

SlimPulse-Gamma Ray

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

Schlumberger

Recorded Mode, Composite Log

Company: Noble Energy INC

Well: Five Rivers K09-66-1HN

Field: Wattenberg

County: Weld

State: Colorado

Country: USA

Section: 8 APIN: 05-123-39482

Township: 4N Rig Name: H&P 330

Range: 66W Rig Type: Top Drive

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

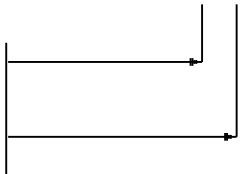
FL1: Latitude: N 40° 19' 40.224", Easting: 1363063.153 ftUS

FL2: Longitude: W 104° 47' 27.636", Northing: 3197669.130 ftUS

Log Measured From: - Drill Floor: 4729.00 ft

Ground Level: 4699.00 ft

Permanent Datum: - Mean Sea Level



Acquisition Dates: 07-Aug-2014 -- 12-Aug-2014

Other Services:

Log Interval: 629.00(ft)TVD to 6965.00(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: 06-Aug-2014



Disclaimer

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

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Borehole Size/Casing Record

Bit						
Bit Size (in)	8.75	6.125				
Top Driller (ft)	0	7272				
Bottom Driller (ft)	7272	12018				

Operational Run Summary

Parameter (unit)	Run001	Run002	Run003			
Date Log Started	07-Aug-2014	08-Aug-2014	10-Aug-2014			
Time Log Started	00:29:33	05:38:30	08:07:55			
Date Log Finished	08-Aug-2014	09-Aug-2014	12-Aug-2014			
Time Log Finished	00:49:11	06:01:51	20:09:31			
Bit Size (in)	8.750	8.750	6.125			
Bit Start Depth (ft)	640.00	6225.00	7272.00			
Bit Stop Depth (ft)	6225.00	7272.00	12018.00			
Top Log Interval (ft)	589.00	6174.00	7213.00			
Bottom Log Interval (ft)	6174.00	7213.00	11951.00			
Max Hole Deviation (deg)	12.76	83.18	92.86			
Azimuth of Max Deviation (deg)	242.56	82.24	94.04			
Logging Unit Number	Command Center	Command Center	Command Center			
Logging Unit Location	Zone 2	Zone 2	Zone 2			
Recorded By	Zach Brunson	Zach Brunson	Mark Wilson			
Witnessed By	Derrick Dupee	Derrick Dupee	Derrick Dupee			
Service Order Number	14CCO0619	14CCO0619	14CCO0619			

Borehole Fluids

Parameter(unit)	Run001	Run002	Run003			
Fluid Type	Water	Water	Water			
Fluid Name	Fresh Water	Fresh Water	Fresh Water			
Max Recorded Temperatures (degF)	212	185	246.2			
Source of Sample	Active Tank	Active Tank	Active Tank			
Salinity (ppm)	19908.23	16130.02	17529.25			
Density (lbm/gal)	8.95	10.6	Zoned			
Funnel Viscosity (s)	30	39	Zoned			
Fluid Loss (cm3)	0	0	0			
PH	9.1	9.5	Zoned			
Source RMF						
RMC	Pressed	Pressed	Pressed			

RM @ Meas Temp (ohm.m@degF)	0.2 @ 116	0.2 @ 140	0.2 @ 130			
RMF @ Meas Temp (ohm.m@degF)	0.15 @ 68	0.15 @ 68	0.15 @ 68			
RMC @ Meas Temp (ohm.m@degF)						
RM @ BHT (ohm.m@degF)	0.11 @ 212	0.13 @ 212	0.13 @ 212			
RMF @ BHT (ohm.m@degF)	0.05 @ 212	0.05 @ 212	0.05 @ 212			
RMC @ BHT (ohm.m@degF)	NaN @ 212	NaN @ 212	NaN @ 212			
Total Solid (%)	3.7	10.8	Zoned			
High Gravity Solids (%)	0.9	6.1	Zoned			

Zoned Borehole Fluids

Run003		
Parameter	Value	Start
Density	9.85	8/10/2014 8:07:55 AM
Density	10.2	8/11/2014 1:30:00 AM
Density	10.3	8/11/2014 1:00:00 PM
Density	10.35	8/12/2014 1:30:00 AM
Funnel Viscosity	37	8/10/2014 8:07:55 AM
Funnel Viscosity	40	8/11/2014 1:30:00 AM
Funnel Viscosity	37	8/11/2014 1:00:00 PM
PH	11.5	8/10/2014 8:07:55 AM
PH	10.9	8/11/2014 1:30:00 AM
PH	9.3	8/11/2014 1:00:00 PM
PH	9.1	8/12/2014 1:30:00 AM
Total Solid	6.5	8/10/2014 8:07:55 AM
Total Solid	8.1	8/11/2014 1:30:00 AM
Total Solid	8.2	8/11/2014 1:00:00 PM
Total Solid	8.9	8/12/2014 1:30:00 AM
High Gravity Solids	4.8	8/10/2014 8:07:55 AM
High Gravity Solids	5.8	8/11/2014 1:30:00 AM
High Gravity Solids	6.4	8/11/2014 1:00:00 PM
High Gravity Solids	6.1	8/12/2014 1:30:00 AM

Remarks and Equipment Summary

Data presented is from tool memory and acquired while drilling from 640.0 ft MD to 12018.0 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 Lateral Section to TD
Bit to GR: 50.71 ft Bit to DNI: 47.68 ft	Bit to GR: 58.63 ft Bit to DNI: 55.60 ft	Bit to GR: 66.17 ft Bit to DNI: 63.14 ft
Drilled from 640.0 ft MD to 6225.0 ft MD Logged from 589.0 ft MD to 6174.0 ft MD	Drilled from 6225.0 ft MD to 7272.0 ft MD Logged from 6174.0 ft MD to 7213.0 ft MD	Drilled from 7272.0 ft MD to 12018.0 ft MD Logged from 7272.0 ft MD to 11951.0 ft MD
SlimPulse Version Software: Version 11 SlimPulse GR Calibrated: 25-Jul-2014 SlimPulse D&I Calibrated: 06-May-2014	SlimPulse Version Software: Version 11 SlimPulse GR Calibrated: 11-Apr-2014 SlimPulse D&I Calibrated: 04-Jan-2014	SlimPulse Version Software: Version 11 SlimPulse GR Calibrated: 13-May-2014 SlimPulse D&I Calibrated: 18-Nov-2013
PathFinder, a Schlumberger Co Personnel: DD: Cotton Walker, Mike Hikes MWD: Mark Wilson, Zach Brunson	PathFinder, a Schlumberger Co Personnel: DD: Cotton Walker, 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: Vertical Section TD	Reason for POOH: Curve Section TD	Reason for POOH: Well TD

Run001: Toolstring	Run002: Toolstring	Run003: Toolstring
	<div>Equip nameLengthMP nameOffset</div>	

Equip name
Flex DC: 6 3/4":D
R18825

Length
95.66

MP name
NMFC

Offset

SPULSE-GEN:DR8
494

64.87

SLB

GR 50.71

D&I 47.68

Flex DC: 6 3/4":D
R18825

103.53

NMFC

SPULSE-GEN:DR8
494

72.74

SLB

GR 58.63

D&I 55.6

Equip name
NMDC: 4 3/4"[2]:D
R23997

Length
110.79

MP name
SLB

Offset

SPULSE-GEN:DR10
035

80.16

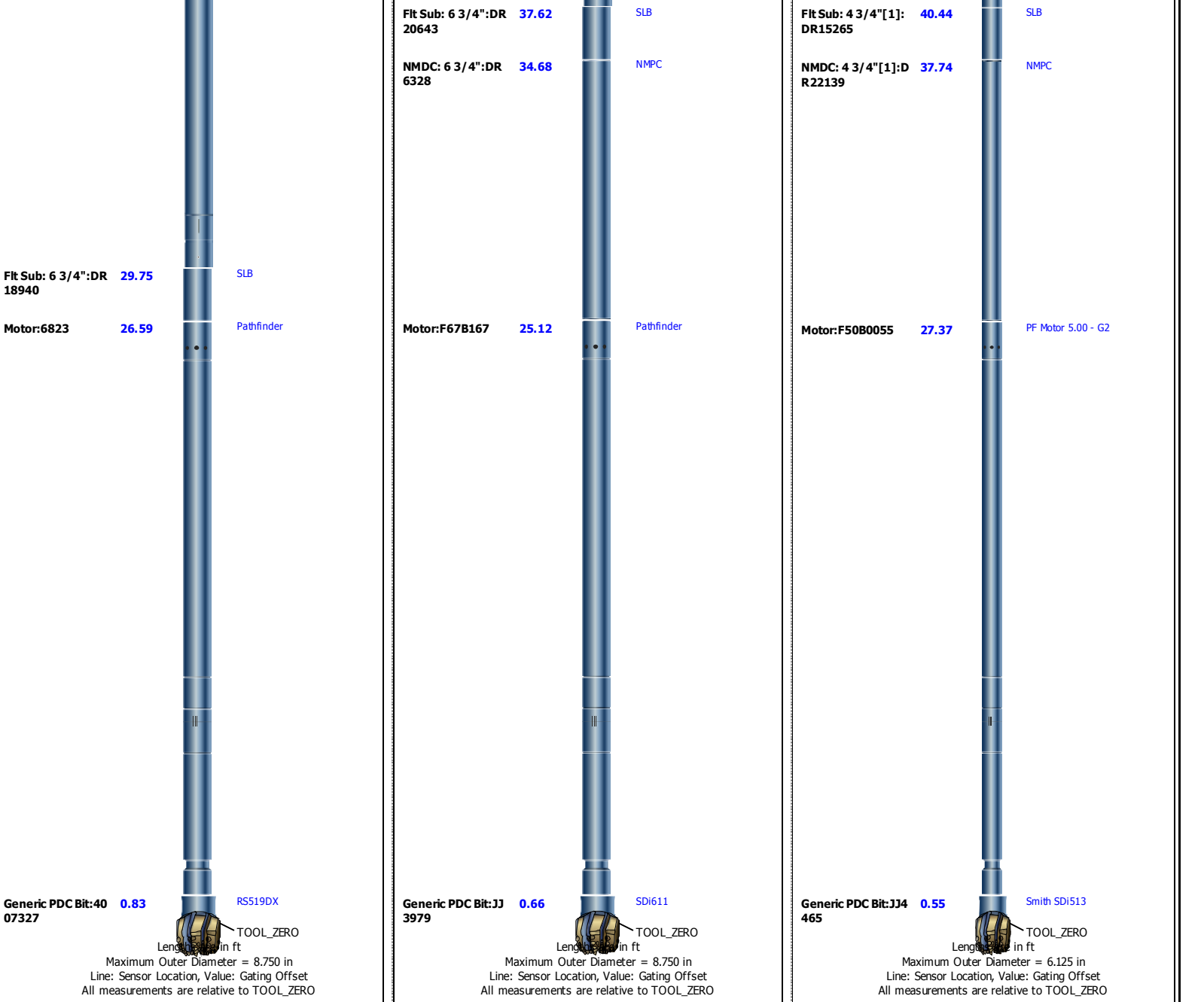
GR 66.17

D&I 63.14

Flt Sub: 4 3/4"[2]:
DR18570

43.92

SLB



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	629.08 ft	6226.83 ft	07-Aug-2014 12:29:33 AM	08-Aug-2014 12:49:11 AM	No
Run002	Drilling	Down	629.08 ft	6226.83 ft	08-Aug-2014 12:49:11 AM	09-Aug-2014 12:49:11 AM	No

All depths are referenced to toolstring zero

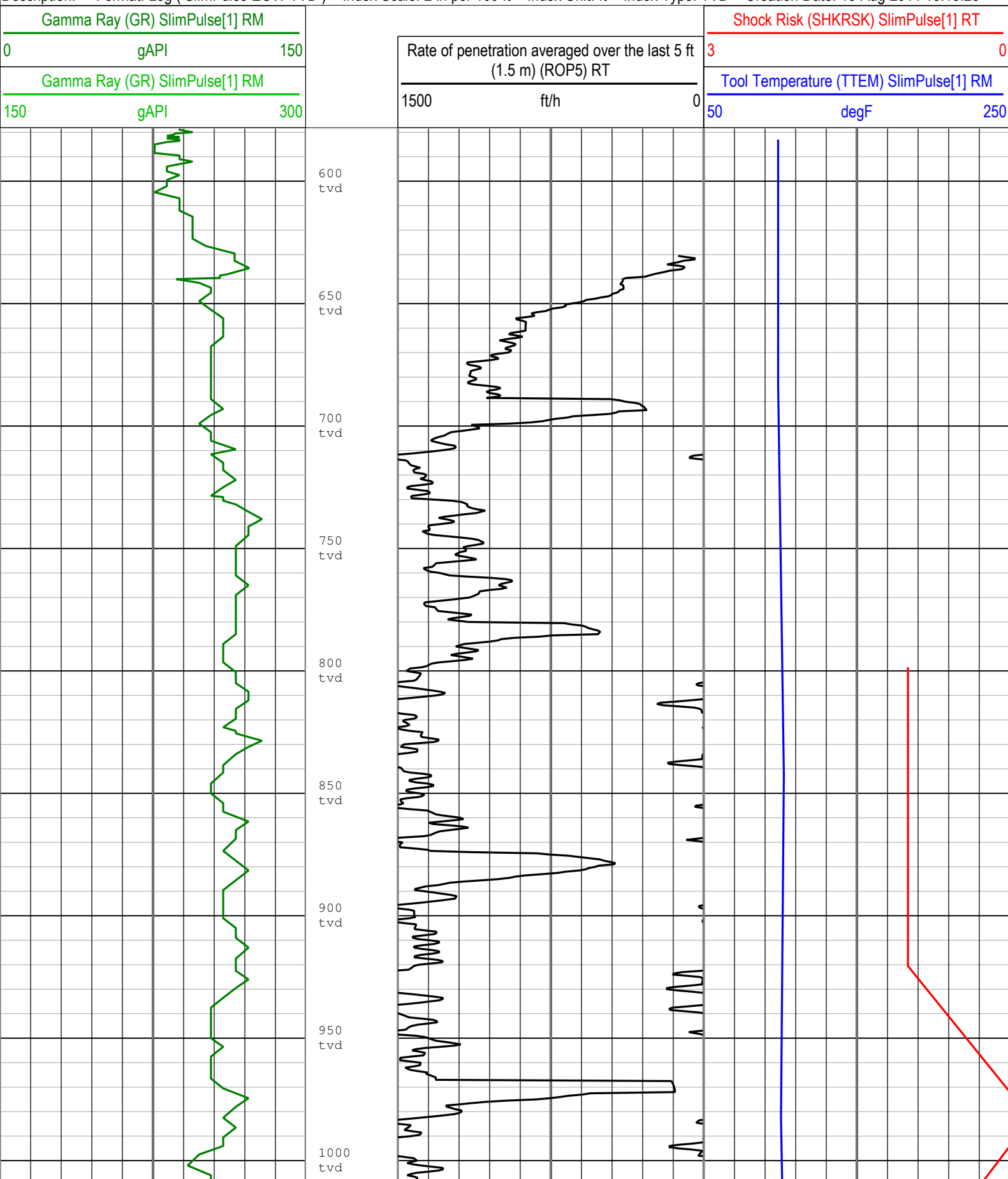
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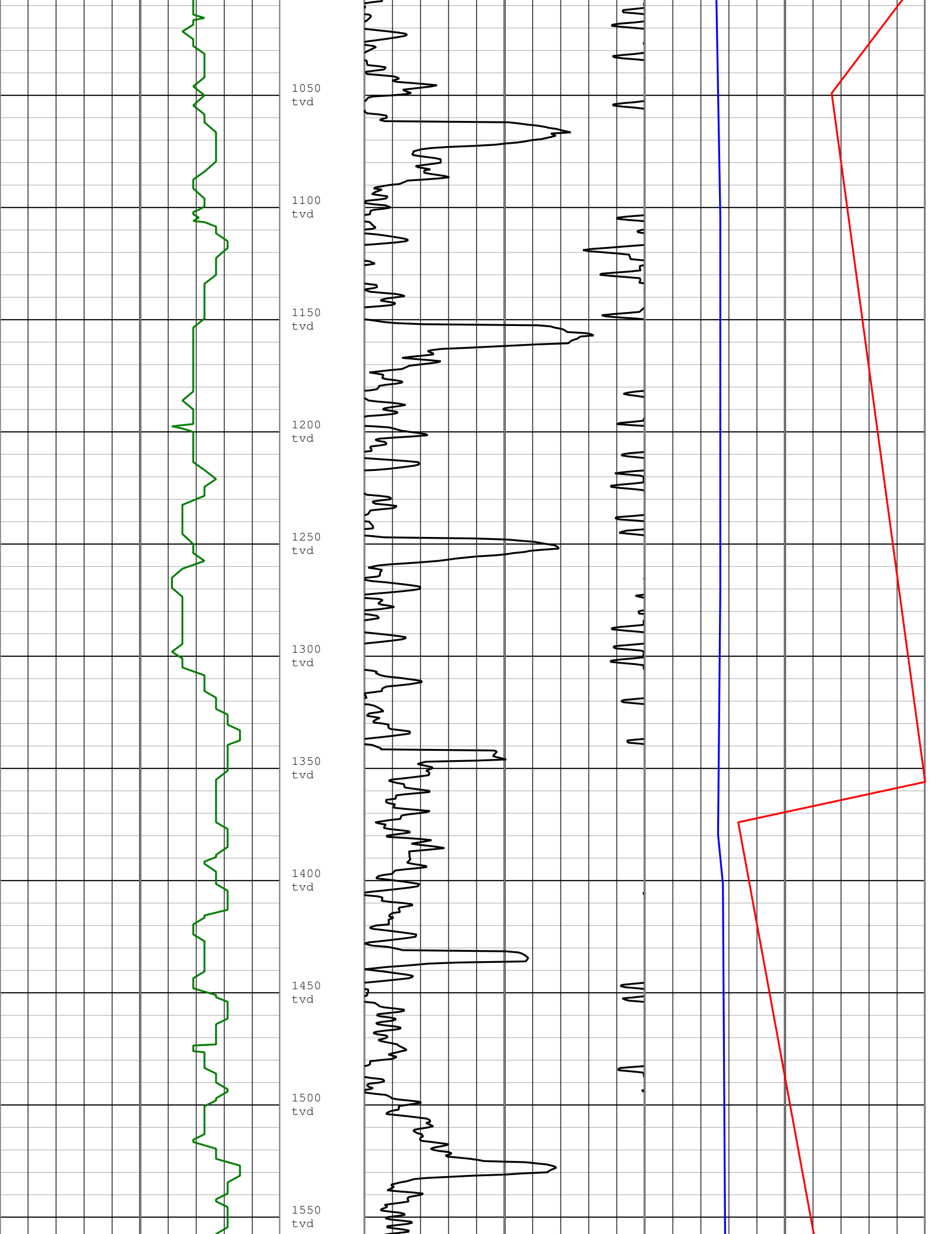
Company:Noble Energy INC

