		<b>MEASURED DEPTH</b> <b>COMPENSATED NEUTRON-DENSITY POROSITY</b> <b>SPECTRAL GAMMA RAY LOG</b>	
Company: <b>GREAT WESTERN OPERATING COMPANY LLC</b>  Well: <b>OTTESEN LE 06-290HN</b> Field: <b>WATTENBERG</b>  County: <b>WELD</b> State: <b>CO</b>		<b>COMPANY: GREAT WESTERN OPERATING COMPANY LLC</b>  <b>WELL: OTTESEN LE 06-290HN</b> <b>FIELD: WATTENBERG</b> <b>COUNTY: WELD</b> <b>STATE: CO</b>	
Permanent Datum: <b>GROUND LEVEL</b> Elevation: 5076.5 ft Log meas. from: <b>KELLY BUSHING</b> 20.0 ft      above Perm. Datum Drill. meas. from: <b>KELLY BUSHING</b>		API No.      05-123-44335 Location      LAT:40.004325 LONG:-104.778269 SEC 33 TWP 1N RNG 66W 1410' FSL & 1593' FEL	Other Services N/A
Date	14-JAN-2019		
Run No.	1 (HORIZONTAL)	TVD	
Depth Driller	17953.0 ft	7580.1 ft	
Depth Logger	17953.0 ft	7580.1 ft	
Bottom Logged Interval	17810.0 ft	7583.0 ft	
Top Logged Interval	8970.0 ft	6850.0 ft	
Casing Driller	1777.0 ft	1773.0 ft	
Casing Logger	N/A	N/A	
Bitsize	8.5 in		
Type Fluid in Hole	INVERT MUD		
Density / Viscosity	10.5 ppg      57 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	13-01-2019 @ 07:30		
Logger on Bottom	13-01-2019 @ 08:26		
Max. Recorded Temp.	245.4 °F		
Equip. No / Location	DL-415      OKC		
Recorded by	A. GLOSPIE	P. MUNGCHAROEN	
Witnessed by	D. ROBERTSON		

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.

REMARKS

TOOLS PUMPED DOWN FROM SURFACE; LOGGING PERFORMED WHILE TRIPPING OUT

COMPENSATED NEUTRON-DENSITY PRESENTED IN SANDSTONE AND LIMESTONE MATRIX

MAX DEVIATION: 91.48 DEG @ 11082.0 ft

DRILLING RIG: PRECISION DRILLING 466

SURFACE CASING SIZE: 9.625 in, 36.0 lbm/ft FROM 0.0 ft TO 1777.0 ft

BITSIZE: 13.5 in FROM 0.0 ft TO 1777.0 ft

BITSIZE: 8.5 in FROM 1777.0 ft TO 17951.91 ft

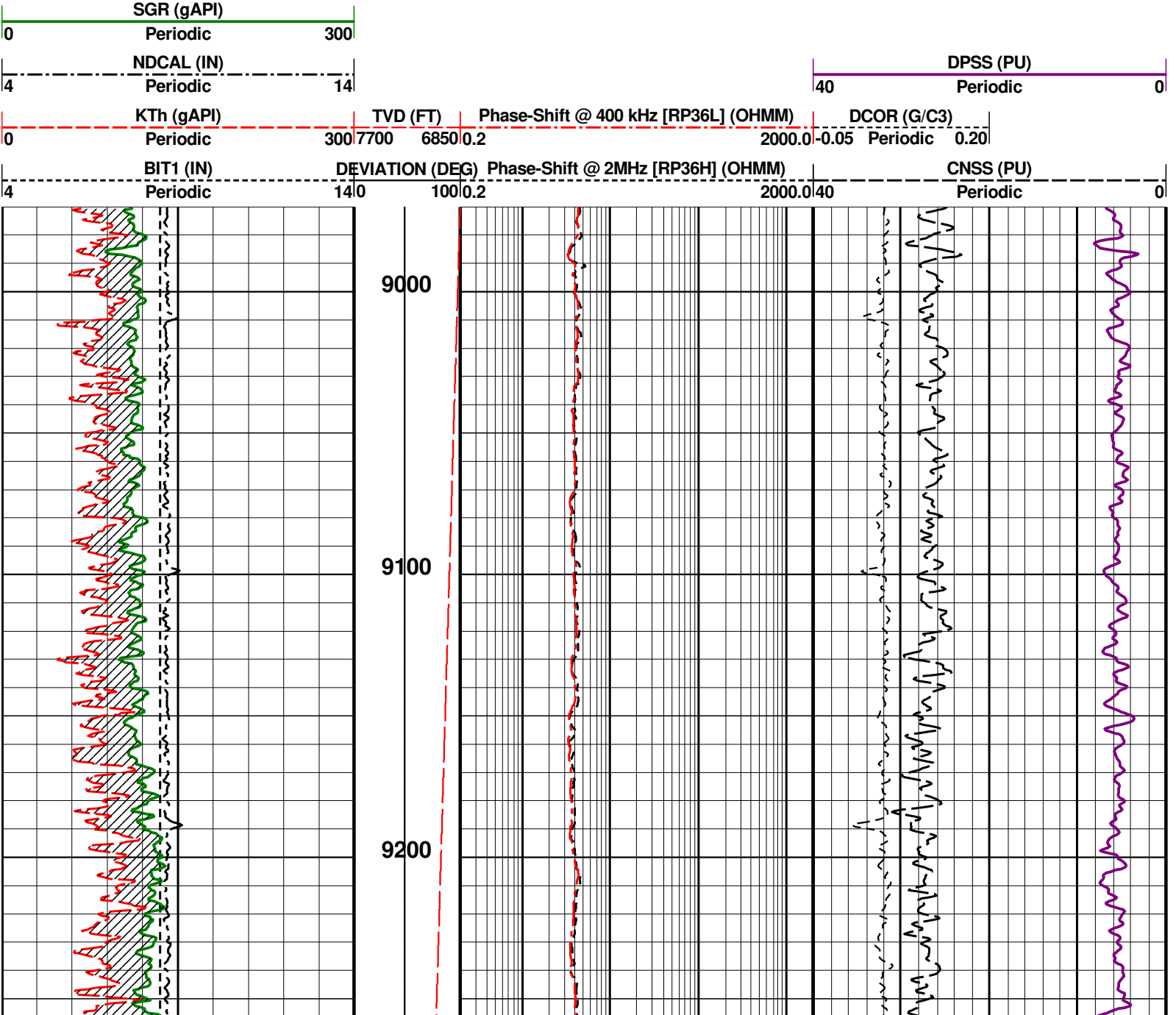
ALL LOG DEPTHS WERE RECORDED WITH EDR (NOV TOTCO), AND CORRECTED TO PIPE TALLY

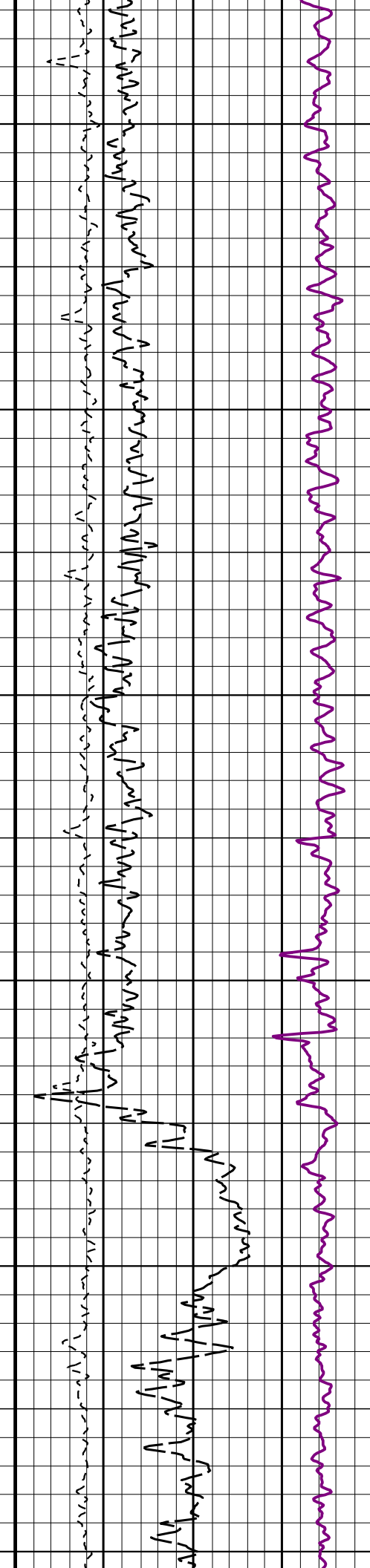
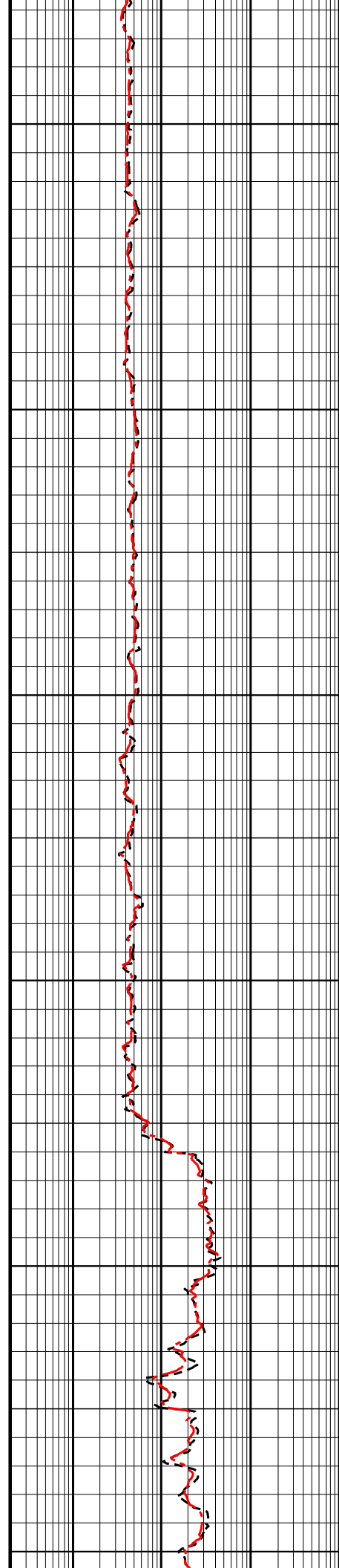
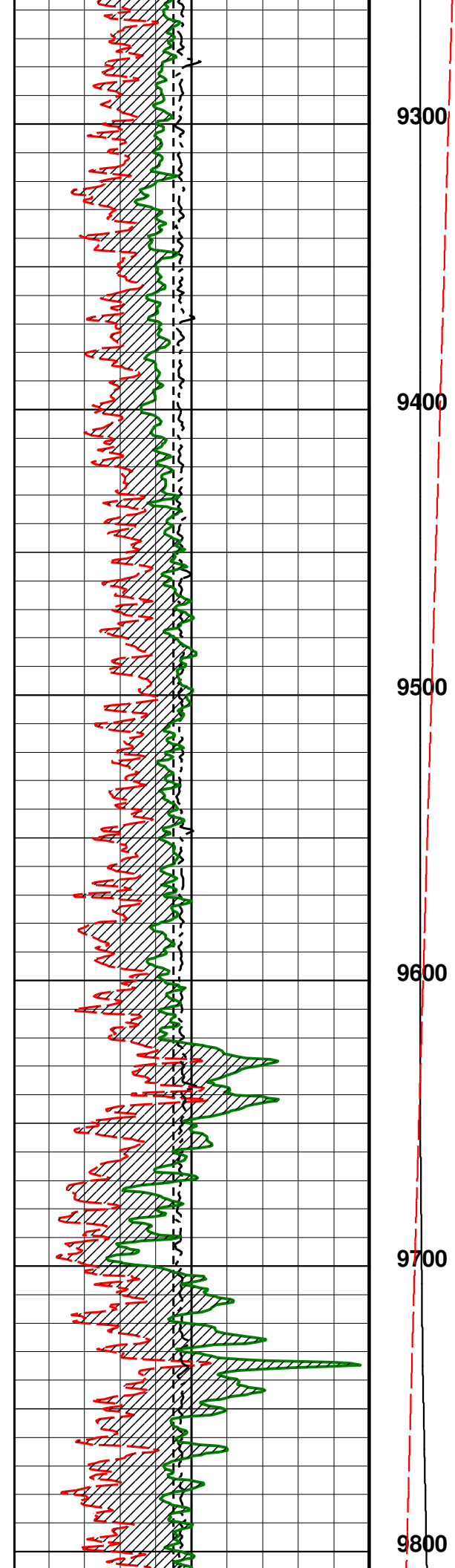
EQUIPMENT DATA					
Run	Trip	Instrument	Serial No.	Series No.	Distance to Reference
1	1	TELEMETRY	3102013		182.77 ft
1	1	SGR	1460015		
1	1	GR-CN	1473020 U	1473020 L	
1	1	KNUCKLE	0813002		
1	1	DENSITY	1481021		
1	1	RESISTIVITY	RX0003		140.07 ft
1	1	OMEGA COLLAR	RSA65008		
1	1	STEEL COLLAR	DL-15X11.2		

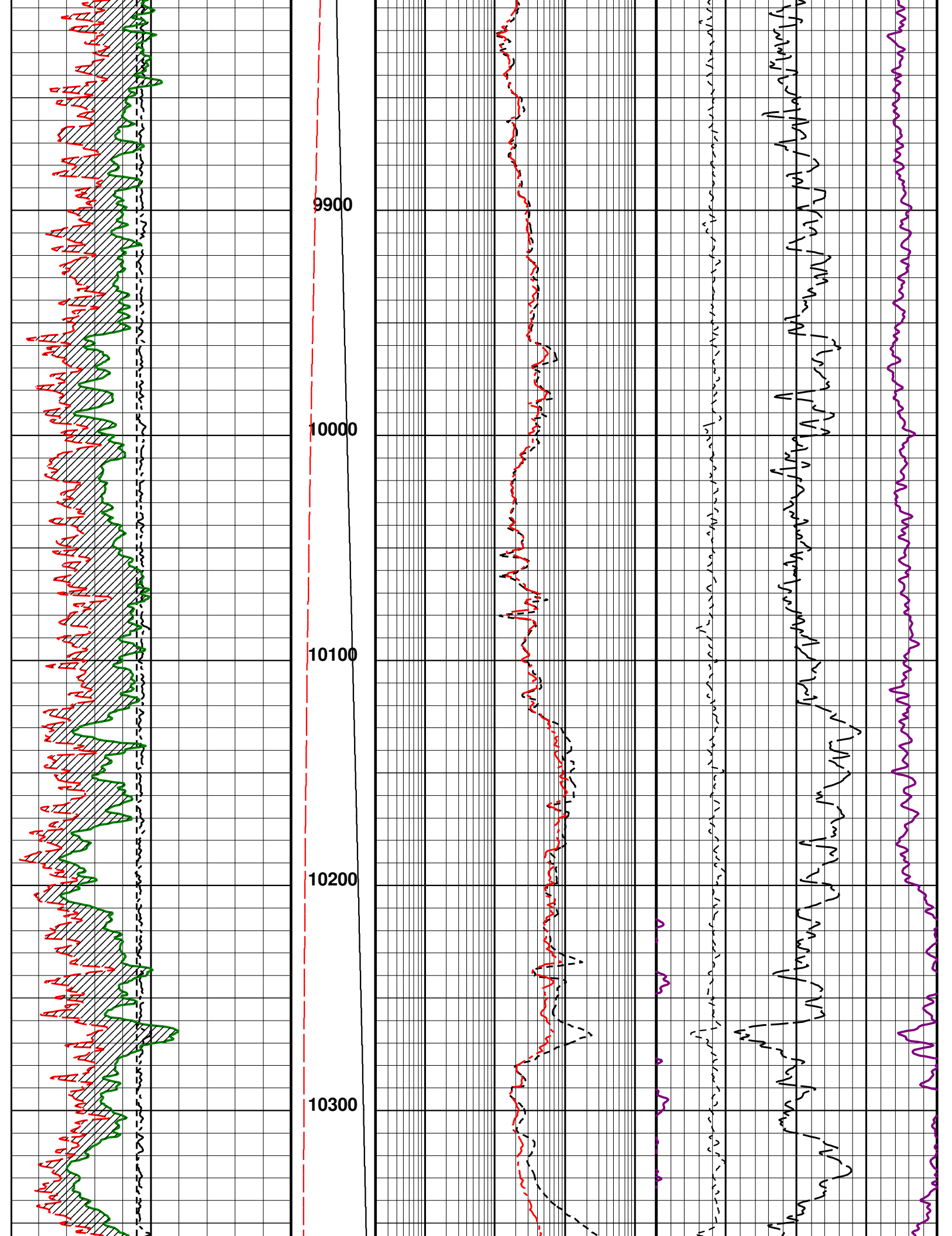
1	1	STEEL COLLAR	DL-L1818-XH1		
1	1	Am241Be / Cs137	349811B	6355013	

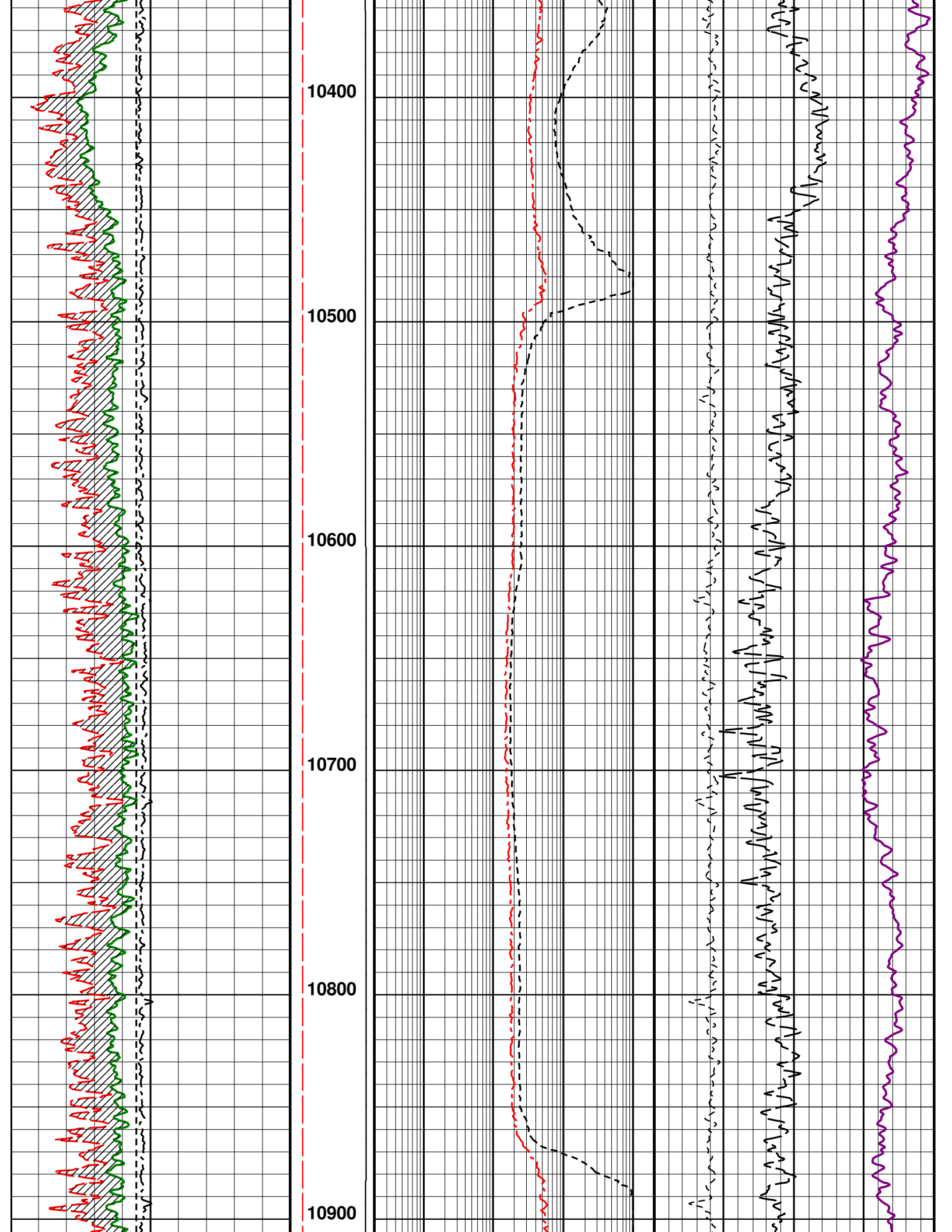
# 2" MAIN PASS SANDSTONE

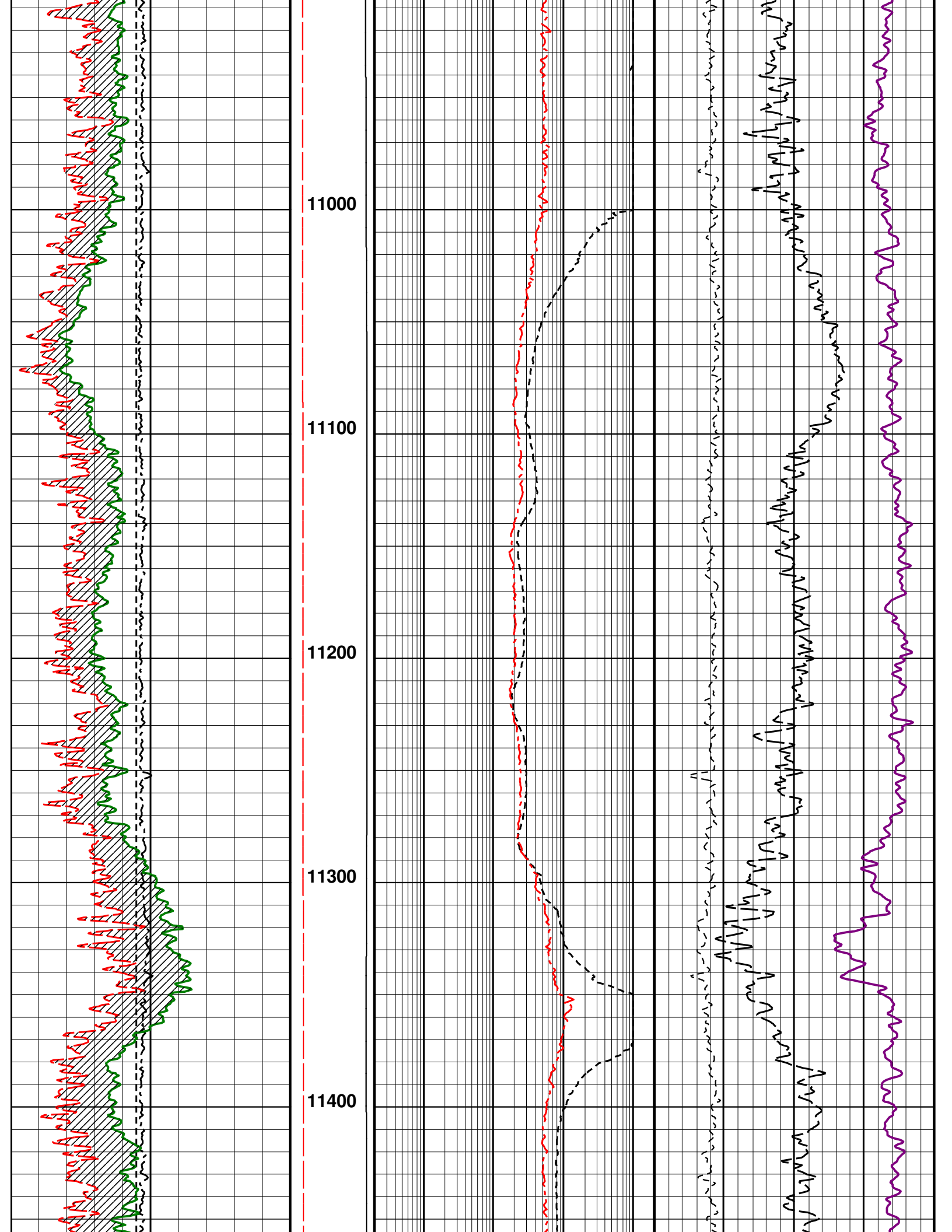
Company	: GREAT WESTERN OPERATING COMPANY	Date	: 14-JAN-2019
Well	: OTTESEN LE 06-290HN	Time	:
Scale	: 1 : 600	Remarks	: SANDSTONE MATRIX
Depth in	: Feet		
Software	: WinAPIot Ver. 5, 87, 2, 0	File Name	: 812_05-123-44335_MAIN MD

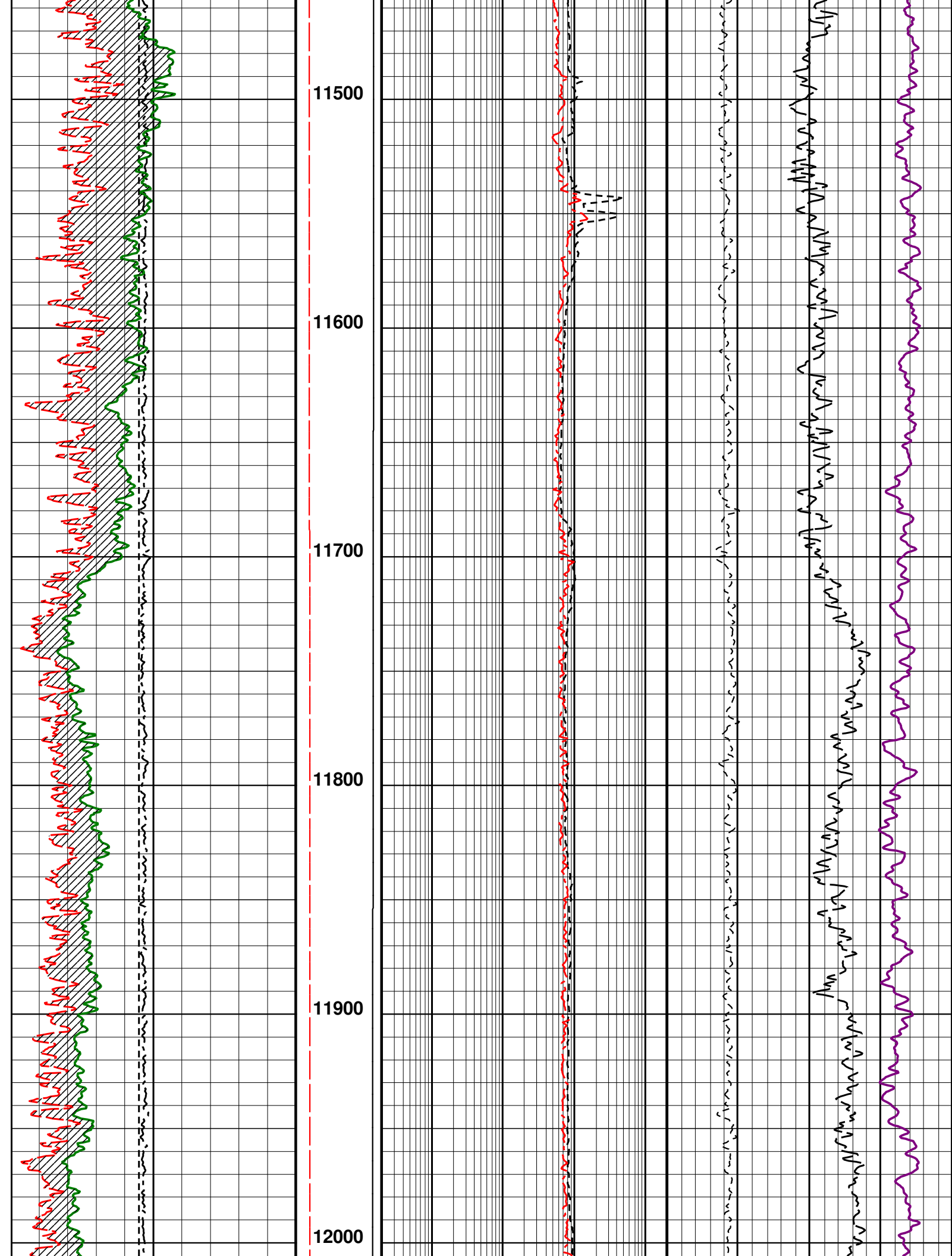




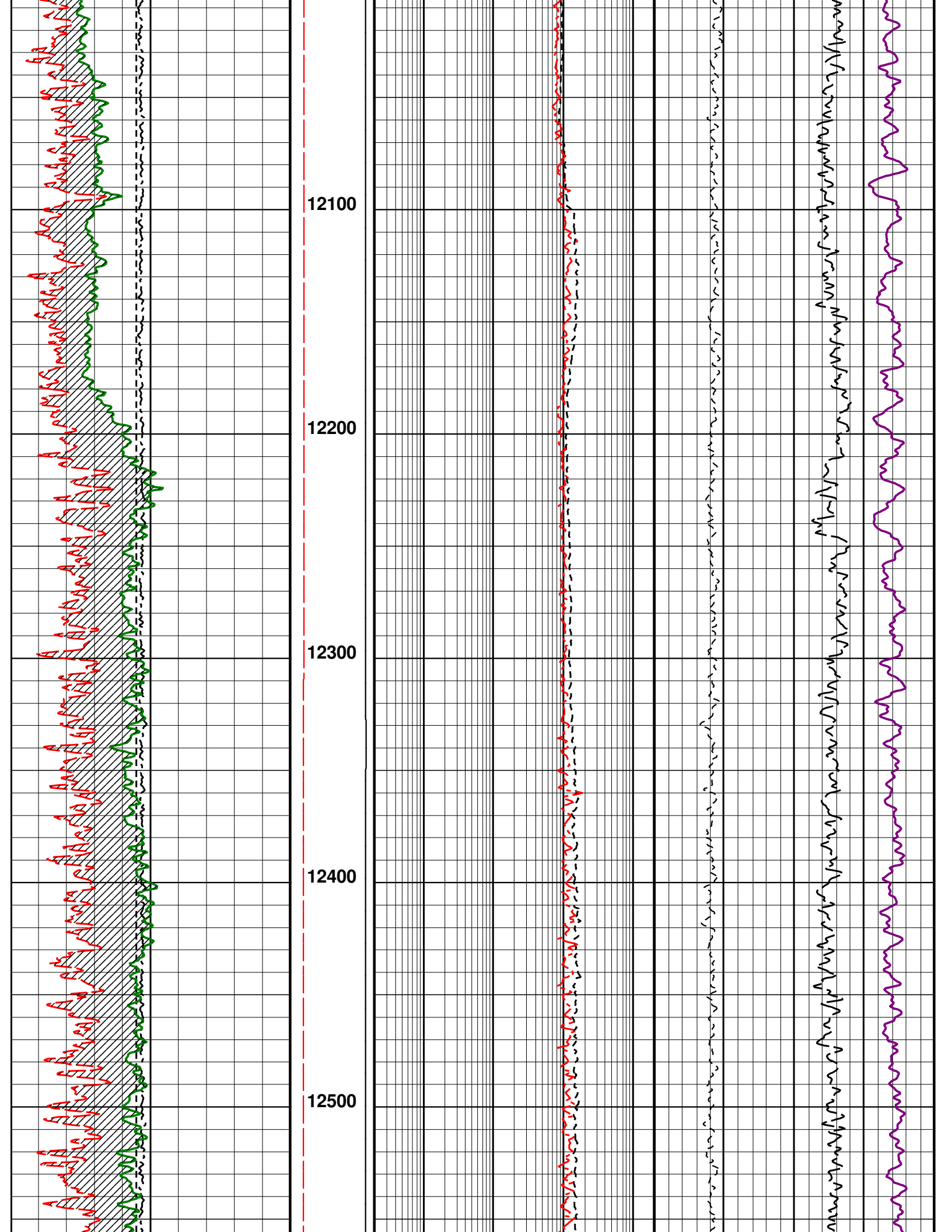




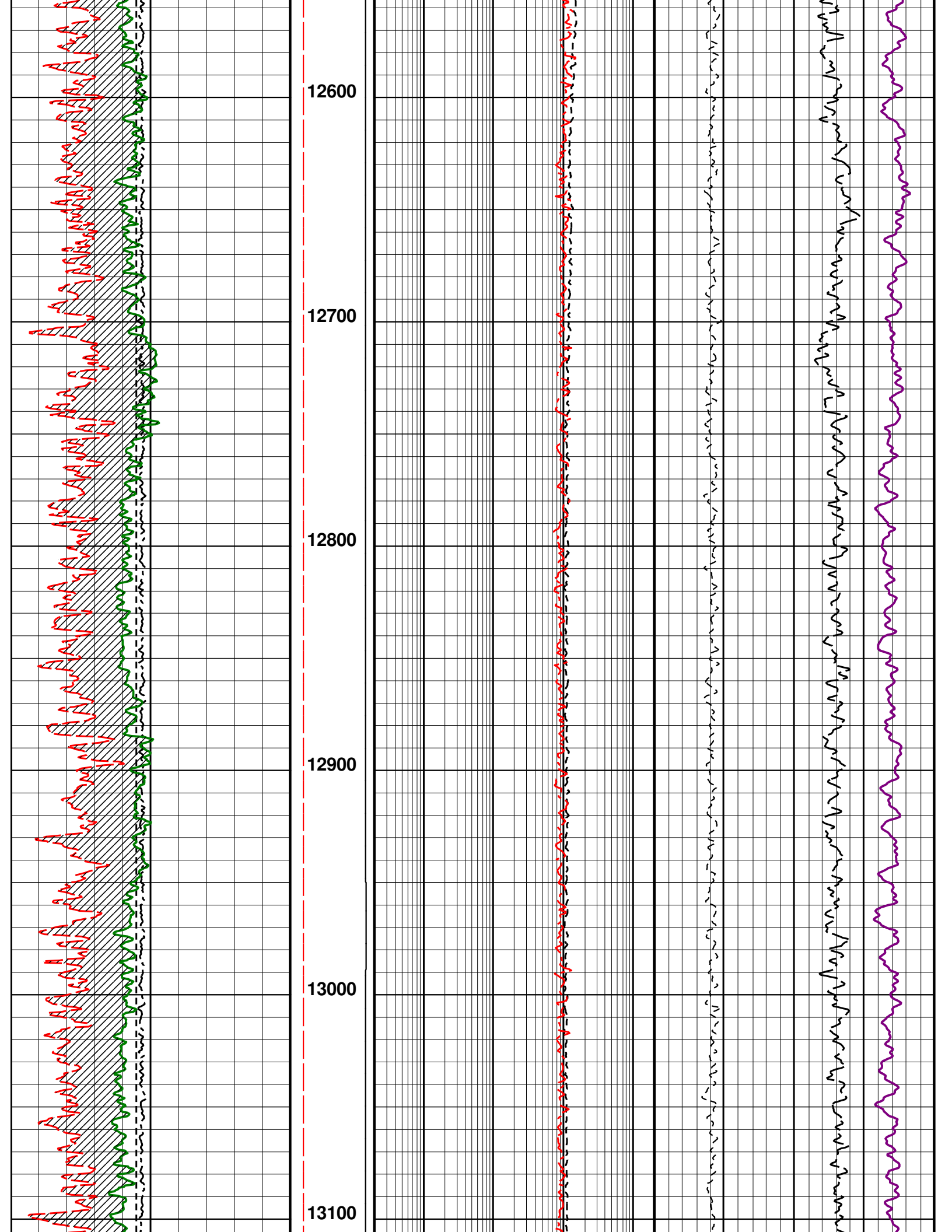


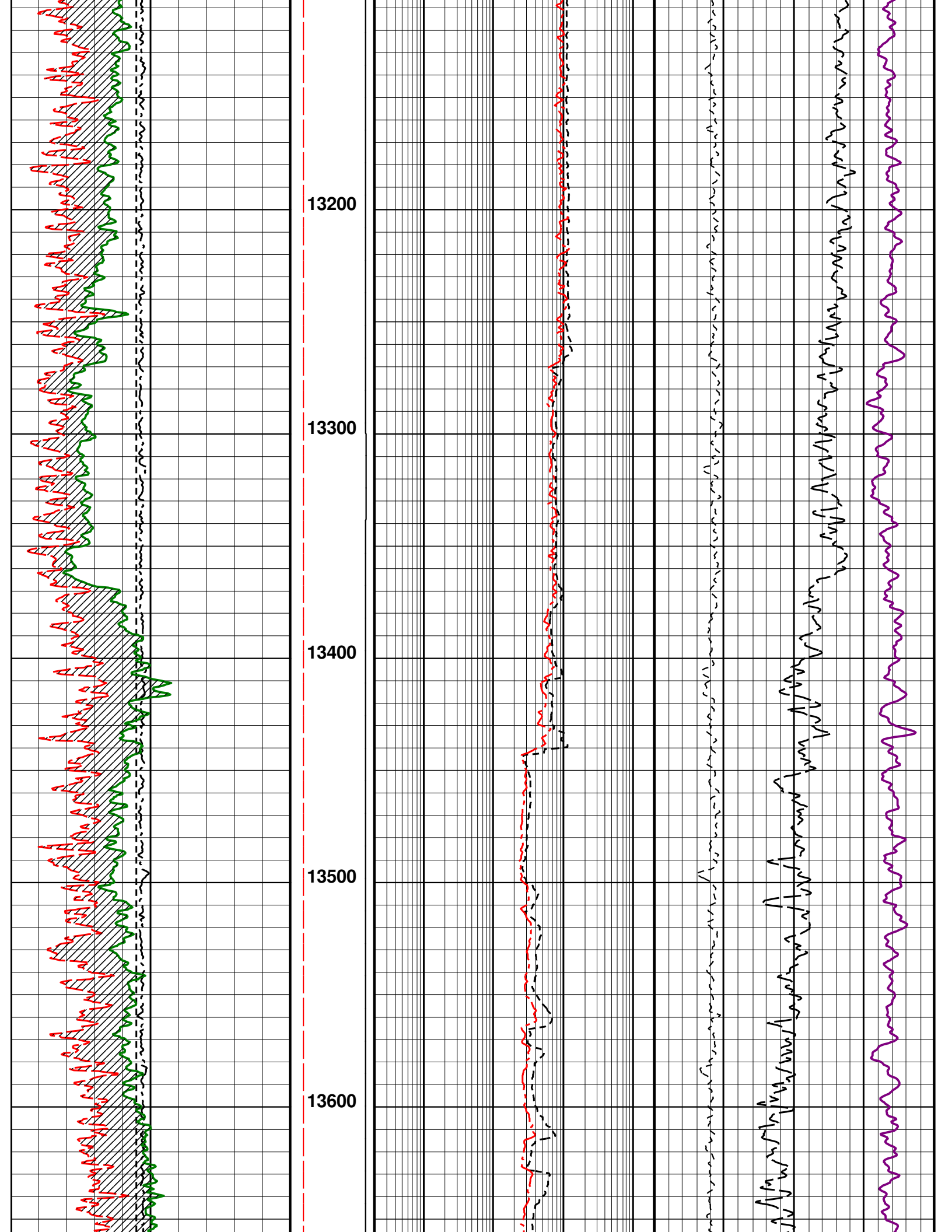


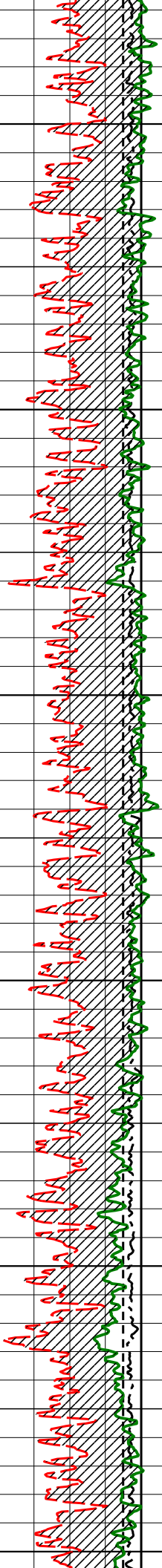












13700

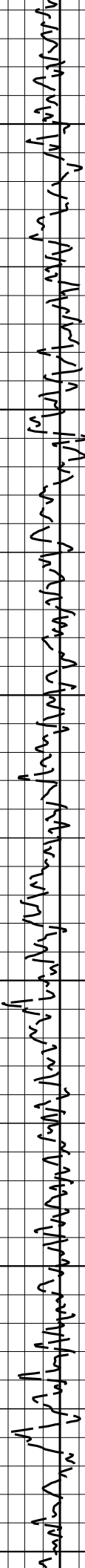
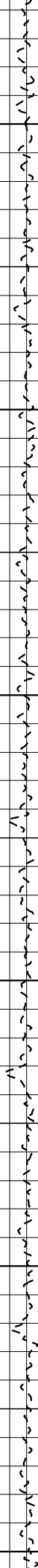
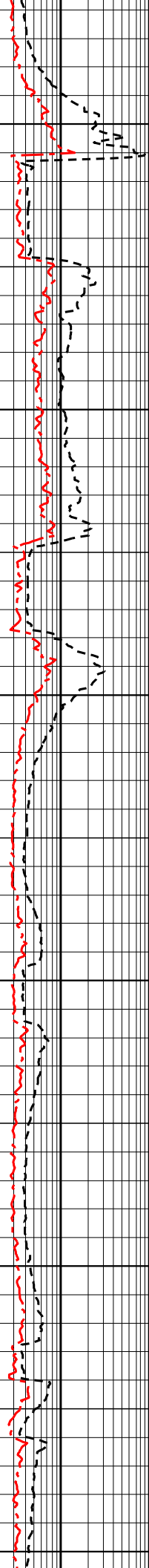
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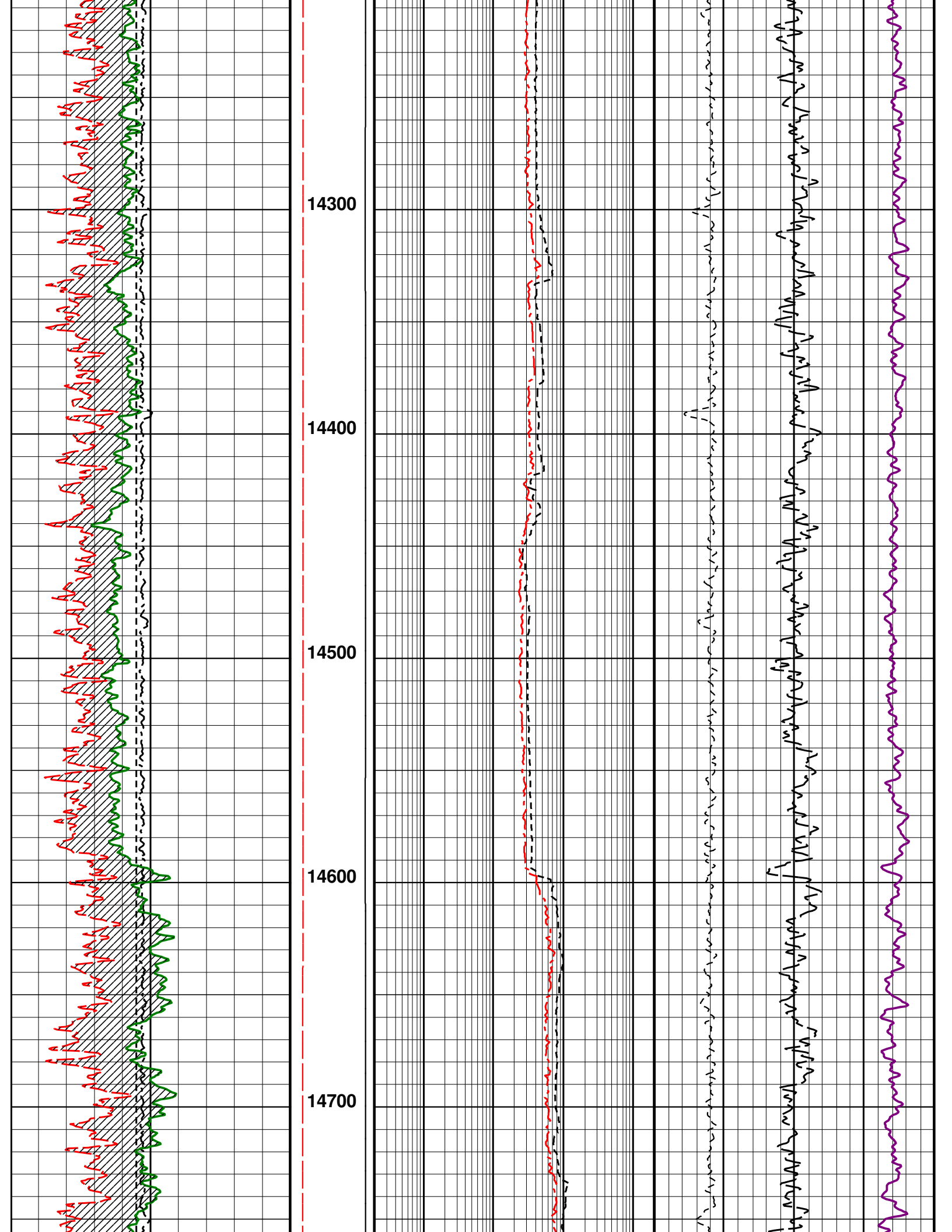
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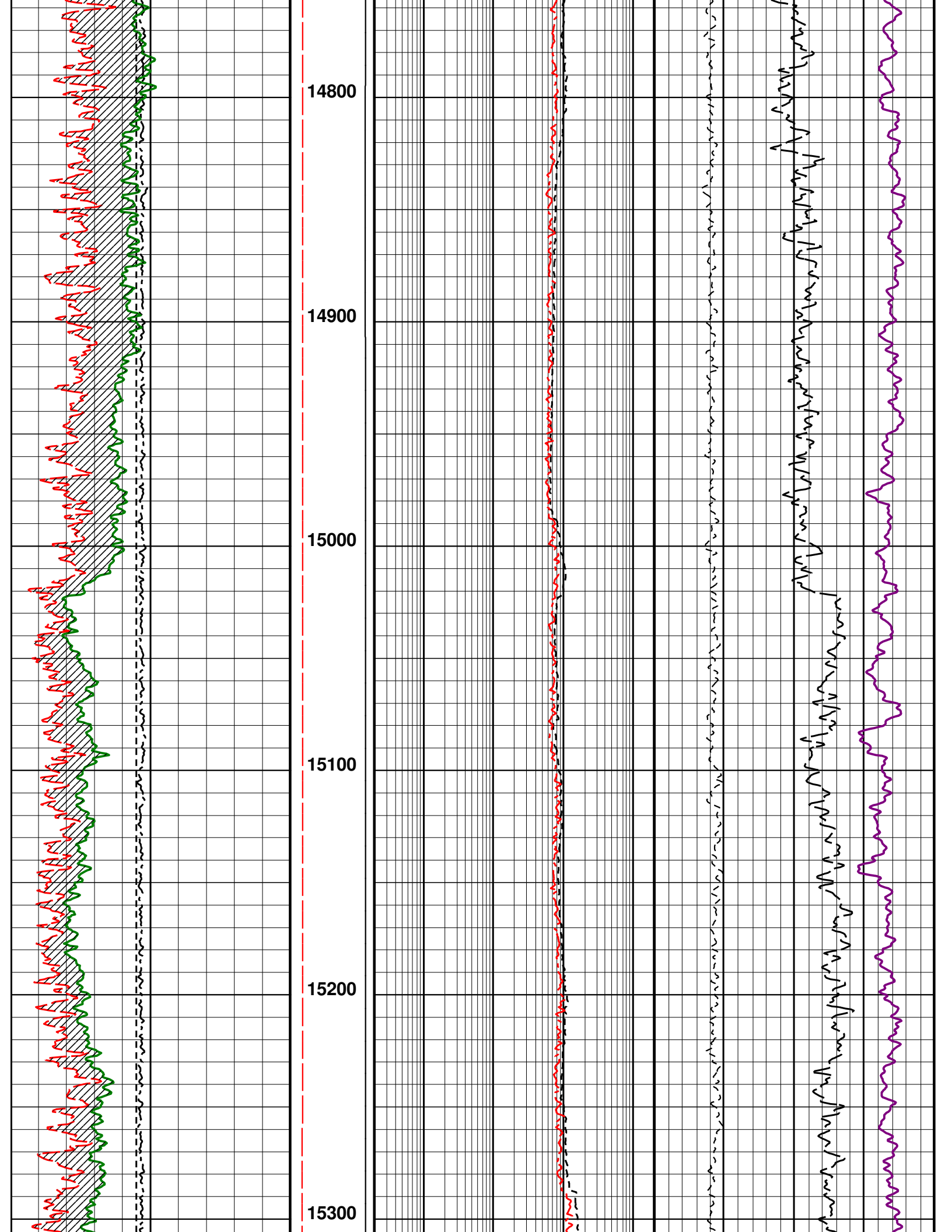
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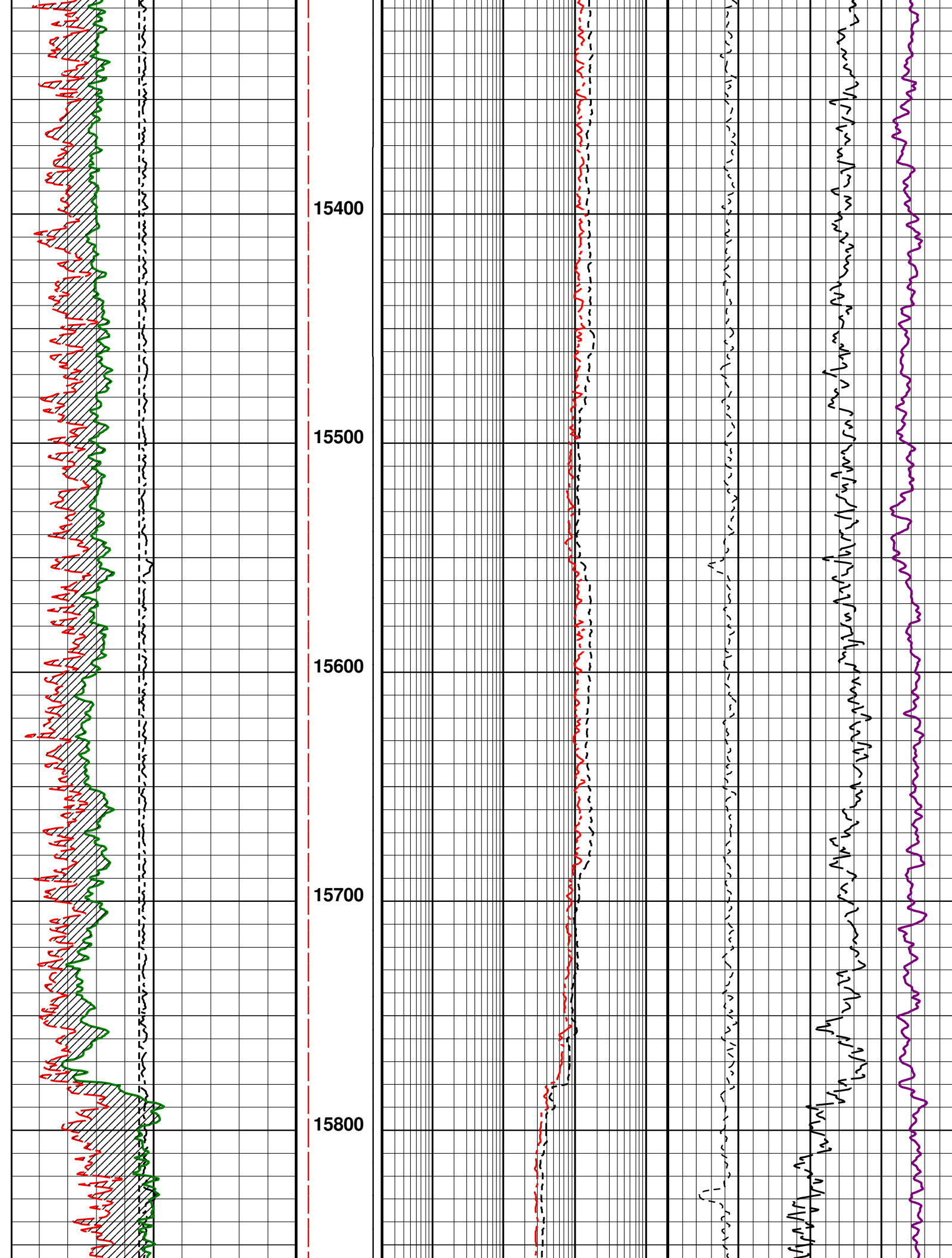
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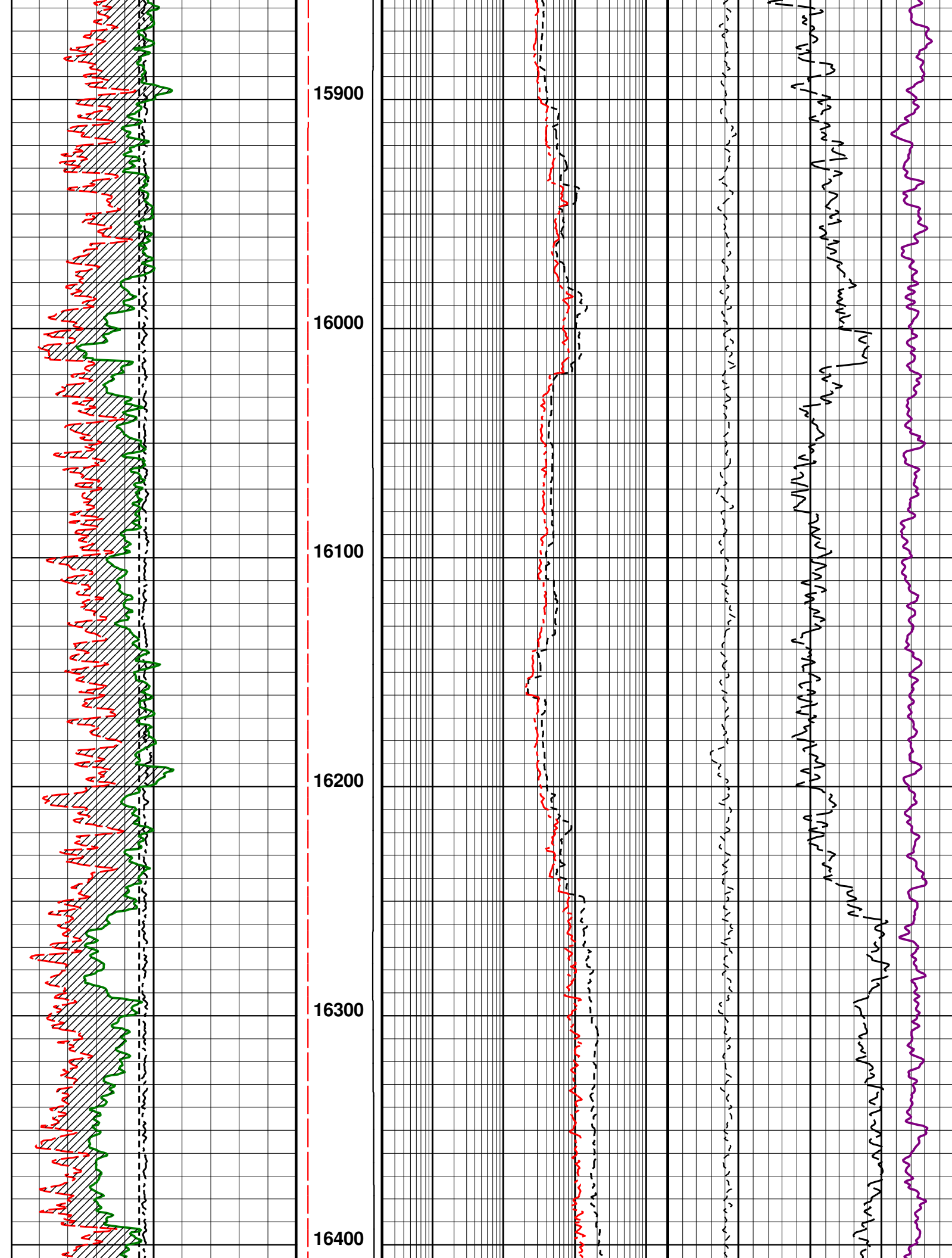
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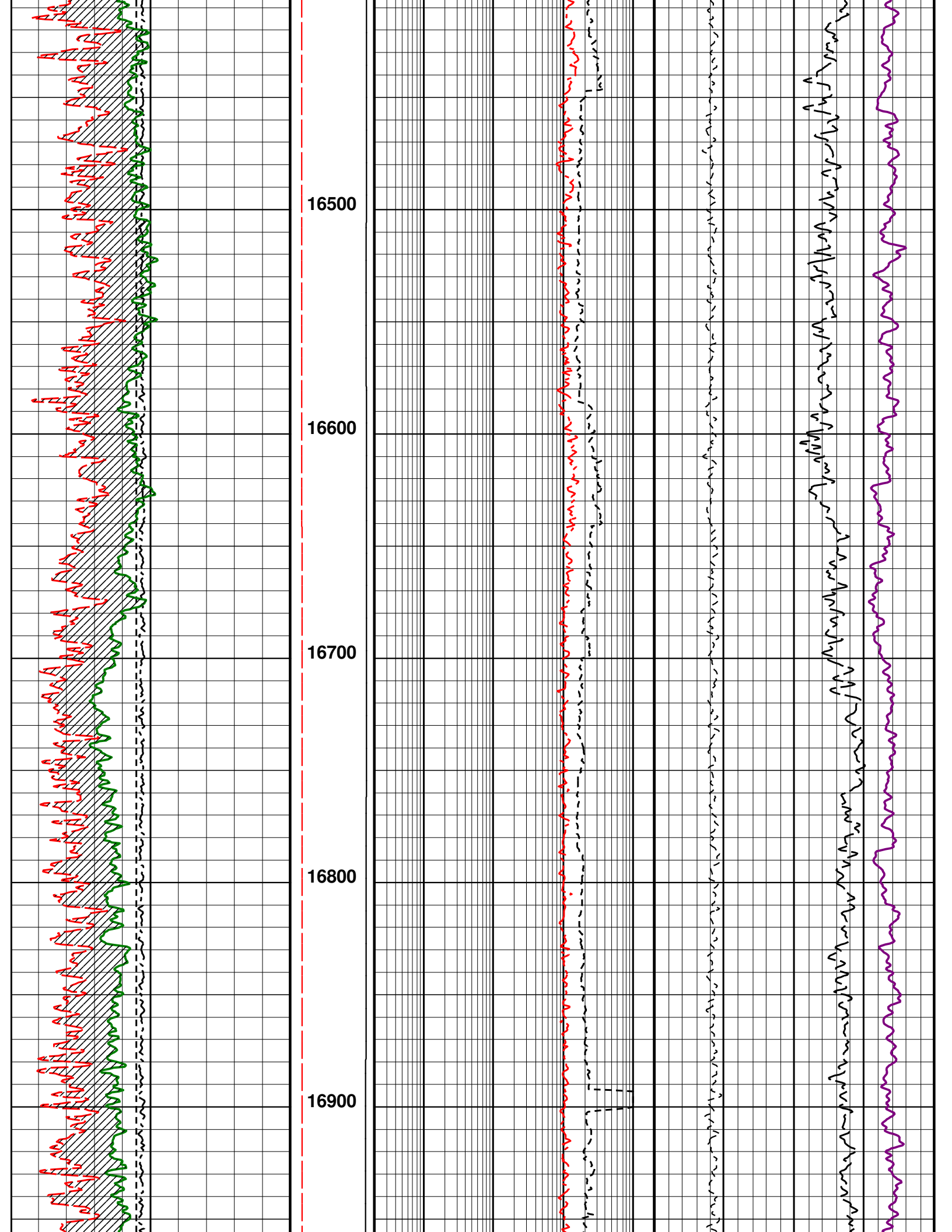


