

ULTRA SLIM  
ARRAY COMPENSATED  
TRUE RESISTIVITY

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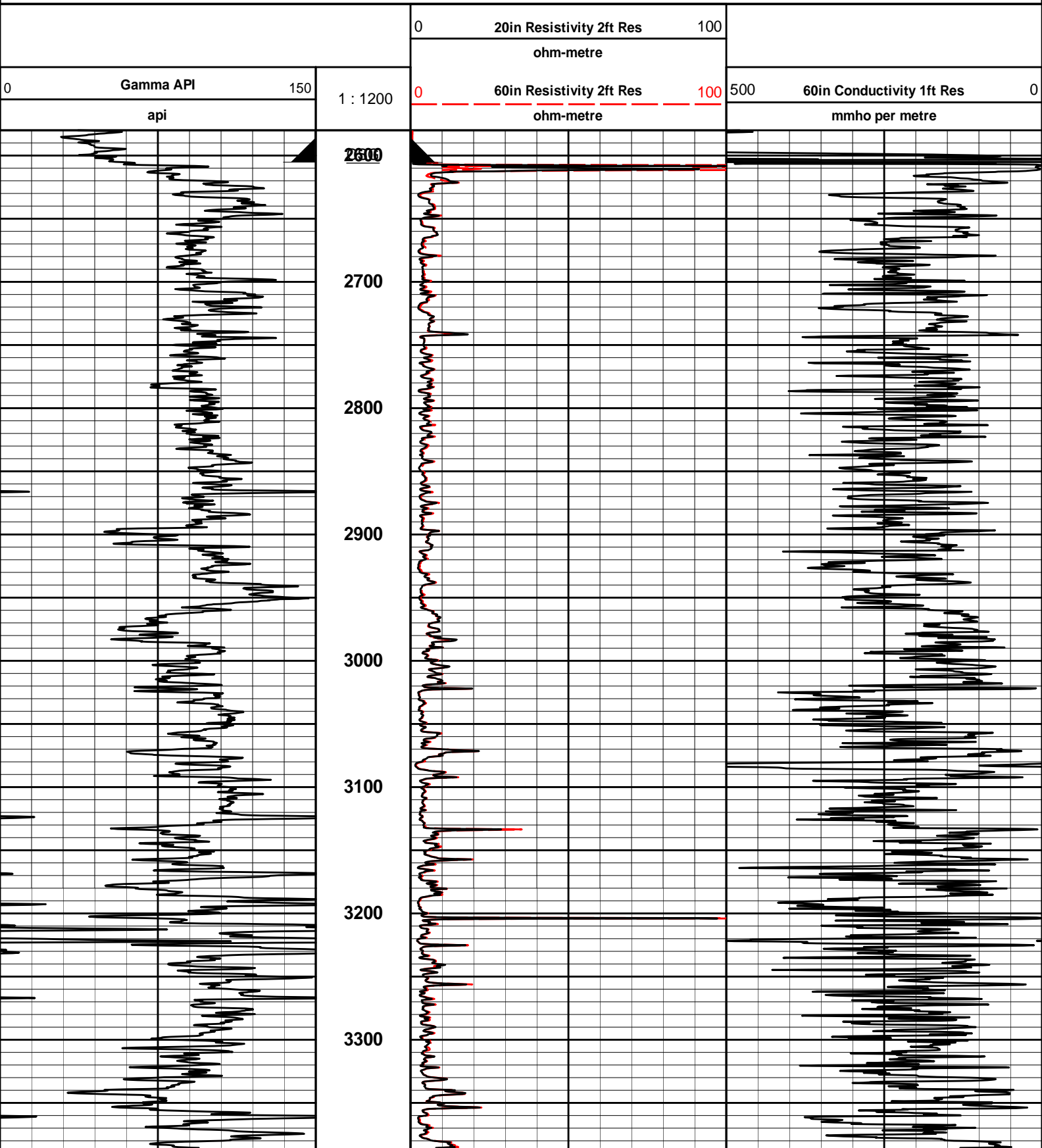
## LOGGING DATA

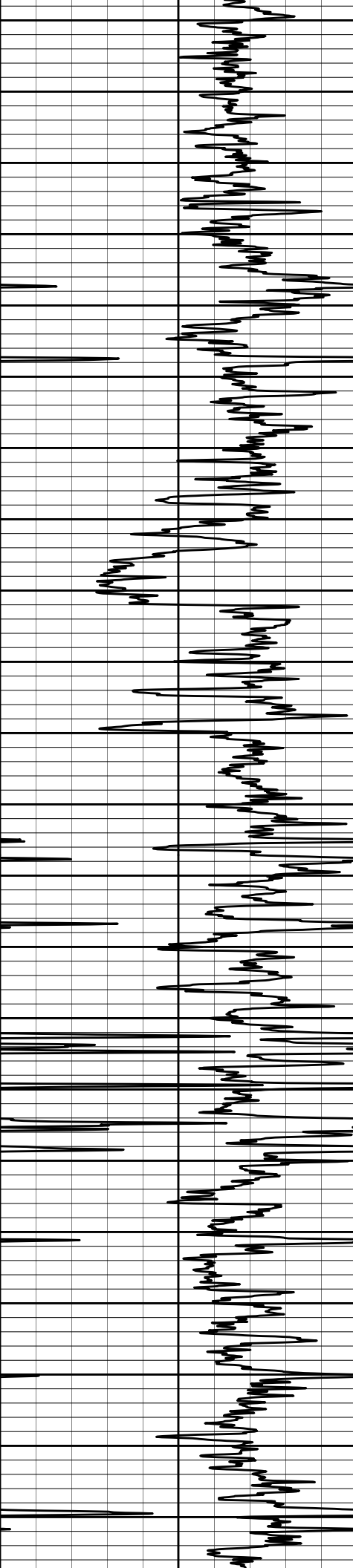
Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	8.750	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	9.700	ppg
	SHARED	WAGT	Weighting Agent	Natural	
	SHARED	BSAL	Borehole salinity	550.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	2.000	ohmm
	SHARED	TRM	Temperature of Mud	75.0	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	4.500	in
	SHARED	CSTR	Compressive Strength	1000.00	psia
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	9739.00	ft
	SHARED	BHT	Bottom Hole Temperature	250.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	NONE	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	S4TG	
	SHARED	TEMM	CBM Temperature Master Tool	S4TG	
	SHARED	SOCI	Source of Casing Information	Parameters	
	SHARED	MSAL	Water-base mud filtrate salinity	0.00	ppm
	Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
	Rwa /	FCAL	Formation Casing Log	Parameters	

Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
Rwa / CrossPlot	AFAC	Archie A factor	0.6200	
Rwa / CrossPlot	MFAC	Archie M factor	2.1500	
Rwa / CrossPlot	RMFR	Rmf Reference	0.10	ohmm
Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohmm
Rwa / CrossPlot	ADP	Use Air Porosity to calculate CrossplotPhi	No	
Rwa / CrossPlot	BHSM	Borehole Size Source Tool	SSDL	
Rwa / CrossPlot	ROIN	Input for RO Calculation	Rwa	
S4TG	GROK	Process Gamma Ray?	Yes	
S4TG	GEOK	Process Gamma Ray EVR?	No	
S4TG	TPOS	Tool Position for Gamma Ray Tools.	Eccentered	
S4TG	BHSM	Borehole Size Source Tool	SSDL	
SDSN	DNOK	Process DSN?	Yes	
SDSN	DEOK	Process DSN EVR?	No	
SDSN	NLIT	Neutron Lithology	Sandstone	
SDSN	DNSO	DSNTool Standoff	0.000	in
SDSN	DNTT	Temperature Correction Type	None	
SDSN	DPRS	DSN Pressure Correction Type	None	
SDSN	SHCO	View More Correction Options	No	
SDSN	UTVD	Use TVD for Gradient Corrections?	No	
SDSN	LHWT	Logging Horizontal Water Tank?	No	
SDSN	USND	Use Var StandOff?	No	
SDSN	BHSM	Borehole Size Source Tool	SSDL	
SSDL	CLOK	Process Caliper Outputs?	Yes	
SSDL Pad	DNOK	Process Density?	Yes	
SSDL Pad	DNOK	Process Density EVR?	No	
SSDL Pad	CB	Logging Calibration Blocks?	No	
SSDL Pad	SPVT	SDLT Pad Temperature Valid?	Yes	
SSDL Pad	DTWN	Disable temperature warning	No	
SSDL Pad	MLPE	Mute Large Pe's? (Recommended Yes-Liquid, No-Air)	Yes	
SSDL Pad	DMA	Formation Density Matrix	2.650	g/cc
SSDL Pad	DFL	Formation Density Fluid	1.000	g/cc
SSDL Pad	BHSM	Borehole Size Source Tool	SSDL	
SACRT Sonde	RTOK	Process ACRT?	Yes	
SACRT Sonde	MNSO	Minimum Tool Standoff	0.25	in
SACRT Sonde	TCS1	Temperature Correction Source	FP Lwr & FP Upr	
SACRT Sonde	TPOS	Tool Position	Eccentered	
SACRT Sonde	RMOP	Rmud Source	Mud Cell	
SACRT Sonde	RMIN	Minimum Resistivity for MAP	0.20	ohmm
SACRT Sonde	RMAX	Maximum Resistivity for MAP	200.00	ohmm
SACRT Sonde	THQY	Threshold Quality	0.50	
SACRT Sonde	MRFX	Fixed mud resistivity	2000	ohmm
SACRT Sonde	BHSM	Borehole Size Source Tool	SSDL	
SACRT Sonde	MBFL	Apply Corkscrew Effect?	No	

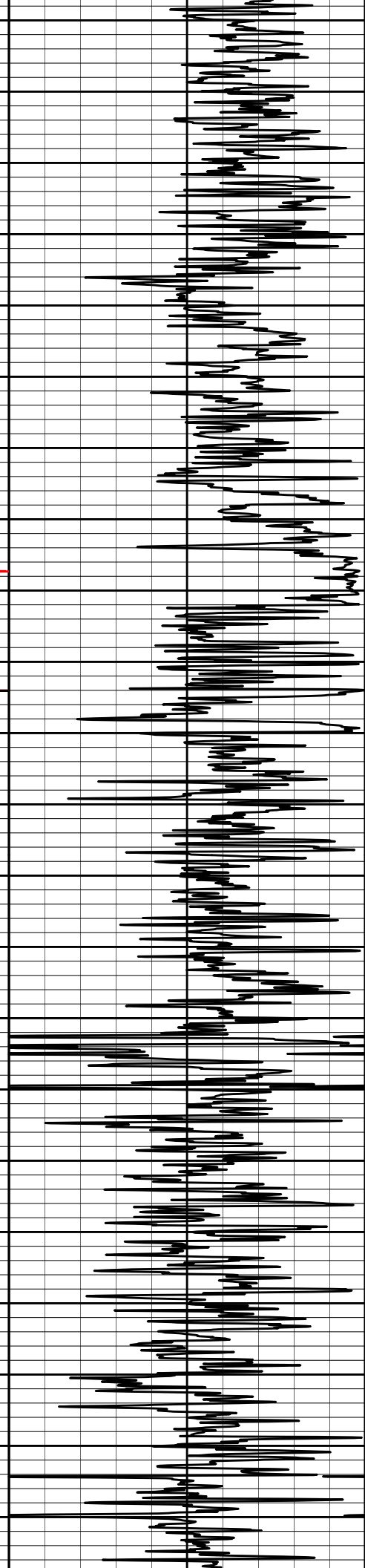
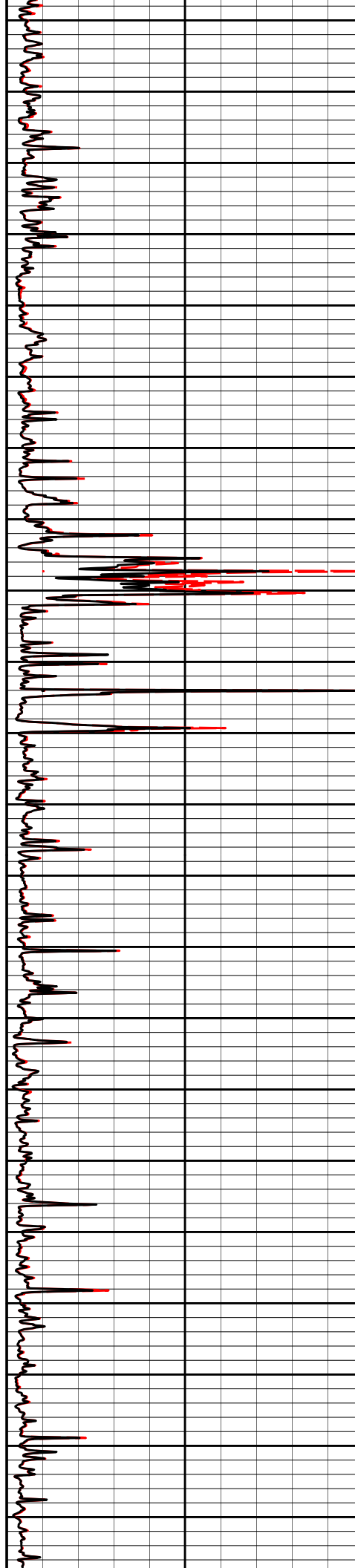
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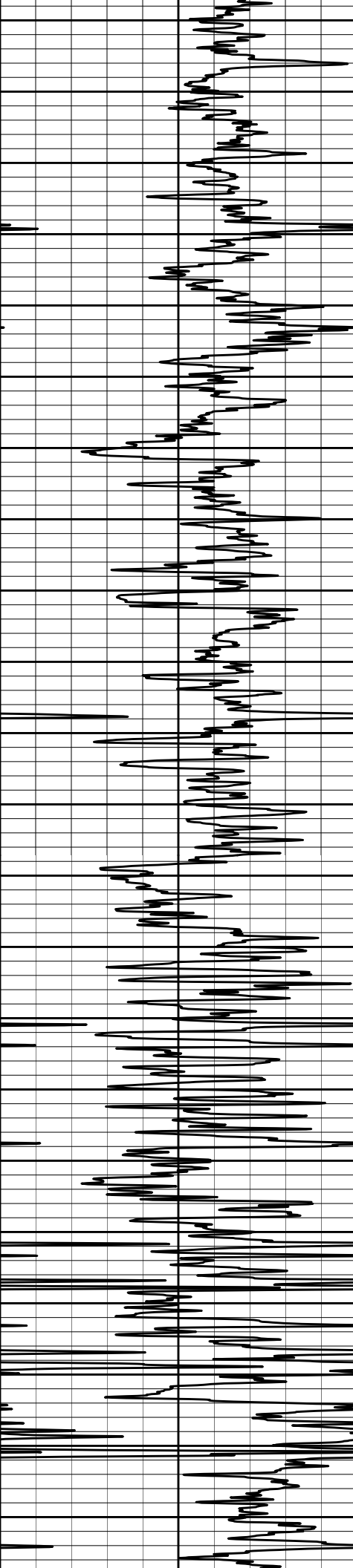
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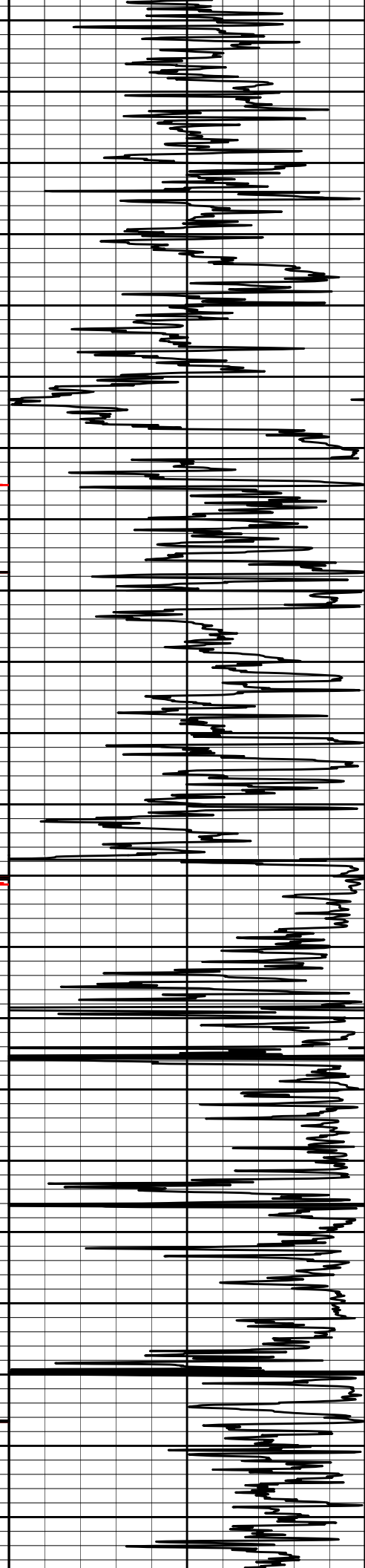
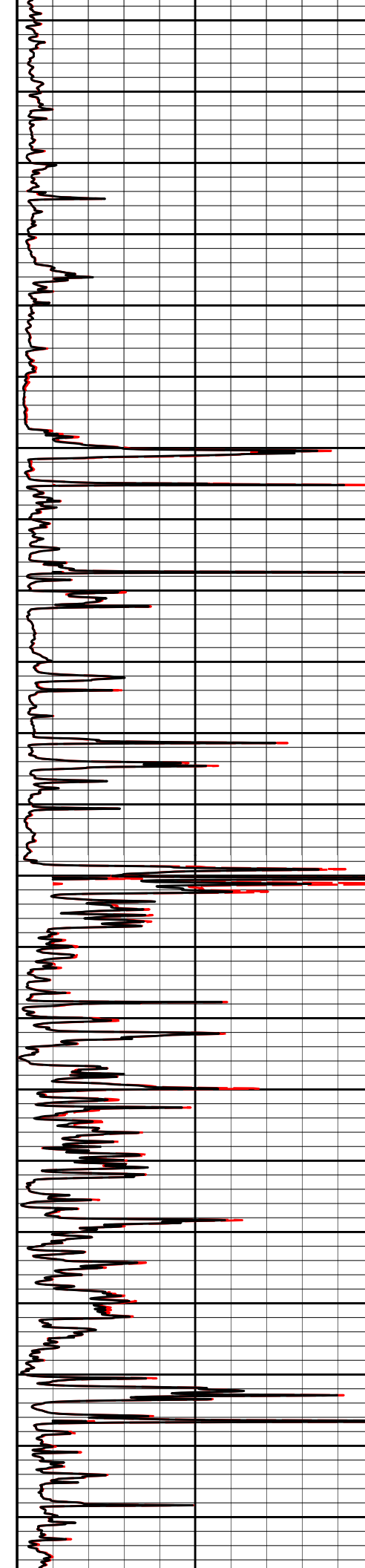


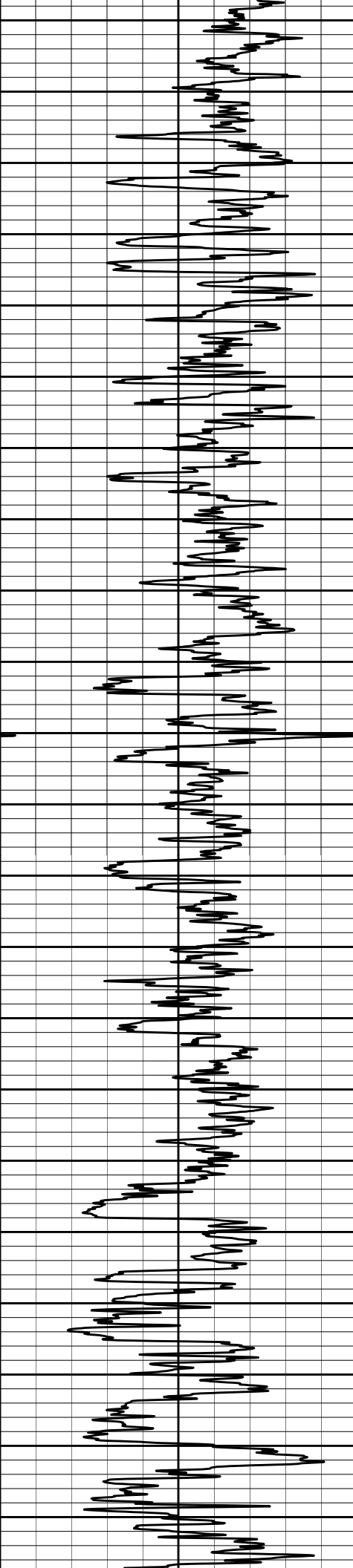
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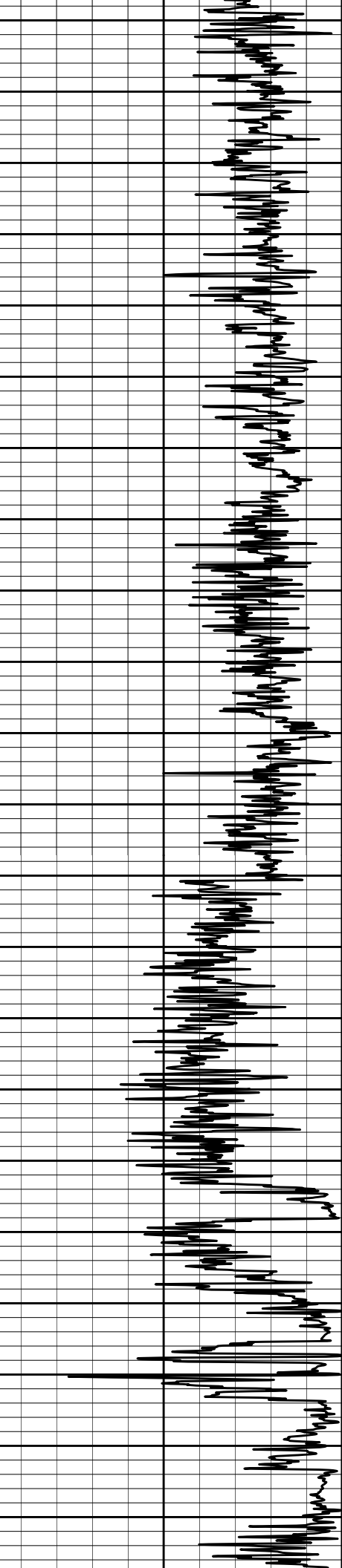
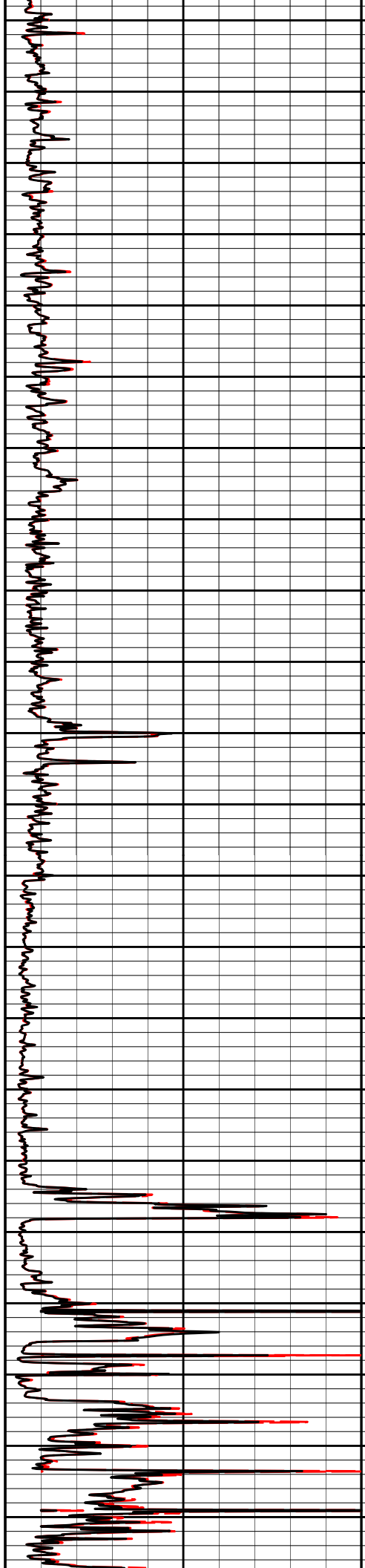


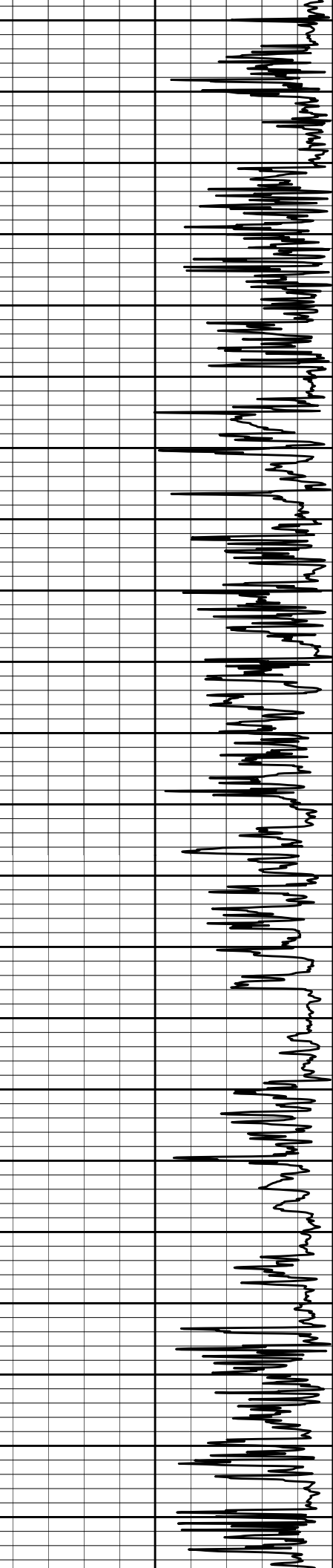
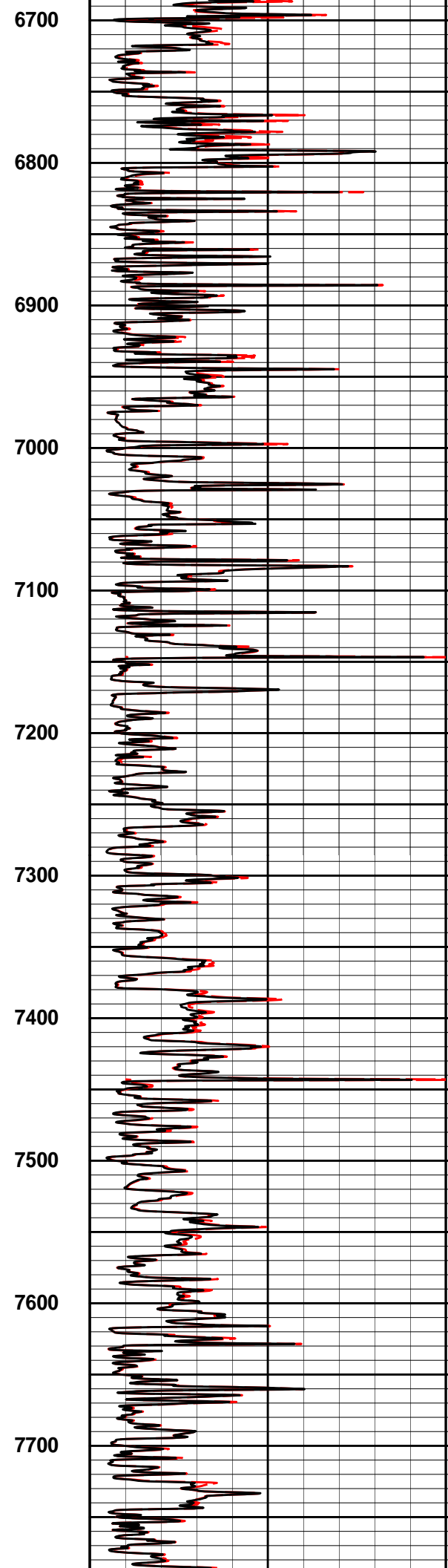
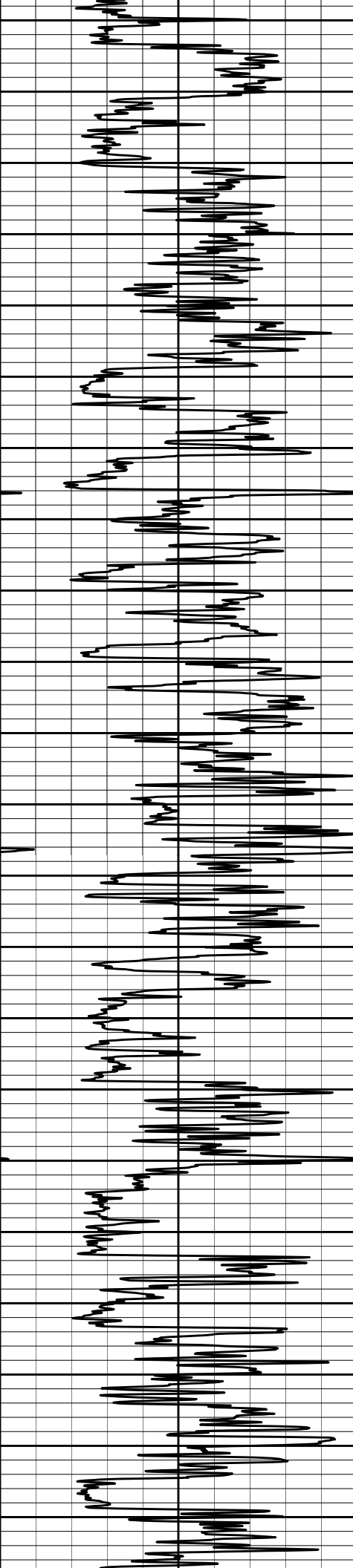
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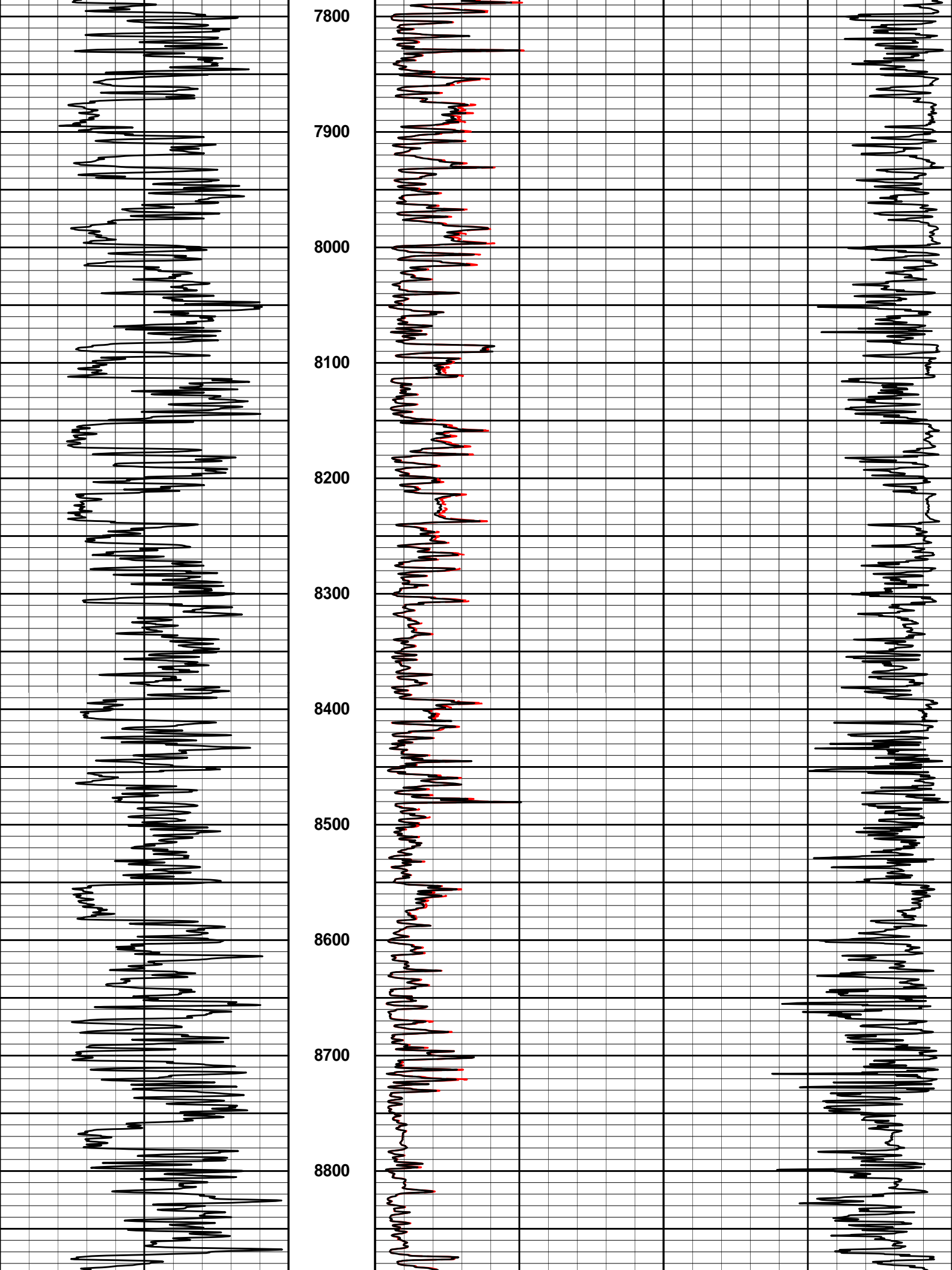


