

SlimPulse-Gamma Ray

2 in./ 100 ft and 5 in./ 100 ft Measured Depth



Recorded Mode, Composite Log

Company: Noble Energy INC

Well: Five Rivers K09-66-1AHN

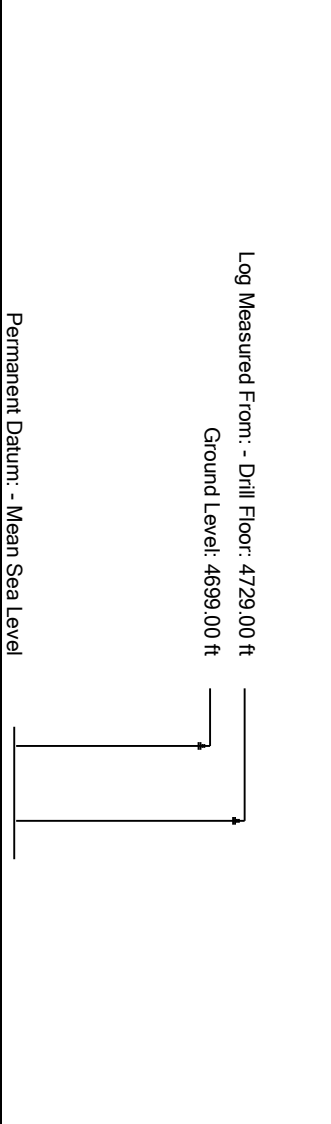
Field: Wattenberg

County: Weld

State: Colorado

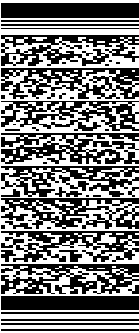
Country: USA

Section:	8	APIN:	05-123-39479
Township:	4N	Rig Name:	H&P 330
Range:	66W	Rig Type:	Top Drive
FL:	NAD83 Colorado State Plane, Northern Zone, US Feet		
FL1:	Latitude: N 40° 19' 39.792", Easting: 1363019.461 ftUS		
FL2:	Longitude: W 104° 47' 27.600", Northing: 3197672.267 ftUS		



Permanent Datum: - Mean Sea Level

Acquisition Dates:	24-Aug-2014 -- 01-Sep-2014	Other Services:	Surveys / Continuous D&I
Log Interval:	633(ft) to 12096(ft)		Downhole Temperature
Index Types:	Measured Depth		Downhole Shocks
Index Scales:	1:600 2" / 100', 1:240 5" / 100'		Directional Drilling
Depth Source:	Driller's Depth		
Depth Sensor:	PASON		
Print Type:	Final		
Spud Date:	23-Aug-2014		



Disclaimer

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Borehole Size/Casing Record						
Bit						
Bit Size (in)	8.75	6.125				
Top Driller (ft)	633	7552				
Bottom Driller (ft)	7552	12096				
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)	623	7541				

Operational Run Summary						
Parameter (unit)	Run001	Run002	Run003	Run004		
Date Log Started	24-Aug-2014	25-Aug-2014	27-Aug-2014	30-Aug-2014		
Time Log Started	12:41:06	00:39:22	16:19:26	05:41:36		
Date Log Finished	24-Aug-2014	26-Aug-2014	28-Aug-2014	01-Sep-2014		
Time Log Finished	22:20:30	15:40:33	21:38:52	19:56:06		
Bit Size (in)	8.750	8.750	8.750	6.125		
Bit Start Depth (ft)	633.00	1708.00	6346.00	7552.00		
Bit Stop Depth (ft)	1708.00	6346.00	7552.00	12096.00		
Top Log Interval (ft)	577.00	1657.00	6297.00	7493.00		
Bottom Log Interval (ft)	1657.00	6297.00	7493.00	12028.00		
Max Hole Deviation (deg)	9.51	10.57	77.52	93.92		
Azimuth of Max Deviation (deg)	234.59	233.41	93.68	91.03		
Logging Unit Number	Command Center	Command Center	Command Center	Command Center		
Logging Unit Location	Zone 2	Zone 2	Zone 2	Zone 2		
Recorded By	Zach Brunson	Zach Brunson	Zach Brunson	Zach Brunson		
Witnessed By	Lane Fullenwider	Lane Fullenwide	Lane Fullenwide	Derek Dupee		
Service Order Number	14CCO0621	14CCO0621	14CCO0621	14CCO0621		

Borehole Fluids						
Parameter(unit)	Run001	Run002	Run003	Run004		
Fluid Type	Water	Water	Water	Water		
Fluid Name	Fresh Water	Fresh Water	Fresh Water	Fresh Water		
Max Recorded Temperatures (degF)	117.14	212	212	251.6		
Source of Sample	Active Tank	Active Tank	Active Tank	Active Tank		

Salinity (ppm)	2500	2000	1900	1600		
Density (lbm/gal)	8.85	Zoned	10.5	Zoned		
Funnel Viscosity (s)	38	49	40	39		
Fluid Loss (cm3)						
PH	9.8	8.6	9	9		
Source RMF						
RMC	Pressed	Pressed	Pressed	Pressed		
RM @ Meas Temp (ohm.m@degF)	0.2 @ 68	0.2 @ 68	0.2 @ 68	0.2 @ 68		
RMF @ Meas Temp (ohm.m@degF)	0.15 @ 68	0.15 @ 68	0.15 @ 68	0.15 @ 68		
RMC @ Meas Temp (ohm.m@degF)						
RM @ BHT (ohm.m@degF)	0.14 @ 99.5	0.1 @ 141.8	0.09 @ 153.3	0.06 @ 251.6		
RMF @ BHT (ohm.m@degF)	0.11 @ 99.5	0.08 @ 141.8	0.07 @ 153.3	0.04 @ 251.6		
RMC @ BHT (ohm.m@degF)	NaN @ 99.5	NaN @ 141.8	NaN @ 153.3	NaN @ 251.6		
Total Solid (%)	2.9	8.6	10.2	11.6		
High Gravity Solids (%)	0.9	4.8	6.3	7.2		

Zoned Borehole Fluids

Run002

Parameter	Value	Start
Density	8.8	8/25/2014 12:39:22 AM
Density	9.3	8/25/2014 2:00:00 PM
Density	10.1	8/26/2014 2:30:00 AM

Run004

Parameter	Value	Start
Density	10.6	8/30/2014 5:41:36 AM
Density	10.8	8/31/2014 12:30:00 AM
Density	10.9	8/31/2014 2:00:00 PM
Density	10.8	9/1/2014 12:30:03 AM

Remarks and Equipment Summary

Data presented is from tool memory and acquired while drilling from 633.0 ft MD to 12096.0 ft MD

Depth Reference: Driller's Depth

Environmental Corrections: Gamma Ray is corrected for bit size, mud weight, and tool collar thickness. Barite and Potassium in the mud affect Gamma Ray readings.

Run001: Remarks	Run002: Remarks	Run003: Remarks
Run Objective: Drill Vertical Section to KOP	Run Objective: Drill Vertical Section to KOP	Run Objective: Drill Curve to Landing Point
Bit to GR: 50.45 ft Bit to DNI: 47.42 ft	Bit to GR: 51.47 ft Bit to DNI: 48.44 ft	Bit to GR: 58.48 ft Bit to DNI: 55.45 ft
Drilled from 633.0 ft MD to 1709.0 ft MD Logged from 582.0 ft MD to 1658.0 ft MD	Drilled from 1709.0 ft MD to 6346.0 ft MD Logged from 1658.0 ft MD to 6294.0 ft MD	Drilled from 6346.0 ft MD to 7552.0 ft MD Logged from 6294.0 ft MD to 7493.0 ft MD
SlimPulse Version Software: Version 11 SlimPulse GR Calibrated: 28-May-2014 SlimPulse D&I Calibrated: 19-Apr-2014	SlimPulse Version Software: Version 11 SlimPulse GR Calibrated: 19-Jul-2014 SlimPulse D&I Calibrated: 29-Jan-2014	SlimPulse Version Software: Version 11 SlimPulse GR Calibrated: 19-Jul-2014 SlimPulse D&I Calibrated: 29-Jan-2014
PathFinder, a Schlumberger Co Personnel: DD: Cotton Walker, Mike Hikes MWD: Zach Brunson, Maria Valles	PathFinder, a Schlumberger Co Personnel: DD: Cotton Walker, Mike Hikes MWD: Zach Brunson, Maria Valles	PathFinder, a Schlumberger Co Personnel: DD: Cotton Walker, Mike Hikes MWD: Zach Brunson, Maria Valles
Reason for POOH: MWD Tool Failure	Reason for POOH: Vertical Section TD	Reason for POOH: Curve Section TD

Run001: Toolstring	Run002: Toolstring	Run003: Toolstring
		<div> <div> <div>Equip name</div> <div>Flex DC: 6 3/4":D</div> <div>R18825</div> </div> <div> <div>Length</div> <div>103.38</div> </div> <div> <div>MP name</div> <div>NMFC</div> </div> <div> <div>Offset</div> </div> </div>

Equip name

Flex DC: 6 3/4":D

R18825

Length

95.41

MP name

NMFC

Offset

SPULSE-GEN:DR8

494

FLOWSUB:DR22528

SPCOLLAR:DR8494

SPMA:2035

SPEC:989

SPBA:Q00345

UBHO:675U288

64.62

SLB

GR

50.46

D&I

47.43

Equip name

Flex DC: 6 3/4":D

R18825

Length

95.37

MP name

NMFC

Offset

SPULSE-GEN:DR8

494

FLOWSUB:DR22528

SPCOLLAR:DR8494

SPMA:702

SPEC:893

SPBA:Q00720

UBHO:675U288

64.58

SLB

GR

50.47

D&I

47.44

SPULSE-GEN:DR8

494

FLOWSUB:DR22528

SPCOLLAR:DR8494

SPMA:702

SPEC:893

SPBA:Q00345

UBHO:675U288

72.59

SLB

GR

58.48

D&I

55.45

Fit Sub: 6 3/4":DR

20643

37.48

SLB

Flt Sub: 6 3/4":DR 29.51
18940

Motor:675002 26.35

SLB

Pathfinder

Generic PDC Bit:40 0.84
07327

Varel

TOOL_ZERO

Length: 8.75 in ft

Maximum Outer Diameter = 8.750 in

Line: Sensor Location, Value: Gating Offset

All measurements are relative to TOOL_ZERO

Flt Sub: 6 3/4":DR 29.47
18940

Motor:675002 26.31

SLB

Pathfinder

Generic PDC Bit:JJ 0.8
6792

Smith

TOOL_ZERO

Length: 8.75 in ft

Maximum Outer Diameter = 8.750 in

Line: Sensor Location, Value: Gating Offset

All measurements are relative to TOOL_ZERO

NMDC: 6 3/4":DR 34.54
6328

Motor:675007 24.98

NMPC

Pathfinder

Generic PDC Bit:JJ 0.66
2936

SDi611

TOOL_ZERO

Length: 8.75 in ft

Maximum Outer Diameter = 8.750 in

Line: Sensor Location, Value: Gating Offset

All measurements are relative to TOOL_ZERO

Run004: Remarks

Run Objective: Drill Lateral Section to TD

Bit to GR: 67.99 ft

Bit to DNI: 64.96 ft

Drilled from 7552.0 ft MD to 12096.0 ft MD

Logged from 7493.0 ft MD to 12028.0 ft MD

SlimPulse Version Software: Version 11

SlimPulse GR Calibrated: 27-Jun-2014

SlimPulse D&I Calibrated: 15-Jul-2014

PathFinder, a Schlumberger Co Personnel:

DD: Chris Sisseck, Mike Hikes

MWD: Zach Brunson, Maria Valles

Reason for POOH: Well TD

Run004: Toolstring

Equip name	Length	MP name	Offset
NMDC: 4 3/4"[2]:D R27988	113.37	SLB	



SPULSE-GEN:DR27 82.3
992
FLOWSUB:DR27636
SPCOLLAR:DR27992
SPMA:938
SPEC:989
SPBA:Q01496
UBHO:475U150

GR 67.99

D&I 64.96

Flt Sub: 4 3/4":DR 45.44
13902

SLB

NMDC: 4 3/4"[1]:D 42.32
R13743

NMPC

Motor:F50B0070 27.36

PF Motor 5.00 - G2

Generic PDC Bit:JJ6 003

0.55

Smith SDI513

TOOL_ZERO

Length in ft

Maximum Outer Diameter = 6.125 in

Line: Sensor Location, Value: Gating Offset

All measurements are relative to TOOL_ZERO

Well Composite

Software Version

Acquisition System		Version	
MaxWell		4.0.9163.3000	
Application Patch		Patch-SP-10767_22480-4.0.9163.3001	
		Patch-NPD_ADN8D_SP3-23661-4.0.9530.3002	
		Patch-Hotfix_rewrite_survey_for_petrolink-23199-4.0.9530.3002	
		Patch-Hotfix_MRT_SP3-23306-4.0.9530.3002	
Tool Elements	Description	Software Version	Firmware Version
DRILLING_SURFACE	DRILLING_SURFACE	4.0.9469.3000	
SPEC	SlimPulse Electronics Cartridge	4.0.9469.3000	

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Include Parallel Data
Run001	Drilling	Down	627.17 ft	1708.92 ft	24-Aug-2014 12:42:28 PM	24-Aug-2014 10:20:30 PM	No
Run002	Drilling	Down	1708.25 ft	6348.00 ft	25-Aug-2014 1:31:16 AM	26-Aug-2014 3:40:33 PM	No
Run003	Drilling	Down	6347.17 ft	7552.92 ft	27-Aug-2014 4:48:18 PM	28-Aug-2014 9:38:52 PM	No
Run004	Drilling	Down	7542.17 ft	12097.17 ft	30-Aug-2014 12:08:50 PM	01-Sep-2014 7:56:06 PM	No

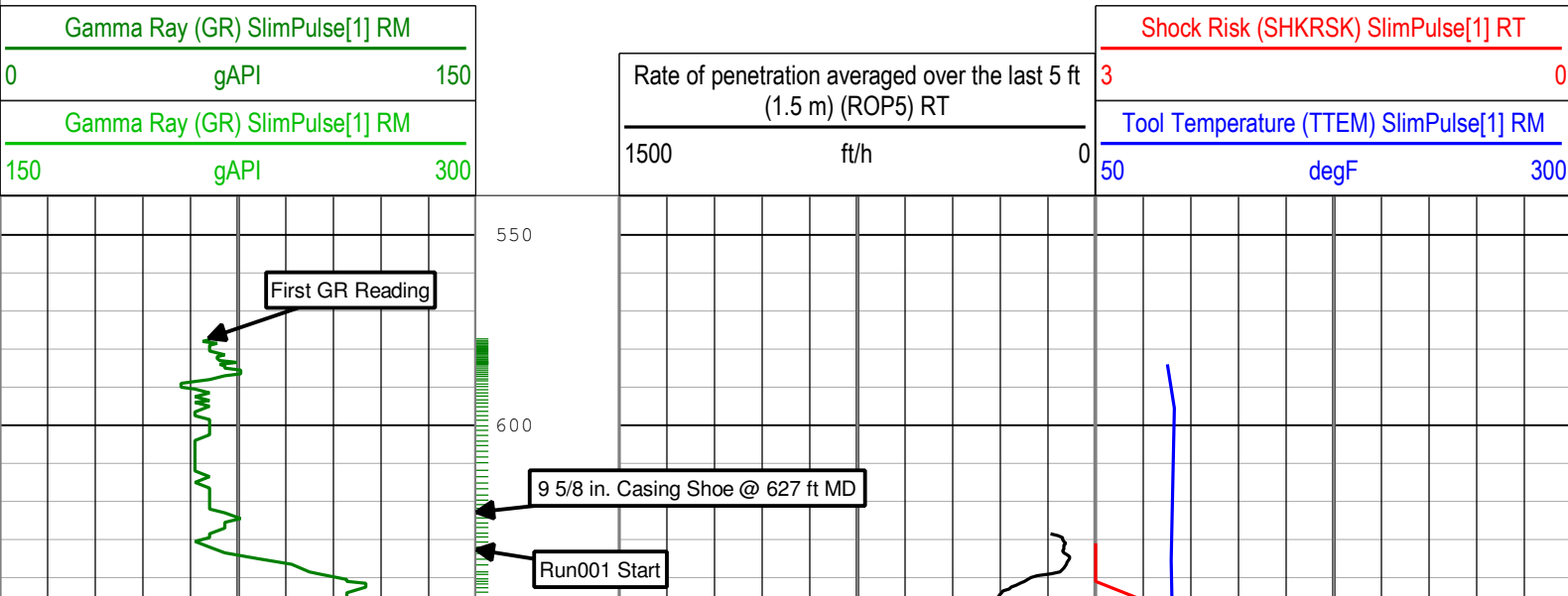
All depths are referenced to toolstring zero

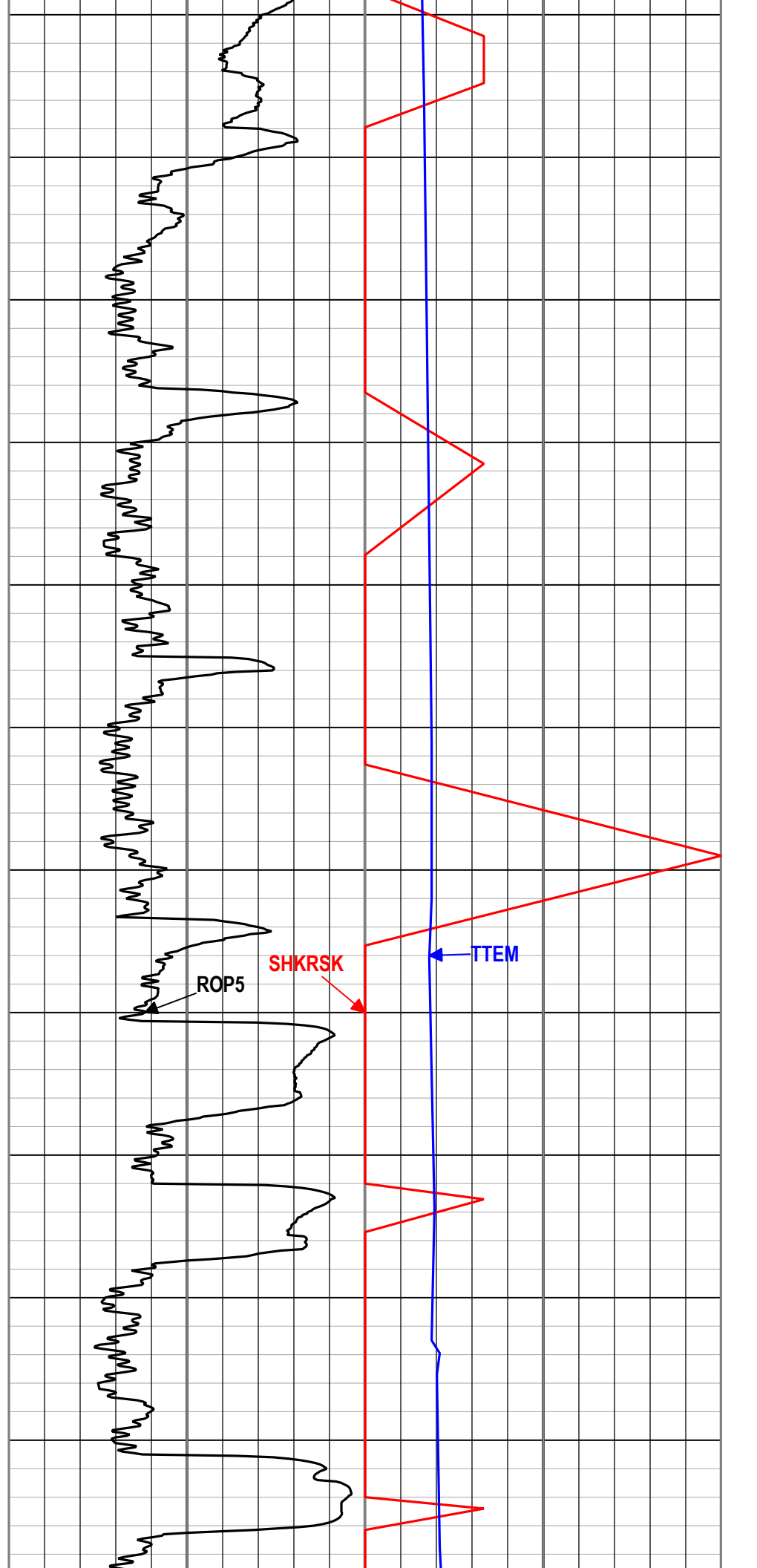
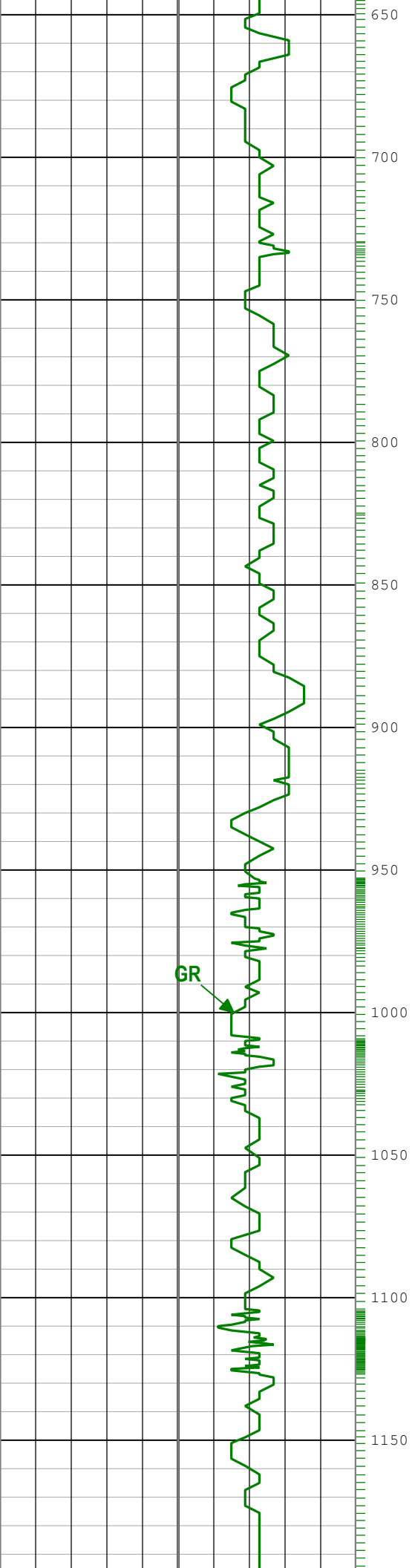
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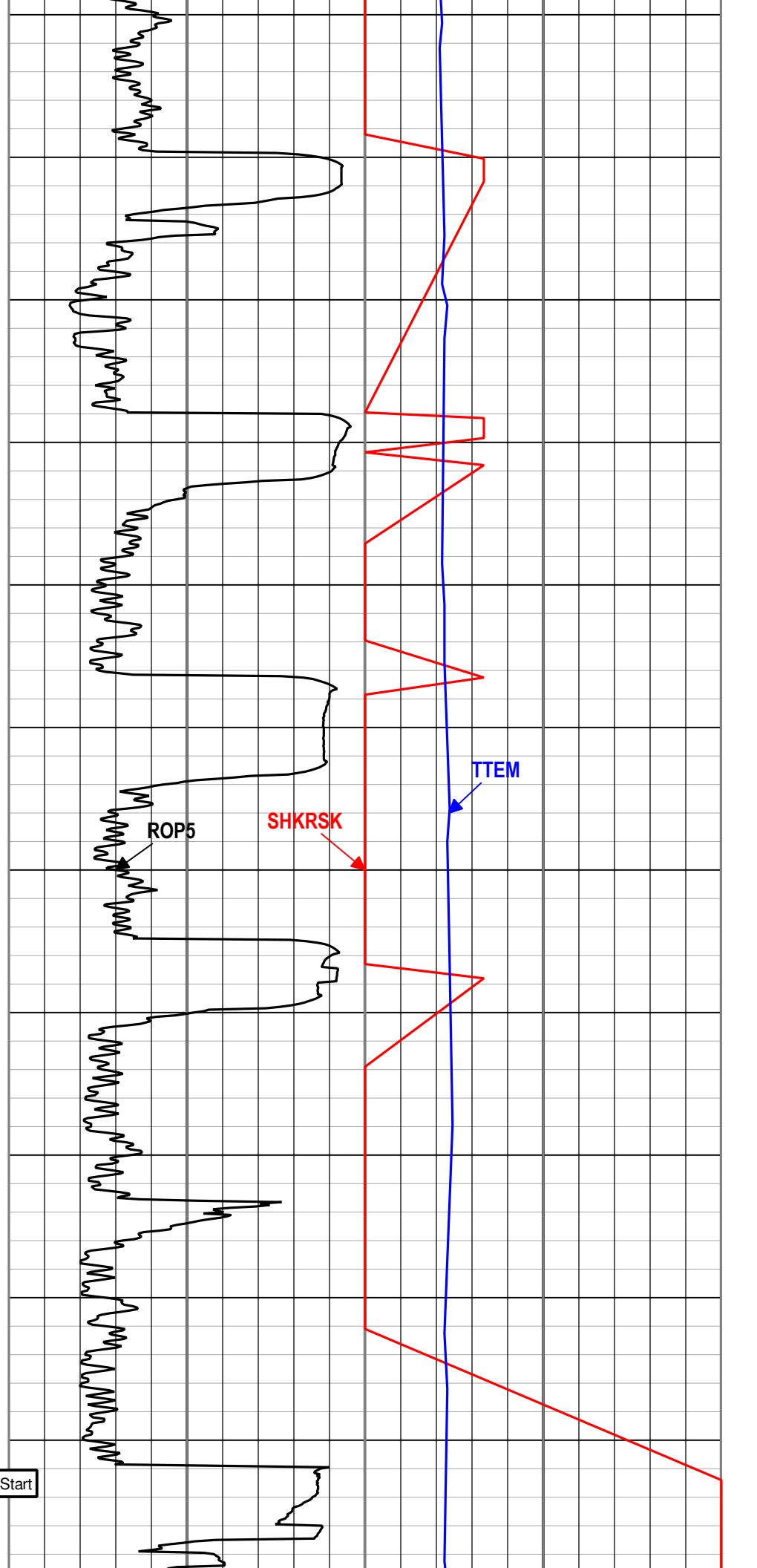
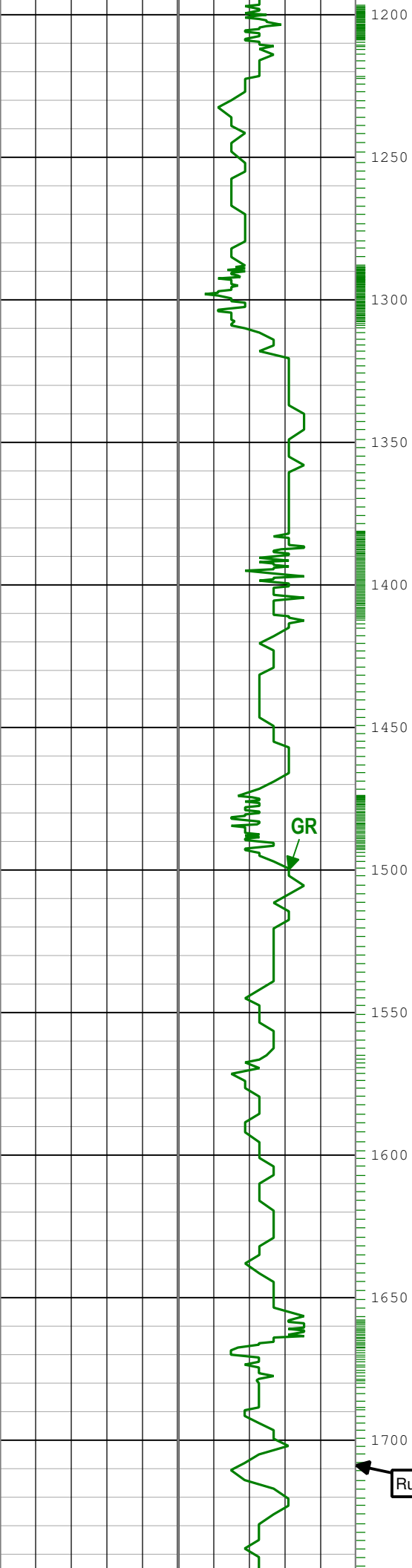
Company:Noble Energy INC Well:Five Rivers K09-66-1AHN
Well Composite:S258

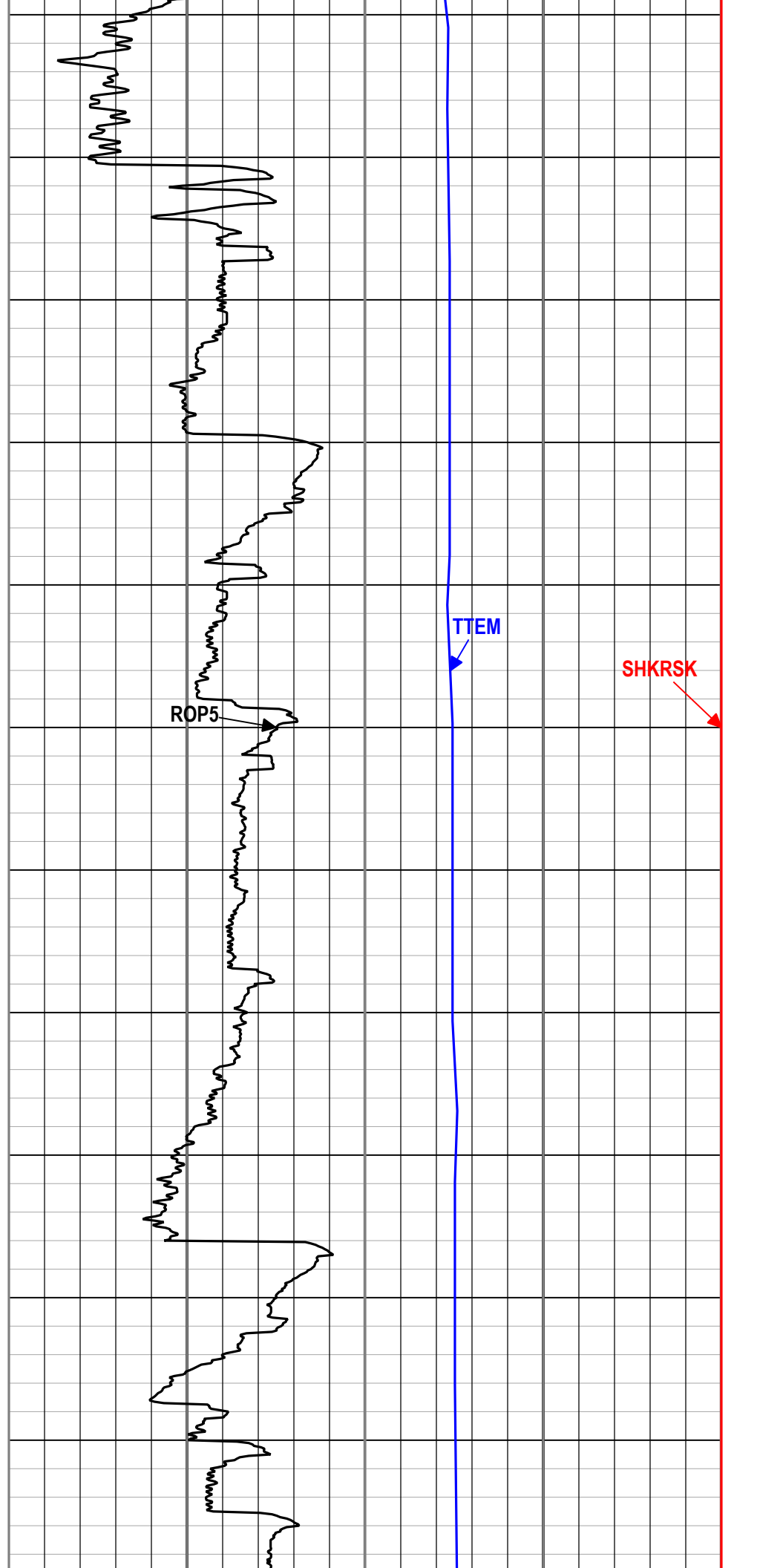
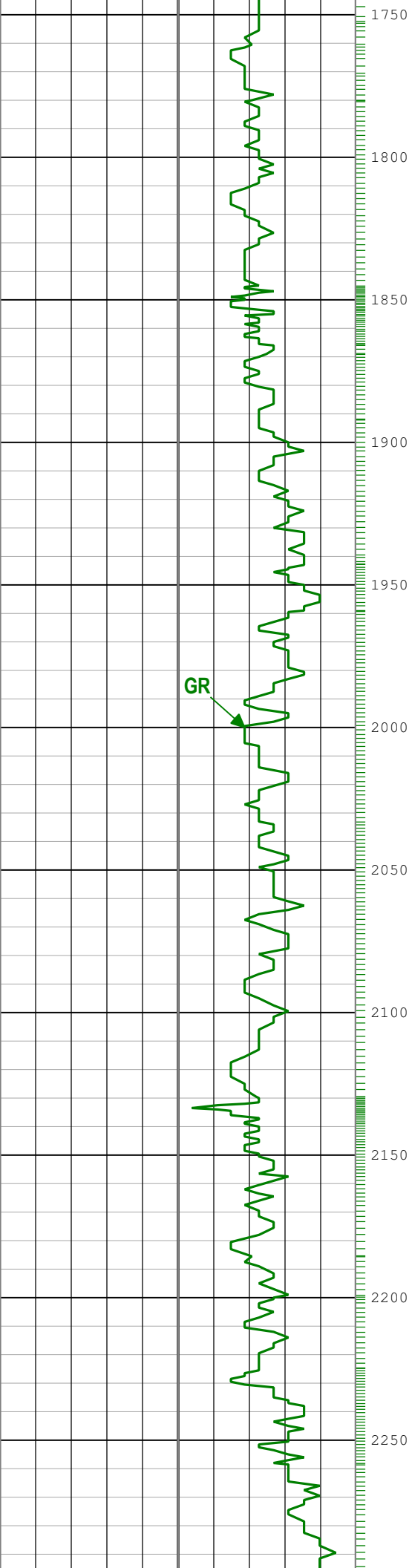
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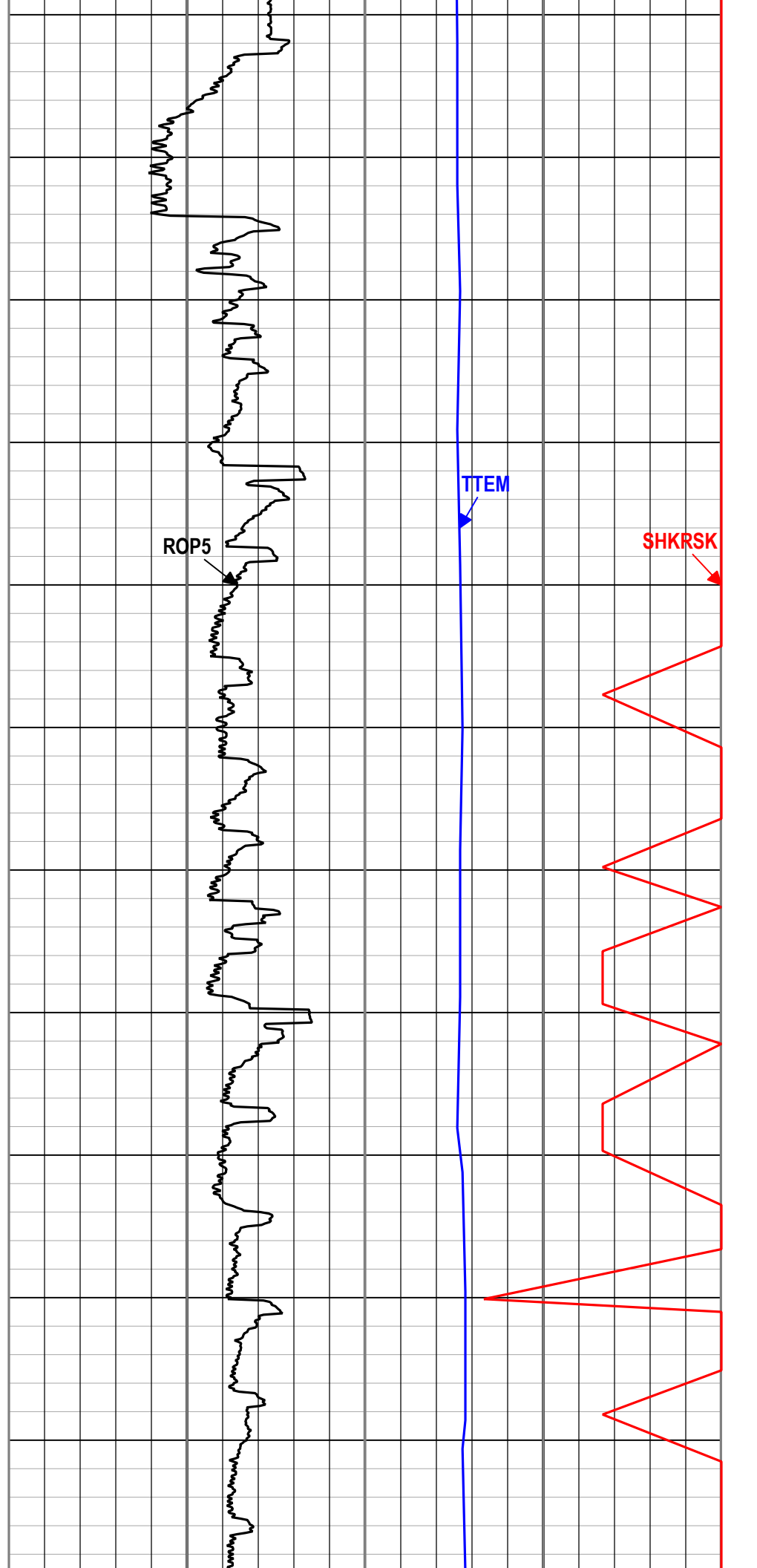
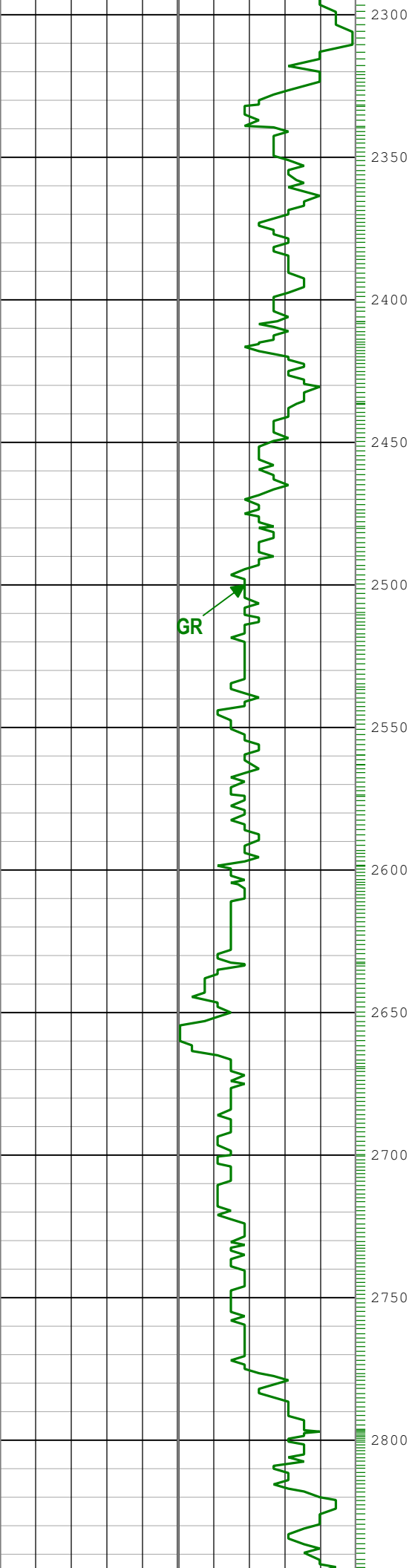
TICKS_GR - Gamma Ray Tick Marks SlimPulse[1] RM

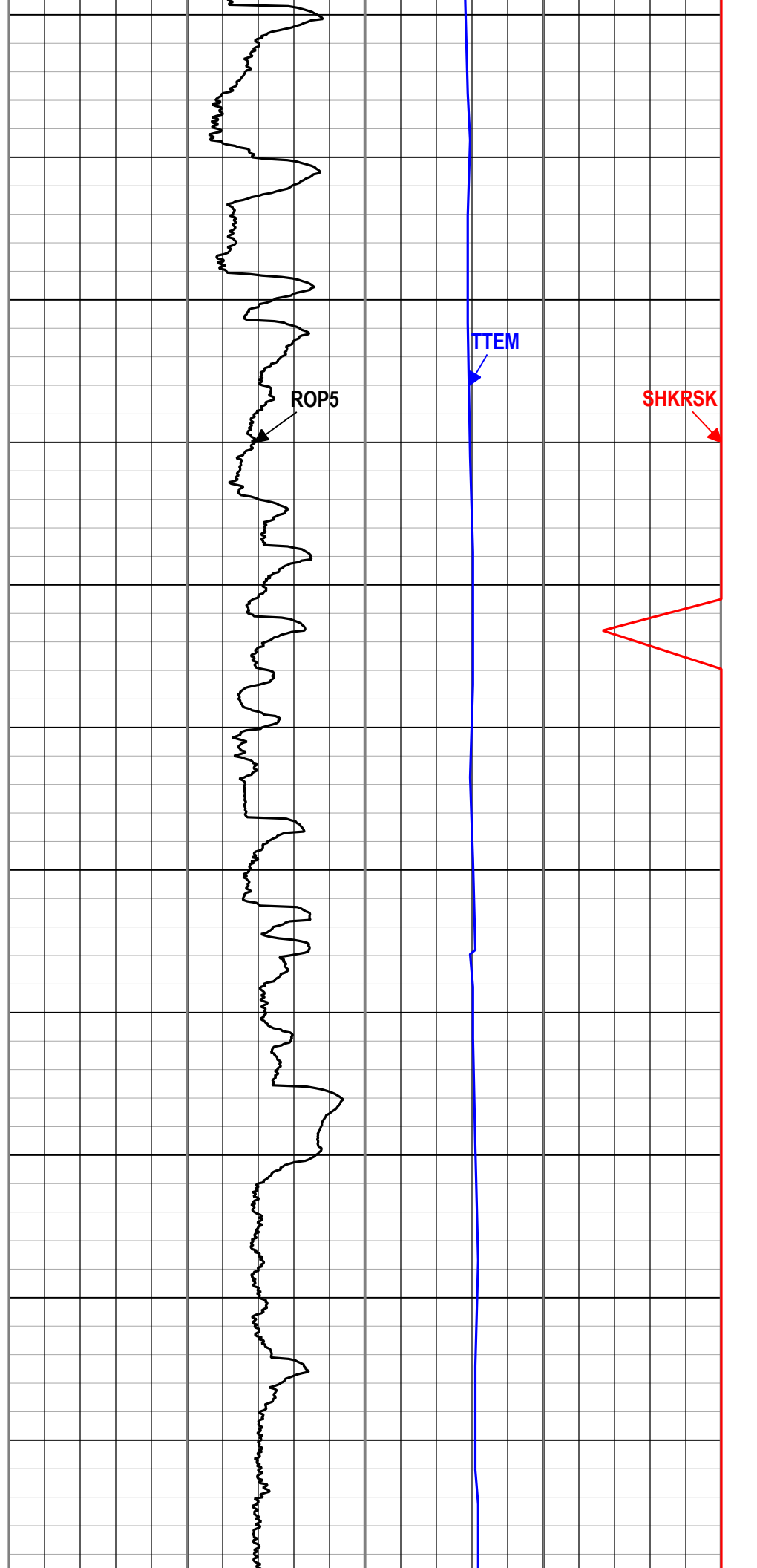
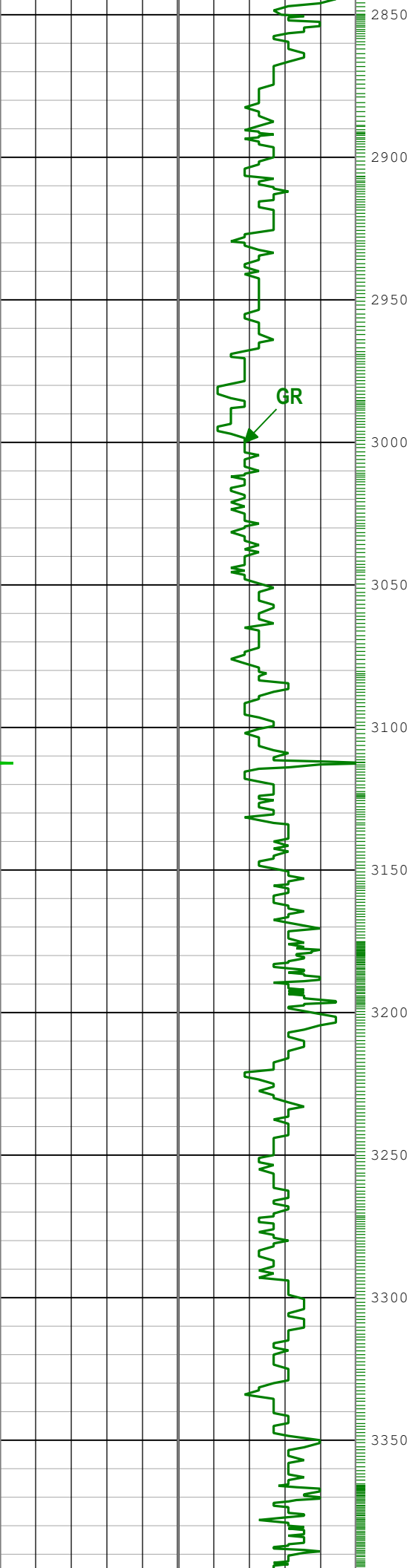


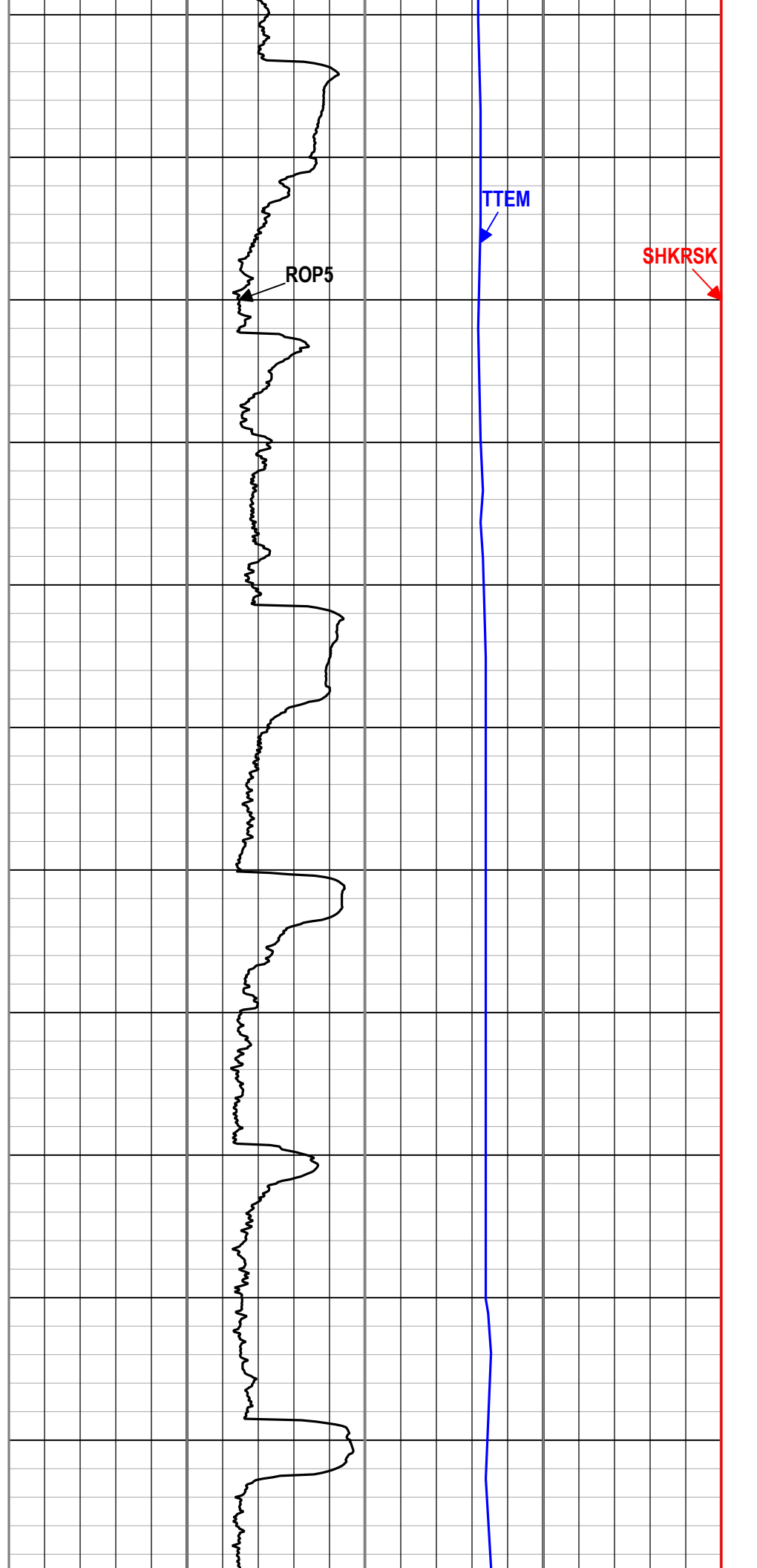
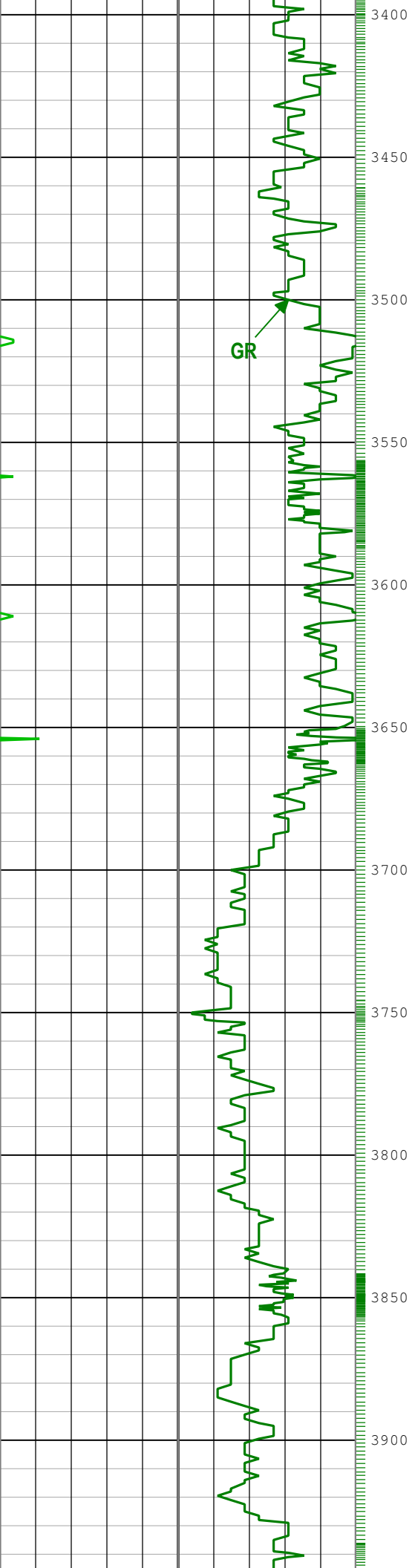


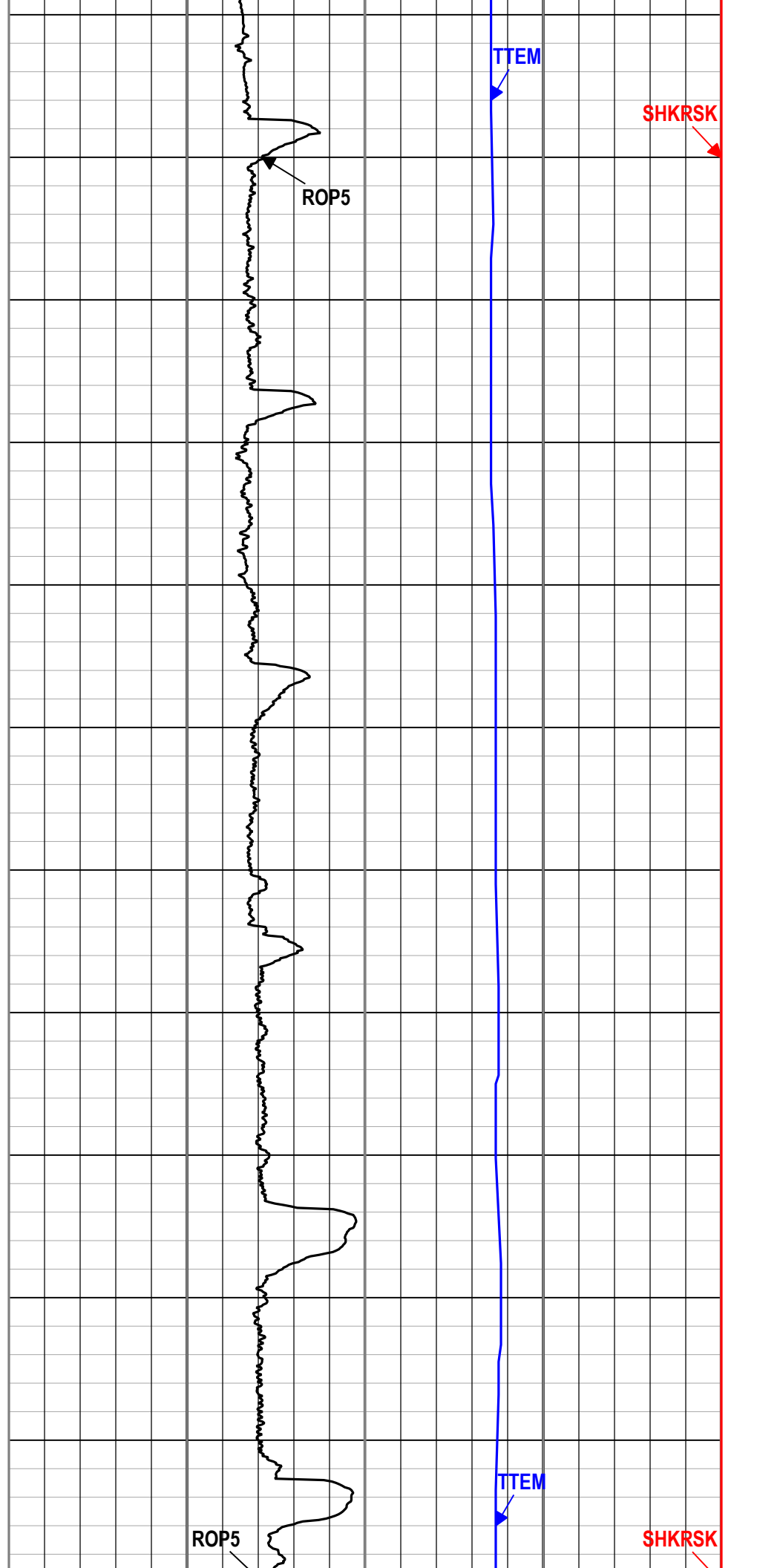
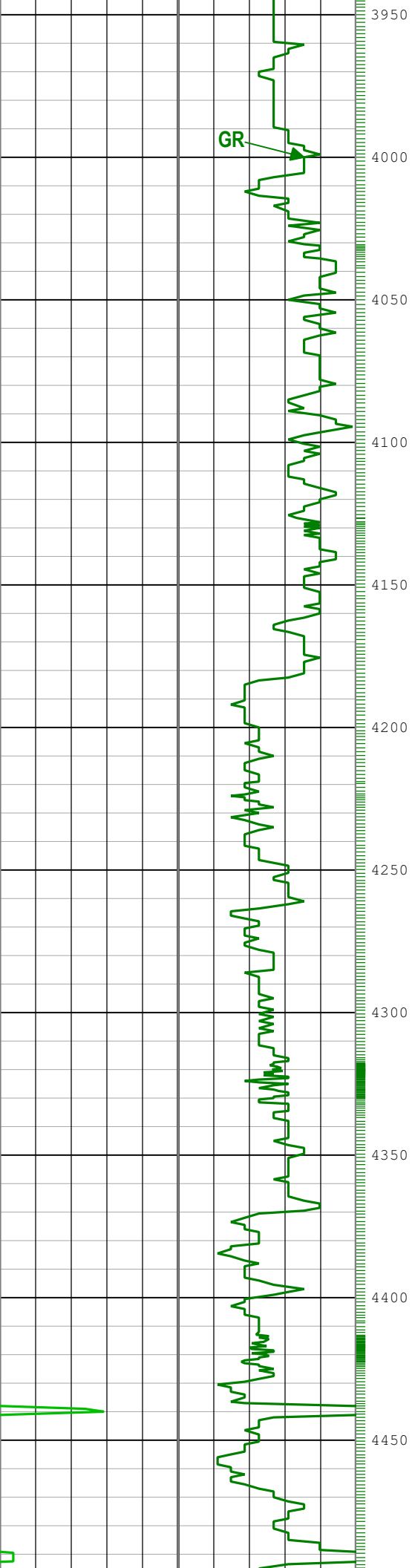