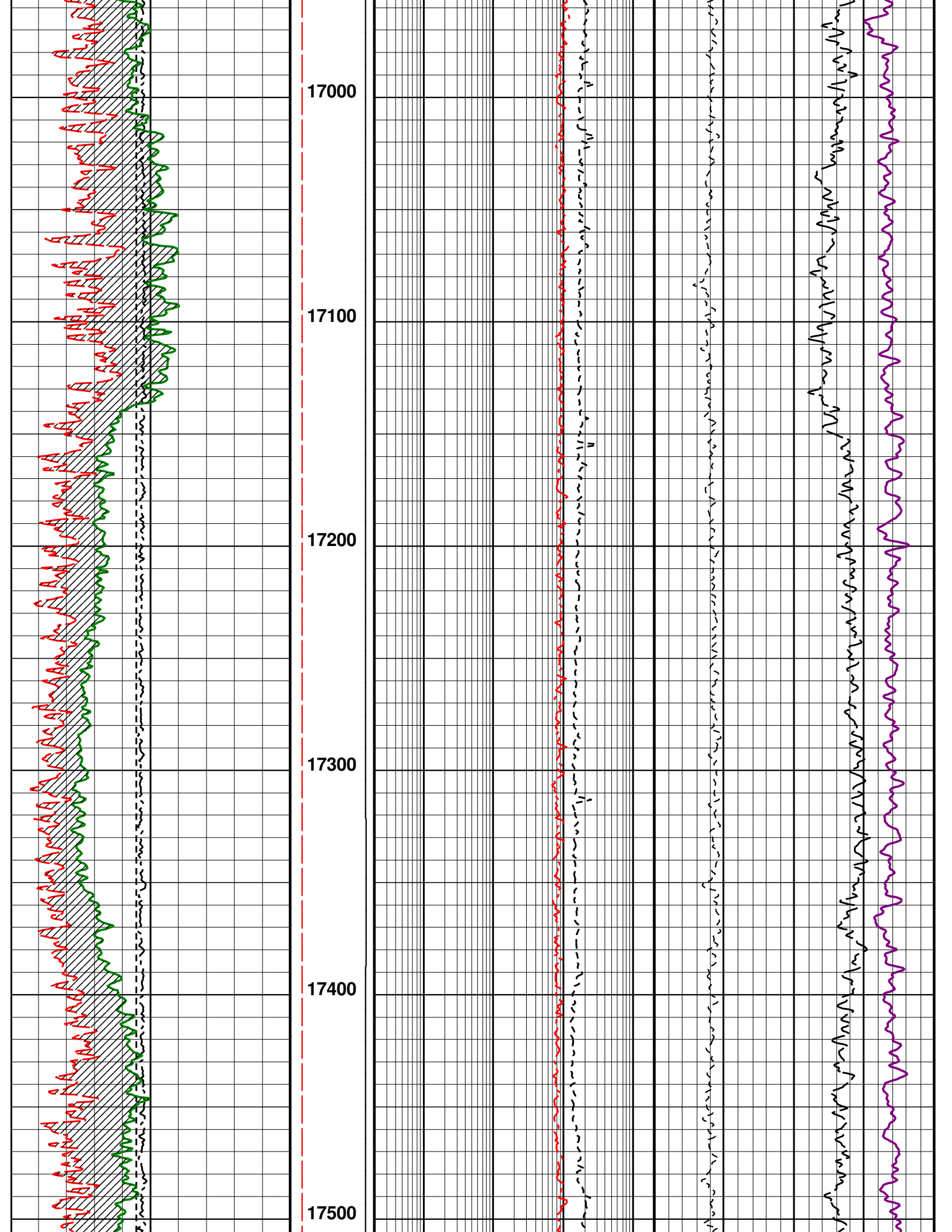


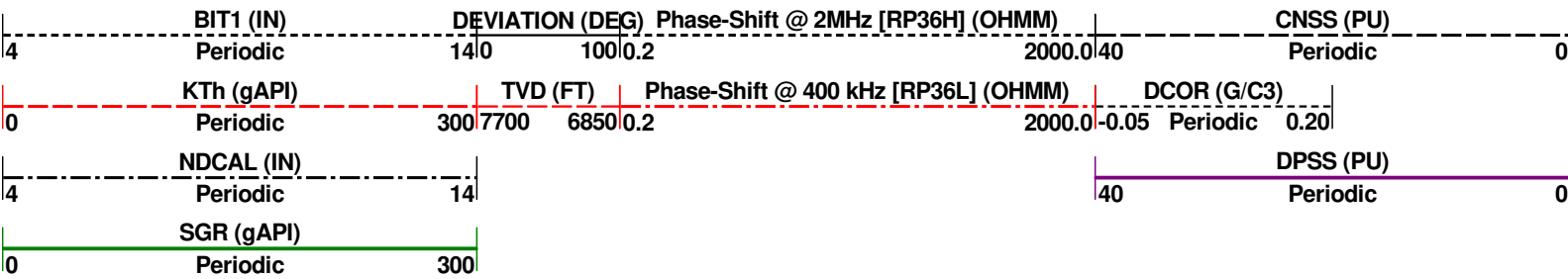
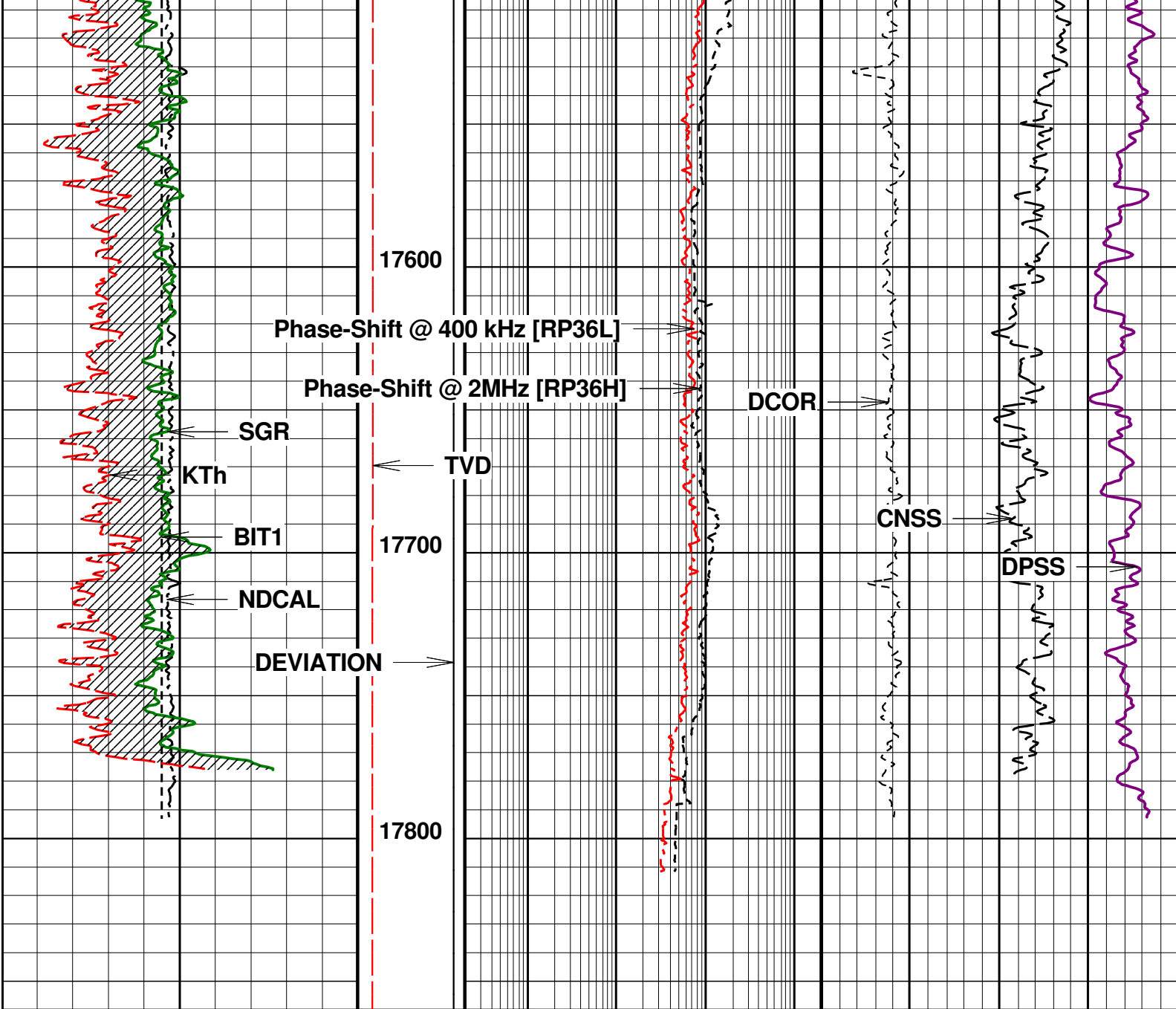












URANIUM EFFECT

2" MAIN PASS LIMESTONE

Company : GREAT WESTERN OPERATING COMPANY

Well : OTTESEN LE 06-290HN

Scale : 1 : 600

Depth in : Feet

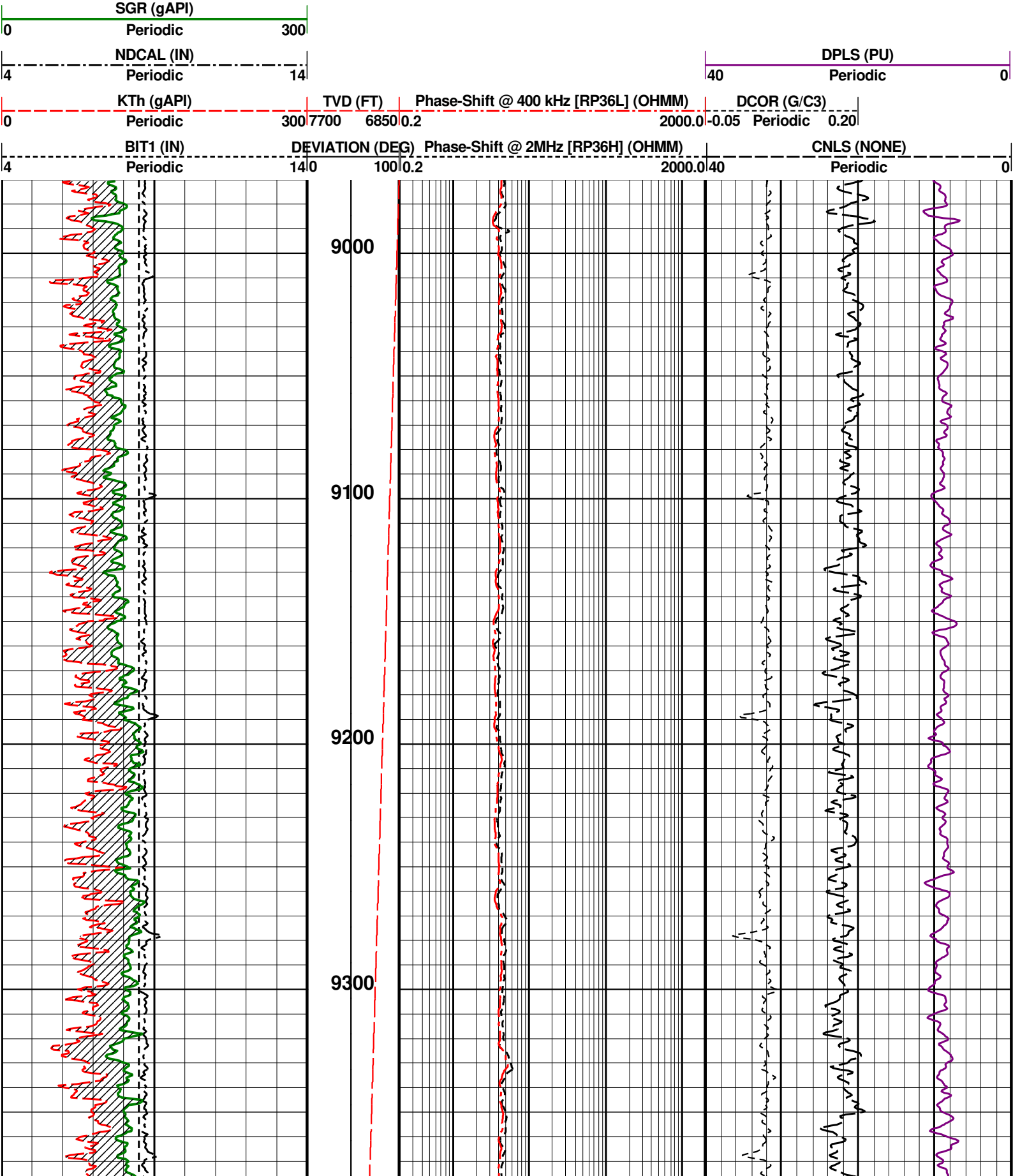
Software : WinAPIPlot Ver. 5, 87, 2, 0

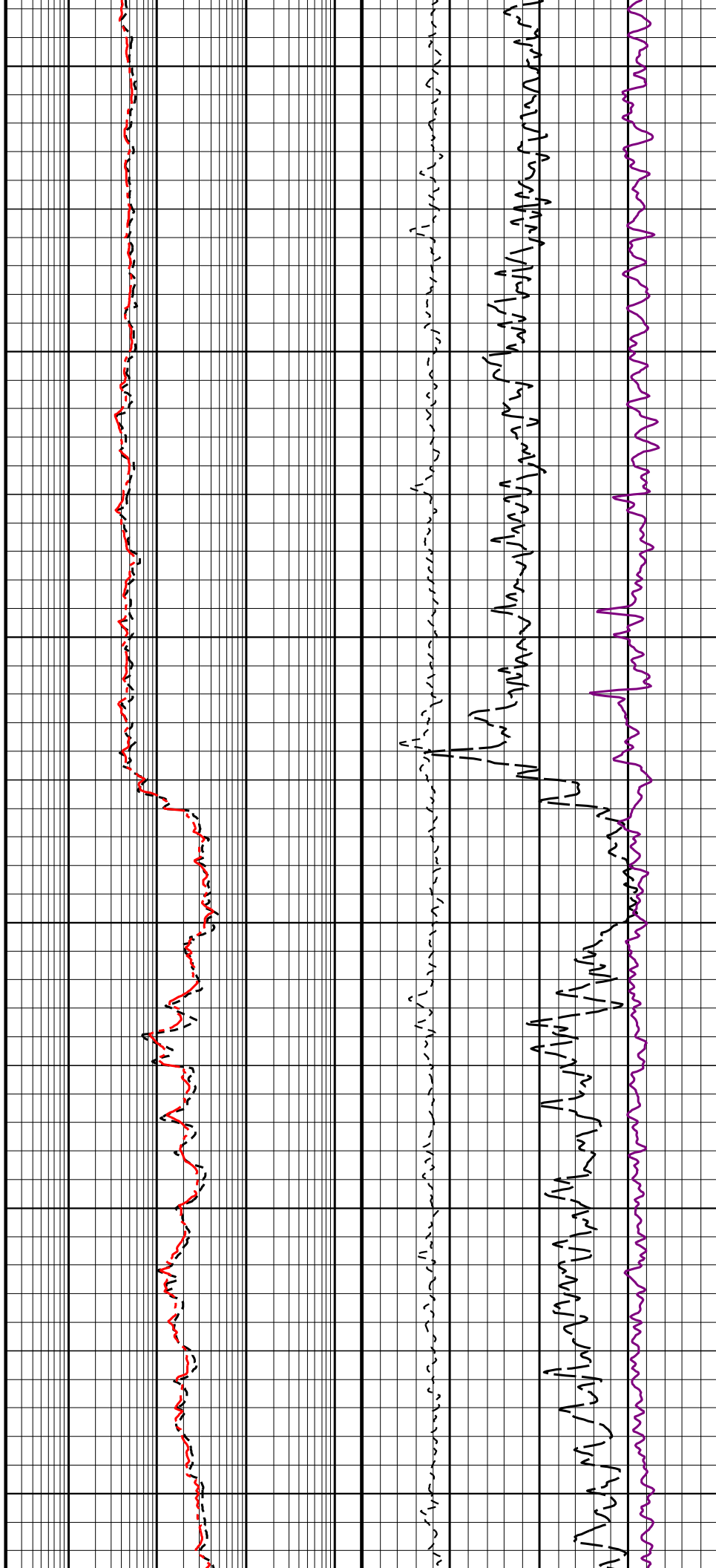
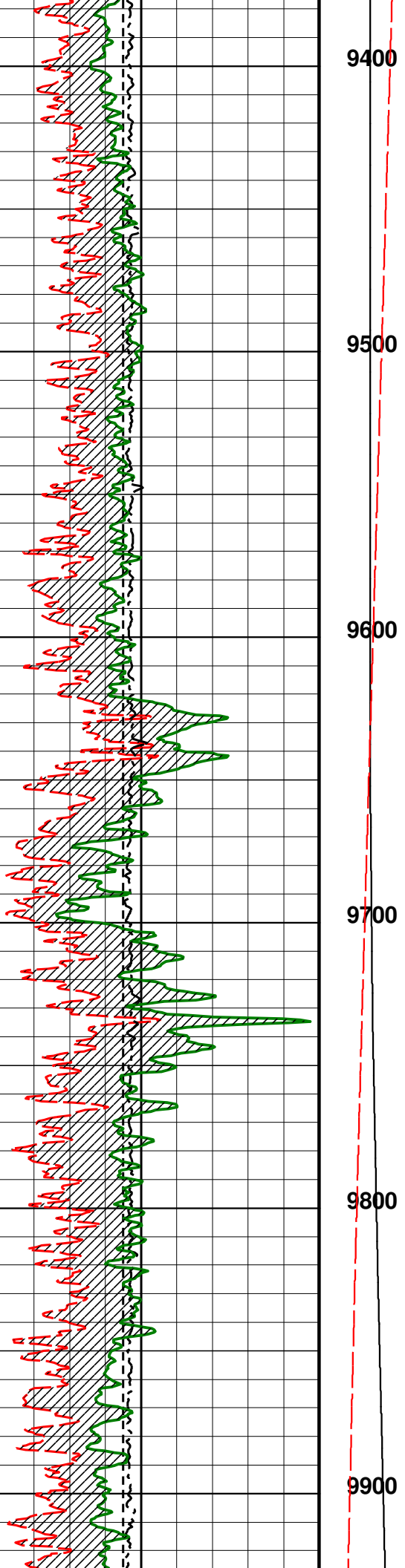
Date : 14-JAN-2019

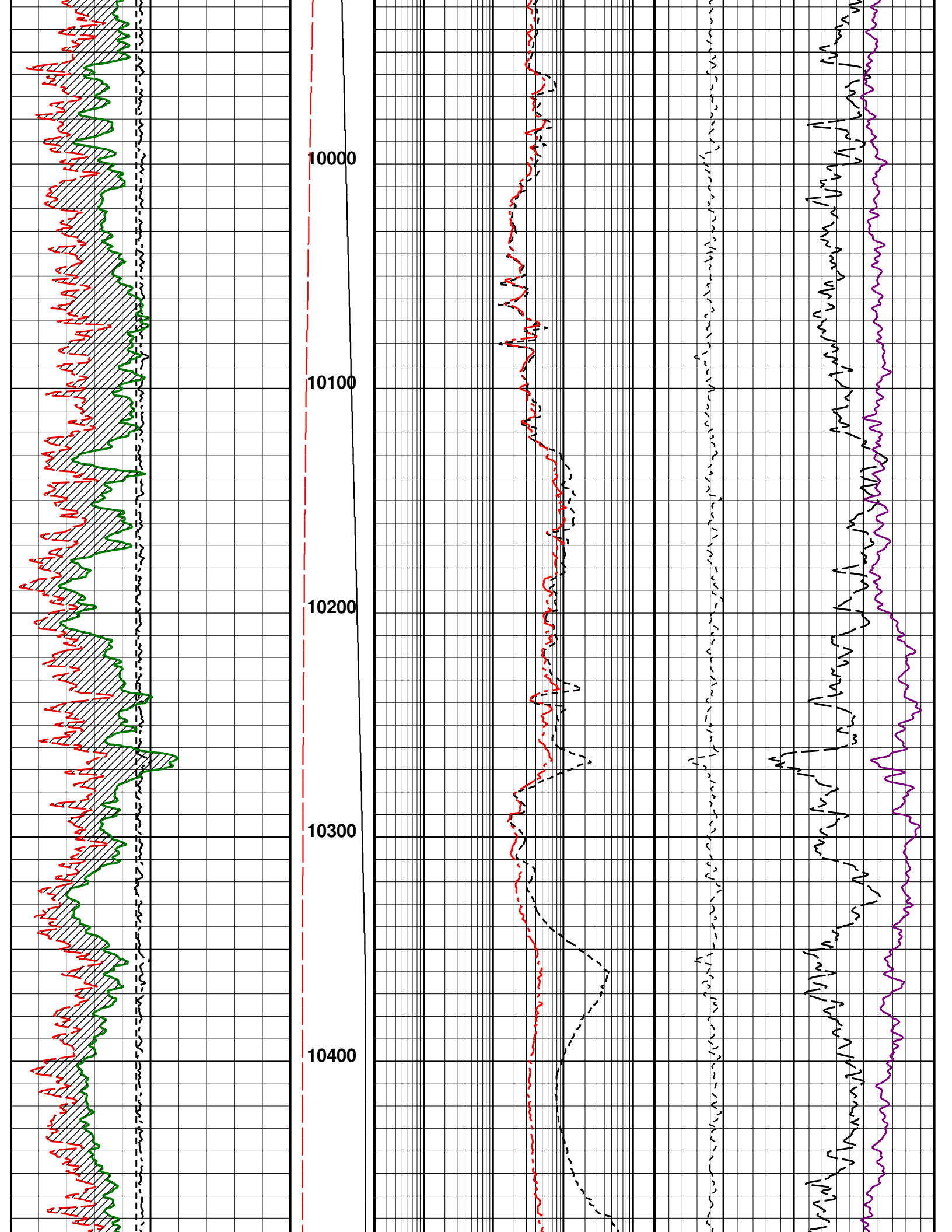
Time :

