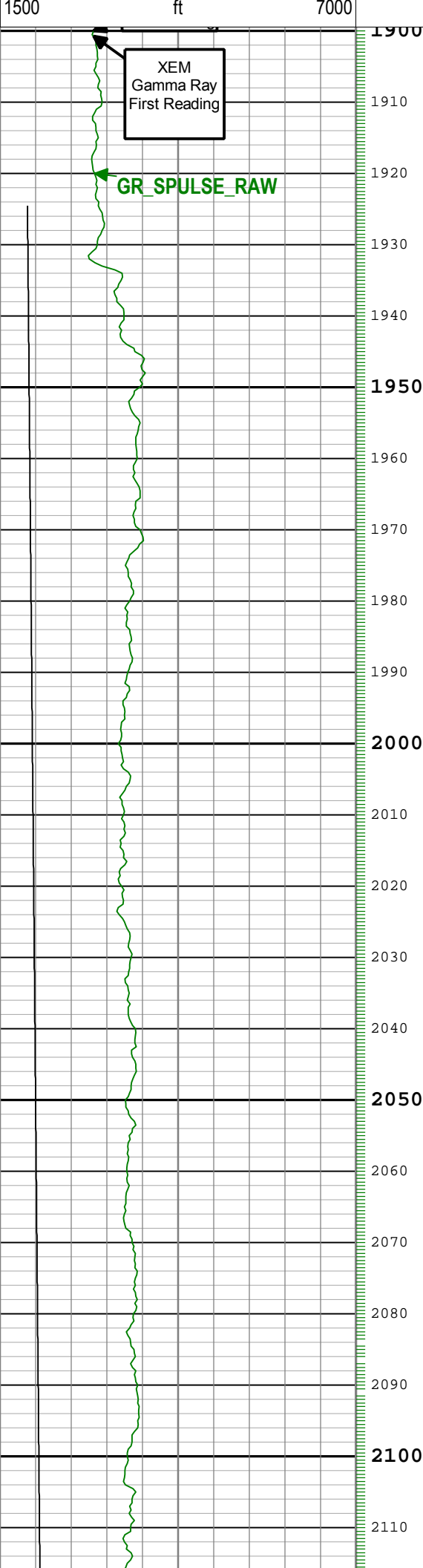
| Composite Summary | | | | | | | |
|-------------------|----------------|-----------|------------|-------------|-------------------------|------------------------|-----------------------|
| Run Name | Pass Objective | Direction | Top | Bottom | Start | Stop | Include Parallel Data |
| Run001 | Drilling | Down | 1924.08 ft | 3342.17 ft | 20-Jul-2019 12:02:33 PM | 20-Jul-2019 8:05:25 PM | No |
| Run002 | Drilling | Down | 3341.50 ft | 16921.33 ft | 21-Jul-2019 1:42:28 AM | 23-Jul-2019 8:25:55 AM | No |

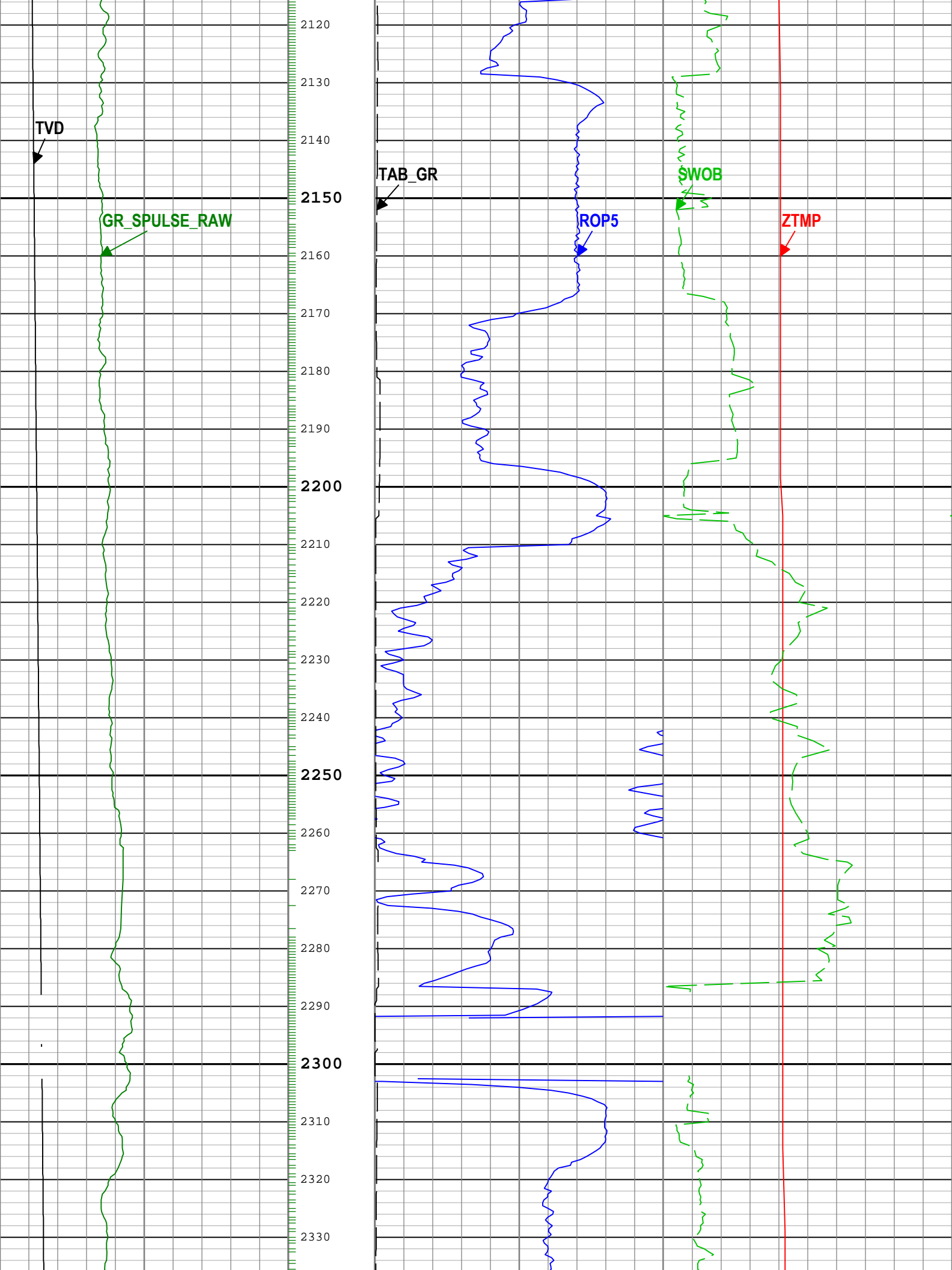
All depths are referenced to toolstring zero

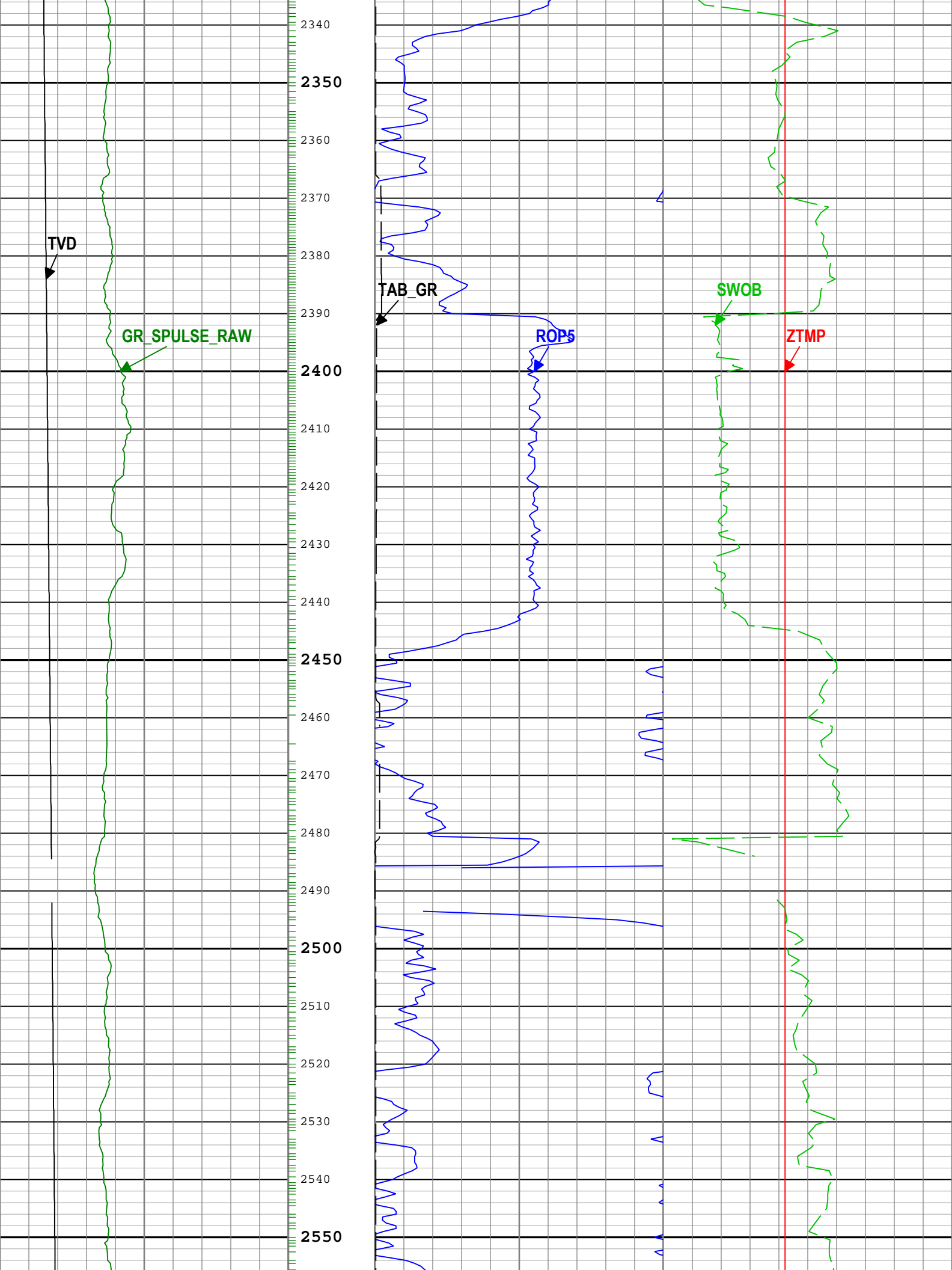
| Log | Company:Noble Energy Inc. | Well:SLW Ranch State BB07-668 |
|-----|---------------------------|-------------------------------|
| | | Composite 1:S261 |

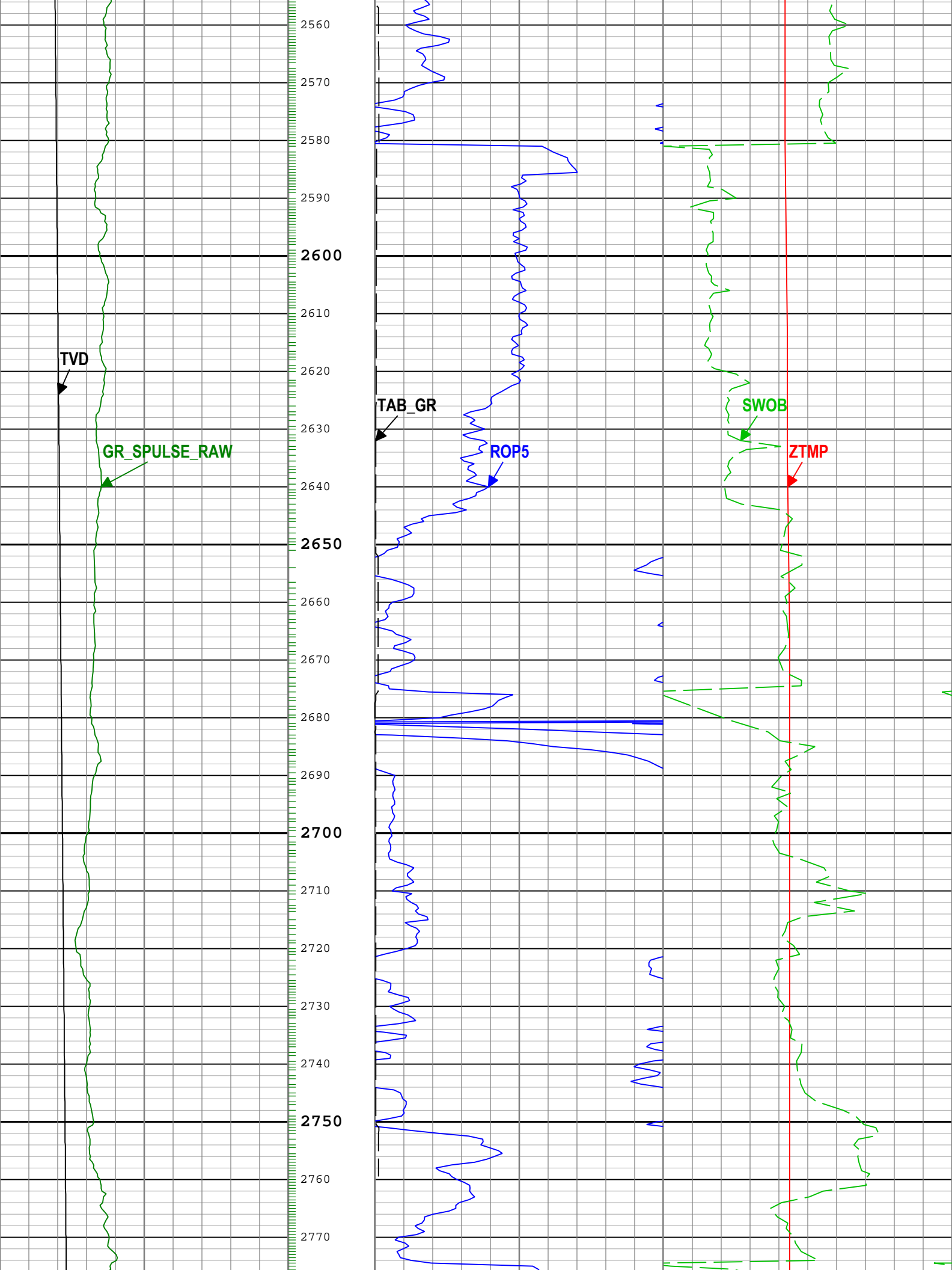
Description: Extreme Gamma Ray 1 RT Format: Log (KKW_EOW_XEM-RM_5MD) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured
Depth Creation Date: 25-Jul-2019 14:28:41

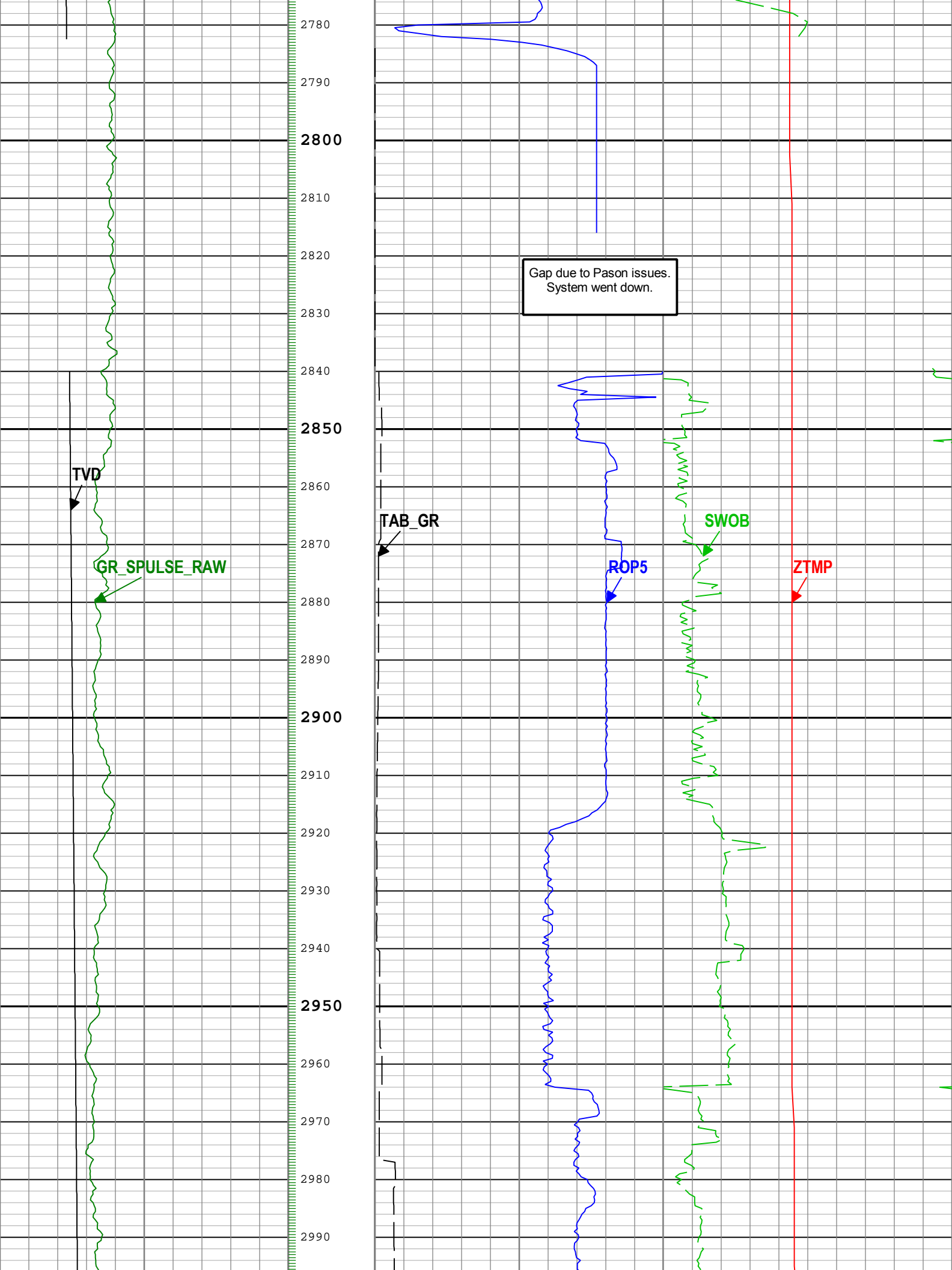
| GR_SPULSE_RAW - Raw Gamma Ray Extreme[1] RM | | |
|---|------|------|
| Rate of penetration averaged over the last 5 ft (1.5 m) (ROP5) RT | | |
| Gamma Ray (GR_SPULSE_BHC) Extreme[1] RM | 1000 | ft/h |
| gAPI | 300 | |
| True Vertical Depth (TVD) RT | 0 | h |
| Cartridge Temperature (ZTMP) Extreme[1] RT | | |
| degF | | |
| Surface Weight On Bit (SWOB) RT | | |
| h | | |

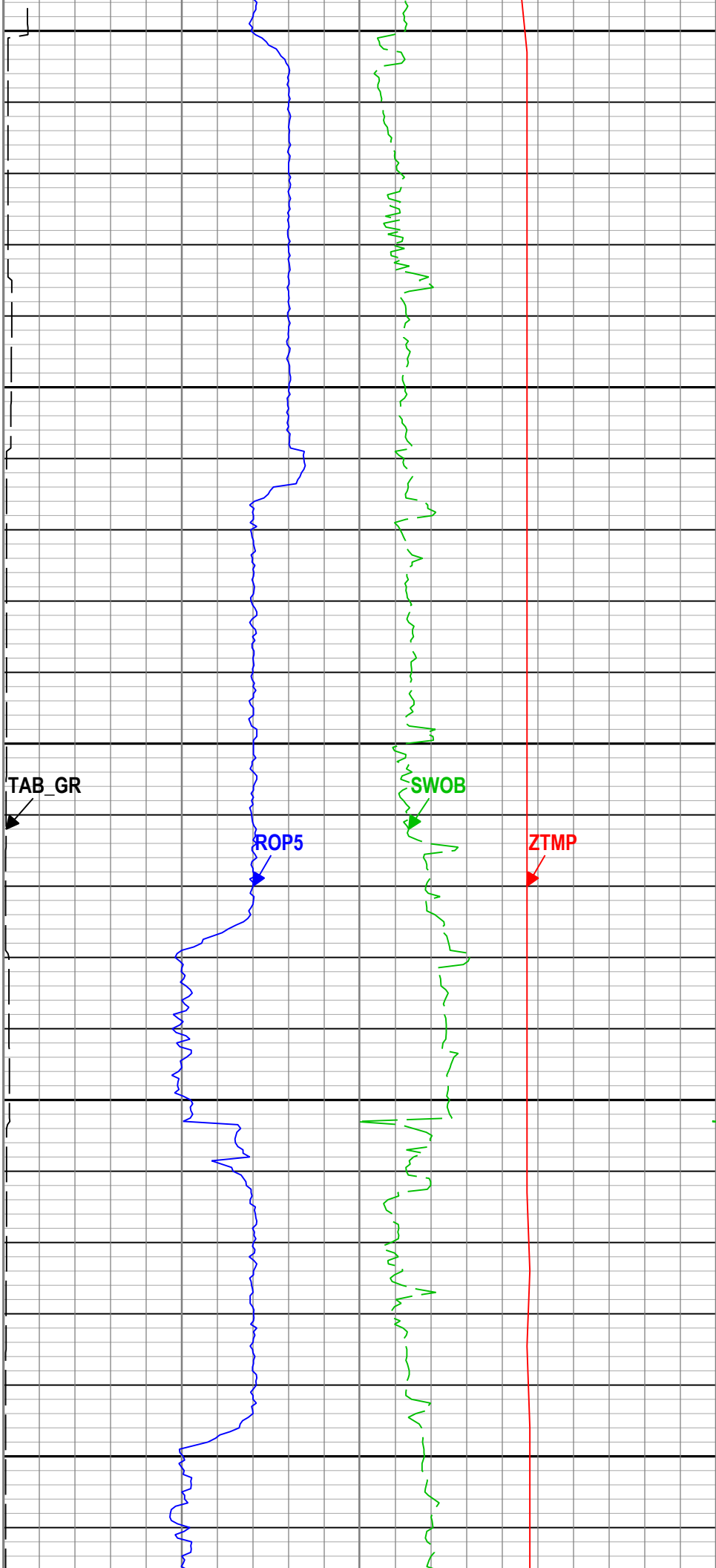
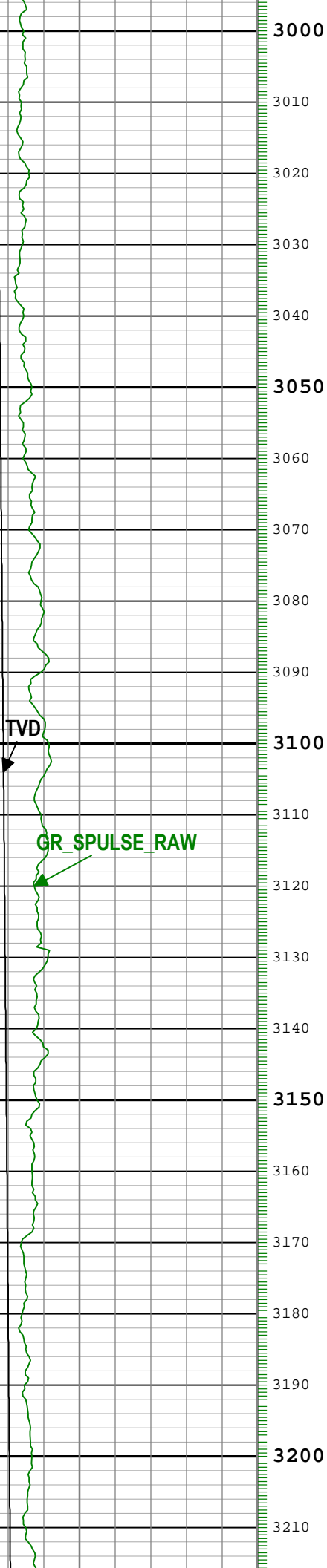


