



# Weatherford®

**6 3/4 in. & 4 3/4 in. WeatherfordLWD™**  
**Spectral Gamma Ray Image**  
**5 in. MEASURED DEPTH**  
**RECORDED DATA**  
**FINAL PRINT**

Company: Anadarko Petroleum Corp.  
Well: Camp 25N-30HZ  
Field: Wattenberg  
Rig: H&P 307  
County: Weld

COMPANY		Anadarko Petroleum Corp.	
WELL		Camp 25N-30HZ	
FIELD		Wattenberg	
RIG		H&P 307	
COUNTY	Weld	STATE	Colorado
API #	05-123-35258		
Latitude:		40.17594° N	X = 3,221,975.14 ft
Longitude:		104.70771° W	Y = 1,314,924.43 ft
		Mag Decl: 8.68°	
		Mag Dip: 66.83°	
Other Services: Directional and Temperature			

Permanent Datum:	<u>Mean Sea Level</u>		
Log Measured From:	<u>Drill Floor</u>	Elev: <u>4975 ft</u>	above perm. datum
Depth Reference:	<u>Drillers Tally</u>	Total Depth: <u>14144 ft</u>	
Depth Logged:	6300ft	to 14144 ft	Runs: 6
Date Logged:	21-May-12	to 31-May-12	Spud Date: 5-May-12
		Elevation	
		K.B.	na
		G.L.	4950 ft
		D.F.	4975 ft
		W.D.	na

Borehole Record			Casing Record			
Hole Size	From	To	Size	Weight	From	To
13.500 in.	0 ft	854 ft	9.625 in.	53.5 lb/ft	Surface	847 ft
8.750 in.	854 ft	7567 ft	7.000 in.	39.0 lb/ft	Surface	7543 ft
6.125 in.	7567 ft	14144 ft				

Borehole Deviation Record			Mud Record			
Hole Size	Min. Inc.	Max. Inc.	Type	Weight	From	To
13.500 in.	0.07°	1.82°	WBM	8.33 - 10.20 ppg	854 ft	14144 ft
8.750 in.	0.14°	86.78°				
6.125 in.	88.09°	92.84°				

**All interpretations of log data are opinions based on inferences from electrical or other measurements. Weatherford International does not guarantee the accuracy or correctness of any interpretation or recommendation and we shall not be liable or responsible for any loss, cost, damages or expenses incurred or sustained by anyone resulting from any interpretation or recommendation made by any of our employees or agents.**

RUN SUMMARY							
MWD/LWD Run Number	1	2	3	4	5	6	7
Bit Size in.	8.750	8.750	8.750	6.125	6.125	6.125	
Bit Type	PDC	PDC	PDC	PDC	PDC	PDC	
Bit TFA sq.in.	1.242	1.242	0.950	0.610	0.610	0.610	
Bit Start Depth ft	854	1345	6303	7567	10297	12964	
Bit End Depth ft	1345	6226	7567	10297	12964	14144	
Top Log Interval ft	-	-	6300	7567	10297	12964	
Bottom Log Interval ft	-	-	7519	10297	12964	14144	
Begin Log Time hrs	-	-	3:42	17:33	17:29	17:21	
Begin Log Date DD-MMM-YY	-	-	21-May-12	25-May-12	27-May-12	30-May-12	
End Log Time hrs	-	-	21:37	19:14	11:14	6:11	
End Log Date DD-MMM-YY	-	-	22-May-12	26-May-12	29-May-12	31-May-12	
Drill or Wipe	Drill	Drill	Drill	Drill/Wipe	Drill/Wipe	Drill/Wipe	
Flow Rate gal/min	357	649	649	296	296	296	
Max AV / CV @ MWD ft/min	282 / 117	399 / 168	399 / 250	485 / 330	485 / 315	485 / 325	
Min Inc @ Depth deg @ ft	0.07 @ 888	6.13 @ 2357	10.21 @ 6423	87.17 @ 10056	88.64 @ 11674	88.77 @ 14088	
Max Inc @ Depth deg @ ft	5.97 @ 1255	13.58 @ 5108	80.86 @ 7476	92.04 @ 8537	90.74 @ 11294	92.84 @ 13693	
MUD DATA							
Depth ft	1345	6226	7567	10297	12964	14144	
Fluid Type	WBM	WBM	WBM	WBM	WBM	WBM	
Mud Weight ppG	8.33	8.70	8.60	9.85	10.15	10.20	
Plastic Viscosity cP	2	1	5	11	11	12	
Solids / Sand %	0 / 0	2.3 / 0.01	1.9 / 0.01	7.7 / 0.04	7.7 / 0.04	8.7 / 0.08	
NaCl Equiv. Chlorides ppm	0	1320	1320	900	900	1000	
pH	WBM	WBM	WBM	WBM	WBM	WBM	
Oil:Water Ratio % Vol	0.0 : 100.0	0.0 : 100.0	0.0 : 100.0	1.0 : 99.0	1.0 : 99.0	0.0 : 100.0	
Rm @ Temperature ohm-m @ deg F	na	na	na	1.12 @ 61	1.14 @ 63	1.21 @ 68	
Rmc @ Temperature ohm-m @ deg F	na	na	na	1.38 @ 61	1.48 @ 63	1.60 @ 68	
Rmf @ Temperature ohm-m @ deg F	na	na	na	0.99 @ 61	1.08 @ 63	1.08 @ 68	
KCl % Vol	0	0	0	0	0	0	
Client Representative	D. Barrone	D. Barrone	D. Barrone	P. Cain	P. Cain	P. Cain	
WeatherfordLWD Engineer	J. Leger	J. Leger	J. Leger	S. Gray	S. Gray	S. Gray	

EQUIPMENT SUMMARY						
MWD/LWD Run Number	1	2	3	4	5	
PP Serial Number	CP20306PDIRHY-T01	CP20306PDIRHY-T01	CP20306PDIRHY-T01	na	na	
HEL Serial Number	na	na	na	NW20798PDB4.75	NW20802PDBB4.75	
MFR Serial Number	na	na	na	NW20799RBBK4.75	NW20799RBBK4.75	
IDS Serial Number	na	na	na	NW20800BI4.75	NW20800BI4.75	
SAGR Serial Number	na	na	na	NW20801JB4.75	NW20801JB4.75	
Sensor to Bit Offsets / Acquisition Rates						
Directional	ft / sec	59.29 / RT	59.29 / RT	59.26 / RT	50.22 / RT	50.22 / RT
Gamma Ray	ft / sec	na	na	45.05 / 10	35.58 / 10	35.58 / 10
Resistivity	ft / sec	na	na	na	71.39 / 10	71.39 / 10
Other Information						
Total BHA Length	ft	98.06	98.06	94.95	140.06	140.10
BHA Assembly Type		Steerable	Steerable	Steerable	Steerable	Steerable
Run Circulating Time	hr	5.90	46.06	44.60	23.12	36.53
Run Drilling Time	hr	0.34	31.15	18.76	15.65	17.70
LWD Run Number	6					
HEL Serial Number	NW20802PDBB4.75					
MFR Serial Number	NW20799RBBK4.75					
IDS Serial Number	NW20800BI4.75					
SAGR Serial Number	NW20801JB4.75					
Sensor to Bit Offsets / Acquisition Rates						
Directional	ft / sec	54.41 / RT				
Gamma Ray	ft / sec	39.76 / 10				
Resistivity	ft / sec	75.58 / 10				
Other Information						
Total BHA Length	ft	144.29				
BHA Assembly Type		Steerable				
Stabilizer Location	ft	35.15				
Stabilizer Location	ft	110.62				
Run Circulating Time	hr	7.43				
Run Drilling Time	hr	3.44				



## MUD SUMMARY

Date and Time	Run	Bit Depth	Mud Weight	% K	Rm @ Temp	Rmf @ Temp	Rmc @ Temp	BHCT
16 May 12 @ 14:39	01	854 ft	8.33 ppg	0	na	na	na	74 F
18 May 12 @ 00:00	02	1345 ft	8.70 ppg	0	na	na	na	155 F
20 May 12 @ 17:00	03	6303 ft	8.60 ppg	0	na	na	na	180 F
24 May 12 @ 11:15	04	7567 ft	9.85 ppg	0	1.12 @ 61 F	0.99 @ 61 F	1.38 @ 61 F	221 F
27 May 12 @ 15:46	05	10297 ft	10.15 ppg	0	1.14 @ 63 F	1.08 @ 63 F	1.48 @ 63 F	238 F
30 May 12 @ 09:00	06	12964 ft	10.20 ppg	0	1.21 @ 68 F	1.08 @ 68 F	1.60 @ 68 F	250 F

MWD/LWD RUN REMARKS		
<b>Run Number:      1 :: RECORDED DATA LOG</b>		
<b>WFT Services Provided:</b> Real Time Logging: Temperature. Directional Services: On demand Inclination and Azimuth.		
<b>Run Number:      2 :: RECORDED DATA LOG</b>		
<b>WFT Services Provided:</b> Real Time Logging: Temperature. Directional Services: On demand Inclination and Azimuth.		
<b>Run Number:      3 :: RECORDED DATA LOG</b>		
<b>WFT Services Provided:</b> Recorded and Real Time Logging: Gamma Ray and Temperature. Directional Services: On demand Inclination and Azimuth.		
<b>Borehole and Environmental Correction:</b> Collar O.D.:                      6.750 in. <b>Gamma Ray:</b> Collar O.D., Collar I.D. and K1 factor. Collar I.D.:                      2.815 in. K1 Factor:                      4.5590		
<b>Run Number:      4 :: RECORDED DATA LOG</b>		
<b>WFT Services Provided:</b> Recorded and Real Time Logging: Gamma Ray, Deep and Shallow Resistivity and Temperature. Directional Services: On demand Inclination and Azimuth.		
<b>Borehole and Environmental Correction:</b> Hole Size:                      6.125 in. <b>Gamma Ray:</b> Corrected for mud weight, hole size and KCl concentration. Mud Weight:                      9.85 ppg <b>Resistivities:</b> Corrected for borehole temperature, hole size, drilling fluid resistivity Borehole Temperature:                      221 F                      and dielectric correction. Mud Type:                      WBM Drilling Fluid Resistivity:                      1.12 ohm-m KCl Concentration:                      0%		
<b>Run Number:      5 :: RECORDED DATA LOG</b>		
<b>WFT Services Provided:</b> Recorded and Real Time Logging: Gamma Ray, Deep and Shallow Resistivity and Temperature. Directional Services: On demand Inclination and Azimuth.		
<b>Borehole and Environmental Correction:</b> Hole Size:                      6.125 in. <b>Gamma Ray:</b> Corrected for mud weight, hole size and KCl concentration. Mud Weight:                      10.15 ppg <b>Resistivities:</b> Corrected for borehole temperature, hole size, drilling fluid resistivity Borehole Temperature:                      238 F                      and dielectric correction. Mud Type:                      WBM Drilling Fluid Resistivity:                      1.14 ohm-m KCl Concentration:                      0%		
<b>Run Number:      6 :: RECORDED DATA LOG</b>		
<b>WFT Services Provided:</b> Recorded and Real Time Logging: Gamma Ray, Deep and Shallow Resistivity and Temperature. Directional Services: On demand Inclination and Azimuth.		
<b>Borehole and Environmental Correction:</b> Hole Size:                      6.125 in. <b>Gamma Ray:</b> Corrected for mud weight, hole size and KCl concentration. Mud Weight:                      10.20 ppg <b>Resistivities:</b> Corrected for borehole temperature, hole size, drilling fluid resistivity Borehole Temperature:                      250 F                      and dielectric correction. Mud Type:                      WBM Drilling Fluid Resistivity:                      1.21 ohm-m KCl Concentration:                      0%		

MWD/LWD LOG COMMENTS	
Comment No. 1-1	<p>RECORDED DATA LOG</p> <p>Start of MWD Drilling Run 03</p> <p>Weatherford International provided 6 3/4 in. Directional, Gamma Ray and Temperature for Run 03.</p> <p>Run 03 started formation logging May 21, 2012 at 03:42 at 6300 MD / 6224 TVD. Weatherford International logged the 8.750 in. borehole.</p> <p>The WBM at the start of drilling was 8.60 ppg.</p>
Comment No. 1-2	<p>End of MWD Drilling Run 03</p> <p>Run 03 ended drilling formation May 22, 2012 at 21:37 at 7567 MD / 7133 TVD.</p> <p>The WBM at the end of drilling was 8.60 ppg.</p>
Comment No. 1-3	<p>The well was drilled from 7567 ft MD to 7663 ft MD without logging tools in the BHA. The hole drilled was a 6.125 in. borehole.</p>
Comment No. 2-1	<p>RECORDED DATA LOG</p> <p>Start of LWD Drilling Run 04</p> <p>Weatherford International provided 4 3/4 in. Directional, Resistivity, Spectral Gamma Ray and Temperature for Run 04.</p> <p>Run 04 started formation drilling May 25, 2012 at 17:33 at 7663 MD / 7131 TVD. Weatherford International logged the 6.125 in. borehole.</p> <p>The WBM at the start of drilling was 9.85 ppg.</p>
Comment No. 2-2	<p>End of LWD Drilling Run 04</p> <p>Run 04 ended drilling formation May 26, 2012 at 19:14 at 10297 MD / 7153 TVD.</p> <p>The WBM at the end of drilling was 9.85 ppg.</p>
Comment No. 3-1	<p>RECORDED DATA LOG</p> <p>Start of LWD Drilling Run 05</p> <p>Weatherford International provided 4 3/4 in. Directional, Resistivity, Spectral Gamma Ray and Temperature for Run 05.</p> <p>Run 05 started formation drilling May 27, 2012 at 17:29 at 10297 MD / 7153 TVD. Weatherford International logged the 6.125 in. borehole.</p> <p>The WBM at the start of drilling was 10.00 ppg.</p>
Comment No. 3-2	<p>End of LWD Drilling Run 05</p> <p>Run 05 ended drilling formation May 29, 2012 at 11:14 at 12964 MD / 7172 TVD.</p> <p>The WBM at the end of drilling was 10.00 ppg.</p>

**Comment No. 4-1**

RECORDED DATA LOG

Start of LWD Drilling Run 06

Weatherford International provided 4 3/4 in. Directional, Resistivity, Spectral Gamma Ray and Temperature for Run 06.

Run 06 started formation drilling May 30, 2012 at 17:21 at 12964 MD / 7172 TVD. Weatherford International logged the 6.125 in. borehole.

The WBM at the start of drilling was 10.15 ppg.

**Comment No. 4-2**

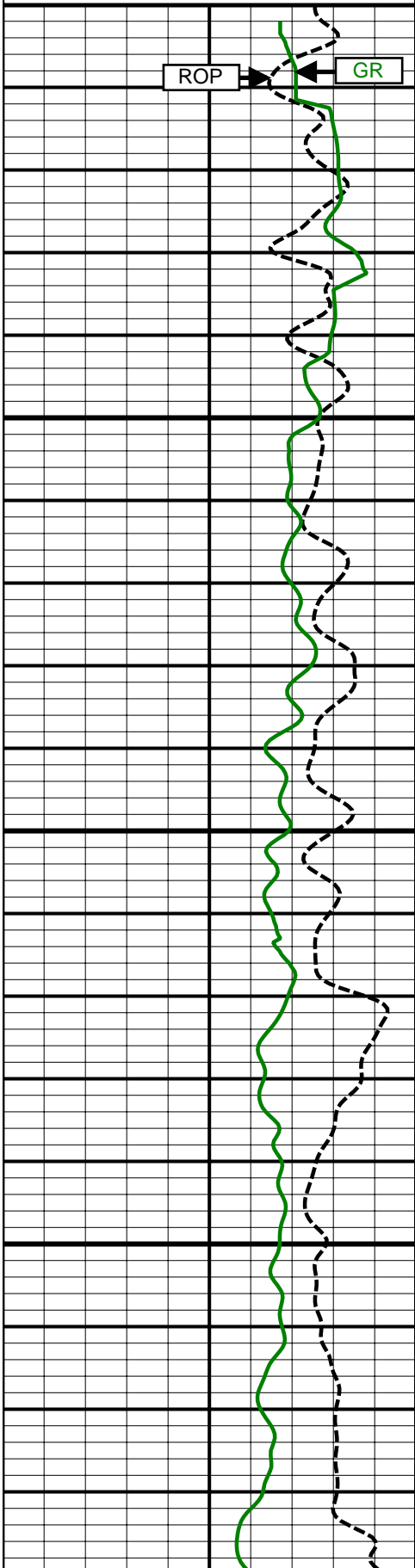
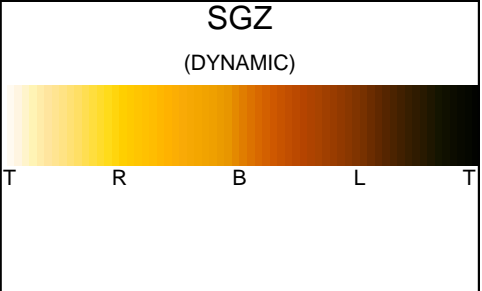
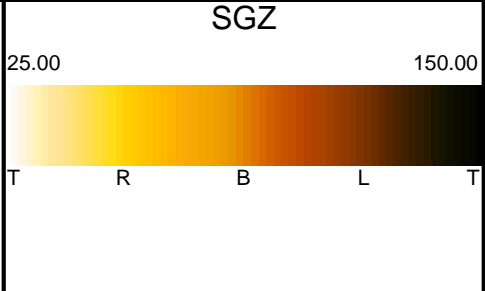
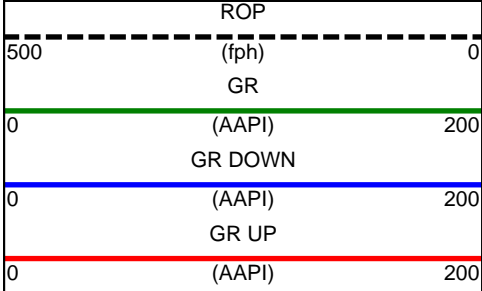
End of LWD Drilling Run 06

Run 06 ended drilling formation May 31, 2012 at 06:11 at 14144 MD / 7159 TVD.

The WBM at the end of drilling was 10.10 ppg.

CURVE SPECIFICATIONS				
CURVE TYPE	MNEMONIC	UNITS	COMMENTS	CORRECTIONS
Rate of Penetration	ROP	fph	Rate of Penetration 3.0 ft window 0.5 ft Exponential Smoothing	None
Gamma Ray	GR	AAP1	Gamma Ray 3.0 ft window 0.5 ft Exponential Smoothing	See LWD Run Remarks
Gamma Ray Up	GR Up	AAP1	Gamma Ray Up 3.0 ft window 0.5 ft Exponential Smoothing	
Gamma Ray Down	GR Down	AAP1	Gamma Ray Down 3.0 ft window 0.5 ft Exponential Smoothing	

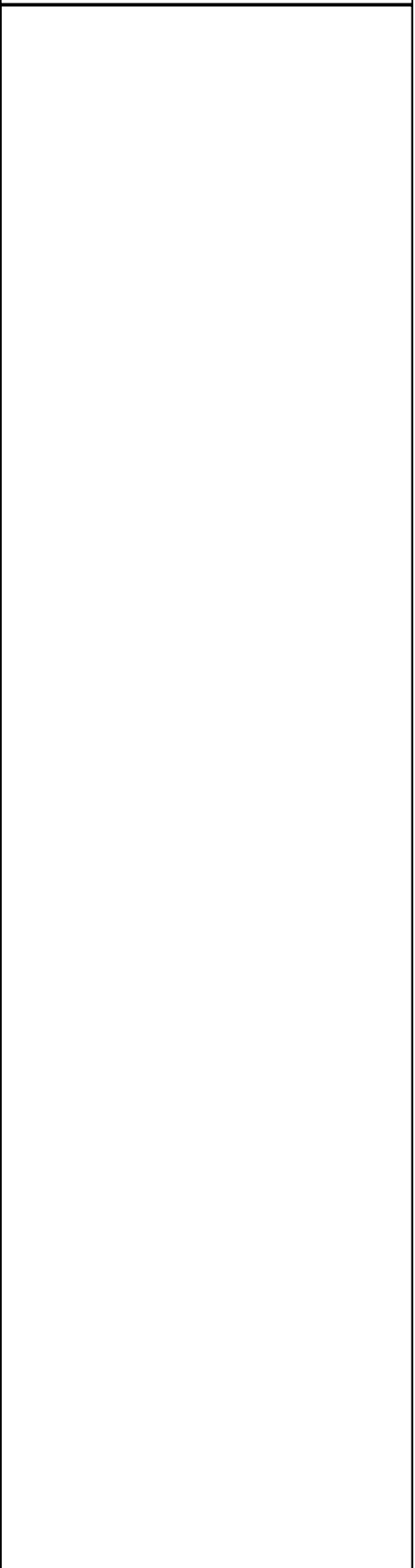
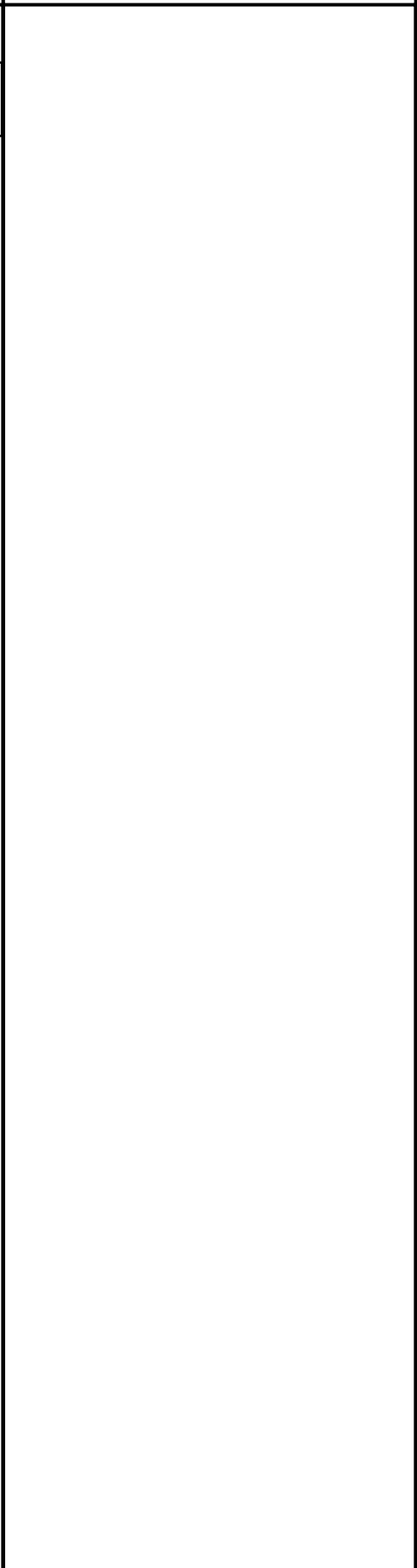
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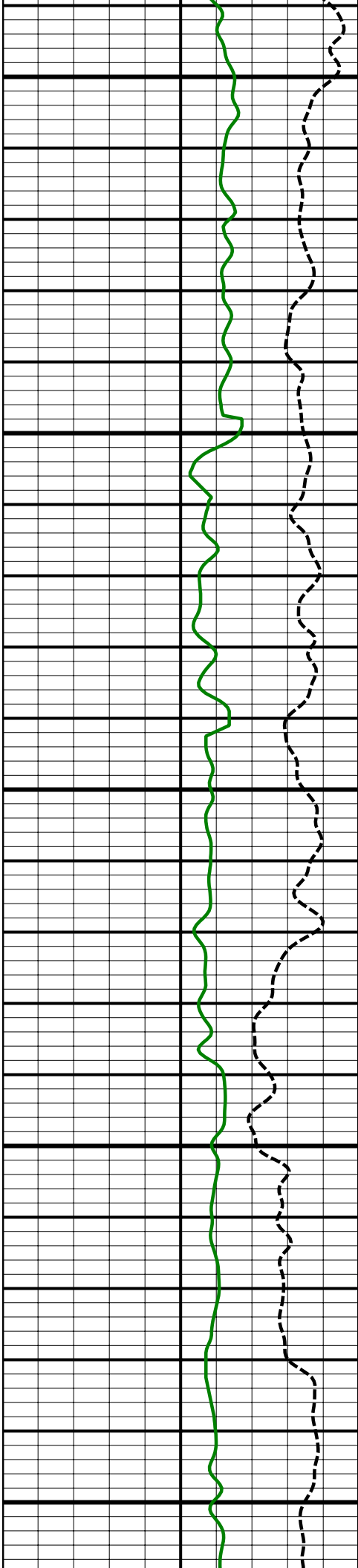