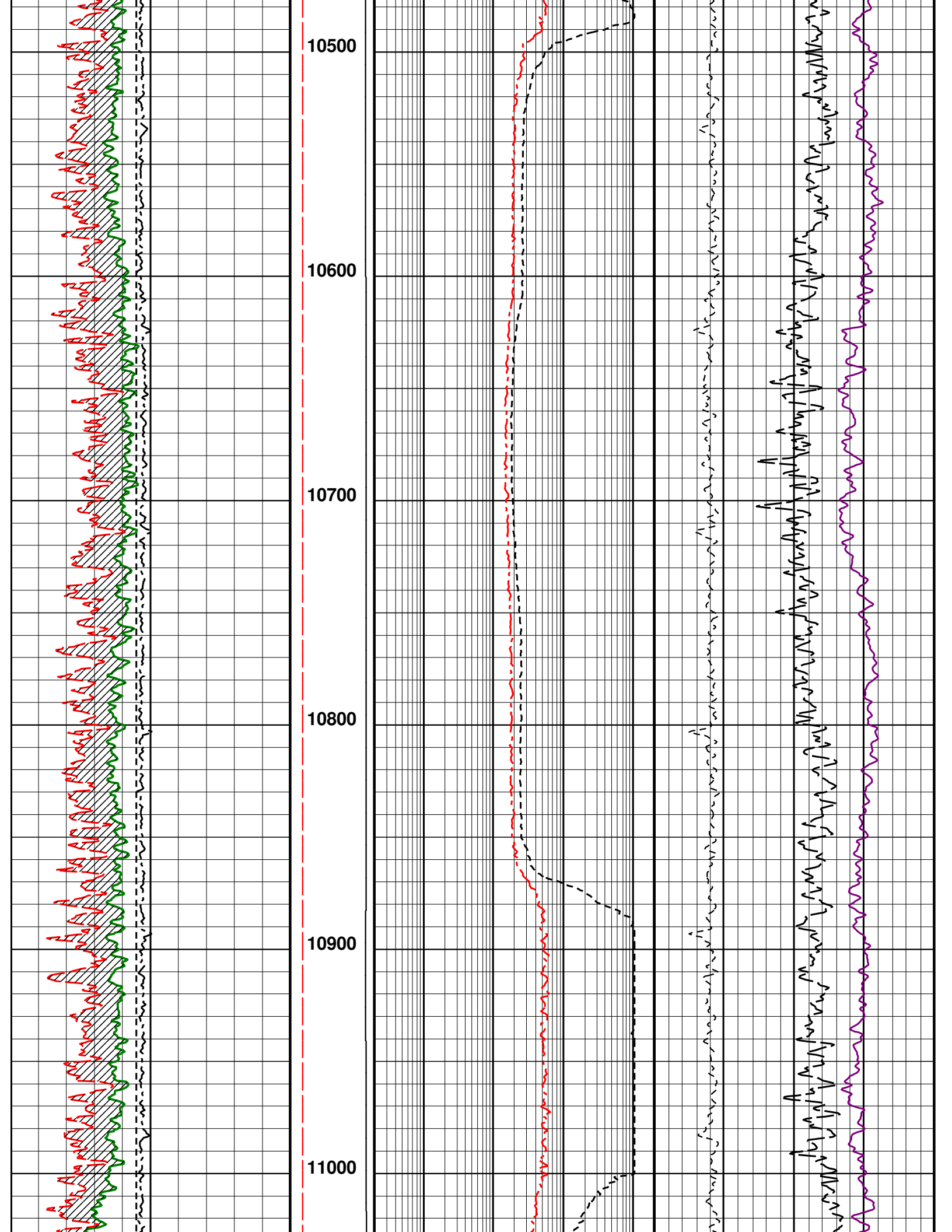
Remarks : LIMESTONE MATRIX

File Name : 812\_05-123-44335\_MAIN MD

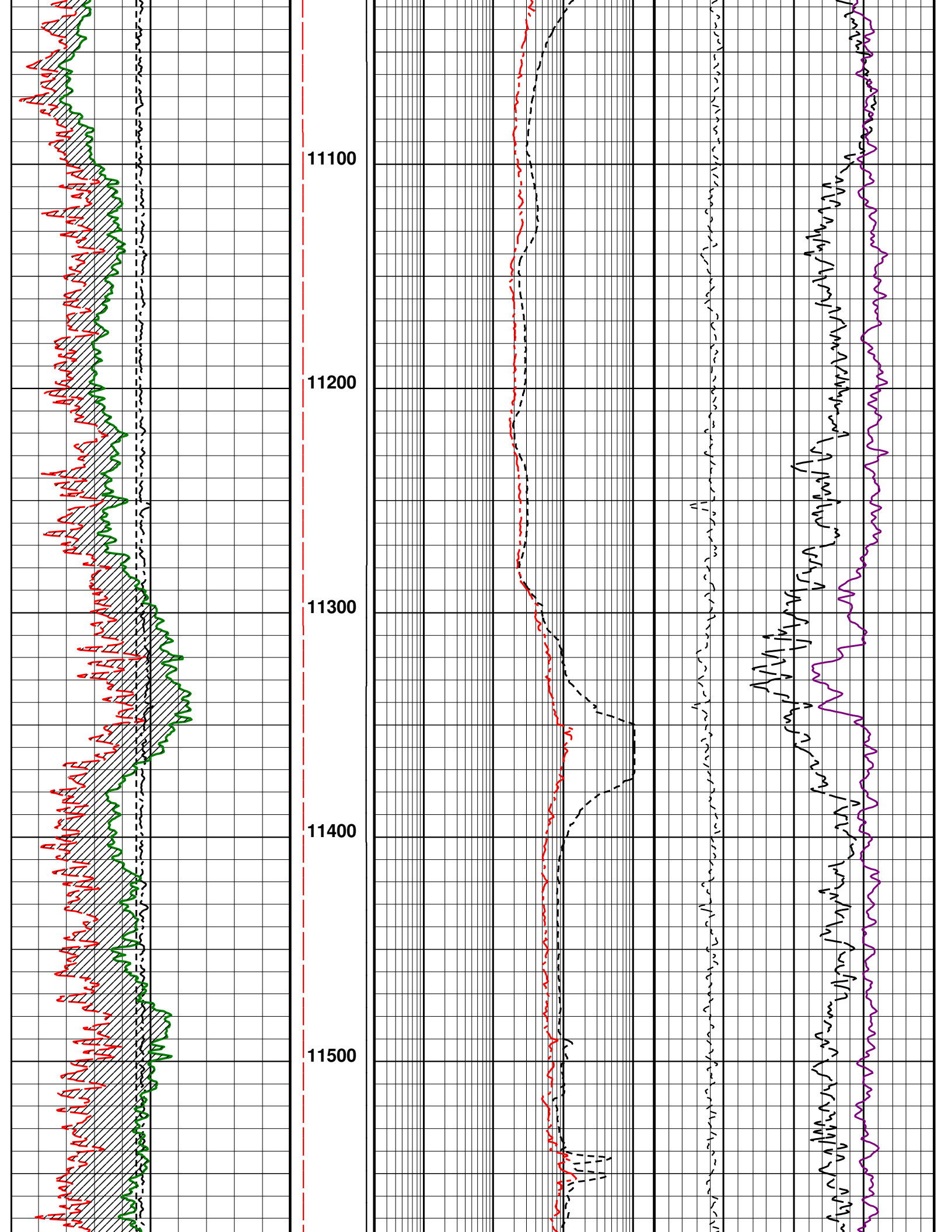


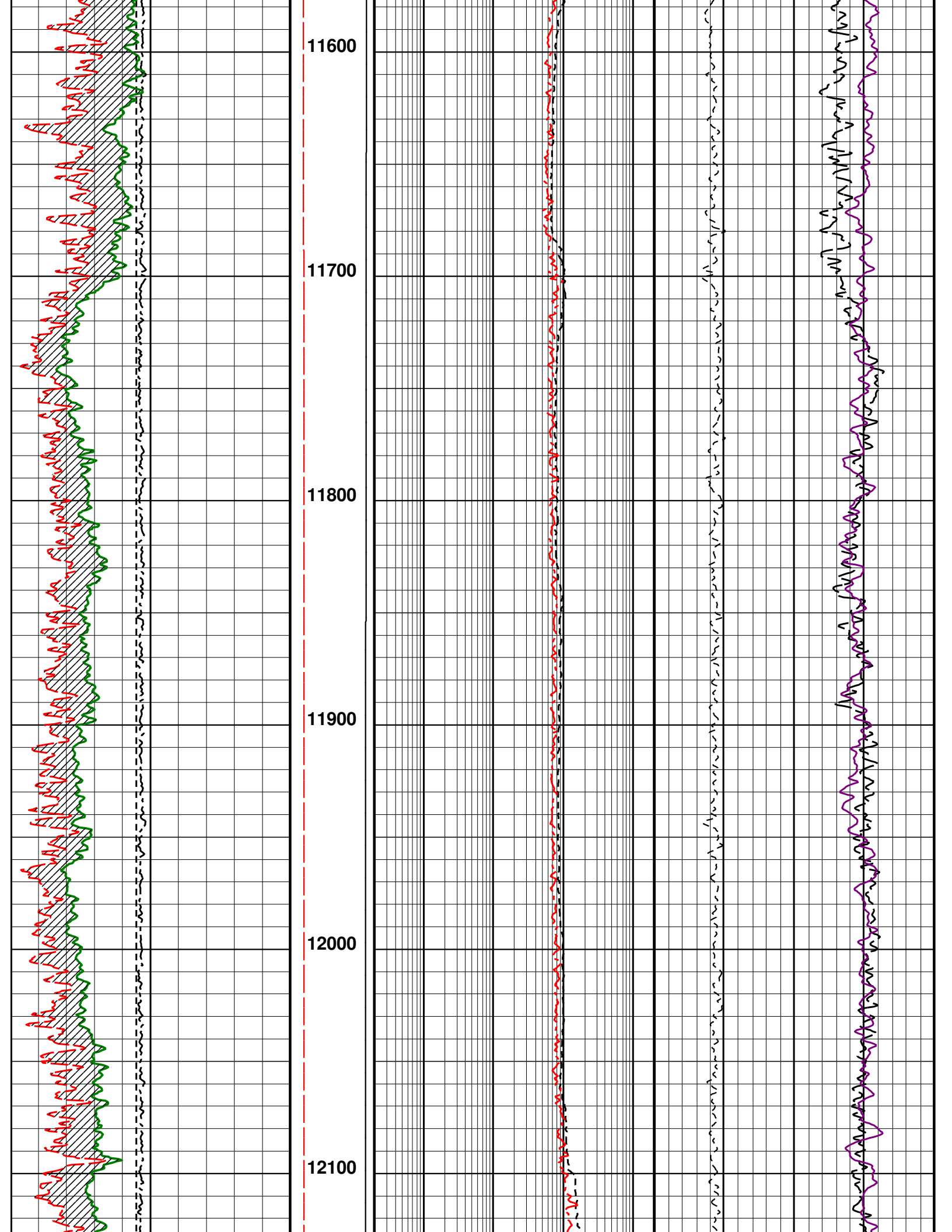


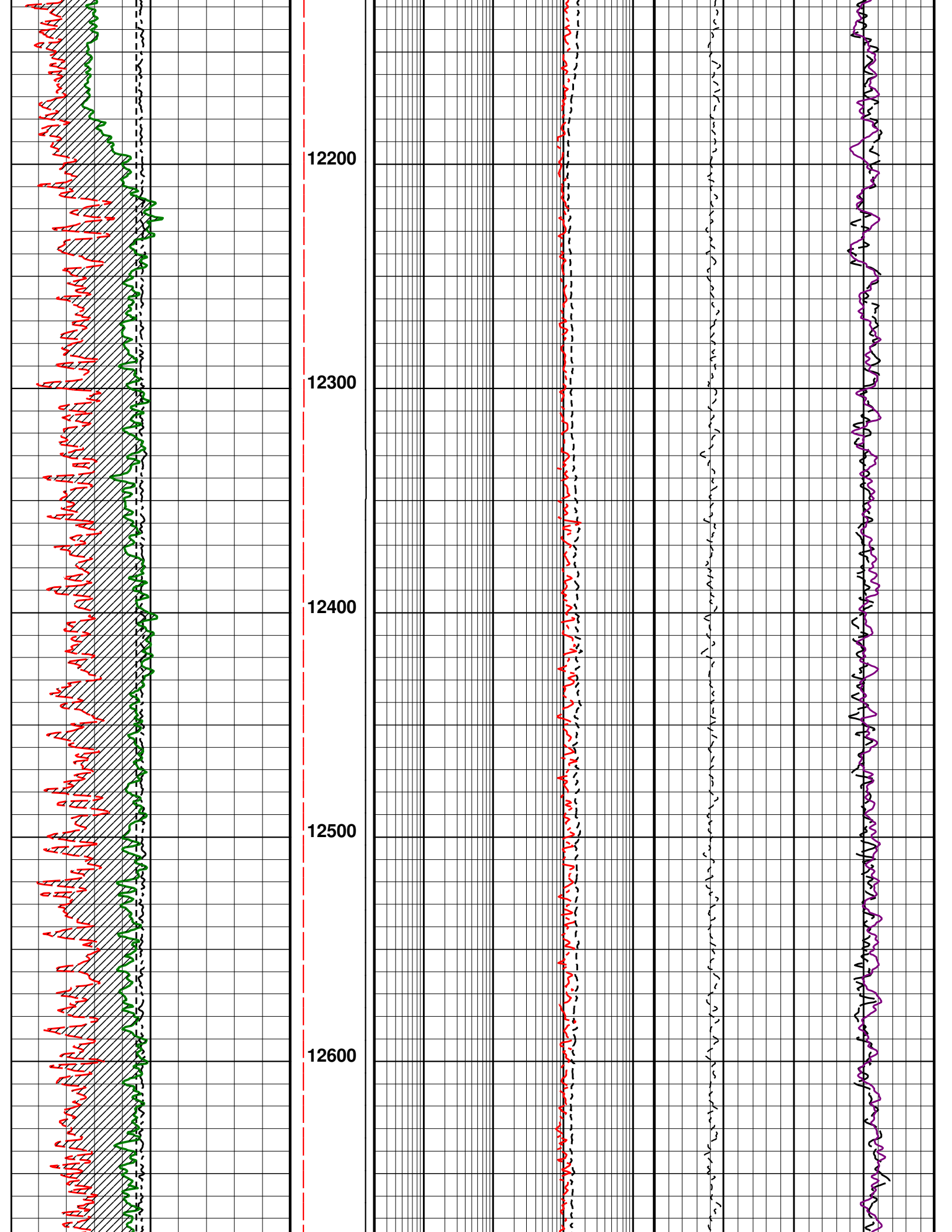


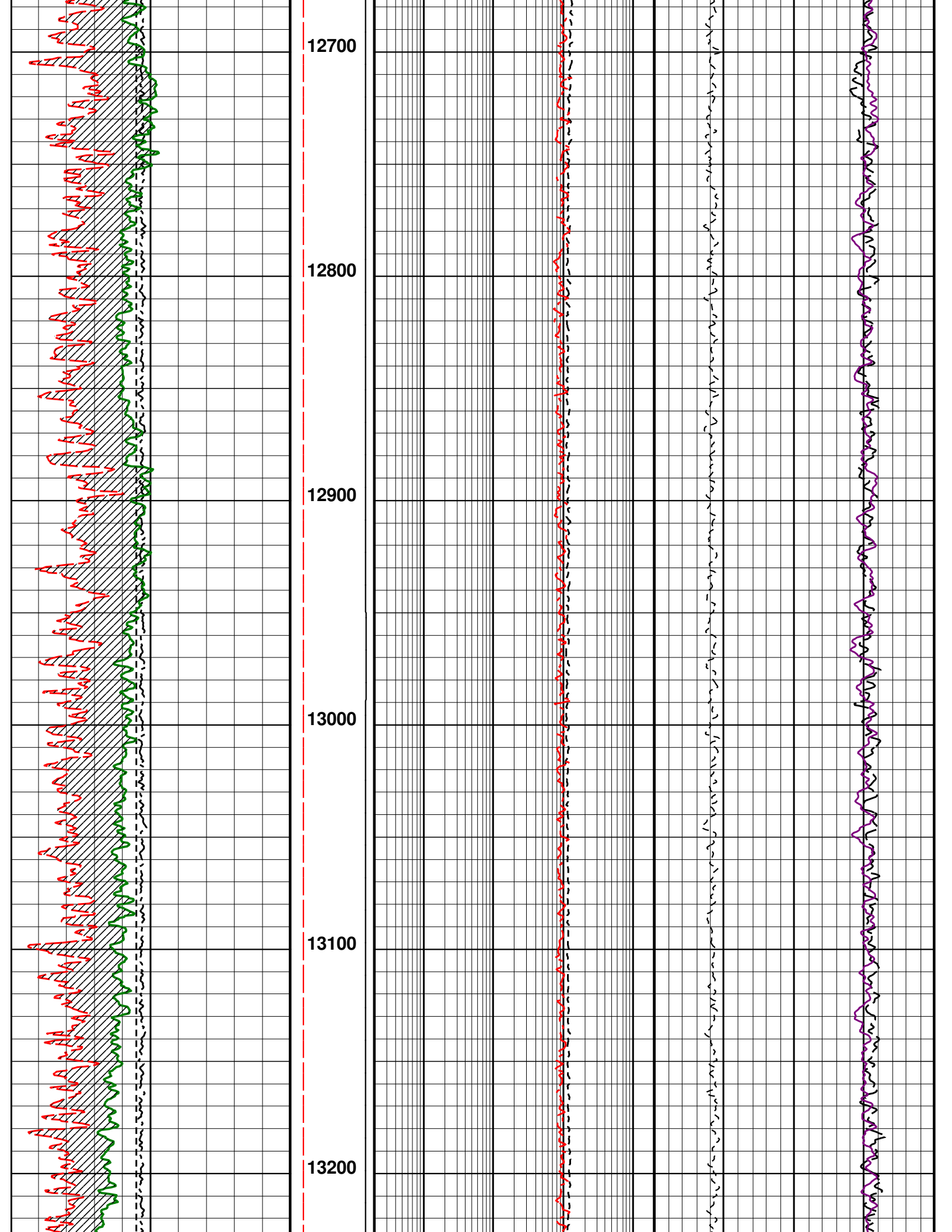


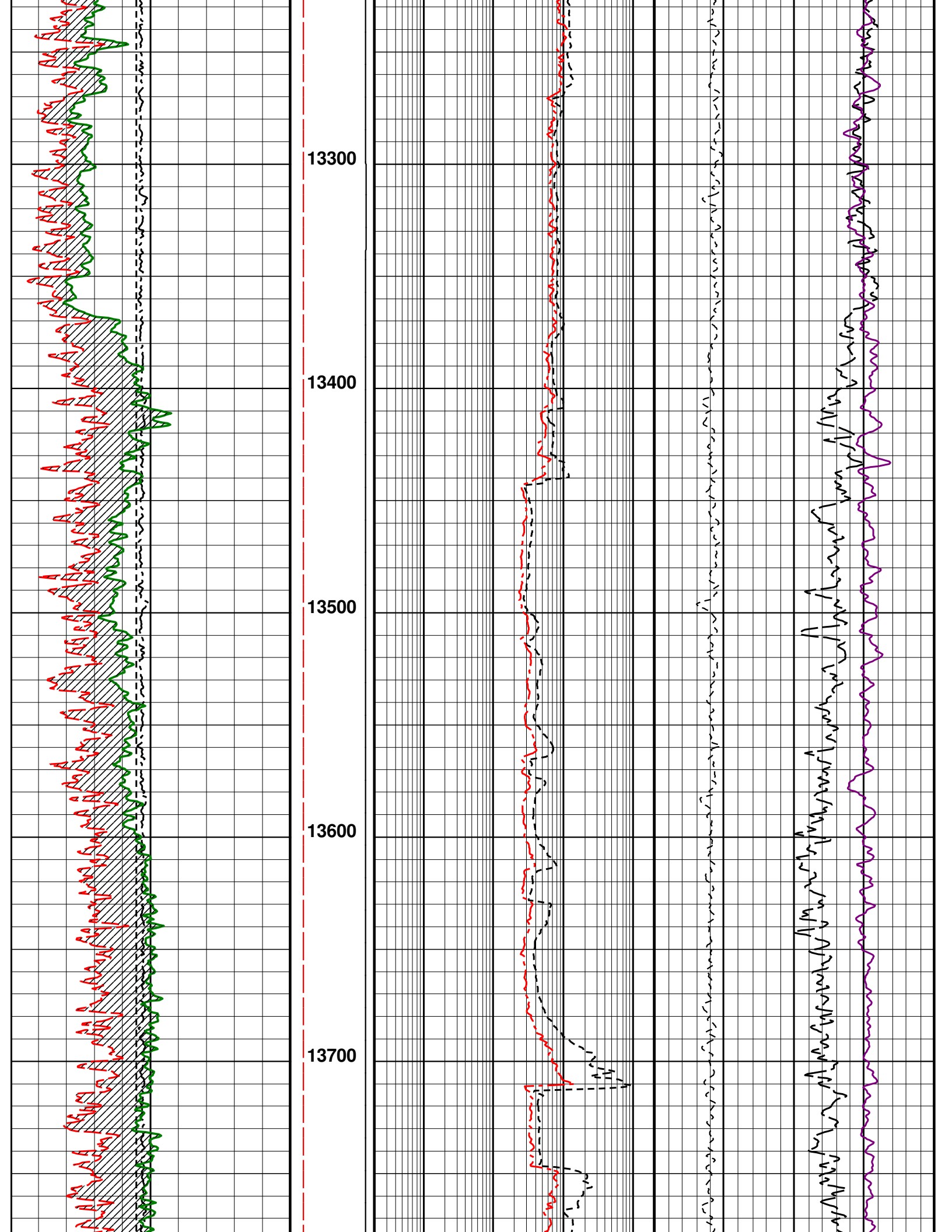


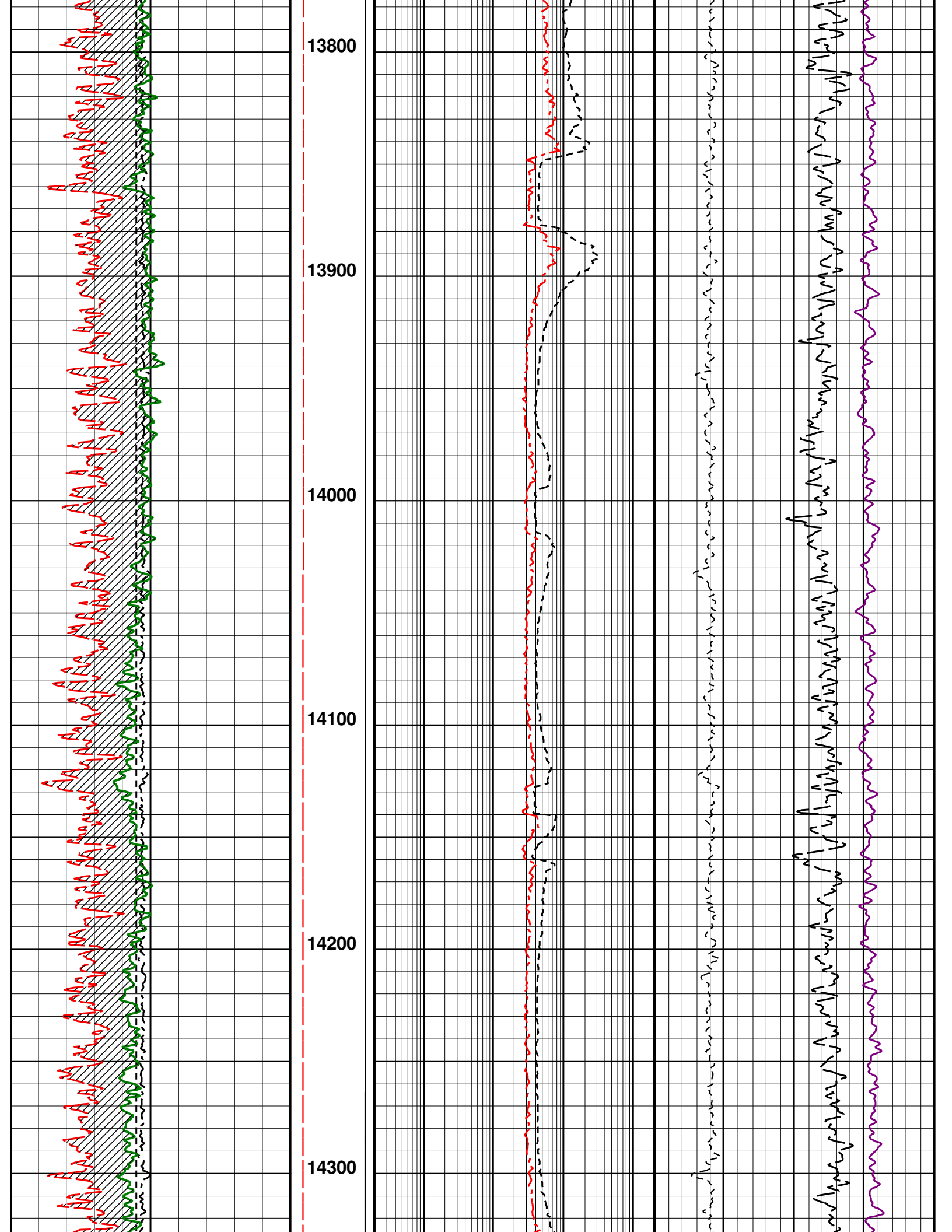


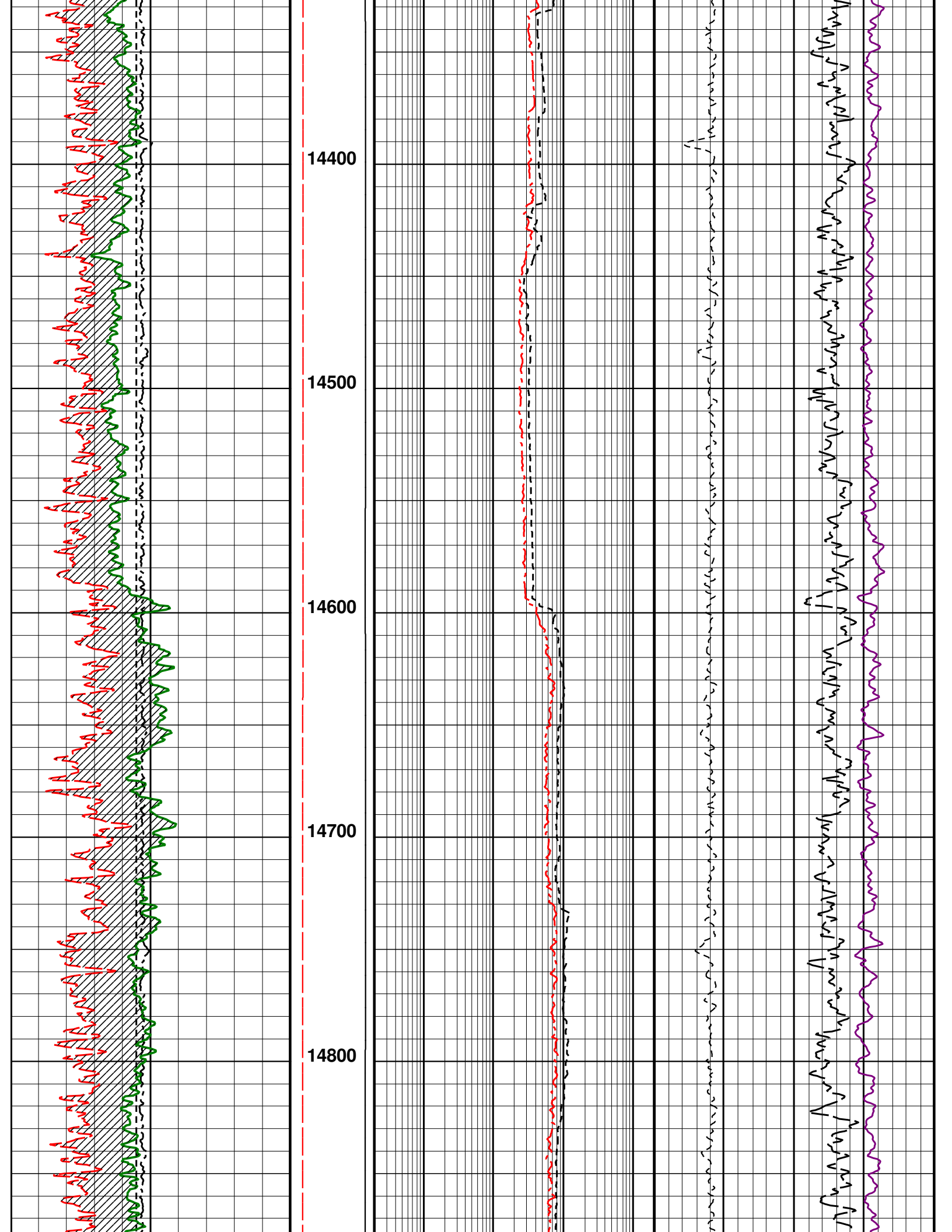




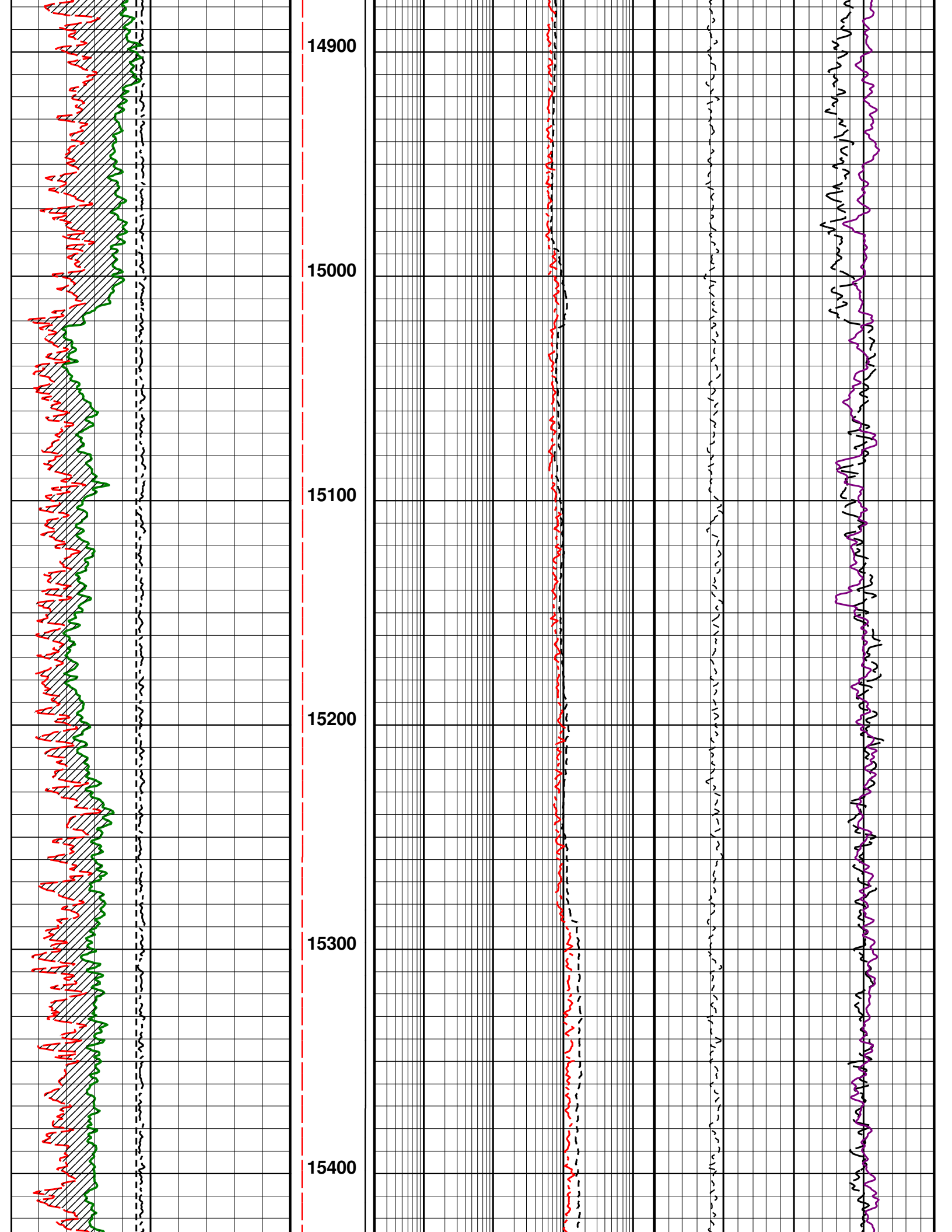


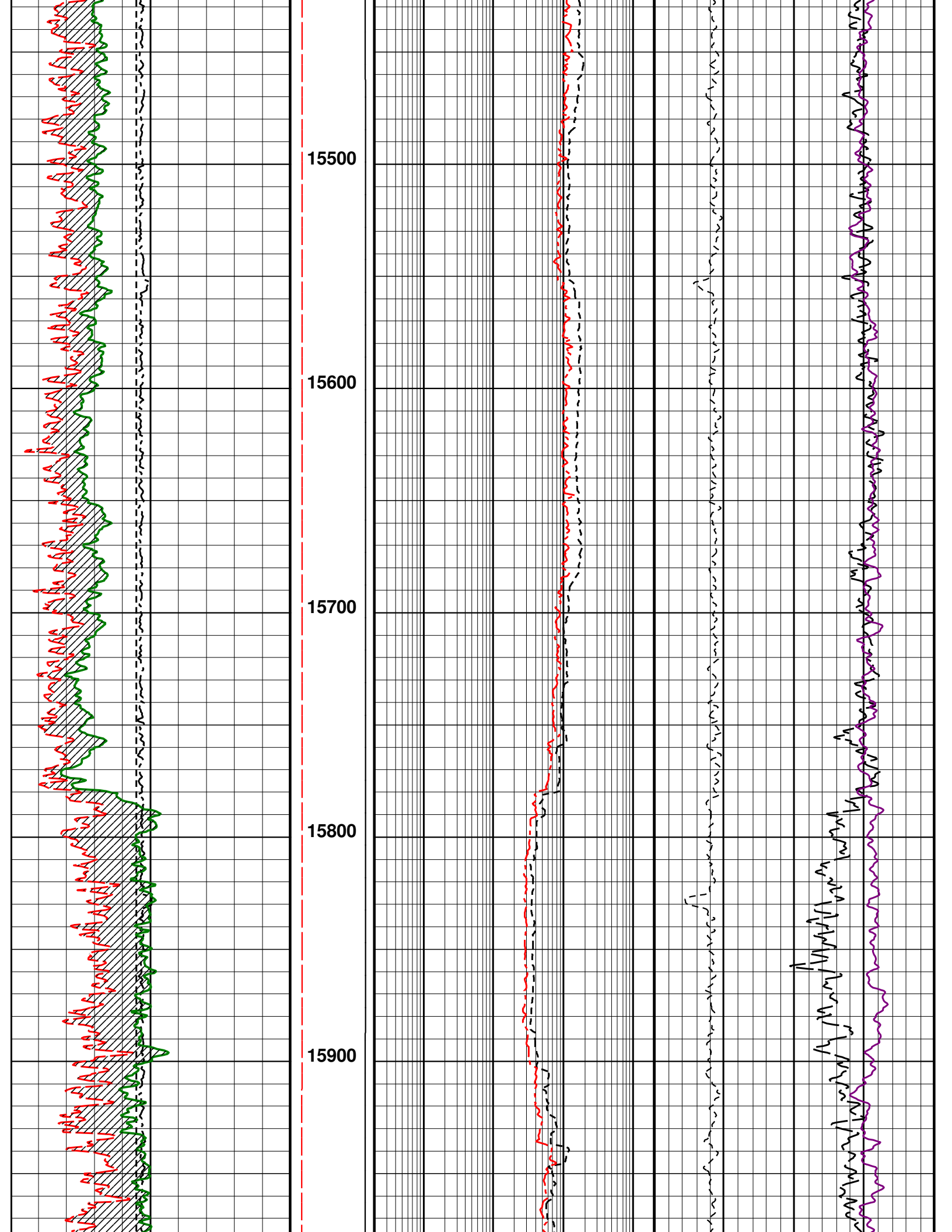


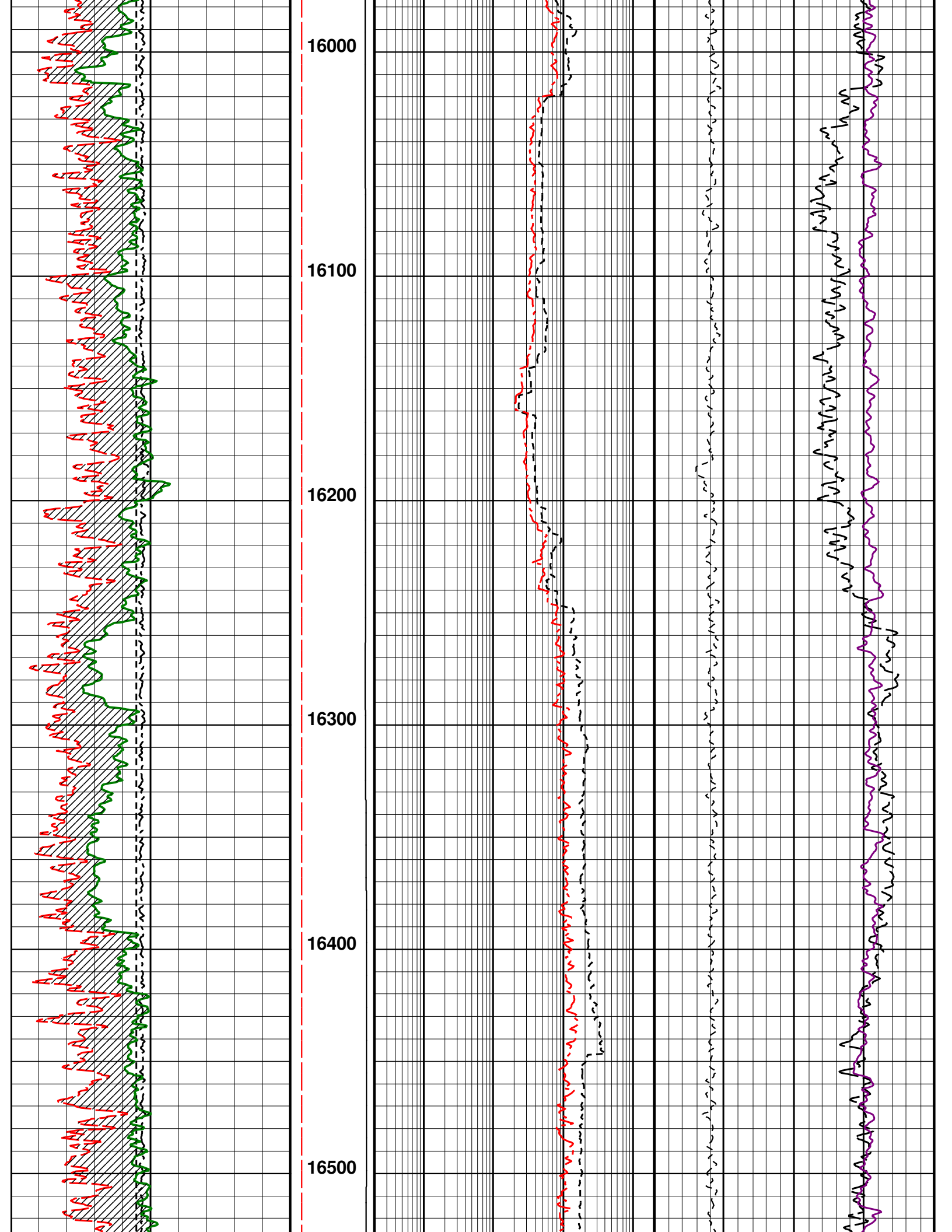


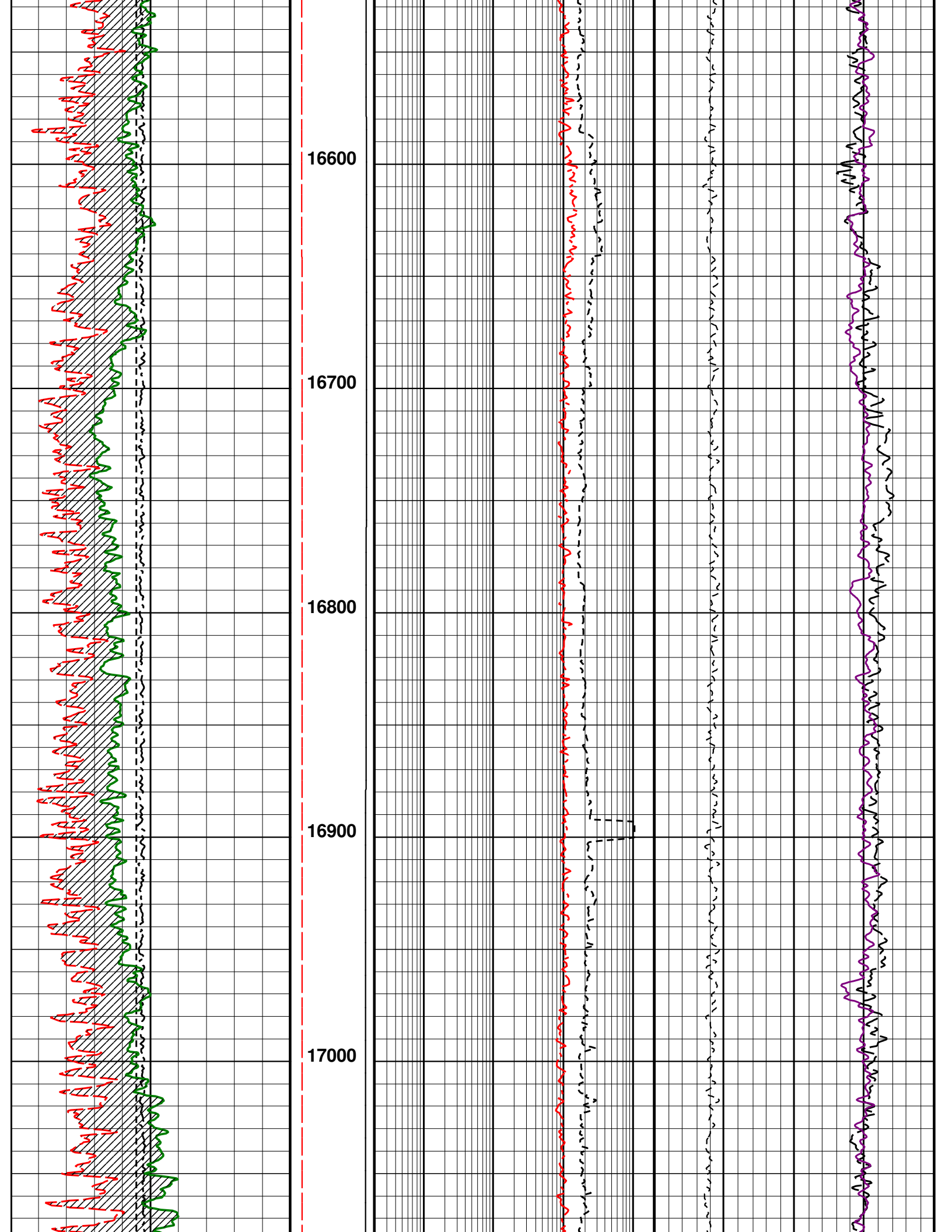


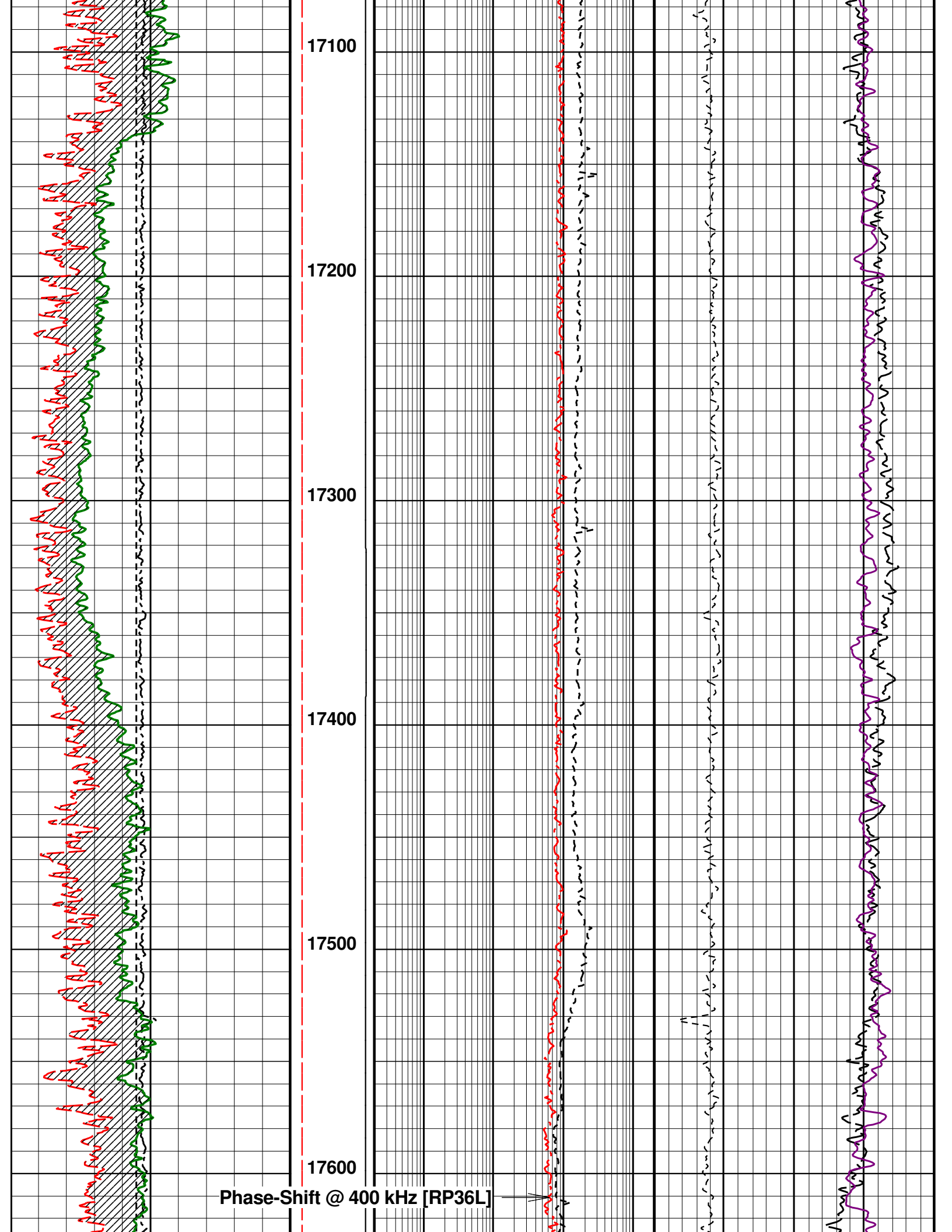


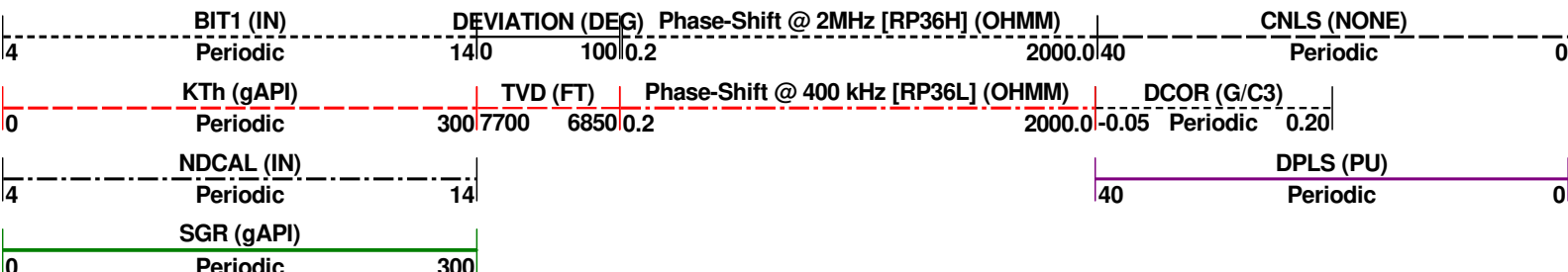
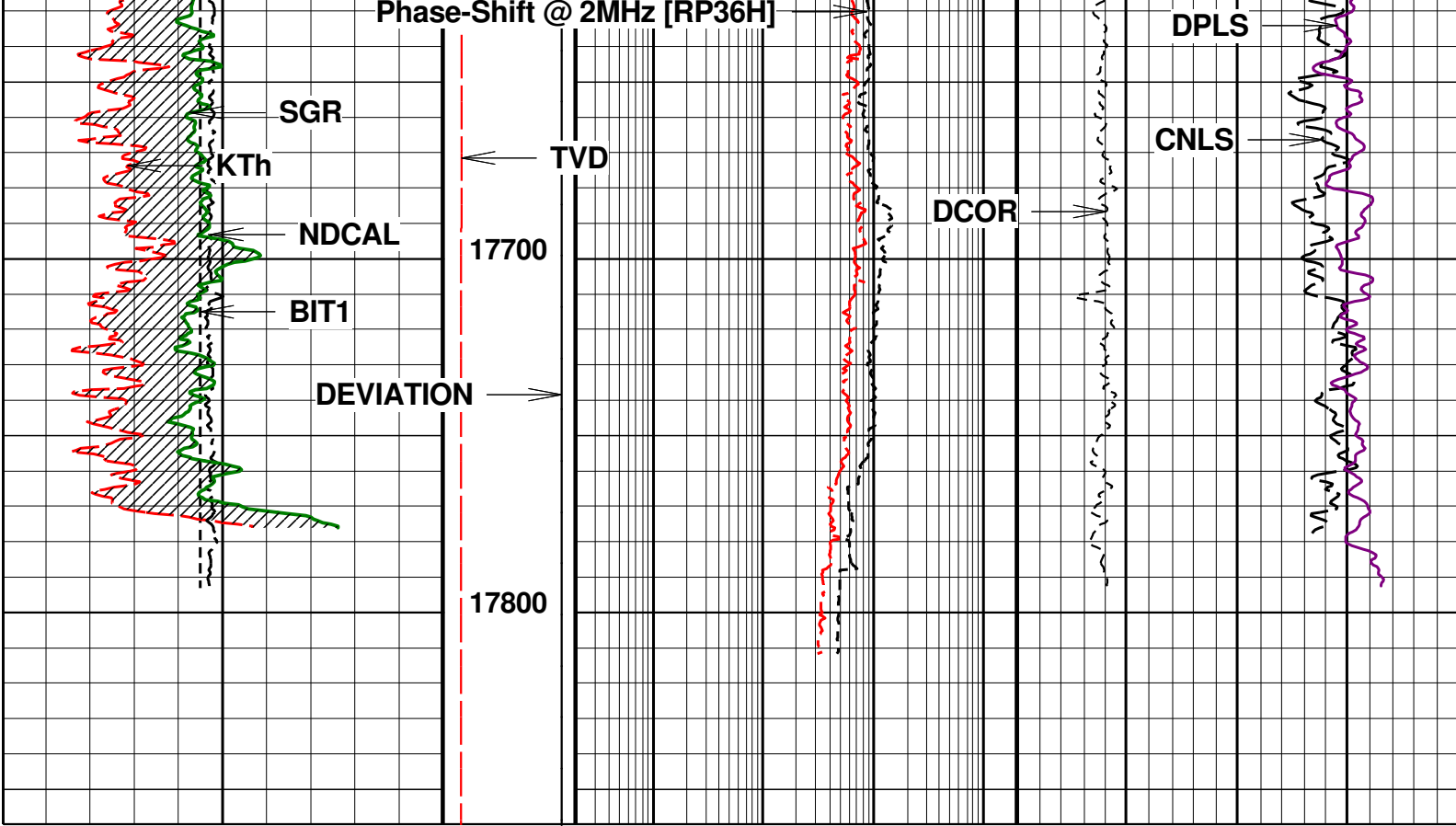








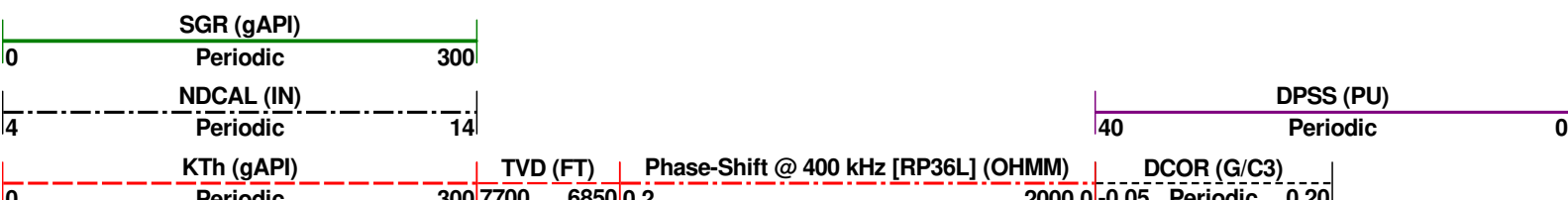




URANIUM EFFECT

# 5" MAIN PASS SANDSTONE

Company	: GREAT WESTERN OPERATING COMPANY	Date	: 14-JAN-2019
Well	: OTTESEN LE 06-290HN	Time	:
Scale	: 1 : 240	Remarks	: SANDSTONE MATRIX
Depth in	: Feet		
Software	: WinAPIPlot Ver. 5, 87, 2, 0	File Name	: 812_05-123-44335_MAIN MD



BIT1 (IN)

DEVIATION (DEG) Phase-Shift @ 2MHz [RP36H] (OHMM)

CNSS (PU)

Periodic

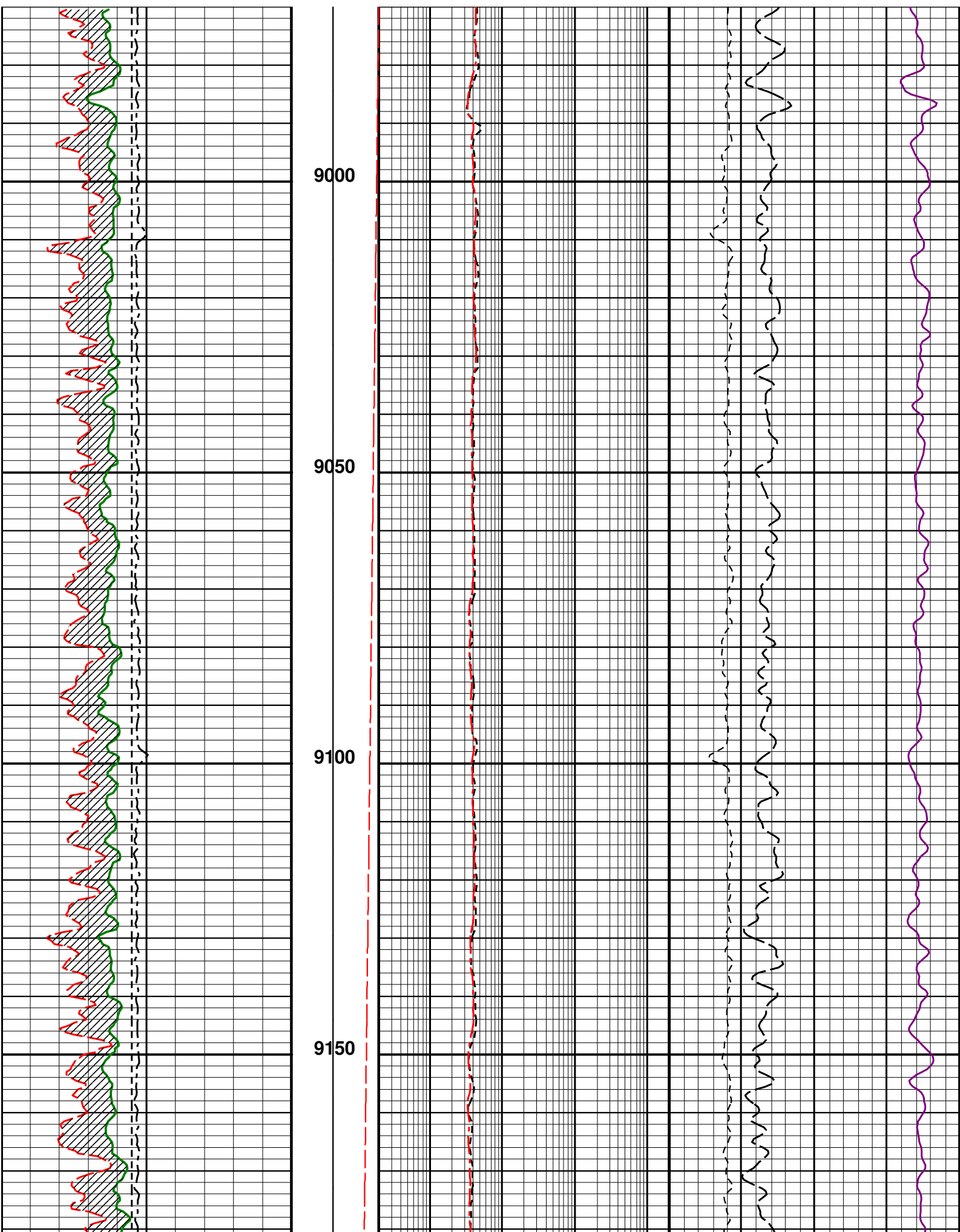
140

1000.2

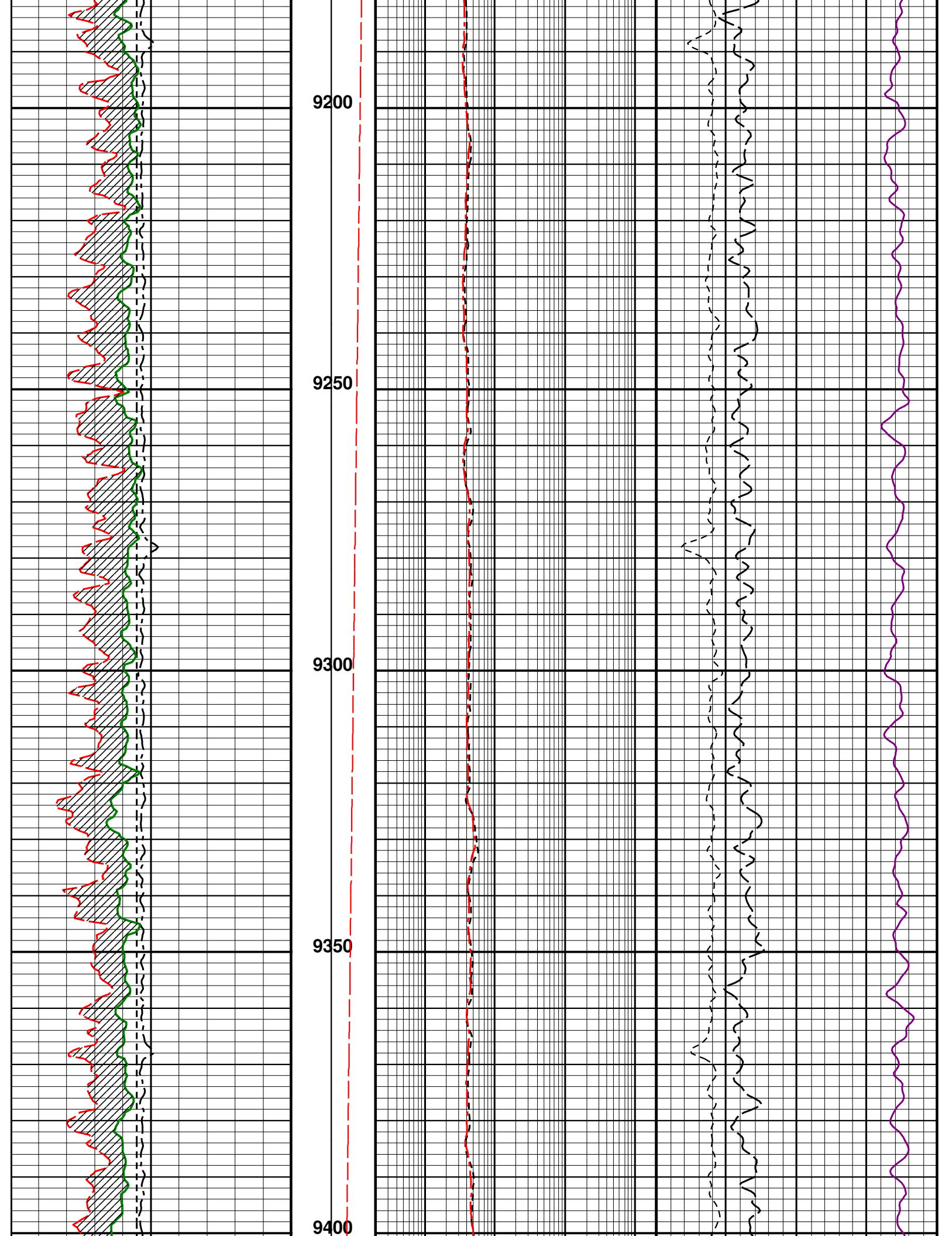
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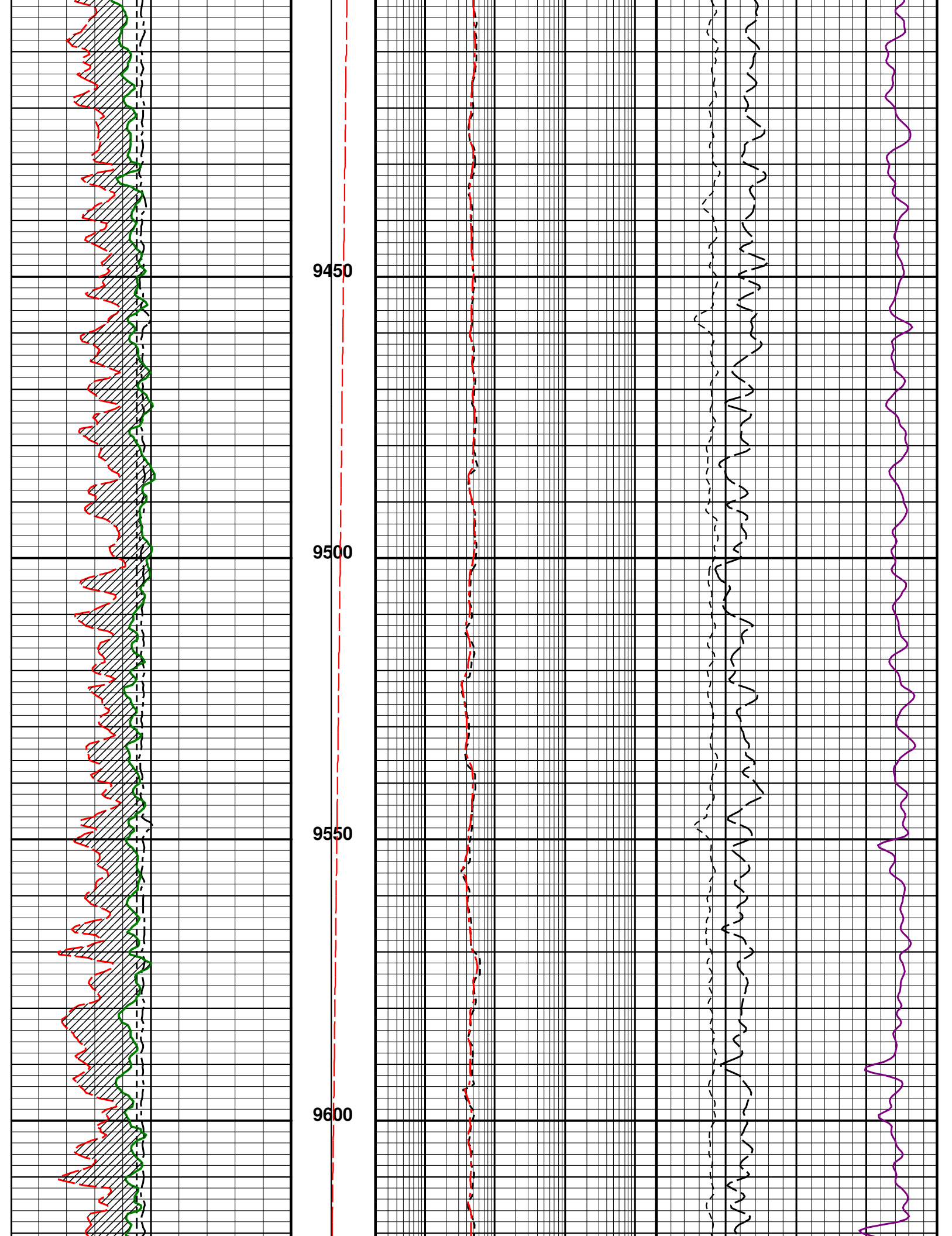
Periodic

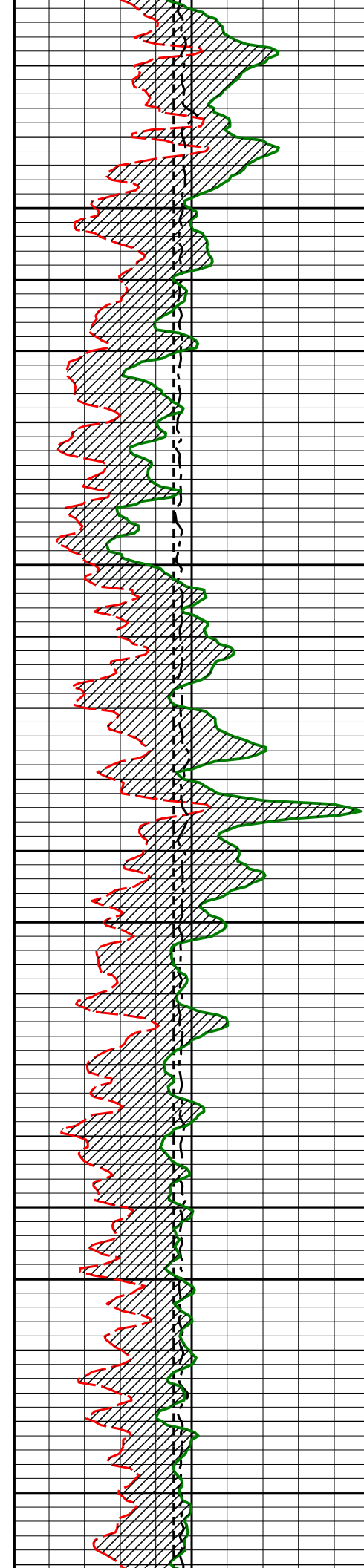
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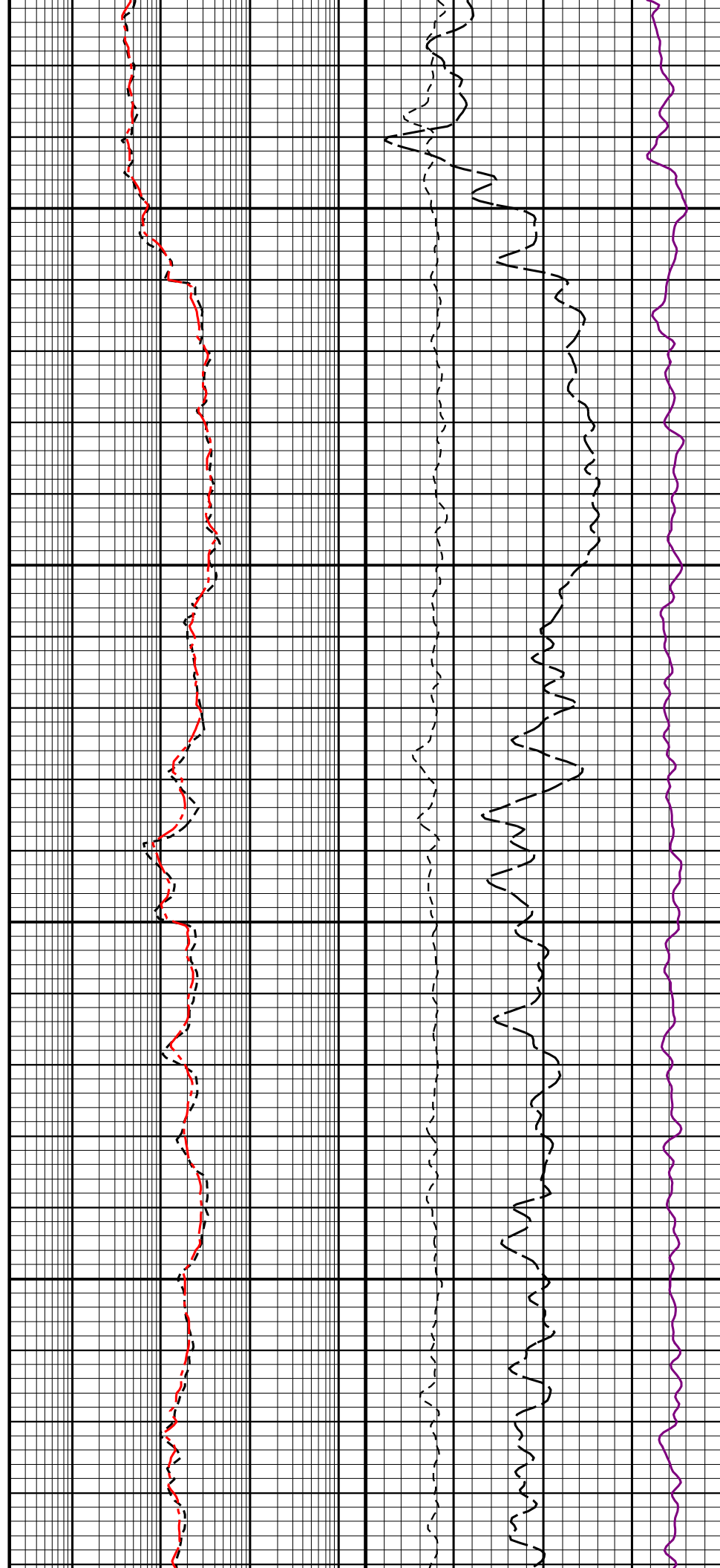


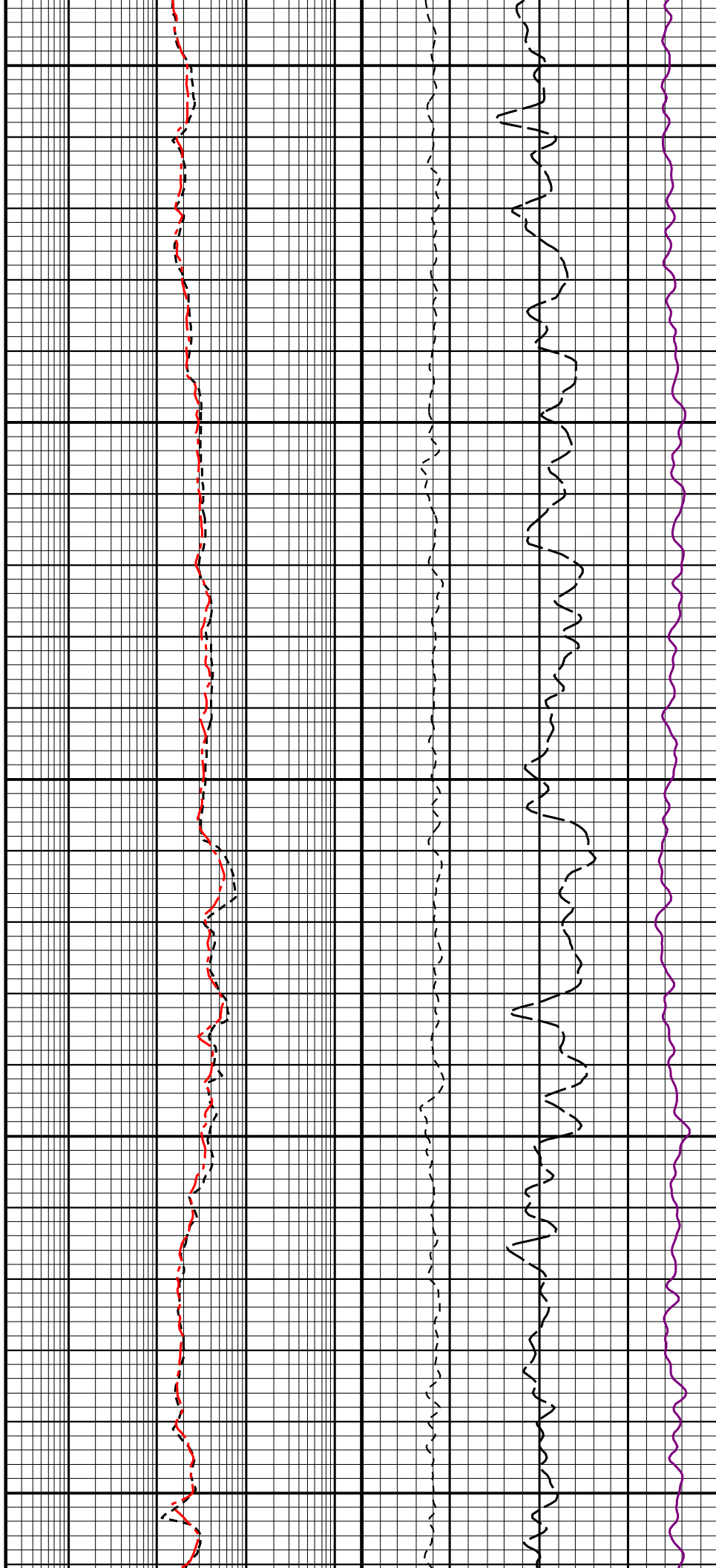
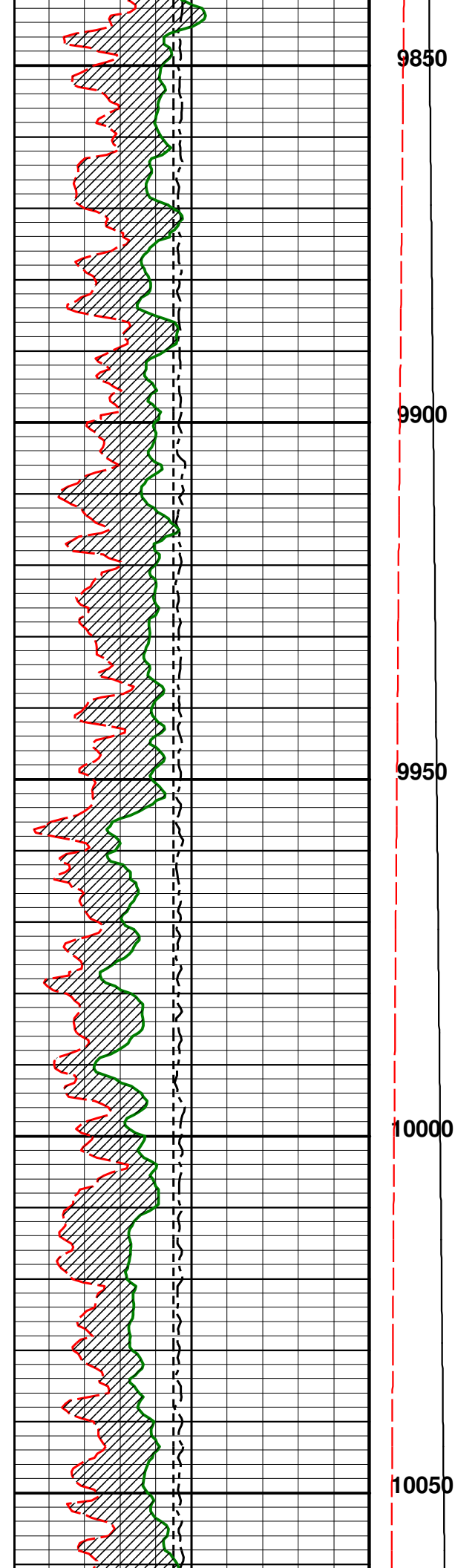
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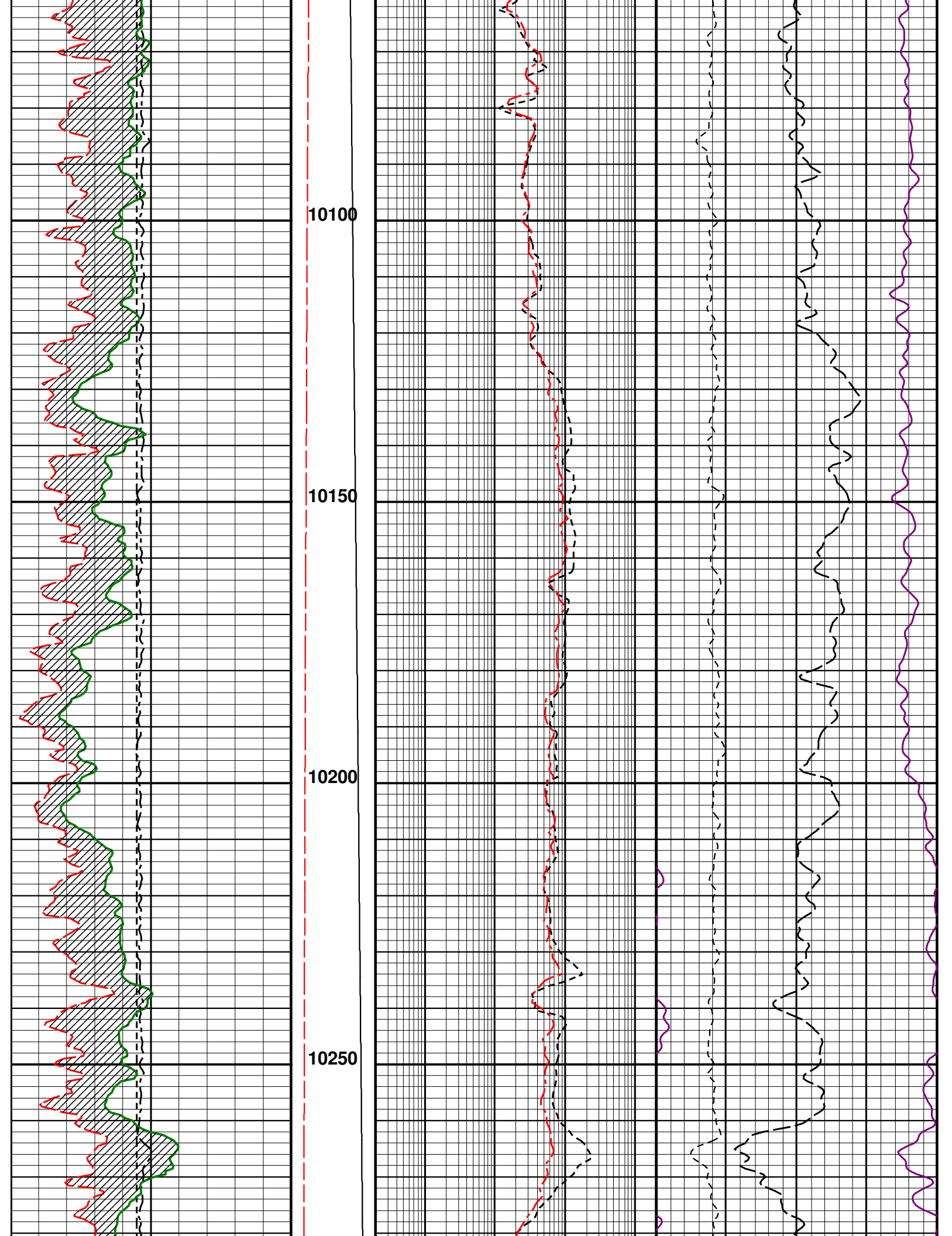
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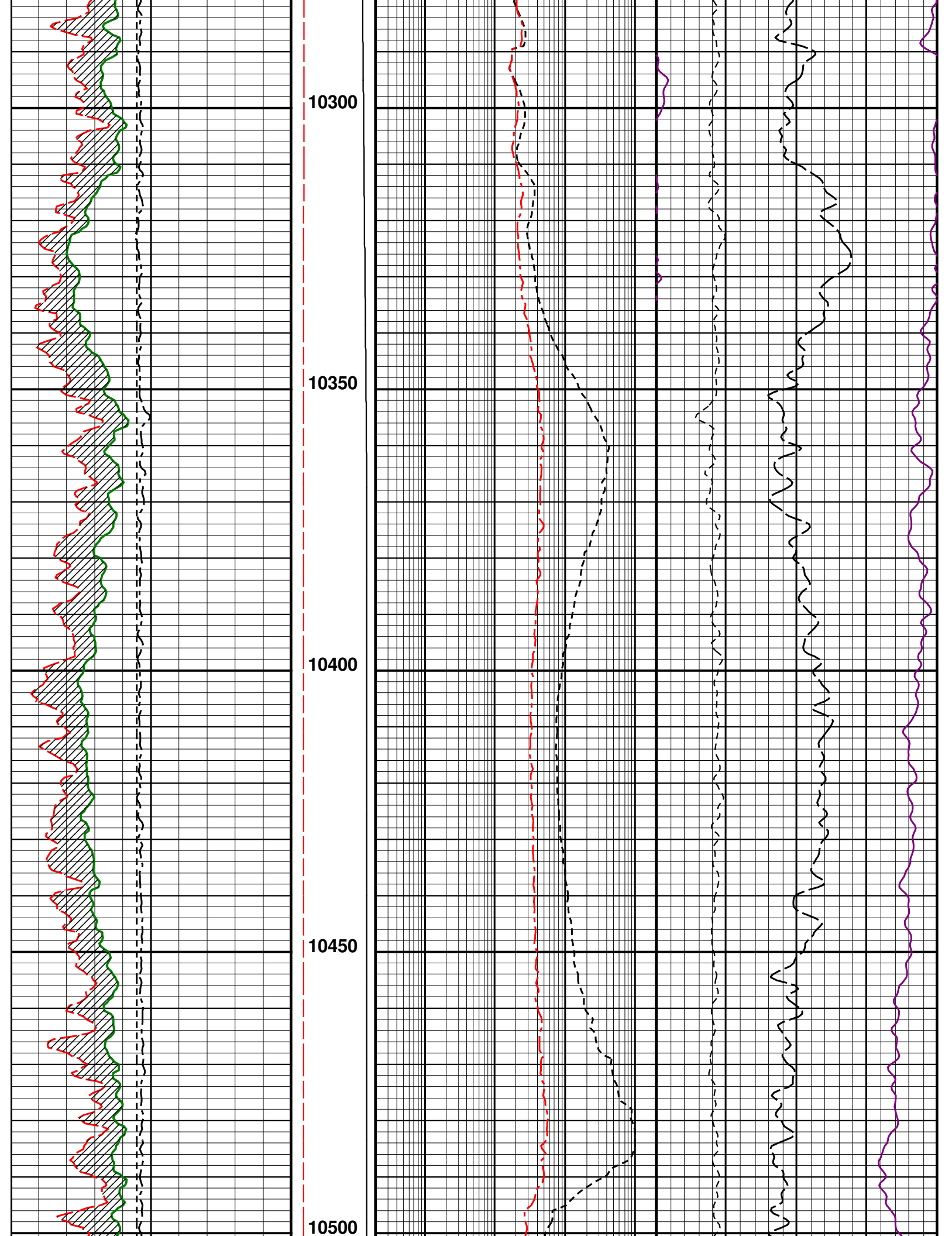
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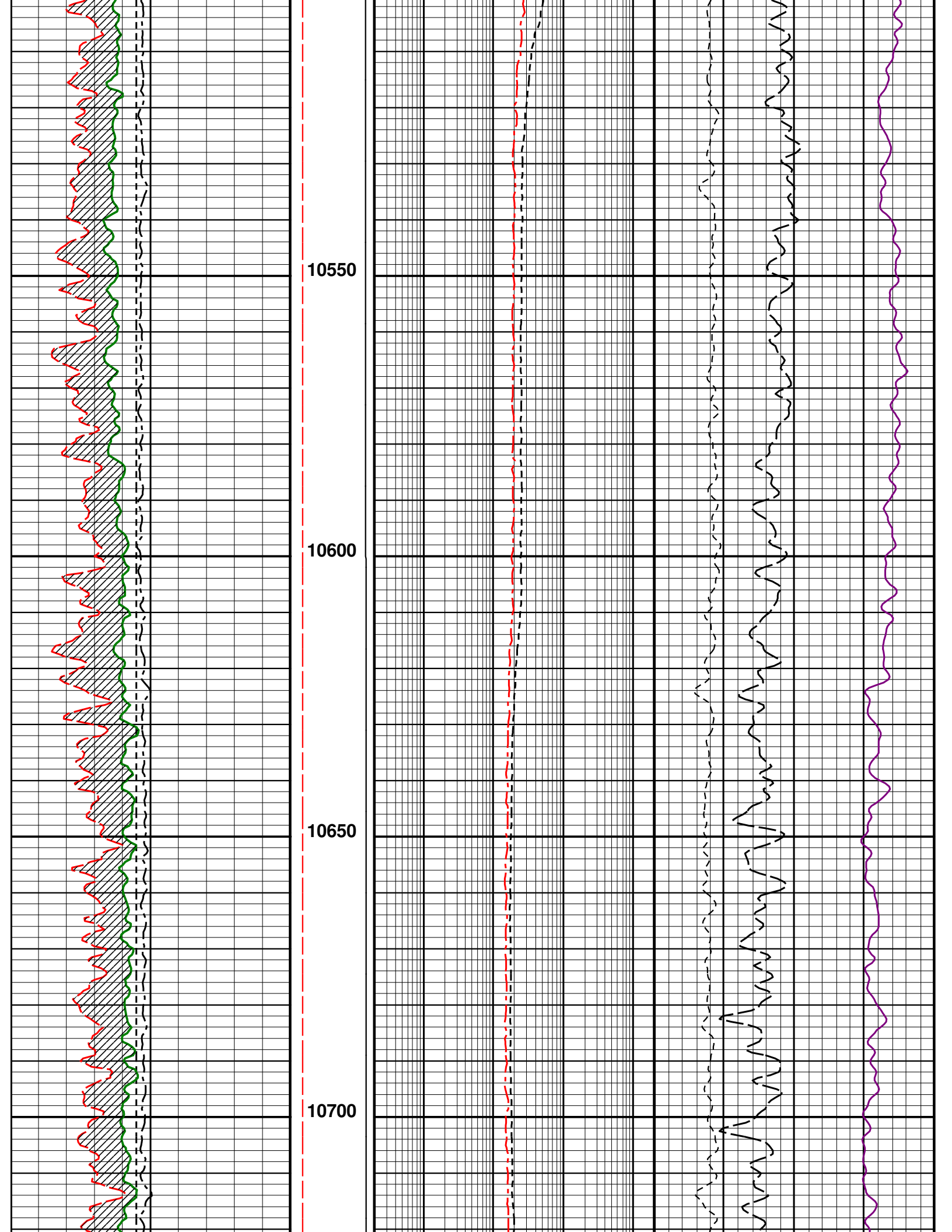
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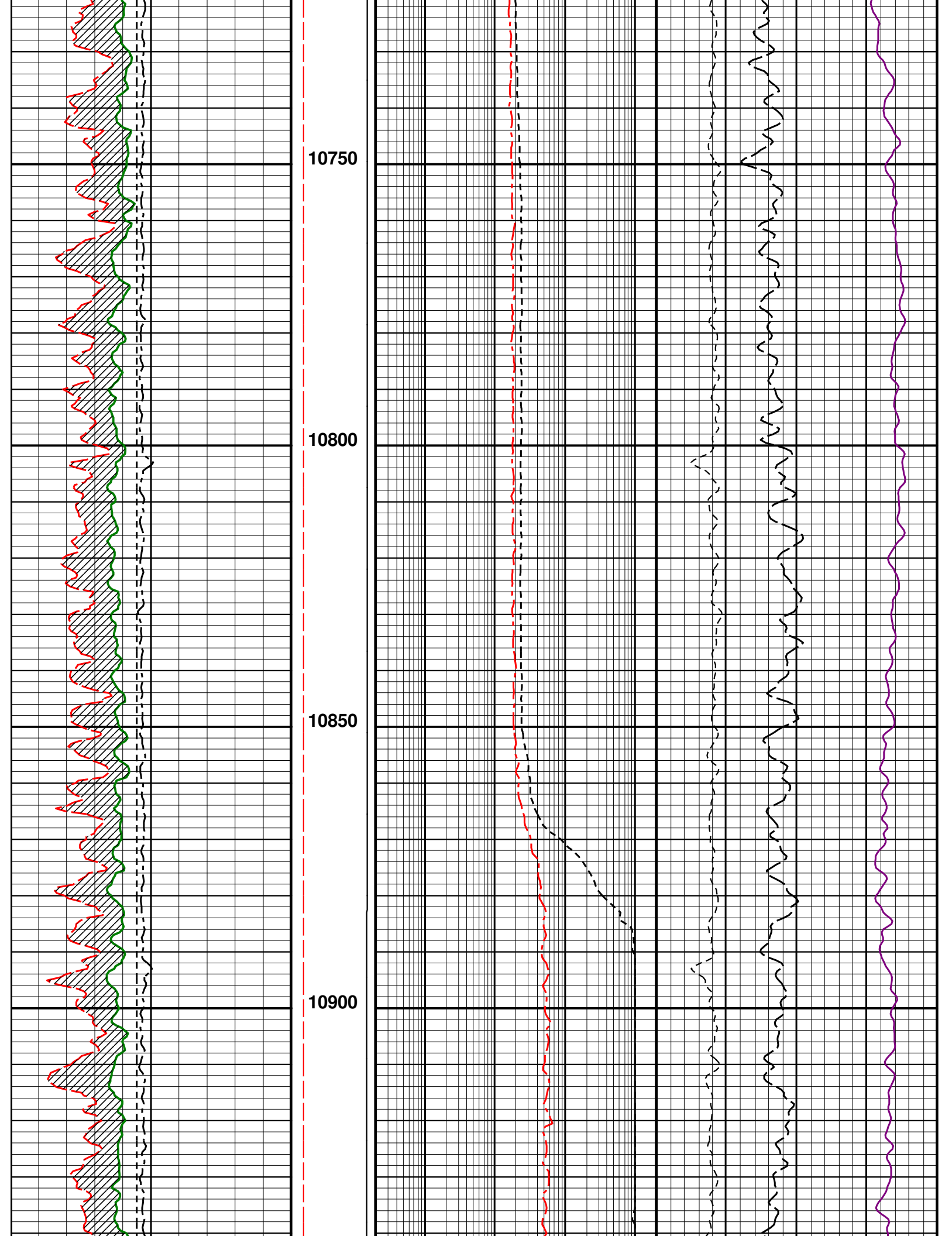




