

Schlumberger

Company: **Santos Ltd**

12.25 in. Section

Well: Pecten East-1

Field: Otway

Rig: Ocean Patriot

State:

Victoria

VISION Resistivity			
1:200 True Vertical Depth			
Recorded Mode Log			
Location			
Total depth:	1993.0 m	K.B.	Top Drive
Spud date:	23-Jun-08	G.L.	-59.7 m
Runs:	2 To 4	D.F.	20.8 m
Permanent datum:	Australian Height Datum	Elev.:	0.0 m
Log measured from:	Rotary Table	20.8 m	above Perm. datum
Depth reference:	Driller's Depth		
Service Order No.	X = E 649,022.6 m	Longitude	Latitude
08ASQ0004	Y = N 5,721,208.5 m	E 142° 42' 44.65"	S 38° 38' 42.57"

Depth logged: 620.0 m		To 1981.4 m	Mag decl: 10.80 deg.		Other services:	
Date logged: 01-Jul-08		To 06-Jul-08	Mag dip: -69.83 deg.		See Remarks	
Bore hole record			Casing record			
Hole size	from	to	Size	Density	from	to
36.0 in.	78.2 m	114.0 m	30.0 in.	310.0 lb/ft	78.2 m	113.0 m
17.5 in.	114.0 m	630.0 m	13.375 in.	68.0 lb/ft	78.2 m	620.0 m
12.25 in.	630.0 m	1993.0 m				
Mud record						
Type	from	to	Min	Max	from	to
GEL-PAC	630.0 m	1001.0 m	0.08 deg.	0.93 deg.	113.0 m	630.0 m
KCl/HPA/Glycol	1001.0 m	1993.0 m	0.27 deg.	6.25 deg.	630.0 m	1993.0 m
Surface equipment			Software record			
Unit	A3518-1/06	IDEAL W/s	ID13_OC_08			
Depth system	Geograph + GTE + CLT	SPM	HSPM13_OC_03			
		LWD	See Remarks			
		MWD	See Remarks			






















Bit Run Summary

Run number		2	3	4						
Bit size	in	12.25	12.25	12.25						
Bit start depth	m	630.0	1305.0	1940.0						
Bit end depth	m	1305.0	1940.0	1993.0						
Top interval logged	m	620.0	1293.5	1928.4						
Bottom interval logged	m	1293.5	1928.4	1981.4						
Begin log: time		13:00	16:05	10:25						
Begin log: date		01-Jul-08	04-Jul-08	06-Jul-08						
End log: time		18:45	14:10	19:00						
End log: date		03-Jul-08	05-Jul-08	06-Jul-08						
Mud data										
Depth	m	1305.0	1940.0	1993.0						
Type		KCl/PHPA/Glycol	KCl/PHPA/Glycol	KCl/PHPA/Glycol						
Mud weight	ppg	9.3	10.8	10.9						
Solids	%	3.35	9.90	10.33						
Chlorides	ppm	44000	46000	46000						
Rm	ohm.m@°C	0.089@24.1	0.109@23.4	0.101@23.3						
Rmf	ohm.m@°C	0.086@24.0	0.088@23.3	0.084@23.3						
Rmc	ohm.m@°C	0.361@24.7	0.419@23.7	0.310@23.3						

Potassium	%	4.267	3.750	3.720							
Environmental data											
GR											
Mud weight	ppg	9.3	10.8	10.9							
Bit size	in	12.25	12.25	12.25							
Resistivity											
Neutron porosity											
Hole Size	in	12.25	12.25	12.25							
Mud weight	ppg	9.3	10.8	10.9							
Temperature	°C	64	66	69							
Mud salinity	ppk	n/a	n/a	n/a							
Formation salinity	ppk	n/a	n/a	n/a							
Recording rate 1	SEC	6	6	6							
Recording rate 2	SEC	n/a	n/a	n/a							
Filtering GR		3 Points	3 Points	3 Points							
Filtering density		n/a	n/a	n/a							
Filtering Neutron		n/a	n/a	n/a							
Company representative		P.Devine	R.Richardson								
Anadrill personnel		J.Oldridge	A.Bayly								

<p style="text-align: center;">DISCLAIMER</p> <p>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 OF 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.</p>		
OTHER SERVICES FOR RUN2 Directional Surveys Shock & Vibrations	OTHER SERVICES FOR RUN3 Directional Surveys Shock & Vibrations	OTHER SERVICES FOR RUN4 Directional Surveys Shock & Vibrations
REMARKS: RUN NUMBER 2 Depth is referenced to Driller's Depth Gamma Ray is corrected for mud weight, bit size, tool collar size and potassium content in mud. Resistivity is borehole compensated environmentally corrected for bit size, mud resistivity and temperature. POOH to change bit	REMARKS: RUN NUMBER 3 Depth is referenced to Driller's Depth Gamma Ray is corrected for mud weight, bit size, tool collar size and potassium content in mud. Resistivity is borehole compensated environmentally corrected for bit size, mud resistivity and temperature. POOH to change bit	REMARKS: RUN NUMBER 4 Depth is referenced to Driller's Depth Gamma Ray is corrected for mud weight, bit size, tool collar size and potassium content in mud. Resistivity is borehole compensated environmentally corrected for bit size, mud resistivity and temperature. POOH at Well TD

EQUIPMENT DESCRIPTION		
RUN2	RUN3	RUN4
DOWNHOLE EQUIPMENT	DOWNHOLE EQUIPMENT	DOWNHOLE EQUIPMENT

DOWNHOLE EQUIPMENT			DOWNHOLE EQUIPMENT			DOWNHOLE EQUIPMENT		
8–1/4" TeleScope* with 12–1/8" Stabiliser		23.96	8–1/4" TeleScope*		23.32	8–1/4" TeleScope*		23.33
MDC: E0005 MEC: 754 MDI: 586 DHS: 9.2C02			MDC: VR53 MEC: 850 MDI: 2505 DHS: 9.2C02			MDC: VR53 MEC: 850 MDI: 2505 DHS: 9.2C02		
D&I		19.60	D&I		19.01	D&I		19.02
8–1/4" arcVISION*R–O Port T5 S/N: 2724 DHS: 9.3B13 Gamma Ray Receiver T2 T4		14.94	8–1/4" arcVISION*R–O Port T5 S/N: 1106 DHS: 9.3B13 Gamma Ray Receiver T2 T4		14.89	8–1/4" arcVISION*R–O Port T5 S/N: 1106 DHS: 9.3B13 Gamma Ray Receiver T2 T4		14.90
12–1/8" String Stabiliser S/N: OSS061170A		9.05	12–1/8" String Stabiliser S/N: OSS061170A		9.04	12–1/8" String Stabiliser S/N: OSS061170A		9.05
8" Pony Collar S/N: 580757–1		6.61	8" Pony Collar S/N: 580757–1		6.60	8" Pony Collar S/N: 580757–1		6.61
12–1/4" Near Bit Stabiliser S/N: 50203		1.56	12–1/4" Near Bit Stabiliser S/N: 50203		1.55	12–1/4" Near Bit Stabiliser S/N: 50203		1.56
12–1/4" Hughes–Chris Milltooth Bit S/N: 6062911		0.30	12–1/4" Smith PDC Bit S/N: JY1702		0.29	12–1/4" Reed Hycalog Milltooth Bit S/N: NA2821		0.30
Maximum string diameter 12–1/4" All lengths in Meters			Maximum string diameter 12–1/4" All lengths in Meters			Maximum string diameter 12–1/4" All lengths in Meters		

Variable Name	Variable Description	Run Name & Value			
	Run Number		2	3	4
	General Information				
BHT_RM	Bottom Hole Temperature (RM)	DEGC	64.000	66.000	69.000
BSAL_RM	Mud Salinity (RM)	PPK	0.000	0.000	0.000
BS_RM	Bit Size (RM)	IN	12.250	12.250	12.250
COEF_M	User Defined FEXP in Clean Sand	----	1.650	1.650	1.650
C_WS	Overpressure correction to Sw and M	----	1.000	1.000	1.000
FEXP	Formation Factor Exponent (RM)	----	2.000	2.000	2.000
FNUM	Formation Factor Enumerator (RM)	----	1.000	1.000	1.000
FPHI_RM	Formation Factor Porosity Source (RM)	----	XPLOT	XPLOT	XPLOT
MST_RM	Mud Sample temperature (RM)	DEGC	24.100	23.400	23.300
MW_RM	Mud Weight (RM)	LB/G	9.300	10.800	10.900
OBMF_RM	Oil Based Mud (RM)	----	NO	NO	NO
RHOF_RM	Mud Filtrate Density (RM)	G/C3	1.000	1.000	1.000
RHOM_RM	Matrix density (RM)	G/C3	2.710	2.710	2.710
RMS_RM	Resistivity of Mud Sample (RM)	OHMM	0.089	0.109	0.101
RWA_COMP_M	Rwa computation model				
RWA_DEN_AD	Rwa Density Input ADN				
RWA_DEN_CD	Rwa Density Input CDN				
RWA_DEN_IN	Rwa Density Input				
RWA_FORM_M	Rwa computation formation model				
RWA_RES_IN	Rwa computation resistivity input				
RWS_RM	Resistivity of Connate Water (RM)	OHMM	1.000	1.000	1.000
SHT_RM	Ground Level Temperature (Mud-Line When Offshore) (RM)	DEGC	10.000	10.000	10.000
TD_RM	Total Measured Depth (RM)	M	1305.000	1940.000	1993.000
TWS_RM	Temperature of Connate Water (RM)	DEGC	23.889	23.889	23.889
VF_ILLI	Fraction of illite in shales	----	0.500	0.500	0.500
VF_KAOL	Fraction of kaolinite in shales	----	0.500	0.500	0.500
VF_MONT	Fraction of montmorillonite in shales	----	0.000	0.000	0.000
XPDM_RM	Cross plot density porosity multiplier	----	0.675	0.675	0.675
XPNM_RM	Cross plot neutron porosity multiplier	----	0.325	0.325	0.325
	ARC				
A12A	ARC Air Cal Attenuation From T1 at 2 MHz	DB	8.251	8.031	8.031
A14A	ARC Air Cal Attenuation From T1 at 400 KHz	DB	8.204	8.019	8.019
A22A	ARC Air Cal Attenuation From T2 at 2 MHz	DB	6.386	6.666	6.666
A24A	ARC Air Cal Attenuation From T2 at 400 KHz	DB	6.445	6.683	6.683
A32A	ARC Air Cal Attenuation From T3 at 2 MHz	DB	4.975	4.733	4.733
A34A	ARC Air Cal Attenuation From T3 at 400 KHz	DB	4.920	4.718	4.718
A42A	ARC Air Cal Attenuation From T4 at 2 MHz	DB	4.351	4.613	4.613
A44A	ARC Air Cal Attenuation From T4 at 400 KHz	DB	4.399	4.630	4.630
A52A	ARC Air Cal Attenuation From T5 at 2 MHz	DB	3.563	3.316	3.316
A54A	ARC Air Cal Attenuation From T5 at 400 KHz	DB	3.517	3.312	3.312
ABNT	Abnormal Transmitter Indicator	----	No_Tx_Failed	No_Tx_Failed	No_Tx_Failed
ADHS	ARC Down Hole Software Version	----	9.3B13	9.3B13	9.3B13
AM2A	ARC Air Cal Amplitude Offset at 2 MHz	----	-50000.000	-50000.000	-50000.000
ANISO_COMPUTE	Anisotropy Computation Option	----	YES	YES	YES
APICG	ARC5 Gamma Ray Gain Factor	----	1.086	1.054	1.054
APIG	ARC Gamma Ray API Gain Factor	----	-1.000	-1.000	-1.000
ARC_DATA_FIX	ARC: Create A Corrected ARC Time Data File	----	NO	NO	NO
ARC_DATA_LTB	ARC: Create An ARC LTB Data File	----	NO	NO	NO
ATMP_ARC	ARC Select Temperature Channel	----	Tool_Temp	Tool_Temp	Tool_Temp
ATRN	ARC Tool Run Number	----	1	1	2
ATSN	ARC Tool Serial Number	----	2724	1106	1106
AZMF	Formation DIP Azimuth	DEG	0.000	0.000	0.000
BH_COMPUTE	Borehole Inversion Computation Option	----	YES	YES	YES
CALG	ARC Gamma Ray Cal Gain Factor	----	1.086	1.054	1.054
CALI_SLCT_ARC	ARC Caliper Selection	----	BITSIZE	BITSIZE	BITSIZE
CDPTH_ARC	Process Start Depth	M	30.480	30.480	30.480
DIELEC_COMPUTE	Dielectric Computation Option	----	YES	YES	YES
DIPF	Formation DIP Angle	DEG	0.000	0.000	0.000
ERRCT	Percentage Error Cutoff	----	4.500	4.500	4.500
GRSH	GR Shale (Invasion Computation Cutoff)	GAPI	1000.000	1000.000	1000.000
HIGH_BLEND	High Resistivity Threshold for Blending	OHMM	2.000	2.000	2.000
INCLIN_B0	ARC Bias Constant (mg)	----	0.000	0.000	0.000
INCLIN_B1	ARC Bias First-order Coefficient (mg/degC)	----	0.000	0.000	0.000
INCLIN_B2	ARC Bias Secod-order Coeeficient (mg/degC)	----	0.000	0.000	0.000
INCLIN_B3	ARC Bias Third-order Coeeficient (mg/degC)	----	0.000	0.000	0.000
INCLIN_C0	ARC Current Scale Factor Constant (mA/g)	----	1.000	1.000	1.000
INCLIN_C1	ARC Scale First-order Coeeficient (mA/g/degC)	----	0.000	0.000	0.000
INCLIN_C2	ARC Scale Second-order Coeeficient (mA/g/degC)	----	0.000	0.000	0.000
INCLIN_C3	ARC Scale Third-order Coeeficient (mA/g/degC)	----	0.000	0.000	0.000
INVAS_COMPUTE	Invasion Computation Option	----	YES	YES	YES
JSD_ARC	ARC Acquisition start date	----	01-Jul-08	04-Jul-08	06-Jul-08
KPER	Potassium Concentration (RM)	----	4.267	3.750	3.720
LOW_BLEND	Low Resistivity Threshold for Blending	OHMM	1.000	1.000	1.000
MSWS	ARC Wizard Model Switch Window	M	1.524	1.524	1.524
MULTIEFFECT_COM	Multi Effect Option	----	YES	YES	YES
P11AC_RM	ARC: Air Calibration For Phase T1 to R1	DEG	-999.250	-999.250	-999.250
P12A	ARC Air Cal Phase-Shift From T1 at 2 MHz	DEG	-1.208	1.923	1.923
P14A	ARC Air Cal Phase-Shift From T1 at 400 KHz	DEG	1.677	0.443	0.443
P22A	ARC Air Cal Phase-Shift From T2 at 2 MHz	DEG	1.258	-1.853	-1.853
P24A	ARC Air Cal Phase-Shift From T2 at 400 KHz	DEG	-1.716	-0.483	-0.483
P32A	ARC Air Cal Phase-Shift From T3 at 2 MHz	DEG	-1.291	1.822	1.822
P34A	ARC Air Cal Phase-Shift From T3 at 400 KHz	DEG	1.691	0.452	0.452
P42A	ARC Air Cal Phase-Shift From T4 at 2 MHz	DEG	1.240	-1.912	-1.912
P44A	ARC Air Cal Phase-Shift From T4 at 400 KHz	DEG	-1.702	-0.507	-0.507
P52A	ARC Air Cal Phase-Shift From T5 at 2 MHz	DEG	-1.297	1.816	1.816
P54A	ARC Air Cal Phase-Shift From T5 at 400 KHz	DEG	1.629	0.447	0.447

POFFSET_ARC	ARC: Pressure Offset	PSI	0.000	0.000	0.000
PRTD	Preferred Resistivity Log for Rt Display while Multi-Effects	----	P34B	P34B	P34B
PSOF_ADJ_T1	ARC: User Input Phase offset	DEG	0.000	0.000	0.000
RESTIK	ARC resistivity tick source	----	Phase	Phase	Phase
RSD	LWD run start date dd-mmm-yy	----	01-Jul-08	04-Jul-08	06-Jul-08
RWA_COMP_MOD	Rwa computation model	----	BASIC	BASIC	BASIC
RWA_DEN_ADN	Rwa Density Input	----	RHOB	RHOB	RHOB
RWA_DEN_CDN	Rwa Density Input	----	RHOB	RHOB	RHOB
RWA_DEN_INPUT	Rwa Density Input	----	RHOB	RHOB	RHOB
RWA_FORM_MOD	Rwa computation formation model	----	CLASTIC	CLASTIC	CLASTIC
RWA_RES_INPUT	Rwa computation resistivity input	----	RT	RT	RT
SHIG	ARC High Shock Risk Level	CPS	0.500	0.500	0.500
SMED	ARC Medium Shock Risk Level	CPS	0.330	0.330	0.330
SMIN	ARC Minimum Shock Risk Level	CPS	0.160	0.160	0.160
SUPD	ARC Real Time Shock Update Rate	S	30.000	30.000	30.000
TCODE_ARC	ARC Tool File Code	S	30.000	30.000	30.000
TSIZ_ARC	ARC Tool Size	IN	8.250	8.250	8.250
UNIFORM_COMPUTE	Uniform Rock Option	----	YES	YES	YES
VERS_ARC	ARC Down hole software version Number	----	9.300	9.300	9.300
WRK	to Report Potassium Concentration (RM)	----	K_by_Wgt_%	K_by_Wgt_%	K_by_Wgt_%

Schlumberger Drilling & Measurements

ID13 Parameter Insert Header Software version 3.0c

IDEAL Version: ID13_0C_08

IDF

Format: VISION Resistivity 2MHz 1:200 Vertical Scale: 1:200 Graphics File Created: 08-Aug-2008 16:22

PIP SUMMARY

└ ARC Gamma Ray Samples

└ ARC Resistivity Samples

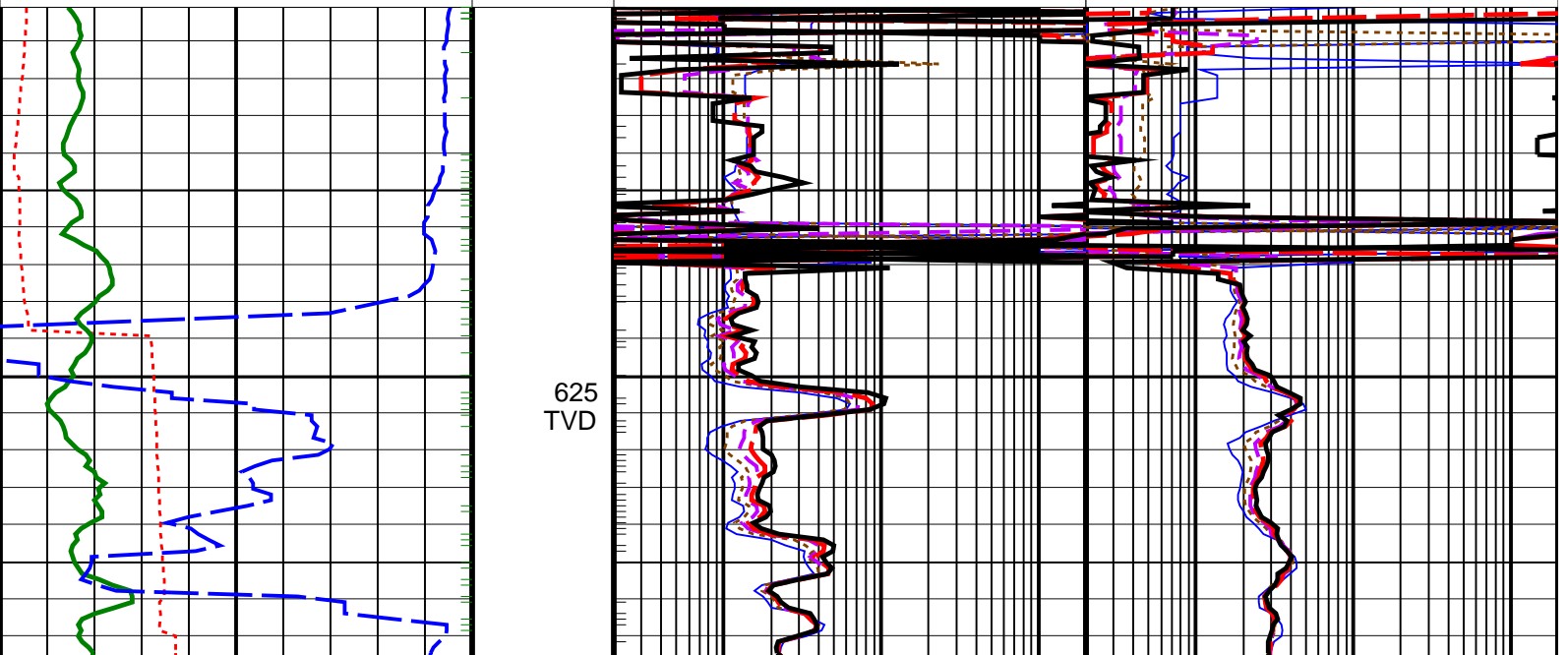
	ARC Phase-Shift Resistivity 40-in. at 2 MHz (P40H)	ARC Attenuation Resistivity 40-in. at 2 MHz (A40H)
0.2 (OHMM) 200	0.2 (OHMM) 200	0.2 (OHMM) 200
ARC Phase-Shift Resistivity 34-in. at 2 MHz (P34H)	ARC Attenuation Resistivity 34-in. at 2 MHz (A34H)	
0.2 (OHMM) 200	0.2 (OHMM) 200	0.2 (OHMM) 200
ARC Phase-Shift Resistivity 28-in. at 2 MHz (P28H)	ARC Attenuation Resistivity 28-in. at 2 MHz (A28H)	
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ARC Phase-Shift Resistivity 22-in. at 2 MHz (P22H)	ARC Attenuation Resistivity 22-in. at 2 MHz (A22H)	
0.2 (OHMM) 200	0.2 (OHMM) 200	0.2 (OHMM) 200
ARC Phase-Shift Resistivity 16-in. at 2 MHz (P16H)	ARC Attenuation Resistivity 16-in. at 2 MHz (A16H)	
0.2 (OHMM) 200	0.2 (OHMM) 200	0.2 (OHMM) 200