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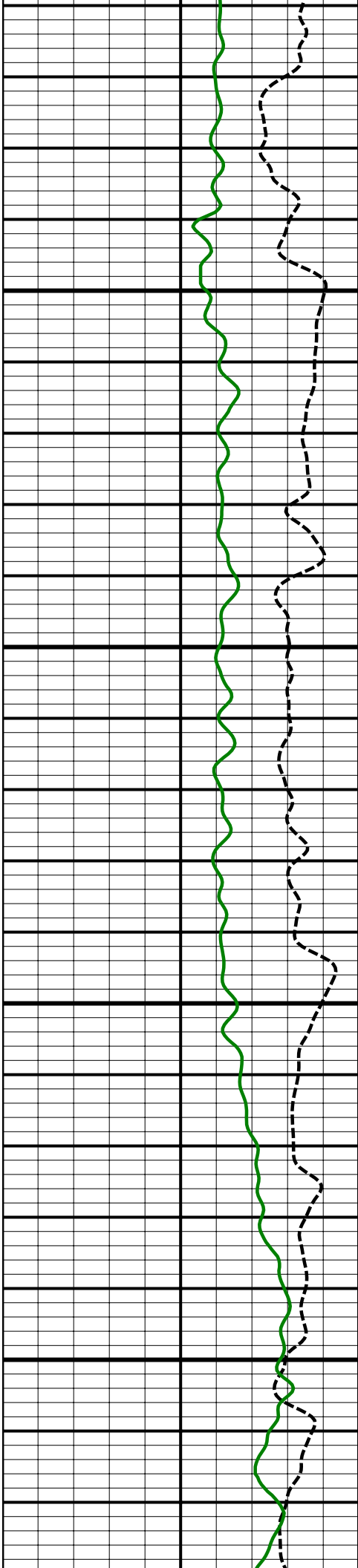


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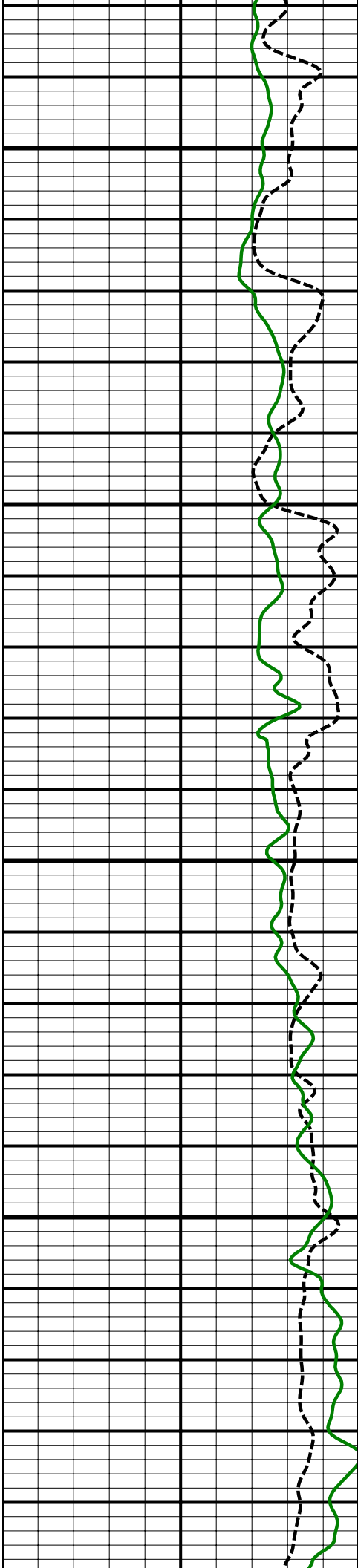
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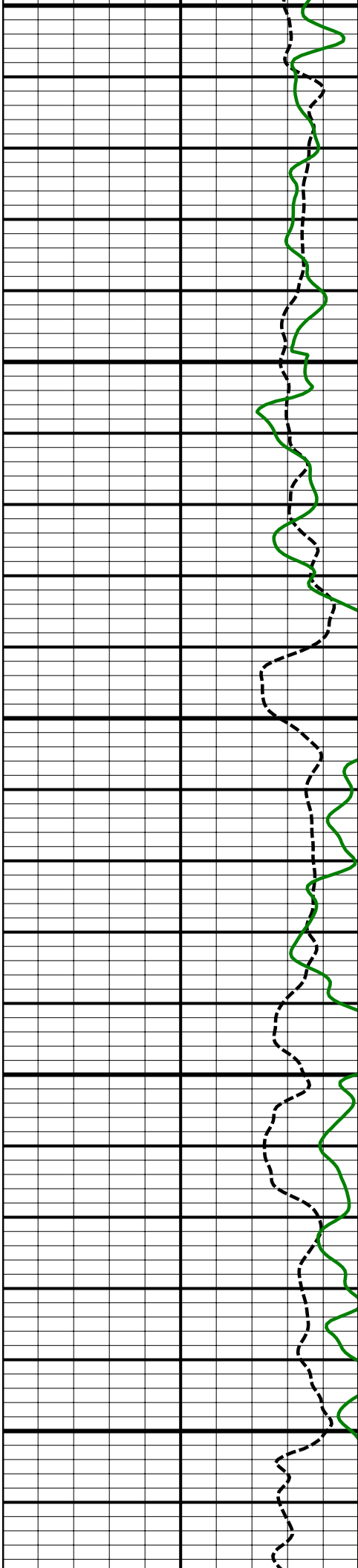
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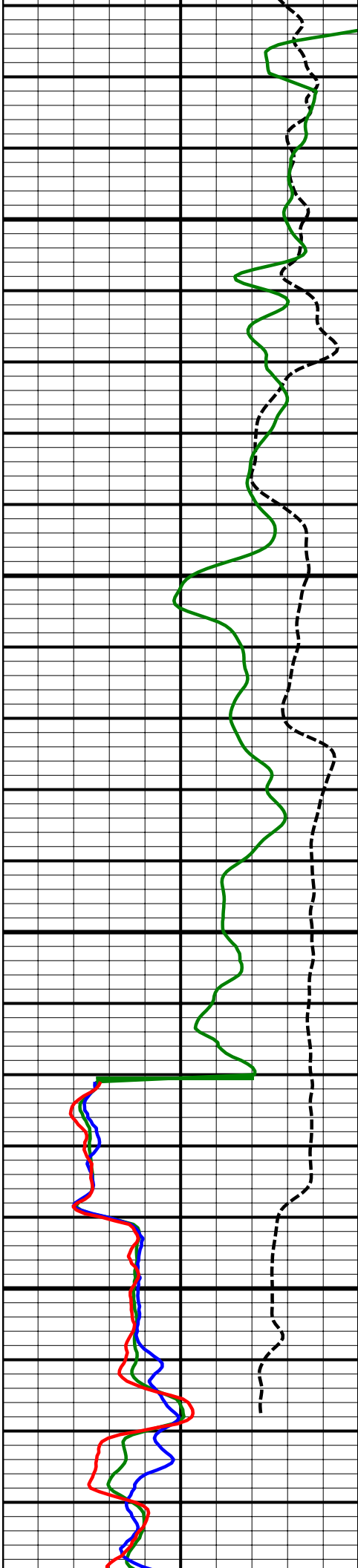
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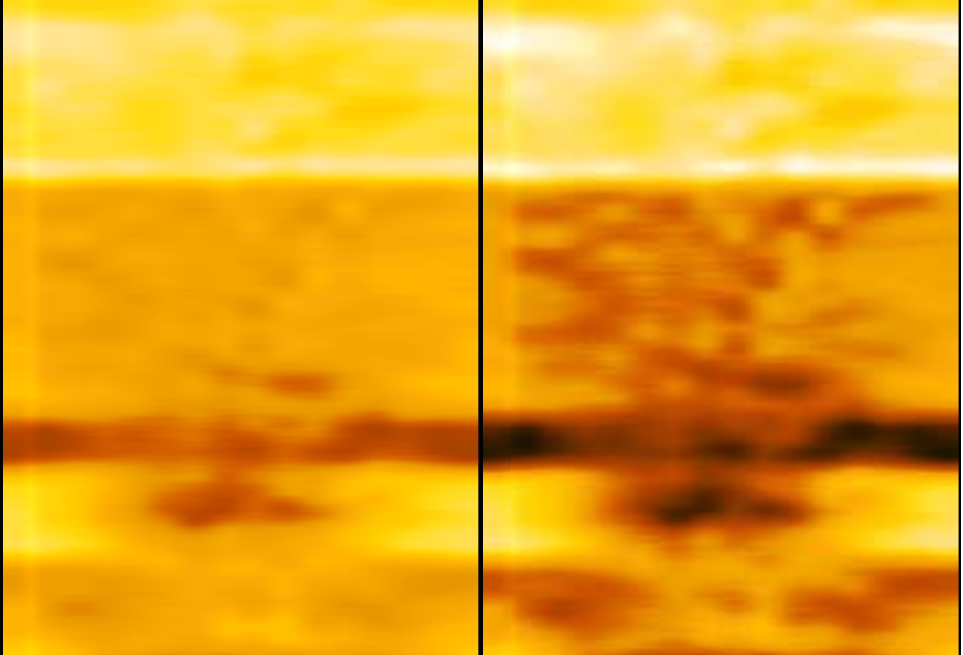
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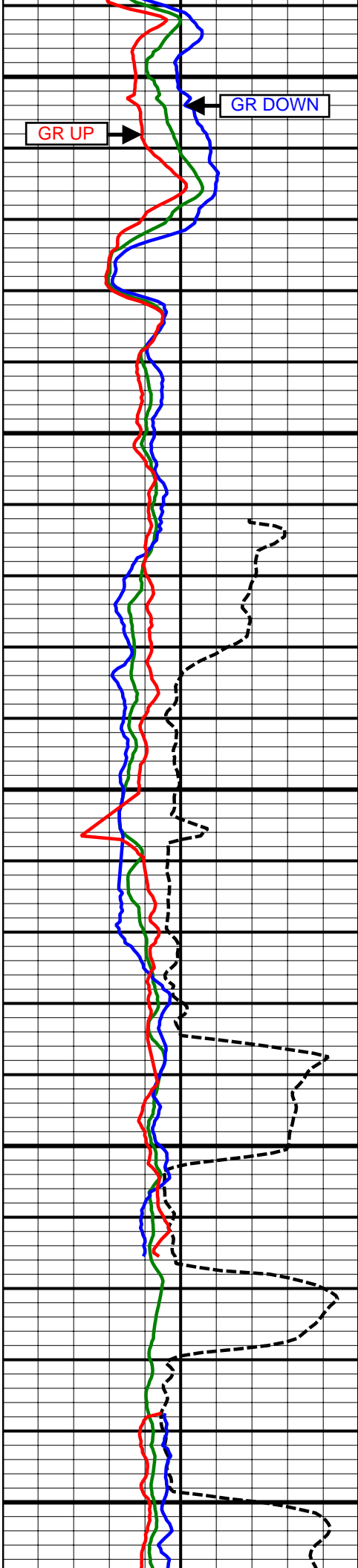


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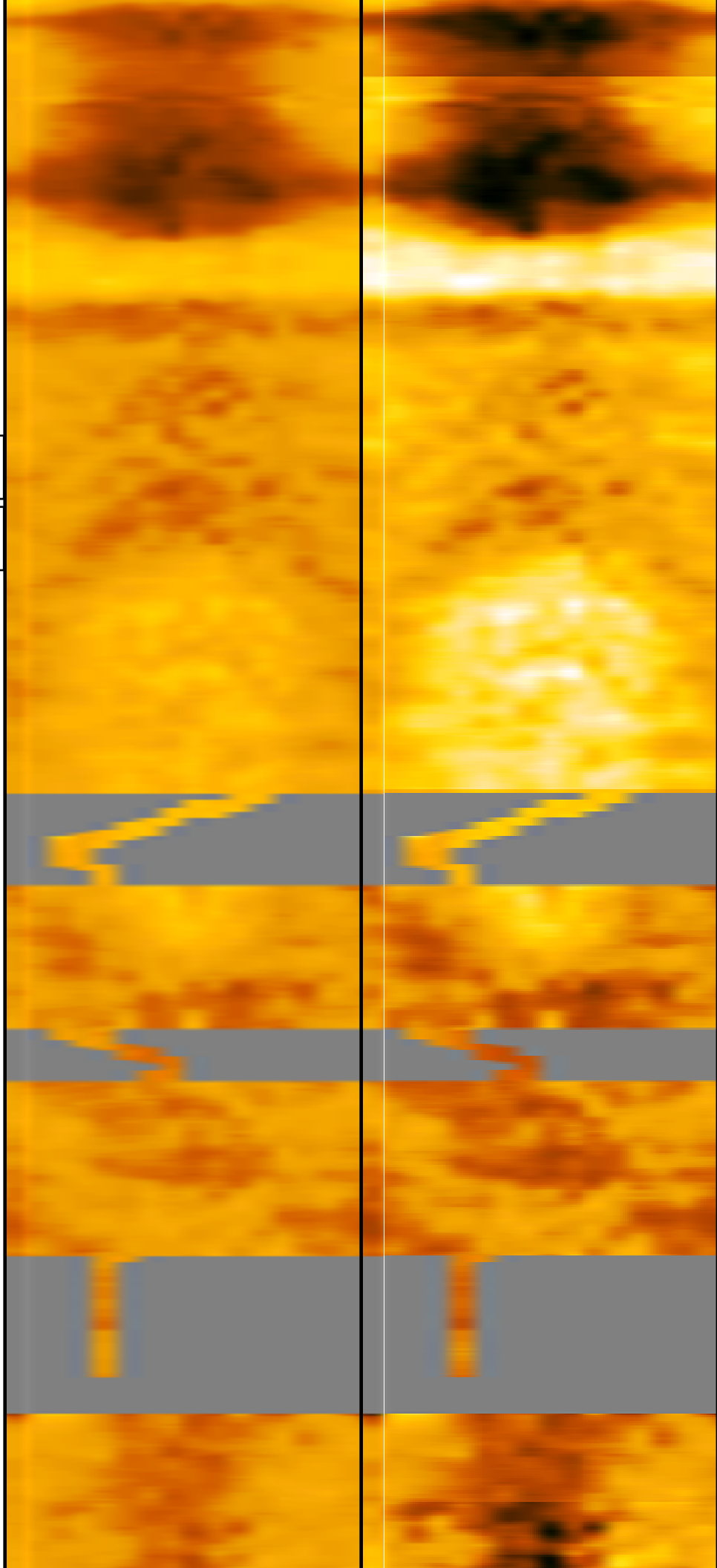
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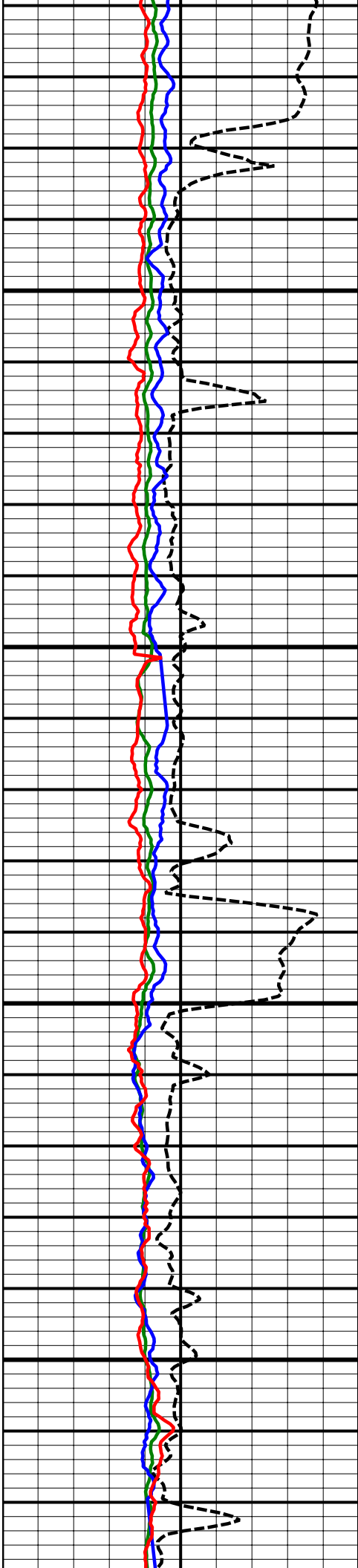
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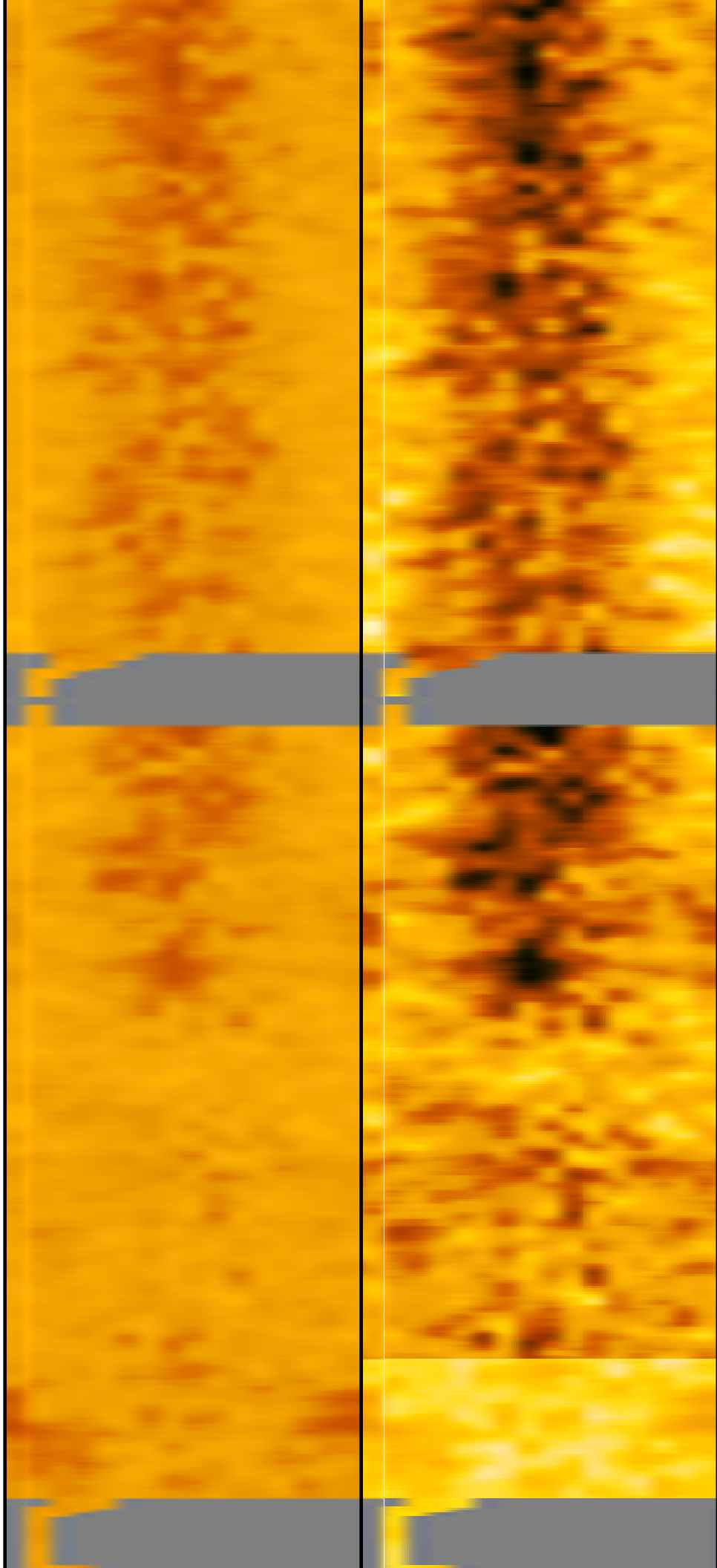
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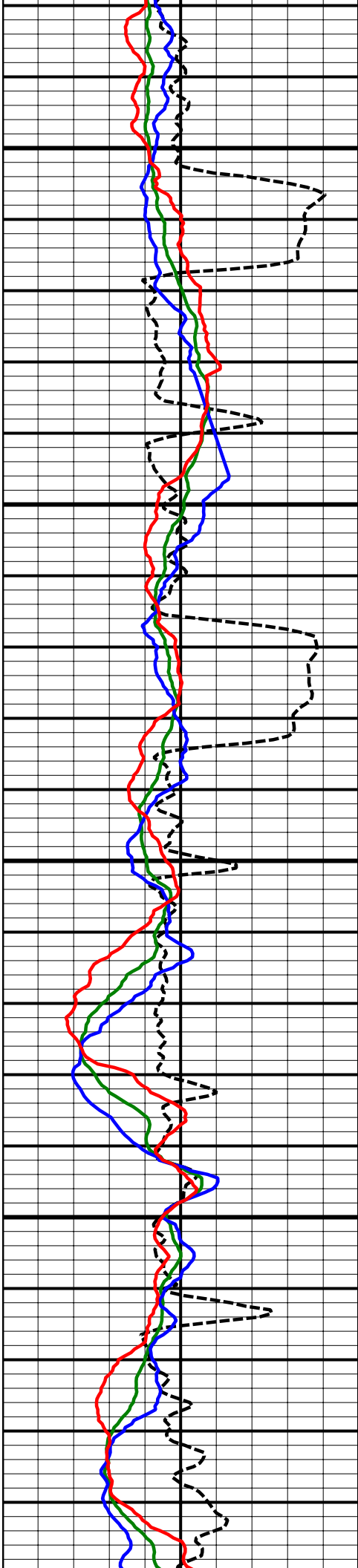




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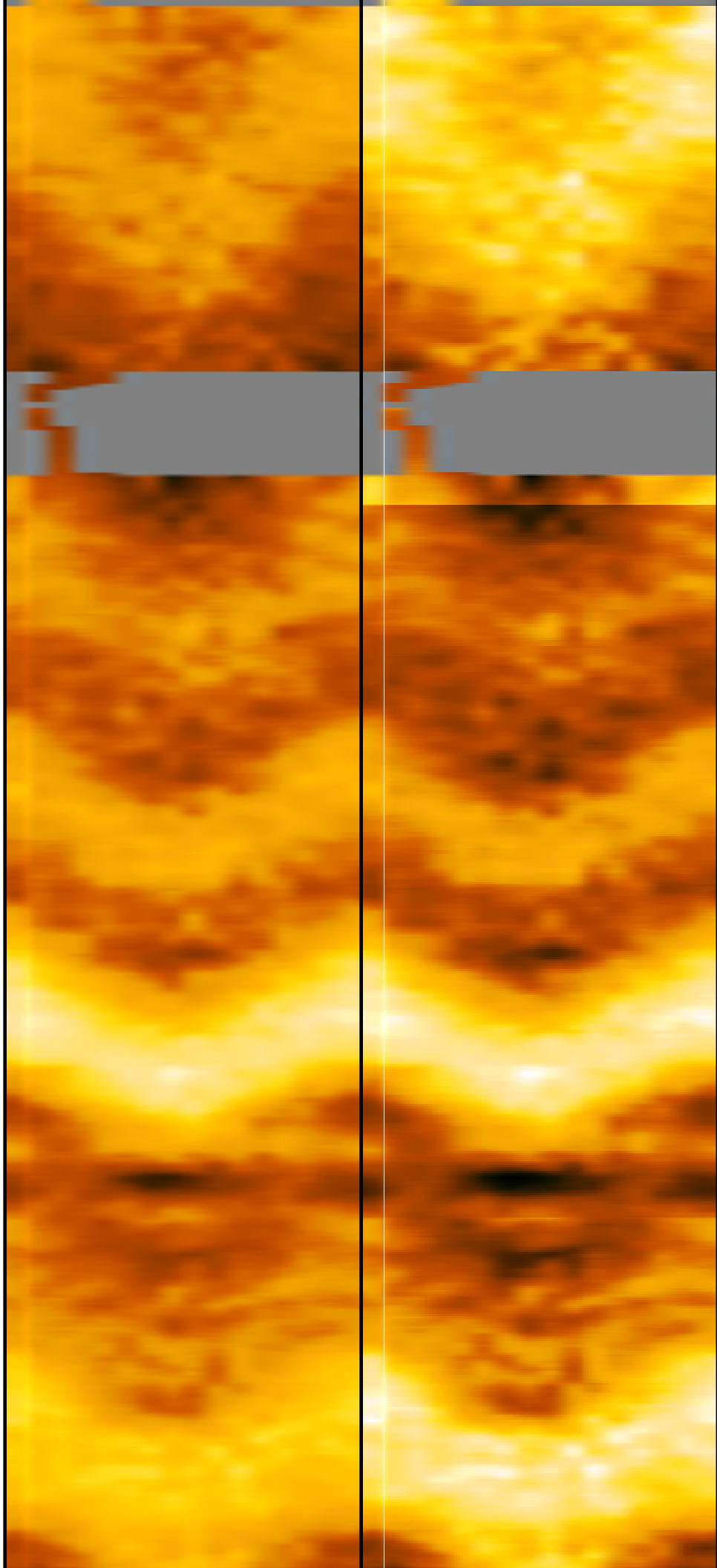
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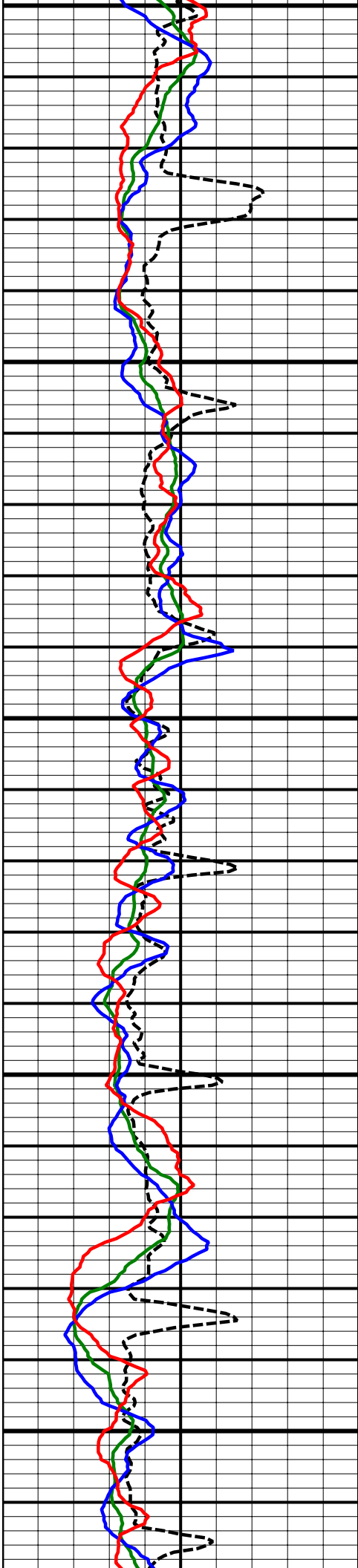