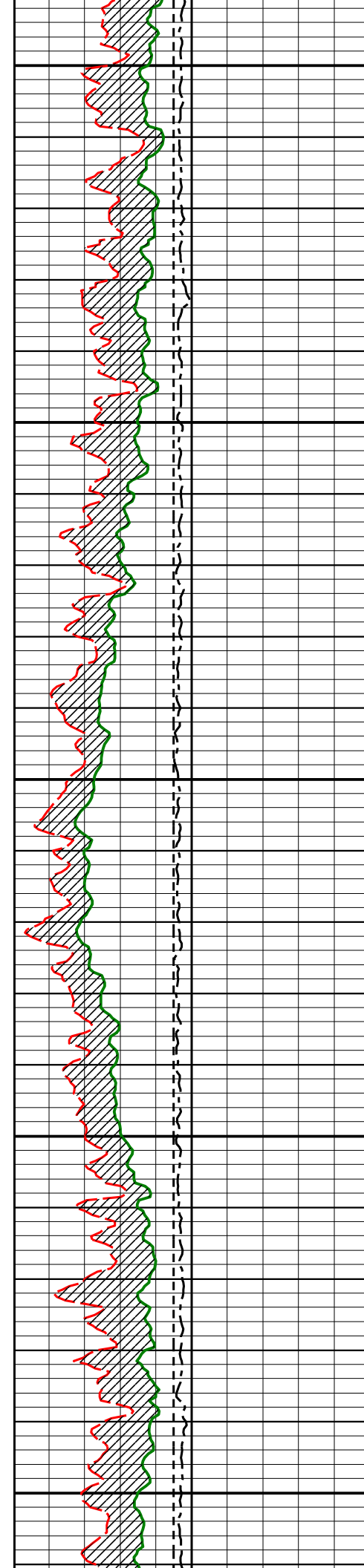




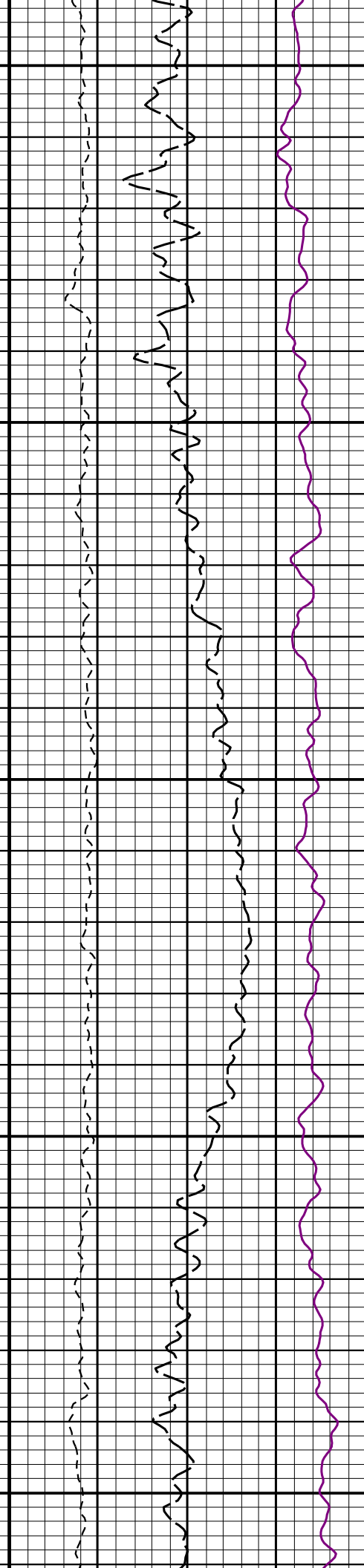
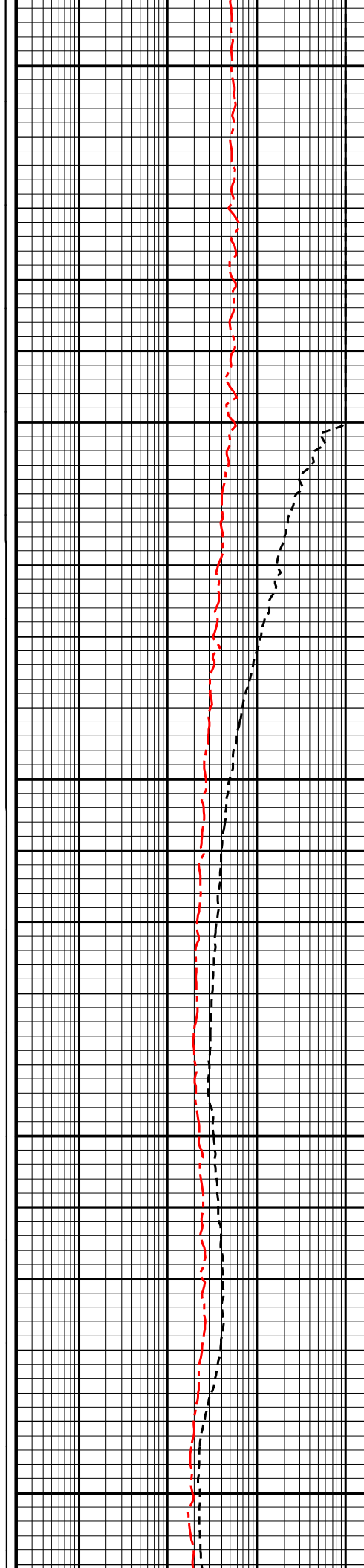


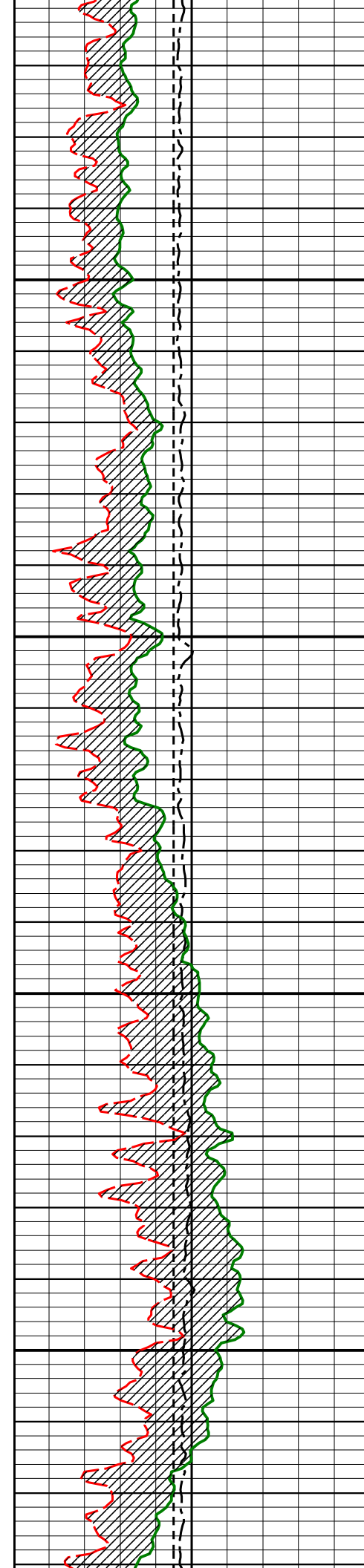






10950  
11000  
11050  
11100  
11150



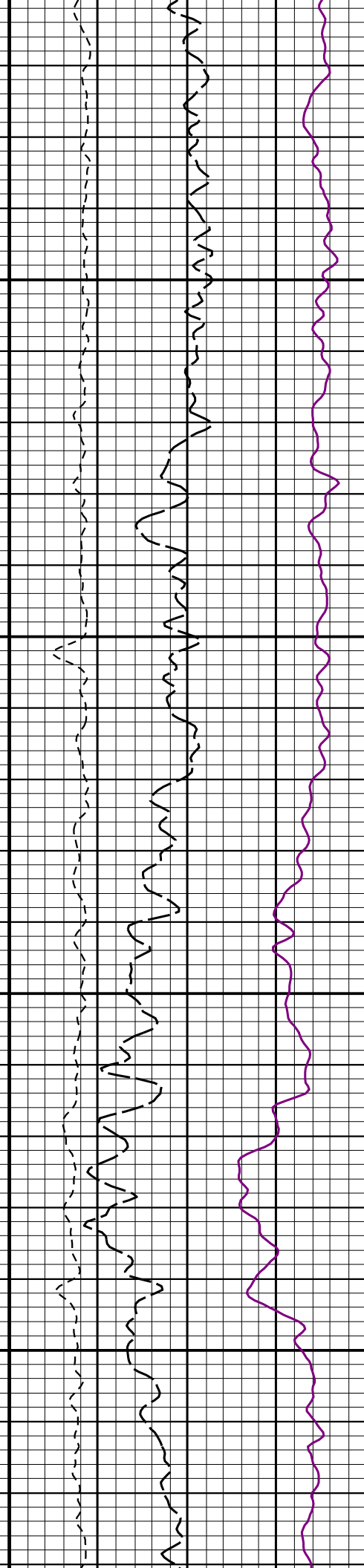
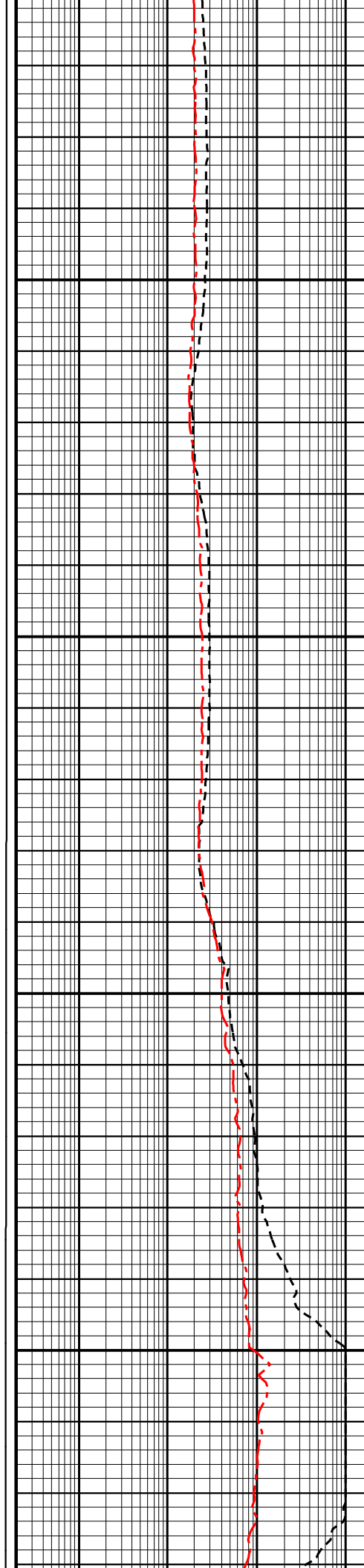


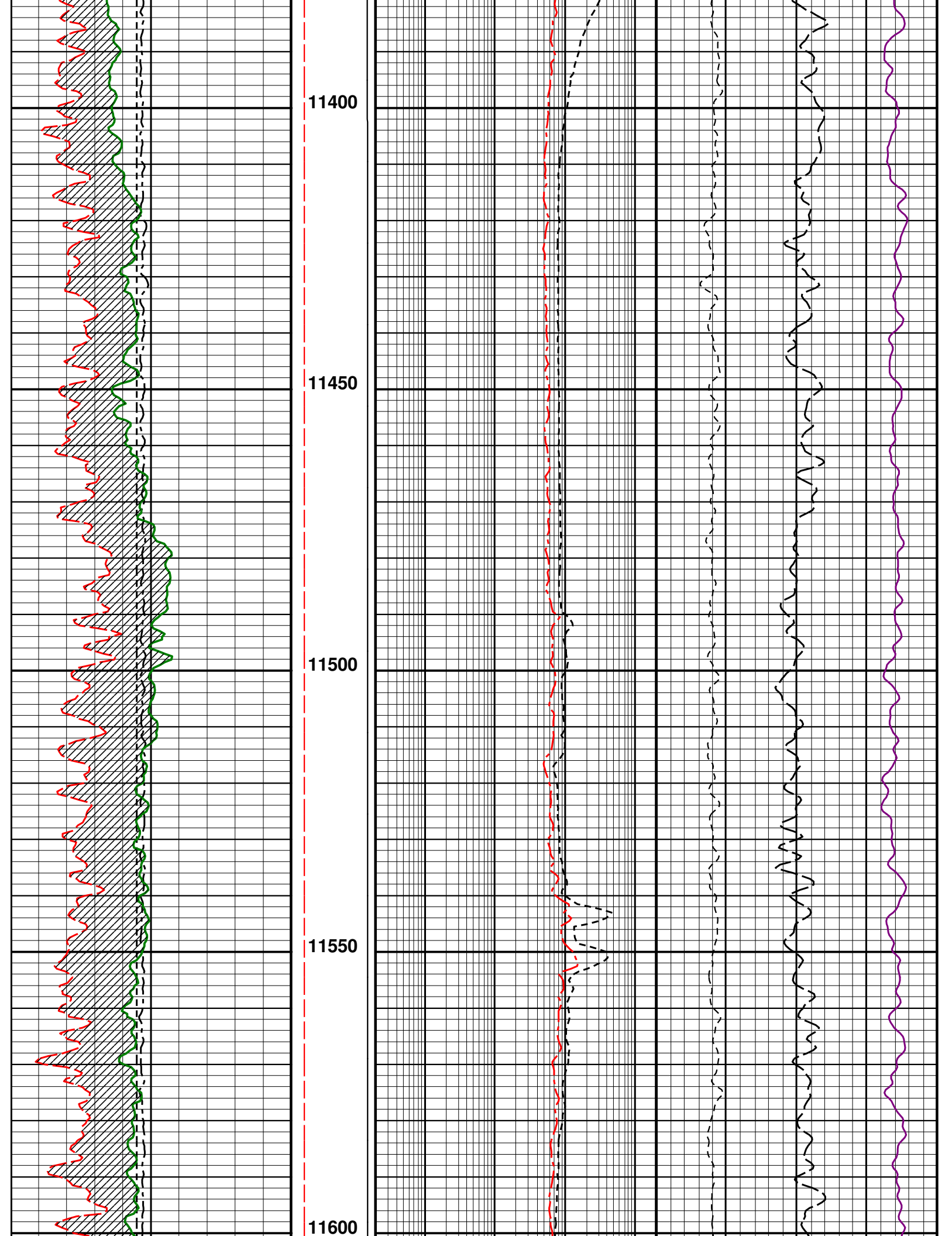
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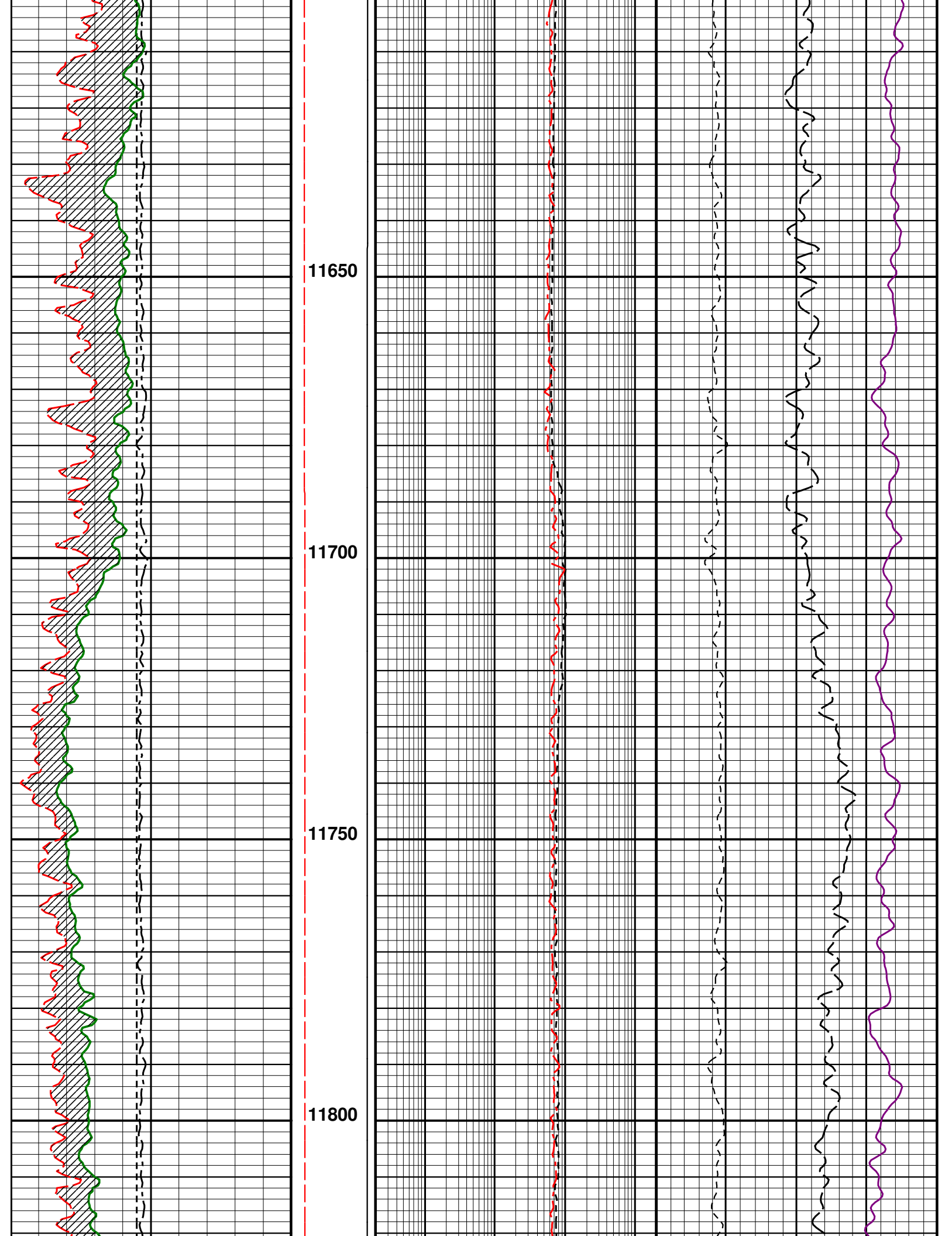
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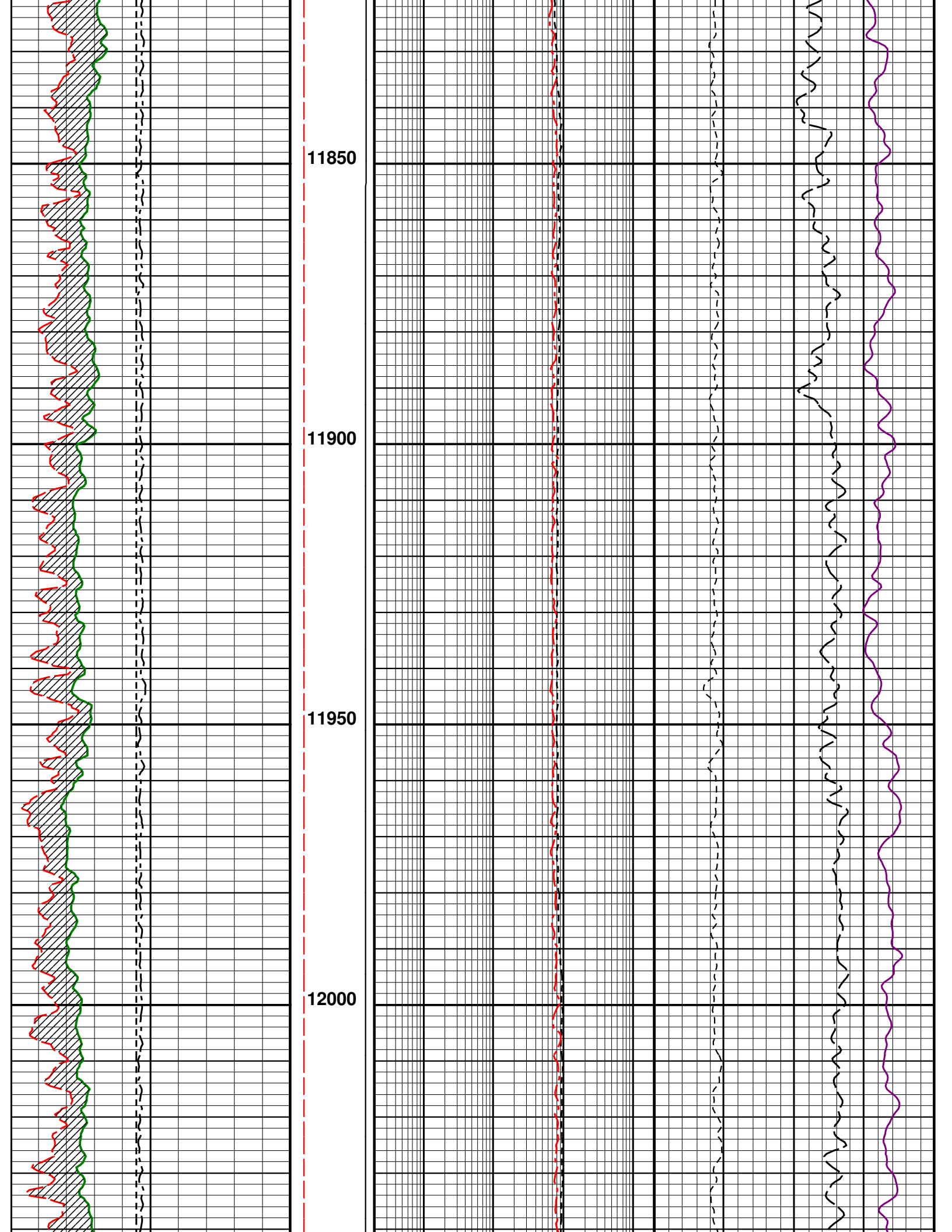
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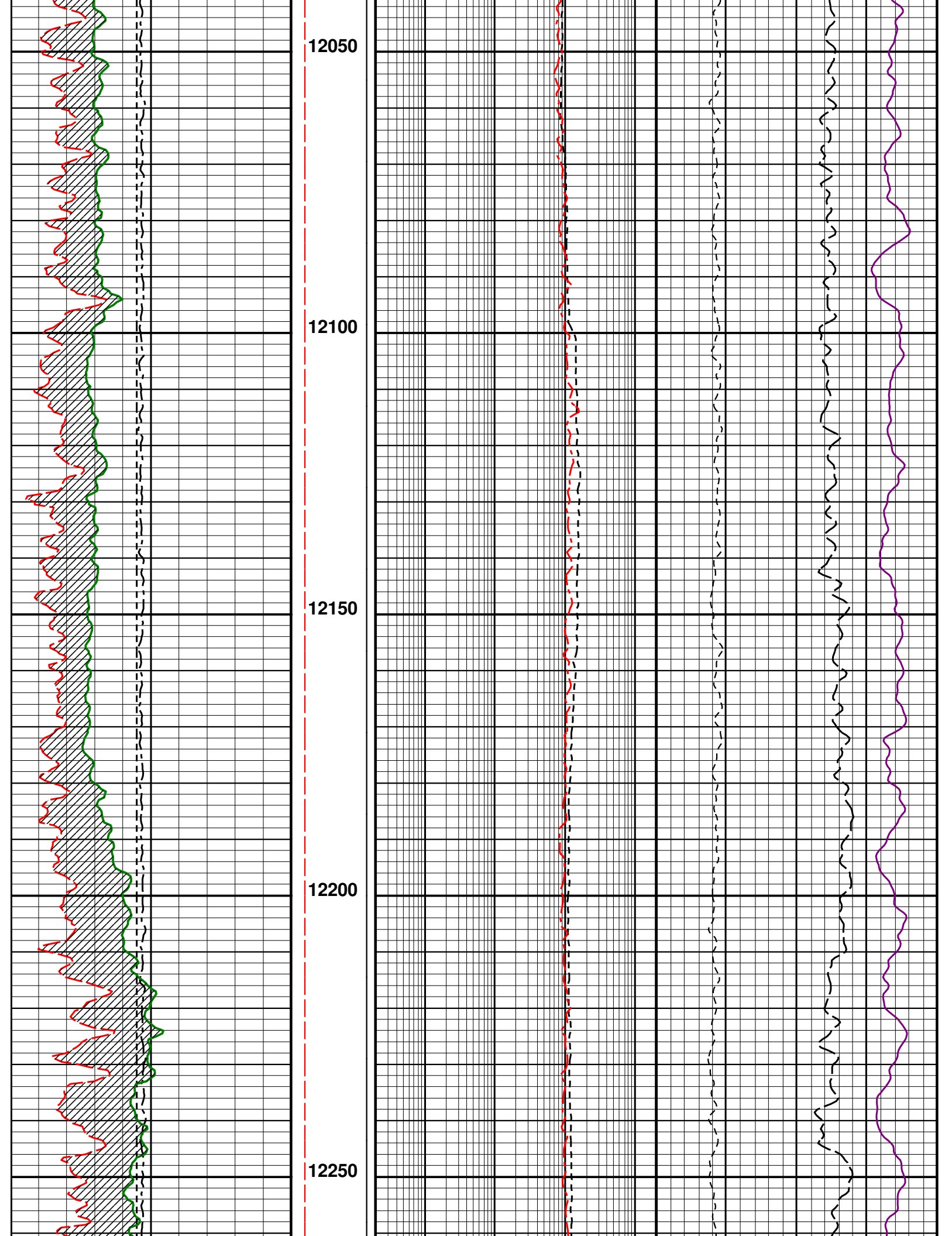
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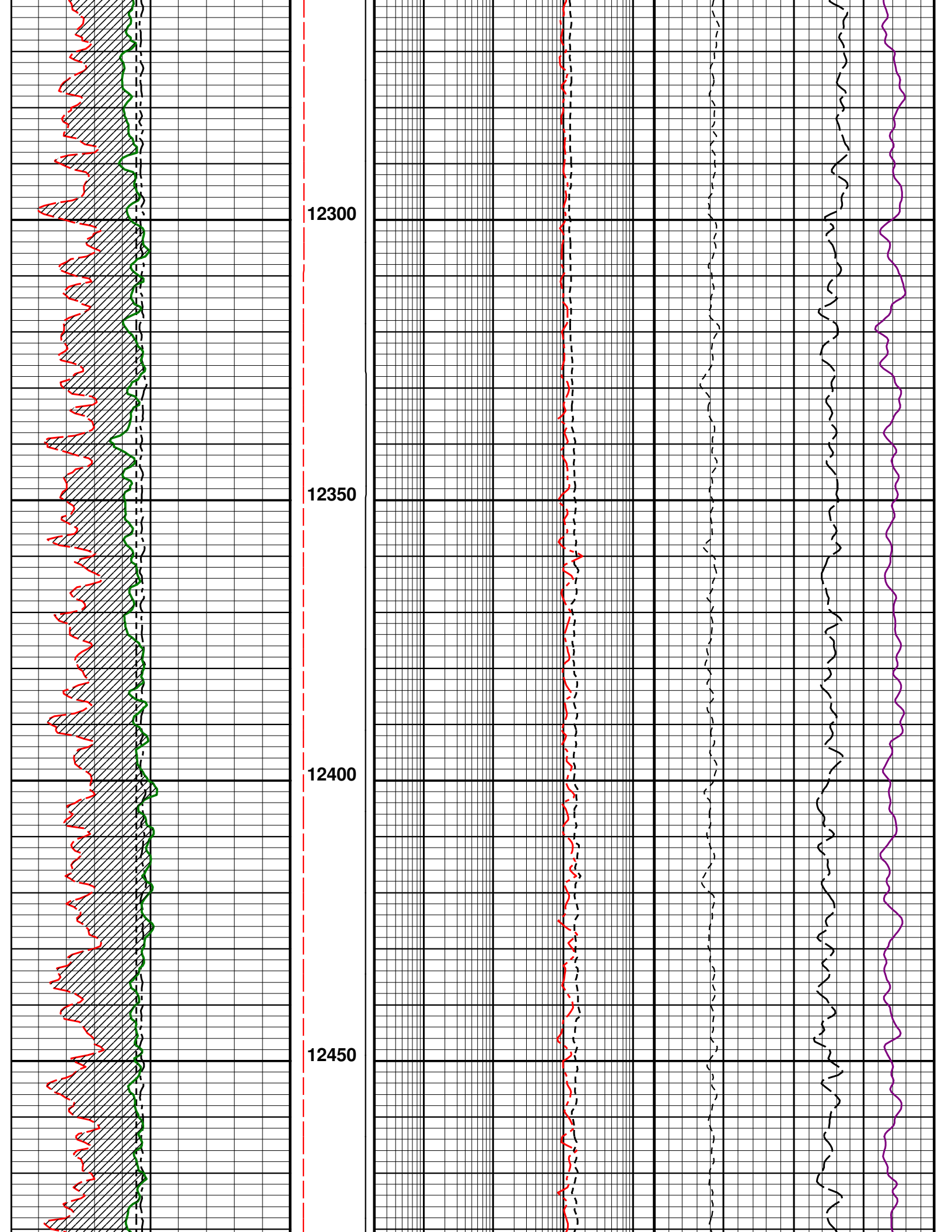


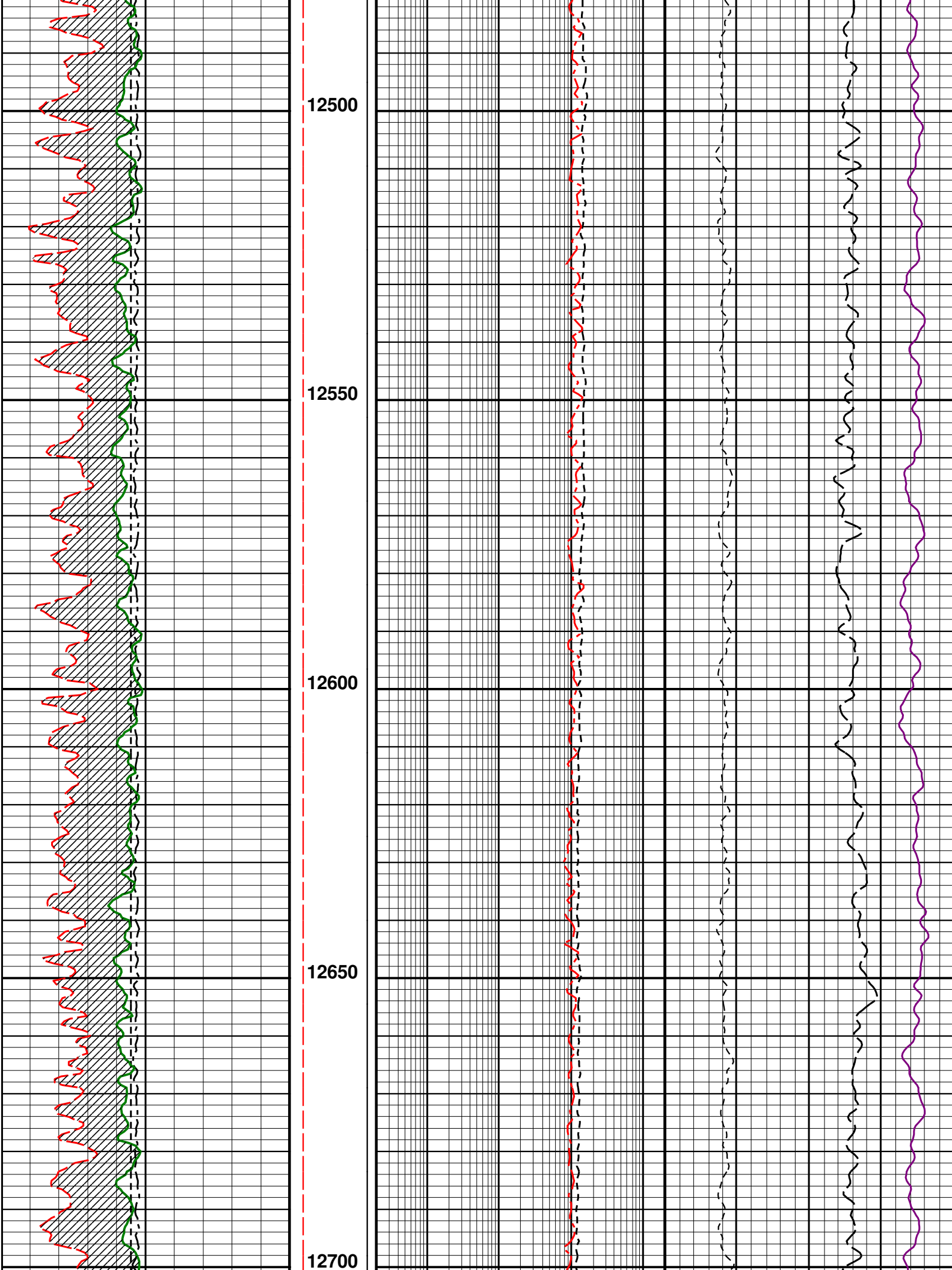




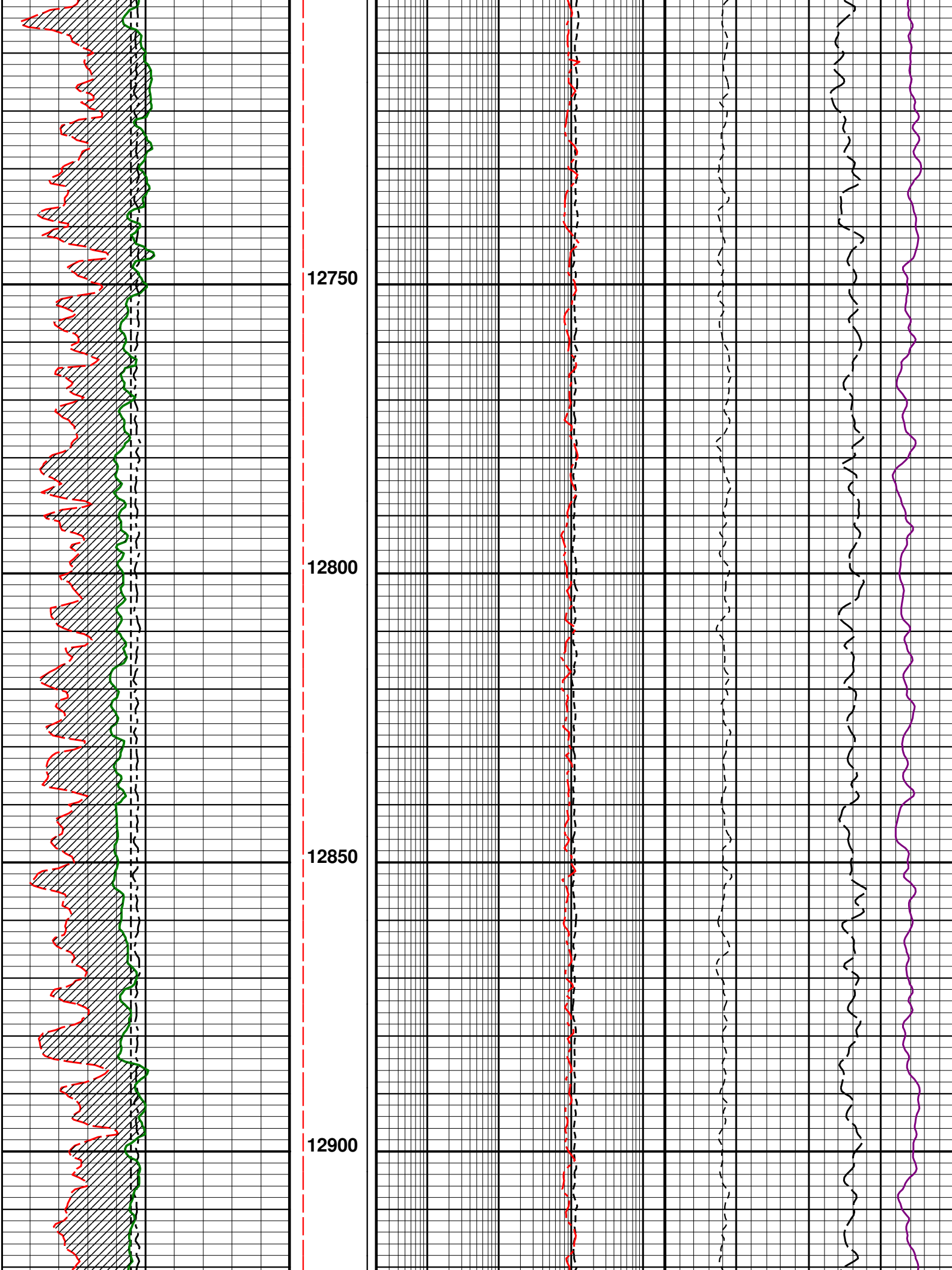


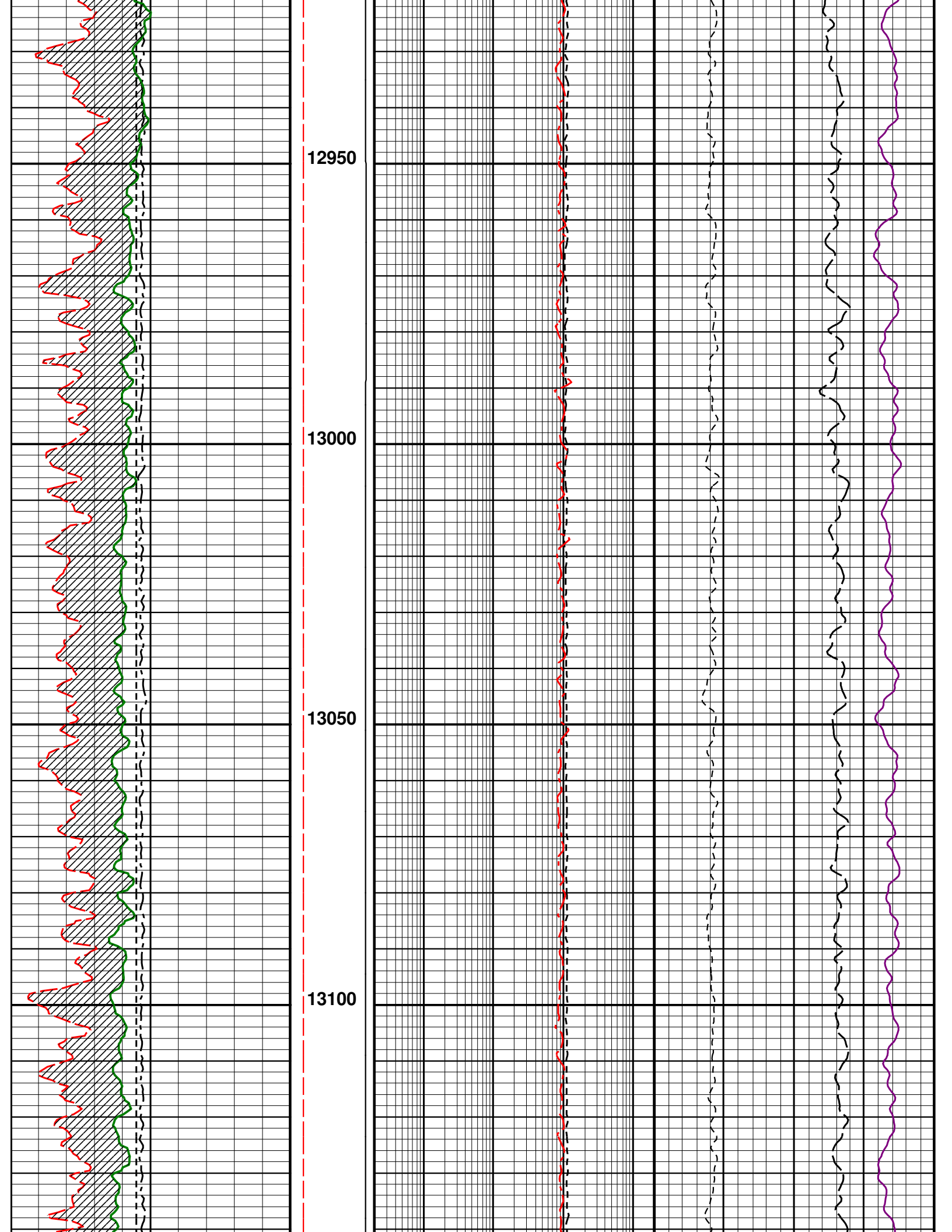


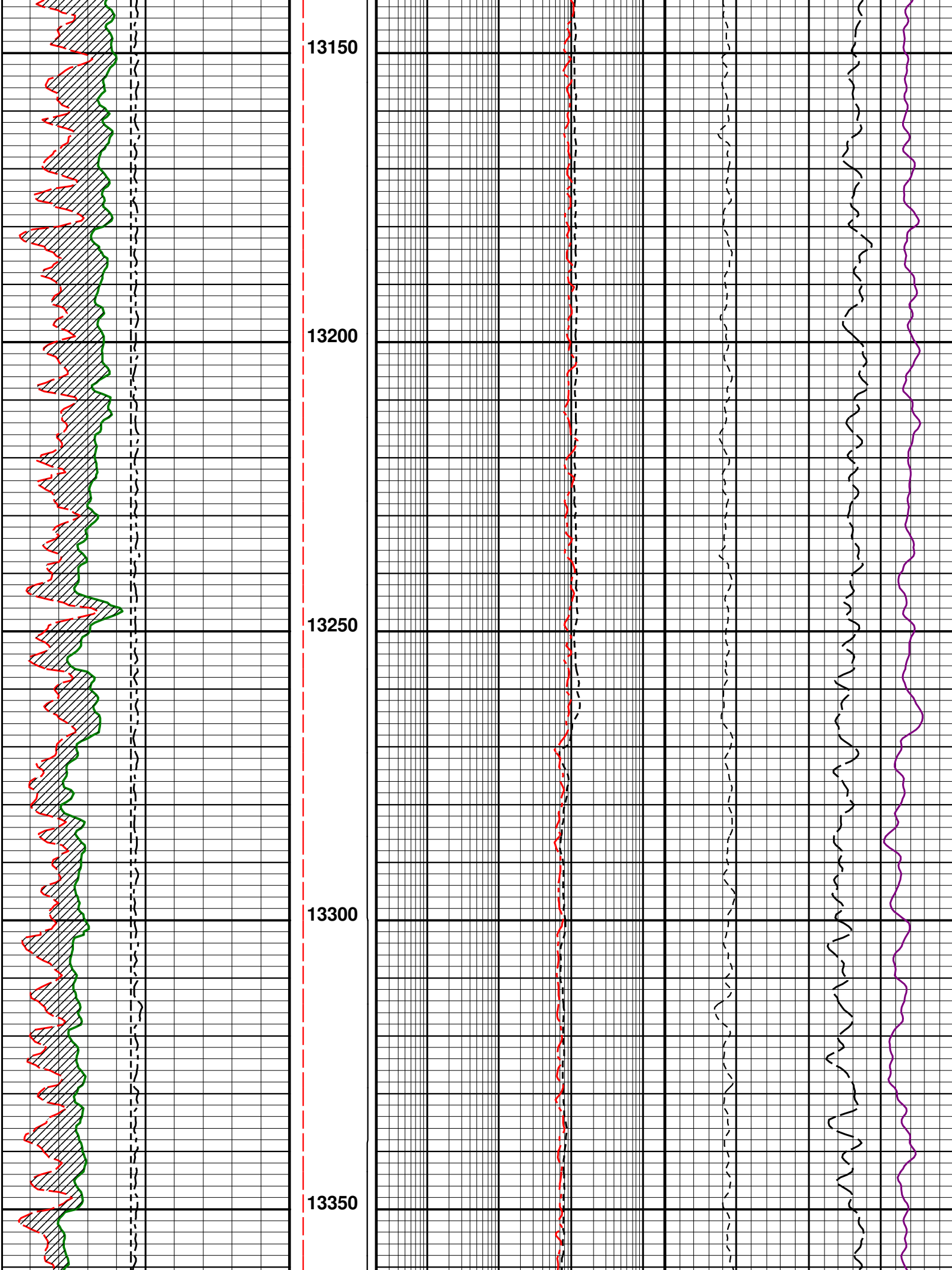


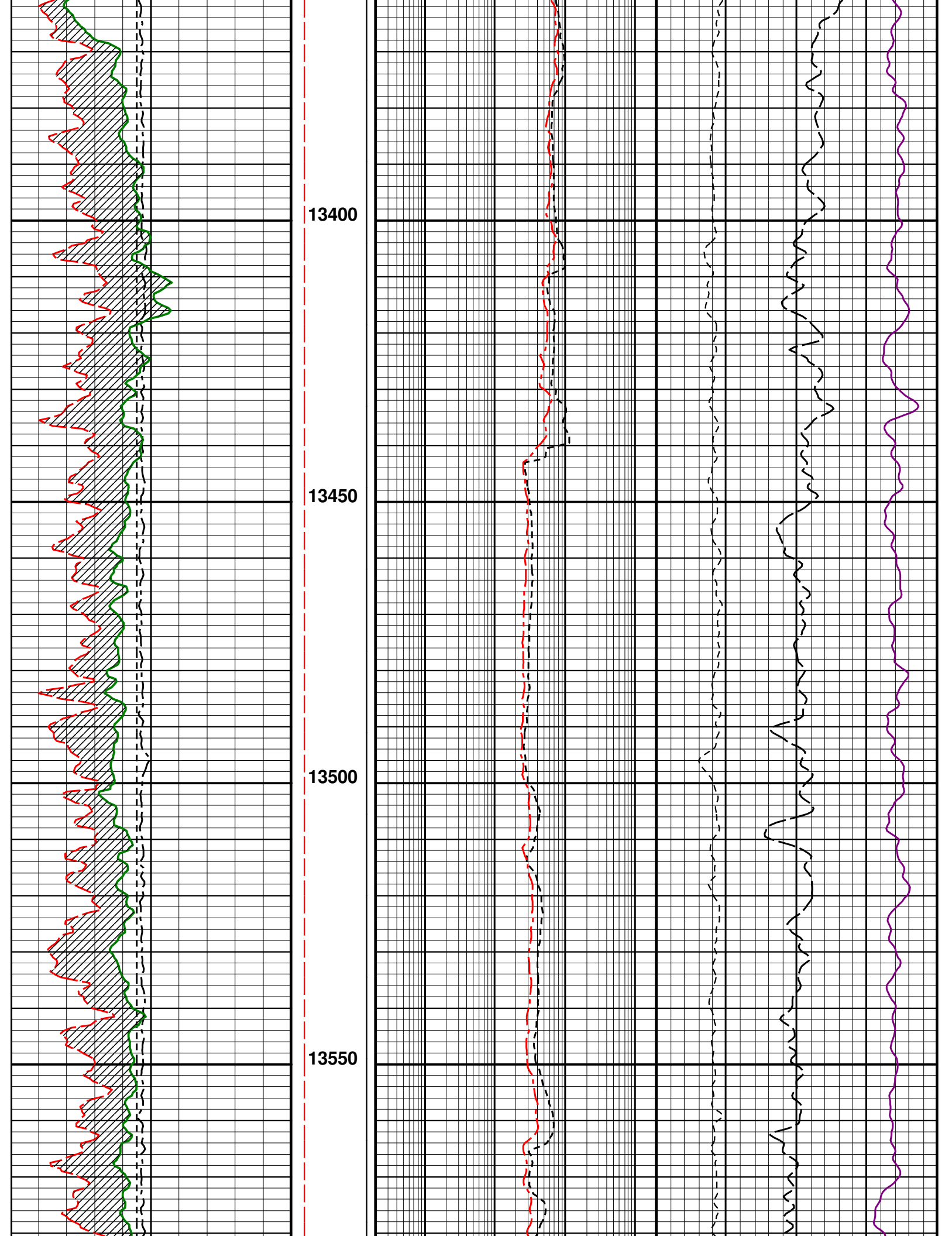


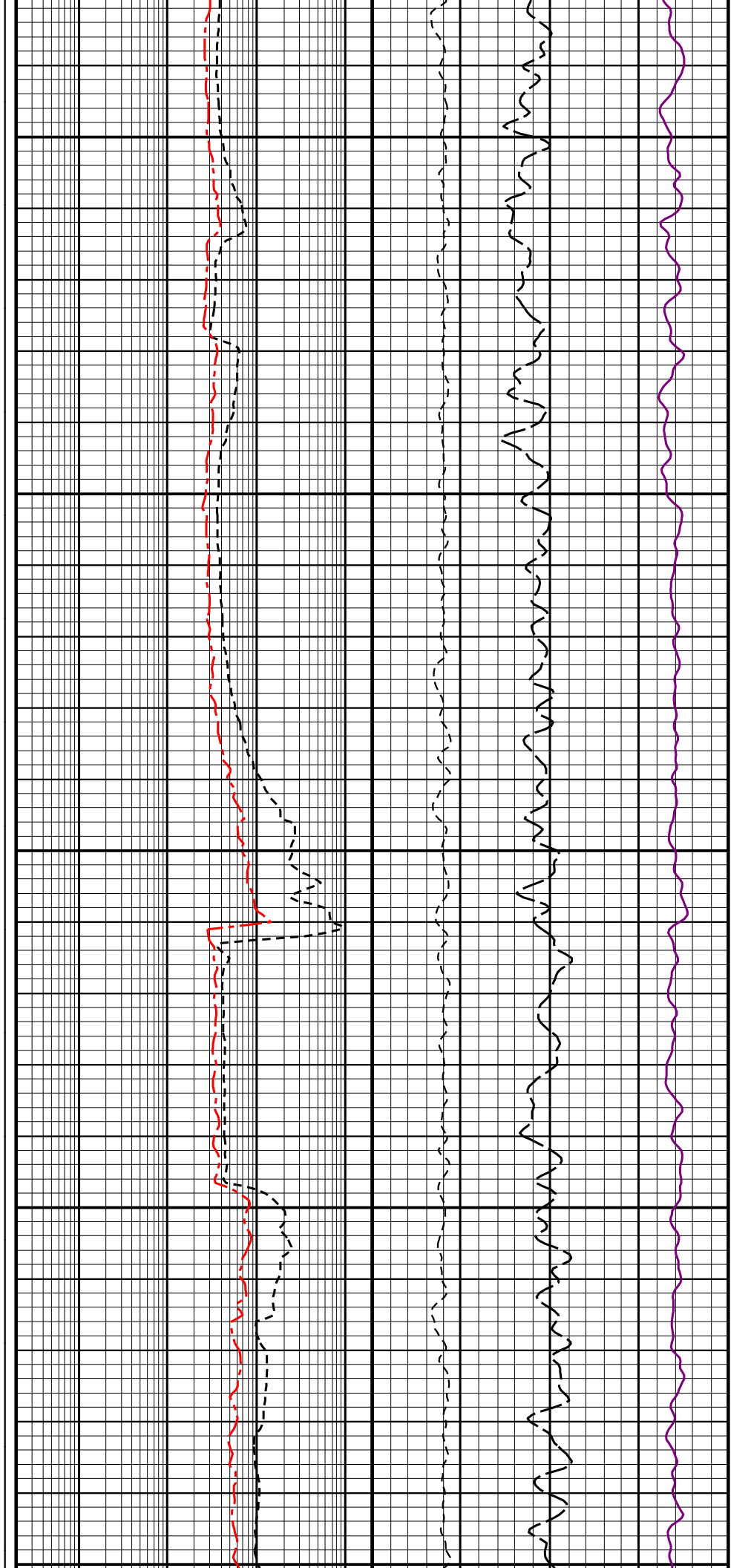
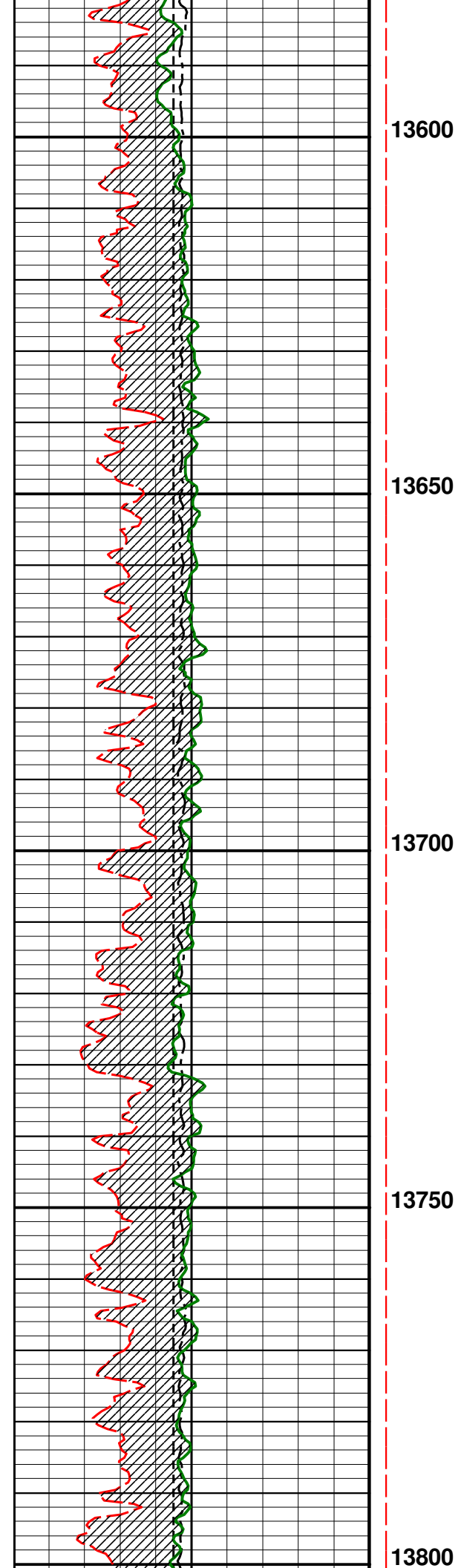


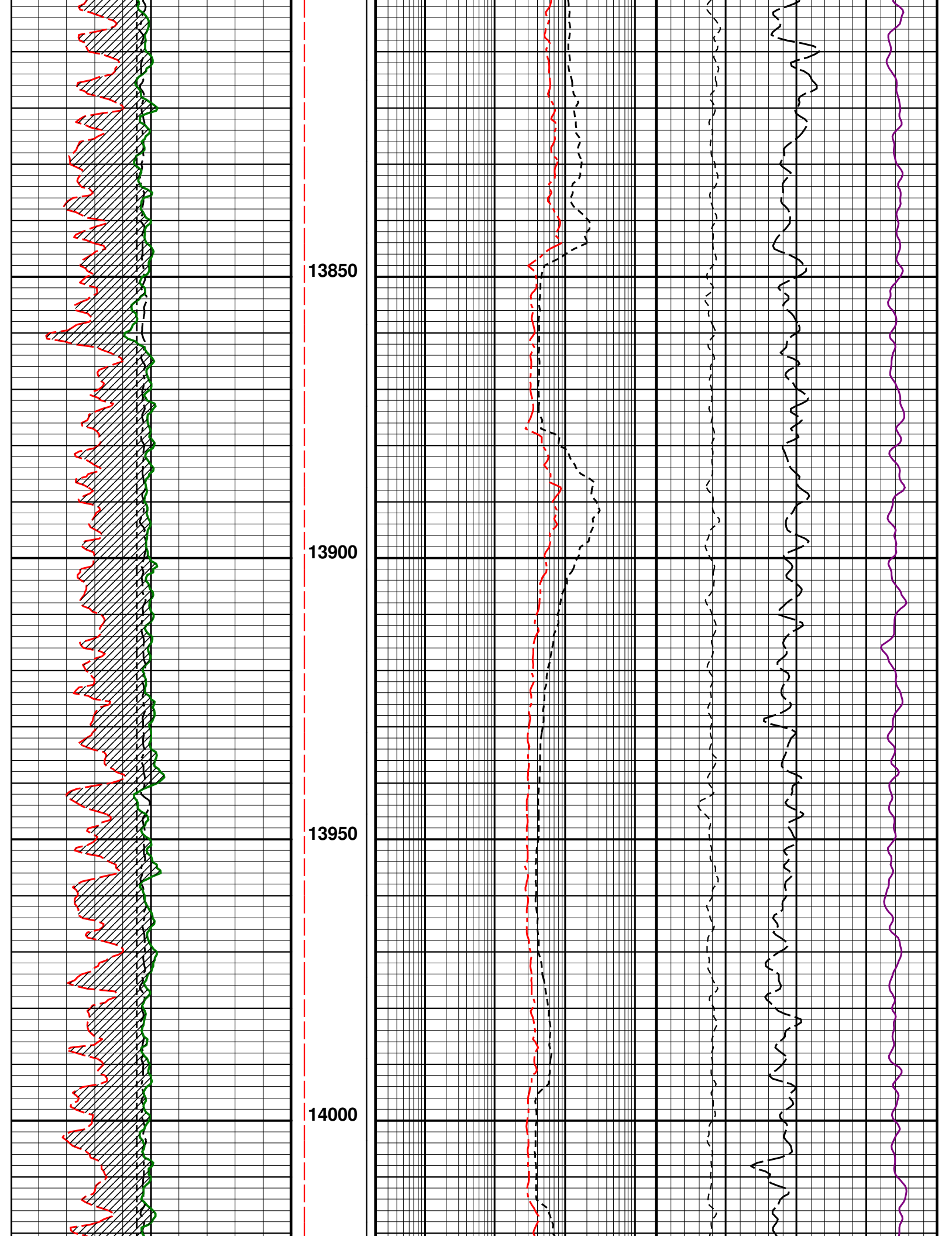


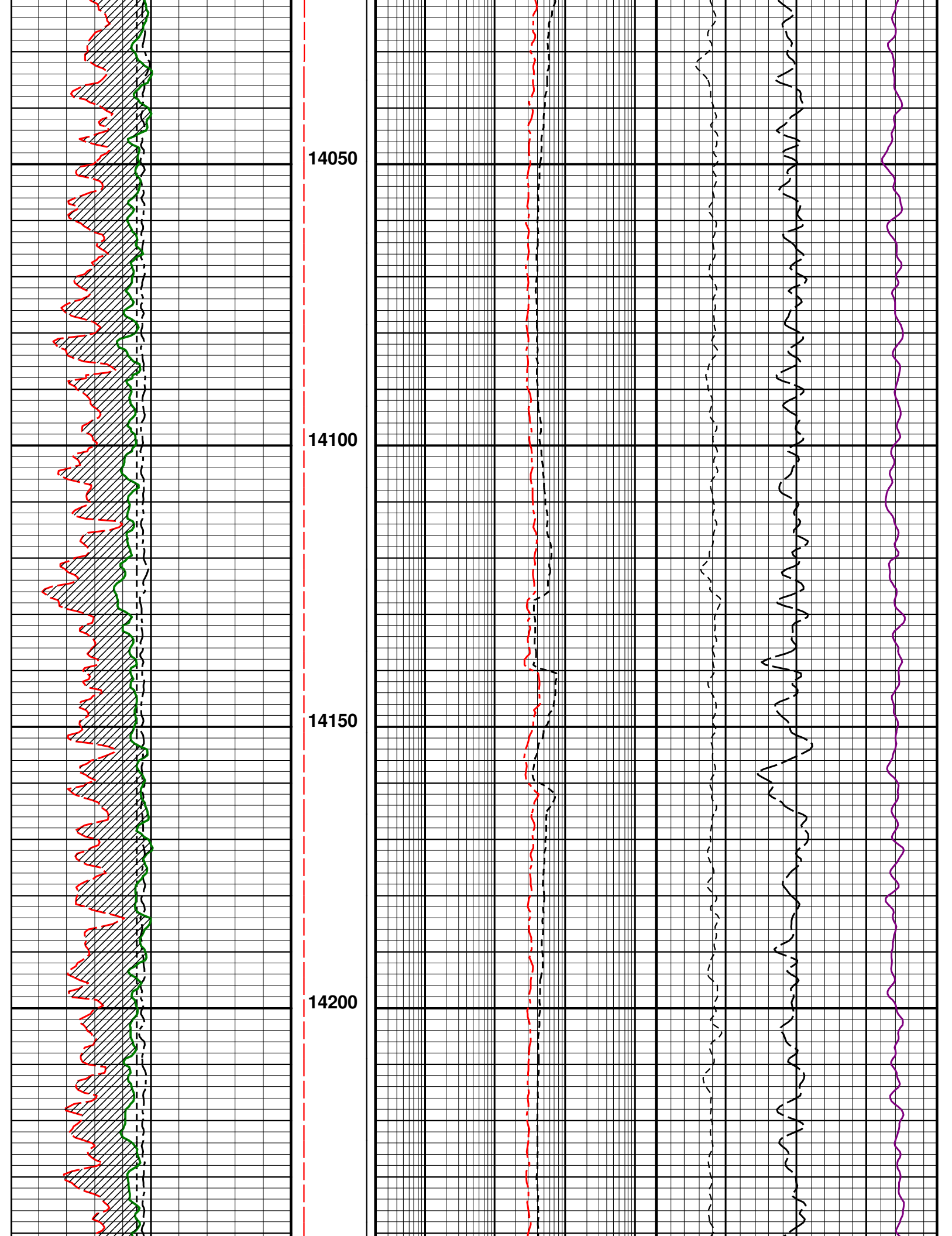


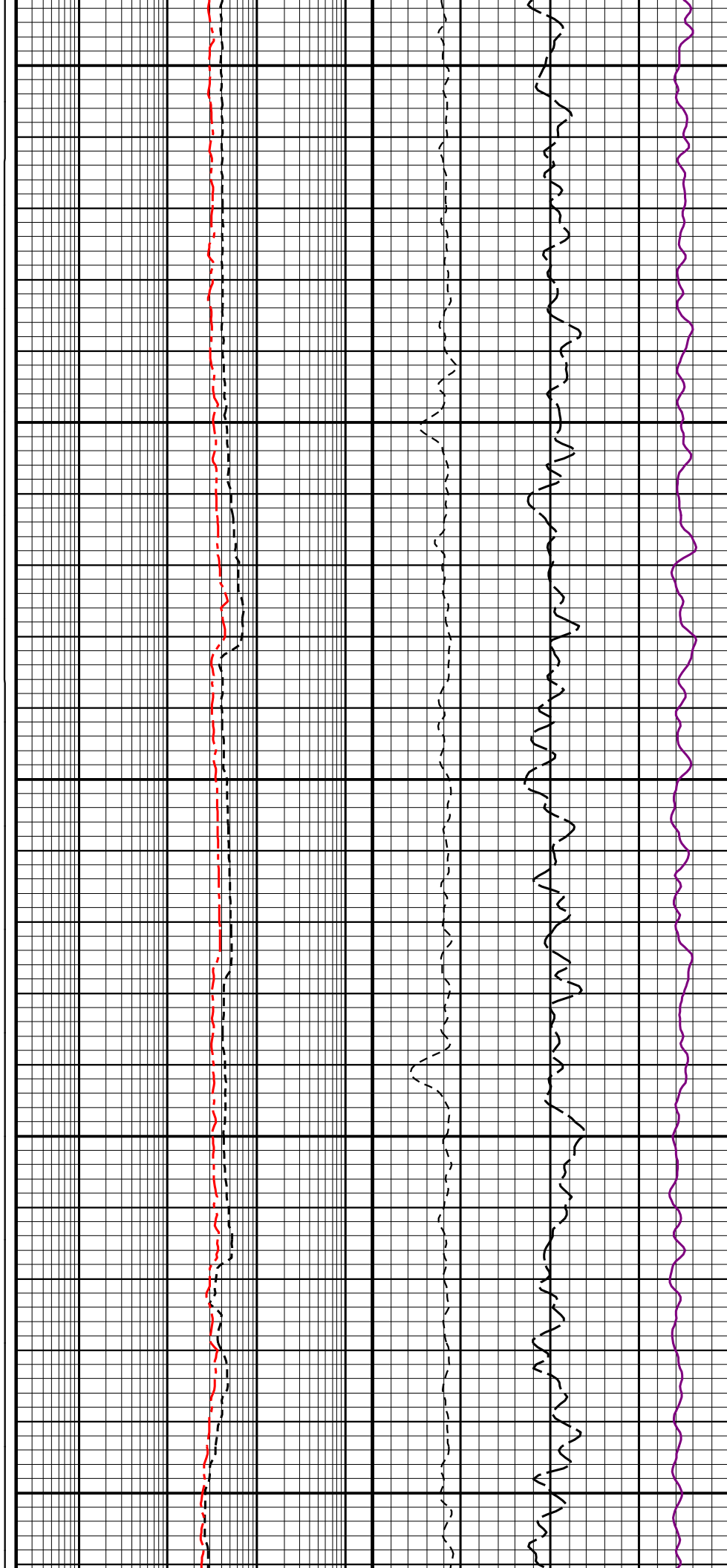
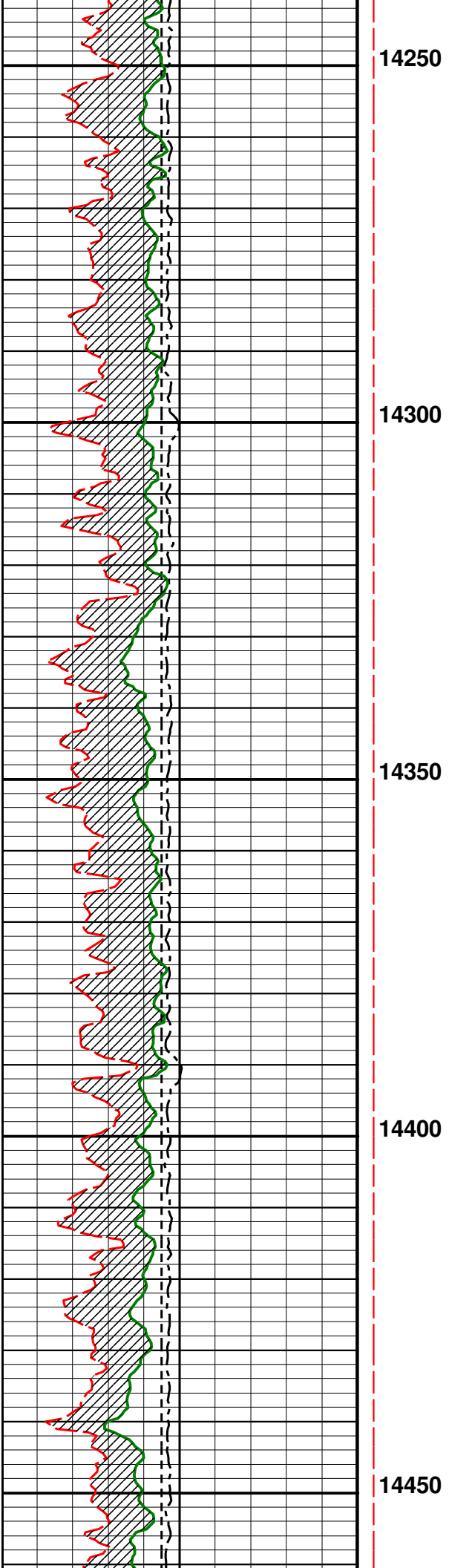