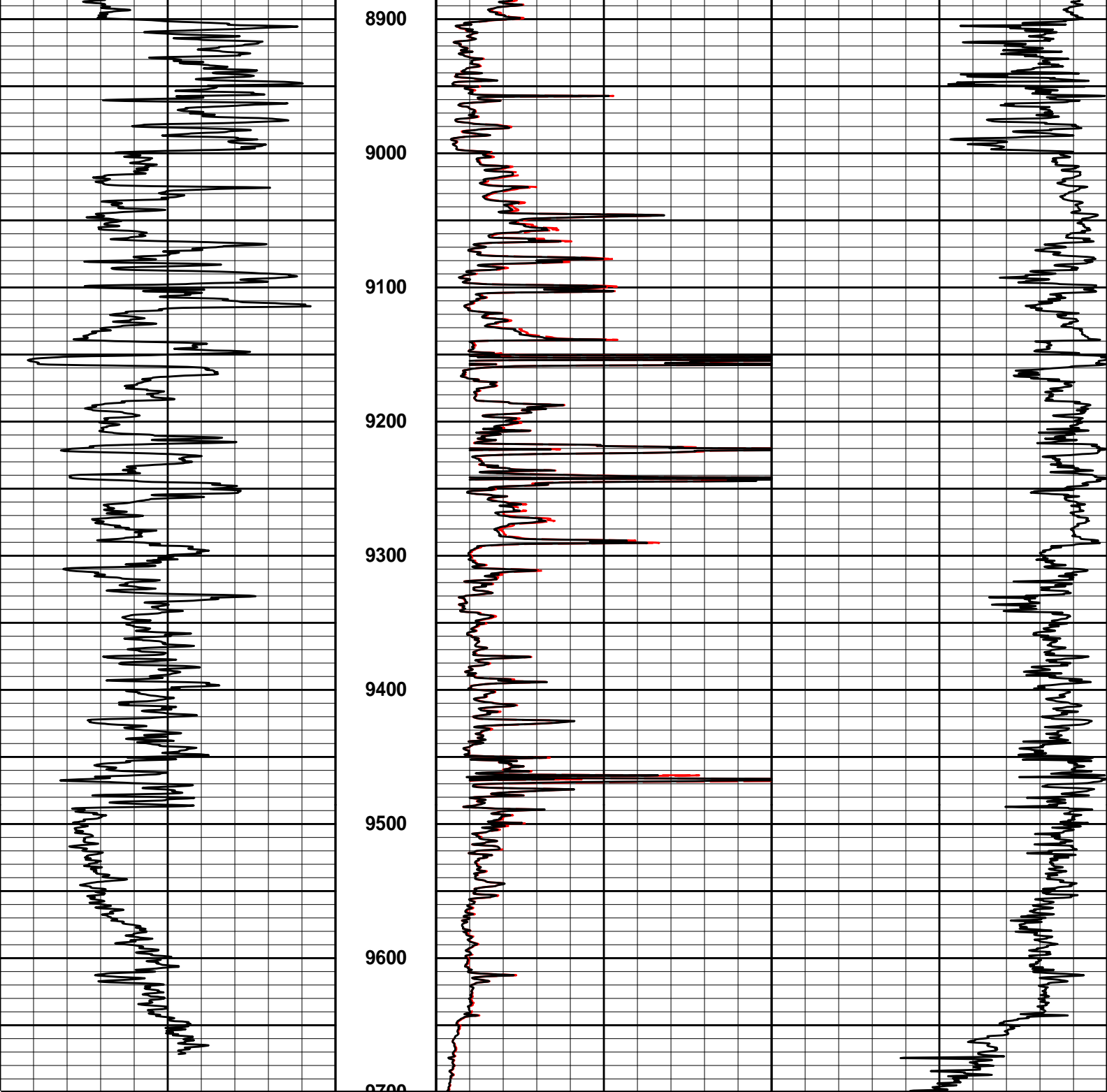
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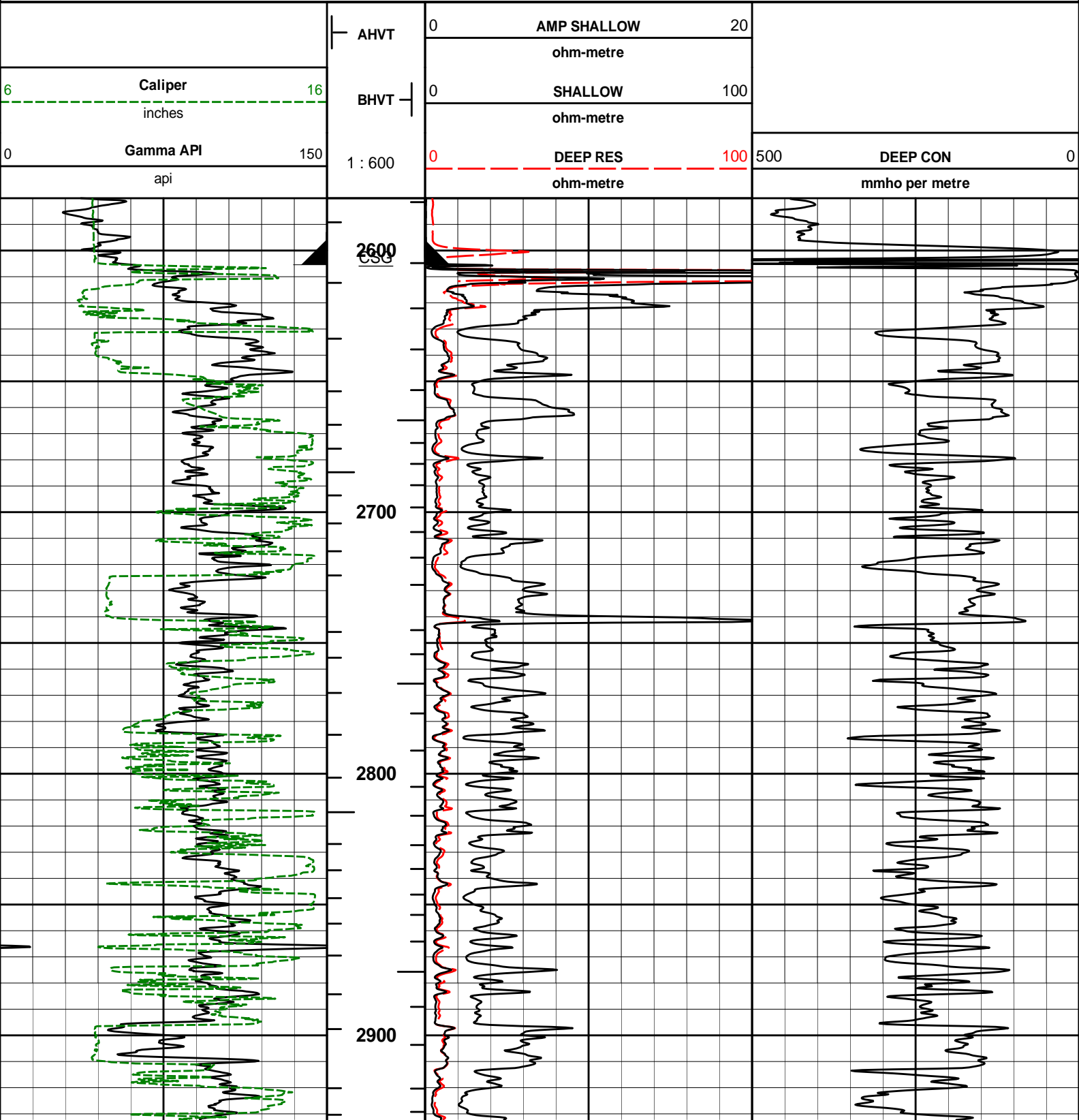
0Gamma API150		1 : 1200	060in Resistivity 2ft Res100		50060in Conductivity 1ft Res0	
api			ohm-metre		mmho per metre	
			020in Resistivity 2ft Res100			
			ohm-metre			

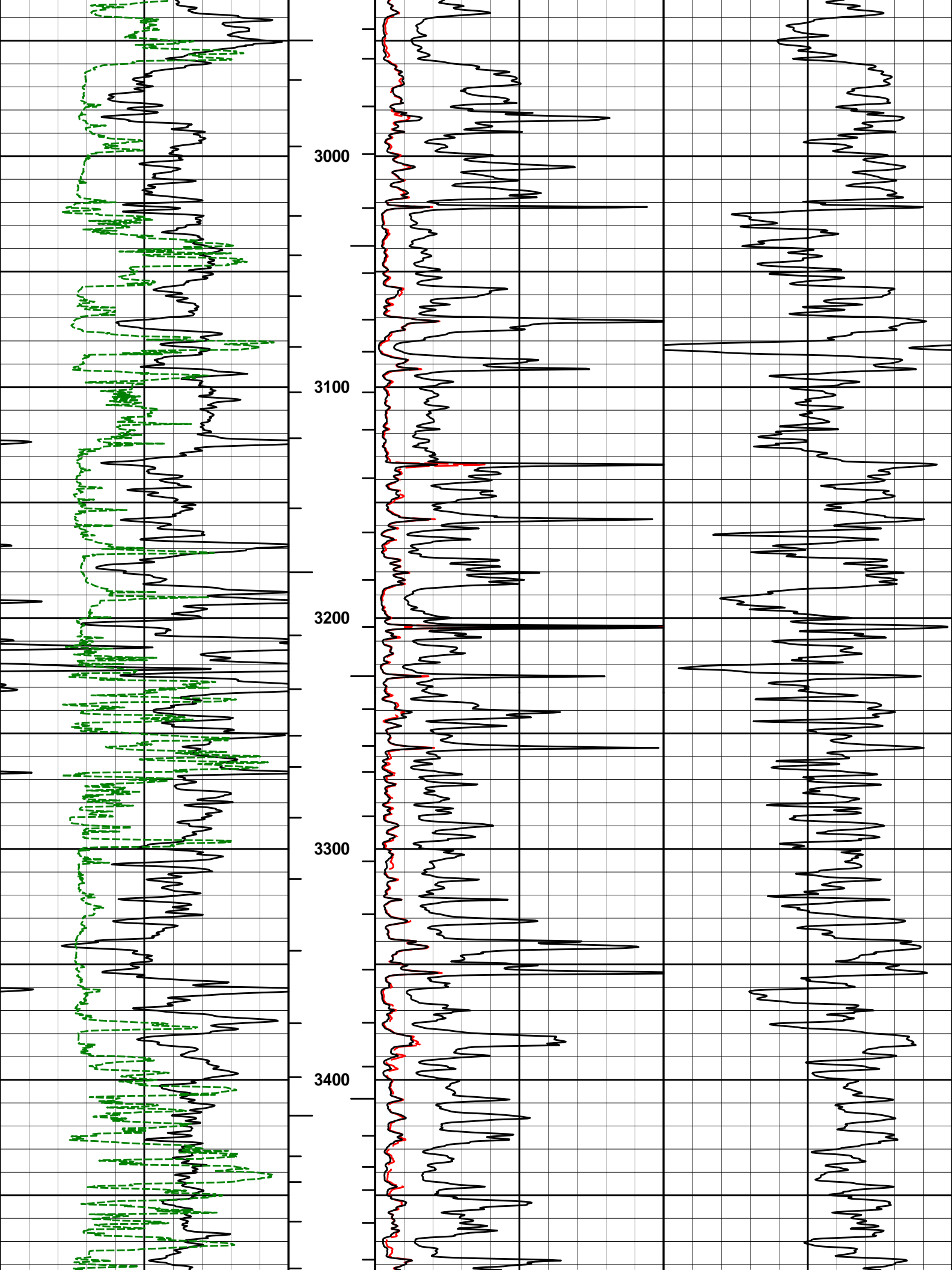
**HALLIBURTON**

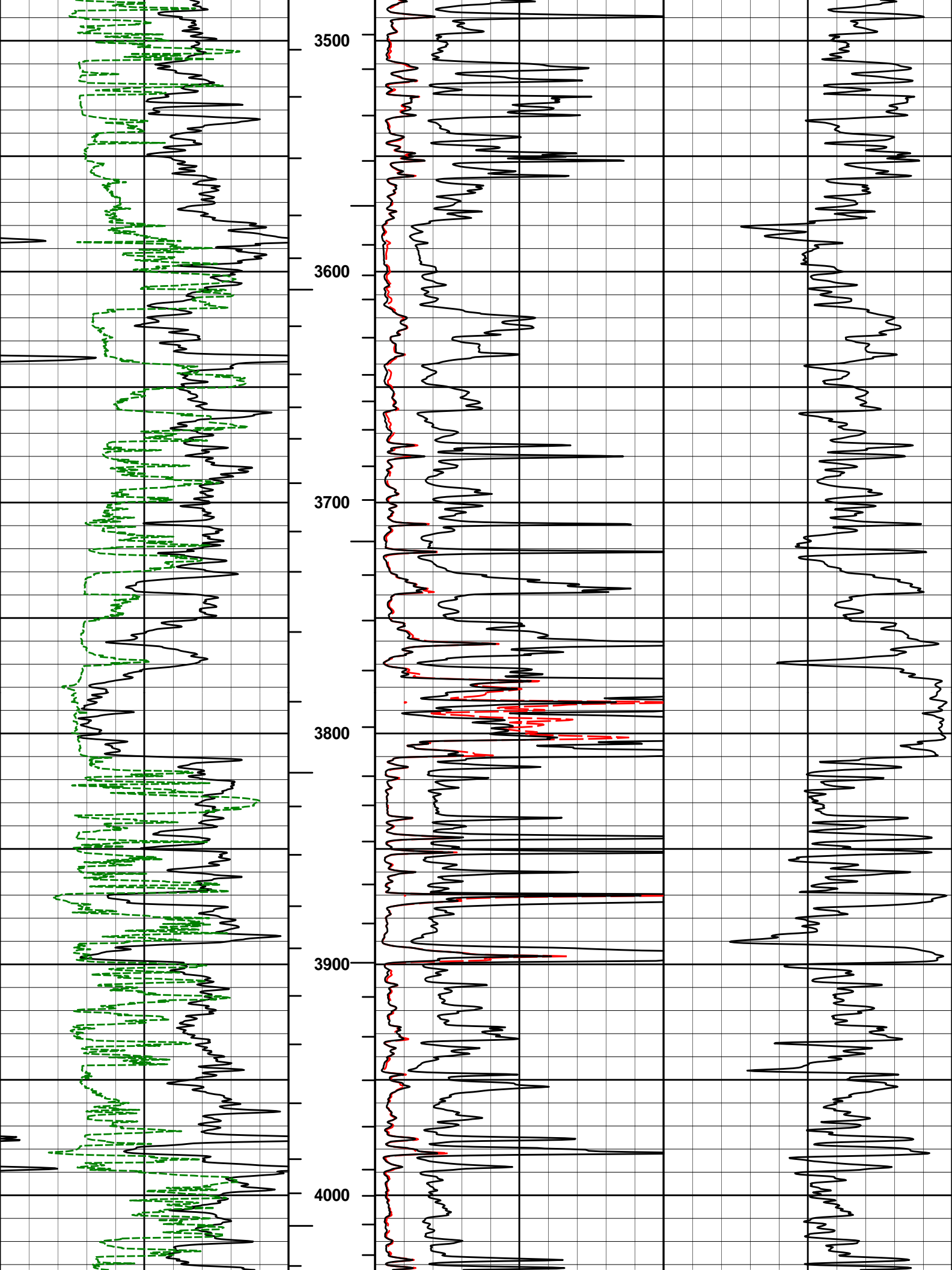
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Plot Range: 2580 ft to 9699.54 ft  
Data: L\_CC0697\_03\_13W\Well Based\MAIN\*  
Plot File: \\RES\LARAMIE\_1IN\_ACRT

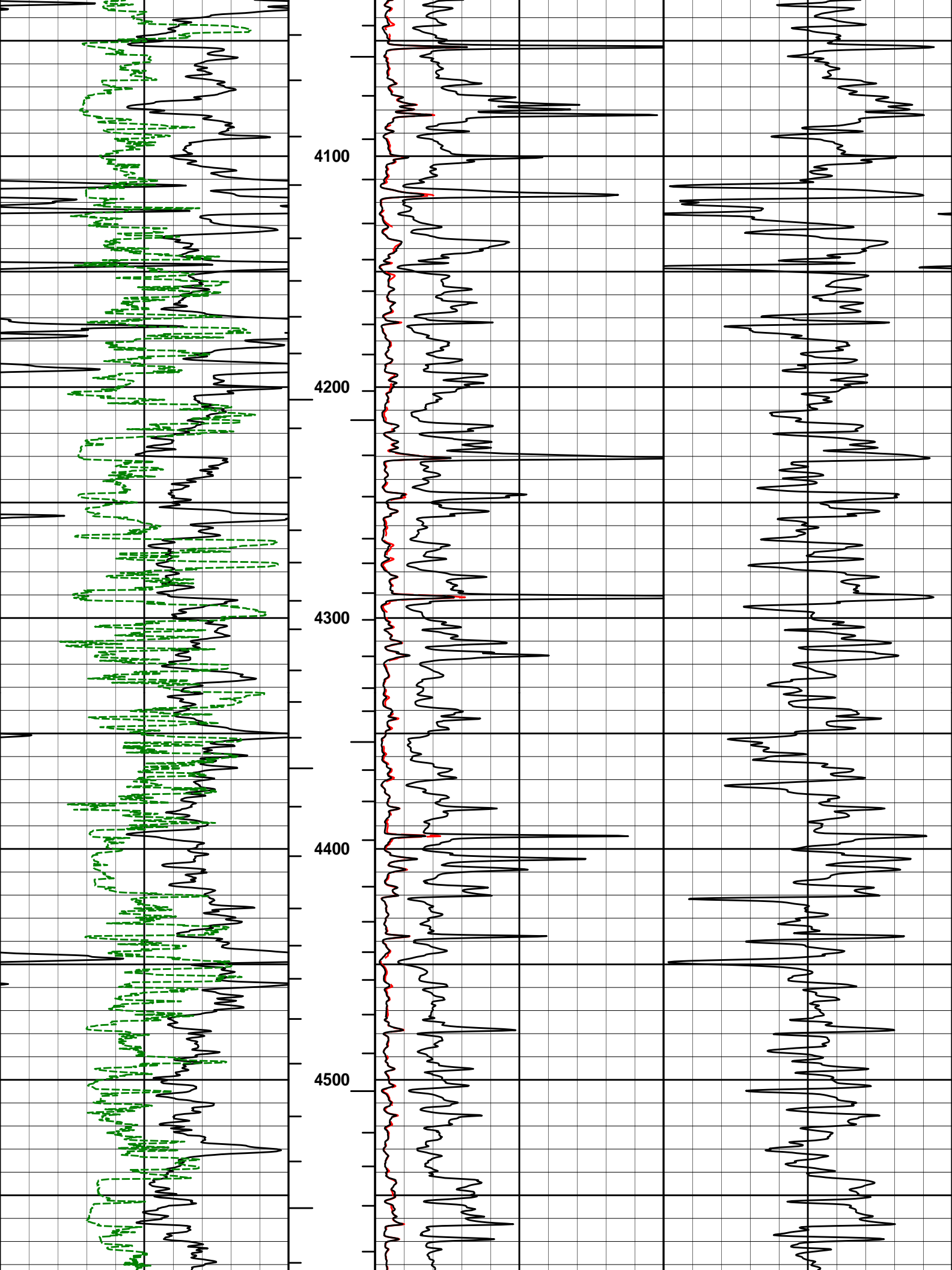
MAIN PASS 1" = 100'

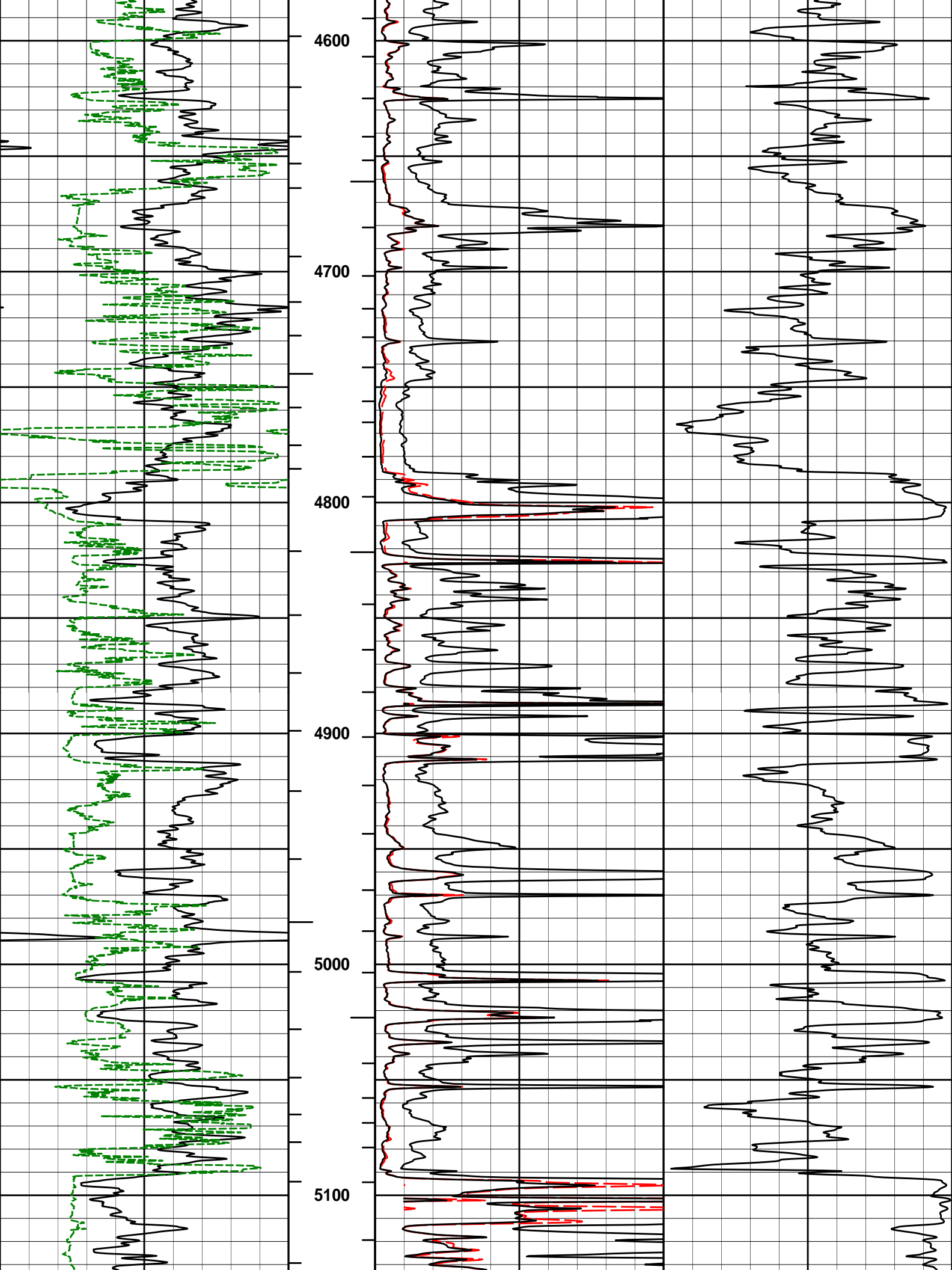
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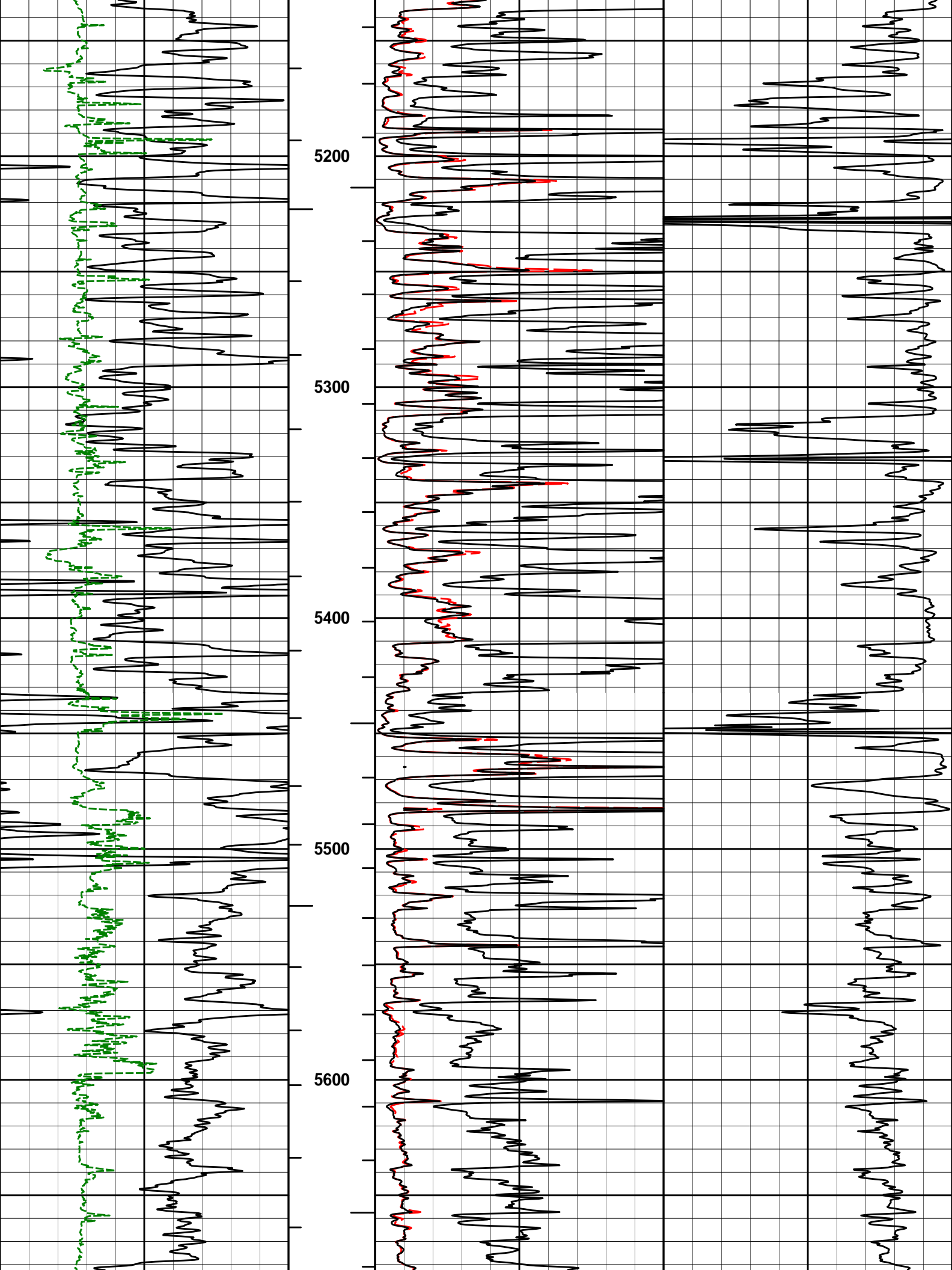