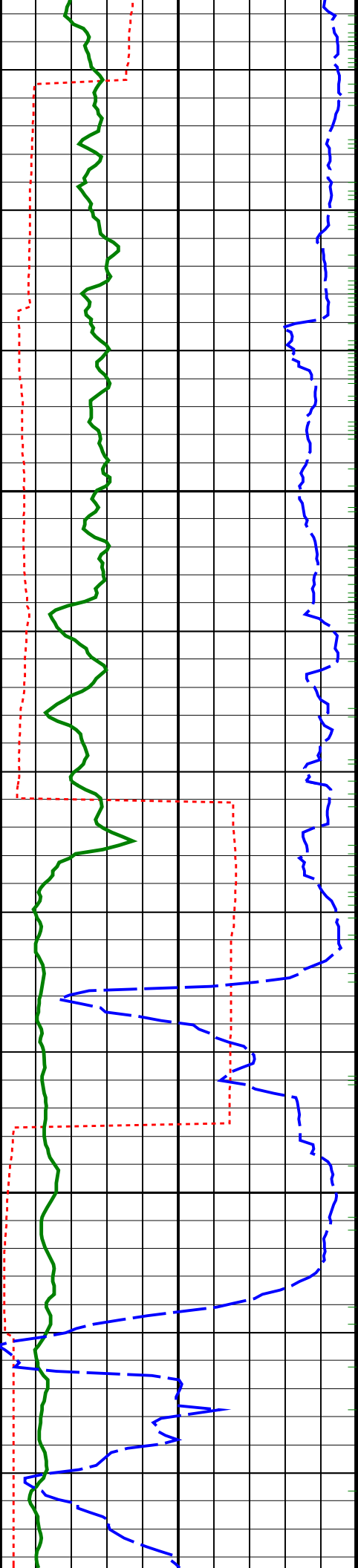
Rate of Penetration, Averaged over Last
5ft (ROP5_RM)
200 (M/HR) 0

ARC Resistivity Time After Bit (TAB_
ARC_RES)
0 (HR) 10

ARC Gamma Ray (GR_ARC)
0 (GAPI) 200

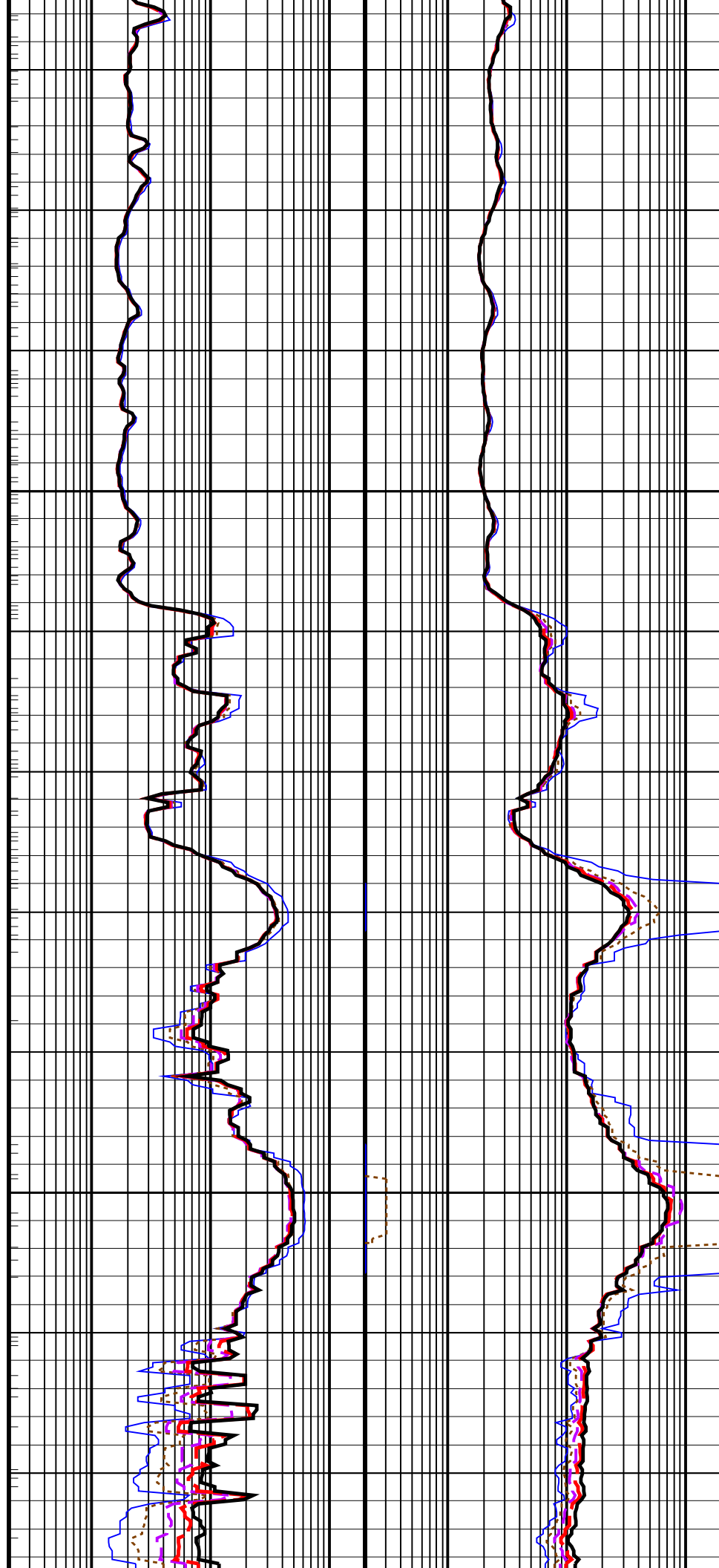
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TVD

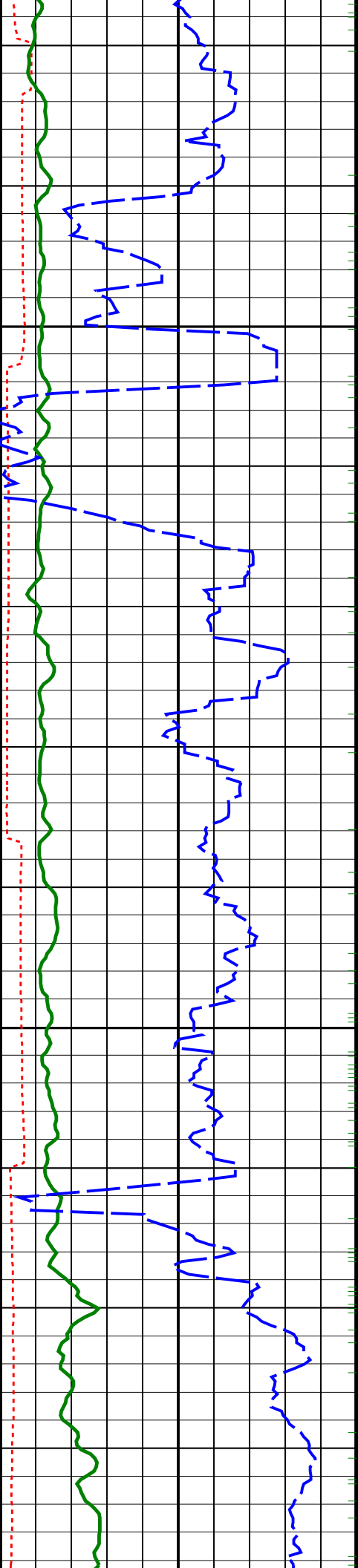




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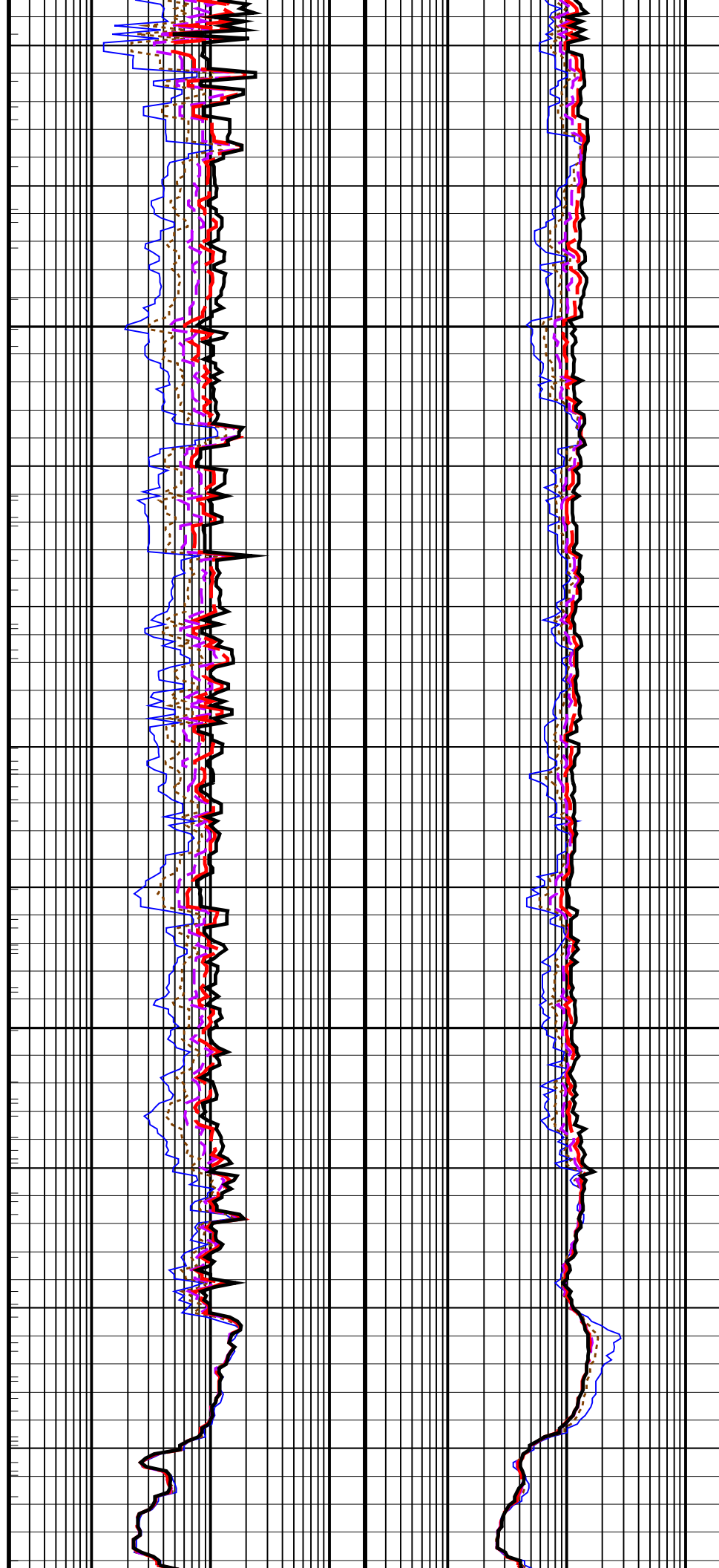
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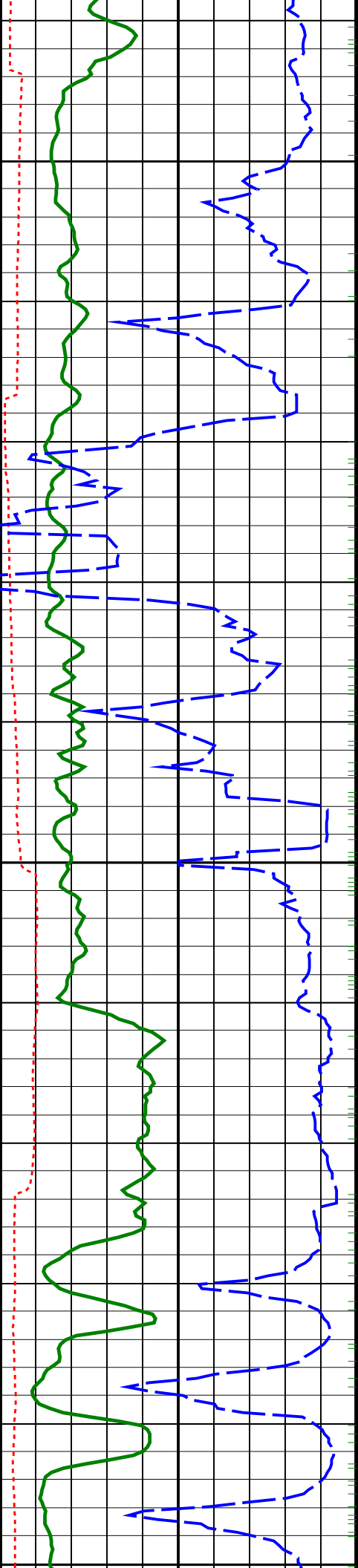




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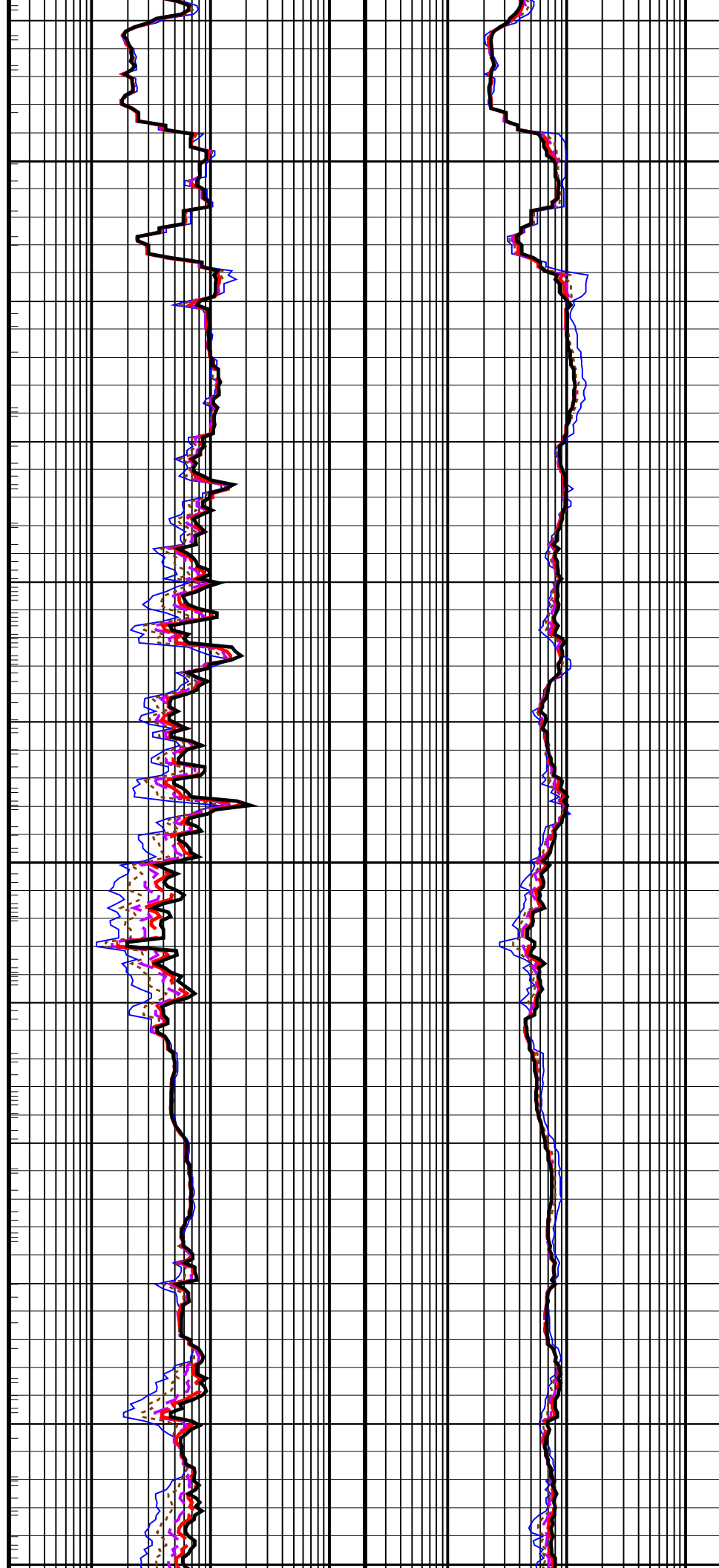
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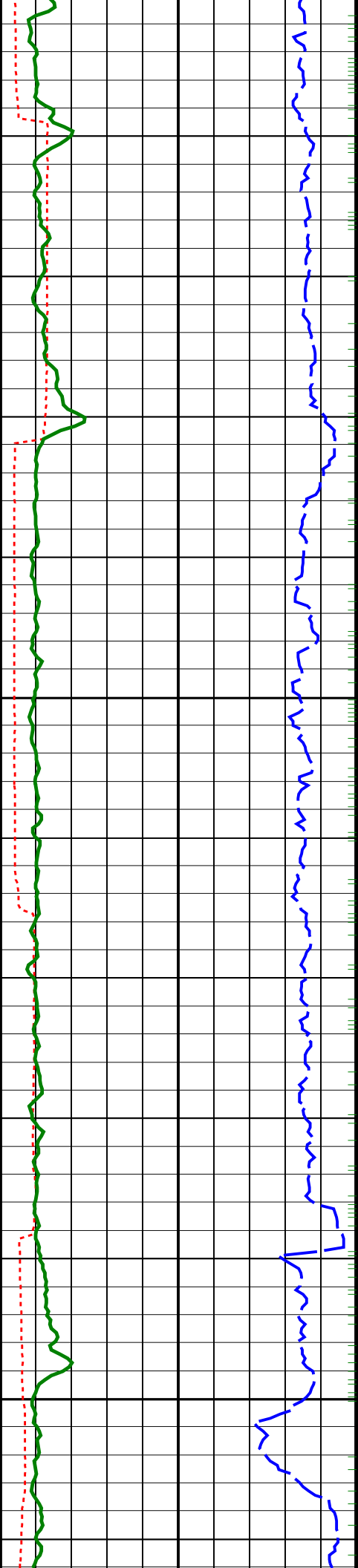