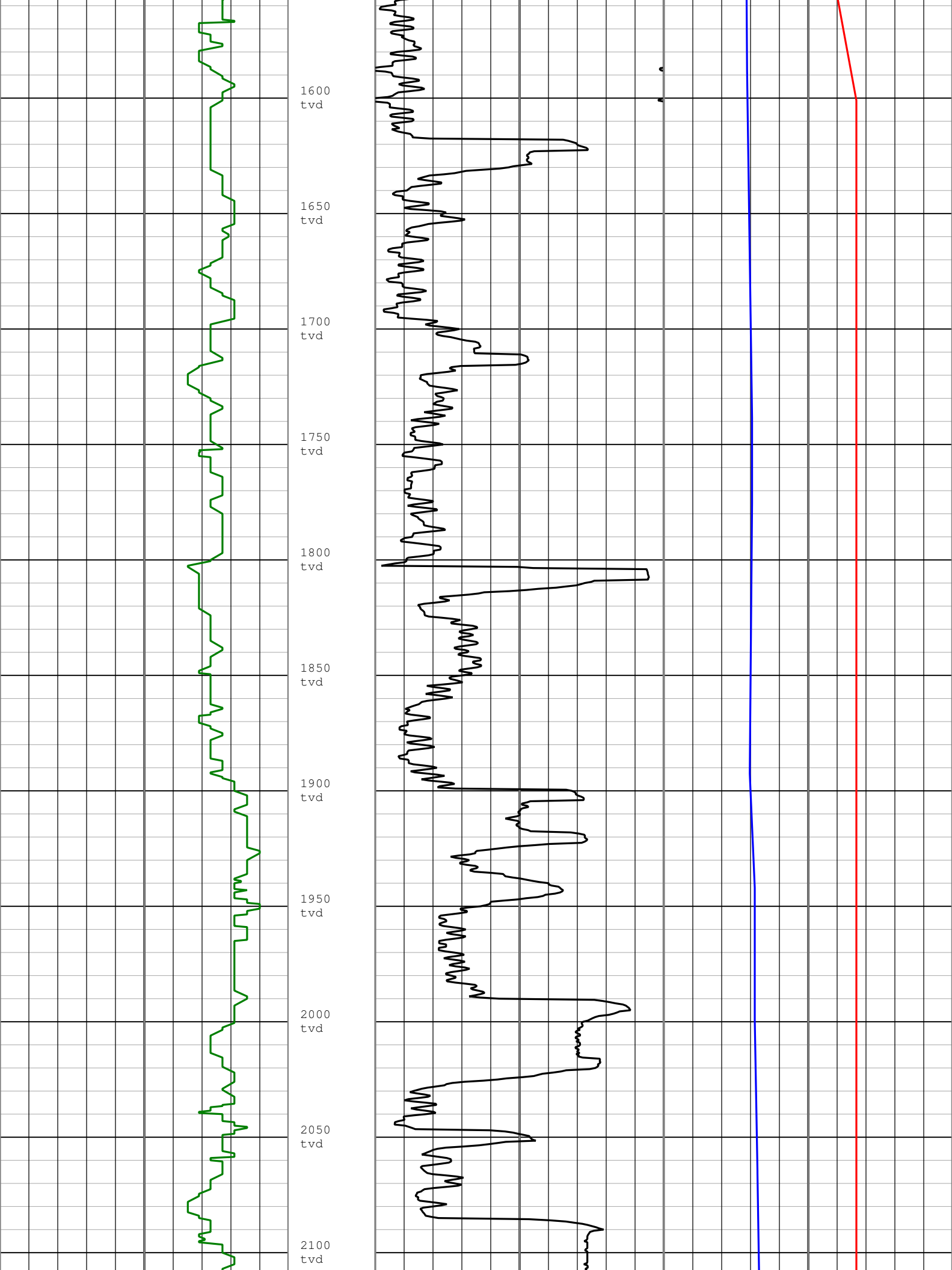
Well:Five Rivers K09-66-1HN

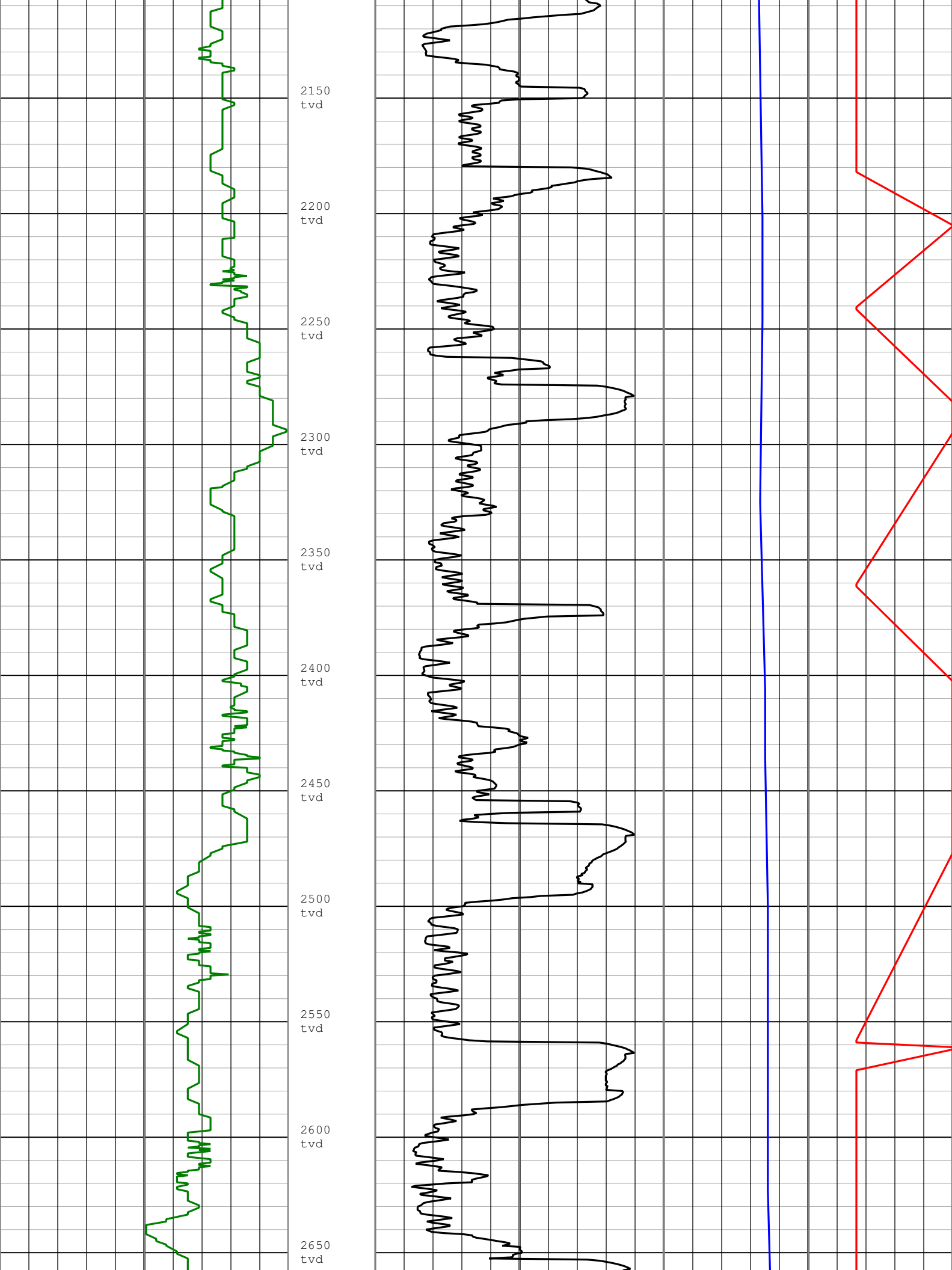
Well Composite:S322

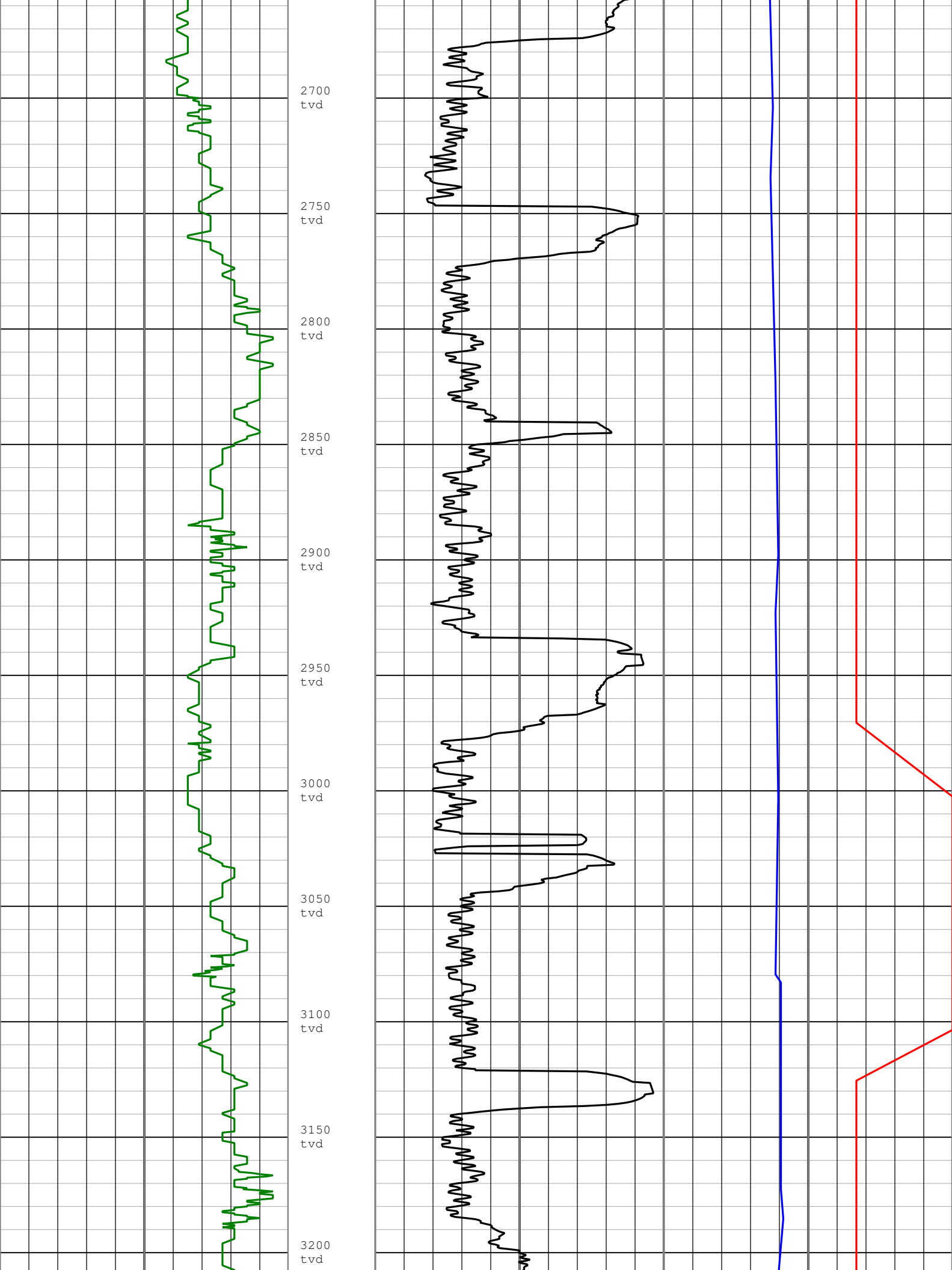
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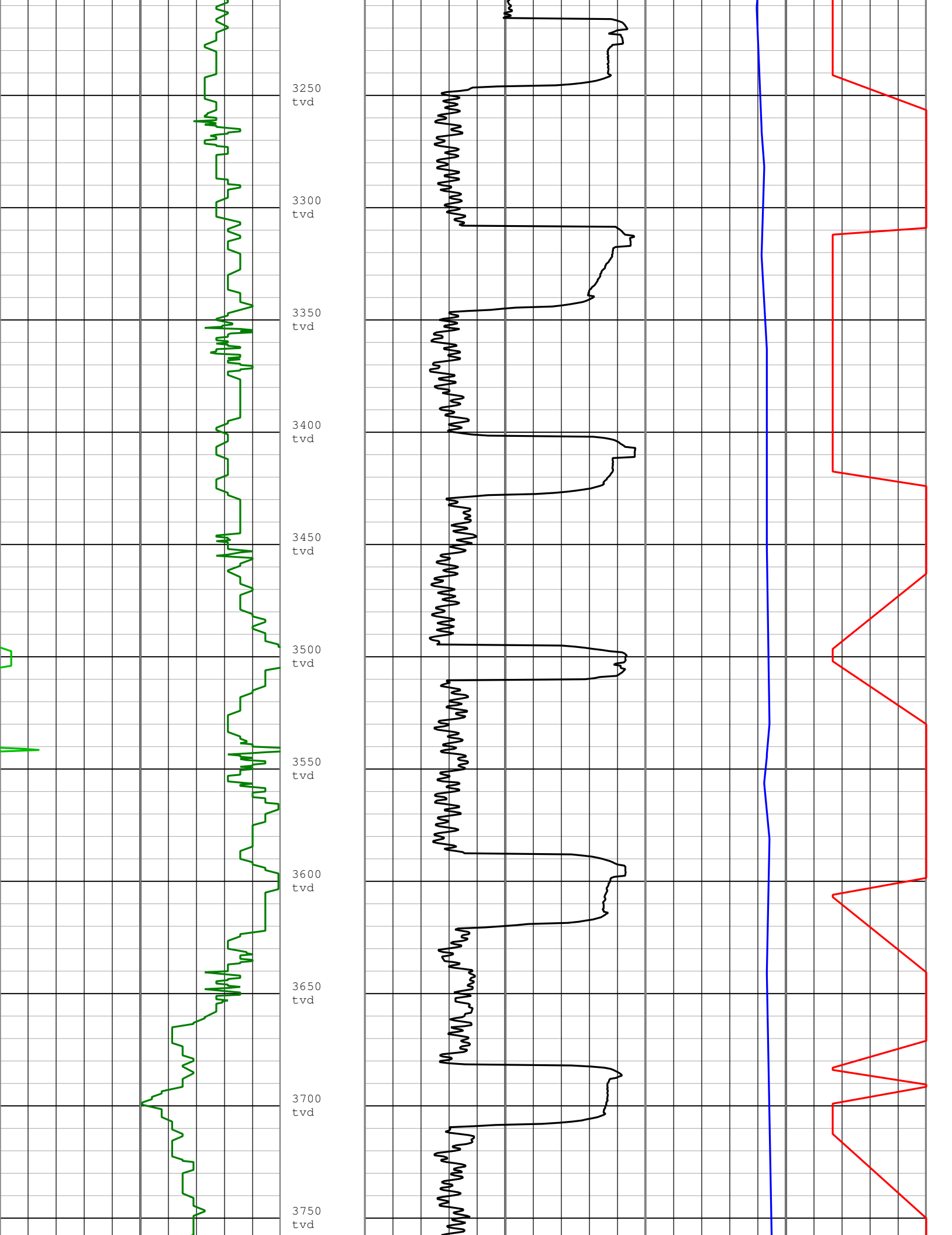


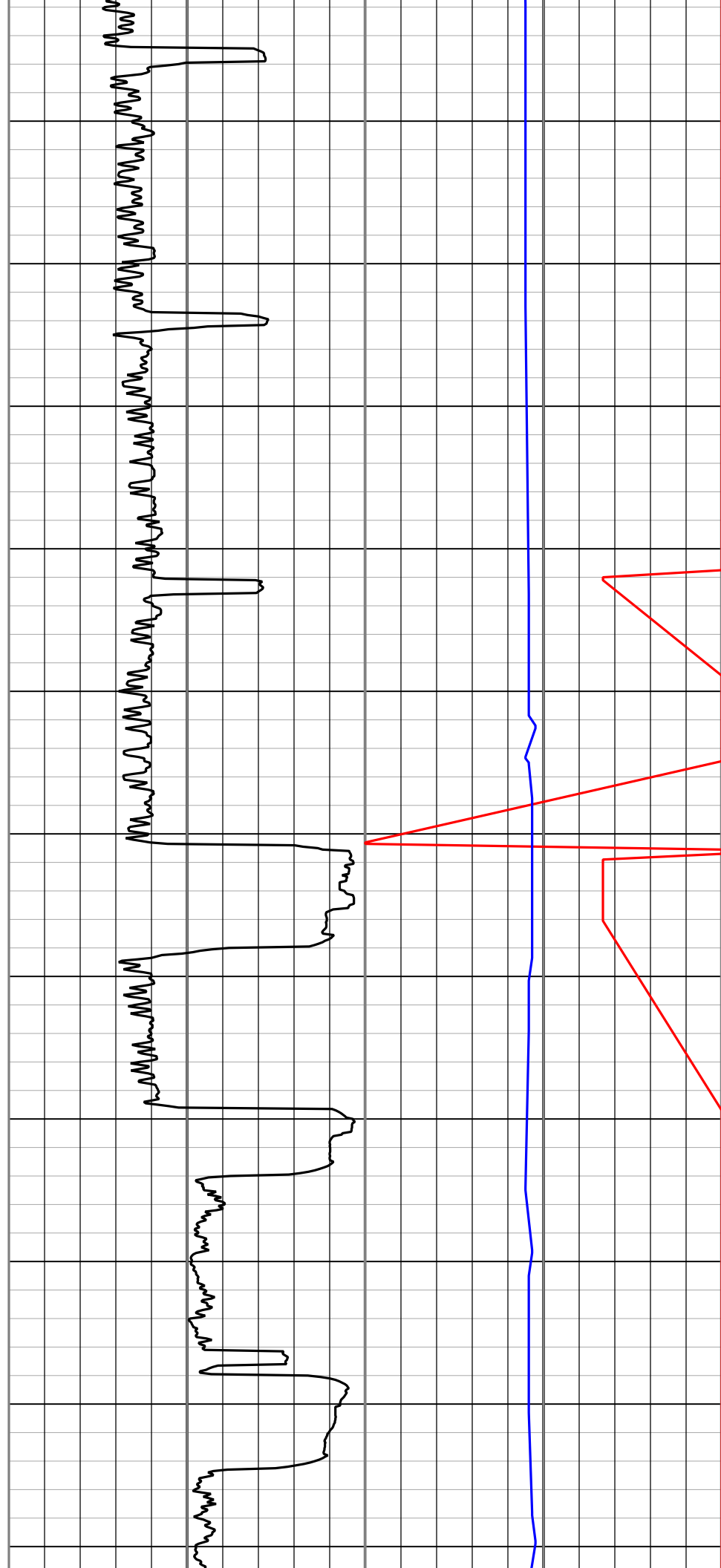
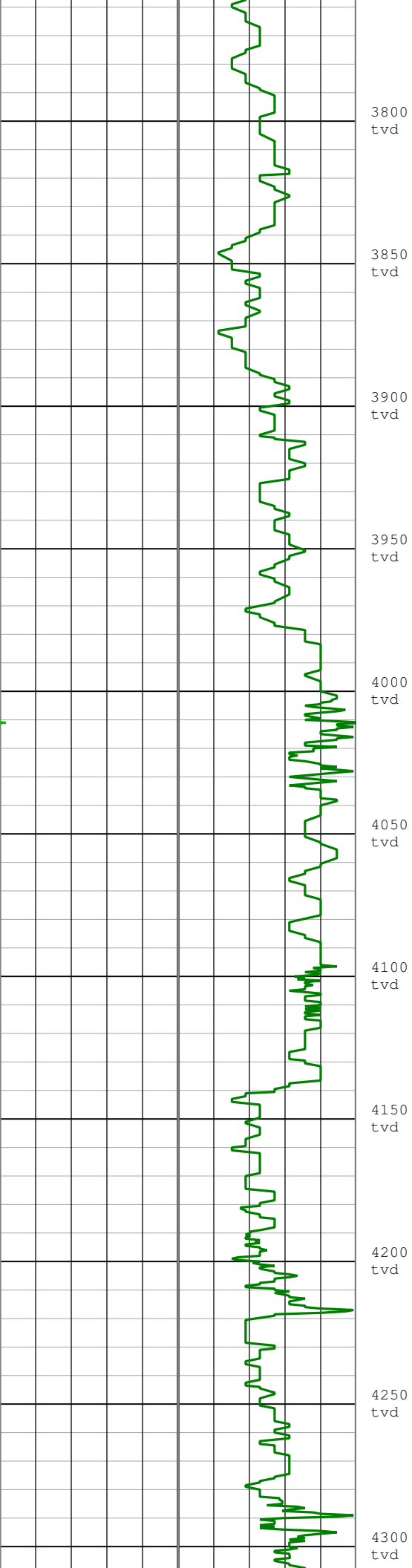


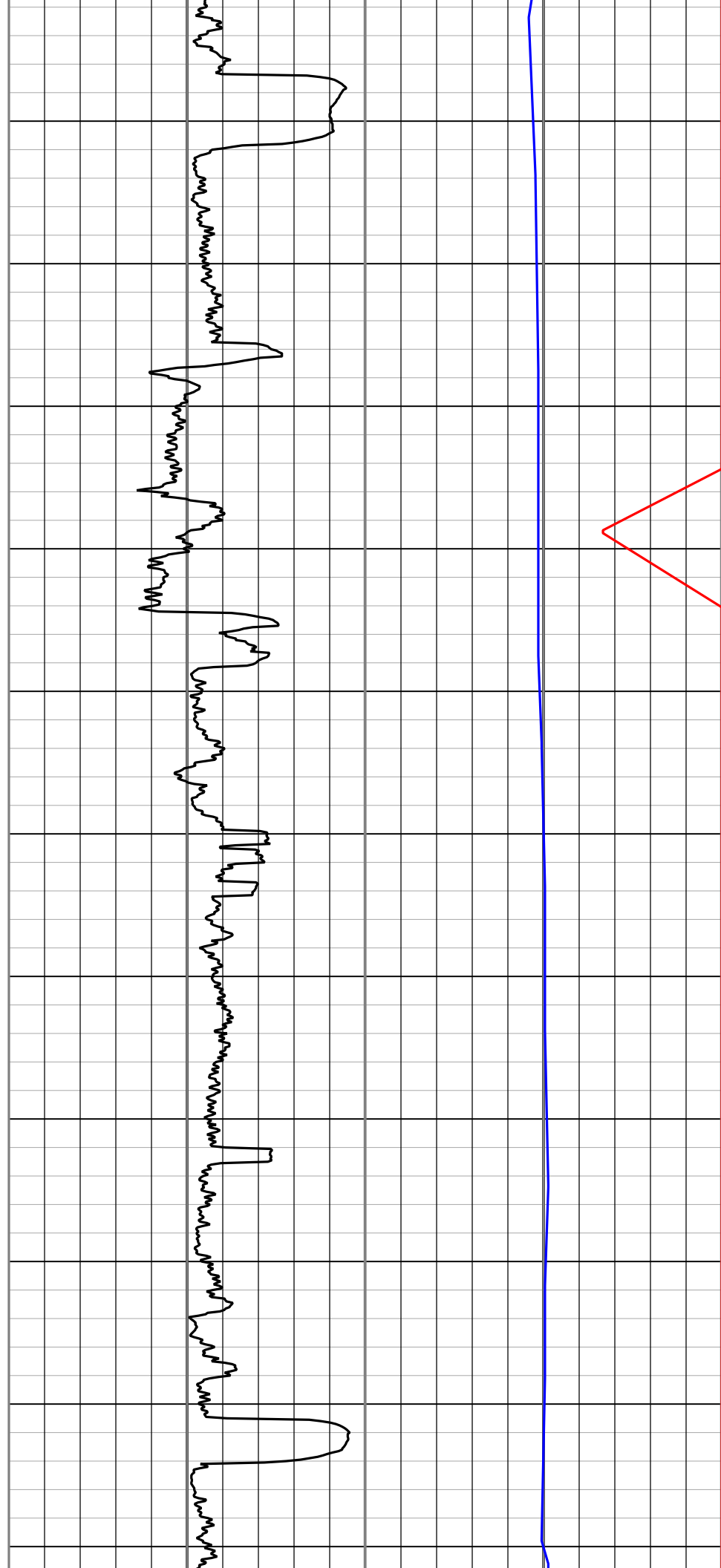
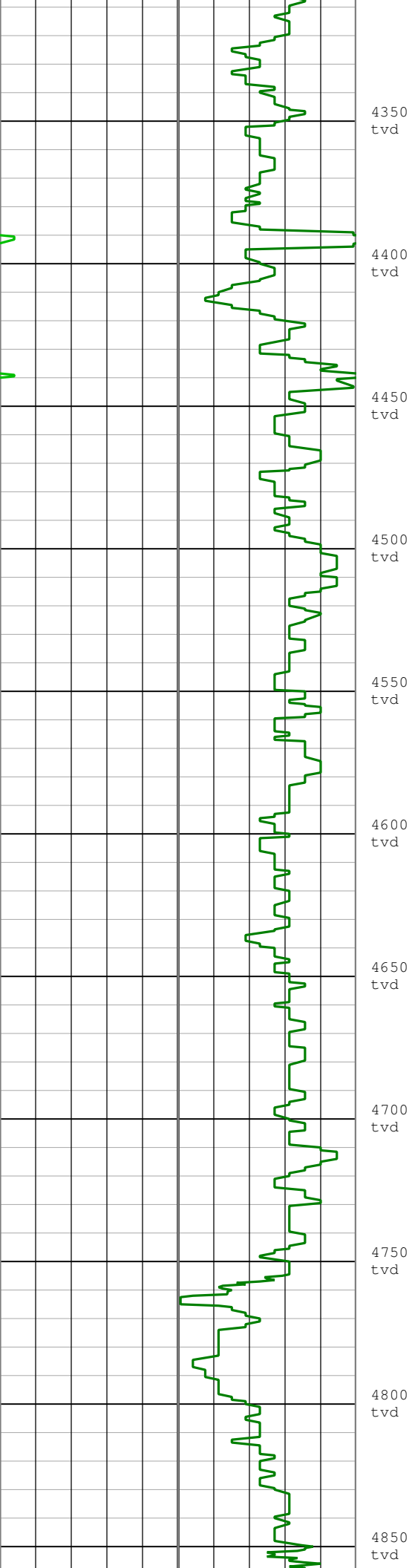


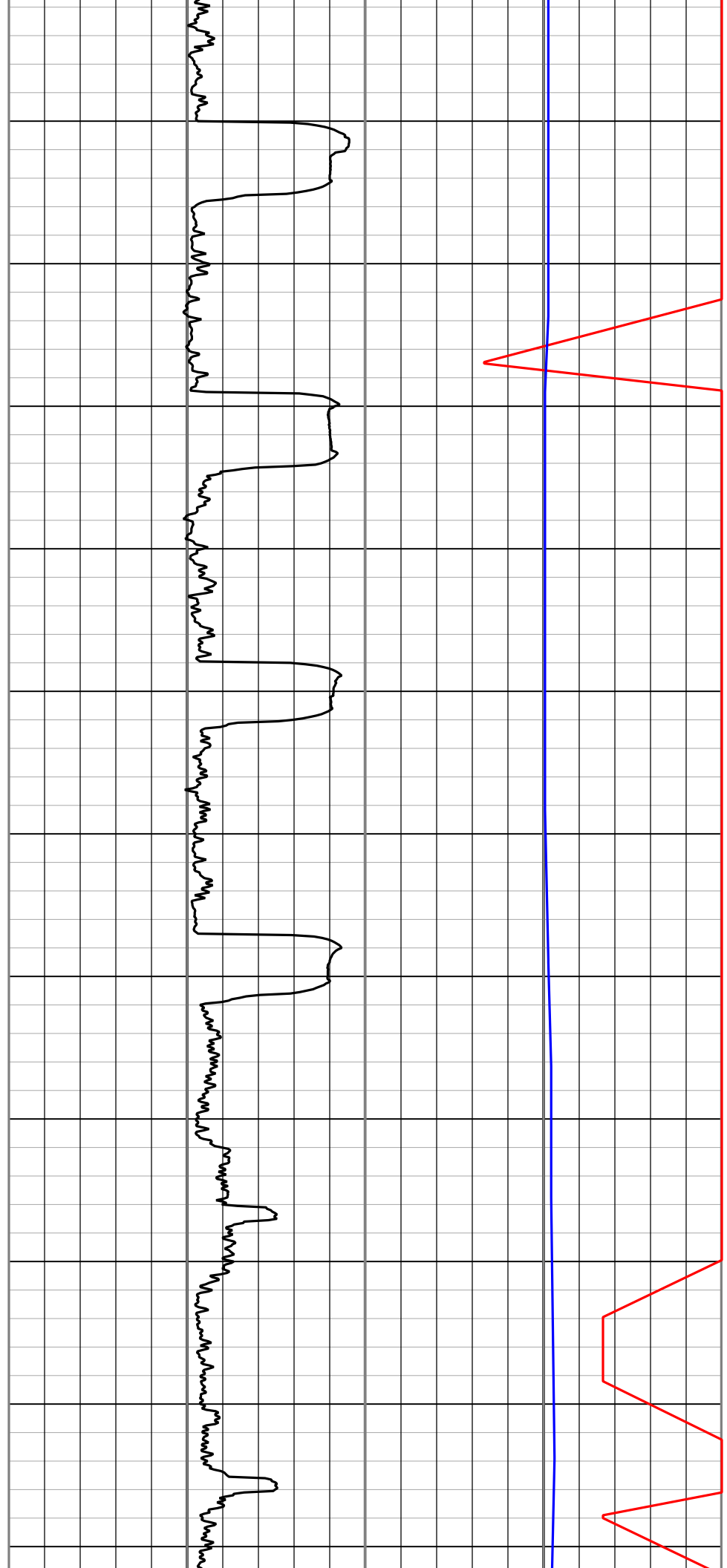
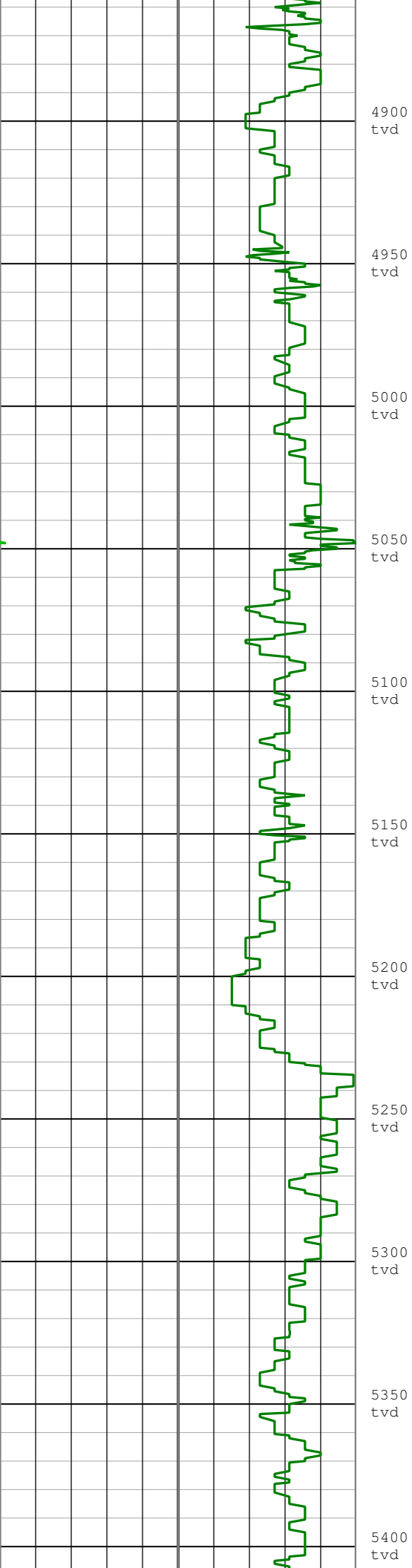


