		MEASURED DEPTH COMPENSATED NEUTRON-DENSITY POROSITY PROPAGATION RESISTIVITY SPECTRAL GAMMA RAY LOG	
Company: GREAT WESTERN OPERATING COMPANY LLC Well: SELTZER LD 21-031HC Field: WATTENBERG County: ADAMS State: CO		COMPANY: GREAT WESTERN OPERATING COMPANY LLC WELL: SELTZER LD 21-031HC FIELD: WATTENBERG COUNTY: ADAMS STATE: CO	
Permanent Datum: GROUND LEVEL Elevation: 5139.5 ft Log meas. from: KELLY BUSHING 20.0 ft above Perm. Datum Drill. meas. from: KELLY BUSHING		API No. 05-001-10199 Location SEC 4 TWP 1S RNG 67W LAT 39.998990 LONG -104.892422 498 FNL 2251 FEL Other Services N/A	
Date	01-DEC-2018		
Run No.	1 (HORIZONTAL)	TVD	
Depth Driller	23960.0 ft	7979.0 ft	
Depth Logger	23964.7 ft	7979.0 ft	
Bottom Logged Interval	23752.3 ft	7978.8 ft	
Top Logged Interval	7200.0 ft	7000.0 ft	
Casing Driller	1739.0 ft	1738.6 ft	
Casing Logger	N/A	N/A	
Bitsize	8.5 in		
Type Fluid in Hole	OBM		
Density / Viscosity	11.0 ppg	67 sec/qt	
pH / Water Loss	N/A	N/A	
Source of Sample	N/A		
Rm at Meas. Temp.	N/A		
Rmf at Meas. Temp.	N/A		
Rmc at Meas. Temp.	N/A		
Source Rmf/Rmc	N/A	N/A	
Rm at BHT	N/A		
End Circulation	30-11-2018 @ 00:00		
Logger on Bottom	30-11-2018 @ 04:45		
Max. Recorded Temp.	255.5 °F		
Equip. No / Location	DL-415	OKC	DL-206 OKC
Recorded by	A. GLOSPIE	P. MUNGCHAROEN	R. BERGERON
Witnessed by	R. WALLEY		

Fold Here

In making interpretations of logs, Contractors employees will give the Customer the benefit of their best judgement, but since all interpretations are opinions, based on inferences from electrical or other measurements, Contractor cannot, and does not guarantee the accuracy or the correctness of any interpretation.

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REMARKS

TOOLS PUMPED DOWN FROM SURFACE; LOGGING PERFORMED WHILE TRIPPING OUT

COMPENSATED NEUTRON-DENSITY PRESENTED IN SANDSTONE AND LIMESTONE MATRIX

MAX DEVIATION: 94.0 DEG @ 11607.0 ft

DRILLING RIG: PRECISION DRILLING 460

SURFACE CASING SIZE: 9.625 in, 36.0 lbm/ft FROM 0 ft TO 1739.0 ft

BITSIZE: 13.5 in FROM 0 ft TO 1739.0 ft

BITSIZE: 8.5 in FROM 1739.0 ft TO 23960.0 ft

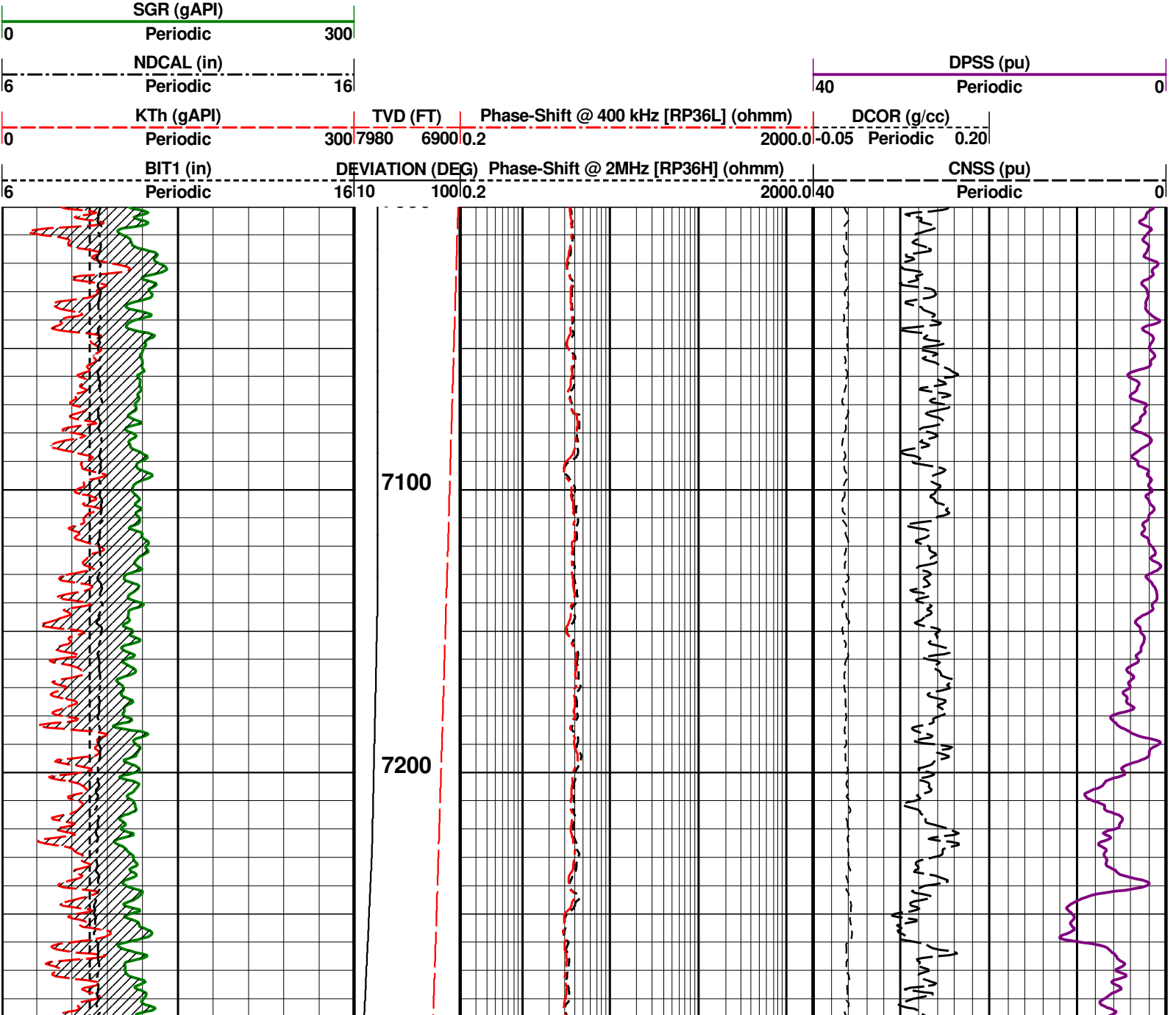
ALL LOG DEPTHS WERE RECORDED WITH EDR (NOV TOTCO), AND CORRECTED TO PIPE TALLY

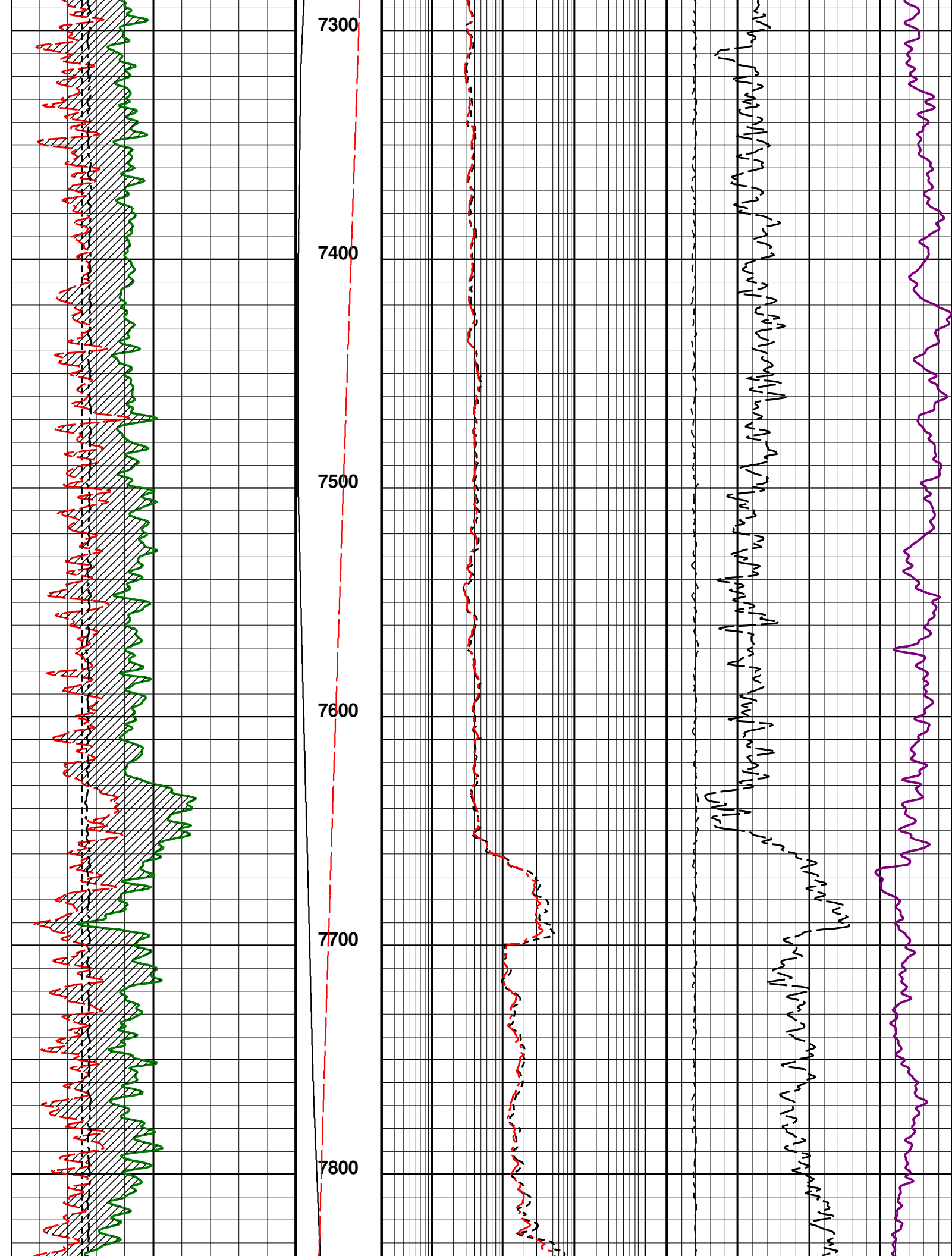
EQUIPMENT DATA				
Run	Trip	Instrument	Serial No.	Series No.
1	1	TELEMETRY	3102003	
1	1	SGR	1460019	
1	1	GR-CN	1473013 U	1473013 L
1	1	KNUCKLE	0813008	
1	1	DENSITY	1481020	
1	1	RESISTIVITY	RSA65002	
1	1	STEEL COLLAR	DL-15XU-2	

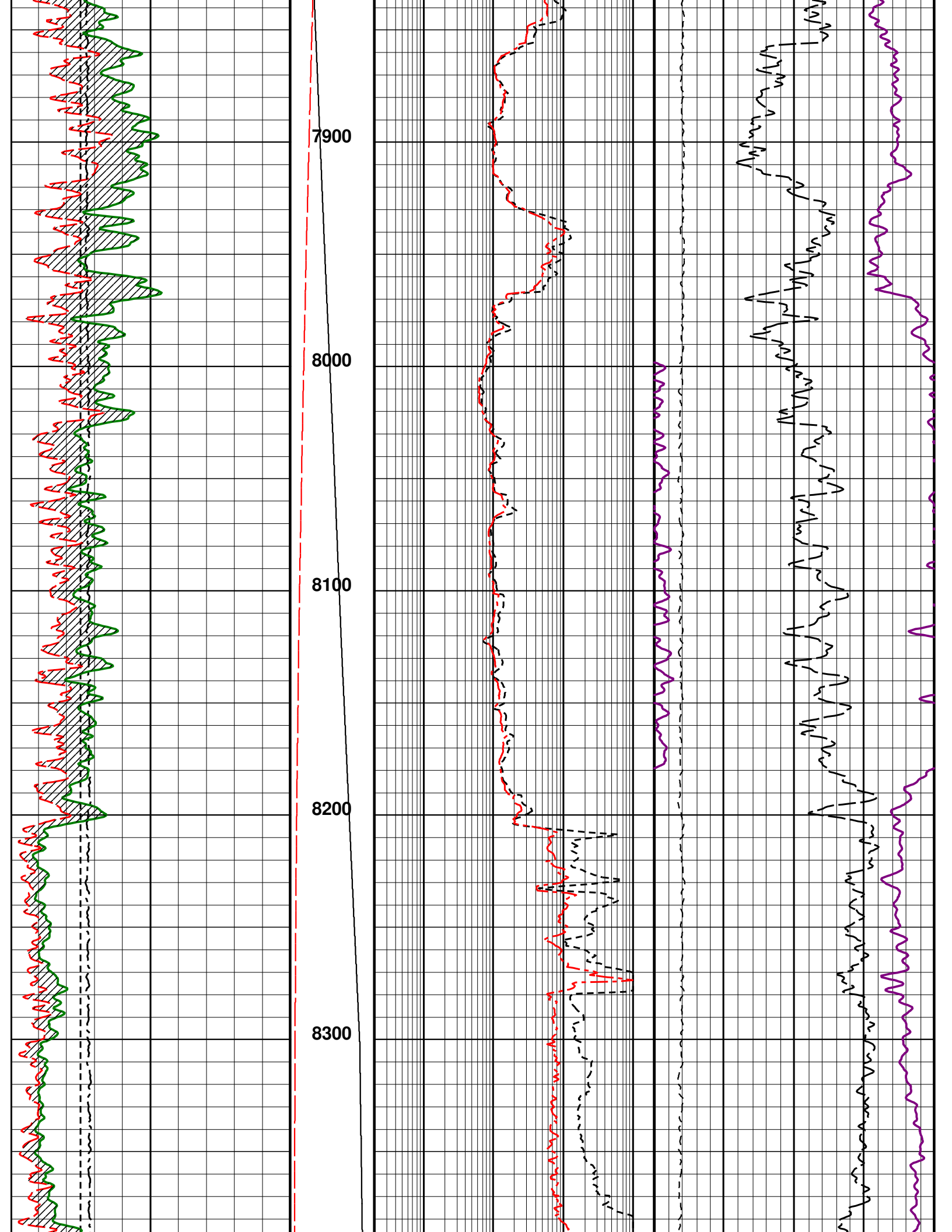
1	1	STEEL COLLAR	DL-43XH-8		
1	1	Am241Be / Cs137	77813	79966B	

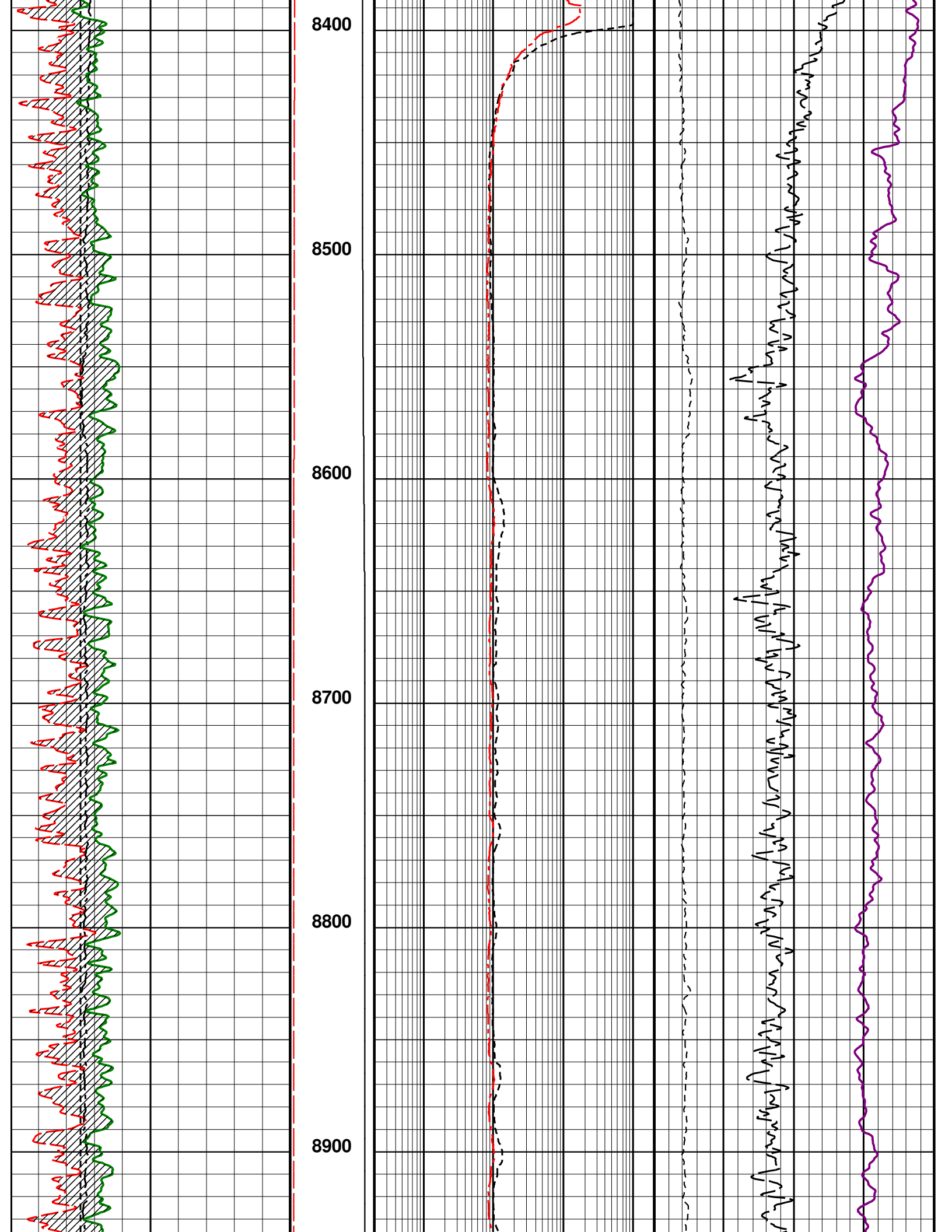
2" MAIN PASS SANDSTONE

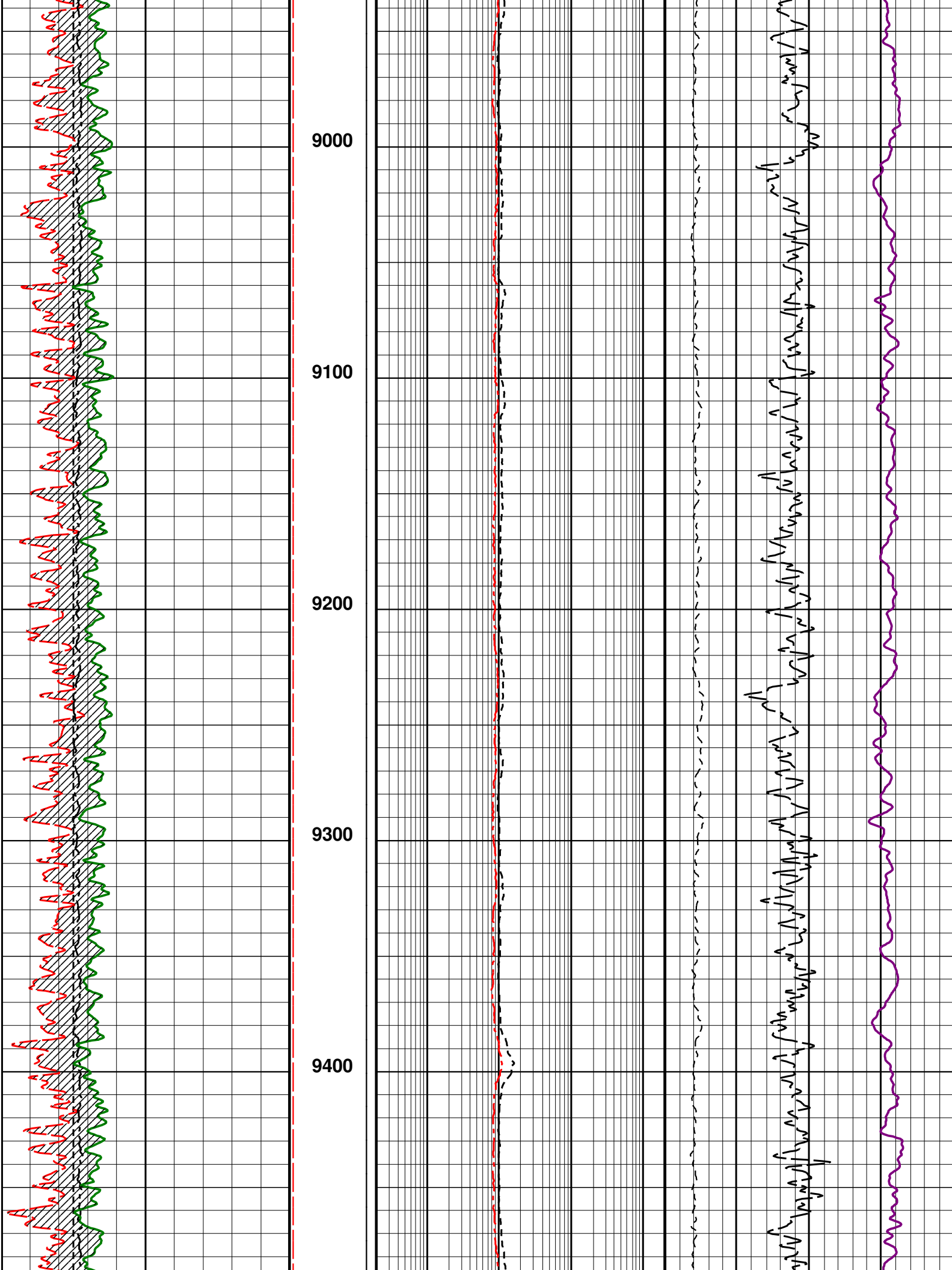
Company	: GREAT WESTERN OPERATING COMPANY LLC	Date	: 1-Dec-2018
Well	: SELTZER LD 21-031HC	Time	:
Scale	: 1 : 600	Remarks	: SANDSTONE MATRIX
Depth in	: Feet		
Software	: WinAPIPlot Ver. 5, 87, 2, 0	File Name	: 812_05-001-10199_MAIN MD

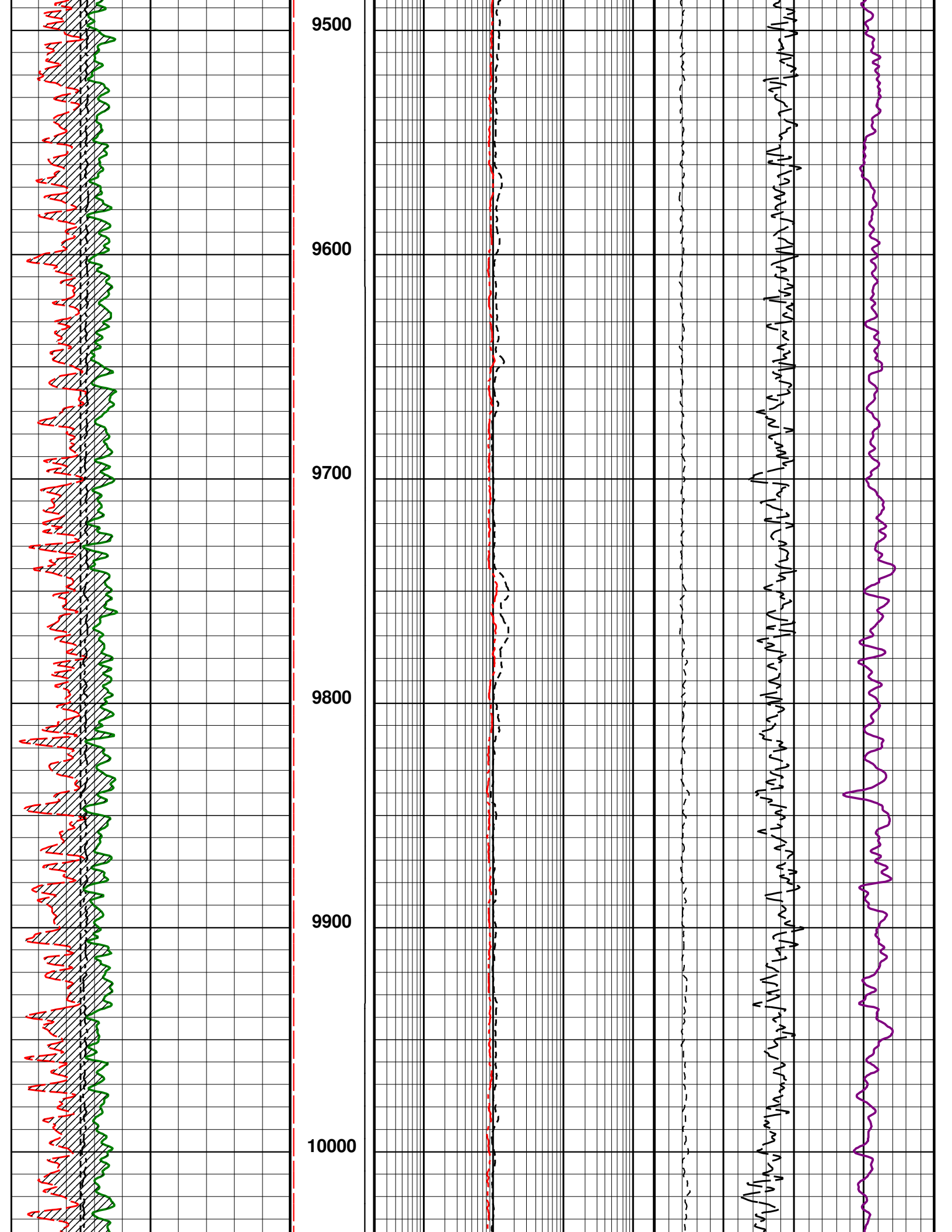


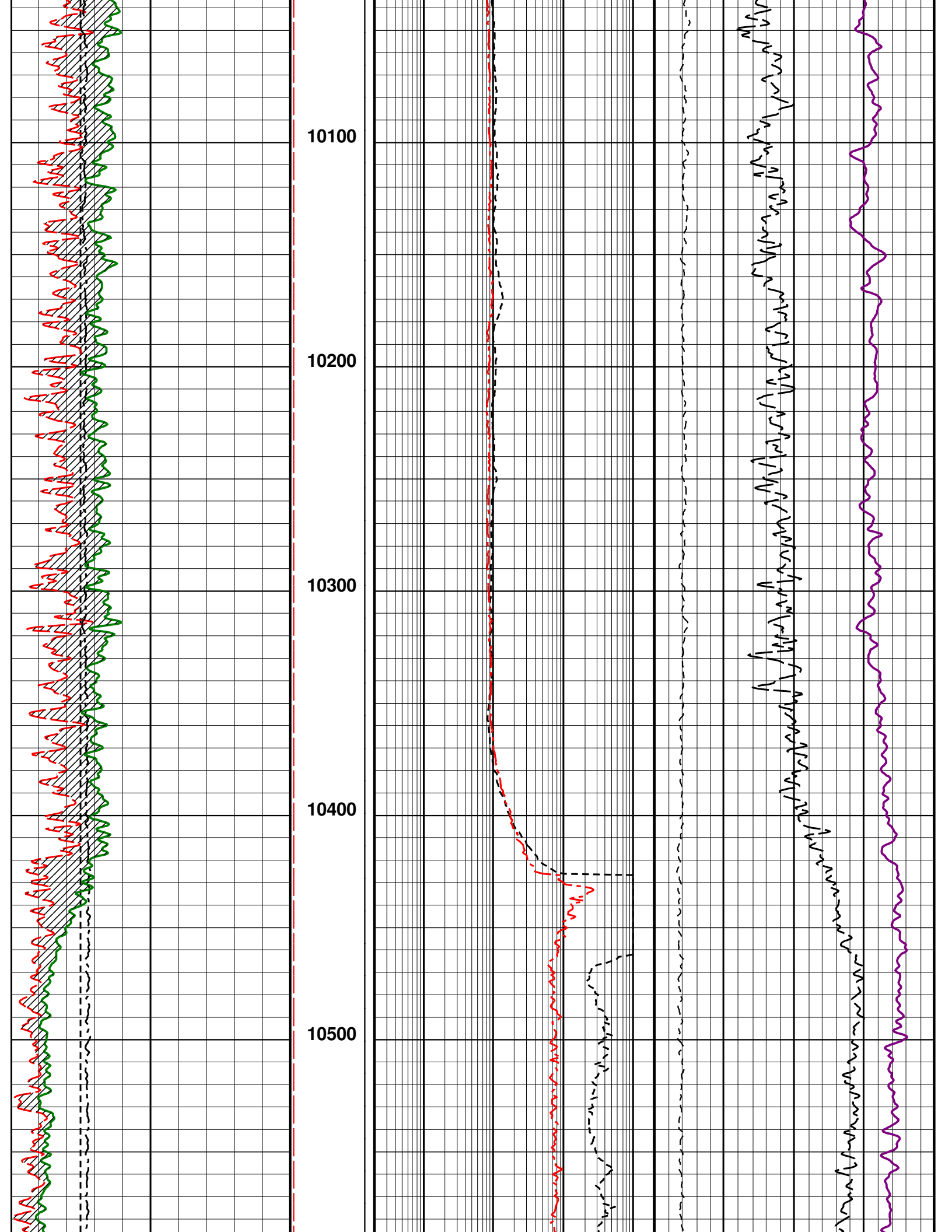


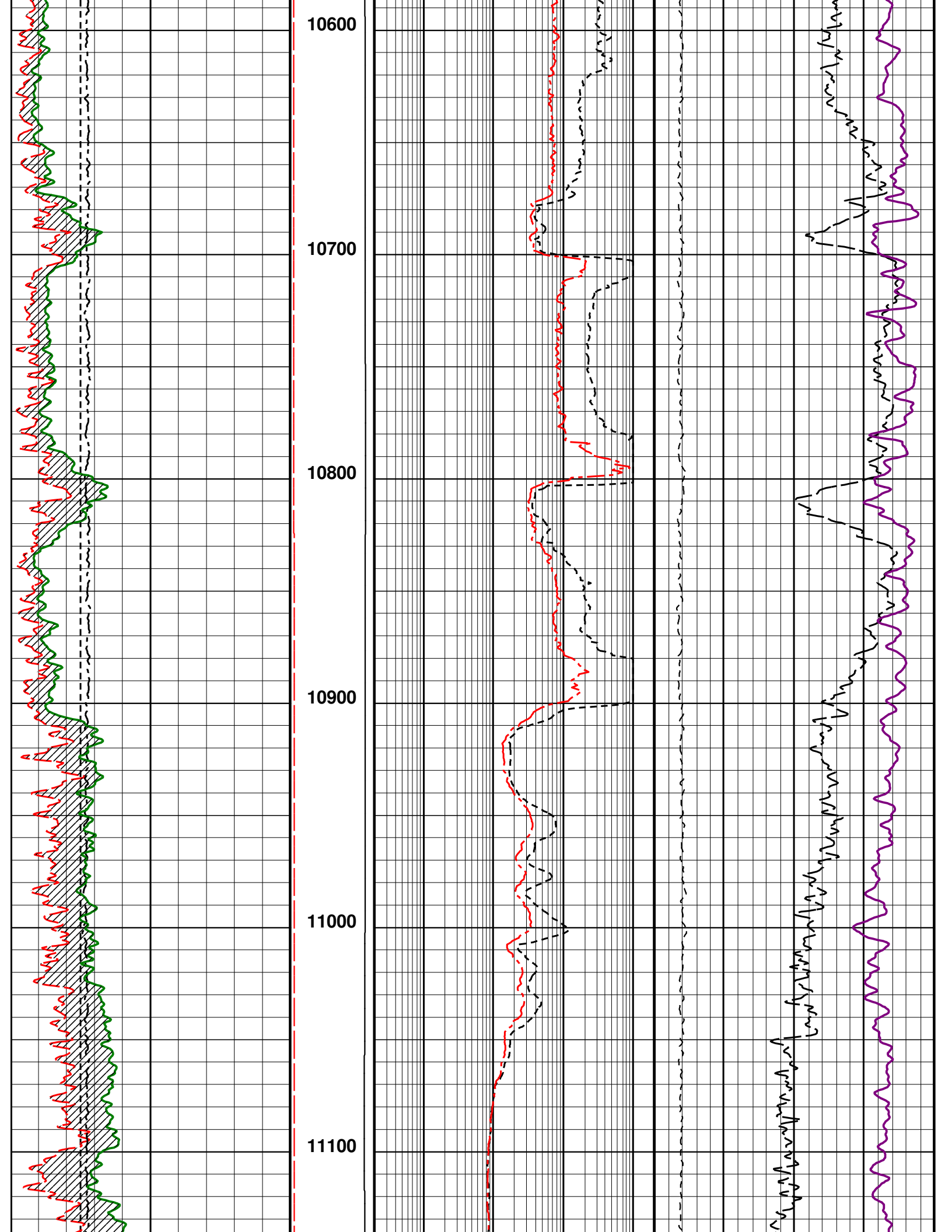


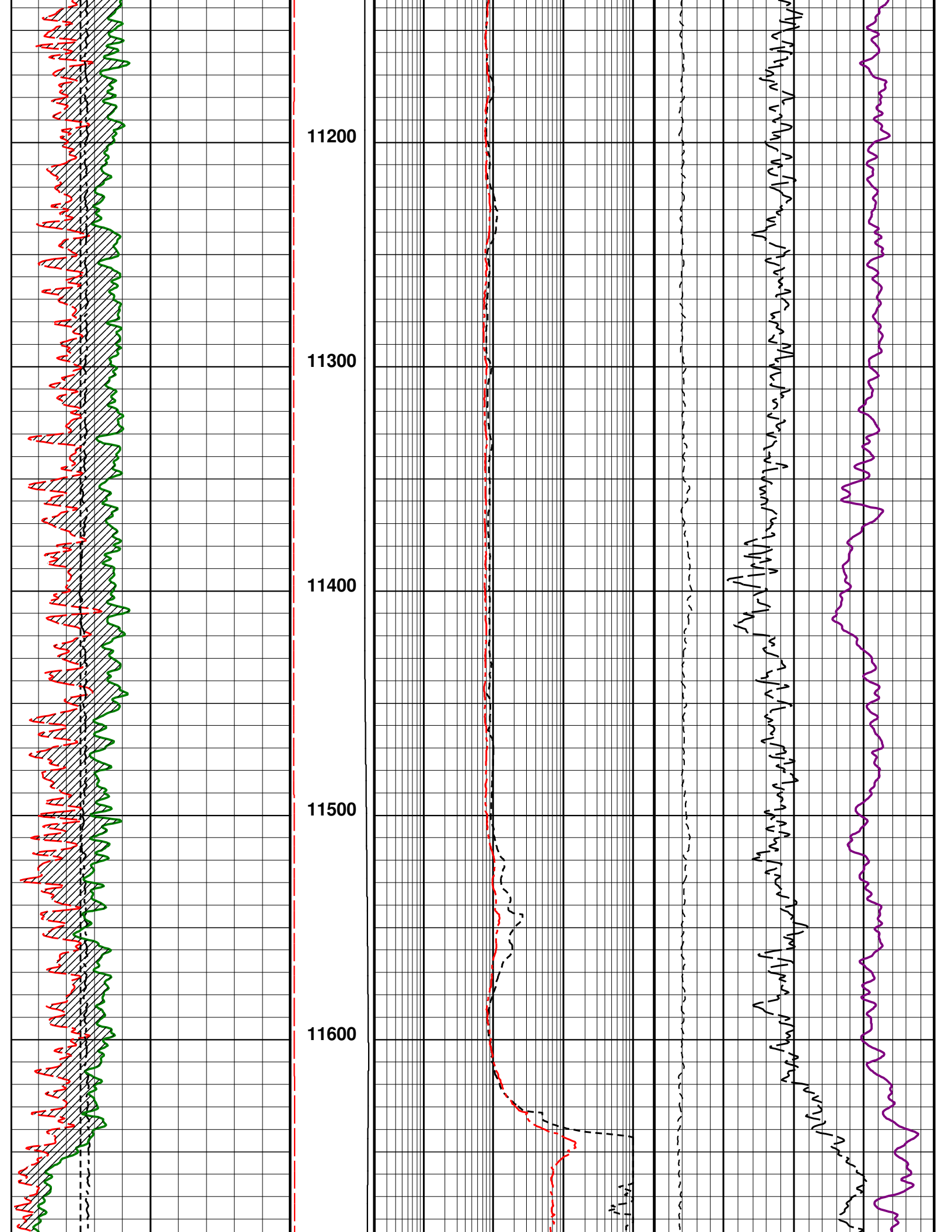


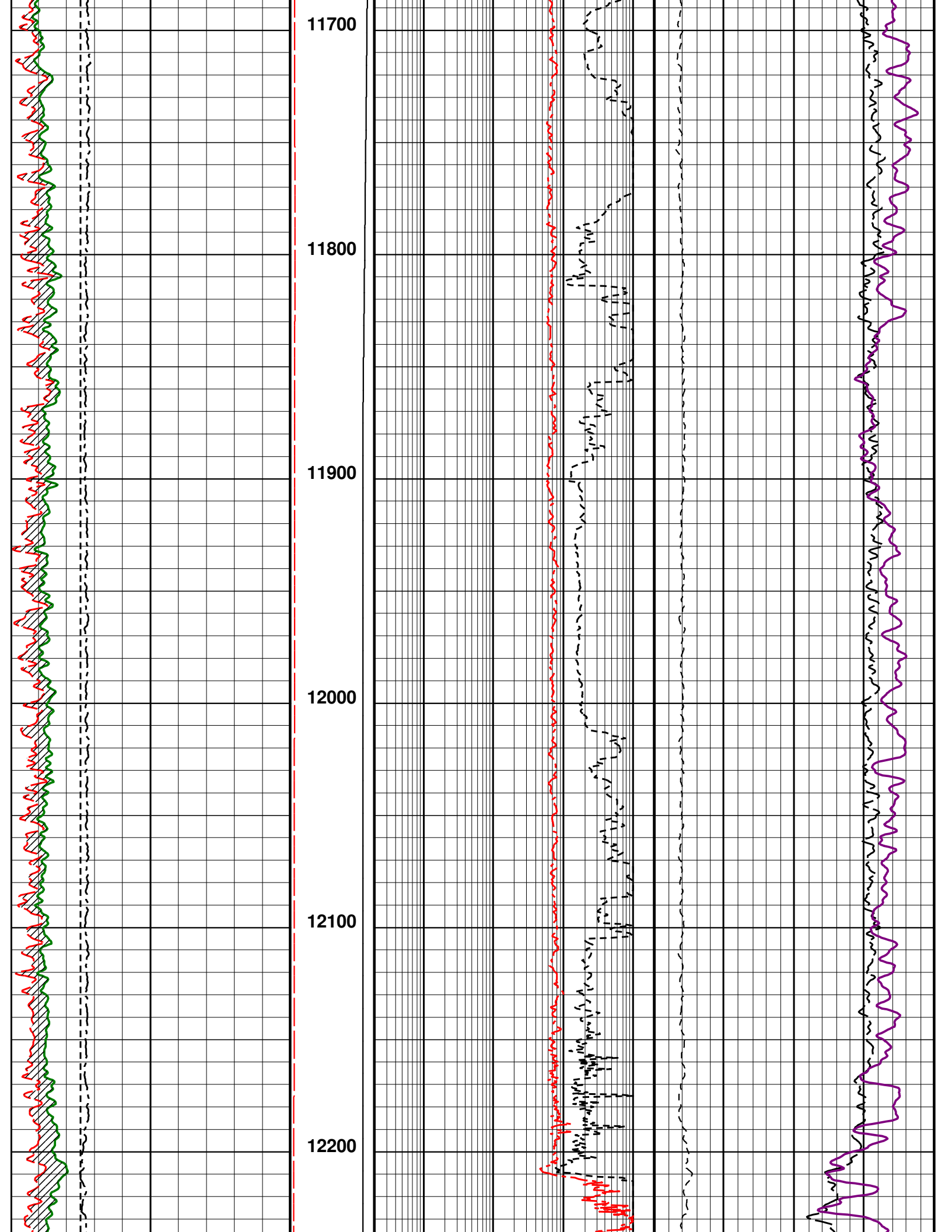


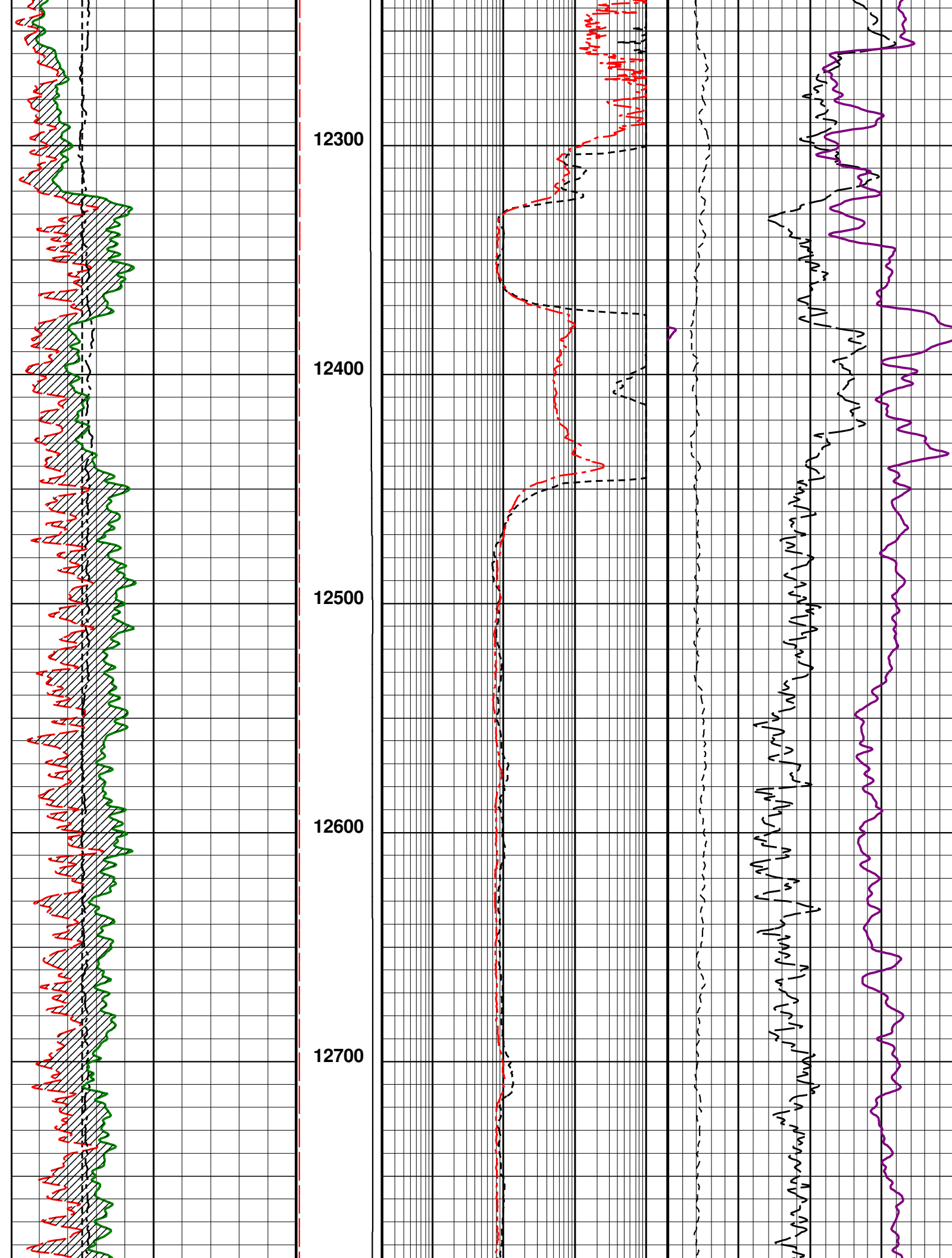


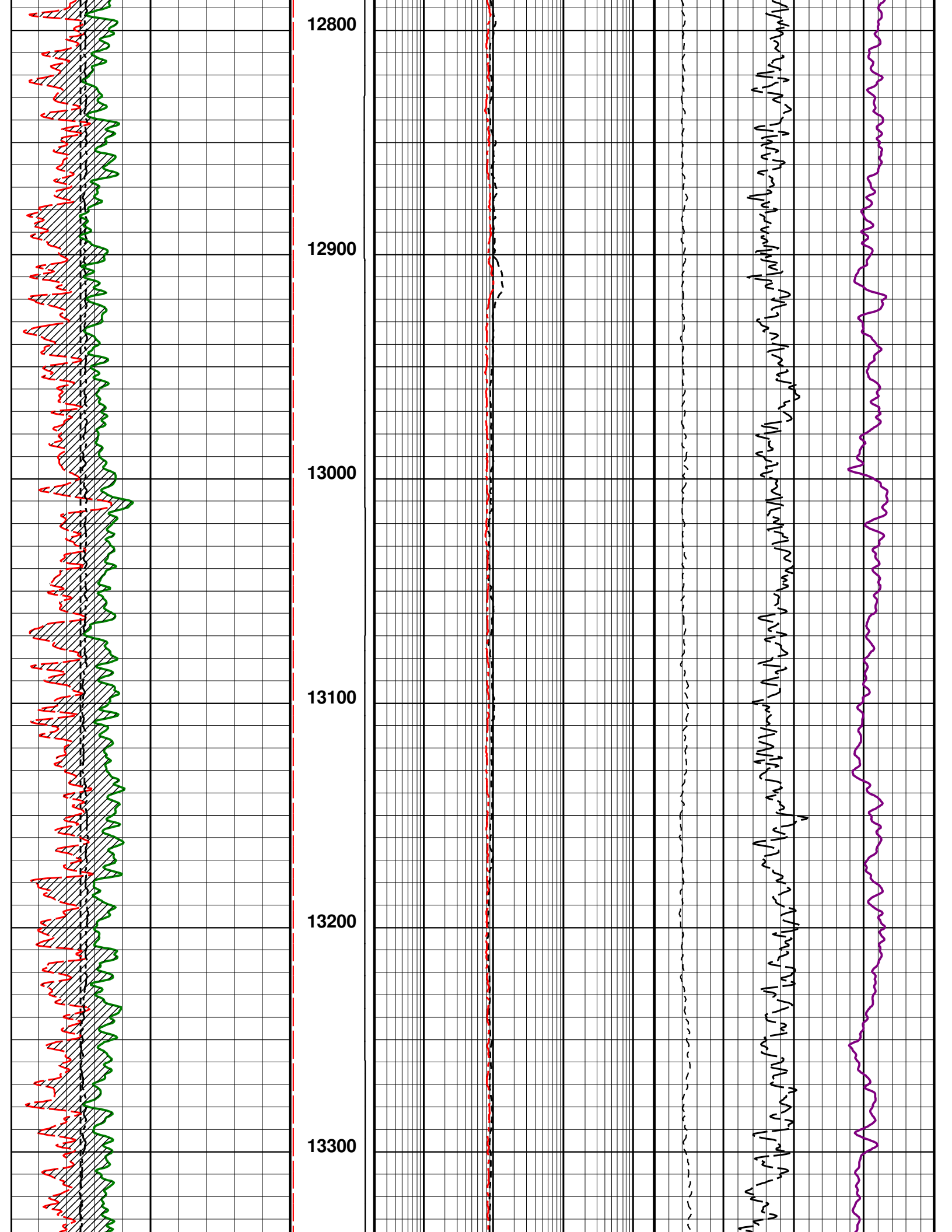


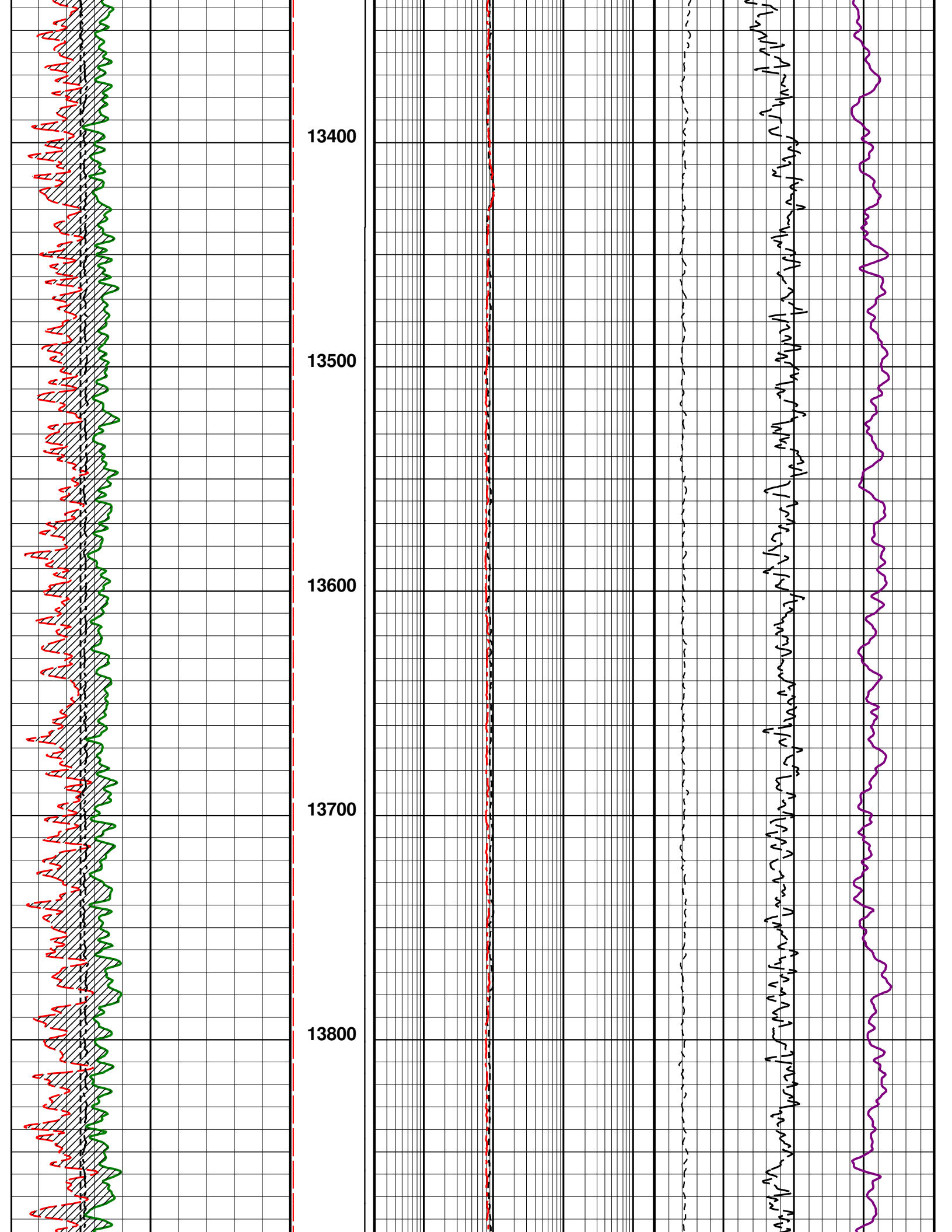


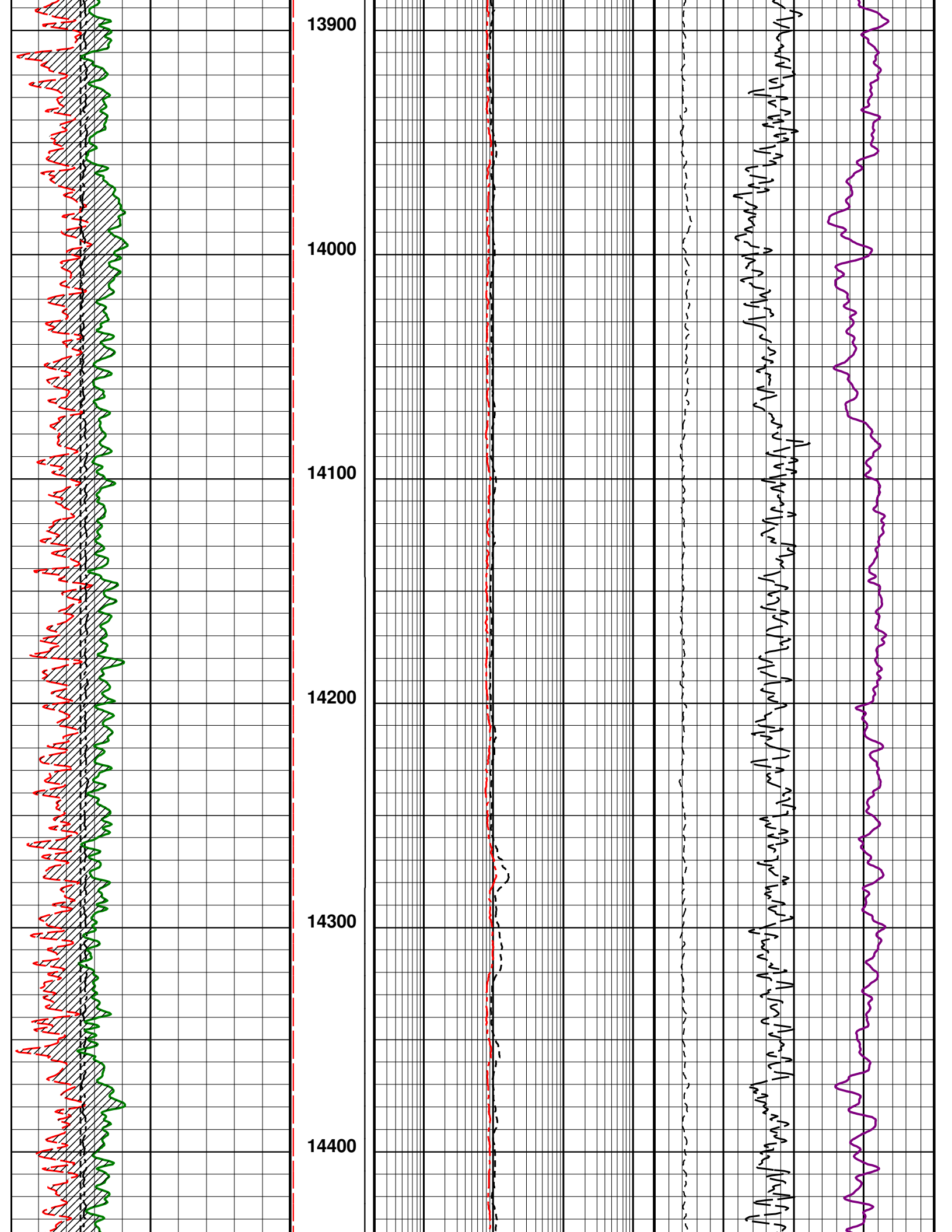


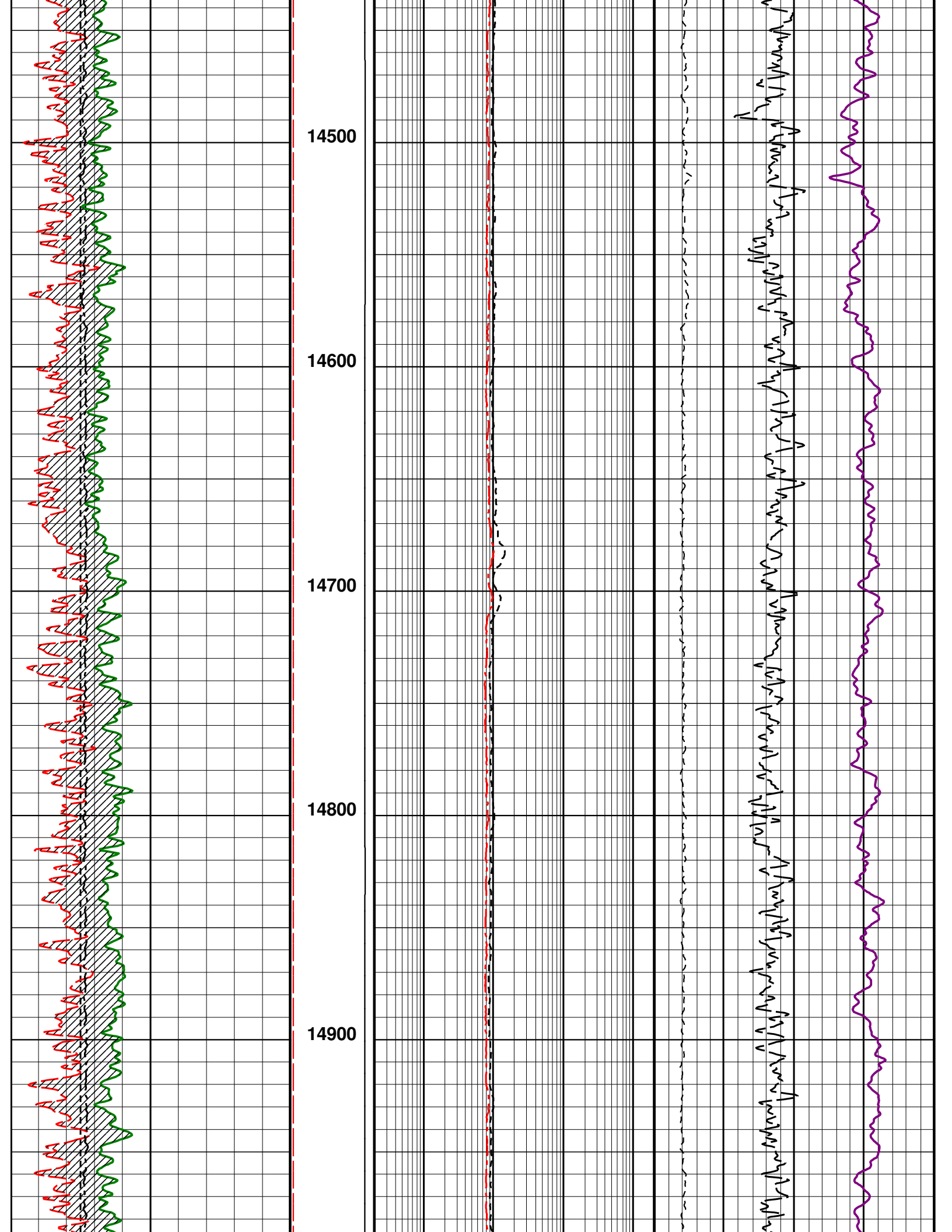


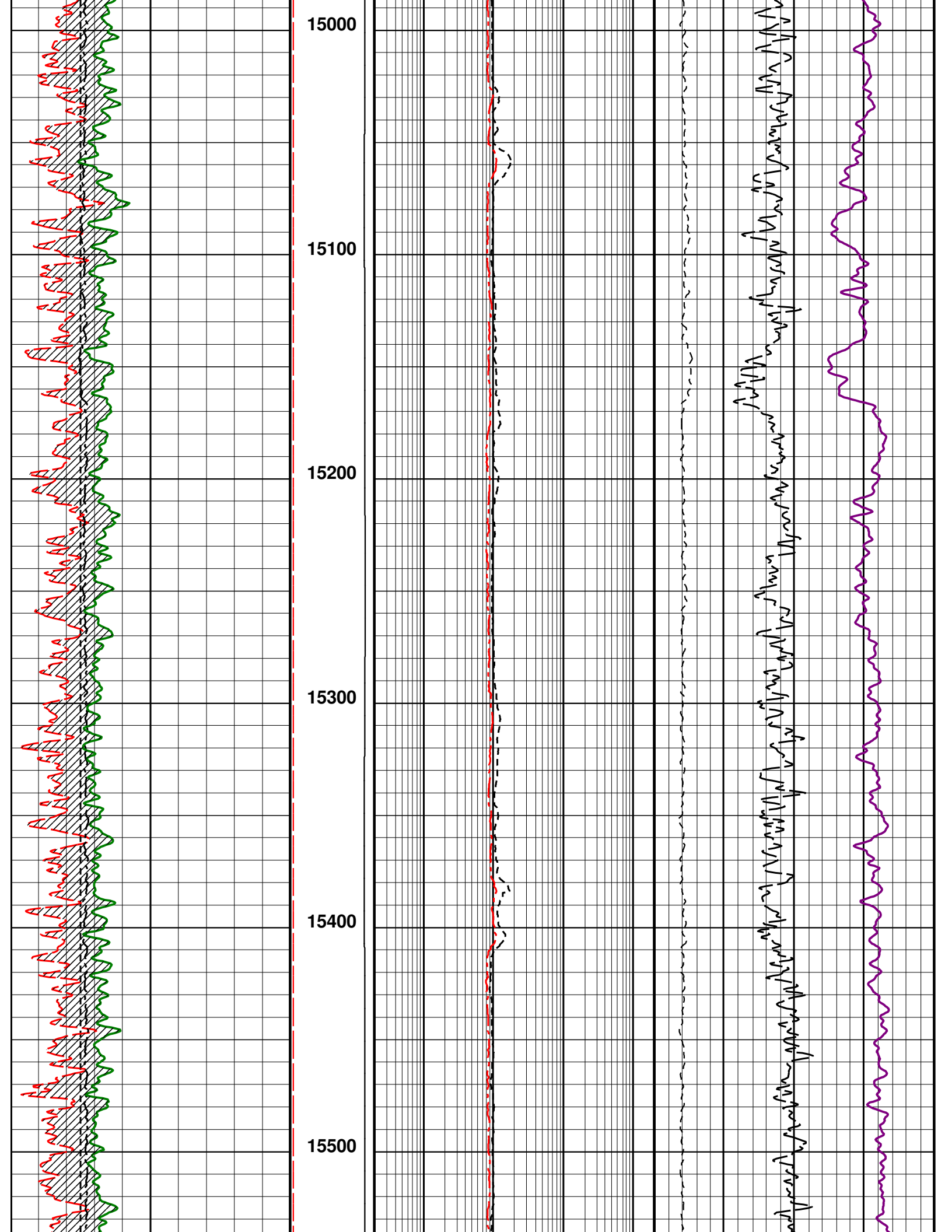


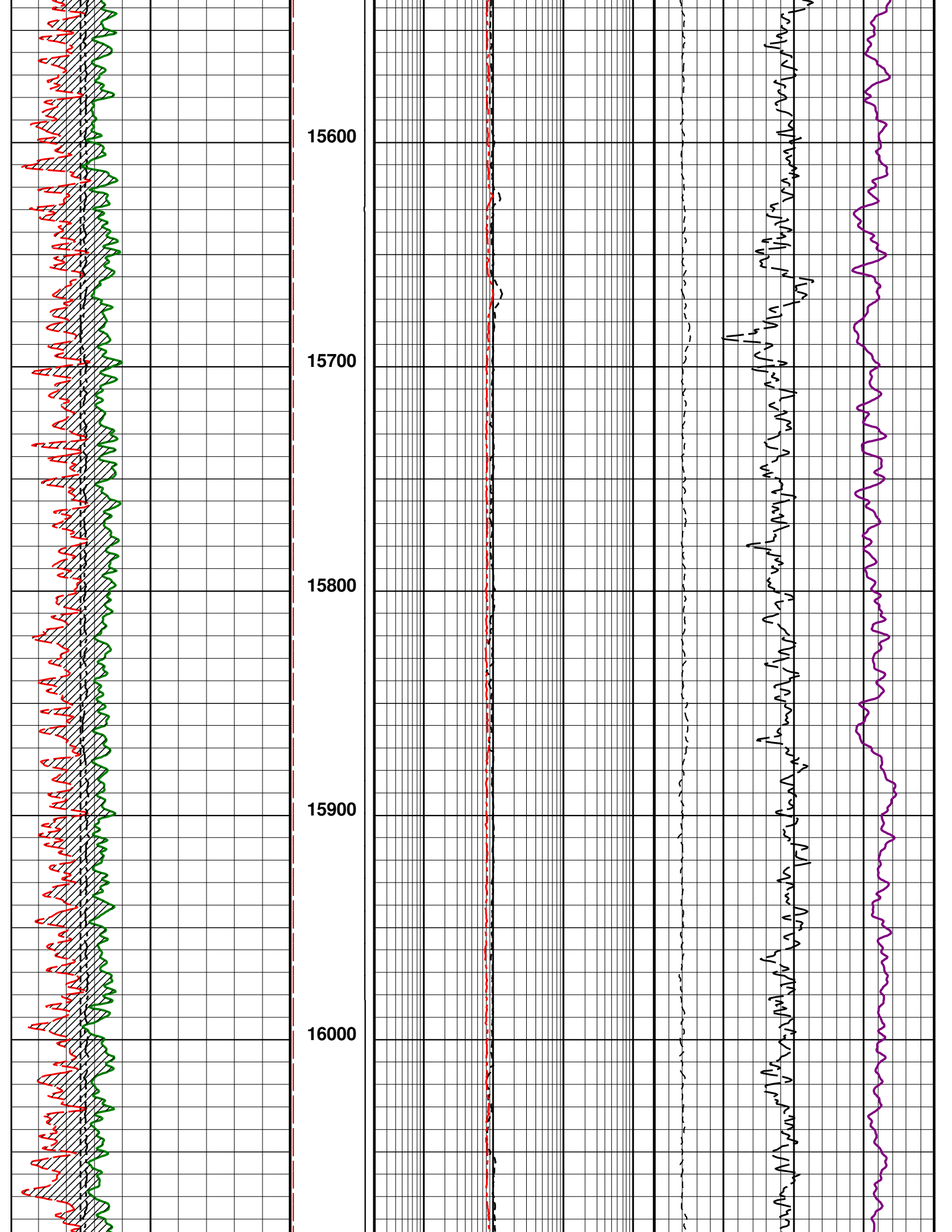


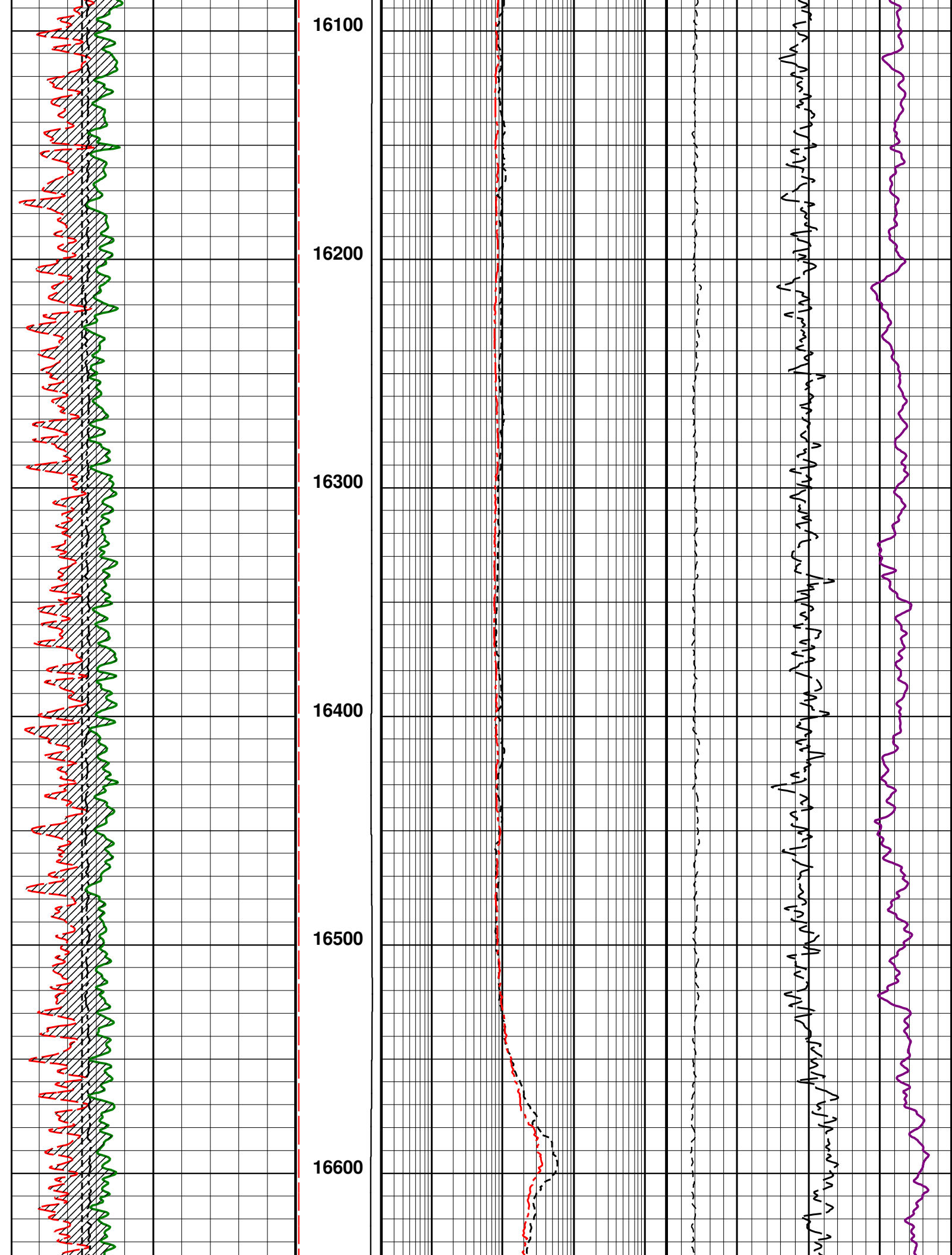


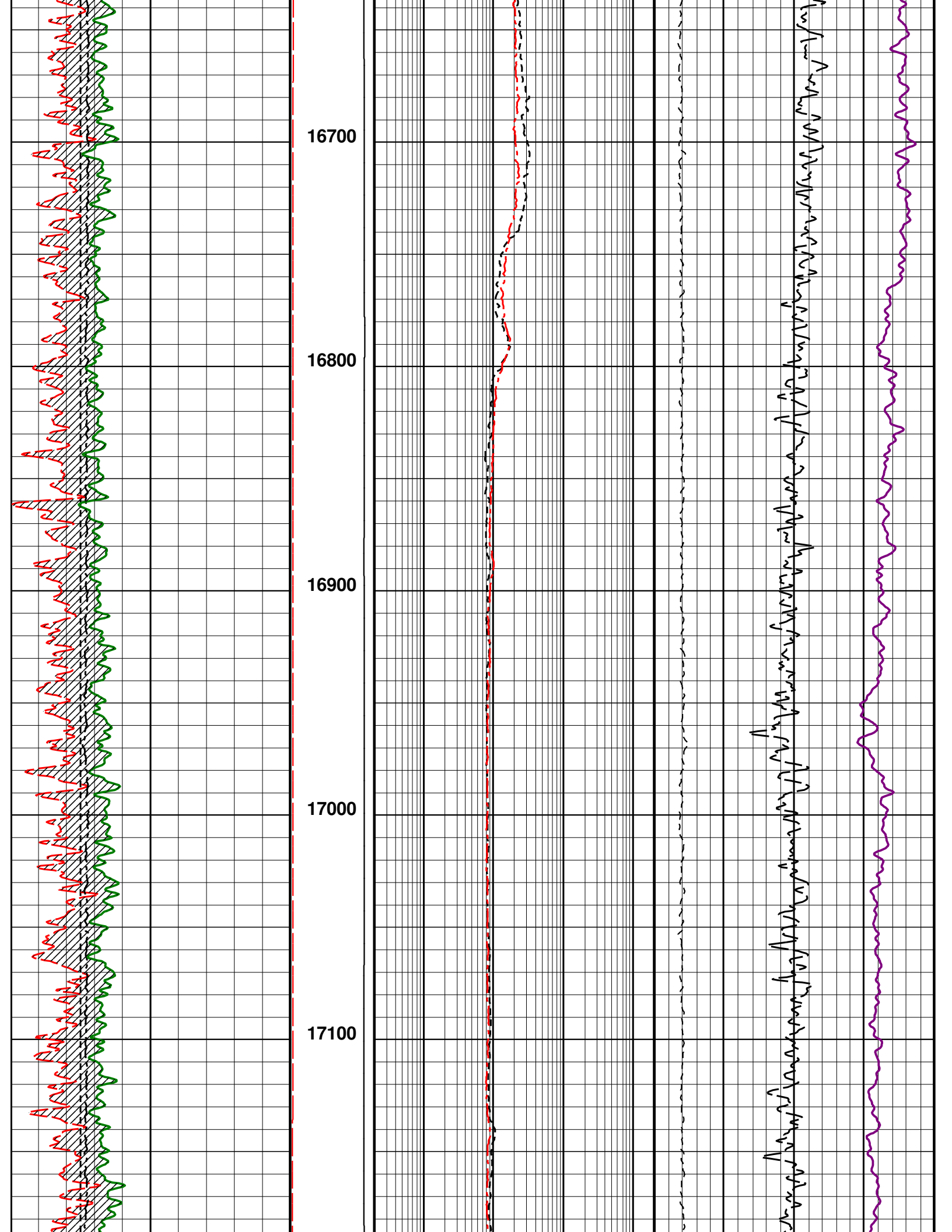


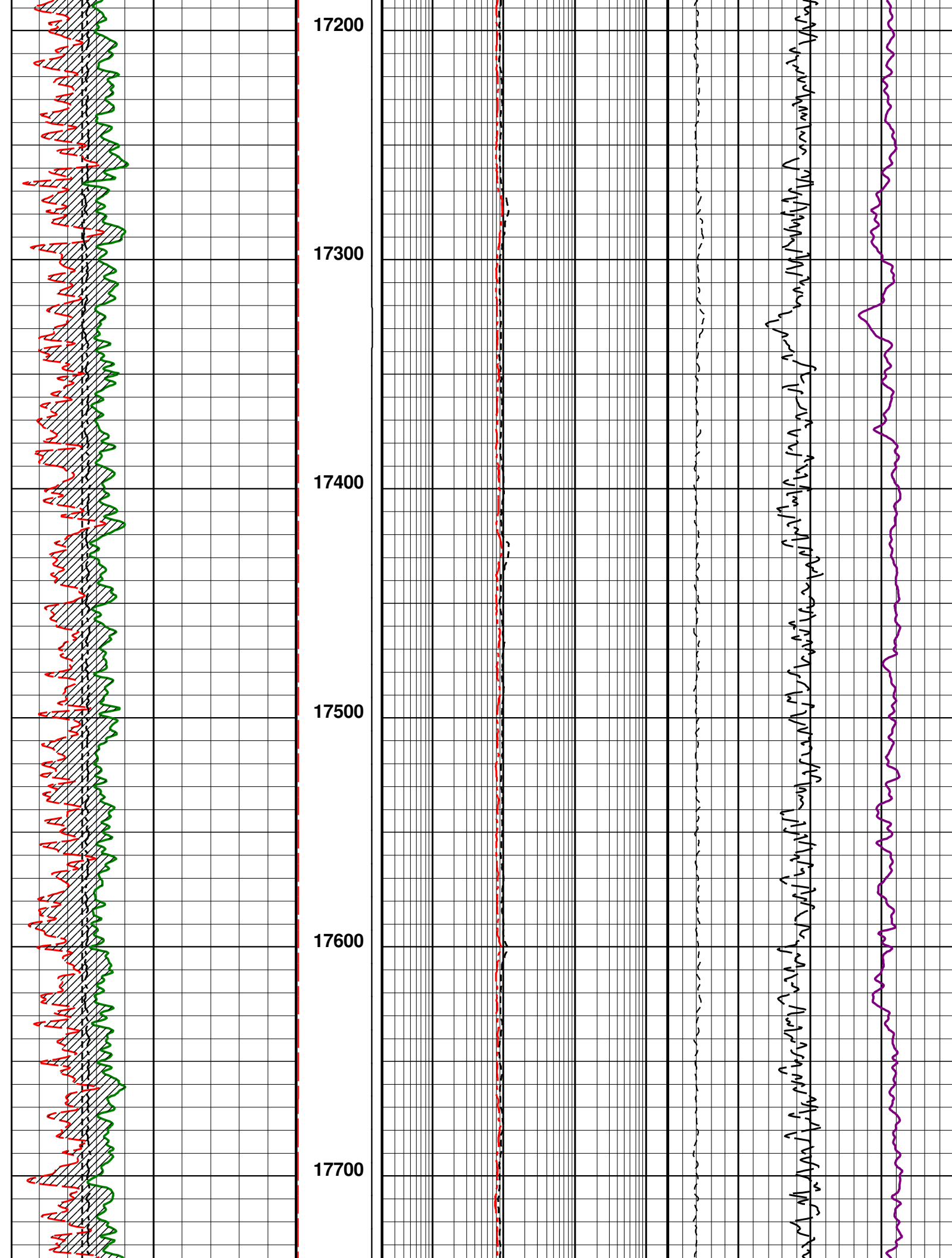


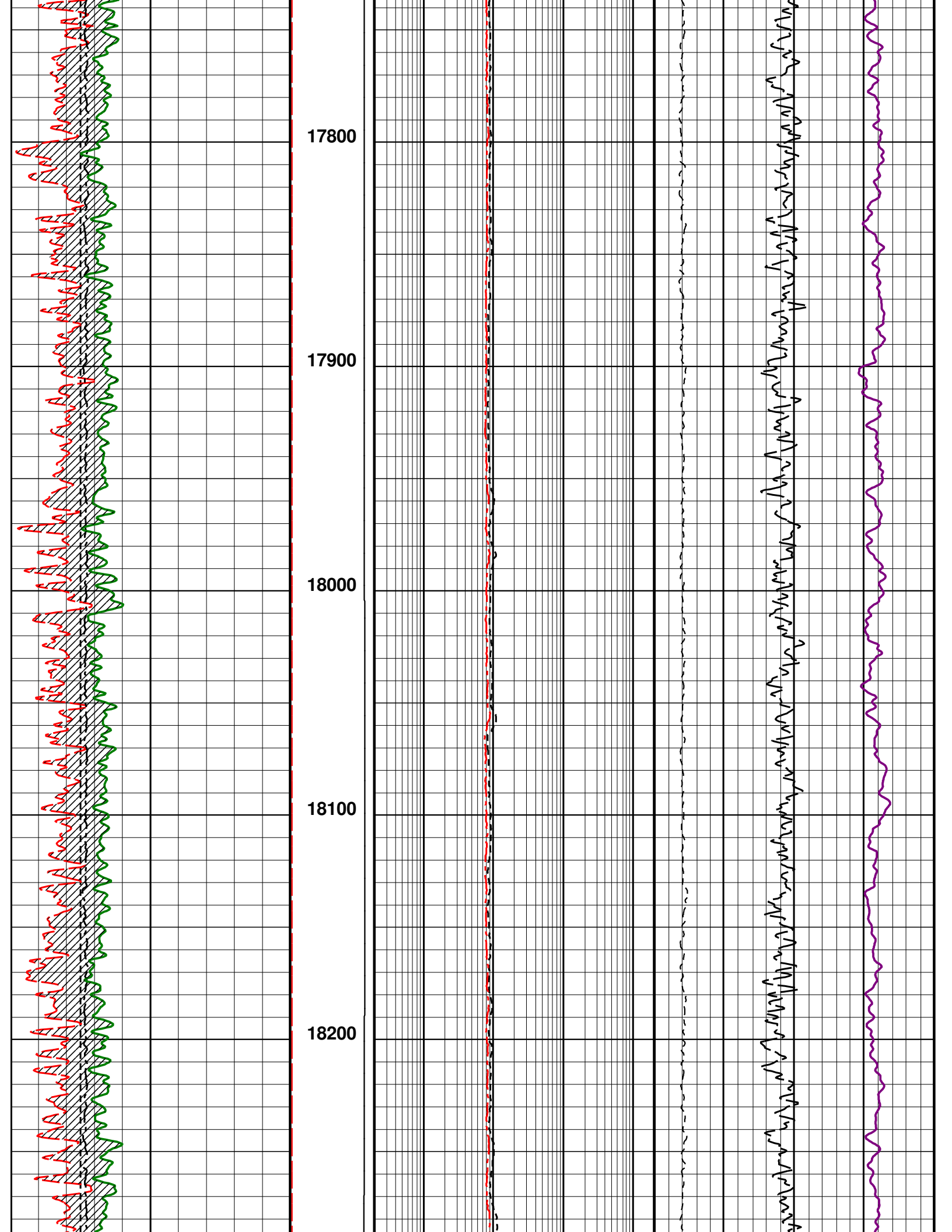


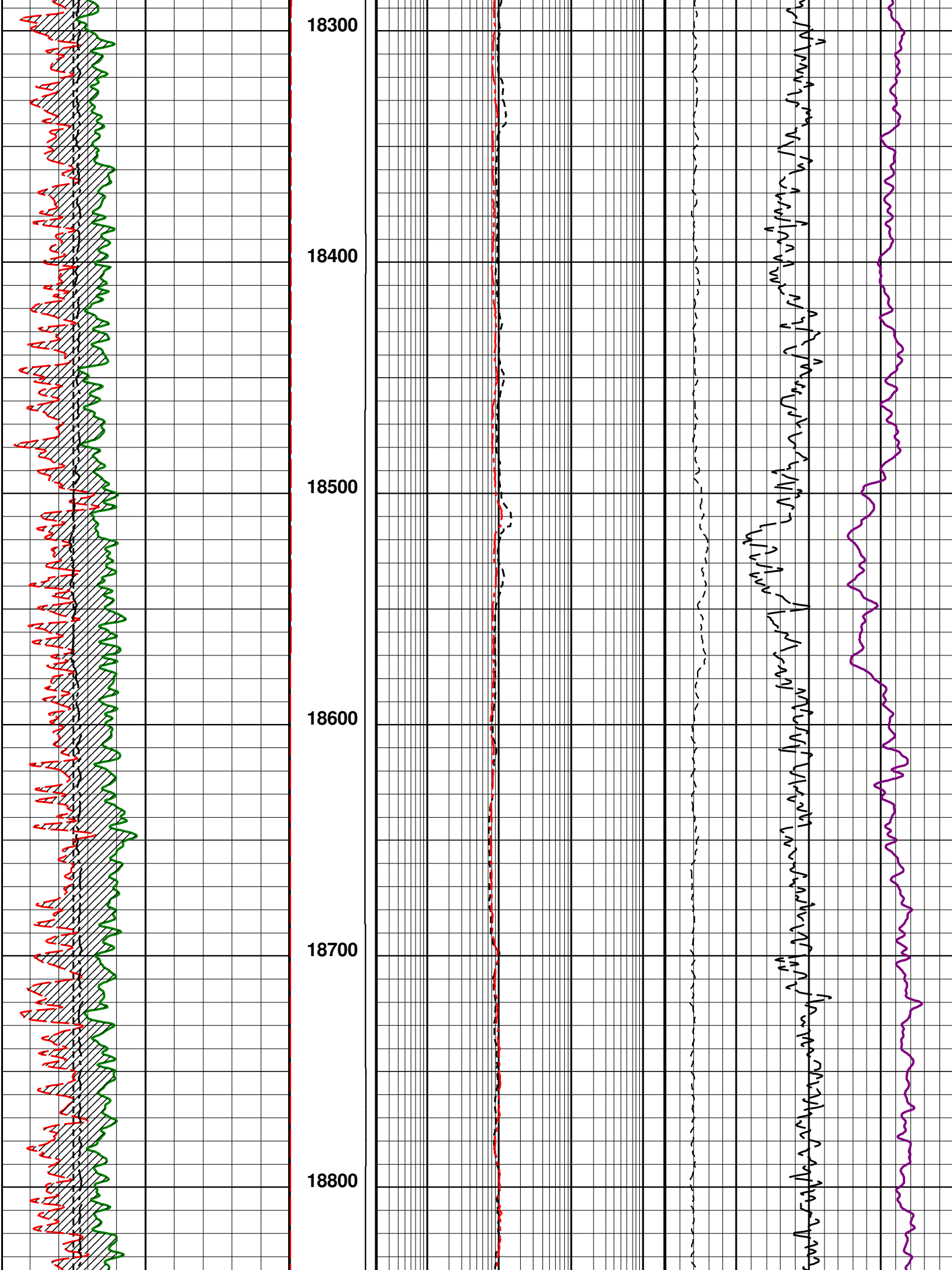


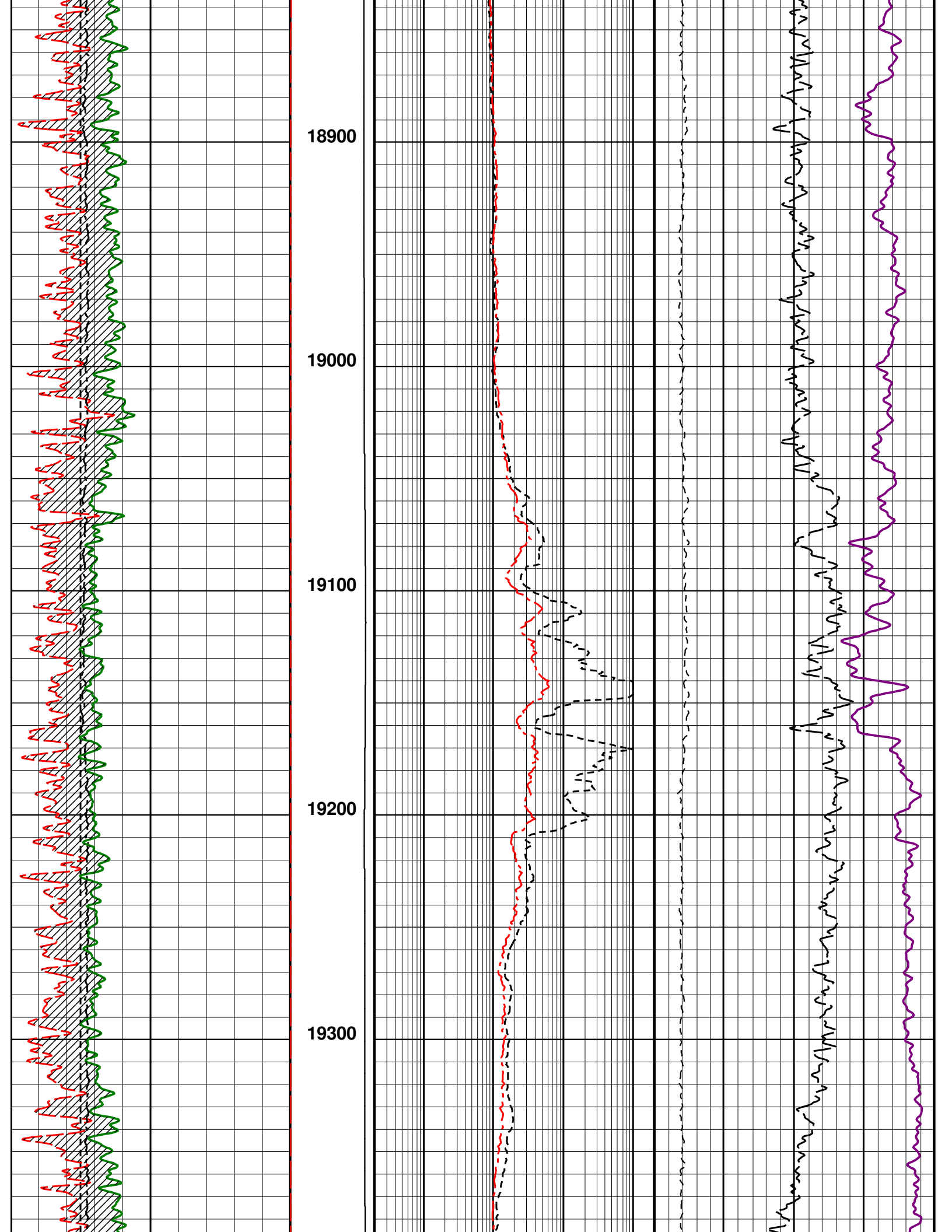


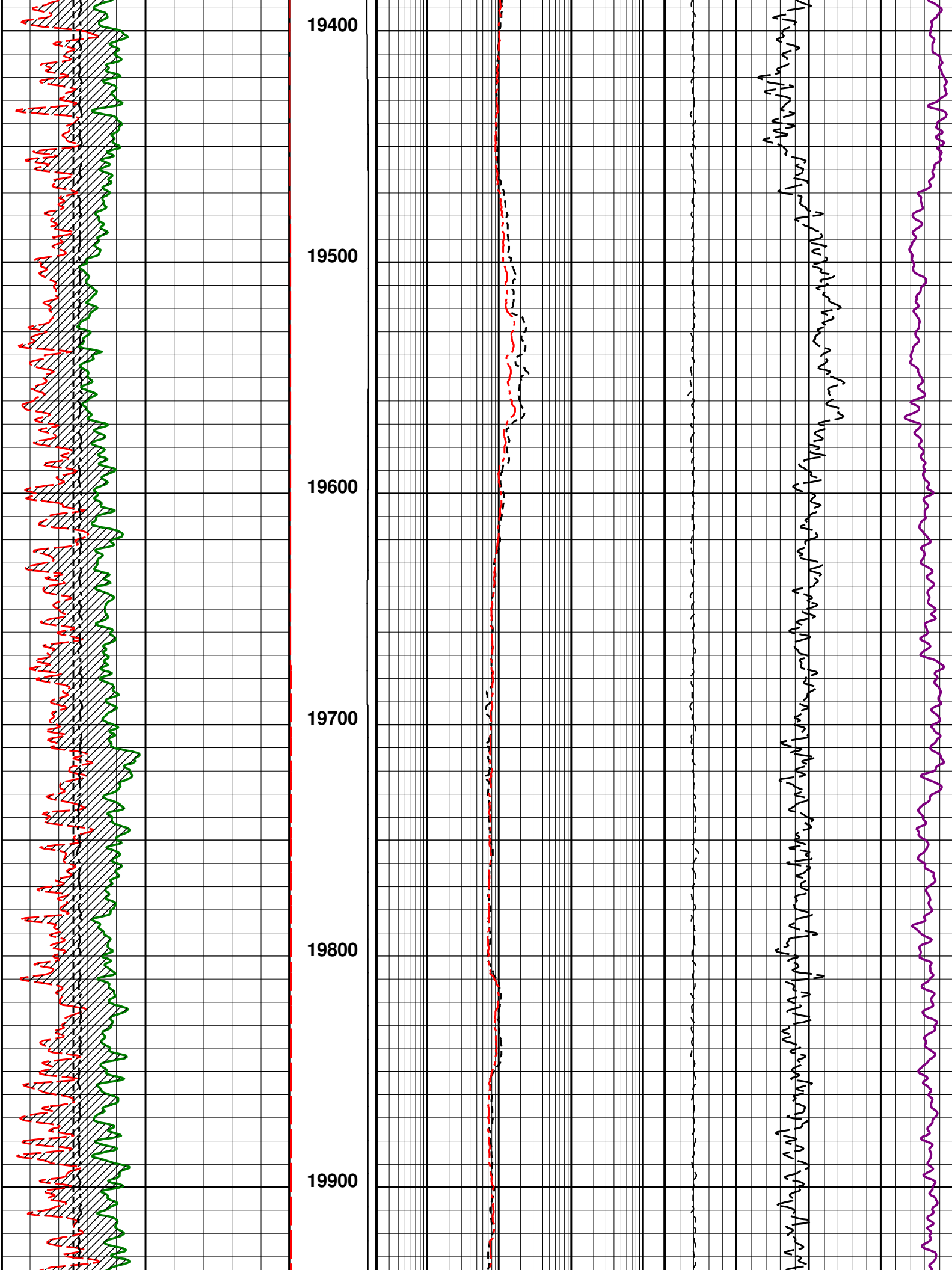


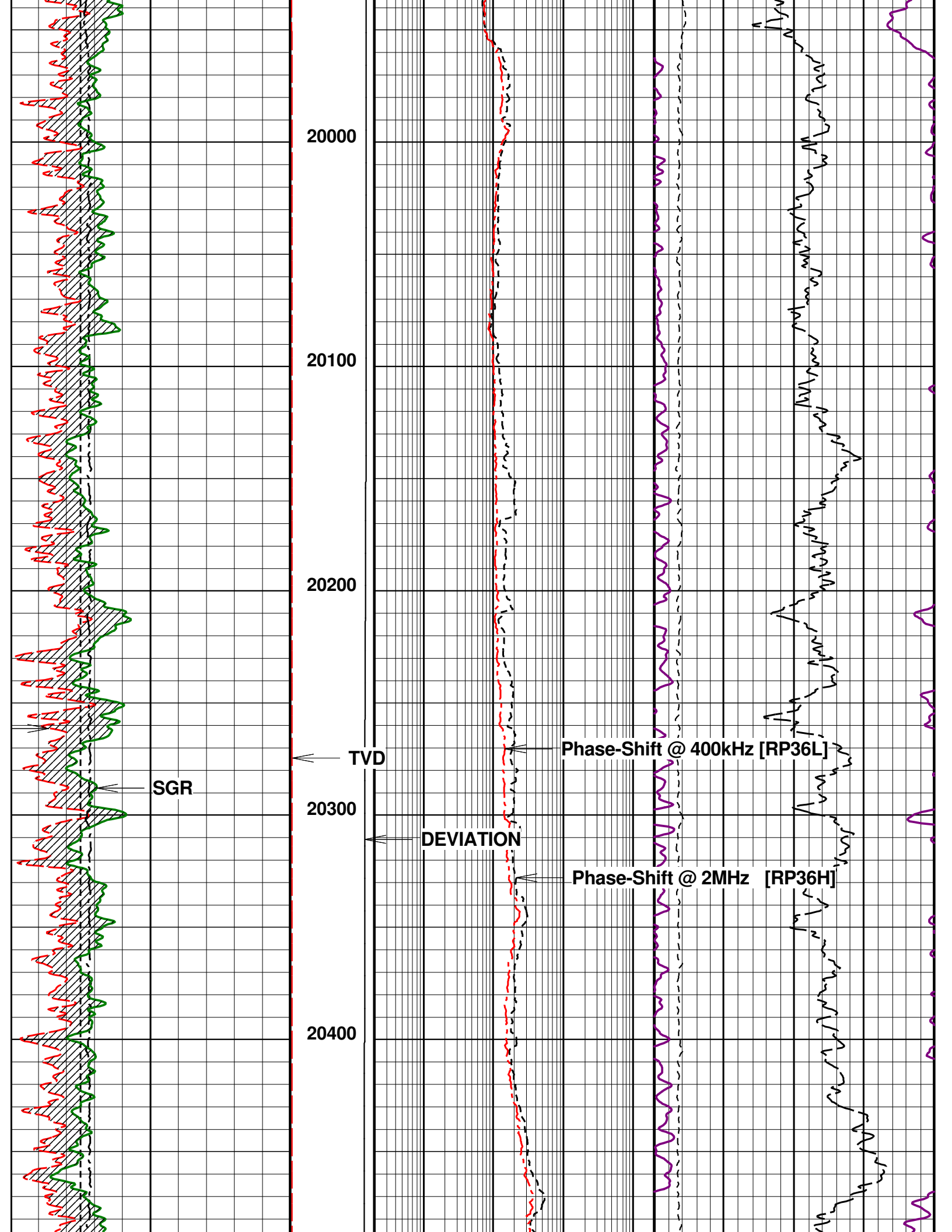


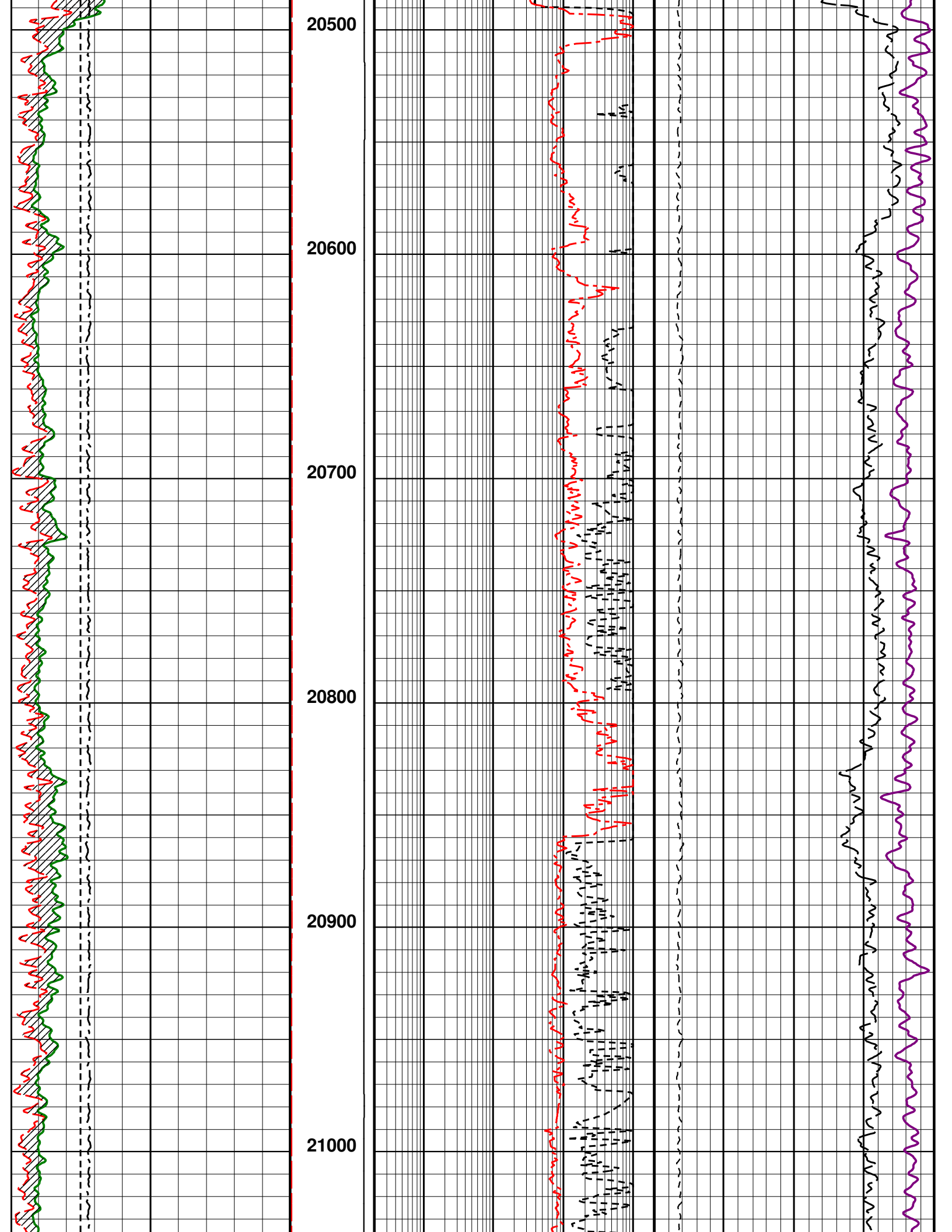


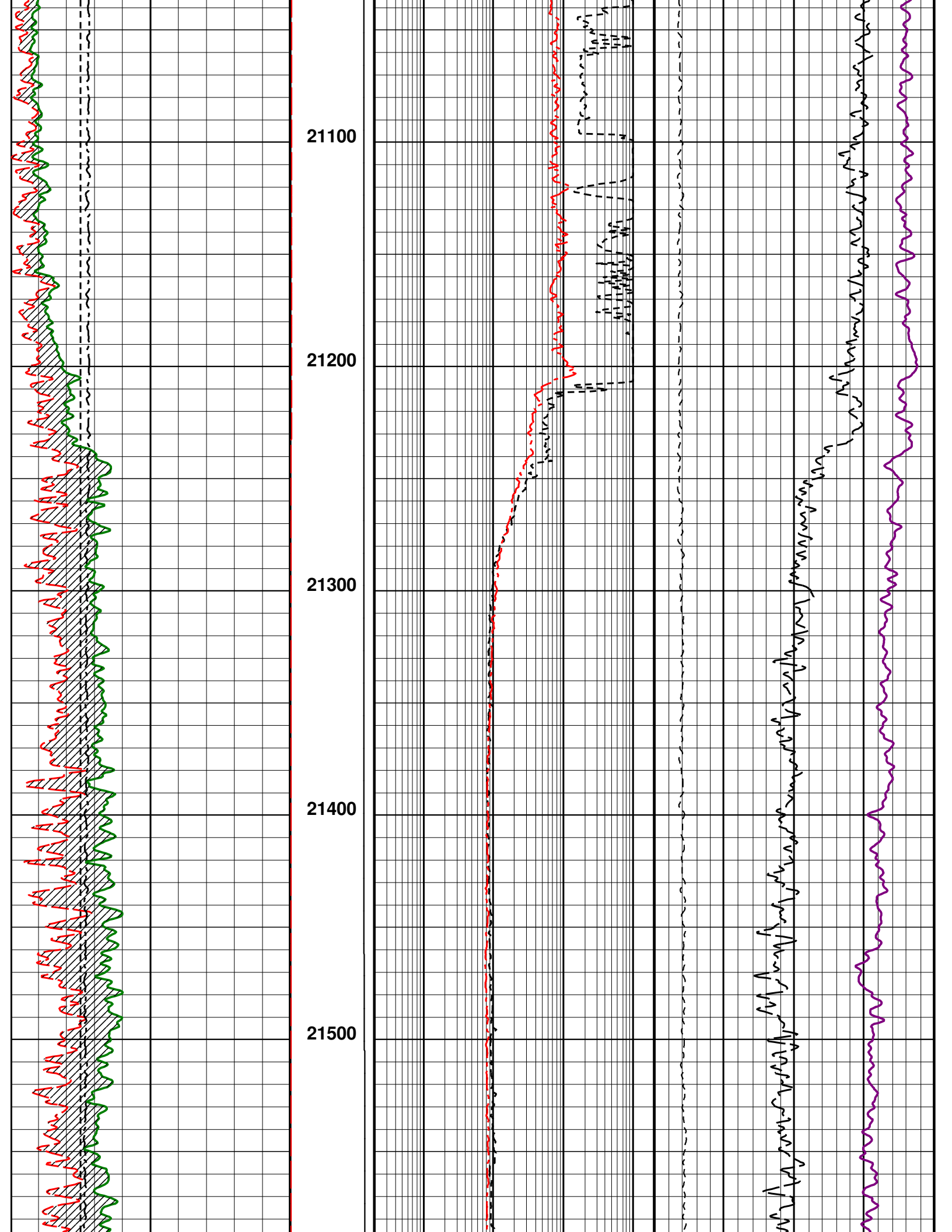


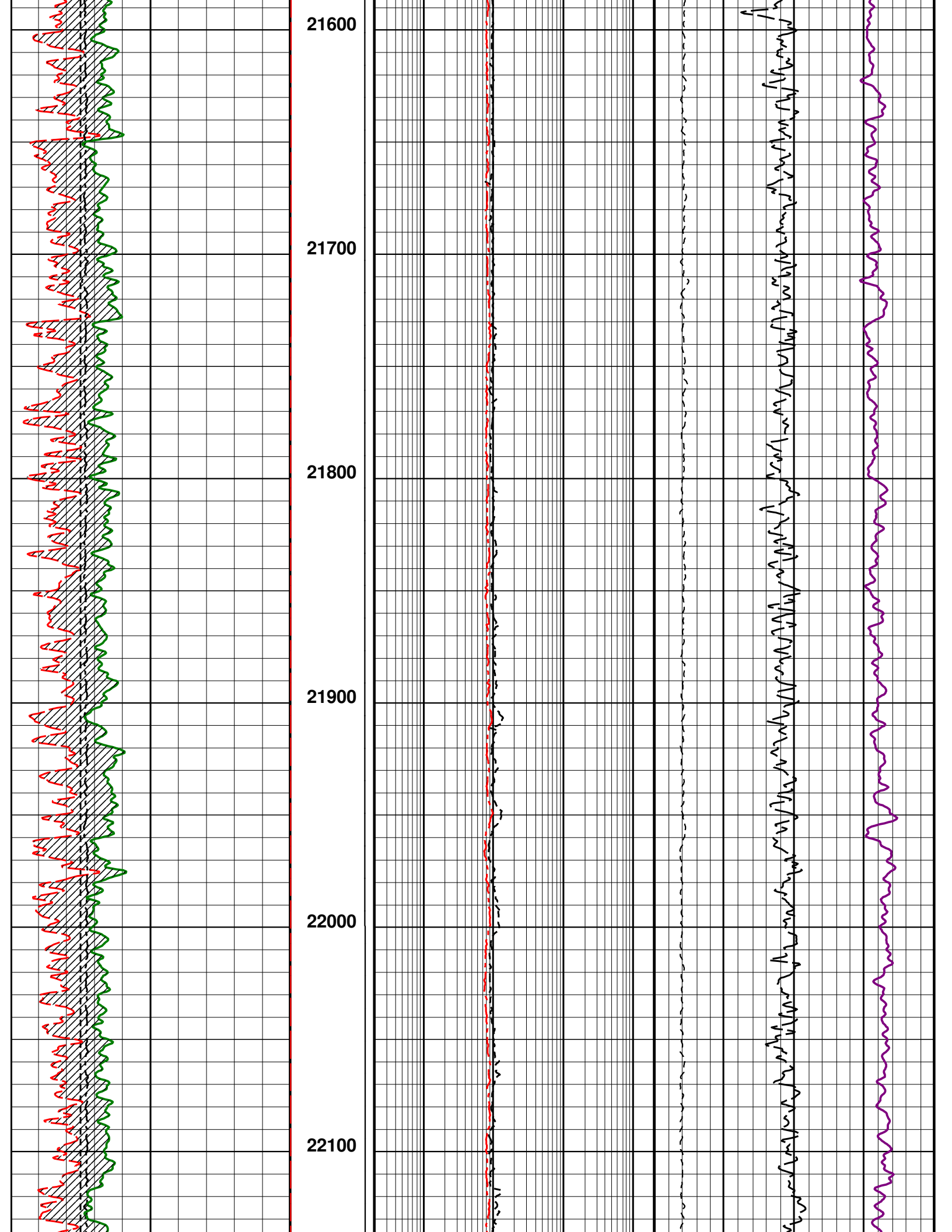


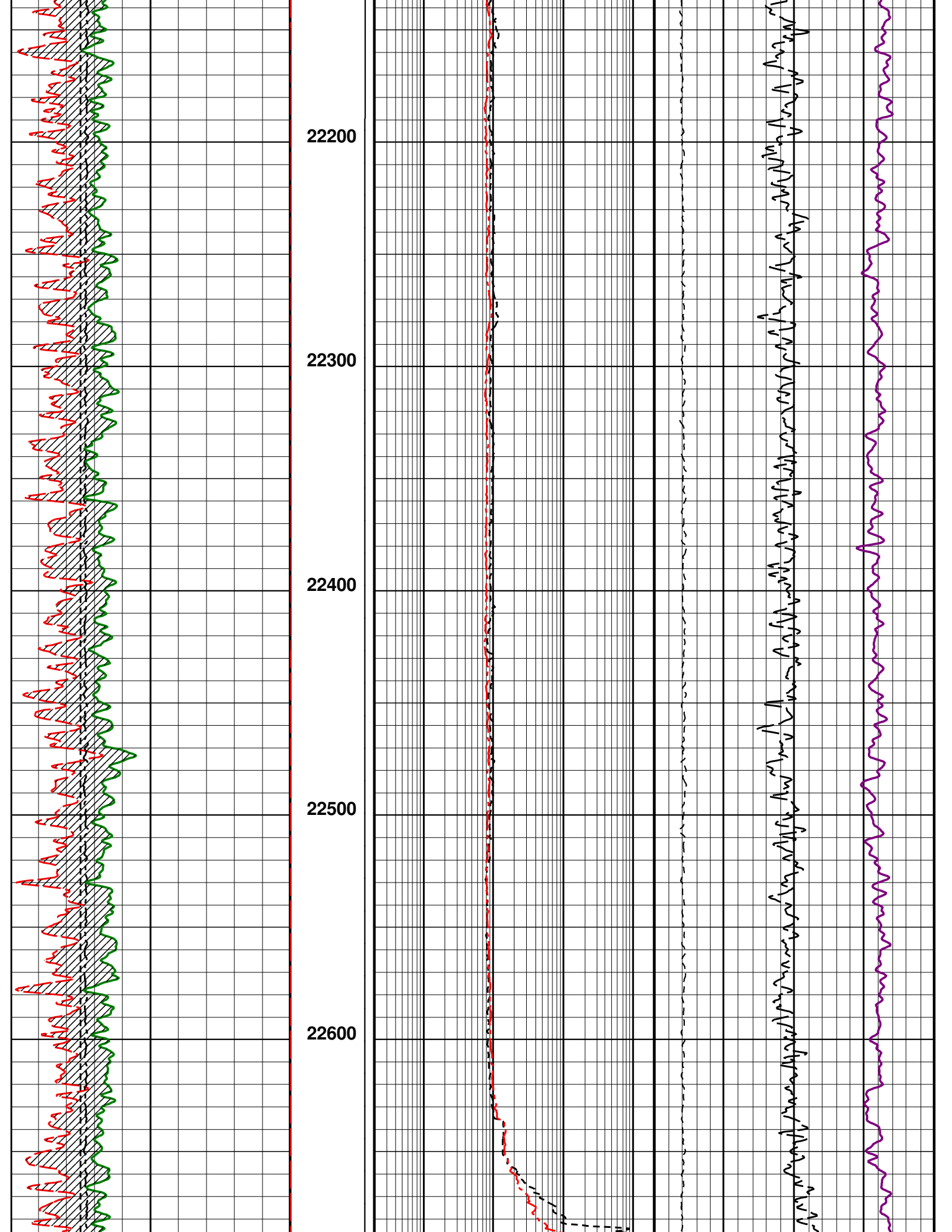


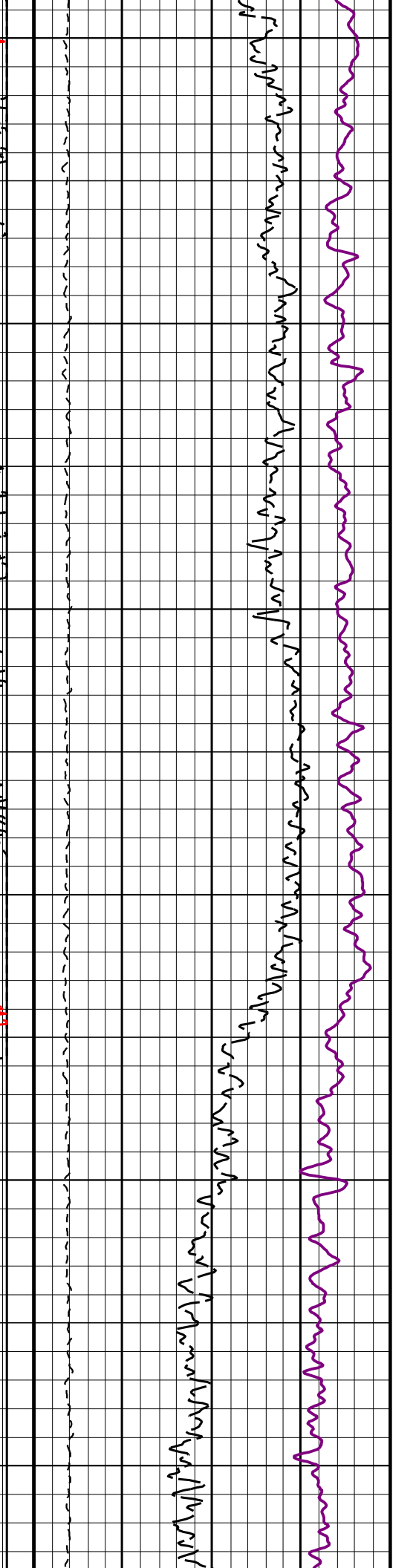
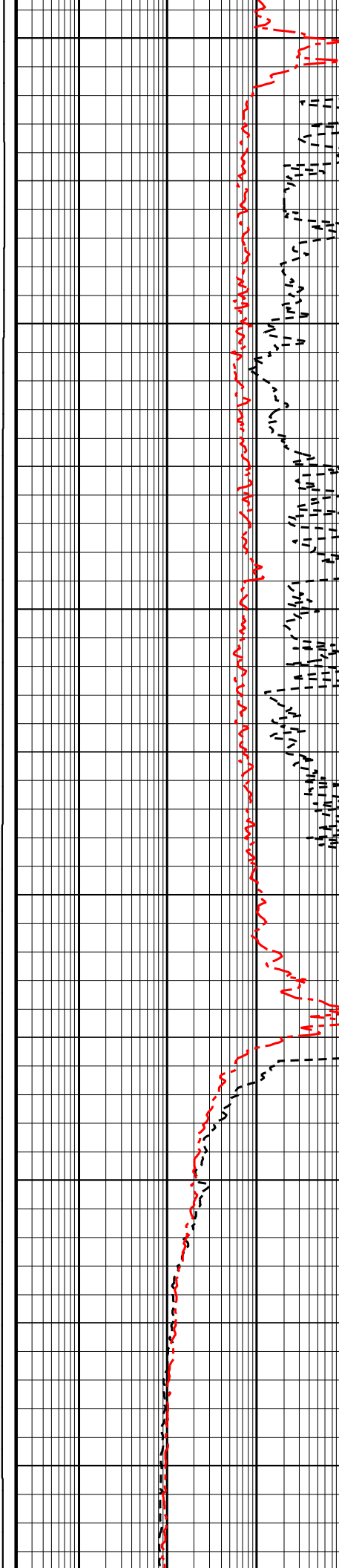
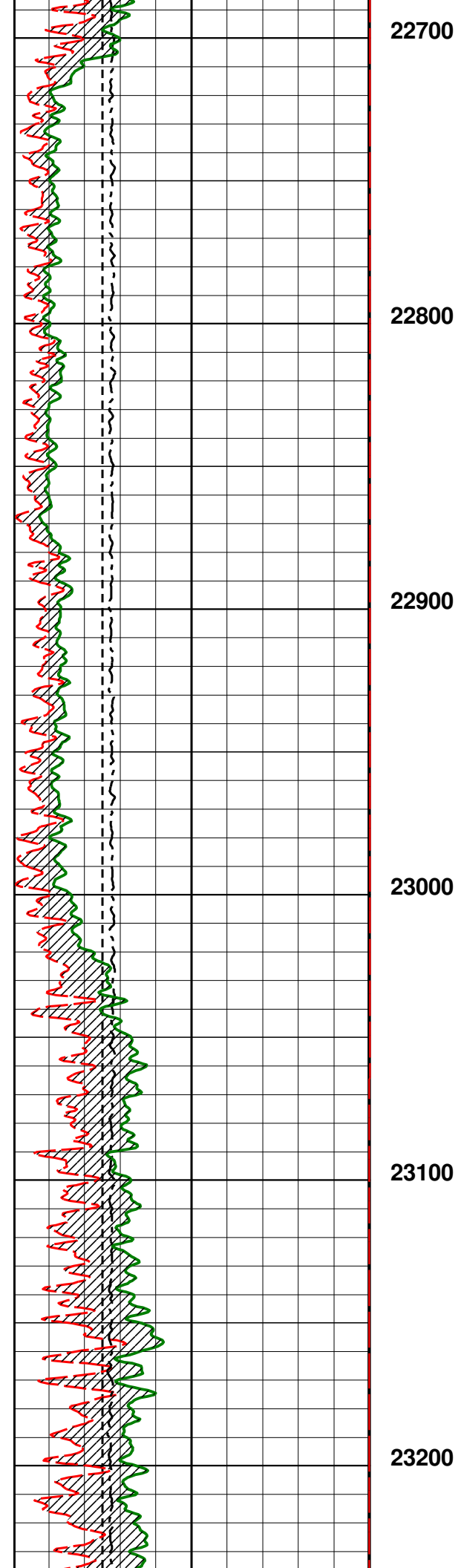


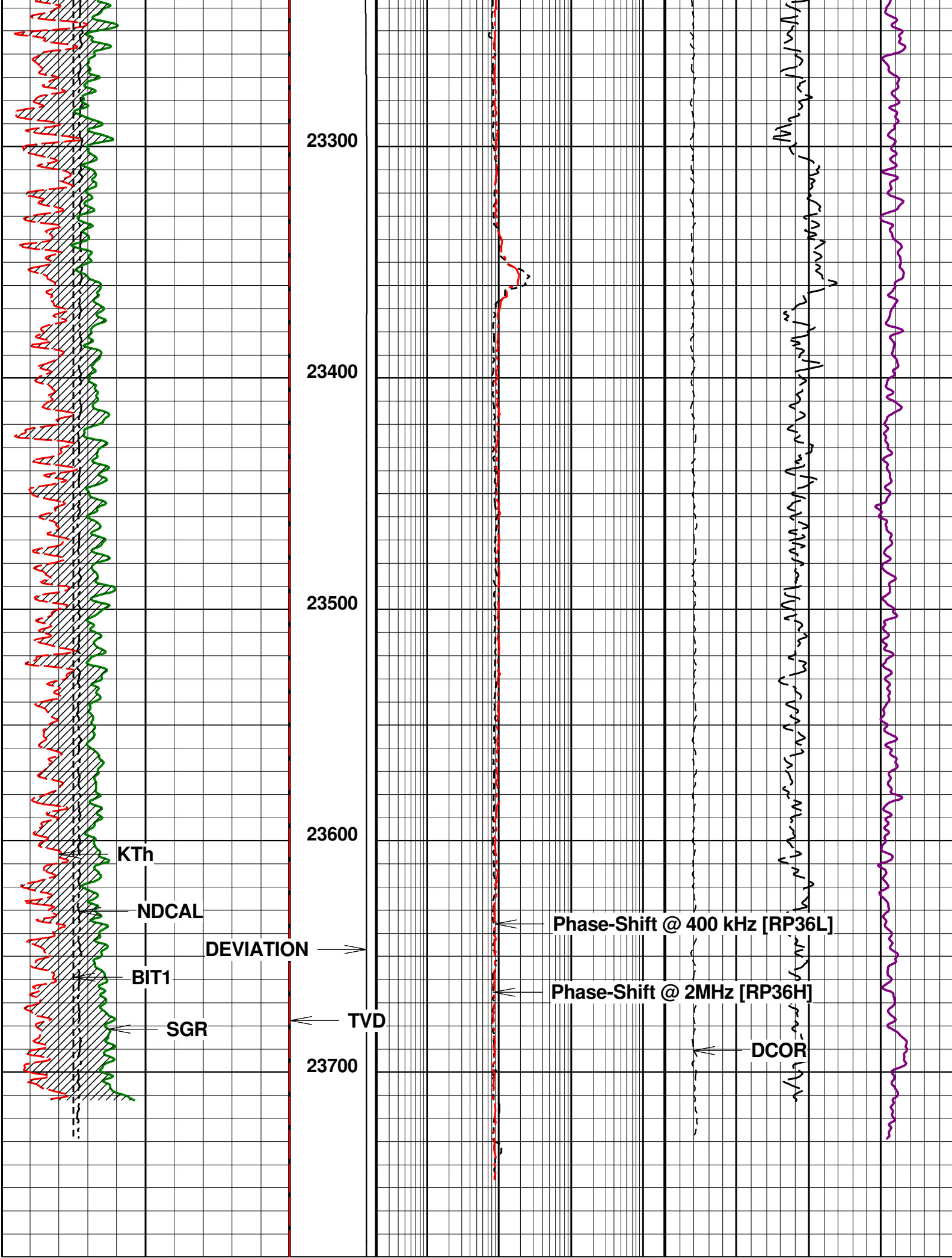


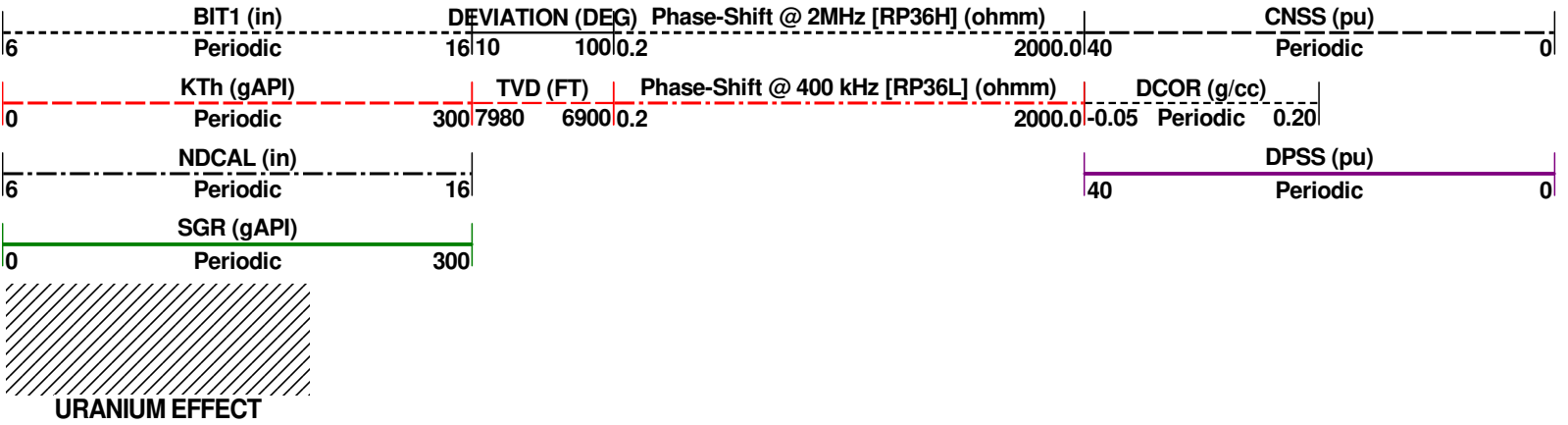






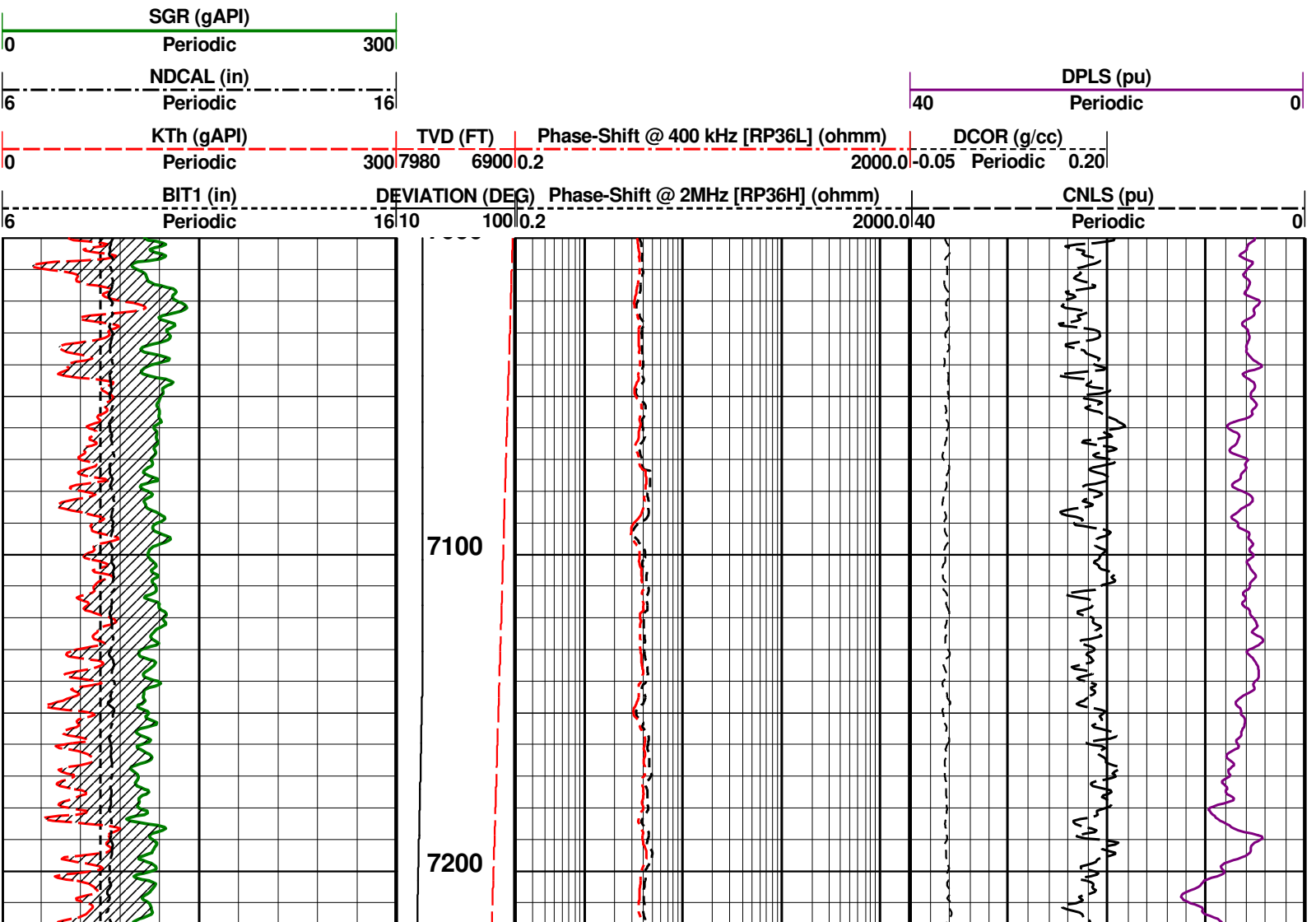


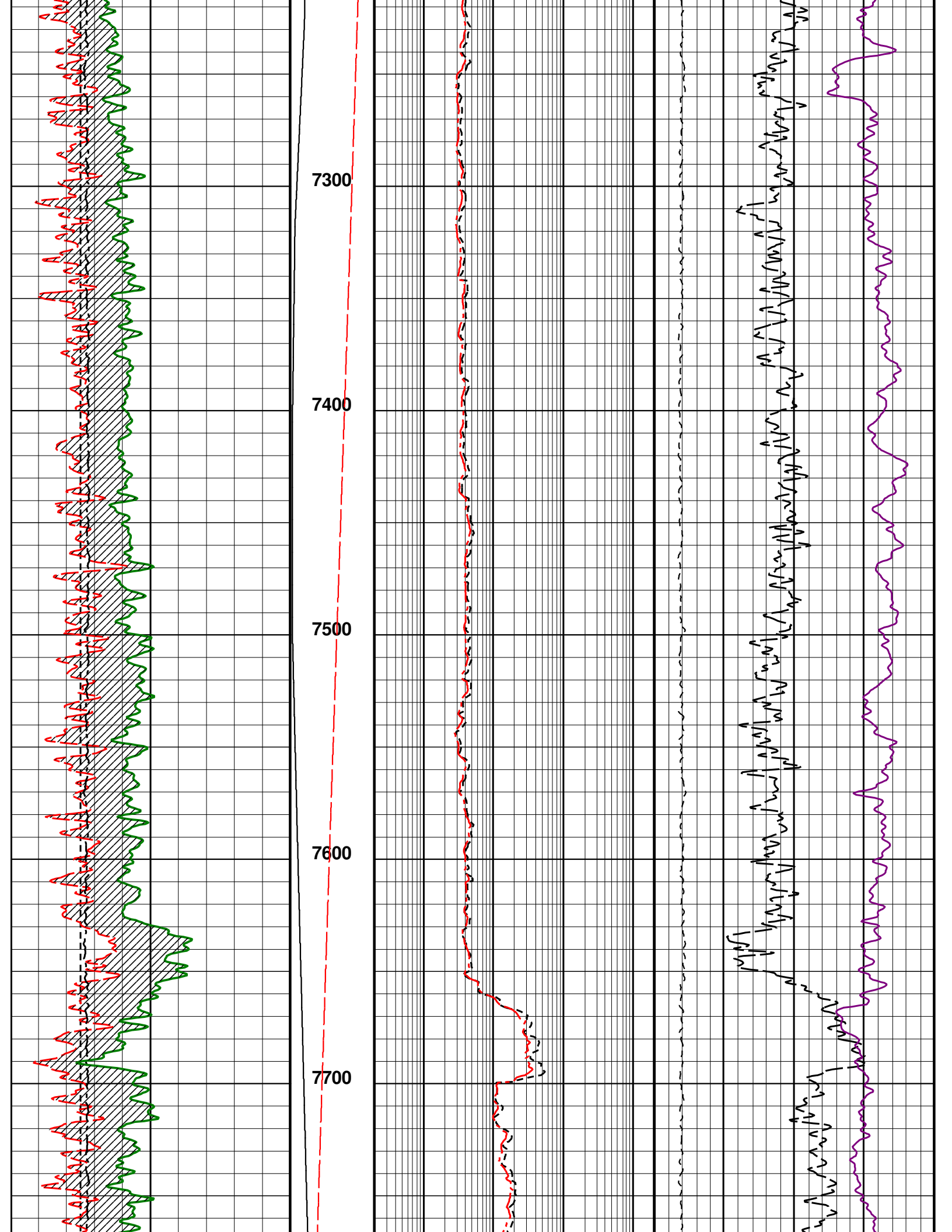


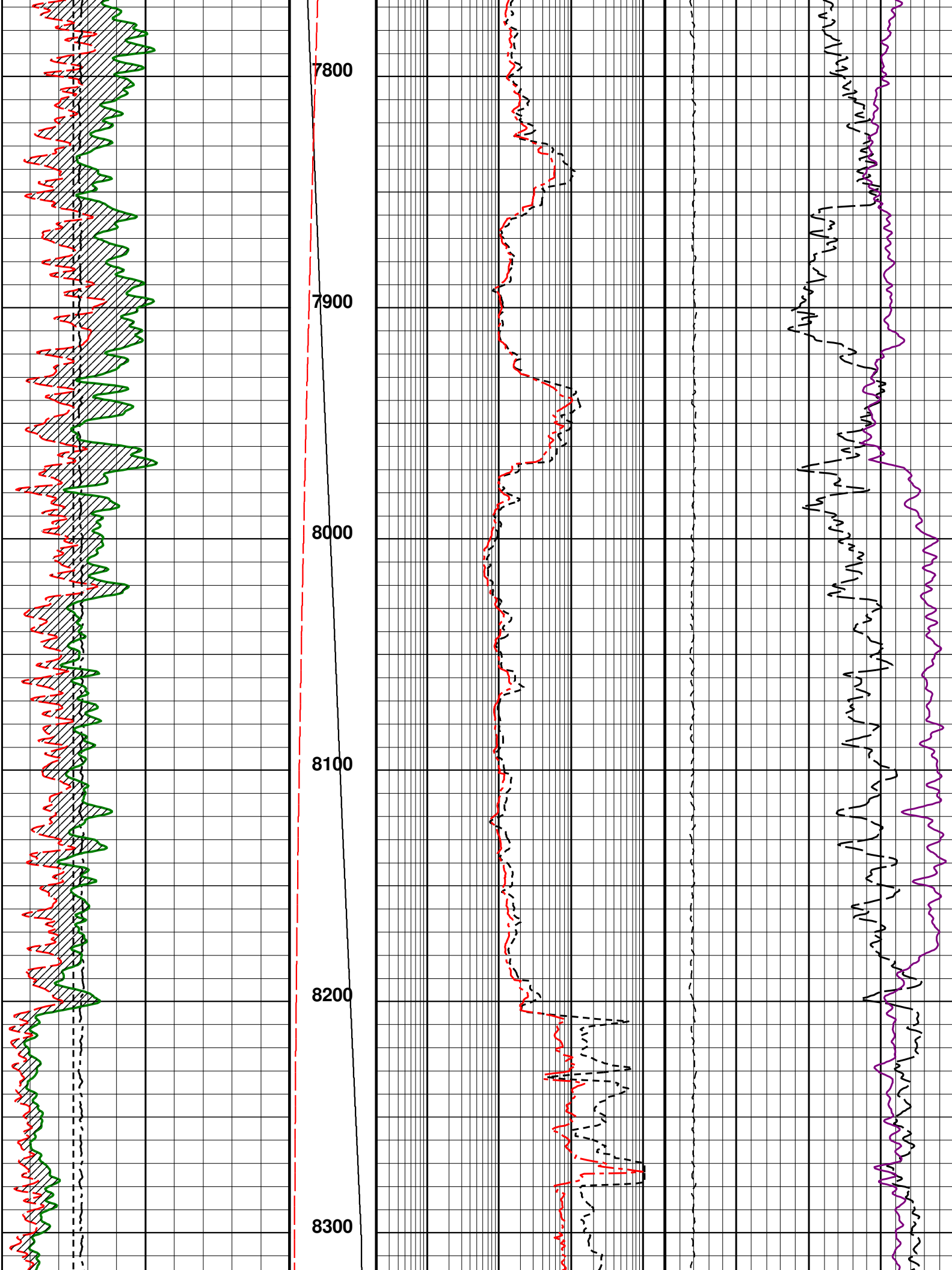


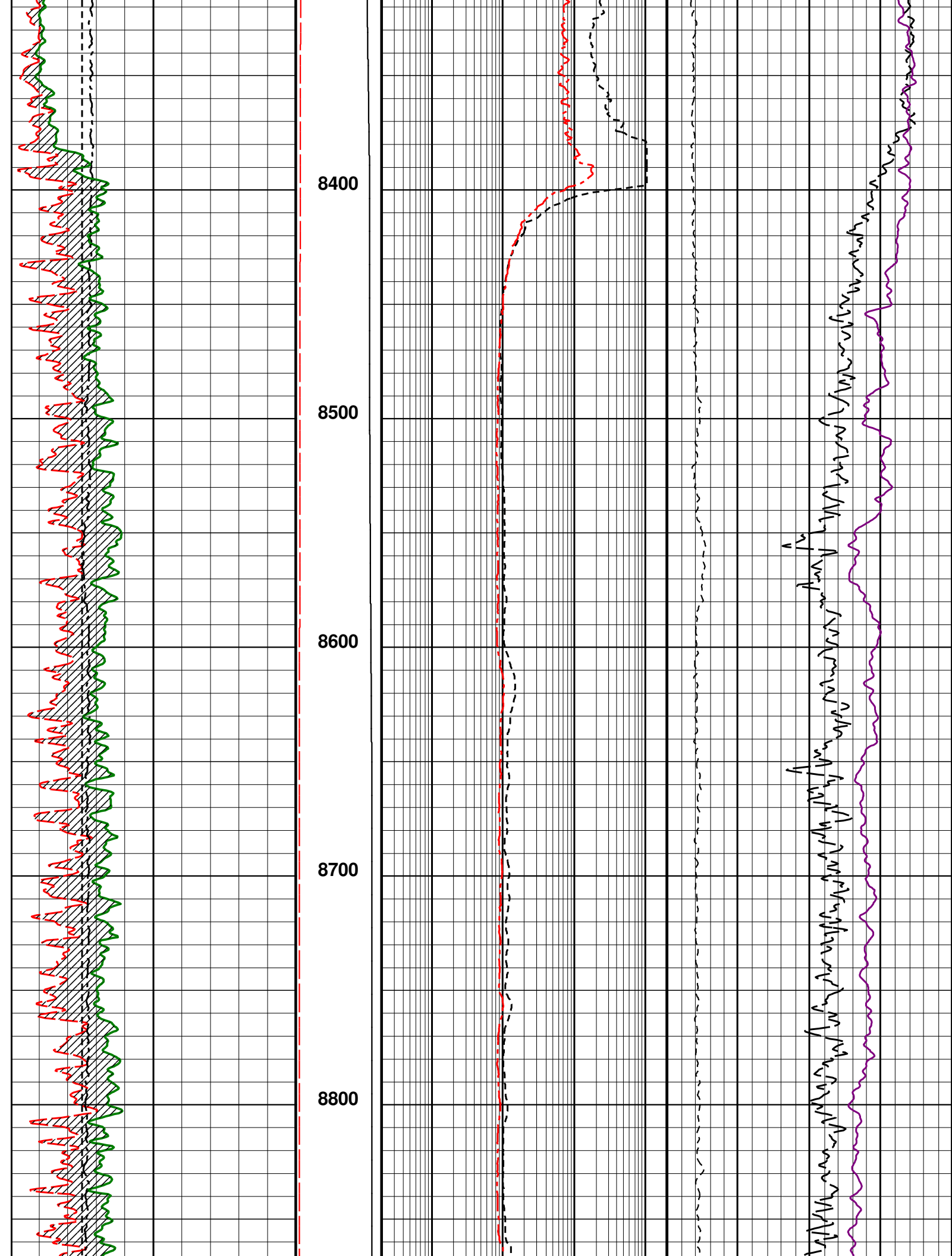
2" MAIN PASS LIMESTONE

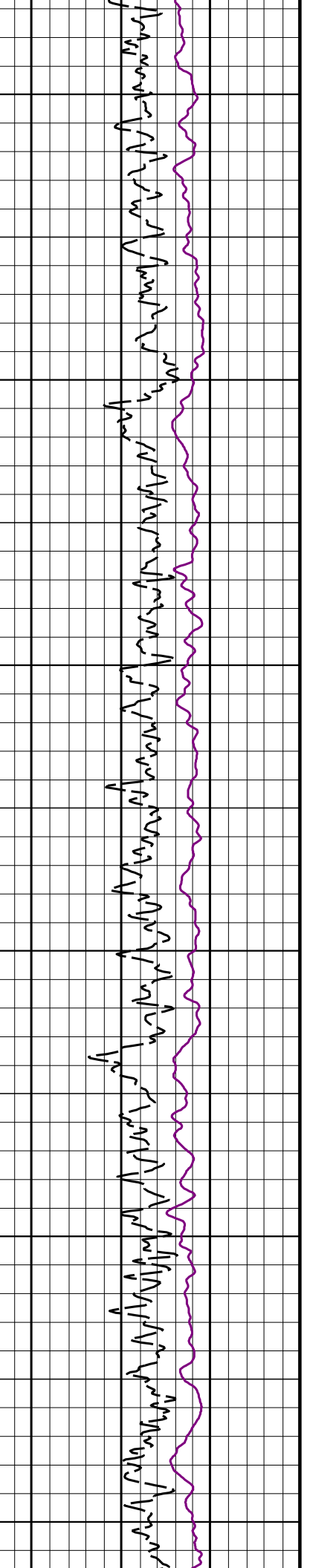
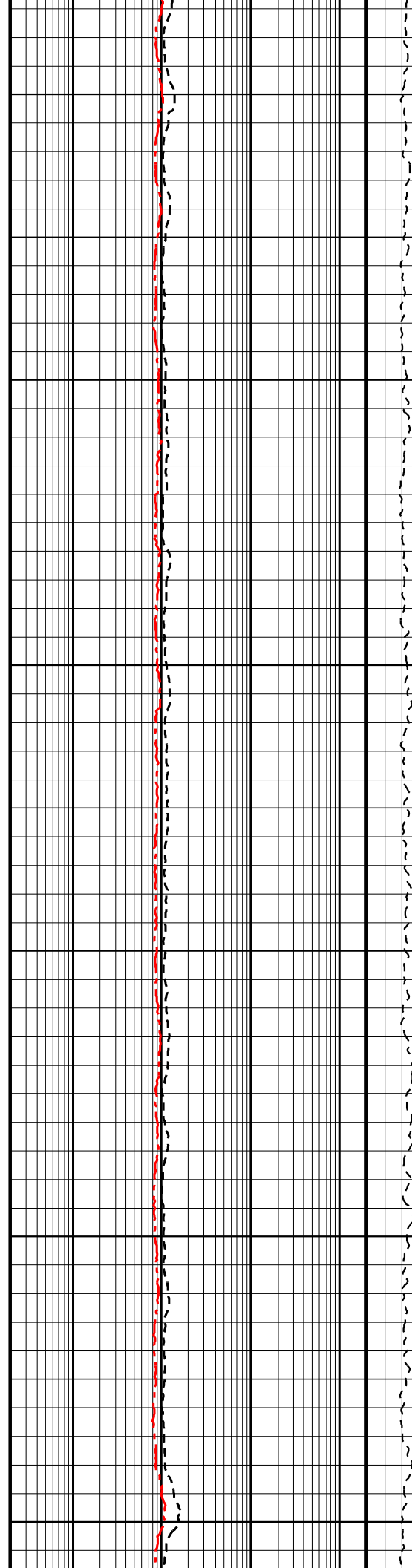
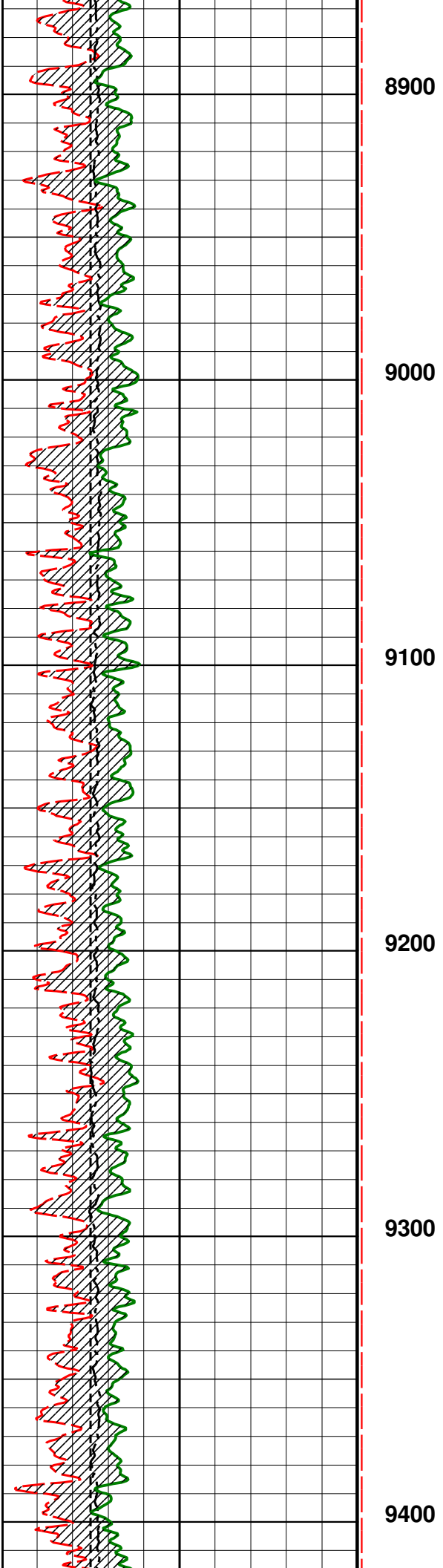
Company : GREAT WESTERN OPERATING COMPANY LLC Date : 1-Dec-2018
Well : SELTZER LD 21-031HC Time :
Scale : 1 : 600 Remarks : LIMESTONE MATRIX
Depth in : Feet
Software : WinAPlot Ver. 5, 87, 2, 0 File Name : 812_05-001-10199_MAIN MD

