



# RADIAL CEMENT BOND LOG

FILE NO: CH136251	COMPANY LARAMIE ENERGY LLC
API NO: 05077103820000	WELL NICHOLS 0994-24-12W
	FIELD VEGA
	COUNTY MESA
	STATE COLORADO

Ver. 4.10	LOCATION: SHL: 2271' FNL & 2785' FWL BHL: 2299' FSL & 1491' FWL SEC 24 TWP 9 S RGE 94 W	OTHER SERVICES RPM
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PERMANENT DATUM LOG MEASURED FROM DRILL. MEAS. FROM	GL KB KB	ELEVATION 7212 FT 24 FT ABOVE P.D.	ELEVATIONS: KB 7236 FT DF GL 7212 FT
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DATE	25-Apr-2018	
RUN	2	1
SERVICE ORDER	US136251	
DEPTH DRILLER	7464 FT	
DEPTH LOGGER	7412 FT	
BOTTOM LOGGED INTERVAL	7412 FT	
TOP LOGGED INTERVAL	24 FT	
TIME STARTED	17:00	
TIME FINISHED	19:00	
OPERATOR RIG TIME	2 HRS	
TYPE OF FLUID IN HOLE	WATER	
FLUID DENSITY	NA	
FLUID SALINITY	NA	
FLUID LEVEL	48 FT	
LOGGED CEMENT TOP	1850 FT	
WELLHEAD PRESSURE	0 PSI	
MAXIMUM HOLE DEVIATION	NA	
NOMINAL LOGGING SPEED	95 FMIN	
MAX. RECORDED TEMP.	224 DEGF	
REFERENCE LOG	NA	
REFERENCE LOG DATE	NA	
EQUIP. NO.	ML-4291	GRAND JCT.
RECORDED BY	M. BAUKA	
WITNESSED BY	NA	

IN MAKING INTERPRETATIONS OF LOGS OUR 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, WE CANNOT, AND WE DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION. WE SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COST, DAMAGES, OR EXPENSES WHATSOEVER INCURRED OR SUSTAINED BY THE CUSTOMER RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR EMPLOYEES.

## REMARKS

RUN 2 TRIP 1: \*2 OPERATIONS IN WELLBORE\*

\*\*OPERATION 2: RAL/GR/CCL RUN CENTRALIZED\*\*

LOGGED WITH 0 PSI ON WELLHEAD

SJ: 5667' - 5686'  
SJ: 6563' - 6582'

## EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
2	1	RAL	1426XA	11871500	CENTRALIZED
2	1	GR/CCL	1355XA	11871507	CENTRALIZED

# MAIN PASS 0 PSI

ECLIPS 7.0i ECLIPS General Release Rel 7.0i Thu Jun 08 20:36:10 CDT 2017

Patches: 3

Plotted: Wed Apr 25 20:37:50 2018

## PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE\_NICHOLS\_0994\_24\_12W/p012g02.prm  
 LOGGING MODE: DEPTH DIRECTION: UP  
 TOP DEPTH: 21.750 ft BOTTOM DEPTH: 7441.250 ft

### SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
GR	FILTER ()	medium (1)		TOP	BOTTOM
AMPLITUDE	FILTER ()	medium (1)		"	"
TRAVEL TIME	FILTER ()	medium (1)		"	"

### RAL CCL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
CCL FLOOR	CCL FLOOR	0.00		TOP	BOTTOM

### ANALOG RAL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
AMPLITUDE WINDOW (NEAR)	AMP WINDOW START (fgp1*)	187	us	TOP	BOTTOM
	AMP WINDOW START (fgp2*)	187	us	"	"
	AMP WINDOW START (fgp3*)	187	us	"	"
	AMP WINDOW START (fgp4*)	187	us	"	"
	AMP WINDOW START (fgp5*)	187	us	"	"
	AMP WINDOW START (fgp6*)	187	us	"	"
	AMP WINDOW START (fgp7*)	187	us	"	"
	AMP WINDOW START (fgp8*)	187	us	"	"
	AMP WINDOW START (fgpn*)	187	us	"	"
	AMP WINDOW LENGTH	25	us	"	"
TRAVEL TIME WINDOW (NEAR)	TT WINDOW START (ttn*)	195	us	"	"
	TT WINDOW LENGTH	500	us	"	"
	FIRST BRK THRESHOLD (ttn*)	5	mV	"	"
RAL CASING PARAMETERS	PPT NEAR	200.391	us	"	"
RAL TOOL DELAY	TOOL DELAY (str1*)	-65	us	"	"
	TOOL DELAY (str2*)	-65	us	"	"
	TOOL DELAY (str3*)	-65	us	"	"
	TOOL DELAY (str4*)	-65	us	"	"
	TOOL DELAY (str5*)	-65	us	"	"
	TOOL DELAY (str6*)	-65	us	"	"
	TOOL DELAY (str7*)	-65	us	"	"
	TOOL DELAY (str8*)	-65	us	"	"
	TOOL DELAY (strn*)	-65	us	"	"
BASELINE NOISE (NEAR)	NOISE WINDOW START	125	us	"	"
	NOISE WINDOW LENGTH	25	us	"	"

### PERCENT BOND CEMENT MAP

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
RAL FREE PIPE AMPLITUDE	FREE AMP REC 1	80	mV	TOP	BOTTOM
	FREE AMP REC 2	80	mV	"	"
	FREE AMP REC 3	80	mV	"	"
	FREE AMP REC 4	80	mV	"	"
	FREE AMP REC 5	80	mV	"	"
	FREE AMP REC 6	80	mV	"	"
	FREE AMP REC 7	80	mV	"	"
	FREE AMP REC 8	80	mV	"	"
RAL FULL BOND AMPLITUDE	FULL BOND AMP REC 1	3	mV	"	"
	FULL BOND AMP REC 2	3	mV	"	"

FULL BOND AMP REC 3	3	mV	"	"
FULL BOND AMP REC 4	3	mV	"	"
FULL BOND AMP REC 5	3	mV	"	"
FULL BOND AMP REC 6	3	mV	"	"
FULL BOND AMP REC 7	3	mV	"	"
FULL BOND AMP REC 8	3	mV	"	"

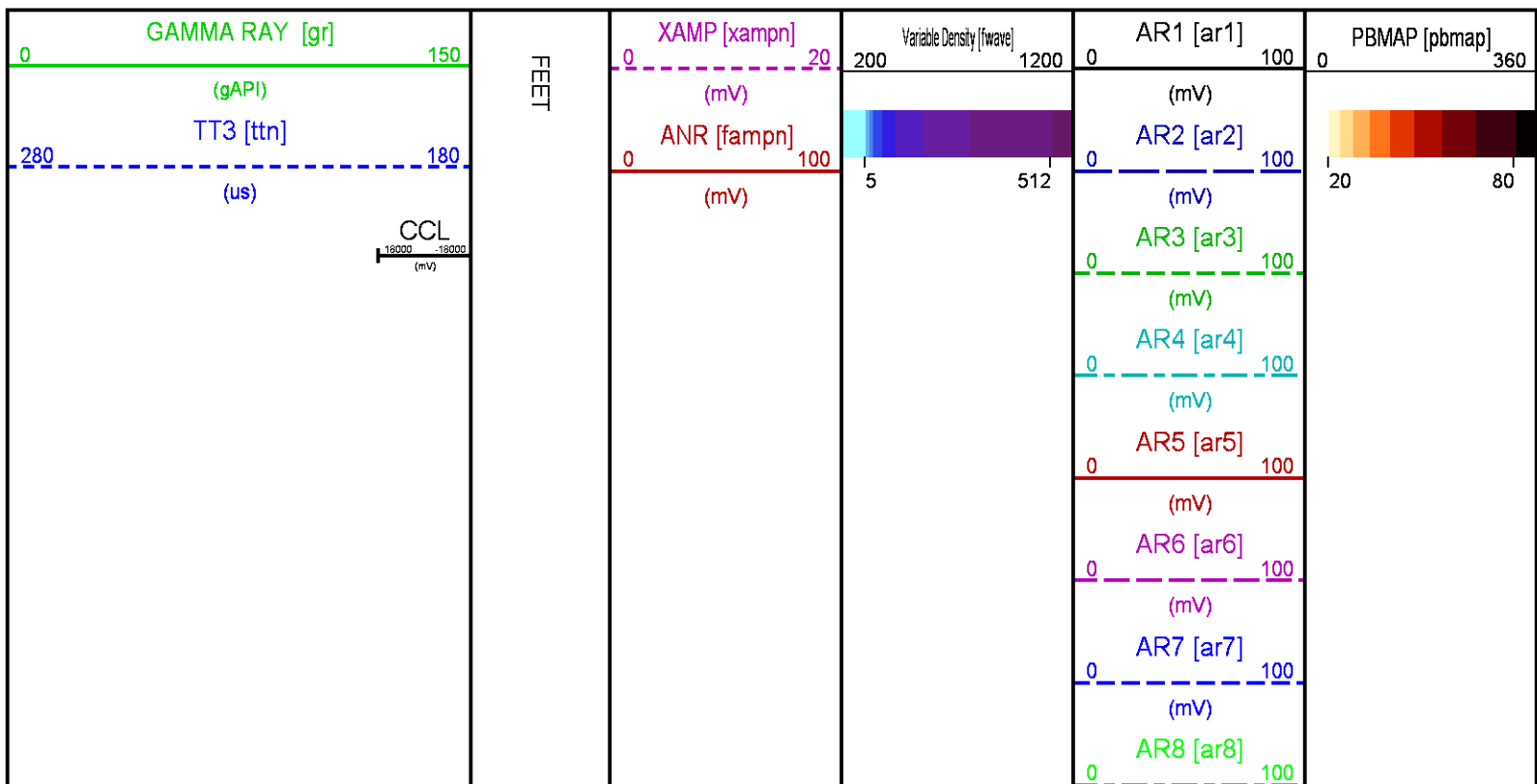
## CURVE DESCRIPTION REPORT

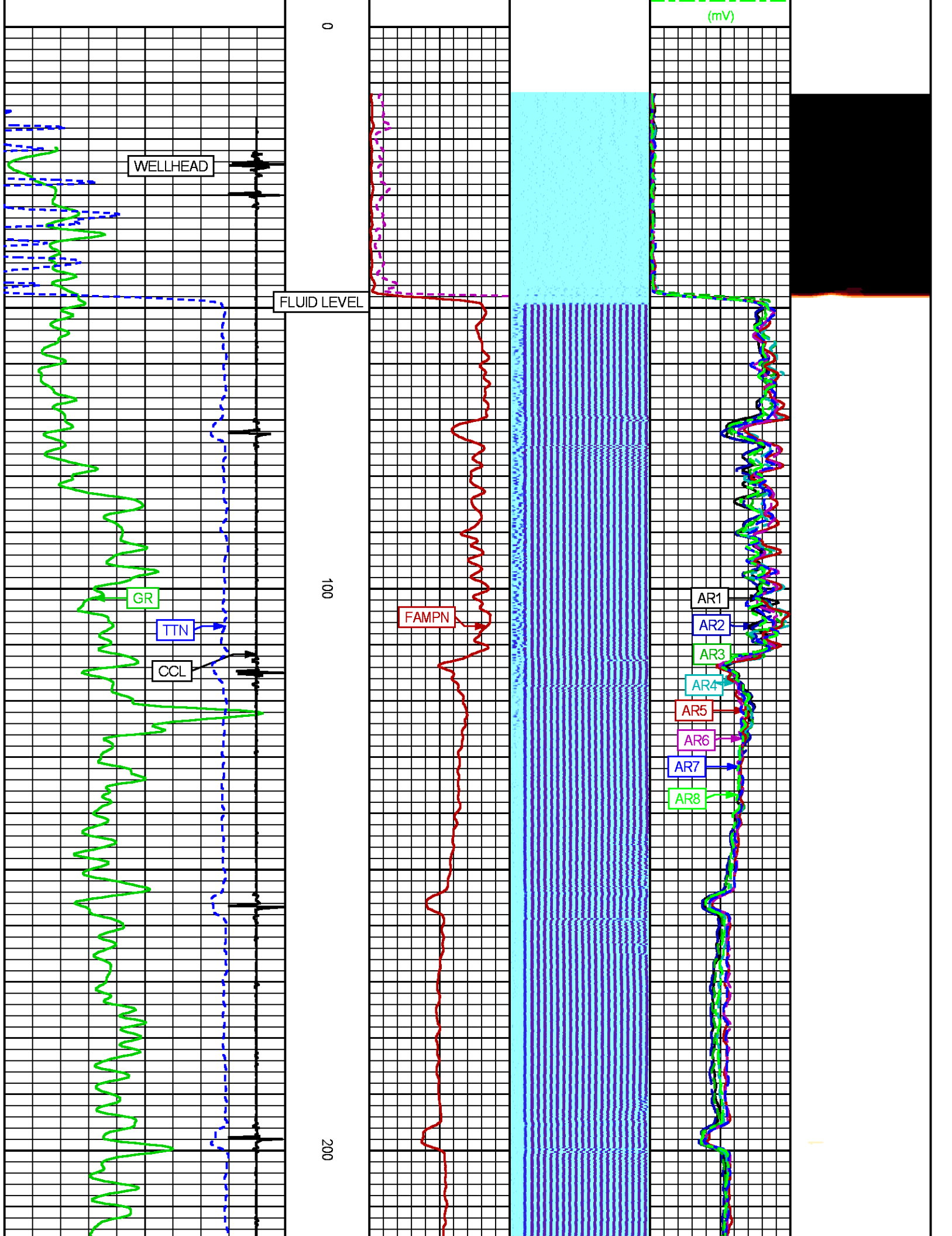
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AR1	N/A	FIXED GATE AMPLITUDE T-R1
F1:AR2	N/A	FIXED GATE AMPLITUDE T-R2
F1:AR3	N/A	FIXED GATE AMPLITUDE T-R3
F1:AR4	N/A	FIXED GATE AMPLITUDE T-R4
F1:AR5	N/A	FIXED GATE AMPLITUDE T-R5
F1:AR6	N/A	FIXED GATE AMPLITUDE T-R6
F1:AR7	N/A	FIXED GATE AMPLITUDE T-R7
F1:AR8	N/A	FIXED GATE AMPLITUDE T-R8
F1:CCL	N/A	CASING COLLAR LOCATOR
F1:FAMPN	N/A	FIXED GATE AMPLITUDE NEAR RECEIVER
F1:FWAVE	N/A	FAR WAVE FORM
F1:GR	N/A	GAMMA RAY
F1:PBMAP	N/A	PERCENT BOND CEMENT MAP
F1:TTN	N/A	TRAVELTIME FROM NEAR TRANSMITTER-RECEIVER
F1:XAMPN	N/A	FIXED GATE AMPLITUDE NEAR RECEIVER TIMES FIVE

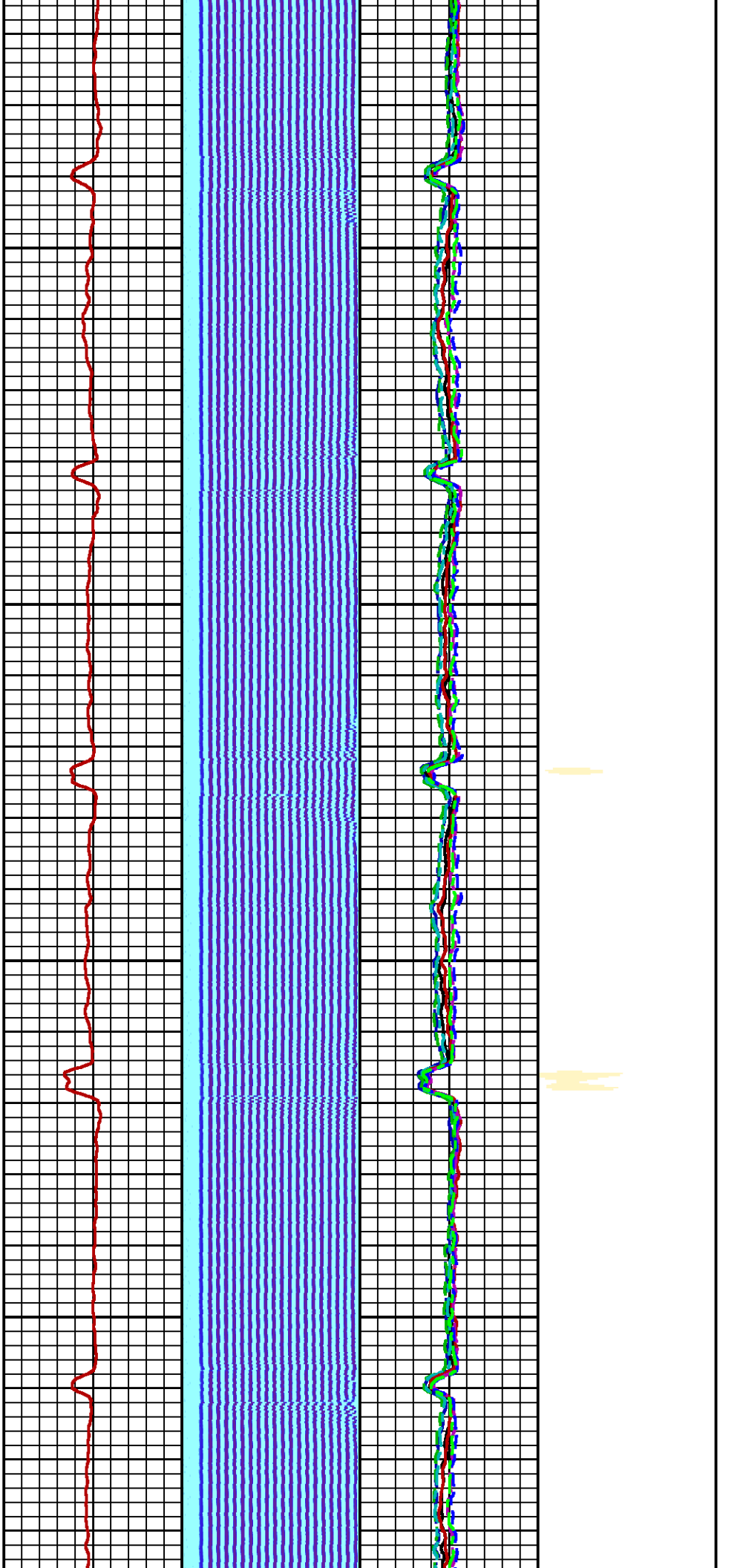
## CURVE MEASURE POINT OFFSET

CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
AR1	-11.25	AR5	-11.25	CCL	-5.75	XAMPN	-11.25
AR2	-11.25	AR6	-11.25	FAMPN	-11.25		
AR3	-11.25	AR7	-11.25	GR	-1.75		
AR4	-11.25	AR8	-11.25	TTN	-11.25		

<b>Presentation</b>	: SysA:/dat1a/LARAMIE_NICHOLS_0994_24_12W/0994-24-12W_RAL_MAIN.fvpdf [5"/100' Scale]
<b>Plot Interval</b>	: 0 - 7440.25 Feet
<b>Data File 1</b>	: F1 : SysA:/dat1a/LARAMIE_NICHOLS_0994_24_12W/0994-24-12W_RAL_MAIN.xtf
<b>Created On</b>	: N/A
<b>Company</b>	: LARAMIE ENERGY LLC
<b>Well</b>	: NICHOLS 0994-24-12W
<b>Field</b>	: VEGA
<b>File Interval</b>	: 10.75 - 7441.5 Feet
<b>OCT</b>	: p012g