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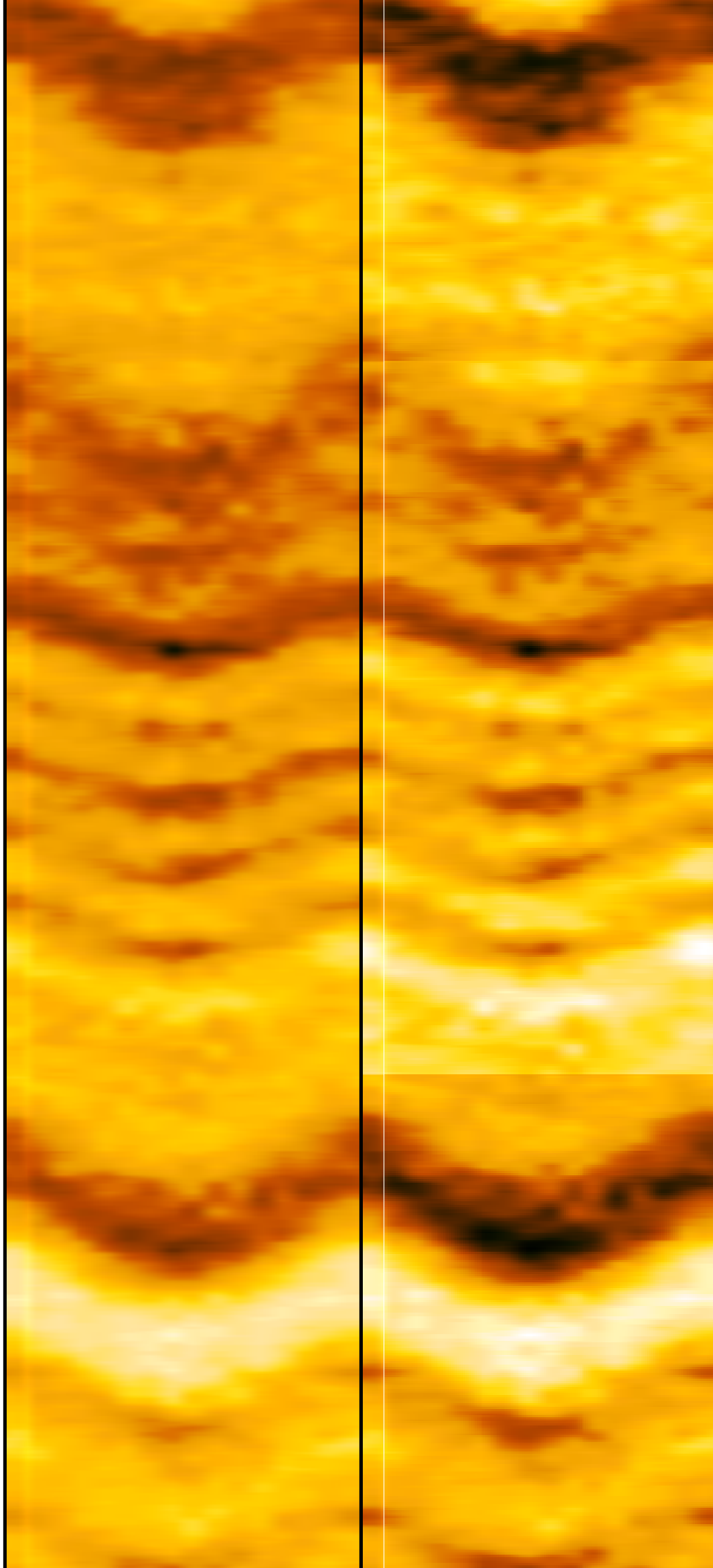
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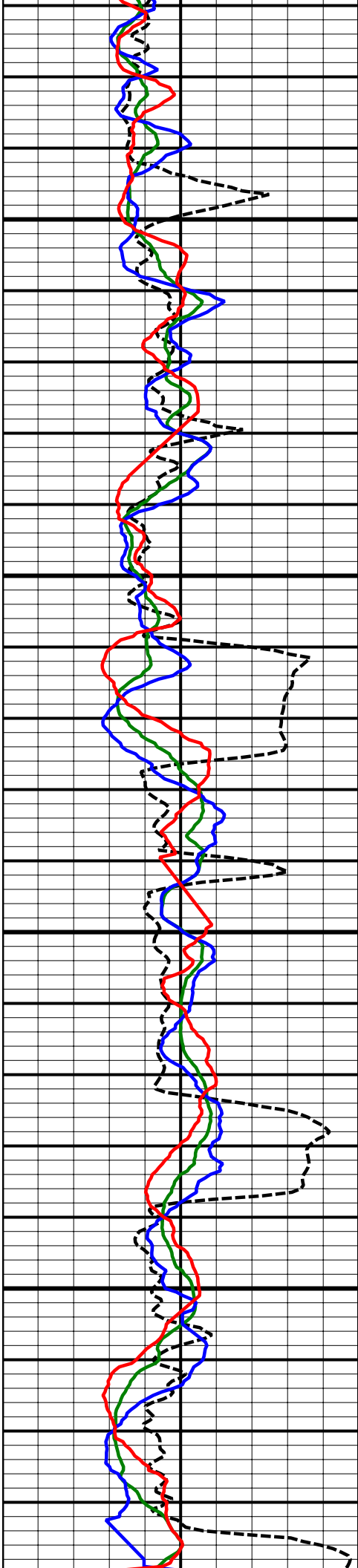


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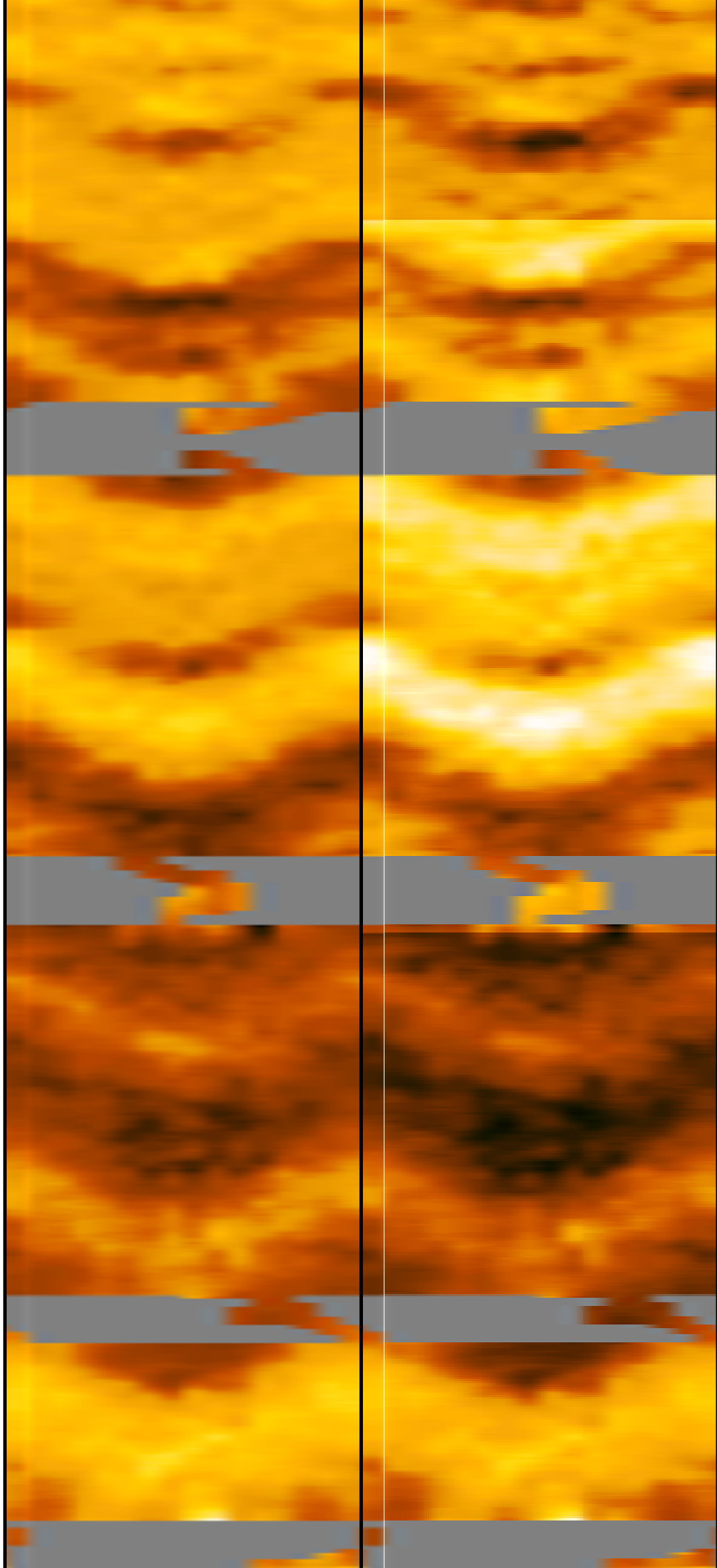


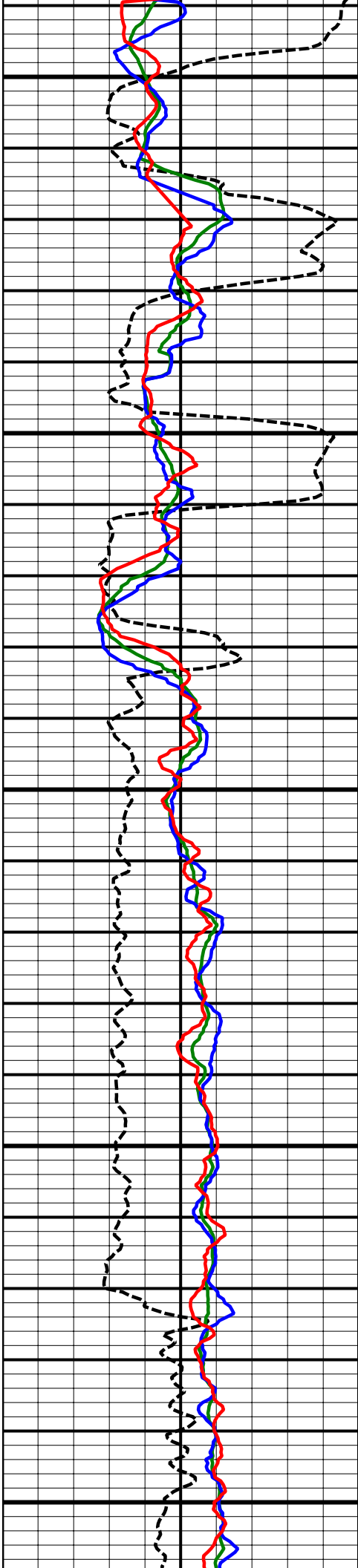




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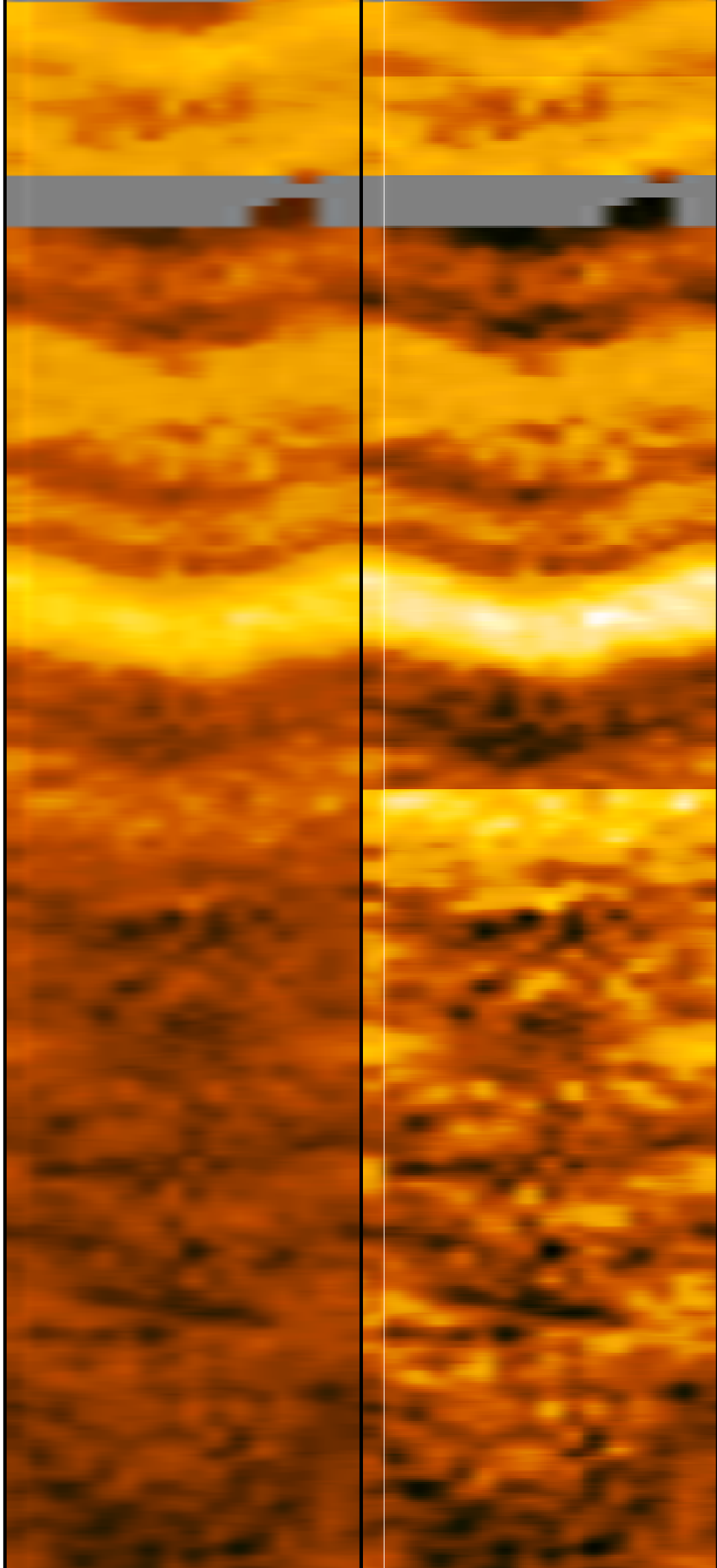


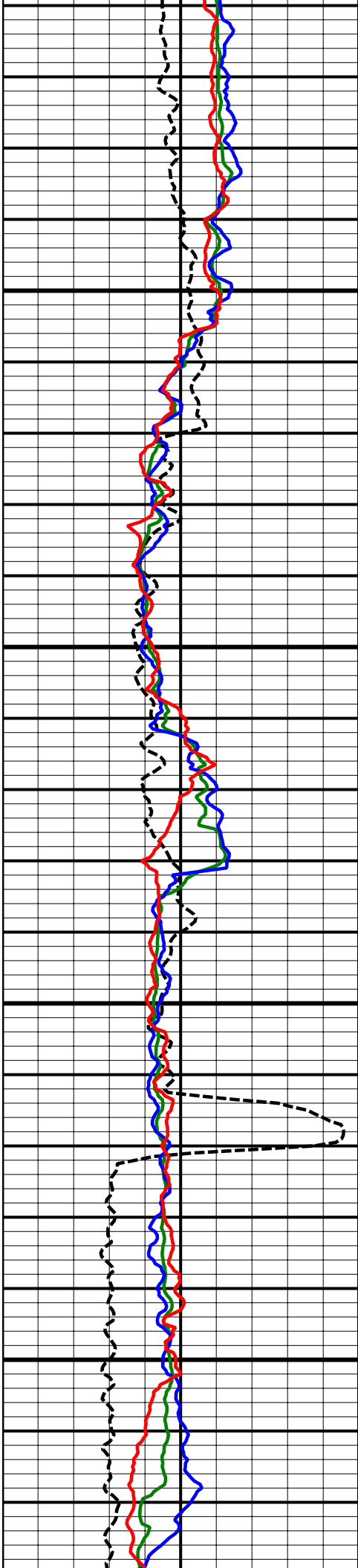


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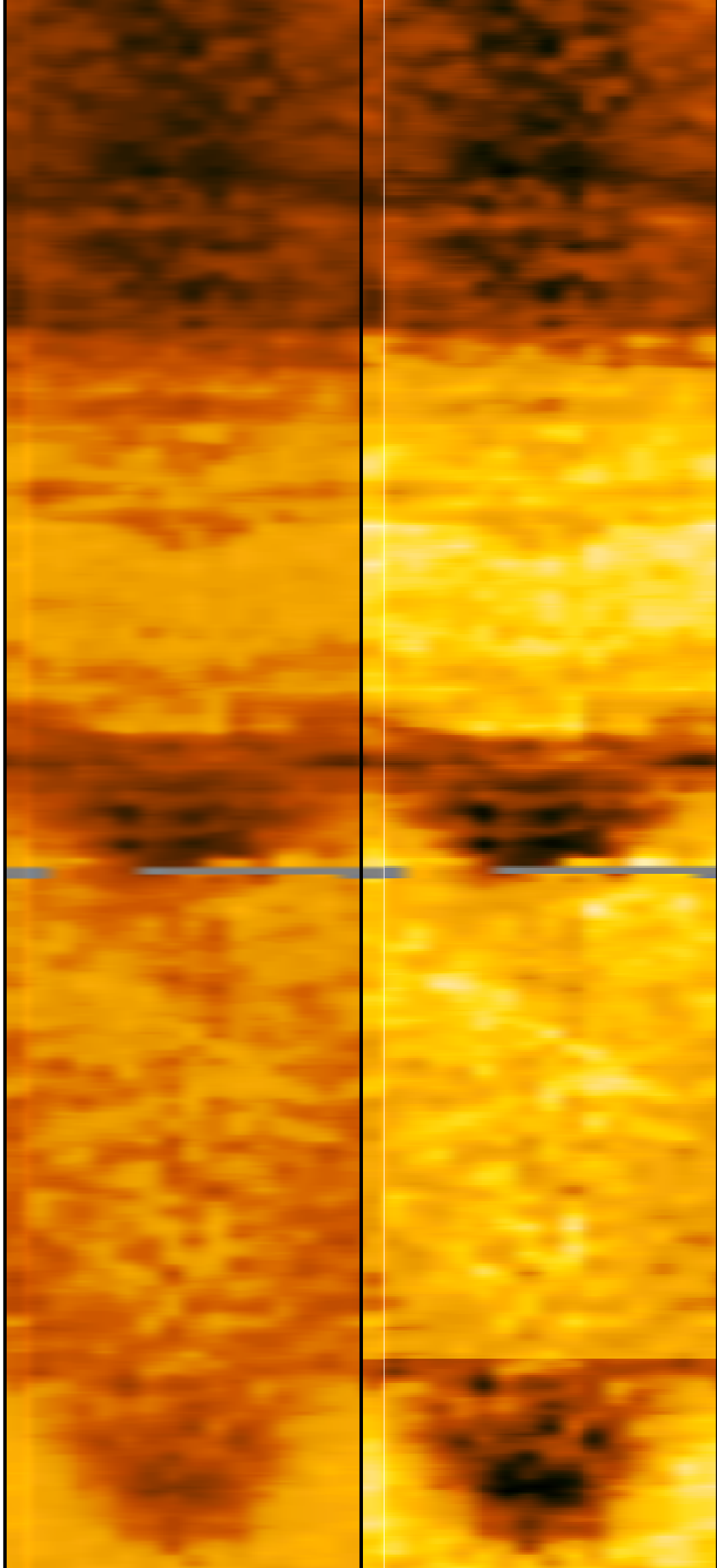
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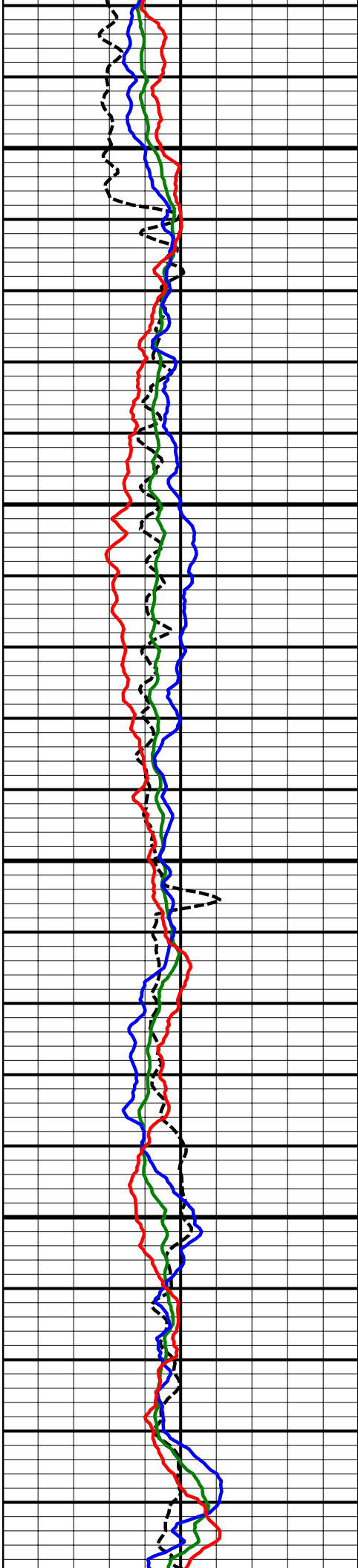




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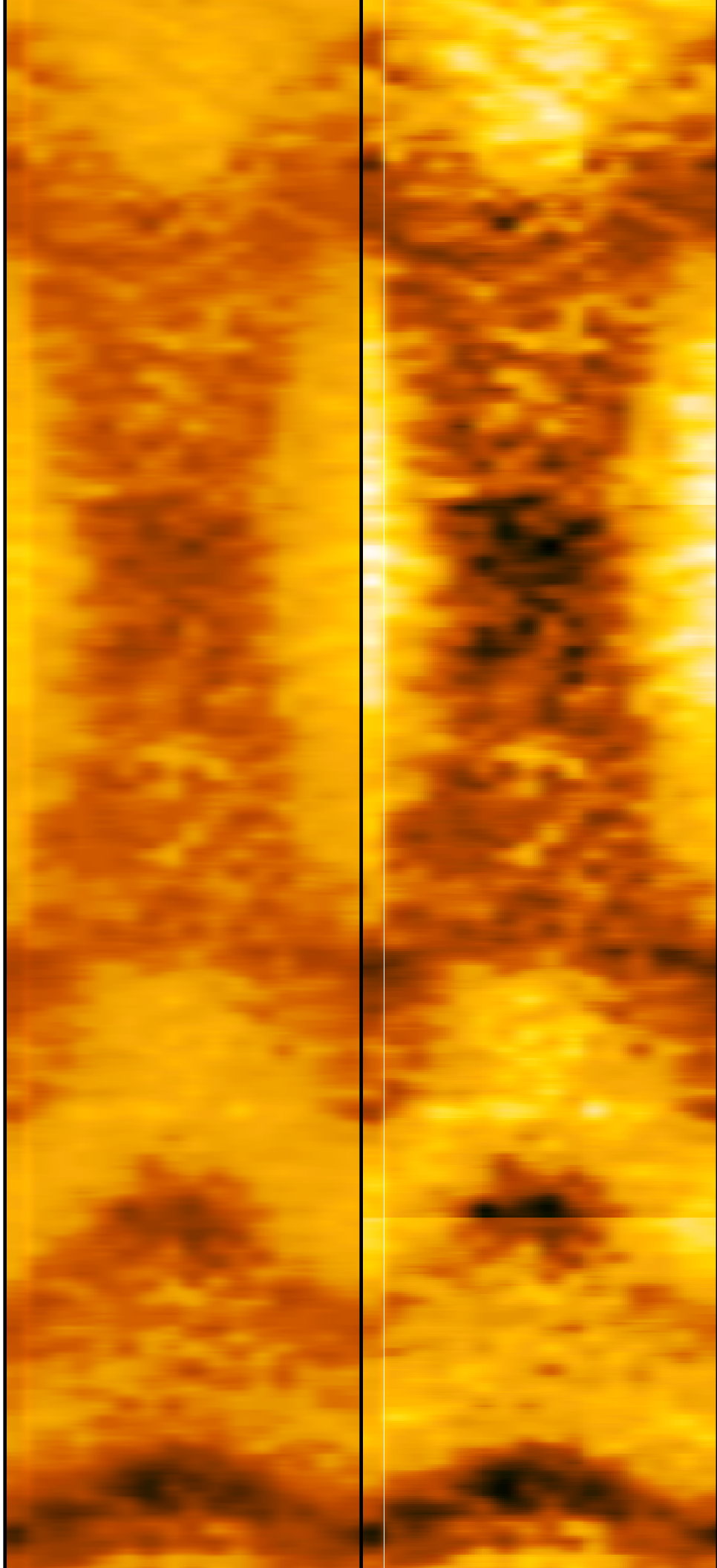
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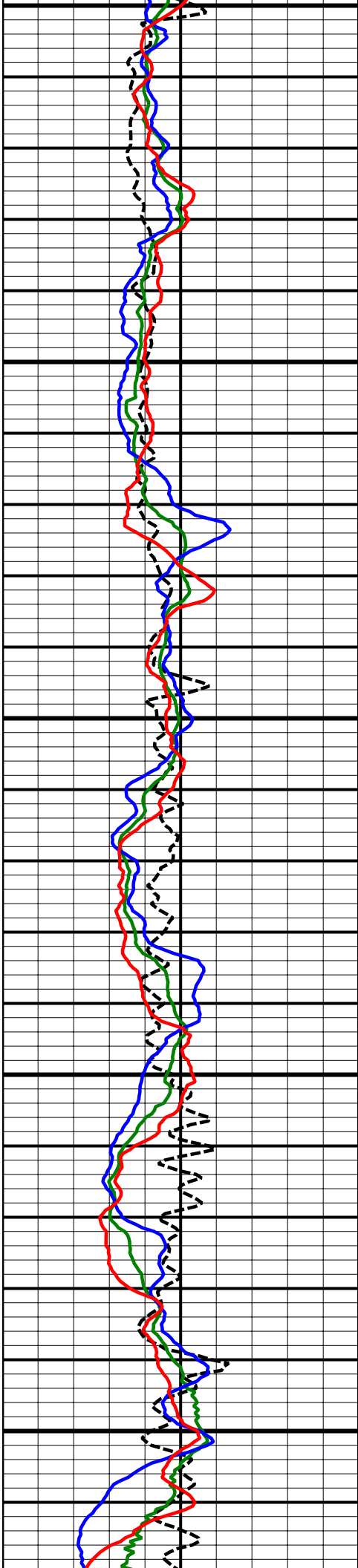