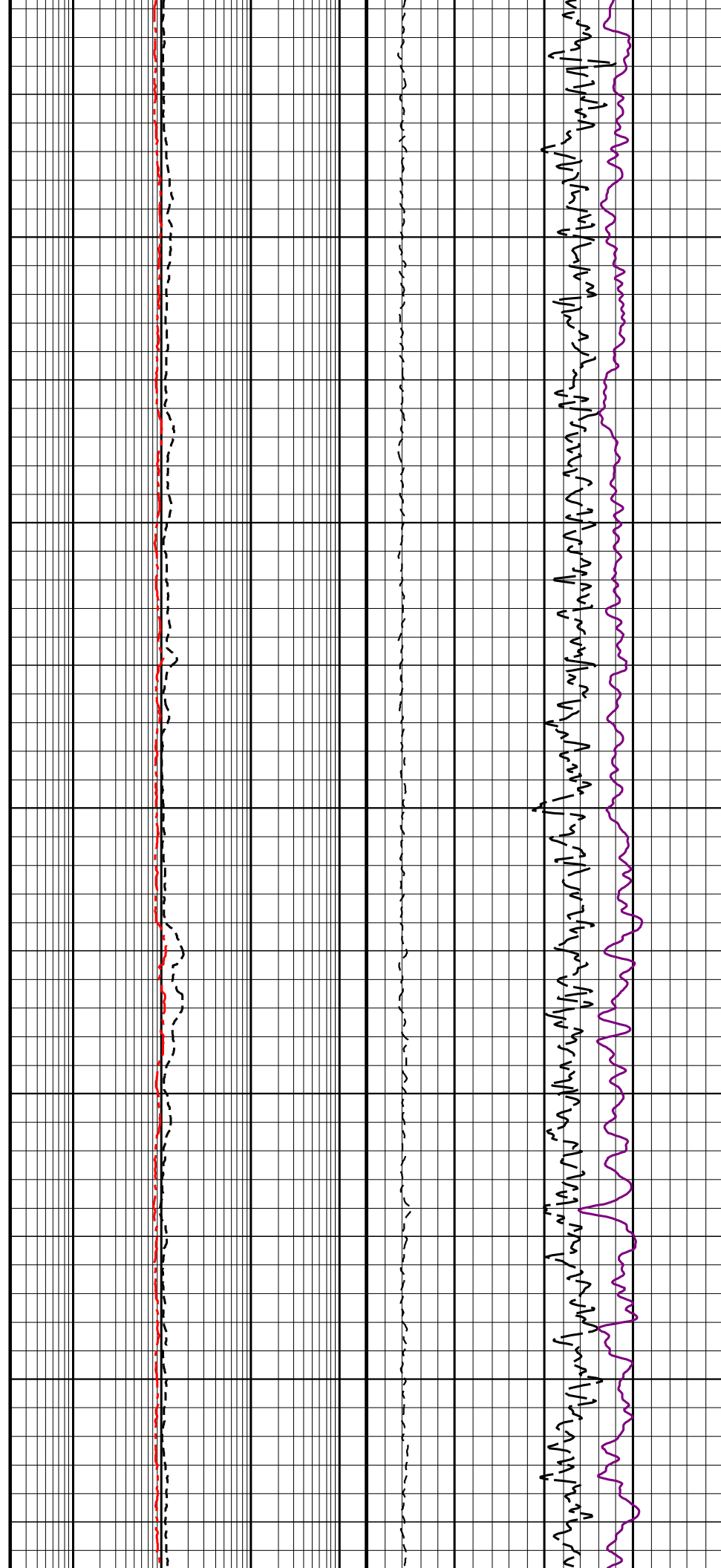
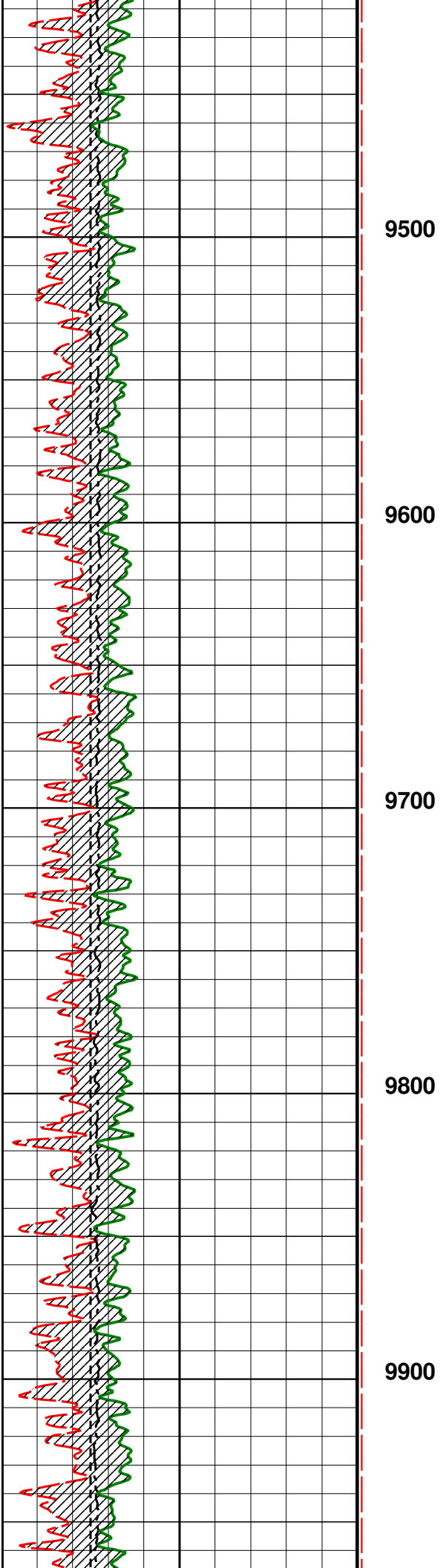


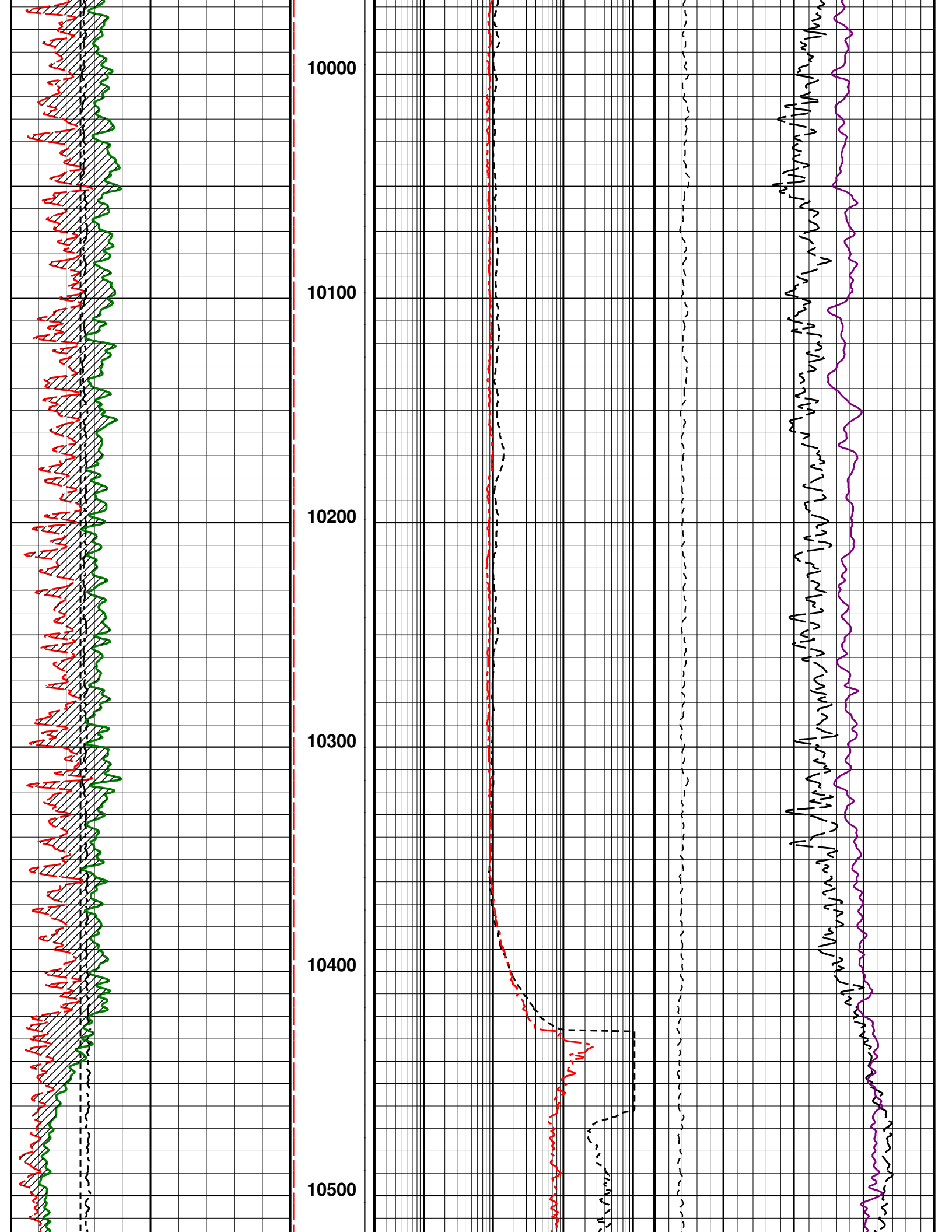


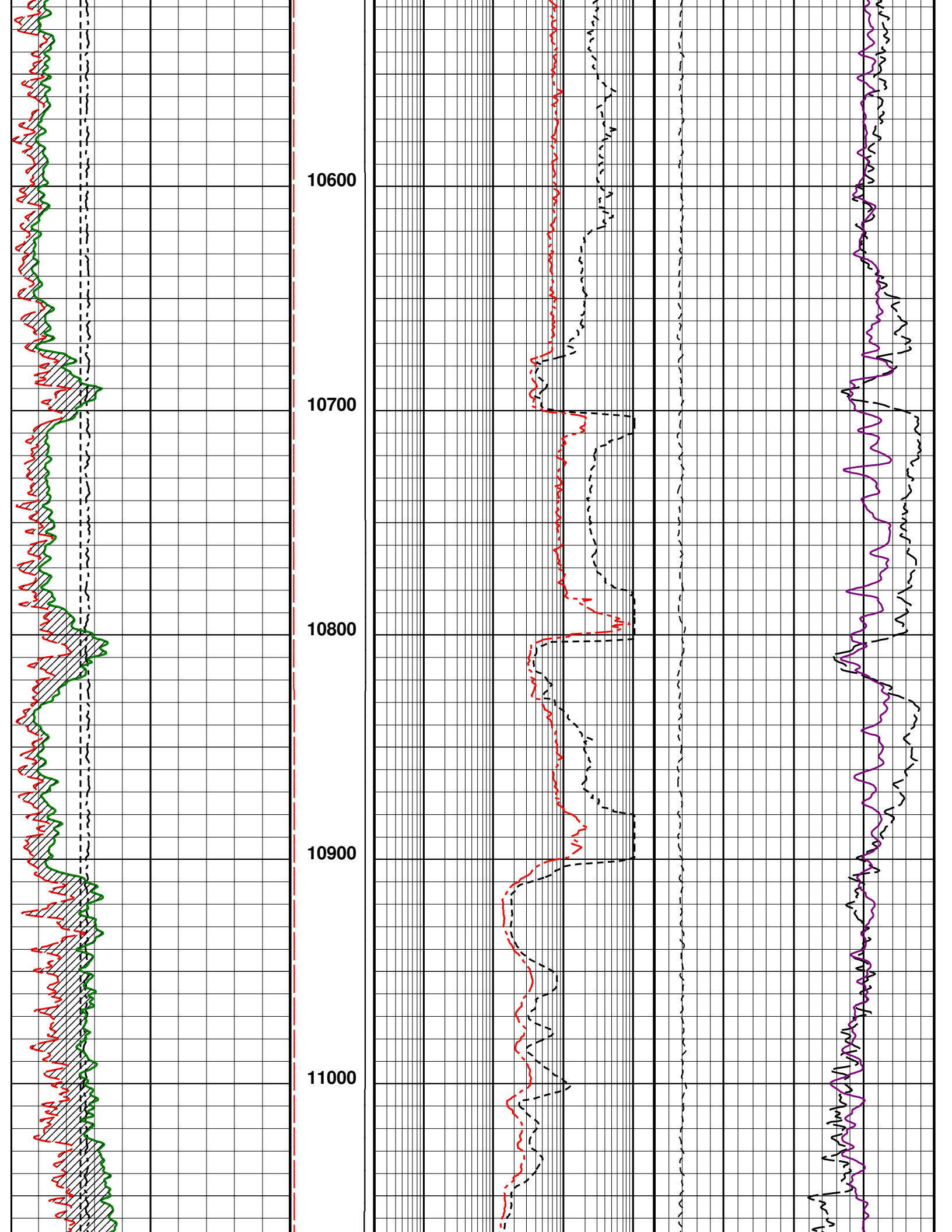


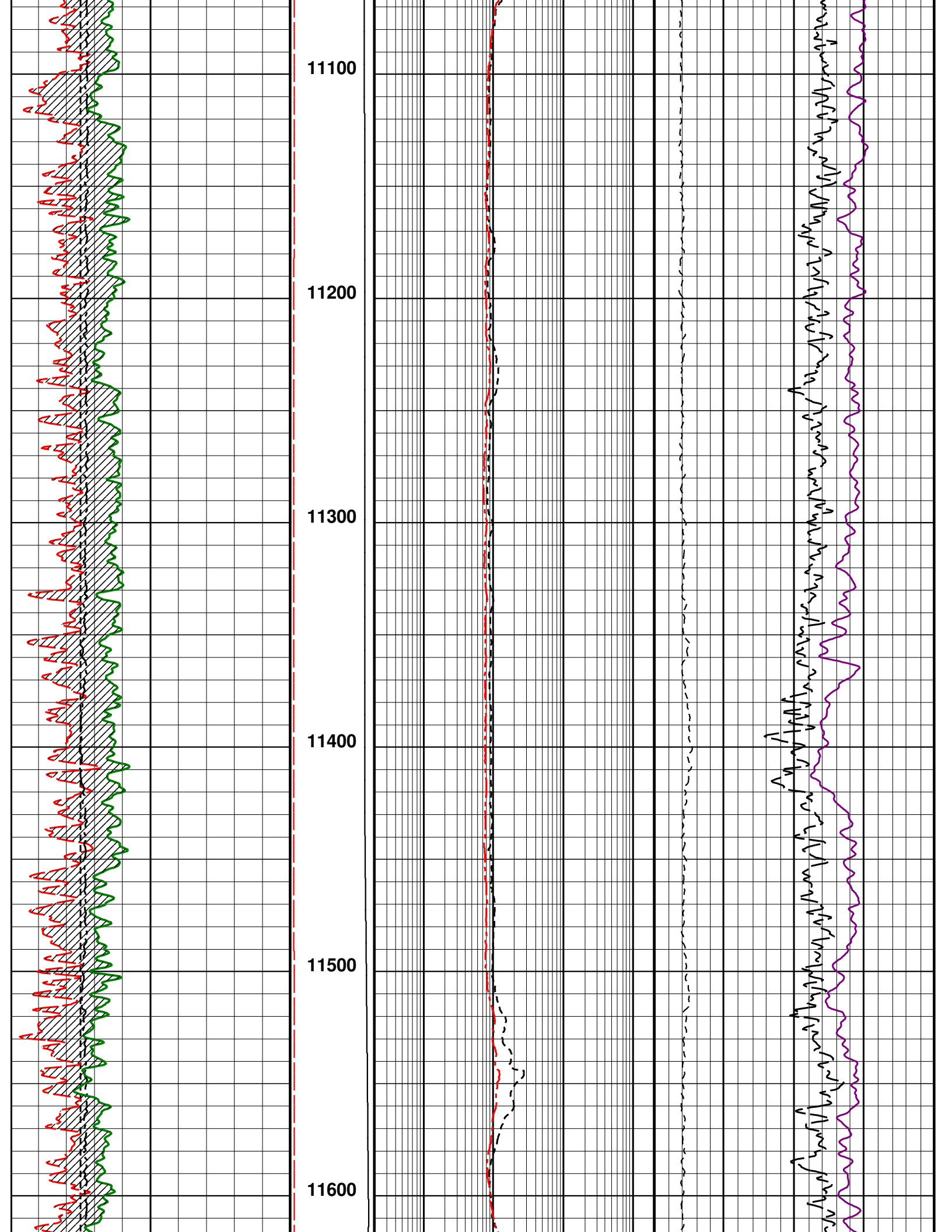


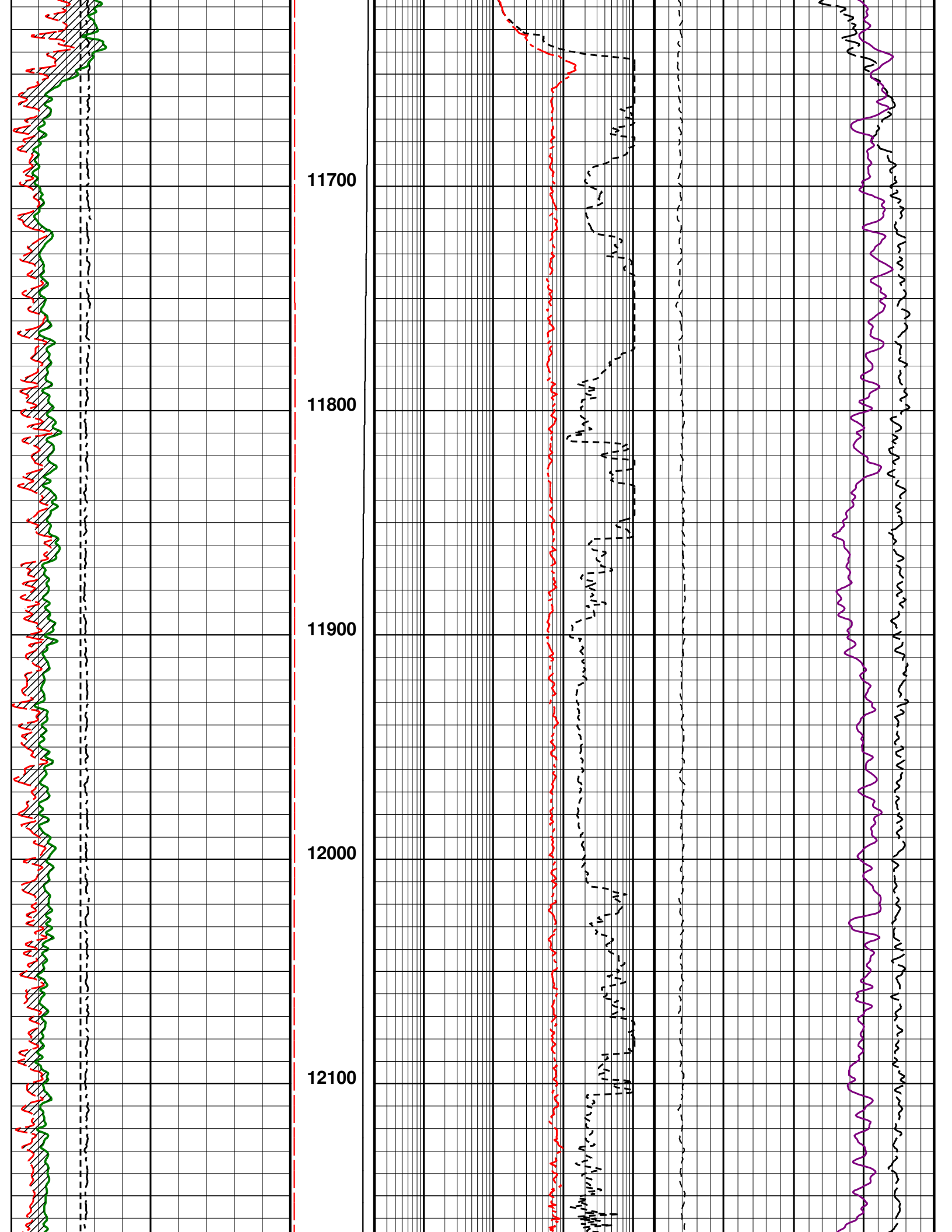


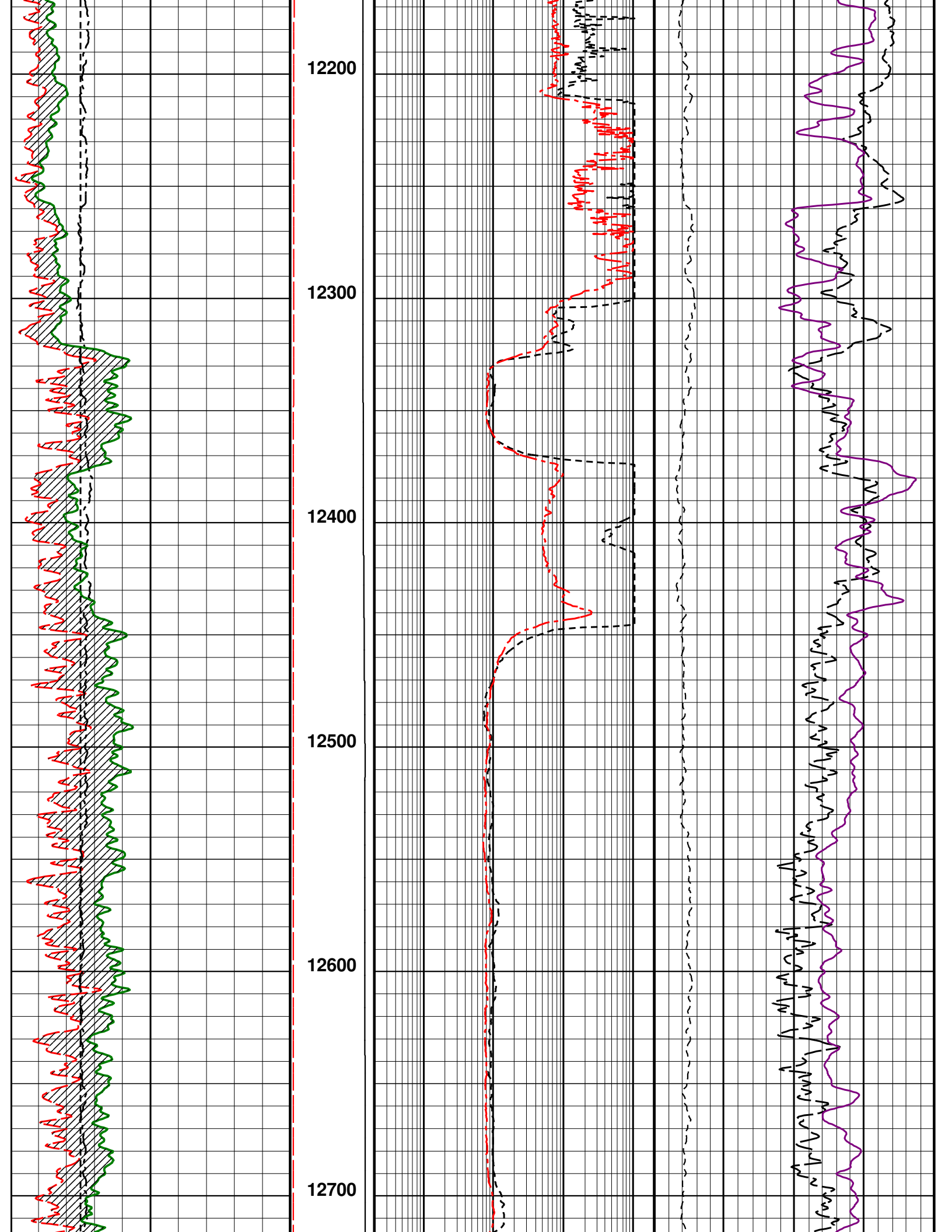


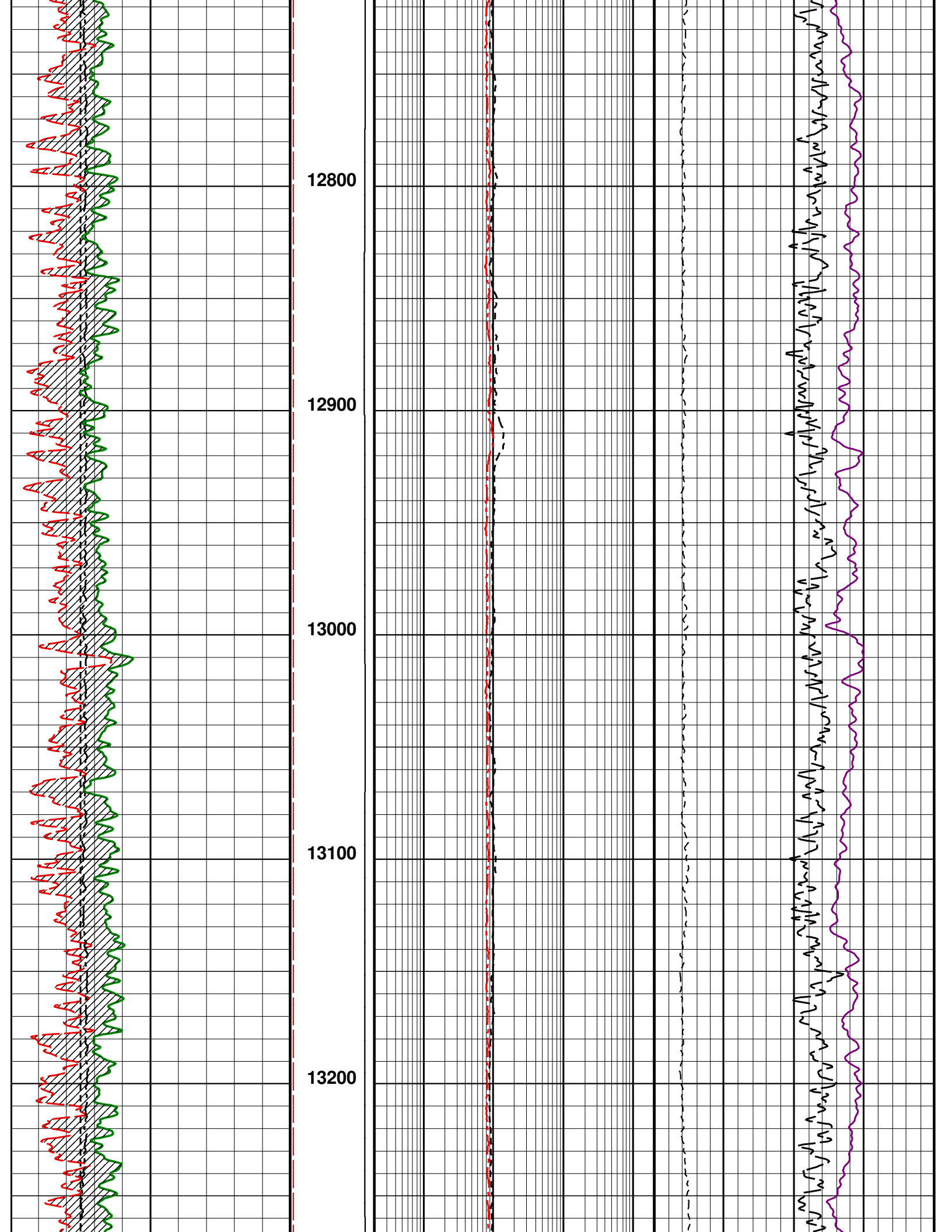


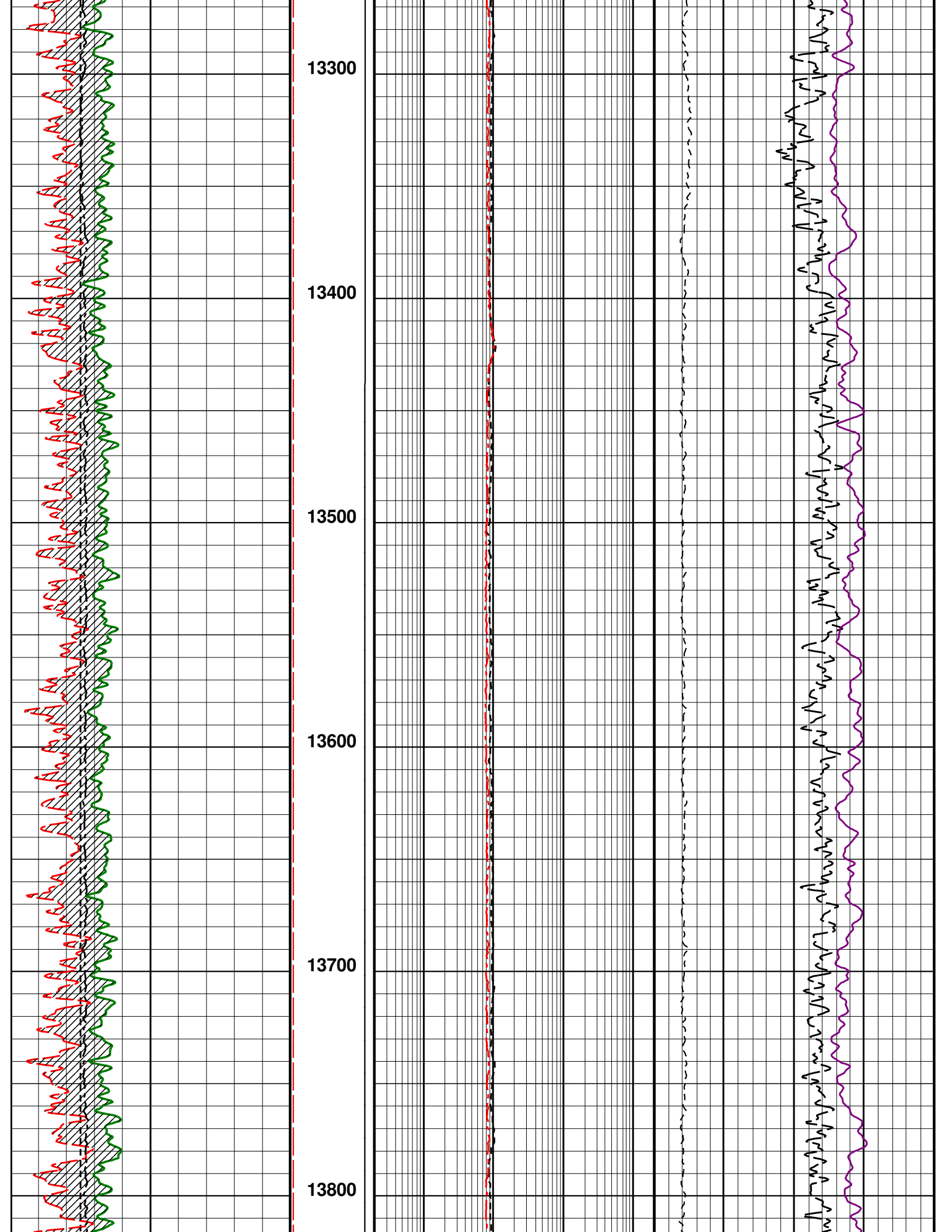


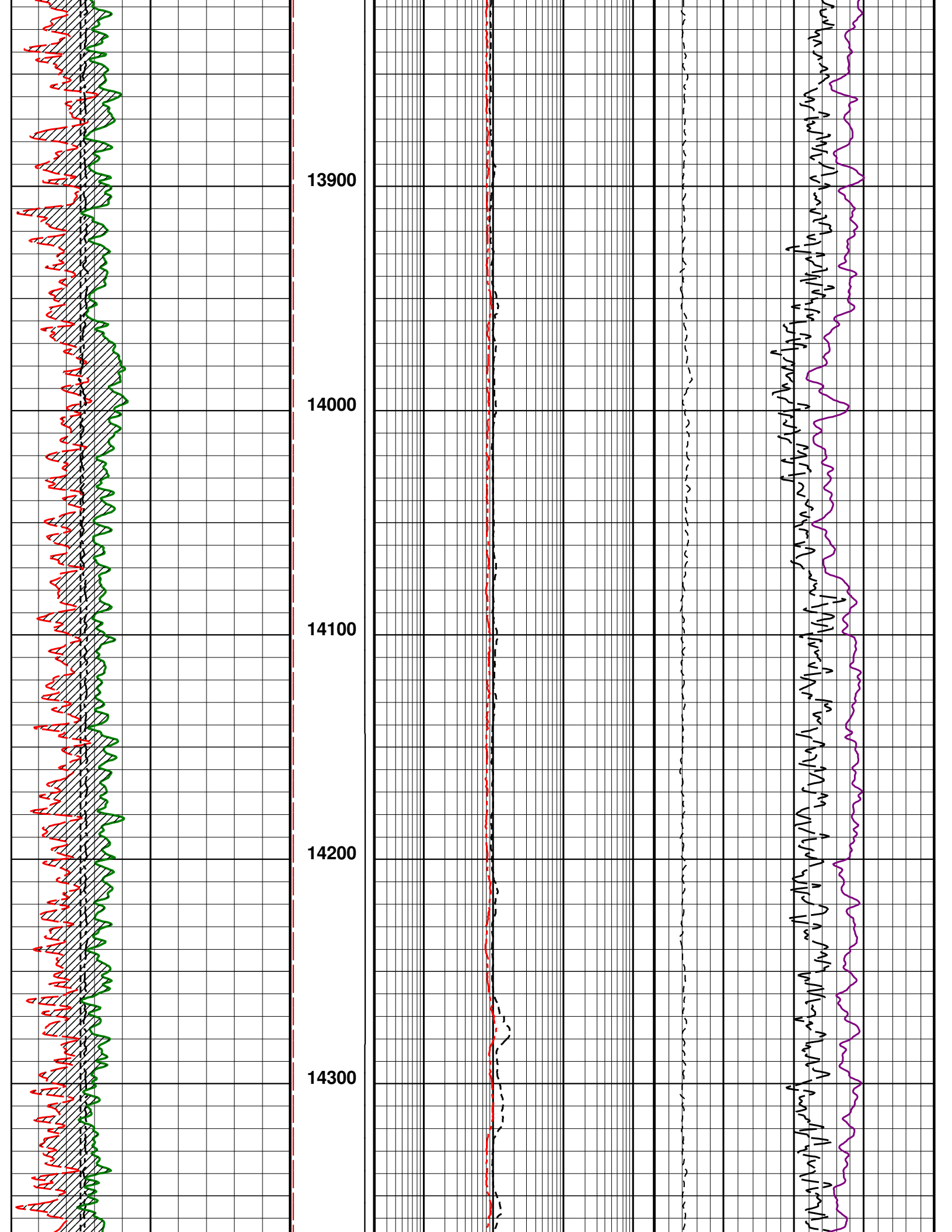


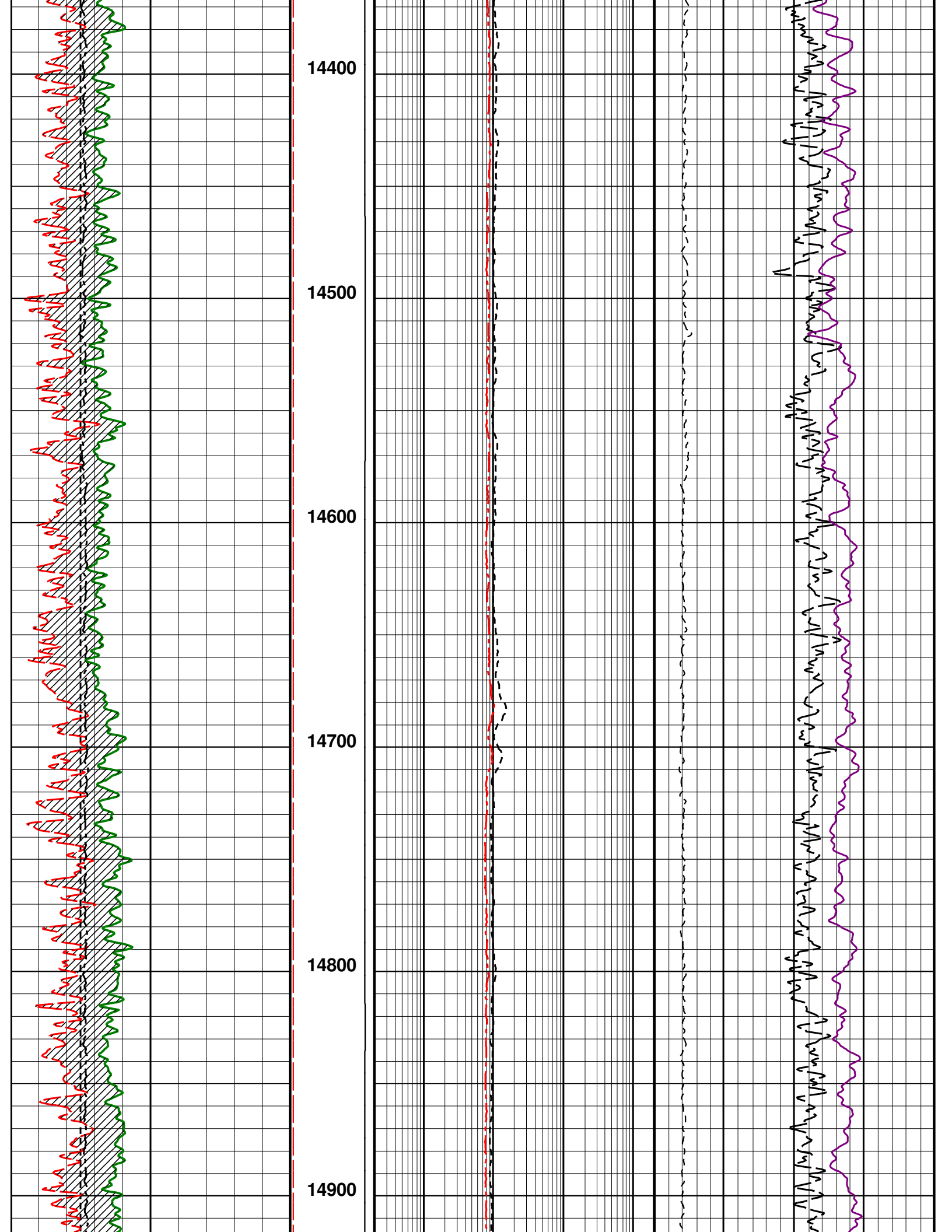


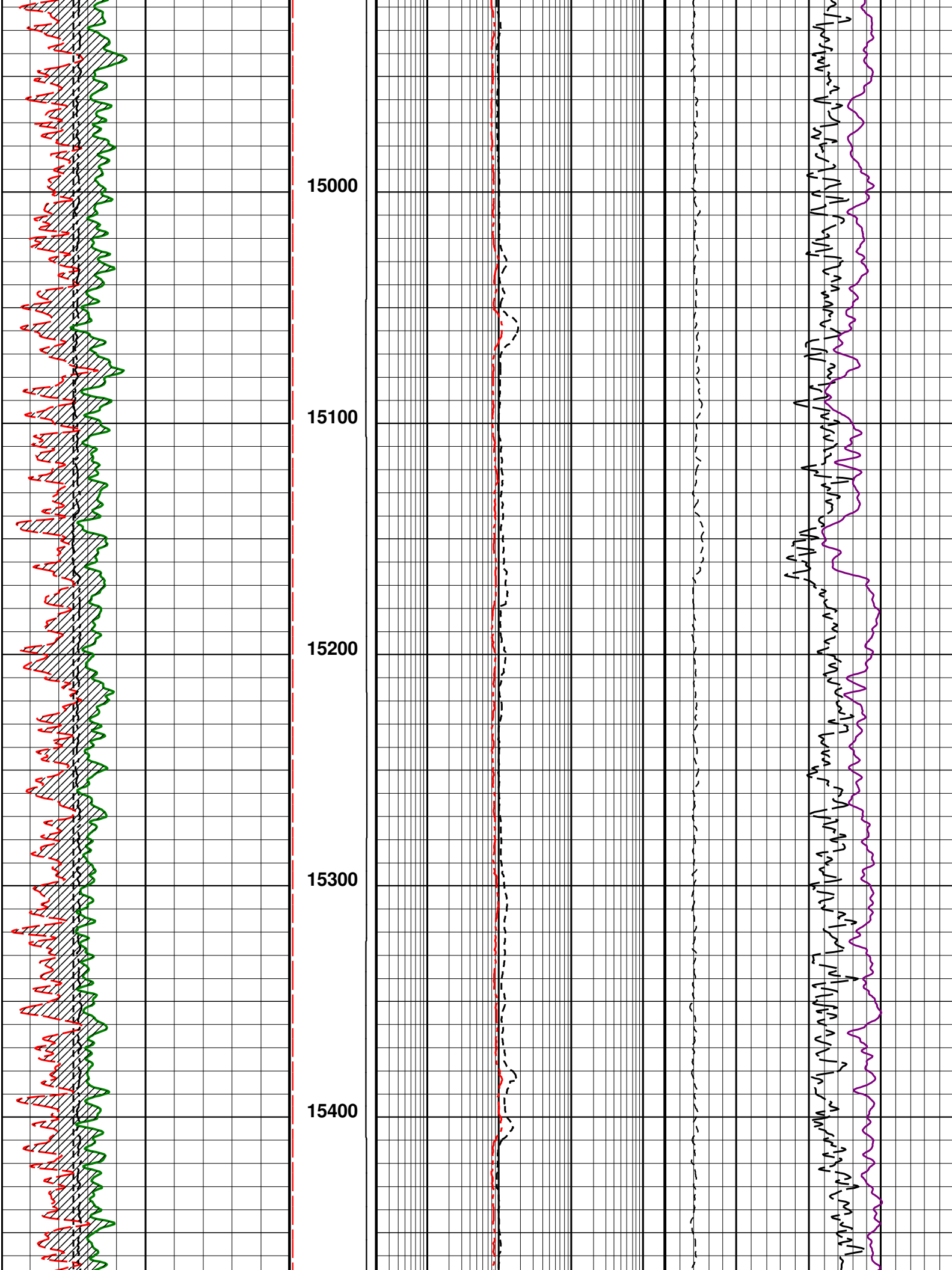


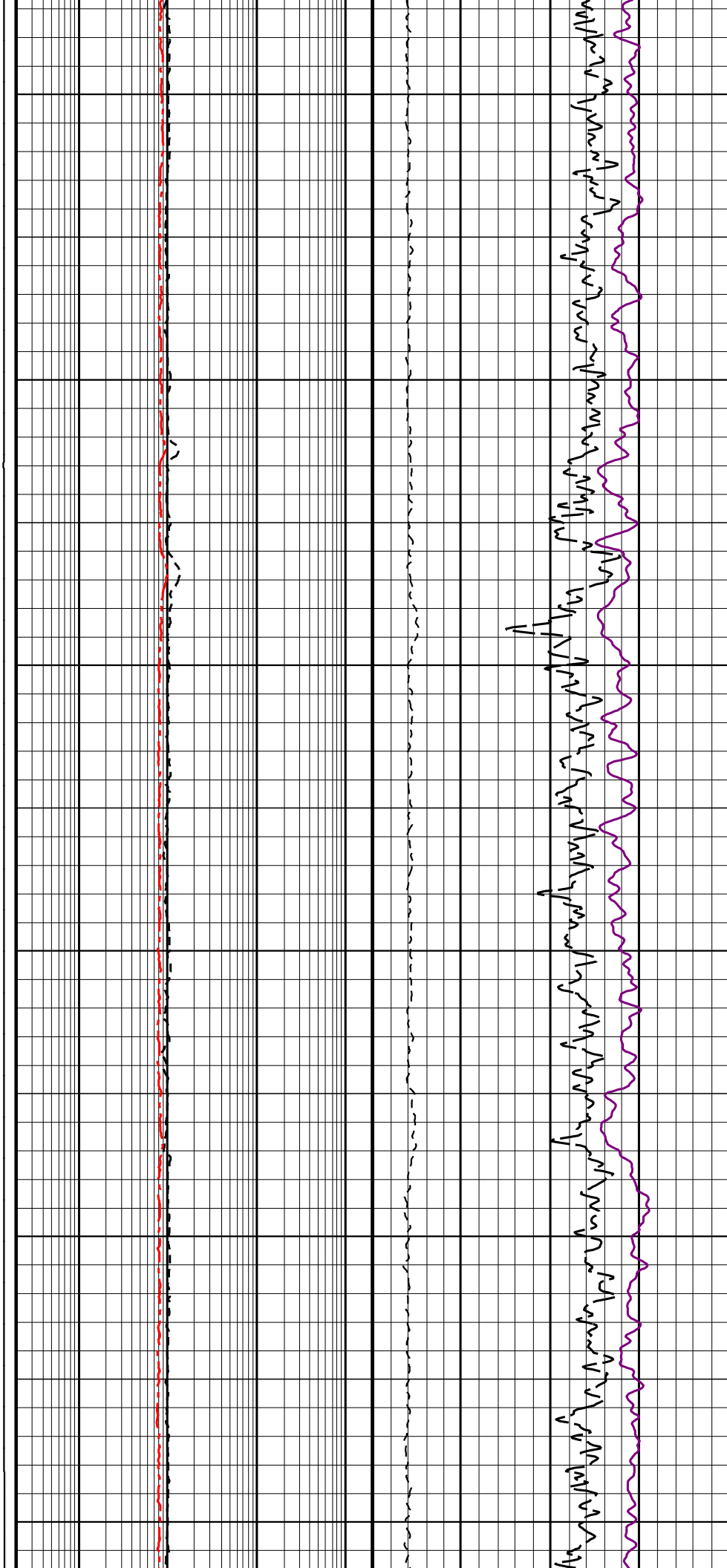
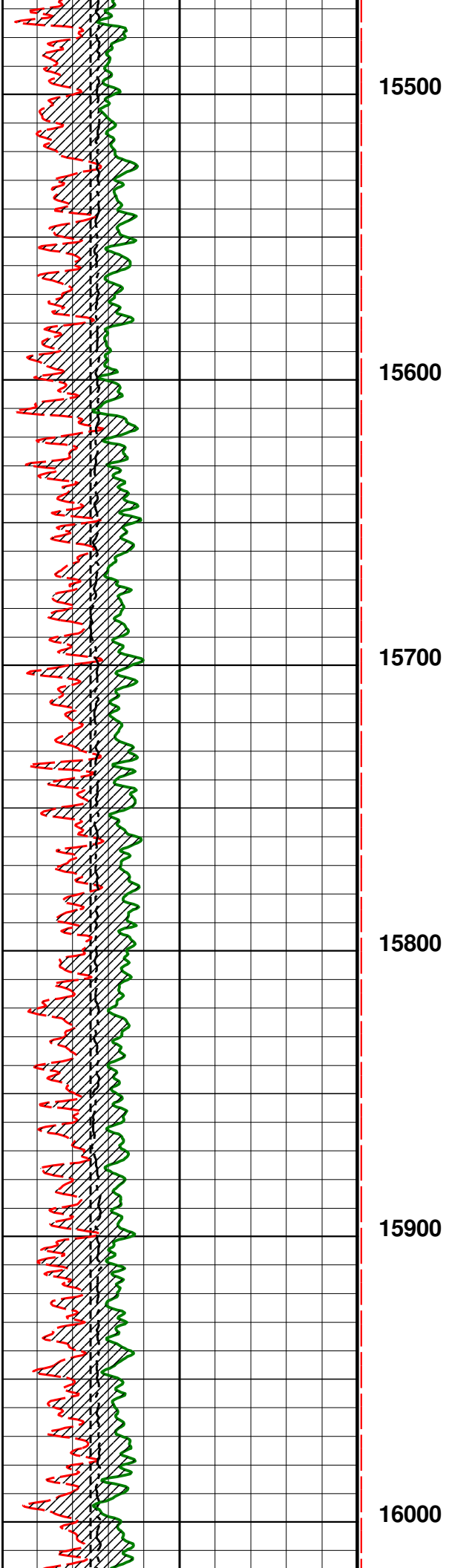


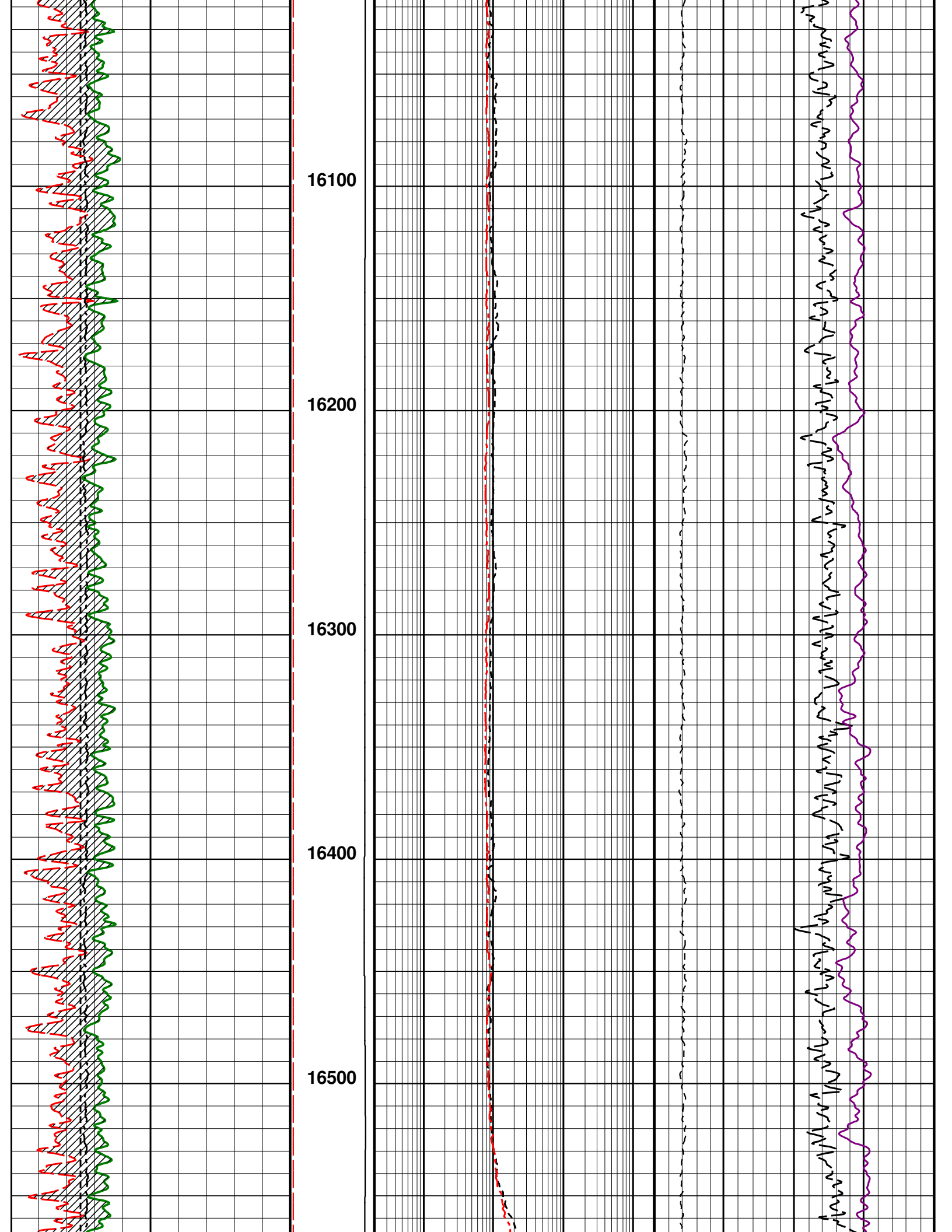


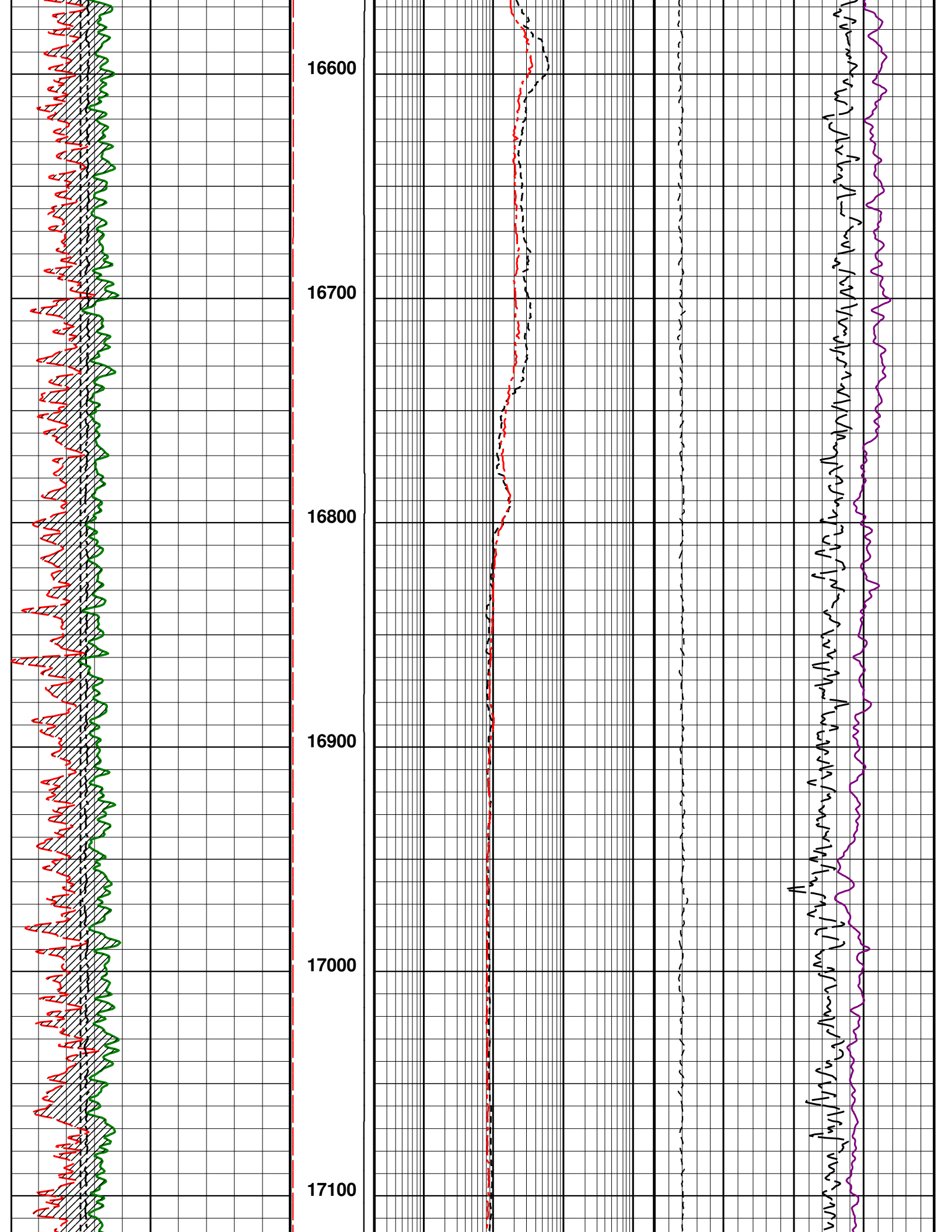


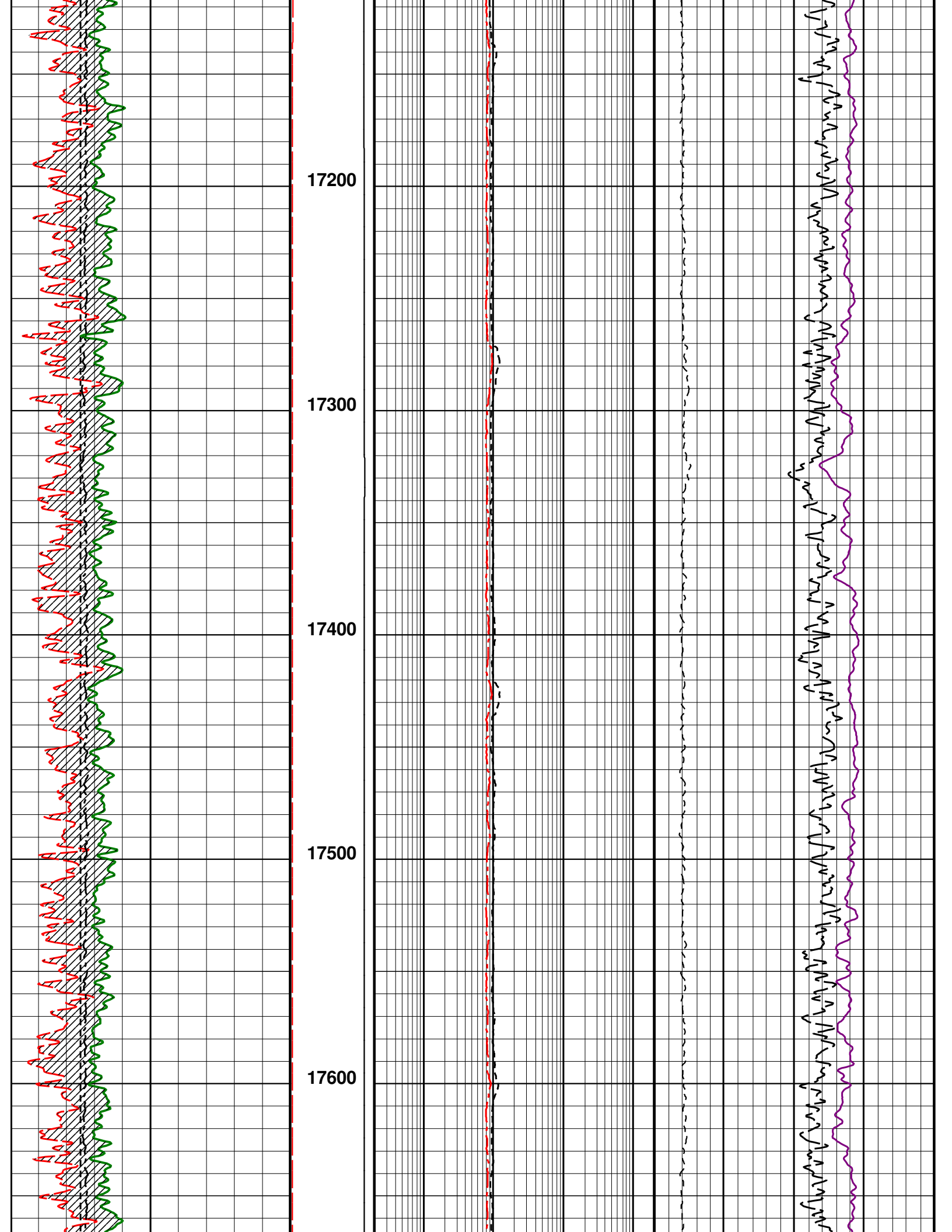


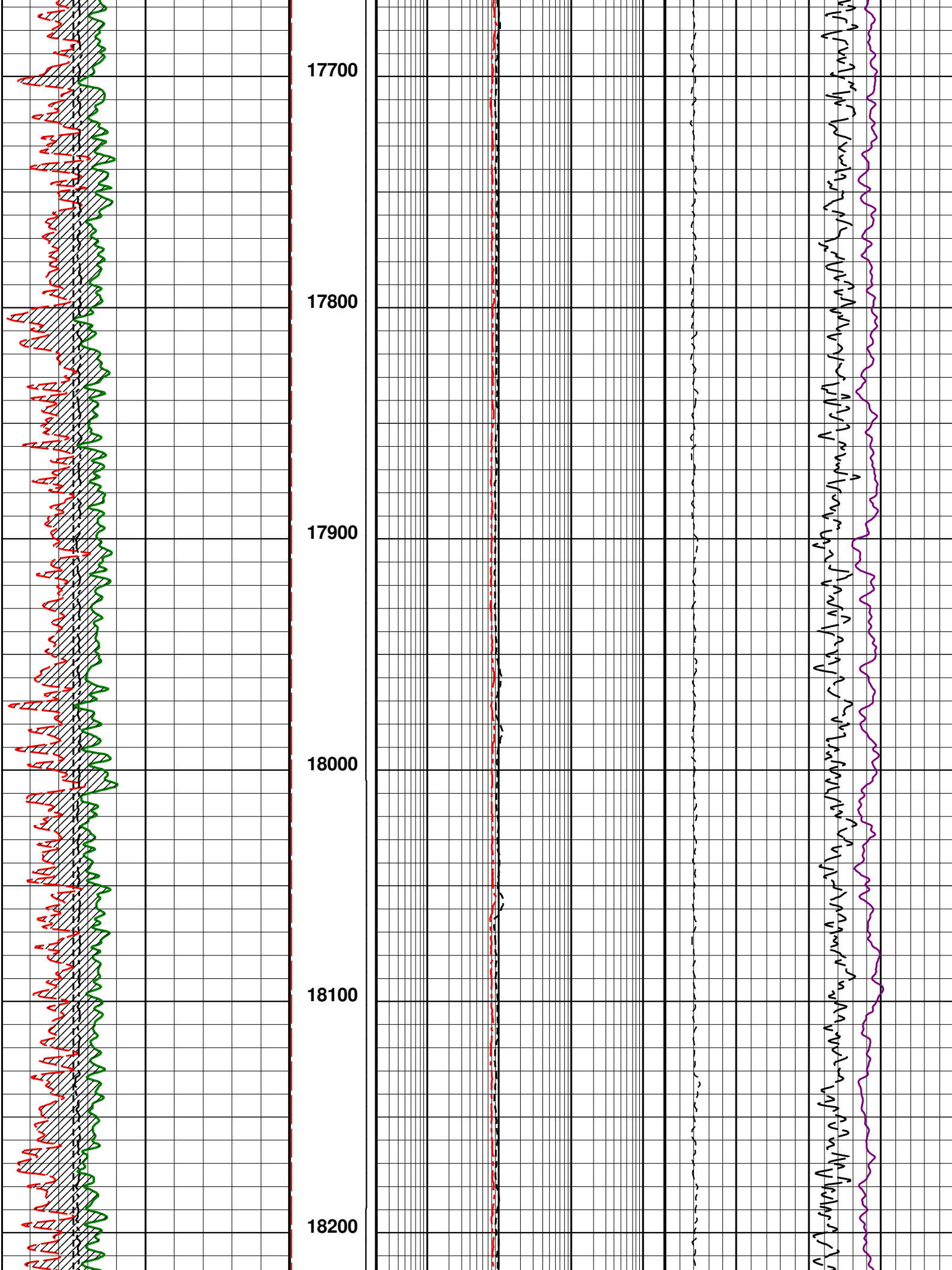


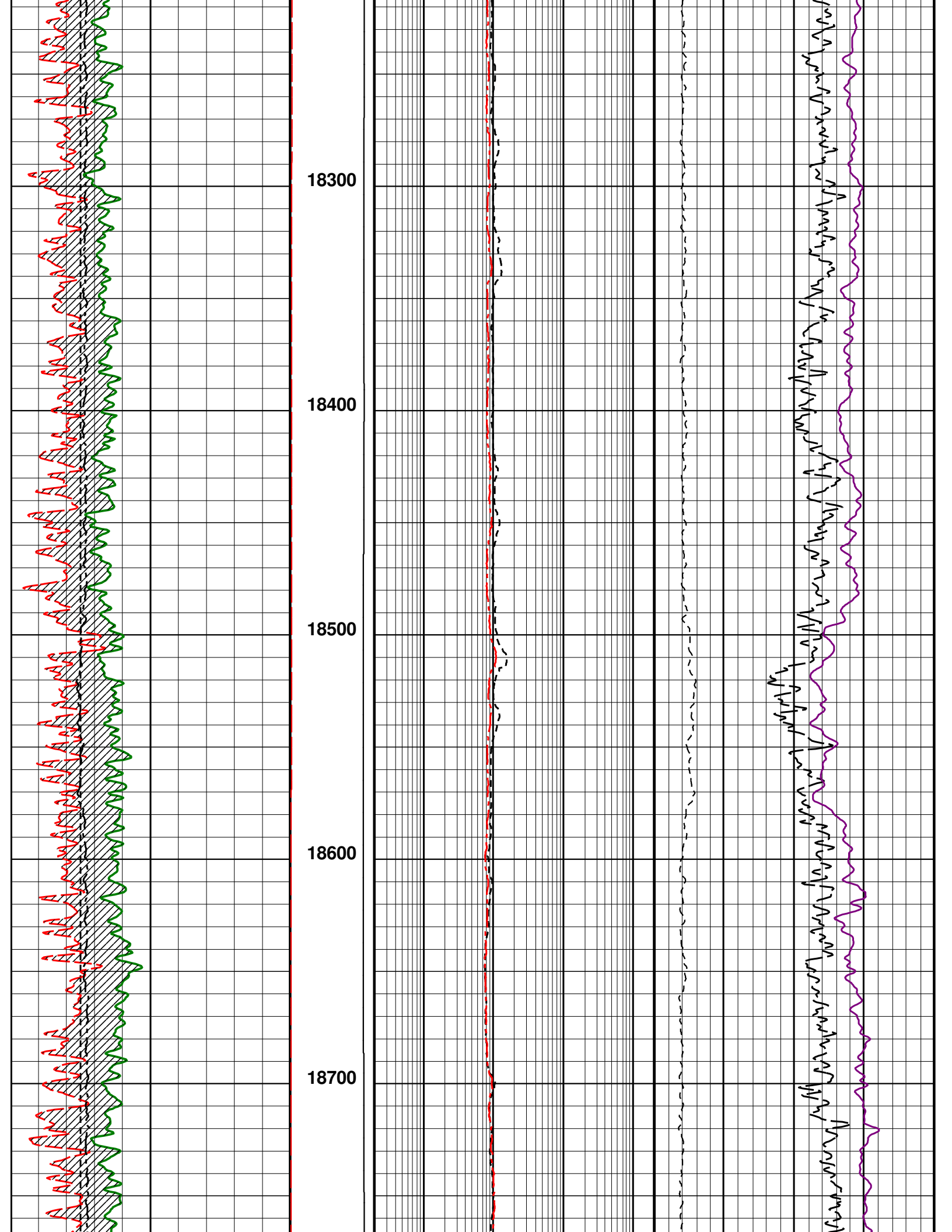


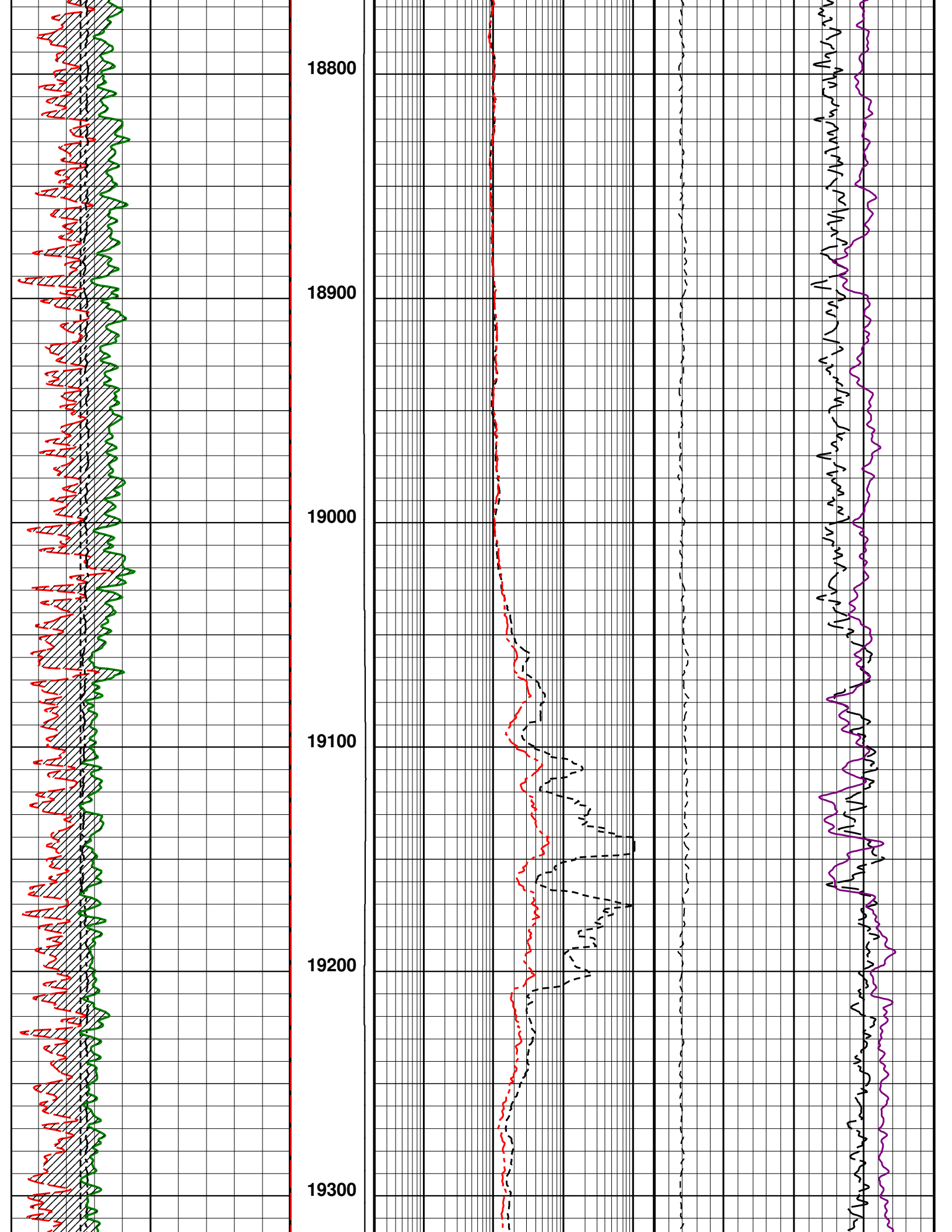


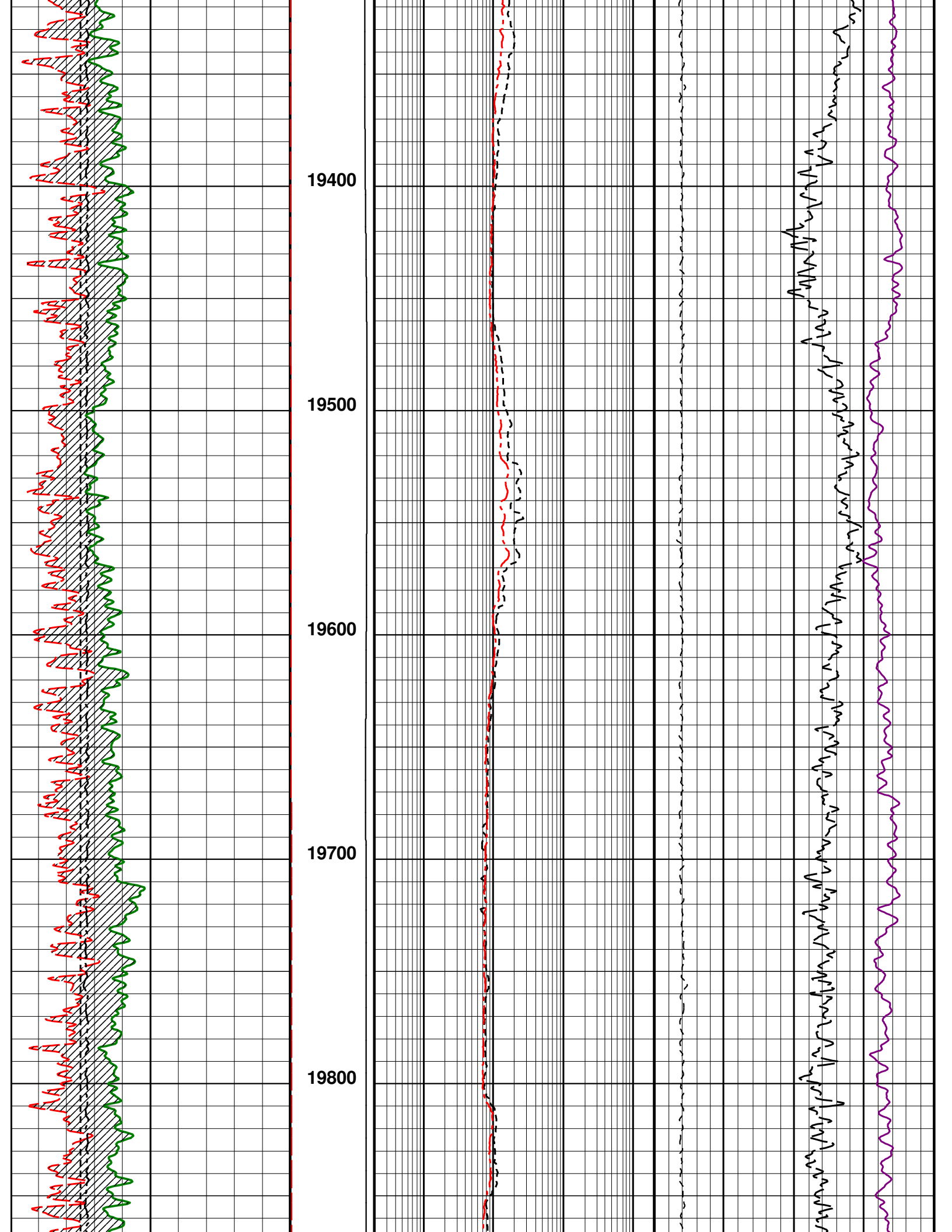


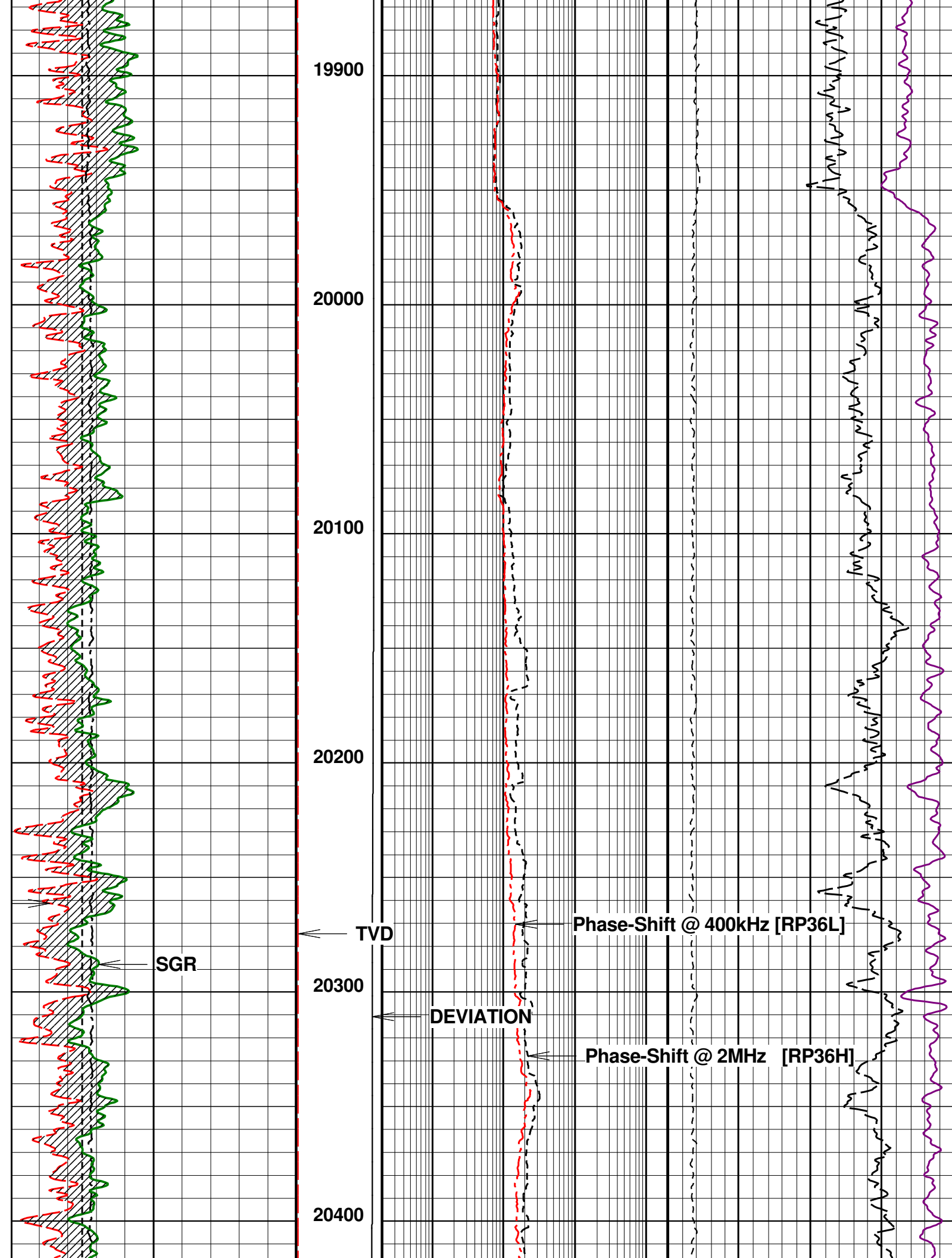


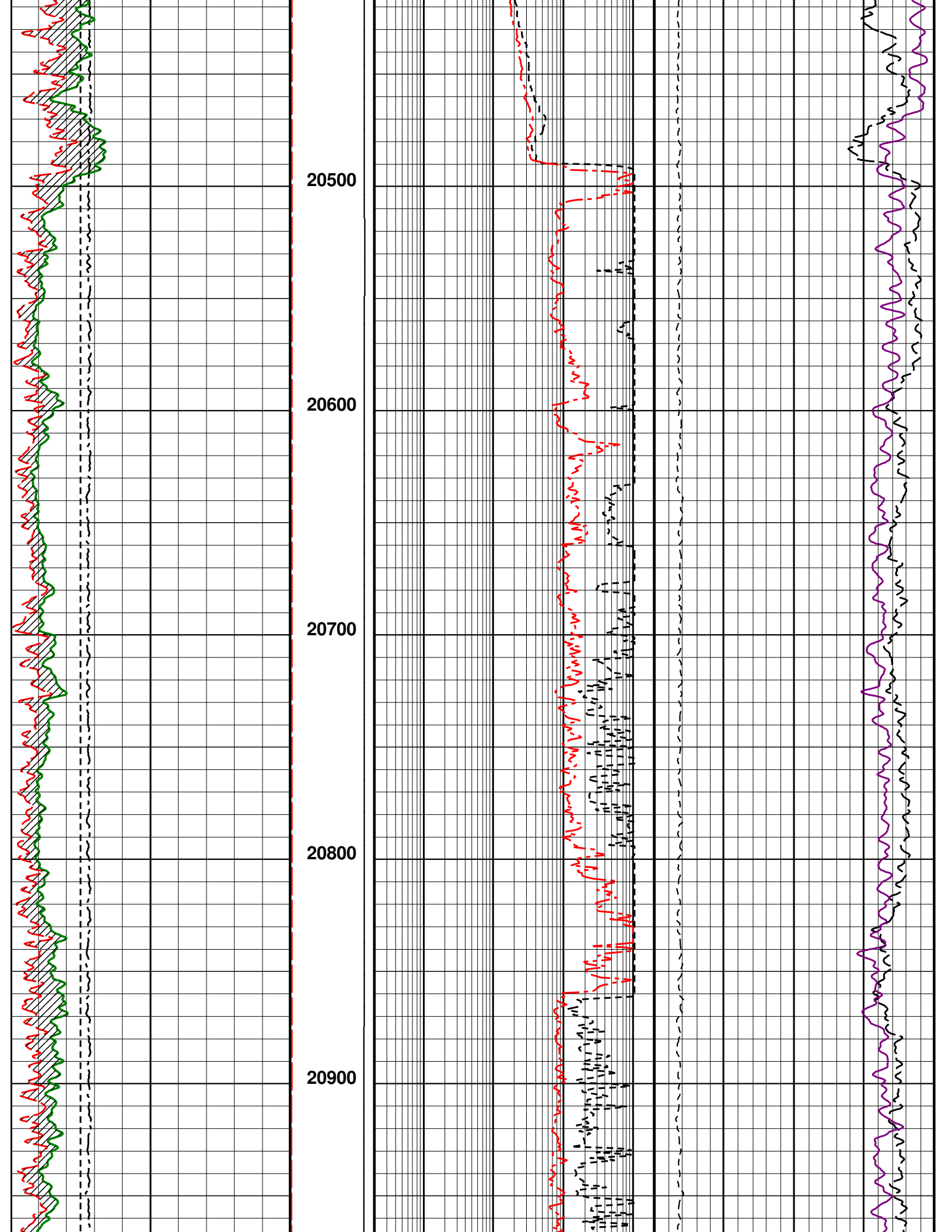


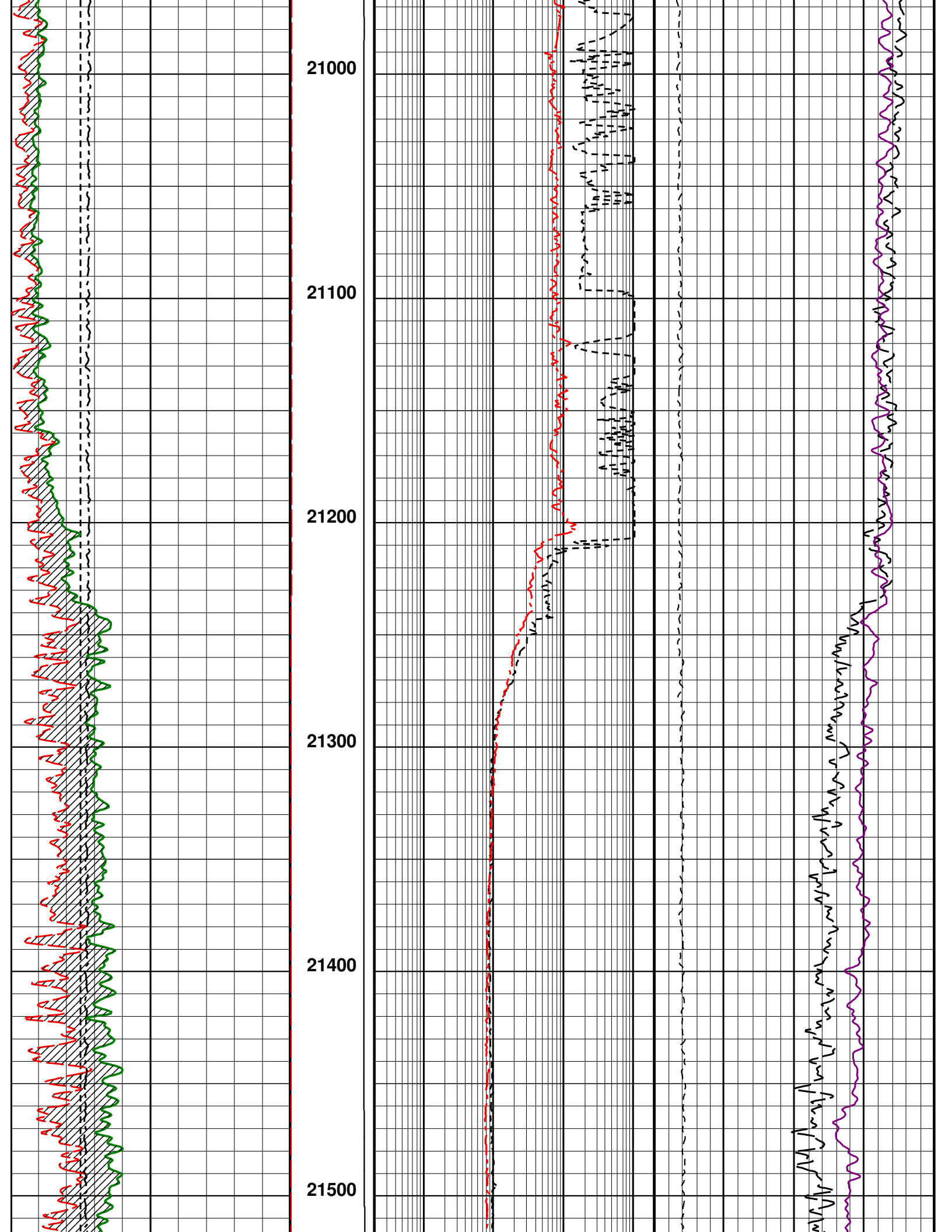


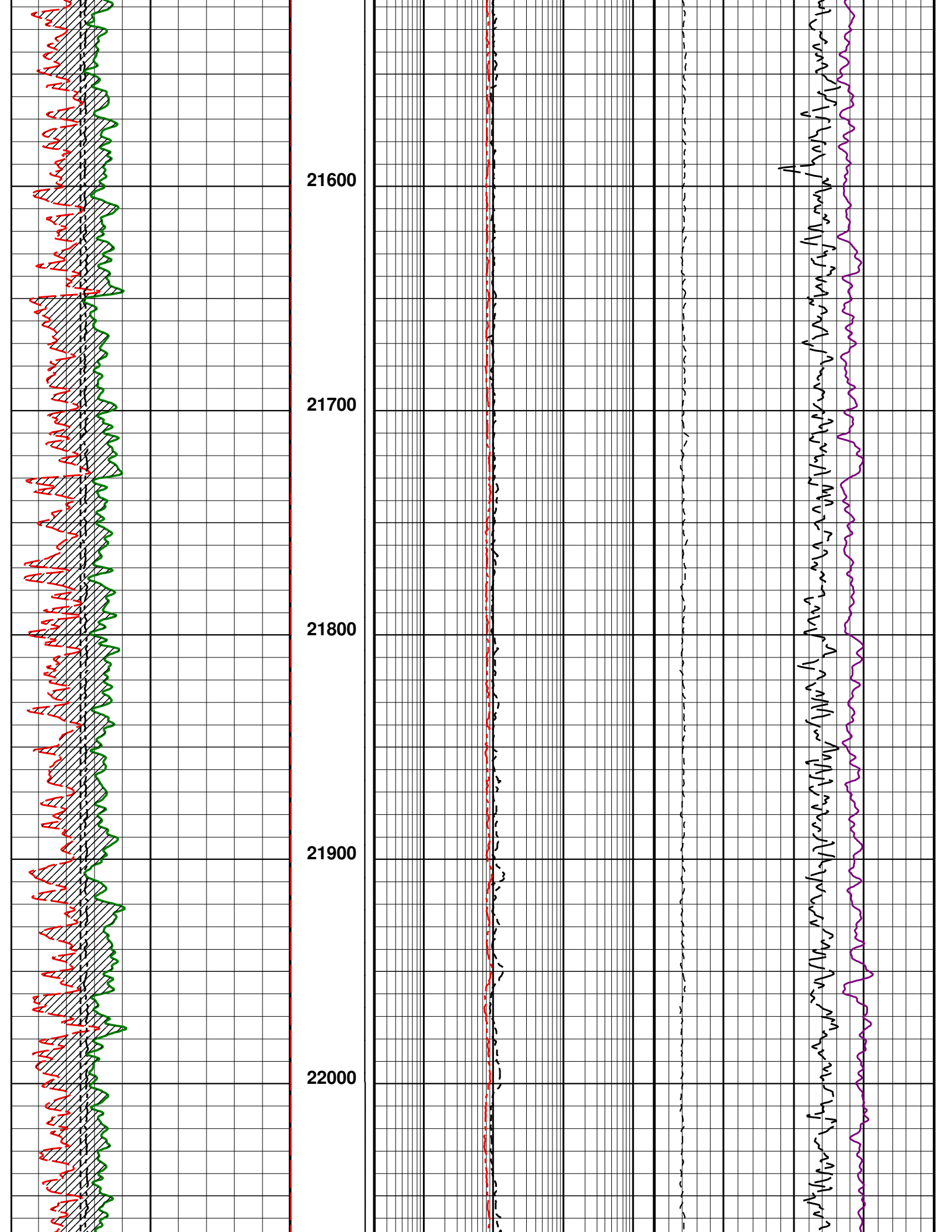


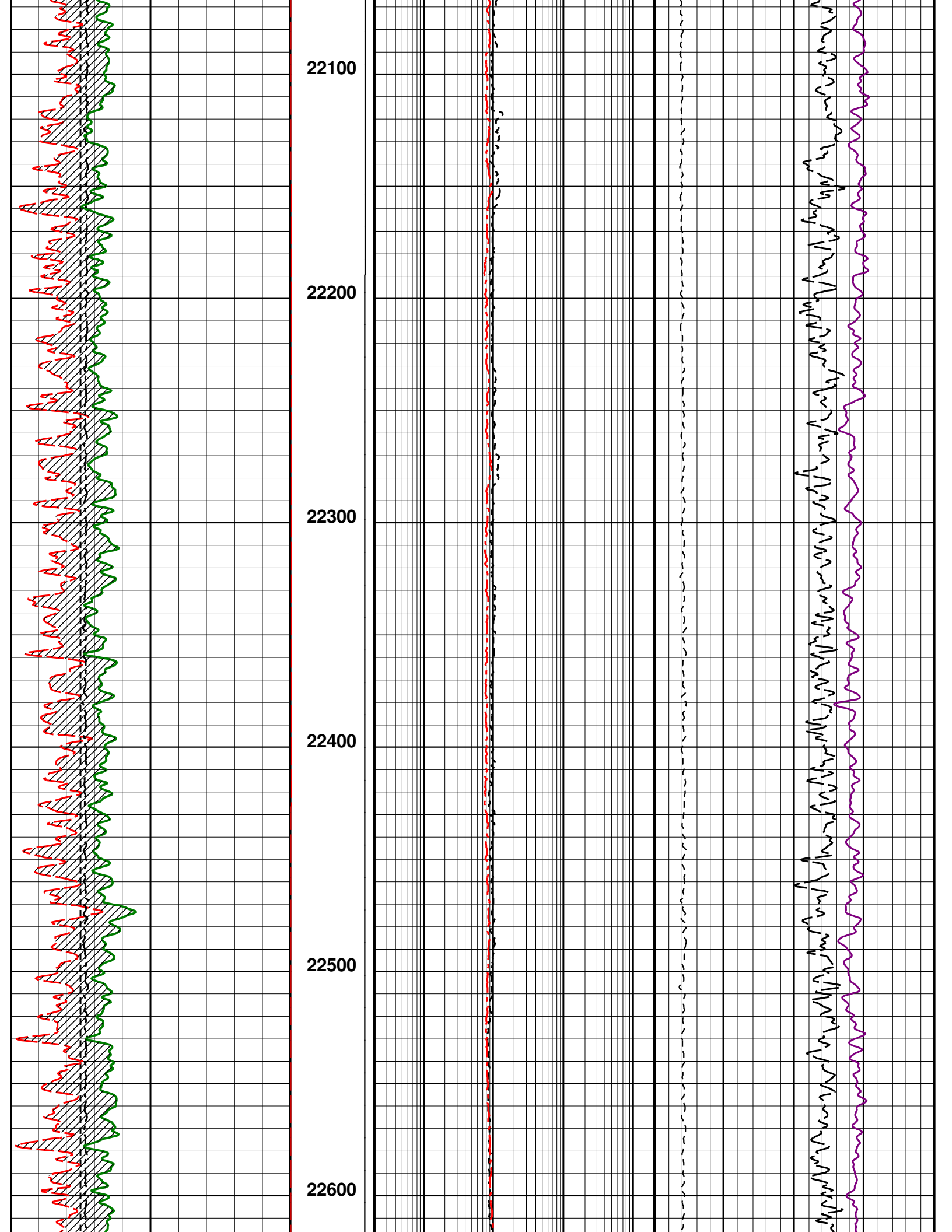


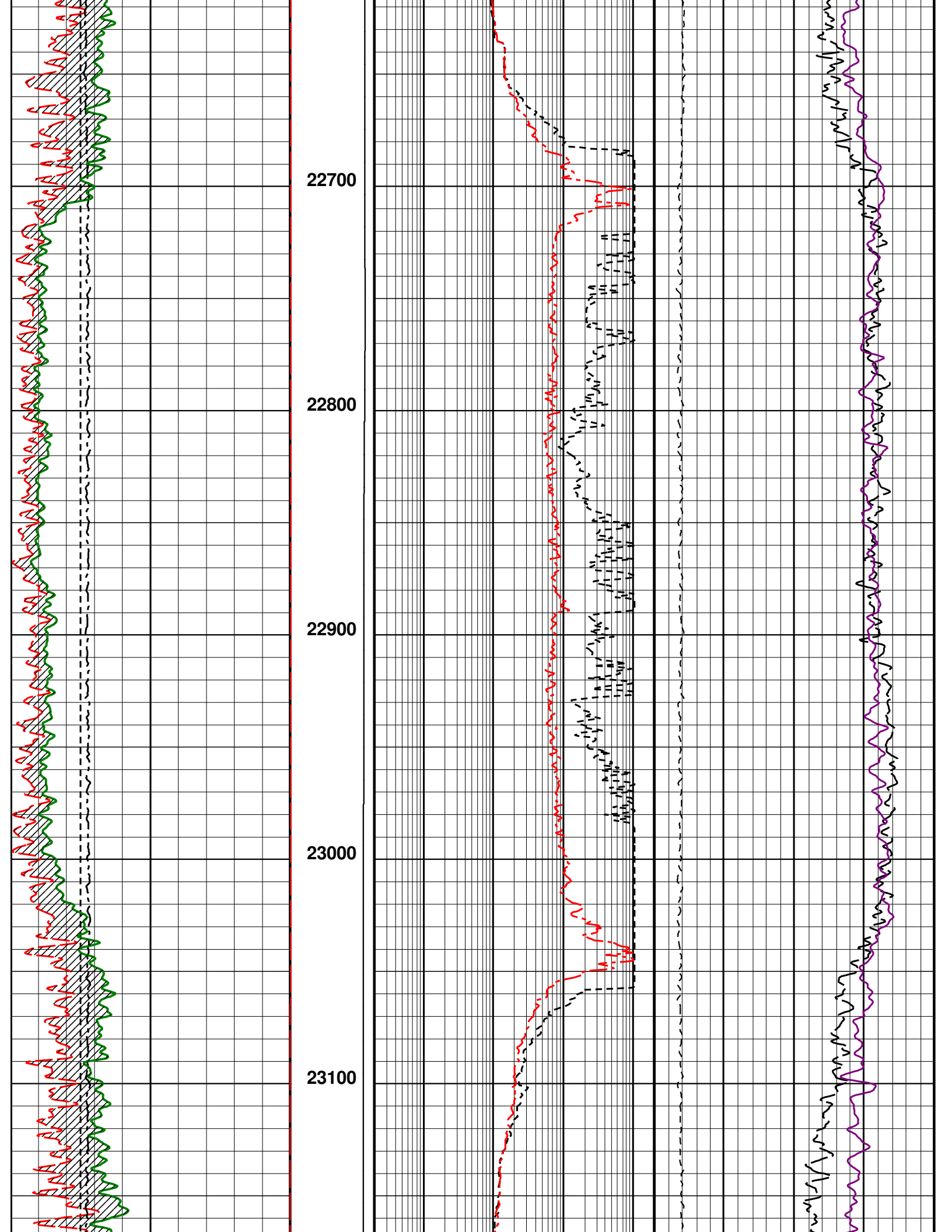


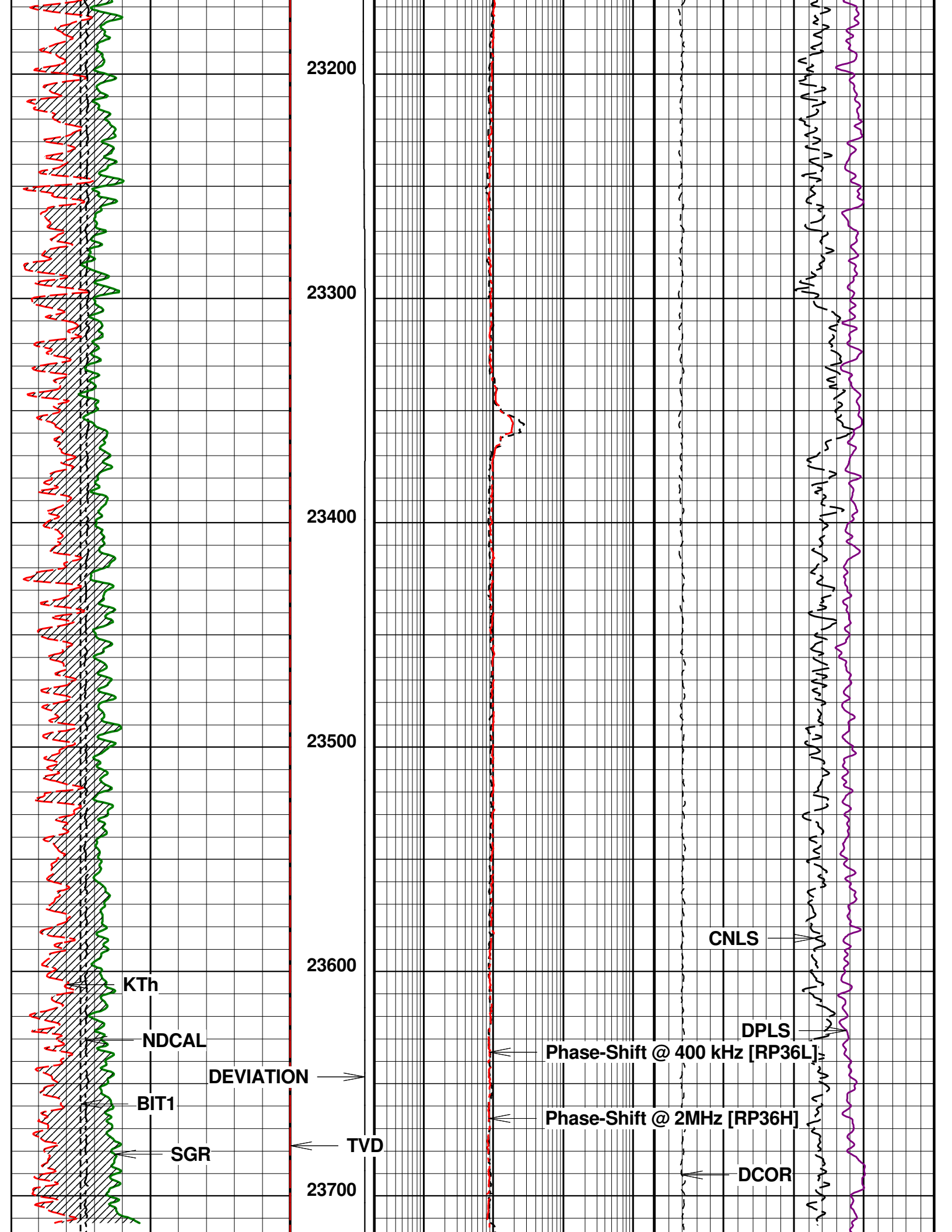


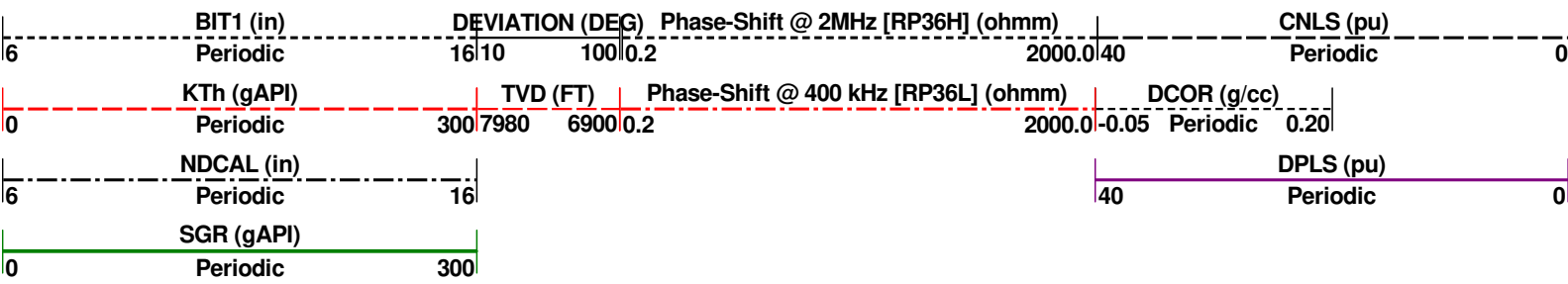
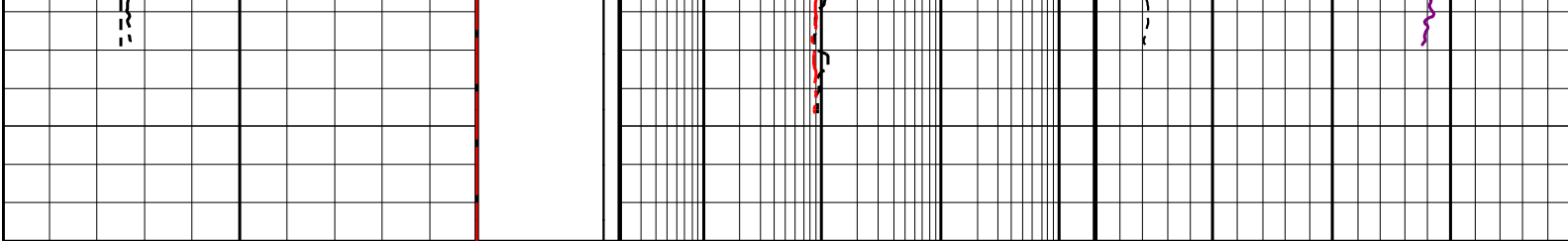






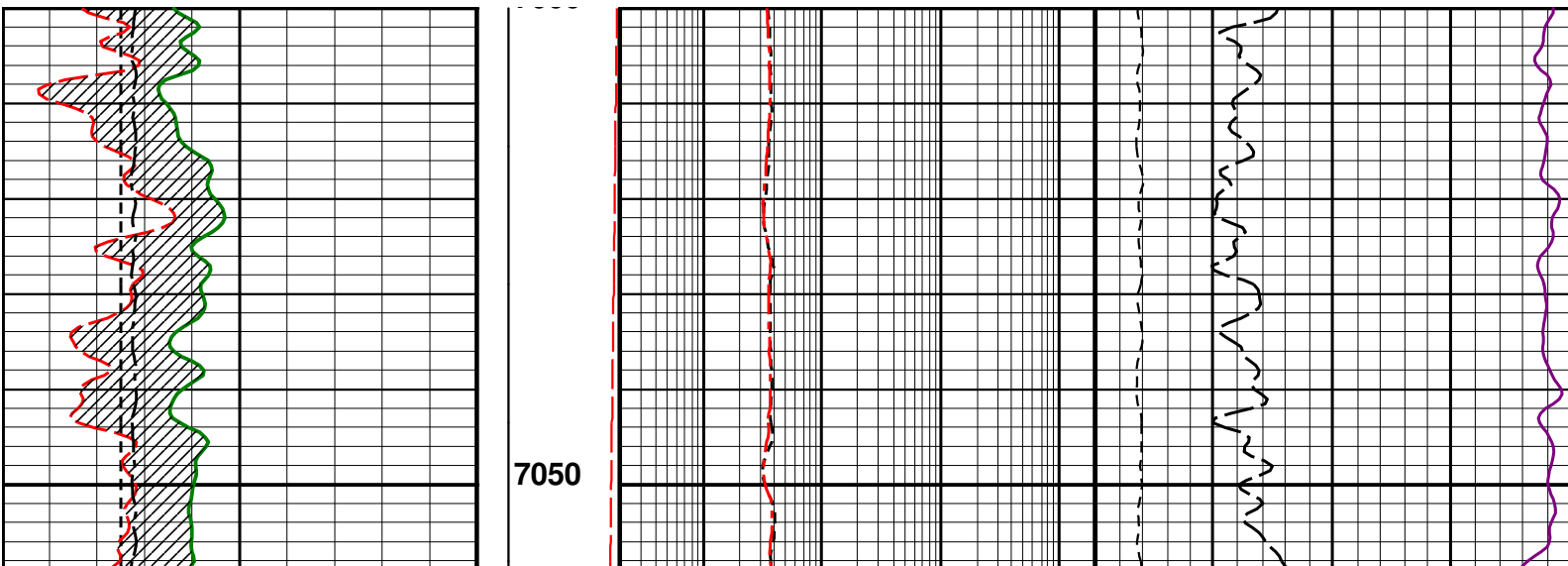
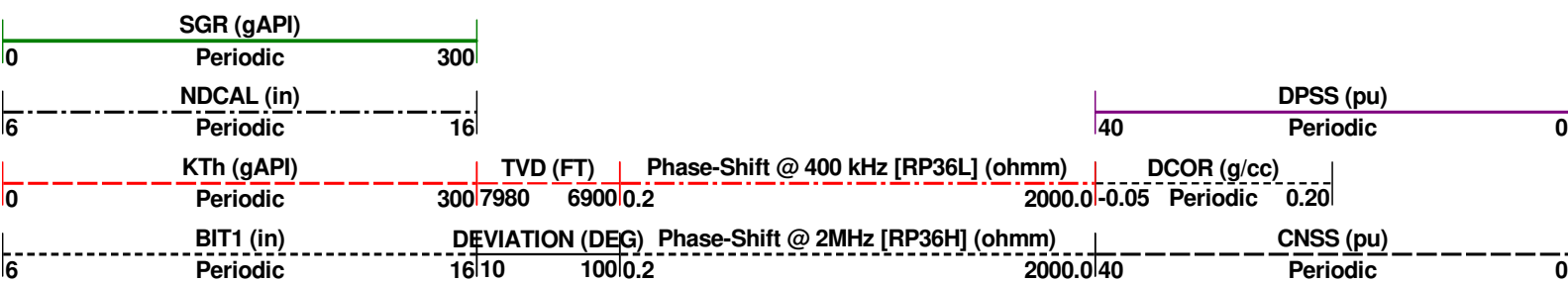


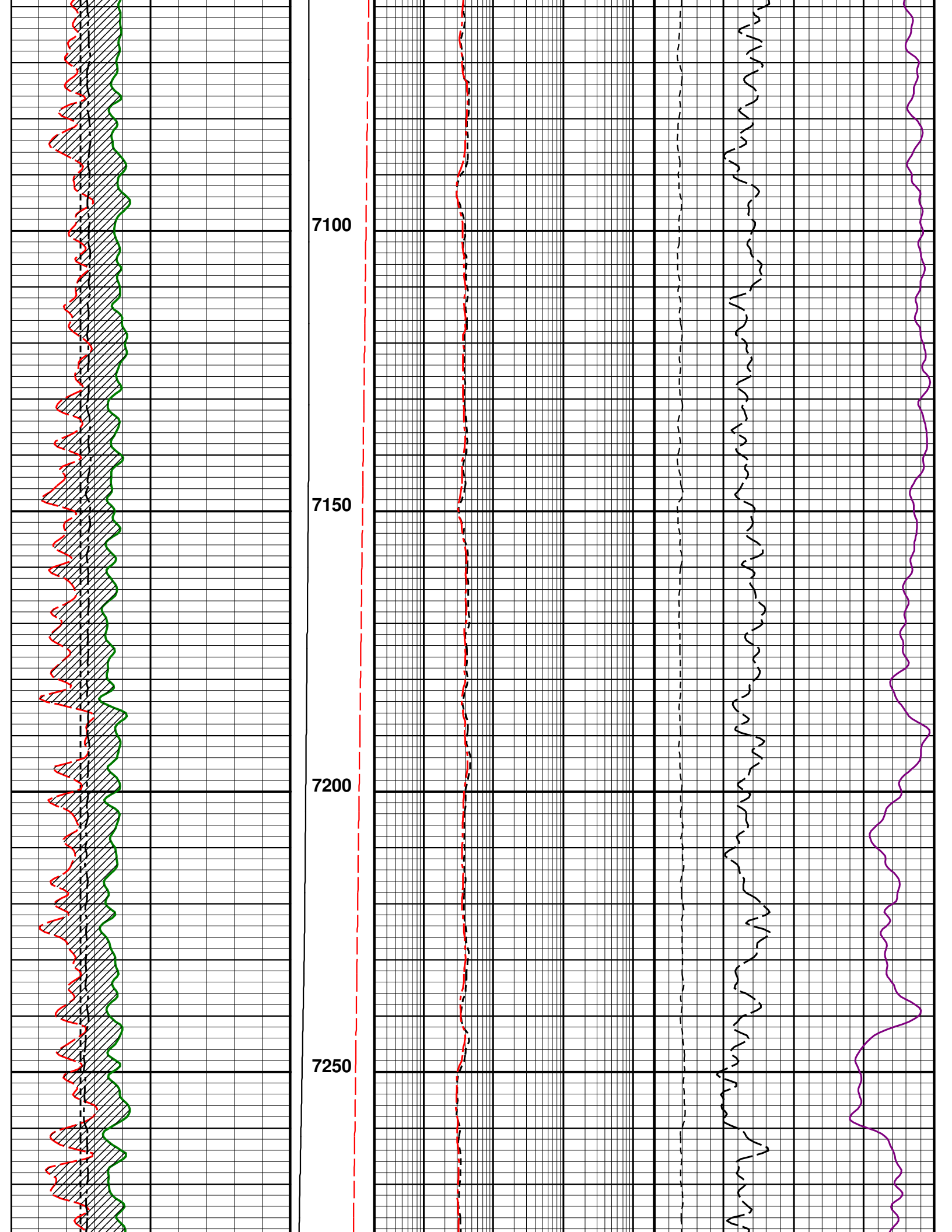


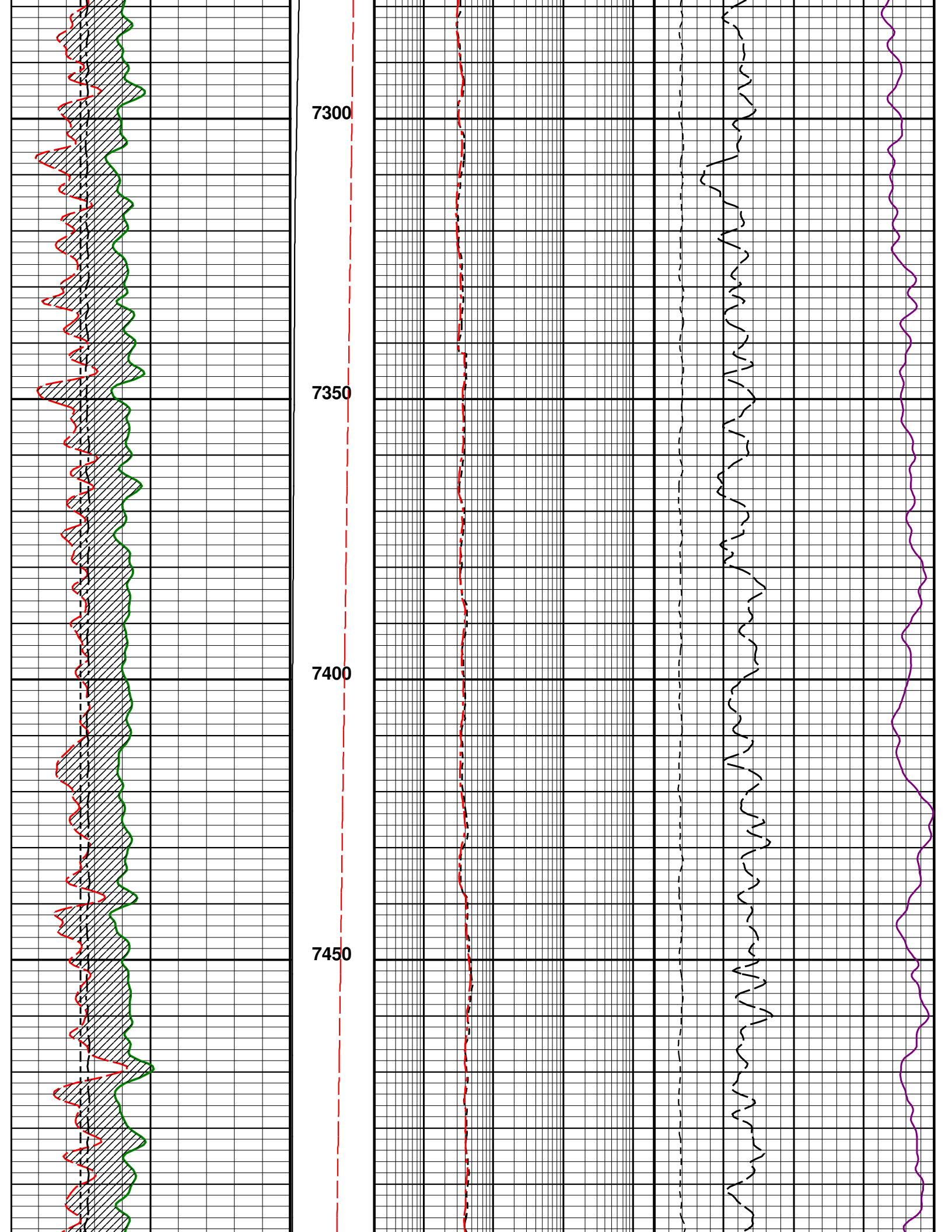


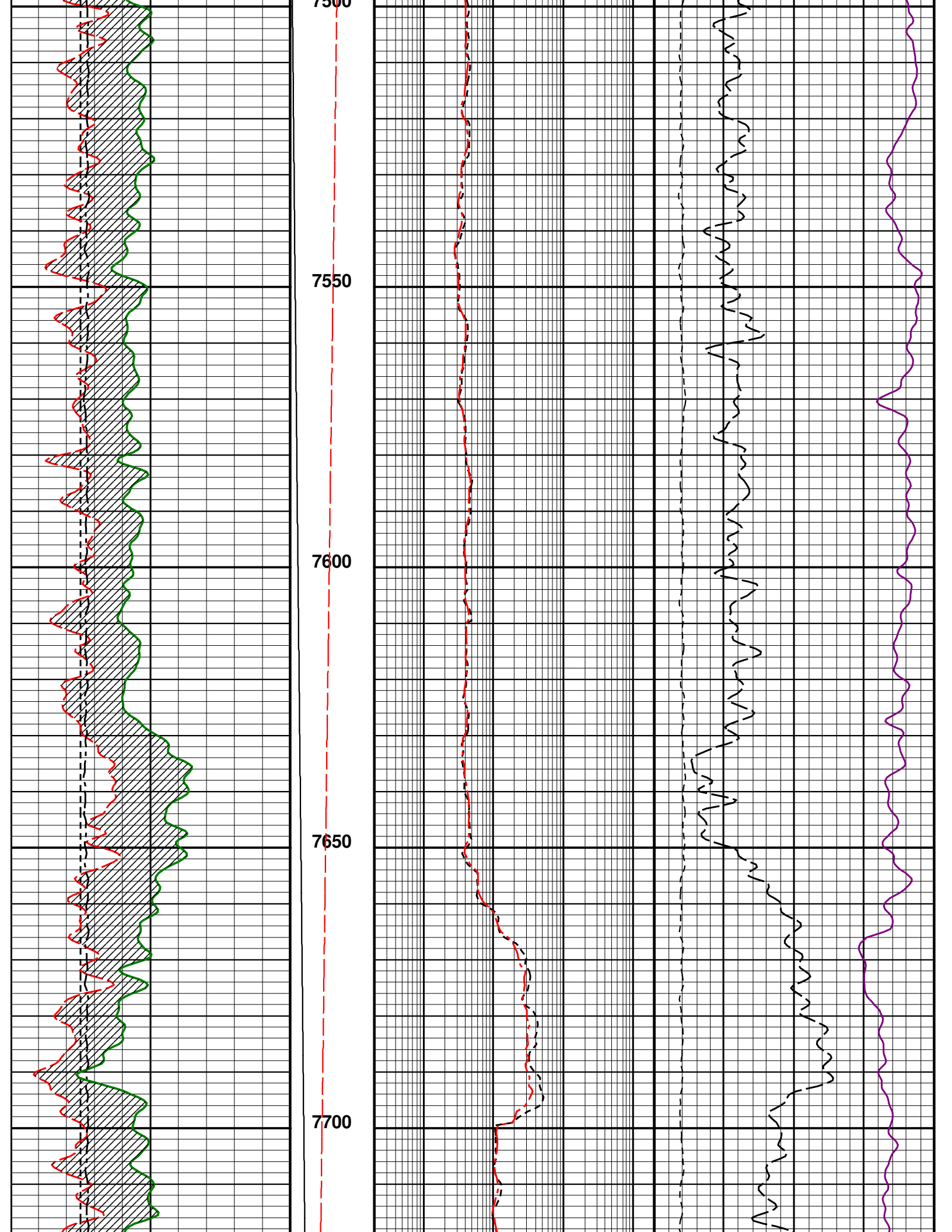
5" MAIN PASS SANDSTONE

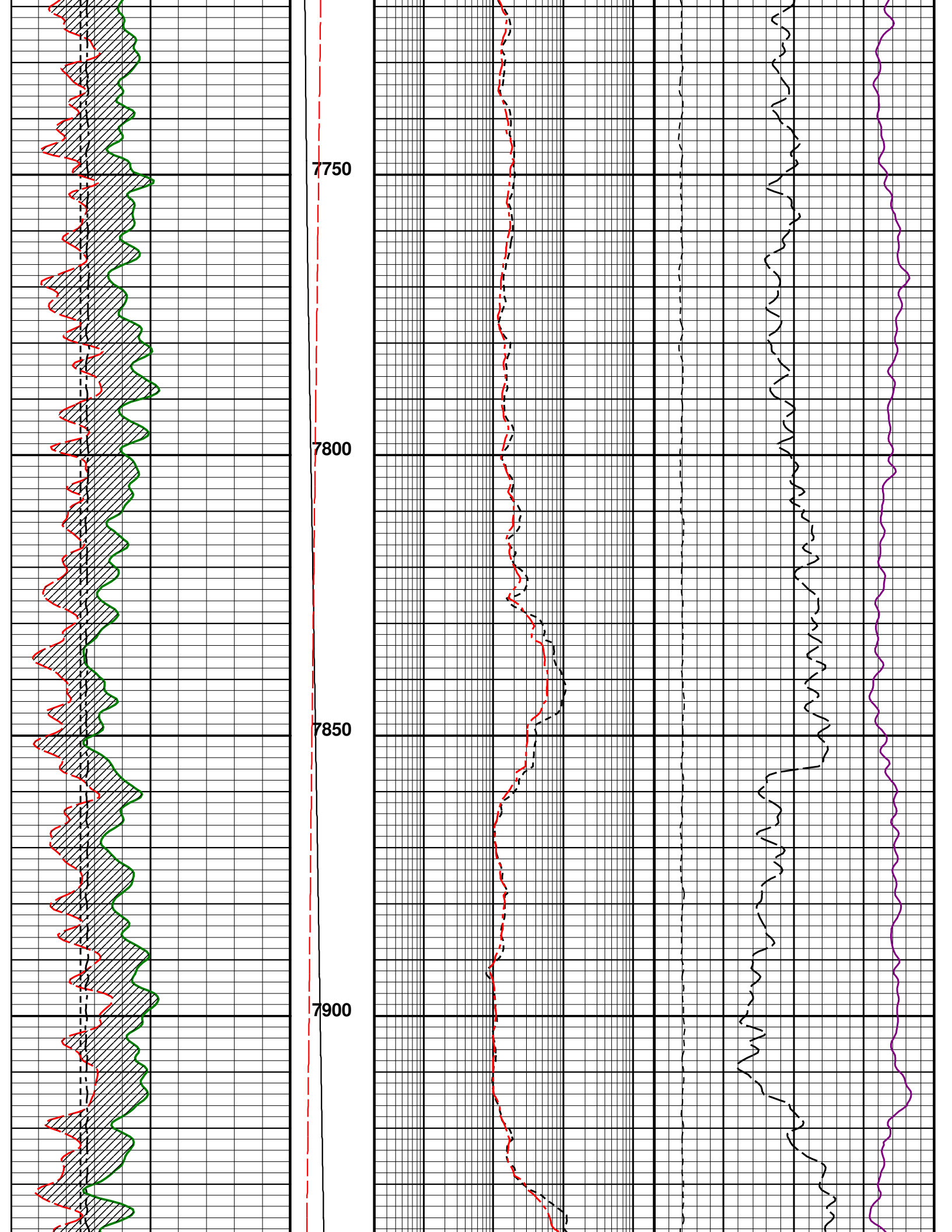
Company : GREAT WESTERN OPERATING COMPANY LLC Date : 1-Dec-2018
Well : SELTZER LD 21-031HC Time :
Scale : 1 : 240 Remarks : SANDSTONE MATRIX
Depth in : Feet
Software : WinAPIPlot Ver. 5, 87, 2, 0 File Name : 812_05-001-10199_MAIN MD