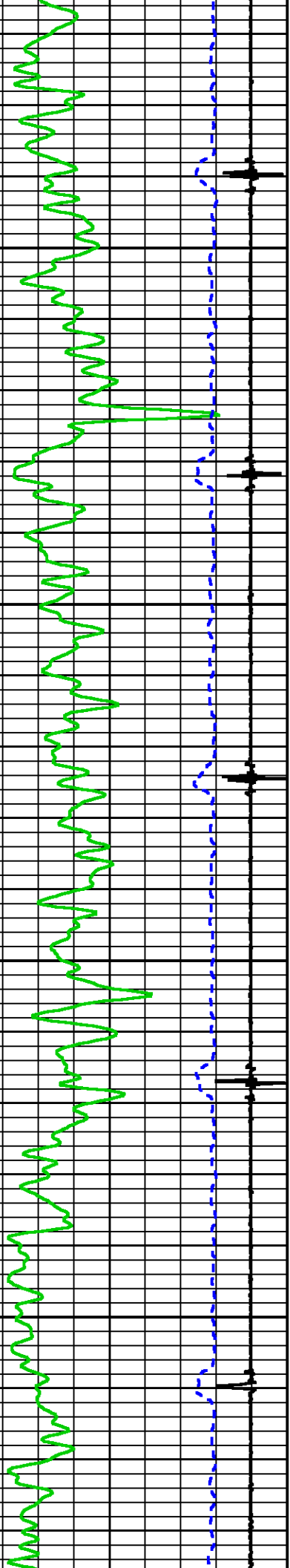


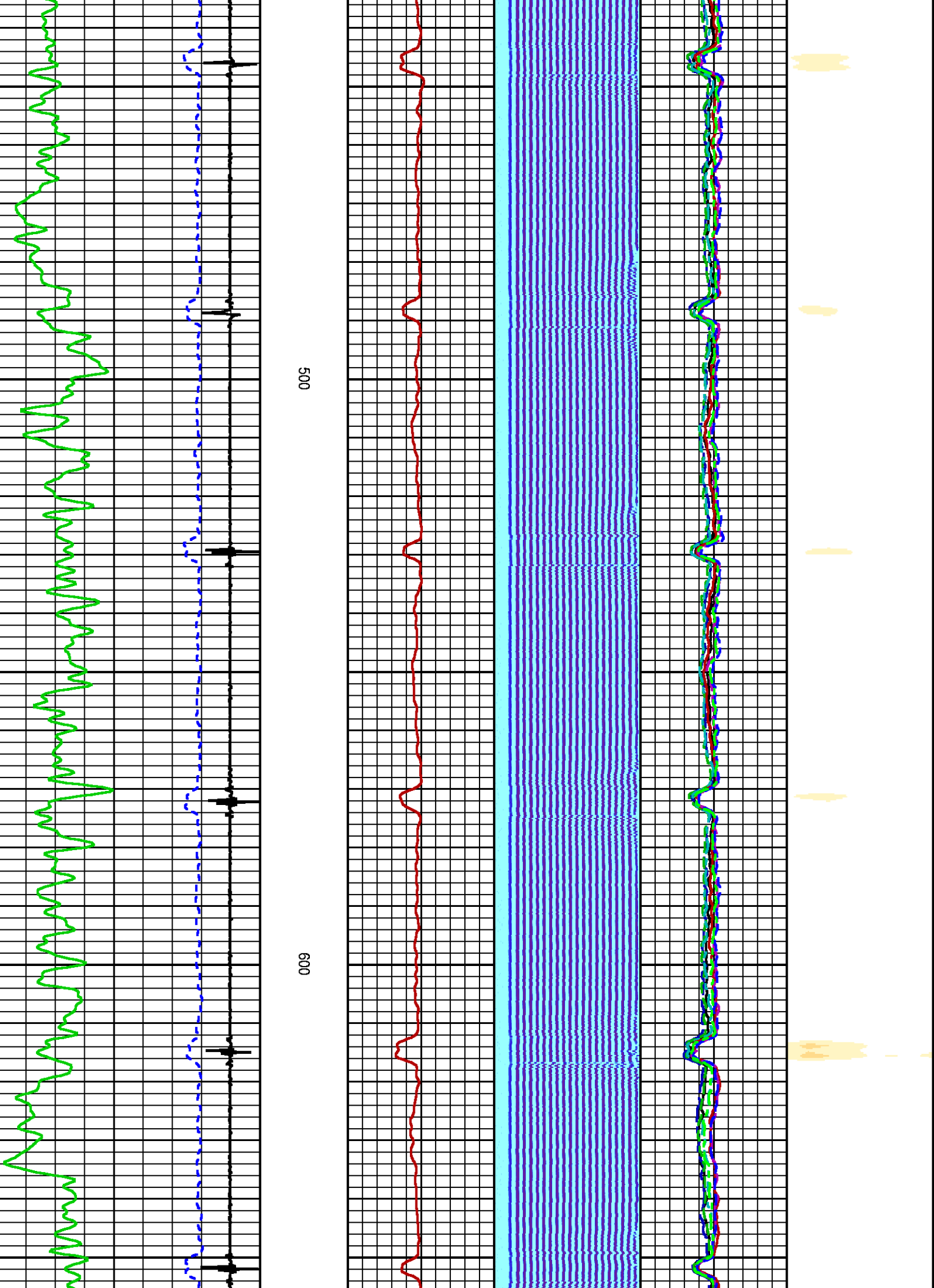




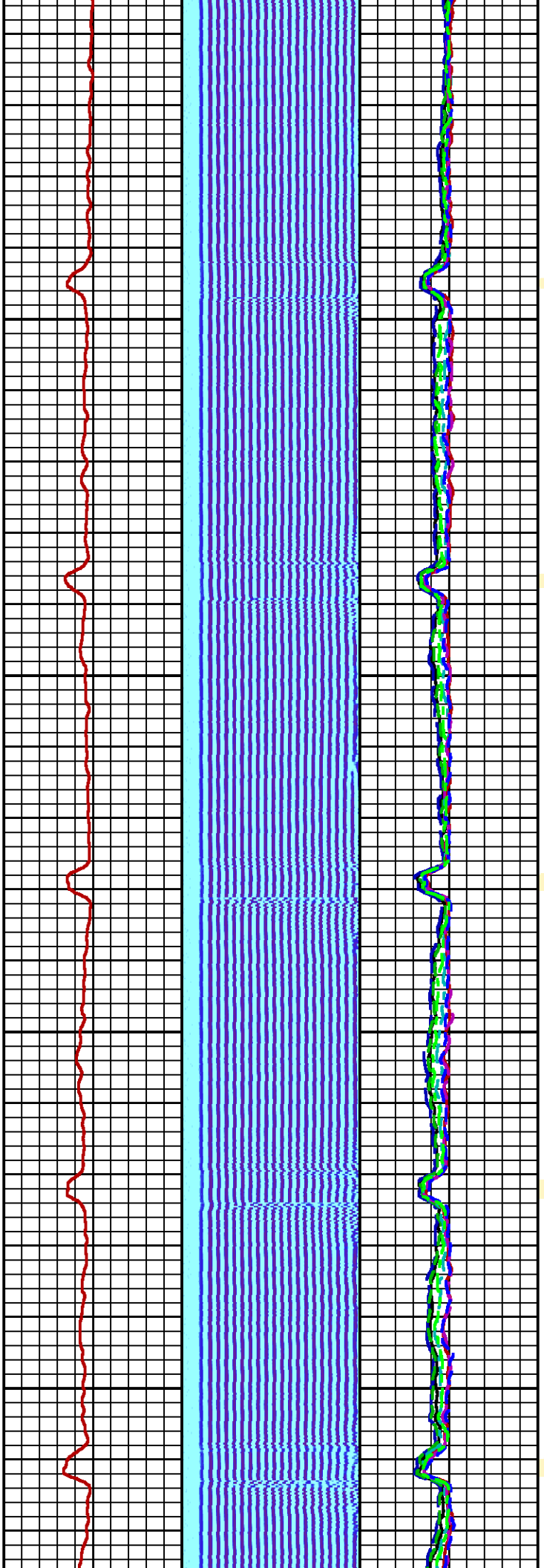
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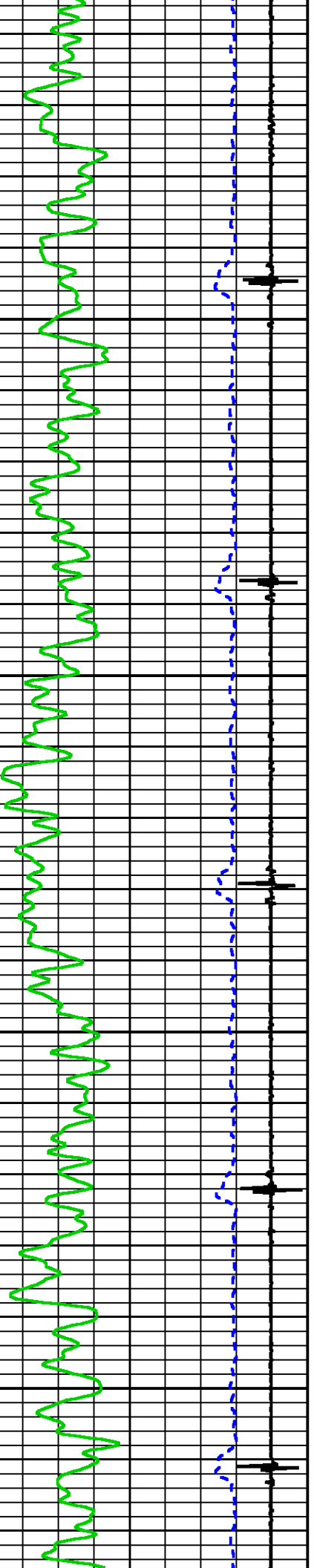


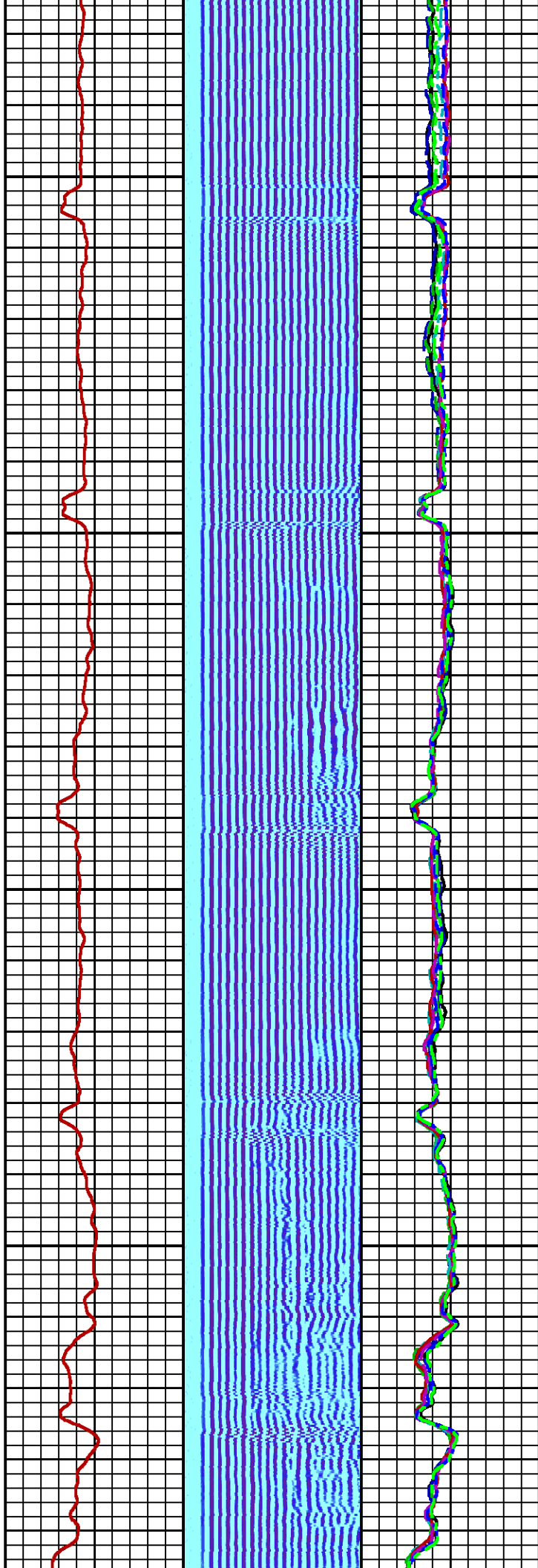
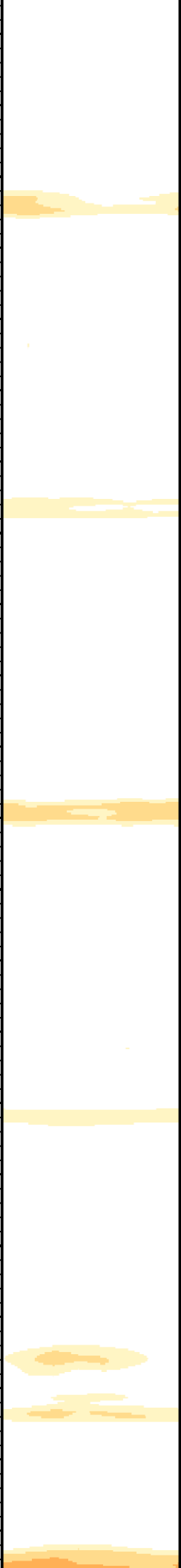




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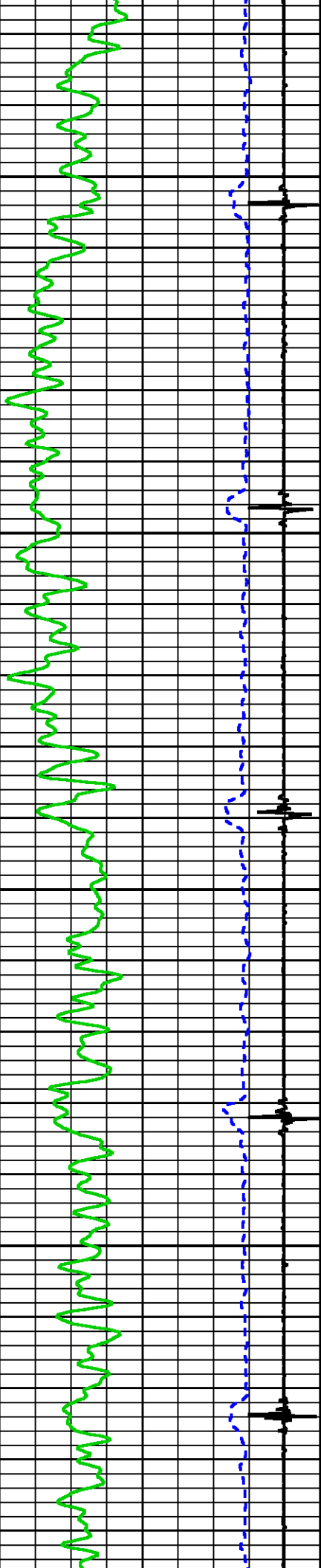
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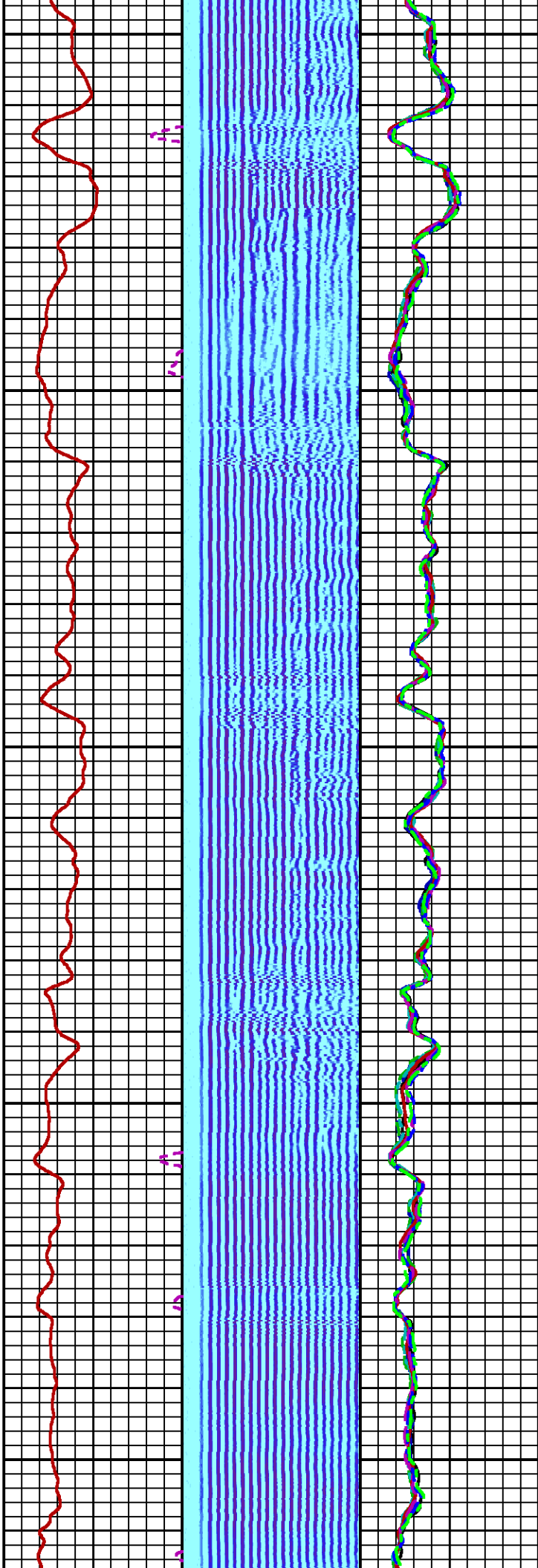
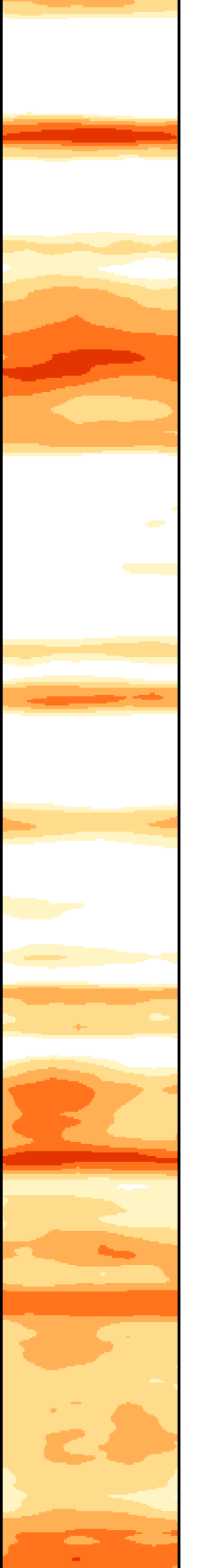


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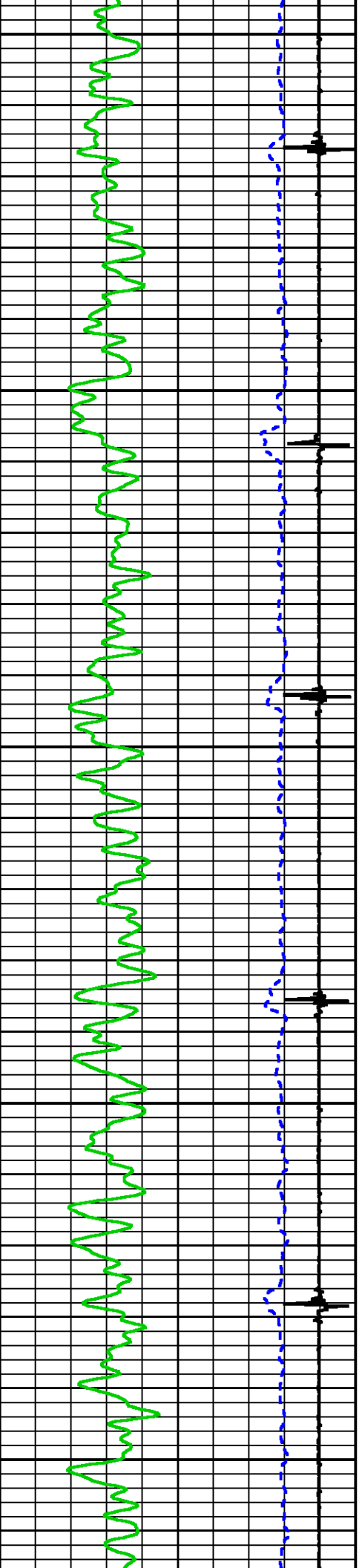


