

SlimPulse-Gamma Ray

2 in./ 100 ft and 5 in./ 100 ft True Vertical Depth

Recorded Mode, Composite Log

Schlumberger

Company: Noble Energy INC

Well: Five Rivers K09-67-1HN

Field: Wattenberg

County: Weld

State: Colorado

Country: USA

Section: 9 APIN: 05-123-39480

Township: 4N Rig Name: H&P 330

Range: 66W Rig Type: Top Drive

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

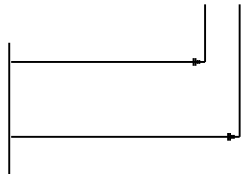
FL1: Latitude: N 40° 19' 40.692", Easting: 3197665.963 ftUS

FL2: Longitude: W 104° 47' 27.672", Northing: 1363110.487 ftUS

Log Measured From: - Drill Floor: 4730.00 ft

Ground Level: 4700.00 ft

Permanent Datum: - Mean Sea Level



Acquisition Dates: 19-Jul-2014 -- 25-Jul-2014

Other Services:

Log Interval: 635.00(ft)TVD to 7101.00(ft)TVD

Surveys / Continuous D&I

Index Types: True Vertical Depth

Downhole Temperature

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

Downhole Shocks

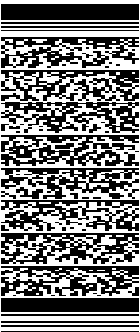
Depth Source: Driller's Depth

Directional Drilling

Depth Sensor: PASON

Print Type: Final

Spud Date: 18-Jul-2014



Disclaimer

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

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Borehole Size/Casing Record						
Bit						
Bit Size (in)	8.75	6.125				
Top Driller (ft)	0	7358				
Bottom Driller (ft)	7358	12260				
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	626				
Bottom Driller (ft)	626	7347				

Operational Run Summary						
Parameter (unit)	Run001	Run002	Run003	Run004		
Date Log Started	19-Jul-2014	20-Jul-2014	21-Jul-2014	23-Jul-2014		
Time Log Started	07:39:00	18:14:49	15:12:37	07:57:42		
Date Log Finished	20-Jul-2014	21-Jul-2014	22-Jul-2014	25-Jul-2014		
Time Log Finished	11:34:18	09:04:08	09:30:32	15:48:31		
Bit Size (in)	8.750	8.750	8.750	6.125		
Bit Start Depth (ft)	636.00	5955.00	6924.00	7358.00		
Bit Stop Depth (ft)	5955.00	6924.00	7358.00	12260.00		
Top Log Interval (ft)	586.00	5904.00	6865.00	7299.00		
Bottom Log Interval (ft)	5904.00	6865.00	7299.00	12194.00		
Max Hole Deviation (deg)	12.64	20.76	75.07	94.09		
Azimuth of Max Deviation (deg)	305.59	85.94	75.58	99.09		
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	Mark Wilson	Mark Wilson	Zach Brunson		
Witnessed By	Lane Fullenwider	Lane Fullenwider	Lane Fullenwider	Lane Fullenwider		
Service Order Number	14CCO0571	14CCO0571	14CCO0571	14CCO0571		

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)	212	212	199.4	258.8		
Source of Sample	Active Tank	Active Tank	Active Tank	Active Tank		

Salinity (ppm)	2100	2100	2100	2300		
Density (lbm/gal)	8.7	10.2	10.5	10.65		
Funnel Viscosity (s)	29	36	38	35		
Fluid Loss (cm3)	0	0	0	0		
PH	11.2	10.1	10	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)	0.07 @ 212	0.07 @ 212	0.07 @ 212	0.07 @ 212		
RMF @ BHT (ohm.m@degF)	0.05 @ 212	0.05 @ 212	0.05 @ 212	0.05 @ 212		
RMC @ BHT (ohm.m@degF)	NaN @ 212	NaN @ 212	NaN @ 212	NaN @ 212		
Total Solid (%)	2.1	9.3	10.1	4.5		
High Gravity Solids (%)	0.6	4.6	6.4	2		


Remarks and Equipment Summary

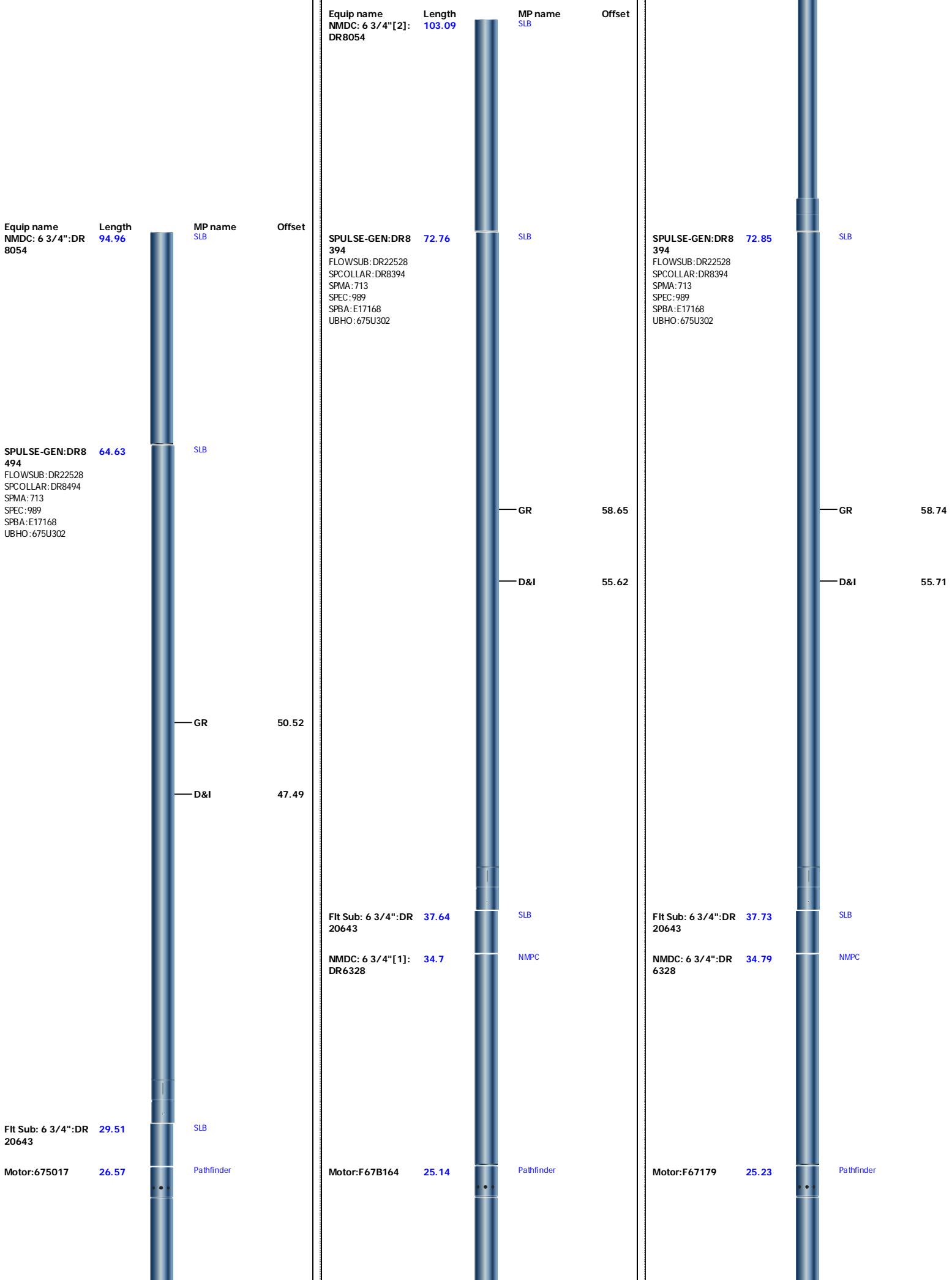
Data presented is from tool memory and acquired while drilling from 636.0 ft MD to 12260.0 ft MD

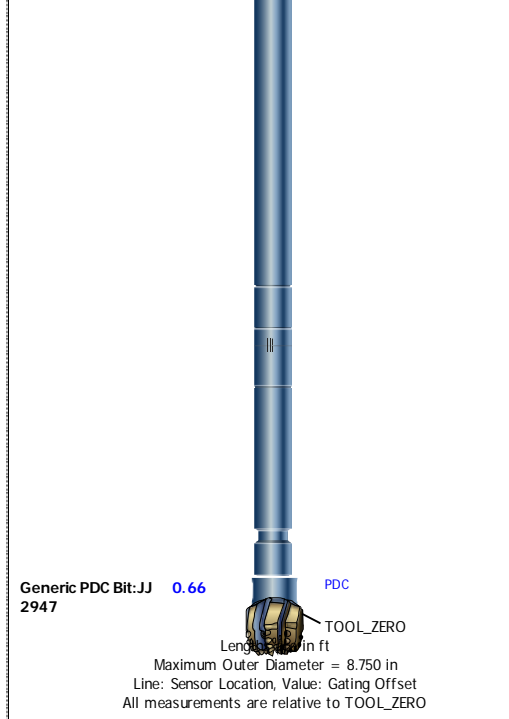
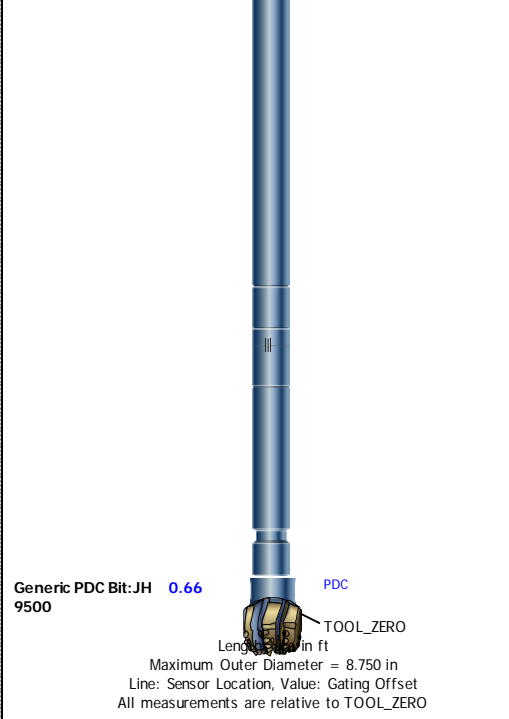
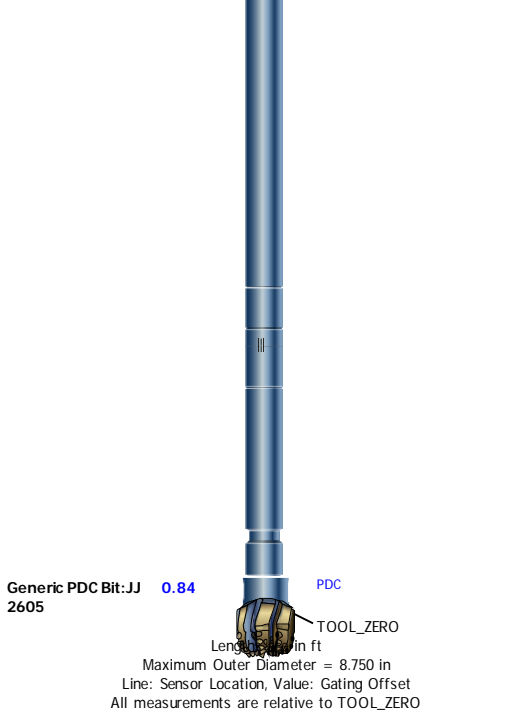
Depth Reference: Driller's Depth

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 Curve to Landing Point	Run Objective: Drill Curve to Landing Point
Bit to GR: 50.52 Bit to DNI: 47.49	Bit to GR: 58.65 Bit to DNI: 55.62	Bit to GR: 58.74 Bit to DNI: 55.71
Drilled from 636.0 ft MD to 5995.0 ft MD Logged from 586.0 ft MD to 5904.0 ft MD	Drilled from 5995.0 ft MD to 6924.0 ft MD Logged from 5904.0 ft MD to 6865.0 ft MD	Drilled from 6924.0 ft MD to 7358.0 ft MD Logged from 6865.0 ft MD to 7299.0 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: 28-May-2014 SlimPulse D&I Calibrated: 19-Apr-2014	SlimPulse Version Software: Version 11 SlimPulse GR Calibrated: 11-Apr-2014 SlimPulse D&I Calibrated: 04-Jan-2013
PathFinder, a Schlumberger Co Personnel: DD: Chris Sisseck, Mike Hikes MWD: Mark Wilson, Zach Brunson	PathFinder, a Schlumberger Co Personnel: DD: Chris Sisseck, Mike Hikes MWD: Mark Wilson, Zach Brunson	PathFinder, a Schlumberger Co Personnel: DD: Chris Sisseck, Mike Hikes MWD: Mark Wilson, Zach Brunson
Reason for POOH: Penetration Rate	Reason for POOH: Hole Problems	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 R18825</div> </div> <div> <div>Length</div> <div>103.64</div> </div> <div> <div>MP name</div> <div>NMFC</div> </div> <div>Offset</div> </div> 





Run004: Remarks

Run Objective: Drill Lateral Section to TD

Bit to GR: 65.42
Bit to DNI: 62.39

Drilled from 7358.0 ft MD to 12260.0 ft MD
Logged from 7299.0 ft MD to 12194.0 ft MD

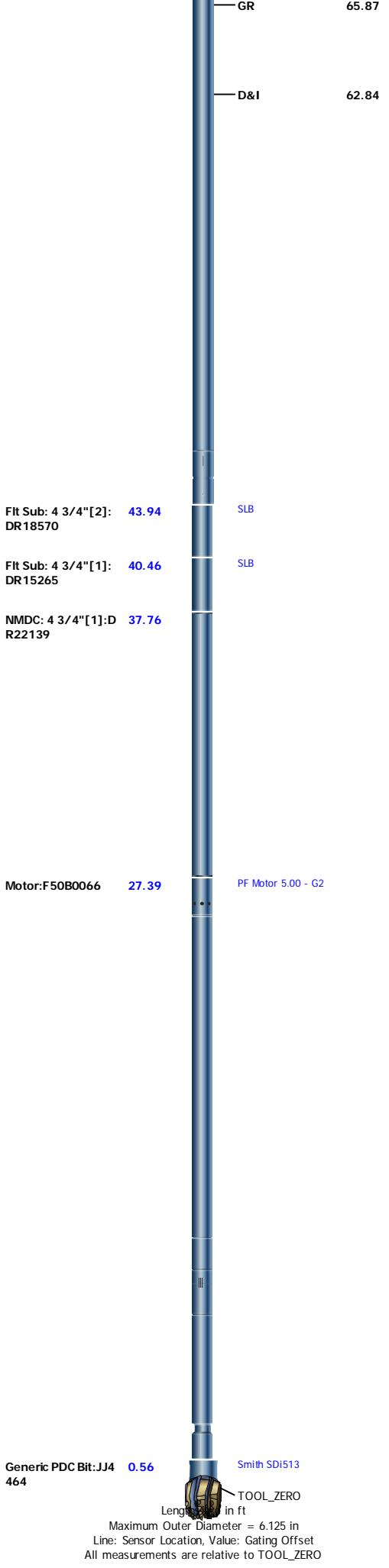
SlimPulse Version Software: Version 11
SlimPulse GR Calibrated: 11-Apr-2014
SlimPulse D&I Calibrated: 04-Jan-2013

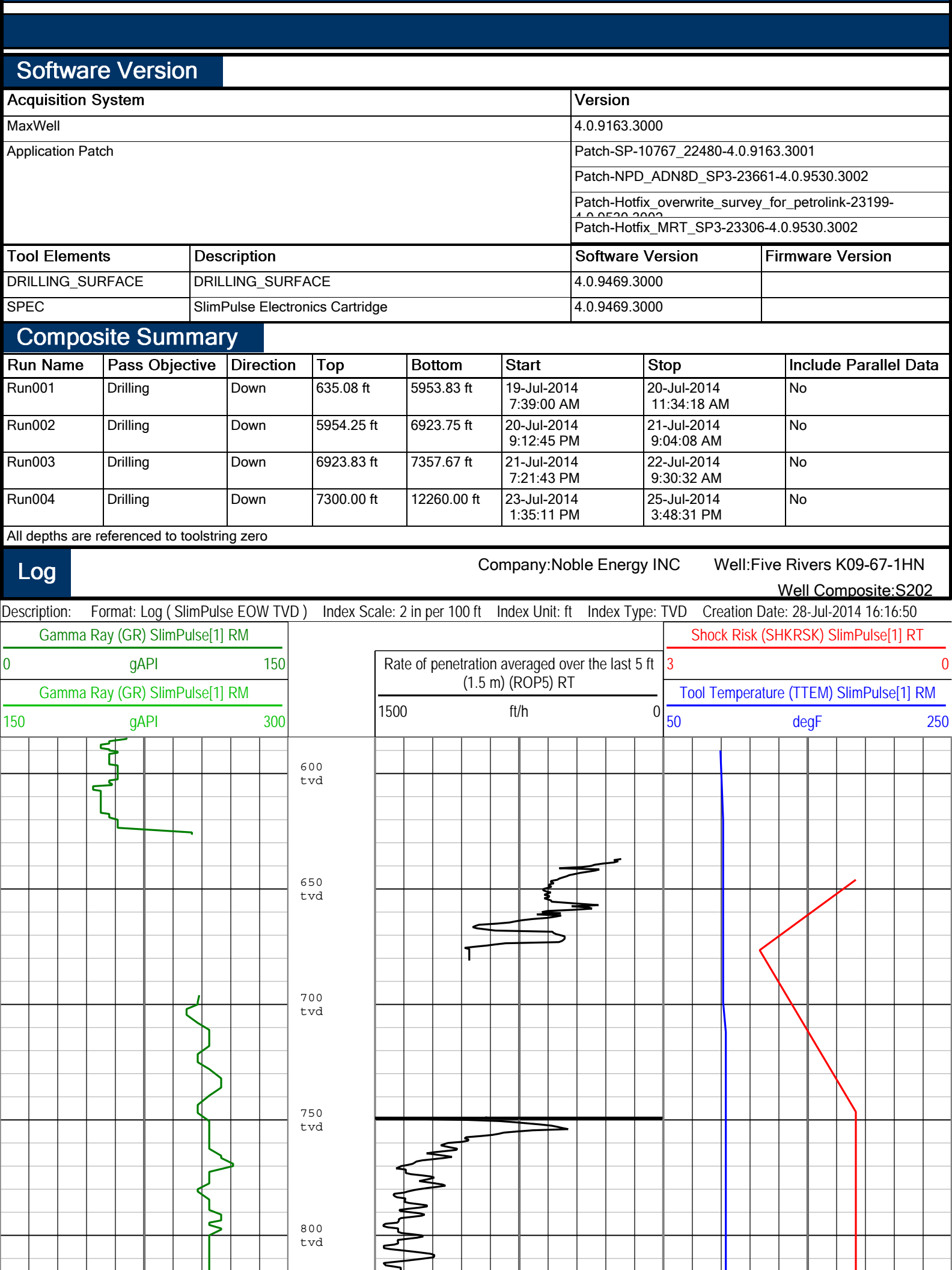
PathFinder, a Schlumberger Co Personnel:
DD: Chris Sisseck, Mike Hikes
MWD: Mark Wilson, Zach Brunson

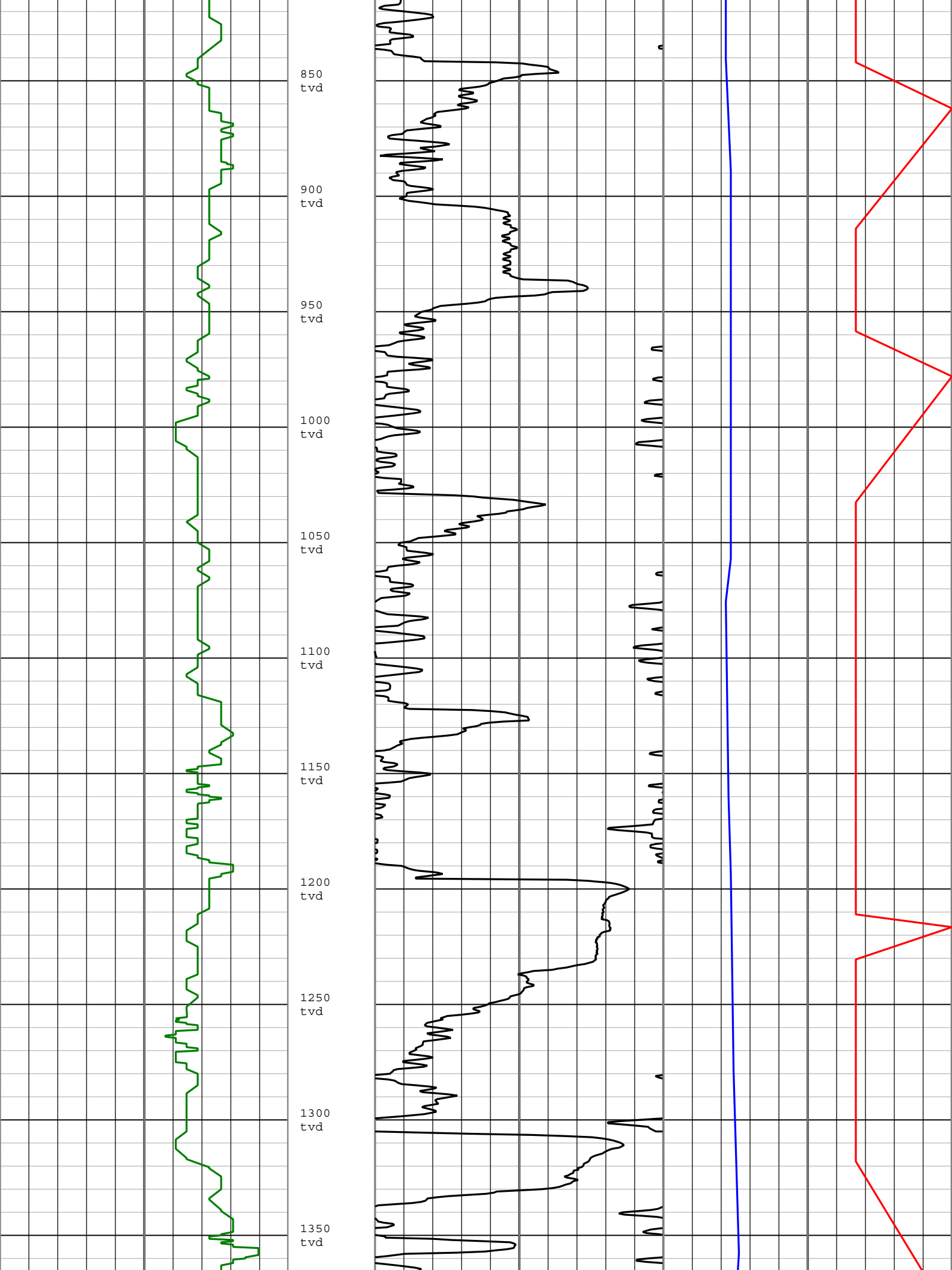
Reason for POOH: Well TD

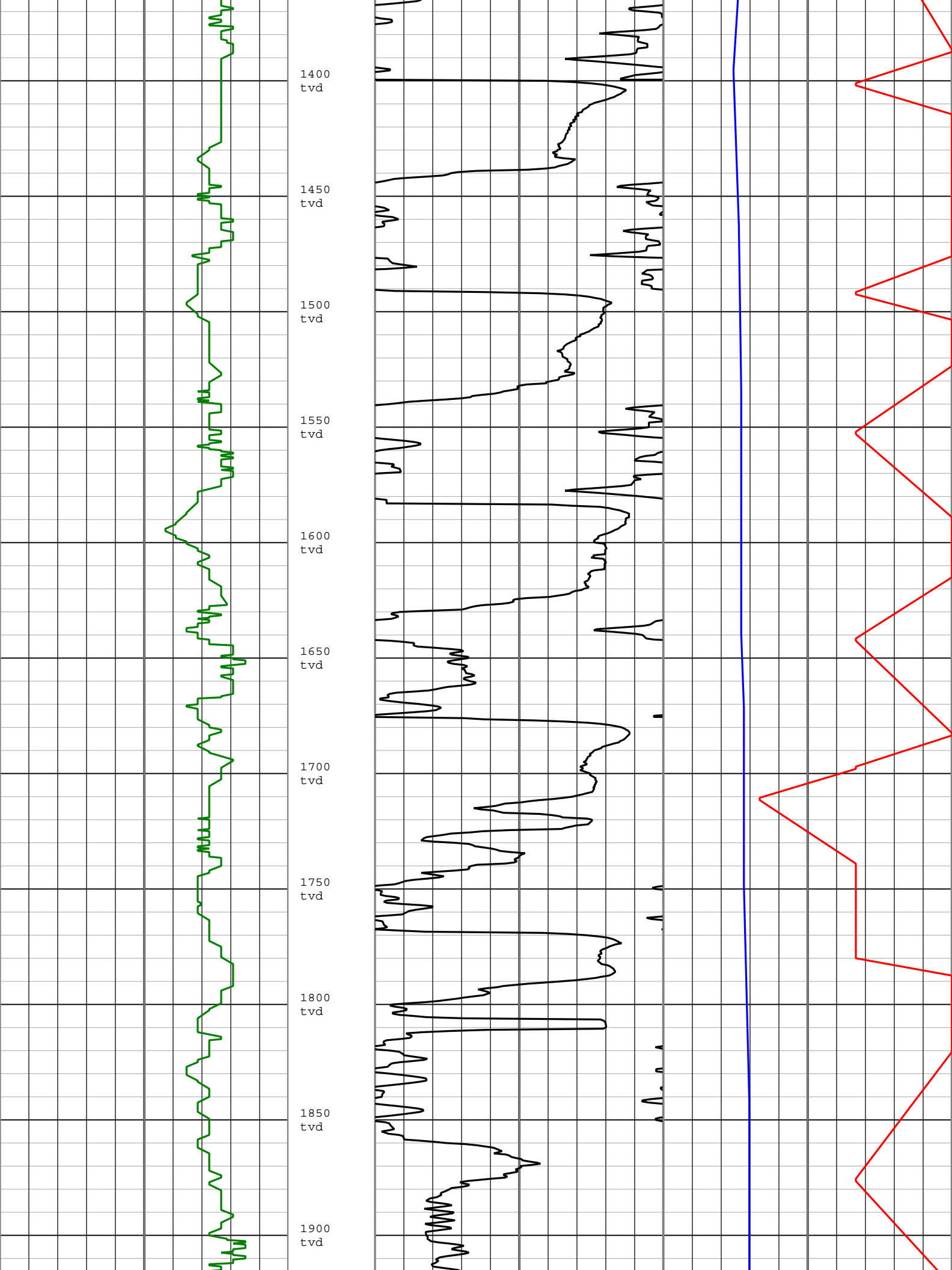
Run004: Toolstring

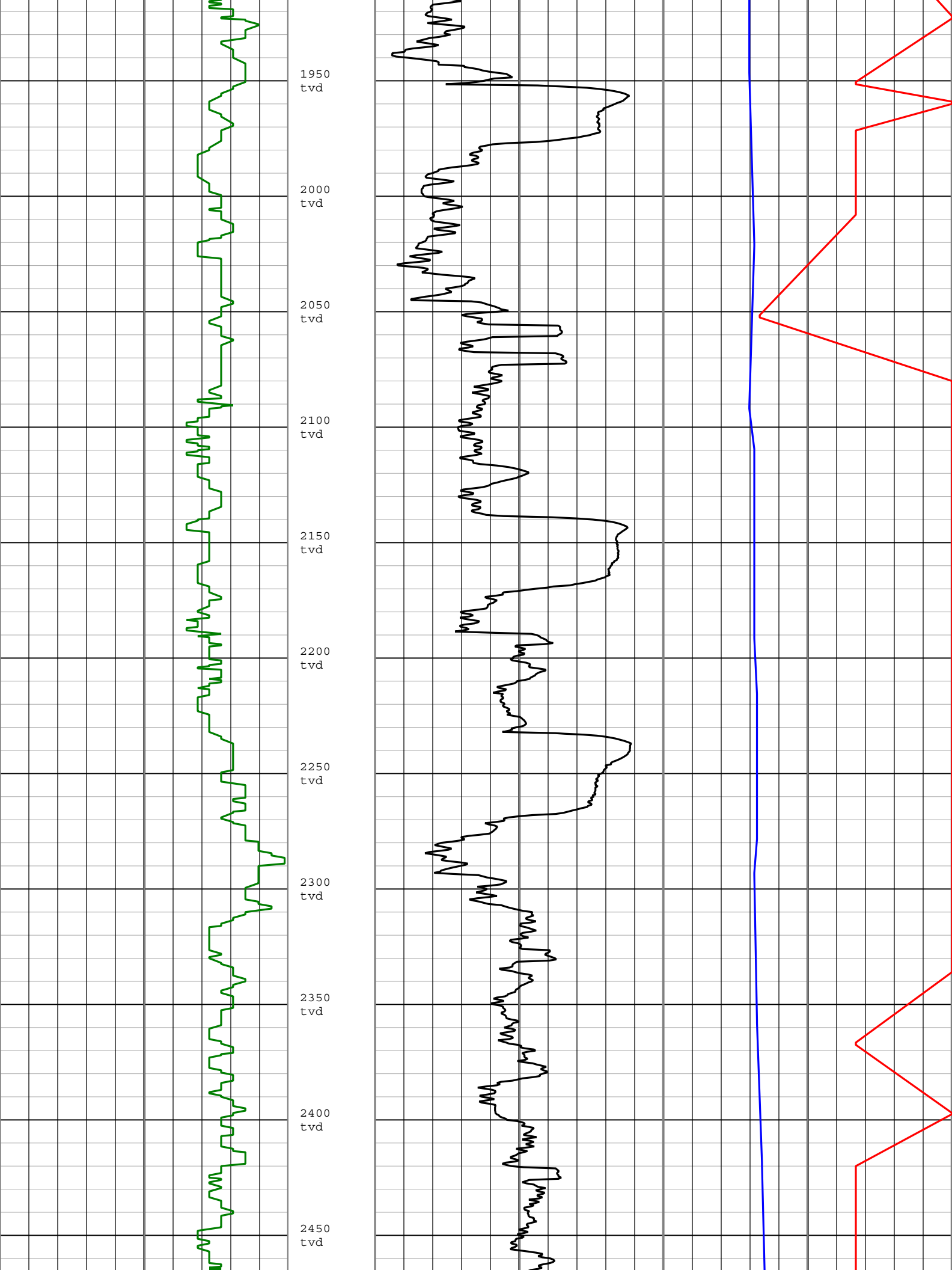
Equip name	Length	MP name	Offset
X/O: 4 3/4":DR194 72	114.23	SLB	
NMDC: 4 3/4"[2]:D R23997	110.81	SLB	
SPULSE-GEN:DR10 035	80.18		
FLWSUB:DR22097			
SPCOLLAR:DR10035			
SPMA:697			
SPEC:6191			
SPBA:Q01490			
UBHO:475U127			