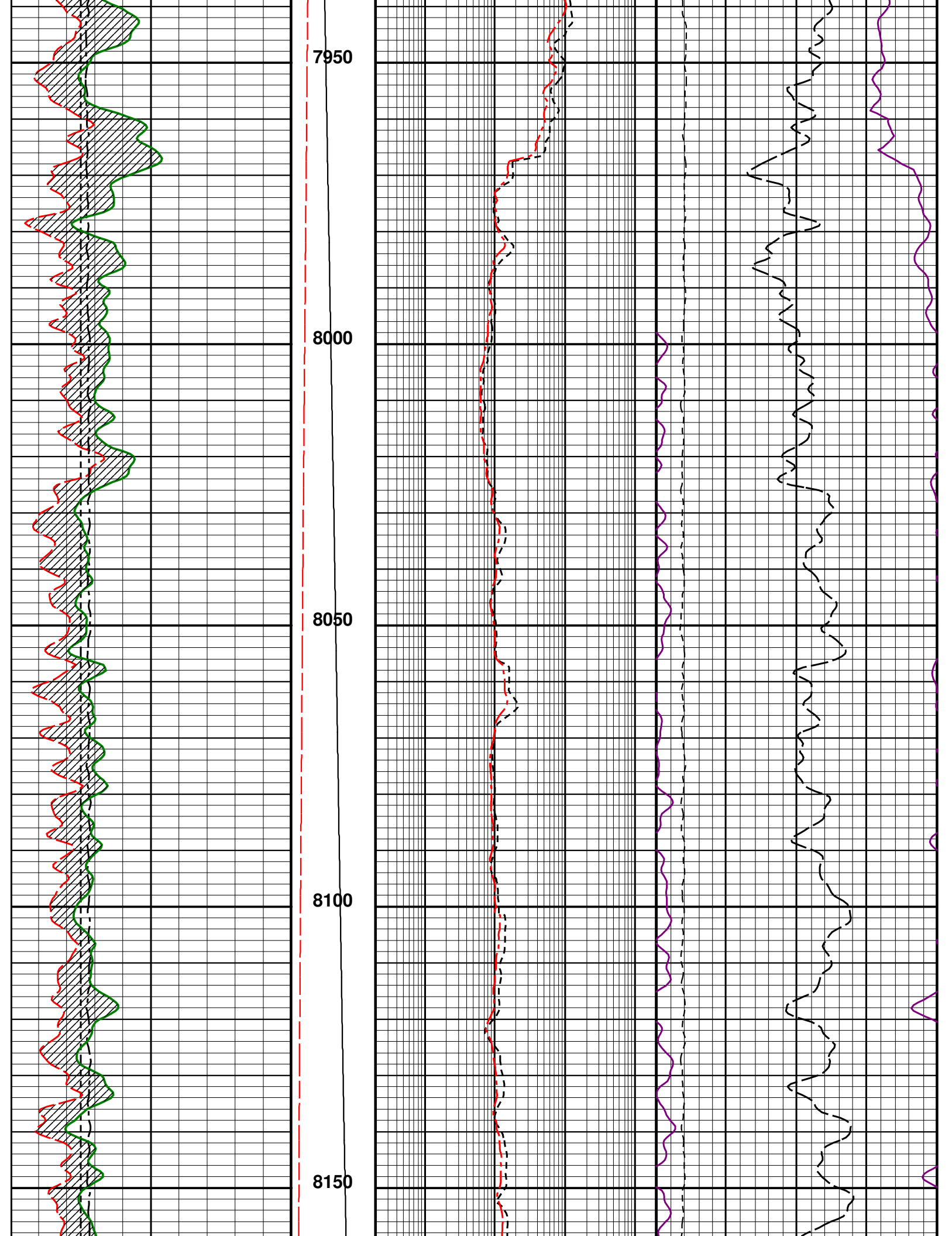


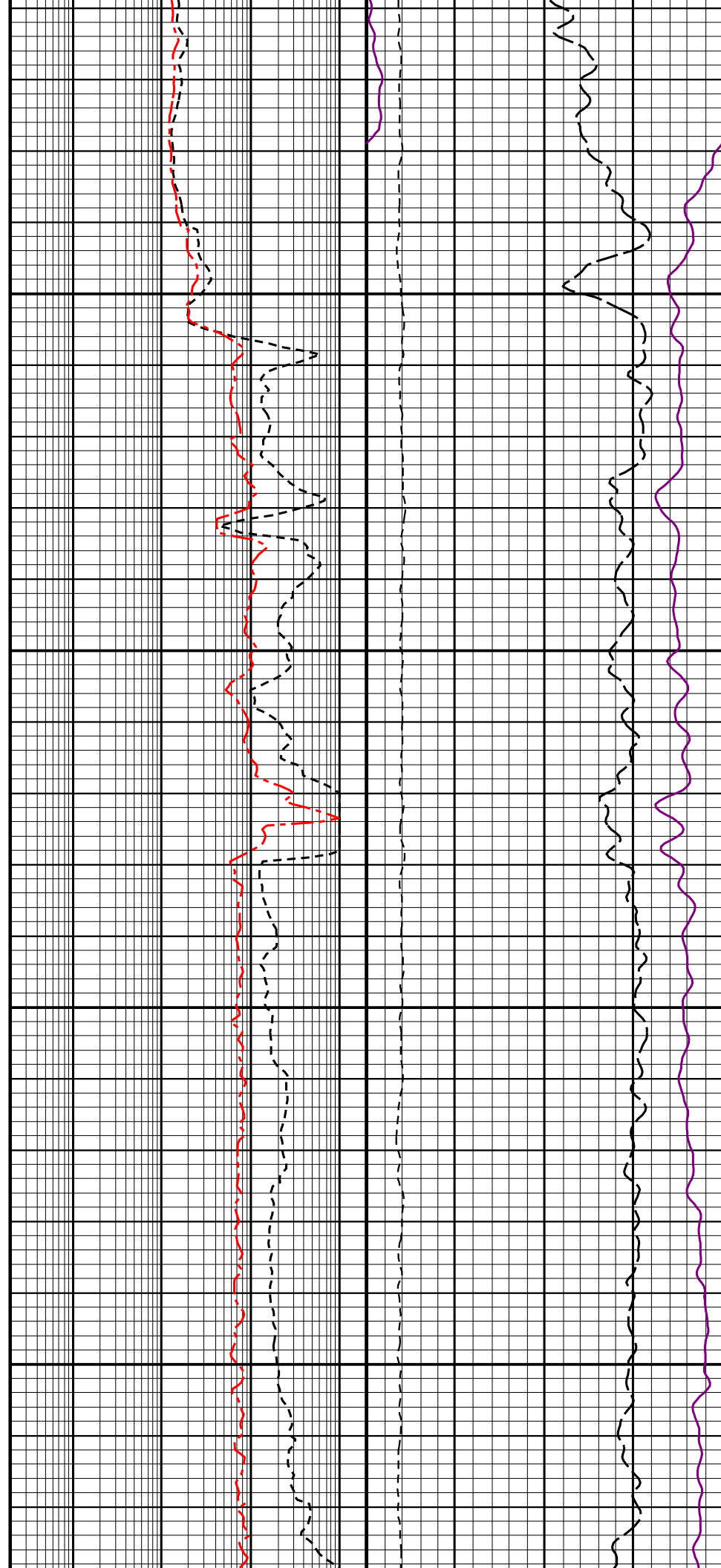
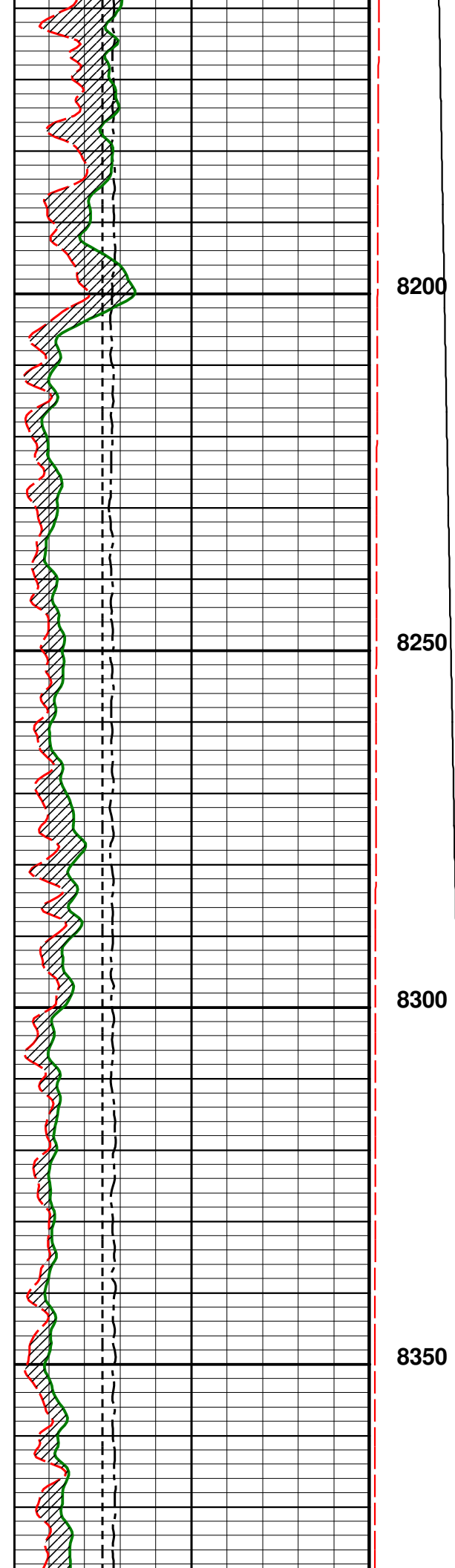


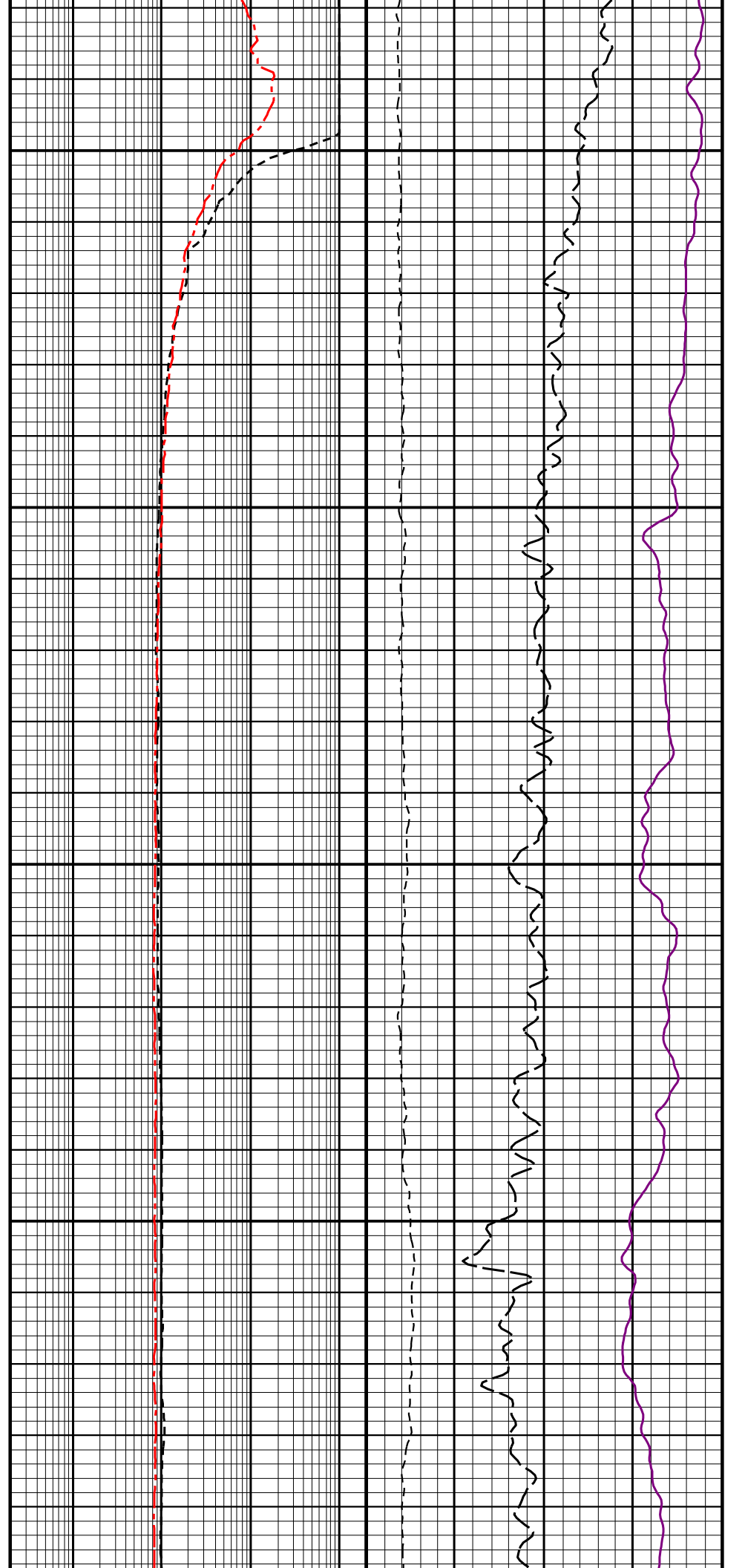
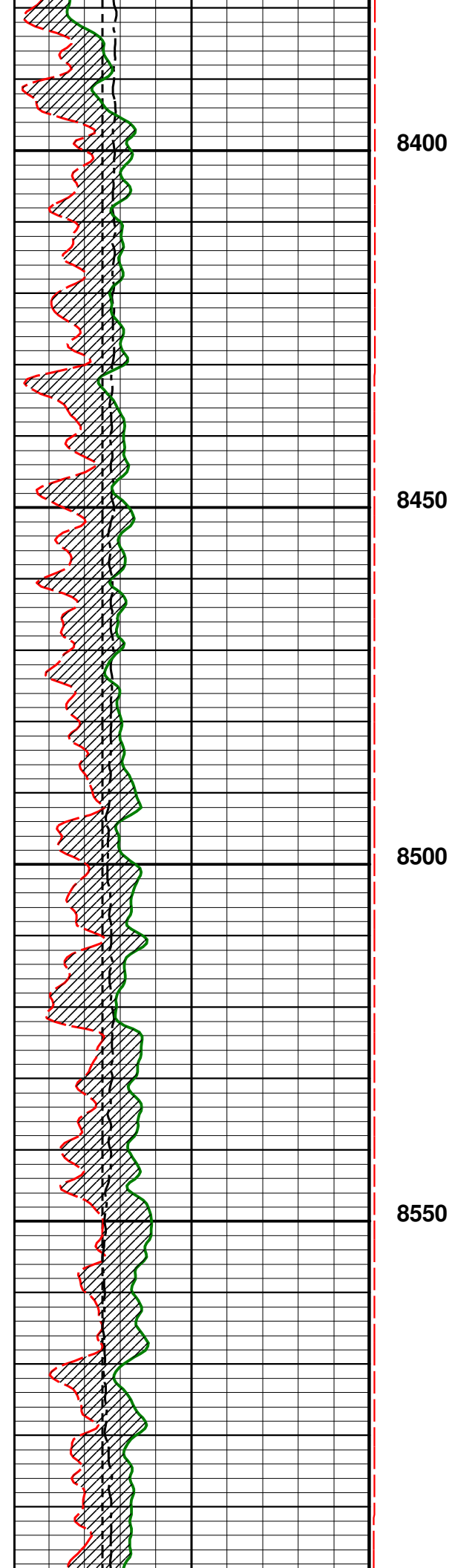


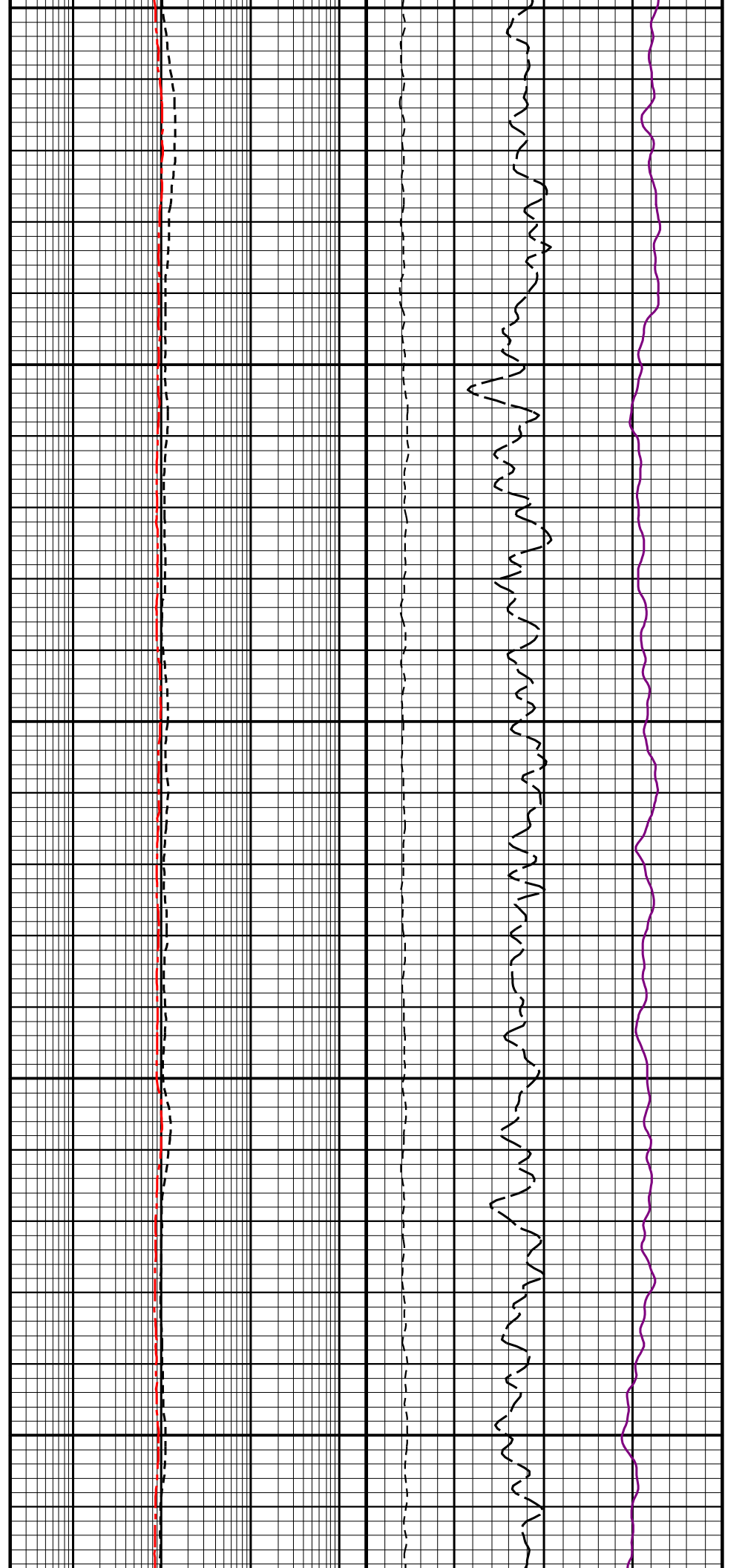
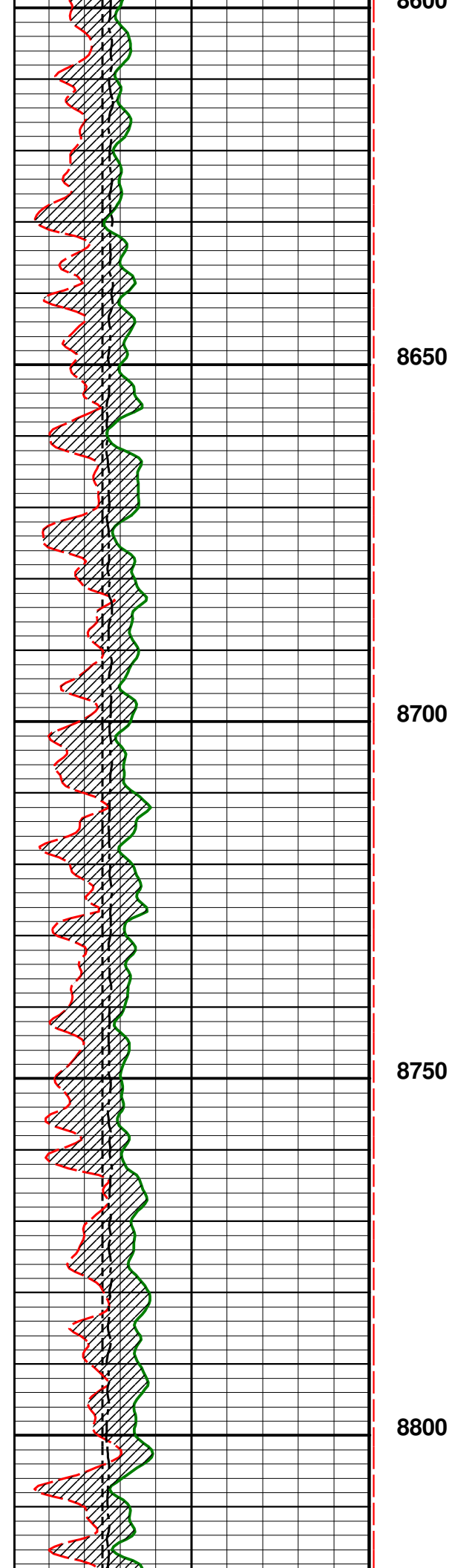


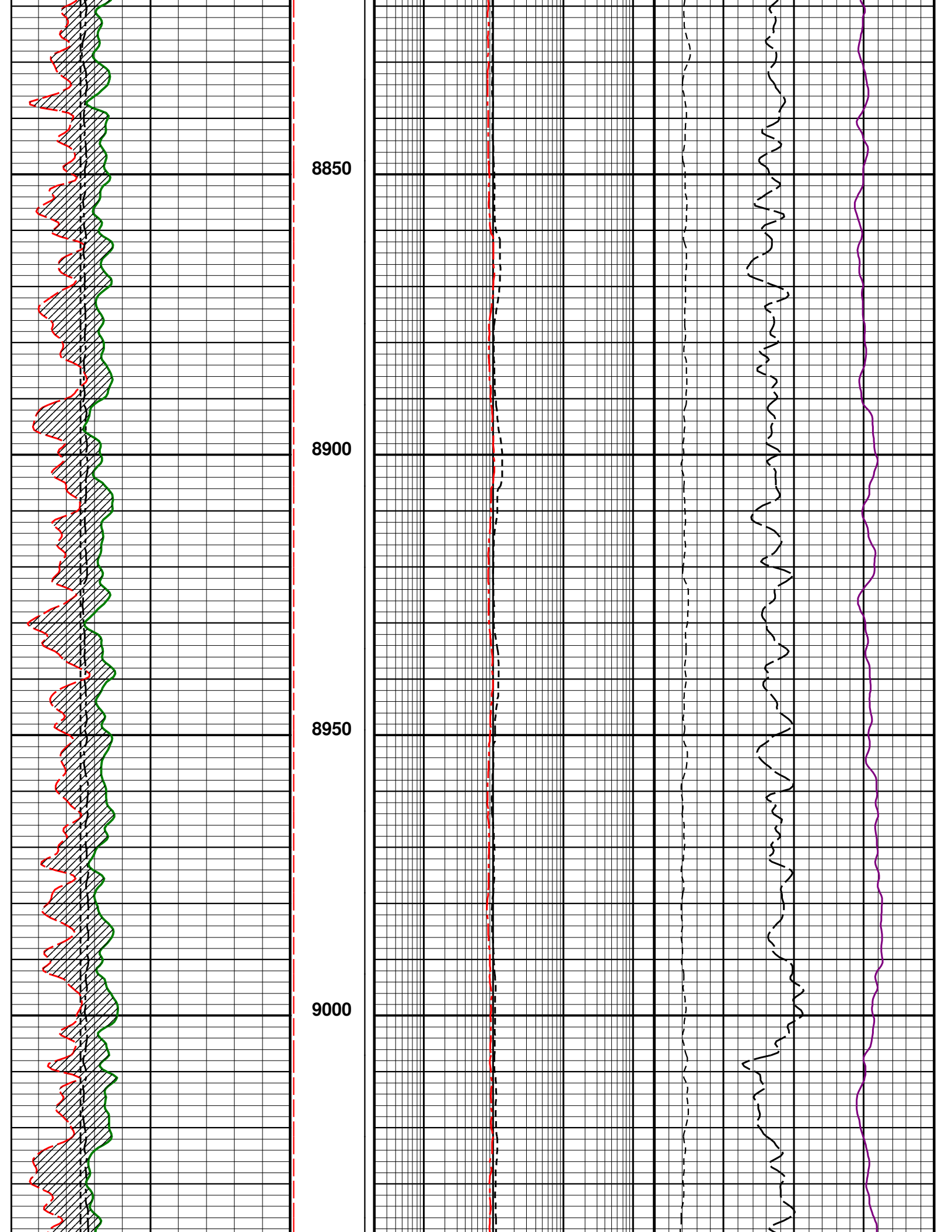


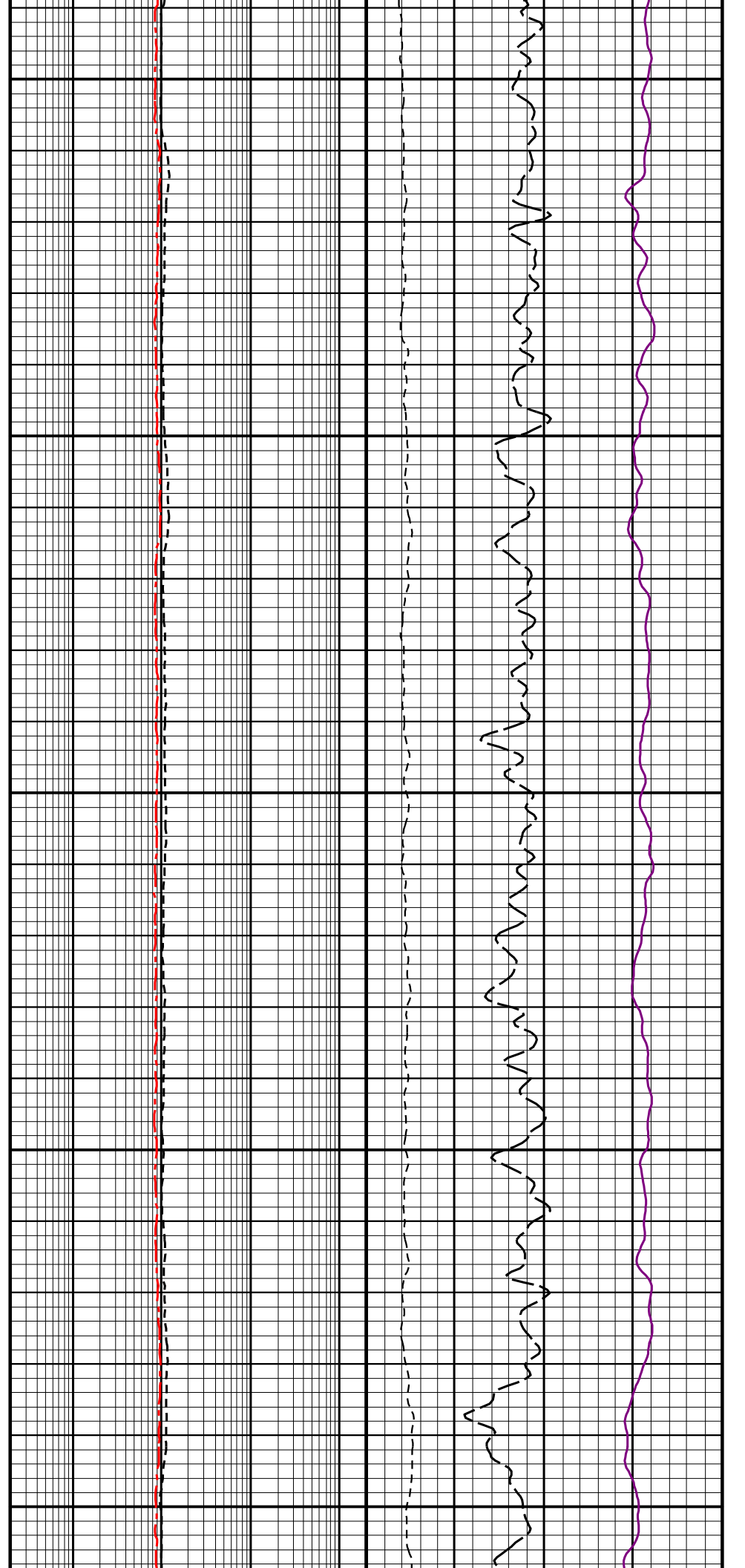
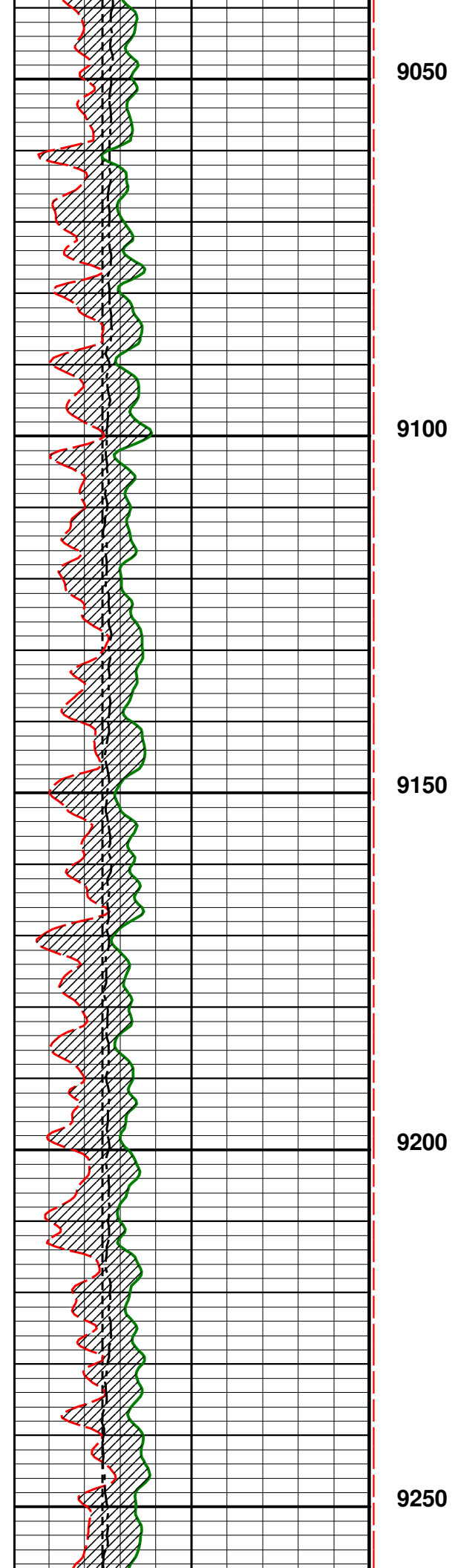


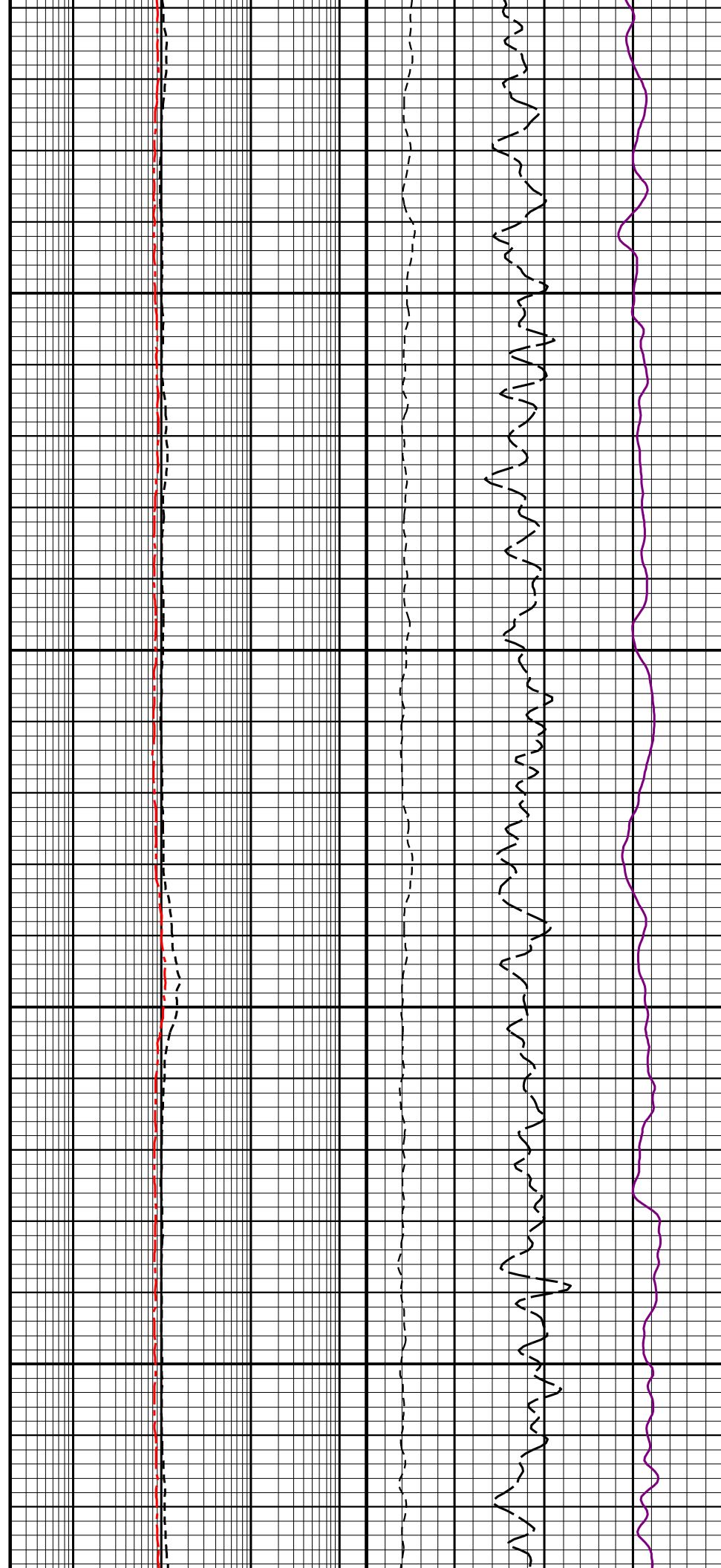
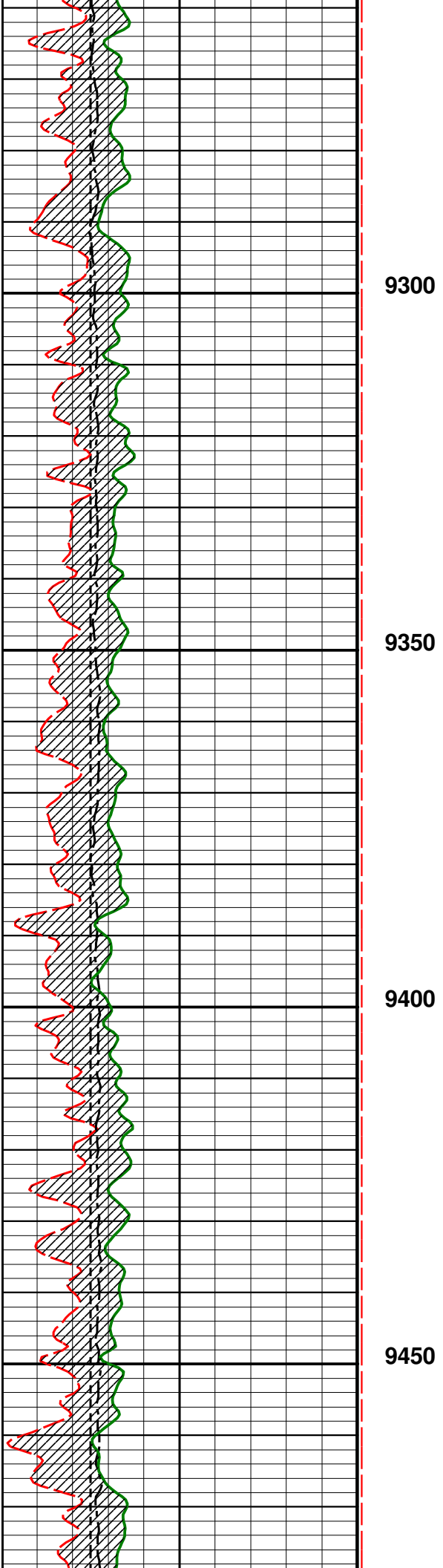


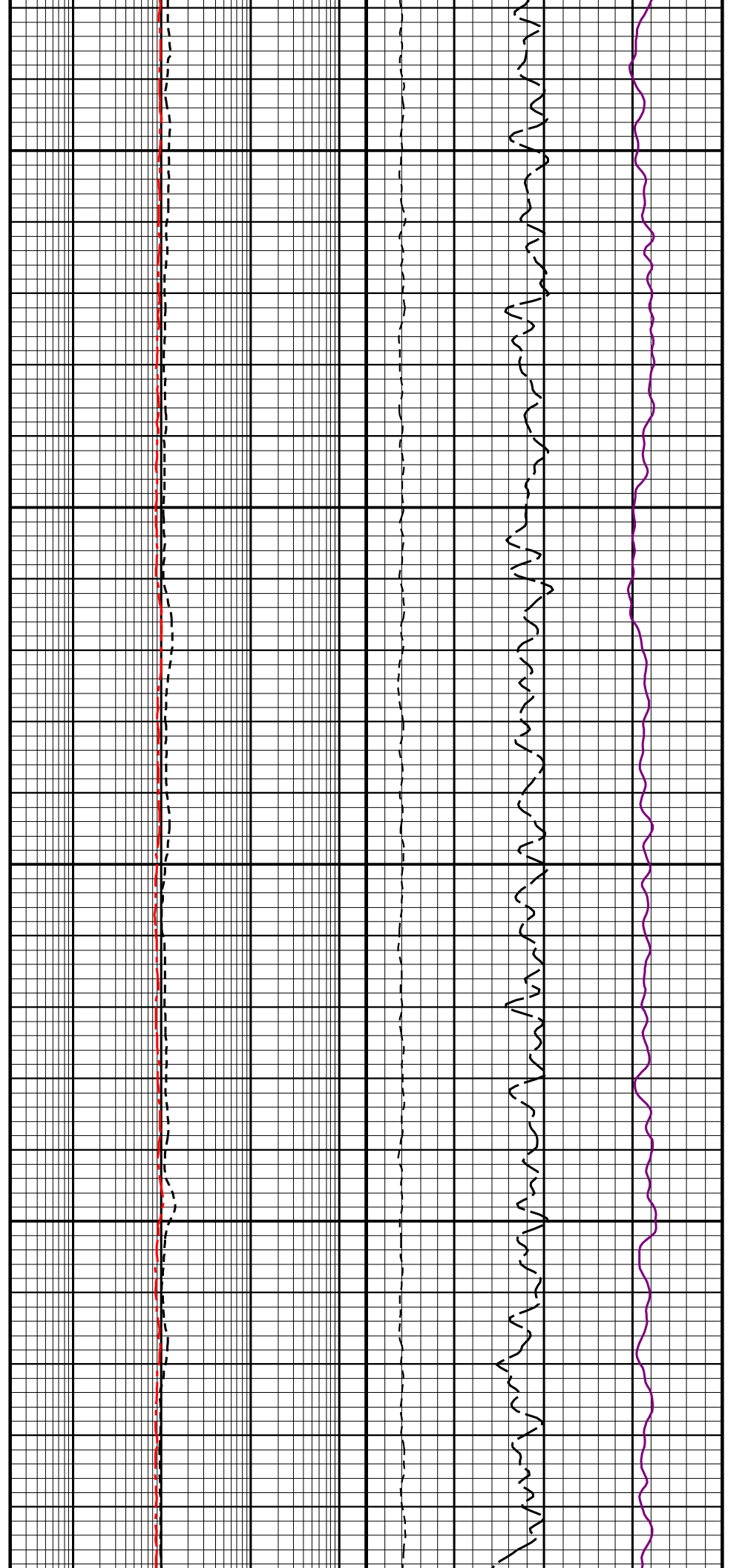
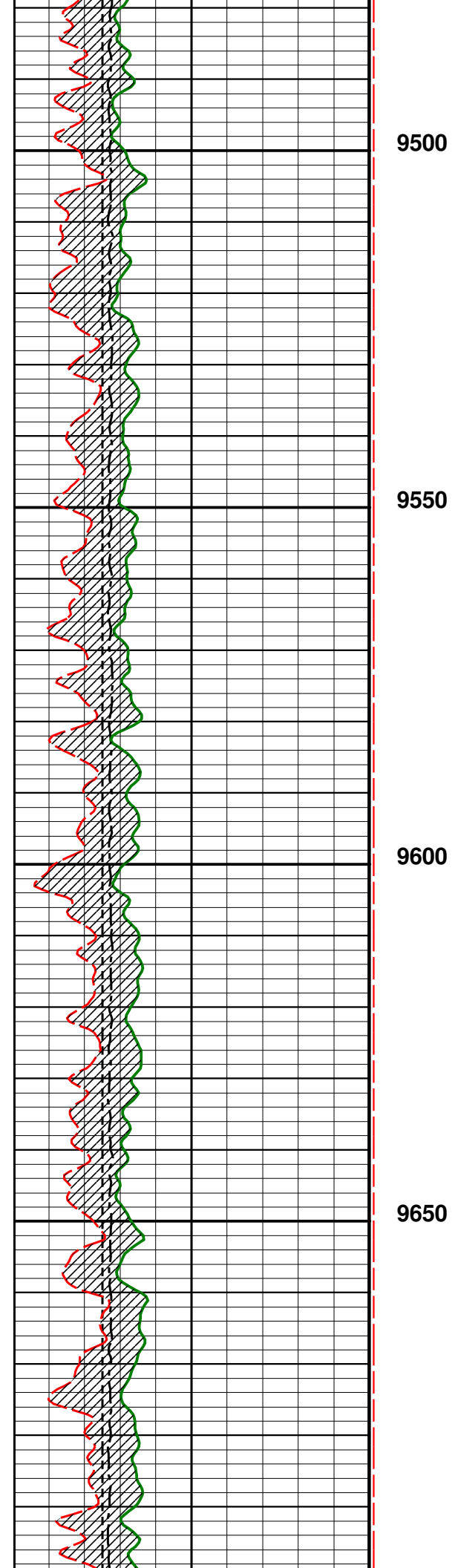


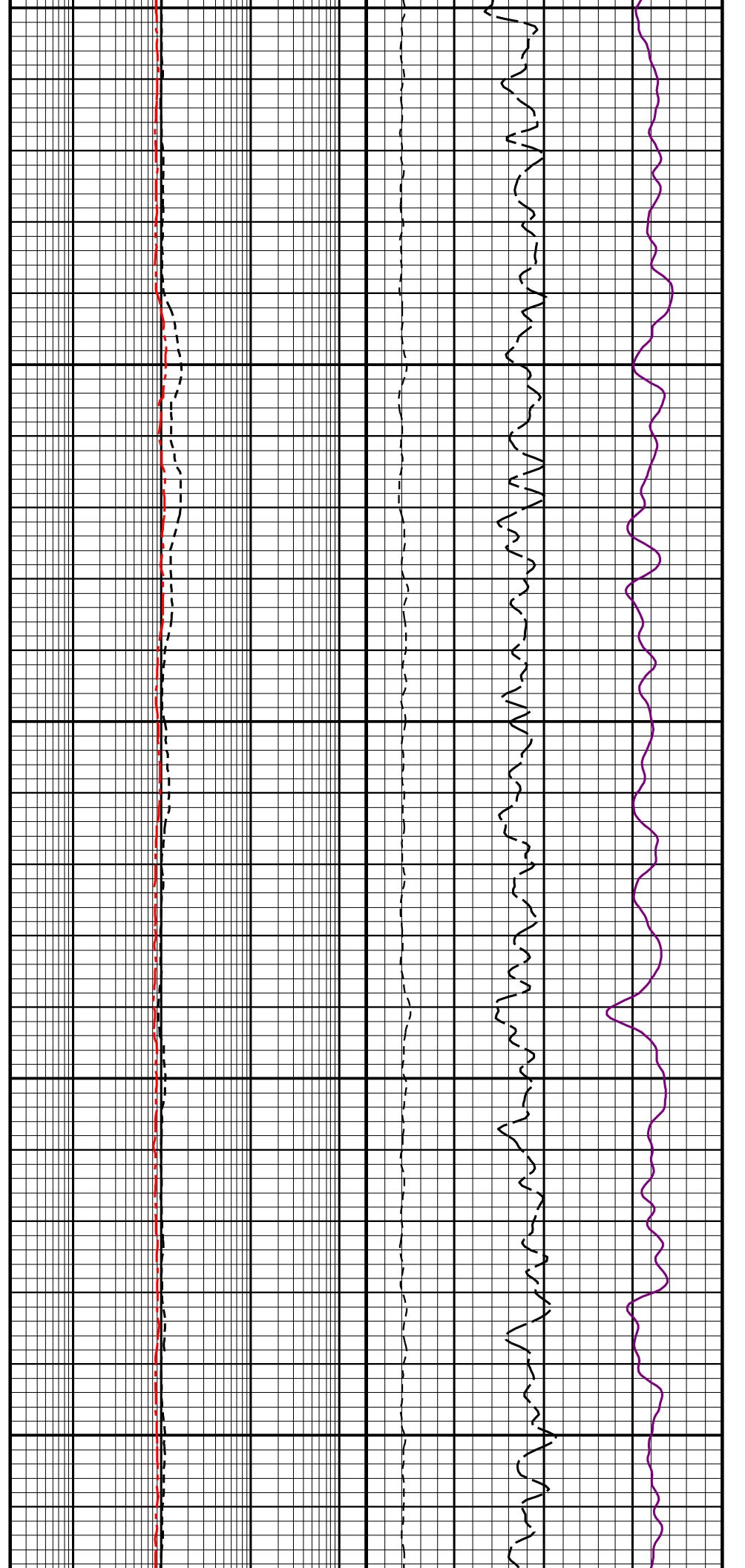
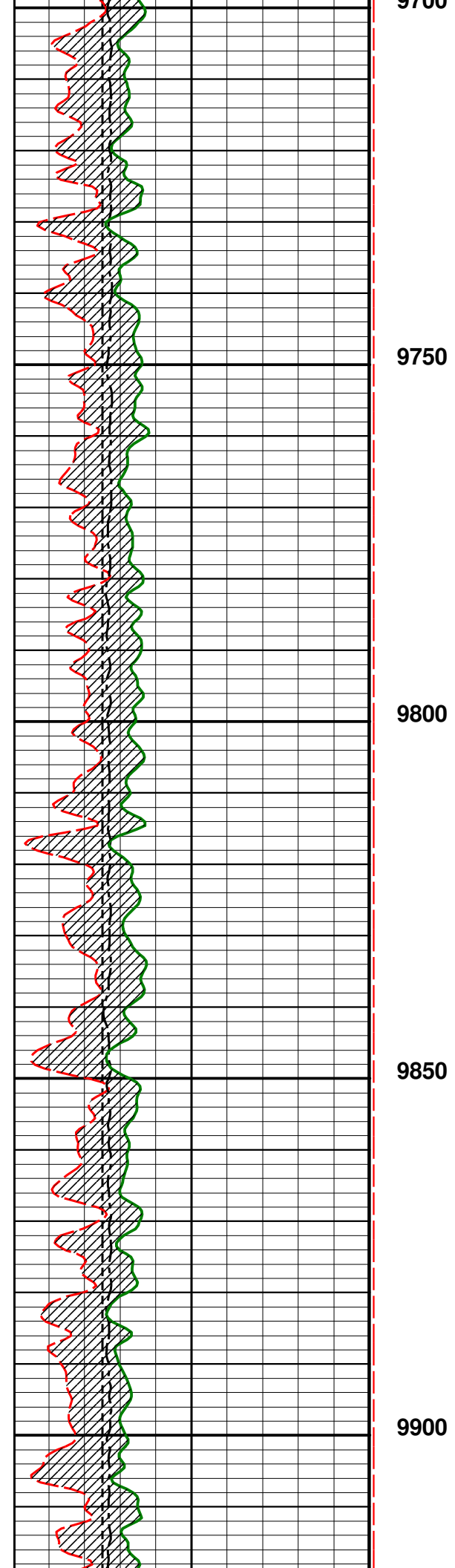


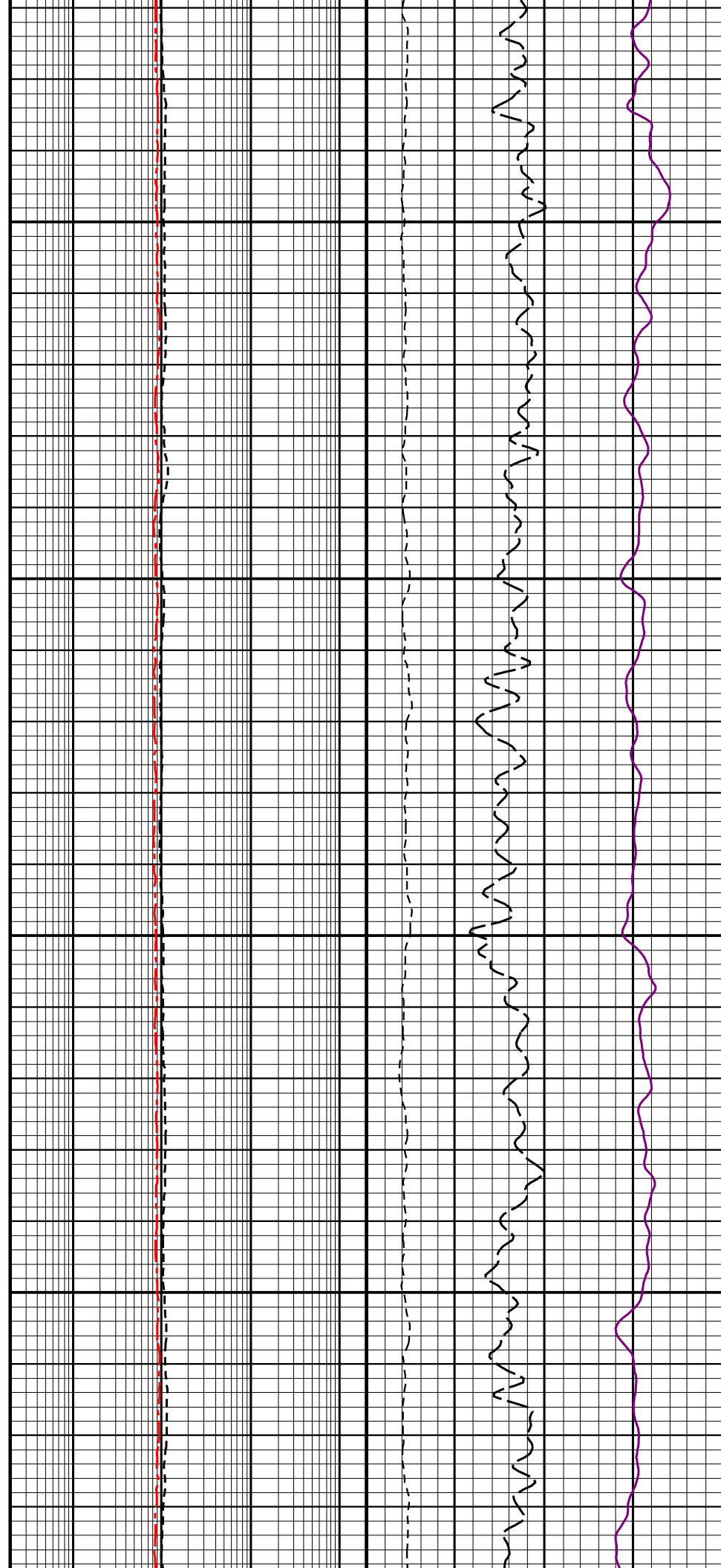
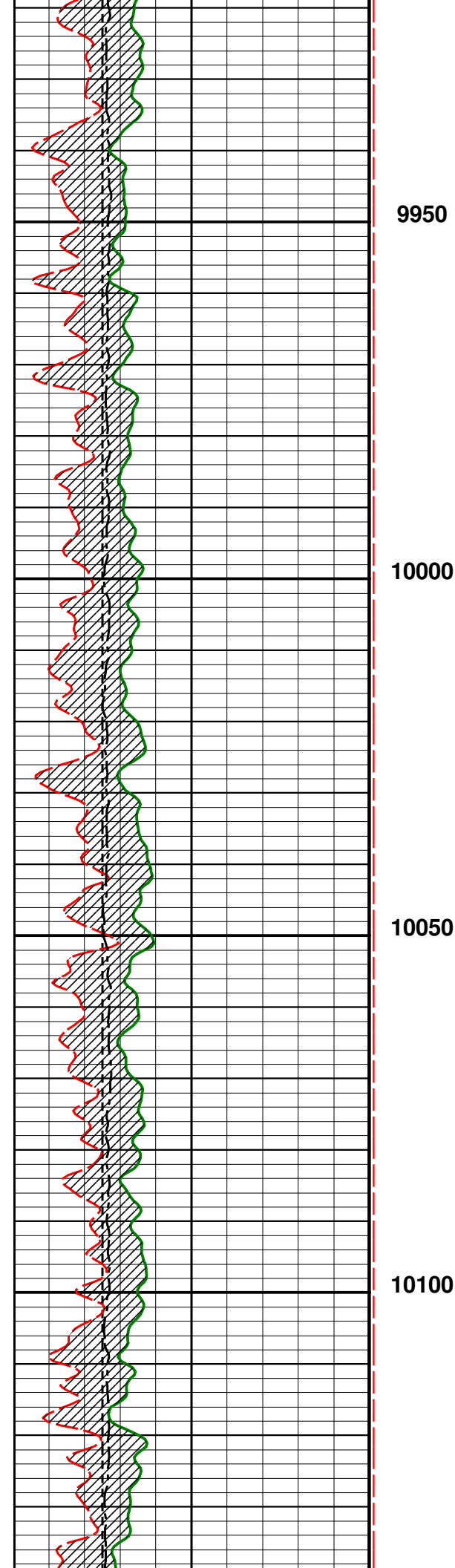


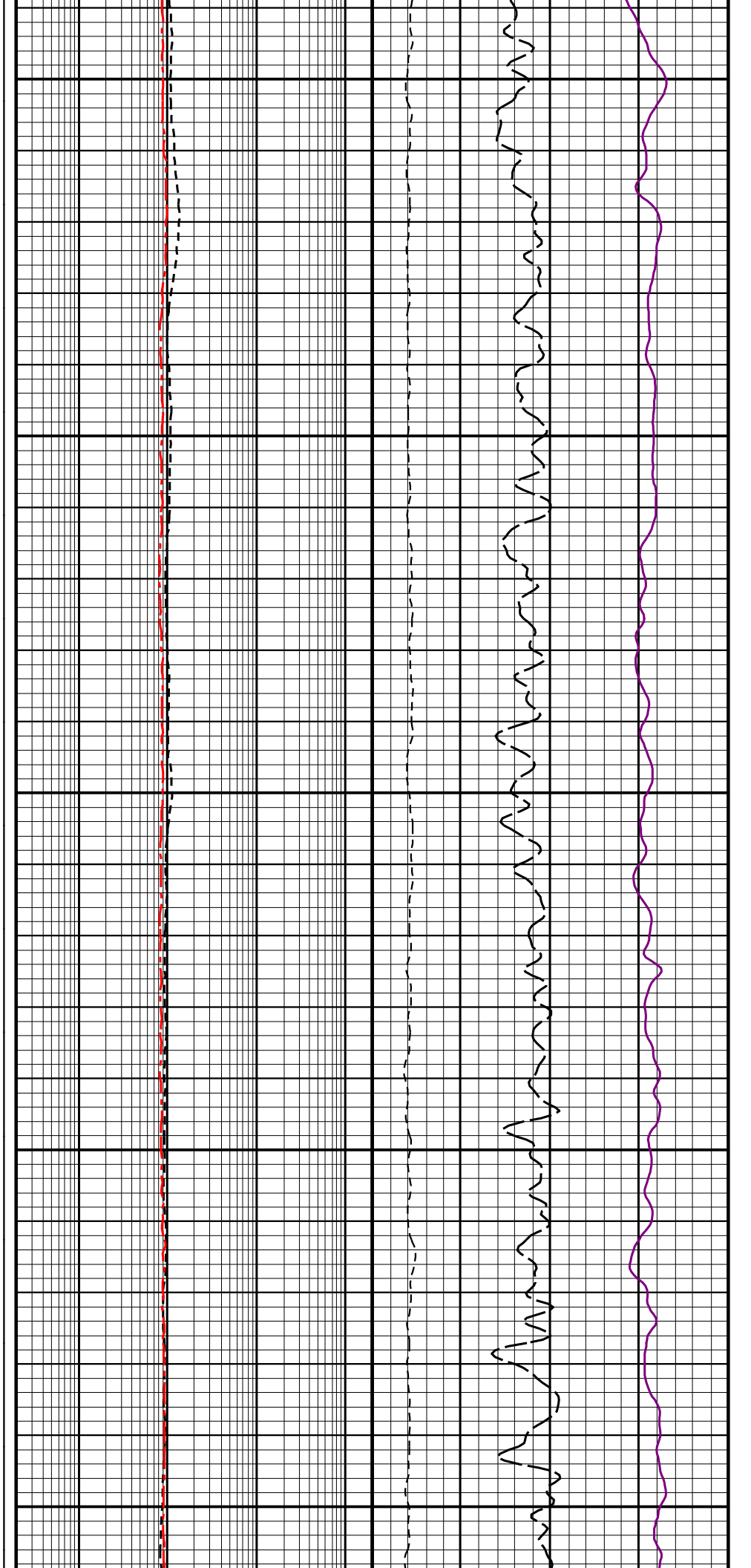
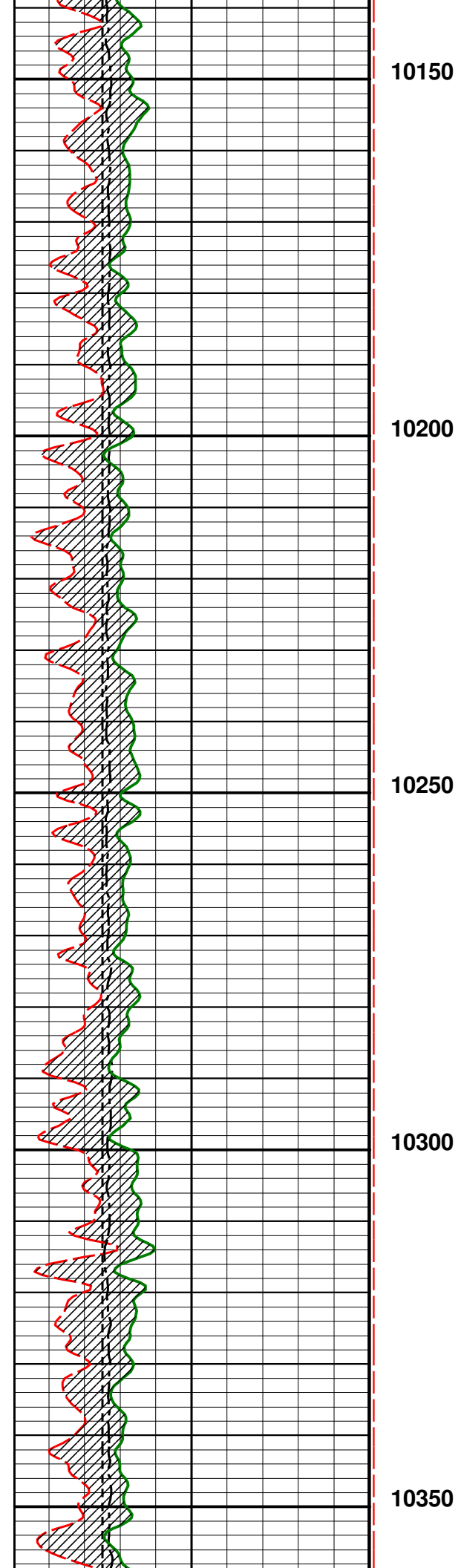


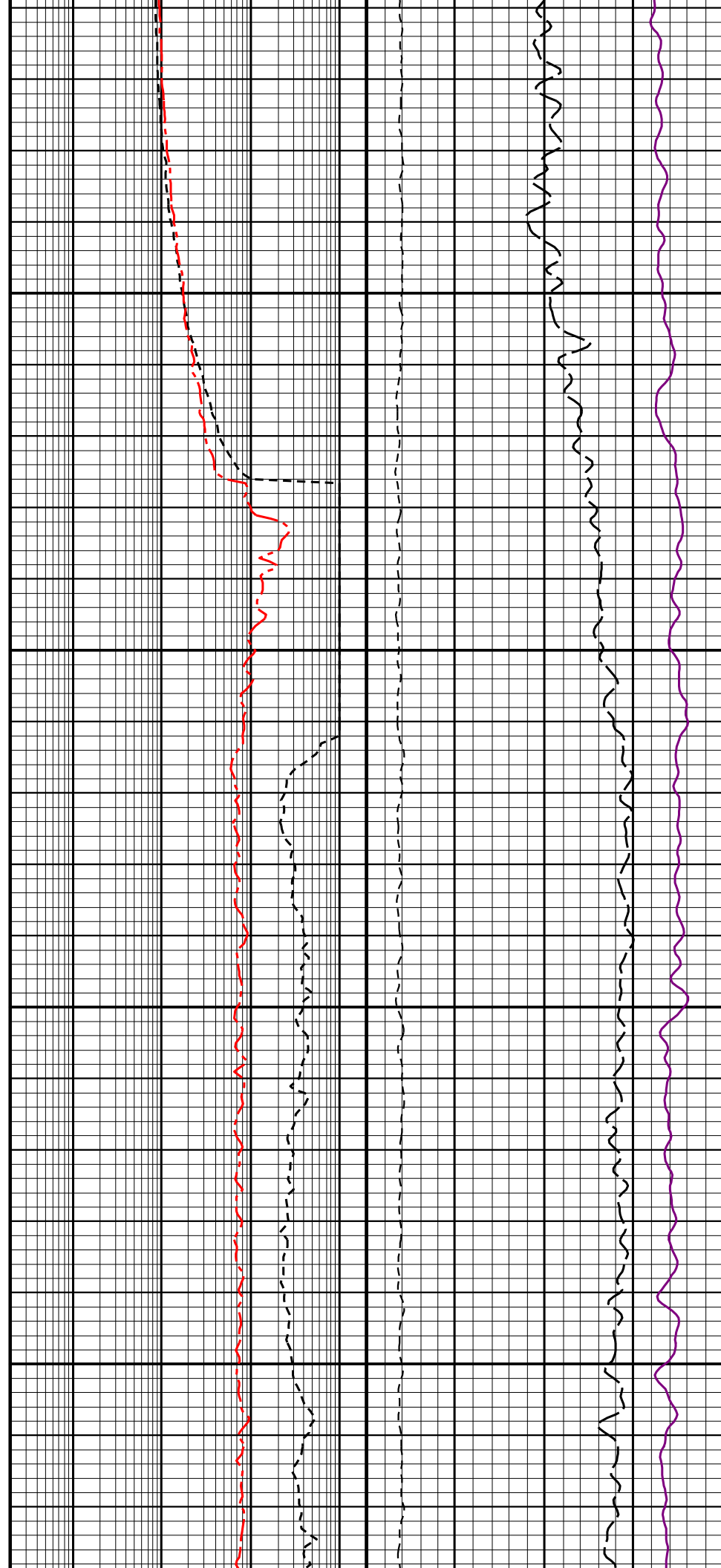
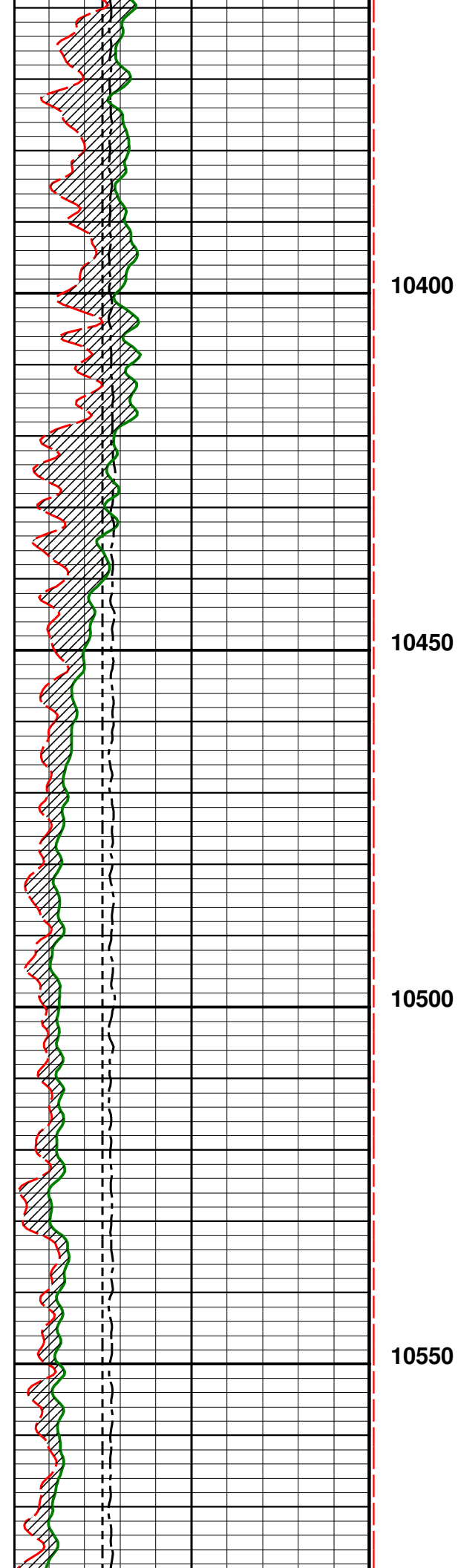


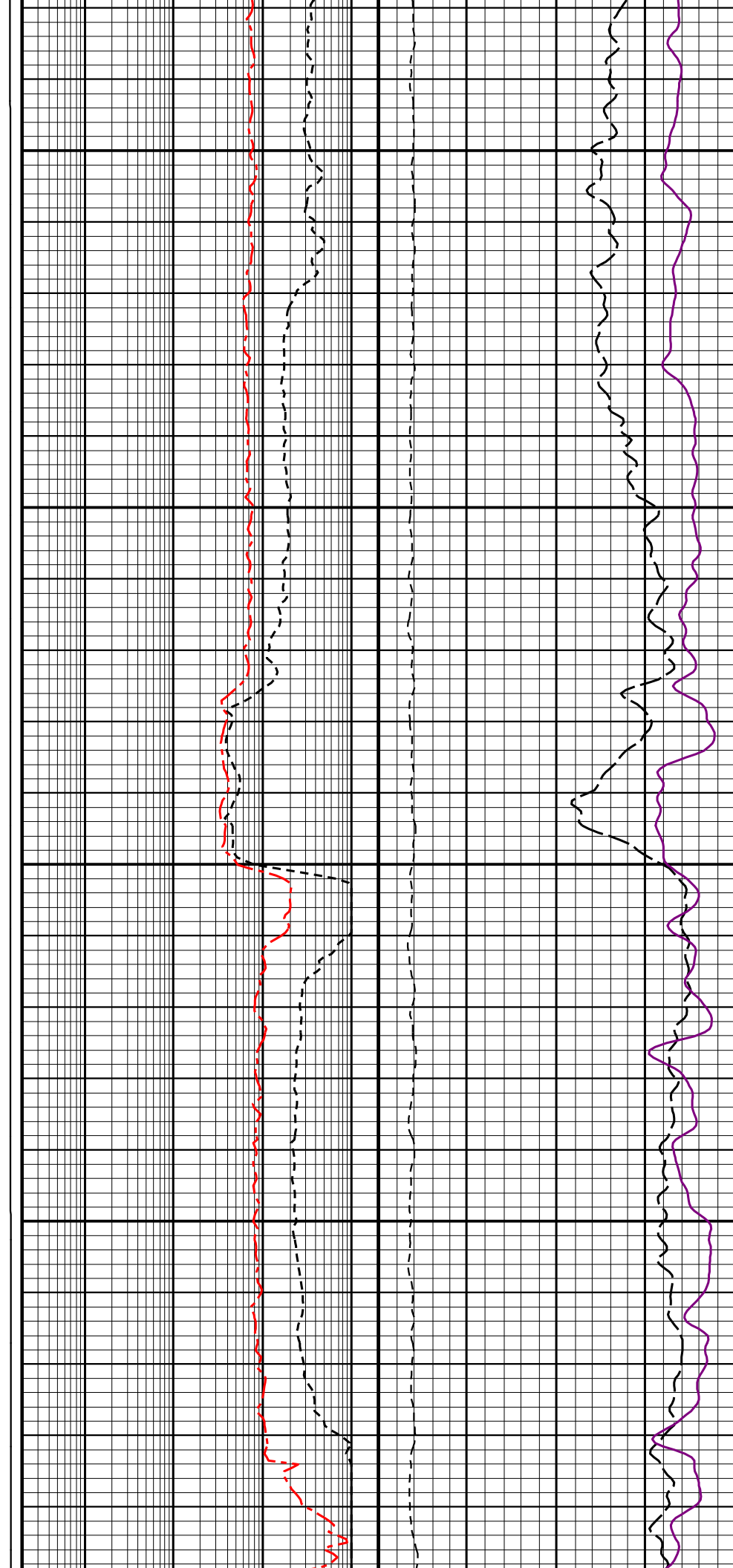
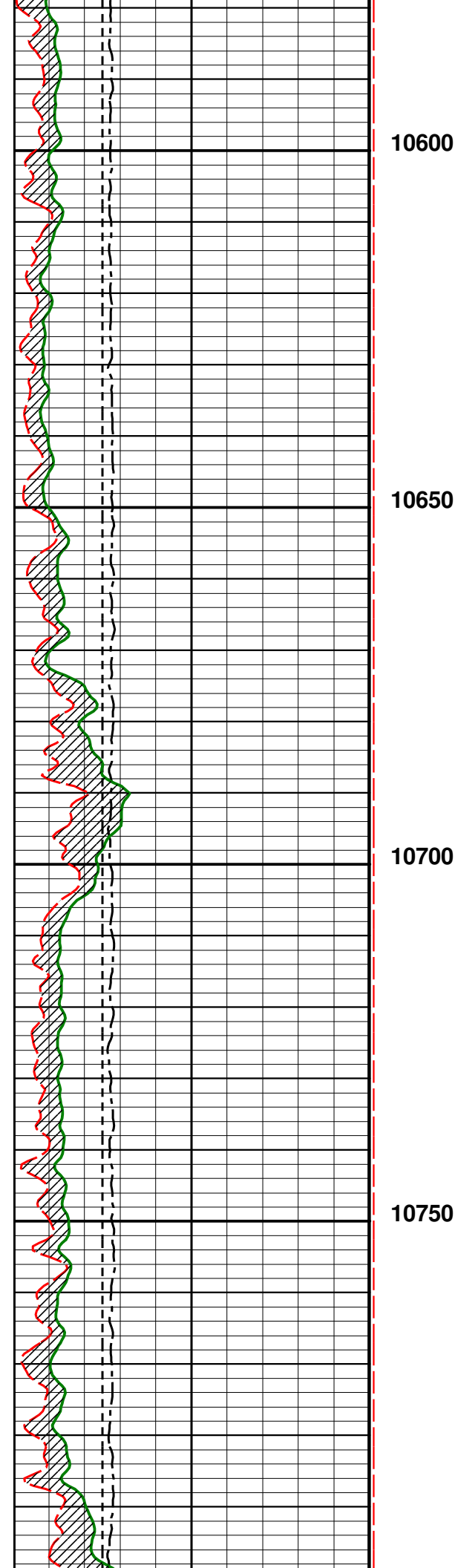


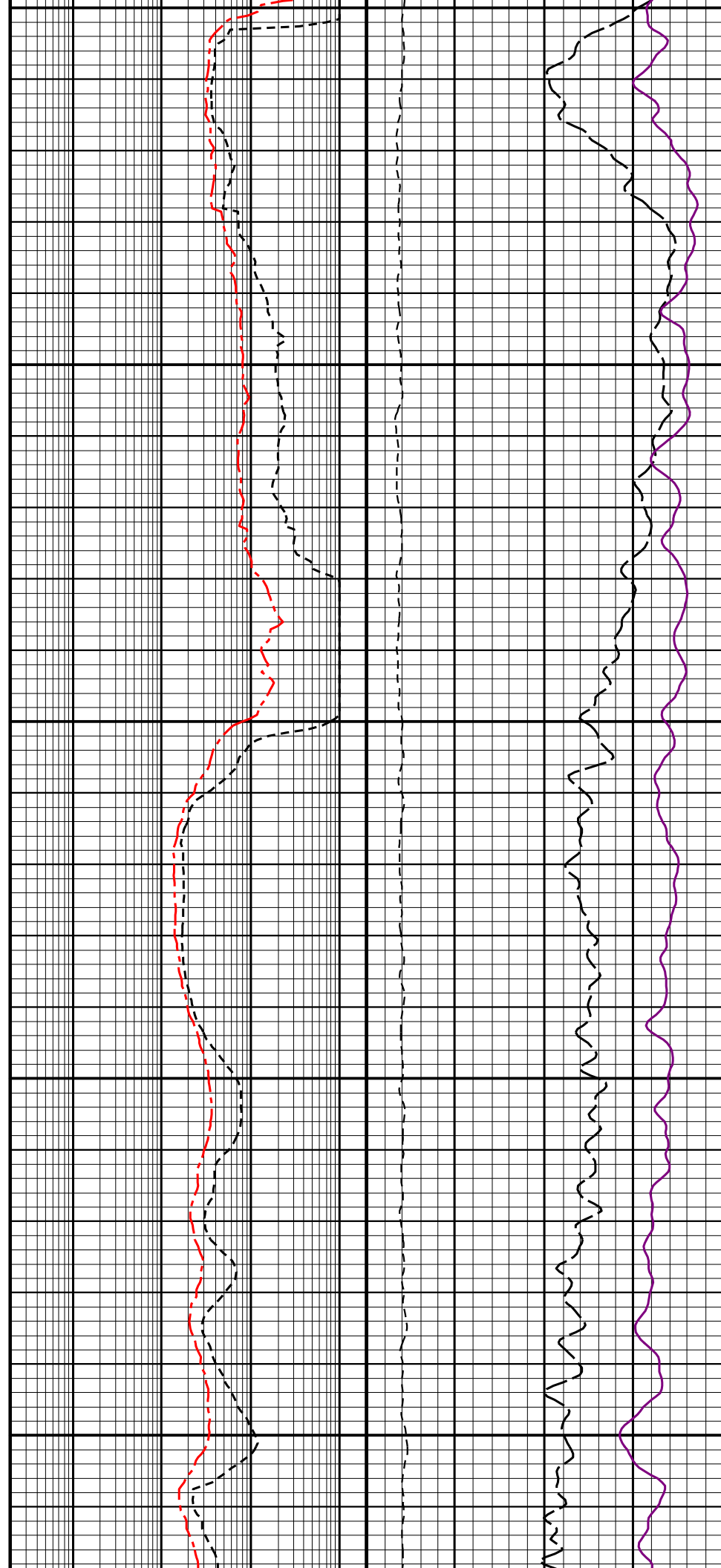
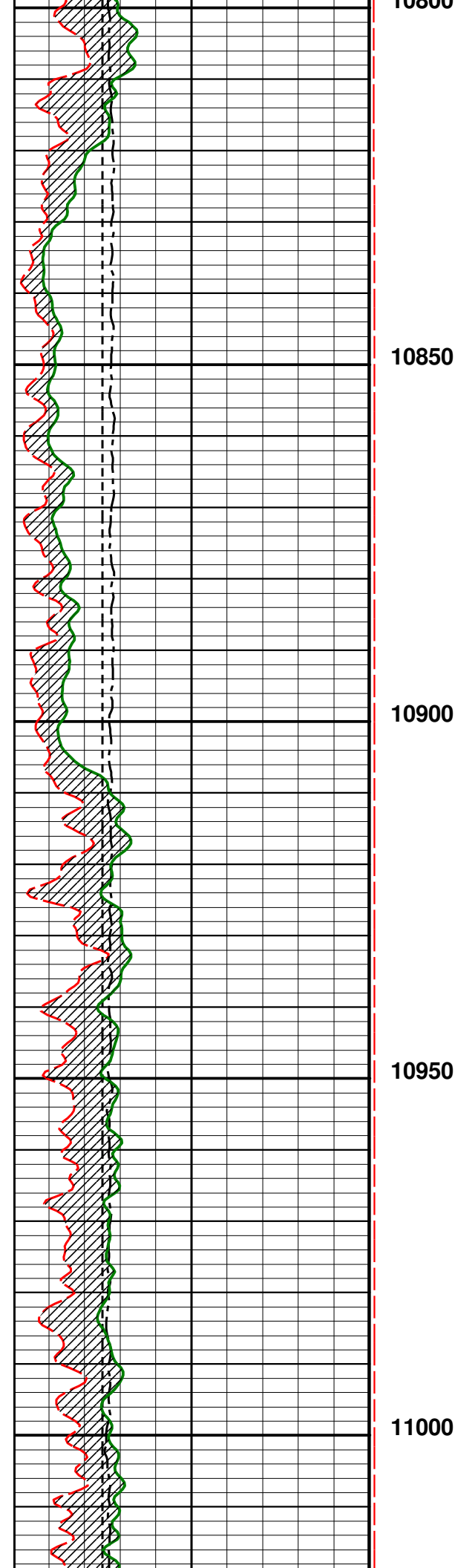


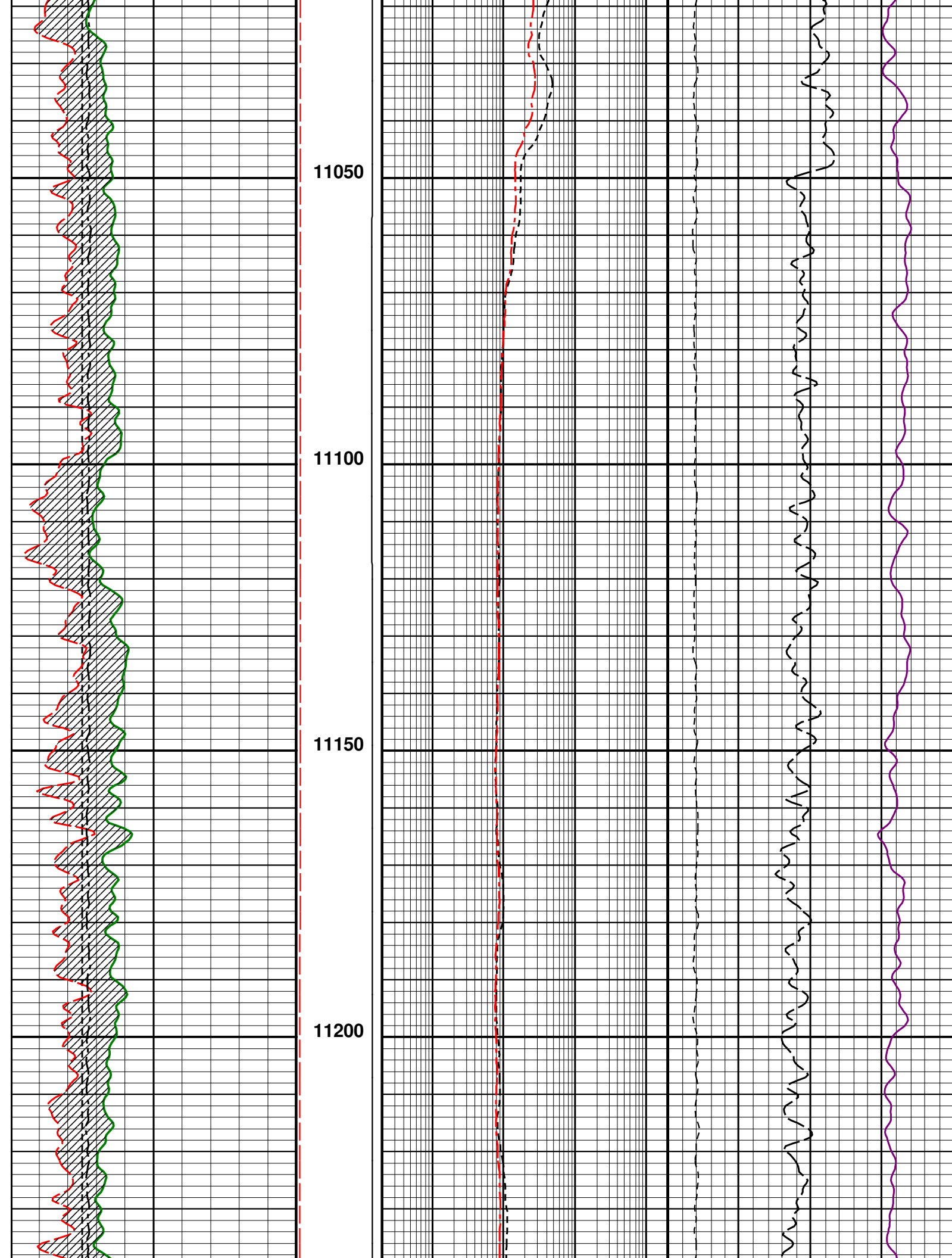


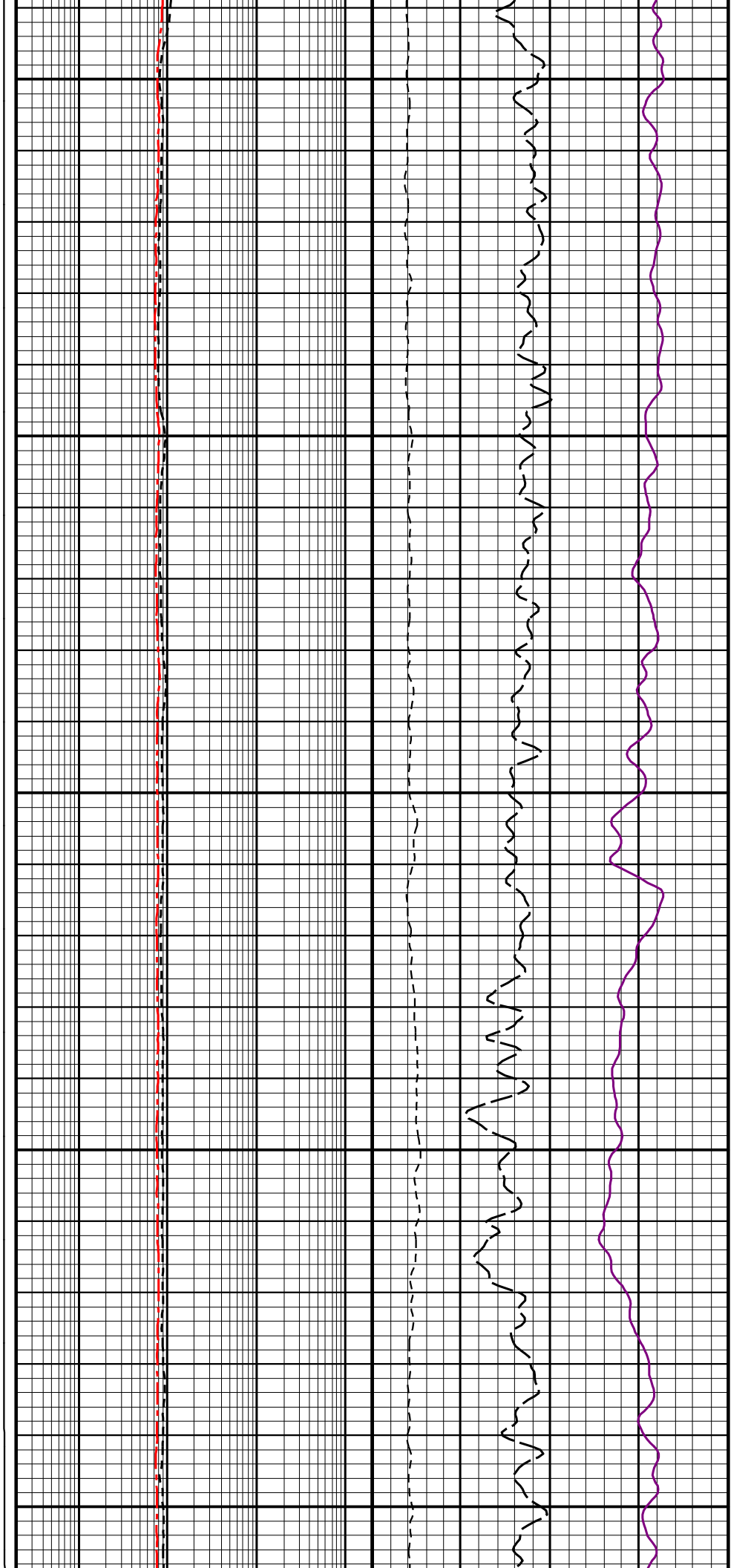
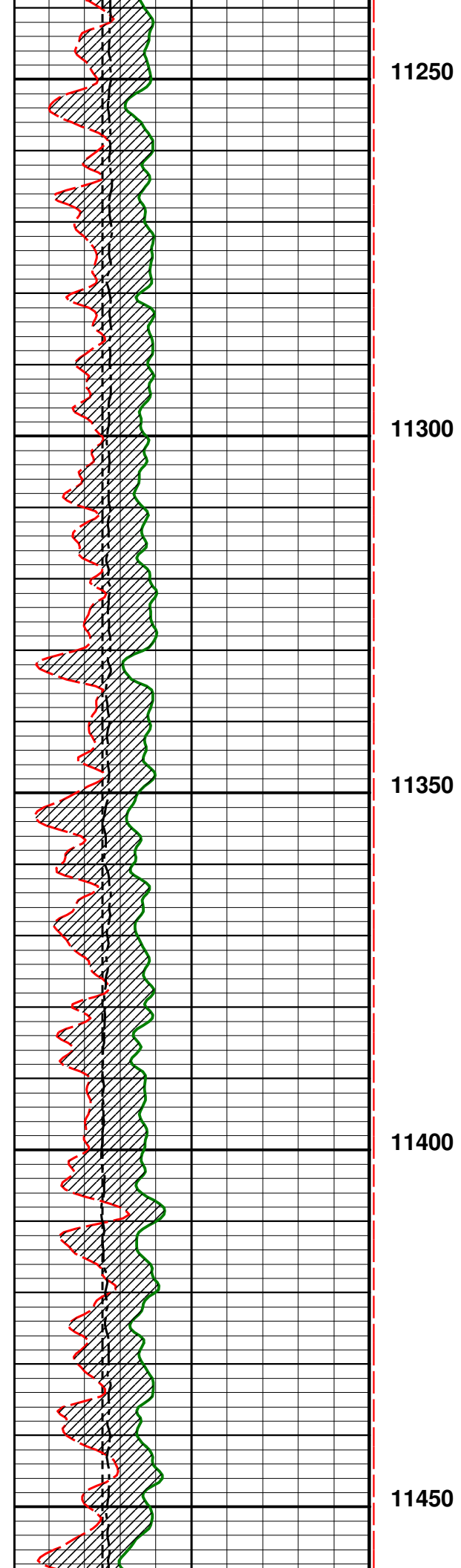


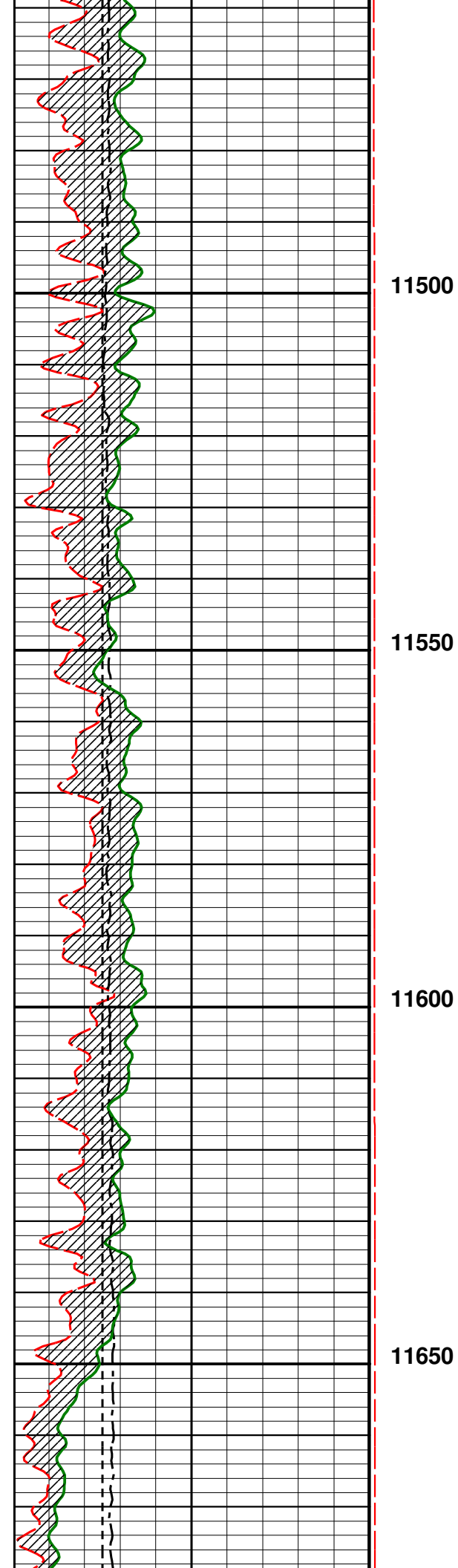


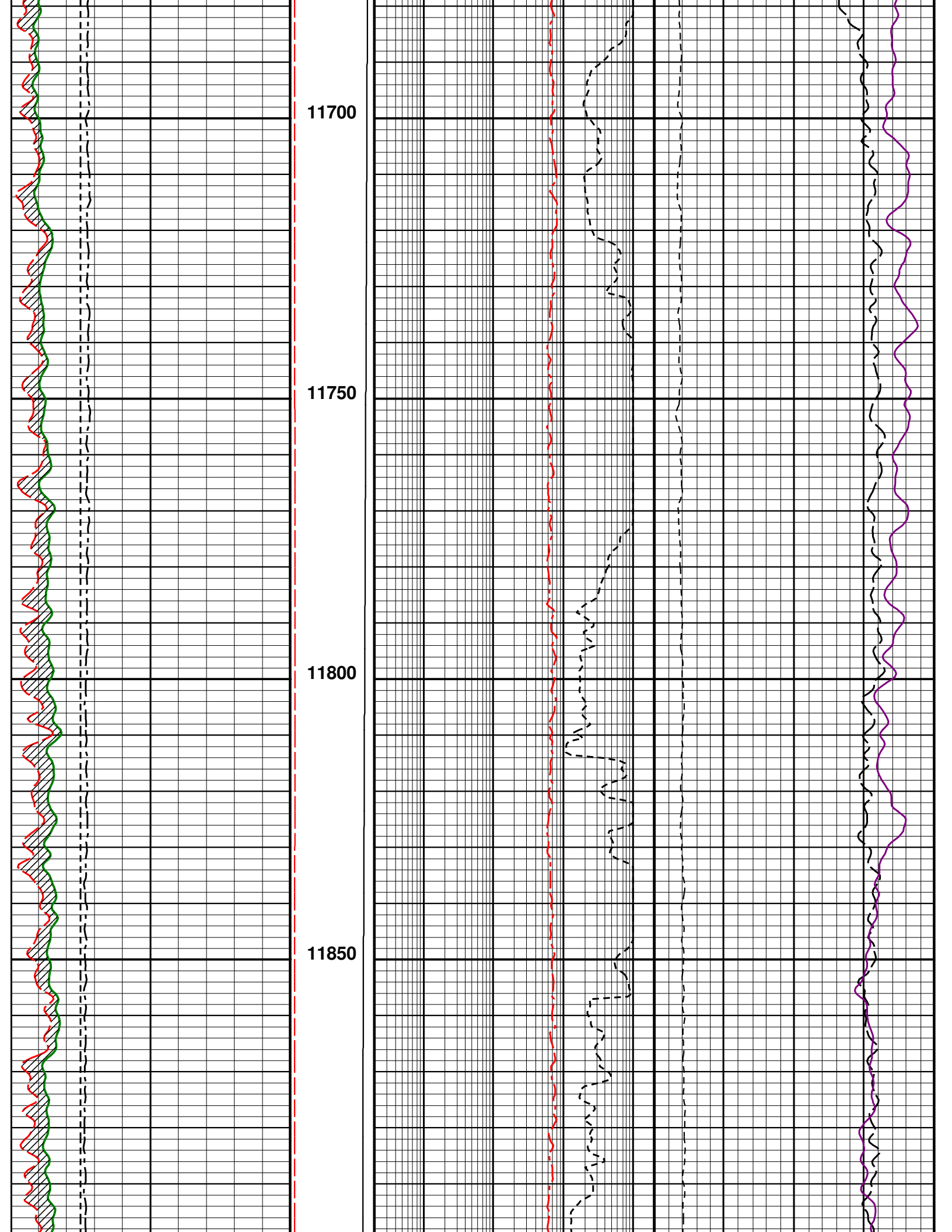


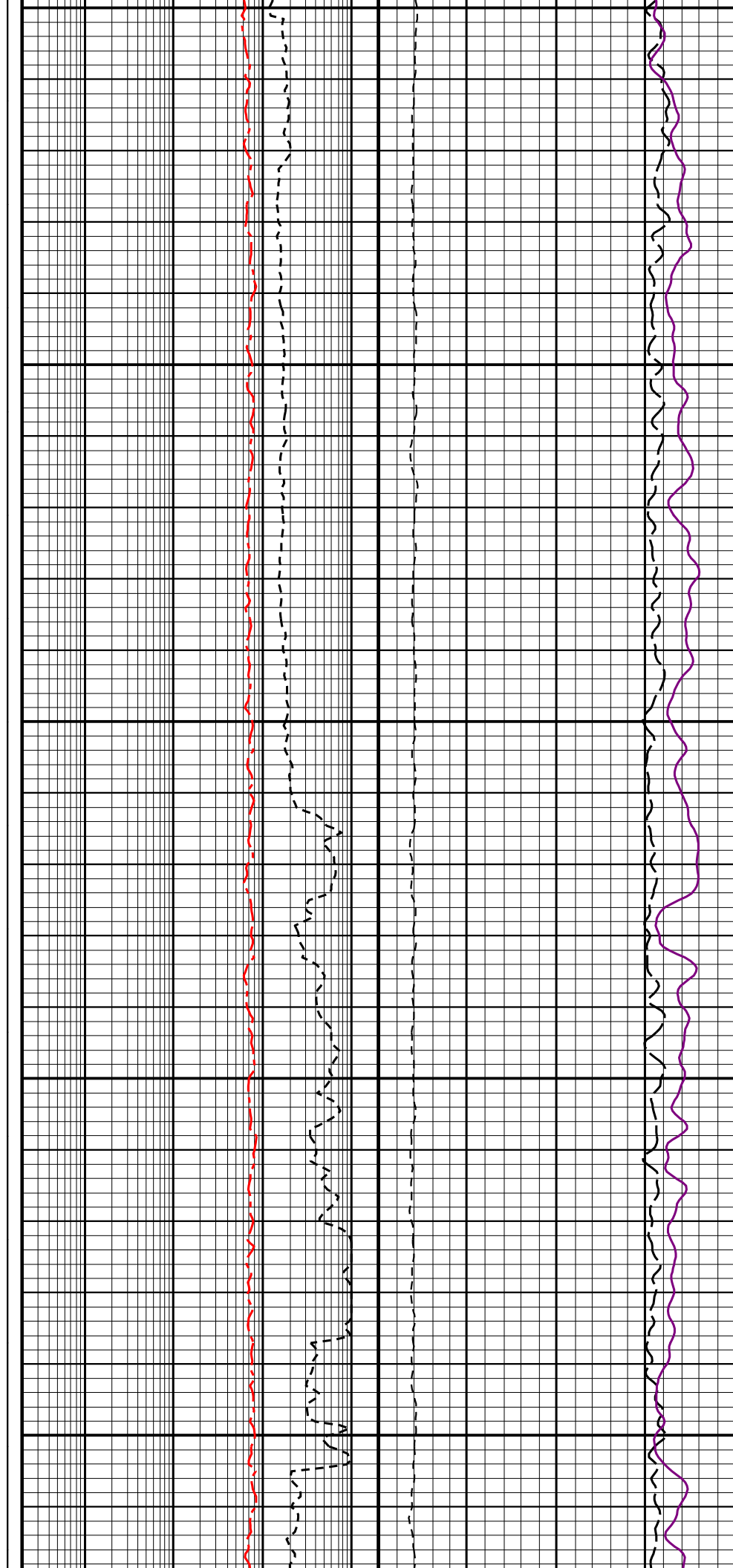
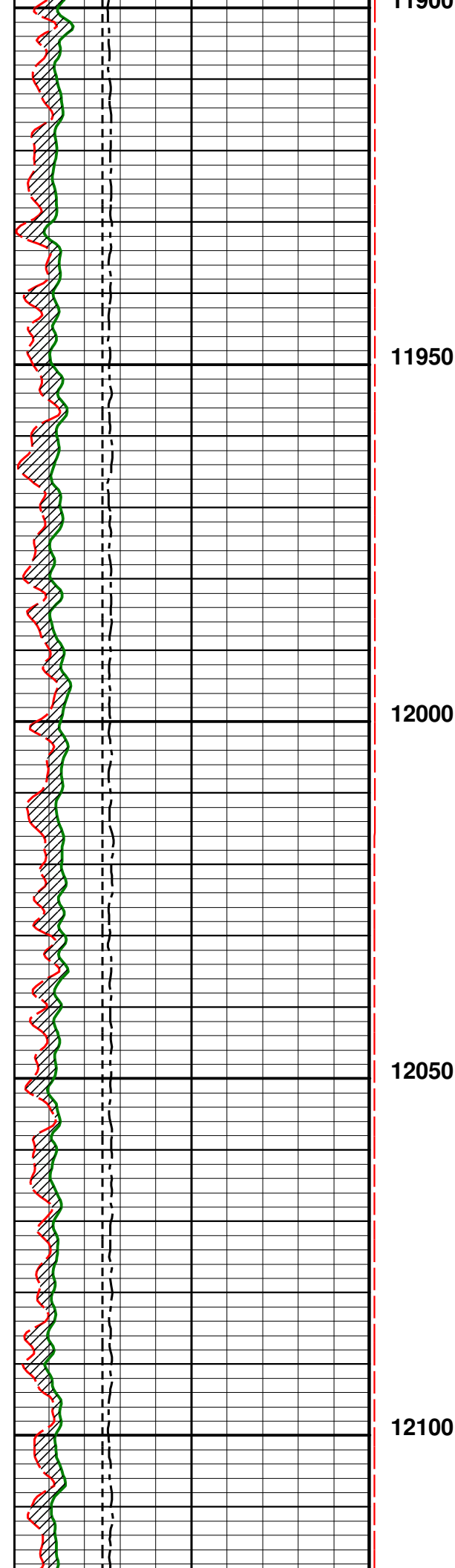


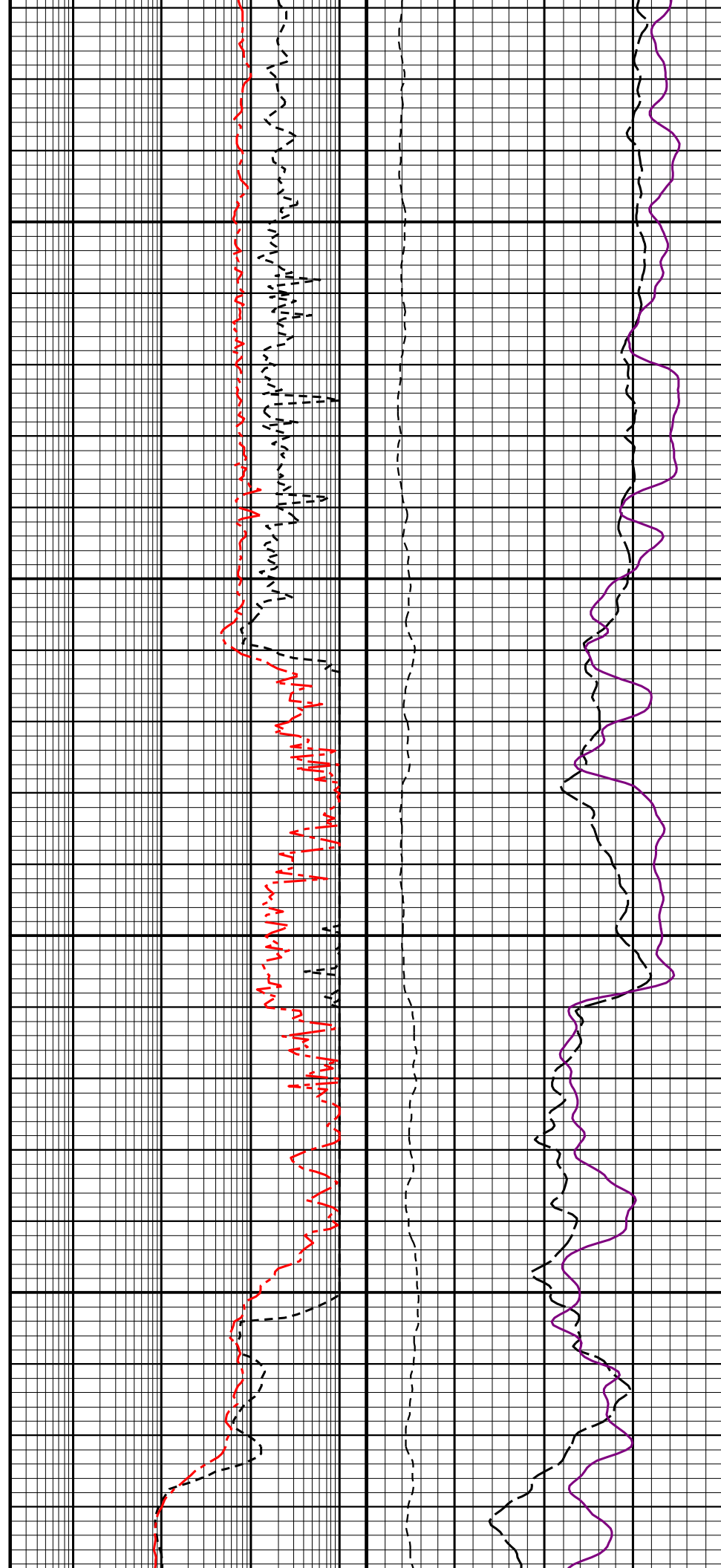
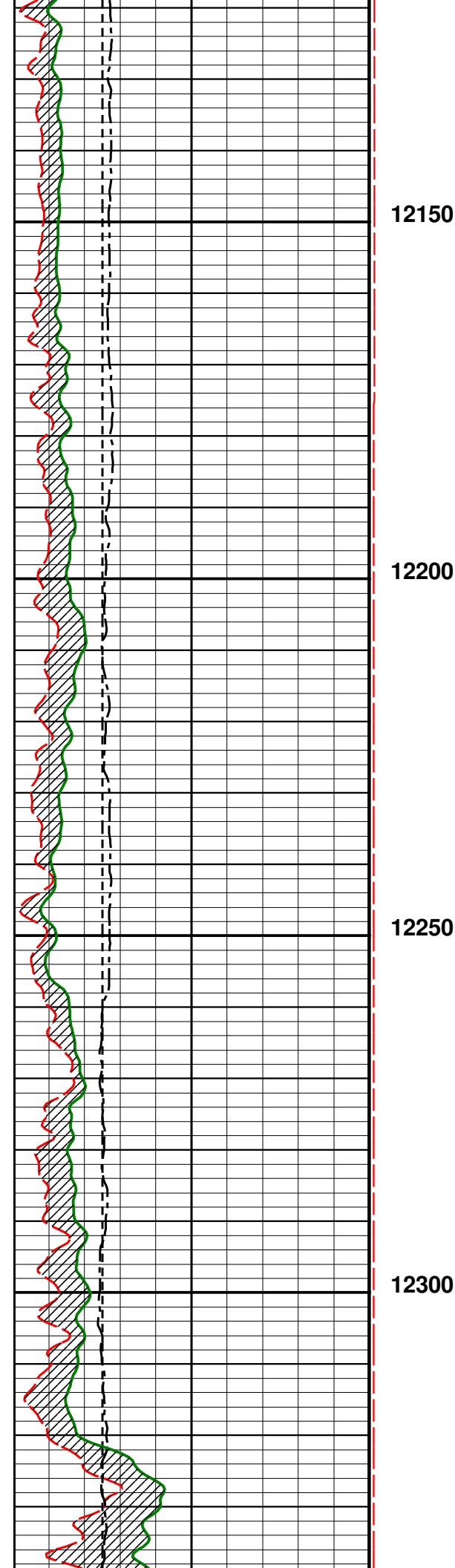


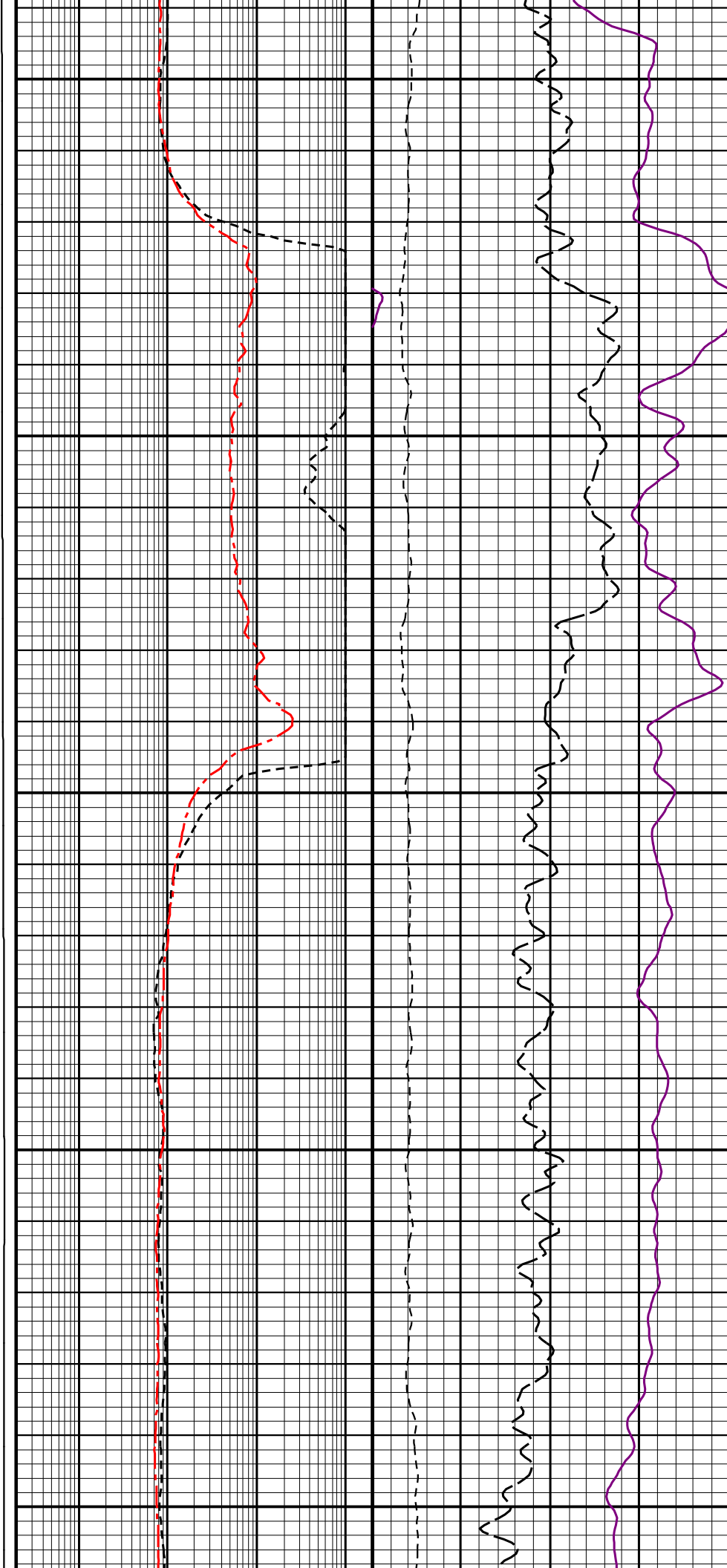
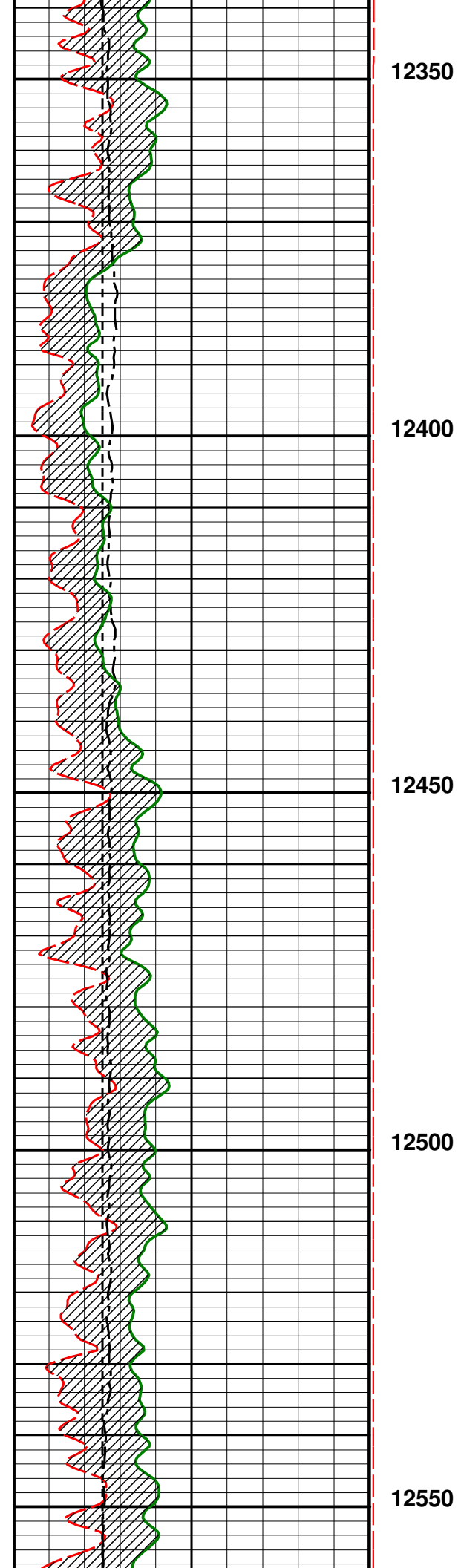


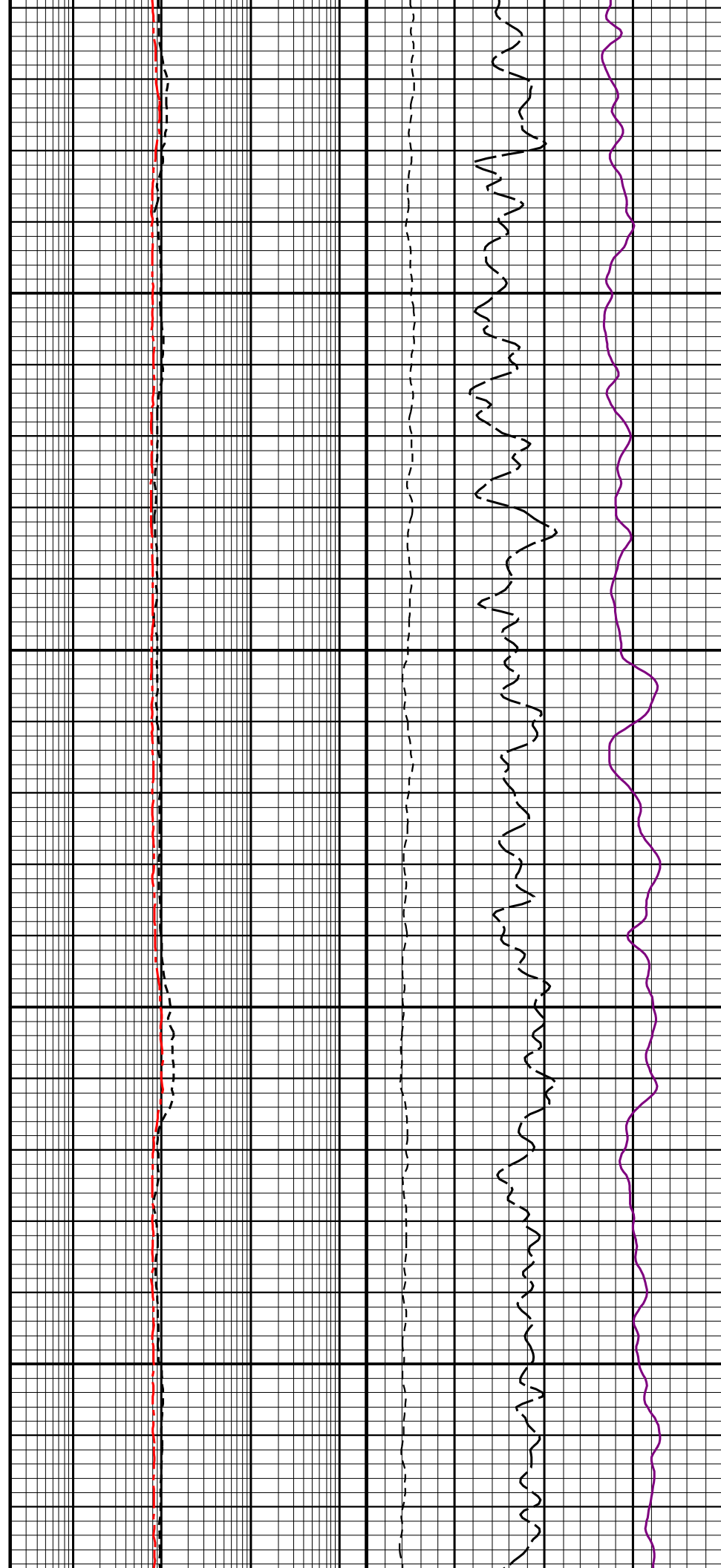
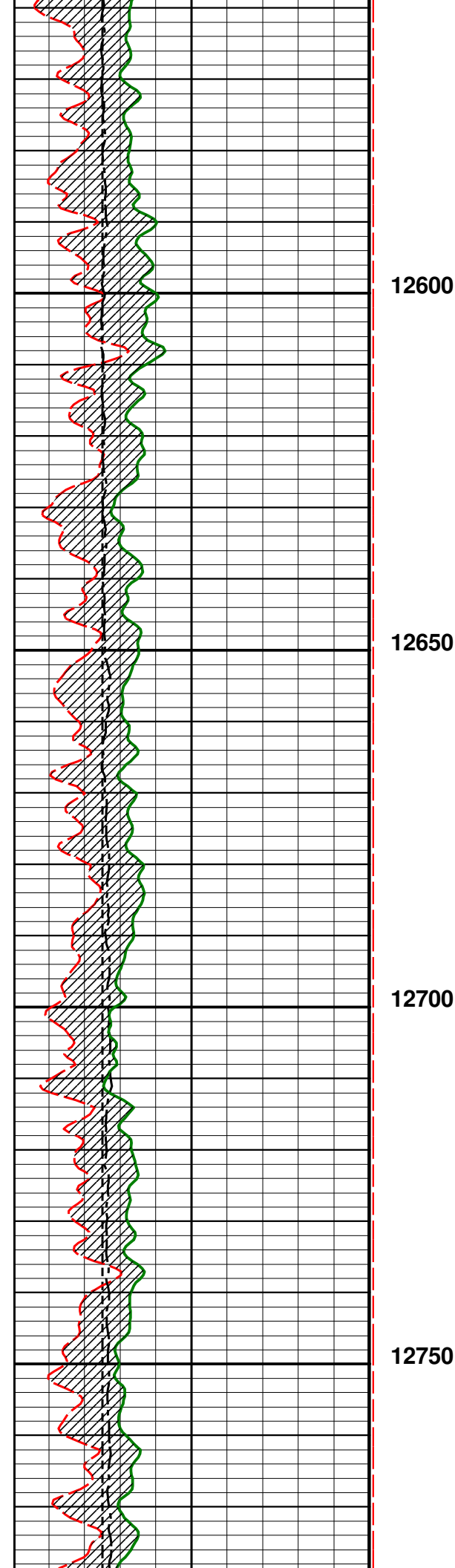


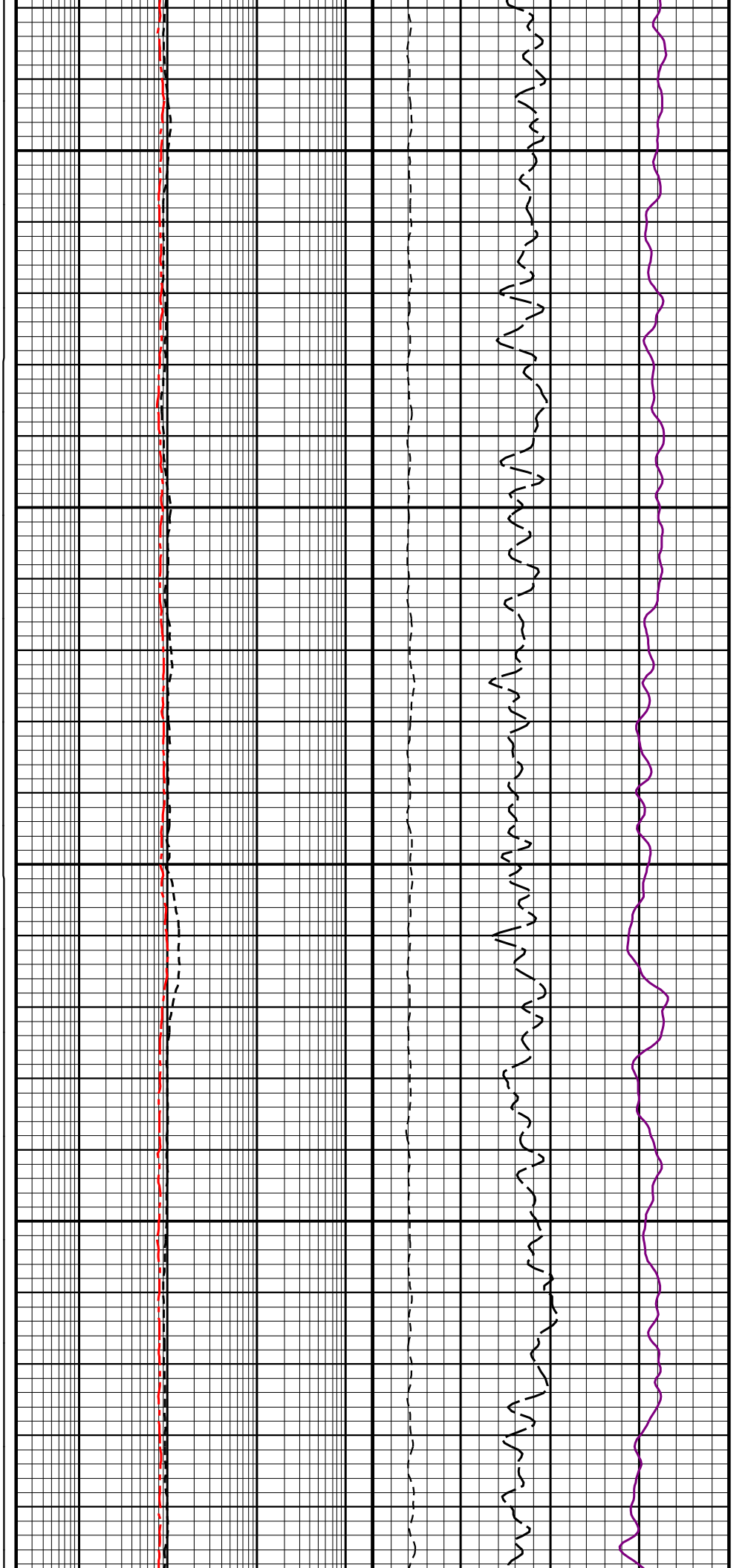
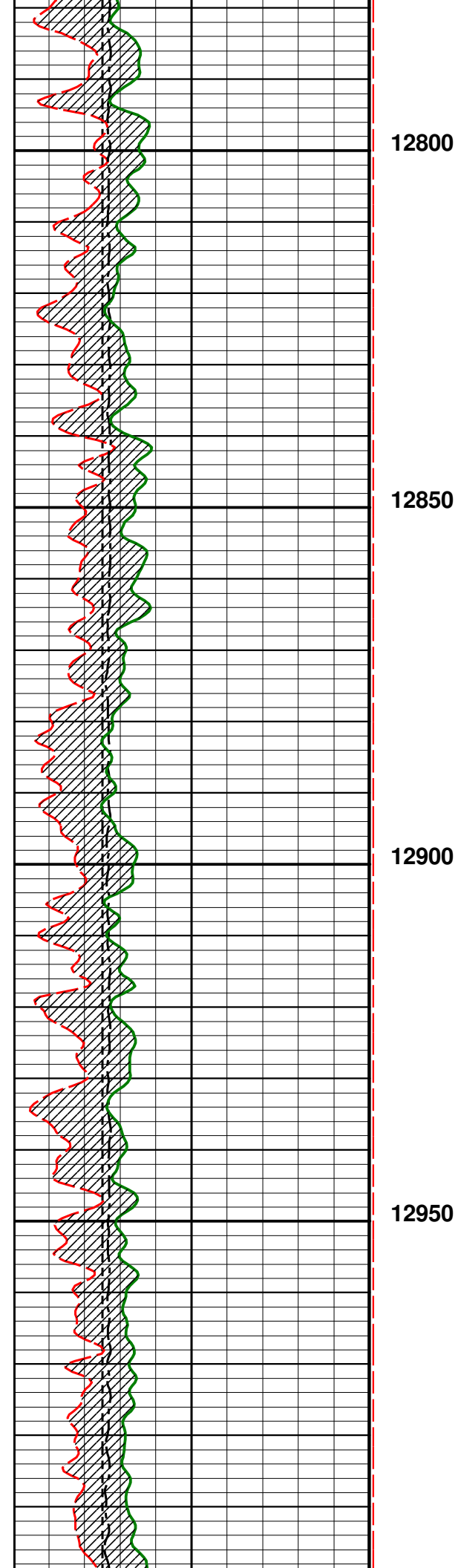


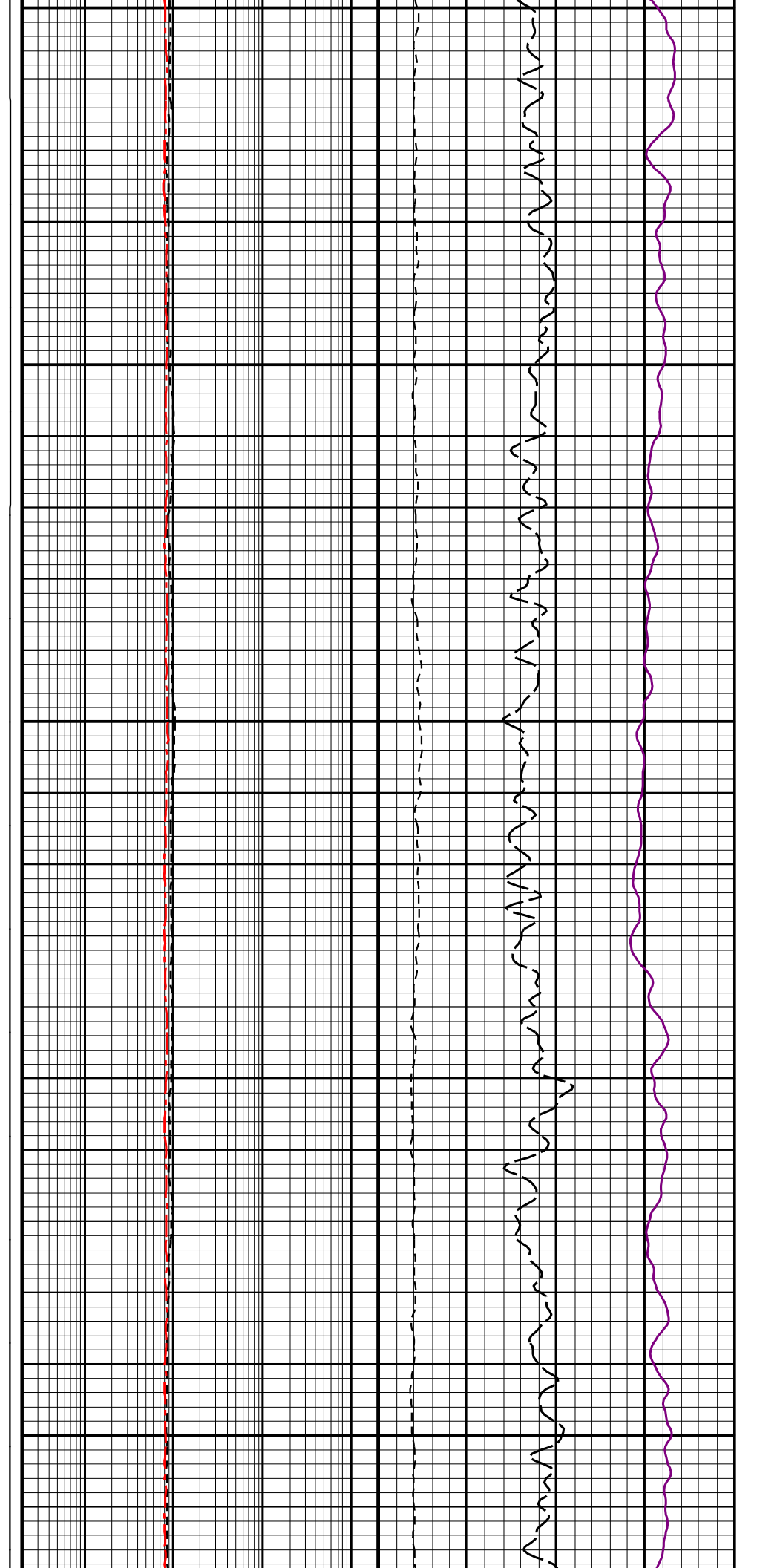
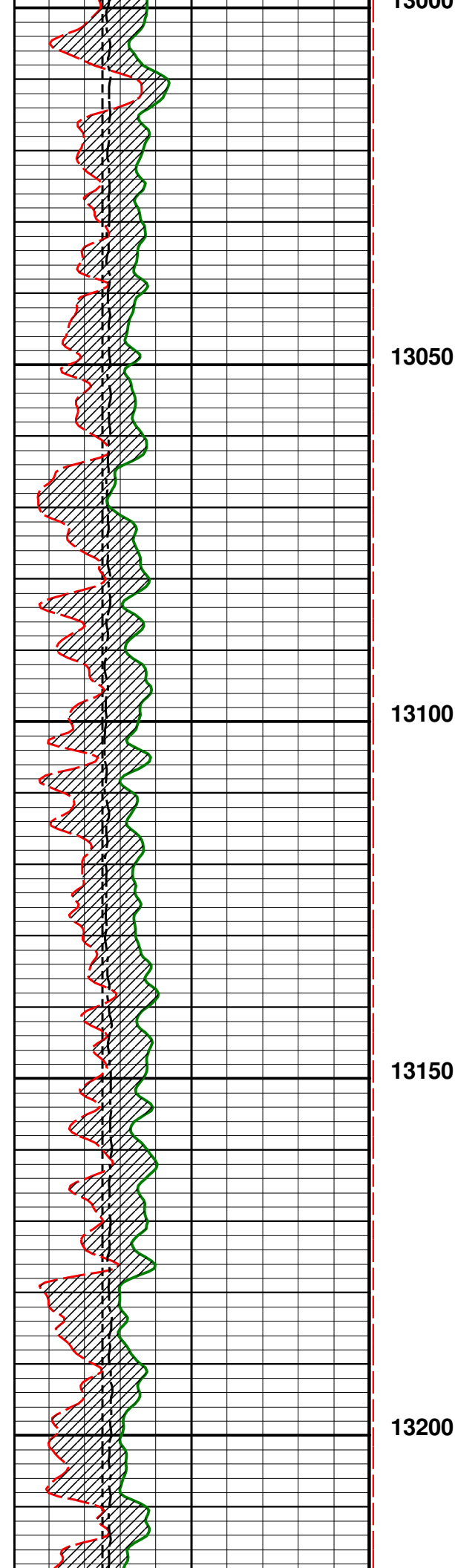