750
TVD

775
TVD

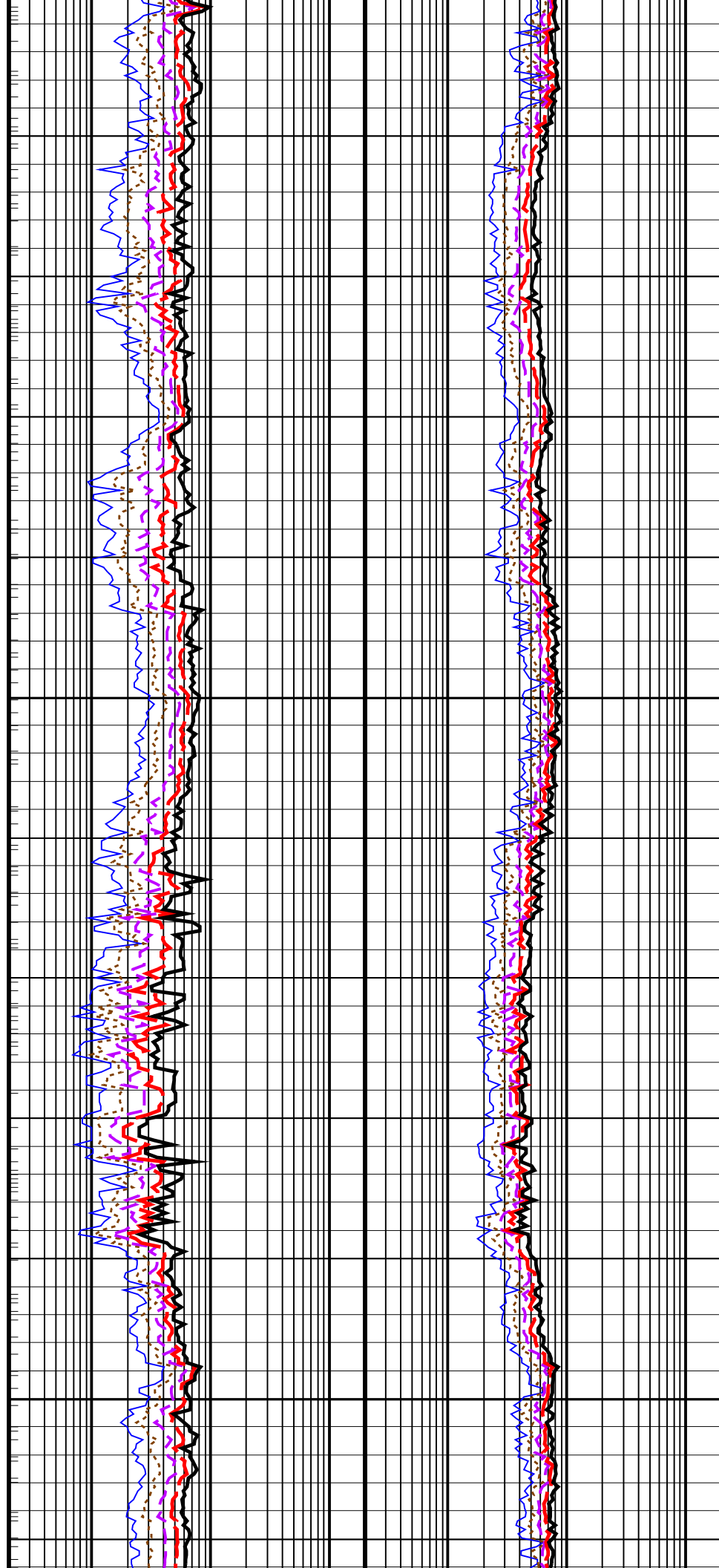


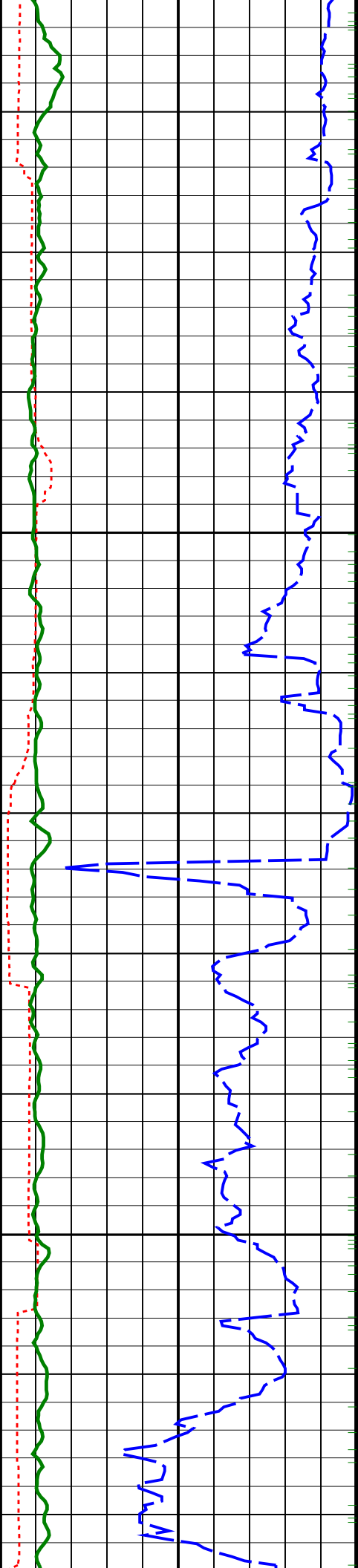


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TVD

825
TVD

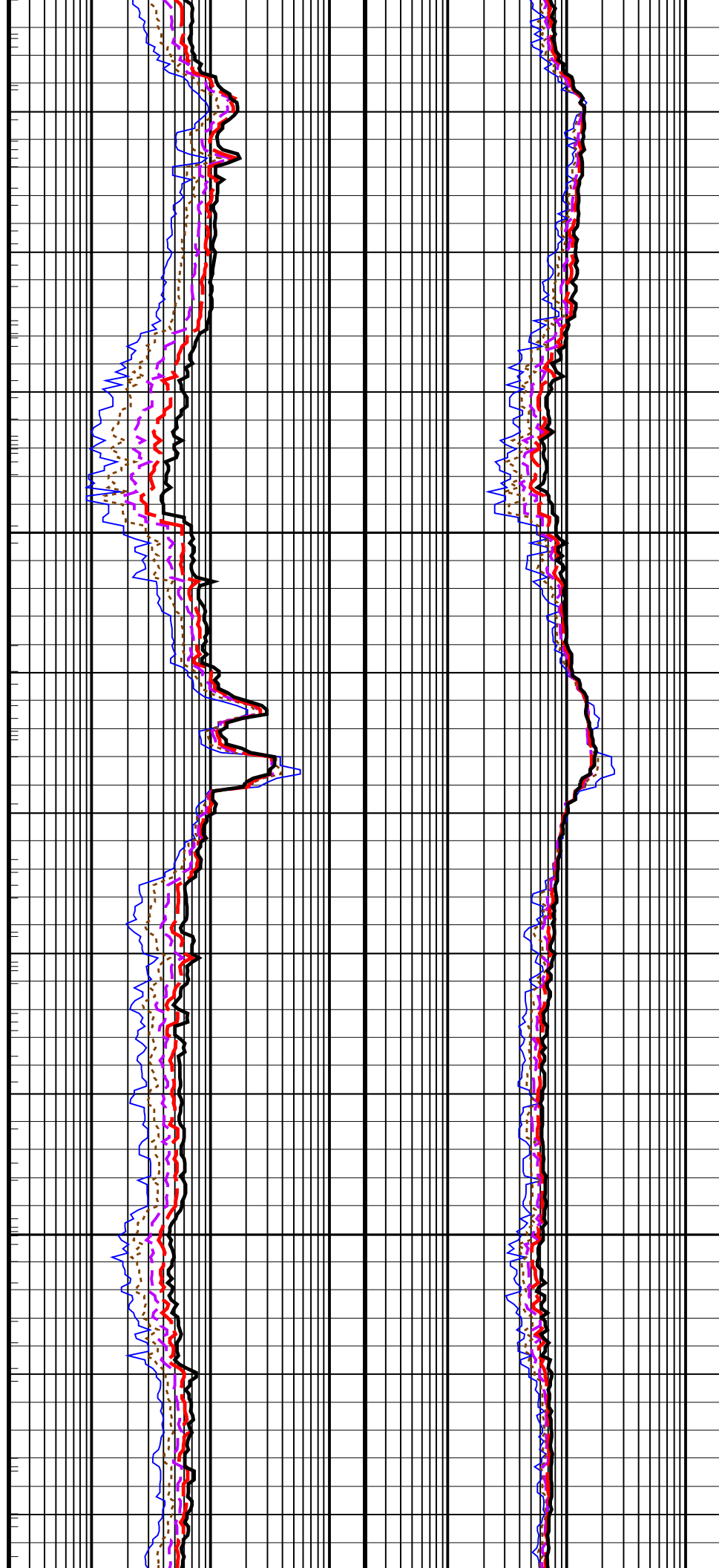
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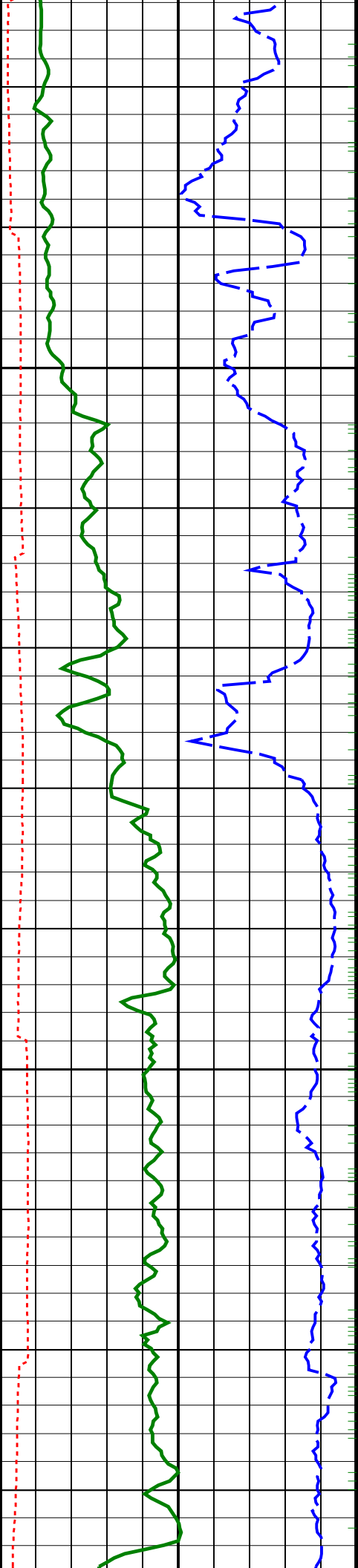




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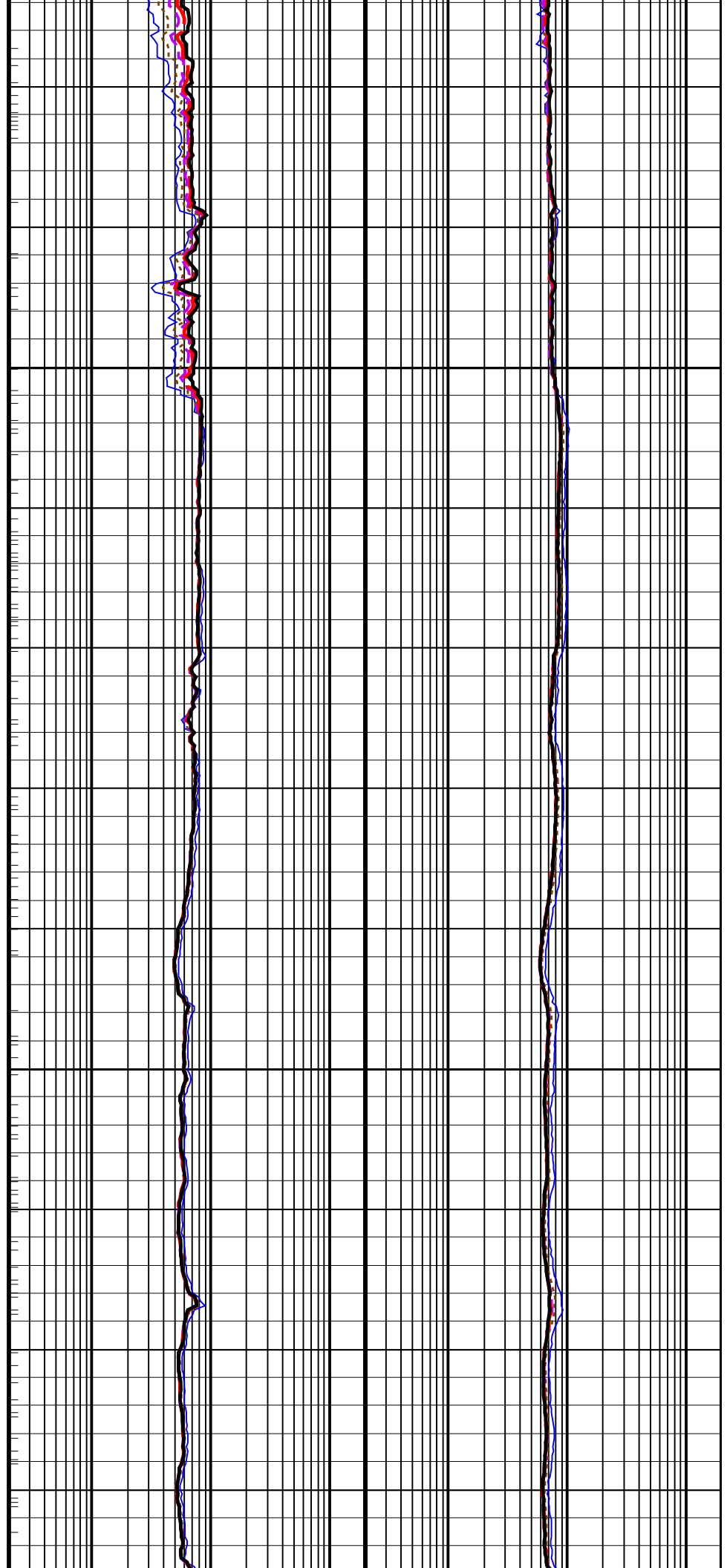
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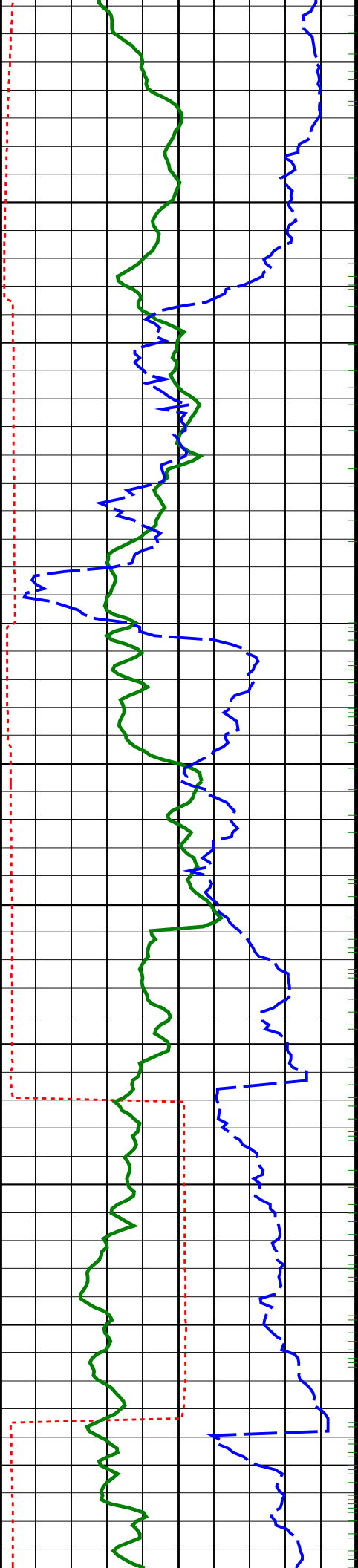




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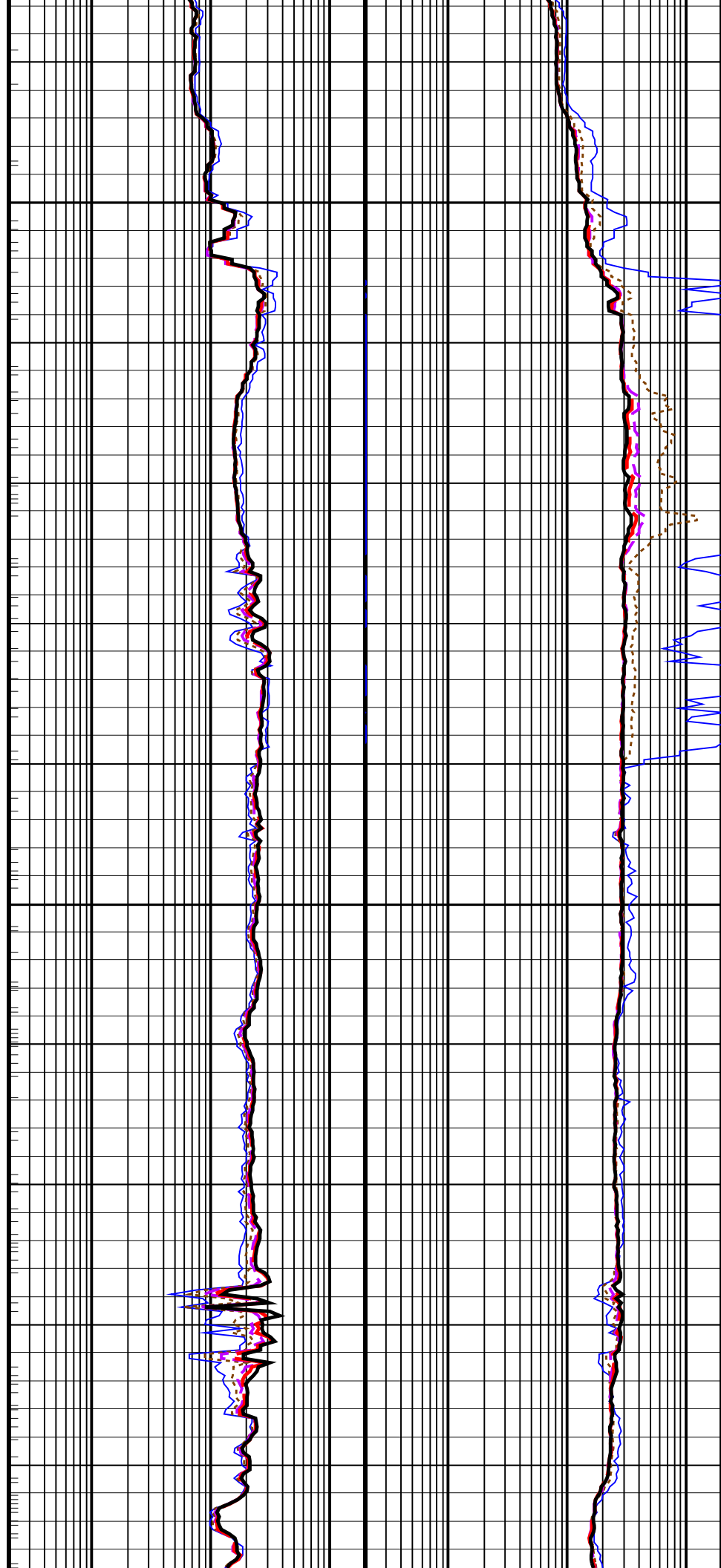
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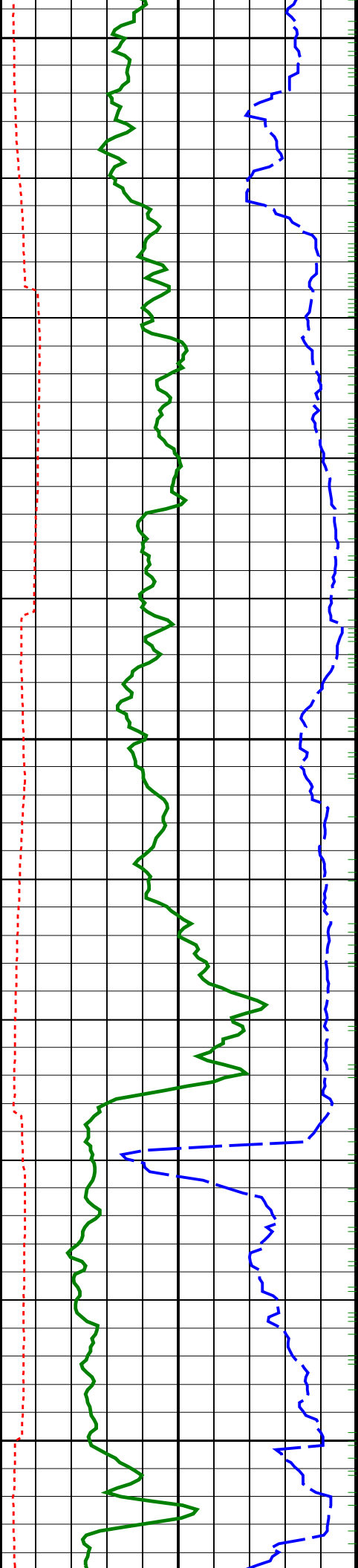