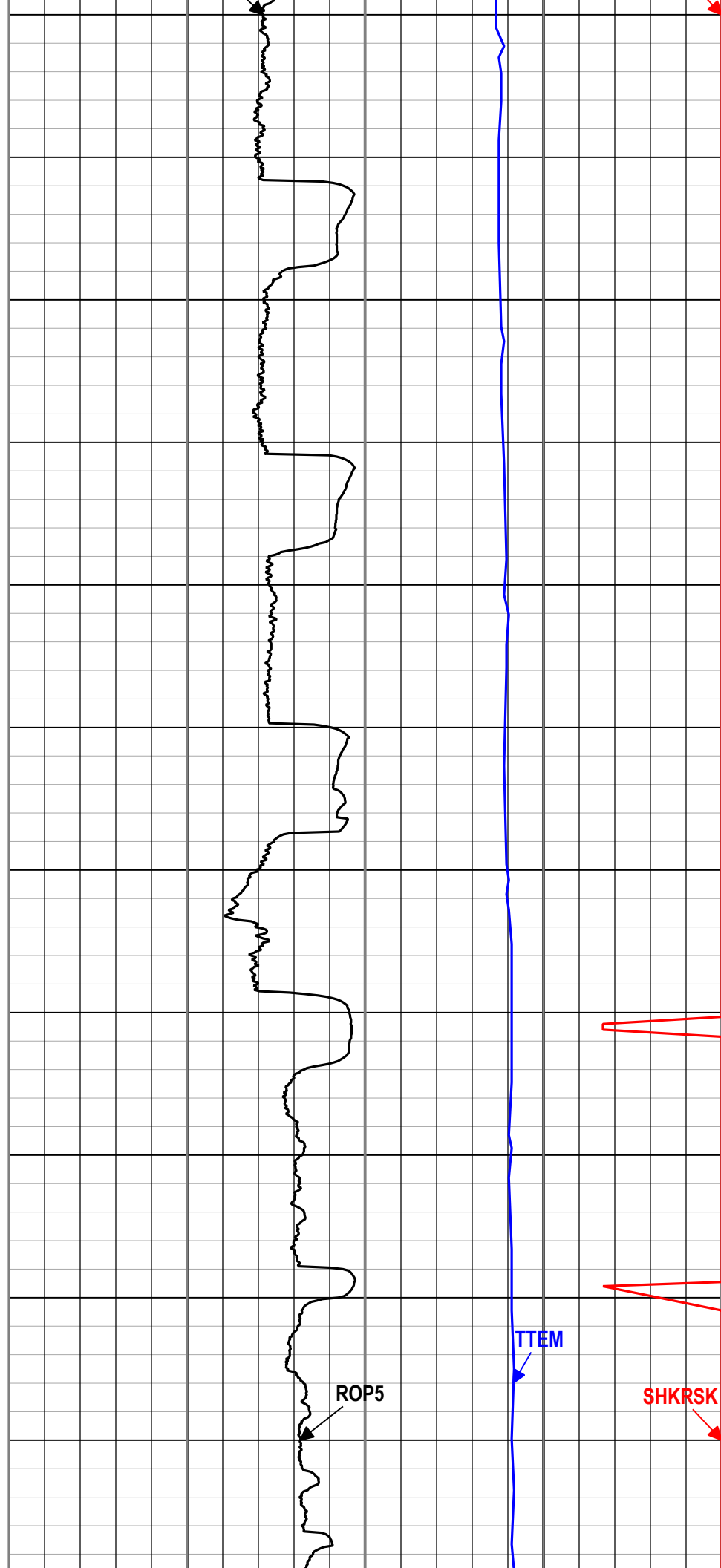
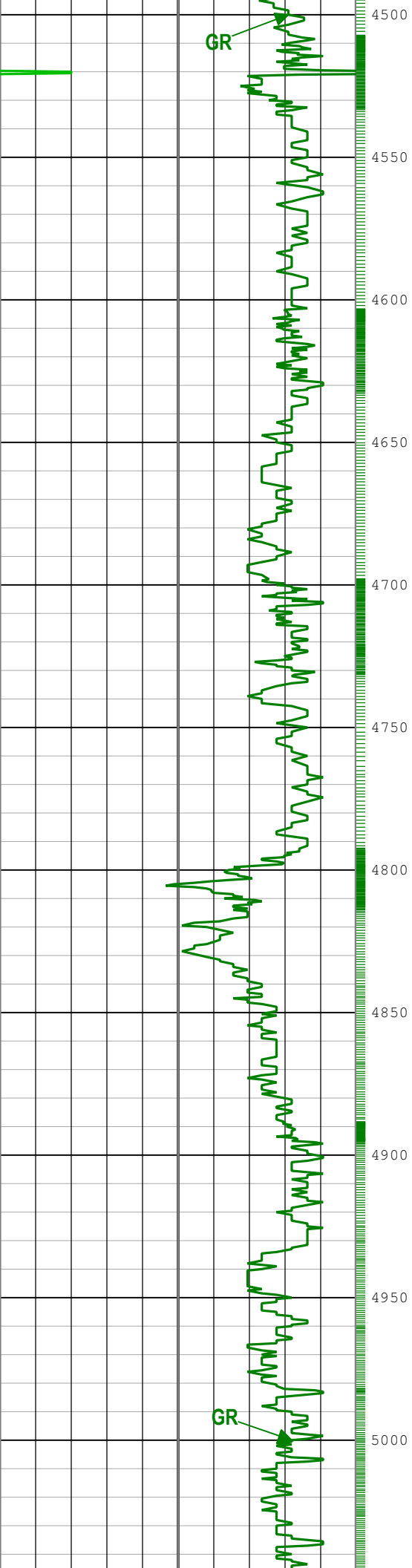


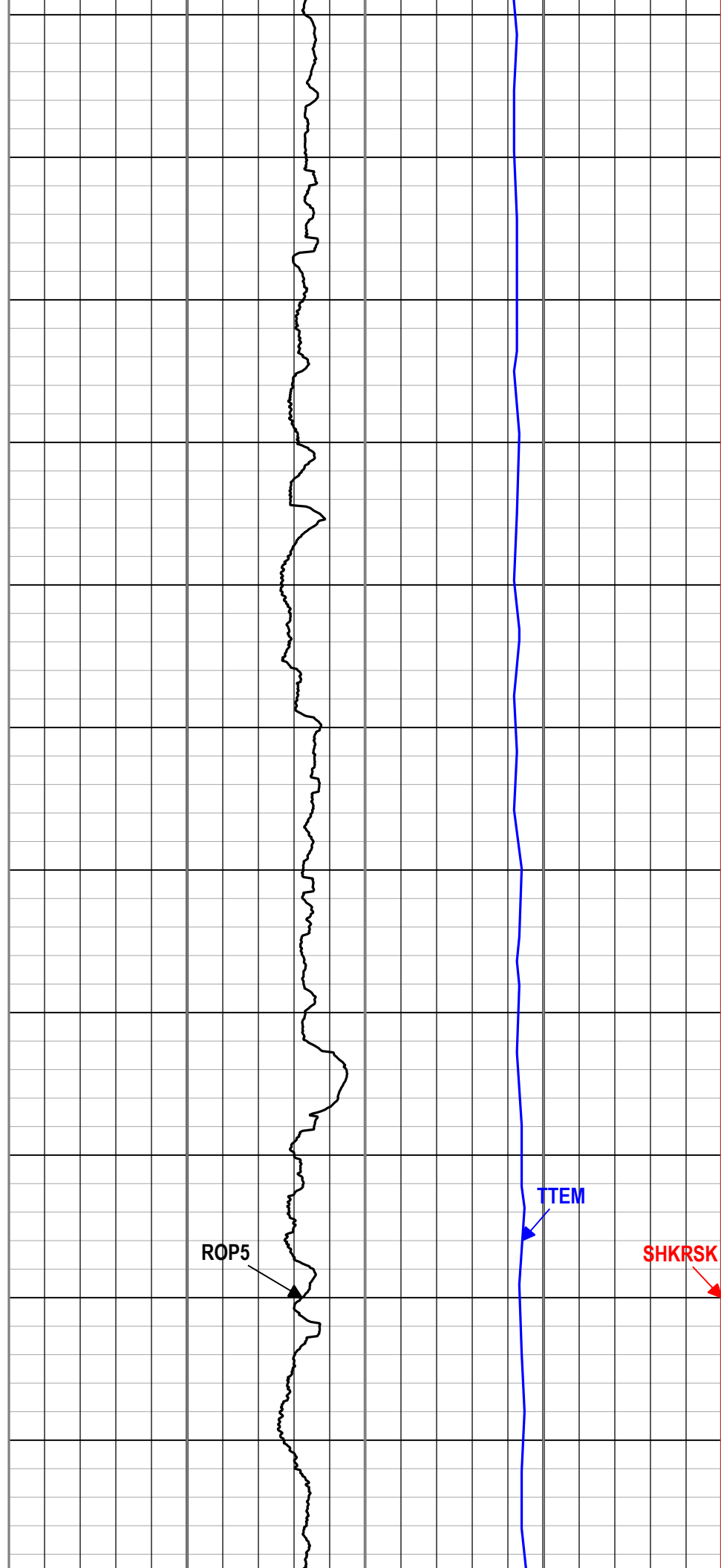
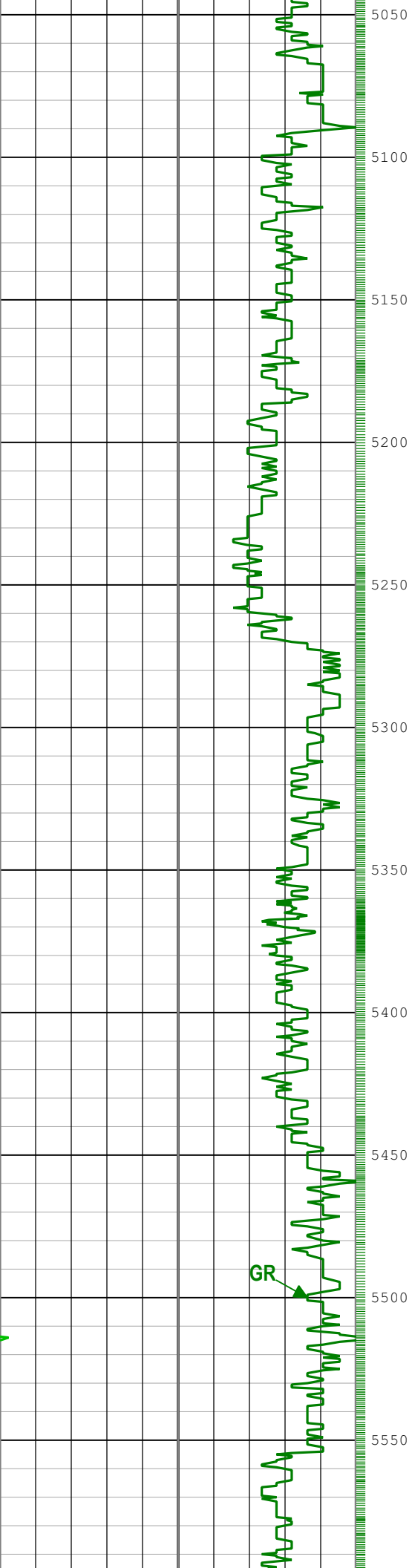


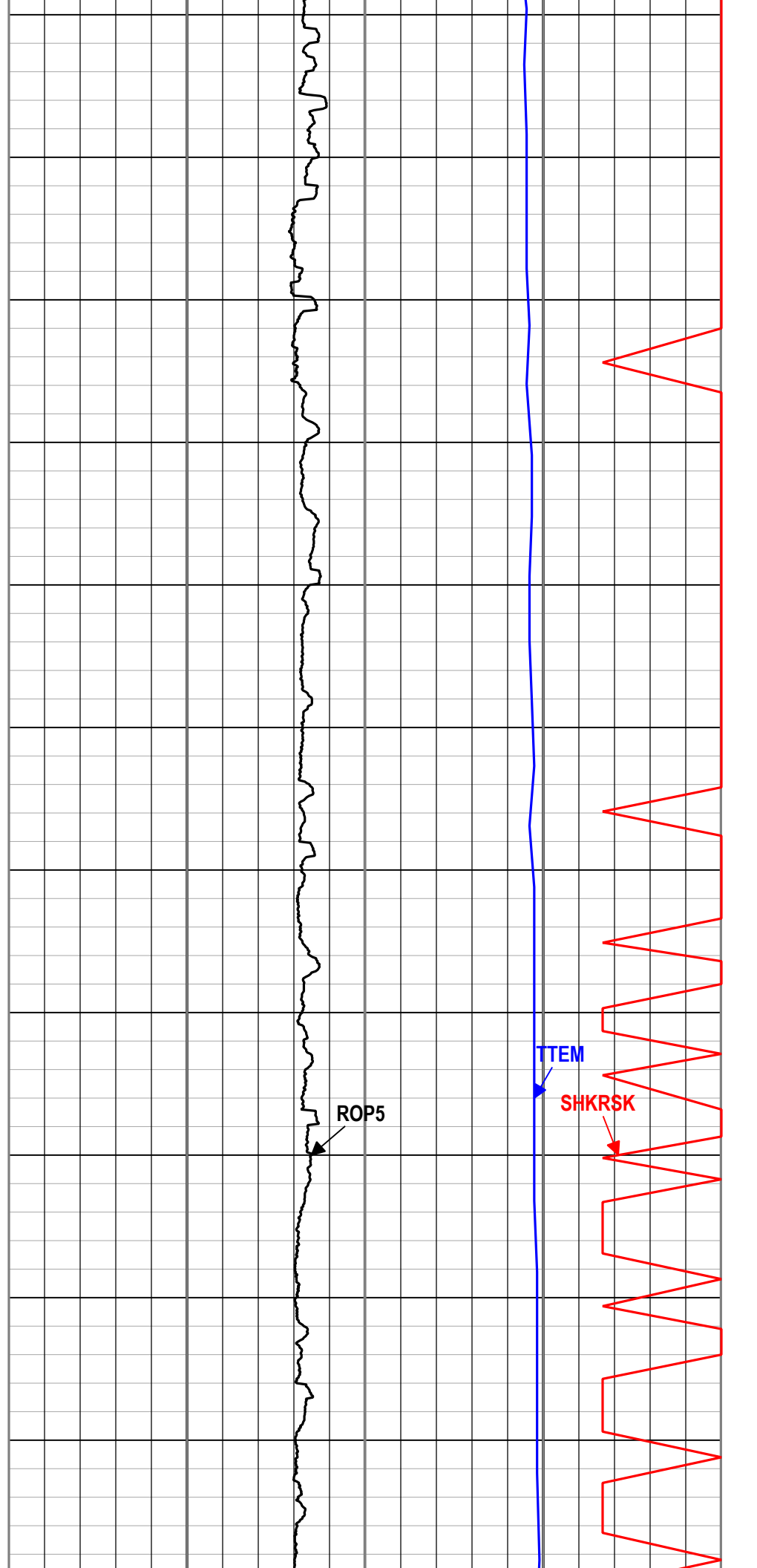
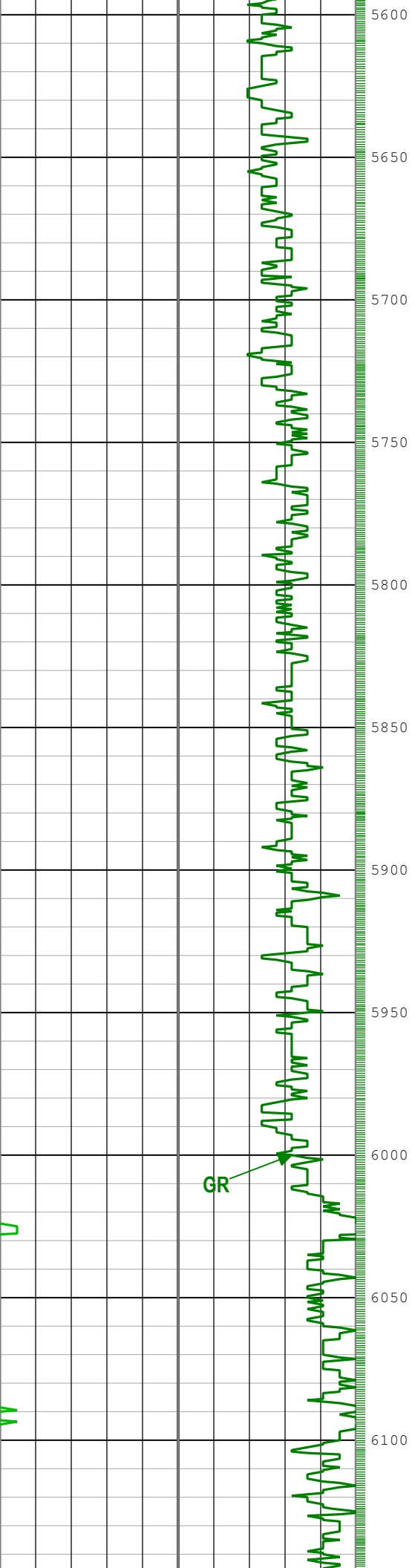


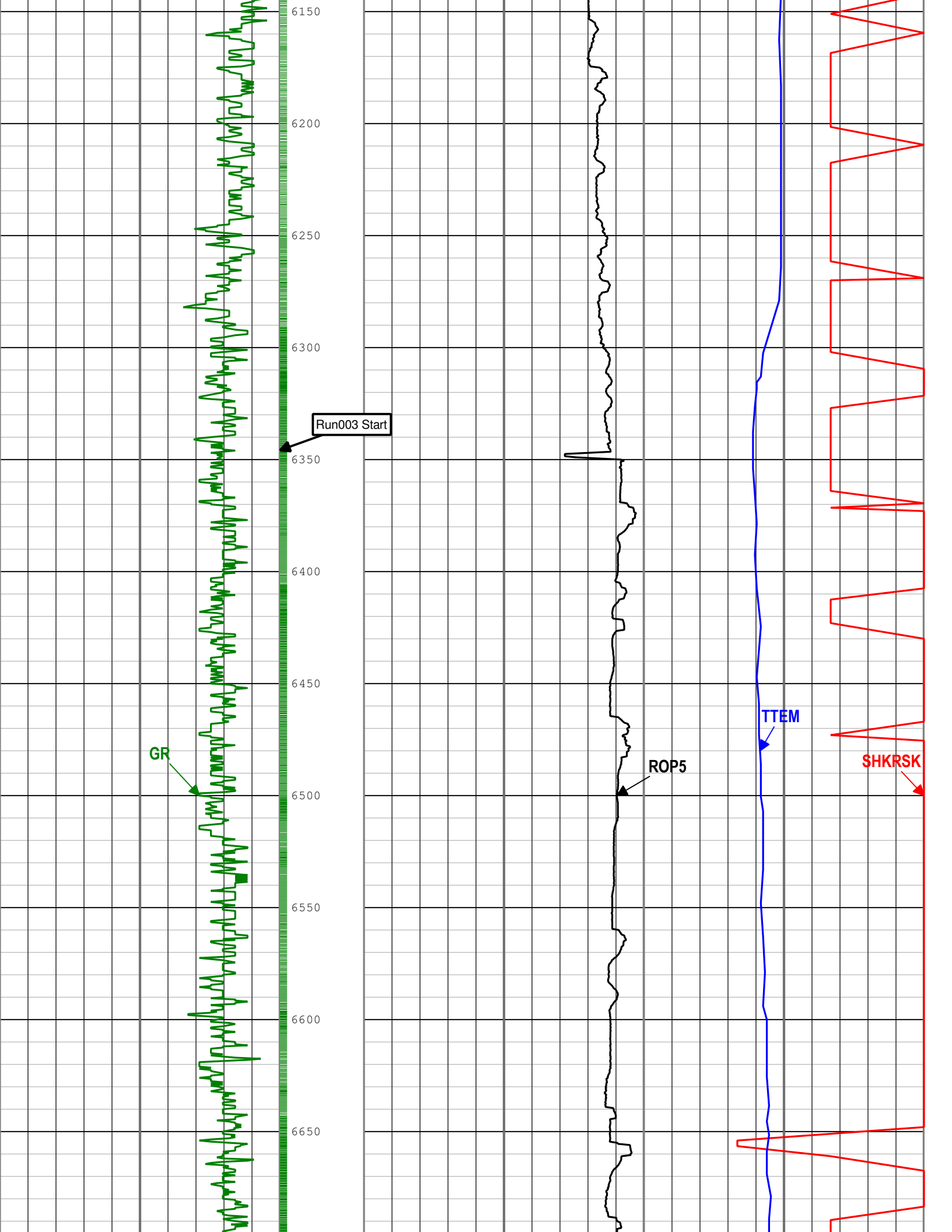


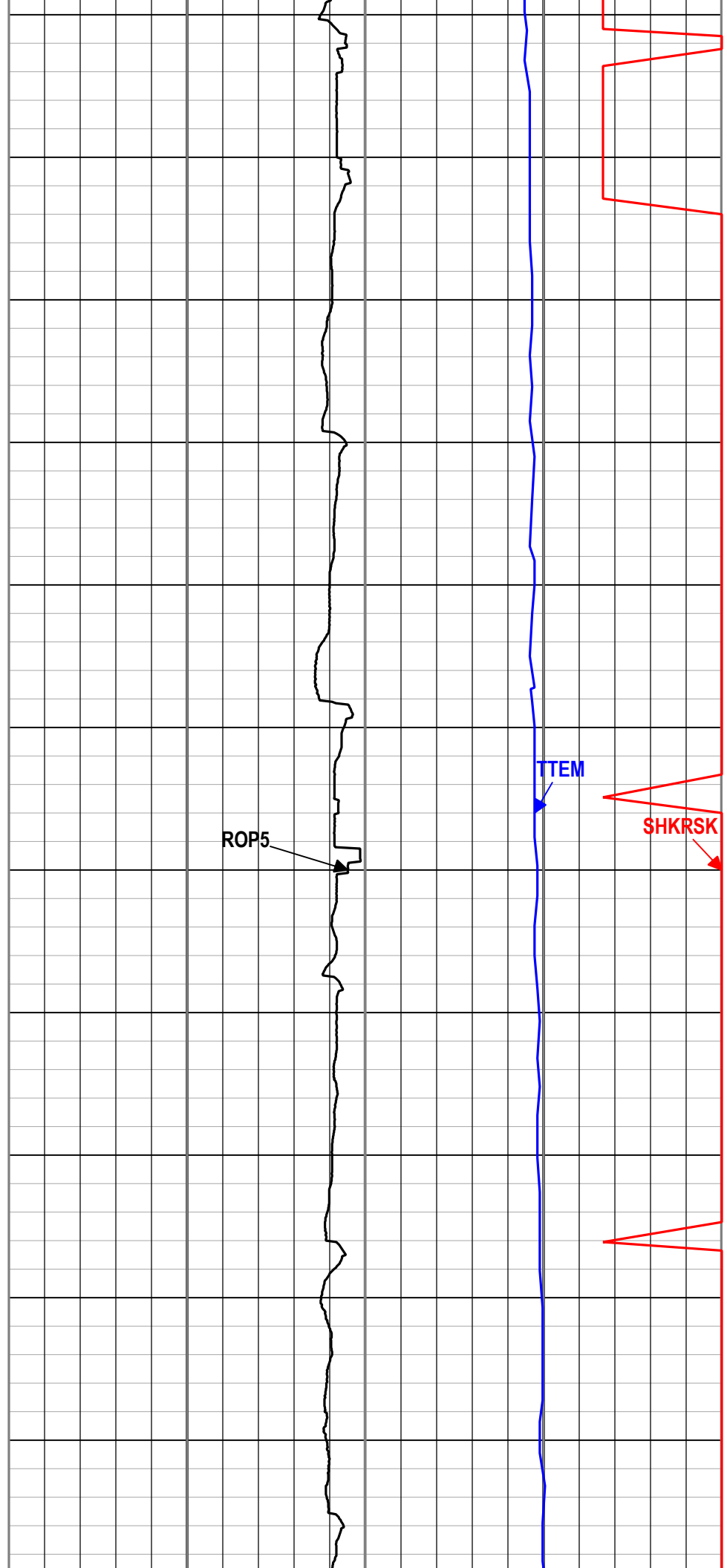
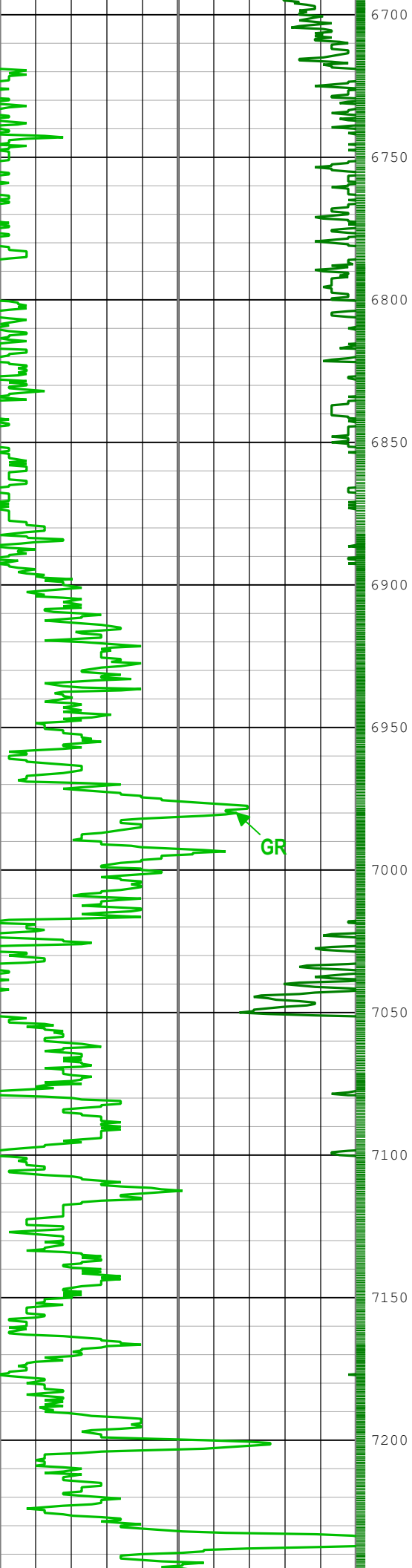


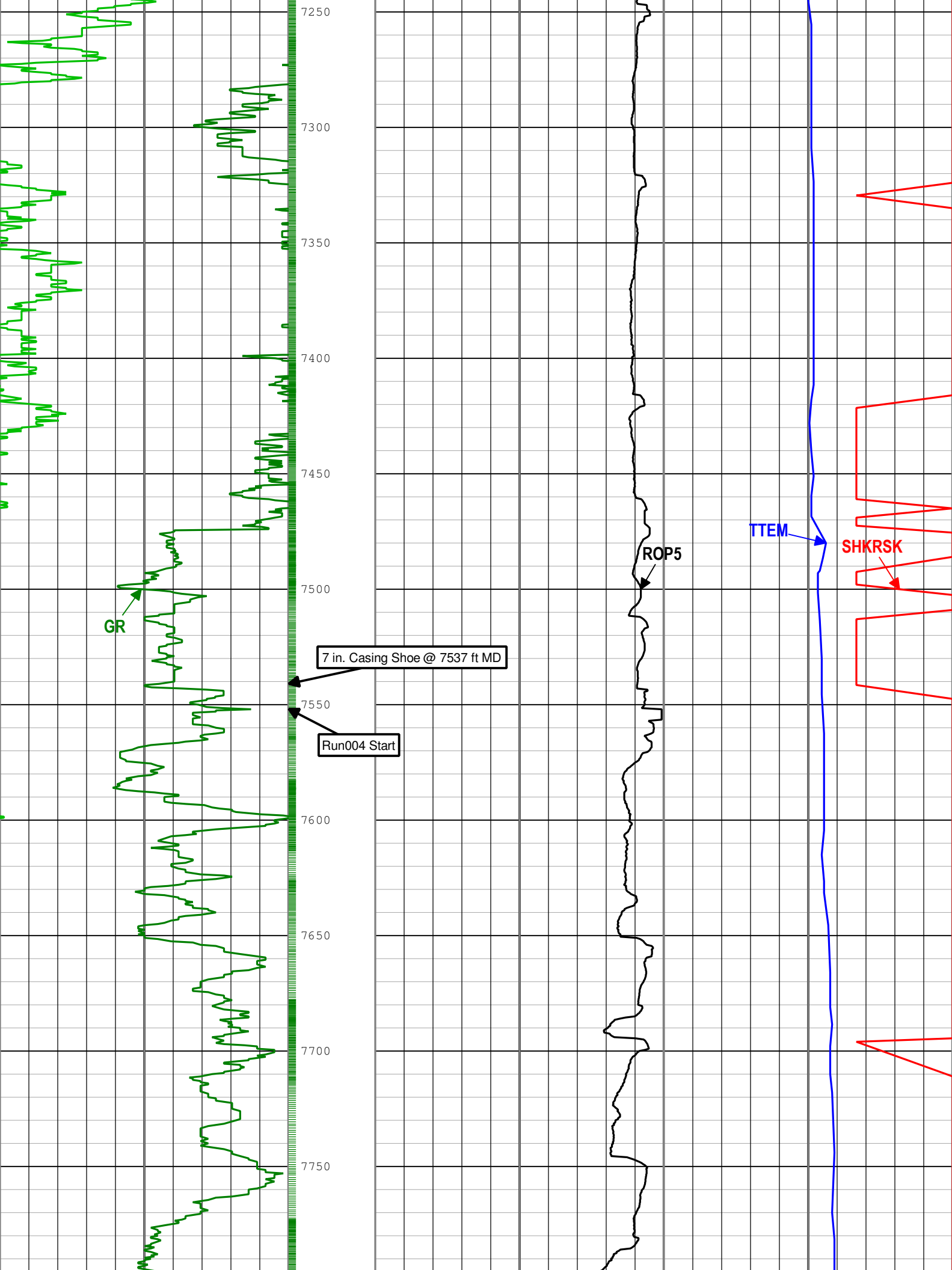


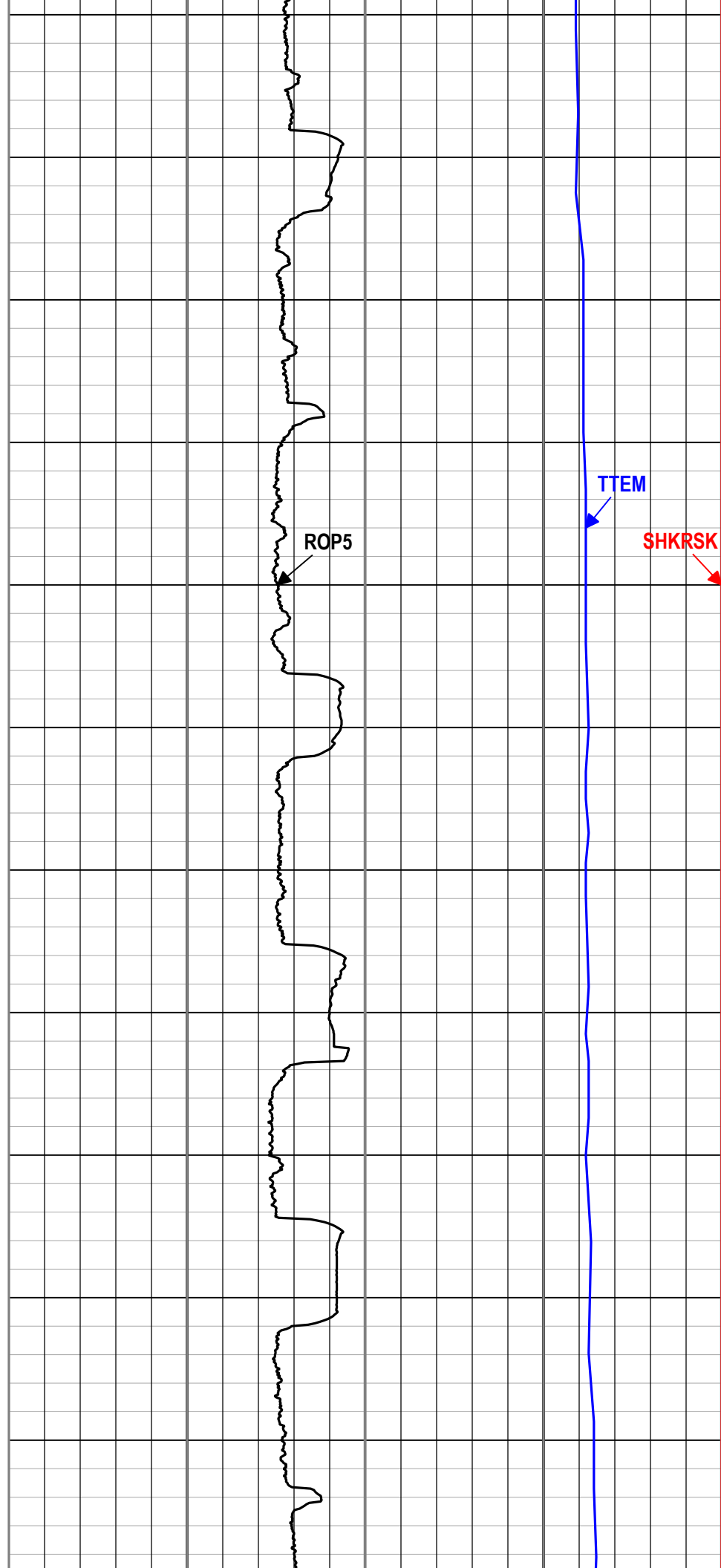
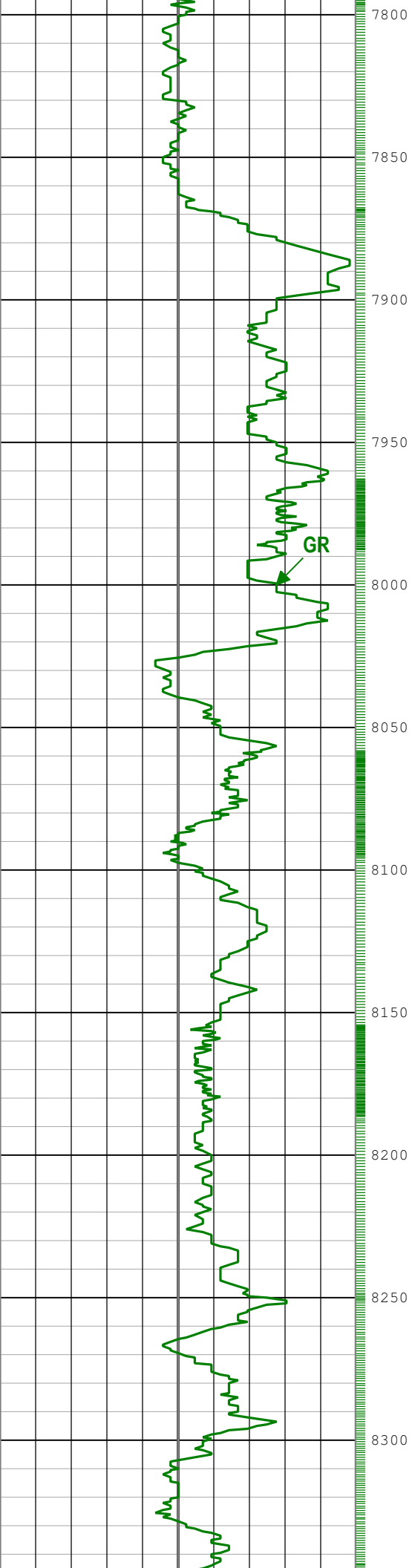


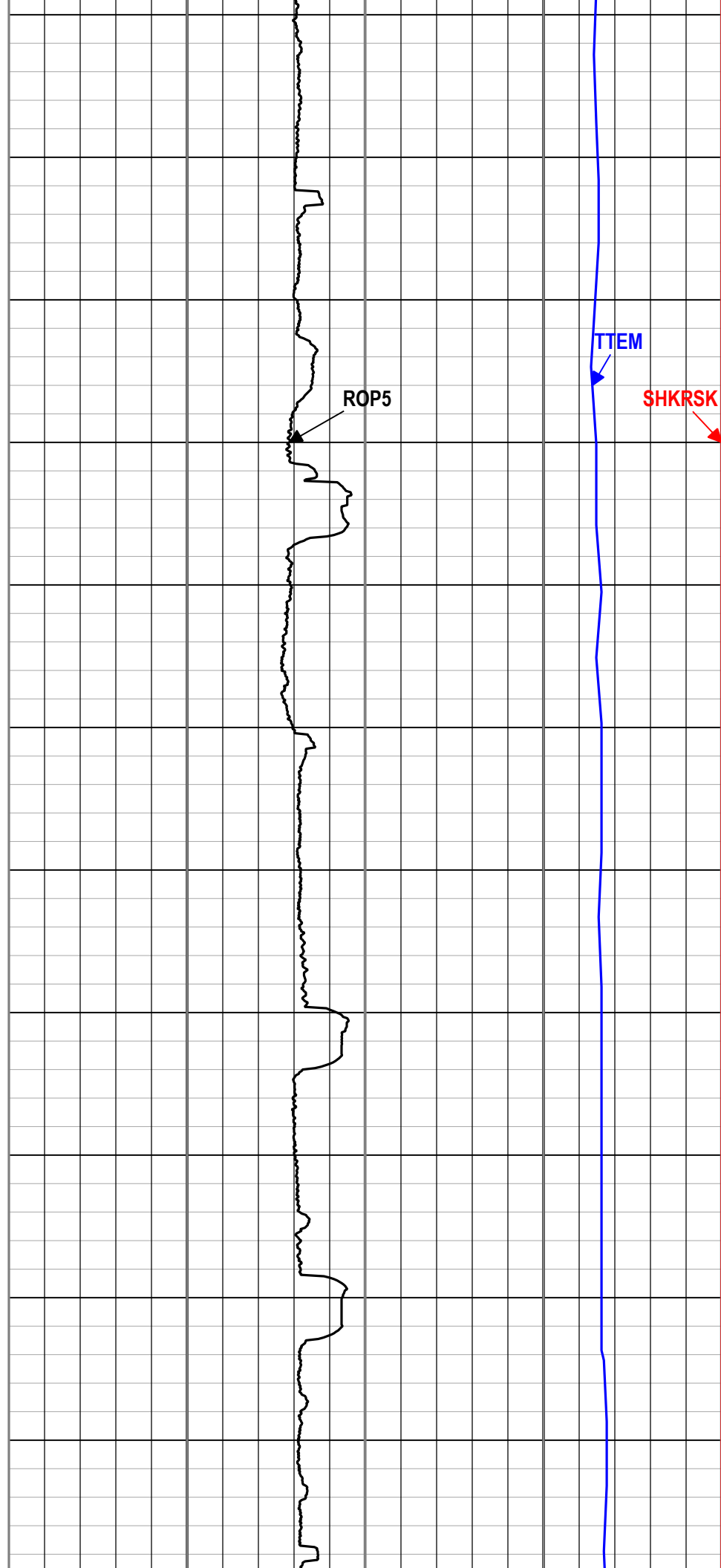
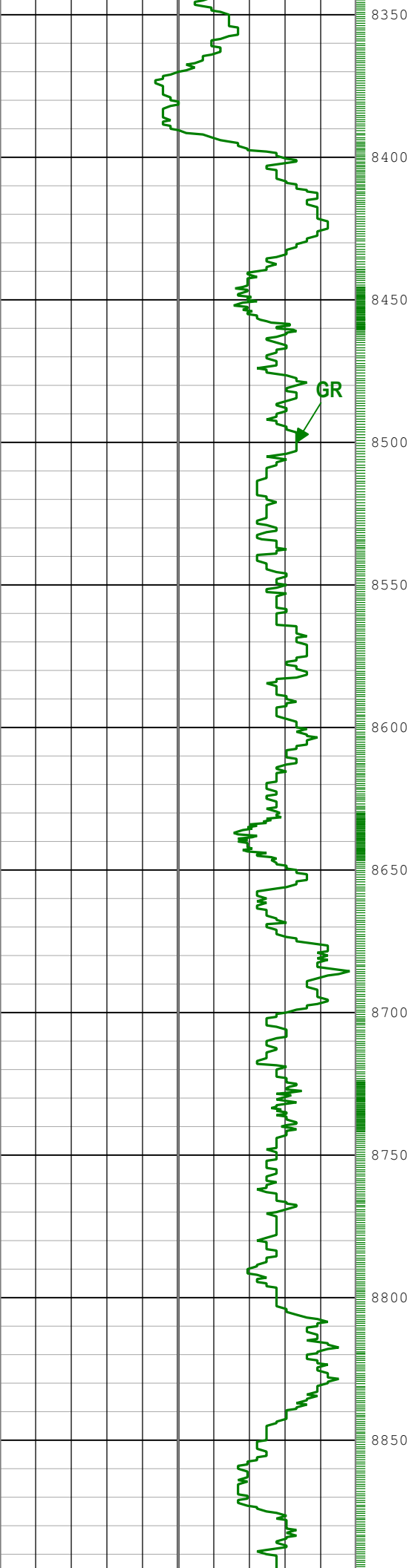


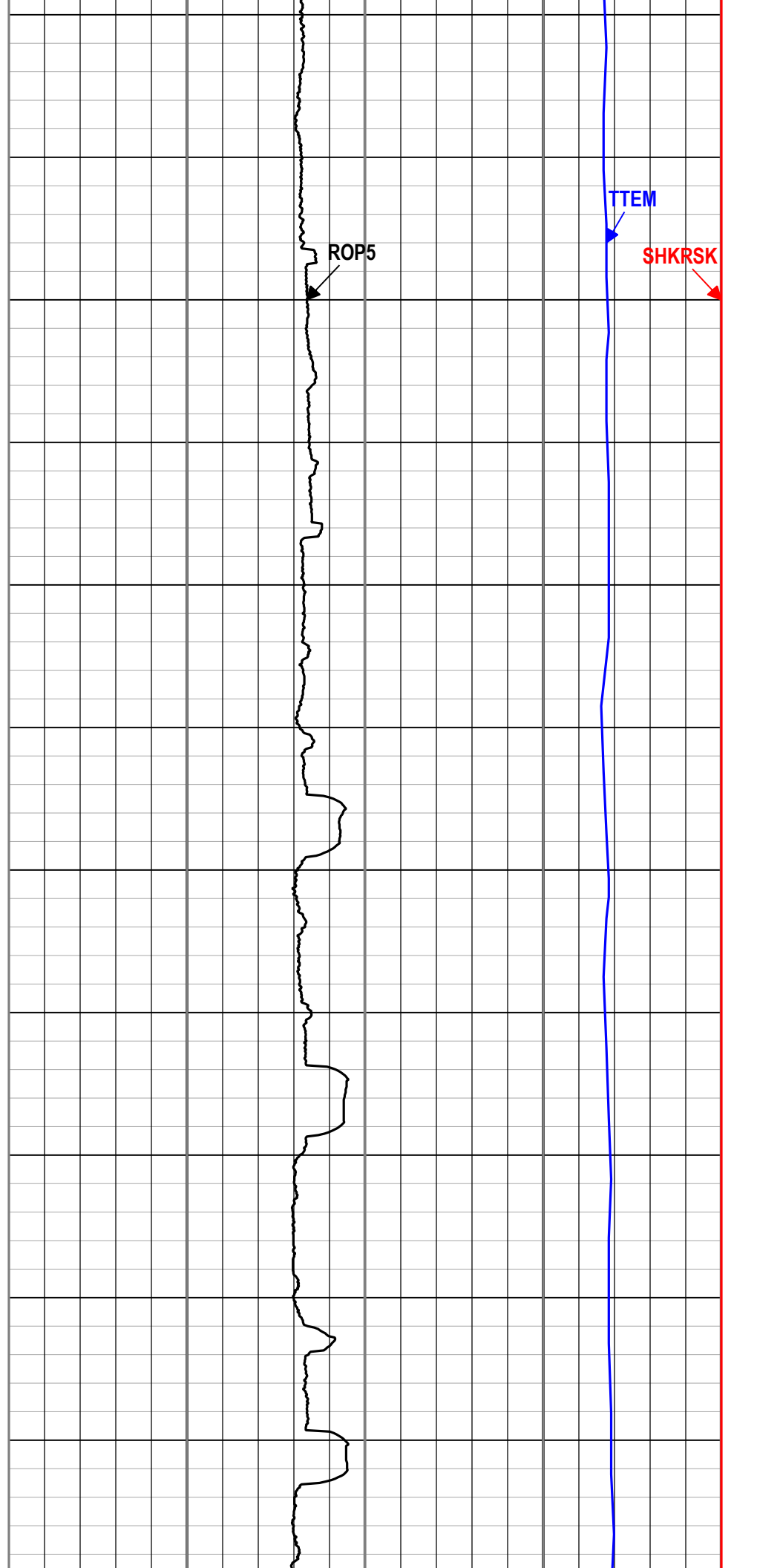
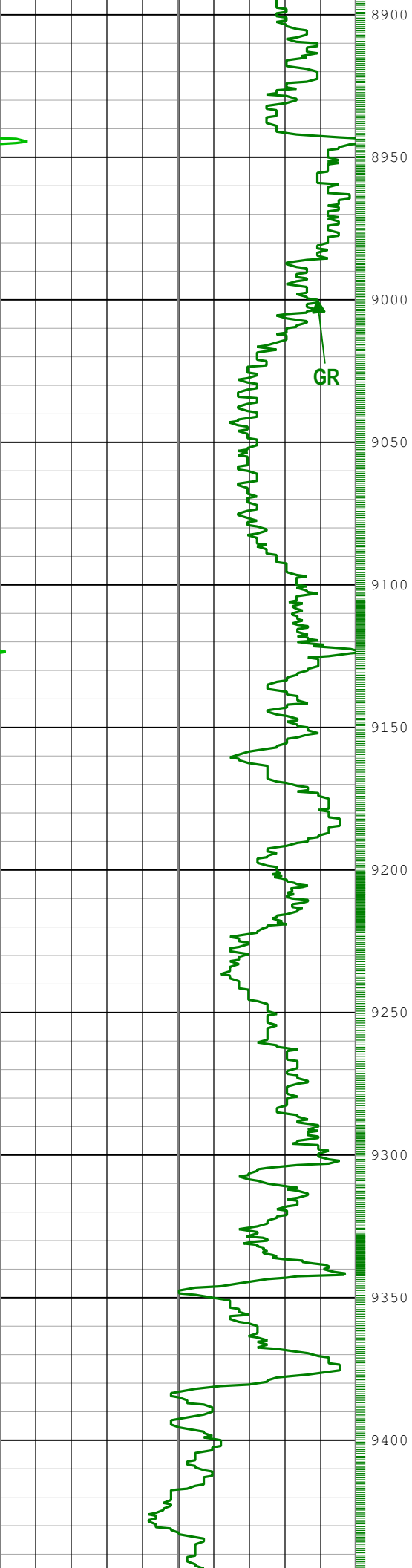


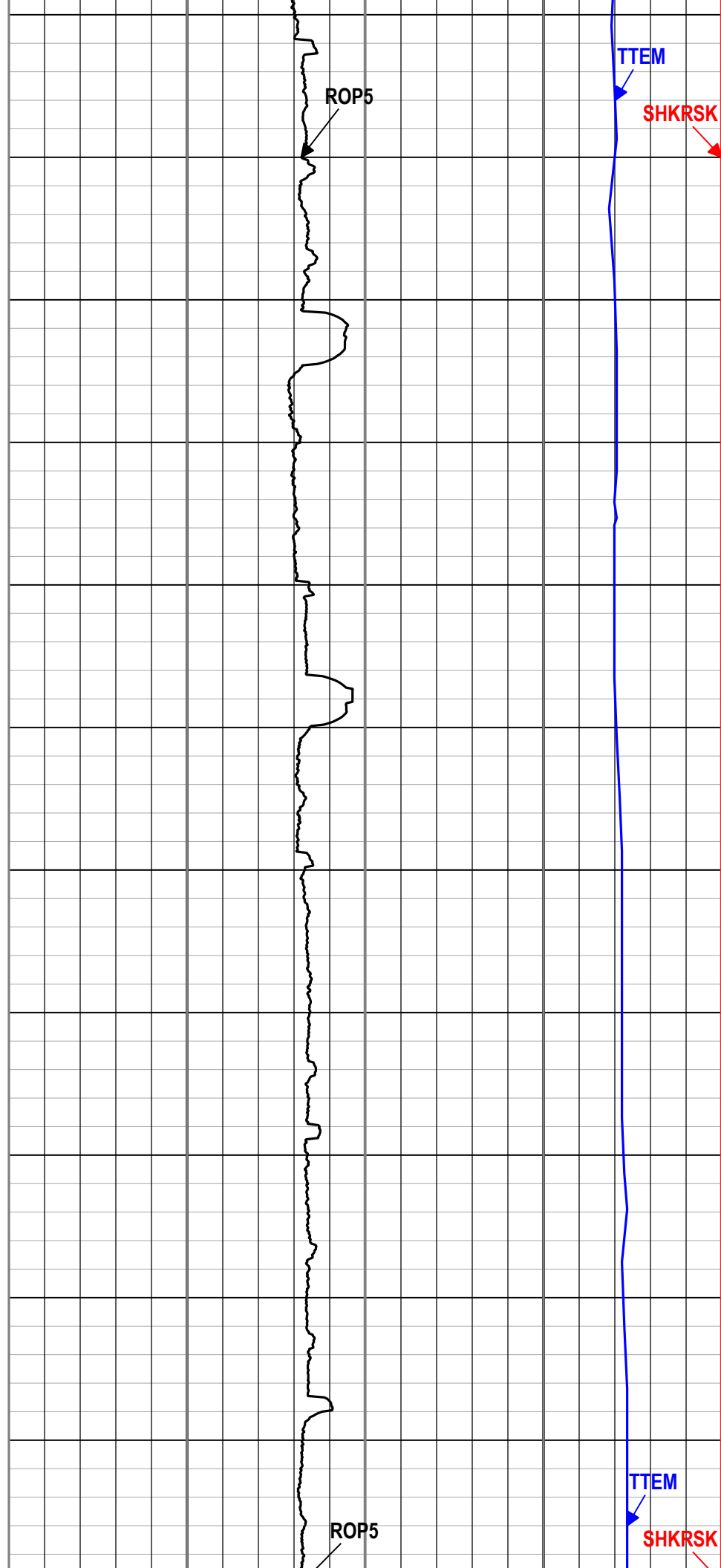
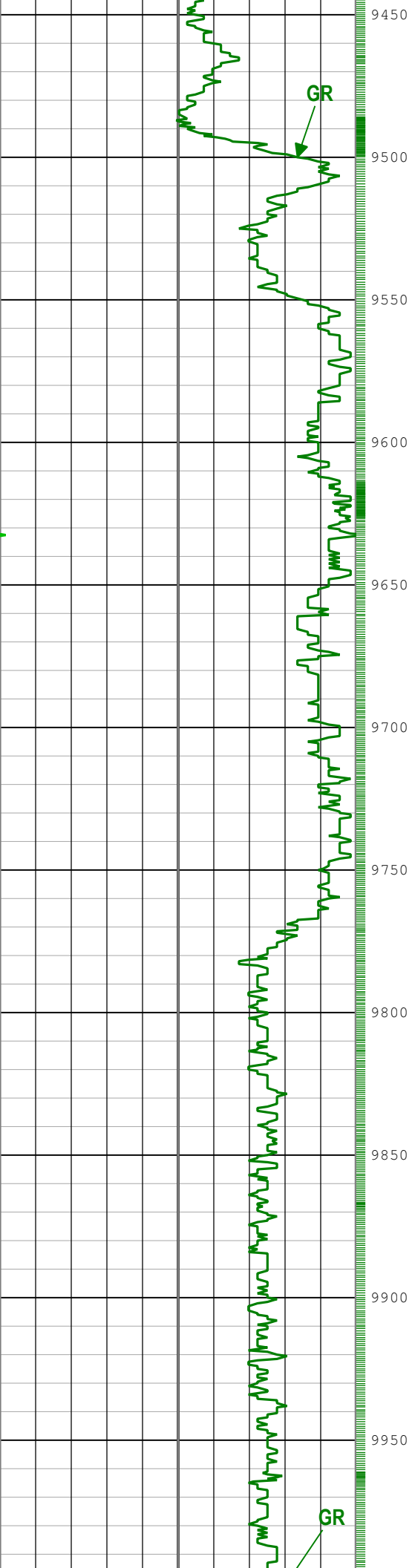