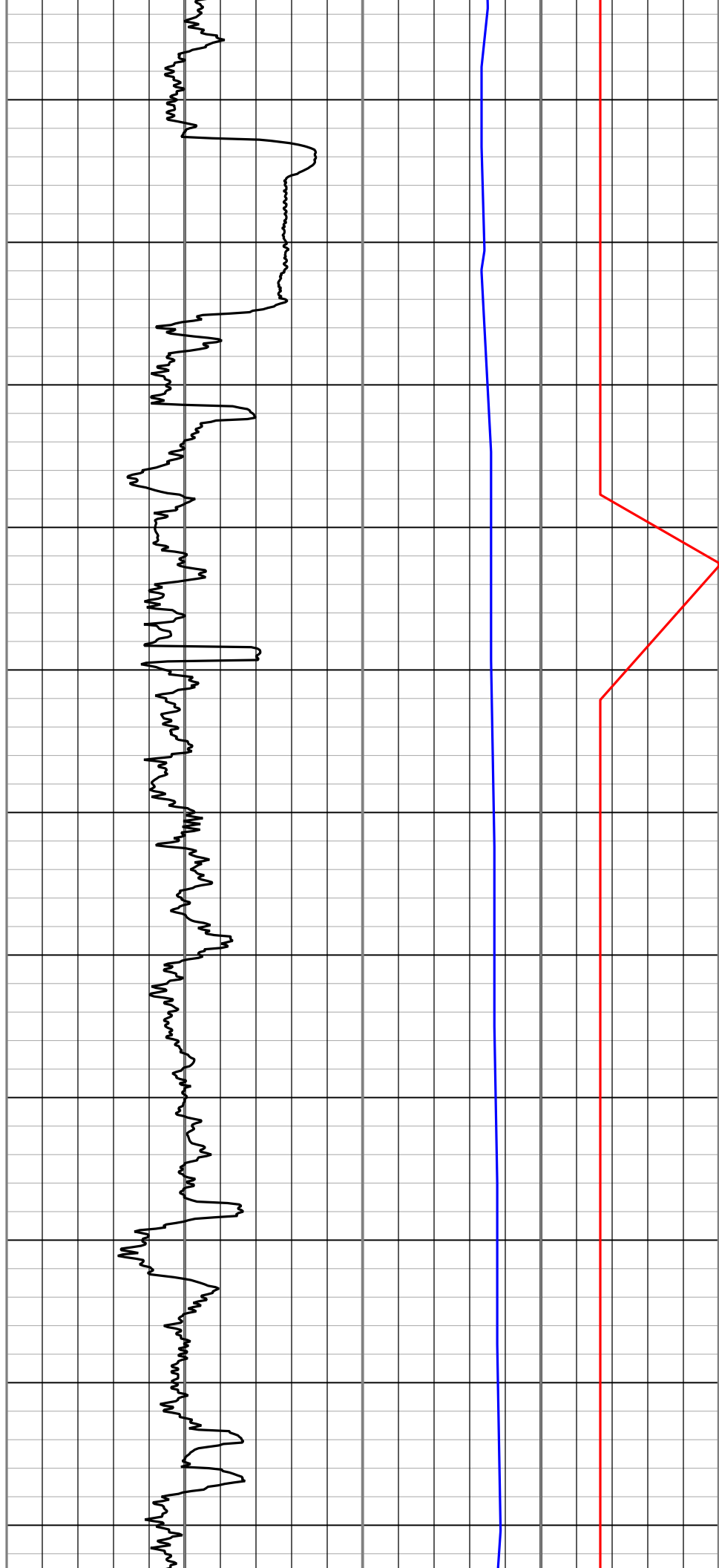
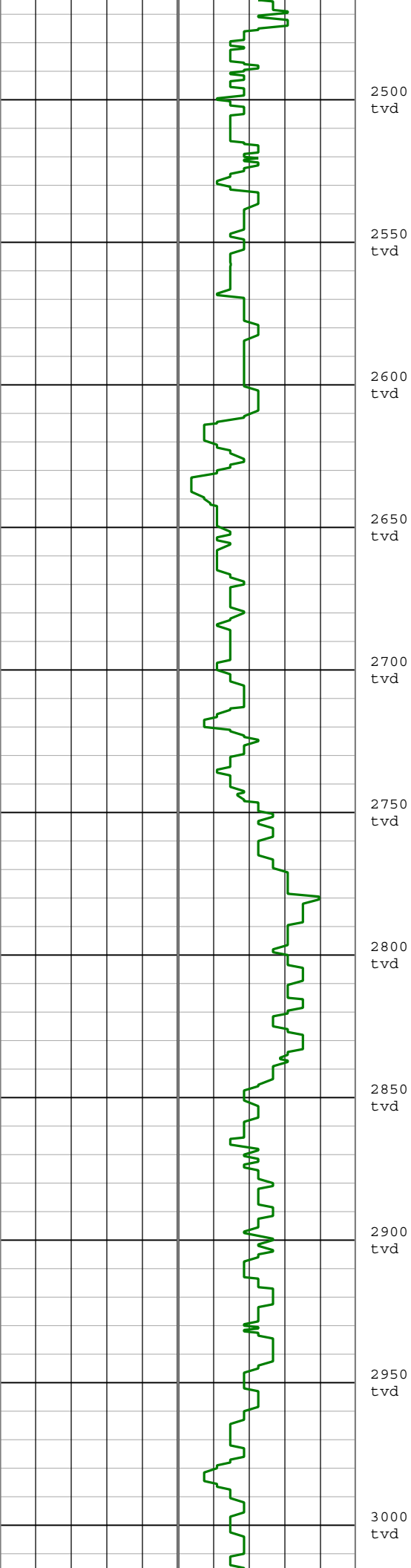


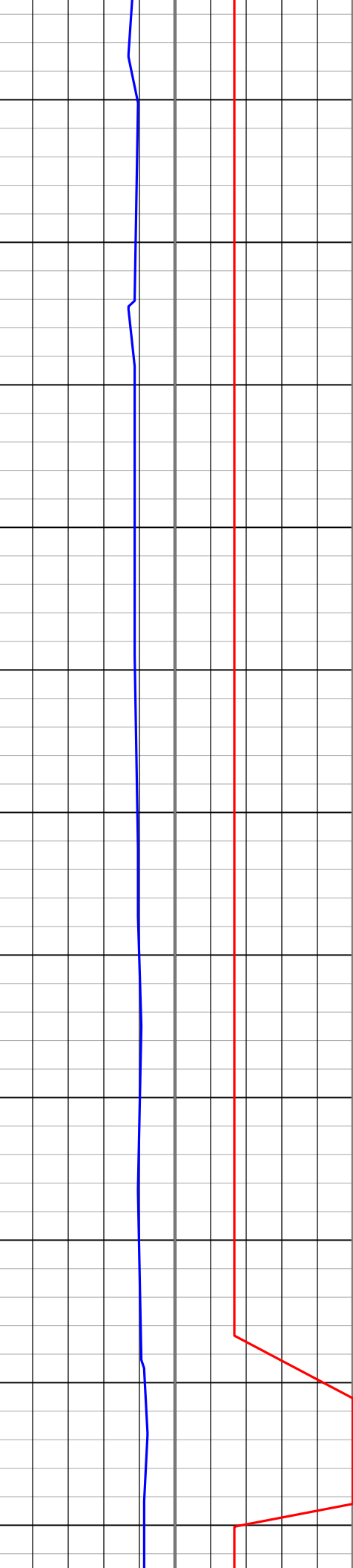
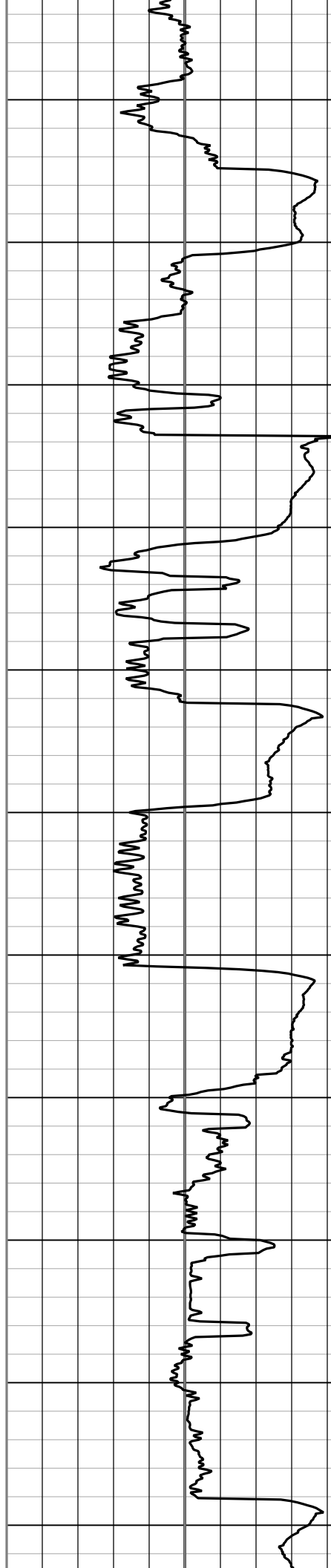
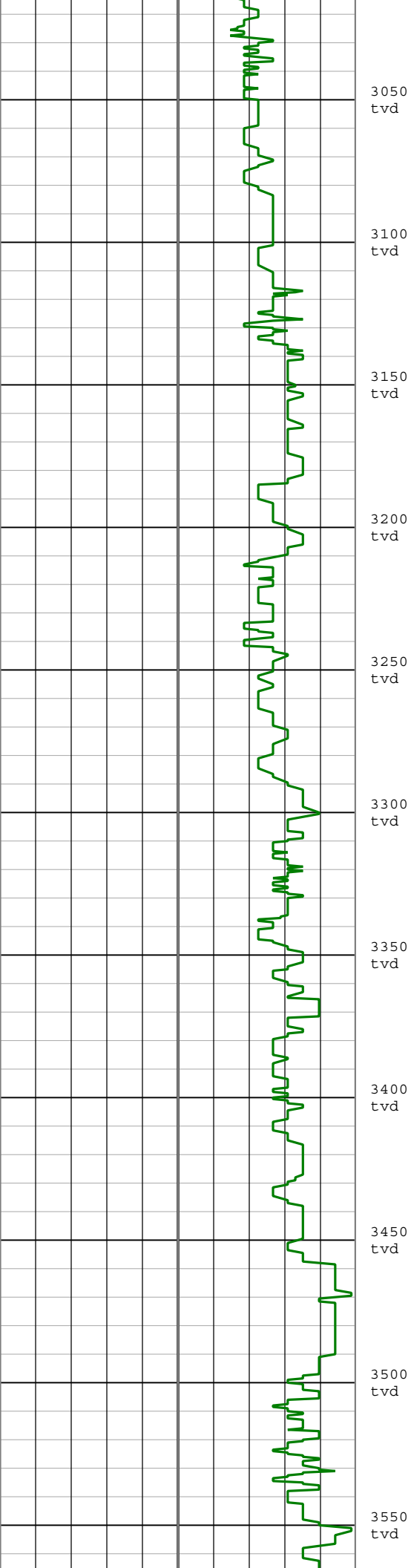


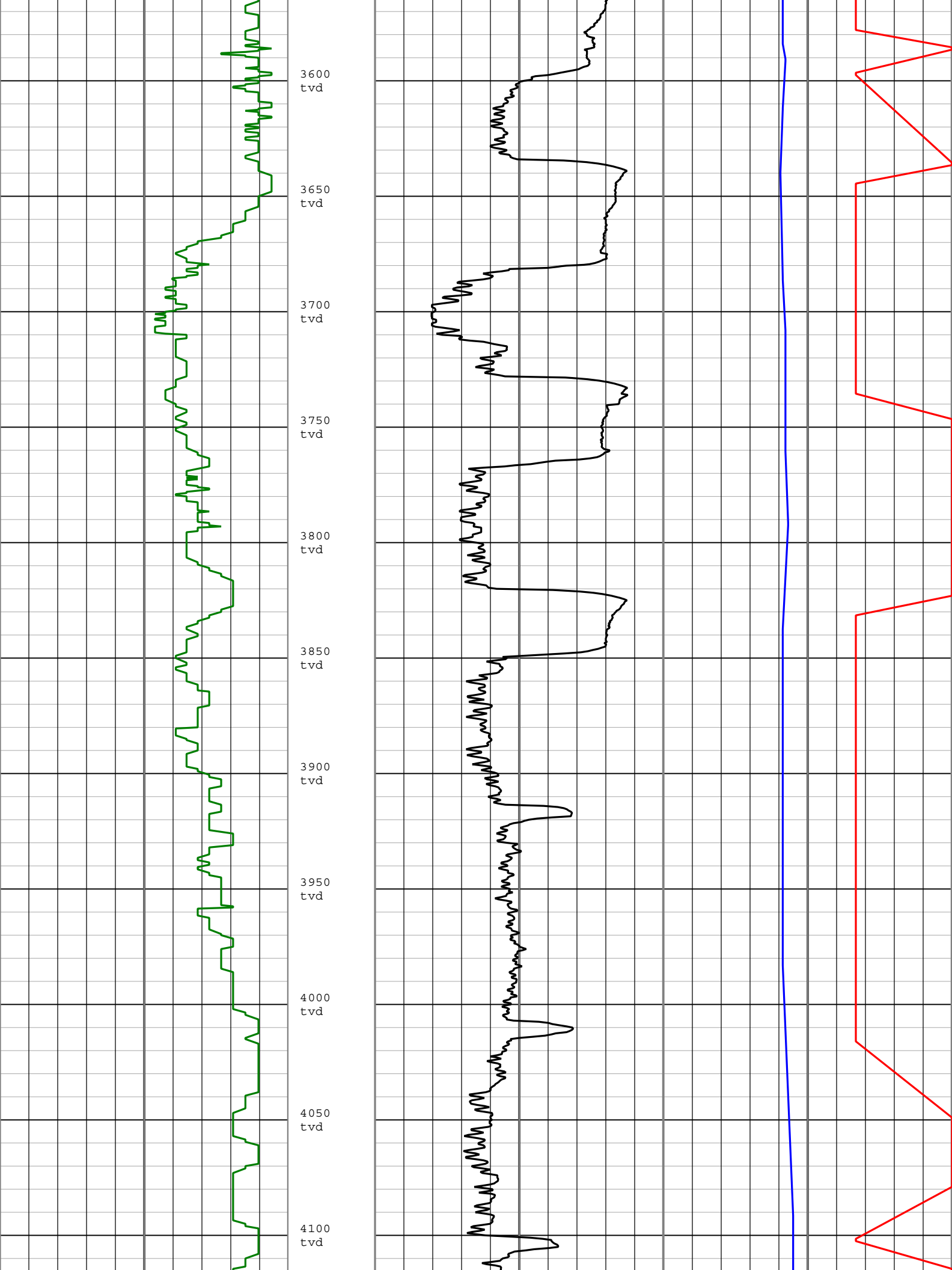


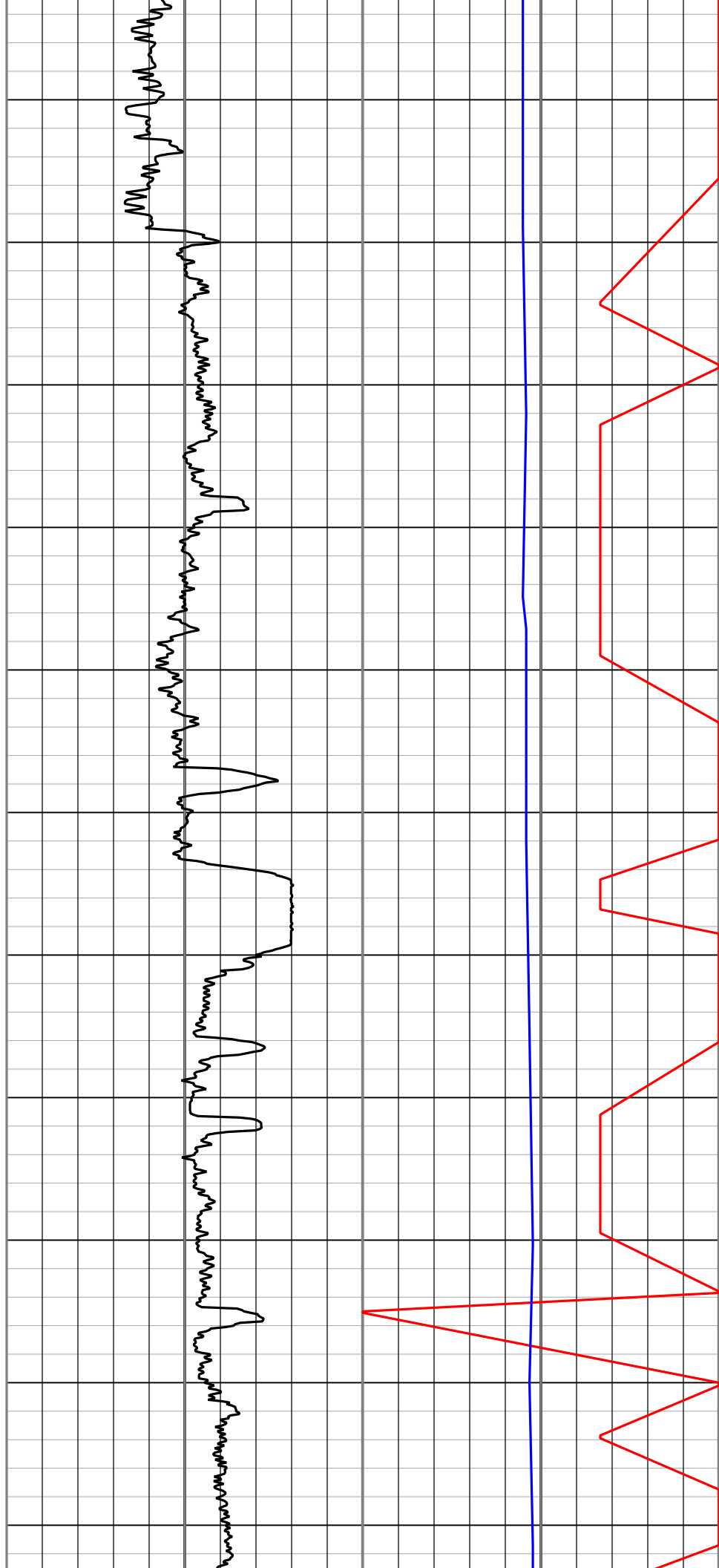
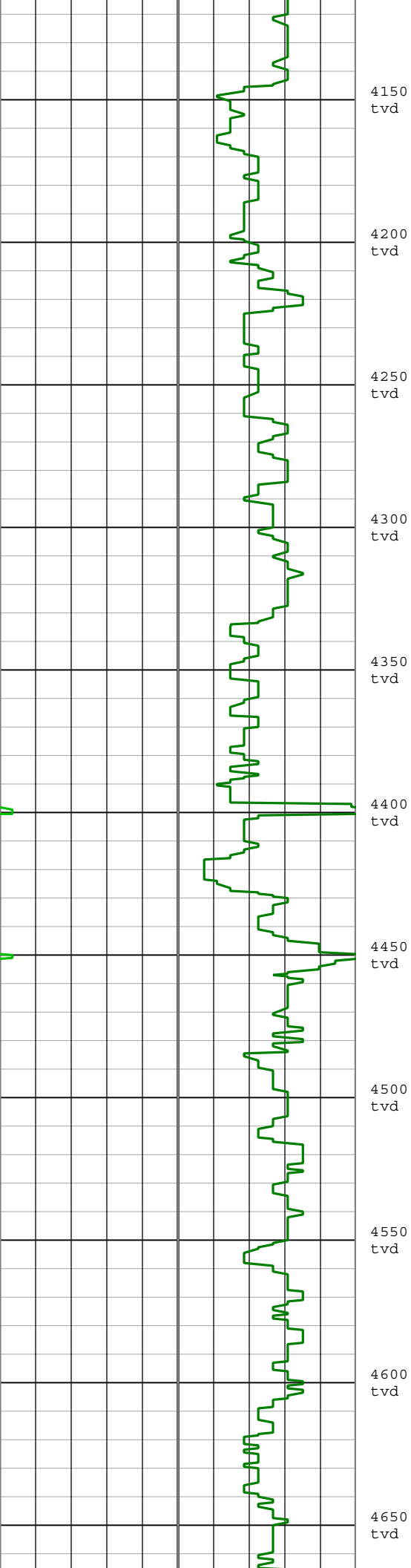