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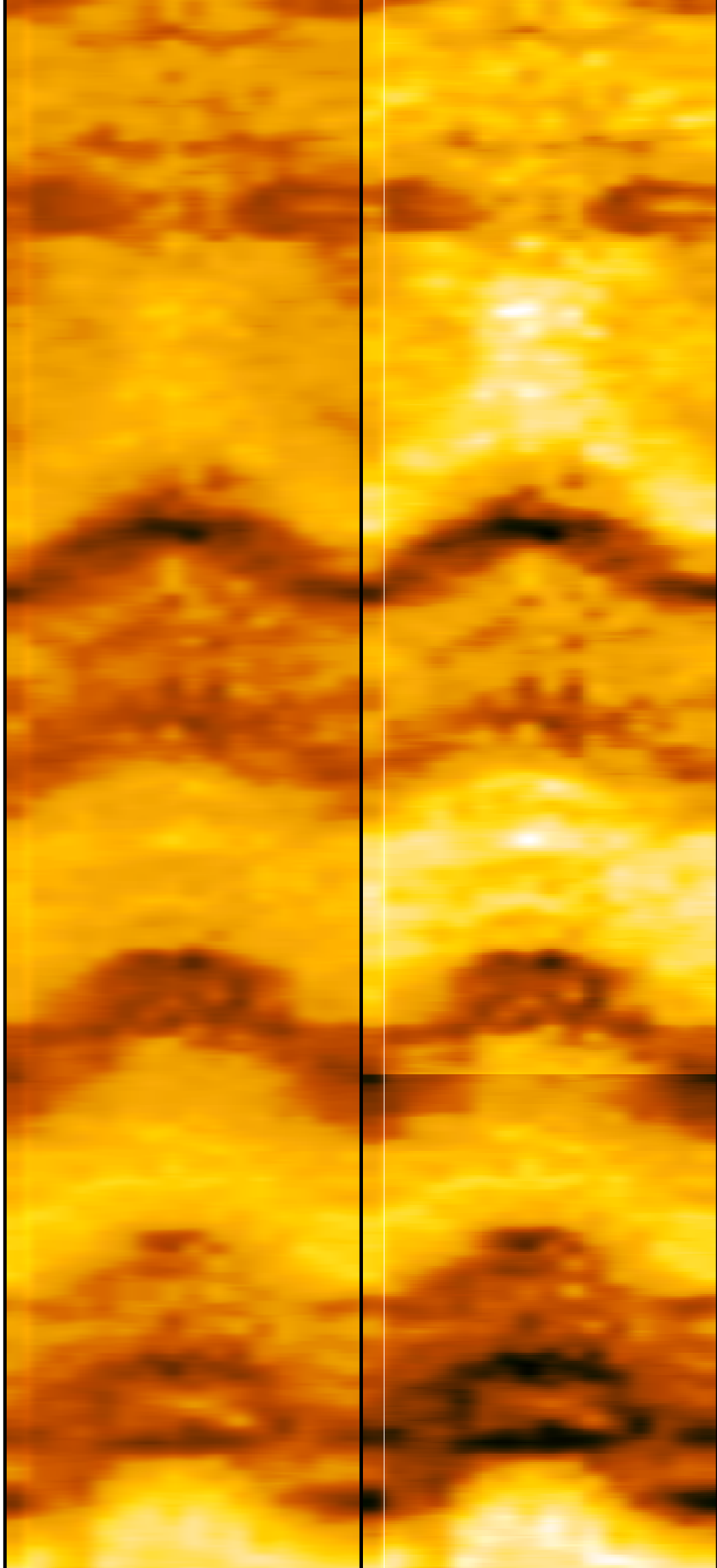
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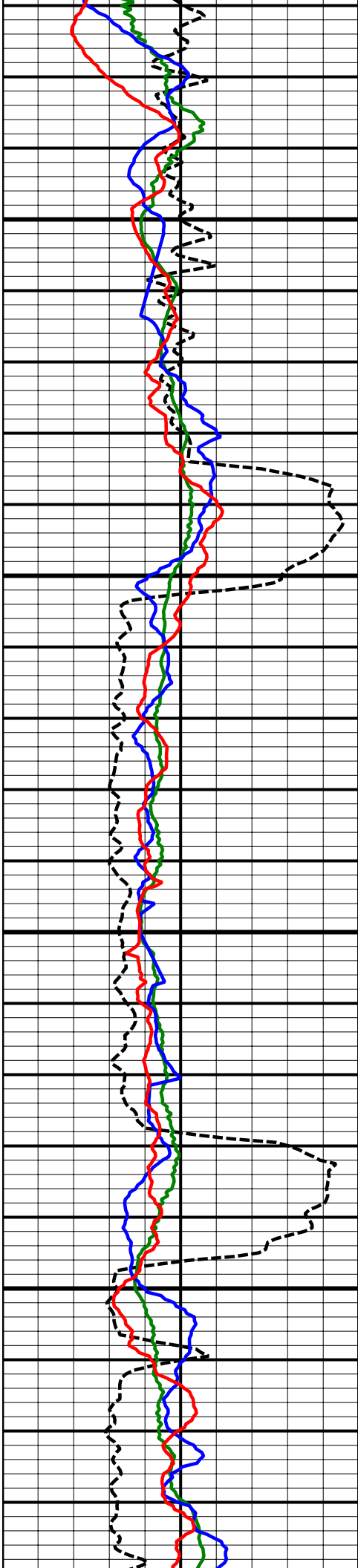


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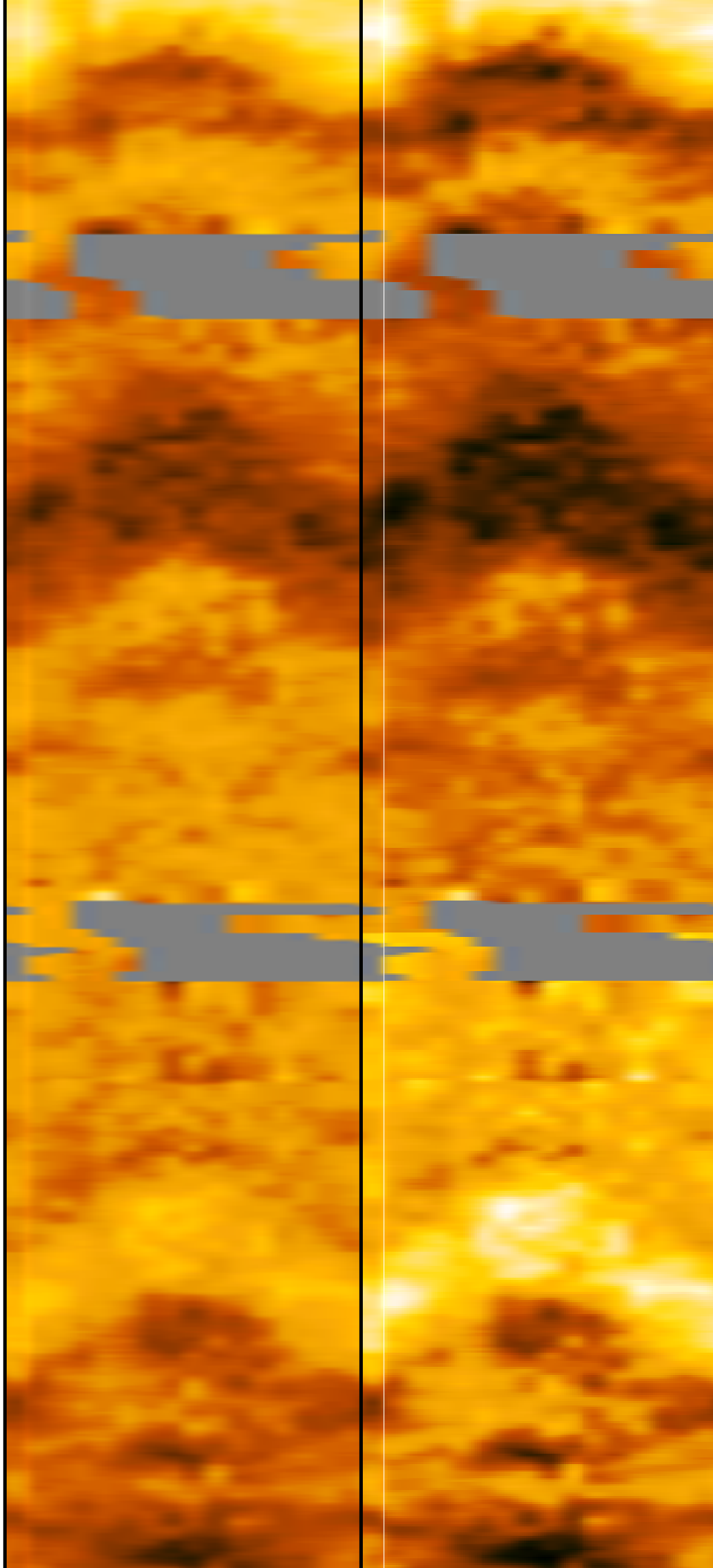


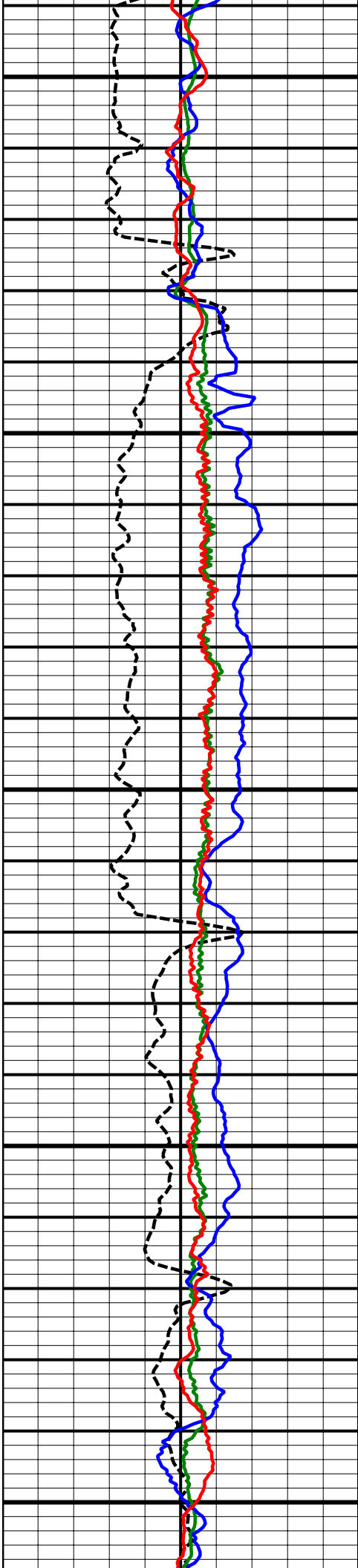




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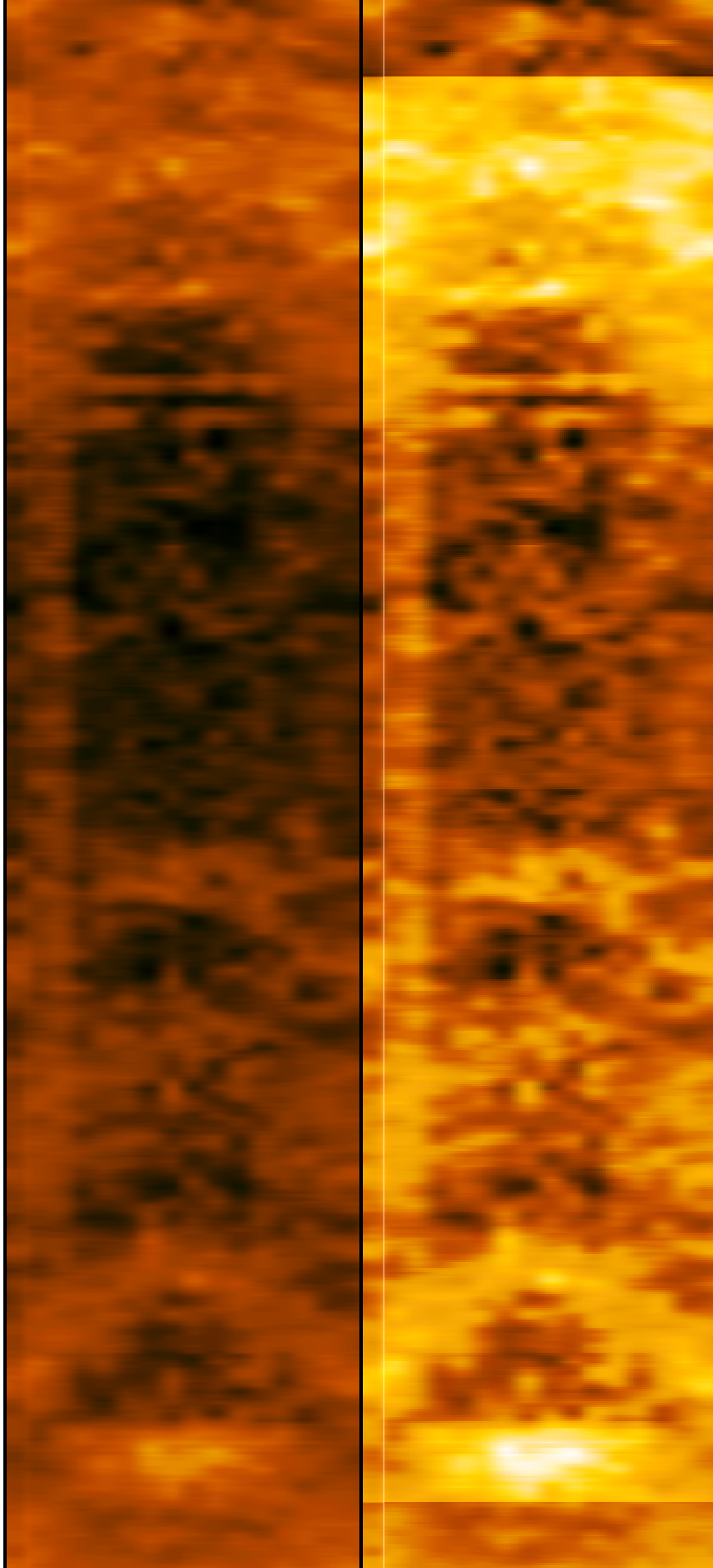


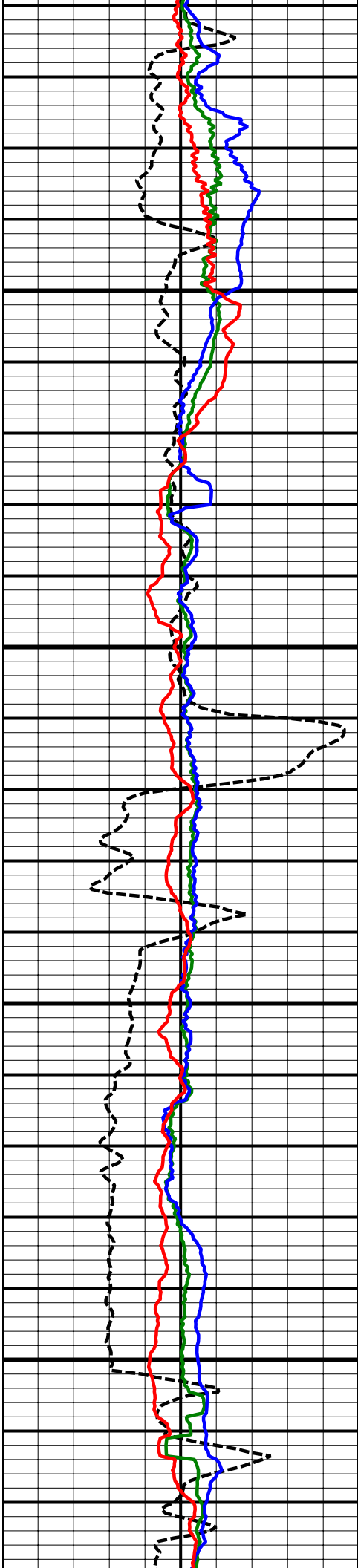


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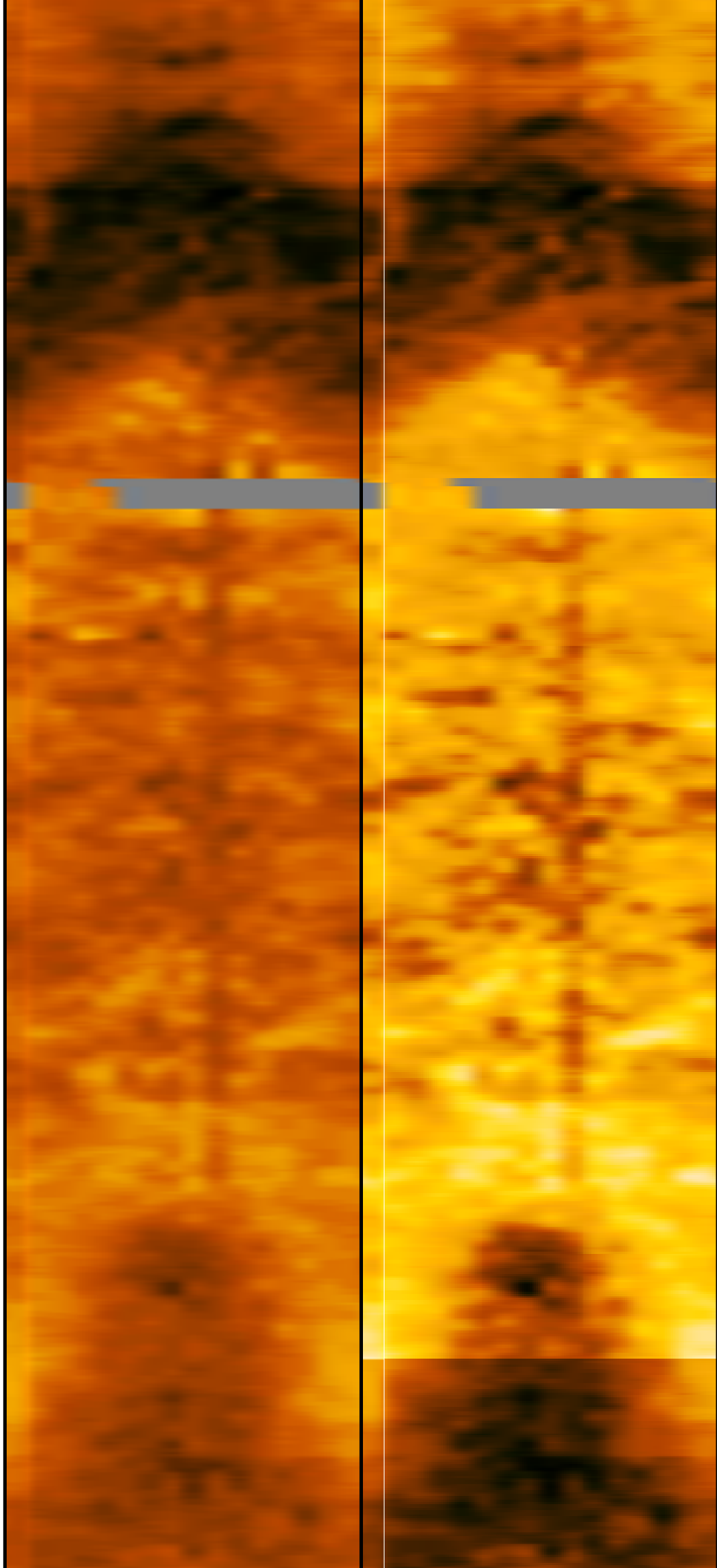
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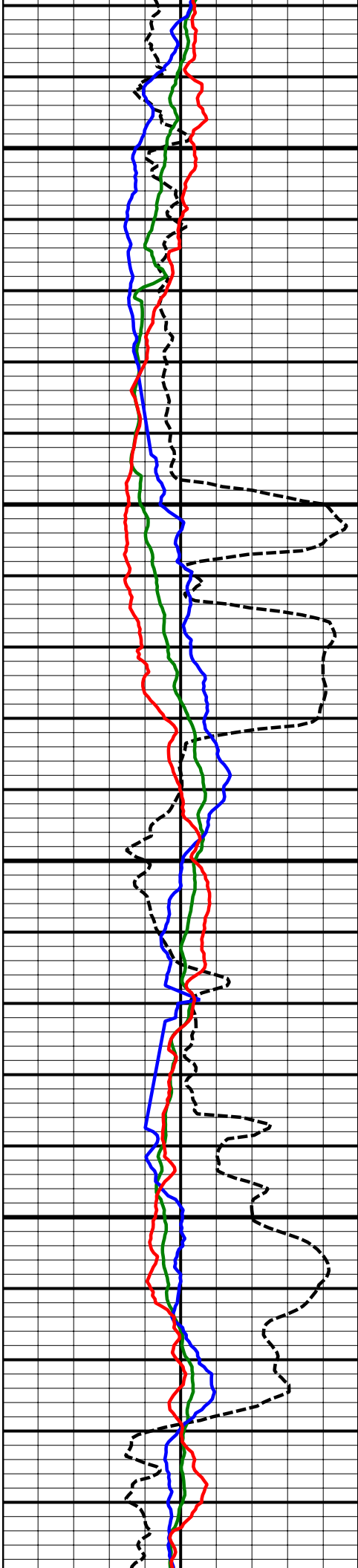