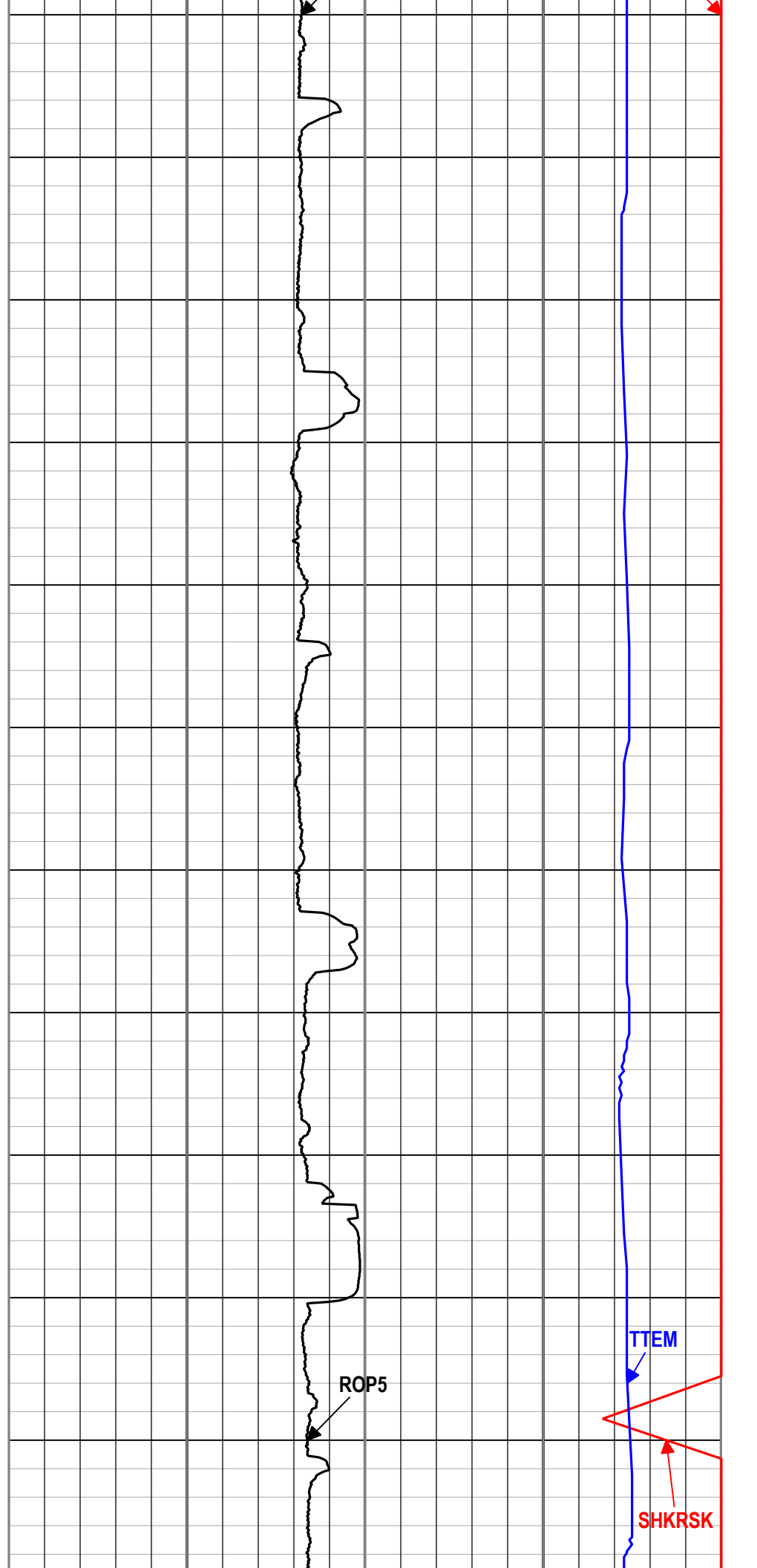
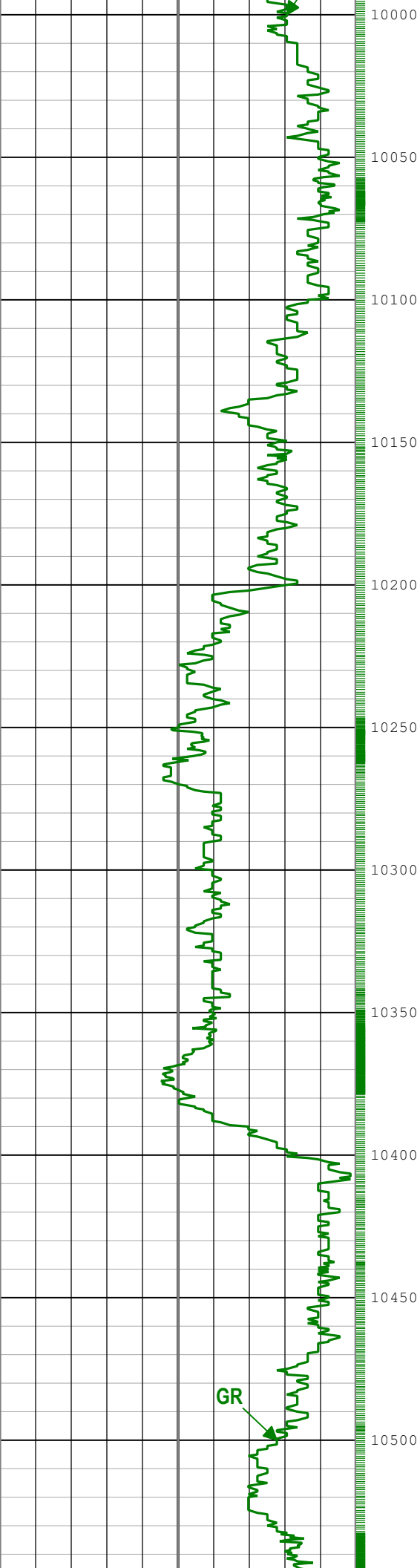


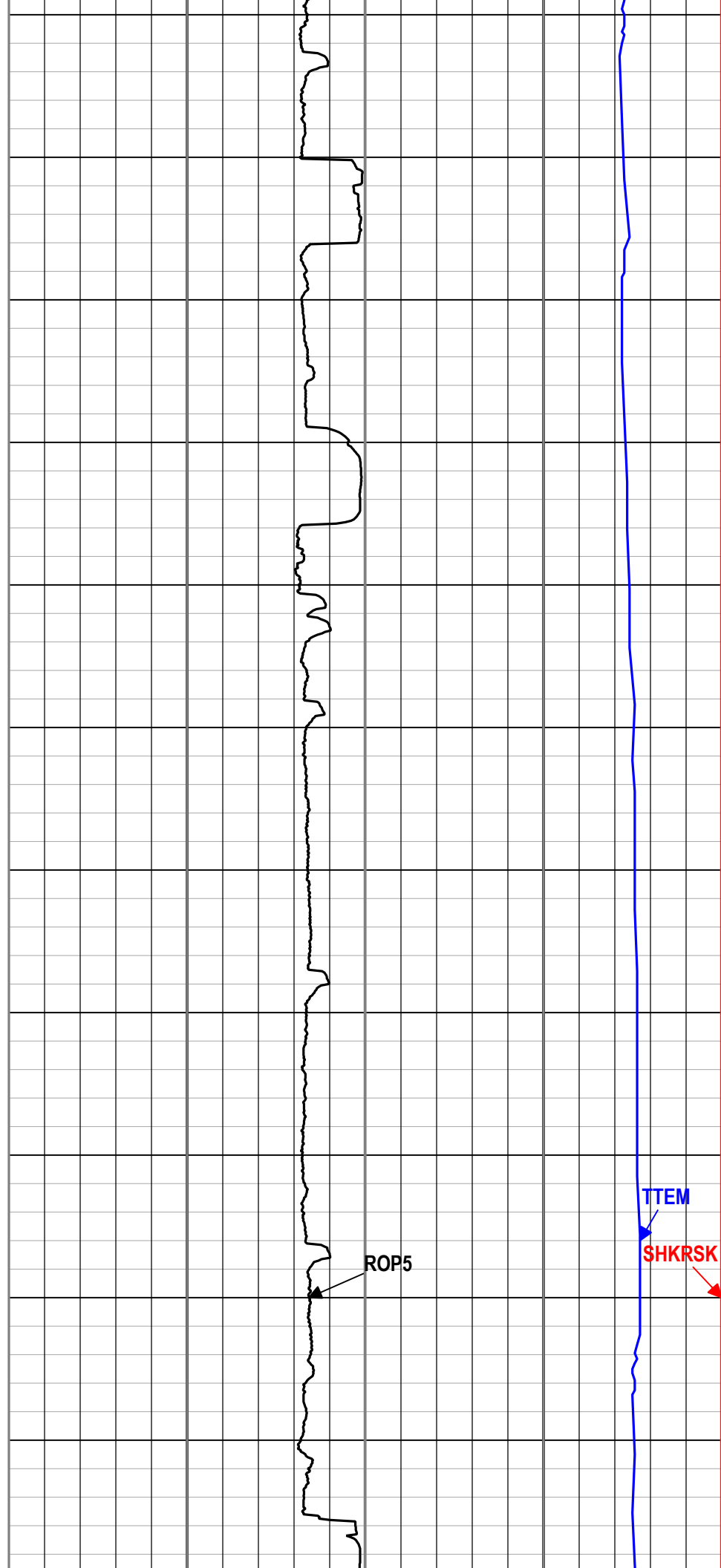
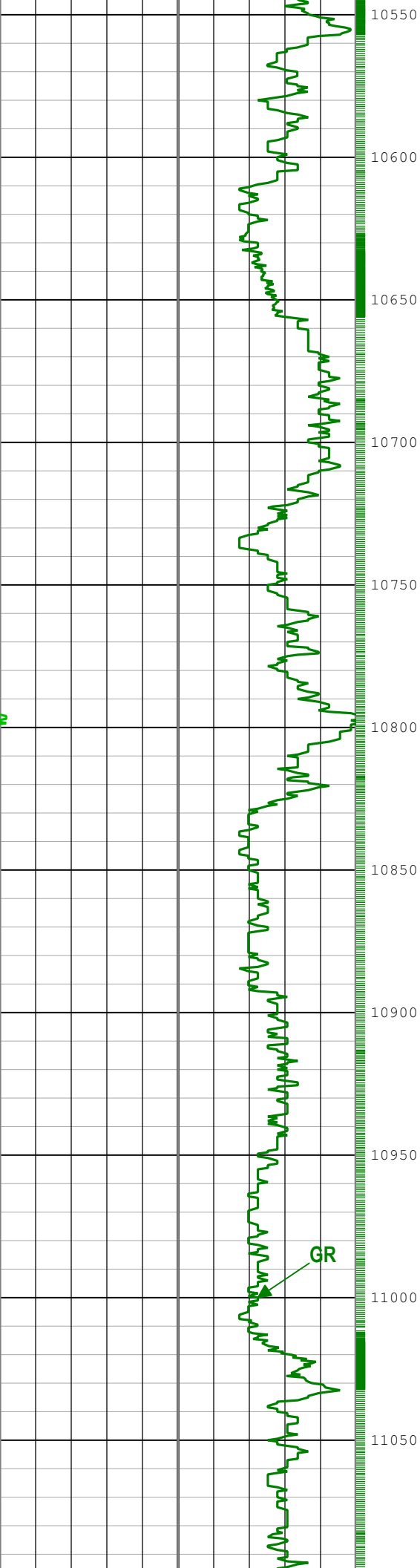


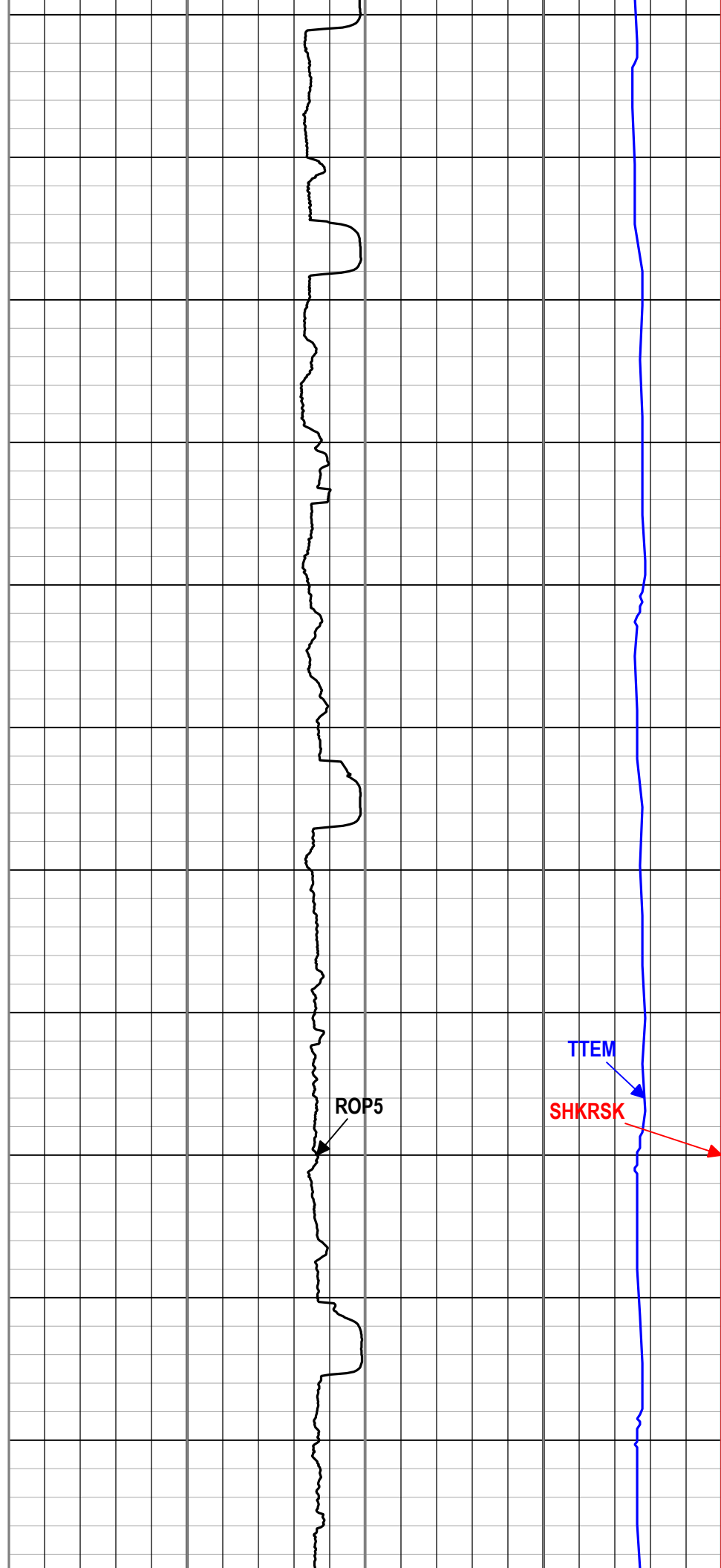
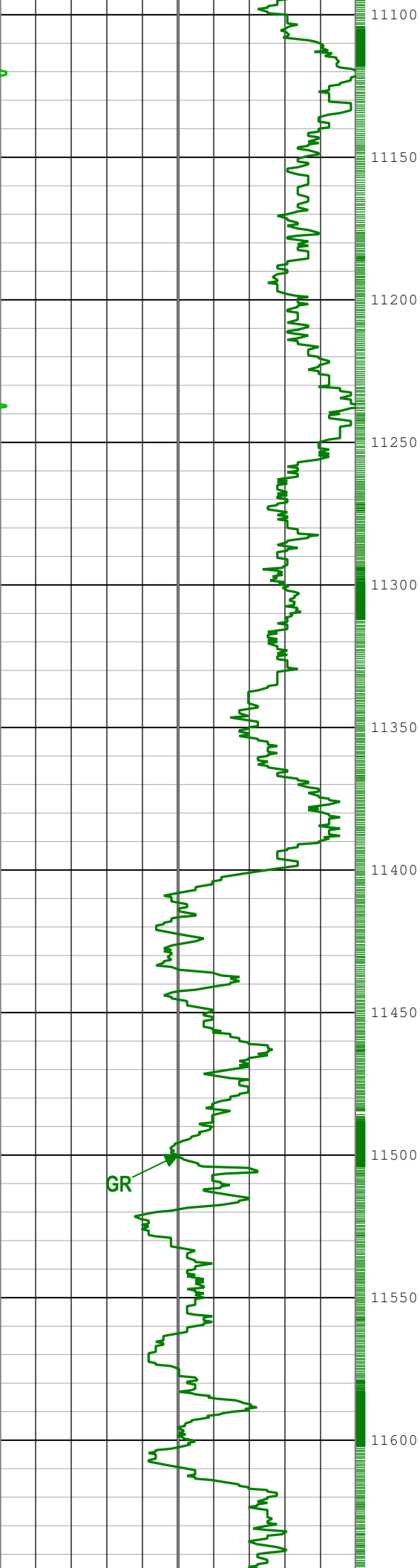


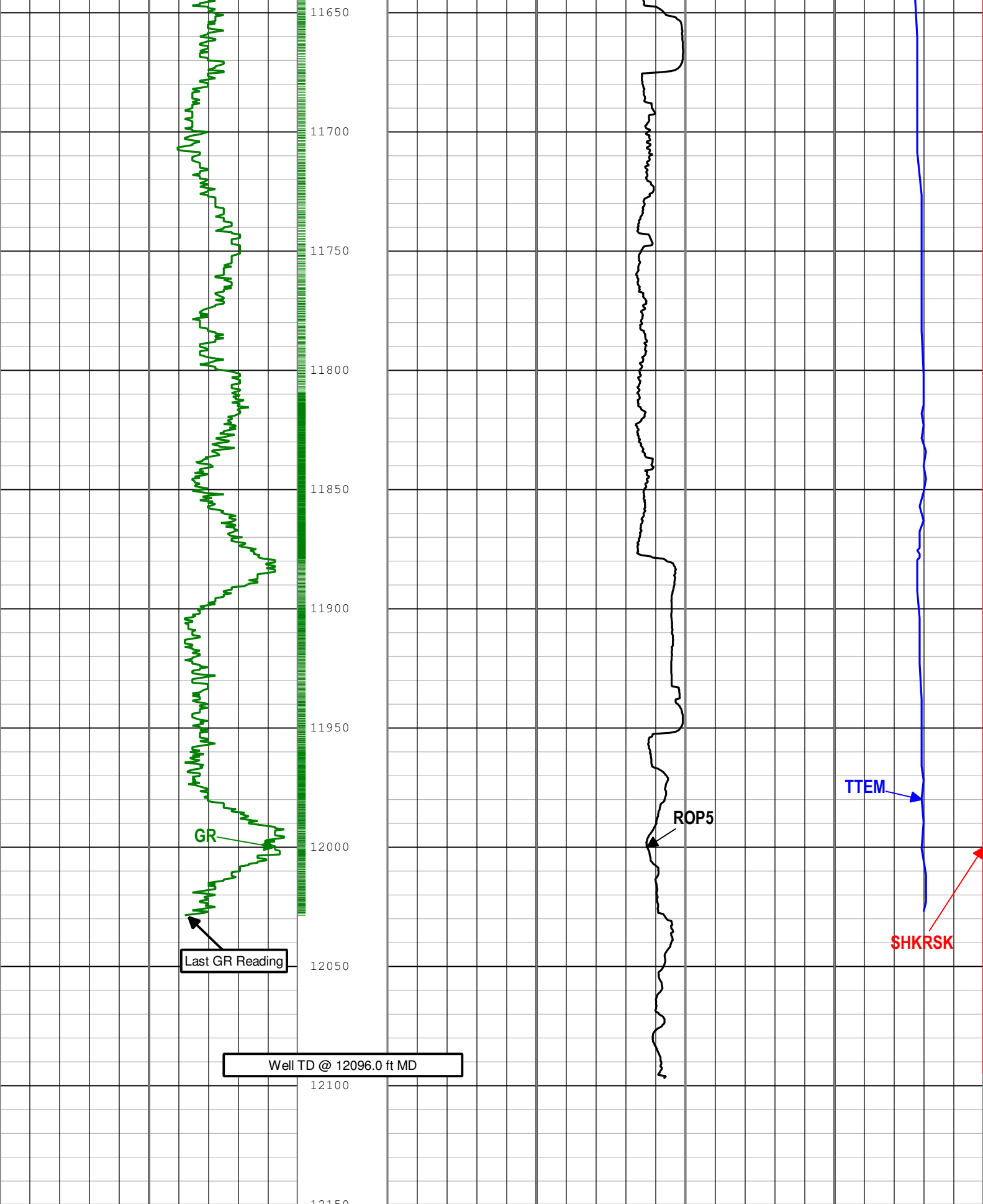












Gamma Ray (GR) SlimPulse[1] RM		
0	gAPI	150
Gamma Ray (GR) SlimPulse[1] RM		
150	gAPI	300

Rate of penetration averaged over the last 5 ft (1.5 m) (ROP5) RT		
1500	ft/h	0

Shock Risk (SHKRSK) SlimPulse[1] RT		
3		0
Tool Temperature (TTEM) SlimPulse[1] RM		
50	degF	300

Channel Processing Parameters

Run001: Parameters

Parameter	Description	Tool	Value	Unit
BS	Bit Size	DNMSESSION	8.75	in
DFD	Drilling Fluid Density	Borehole	8.85	lbm/gal
GR_SRC	GR Source Selection	SPULSE-GEN	GAMMA_EXT	

Run002: Parameters

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

Run002Time Zoned Parameters

Pass Drilling

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
DFD	8.8	25-Aug-2014 01:31:16	25-Aug-2014 14:00:00	1708.25	4558.25
DFD	9.3	25-Aug-2014 14:00:00	26-Aug-2014 02:30:00	4558.25	6345.75
DFD	10.1	26-Aug-2014 02:30:00	26-Aug-2014 15:40:33	6345.75	6348

All depth are at tool zero.

Run003: Parameters

Parameter	Description	Tool	Value	Unit
BS	Bit Size	DNMSESSION	8.75	in
DFD	Drilling Fluid Density	Borehole	10.5	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	Time Zoned	lbm/gal
GR_SRC	GR Source Selection	SPULSE-GEN	GAMMA_EXT	

Run004Depth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	8.75	7428.8	7552
BS	6.125	7552	12096

All depth are actual.

Run004Time Zoned Parameters

Pass Drilling

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
DFD	10.6	30-Aug-2014 12:08:50	31-Aug-2014 00:30:00	7542.17	9174
DFD	10.8	31-Aug-2014 00:30:00	31-Aug-2014 14:00:00	9174	10647.42
DFD	10.9	31-Aug-2014 14:00:00	01-Sep-2014 00:30:03	10647.42	11564.83
DFD	10.8	01-Sep-2014 00:30:03	01-Sep-2014 19:56:06	11564.83	12097.17

All depth are at tool zero.

Tool Control Parameters

Well Composite

Software Version

Acquisition System	Version
MaxWell	4.0.9163.3000
Application Patch	Patch-SP-10767_22480-4.0.9163.3001
	Patch-NPD_ADN8D_SP3-23661-4.0.9530.3002
	Patch-Hotfix_overwrite_survey_for_petrolink-23199-4.0.9530.3002
	Patch-Hotfix_MRT_SP3-23306-4.0.9530.3002

Tool Elements	Description	Software Version	Firmware Version
DRILLING_SURFACE	DRILLING_SURFACE	4.0.9469.3000	
SPEC	SlimPulse Electronics Cartridge	4.0.9469.3000	

Composite Summary

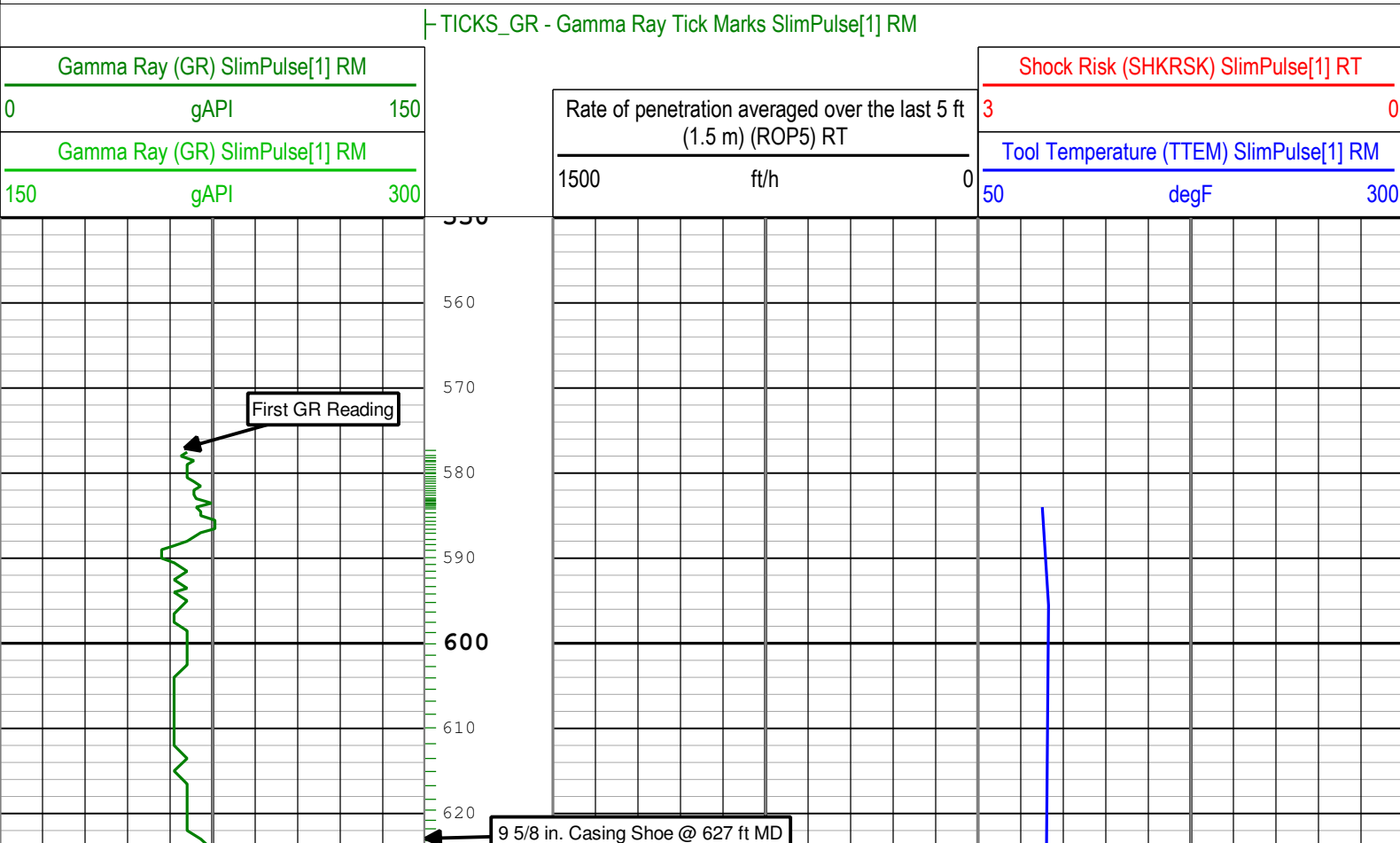
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Include Parallel Data
Run001	Drilling	Down	627.17 ft	1708.92 ft	24-Aug-2014 12:42:28 PM	24-Aug-2014 10:20:30 PM	No
Run002	Drilling	Down	1708.25 ft	6348.00 ft	25-Aug-2014 1:31:16 AM	26-Aug-2014 3:40:33 PM	No
Run003	Drilling	Down	6347.17 ft	7552.92 ft	27-Aug-2014 4:48:18 PM	28-Aug-2014 9:38:52 PM	No
Run004	Drilling	Down	7542.17 ft	12097.17 ft	30-Aug-2014 12:08:50 PM	01-Sep-2014 7:56:06 PM	No

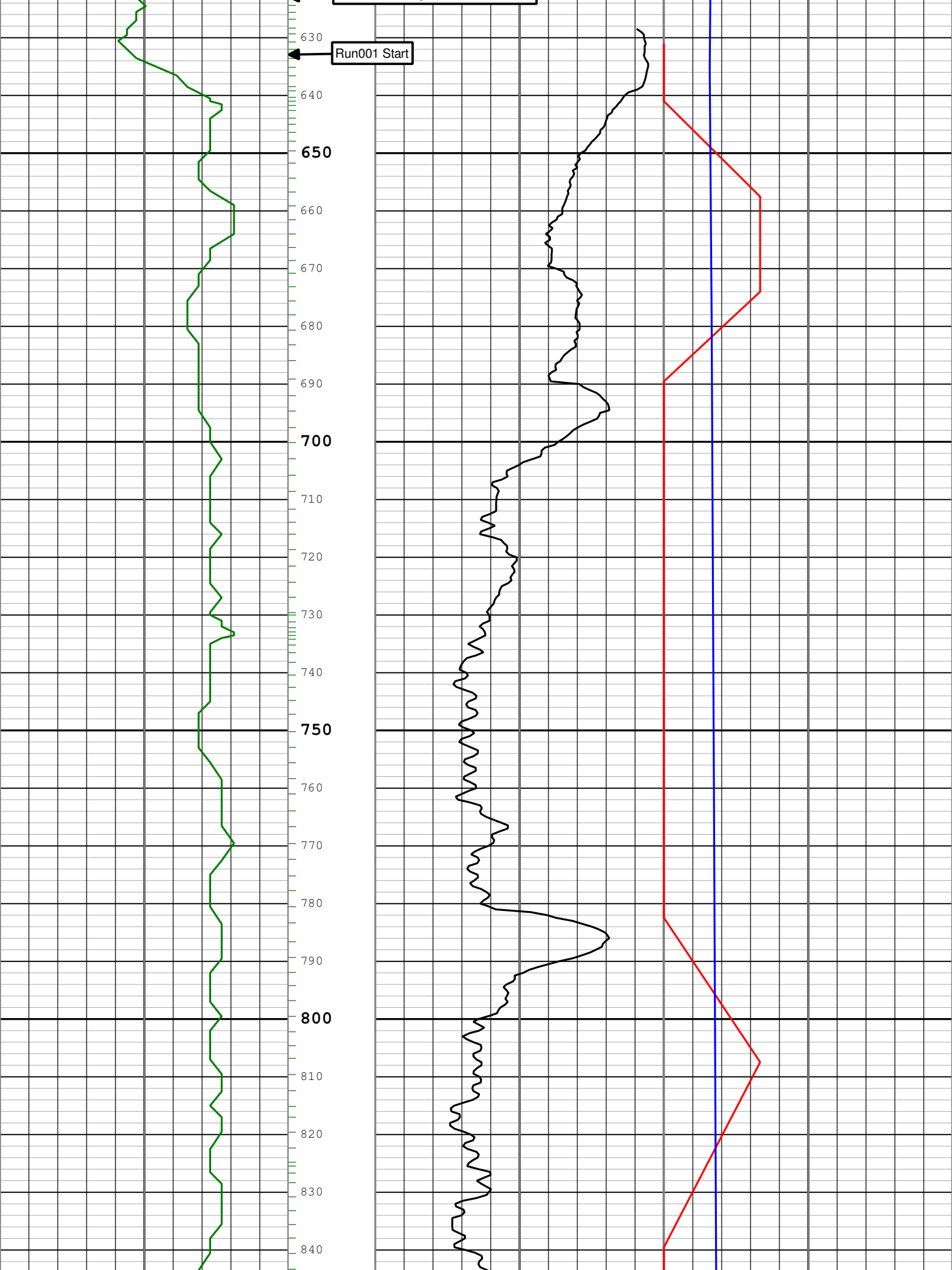
All depths are referenced to toolstring zero

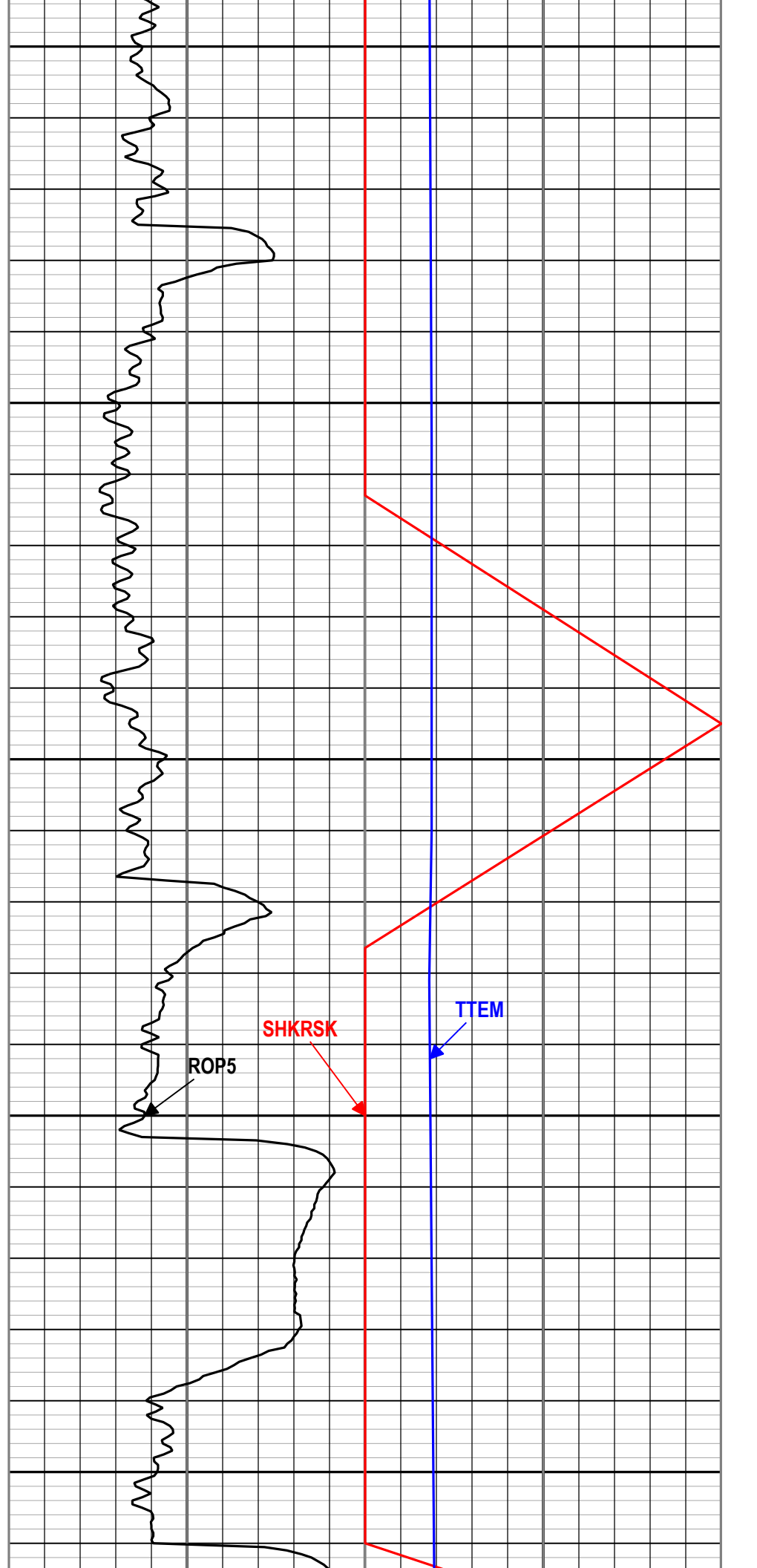
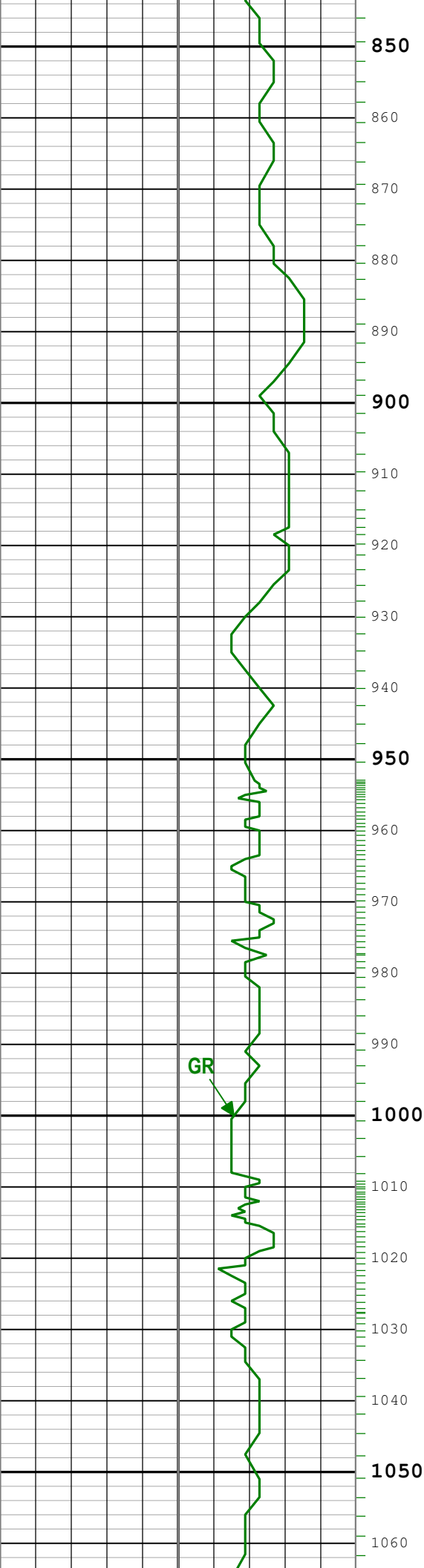
Log

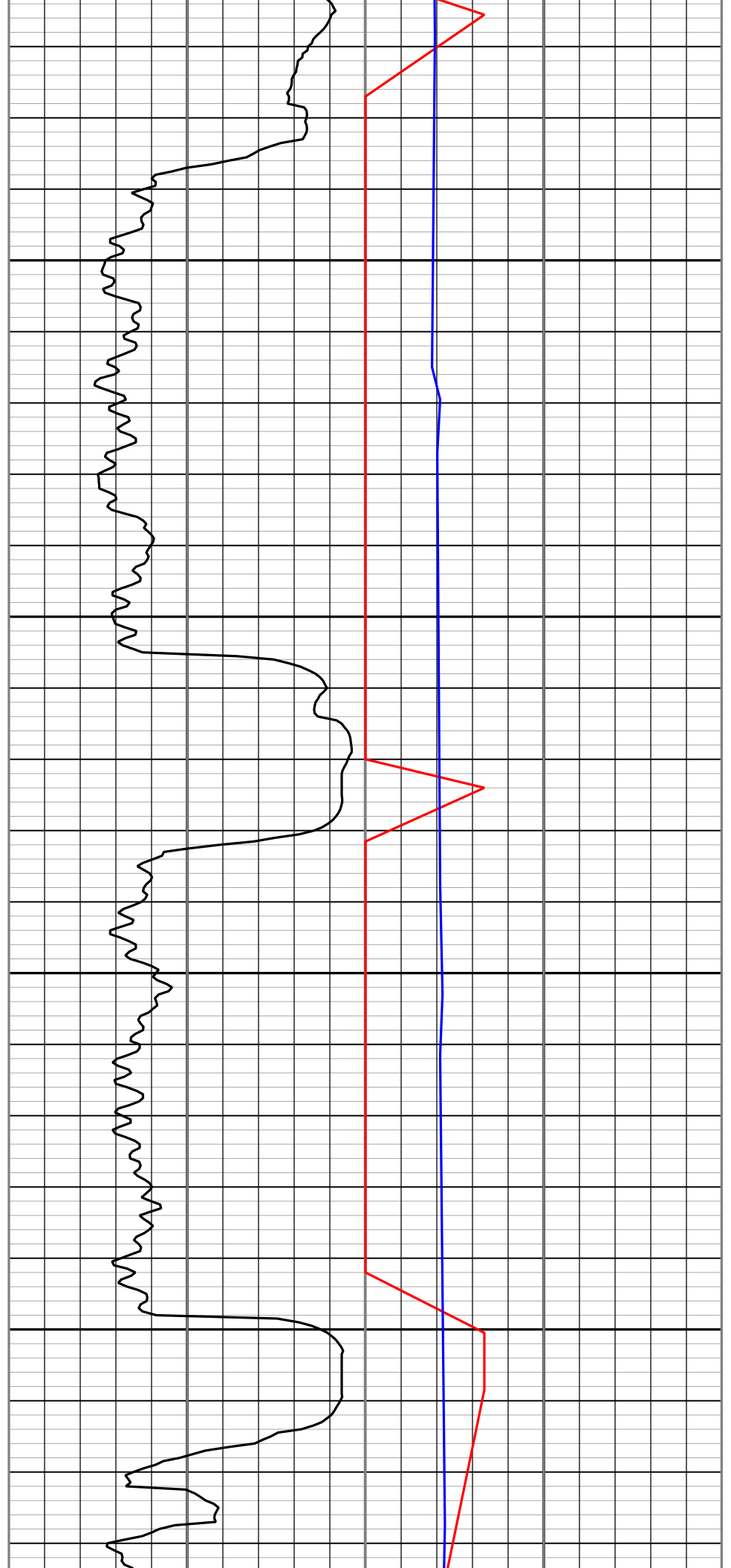
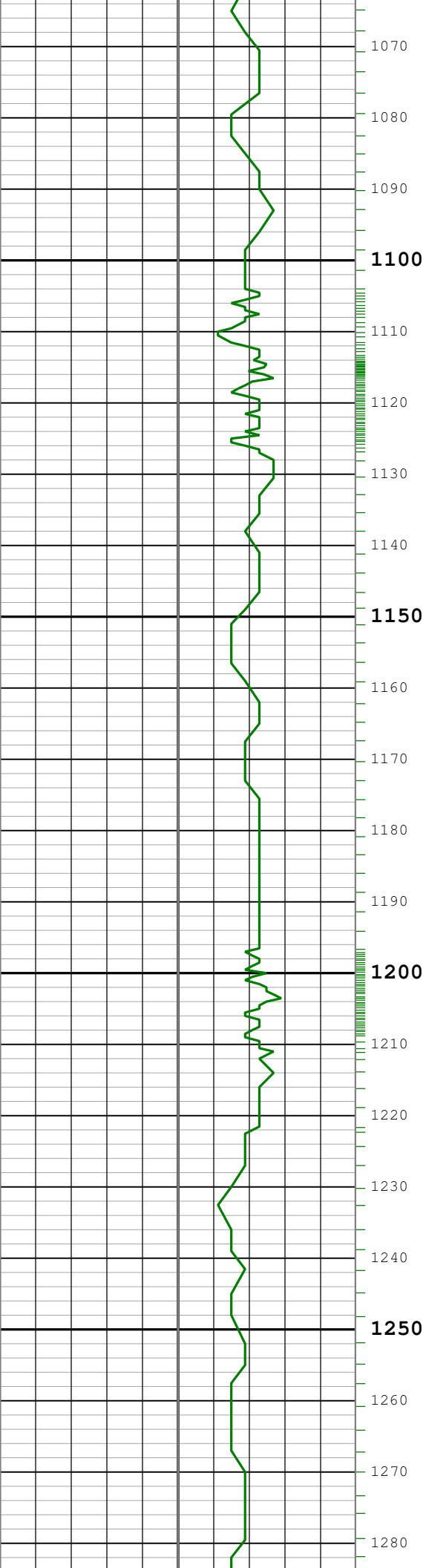
Company:Noble Energy INCWell:Five Rivers K09-66-1AHNWell Composite:S258

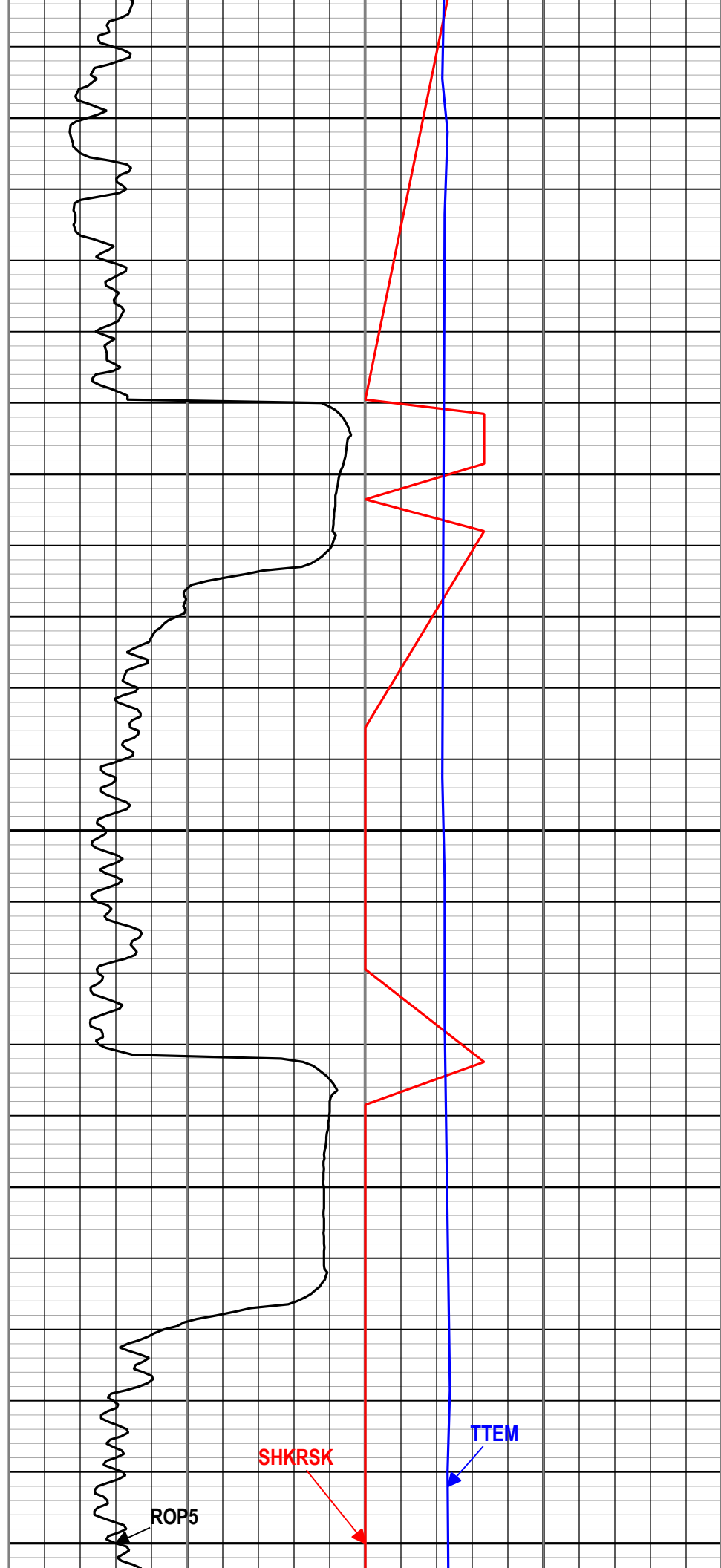
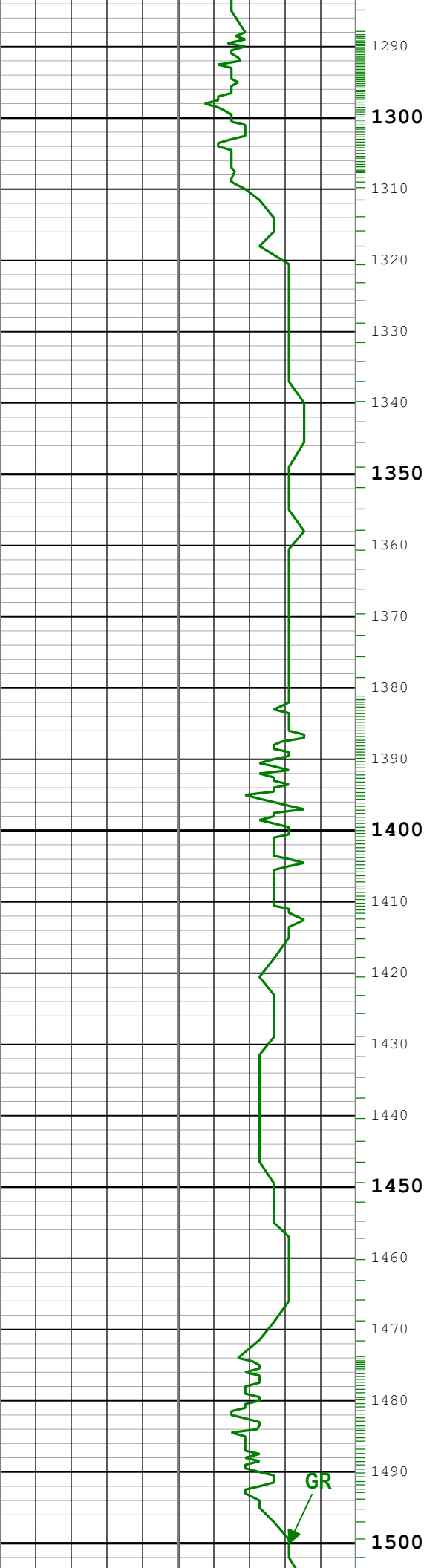
Description: Format: Log (SlimPulse EOW MD) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 02-Sep-2014 10:25:06

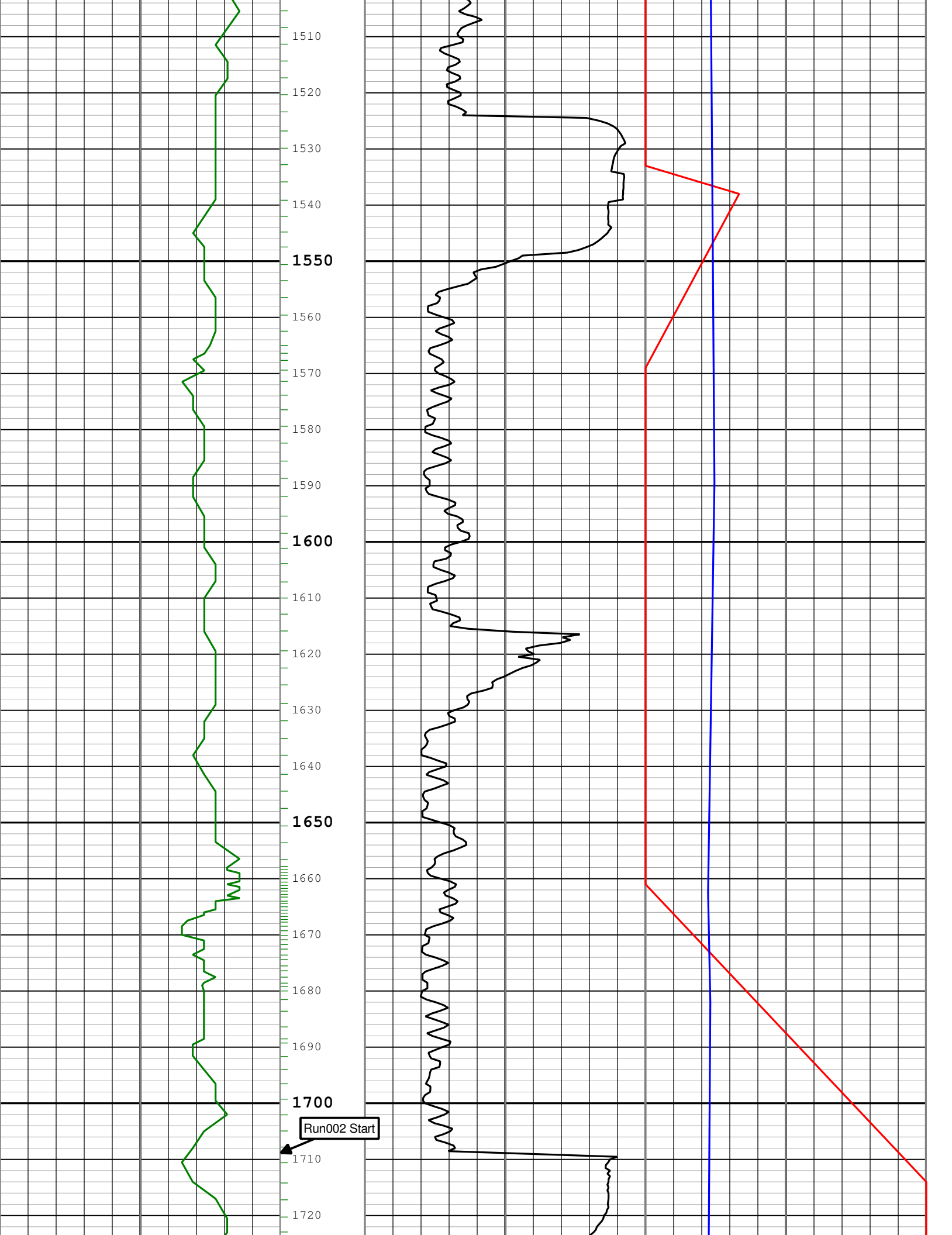


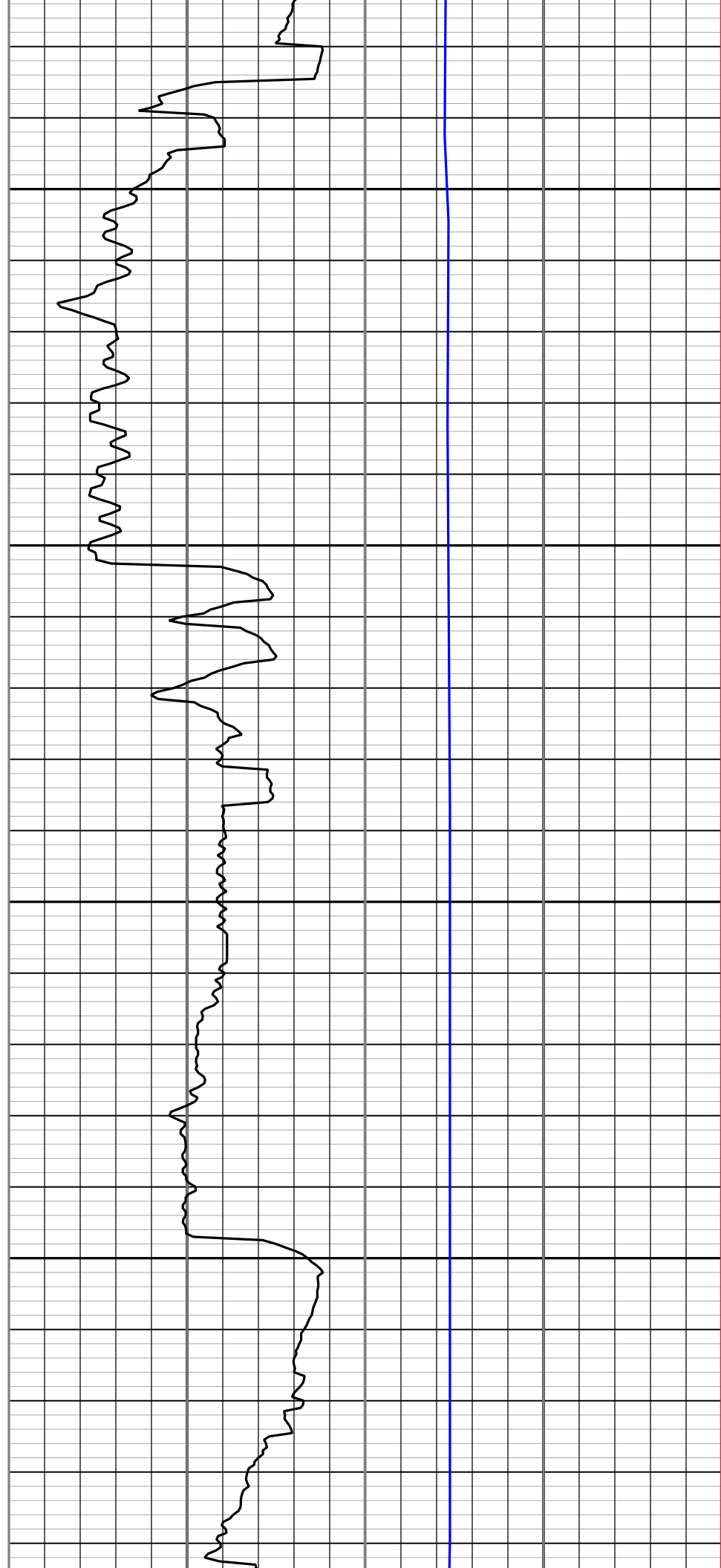
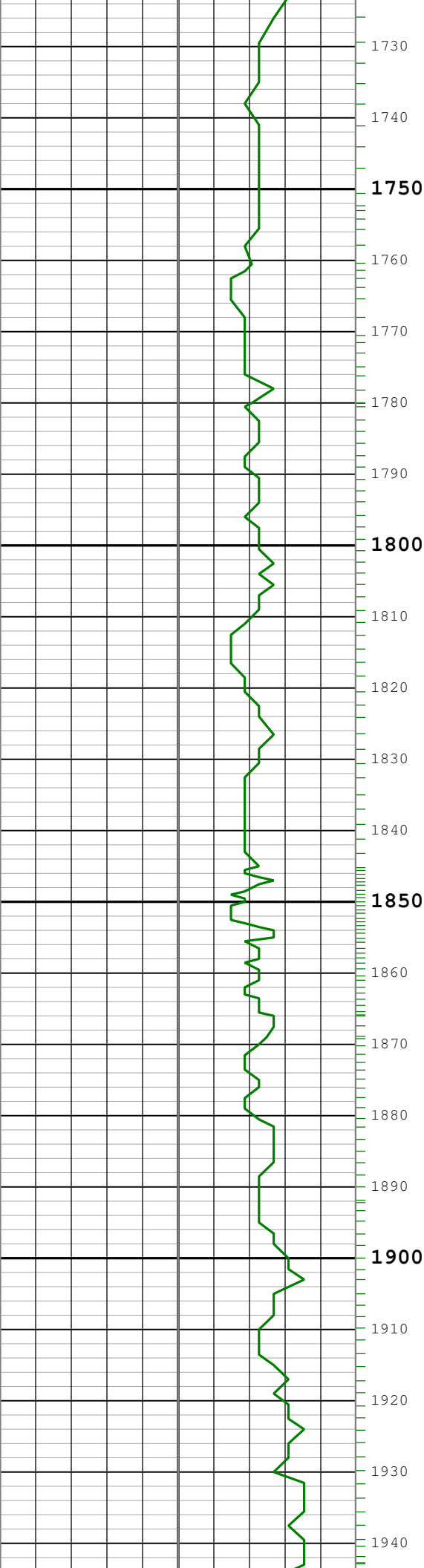