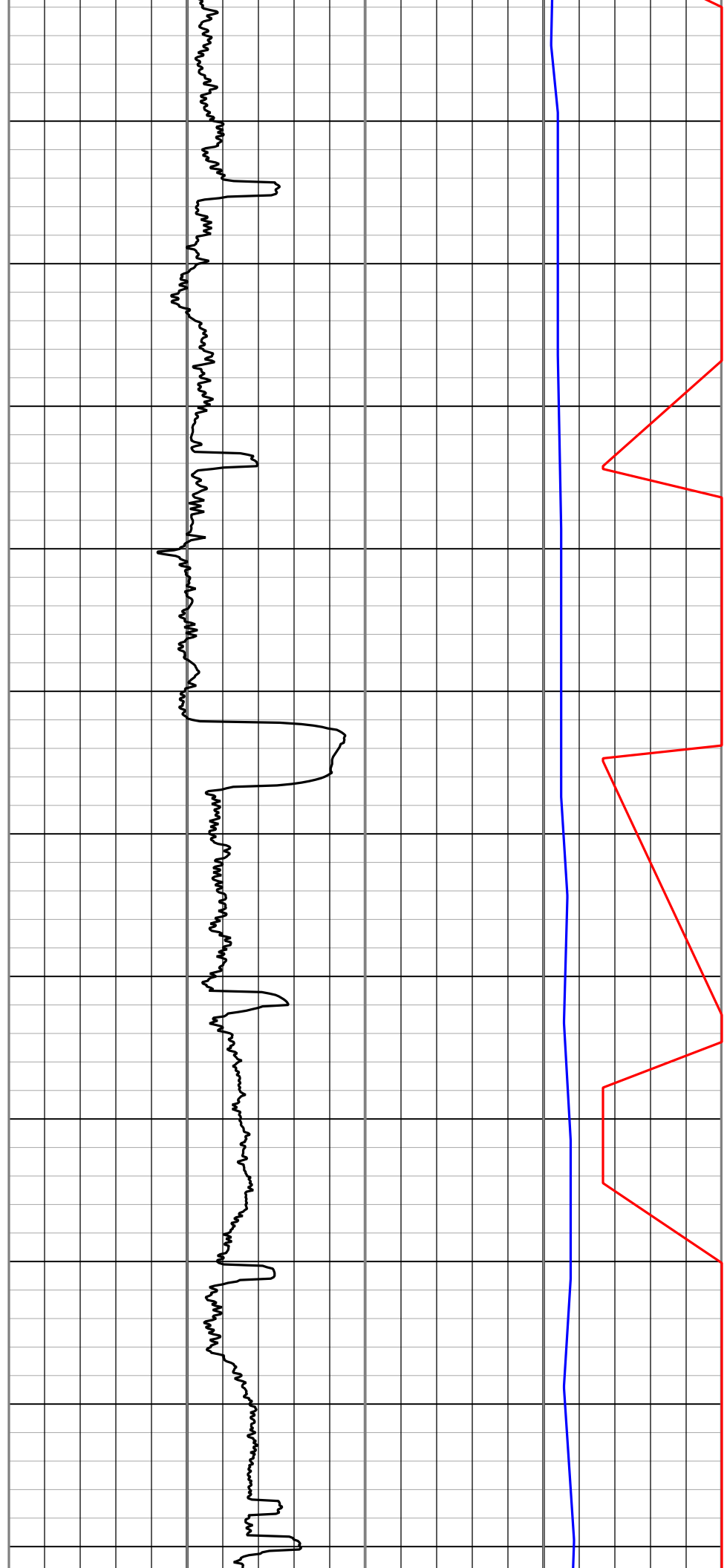
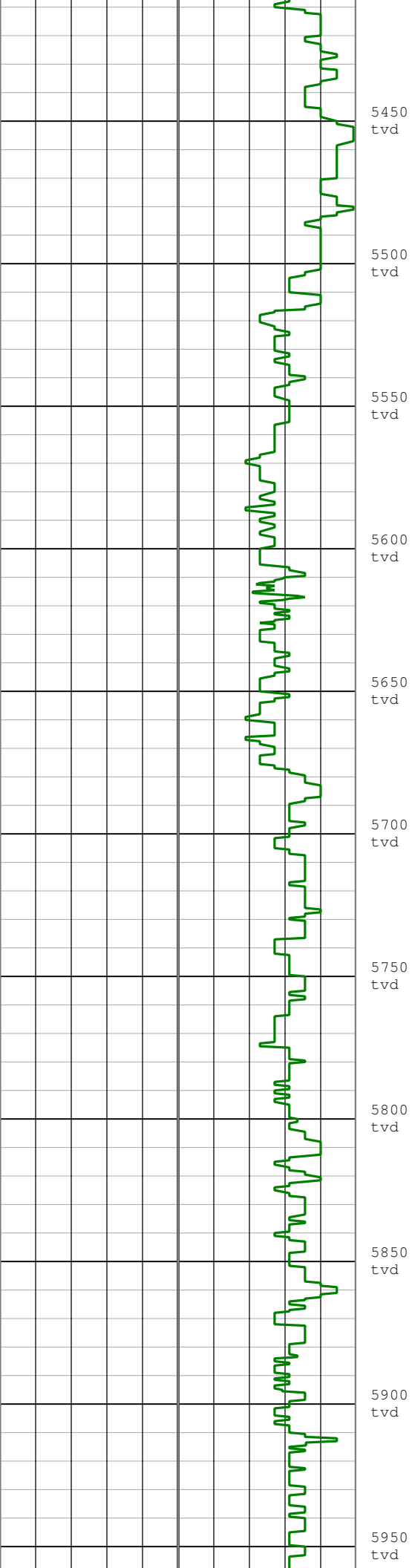


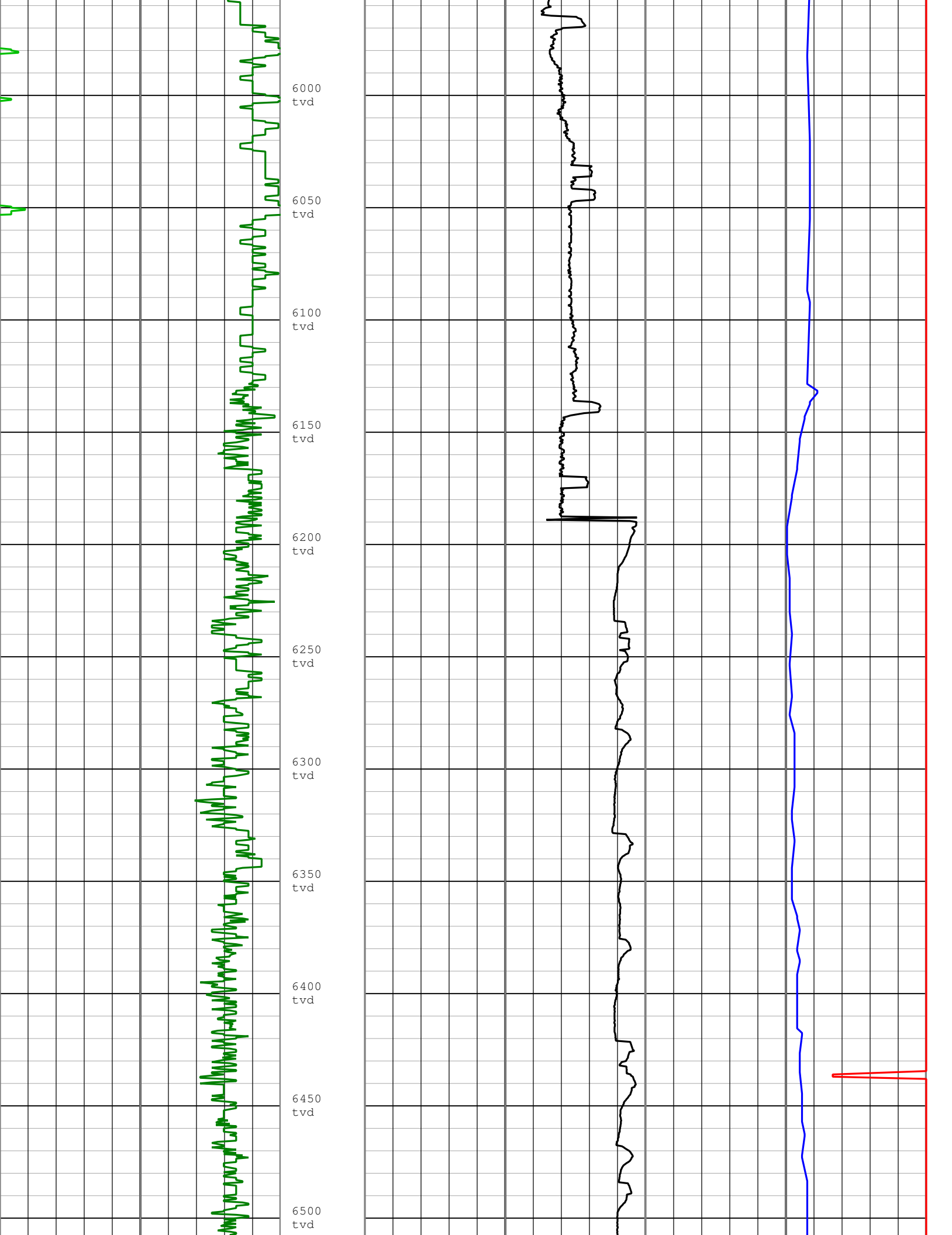


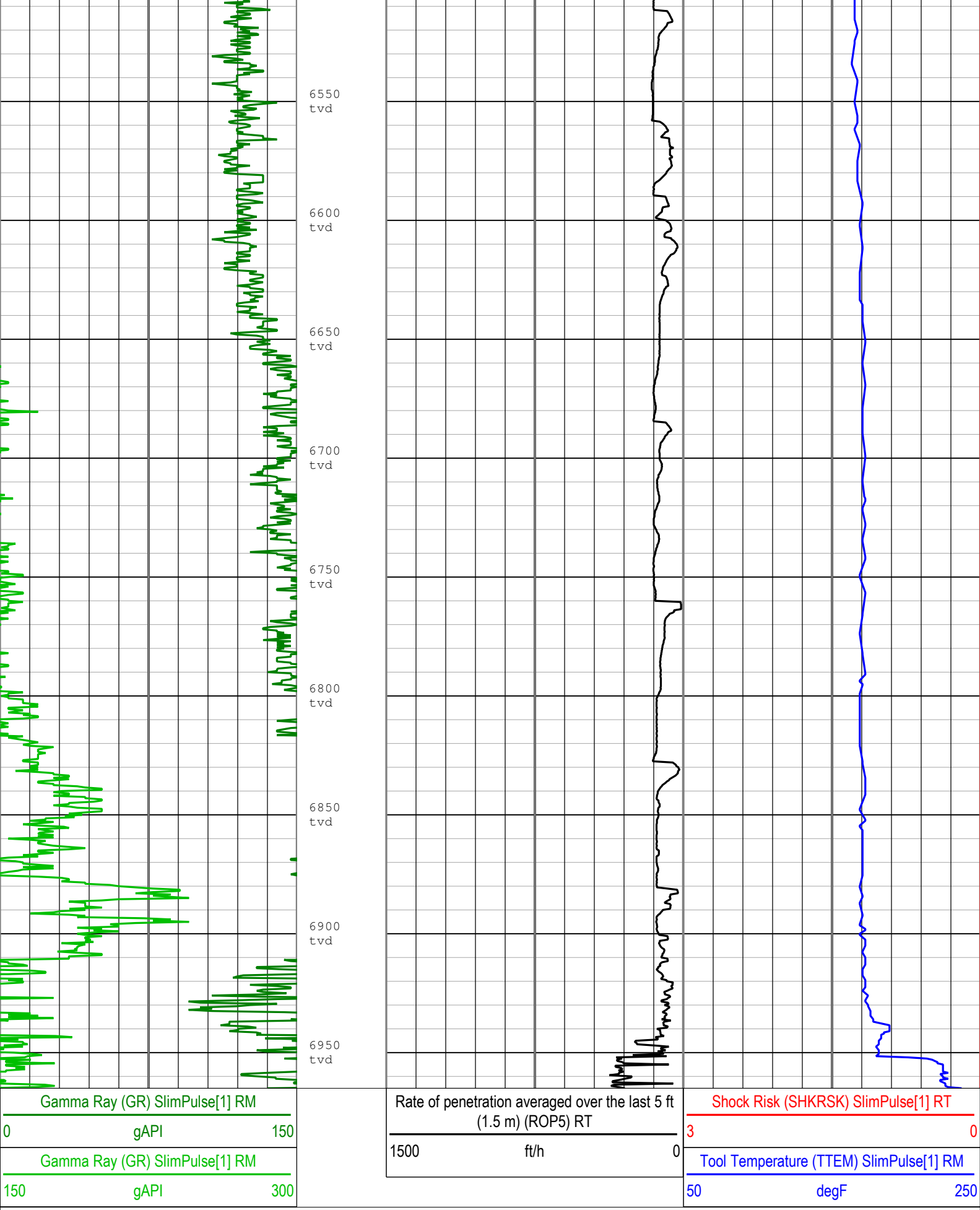












Description: Format: Log (SlimPulse EOW TVD) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: TVD Creation Date: 18-Aug-2014 13:13:28

Channel Processing Parameters

Run001: Parameters

Parameter	Description	Tool	Value	Unit
BS	Bit Size	DNMSESSION	Depth Zoned	in
DFD	Drilling Fluid Density	Borehole	8.95	lbm/gal
GR_SRC	GR Source Selection	SPULSE-GEN	GAMMA_EXT	

Run001Depth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	13.5	578.58	640.08
BS	8.75	640.08	6187.22

All depth are actual.

Run002: Parameters

Parameter	Description	Tool	Value	Unit
BS	Bit Size	DNMSESSION	8.75	in
DFD	Drilling Fluid Density	Borehole	10.6	lbm/gal
GR_SRC	GR Source Selection	SPULSE-GEN	GAMMA_EXT	

Run003: 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	

Run003Depth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	8.75	6928.06	6943.87
BS	6.125	6943.87	6965.15

All depth are actual.

Run003Time Zoned Parameters

Pass Drilling

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
DFD	9.85	10-Aug-2014 20:02:51	11-Aug-2014 01:30:00	7272.25	7797.17
DFD	10.2	11-Aug-2014 01:30:00	11-Aug-2014 13:00:00	7797.17	9389.17
DFD	10.3	11-Aug-2014 13:00:00	12-Aug-2014 01:30:00	9389.17	10643.83
DFD	10.35	12-Aug-2014 01:30:00	12-Aug-2014 20:09:31	10643.83	12017.67

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	629.08 ft	6226.83 ft	07-Aug-2014 12:29:33 AM	08-Aug-2014 12:49:11 AM	No
Run002	Drilling	Down	6226.83 ft	7272.92 ft	08-Aug-2014 5:38:30 AM	09-Aug-2014 6:01:51 AM	No
Run003	Drilling	Down	7272.25 ft	12017.67 ft	10-Aug-2014 8:02:51 PM	12-Aug-2014 8:09:31 PM	No

All depths are referenced to toolstring zero

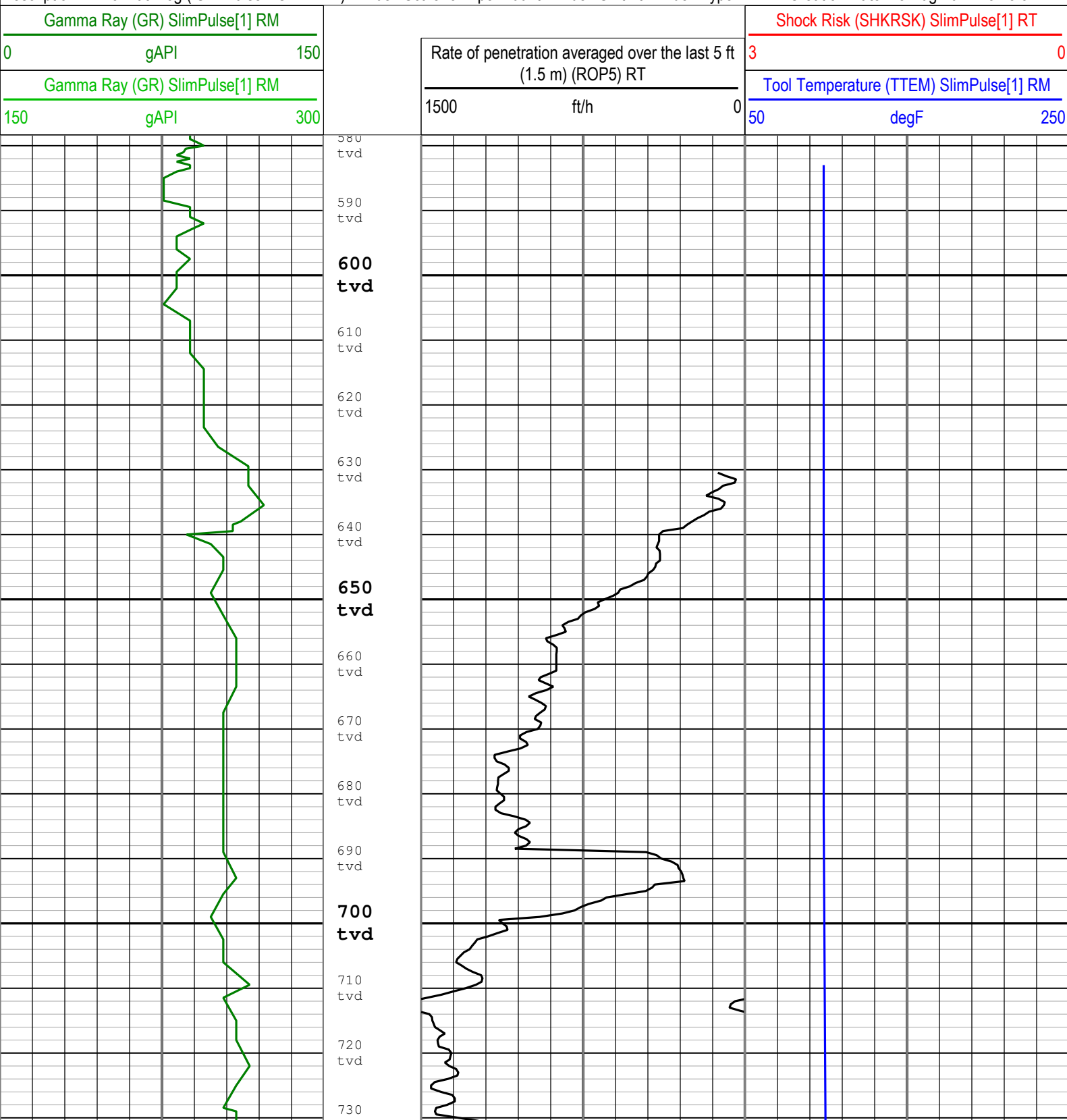
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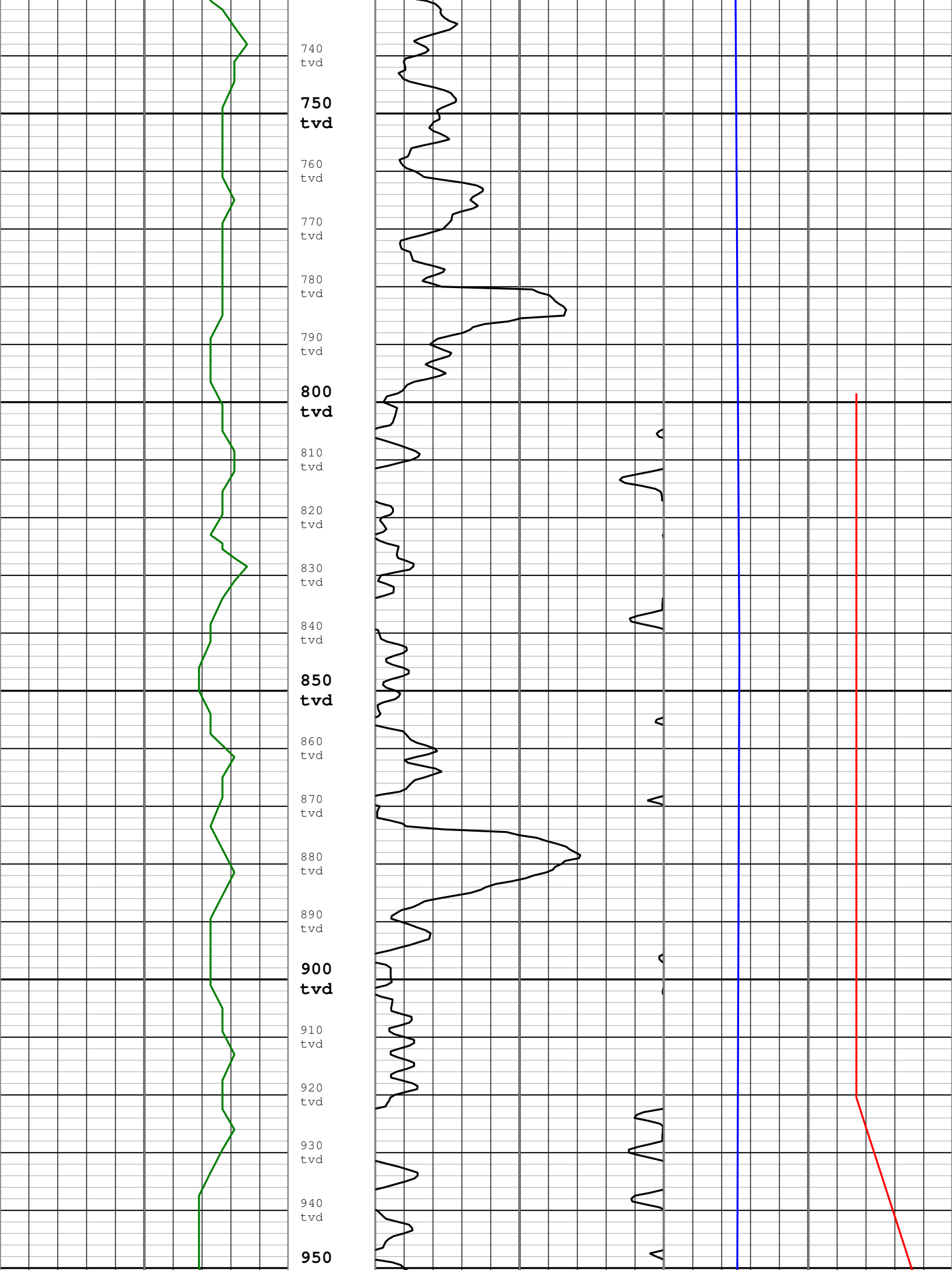
Company:Noble Energy INC