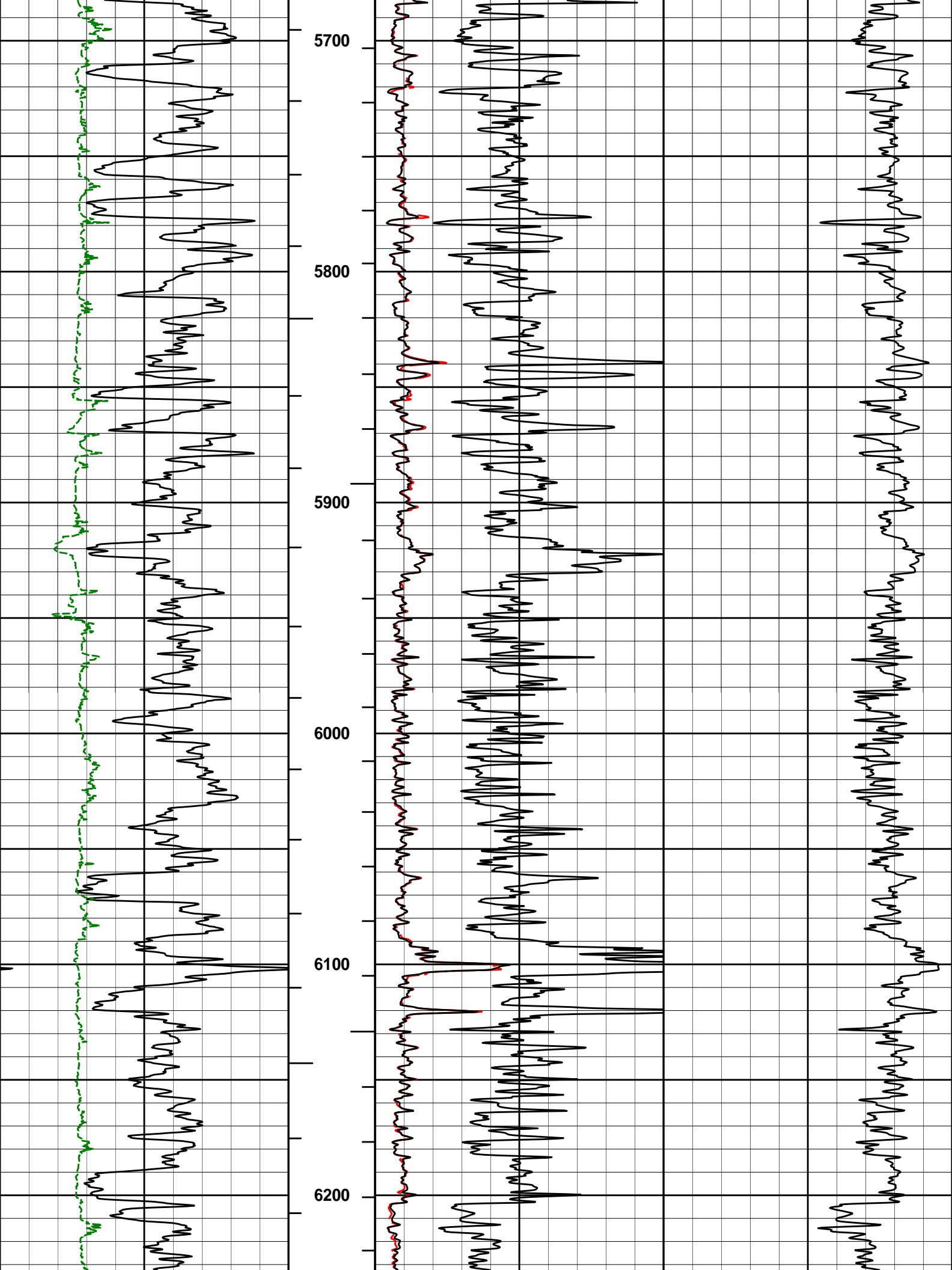


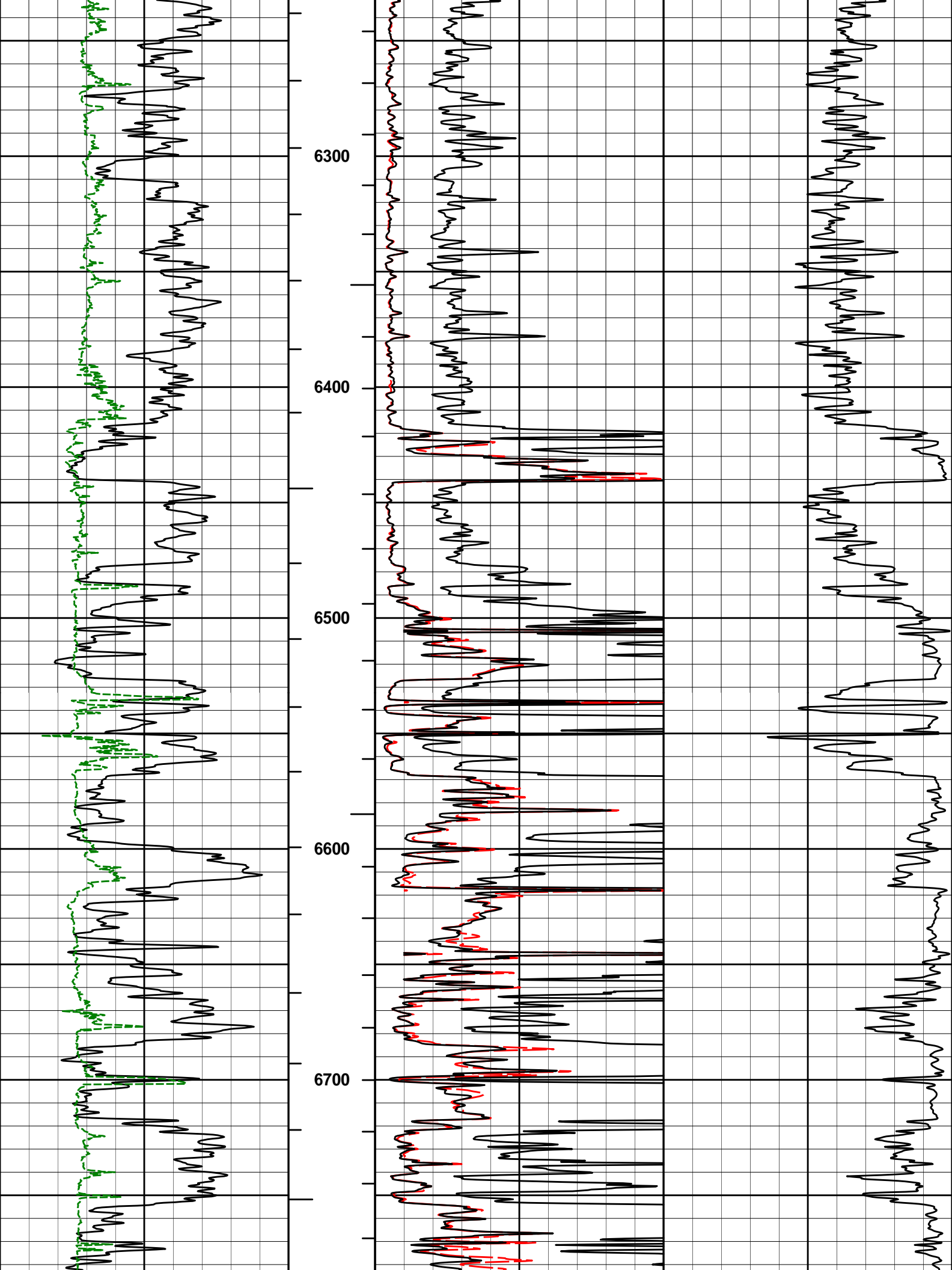


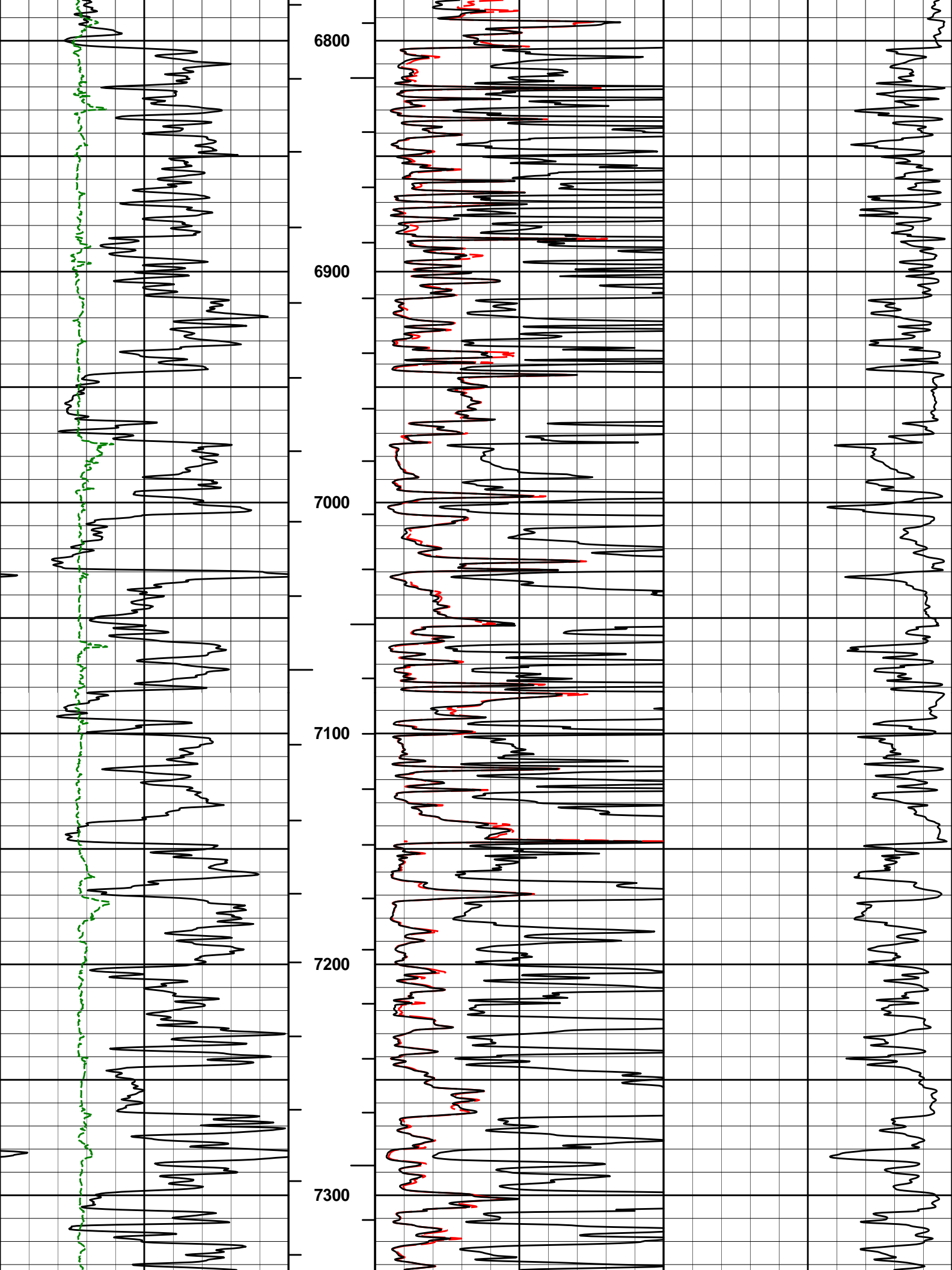


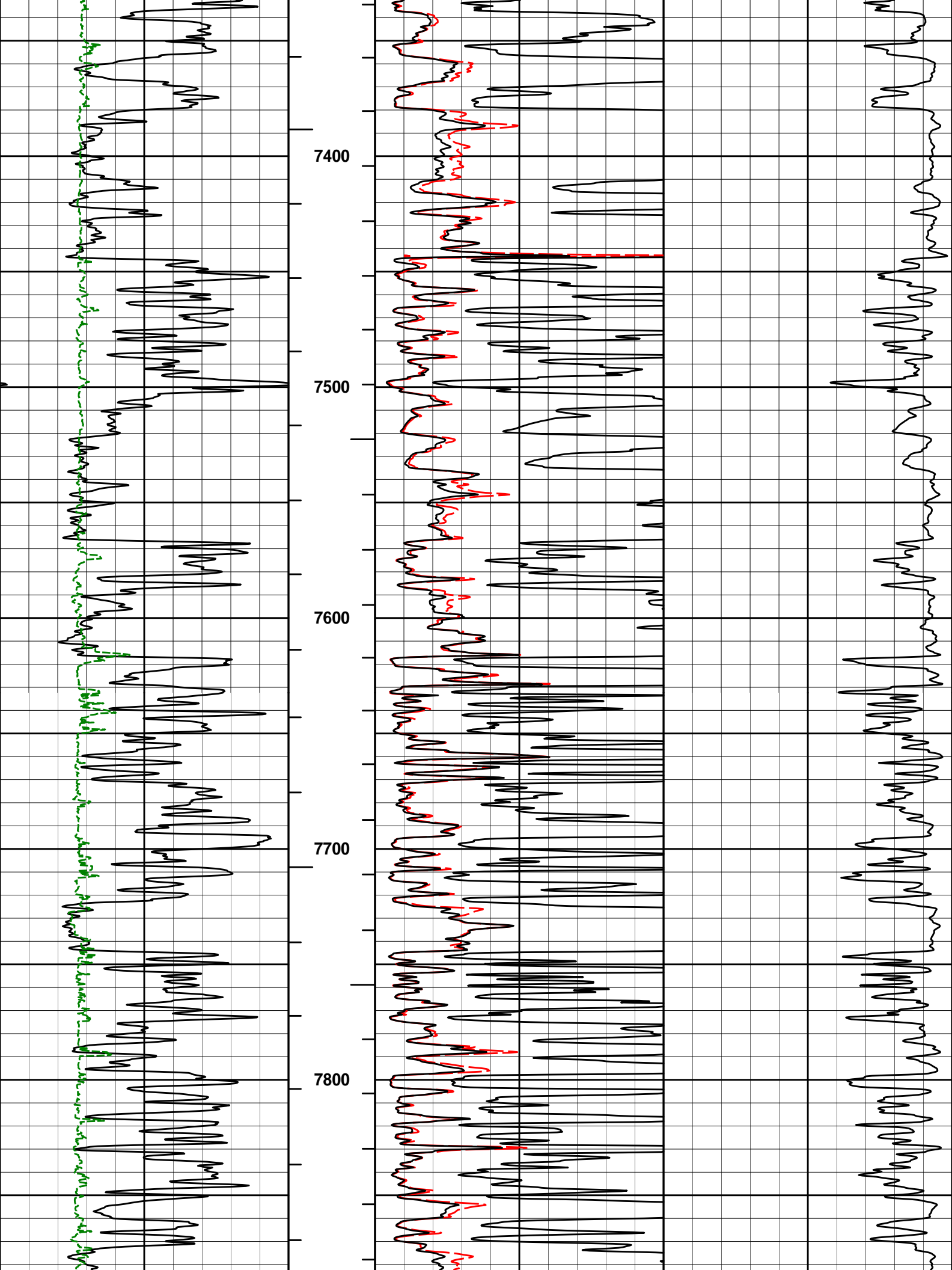


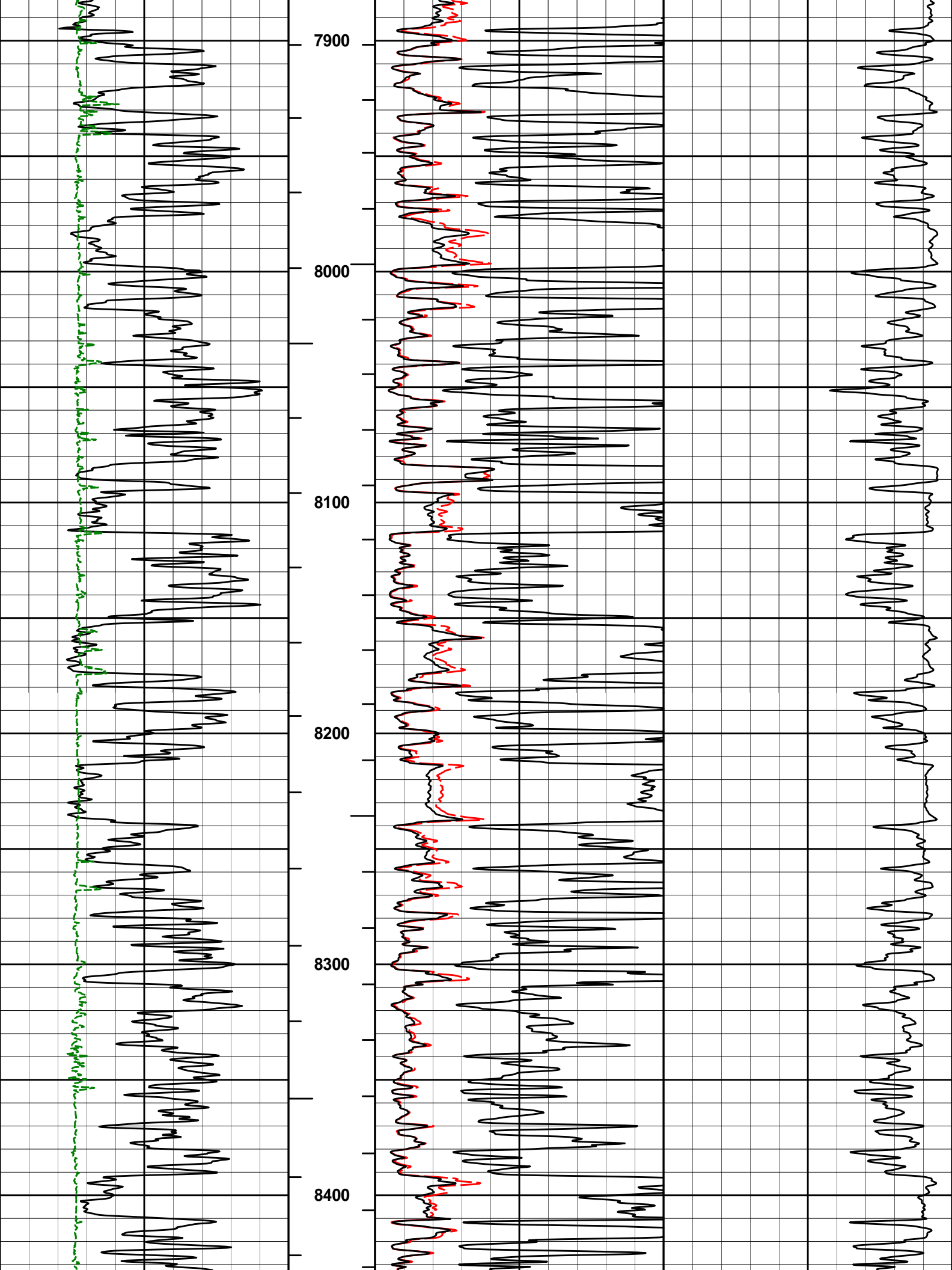


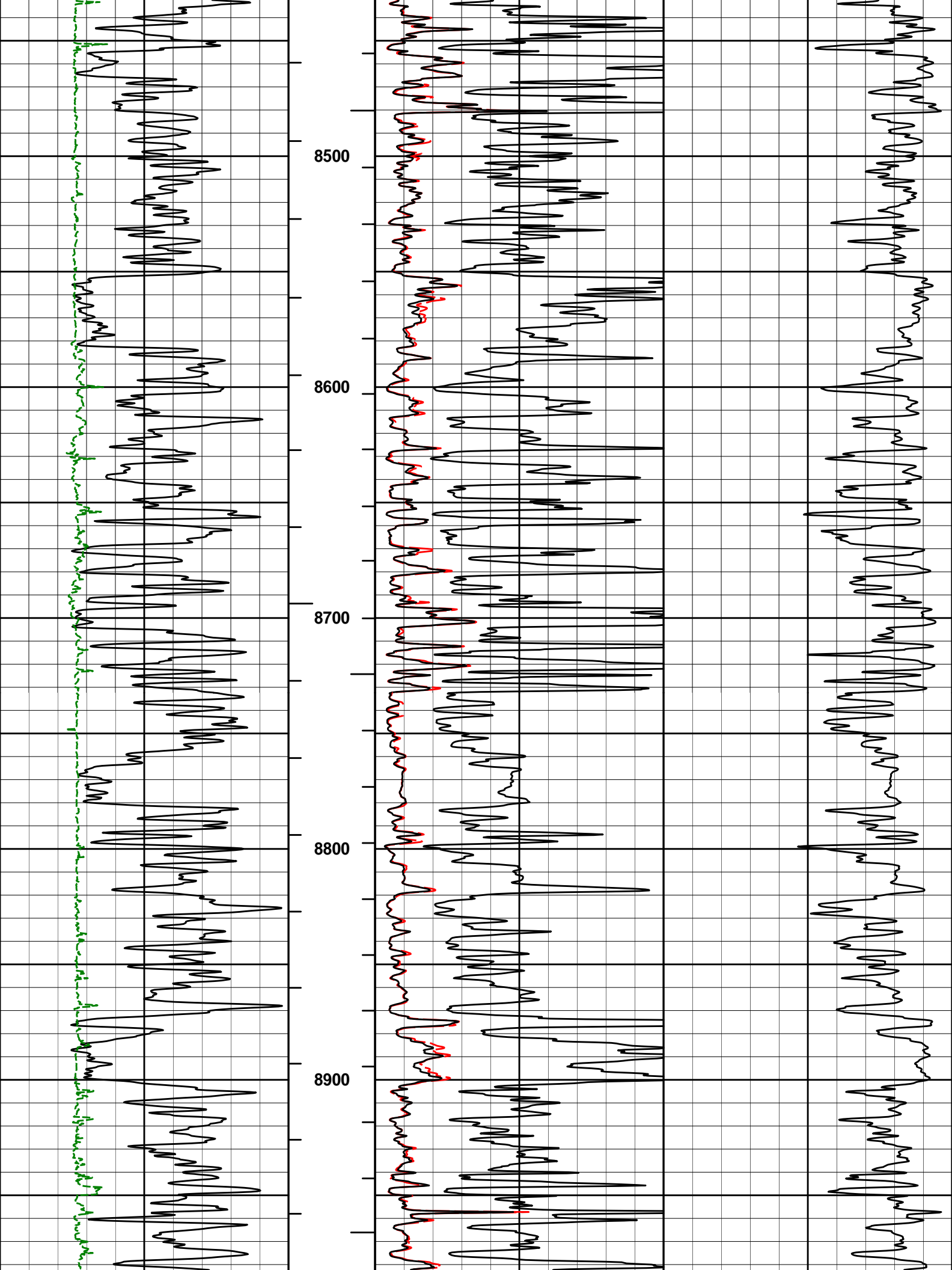


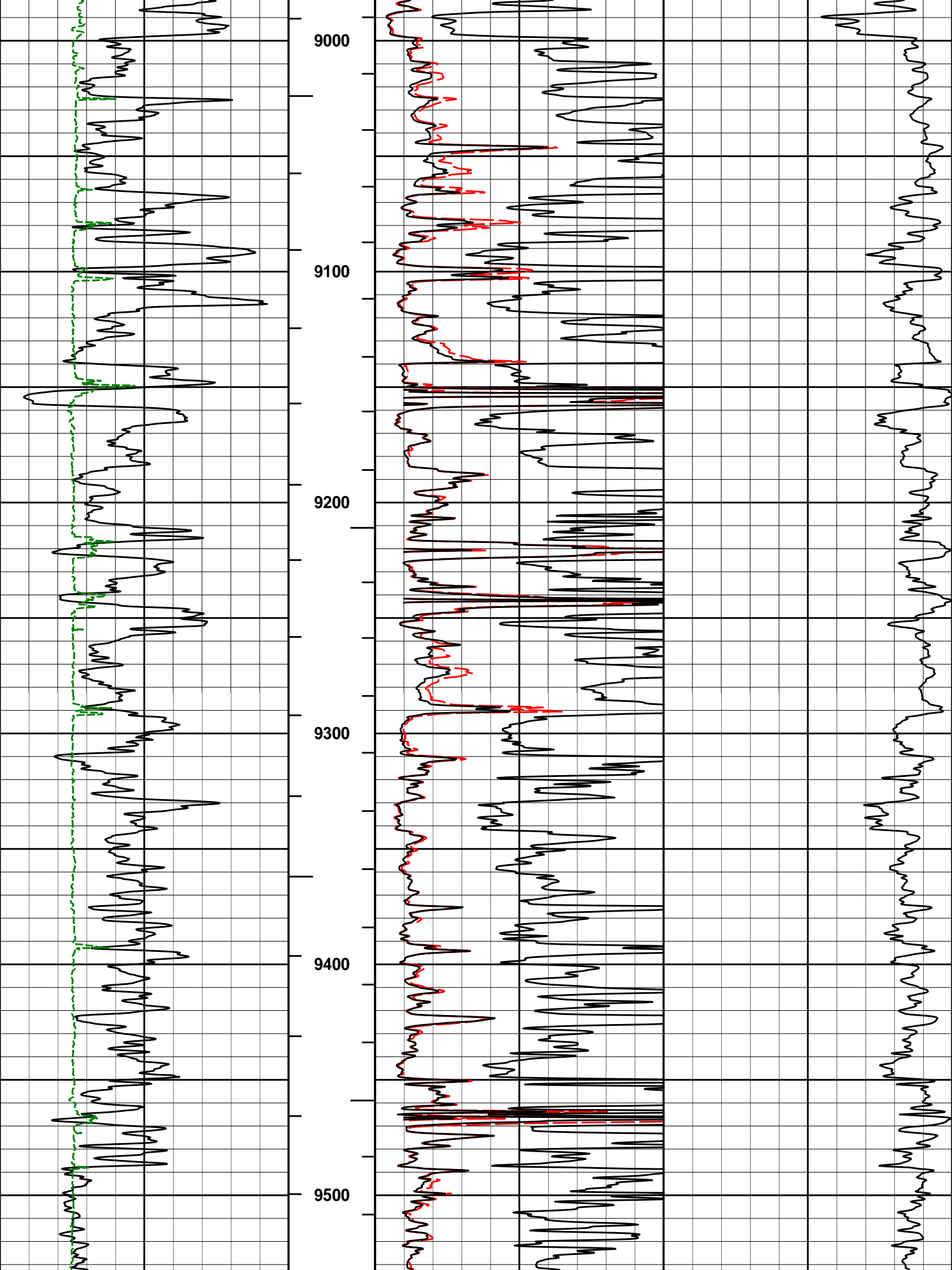


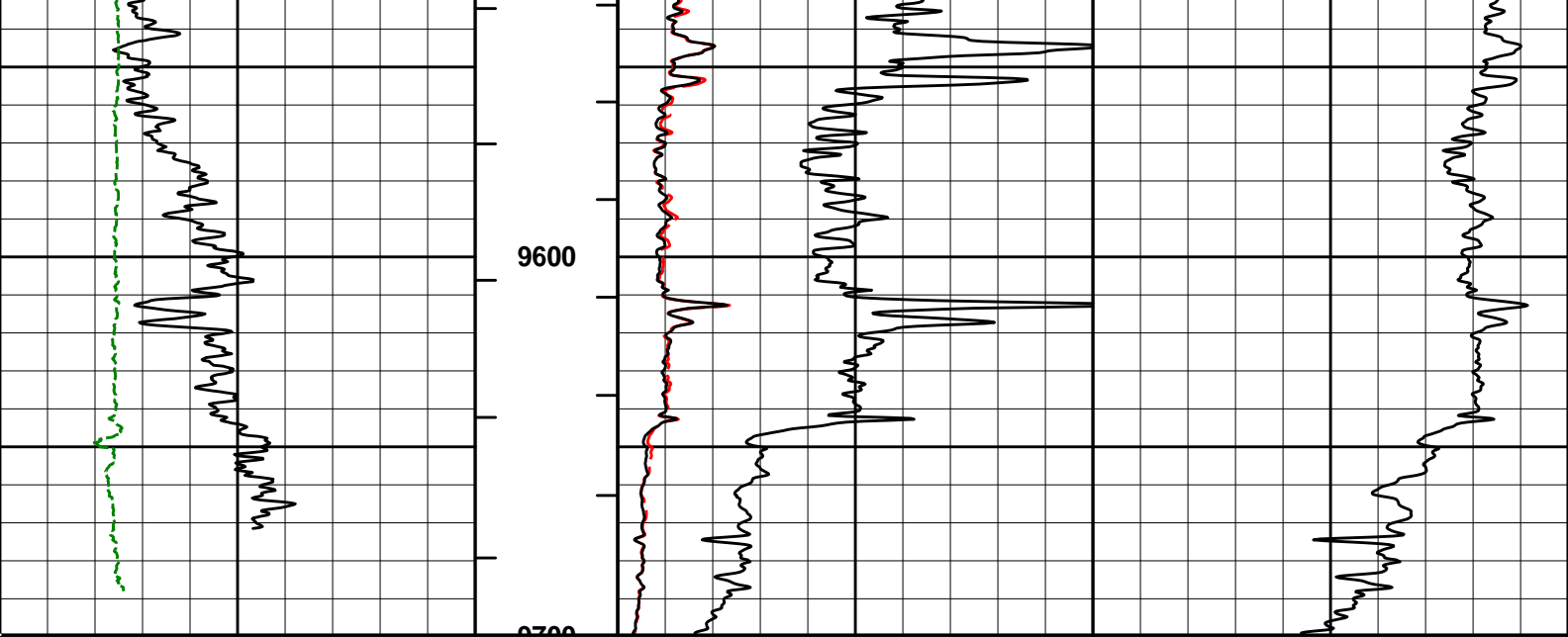












0	Gamma API	150	1 : 600	0	DEEP RES	100	500	DEEP CON	0
	api				ohm-metre			mmho per metre	
6	Caliper	16	BHVT	0	SHALLOW	100			
	inches				ohm-metre				
			AHVT	0	AMP SHALLOW	20			
					ohm-metre				

**HALLIBURTON**

Plot Time: 16-Jun-18 22:21:48  
Plot Range: 2580 ft to 9699.54 ft  
Data: L\_CC0697\_03\_13W\Well Based\MAIN\*  
Plot File: \\RES\LARAMIE\_2IN\_ACRT

MAIN PASS 2" = 100'

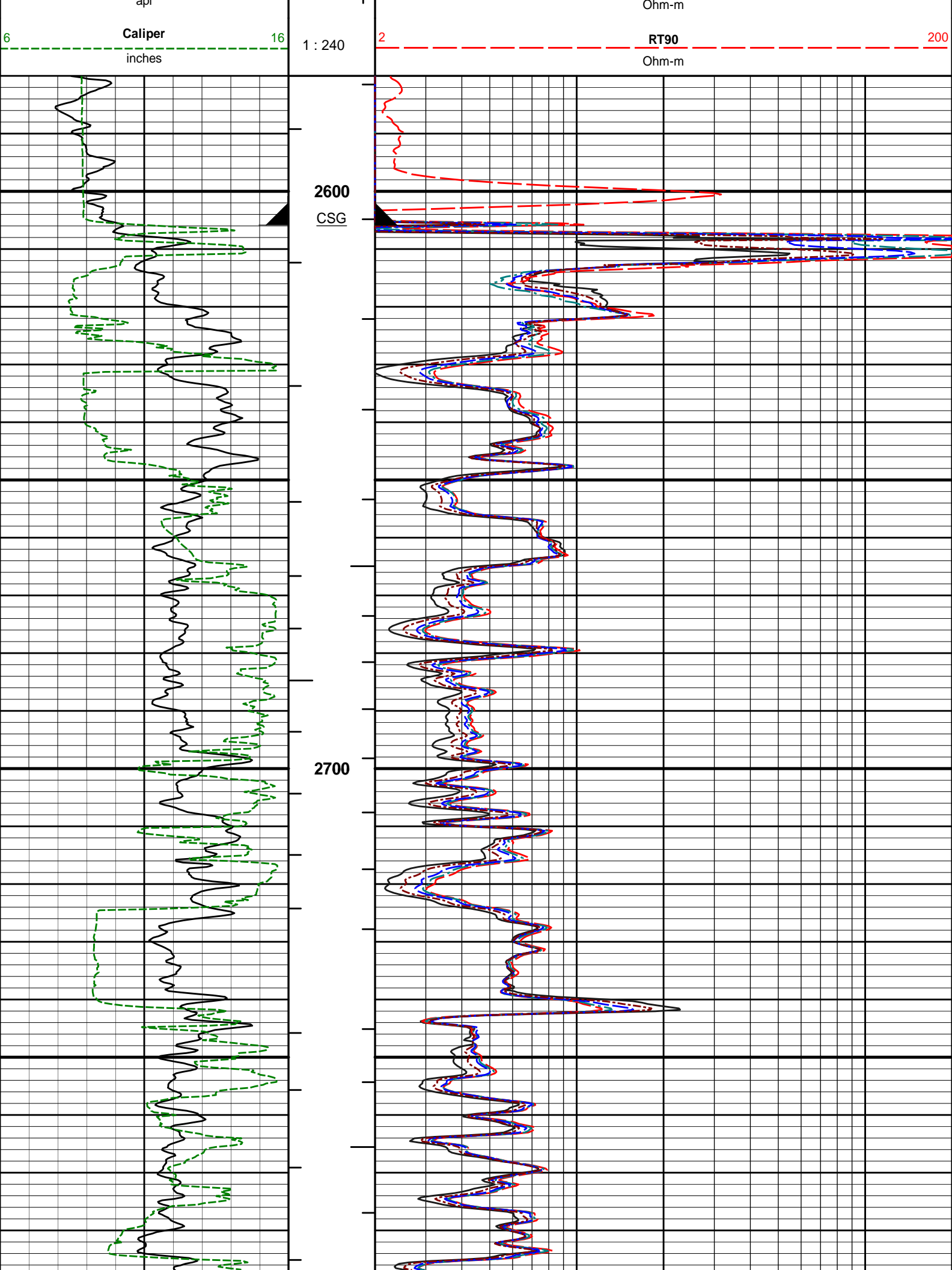
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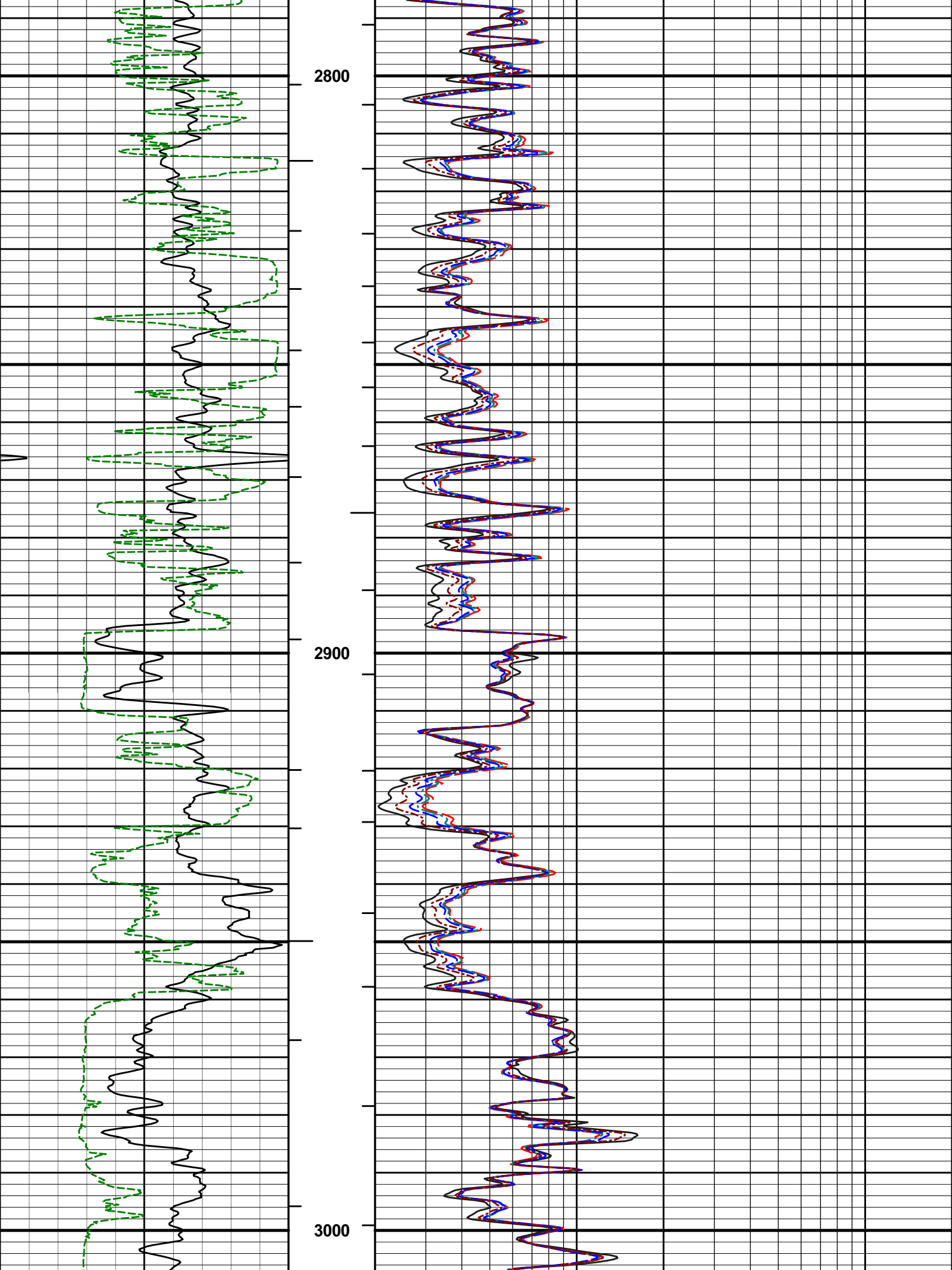
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Plot Range: 2580 ft to 9699.54 ft  
Data: L\_CC0697\_03\_13W\Well Based\MAIN  
Plot File: \\RES\LARAMIE\_5IN\_ACRT