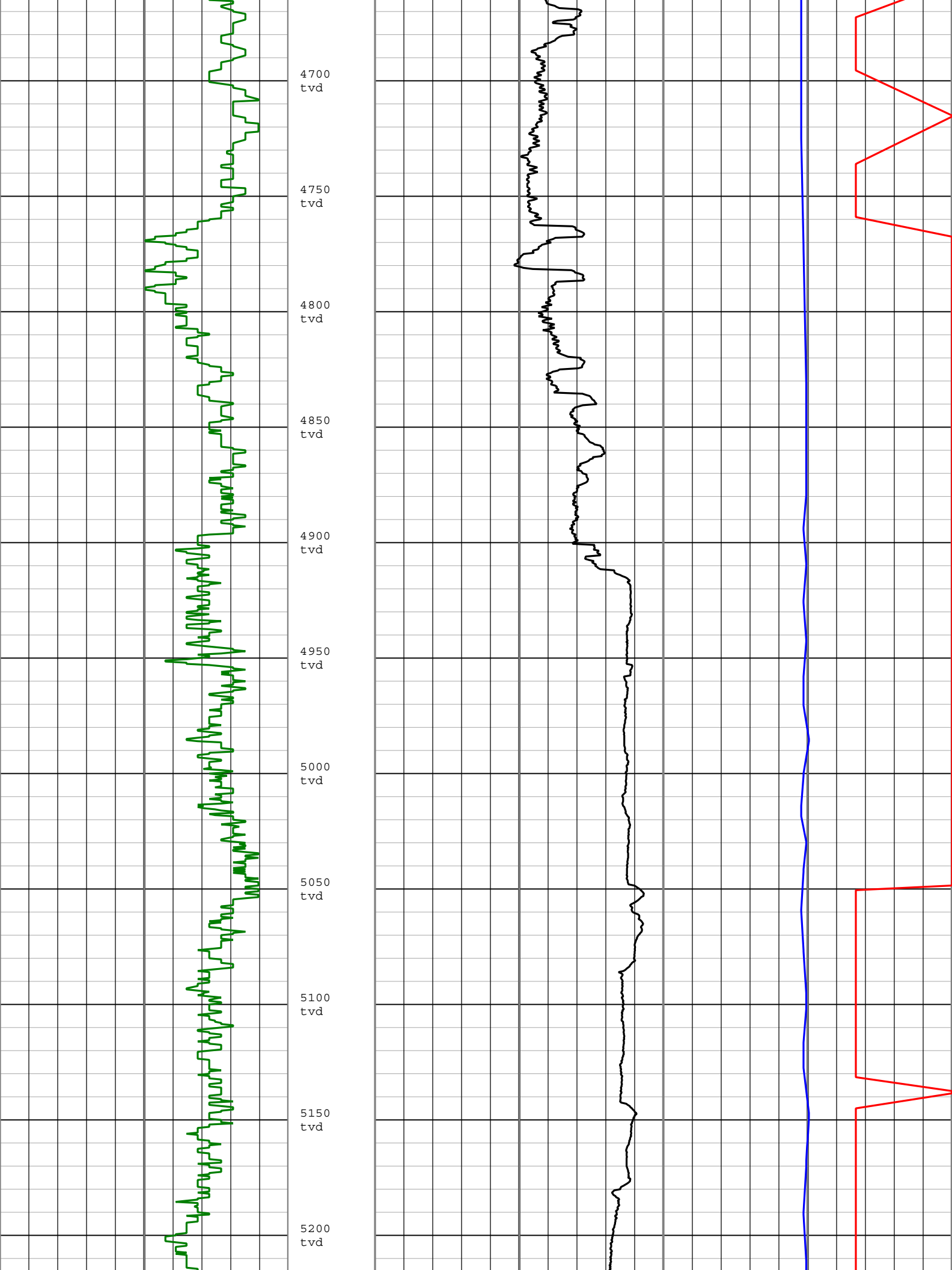


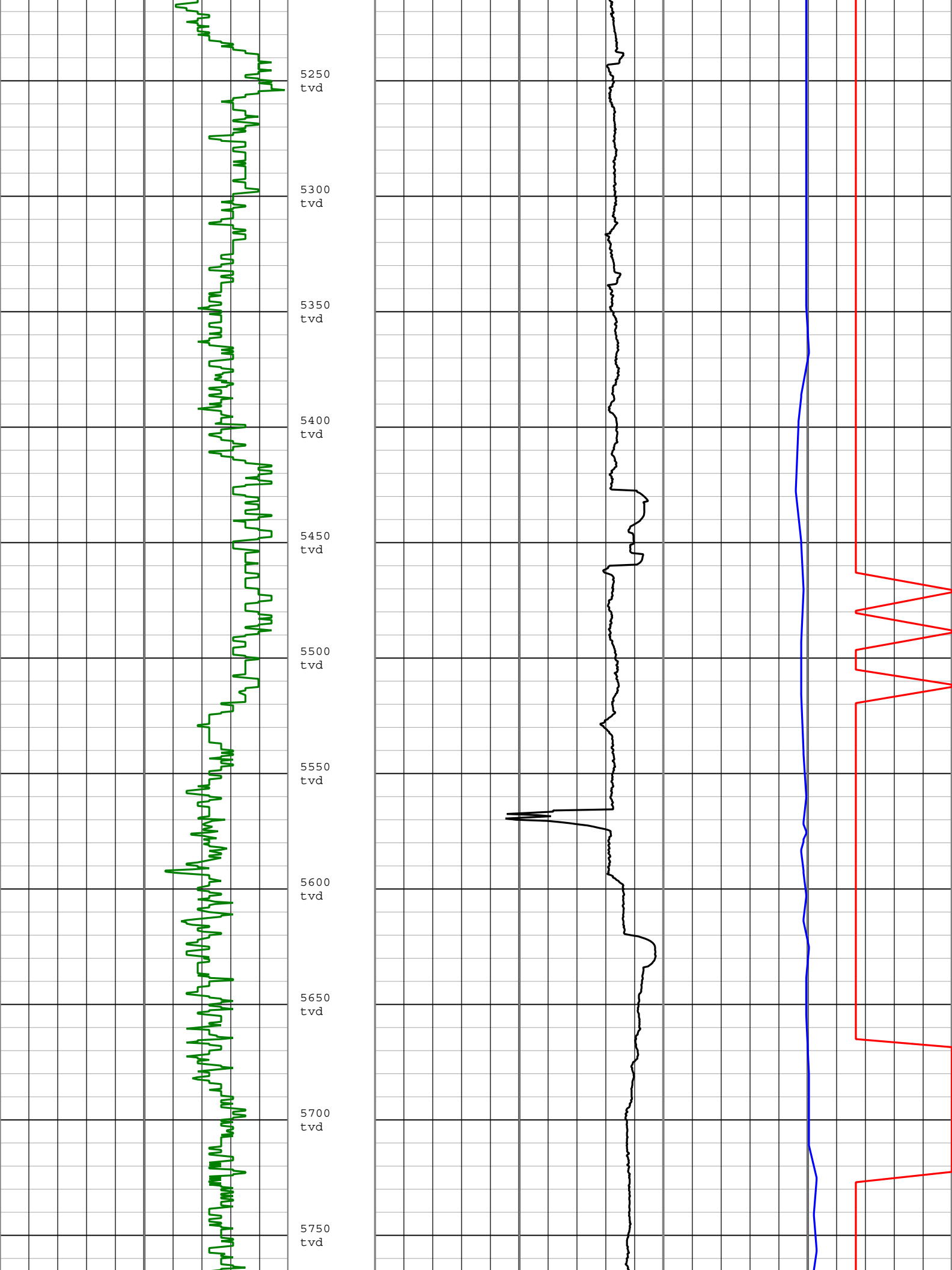


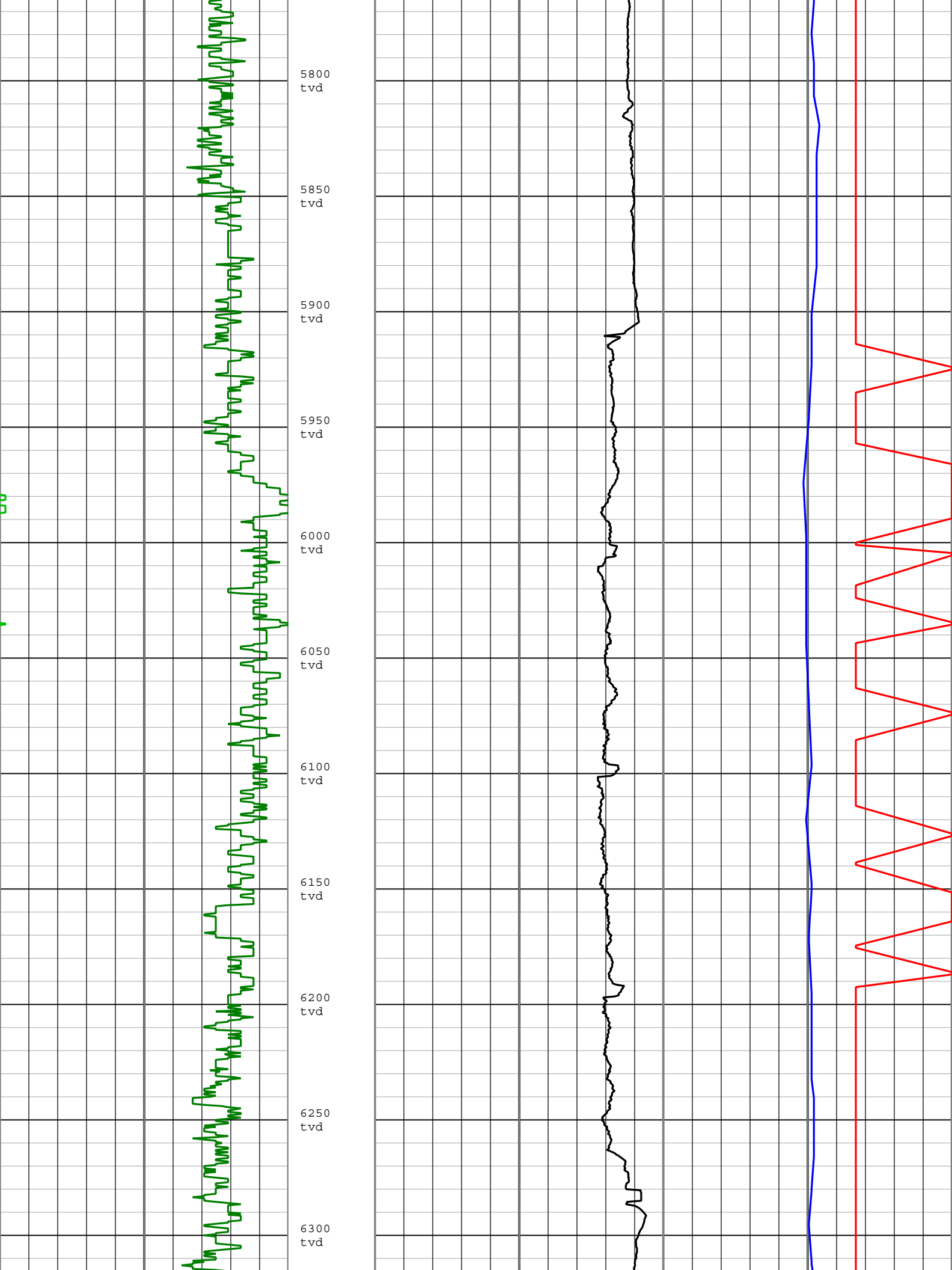


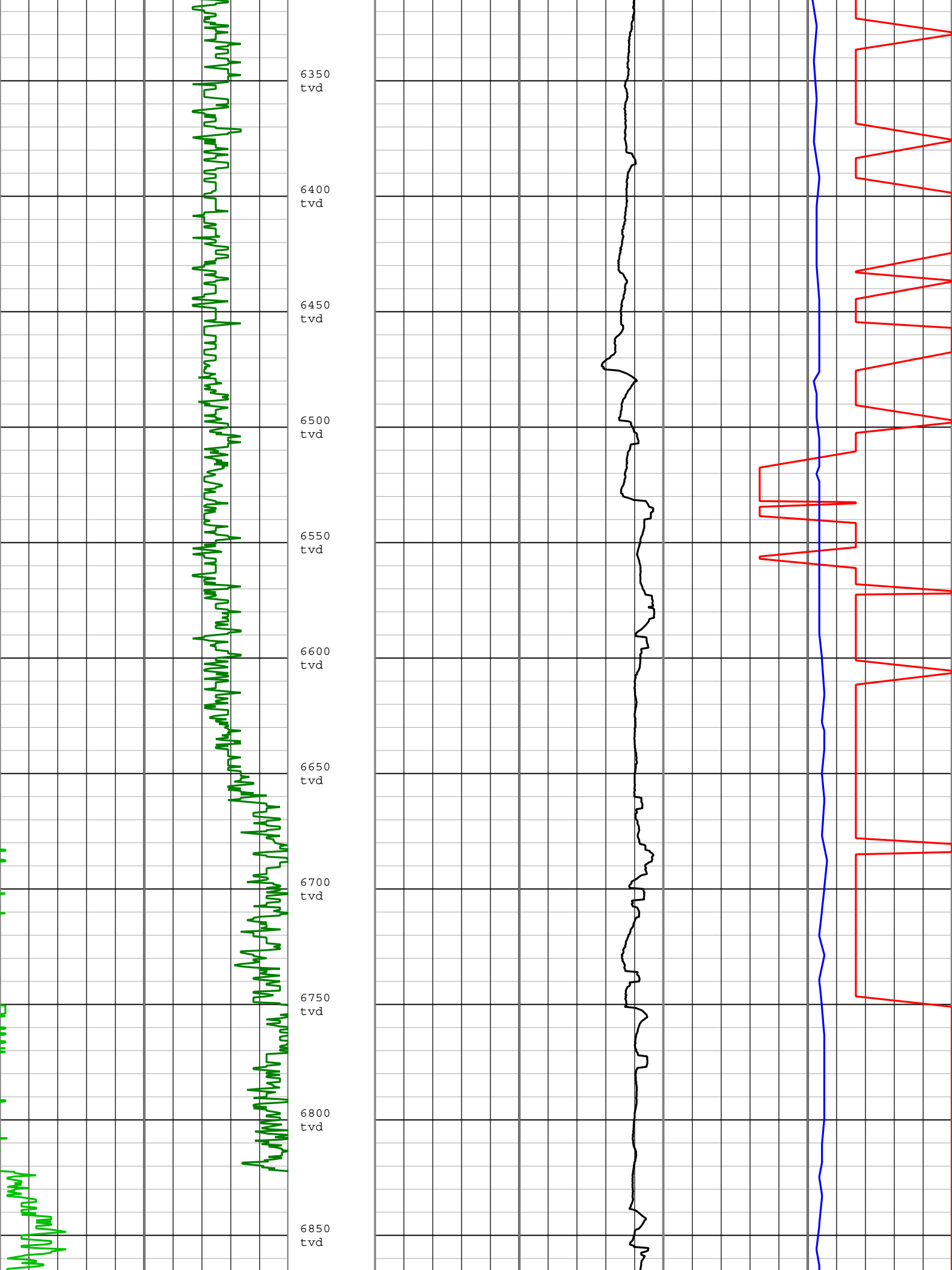


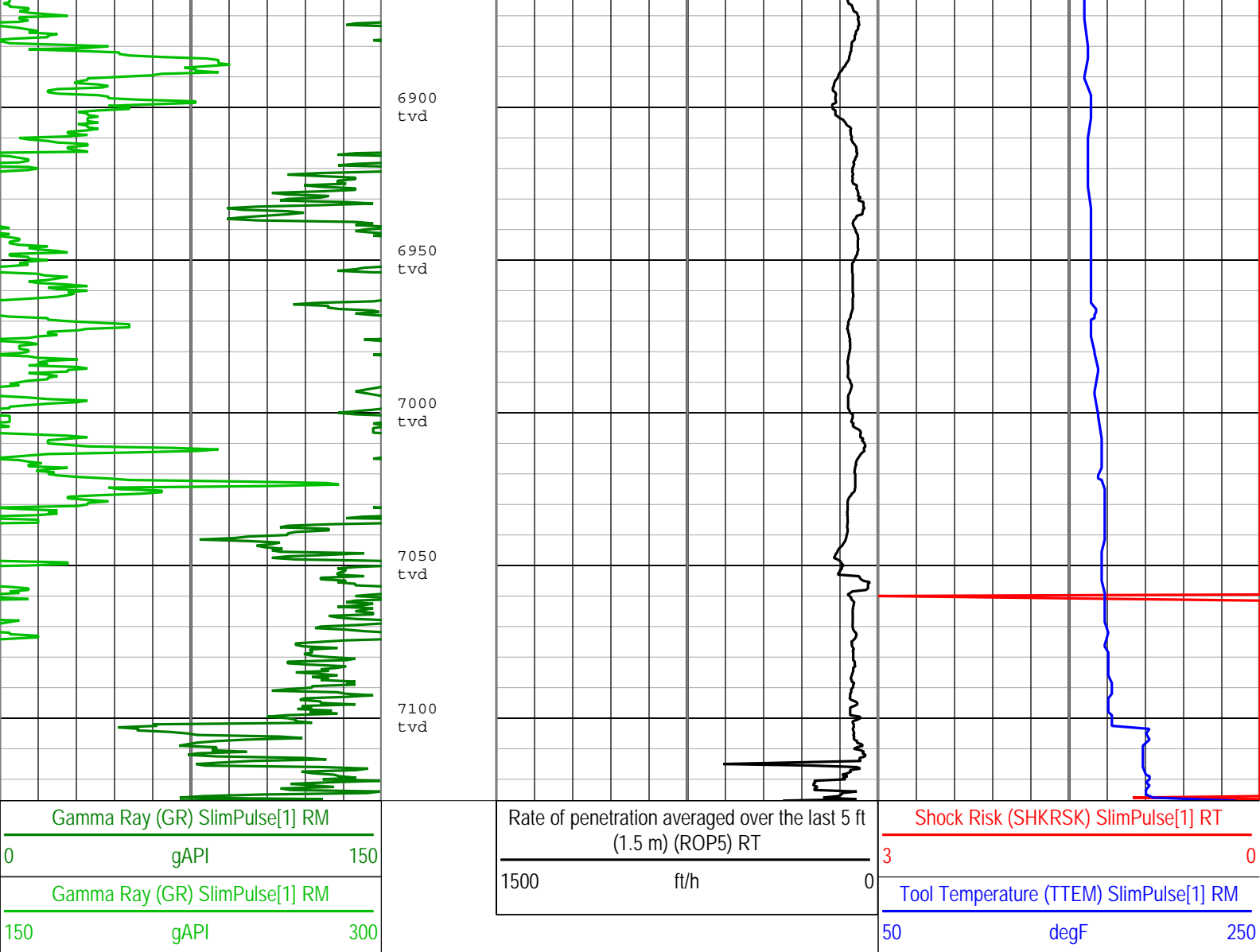












Description: Format: Log (SlimPulse EOW TVD) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: TVD Creation Date: 28-Jul-2014 16:16:50

Channel Processing Parameters

Run001: Parameters

Parameter	Description	Tool	Value	Unit
BS	Bit Size	DNMSESSION	8.75	in
DFD	Drilling Fluid Density	Borehole	8.7	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	10.2	lbm/gal
GR_SRC	GR Source Selection	SPULSE-GEN	GAMMA_EXT	

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

CS	Bit Size	DNMSESSION	Depth Zoned	in
DFD	Drilling Fluid Density	Borehole	10.65	lbm/gal
GR_SRC	GR Source Selection	SPULSE-GEN	GAMMA_EXT	

Run004Depth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	8.75	7055.68	7113.96
BS	6.125	7113.96	7127.02

All depth are actual.

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	635.08 ft	5953.83 ft	19-Jul-2014 7:39:00 AM	20-Jul-2014 11:34:18 AM	No
Run002	Drilling	Down	5954.25 ft	6923.75 ft	20-Jul-2014 9:12:45 PM	21-Jul-2014 9:04:08 AM	No
Run003	Drilling	Down	6923.83 ft	7357.67 ft	21-Jul-2014 7:21:43 PM	22-Jul-2014 9:30:32 AM	No
Run004	Drilling	Down	7300.00 ft	12260.00 ft	23-Jul-2014 1:35:11 PM	25-Jul-2014 3:48:31 PM	No

All depths are referenced to toolstring zero

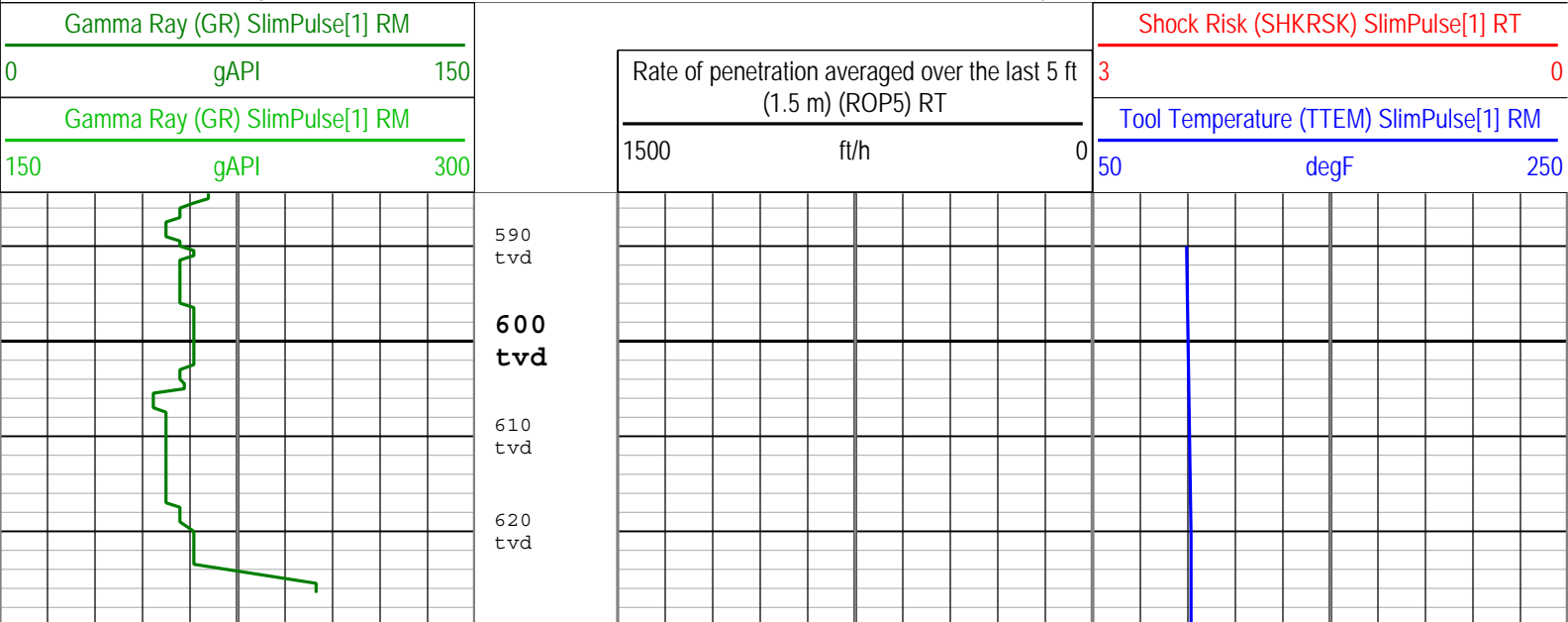
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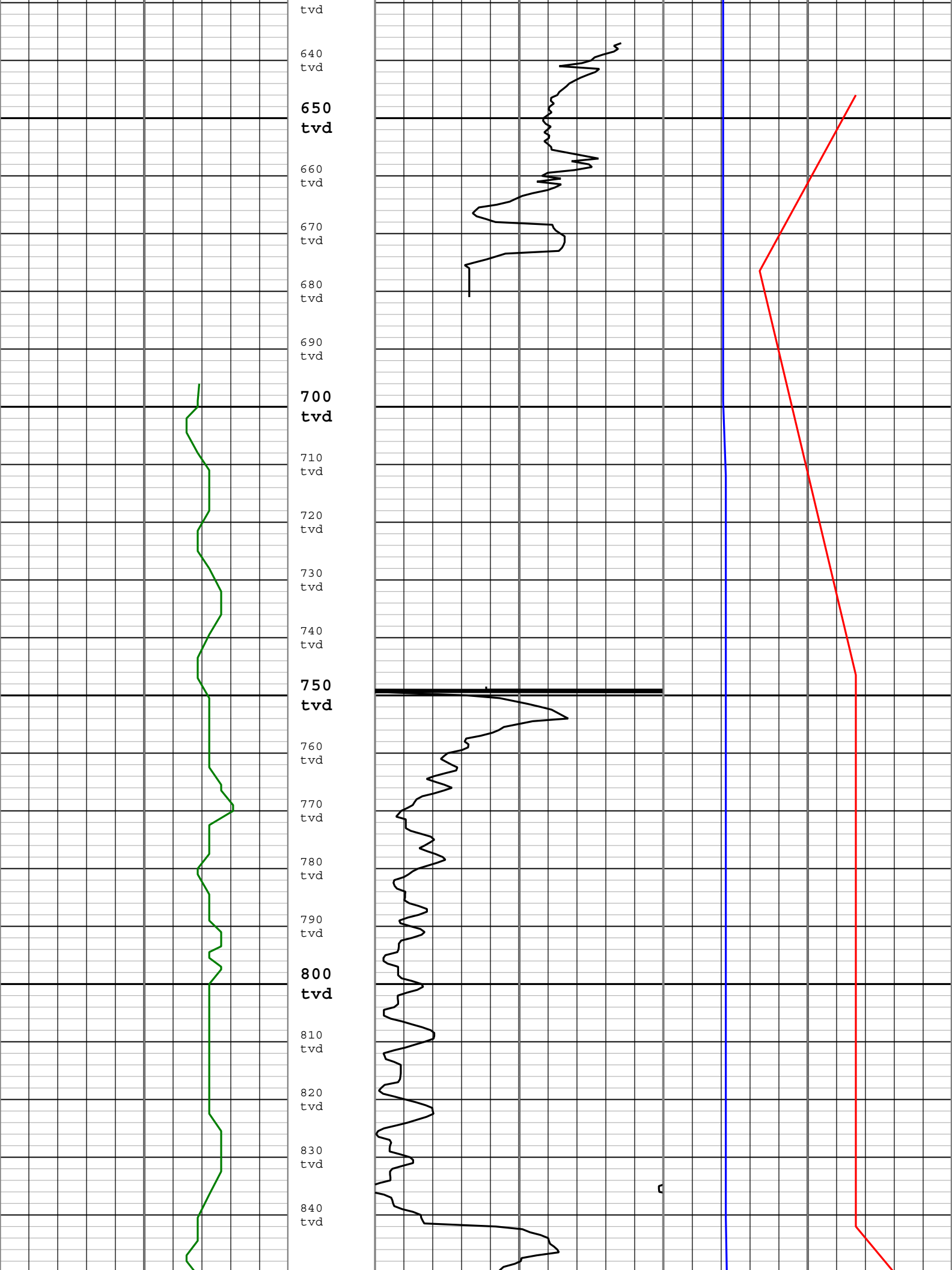
Company:Noble Energy INC