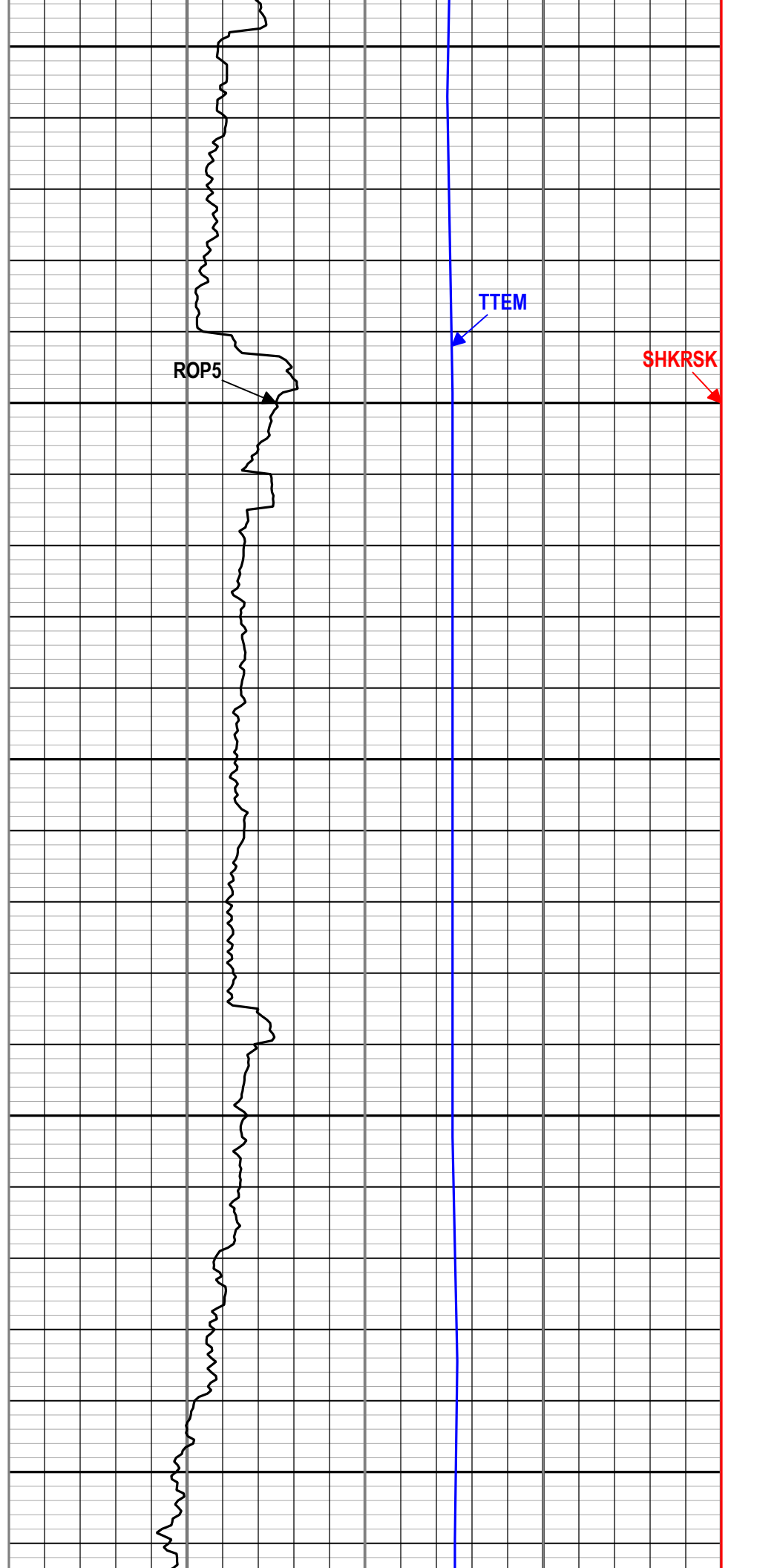
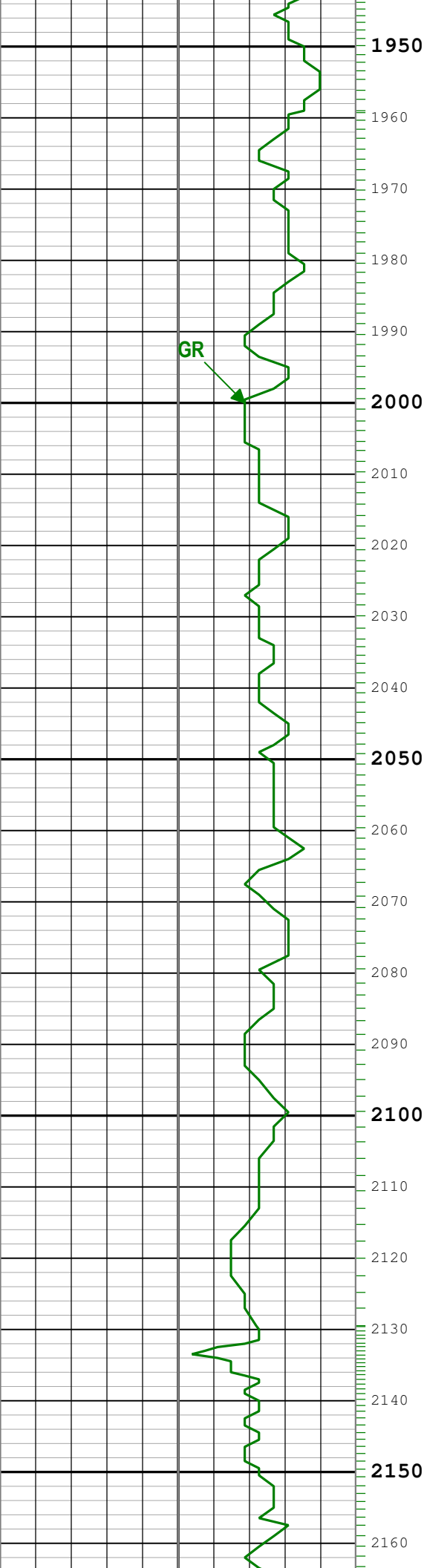


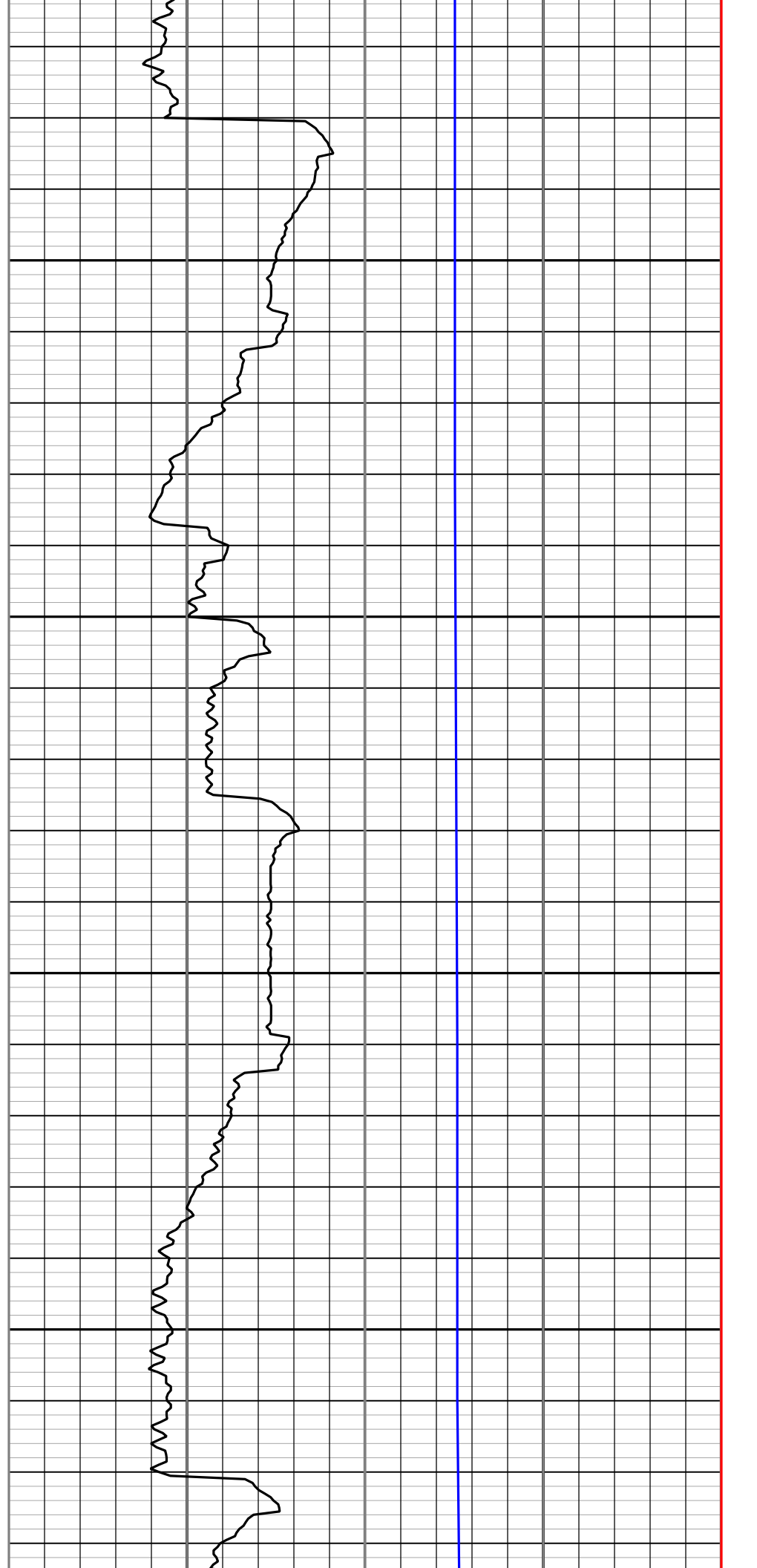
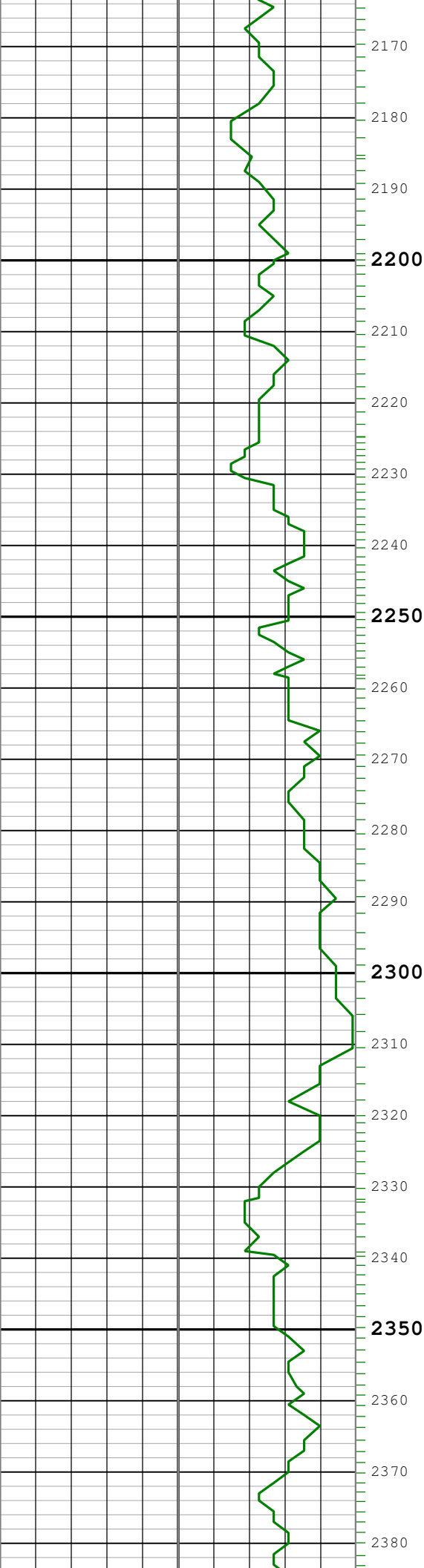


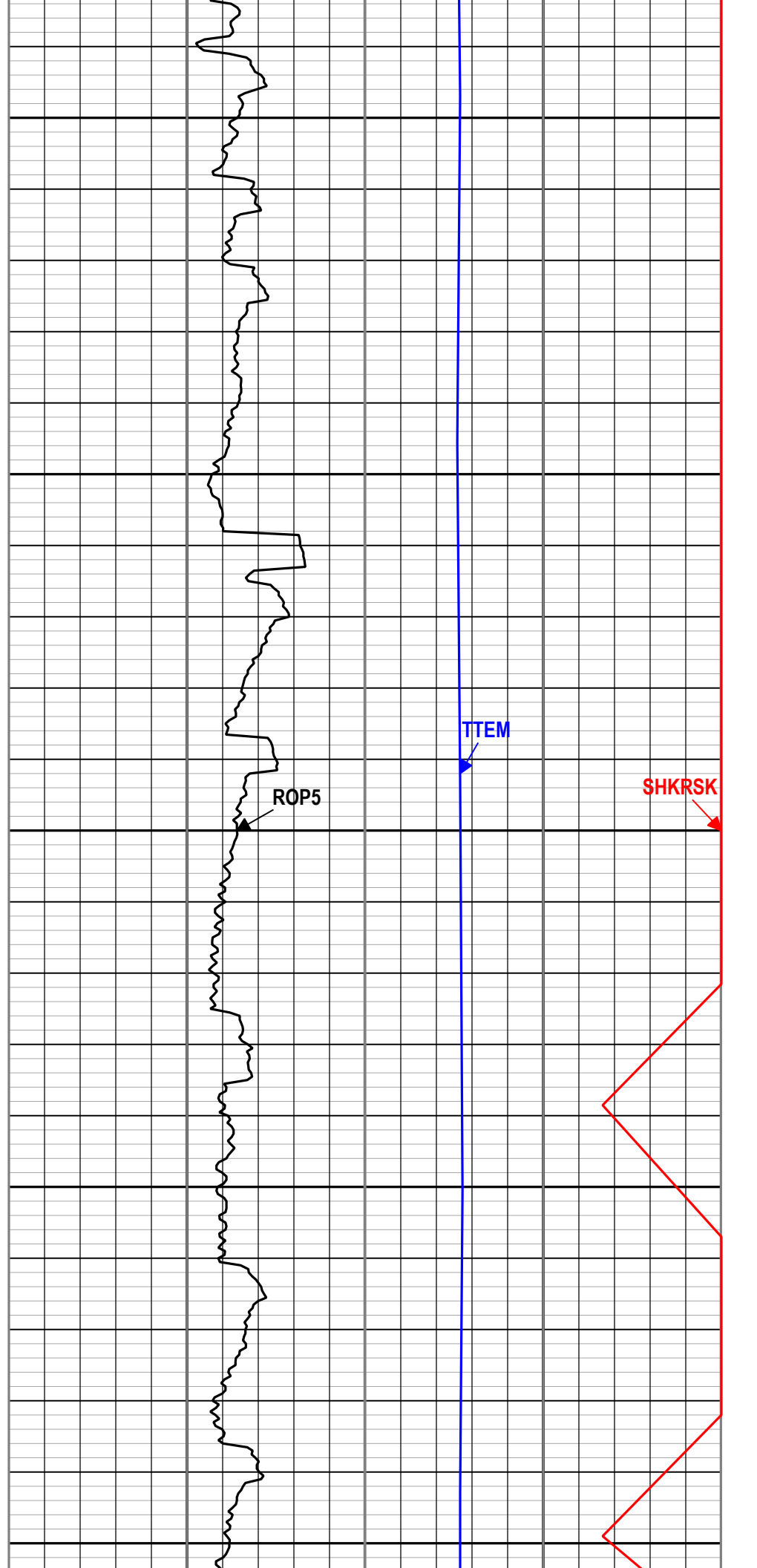
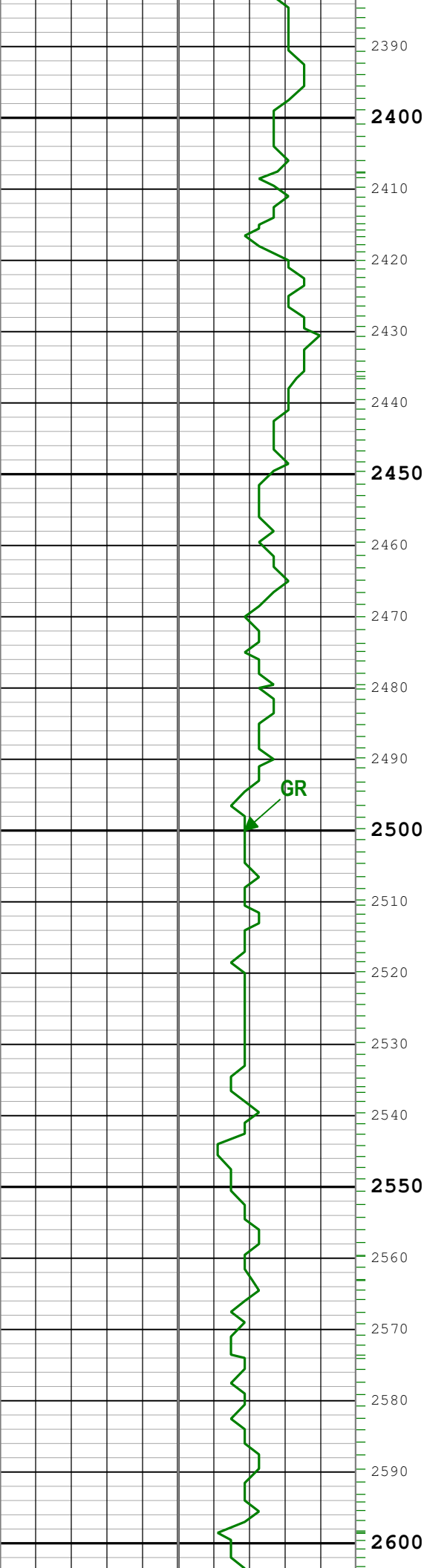


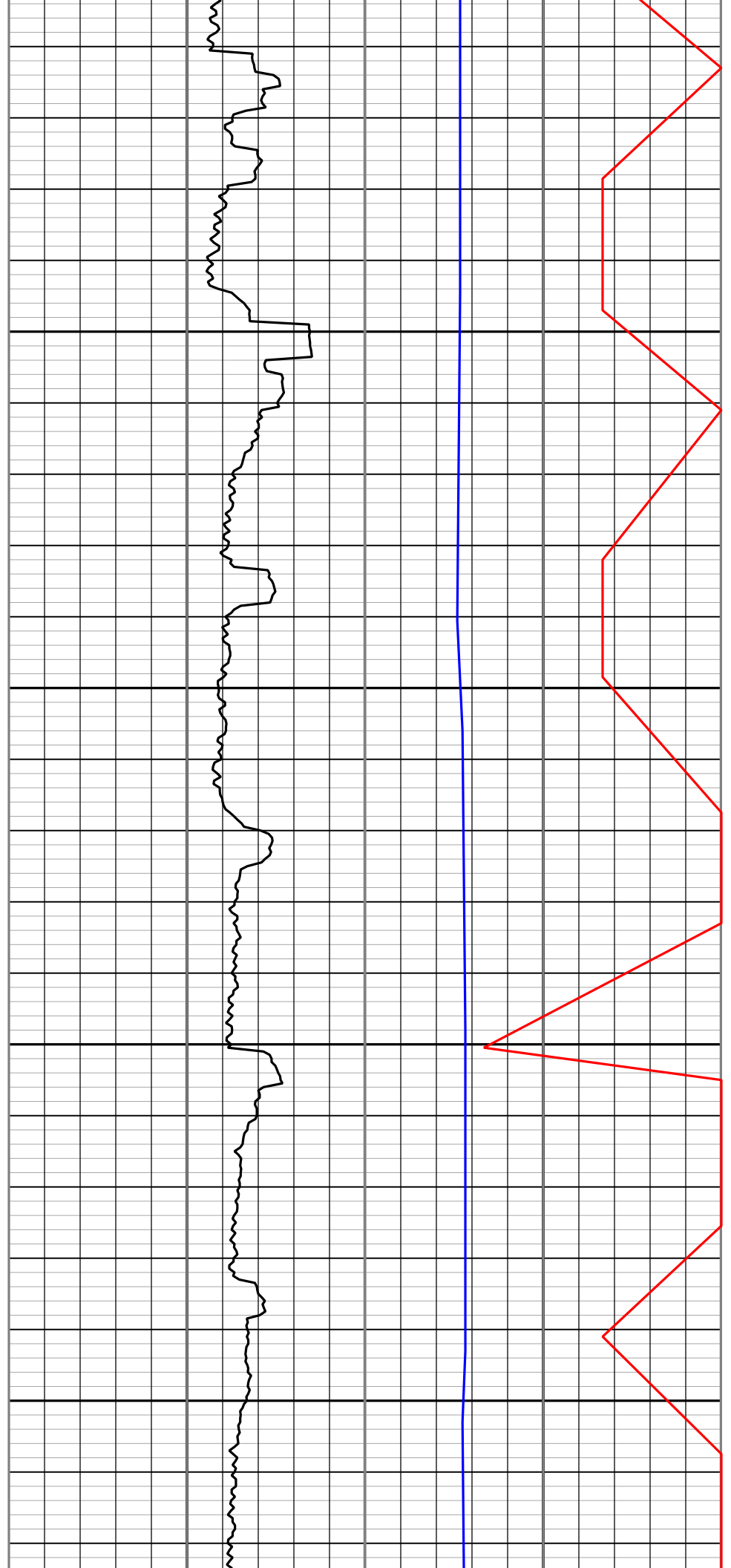
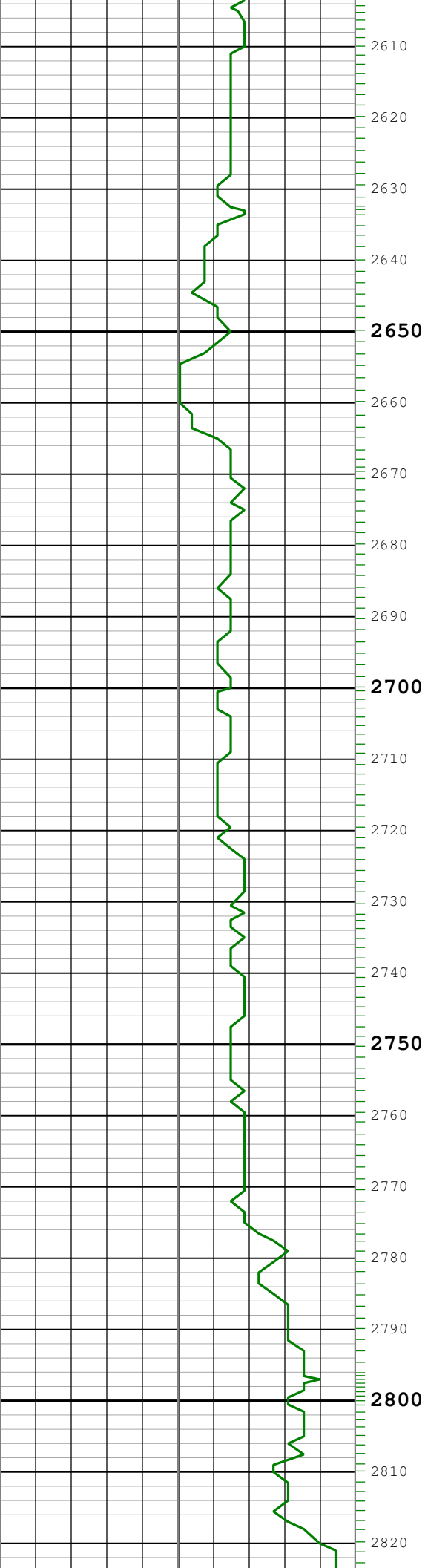


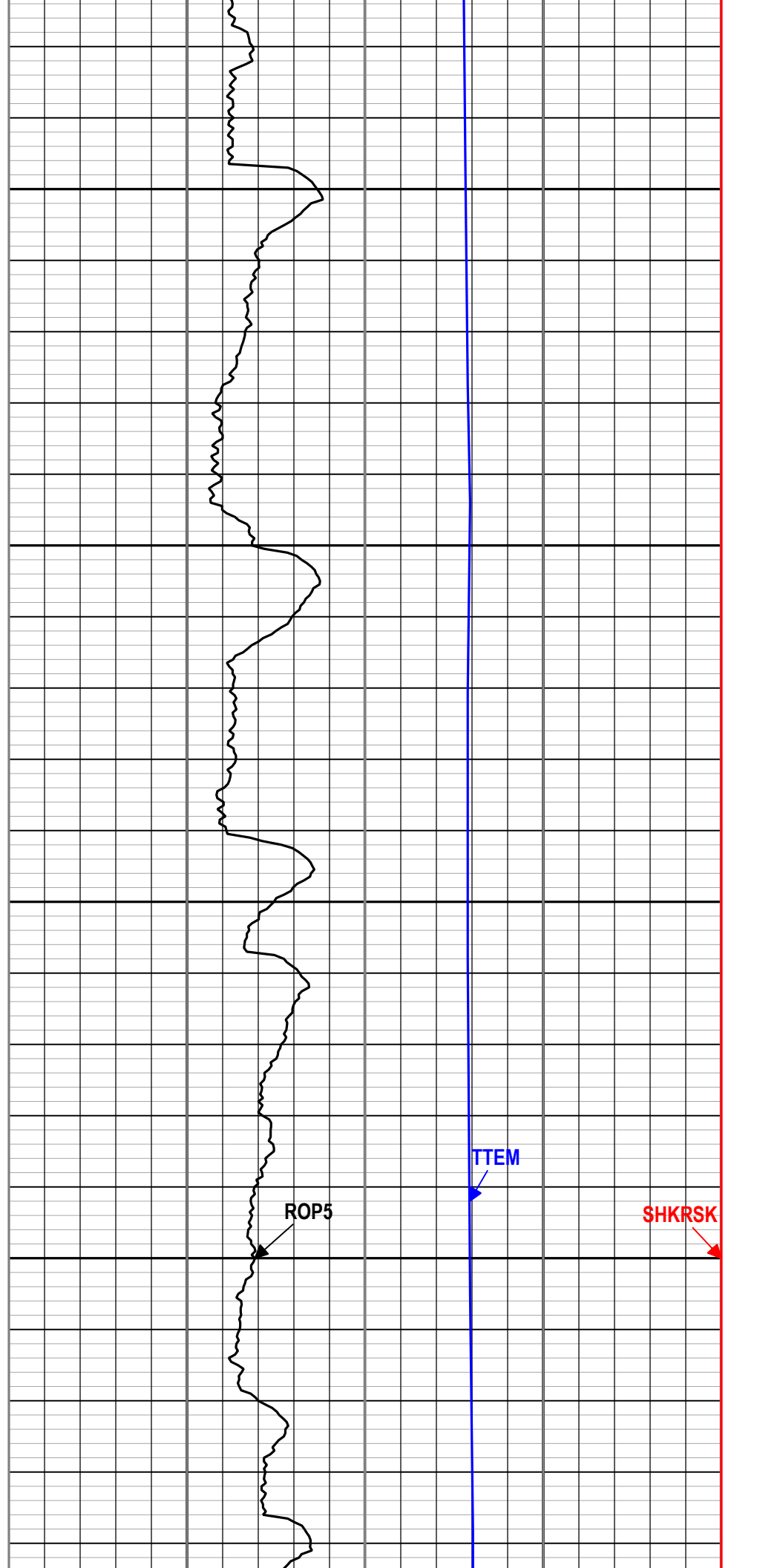
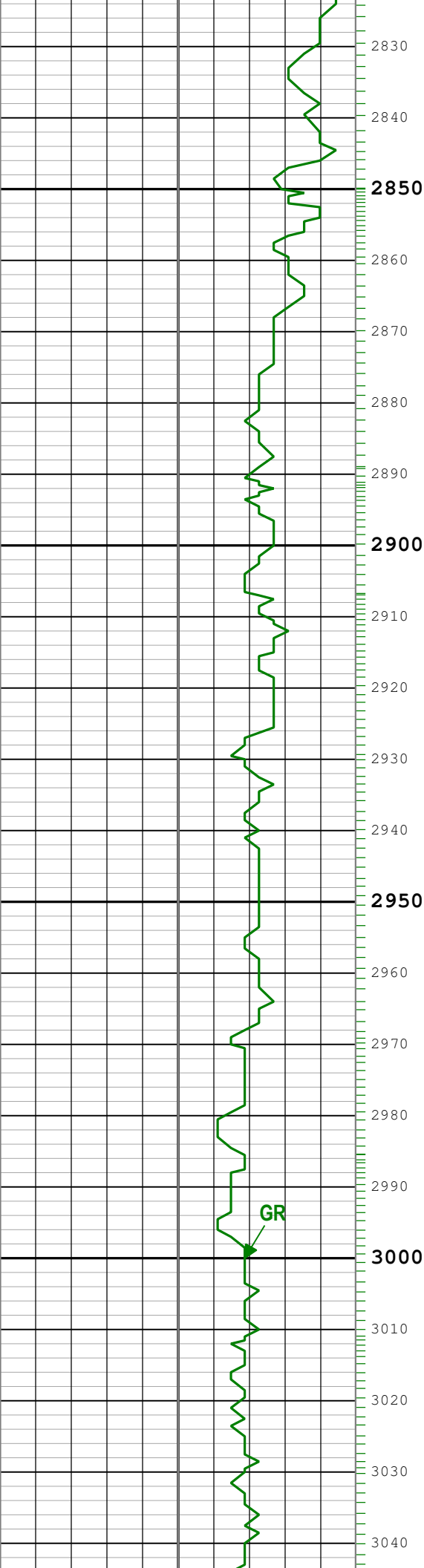


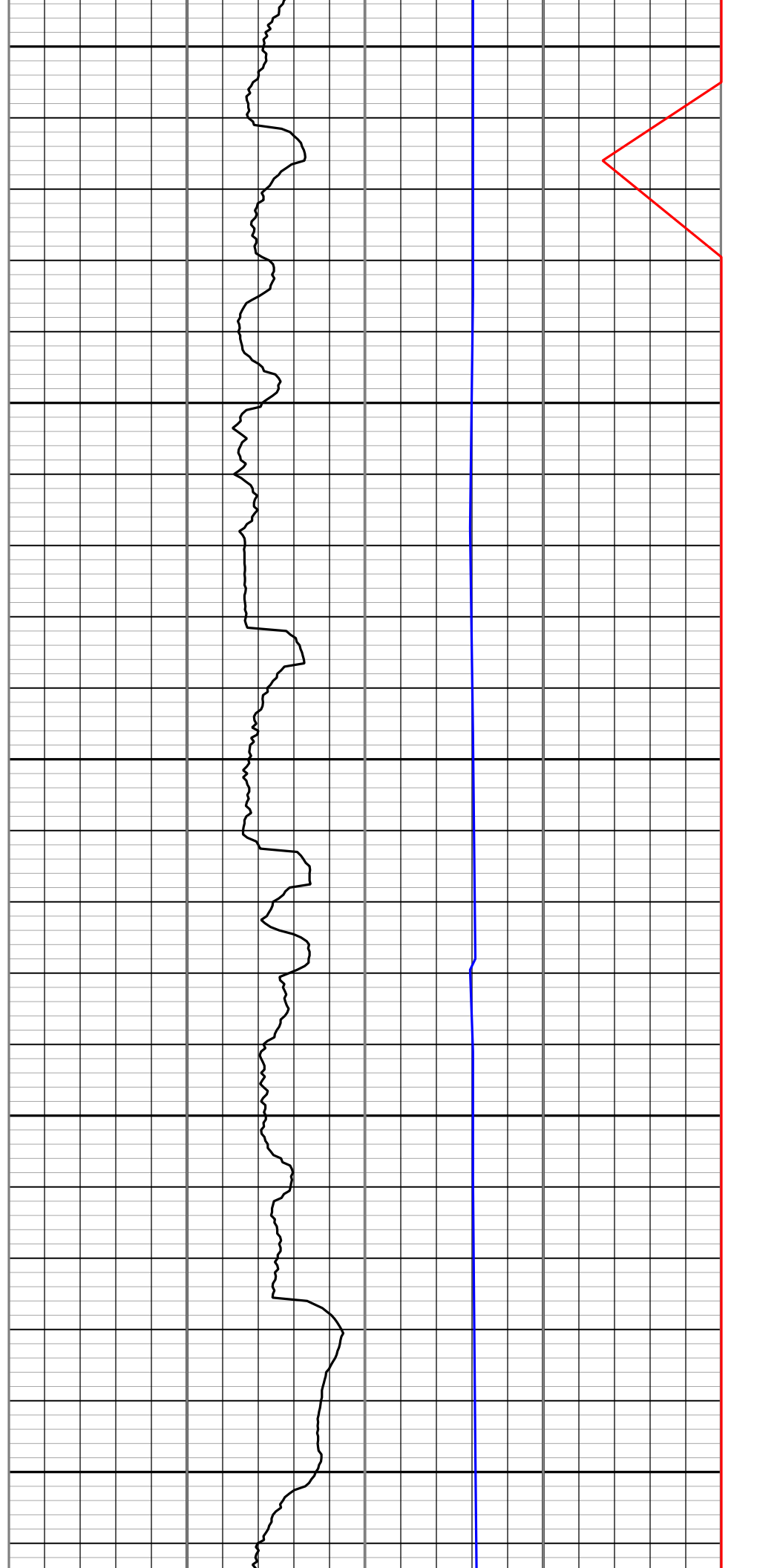
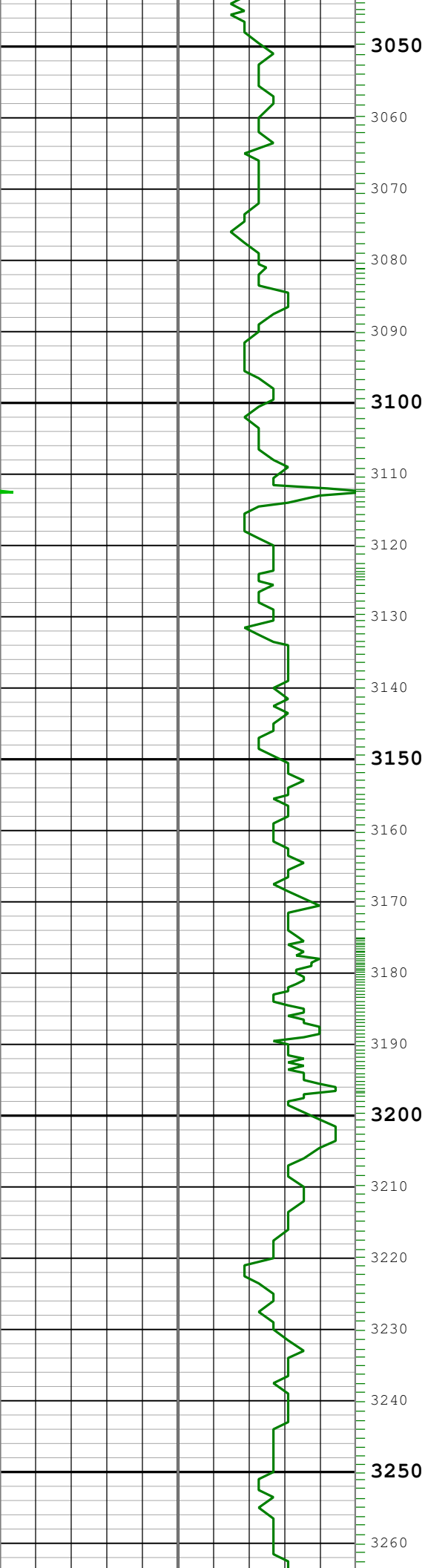


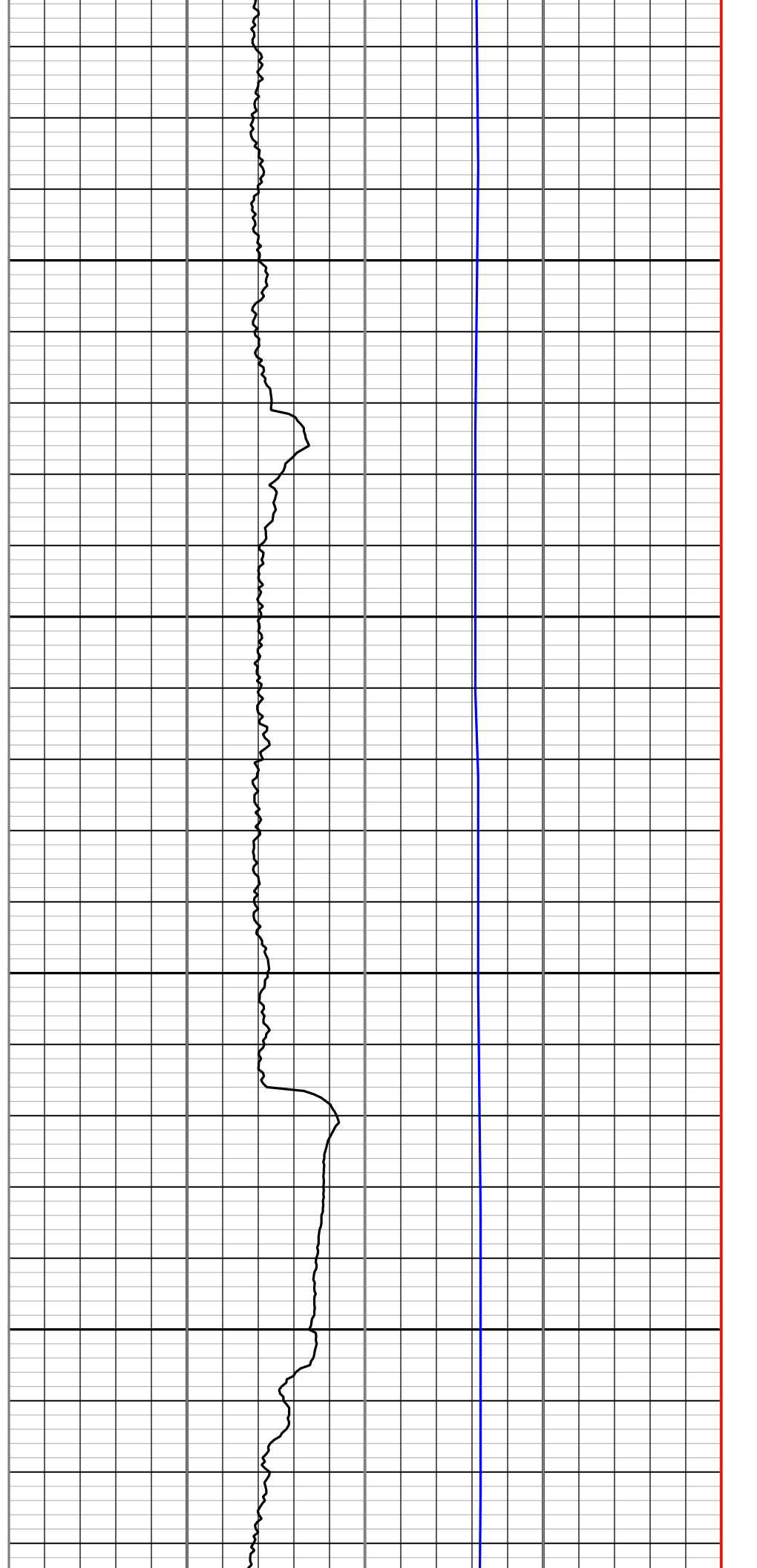
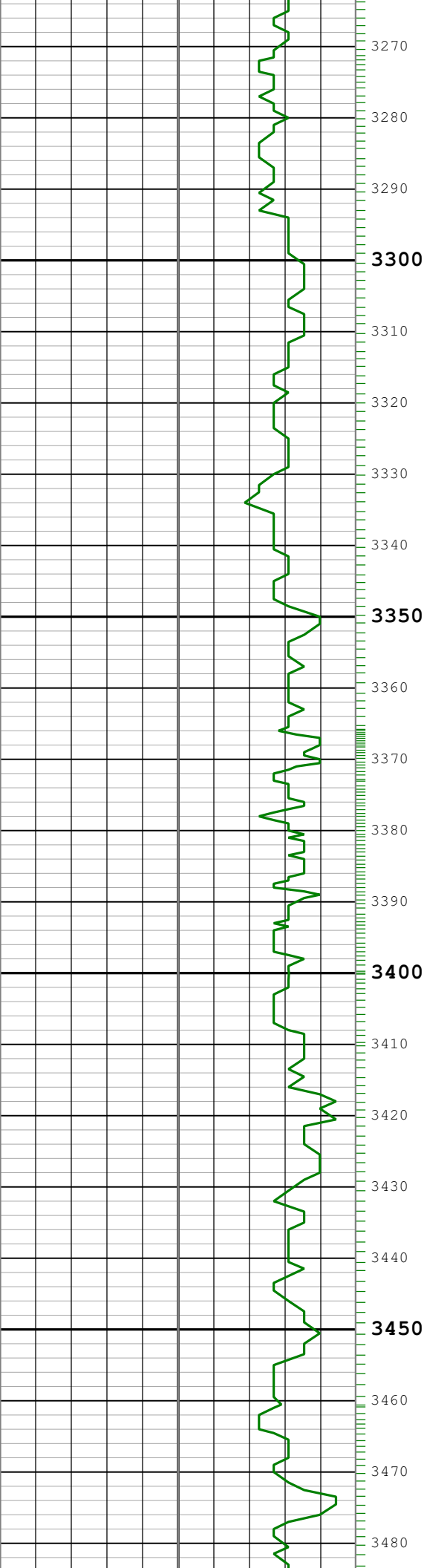


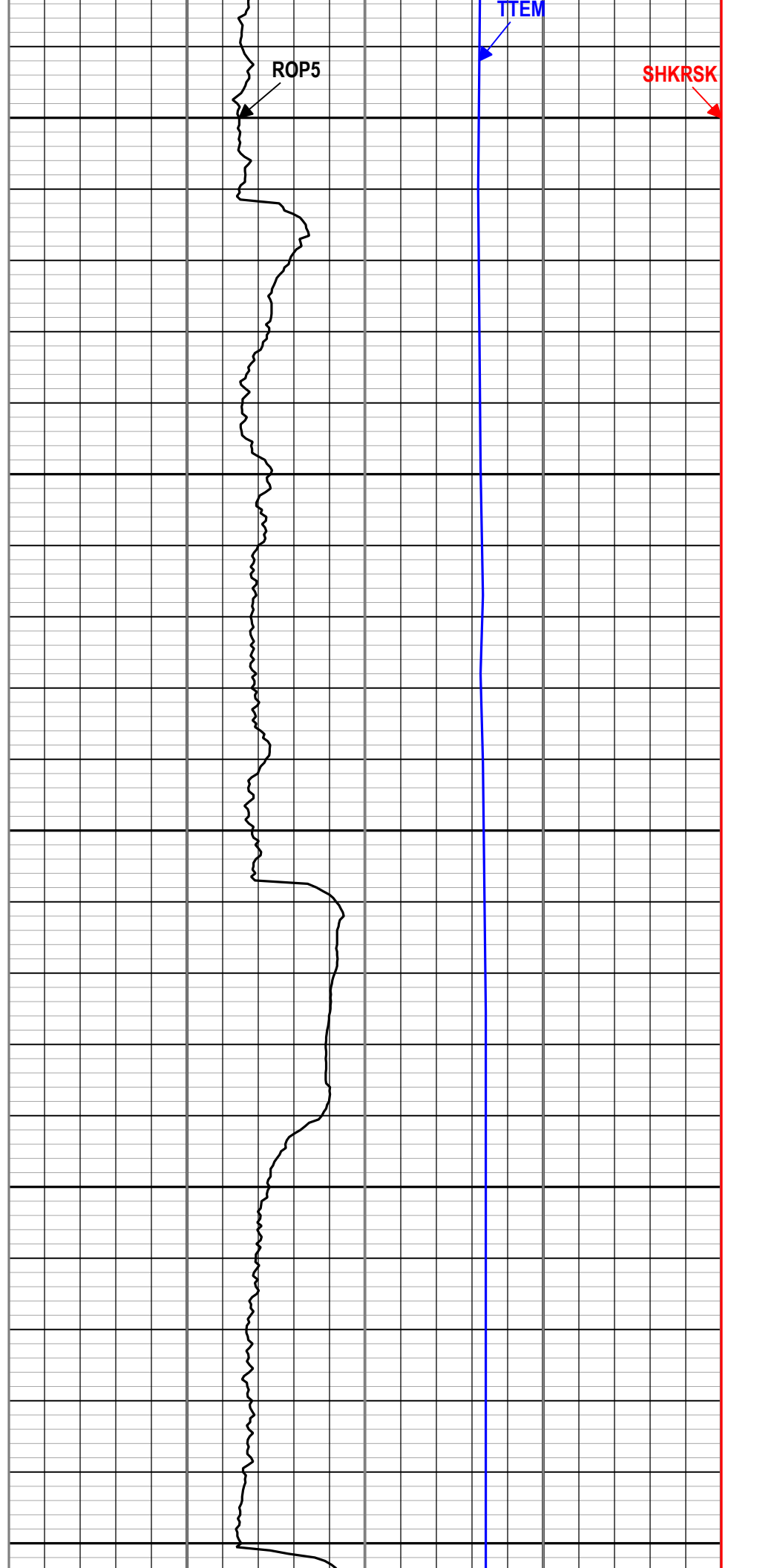
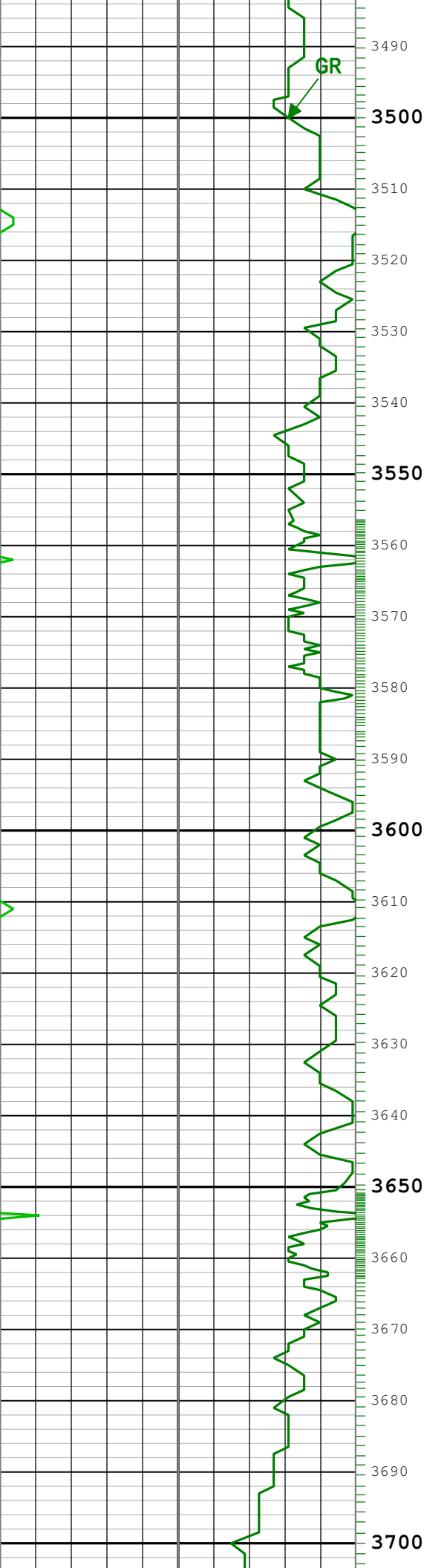