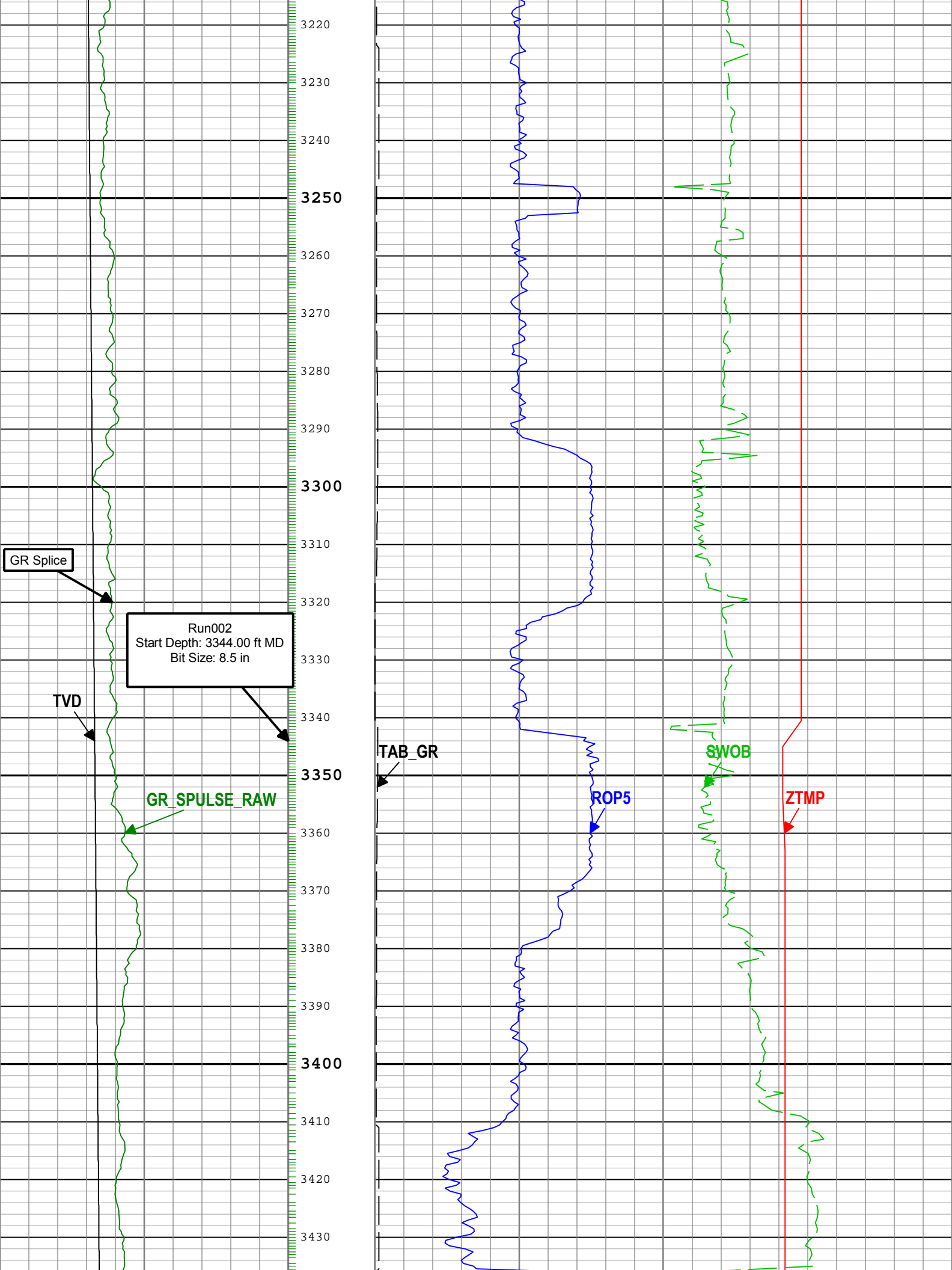


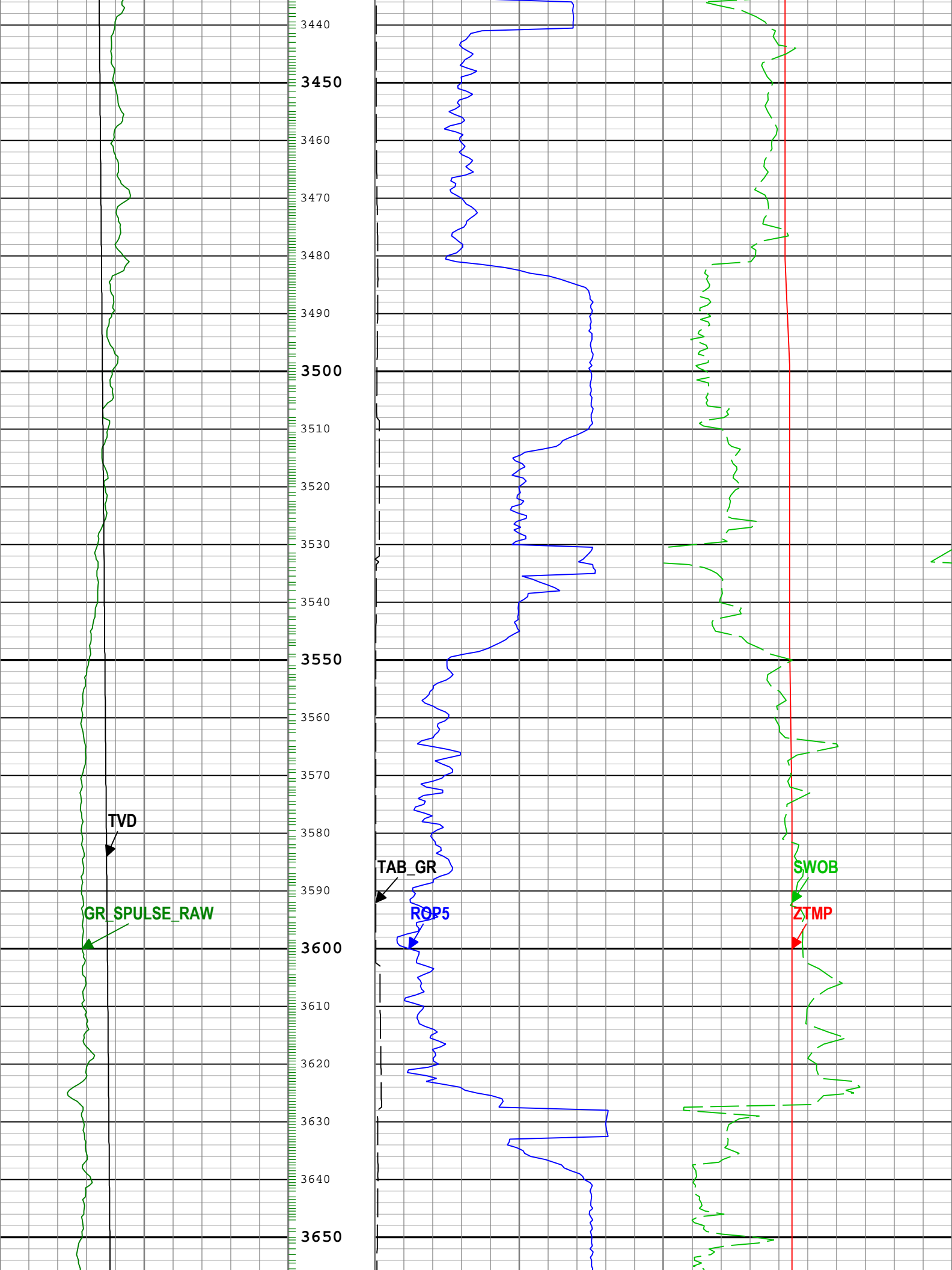


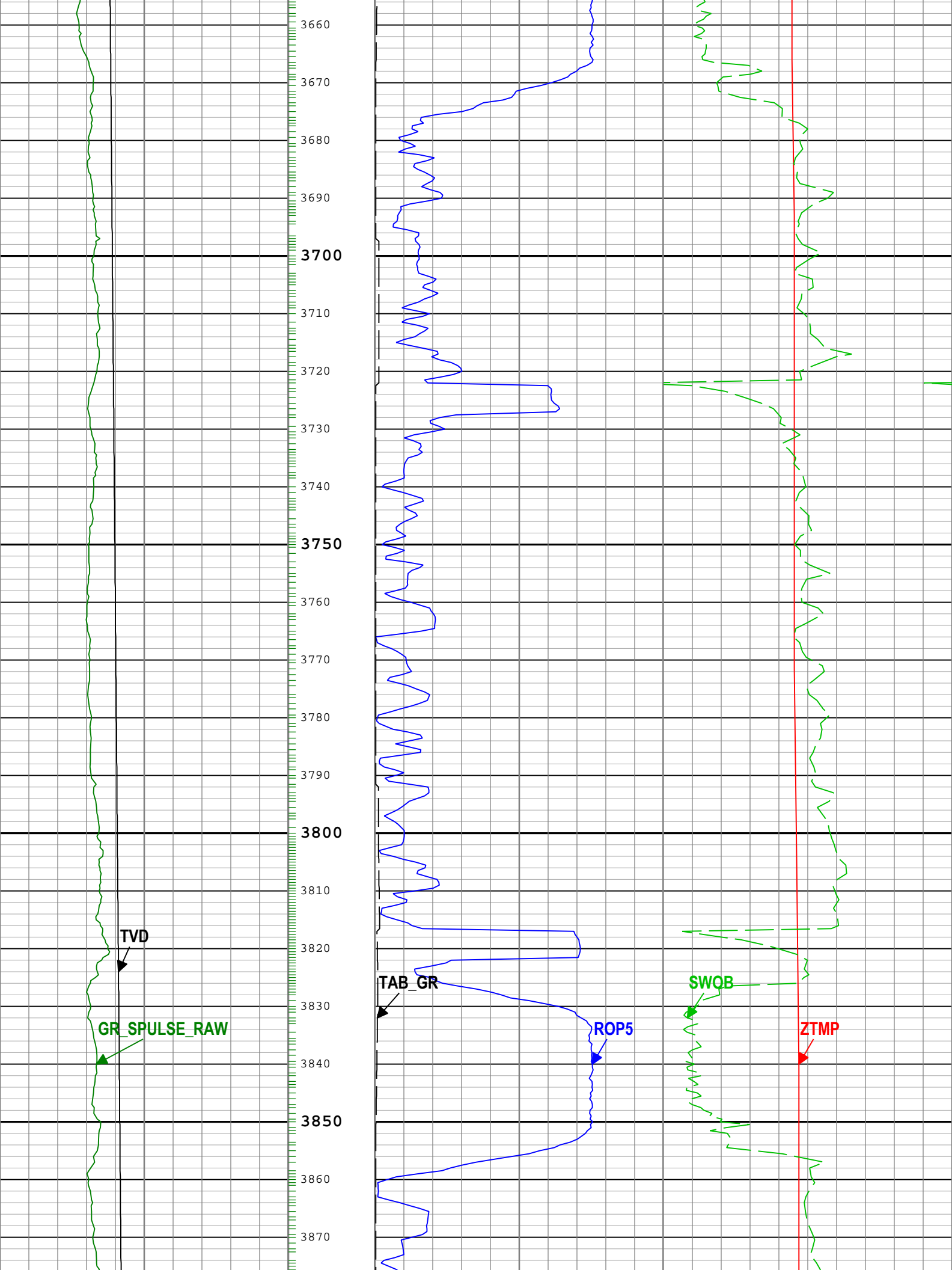


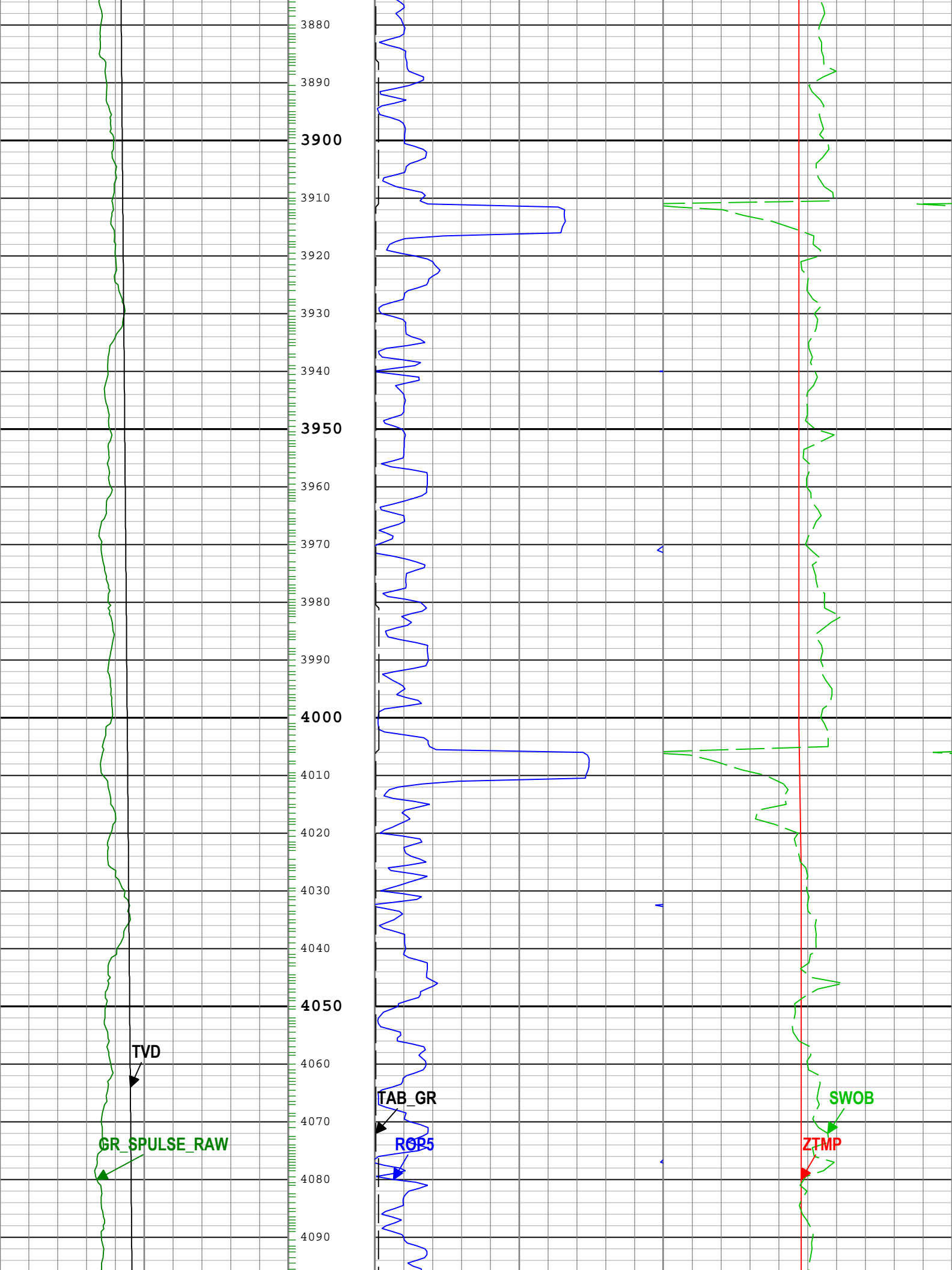


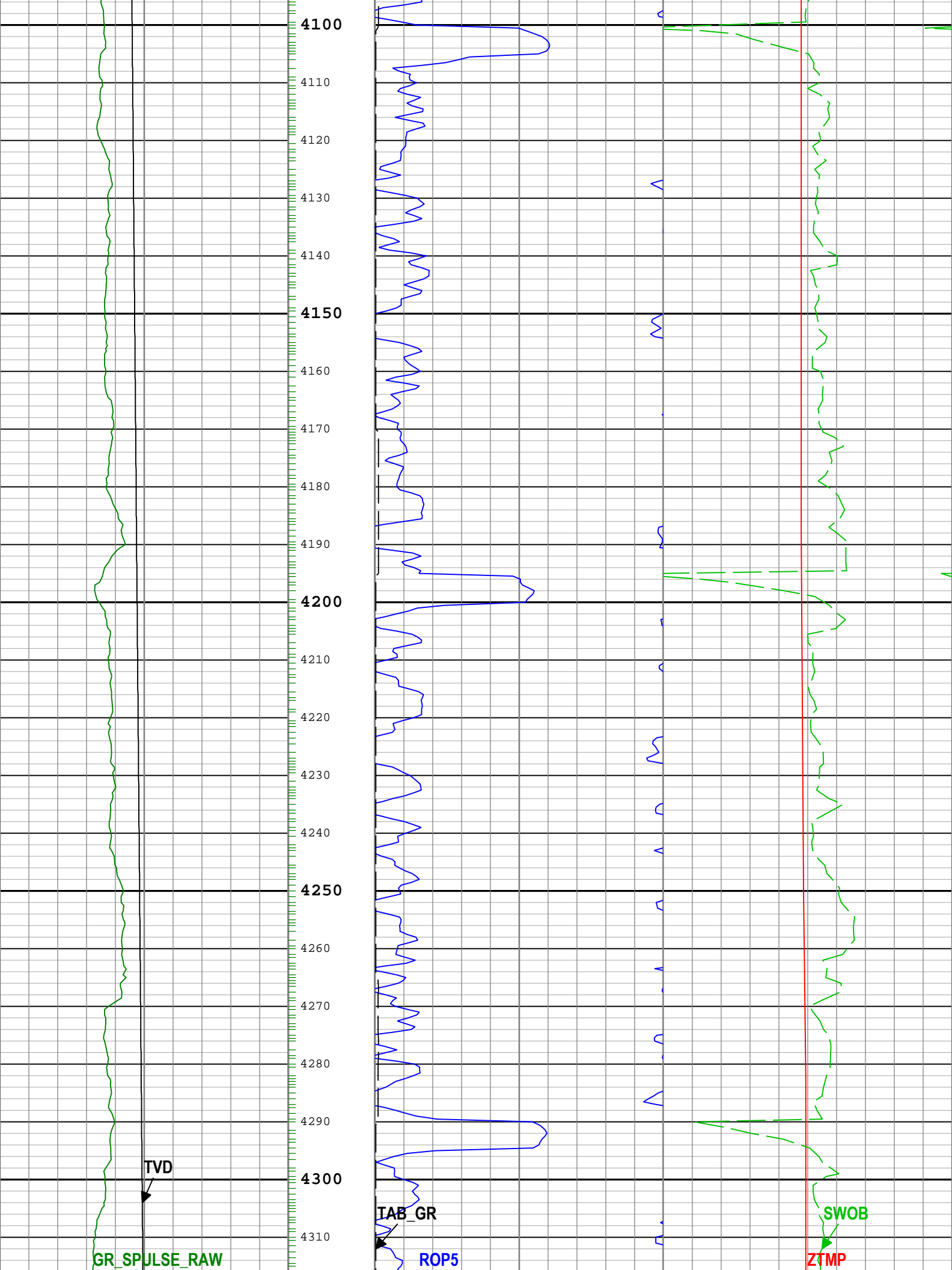


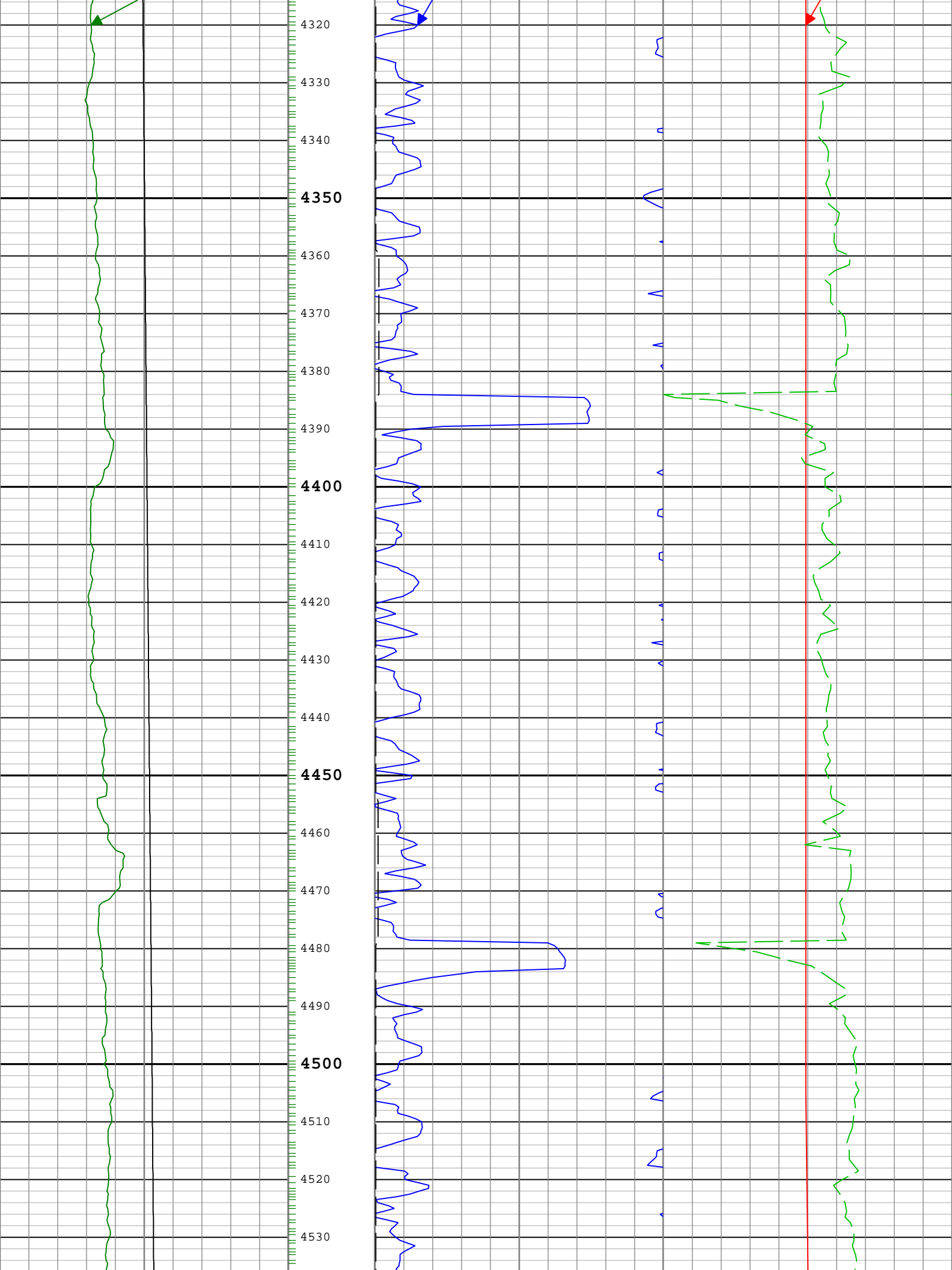


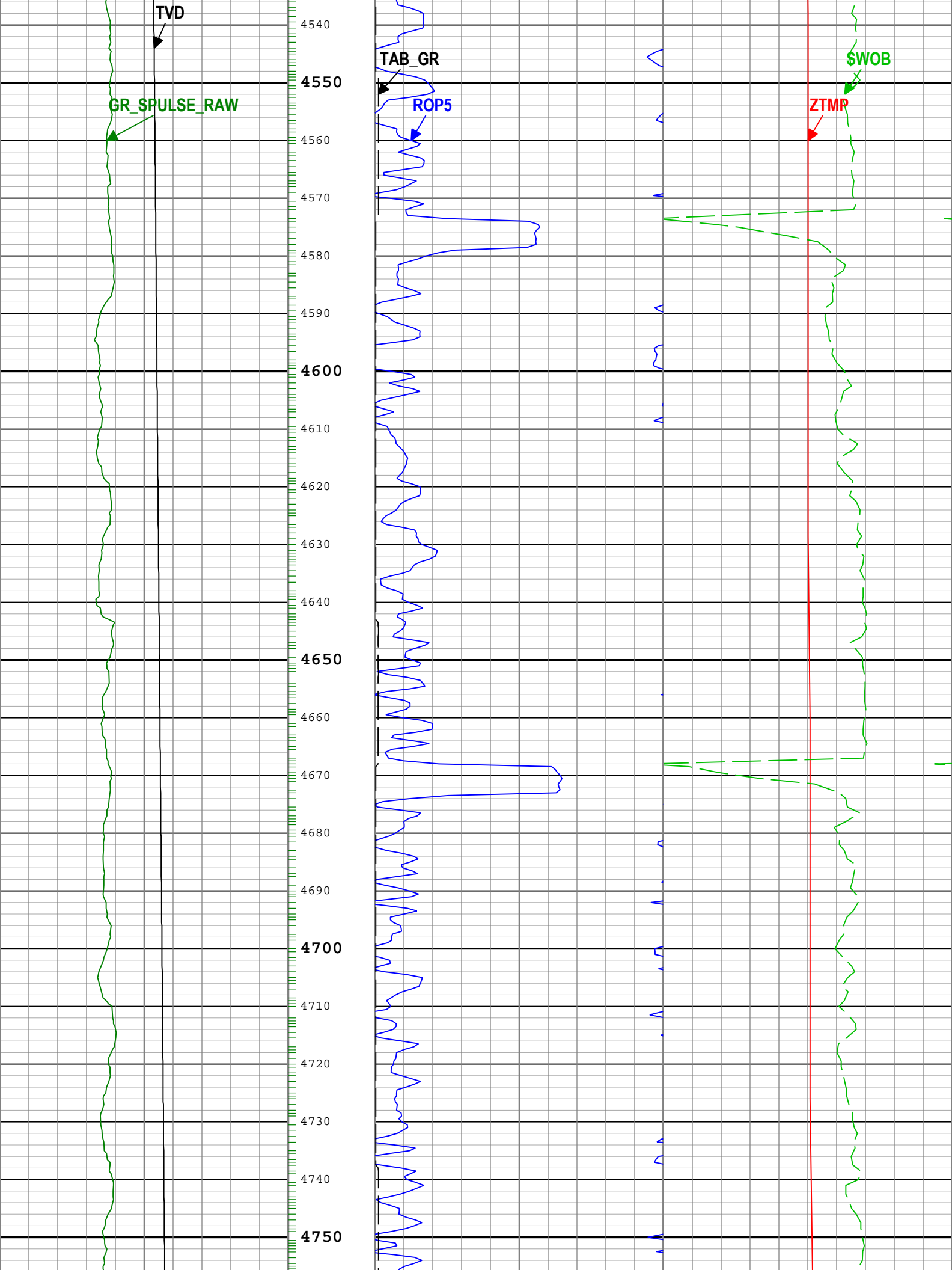


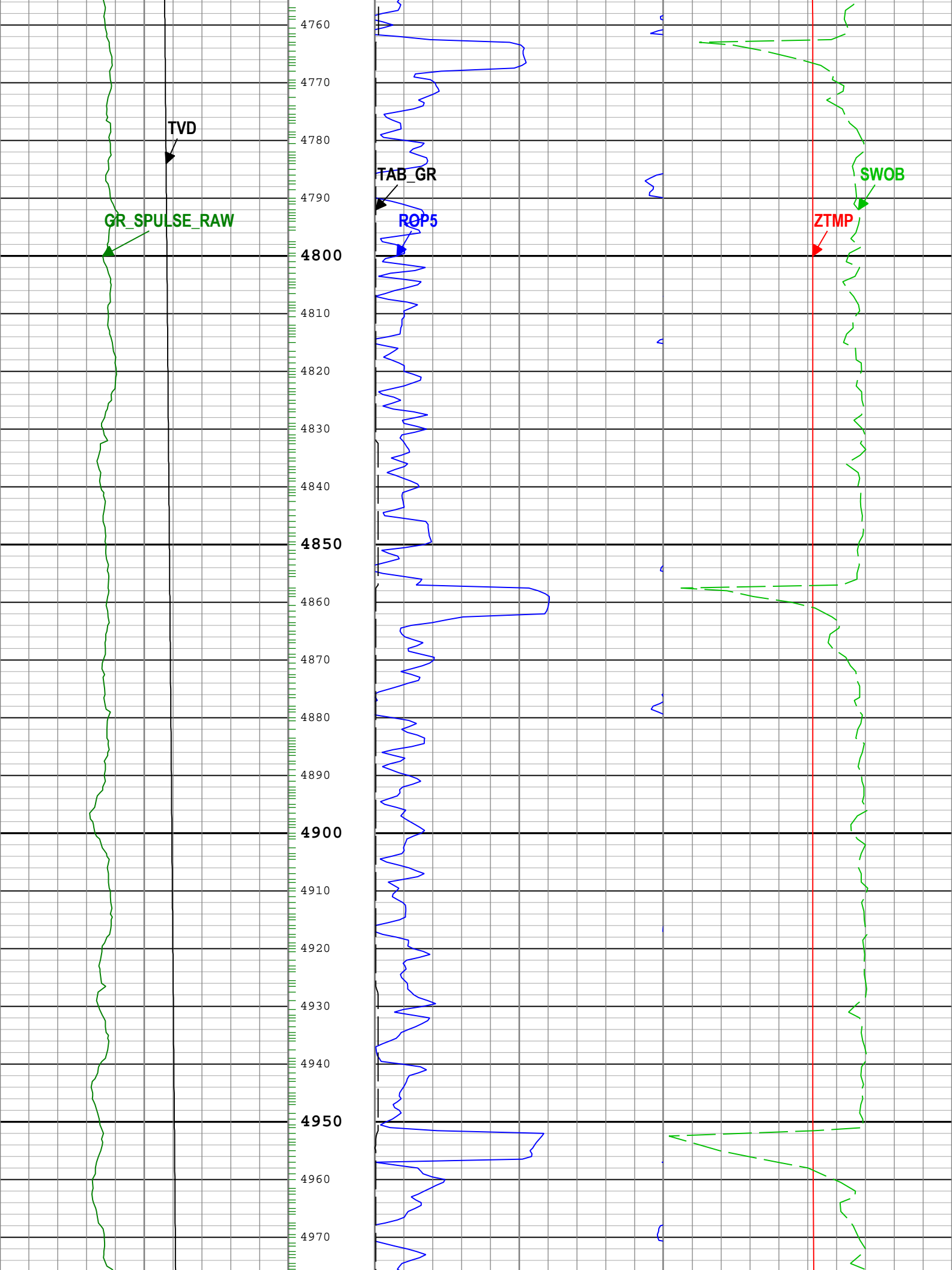


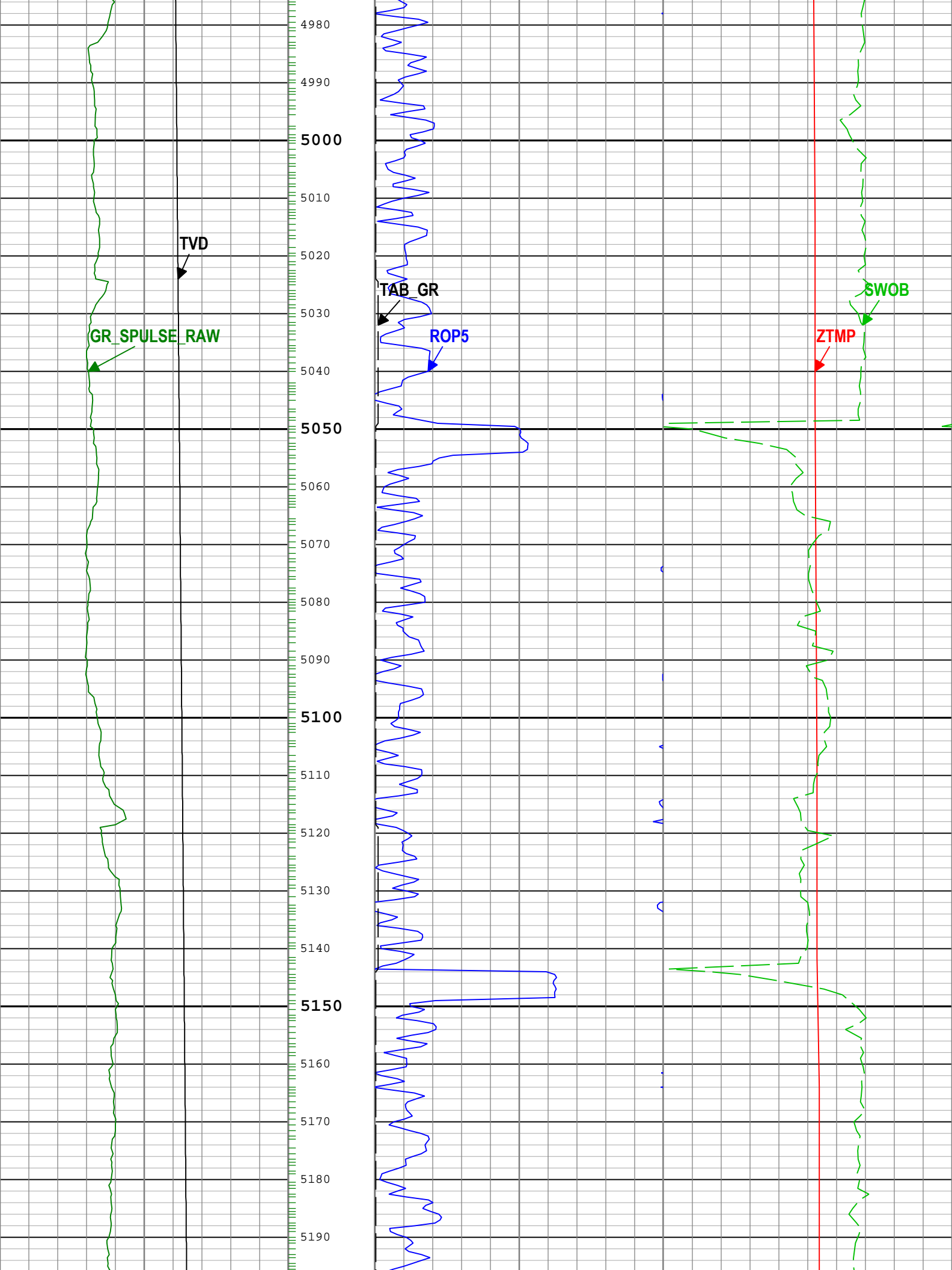


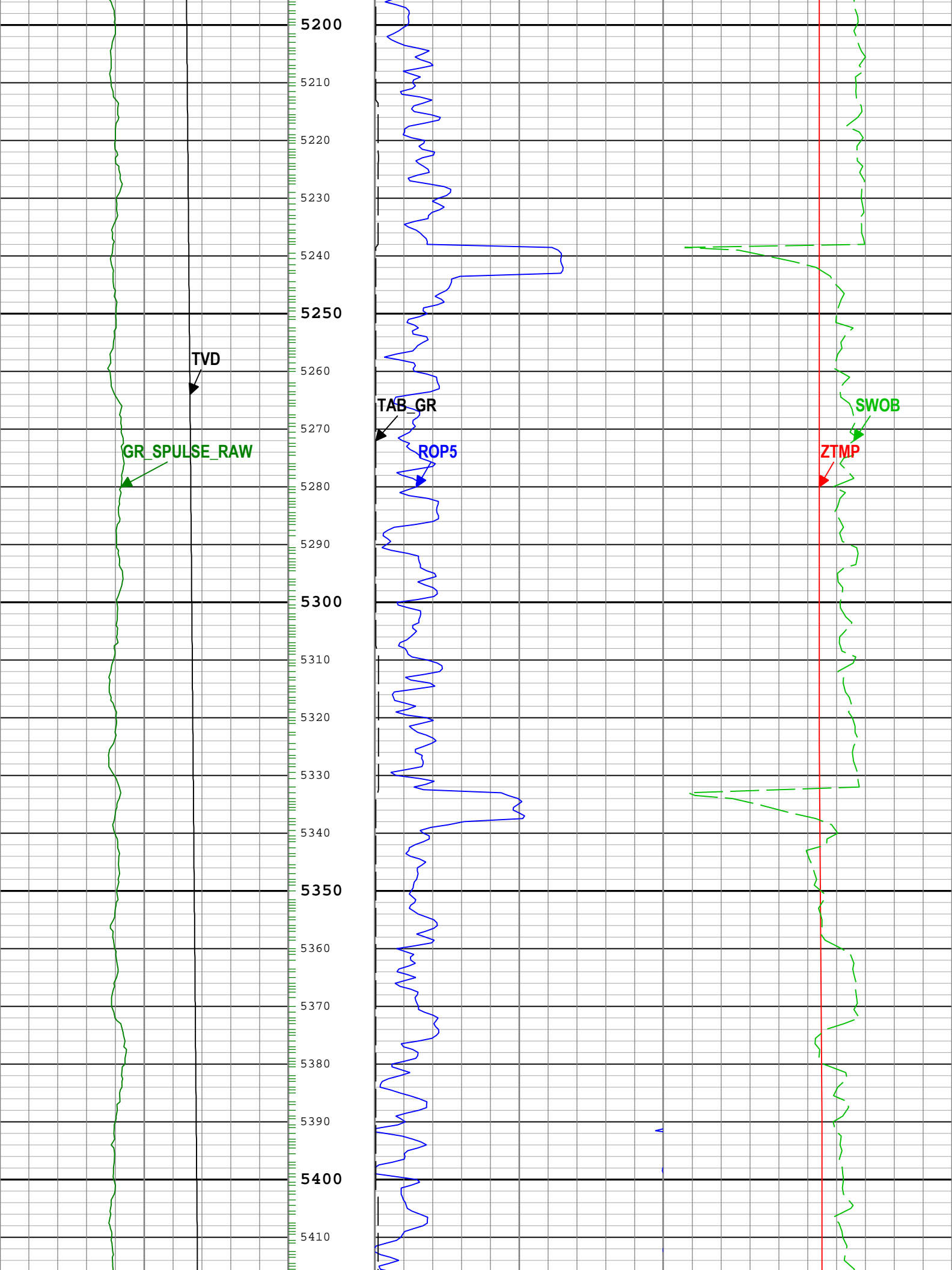