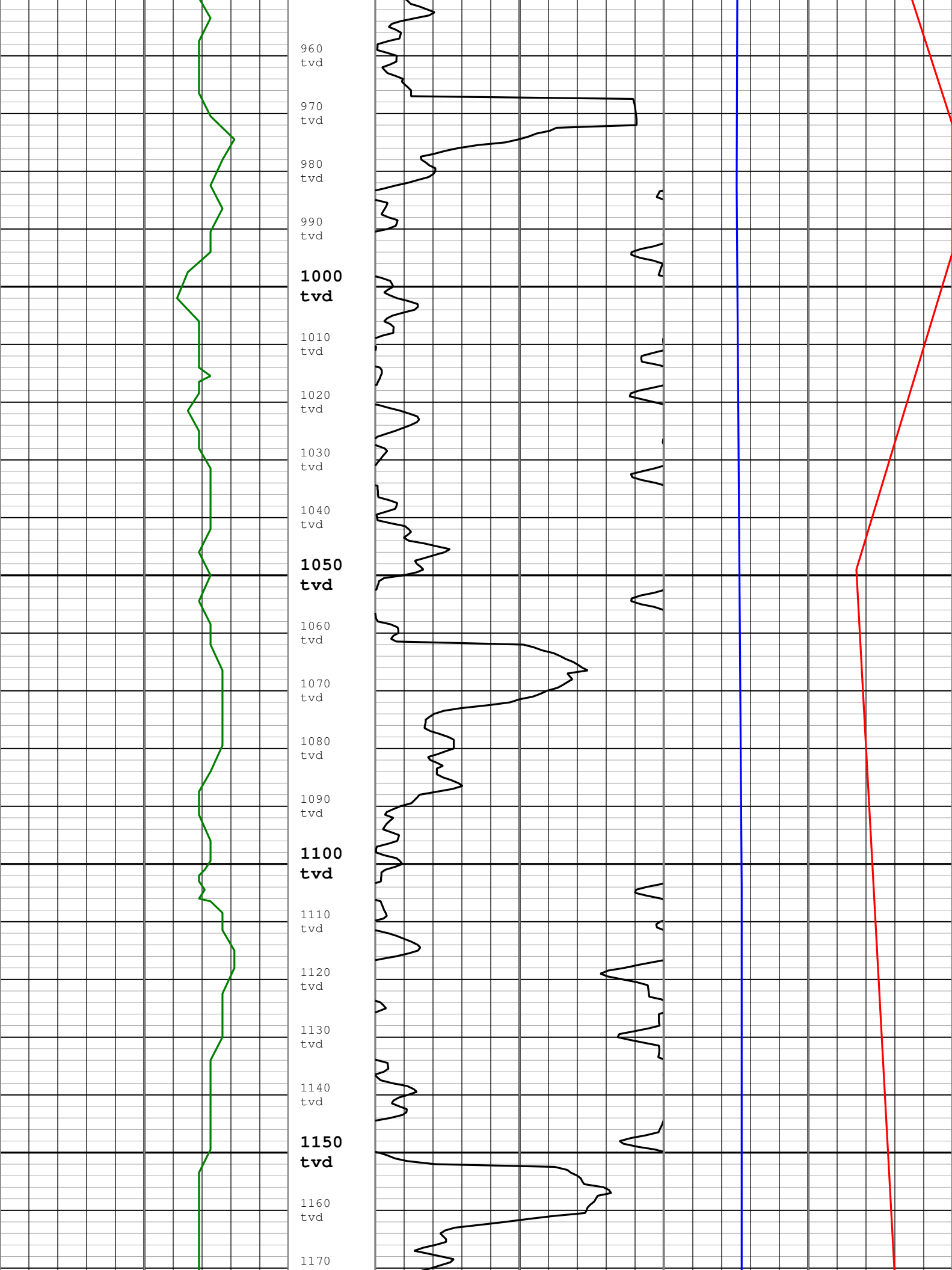
Well:Five Rivers K09-66-1HN

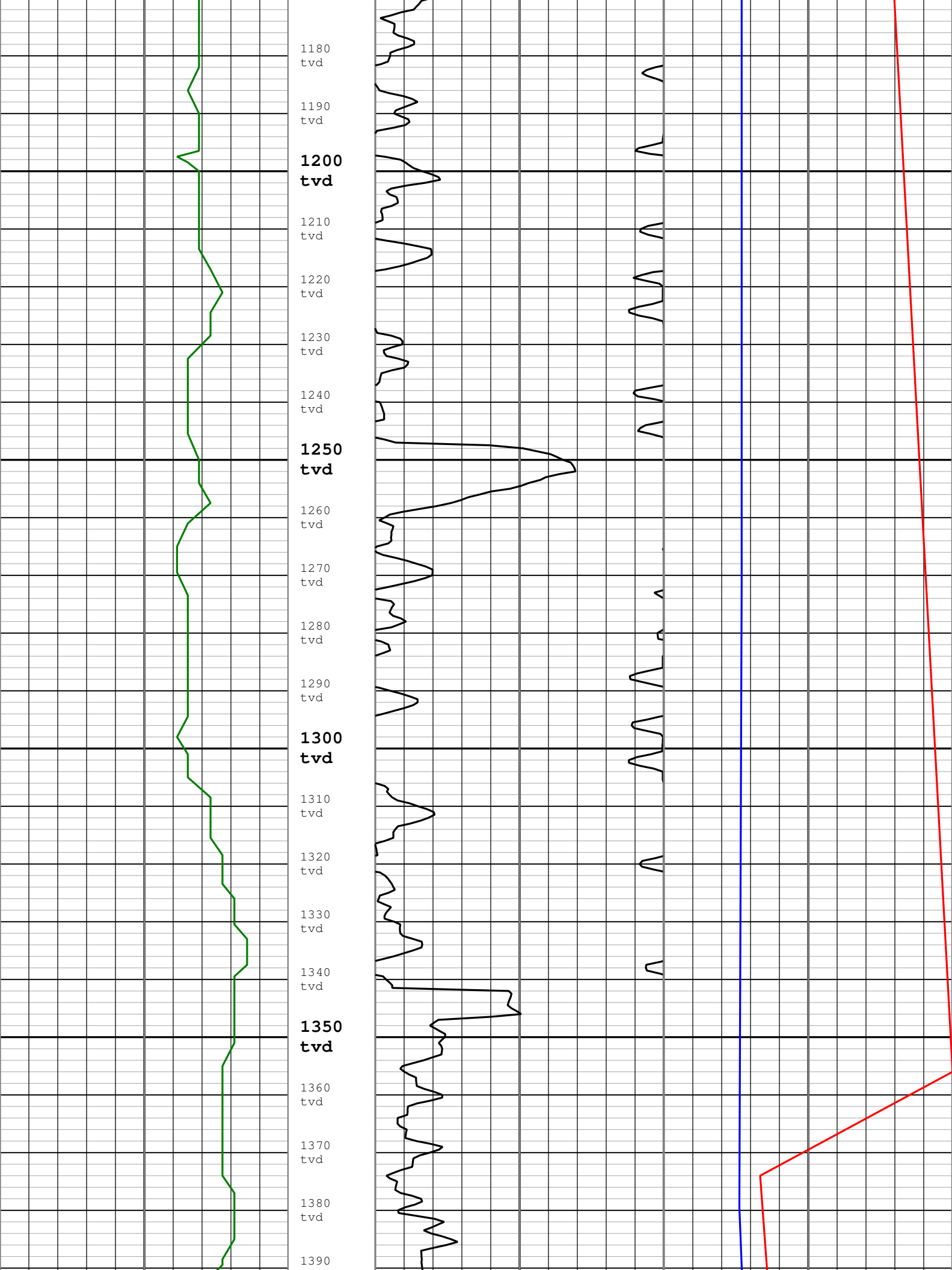
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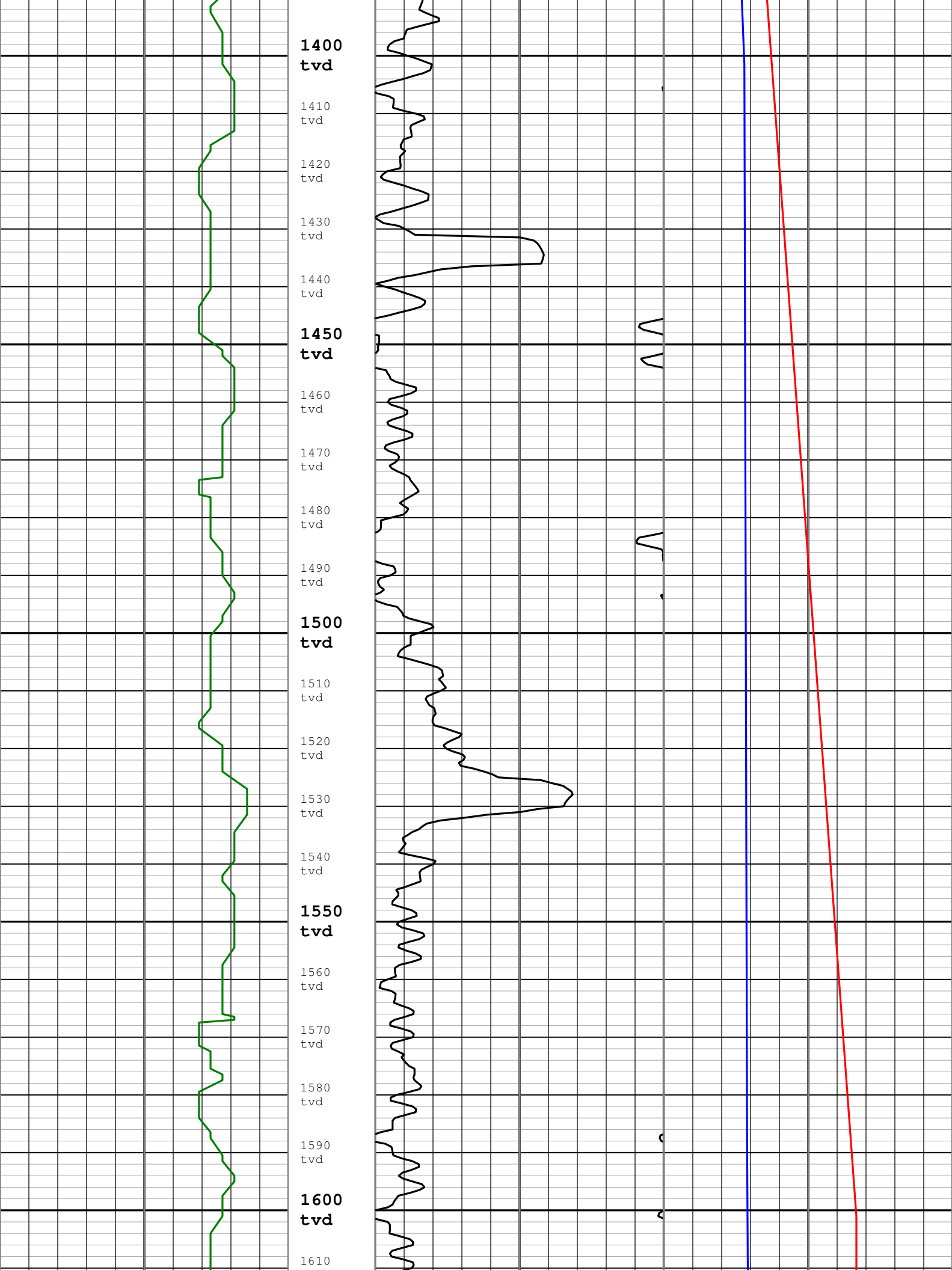
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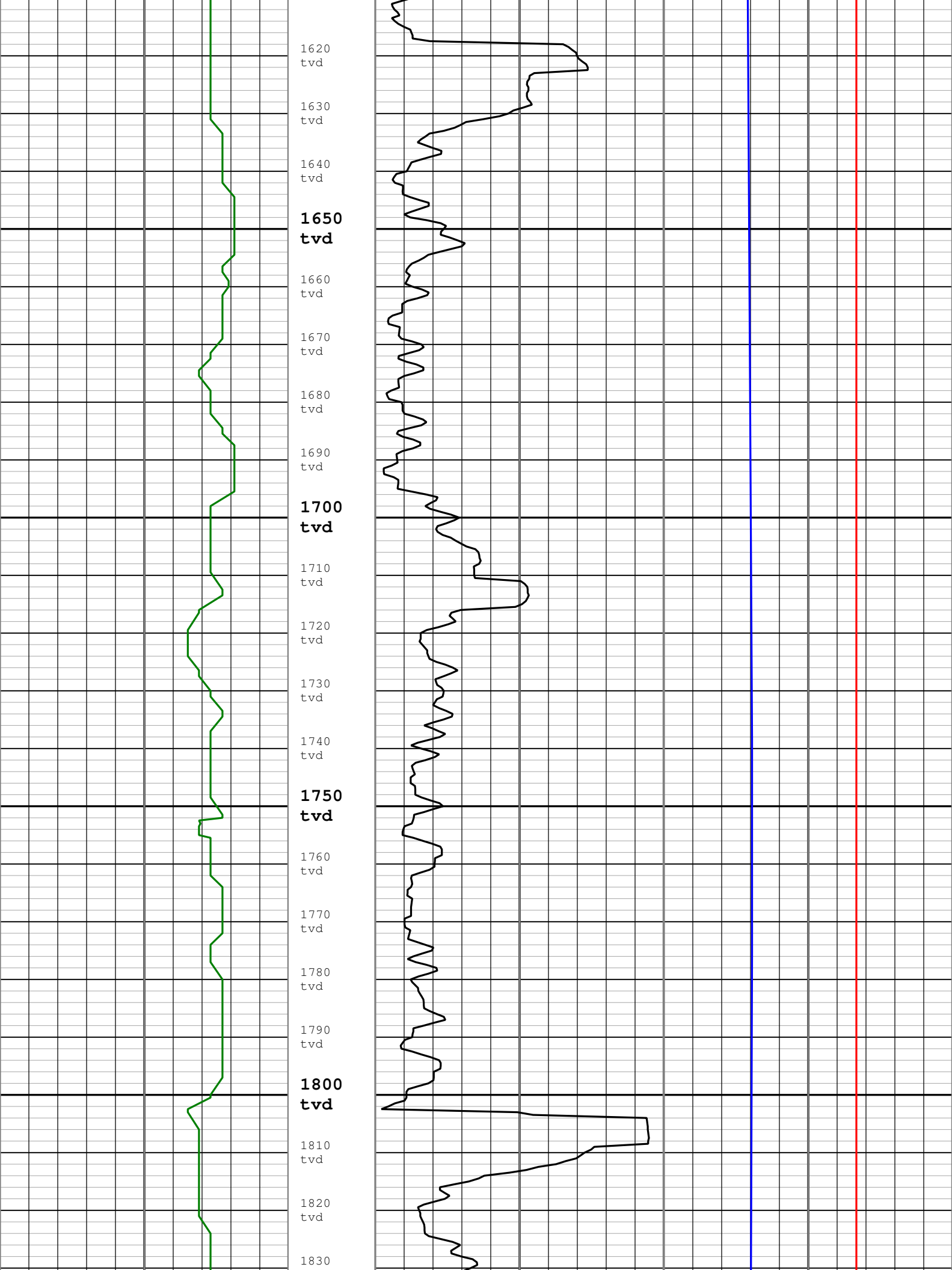