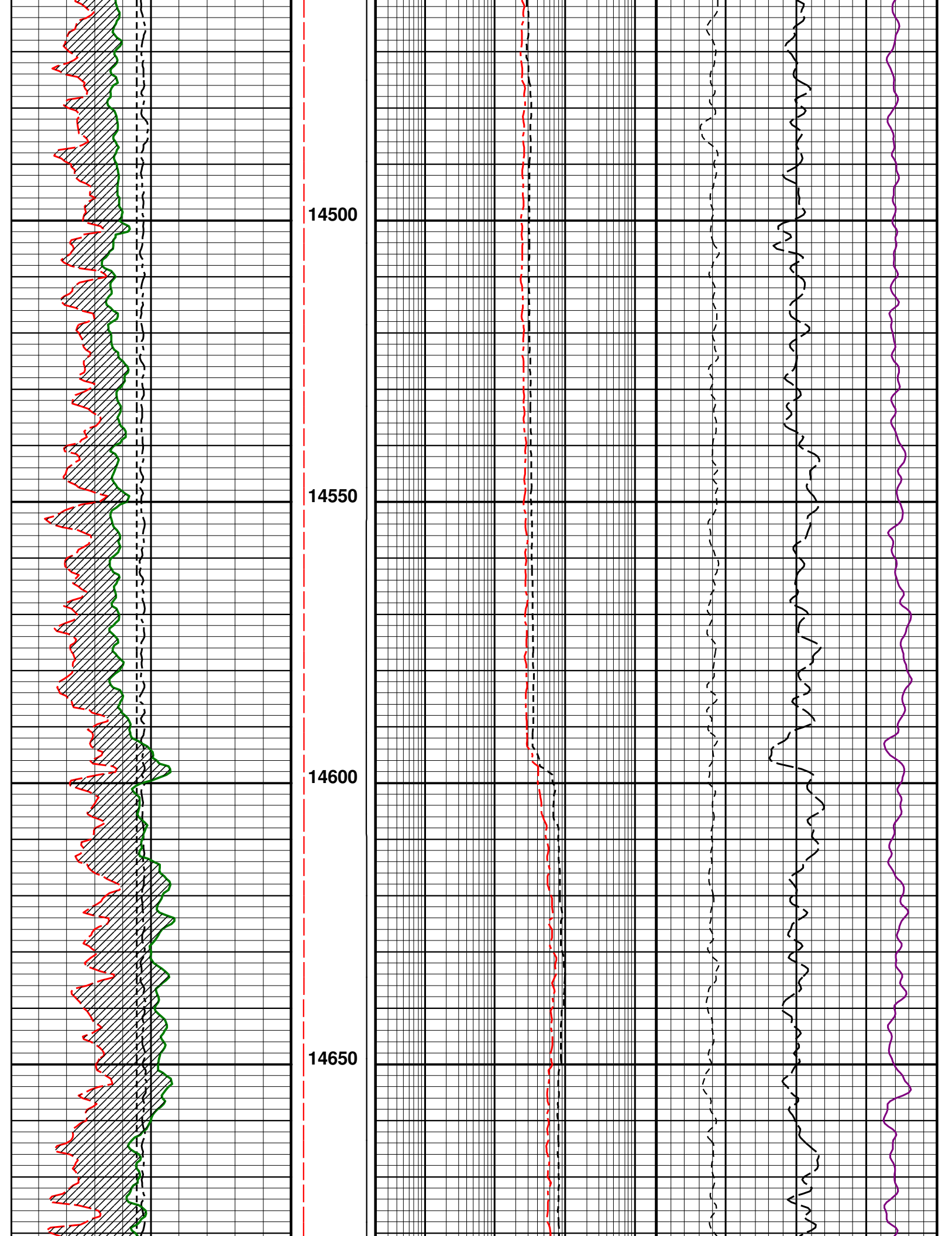


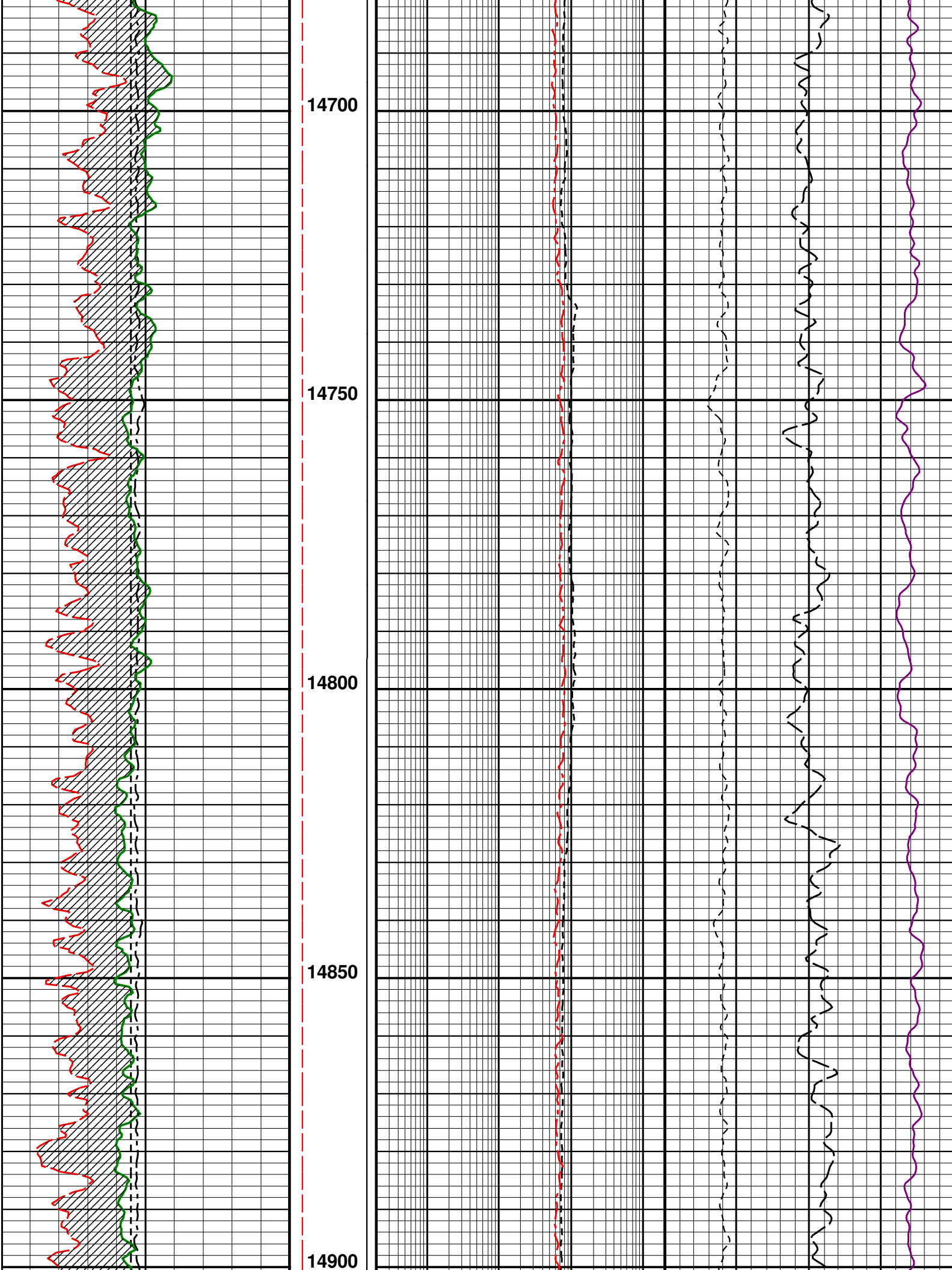


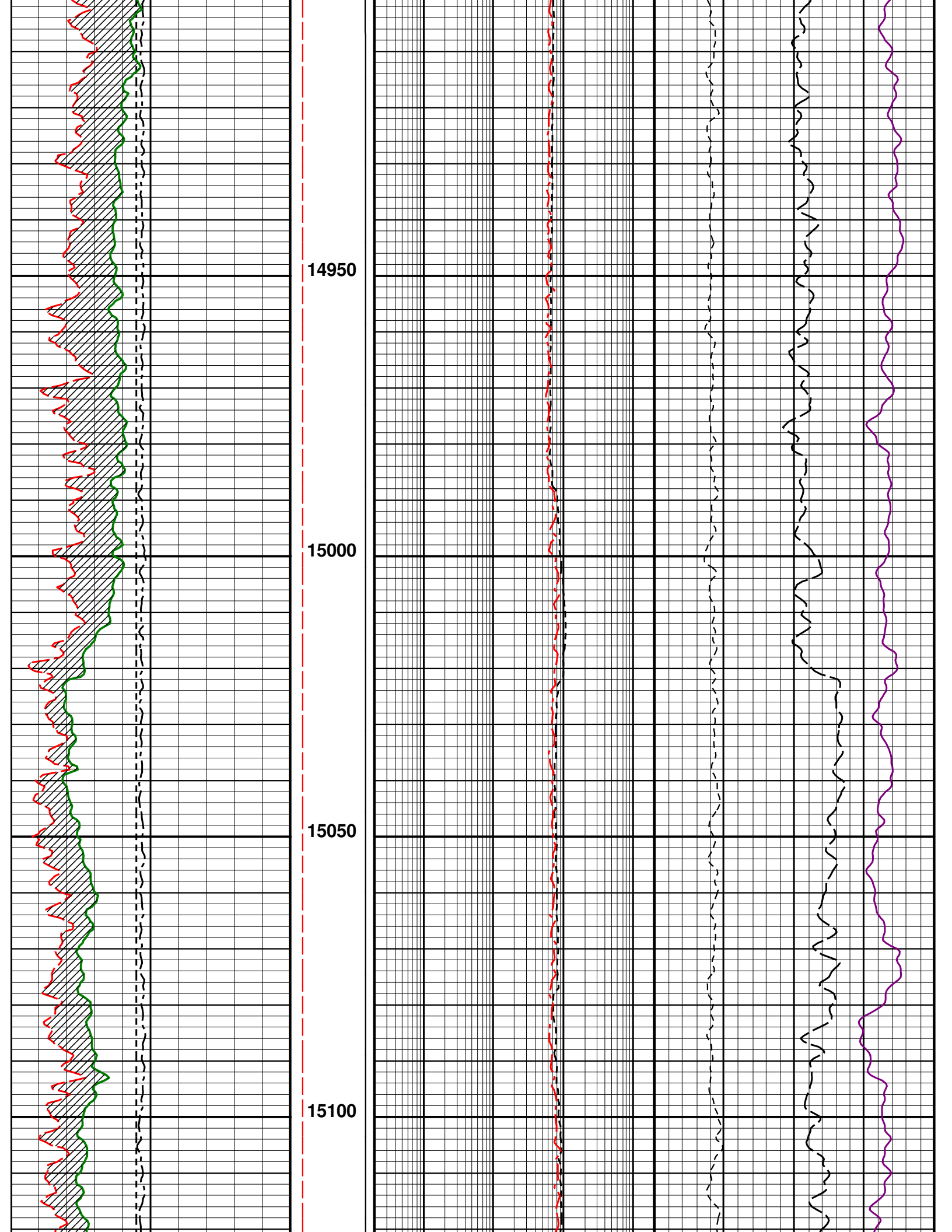


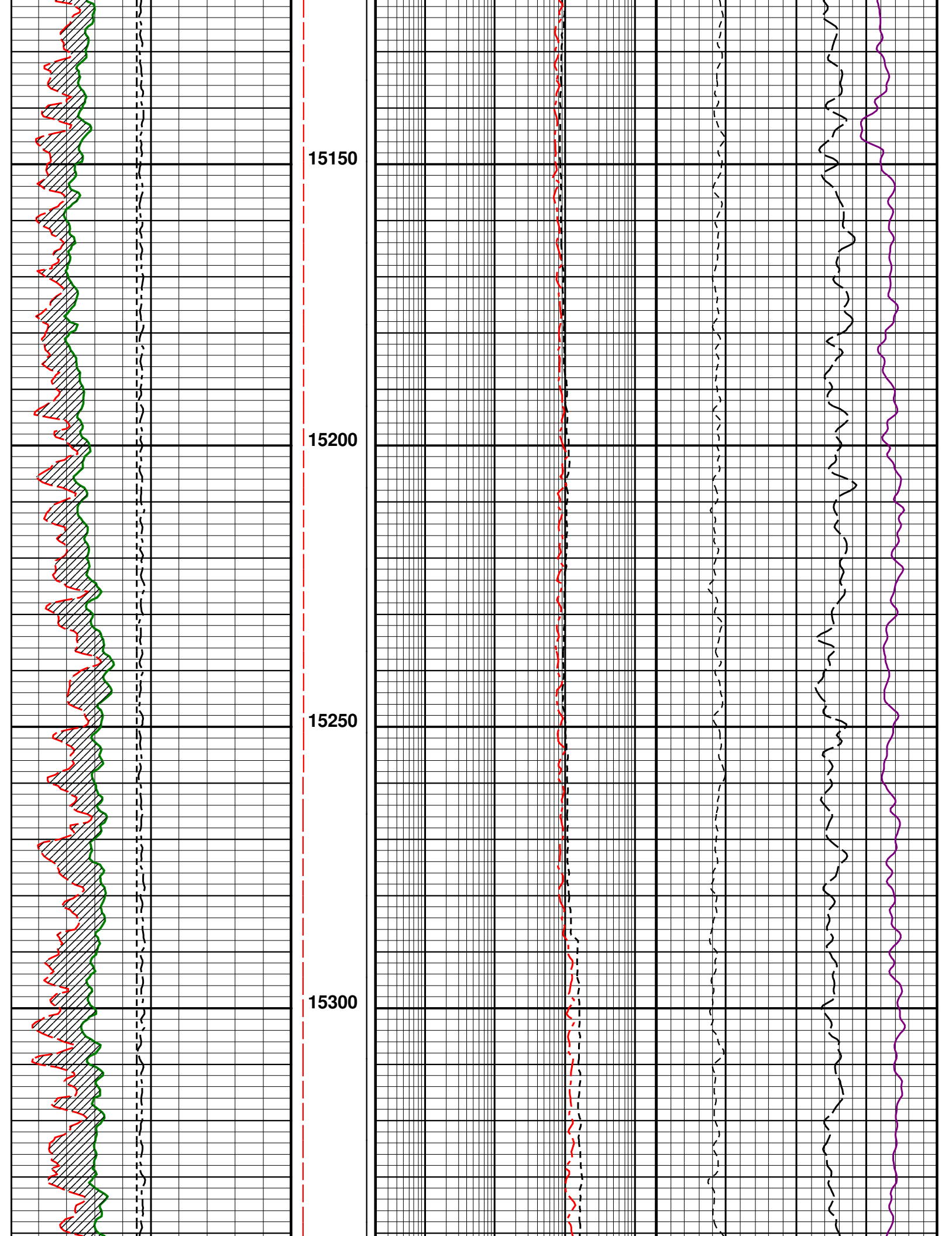


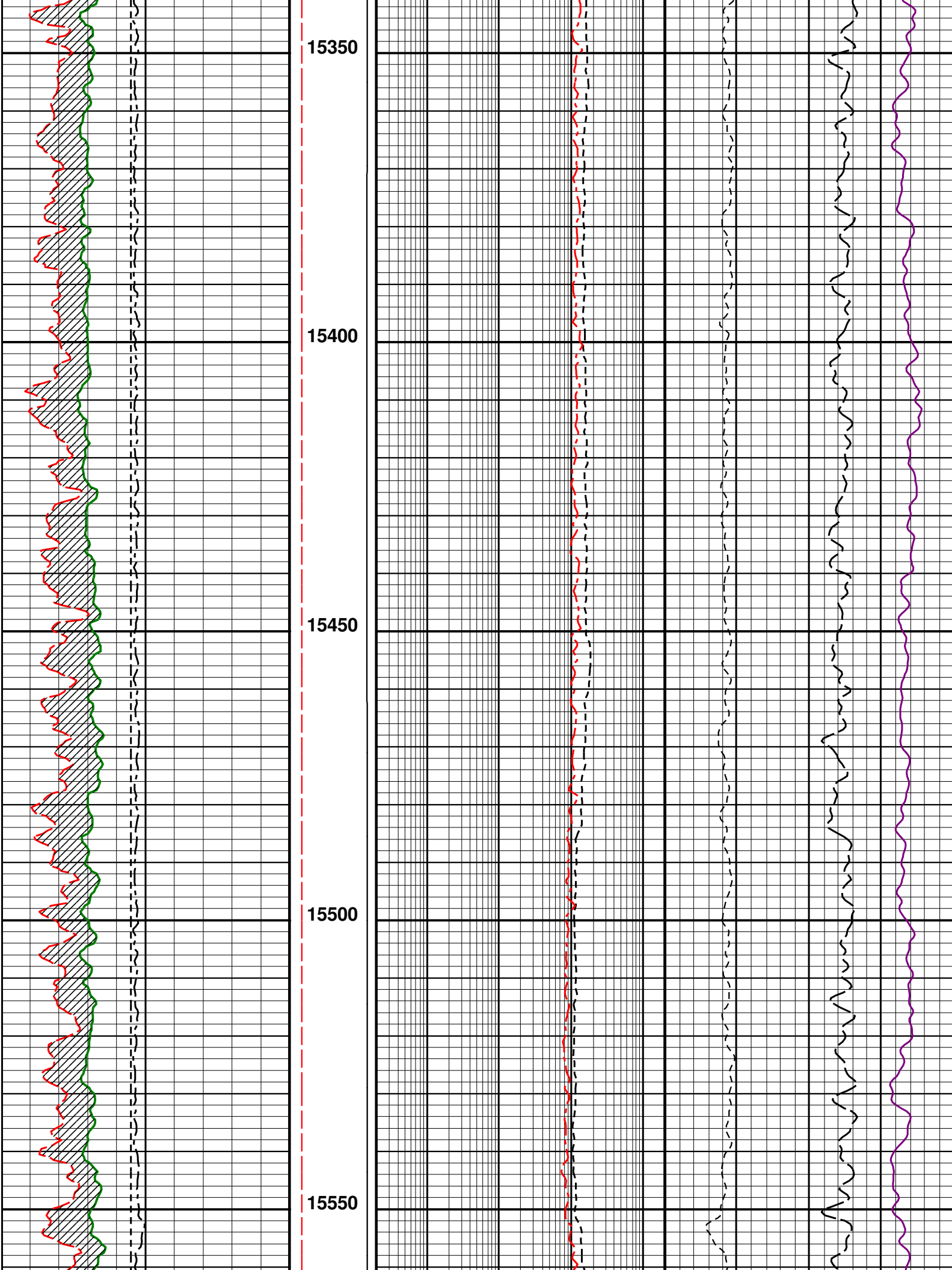


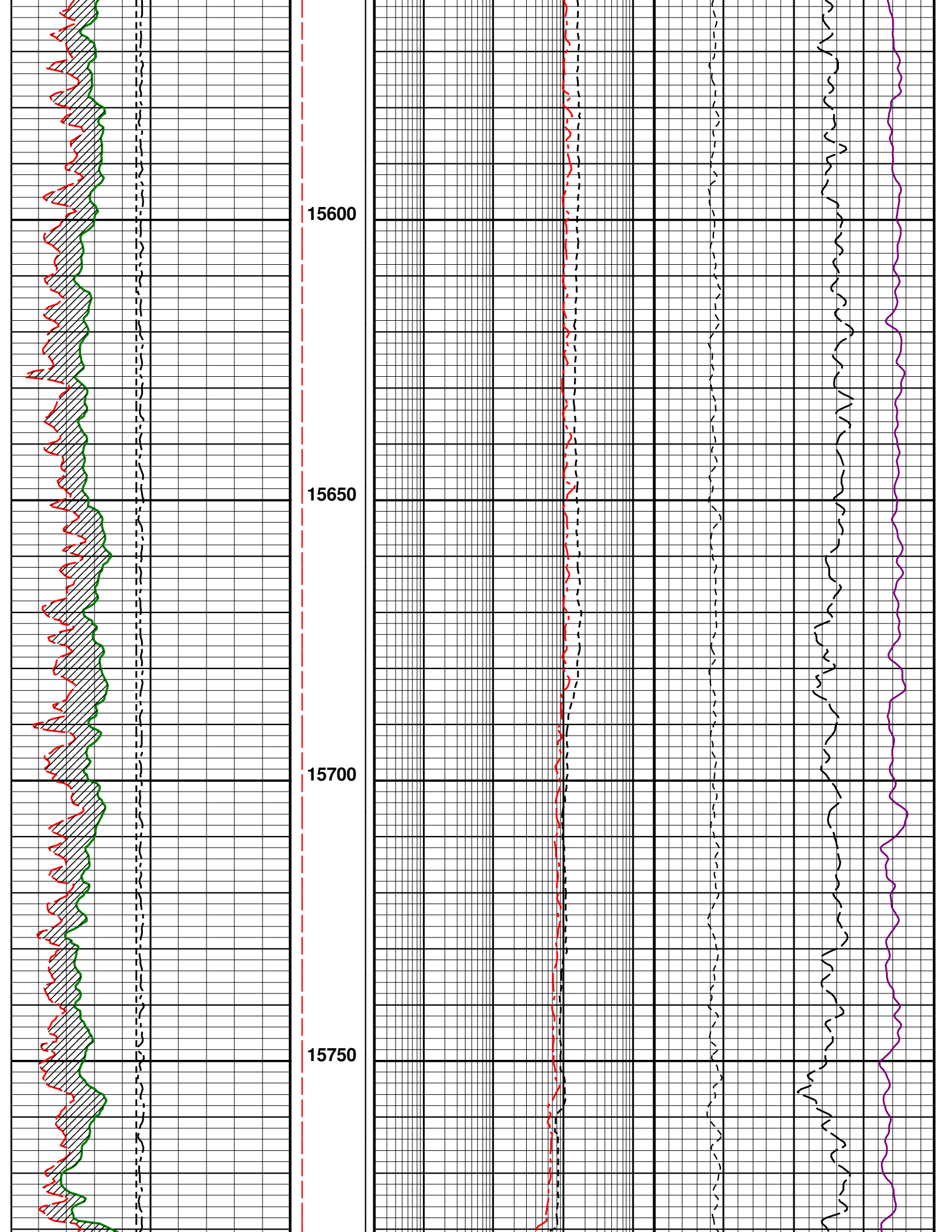


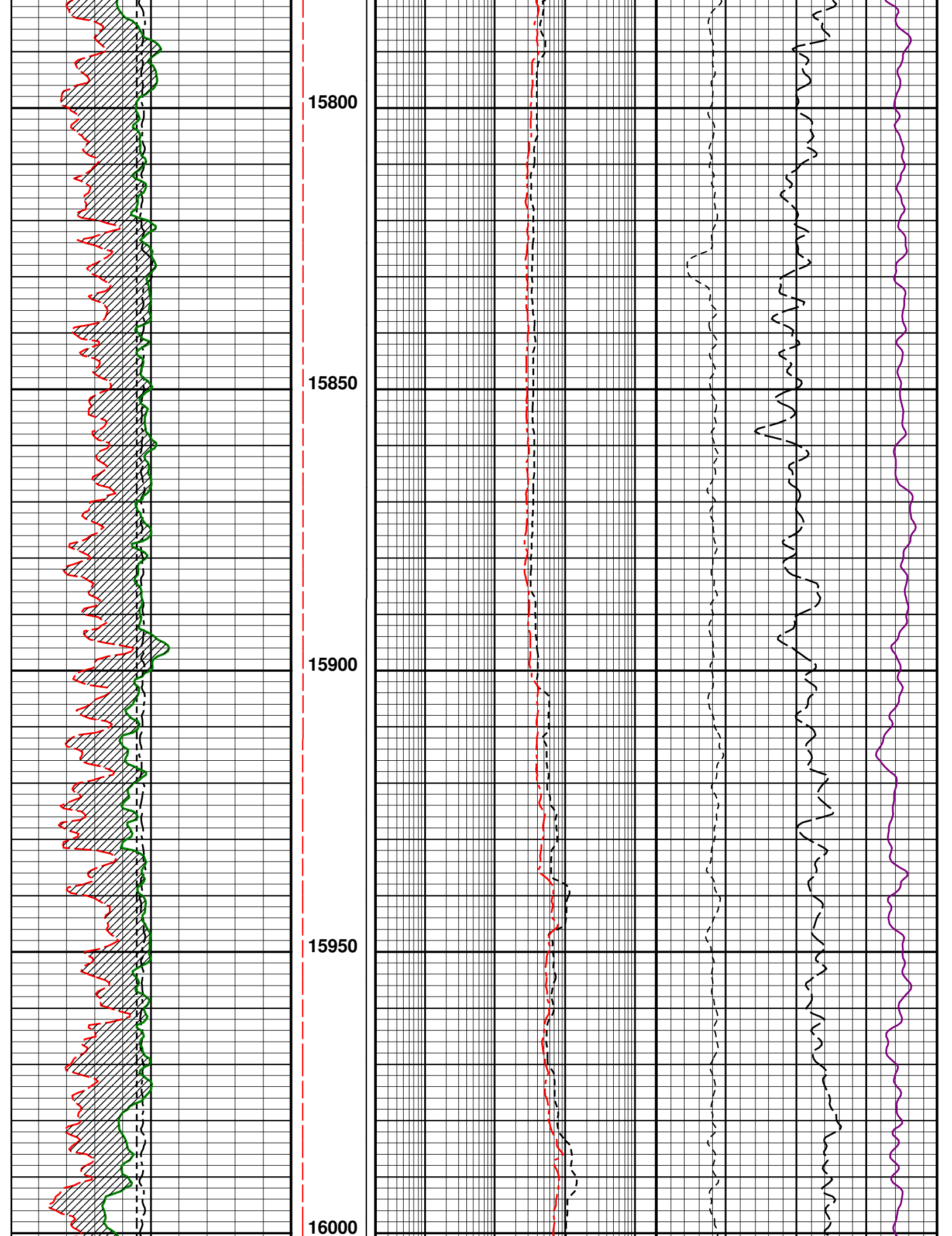


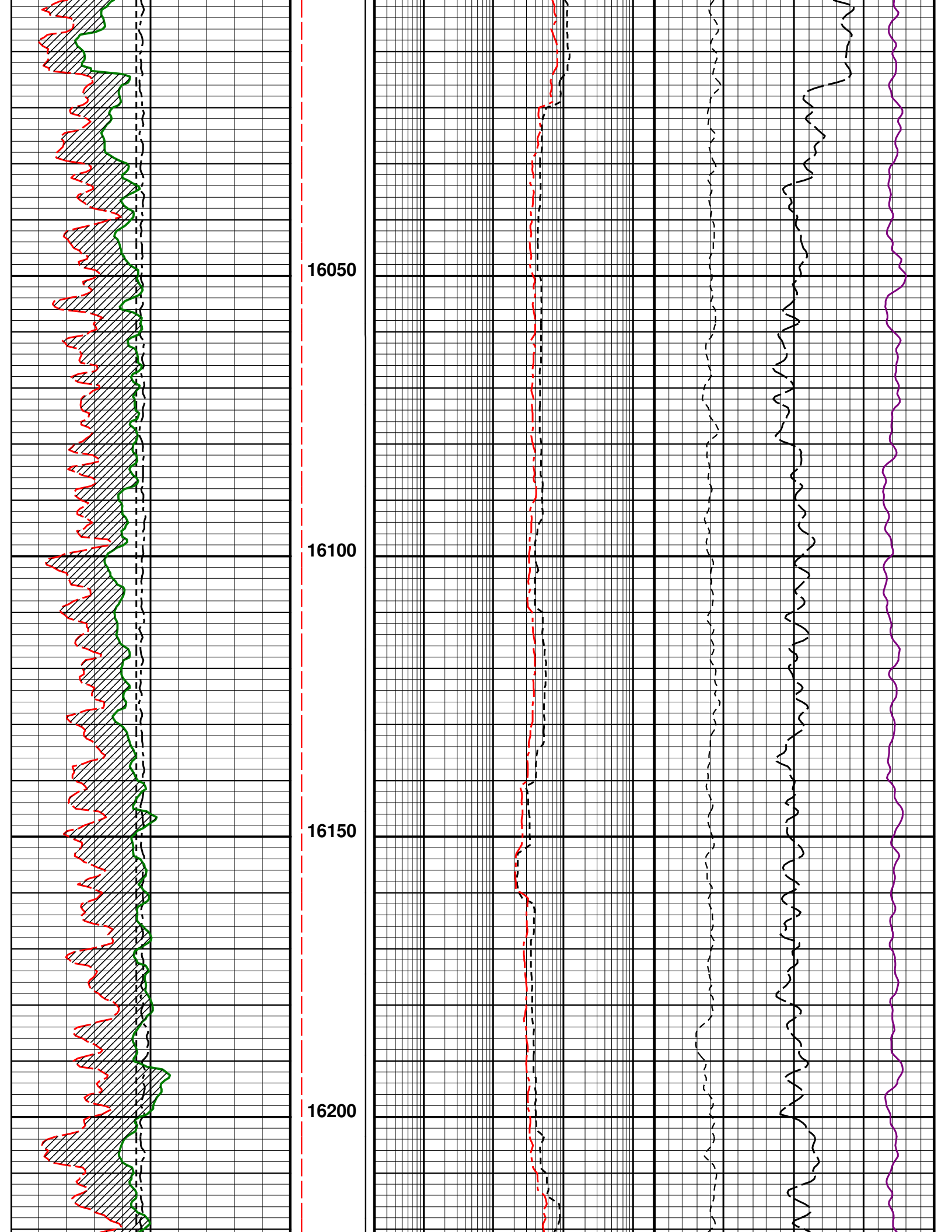




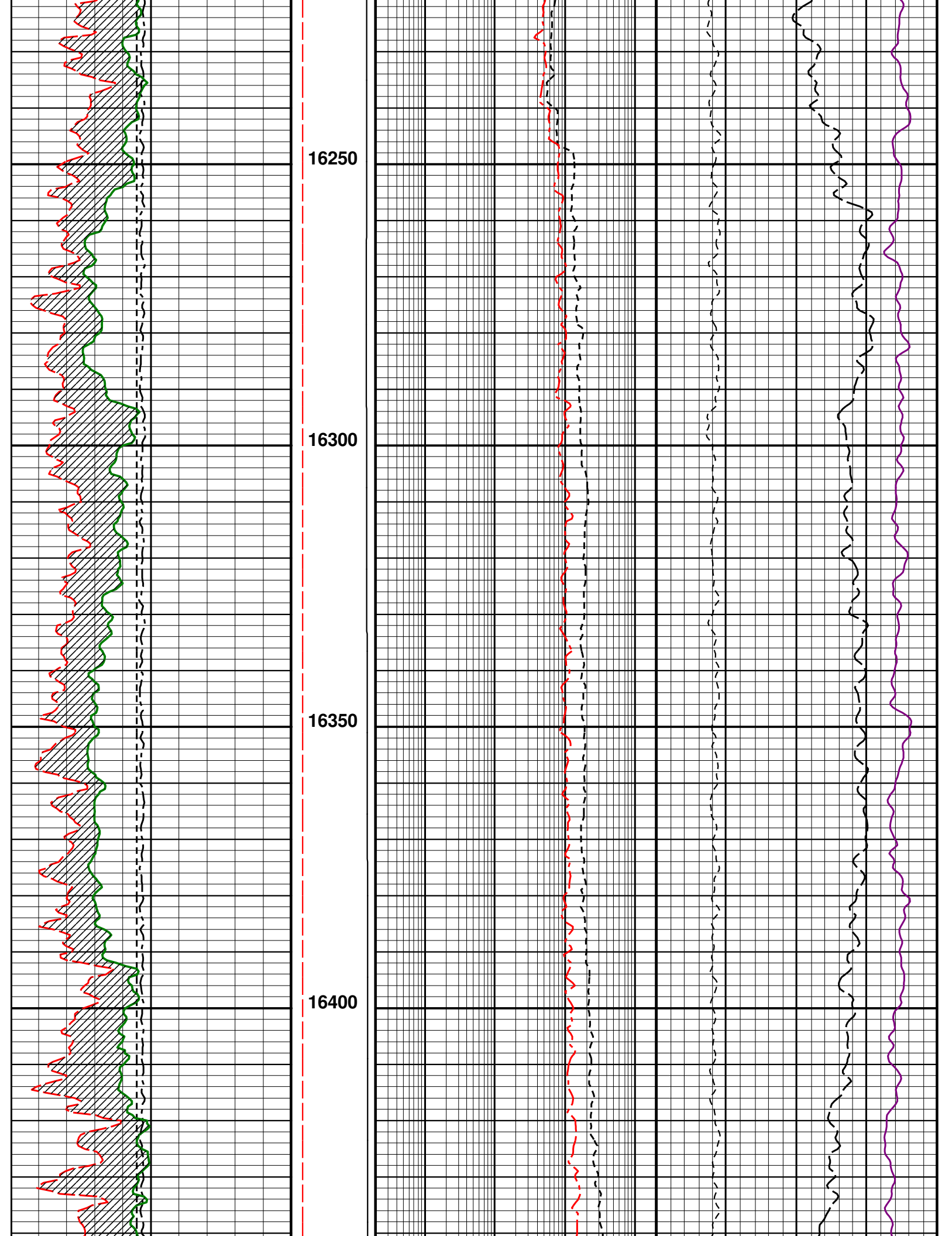


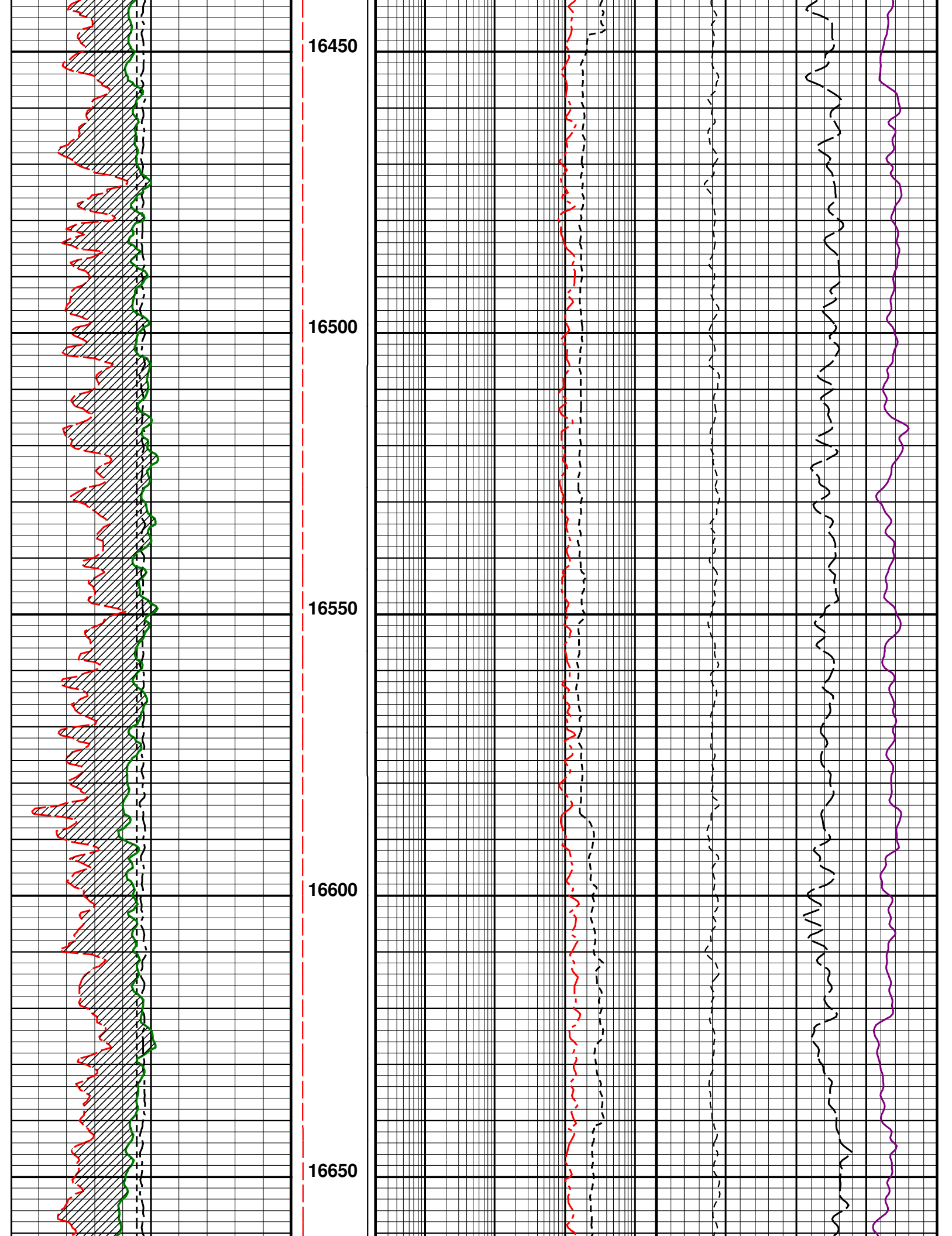


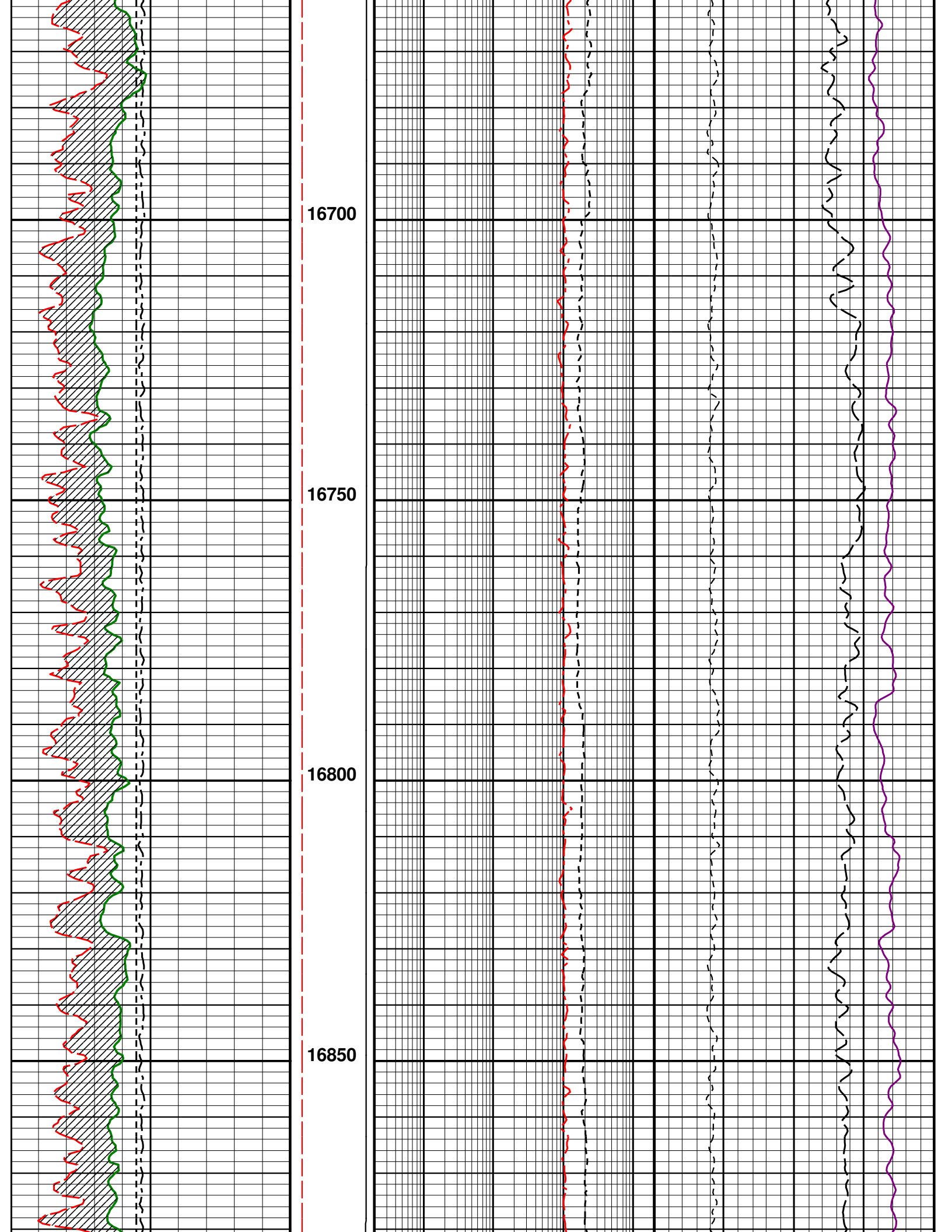


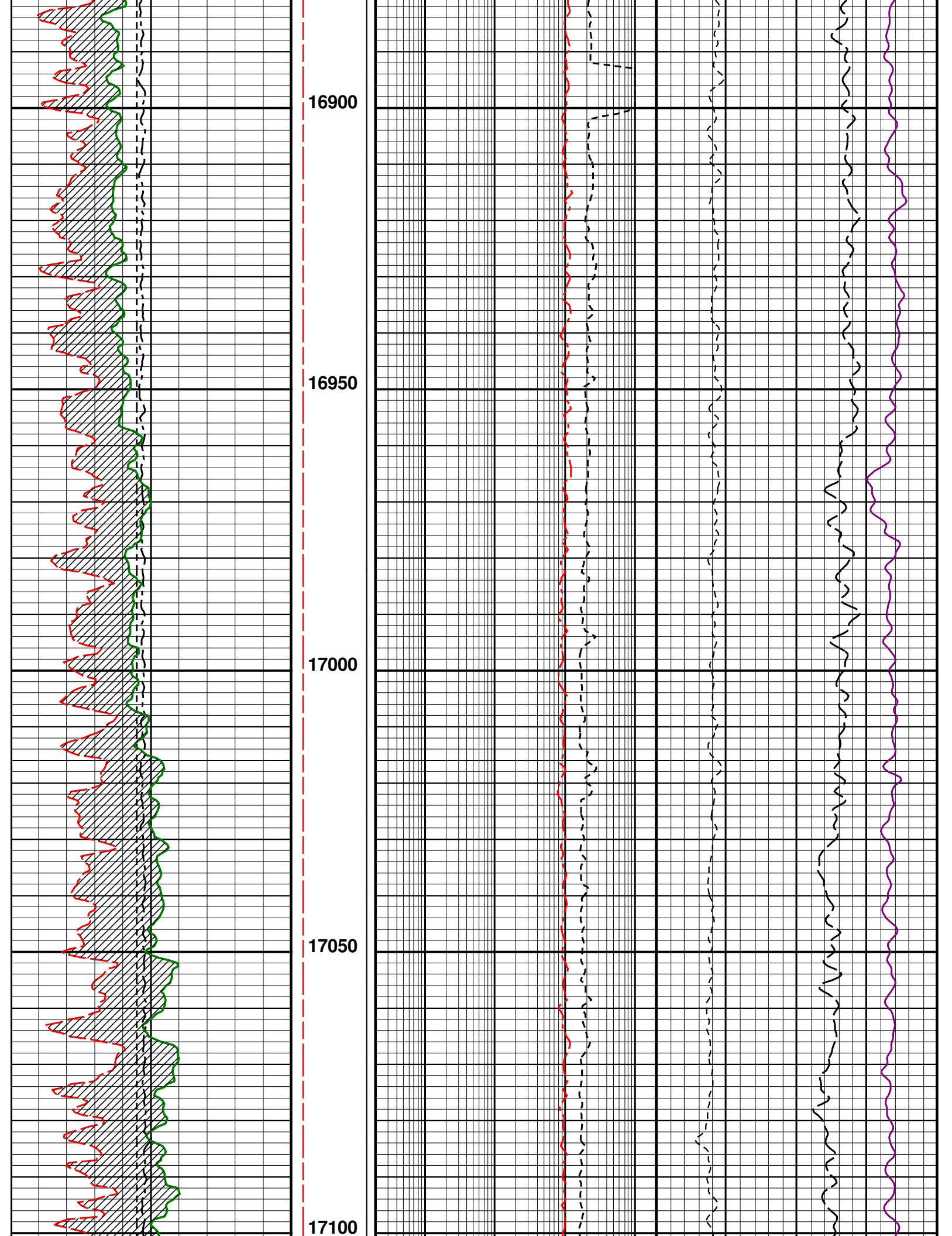


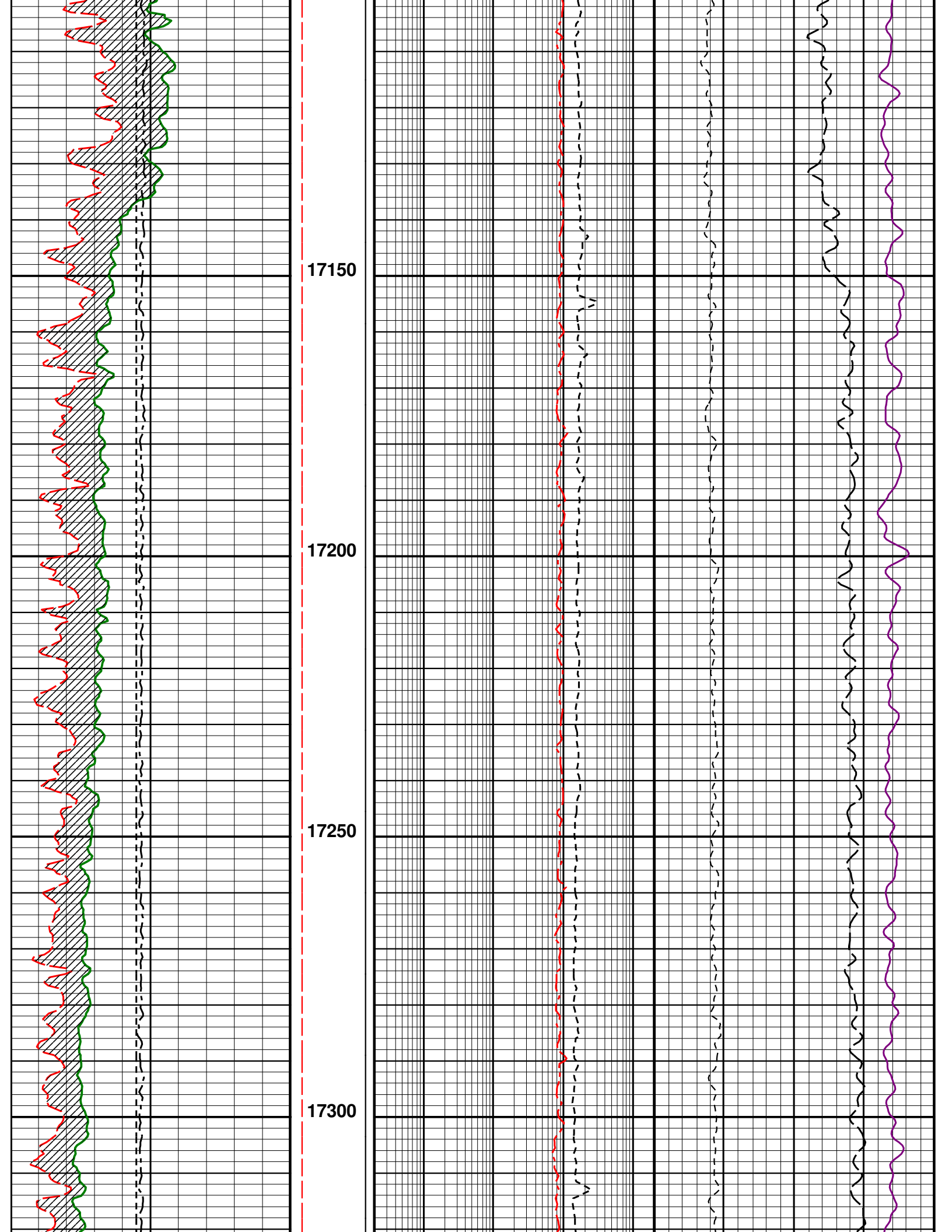


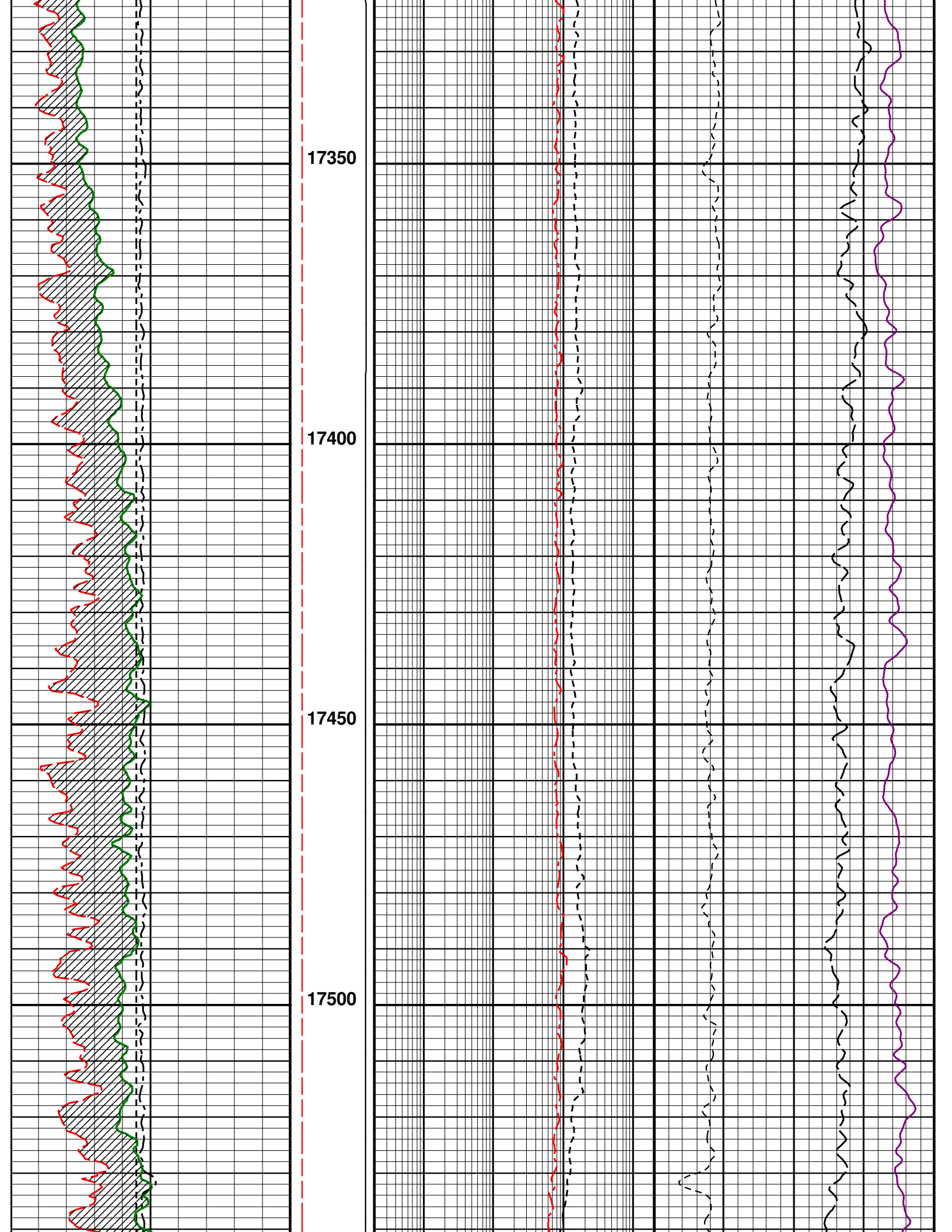


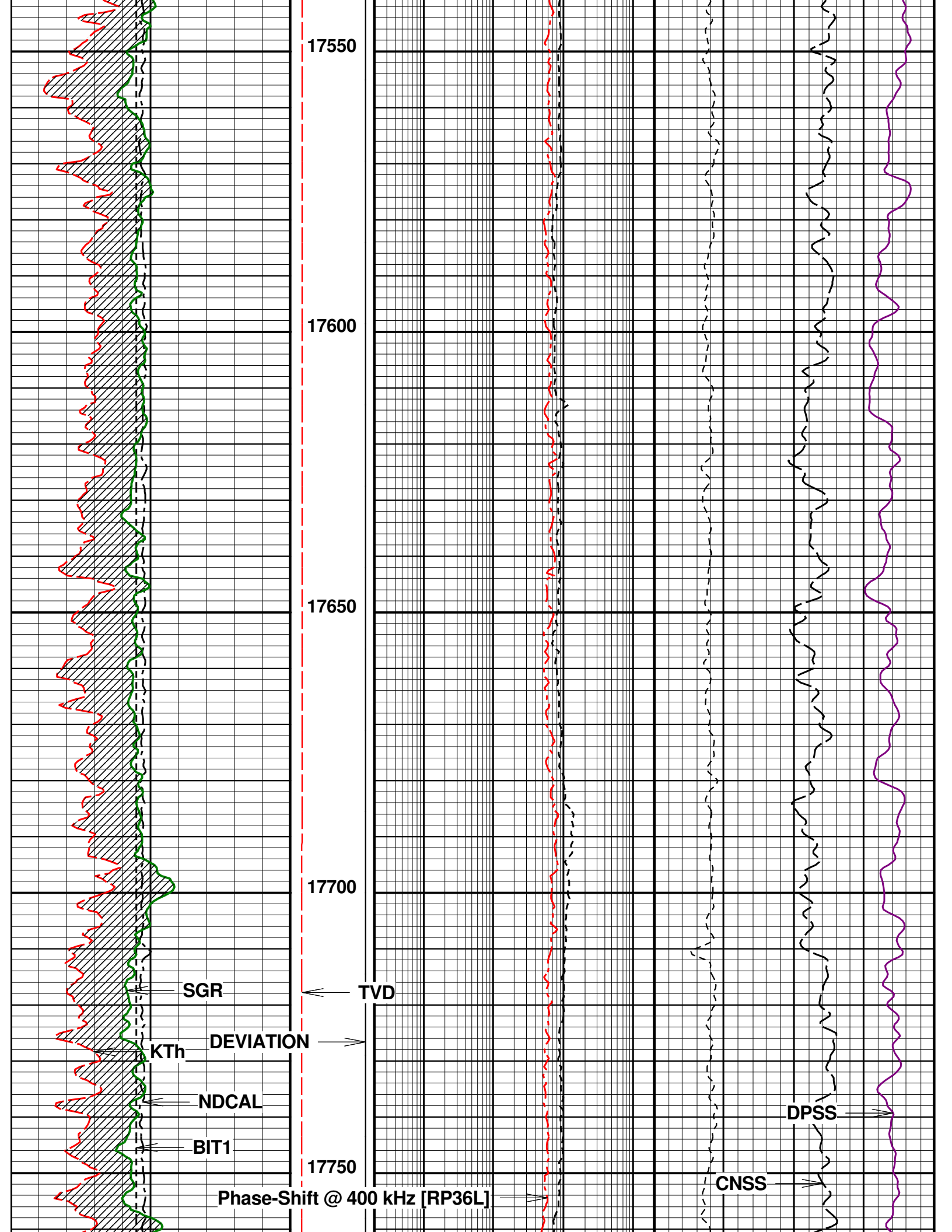


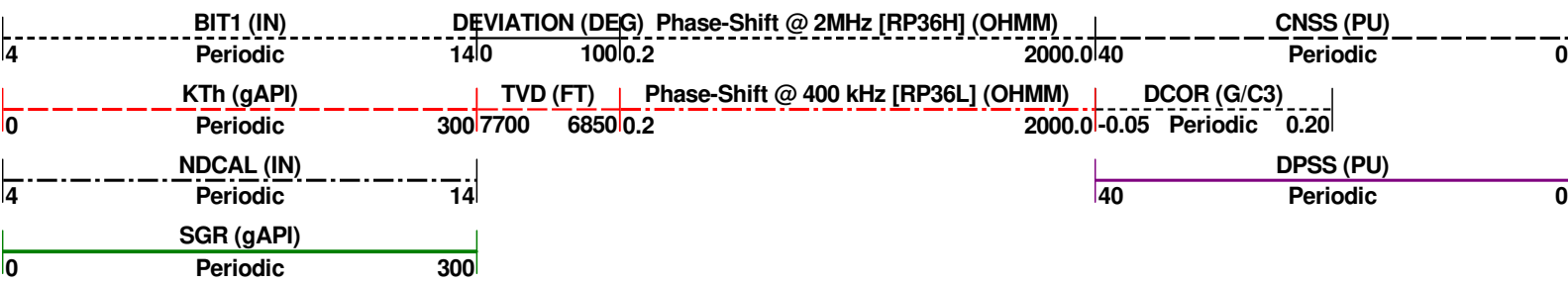
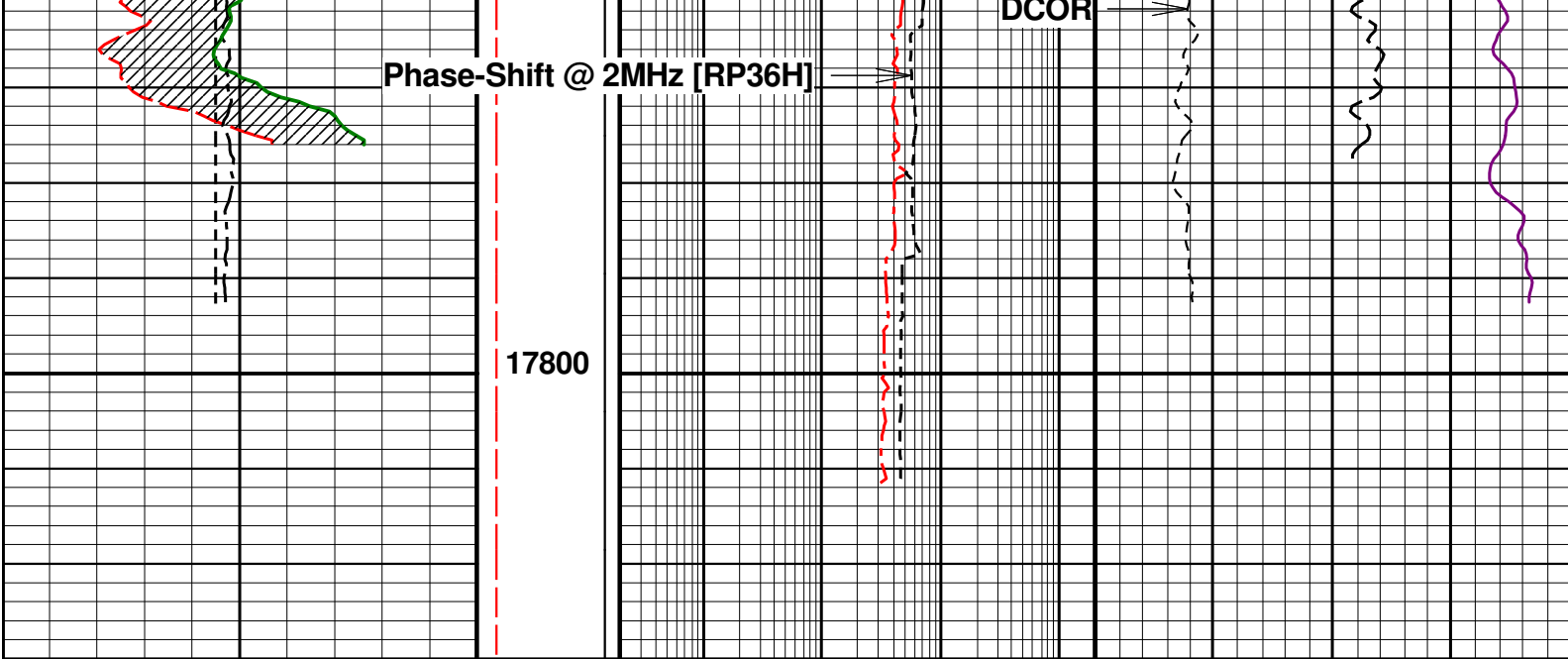