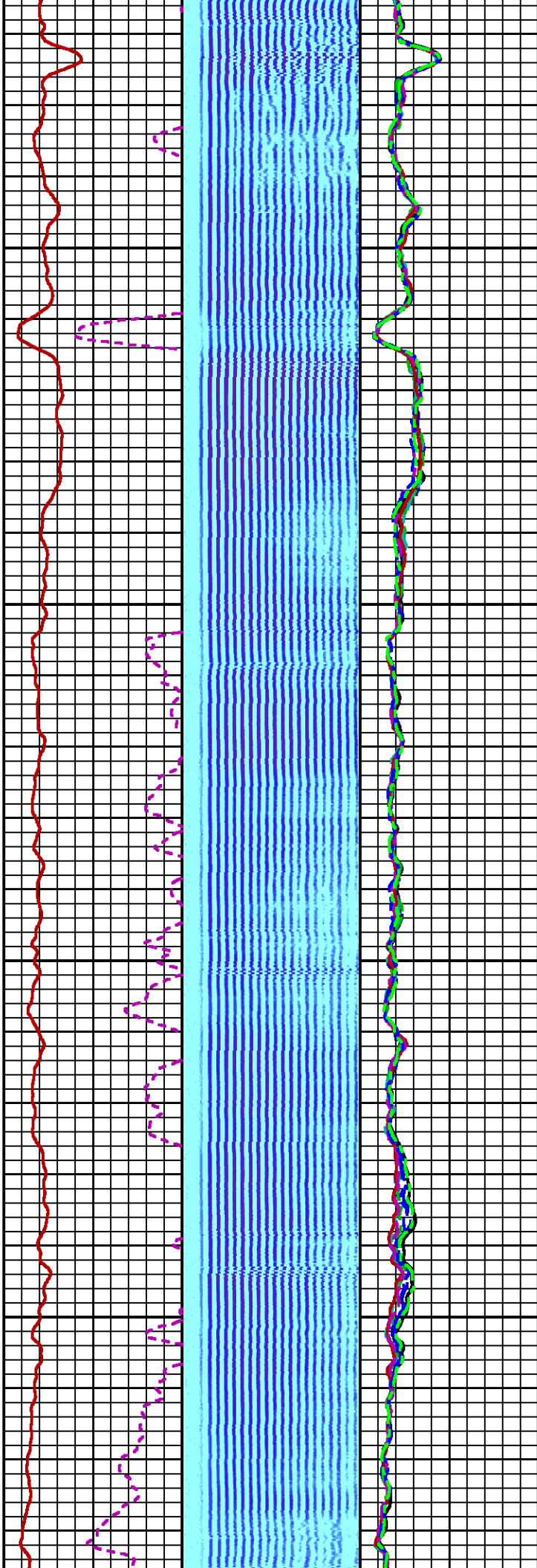
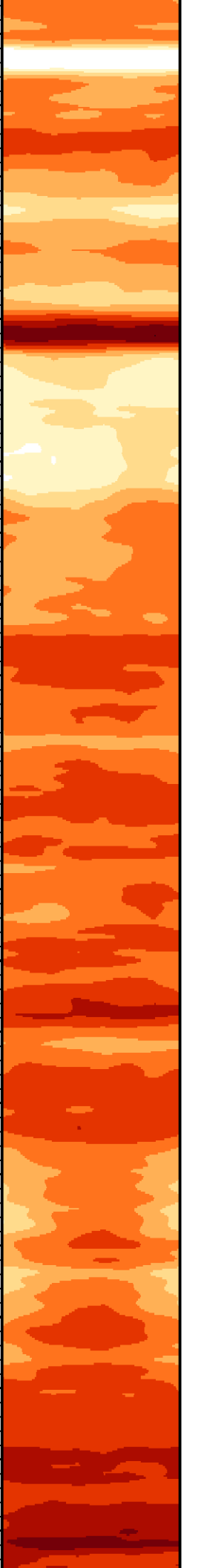


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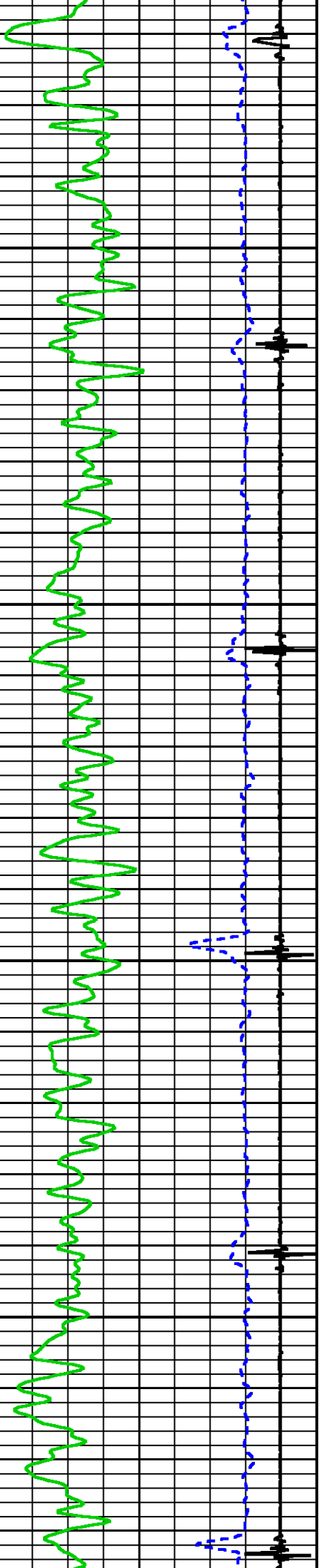
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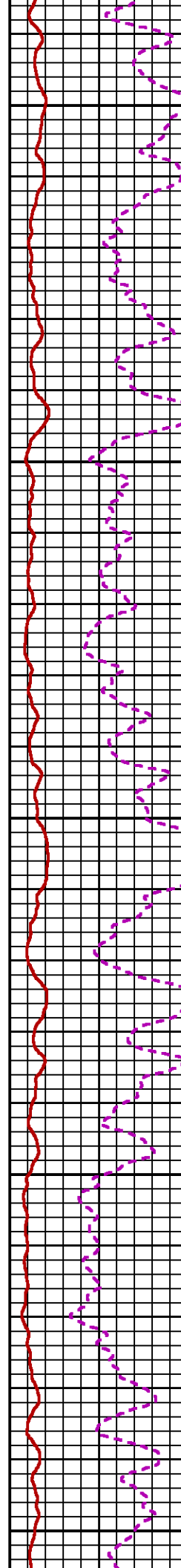
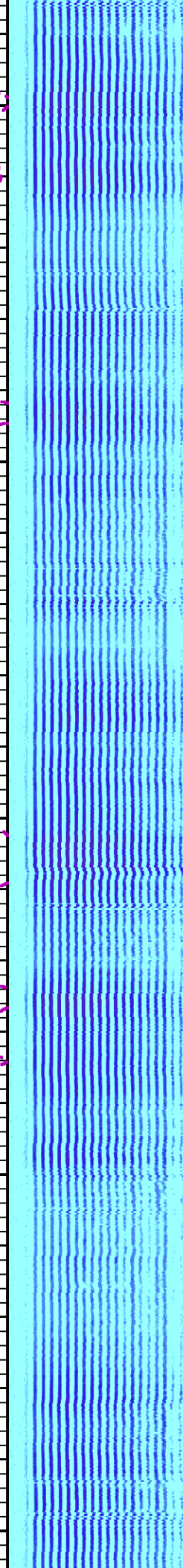
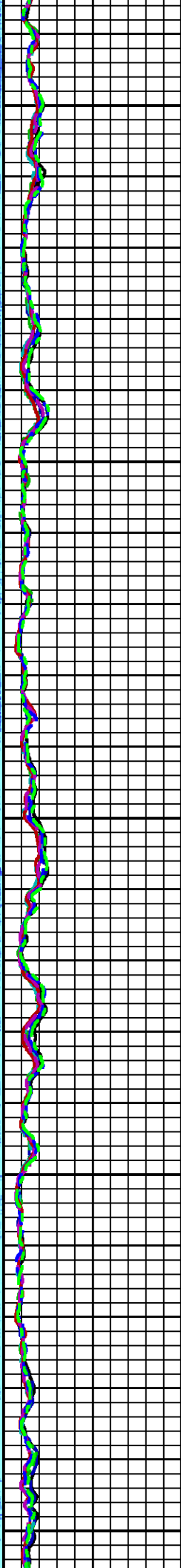




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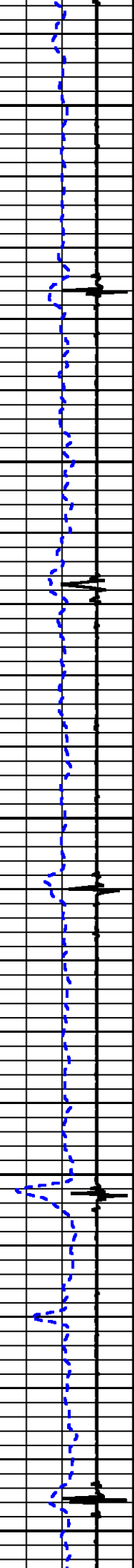
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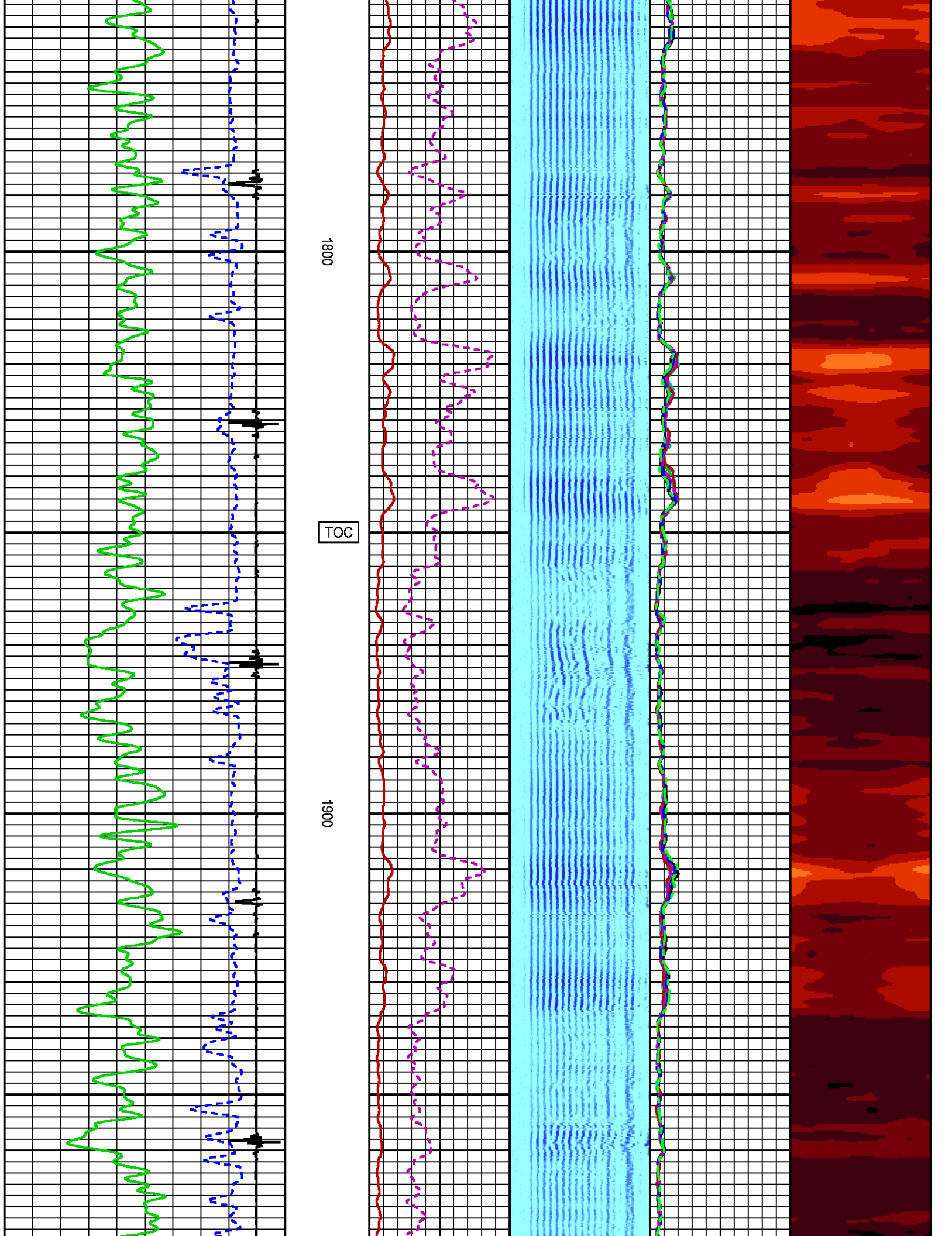


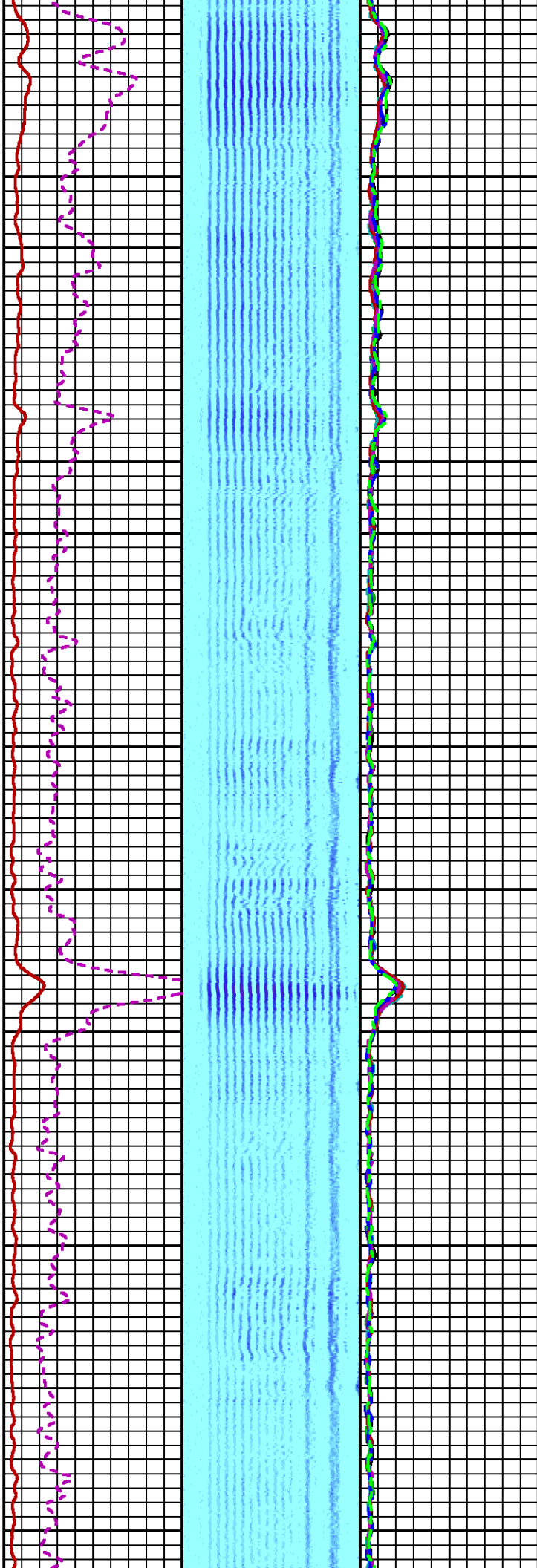


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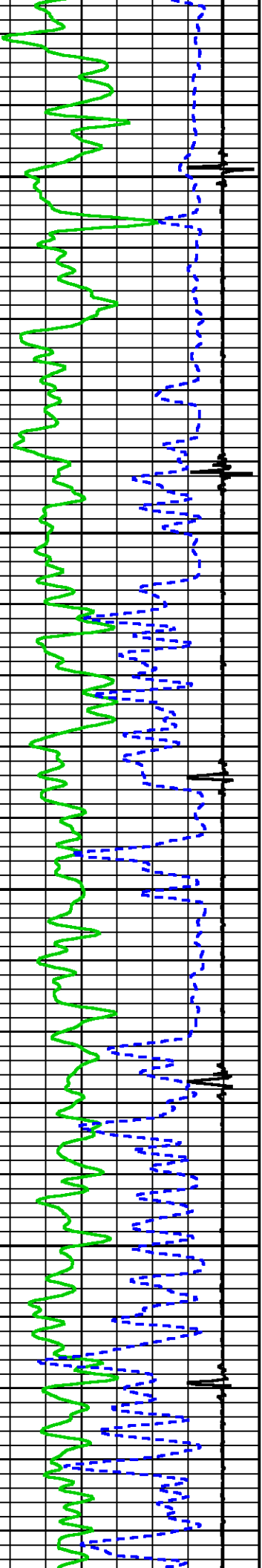




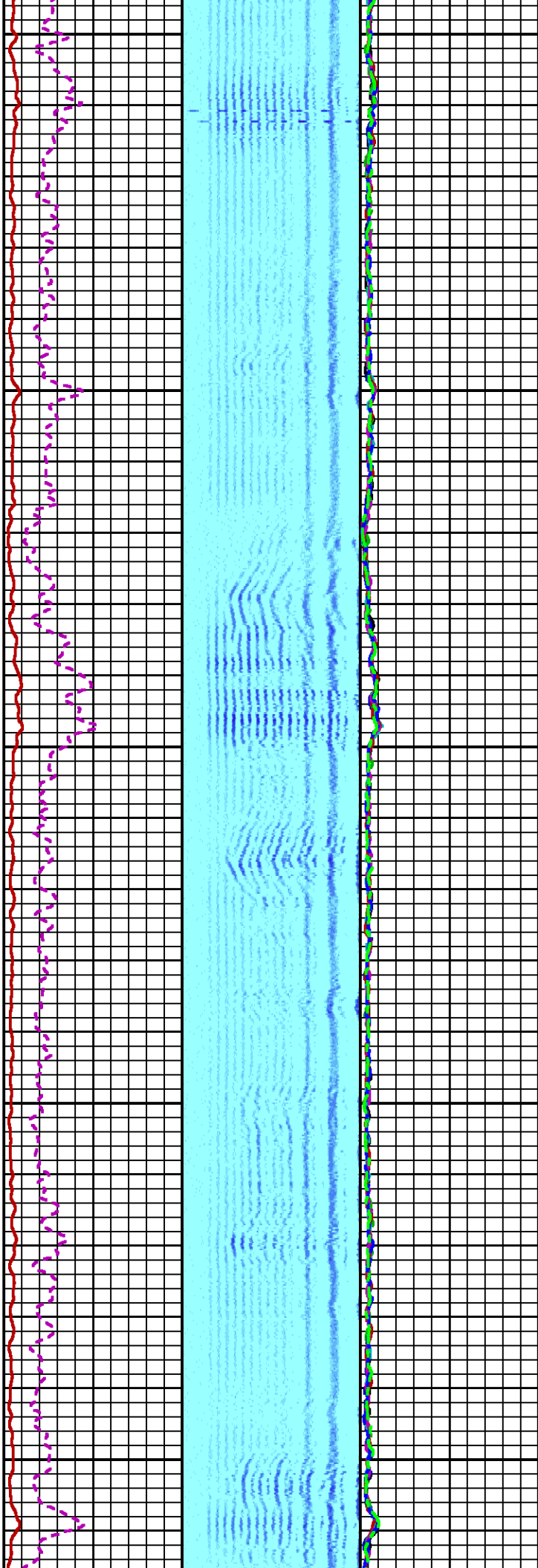


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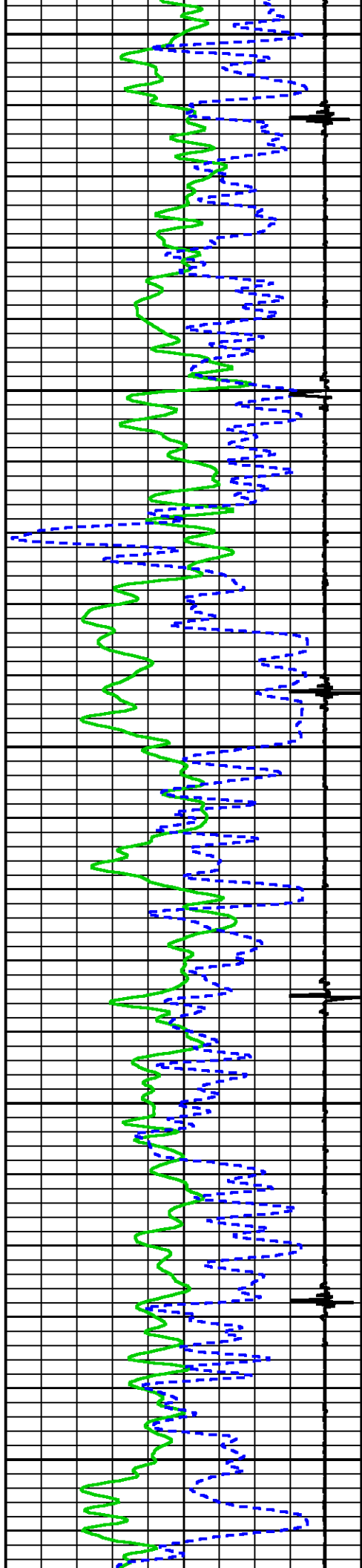