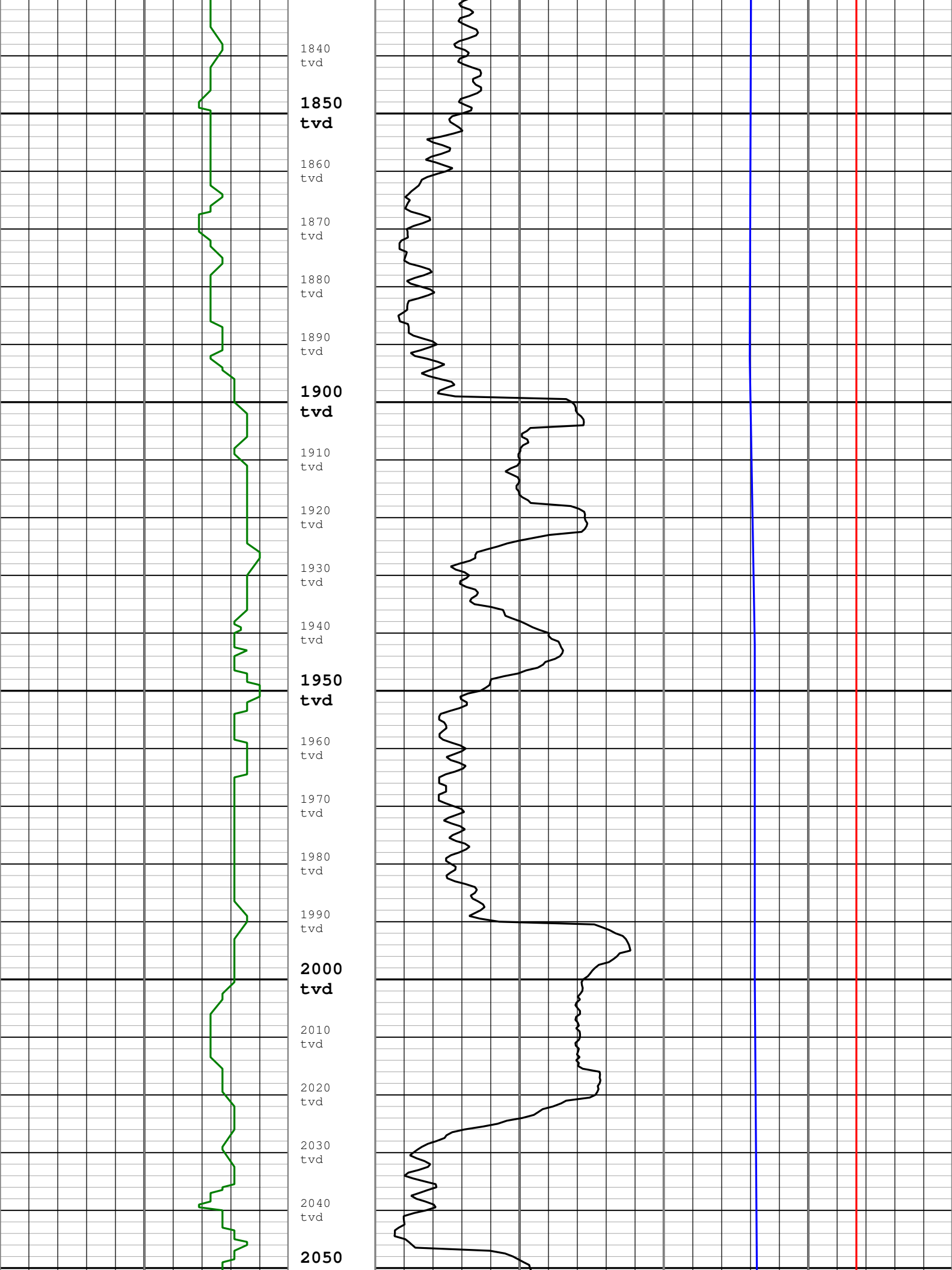


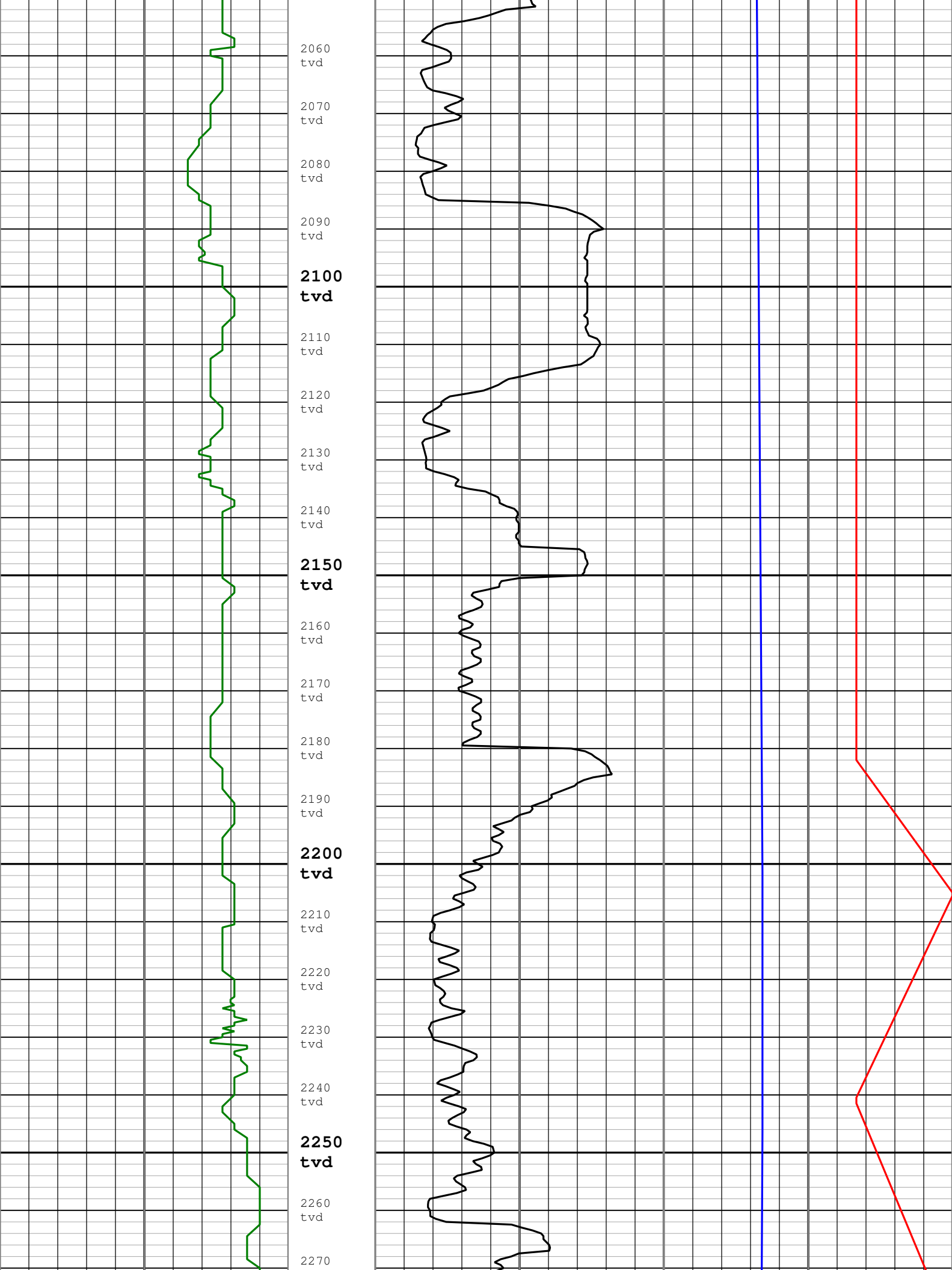


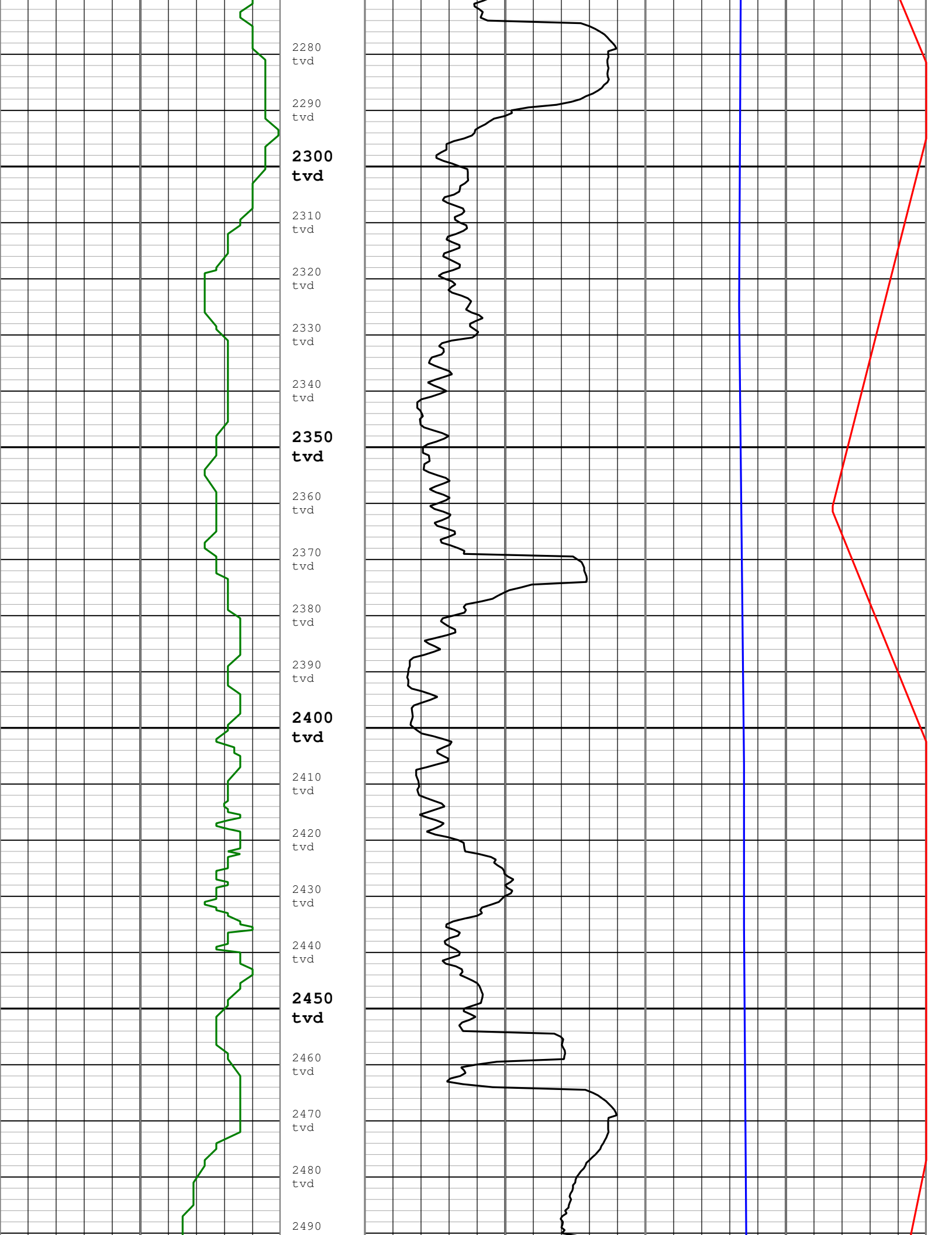


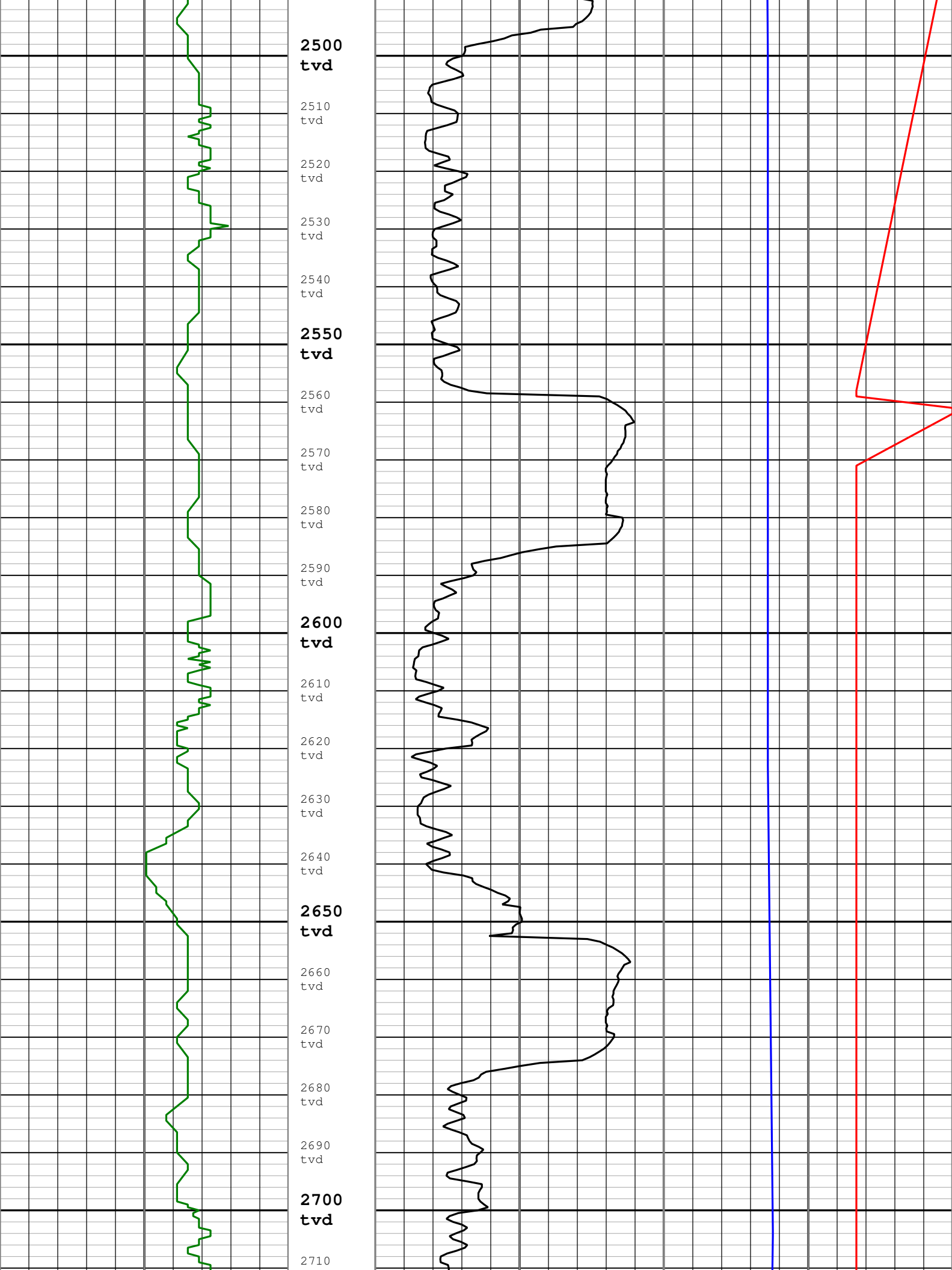


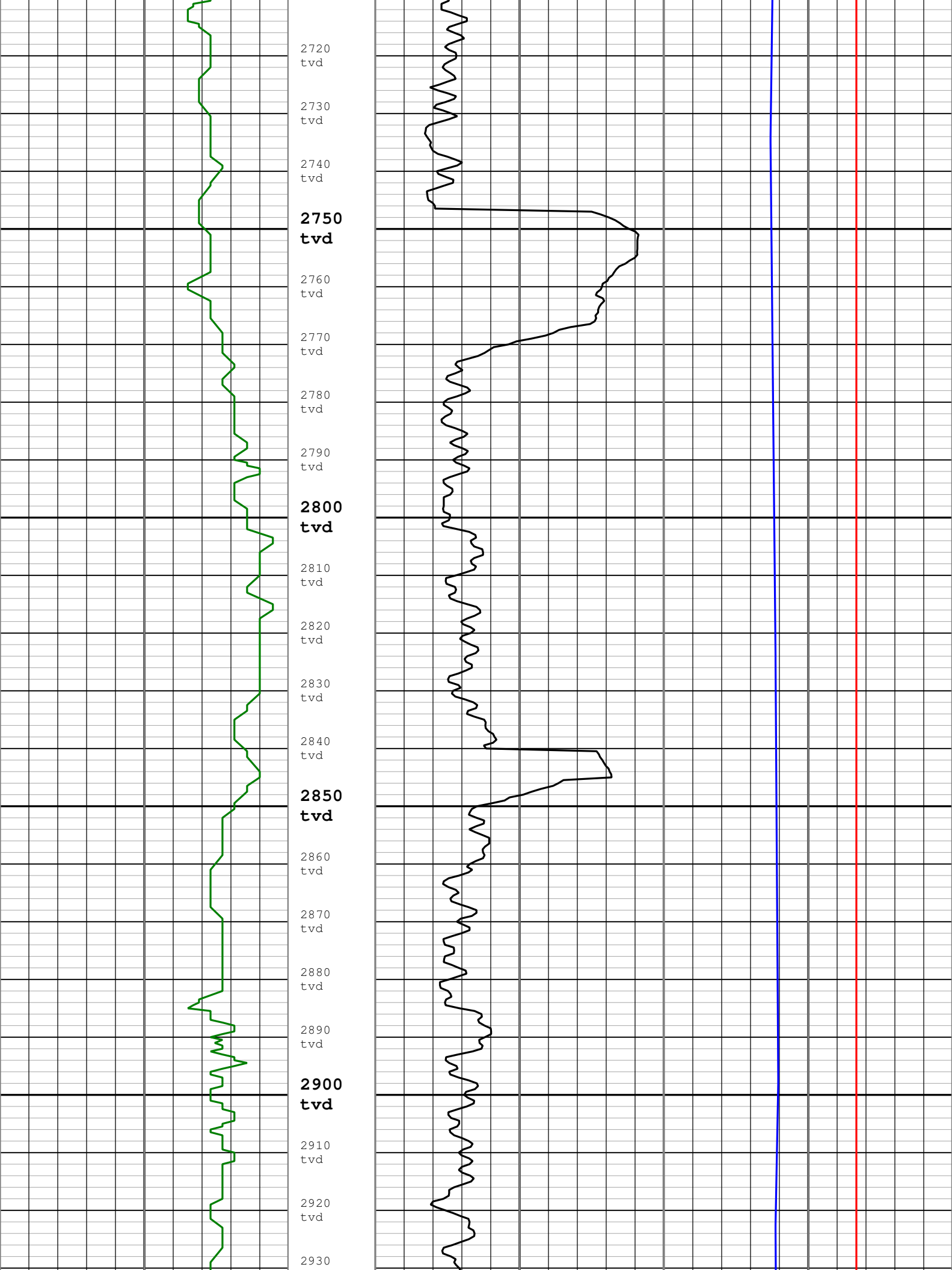


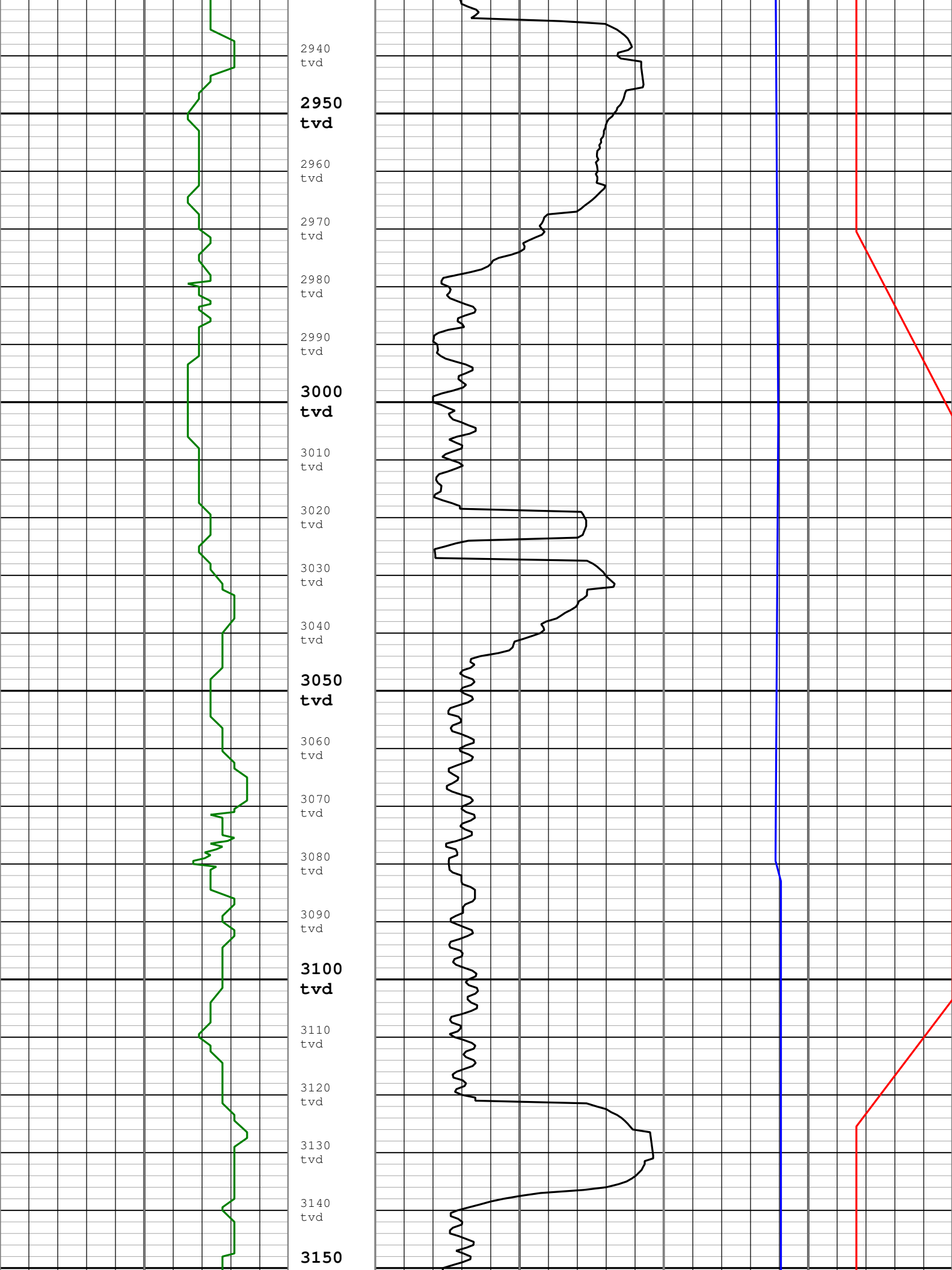


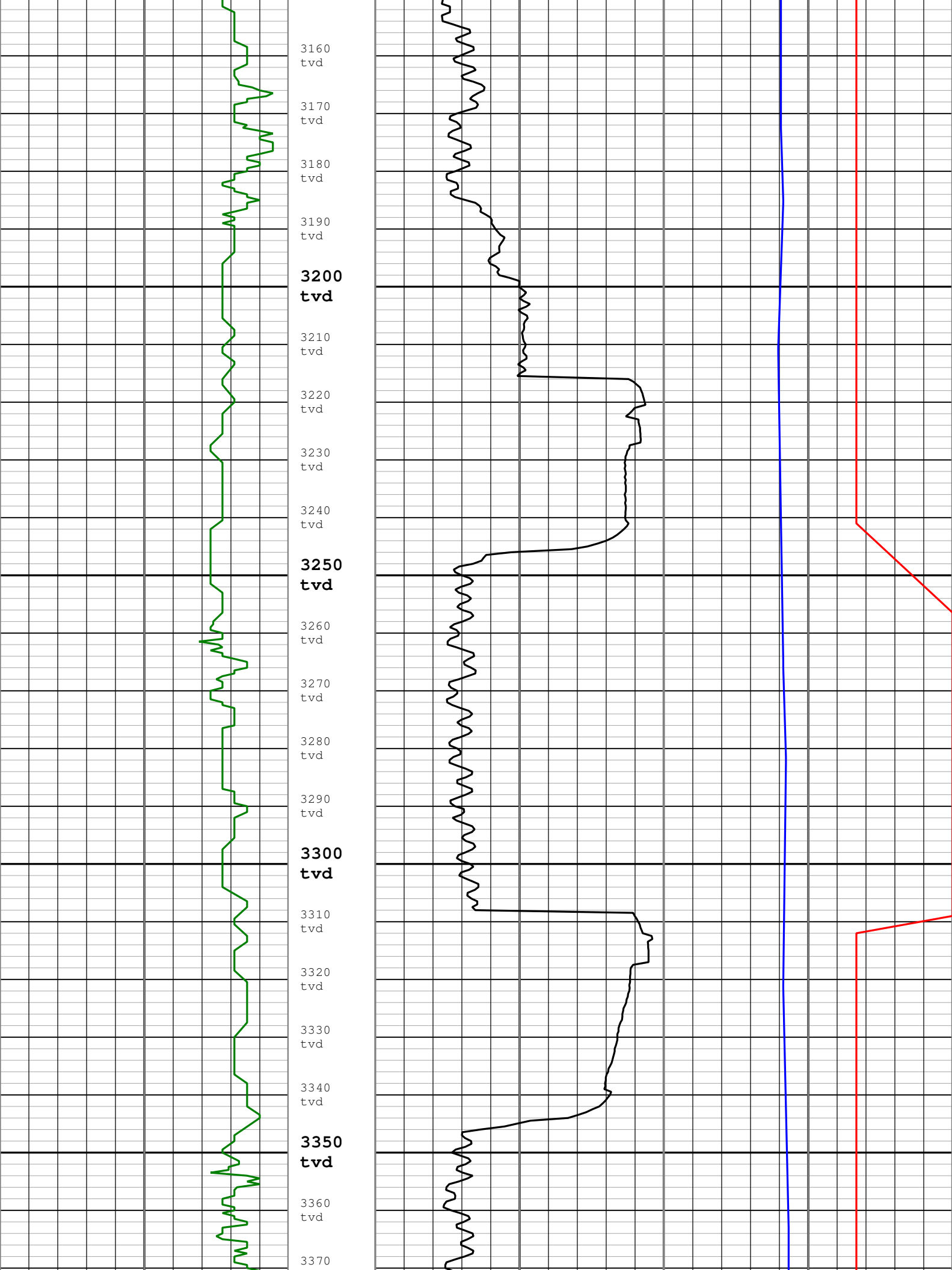


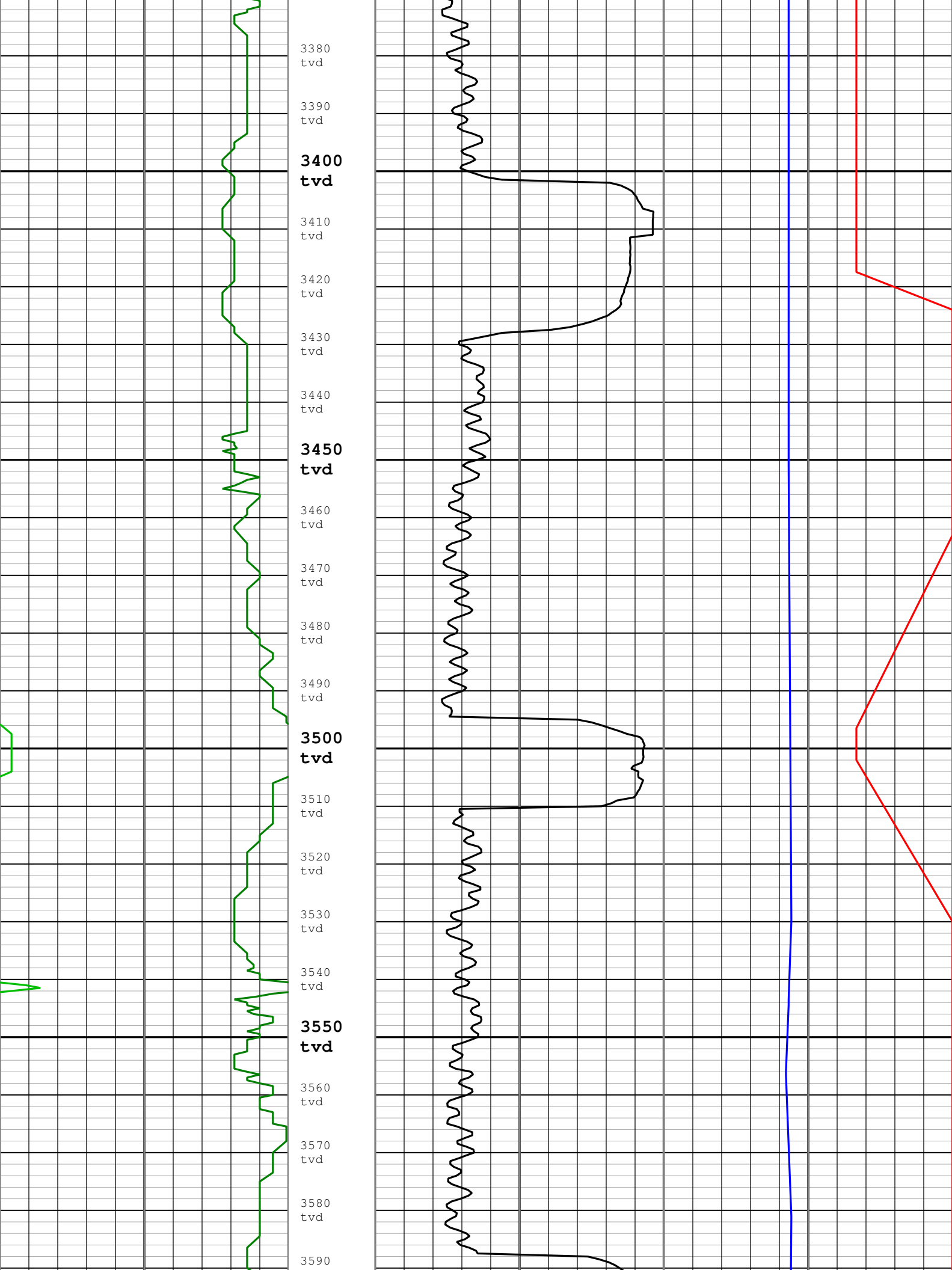


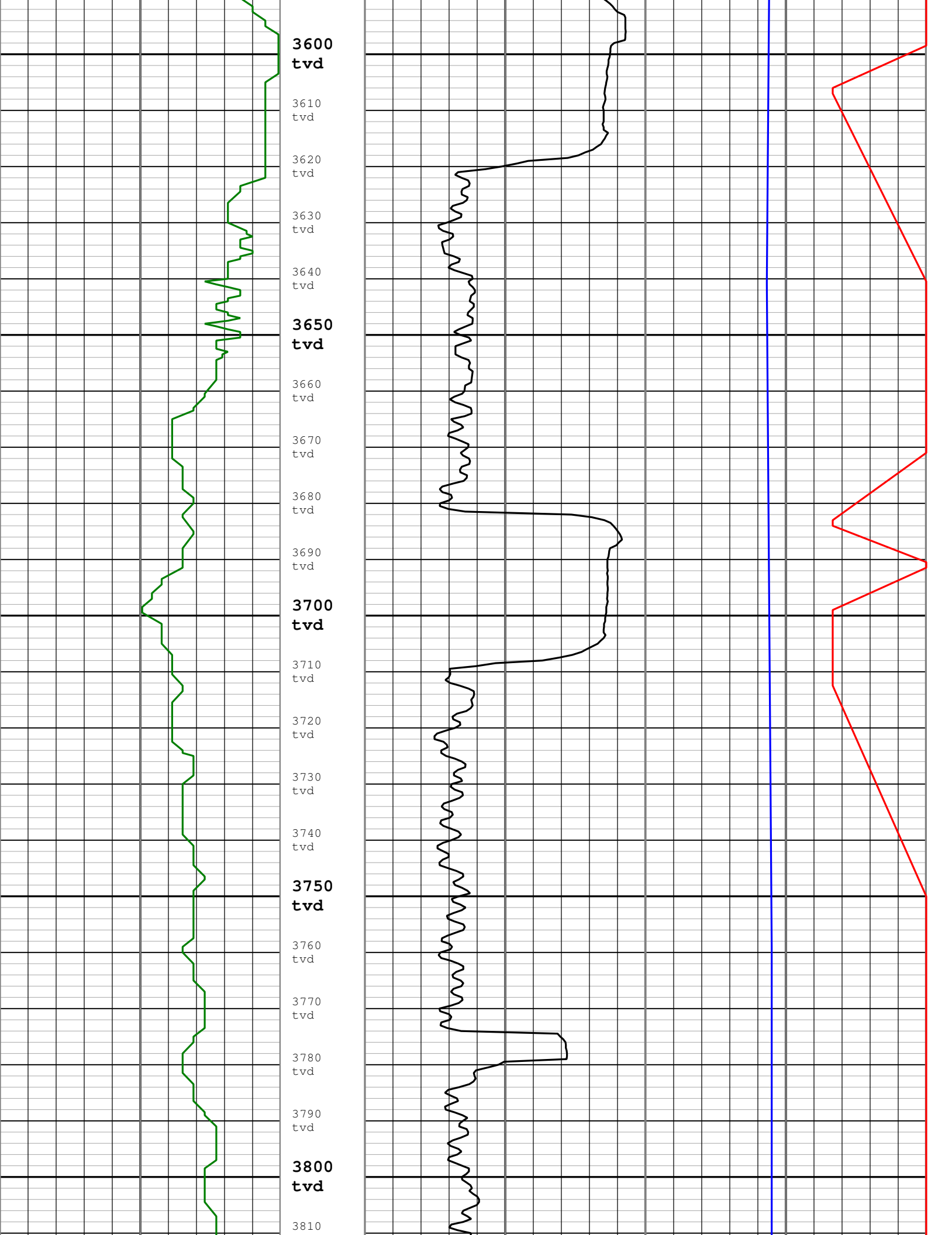


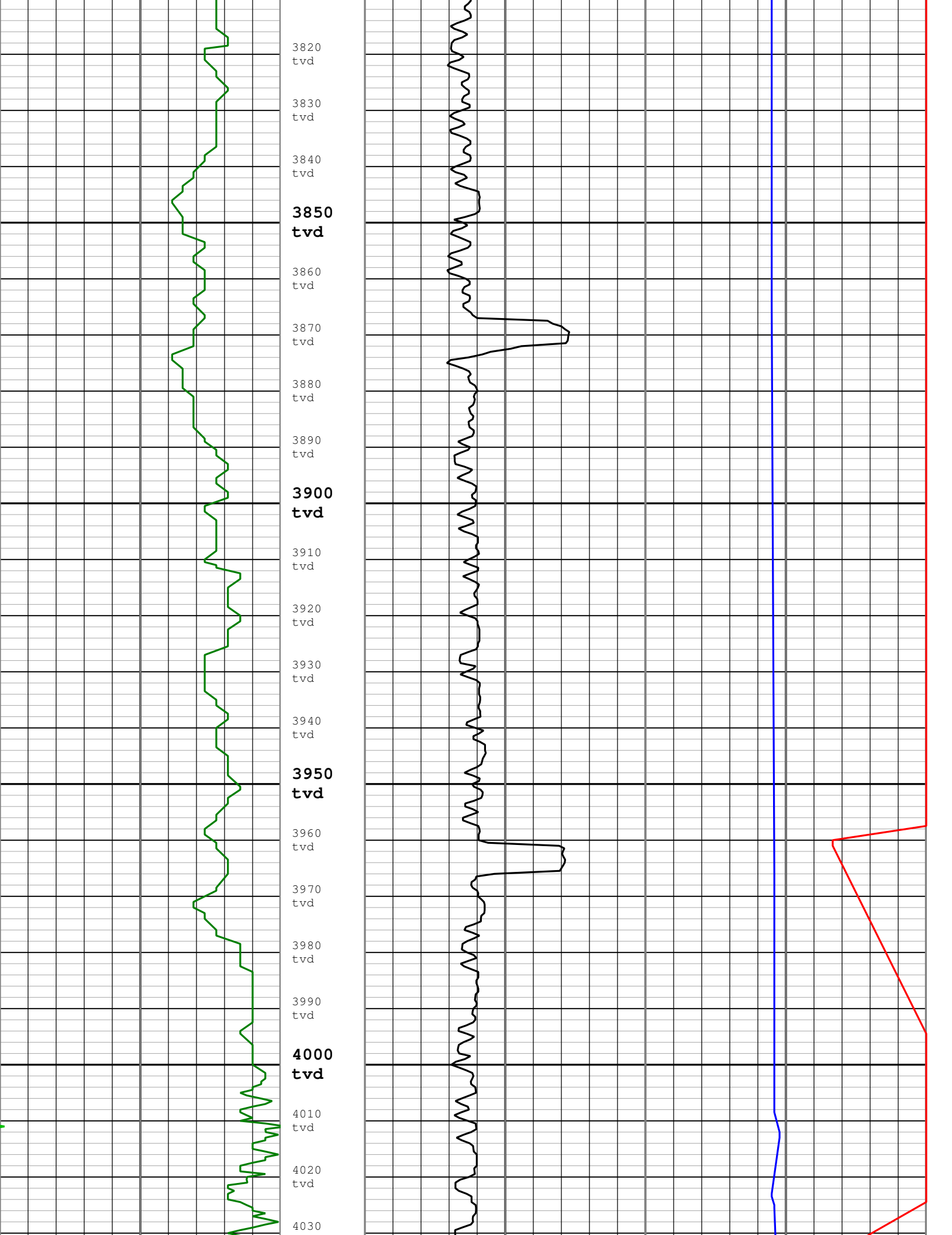


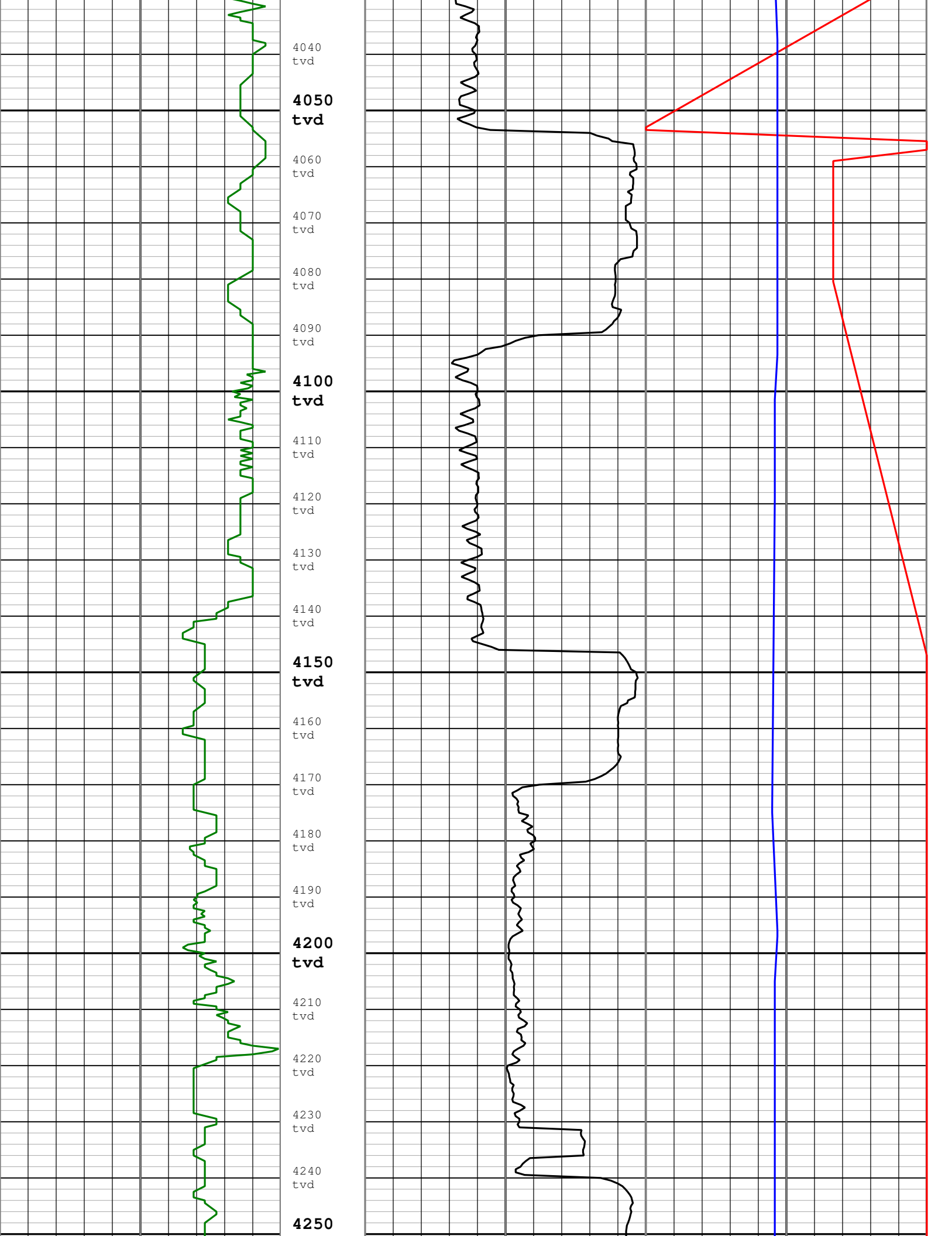


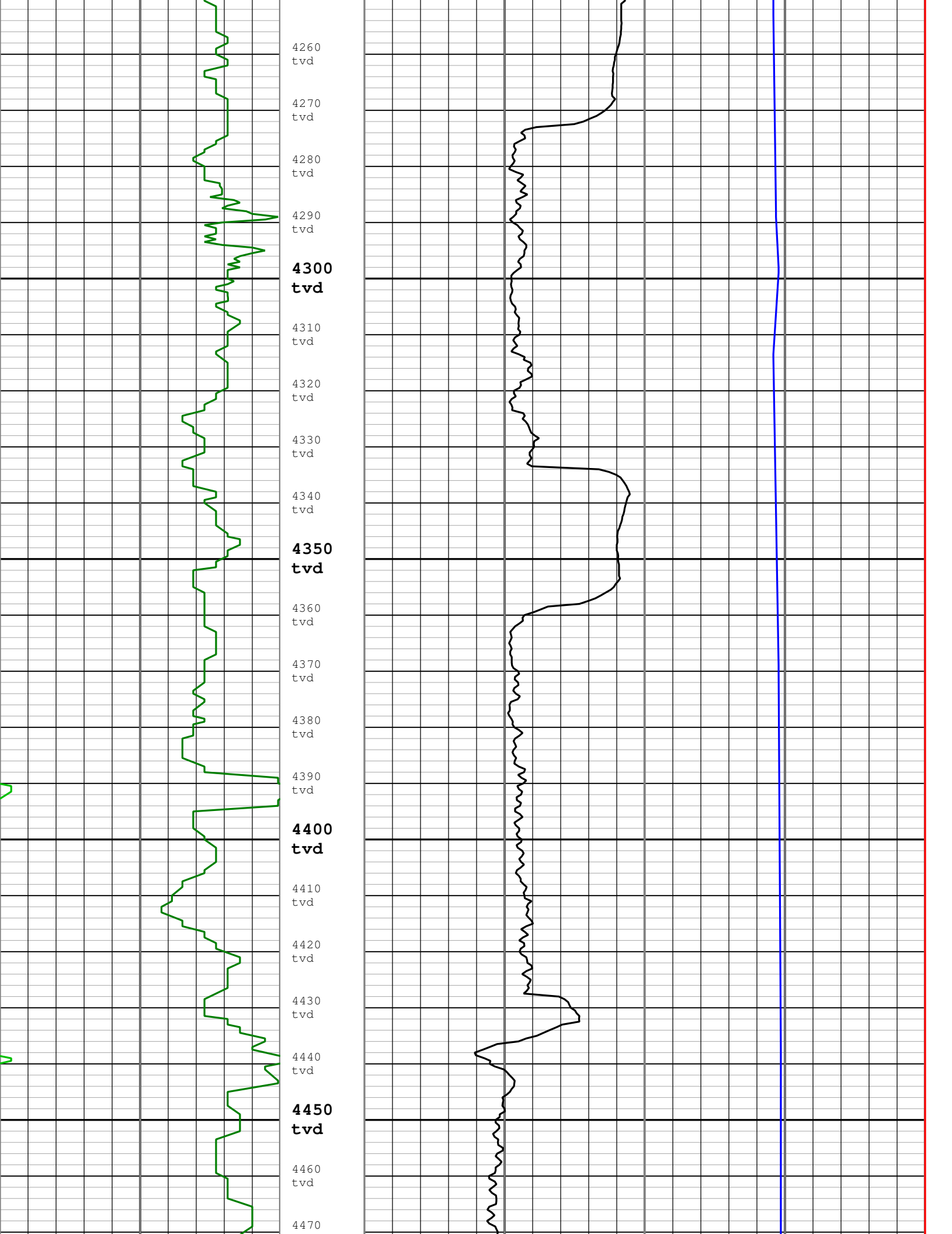