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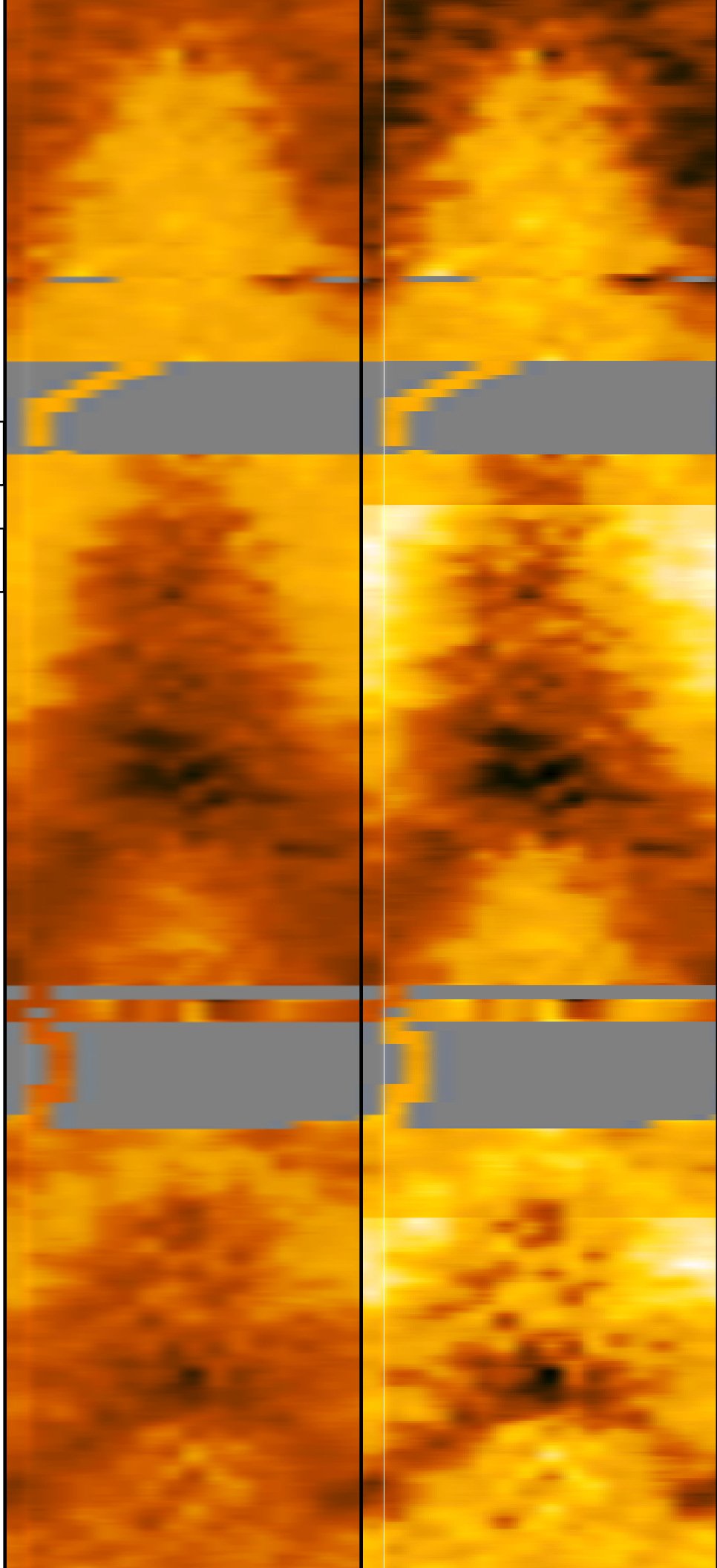


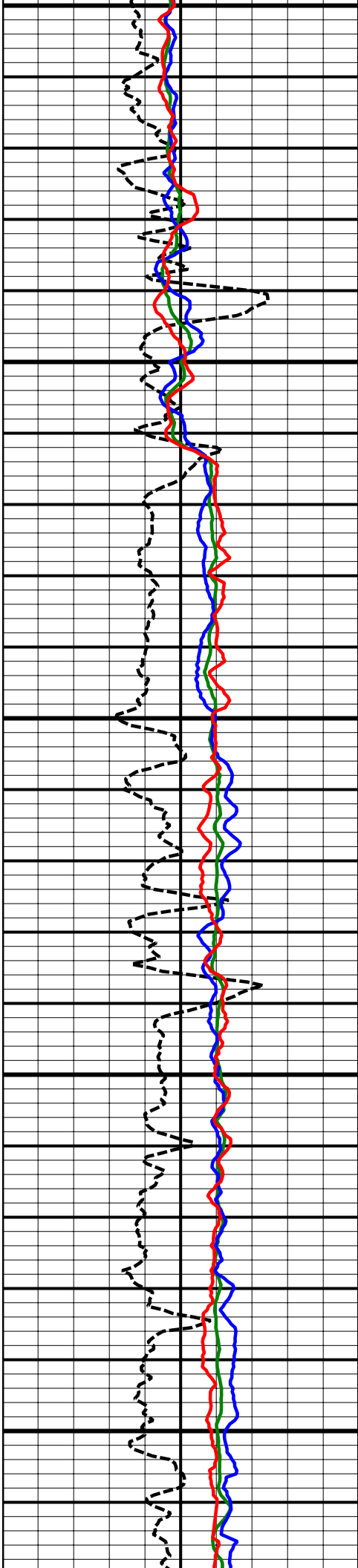
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No. 3-1

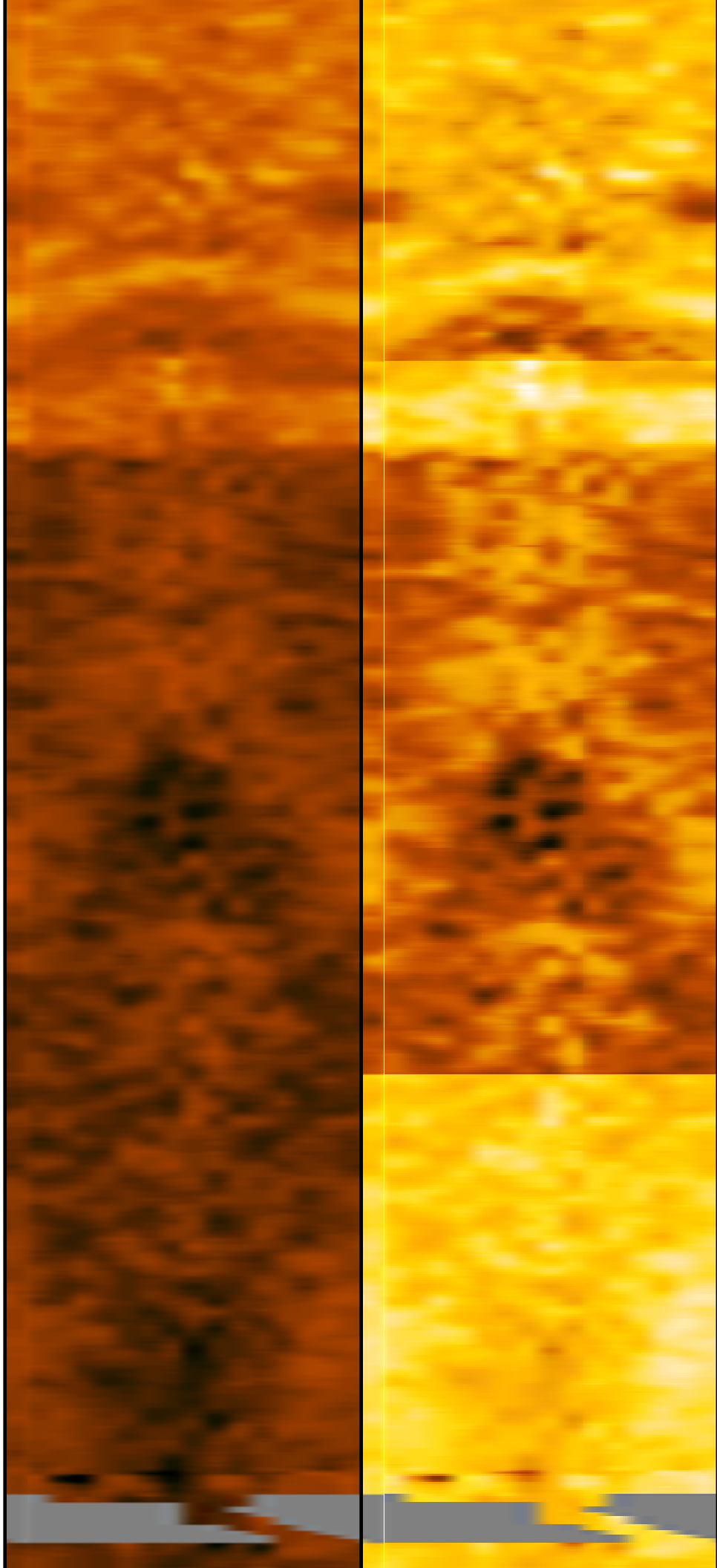
10400  
MD

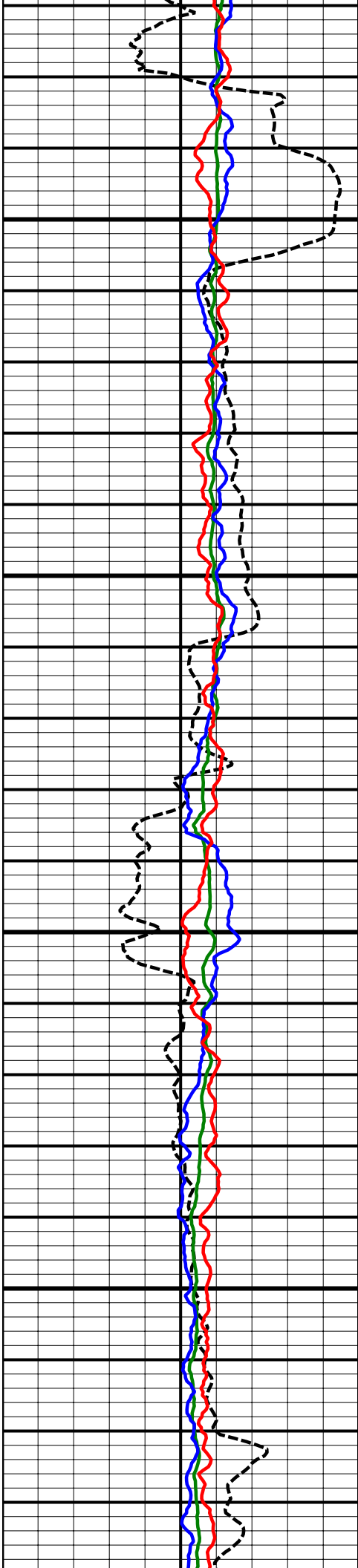




10500  
MD

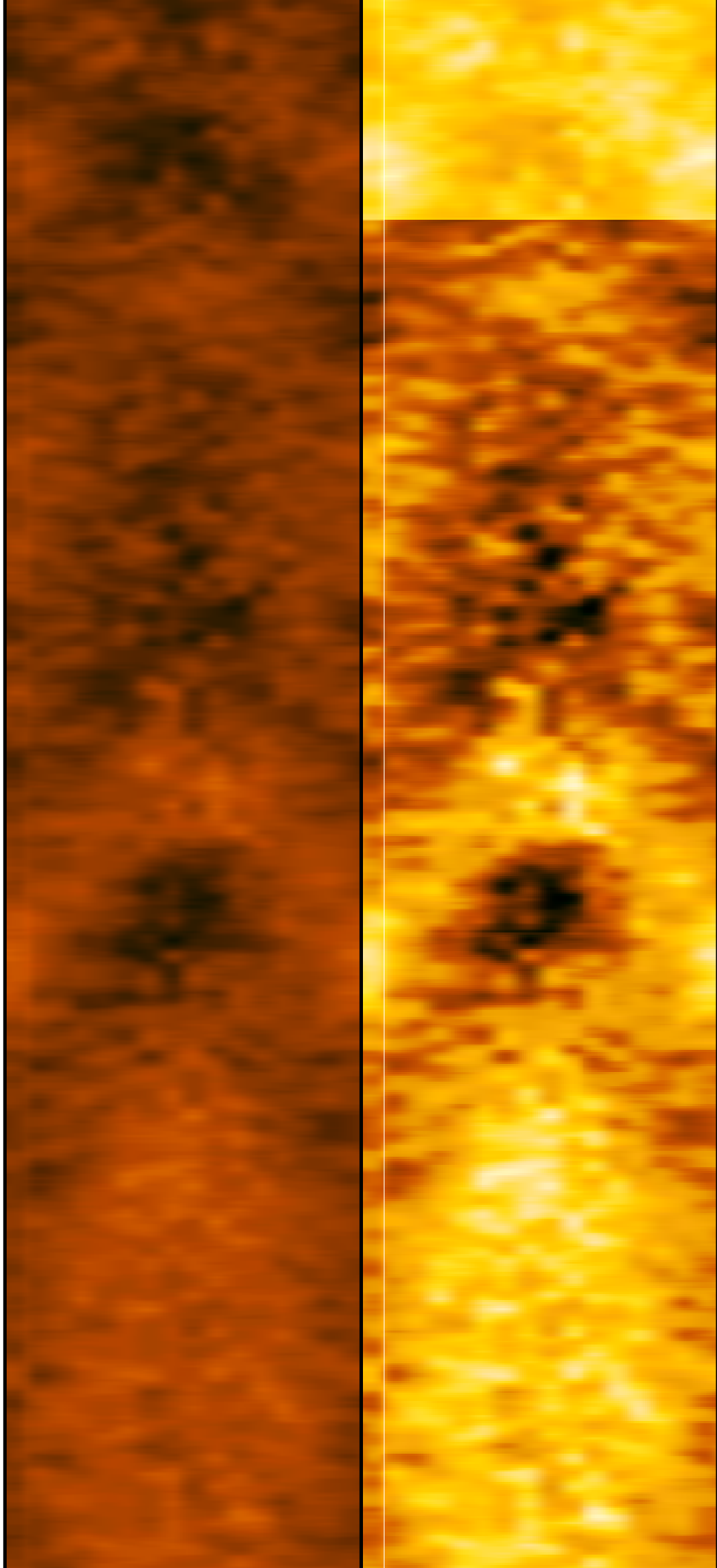
10600  
MD

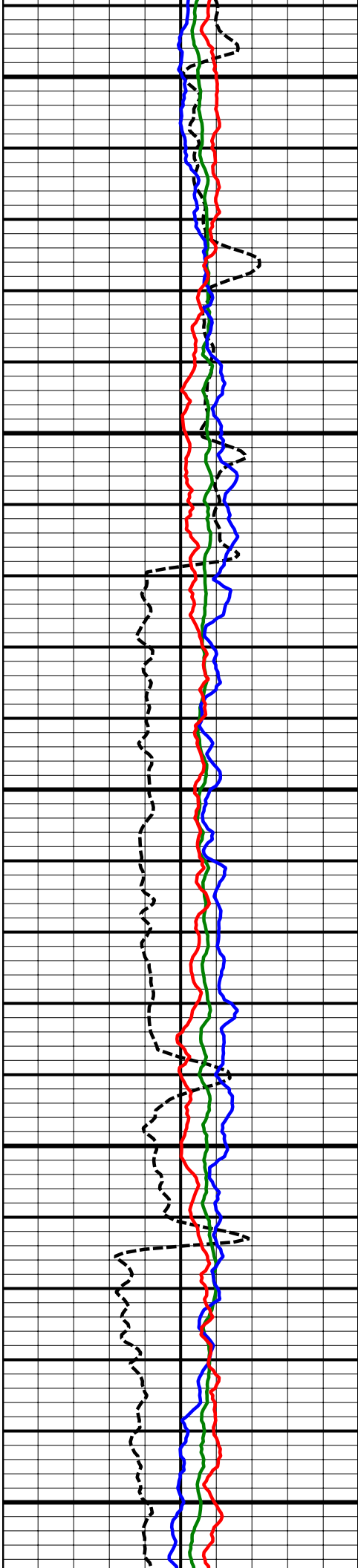




10700  
MD

10800  
MD

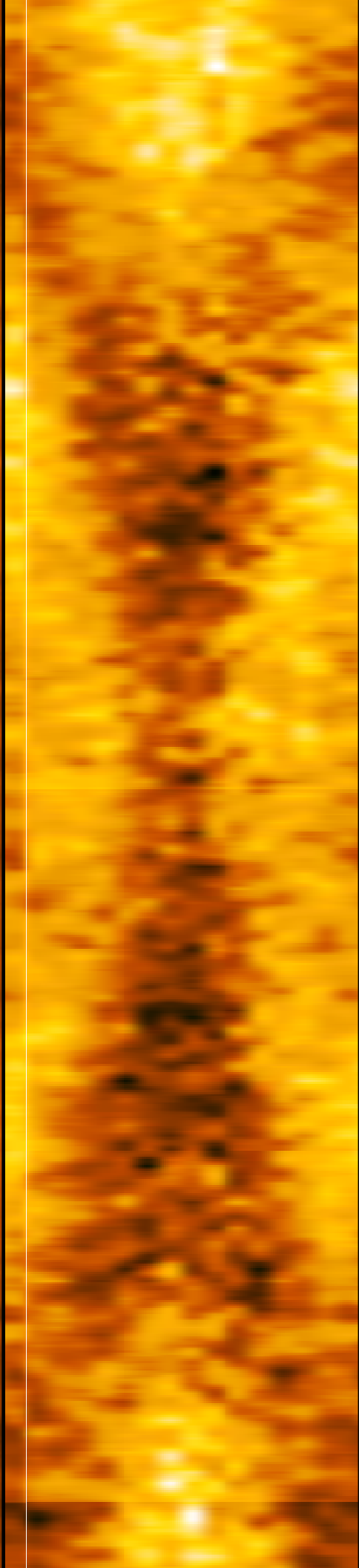
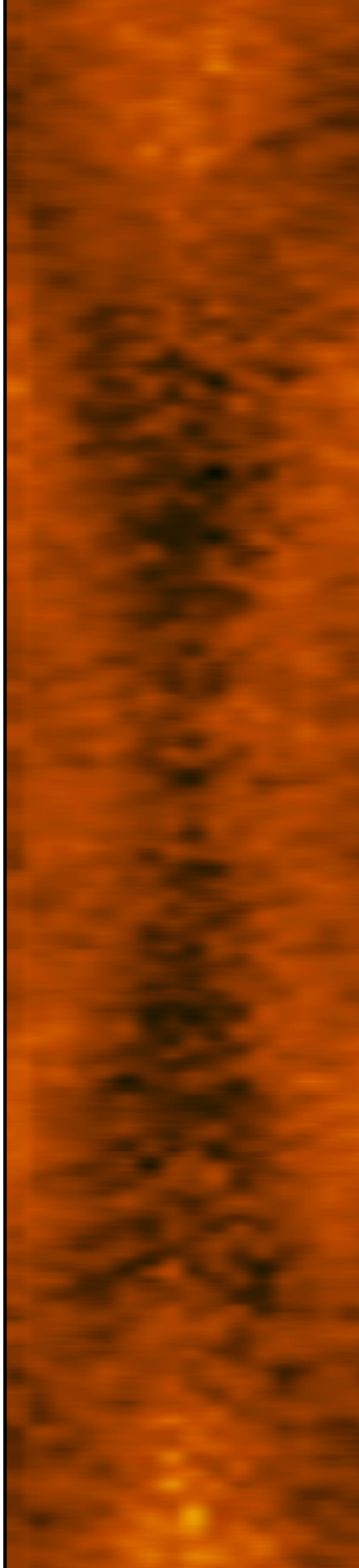


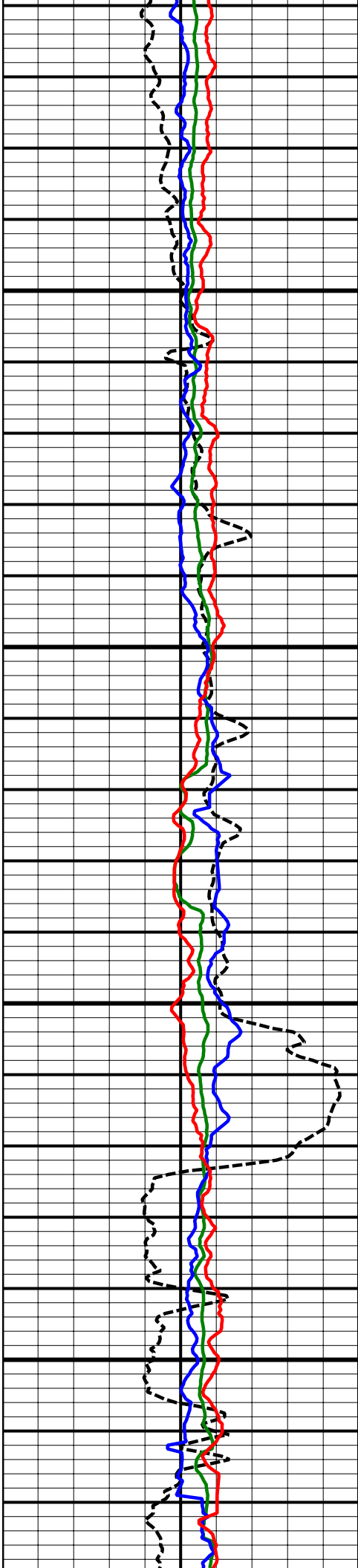


10900  
MD

11000  
MD

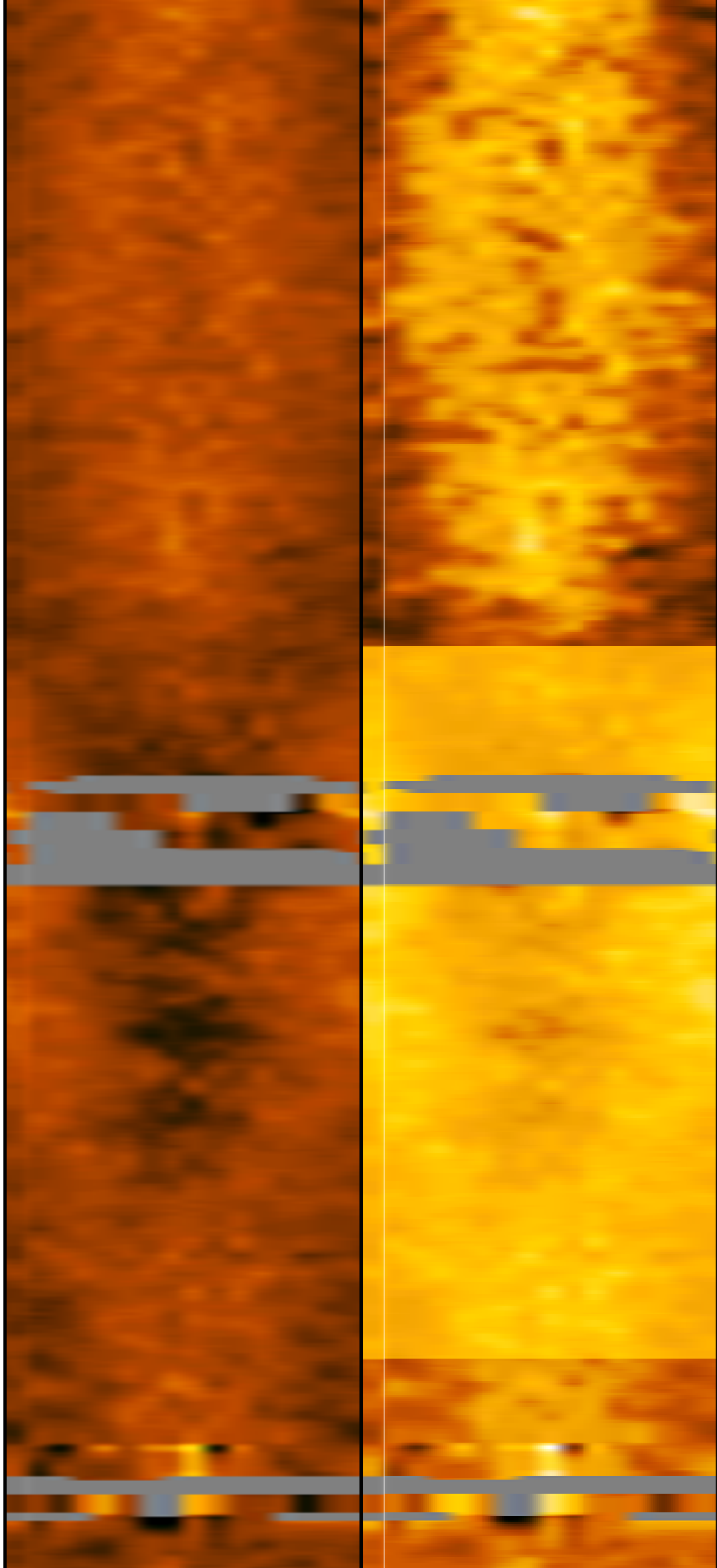
11100  
MD



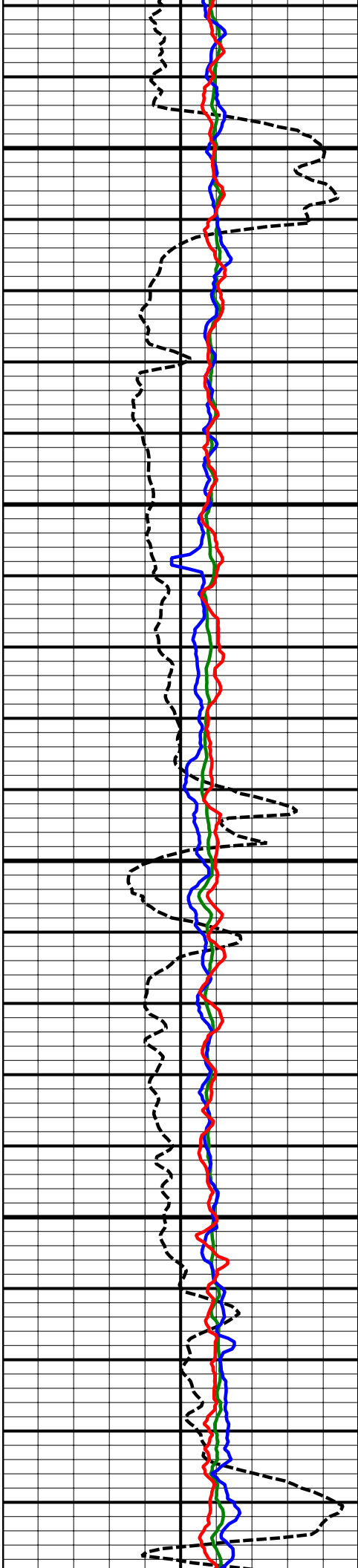


11200  
MD

11300  
MD

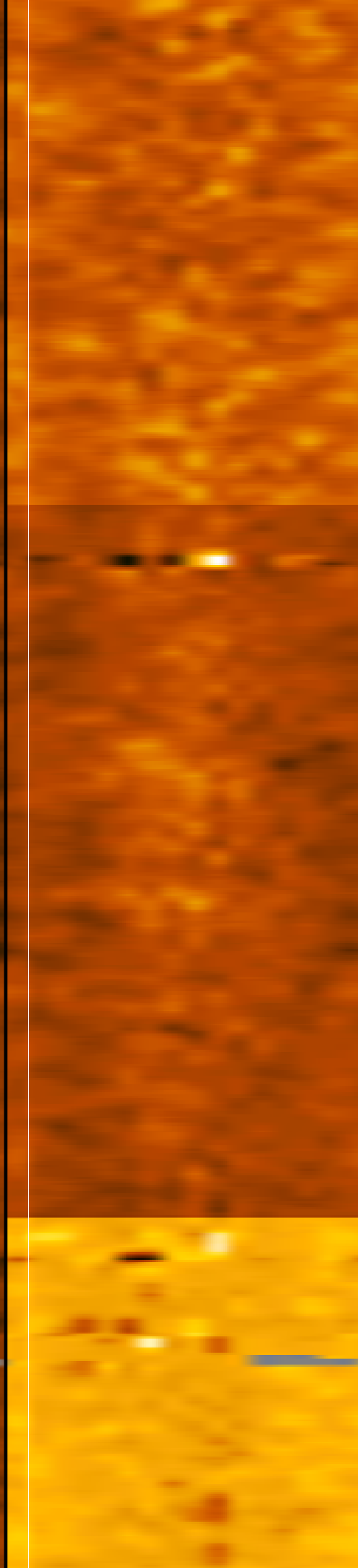
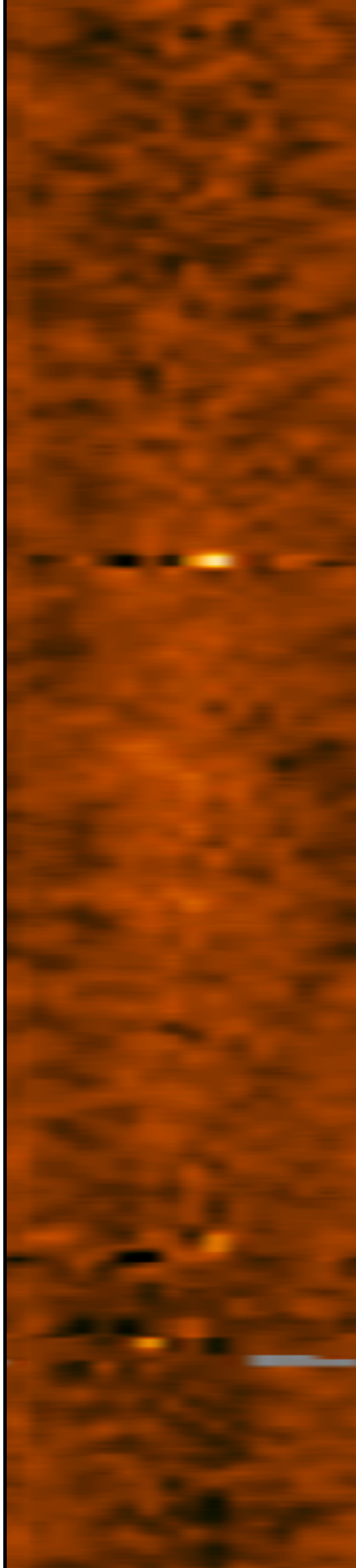