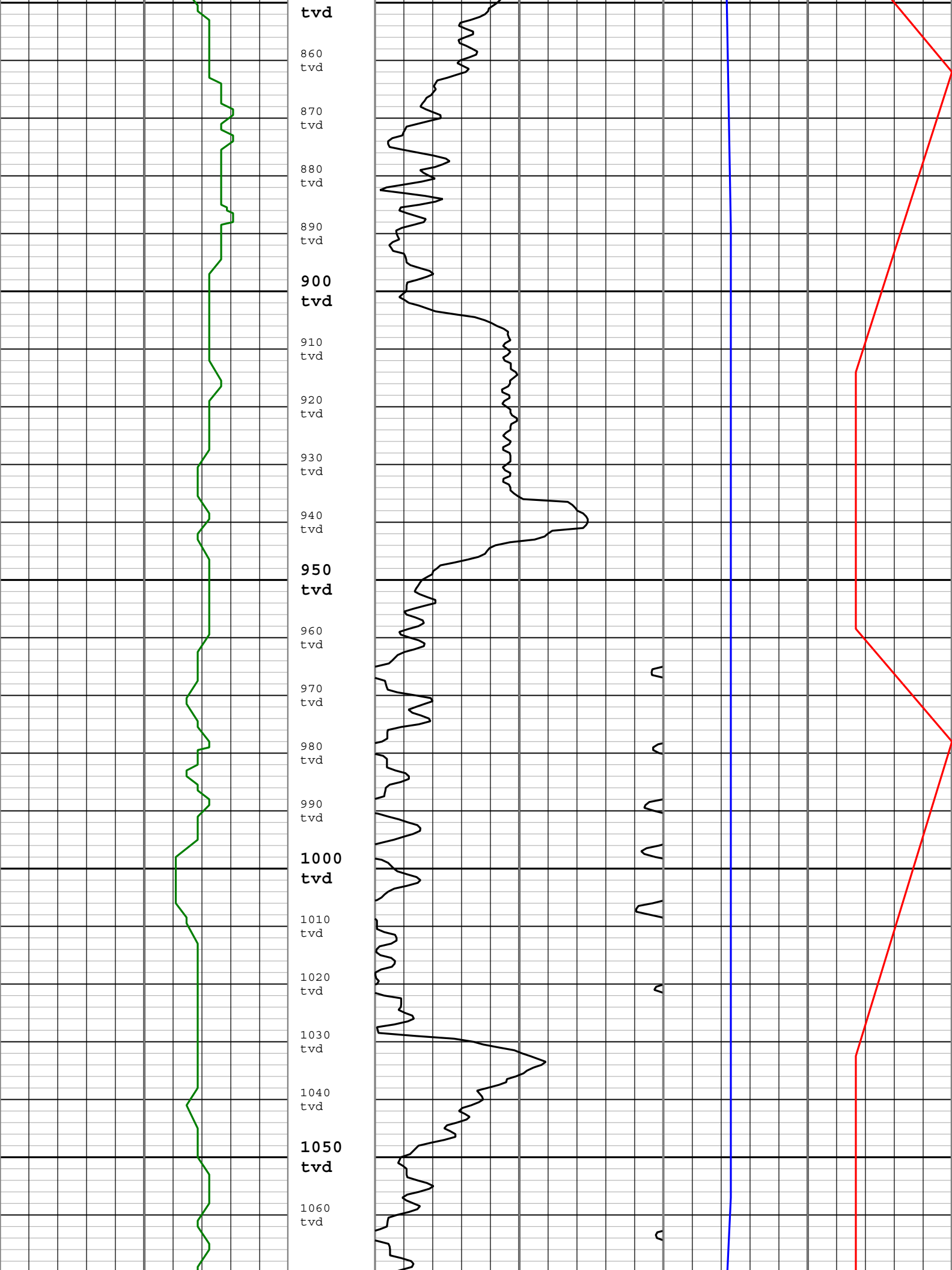
Well:Five Rivers K09-67-1HN

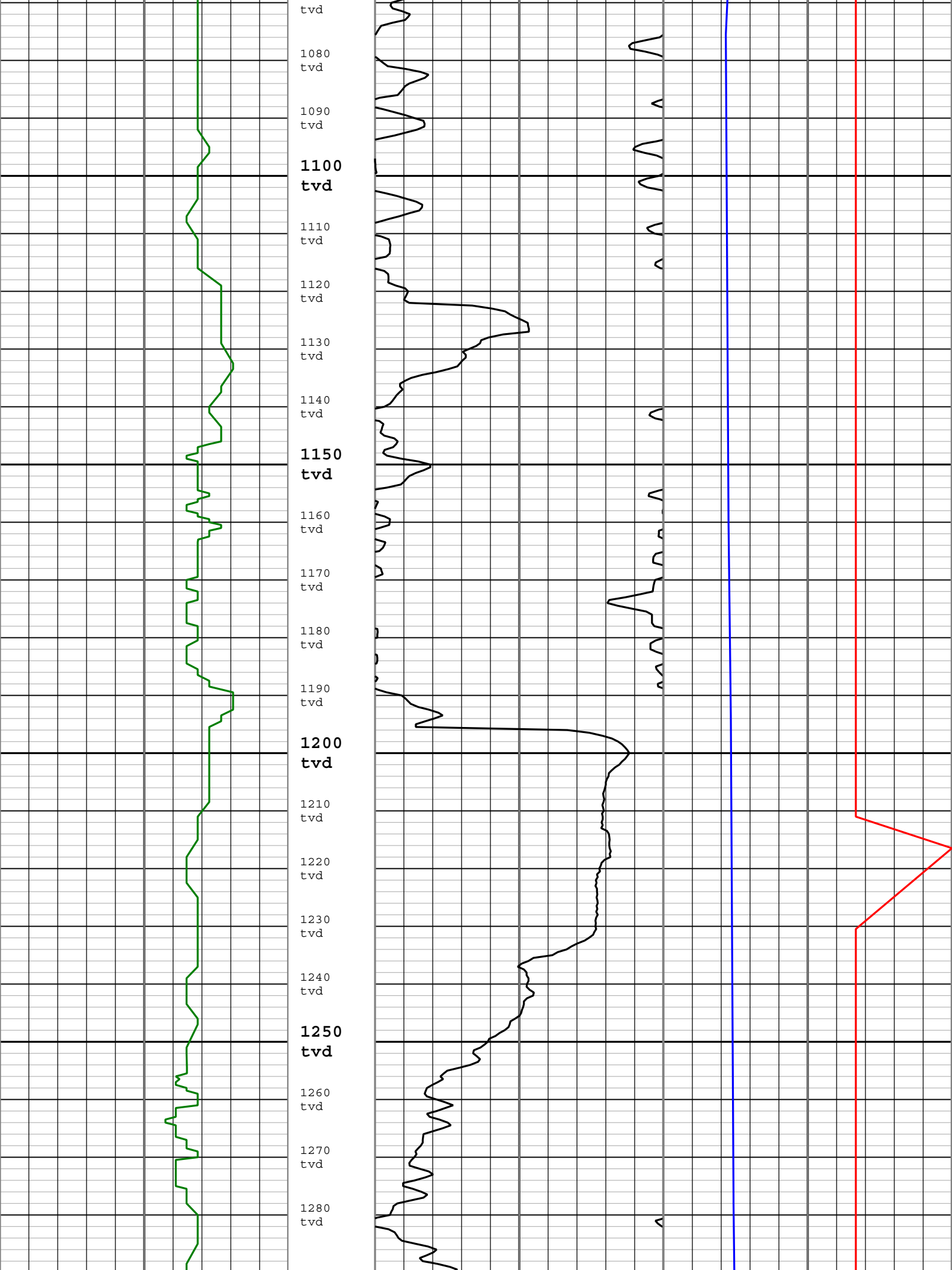
Well Composite:S202

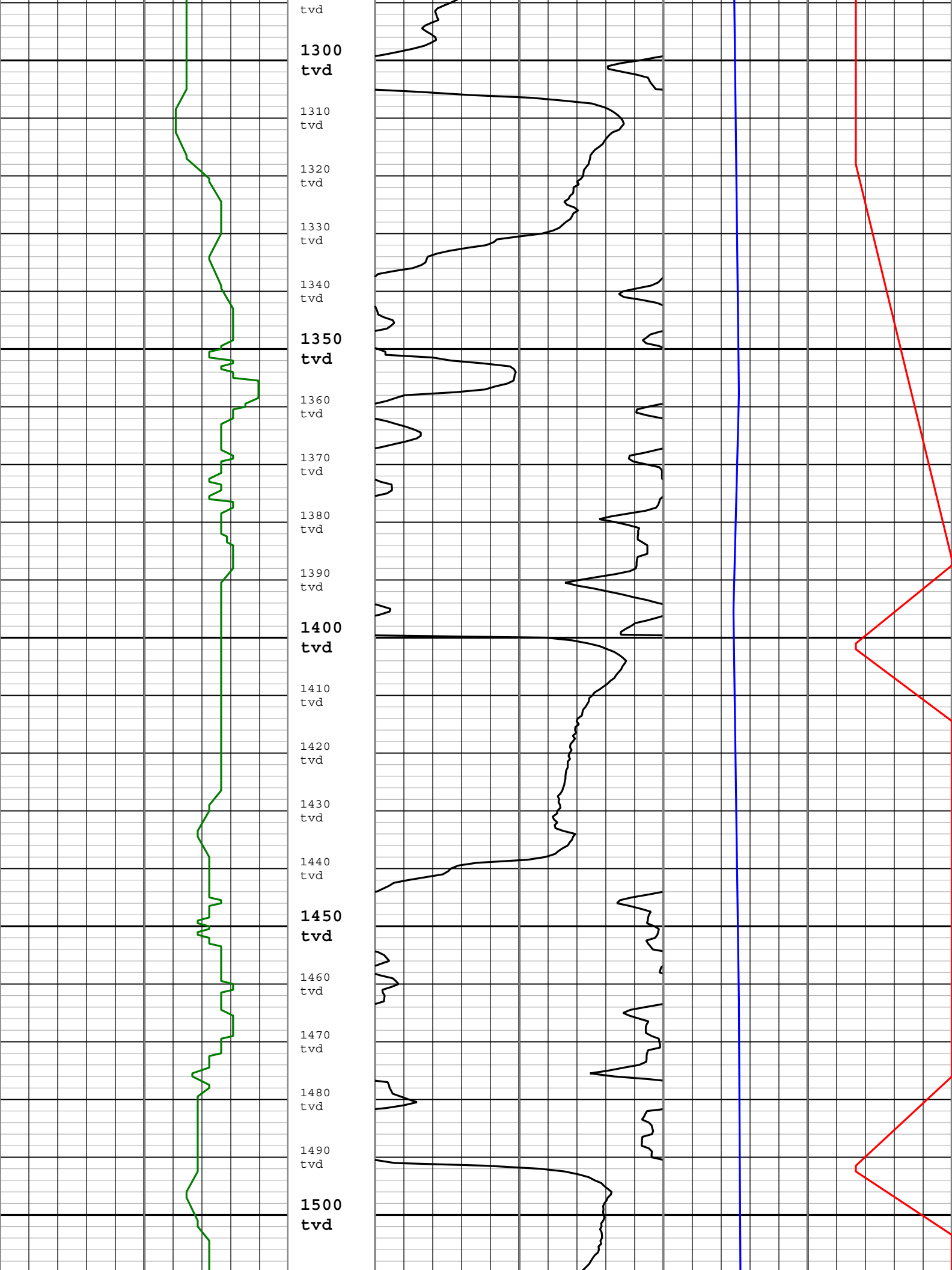
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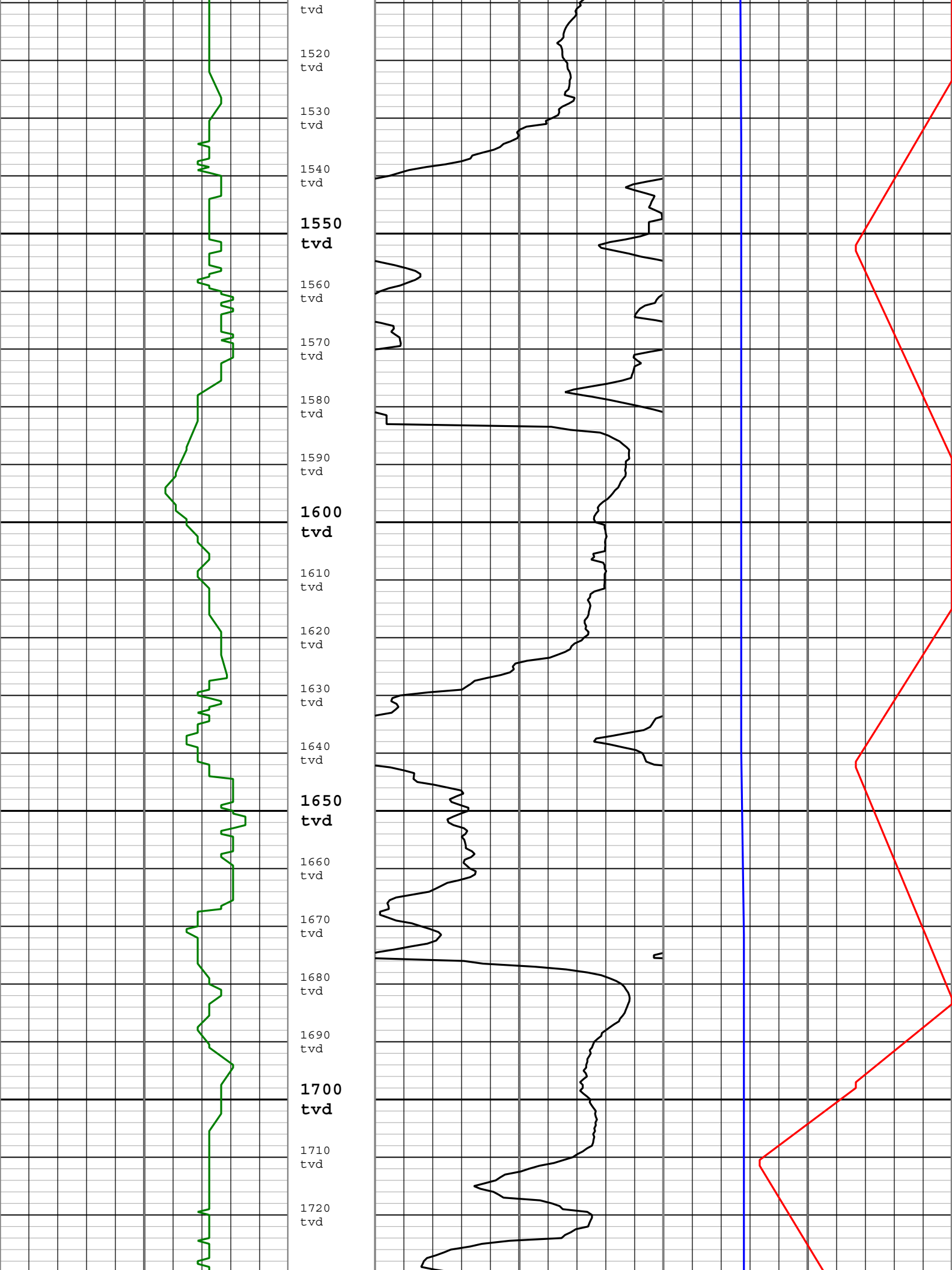


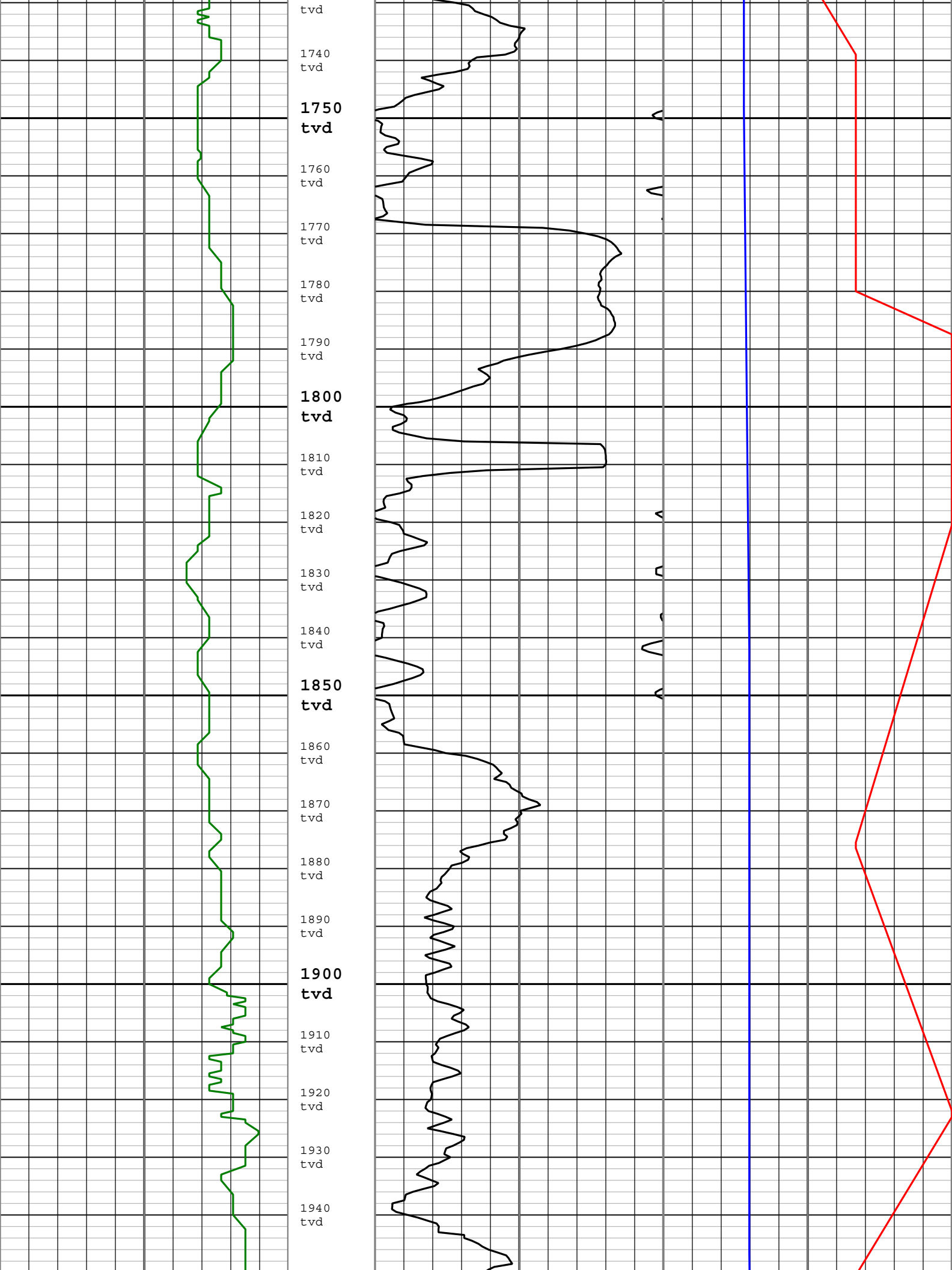


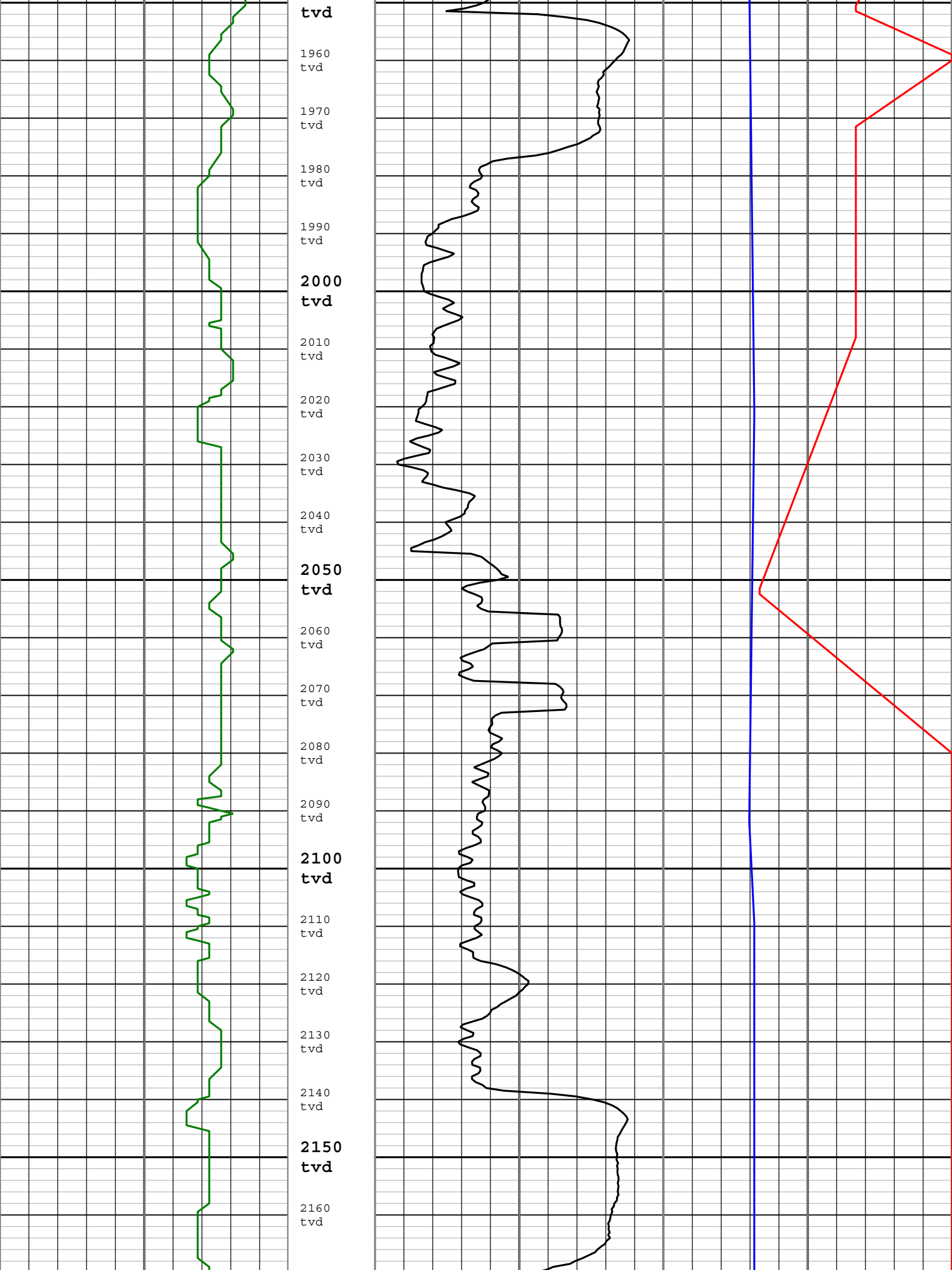


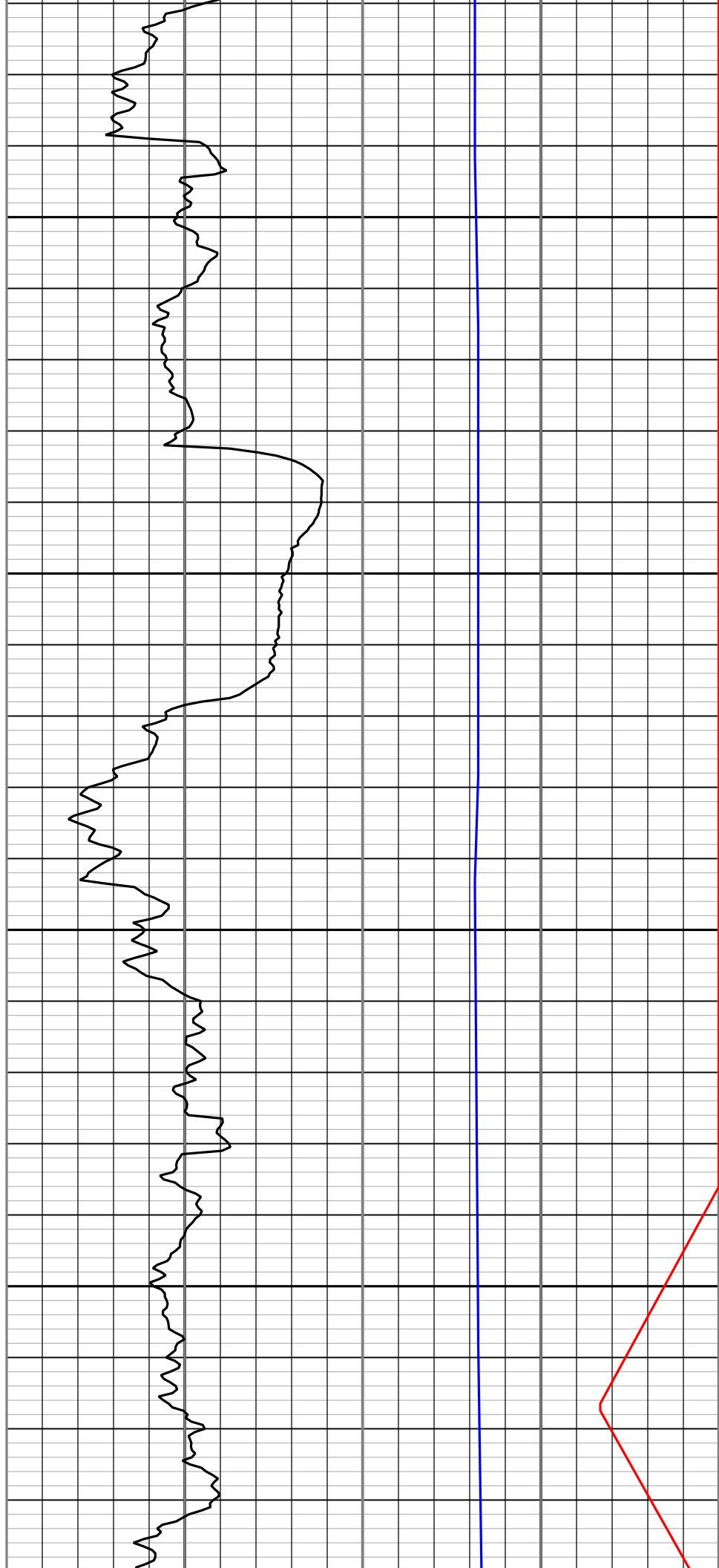
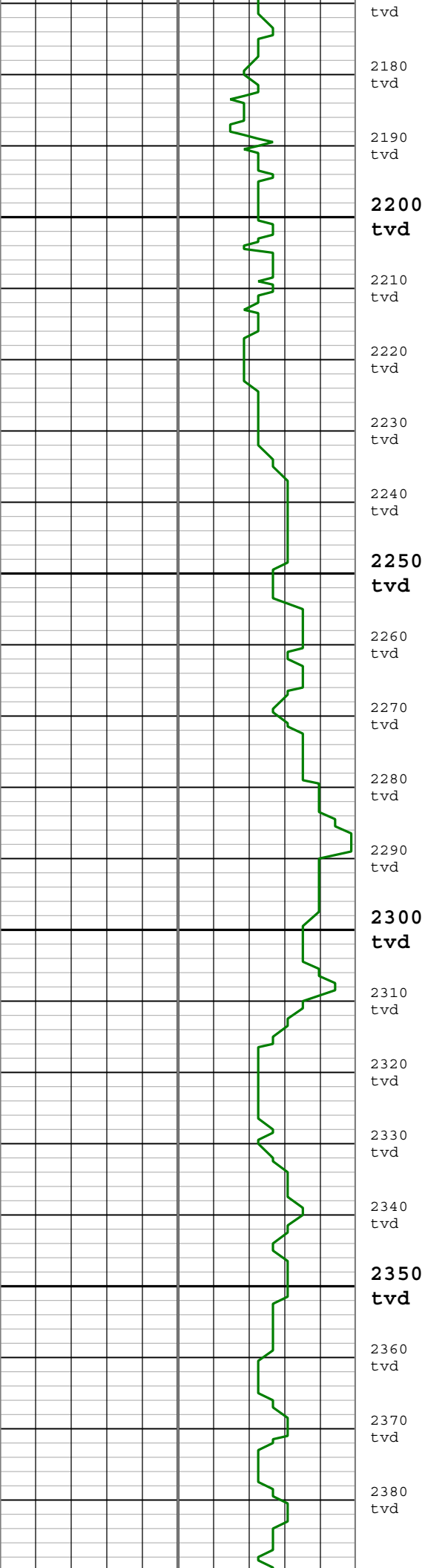


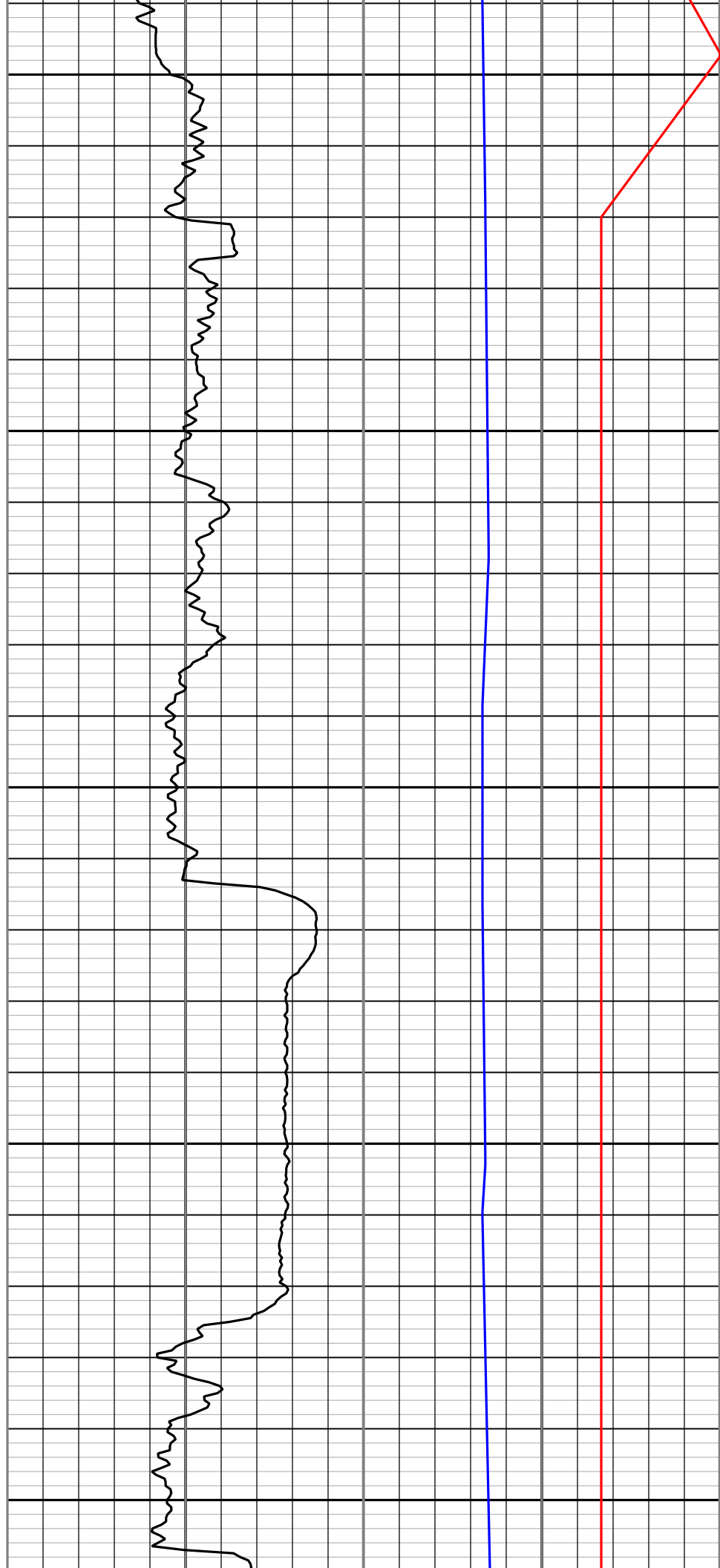
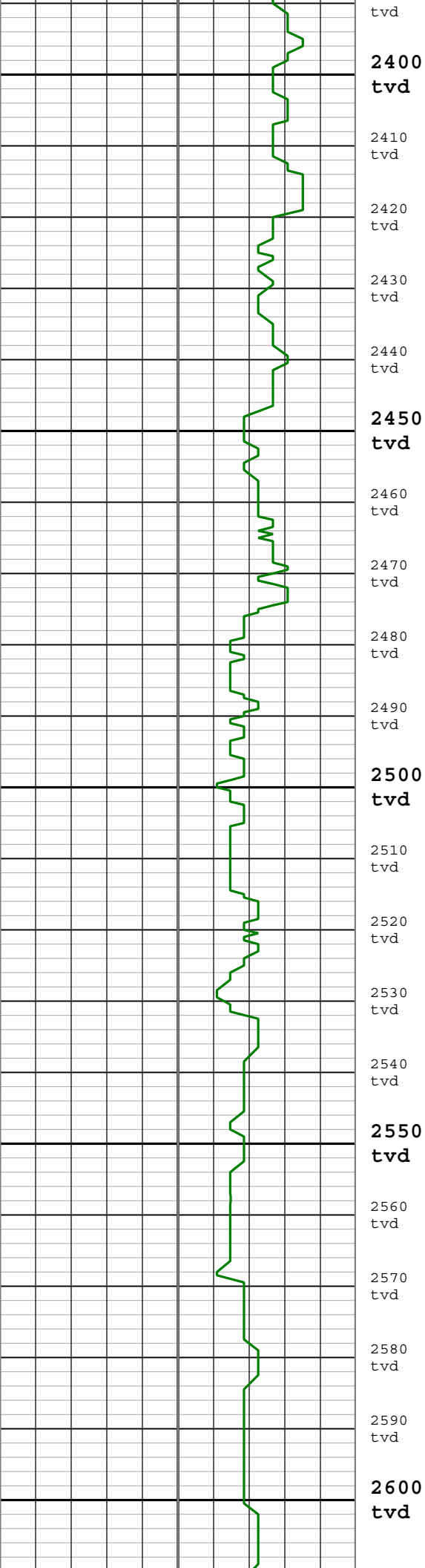


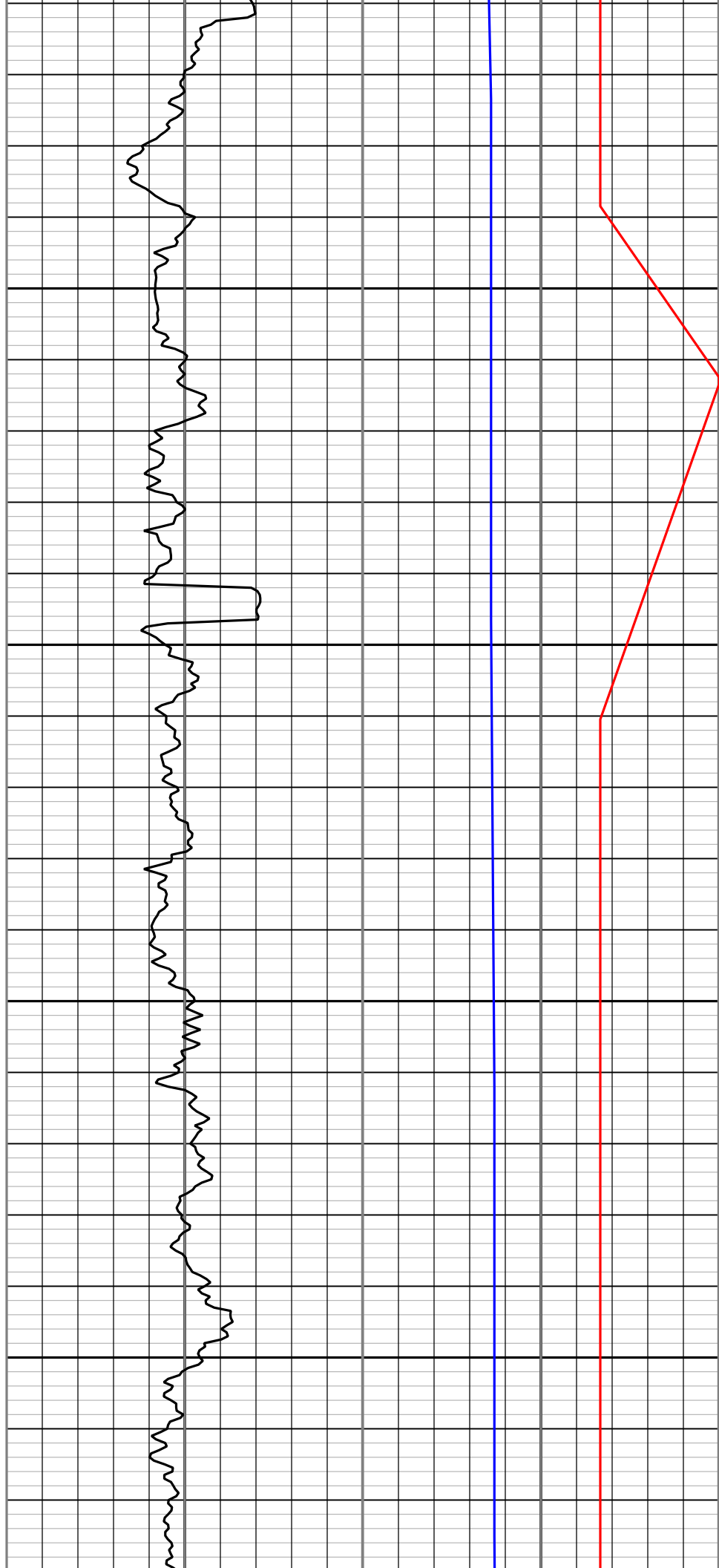
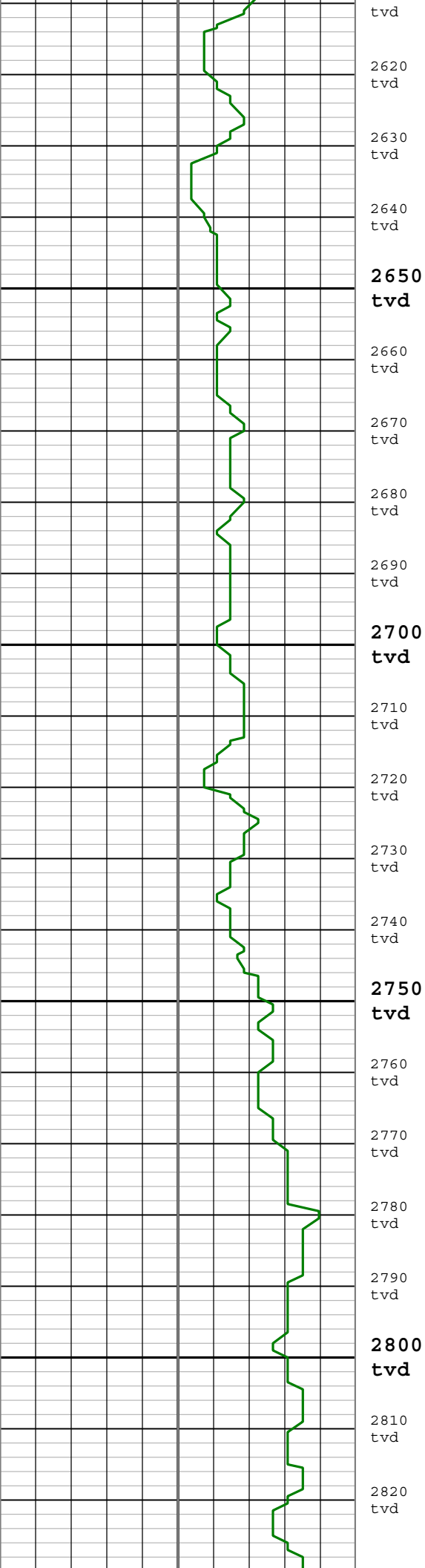