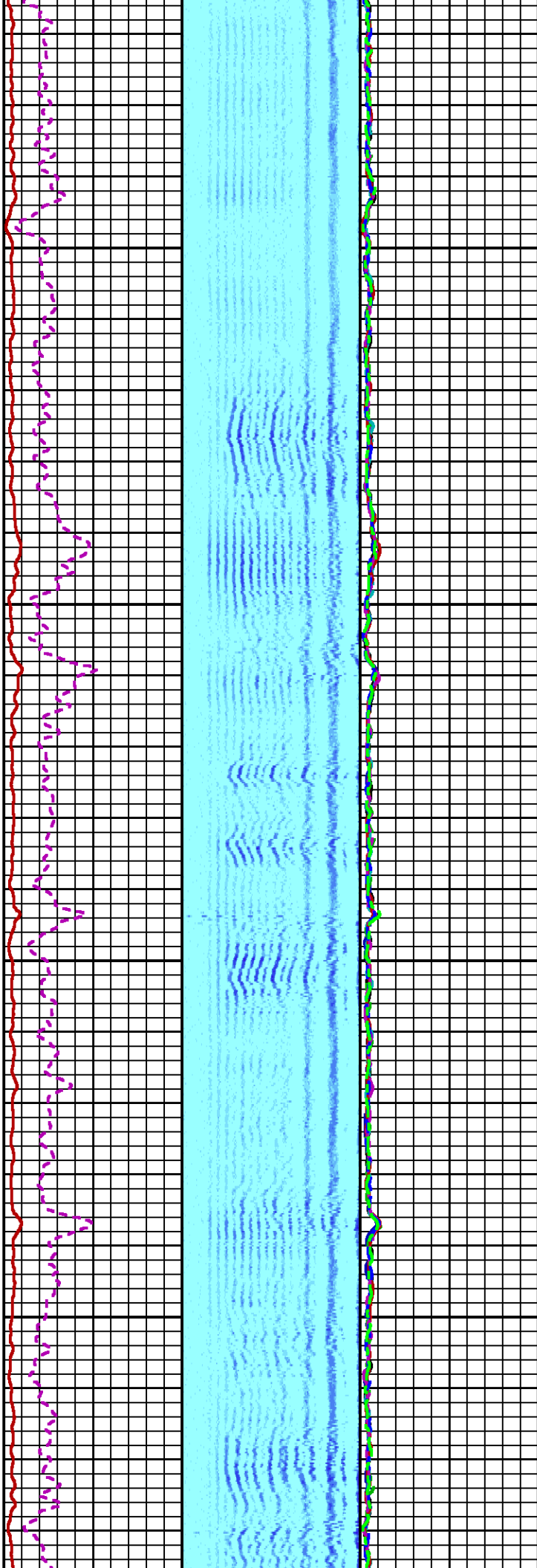
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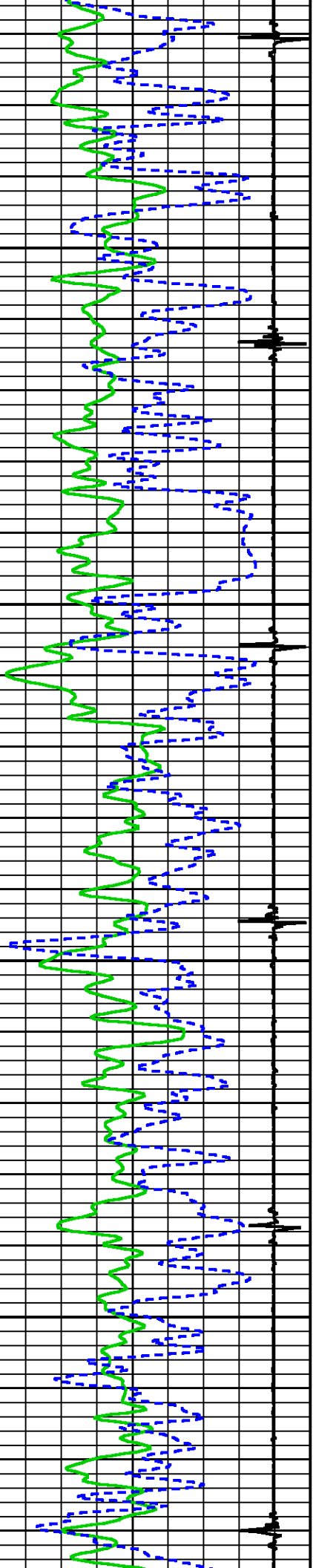


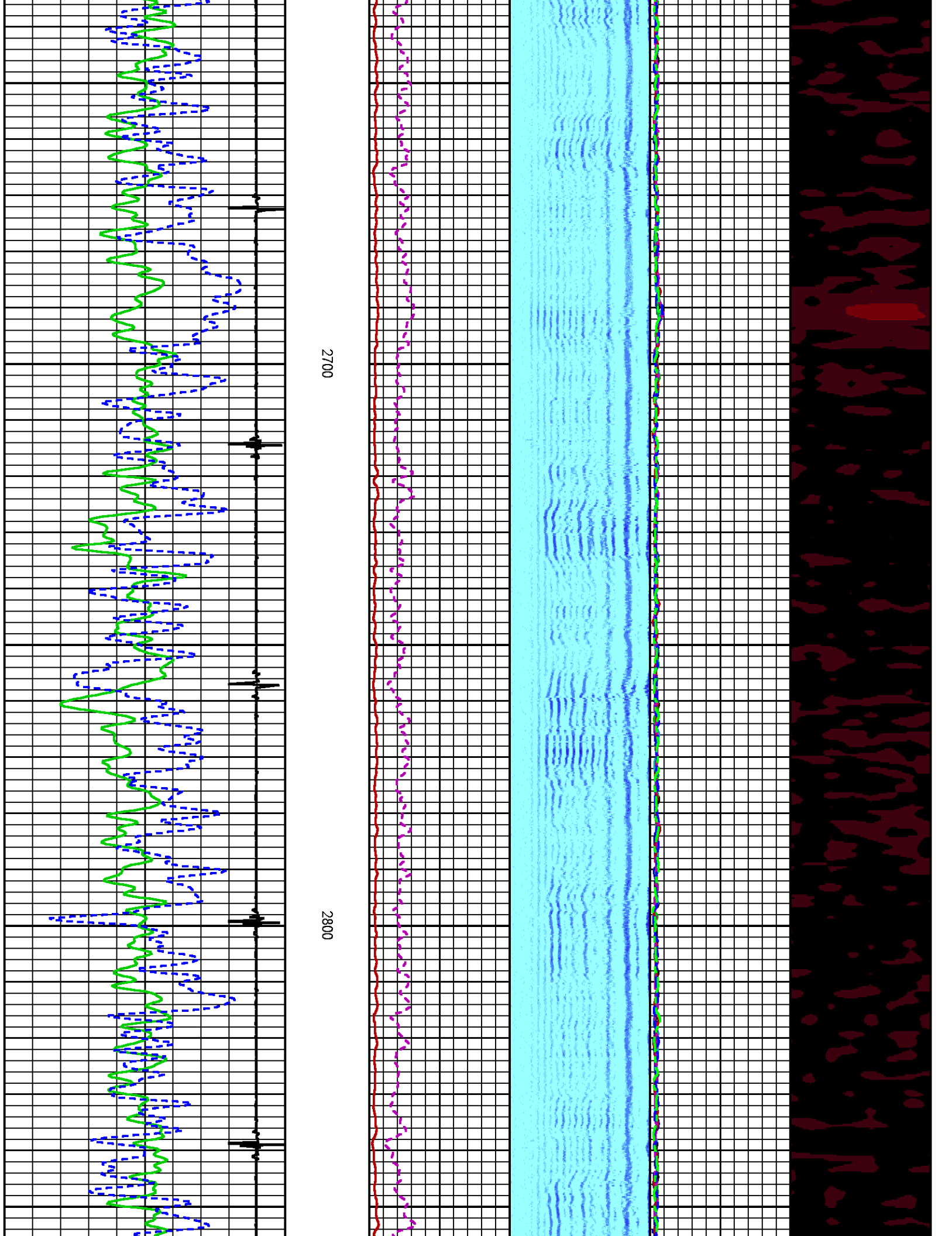


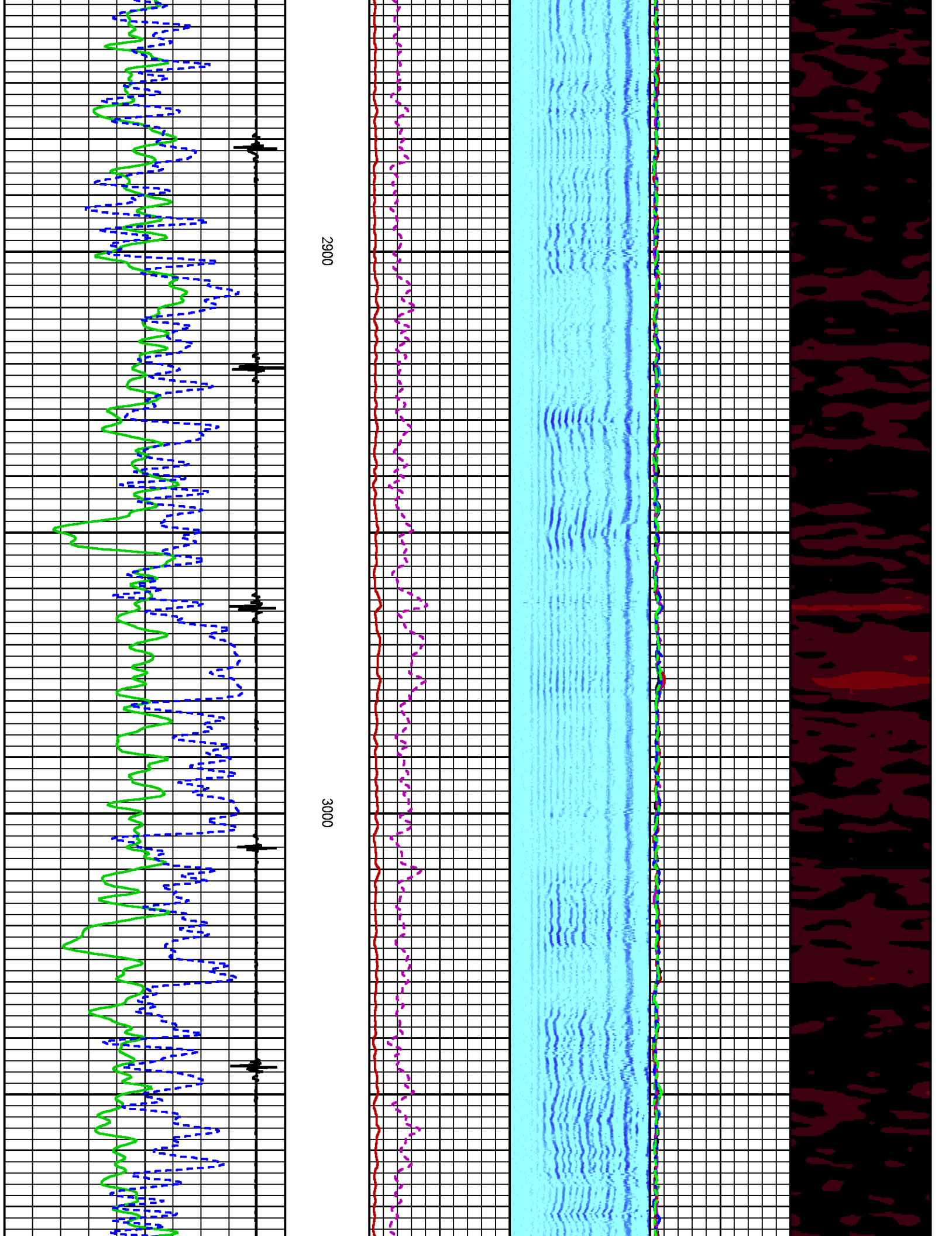


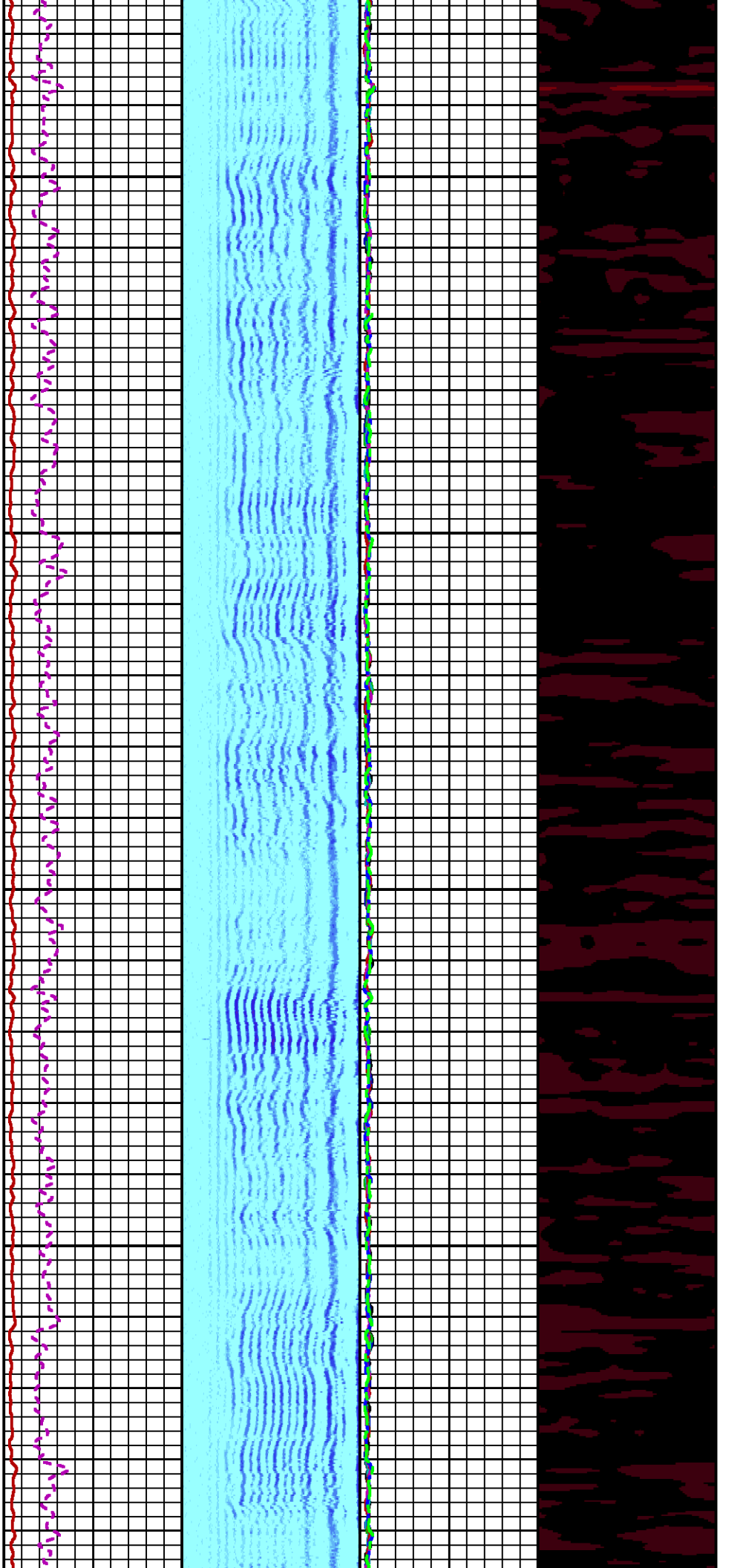
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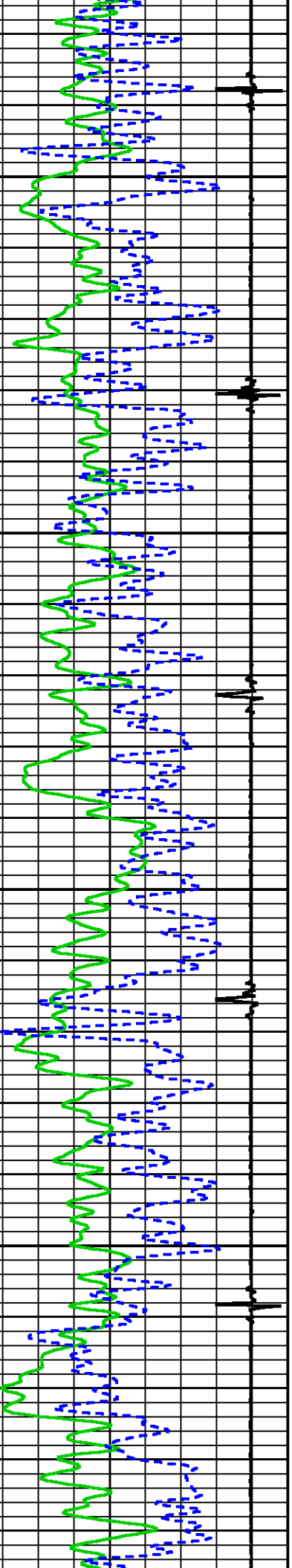