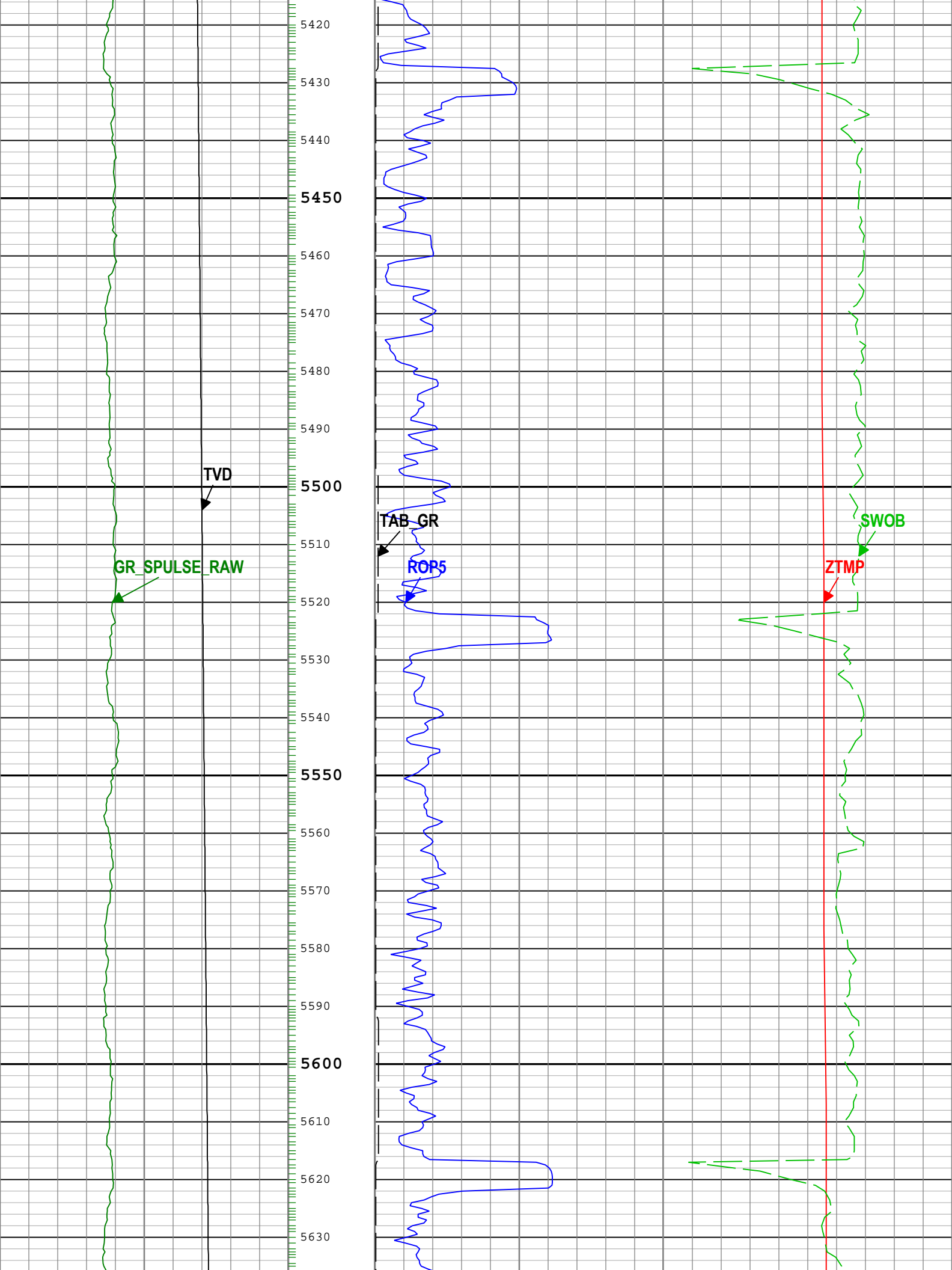


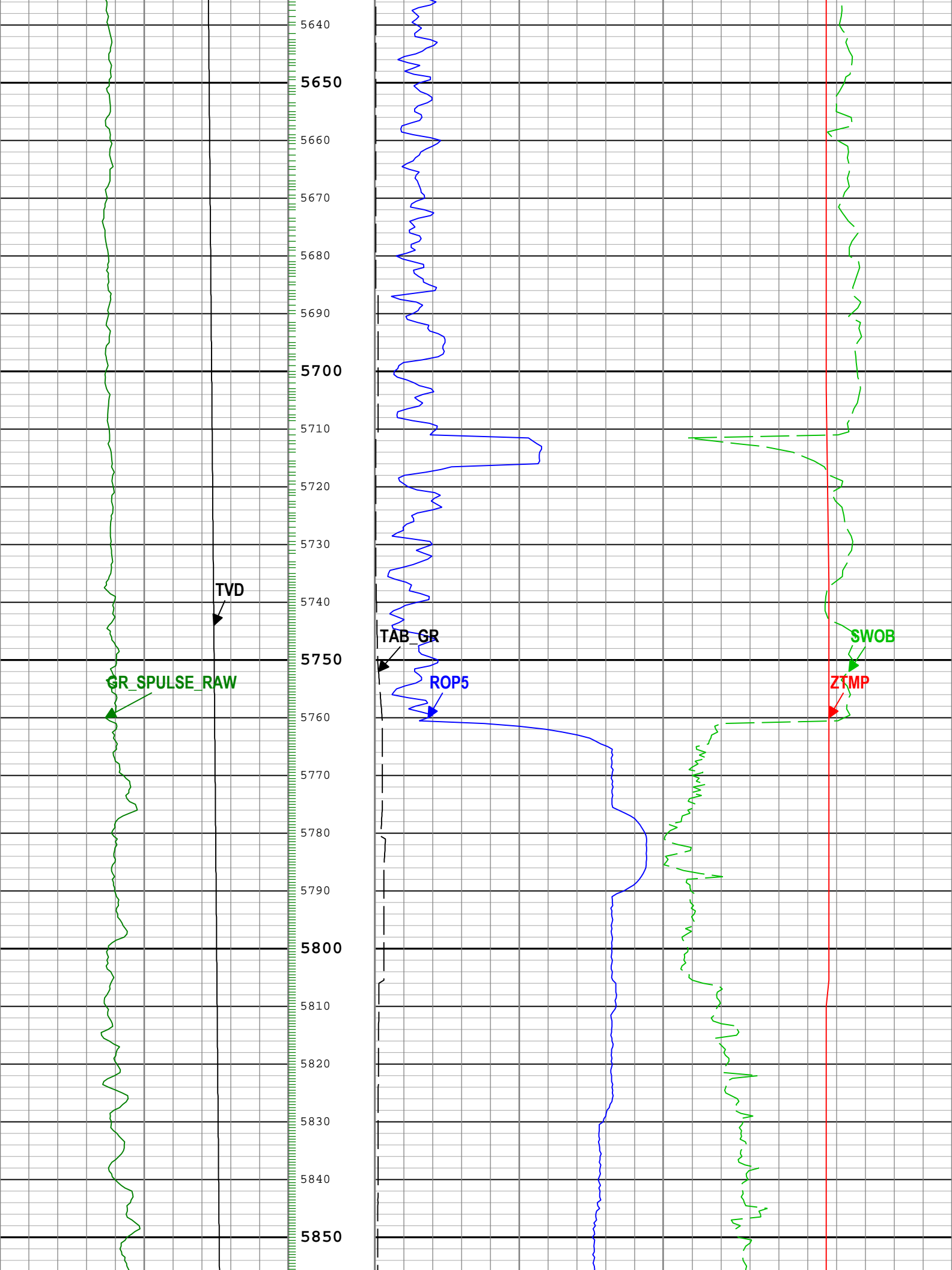


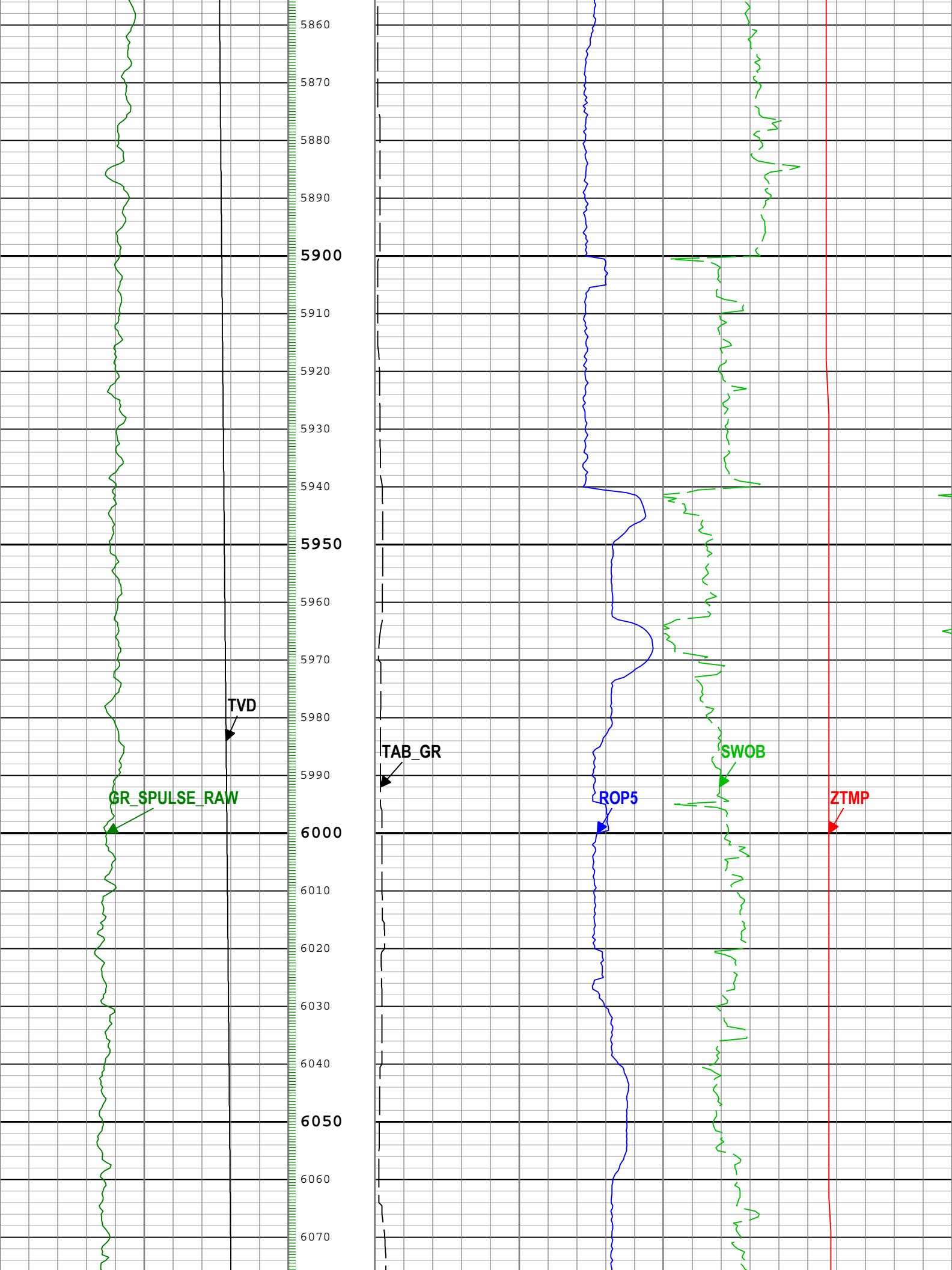


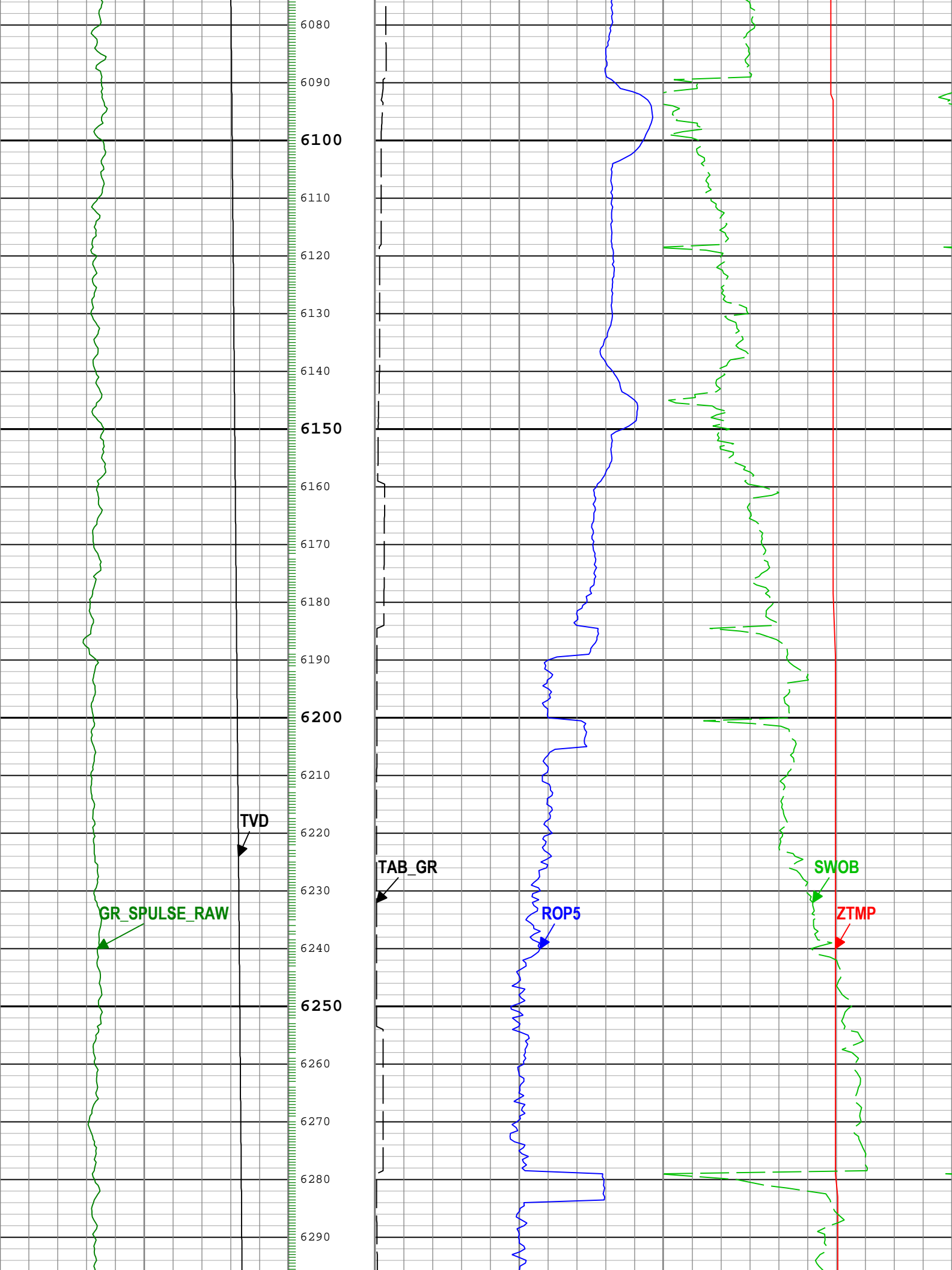


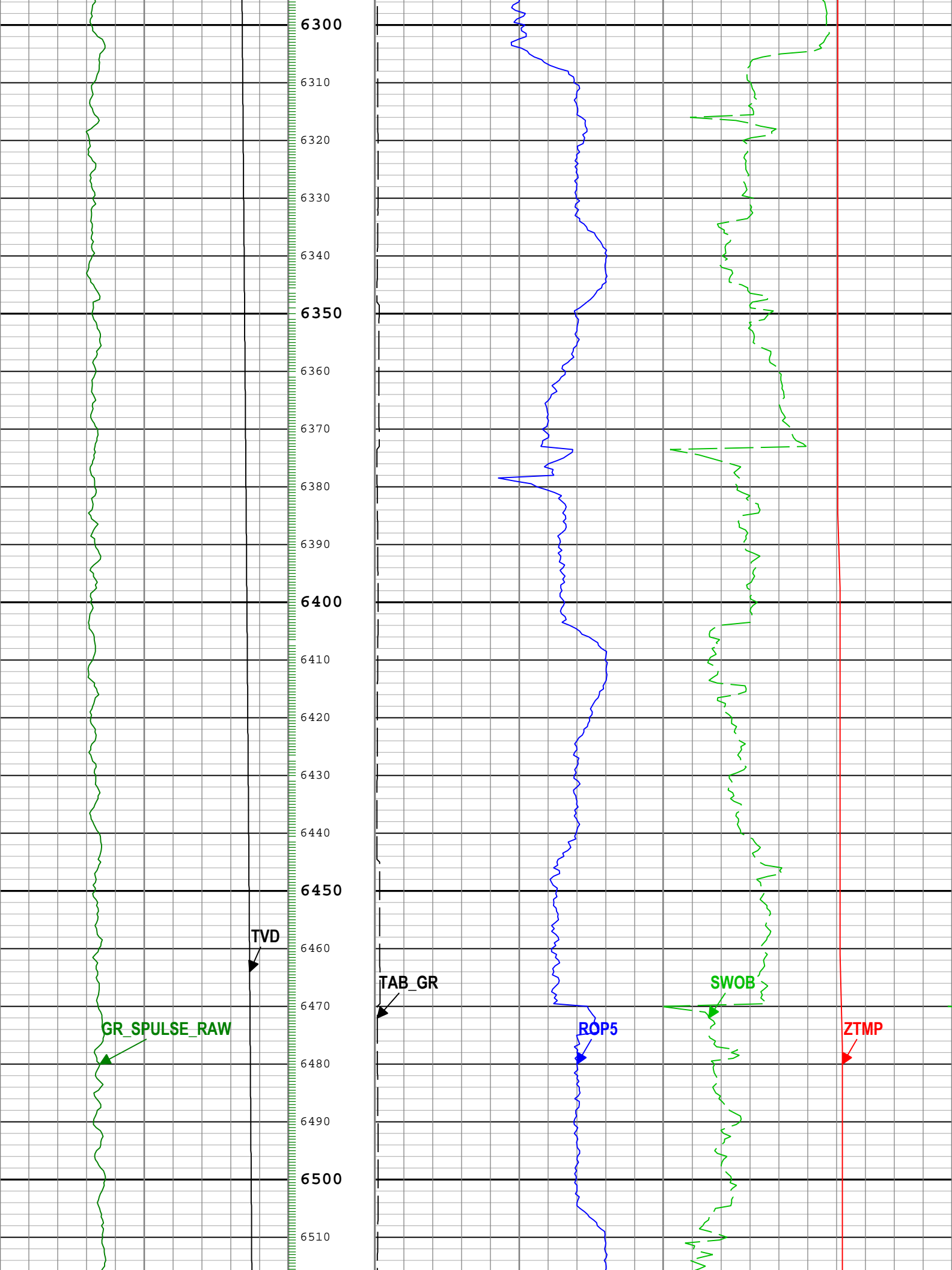


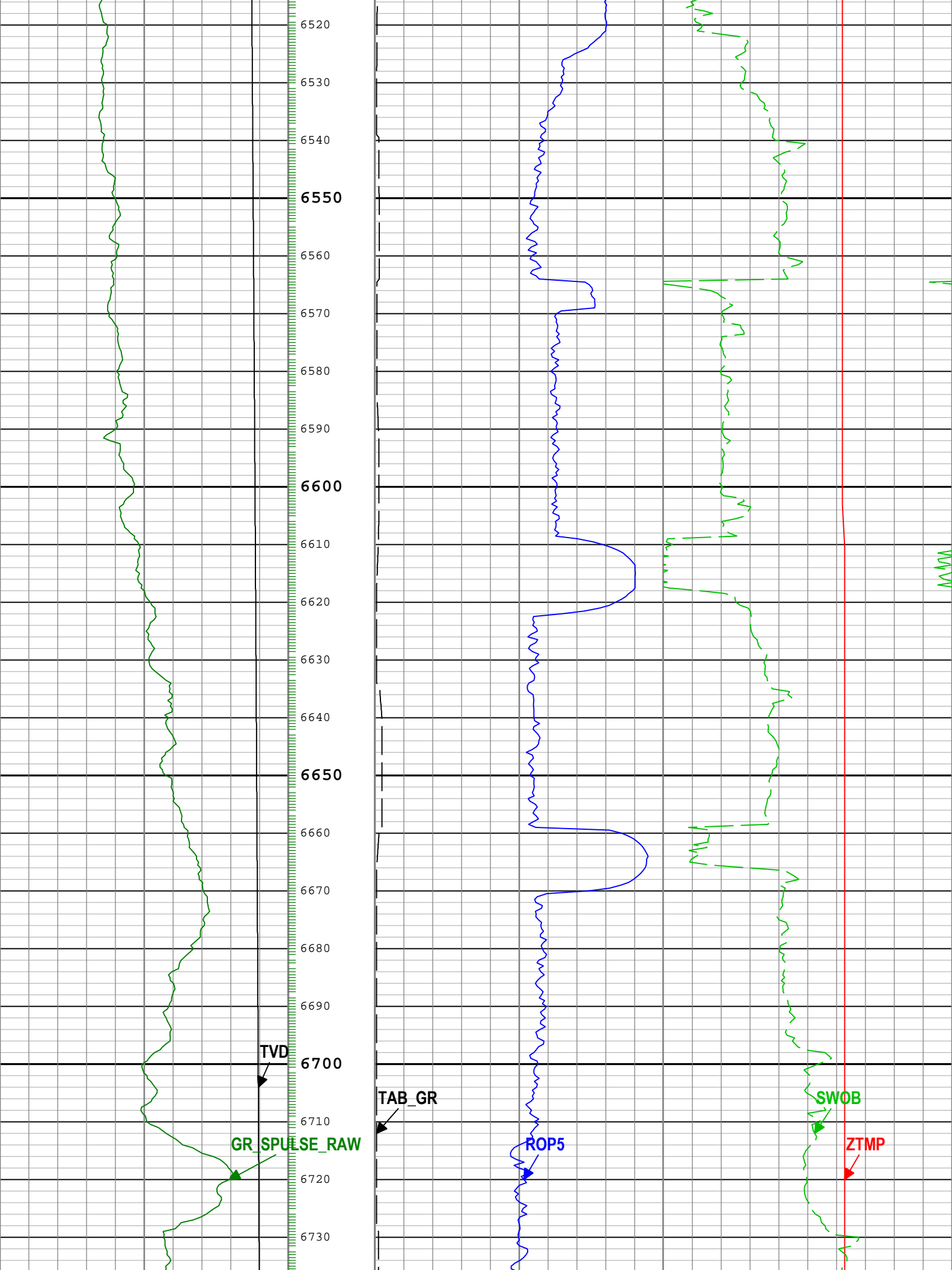


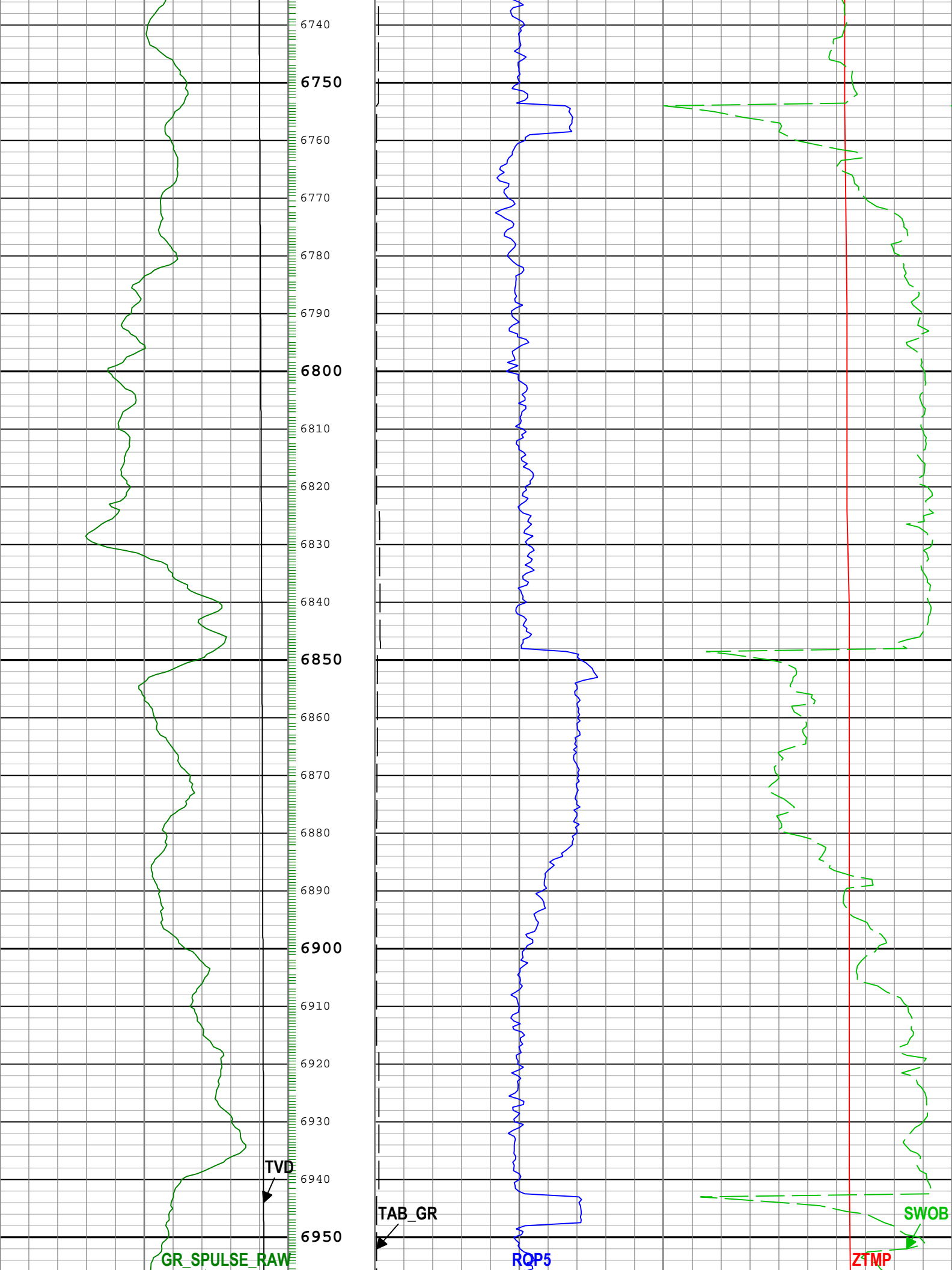


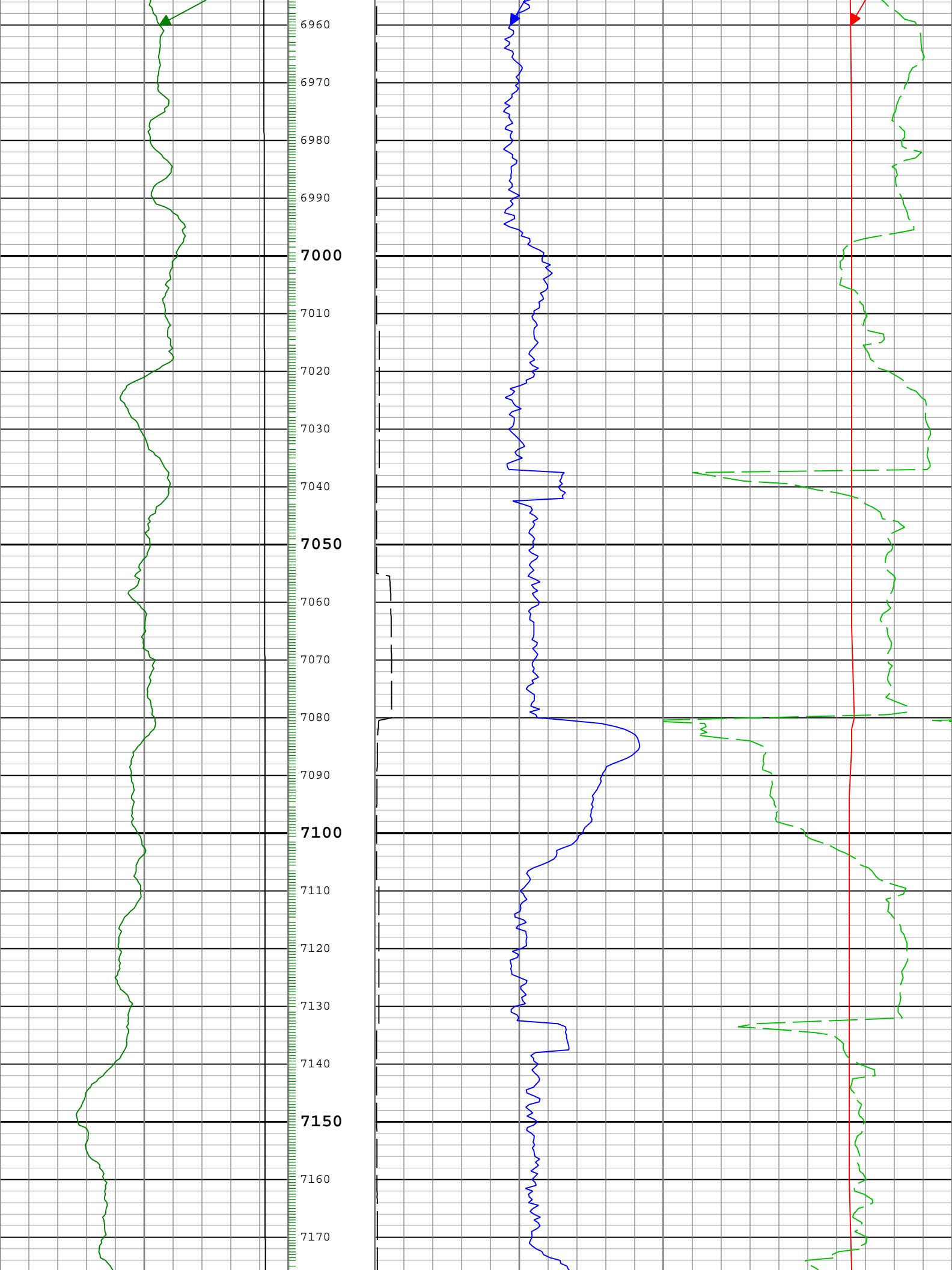


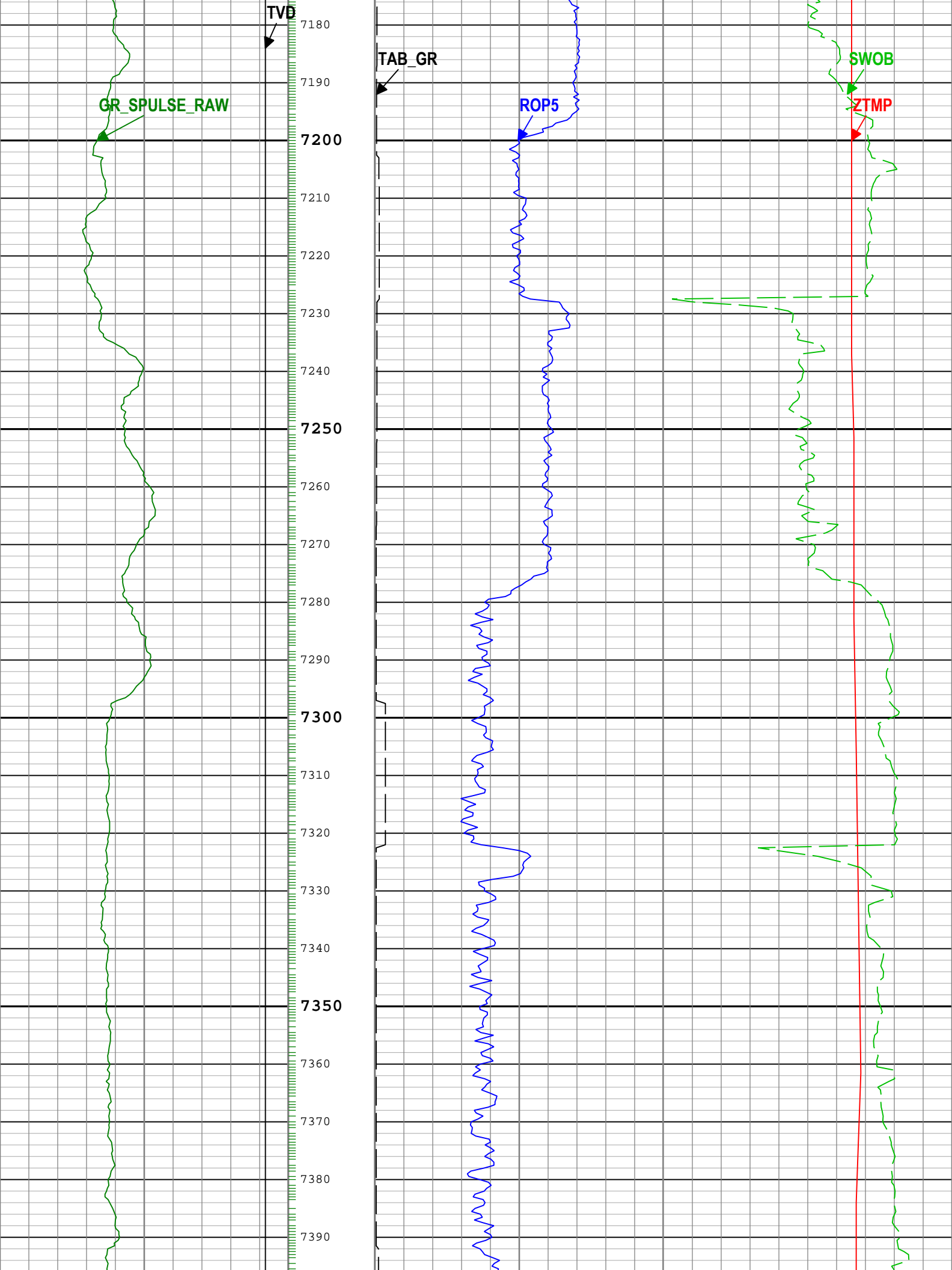


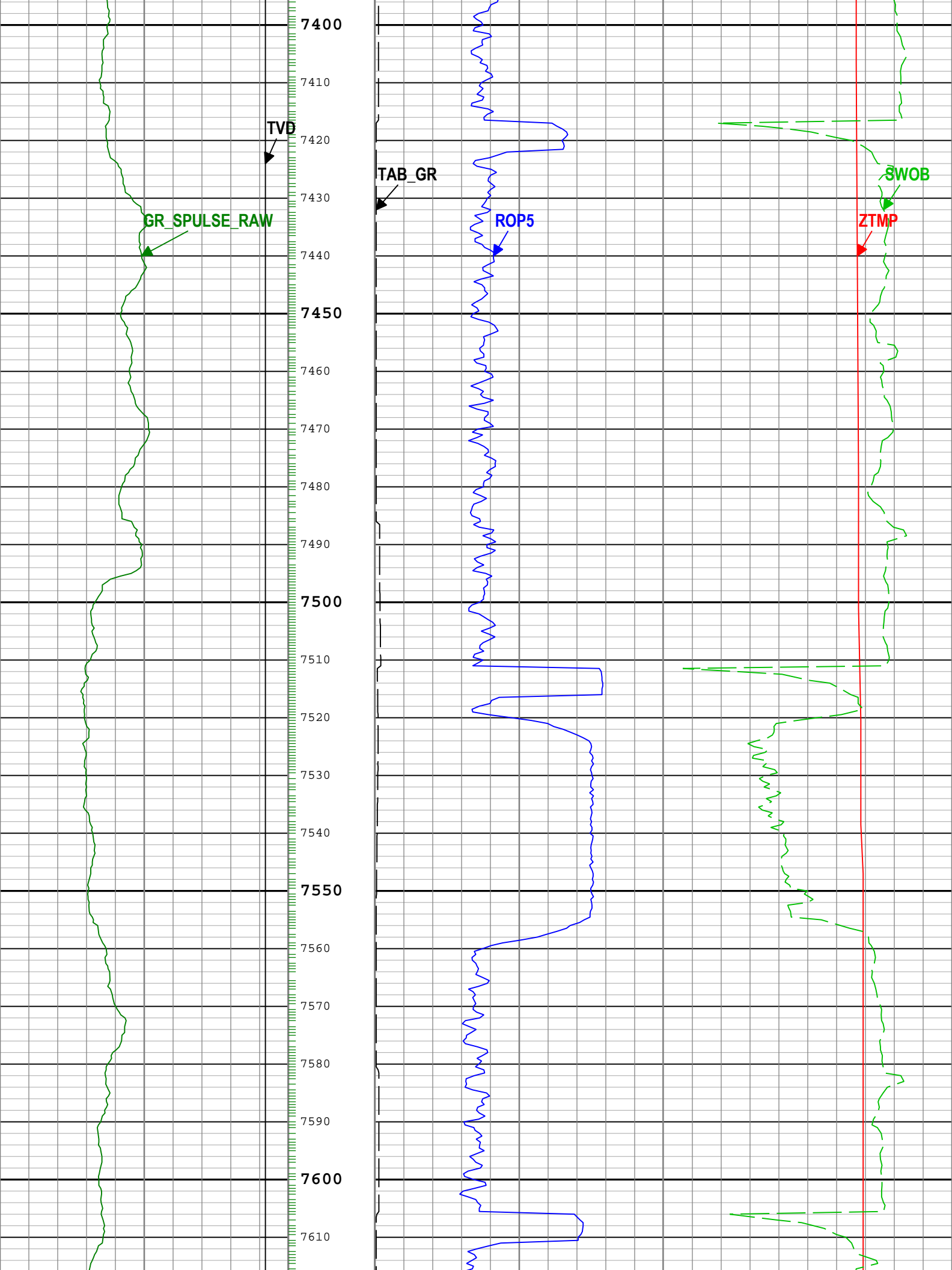


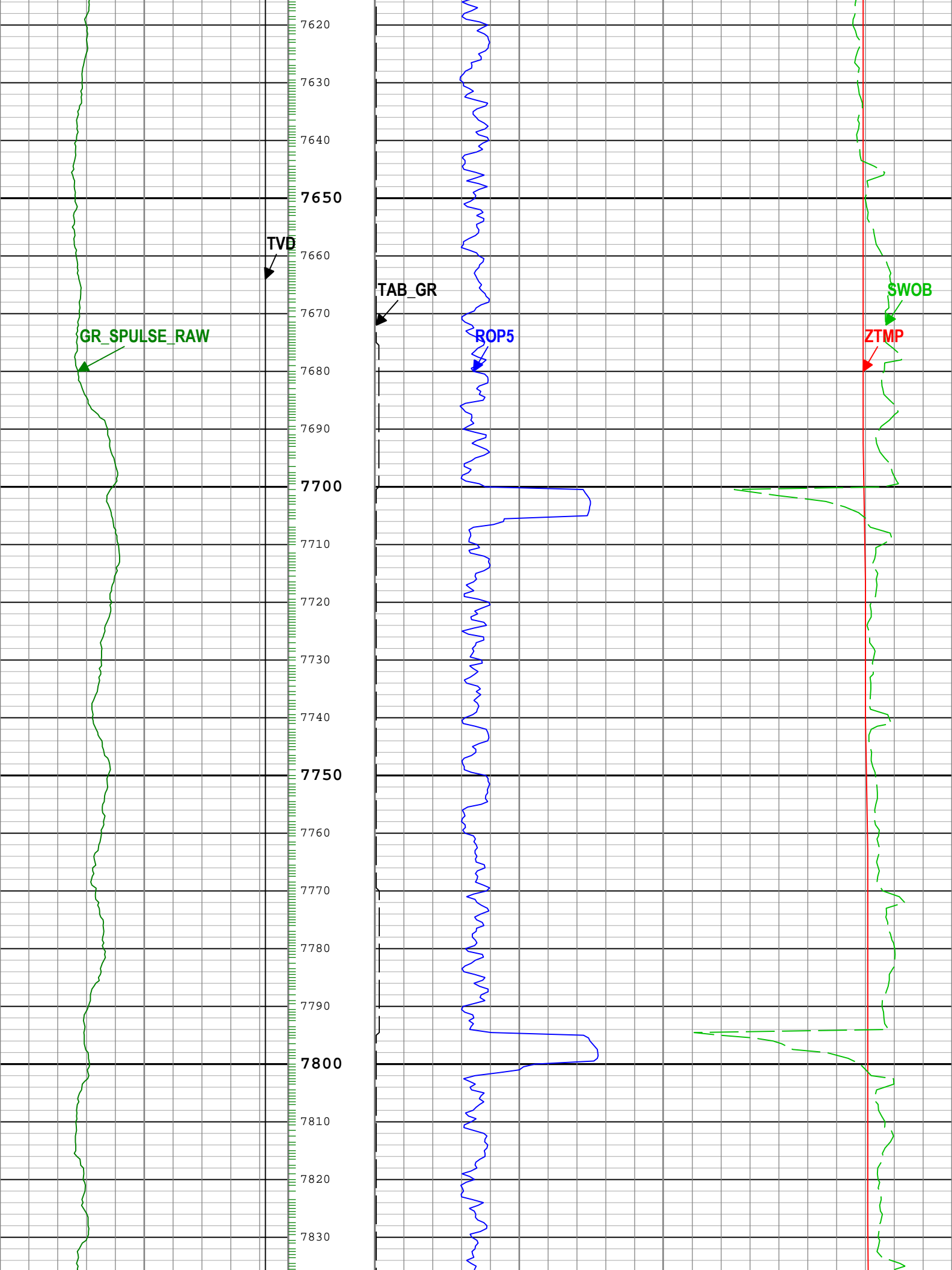