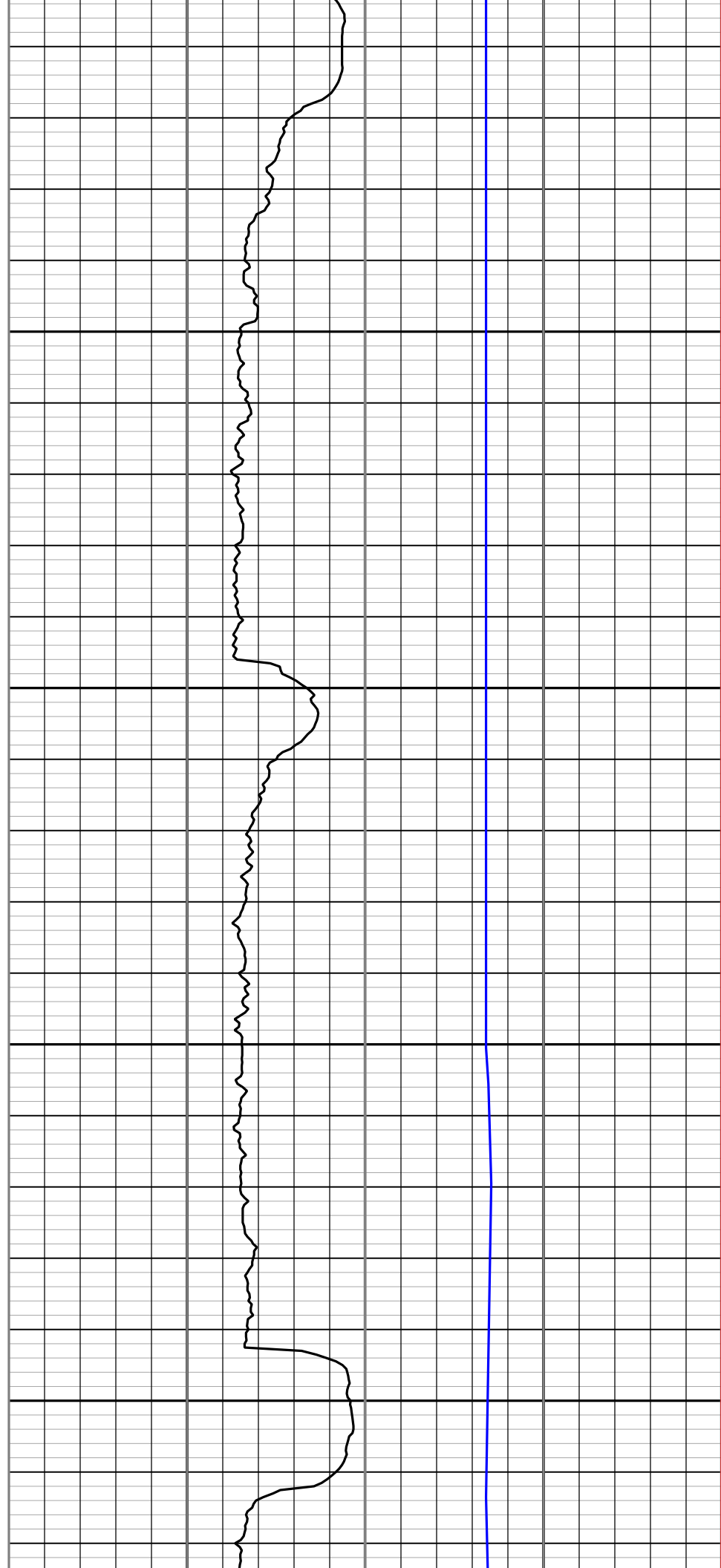
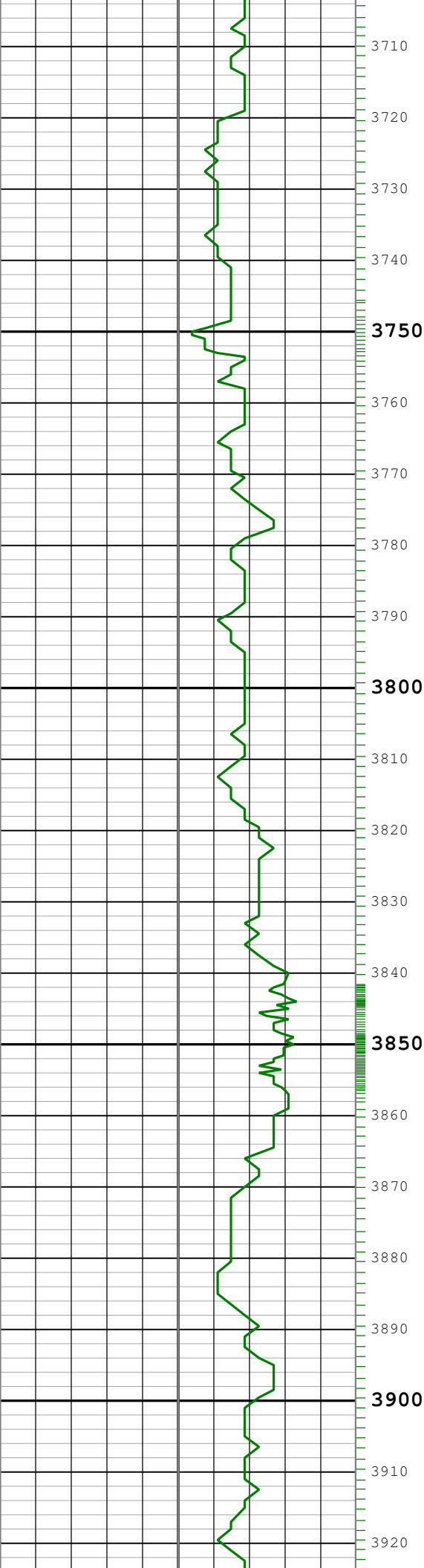


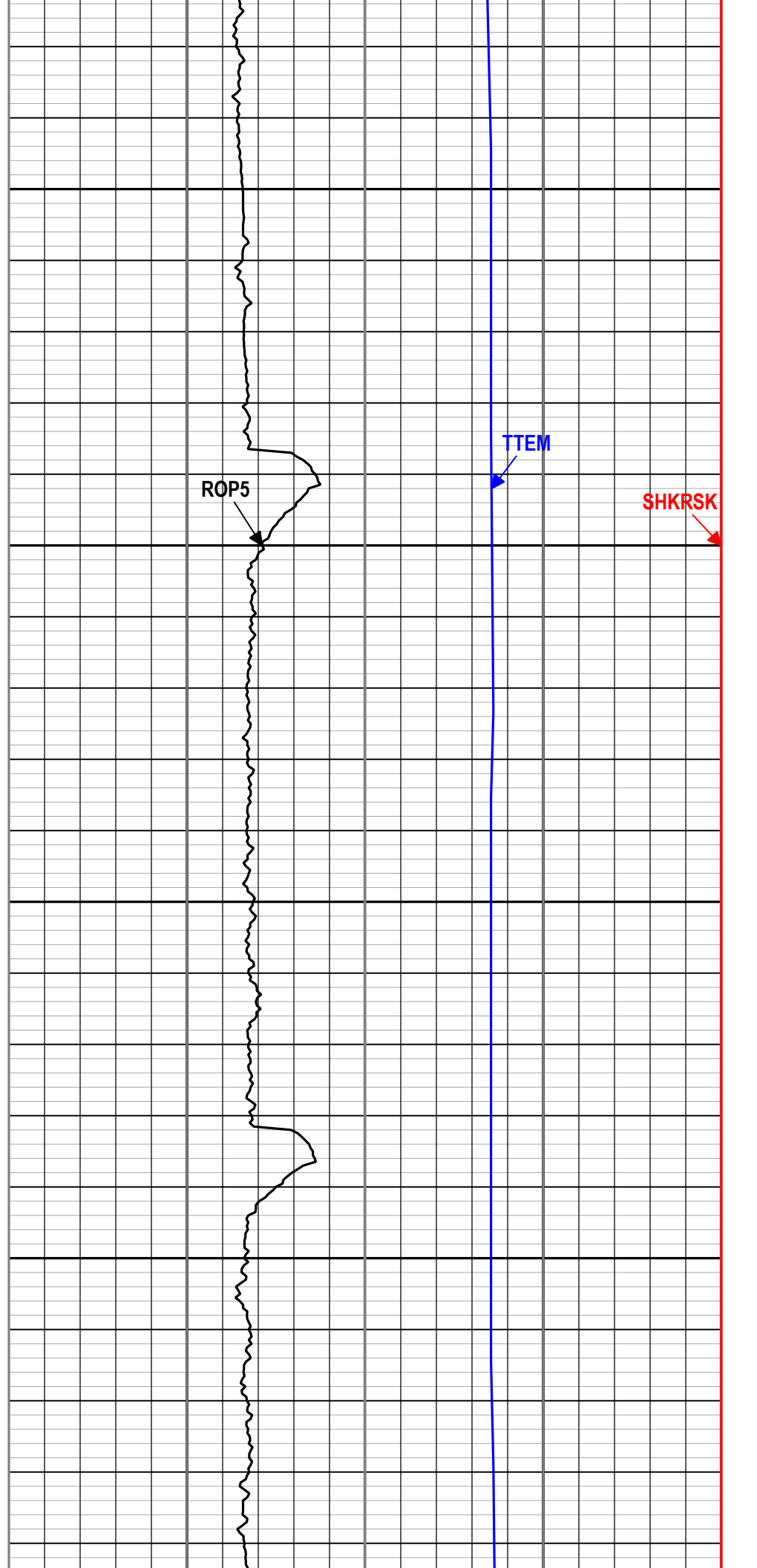
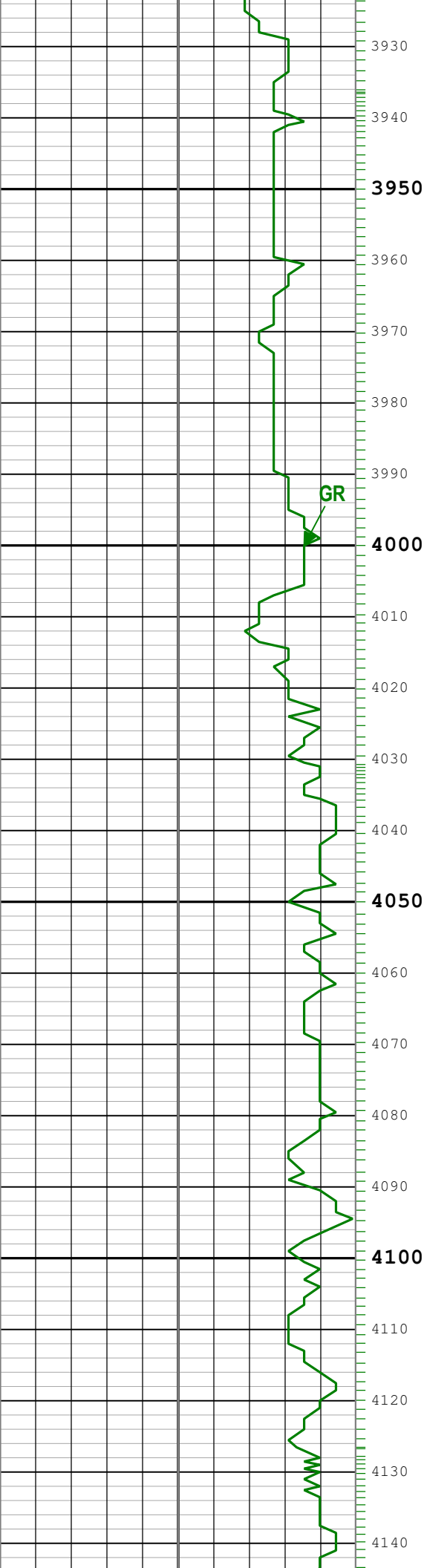


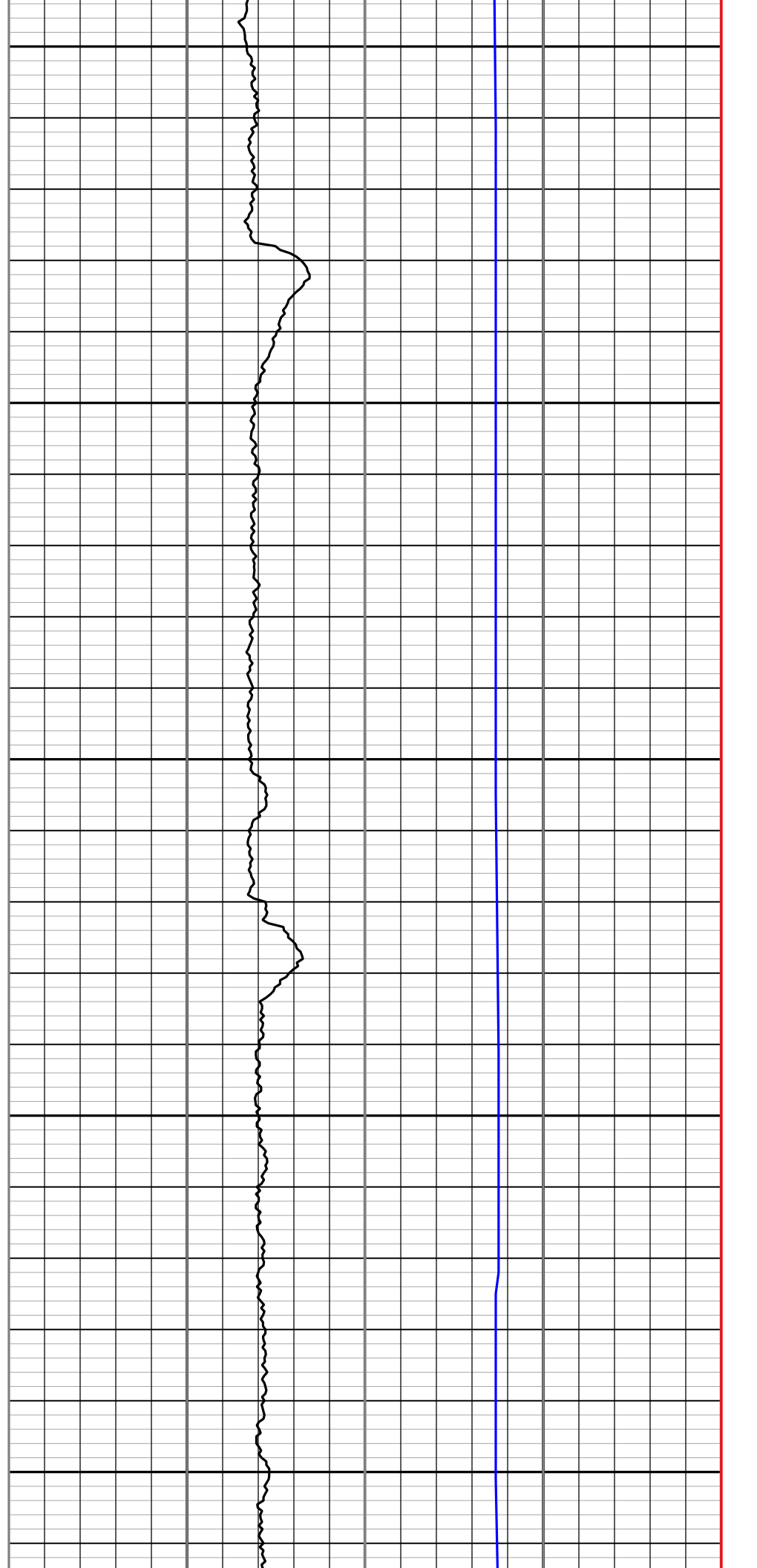
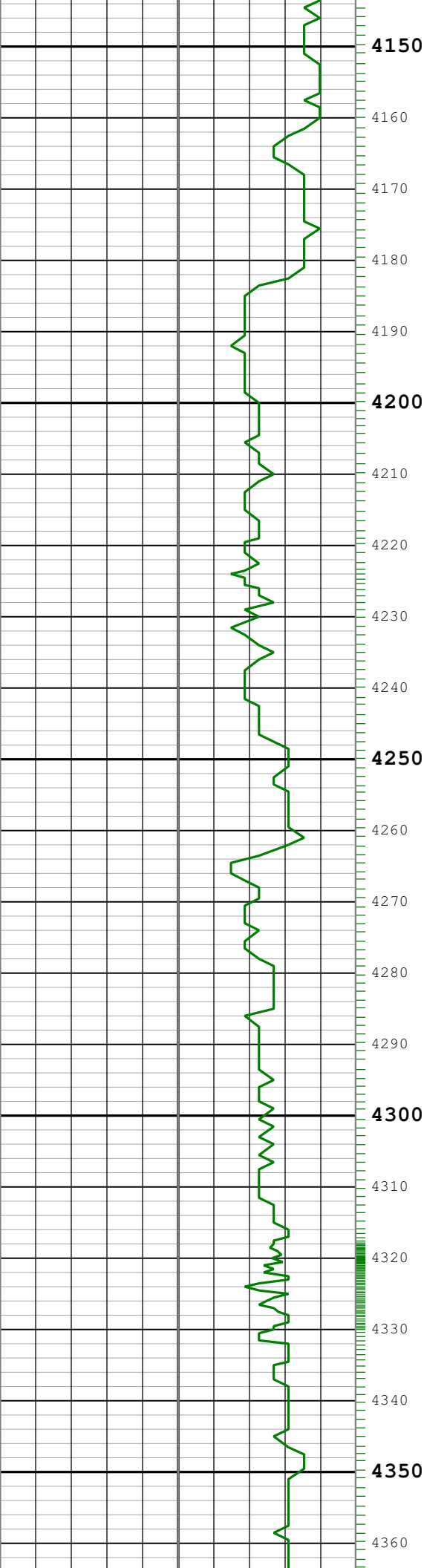


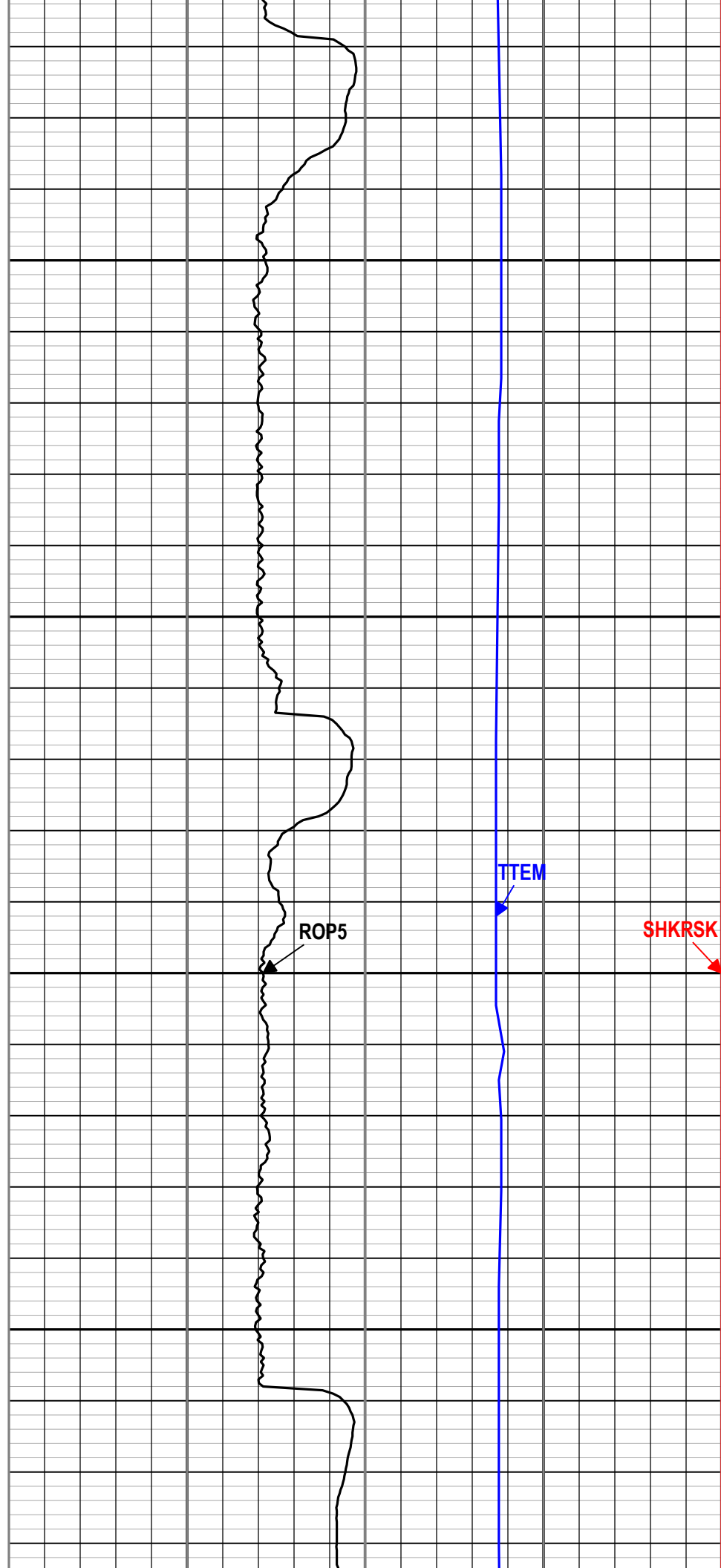
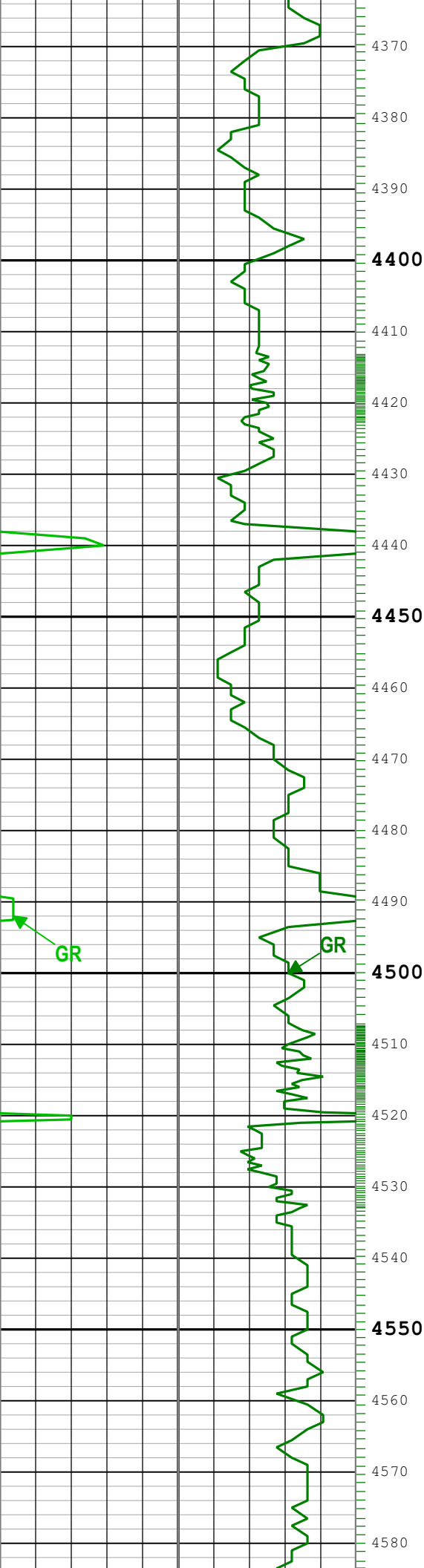


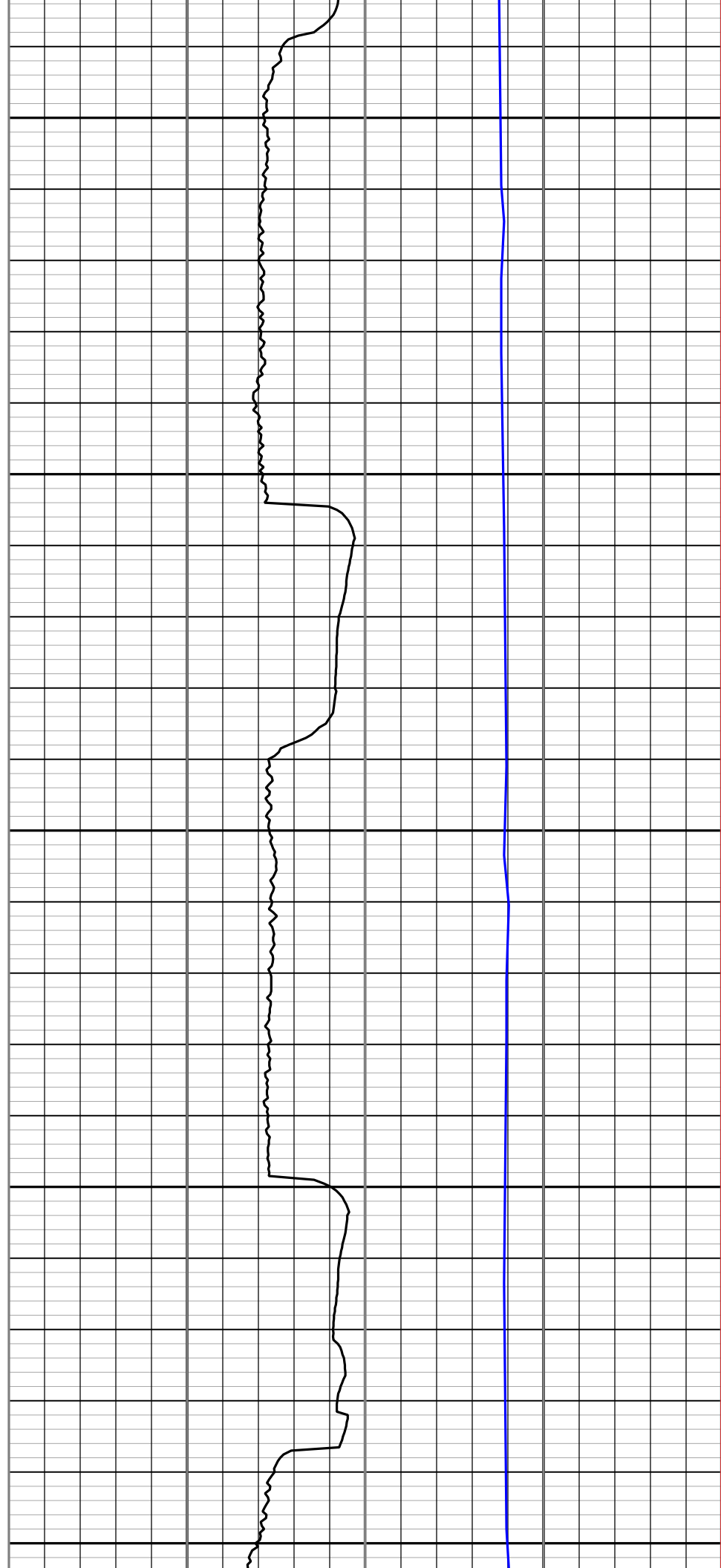
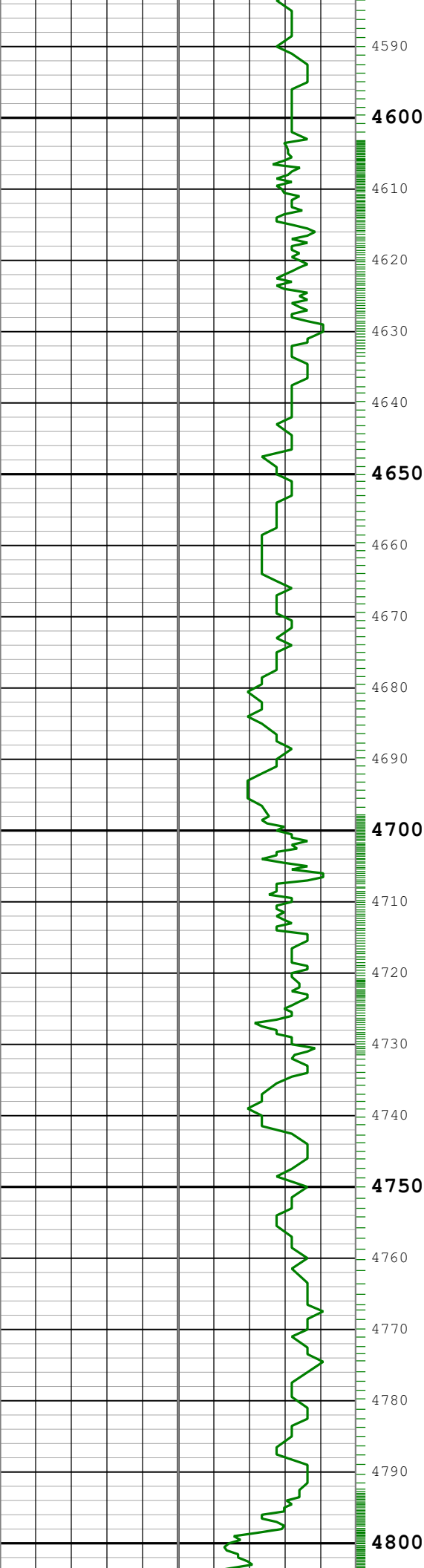


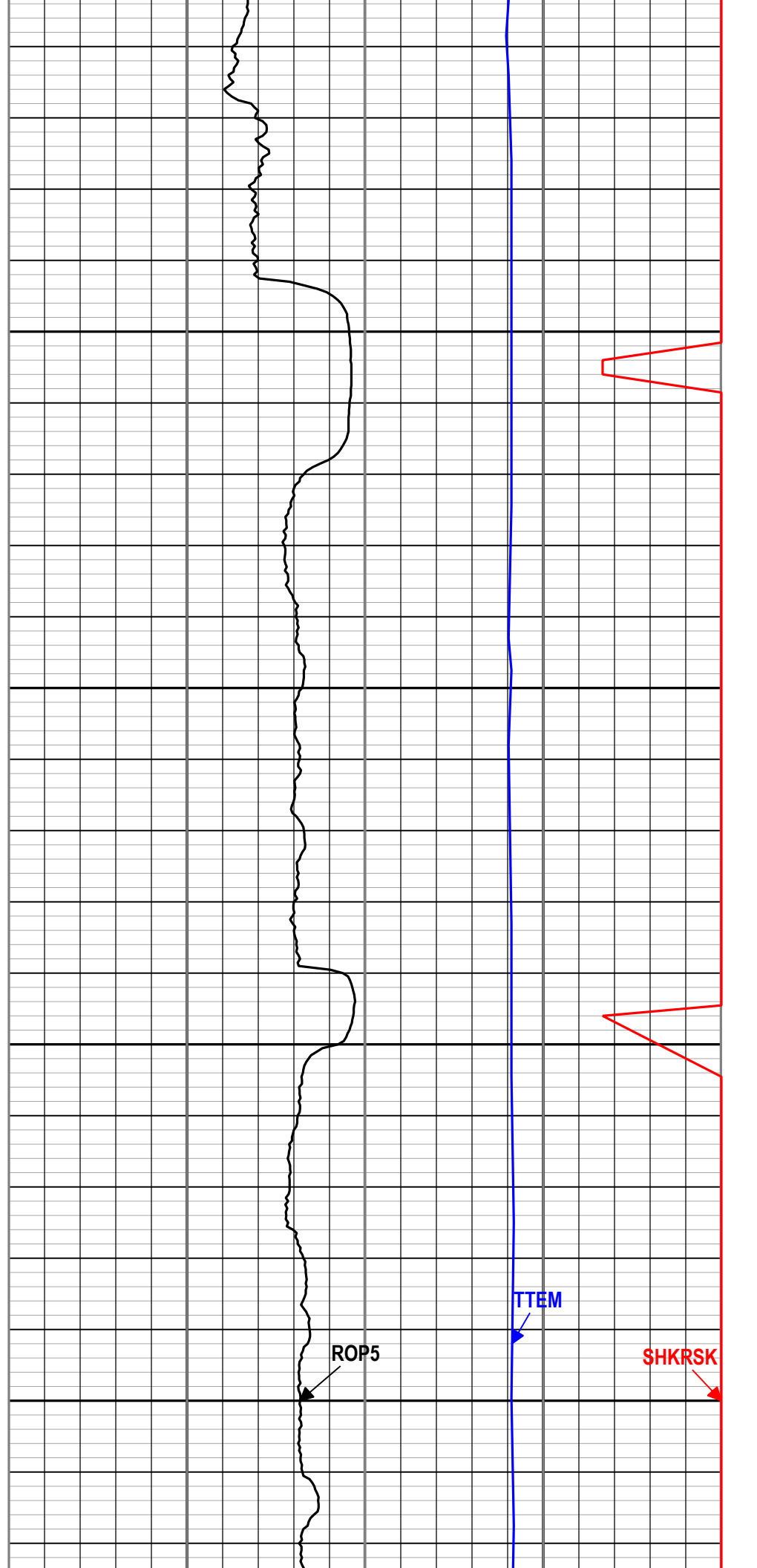
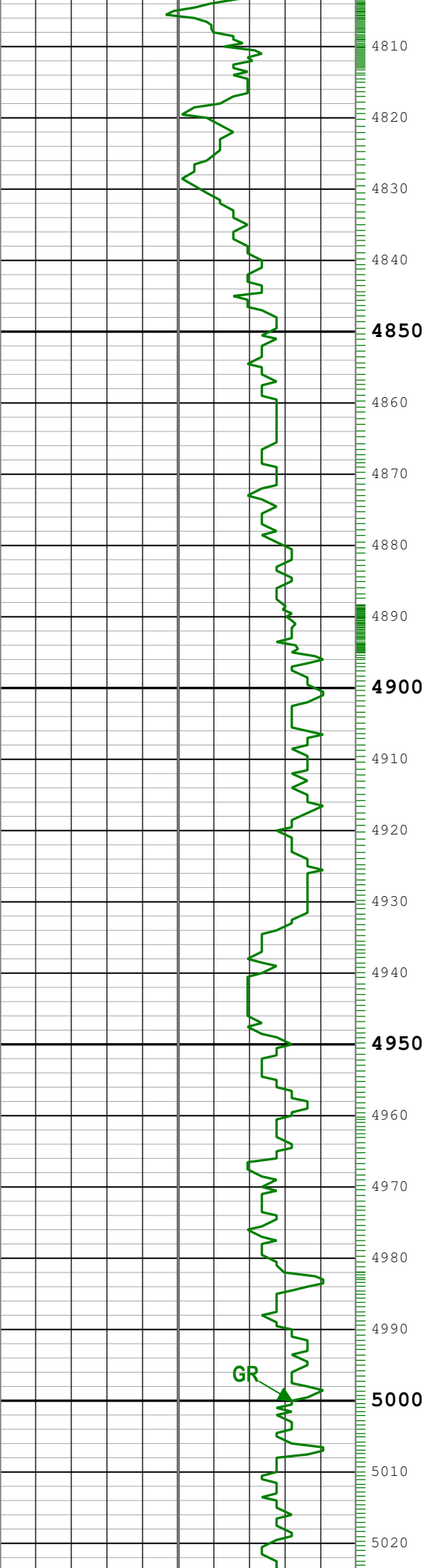


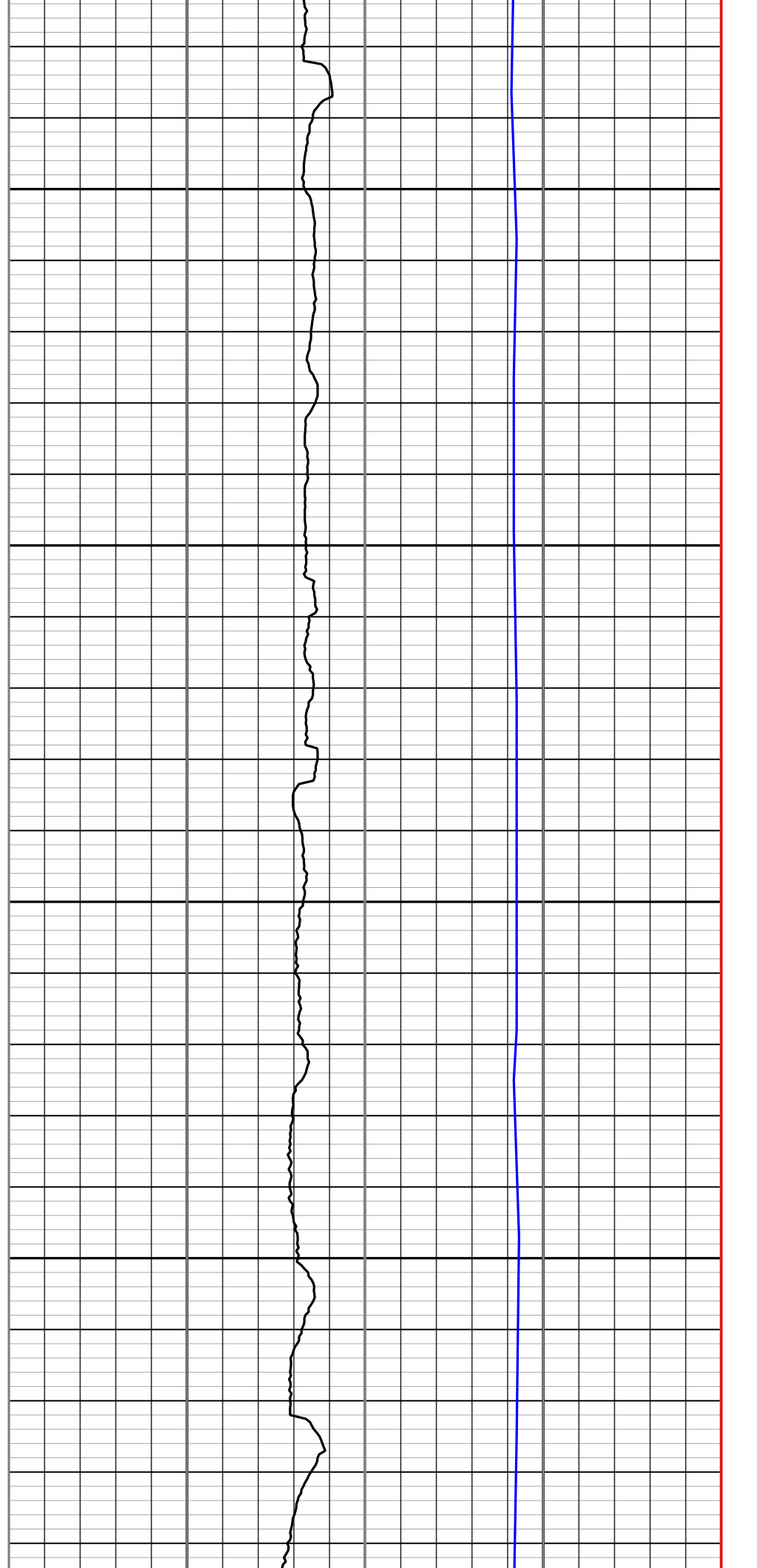
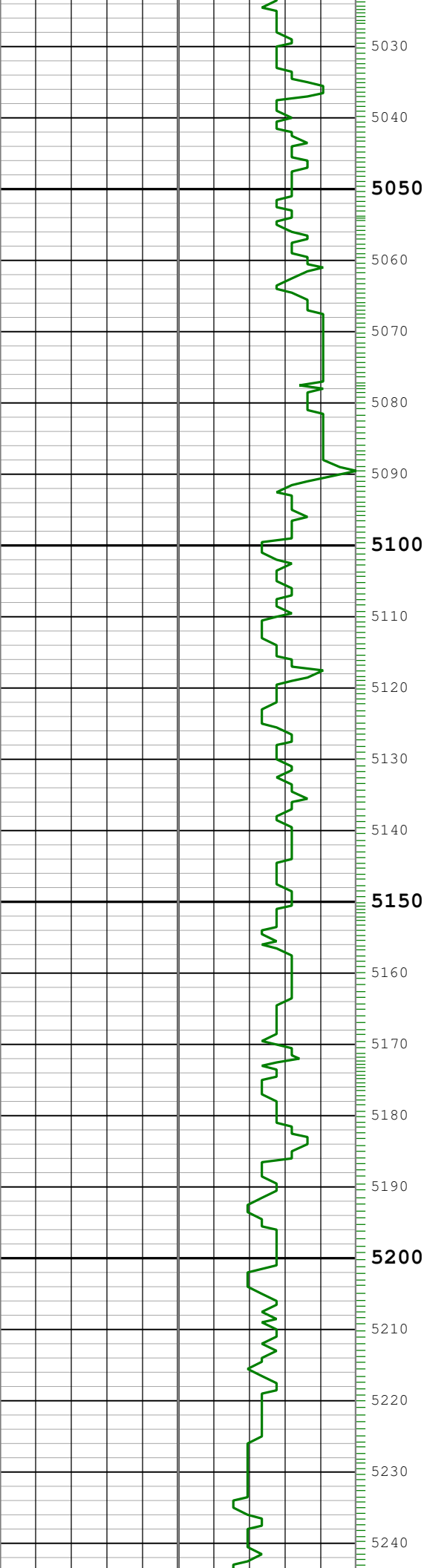


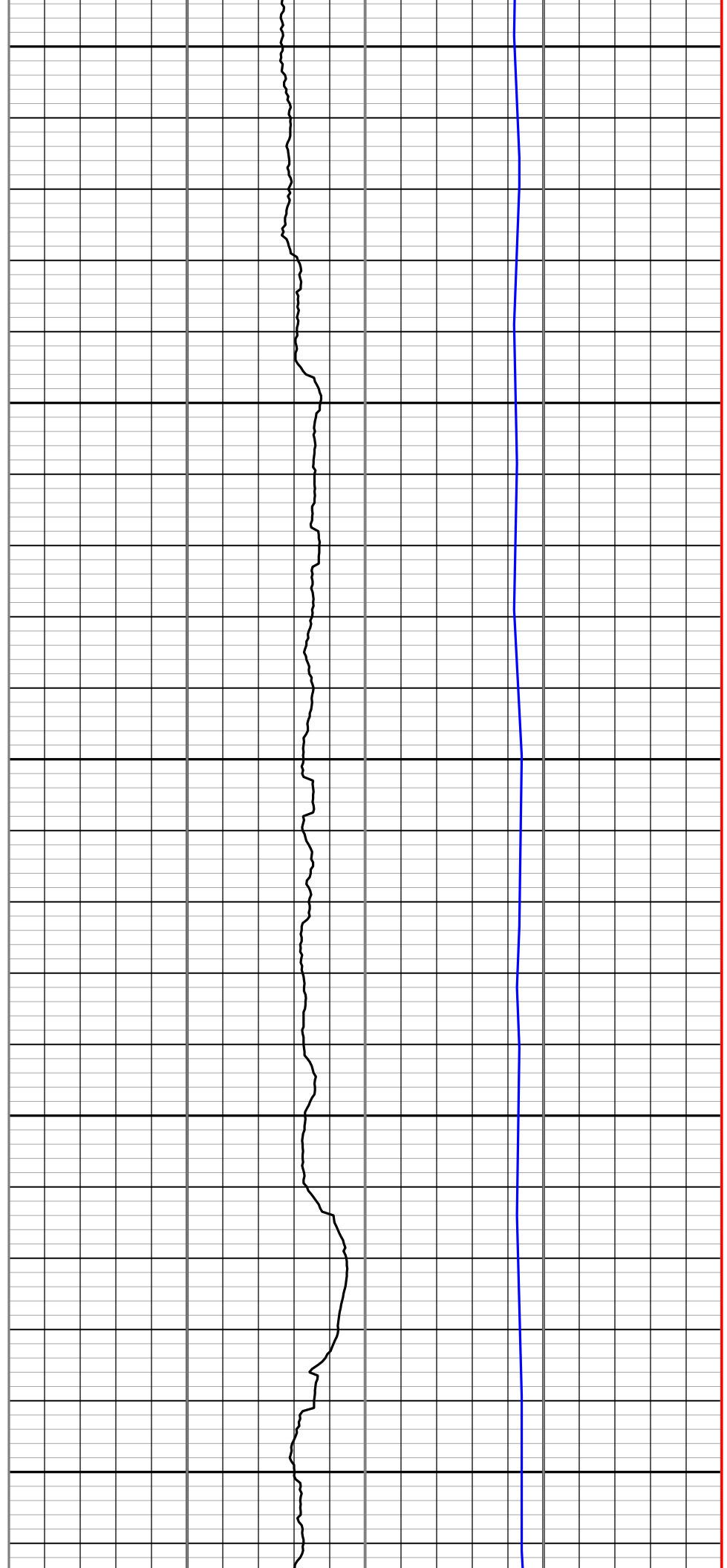
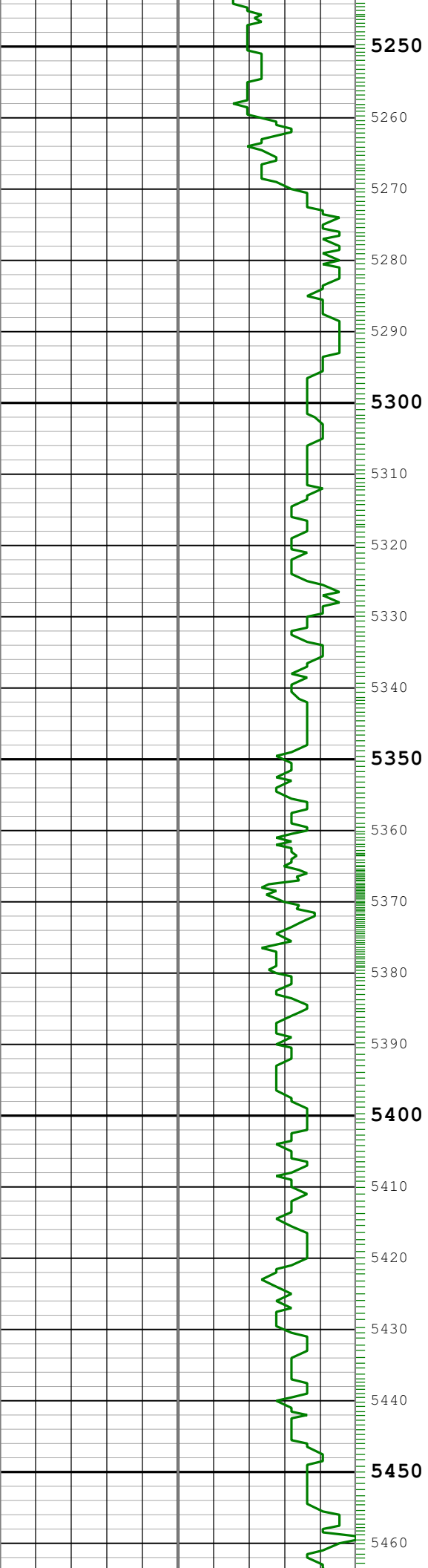


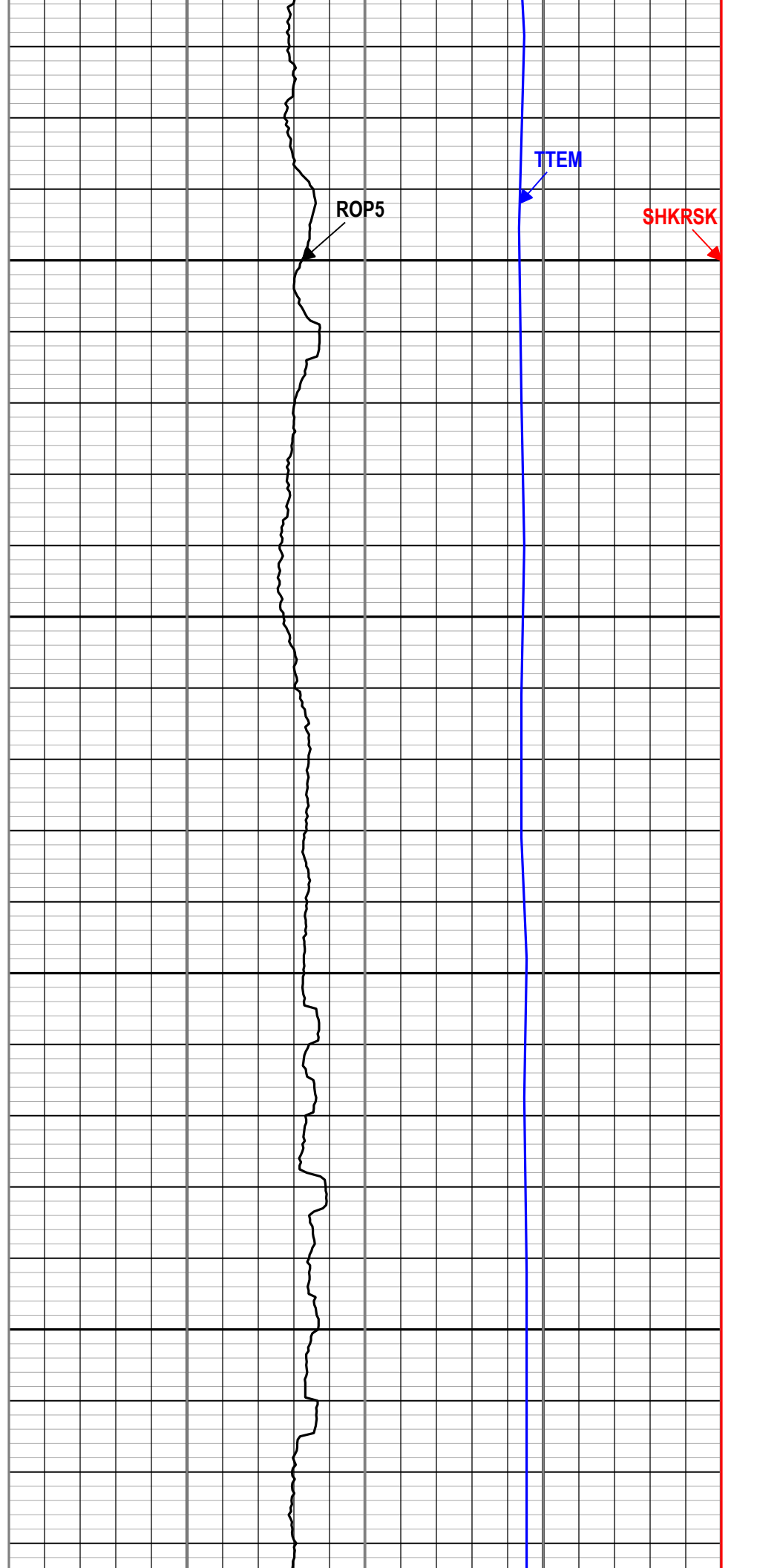
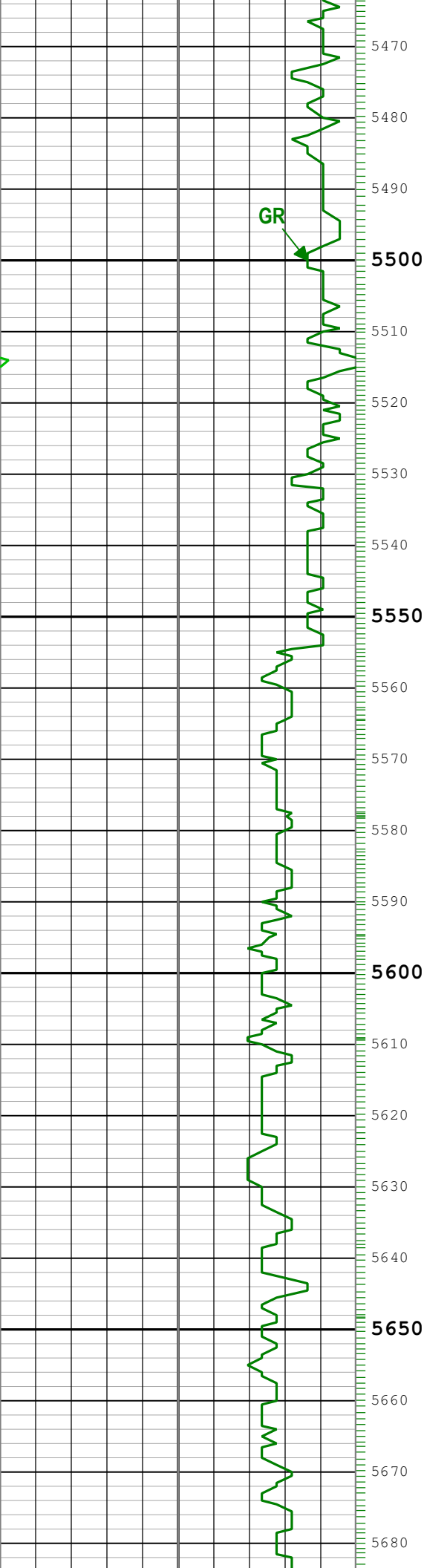


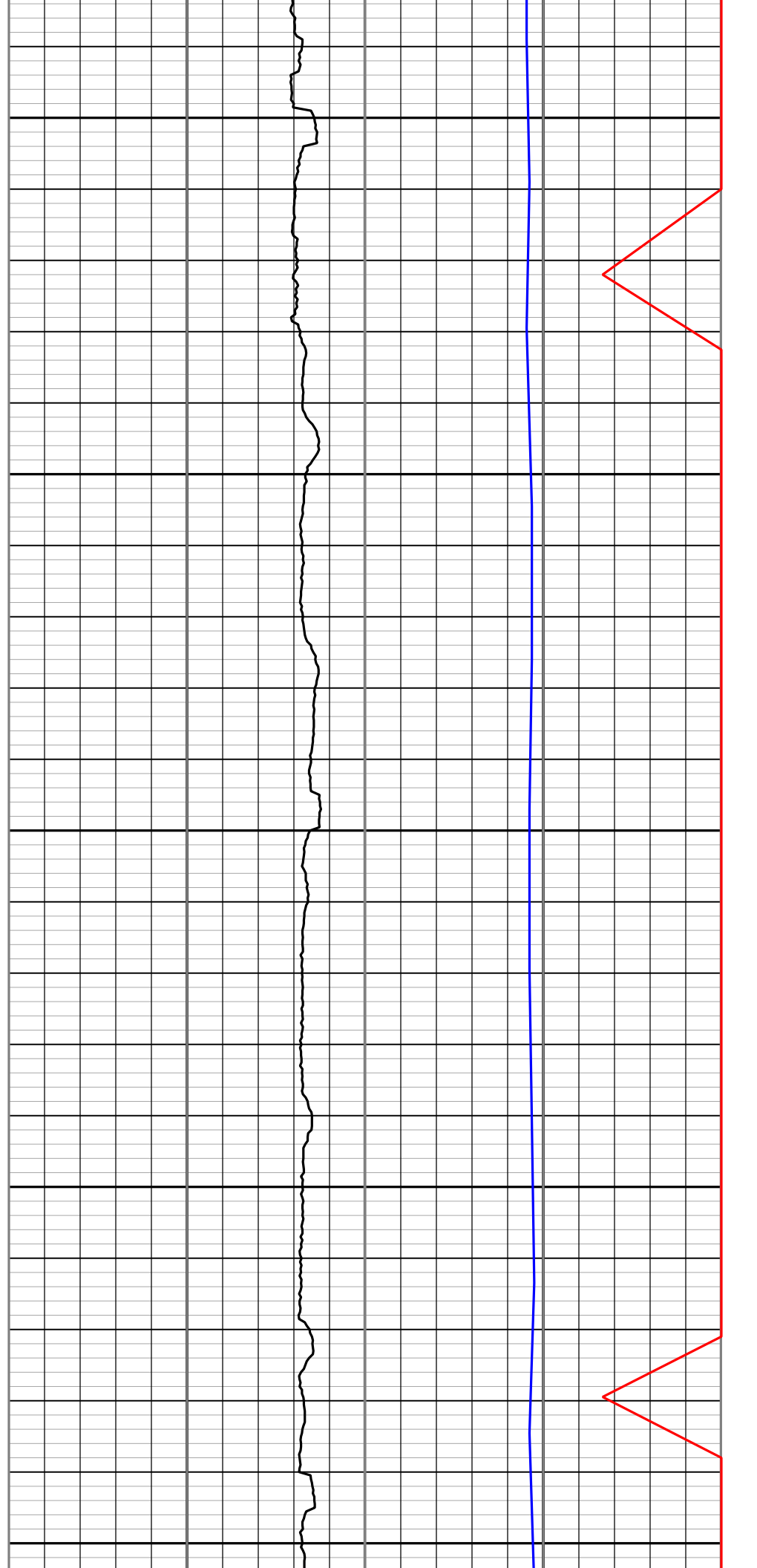
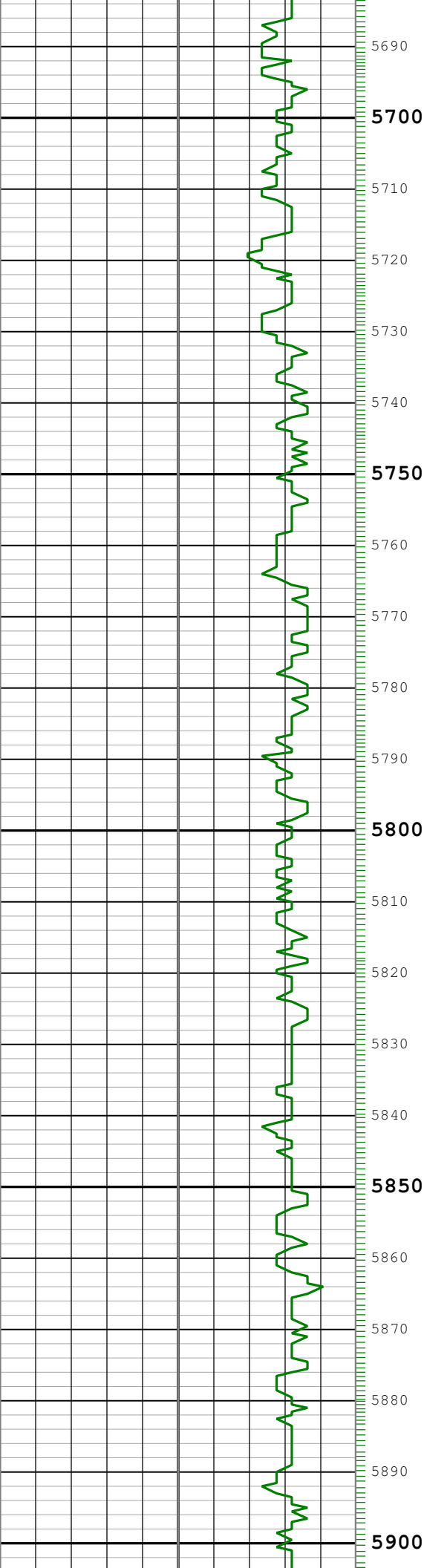