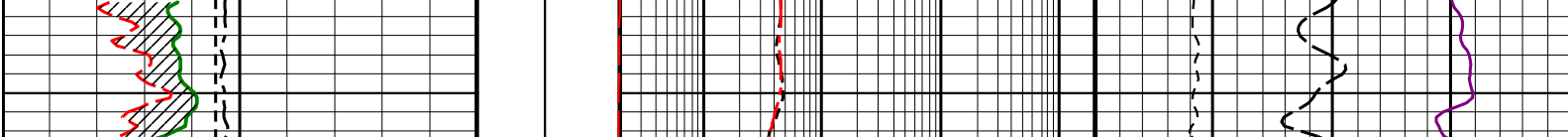
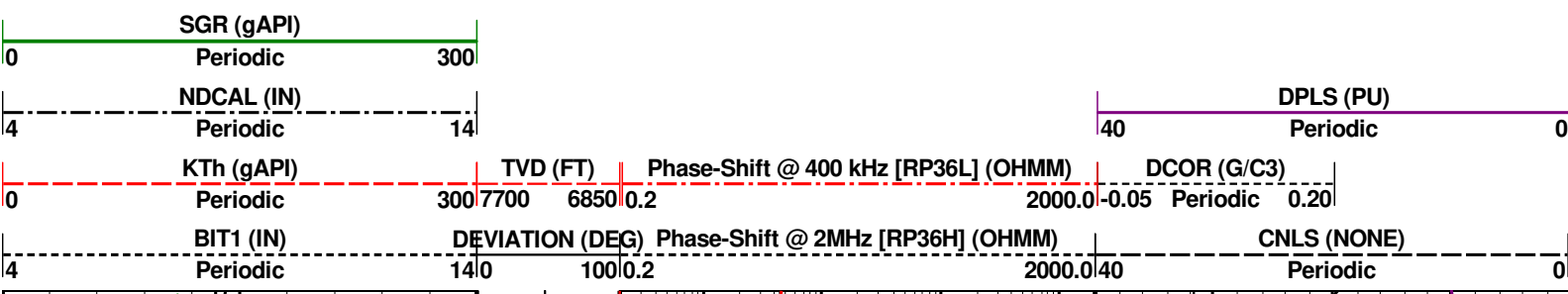




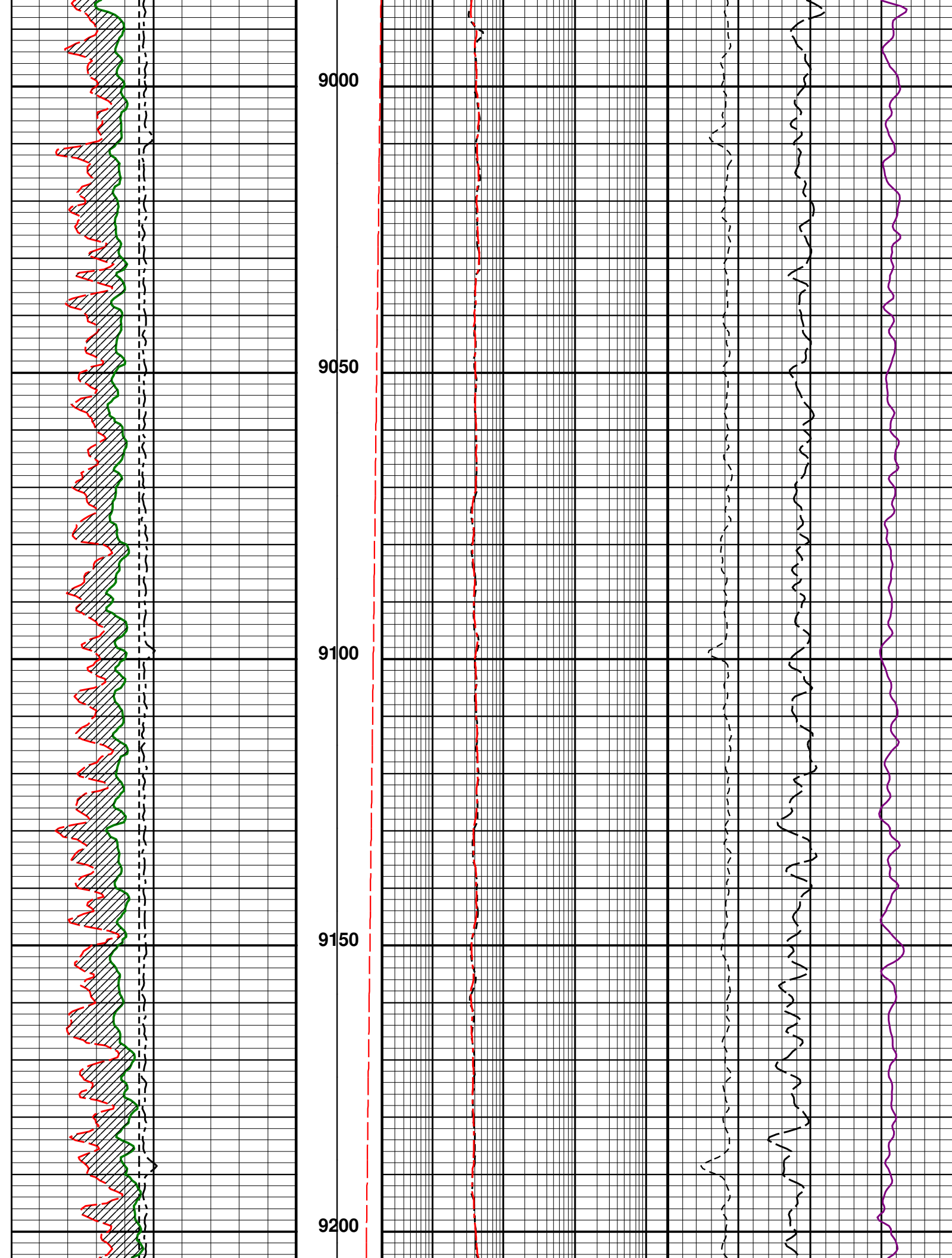
URANIUM EFFECT

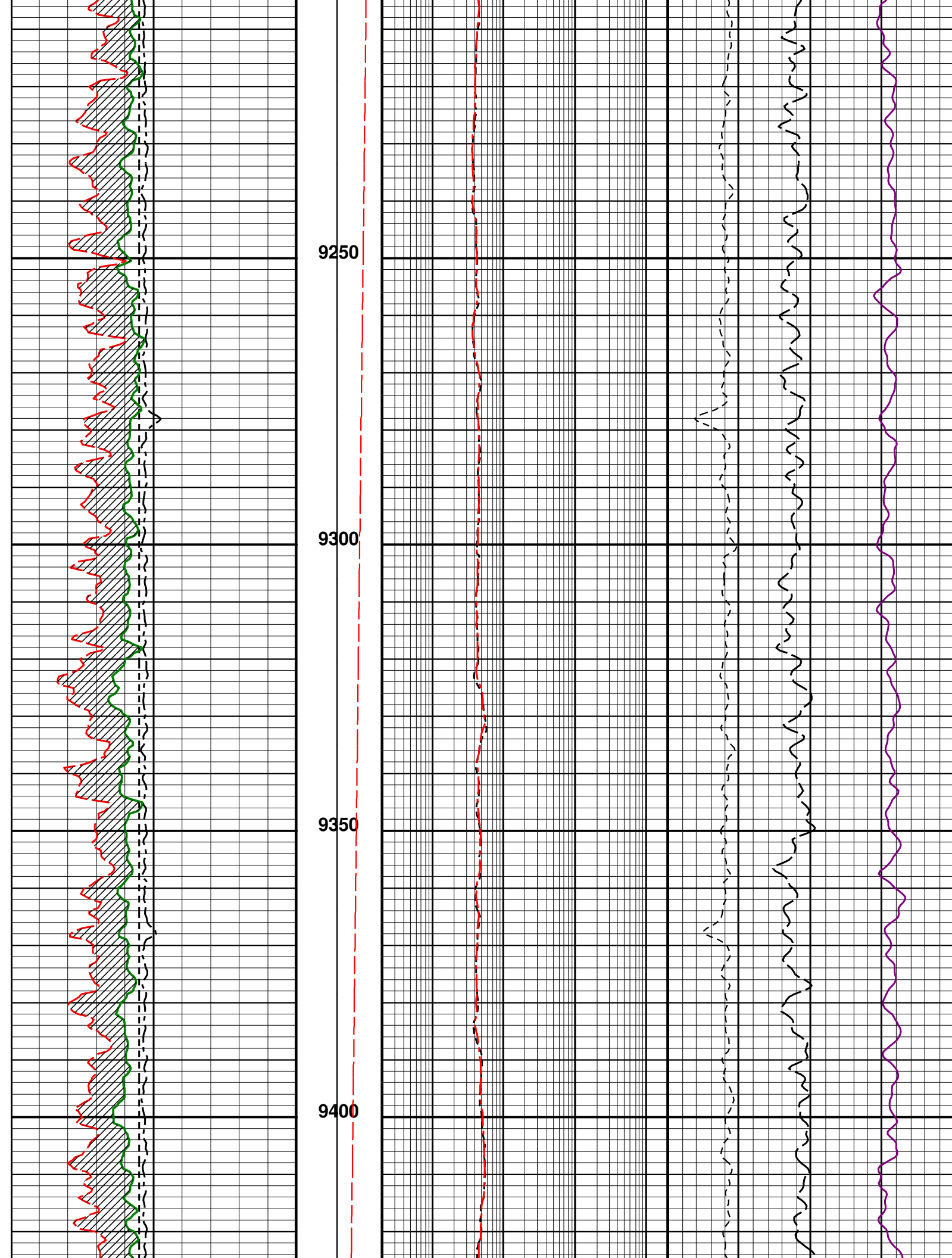
# 5" MAIN PASS LIMESTONE

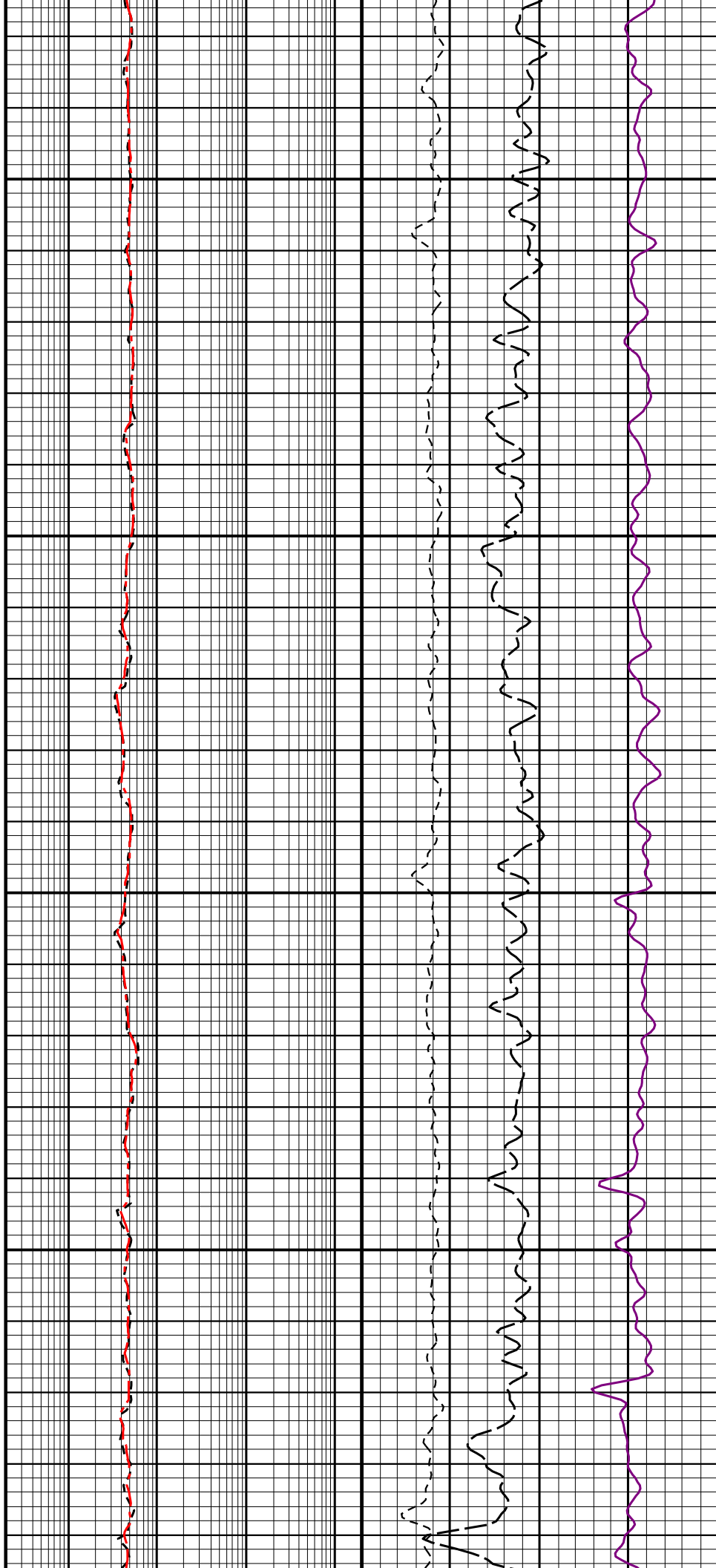
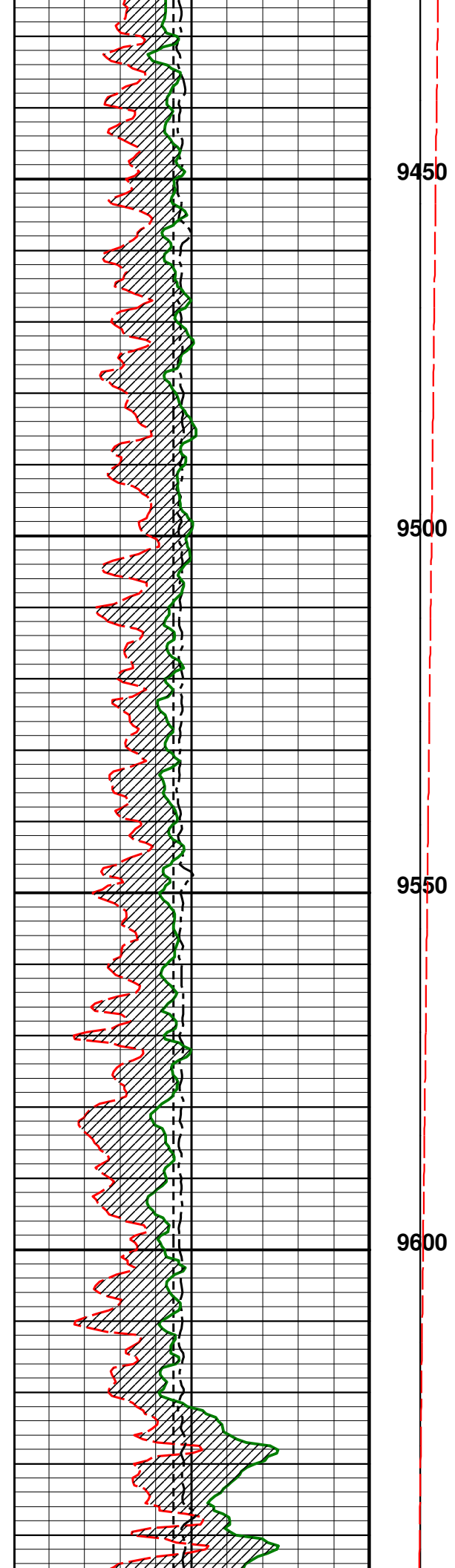
Company	: GREAT WESTERN OPERATING COMPANY	Date	: 14-JAN-2019
Well	: OTTESEN LE 06-290HN	Time	:
Scale	: 1 : 240	Remarks	: LIMESTONE MATRIX
Depth in	: Feet		
Software	: WinAPlot Ver. 5, 87, 2, 0	File Name	: 812_05-123-44335_MAIN MD

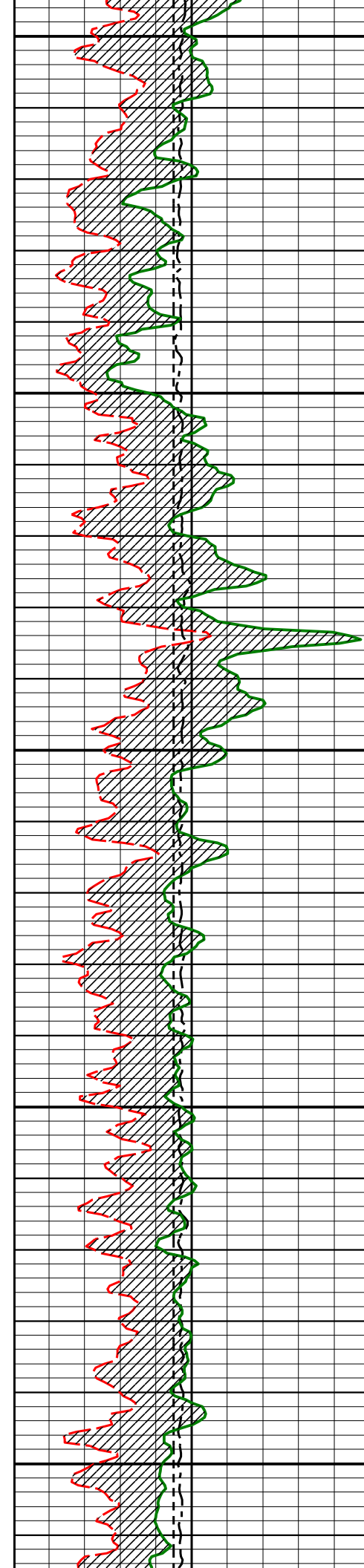












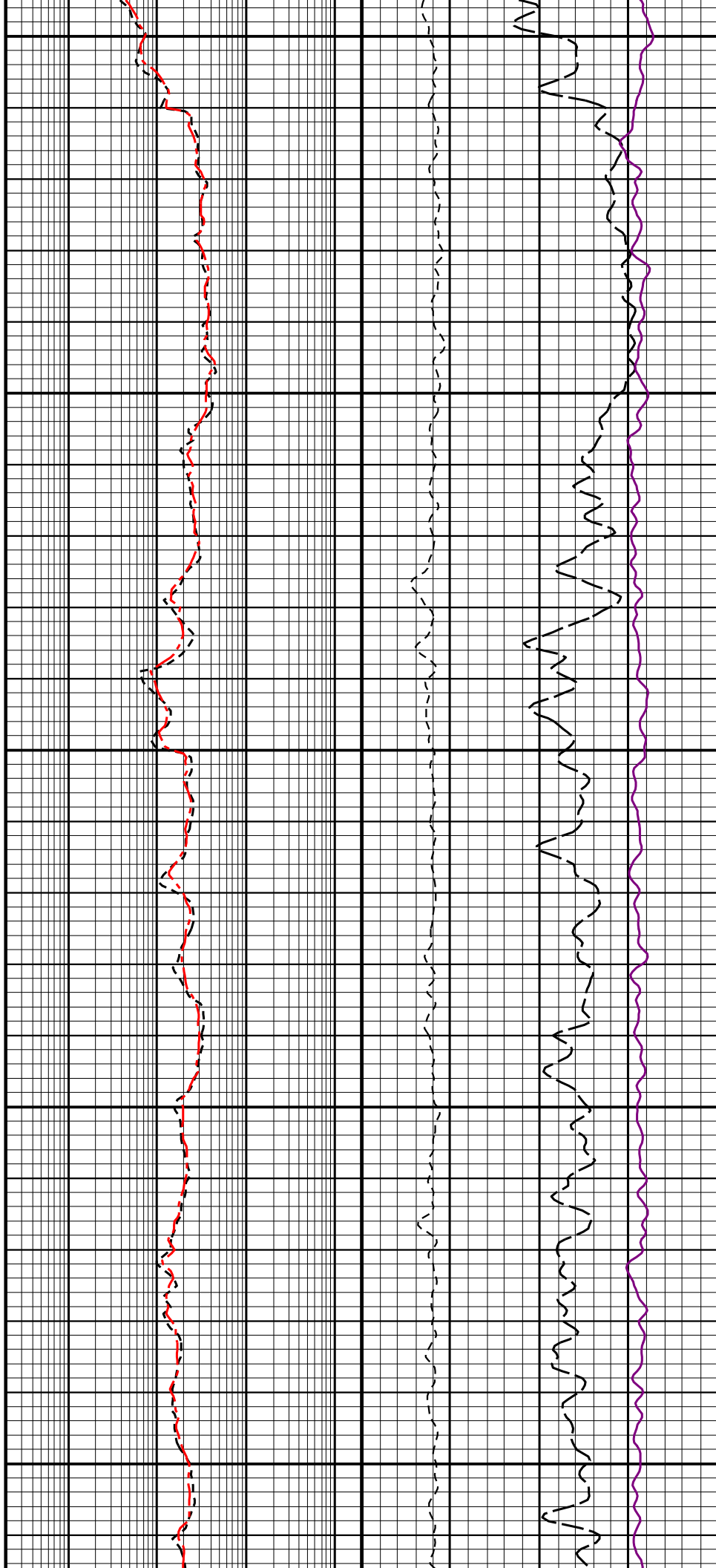
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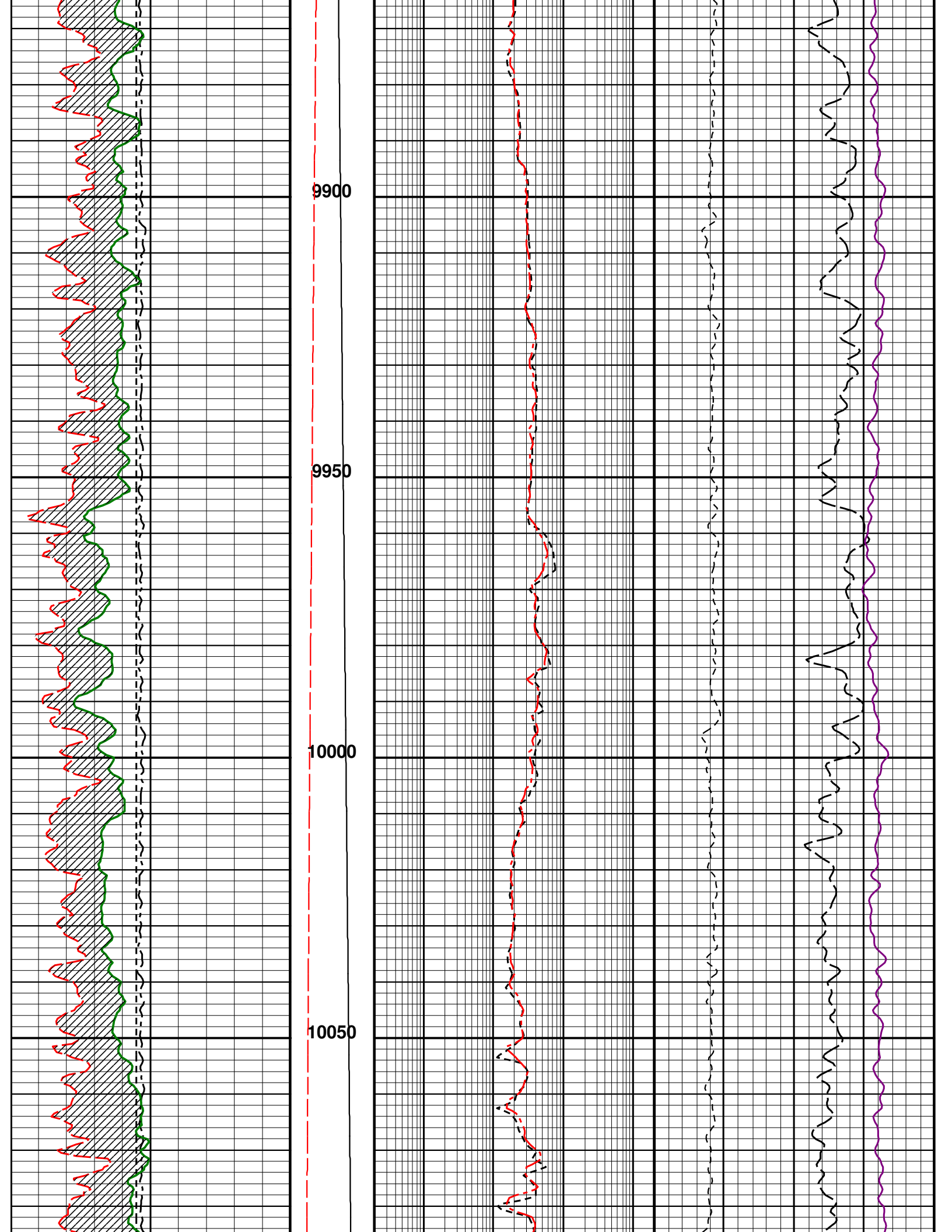
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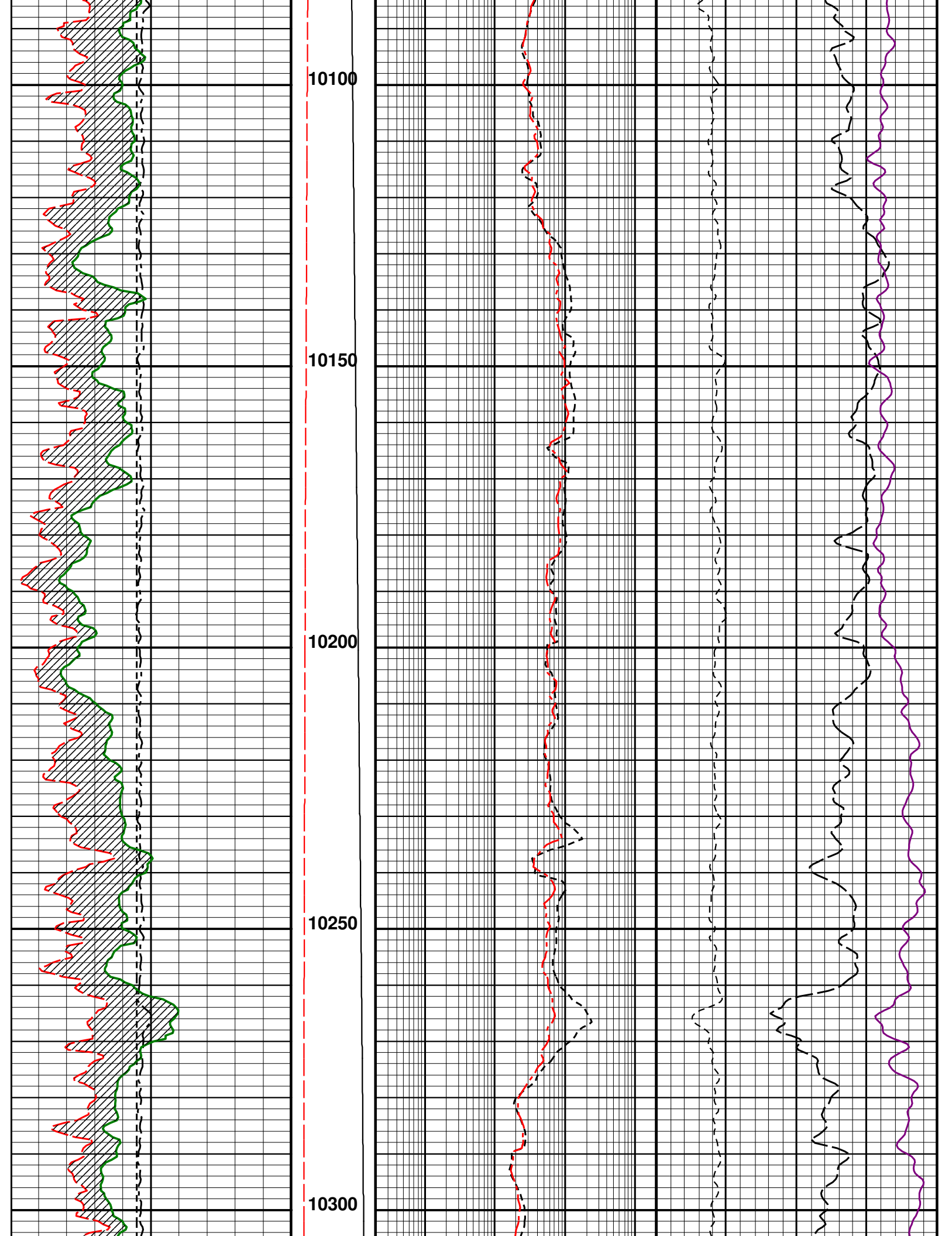
9750

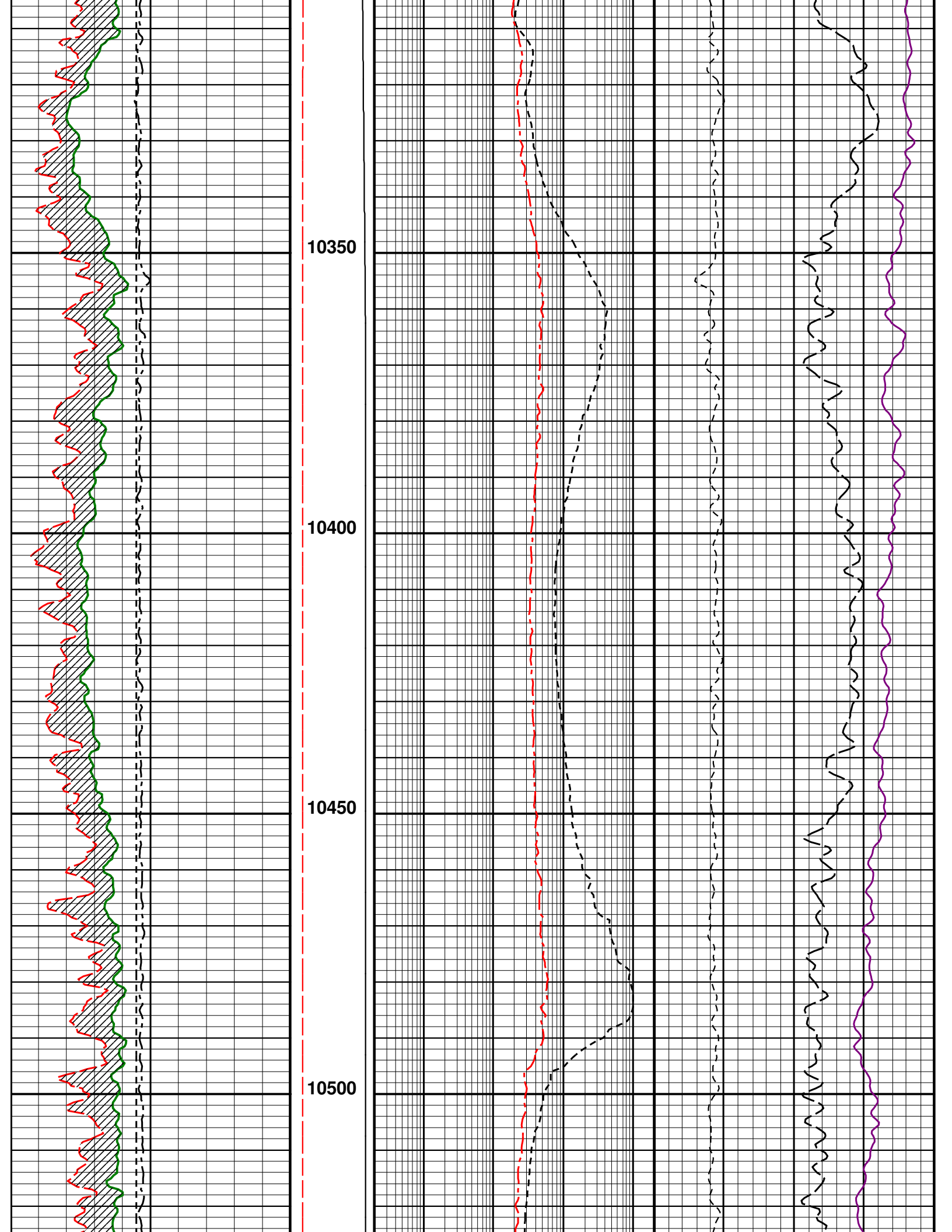
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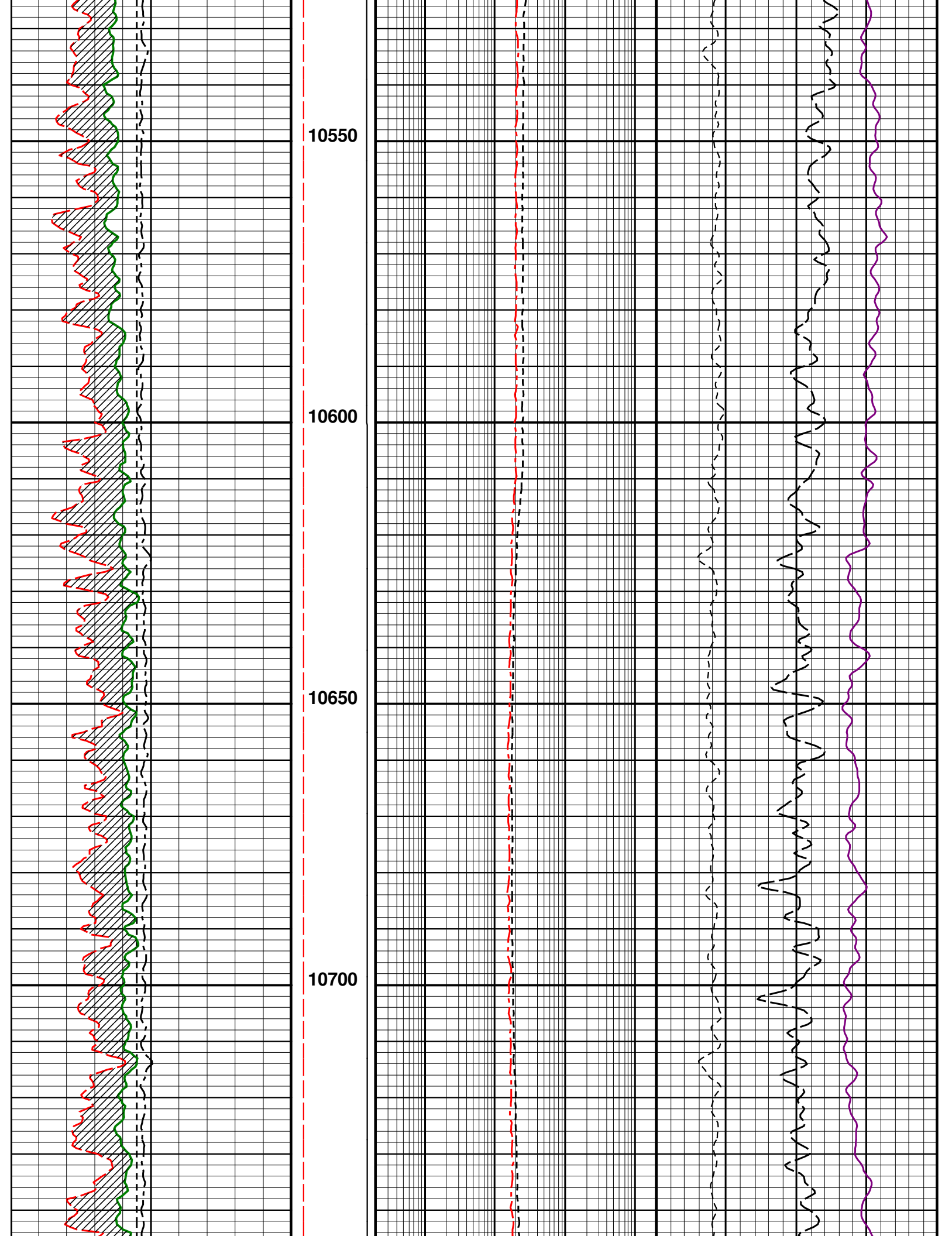
9850



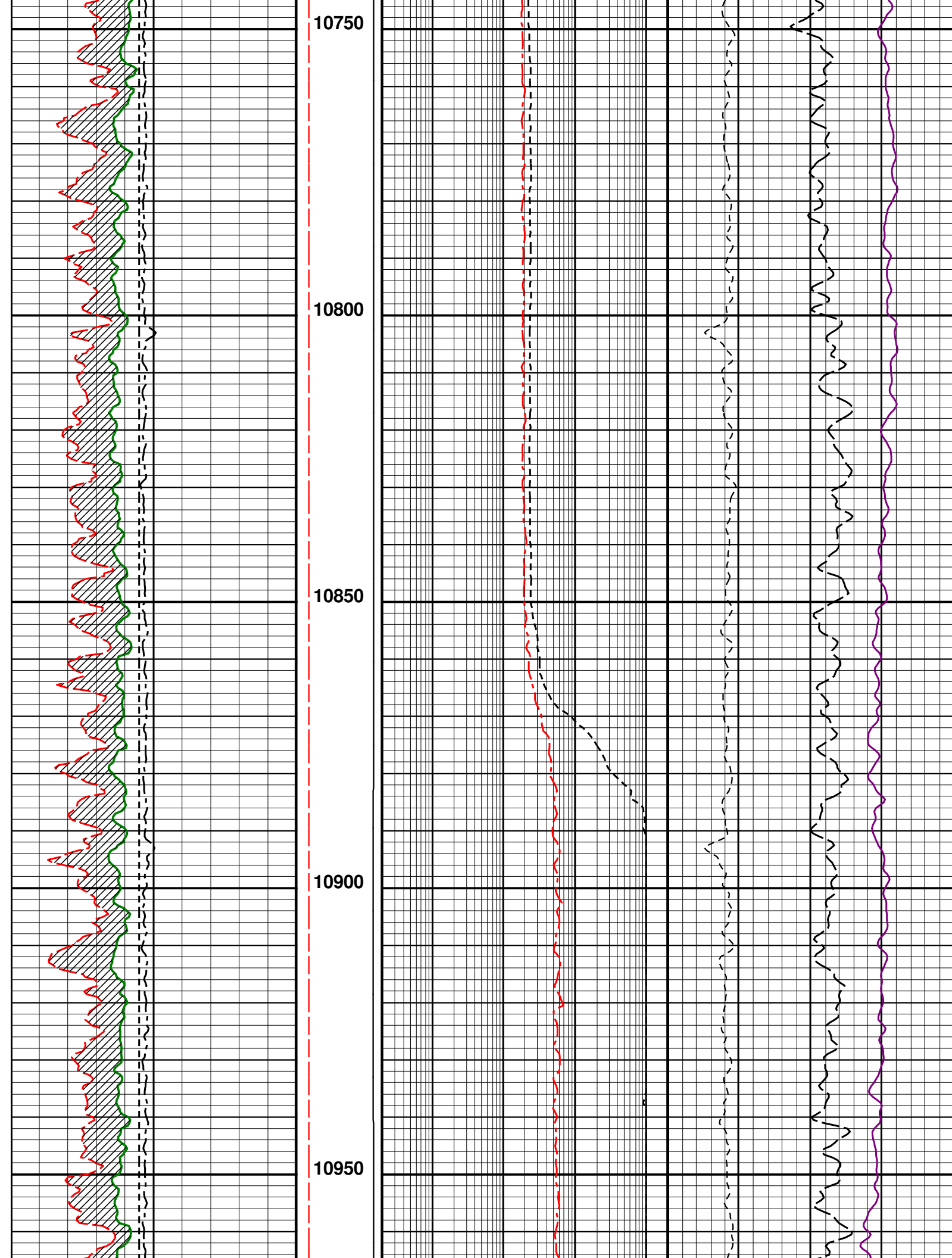


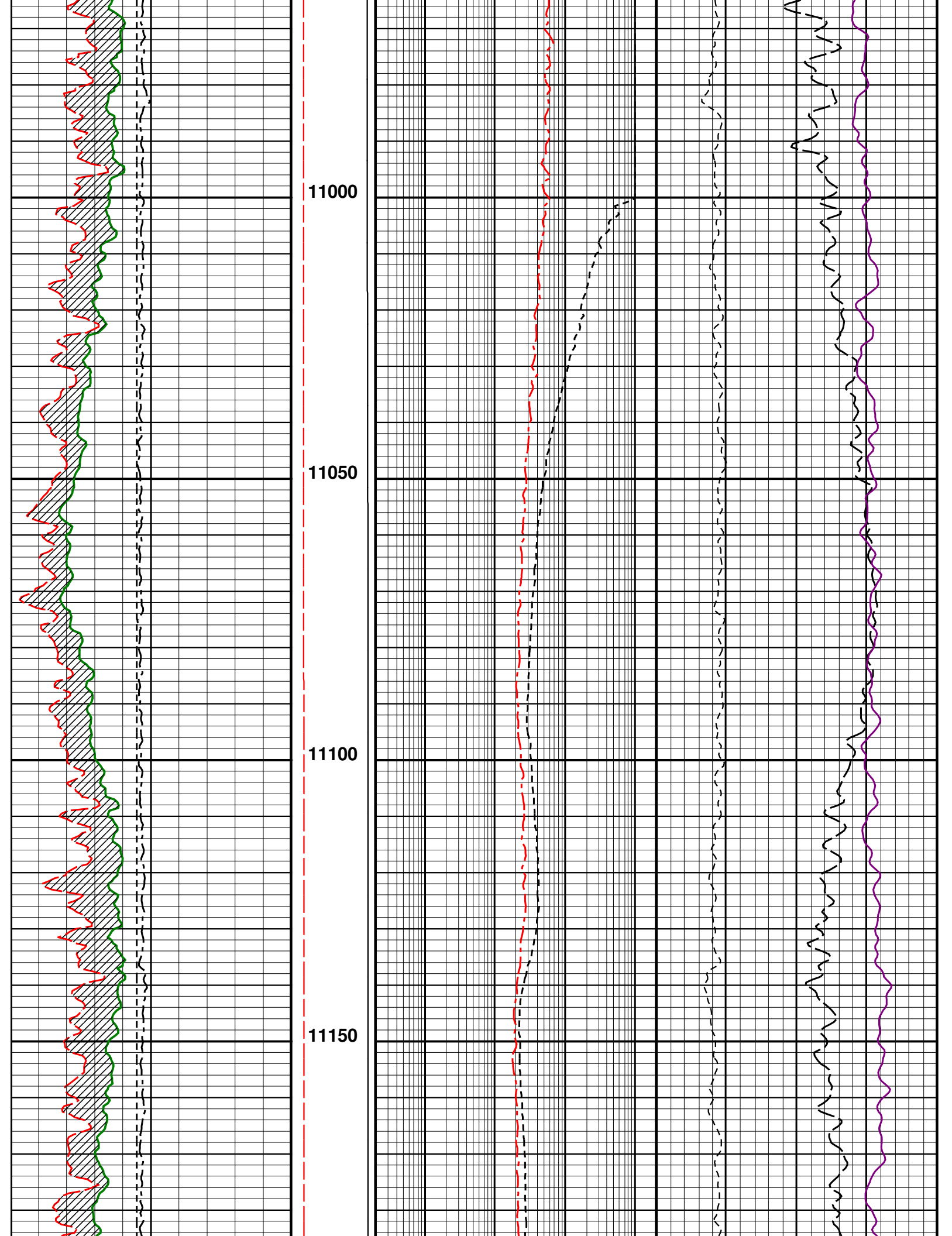


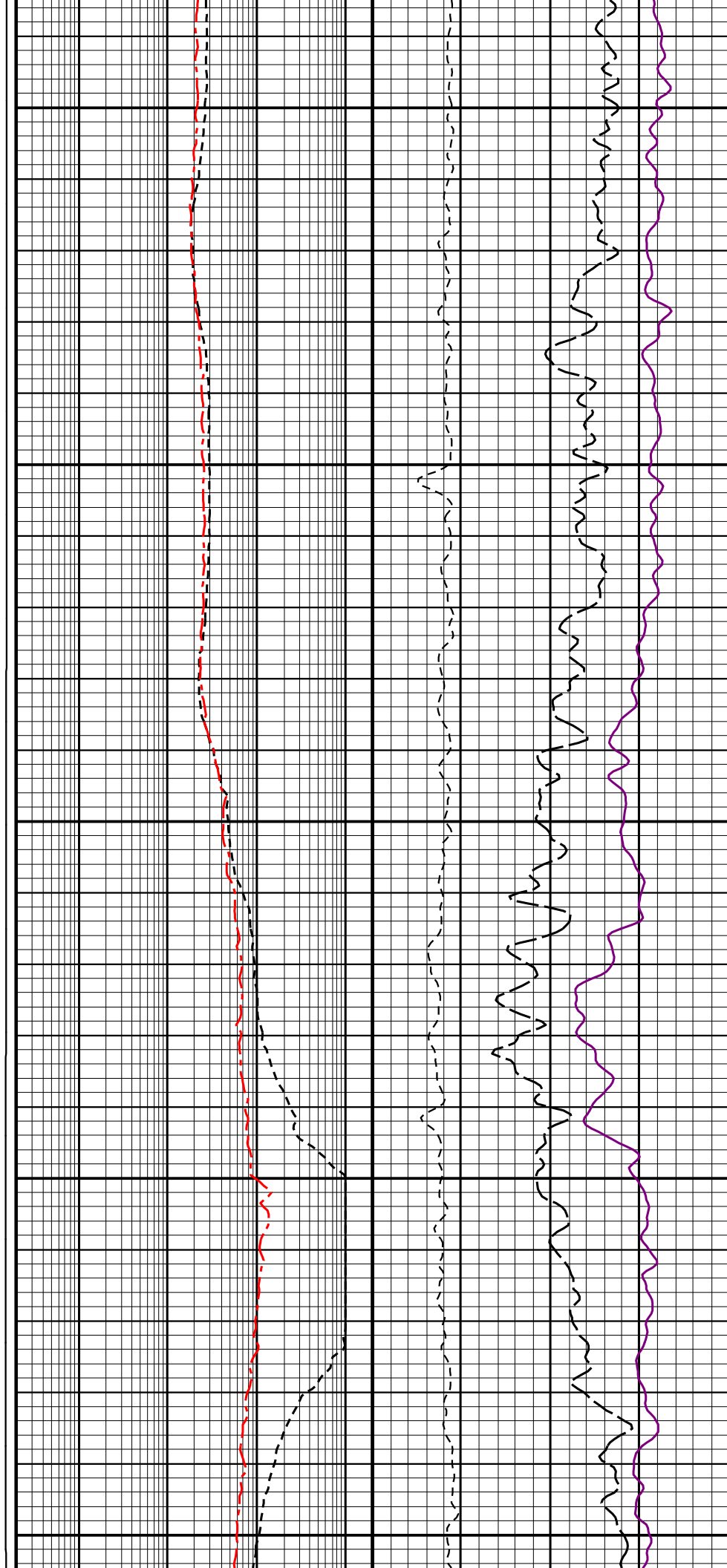
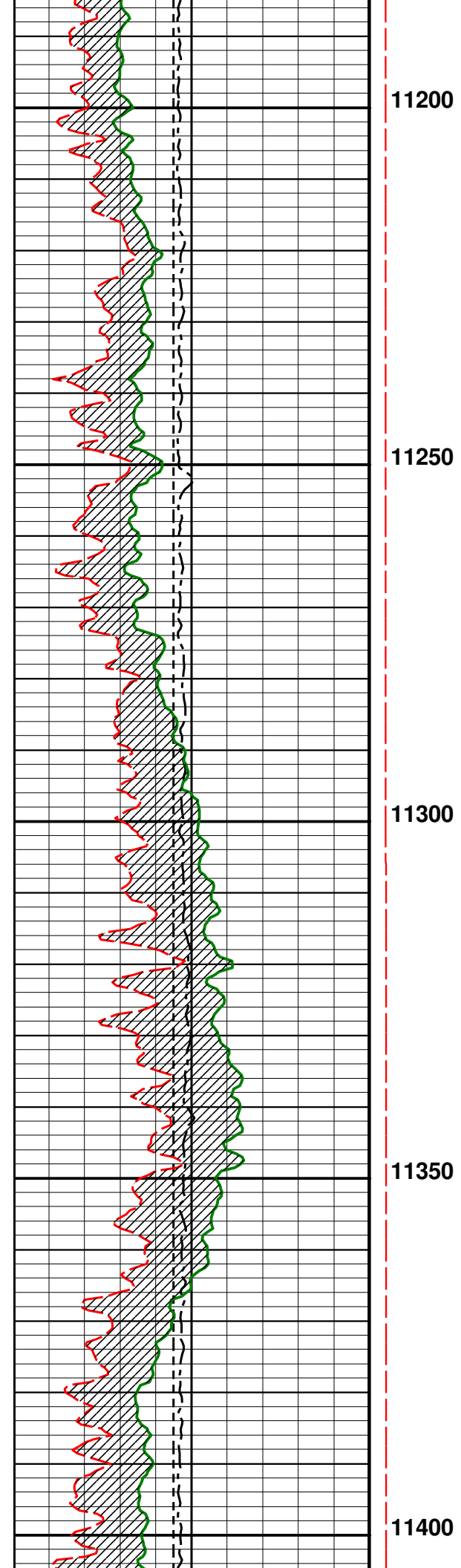