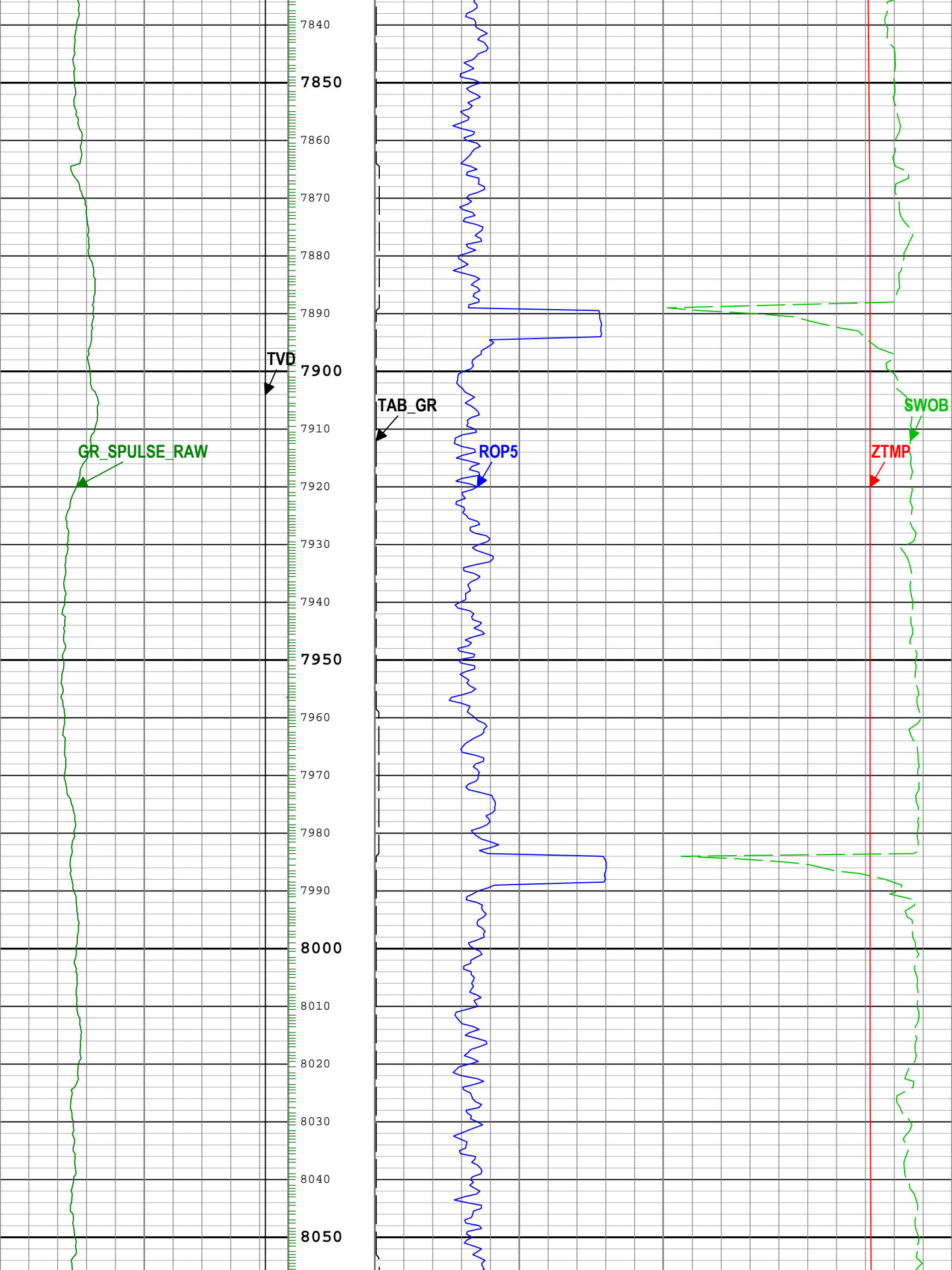


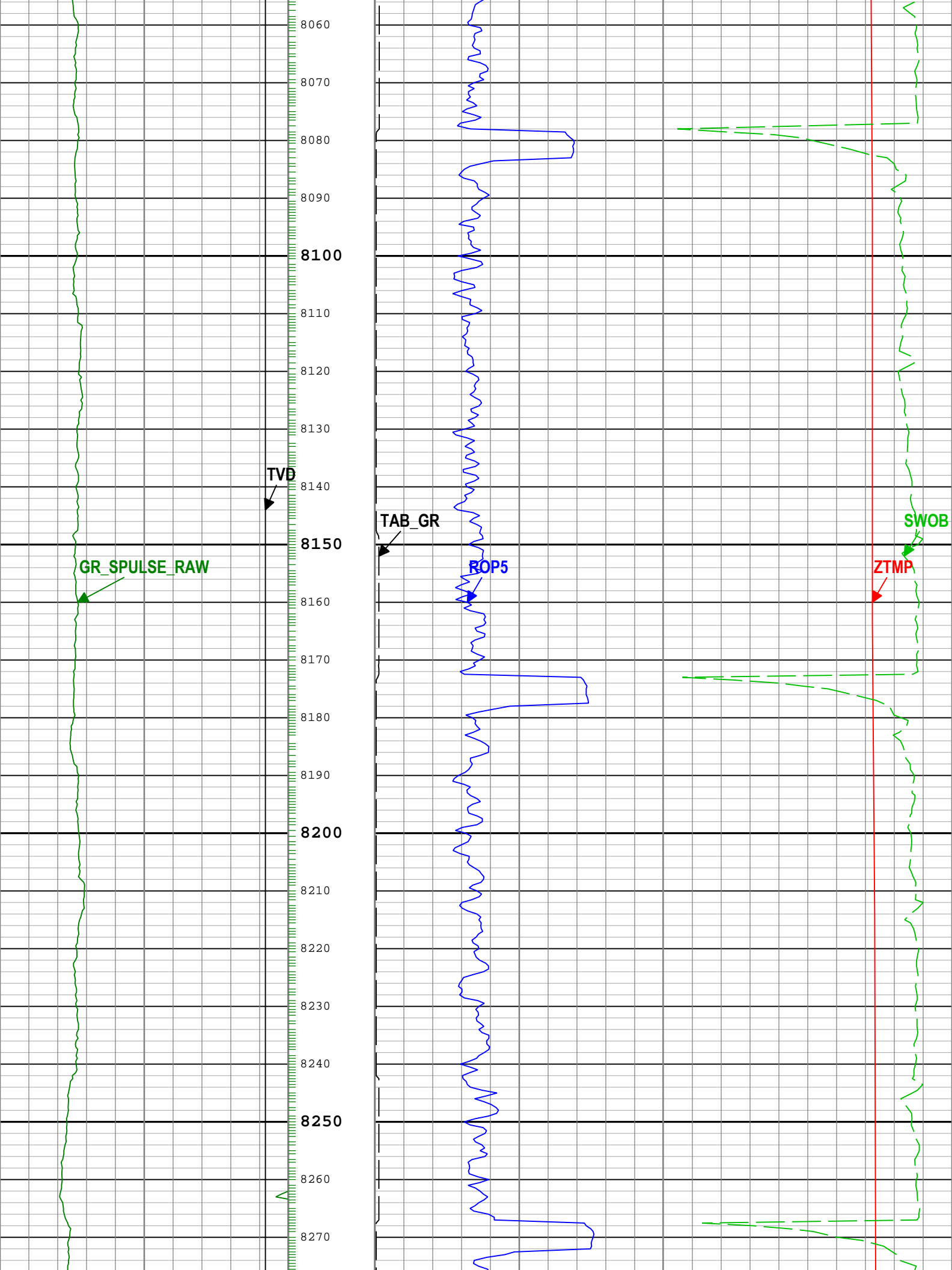


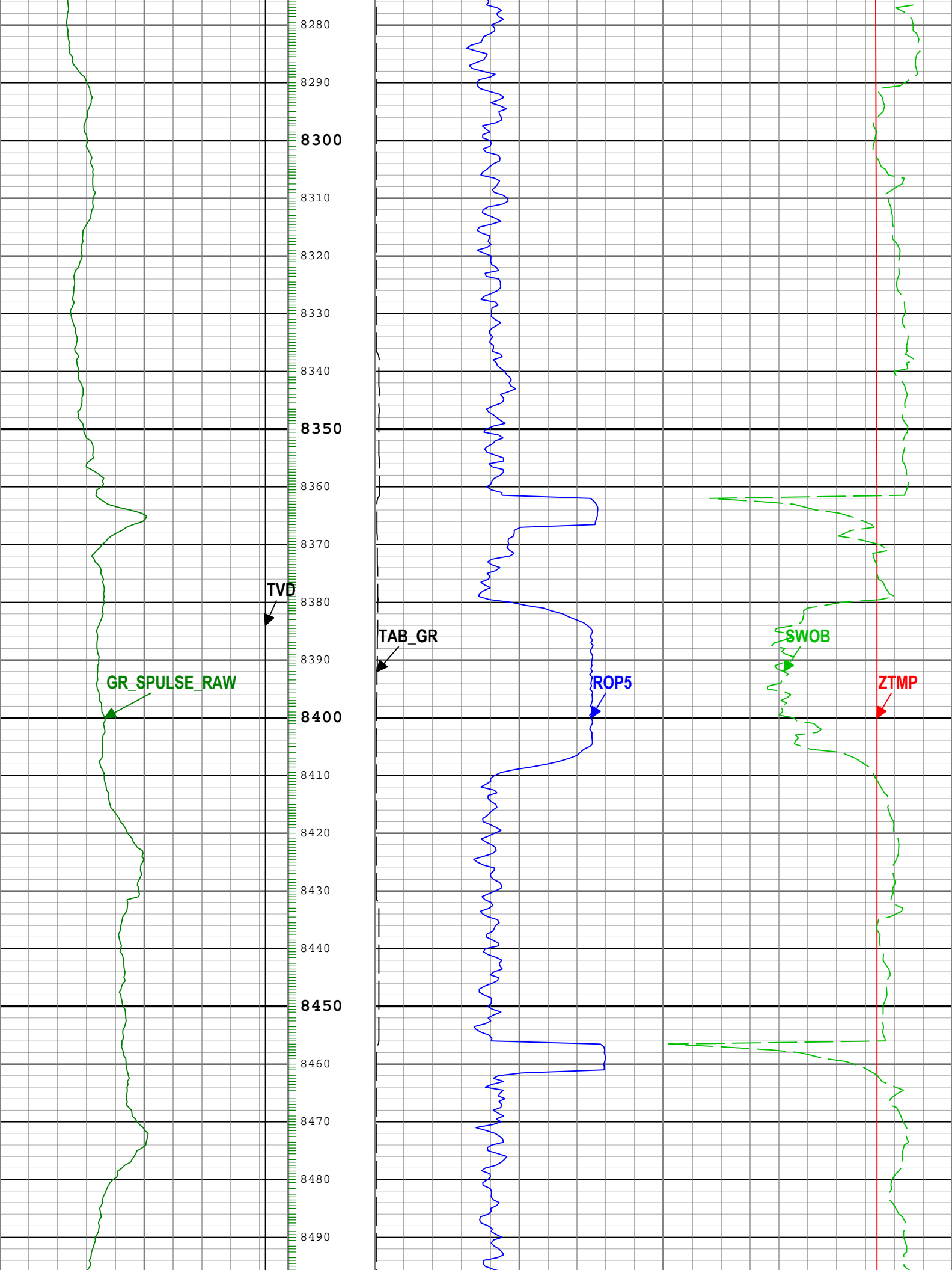


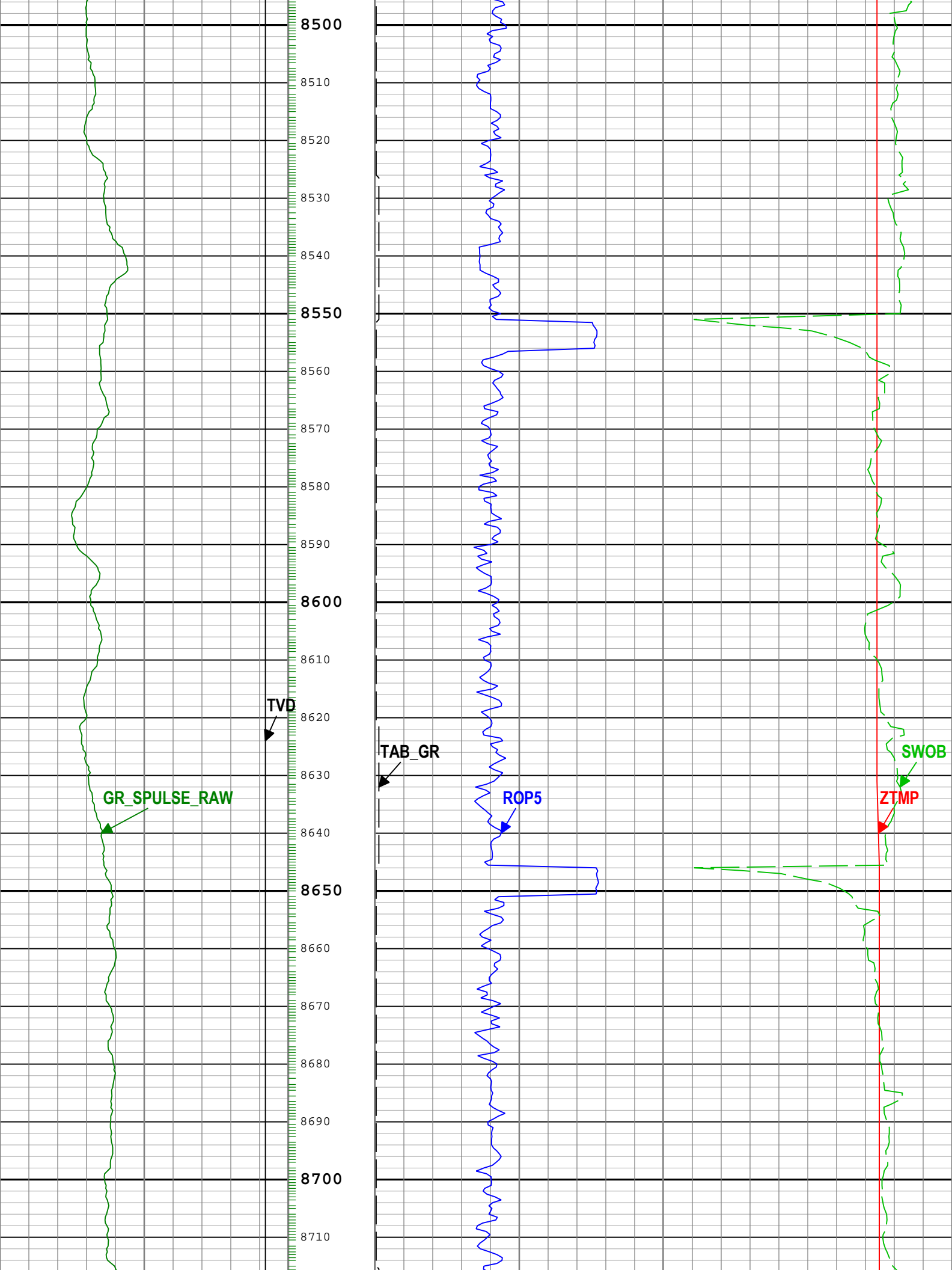


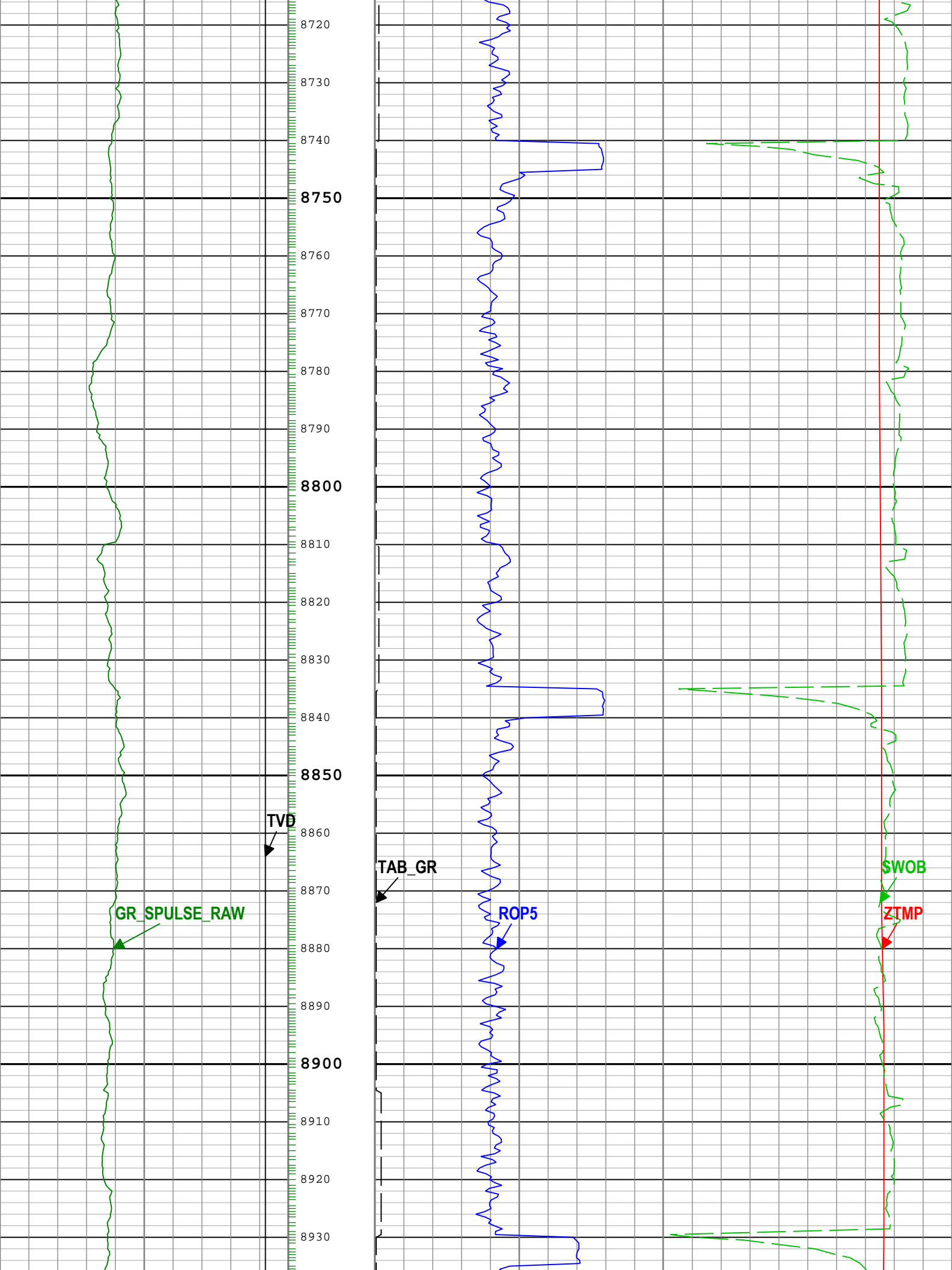


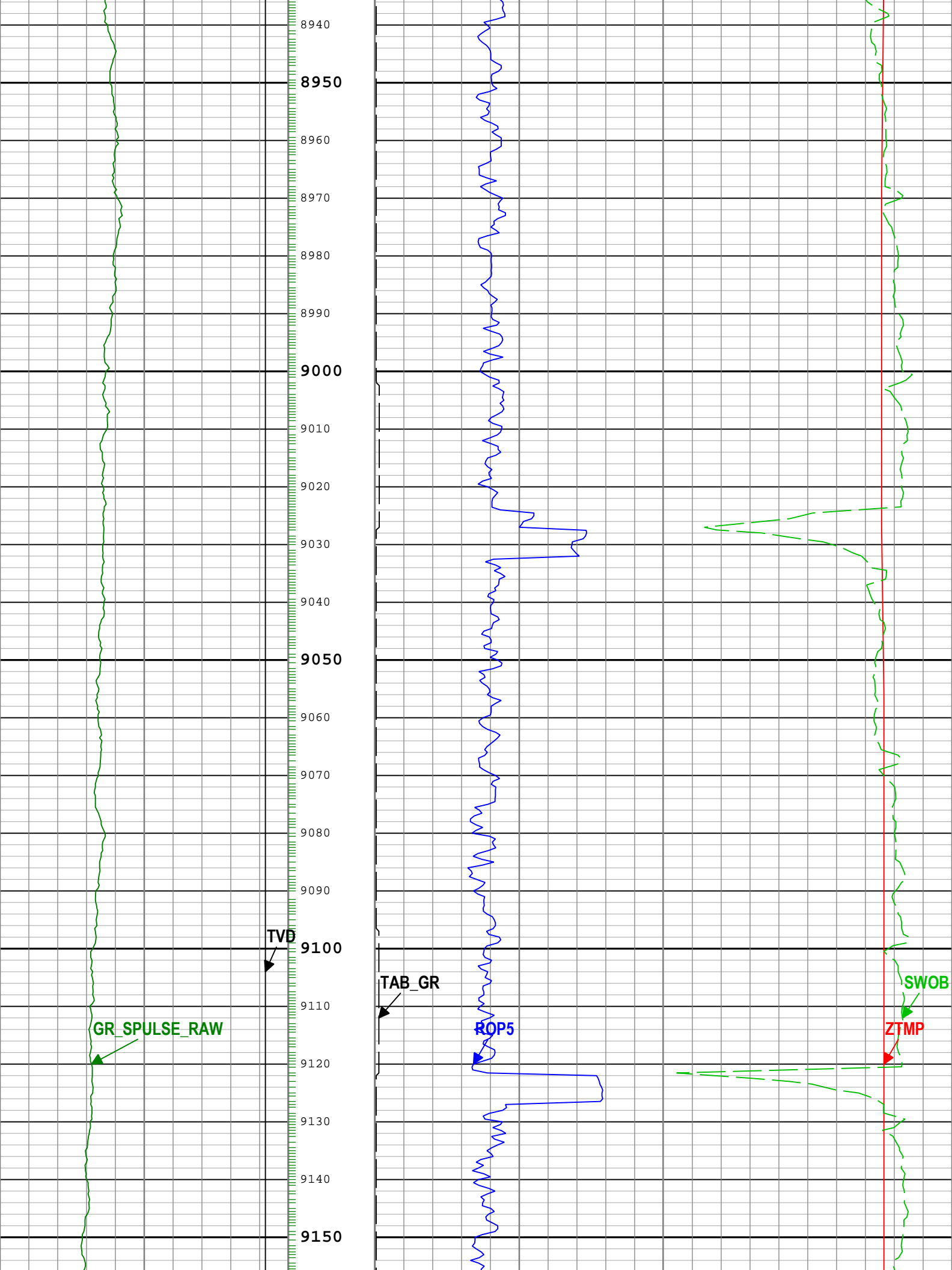


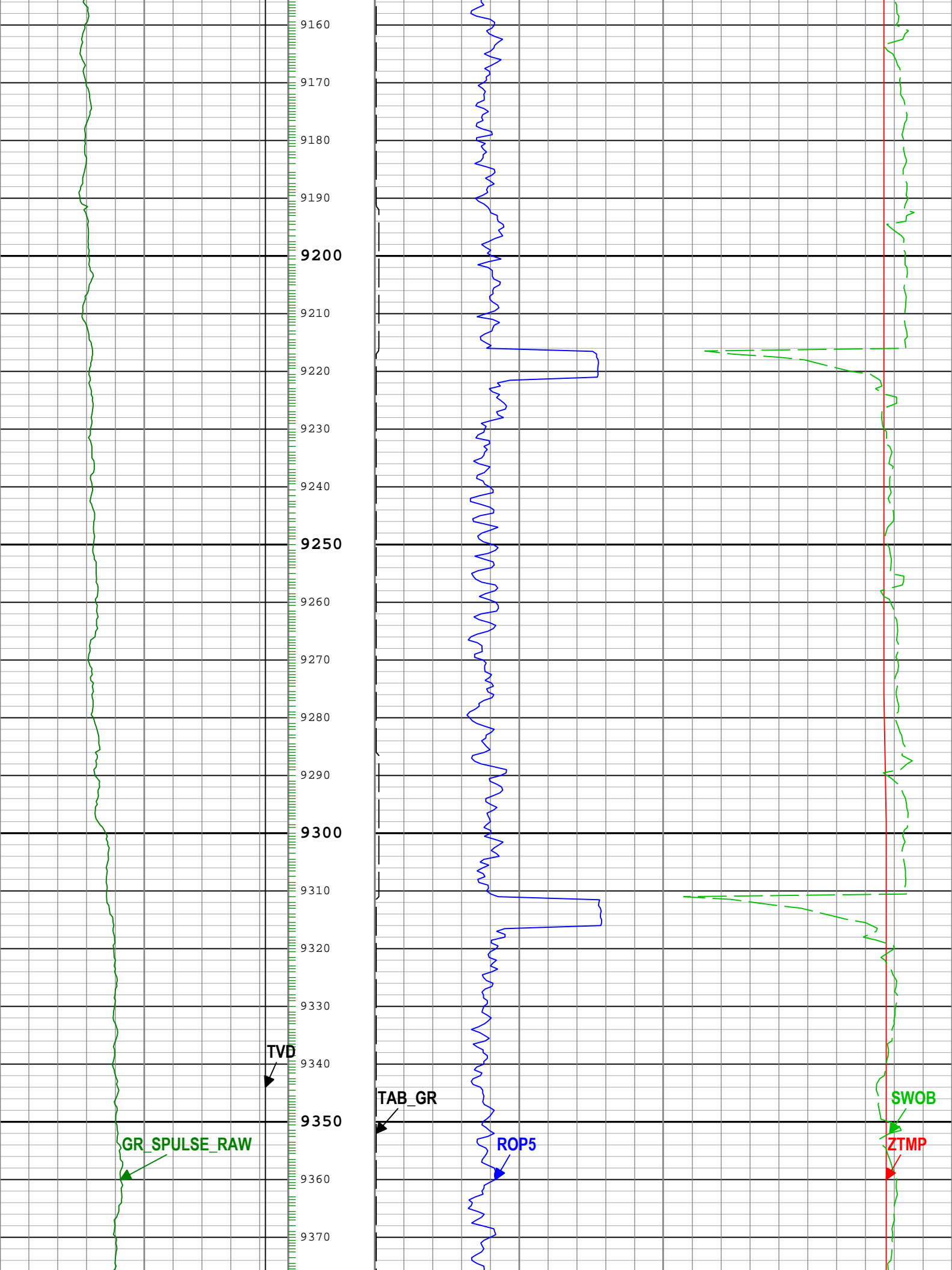


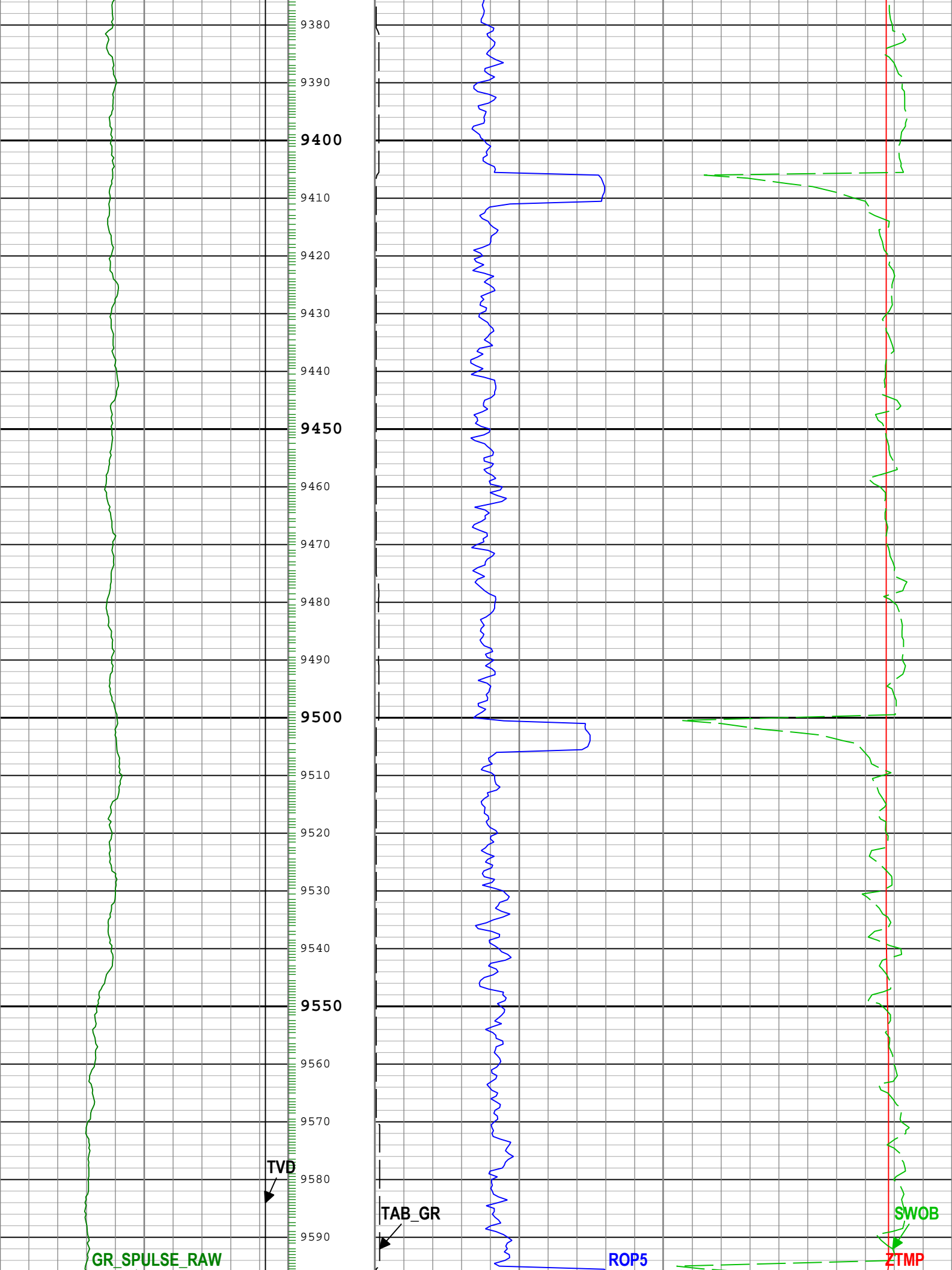


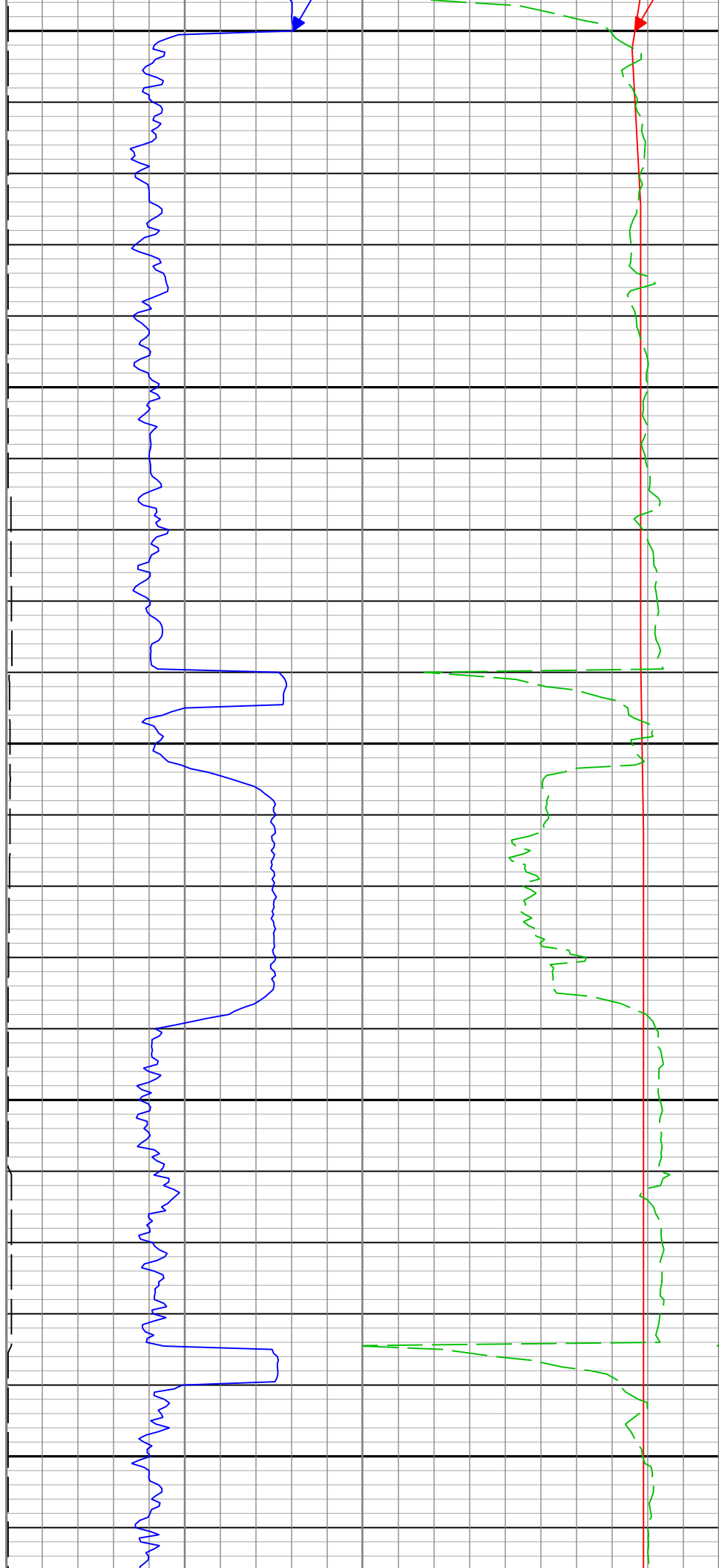
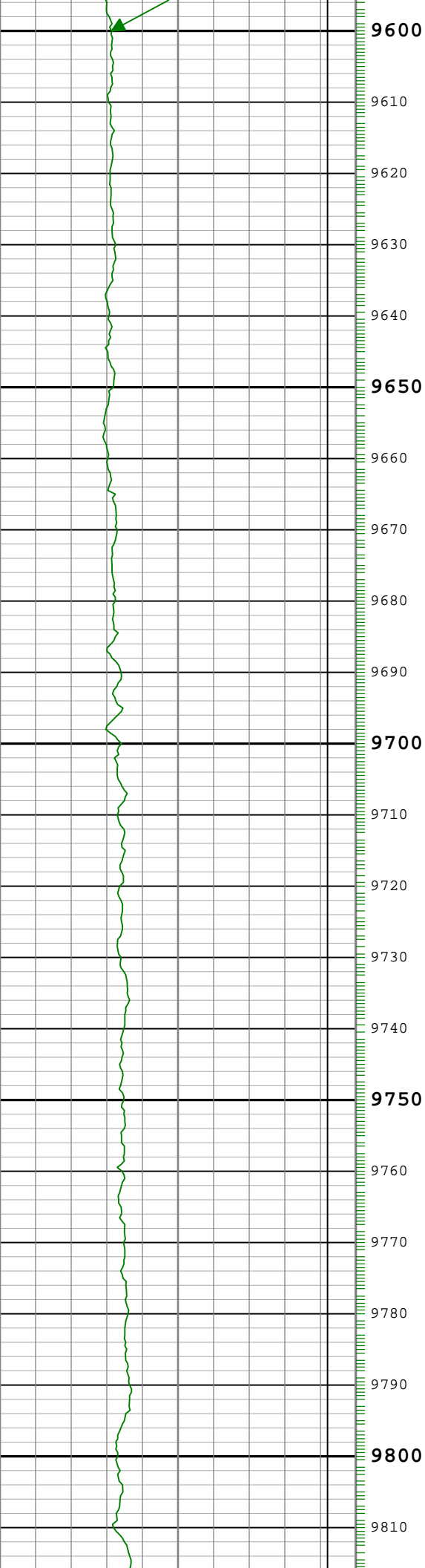