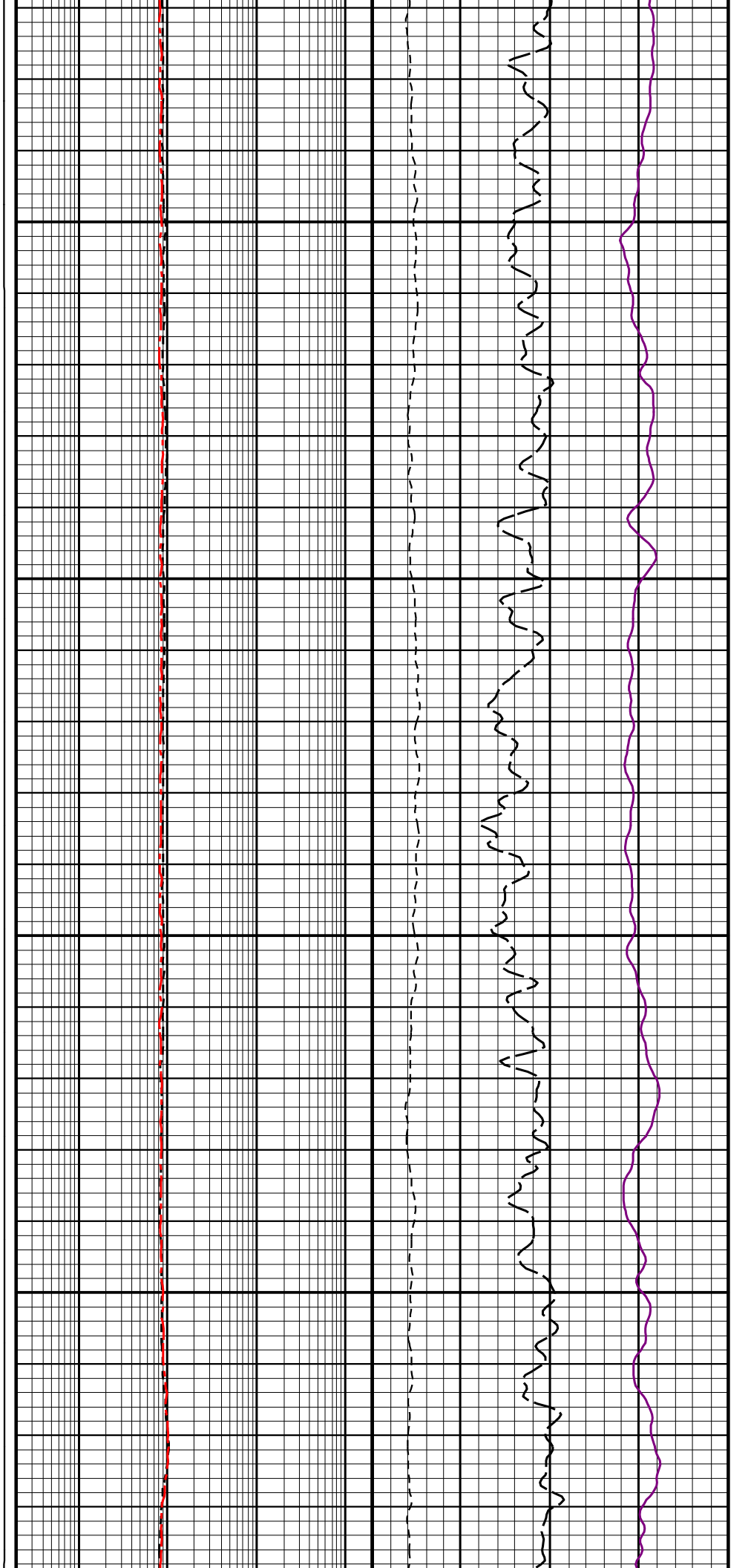
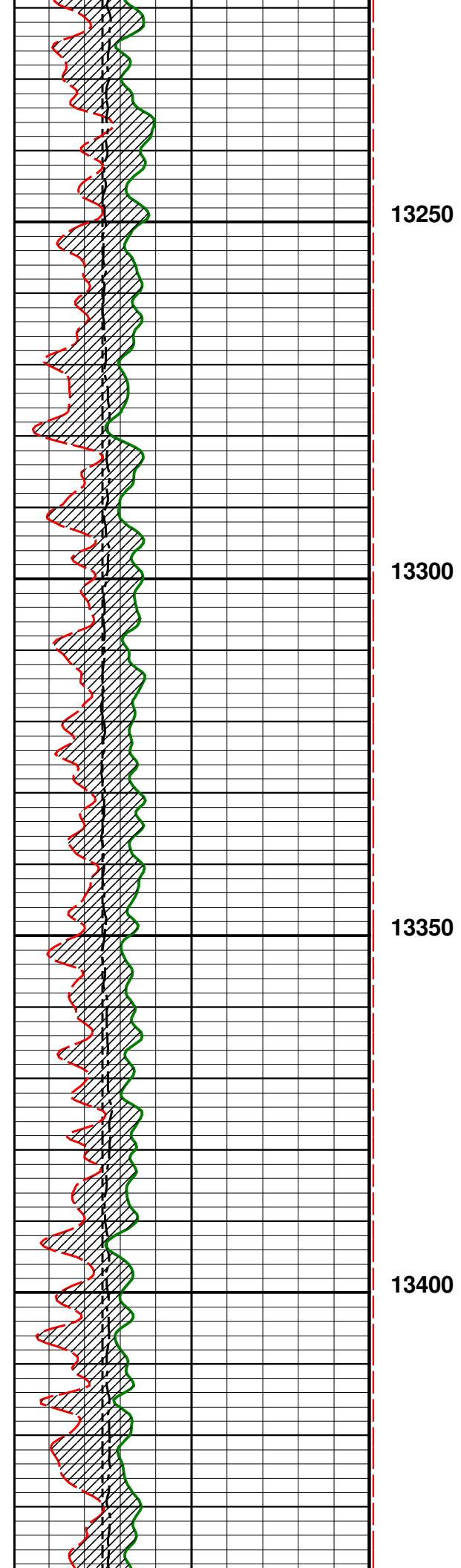


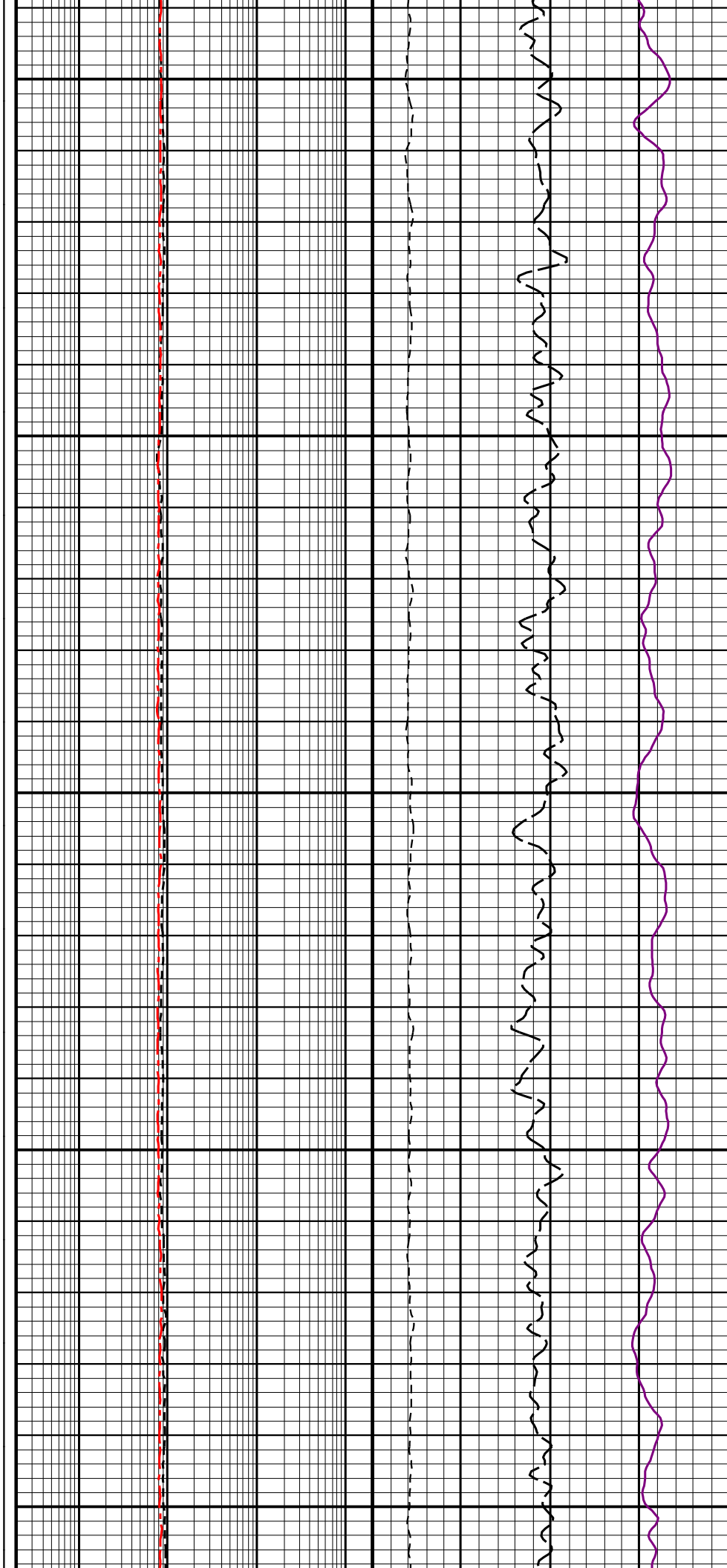
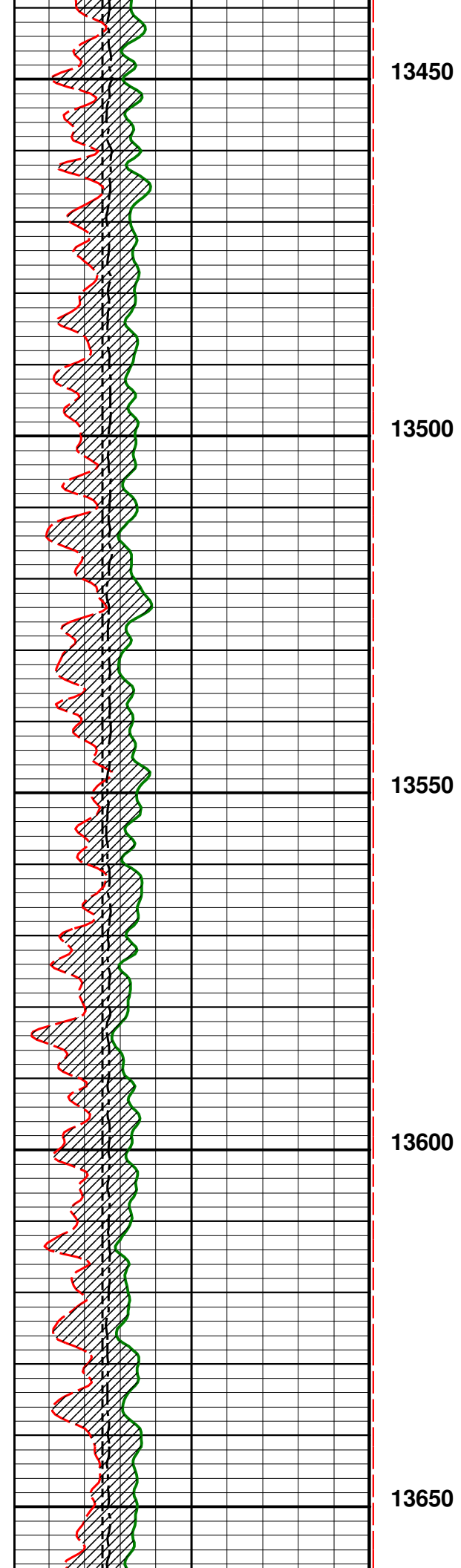


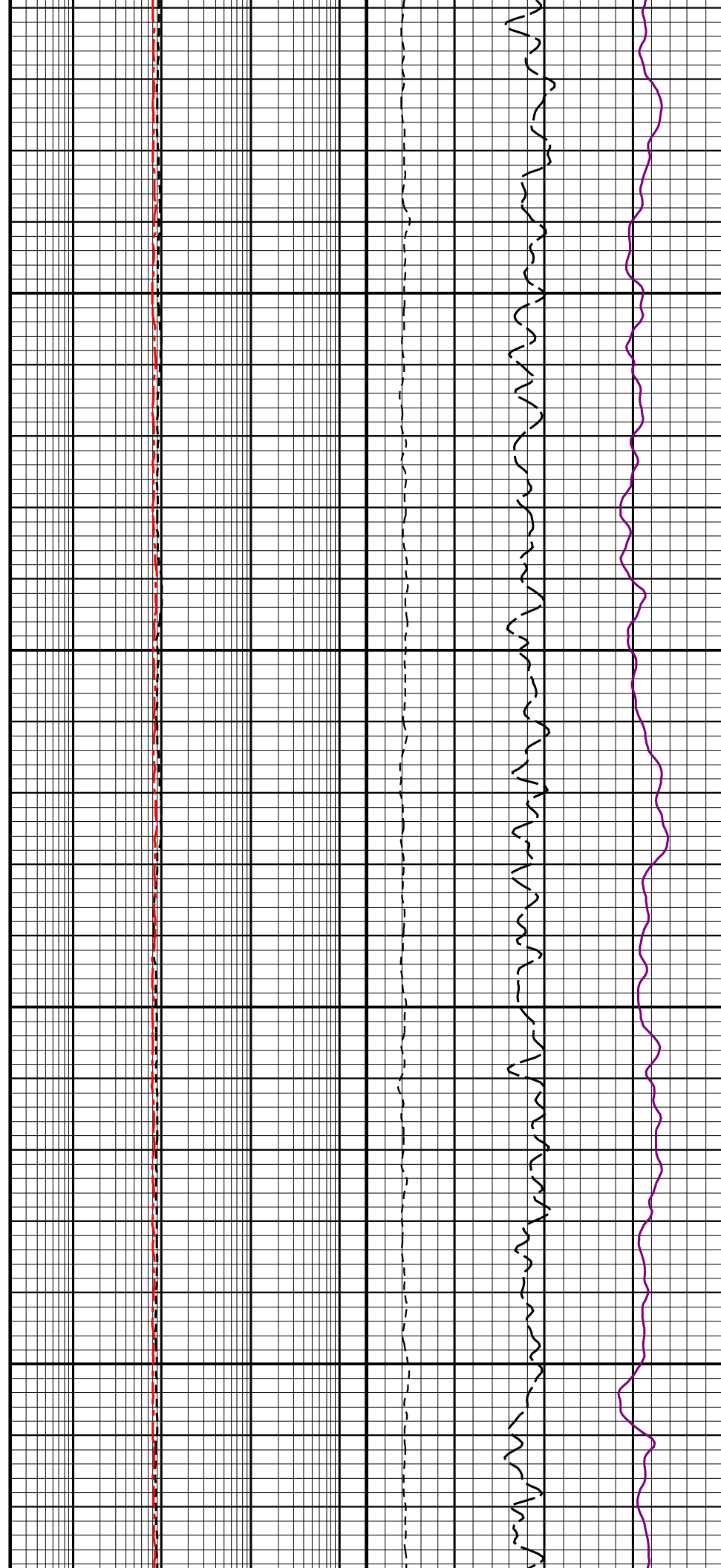
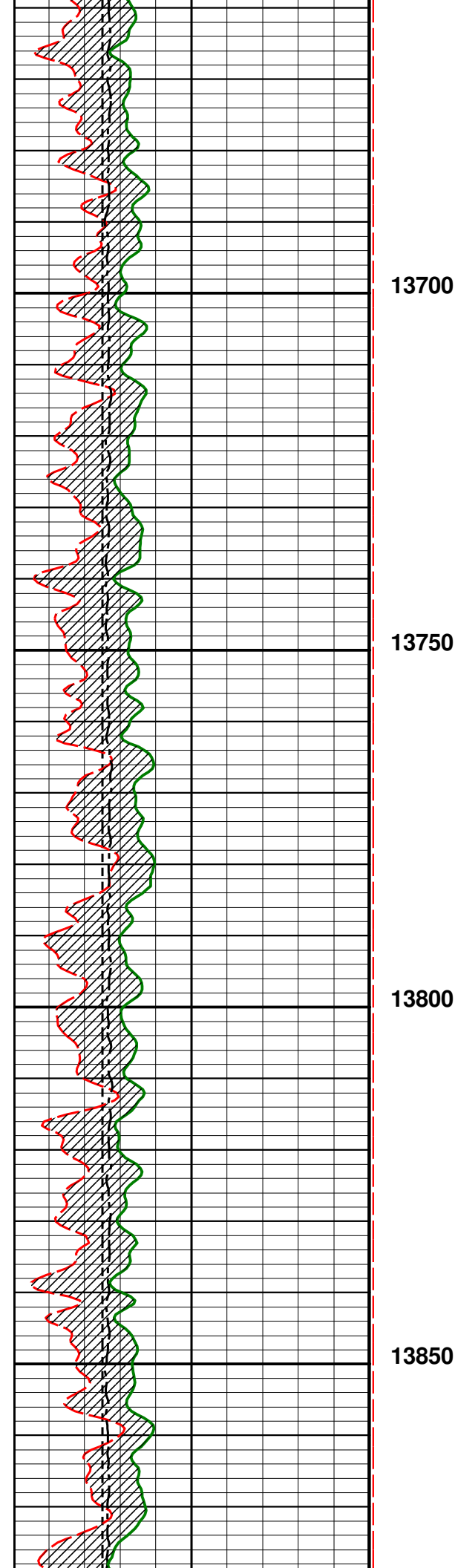


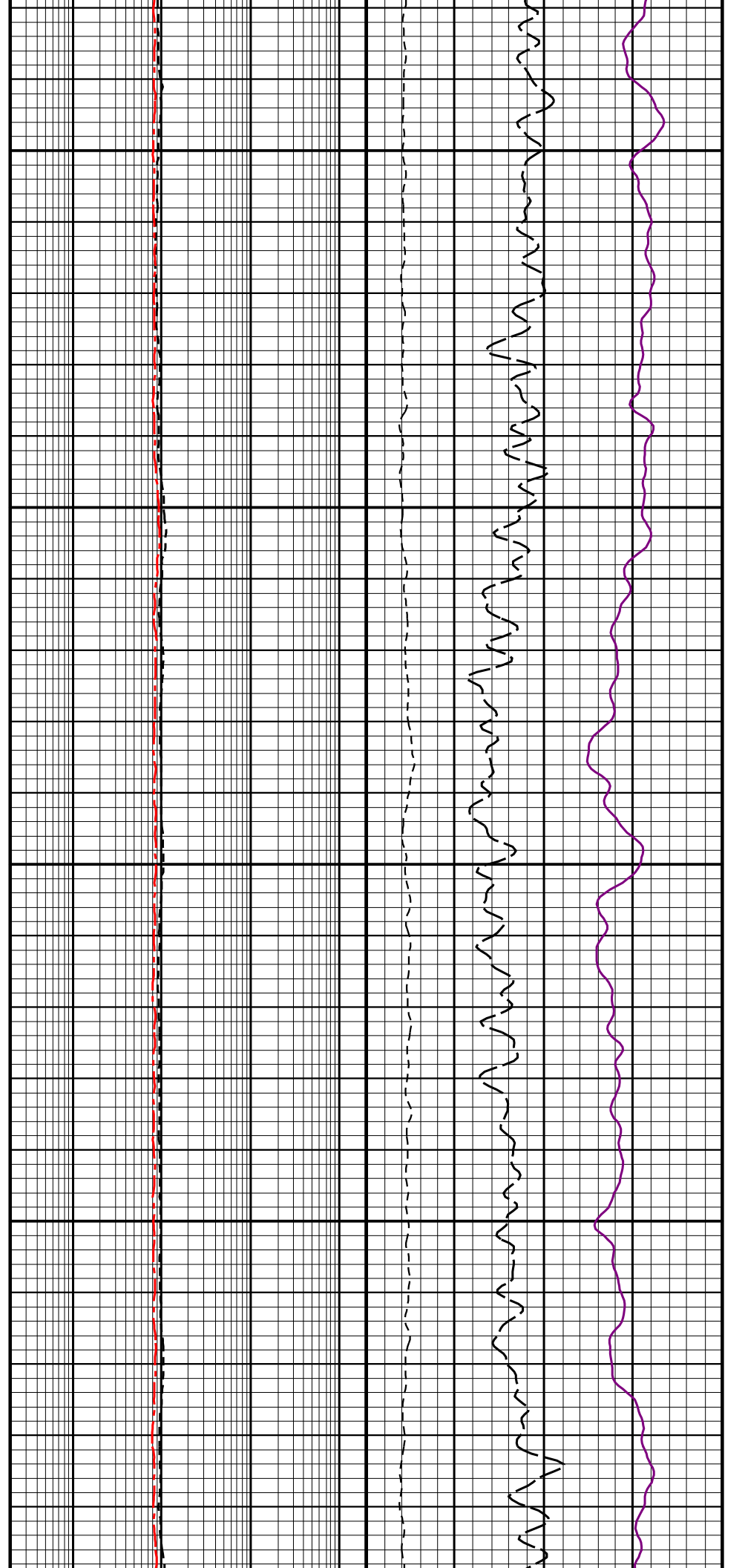
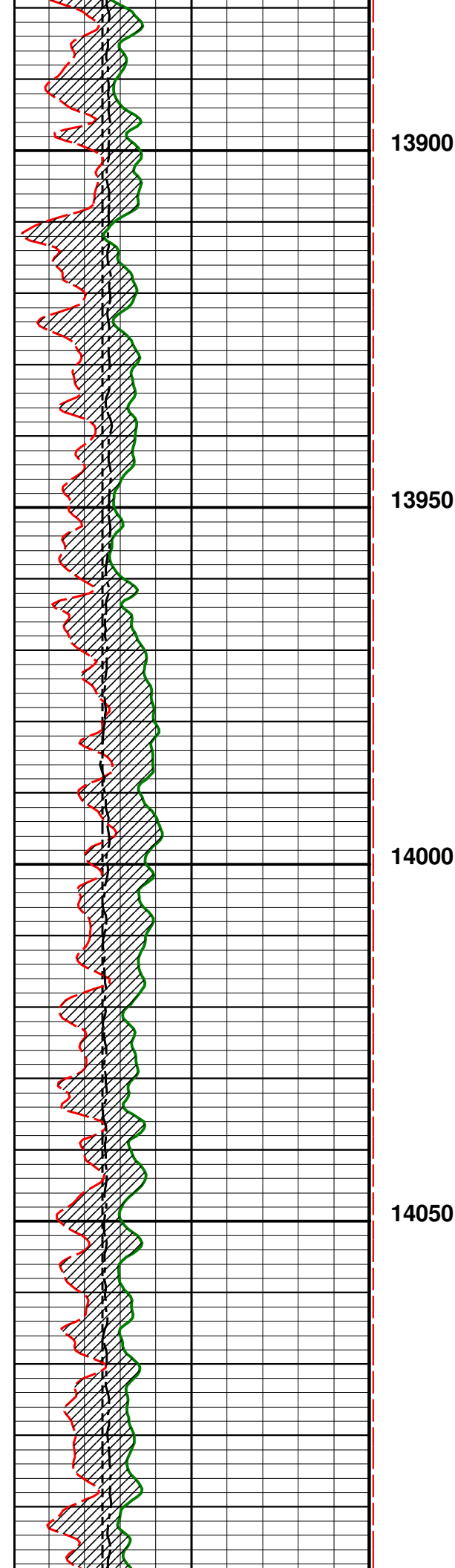


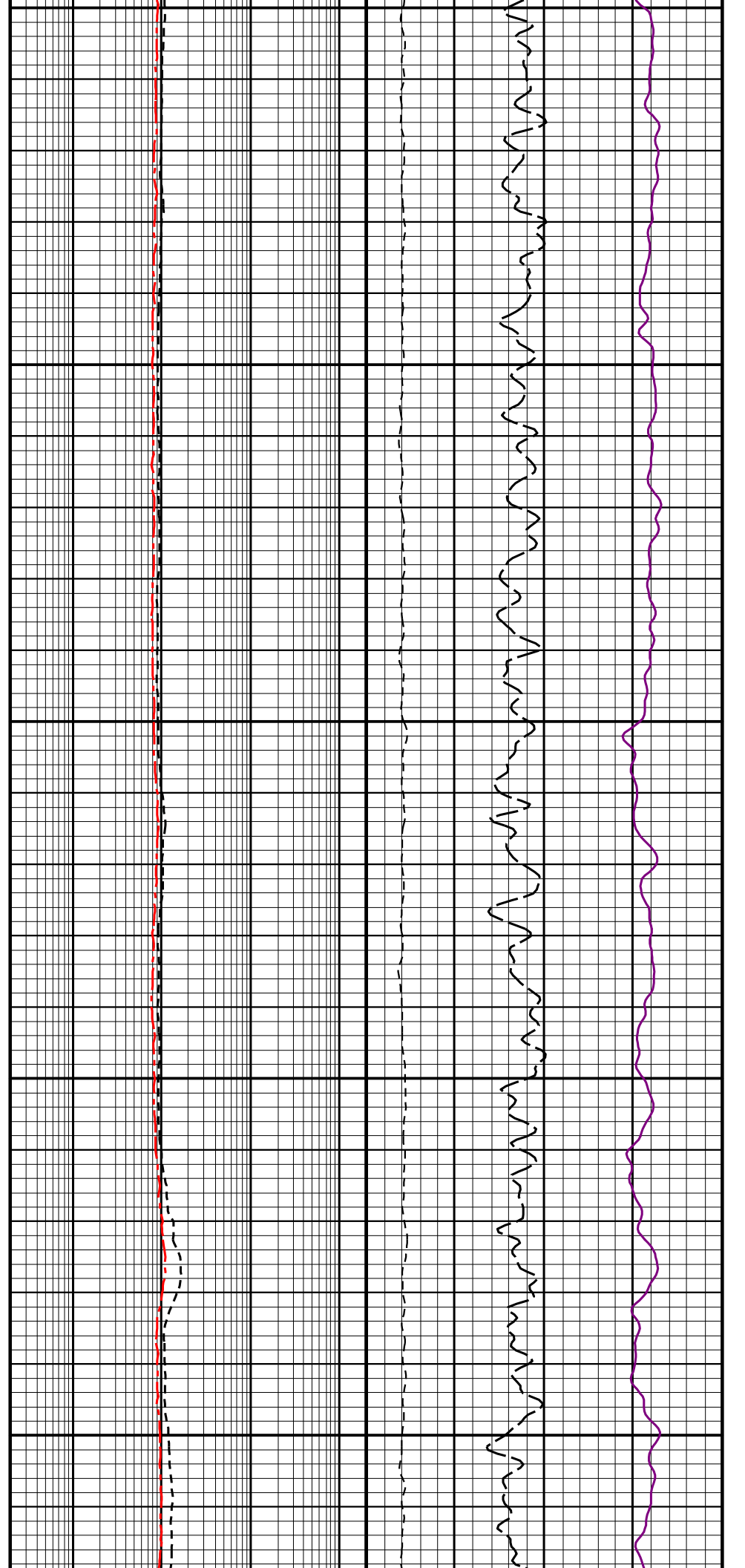
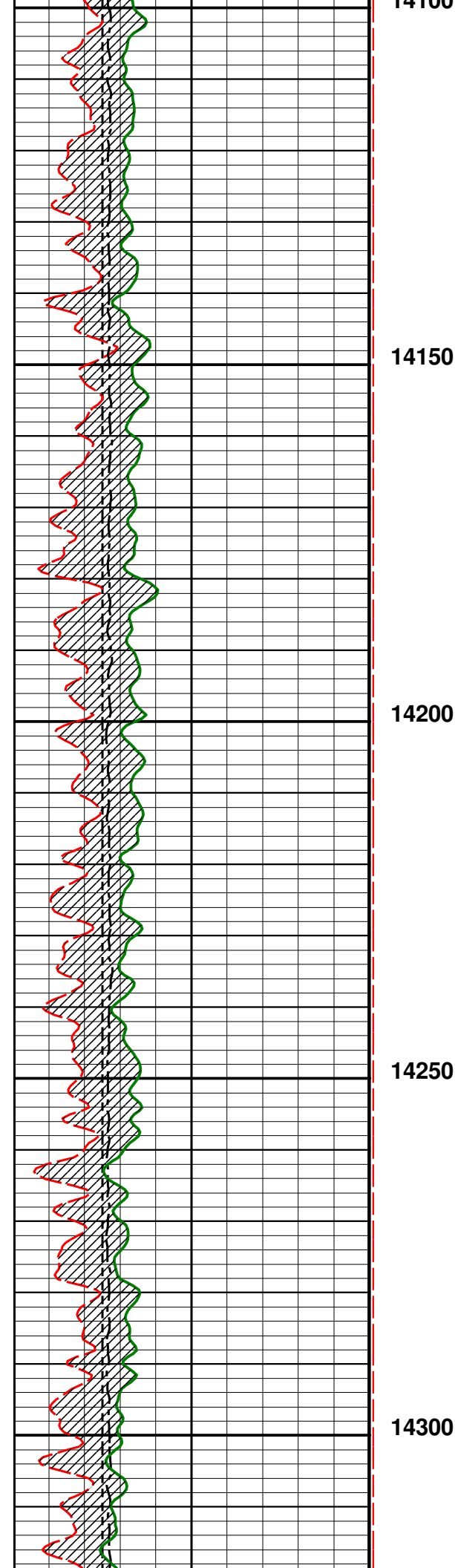


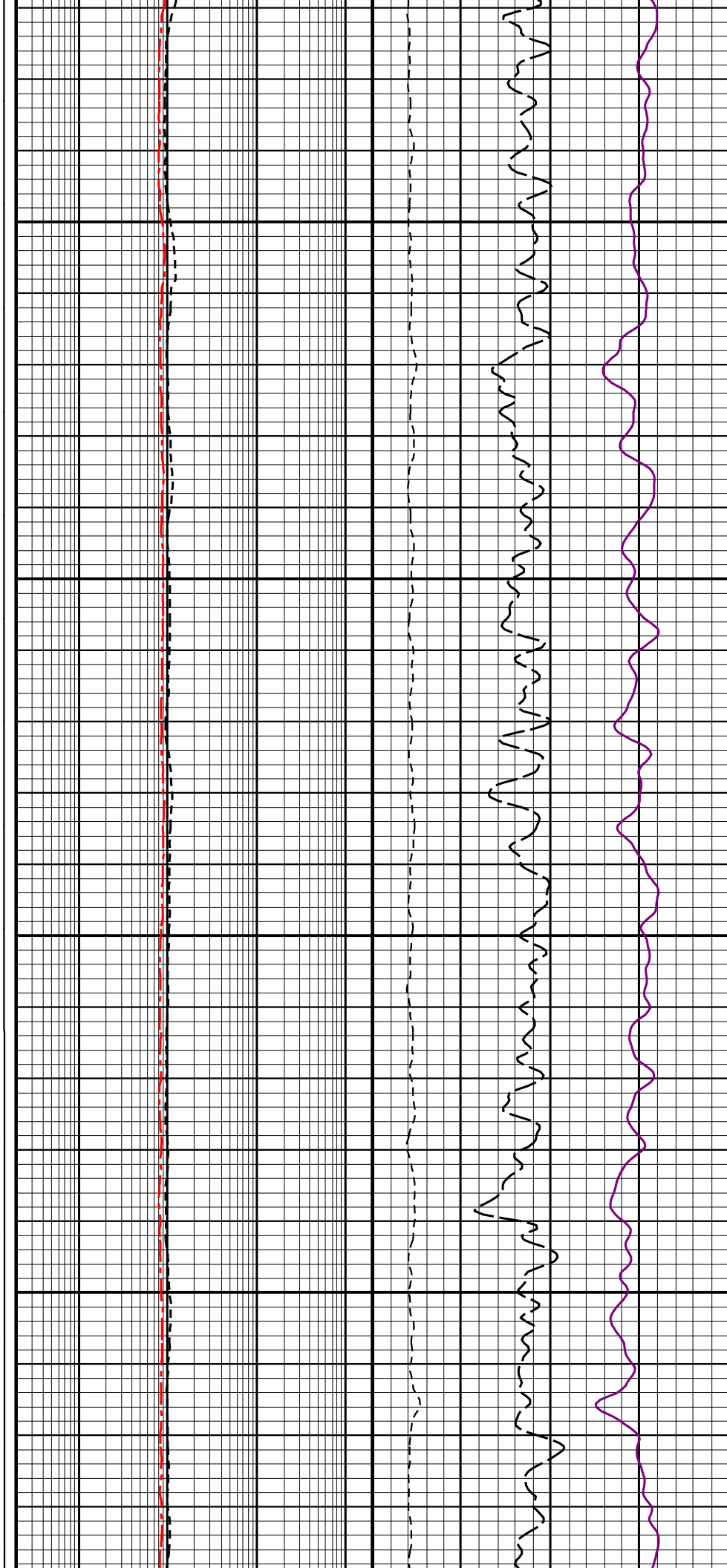
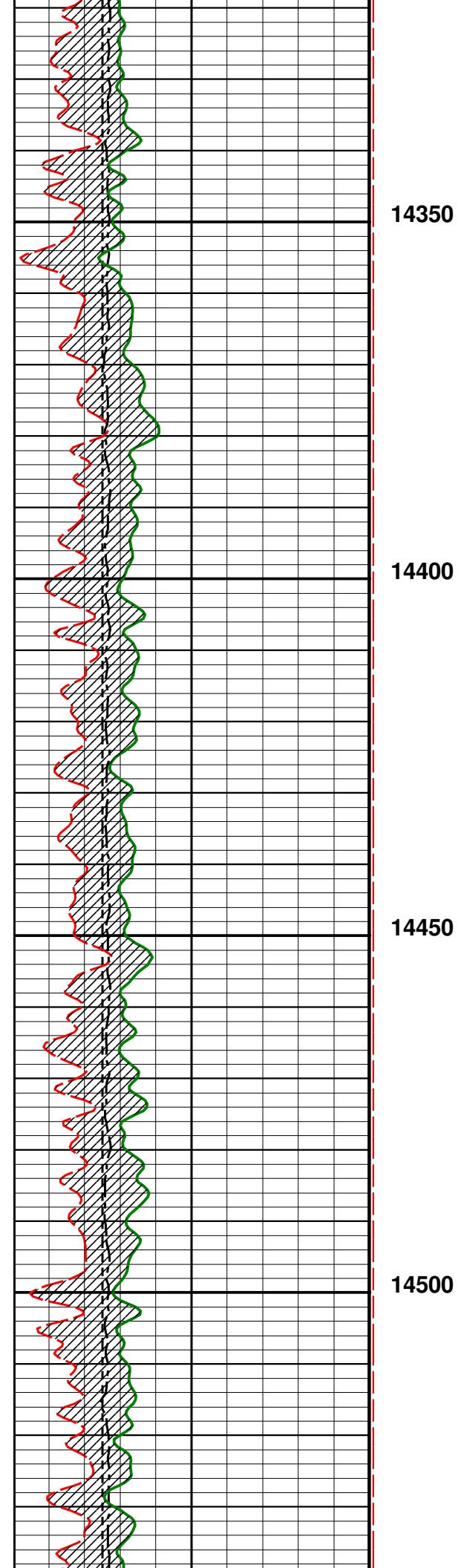


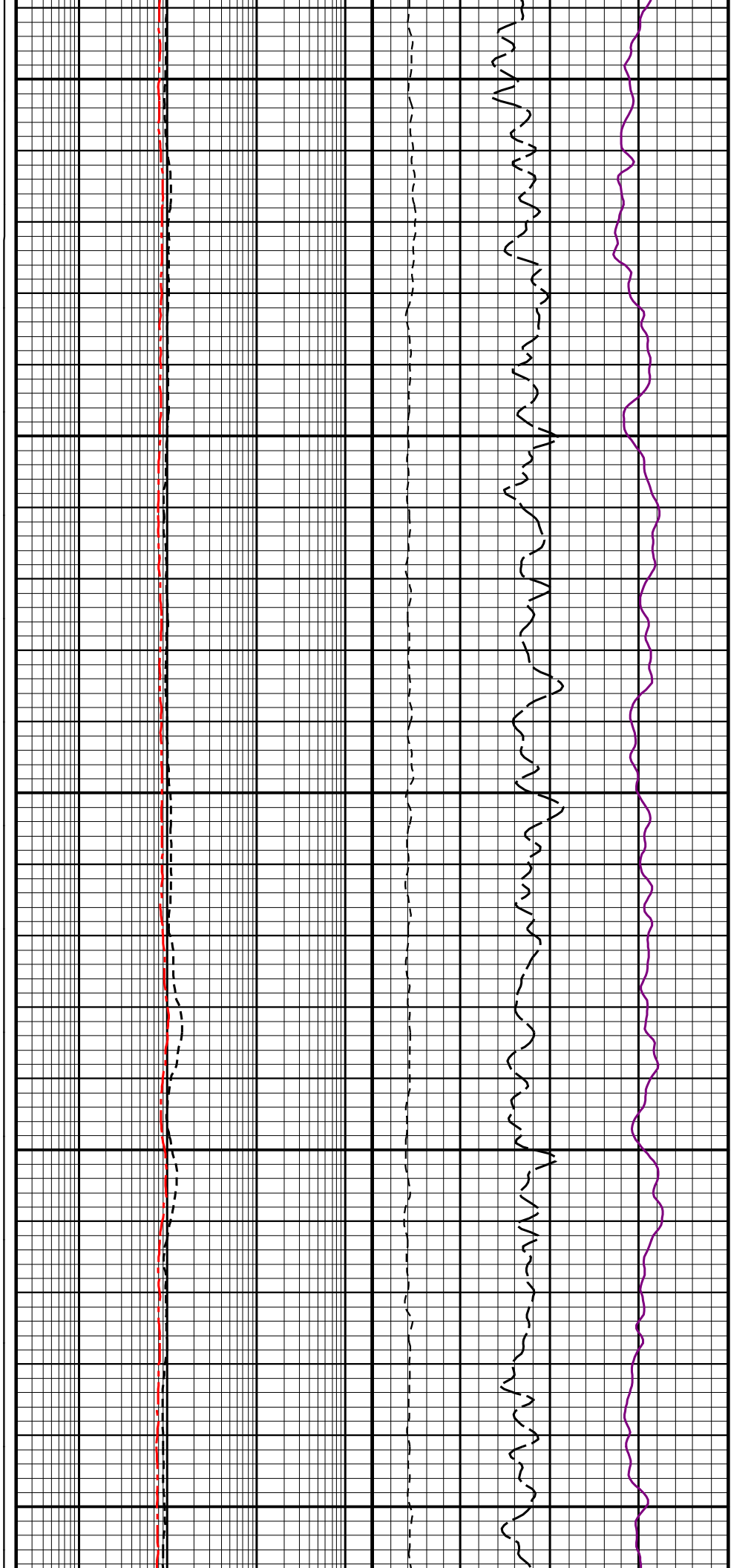
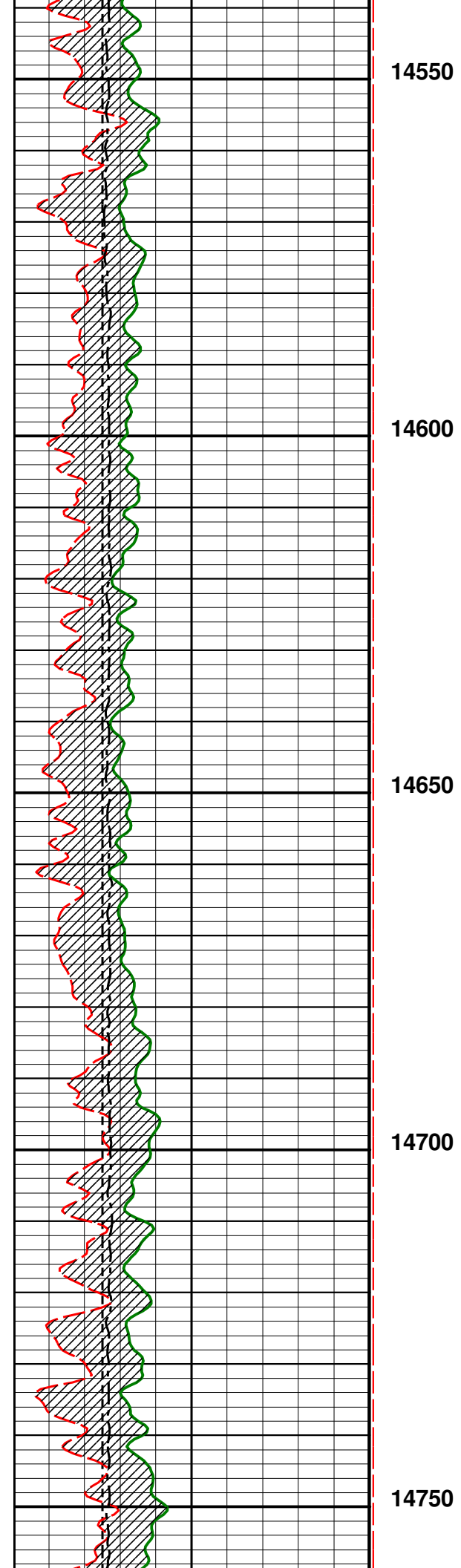


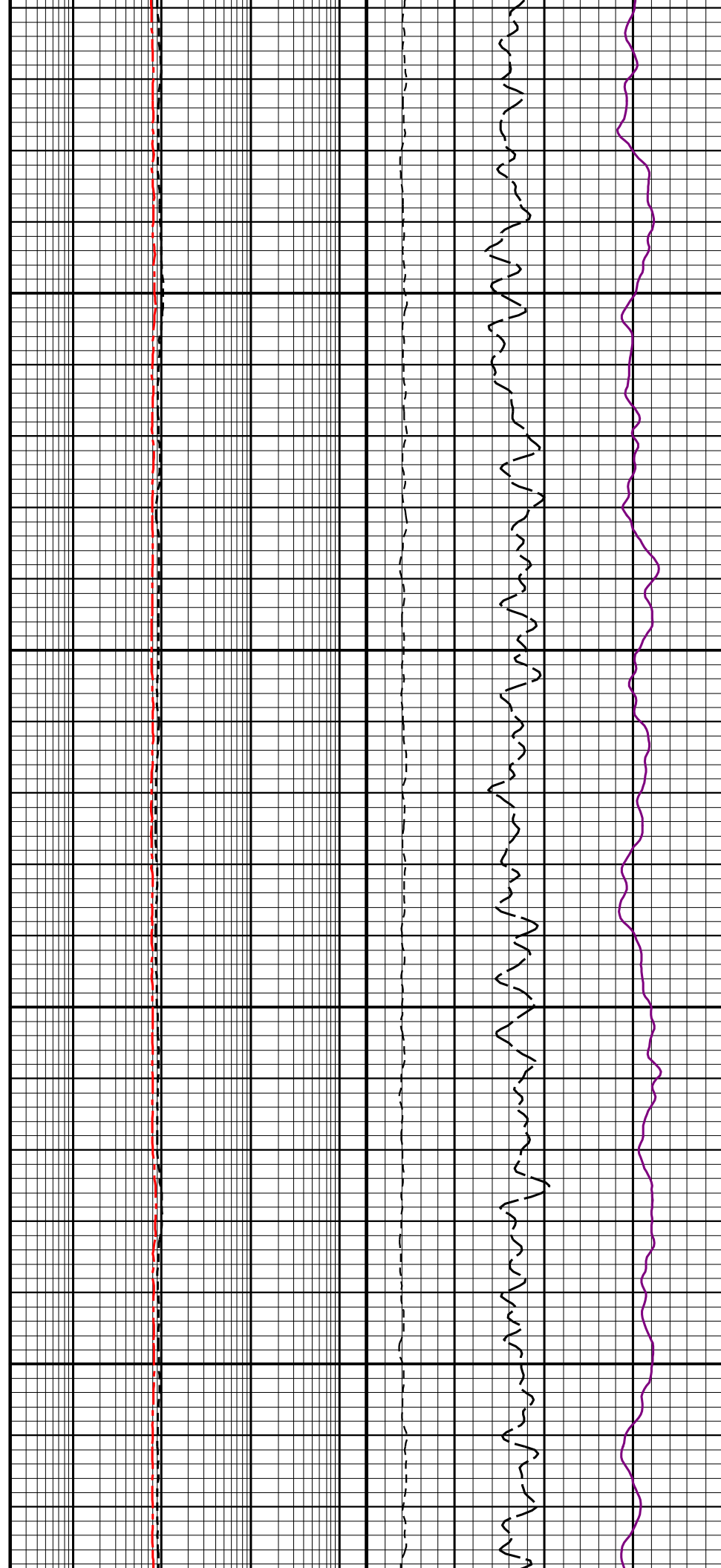
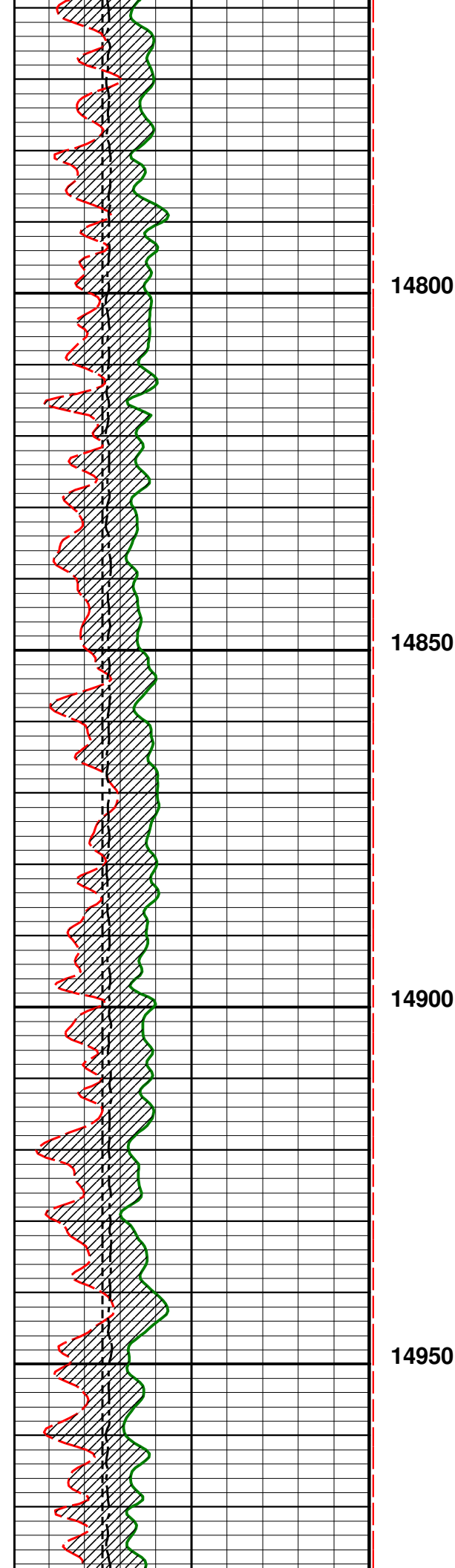


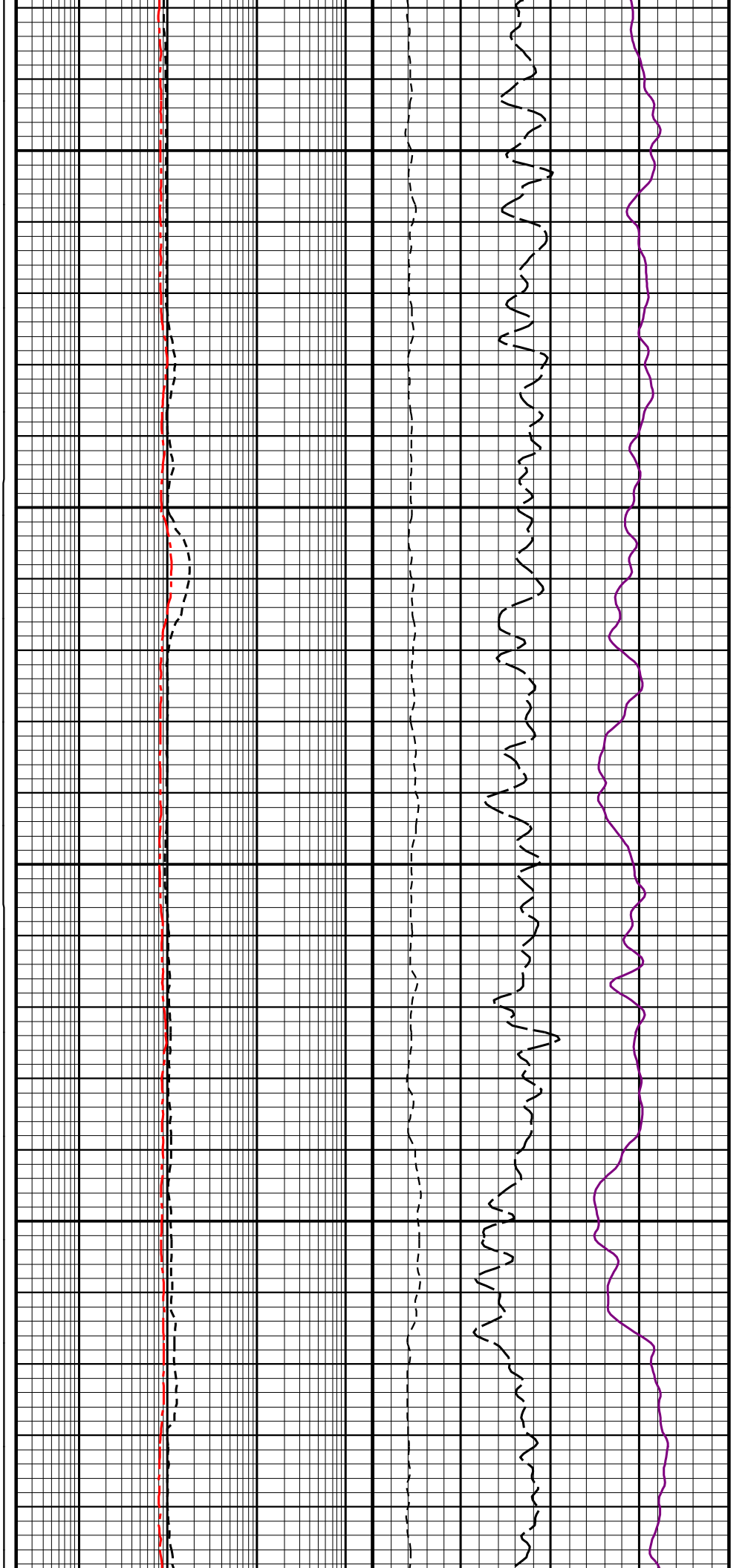
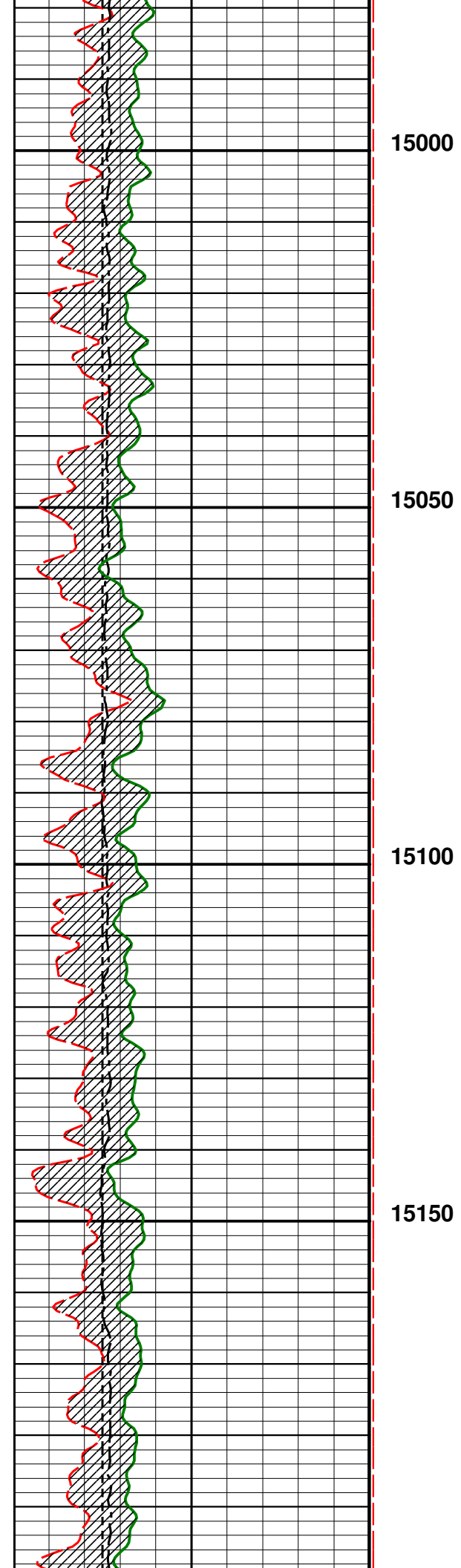


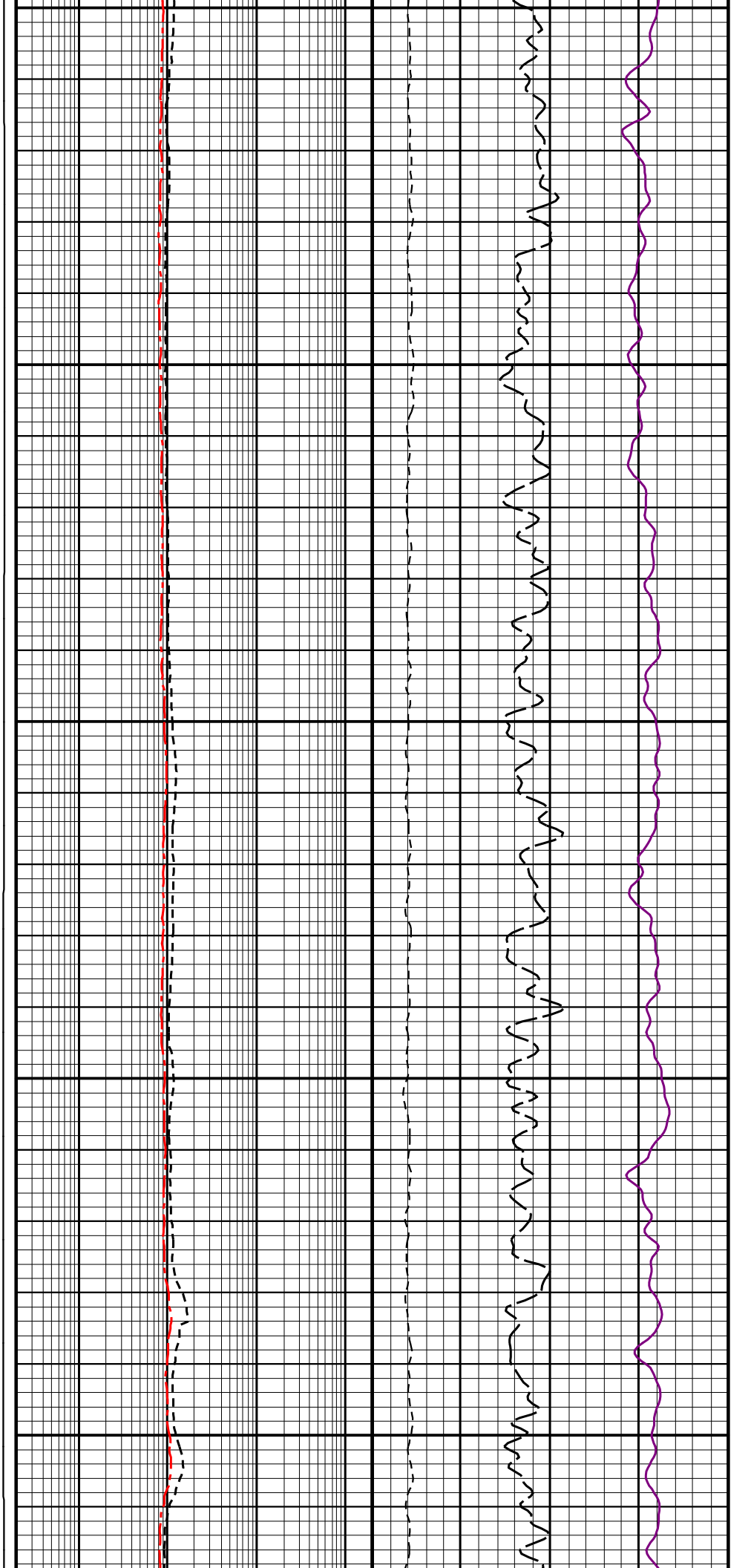
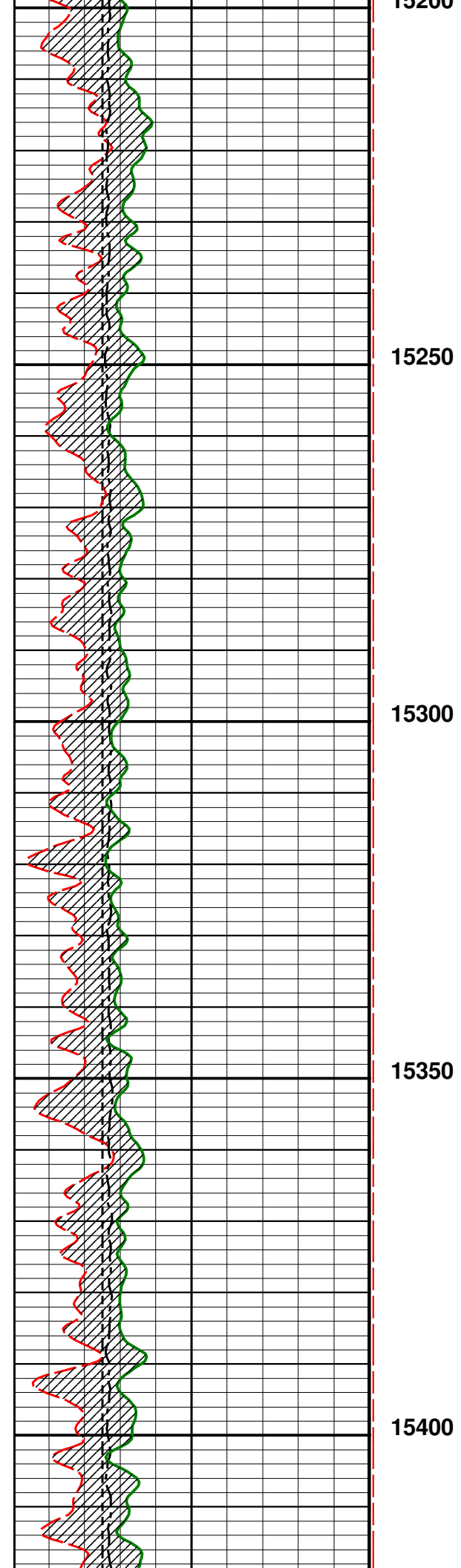


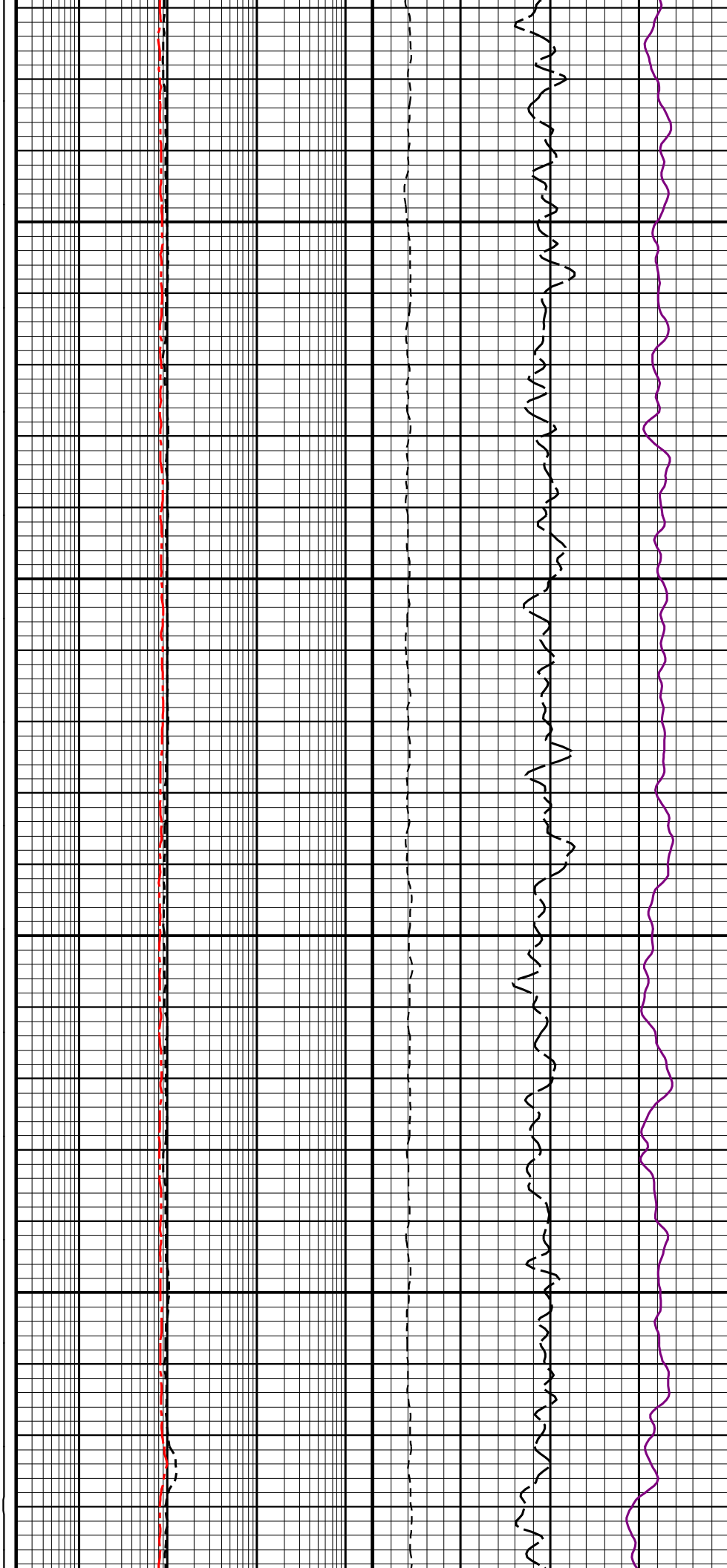
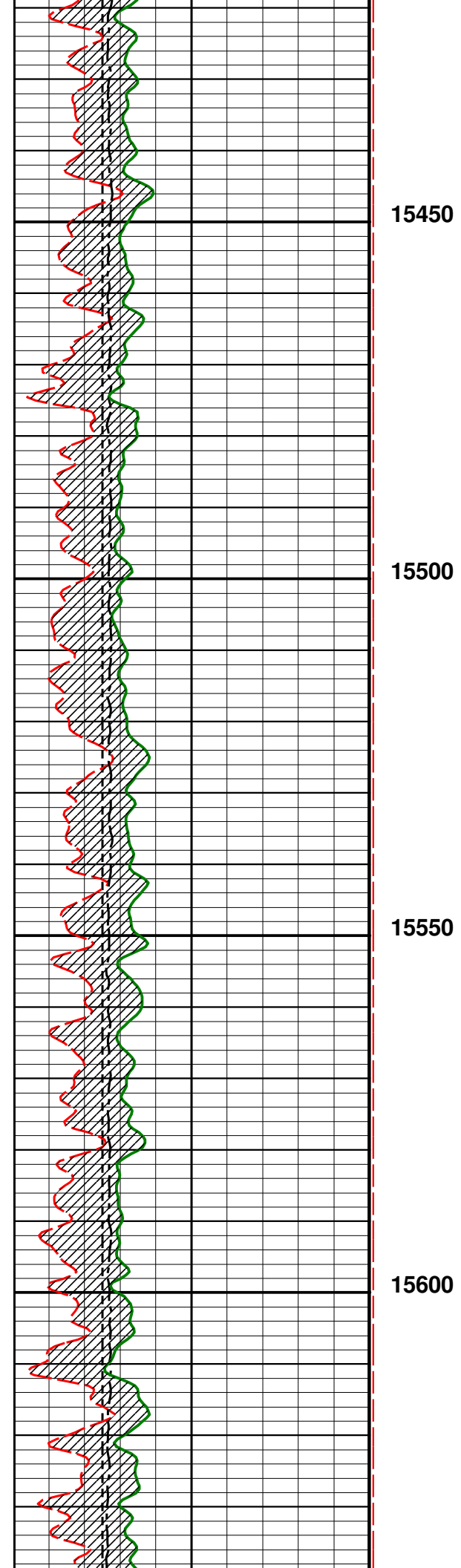


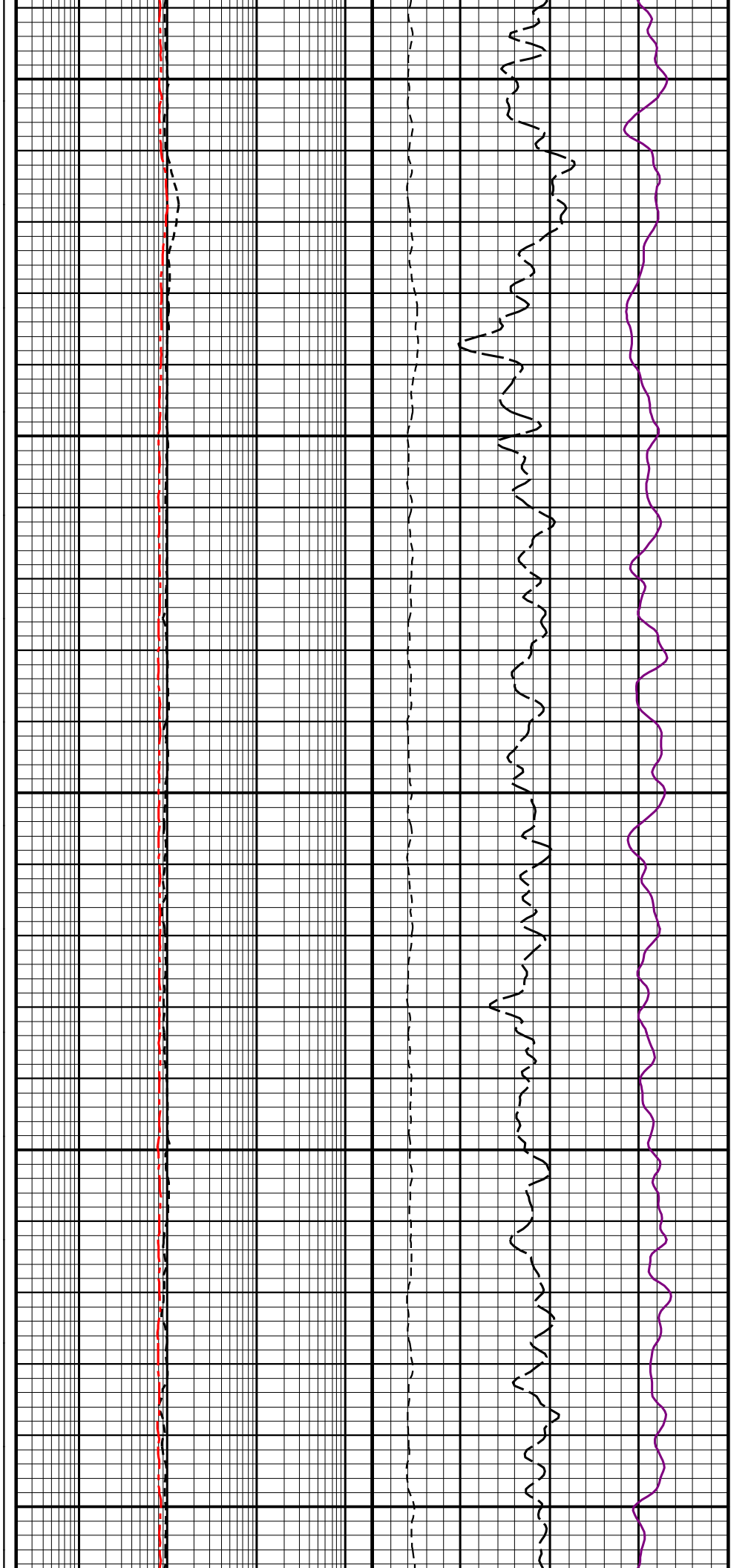
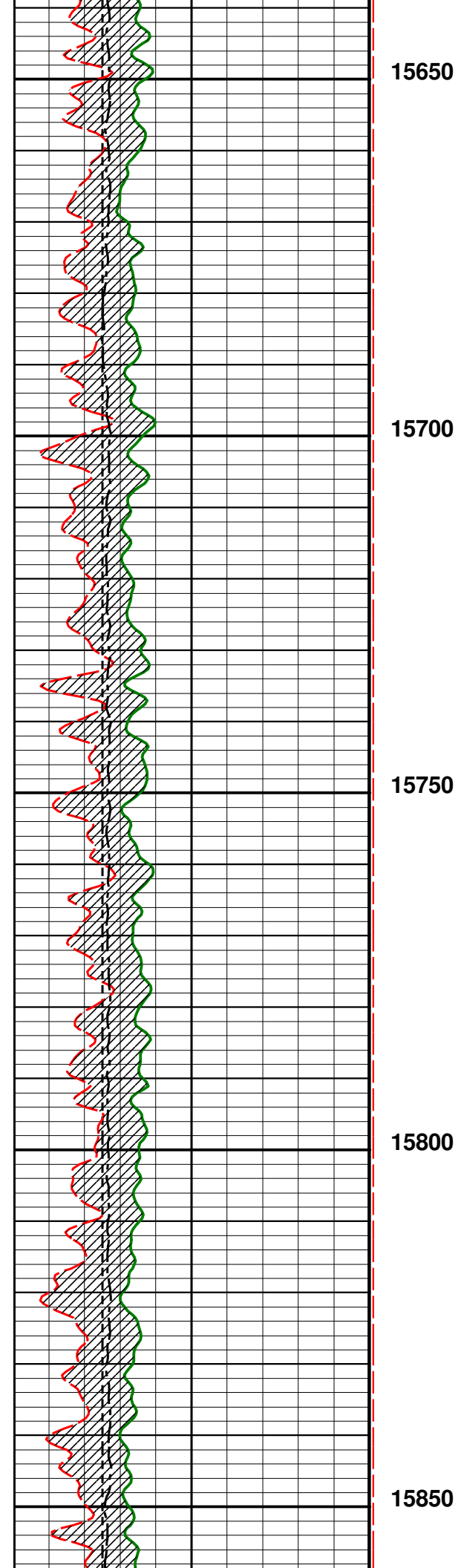


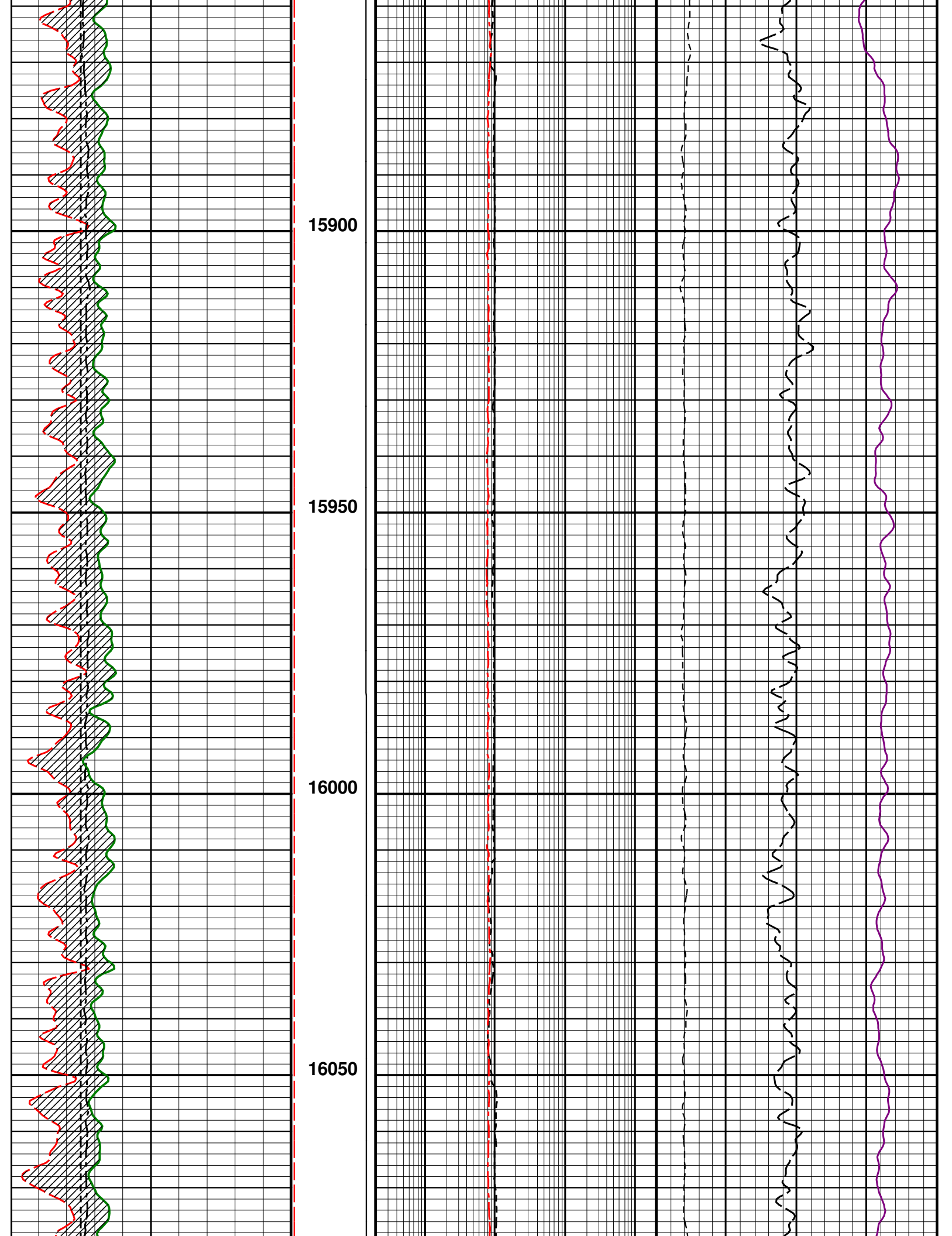


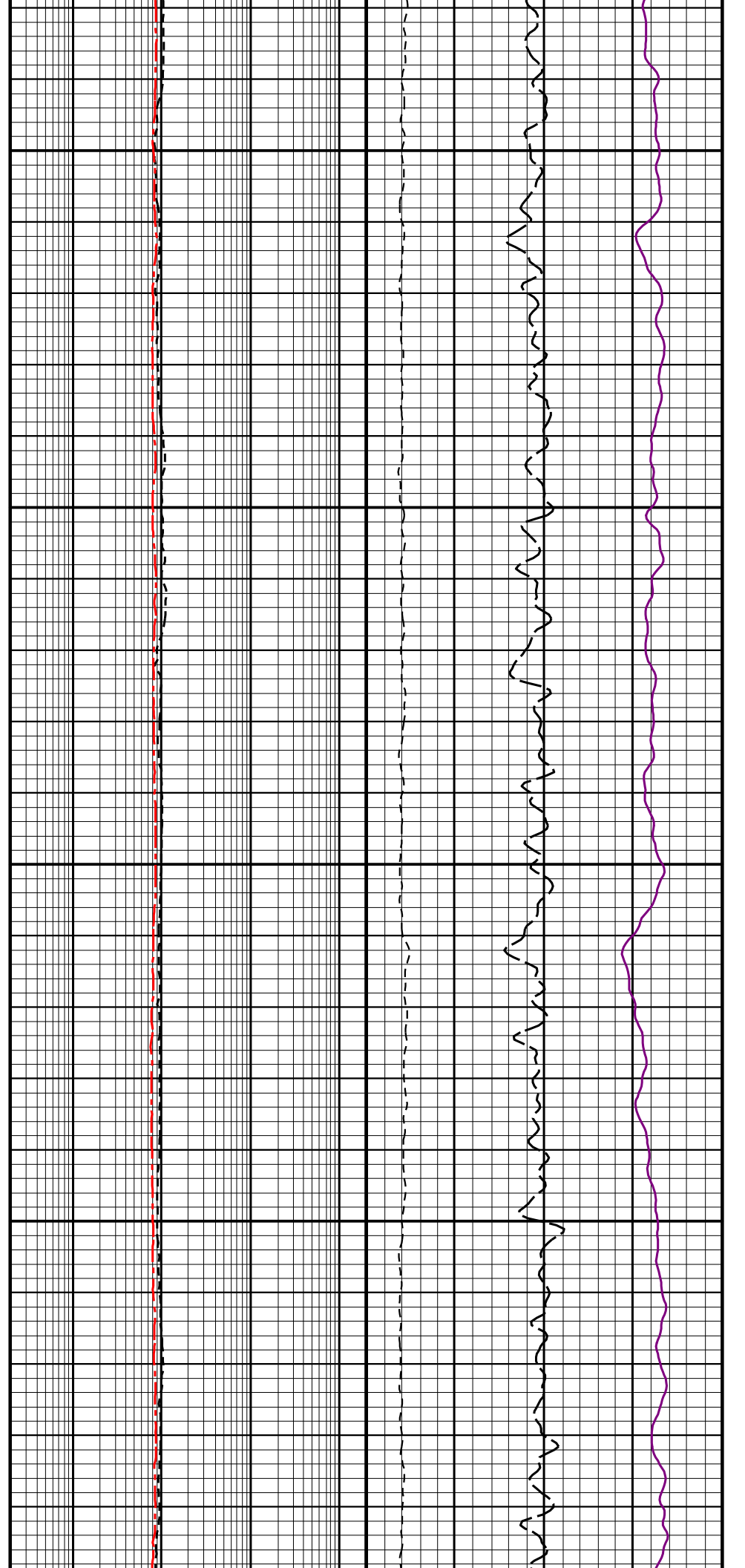
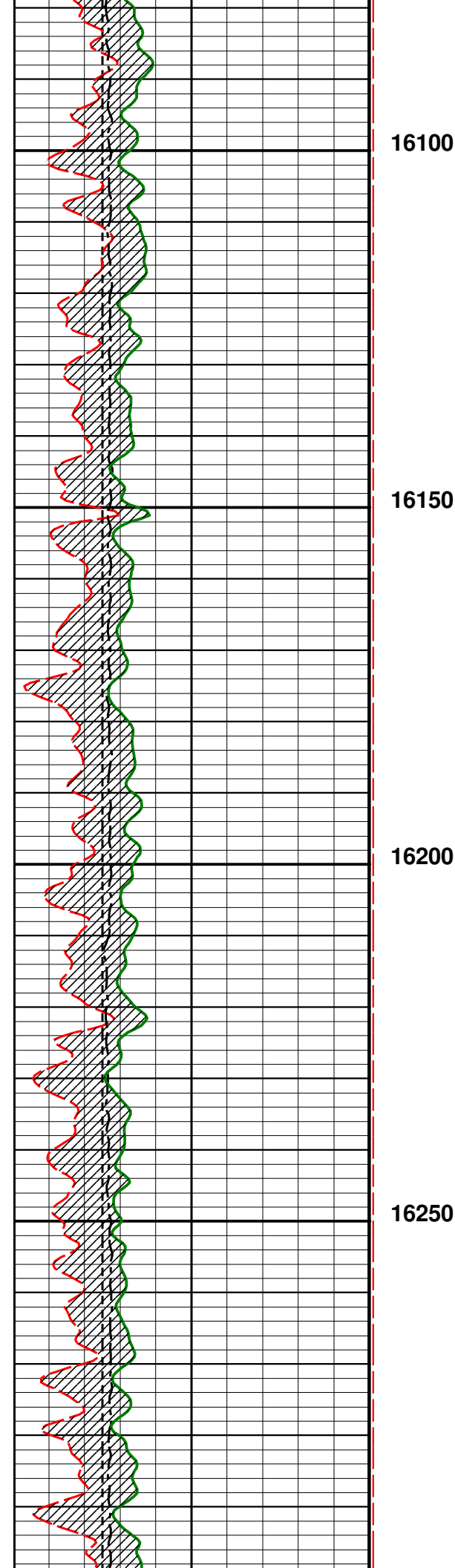


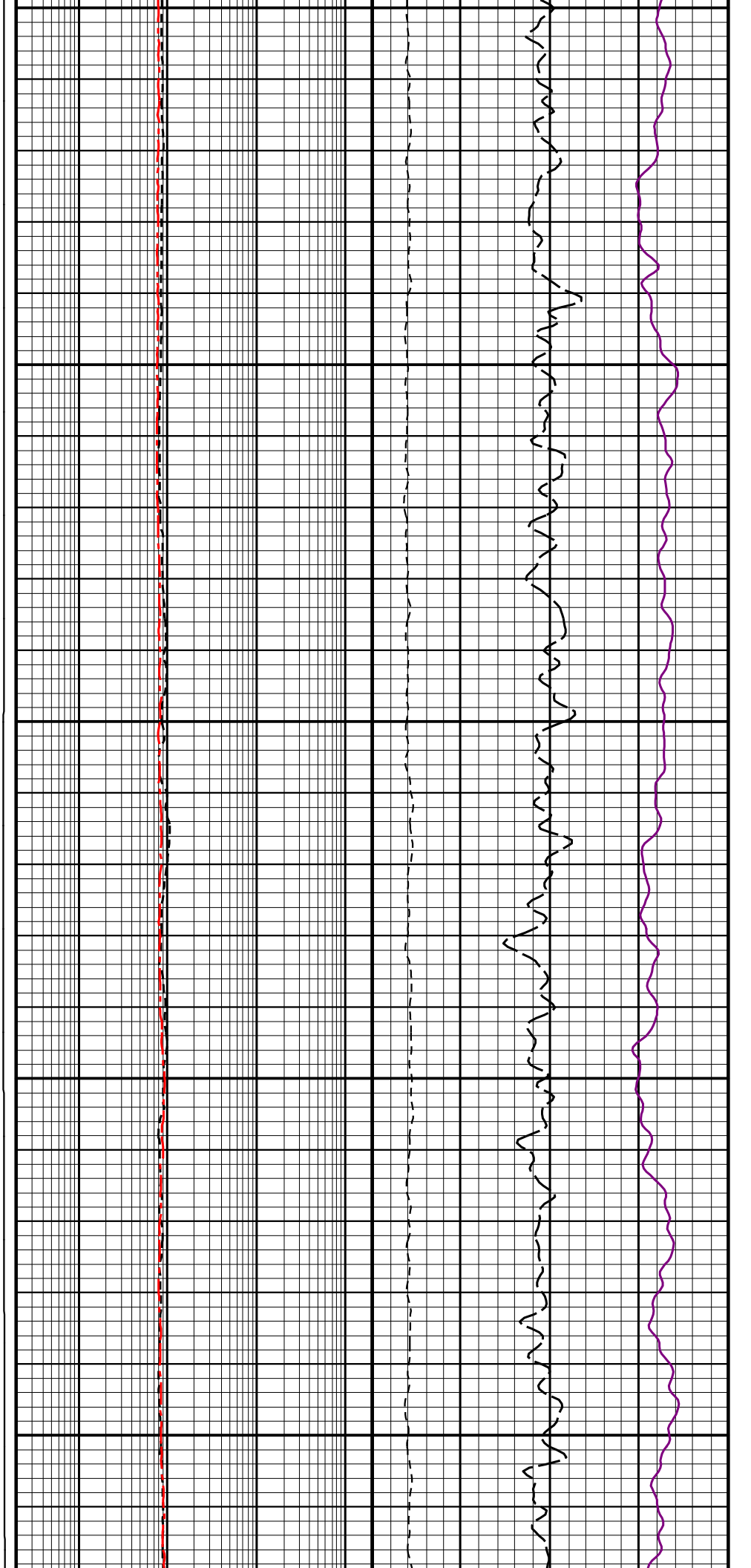
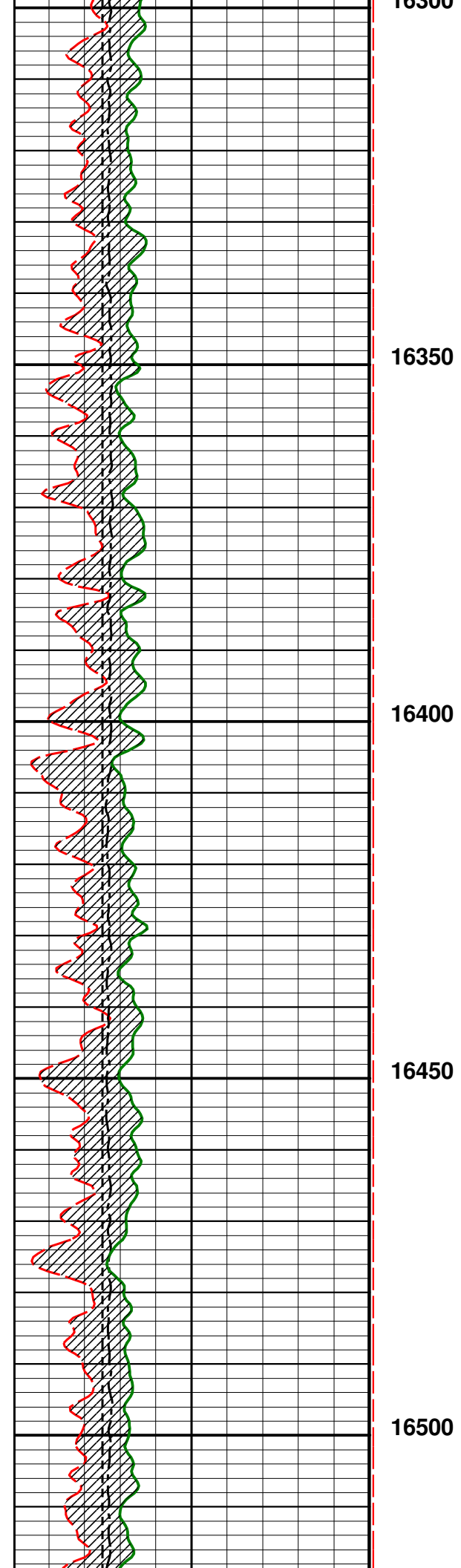


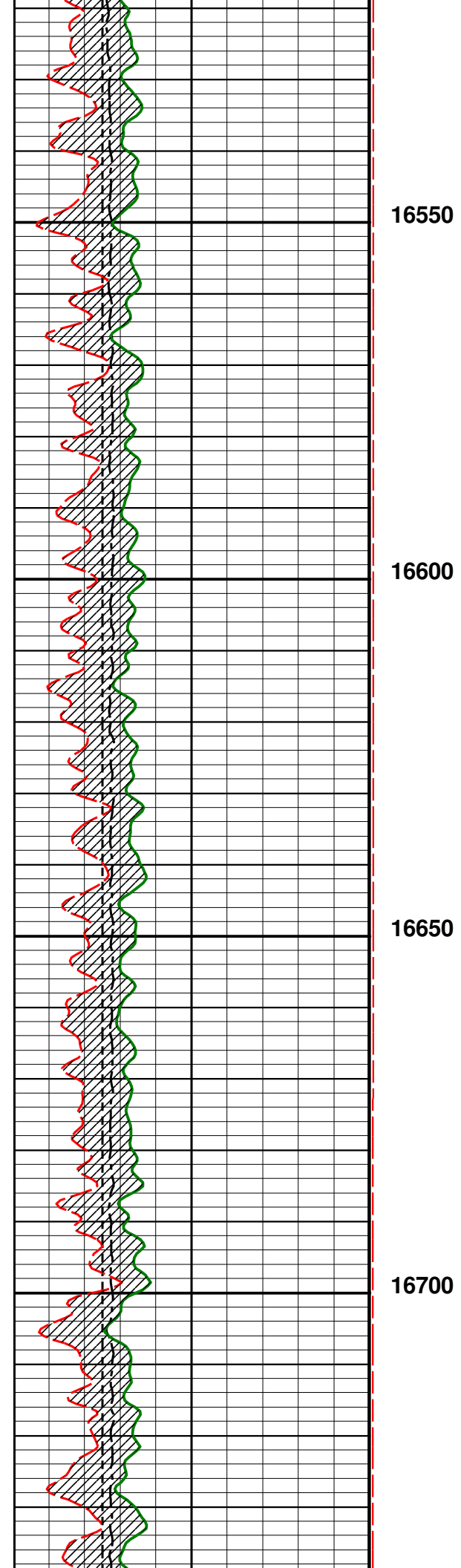


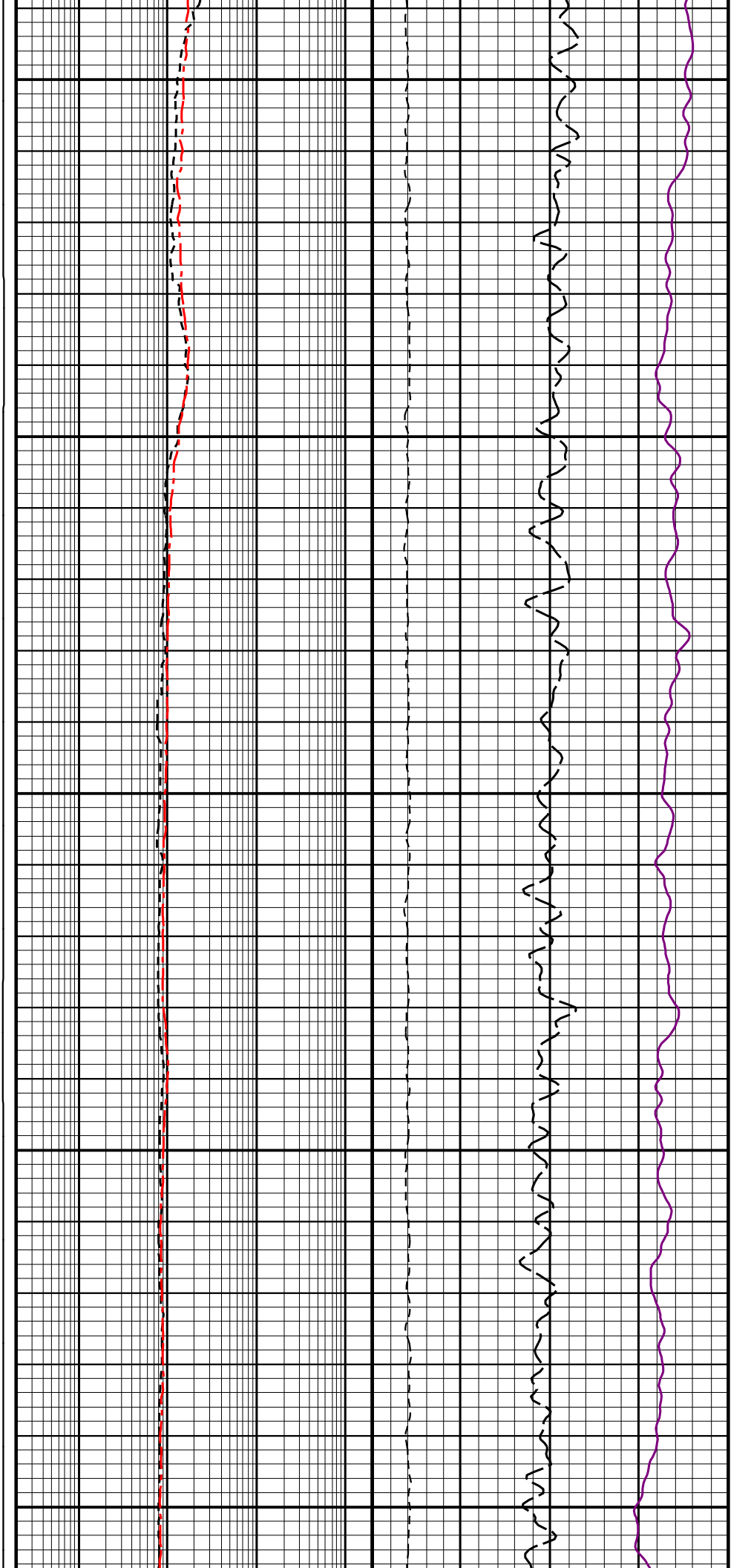
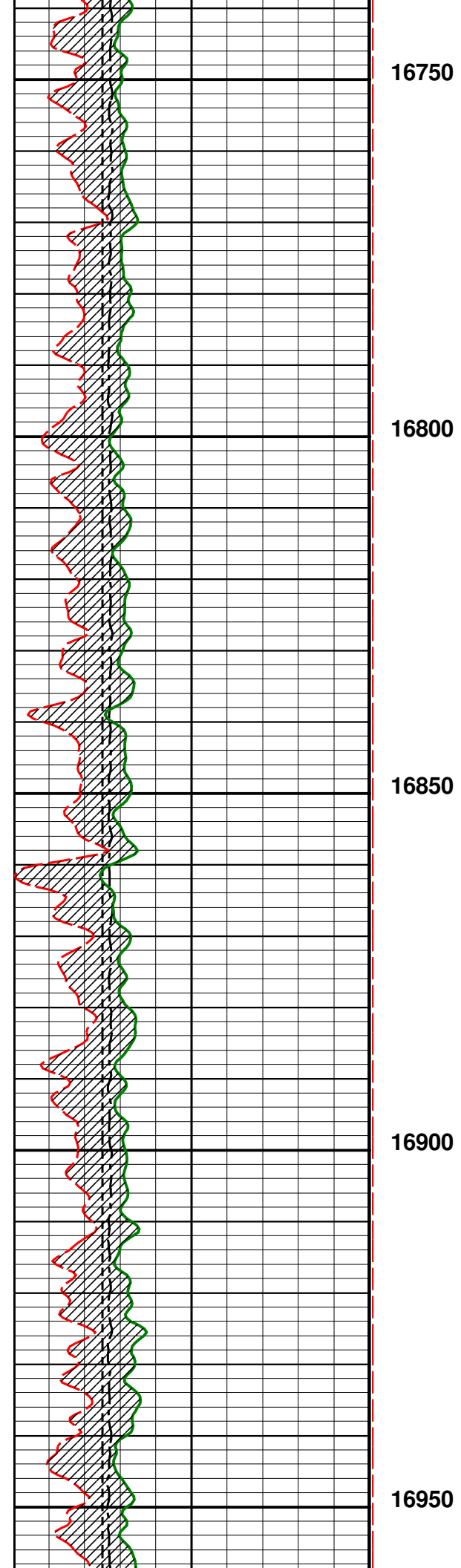


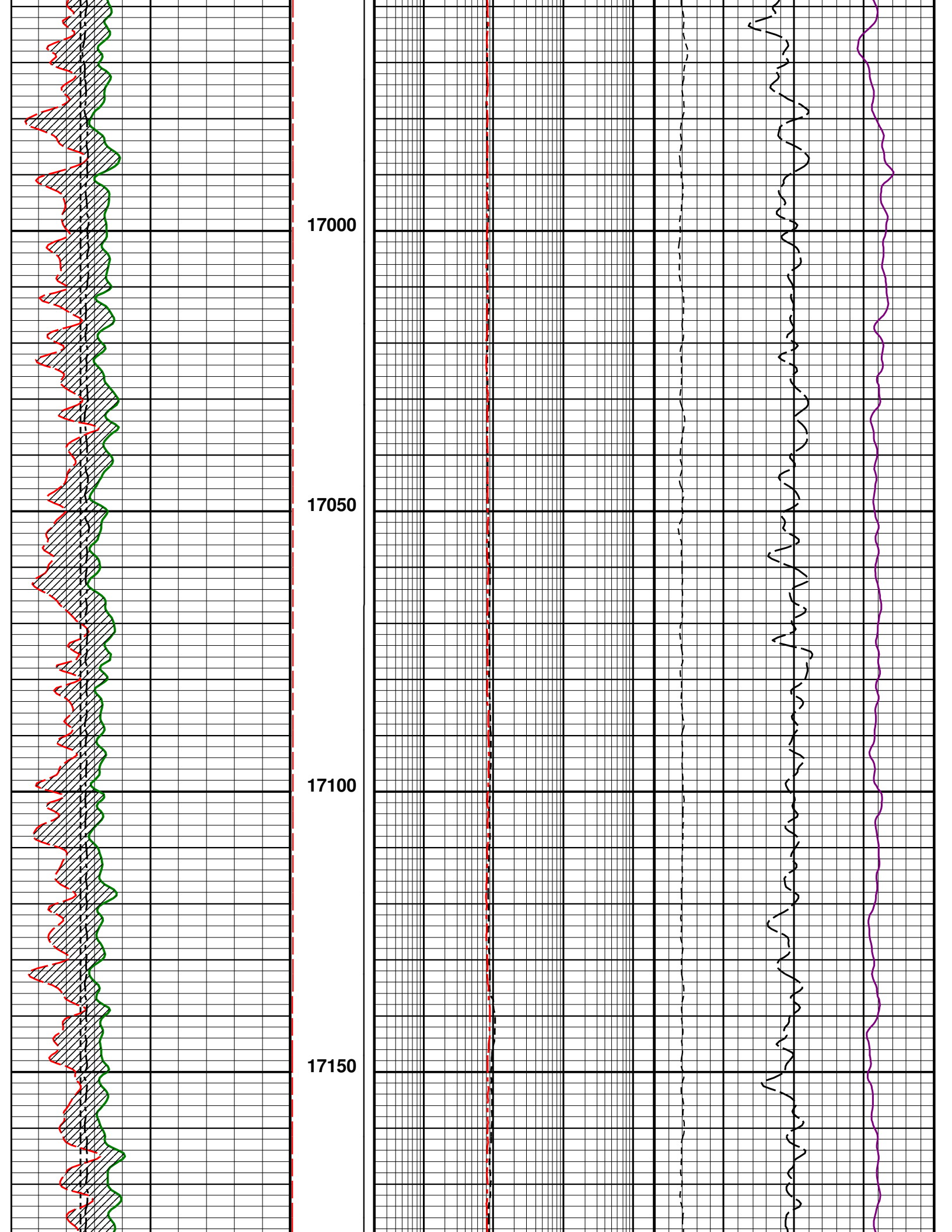


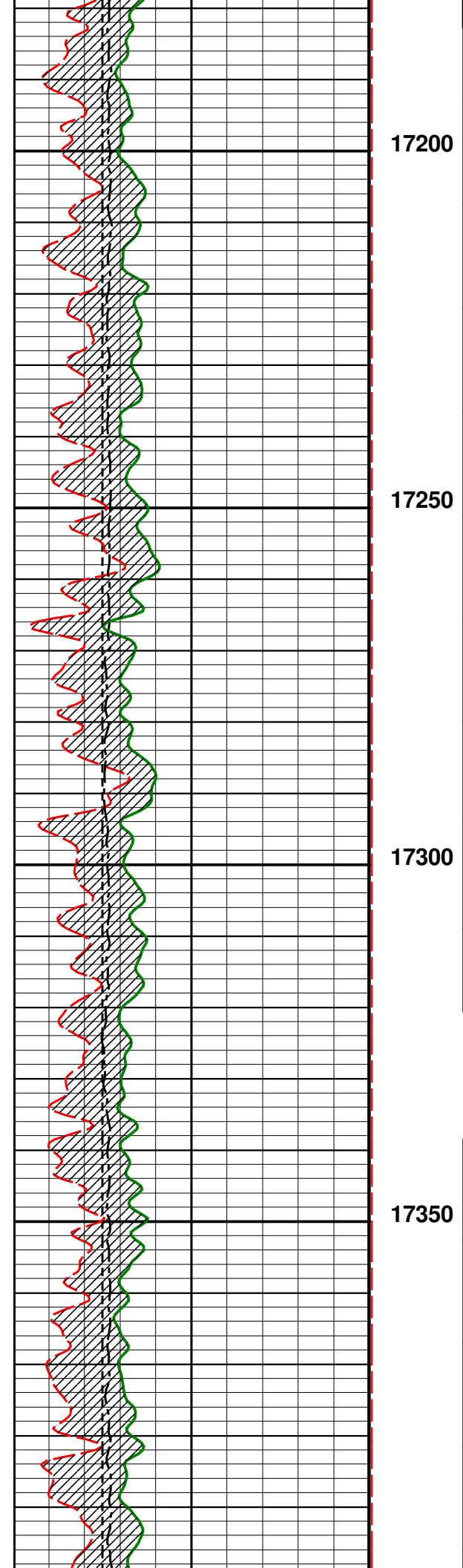


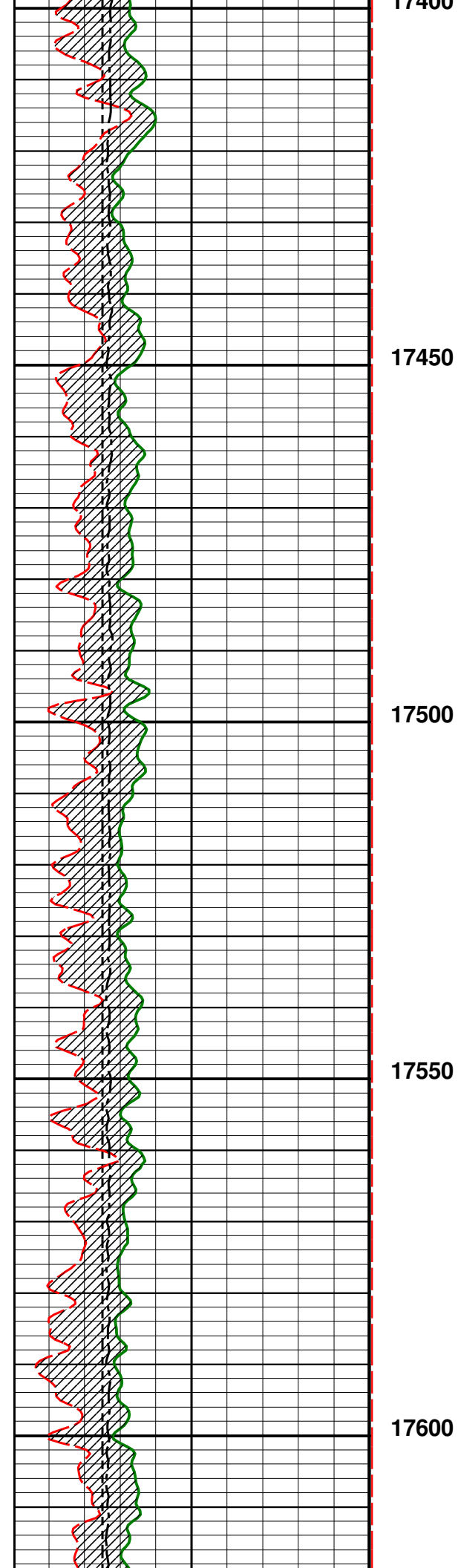


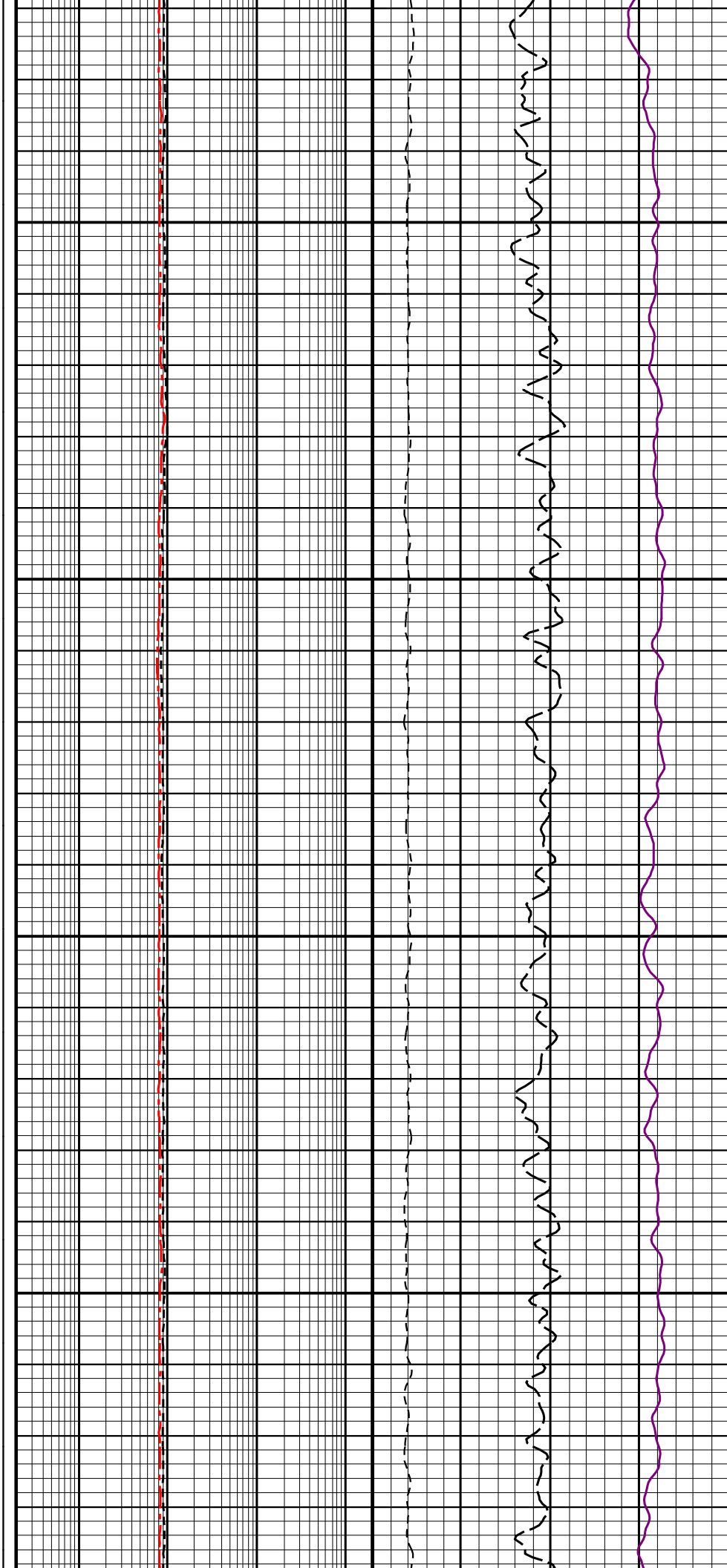
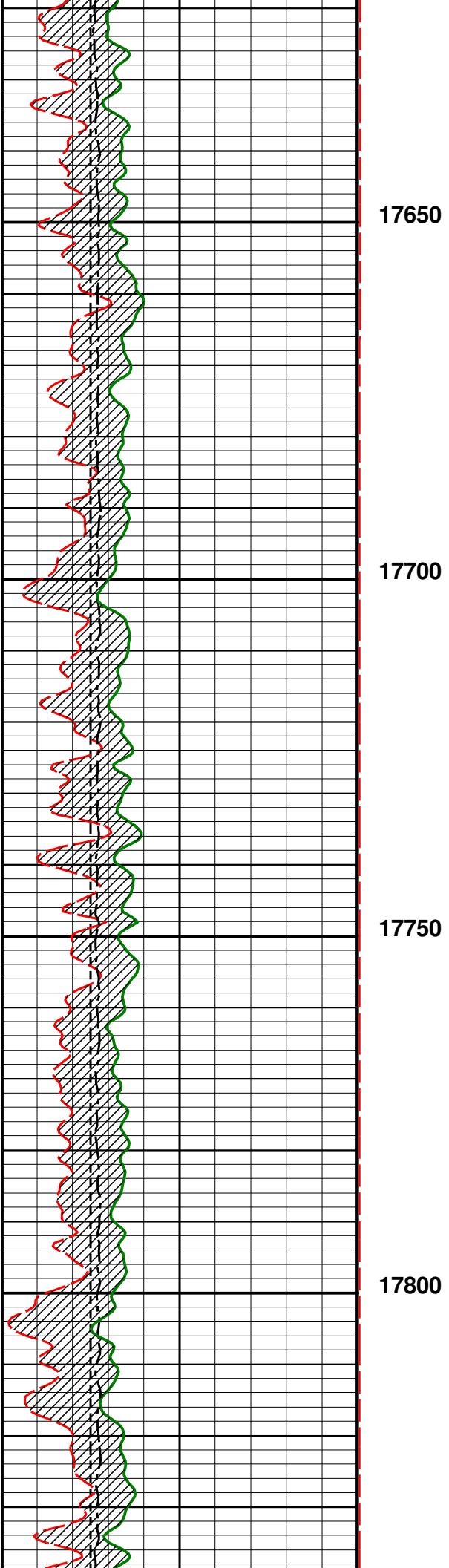


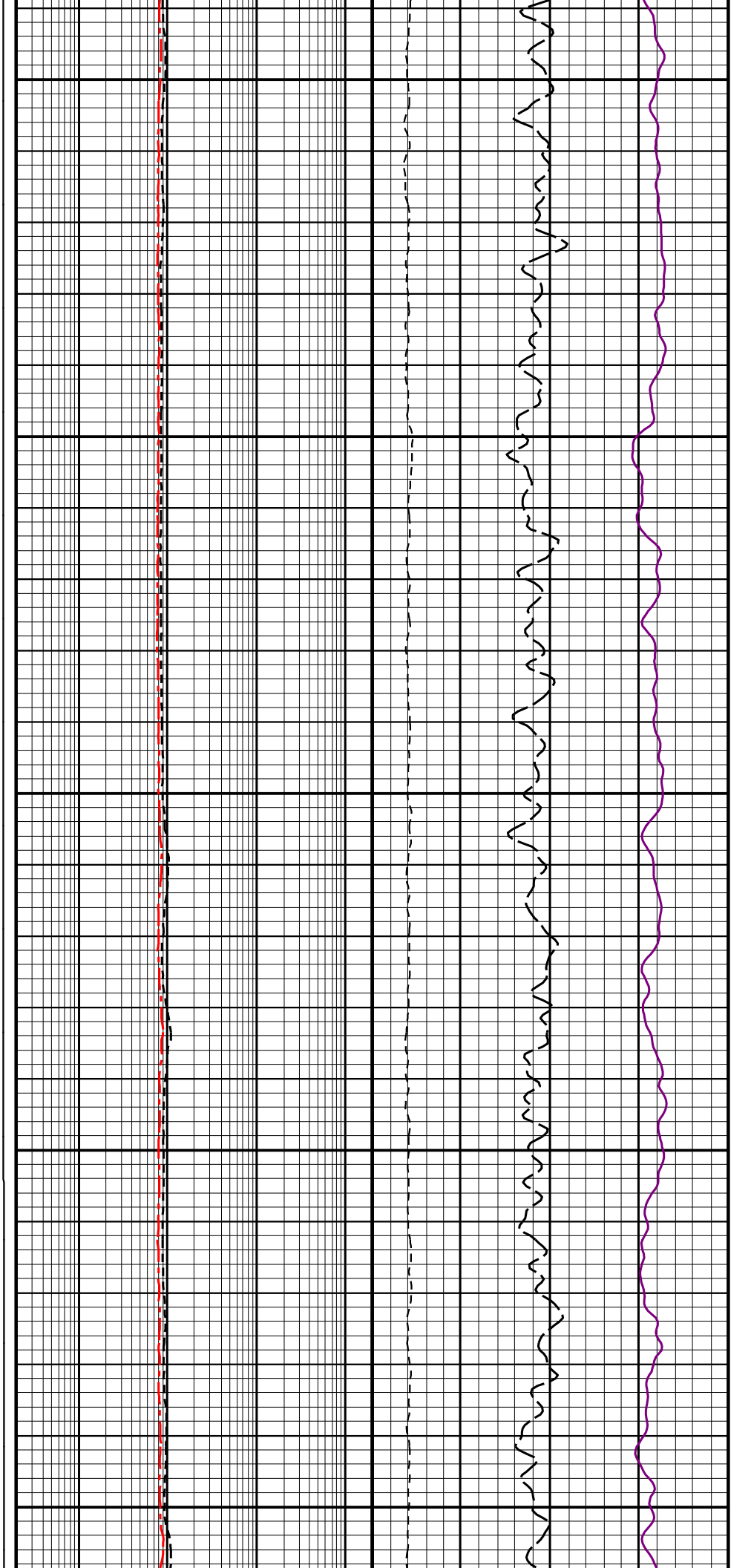
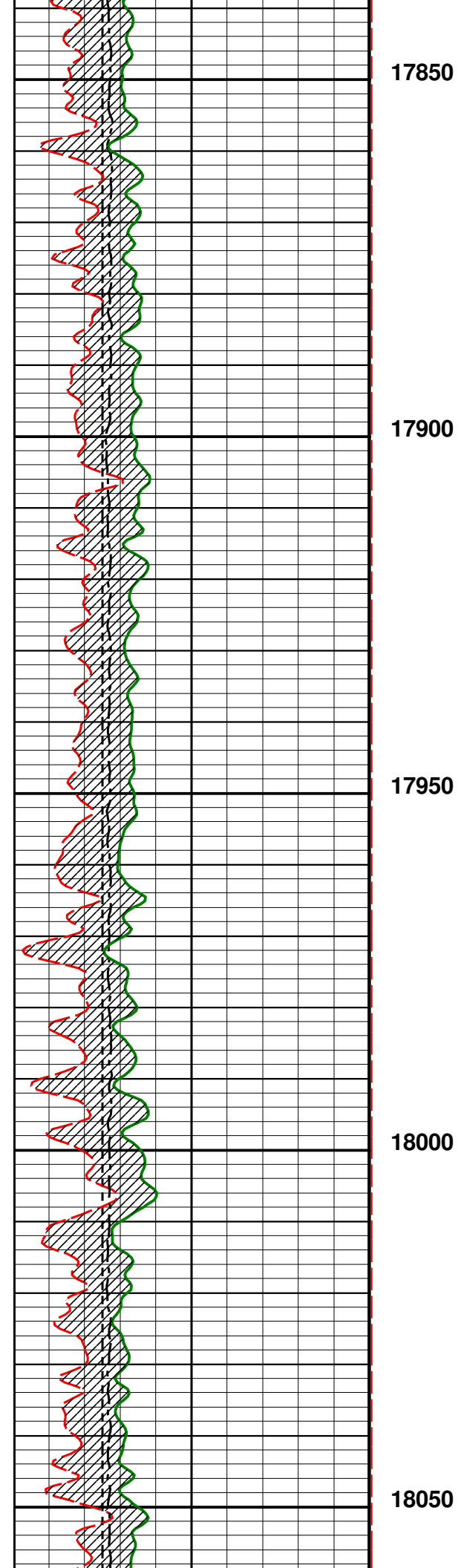


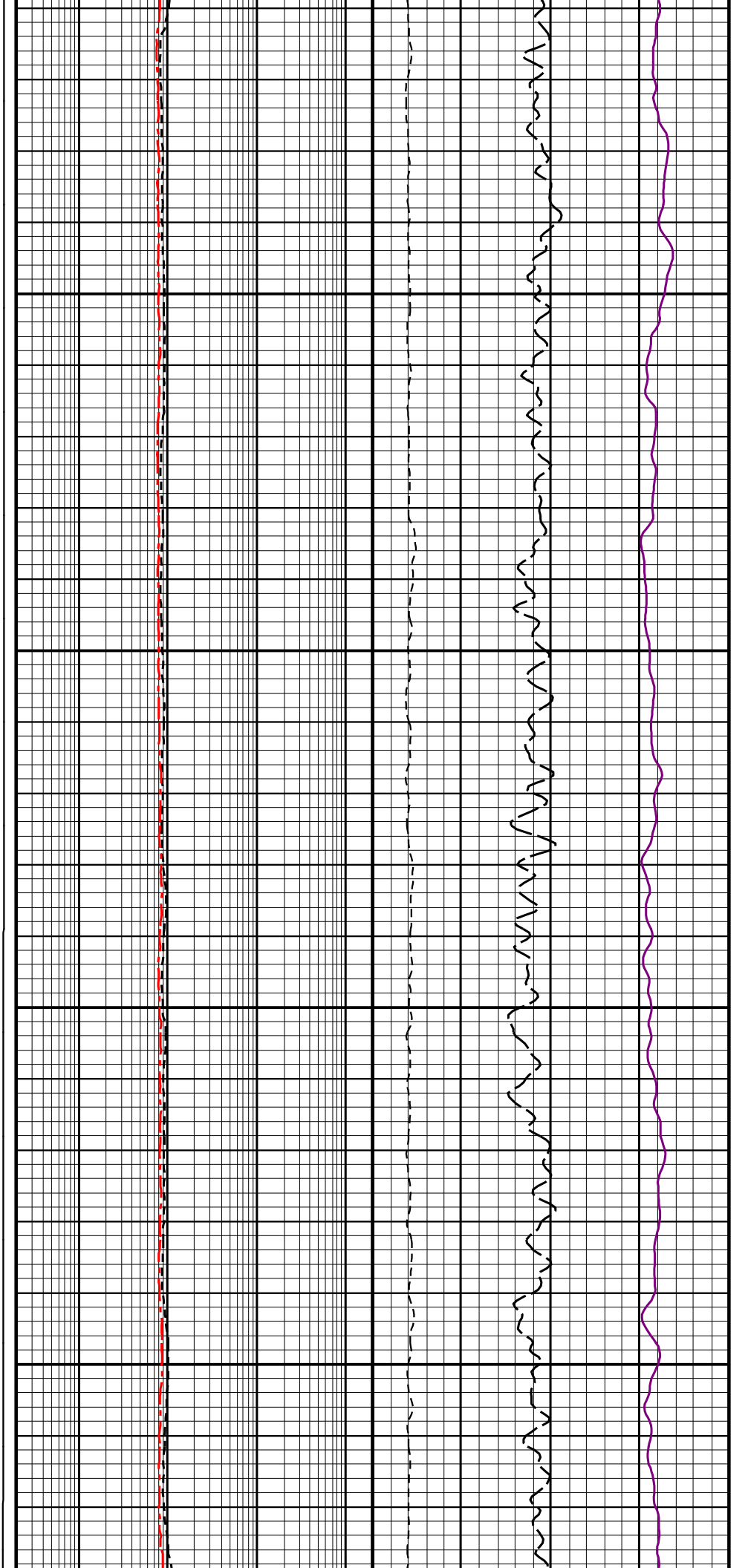
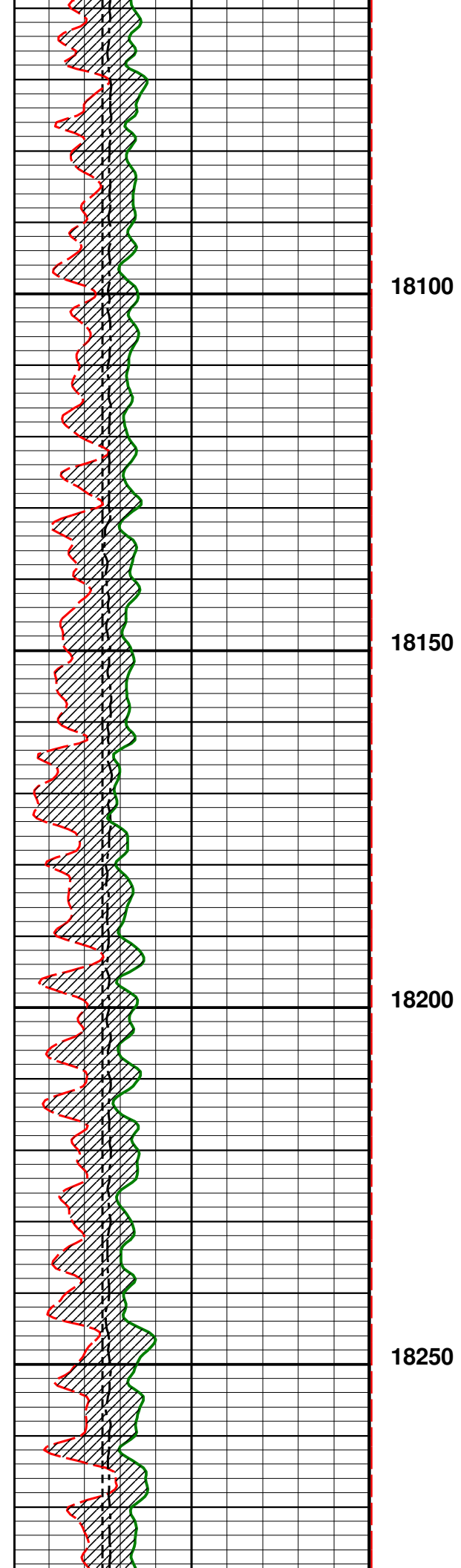


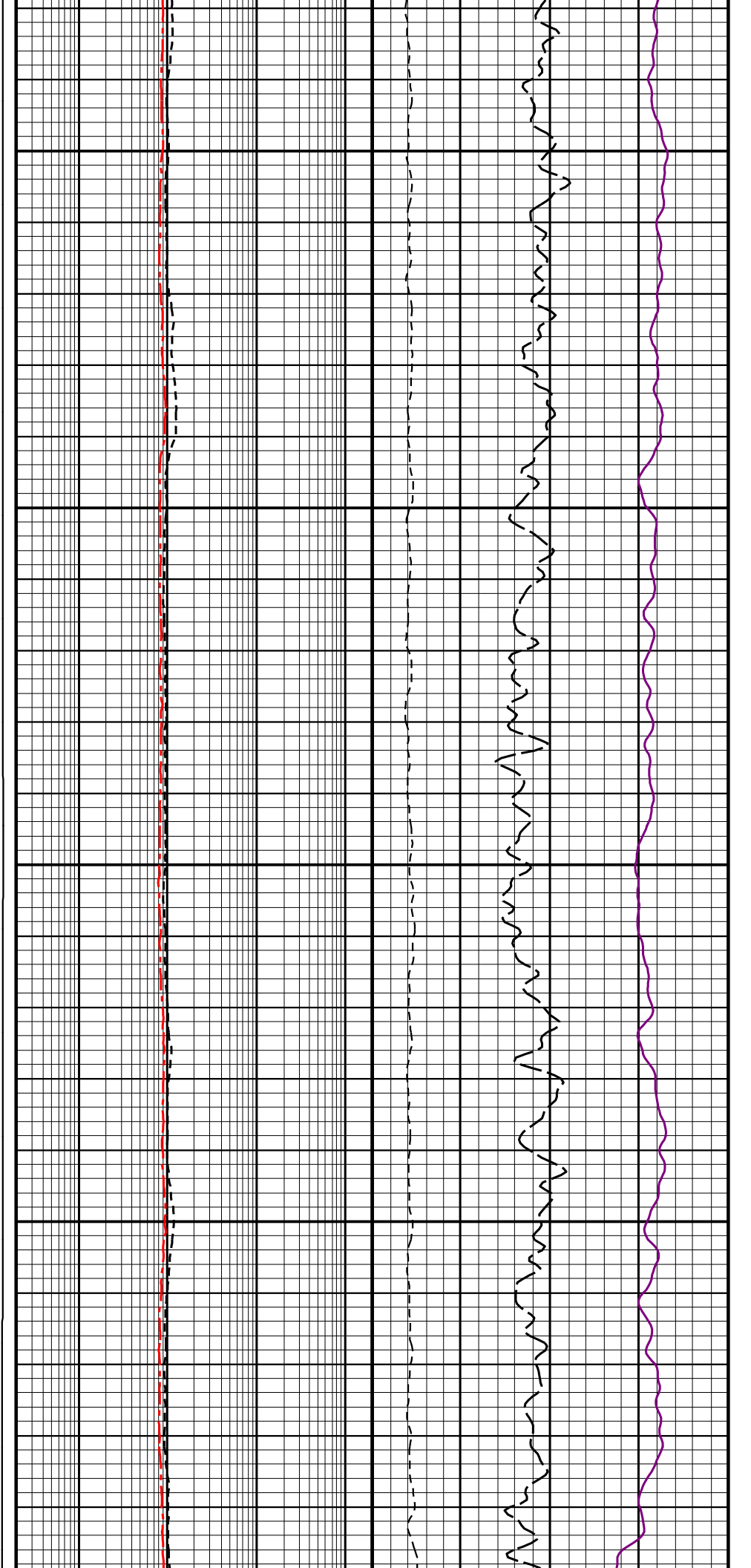
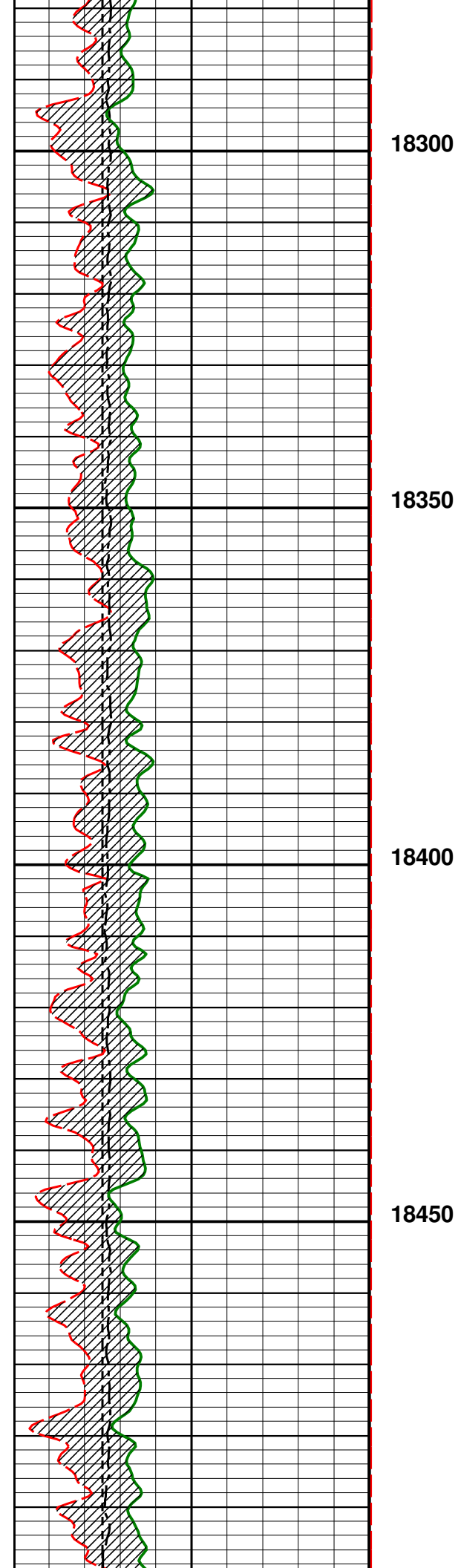