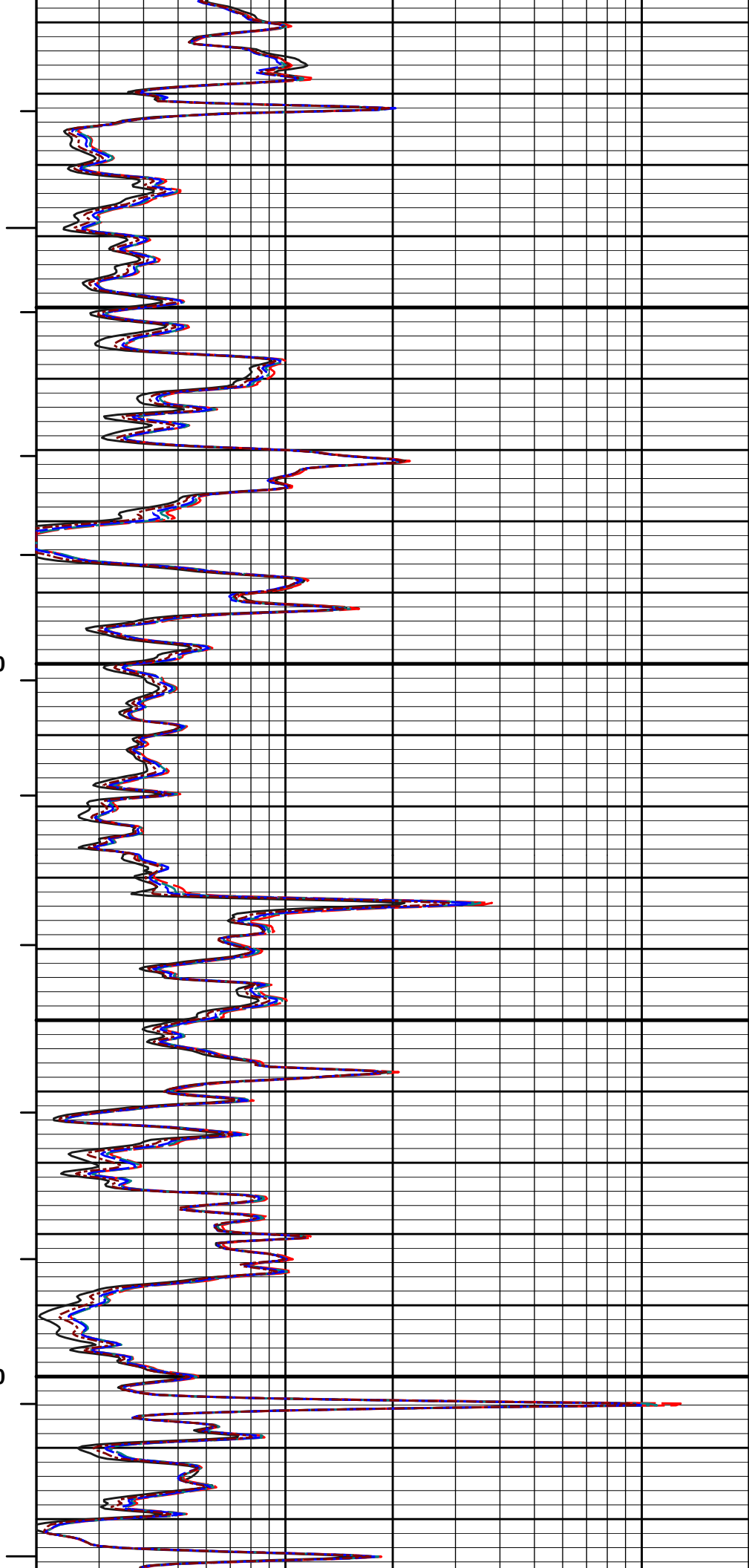
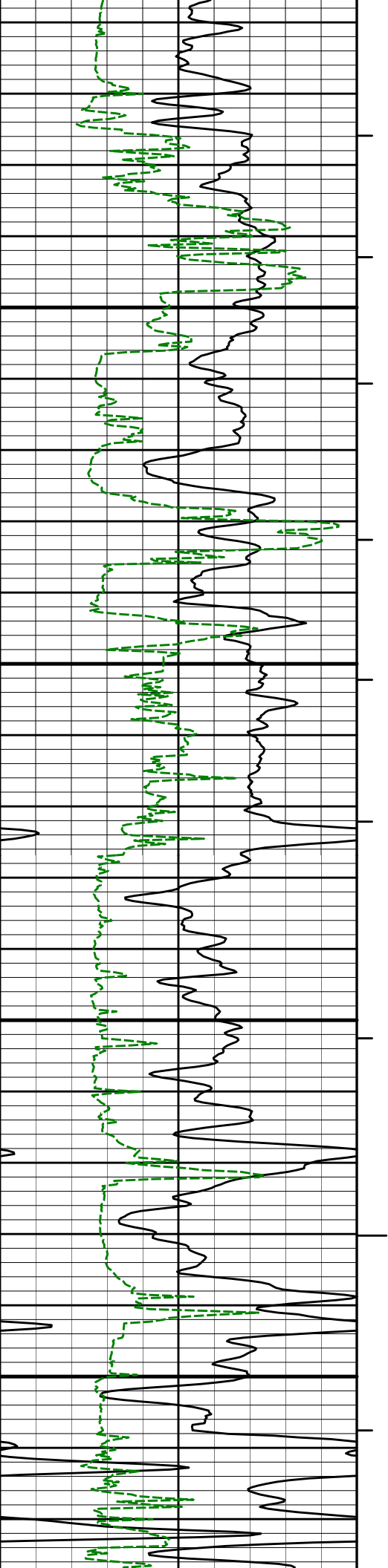
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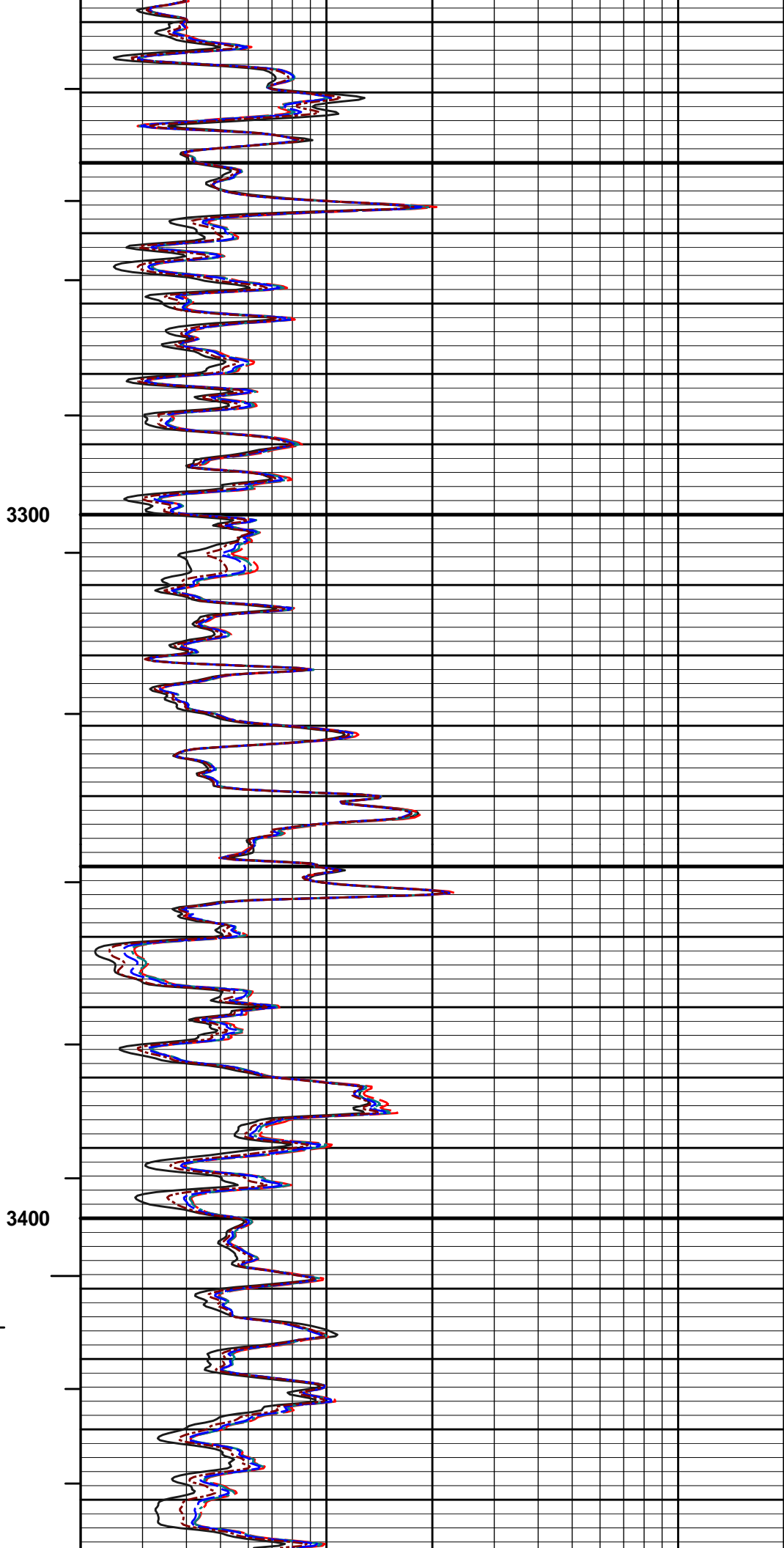
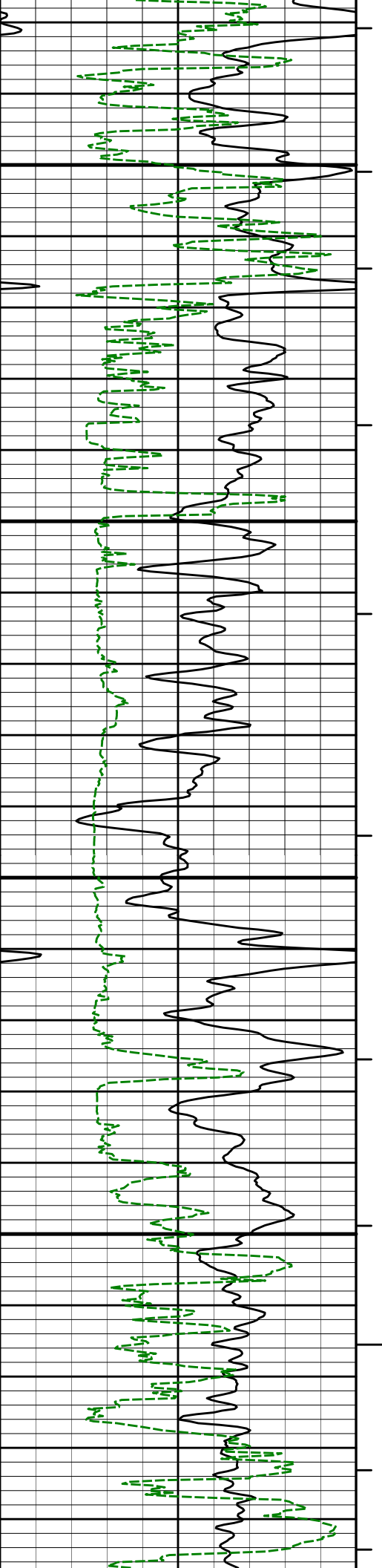
		2	RT10	200
			Ohm-m	
		2	RT20	200
			Ohm-m	
	AHVT	2	RT30	200
			Ohm-m	
0	Gamma API	150	RT60	200
	api			
		BHVT		

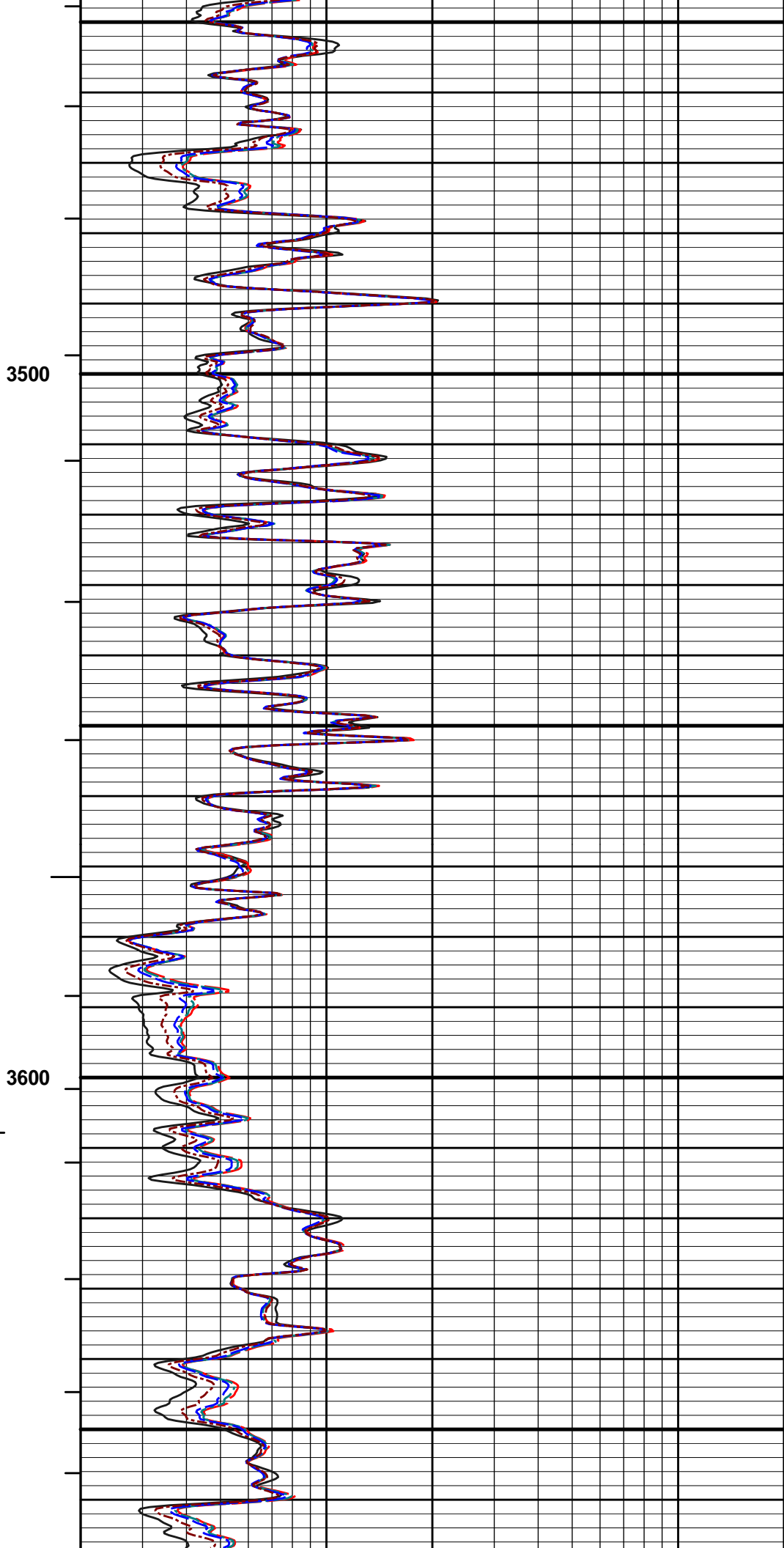
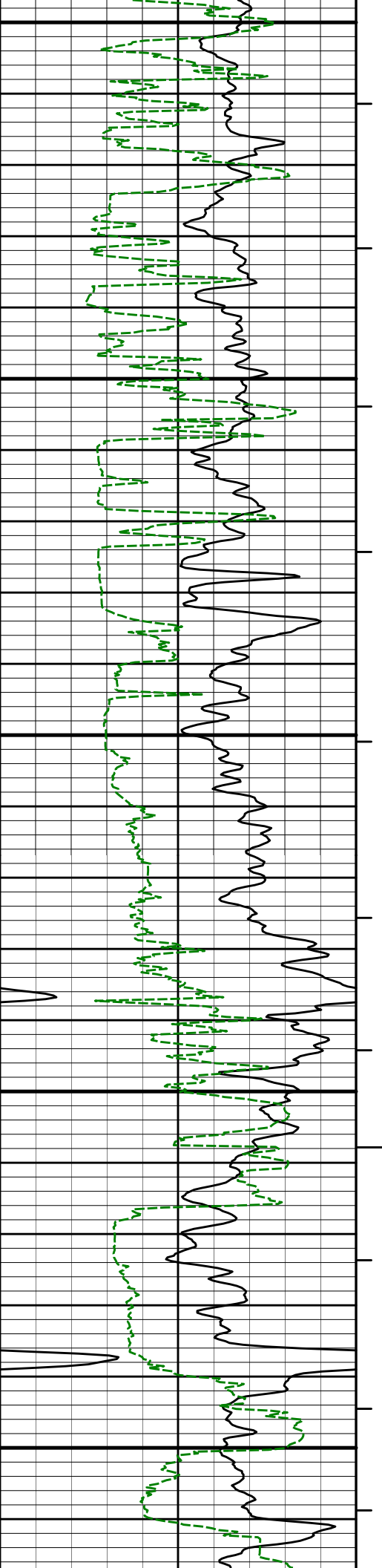


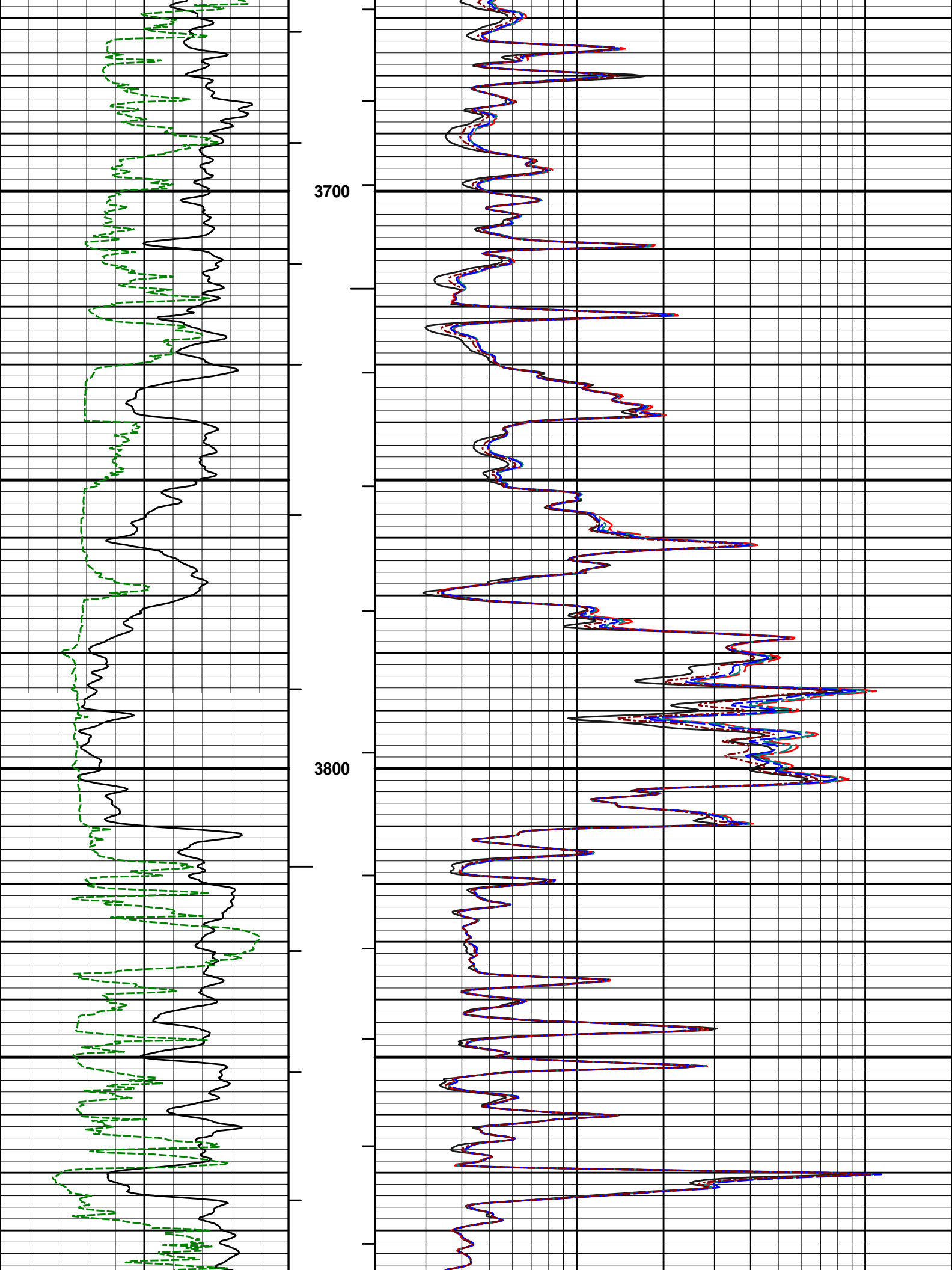


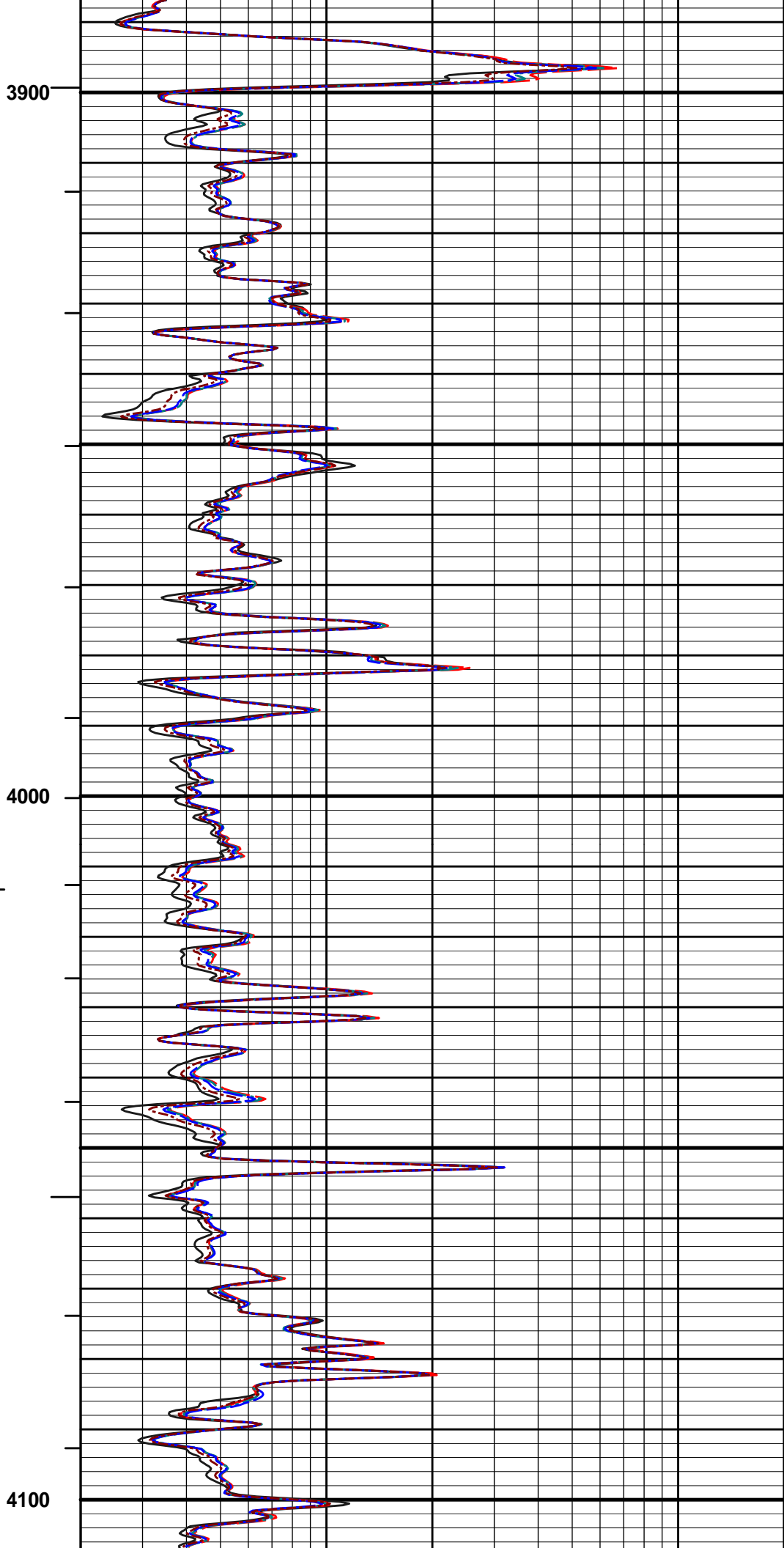
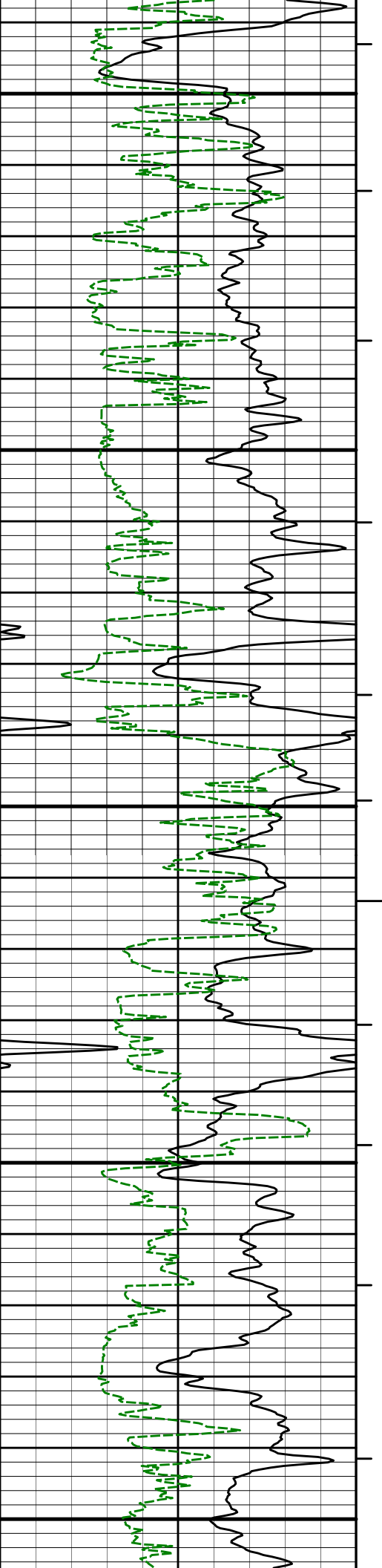


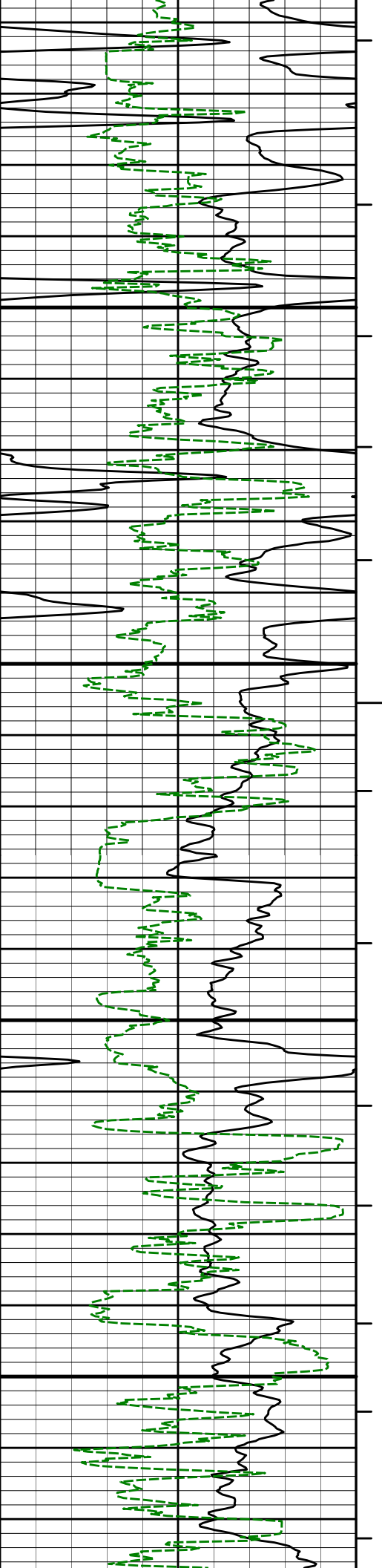






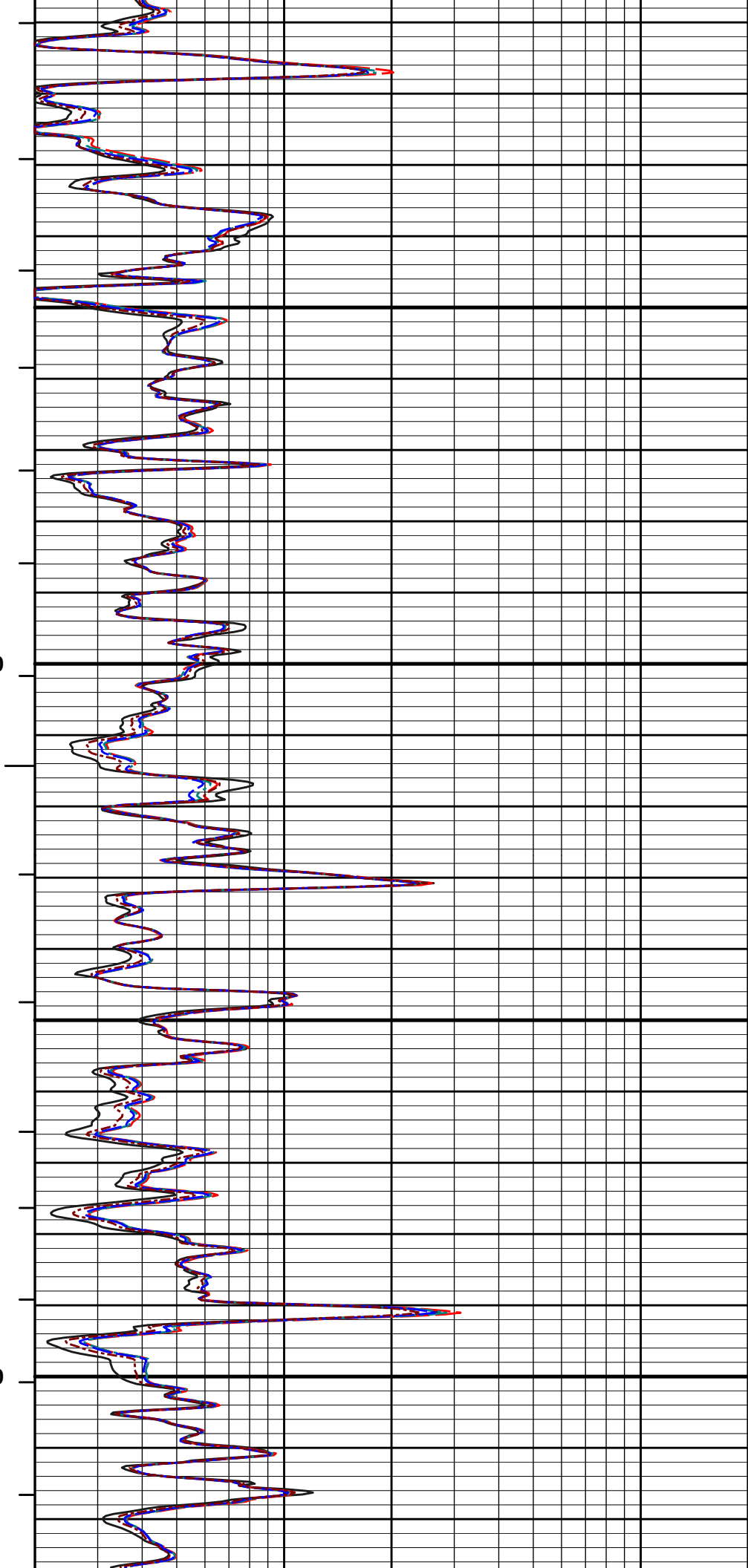




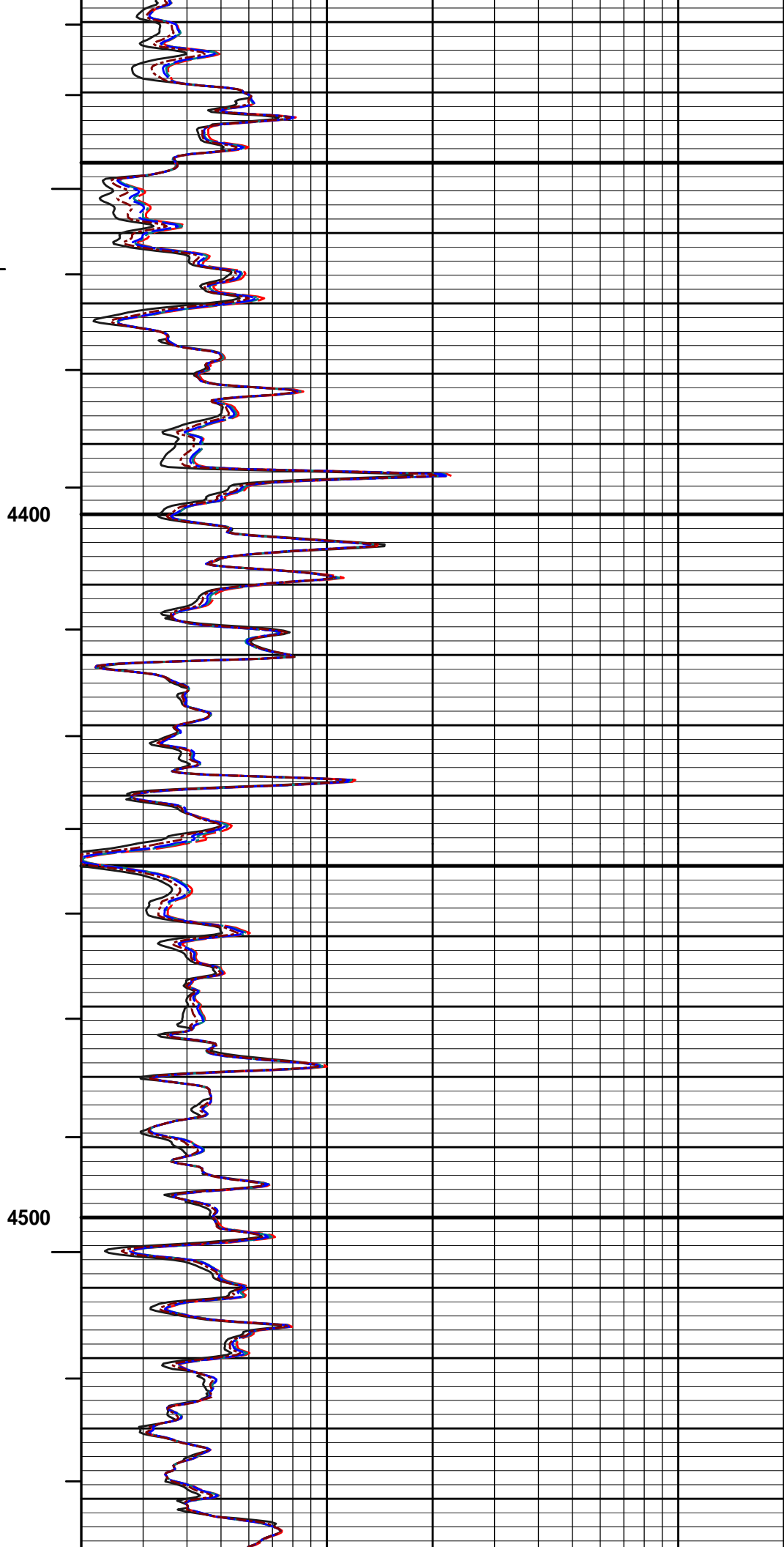
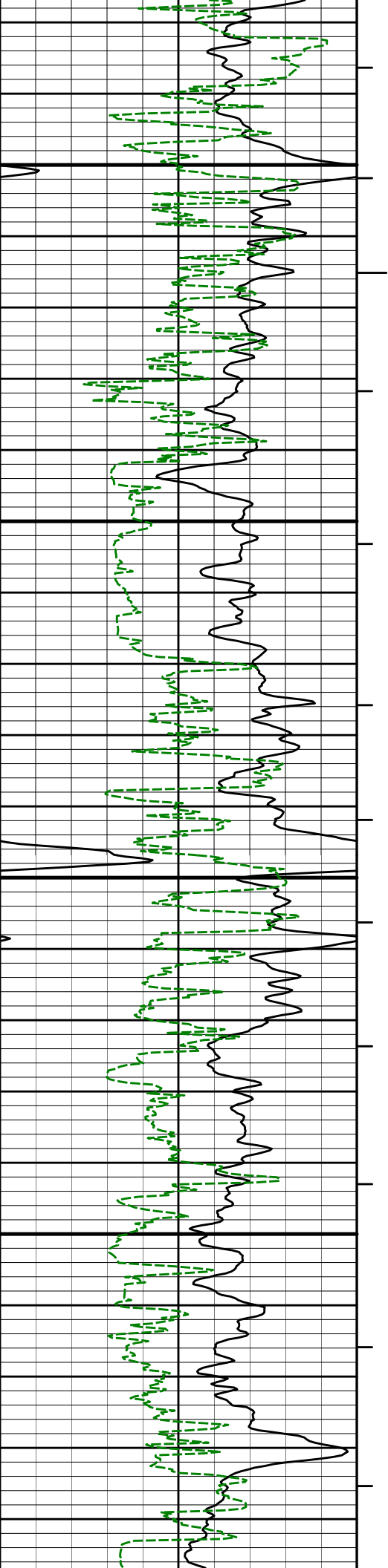