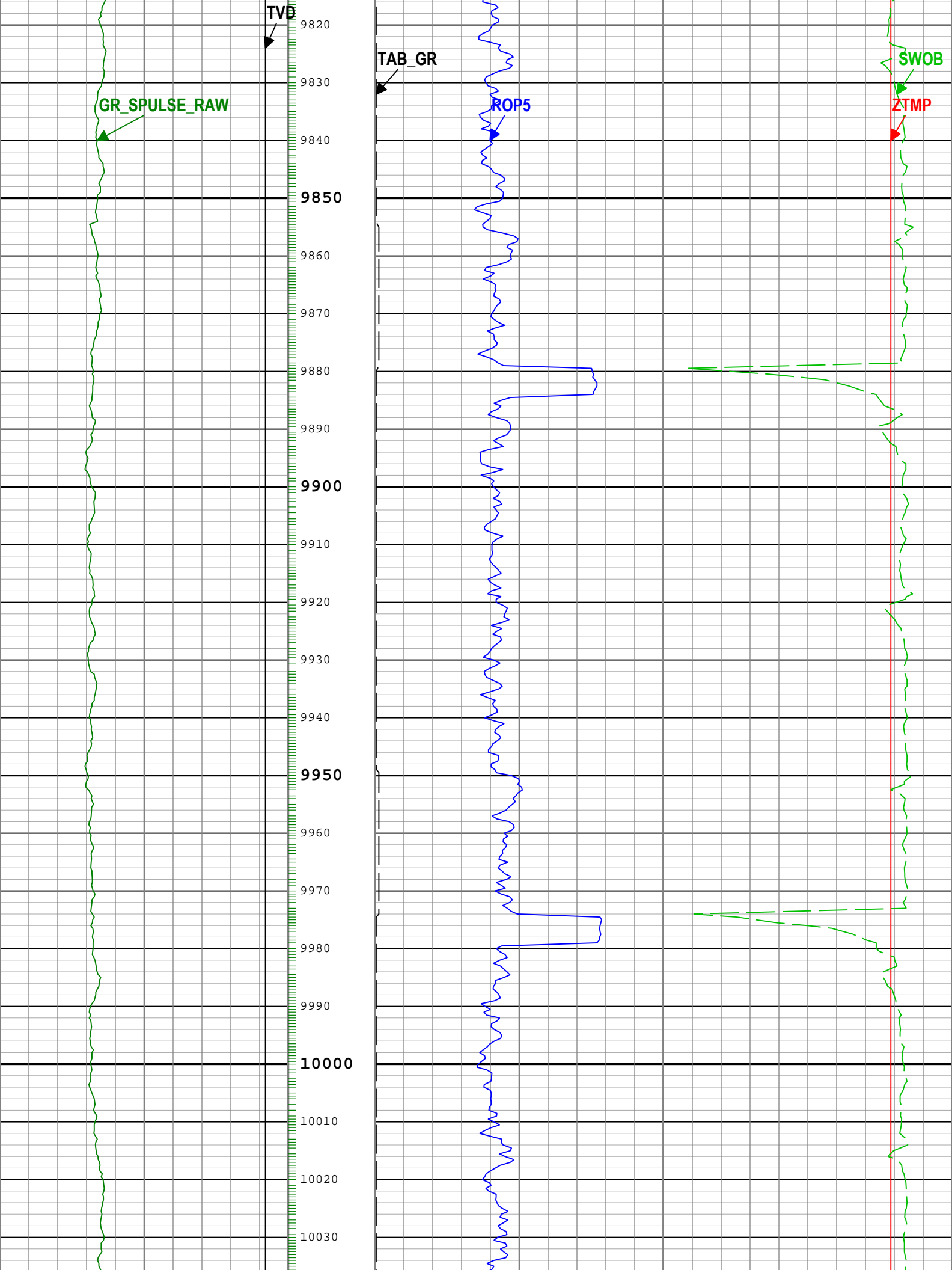


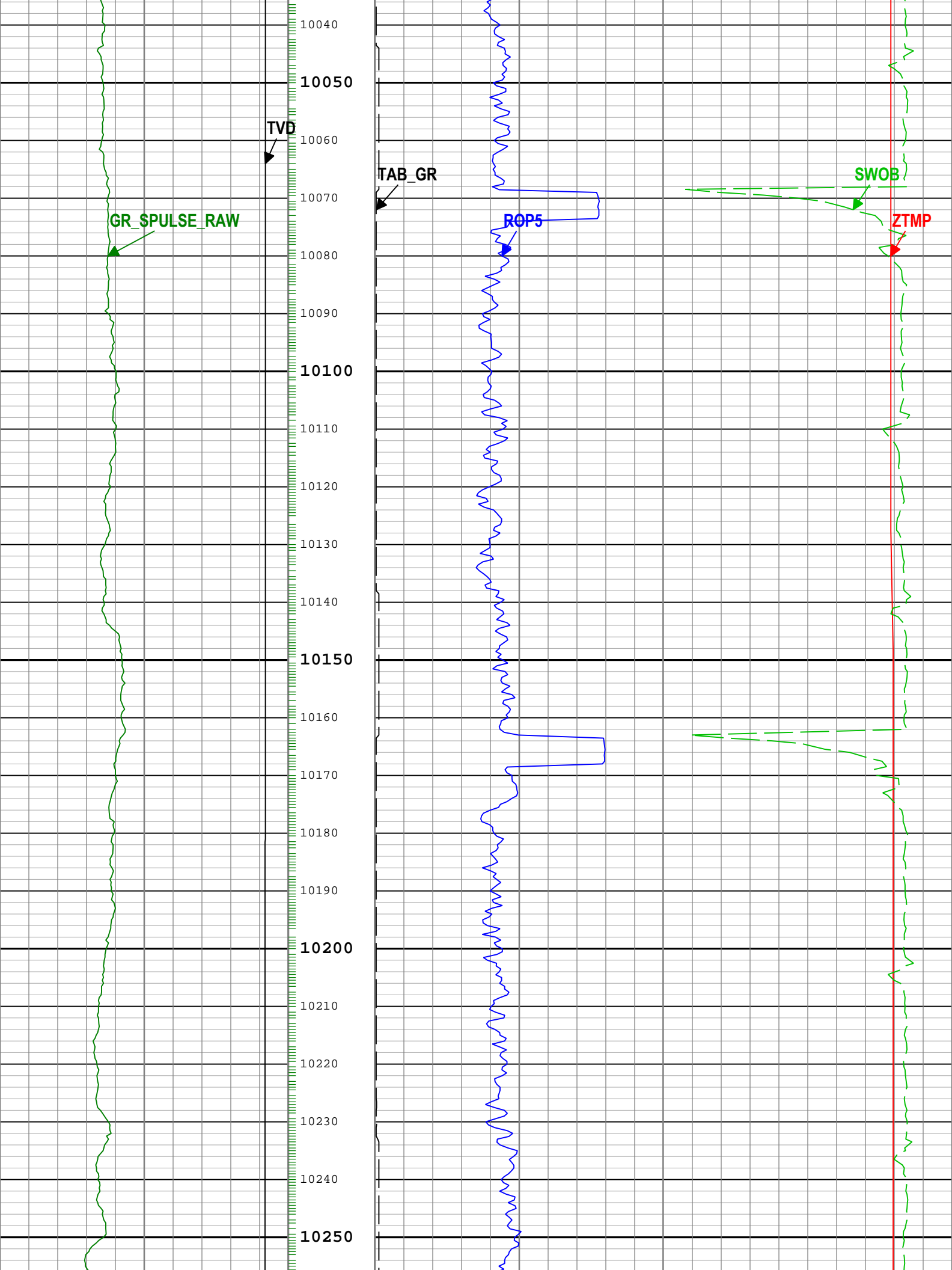


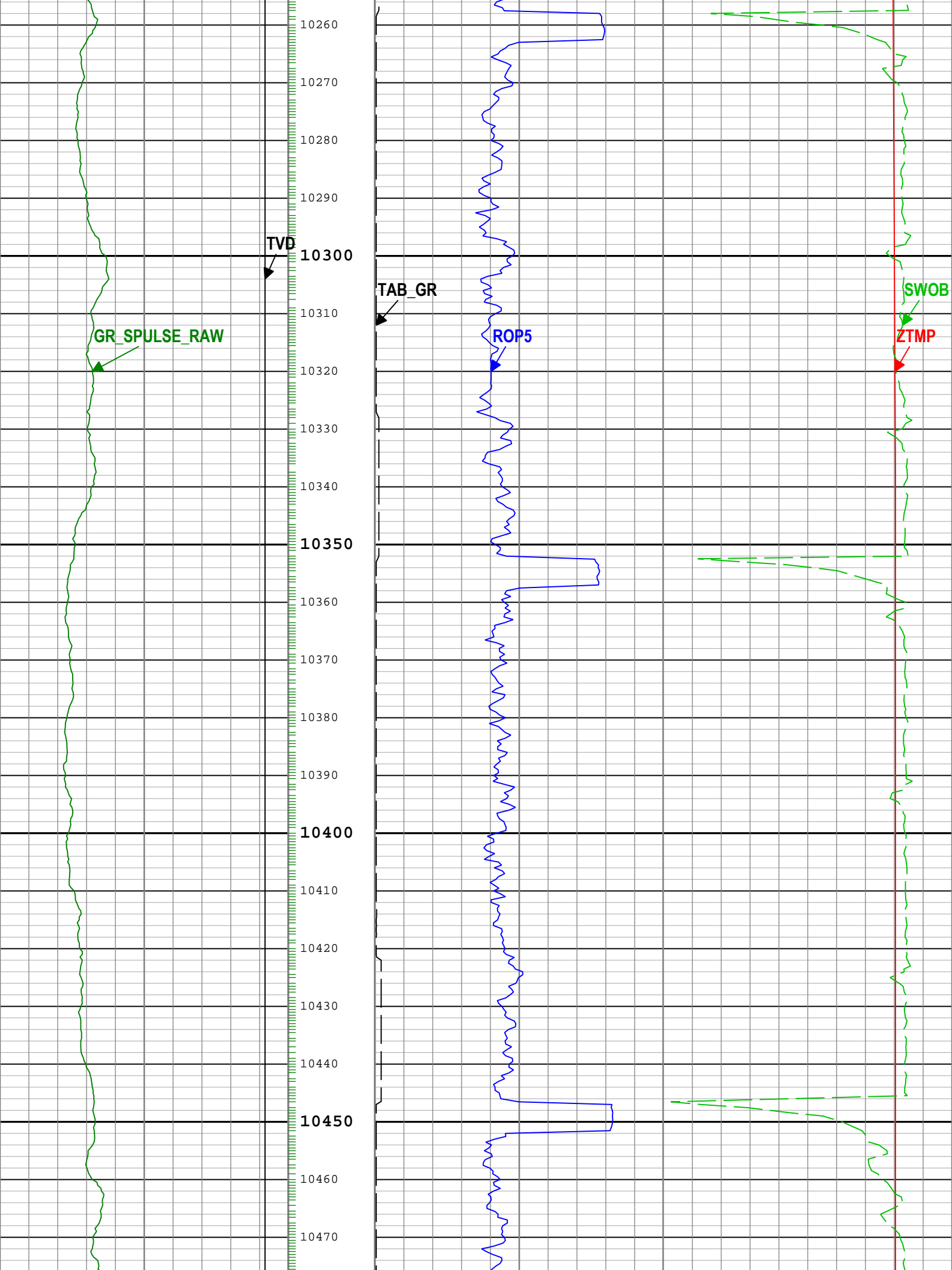


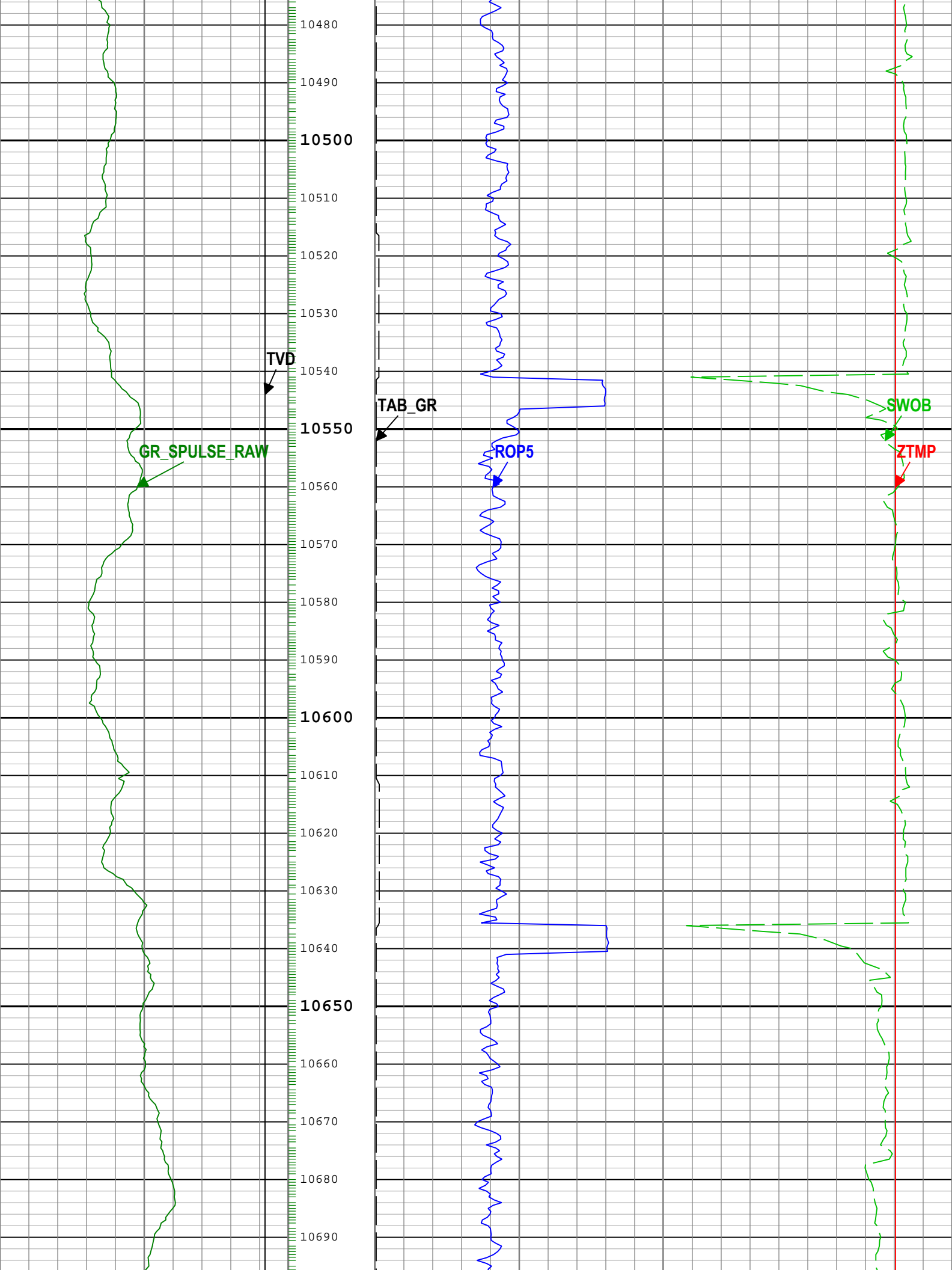


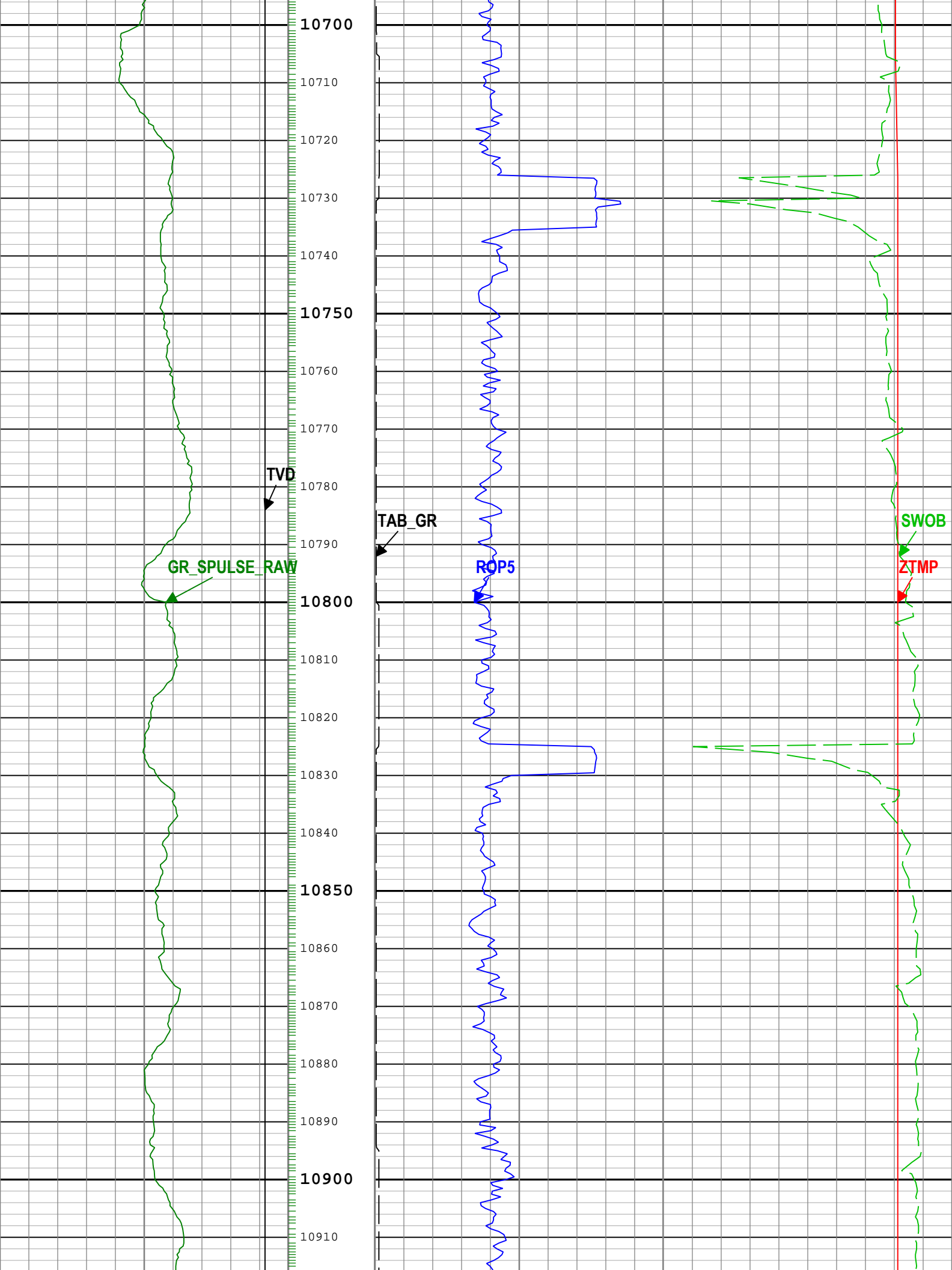


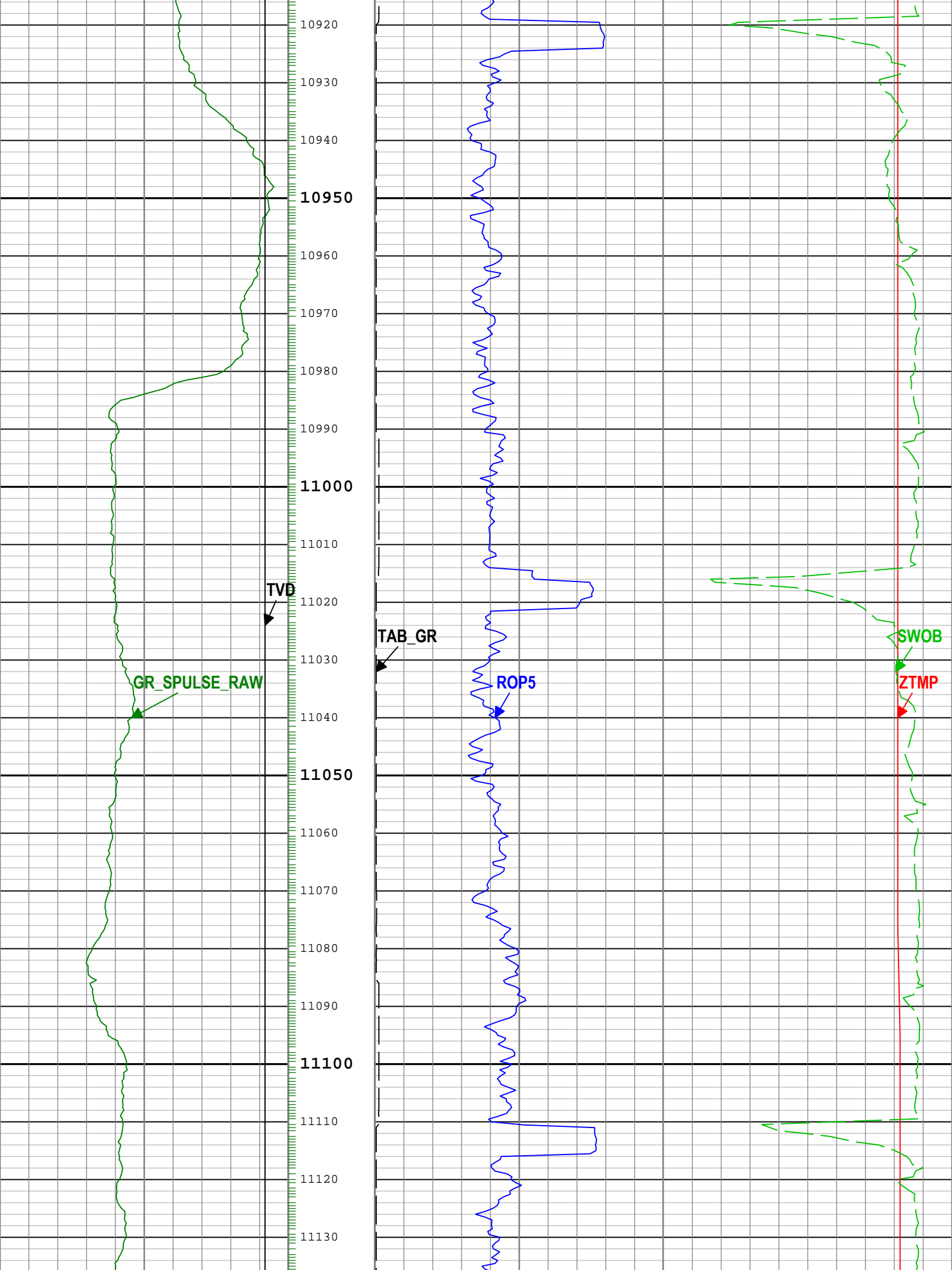


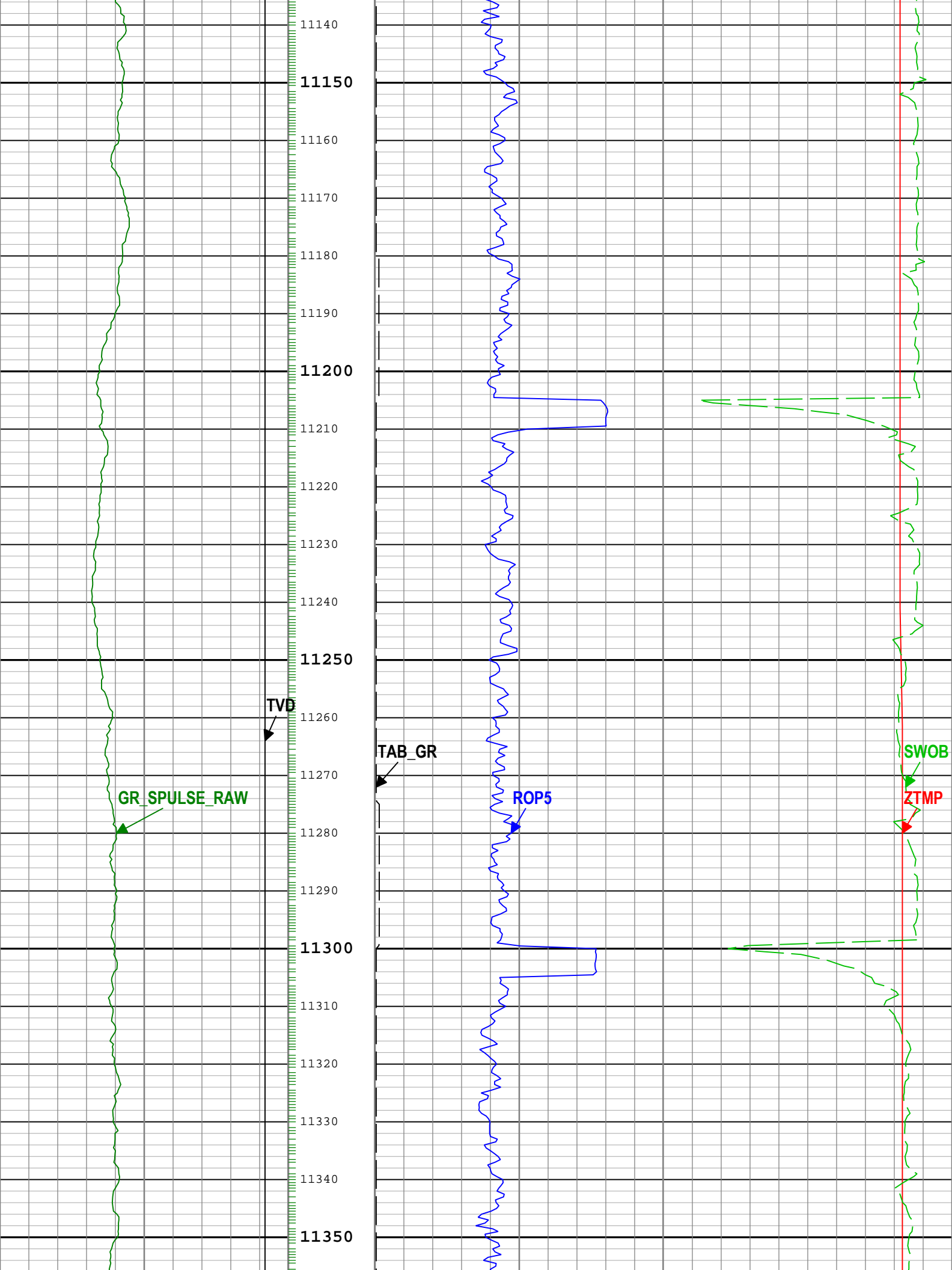


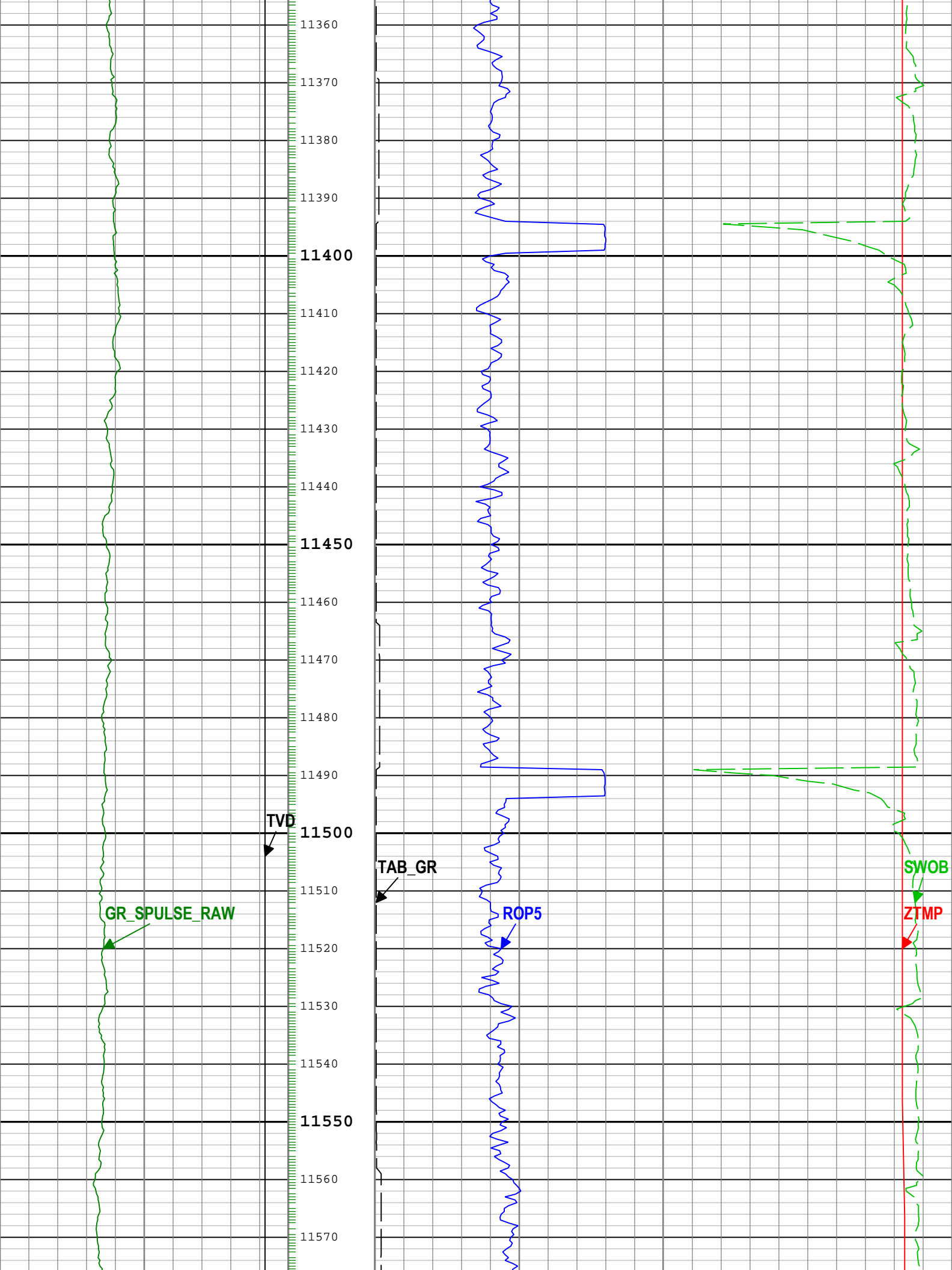


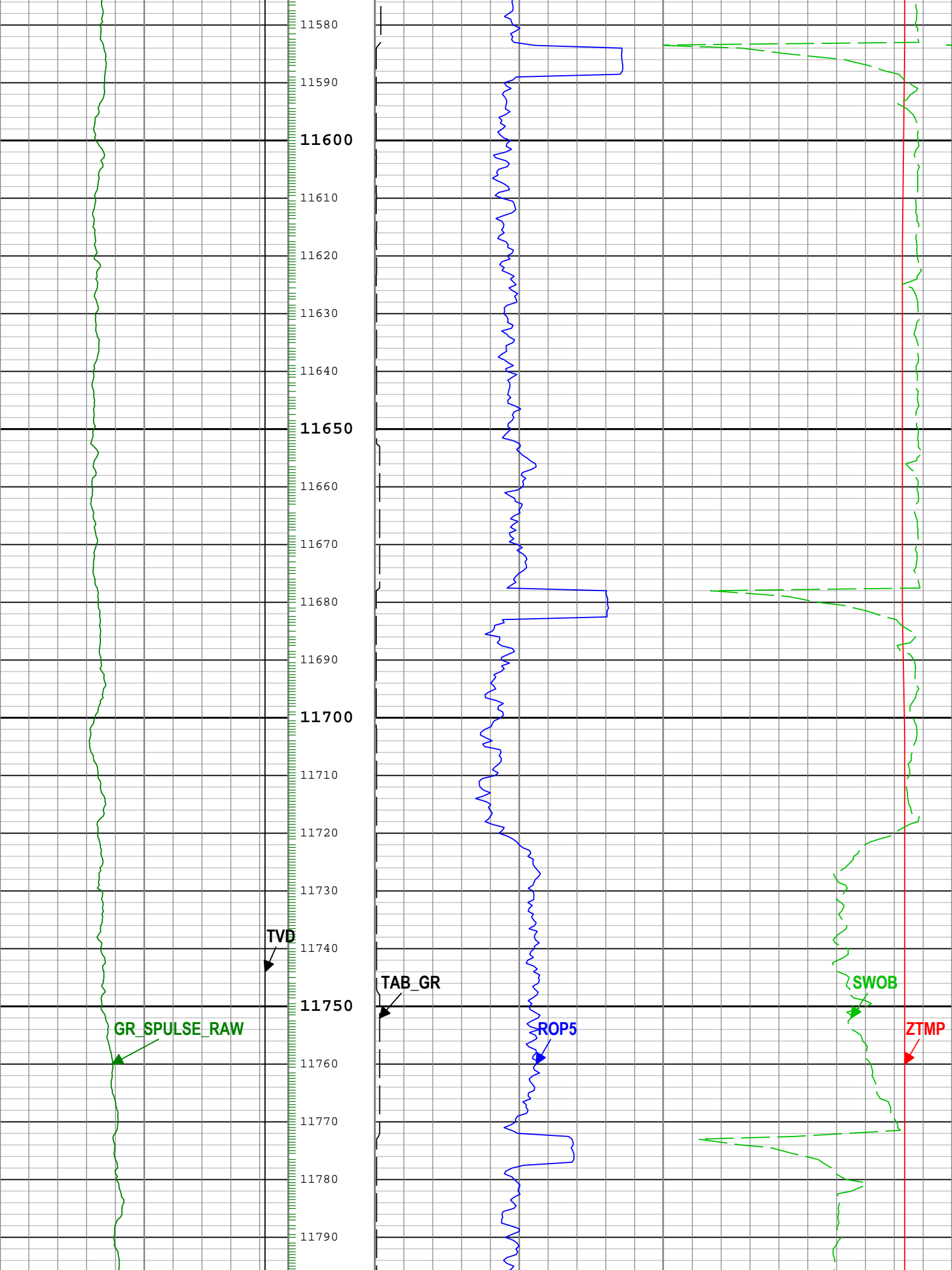


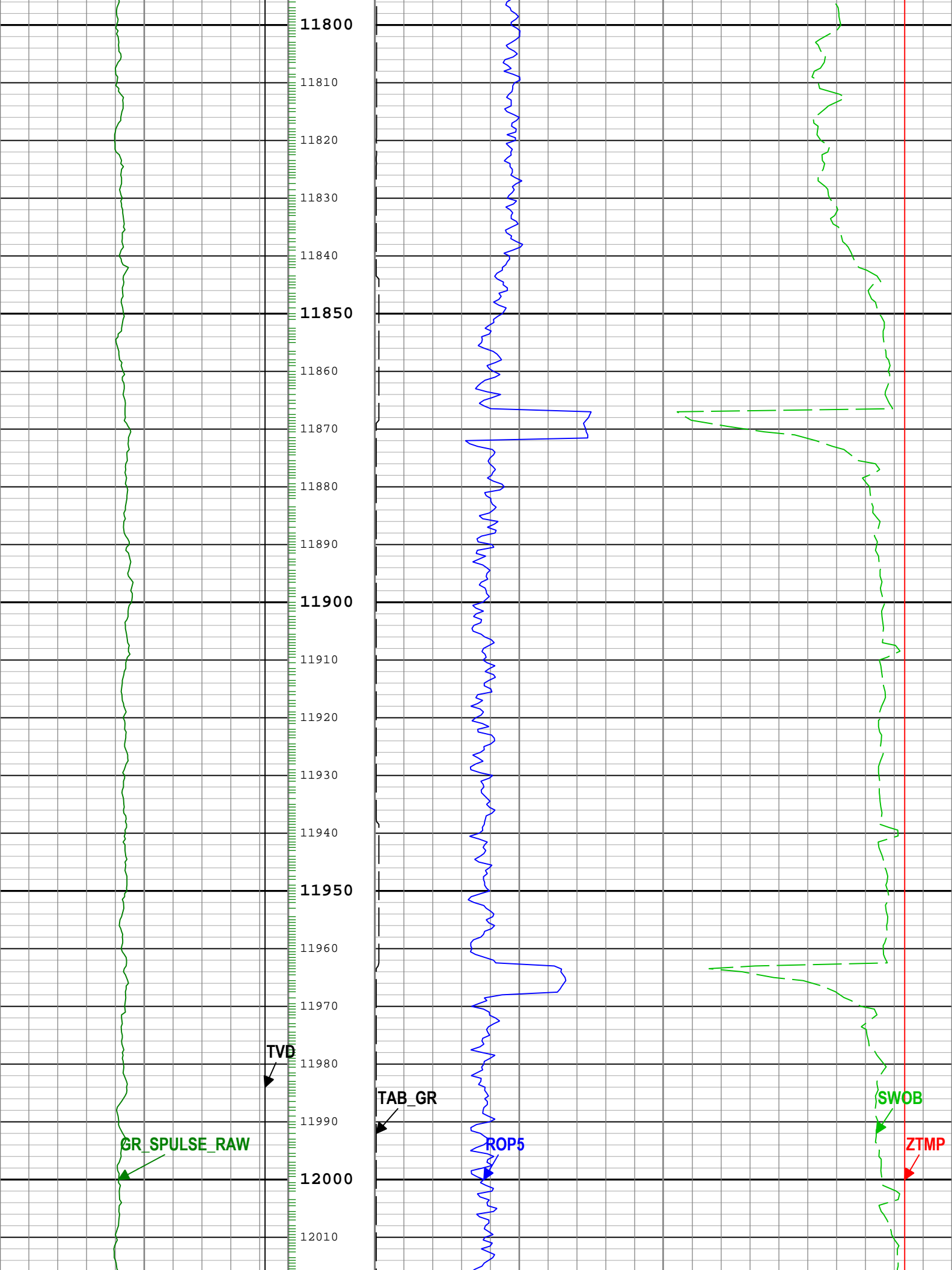


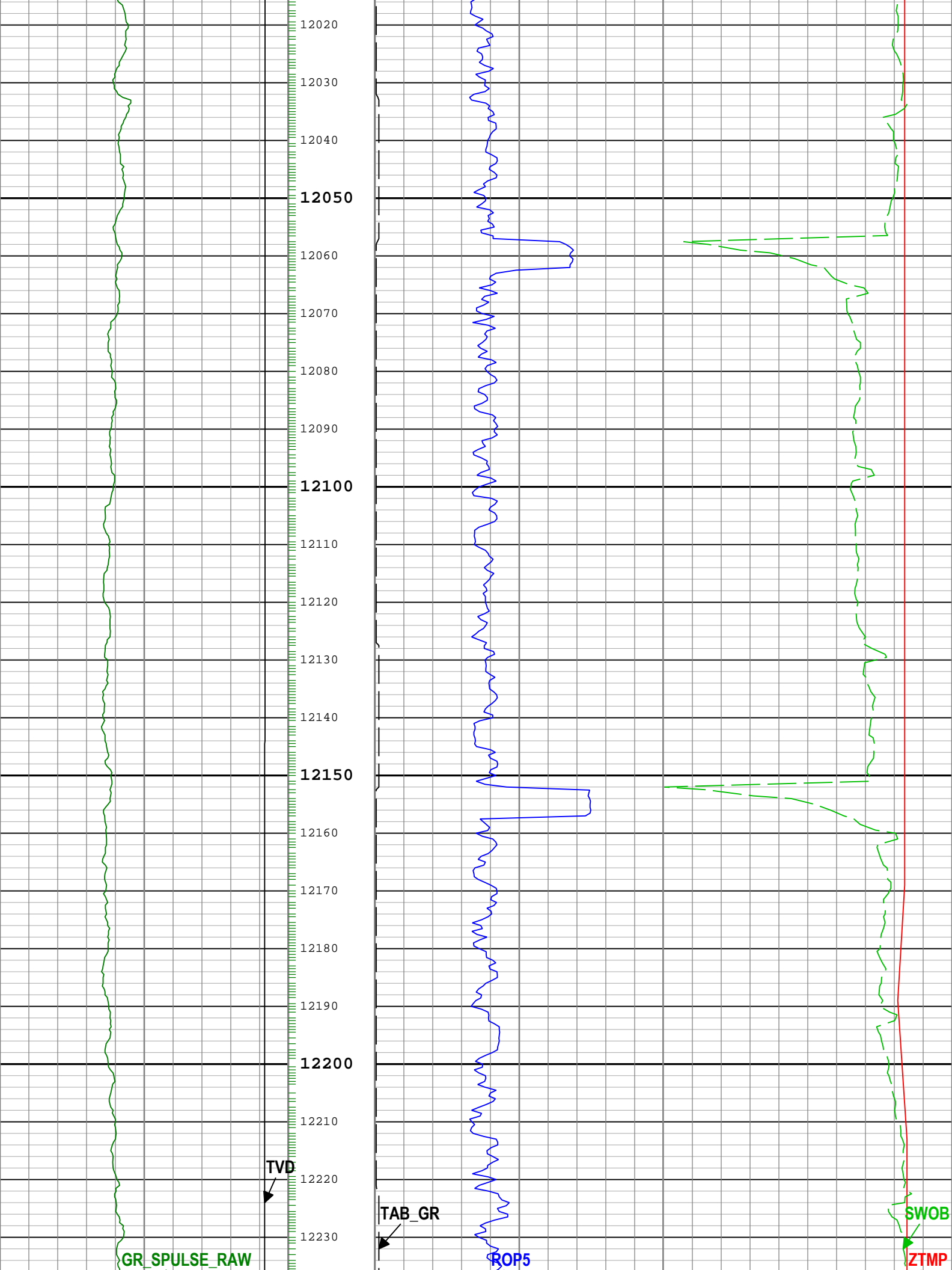


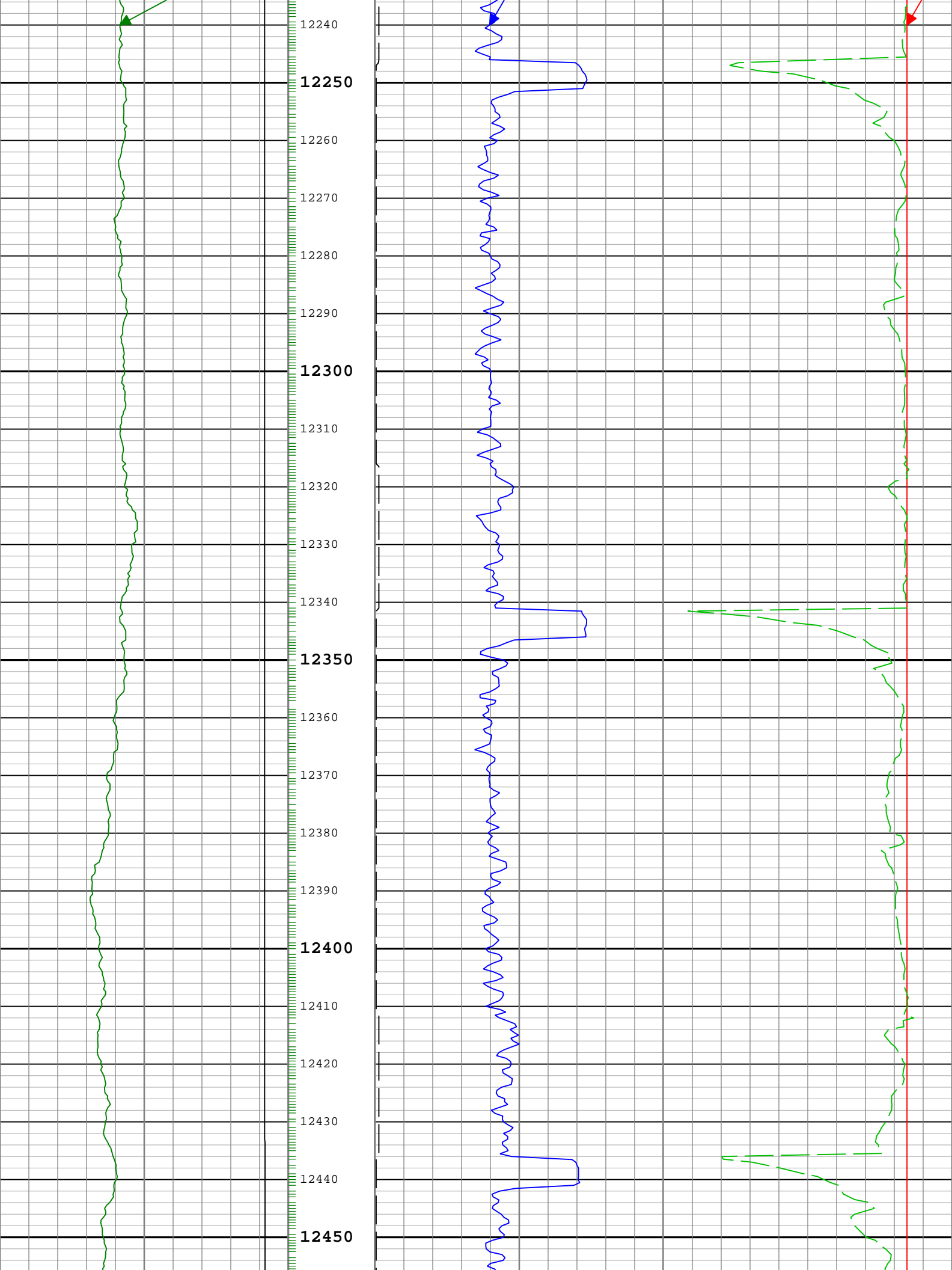


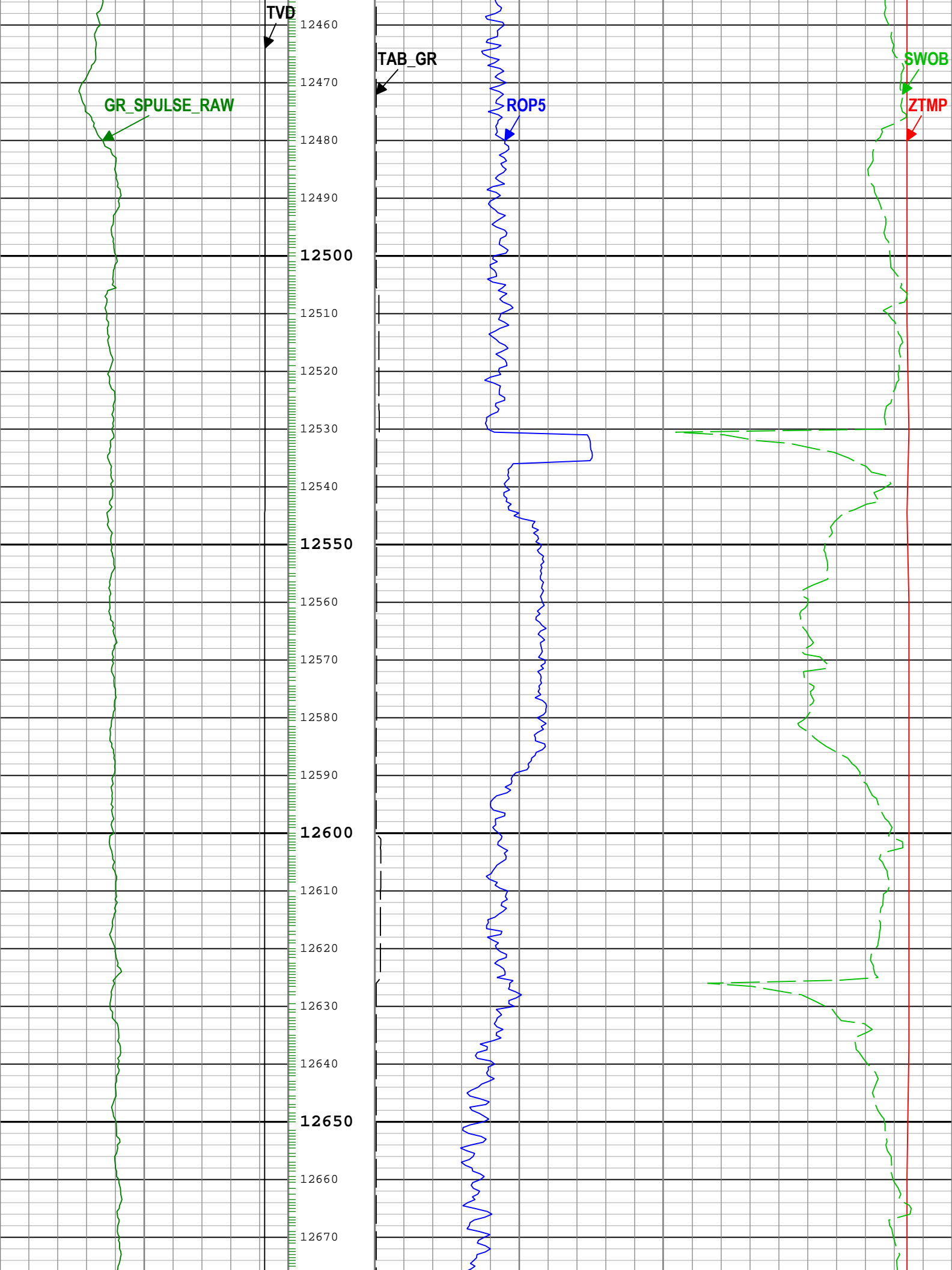


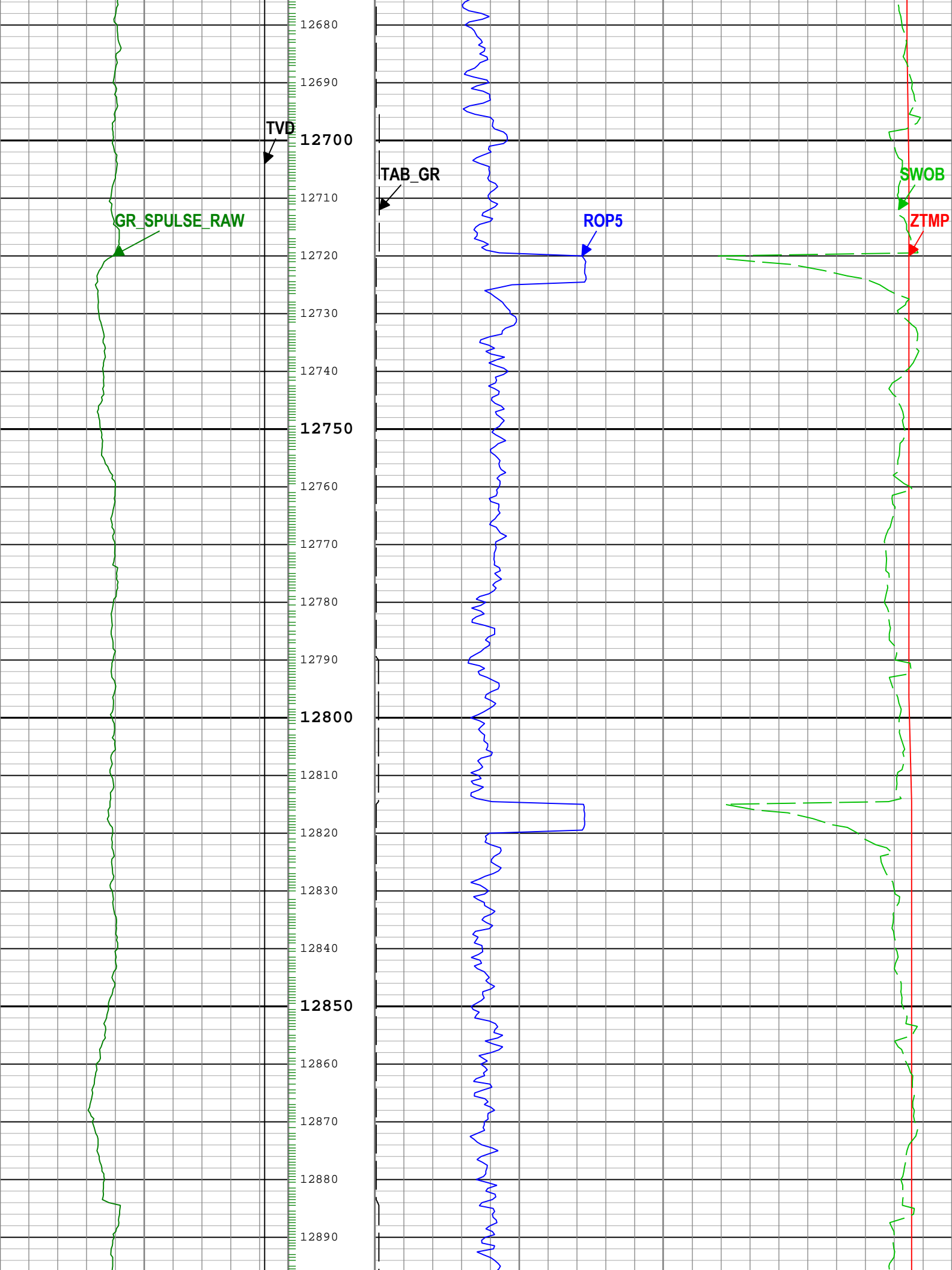


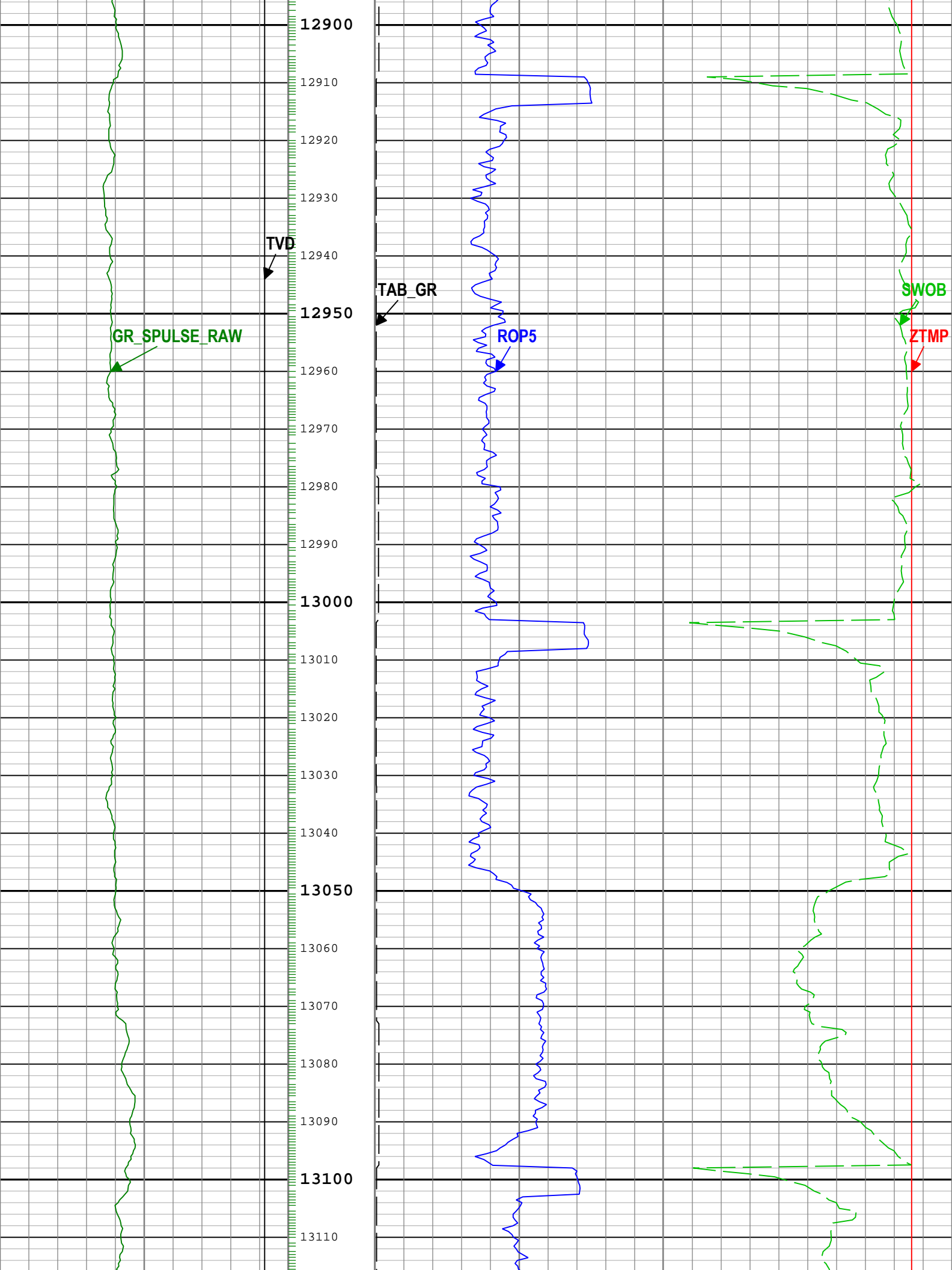


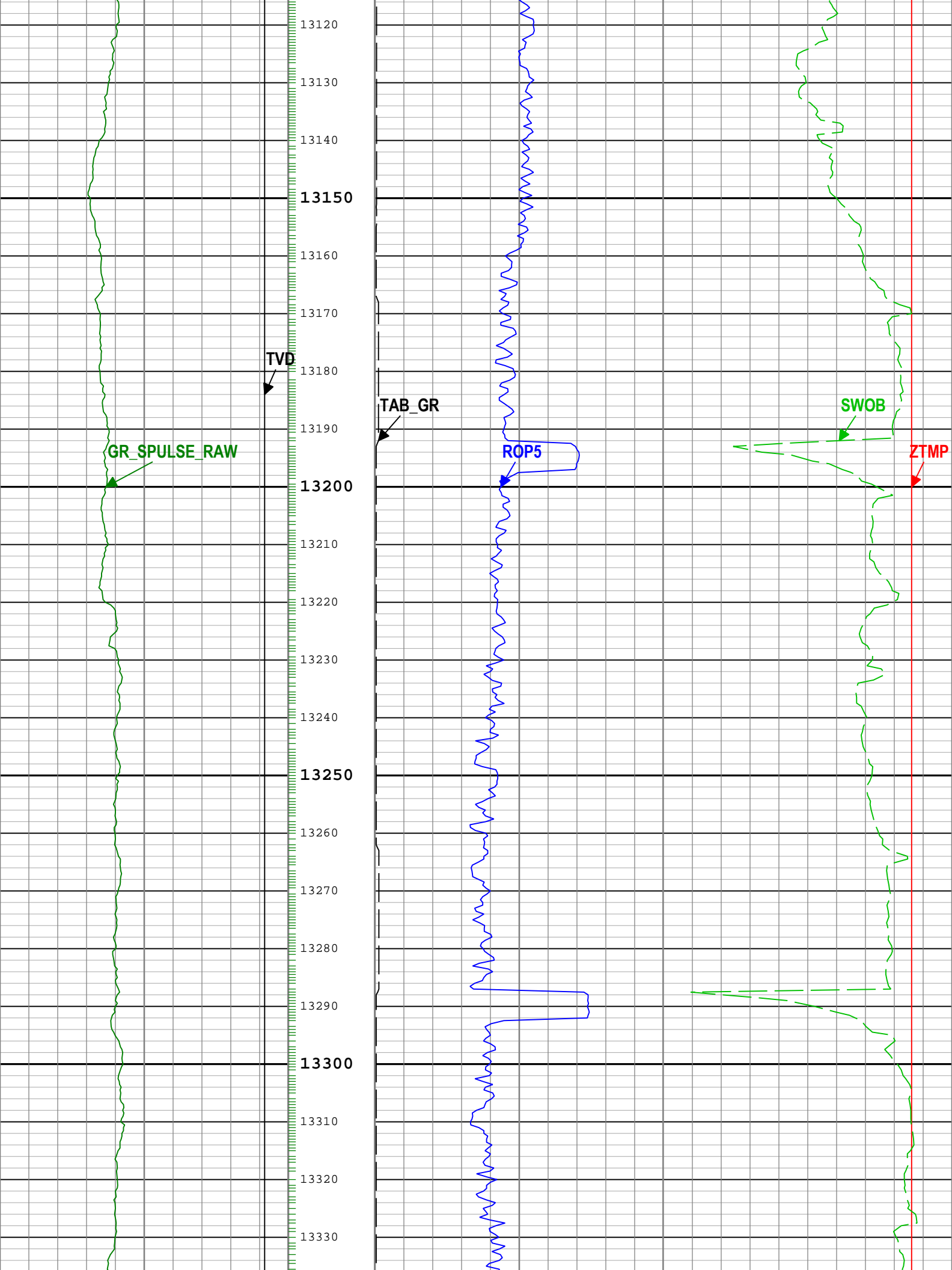


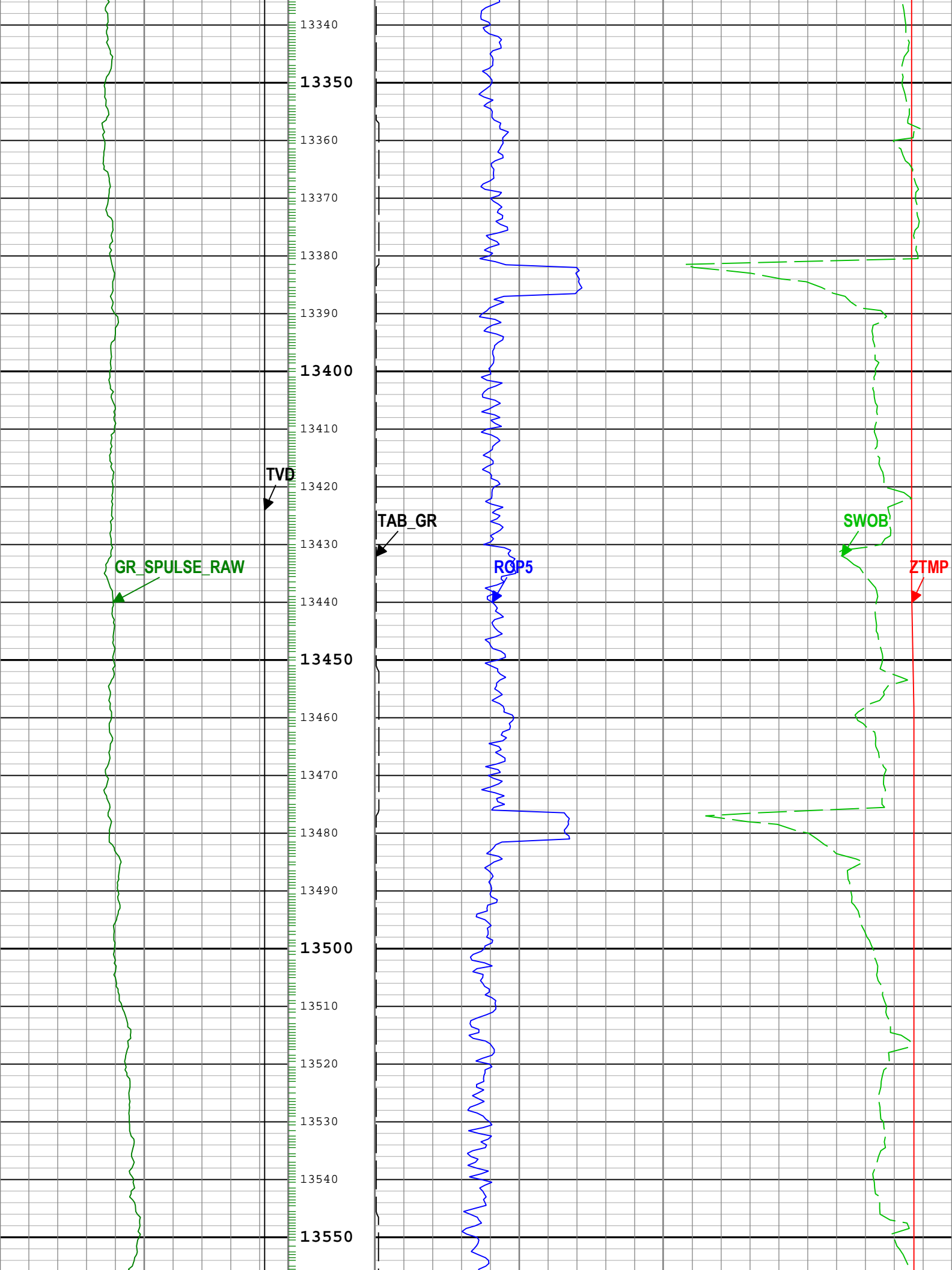


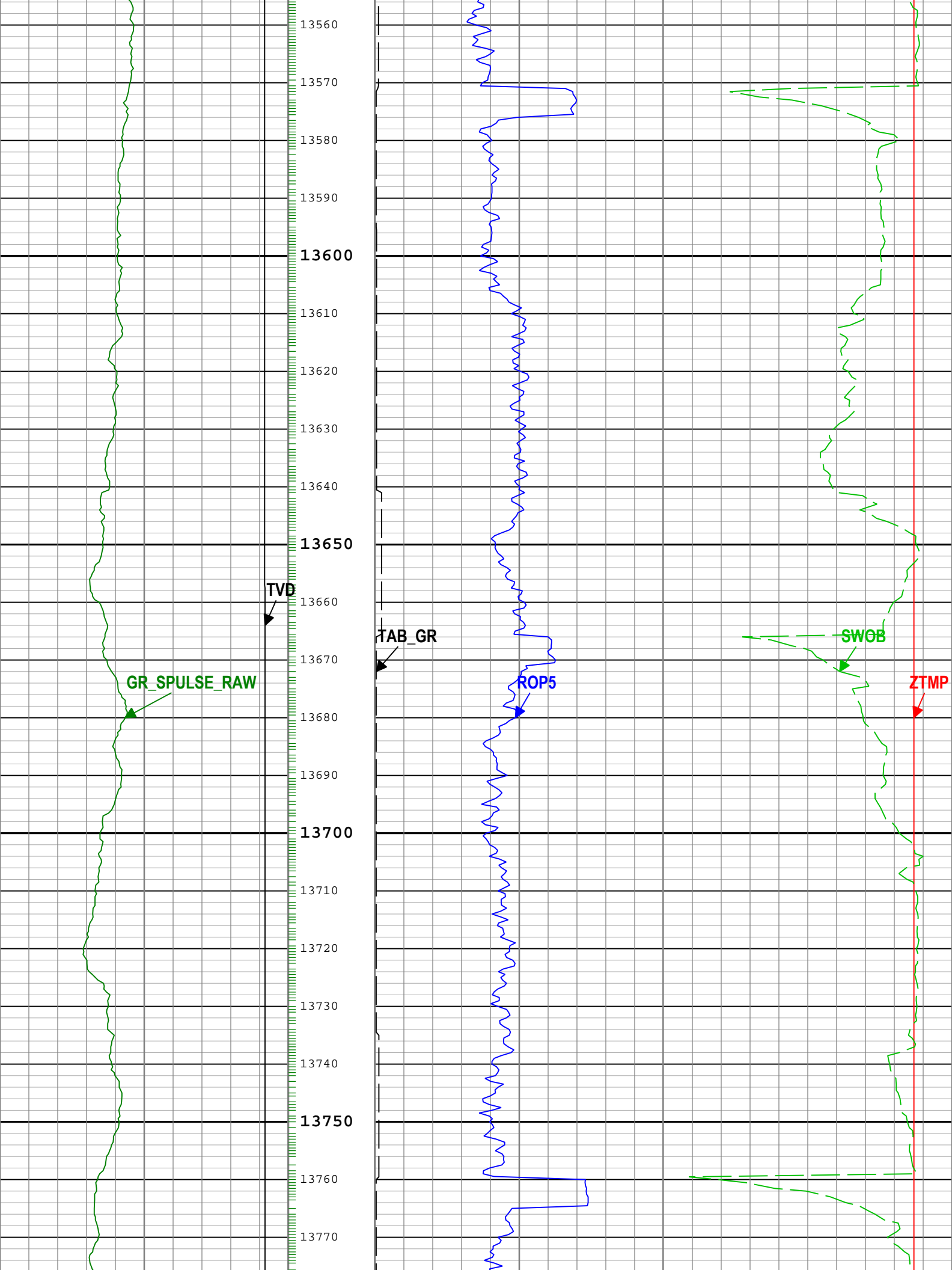