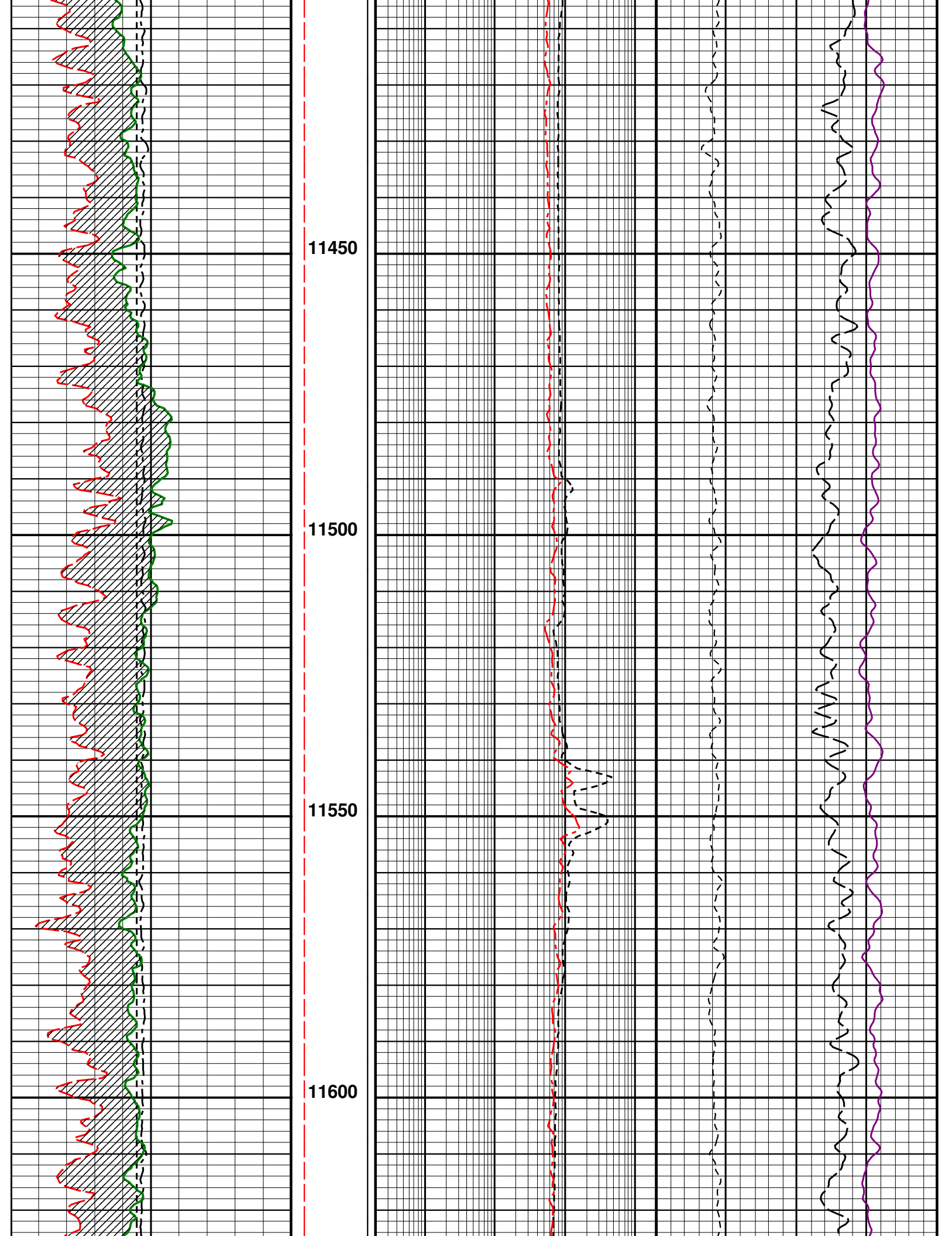


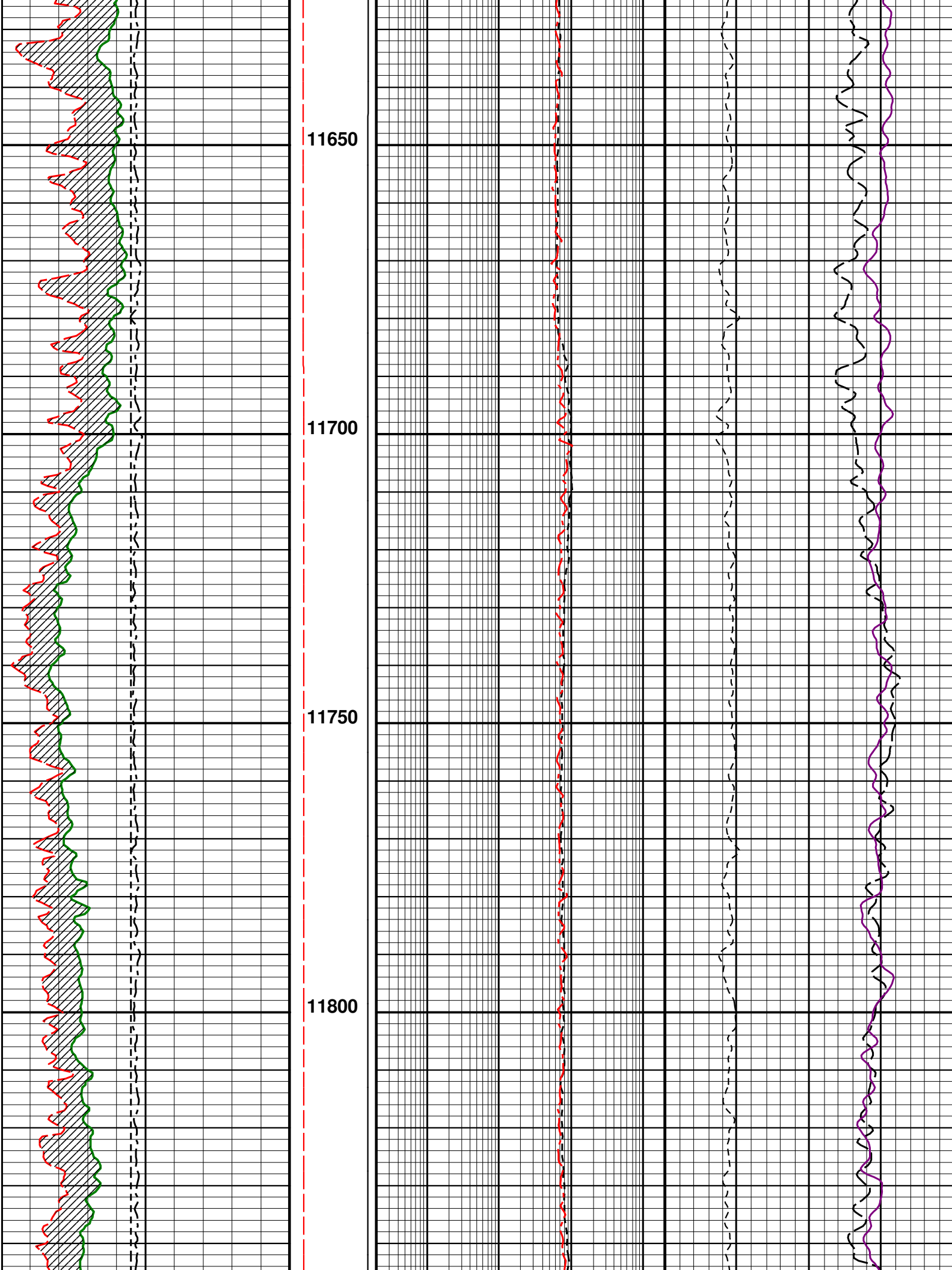


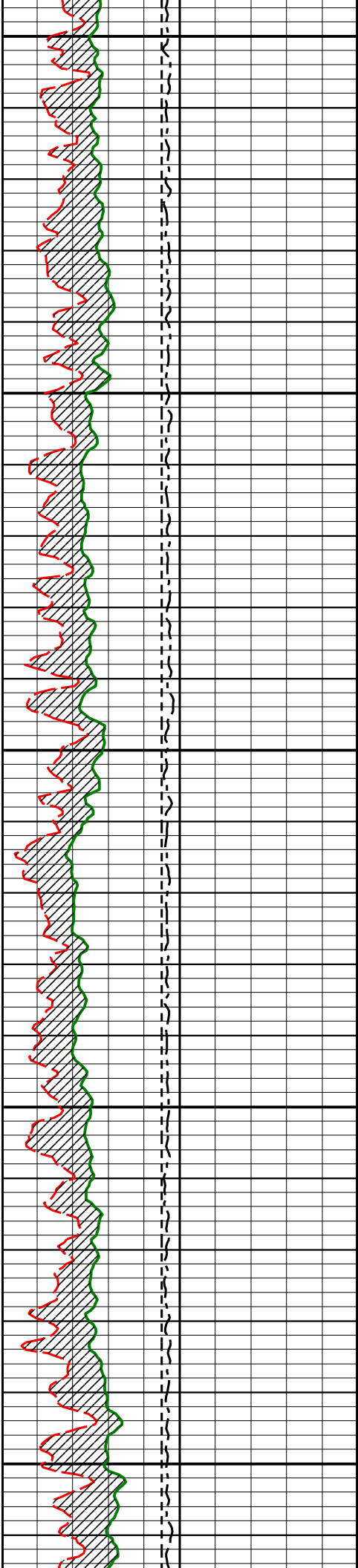




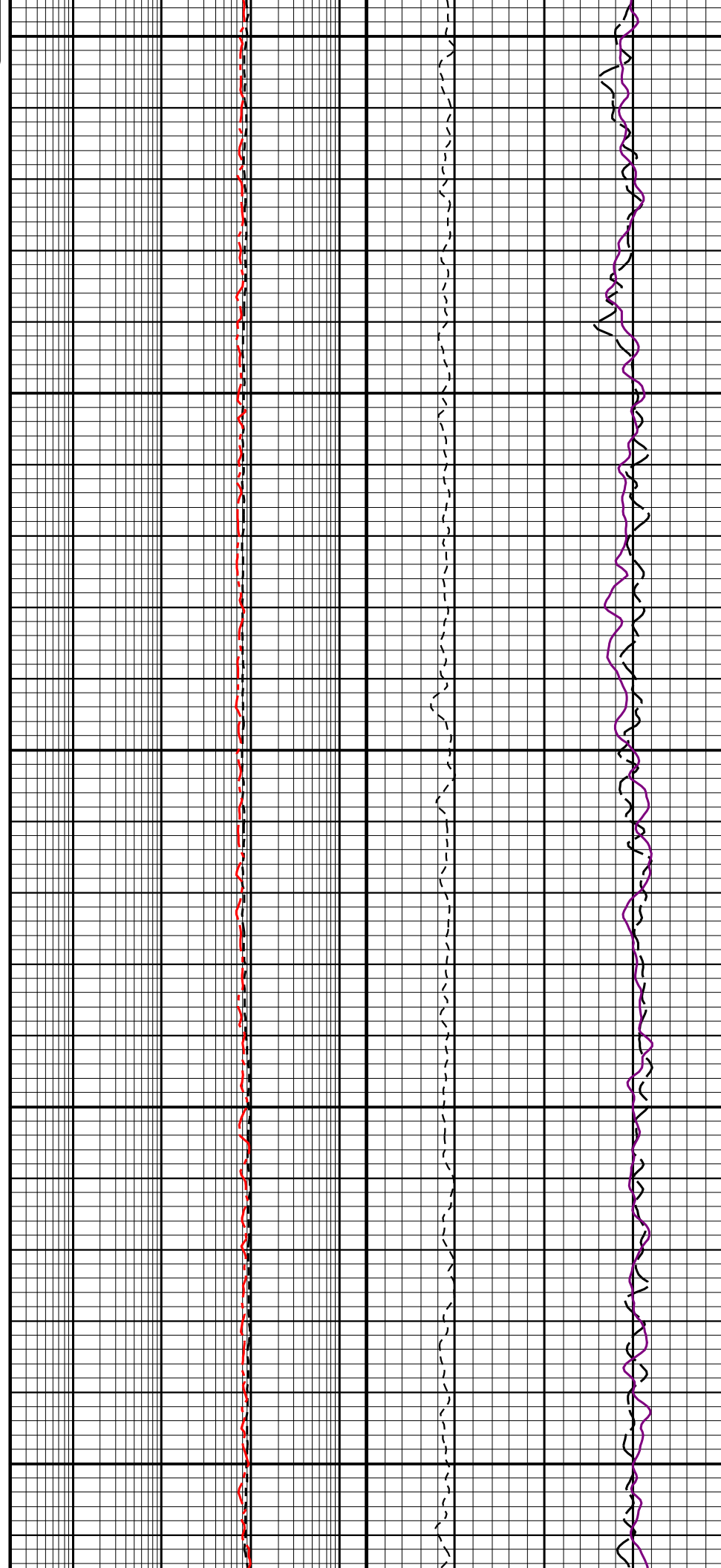


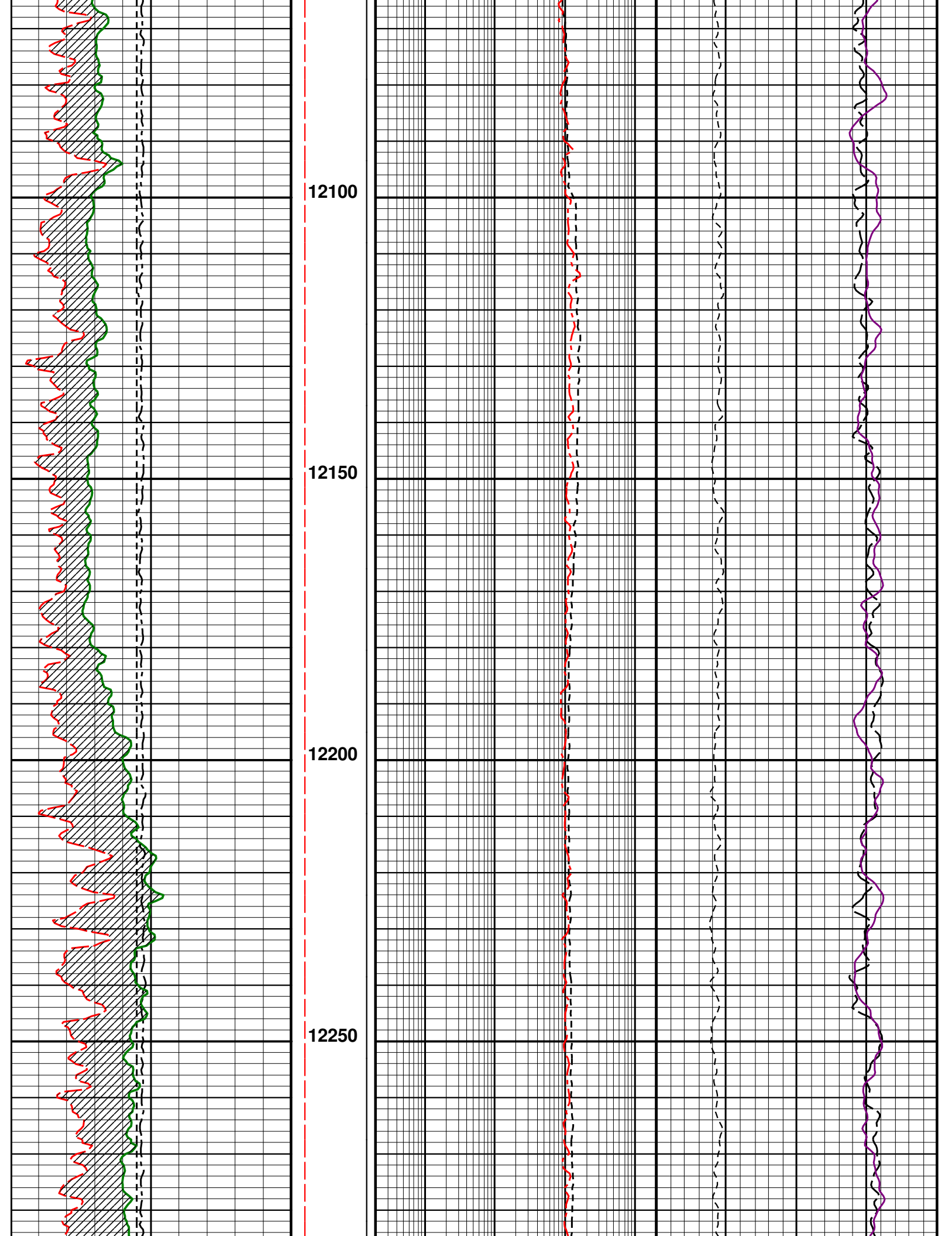


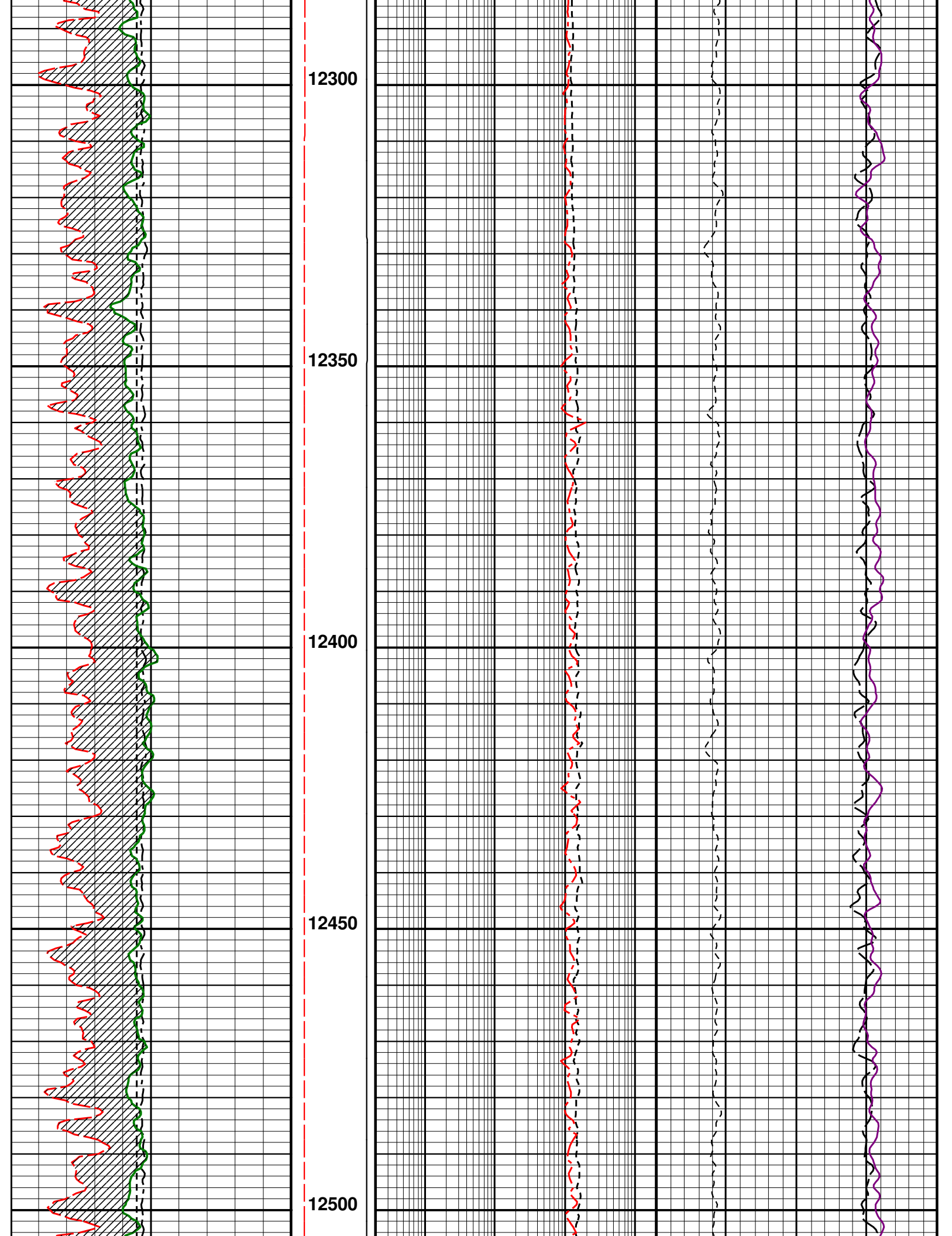




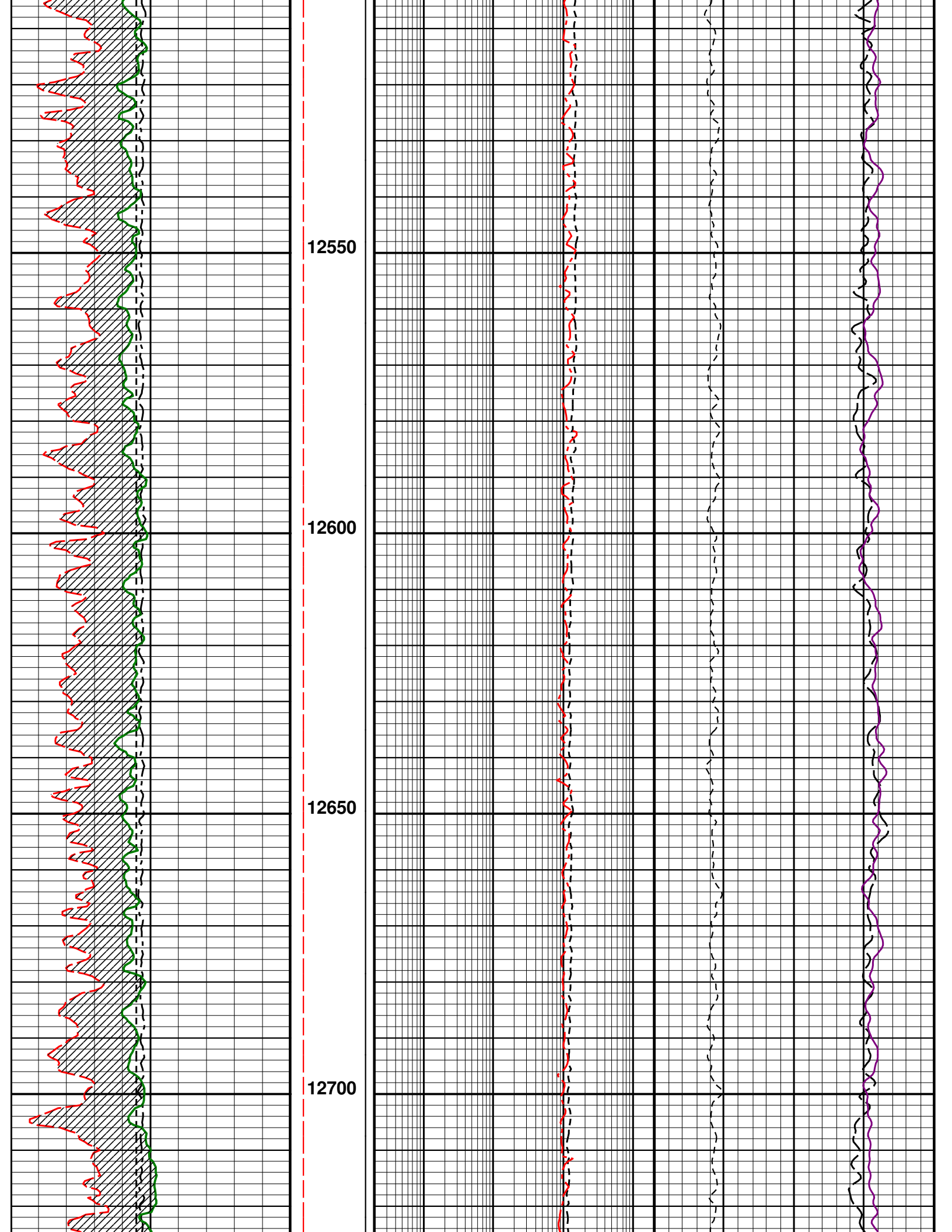
11850  
11900  
11950  
12000  
12050

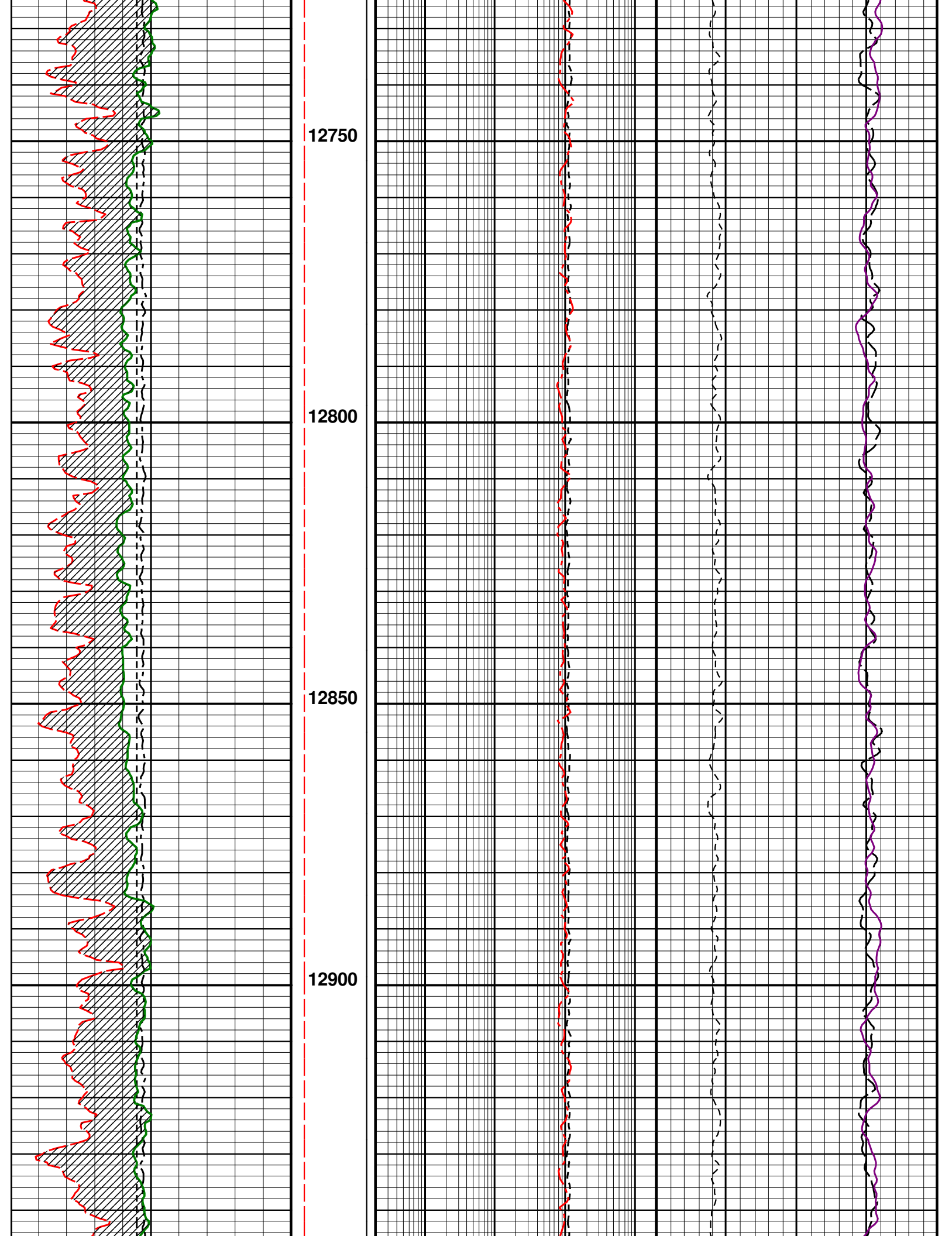


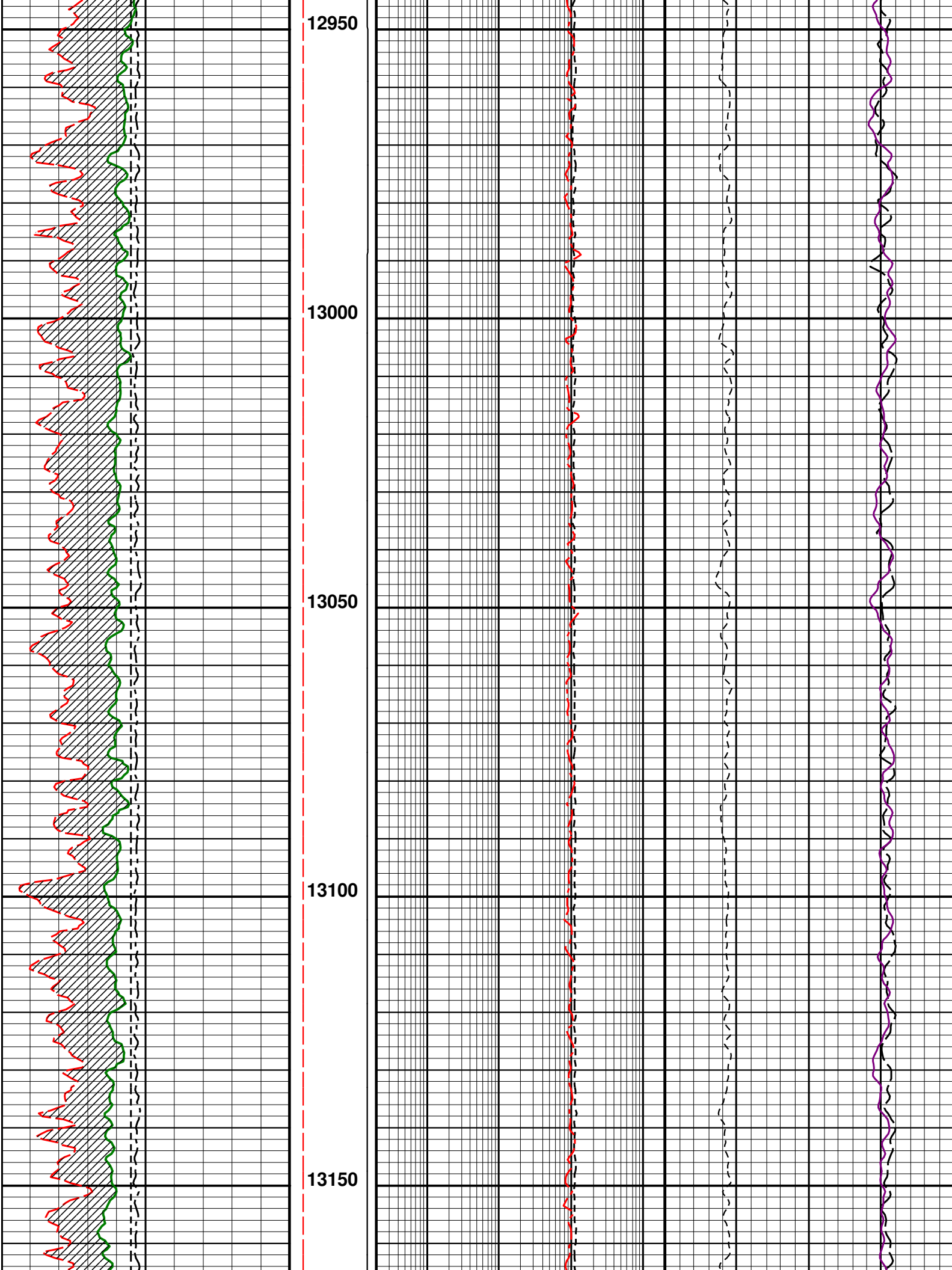


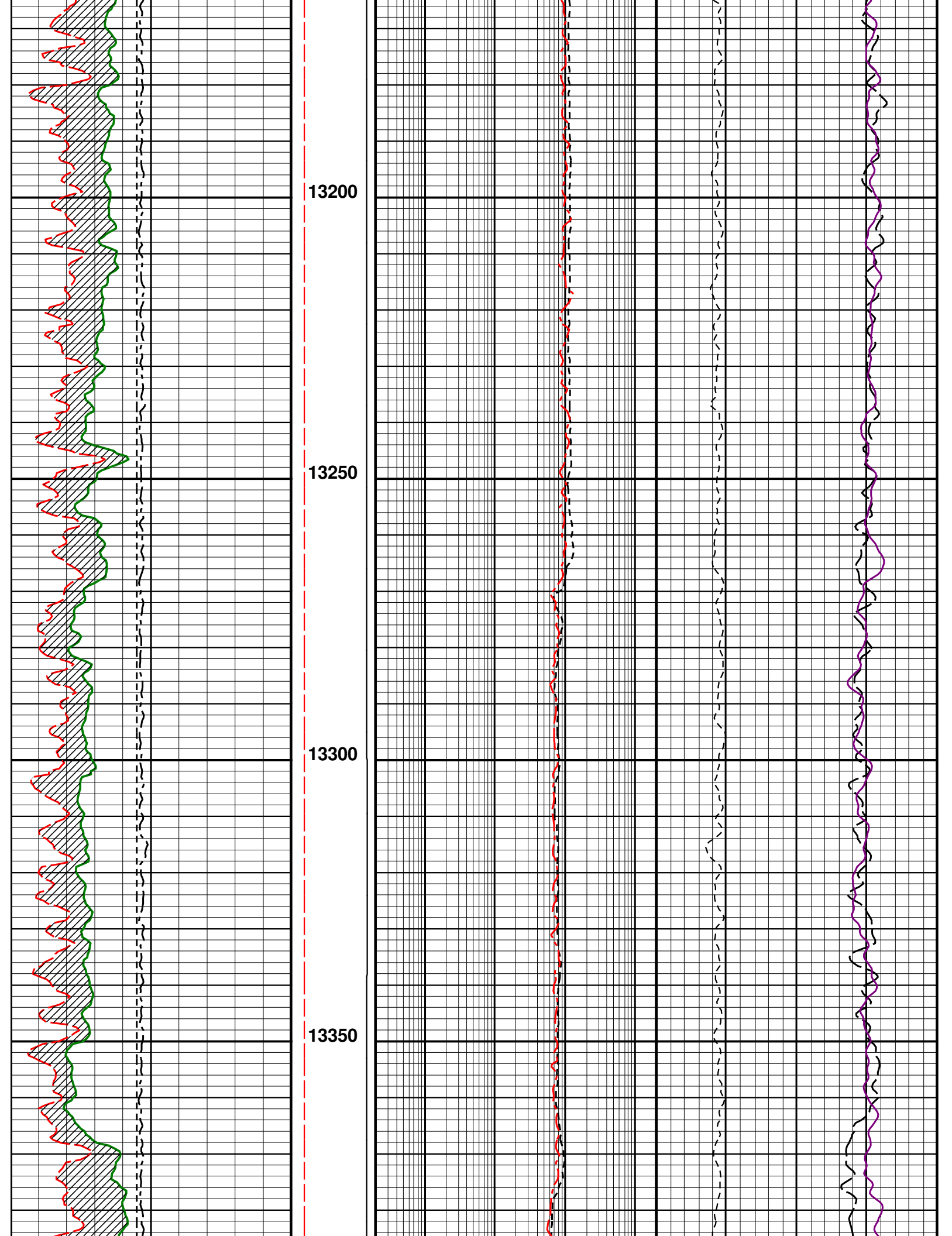


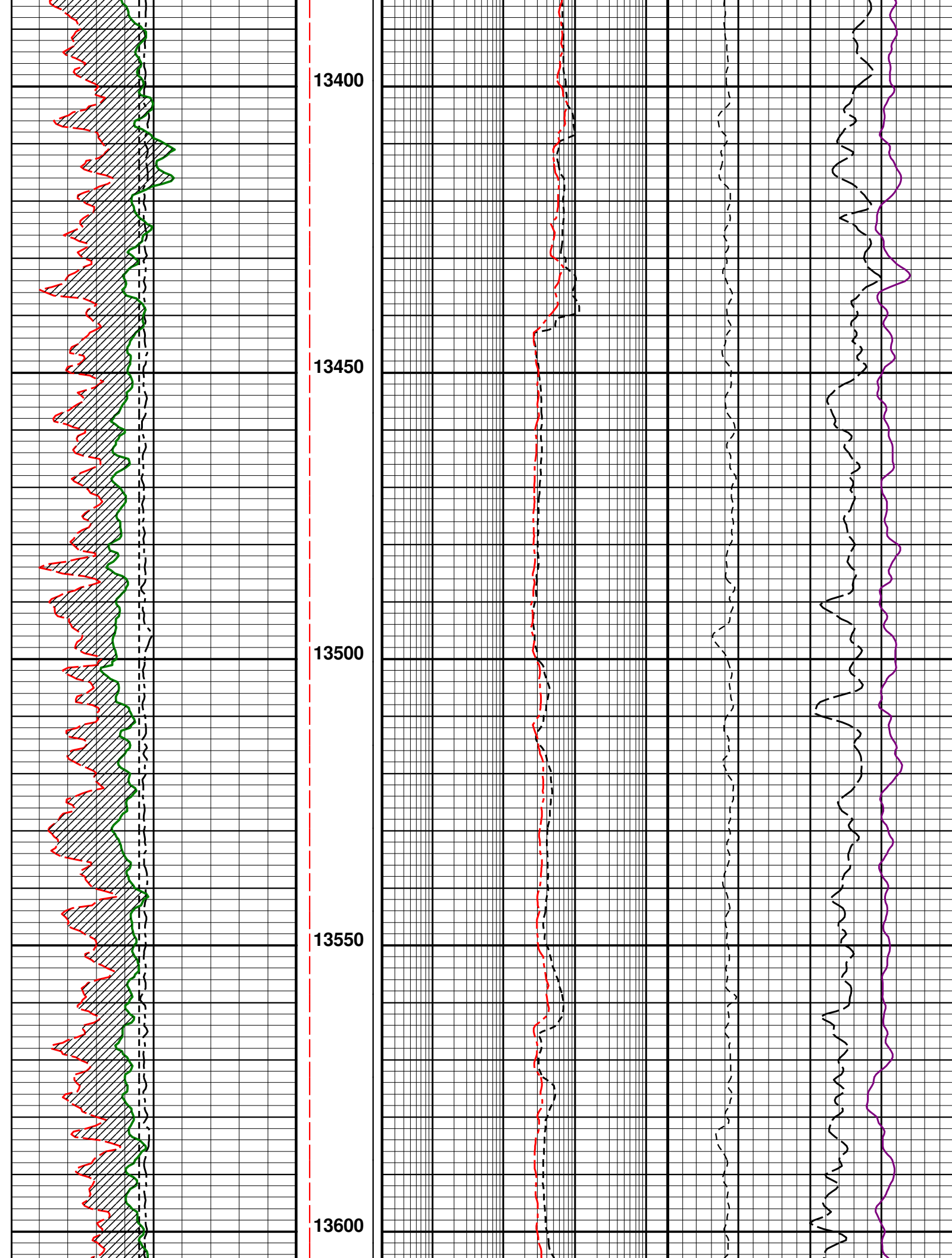


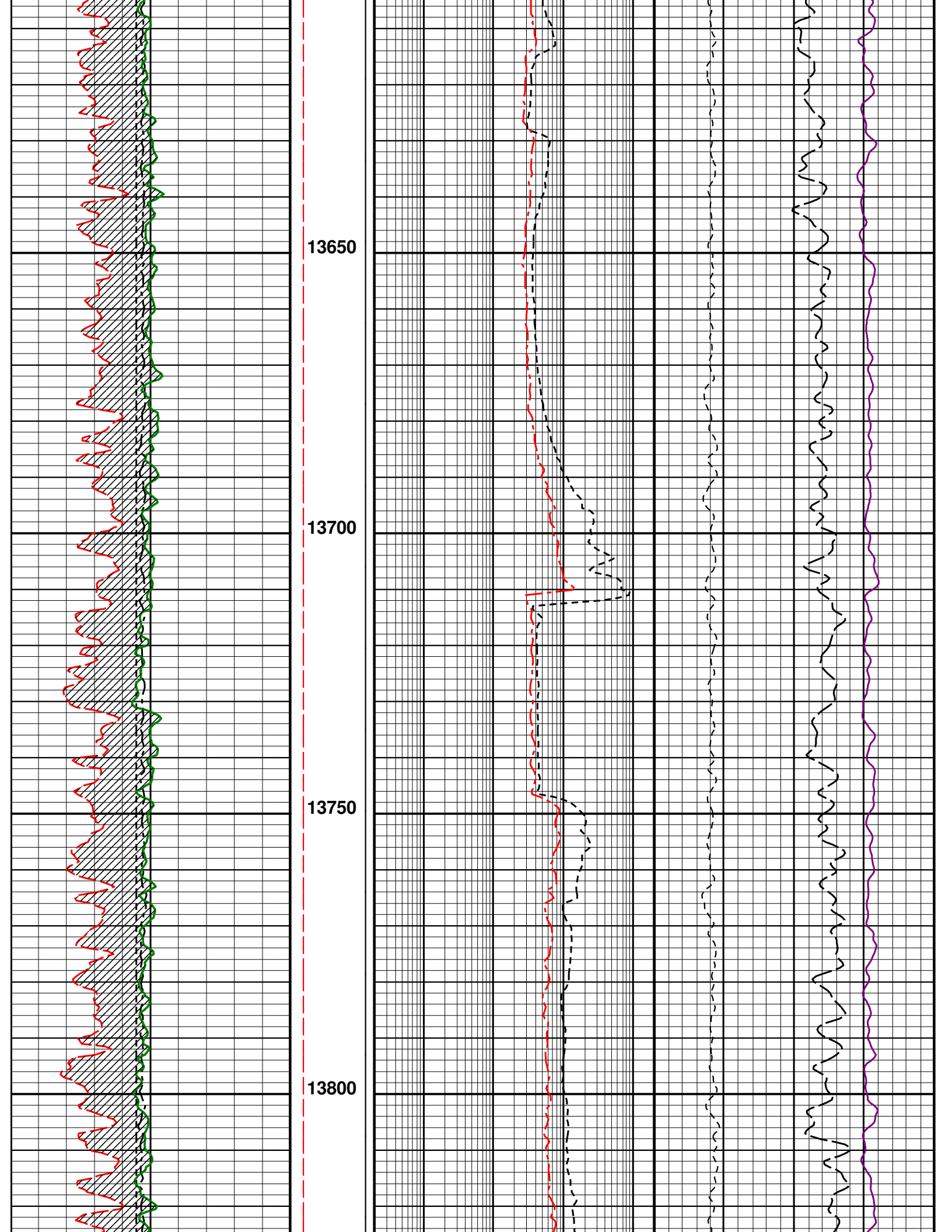


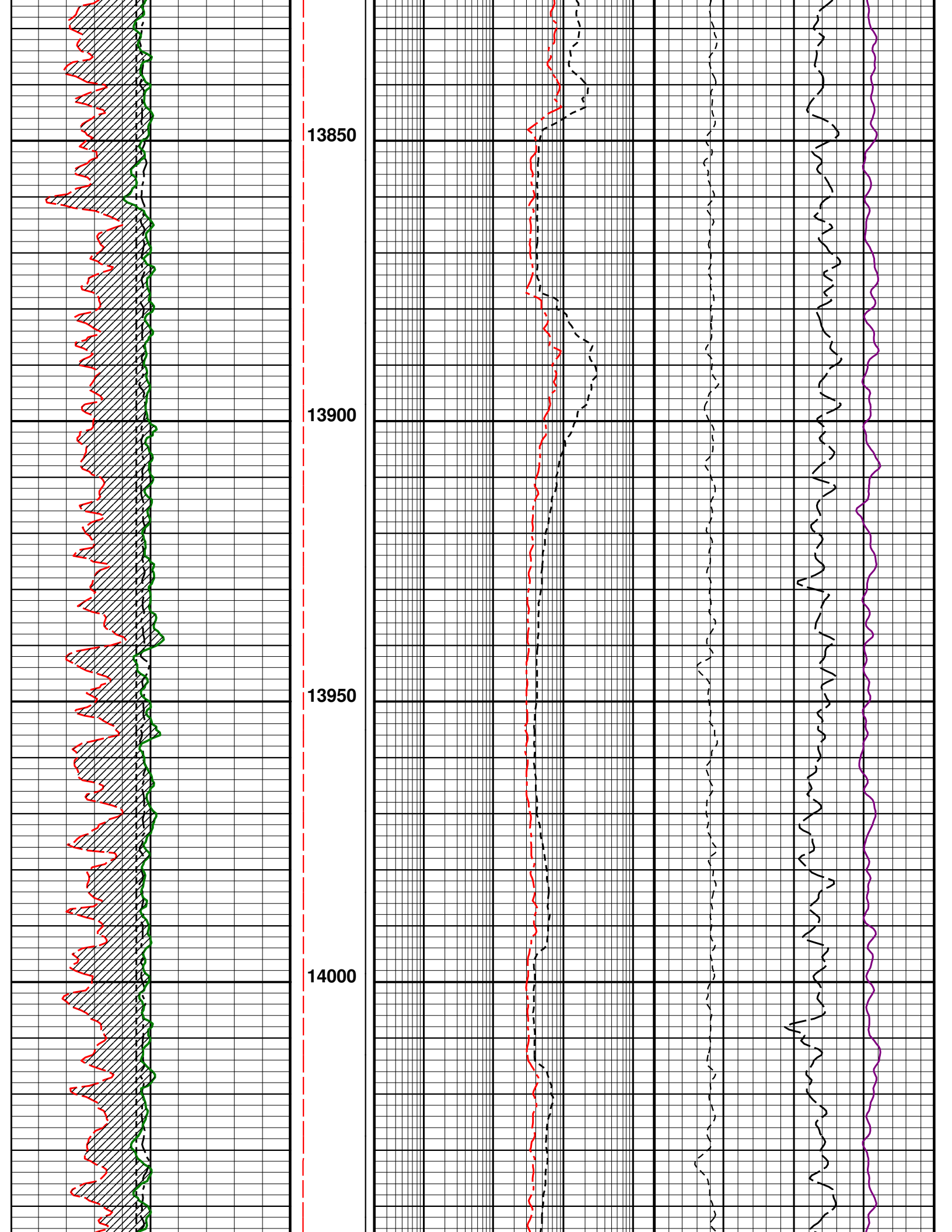


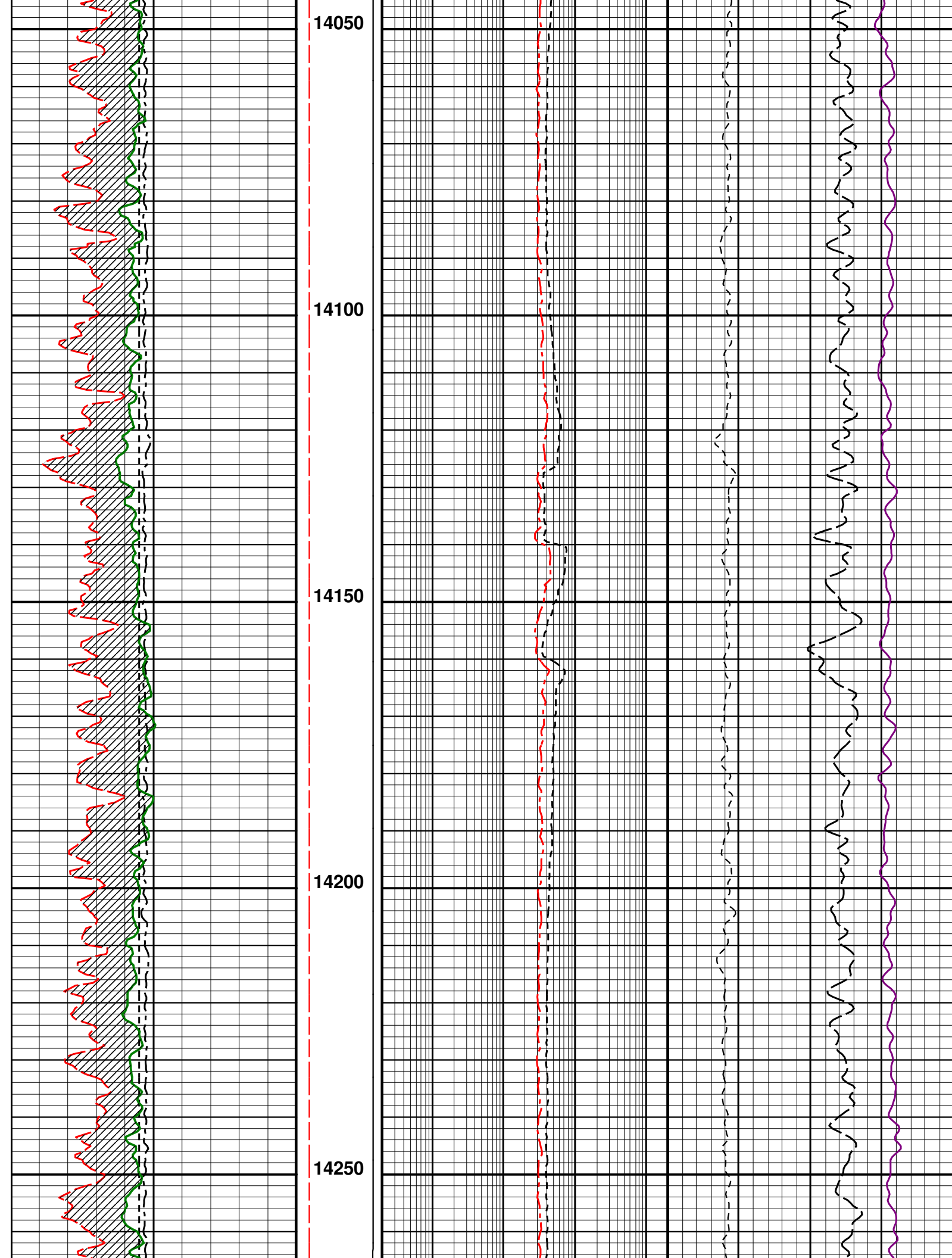




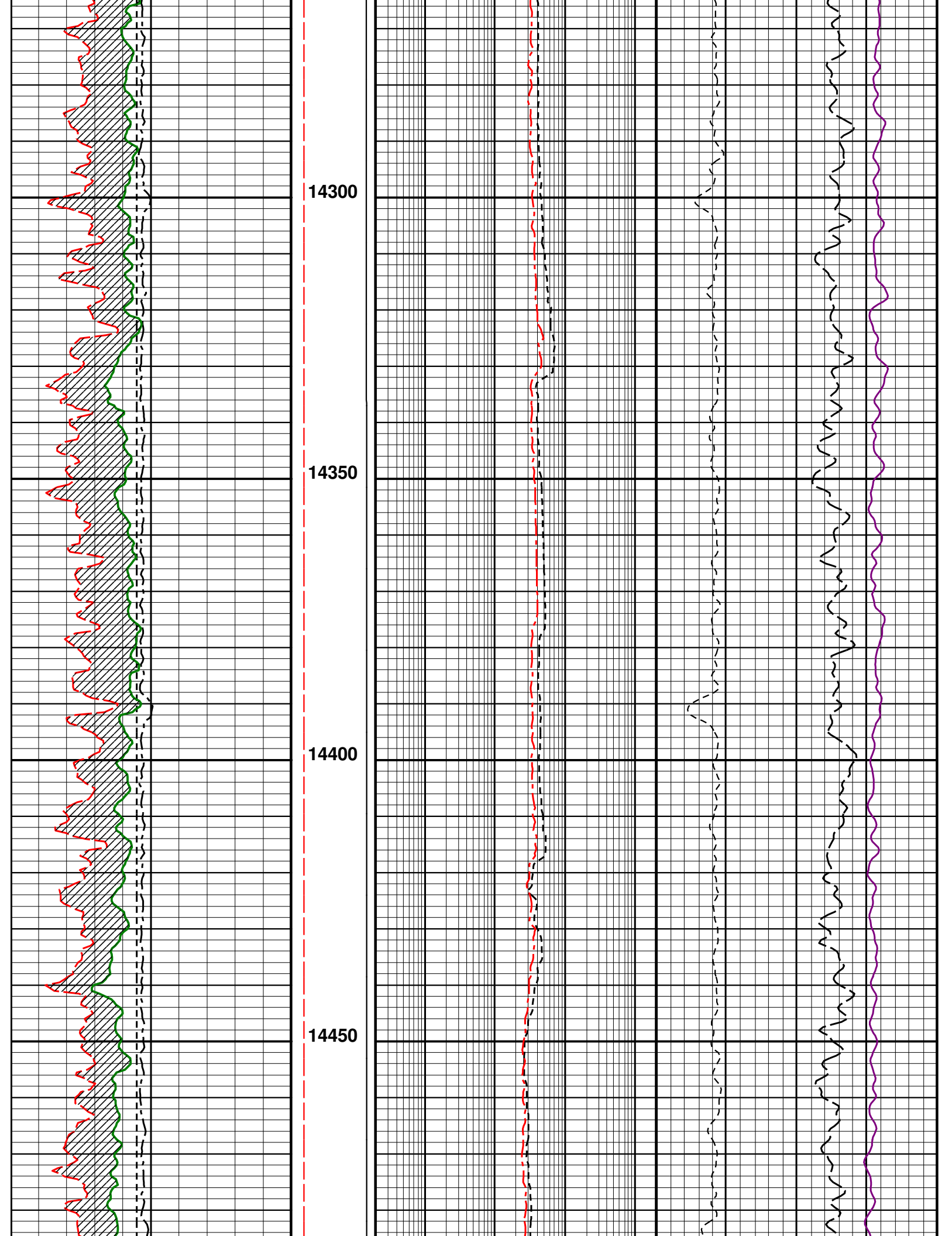


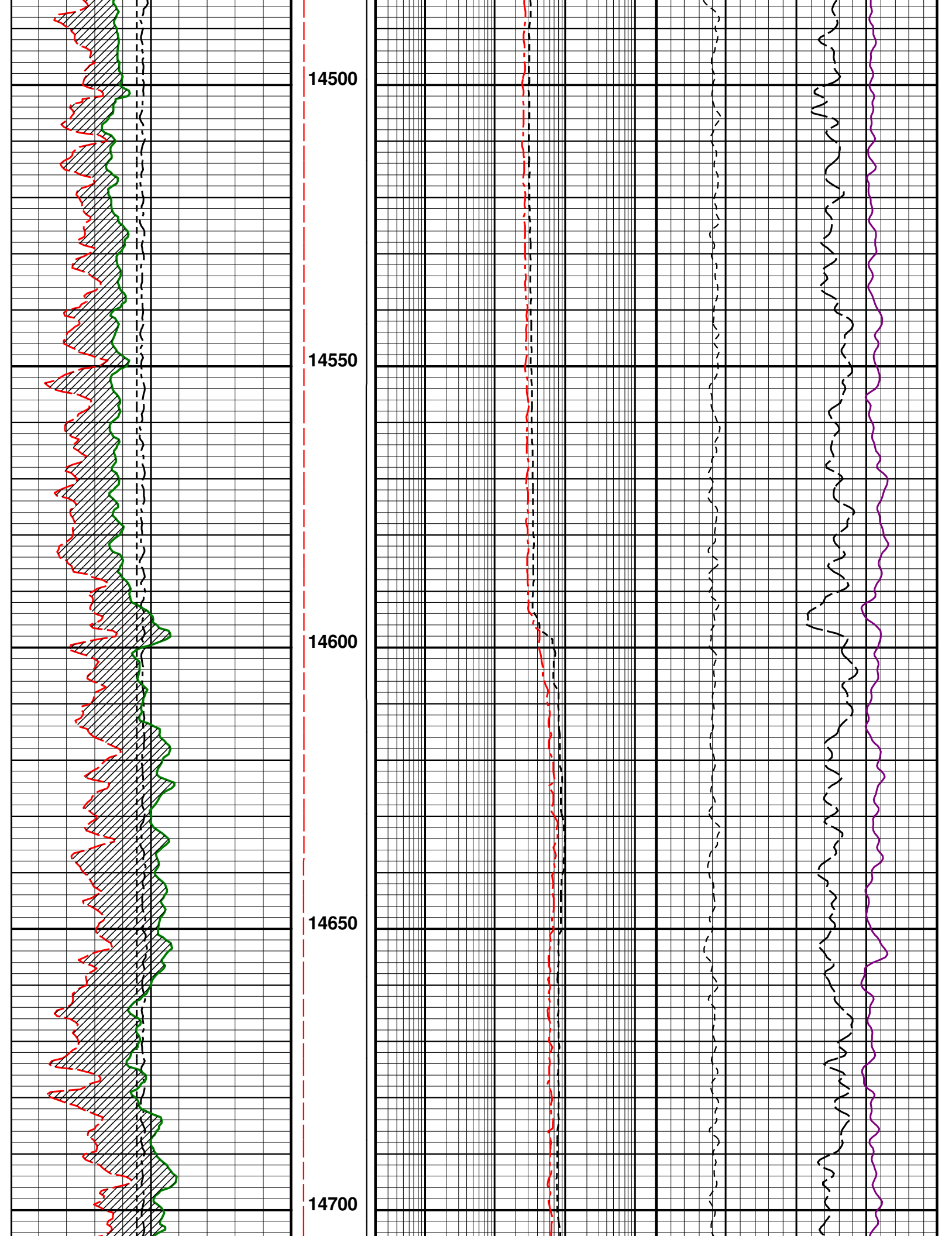


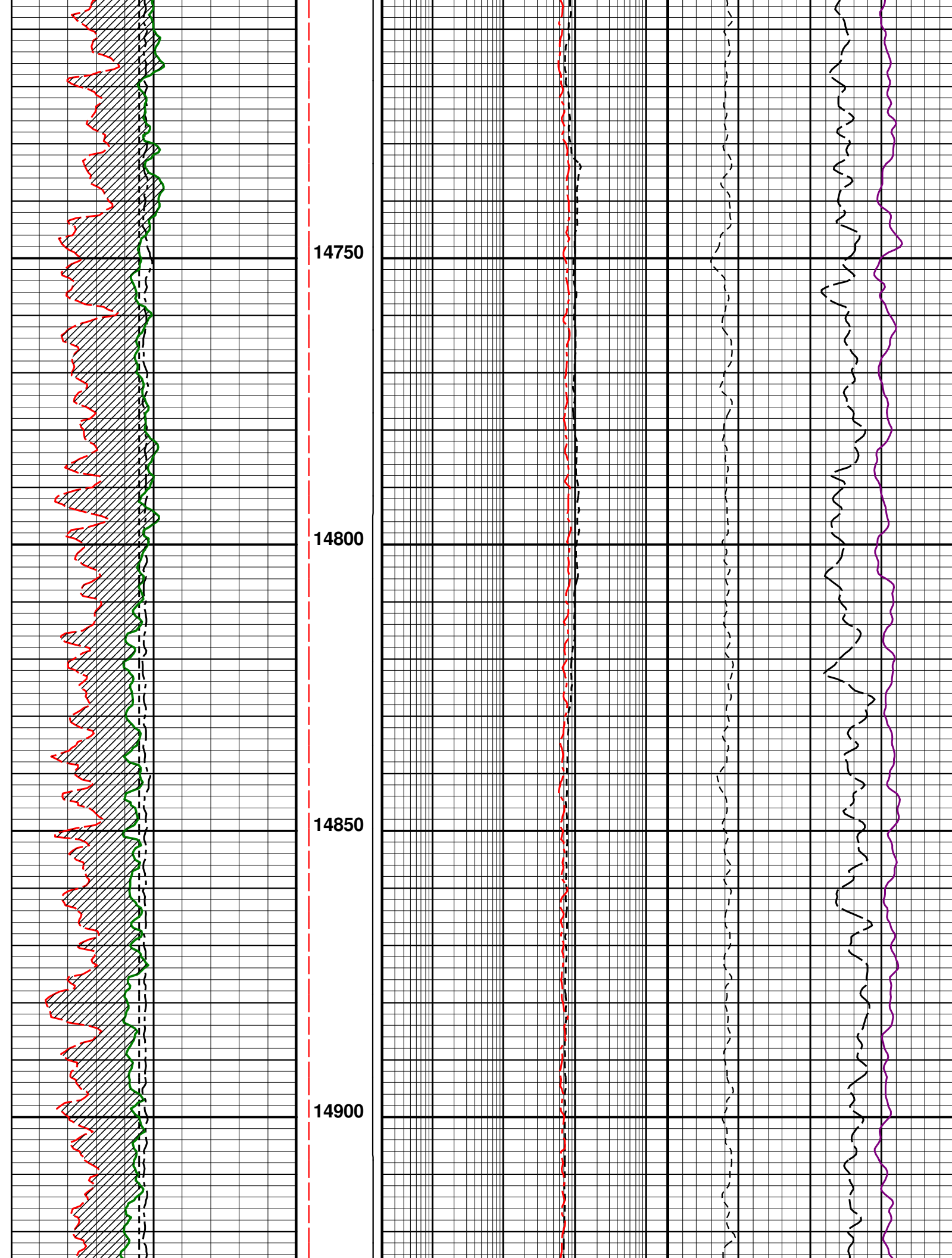


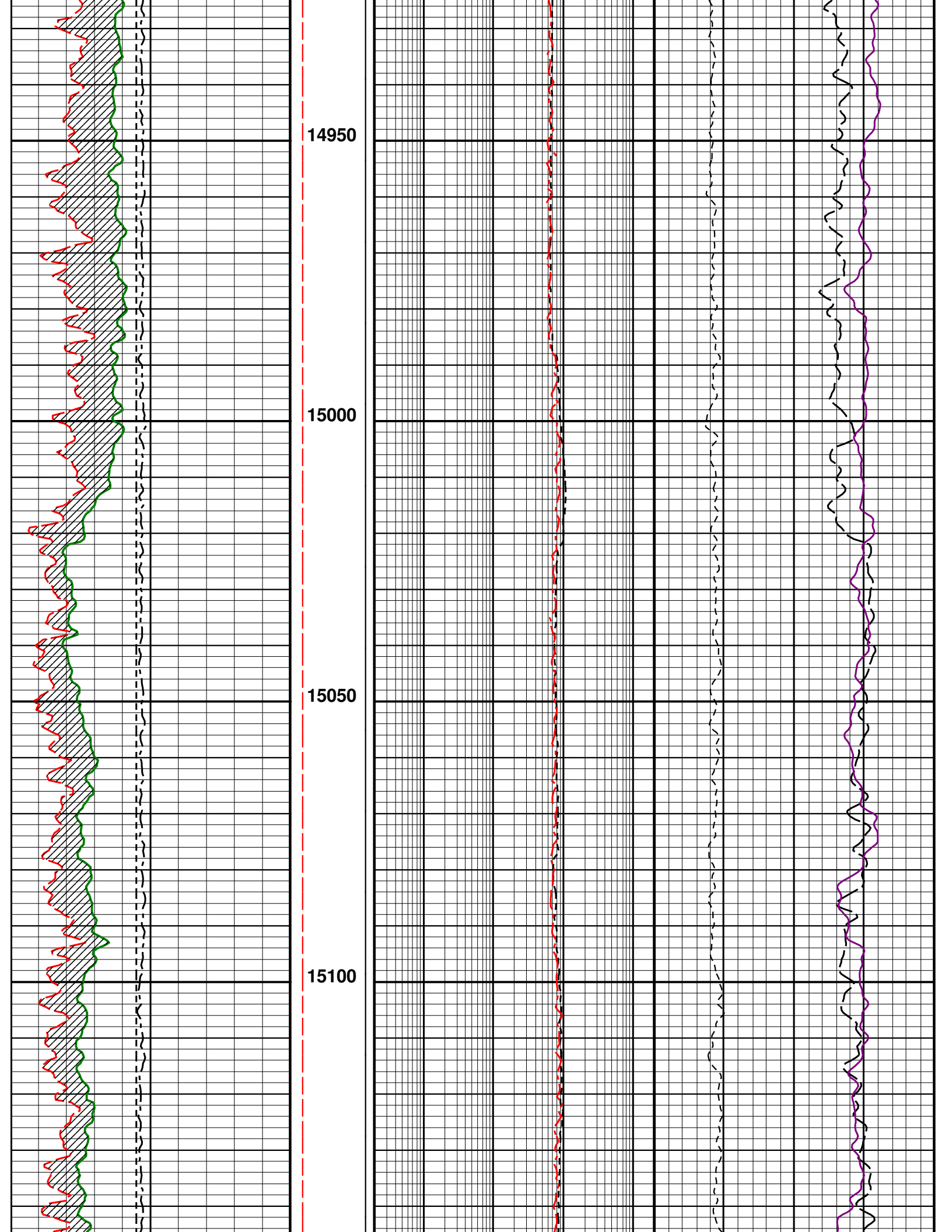


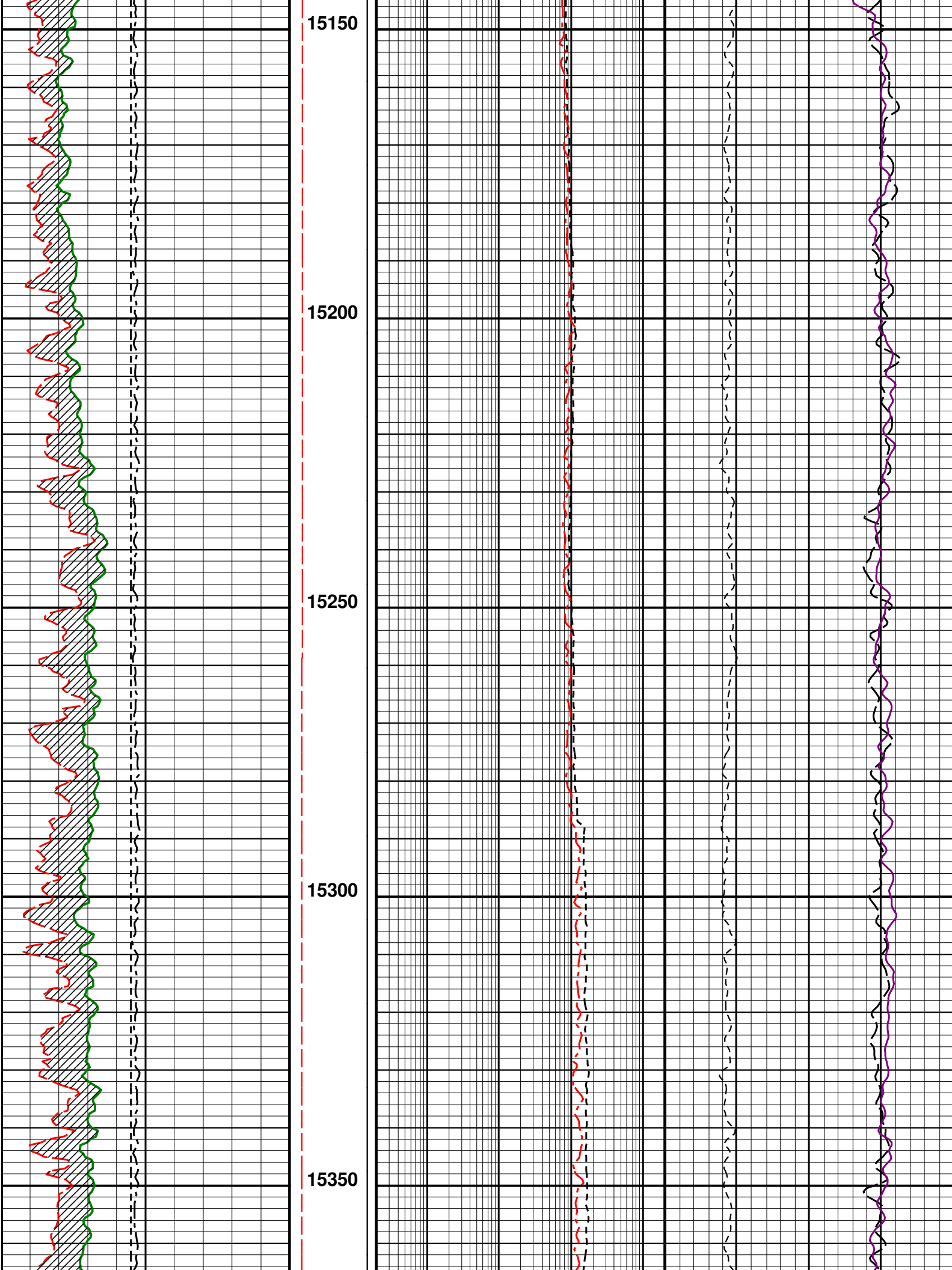


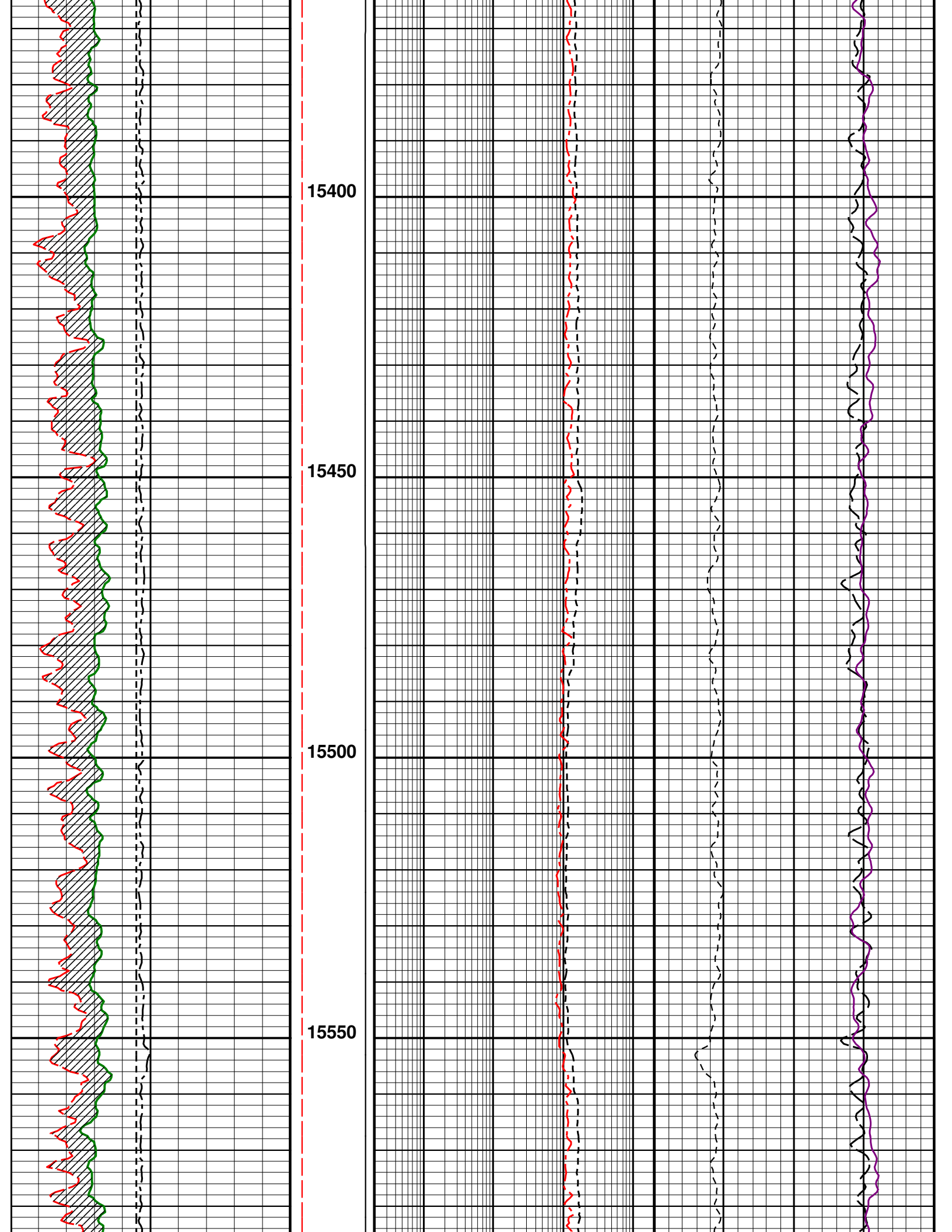


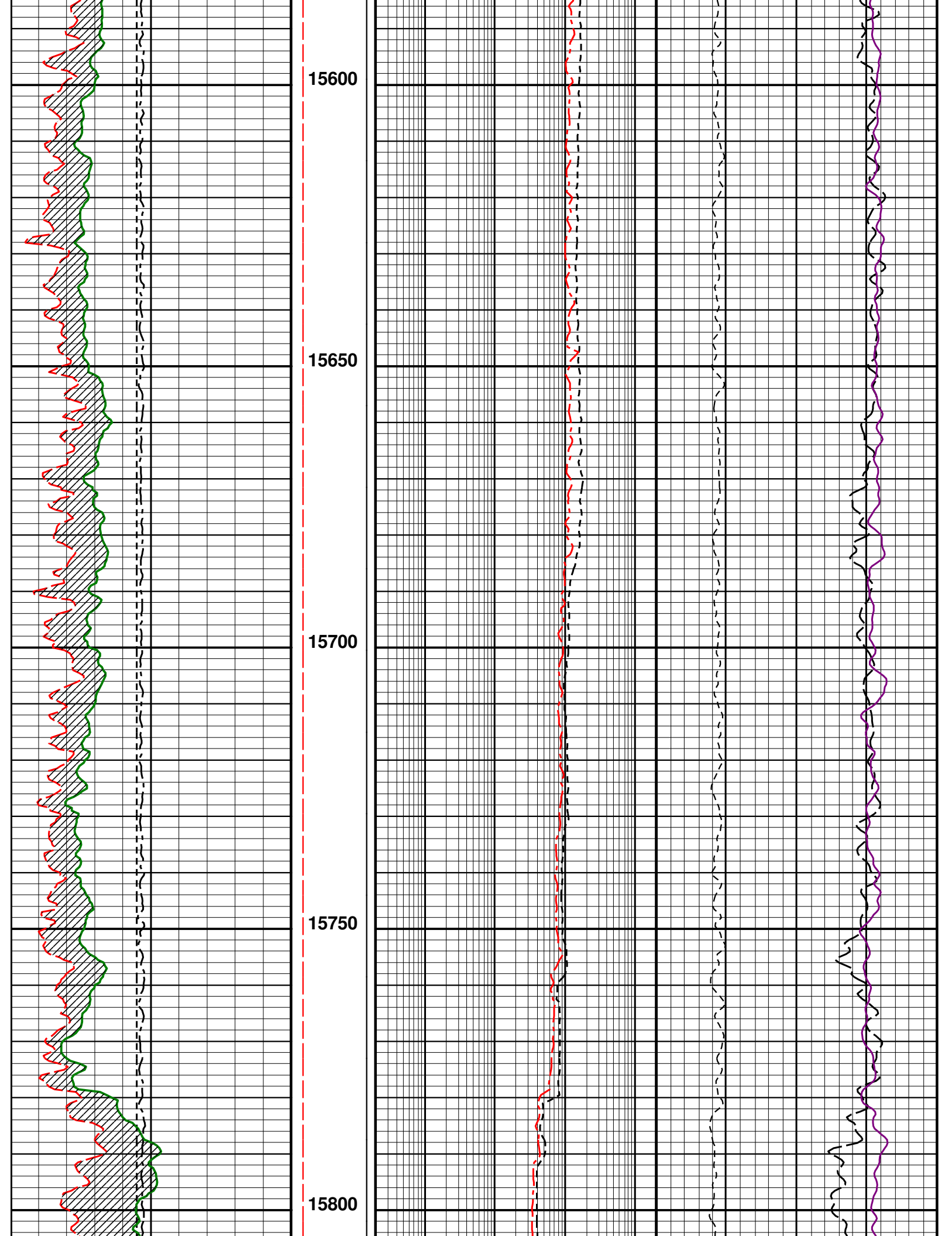


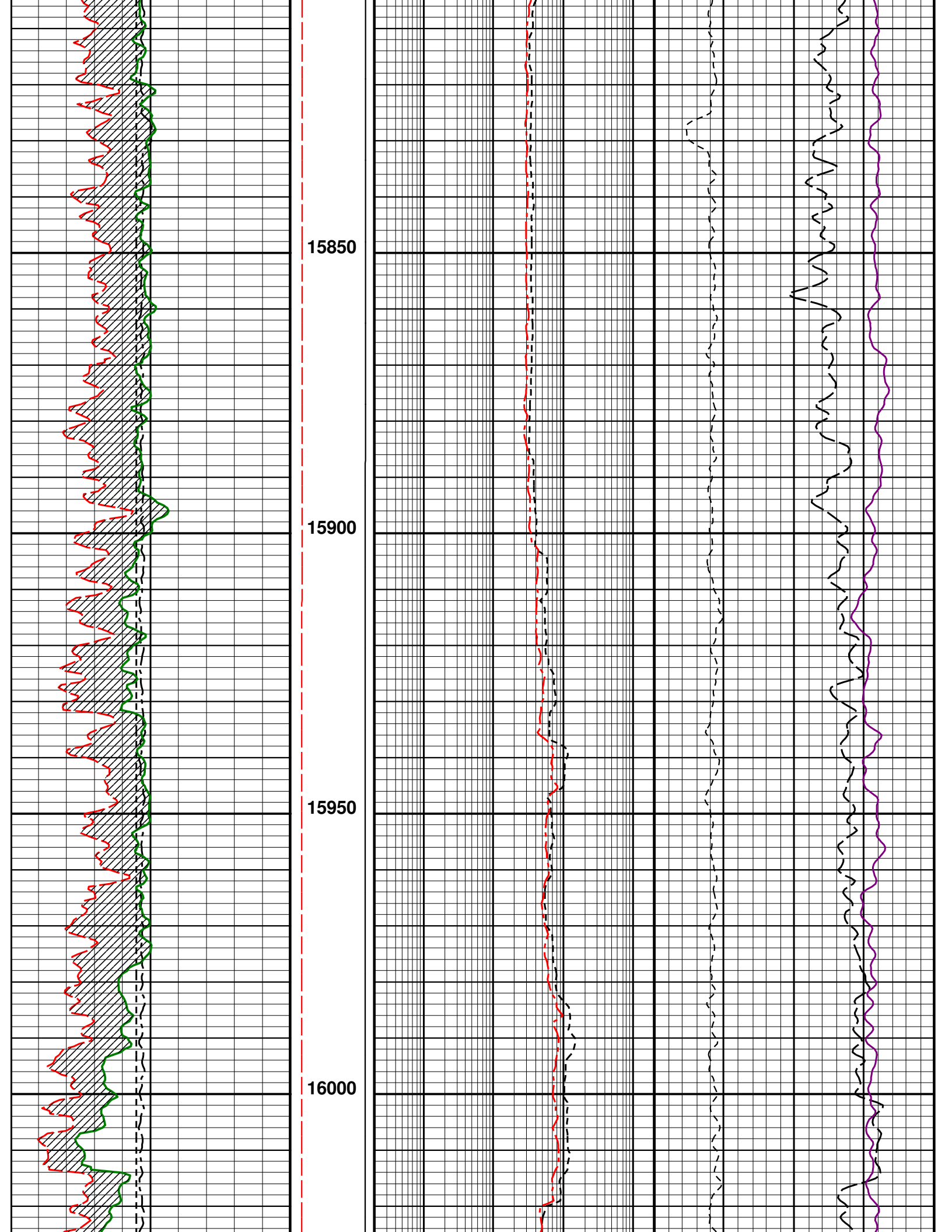




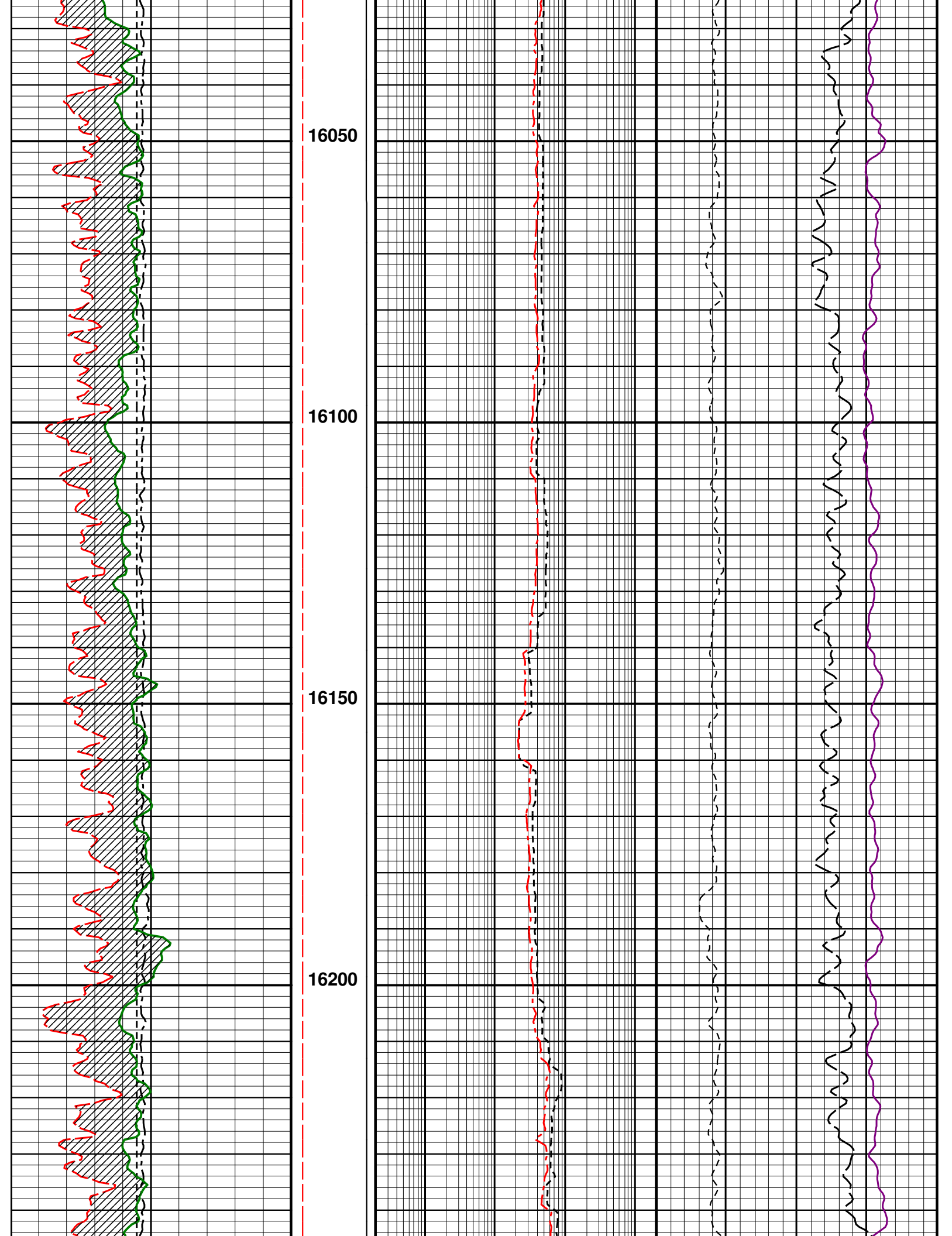


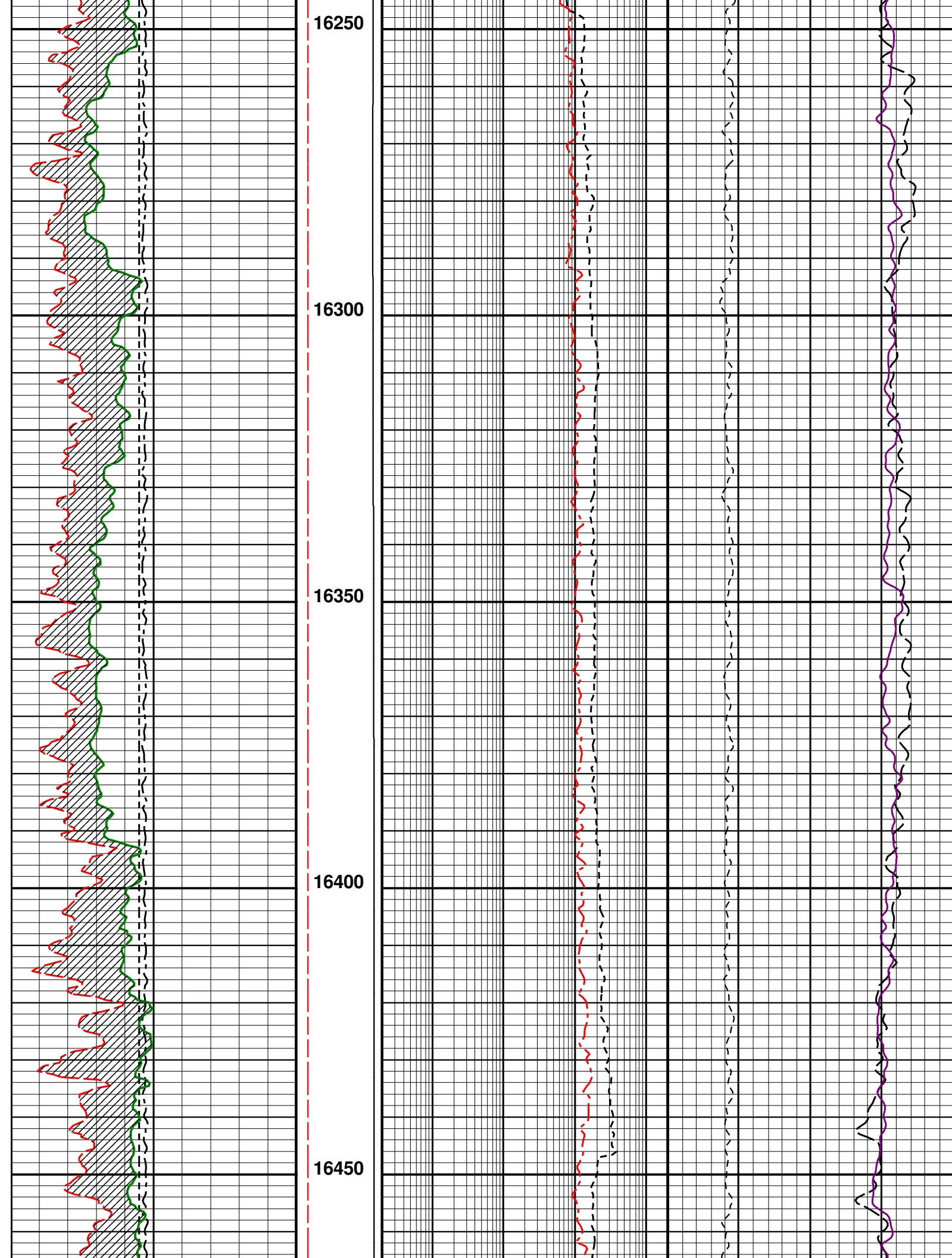


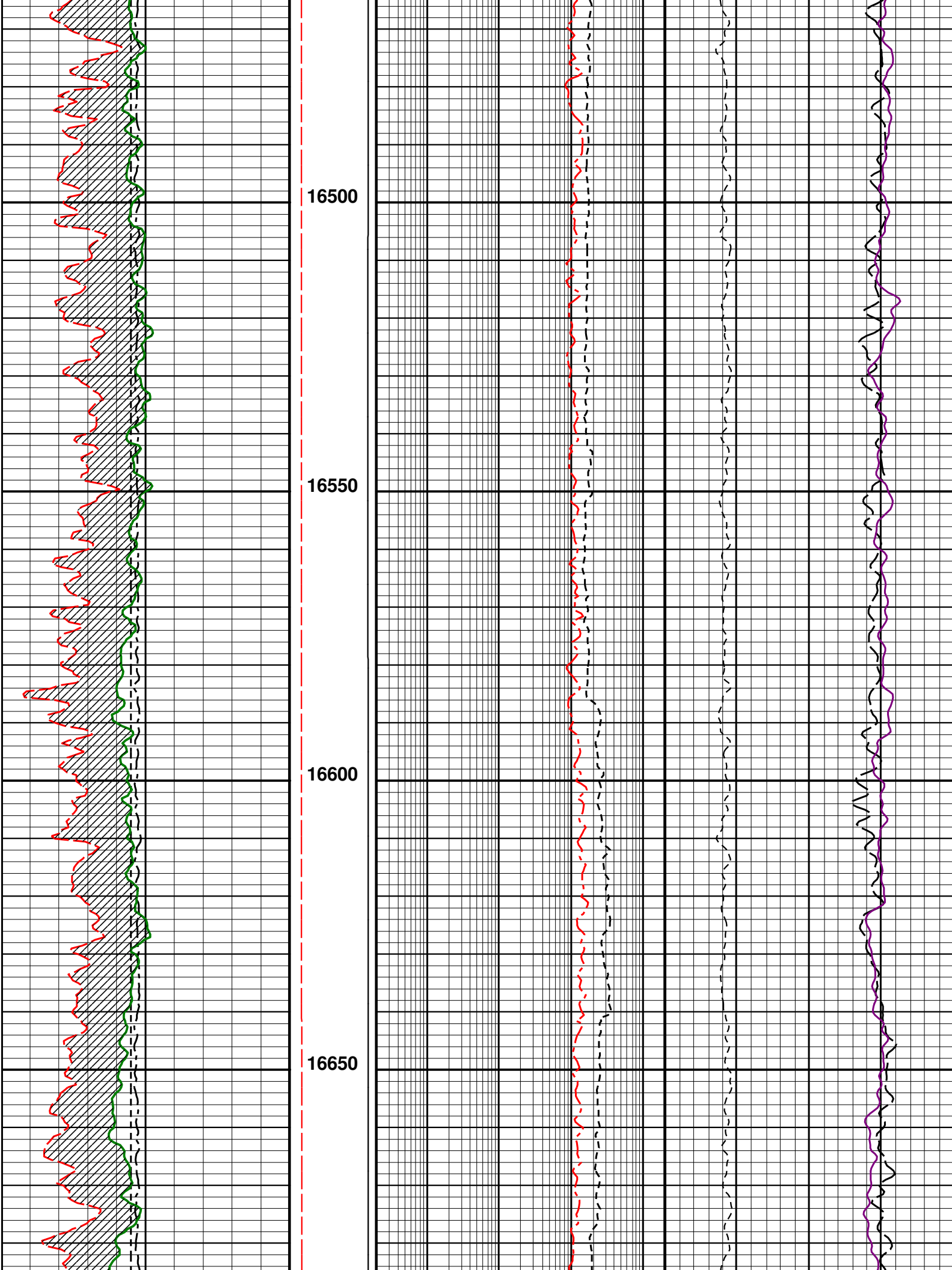


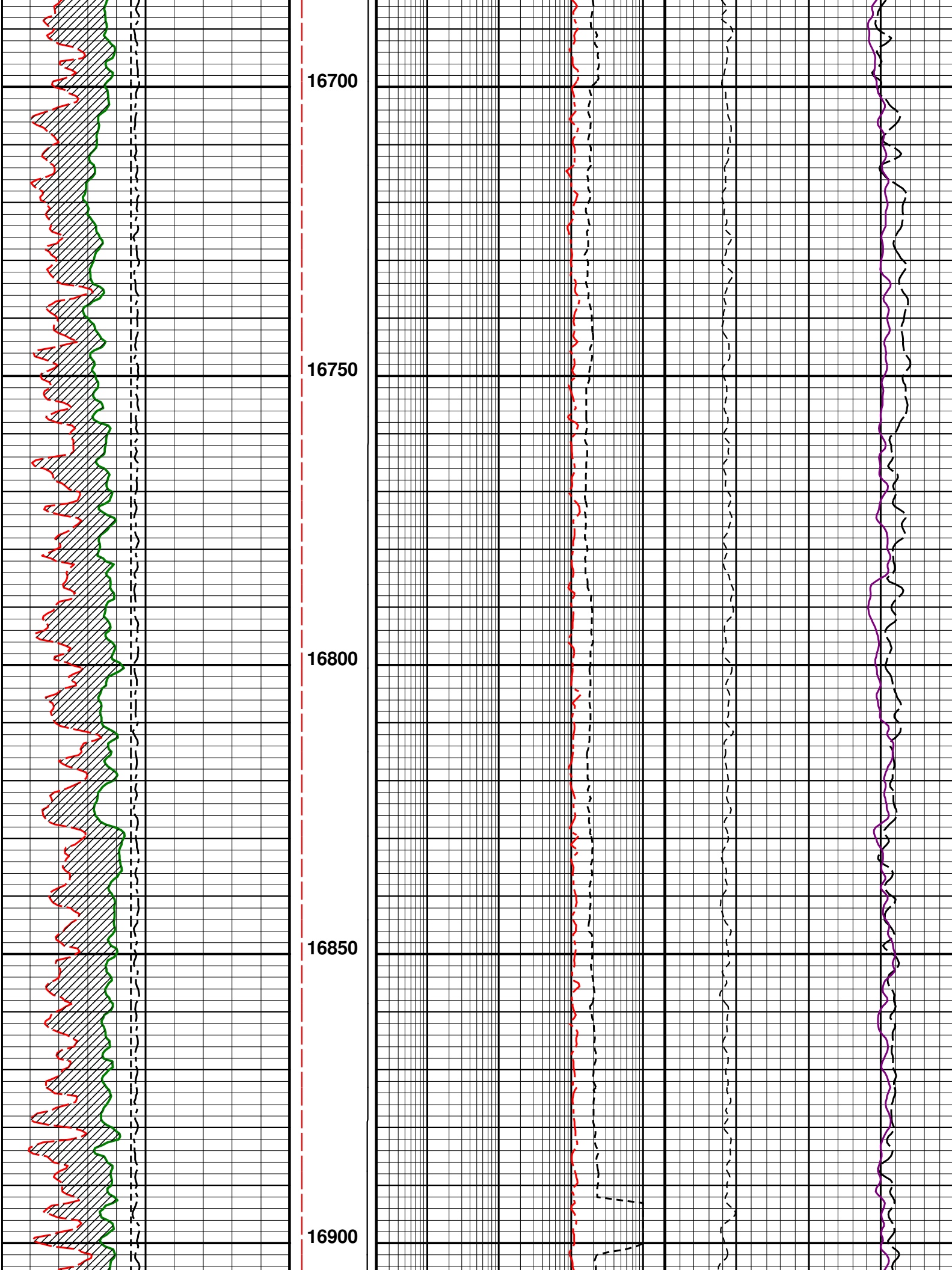


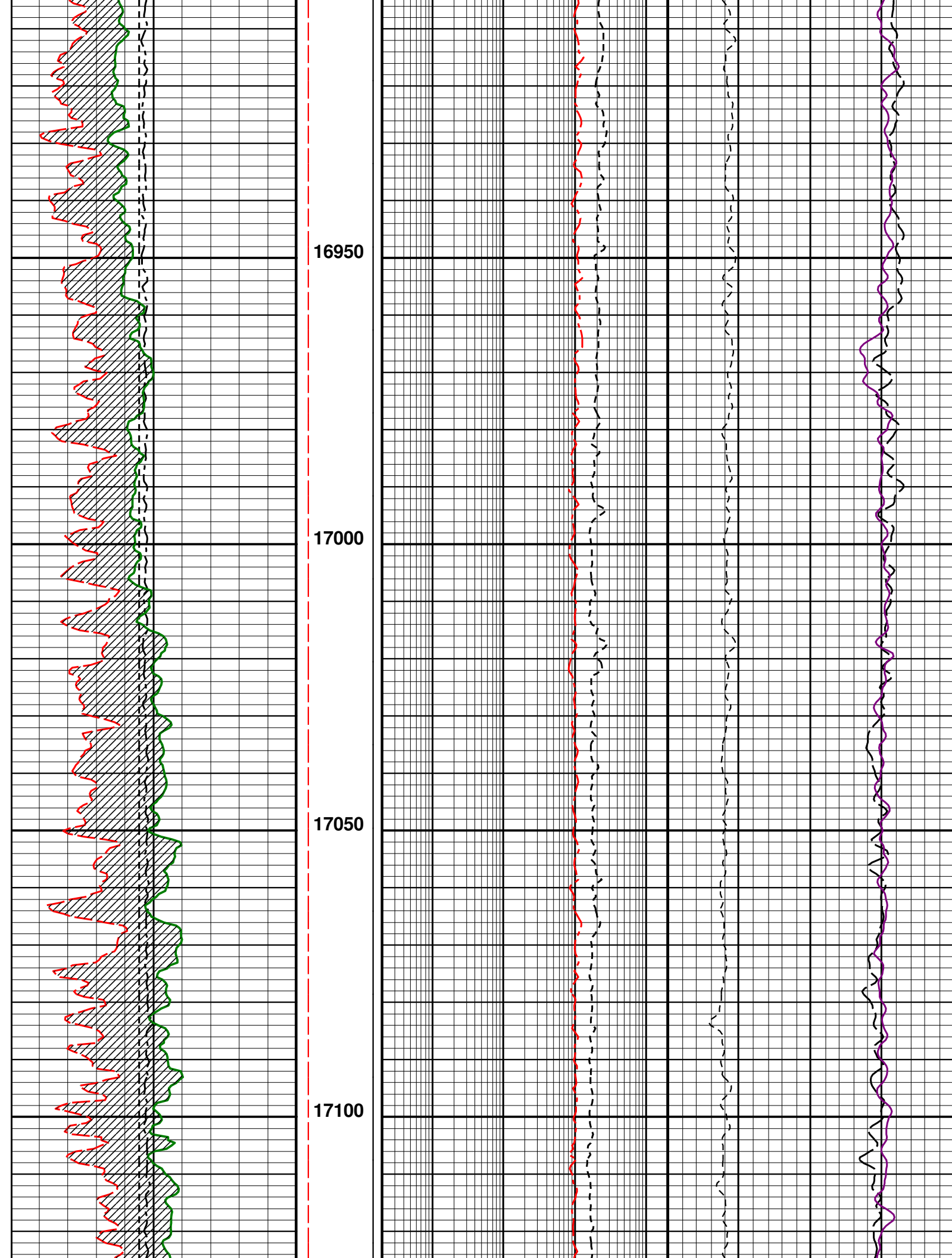


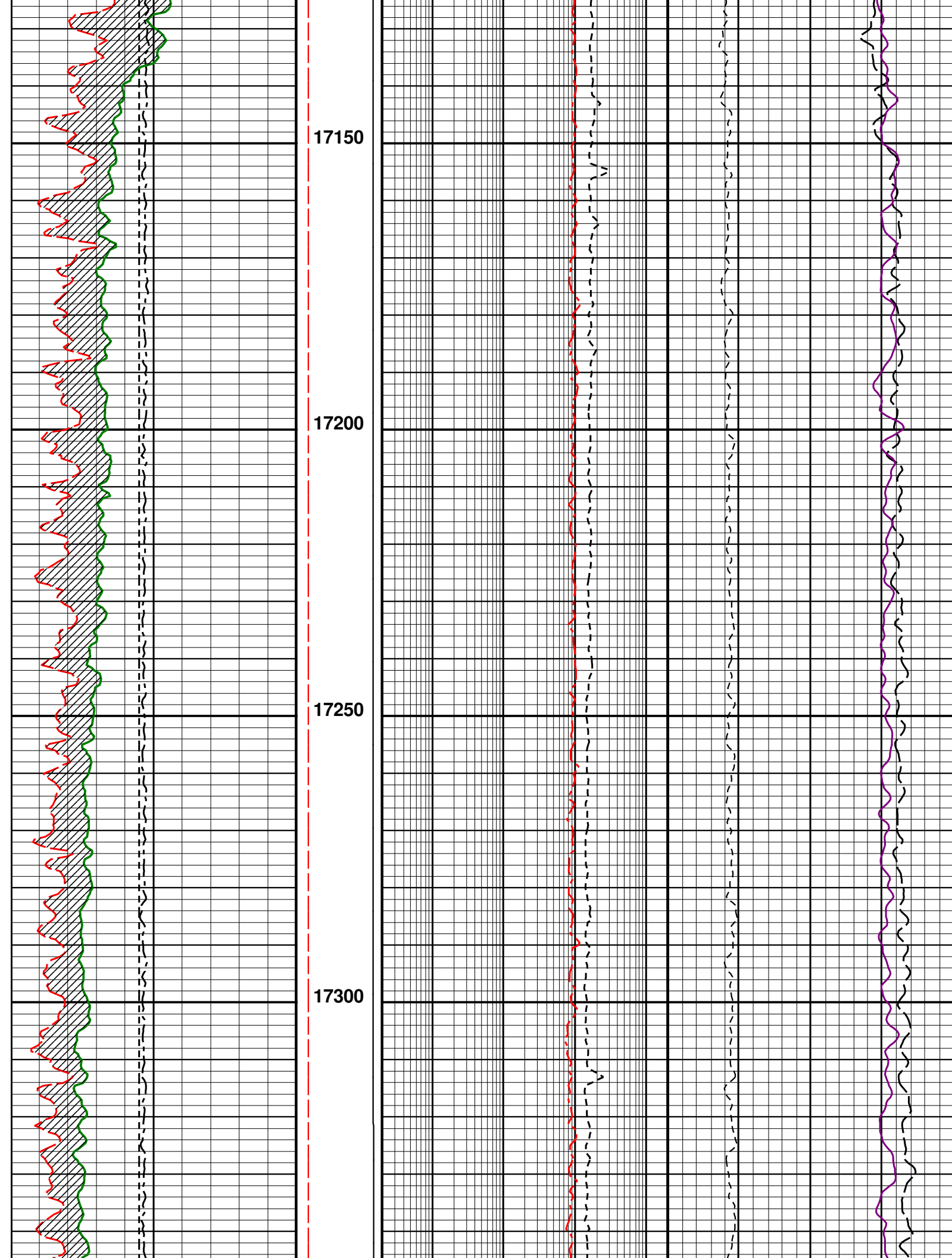


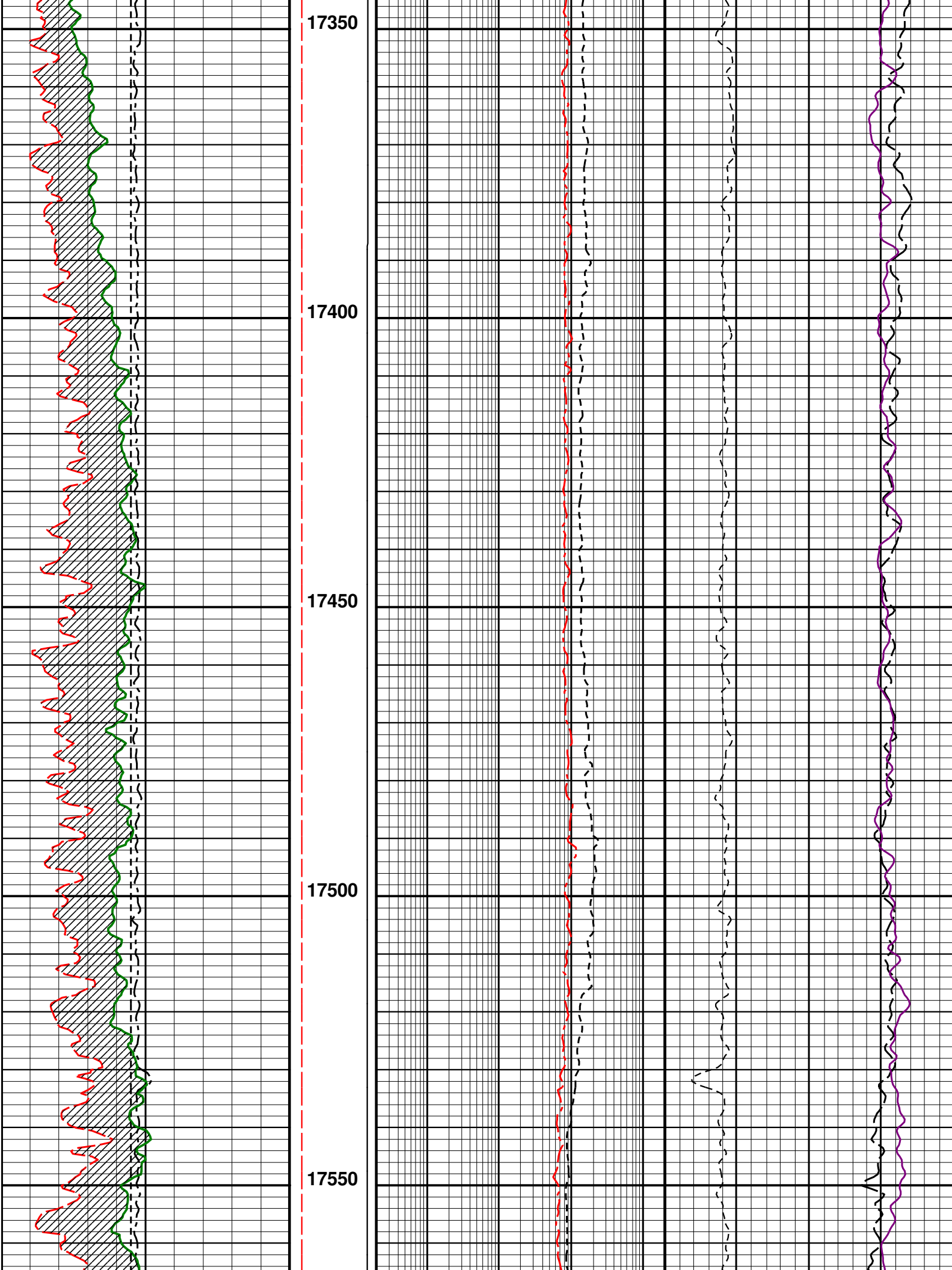


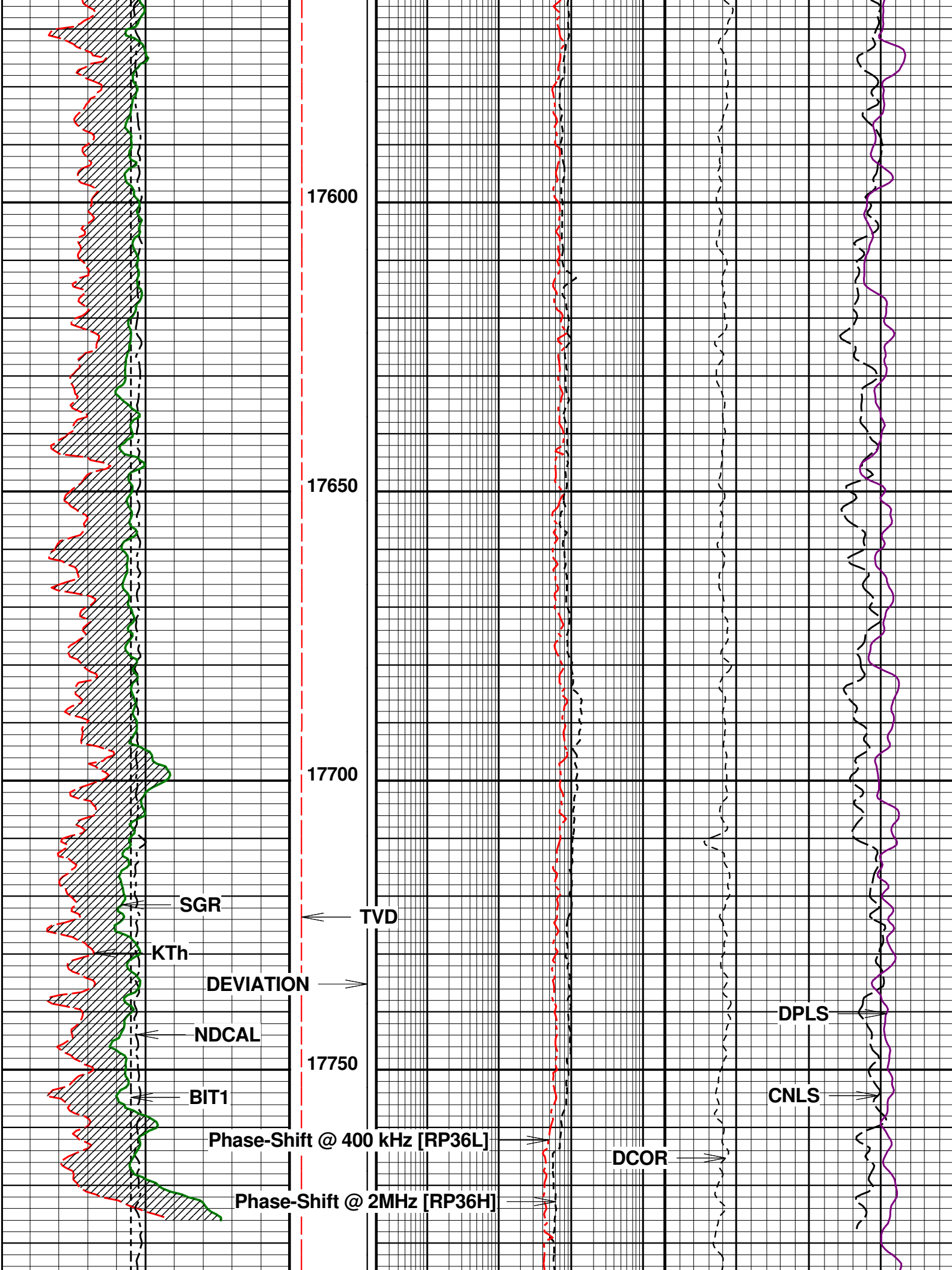




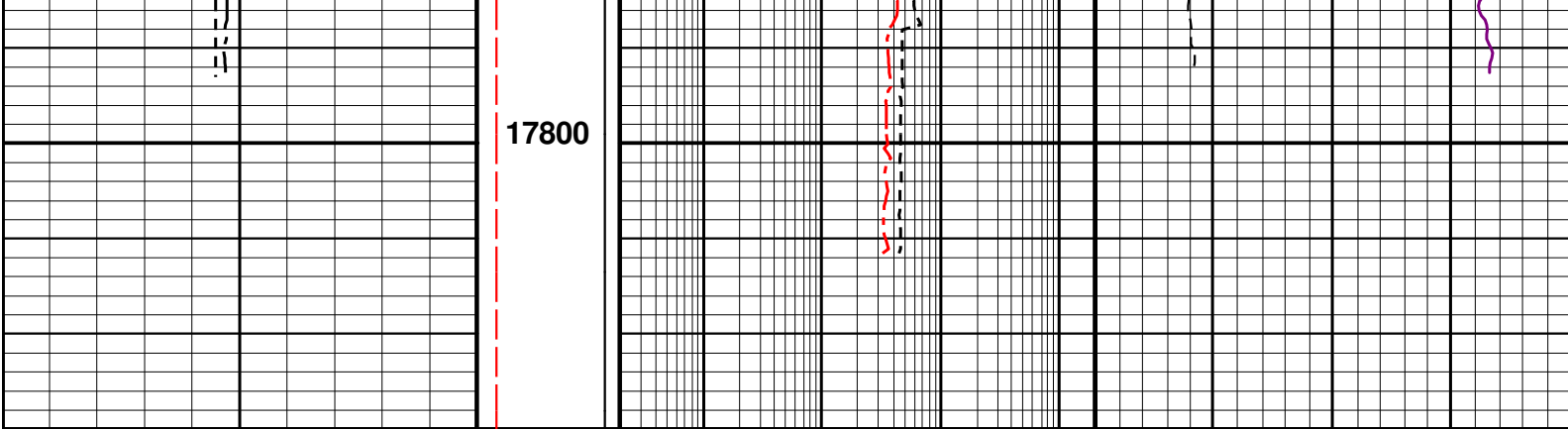












4	BIT1 (IN) Periodic	14	DEVIATION (DEG) 140	100	0.2	Phase-Shift @ 2MHz [RP36H] (OHMM) 2000.0	40	CNLS (NONE) Periodic	0
0	KTh (gAPI) Periodic	300	TVD (FT) 7700	6850	0.2	Phase-Shift @ 400 kHz [RP36L] (OHMM) 2000.0	-0.05	DCOR (G/C3) Periodic	0.20
4	NDCAL (IN) Periodic	14					40	DPLS (PU) Periodic	0
0	SGR (gAPI) Periodic	300							



File :

Tool name : **Density**      Asset : **021**      Series : **1481**      Source ID :

**Density**

**Density Calibration**

Time      Jan / 11 / 2019 18:03:20

Setup

Description      1481021\_63550B\_2019JAN11\_JS

Setup Version      00046

Curve Name	pt	Raw Value	User Value	Device	Mult.	Add.
<b>LSDensity</b>	<b>1</b>	<b>0.283013</b>	<b>2.7 g/c3</b>	<b>Aluminum Block</b>	<b>29.790570</b>	<b>-5.731</b>
<b>MSDensity</b>	<b>1</b>	<b>0.22747</b>	<b>2.7 g/c3</b>	<b>Aluminum Block</b>	<b>69.772410</b>	<b>-13.171</b>
<b>SSDensity</b>	<b>1</b>	<b>0.250014</b>	<b>2.7 g/c3</b>	<b>Aluminum Block</b>	<b>118.435200</b>	<b>-26.910</b>