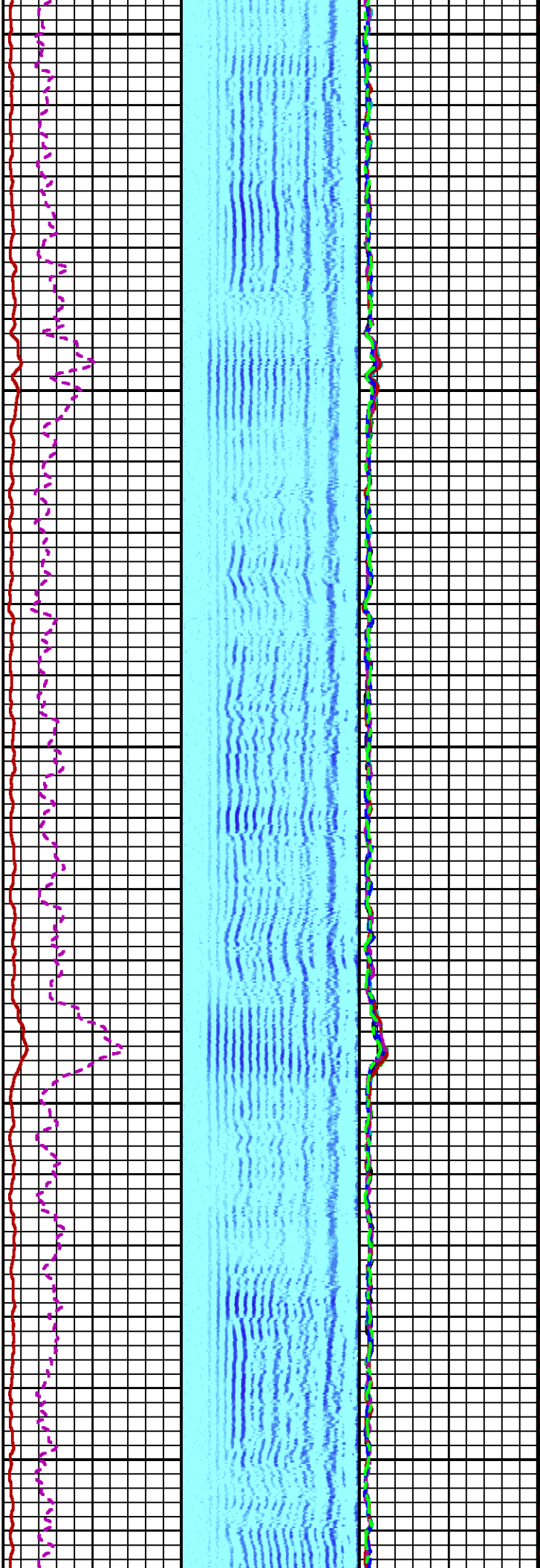




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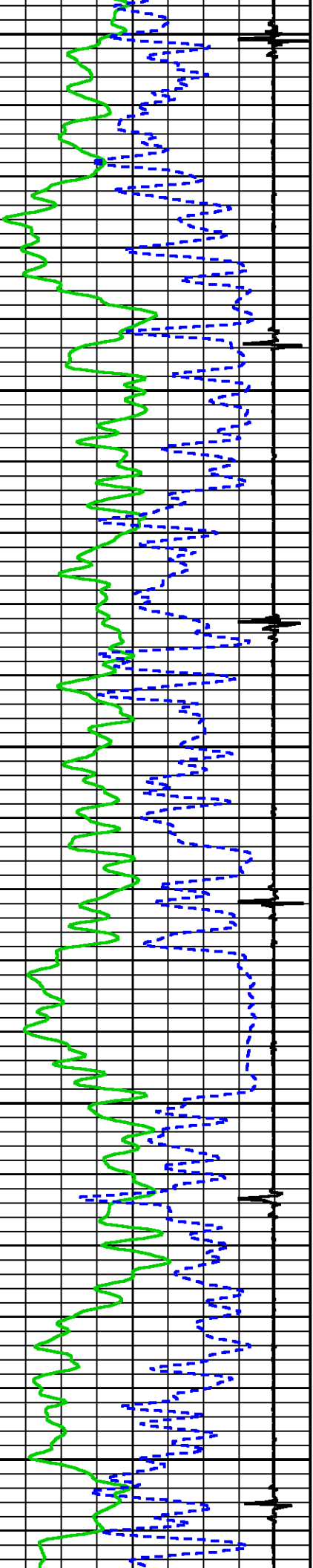




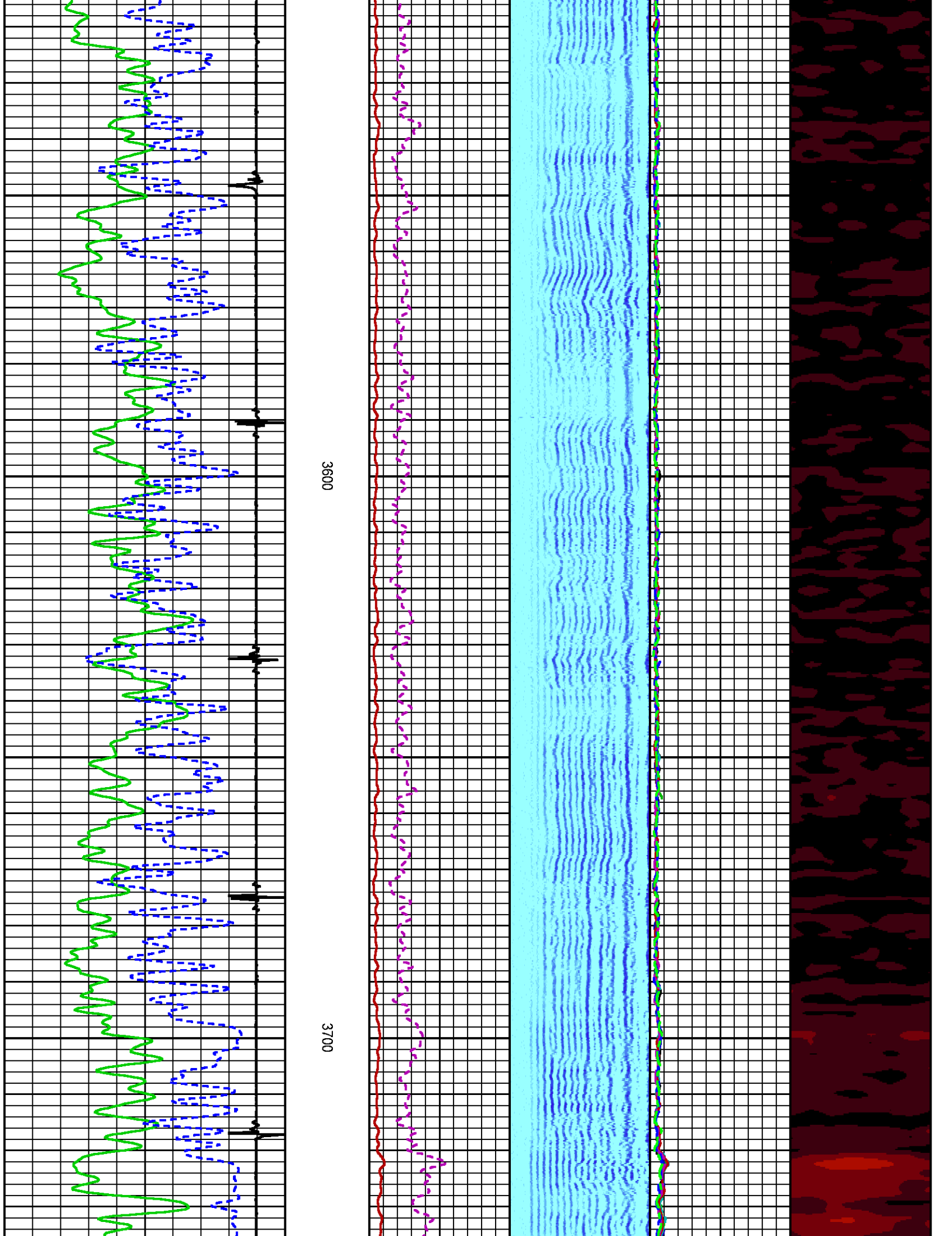
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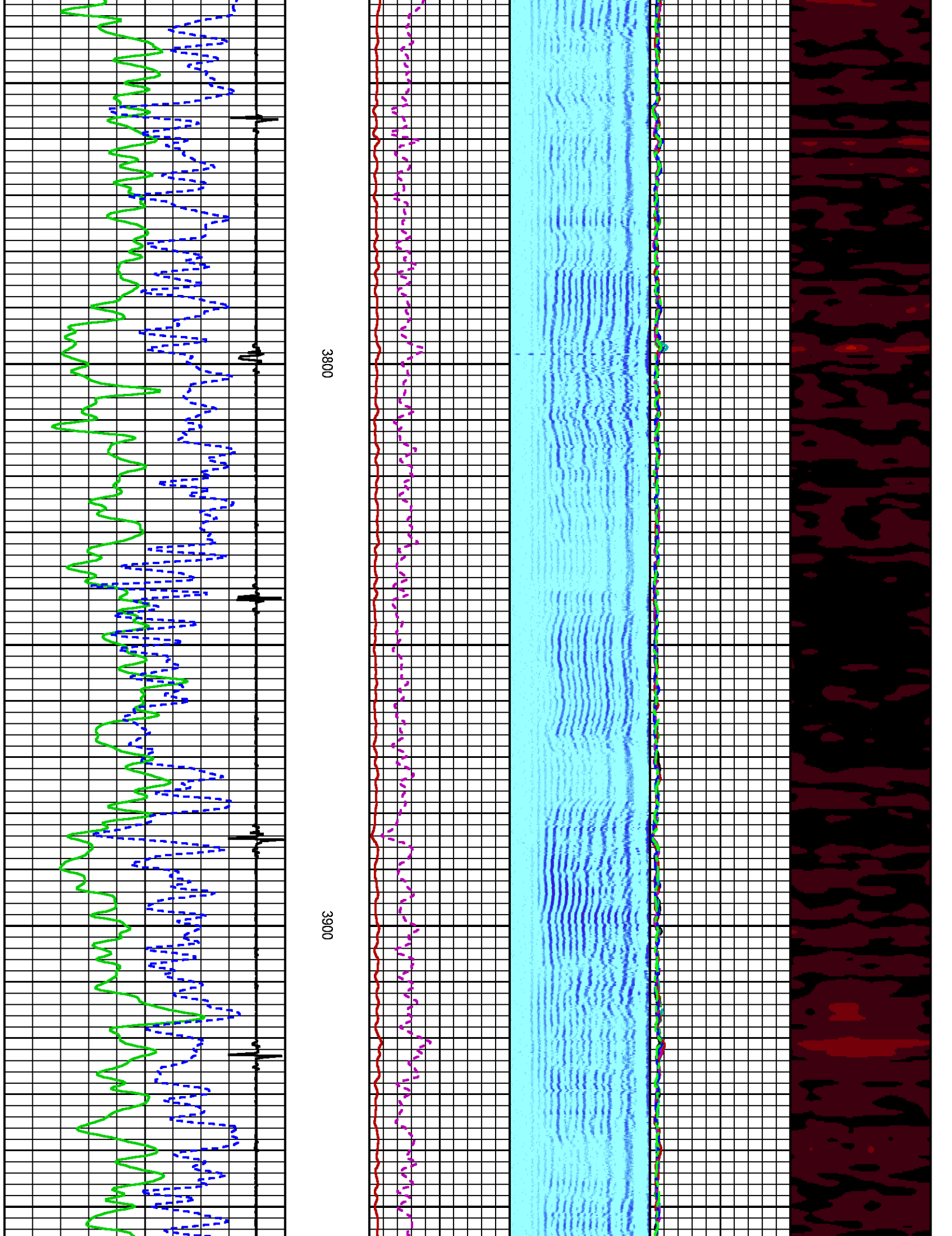
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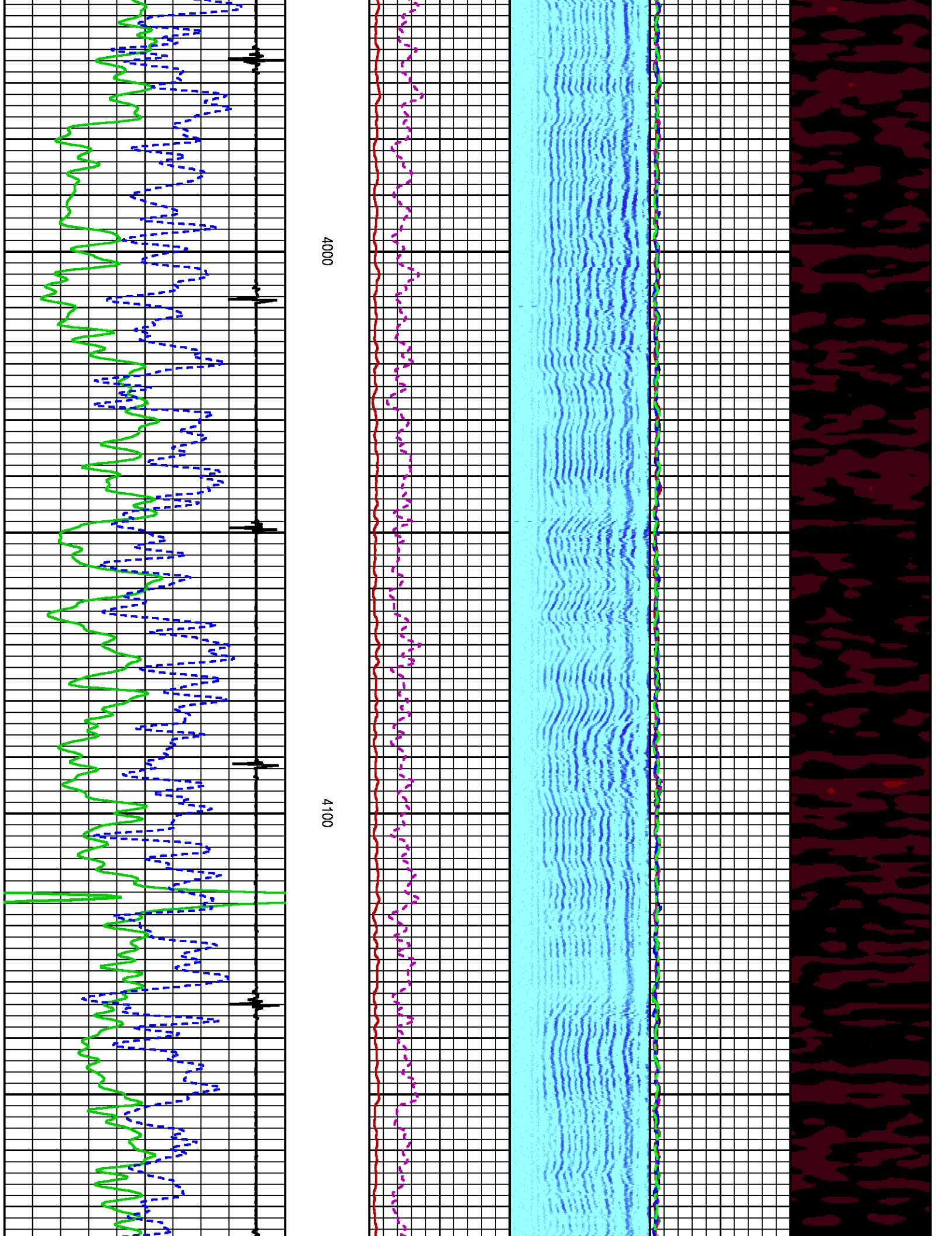