975
TVD

1000
TVD

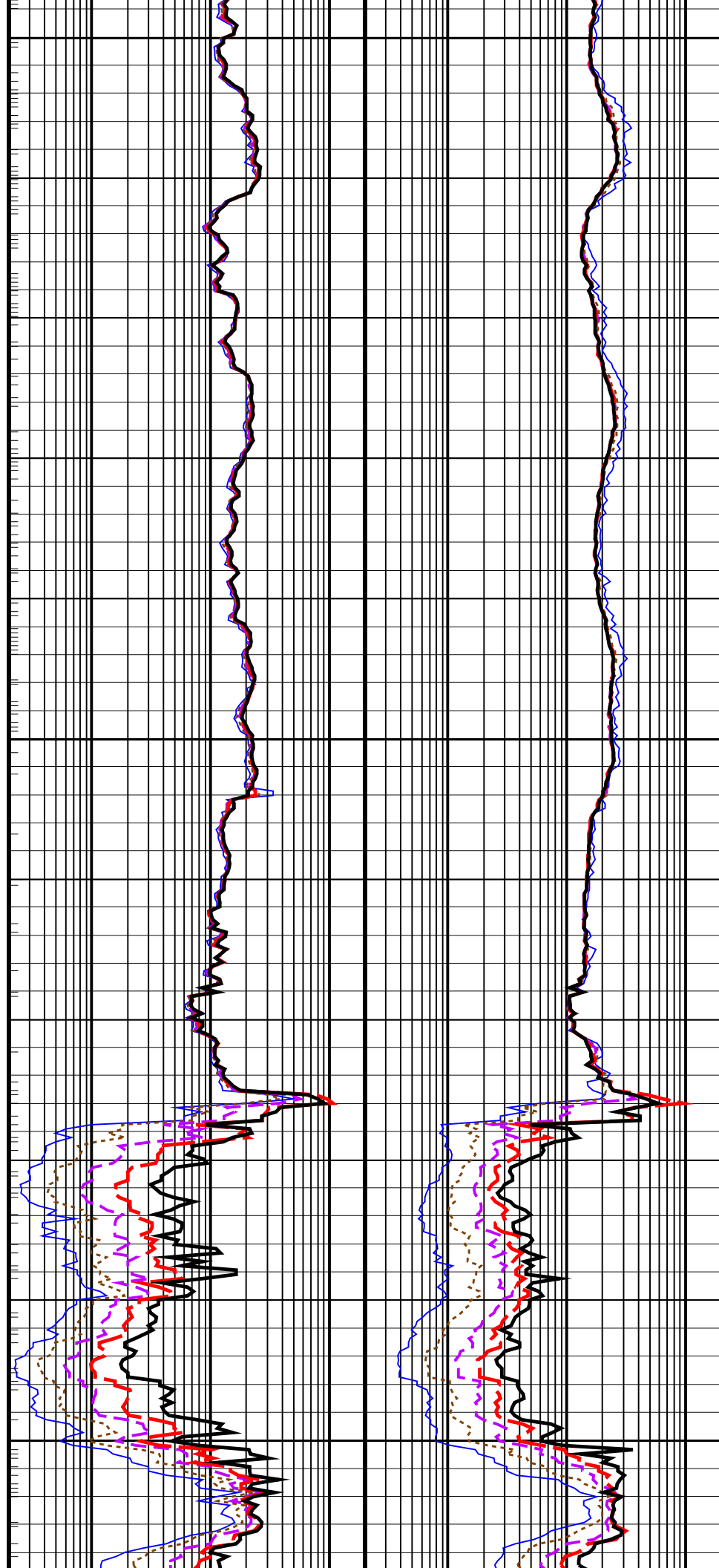


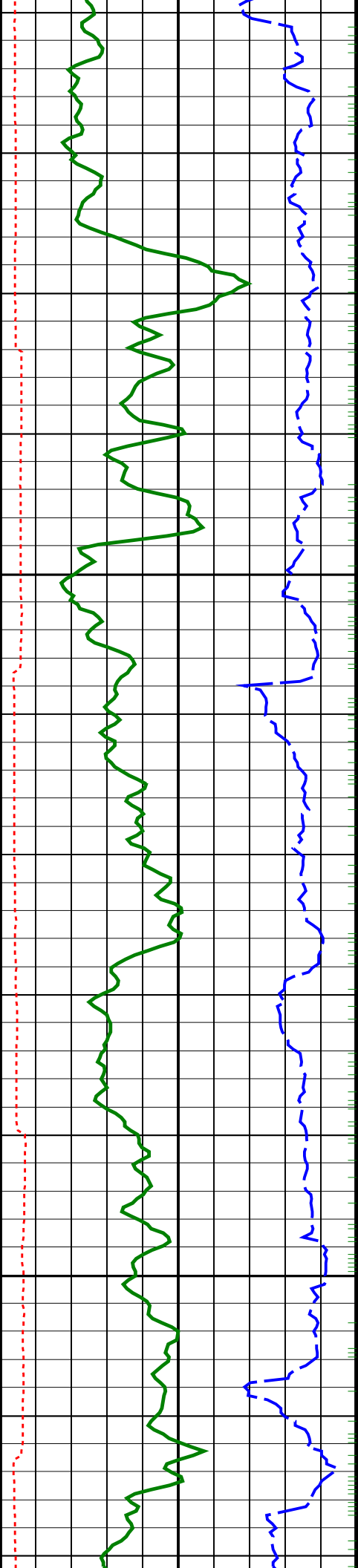


1025
TVD

1050
TVD

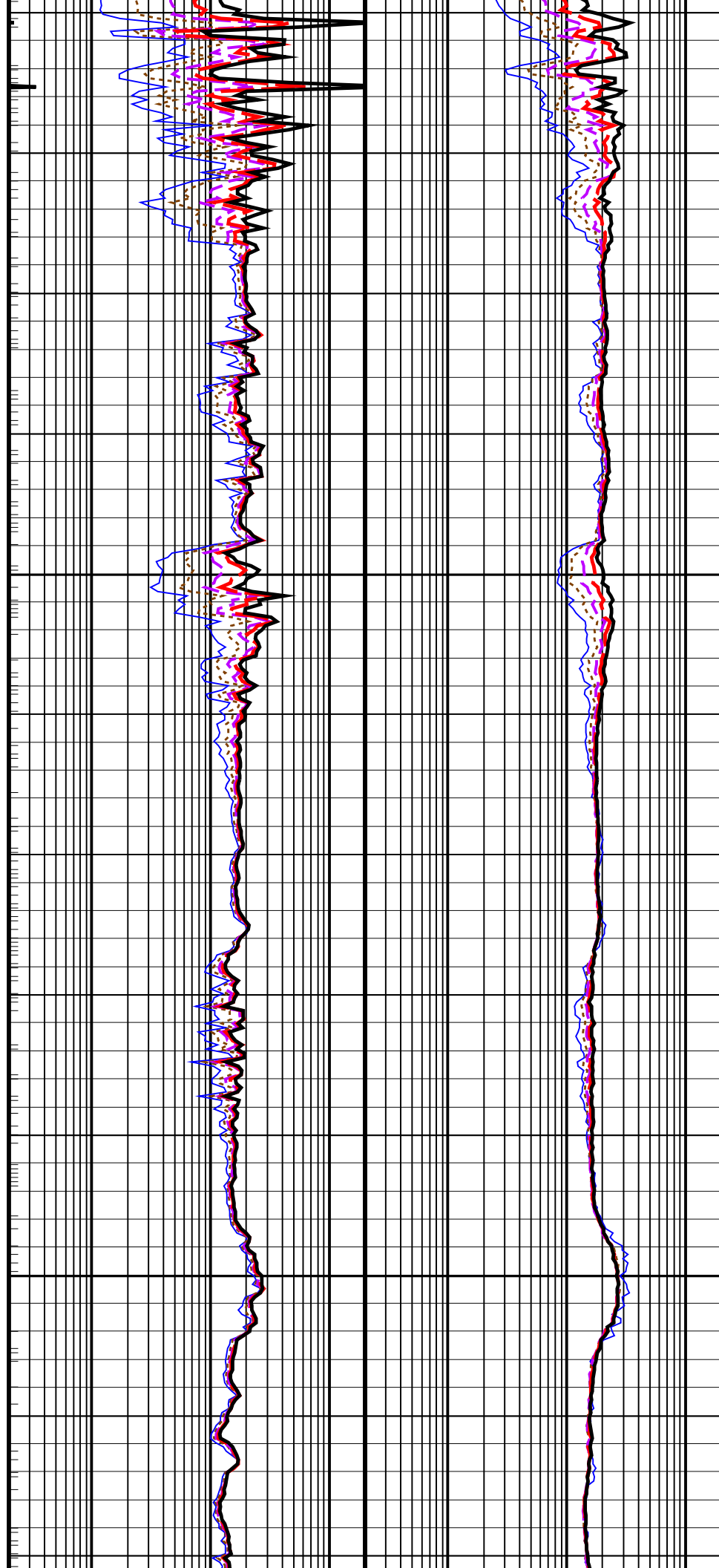
1075
TVD

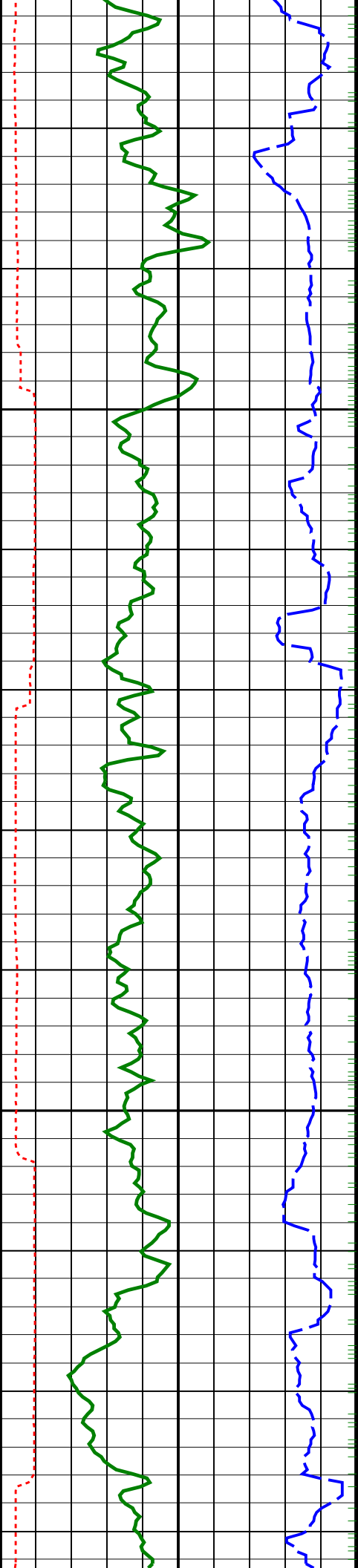




1100
TVD

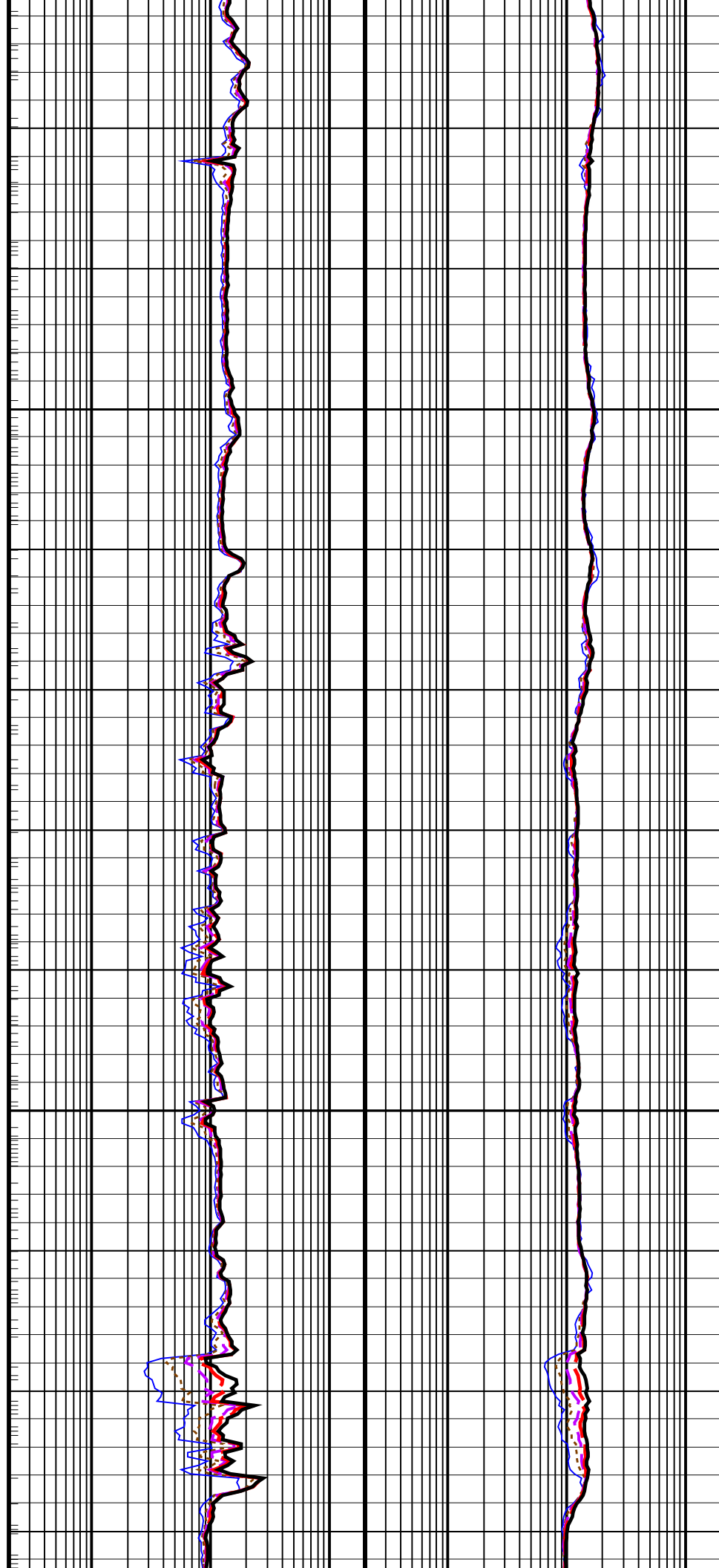
1125
TVD

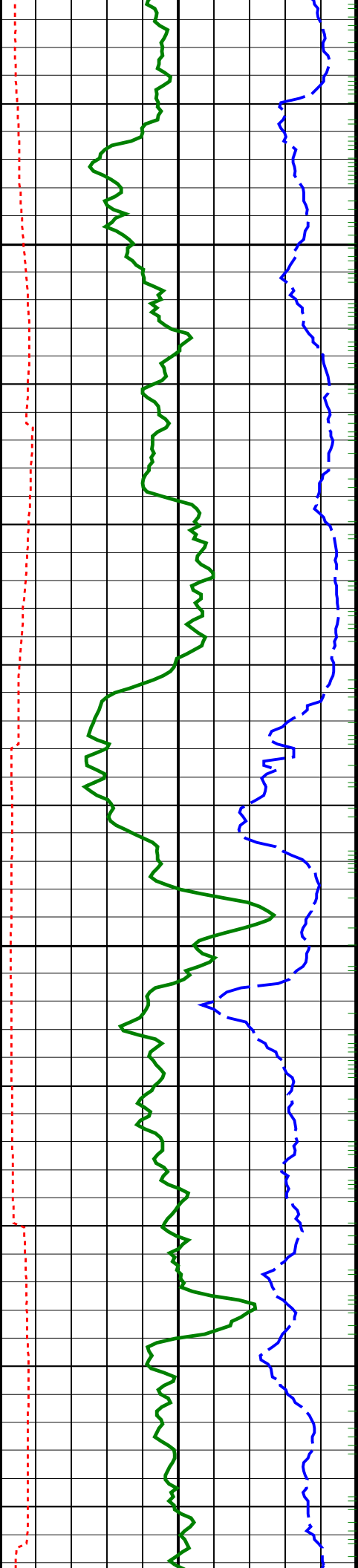




1150
TVD

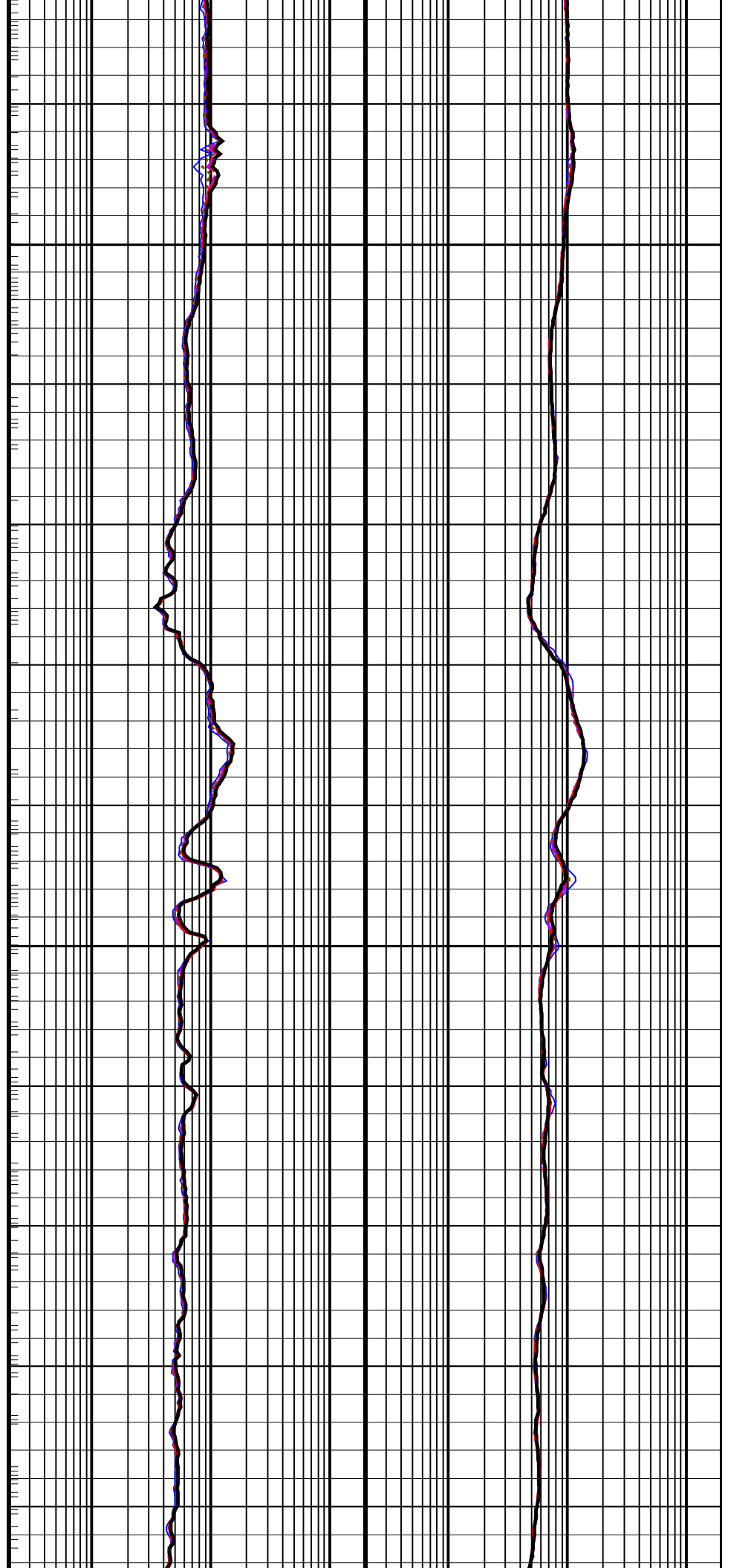
1175
TVD

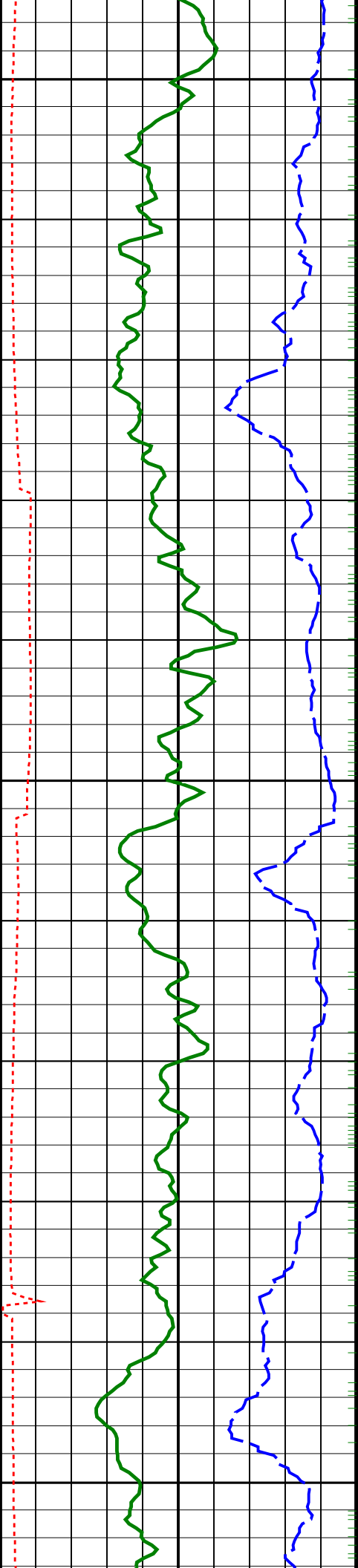




1200
TVD

1225
TVD



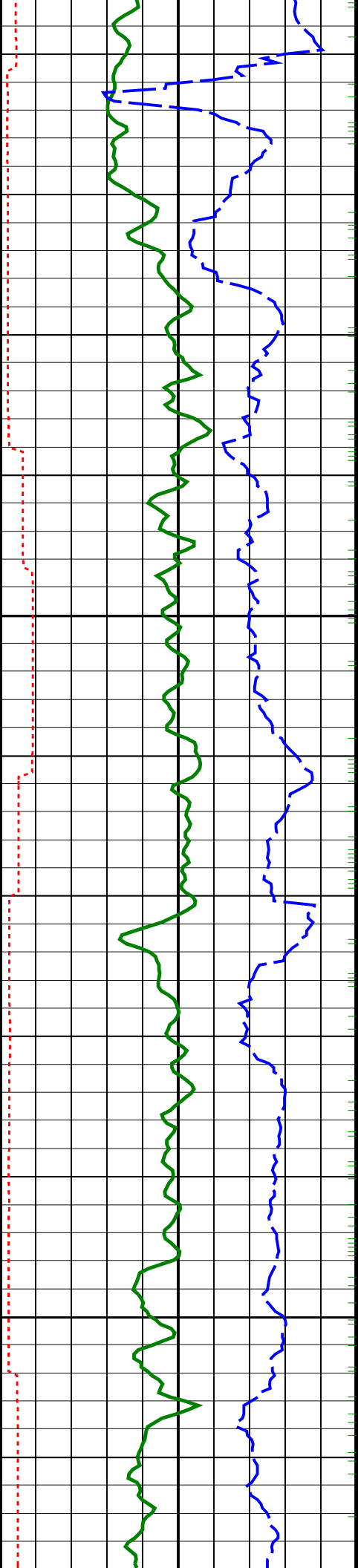


1250
TVD

1275
TVD

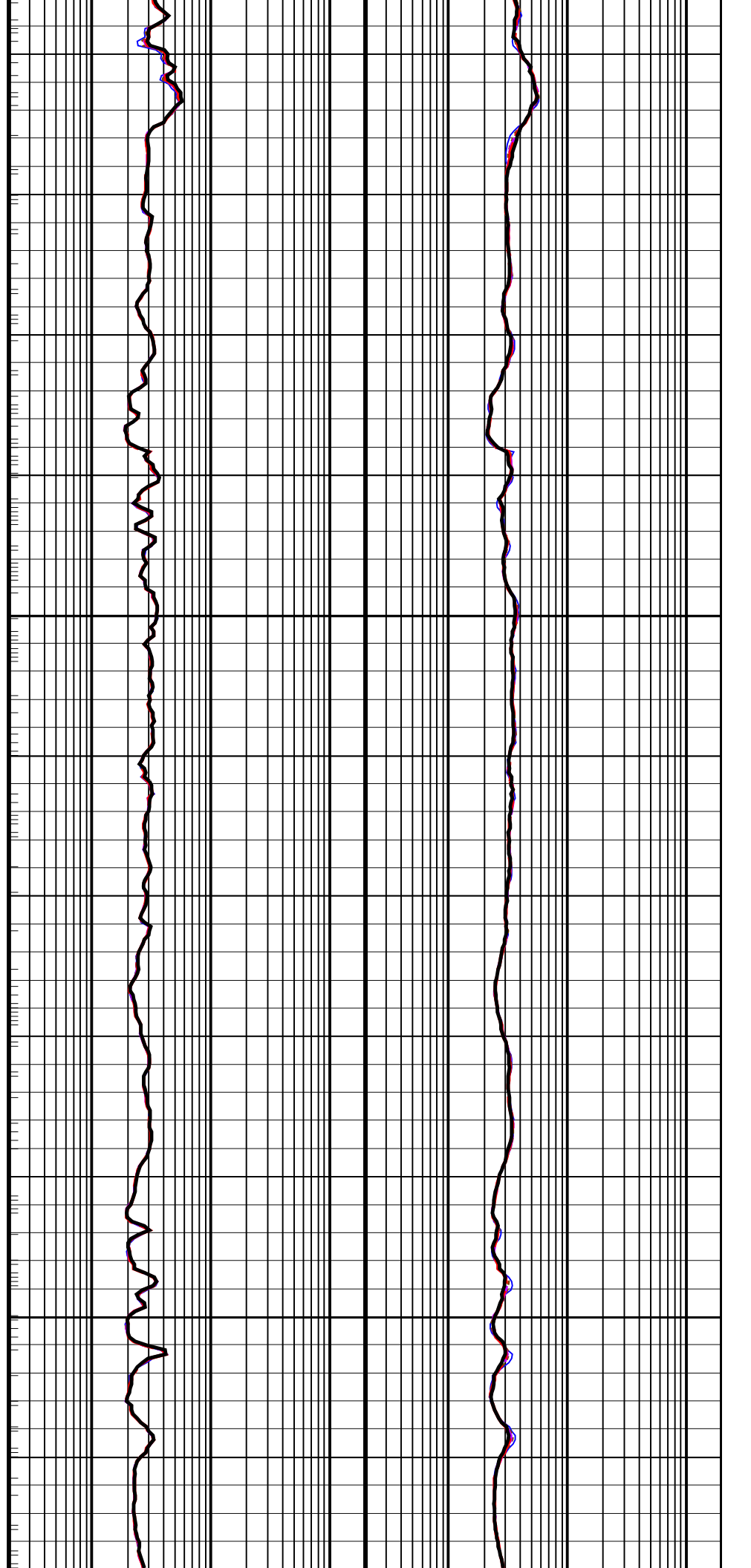
1300
TVD

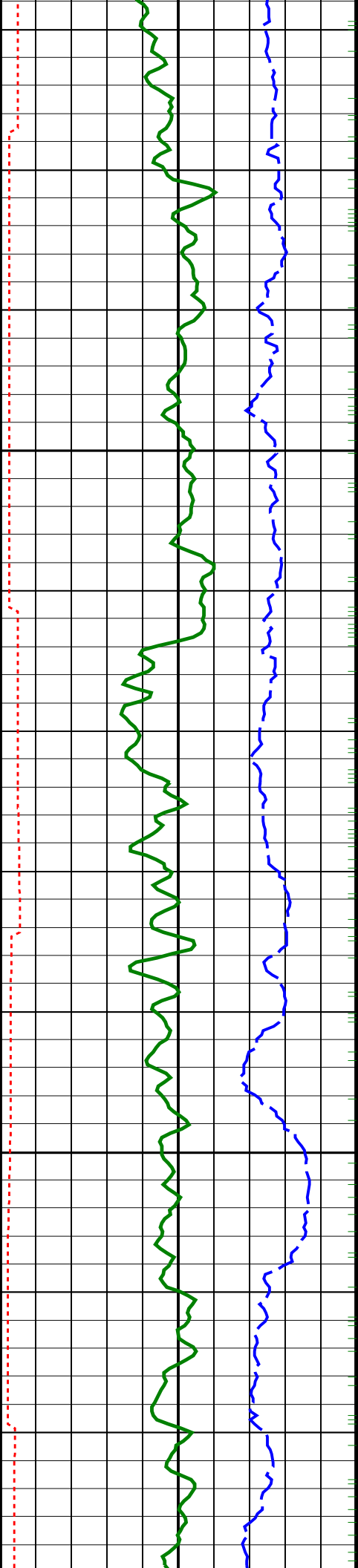




1325
TVD

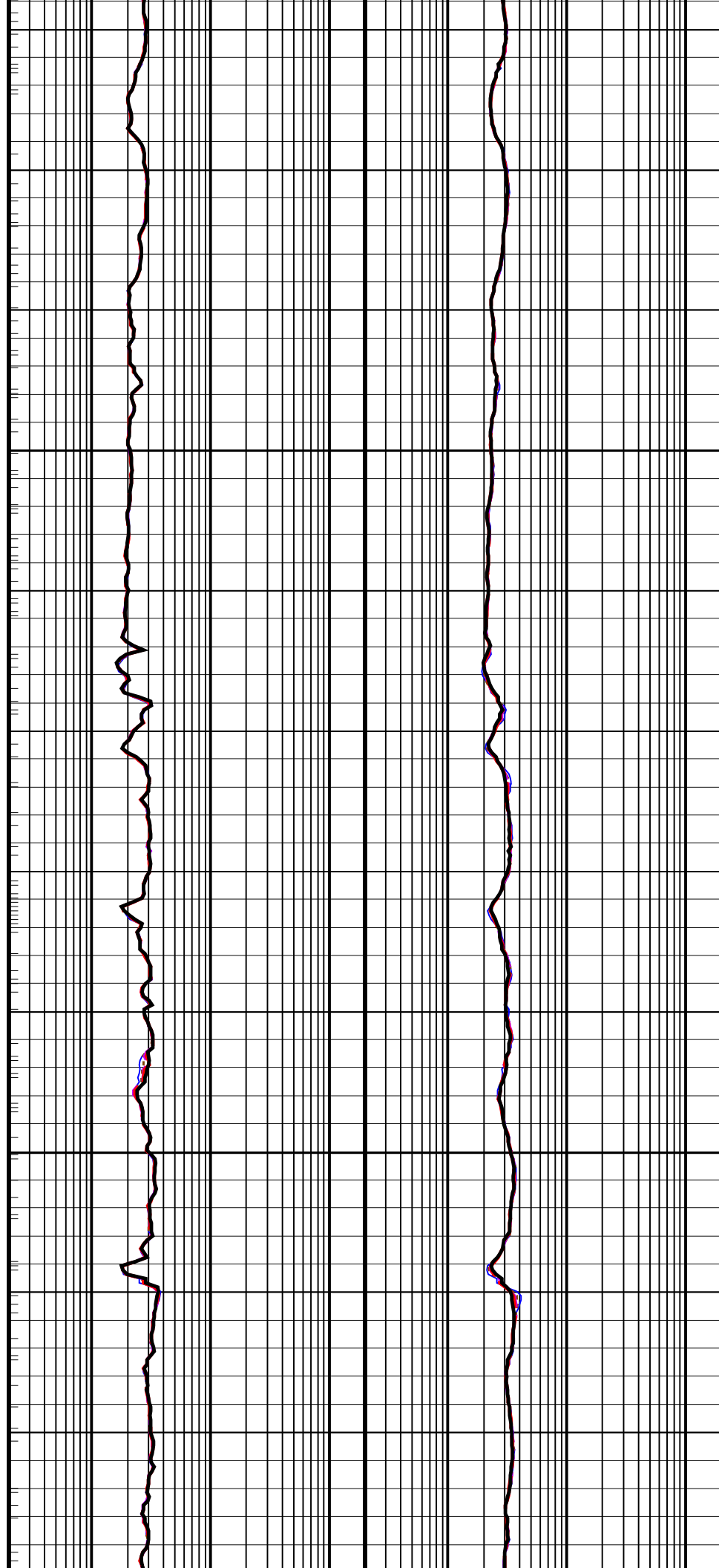
1350
TVD

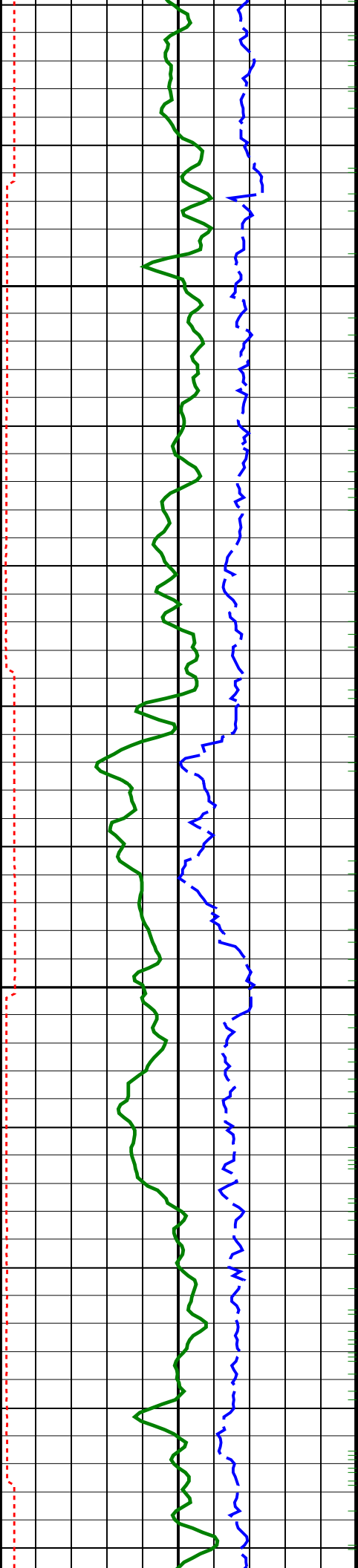




1375
TVD

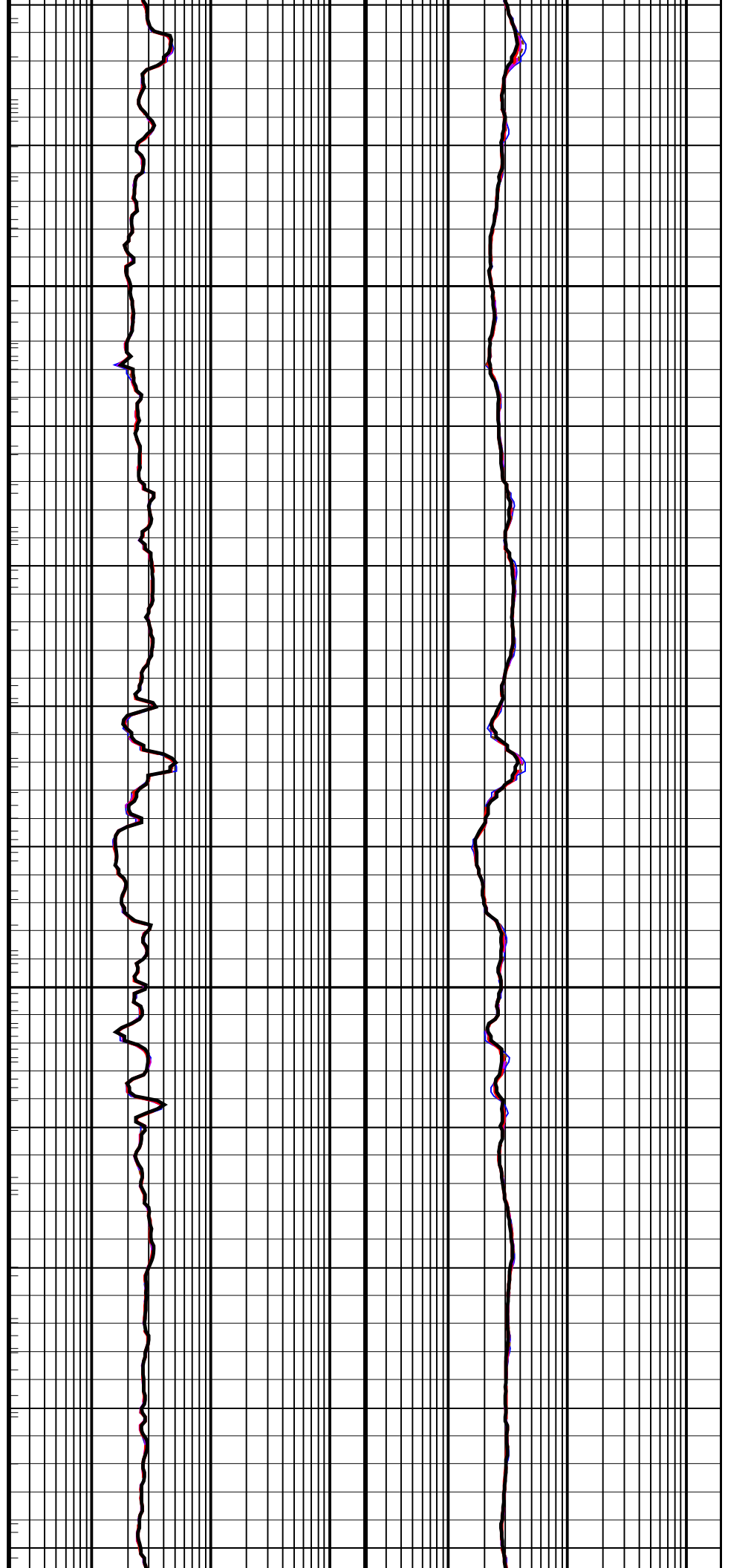
1400
TVD

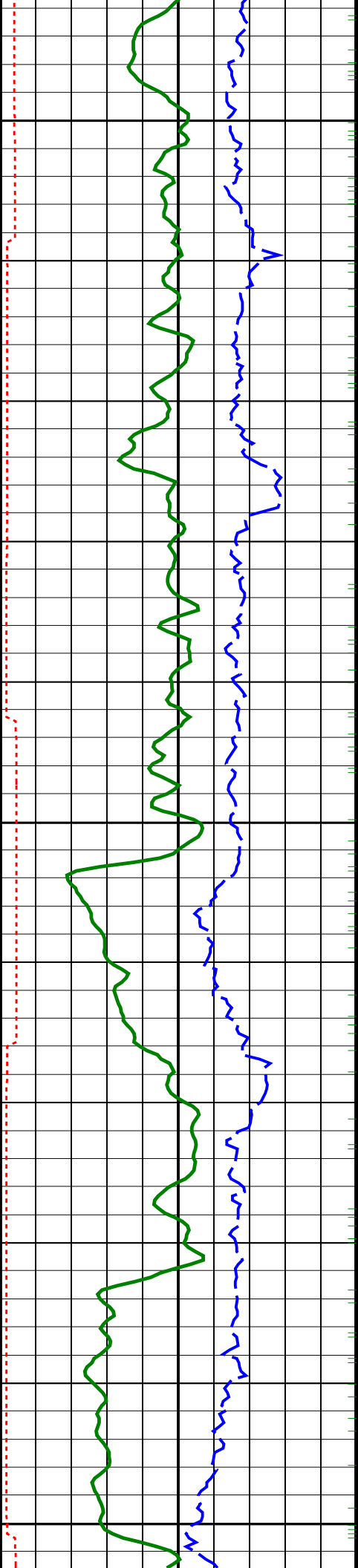




1425
TVD

1450
TVD

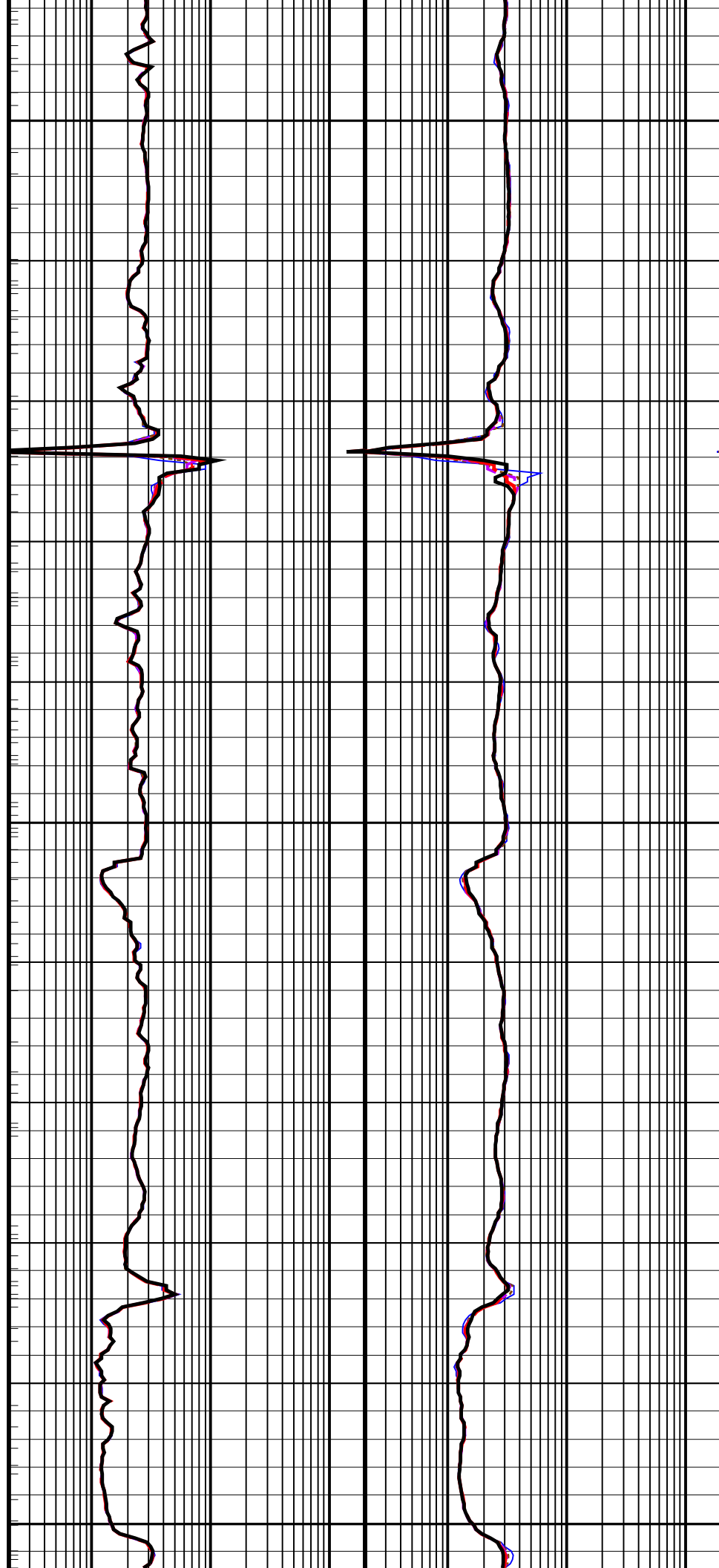


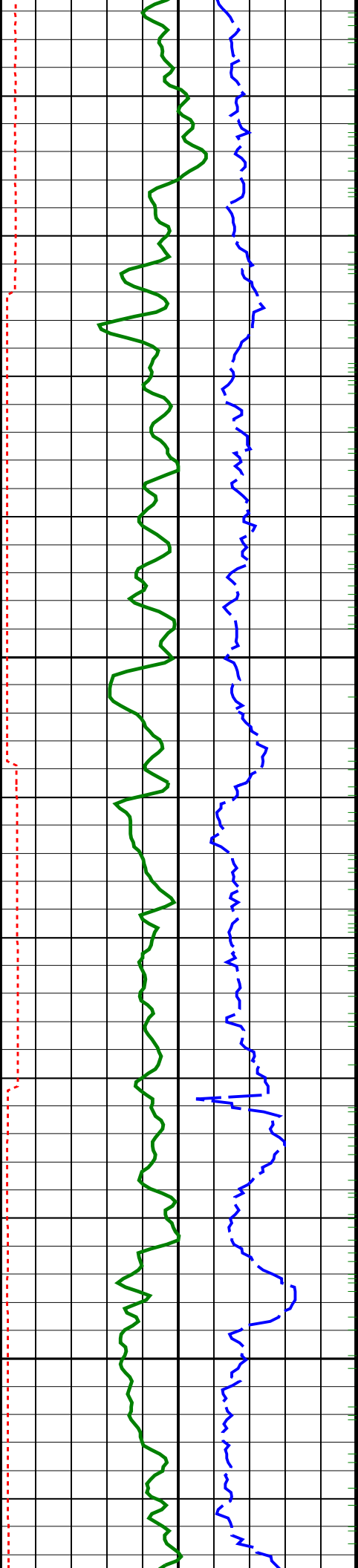


1475
TVD

1500
TVD

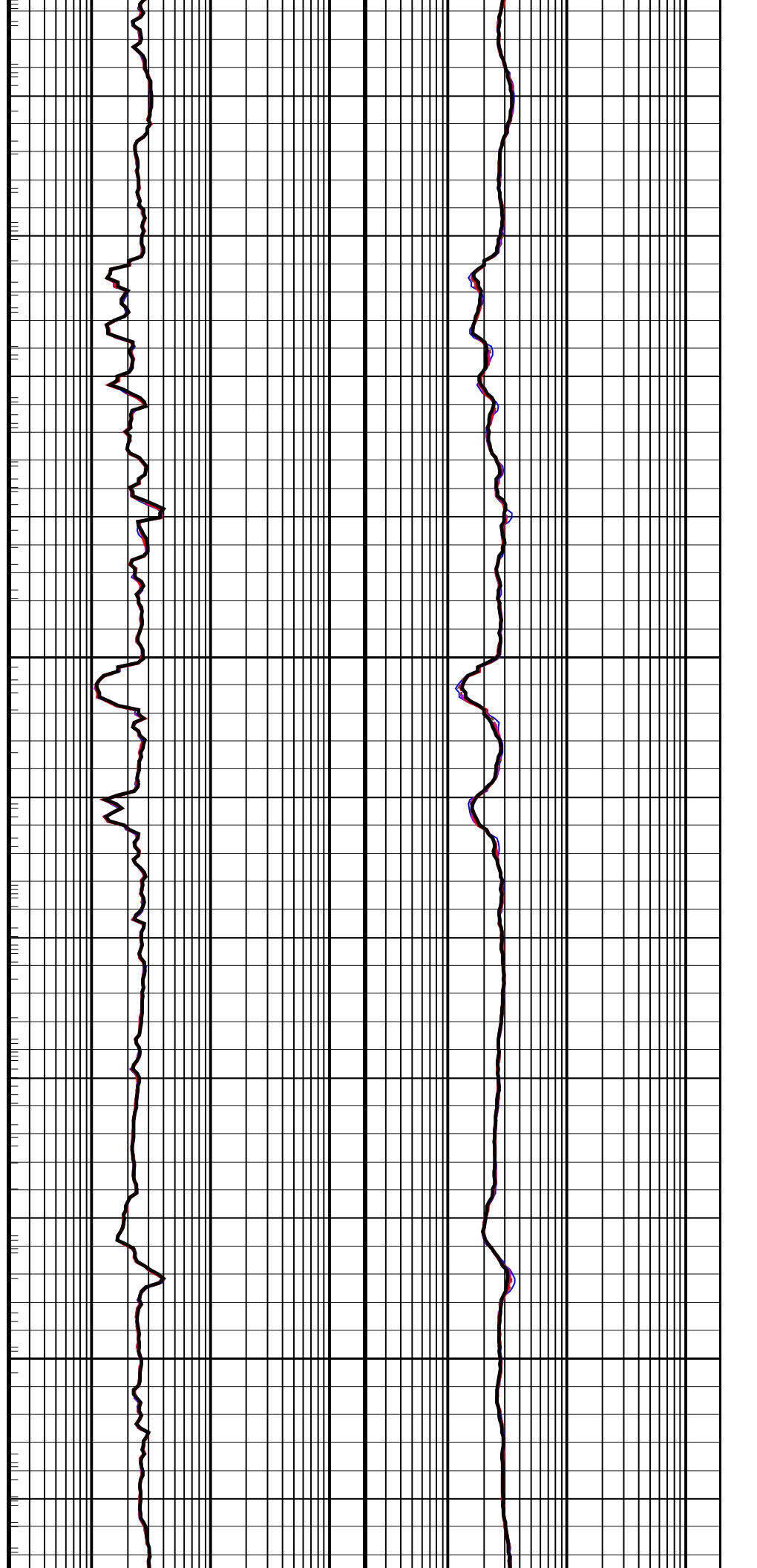
1525
TVD

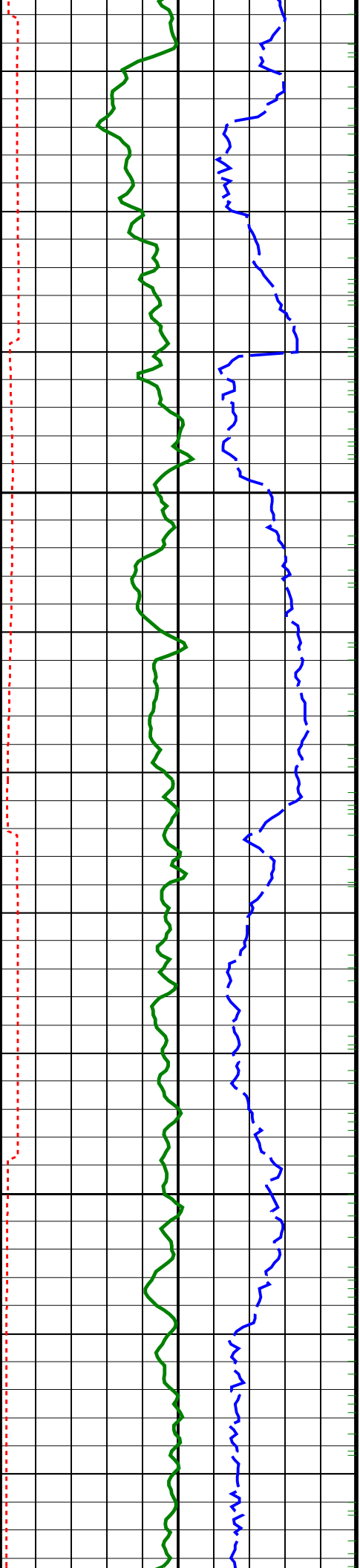




1550
TVD

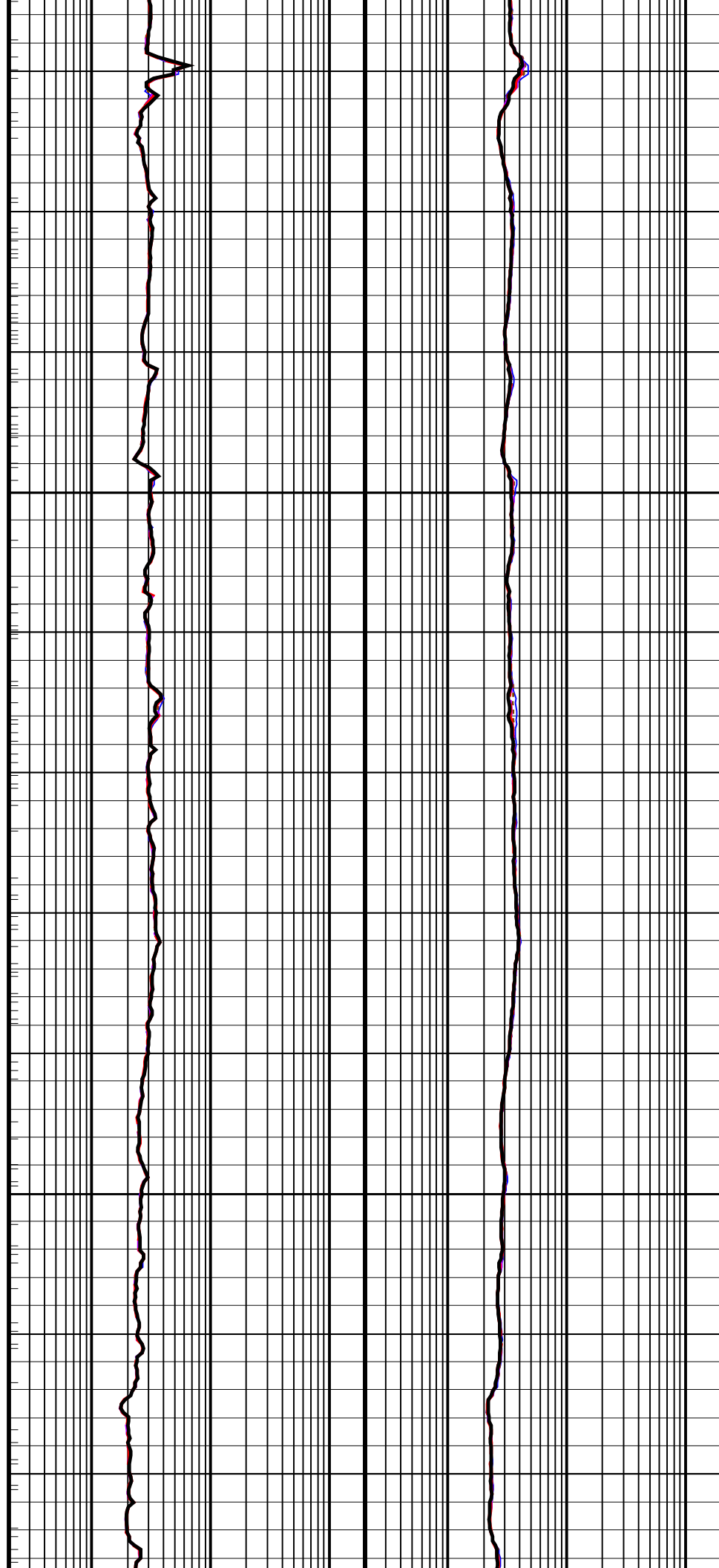
1575
TVD

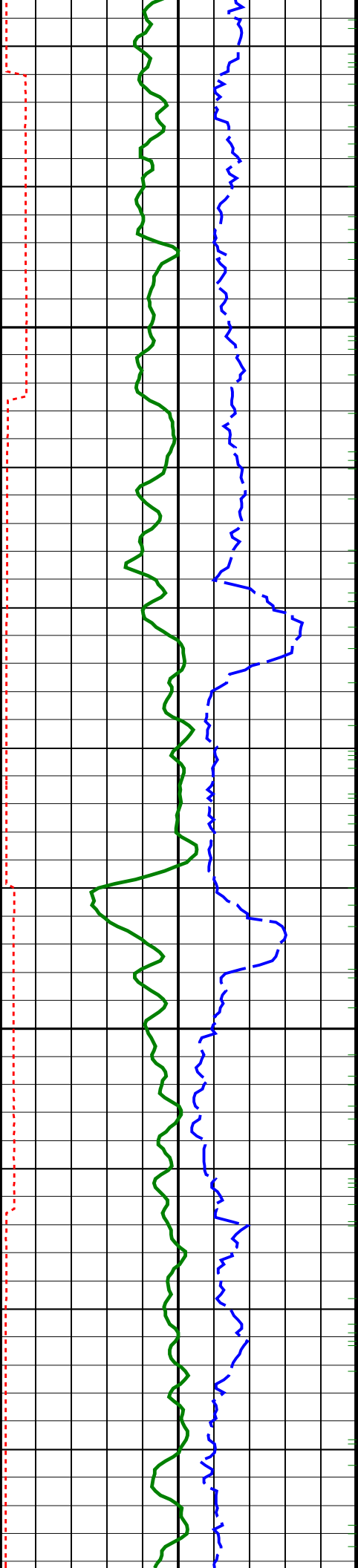




1600
TVD

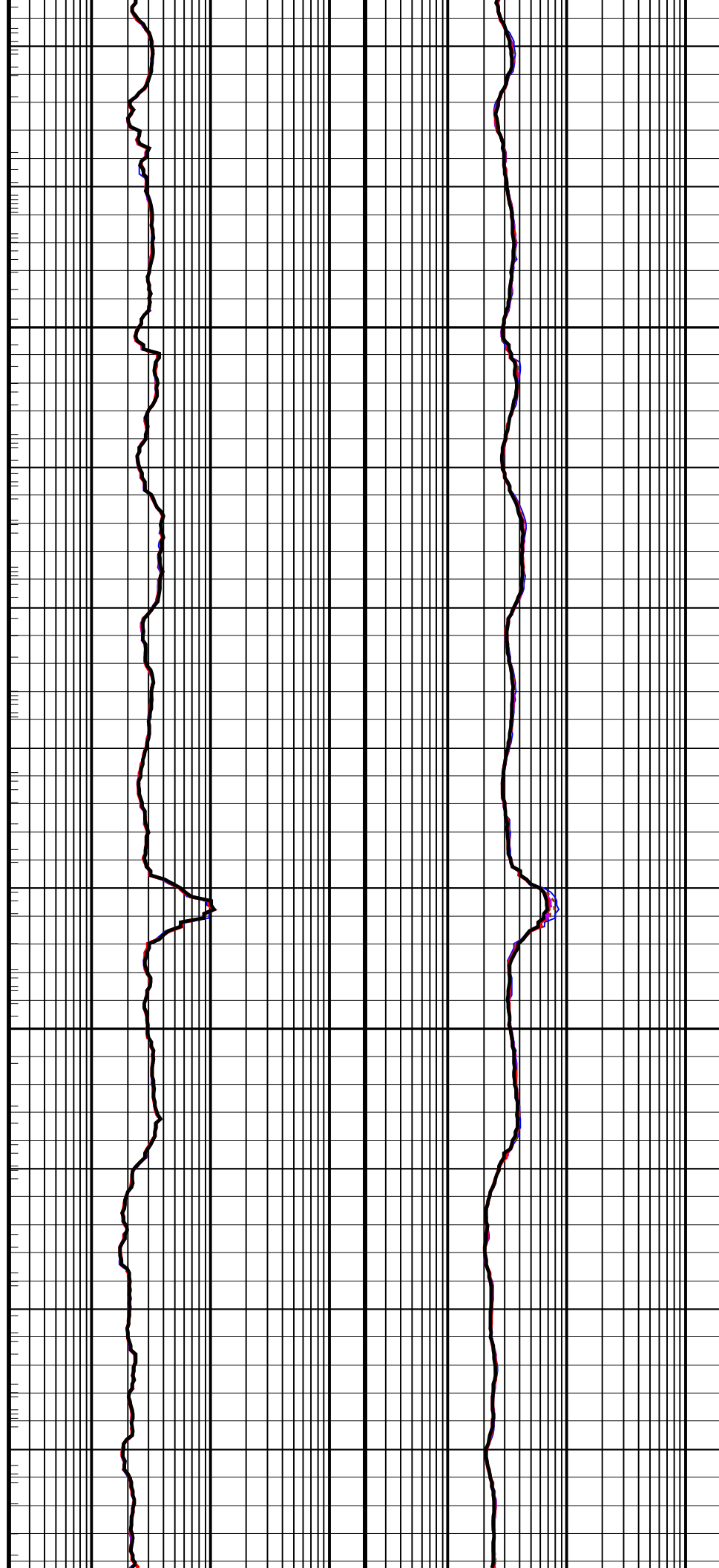
1625
TVD

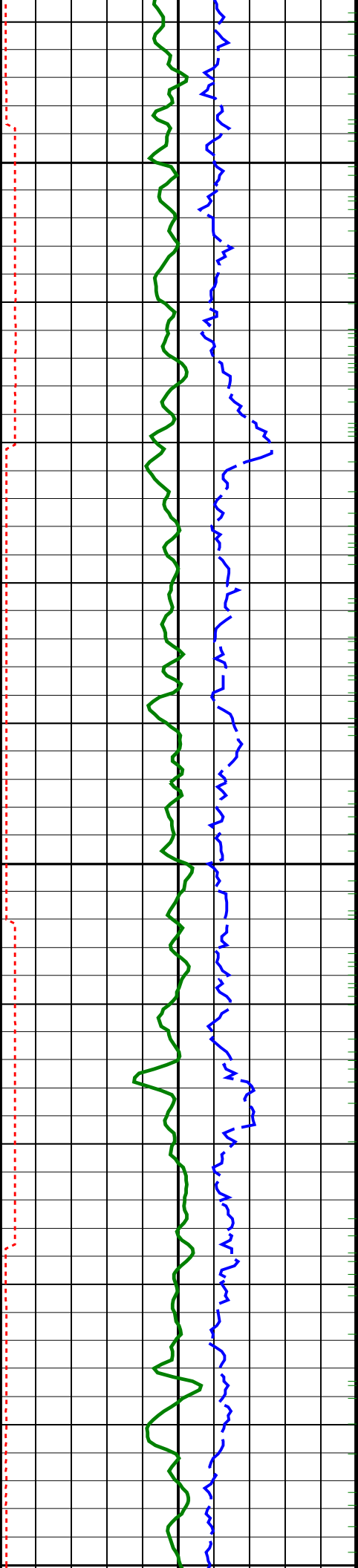




1650
TVD

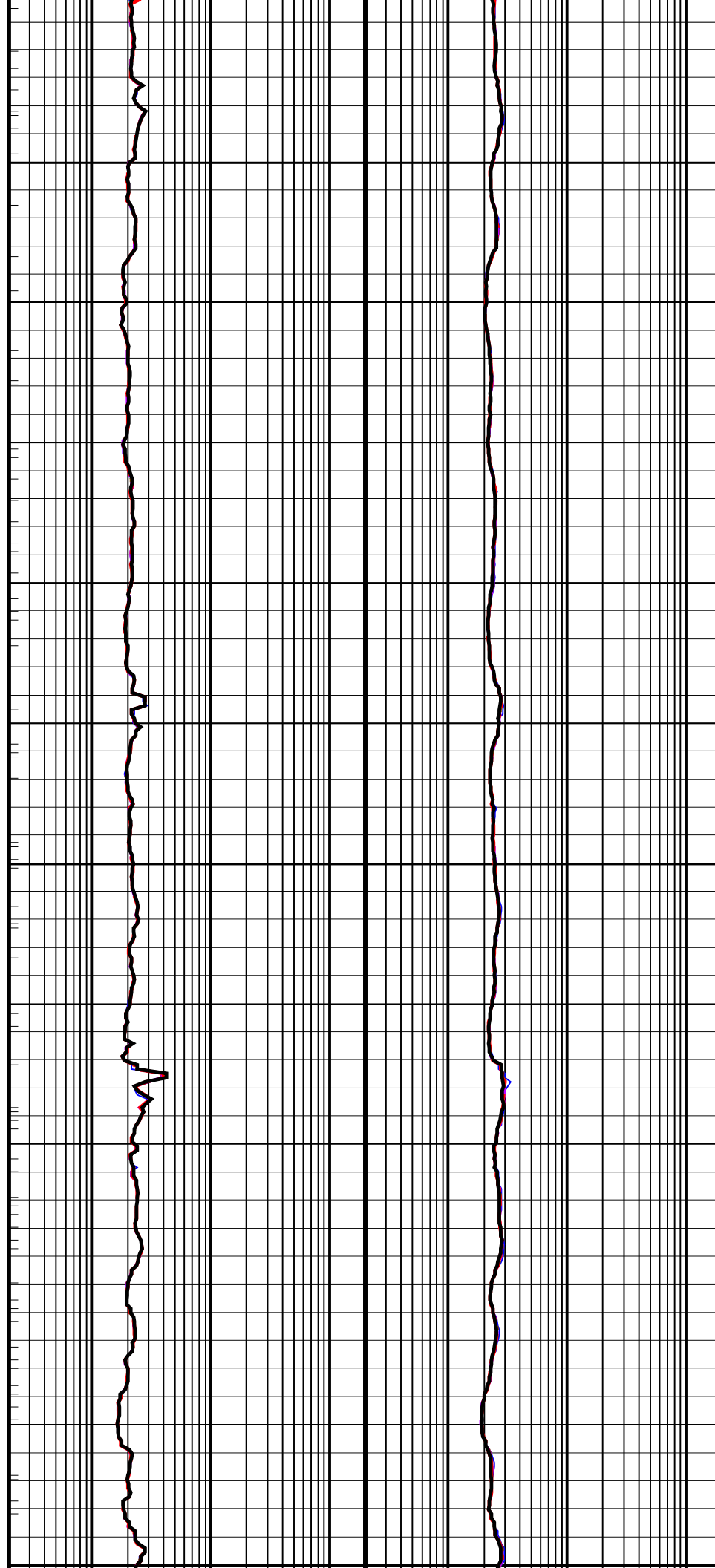
1675
TVD

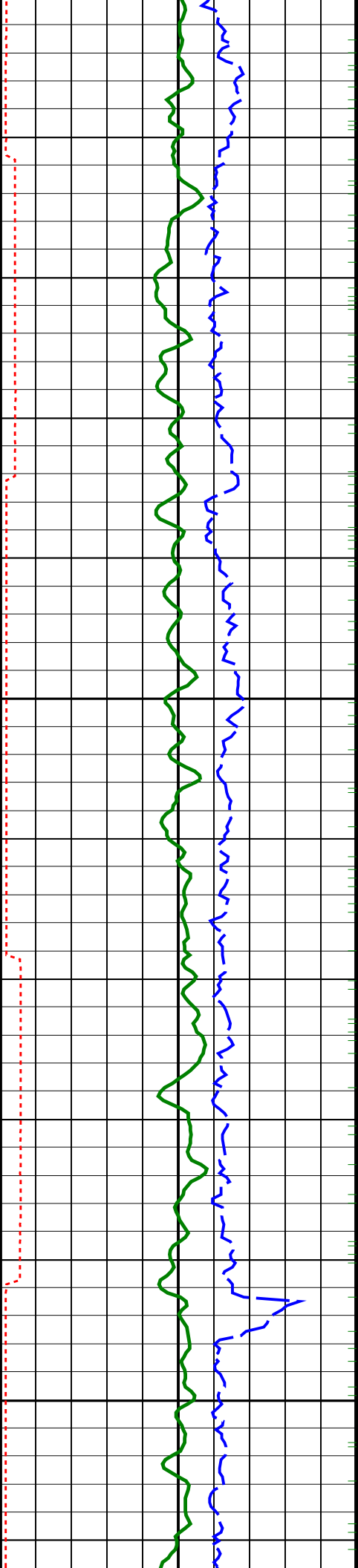




1700
TVD

1725
TVD

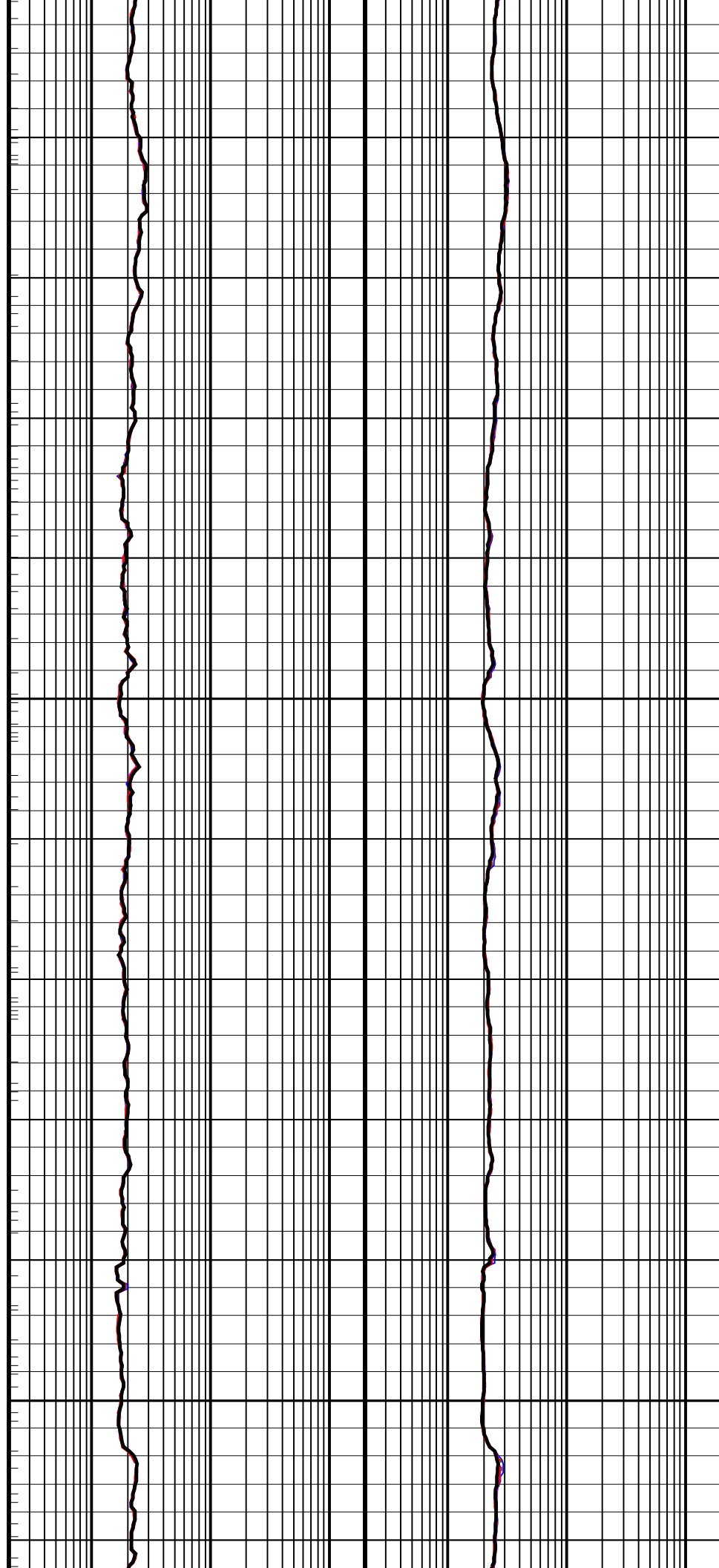


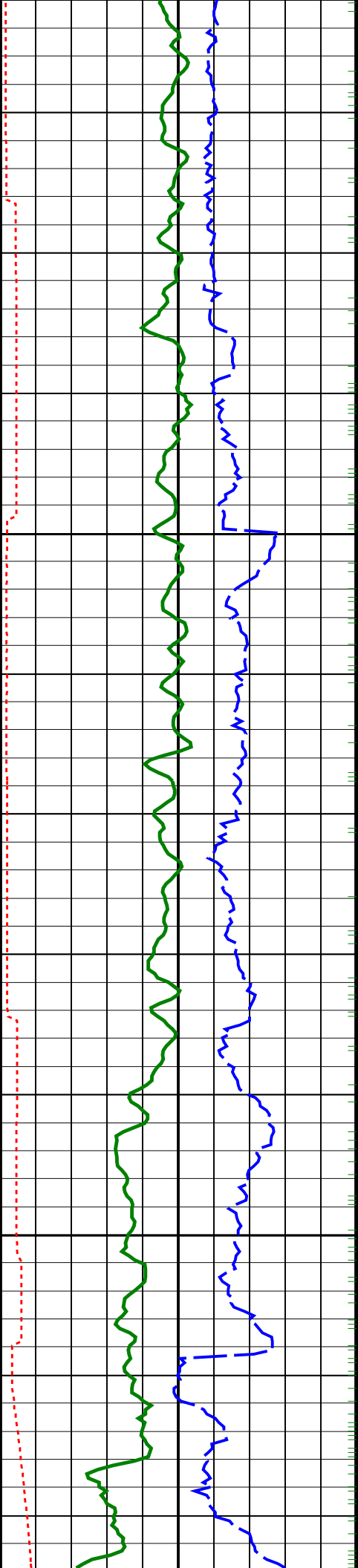


1750
TVD

1775
TVD

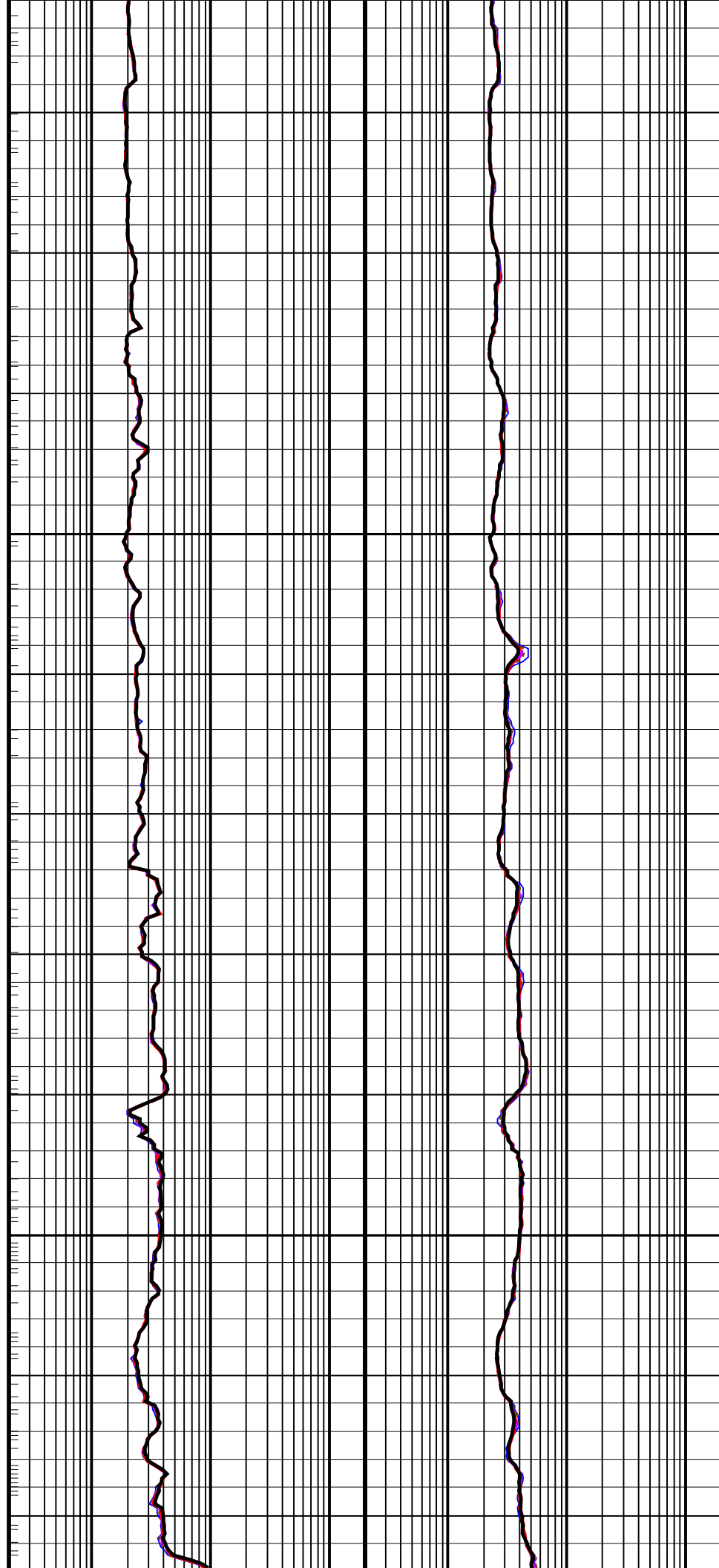
1800
TVD

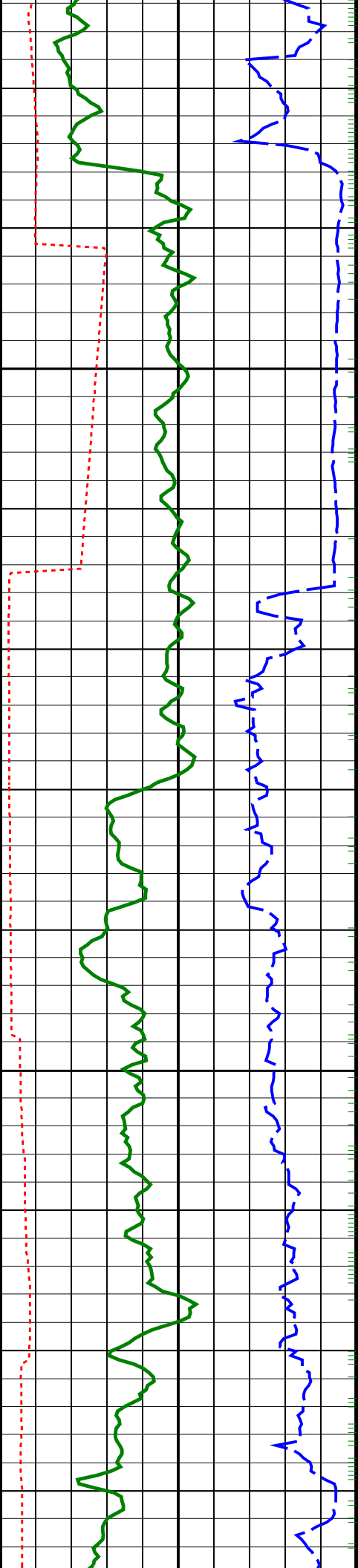




1825
TVD

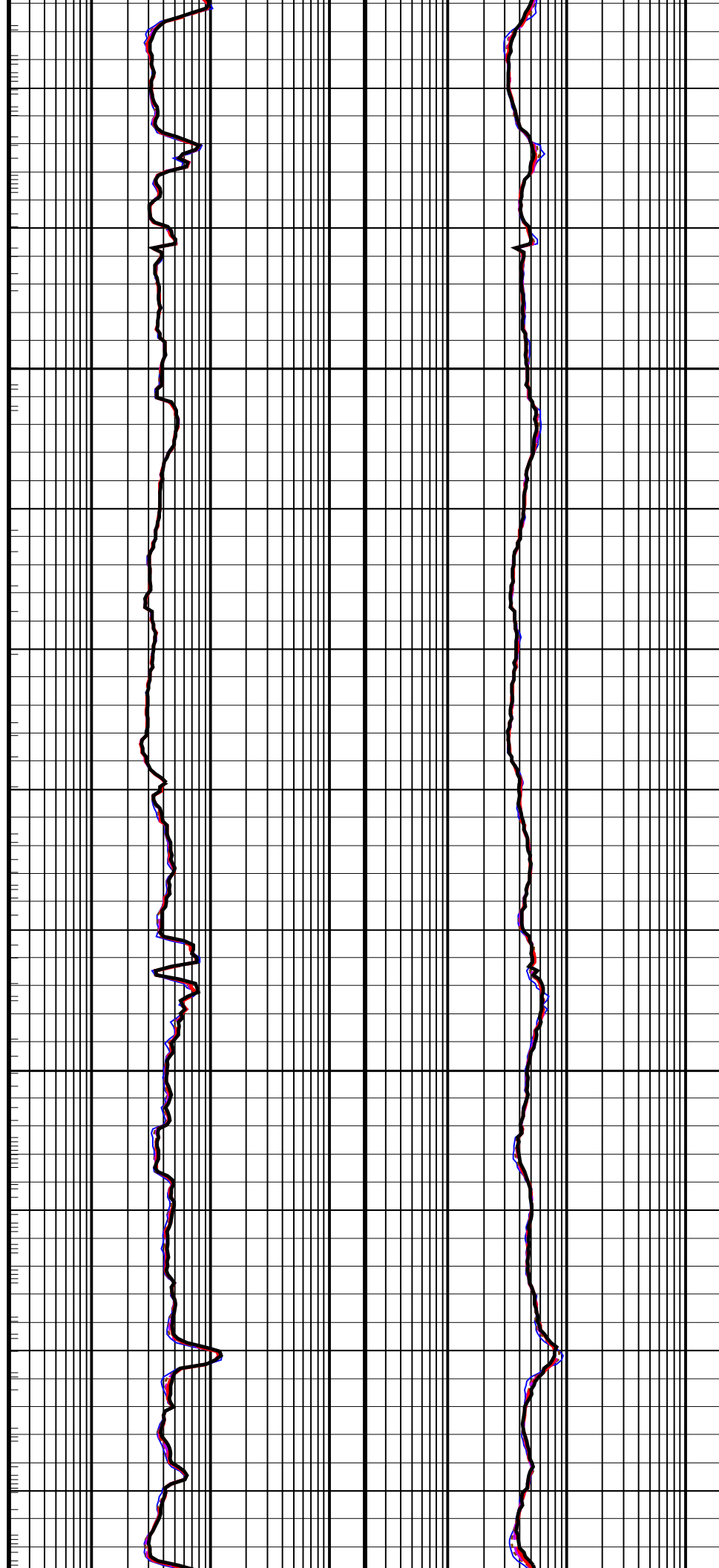
1850
TVD

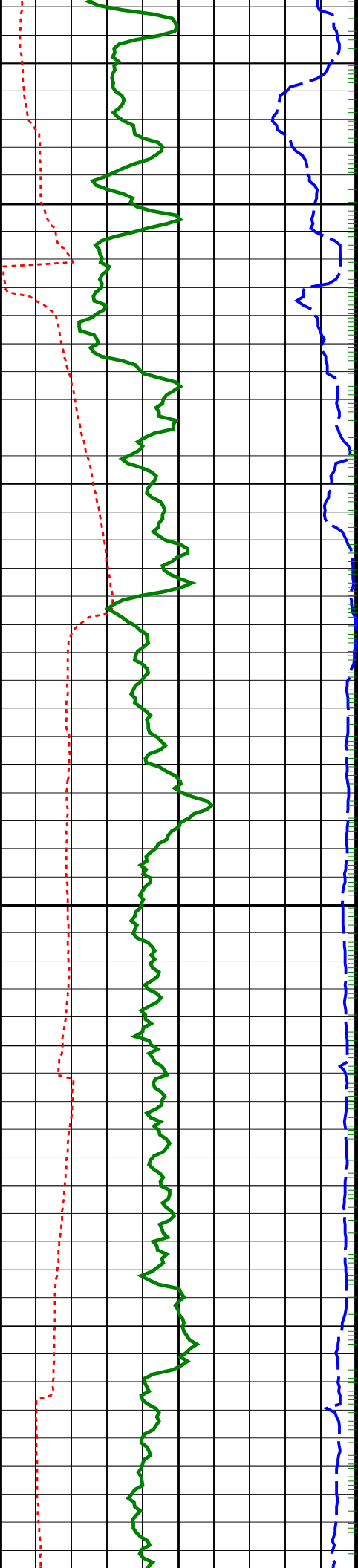




1875
TVD

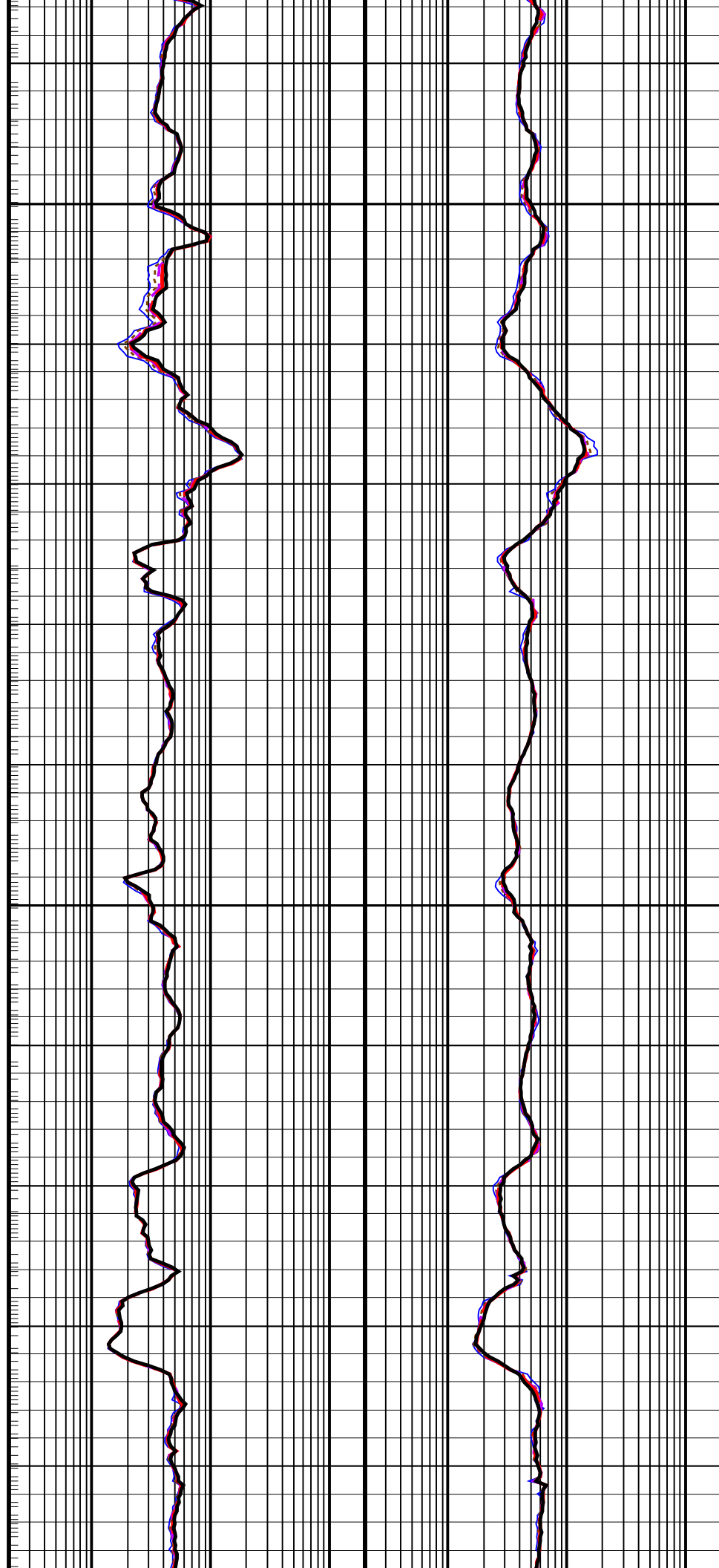
1900
TVD

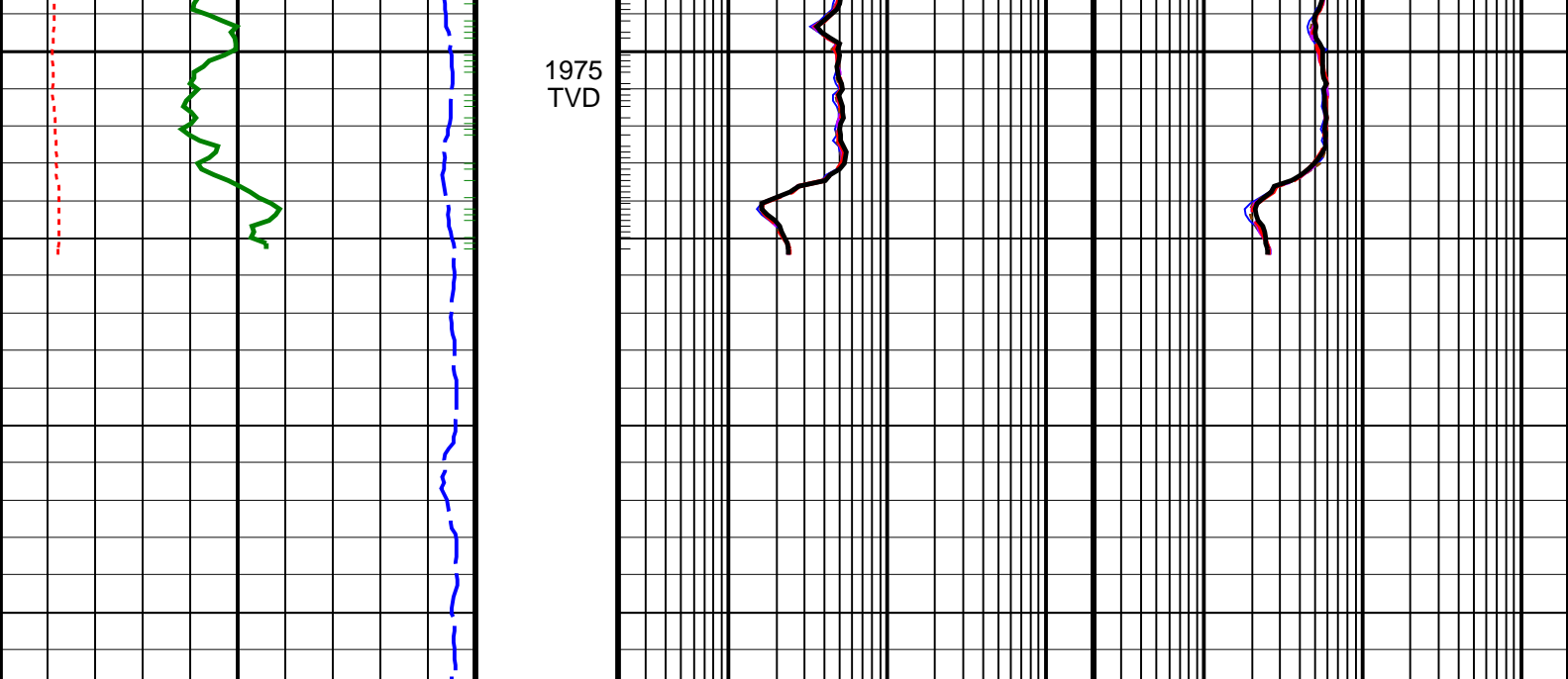




1925
TVD

1950
TVD





ARC Gamma Ray (GR_ARC) (GAPI)			ARC Phase-Shift Resistivity 16-in. at 2 MHz (P16H)			ARC Attenuation Resistivity 16-in. at 2 MHz (A16H)		
0		200	0.2	(OHMM)	200	0.2	(OHMM)	200
ARC Resistivity Time After Bit (TAB_ARC_RES) (HR)			ARC Phase-Shift Resistivity 22-in. at 2 MHz (P22H)			ARC Attenuation Resistivity 22-in. at 2 MHz (A22H)		