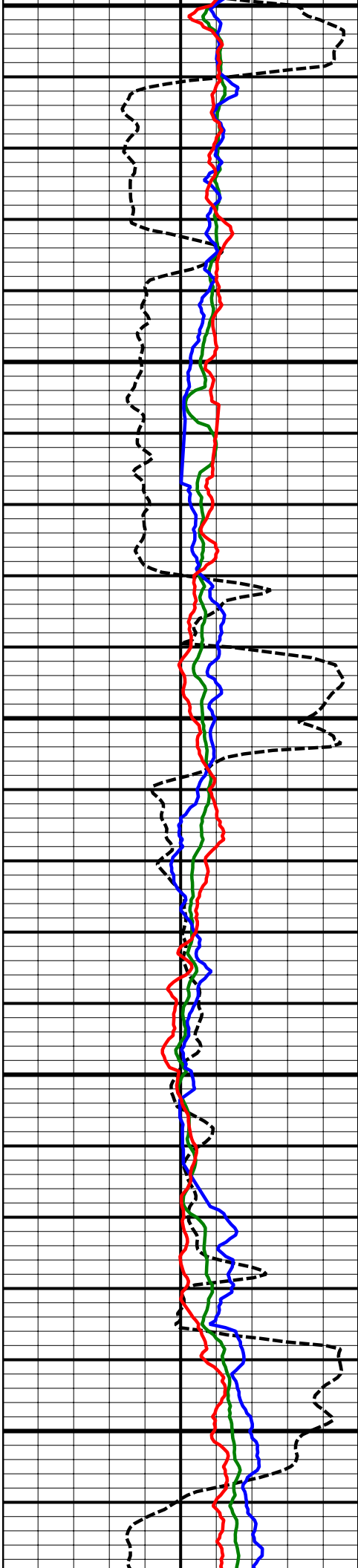




11400  
MD

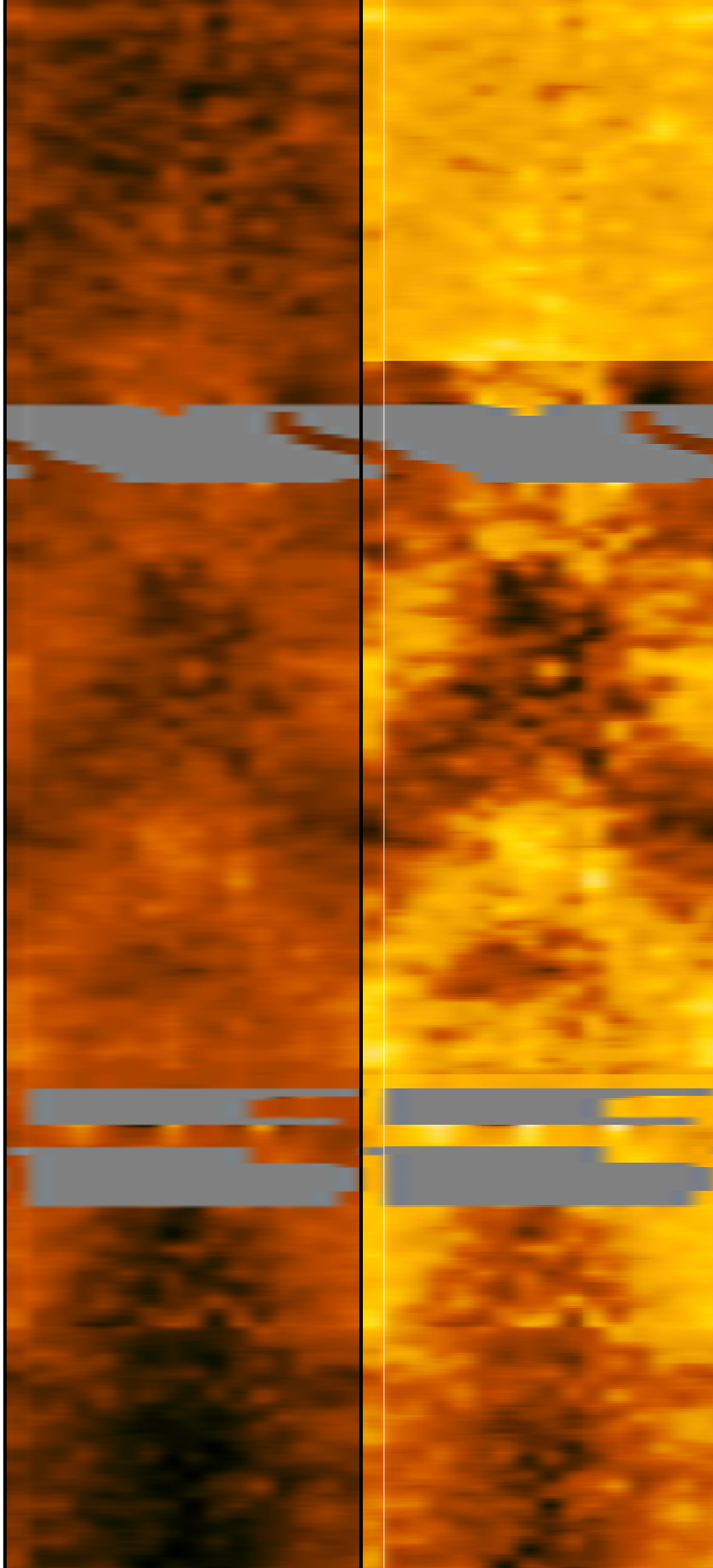
11500  
MD

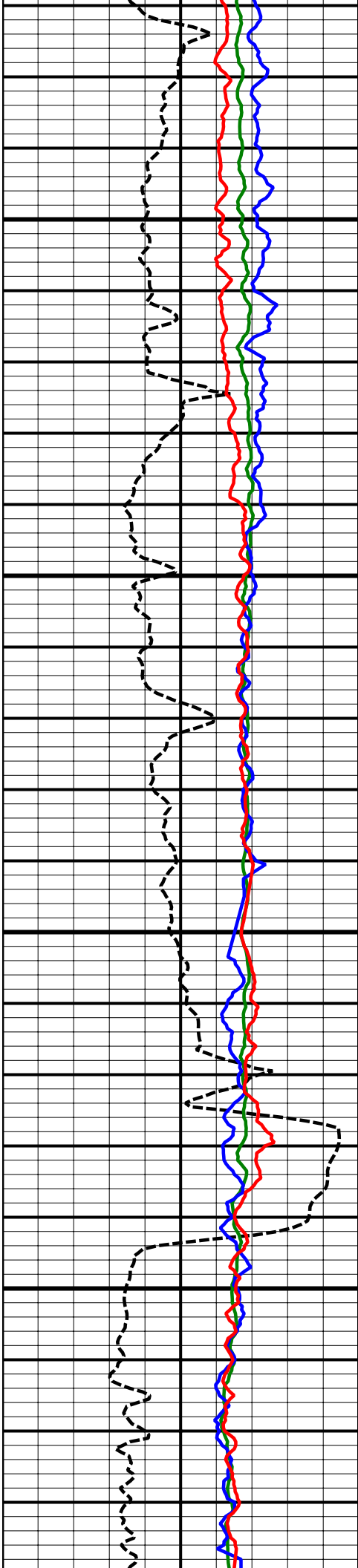




11600  
MD

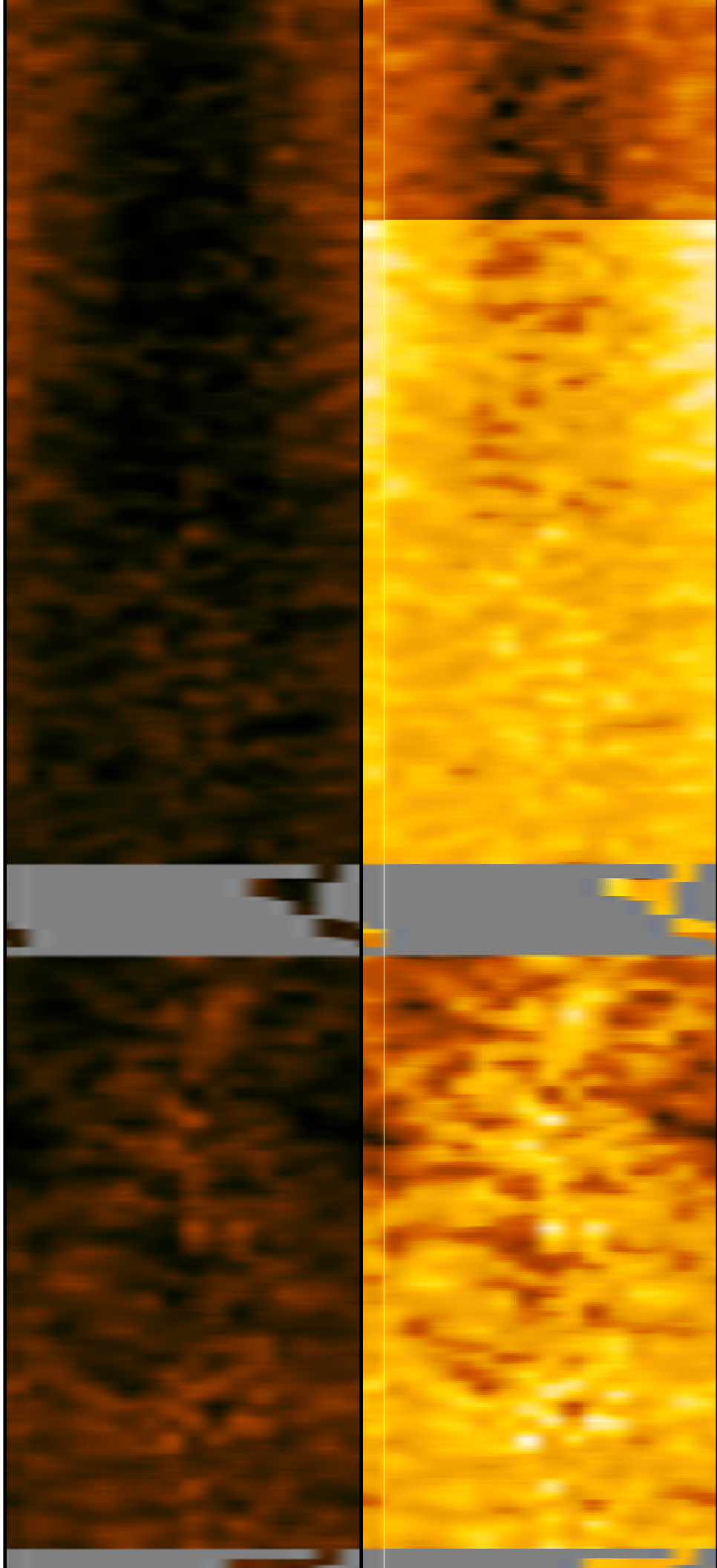
11700  
MD



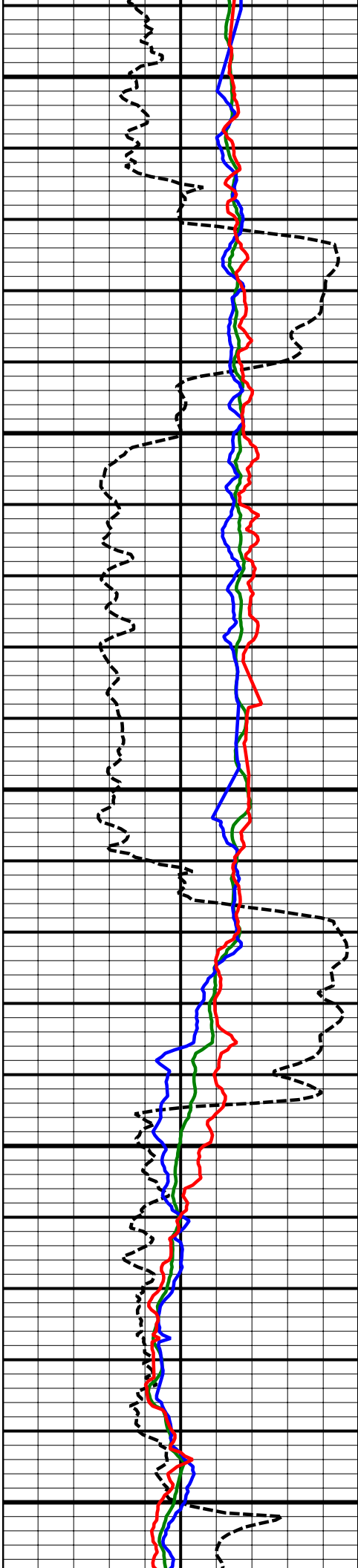


11800  
MD

11900  
MD



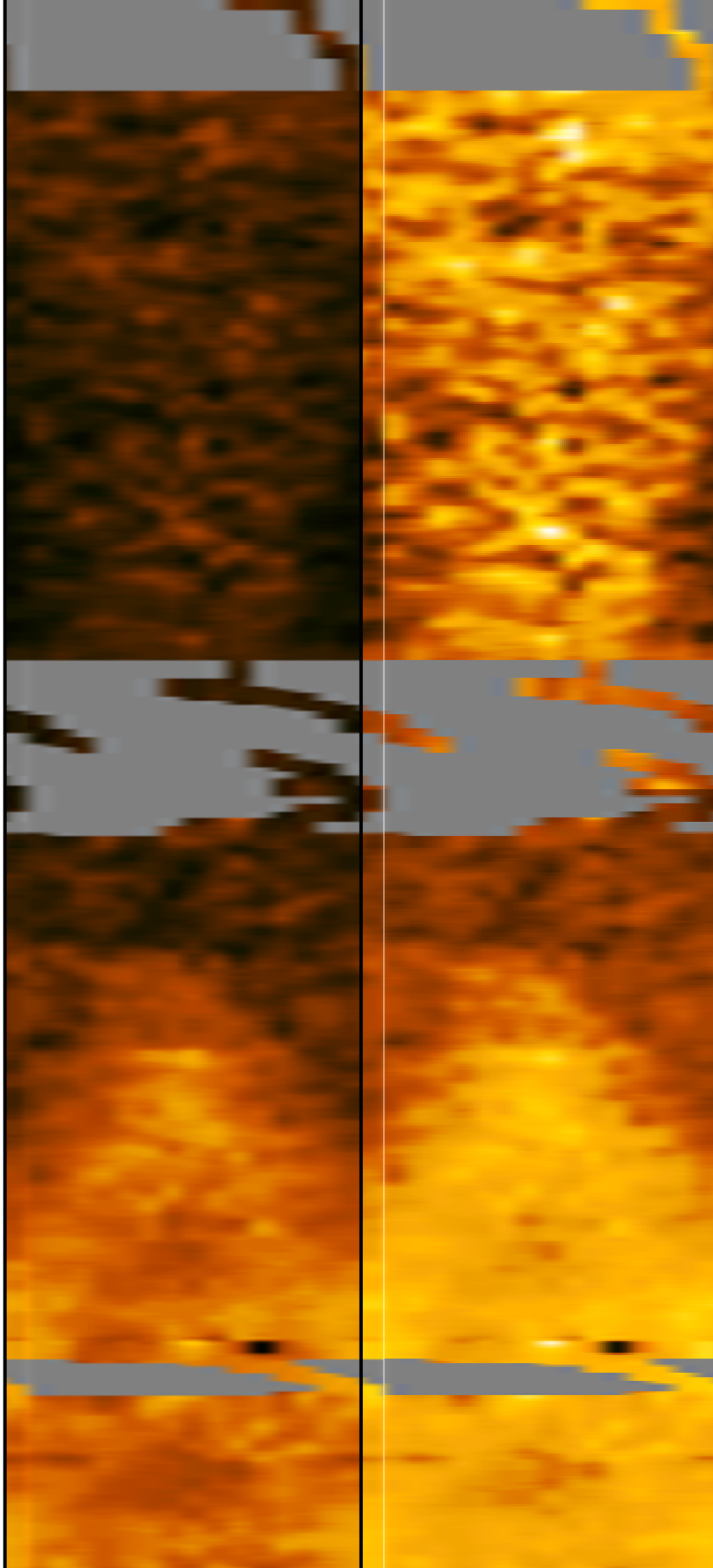


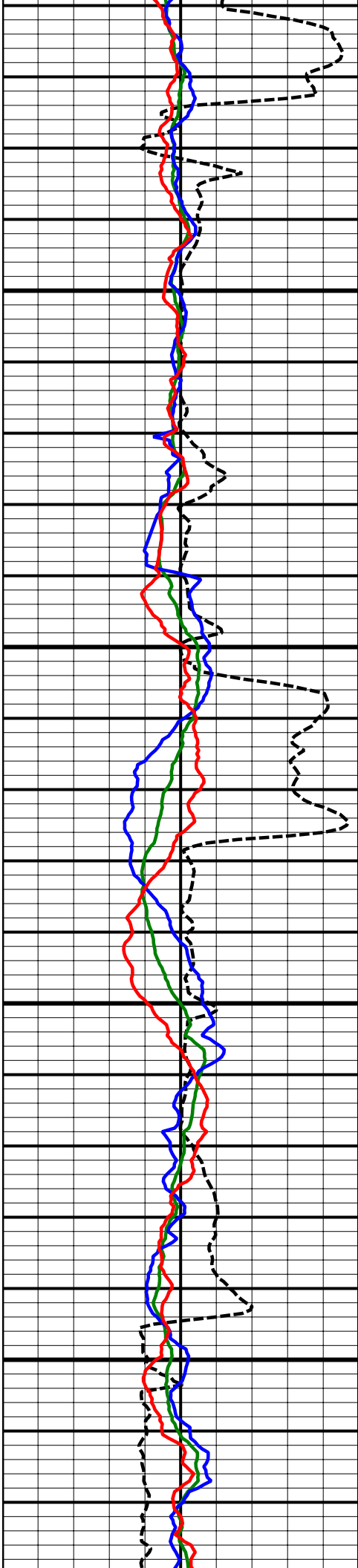


12000  
MD

12100  
MD

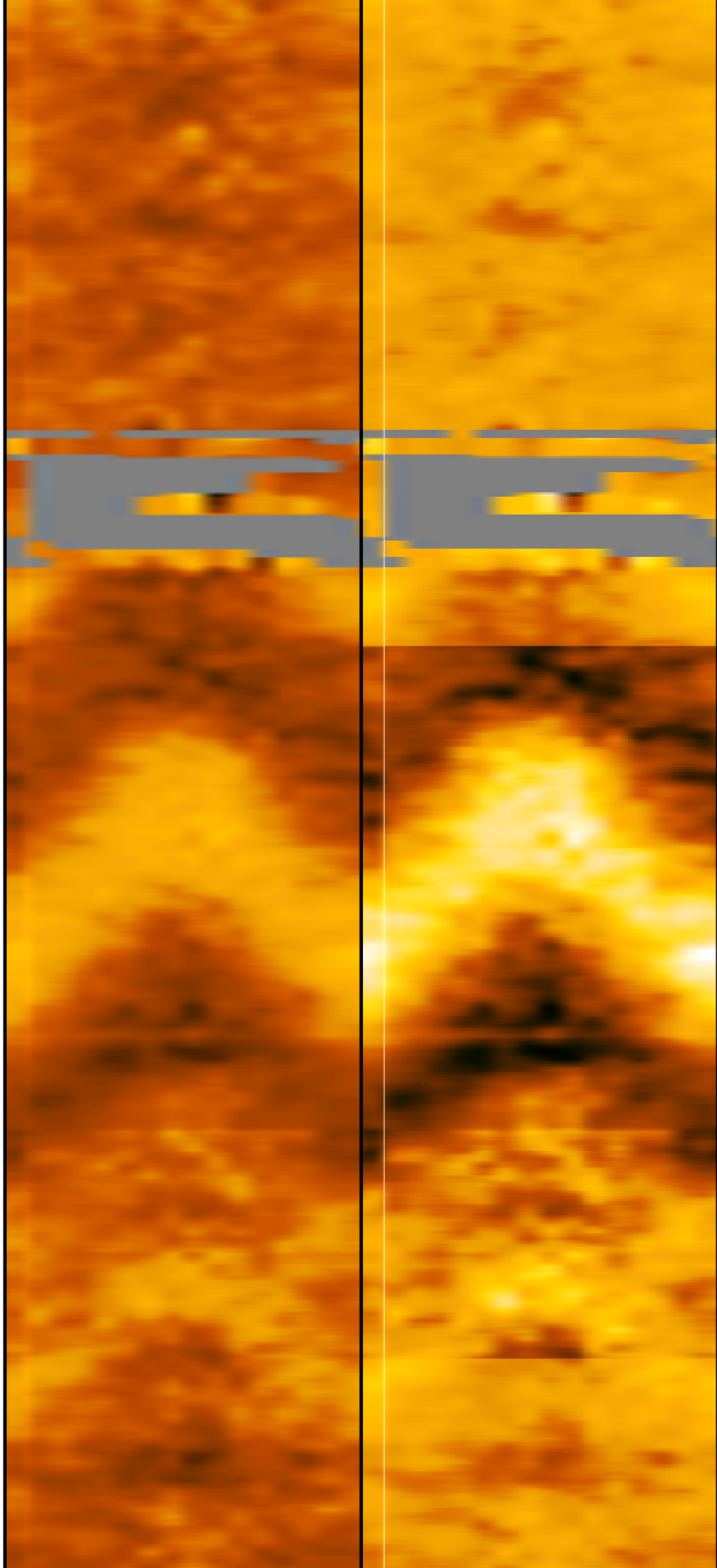
12200  
MD

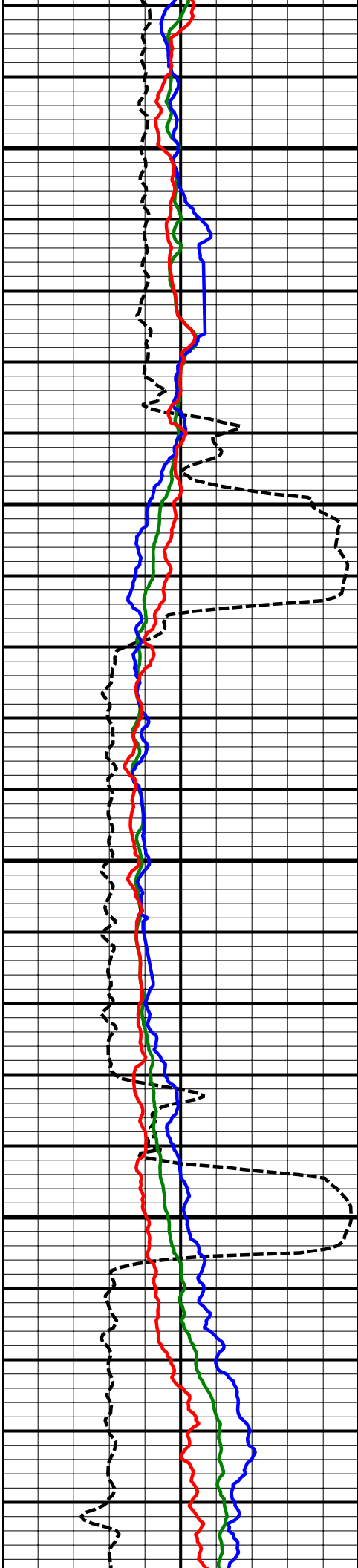




12300  
MD

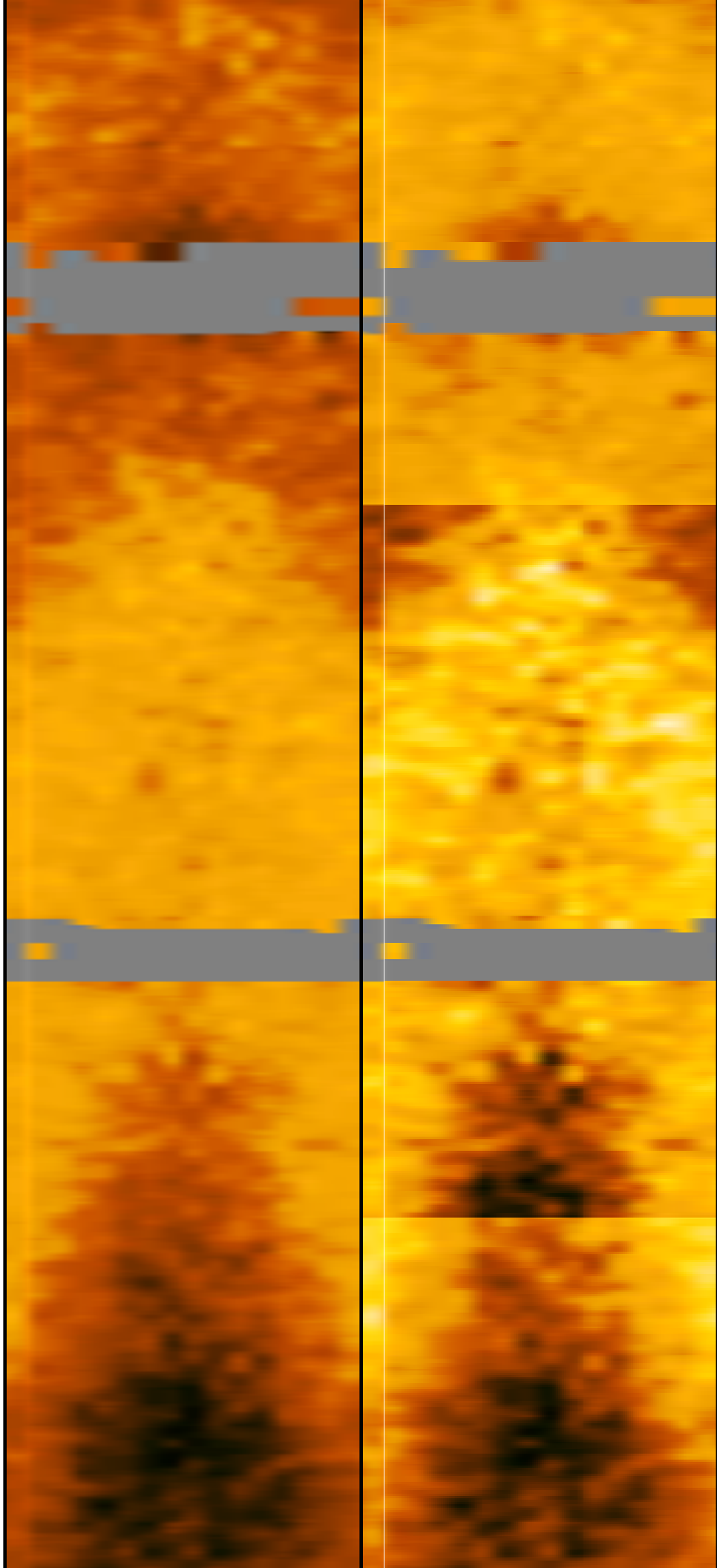
12400  
MD

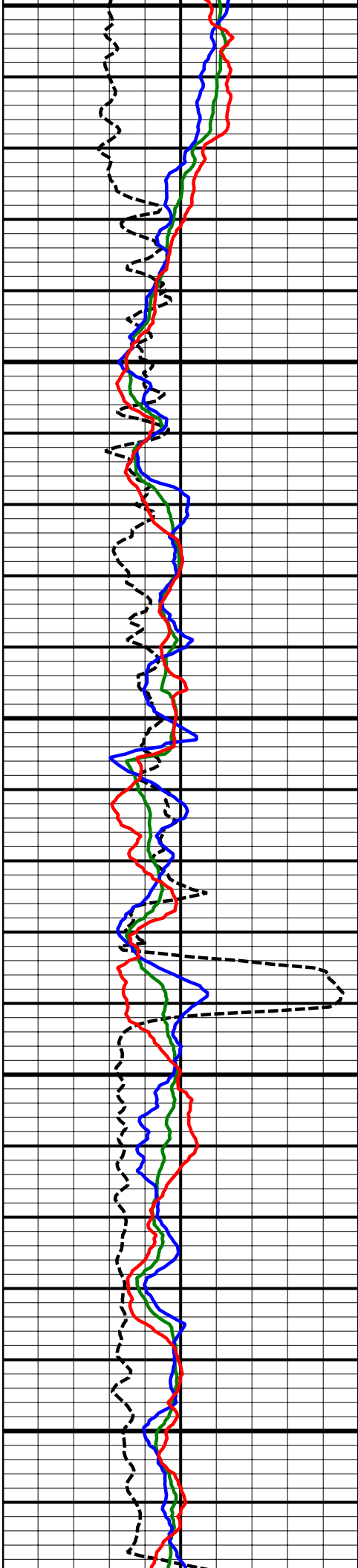




12500  
MD

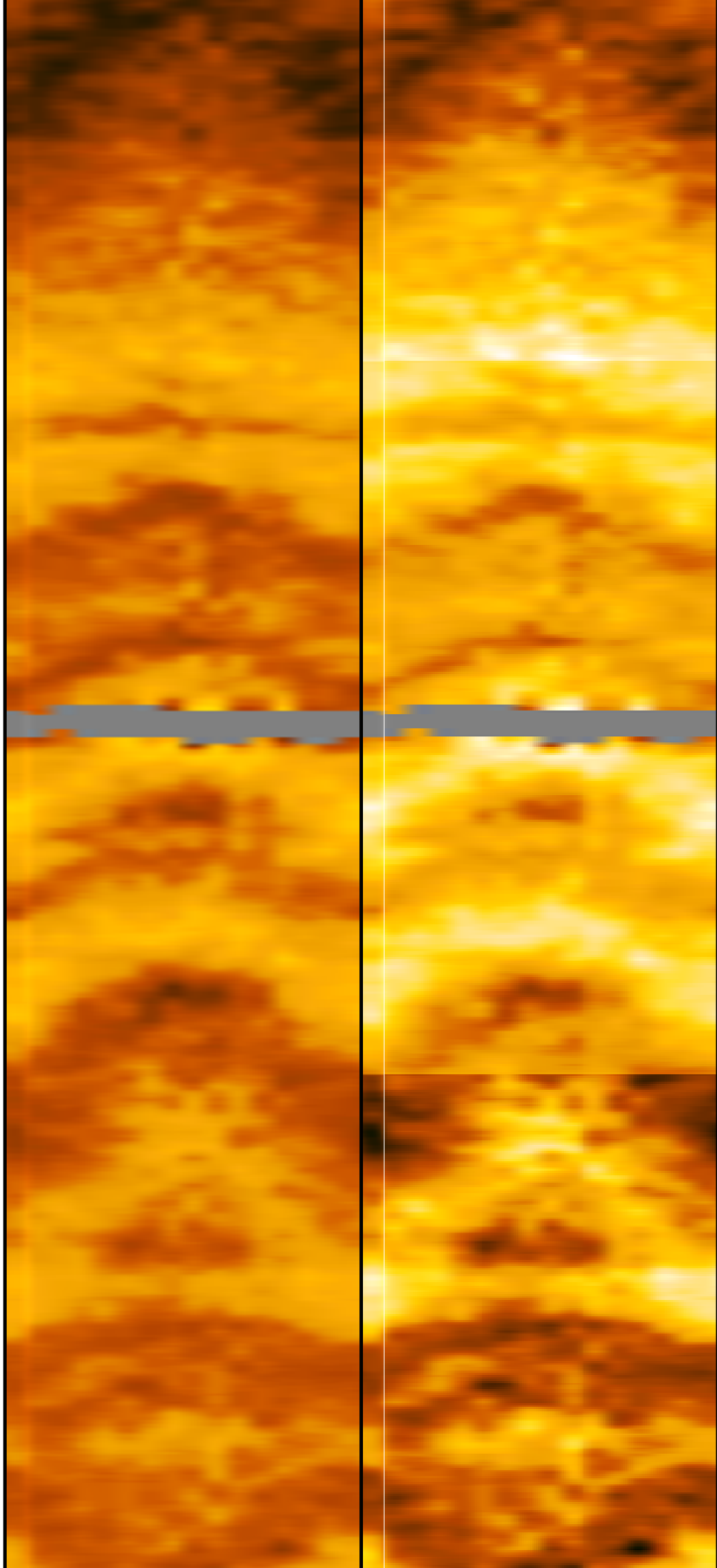
12600  
MD

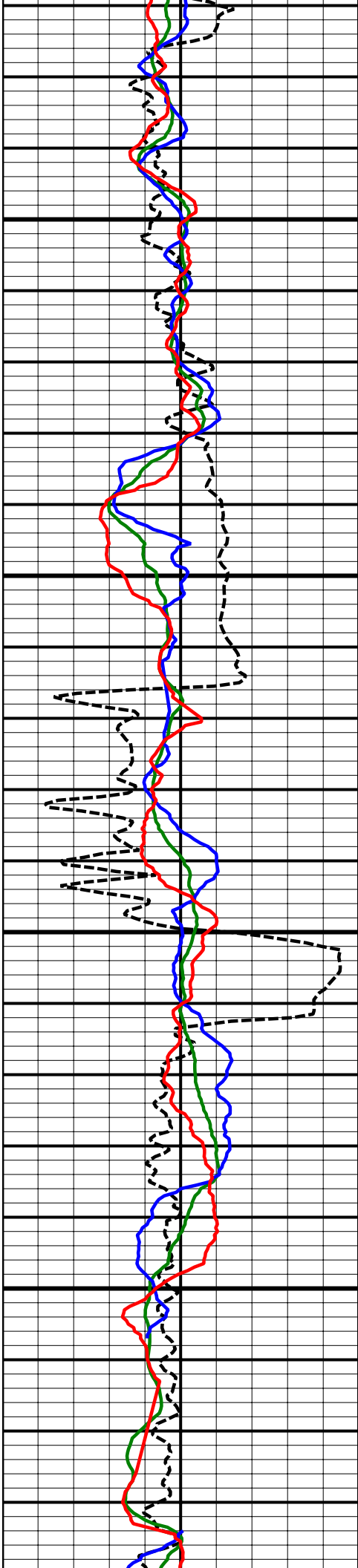




12700  
MD

12800  
MD



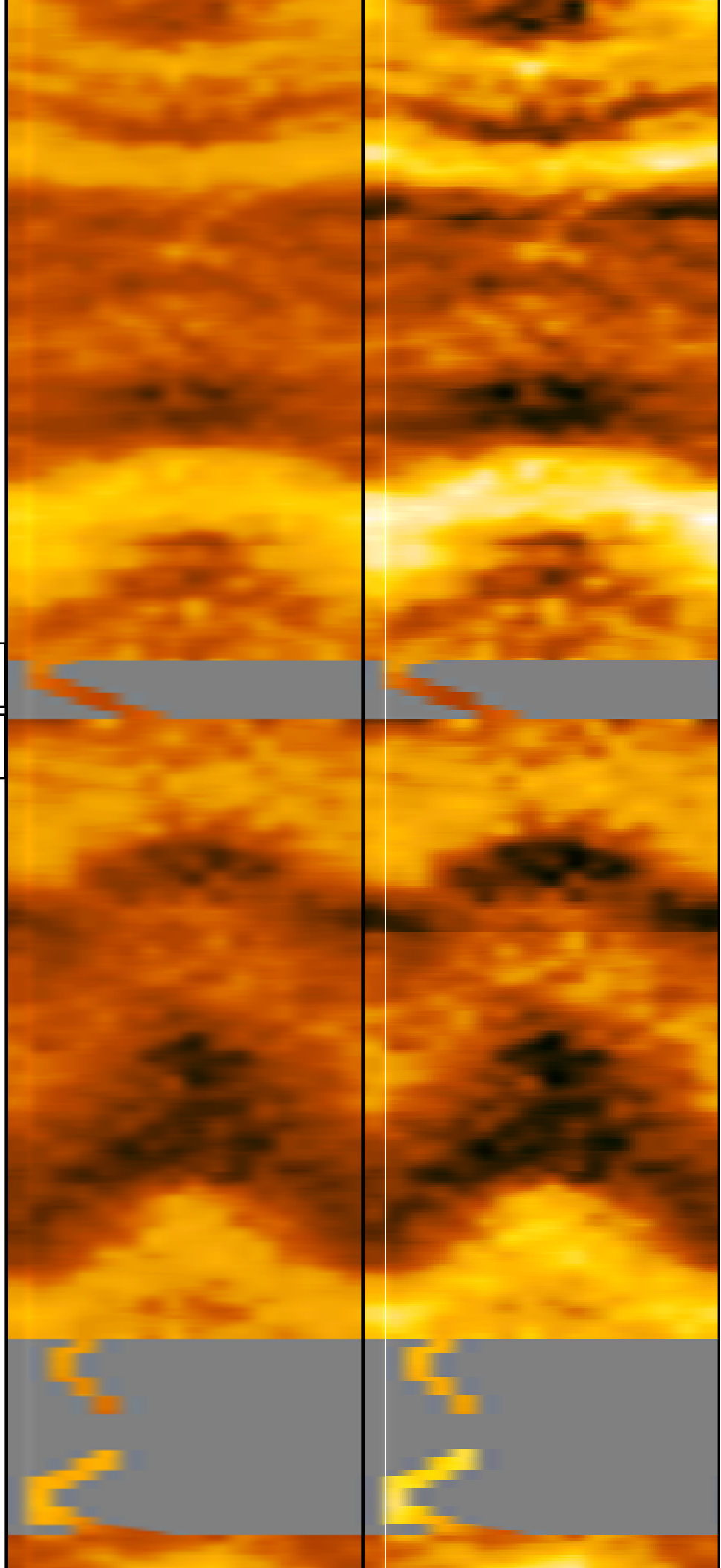


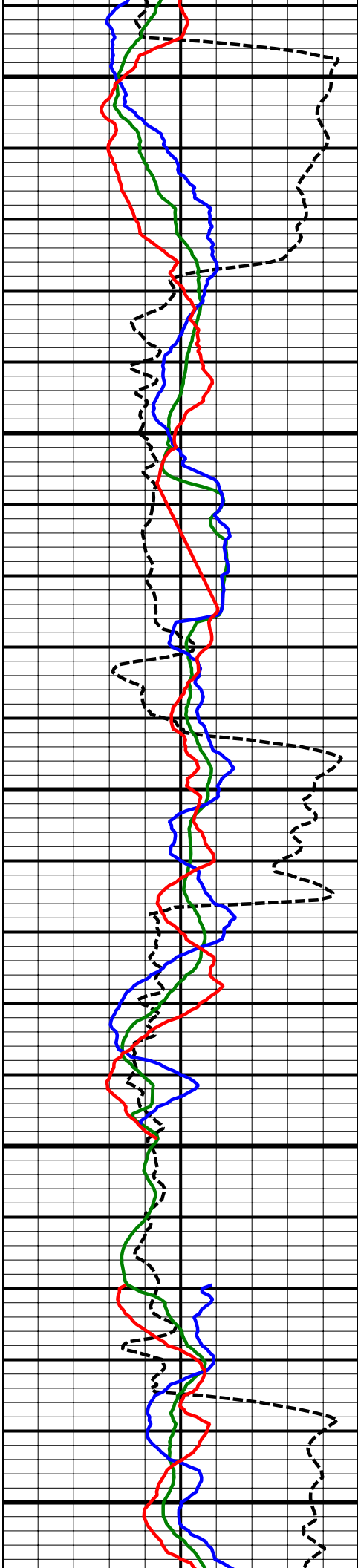
12900  
MD

Comment  
No. 3-2

Comment  
No. 4-1

13000  
MD

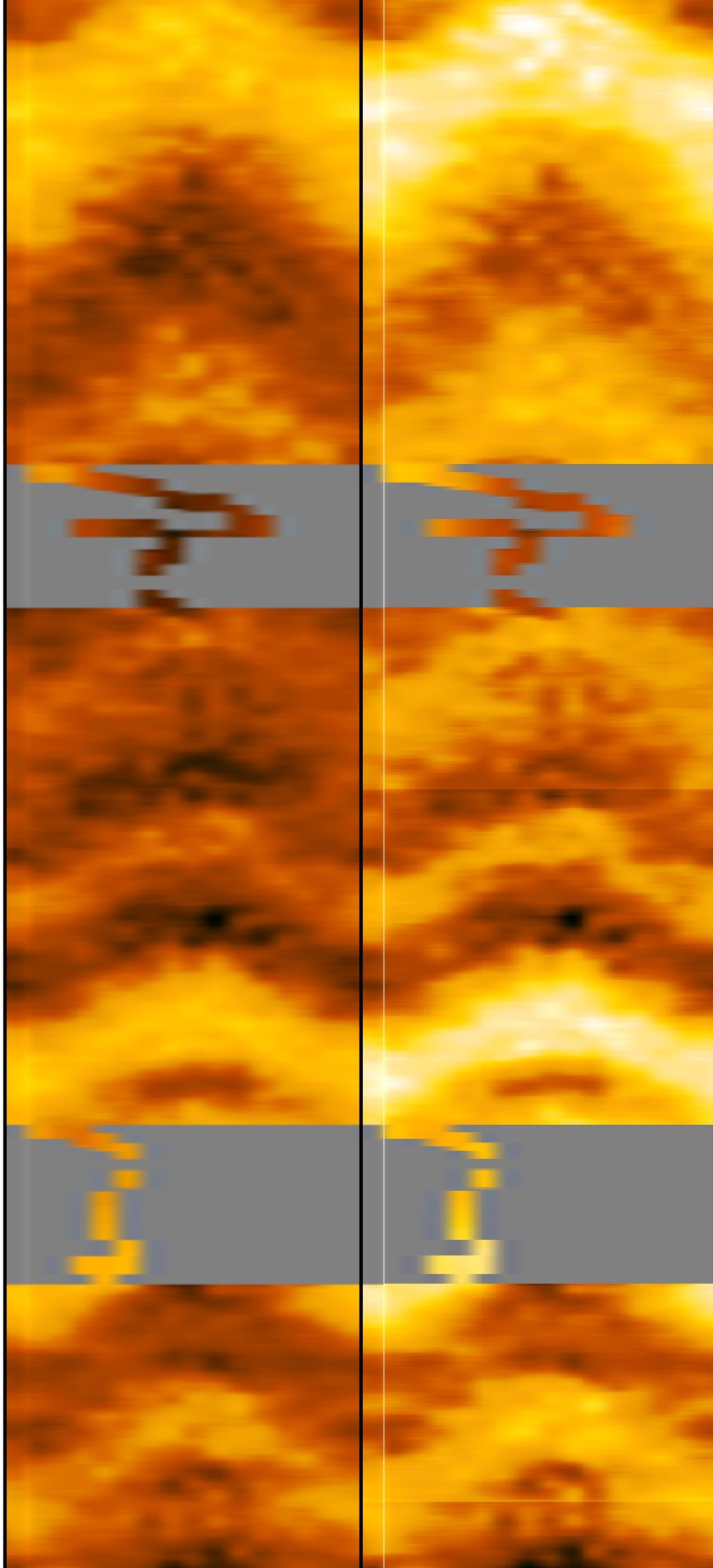




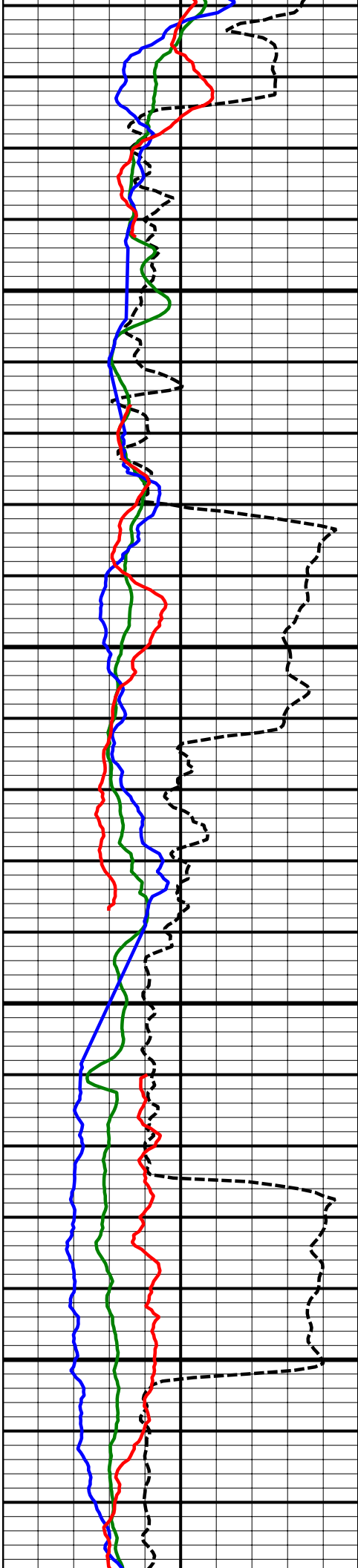
13100  
MD

13200  
MD

13300  
MD

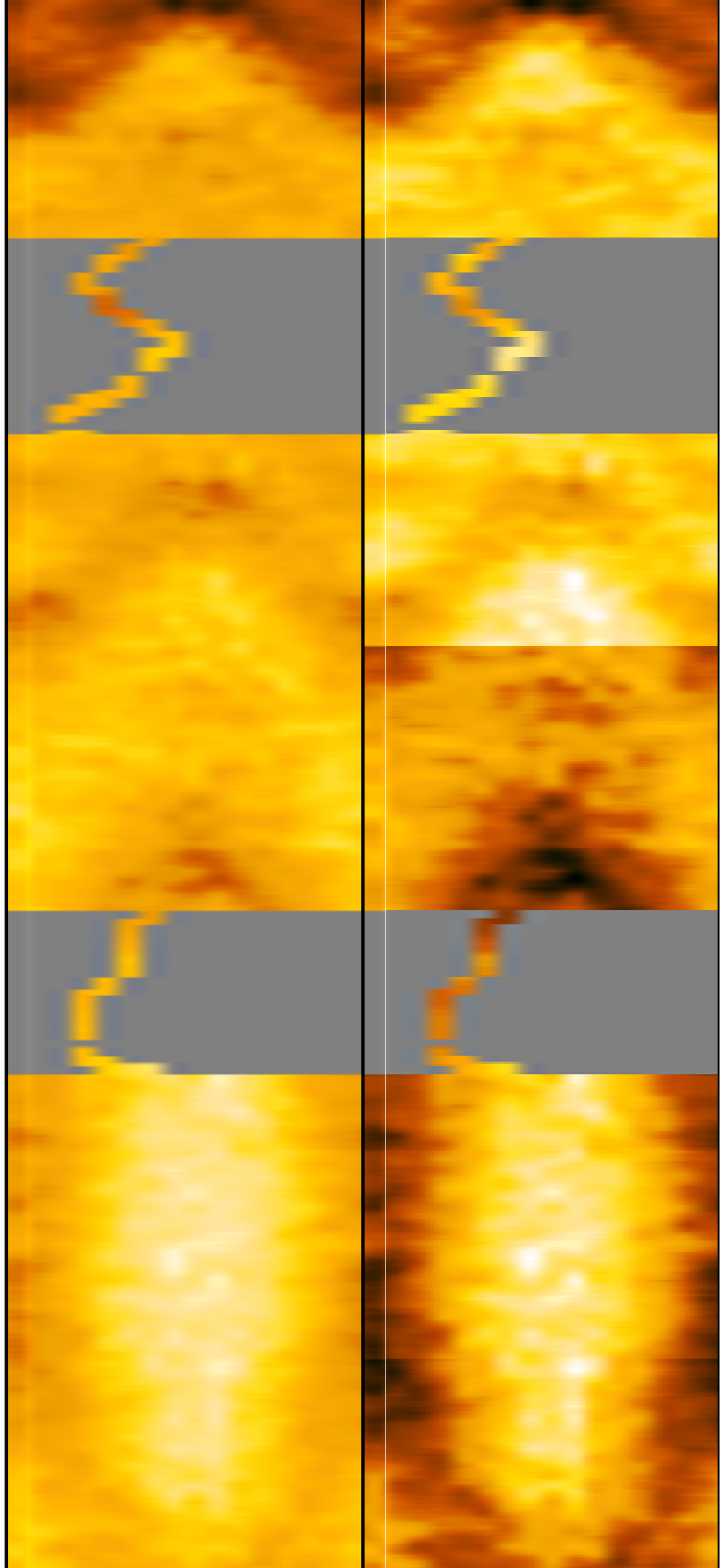


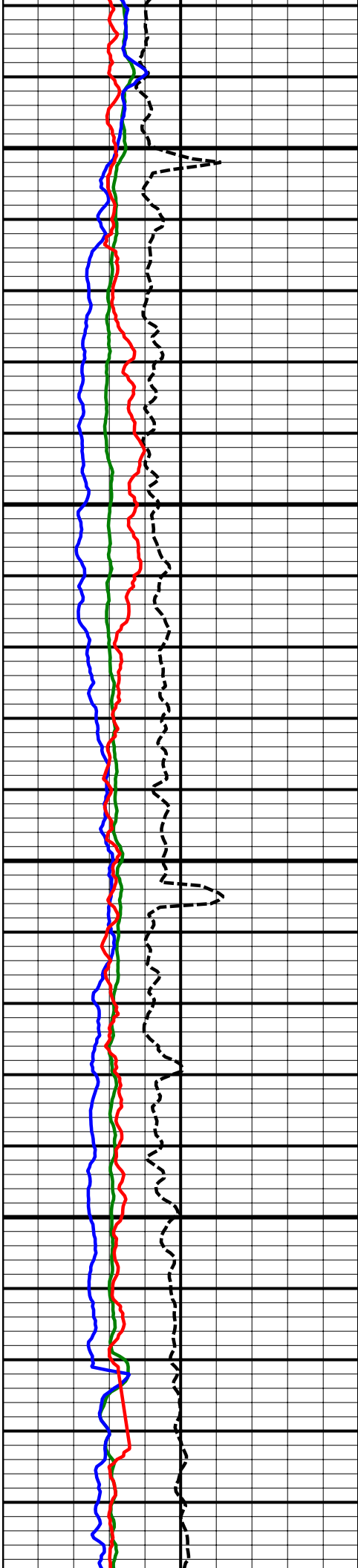




13400  
MD

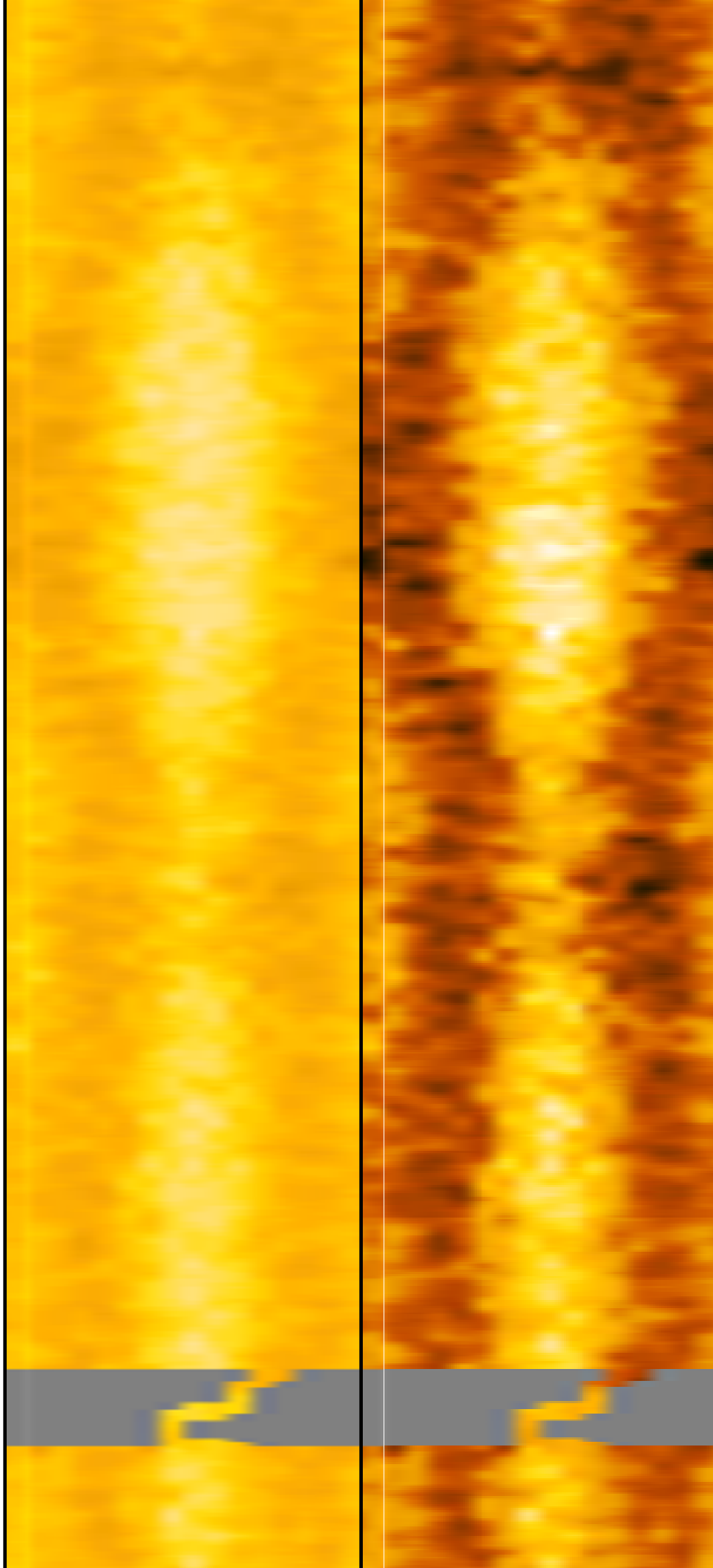
13500  
MD



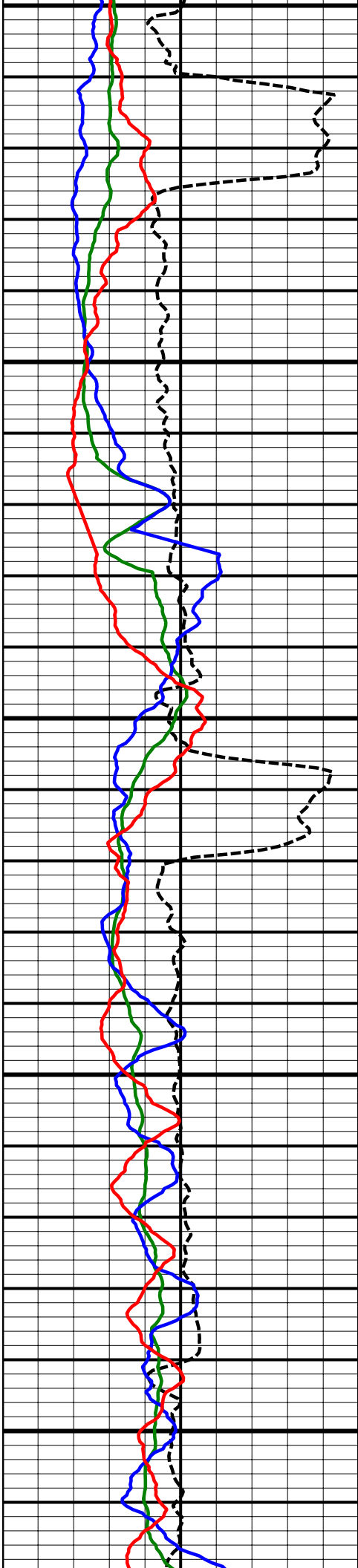


13600  
MD

13700  
MD

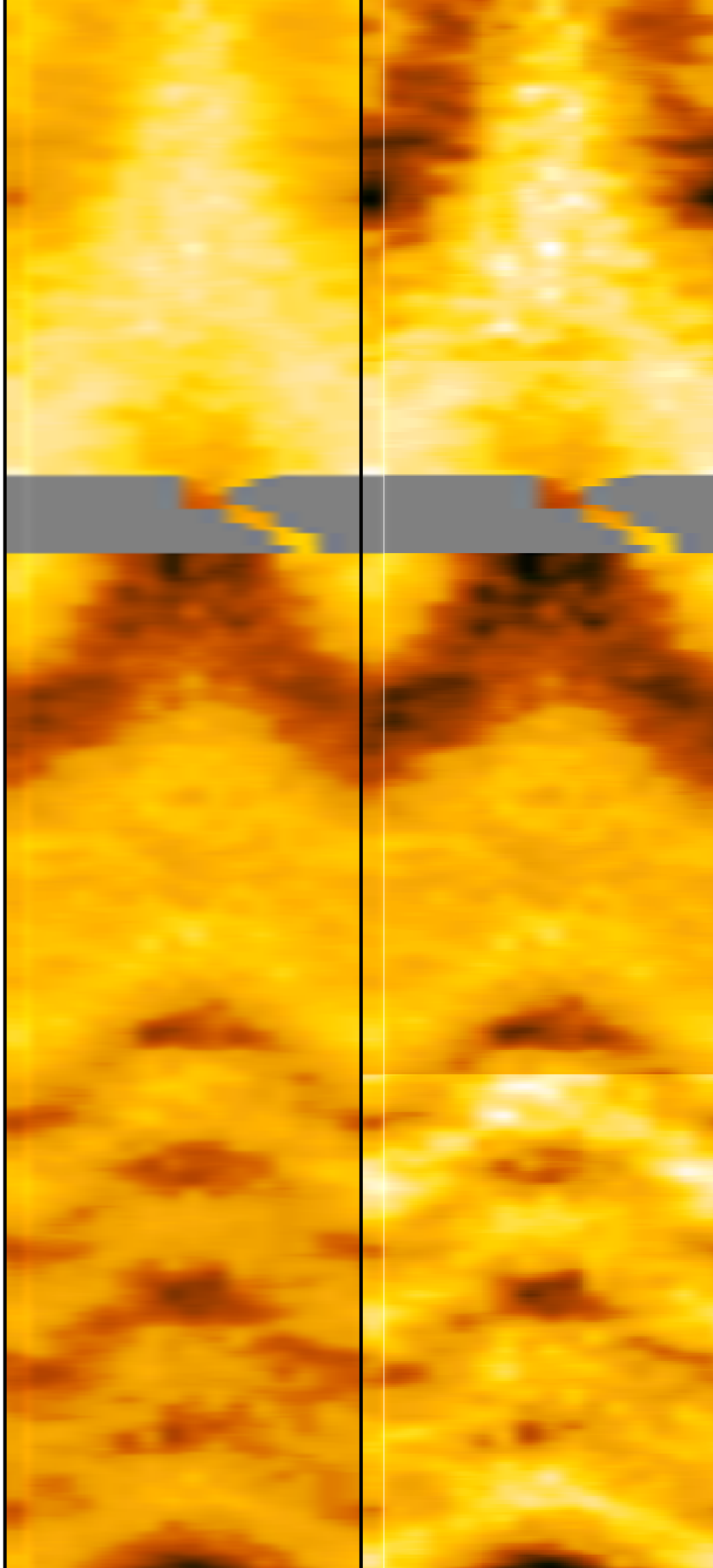


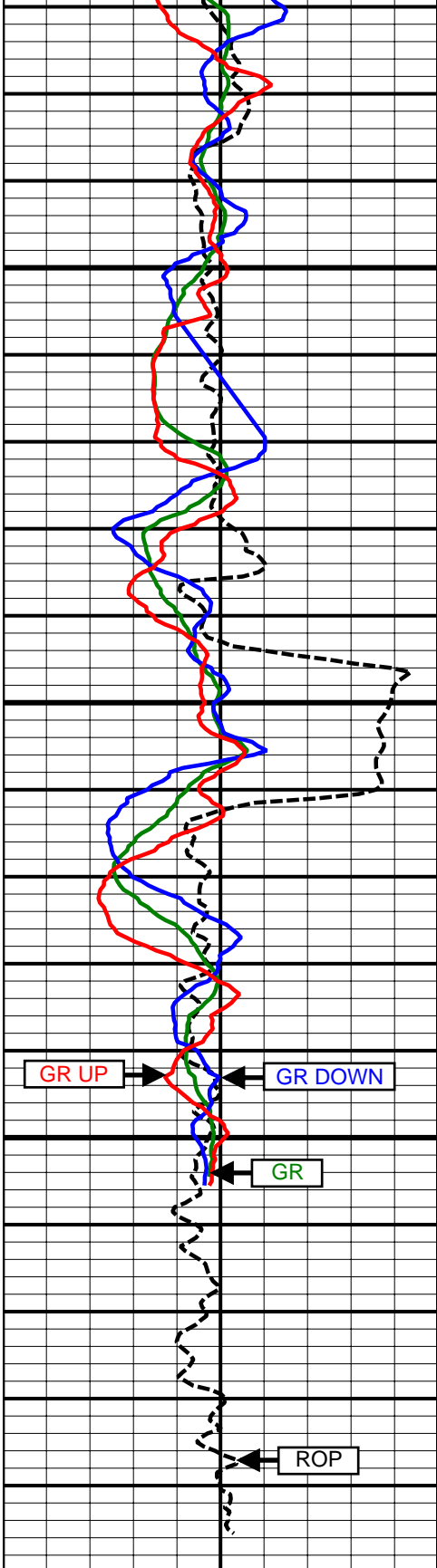




13800  
MD

13900  
MD

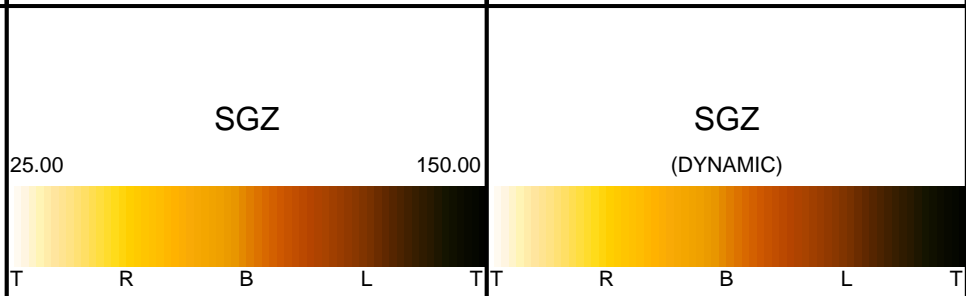
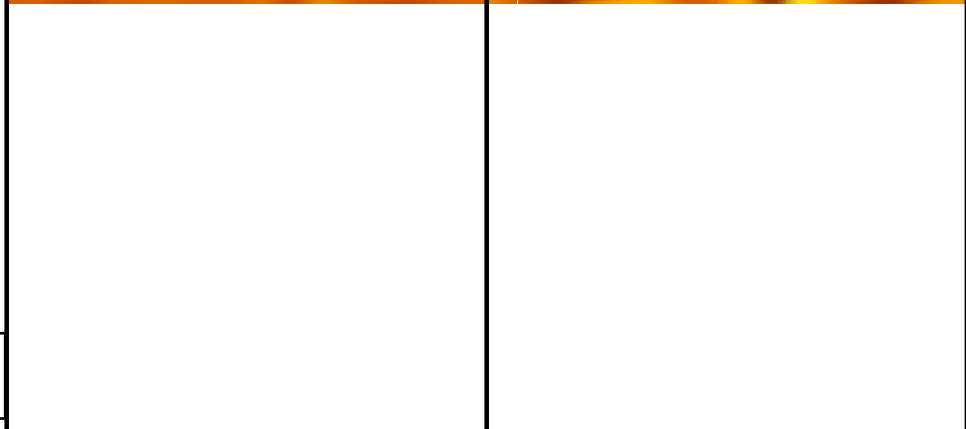
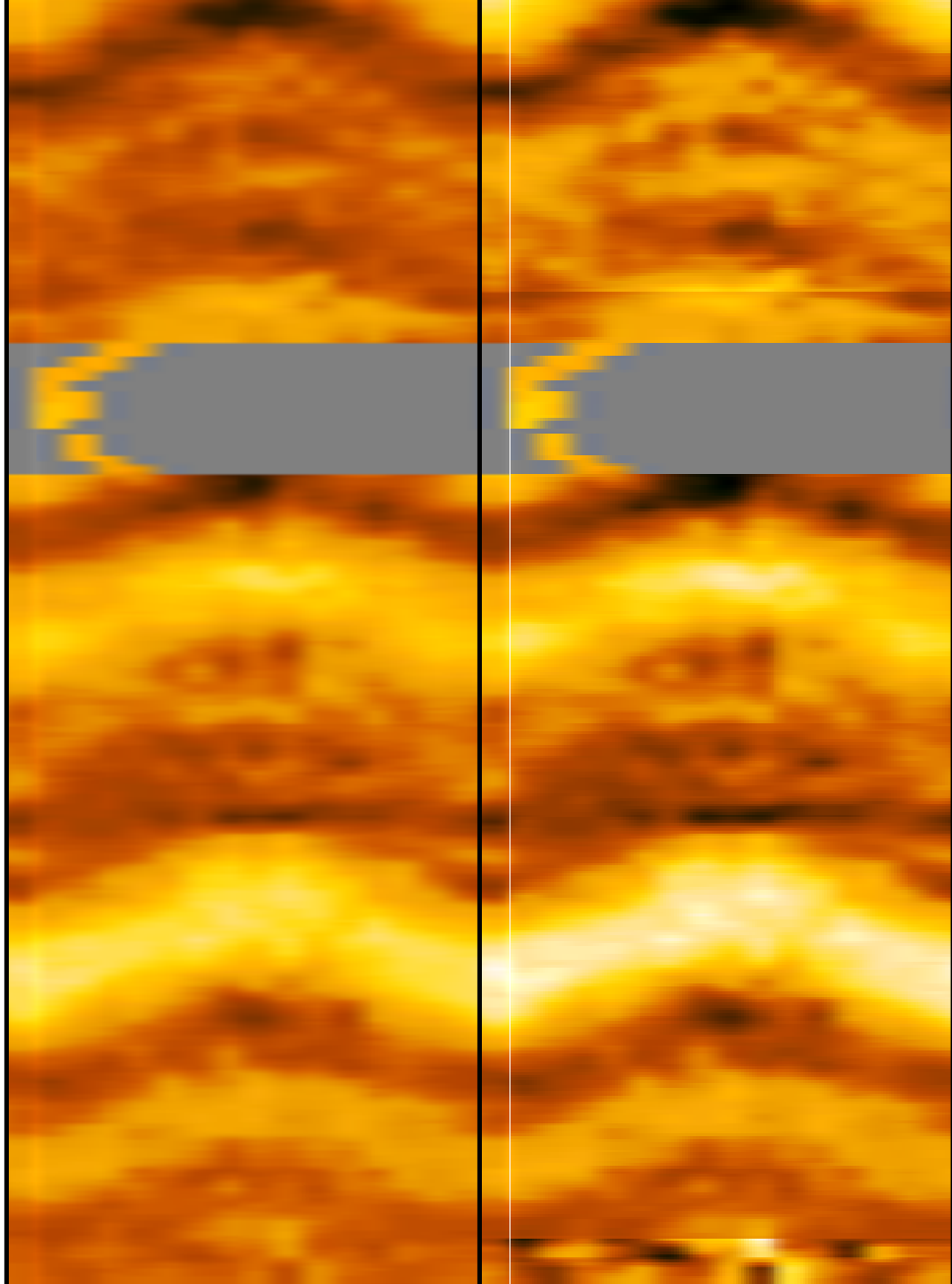