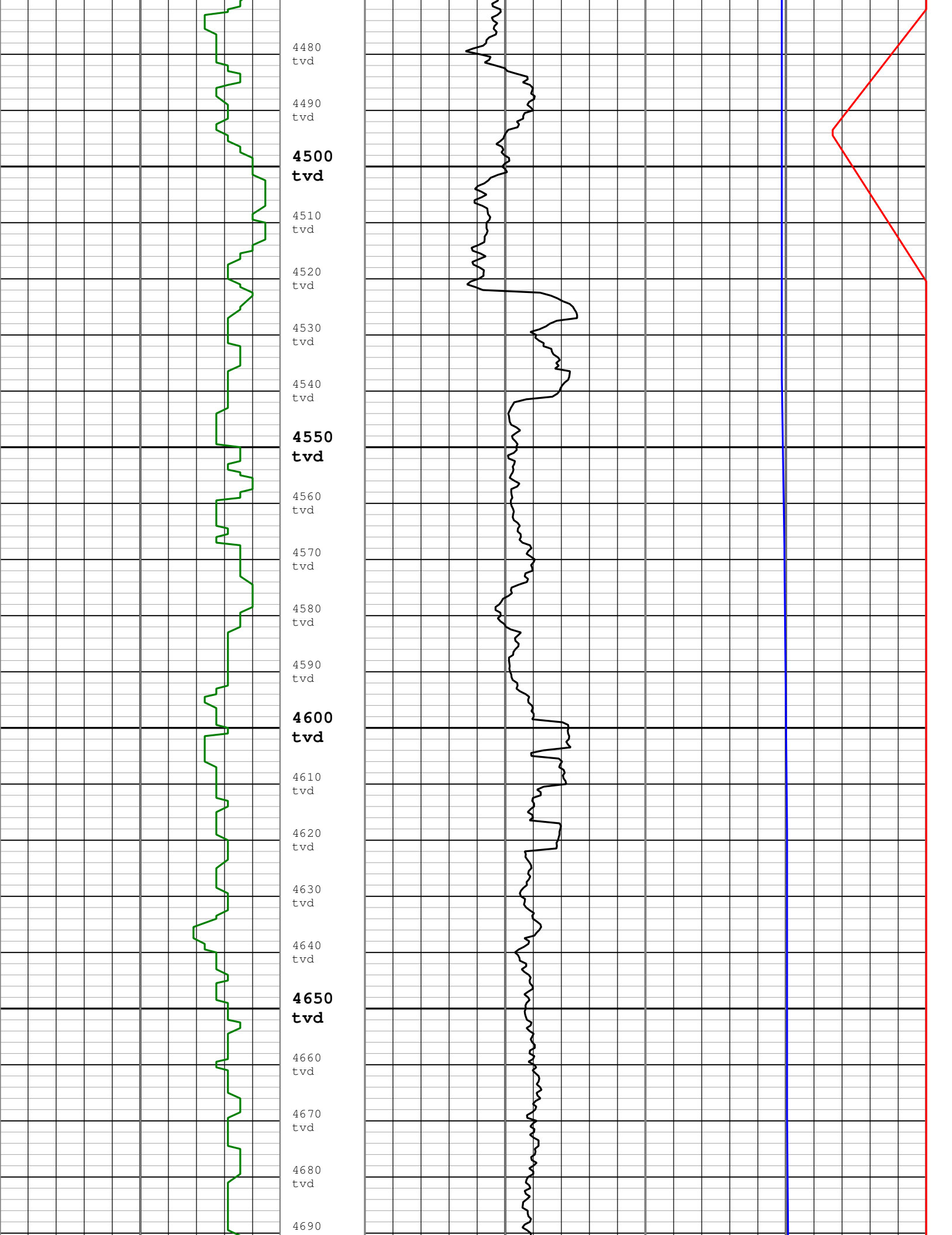


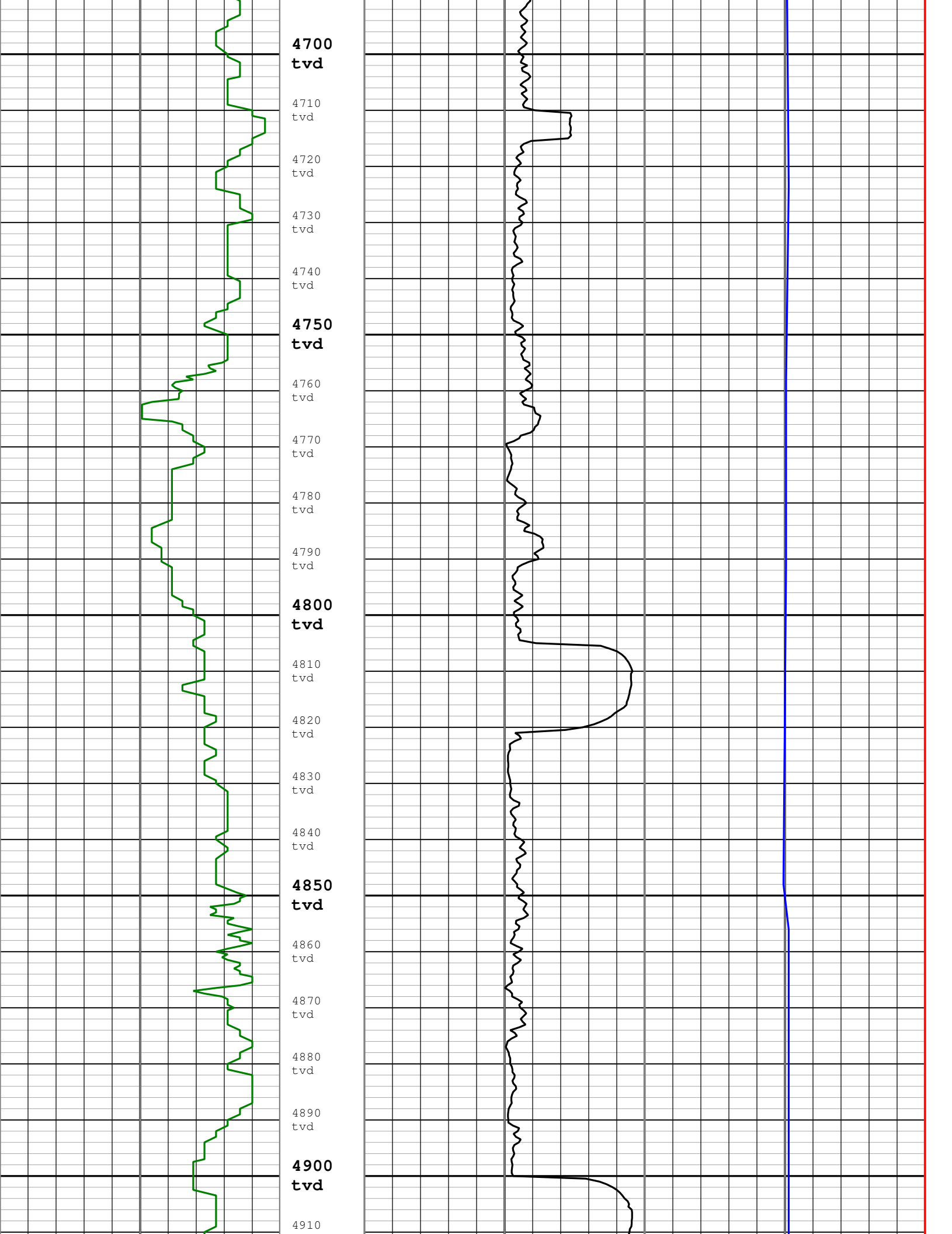


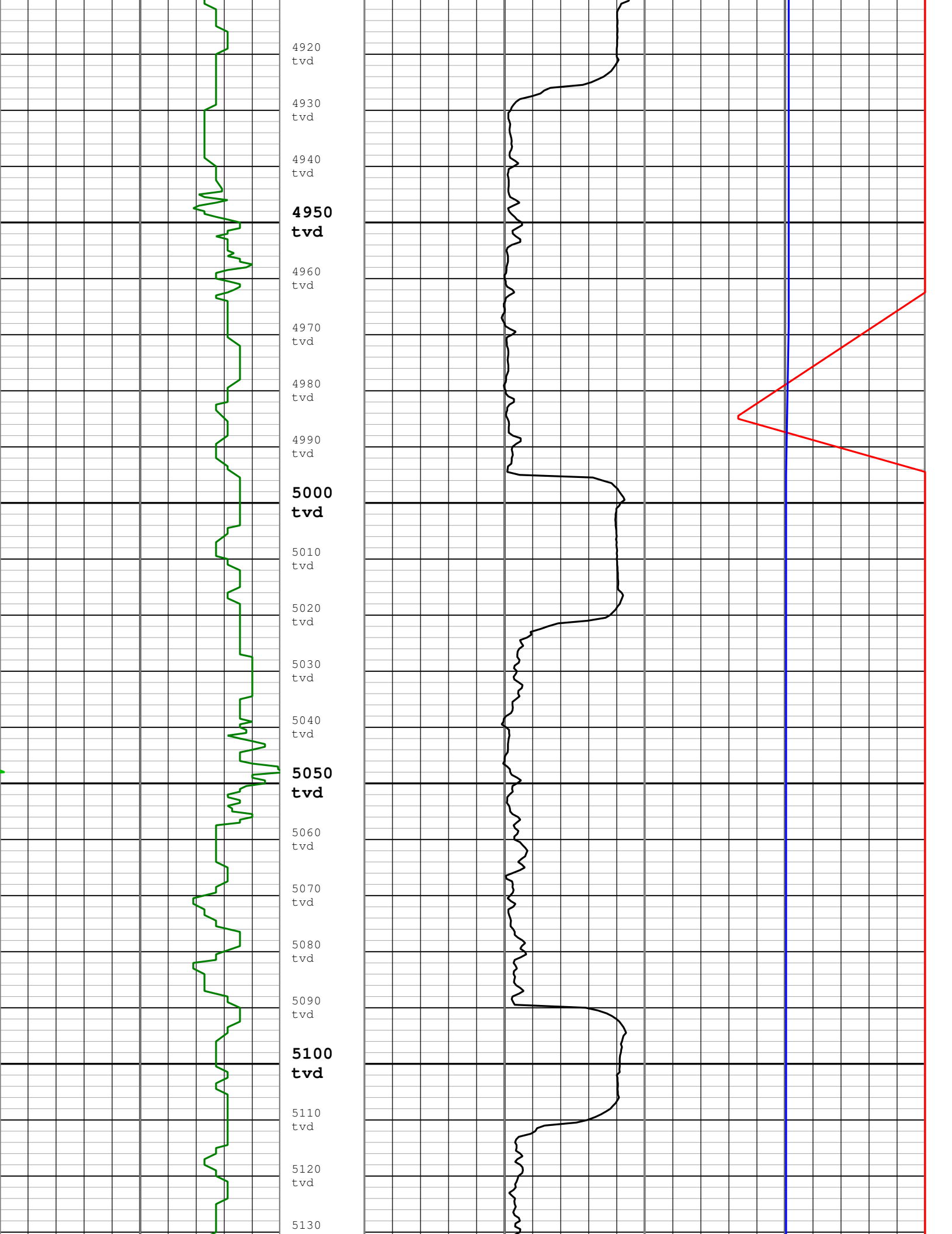


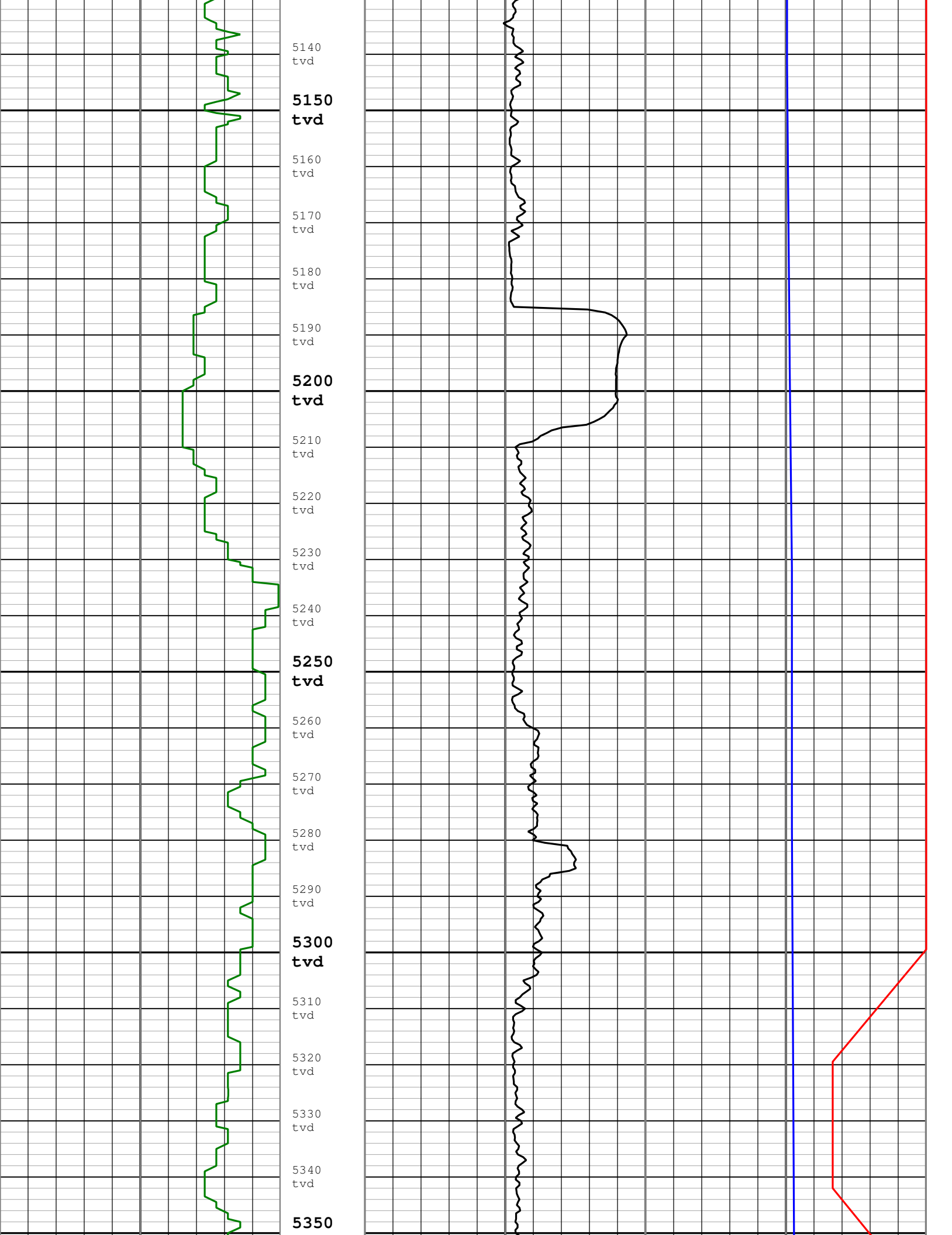


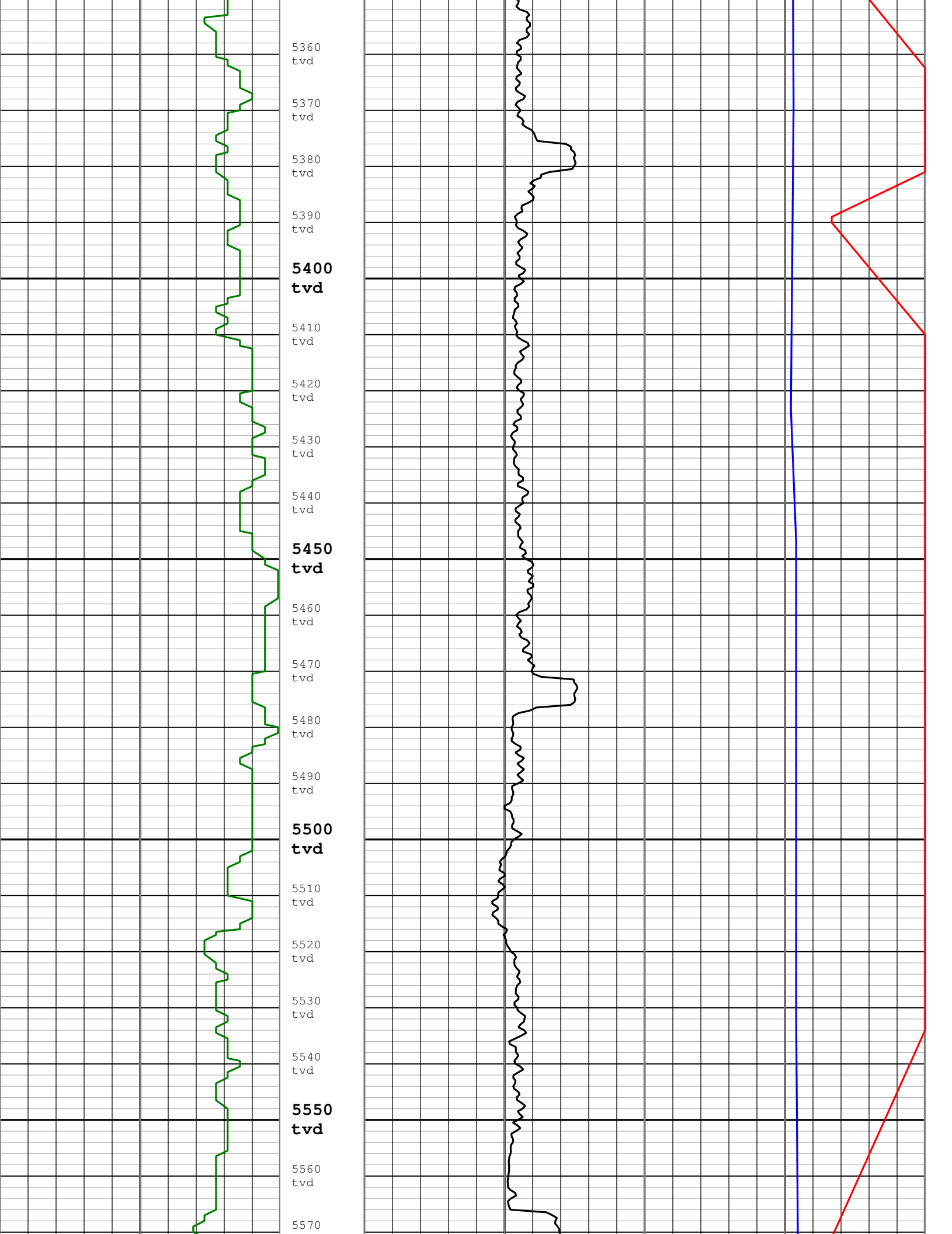


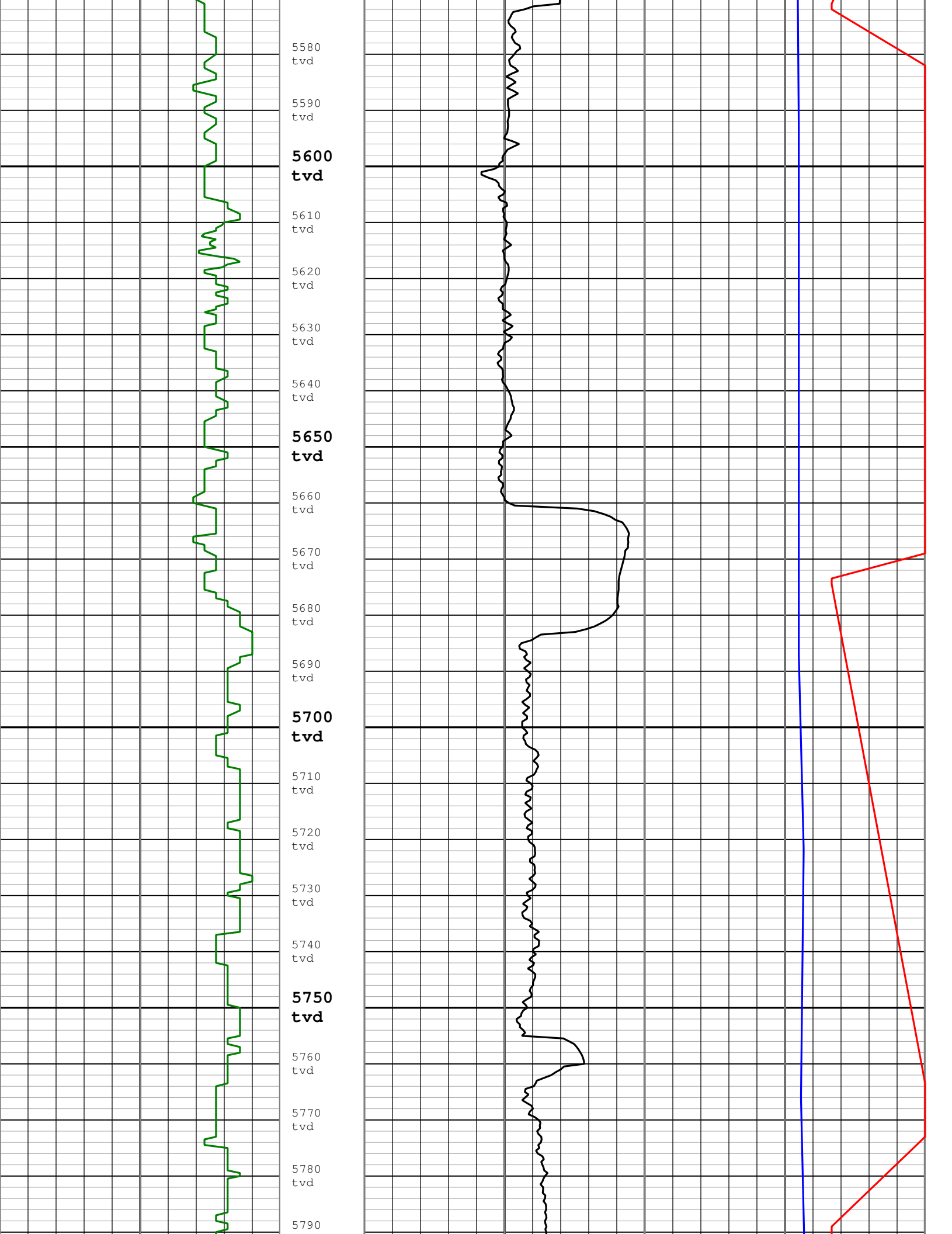


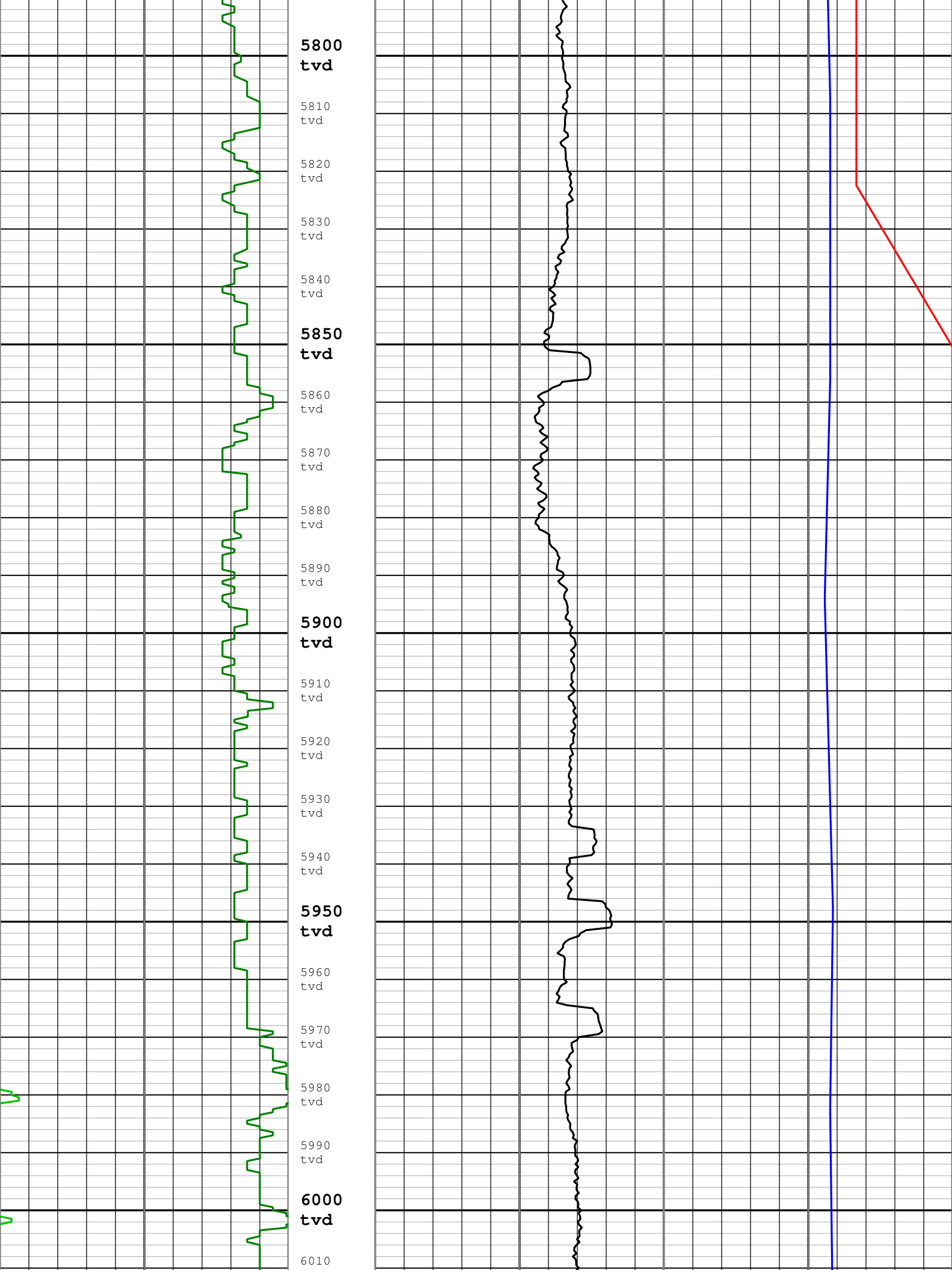


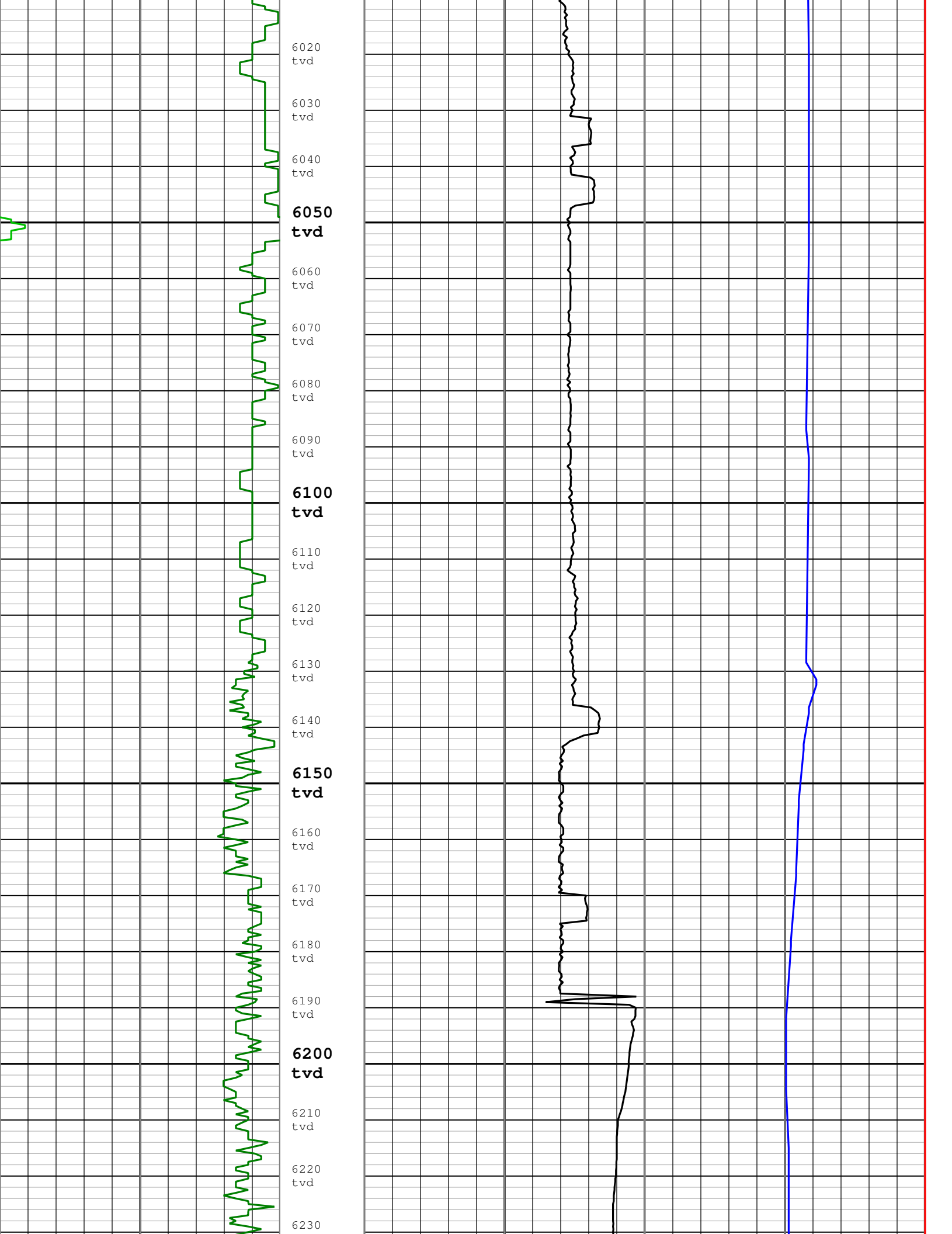


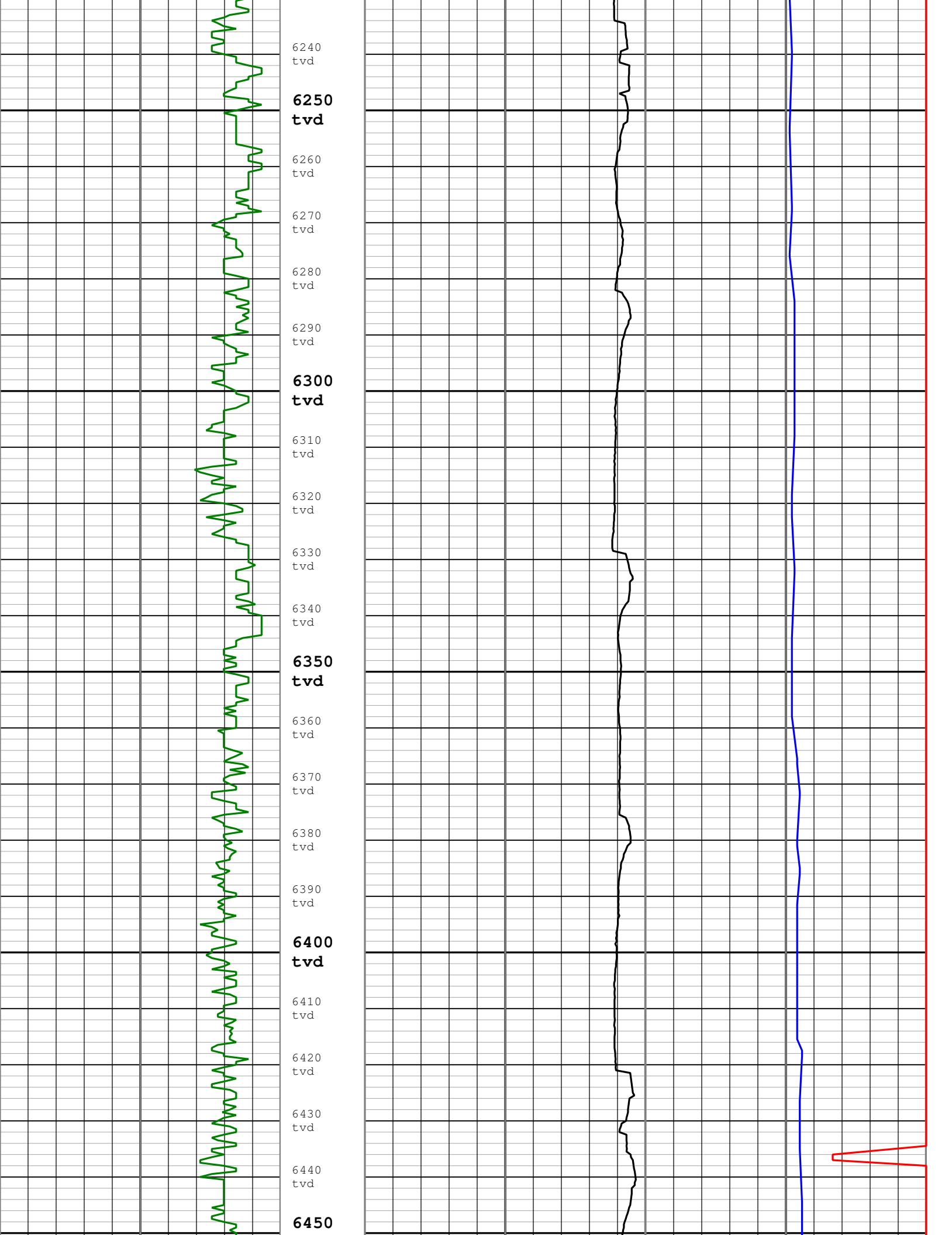


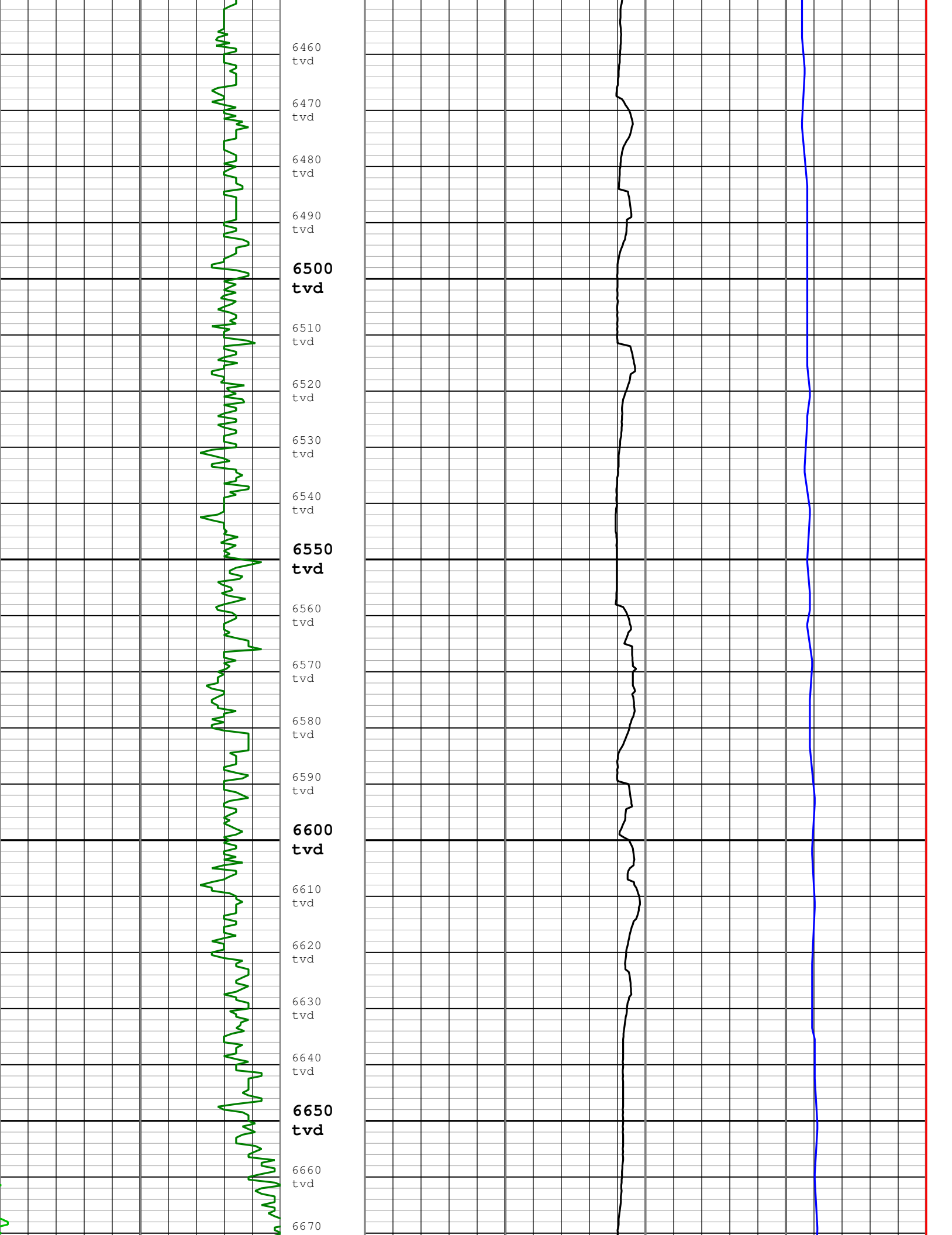


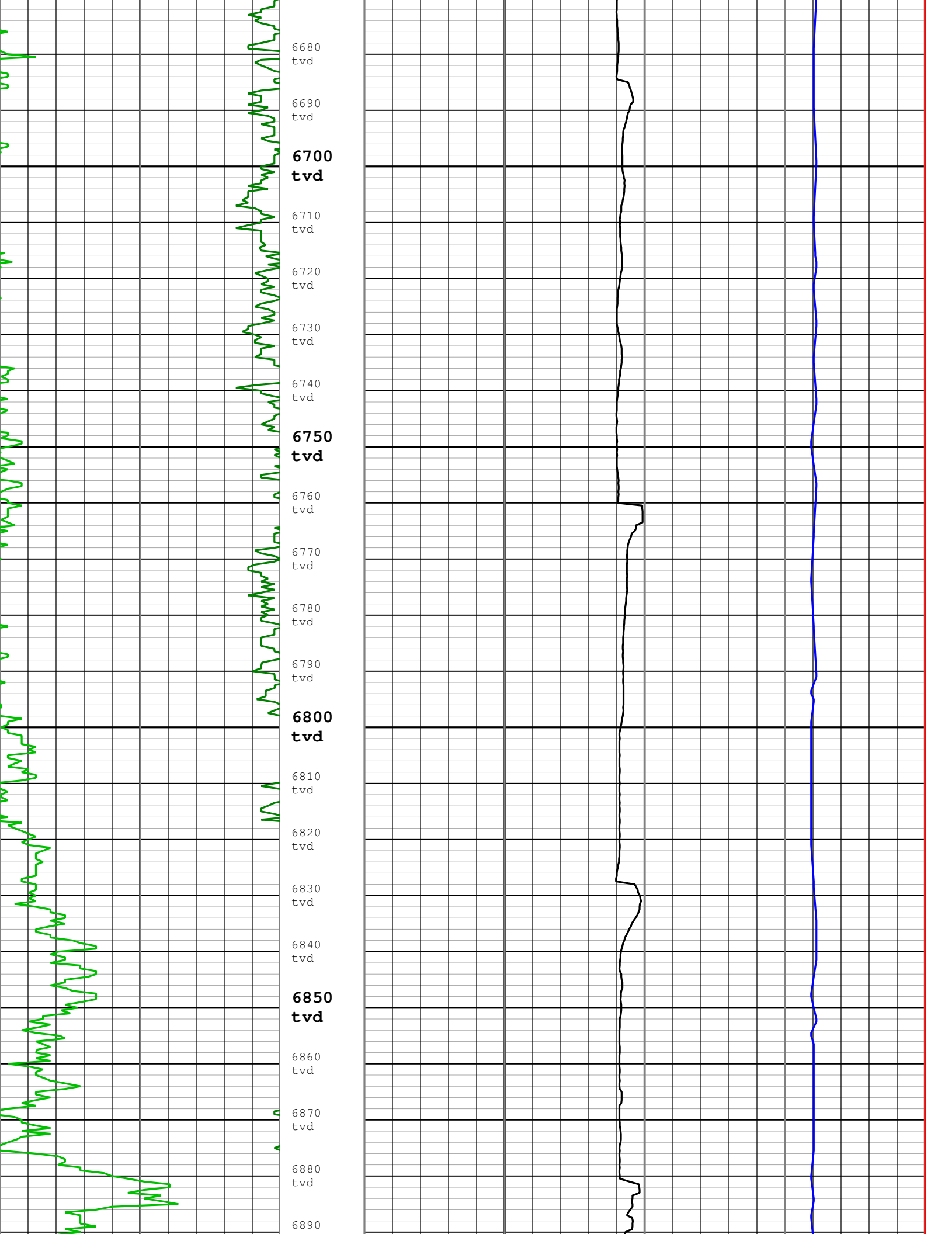


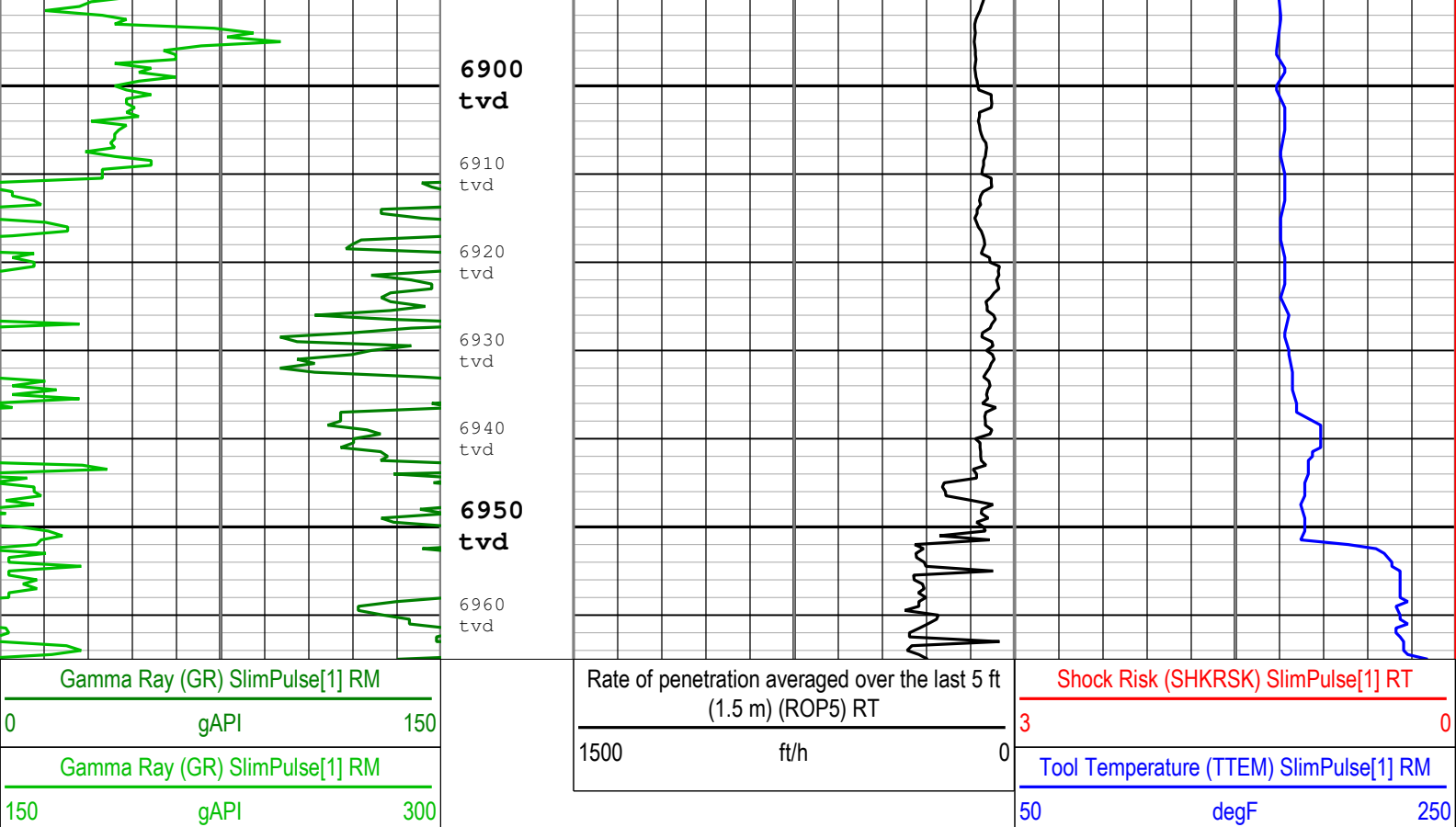












Description: Format: Log (SlimPulse EOW TVD) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: TVD Creation Date: 18-Aug-2014 13:13:32

Channel Processing Parameters

Run001: Parameters

Parameter	Description	Tool	Value	Unit
BS	Bit Size	DNMSESSION	Depth Zoned	in
DFD	Drilling Fluid Density	Borehole	8.95	lbm/gal
GR_SRC	GR Source Selection	SPULSE-GEN	GAMMA_EXT	

Run001Depth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	13.5	578.58	640.08
BS	8.75	640.08	6187.22

All depth are actual.