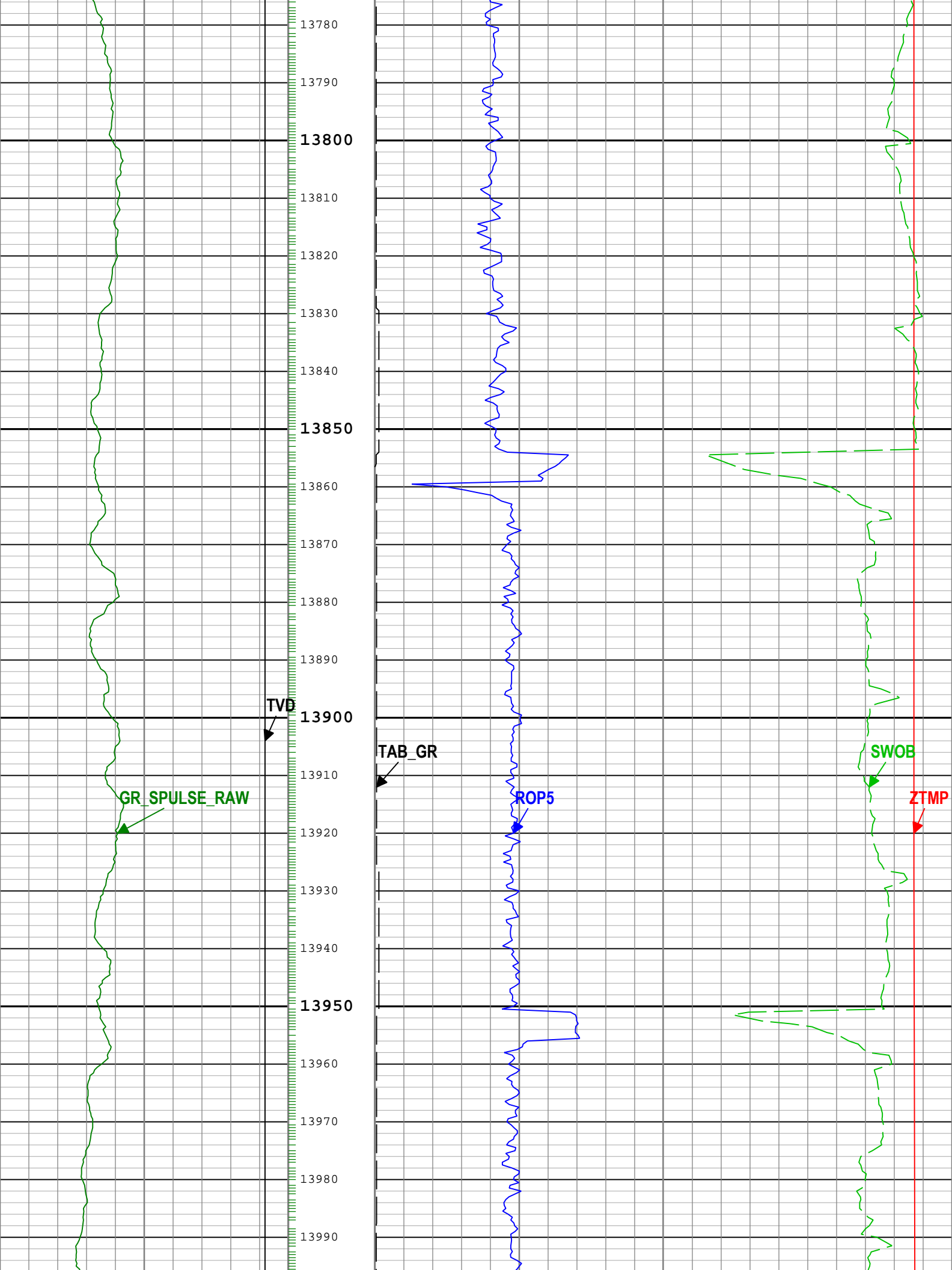


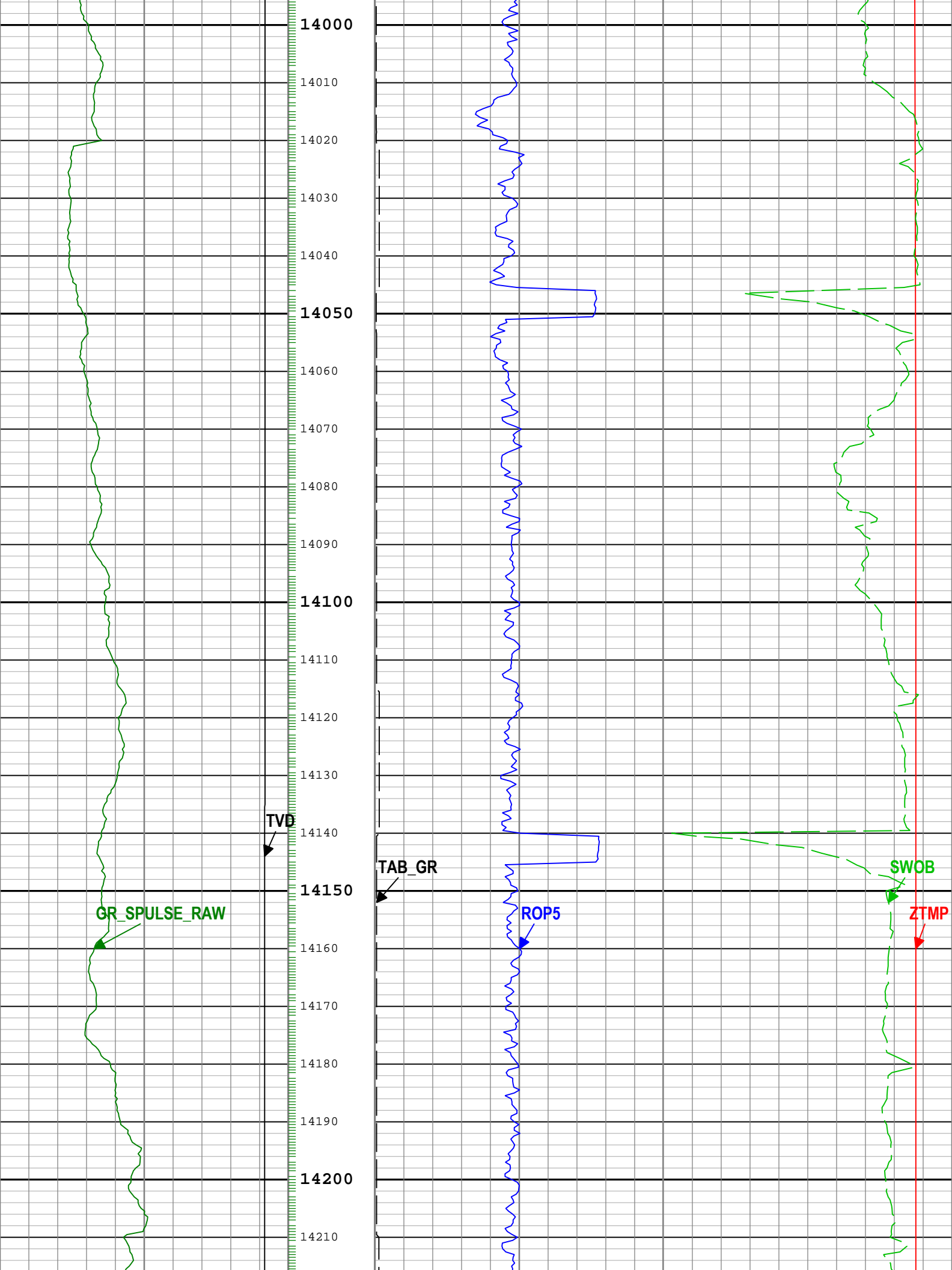


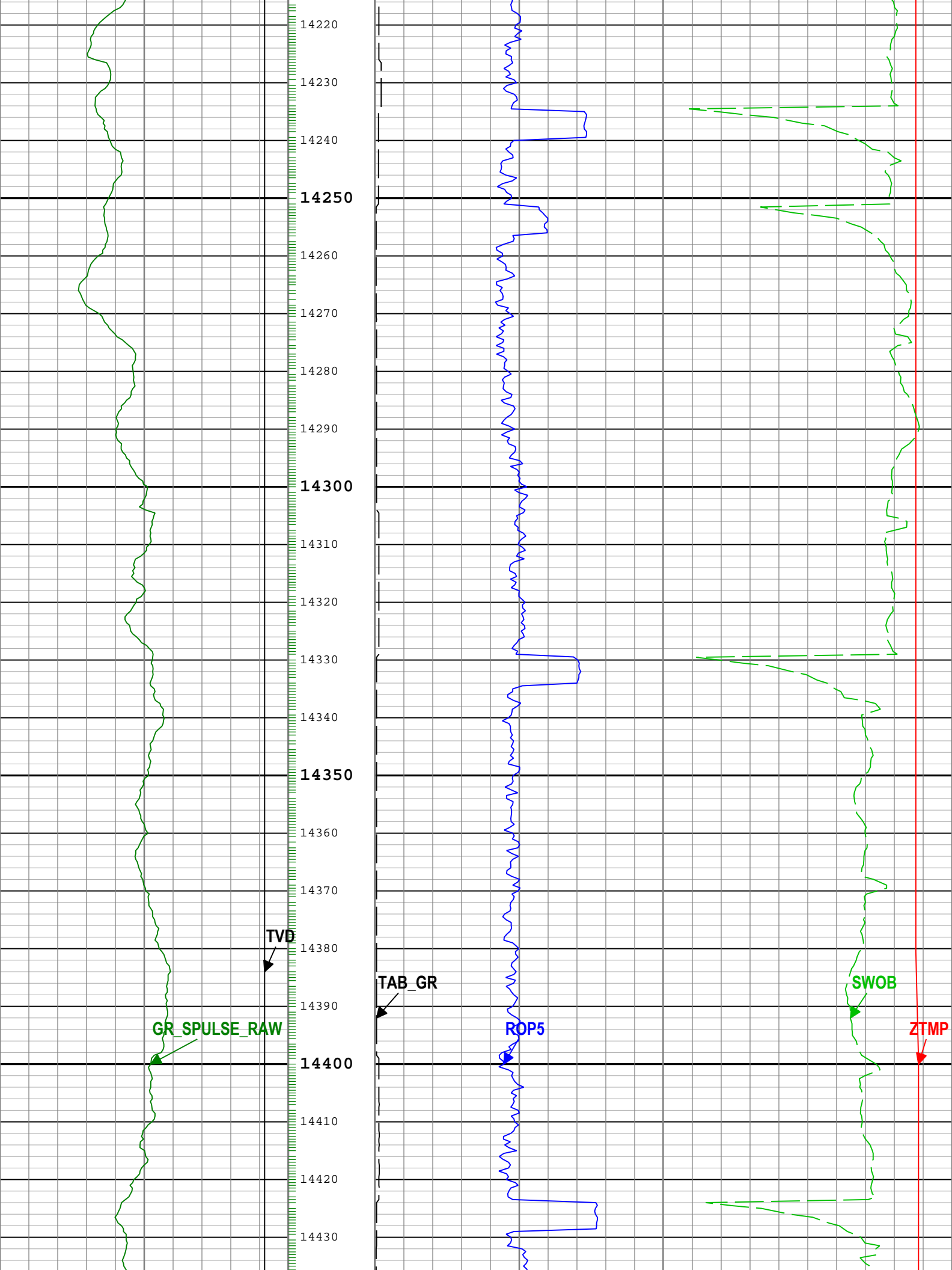


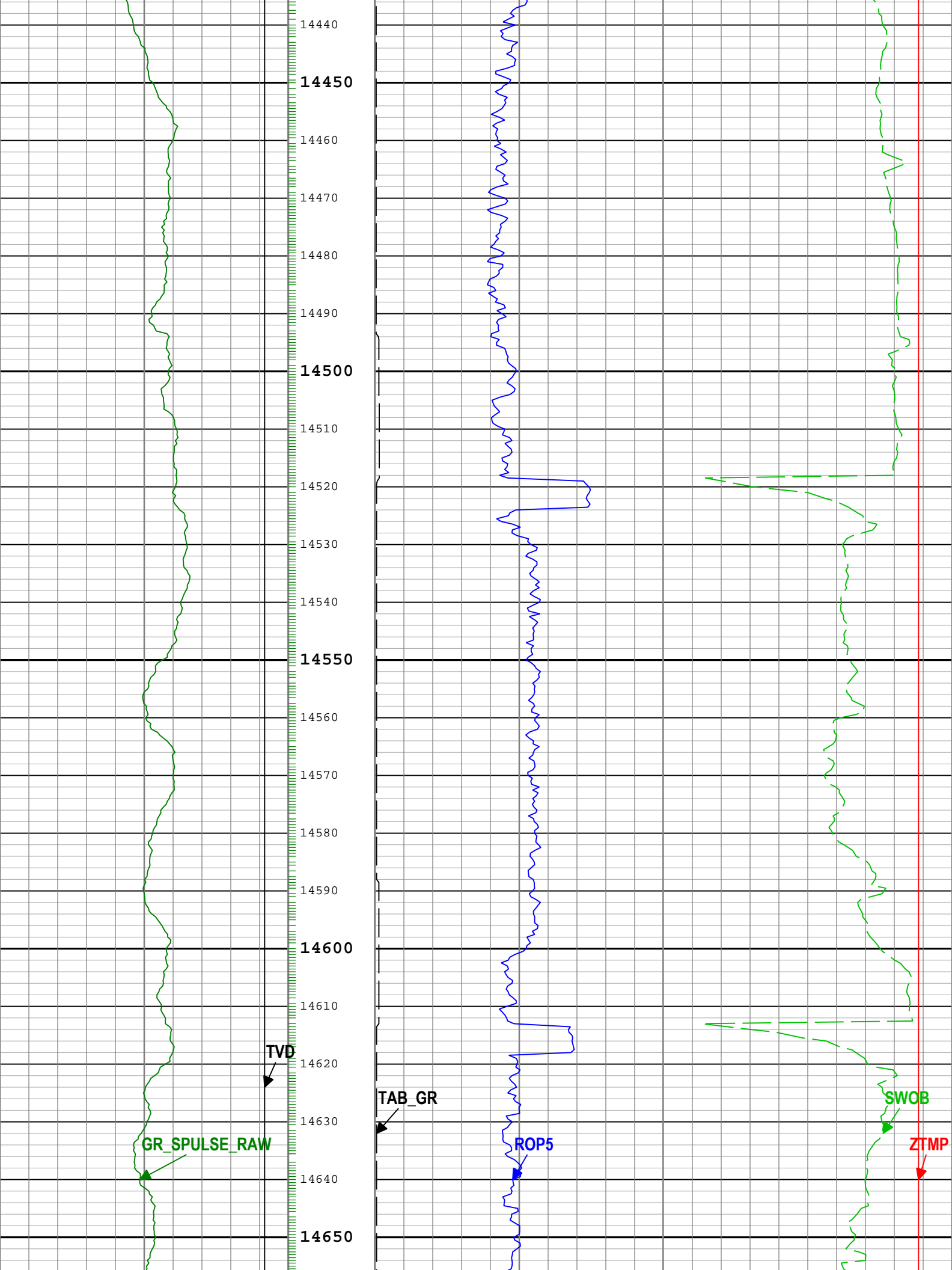


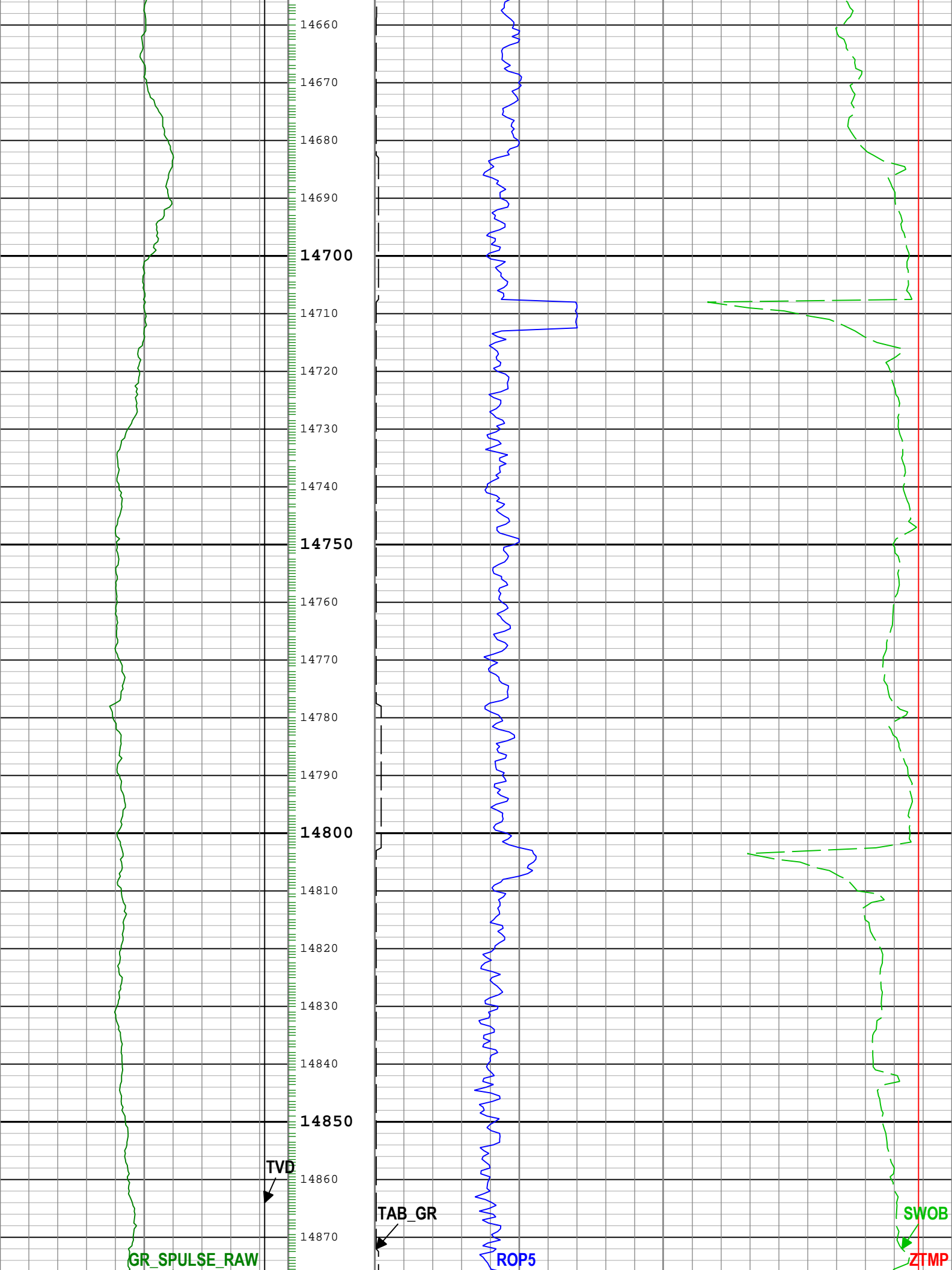


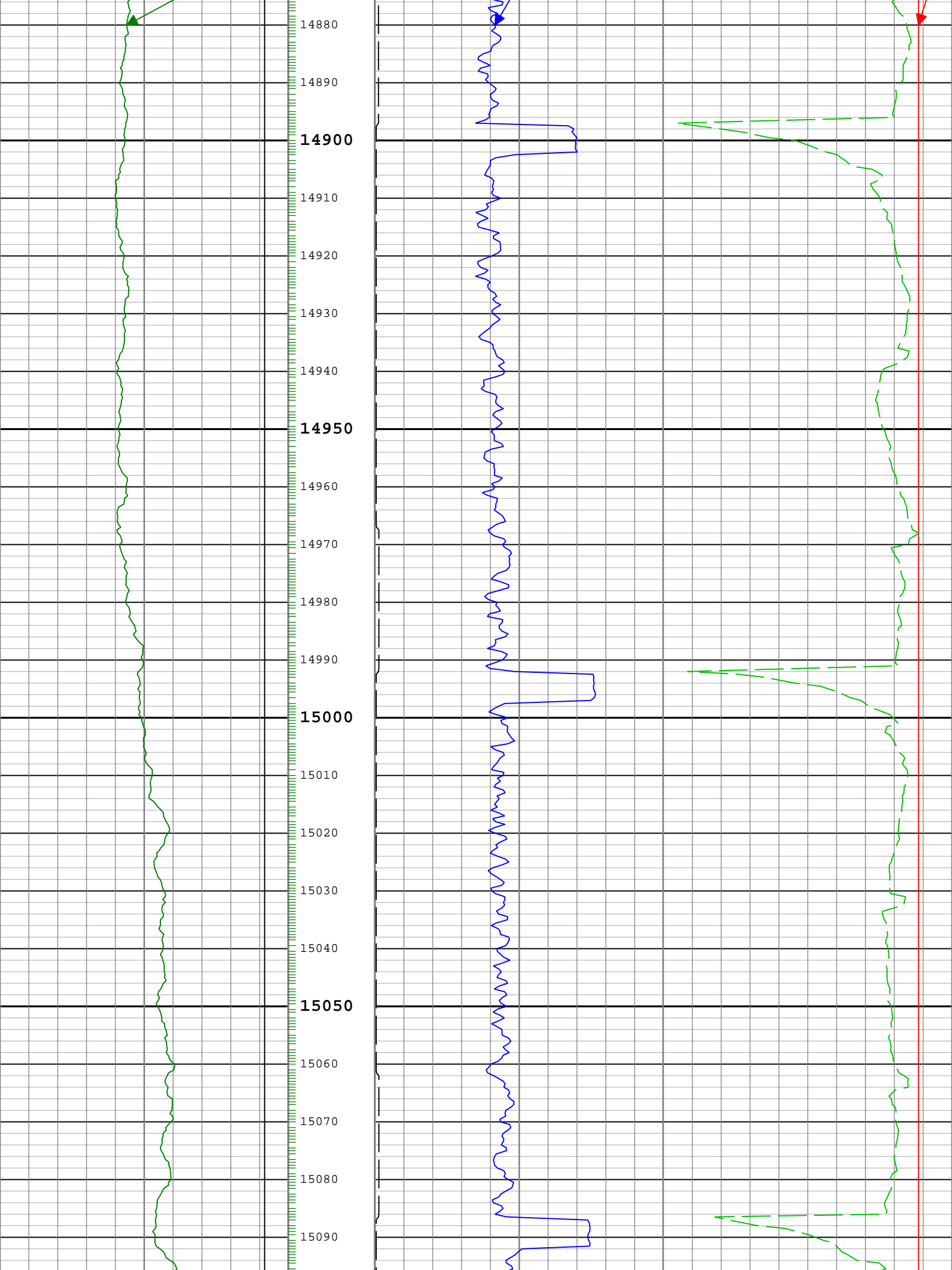


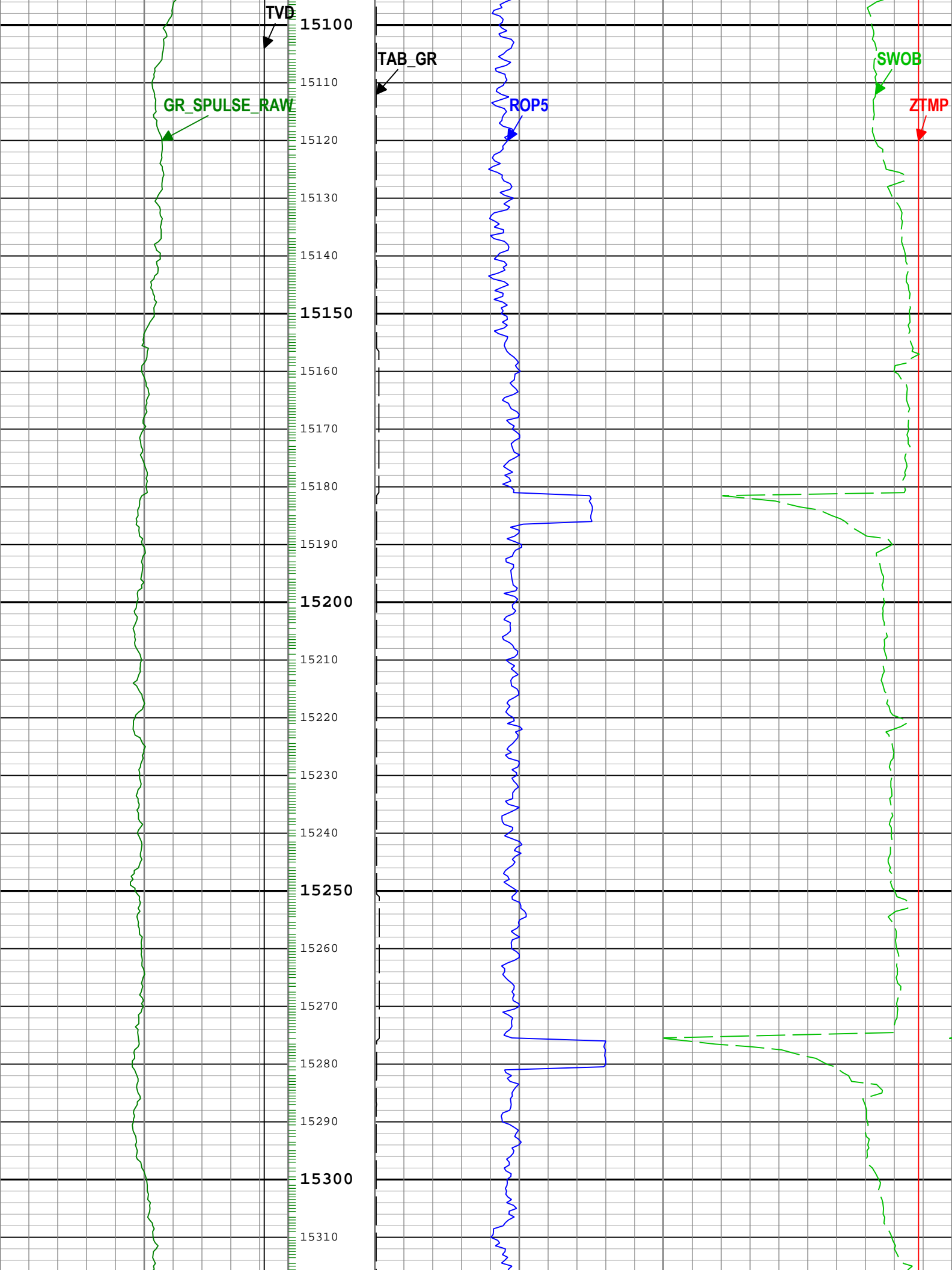


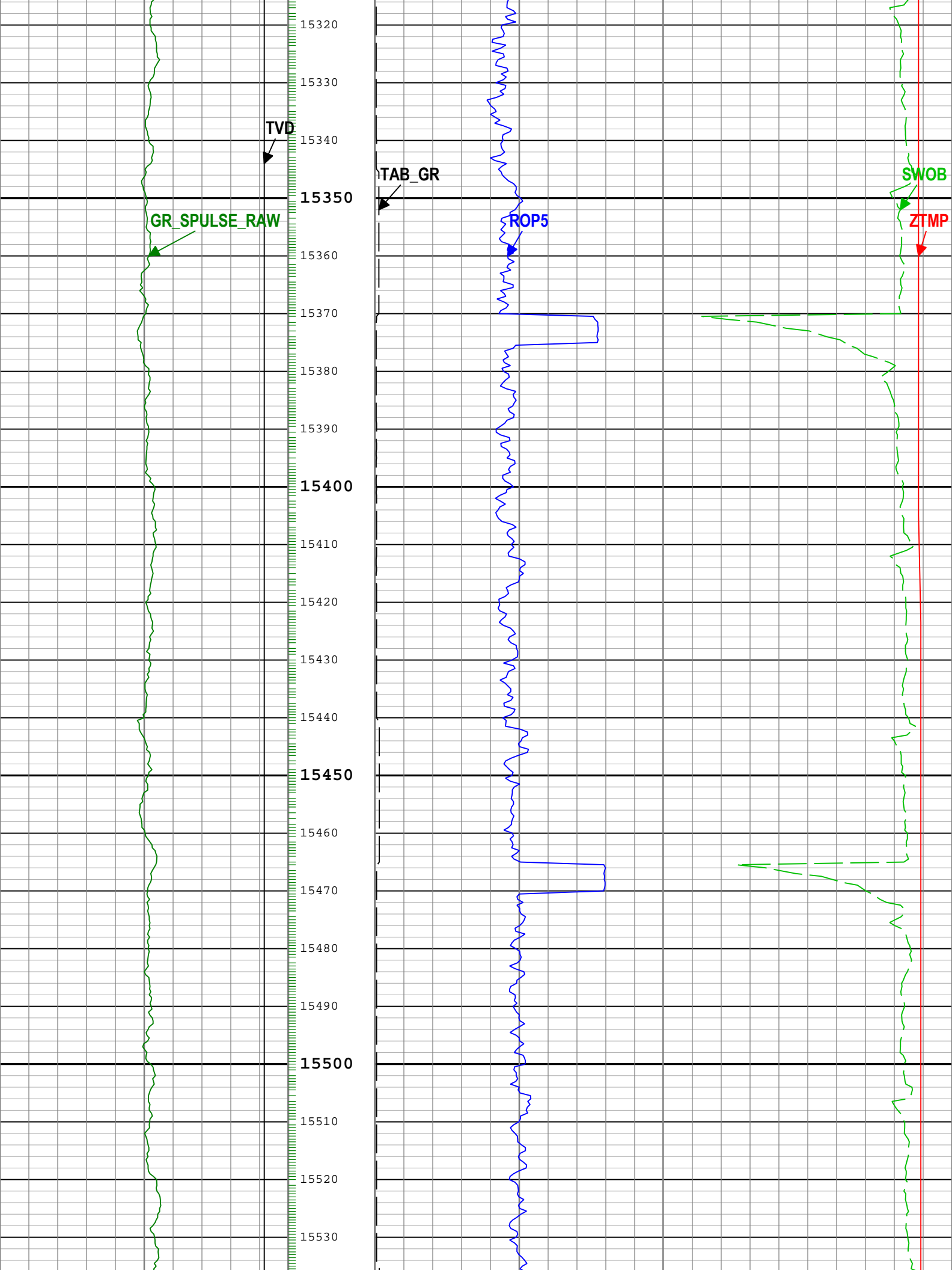


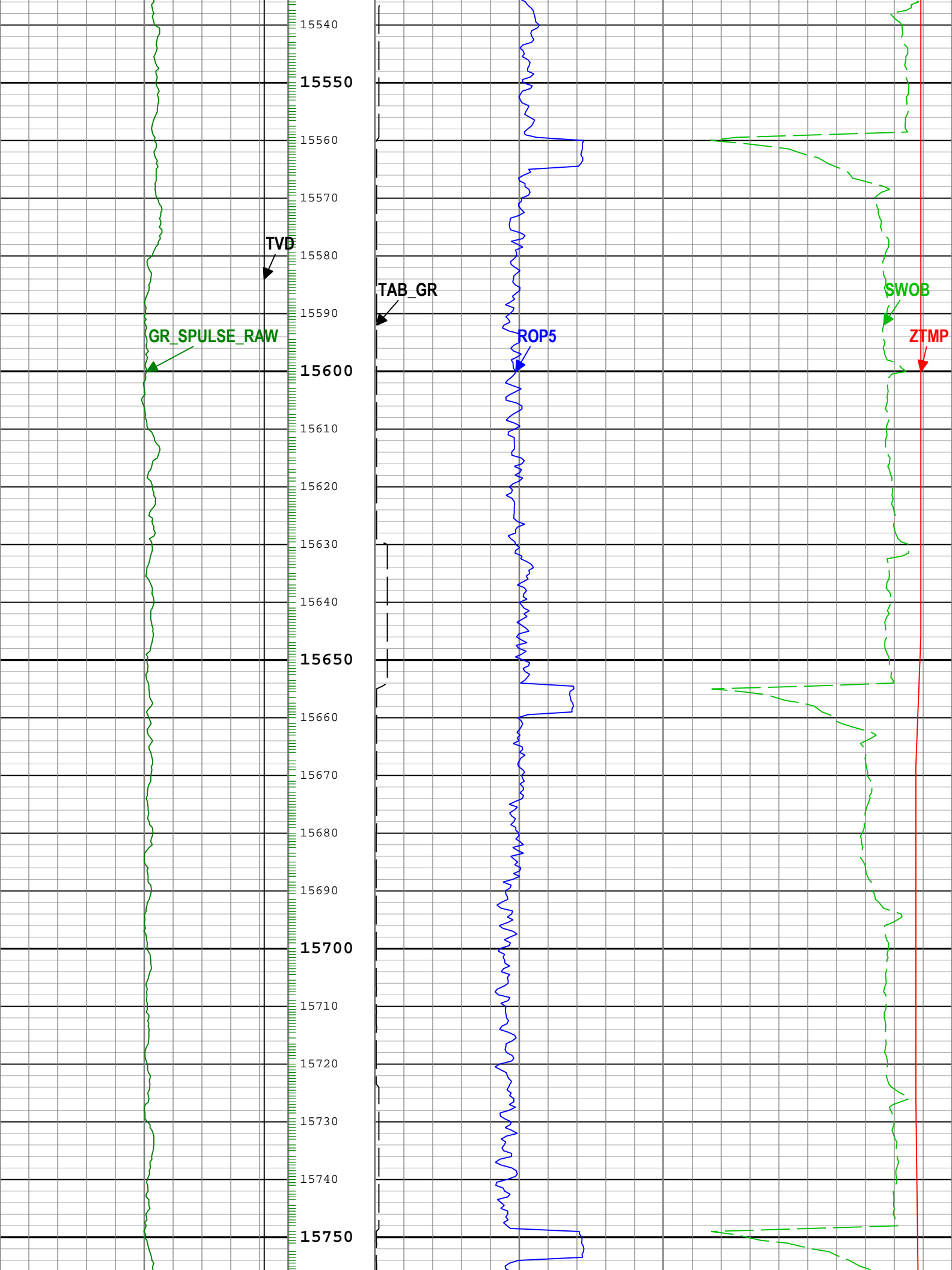


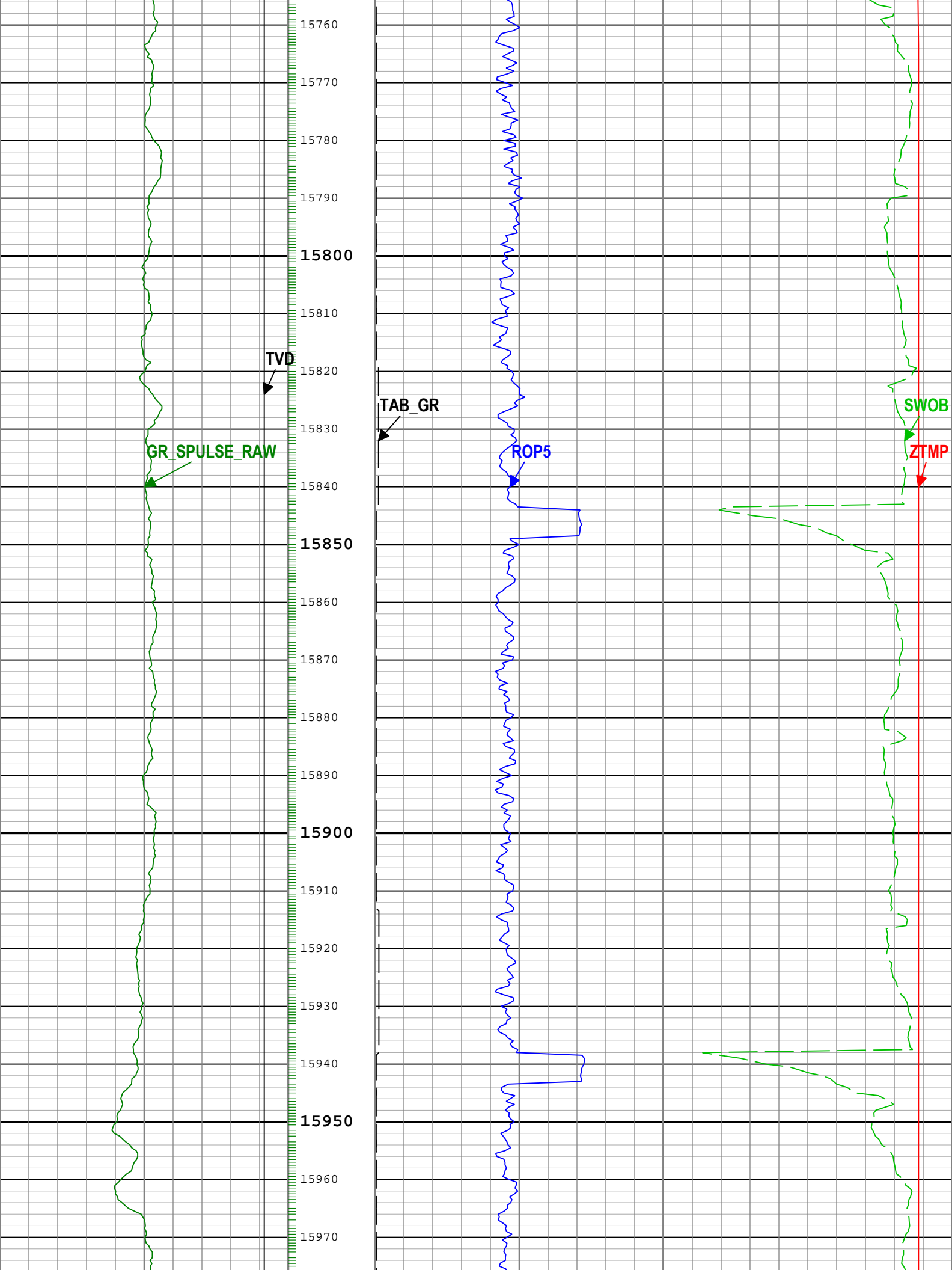


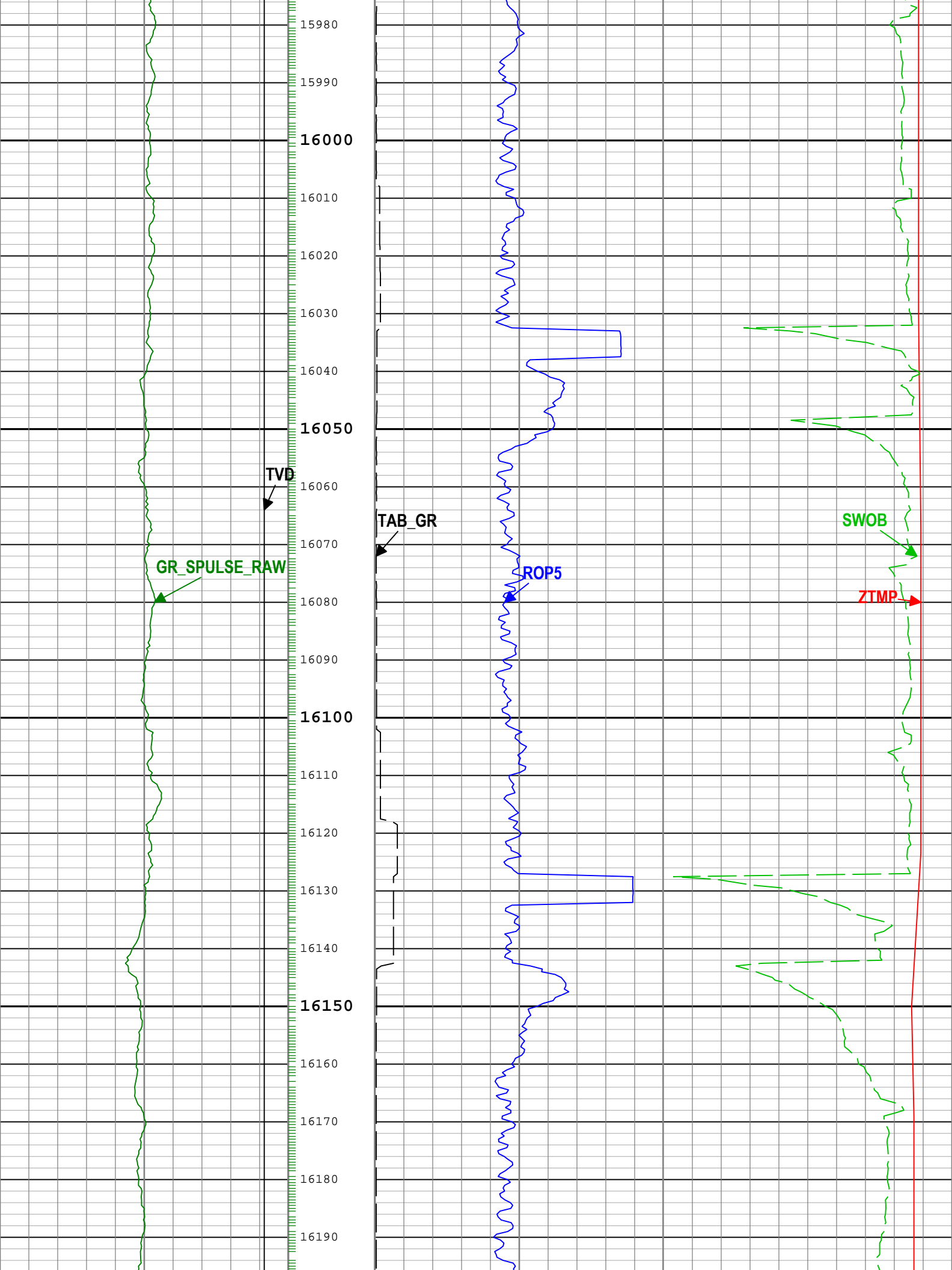


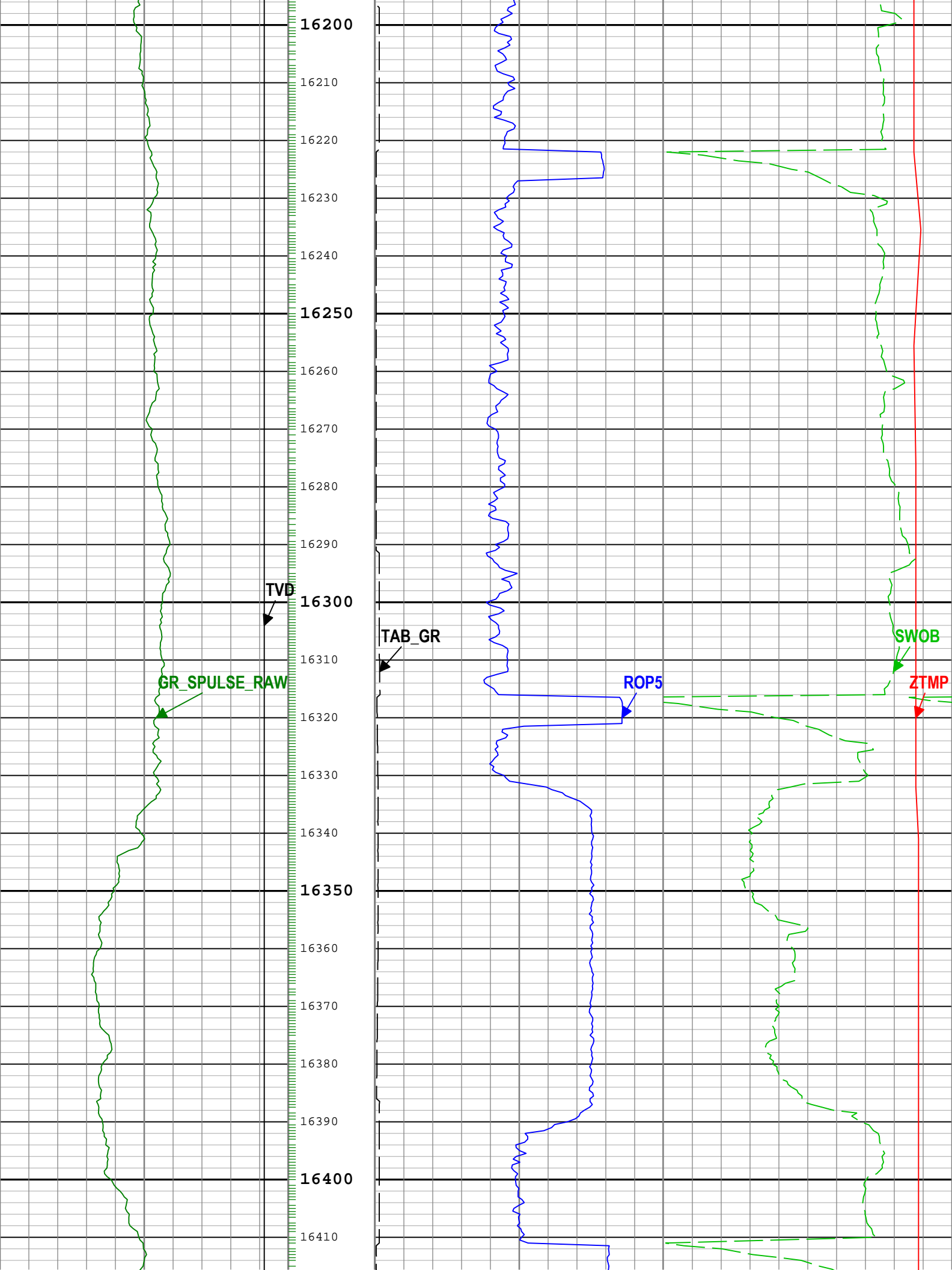


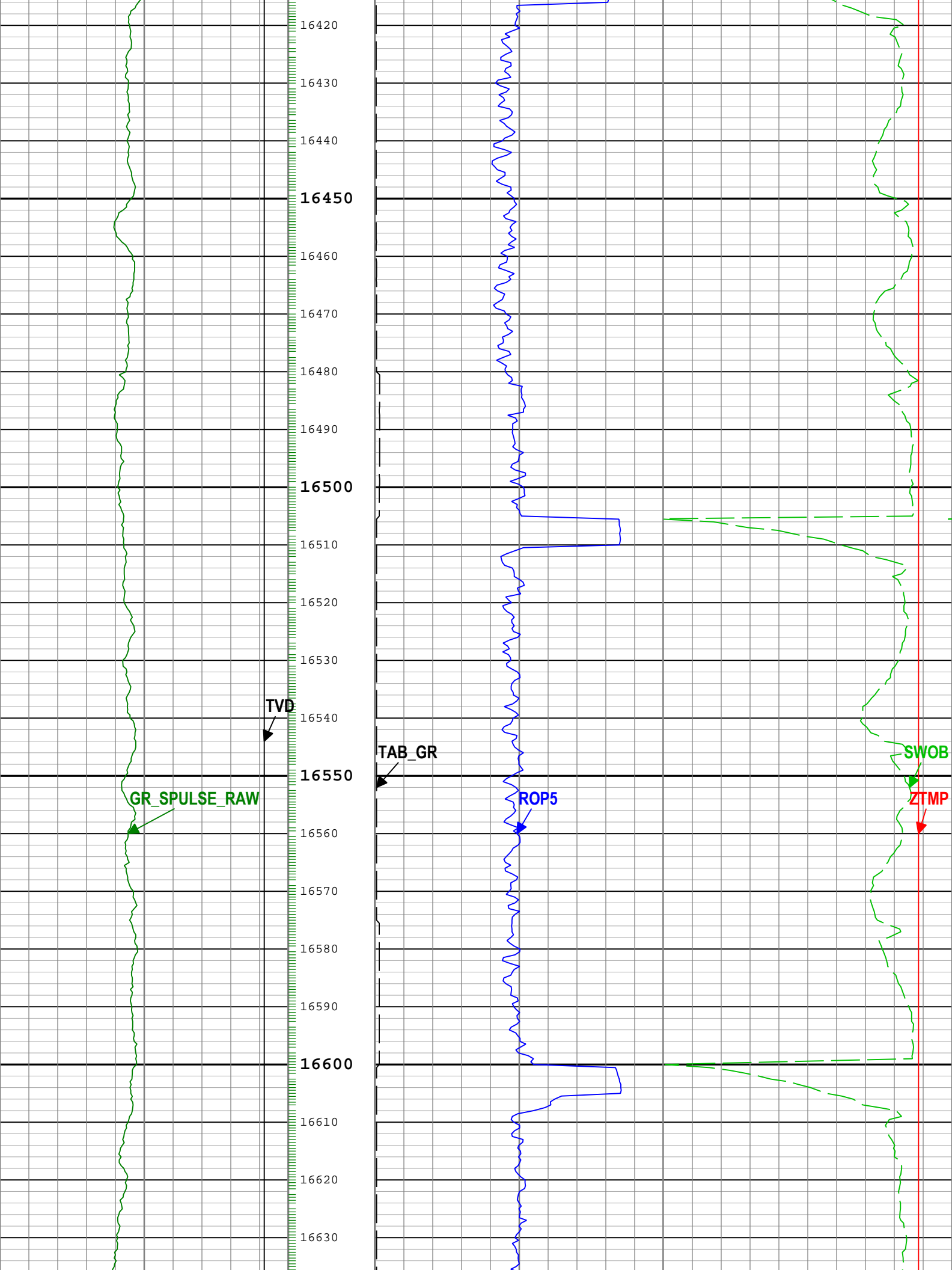


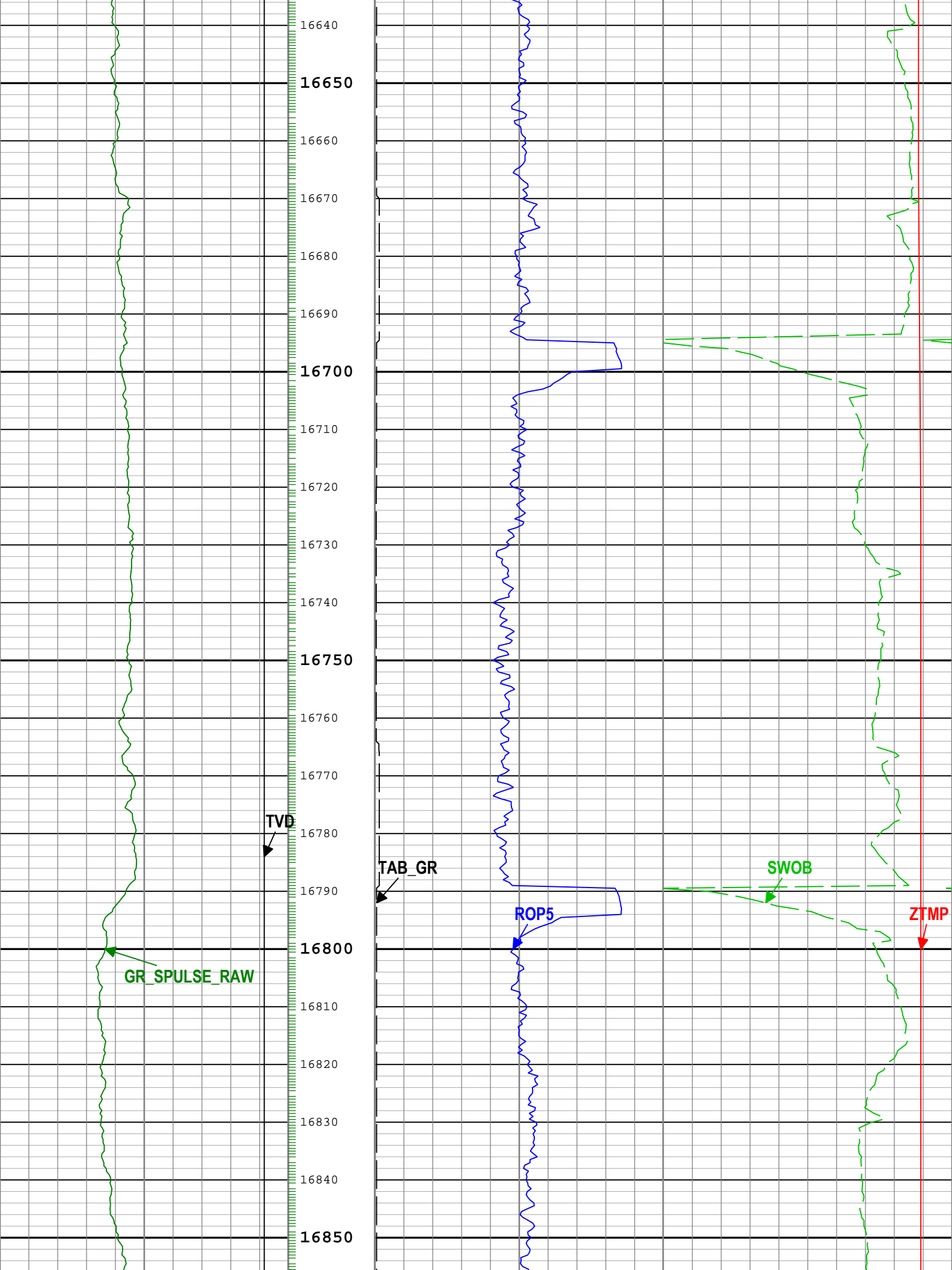


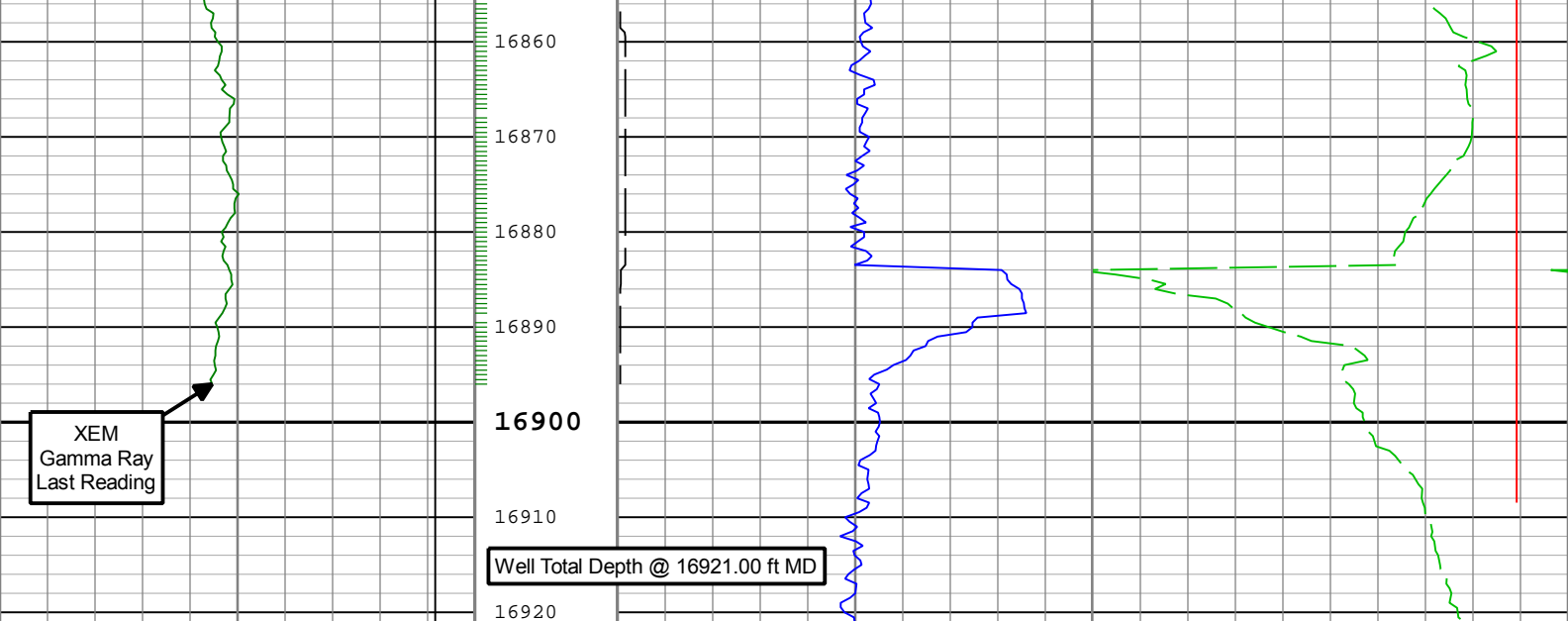












| | | | | | | | | |
|---|------|------|---|------|----|--|----------|-----|