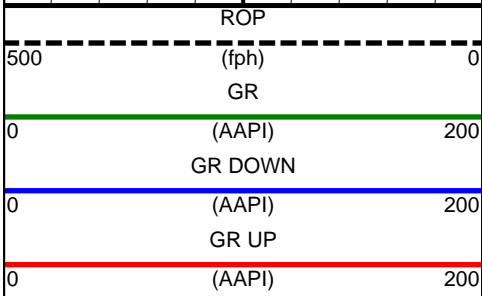




14000  
MD

14100  
MD

Comment  
No. 4-2



SURVEY						
Survey Calculation Method: <b>Minimum Curvature</b>						
Magnetic Reference	Target Direction	Total Magnetic Field	Magnetic Dip Angle	Magnetic Declination	Grid Convergence	Total Correction
<b>True North</b>	<b>350.84 deg</b>	<b>52873 nT</b>	<b>66.83 deg</b>	<b>8.68 deg</b>	<b>0.00 deg</b>	<b>8.68 deg</b>
<b>Survey Tie-On</b>	Depth	INC	AZ	TVD	NS	EW
	<b>11115.00 ft</b>	<b>89.66 deg</b>	<b>1.54 deg</b>	<b>7158.45 ft</b>	<b>3959.14 ft</b>	<b>-890.72 ft</b>

Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	Well Head		VSect (ft)	Dogleg (deg/100ft)
				NS (ft)	EW (ft)		
11199.00	90.44	2.33	7158.38	4043.09	-887.88	4132.88	1.32
11294.00	90.74	0.07	7157.40	4138.06	-885.89	4226.32	2.40
11388.00	89.94	359.54	7156.84	4232.06	-886.21	4319.16	1.02
11483.00	90.25	359.79	7156.68	4327.05	-886.77	4413.04	0.42
11578.00	88.89	358.45	7157.40	4422.04	-888.23	4507.04	2.01
11674.00	88.64	358.22	7159.47	4517.97	-891.02	4602.20	0.35
11769.00	89.38	355.91	7161.11	4612.83	-895.88	4696.62	2.55
11864.00	88.95	355.56	7162.49	4707.55	-902.94	4791.26	0.58
11959.00	89.57	354.64	7163.72	4802.20	-911.06	4885.99	1.17
12054.00	90.31	353.82	7163.82	4896.71	-920.61	4980.82	1.16
12149.00	89.20	352.05	7164.22	4990.99	-932.29	5075.75	2.20
12245.00	89.01	351.71	7165.72	5086.01	-945.85	5171.73	0.41
12340.00	89.20	350.34	7167.21	5179.83	-960.67	5266.71	1.46
12435.00	88.83	349.78	7168.84	5273.39	-977.07	5361.69	0.71