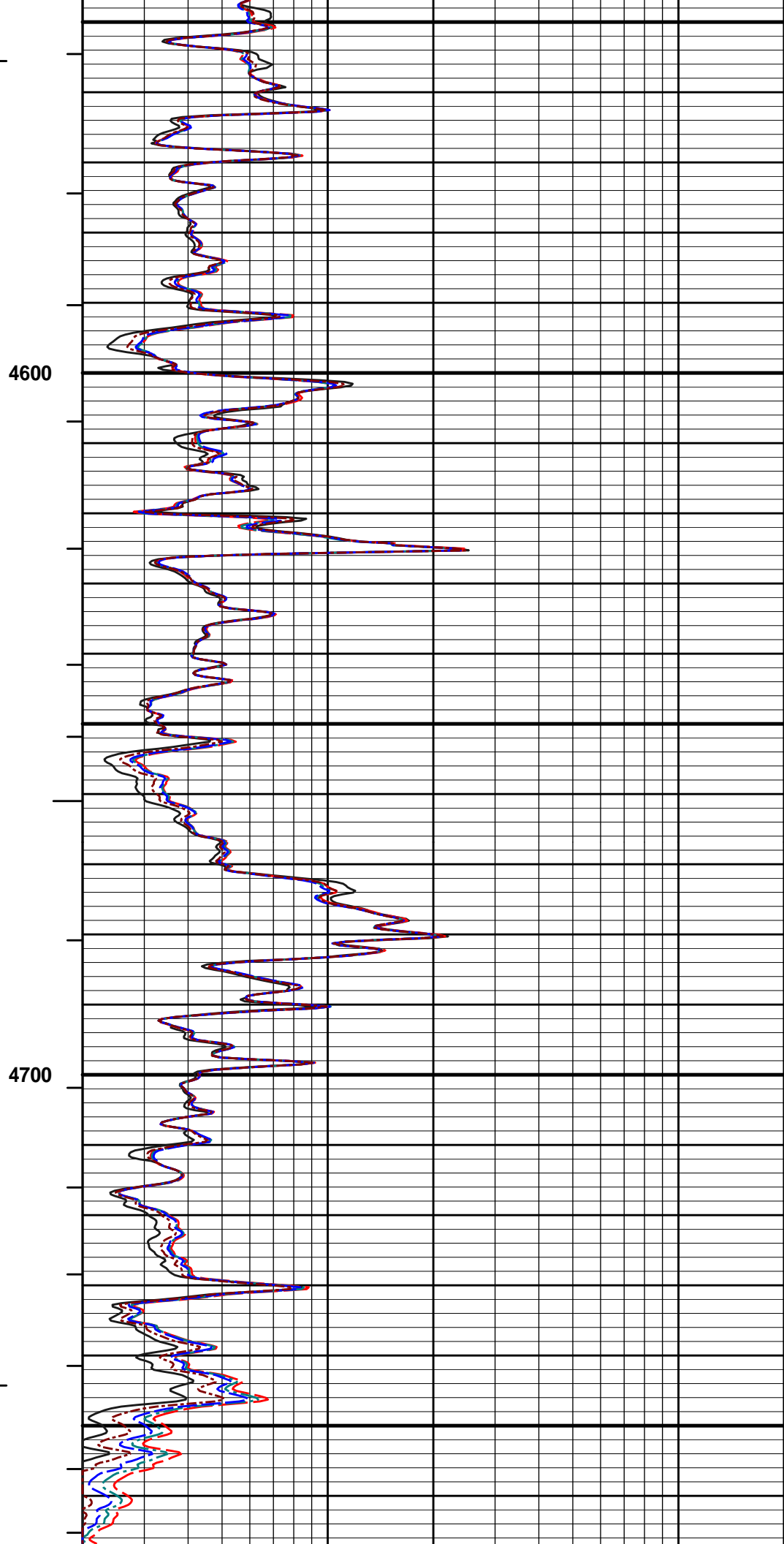
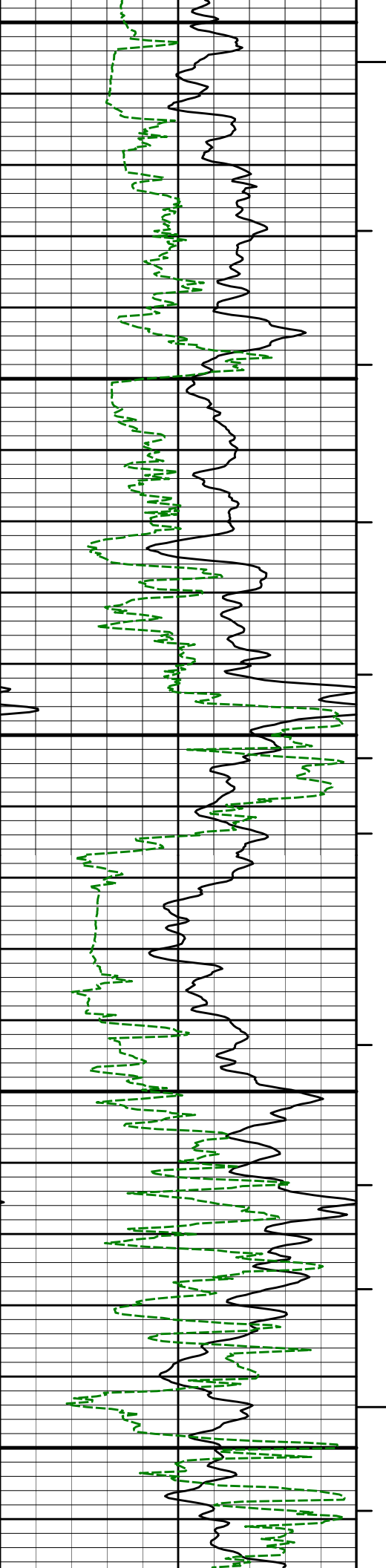
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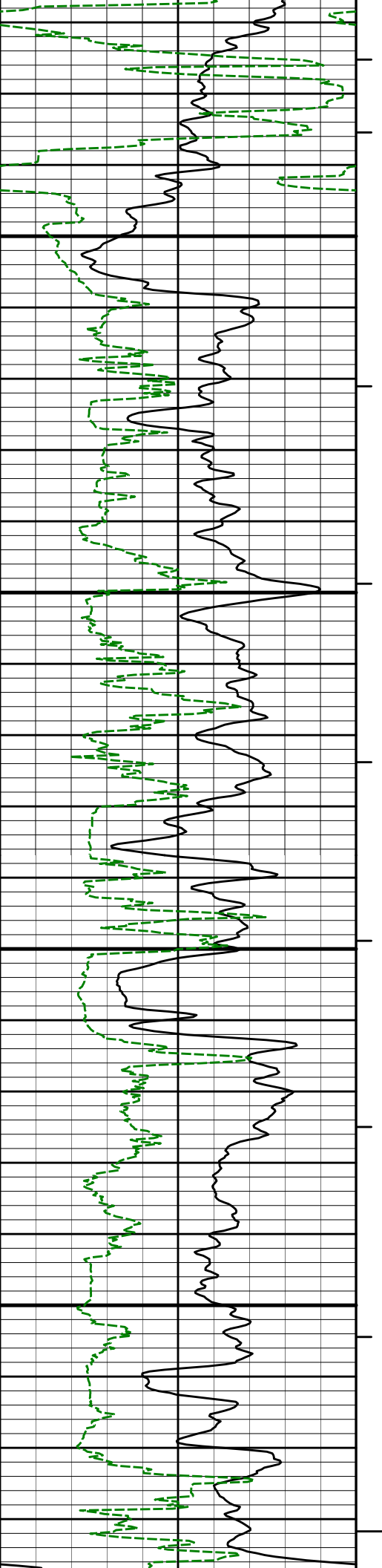
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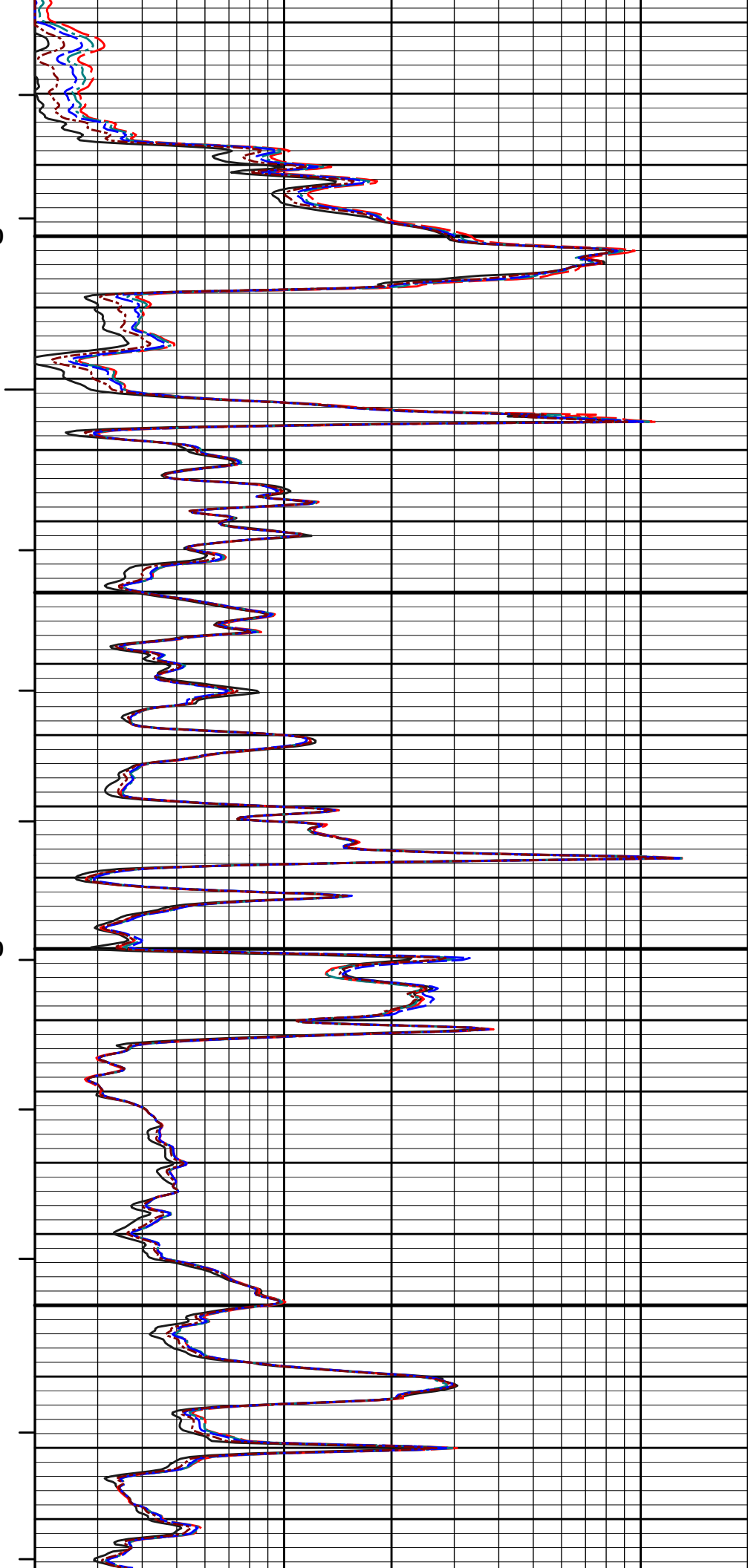


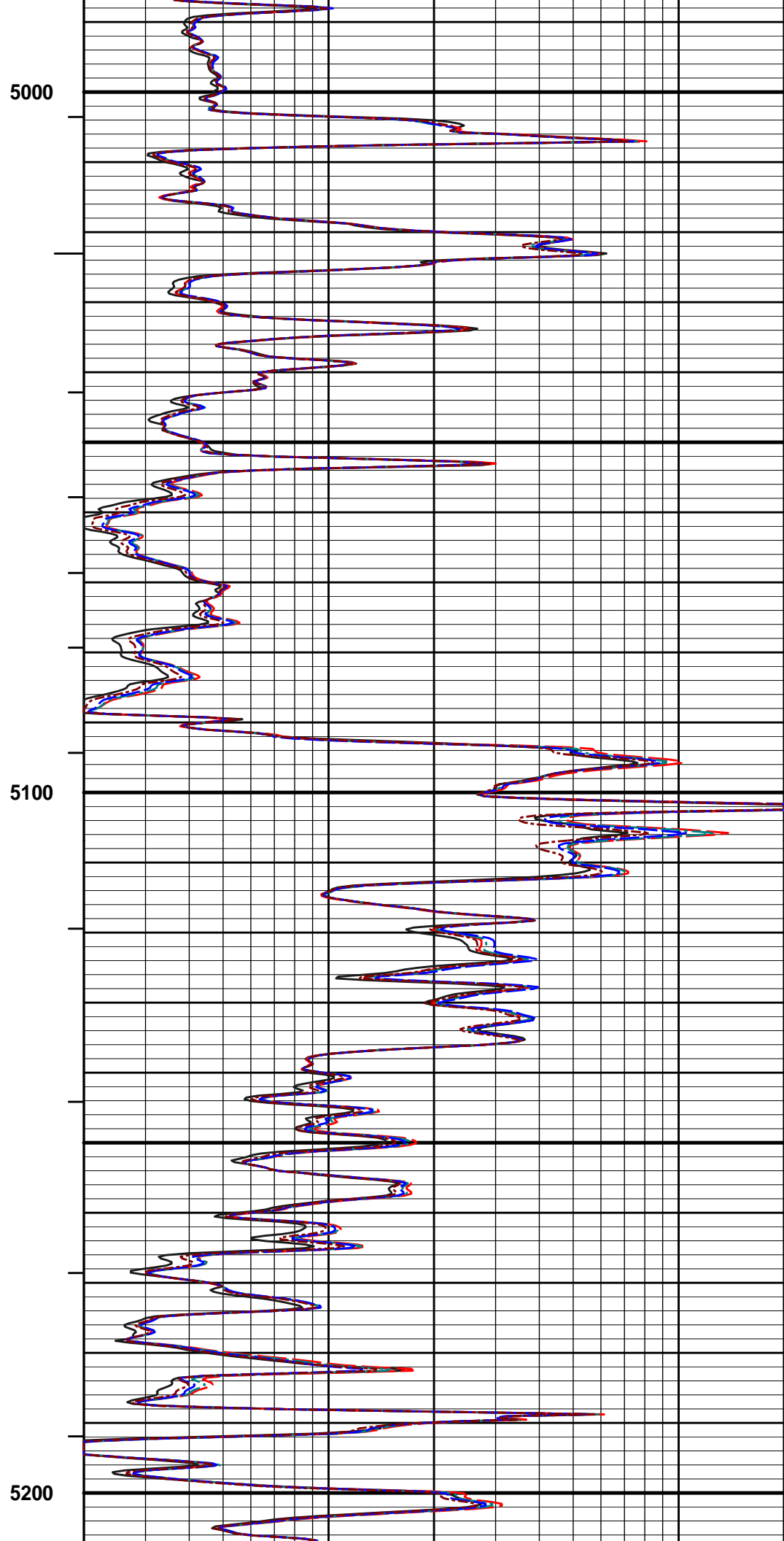
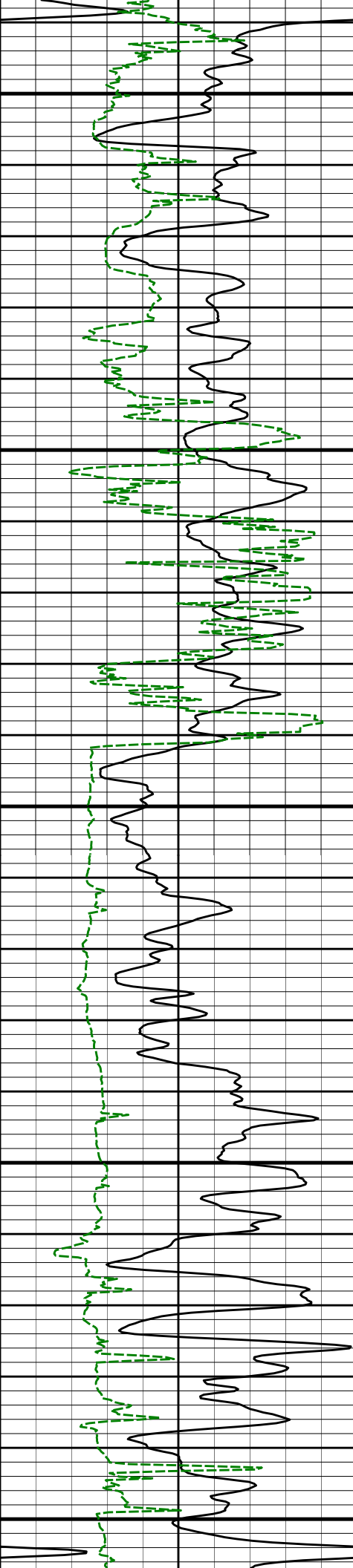


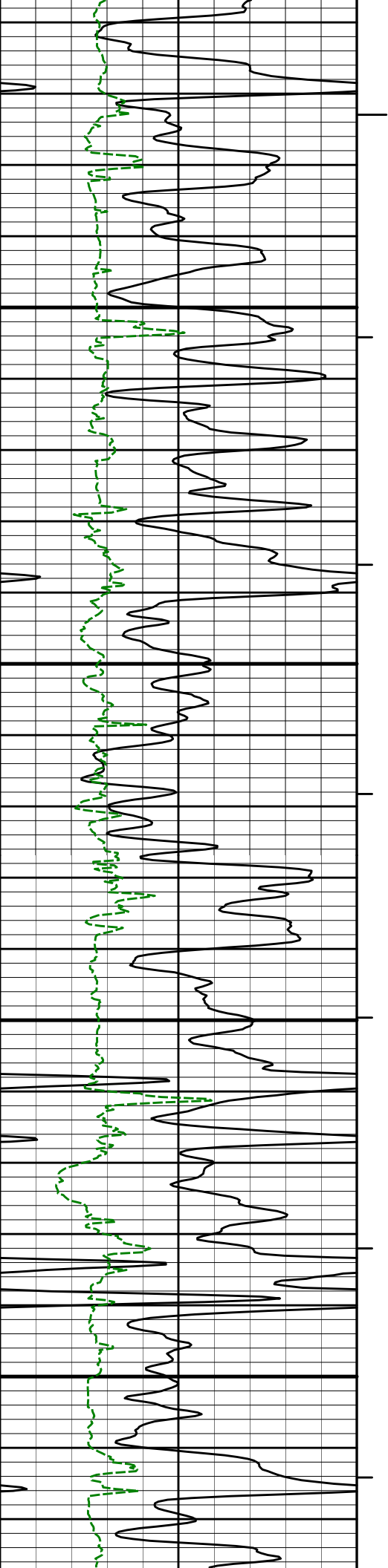


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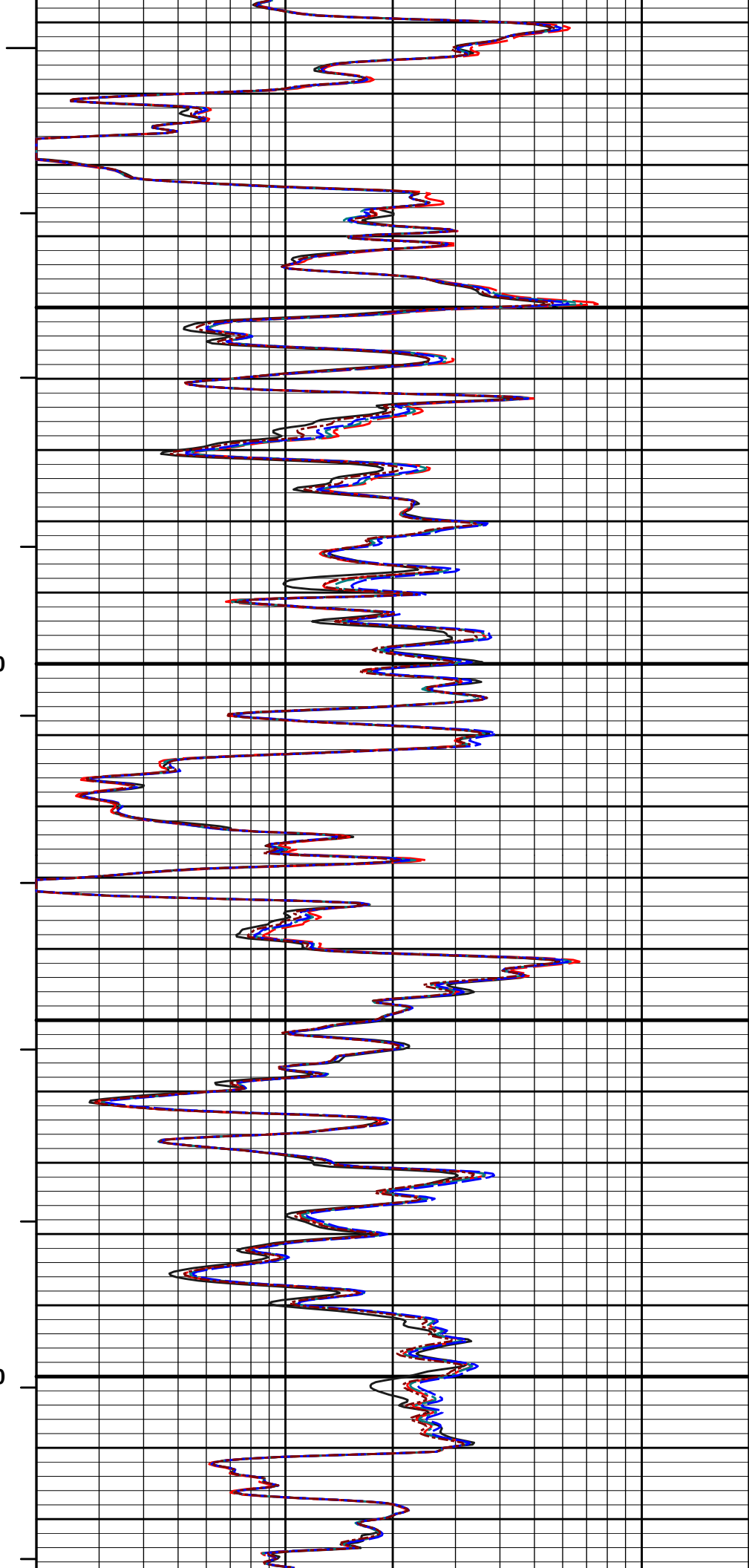


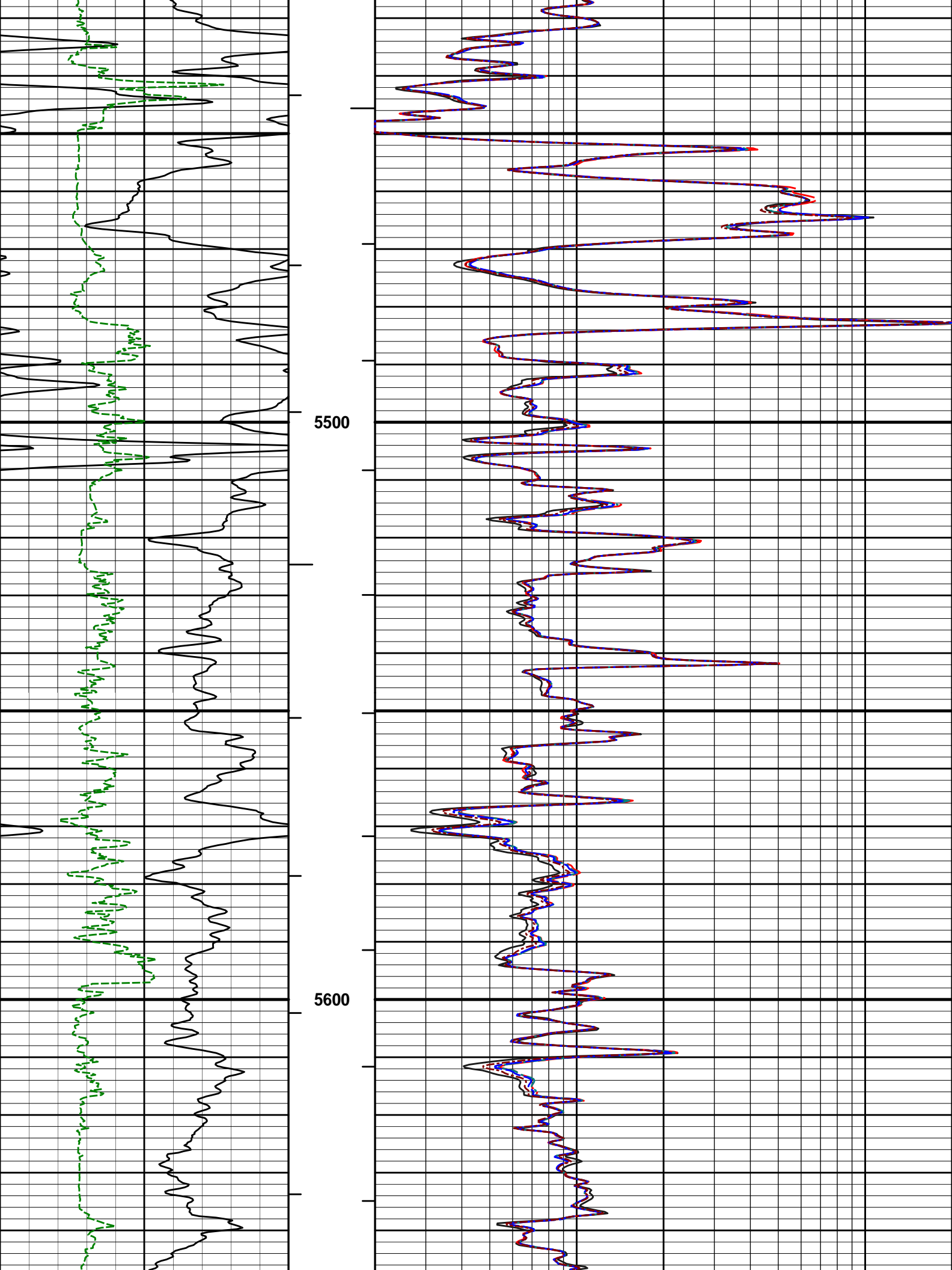


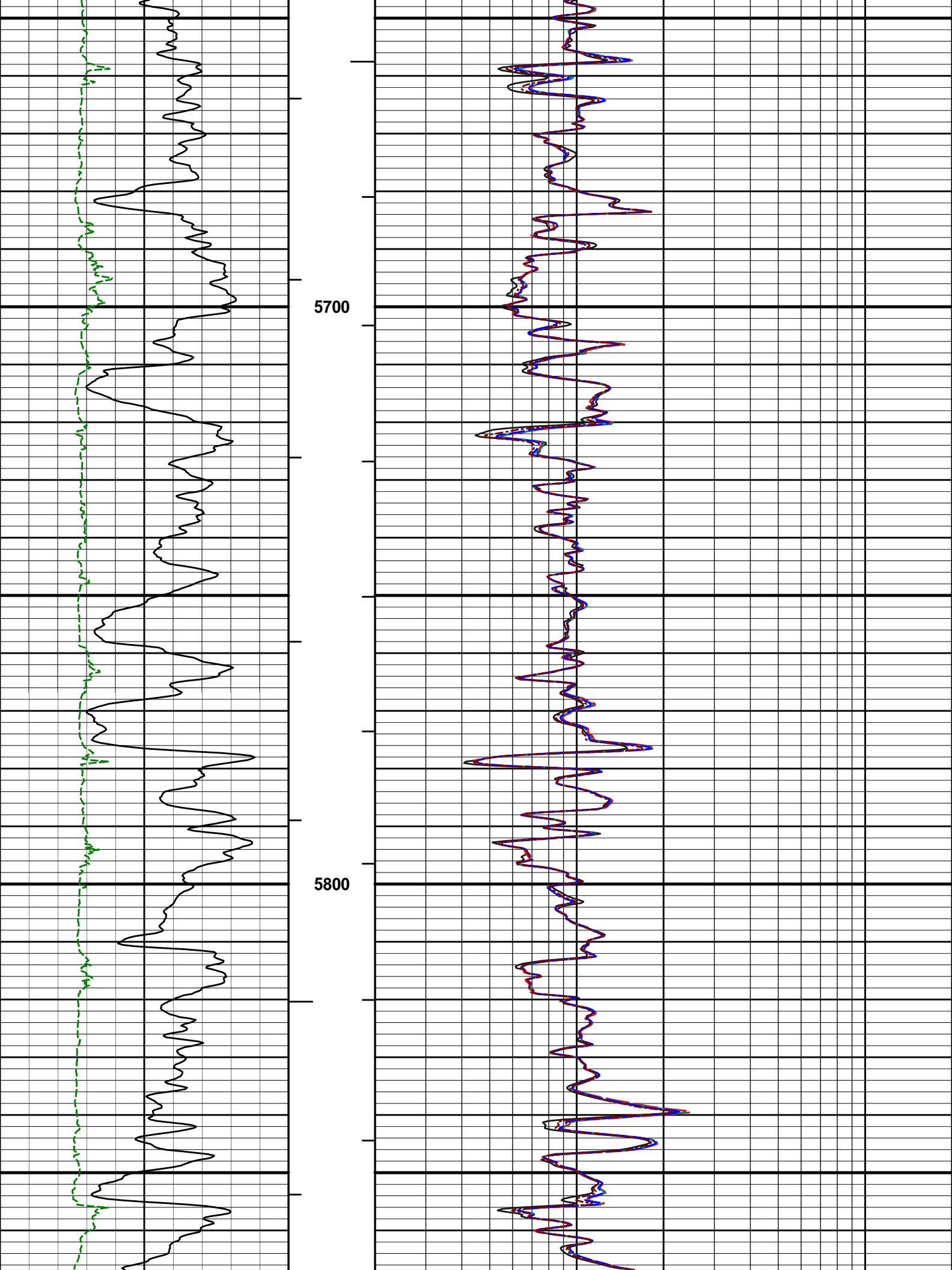


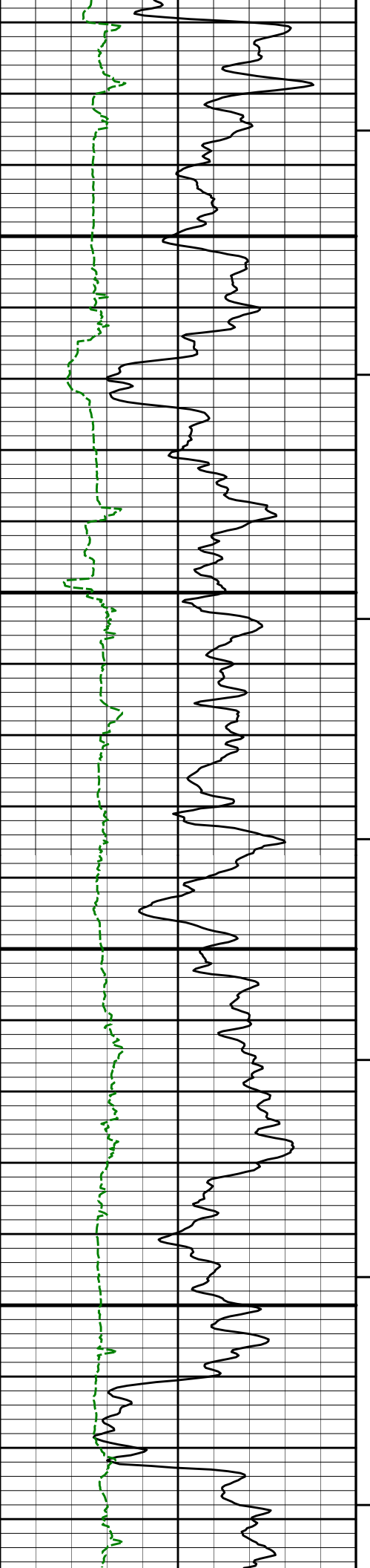
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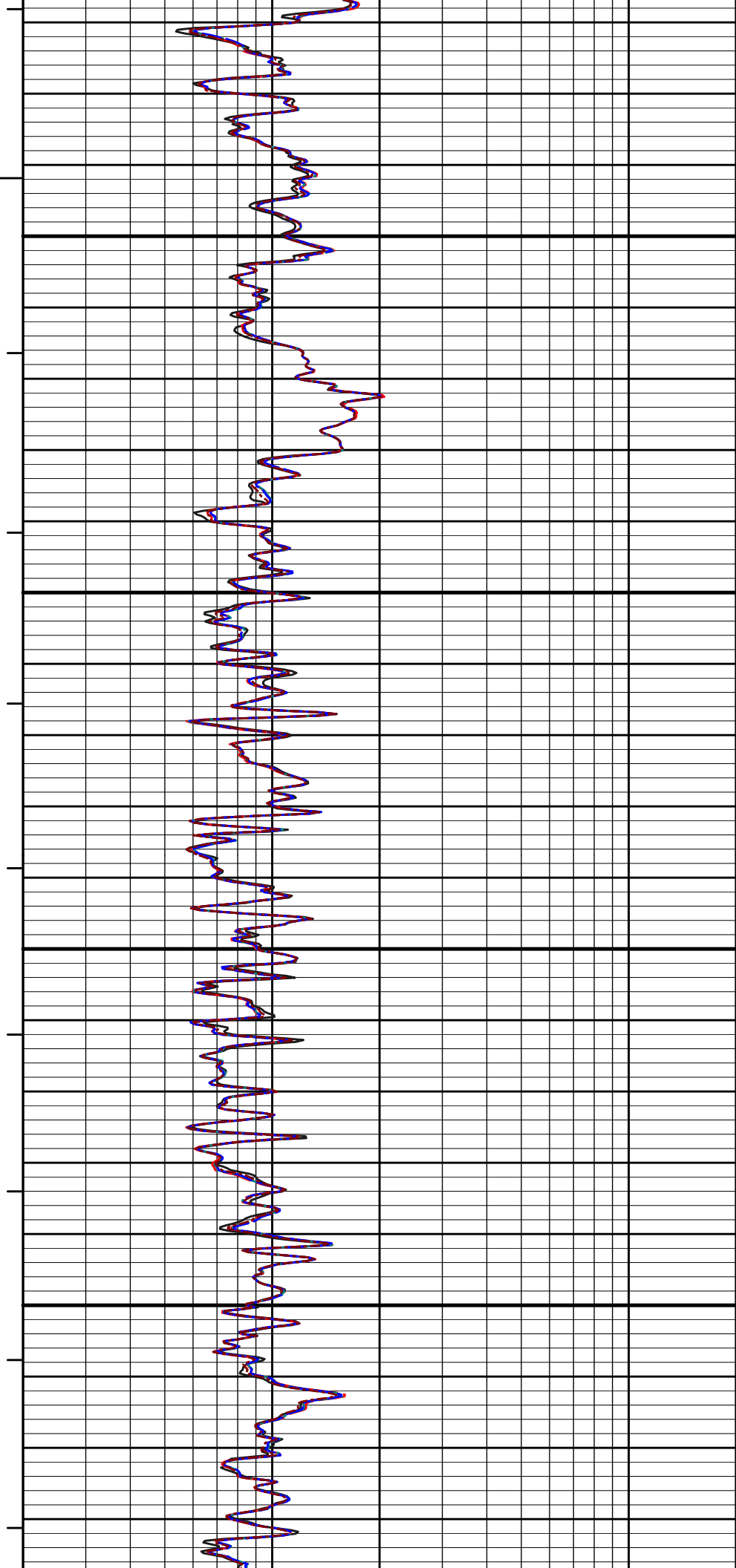