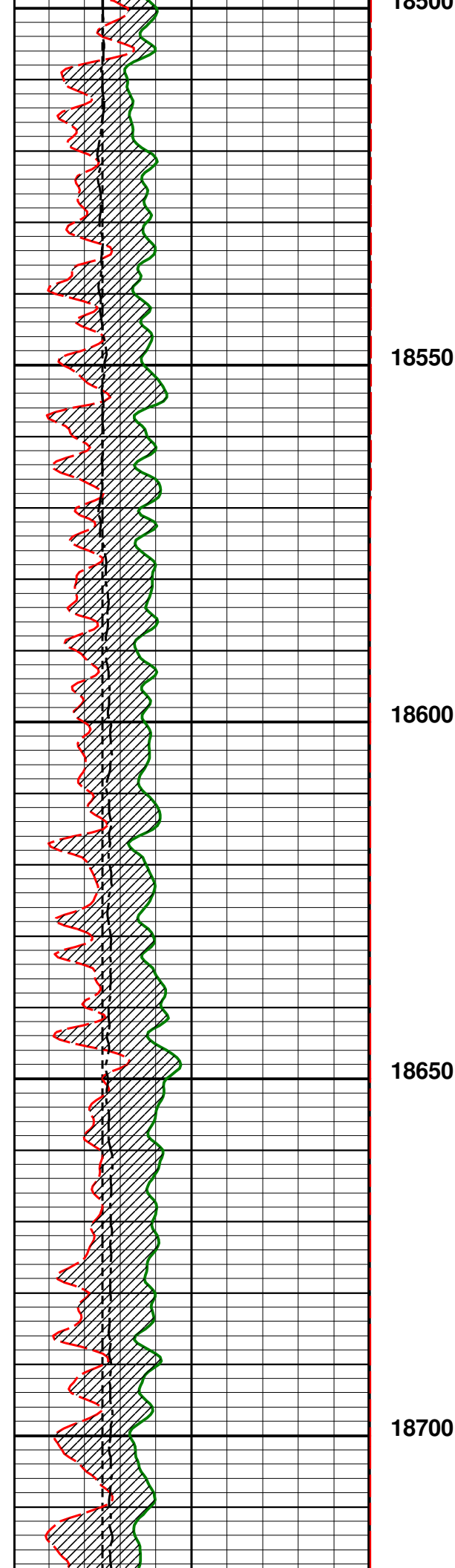


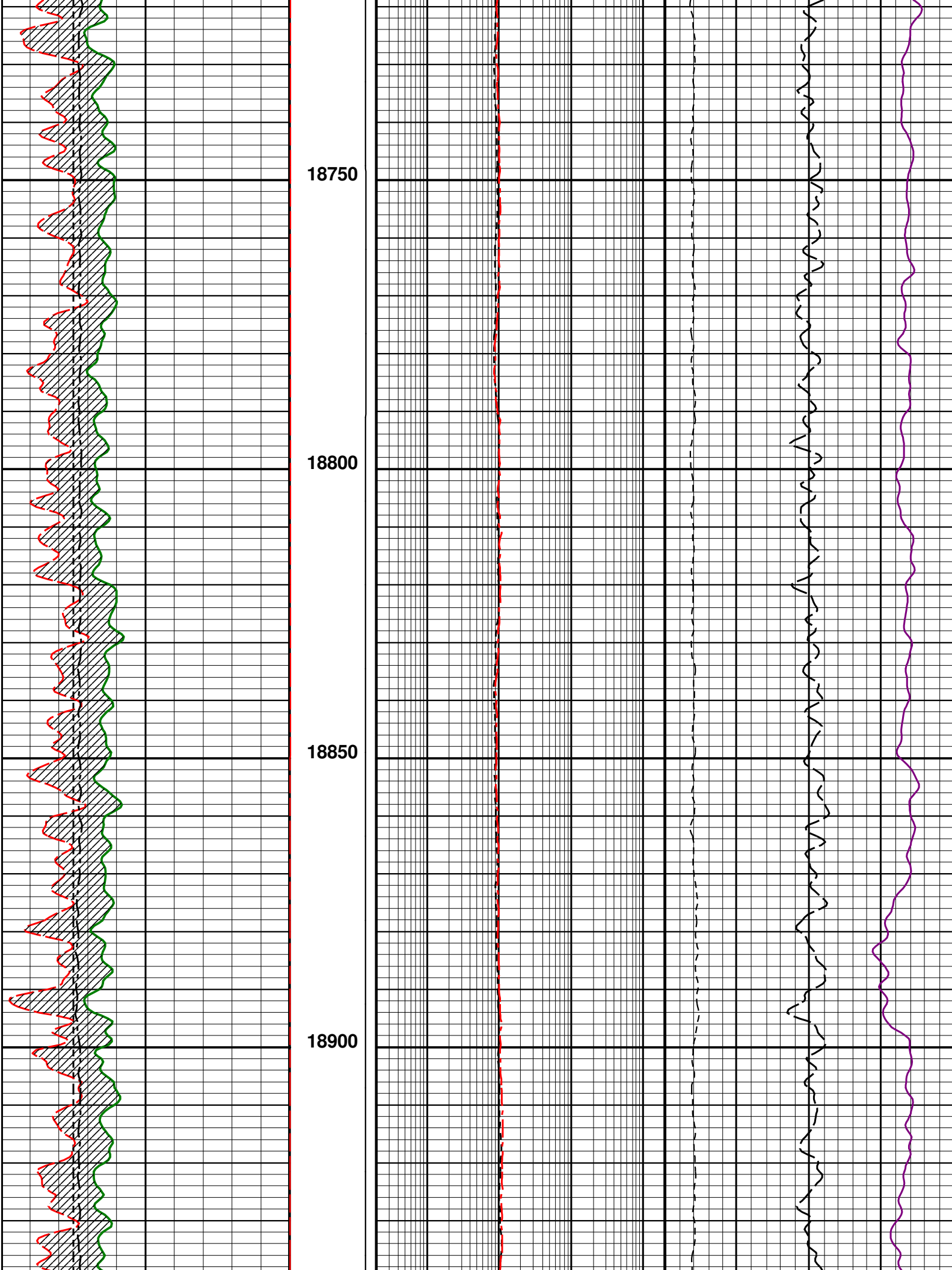


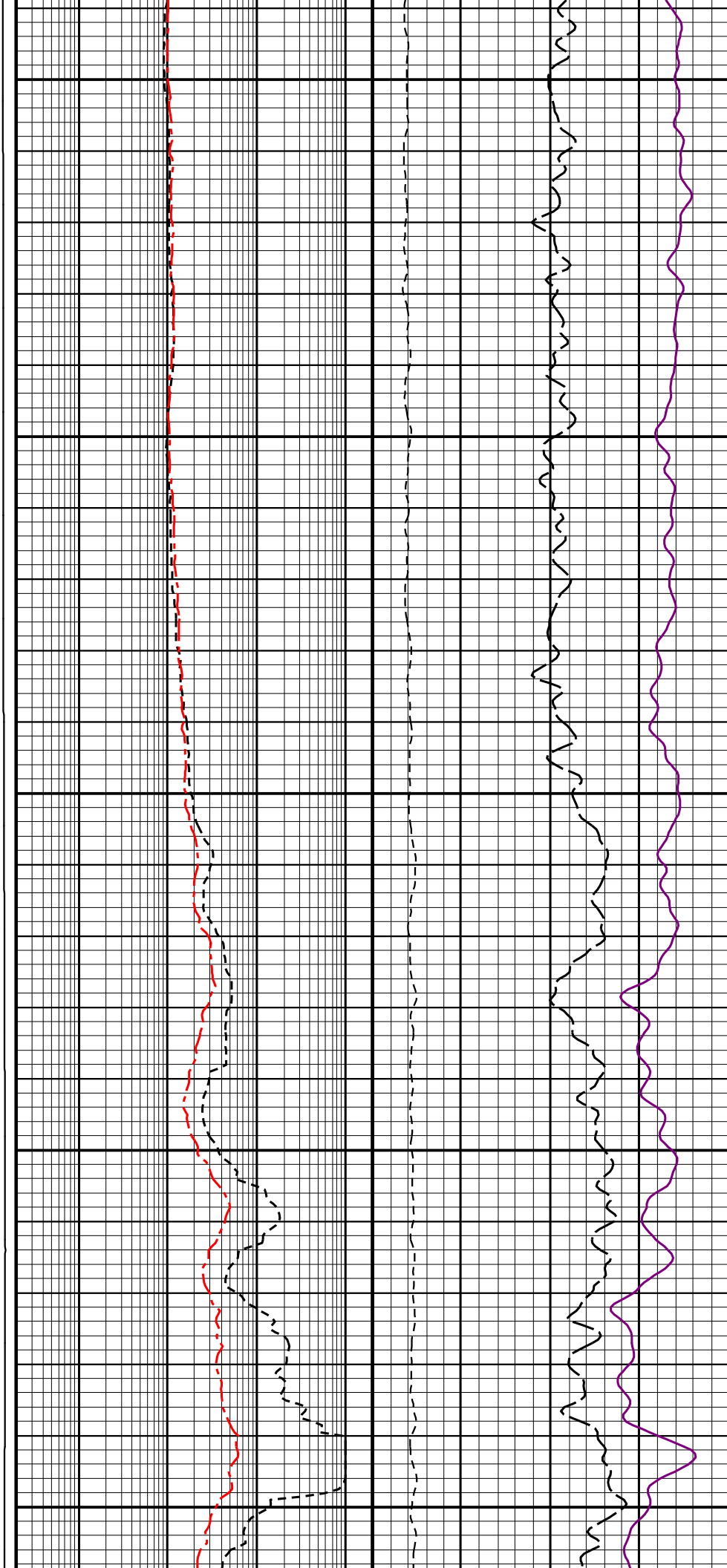
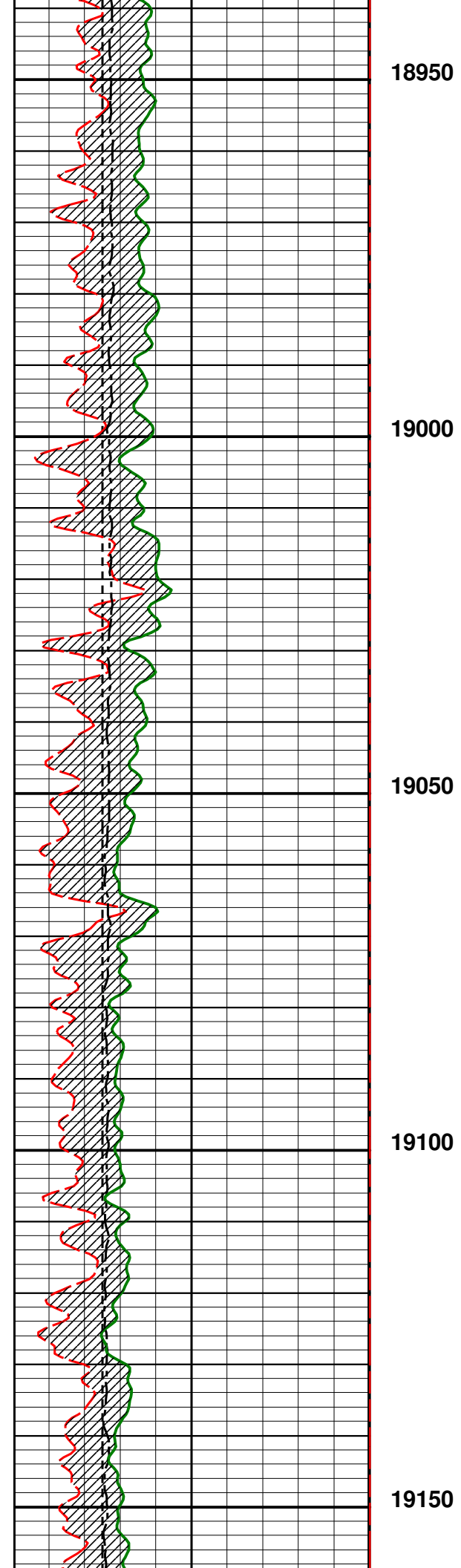


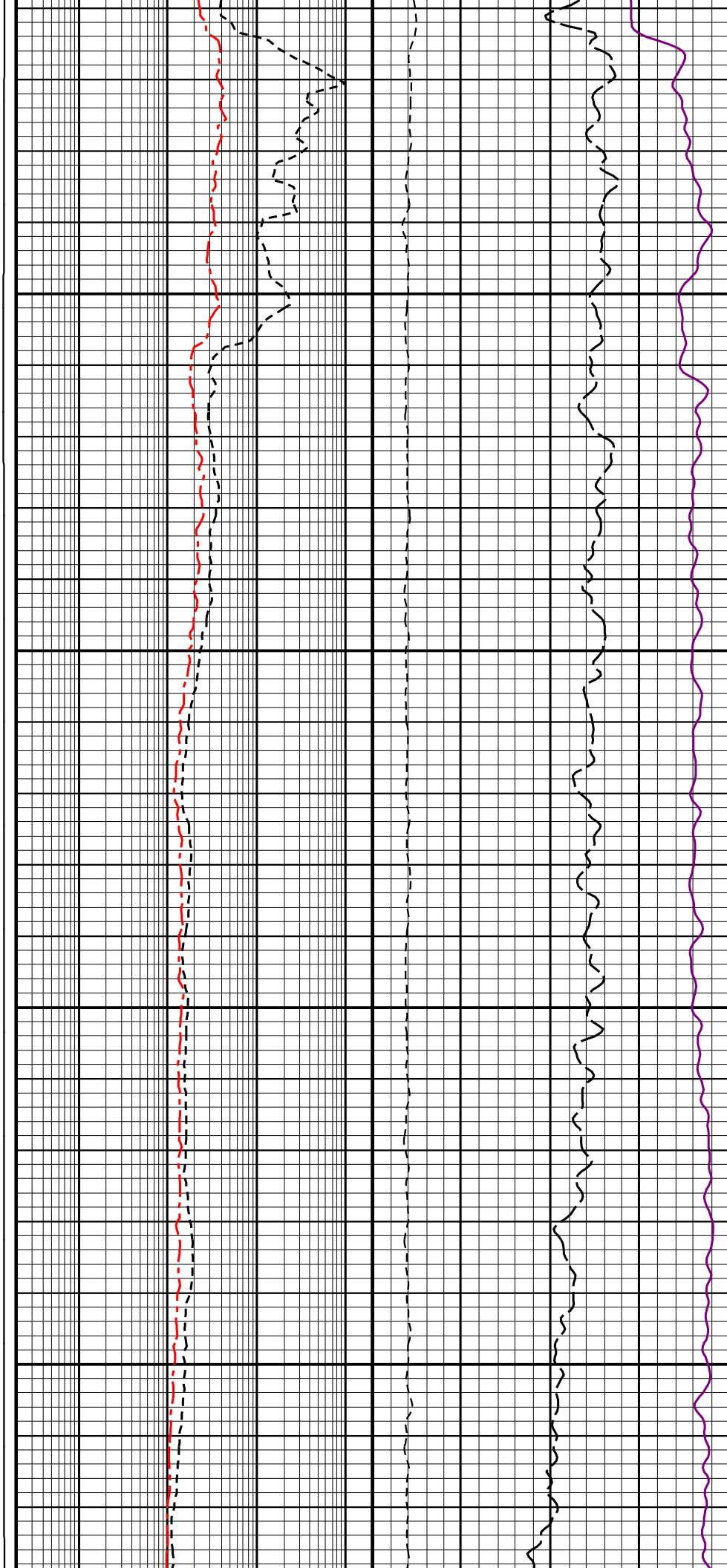
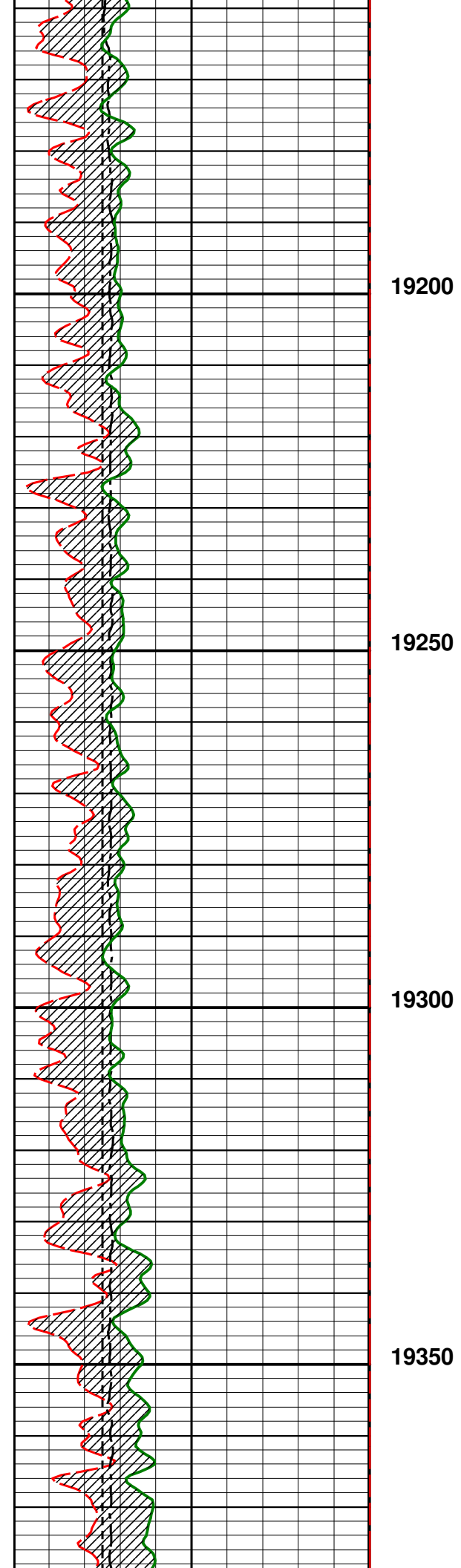


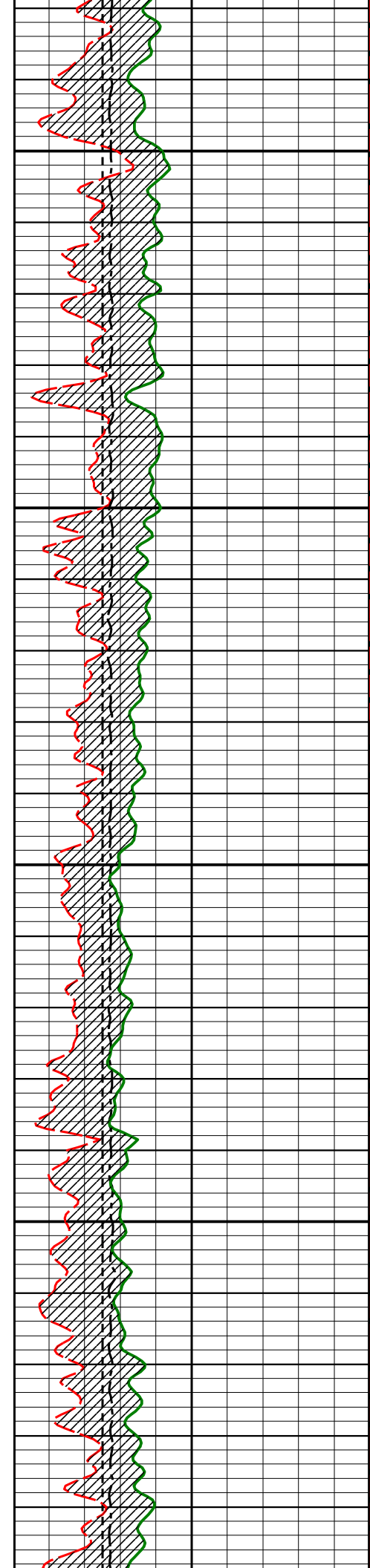










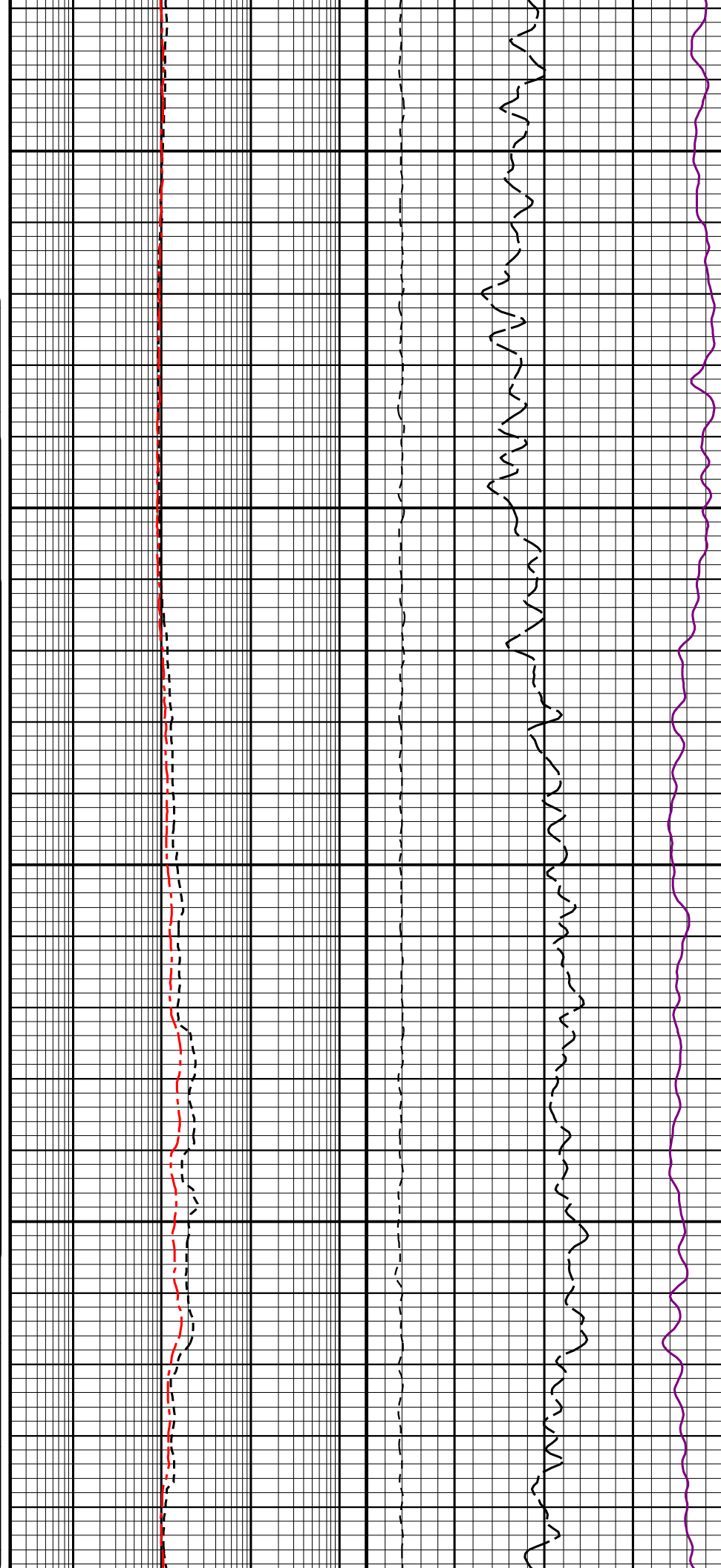


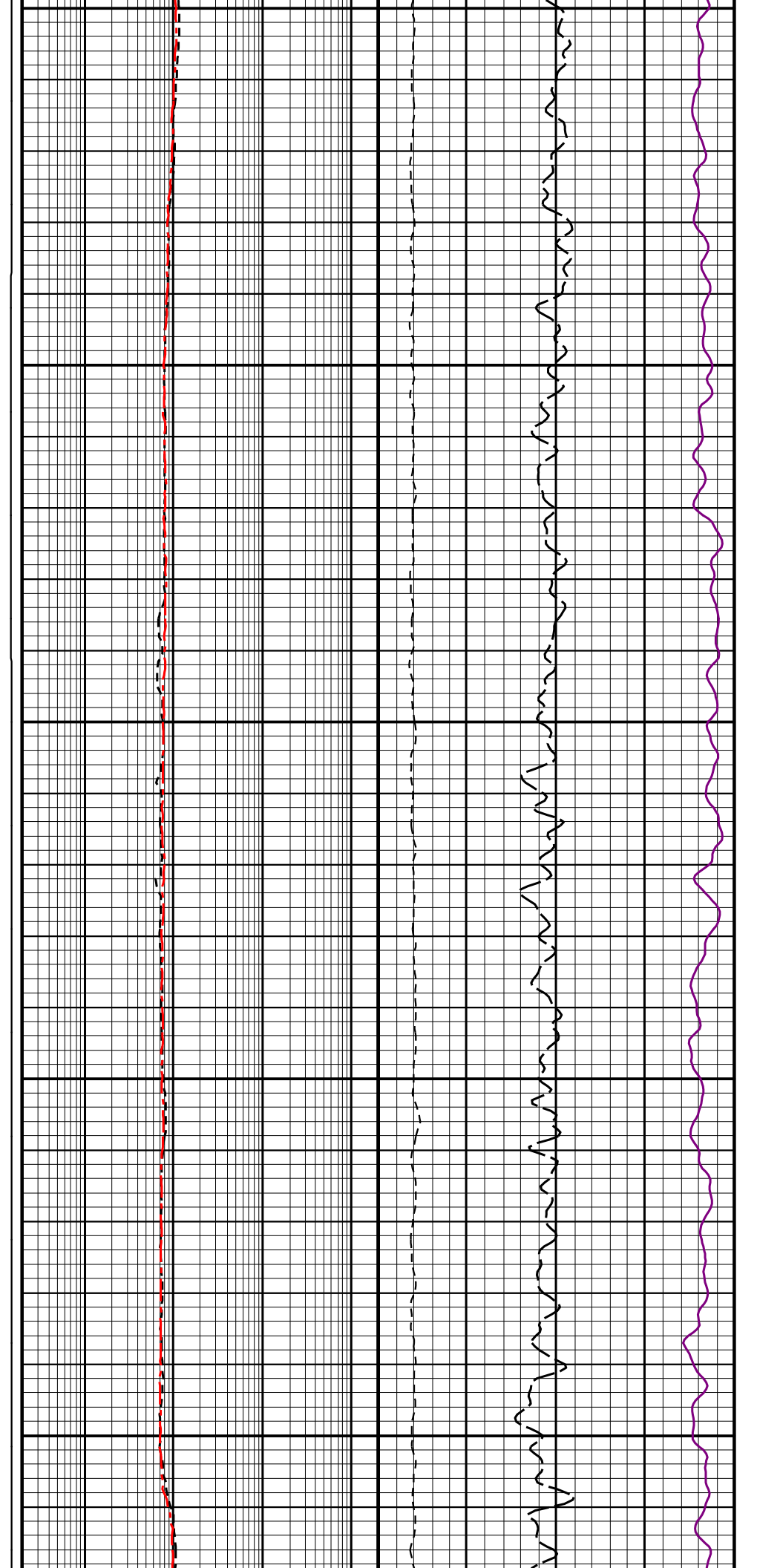
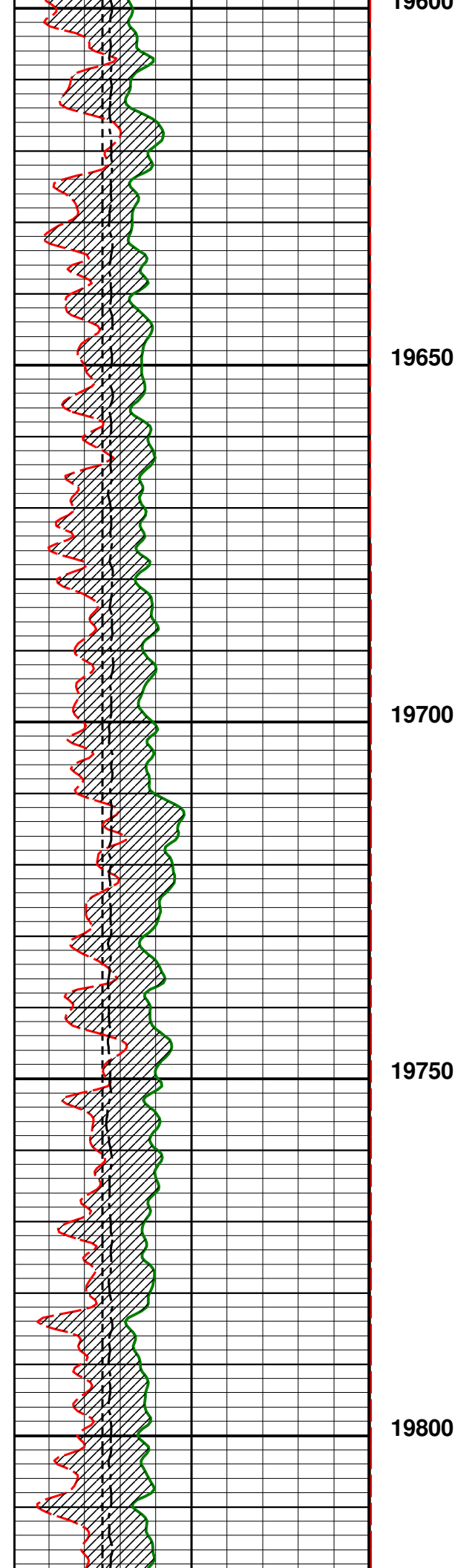
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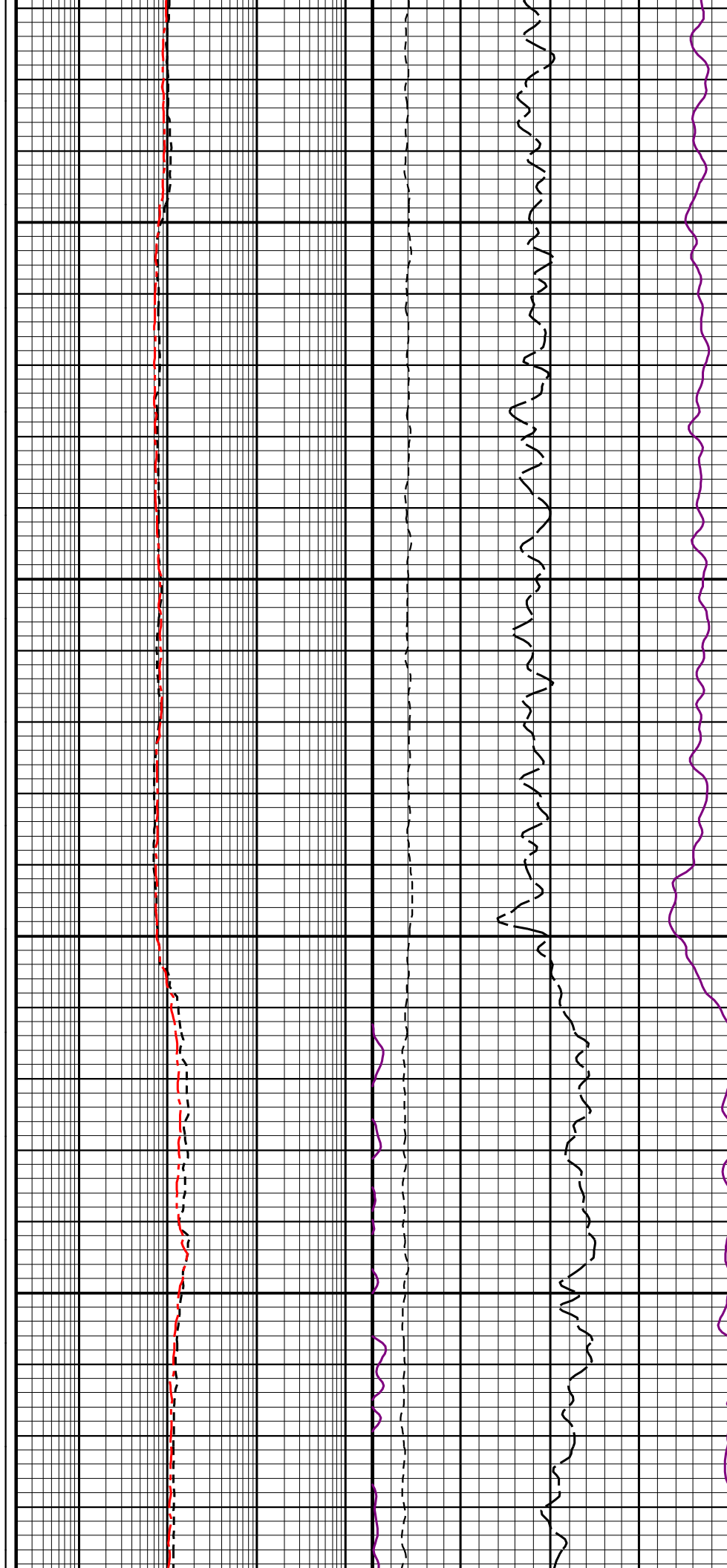
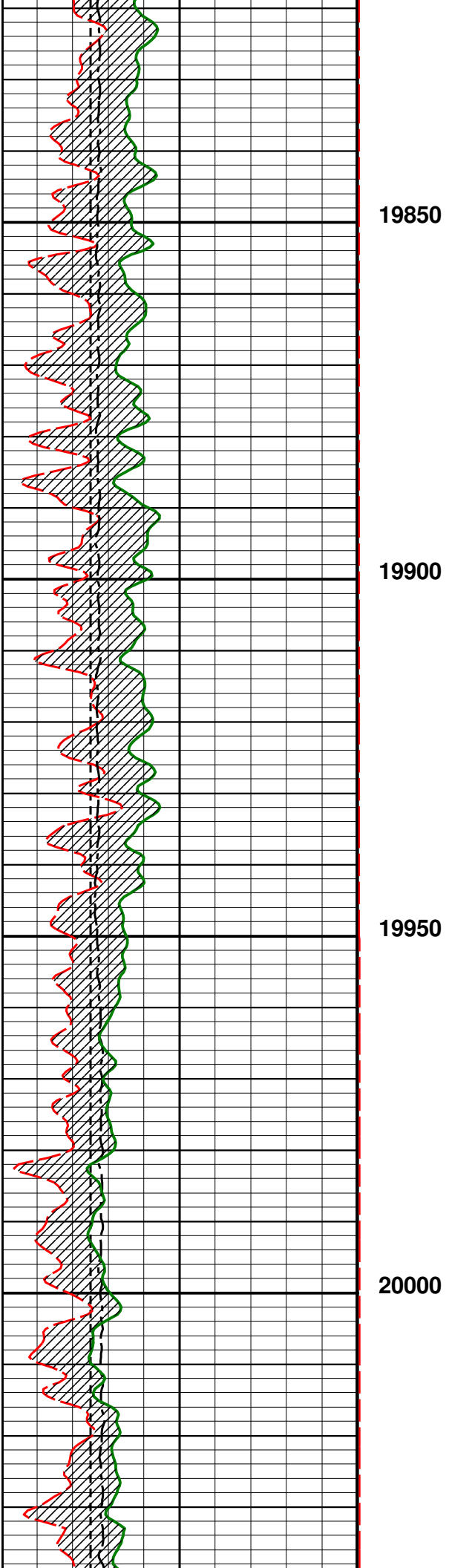
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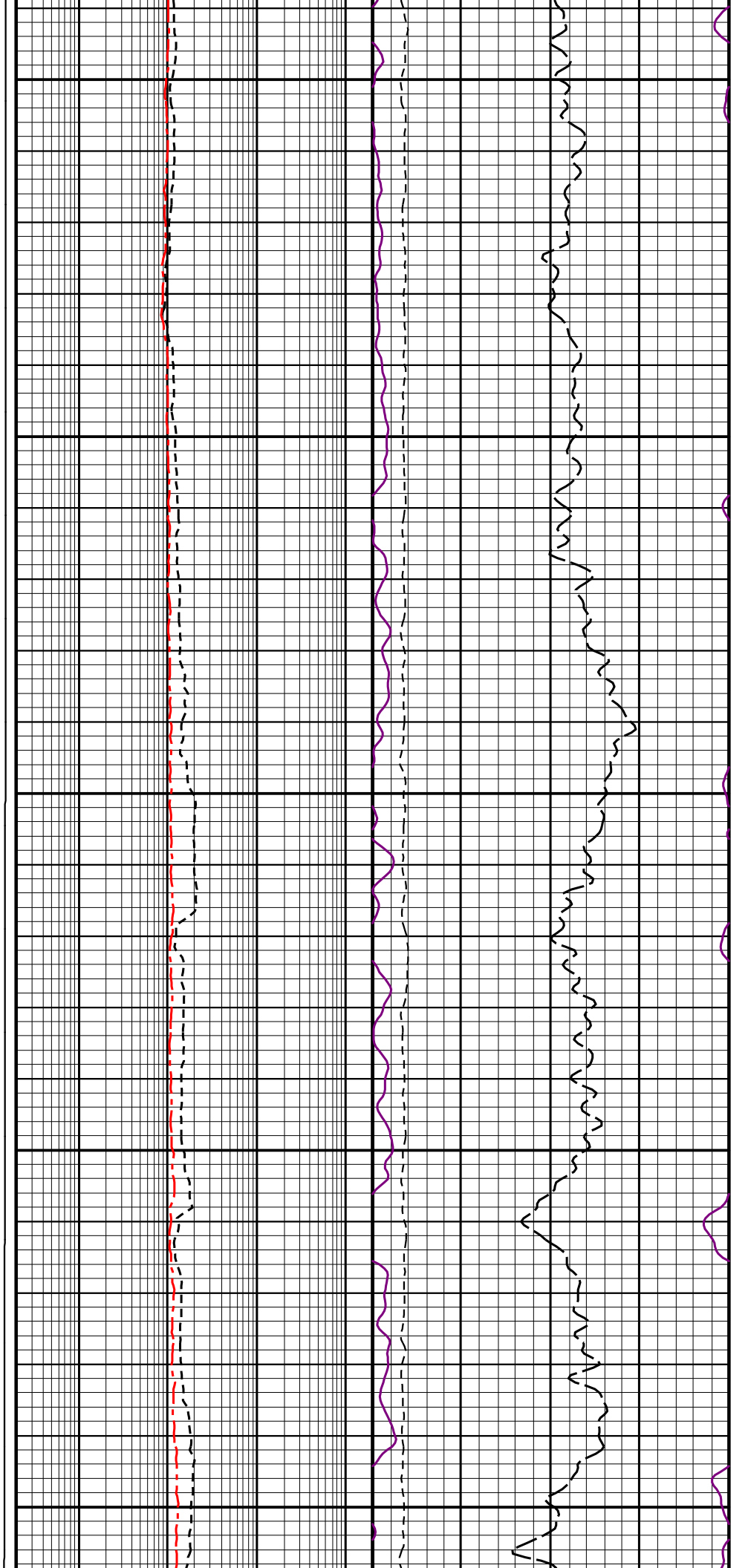
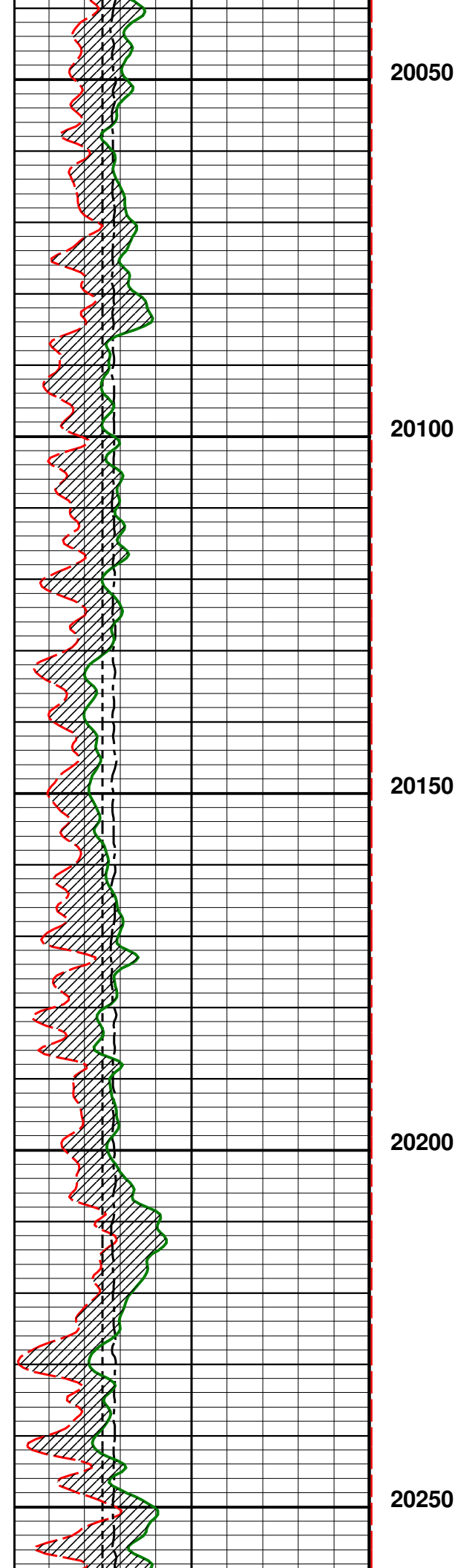
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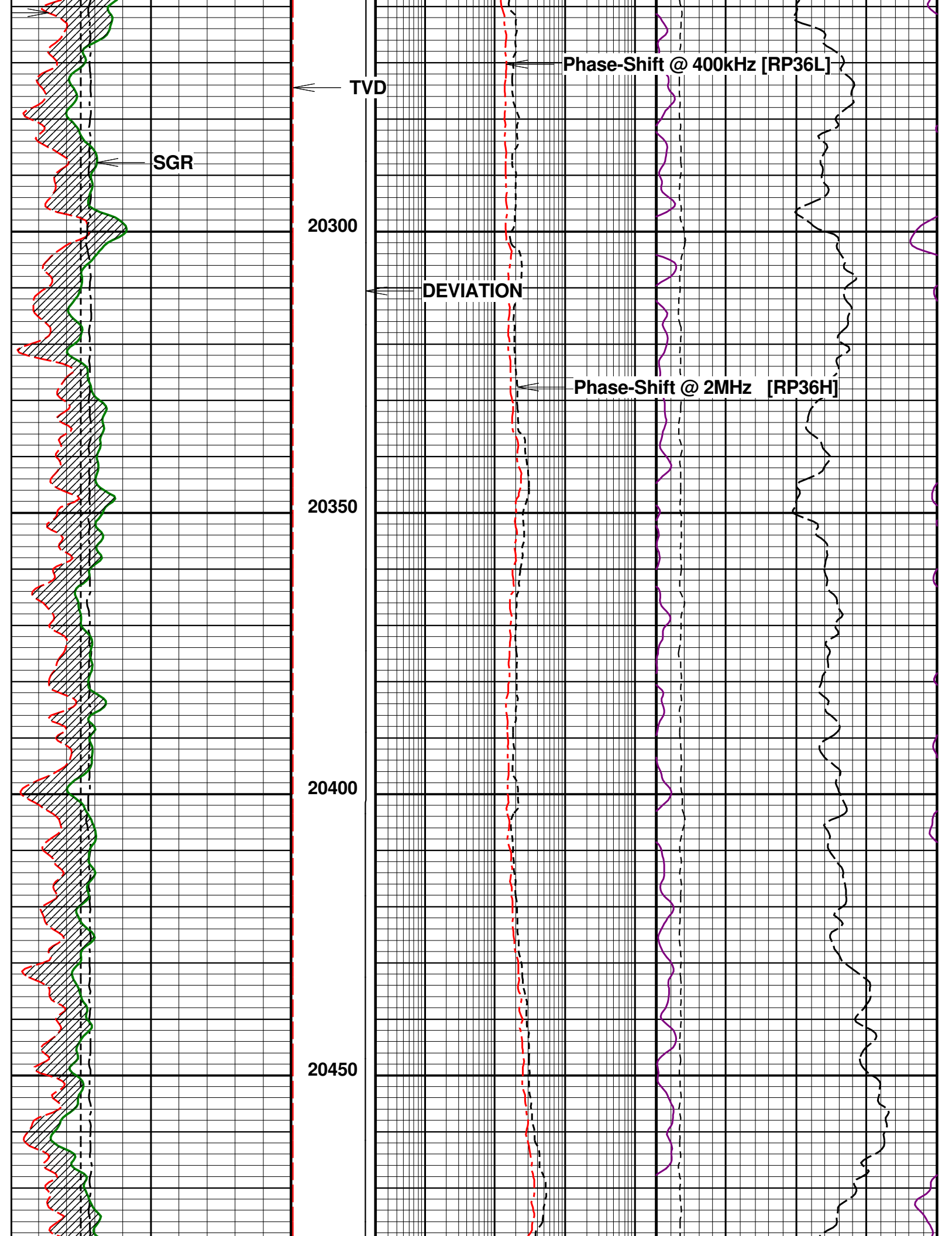
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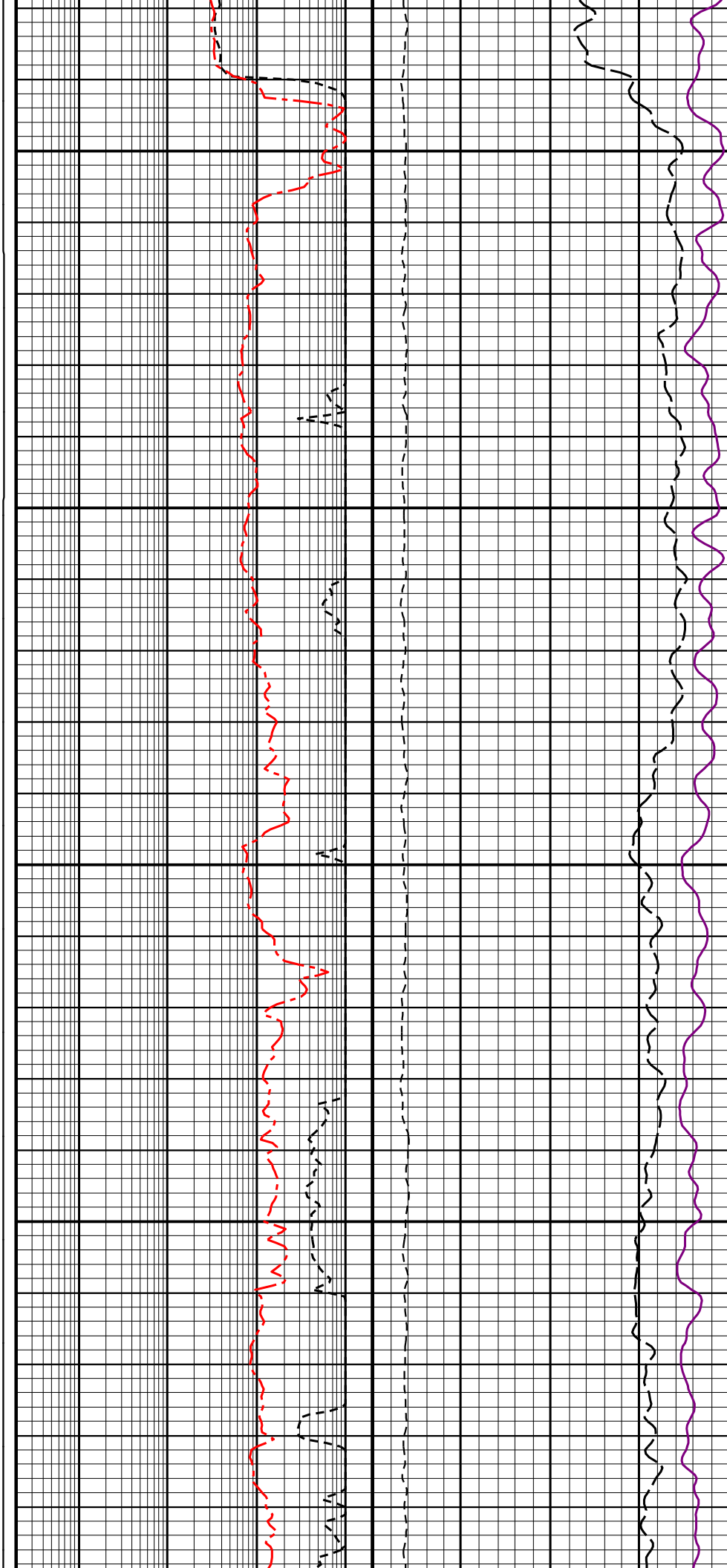
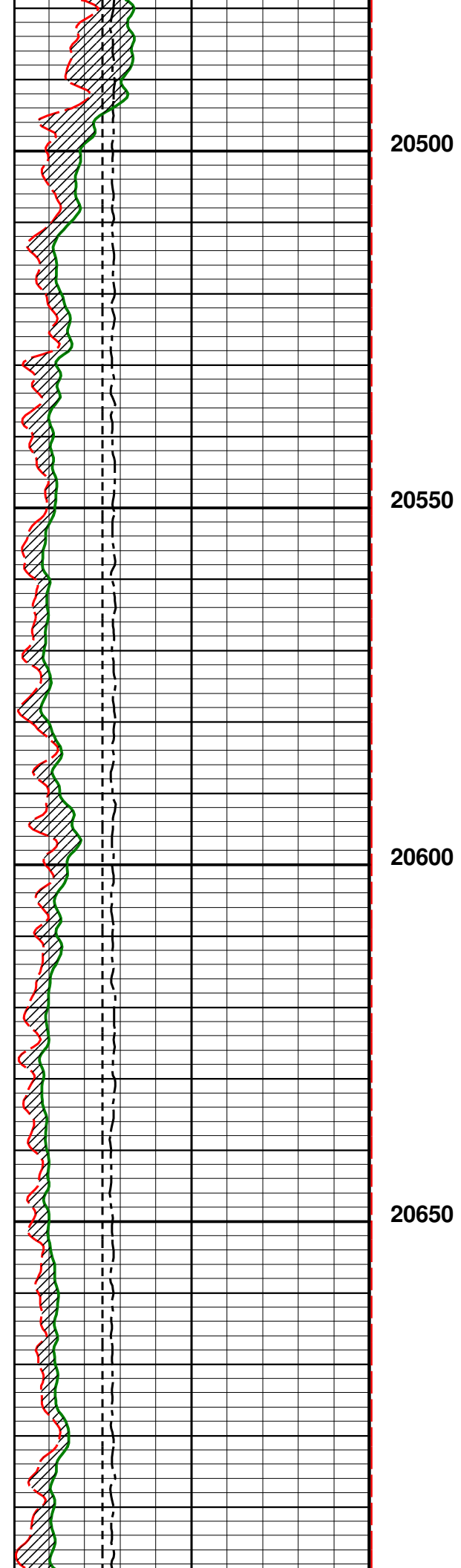


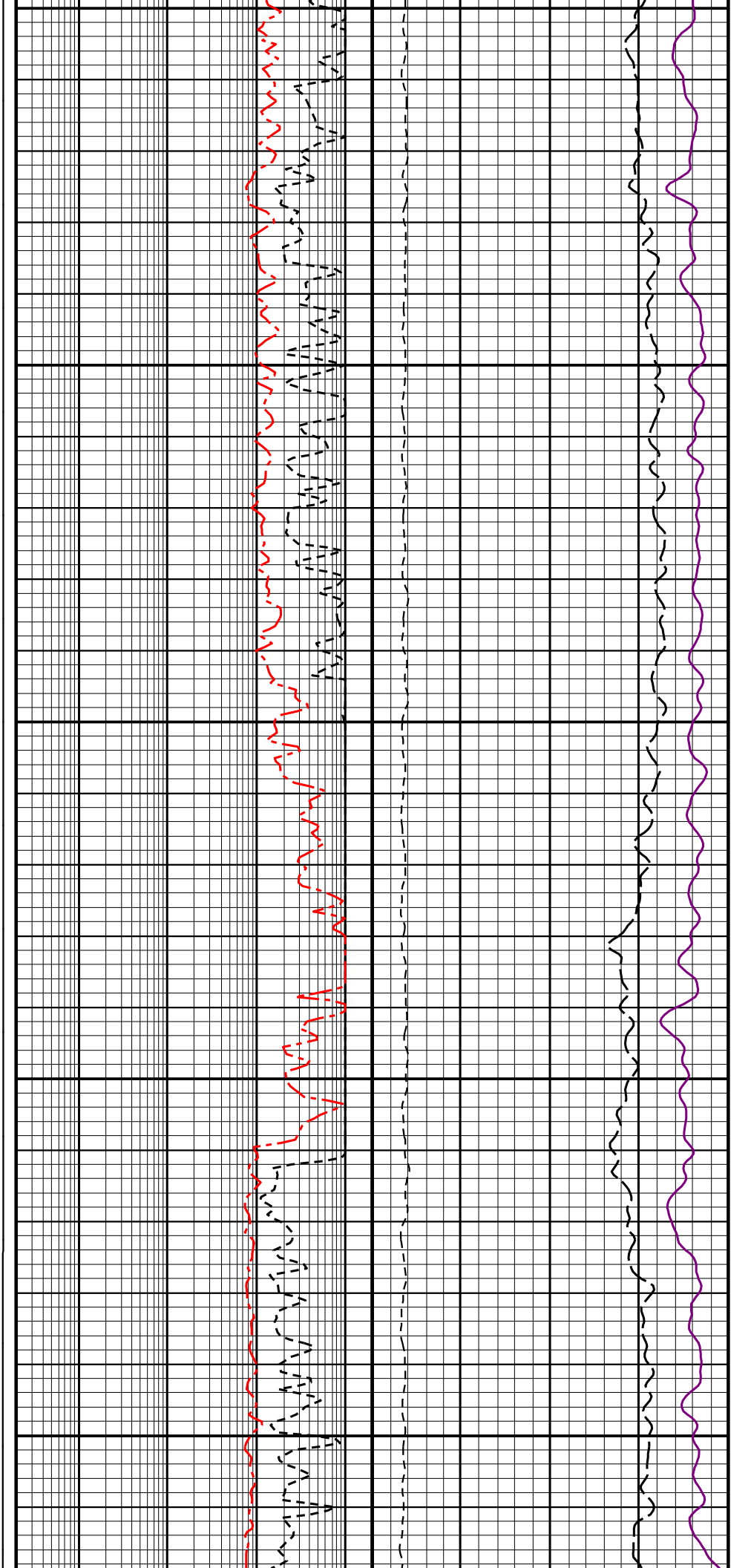
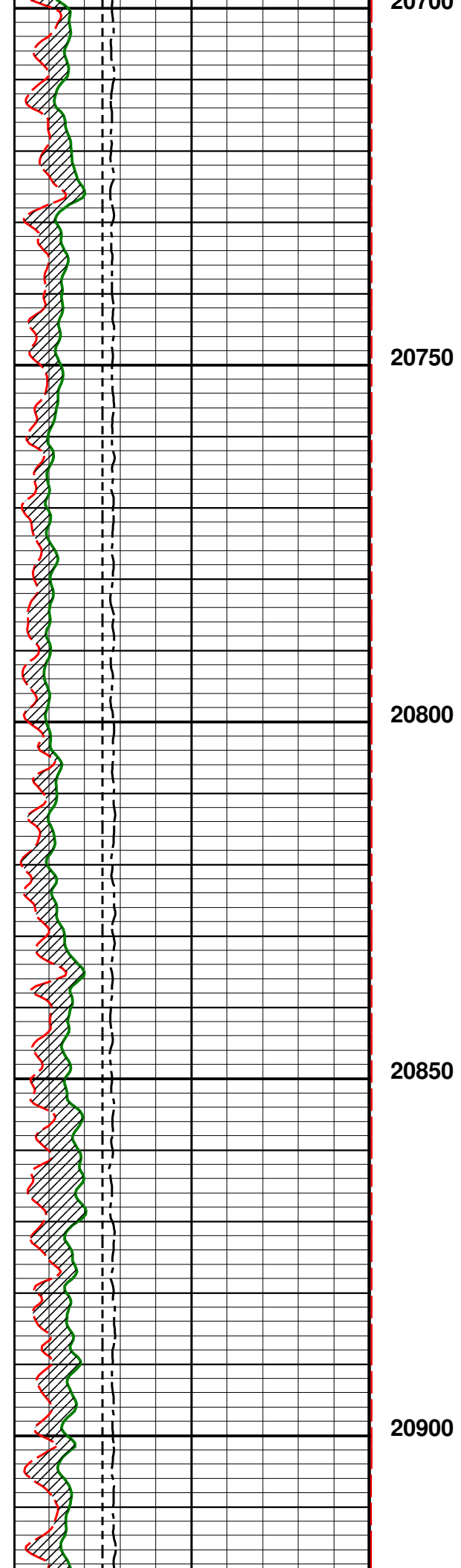


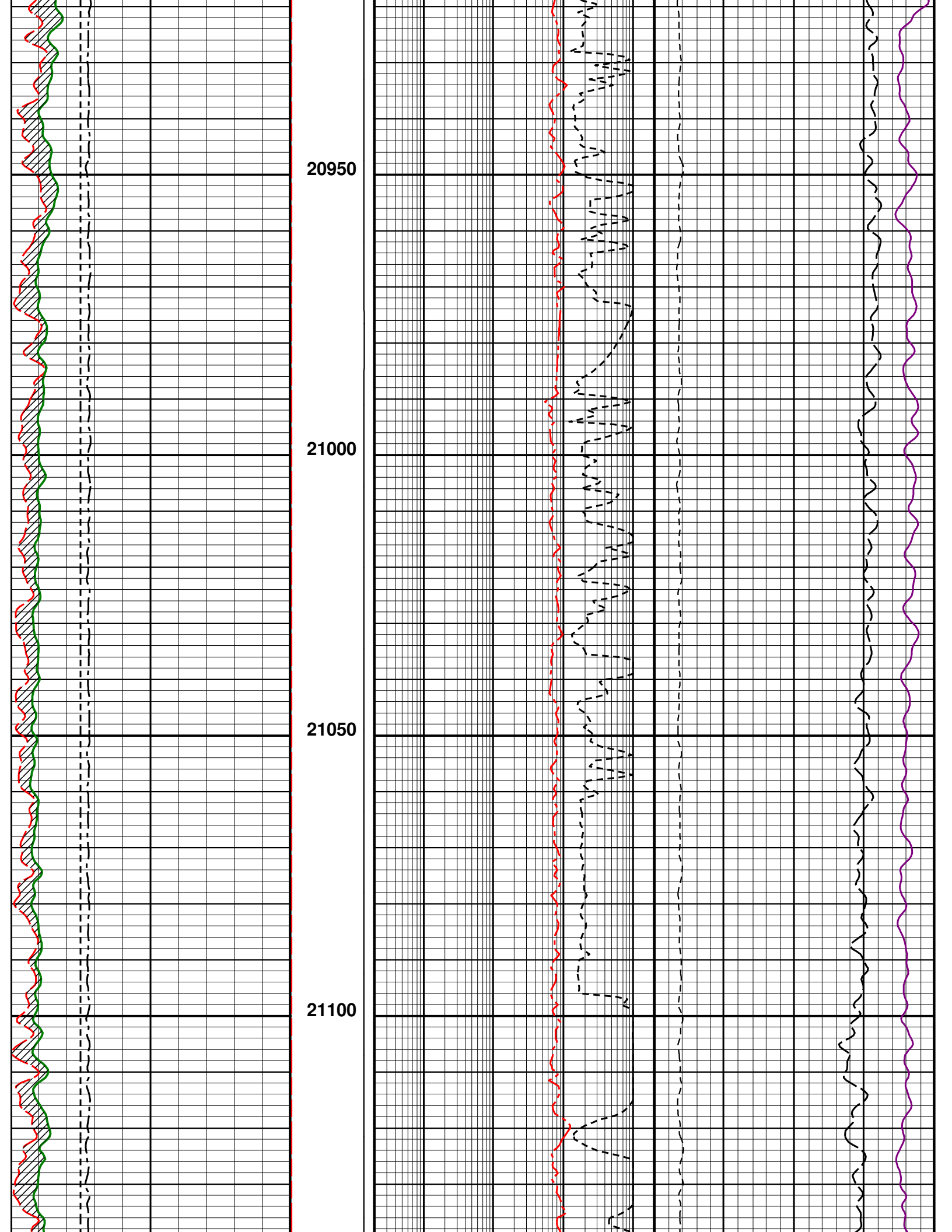


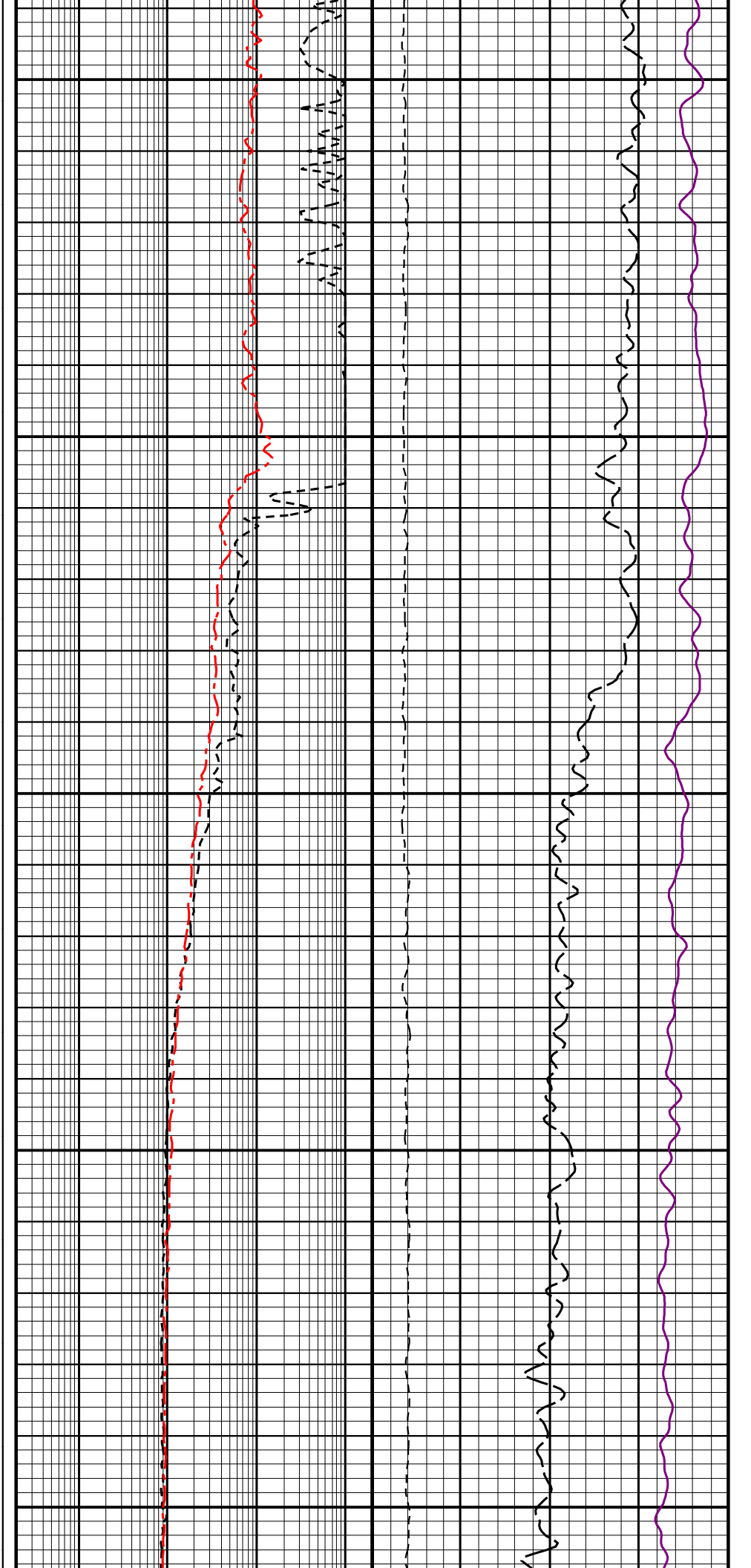
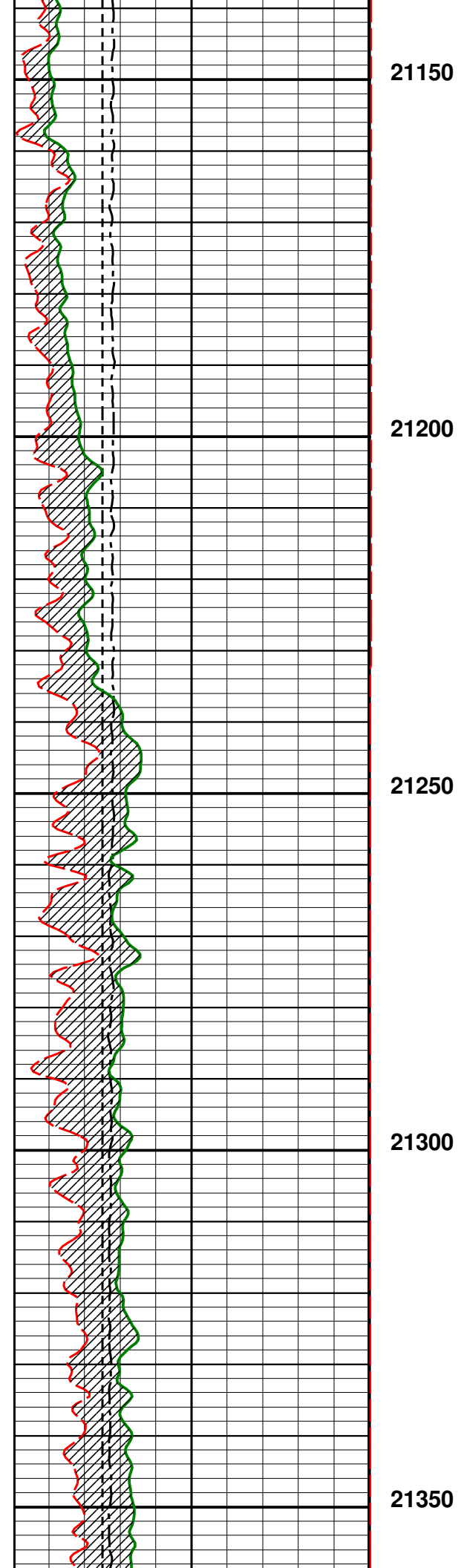


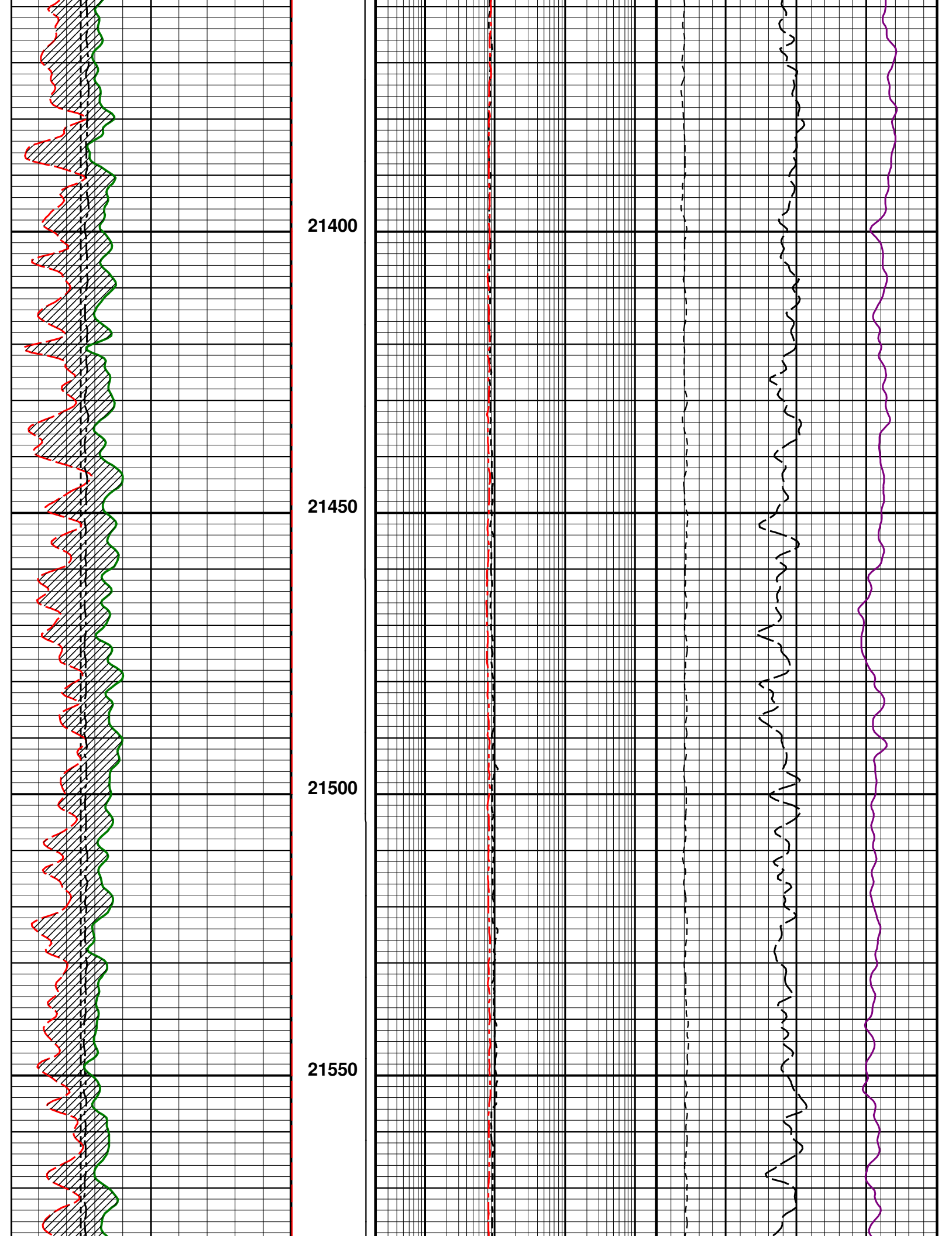


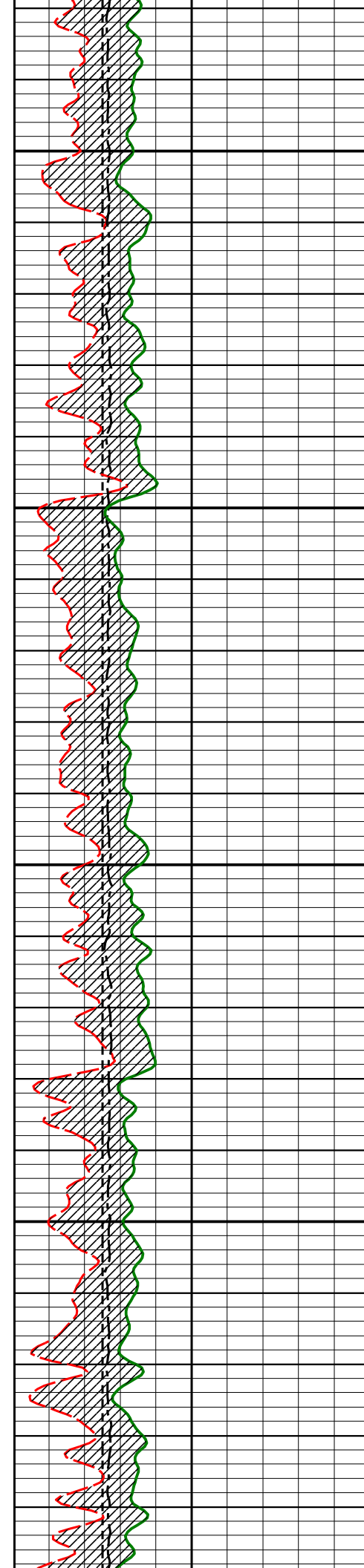










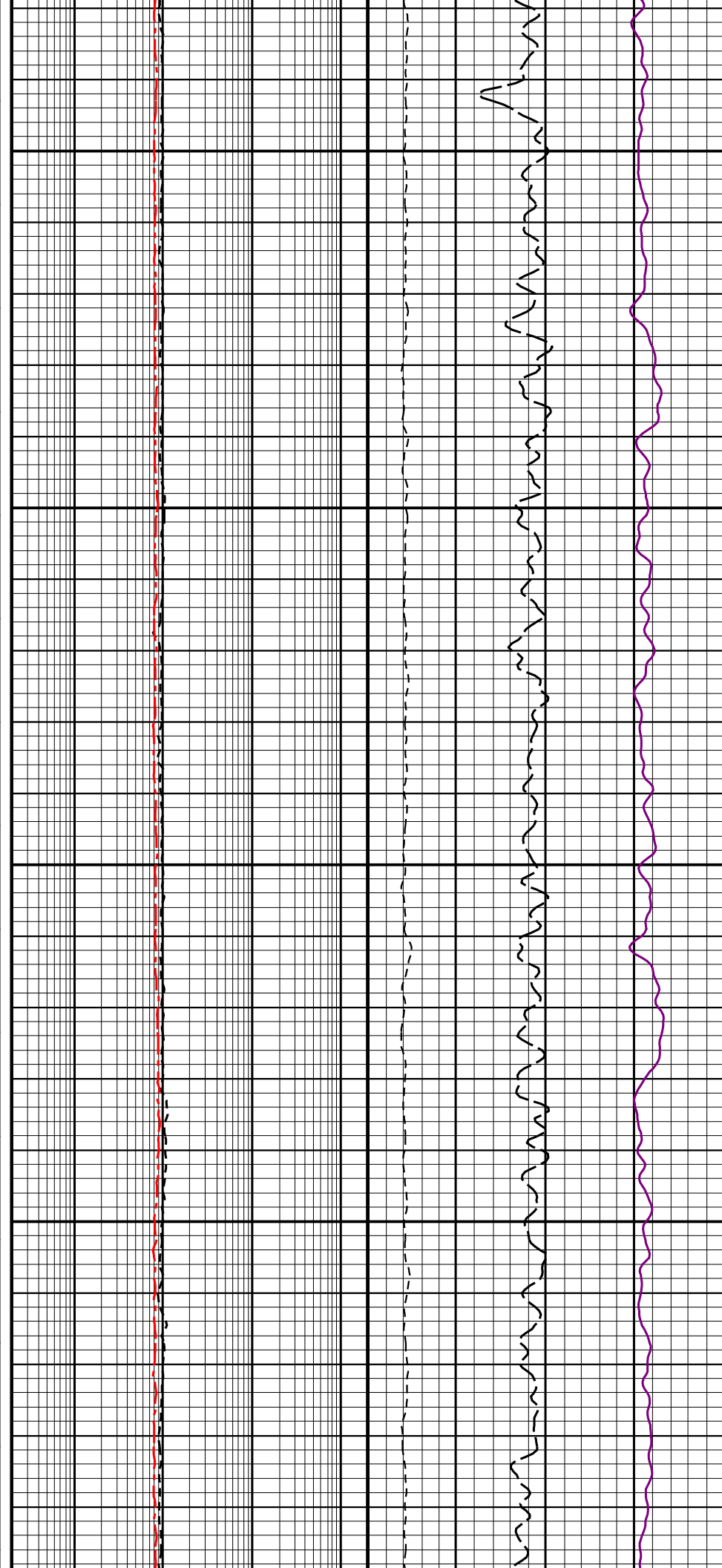


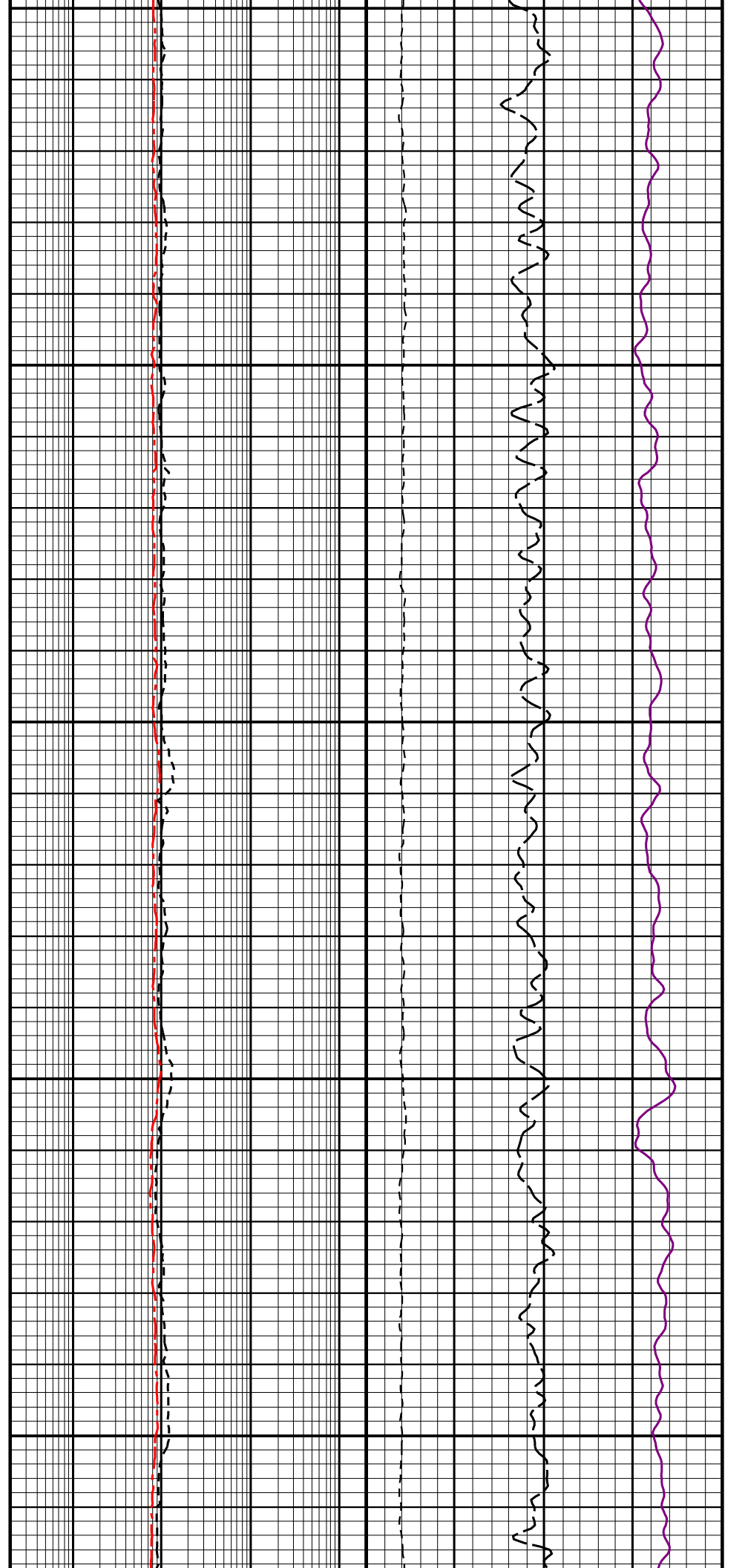
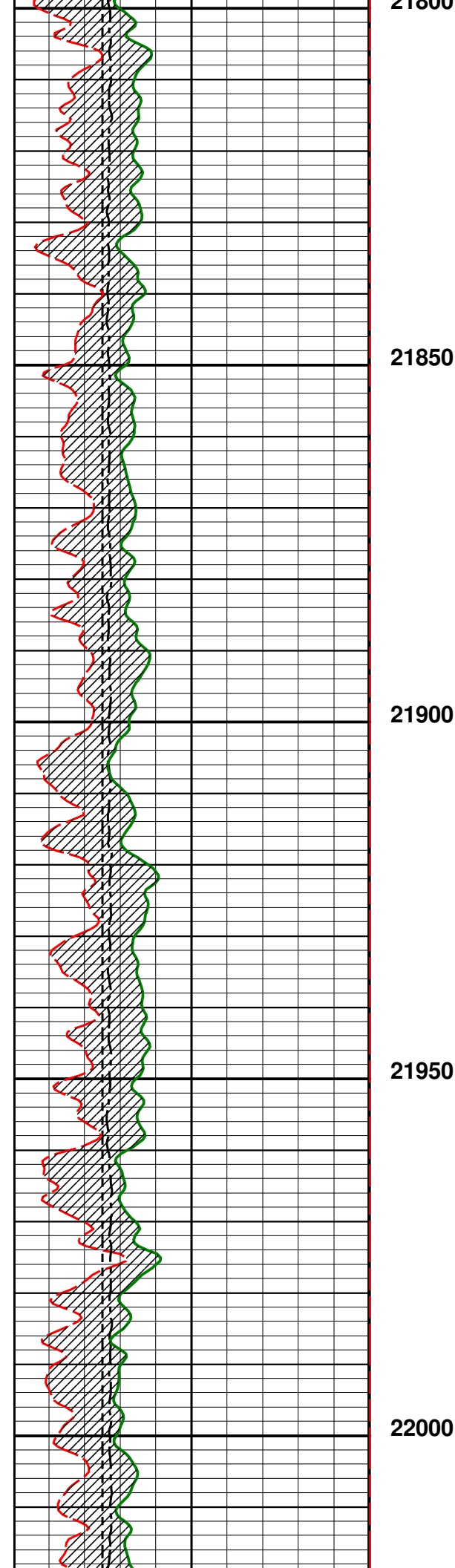
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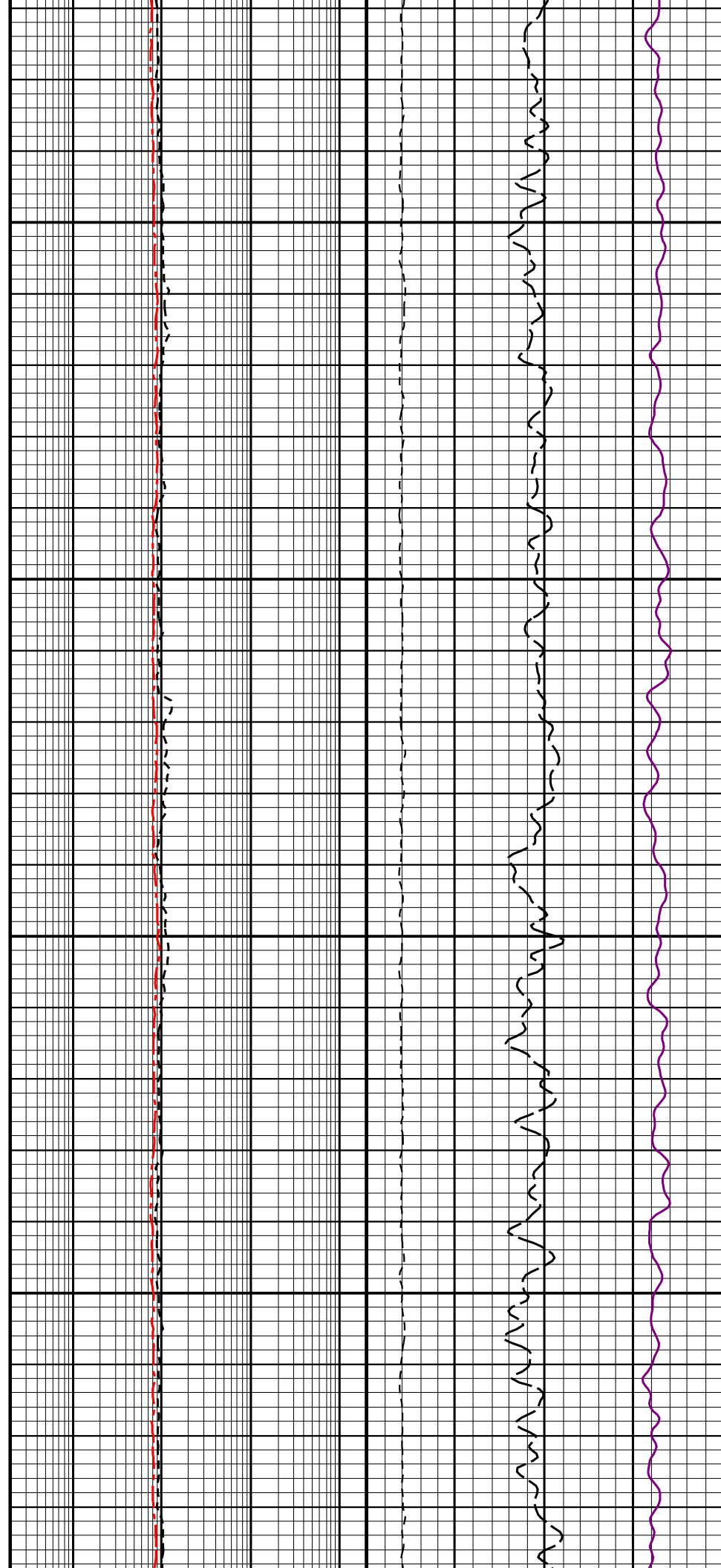
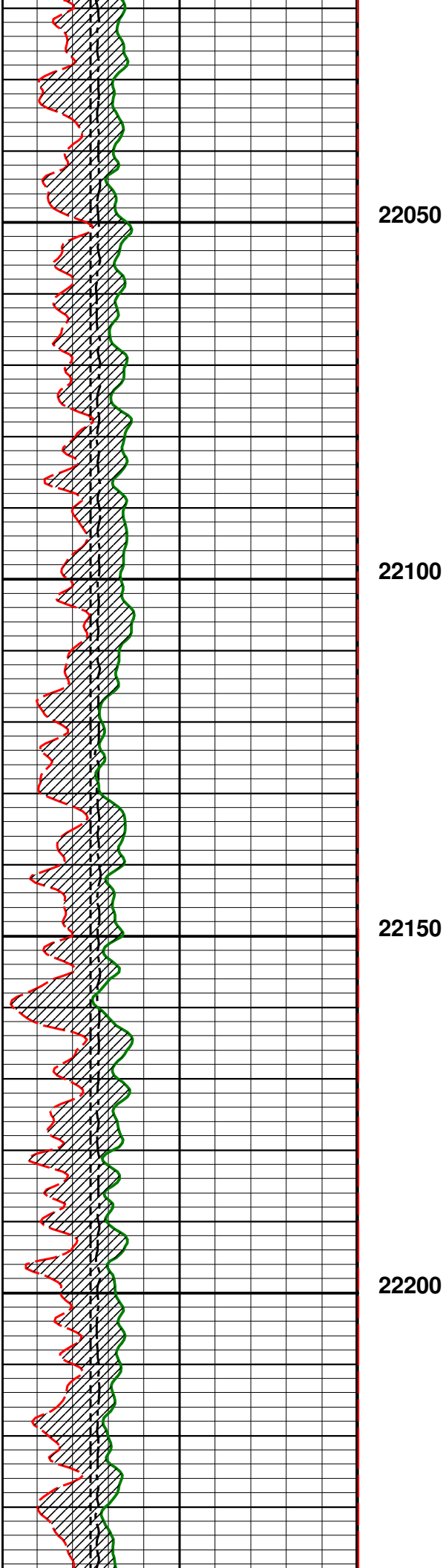
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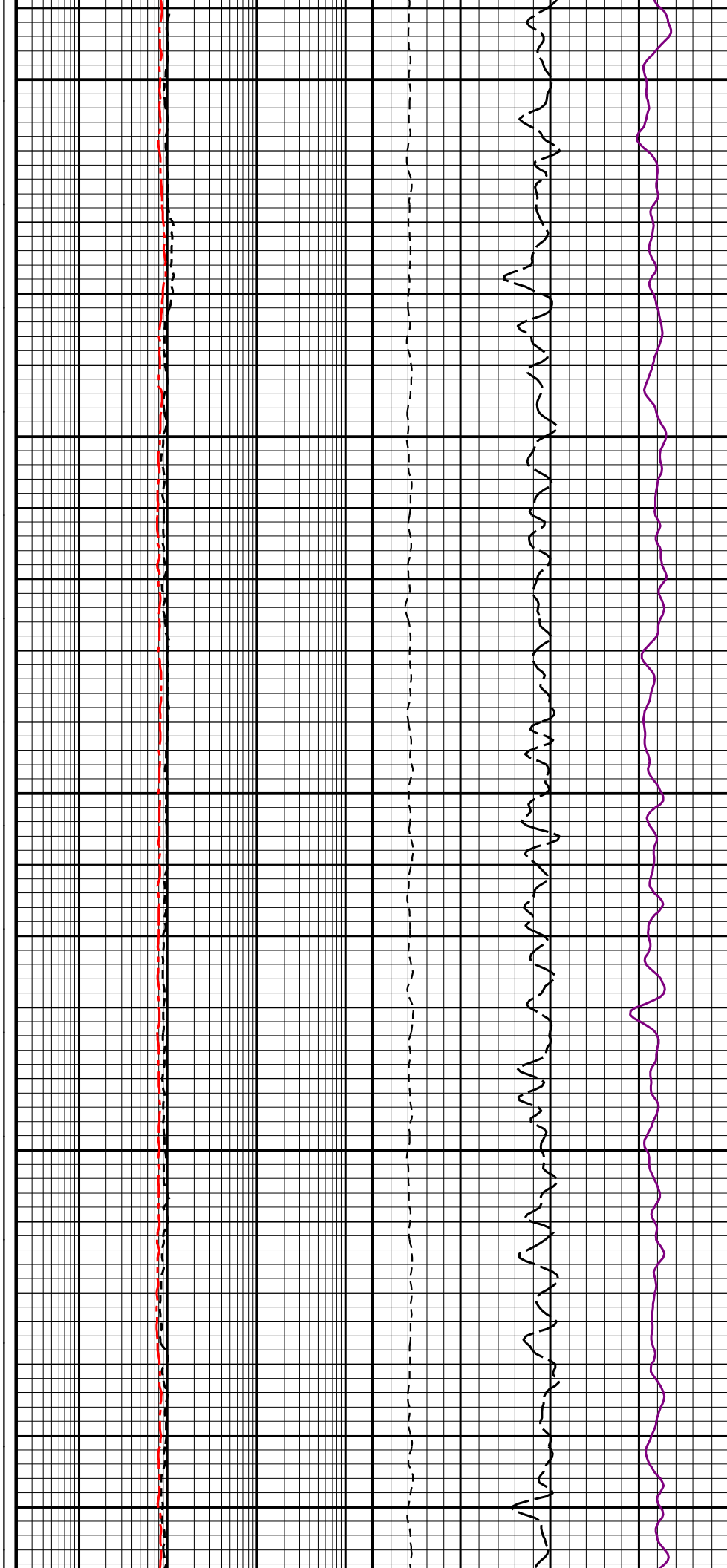
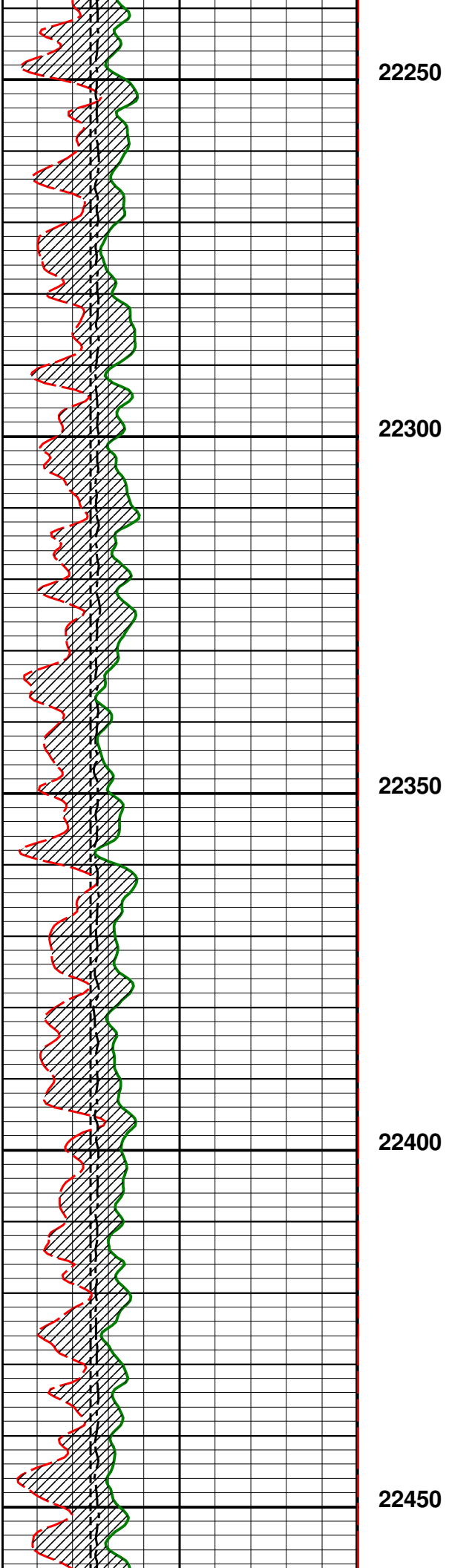
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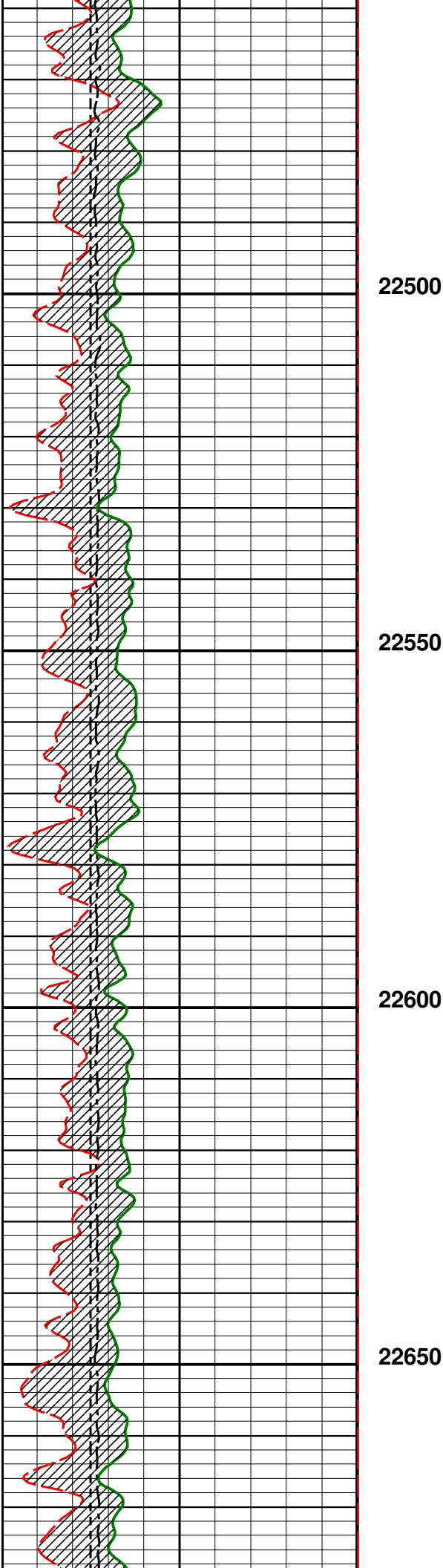
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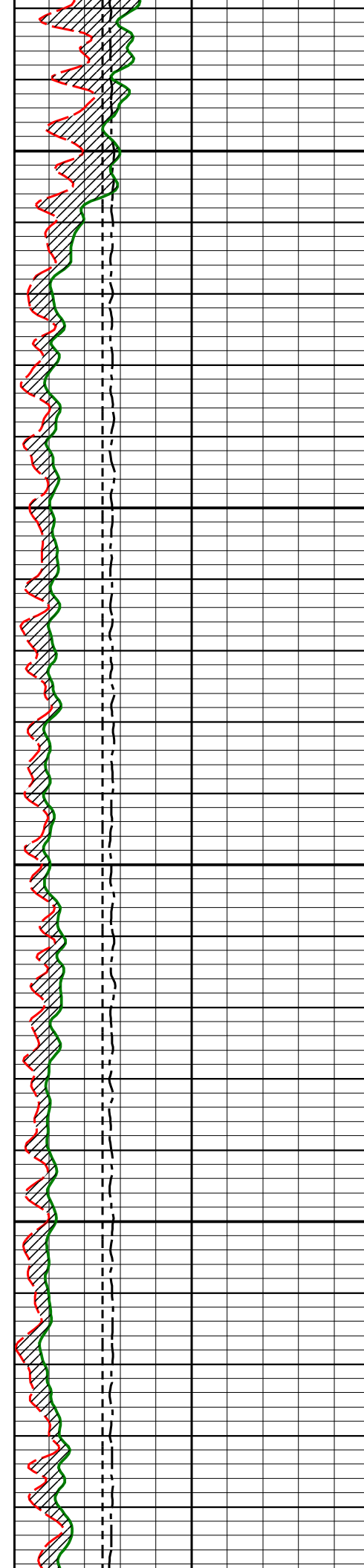










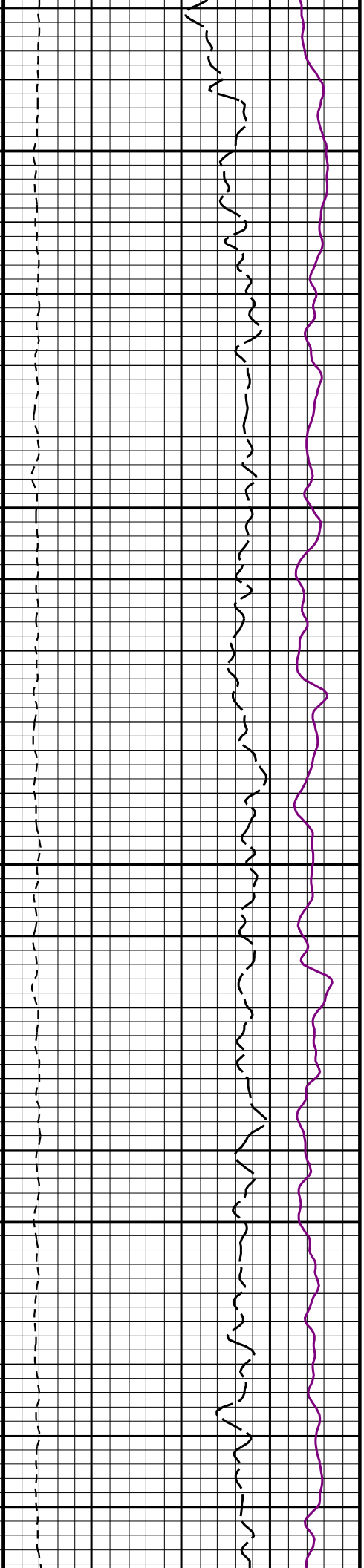
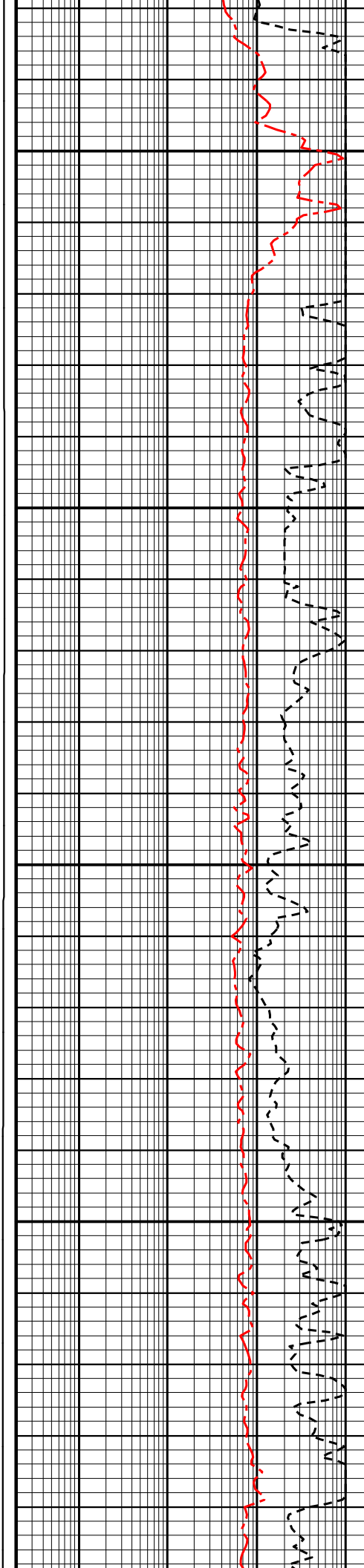


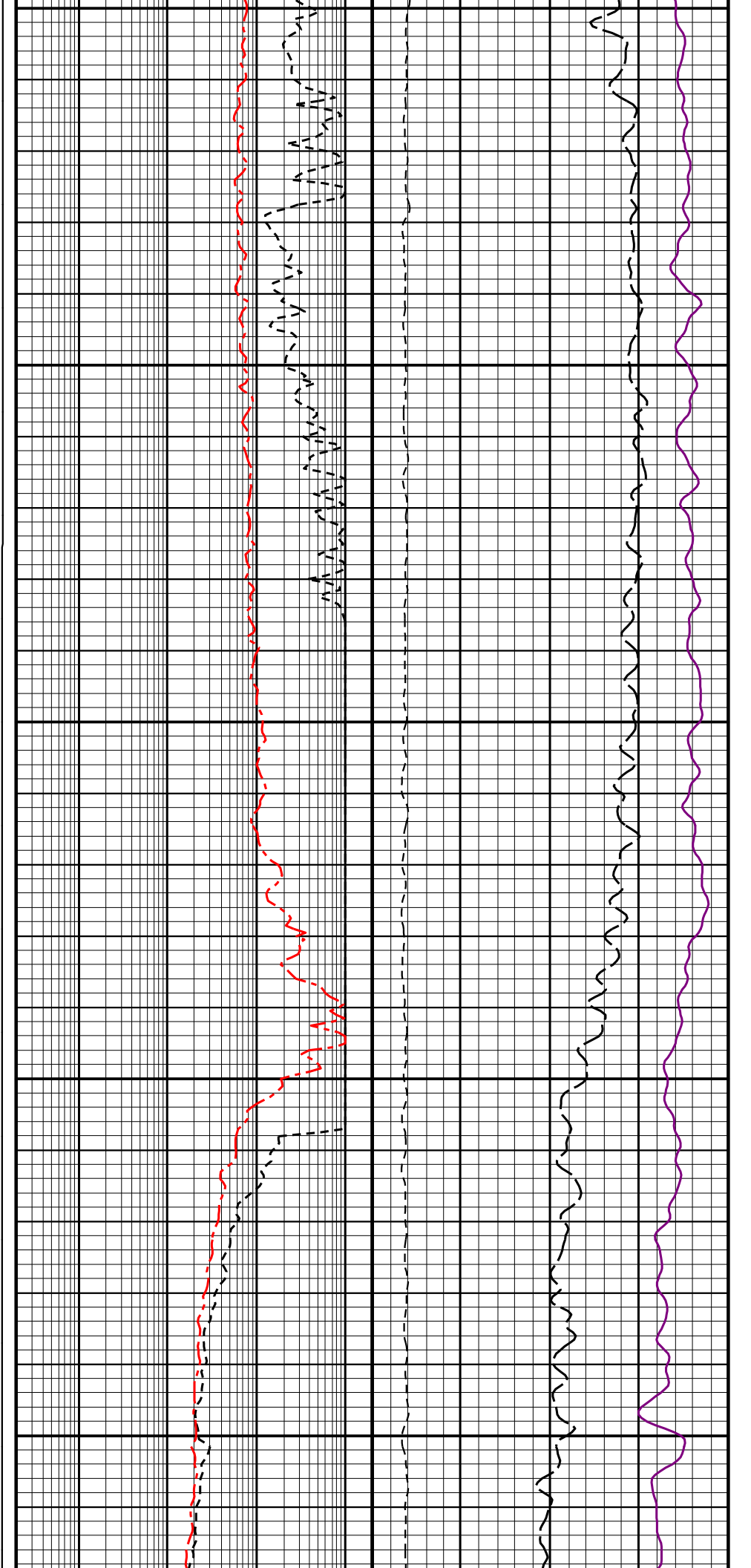
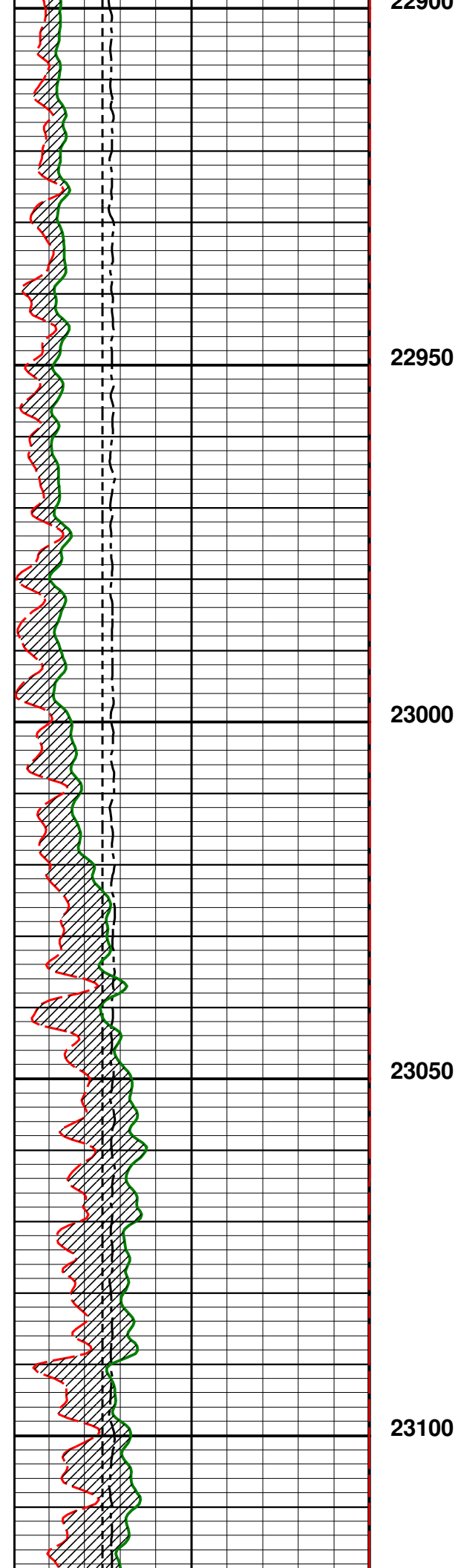
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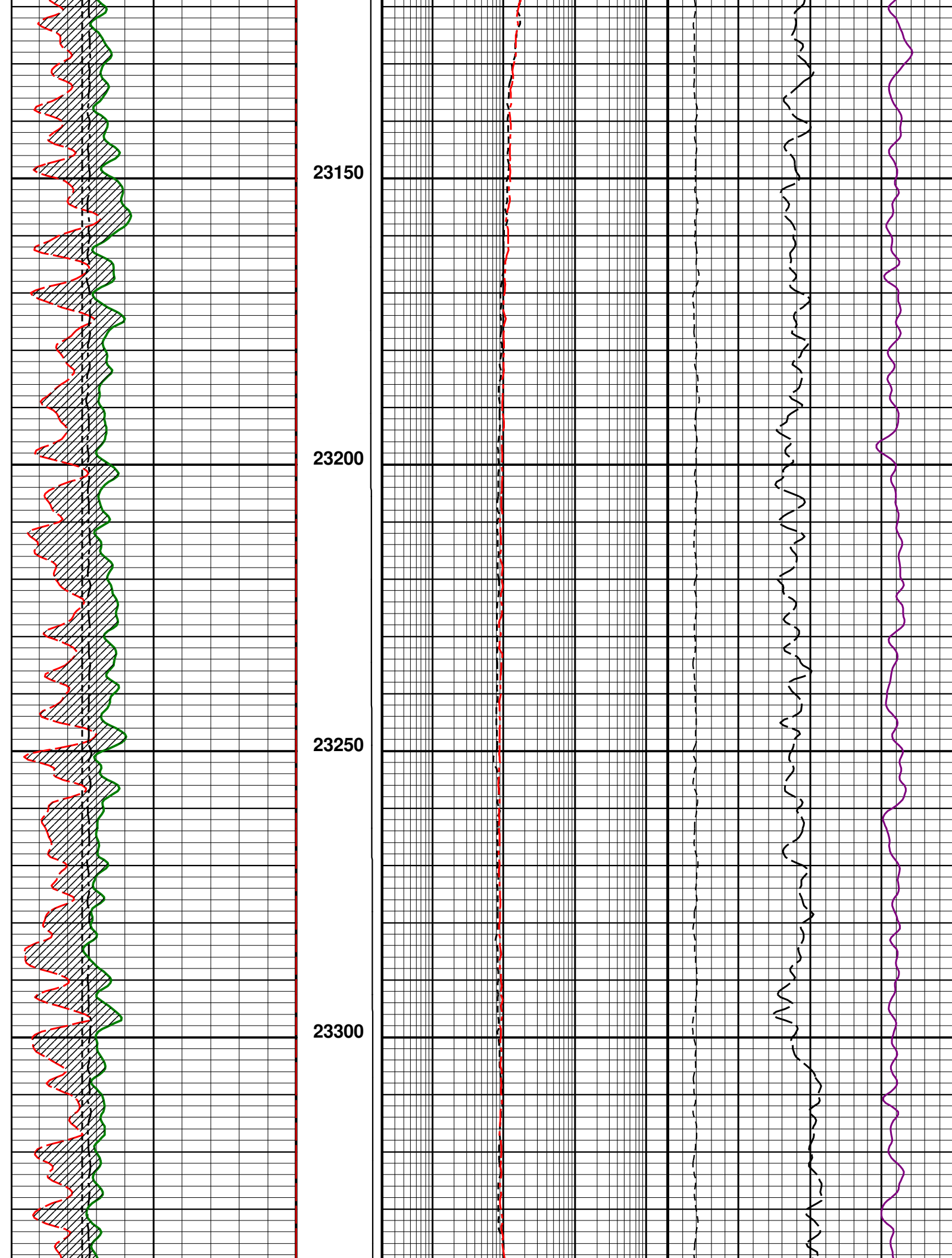
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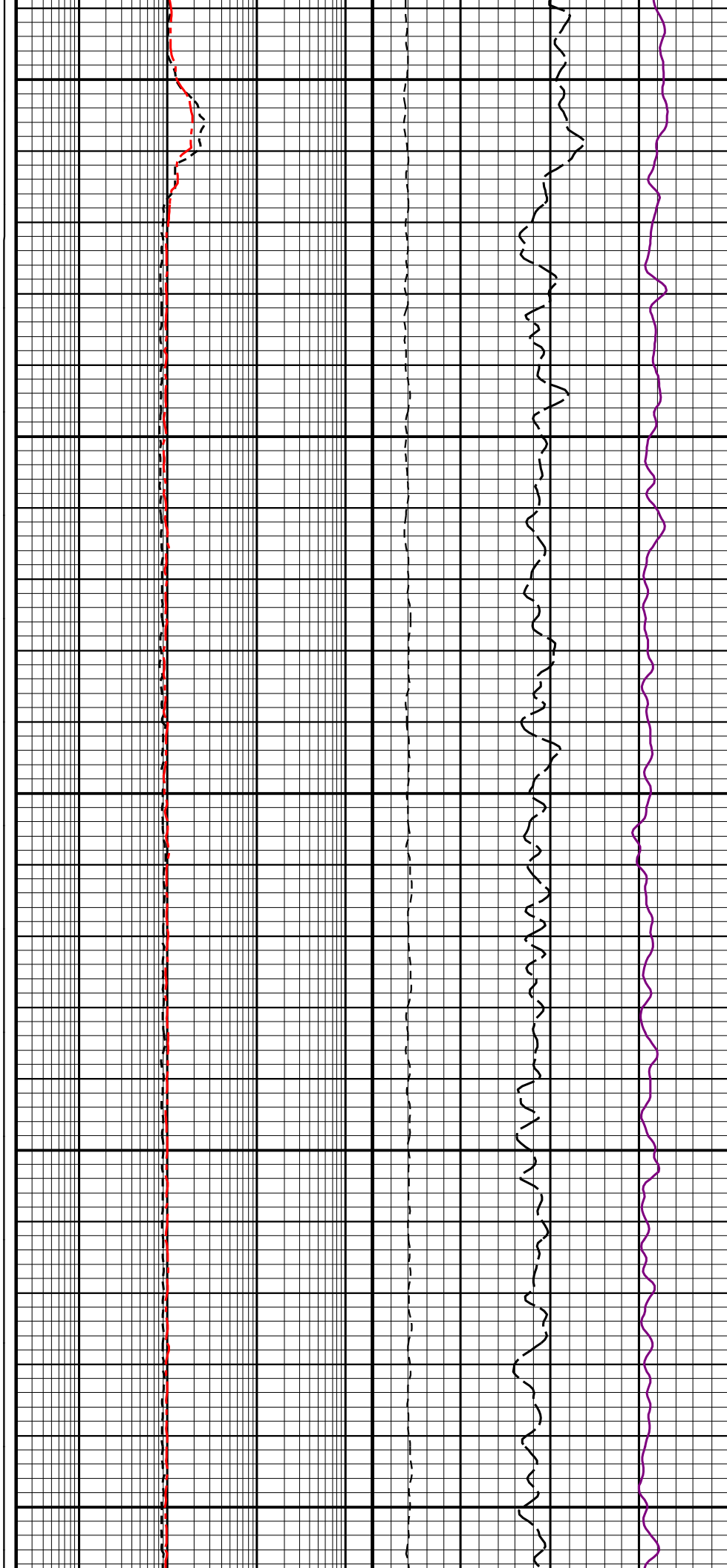
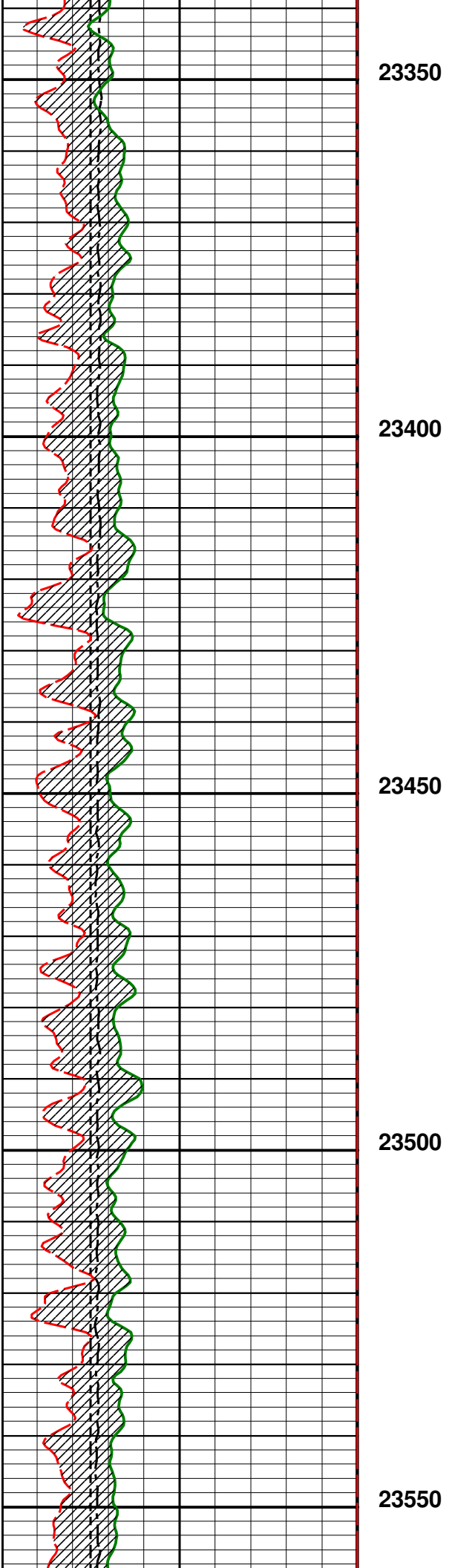
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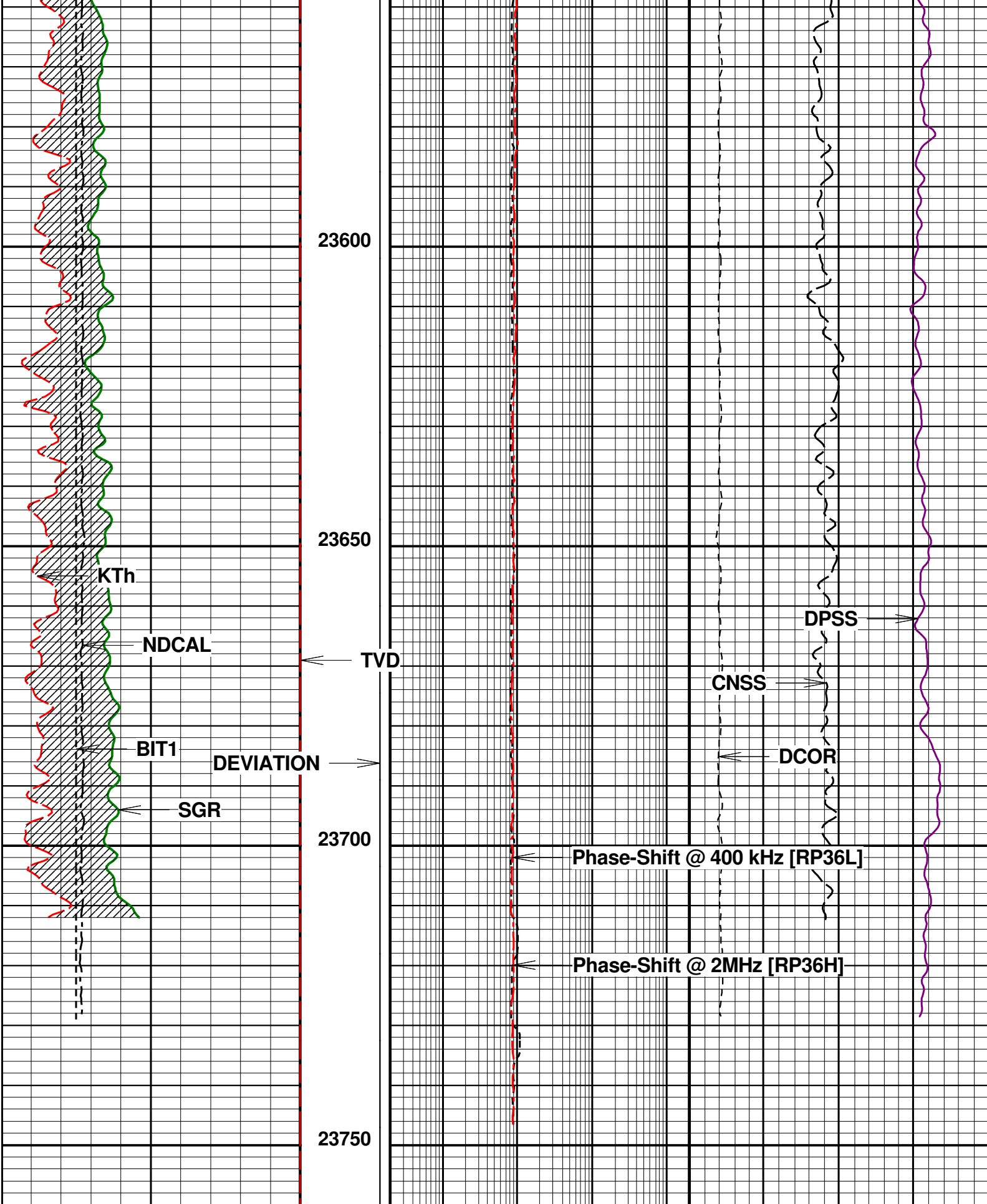
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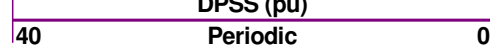
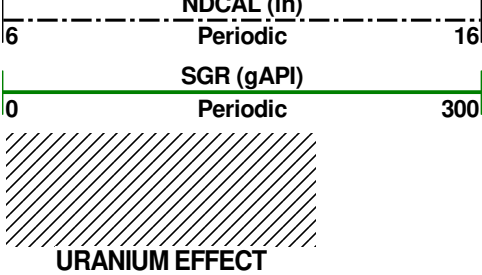






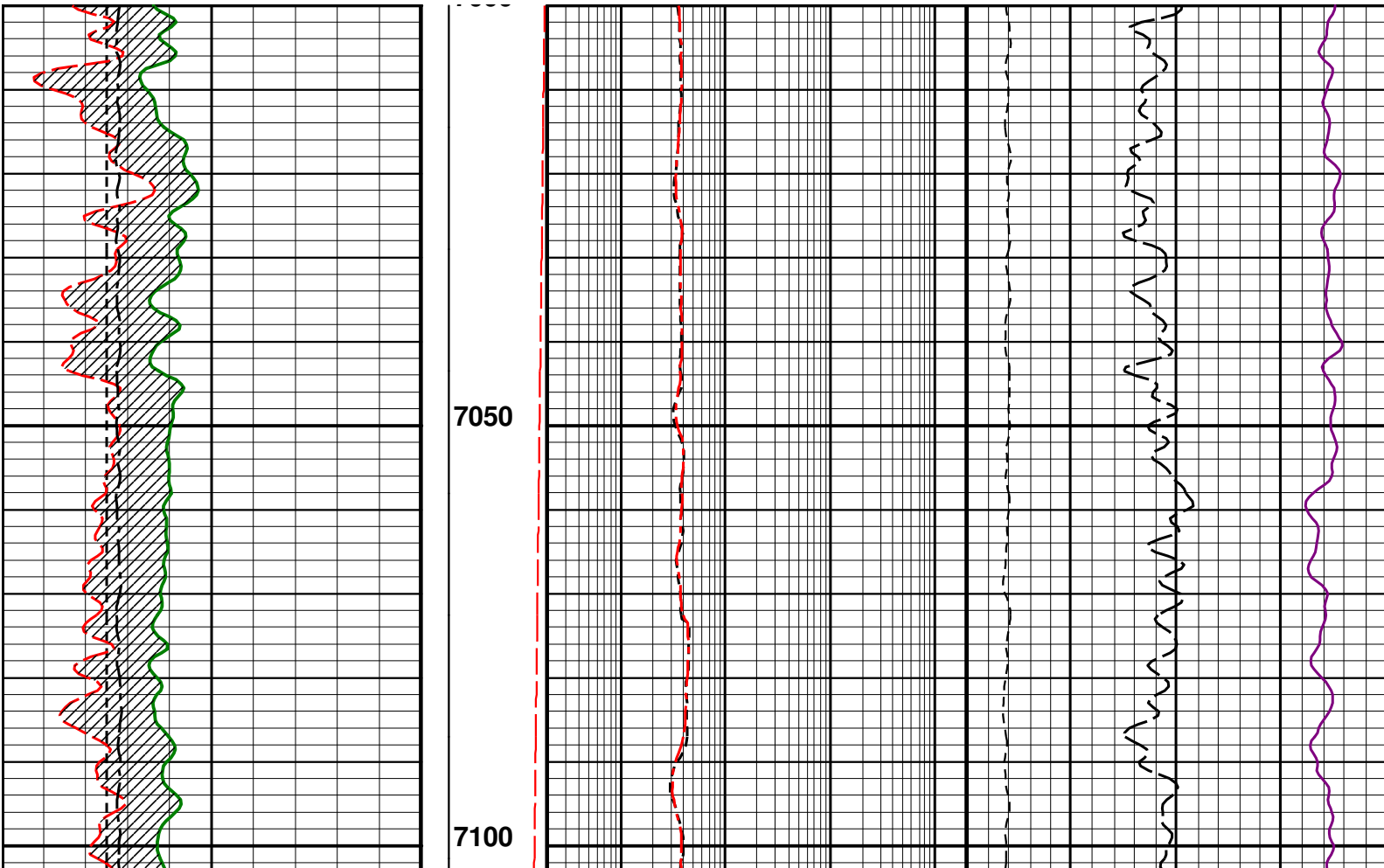
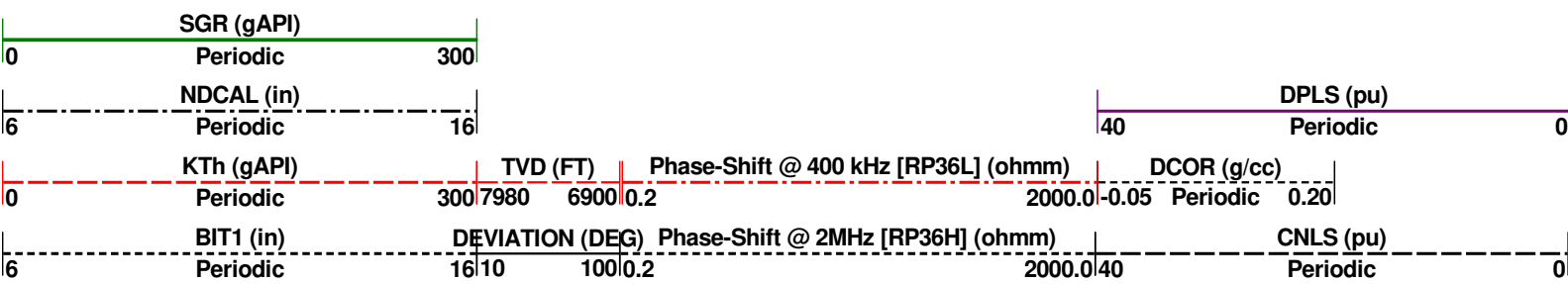


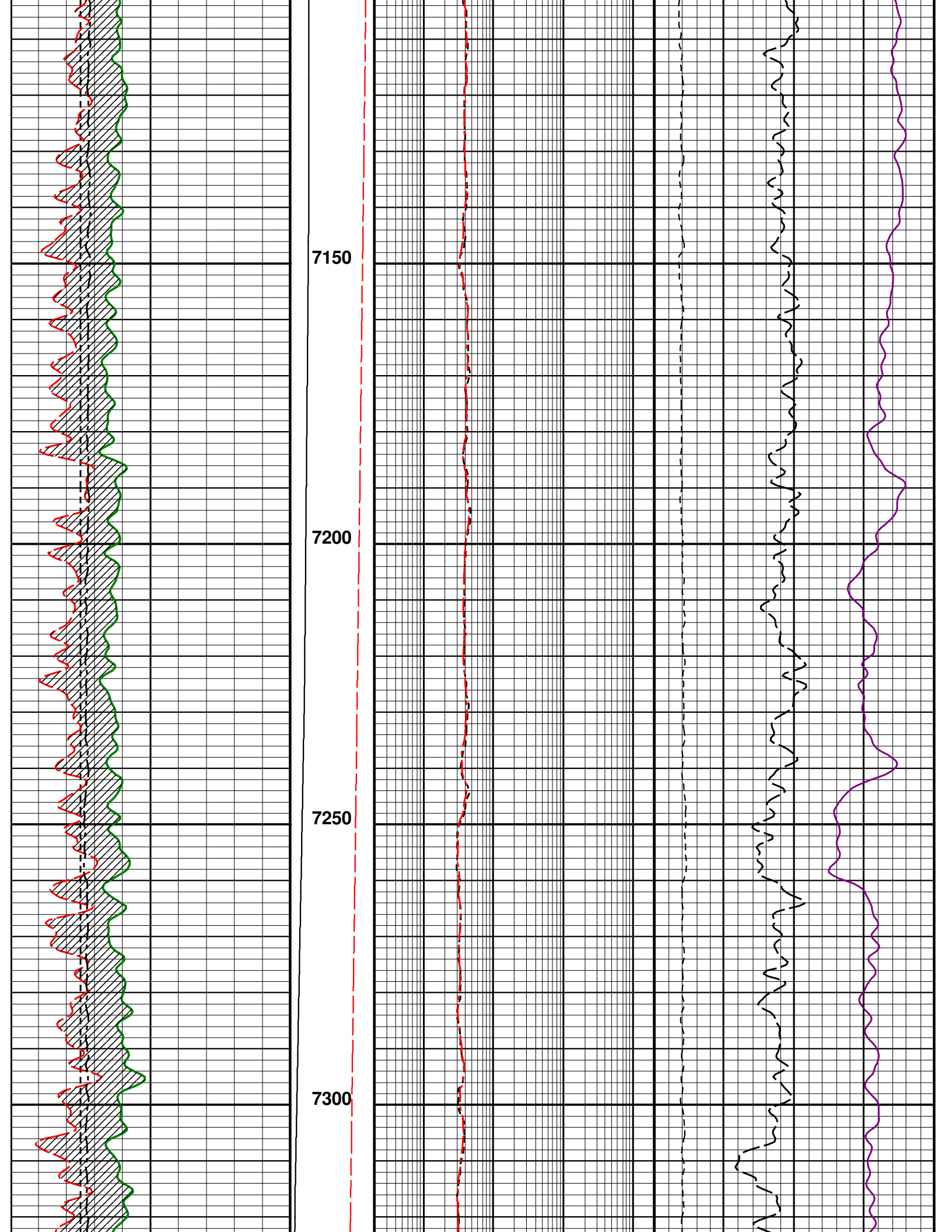
6	BIT1 (in)	DEVIATION (DEG)	Phase-Shift @ 2MHz [RP36H] (ohmm)	CNSS (pu)	0
Periodic	1610	1000.2	2000.040	Periodic	
0	KTh (gAPI)	TVD (FT)	Phase-Shift @ 400 kHz [RP36L] (ohmm)	DCOR (g/cc)	
Periodic	300	7980	6900.0.2	2000.0-0.05	Periodic 0.20

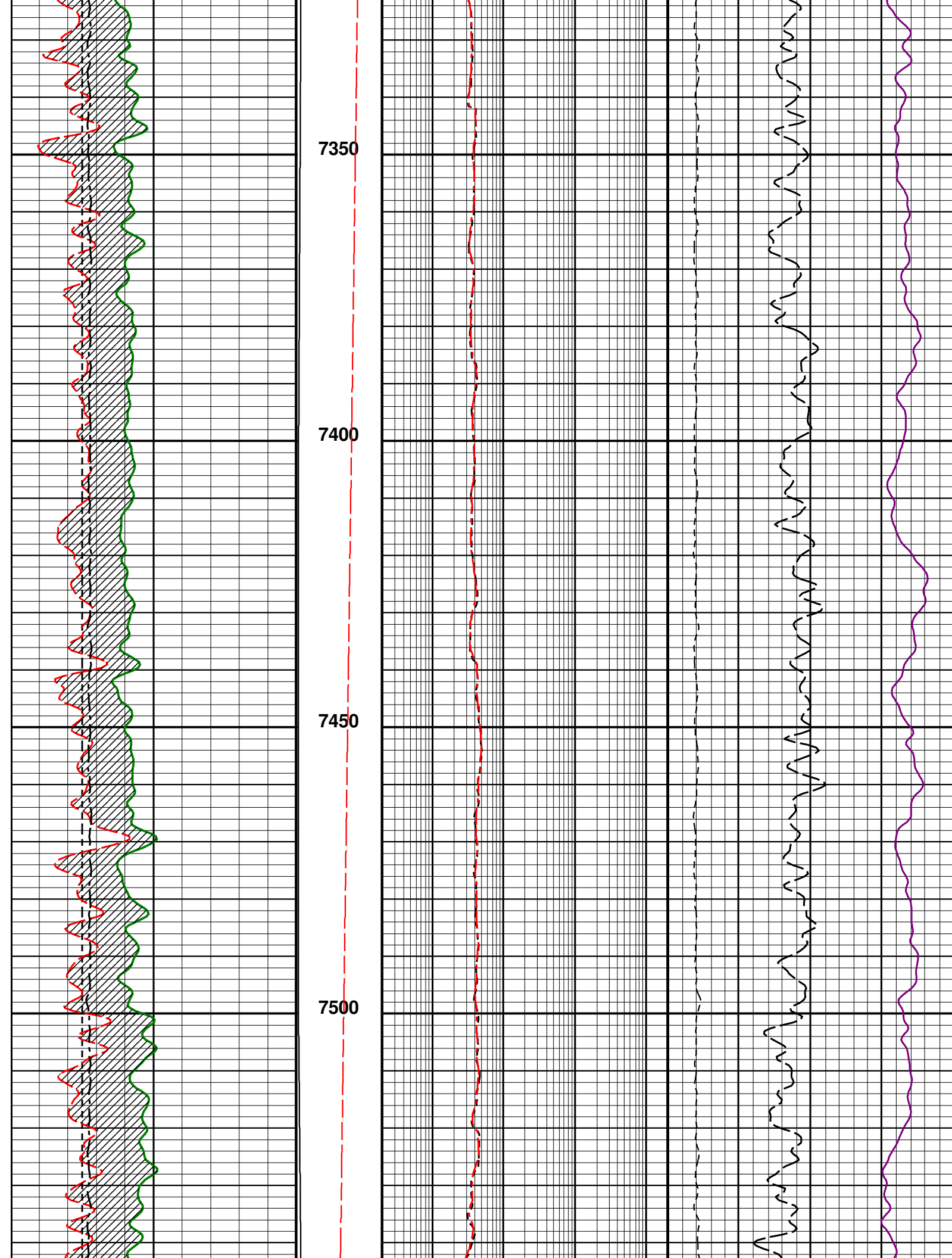


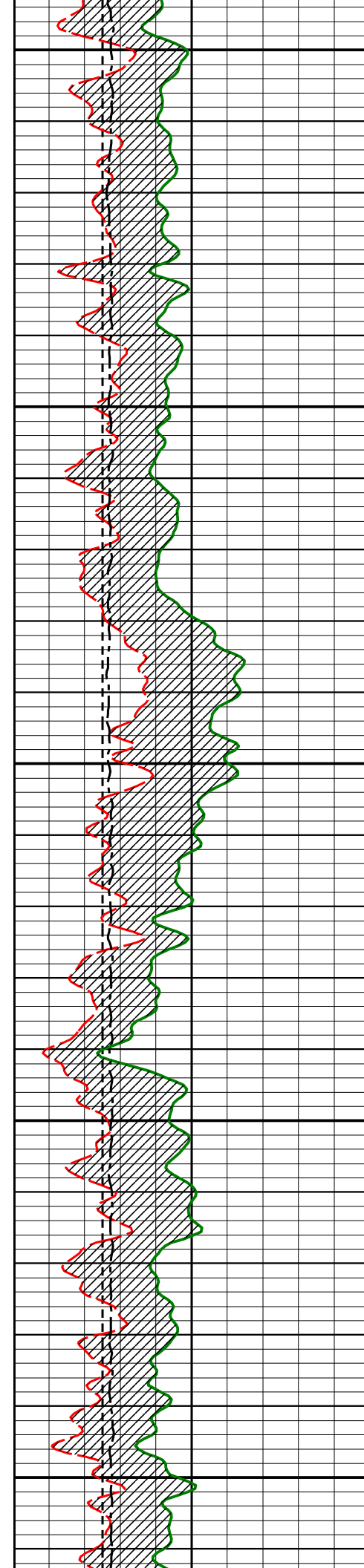
5" MAIN PASS LIMESTONE

Company : GREAT WESTERN OPERATING COMPANY LLC Date : 1-Dec-2018
Well : SELTZER LD 21-031HC Time :
Scale : 1 : 240 Remarks : LIMESTONE MATRIX
Depth in : Feet
Software : WinAPIPlot Ver. 5, 87, 2, 0 File Name : 812_05-001-10199_MAIN MD