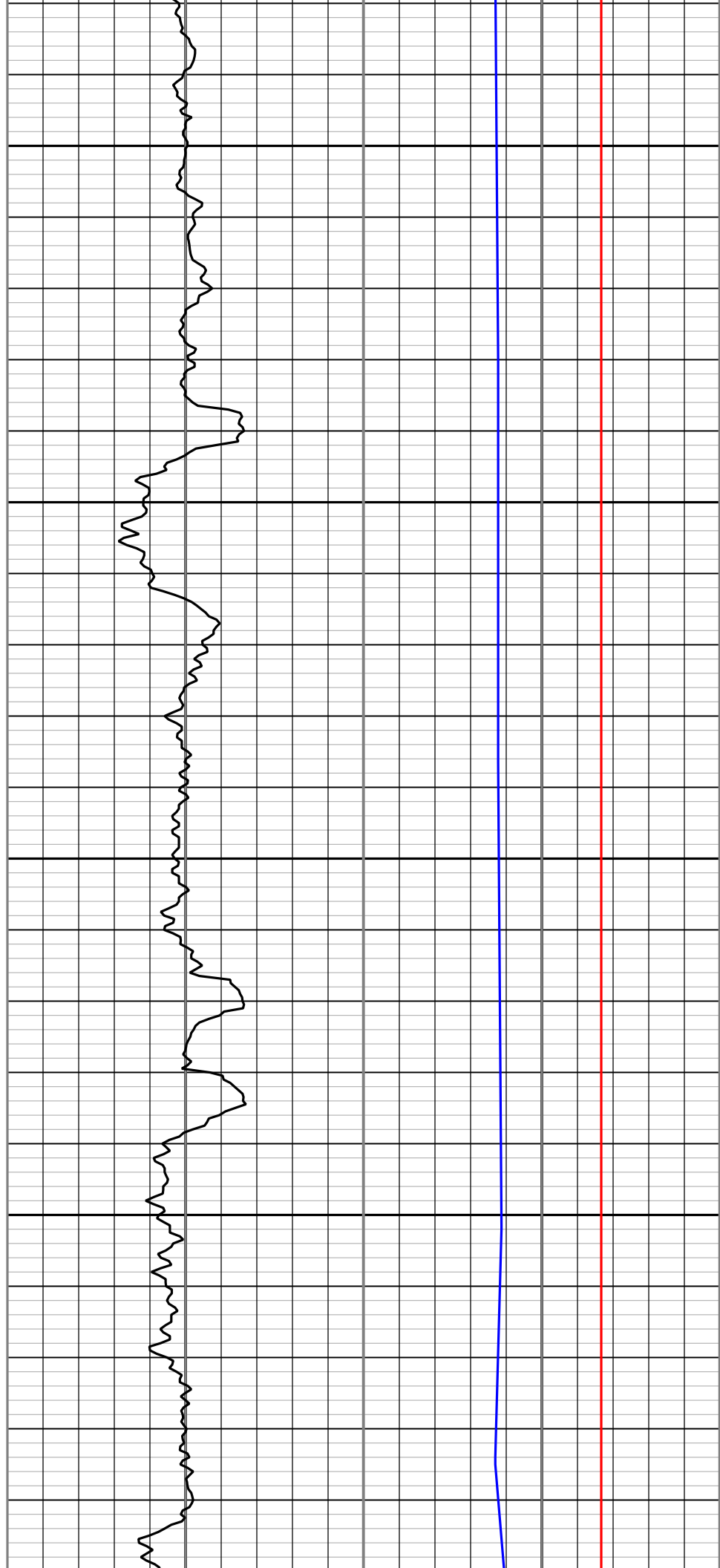
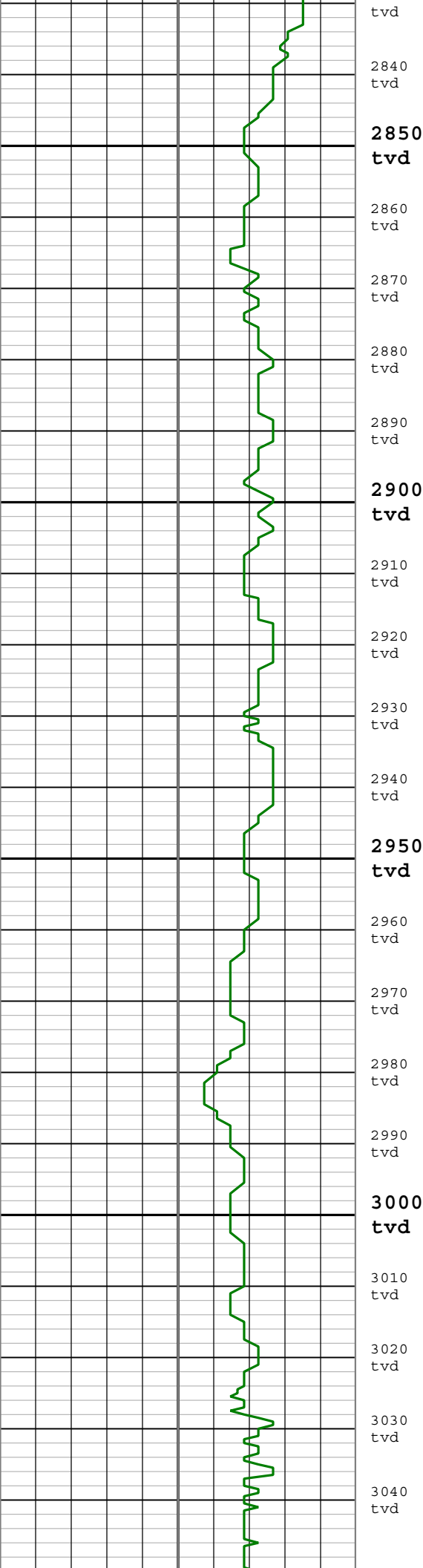


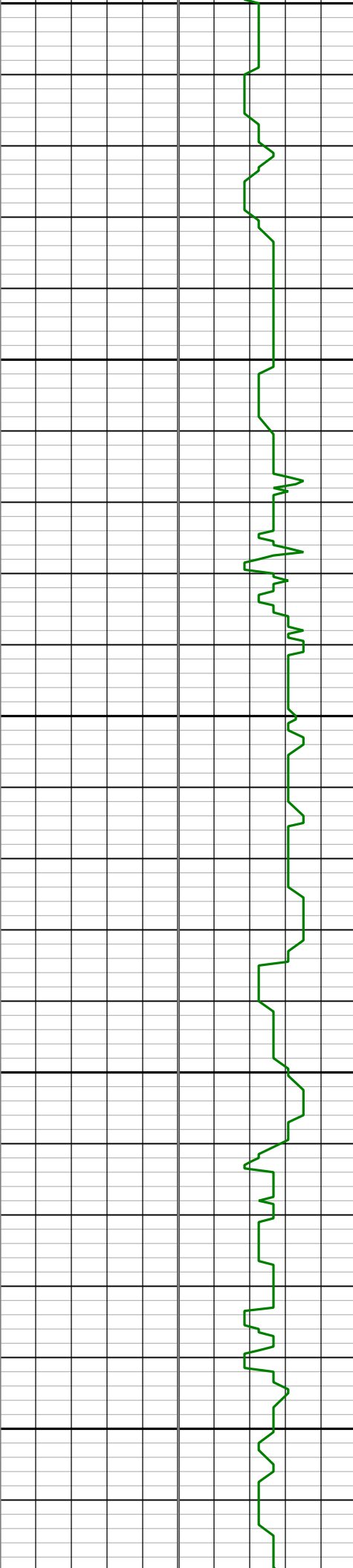




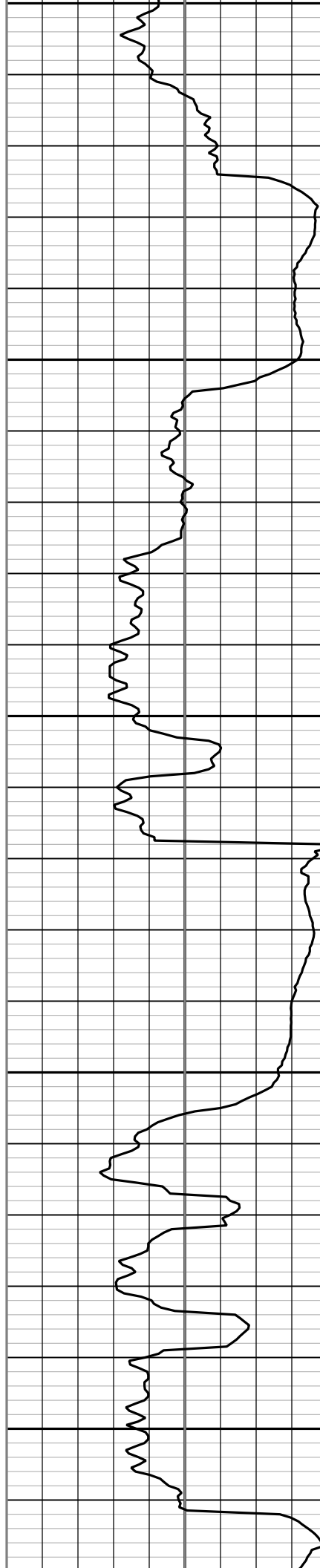


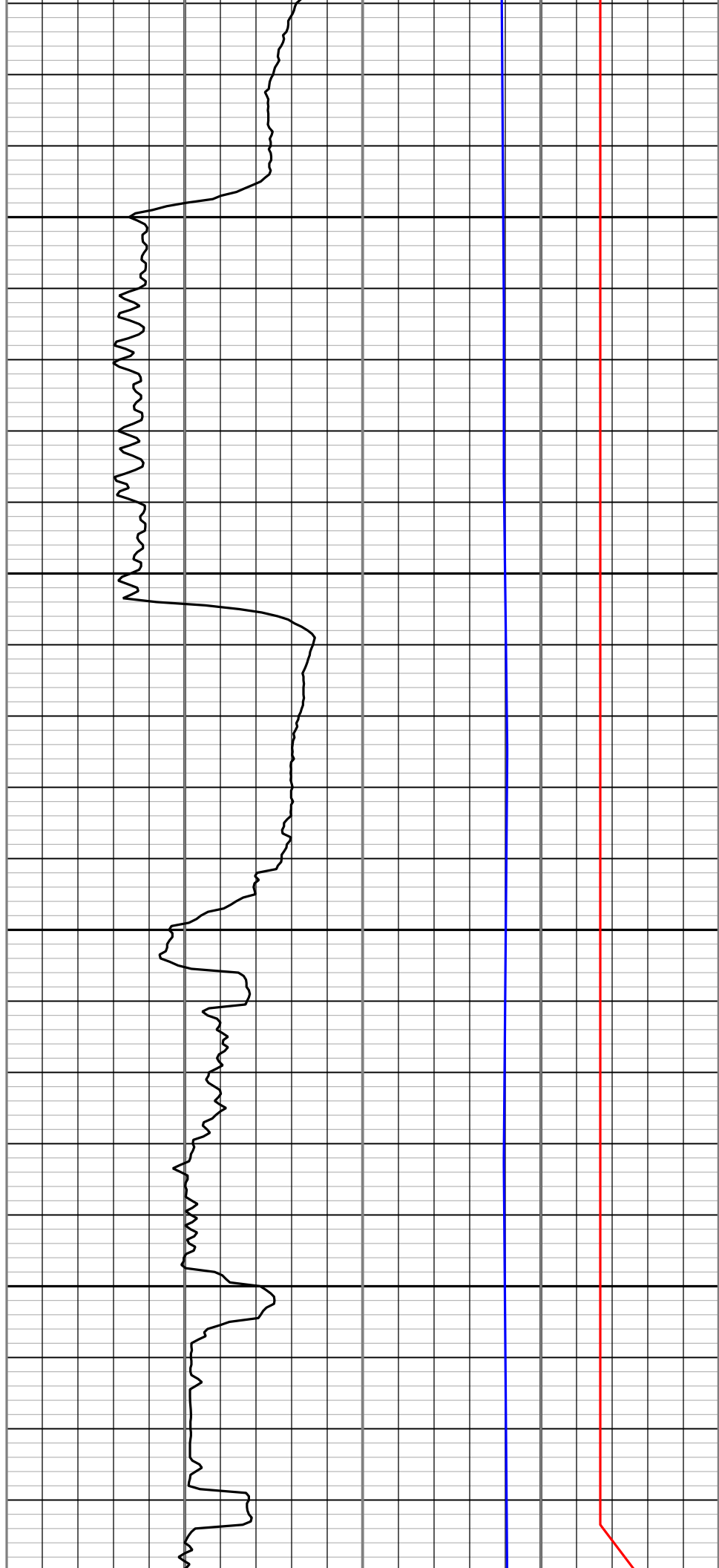
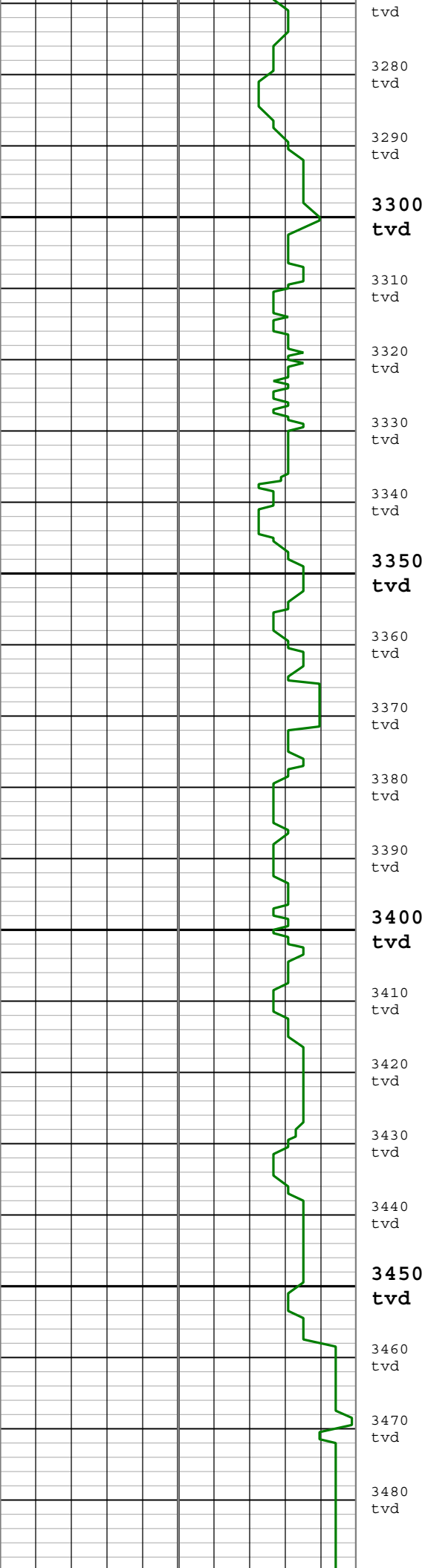


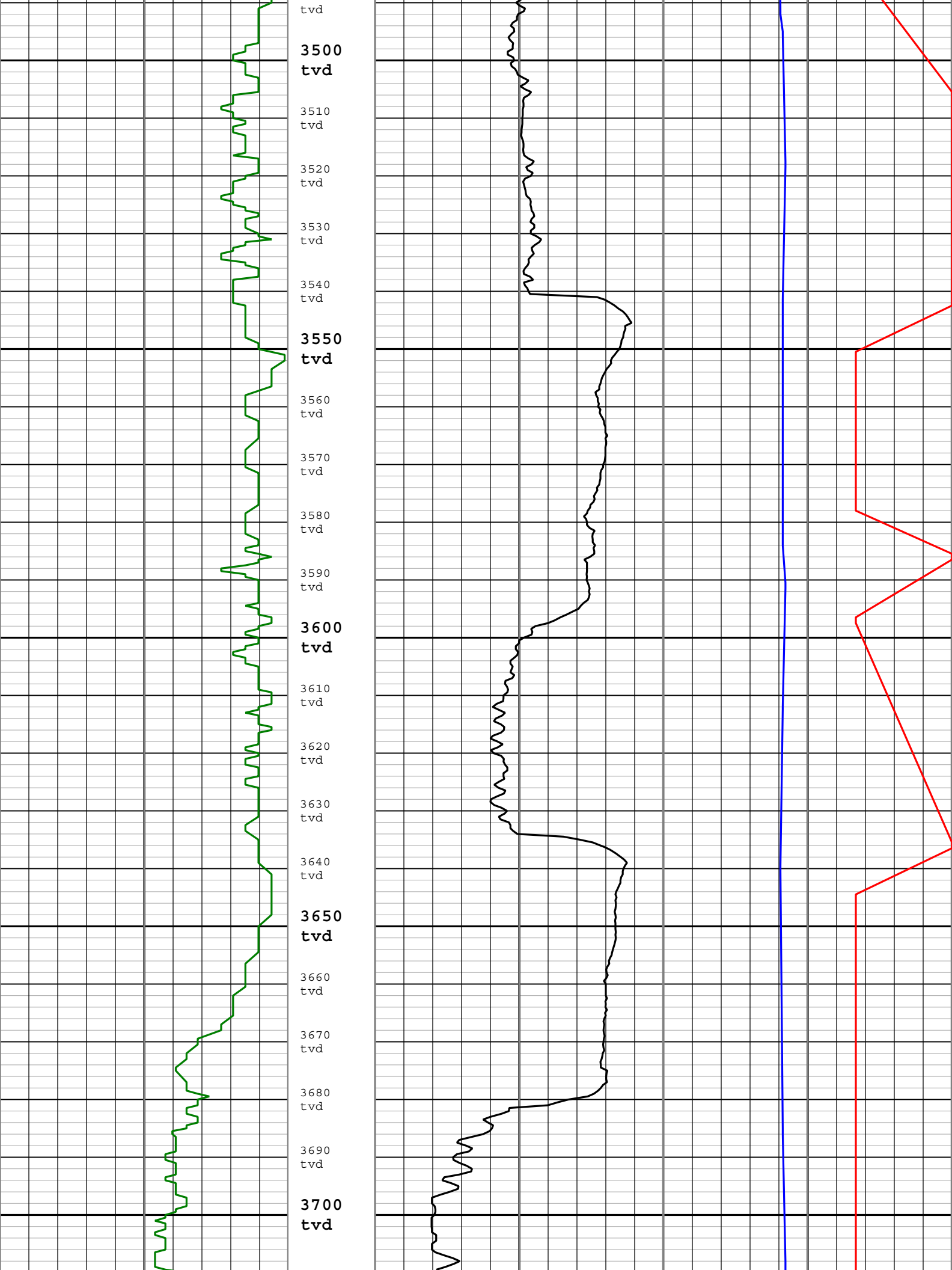


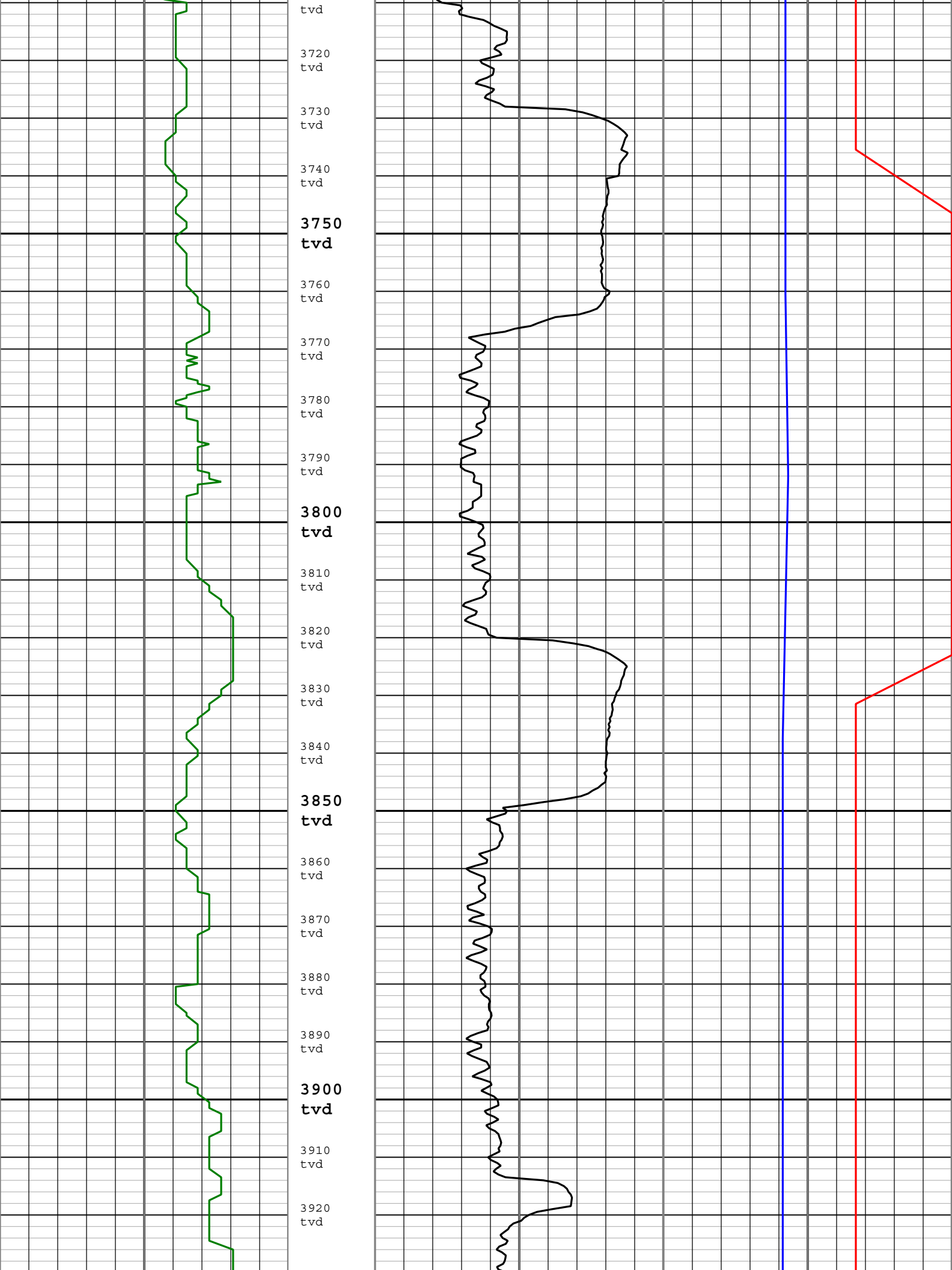


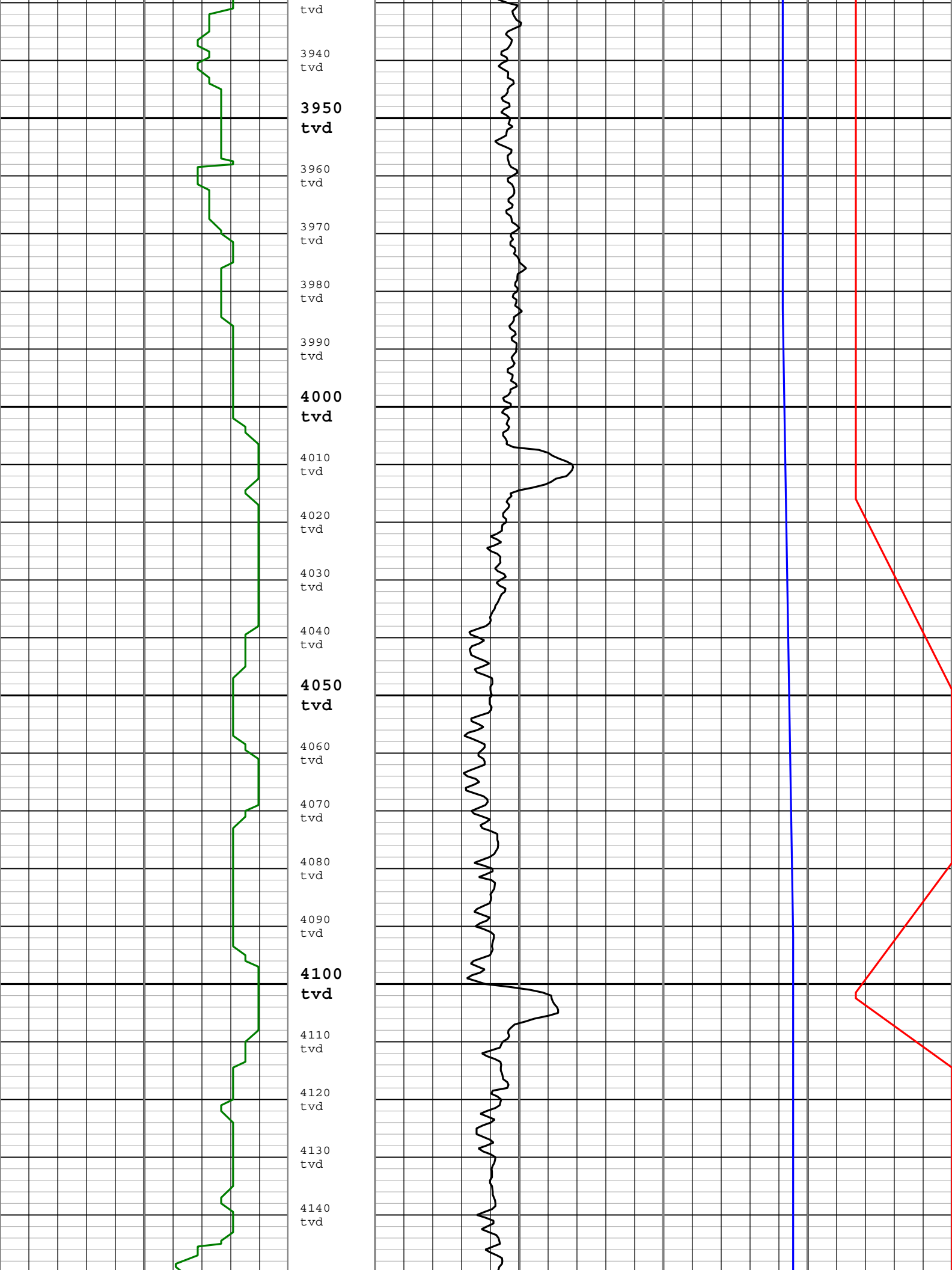
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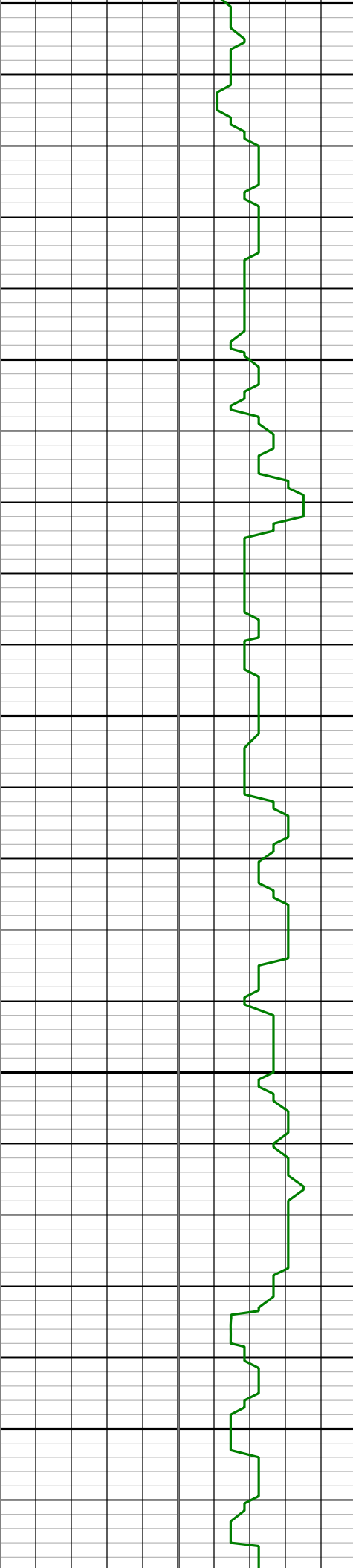