12530.00	89.91	349.64	7169.88	5366.86	-994.03	5456.66	1.15
12626.00	90.31	349.33	7169.70	5461.25	-1011.55	5552.63	0.53
12722.00	89.81	348.24	7169.60	5555.41	-1030.22	5648.57	1.25
12817.00	89.47	347.88	7170.20	5648.35	-1049.88	5743.46	0.52
12912.00	89.20	348.21	7171.30	5741.29	-1069.56	5838.34	0.45
12935.00	89.12	346.82	7171.64	5763.74	-1074.53	5861.30	6.05
13029.00	89.38	347.84	7172.87	5855.44	-1095.14	5955.11	1.12
13124.00	90.86	349.59	7172.67	5948.60	-1113.73	6050.04	2.41
13219.00	90.37	351.30	7171.65	6042.27	-1129.50	6145.03	1.87
13313.00	90.74	352.84	7170.74	6135.37	-1142.47	6239.00	1.68
13408.00	90.80	355.80	7169.46	6229.88	-1151.87	6333.80	3.12
13503.00	92.10	358.40	7167.06	6324.72	-1156.67	6428.20	3.06
13598.00	92.28	358.96	7163.43	6419.62	-1158.86	6522.24	0.62
13693.00	92.84	0.14	7159.18	6514.52	-1159.60	6616.05	1.37
13788.00	91.98	1.34	7155.19	6609.43	-1158.38	6709.55	1.55
13883.00	89.51	1.27	7153.95	6704.39	-1156.22	6802.95	2.60
13978.00	88.09	0.84	7155.94	6799.35	-1154.47	6896.42	1.56
14072.00	89.01	1.90	7158.32	6893.29	-1152.22	6988.81	1.49
14088.00	88.77	1.72	7158.63	6909.28	-1151.71	7004.51	1.87

\*Weatherford Surveys from 11199.00 ft MD to 14088.00 ft MD.\*

\*TD at 14134.00 ft MD.\*

The total correction is 8.68 deg relative to True North.



**Weatherford®**

Final Print

COMPANY	<u>Anadarko Petroleum Corp.</u>		
WELL	<u>Camp 25N-30HZ</u>		
FIELD	<u>Camp</u>		
RIG	<u>H&amp;P 307</u>		
LOC.	<u>Colorado</u>	COUNTY	<u>Weld</u>