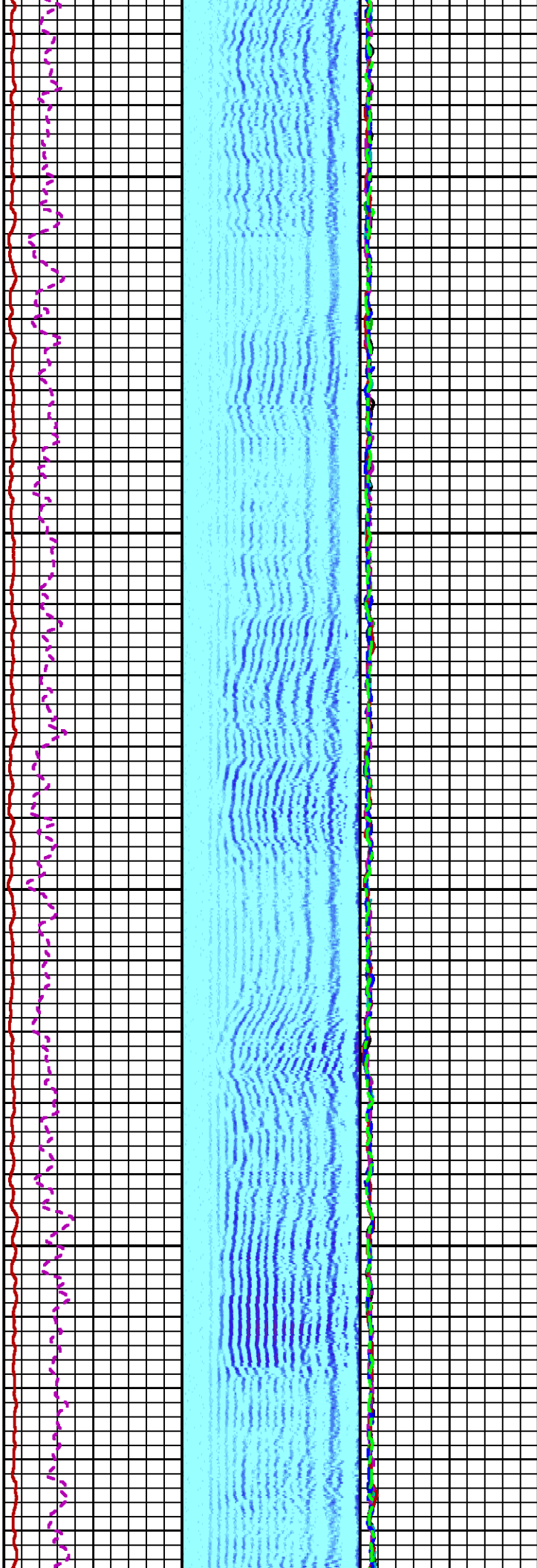






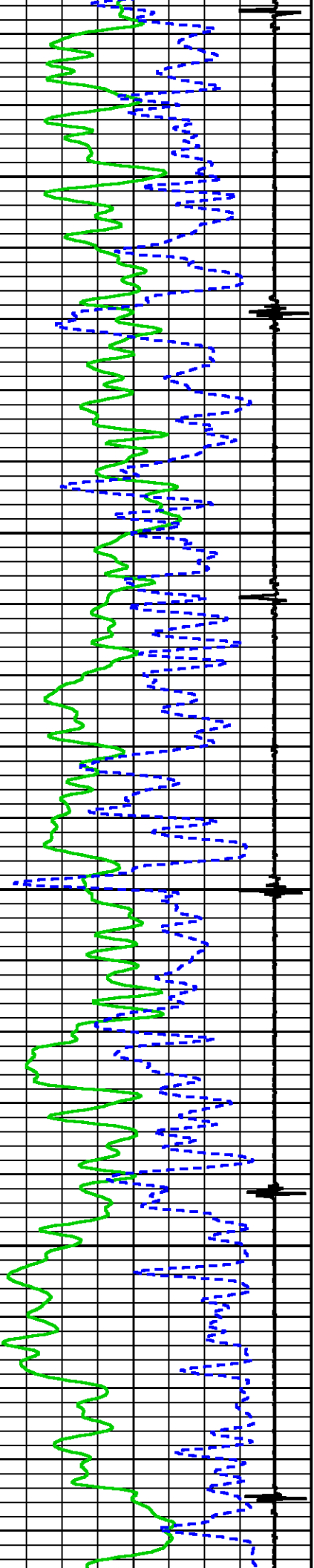


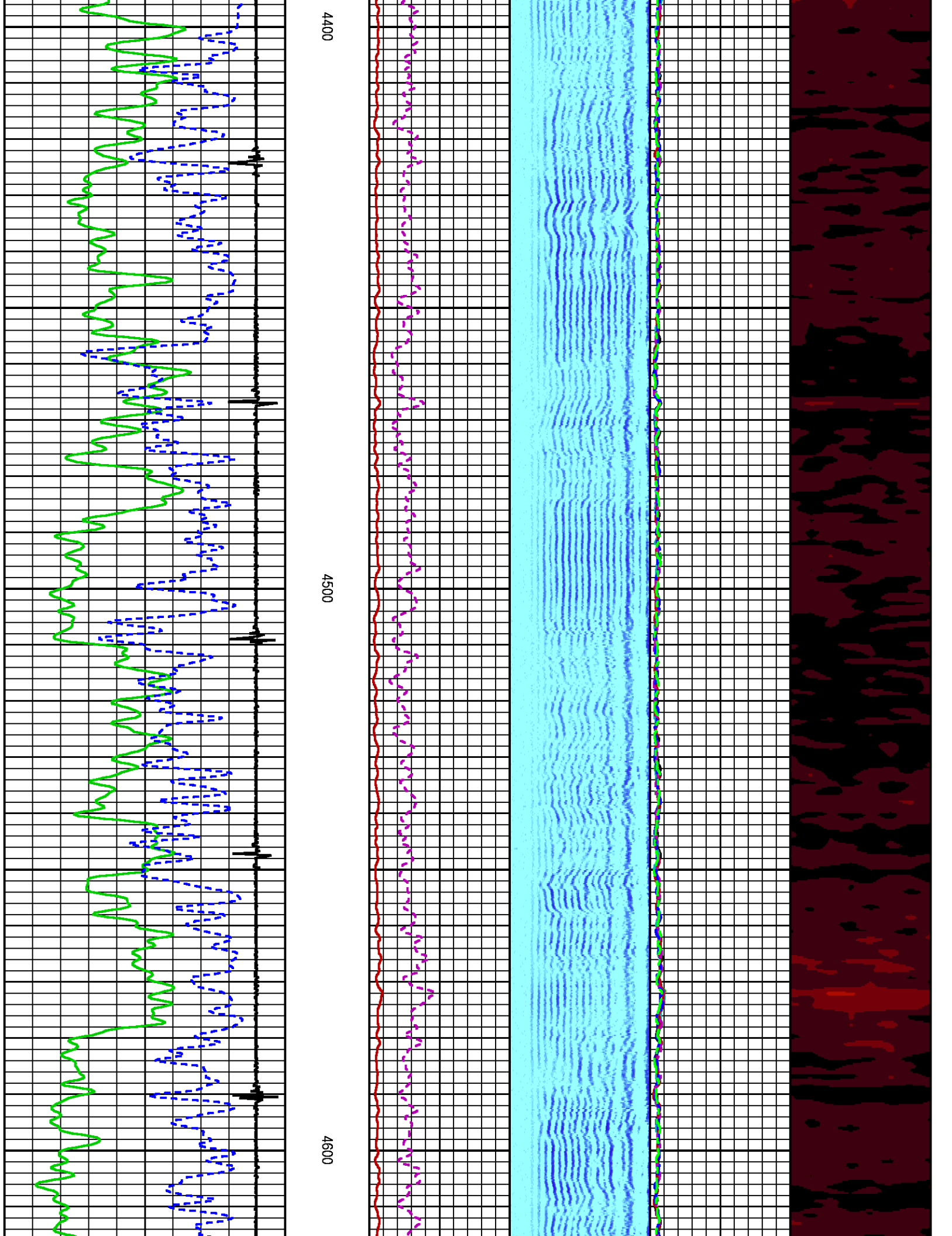




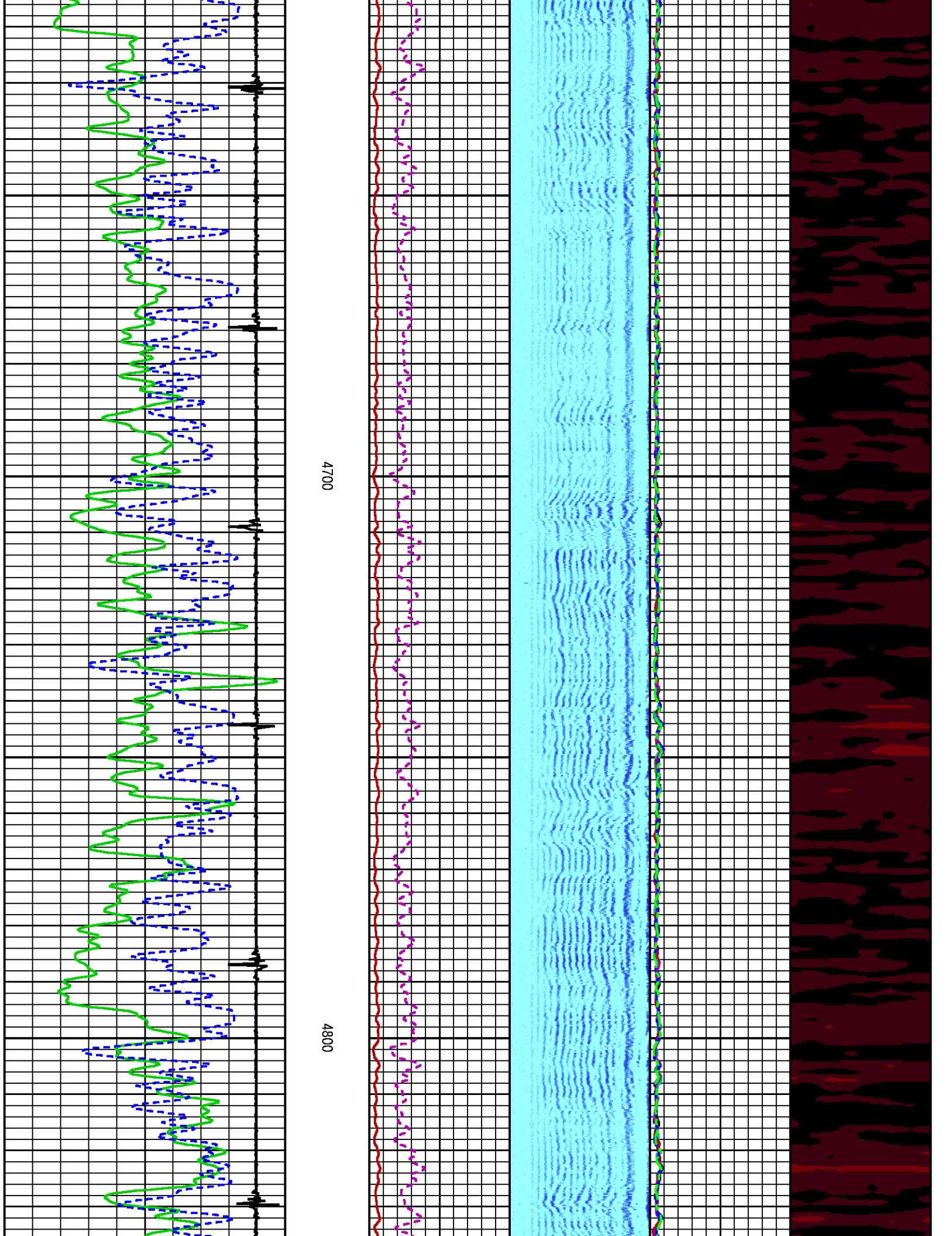
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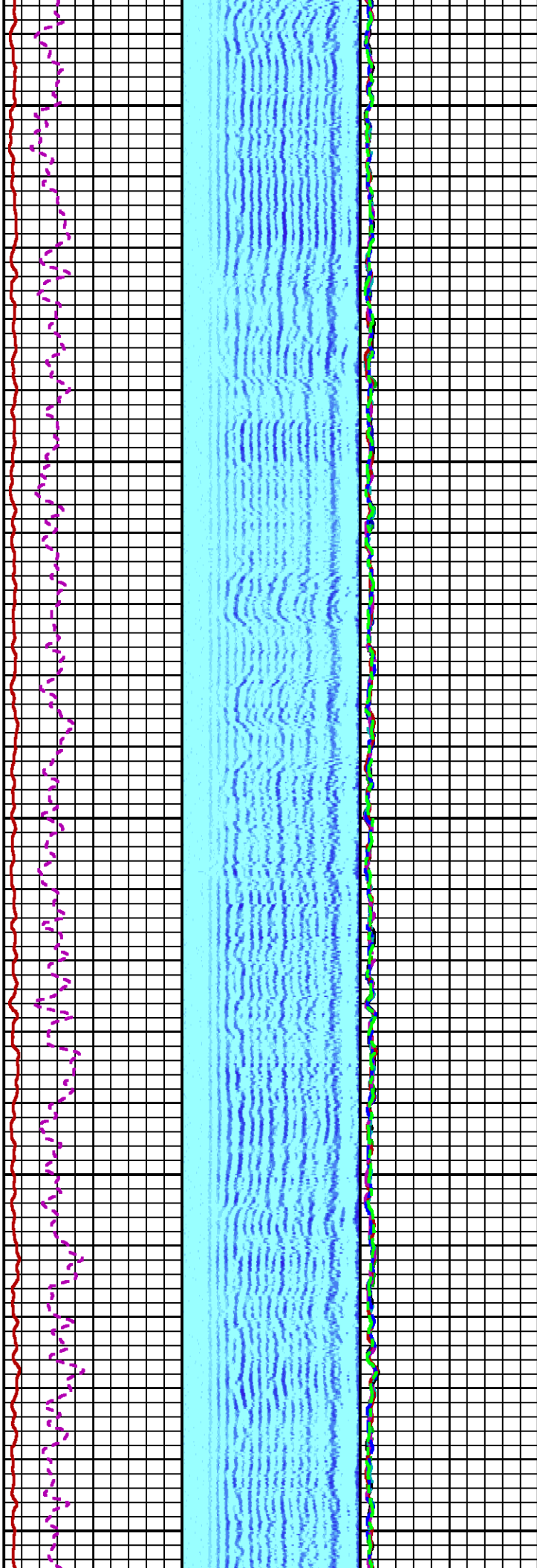
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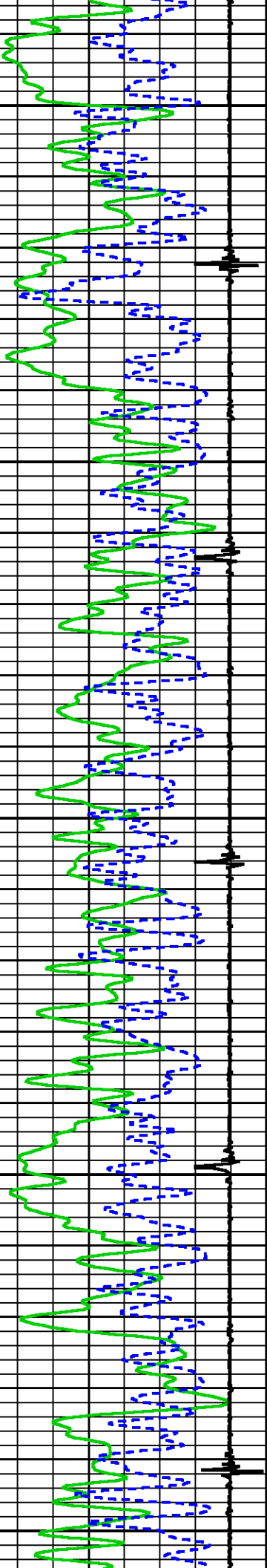




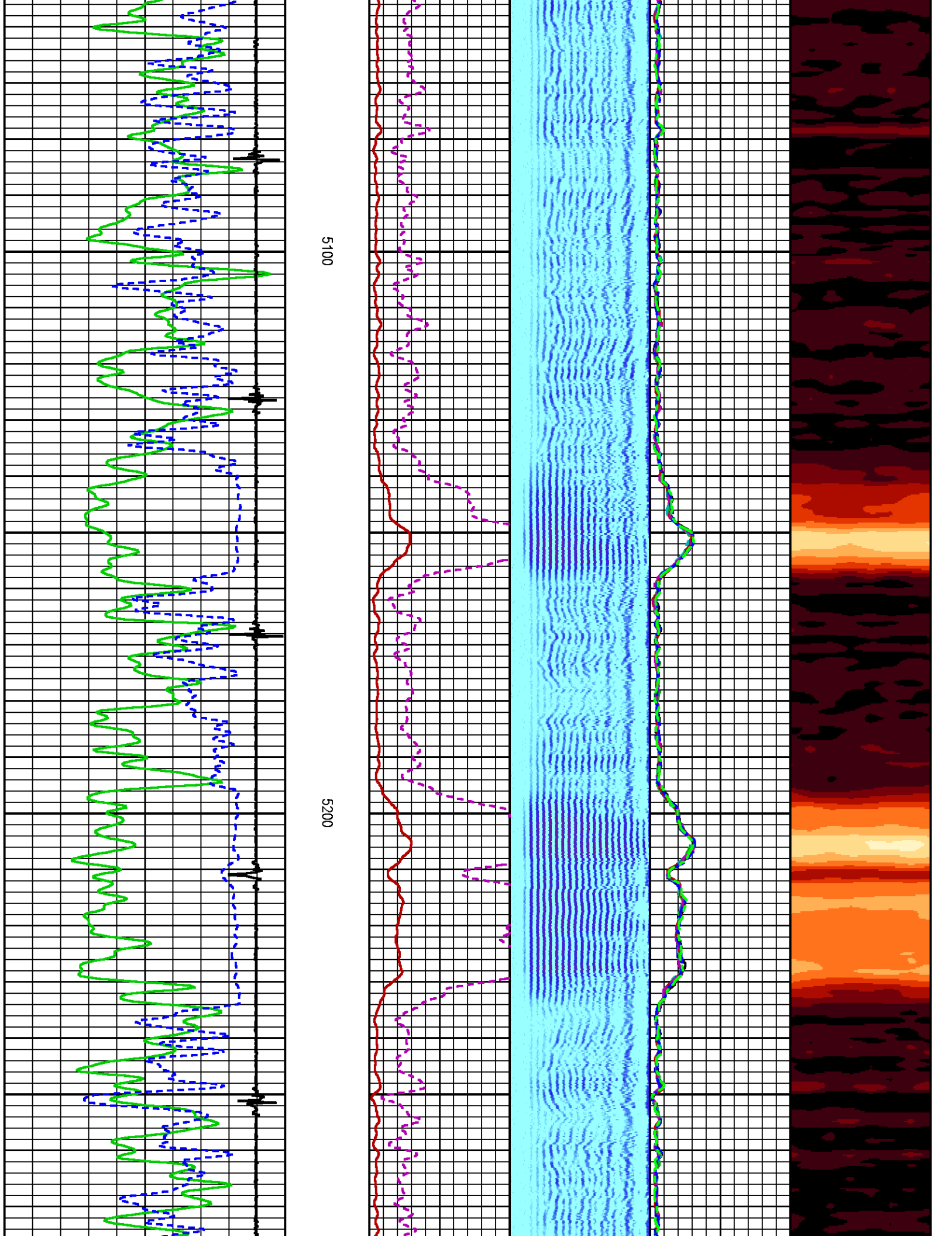


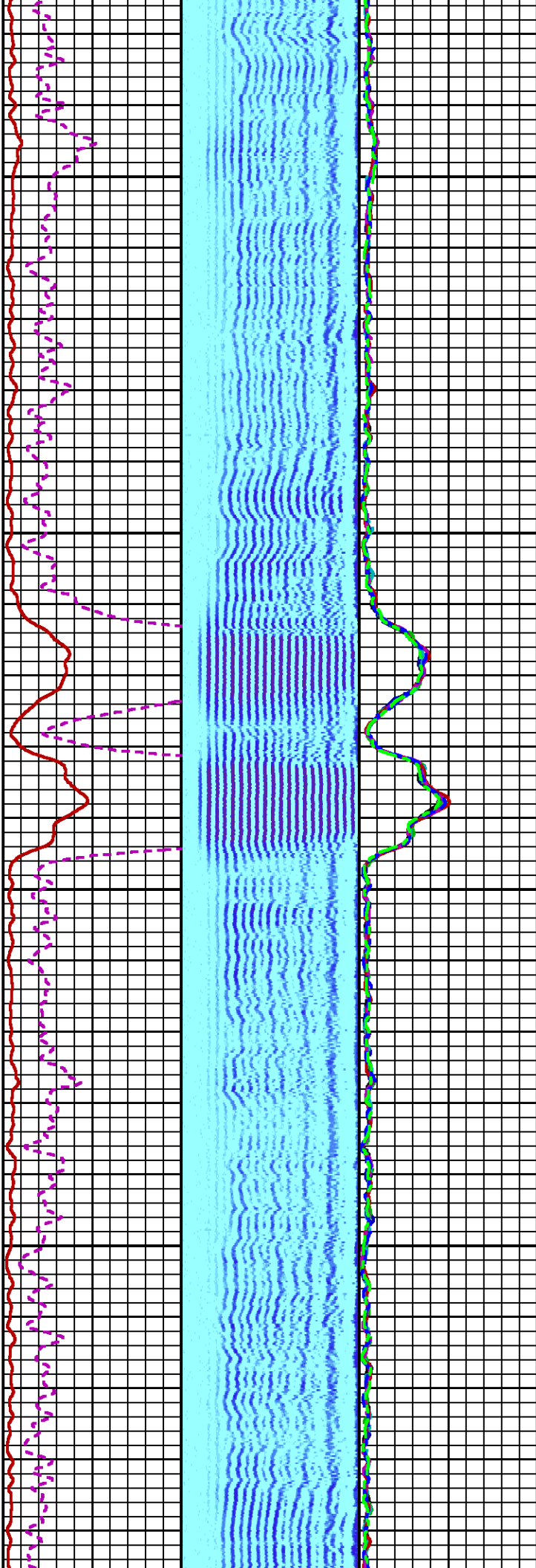
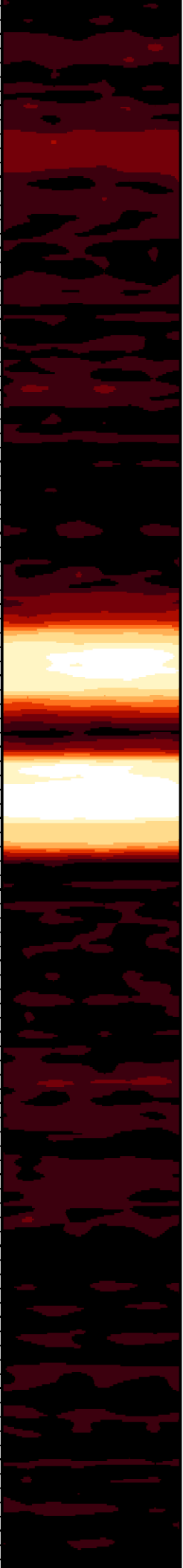
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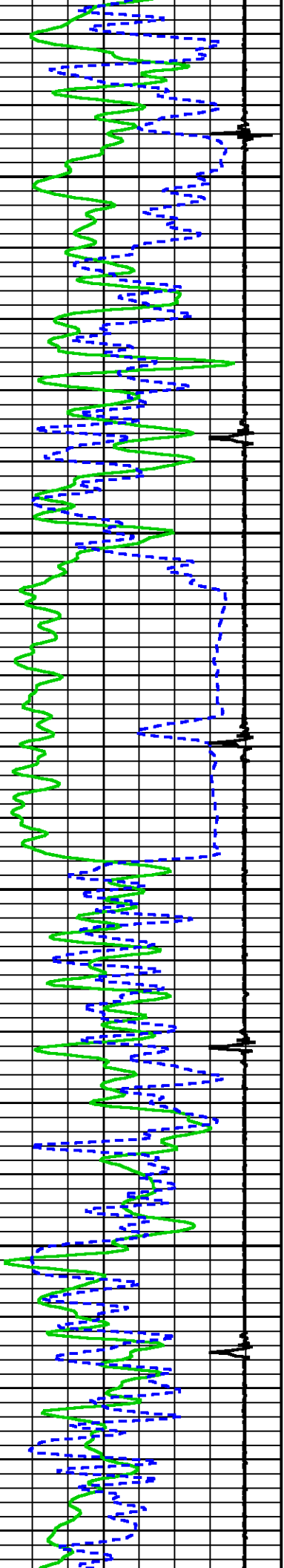