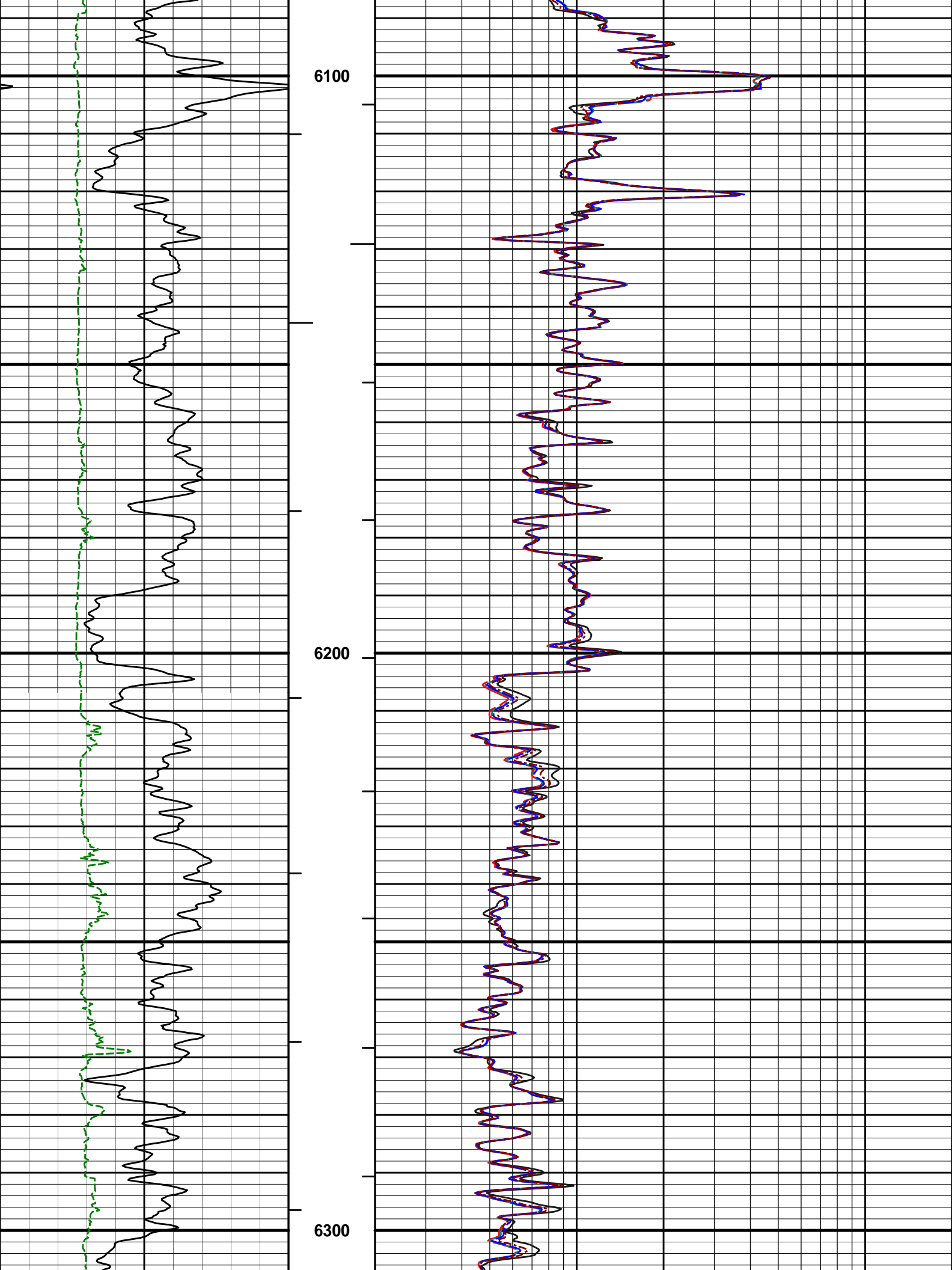


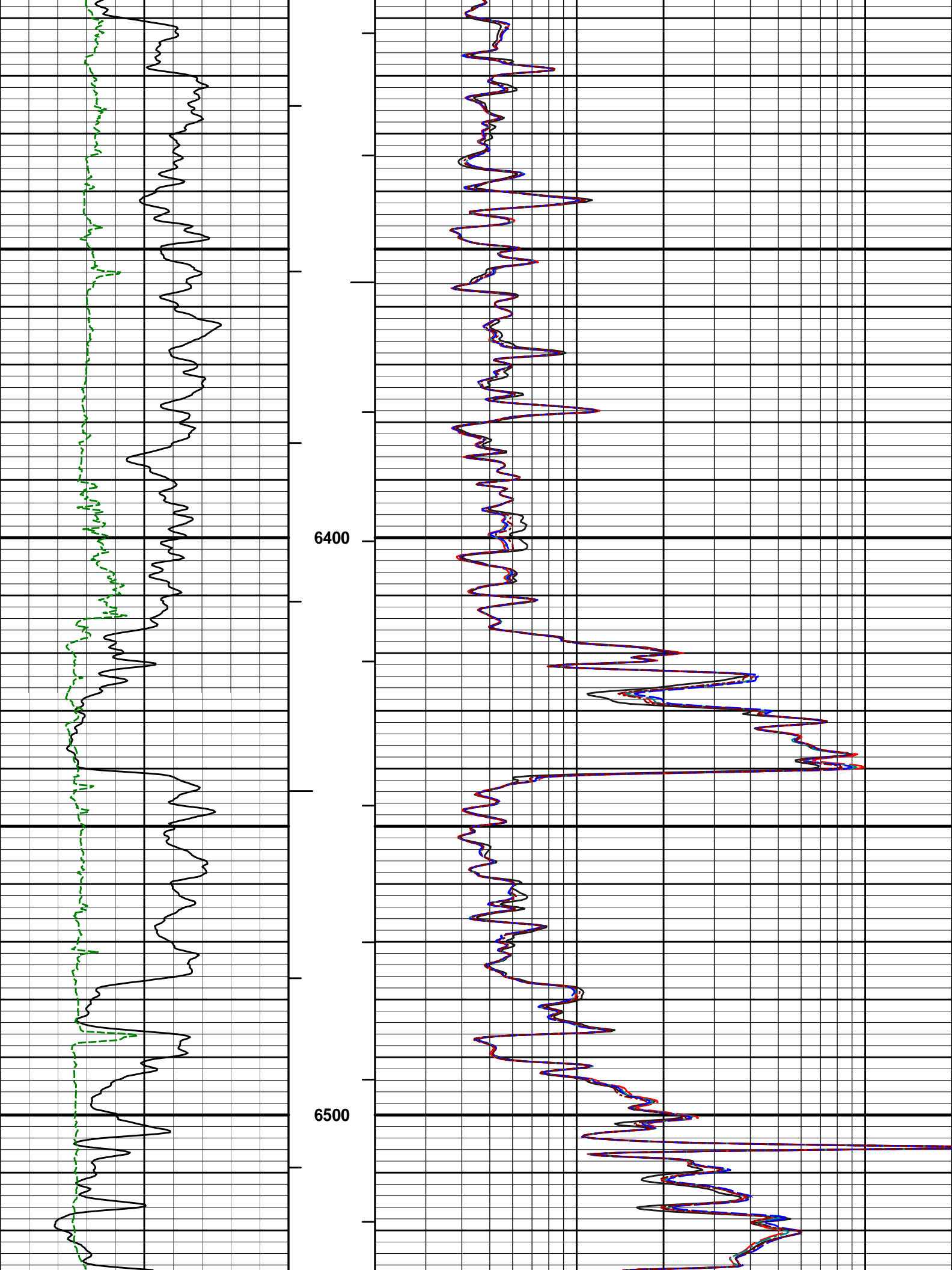
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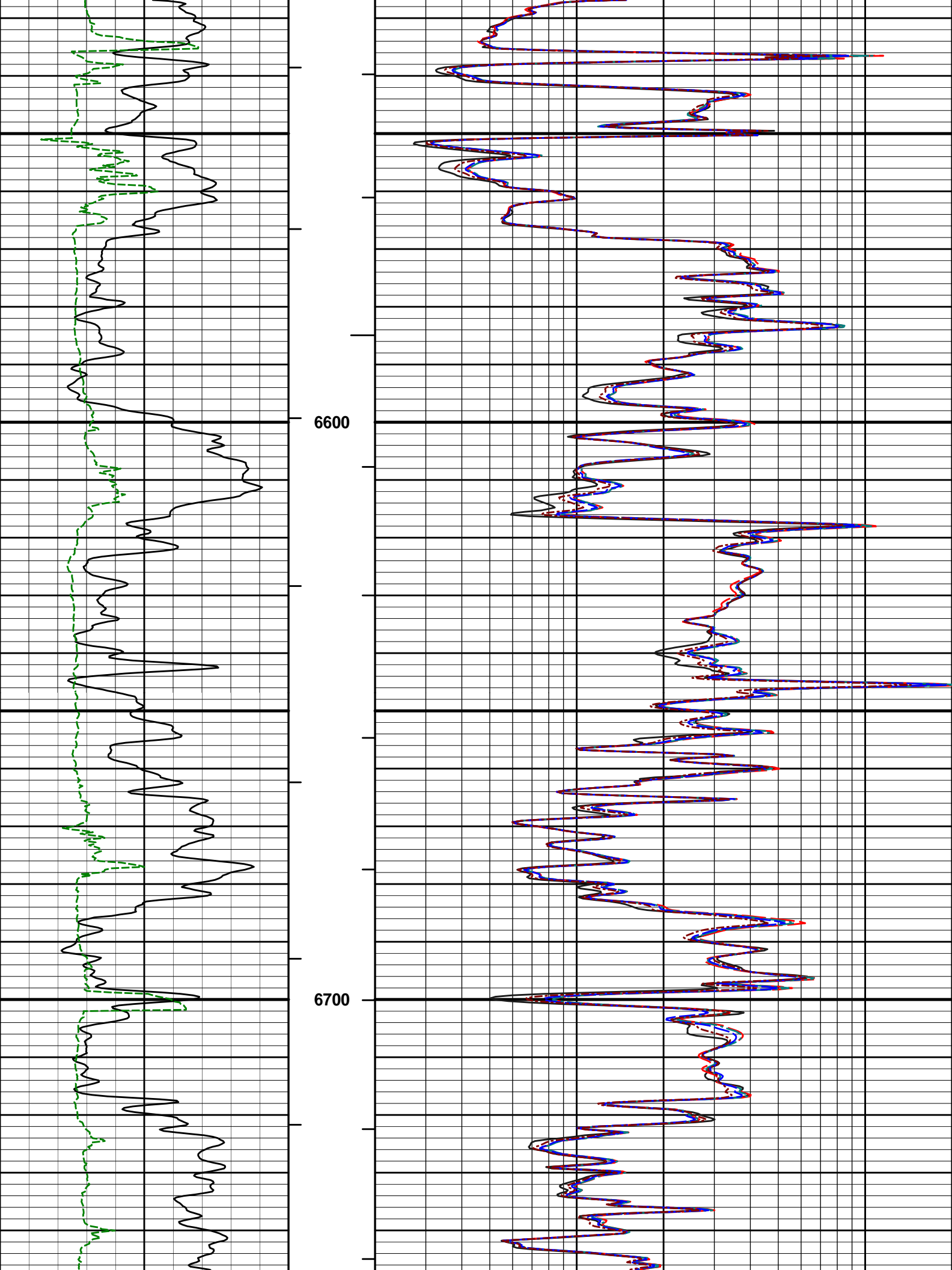
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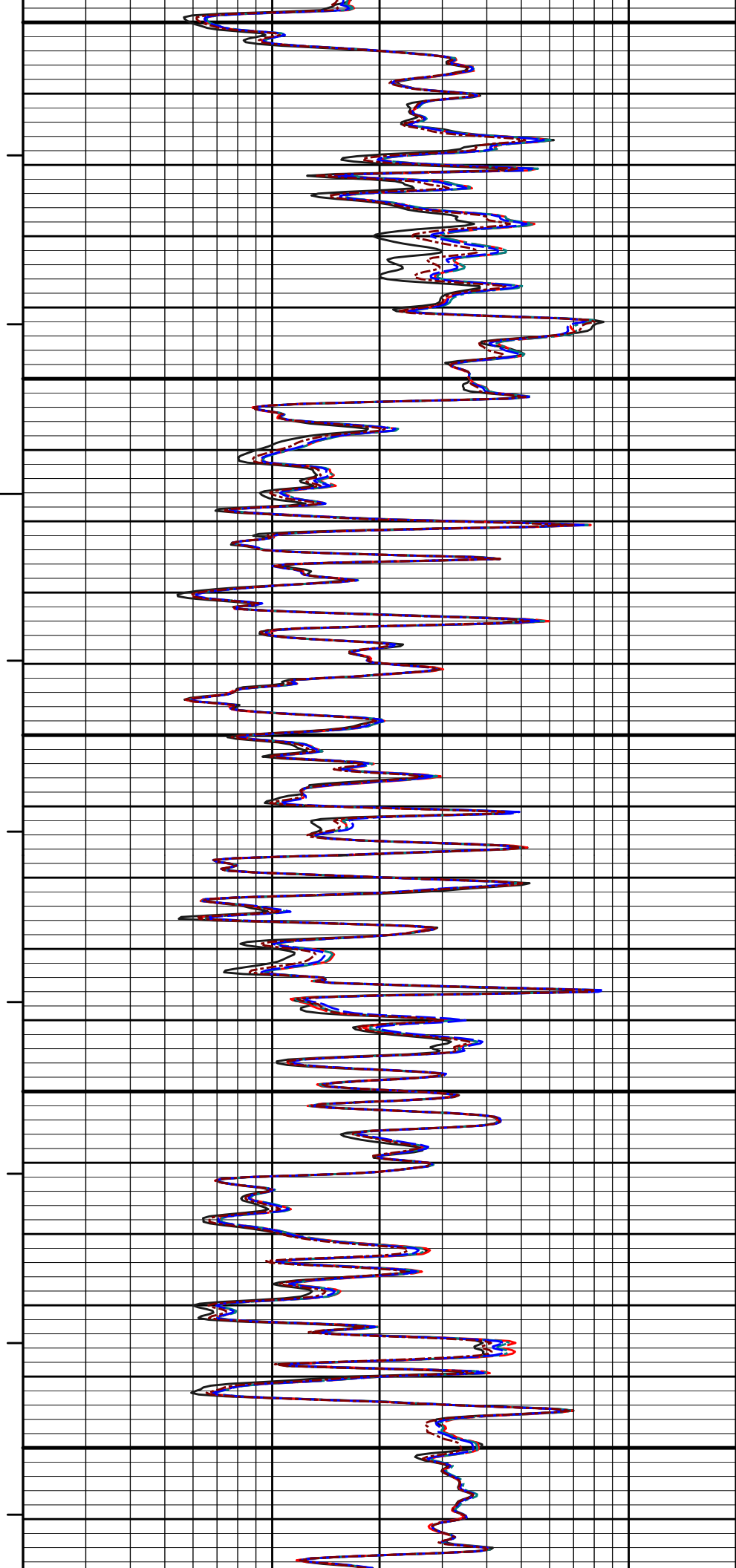
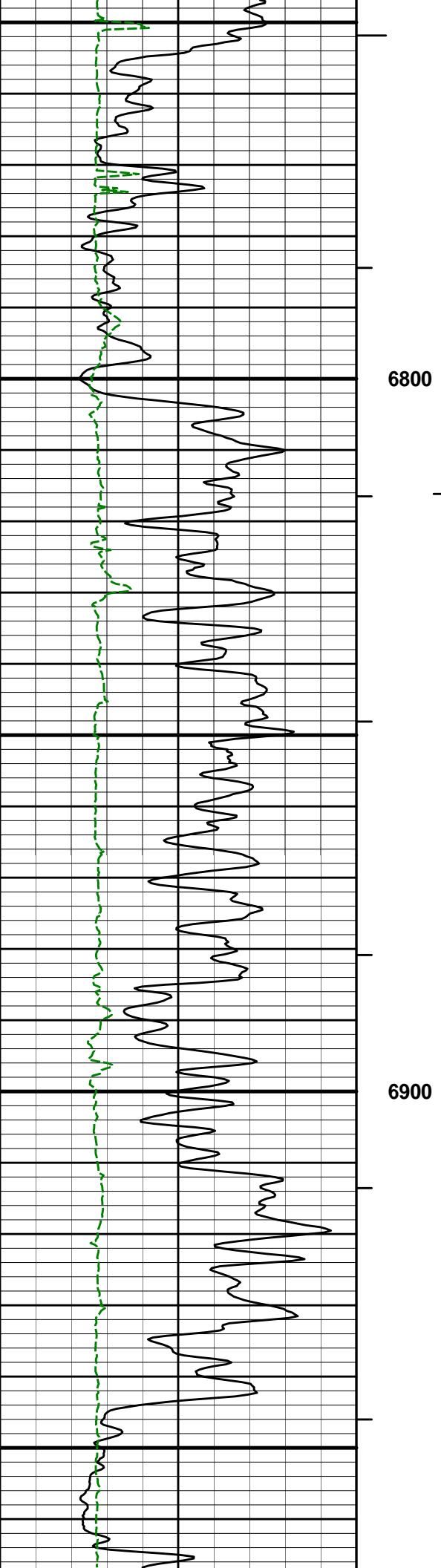


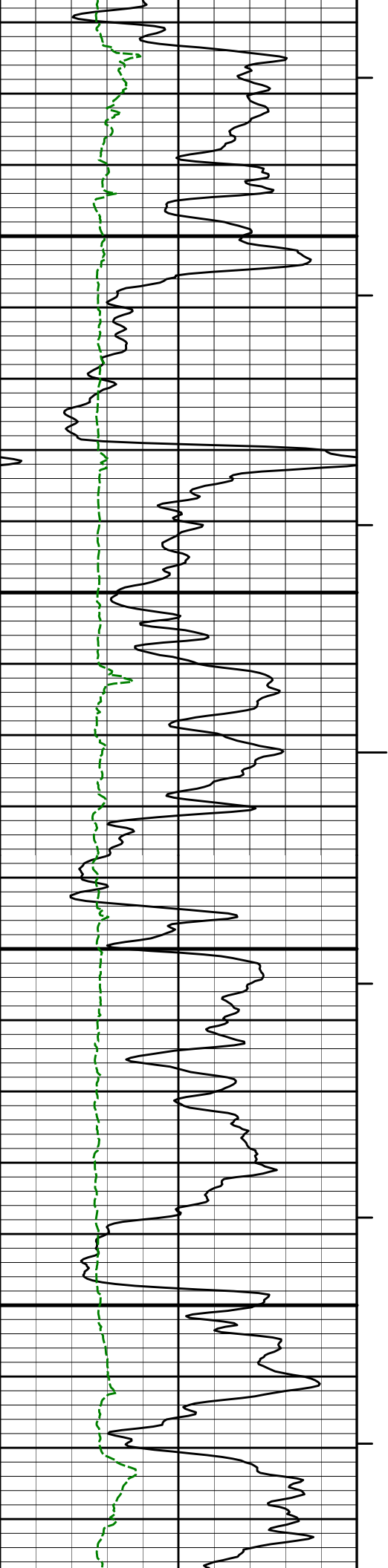






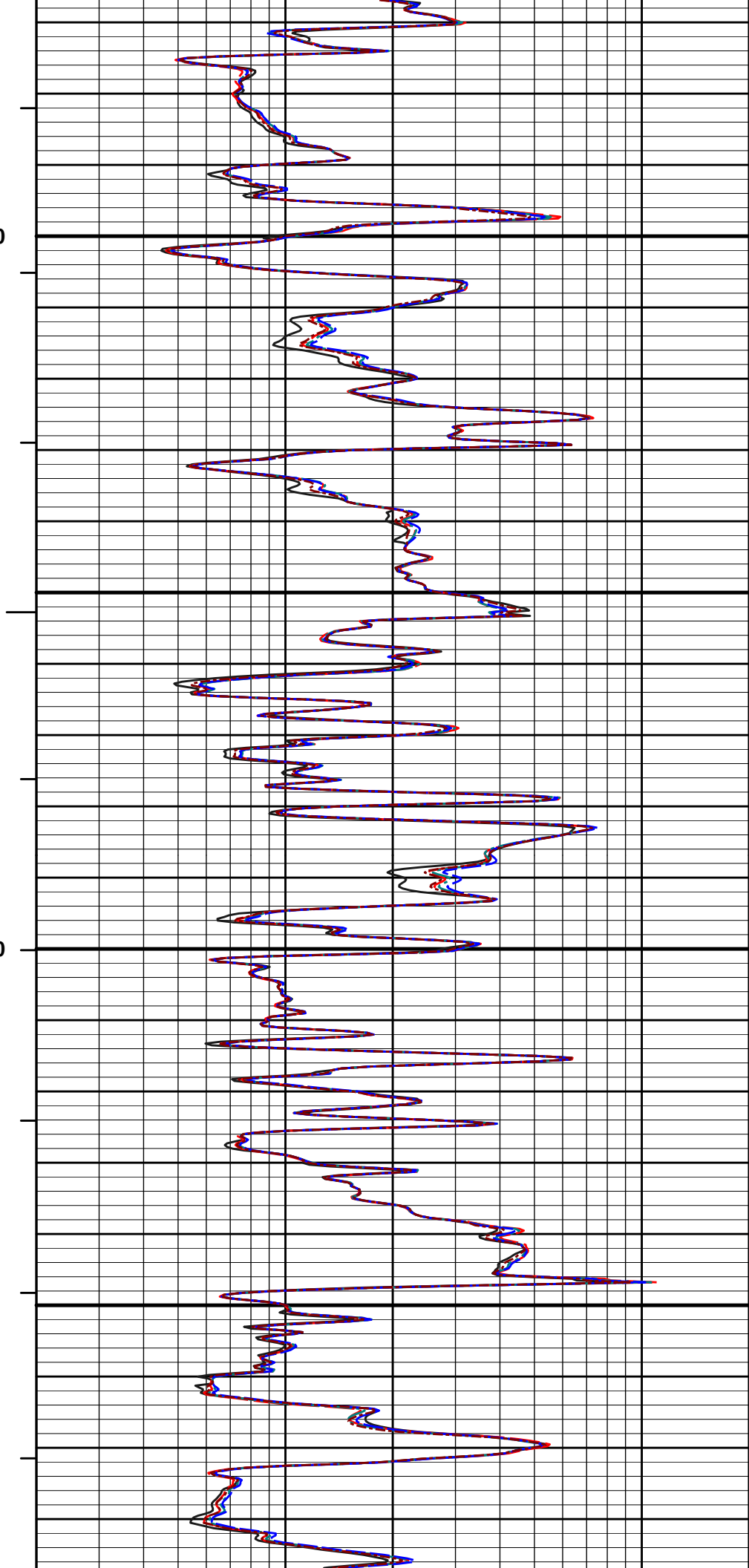


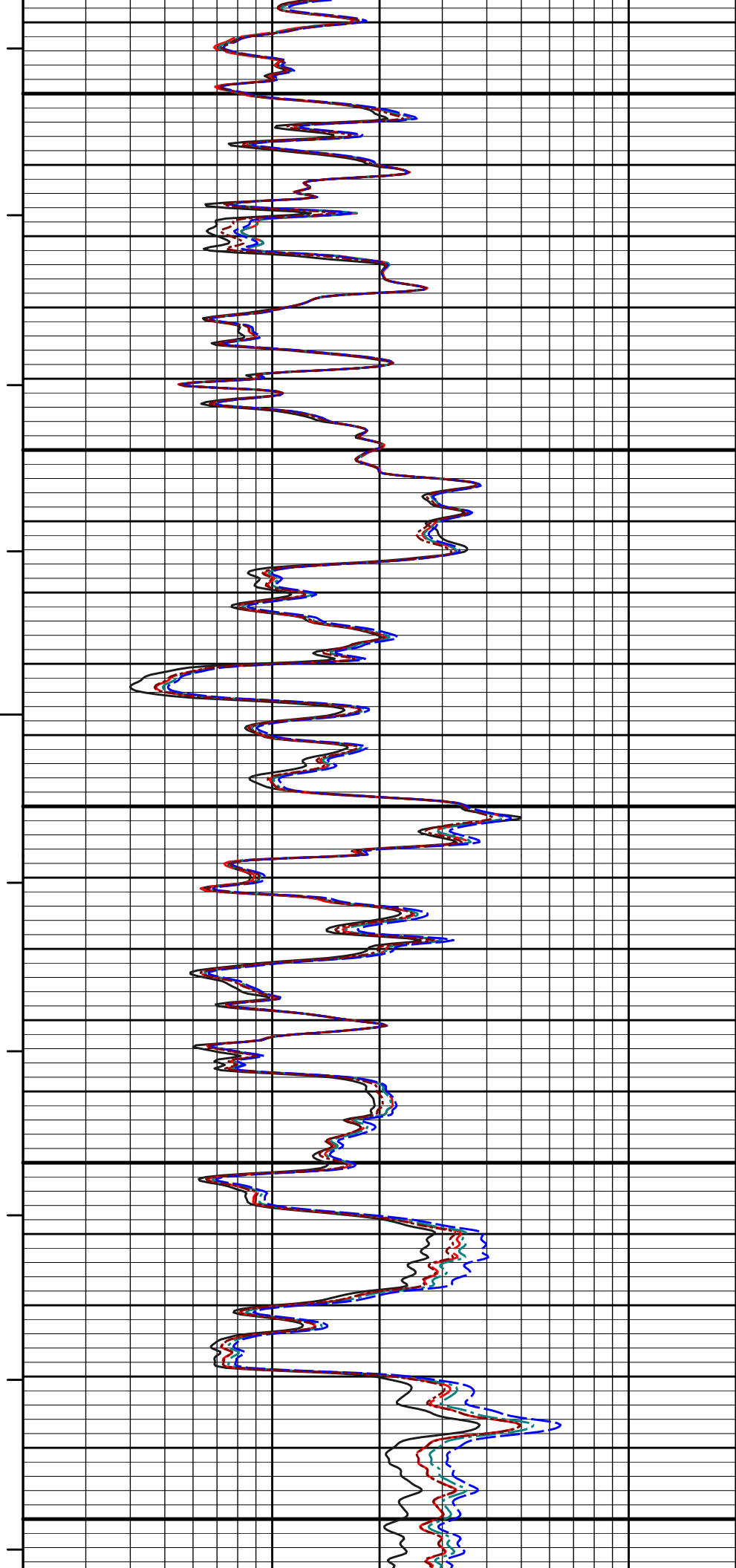
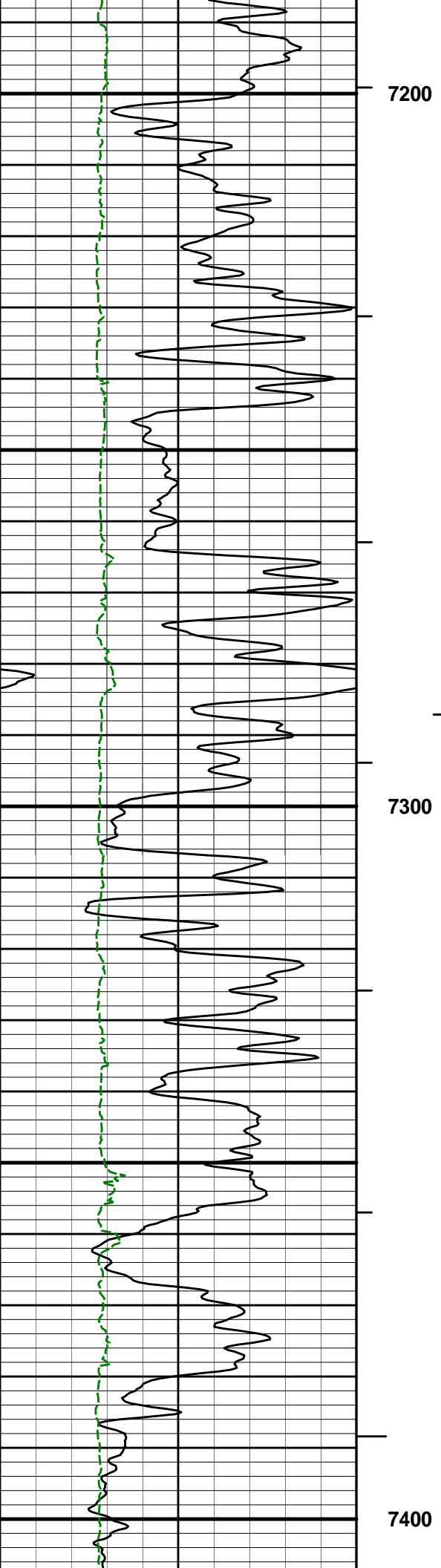