| Gamma Ray (GR_SPULSE_BHC) Extreme[1] RM | | | Rate of penetration averaged over the last 5 ft (1.5 m) (ROP5) RT | | | Cartridge Temperature (ZTMP) Extreme[1] RT | | |
| 0 | gAPI | 300 | 1000 | ft/h | 0 | 0 | degF | 300 |
| True Vertical Depth (TVD) RT | | | Gamma Ray Time after Bit (TAB_GR) Extreme[1] | | | Surface Weight On Bit (SWOB) RT | | |
| 1500 | ft | 7000 | 0 | h | 10 | 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: 25-Jul-2019 14:28:41

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 | 9.3 | lbm/gal |

Run001Depth Zoned Parameters

| Parameter | Value | Start (ft) | Stop (ft) |
|-----------|-------|--------------|-------------|
| BS | 12.25 | 1899.5 | 1940 |
| BS | 8.5 | 1940 | 3342.17 |

All depth are actual.

Run002: Parameters

| Parameter | Description | Tool | Value | Unit |
|-----------|---------------------------|------------|-----------------|---------|
| BS | Bit Size | DNMSESSION | 8.5 | in |
| DEPTH_SEL | Depth Selection Parameter | DNMSESSION | Driller's Depth | |
| DFD | Drilling Fluid Density | Borehole | 9.6 | lbm/gal |

Tool Control Parameters

Run001: Parameters

| Parameter | Description | Tool | Value | Unit |
|-----------|-------------|------|-------|------|
|-----------|-------------|------|-------|------|

Run002: Parameters

| Parameter | Description | Tool | Value | Unit |
|-----------|-------------|------|-------|------|
|-----------|-------------|------|-------|------|

Company: Noble Energy Inc.

Well: SLW Ranch State BB07-668

Field: Wattenberg

County: Weld

State: Colorado

Country: United States





Schlumberger

XEM - Gamma Ray

5 in / 100 ft Measured Depth

Recorded Mode, Composite Log