<b>LSDensity</b>	<b>2</b>	<b>0.249781</b>	<b>1.71 g/c3</b>	<b>Concrete Block</b>		
<b>MSDensity</b>	<b>2</b>	<b>0.213281</b>	<b>1.71 g/c3</b>	<b>Concrete Block</b>		
<b>SSDensity</b>	<b>2</b>	<b>0.241655</b>	<b>1.71 g/c3</b>	<b>Concrete Block</b>		

File :

Tool name : **Dual Neutron**      Asset : **020**      Series : **1473**      Source ID :

**Gamma**

**Gamma Calibration**

Time      Jan / 11 / 2019 15:17:48

Setup

Description      1473020 1619-93 2019JAN11 JS

Setup Version	00046				
Block	Raw Value	User Value	Device	Device SN	Mult.
Background	45.4628				
Jig ON	354.352				
Gamma	308.8892	250.0005 gAPI	Gamma Ray Jlg	1619-93	0.8093533
	287	325			

Gamma Primary Verification

Time Jan / 11 / 2019 15:20:11

Setup

Description 1473020\_1619-93\_2019JAN11\_JS

Setup Version 00046

Block	Device	Device SN	Raw Value	User Value
Background			46.0118	
Jig ON	Gamma Ray Jlg	1619-93	360.021	
Gamma			254.1443 gAPI	
			244.5	255.5

Tool name : Dual Neutron      Asset : 020      Series : 1473      Source ID :

Ratio

Compensated Neutron Calibration

Time Jan / 11 / 2019 15:42:48

Setup

Description 1473020\_34981B\_2019JAN11\_JS

Setup Version 00046

Curve Name	pt	Raw Value	User Value	Device	Mult.
Ratio	1	16.2133	17 none	Neutron Ratio	1.048522
		16.15	17.85		

Compensated Neutron Primary Verification

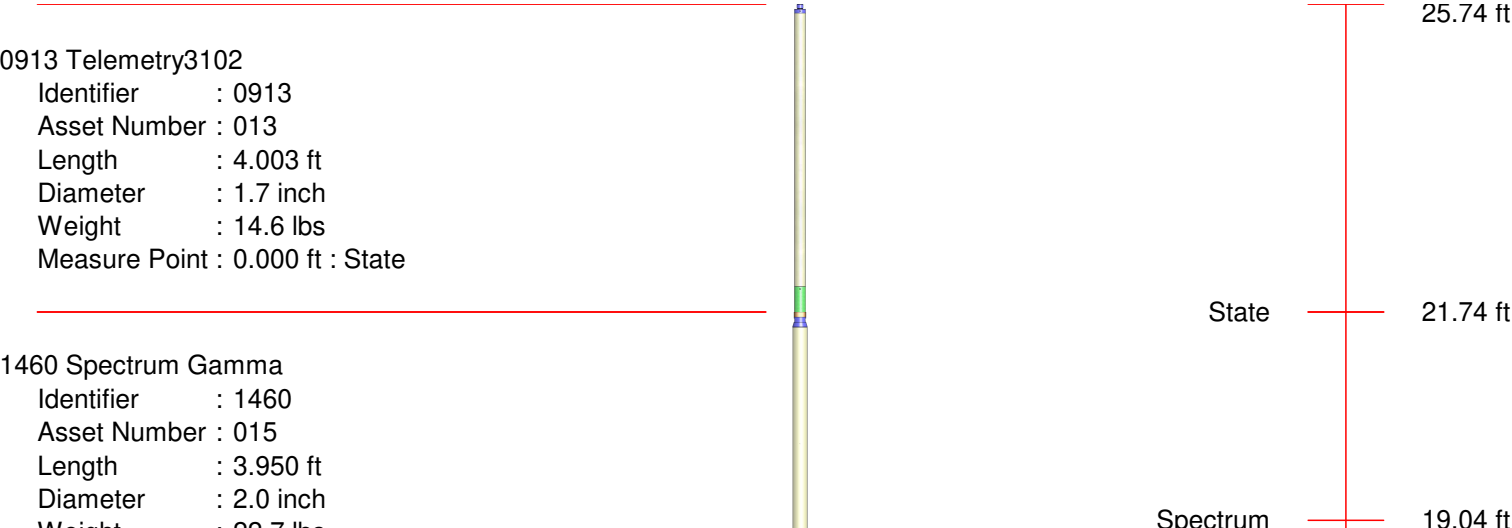
Time Jan / 11 / 2019 15:46:04

Setup

Description 1473020\_34981B\_2019JAN11\_JS

Setup Version 00046

Curve Name	pt	Device	Device Value	User Value
CN	1	Neutron Porosity	23 pu	24.5127 pu
				21.16 24.84



Weight : 22.7 lbs  
Measure Point : 1.247 ft : Spectrum

GR 17.11 ft

#### 1473 Dual Neutron

Identifier : 1473  
Asset Number : 020  
Length : 10.069 ft  
Diameter : 2.0 inch  
Weight : 58.4 lbs  
Measure Point : 1.854 ft : SSN  
Measure Point : 2.343 ft : LSN  
Measure Point : 9.383 ft : GR

LSN 10.07 ft  
SSN 9.58 ft

#### 0813 Knuckle Joint

Identifier : 0813  
Length : 2.297 ft  
Diameter : 1.7 inch  
Weight : 16.1 lbs

#### 1481 Density

Identifier : 1481  
Asset Number : 021  
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

Long 2.14 ft  
Mid 1.87 ft  
Short 1.65 ft

0.00 ft

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

**CORDAX™**

COMPANY: GREAT WESTERN OPERATING COMPANY LLC  
WELL: OTTESEN LE 06-290HN  
FIELD: WATTENBERG  
COUNTY: WELD  
STATE: CO