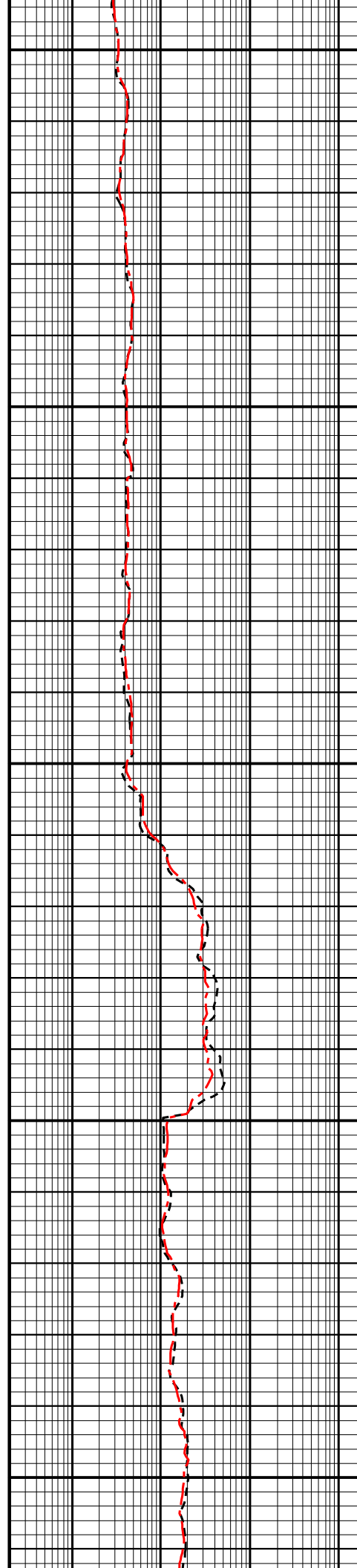
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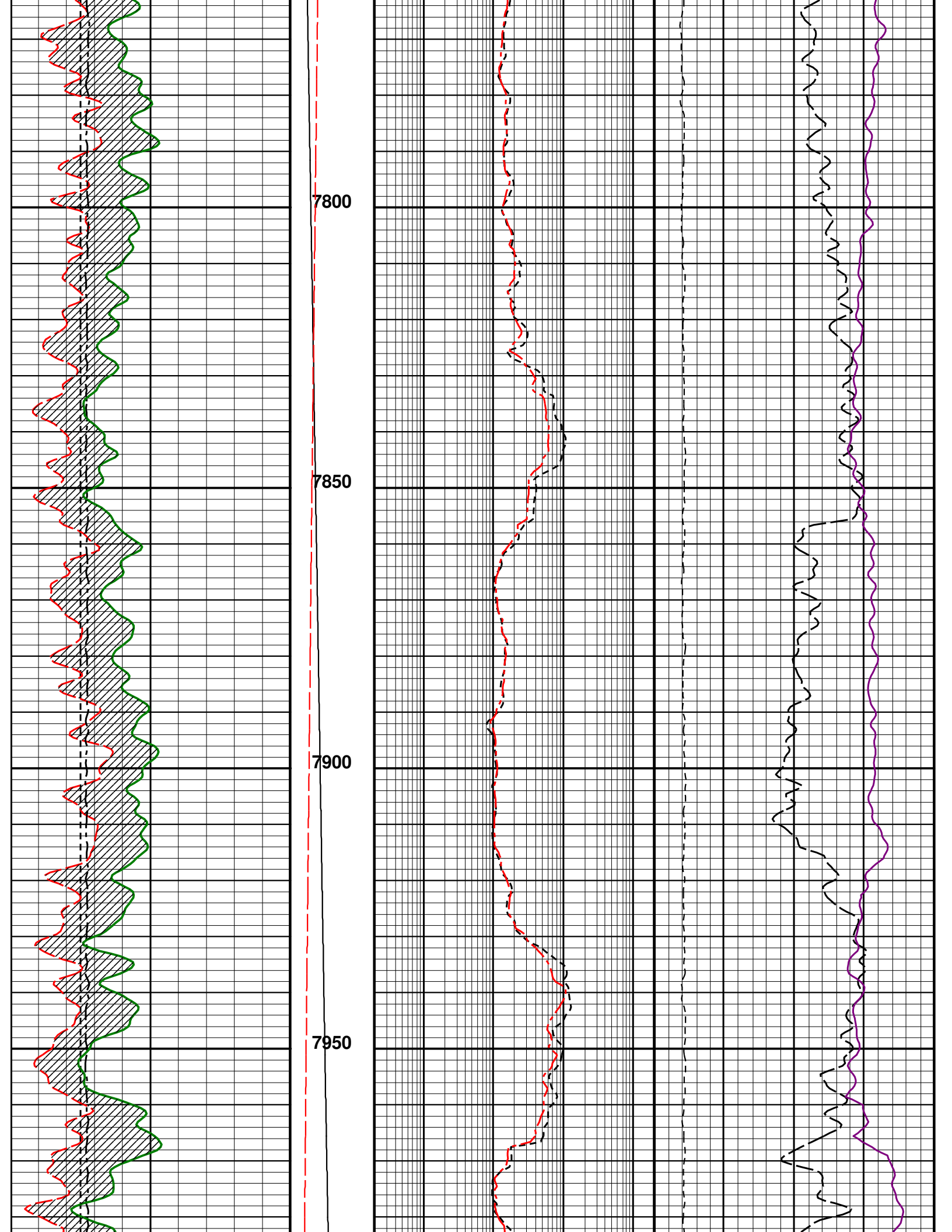
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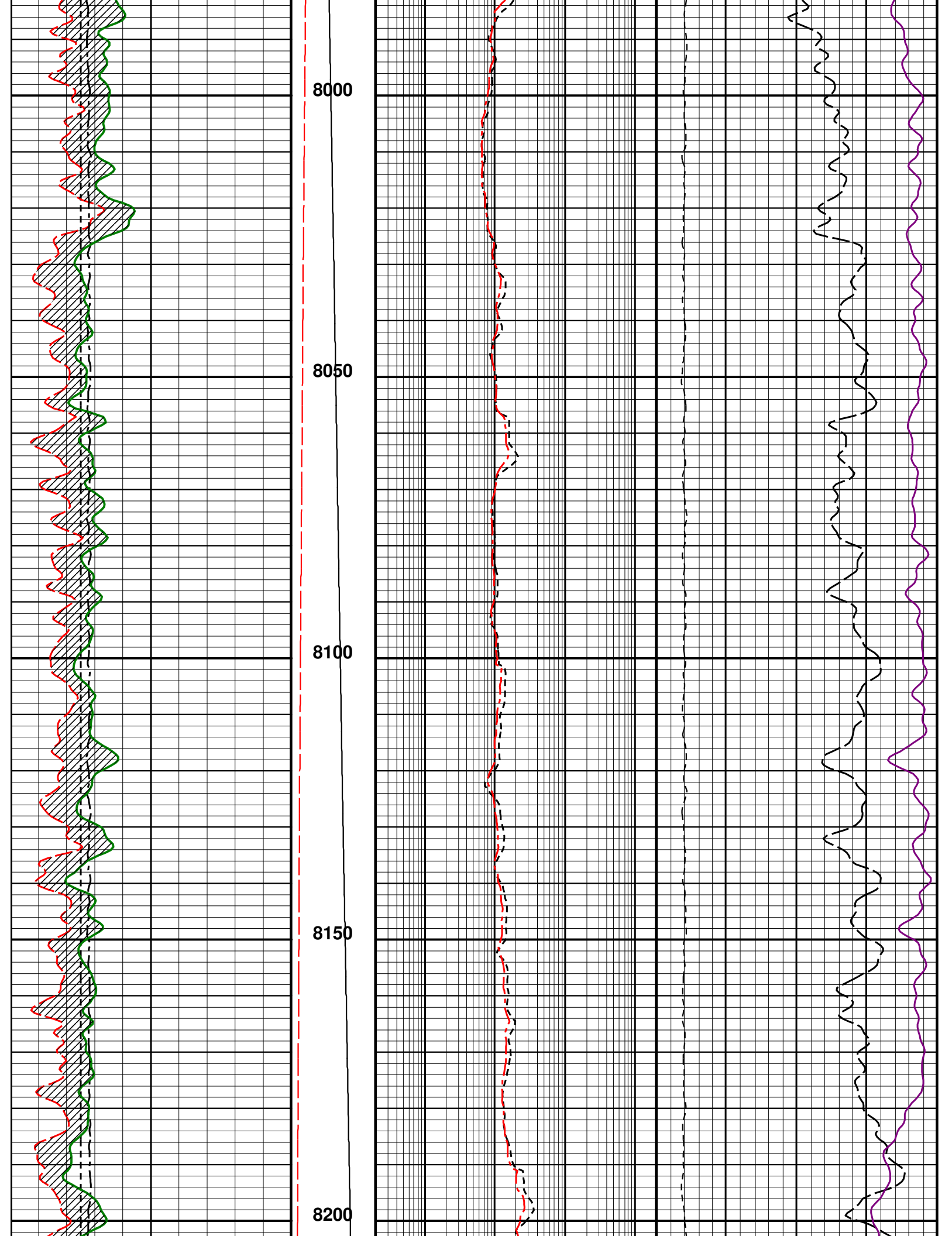
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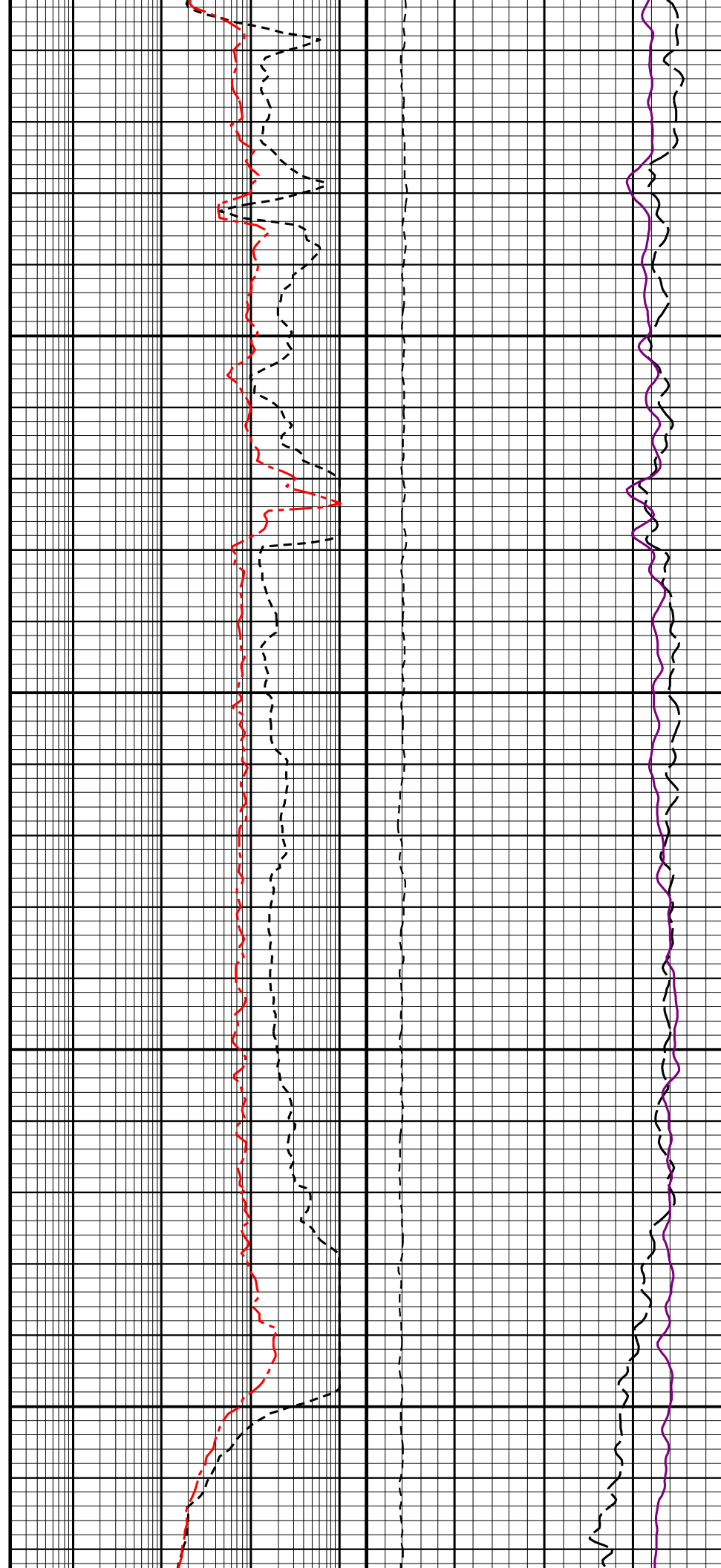
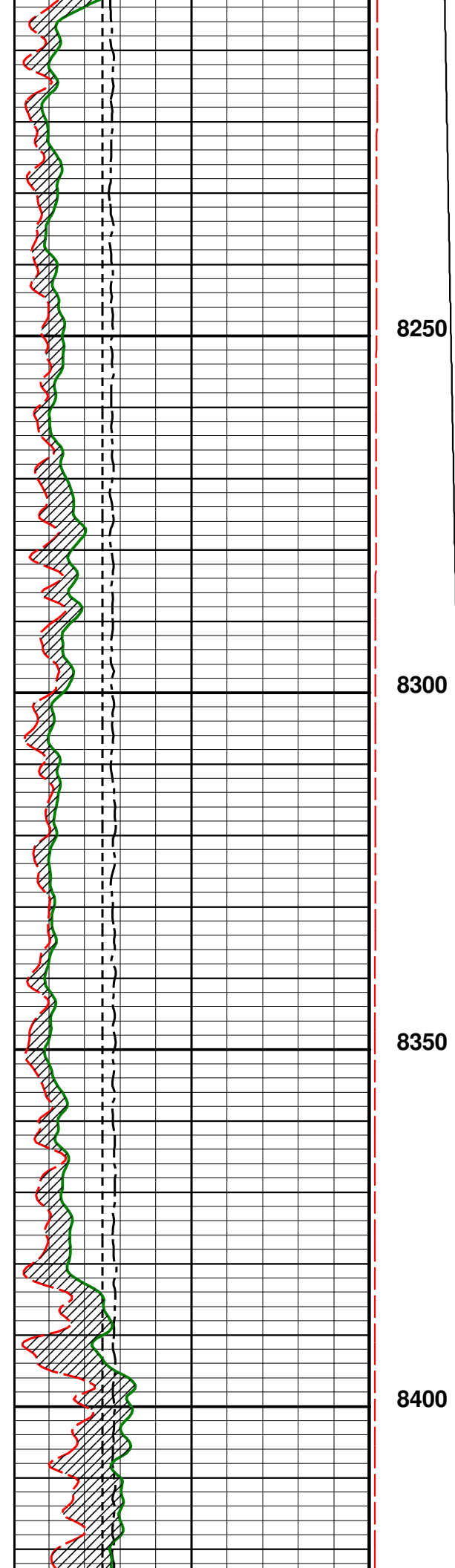
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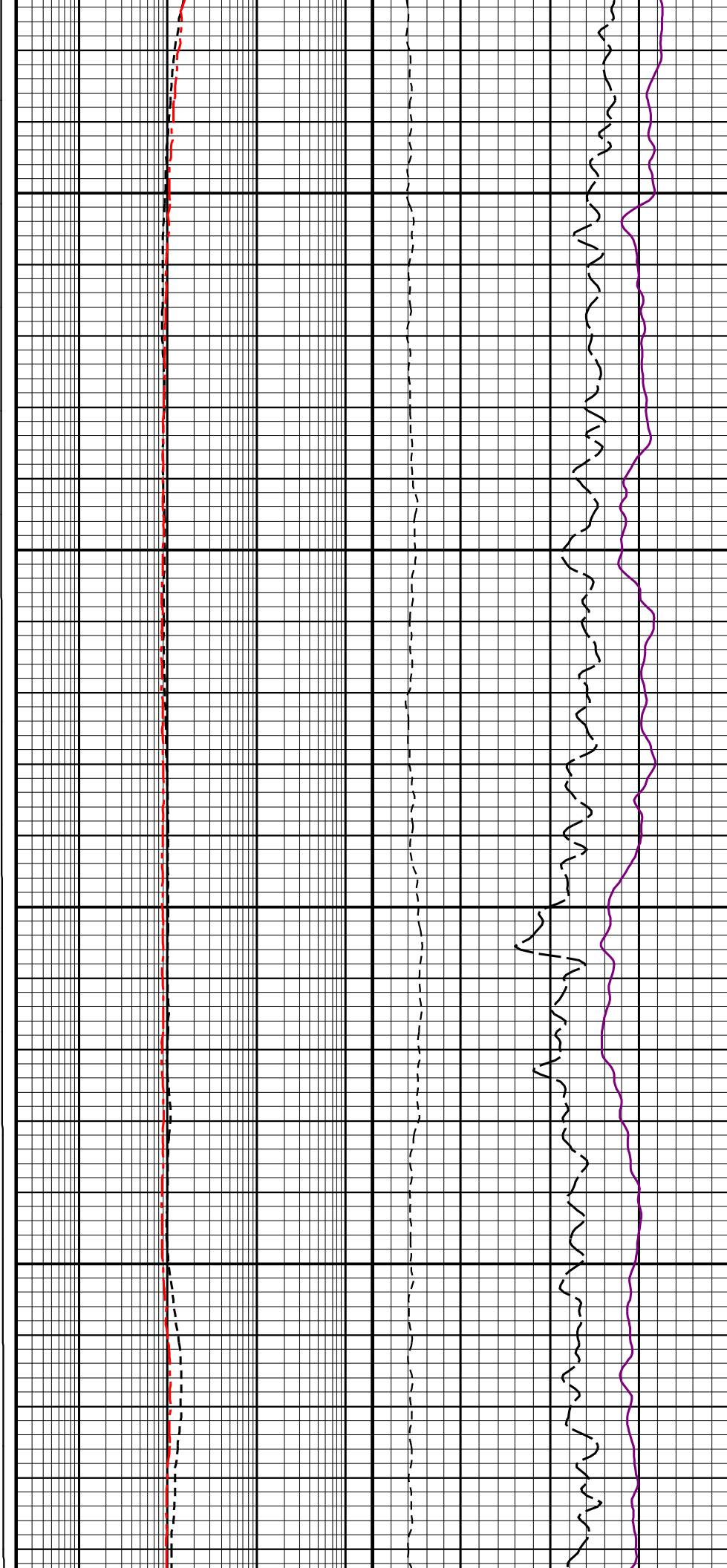
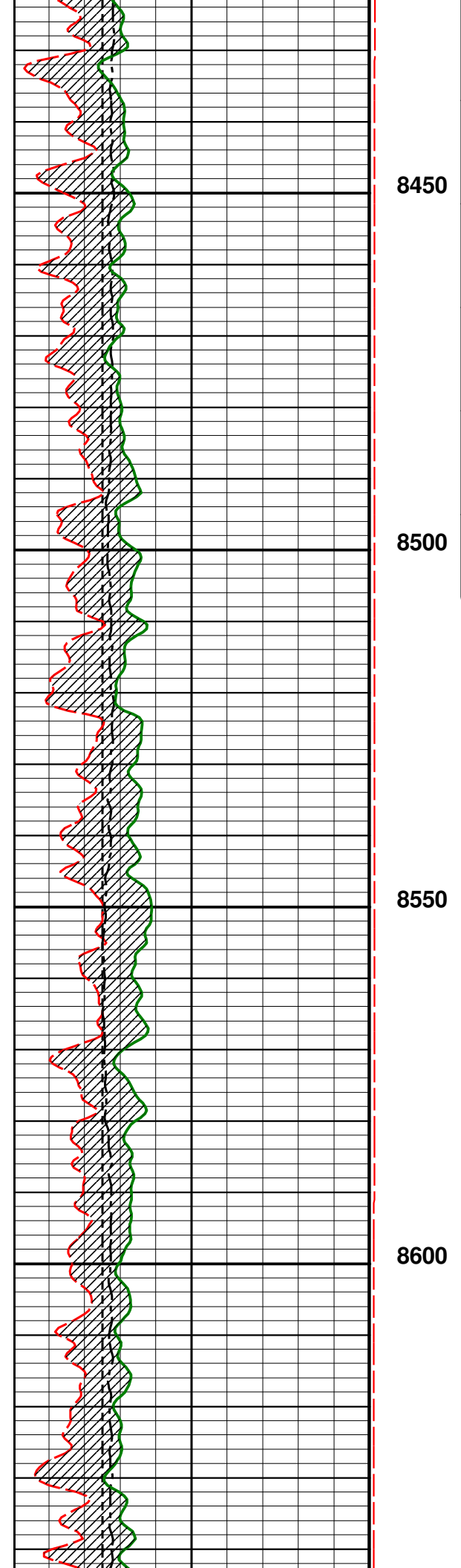
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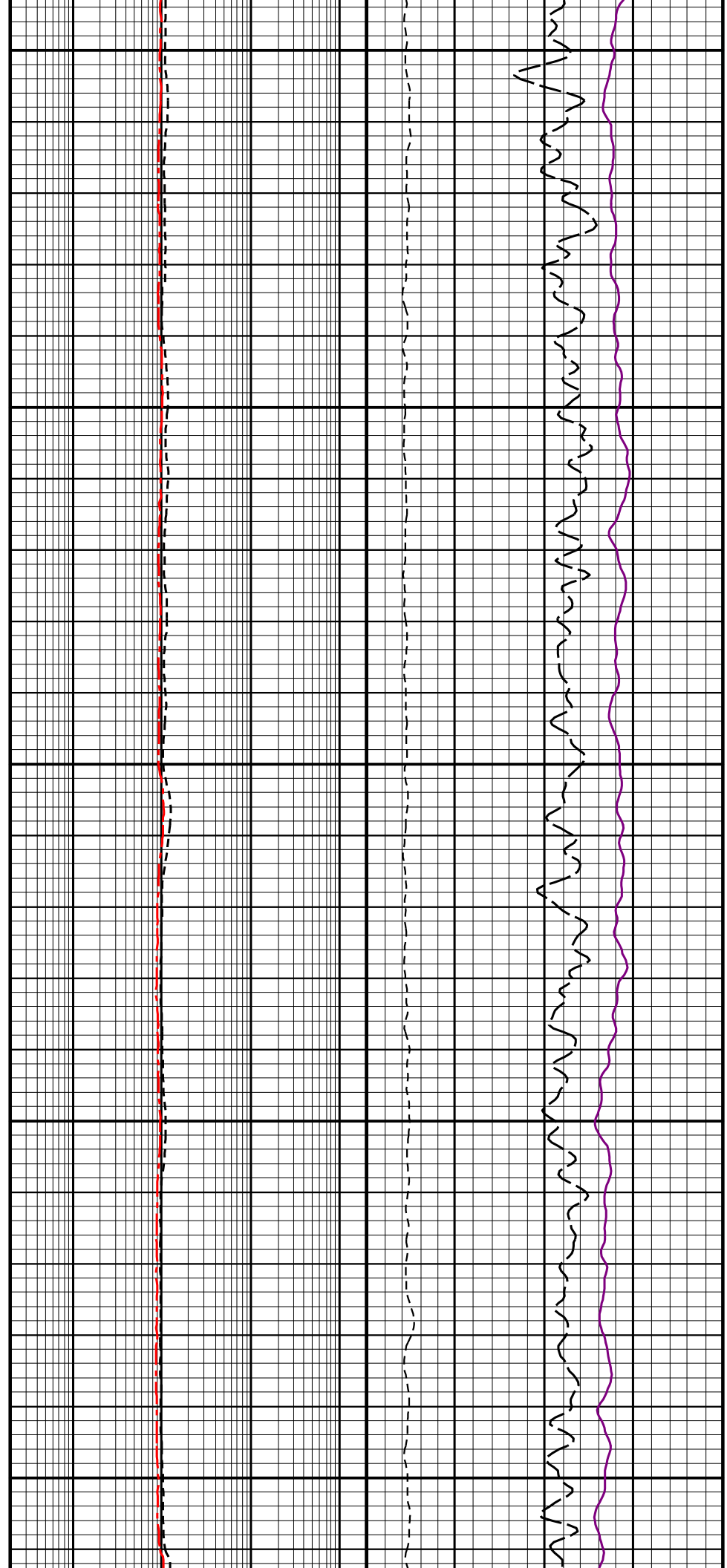
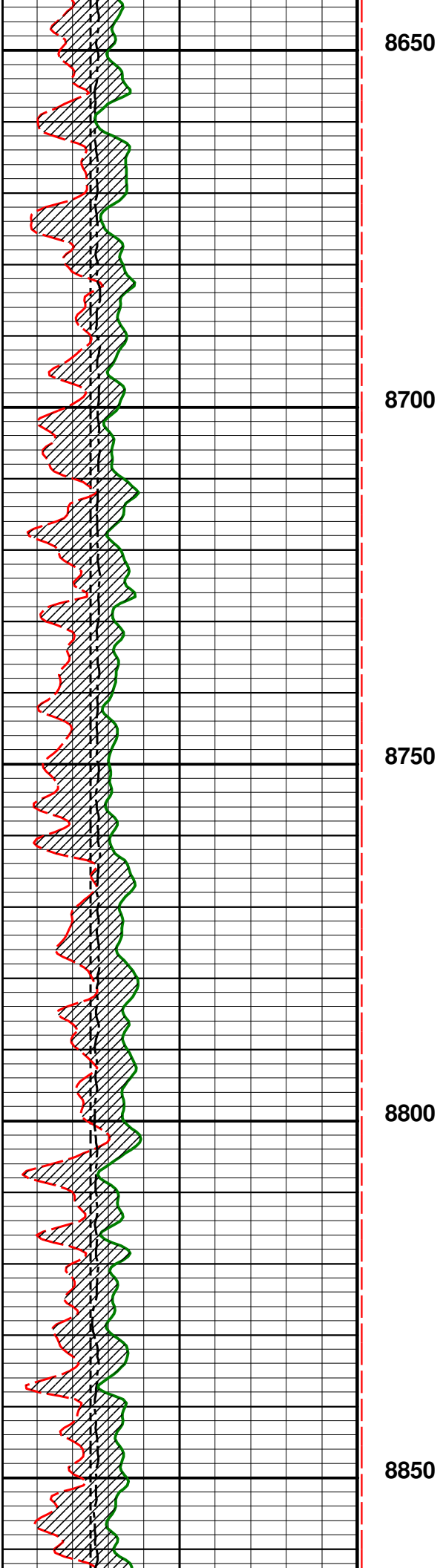


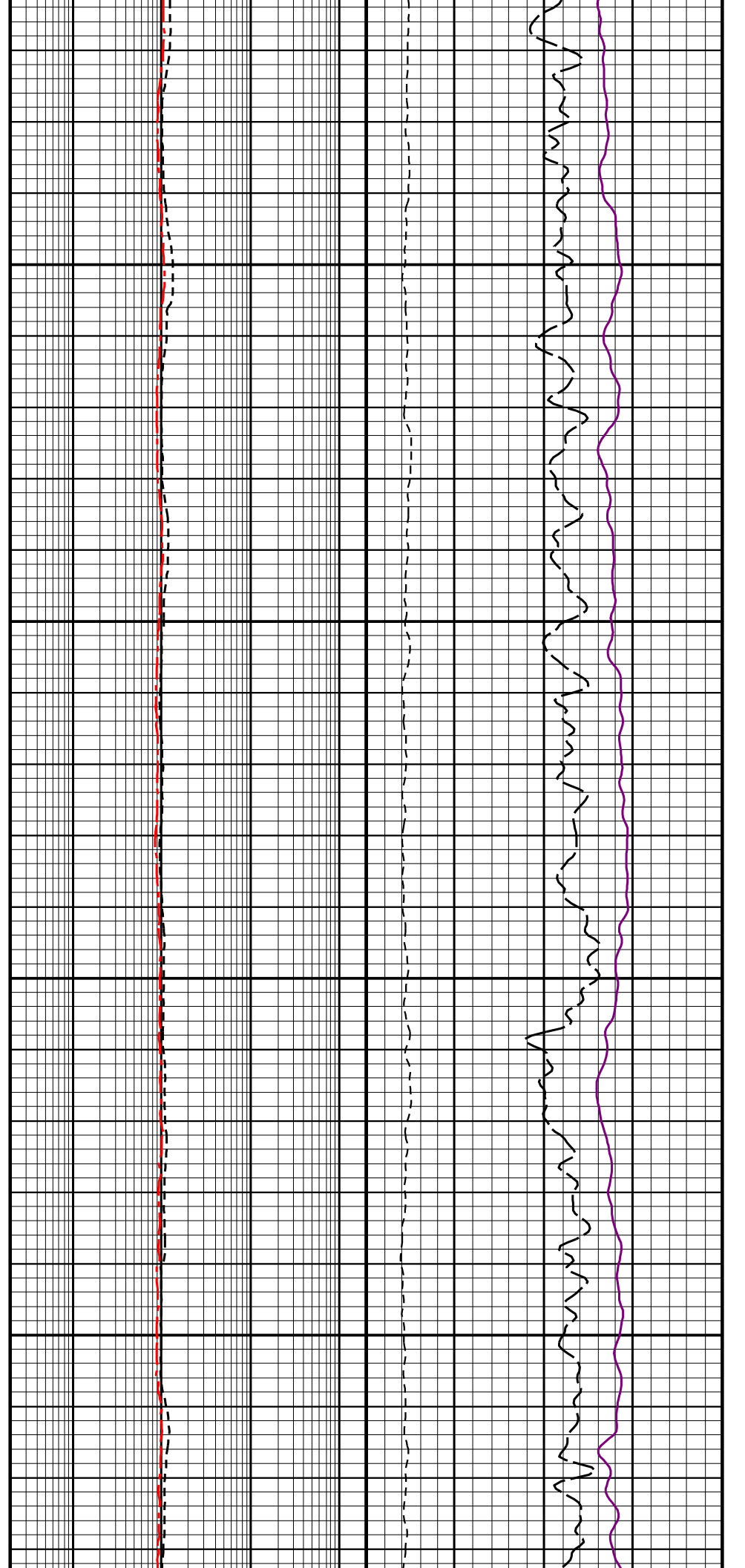
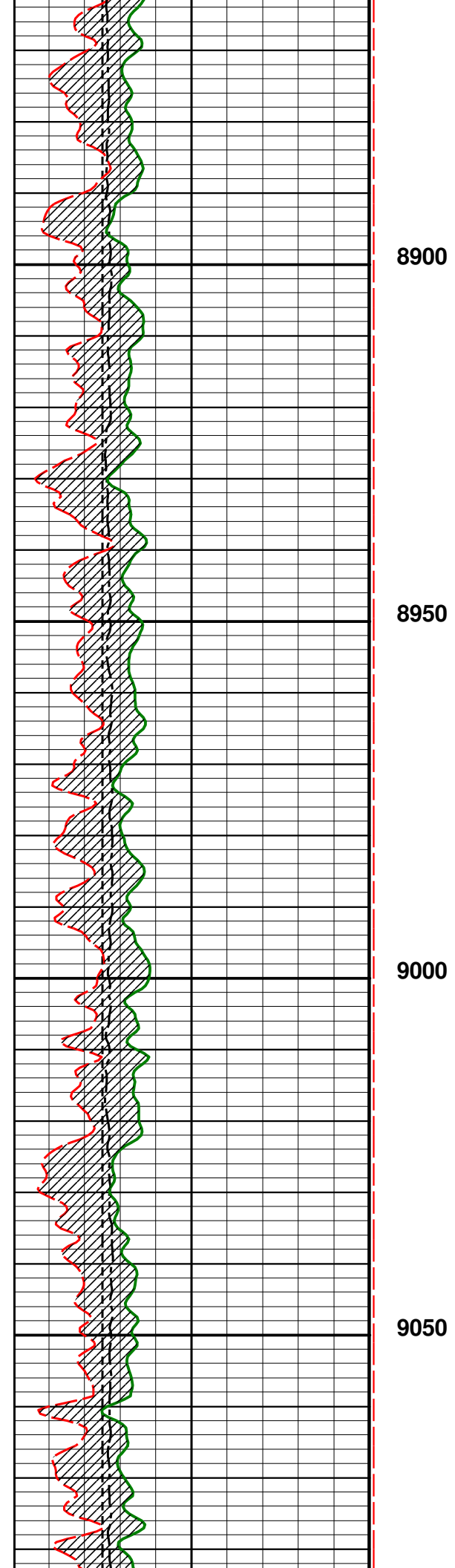


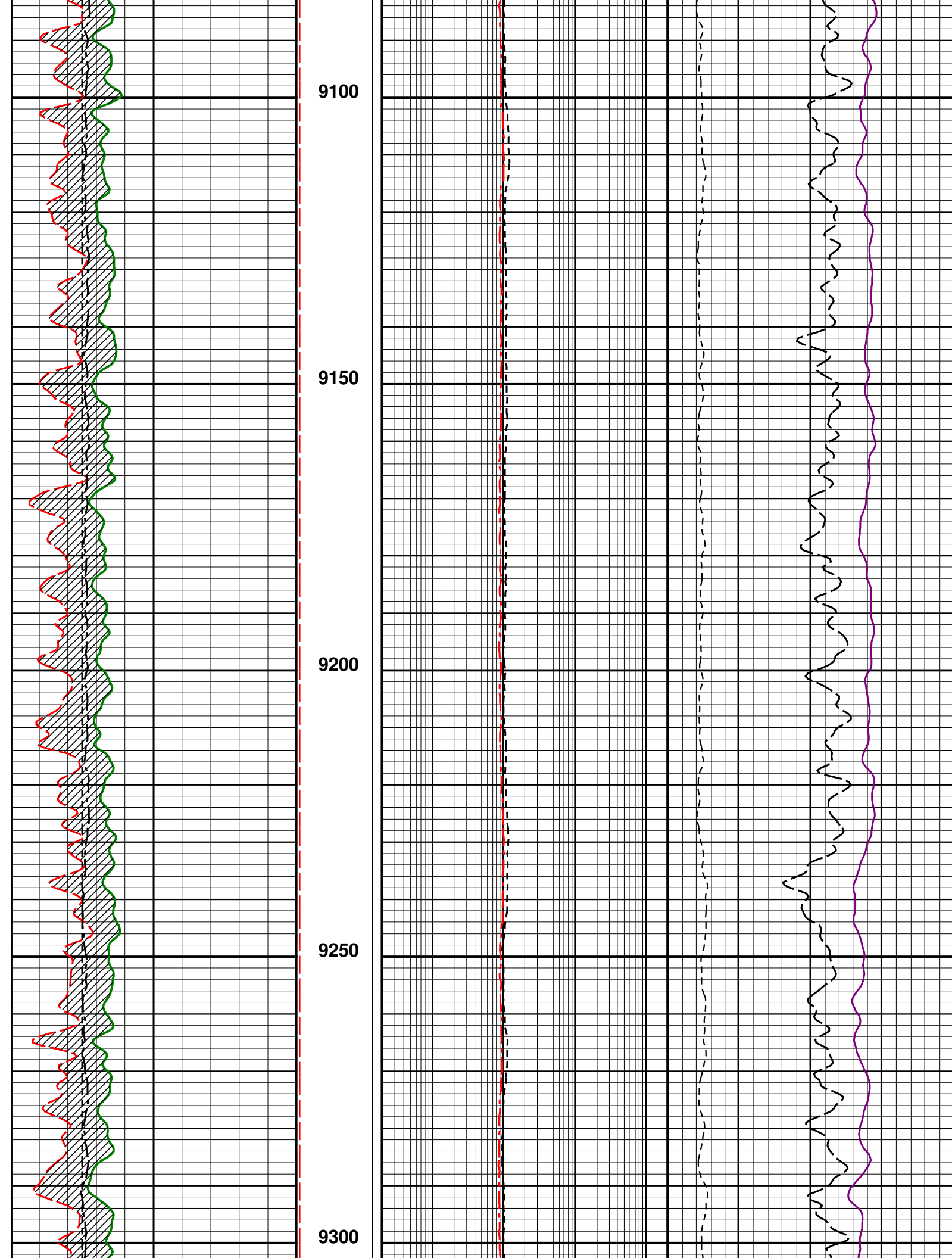


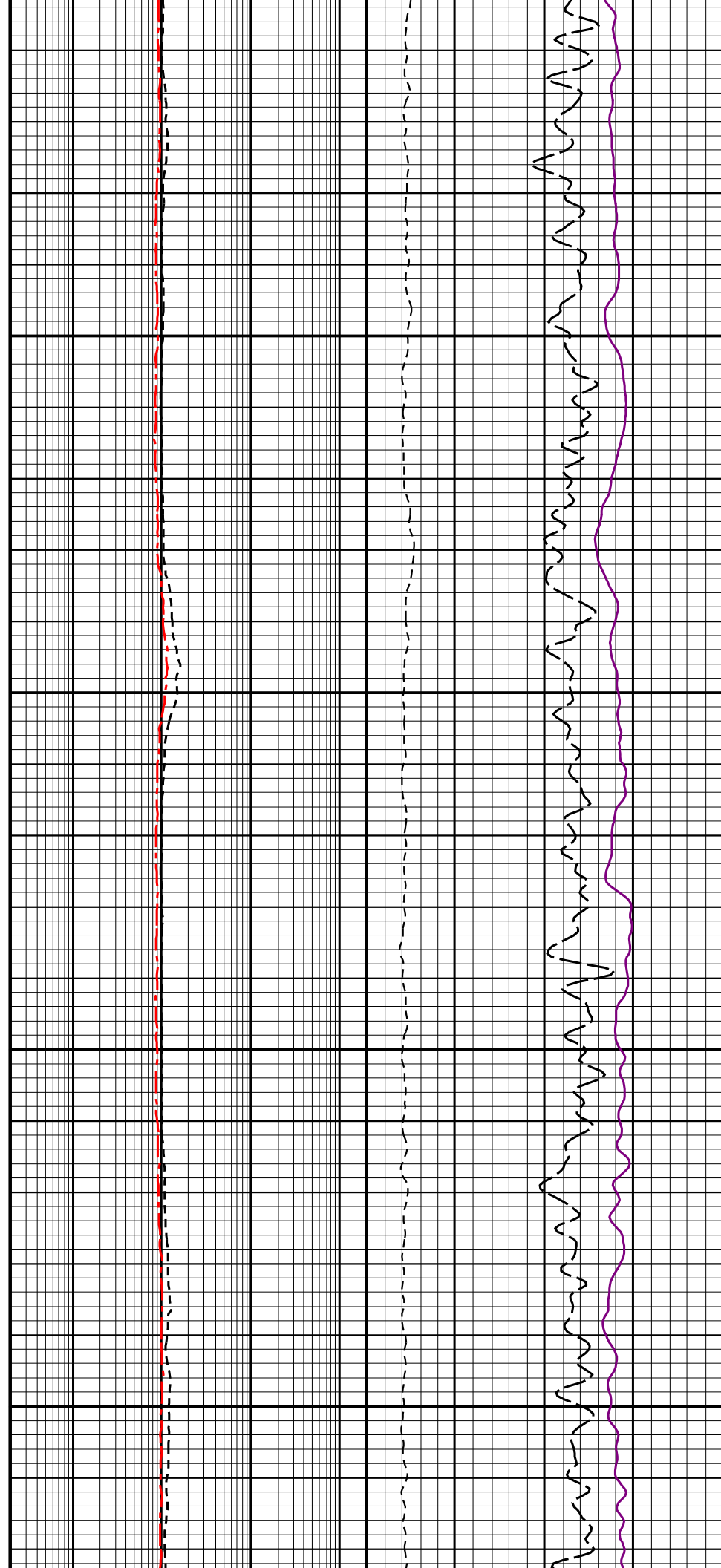
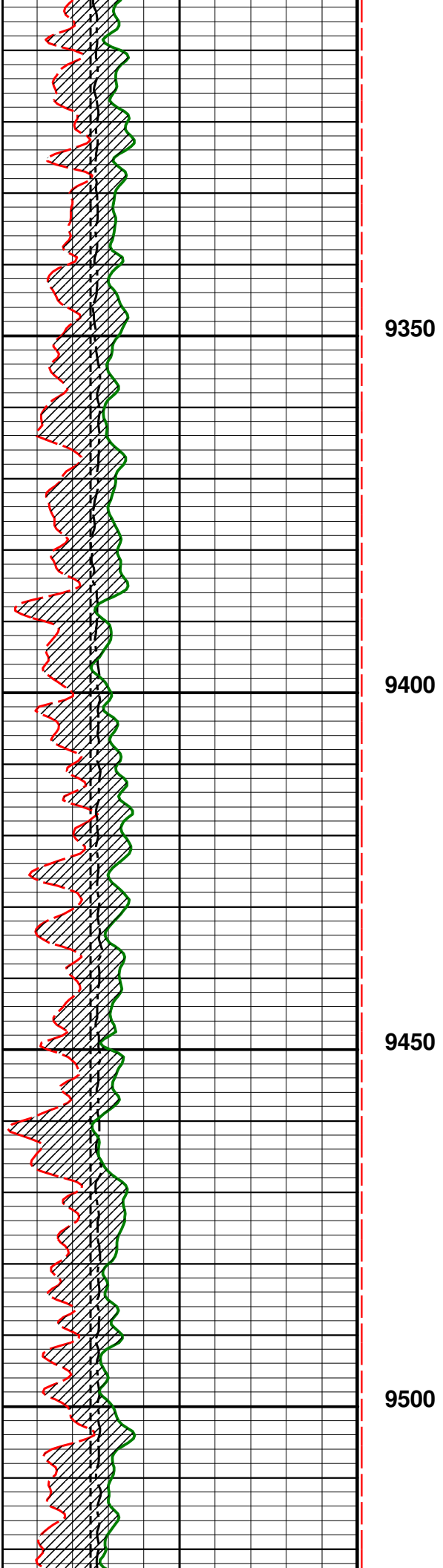


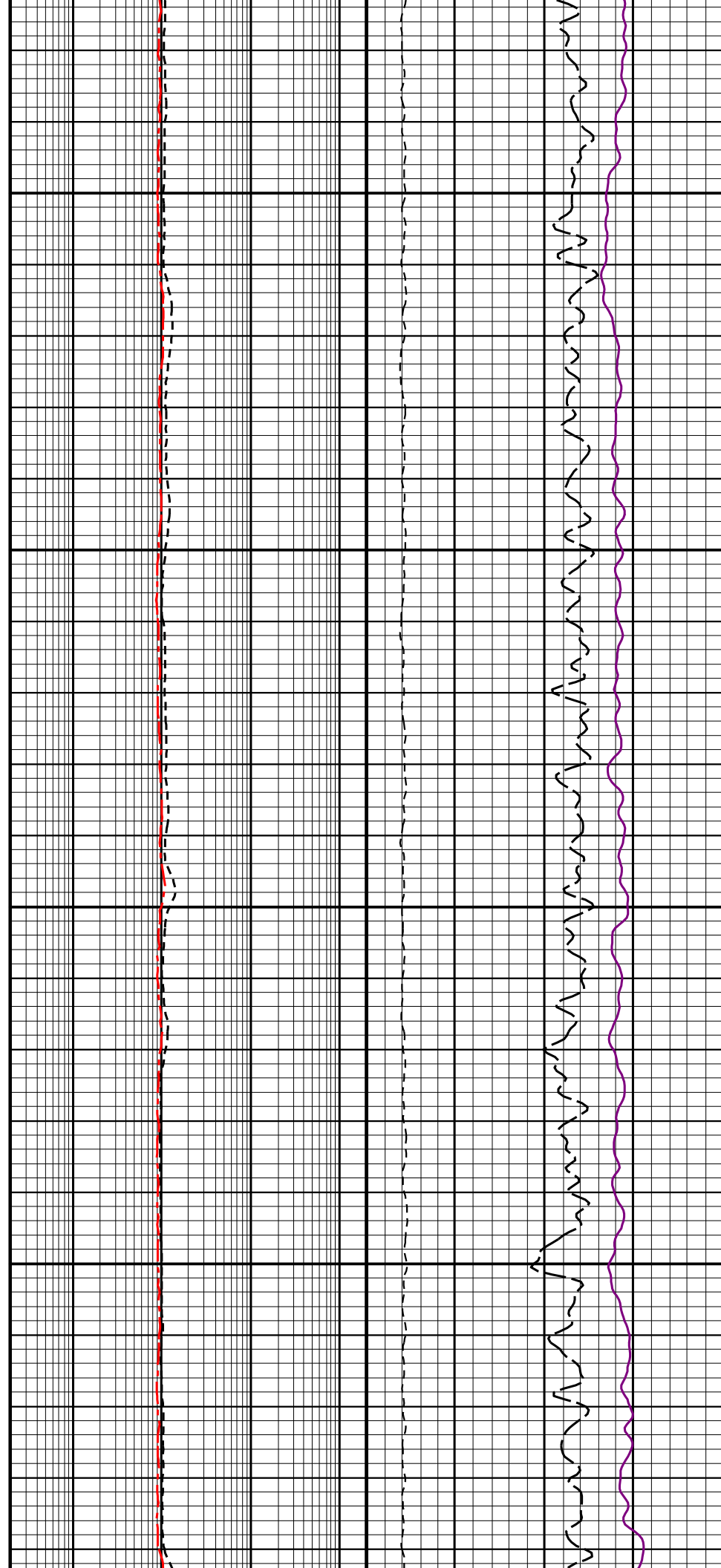
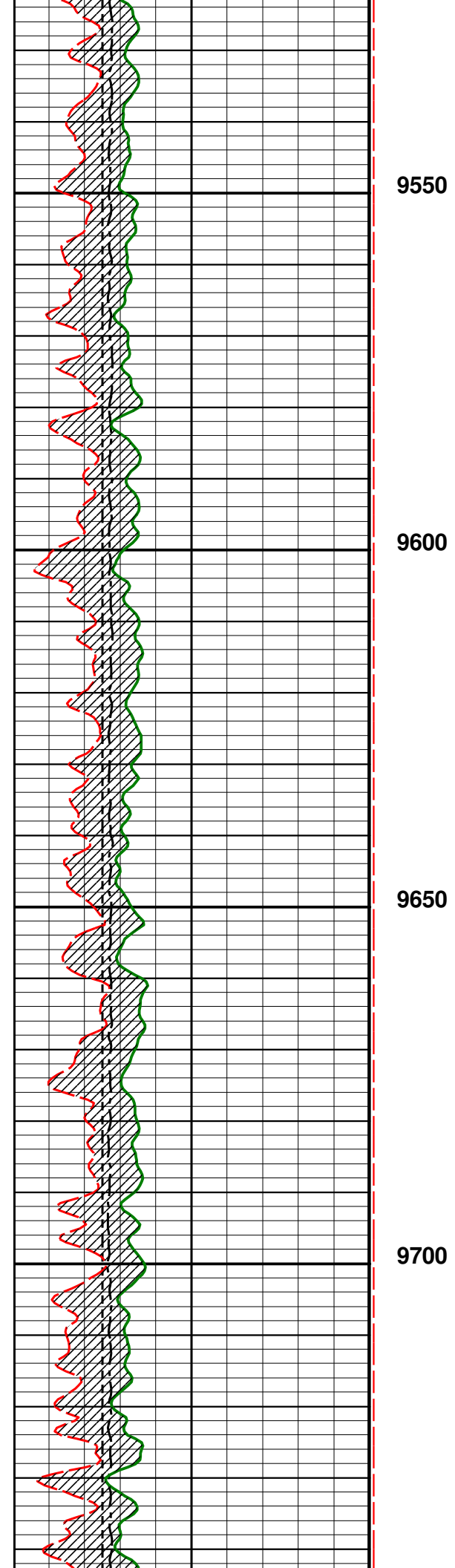


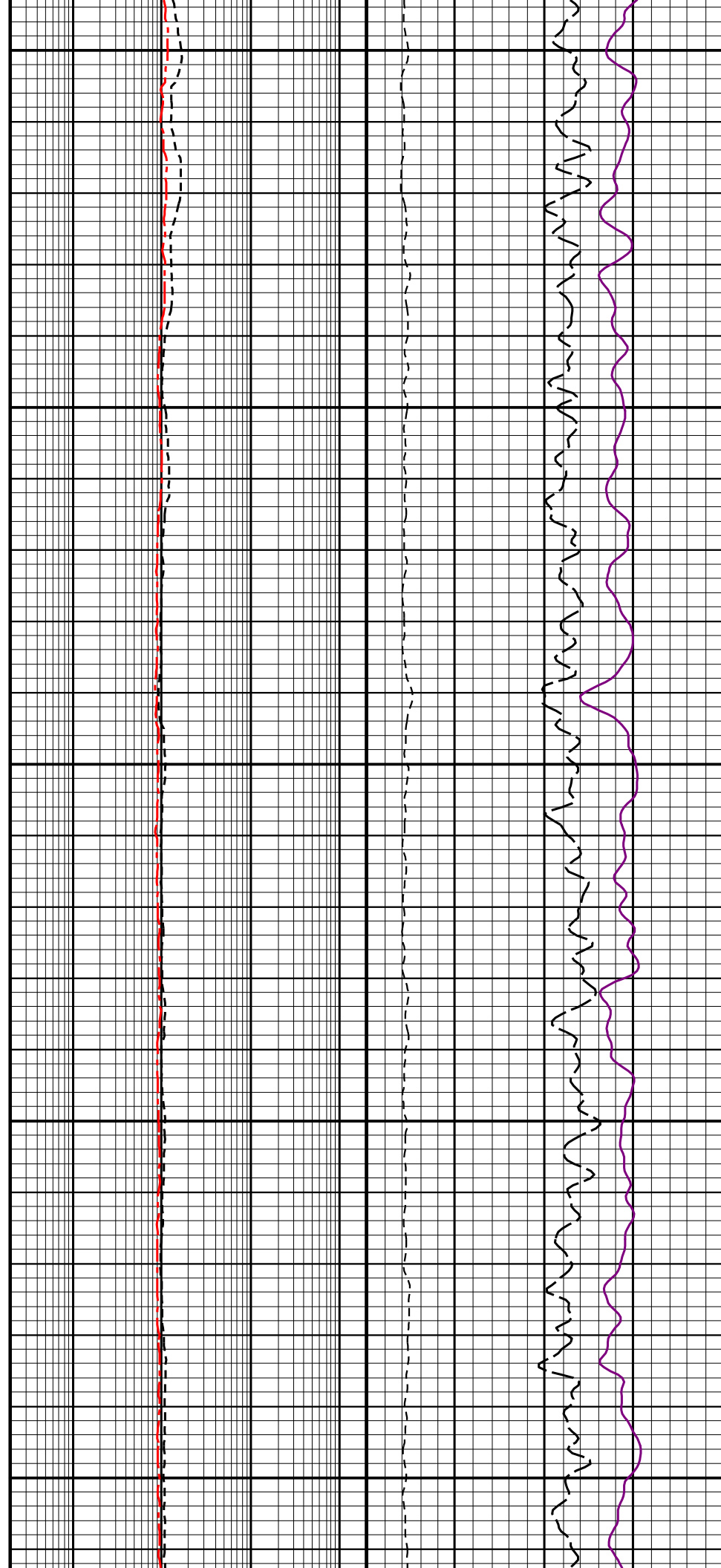
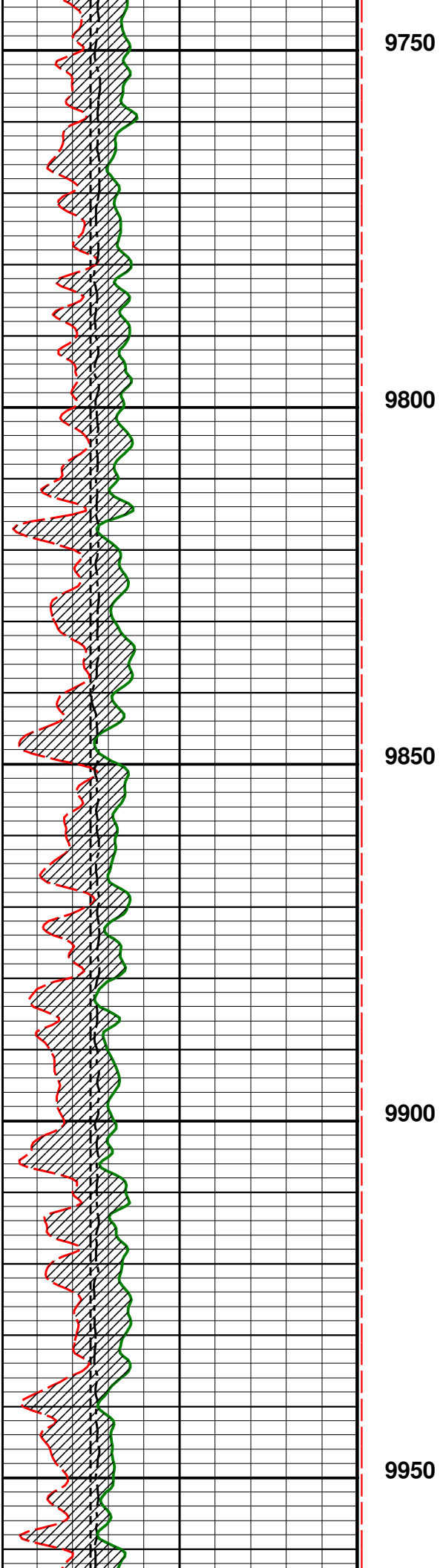


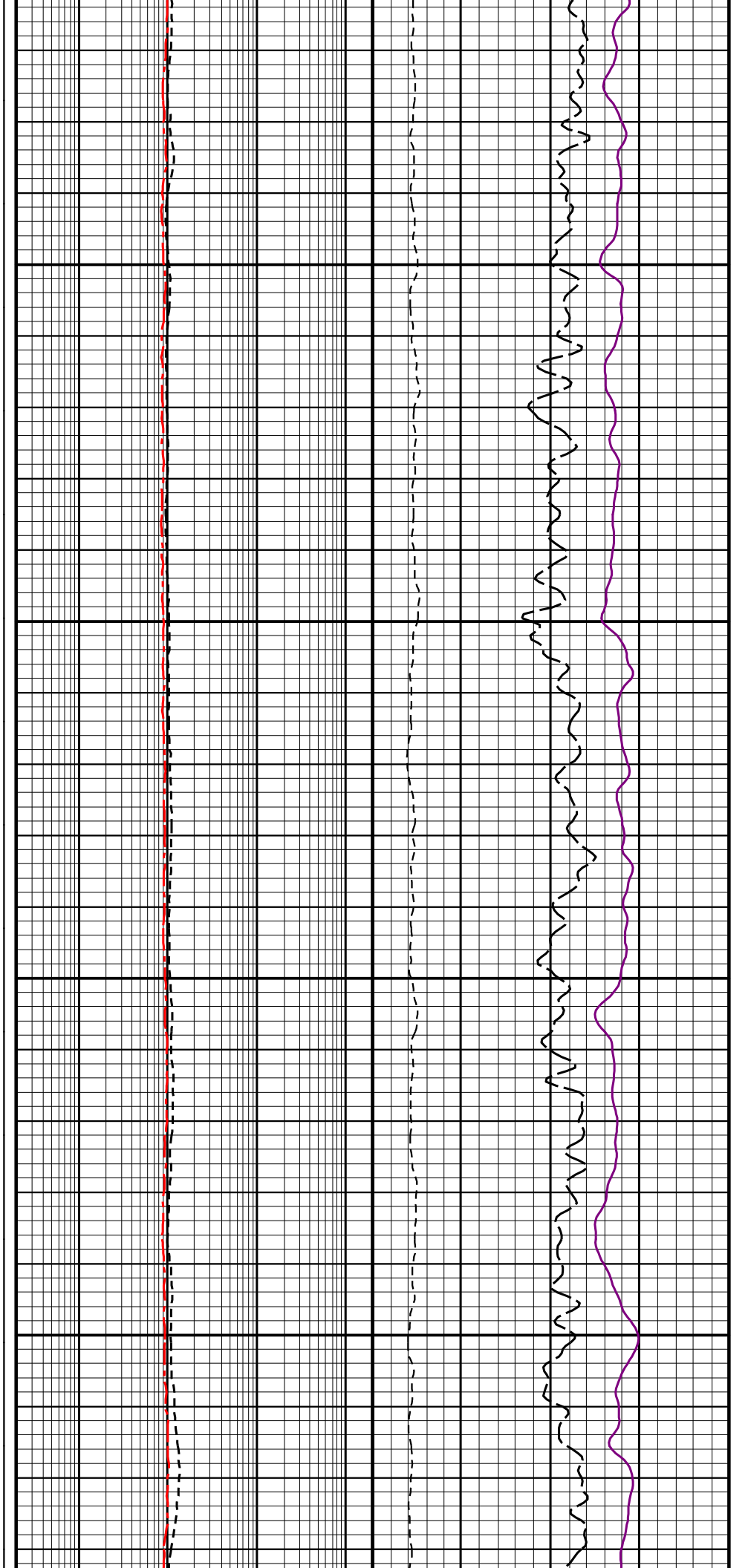
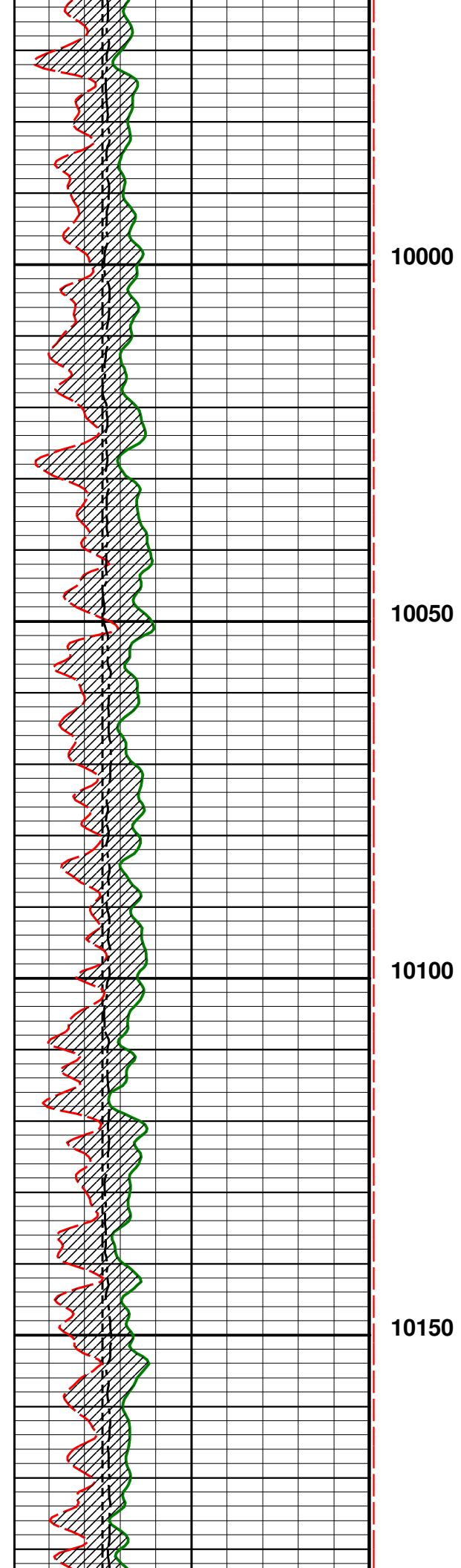


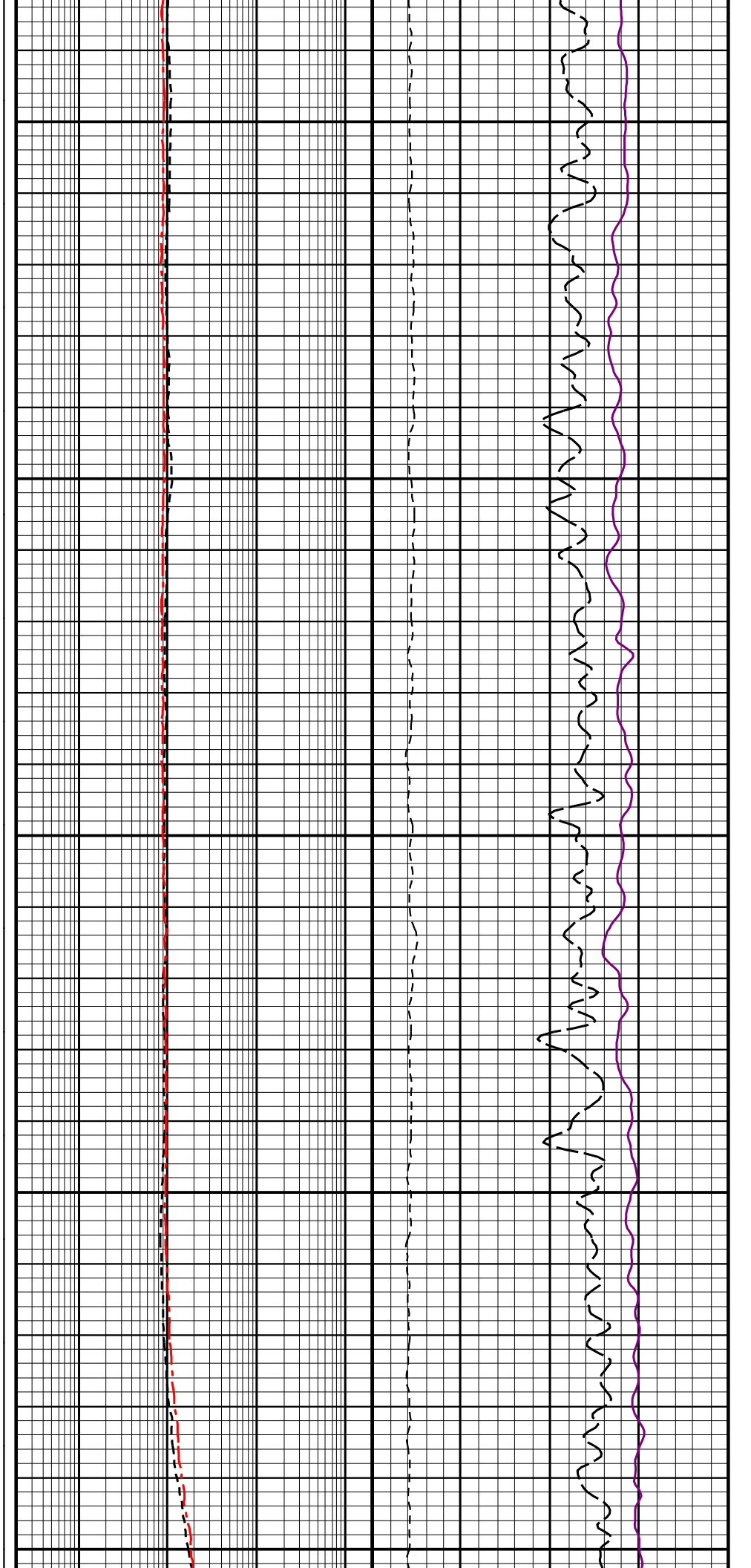
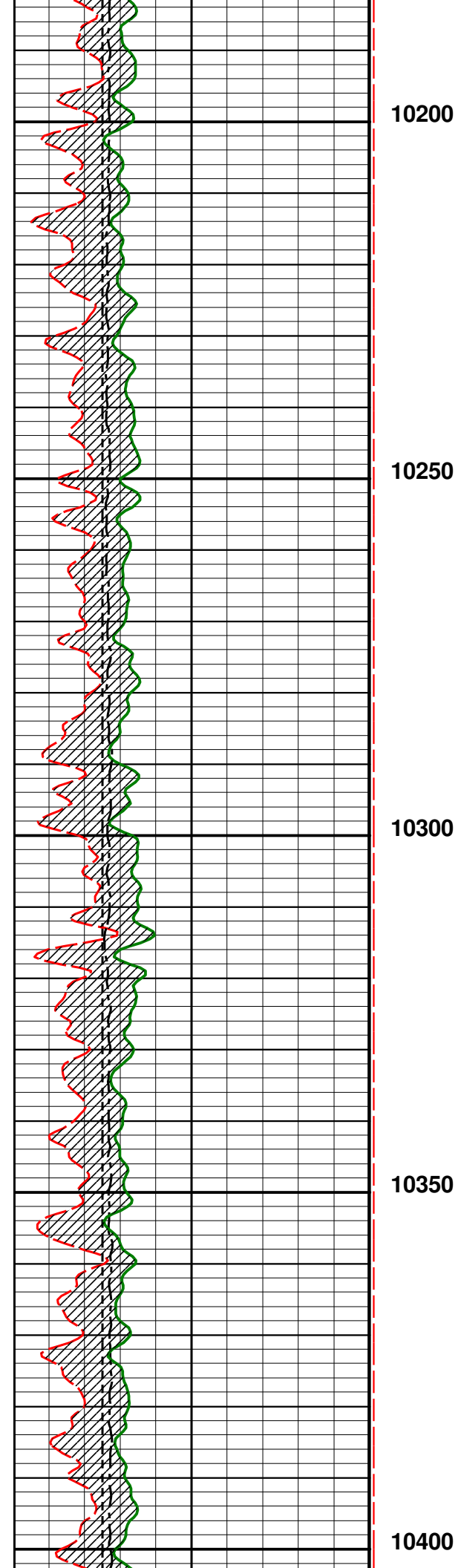


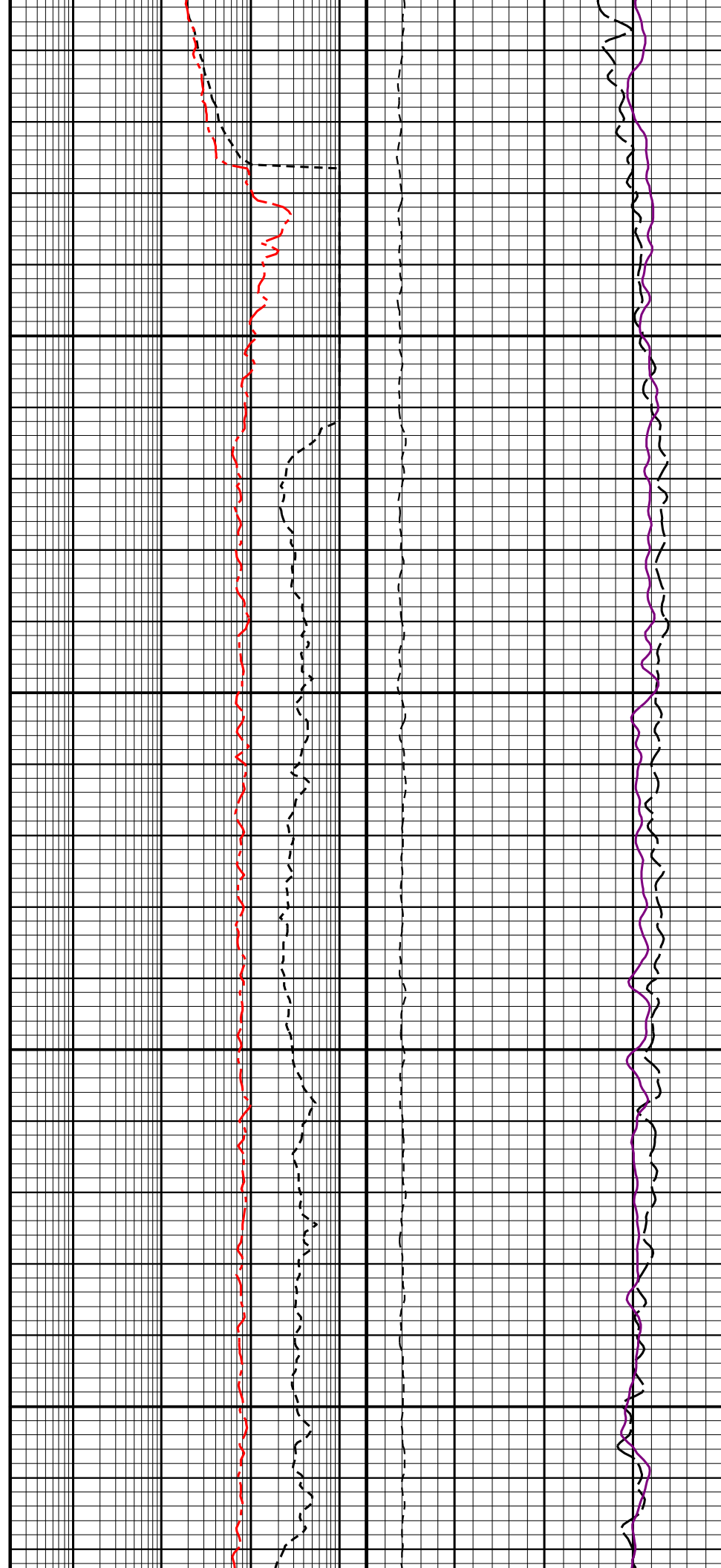
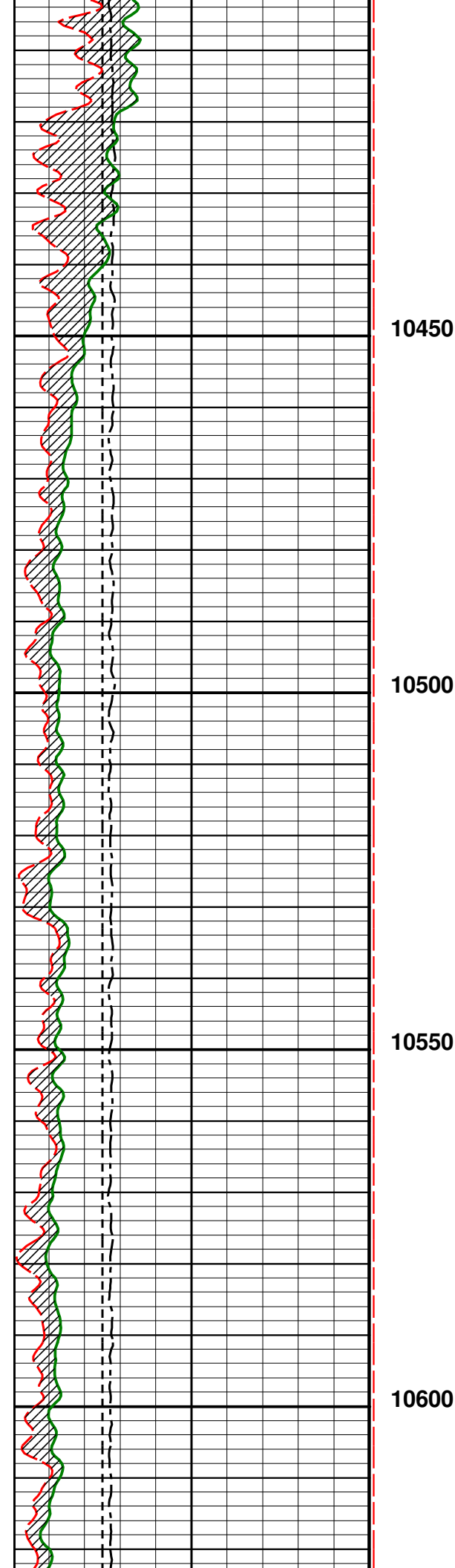


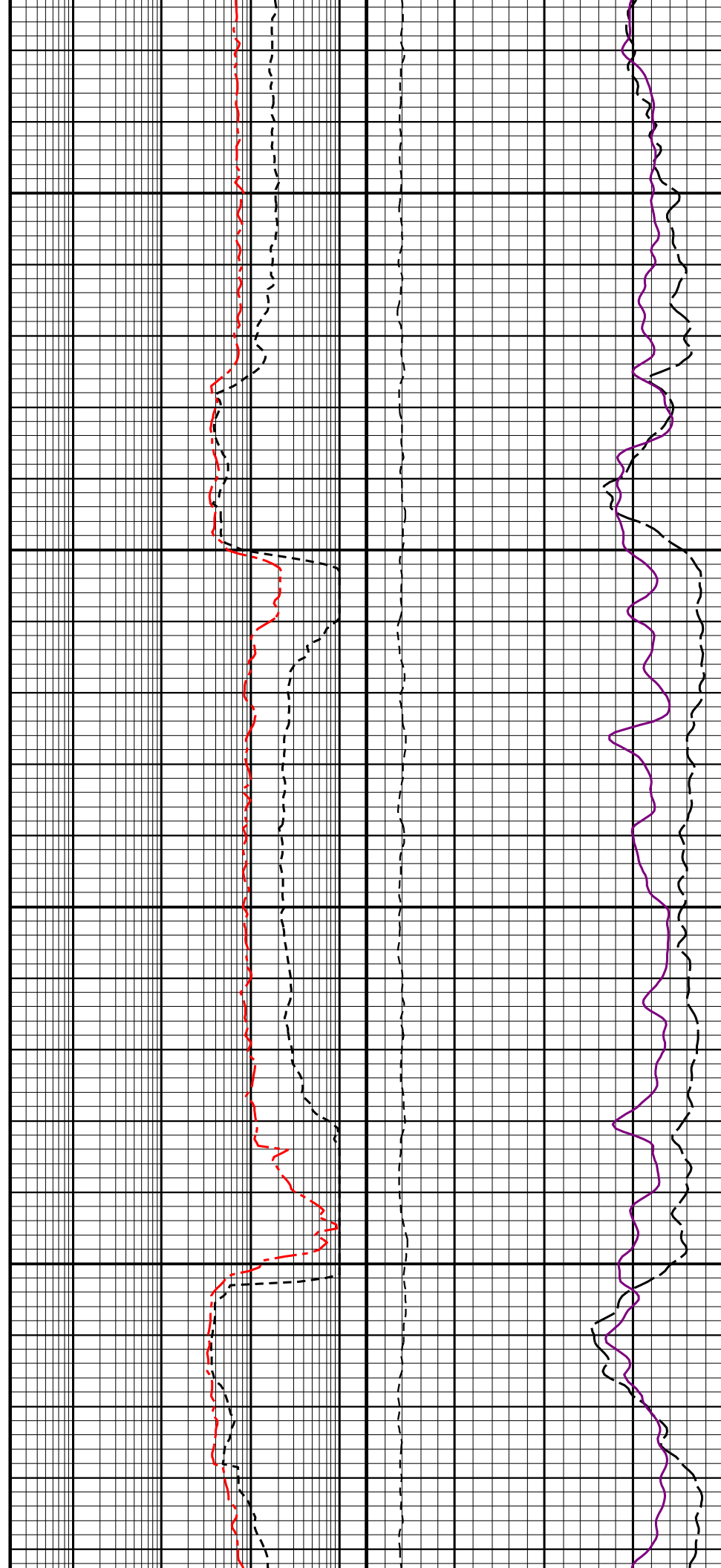
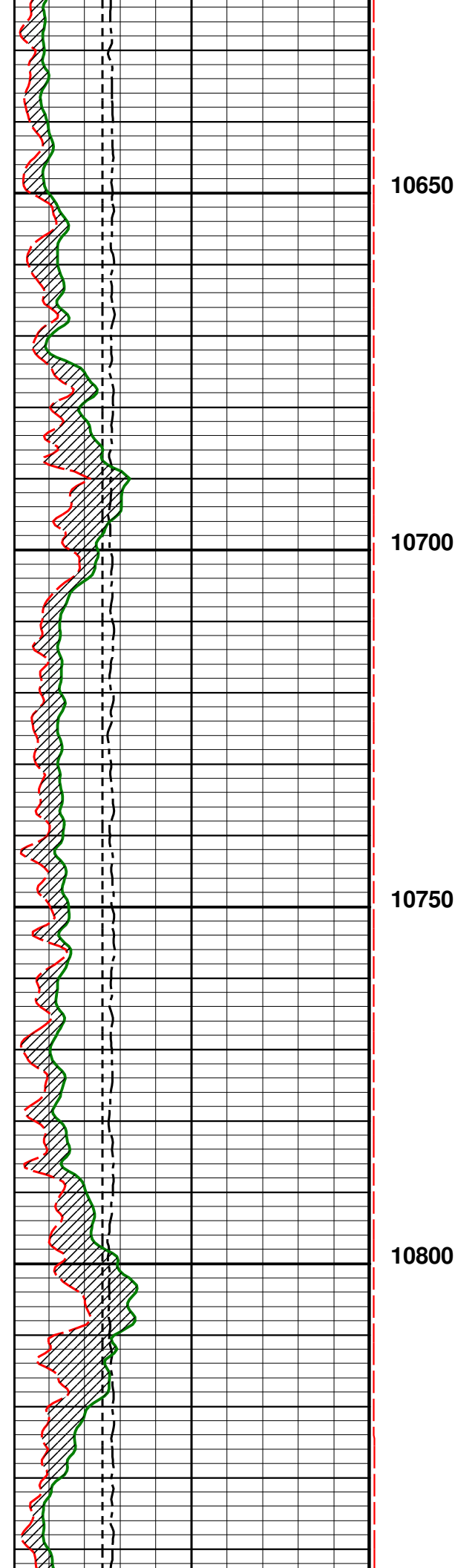


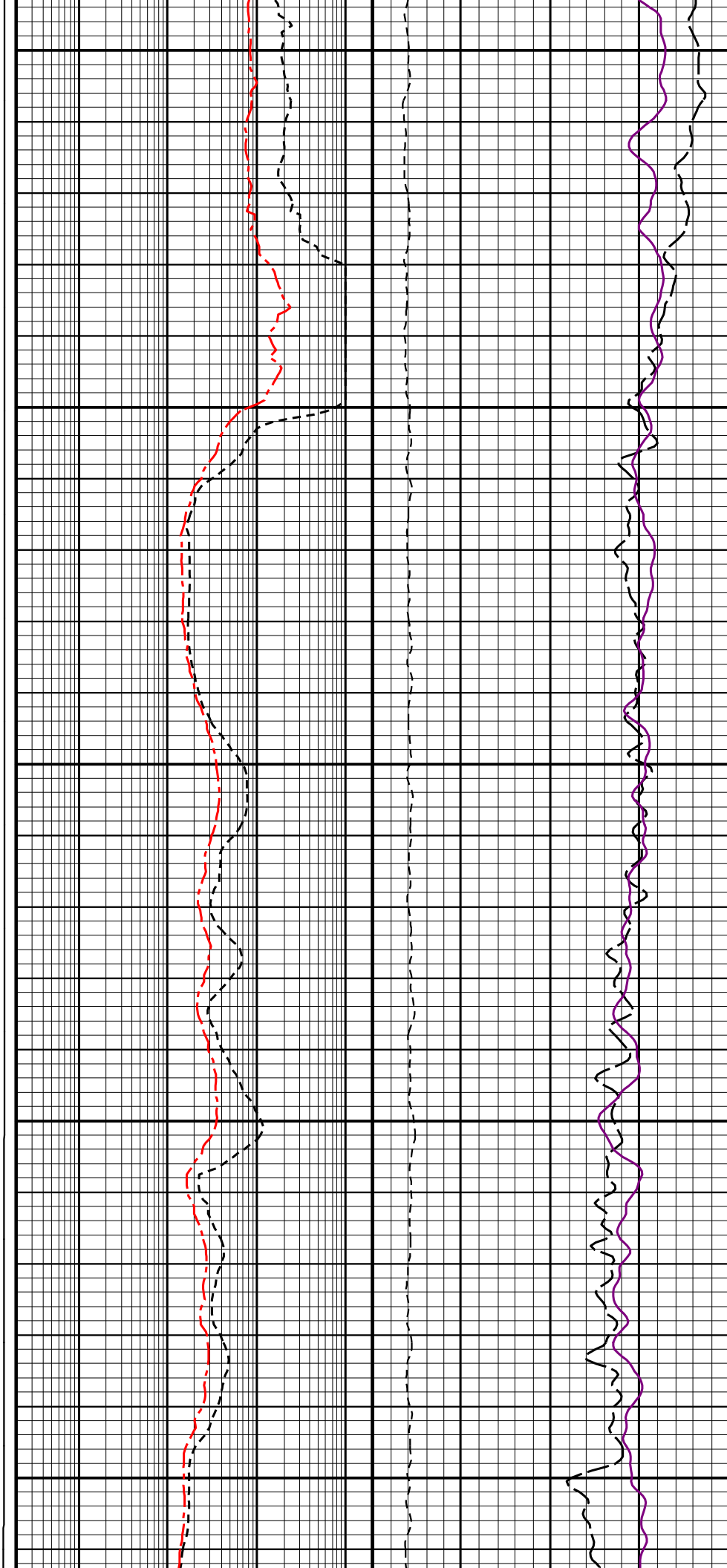
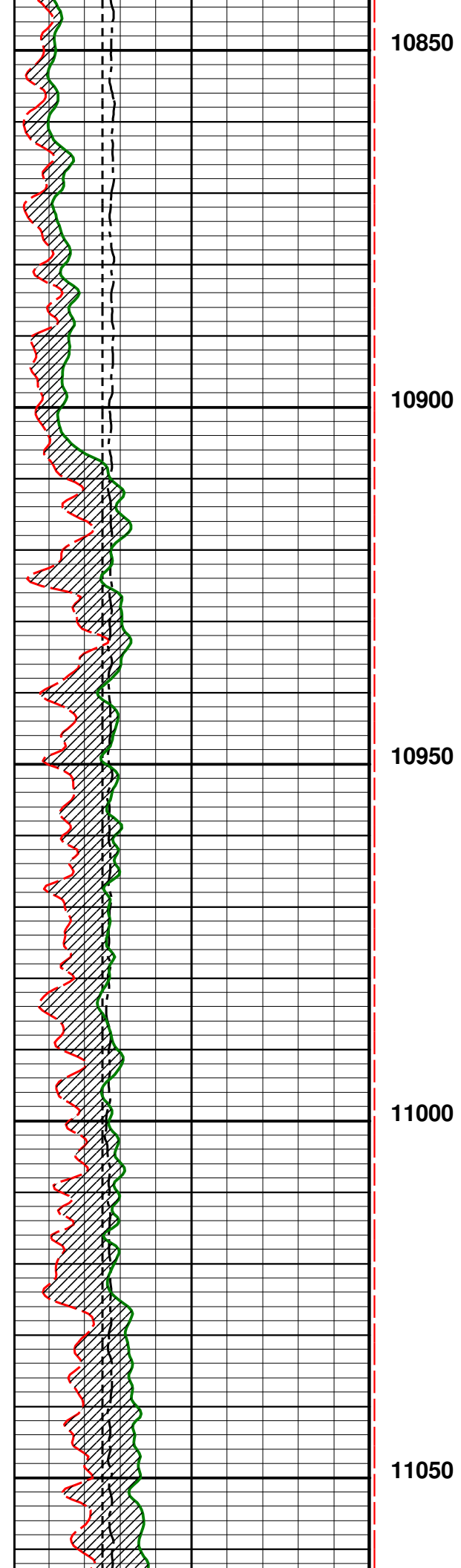


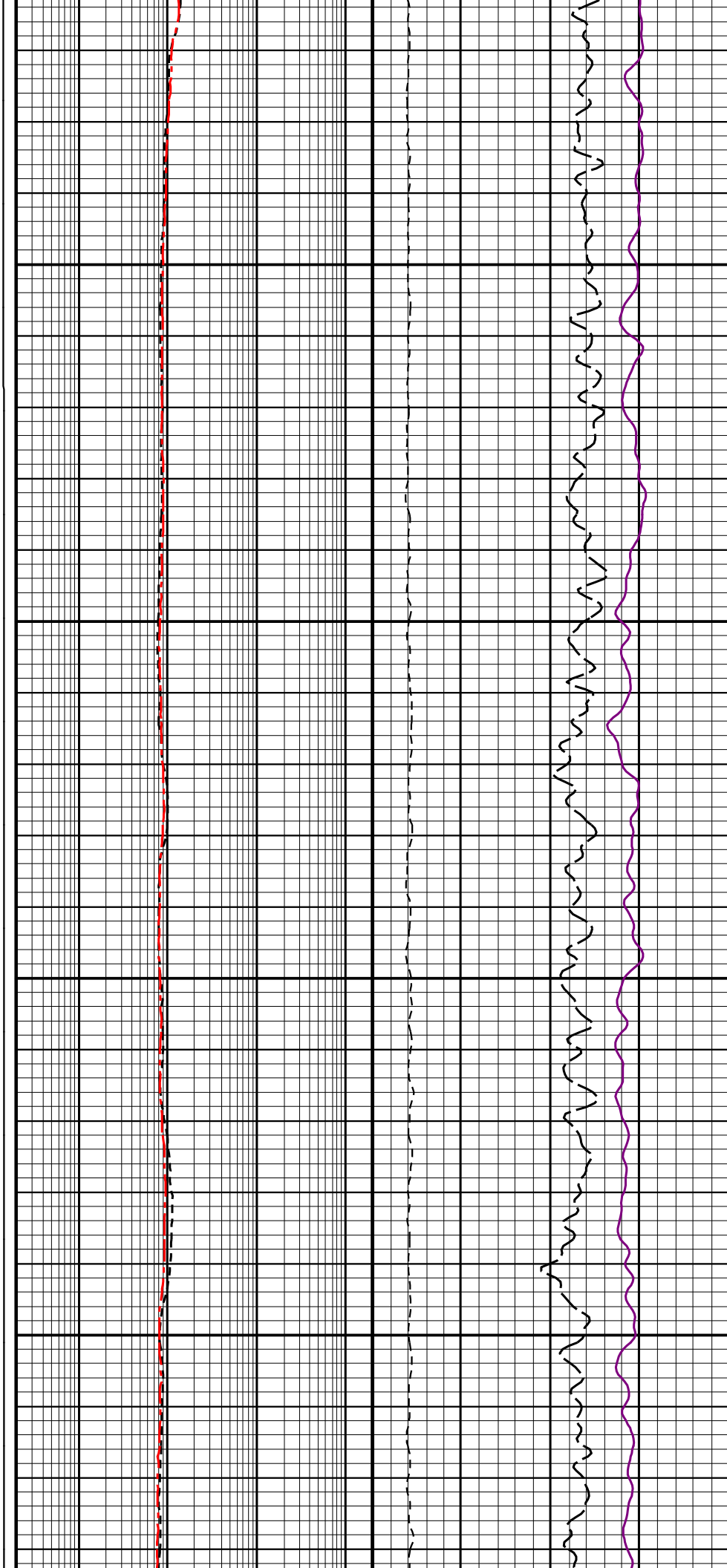
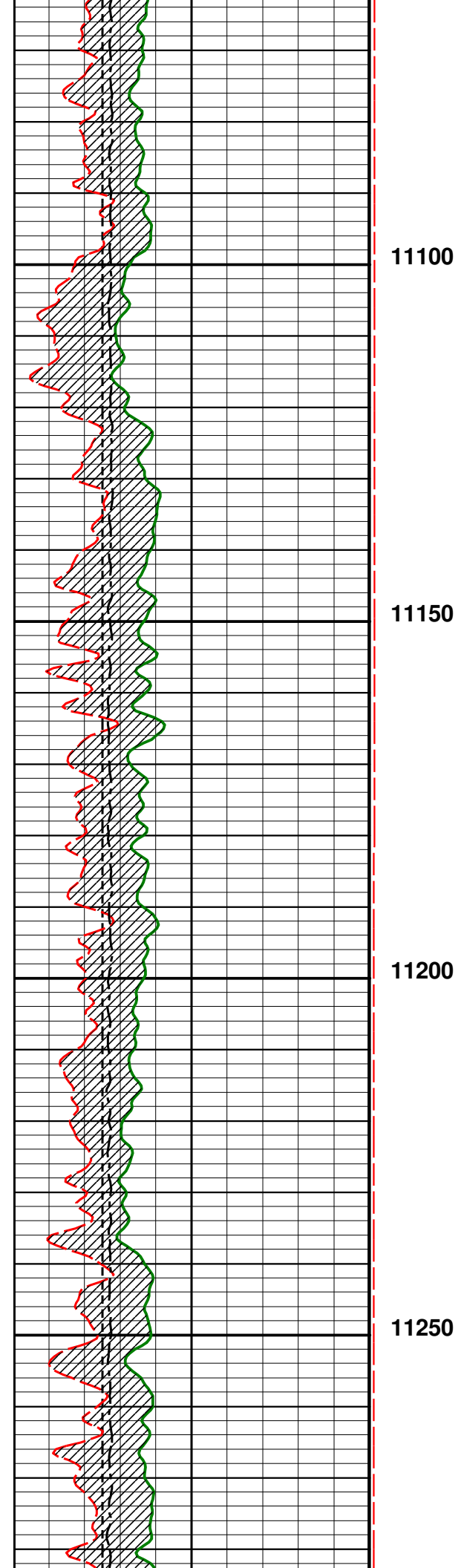


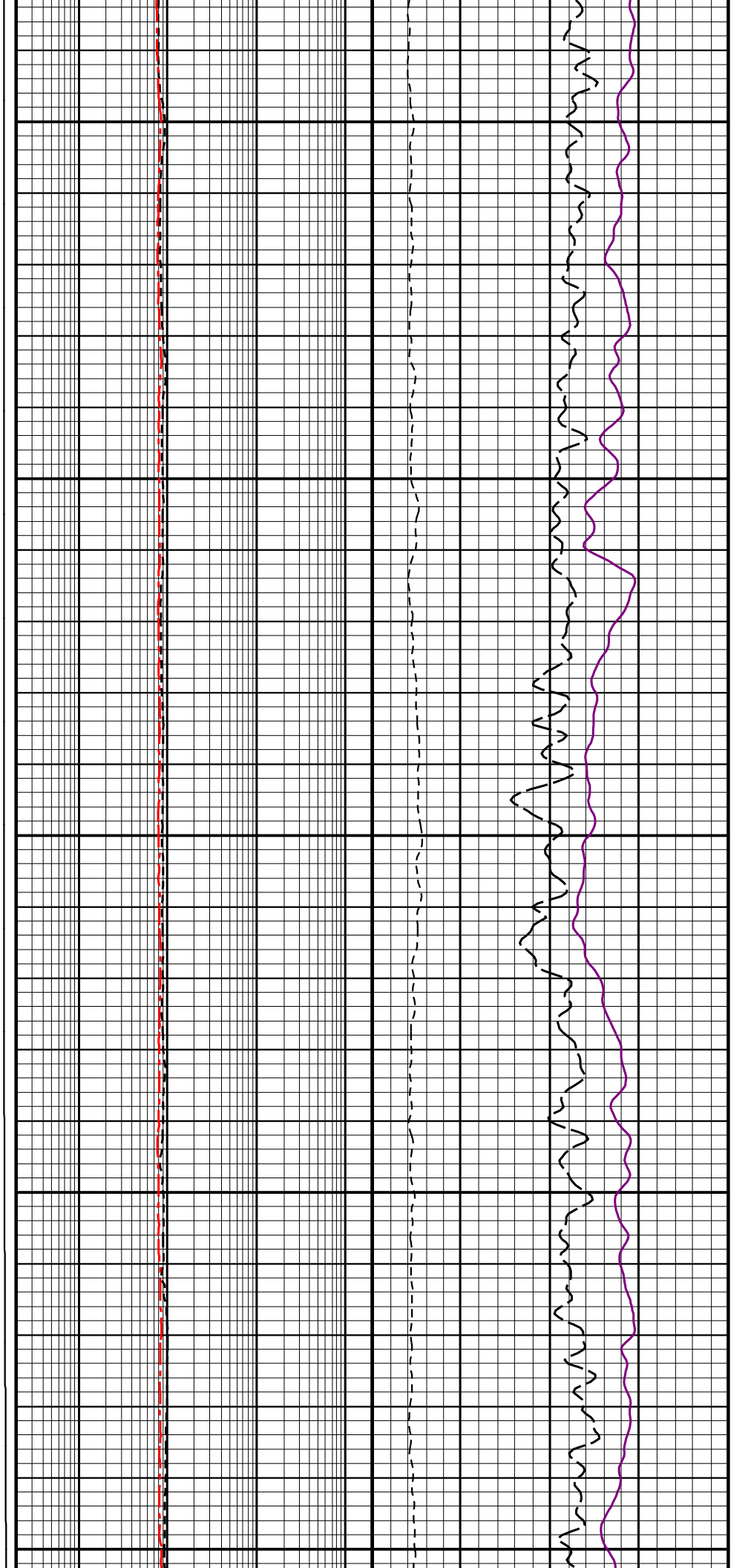
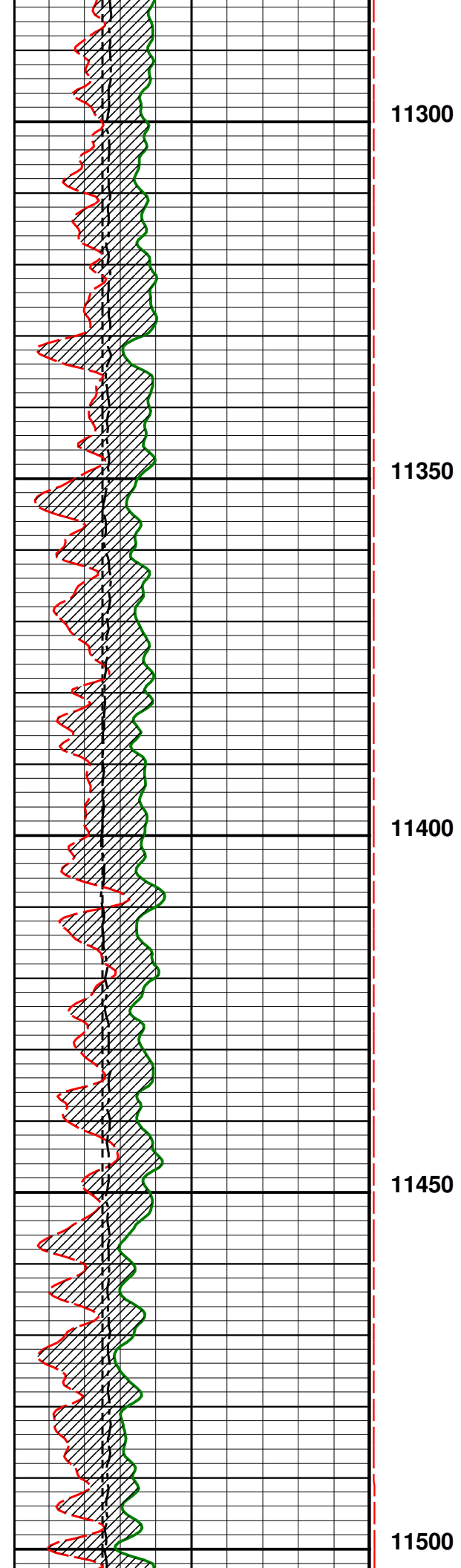


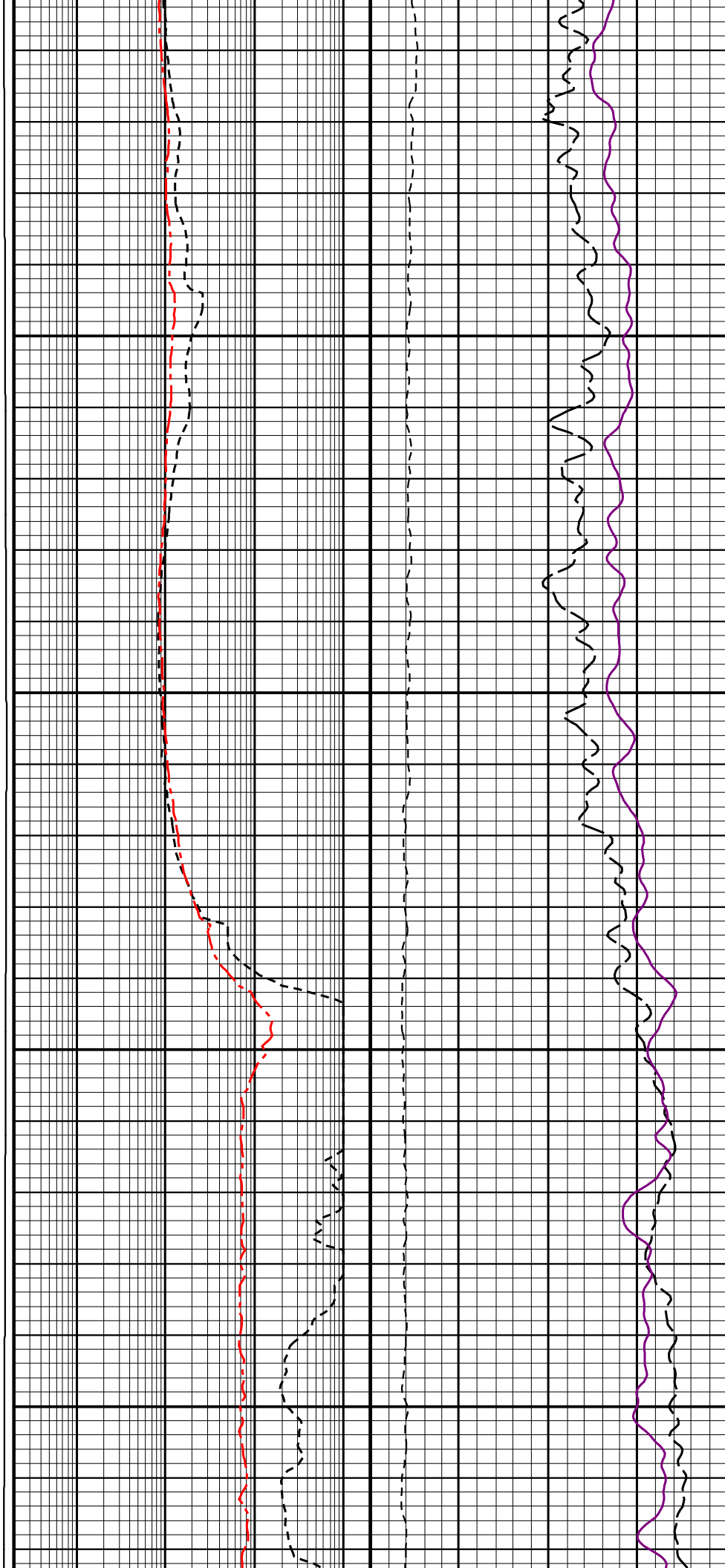
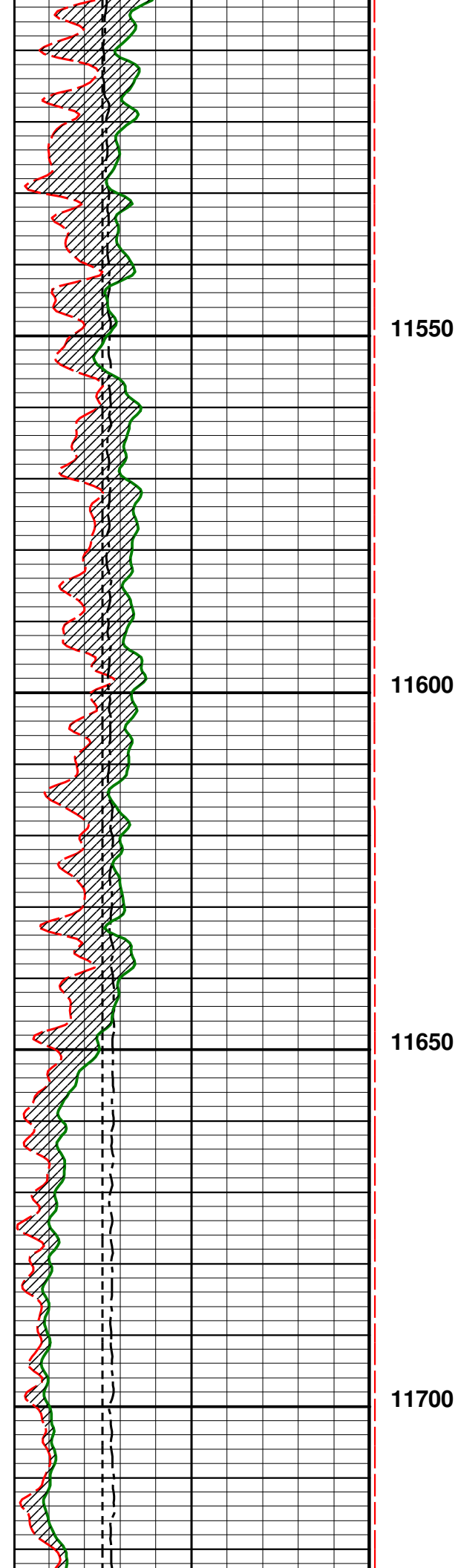


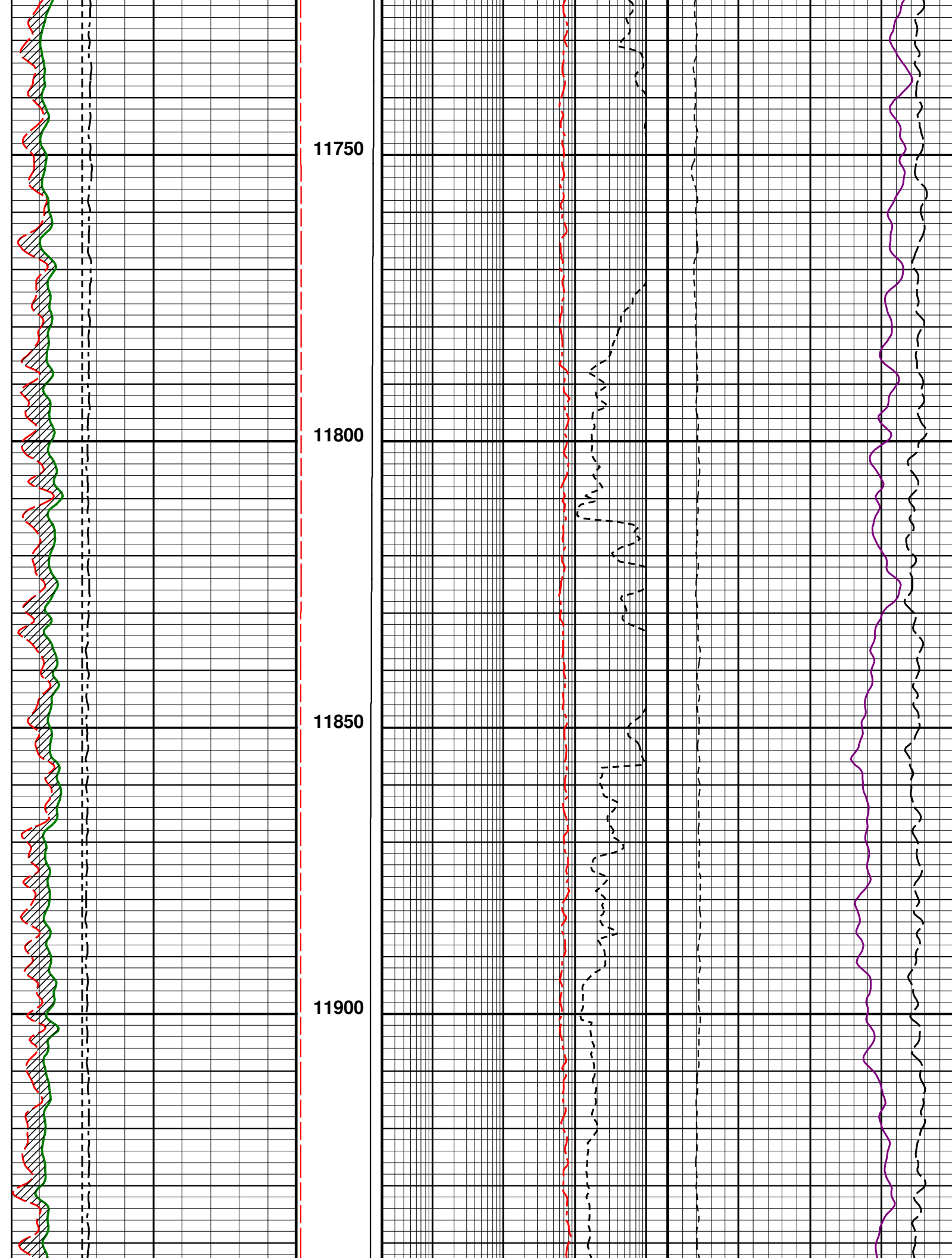


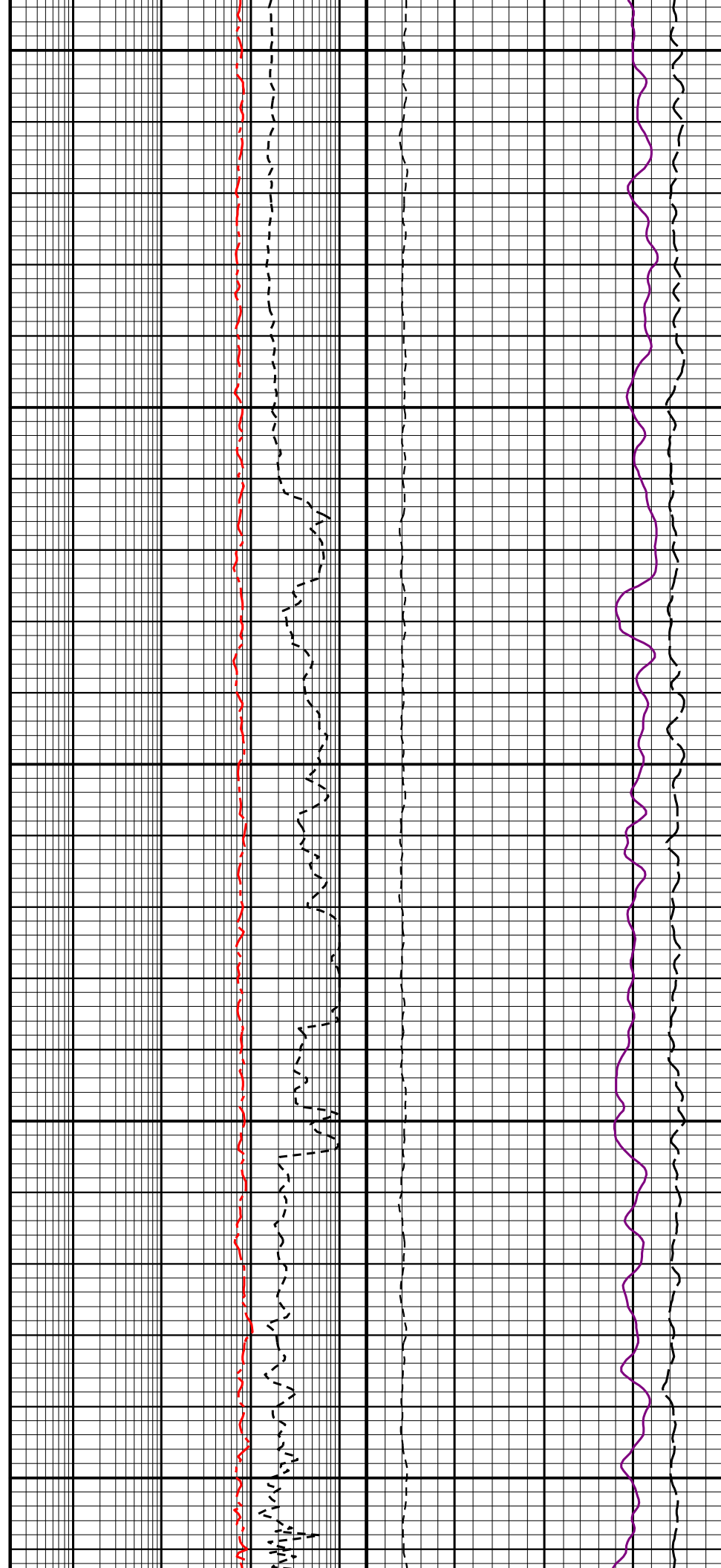
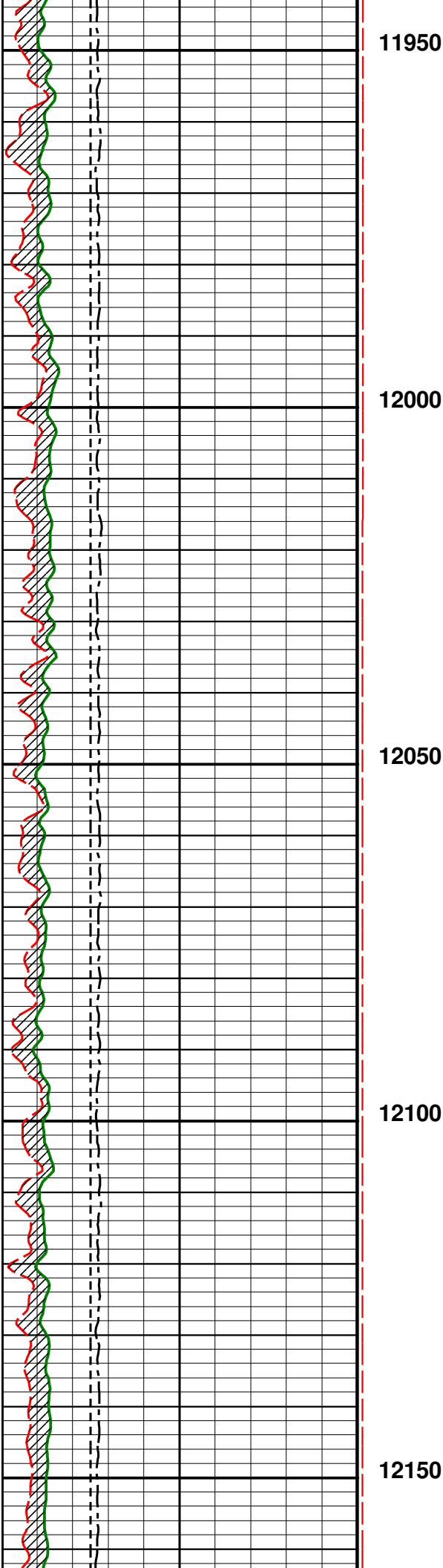


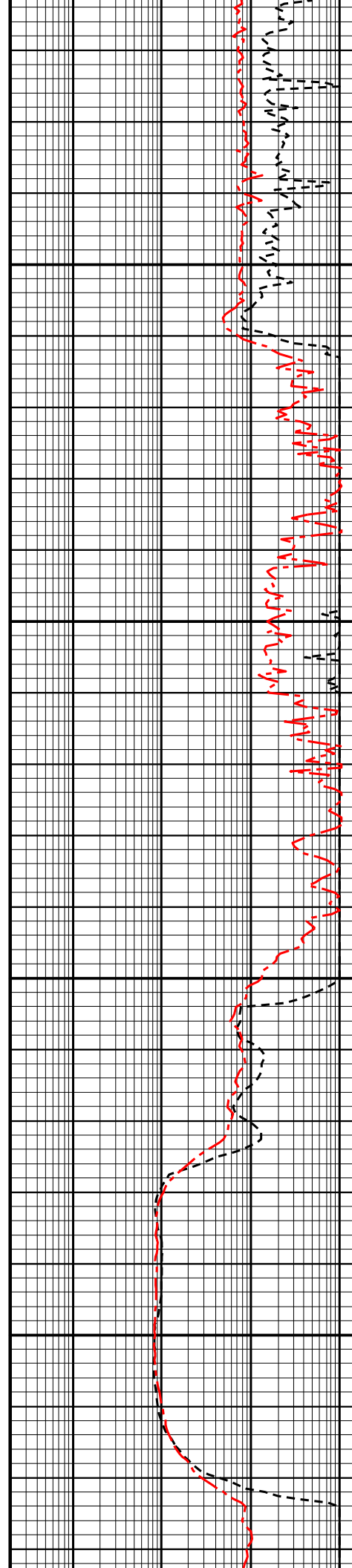
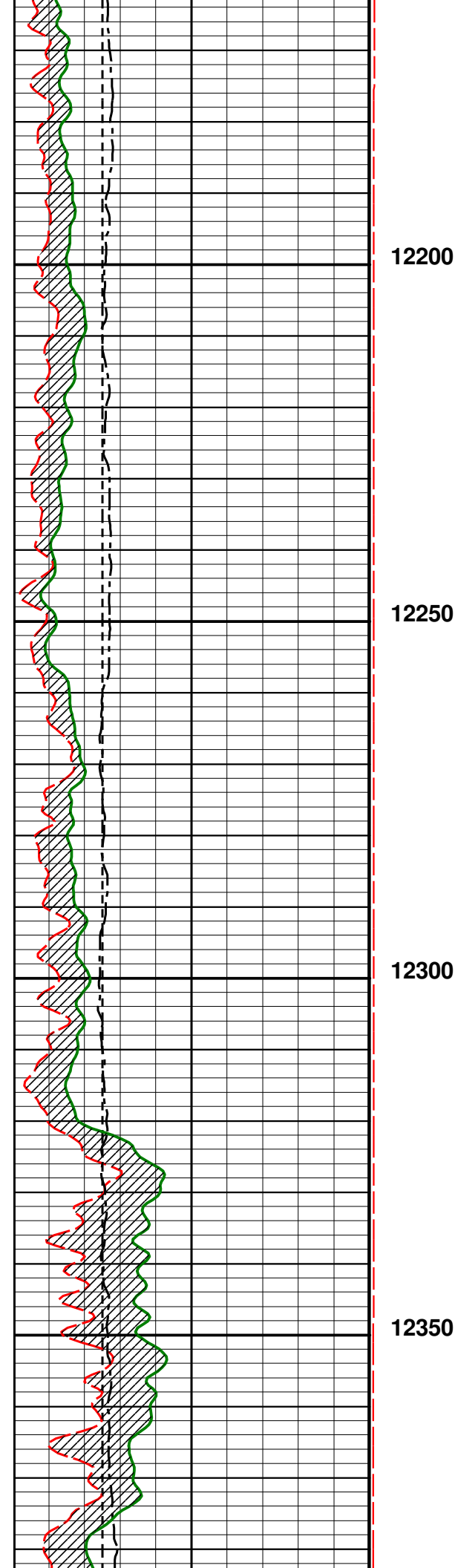


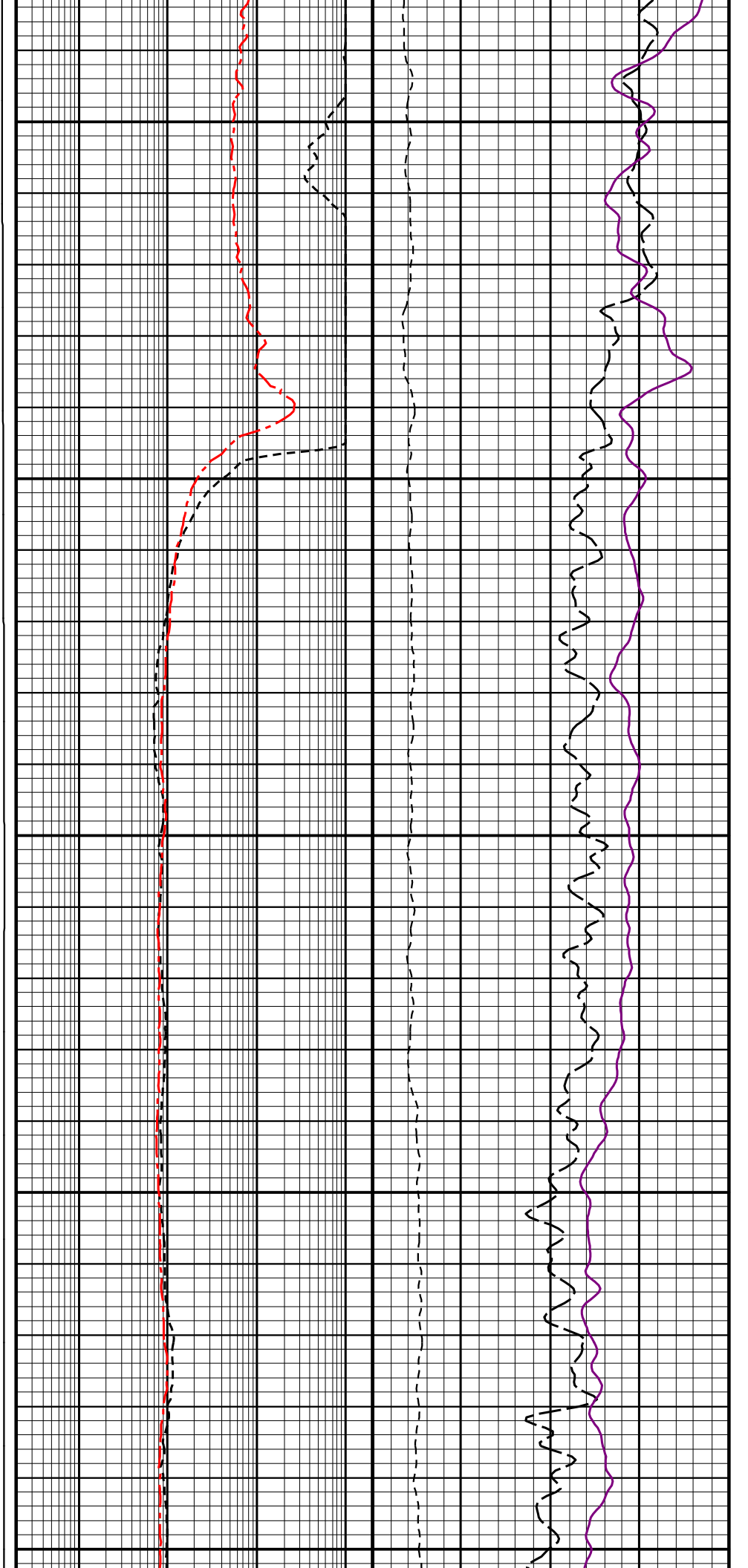
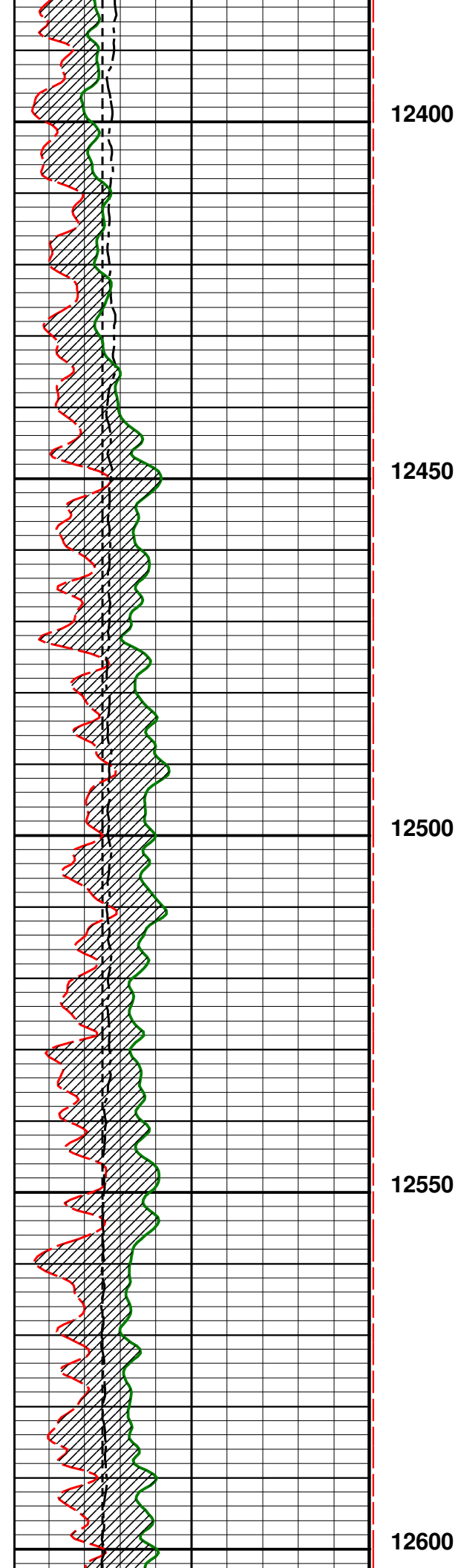


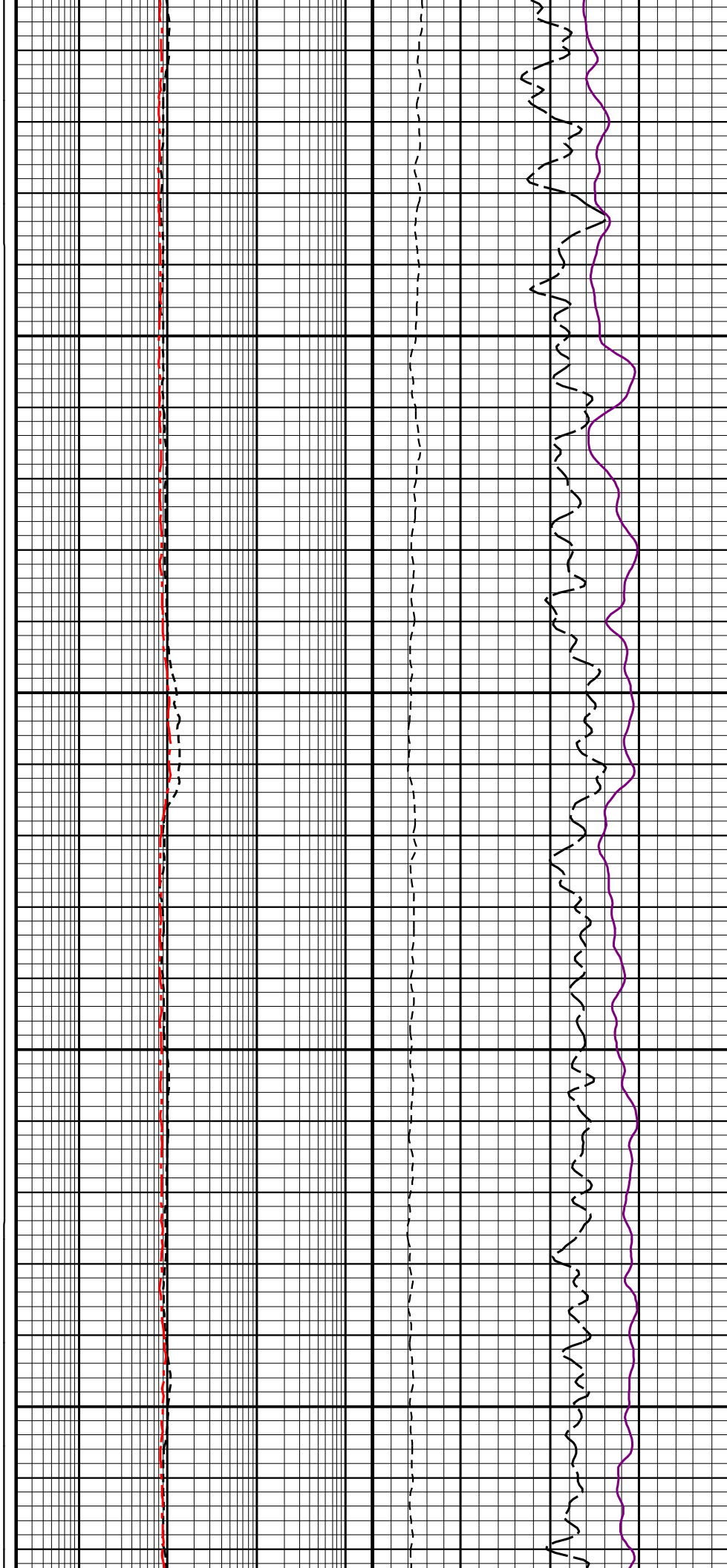
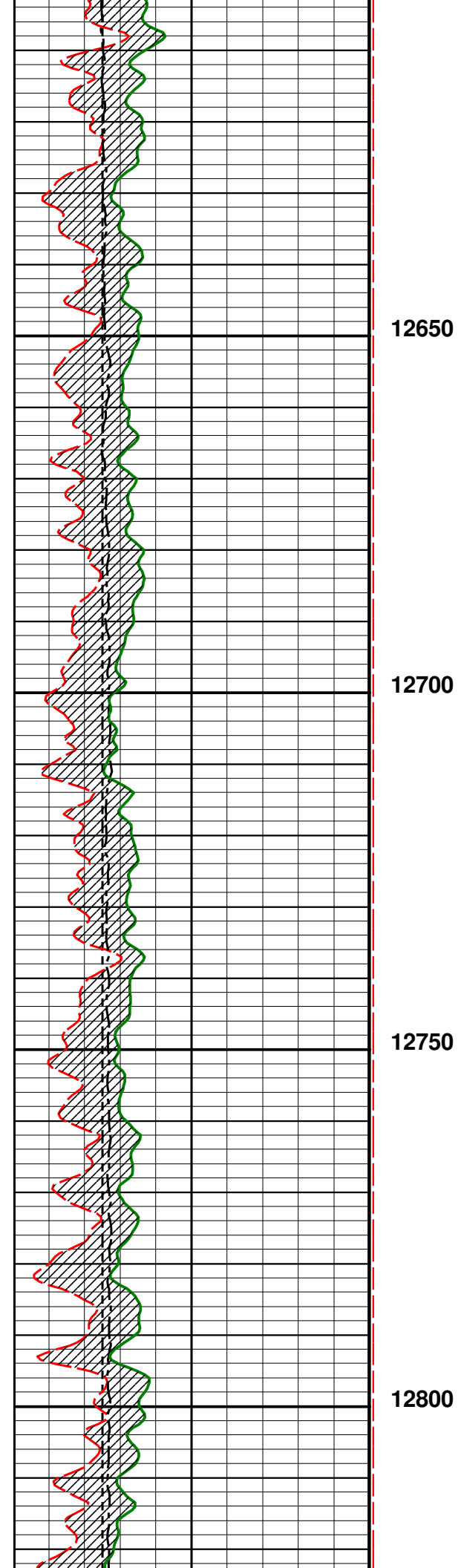


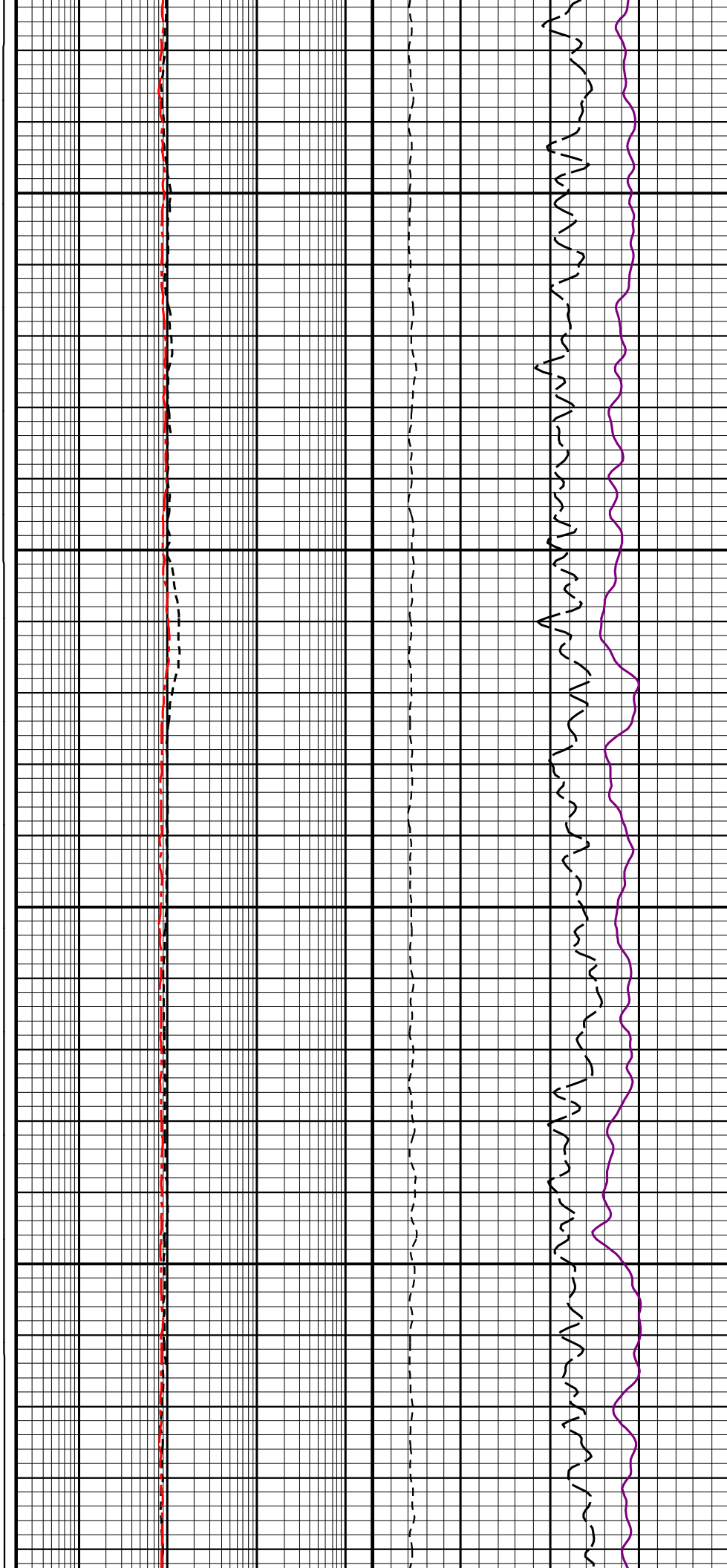
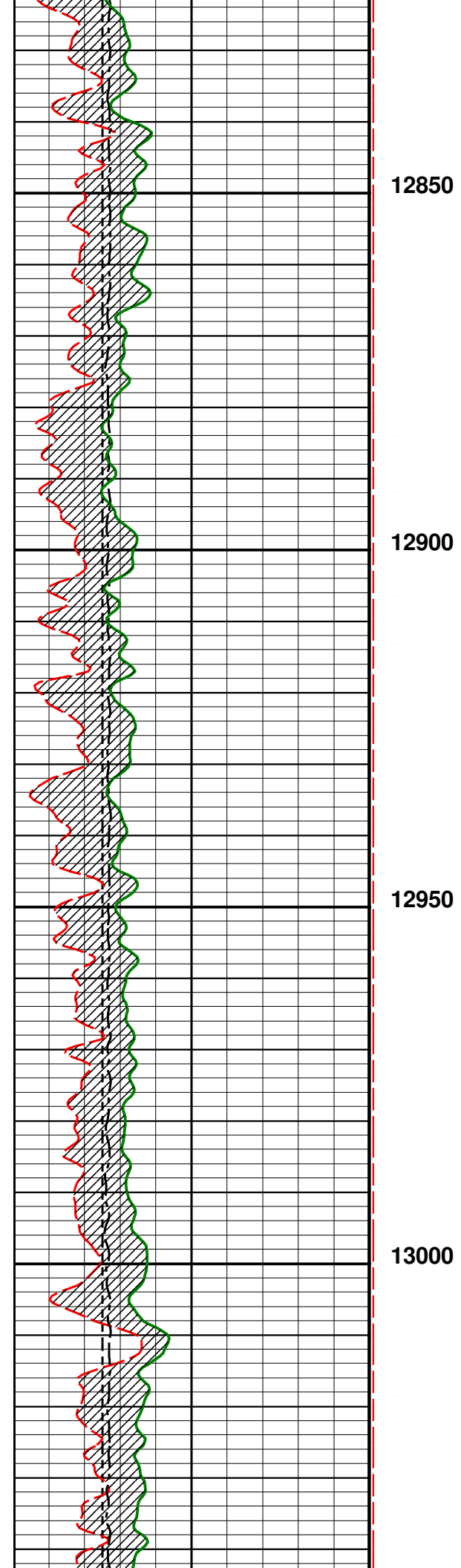