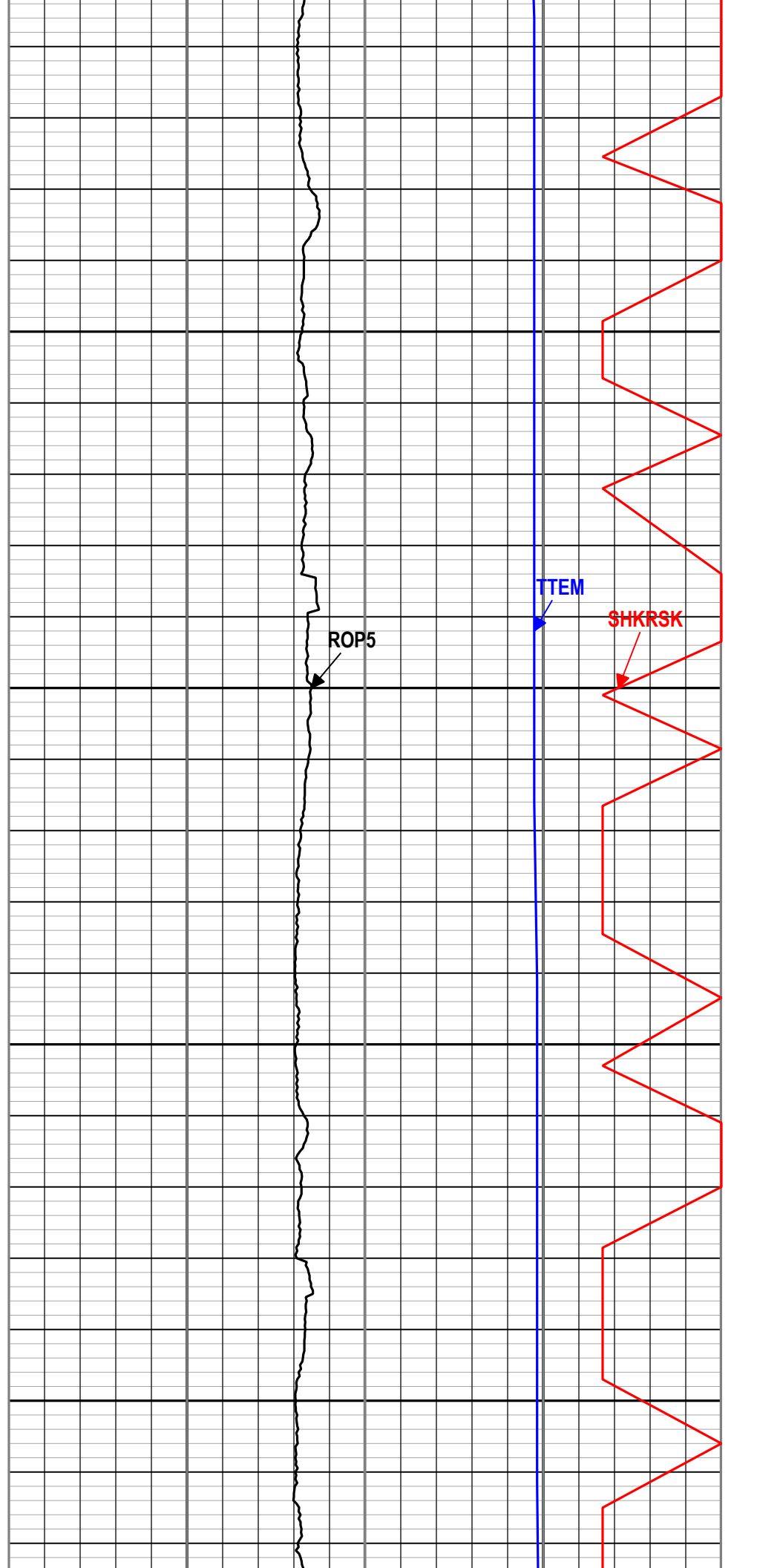
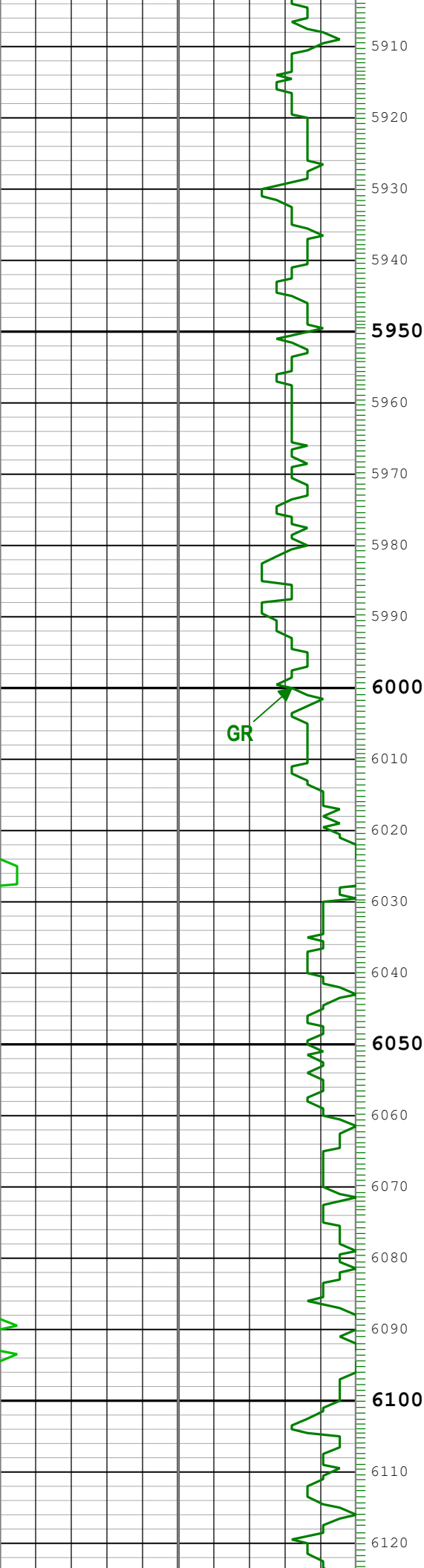


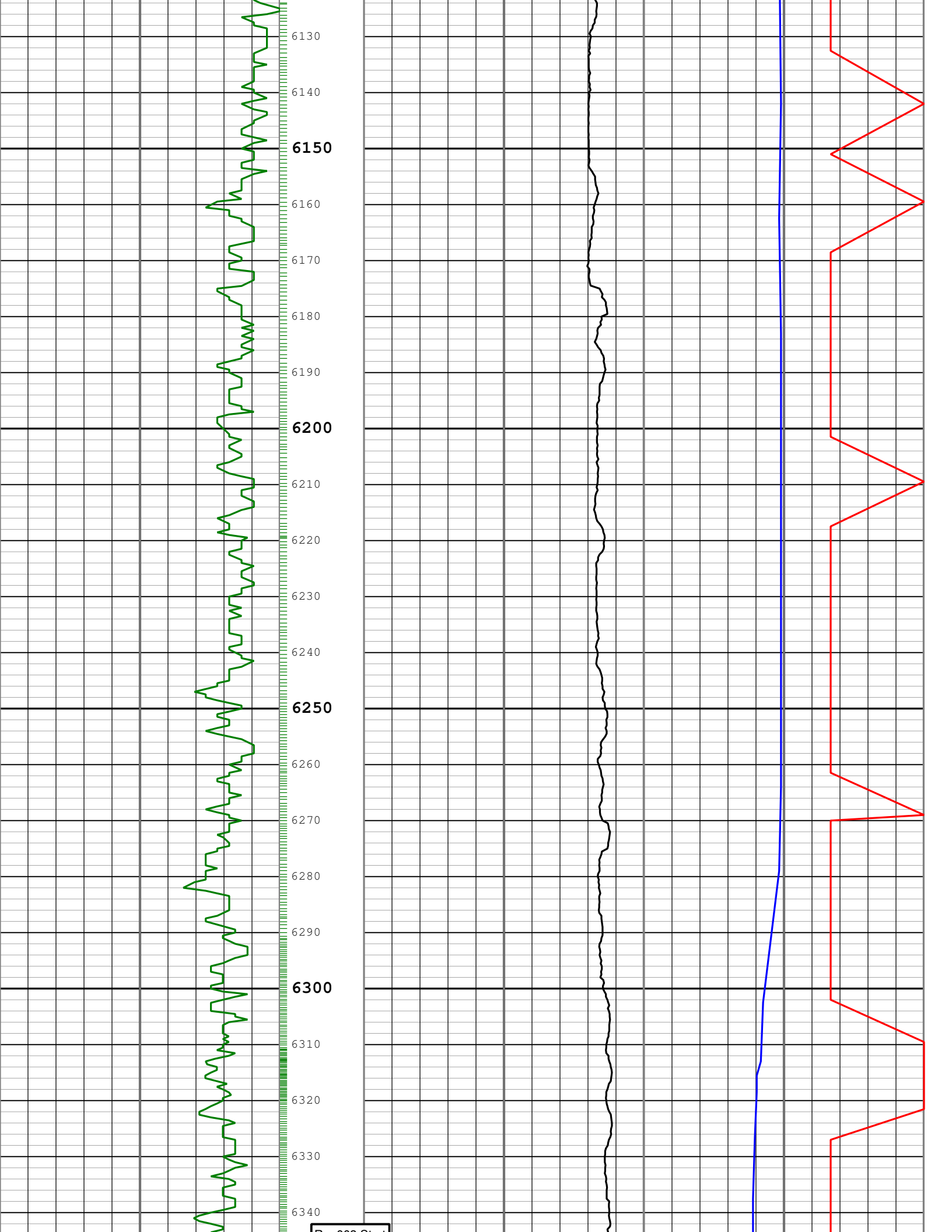


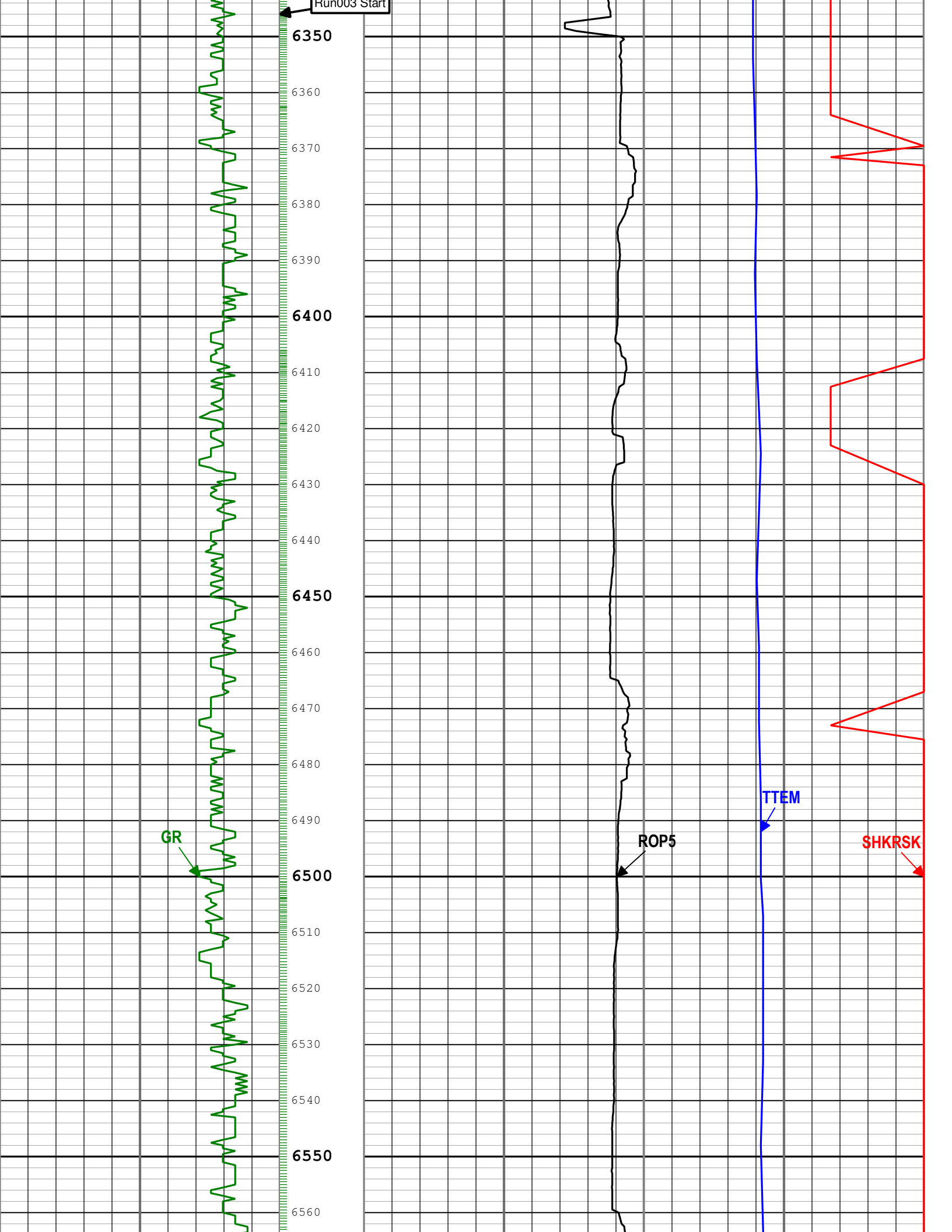


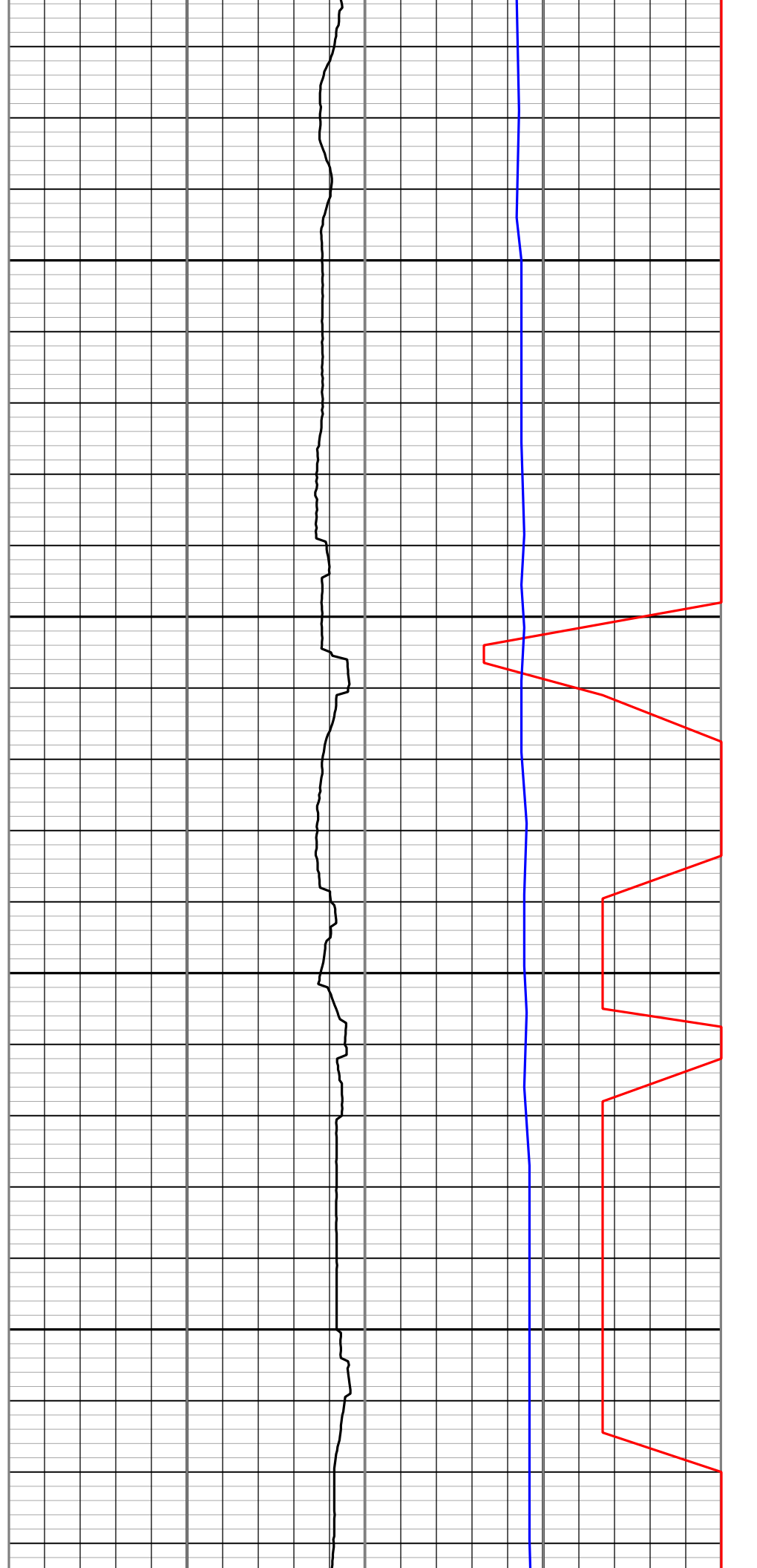
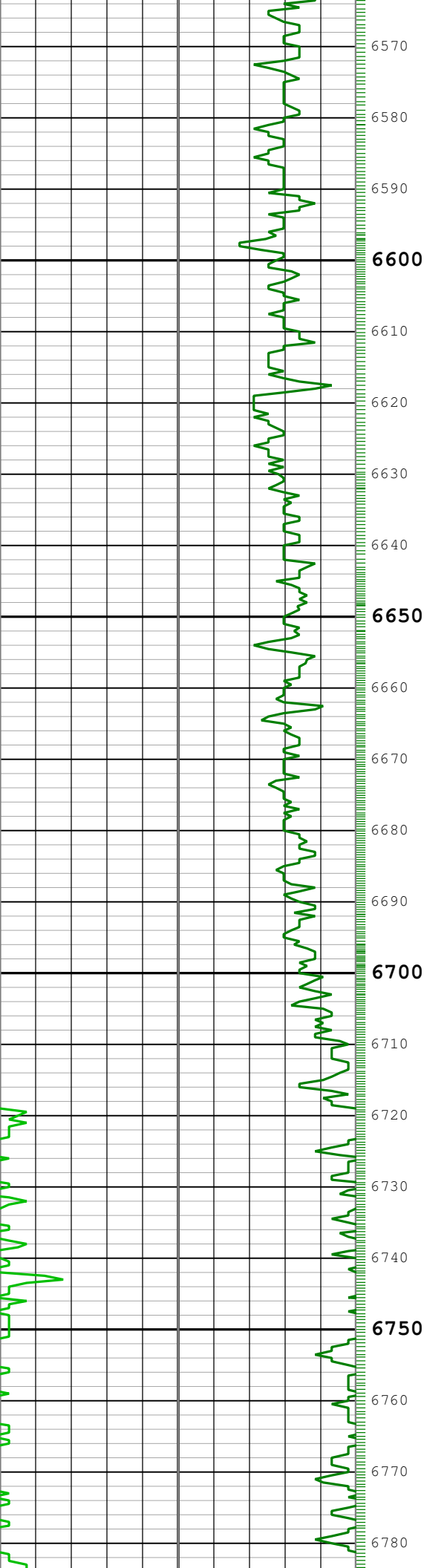


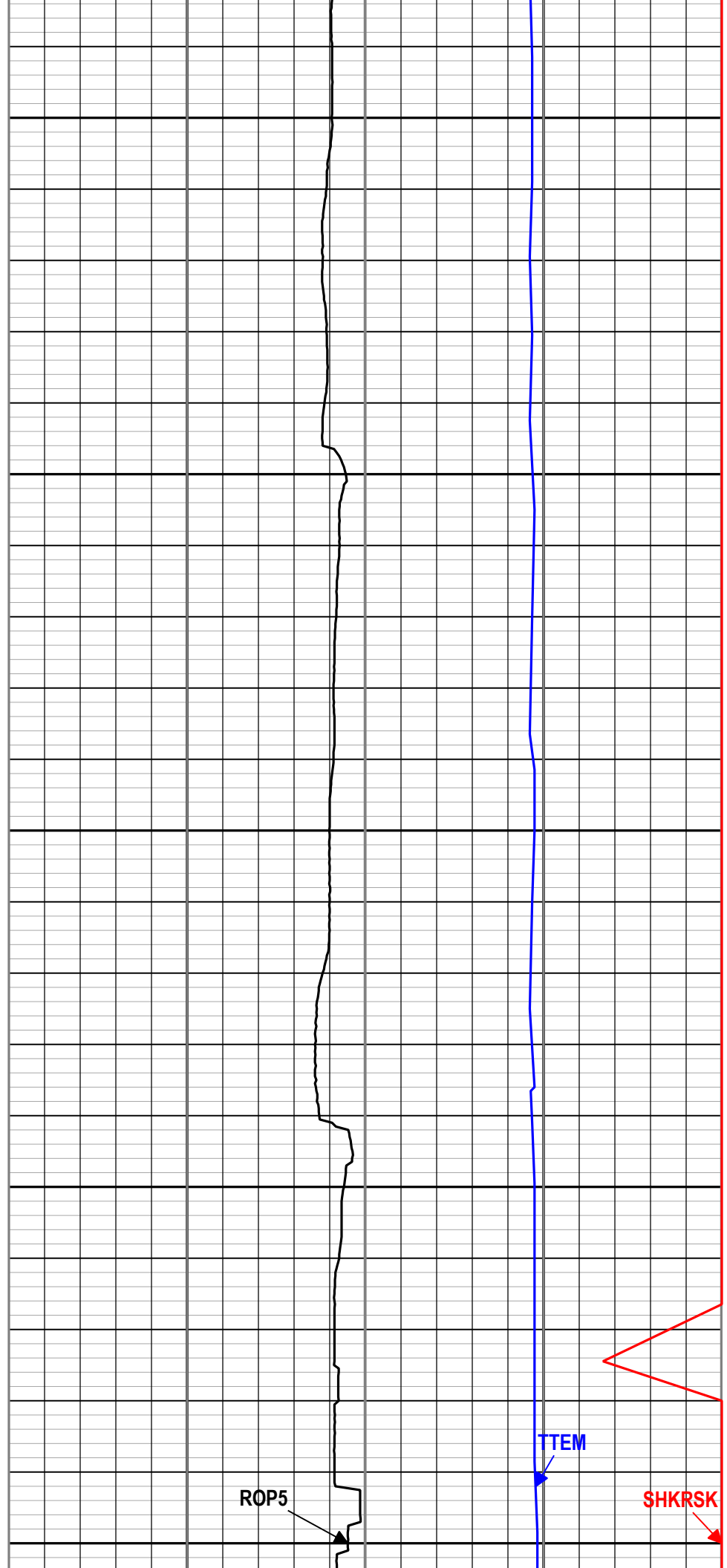
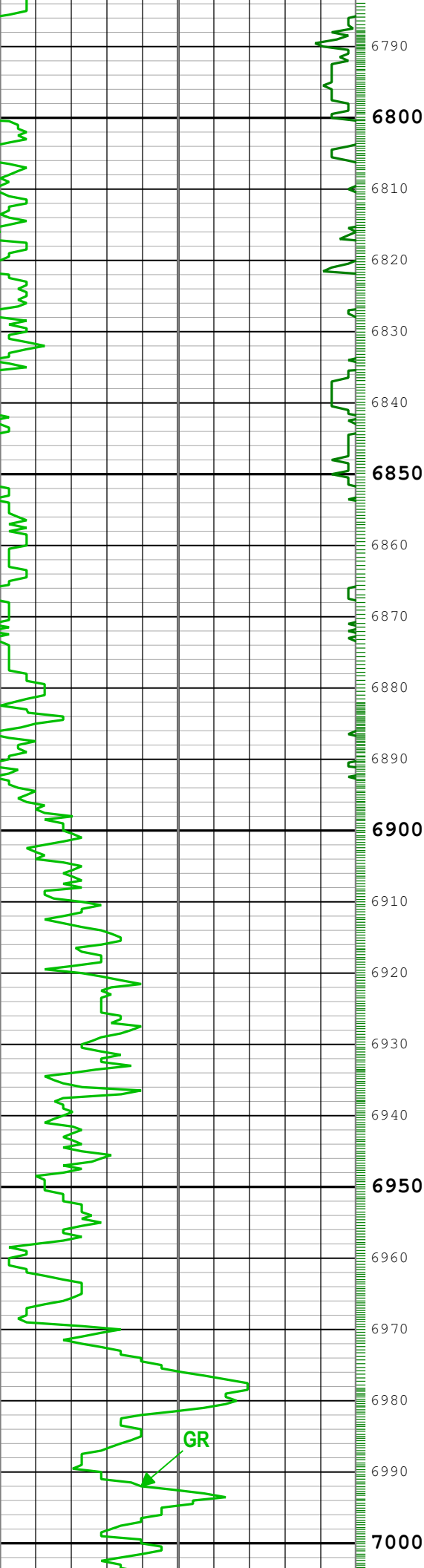


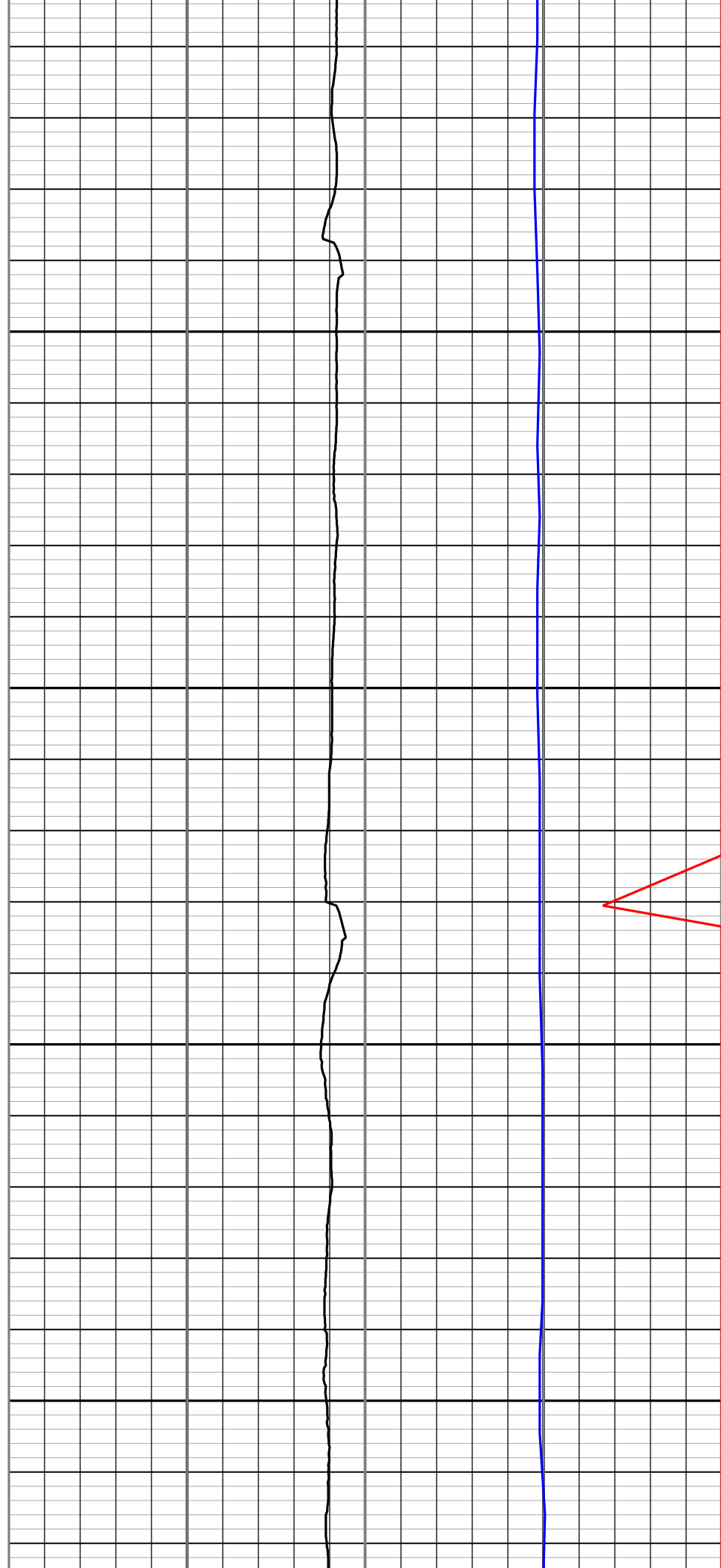
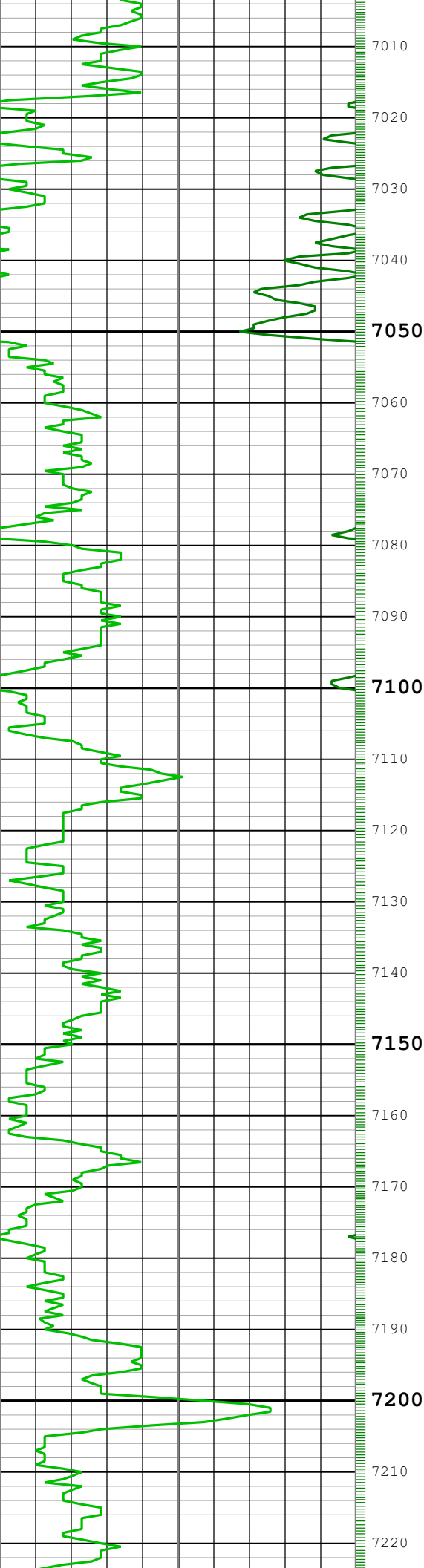


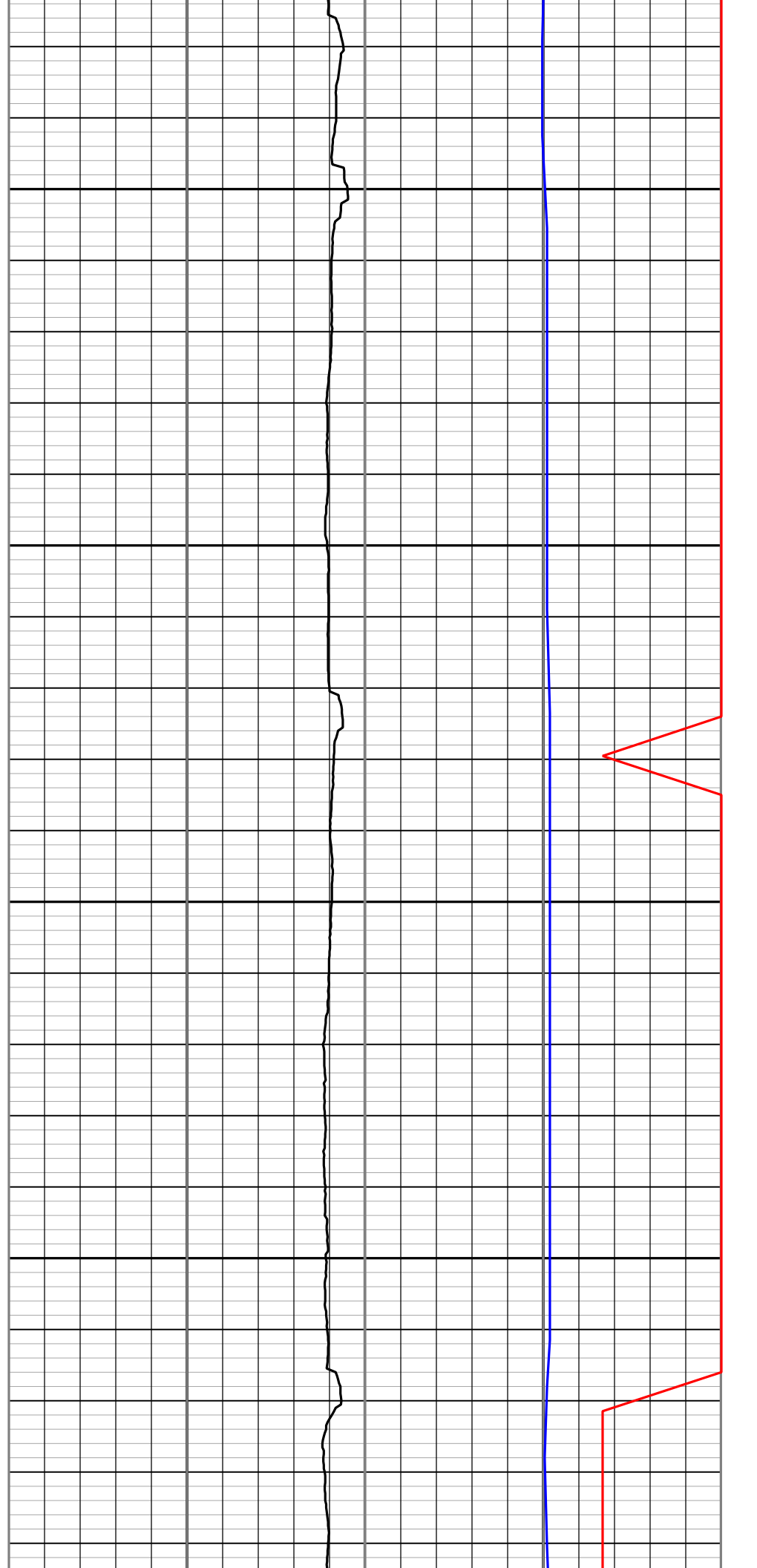
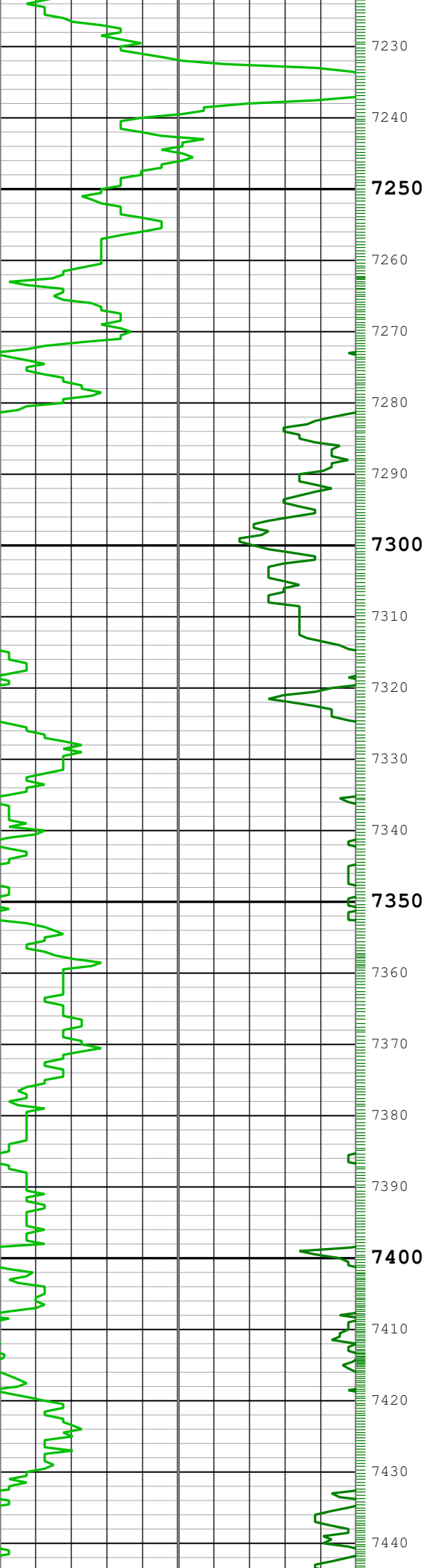


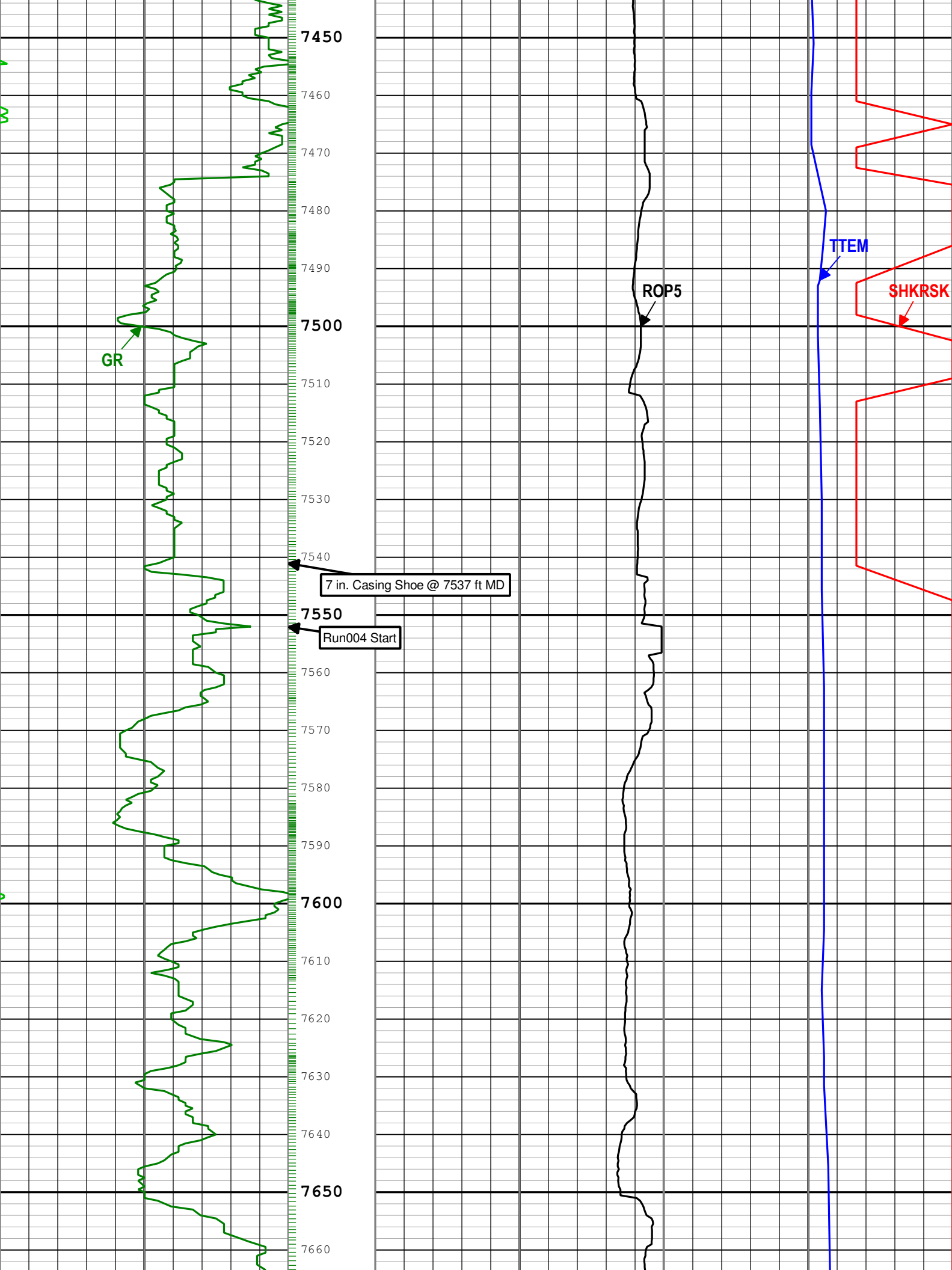


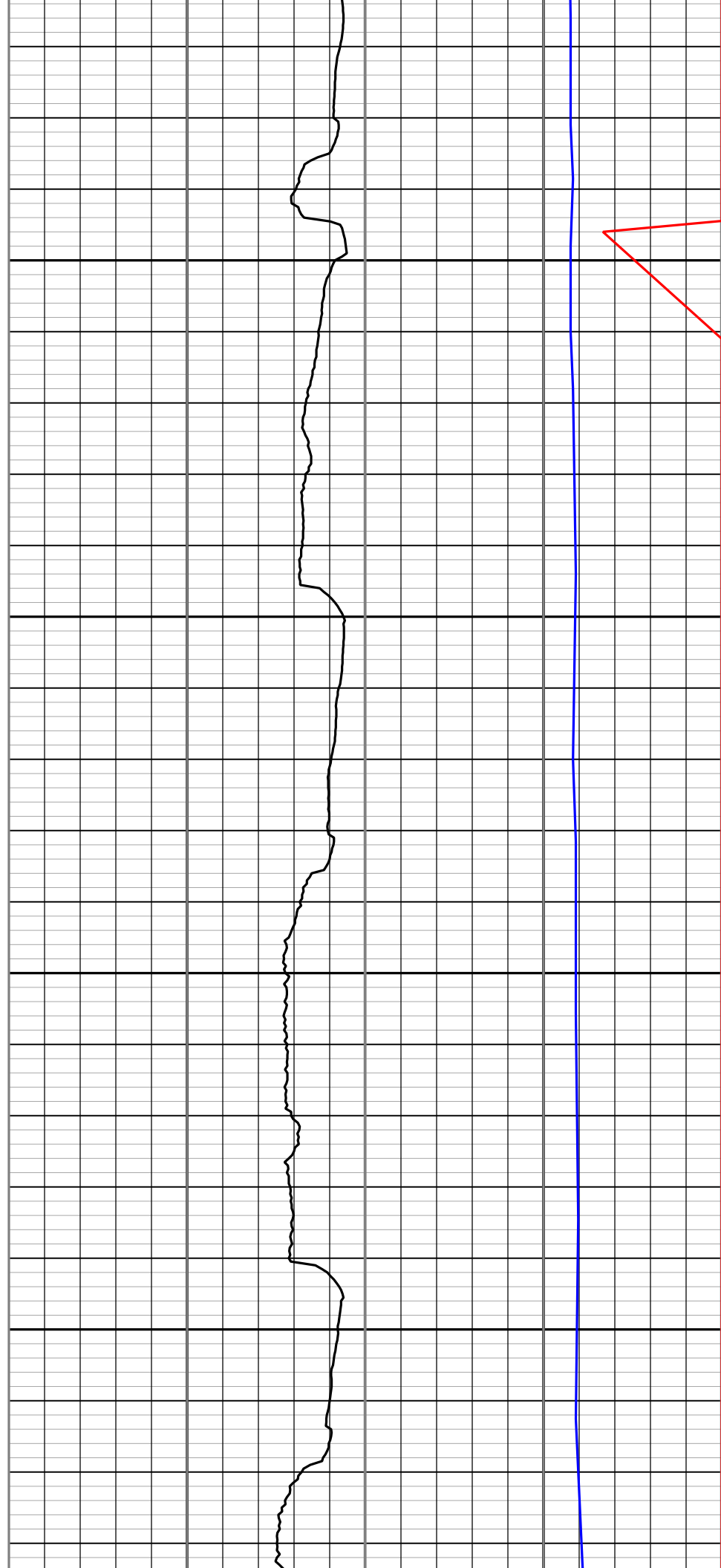
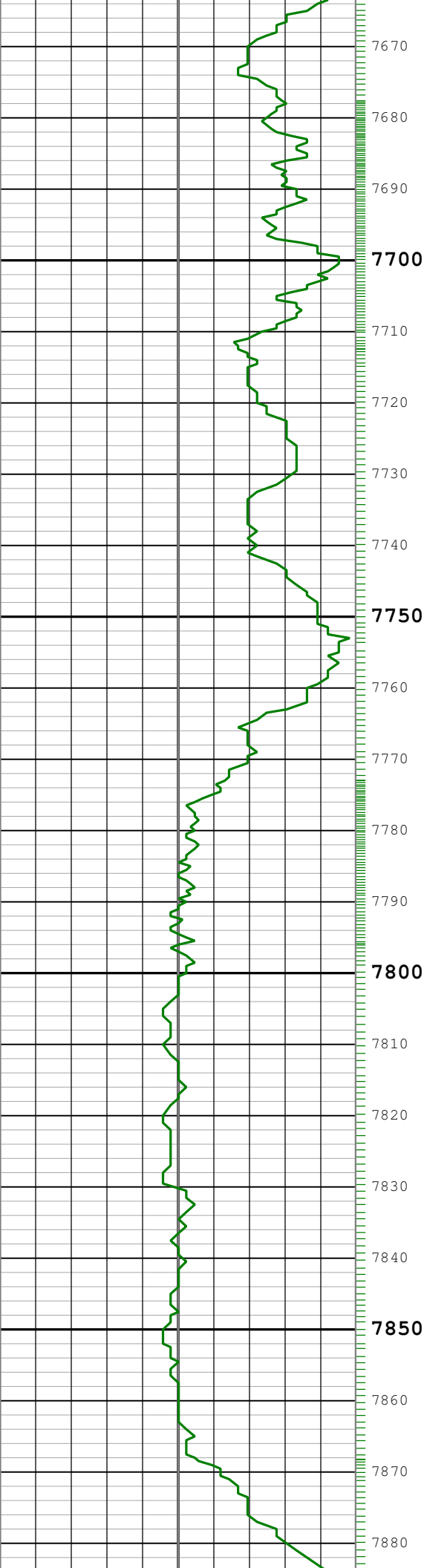


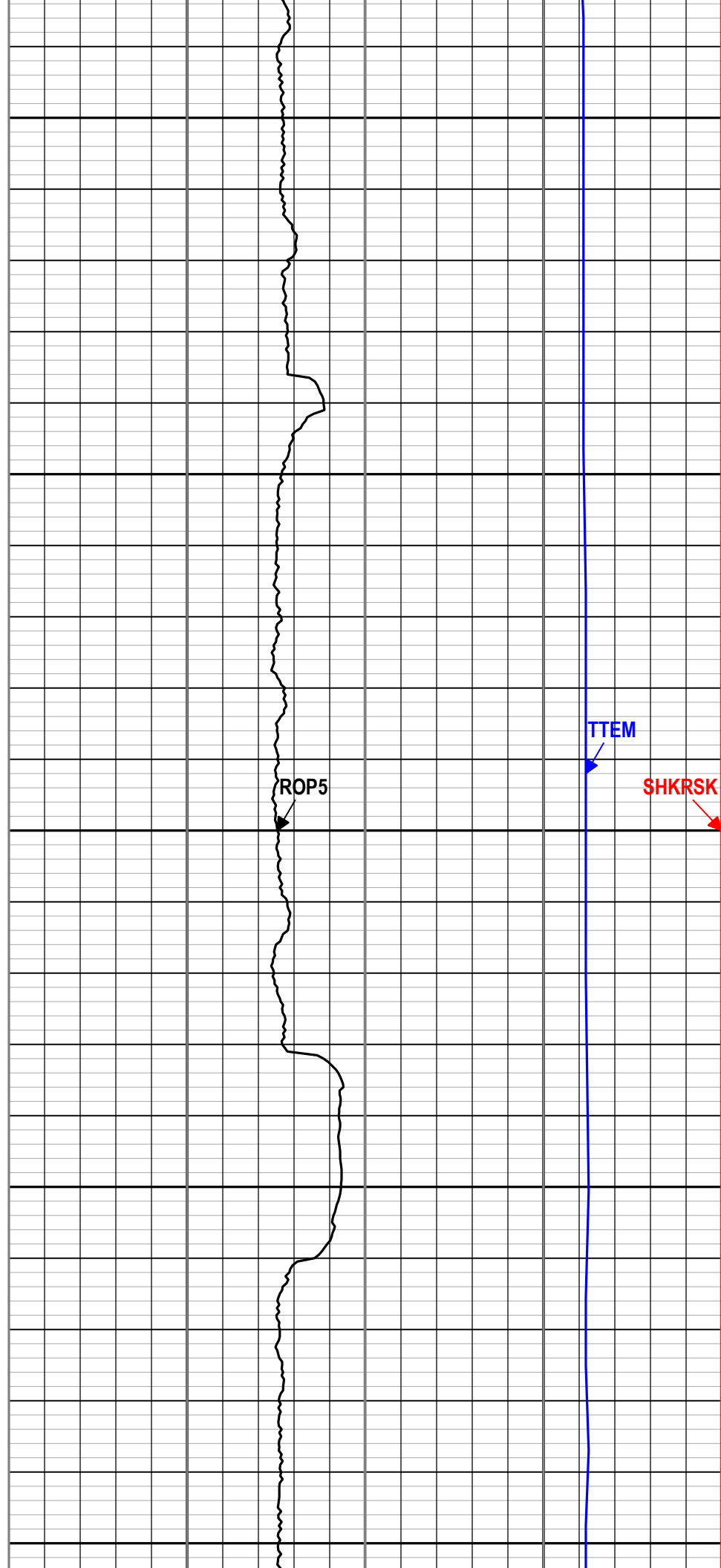
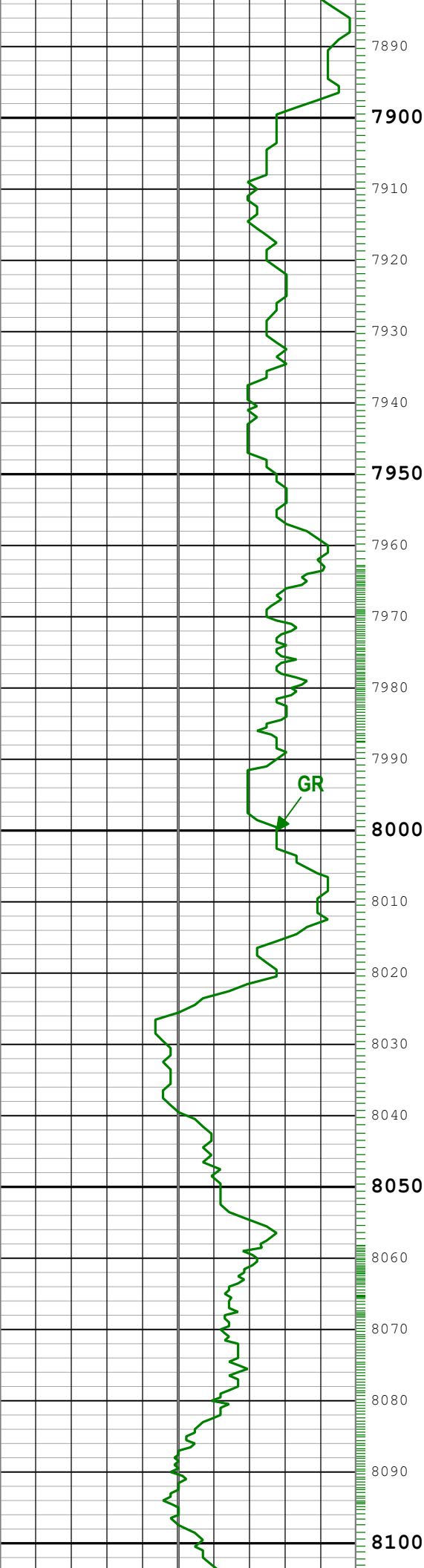