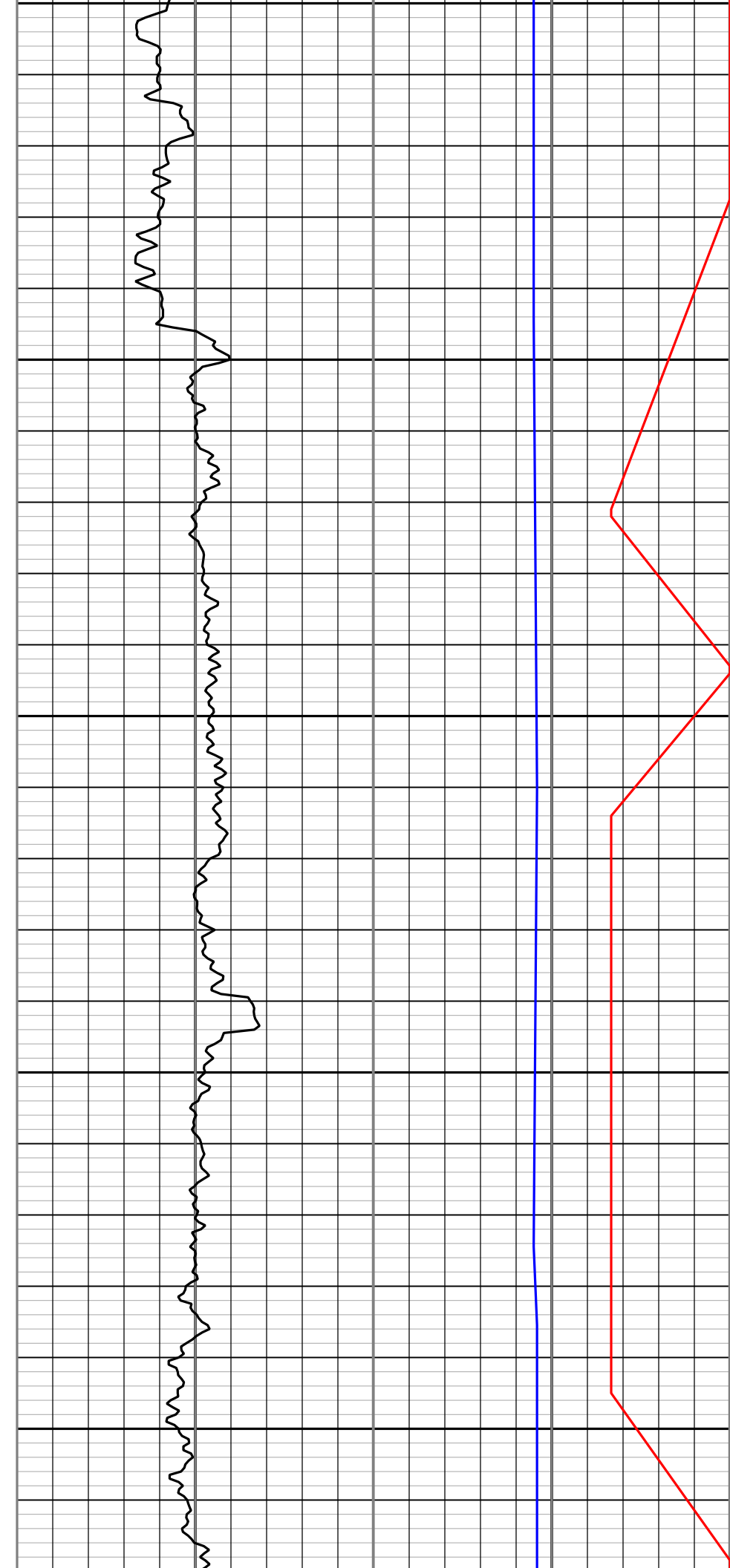


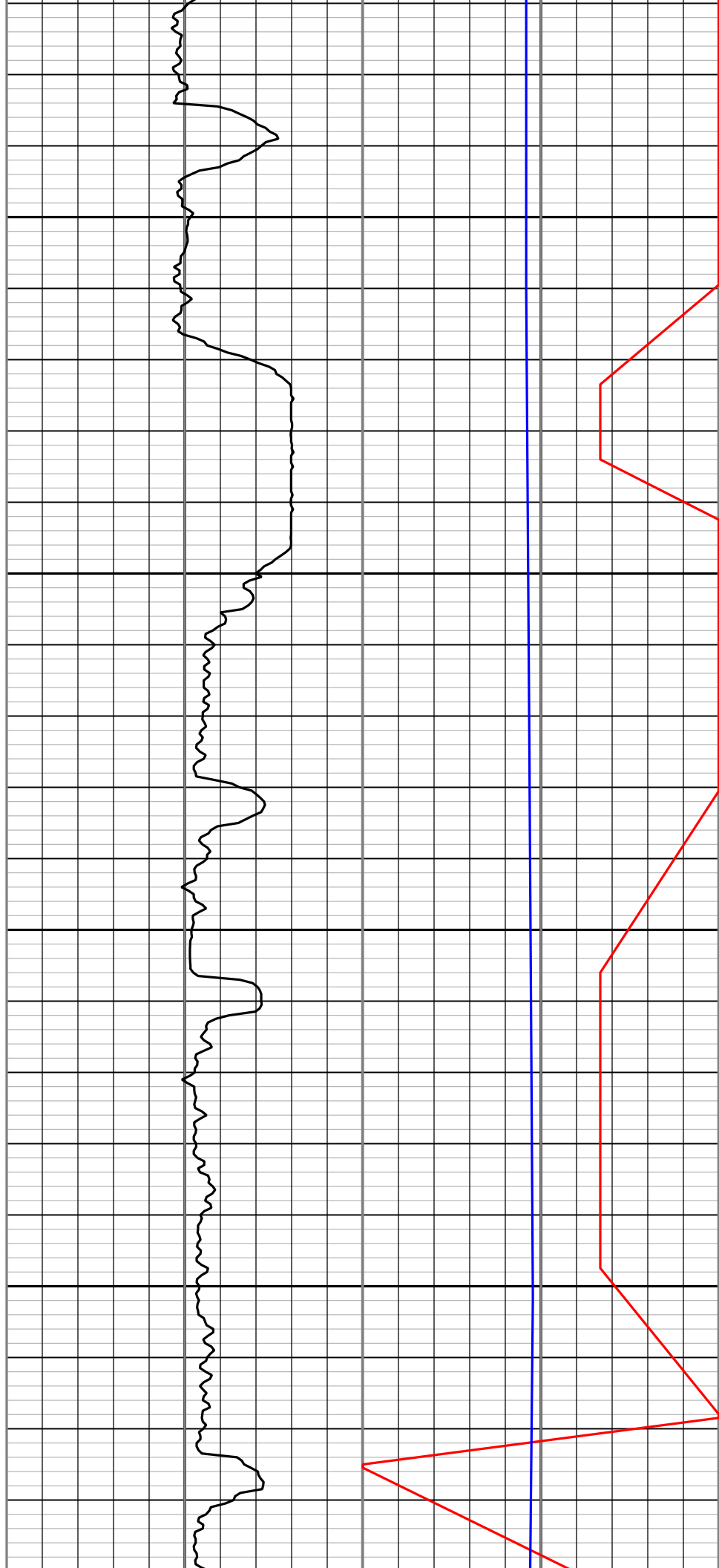
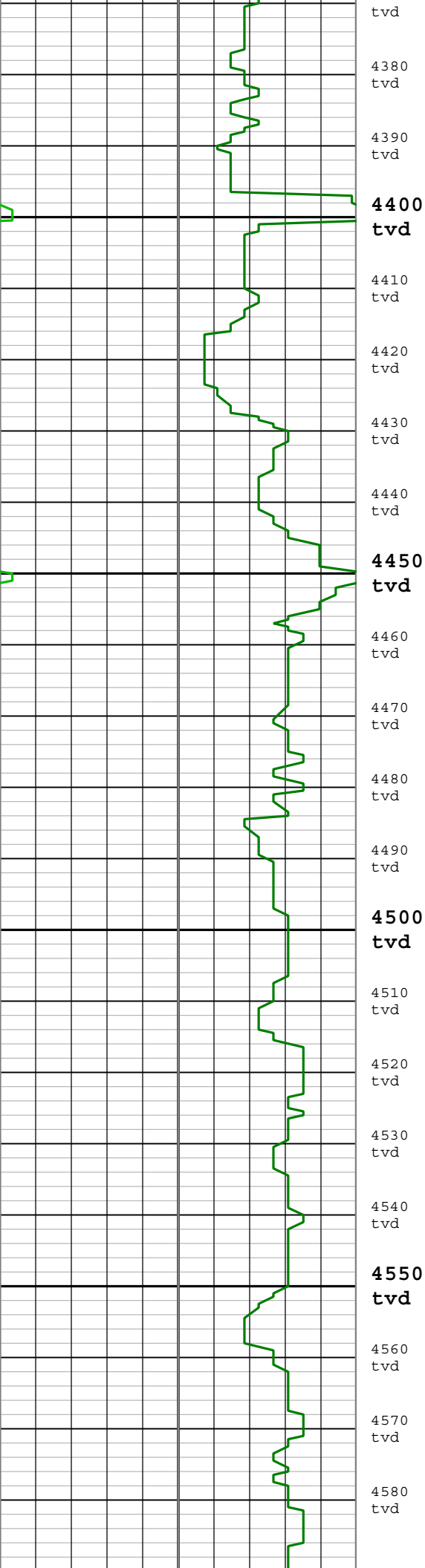


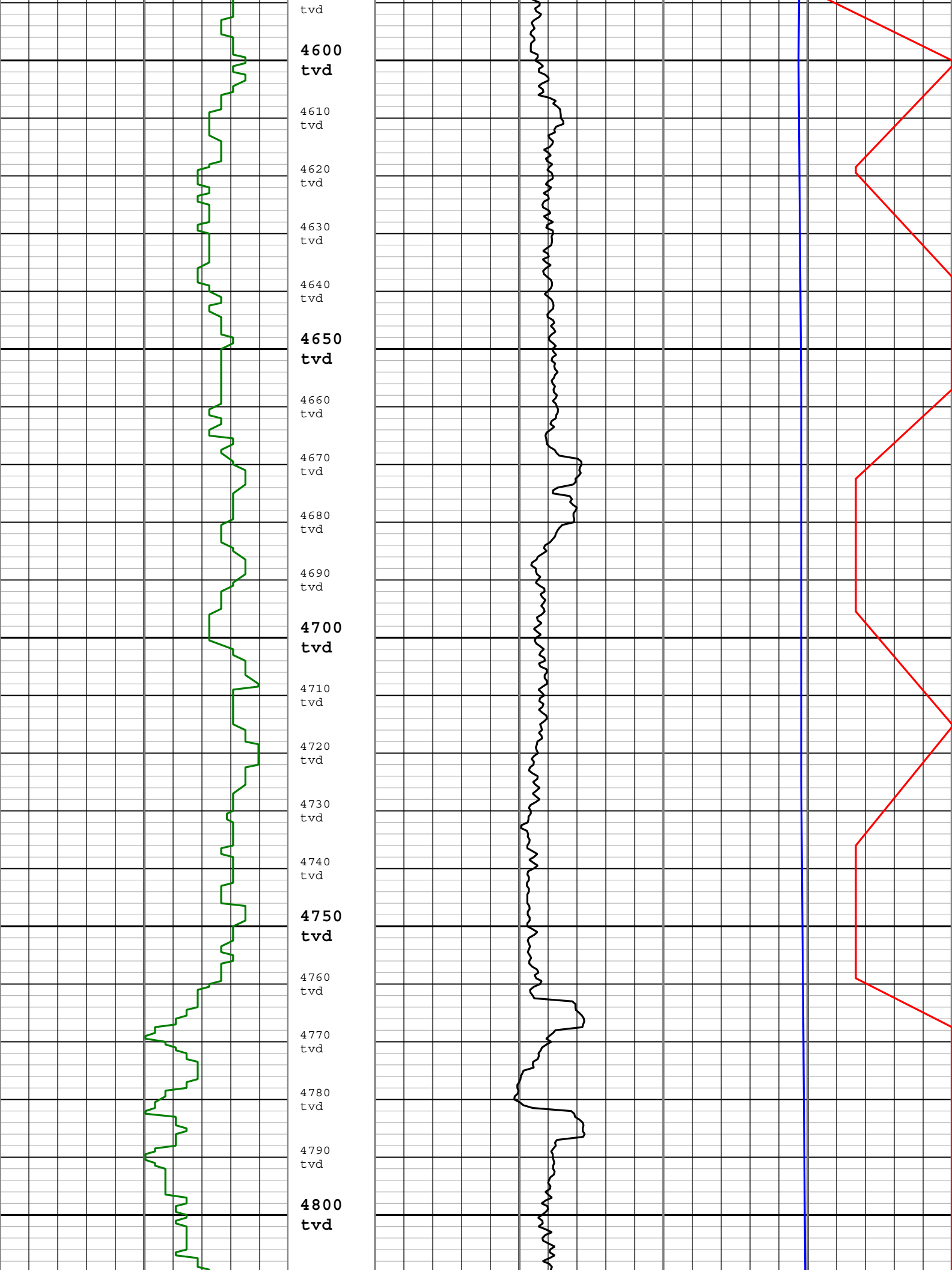


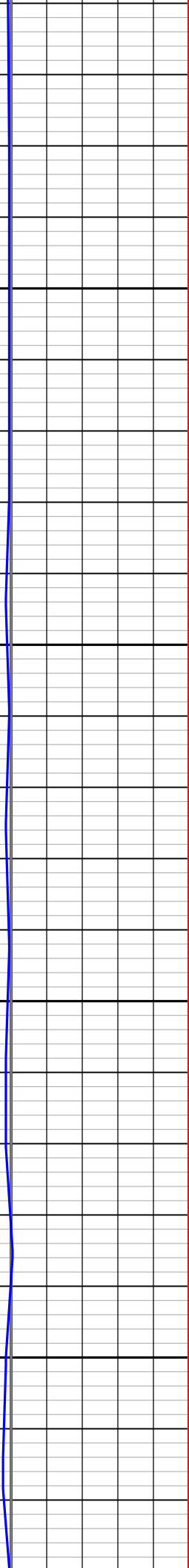
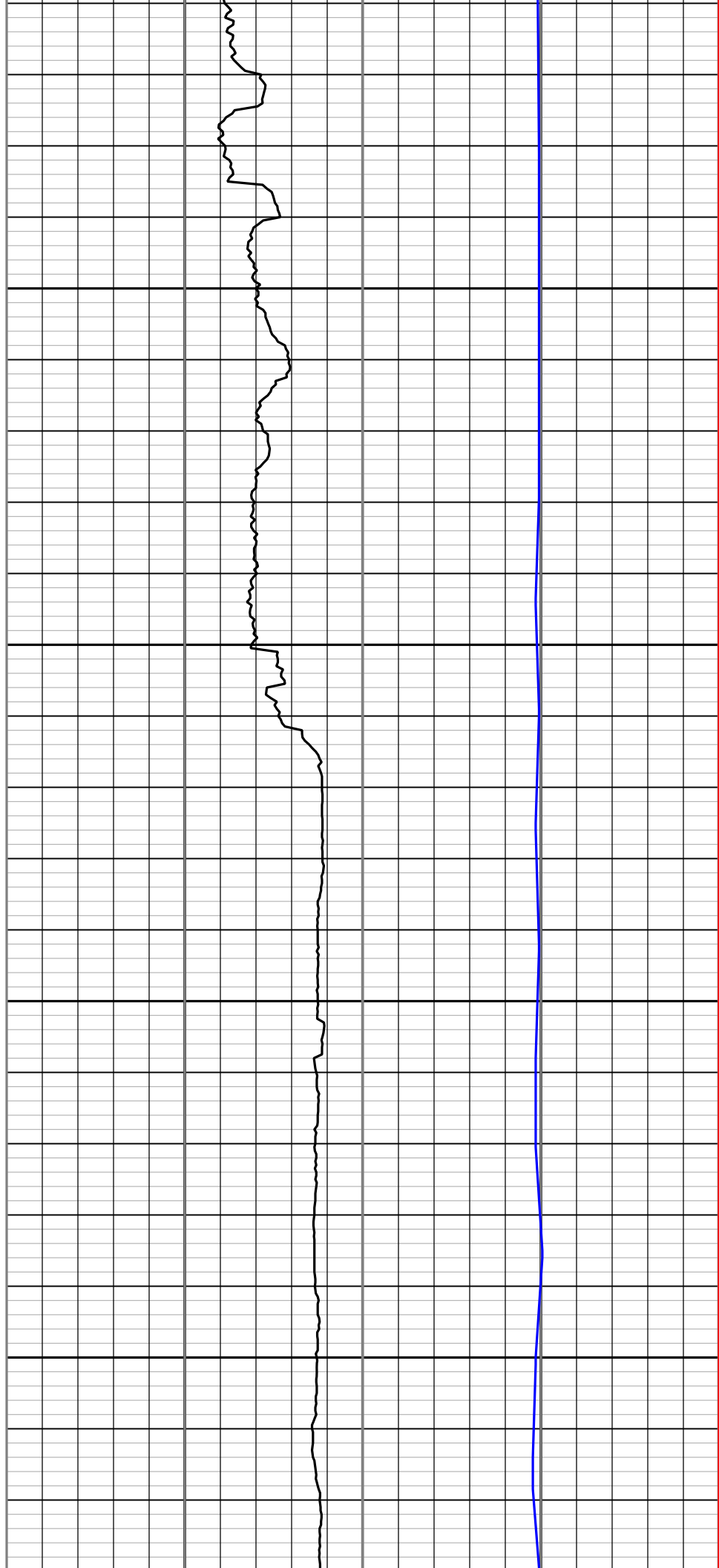
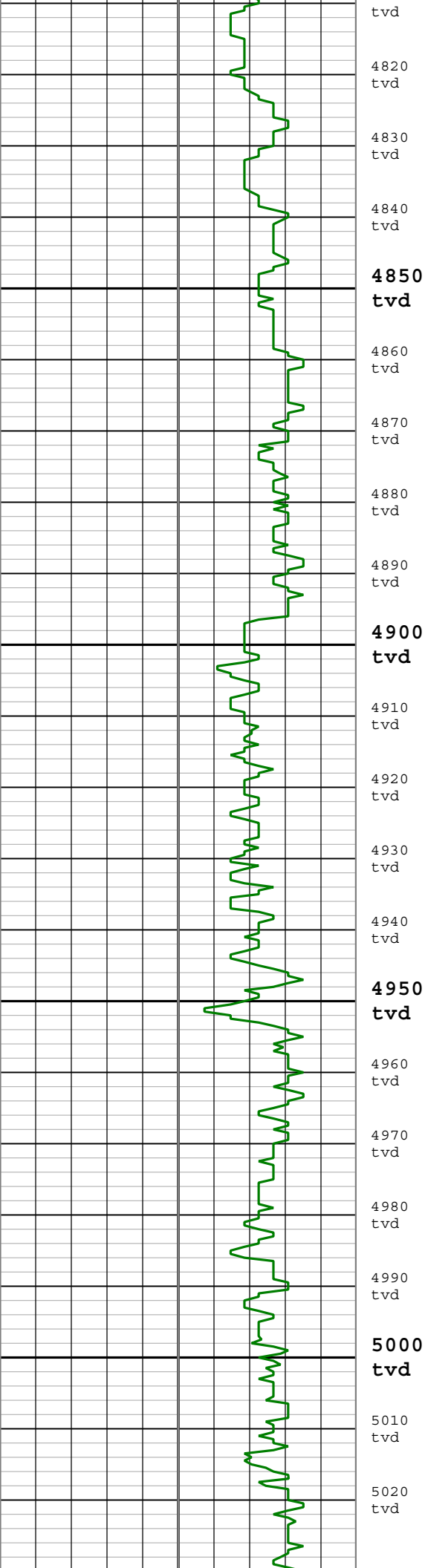


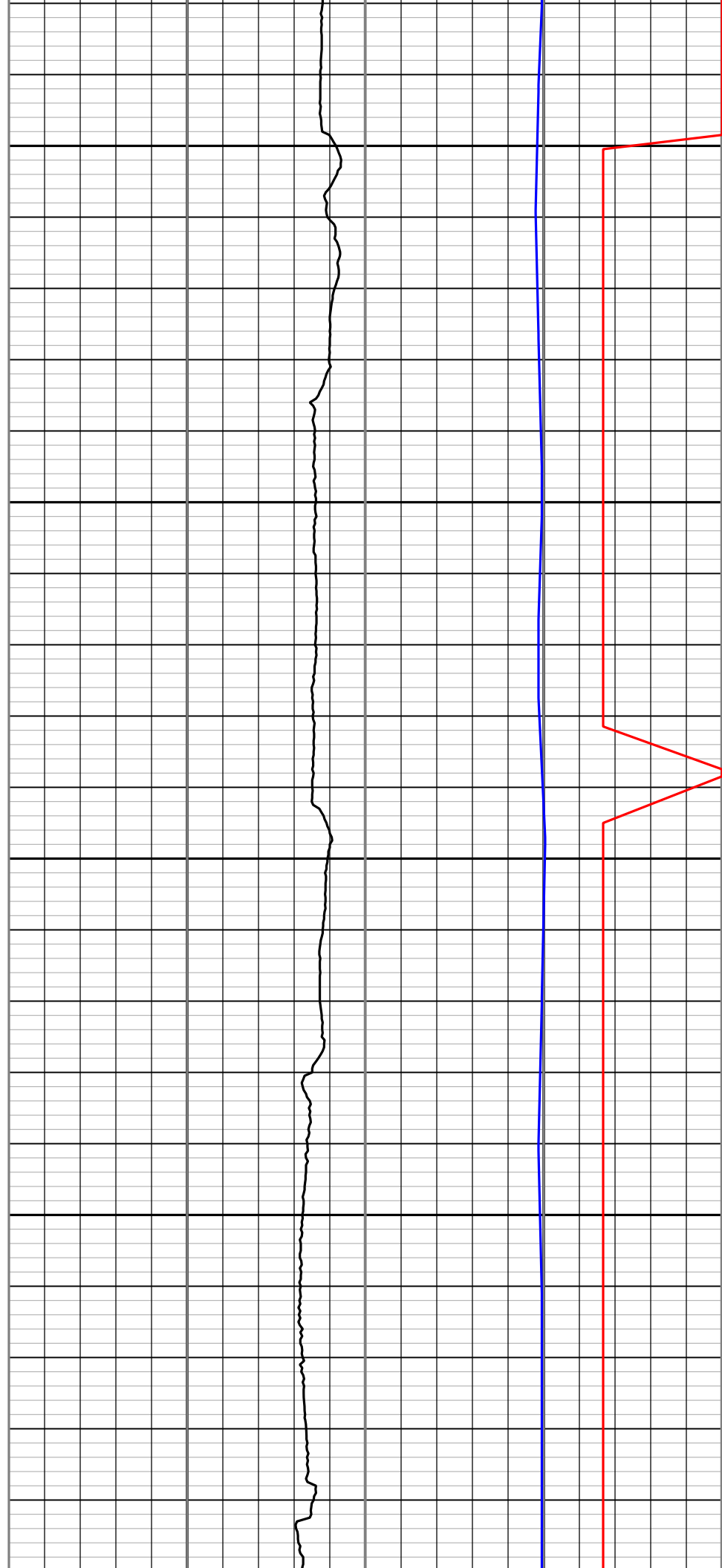
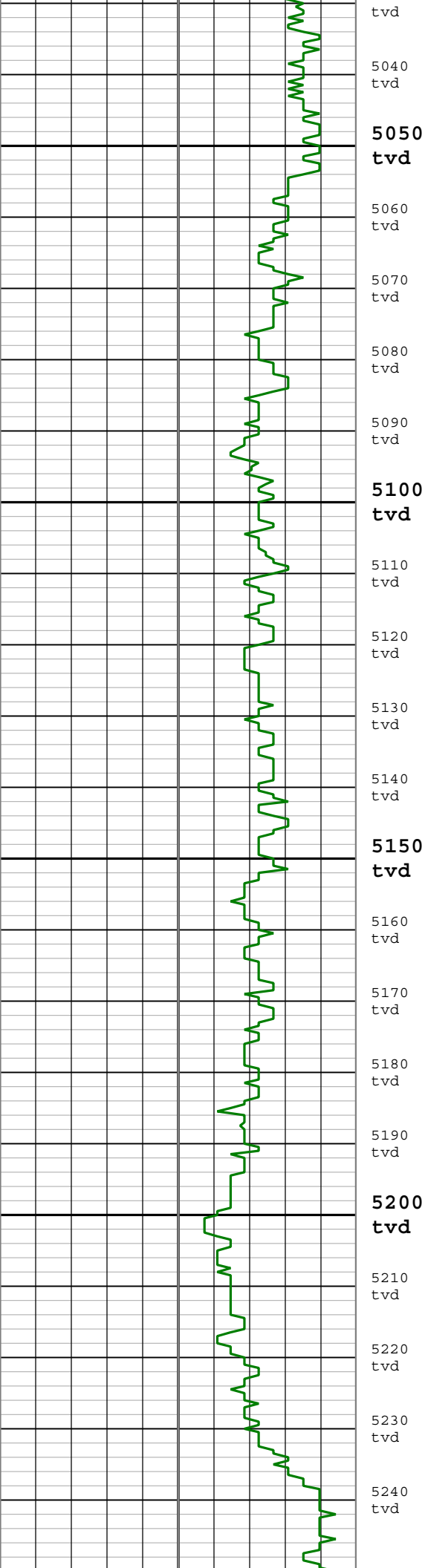
tvd
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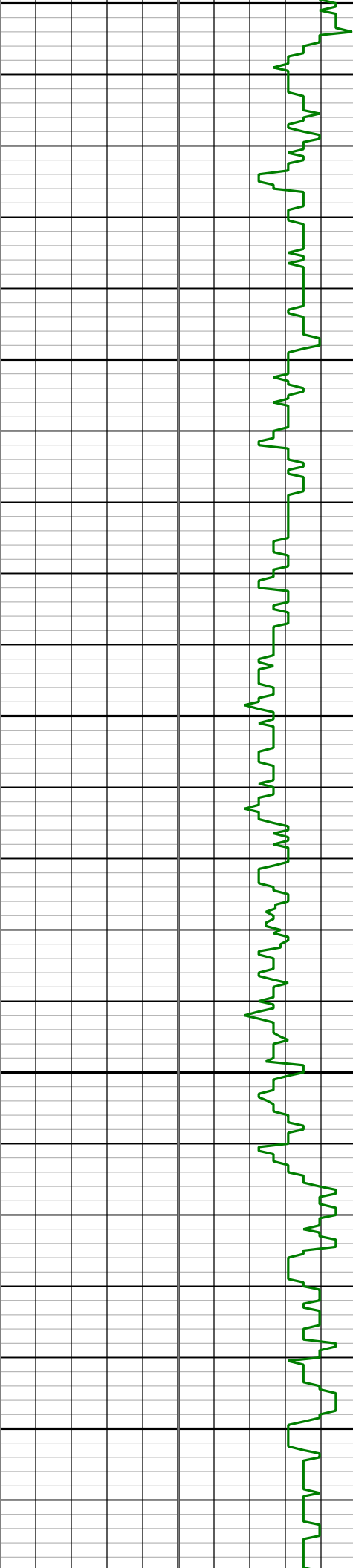