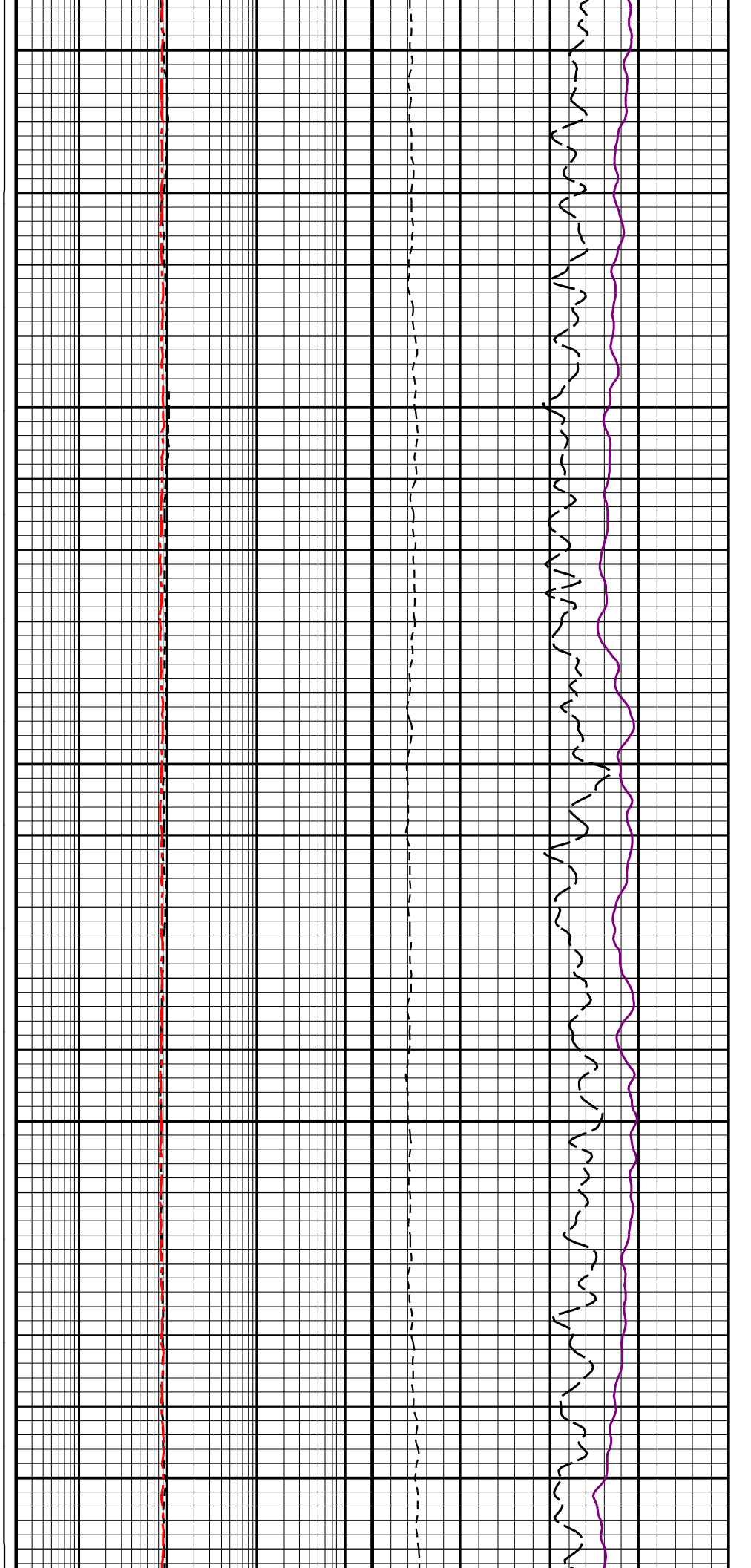
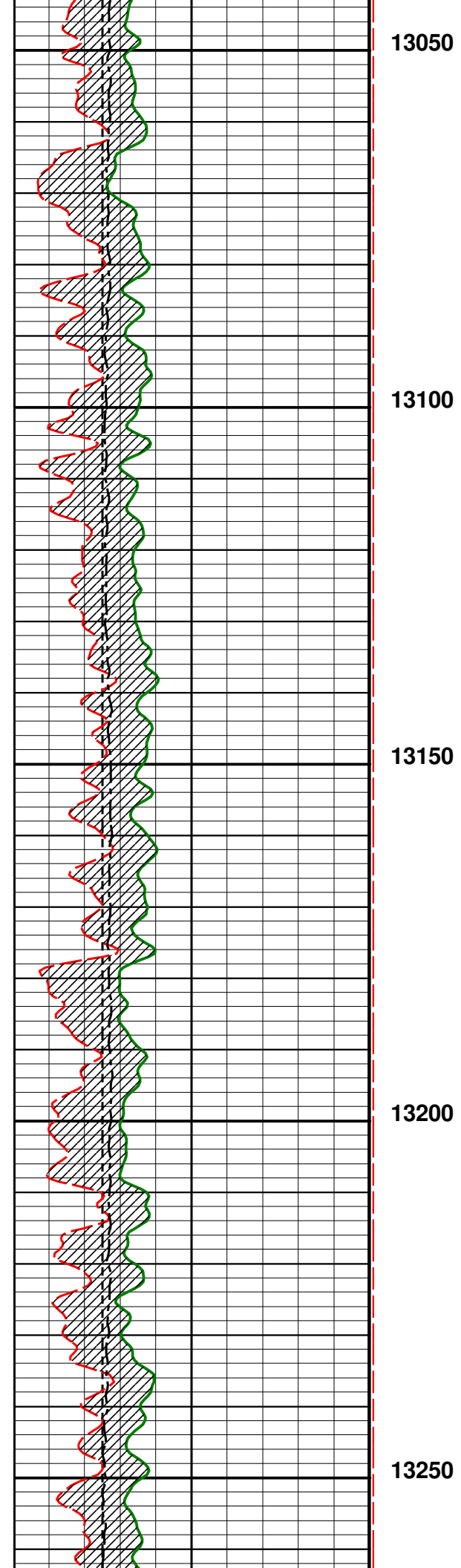


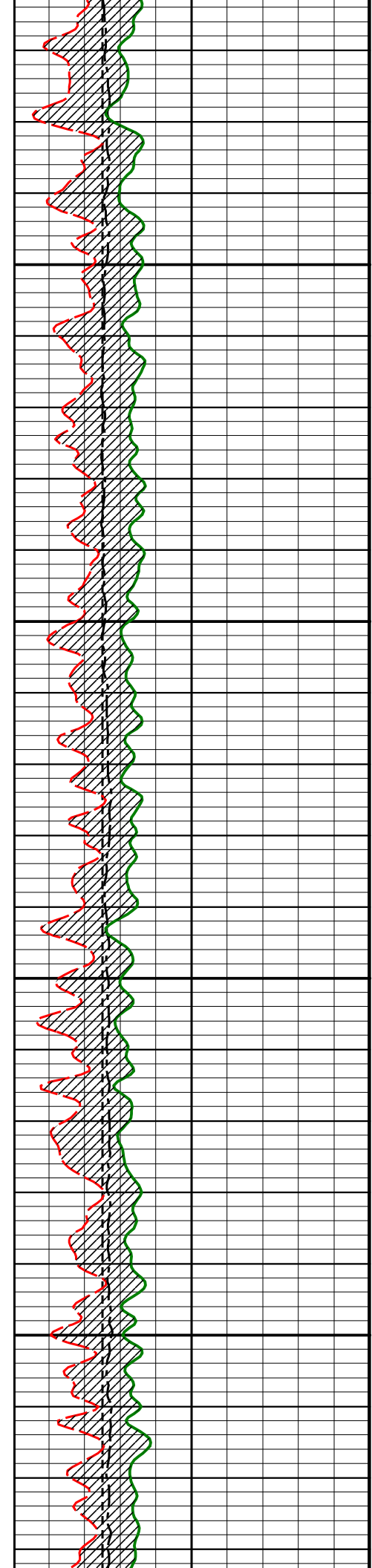










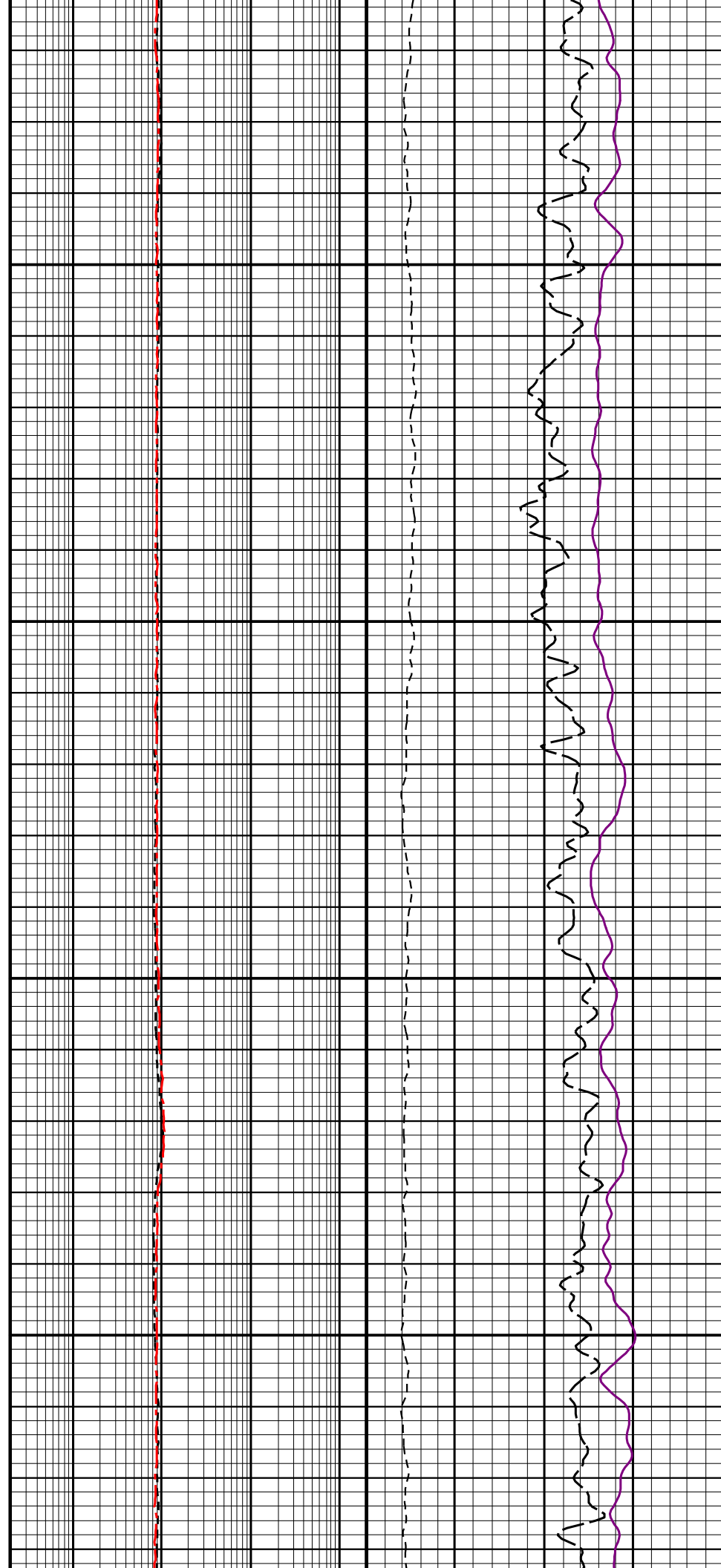


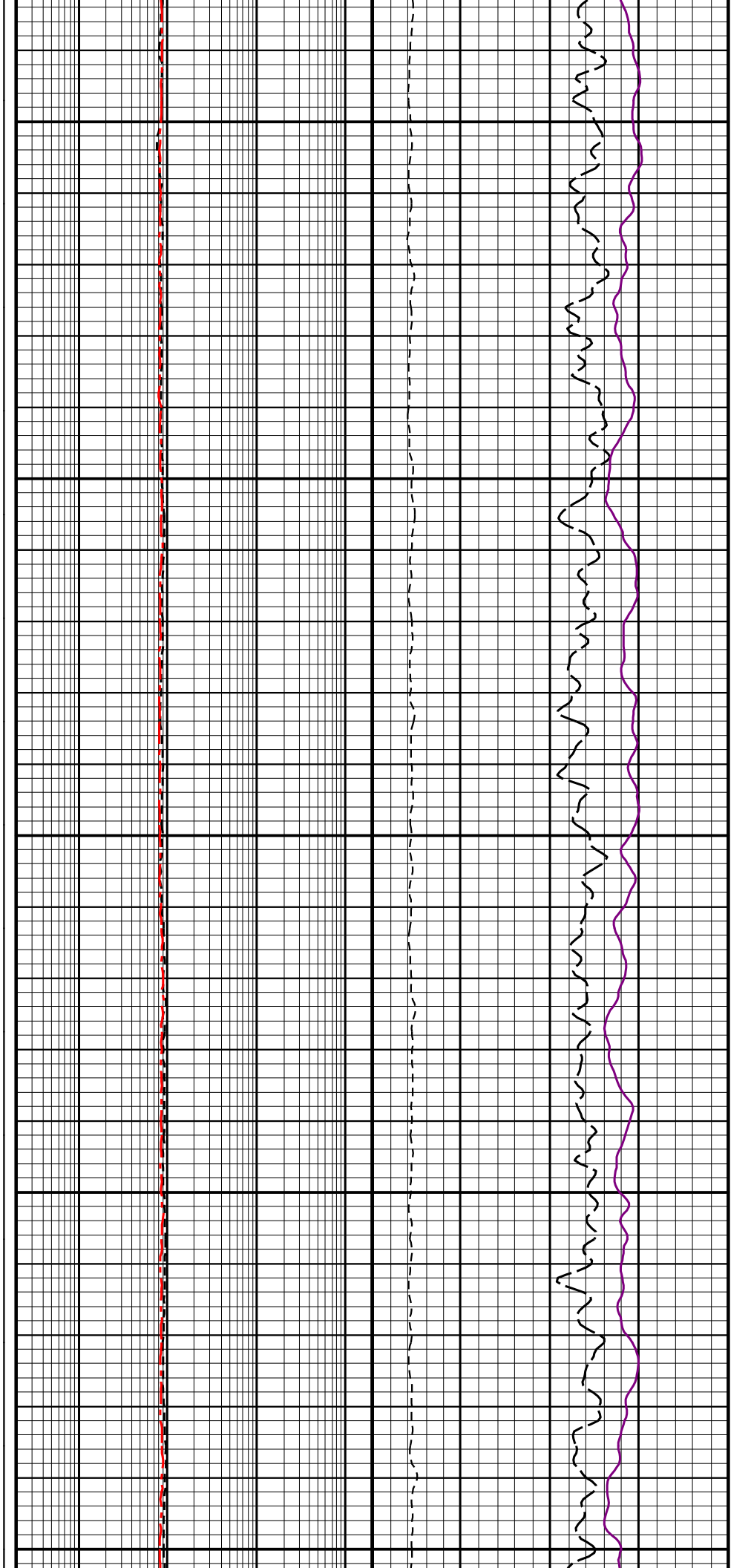
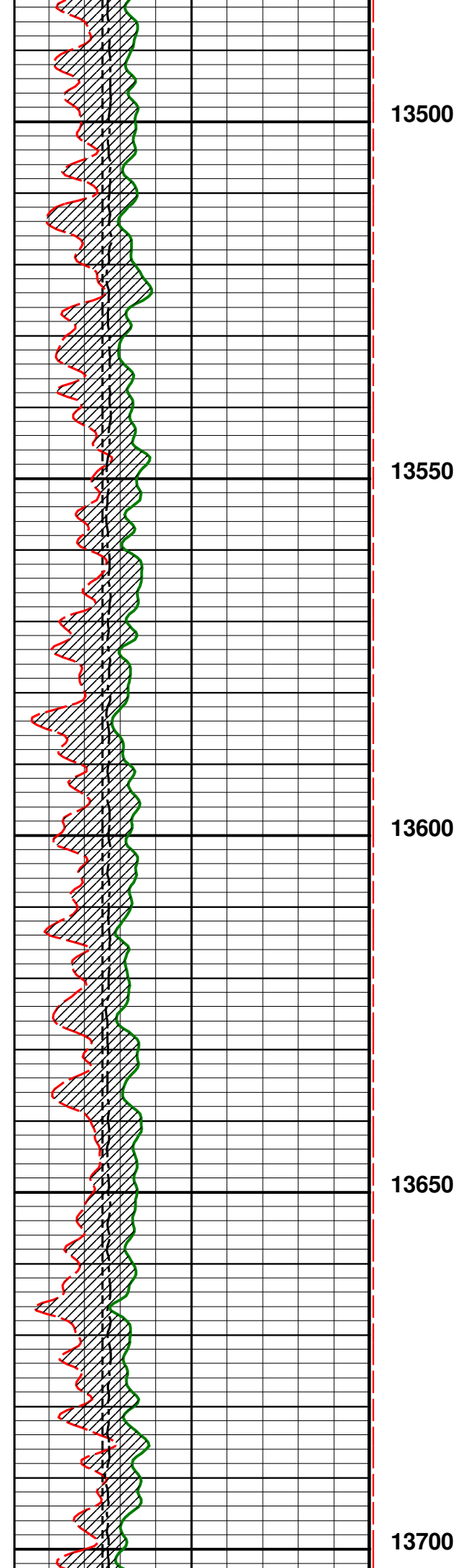
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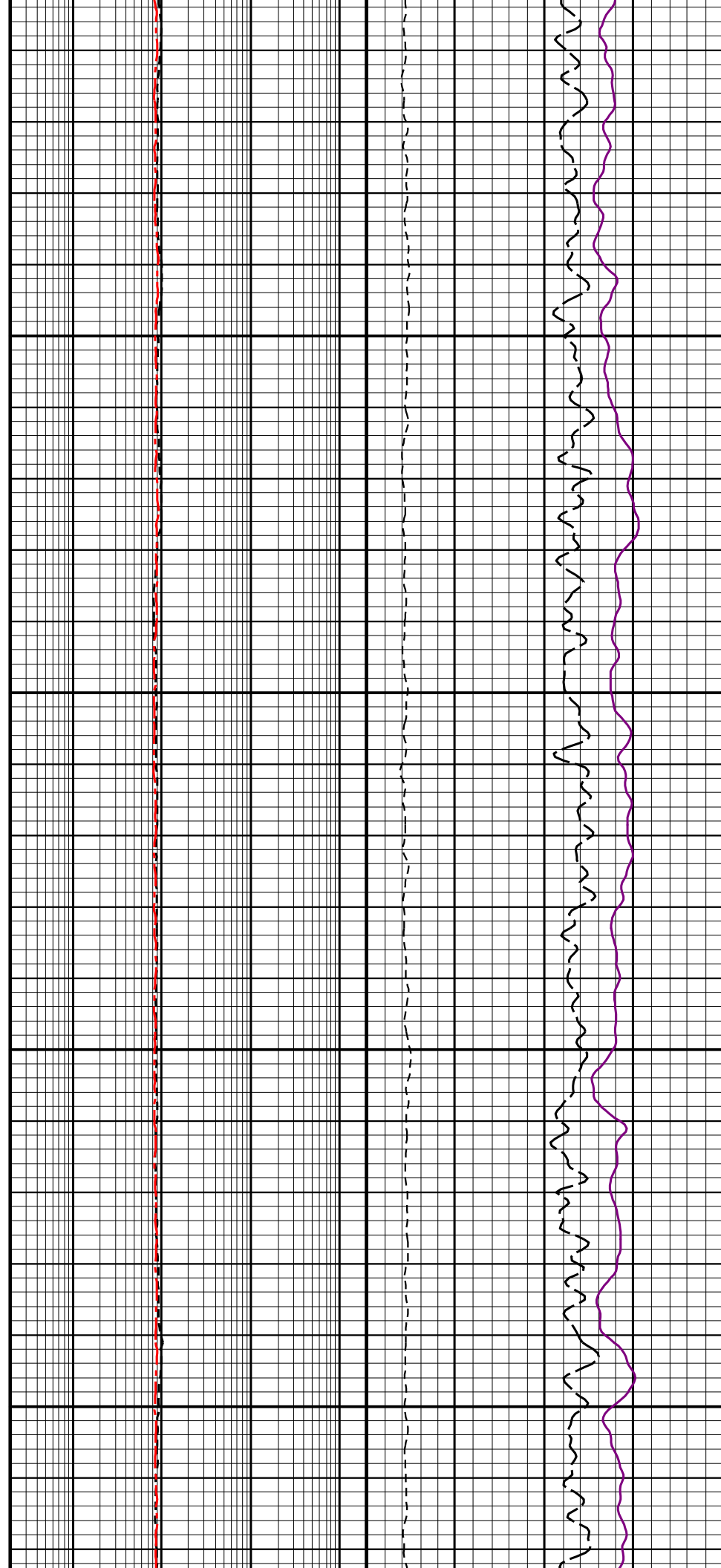
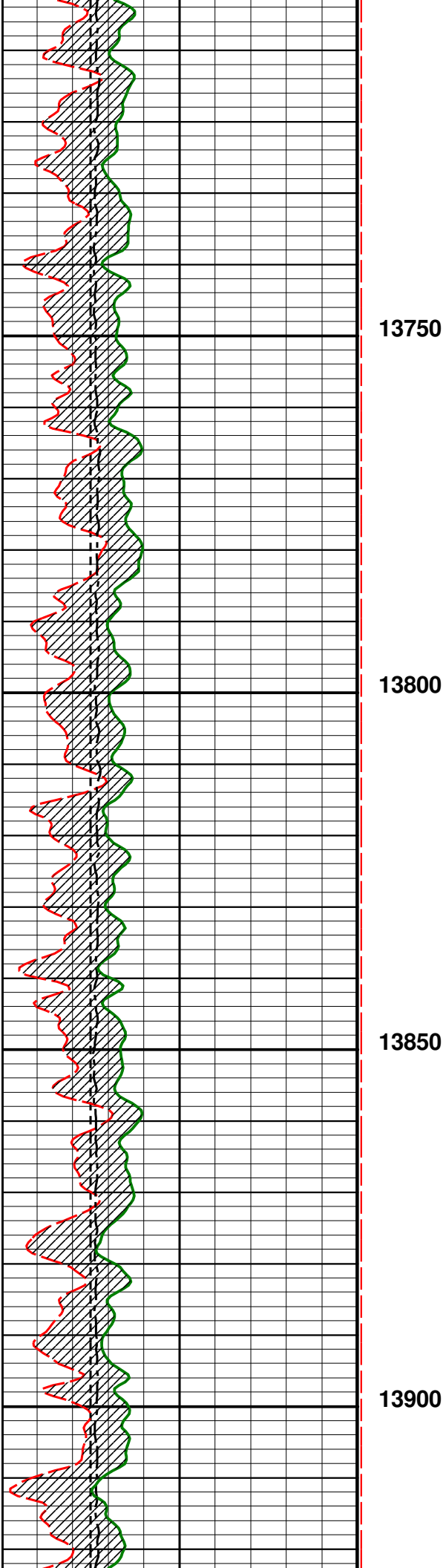
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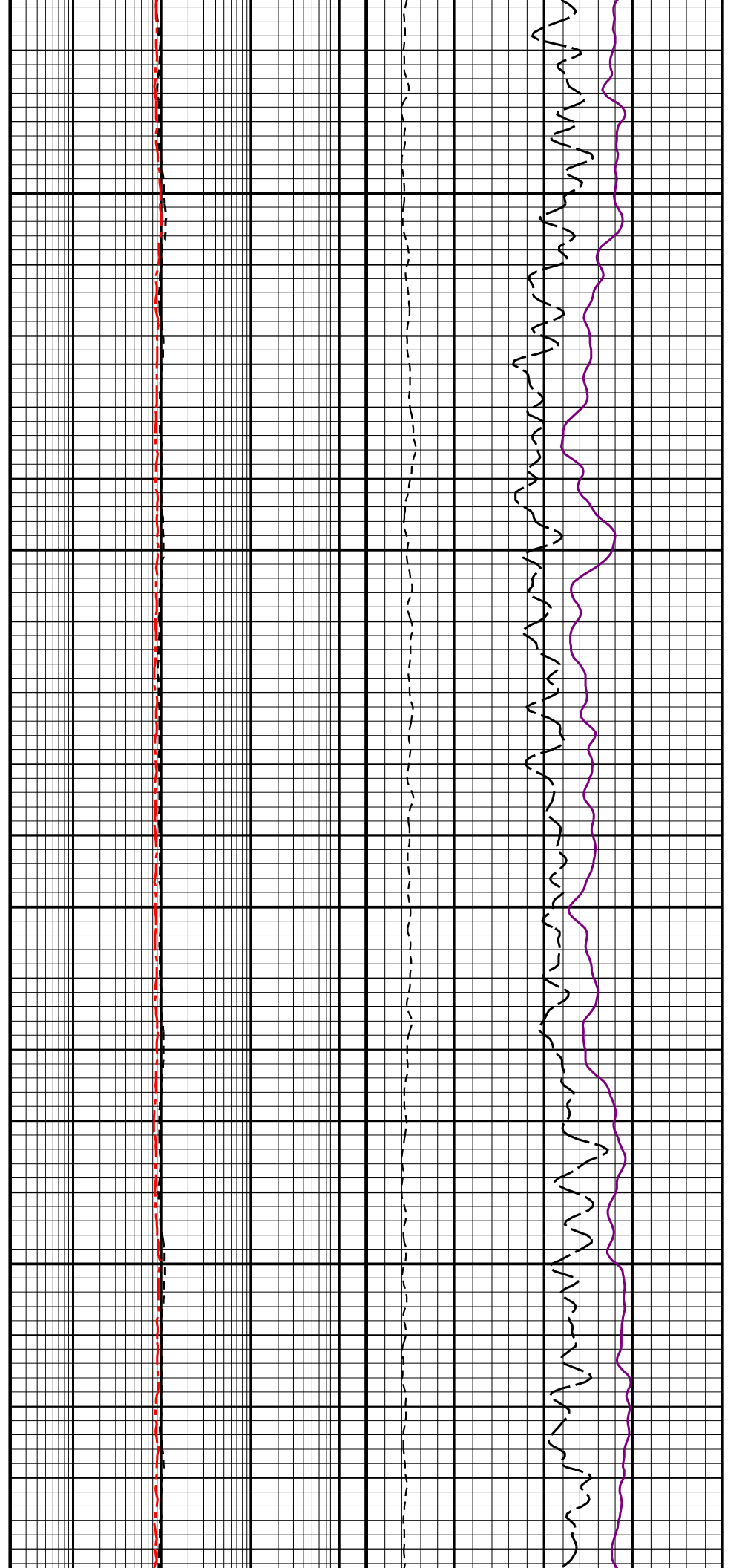
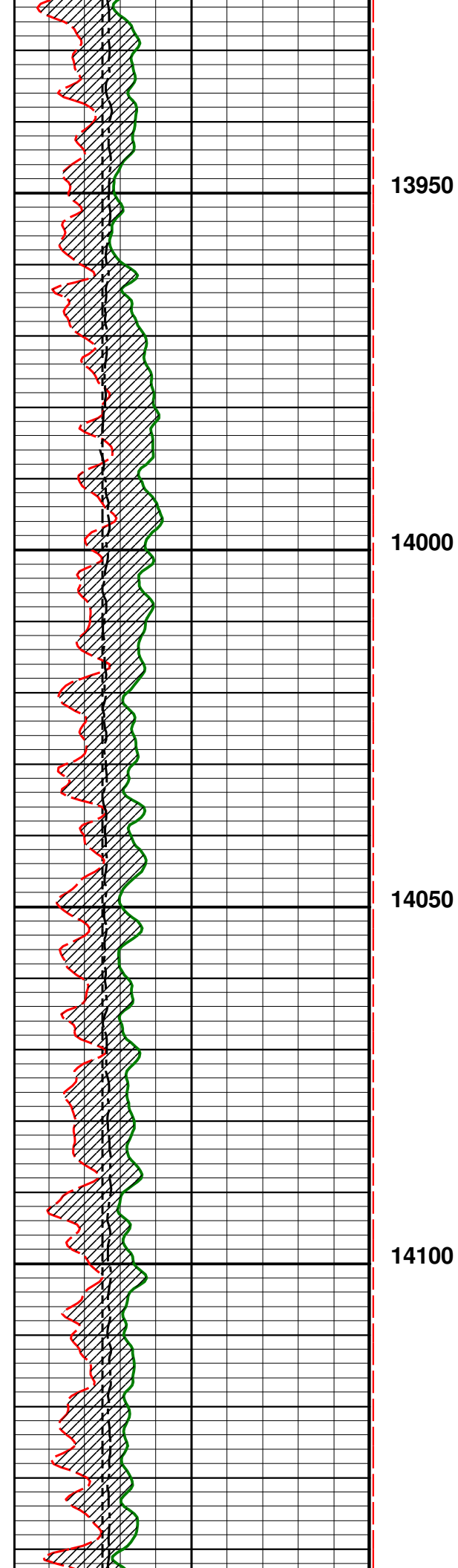
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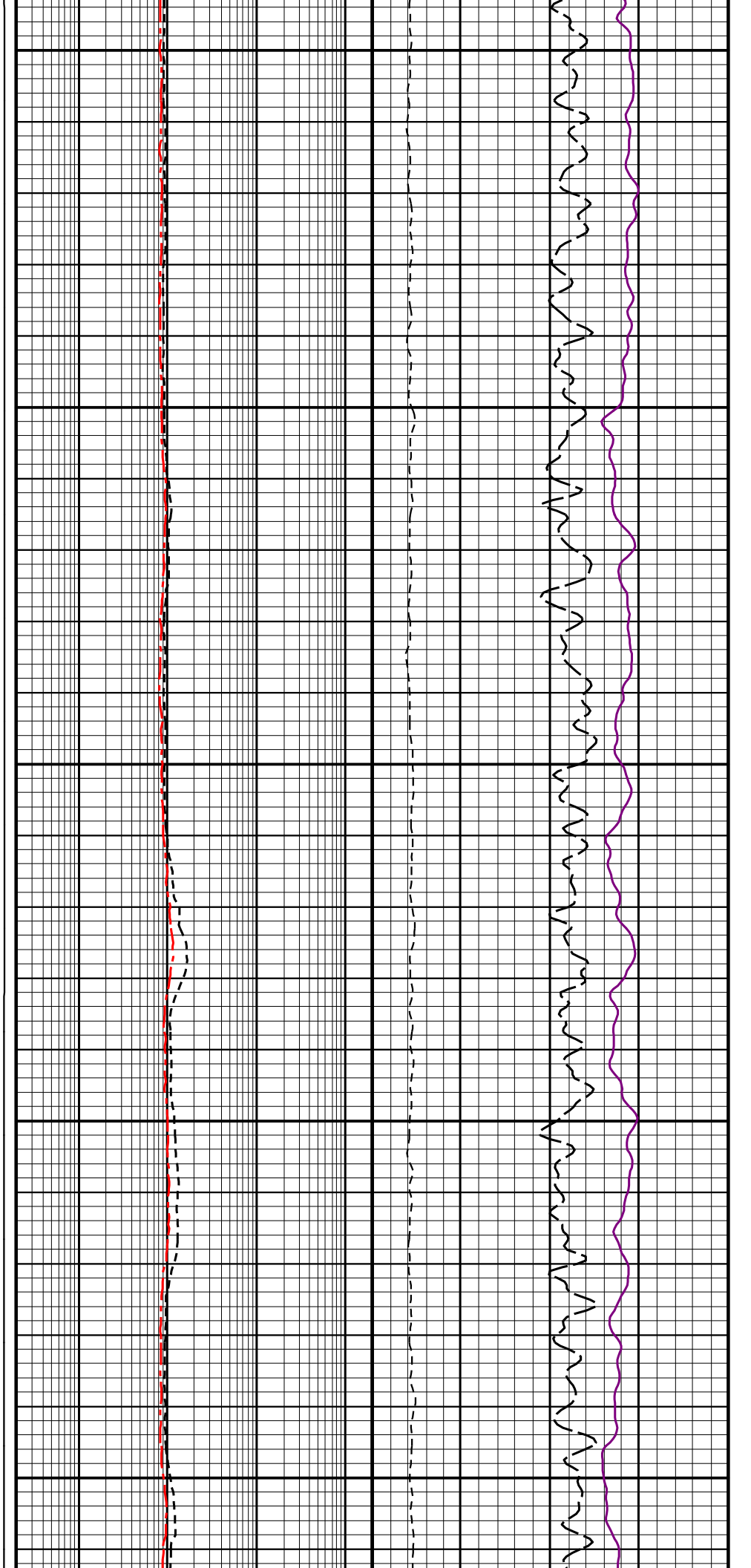
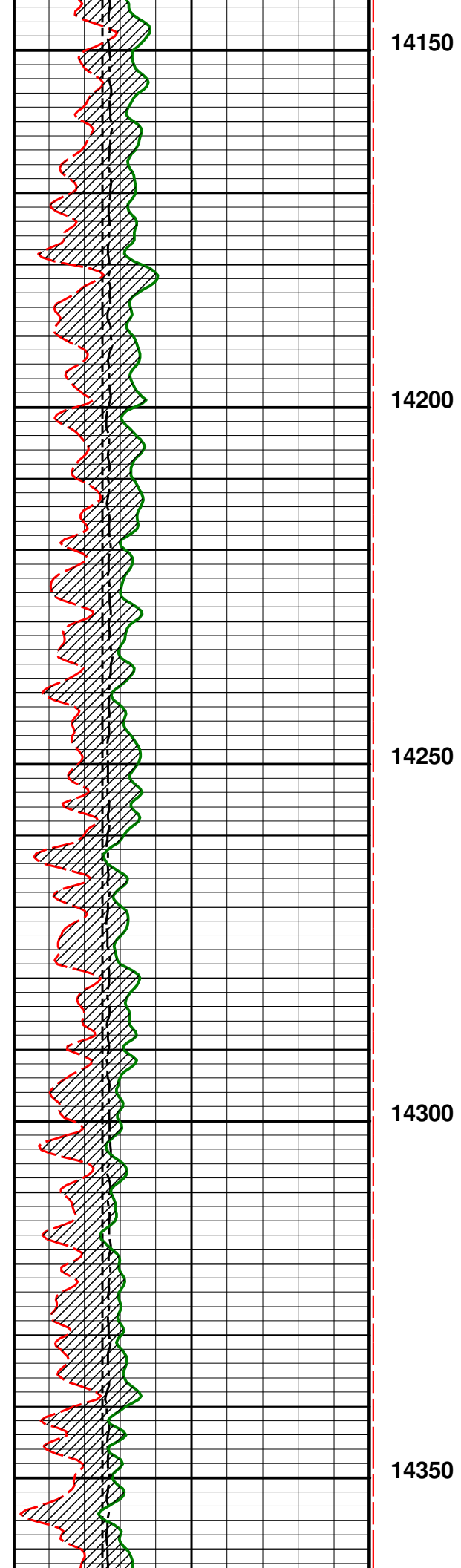
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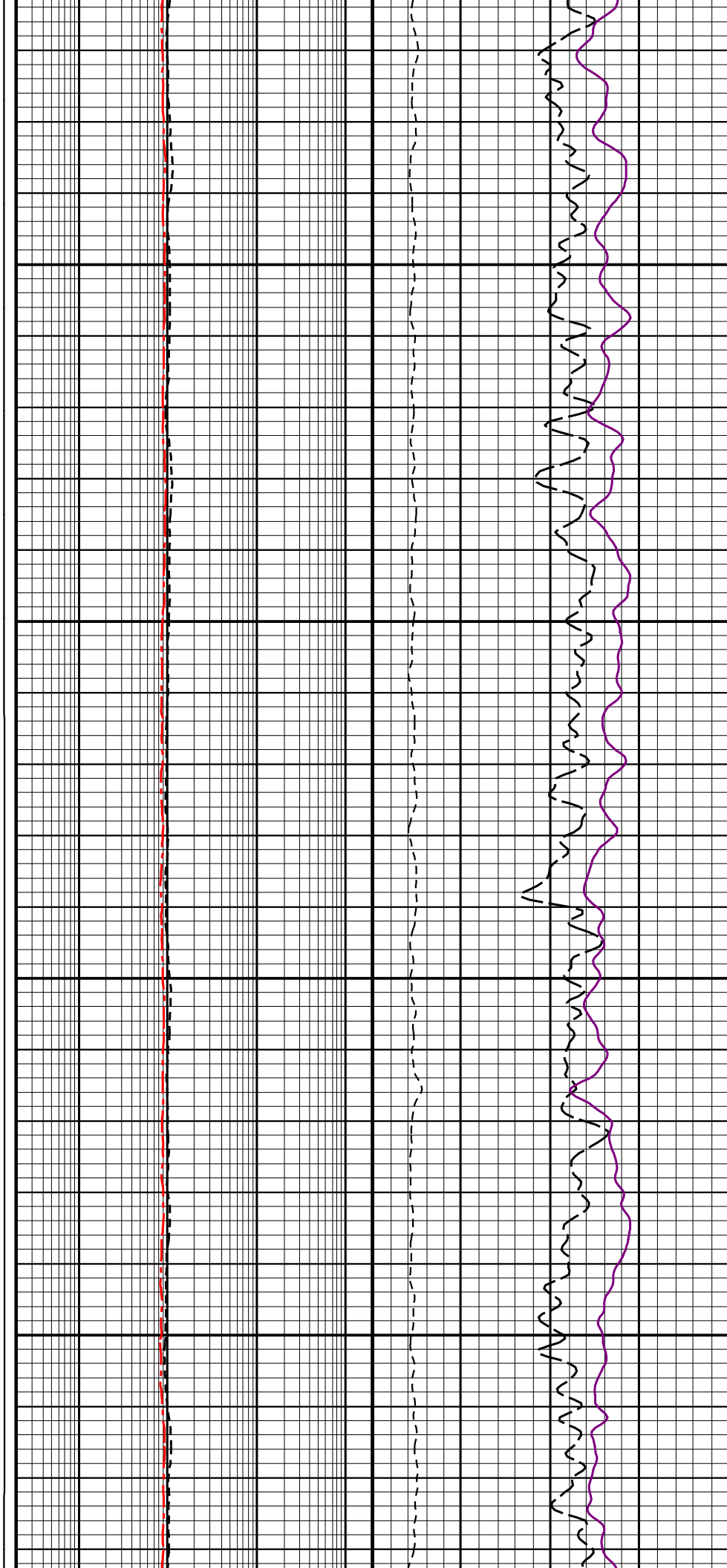
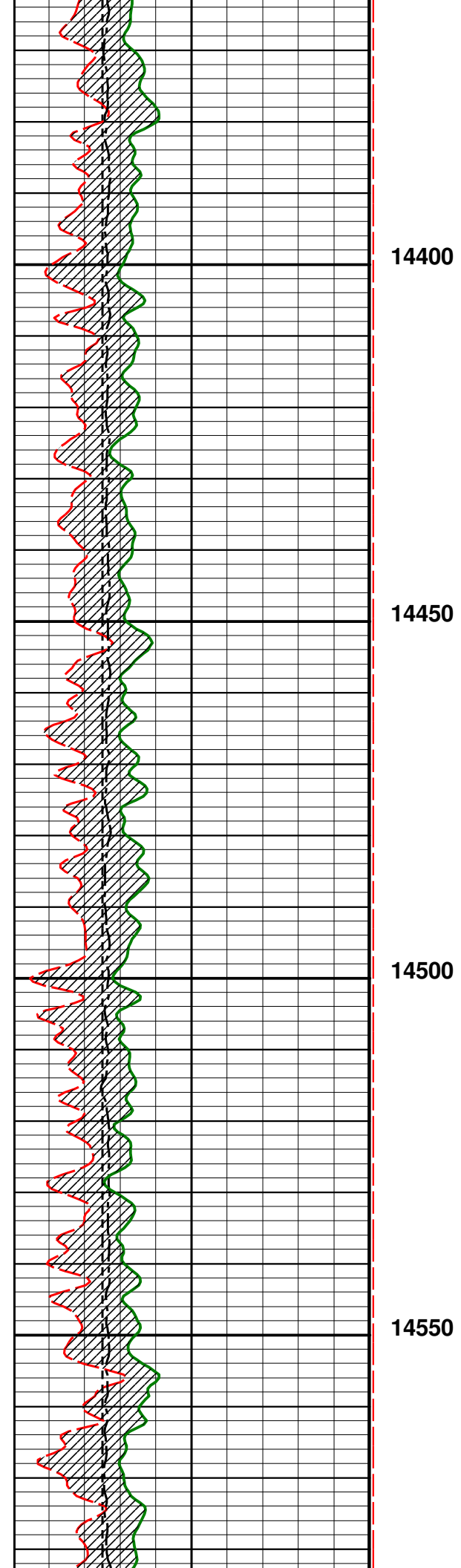


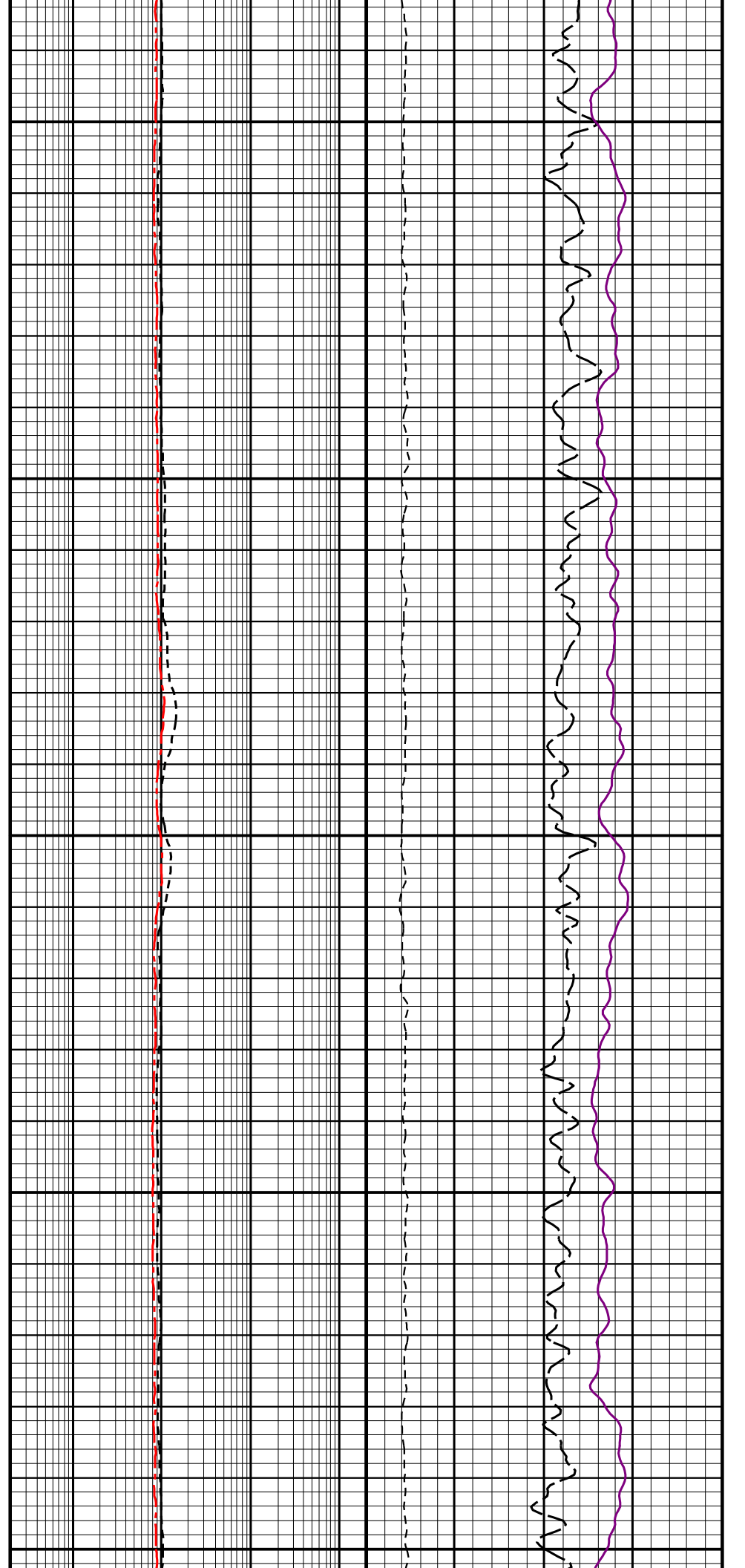
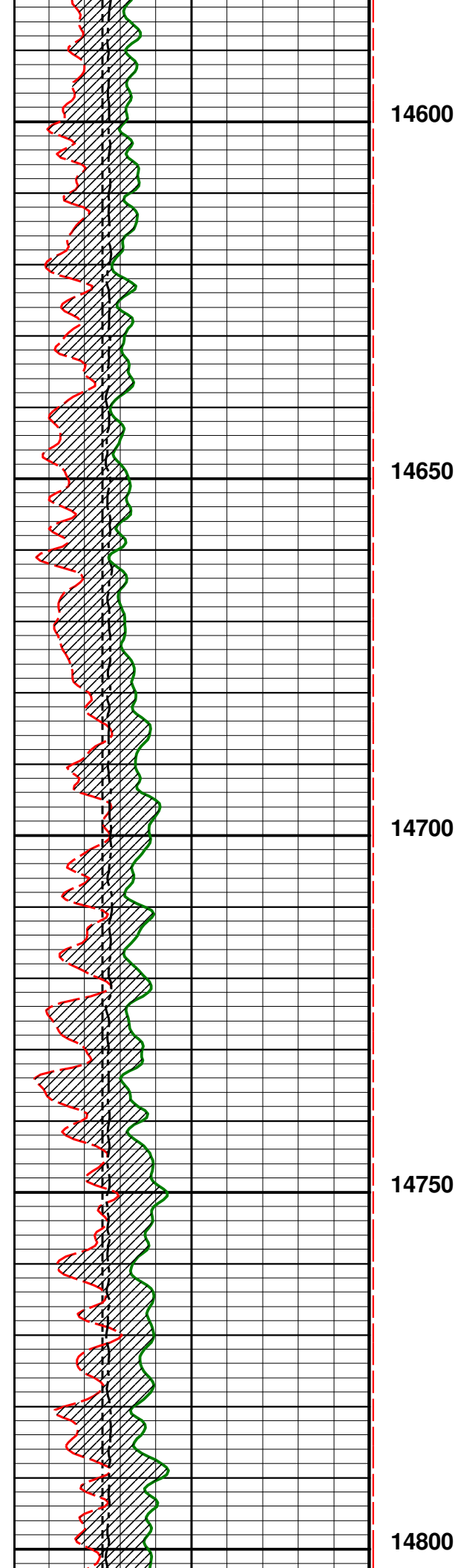


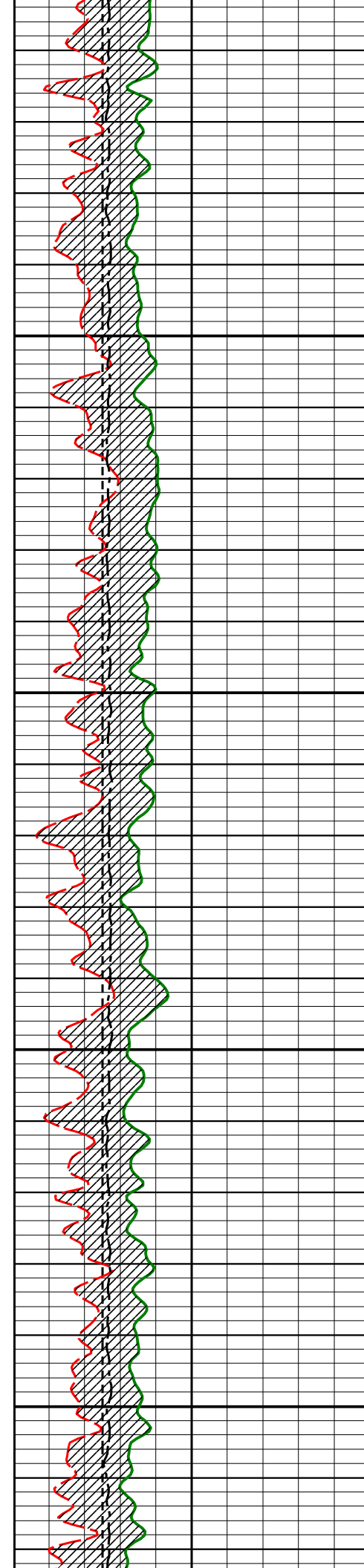










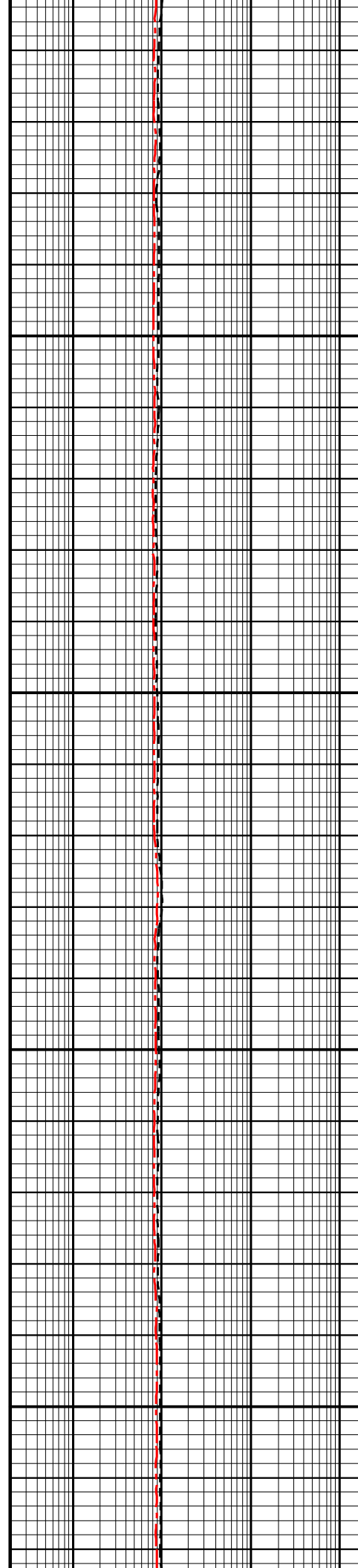


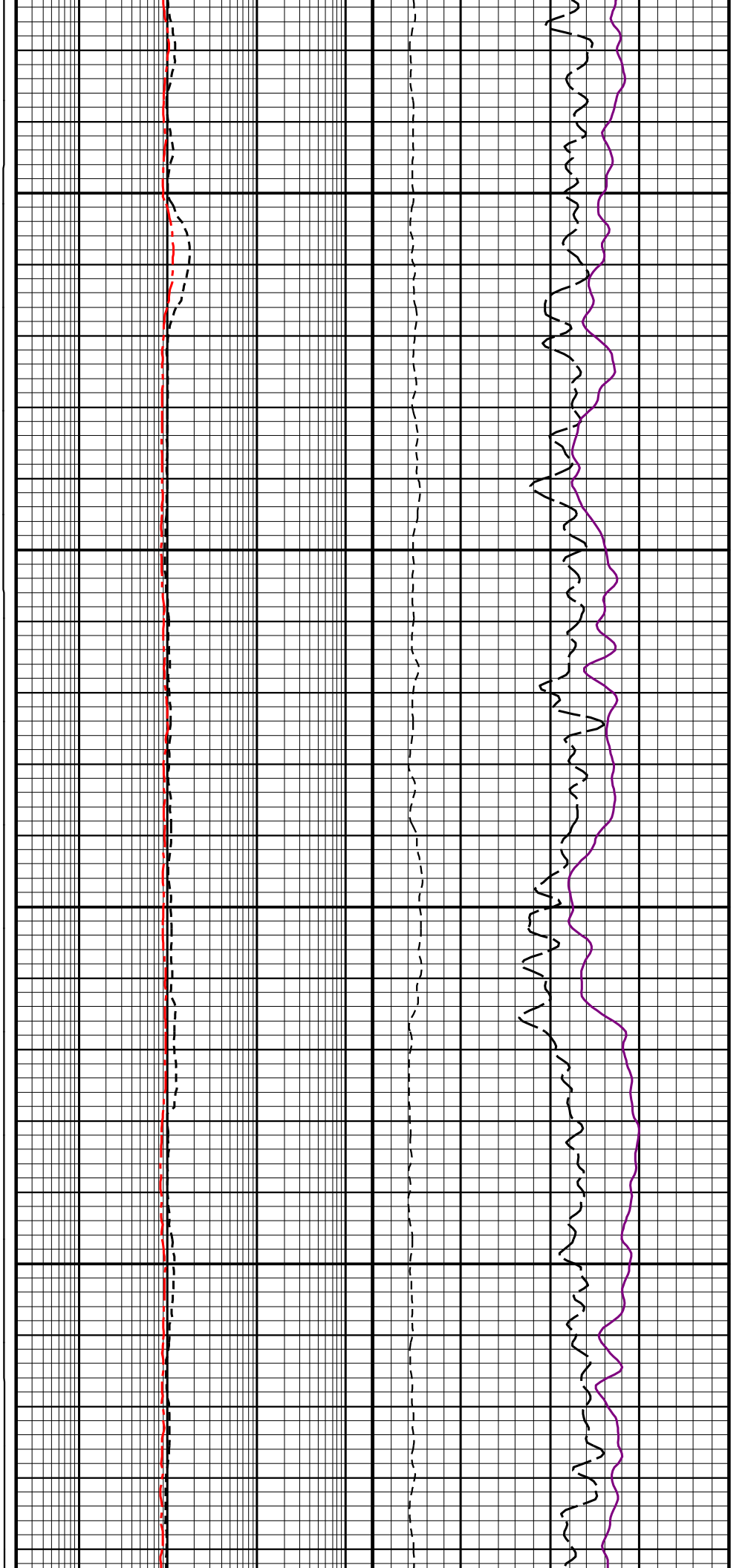
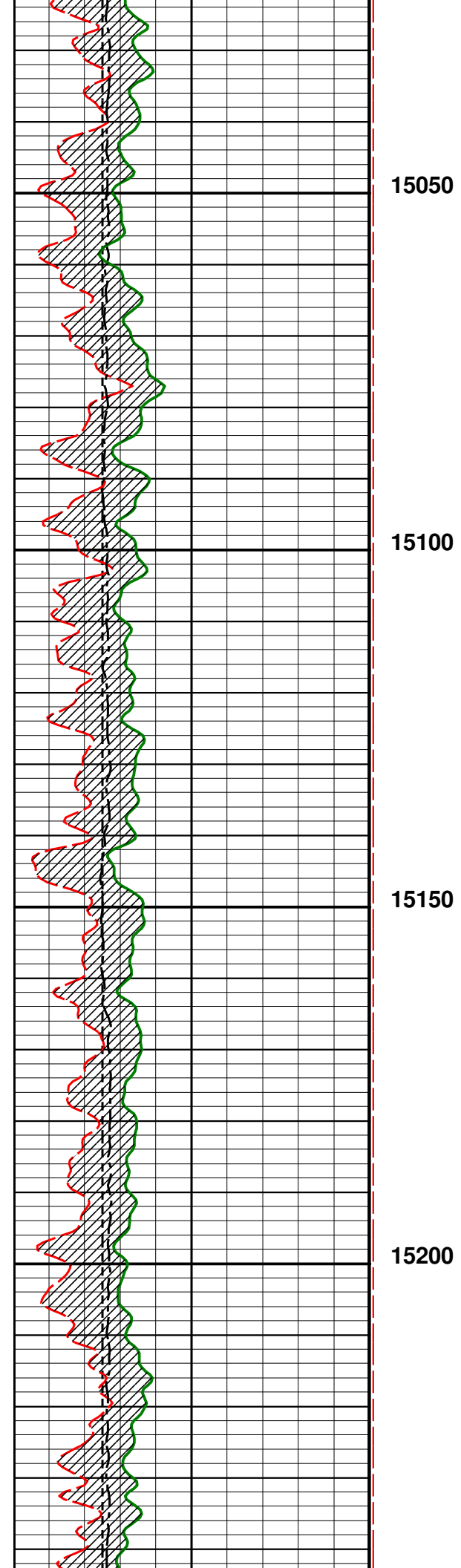
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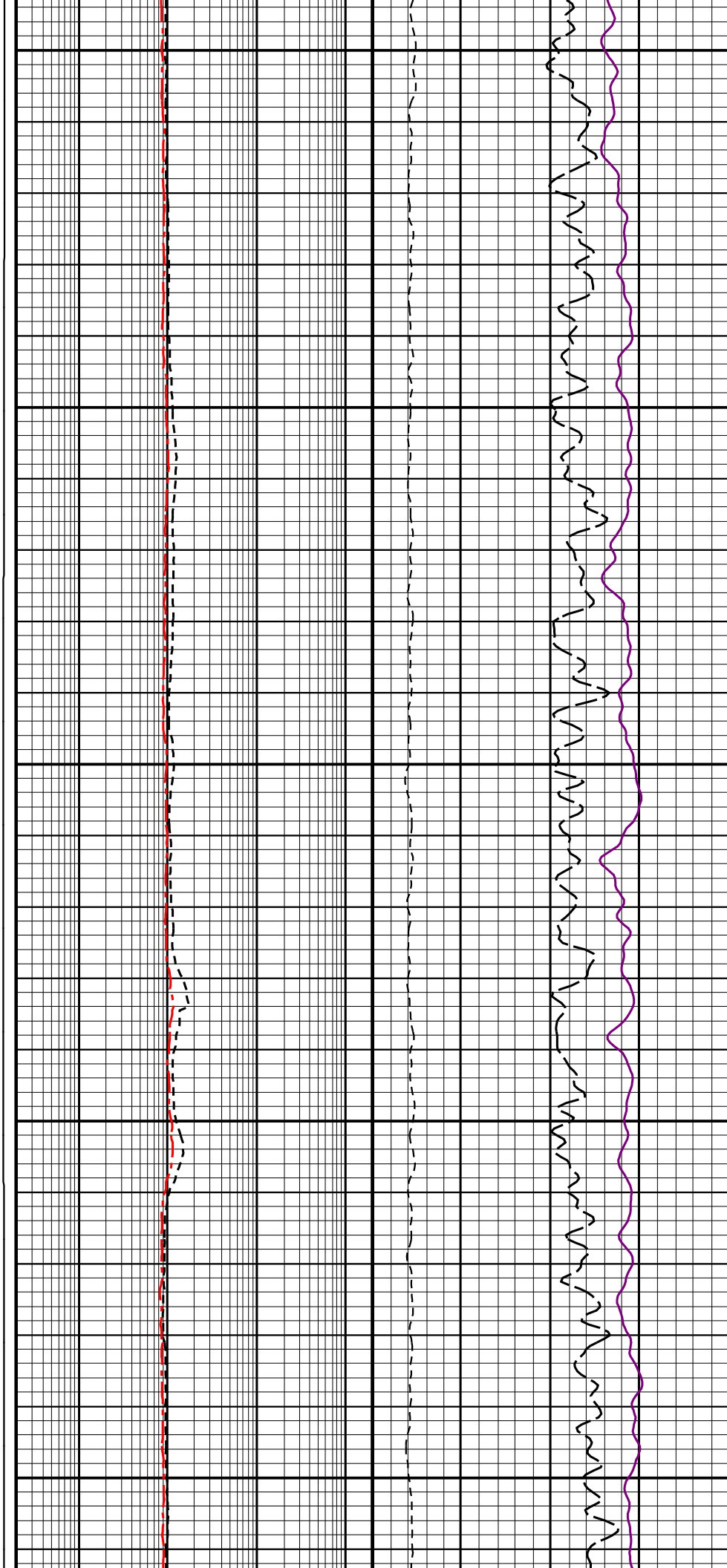
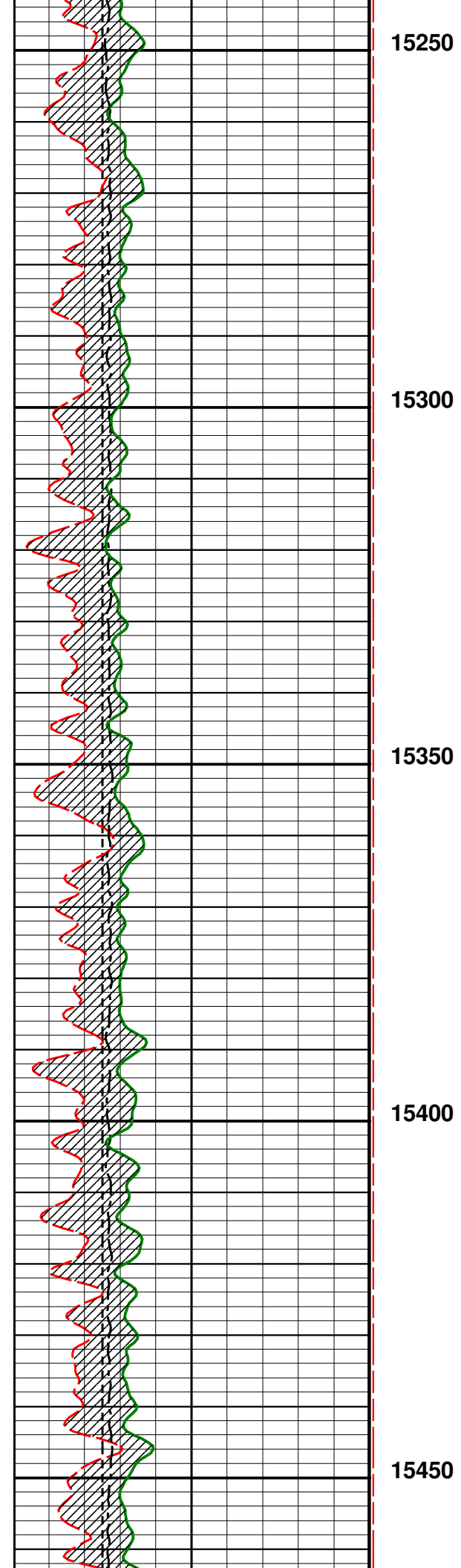
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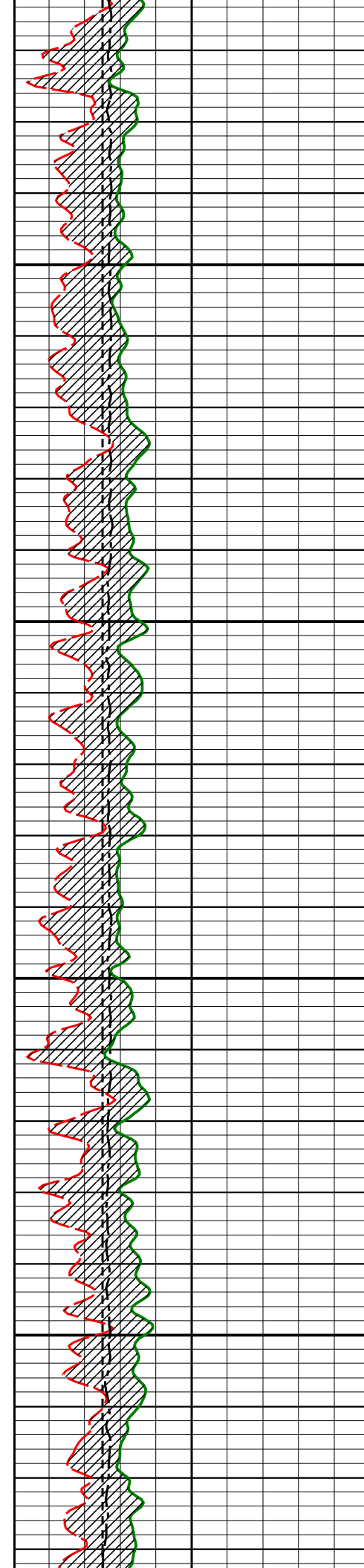
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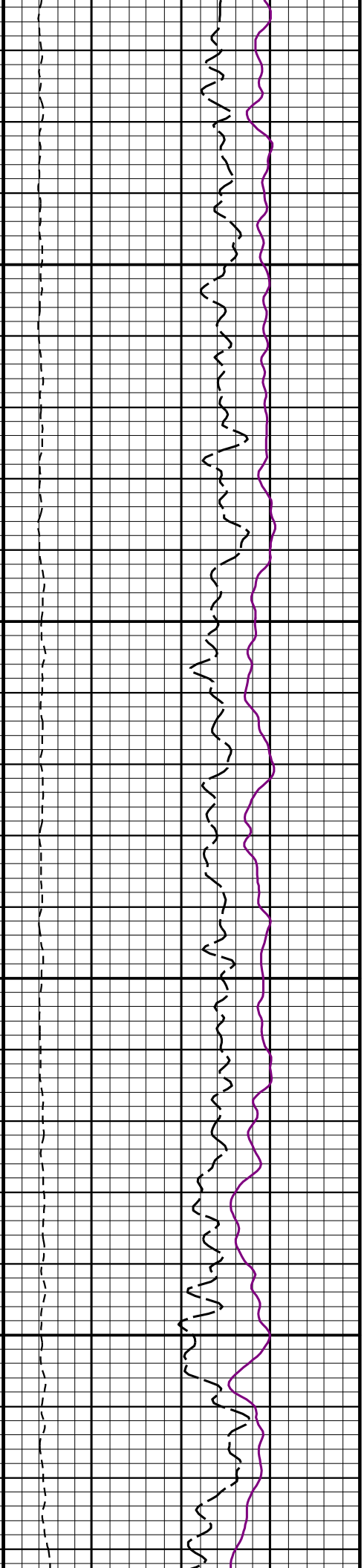
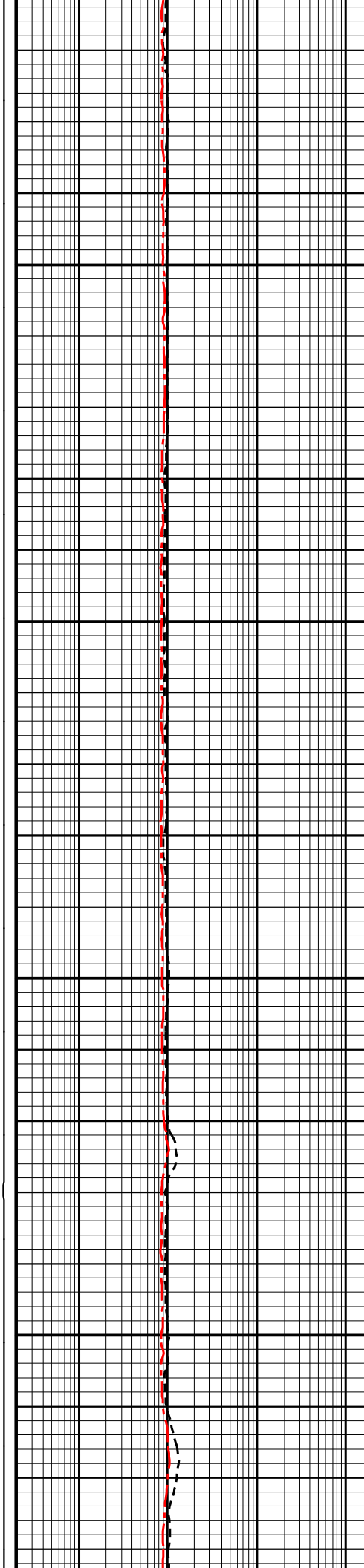


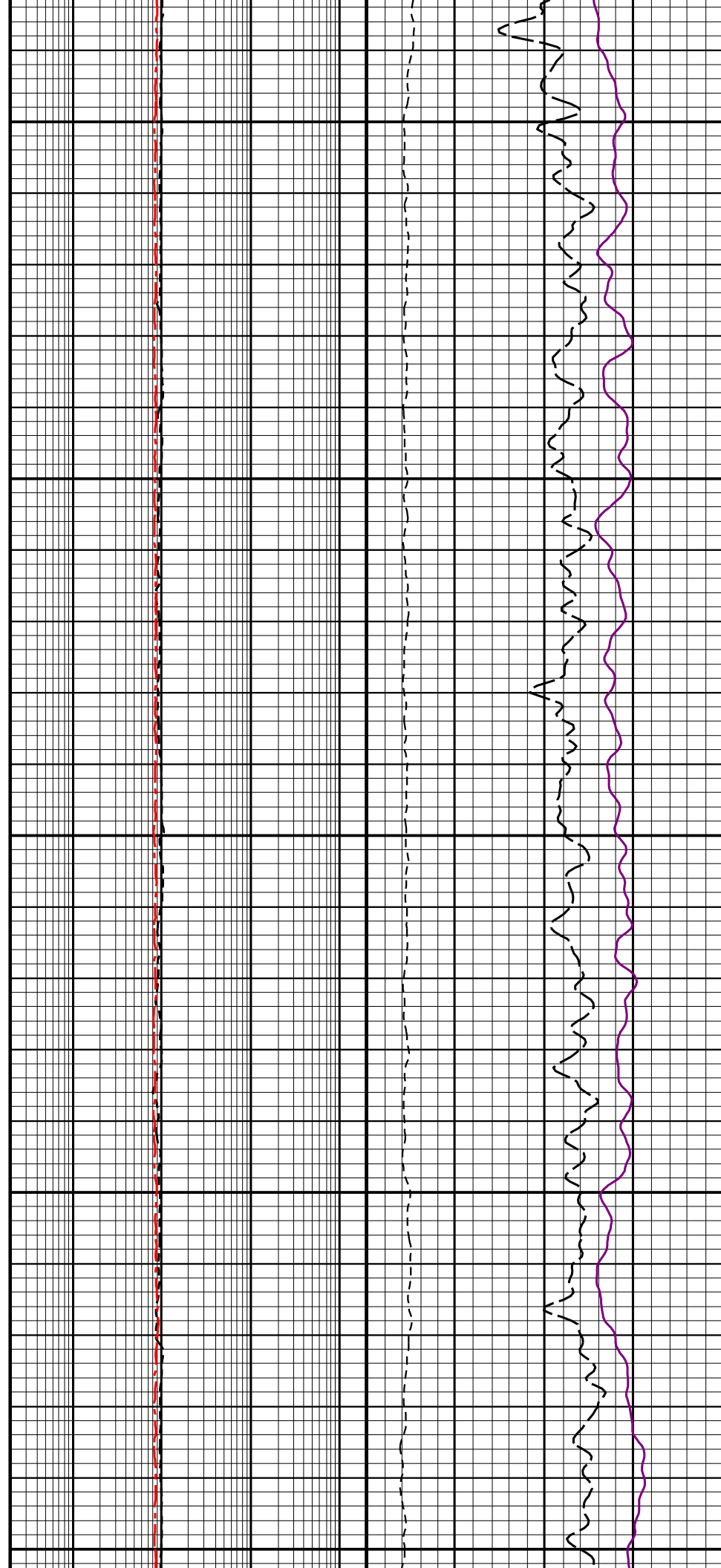
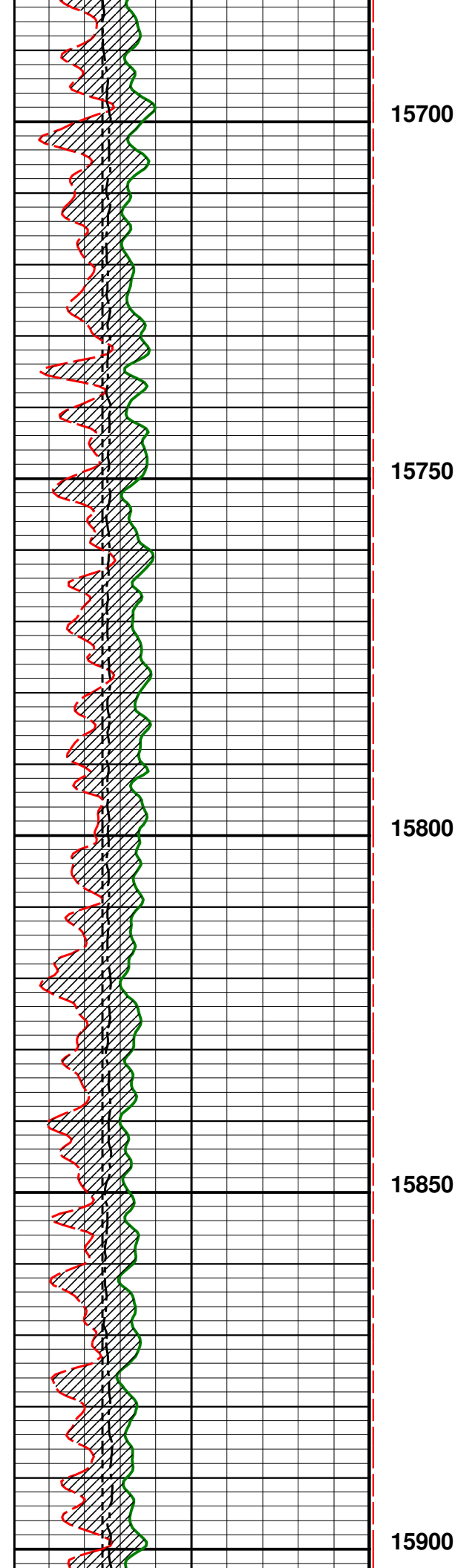
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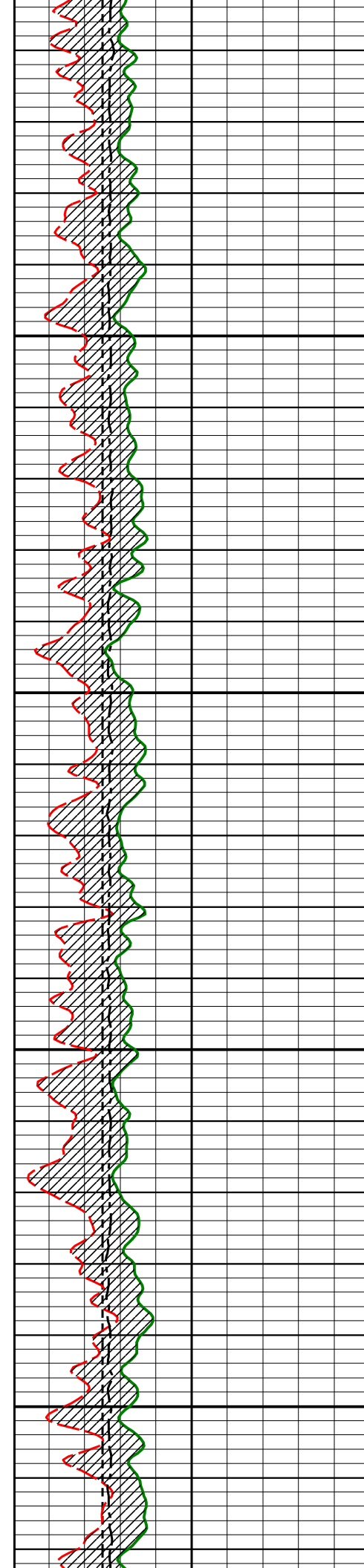
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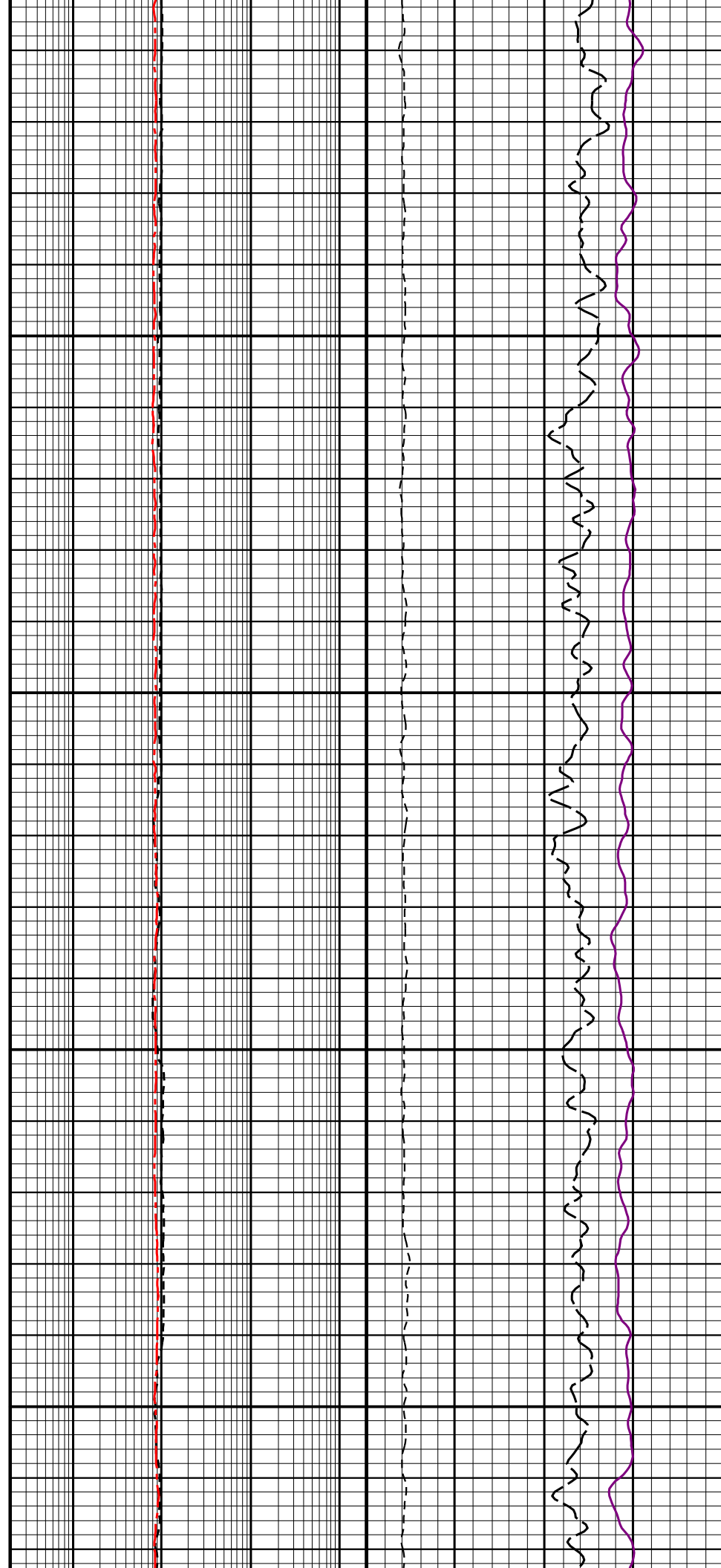


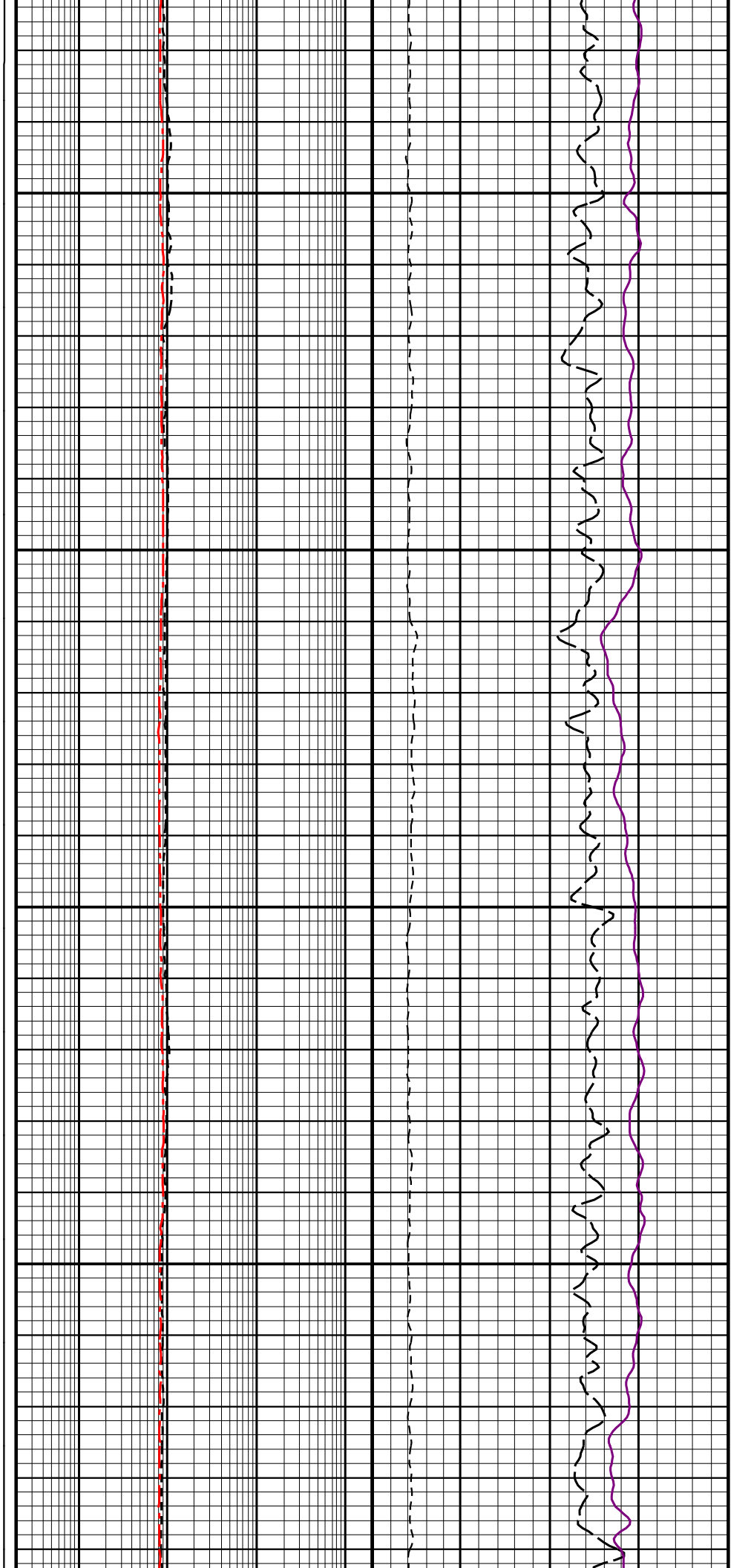
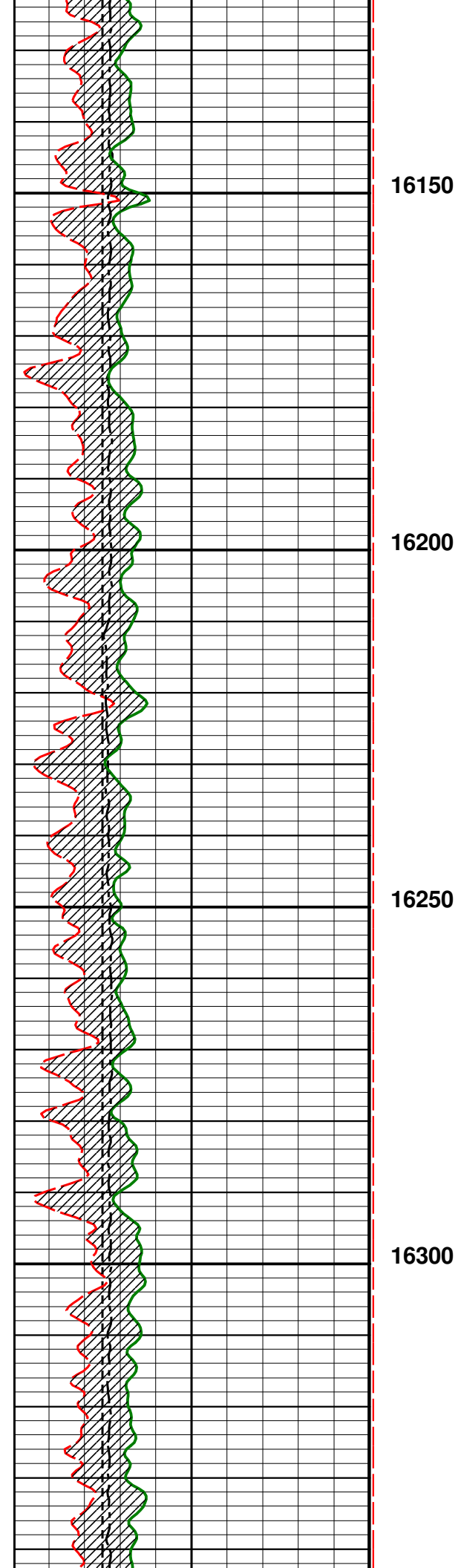
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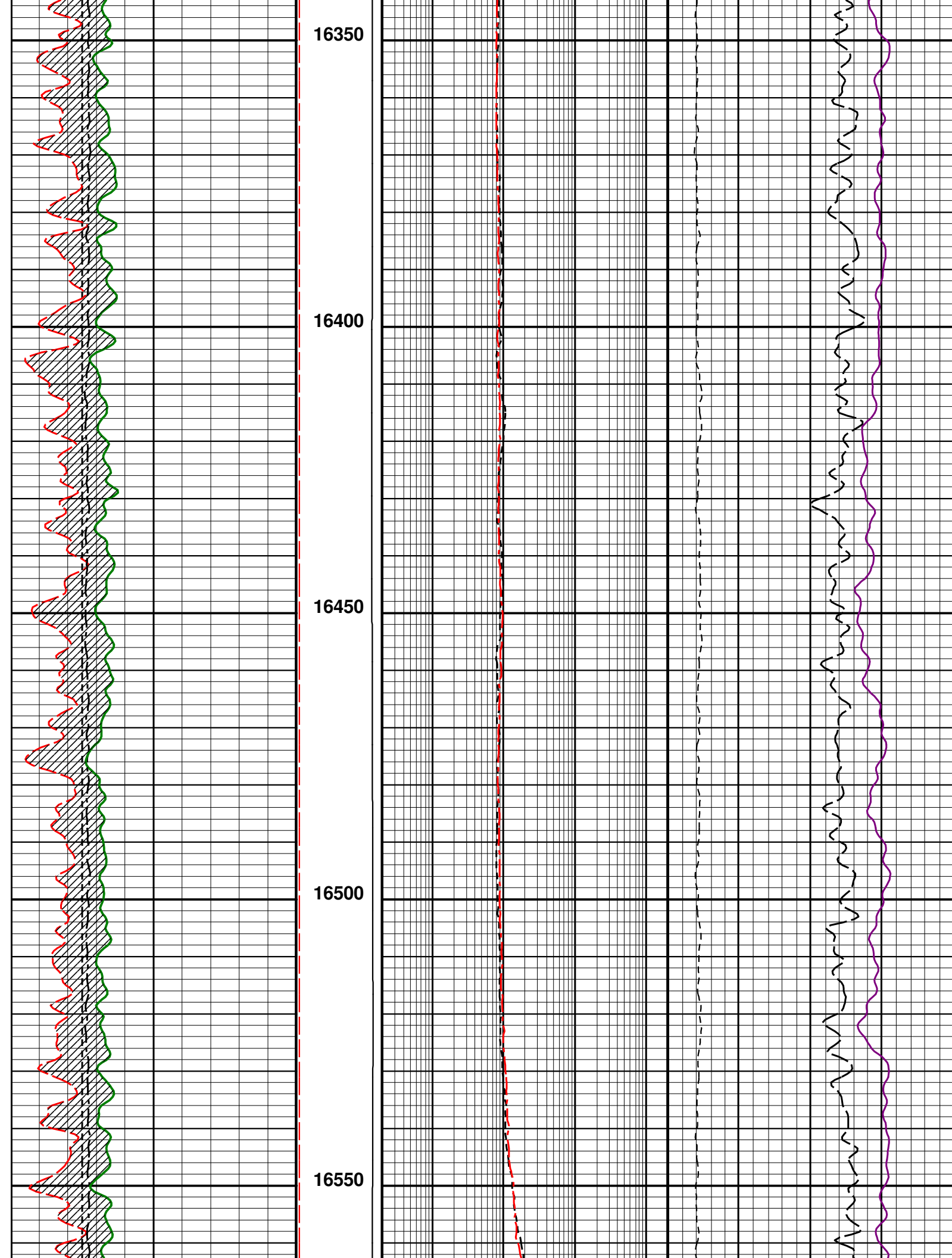
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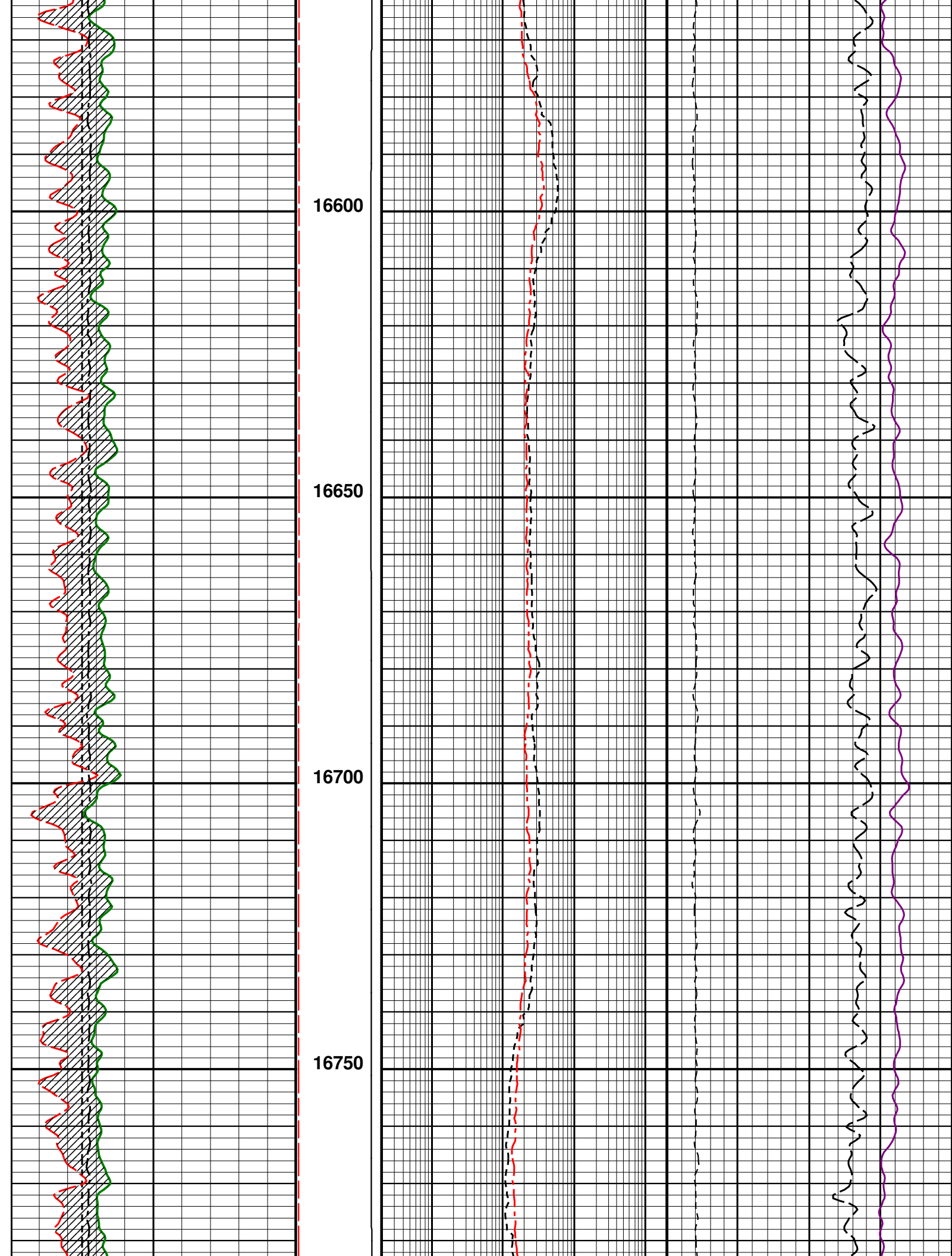
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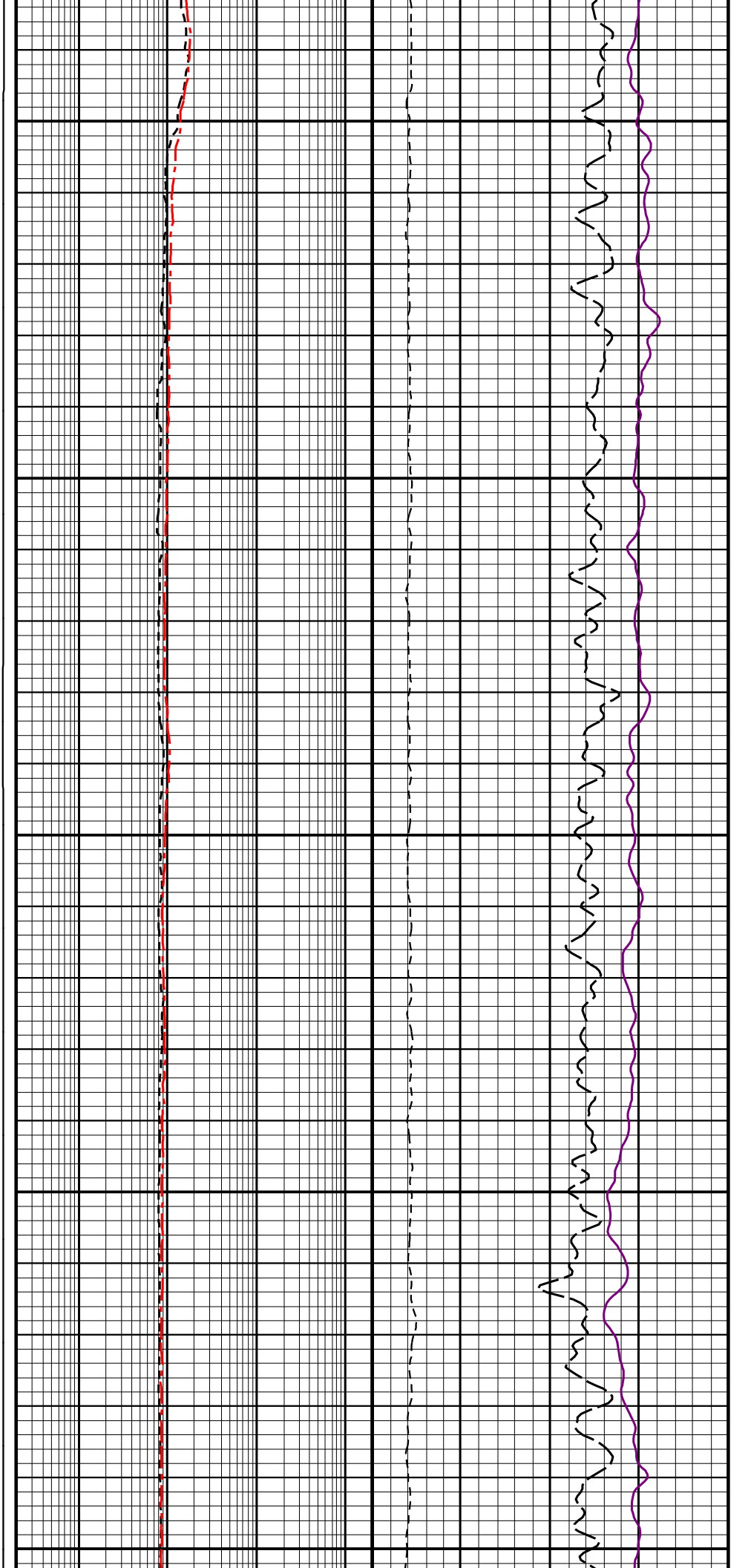
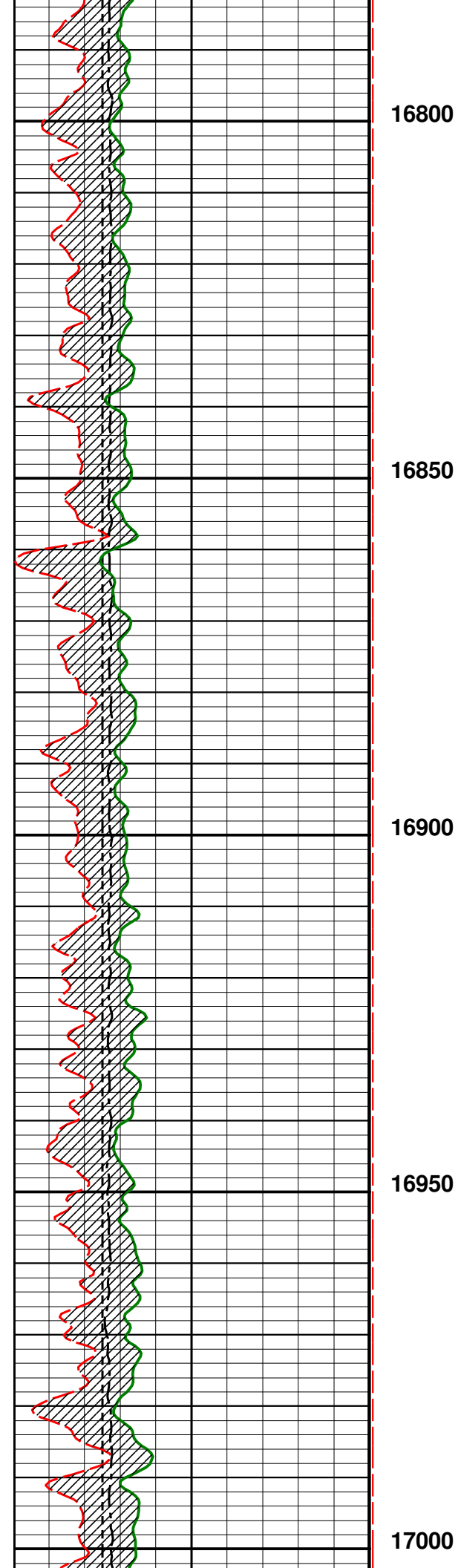
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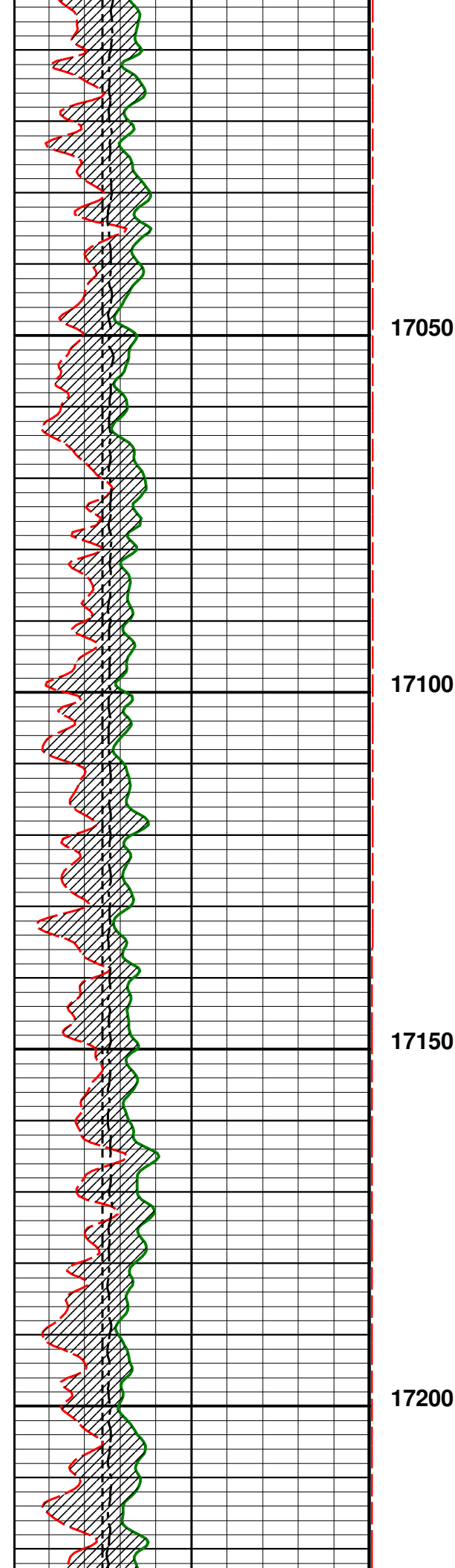


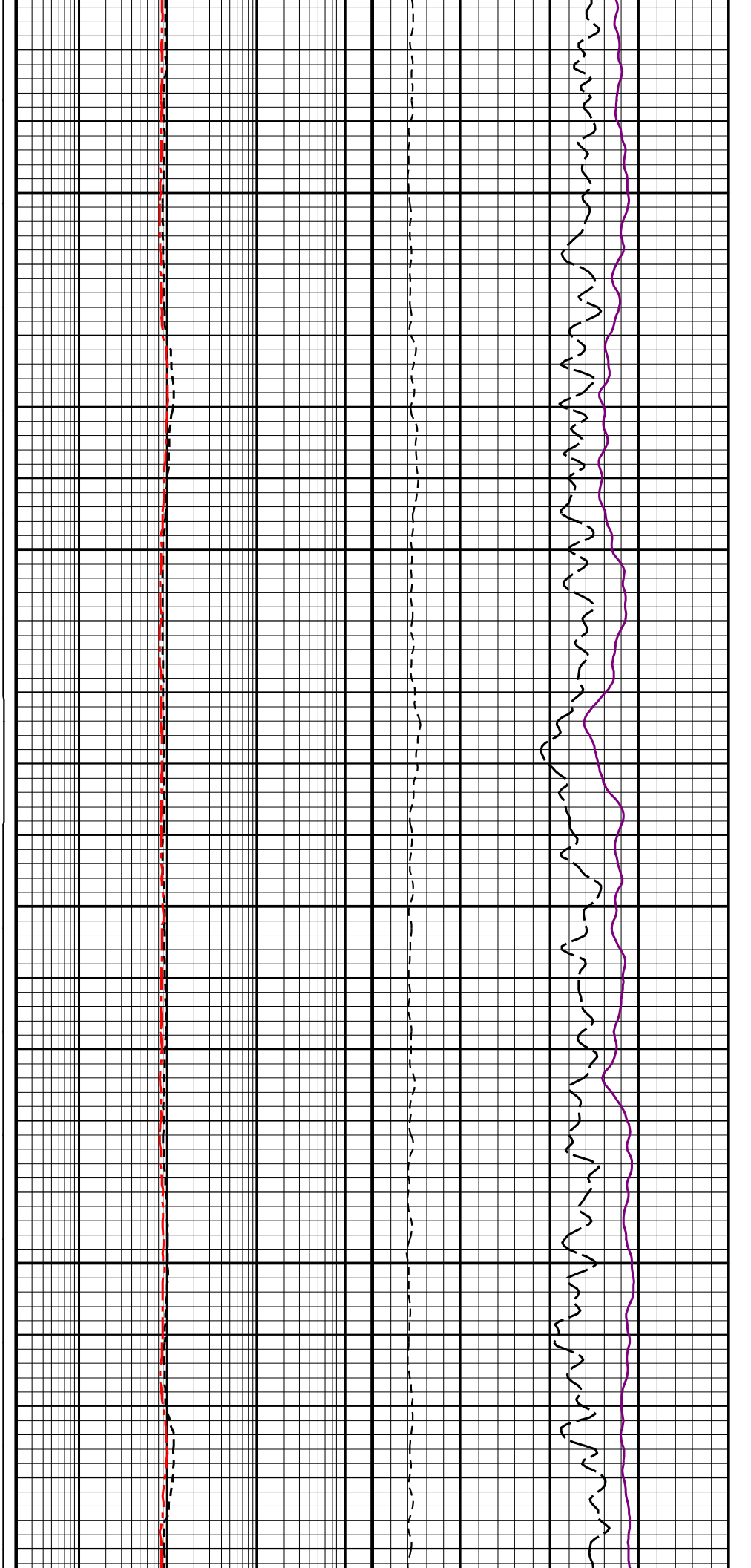
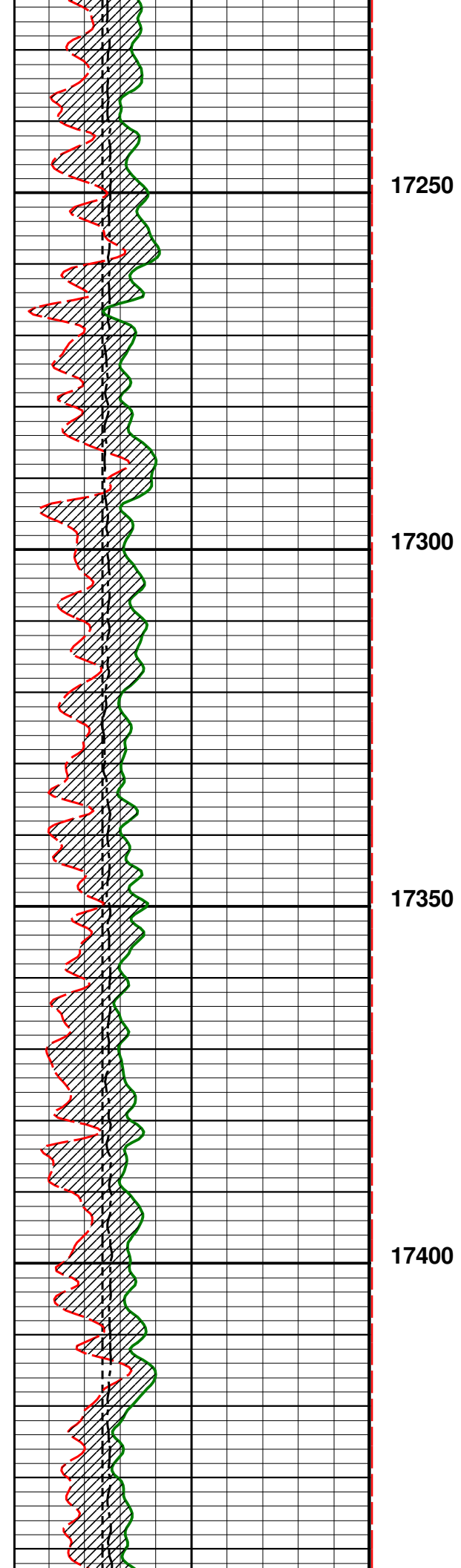


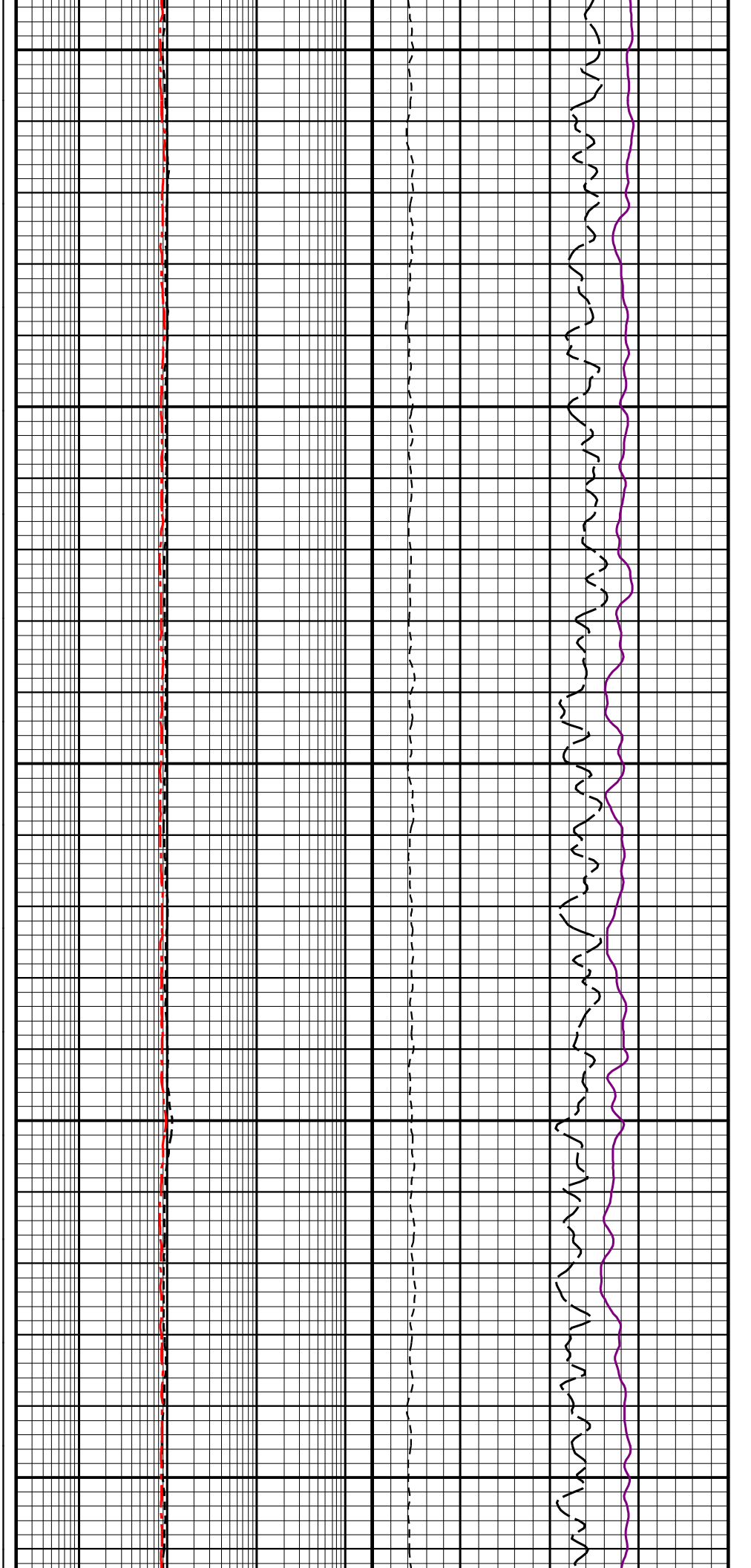
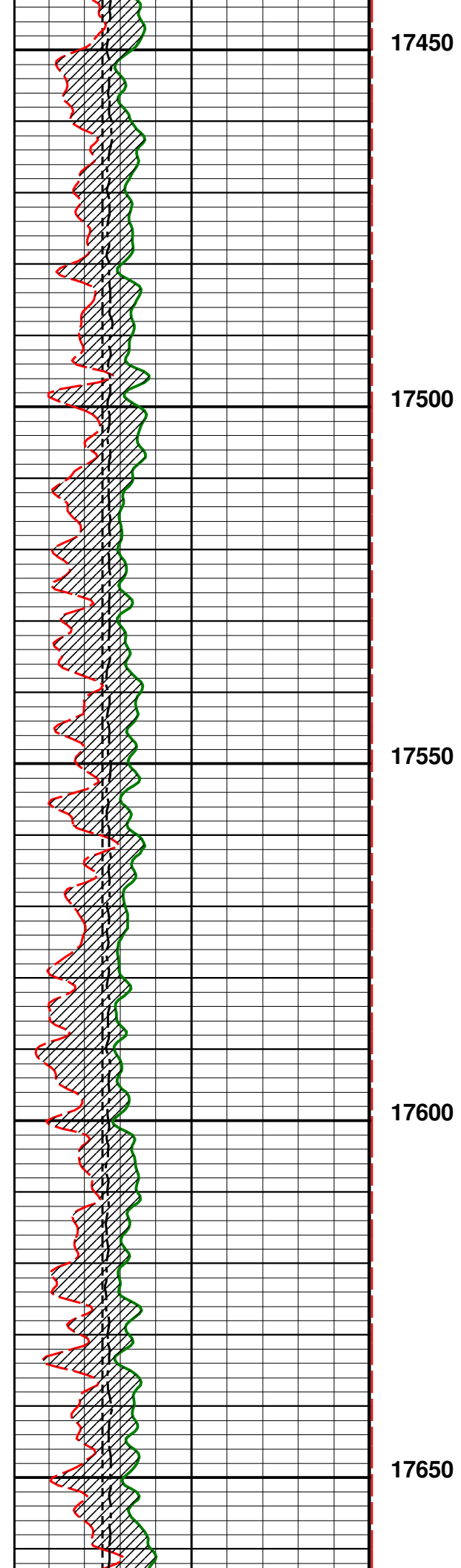


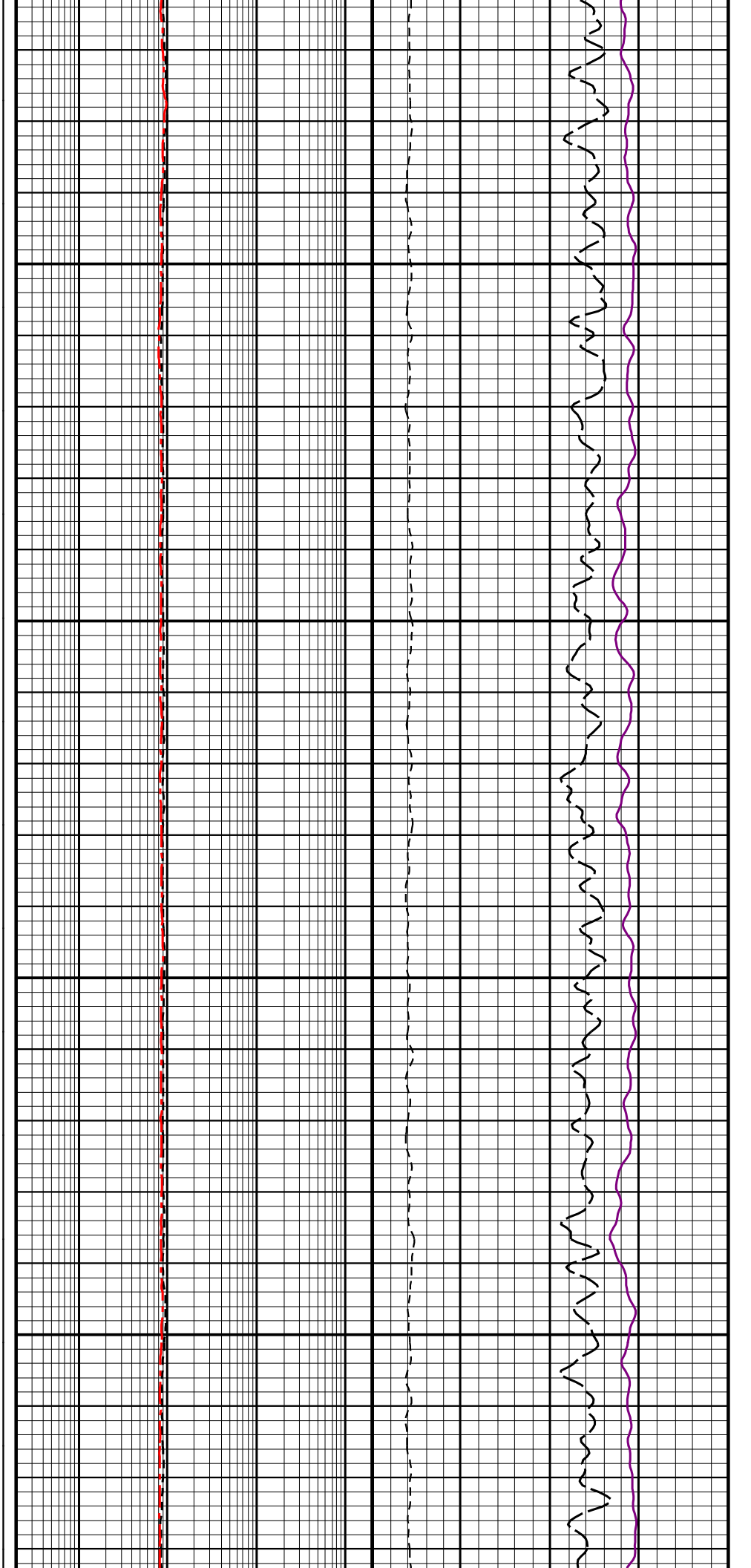
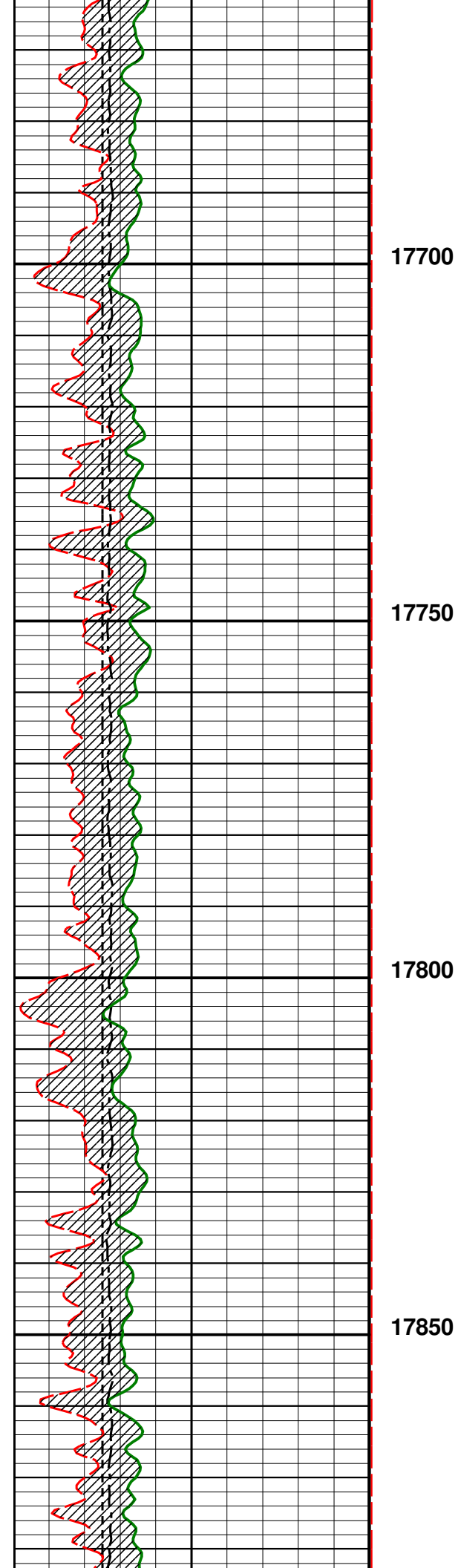


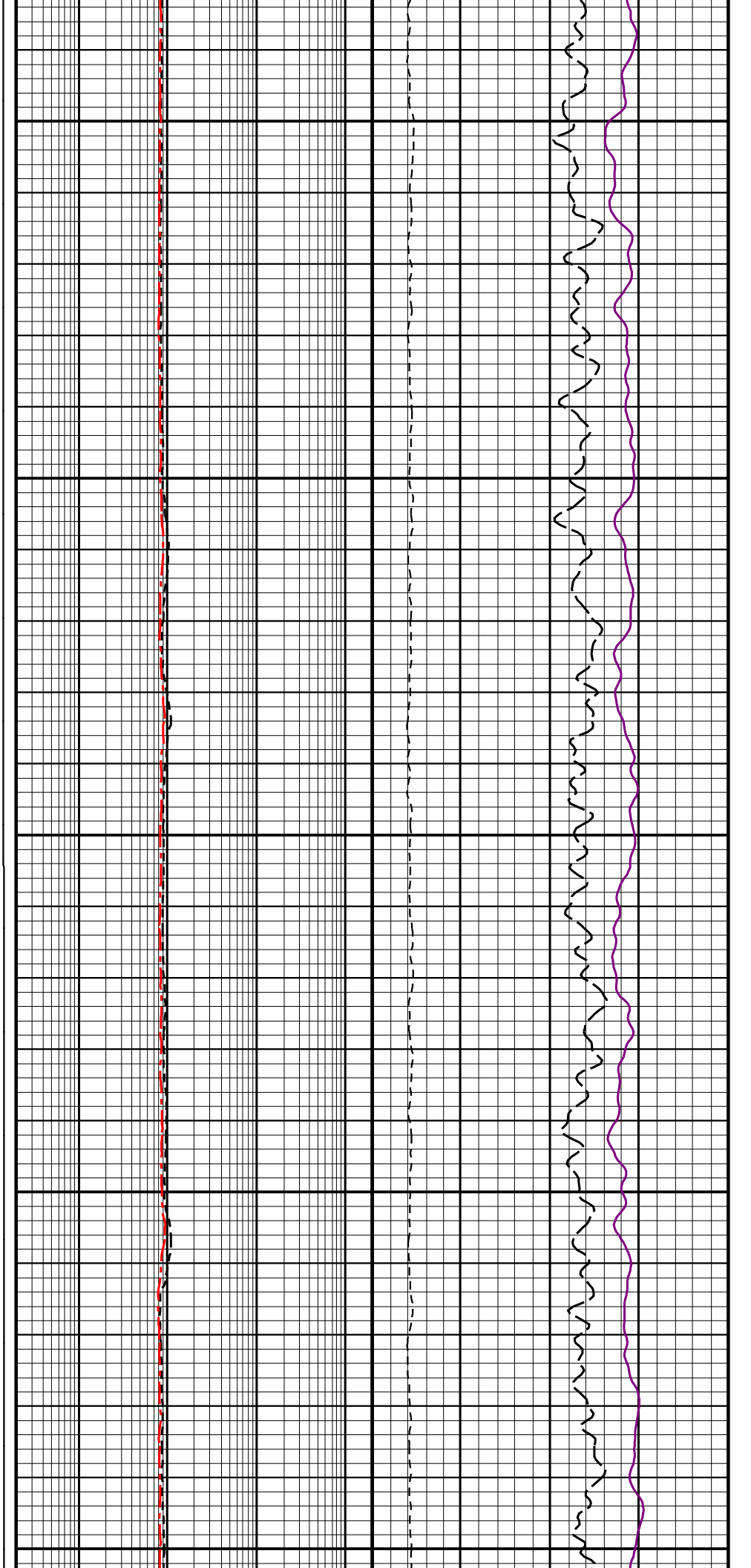
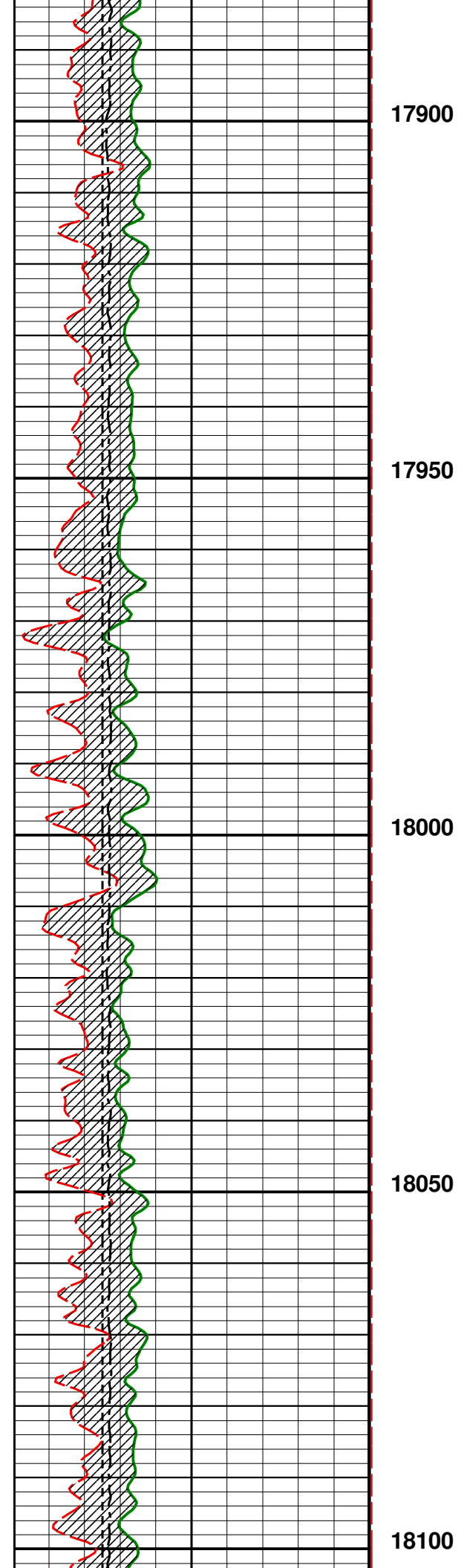


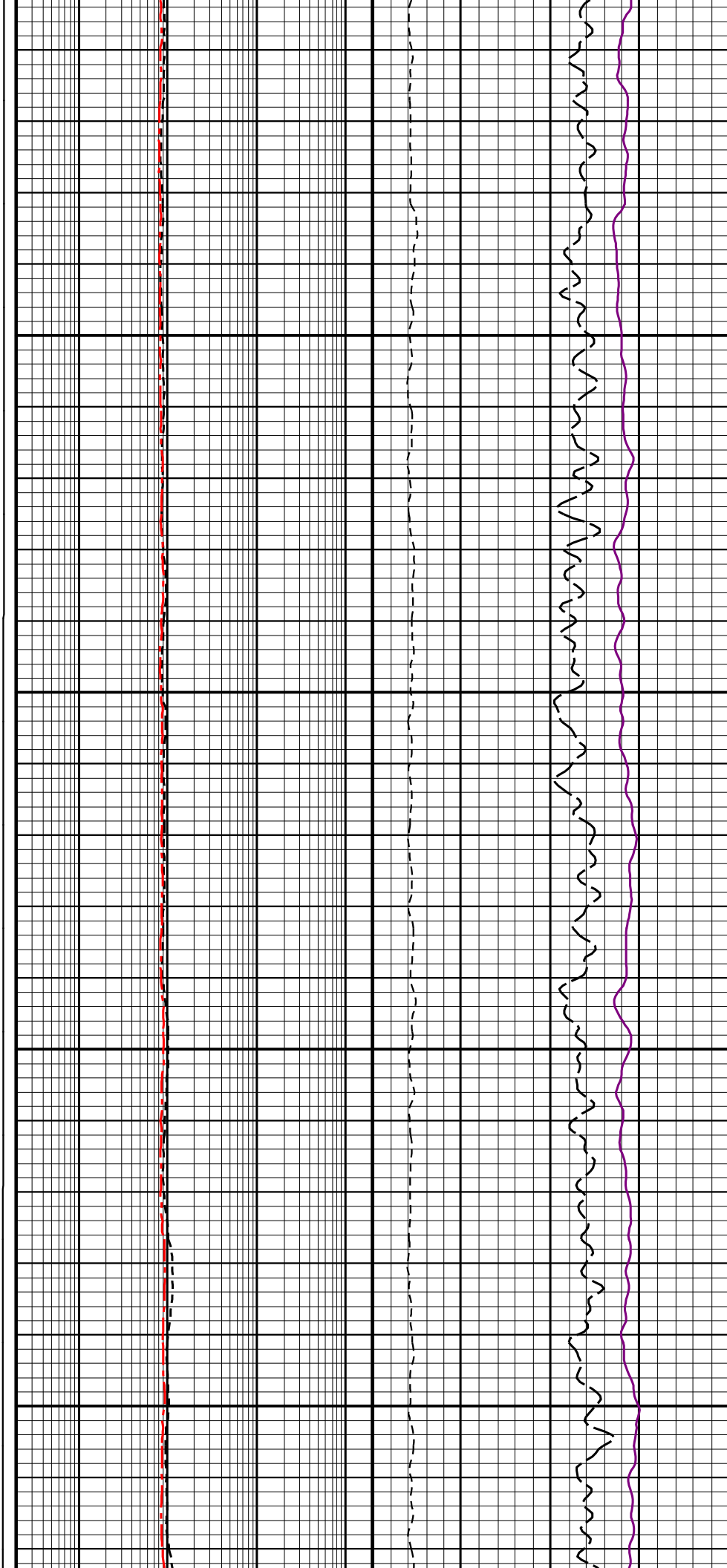
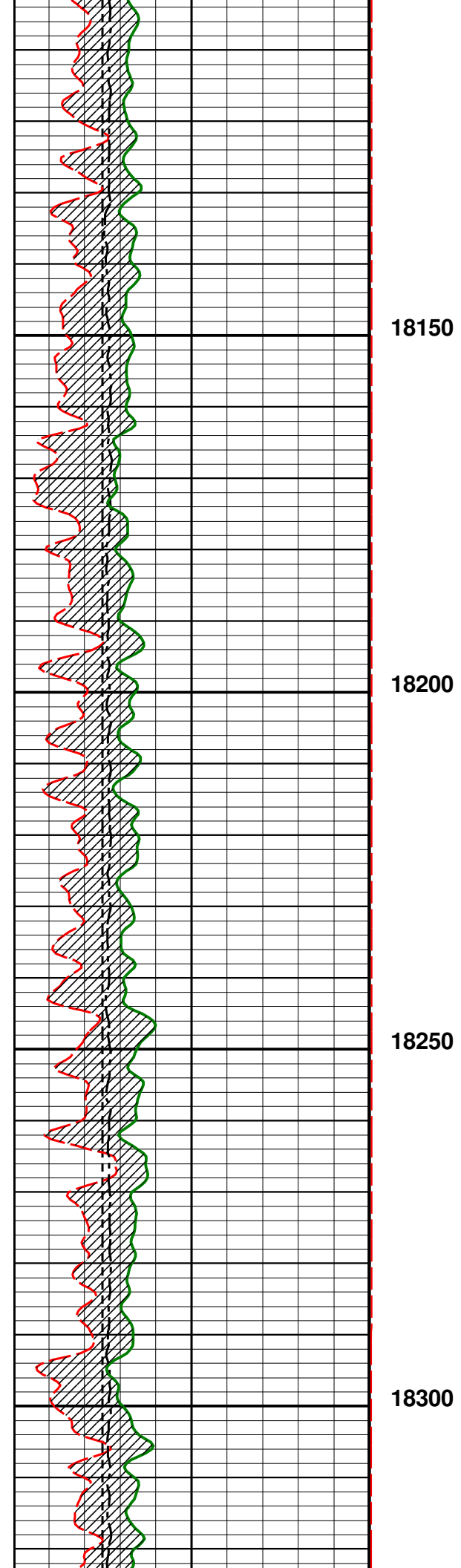