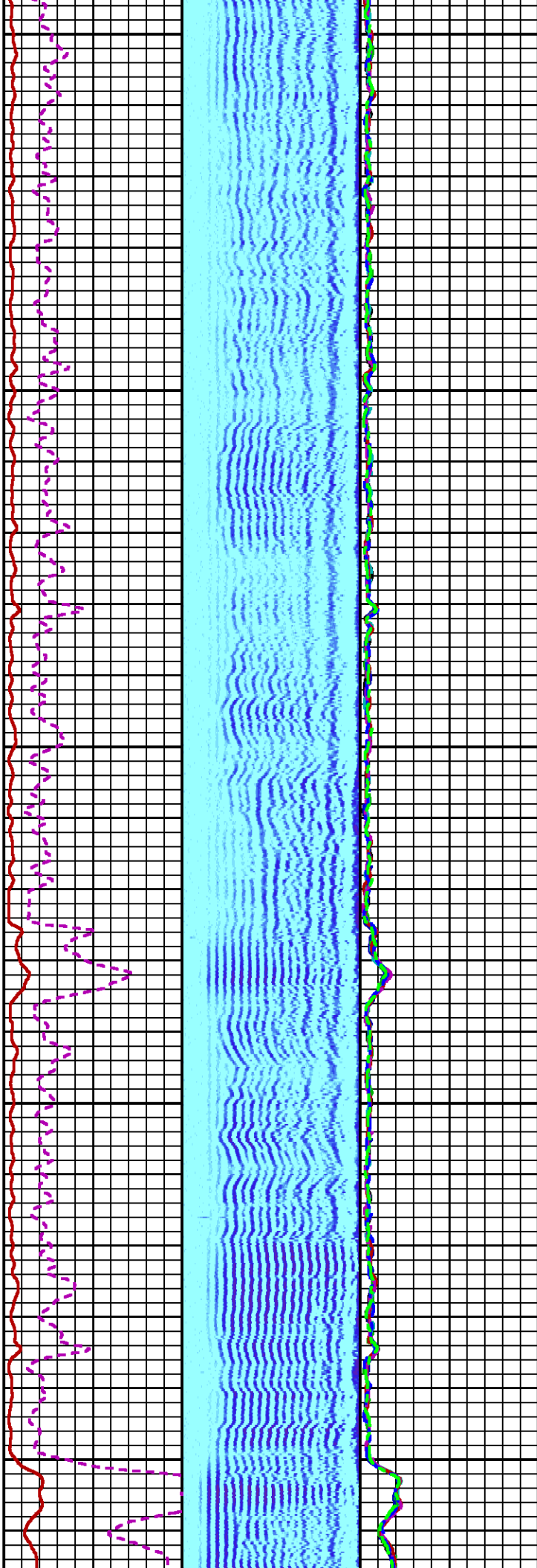




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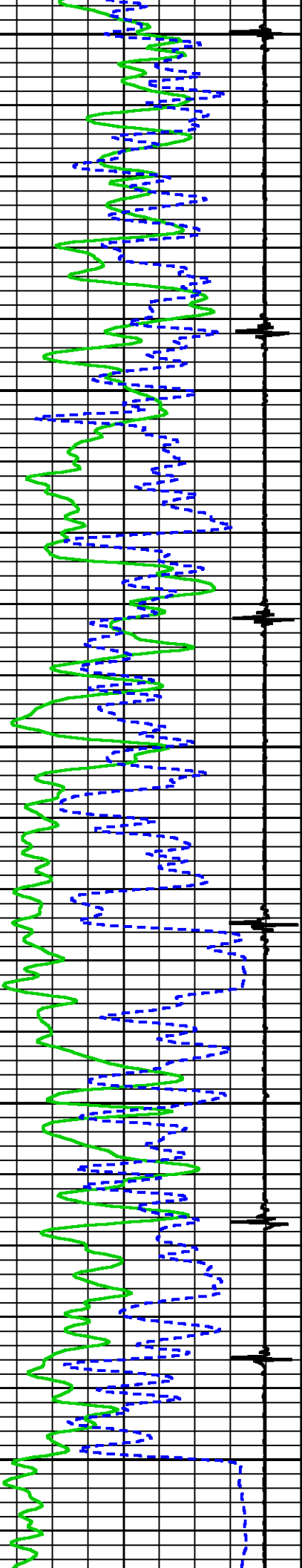


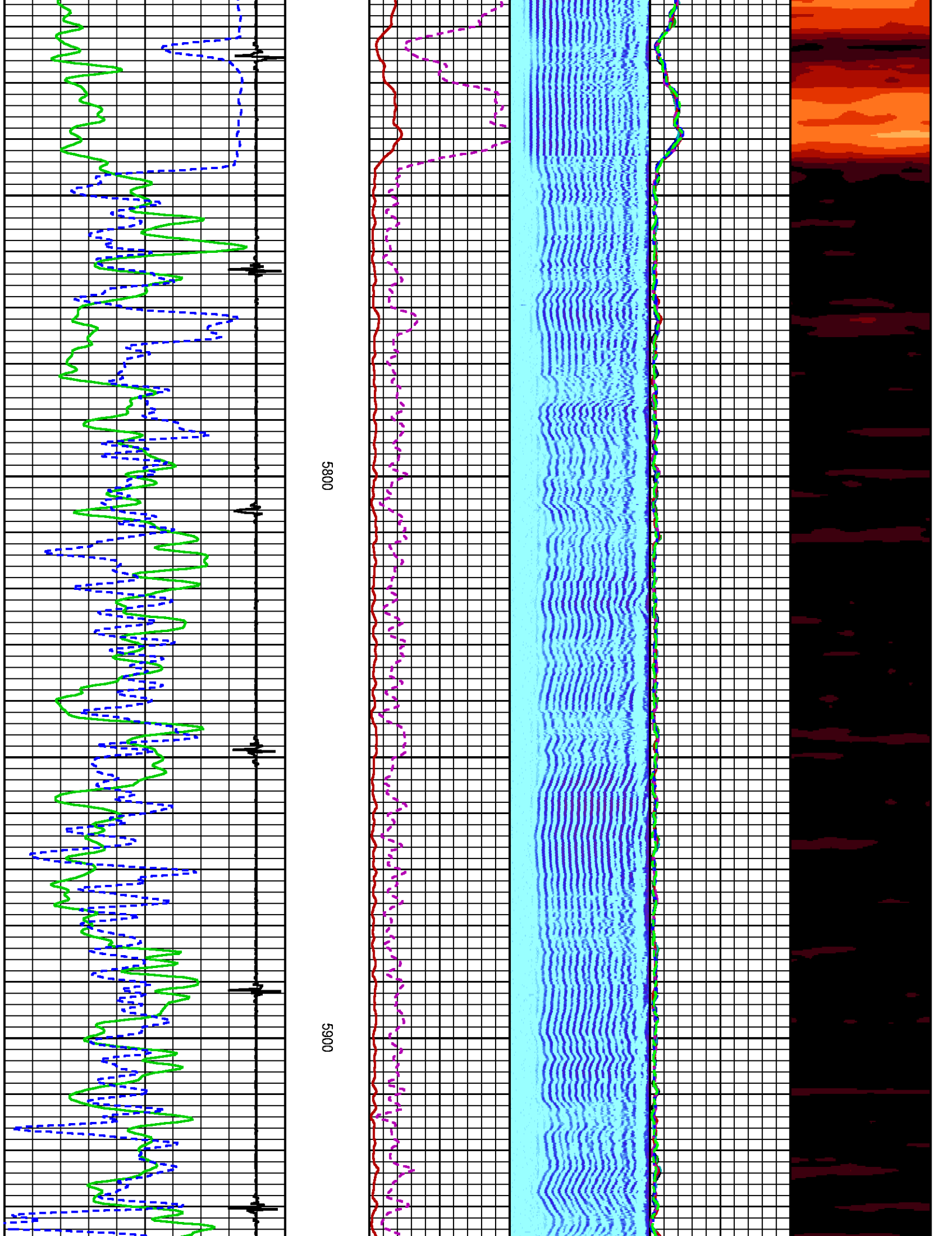
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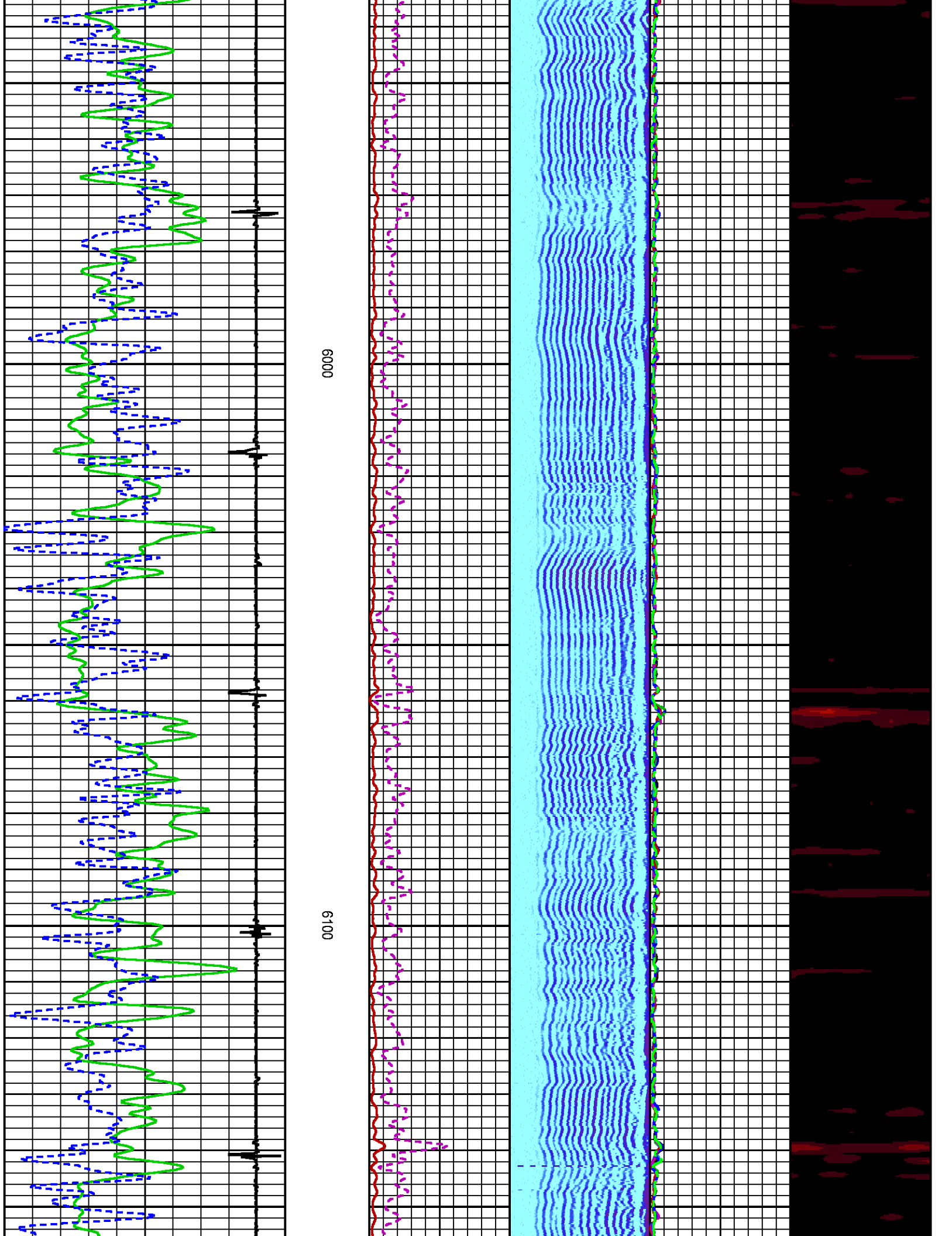


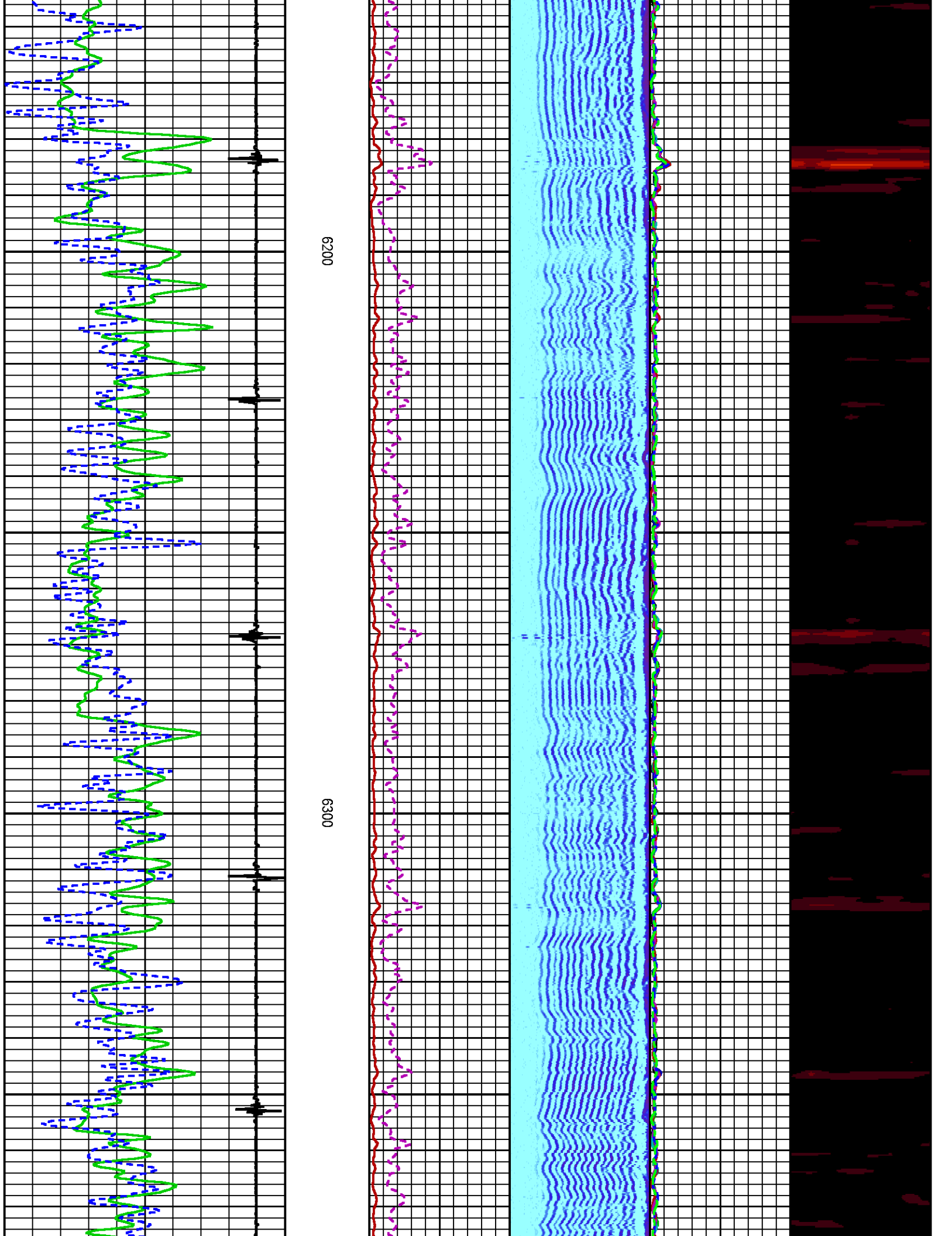


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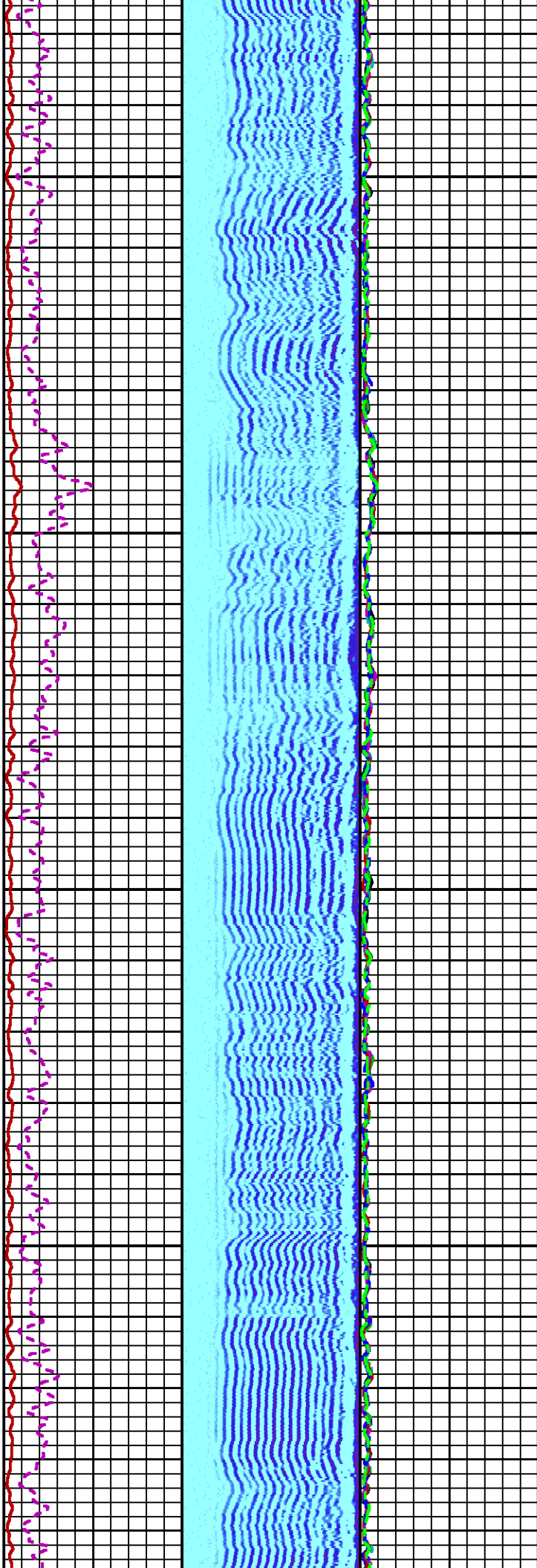
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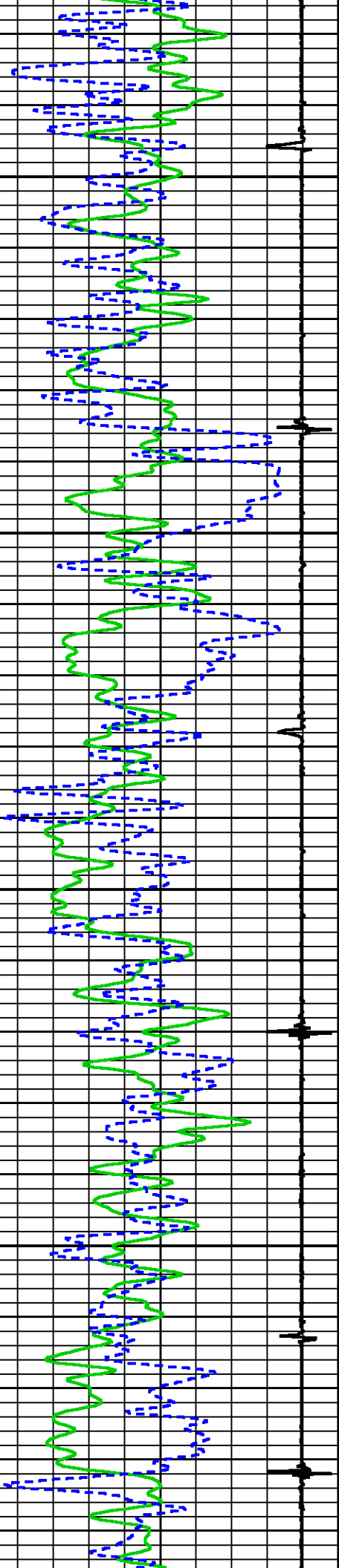