tvd

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5410
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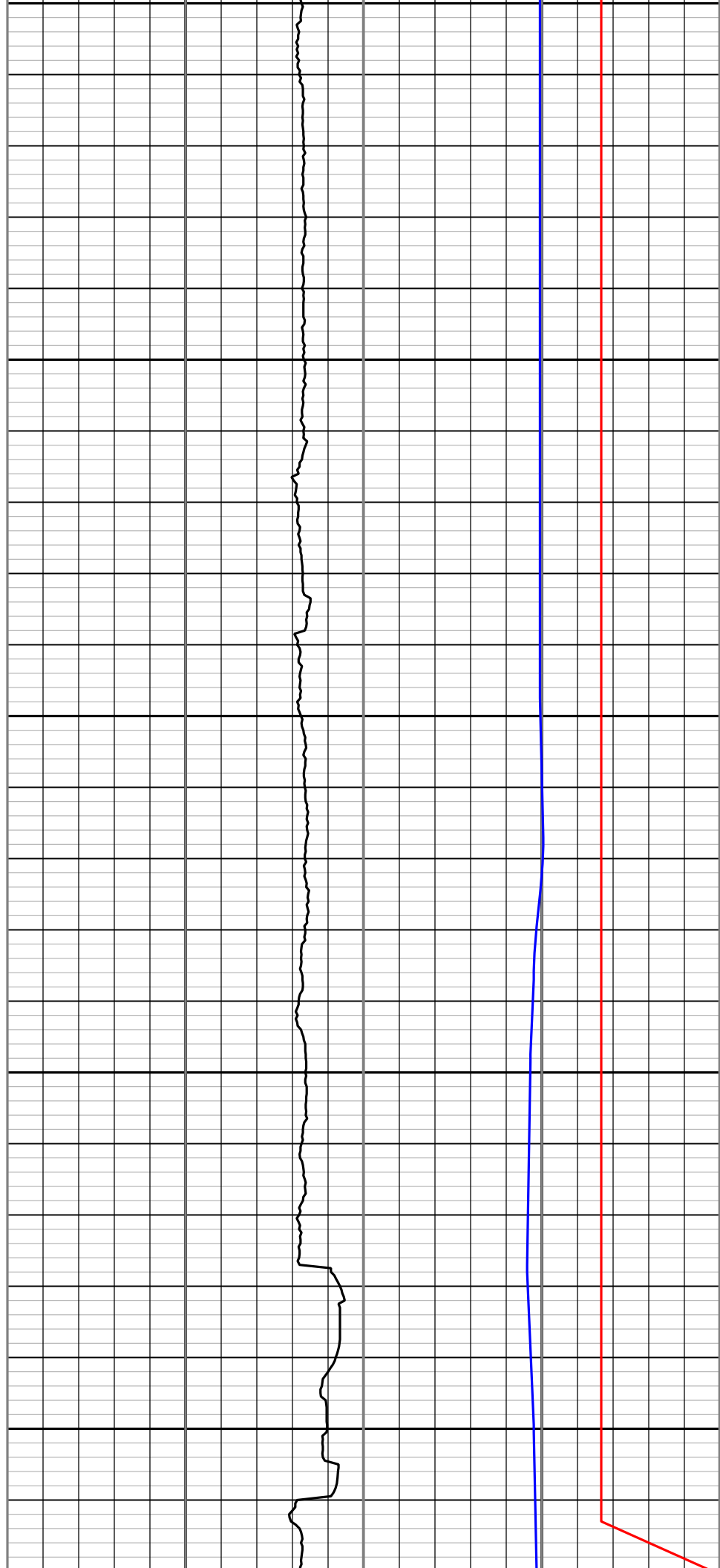
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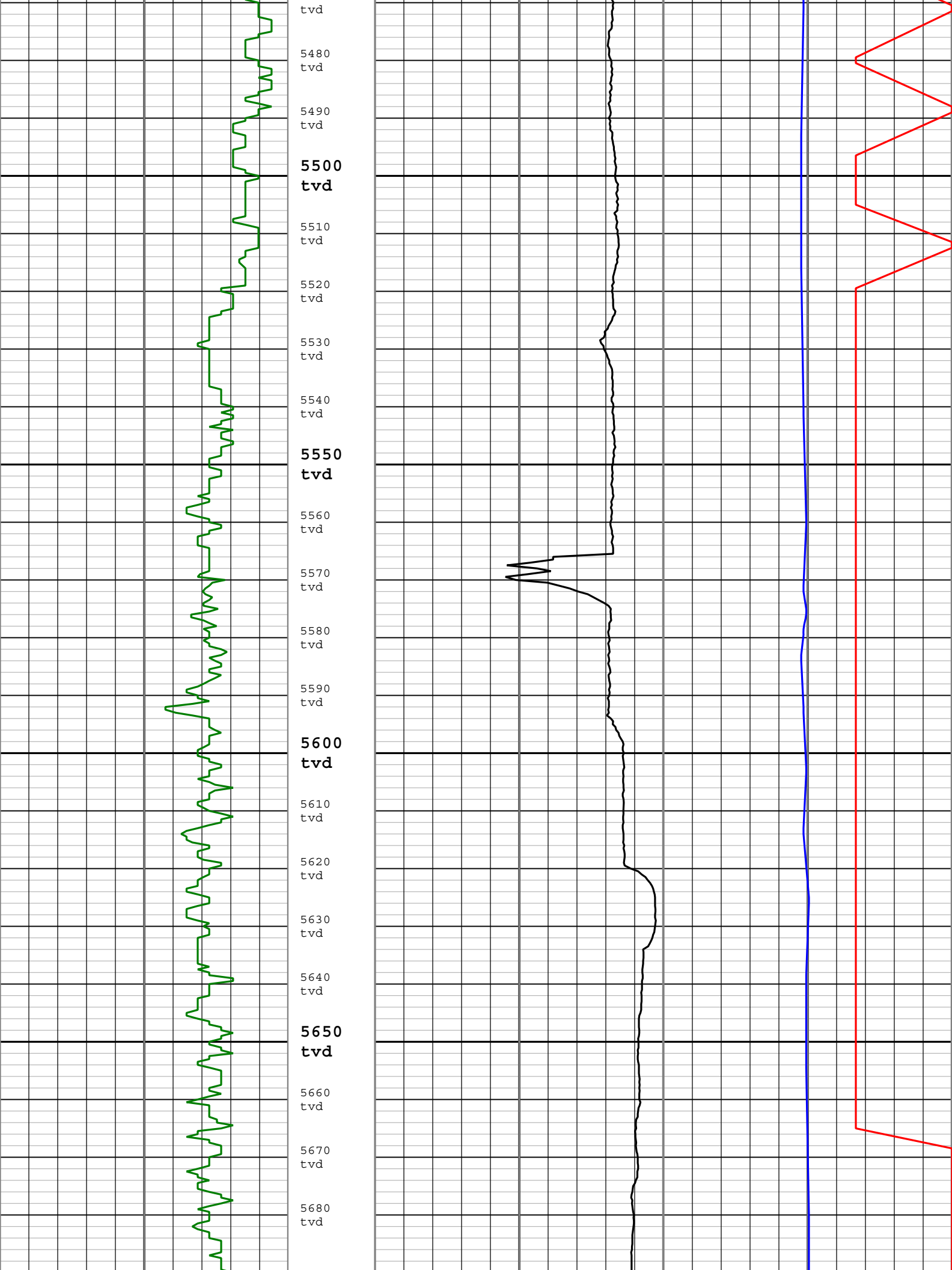
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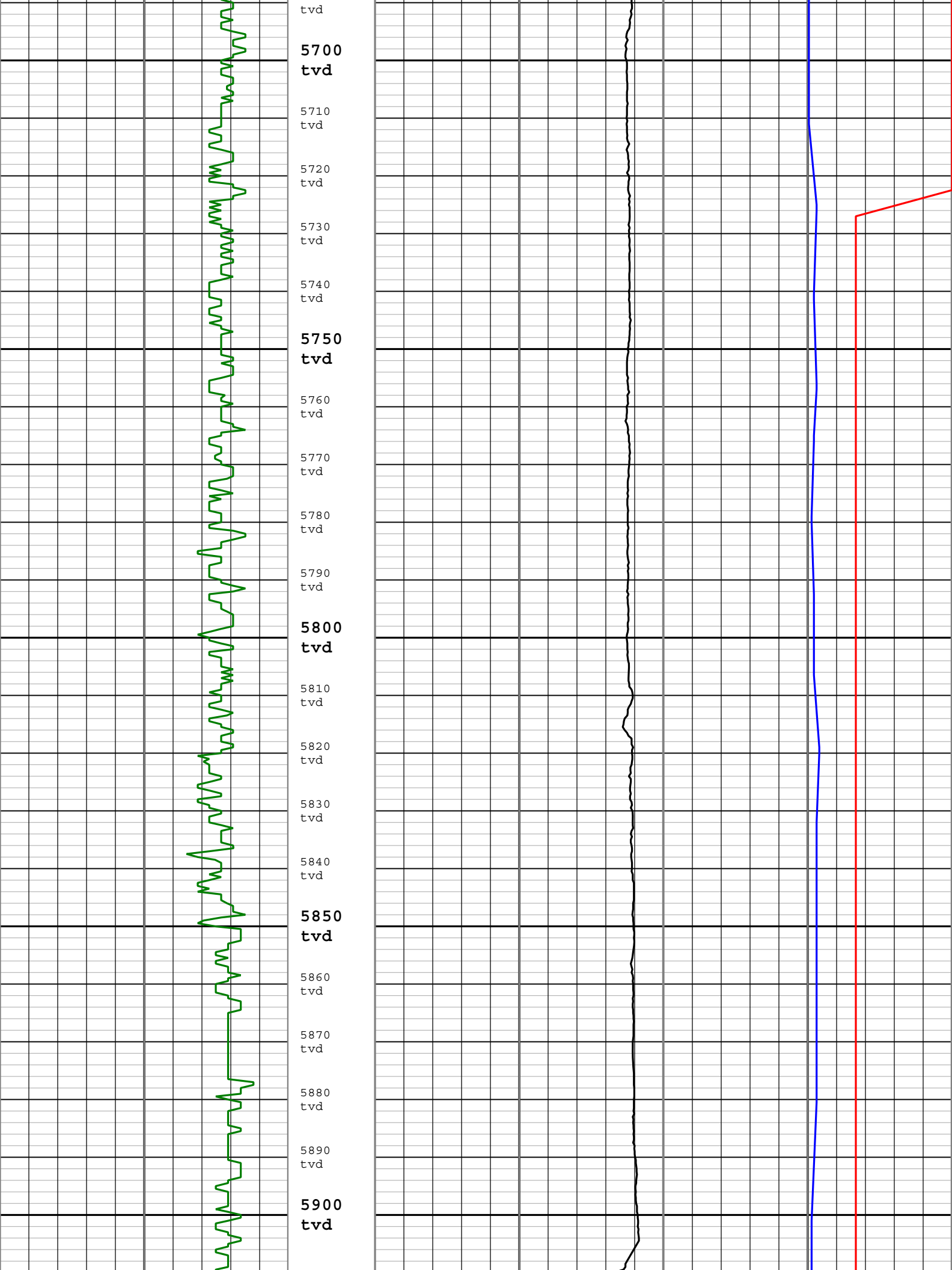
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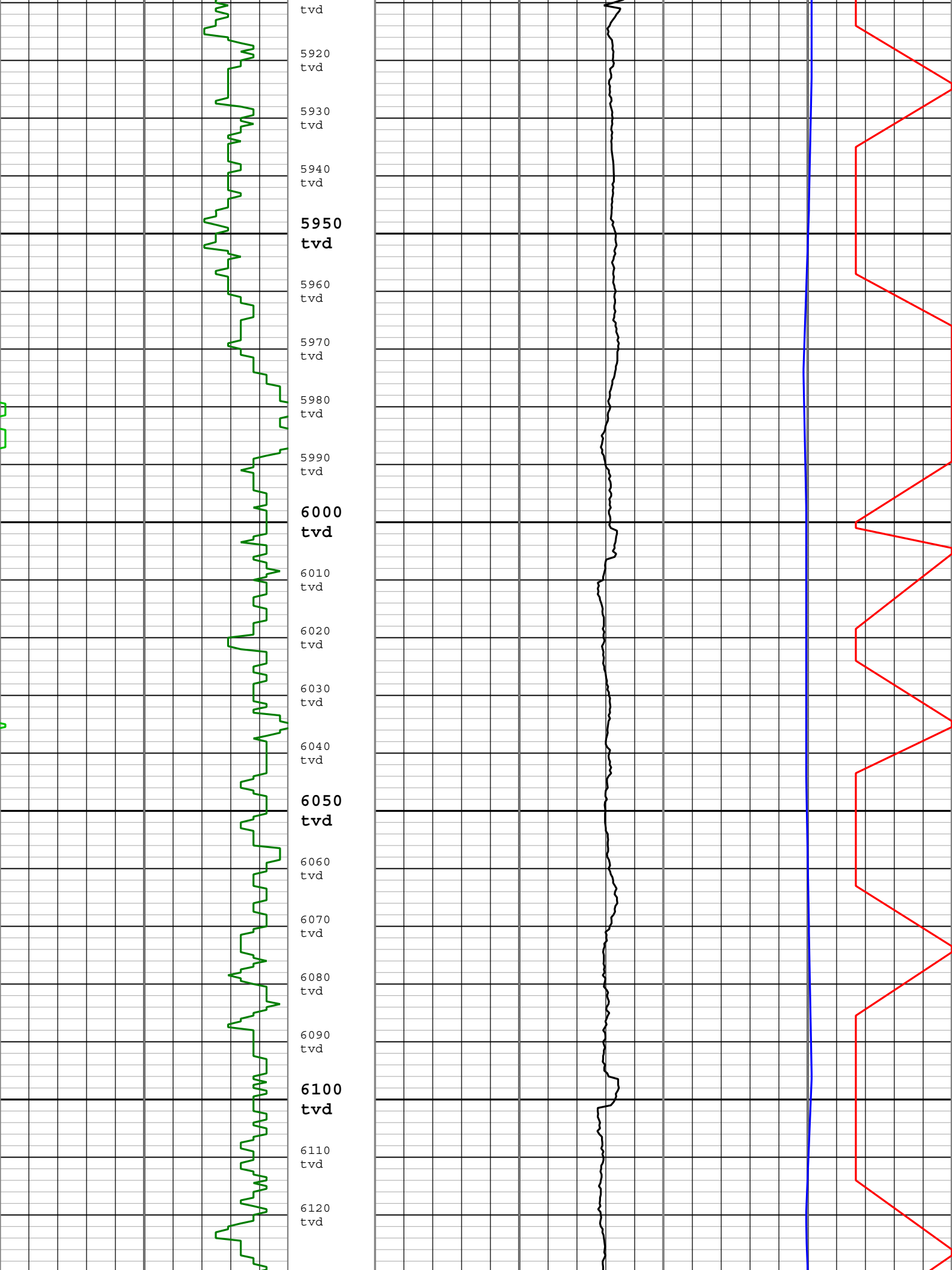
**5450
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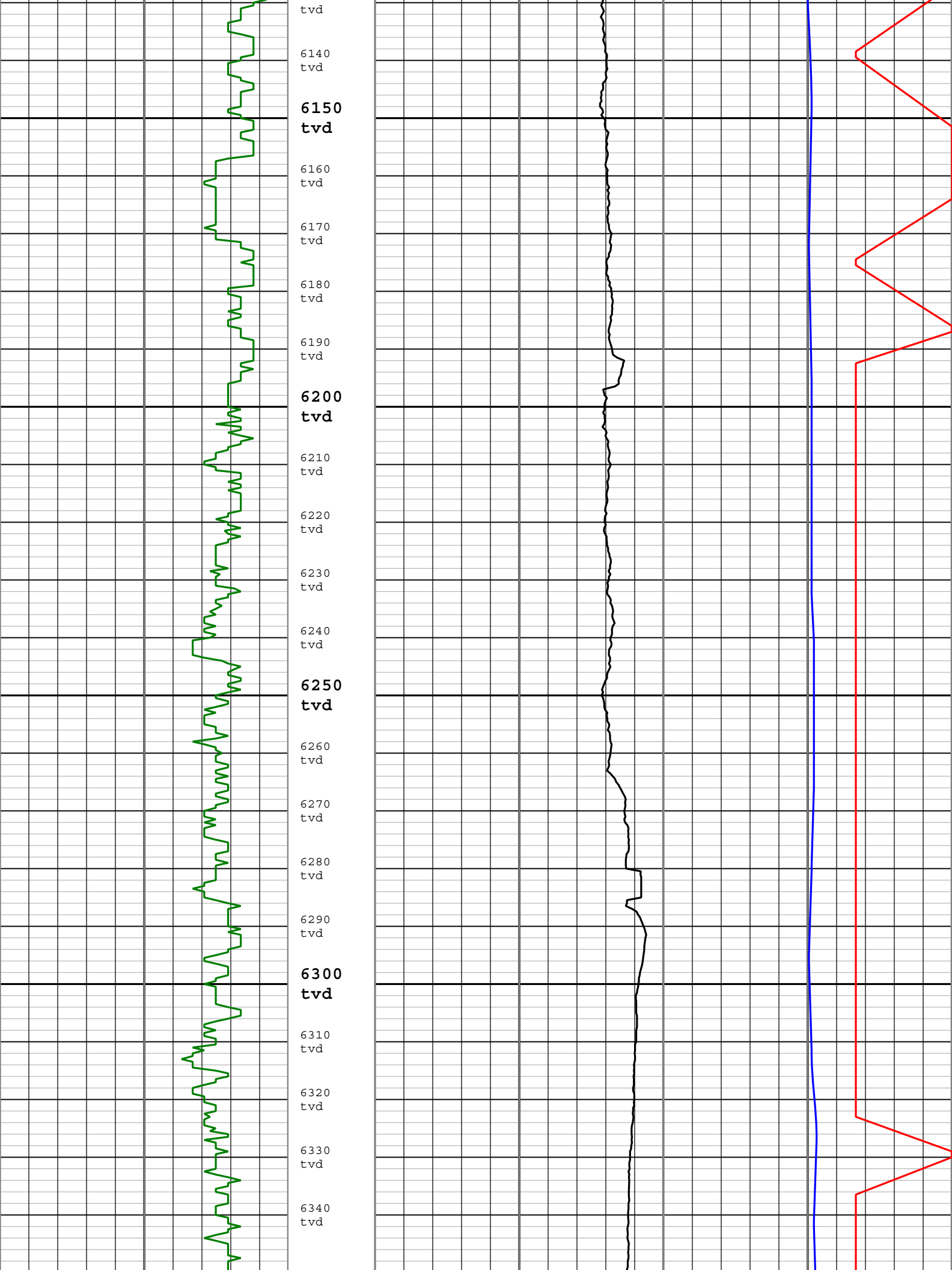
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tvd

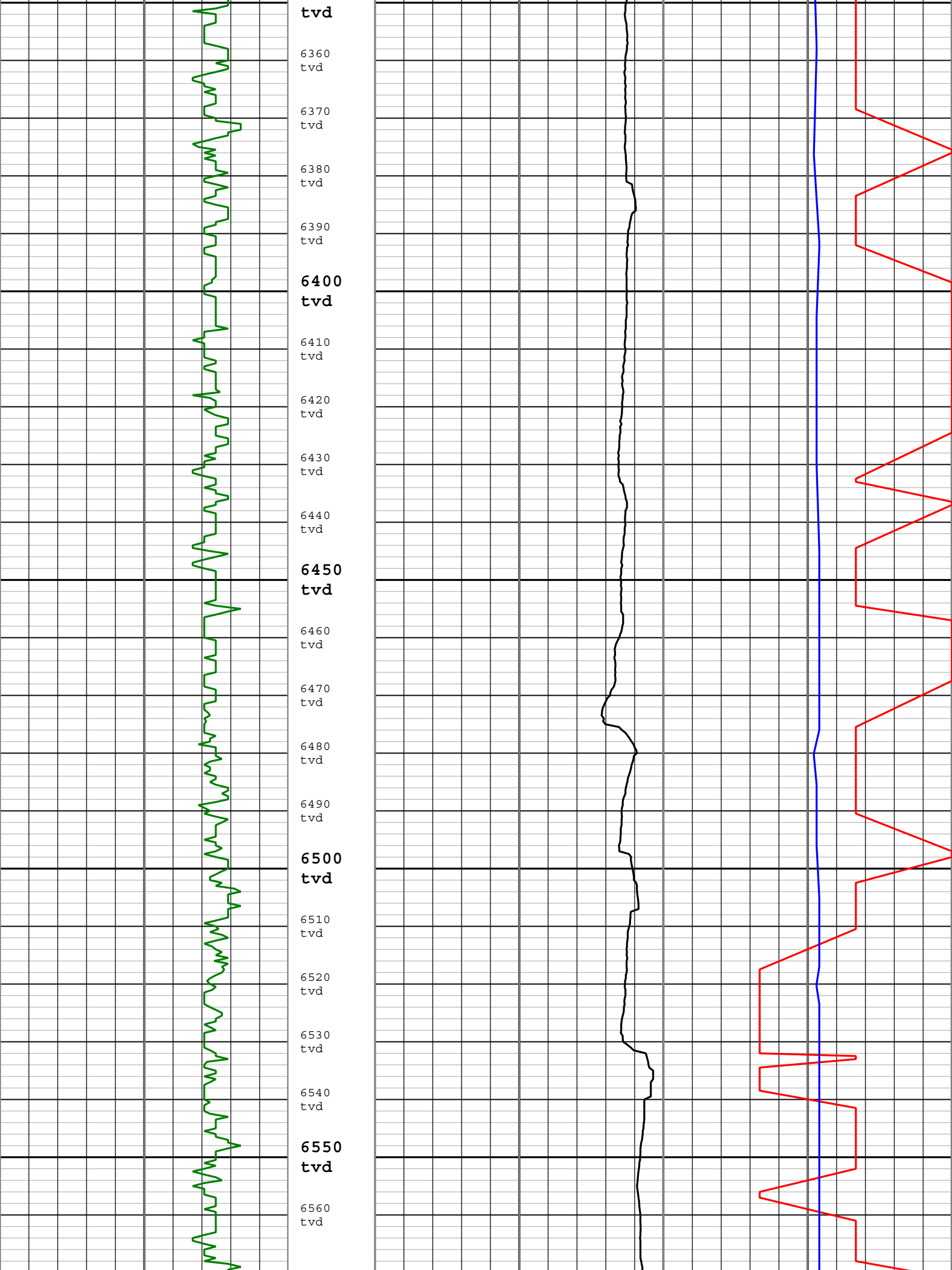


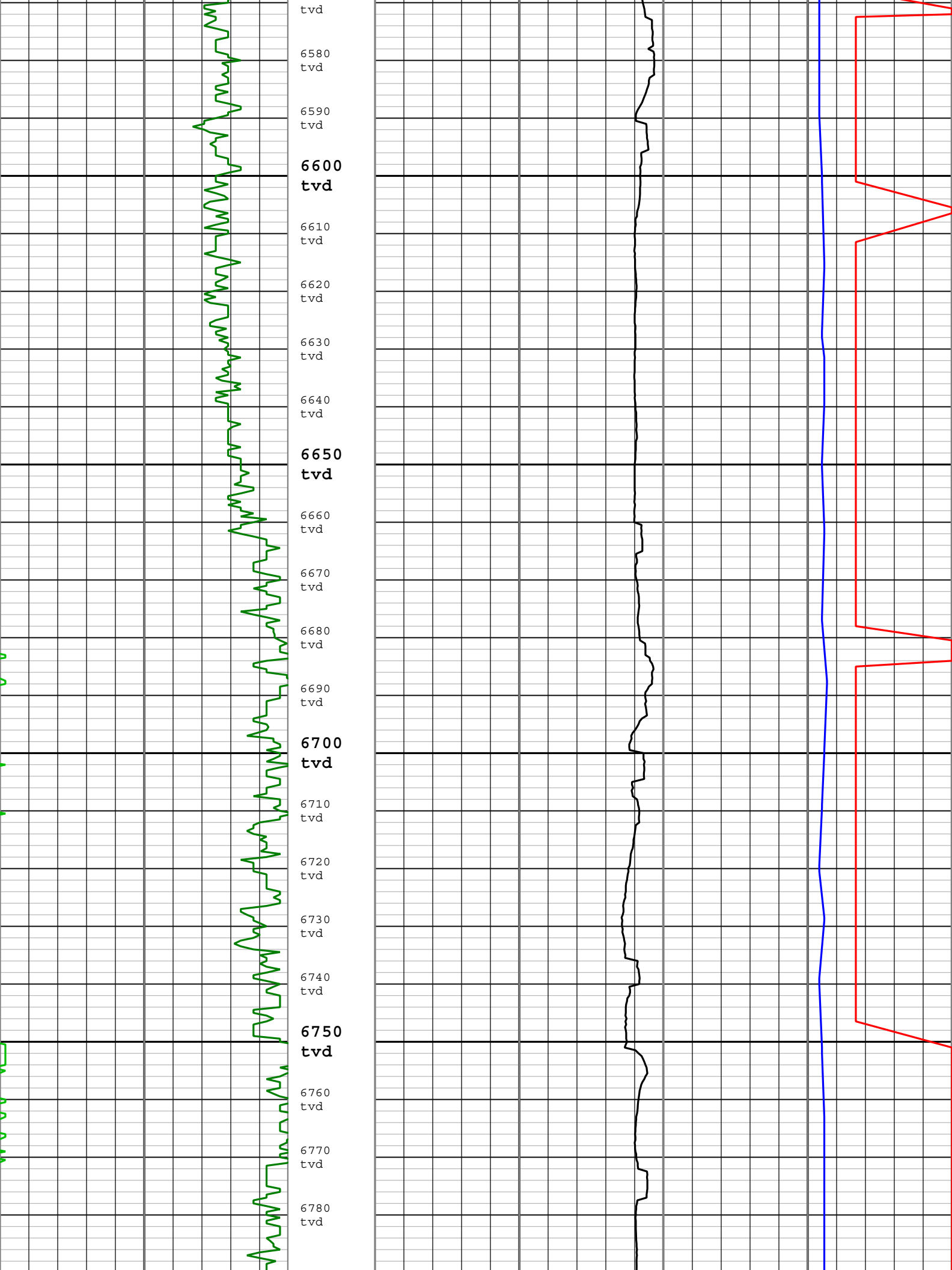


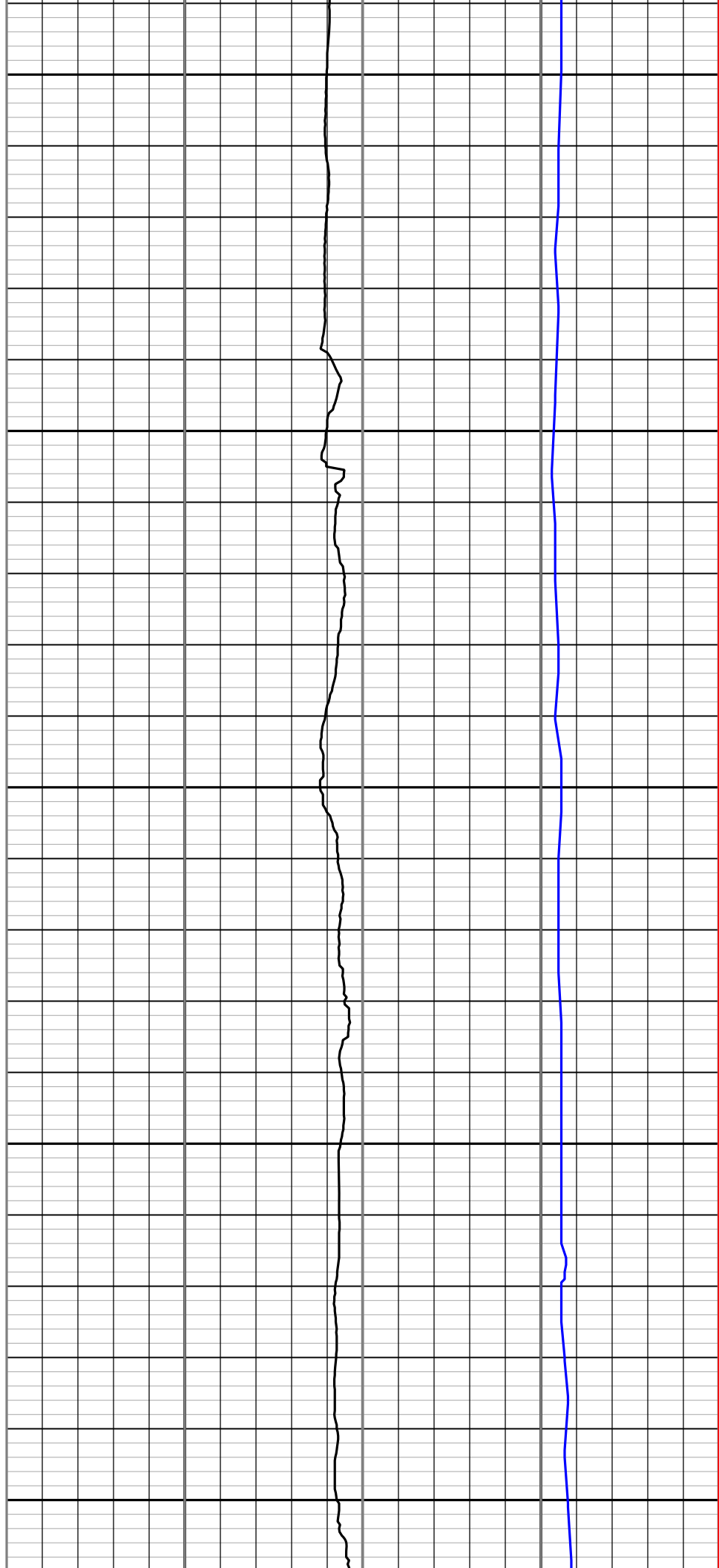
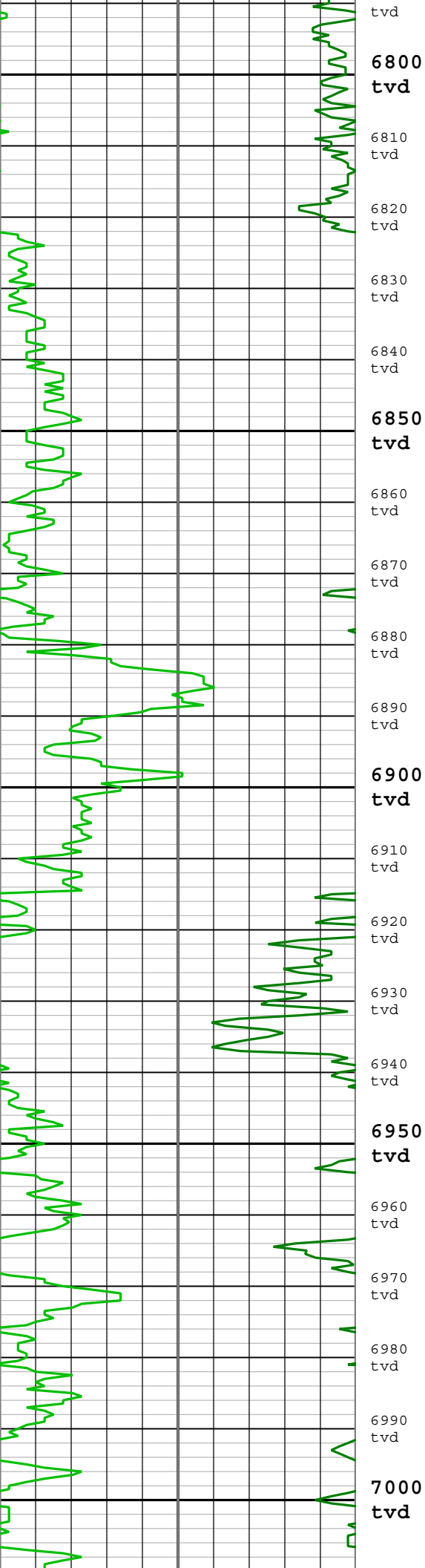