0		10	0.2	(OHMM)	200	0.2	(OHMM)	200
Rate of Penetration, Averaged over Last 5ft (ROP5_RM)			ARC Phase-Shift Resistivity 28-in. at 2 MHz (P28H)			ARC Attenuation Resistivity 28-in. at 2 MHz (A28H)		
200		0	0.2	(OHMM)	200	0.2	(OHMM)	200
			ARC Phase-Shift Resistivity 34-in. at 2 MHz (P34H)			ARC Attenuation Resistivity 34-in. at 2 MHz (A34H)		
			0.2	(OHMM)	200	0.2	(OHMM)	200
			ARC Phase-Shift Resistivity 40-in. at 2 MHz (P40H)			ARC Attenuation Resistivity 40-in. at 2 MHz (A40H)		
			0.2	(OHMM)	200	0.2	(OHMM)	200

PIP SUMMARY		
+ ARC Gamma Ray Samples		
+ ARC Resistivity Samples		

IDEAL Version: ID13_0C_08
IDF

8.25-in. Array Resistivity Compensated / Equipment Identification		
Primary Equipment:		
Tool Name and Serial Number	ARC8 – AA	8316
ARC825 Calibration Status	Valid	

Master: 3-May-2008 1:32								
8.25-in. Array Resistivity Compensated Calibration								
Resistivity: Air								
Phase	Phase-Shift T1	Value	Phase	Phase-Shift T2	Value	Phase	Phase-Shift T3	Value
Master		-1.208	Master		1.258	Master		-1.291
	-3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)		-3.900 (Minimum)	0.1000 (Nominal)	4.100 (Maximum)	
Phase	Phase-Shift T4	Value	Phase	Phase-Shift T5	Value	Phase	Phase-Shift T1 at 400KHz	Value
Master		1.240	Master		-1.297	Master		1.677


```

                                SCHLUMBERGER
                                Survey report      11-Jul-2008 15:23:46      Page   1 of 3

Client.....: Santos Ltd
Field.....: Otway

Well.....: Pecten East-1
API number.....:
Engineer.....: J. Oldridge / A. Bayly

RIG.....: Ocean Patriot
STATE.....: Victoria

----- Survey calculation methods-----
Method for positions.....: Minimum curvature
Method for DLS.....: Mason & Taylor

----- Depth reference -----
Permanent datum.....: Australian Height Datum
Depth reference.....: Driller's Depth
GL above permanent.....: 59.70 m
KB above permanent.....: Top Drive
DF above permanent.....: 20.80 m

----- Vertical section origin-----
Latitude (+N/S-).....: 0.00 m
Departure (+E/W-).....: 0.00 m

----- Platform reference point-----
Latitude (+N/S-).....: ----
Departure (+E/W-).....: ----