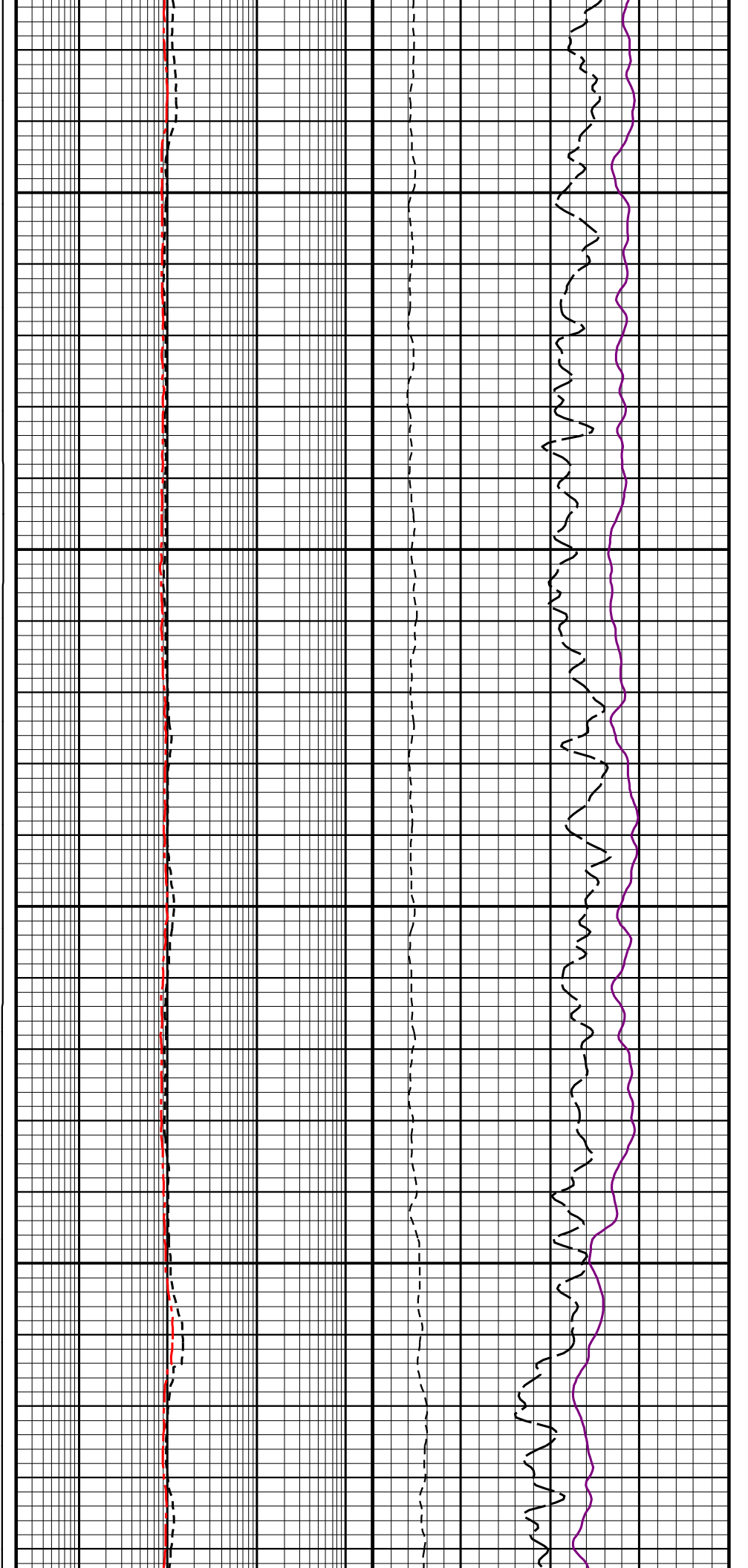
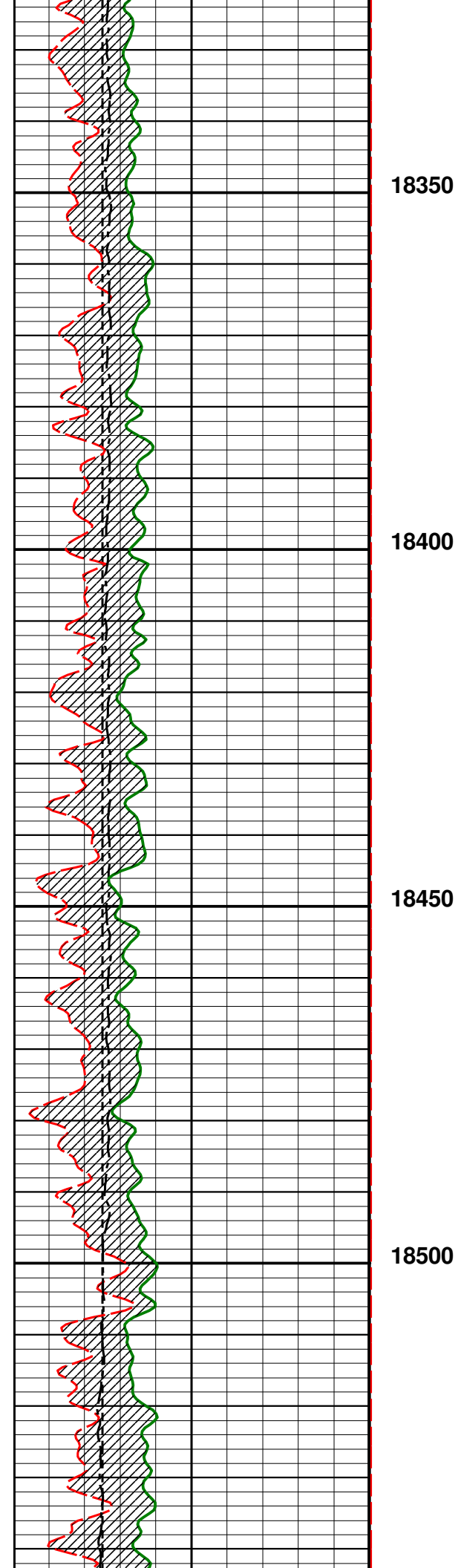


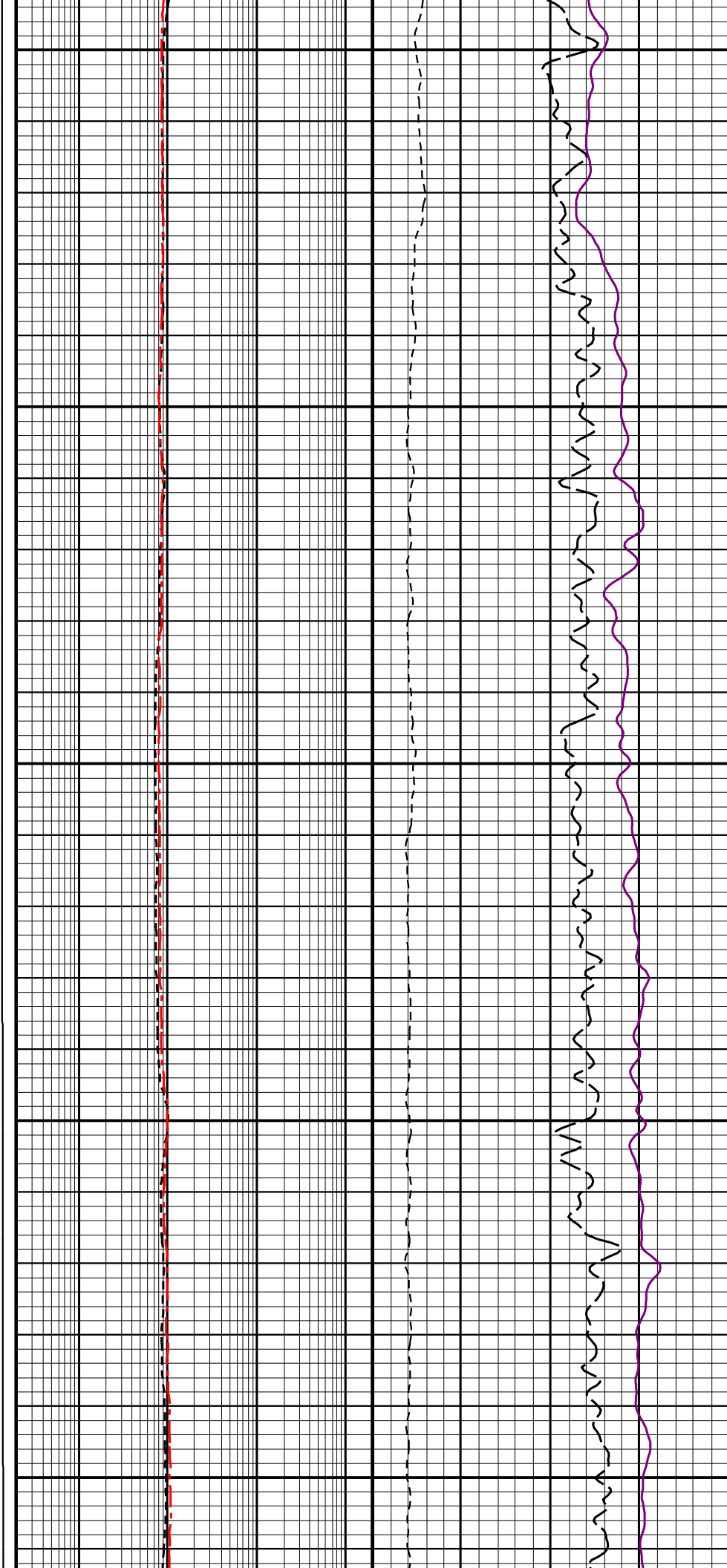
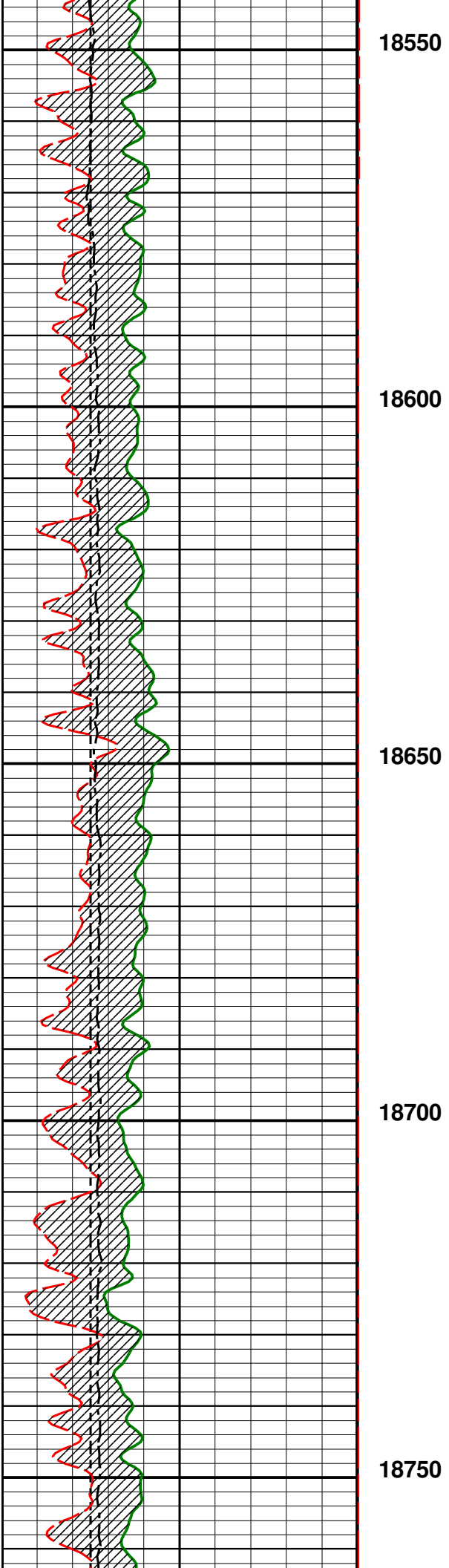


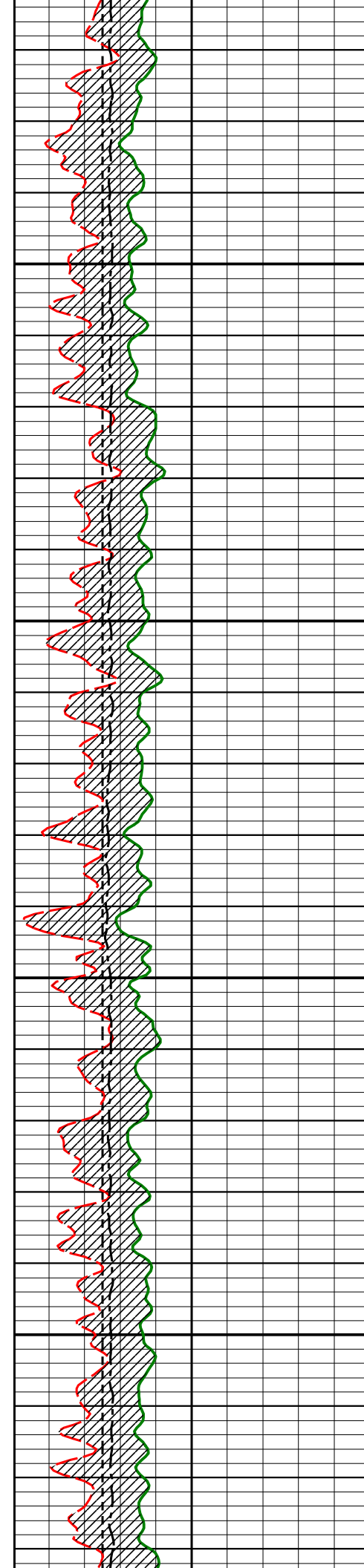










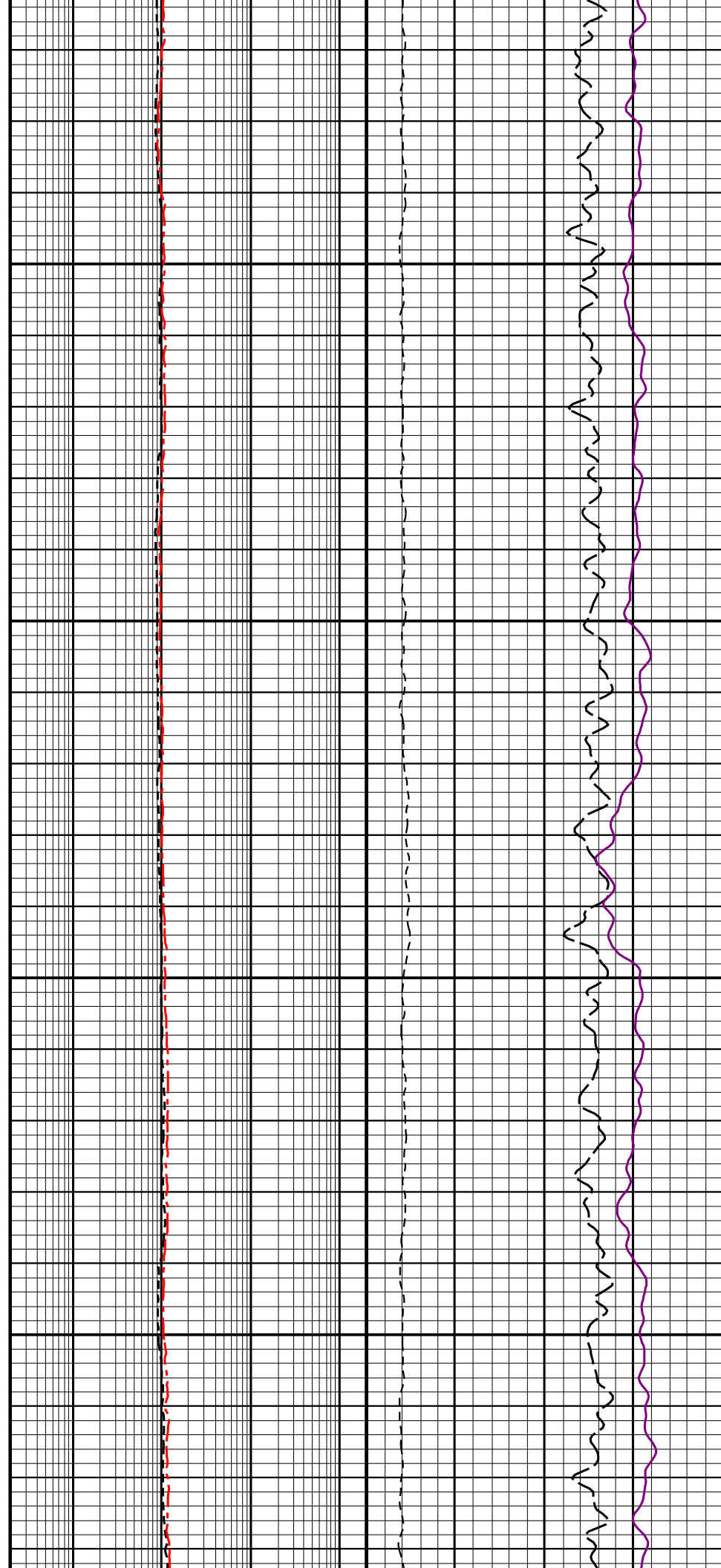


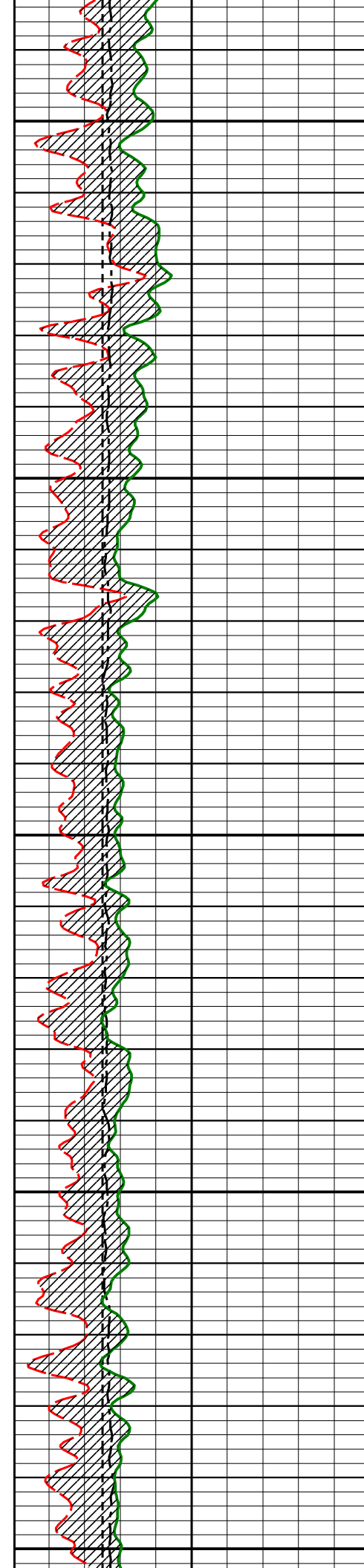
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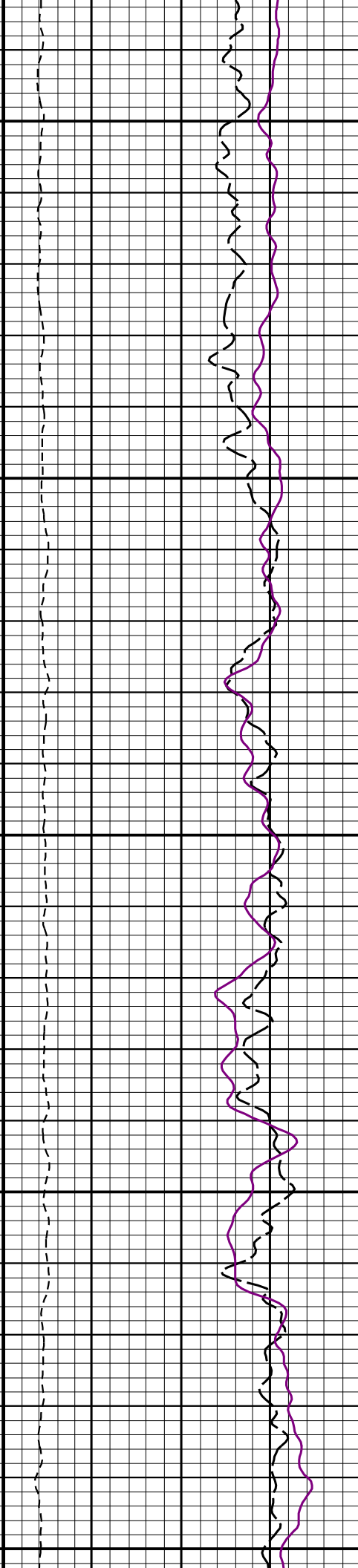
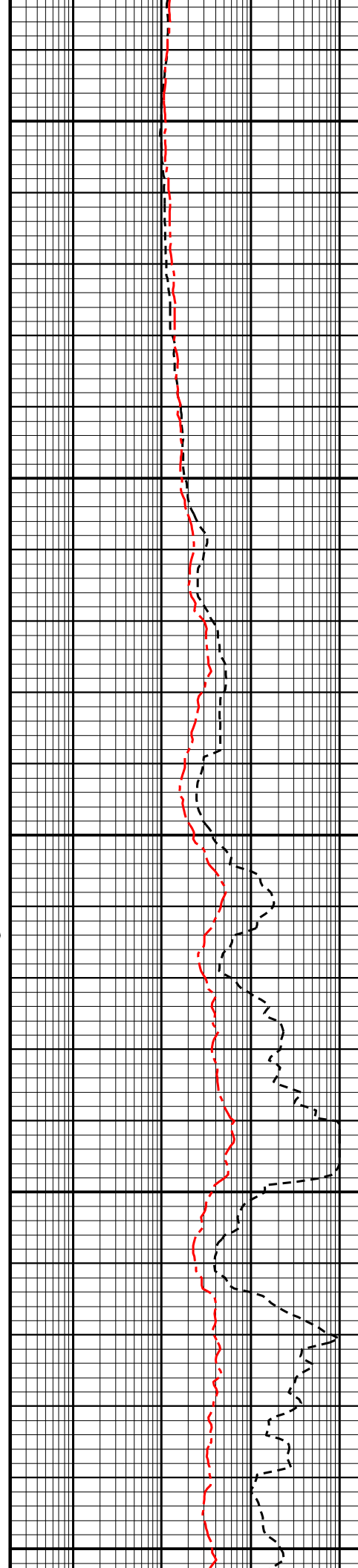
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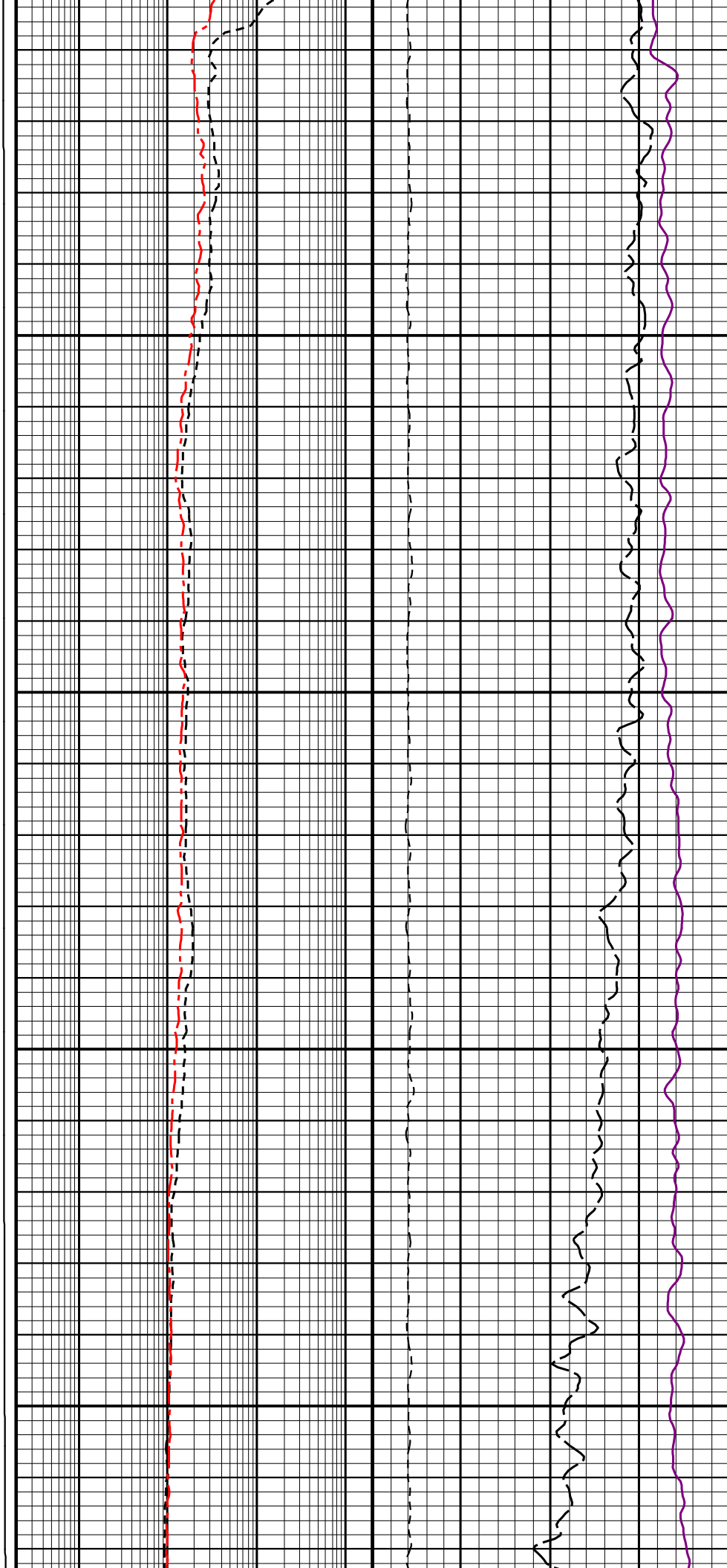
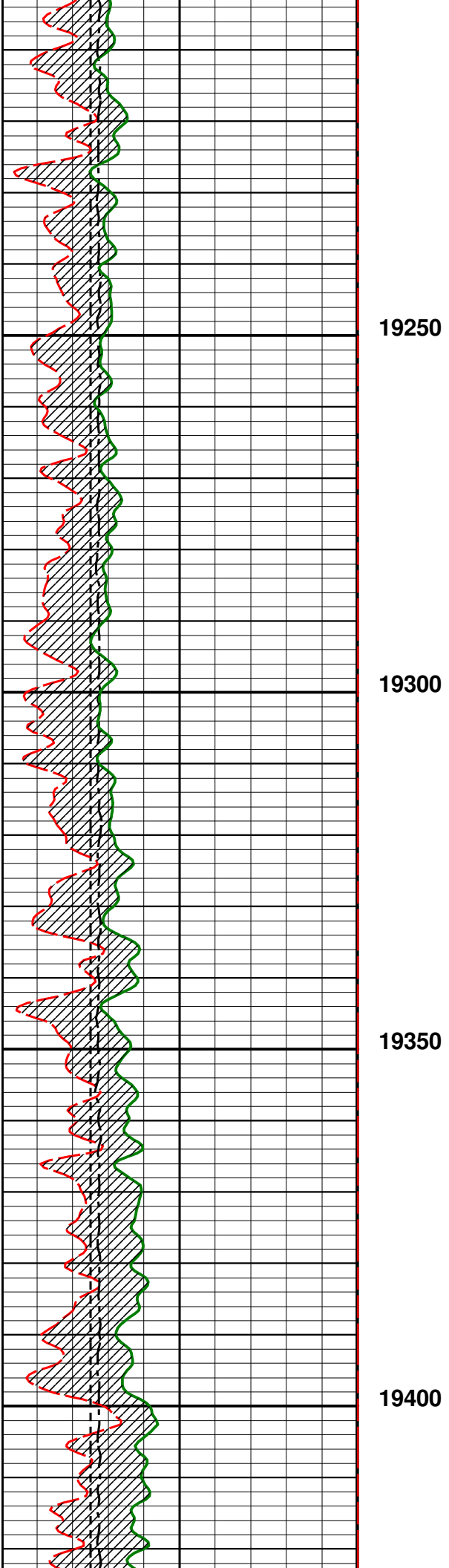
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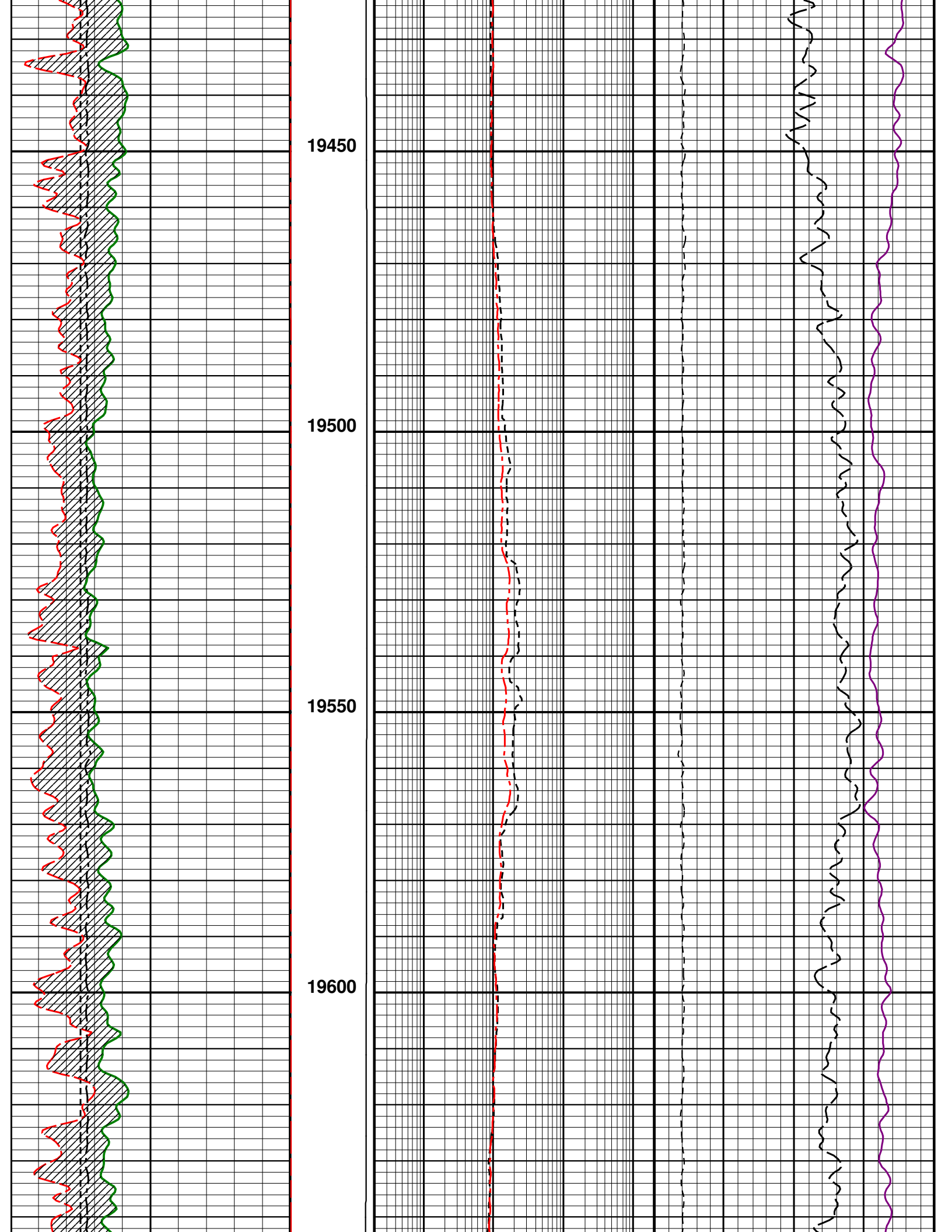
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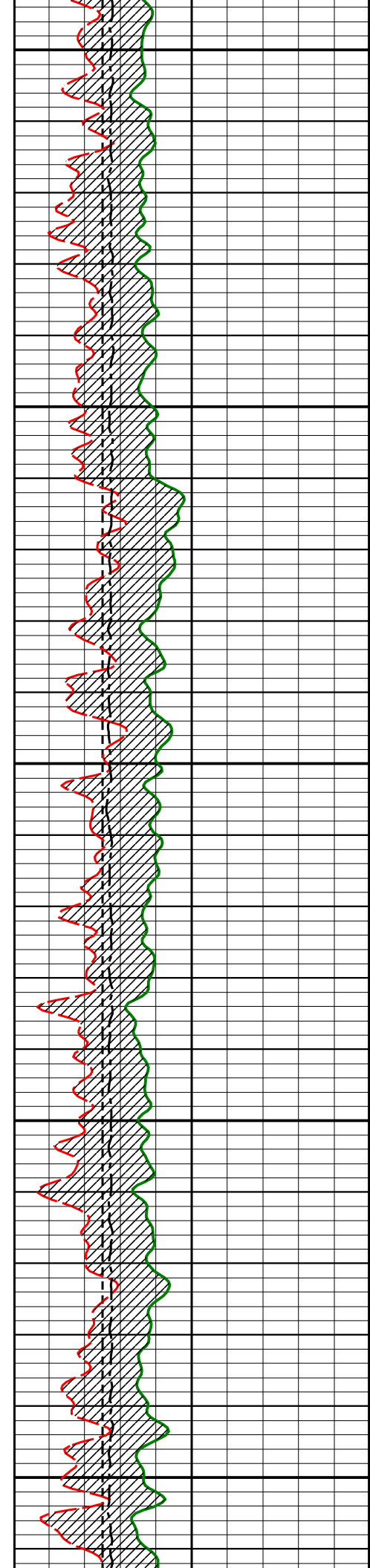
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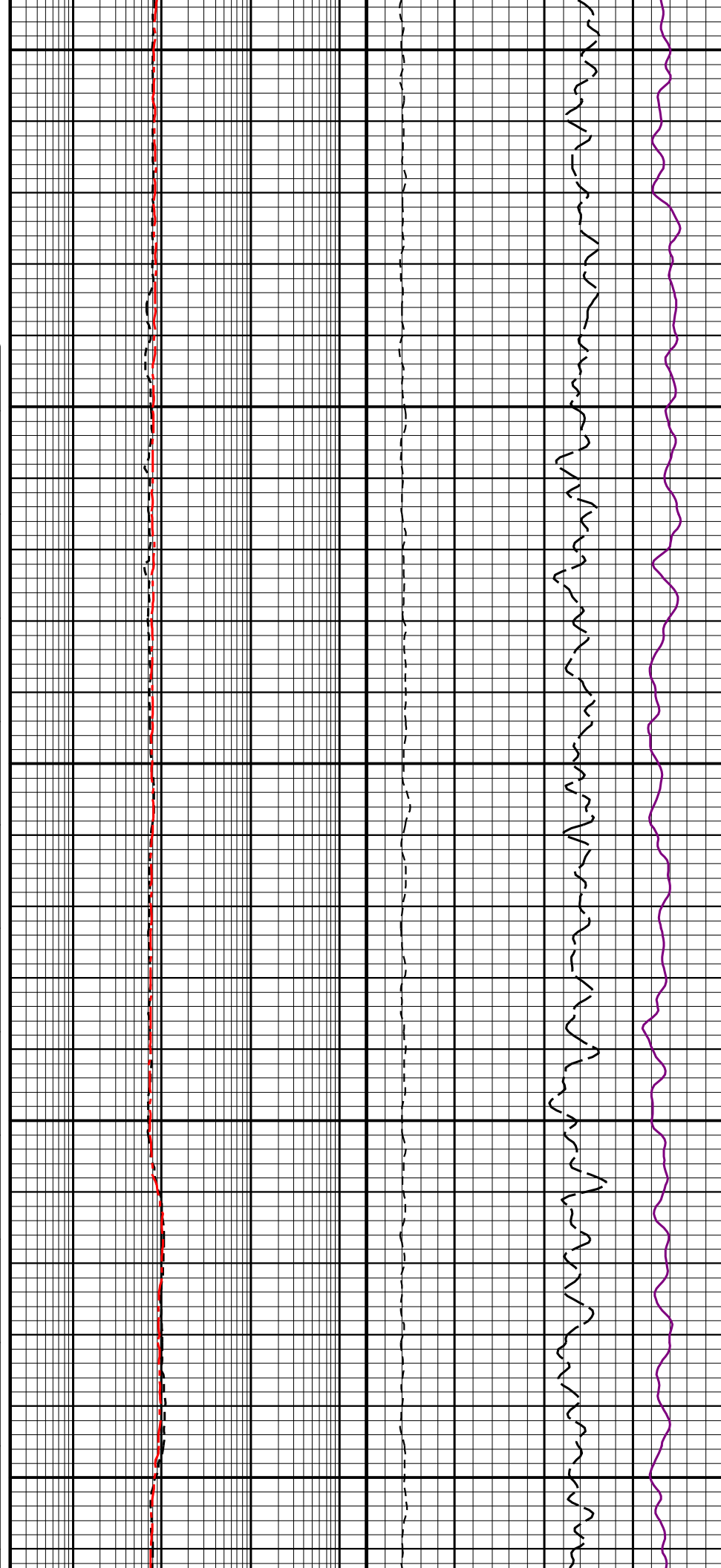
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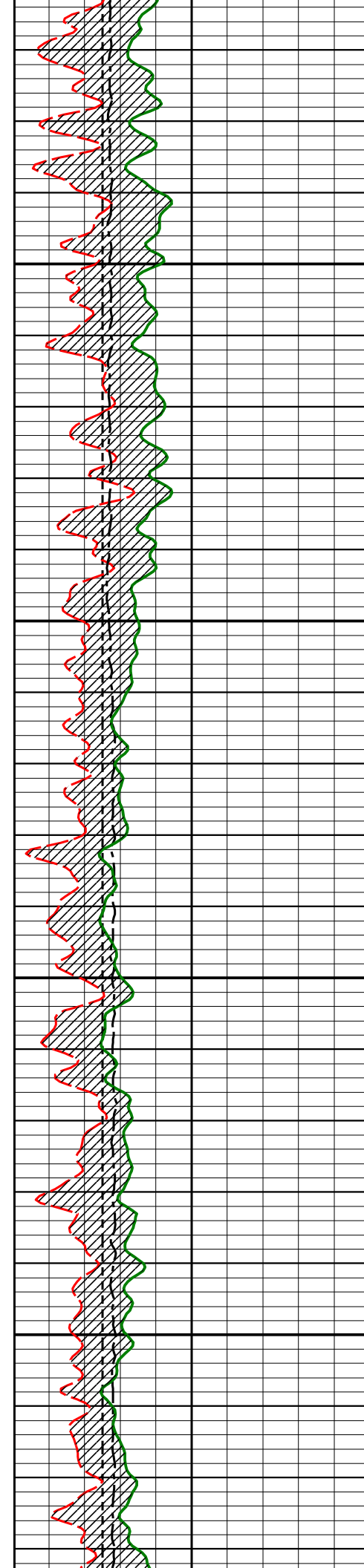
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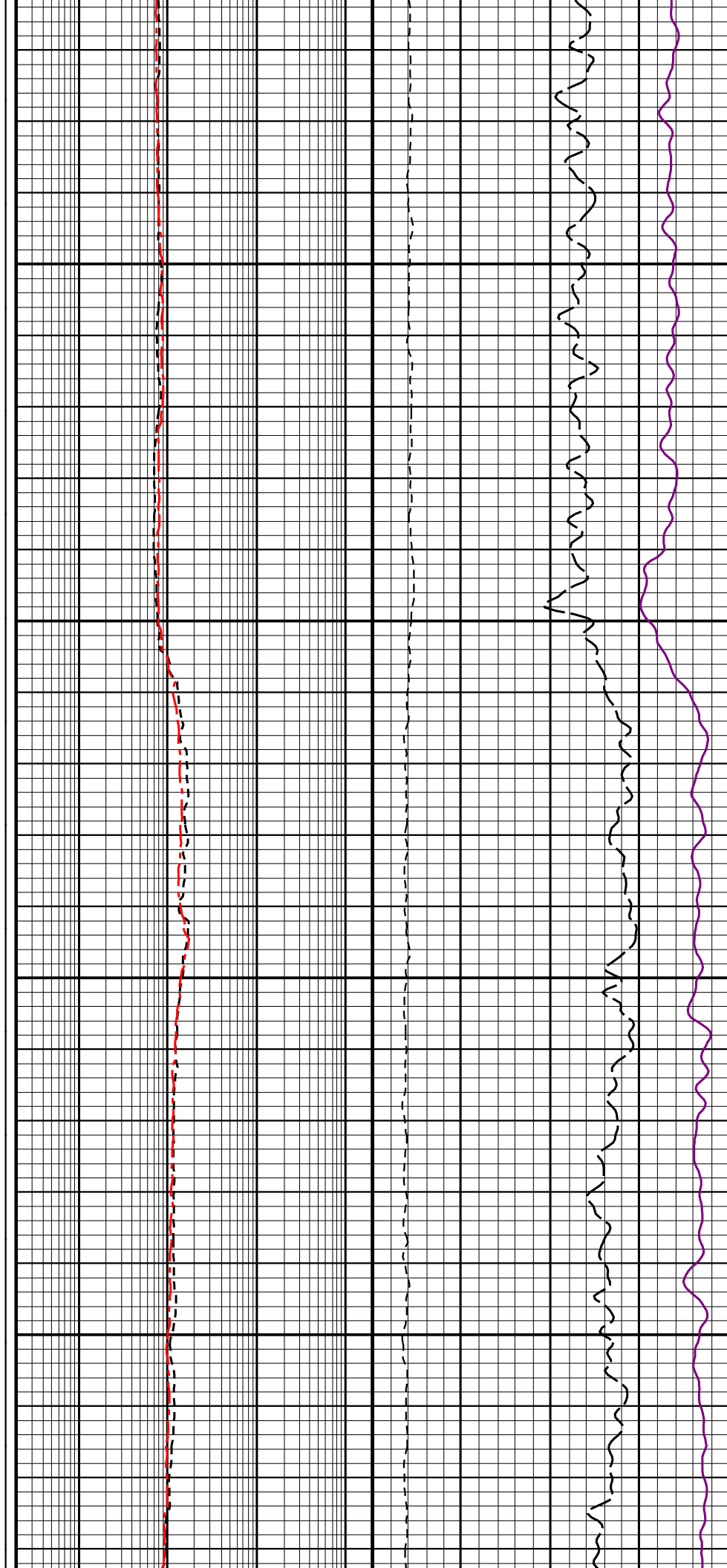


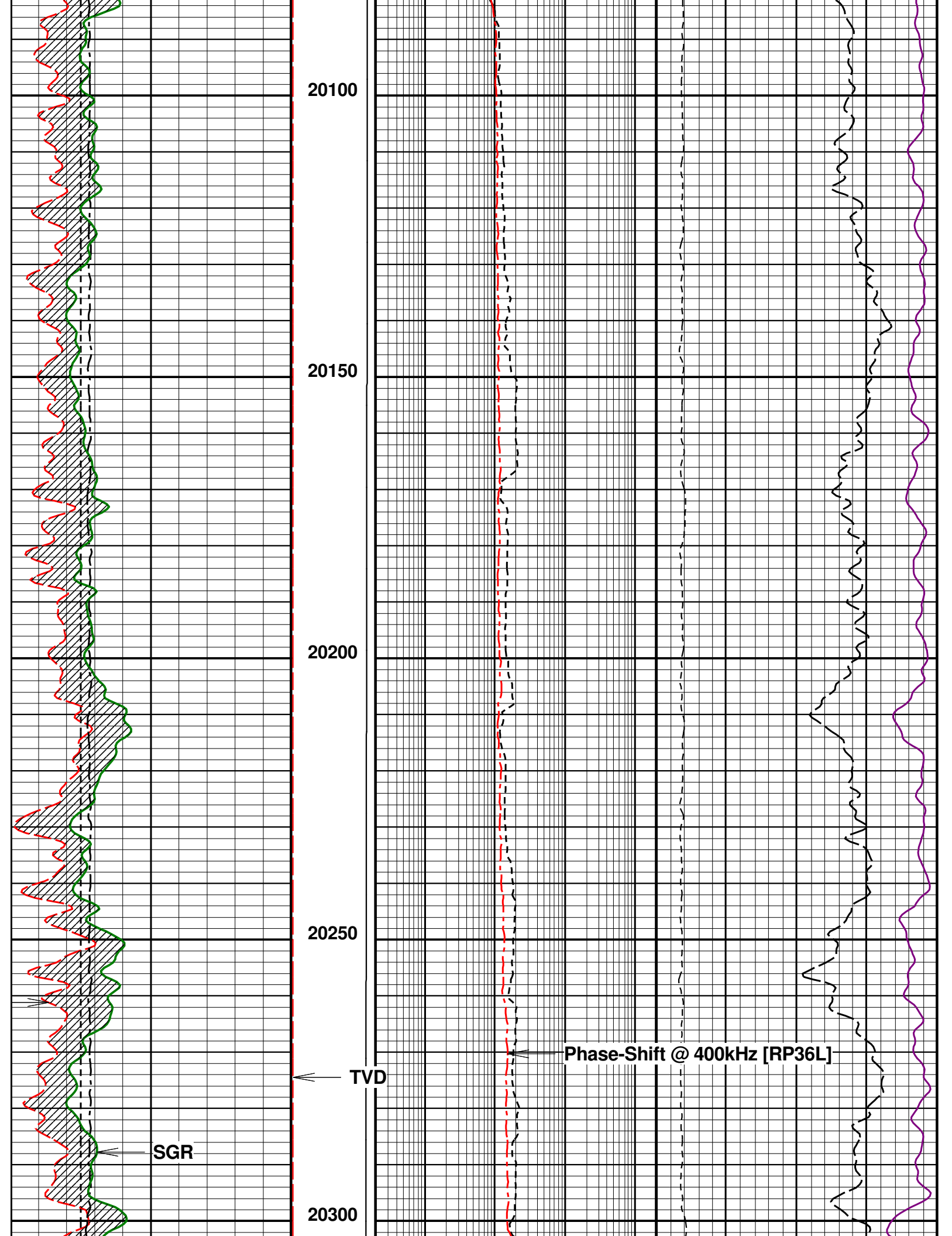
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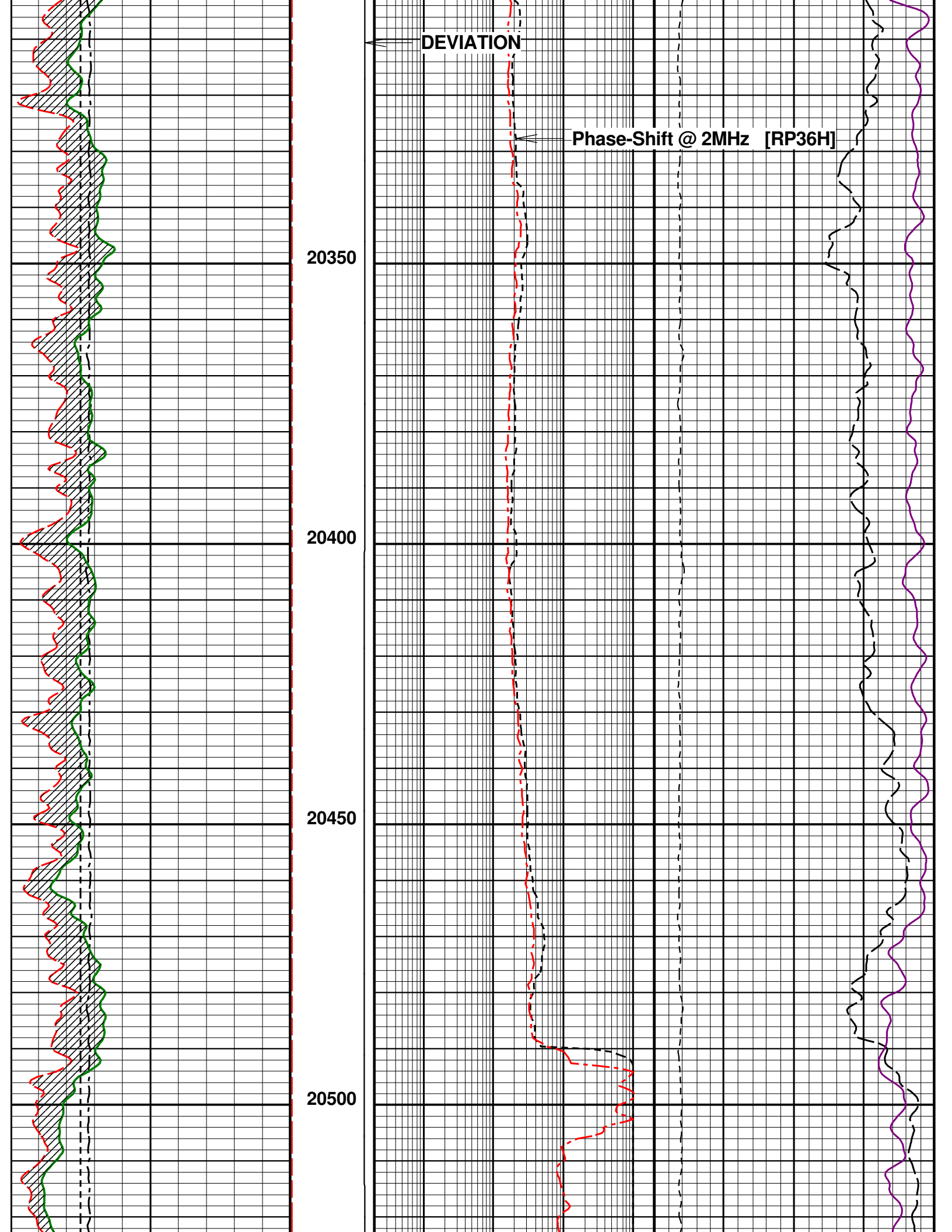
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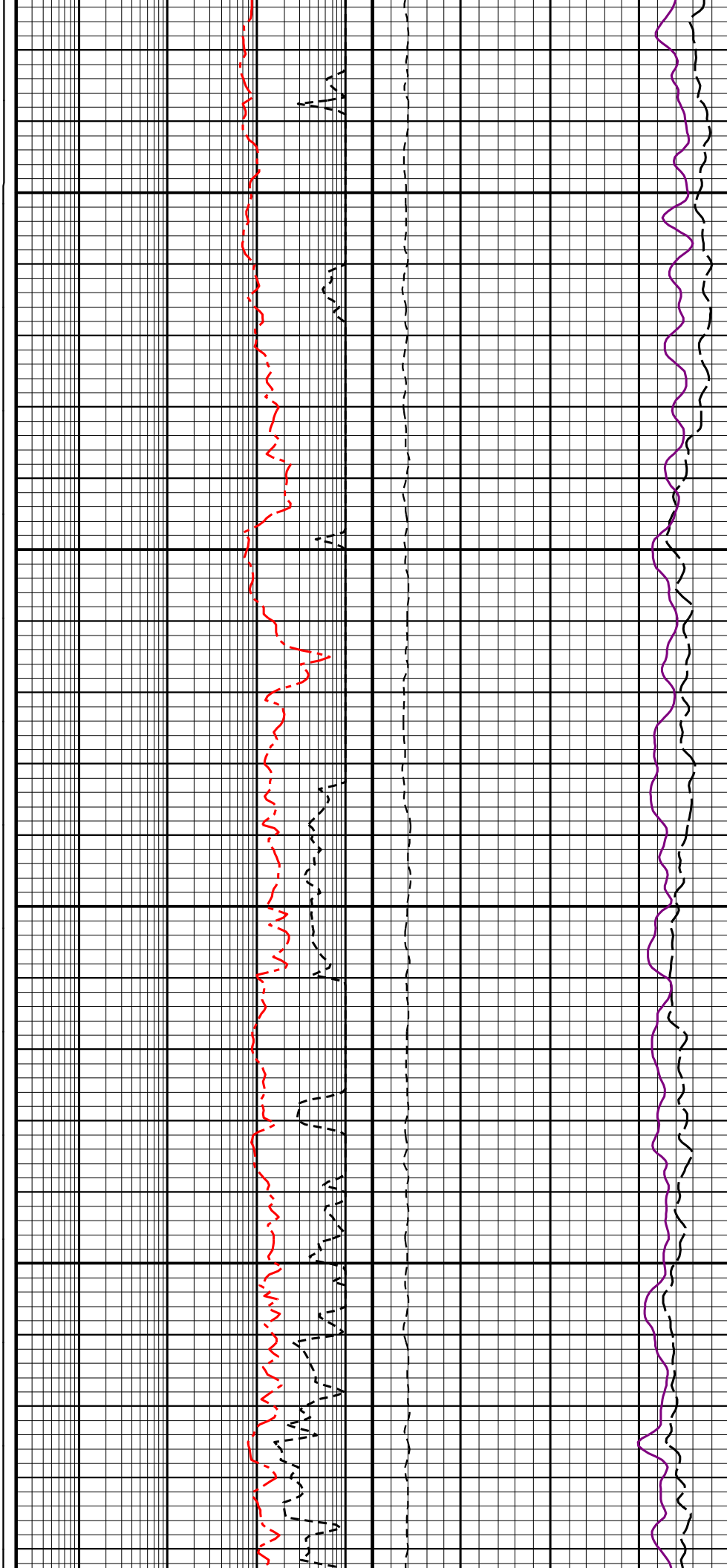
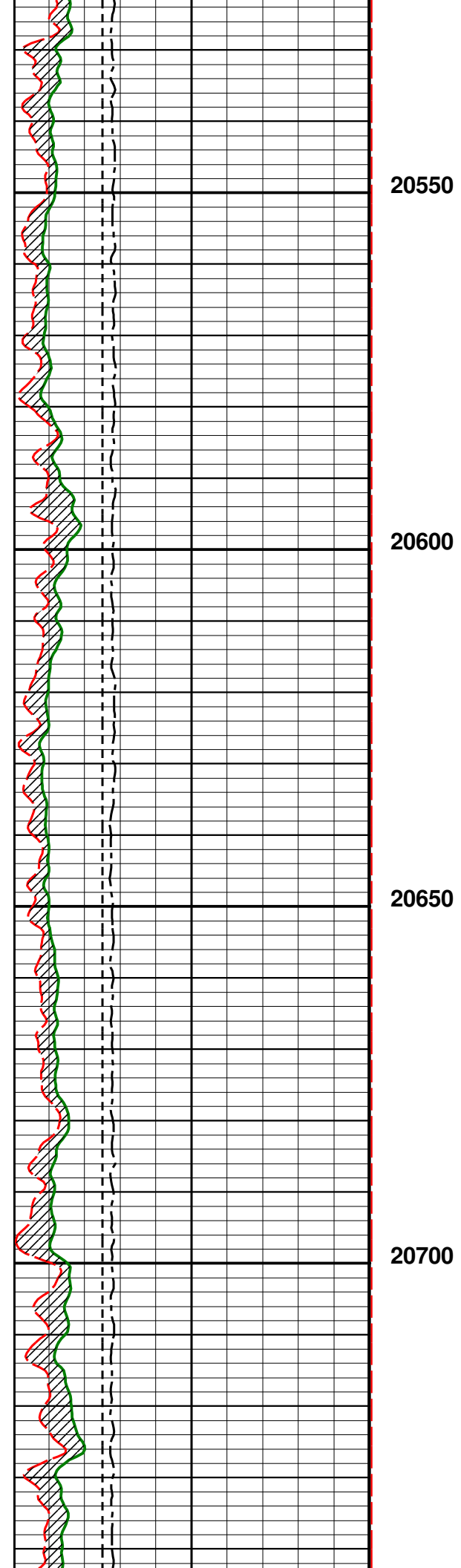
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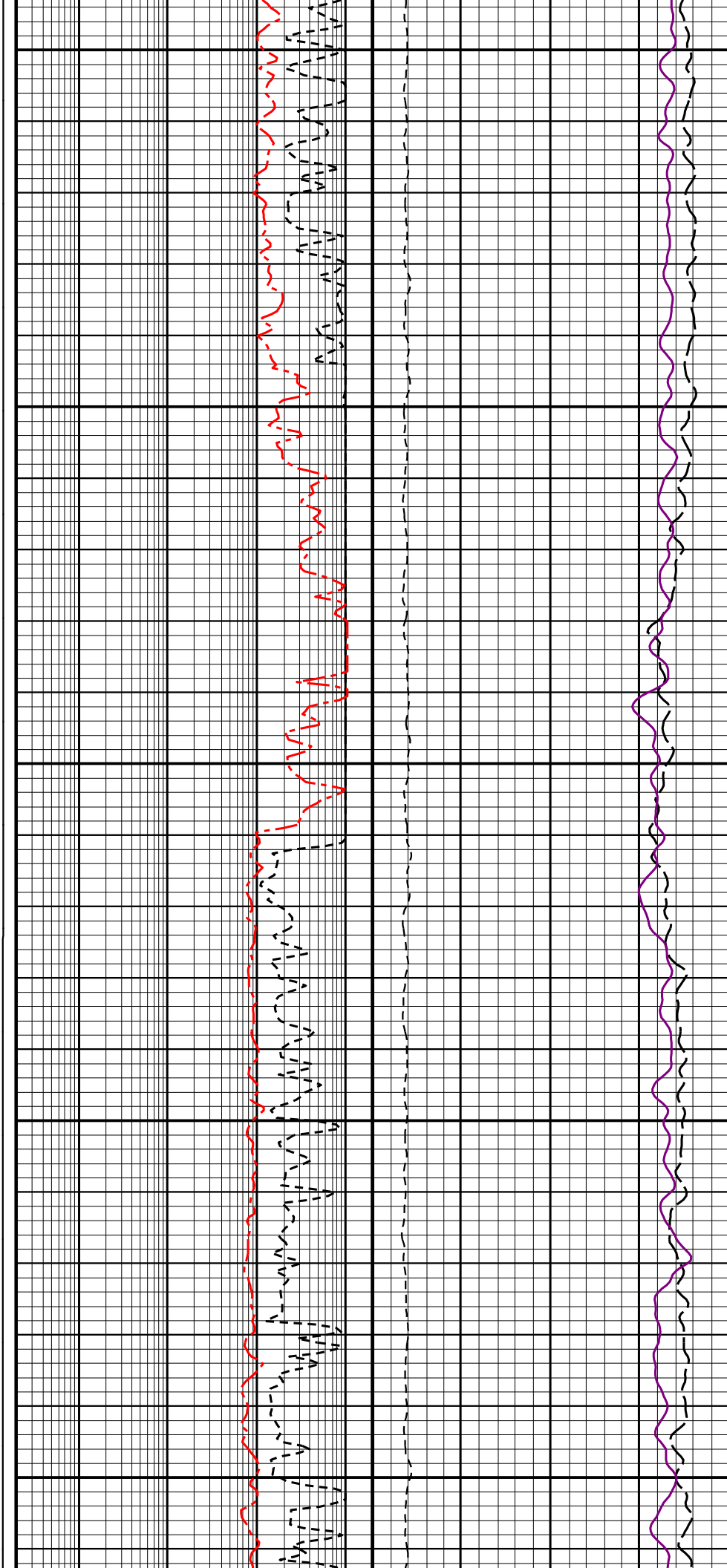
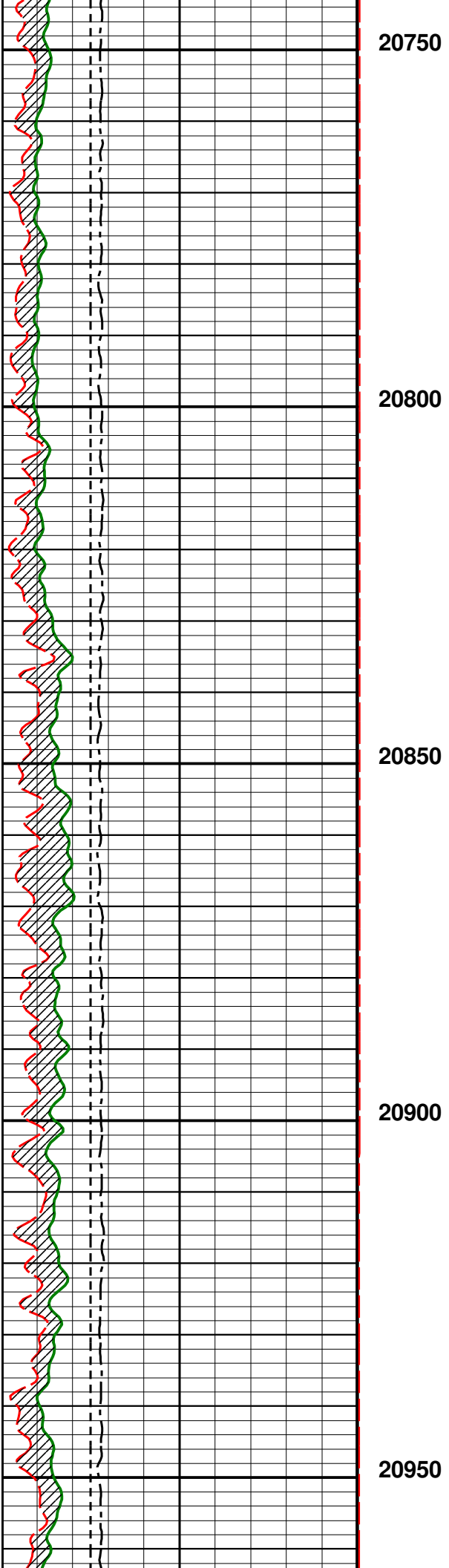
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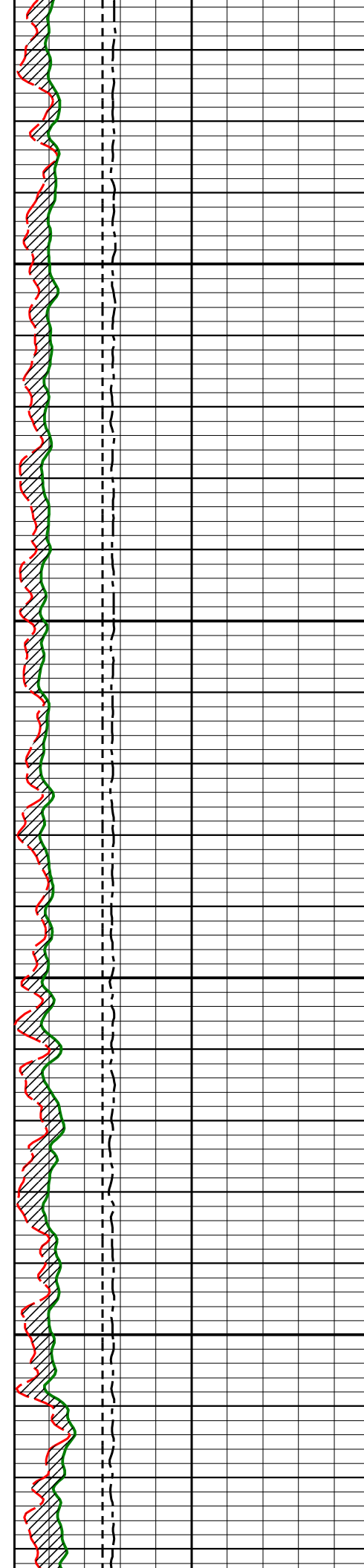










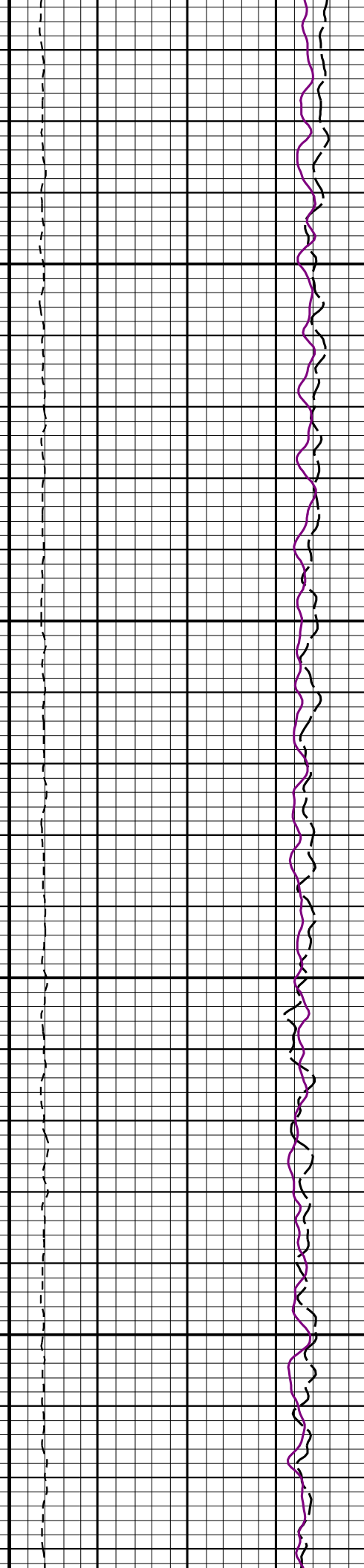
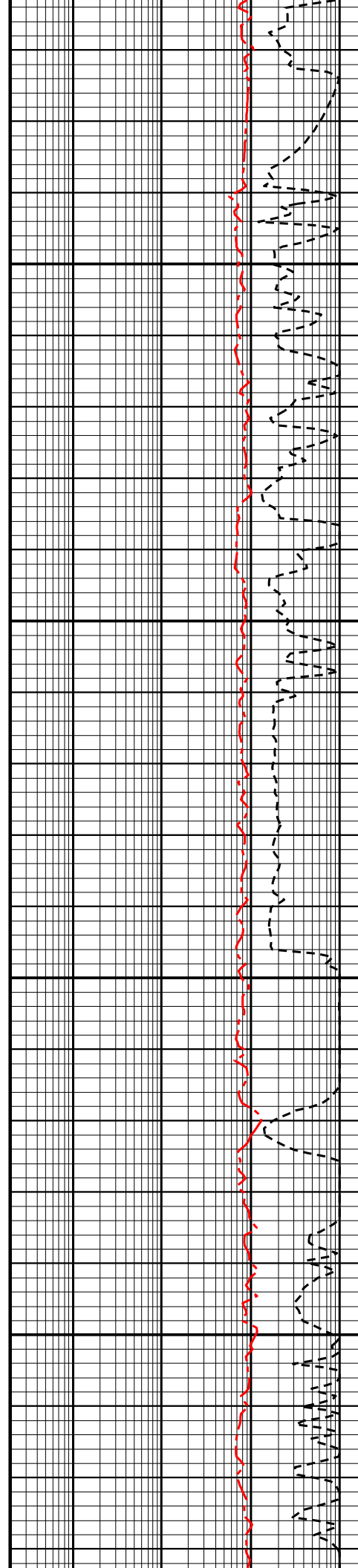


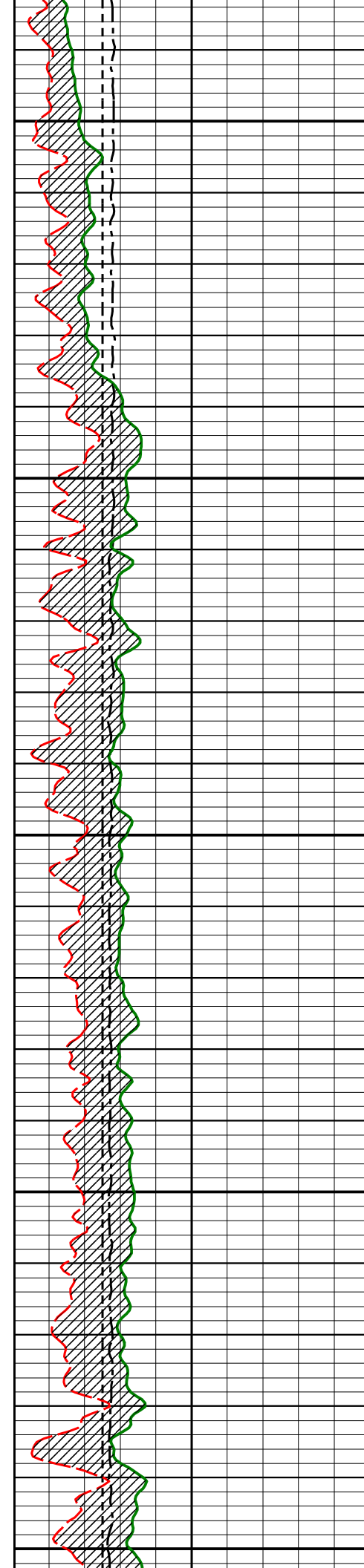
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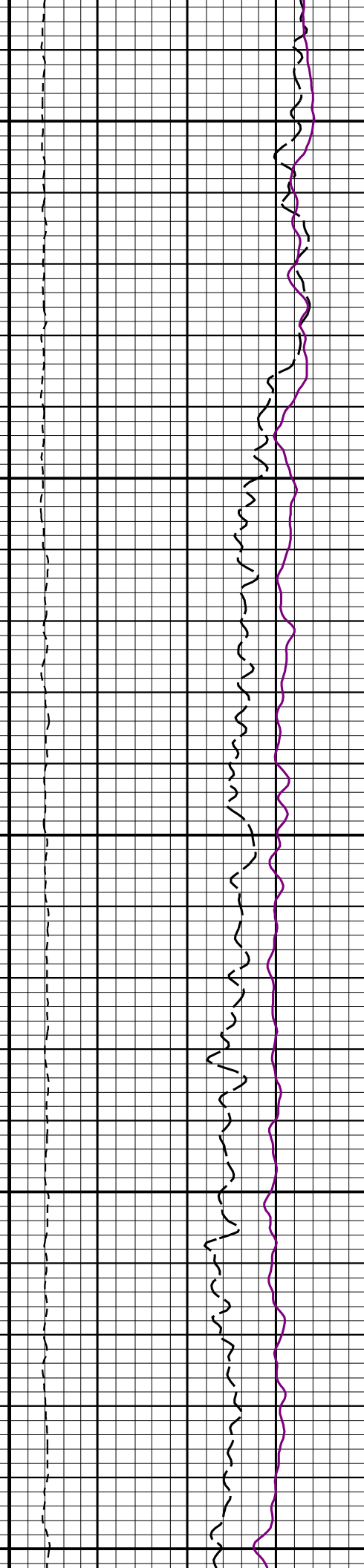
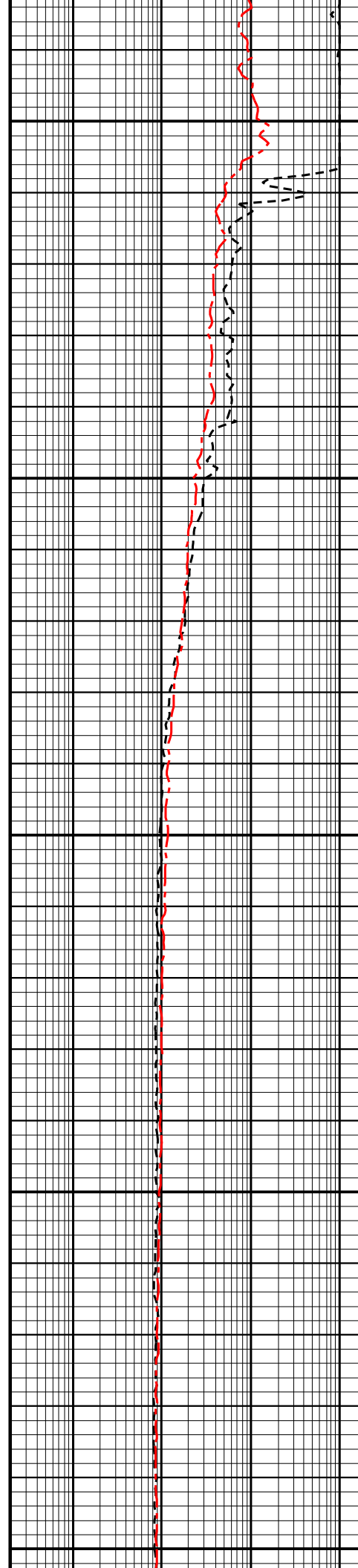
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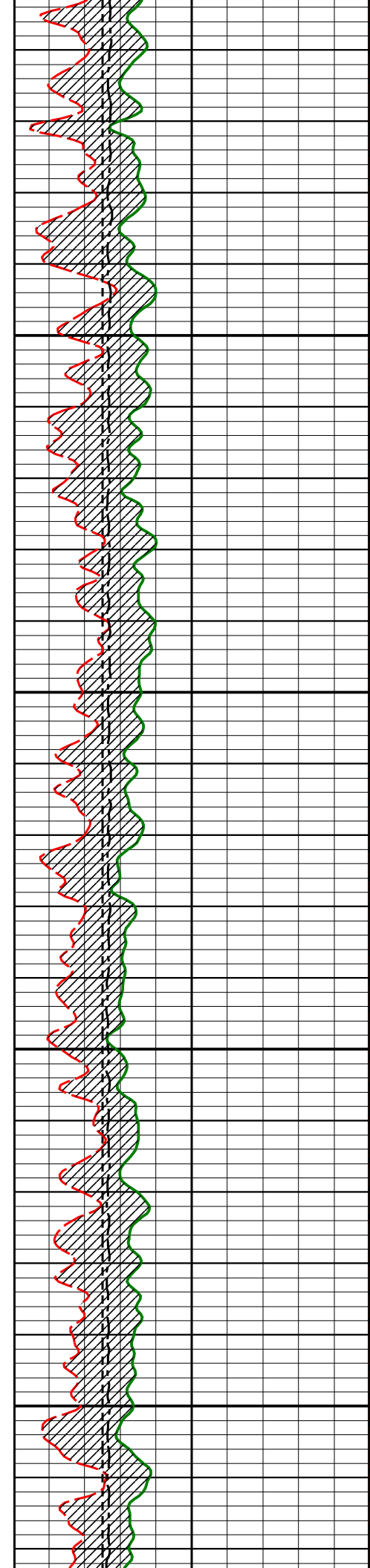
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21400



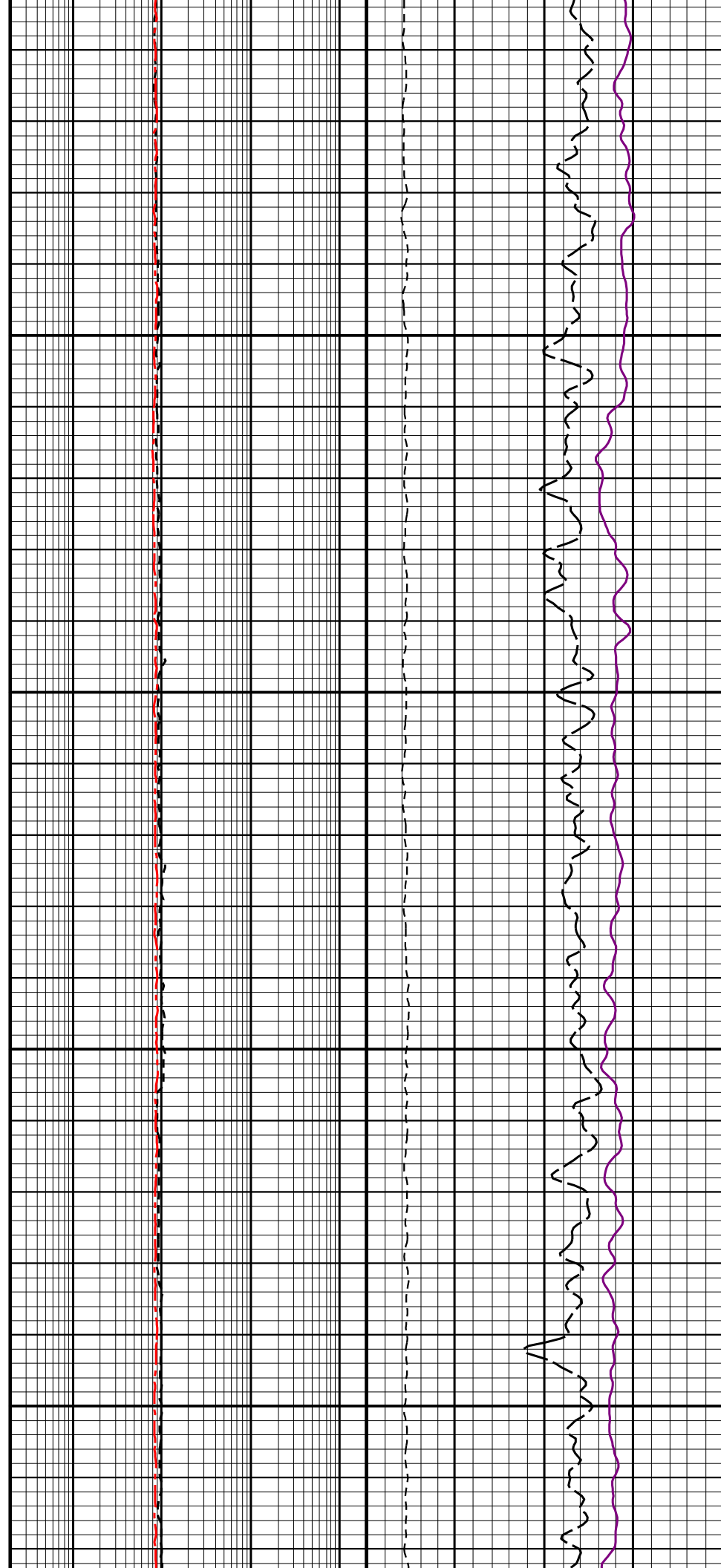


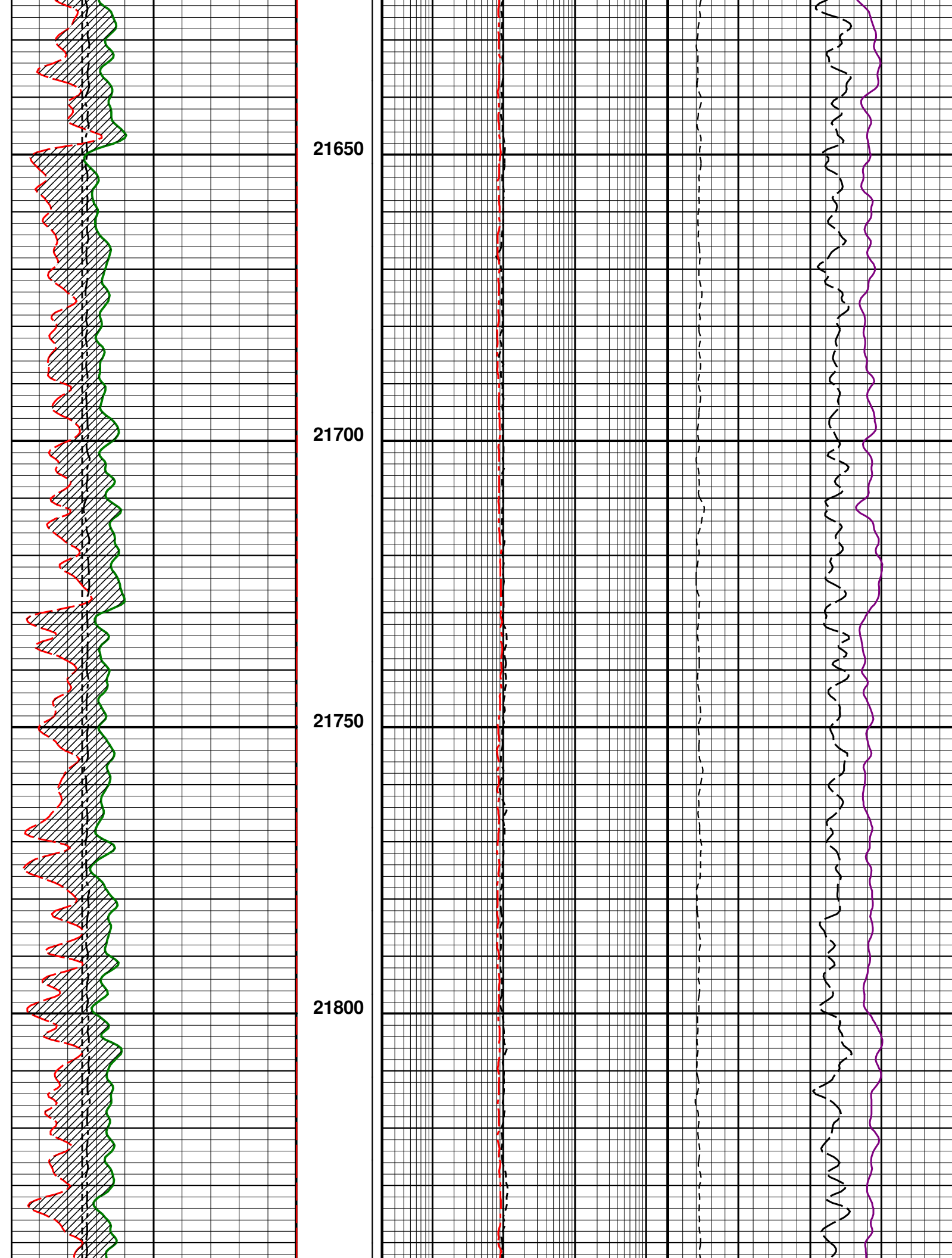
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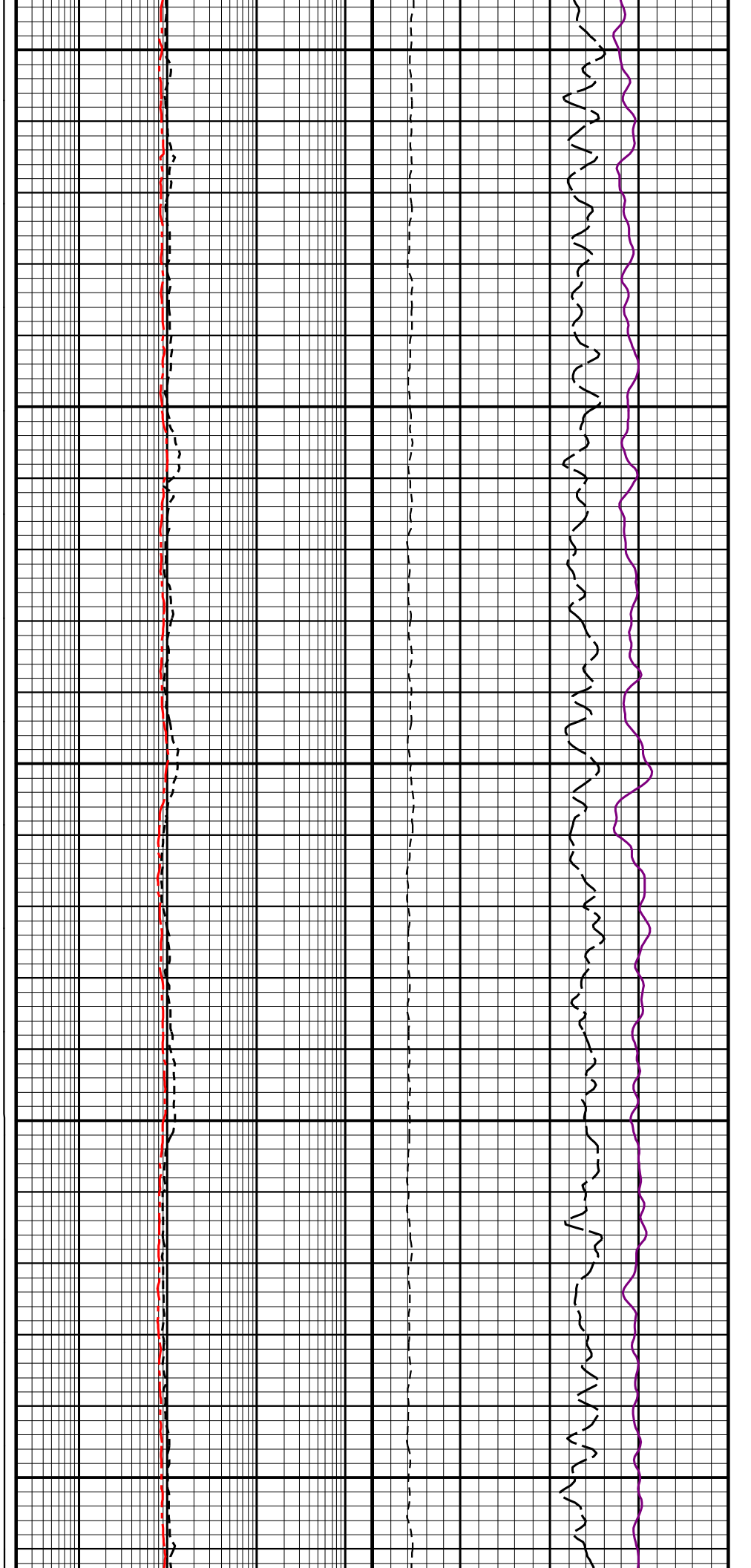
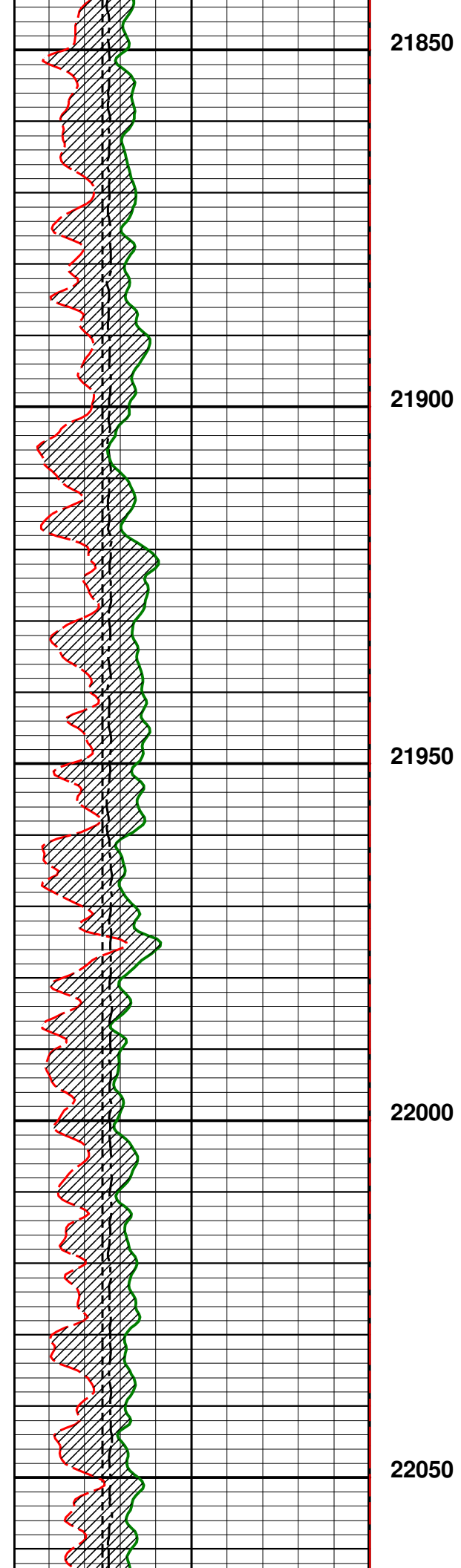
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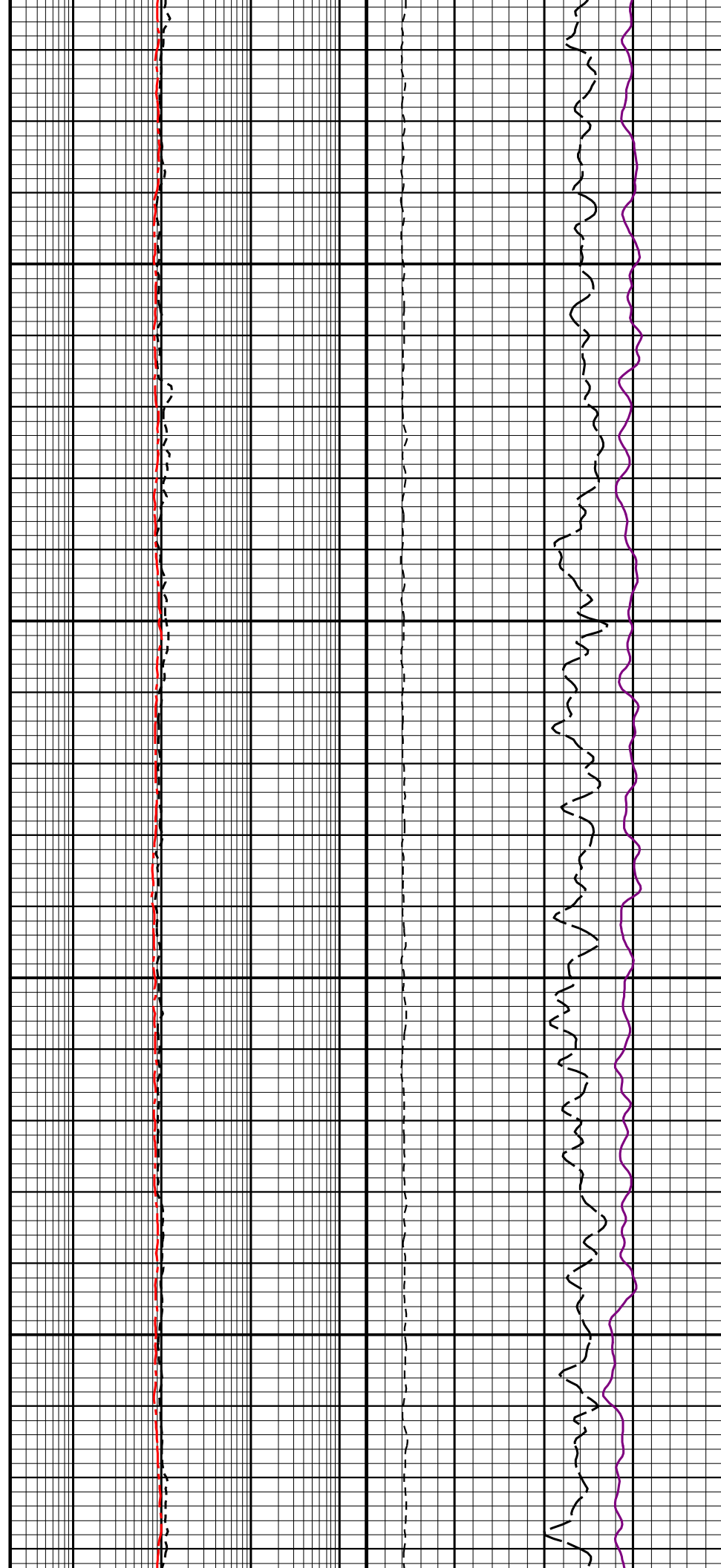
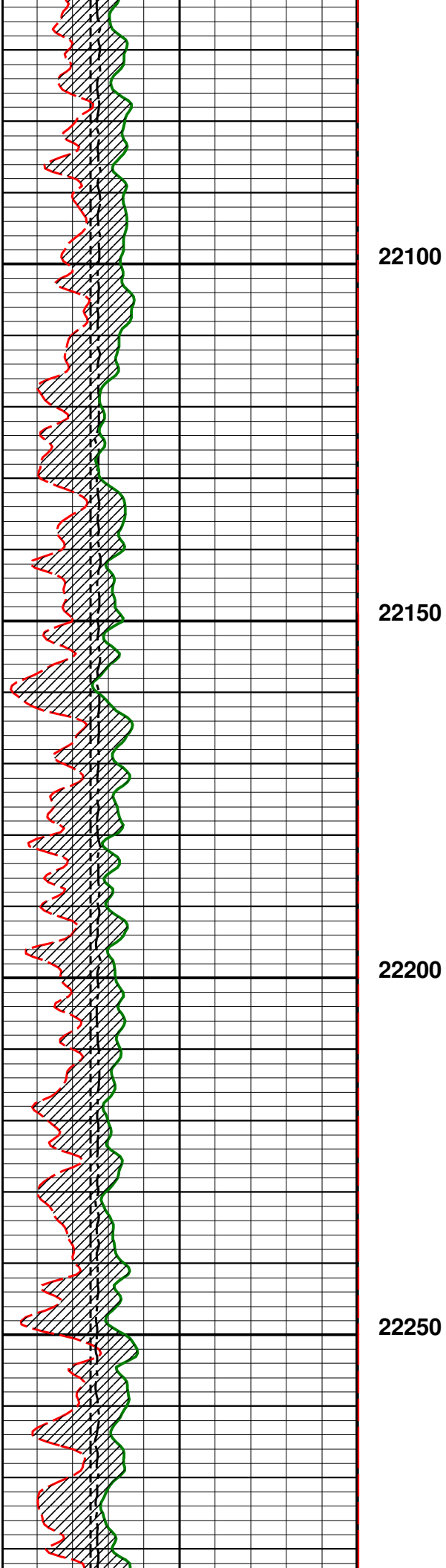
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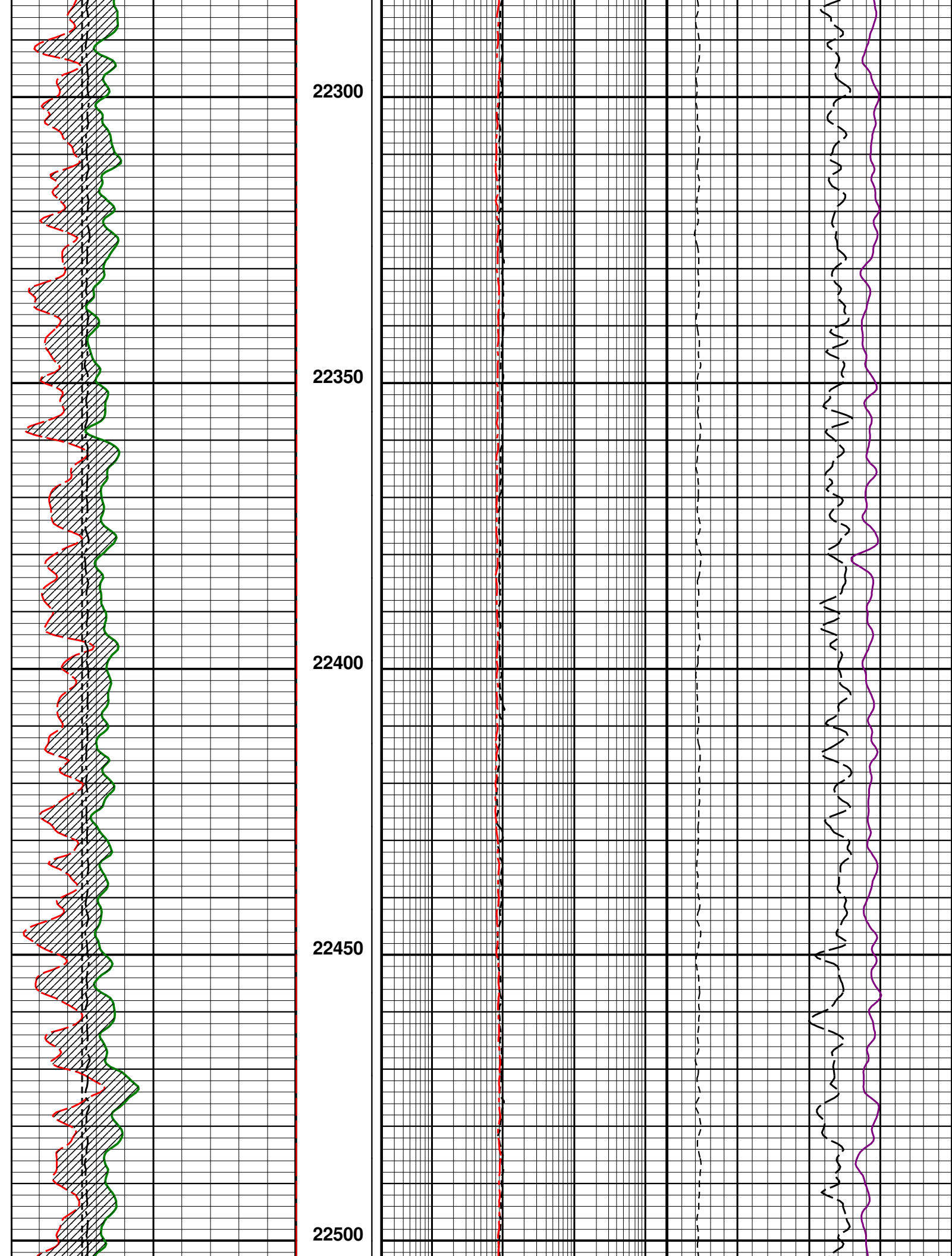
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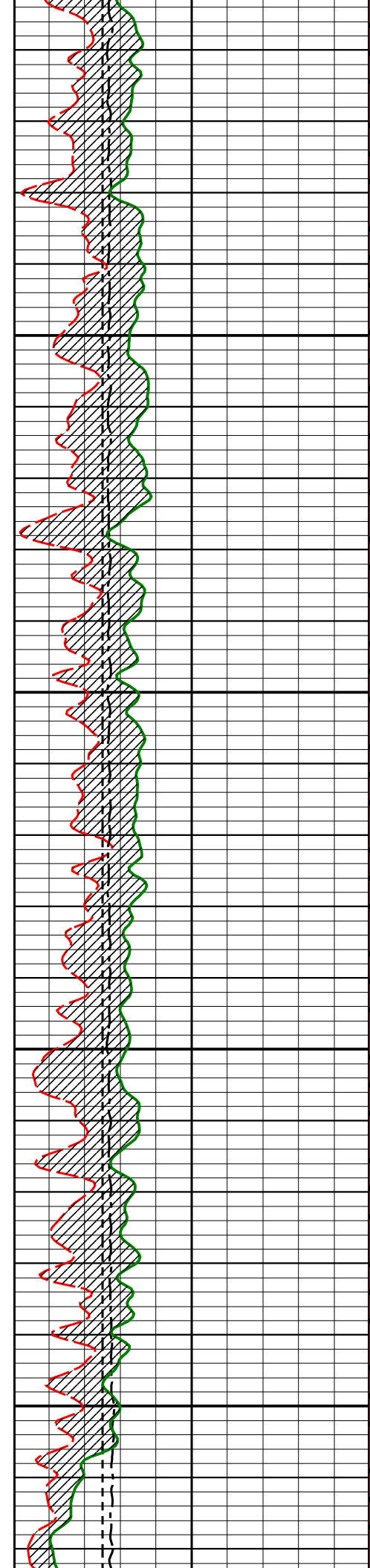










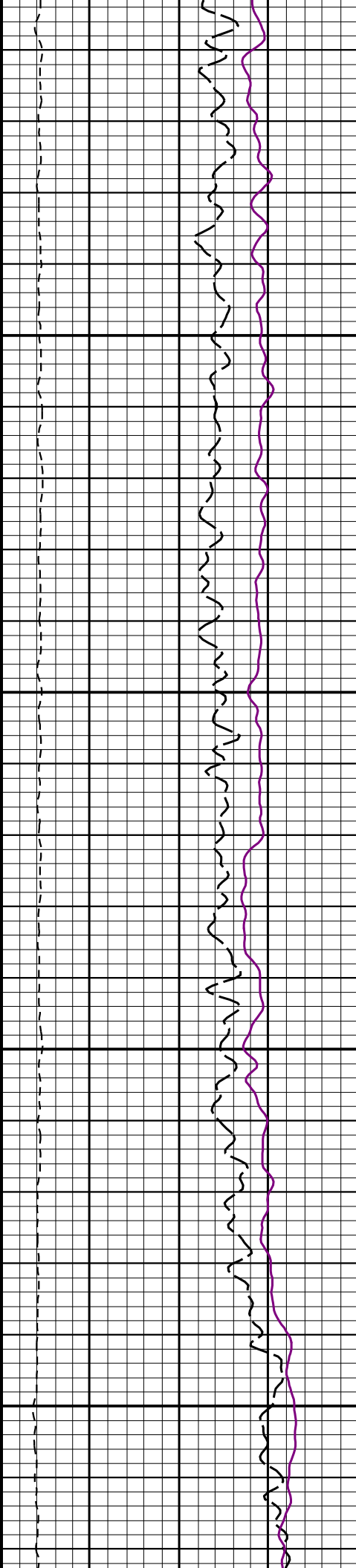
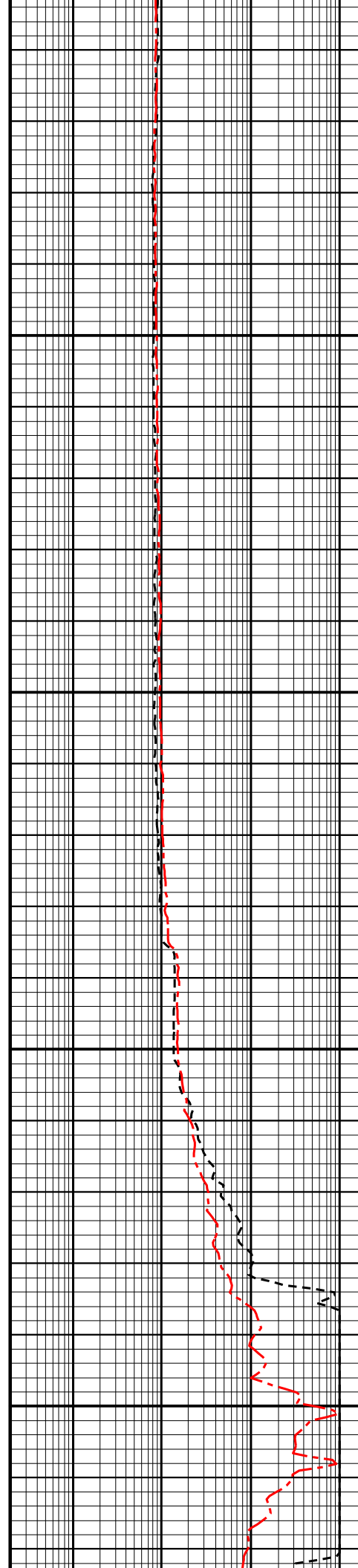


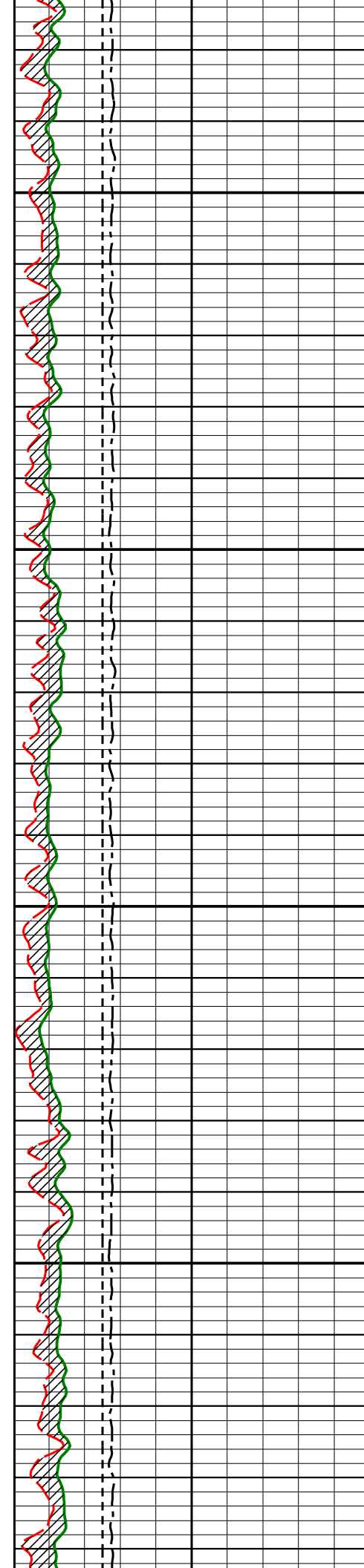
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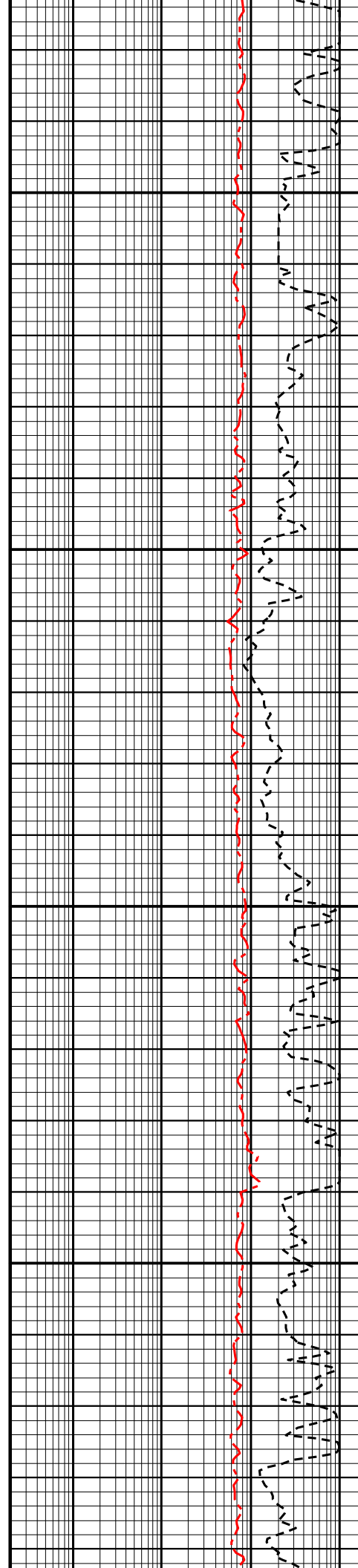


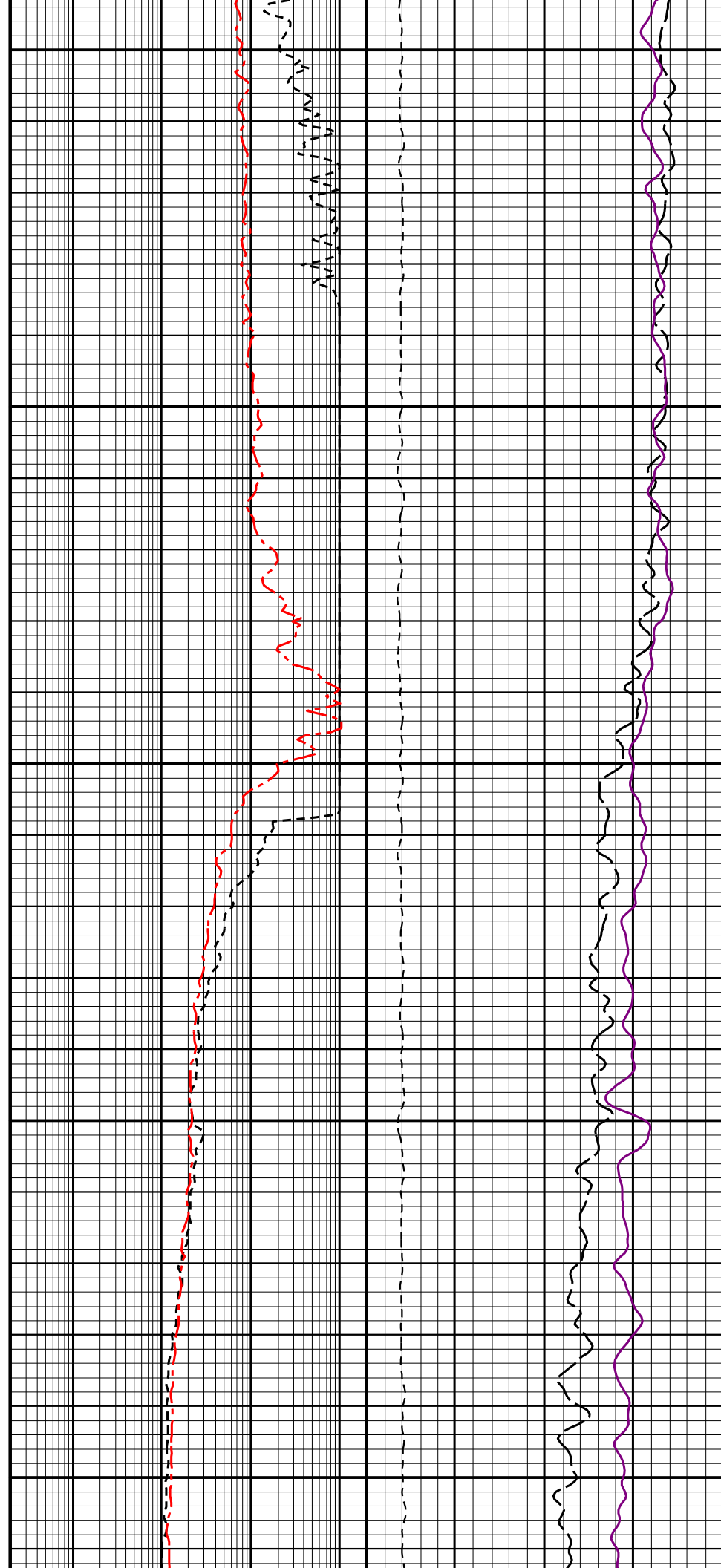
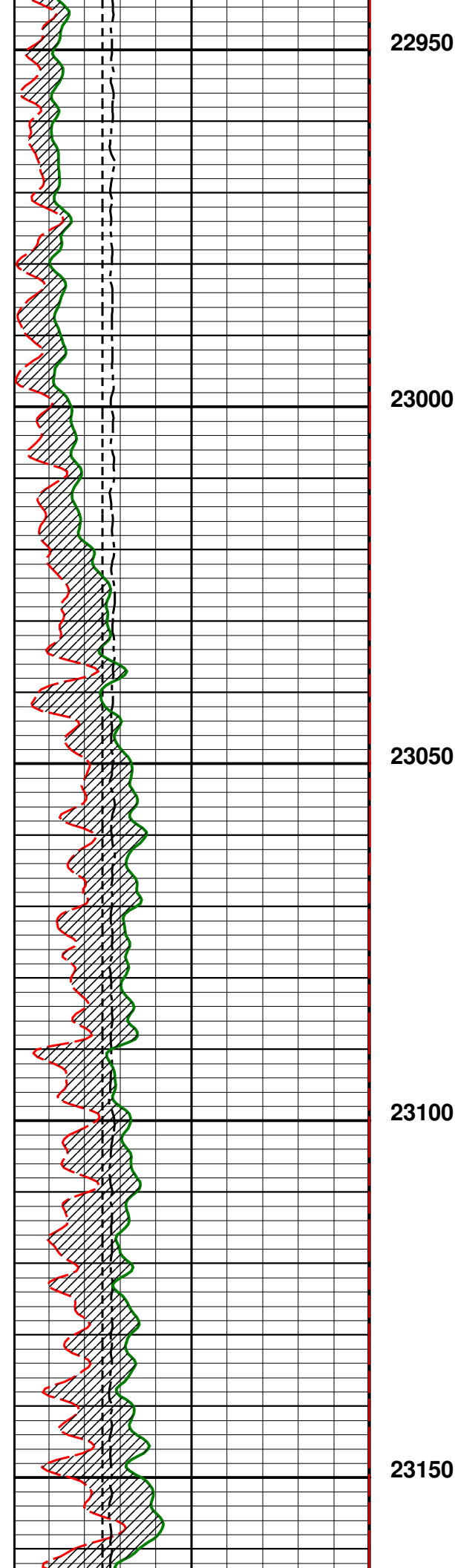
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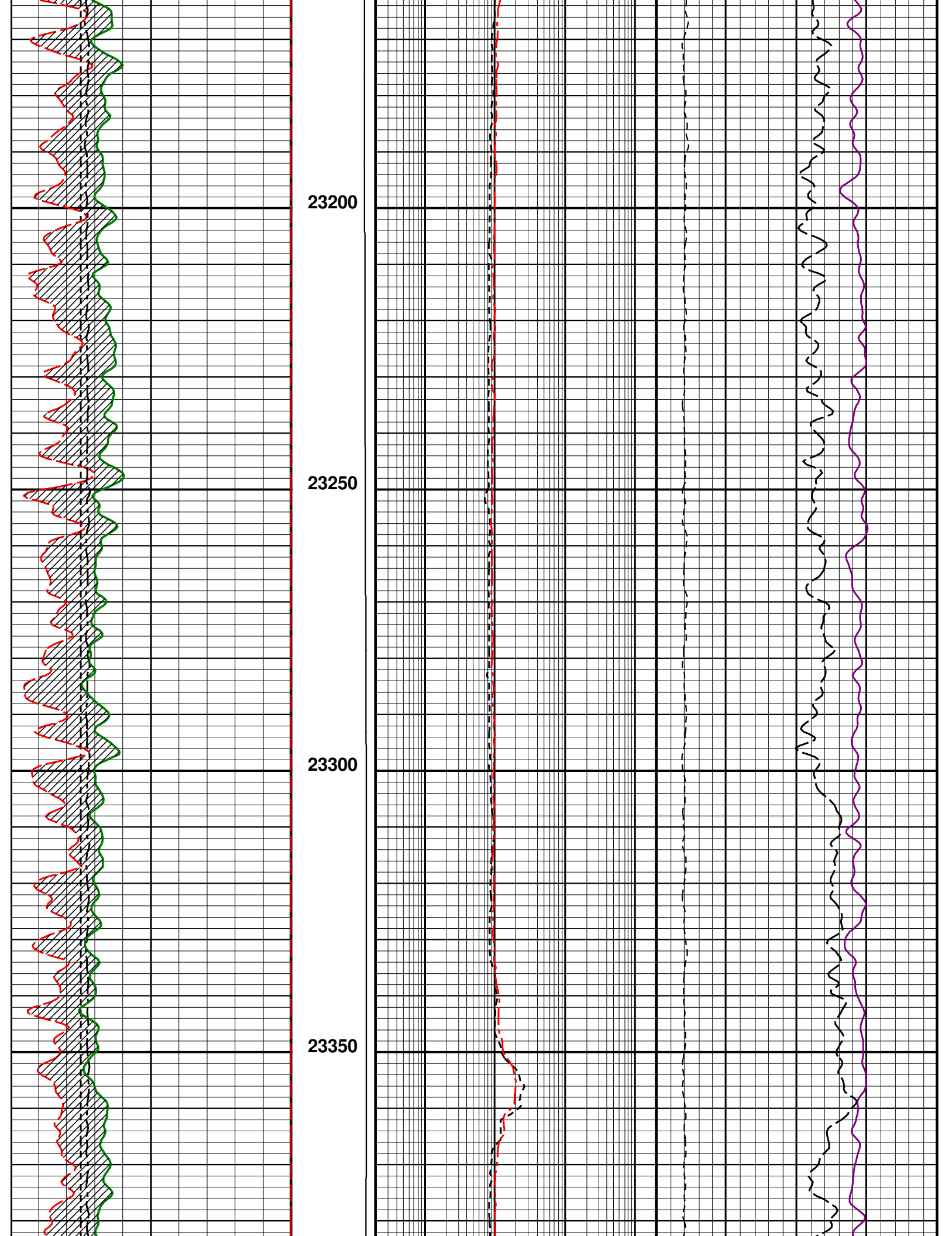
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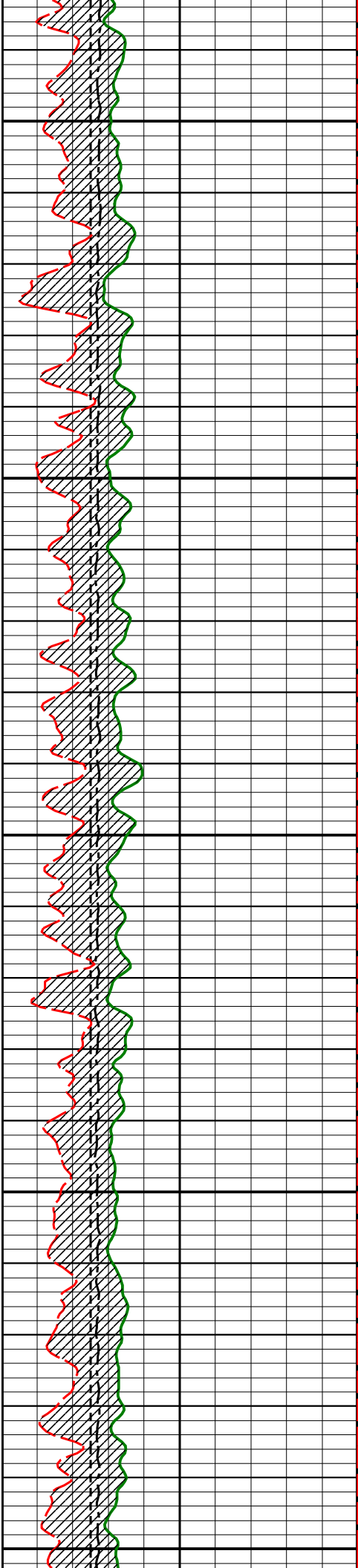
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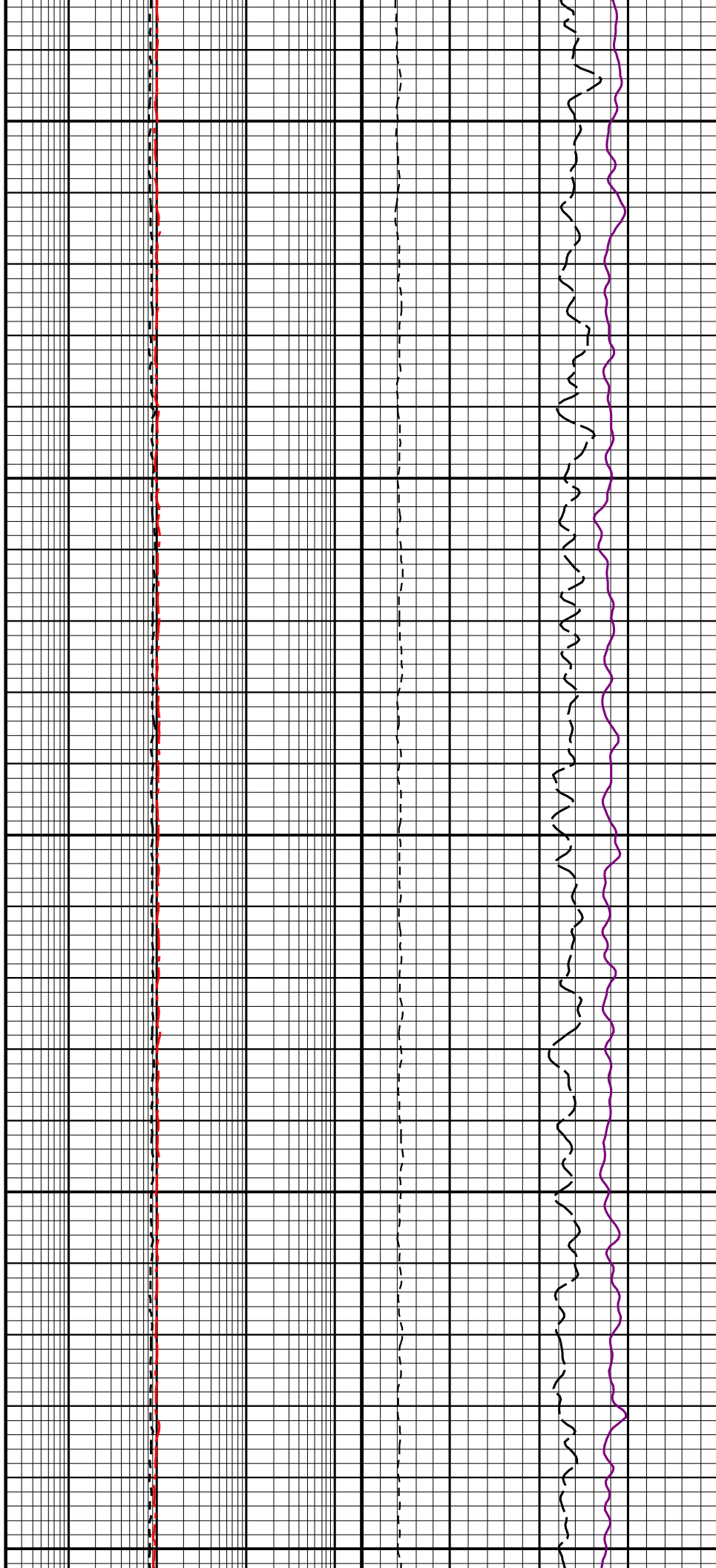
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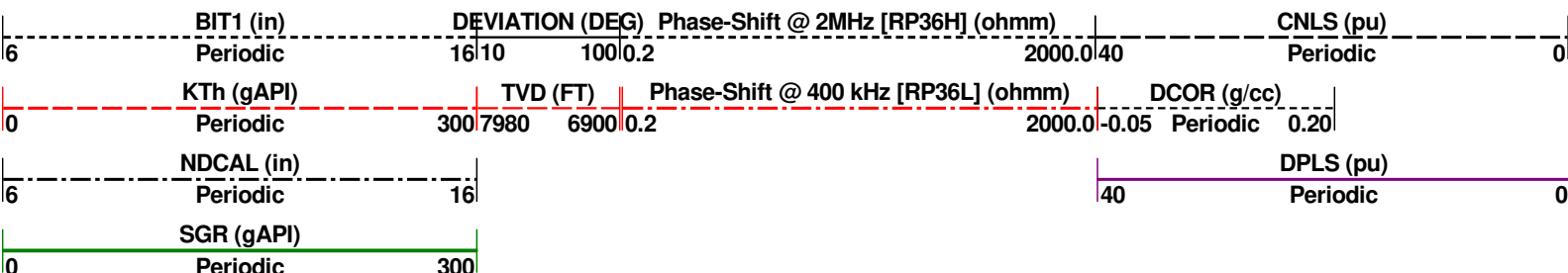
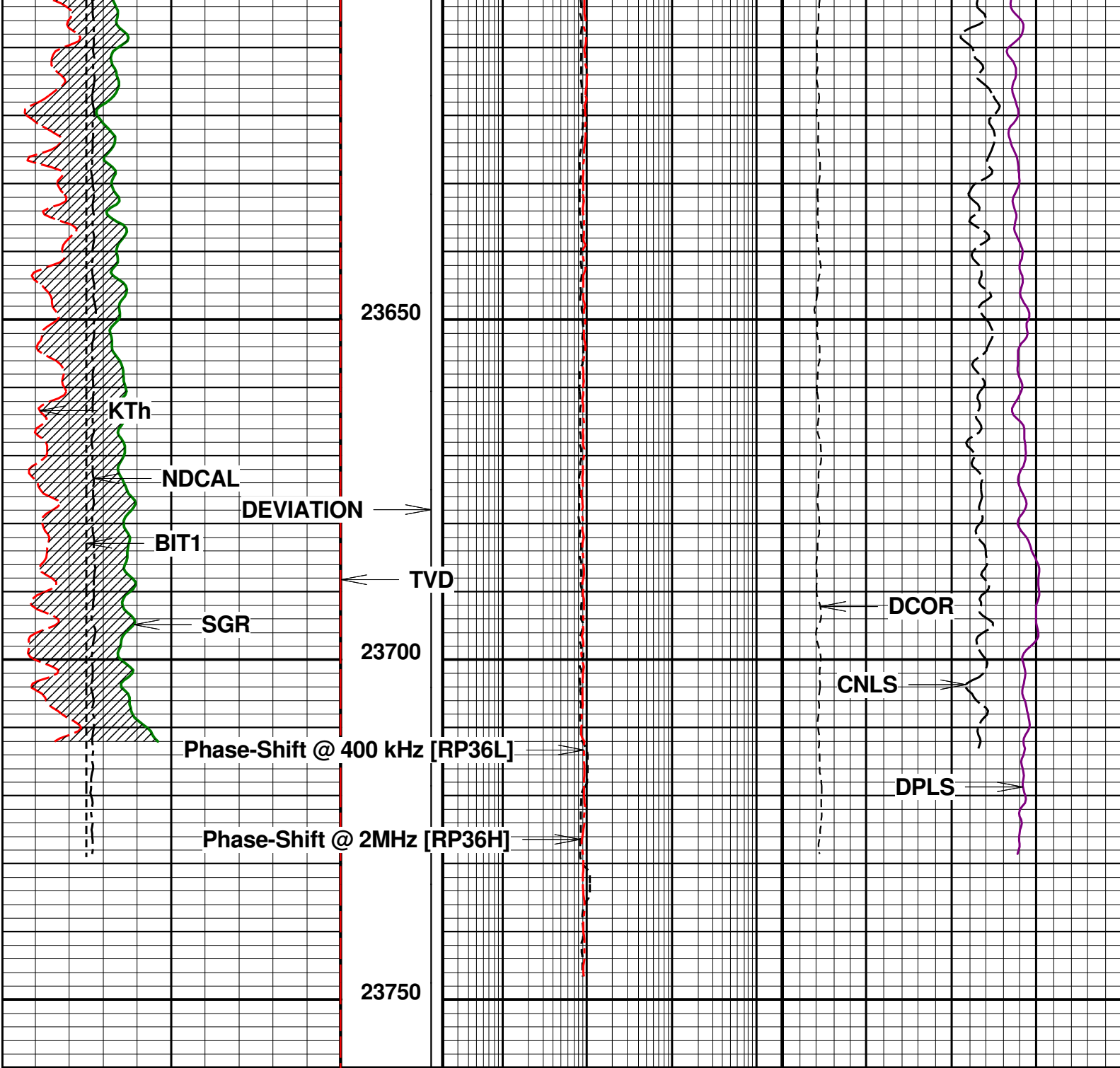
23450

23500

23550

23600





URANIUM EFFECT

File :

Density

Density Calibration

Time Nov / 20 / 2018 12:45:02
Setup
Description 1481020_79966B_2018NOV20_AM
Setup Version 00046

Curve Name	pt	Raw Value	User Value	Device	Mult.	Add.
LSDensity	1	0.246787	1.71 g/c3	Concrete Block	31.753150	-6.126
MSDensity	1	0.211324	1.71 g/c3	Concrete Block	73.268200	-13.773
SSDensity	1	0.239729	1.71 g/c3	Concrete Block	122.707100	-27.706
LSDensity	2	0.277965	2.7 g/c3	Aluminum Block		
MSDensity	2	0.224836	2.7 g/c3	Aluminum Block		
SSDensity	2	0.247797	2.7 g/c3	Aluminum Block		

File :

Tool name : **Dual Neutron** Asset : **021** Series : **1473** Source ID :

Gamma

Gamma Calibration

Time Nov / 20 / 2018 09:50:53
Setup
Description 1473013_1619-93_2018NOV20_AM
Setup Version 00046

Block	Raw Value	User Value	Device	Device SN	Mult.
Background	34.8234				
Jig ON	340.688				
Gamma	305.8646 287	249.9999 gAPI 325	Gamma Ray Jig	1619-93	0.8173549

Gamma Primary Verification

Time Nov / 20 / 2018 09:56:16
Setup
Description 1473013_1619-93_2018NOV20_AM
Setup Version 00046

Block	Device	Device SN	Raw Value	User Value
Background			35.026	
Jig ON			334.736	
Gamma				244.9693 gAPI

Tool name : **Dual Neutron** Asset : **021** Series : **1473** Source ID :

Ratio

Compensated Neutron Calibration

Time Nov / 20 / 2018 10:19:58
Setup
Description 1473013_77813_2018NOV20_AM
Setup Version 00046

Curve Name	pt	Raw Value	User Value	Device	Mult.
Ratio	1	16.2445	17 none	Neutron Ratio	1.046508
		16.15	17.85		

Compensated Neutron Primary Verification

Time

Nov / 20 / 2018 10:23:12

Setup

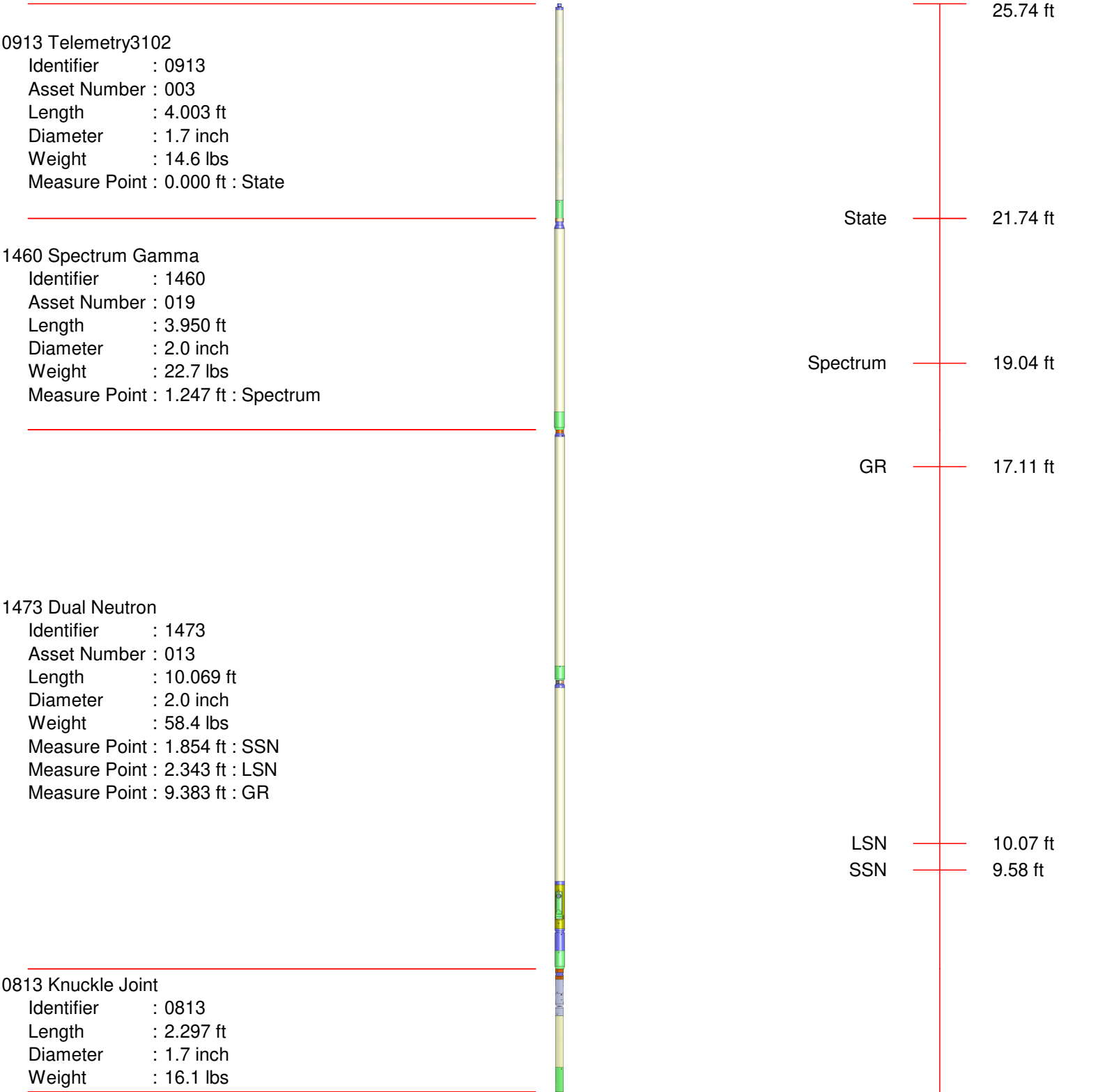
Description

1473013_77813_2018NOV20_AM

Setup Version

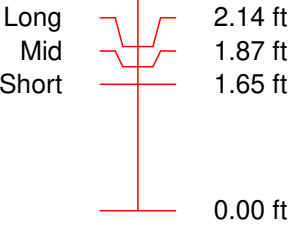
00046

Curve Name	pt	Device	Device Value	User Value
CN	1	Neutron Porosity	23 pu	23.6464 pu
				21.16 24.84




1481 Density

Identifier : 1481
Asset Number : 020
Length : 5.427 ft
Diameter : 2.0 inch
Weight : 38.4 lbs
Measure Point : 1.647 ft : Short
Measure Point : 1.870 ft : Mid
Measure Point : 2.139 ft : Long



Total Length : 25.74 ft
Total Weight : 150.13 lbs
Max Diameter : 2.0 inch

	<div>COMPANY: GREAT WESTERN OPERATING COMPANY LLC</div> <div>WELL: SELTZER LD 21-031HC</div> <div>FIELD: WATTENBERG</div> <div>COUNTY: ADAMS</div> <div>STATE: COLORADO</div>
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