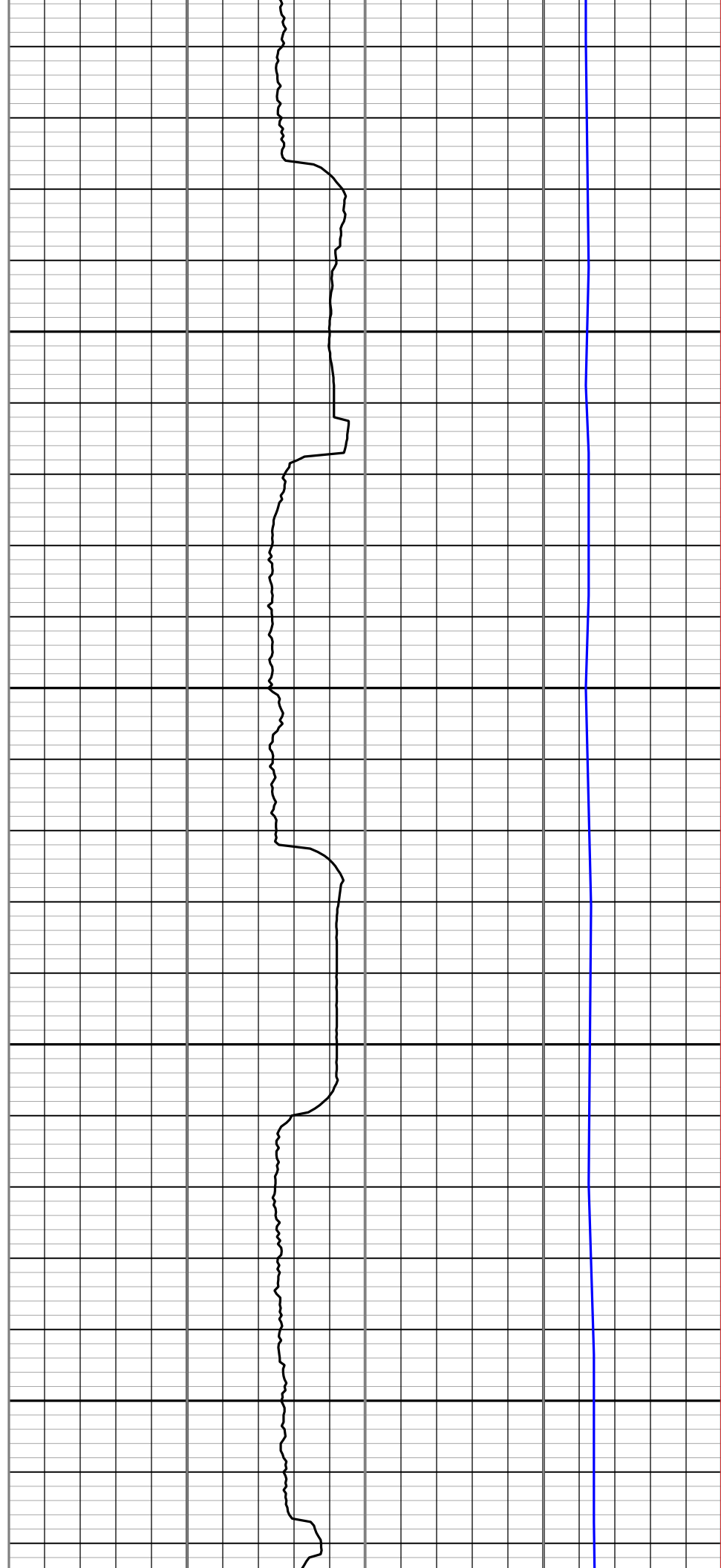
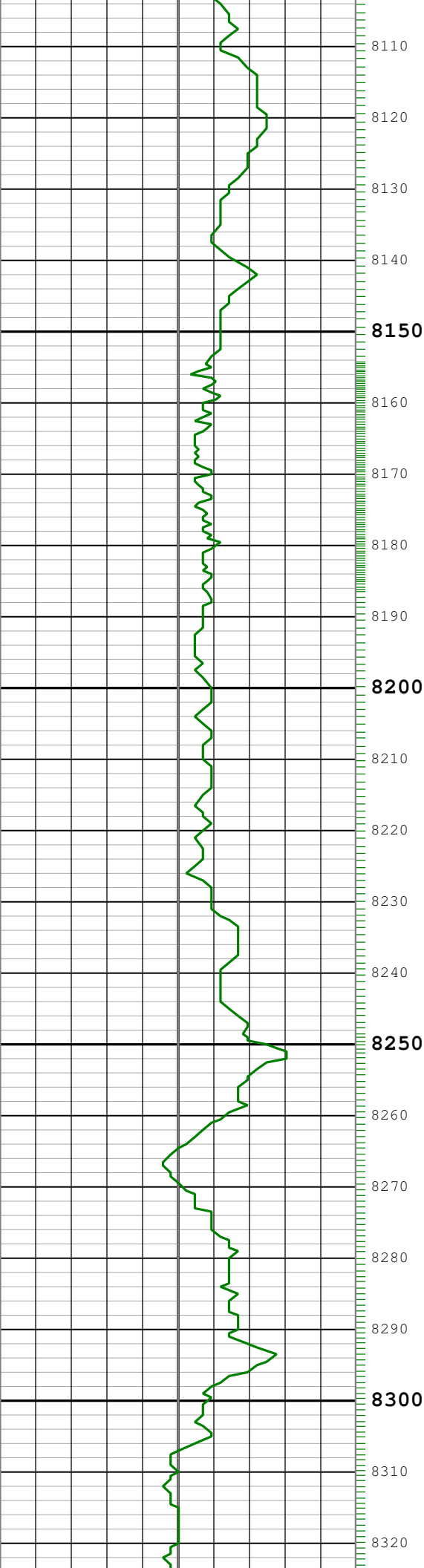


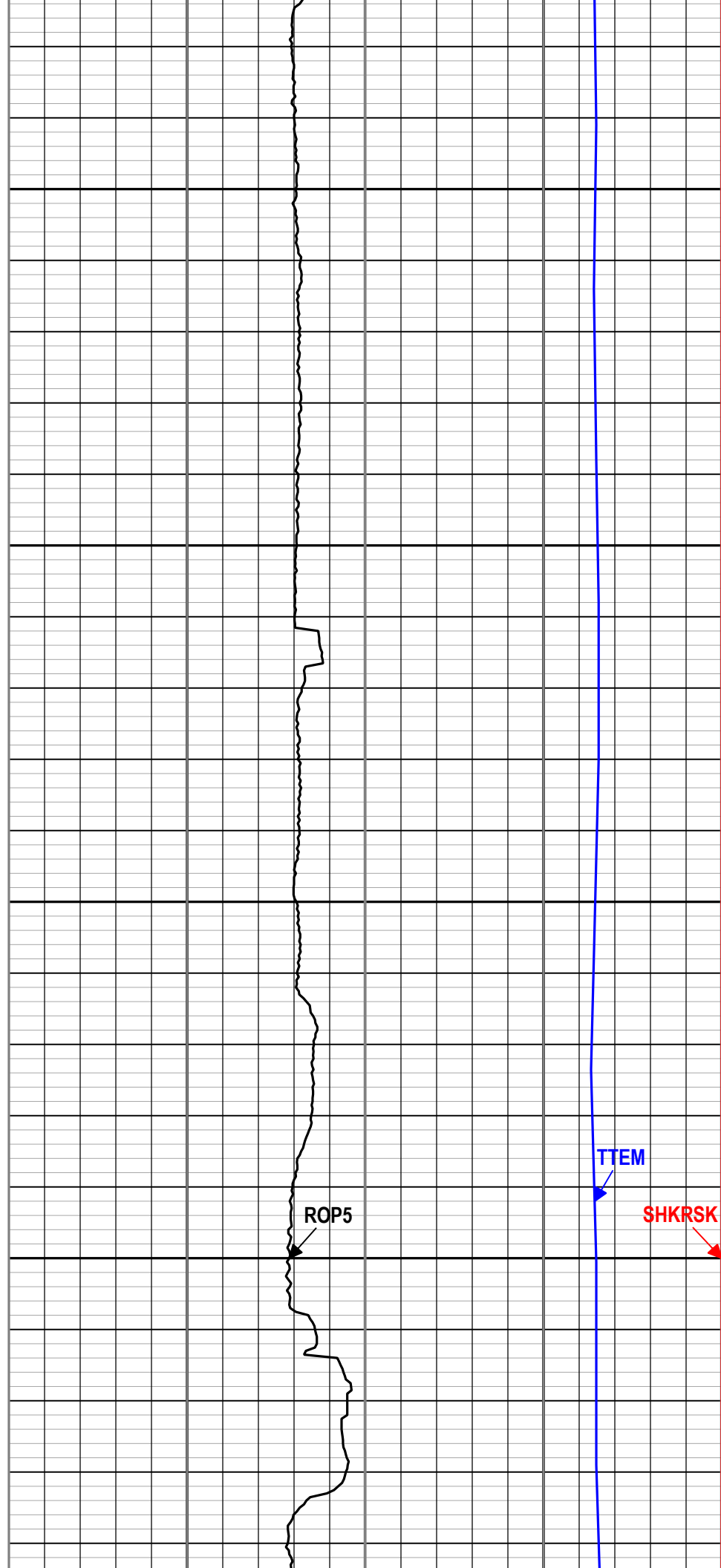
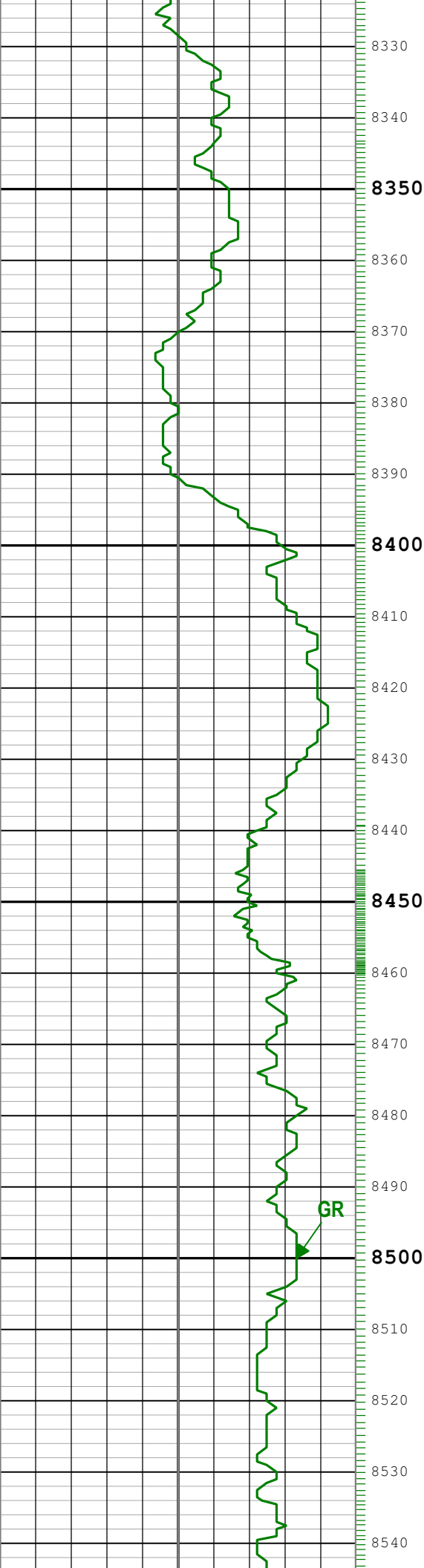


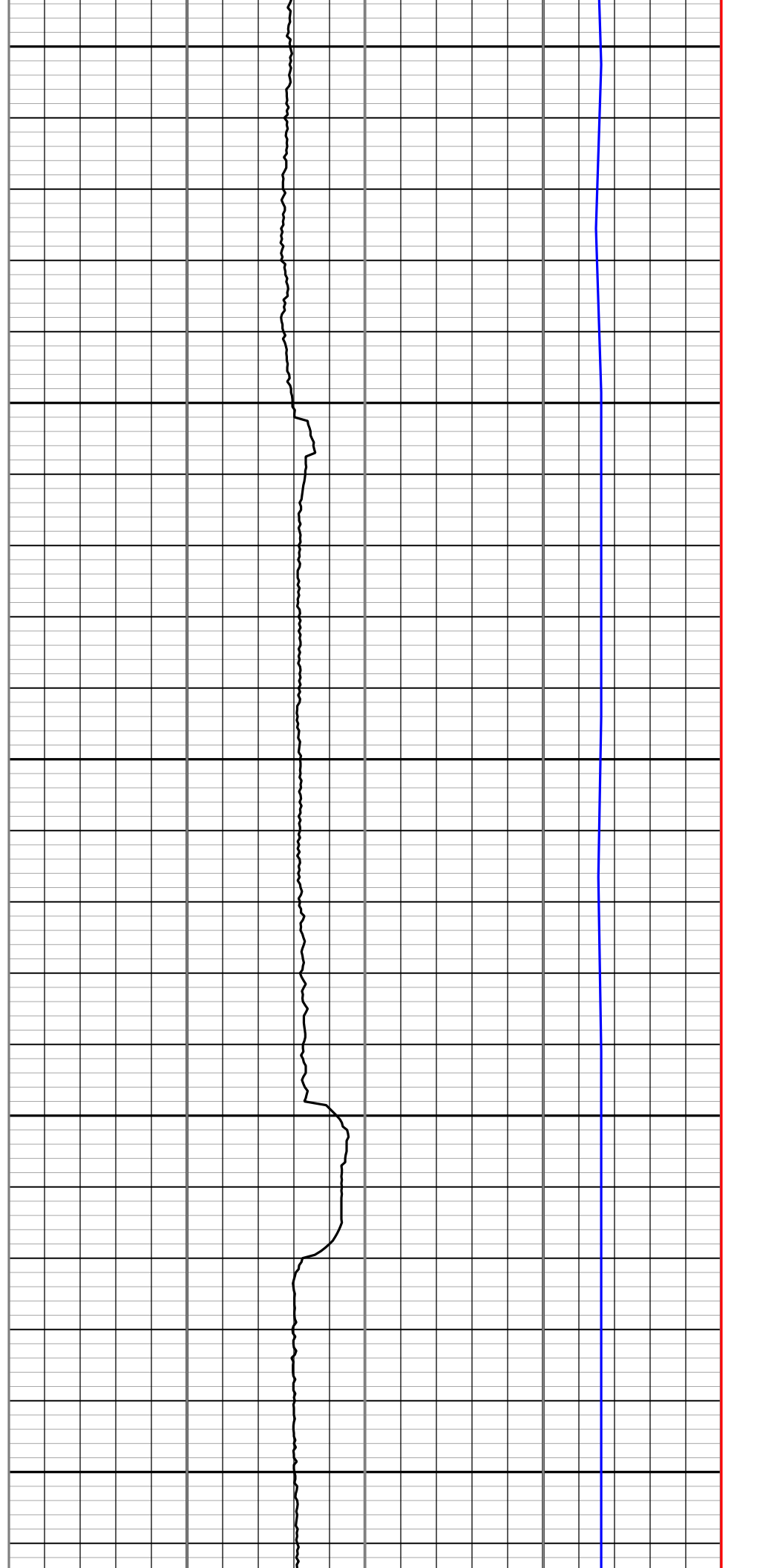
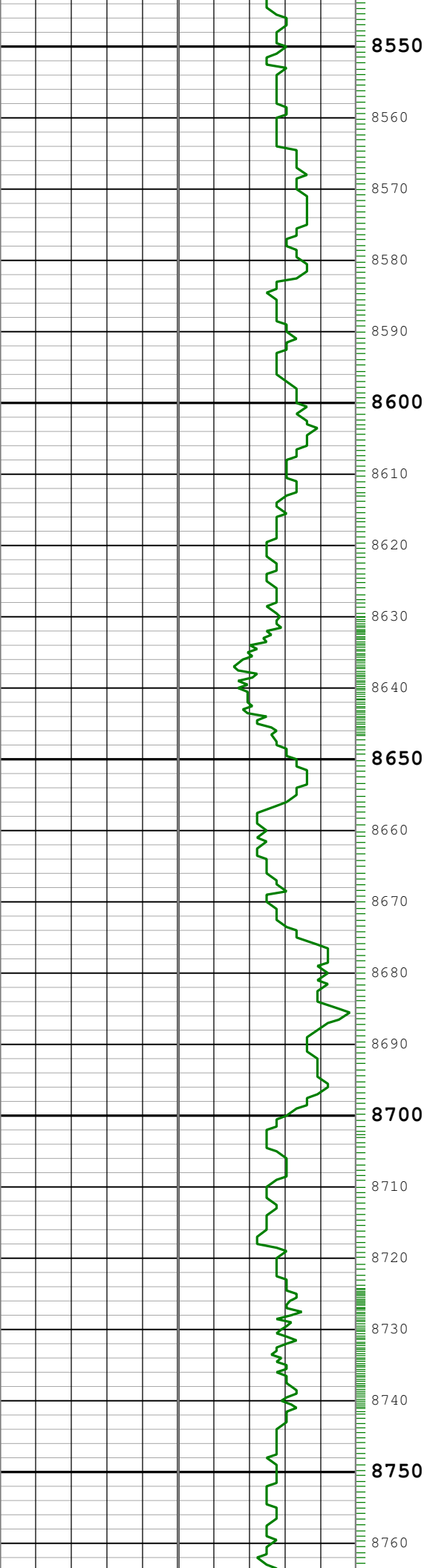


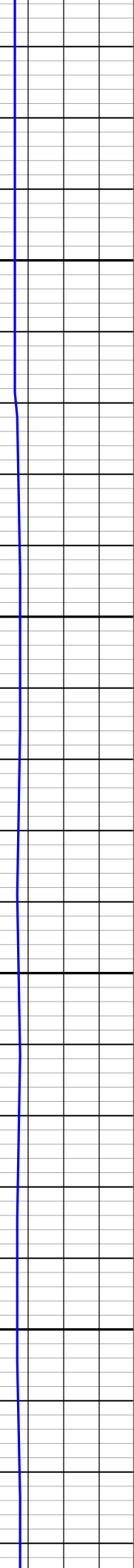
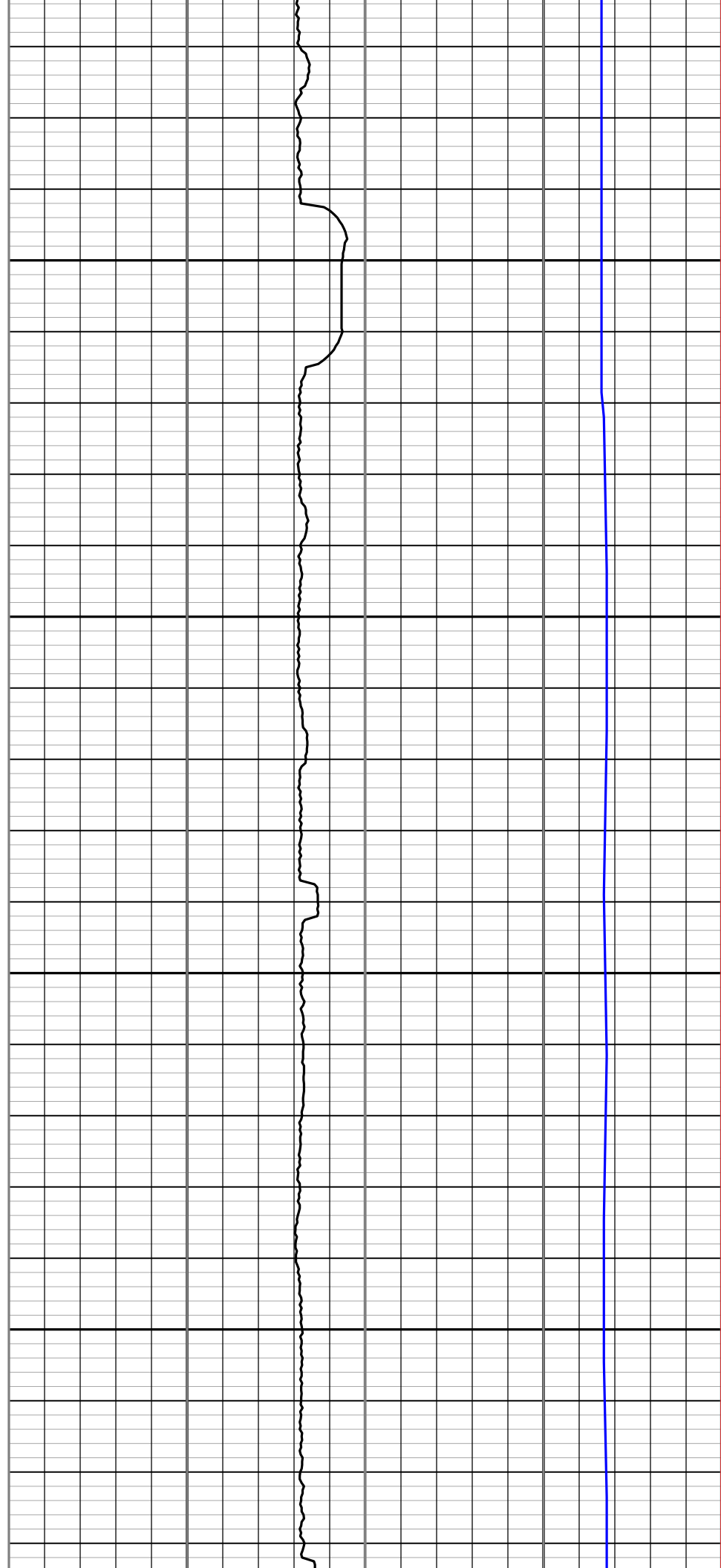
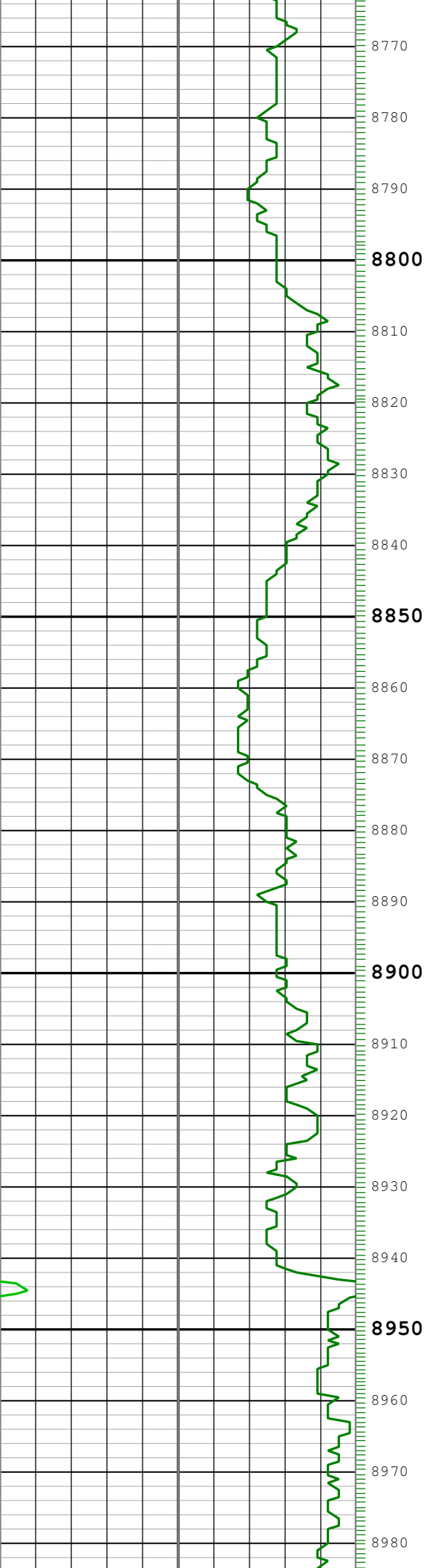


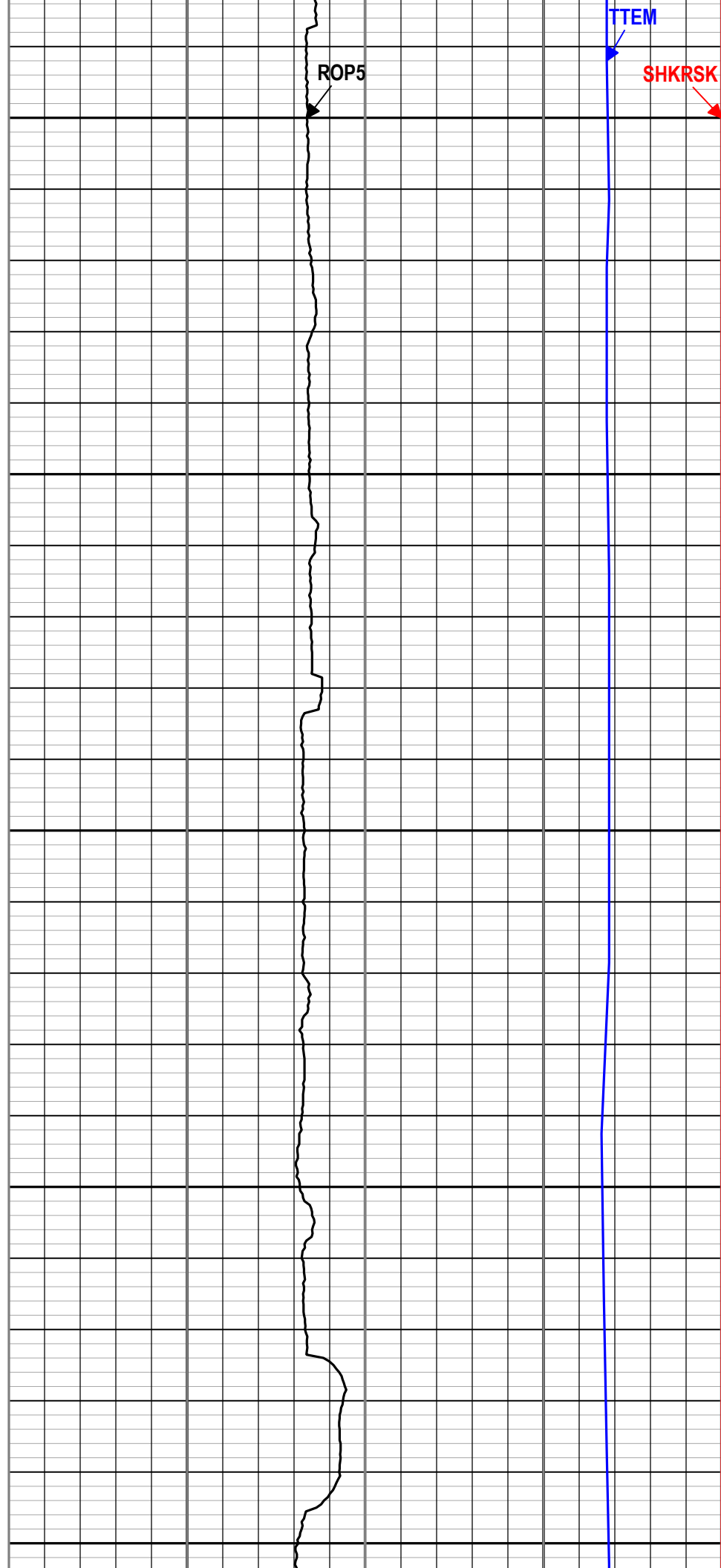
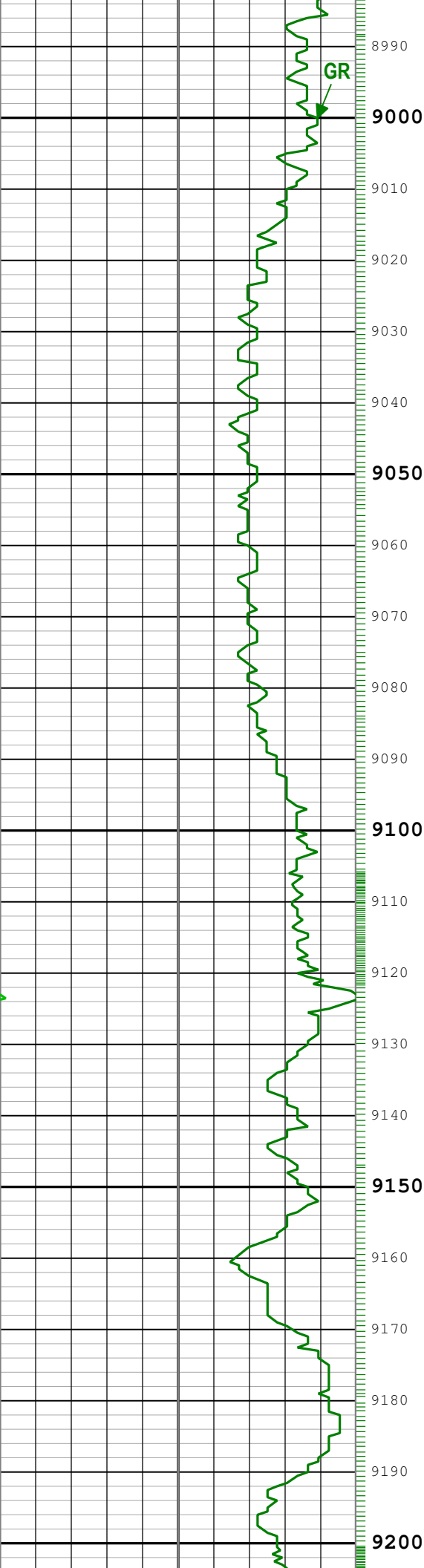


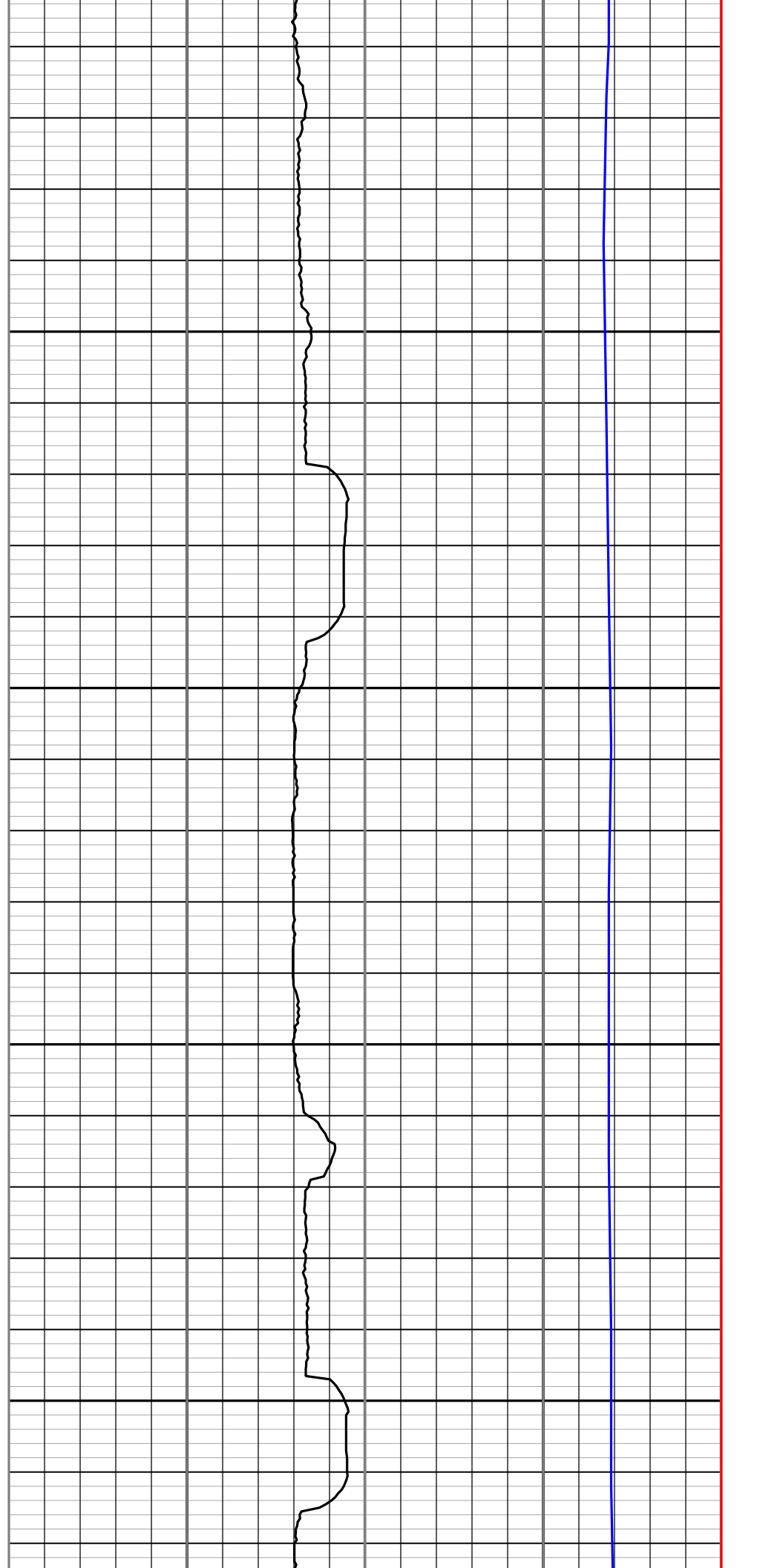
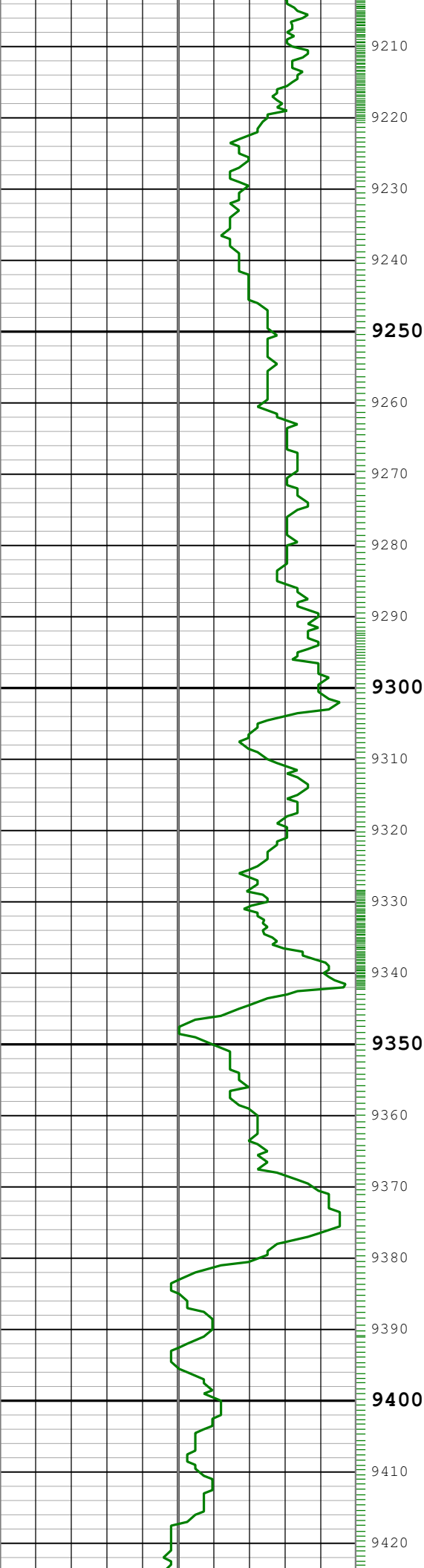


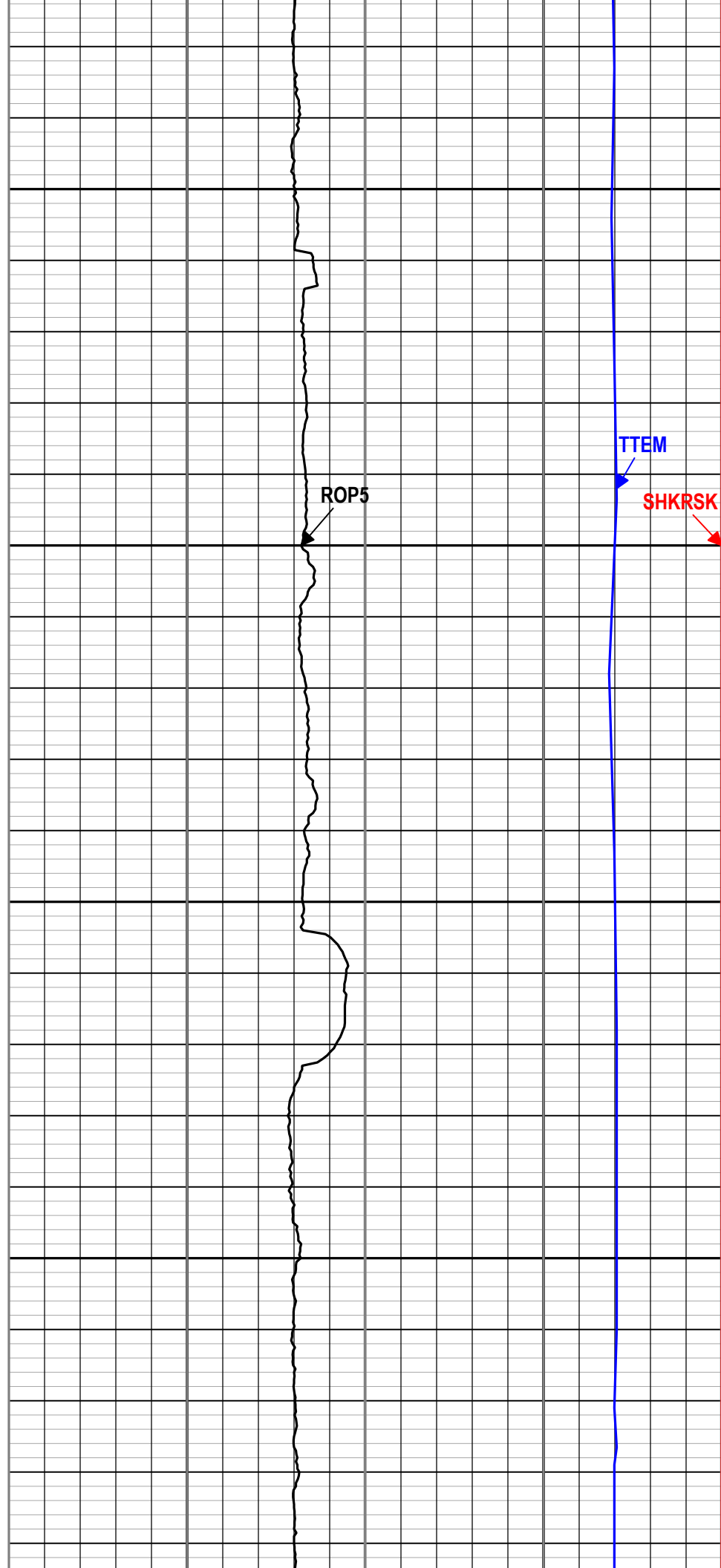
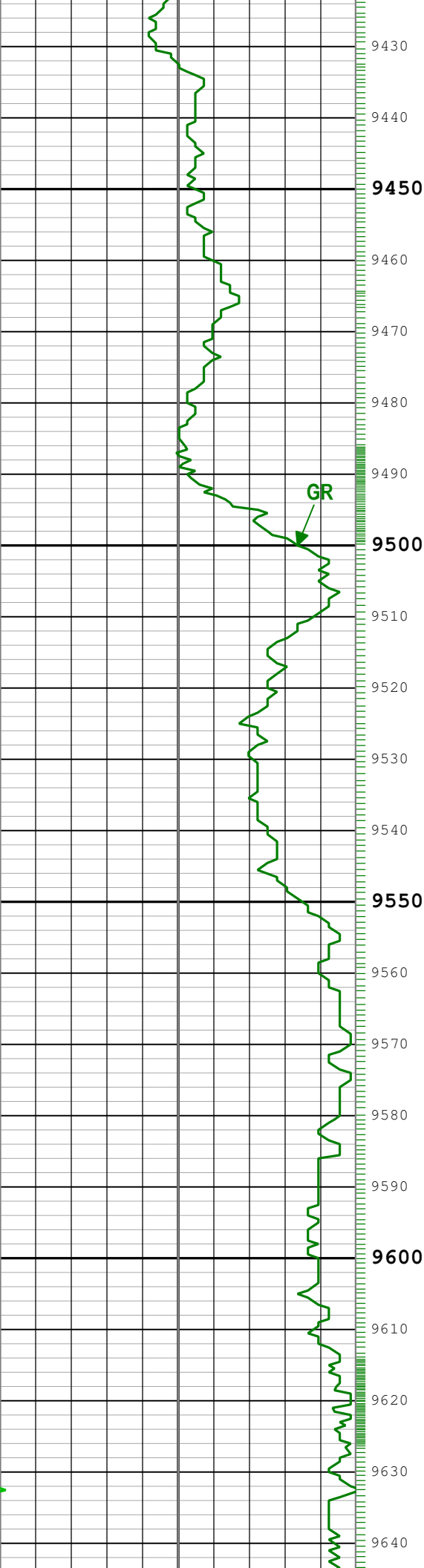


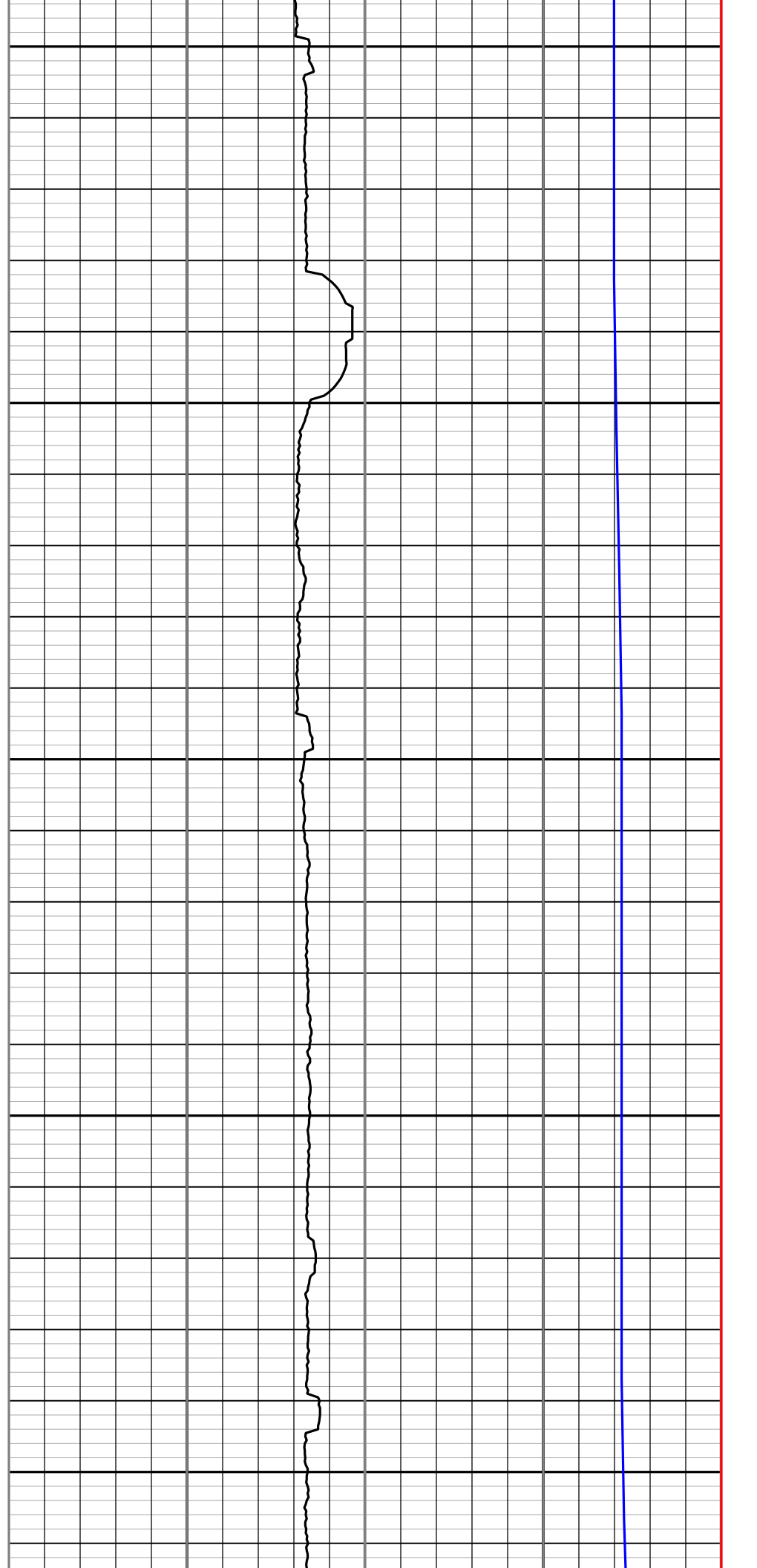
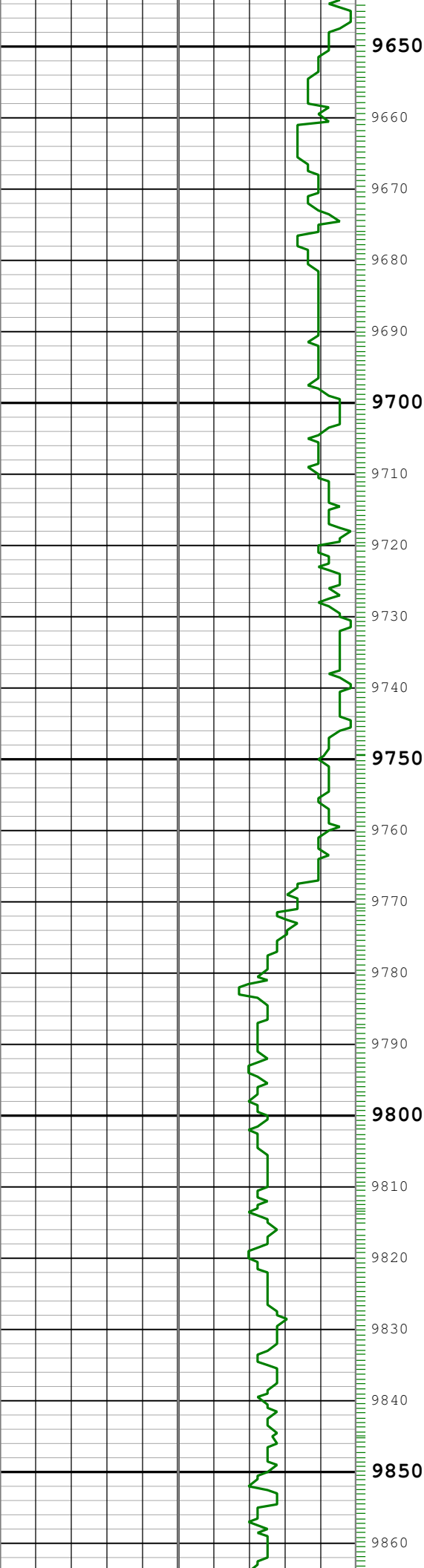


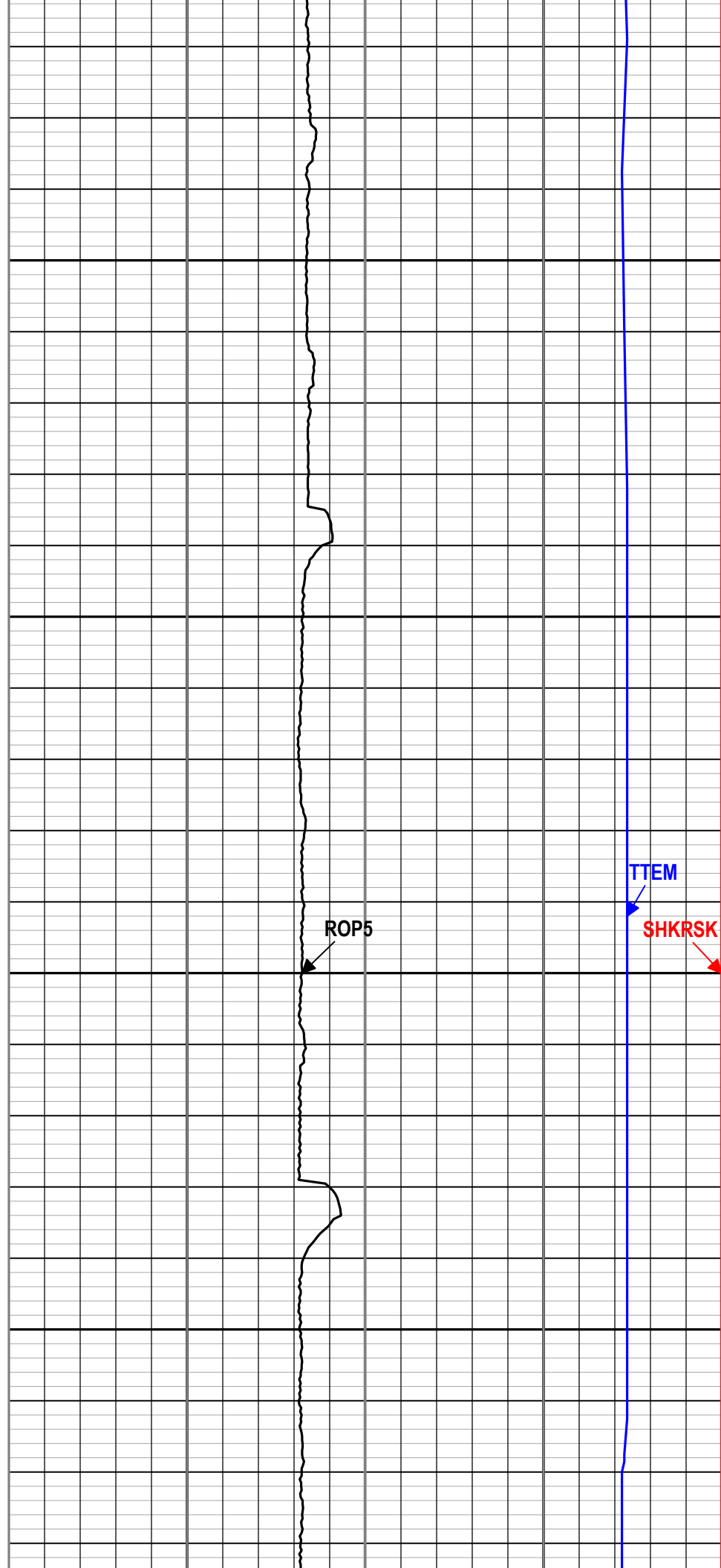
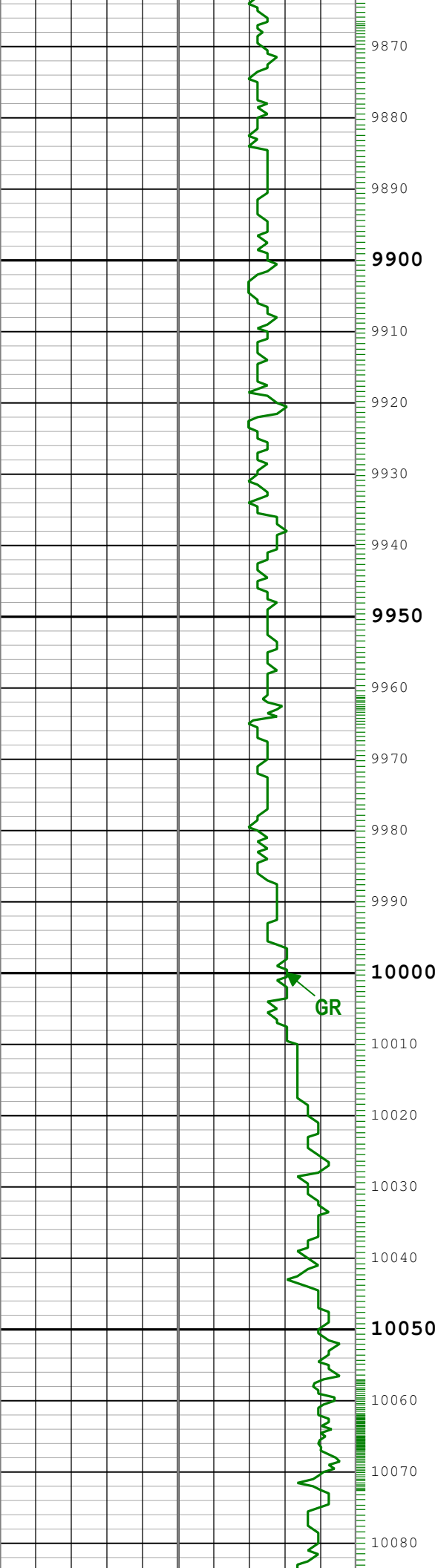


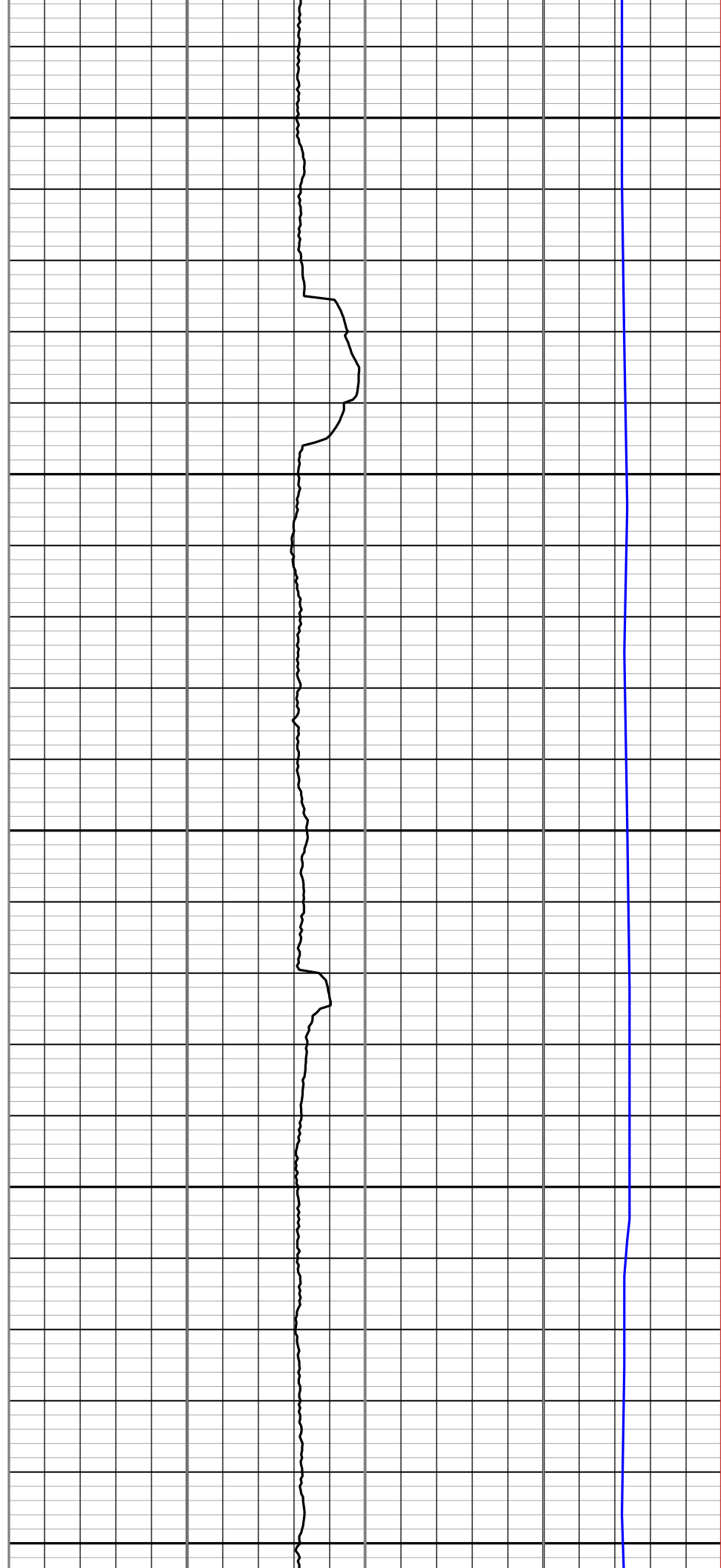
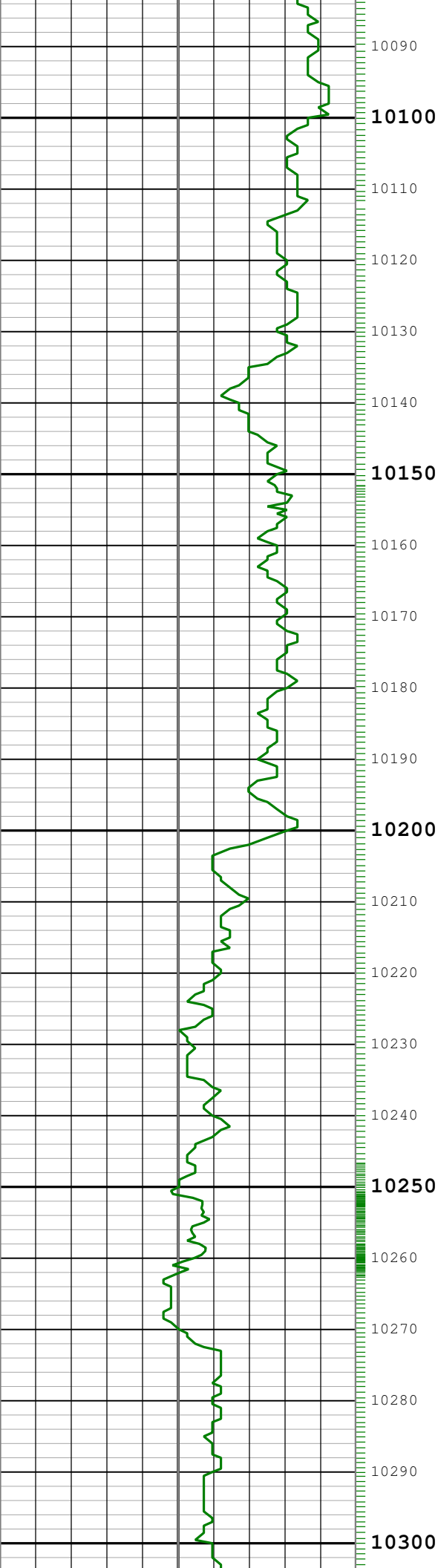