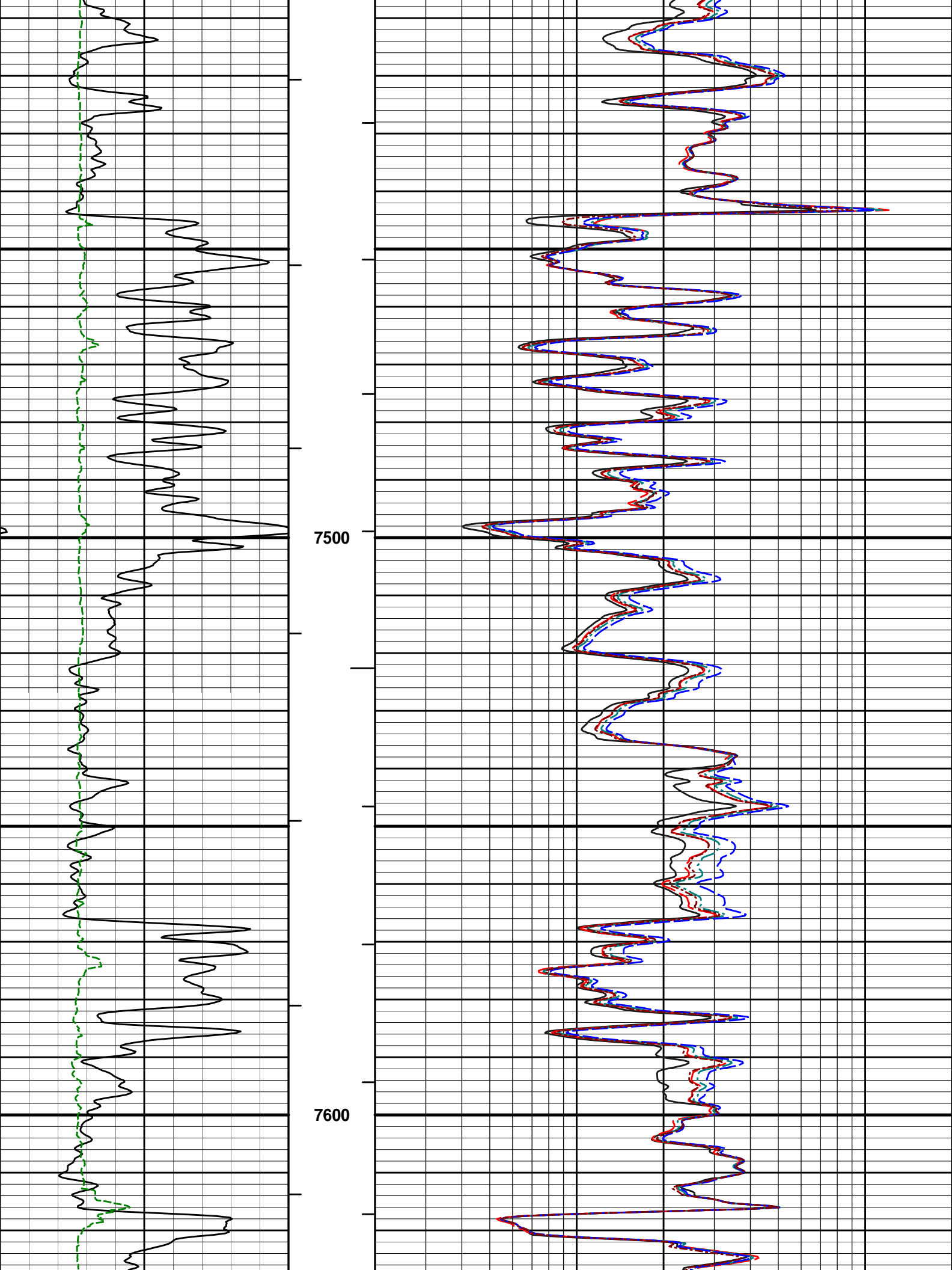


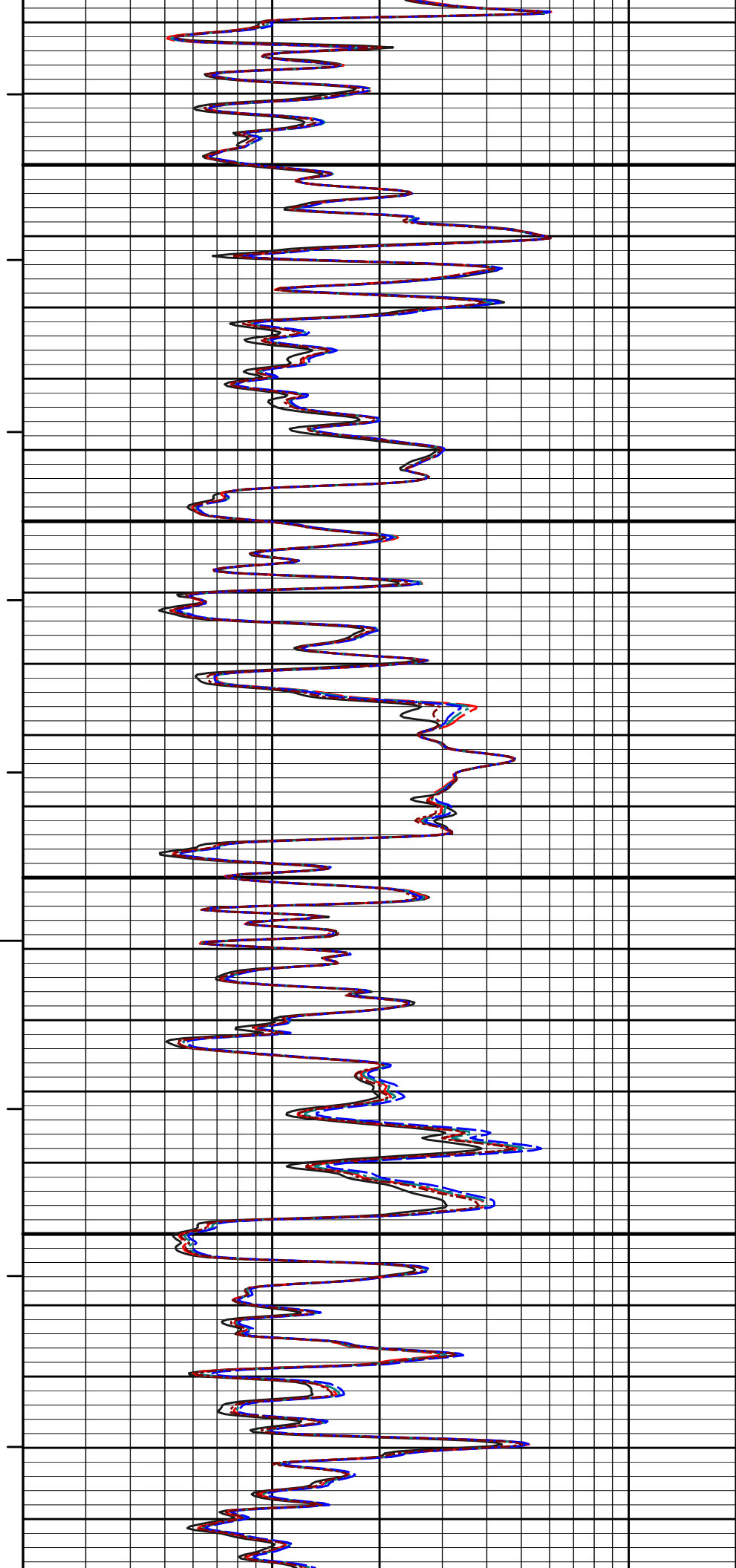
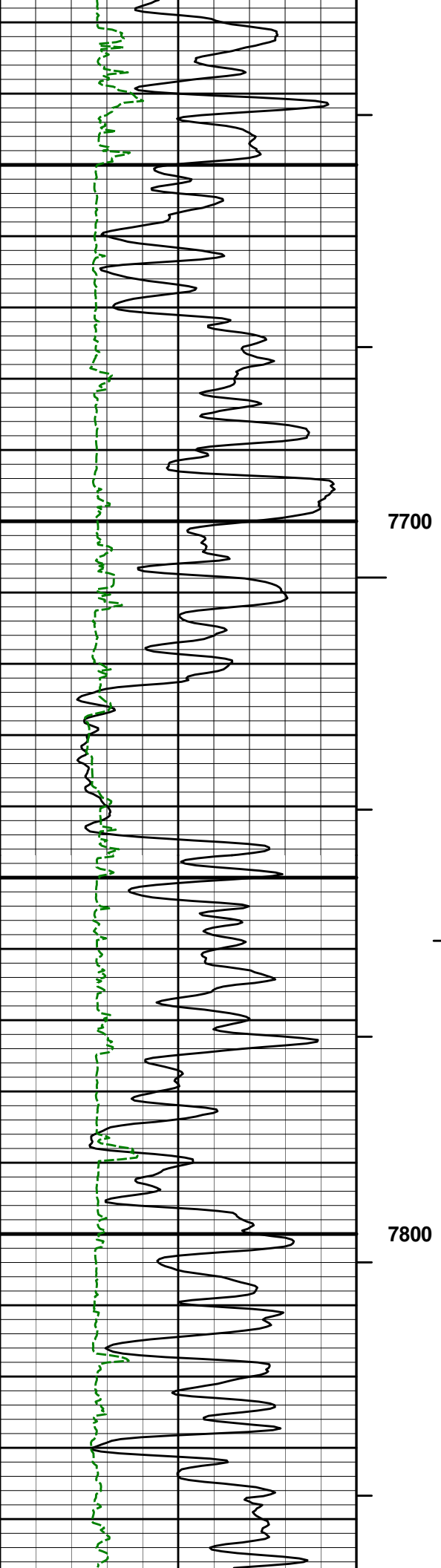
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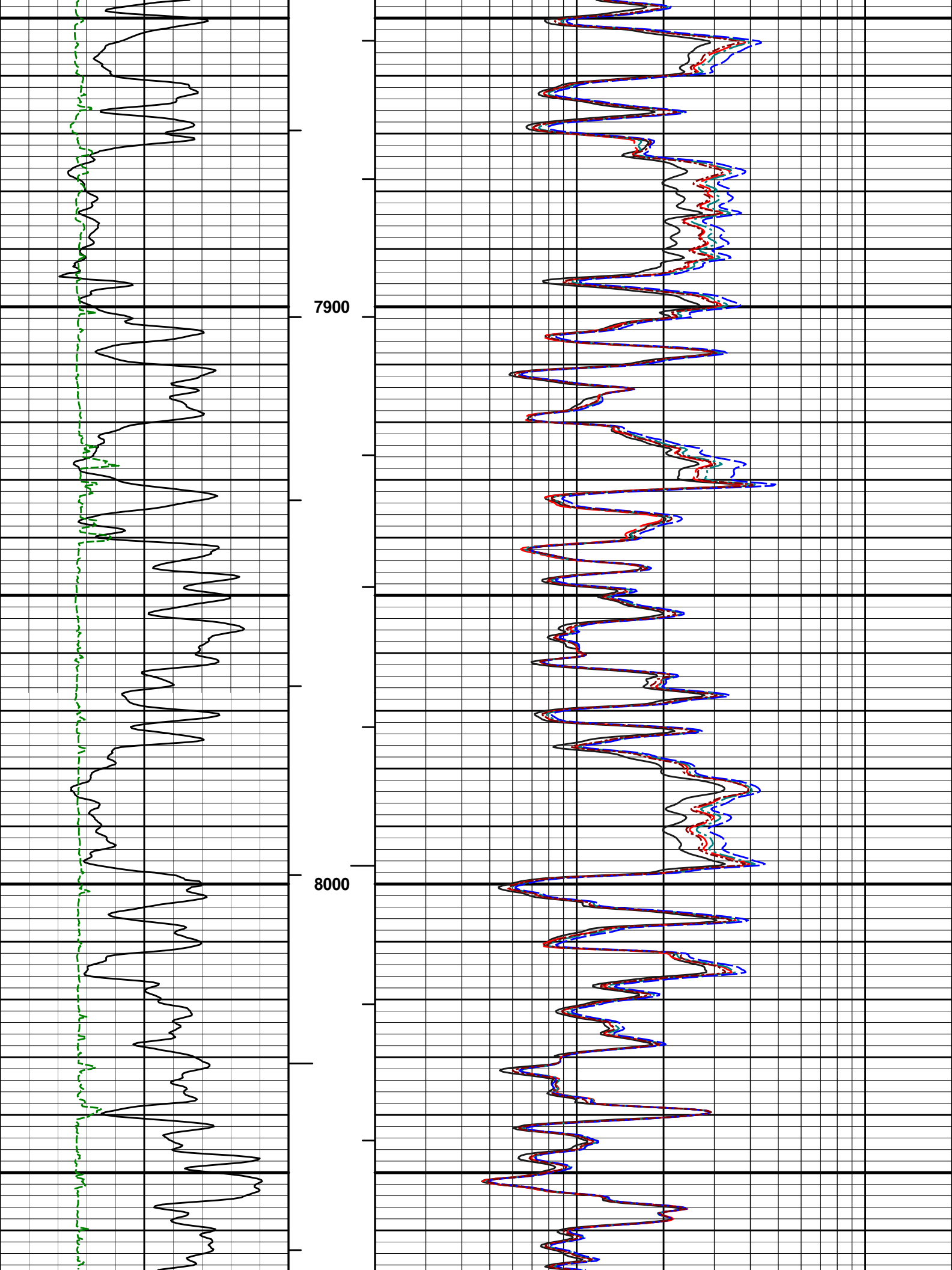