Azimuth from Vsect Origin to target: 0.00 degrees

----- Geomagnetic data -----
Magnetic model.....: BGGM version 2007
Magnetic date.....: 29-Jun-2008
Magnetic field strength...: 1214.73 HCNT
Magnetic dec (+E/W-).....: 10.80 degrees
Magnetic dip.....: -69.83 degrees

----- MWD survey Reference Criteria -----
Reference G.....: 1000.06 mGal
Reference H.....: 1214.74 HCNT
Reference Dip.....: -69.83 degrees
Tolerance of G.....: (+/-) 2.50 mGal
Tolerance of H.....: (+/-) 6.00 HCNT
Tolerance of Dip.....: (+/-) 0.45 degrees

----- Corrections -----
Magnetic dec (+E/W-).....: 10.80 degrees
Grid convergence (+E/W-)..: -1.07 degrees
Total az corr (+E/W-)....: 11.87 degrees
(Total az corr = magnetic dec - grid conv)
Survey Correction Type ...:
I=Sag Corrected Inclination
M=Schlumberger Magnetic Correction
S=Shell Magnetic Correction
F=Failed Axis Correction
R=Magnetic Resonance Tool Correction
D=Dmag Magnetic Correction

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SCHLUMBERGER Survey Report
                                11-Jul-2008 15:23:46      Page   2 of 3

=====
Seq Measured Incl Azimuth Course TVD Vertical Displ Displ Total At DLS Srvy Tool
=====

```


#	depth (m)	angle (deg)	angle (deg)	length (m)	depth (m)	section (m)	+N/S- (m)	+E/W- (m)	displ (m)	Azim (deg)	(deg/ 100f)	tool type	Corr (deg)
===	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIP	None
2	80.50	0.00	0.00	80.50	80.50	0.00	0.00	0.00	0.00	0.00	0.00	SB	None
3	100.22	0.31	192.19	19.72	100.22	-0.05	-0.05	-0.01	0.05	192.19	0.48	MS	None
4	129.23	0.72	126.87	29.01	129.23	-0.24	-0.24	0.12	0.27	153.65	0.69	MS	None
5	158.47	0.93	153.25	29.24	158.47	-0.56	-0.56	0.37	0.67	146.44	0.45	MS	None
6	186.57	0.37	216.94	28.10	186.56	-0.84	-0.84	0.42	0.94	153.35	0.91	MS	None
7	214.65	0.39	95.93	28.08	214.64	-0.92	-0.92	0.46	1.03	153.38	0.72	MS	None
8	242.72	0.08	107.95	28.07	242.71	-0.93	-0.93	0.57	1.10	148.44	0.34	MS	None
9	270.58	0.13	47.49	27.86	270.57	-0.92	-0.92	0.62	1.11	146.18	0.12	MS	None
10	279.92	0.21	93.74	9.34	279.91	-0.91	-0.91	0.64	1.12	144.95	0.50	MS	None
11	308.81	0.70	190.12	28.89	308.80	-1.09	-1.09	0.66	1.28	148.72	0.79	MS	None