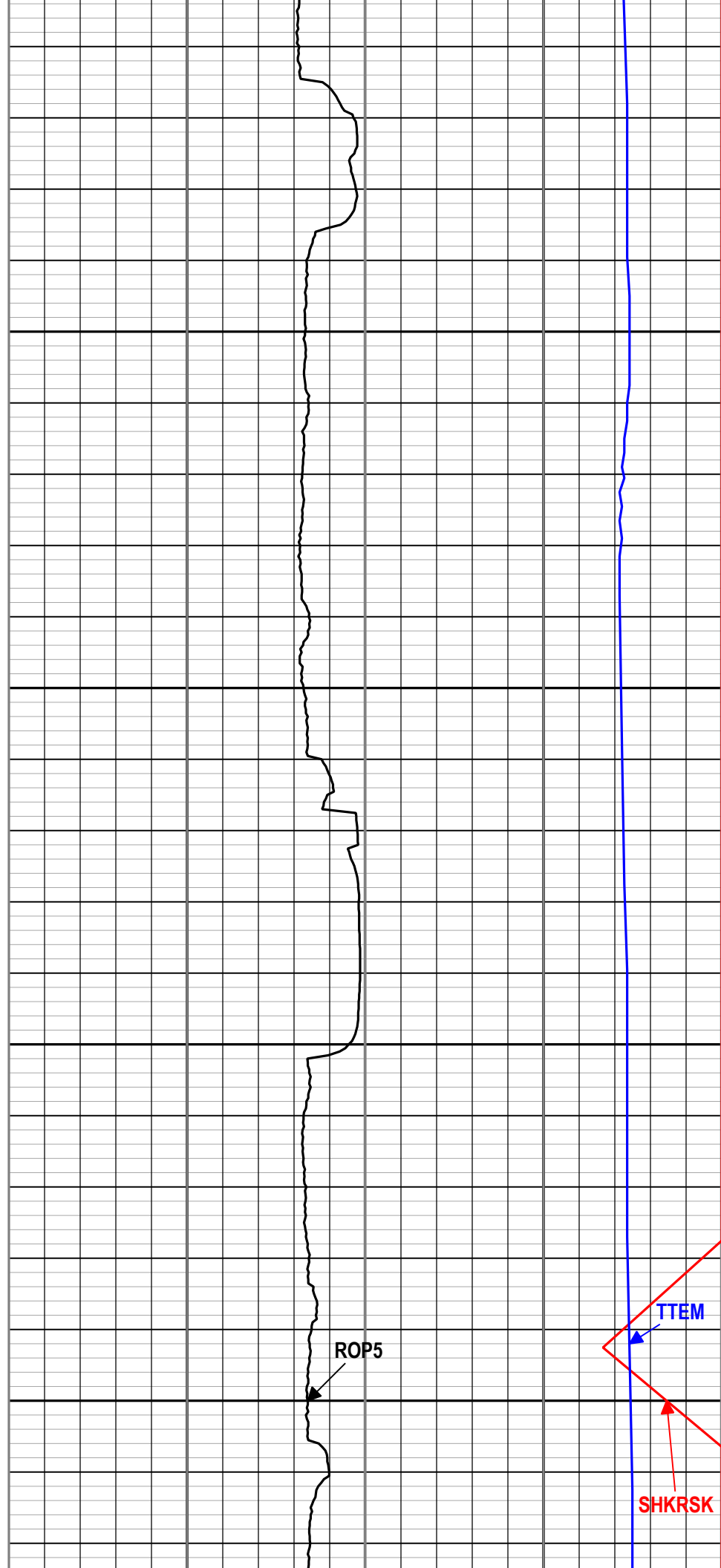
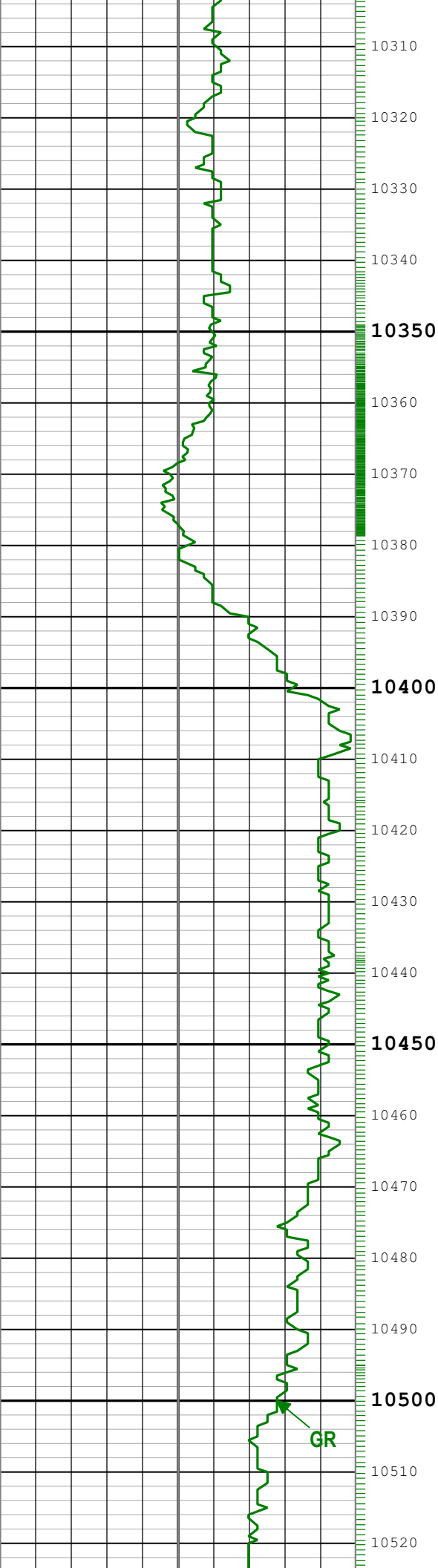


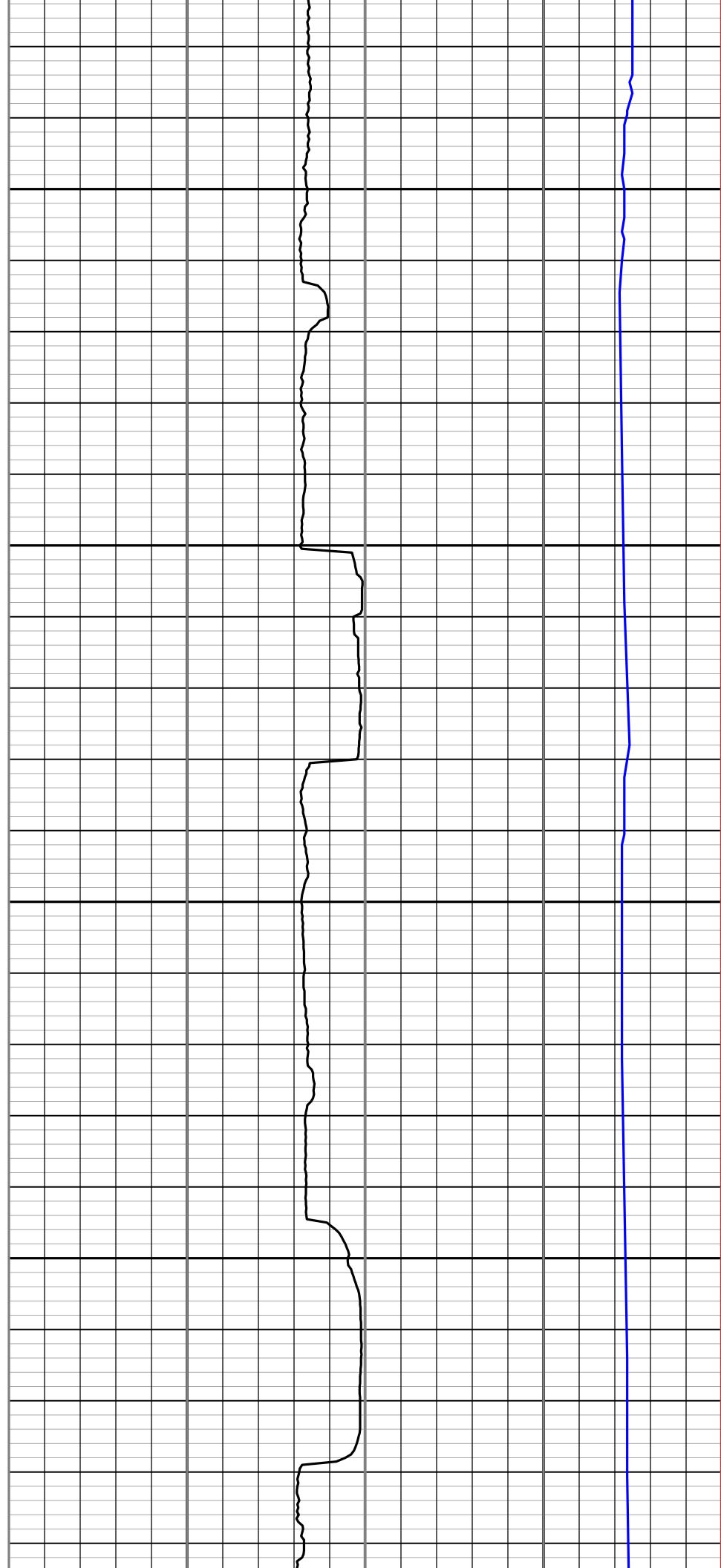
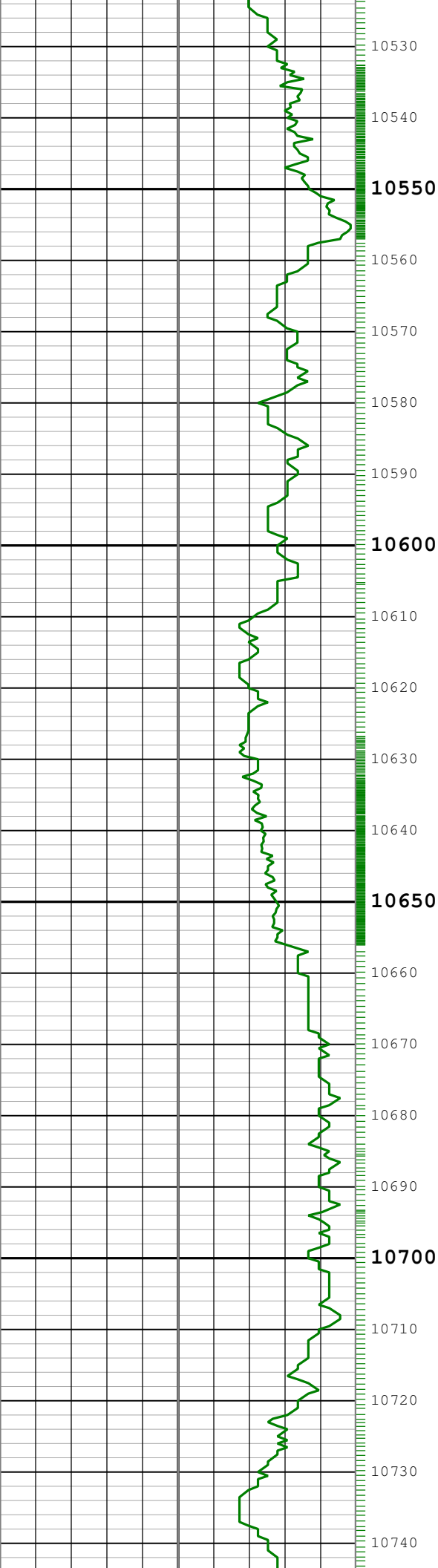


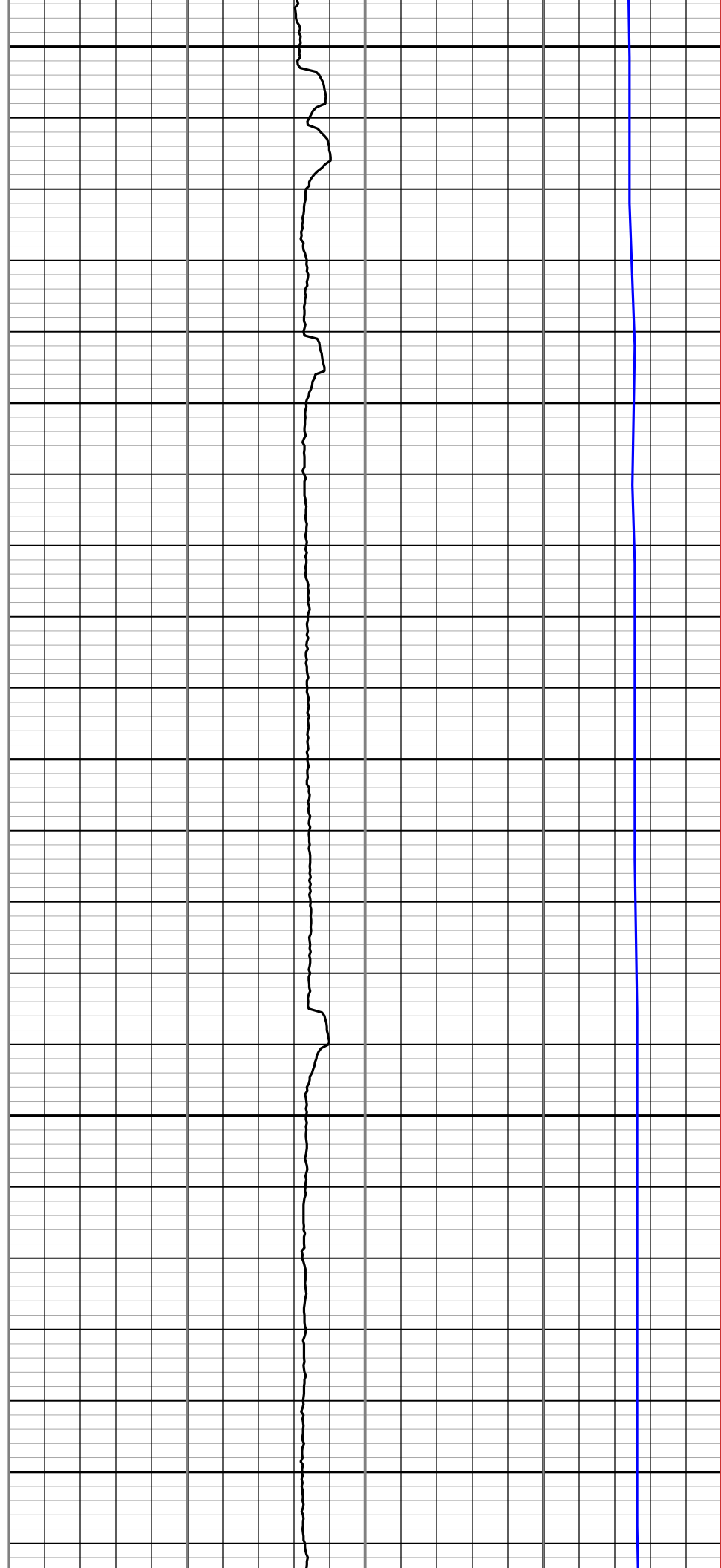
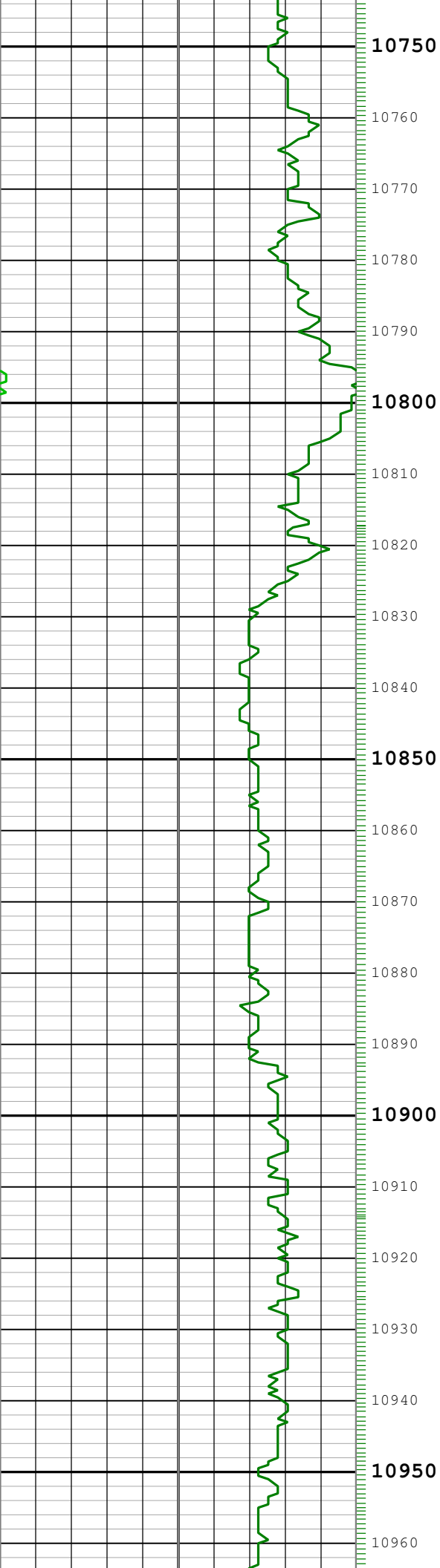


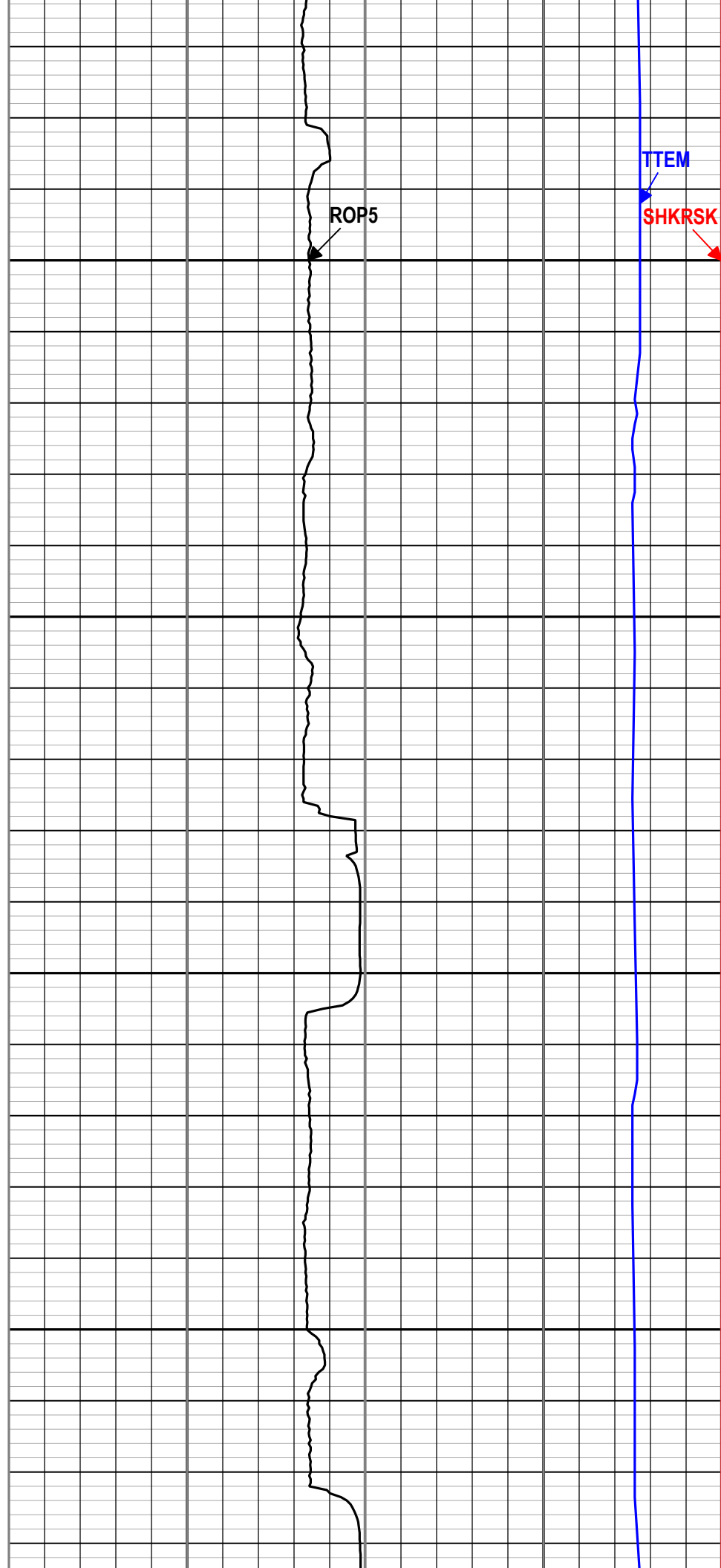
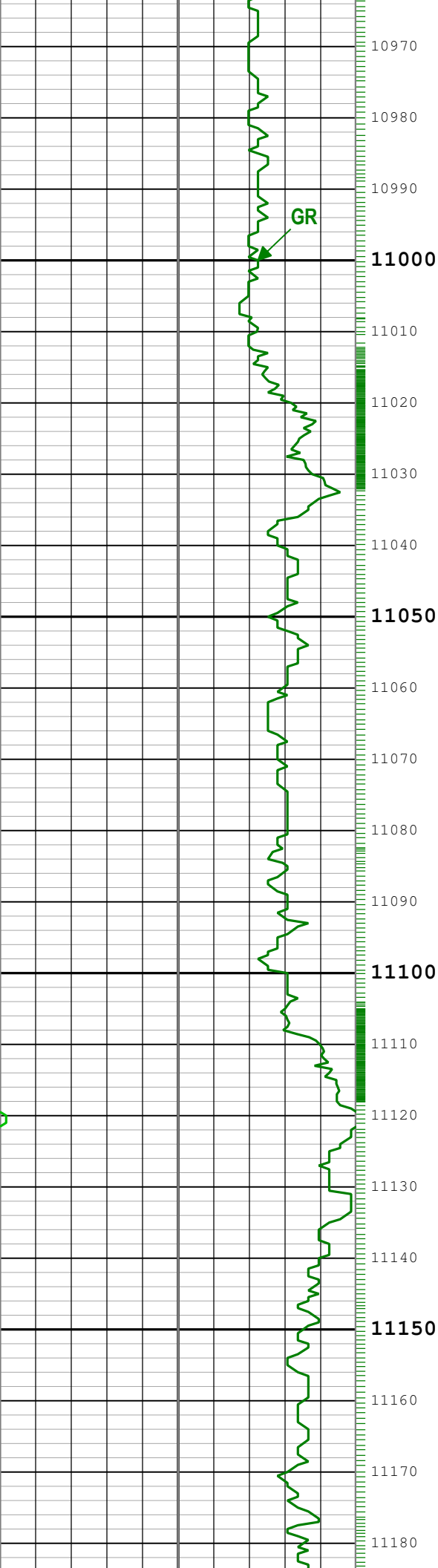


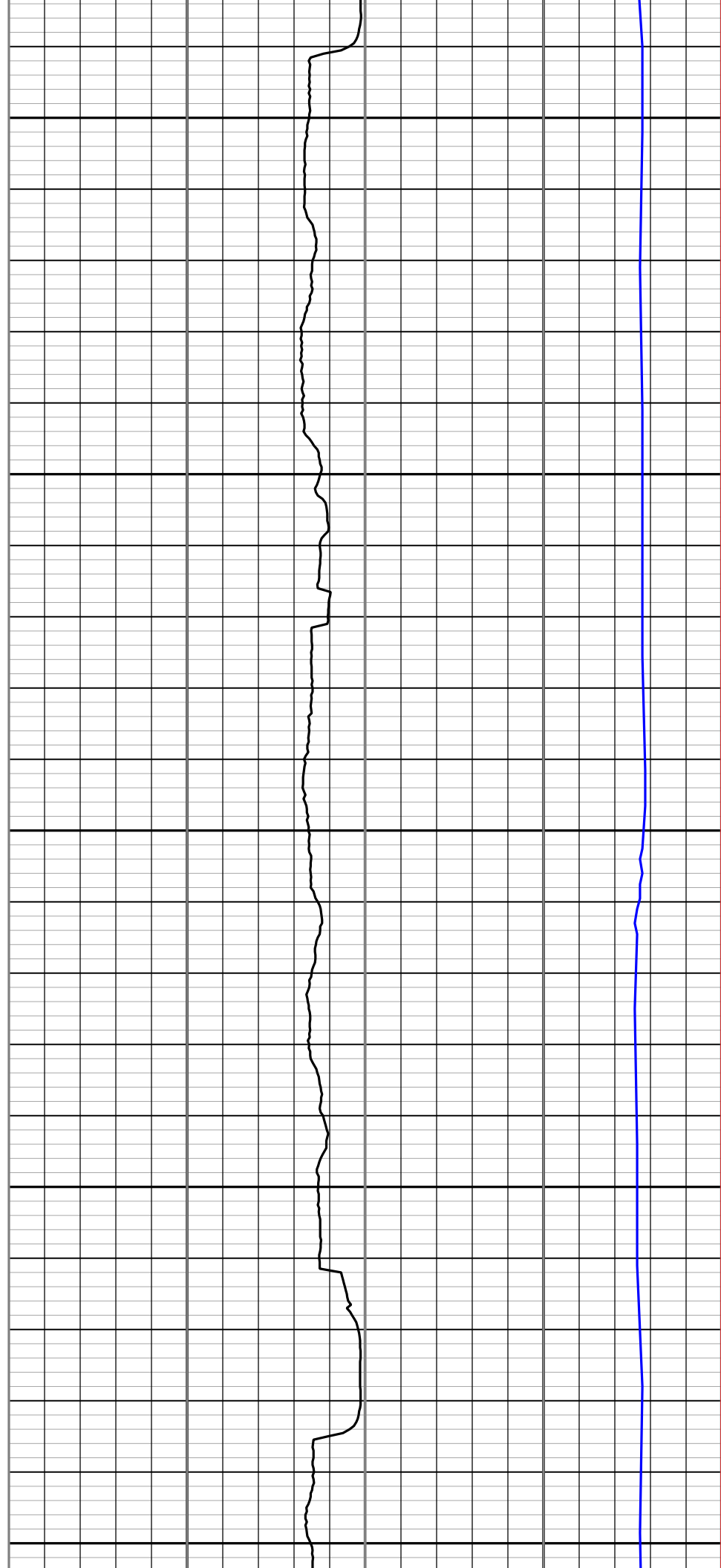
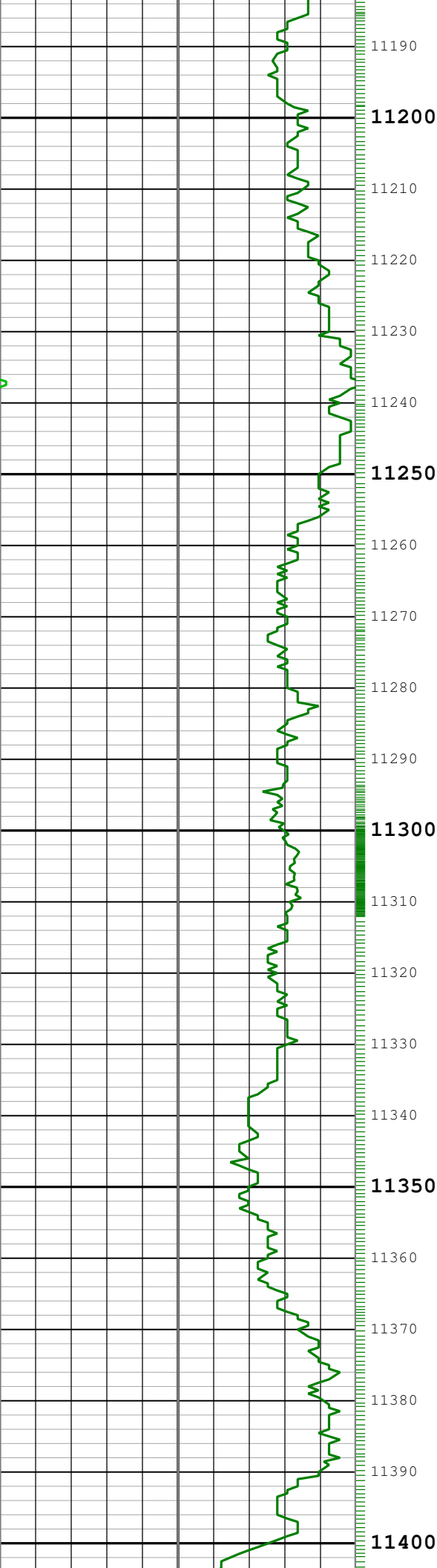


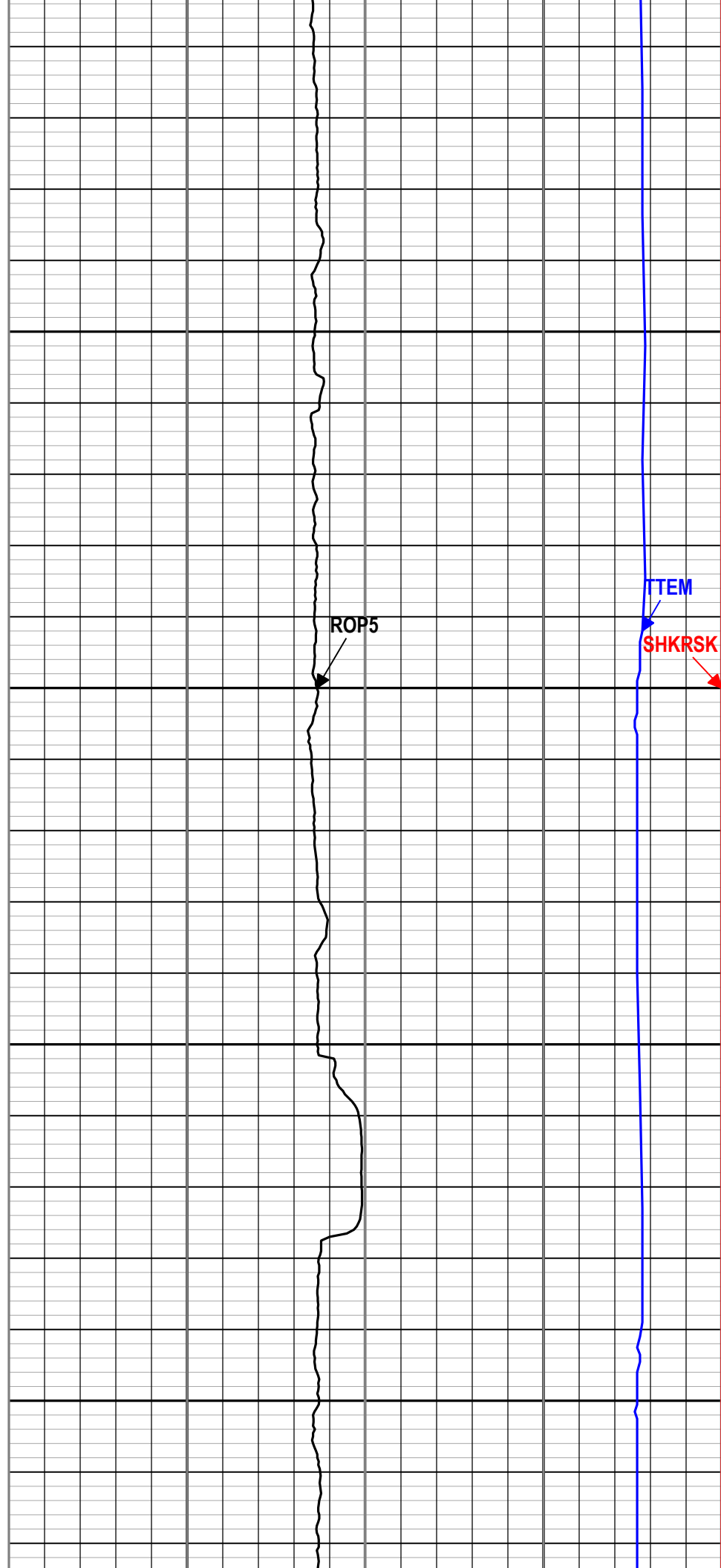
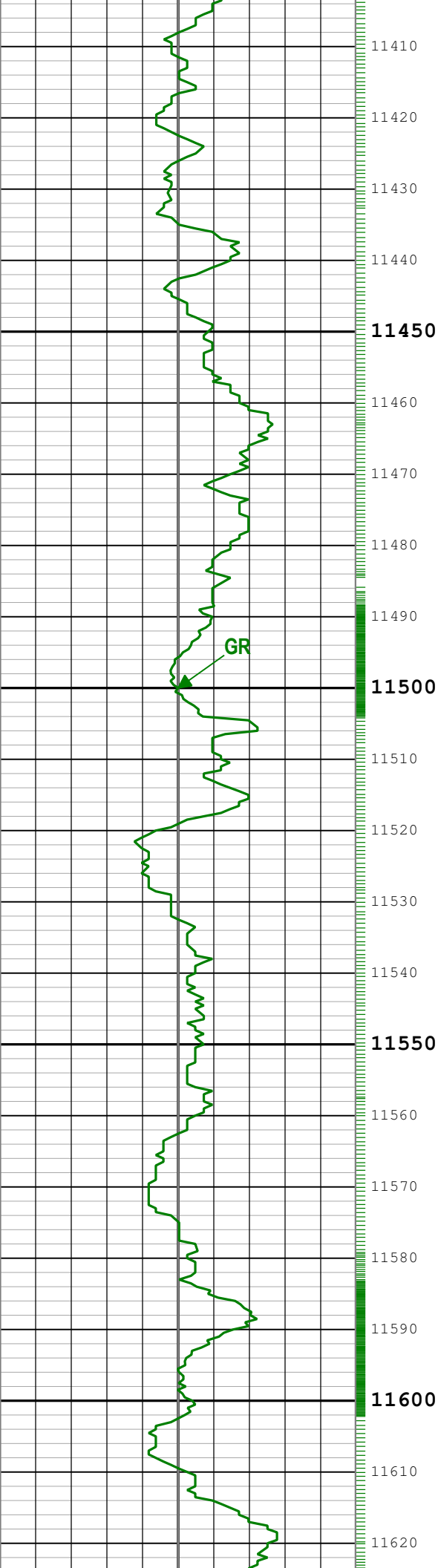


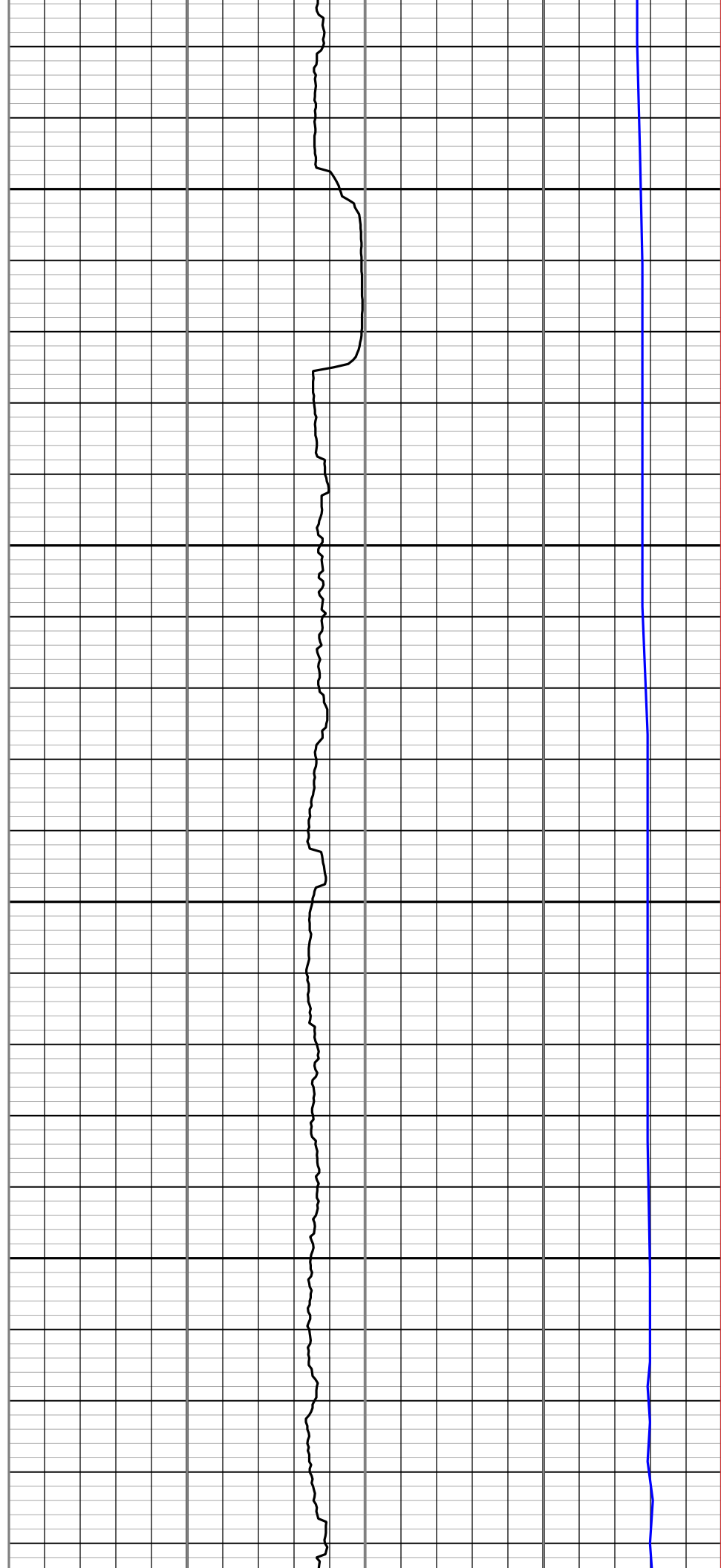
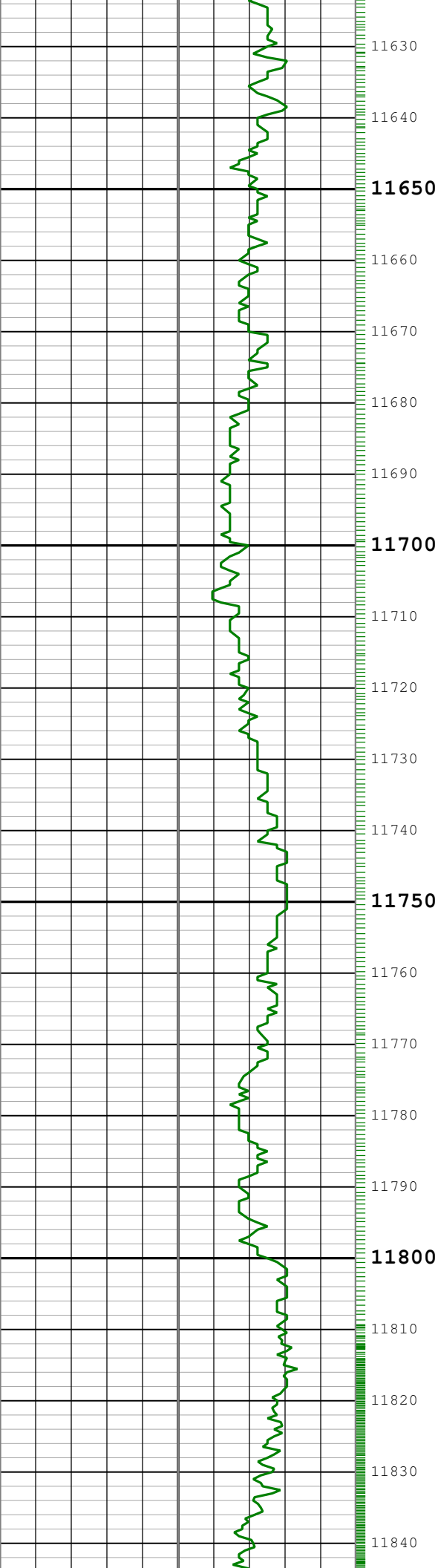


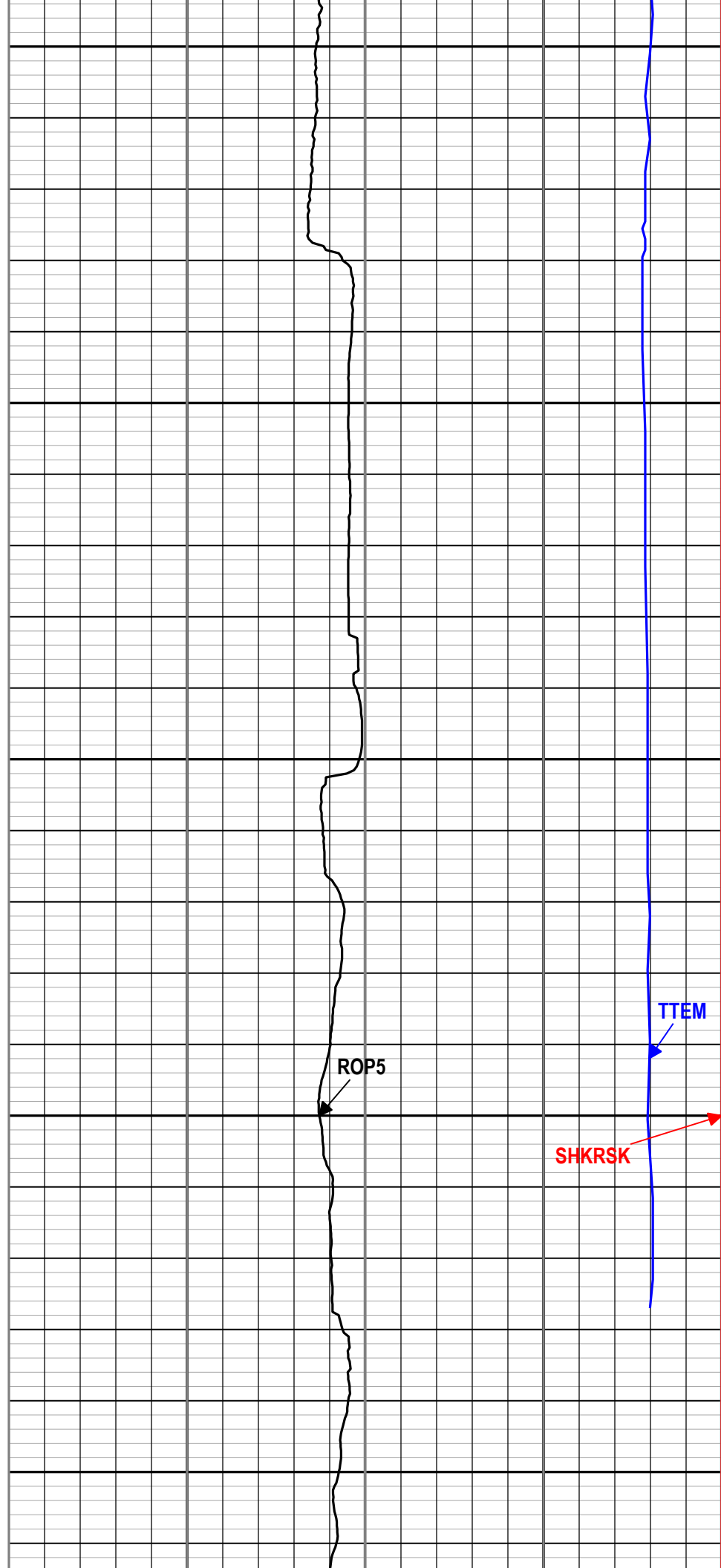
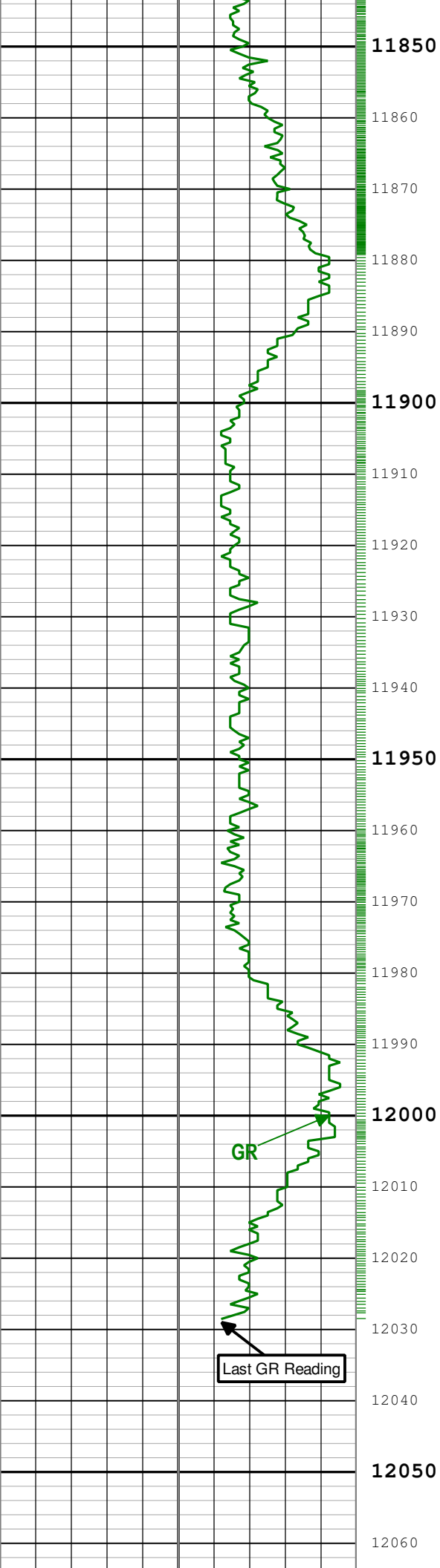


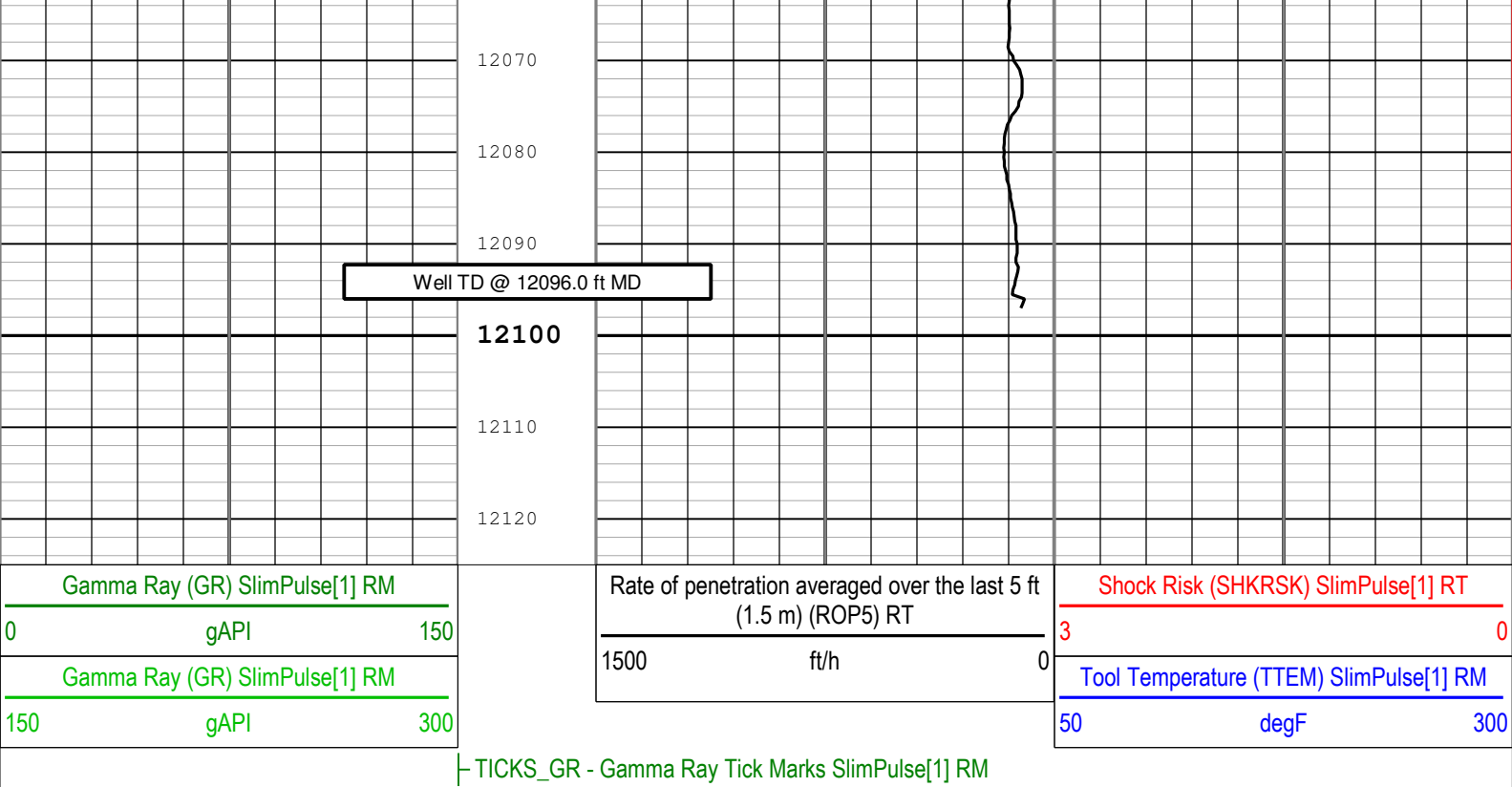












Description: Format: Log (SlimPulse EOW MD) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 02-Sep-2014 10:25:06

Channel Processing Parameters

Run001: Parameters

Parameter	Description	Tool	Value	Unit
BS	Bit Size	DNMSESSION	8.75	in
DFD	Drilling Fluid Density	Borehole	8.85	lbm/gal
GR_SRC	GR Source Selection	SPULSE-GEN	GAMMA_EXT	

Run002: Parameters

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

Run002Time Zoned Parameters

Pass Drilling

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
DFD	8.8	25-Aug-2014 01:31:16	25-Aug-2014 14:00:00	1708.25	4558.25
DFD	9.3	25-Aug-2014 14:00:00	26-Aug-2014 02:30:00	4558.25	6345.75
DFD	10.1	26-Aug-2014 02:30:00	26-Aug-2014 15:40:33	6345.75	6348

All depth are at tool zero.

Run003: Parameters

Parameter	Description	Tool	Value	Unit
BS	Bit Size	DNMSESSION	8.75	in
DFD	Drilling Fluid Density	Borehole	10.5	lbm/gal
GR_SRC	GR Source Selection	SPULSE-GEN	GAMMA_EXT	

Run004: Parameters

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

Run004Depth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	8.75	7428.8	7552
BS	6.125	7552	12096

All depth are actual.

Run004Time Zoned Parameters

Pass Drilling

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
DFD	10.6	30-Aug-2014 12:08:50	31-Aug-2014 00:30:00	7542.17	9174
DFD	10.8	31-Aug-2014 00:30:00	31-Aug-2014 14:00:00	9174	10647.42
DFD	10.9	31-Aug-2014 14:00:00	01-Sep-2014 00:30:03	10647.42	11564.83
DFD	10.8	01-Sep-2014 00:30:03	01-Sep-2014 19:56:06	11564.83	12097.17

All depth are at tool zero.

Tool Control Parameters

Calibration Report

SPULSE-GEN (SlimPulse with Generic Collar) Calibration - Run Run001

Primary Equipment :	Elec. cartridge, 150C max with GR	SPEC	989
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GRGain - Gamma Ray: Blanket

Master (Time Frame File): 12:00:00 28-May-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Gamma Ray Calibration Gain		Master	1.0000	0.9000	1.0395	1.1000	

SPULSE-GEN (SlimPulse with Generic Collar) Calibration - Run Run002

Primary Equipment :	Elec. cartridge, 150C max with GR	SPEC	893
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GRGain - Gamma Ray: Blanket

Master (Time Frame File): 12:00:00 19-Jul-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Gamma Ray Calibration Gain		Master	1.0000	0.9000	1.0483	1.1000	

SPULSE-GEN (SlimPulse with Generic Collar) Calibration - Run Run003

Primary Equipment :	Elec. cartridge, 150C max with GR	SPEC	893
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GRGain - Gamma Ray: Blanket

Master (Time Frame File): 12:00:00 19-Jul-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Gamma Ray Calibration Gain		Master	1.0000	0.9000	1.0483	1.1000	

SPULSE-GEN (SlimPulse with Generic Collar) Calibration - Run Run004

Primary Equipment :	Elec. cartridge, 150C max with GR	SPEC	989
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GRGain - Gamma Ray: Blanket

Master (Time Frame File): 12:00:00 27-Jun-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Gamma Ray Calibration Gain		Master	1.0000	0.9000	1.0774	1.1000	

Field: Wattenberg
County: Weld
State: Colorado
Country: USA



Schlumberger

SlimPulse-Gamma Ray

2 in./ 100 ft and 5 in./ 100 ft Measured Depth

Recorded Mode, Composite Log