Run002: Parameters

Parameter	Description	Tool	Value	Unit
BS	Bit Size	DNMSESSION	8.75	in
DFD	Drilling Fluid Density	Borehole	10.6	lbm/gal
GR_SRC	GR Source Selection	SPULSE-GEN	GAMMA_EXT	

Run003: 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	

Run003Depth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	8.75	6928.06	6943.87
BS	6.125	6943.87	6965.15

All depth are actual.

Run003Time Zoned Parameters

Pass Drilling

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
DFD	9.85	10-Aug-2014 20:02:51	11-Aug-2014 01:30:00	7272.25	7797.17
DFD	10.2	11-Aug-2014 01:30:00	11-Aug-2014 13:00:00	7797.17	9389.17
DFD	10.3	11-Aug-2014 13:00:00	12-Aug-2014 01:30:00	9389.17	10643.83
DFD	10.35	12-Aug-2014 01:30:00	12-Aug-2014 20:09:31	10643.83	12017.67

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	H795
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GRGain - Gamma Ray: Blanket

Master (Time Frame File):		12:00:00 25-Jul-2014					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div></div>
Gamma Ray Calibration Gain		Master	1.0000	0.9000	1.0983	1.1000	<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	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	<div><div></div><div></div></div>
Gamma Ray Calibration Gain		Master	1.0000	0.9000	1.0258	1.1000	<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	1001
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GRGain - Gamma Ray: Blanket

Master (Time Frame File):		12:00:00 13-May-2014					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	<div><div></div><div></div></div>
Gamma Ray Calibration Gain		Master	1.0000	0.9000	1.0000	1.1000	<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

Latitude :	40° 19' 40.224" N	Longitude :	104° 47' 27.636" W
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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:	92.28 deg

D&I Inits Computed and Values Used - Run001

Geomagnetic Model :	BGGM 2014	Geomagnetic Date :	05-Aug-2014
Computed Location B :	52660.73 nT +/- 300.00nT	Used Location B :	52570.00 nT +/- 300.00nT
Computed Location G :	999.54 mgn +/- 2.50mgn	Used Location G :	999.02 mgn +/- 2.50mgn

Computed Magnetic Dip :	66.87 deg +/- 0.45deg	Used Magnetic Dip :	66.79 deg +/- 0.45deg
Computed Magnetic Dec :	8.54 deg	Used Magnetic Dec :	8.40 deg
Computed Total Correction :	8.08 deg	Used Total Correction :	7.94 deg

D&I Inits Computed and Values Used - Run002			
Geomagnetic Model :	BGGM 2014	Geomagnetic Date :	08-Aug-2014
Computed Location B :	52659.62 nT +/- 300.00nT	Used Location B :	52570.00 nT +/- 300.00nT
Computed Location G :	999.54 mgn +/- 2.50mgn	Used Location G :	999.02 mgn +/- 2.50mgn
Computed Magnetic Dip :	66.87 deg +/- 0.45deg	Used Magnetic Dip :	66.79 deg +/- 0.45deg
Computed Magnetic Dec :	8.53 deg	Used Magnetic Dec :	8.40 deg
Computed Total Correction :	8.07 deg	Used Total Correction :	7.94 deg

D&I Inits Computed and Values Used - Run003			
Geomagnetic Model :	BGGM 2014	Geomagnetic Date :	09-Aug-2014
Computed Location B :	52659.25 nT +/- 300.00nT	Used Location B :	52570.00 nT +/- 300.00nT
Computed Location G :	999.54 mgn +/- 2.50mgn	Used Location G :	999.02 mgn +/- 2.50mgn
Computed Magnetic Dip :	66.87 deg +/- 0.45deg	Used Magnetic Dip :	66.79 deg +/- 0.45deg
Computed Magnetic Dec :	8.53 deg	Used Magnetic Dec :	8.40 deg
Computed Total Correction :	8.07 deg	Used Total Correction :	7.94 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	1 : DMAG Corrected 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	380.00	0.20	135.54	380.00	380.00	0.48	-0.47	0.46	0.66	135.54	0.05	SingleShot	9	0	0
3	640.00	0.40	319.44	260.00	640.00	0.20	-0.11	0.19	0.23	119.27	0.23	SingleShot	9	0	0
4	731.00	1.18	225.12	91.00	730.99	-0.66	-0.53	-0.68	0.85	232.10	1.40	SlimPulse	2	0	0
5	826.00	0.90	213.87	95.00	825.97	-1.72	-1.84	-1.79	2.56	224.21	0.37	SlimPulse	2	0	0
6	920.00	1.08	211.02	94.00	919.96	-2.53	-3.21	-2.66	4.17	219.62	0.19	SlimPulse	2	0	0
7	1013.00	0.80	242.42	93.00	1012.95	-3.51	-4.26	-3.68	5.64	220.85	0.62	SlimPulse	2	0	0
8	1106.00	0.86	242.54	93.00	1105.94	-4.68	-4.88	-4.88	6.89	224.97	0.06	SlimPulse	2	0	0
9	1197.00	0.83	247.77	91.00	1196.93	-5.87	-5.45	-6.09	8.17	228.20	0.09	SlimPulse	0	0	0
10	1290.00	0.90	248.91	93.00	1289.92	-7.15	-5.96	-7.40	9.51	231.12	0.08	SlimPulse	2	0	0
11	1383.00	1.05	240.62	93.00	1382.91	-8.55	-6.64	-8.82	11.06	233.01	0.22	SlimPulse	2	0	0
12	1475.00	0.88	233.68	92.00	1474.89	-9.82	-7.47	-10.12	12.60	233.56	0.22	SlimPulse	2	0	0
13	1568.00	0.86	243.81	93.00	1567.88	-10.99	-8.20	-11.32	13.98	234.07	0.17	SlimPulse	2	0	0
14	1662.00	0.74	217.71	94.00	1661.87	-11.96	-8.99	-12.32	15.26	233.88	0.40	SlimPulse	2	0	0
15	1757.00	0.47	200.20	95.00	1756.87	-12.43	-9.84	-12.83	16.17	232.51	0.34	SlimPulse	2	0	0
16	1849.00	0.14	224.81	92.00	1848.87	-12.62	-10.28	-13.04	16.60	231.77	0.37	SlimPulse	2	0	0
17	1943.00	0.56	6.77	94.00	1942.86	-12.67	-9.90	-13.07	16.40	232.85	0.72	SlimPulse	2	0	0
18	2037.00	3.04	300.25	94.00	2036.82	-14.83	-8.19	-15.17	17.22	241.63	3.04	SlimPulse	2	0	0
19	2132.00	5.30	284.40	95.00	2131.56	-21.35	-5.83	-21.60	22.38	254.89	2.65	SlimPulse	2	0	0
20	2227.00	5.19	282.81	95.00	2226.16	-29.86	-3.79	-30.04	30.28	262.82	0.19	SlimPulse	2	0	0
21	2322.00	5.90	277.97	95.00	2320.72	-38.95	-2.15	-39.07	39.14	266.84	0.89	SlimPulse	2	0	0
22	2418.00	5.40	276.98	96.00	2416.25	-48.37	-0.92	-48.44	48.46	268.91	0.53	SlimPulse	2	0	0
23	2513.00	6.95	248.73	95.00	2510.72	-58.09	-2.46	-58.24	58.30	267.58	3.54	SlimPulse	2	0	0
24	2608.00	8.62	239.76	95.00	2604.84	-69.36	-8.13	-69.74	70.21	263.35	2.17	SlimPulse	2	0	0
25	2703.00	10.55	242.22	95.00	2698.51	-82.89	-15.77	-83.59	85.07	259.31	2.08	SlimPulse	2	0	0
26	2798.00	11.00	246.52	95.00	2791.84	-98.59	-23.44	-99.60	102.33	256.76	0.97	SlimPulse	2	0	0
27	2893.00	9.53	247.62	95.00	2885.32	-113.90	-30.04	-115.19	119.03	255.38	1.56	SlimPulse	2	0	0
28	2989.00	10.83	241.49	96.00	2979.81	-128.87	-37.38	-130.46	135.70	254.01	1.76	SlimPulse	2	0	0
29	3084.00	10.13	240.02	95.00	3073.22	-143.60	-45.81	-145.54	152.59	252.53	0.79	SlimPulse	2	0	0
30	3179.00	8.88	235.10	95.00	3166.92	-156.51	-54.18	-158.79	167.78	251.16	1.57	SlimPulse	2	0	0

	3273.00	9.84	228.77	94.00	3259.66	-168.12	-63.63	-170.79	182.25	249.57	1.50	SlimPulse	2	0	0
32	3368.00	10.51	237.34	95.00	3353.17	-181.12	-73.66	-184.20	198.39	248.20	1.74	SlimPulse	2	0	0
33	3463.00	10.90	241.01	95.00	3446.52	-195.90	-82.69	-199.35	215.81	247.47	0.82	SlimPulse	2	0	0
34	3558.00	10.13	237.44	95.00	3539.93	-210.44	-91.54	-214.25	232.97	246.86	1.06	SlimPulse	2	0	0
35	3653.00	11.10	242.01	95.00	3633.30	-225.19	-100.33	-229.37	250.36	246.37	1.35	SlimPulse	2	0	0
36	3748.00	12.67	244.07	95.00	3726.26	-242.27	-109.18	-246.81	269.88	246.14	1.71	SlimPulse	2	0	0
37	3843.00	12.72	243.26	95.00	3818.94	-260.60	-118.44	-265.52	290.75	245.96	0.20	SlimPulse	2	0	0
38	3939.00	12.76	242.56	96.00	3912.58	-279.05	-128.08	-284.37	311.88	245.75	0.16	SlimPulse	2	0	0
39	4034.00	11.03	241.08	95.00	4005.53	-295.94	-137.31	-301.64	331.43	245.52	1.85	SlimPulse	2	0	0
40	4129.00	9.58	243.13	95.00	4099.00	-310.62	-145.28	-316.65	348.39	245.35	1.57	SlimPulse	2	0	0
41	4224.00	9.85	246.32	95.00	4192.63	-324.83	-152.12	-331.15	364.40	245.33	0.63	SlimPulse	2	0	0
42	4319.00	10.45	245.12	95.00	4286.15	-339.80	-159.01	-346.40	381.17	245.34	0.66	SlimPulse	2	0	0
43	4414.00	10.02	246.25	95.00	4379.64	-354.89	-165.96	-361.78	398.03	245.36	0.50	SlimPulse	2	0	0
44	4509.00	8.68	245.87	95.00	4473.37	-368.74	-172.22	-375.88	413.45	245.38	1.40	SlimPulse	2	0	0
45	4604.00	8.30	244.87	95.00	4567.33	-381.25	-178.07	-388.64	427.49	245.38	0.43	SlimPulse	2	0	0
46	4700.00	7.10	249.26	96.00	4662.46	-392.86	-183.11	-400.47	440.35	245.43	1.40	SlimPulse	2	0	0
47	4795.00	6.70	248.90	95.00	4756.78	-403.35	-187.18	-411.12	451.74	245.52	0.43	SlimPulse	2	0	0
48	4890.00	5.99	250.79	95.00	4851.19	-413.05	-190.81	-420.98	462.20	245.62	0.77	SlimPulse	2	0	0
49	4986.00	4.40	254.63	96.00	4946.79	-421.23	-193.43	-429.26	470.83	245.74	1.69	SlimPulse	2	0	0
50	5081.00	3.38	224.58	95.00	5041.58	-426.59	-196.40	-434.75	477.07	245.69	2.36	SlimPulse	2	0	0
51	5176.00	1.70	220.18	95.00	5136.49	-429.34	-199.47	-437.63	480.94	245.50	1.79	SlimPulse	2	0	0
52	5271.00	0.59	243.69	95.00	5231.47	-430.64	-200.76	-438.97	482.71	245.42	1.24	SlimPulse	2	0	0
53	5366.00	0.46	233.18	95.00	5326.46	-431.36	-201.21	-439.72	483.56	245.41	0.17	SlimPulse	2	0	0
54	5462.00	0.85	186.81	96.00	5422.46	-431.72	-202.14	-440.11	484.32	245.33	0.65	SlimPulse	2	0	0
55	5556.00	1.23	207.54	94.00	5516.44	-432.20	-203.72	-440.66	485.47	245.19	0.56	SlimPulse	2	0	0
56	5651.00	1.59	180.68	95.00	5611.41	-432.60	-205.94	-441.14	486.84	244.97	0.78	SlimPulse	2	0	0
57	5747.00	0.65	121.08	96.00	5707.40	-432.09	-207.56	-440.69	487.14	244.78	1.44	SlimPulse	2	0	0
58	5842.00	0.77	176.38	95.00	5802.39	-431.55	-208.47	-440.20	487.07	244.66	0.70	SlimPulse	2	0	0
59	5937.00	0.39	219.45	95.00	5897.39	-431.68	-209.35	-440.36	487.60	244.57	0.58	SlimPulse	2	0	0
60	6032.00	0.14	75.63	95.00	5992.39	-431.77	-209.57	-440.45	487.76	244.55	0.54	SlimPulse	2	0	0
61	6127.00	0.24	251.85	95.00	6087.39	-431.84	-209.61	-440.53	487.86	244.55	0.40	SlimPulse	2	0	0
62	6175.00	0.33	256.38	48.00	6135.39	-432.07	-209.67	-440.76	488.09	244.56	0.18	SlimPulse	2	0	0
63	6216.00	0.12	256.29	41.00	6176.38	-432.22	-209.71	-440.92	488.25	244.56	0.49	SlimPulse	2	0	0
64	6263.00	3.38	79.23	47.00	6223.36	-430.92	-209.46	-439.60	486.94	244.52	7.46	SlimPulse	9	0	1
65	6312.00	4.50	88.96	49.00	6272.24	-427.60	-209.16	-436.26	483.79	244.39	2.65	SlimPulse	9	0	1
66	6359.00	7.77	84.58	47.00	6318.97	-422.61	-208.82	-431.25	479.17	244.16	7.02	SlimPulse	9	0	1
67	6407.00	11.49	86.04	48.00	6366.28	-414.63	-208.19	-423.25	471.69	243.81	7.77	SlimPulse	9	0	1
68	6454.00	15.11	84.38	47.00	6412.01	-403.91	-207.26	-412.48	461.61	243.32	7.74	SlimPulse	9	0	1
69	6502.00	17.62	85.04	48.00	6458.07	-390.50	-206.02	-399.02	449.05	242.69	5.24	SlimPulse	9	0	1
70	6550.00	19.78	90.30	48.00	6503.53	-375.18	-205.44	-383.65	435.20	241.83	5.70	SlimPulse	9	0	1
71	6597.00	22.45	94.28	47.00	6547.38	-358.26	-206.15	-366.75	420.70	240.66	6.45	SlimPulse	9	0	1
72	6692.00	25.72	92.83	95.00	6634.09	-319.51	-208.52	-328.06	388.71	237.56	3.50	SlimPulse	9	0	1
73	6787.00	34.49	86.95	95.00	6716.22	-272.01	-208.11	-280.51	349.28	233.43	9.73	SlimPulse	9	0	1
74	6883.00	44.65	83.15	96.00	6790.13	-211.47	-202.62	-219.71	298.88	227.32	10.88	SlimPulse	9	0	1
75	6978.00	55.73	83.14	95.00	6850.86	-139.53	-193.92	-147.36	243.57	217.23	11.66	SlimPulse	9	0	1
76	7073.00	64.55	82.47	95.00	6898.11	-58.35	-183.59	-65.71	195.01	199.69	9.30	SlimPulse	9	0	1
77	7168.00	76.65	81.69	95.00	6929.61	29.67	-171.25	22.87	172.77	172.39	12.76	SlimPulse	9	0	1
78	7214.00	83.18	82.24	46.00	6937.66	74.20	-164.92	67.69	178.28	157.68	14.24	SlimPulse	9	0	1
79	7305.00	85.32	81.62	91.00	6946.78	163.26	-152.21	157.33	218.90	134.05	2.45	SlimPulse	9	0	0
80	7398.00	89.00	87.06	93.00	6951.39	255.21	-143.06	249.72	287.80	119.81	7.06	SlimPulse	9	0	0
81	7491.00	91.41	90.88	93.00	6951.06	348.03	-141.39	342.68	370.70	112.42	4.86	SlimPulse	9	0	0
82	7585.00	92.86	94.04	94.00	6947.55	441.95	-145.42	436.51	460.10	108.43	3.70	SlimPulse	9	0	0
83	7680.00	92.10	93.25	95.00	6943.44	536.83	-151.45	531.23	552.40	105.91	1.15	SlimPulse	9	0	0
84	7776.00	90.86	94.29	96.00	6940.96	632.77	-157.76	626.99	646.52	104.12	1.69	SlimPulse	9	0	0

85	7871.00	88.11	93.82	95.00	6941.82	727.71	-164.48	721.73	740.26	102.84	2.94	SlimPulse	9	0	0
86	7966.00	88.73	93.03	95.00	6944.44	822.65	-170.16	816.53	834.06	101.77	1.06	SlimPulse	9	0	0
87	8061.00	88.45	93.02	95.00	6946.77	917.61	-175.17	911.37	928.05	100.88	0.29	SlimPulse	9	0	0
88	8156.00	88.83	91.45	95.00	6949.03	1012.58	-178.87	1006.26	1022.05	100.08	1.70	SlimPulse	9	0	0
89	8251.00	90.10	91.03	95.00	6949.92	1107.56	-180.93	1101.24	1116.01	99.33	1.41	SlimPulse	9	0	0
90	8347.00	89.73	92.30	96.00	6950.06	1203.55	-183.72	1197.19	1211.22	98.72	1.38	SlimPulse	9	0	0
91	8442.00	89.52	92.39	95.00	6950.68	1298.55	-187.60	1292.11	1305.64	98.26	0.24	SlimPulse	9	0	0
92	8537.00	90.55	93.30	95.00	6950.62	1393.54	-192.32	1386.99	1400.26	97.89	1.45	SlimPulse	9	0	0
93	8632.00	89.42	92.10	95.00	6950.65	1488.54	-196.79	1481.88	1494.88	97.56	1.74	SlimPulse	9	0	0
94	8727.00	90.14	91.35	95.00	6951.01	1583.53	-199.65	1576.84	1589.44	97.22	1.09	SlimPulse	9	0	0
95	8822.00	88.83	92.66	95.00	6951.86	1678.52	-202.98	1671.77	1684.06	96.92	1.95	SlimPulse	9	0	0
96	8917.00	90.38	92.76	95.00	6952.52	1773.52	-207.47	1766.66	1778.81	96.70	1.63	SlimPulse	9	0	0
97	9013.00	89.42	91.68	96.00	6952.69	1869.51	-211.19	1862.59	1874.51	96.47	1.51	SlimPulse	9	0	0
98	9108.00	89.93	91.69	95.00	6953.23	1964.51	-213.98	1957.54	1969.19	96.24	0.54	SlimPulse	9	0	0
99	9203.00	89.97	90.16	95.00	6953.31	2059.48	-215.51	2052.53	2063.81	95.99	1.61	SlimPulse	9	0	0
100	9298.00	90.48	90.03	95.00	6952.94	2154.41	-215.67	2147.53	2158.33	95.73	0.55	SlimPulse	9	0	0
101	9393.00	89.97	90.55	95.00	6952.56	2249.35	-216.15	2242.52	2252.92	95.51	0.77	SlimPulse	9	0	0
102	9488.00	89.31	89.13	95.00	6953.16	2344.26	-215.89	2337.52	2347.47	95.28	1.65	SlimPulse	9	0	0
103	9583.00	89.93	88.50	95.00	6953.79	2439.08	-213.92	2432.49	2441.90	95.03	0.93	SlimPulse	9	0	0
104	9679.00	88.04	88.78	96.00	6955.49	2534.87	-211.64	2528.45	2537.30	94.78	1.99	SlimPulse	9	0	0
105	9774.00	88.11	89.02	95.00	6958.68	2629.65	-209.82	2623.38	2631.76	94.57	0.26	SlimPulse	9	0	0
106	9869.00	88.83	88.27	95.00	6961.22	2724.42	-207.57	2718.32	2726.21	94.37	1.09	SlimPulse	9	0	0
107	9964.00	88.97	89.45	95.00	6963.04	2819.23	-205.68	2813.28	2820.80	94.18	1.25	SlimPulse	9	0	0
108	10059.00	88.93	88.93	95.00	6964.78	2914.08	-204.34	2908.25	2915.42	94.02	0.55	SlimPulse	9	0	0
109	10154.00	91.96	89.31	95.00	6964.05	3008.92	-202.88	3003.23	3010.07	93.86	3.21	SlimPulse	9	0	0
110	10249.00	92.79	88.96	95.00	6960.11	3103.69	-201.45	3098.13	3104.69	93.72	0.95	SlimPulse	9	0	0
111	10345.00	91.38	89.26	96.00	6956.62	3199.48	-199.96	3194.06	3200.30	93.58	1.50	SlimPulse	9	0	0
112	10440.00	90.76	91.22	95.00	6954.84	3294.40	-200.36	3289.03	3295.14	93.49	2.16	SlimPulse	9	0	0
113	10535.00	92.10	91.40	95.00	6952.47	3389.35	-202.53	3383.98	3390.03	93.43	1.42	SlimPulse	9	0	0
114	10630.00	90.89	92.49	95.00	6949.99	3484.32	-205.75	3478.89	3484.97	93.38	1.71	SlimPulse	9	0	0
115	10725.00	92.13	91.33	95.00	6947.49	3579.28	-208.92	3573.80	3579.89	93.35	1.79	SlimPulse	9	0	0
116	10820.00	89.73	91.65	95.00	6945.95	3674.25	-211.39	3668.75	3674.84	93.30	2.55	SlimPulse	9	0	0
117	10916.00	88.35	91.66	96.00	6947.56	3770.23	-214.16	3764.69	3770.77	93.26	1.44	SlimPulse	9	0	0
118	11011.00	89.86	91.19	95.00	6949.04	3865.20	-216.52	3859.65	3865.72	93.21	1.66	SlimPulse	9	0	0
119	11106.00	91.37	90.98	95.00	6948.02	3960.17	-218.32	3954.62	3960.63	93.16	1.60	SlimPulse	9	0	0
120	11201.00	91.17	91.19	95.00	6945.91	4055.13	-220.12	4049.58	4055.54	93.11	0.31	SlimPulse	9	0	0
121	11296.00	90.52	90.56	95.00	6944.51	4150.09	-221.57	4144.56	4150.46	93.06	0.95	SlimPulse	9	0	0
122	11391.00	89.17	89.45	95.00	6944.77	4245.01	-221.58	4239.55	4245.34	92.99	1.84	SlimPulse	9	0	0
123	11486.00	91.13	88.46	95.00	6944.52	4339.85	-219.85	4334.53	4340.09	92.90	2.31	SlimPulse	9	0	0
124	11581.00	90.86	89.76	95.00	6942.87	4434.68	-218.37	4429.50	4434.88	92.82	1.40	SlimPulse	9	0	0
125	11677.00	87.63	90.15	96.00	6944.14	4530.58	-218.29	4525.48	4530.74	92.76	3.39	SlimPulse	9	0	0
126	11772.00	85.49	90.77	95.00	6949.84	4625.36	-219.06	4620.30	4625.49	92.71	2.34	SlimPulse	9	0	0
127	11867.00	86.25	89.90	95.00	6956.68	4720.06	-219.61	4715.05	4720.18	92.67	1.21	SlimPulse	9	0	0
128	11953.00	86.94	90.02	86.00	6961.79	4805.83	-219.55	4800.90	4805.91	92.62	0.81	SlimPulse	9	0	0
129	12018.00	86.94	90.02	65.00	6965.26	4870.69	-219.57	4865.81	4870.77	92.58	0.00	Other	9	0	7

Company:	Noble Energy INC
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Well: Five Rivers K09-66-1HN
Field: Wattenberg
County: Weld
State: Colorado
Country: USA



Schlumberger

SlimPulse-Gamma Ray
2 in./ 100 ft and 5 in./ 100 ft True Vertical Depth
Recorded Mode, Composite Log