12	337.67	0.63	187.60	28.86	337.66	-1.42	-1.42	0.61	1.55	156.75	0.08	MS	None
13	366.59	0.68	185.93	28.92	366.58	-1.75	-1.75	0.57	1.84	161.90	0.06	MS	None
14	395.33	0.68	19.42	28.74	395.32	-1.76	-1.76	0.61	1.86	160.84	1.43	MS	None
15	424.18	0.62	192.55	28.85	424.17	-1.75	-1.75	0.63	1.86	160.08	1.37	MS	None
16	453.01	0.59	200.09	28.83	453.00	-2.04	-2.04	0.55	2.11	164.94	0.09	MS	None
17	481.91	0.66	180.35	28.90	481.89	-2.35	-2.35	0.50	2.40	168.04	0.24	MS	None
18	510.72	0.65	195.28	28.81	510.70	-2.67	-2.67	0.45	2.71	170.38	0.18	MS	None
19	539.63	0.70	195.89	28.91	539.61	-3.00	-3.00	0.36	3.02	173.13	0.05	MS	None
20	568.40	0.54	206.41	28.77	568.38	-3.29	-3.29	0.25	3.30	175.60	0.21	MS	None
21	597.28	0.59	205.80	28.88	597.26	-3.54	-3.54	0.13	3.55	177.94	0.05	MS	None
22	616.42	0.40	109.32	19.14	616.40	-3.66	-3.66	0.15	3.66	177.68	1.19	MS	None
23	678.32	0.27	62.01	61.90	678.30	-3.66	-3.66	0.48	3.69	172.52	0.14	PUP	None
24	764.17	0.40	151.54	85.85	764.14	-3.83	-3.83	0.80	3.91	168.17	0.17	PUP	None
25	880.73	0.59	217.65	116.56	880.70	-4.66	-4.66	0.63	4.70	172.31	0.15	PUP	None
26	909.85	1.97	252.45	29.12	909.81	-4.93	-4.93	0.06	4.93	179.30	1.59	PUP	None
27	991.51	2.15	267.80	81.66	991.42	-5.41	-5.41	-2.81	6.10	207.43	0.22	PUP	None
28	1109.66	1.30	255.86	118.15	1109.52	-5.82	-5.82	-6.32	8.60	227.35	0.24	PUP	None
29	1197.14	1.38	257.72	87.48	1196.97	-6.29	-6.29	-8.31	10.43	232.89	0.03	PUP	None
30	1254.68	1.42	257.96	57.54	1254.50	-6.59	-6.59	-9.69	11.72	235.79	0.02	PUP	None
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SCHLUMBERGER Survey Report						11-Jul-2008 15:23:46			Page		3 of 3		
Seq #	Measured depth (m)	Incl angle (deg)	Azimuth angle (deg)	Course length (m)	TVD depth (m)	Vertical section (m)	Displ +N/S- (m)	Displ +E/W- (m)	Total displ (m)	At Azim (deg)	DLS (deg/ 100f)	Srvy tool type	Tool Corr (deg)
===	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
31	1285.95	1.48	259.75	31.27	1285.76	-6.74	-6.74	-10.46	12.45	237.22	0.07	PUP	None
32	1314.65	1.50	257.02	28.70	1314.45	-6.89	-6.89	-11.20	13.15	238.39	0.08	PUP	None
33	1343.08	1.43	249.34	28.43	1342.87	-7.10	-7.10	-11.89	13.85	239.16	0.22	PUP	None