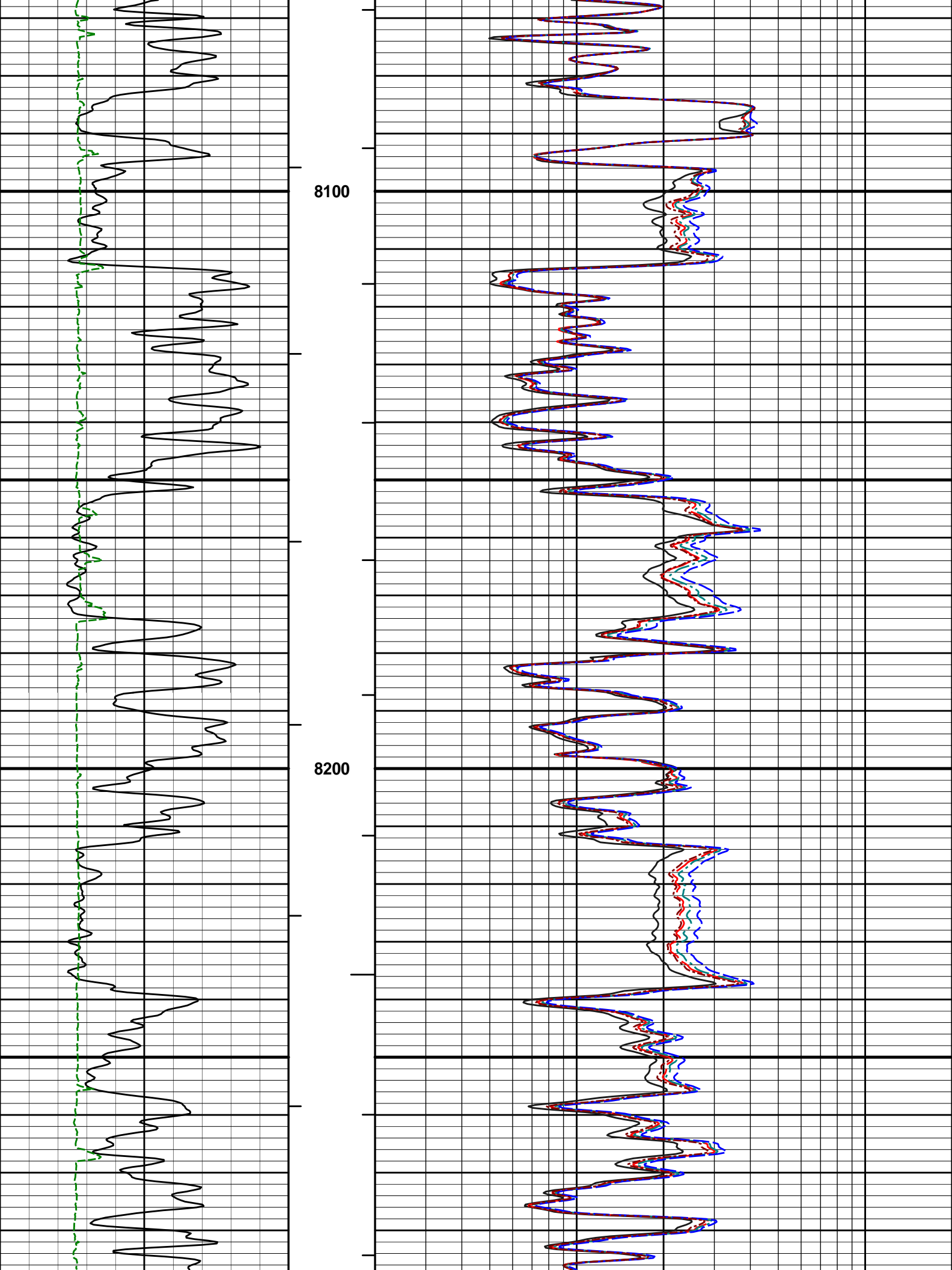


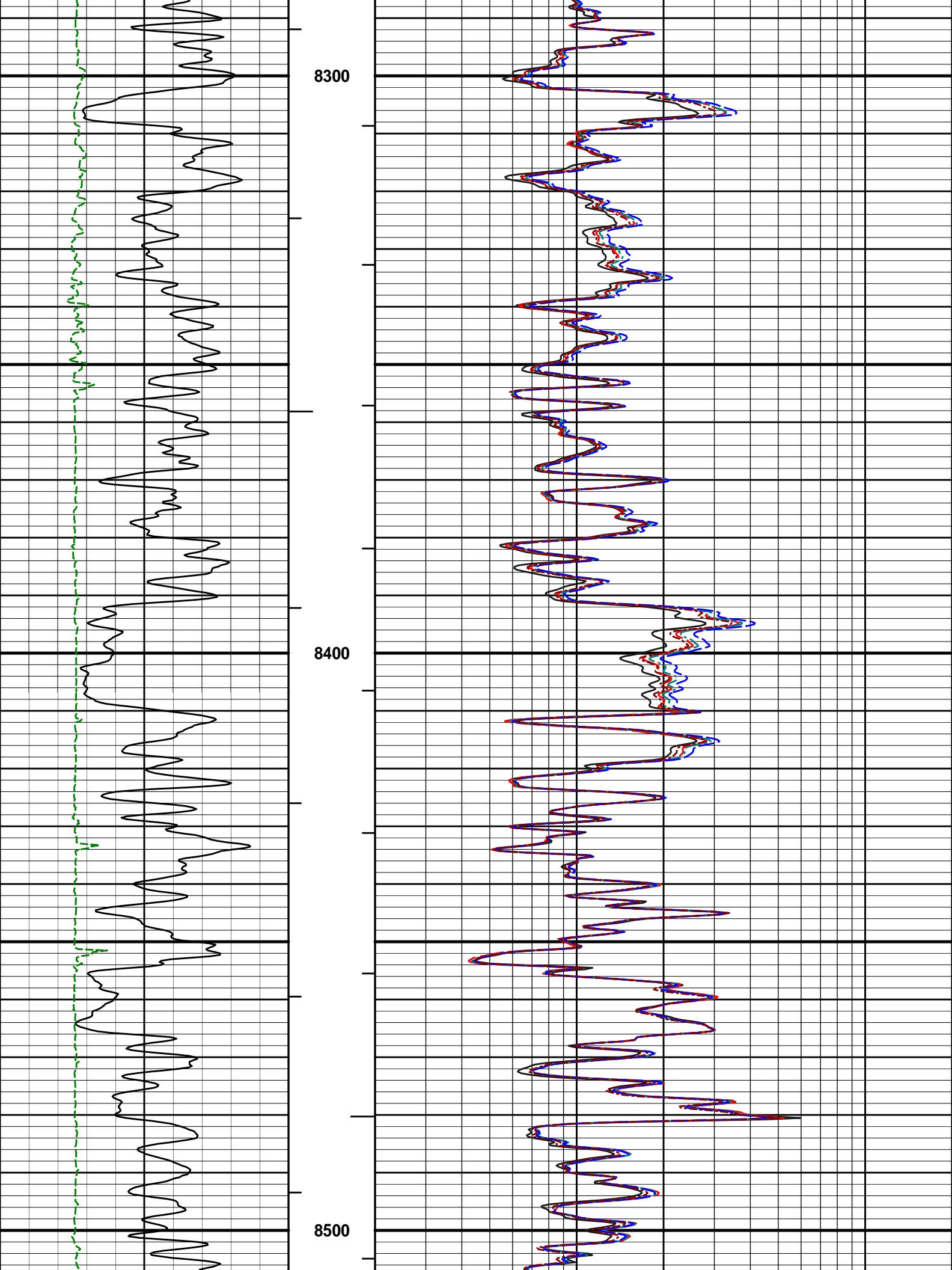


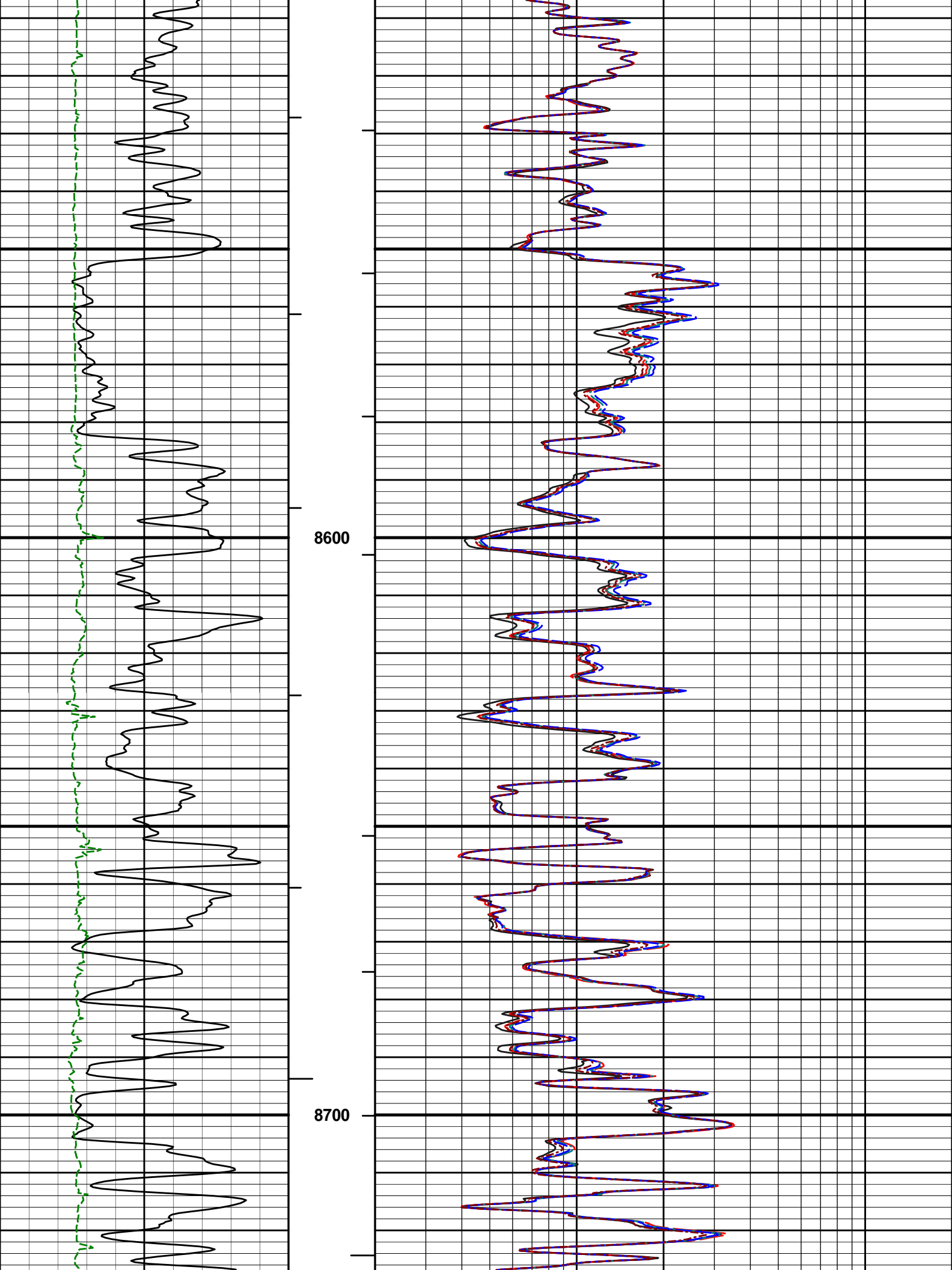


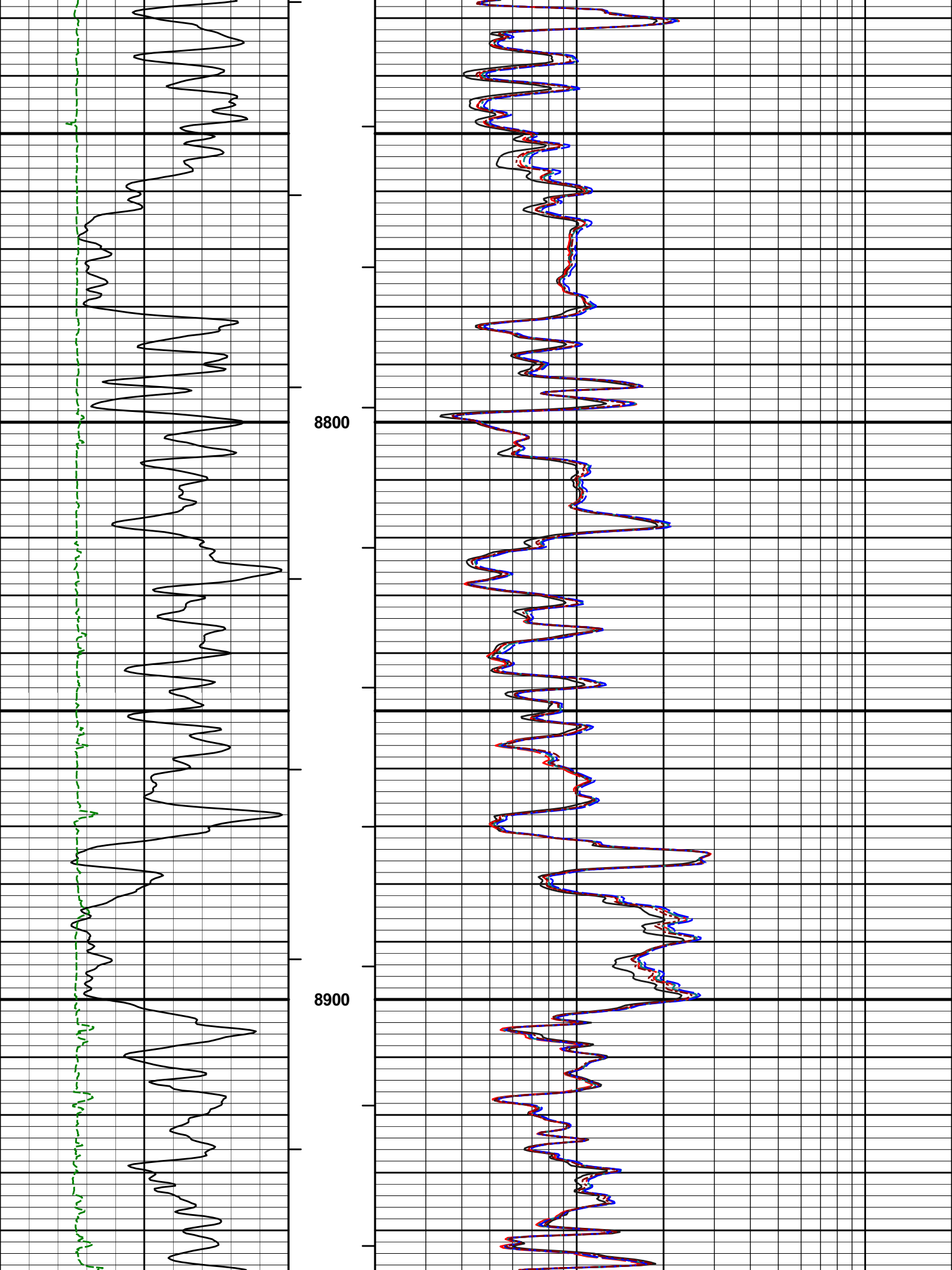


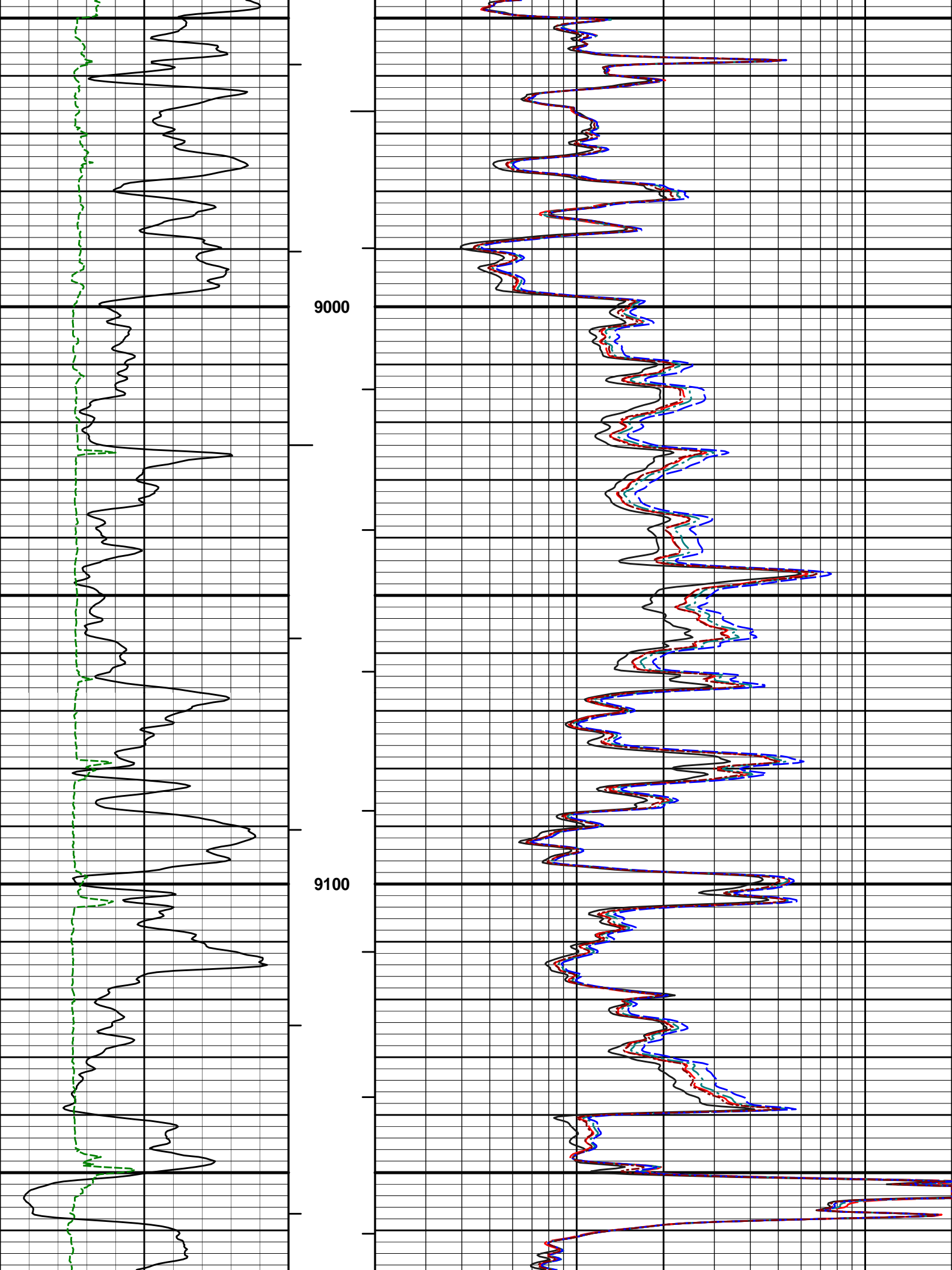


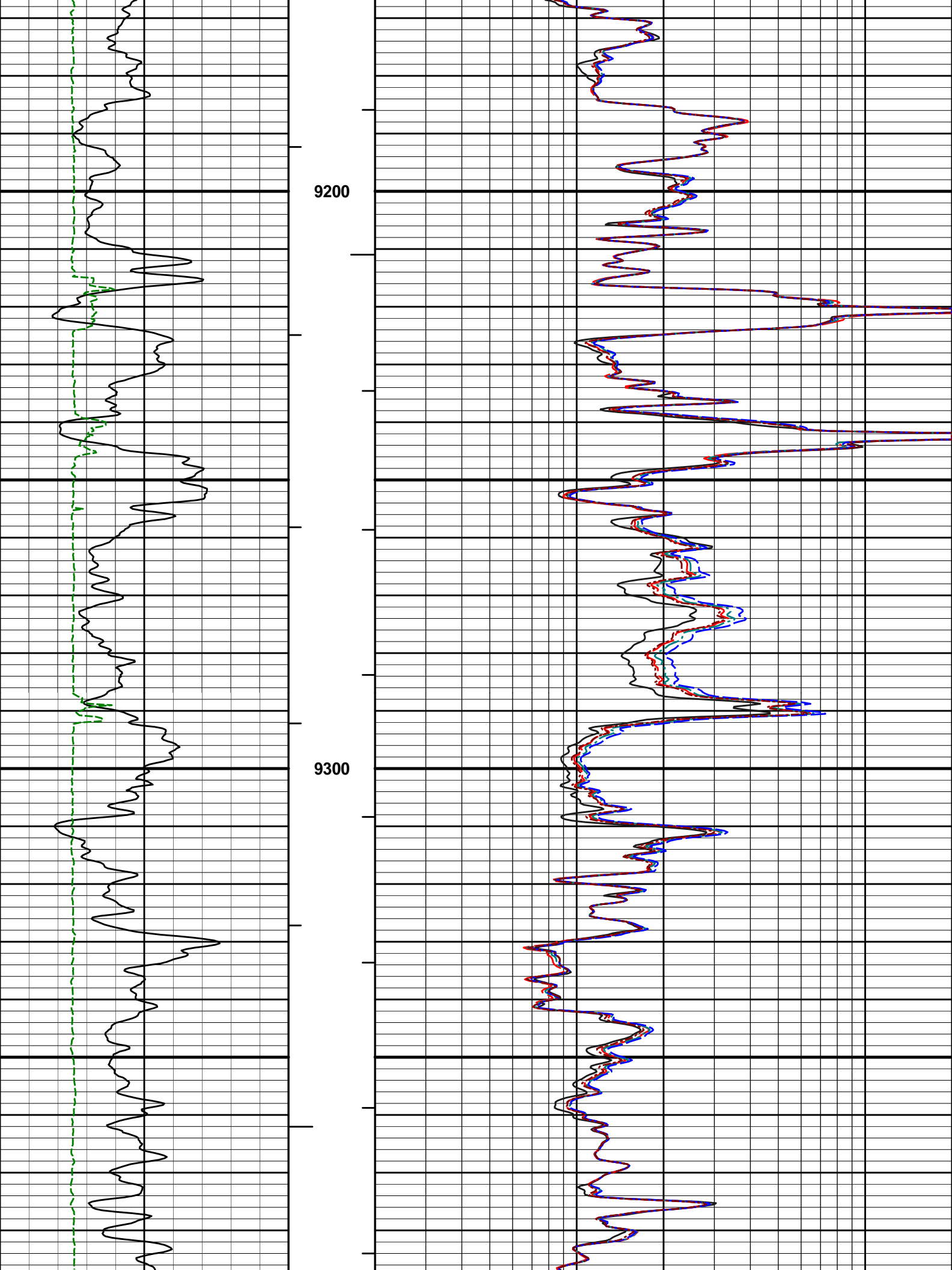


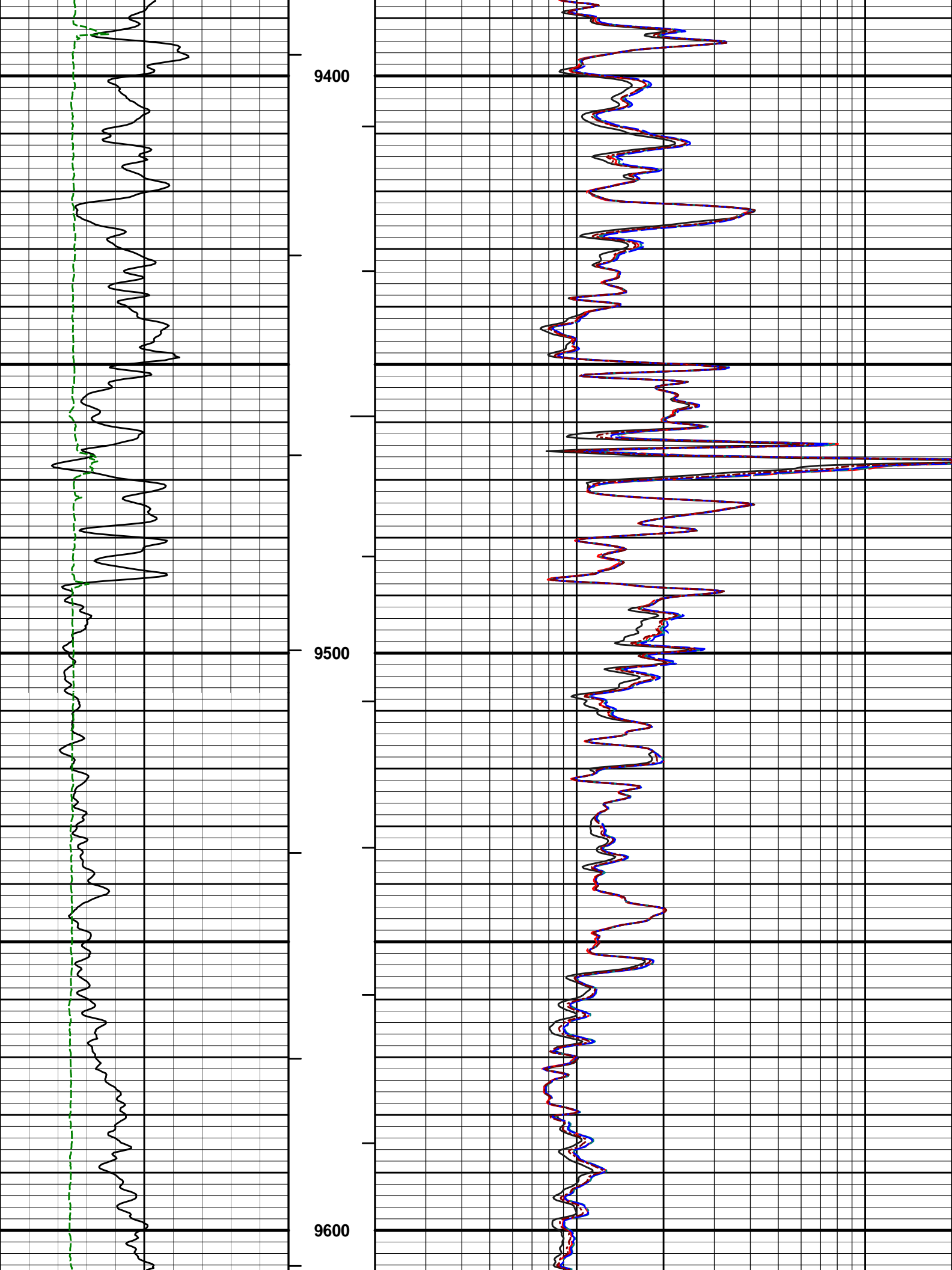




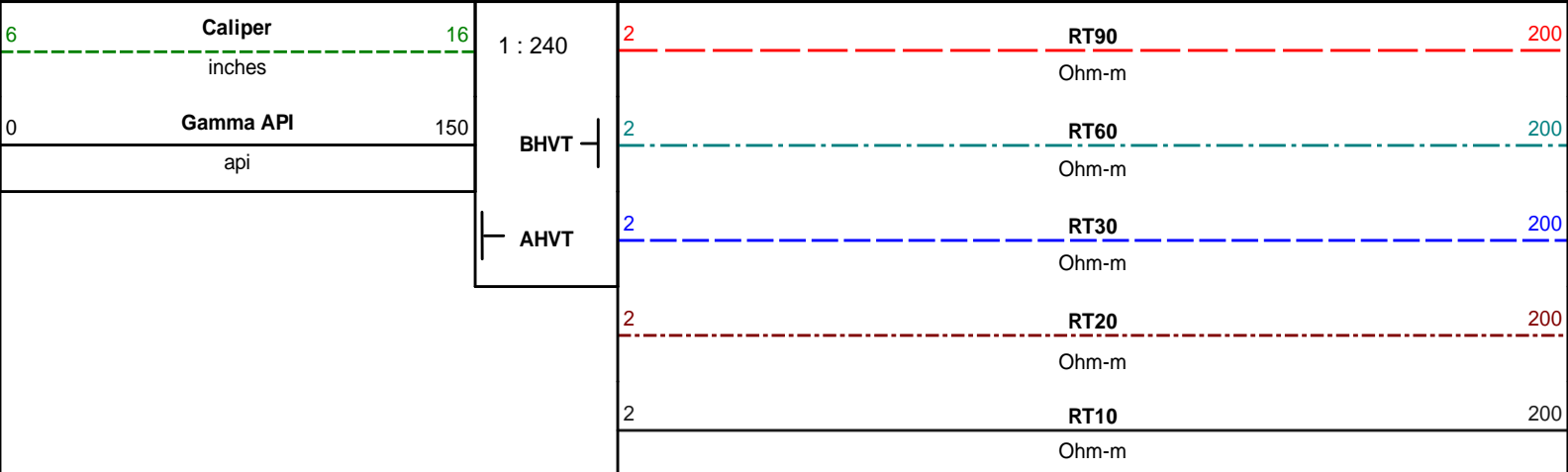
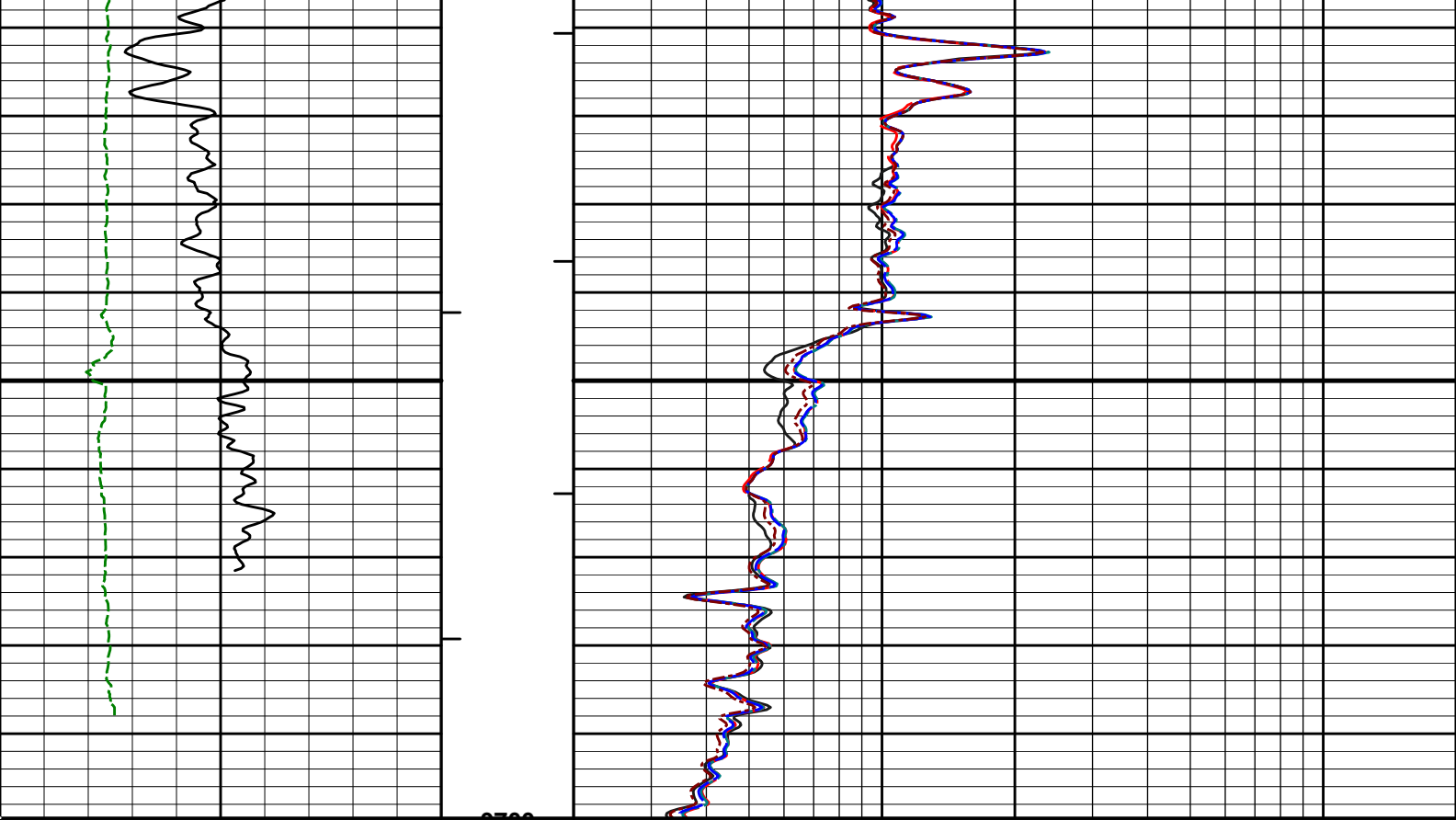












**HALLIBURTON**

Plot Time: 16-Jun-18 22:21:53  
Plot Range: 2580 ft to 9699.54 ft  
Data: L\_CC0697\_03\_13W\Well Based\MAIN\  
Plot File: \\RES\LARAMIE\_5IN\_ACRT

MAIN PASS 5" = 100'

**HALLIBURTON**

**CALIBRATION REPORT**

**ULTRA-SLIM QUAD TELEMETRY GAMMA CARTRIDGE SHOP CALIBRATION**

Tool Name:	S4TG - 11577724	Reference Calibration Date:	08-Mar-18 09:03:59
Engineer:	J. HEATHERLY	Calibration Date:	13-Jun-18 15:11:06
Software Version:	WL INSITE P5.6.5 (Build 3)	Calibration Version:	1

Software Version: WL INSITE R5.6.5 (Build 2)

Calibration Version: 1

Calibrator Source S/N: USC-003-CB

Calibrator API Reference:155.00 api

Equivalent Calibrator API Reference:151.4 api

Measurement	Measured	Calibrated	Units
Background	27.2	31.5	api
Background + Calibrator	158.0	182.9	api
Calibrator	130.8	151.4	api

ULTRA-SLIM QUAD TELEMETRY GAMMA CARTRIDGE FIELD CALIBRATION			
Tool Name:	S4TG - 11577724	Reference Calibration Date:	13-Jun-18 15:11:06
Engineer:	J. HEATHERLY	Calibration Date:	13-Jun-18 15:14:46
Software Version:	WL INSITE R5.6.5 (Build 2)	Calibration Version:	1

Calibrator Source S/N: USC-003-CB			
Calibrator API Reference:155.00 api			
Equivalent Calibrator API Reference:151.4 api			
Field Verification	Shop	Field	Units
Background	31.5	33.2	api
Background + Calibrator	182.9	186.1	api
Calibrator	151.4	152.9	api
Shop	Field	Difference	Tolerance
151.4	152.9	-1.5	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION			
Tool Name:	SDSN - 11790665	Reference Calibration Date:	16-Mar-18 13:55:13
Engineer:	J. HEATHERLY	Calibration Date:	13-Jun-18 14:21:18
Software Version:	WL INSITE R5.6.5 (Build 2)	Calibration Version:	1

Logging Source S/N: DSN-359  
Reference value assigned to Bath: 22.284  
Snow Block S/N: 11392047  
Calibration Bath Water Temperature: 65 degF  
Min. Tool Housing Outside Diameter: 2.350 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.99042	0.98462	0.900 - 1.100

WATER BATH SUMMARY (Vertical Water Bath)				
Measurement	Current Reading (Previous Coef.)	Calibrated (New Coef.)	Change	Control Limit On Change
Porosity (decp):	1.0185	1.0000	0.0185	+/- 0.0280
Calibrated Ratio:	22.4157	22.2843	0.131	+/- 0.180

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0346	0.02000 - 0.09000

PASS/FAIL SUMMARY	
Background Check:	Passed
Gain-Range Check:	Passed
Snow-Block Check:	Passed

DUAL SPACED NEUTRON FIELD CALIBRATION

Tool Name: SDSN - 11790665

Reference Calibration Date: 13-Jun-18 14:21:18

Engineer: J. HEATHERLY

Calibration Date: 13-Jun-18 14:22:36

Software Version: WL INSITE R5.6.5 (Build 2)

Calibration Version: 1

Logging Source S/N: DSN-359

Snow Block S/N: 11392047

NEUTRON FIELD-CHECK SUMMARY

	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0346	0.0344	-0.0001	+/- 0.0150

PASS/FAIL SUMMARY

Block Change Check:	Passed
Snow Block Stat Check:	Passed
Temperature Check:	Passed

DENSITY CALIPER SHOP CALIBRATION

Tool Name: SSDL - 11790674

Reference Calibration Date: 16-Mar-18 11:39:01

Engineer: J. HEATHERLY

Calibration Date: 13-Jun-18 11:52:39

Software Version: WL INSITE R5.6.5 (Build 2)

Calibration Version: 1

The ring diameter is computed from: DIAMETER = PAD EXTENSION + ARM EXTENSION + TOOL DIAMETER

Calibrator Small Ring Diameter: 4.100 in

Calibrator Medium Ring Diameter: 8.10 in

Calibrator Large Ring Diameter: 12.100 in

Tool Diameter: 2.35 in

Arm Power: -3.170e-06

CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-20940.97	-20872.57	-33000.00 - -16000.00
Pad Gain	7.540e-05	7.530e-05	5.250e-05 - 9.750e-05
Arm Offset	-21410.44	-21930.48	-28000.00 - -7000.00
Arm Gain	3.121e-04	3.105e-04	2.900e-04 - 3.300e-04

ARM EXTENSION CHECK

Measurement	Expected Arm Extension	Measured Arm Extension	Difference	Control Limit
Medium Ring - Arm Only (in)	5.75	5.75	0.00	+/- 0.15

CALIBRATION CHANGES

Measurement	Current Reading (Previous Coeff.)	Calibrated (New Coeff.)	Change	Control Limit On New Value
PAD EXTENSION:				
Closed (in)	-0.01	0.00	0.01	+/- 0.20
Small Ring (in)	1.77	1.78	0.01	+/- 0.20
Maximum (in)	2.16	2.16	0.01	+/- 0.20
ARM EXTENSION:				
Small Ring (in)	4.26	4.10	-0.16	+/- 0.20
Large Ring (in)	12.27	12.10	-0.17	+/- 0.20
Maximum (in)	15.59	15.42	-0.17	+/- 0.20

PASS/FAIL SUMMARY

Calibration-Coefficients Range Check:	Passed
Calibration Change Check:	Passed

**DENSITY CALIPER FIELD CALIBRATION****Tool Name:** SSDL - 11790674**Reference Calibration Date:** 13-Jun-18 11:52:39**Engineer:** J. HEATHERLY**Calibration Date:** 13-Jun-18 11:57:45**Software Version:** WL INSITE R5.6.5 (Build 2)**Calibration Version:** 1

The Caliper is computed from: CALIPER = PAD EXTENSION + ARM EXTENSION + TOOL DIAMETER

Tool Diameter: 2.35 in

MEASURED CALIPER VALUES				
Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	10.91	10.88	-0.03	+/- 0.20
Caliper	15.42	15.38	-0.04	+/- 0.20

**PASS/FAIL SUMMARY**

Pad Extension Check: Passed

Diameter Check: Passed

**SPECTRAL DENSITY SHOP CALIBRATION****Tool Name:** SSDL Pad - 11790681**Reference Calibration Date:** 16-Mar-18 11:10:27**Engineer:** J. HEATHERLY**Calibration Date:** 13-Jun-18 10:38:14**Software Version:** WL INSITE R5.6.5 (Build 2)**Calibration Version:** 1

Logging Source S/N: 5265GW

Aluminum Block S/N: ROCK SPRINGS, WY

Density: 2.602g/cc

Pe: 3.110

Magnesium Block S/N: ROCK SPRINGS, WY

Density: 1.690g/cc

Pe: 2.610

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0043	0.9789	0.90 - 1.10
Near Dens Gain	1.0413	1.0340	0.90 - 1.10
Near Peak Gain	1.0494	1.0376	0.90 - 1.10
Near Lith Gain	1.0367	1.0254	0.90 - 1.10
Far Bar Gain	1.0019	0.9947	0.90 - 1.10
Far Dens Gain	1.0086	1.0066	0.90 - 1.10
Far Peak Gain	1.0144	1.0097	0.90 - 1.10
Far Lith Gain	1.0134	1.0077	0.90 - 1.10
Near Bar Offset	0.0658	0.3123	NONE
Near Dens Offset	-0.3030	-0.2241	NONE
Near Peak Offset	-0.4207	-0.2974	NONE
Near Lith Offset	-0.2539	-0.1421	NONE
Far Bar Offset	0.1318	0.1943	NONE
Far Dens Offset	0.0362	0.0560	NONE
Far Peak Offset	-0.0465	-0.0026	NONE
Far Lith Offset	-0.0224	0.0223	NONE
Near Bar Background	193.15	191.70	155 - 360
Near Dens Background	106.64	106.28	90 - 210
Near Peak Background	63.49	63.06	55 - 125
Near Lith Background	55.22	55.60	45 - 100
Far Bar Background	122.89	122.05	90 - 210
Far Dens Background	60.31	60.38	45 - 105
Far Peak Background	49.49	48.06	35 - 85
Far Lith Background	30.99	30.84	25 - 55

Far Lith Background	30.99	30.84	23 - 33
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CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.688	1.691	0.003	+/- 0.015
Pe	2.399	2.396	-0.003	+/- 0.150
ALUMINUM				
Density (g/cc)	2.588	2.594	0.006	+/- 0.01500
Pe	2.937	2.937	0.000	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0013	+/- 0.0110	-0.0029	+/- 0.0140
Magnesium Block	-0.0035	+/- 0.0110	-0.0002	+/- 0.0140
Aluminum Block	-0.0067	+/- 0.0110	-0.0036	+/- 0.0140
Resolution	9.55	6.00 - 11.50	9.61	6.00 - 11.50
Noise Edge	0	< 11	0	< 20
Internal Verifier(B+D+P+L)	417	345 - 795	261	195 - 455

PASS/FAIL SUMMARY	
Background Quality Check:	Passed
Background Range Check:	Passed
Background Resolution Check:	Passed
Background Verification Check:	Passed
Near Noise Edge:	Passed
Far Noise Edge:	Passed
Magnesium Quality Check:	Passed
Aluminum Quality Check:	Passed
Gains Check:	Passed
Changes in Calibration Blocks:	Passed

SPECTRAL DENSITY FIELD CHECK

Tool Name:	SSDL Pad - 11790681	Reference Calibration Date:	13-Jun-18 10:38:14
Engineer:	J. HEATHERLY	Calibration Date:	13-Jun-18 10:46:21
Software Version:	WL INSITE R5.6.5 (Build 2)	Calibration Version:	1

Pad Temperature: 80.9 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	416.635	414.061	-2.574	8.698
Far (B+D+P+L) cps	261.347	261.387	0.040	11.097
Near Resolution	9.55	9.65	0.100	0.50
Far Resolution	9.61	9.49	-0.120	1.00

PASS/FAIL SUMMARY	
Bkg Quality Check:	Passed
Bkg Resolution Check:	Passed
Bkg Verification Check:	Passed

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION									
Tool Name:		SACRT Sonde - 12055737				Reference Calibration Date:		07-Dec-17 11:21:16	
Engineer:		B. ERICKSON				Calibration Date:		14-Mar-18 09:19:38	
Software Version:		WL INSITE R5.0.5 (Build 8)				Calibration Version:		1	
Host Tool Name:		SACRT Instrument - 12055741							
TYPICAL GAIN RANGE									
Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	0.9859	1.05	0.95	0.9915	1.05	0.95	0.9913	1.05
A2 (50")	0.95	0.9843	1.05	0.95	0.9914	1.05	0.95	0.9913	1.05
A3 (29")	0.95	0.9860	1.05	0.95	0.9895	1.05	0.95	0.9846	1.05
A4 (17")	0.95	0.9829	1.05	0.95	0.9876	1.05	0.95	0.9851	1.05
A5 (10")	N/A	N/A	N/A	0.95	0.9954	1.05	0.95	0.9864	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9890	1.05	0.95	0.9852	1.05
TYPICAL SONDE OFFSET RANGE									
Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	-40	9.150	40	-25	0.562	25	-15	-1.098	15
A2 (50")	-40	11.053	40	-25	1.552	25	-15	-0.211	15
A3 (29")	-40	6.215	40	-25	3.575	25	-15	1.653	15
A4 (17")	-80	-18.520	80	-40	5.211	40	-25	5.659	25
A5 (10")	N/A	N/A	N/A	-150	13.379	100	-75	40.019	75
A6 (6")	N/A	N/A	N/A	-100	-7.096	250	-250	93.678	250
TRANSMITTER CURRENT GAIN					R-MUD VERIFICATION				
Signal	Lower	R	Upper	Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)		
12K	0.59	0.64	0.69	Mud Cell	0.95	1.00	1.05		
36K	0.79	0.85	0.91						
72K	0.6	0.61	0.74						
PASS/FAIL SUMMARY									
GAIN RANGE CHK				PASS					
TOOL OK TO LOG									

QUALITY CHECK SHOP CALIBRATION									
Tool Name:		SACRT Sonde - 12055737				Reference Calibration Date:		07-Dec-17 11:24:33	
Engineer:		B. ERICKSON				Calibration Date:		14-Mar-18 09:21:32	
Software Version:		WL INSITE R5.0.5 (Build 8)				Calibration Version:		1	
Host Tool Name:		SACRT Instrument - 12055741							
STANDARD DEVIATIONS									
	R12KHz			R36KHz			R72KHz		
	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail
A1 (80")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A2 (50")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A3 (29")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A4 (17")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A5 (10")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A6 (6")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass

AVERAGES									
	R12KHz			R36KHz			R72KHz		
	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail
A1 (80")	0.000	< 0.500	Pass	0.000	< 0.500	Pass	-0.000	< 0.500	Pass
A2 (50")	0.000	< 0.500	Pass	0.000	< 0.500	Pass	0.000	< 0.500	Pass
A3 (29")	0.000	< 0.500	Pass	0.000	< 0.500	Pass	0.001	< 0.500	Pass
A4 (17")	-0.000	< 0.500	Pass	0.000	< 0.500	Pass	0.002	< 0.500	Pass
A5 (10")	-0.002	> -0.500	Pass	0.001	< 0.500	Pass	0.012	< 0.500	Pass
A6 (6")	-0.006	> -0.500	Pass	-0.000	< 0.500	Pass	0.026	< 0.500	Pass

GAIN TOLERANCE					
R12KHz					
	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	2864418.250	2856623.000	7795.250	142831.150	Pass
A2 (50")	2805453.000	2799791.000	5662.000	139989.550	Pass
A3 (29")	2886552.750	2879816.500	6736.250	143990.825	Pass
A4 (17")	2816118.000	2807187.750	8930.250	140359.388	Pass
A5 (10")	2840069.250	2835506.500	4562.750	141775.325	Pass
A6 (6")	2797970.250	2791227.500	6742.750	139561.375	Pass
R36KHz					
	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	707002.938	713578.875	6575.937	35678.944	Pass
A2 (50")	959131.063	965636.000	6504.937	48281.800	Pass
A3 (29")	853956.188	860564.063	6607.875	43028.203	Pass
A4 (17")	1047743.563	1055243.250	7499.687	52762.163	Pass
A5 (10")	1023675.313	1029805.625	6130.312	51490.281	Pass
A6 (6")	1009029.063	1015765.563	6736.500	50788.278	Pass
R72KHz					
	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	905888.250	902654.313	3233.937	45132.716	Pass
A2 (50")	868841.875	865053.625	3788.250	43252.681	Pass
A3 (29")	834433.750	831389.938	3043.812	41569.497	Pass
A4 (17")	778019.875	774278.438	3741.437	38713.922	Pass
A5 (10")	784466.313	781156.813	3309.500	39057.841	Pass
A6 (6")	767868.813	764359.625	3509.188	38217.981	Pass

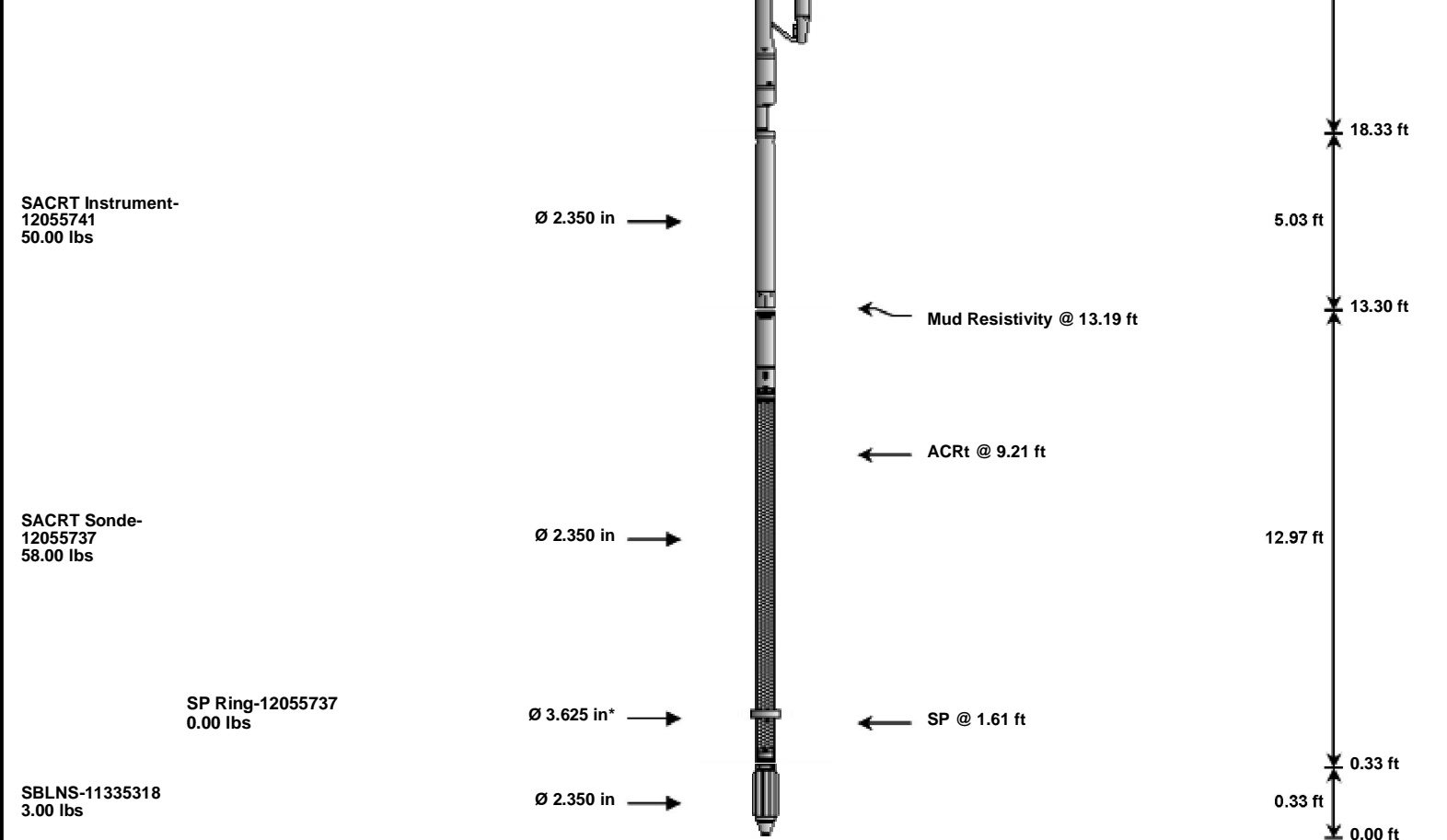
PASS/FAIL SUMMARY	
Std Deviation Verification	Pass
Average Verification	Pass
Gain Tolerance Verification	Pass

Data: L\_CC0697\_03\_13W0001 USC\004.01 16-Jun-18 19:11 Up Date: 16-Jun-18 22:00:33

# TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
SBLT-C-11974791 31.00 lbs		Ø 2.350 in →			3.32 ft	73.31 ft
SBLT-S-11974784 42.00 lbs		Ø 2.350 in →			2.88 ft	69.99 ft
SMCSA-12075178 57.00 lbs		Ø 2.350 in →			4.65 ft	67.11 ft
SBLT-B-12006177 85.00 lbs		Ø 2.350 in →			8.01 ft	62.46 ft
SBLT-I-11974782 55.00 lbs		Ø 2.350 in →			6.12 ft	54.45 ft
S4TG-11577724 70.00 lbs		Ø 2.350 in →			9.77 ft	48.33 ft
				← GammaRay @ 39.61 ft		38.56 ft
SDSN-11790665 74.00 lbs		Ø 2.350 in →		← DSN Far @ 32.70 ft ← DSN Near @ 31.85 ft	7.96 ft	30.60 ft
SSDL-11790674 140.00 lbs	SSDL Pad-11790681 65.00 lbs	Ø 2.350 in → Ø 4.750 in* →		SDL Arm Caliper @ 23.49 ft SDL Pad Caliper @ 23.42 ft SDL @ 23.00 ft	12.27 ft	





Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
SBLT-C	Ultra-Slim Hole Motorized Releasable Sub	11974791	31.00	3.32	69.99	300.00
SBLT-S	Ultra-Slim Hole Shock Sub	11974784	42.00	2.88	67.11	300.00
SMCSA	Ultra-Slim Hole Multi Conductor Swivel	12075178	57.00	4.65	62.46	300.00
SBLT-B	Ultra-Slim Hole Battery Sub	12006177	85.00	8.01	54.45	300.00
SBLT-I	Ultra-Slim Hole Sensor / Inverter Sub	11974782	55.00	6.12	48.33	300.00
S4TG	Ultra-Slim Quad Telemetry Gamma Cartridge	11577724	70.00	9.77	38.56	60.00
SDSN	Ultra-Slim Hole Dual Spaced Neutron	11790665	74.00	7.96	30.60	60.00
SSDL	Ultra-Slim Hole Spectral Density	11790674	140.00	12.27	18.33	60.00
SDLP	Slim Density Pad	11790681	65.00	2.55 *	21.72	60.00
SACRT	Array Compensated True Resistivity Instrument Section	12055741	50.00	5.03	13.30	120.00
SACRT	Array Compensated True Resistivity Sonde Section	12055737	58.00	12.97	0.33	120.00
SP	SP Ring	12055737	0.00	0.25 *	1.61	300.00
SBLNS	Ultra-Slim Bull Nose	11335318	3.00	0.33	0.00	300.00
<b>Total</b>			<b>730.00</b>	<b>73.31</b>		
* Not included in Total Length and Length Accumulation.						
Data: L_CC0697_03_13W0001 USC\004.01 16-Jun-18 19:11 Up					Date: 16-Jun-18 21:59:04	

COMPANY	LARAMIE ENERGY LLC		
WELL	CC-0697-03-13W		
FIELD	GRAND VALLEY		
COUNTY	GARFIELD	STATE	COLORADO
<b>HALLIBURTON</b>		ULTRA SLIM ARRAY COMPENSATED TRUE RESISTIVITY	