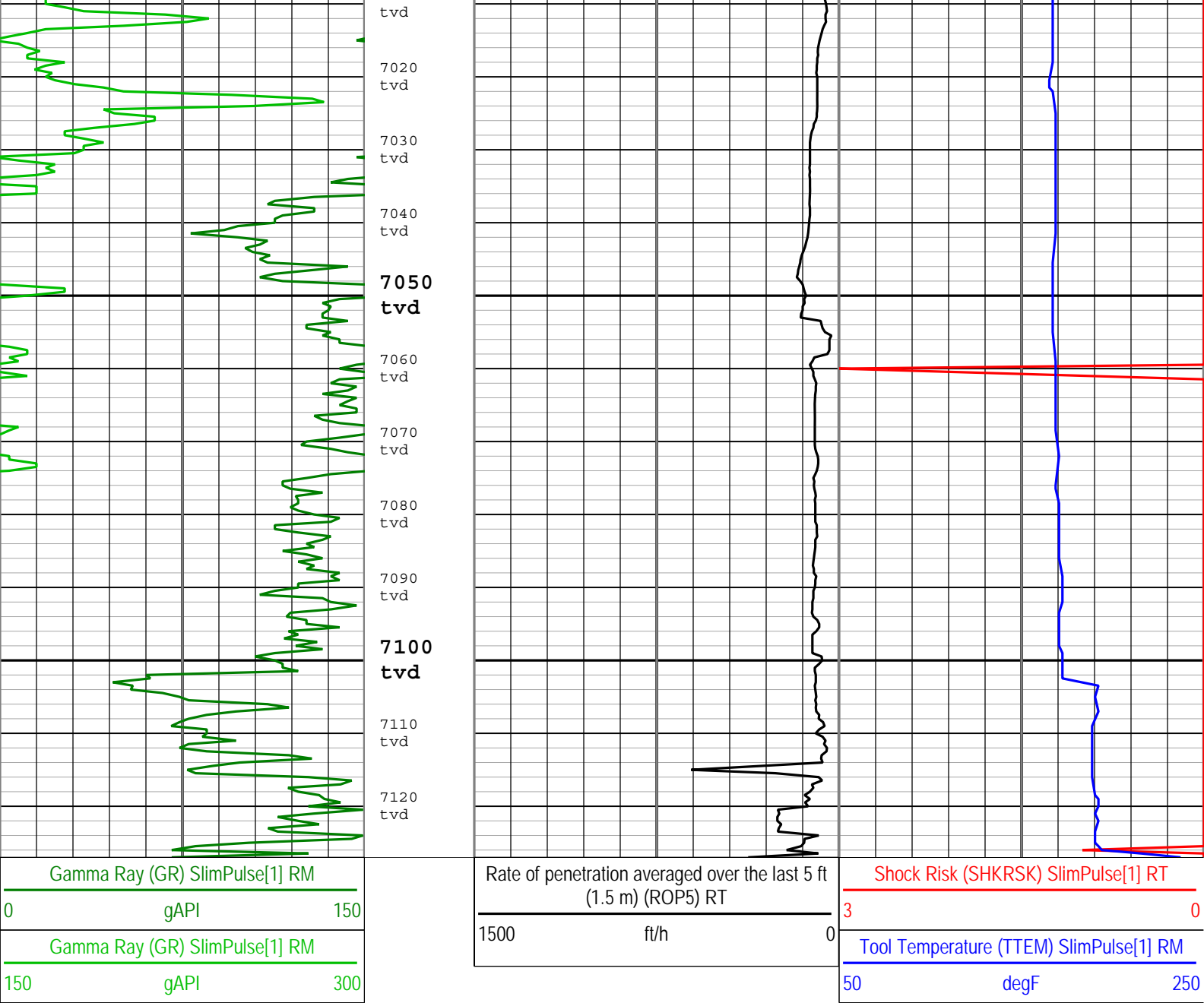












Channel Processing Parameters

Run001: Parameters

Parameter	Description	Tool	Value	Unit
BS	Bit Size	DNMSESSION	8.75	in
DFD	Drilling Fluid Density	Borehole	8.7	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	10.2	lbm/gal
GR_SRC	GR Source Selection	SPULSE-GEN	GAMMA_EXT	

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	10.65	lbm/gal
GR_SRC	GR Source Selection	SPULSE-GEN	GAMMA_EXT	

Run004Depth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	8.75	7055.68	7113.96
BS	6.125	7113.96	7127.02

All depth are actual.

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	<div><div></div><div></div><div></div><div></div><div></div></div>

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

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	<div><div></div><div></div><div></div><div></div><div></div></div>

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

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 11-Apr-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Gamma Ray Calibration Gain		Master	1.0000	0.9000	1.0258	1.1000	<div><div></div><div></div><div></div><div></div><div></div></div>

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

Primary Equipment :	Elec. cartridge, 150C max with GR	SPEC	6191
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GRGain - Gamma Ray: Blanket

Master (Time Frame File): 12:00:00 11-Apr-2014

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Gamma Ray Calibration Gain		Master	1.0000	0.9000	1.0258	1.1000	<div><div></div><div></div><div></div><div></div><div></div></div>

Survey Record

Survey Calculation			
Method :	Minimum Radius of Curvature	DLS Method :	Lubinski
North Reference :	Grid North	Total Correction Formula :	Magnetic Dec - Grid Convergence
Grid Convergence :	0.46 deg		


Rig Location


Lag Location:		40° 19' 40.692" N		Longitude :		104° 47' 27.672" W									
Tie In Point															
Measured Depth:	0.00 ft	Inclination:	0.00 deg	Azimuth:	0.00 deg										
True Vertical Depth:	0.00 ft	North Displacement:	0.00 ft	East Displacement:	0.00 ft										
N/-S VSec Origin:	0.00 ft	E/-W VSec Origin:	0.00 ft	Vertical Section Azimuth:	85.73 deg										
D&I Inits Computed and Values Used - Run001															
Geomagnetic Model :	BGGM 2014		Geomagnetic Date :	18-Jul-2014											
Computed Location B :	52667.45 nT +/- 300.00nT		Used Location B :	52580.00 nT +/- 300.00nT											
Computed Location G :	999.54 mgn +/- 2.50mgn		Used Location G :	999.54 mgn +/- 2.50mgn											
Computed Magnetic Dip :	66.88 deg +/- 0.45deg		Used Magnetic Dip :	66.79 deg +/- 0.45deg											
Computed Magnetic Dec :	8.54 deg		Used Magnetic Dec :	8.41 deg											
Computed Total Correction :	8.08 deg		Used Total Correction :	7.95 deg											
D&I Inits Computed and Values Used - Run002															
Geomagnetic Model :	BGGM 2014		Geomagnetic Date :	20-Jul-2014											
Computed Location B :	52666.70 nT +/- 300.00nT		Used Location B :	52666.70 nT +/- 300.00nT											
Computed Location G :	999.54 mgn +/- 2.50mgn		Used Location G :	999.54 mgn +/- 2.50mgn											
Computed Magnetic Dip :	66.88 deg +/- 0.45deg		Used Magnetic Dip :	66.88 deg +/- 0.45deg											
Computed Magnetic Dec :	8.54 deg		Used Magnetic Dec :	8.54 deg											
Computed Total Correction :	8.08 deg		Used Total Correction :	8.08 deg											
D&I Inits Computed and Values Used - Run003															
Geomagnetic Model :	BGGM 2014		Geomagnetic Date :	21-Jul-2014											
Computed Location B :	52666.34 nT +/- 300.00nT		Used Location B :	52580.00 nT +/- 300.00nT											
Computed Location G :	999.54 mgn +/- 2.50mgn		Used Location G :	999.54 mgn +/- 2.50mgn											
Computed Magnetic Dip :	66.88 deg +/- 0.45deg		Used Magnetic Dip :	66.79 deg +/- 0.45deg											
Computed Magnetic Dec :	8.54 deg		Used Magnetic Dec :	8.41 deg											
Computed Total Correction :	8.08 deg		Used Total Correction :	7.95 deg											
D&I Inits Computed and Values Used - Run004															
Geomagnetic Model :	BGGM 2014		Geomagnetic Date :	23-Jul-2014											
Computed Location B :	52665.59 nT +/- 300.00nT		Used Location B :	52580.00 nT +/- 300.00nT											
Computed Location G :	999.54 mgn +/- 2.50mgn		Used Location G :	999.02 mgn +/- 2.50mgn											
Computed Magnetic Dip :	66.88 deg +/- 0.45deg		Used Magnetic Dip :	66.79 deg +/- 0.45deg											
Computed Magnetic Dec :	8.54 deg		Used Magnetic Dec :	8.41 deg											
Computed Total Correction :	8.08 deg		Used Total Correction :	7.95 deg											
Survey Quality Index															
0 : Long Survey passed all criteria		2 : Long Survey failed mag criteria		9 : Manual											
28 : Tie-In Point															
Survey Correction Index															
0 : No correction															
Survey Description Index															
0 : Not Flagged Survey		7 : Projection to Bit													
Seq	MD (ft)	Incl (deg)	Azim (deg)	Course (ft)	TVD (ft)	V Sec (ft)	N/ -S (ft)	E/ -W (ft)	Closure (ft)	at Azim (deg)	DLS deg/100ft	Tool Type	QI	CI	DI
1	0.00	0.00	0.00	- - - -	0.00	0.00	0.00	0.00	0.00	90.00	0.00	TIP	28	0	0
2	286.00	0.60	38.20	286.00	285.99	1.01	1.18	0.93	1.51	38.20	0.21	SingleShot	9	0	0
3	630.00	0.70	329.60	344.00	629.98	1.30	4.40	0.98	4.53	12.50	0.21	SingleShot	9	0	0
4	699.00	0.61	337.49	69.00	698.97	1.00	5.11	0.62	5.15	6.95	0.18	SlimPulse	2	0	0
5	793.00	0.64	340.44	94.00	792.97	0.71	6.07	0.25	6.07	2.41	0.05	SlimPulse	0	0	0
6	888.00	0.81	330.96	95.00	887.96	0.29	7.15	-0.25	7.15	358.02	0.21	SlimPulse	0	0	0
7	980.00	0.67	313.22	92.00	979.95	-0.35	8.08	-0.95	8.14	353.28	0.29	SlimPulse	0	0	0
8	1073.00	0.65	321.92	93.00	1072.95	-1.01	8.87	-1.67	9.02	349.33	0.11	SlimPulse	0	0	0
9	1165.00	0.79	318.95	92.00	1164.94	-1.67	9.75	-2.40	10.04	346.15	0.16	SlimPulse	0	0	0
10	1257.00	2.92	306.01	92.00	1256.89	-3.84	11.60	-4.71	12.53	337.90	2.34	SlimPulse	0	0	0
11	1351.00	3.83	304.13	94.00	1350.72	-8.12	14.77	-9.25	17.42	327.95	0.98	SlimPulse	0	0	0
12	1443.00	5.53	291.66	92.00	1442.41	-14.52	18.13	-15.91	24.11	318.73	2.14	SlimPulse	2	0	0
13	1536.00	7.86	285.82	93.00	1534.77	-24.52	21.52	-26.19	33.89	309.41	2.61	SlimPulse	0	0	0
14	1630.00	9.67	291.11	94.00	1627.68	-37.69	26.12	-39.74	47.54	303.31	2.11	SlimPulse	0	0	0
15	1724.00	10.41	300.14	94.00	1720.24	-51.83	33.22	-54.45	63.78	301.39	1.85	SlimPulse	0	0	0

	1817.00	11.01	305.33	93.00	1811.62	-65.61	42.58	-68.97	81.07	301.69	1.22	SlimPulse	0	0	0
17	1910.00	9.59	302.26	93.00	1903.12	-78.68	51.85	-82.77	97.67	302.07	1.63	SlimPulse	0	0	0
18	2005.00	9.91	309.67	95.00	1996.75	-90.93	61.30	-95.76	113.68	302.62	1.36	SlimPulse	0	0	0
19	2100.00	9.22	308.96	95.00	2090.43	-102.36	71.30	-107.97	129.40	303.44	0.74	SlimPulse	0	0	0
20	2195.00	9.78	306.55	95.00	2184.13	-114.02	80.89	-120.37	145.01	303.90	0.72	SlimPulse	0	0	0
21	2290.00	10.72	311.06	95.00	2277.61	-126.33	91.50	-133.52	161.88	304.42	1.31	SlimPulse	0	0	0
22	2385.00	9.91	311.24	95.00	2371.07	-138.28	102.70	-146.33	178.77	305.06	0.86	SlimPulse	0	0	0
23	2480.00	8.75	308.66	95.00	2464.82	-149.30	112.60	-158.12	194.13	305.46	1.30	SlimPulse	0	0	0
24	2576.00	11.33	311.22	96.00	2559.34	-161.25	123.38	-170.91	210.79	305.82	2.73	SlimPulse	0	0	0
25	2671.00	12.02	309.85	95.00	2652.37	-174.90	135.87	-185.53	229.95	306.22	0.78	SlimPulse	0	0	0
26	2766.00	12.44	311.54	95.00	2745.22	-189.13	148.99	-200.78	250.03	306.58	0.58	SlimPulse	0	0	0
27	2861.00	10.70	309.54	95.00	2838.28	-202.63	161.39	-215.24	269.03	306.86	1.87	SlimPulse	0	0	0
28	2956.00	10.12	309.63	95.00	2931.72	-215.01	172.33	-228.47	286.19	307.03	0.62	SlimPulse	0	0	0
29	3051.00	9.28	309.19	95.00	3025.36	-226.58	182.50	-240.83	302.17	307.15	0.89	SlimPulse	0	0	0
30	3146.00	9.33	305.45	95.00	3119.11	-238.06	191.80	-253.04	317.52	307.16	0.64	SlimPulse	0	0	0
31	3241.00	10.16	303.55	95.00	3212.74	-250.60	200.90	-266.30	333.60	307.03	0.94	SlimPulse	0	0	0
32	3336.00	10.55	306.15	95.00	3306.19	-263.84	210.66	-280.30	350.66	306.93	0.63	SlimPulse	0	0	0
33	3431.00	10.61	307.77	95.00	3399.58	-276.96	221.15	-294.24	368.08	306.93	0.32	SlimPulse	0	0	0
34	3526.00	8.89	308.11	95.00	3493.20	-288.88	231.04	-306.93	384.15	306.97	1.82	SlimPulse	0	0	0
35	3621.00	9.14	308.87	95.00	3587.03	-299.80	240.30	-318.58	399.05	307.03	0.30	SlimPulse	0	0	0
36	3716.00	10.31	313.57	95.00	3680.66	-311.02	250.90	-330.62	415.06	307.19	1.49	SlimPulse	0	0	0
37	3811.00	11.98	310.67	95.00	3773.87	-323.71	263.19	-344.26	433.33	307.40	1.85	SlimPulse	0	0	0
38	3906.00	12.64	305.59	95.00	3866.69	-338.67	275.67	-360.19	453.58	307.43	1.33	SlimPulse	0	0	0
39	4001.00	12.18	305.00	95.00	3959.46	-354.41	287.46	-376.86	473.98	307.34	0.50	SlimPulse	0	0	0
40	4096.00	10.46	304.43	95.00	4052.61	-368.90	298.09	-392.19	492.62	307.24	1.82	SlimPulse	0	0	0
41	4192.00	8.42	300.05	96.00	4147.31	-381.51	306.54	-405.46	508.30	307.09	2.26	SlimPulse	0	0	0
42	4287.00	7.64	299.86	95.00	4241.38	-392.48	313.16	-416.95	521.46	306.91	0.81	SlimPulse	0	0	0
43	4382.00	6.77	299.36	95.00	4335.63	-402.37	319.06	-427.32	533.30	306.75	0.92	SlimPulse	0	0	0
44	4477.00	6.34	298.44	95.00	4430.00	-411.45	324.30	-436.81	544.03	306.59	0.47	SlimPulse	0	0	0
45	4572.00	6.06	300.72	95.00	4524.45	-419.98	329.36	-445.74	554.23	306.46	0.39	SlimPulse	0	0	0
46	4668.00	5.13	314.31	96.00	4619.99	-426.97	334.95	-453.17	563.52	306.47	1.68	SlimPulse	0	0	0
47	4763.00	4.59	314.01	95.00	4714.65	-432.31	340.56	-458.94	571.49	306.58	0.57	SlimPulse	0	0	0
48	4858.00	4.58	315.49	95.00	4809.35	-437.29	345.90	-464.33	579.00	306.68	0.12	SlimPulse	0	0	0
49	4953.00	4.04	314.78	95.00	4904.08	-441.93	350.96	-469.36	586.06	306.79	0.57	SlimPulse	0	0	0
50	5048.00	3.95	316.25	95.00	4998.85	-446.20	355.68	-474.00	592.62	306.88	0.14	SlimPulse	0	0	0
51	5143.00	2.79	324.72	95.00	5093.68	-449.47	359.93	-477.60	598.03	307.00	1.33	SlimPulse	0	0	0
52	5239.00	0.94	311.31	96.00	5189.63	-451.23	362.36	-479.54	601.05	307.08	1.96	SlimPulse	0	0	0
53	5334.00	0.69	306.53	95.00	5284.62	-452.21	363.21	-480.59	602.40	307.08	0.28	SlimPulse	0	0	0
54	5429.00	0.84	309.64	95.00	5379.61	-453.14	364.00	-481.58	603.67	307.08	0.16	SlimPulse	0	0	0
55	5524.00	0.28	78.52	95.00	5474.61	-453.41	364.49	-481.88	604.20	307.10	1.10	SlimPulse	0	0	0
56	5619.00	0.52	144.91	95.00	5569.61	-452.96	364.19	-481.41	603.64	307.11	0.50	SlimPulse	0	0	0
57	5715.00	1.06	177.80	96.00	5665.60	-452.77	362.94	-481.13	602.66	307.03	0.72	SlimPulse	0	0	0
58	5810.00	1.09	183.05	95.00	5760.58	-452.91	361.16	-481.14	601.61	306.89	0.11	SlimPulse	0	0	0
59	5905.00	0.88	192.79	95.00	5855.57	-453.24	359.54	-481.35	600.82	306.76	0.29	SlimPulse	0	0	0
60	5994.00	0.72	213.27	89.00	5944.56	-453.79	358.41	-481.81	600.49	306.64	0.36	SlimPulse	2	0	0
61	6089.00	0.76	208.03	95.00	6039.55	-454.49	357.35	-482.43	600.36	306.53	0.08	SlimPulse	2	0	0
62	6184.00	0.41	257.48	95.00	6134.54	-455.16	356.72	-483.07	600.49	306.44	0.61	SlimPulse	2	0	0
63	6279.00	0.85	250.73	95.00	6229.54	-456.19	356.41	-484.07	601.12	306.36	0.47	SlimPulse	2	0	0
64	6375.00	3.28	120.62	96.00	6325.49	-454.62	354.78	-482.37	598.79	306.33	4.05	SlimPulse	2	0	0
65	6422.00	8.27	96.64	47.00	6372.24	-450.20	353.70	-477.86	594.52	306.51	11.56	SlimPulse	2	0	0
66	6470.00	11.71	92.40	48.00	6419.51	-441.97	353.10	-469.56	587.50	306.94	7.34	SlimPulse	2	0	0
67	6565.00	12.48	104.51	95.00	6512.41	-422.67	350.12	-449.98	570.14	307.89	2.78	SlimPulse	2	0	0
68	6660.00	14.15	93.27	95.00	6604.87	-401.43	346.89	-428.45	551.28	308.99	3.23	SlimPulse	2	0	0
69	6755.00	17.40	81.87	95.00	6696.31	-375.74	348.23	-402.79	532.45	310.85	4.71	SlimPulse	2	0	0

	6851.00	20.76	85.94	96.00	6787.02	-344.39	351.47	-371.59	511.48	313.41	3.76	SlimPulse	2	0	0
71	6946.00	24.98	87.87	95.00	6874.53	-307.49	353.41	-334.73	486.78	316.55	4.52	SlimPulse	2	0	0
72	7042.00	36.08	77.20	96.00	6957.15	-259.09	360.45	-286.72	460.60	321.50	12.82	SlimPulse	2	0	0
73	7137.00	49.82	72.44	95.00	7026.54	-195.79	377.69	-224.53	439.37	329.27	14.85	SlimPulse	2	0	0
74	7232.00	63.51	73.28	95.00	7078.63	-118.59	400.98	-148.86	427.72	339.63	14.42	SlimPulse	0	0	0
75	7295.00	75.07	75.58	63.00	7100.87	-60.90	416.73	-92.18	426.80	347.53	18.67	SlimPulse	0	0	0
76	7398.00	84.76	83.14	103.00	7118.91	39.70	435.31	7.31	435.37	0.96	11.86	SlimPulse	9	0	0
77	7492.00	87.38	88.87	94.00	7125.36	133.43	441.84	100.81	453.18	12.85	6.69	SlimPulse	9	0	0
78	7585.00	92.68	94.95	93.00	7125.31	225.81	438.74	193.68	479.59	23.82	8.67	SlimPulse	9	0	0
79	7678.00	93.75	97.25	93.00	7120.10	317.14	428.87	286.01	515.49	33.70	2.72	SlimPulse	9	0	0
80	7773.00	94.09	99.09	95.00	7113.60	409.69	415.41	379.82	562.86	42.44	1.97	SlimPulse	9	0	0
81	7868.00	93.06	99.77	95.00	7107.68	501.81	399.87	473.35	619.65	49.81	1.30	SlimPulse	9	0	0
82	7963.00	90.79	98.95	95.00	7104.49	594.07	384.43	567.02	685.07	55.86	2.54	SlimPulse	9	0	0
83	8058.00	91.10	98.76	95.00	7102.92	686.58	369.81	660.88	757.32	60.77	0.38	SlimPulse	9	0	0
84	8153.00	89.79	96.38	95.00	7102.18	779.55	357.30	755.04	835.30	64.68	2.86	SlimPulse	9	0	0
85	8248.00	89.35	93.57	95.00	7102.89	873.30	349.06	849.67	918.57	67.67	2.99	SlimPulse	9	0	0
86	8344.00	89.11	89.60	96.00	7104.19	968.77	346.40	945.60	1007.05	69.88	4.14	SlimPulse	9	0	0
87	8439.00	87.56	87.77	95.00	7106.95	1063.60	348.58	1040.53	1097.38	71.48	2.52	SlimPulse	9	0	0
88	8534.00	91.13	89.11	95.00	7108.03	1158.47	351.17	1135.47	1188.55	72.81	4.01	SlimPulse	9	0	0
89	8629.00	92.65	88.90	95.00	7104.90	1253.26	352.82	1230.40	1279.99	74.00	1.62	SlimPulse	9	0	0
90	8724.00	92.27	88.75	95.00	7100.82	1348.03	354.76	1325.30	1371.95	75.01	0.43	SlimPulse	9	0	0
91	8820.00	91.13	90.46	96.00	7097.97	1443.77	355.42	1421.25	1465.03	75.96	2.14	SlimPulse	9	0	0
92	8915.00	90.65	89.89	95.00	7096.50	1538.47	355.13	1516.23	1557.28	76.82	0.78	SlimPulse	9	0	0
93	9010.00	89.42	89.44	95.00	7096.44	1633.24	355.69	1611.23	1650.03	77.55	1.38	SlimPulse	9	0	0
94	9105.00	88.93	90.42	95.00	7097.81	1727.98	355.80	1706.22	1742.91	78.22	1.15	SlimPulse	9	0	0
95	9200.00	89.45	90.16	95.00	7099.15	1822.66	355.32	1801.21	1835.93	78.84	0.61	SlimPulse	9	0	0
96	9295.00	87.93	90.10	95.00	7101.32	1917.36	355.11	1896.18	1929.13	79.39	1.60	SlimPulse	9	0	0
97	9390.00	88.80	90.09	95.00	7104.03	2012.04	354.95	1991.14	2022.54	79.89	0.92	SlimPulse	9	0	0
98	9485.00	90.41	89.76	95.00	7104.69	2106.78	355.07	2086.14	2116.14	80.34	1.73	SlimPulse	9	0	0
99	9581.00	89.52	91.59	96.00	7104.75	2202.42	353.94	2182.12	2210.63	80.79	2.12	SlimPulse	9	0	0
100	9676.00	90.52	92.44	95.00	7104.71	2296.85	350.60	2277.06	2303.90	81.25	1.38	SlimPulse	9	0	0
101	9771.00	88.69	90.32	95.00	7105.37	2391.37	348.32	2372.02	2397.47	81.65	2.95	SlimPulse	9	0	0
102	9866.00	89.62	90.14	95.00	7106.77	2486.07	347.93	2467.01	2491.44	81.97	1.00	SlimPulse	9	0	0
103	9961.00	88.49	89.58	95.00	7108.34	2580.81	348.17	2562.00	2585.53	82.26	1.33	SlimPulse	9	0	0
104	10056.00	88.24	89.49	95.00	7111.05	2675.56	348.94	2656.95	2679.76	82.52	0.28	SlimPulse	9	0	0
105	10151.00	89.28	88.95	95.00	7113.10	2770.36	350.23	2751.92	2774.11	82.75	1.23	SlimPulse	9	0	0
106	10246.00	89.24	87.91	95.00	7114.33	2865.25	352.83	2846.88	2868.67	82.93	1.10	SlimPulse	9	0	0
107	10342.00	88.11	88.22	96.00	7116.55	2961.14	356.07	2942.79	2964.27	83.10	1.22	SlimPulse	9	0	0
108	10437.00	87.39	89.78	95.00	7120.28	3055.91	357.73	3037.70	3058.69	83.28	1.81	SlimPulse	9	0	0
109	10532.00	88.07	89.65	95.00	7124.04	3150.60	358.20	3132.63	3153.05	83.48	0.73	SlimPulse	9	0	0
110	10627.00	89.11	89.91	95.00	7126.38	3245.33	358.57	3227.60	3247.44	83.66	1.13	SlimPulse	9	0	0
111	10723.00	90.14	89.07	96.00	7127.01	3341.12	359.42	3323.59	3342.98	83.83	1.38	SlimPulse	9	0	0
112	10817.00	91.69	88.79	94.00	7125.51	3434.96	361.18	3417.56	3436.58	83.97	1.68	SlimPulse	9	0	0
113	10913.00	92.69	88.18	96.00	7121.84	3530.78	363.71	3513.45	3532.22	84.09	1.22	SlimPulse	9	0	0
114	11008.00	91.75	89.41	95.00	7118.16	3625.57	365.71	3608.36	3626.84	84.21	1.63	SlimPulse	9	0	0
115	11103.00	92.10	88.98	95.00	7114.97	3720.34	367.04	3703.29	3721.42	84.34	0.58	SlimPulse	9	0	0
116	11198.00	92.96	88.73	95.00	7110.77	3815.11	368.94	3798.18	3816.04	84.45	0.94	SlimPulse	9	0	0
117	11293.00	90.86	88.98	95.00	7107.61	3909.91	370.84	3893.10	3910.73	84.56	2.23	SlimPulse	9	0	0
118	11388.00	91.51	89.43	95.00	7105.64	4004.71	372.15	3988.07	4005.41	84.67	0.83	SlimPulse	9	0	0
119	11483.00	88.90	89.32	95.00	7105.30	4099.51	373.19	4083.06	4100.07	84.78	2.75	SlimPulse	9	0	0
120	11579.00	89.18	89.33	96.00	7106.91	4195.31	374.32	4179.04	4195.77	84.88	0.29	SlimPulse	9	0	0
121	11674.00	89.62	89.20	95.00	7107.91	4290.12	375.54	4274.03	4290.49	84.98	0.48	SlimPulse	9	0	0
122	11769.00	90.65	88.91	95.00	7107.68	4384.96	377.11	4369.01	4385.27	85.07	1.13	SlimPulse	9	0	0
123	11864.00	89.83	90.46	95.00	7107.28	4479.73	377.63	4464.00	4479.95	85.16	1.85	SlimPulse	9	0	0

124	11959.00	90.17	90.46	95.00	7107.28	4574.41	376.87	4559.00	4574.54	85.27	0.36	SlimPulse	9	0	0
125	12054.00	91.03	90.99	95.00	7106.29	4669.04	375.66	4653.99	4669.13	85.39	1.06	SlimPulse	9	0	0
126	12149.00	91.41	91.42	95.00	7104.27	4763.58	373.67	4748.94	4763.62	85.50	0.60	SlimPulse	9	0	0
127	12195.00	91.65	91.52	46.00	7103.04	4809.34	372.49	4794.91	4809.35	85.56	0.57	SlimPulse	9	0	0
128	12260.00	91.65	91.52	65.00	7101.17	4873.98	370.76	4859.86	4873.98	85.64	0.00	Other	9	0	7

Company:	Noble Energy INC	
Well:	Five Rivers K09-67-1HN	
Field:	Wattenberg	
County:	Weld	
State:	Colorado	
Country:	USA	



SlimPulse-Gamma Ray

2 in./ 100 ft and 5 in./ 100 ft True Vertical Depth

Recorded Mode, Composite Log