34	1400.23	1.28	247.24	57.15	1400.00	-7.60	-7.60	-13.15	15.18	239.98	0.08	PUP	None
35	1428.81	1.37	244.58	28.58	1428.57	-7.87	-7.87	-13.75	15.84	240.22	0.12	PUP	None
36	1458.68	1.51	240.58	29.87	1458.43	-8.21	-8.21	-14.41	16.59	240.32	0.18	PUP	None
37	1487.10	1.65	235.19	28.42	1486.84	-8.63	-8.63	-15.08	17.37	240.21	0.22	PUP	None
38	1515.81	1.83	234.00	28.71	1515.54	-9.14	-9.14	-15.79	18.24	239.94	0.19	PUP	None
39	1545.03	1.95	232.90	29.22	1544.74	-9.71	-9.71	-16.56	19.20	239.61	0.13	PUP	None
40	1573.43	2.06	237.88	28.40	1573.13	-10.27	-10.27	-17.38	20.19	239.41	0.22	PUP	None
41	1601.32	2.20	234.44	27.89	1601.00	-10.85	-10.85	-18.24	21.22	239.25	0.21	PUP	None
42	1630.42	2.54	236.15	29.10	1630.07	-11.54	-11.54	-19.23	22.42	239.04	0.36	PUP	None
43	1659.81	3.11	236.63	29.39	1659.43	-12.34	-12.34	-20.43	23.87	238.88	0.59	PUP	None
44	1687.83	3.45	240.78	28.02	1687.40	-13.17	-13.17	-21.81	25.47	238.88	0.45	PUP	None
45	1716.74	3.96	241.10	28.91	1716.25	-14.07	-14.07	-23.44	27.34	239.02	0.54	PUP	None
46	1746.86	4.10	241.06	30.12	1746.30	-15.10	-15.10	-25.29	29.45	239.17	0.14	PUP	None
47	1775.20	4.48	242.79	28.34	1774.56	-16.09	-16.09	-27.16	31.57	239.35	0.43	PUP	None
48	1803.10	4.37	240.10	27.90	1802.37	-17.12	-17.12	-29.05	33.72	239.49	0.26	PUP	None
49	1832.76	4.84	243.68	29.66	1831.94	-18.24	-18.24	-31.15	36.10	239.65	0.57	PUP	None
50	1862.61	4.80	242.85	29.85	1861.68	-19.37	-19.37	-33.39	38.60	239.89	0.08	PUP	None
51	1889.75	5.24	243.63	27.14	1888.72	-20.44	-20.44	-35.51	40.98	240.08	0.50	PUP	None
52	1919.69	5.61	241.98	29.94	1918.52	-21.73	-21.73	-38.03	43.80	240.26	0.41	PUP	None
53	1947.74	5.93	242.04	28.05	1946.43	-23.06	-23.06	-40.52	46.62	240.36	0.35	PUP	None
54	1972.25	6.25	238.30	24.51	1970.80	-24.35	-24.35	-42.78	49.22	240.35	0.63	PUP	None
55	1993.00	6.25	238.30	20.75	1991.43	-25.54	-25.54	-44.70	51.48	240.26	0.00	Projection to TD	
[(c) 2008 IDEAL ID13_OC_08]													

Company:

Santos Ltd

Well:

Pecten East–1

Field:

Otway

Rig:

Ocean Patriot

State:

Victoria

12.25in. Section

VISION Resistivity

1:200 True Vertical Depth

Recorded Mode Log

Schlumberger