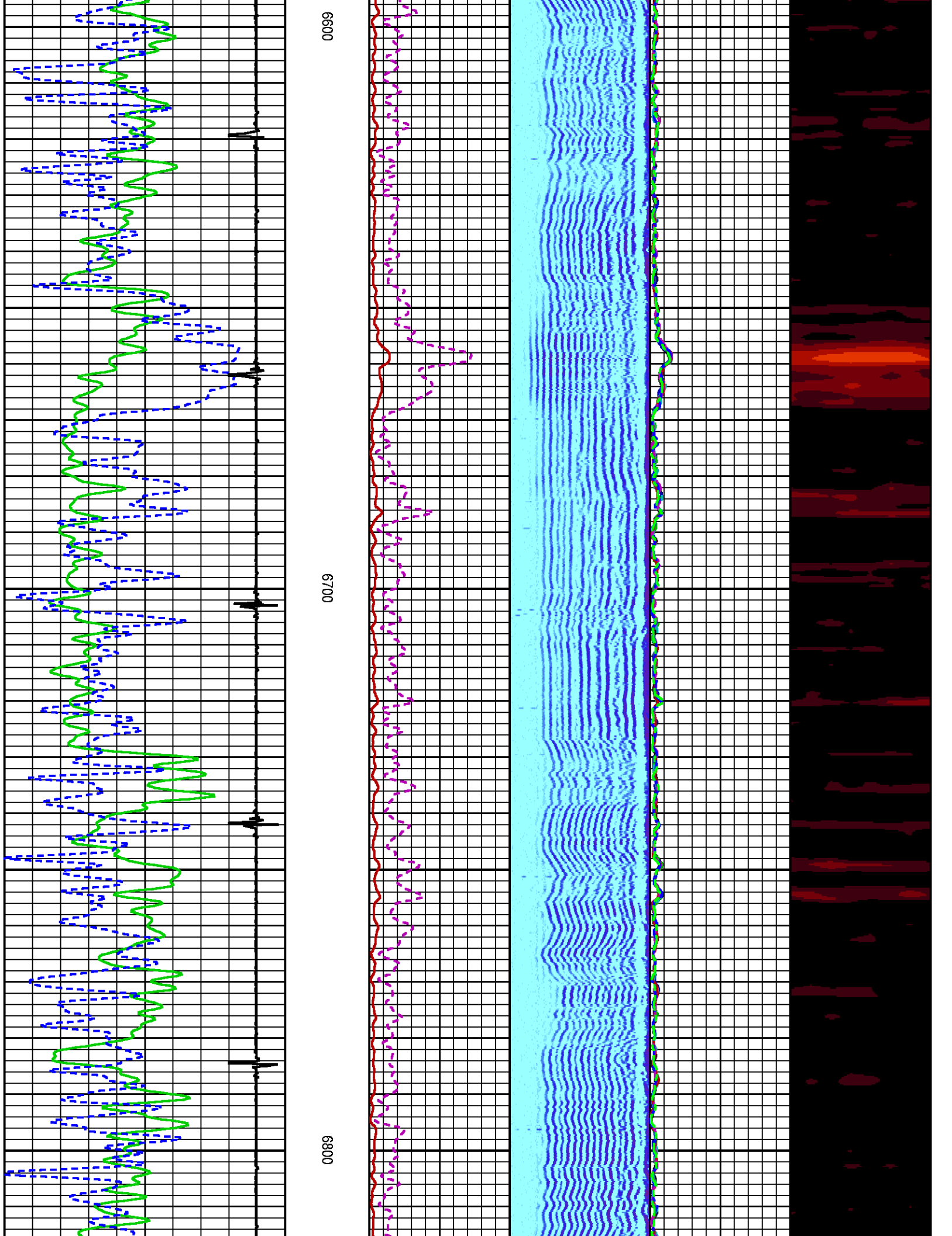


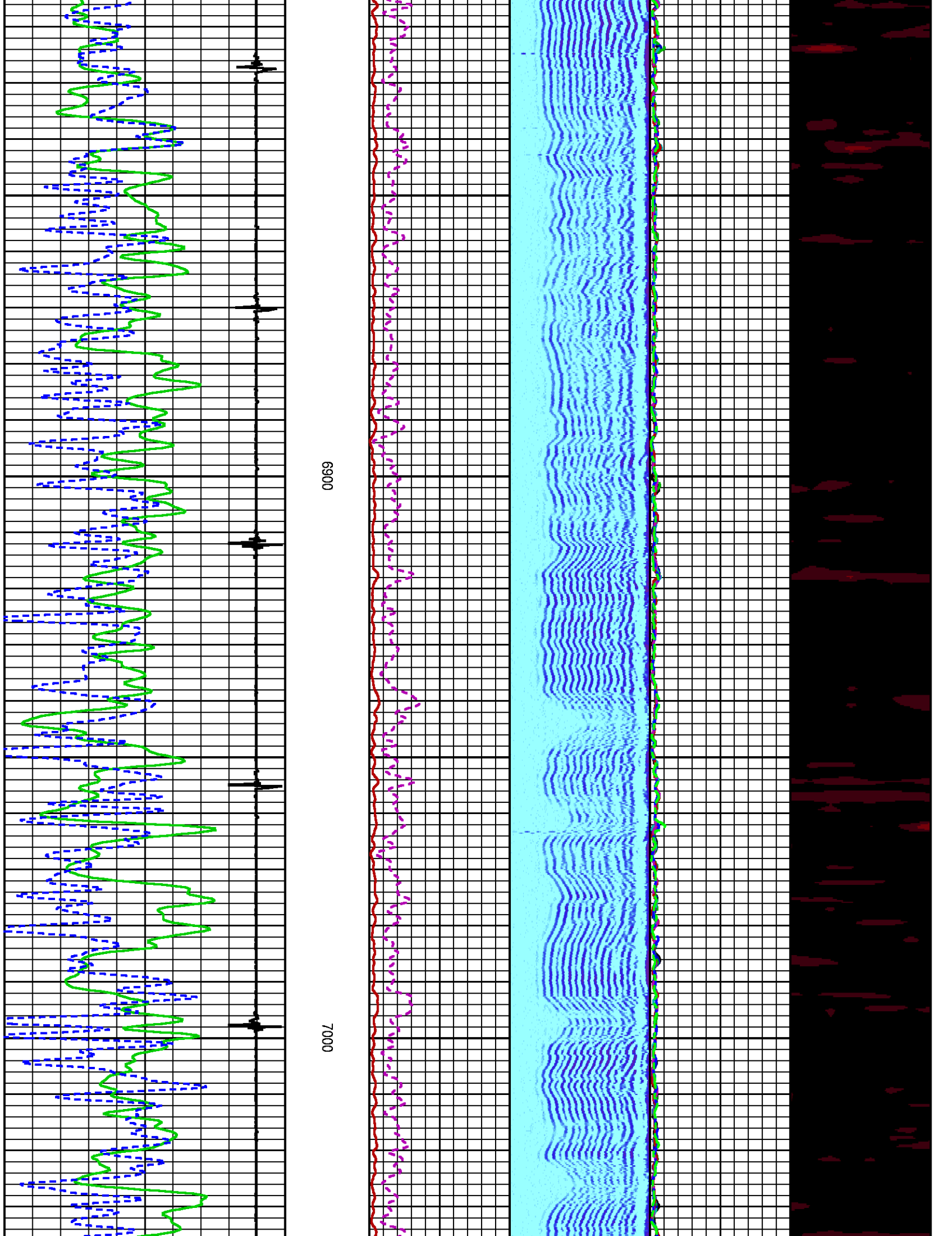
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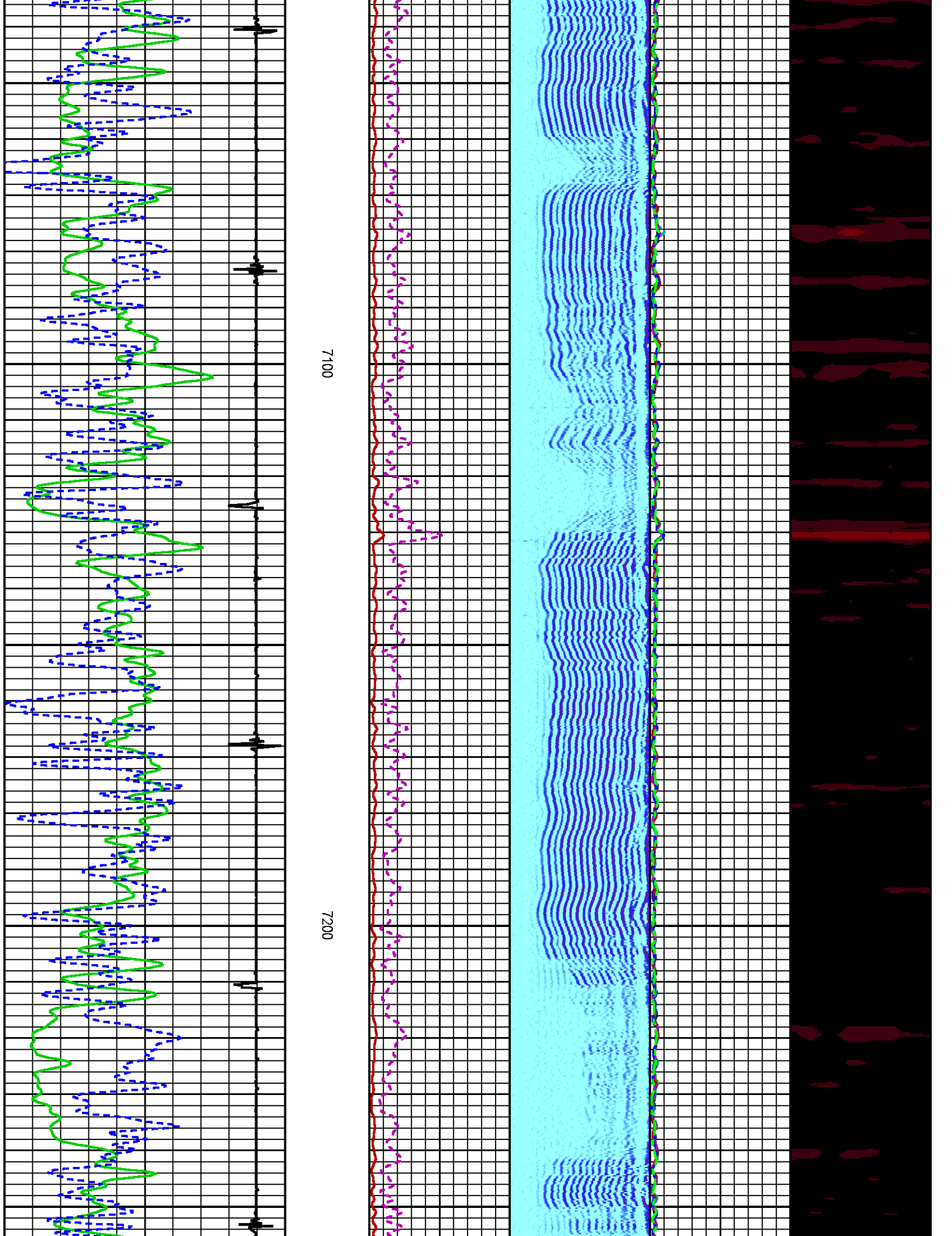
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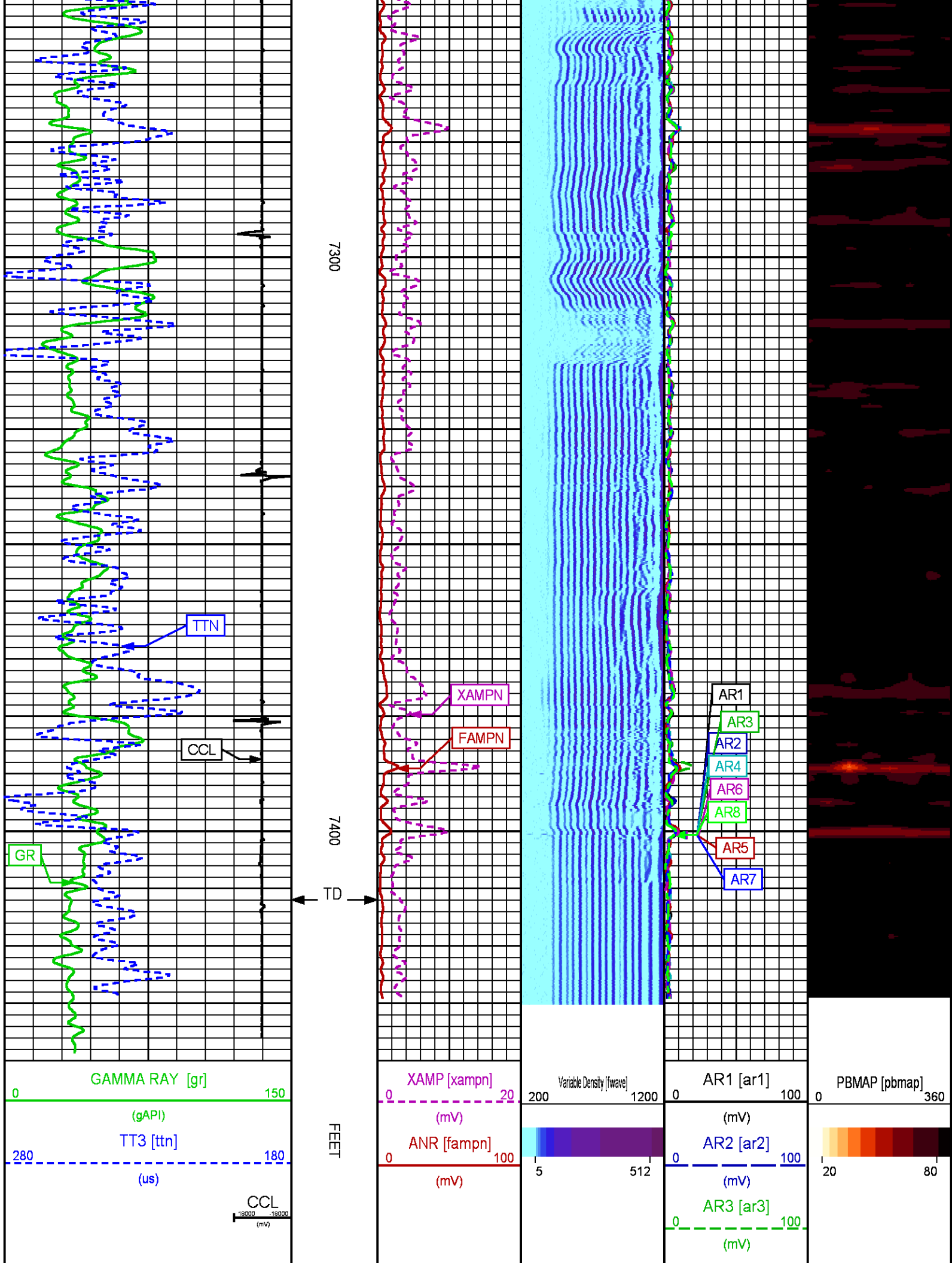




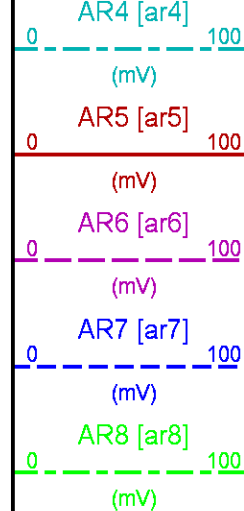












REPEAT PASS 0 PSI

ECLIPS 7.0i ECLIPS General Release Rel 7.0i Thu Jun 08 20:36:10 CDT 2017  
Patches: 3

Plotted: Wed Apr 25 18:59:05 2018

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE\_NICHOLS\_0994\_24\_12W/p012g01.prm  
LOGGING MODE: DEPTH DIRECTION: UP  
TOP DEPTH: 7152.500 ft BOTTOM DEPTH: 7424.064 ft

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
GR	FILTER ()	medium (1)		TOP	BOTTOM
AMPLITUDE	FILTER ()	medium (1)		"	"
TRAVEL TIME	FILTER ()	medium (1)		"	"

RAL CCL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
CCL FLOOR	CCL FLOOR	0.00		TOP	BOTTOM

ANALOG RAL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
AMPLITUDE WINDOW (NEAR)	AMP WINDOW START (fgp1*)	187	us	TOP	BOTTOM
	AMP WINDOW START (fgp2*)	187	us	"	"
	AMP WINDOW START (fgp3*)	187	us	"	"
	AMP WINDOW START (fgp4*)	187	us	"	"
	AMP WINDOW START (fgp5*)	187	us	"	"
	AMP WINDOW START (fgp6*)	187	us	"	"
	AMP WINDOW START (fgp7*)	187	us	"	"
	AMP WINDOW START (fgp8*)	187	us	"	"
	AMP WINDOW START (fgpn*)	187	us	"	"
	AMP WINDOW LENGTH	25	us	"	"
TRAVEL TIME WINDOW (NEAR)	TT WINDOW START (ttn*)	195	us	"	"
	TT WINDOW LENGTH	500	us	"	"
	FIRST BRK THRESHOLD (ttn*)	5	mV	"	"
RAL CASING PARAMETERS	PPT NEAR	200.391	us	"	"
RAL TOOL DELAY	TOOL DELAY (str1*)	-65	us	"	"
	TOOL DELAY (str2*)	-65	us	"	"
	TOOL DELAY (str3*)	-65	us	"	"

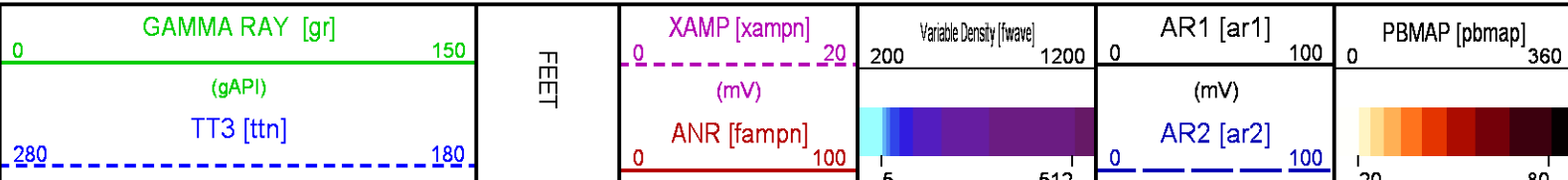
	TOOL DELAY (str1*)	-65	us	"	"
	TOOL DELAY (str4*)	-65	us	"	"
	TOOL DELAY (str6*)	-65	us	"	"
	TOOL DELAY (str7*)	-65	us	"	"
	TOOL DELAY (str8*)	-65	us	"	"
	TOOL DELAY (strn*)	-65	us	"	"
BASELINE NOISE (NEAR)	NOISE WINDOW START	125	us	"	"
	NOISE WINDOW LENGTH	25	us	"	"

PERCENT BOND CEMENT MAP					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
RAL FREE PIPE AMPLITUDE	FREE AMP REC 1	80	mV	TOP	BOTTOM
	FREE AMP REC 2	80	mV	"	"
	FREE AMP REC 3	80	mV	"	"
	FREE AMP REC 4	80	mV	"	"
	FREE AMP REC 5	80	mV	"	"
	FREE AMP REC 6	80	mV	"	"
	FREE AMP REC 7	80	mV	"	"
	FREE AMP REC 8	80	mV	"	"
RAL FULL BOND AMPLITUDE	FULL BOND AMP REC 1	3	mV	"	"
	FULL BOND AMP REC 2	3	mV	"	"
	FULL BOND AMP REC 3	3	mV	"	"
	FULL BOND AMP REC 4	3	mV	"	"
	FULL BOND AMP REC 5	3	mV	"	"
	FULL BOND AMP REC 6	3	mV	"	"
	FULL BOND AMP REC 7	3	mV	"	"
	FULL BOND AMP REC 8	3	mV	"	"

CURVE DESCRIPTION REPORT		
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AR1	N/A	FIXED GATE AMPLITUDE T-R1
F1:AR2	N/A	FIXED GATE AMPLITUDE T-R2
F1:AR3	N/A	FIXED GATE AMPLITUDE T-R3
F1:AR4	N/A	FIXED GATE AMPLITUDE T-R4
F1:AR5	N/A	FIXED GATE AMPLITUDE T-R5
F1:AR6	N/A	FIXED GATE AMPLITUDE T-R6
F1:AR7	N/A	FIXED GATE AMPLITUDE T-R7
F1:AR8	N/A	FIXED GATE AMPLITUDE T-R8
F1:CCL	N/A	CASING COLLAR LOCATOR
F1:FAMPN	N/A	FIXED GATE AMPLITUDE NEAR RECEIVER
F1:FWAVE	N/A	FAR WAVE FORM
F1:GR	N/A	GAMMA RAY
F1:PBMAP	N/A	PERCENT BOND CEMENT MAP
F1:TTN	N/A	TRAVELTIME FROM NEAR TRANSMITTER-RECEIVER
F1:XAMPN	N/A	FIXED GATE AMPLITUDE NEAR RECEIVER TIMES FIVE

CURVE MEASURE POINT OFFSET					
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
AR1	-11.25	AR5	-11.25	CCL	-5.75
AR2	-11.25	AR6	-11.25	FAMPN	-11.25
AR3	-11.25	AR7	-11.25	GR	-1.75
AR4	-11.25	AR8	-11.25	TTN	-11.25
				XAMPN	-11.25

Presentation	: SysA:/dat1a/LARAMIE_NICHOLS_0994_24_12W/0994-24-12W_RAL_REPEAT.fvpdf [5"/100" Scale]
Plot Interval	: 7142 - 7420 Feet
Data File 1	: F1 : SysA:/dat1a/LARAMIE_NICHOLS_0994_24_12W/0994-24-12W_RAL_REPEAT.xtf
Created On	: N/A
Company	: LARAMIE ENERGY LLC
Well	: NICHOLS 0994-24-12W
Field	: VEGA
File Interval	: 7141 - 7421.25 Feet
OCT	: p012g



(us)

CCL  
-14000 -14000  
(mV)

(mV)

5

512

(mV)

AR3 [ar3]

0 100

(mV)

AR4 [ar4]

0 100

(mV)

AR5 [ar5]

0 100

(mV)

AR6 [ar6]

0 100

(mV)

AR7 [ar7]

0 100

(mV)

AR8 [ar8]

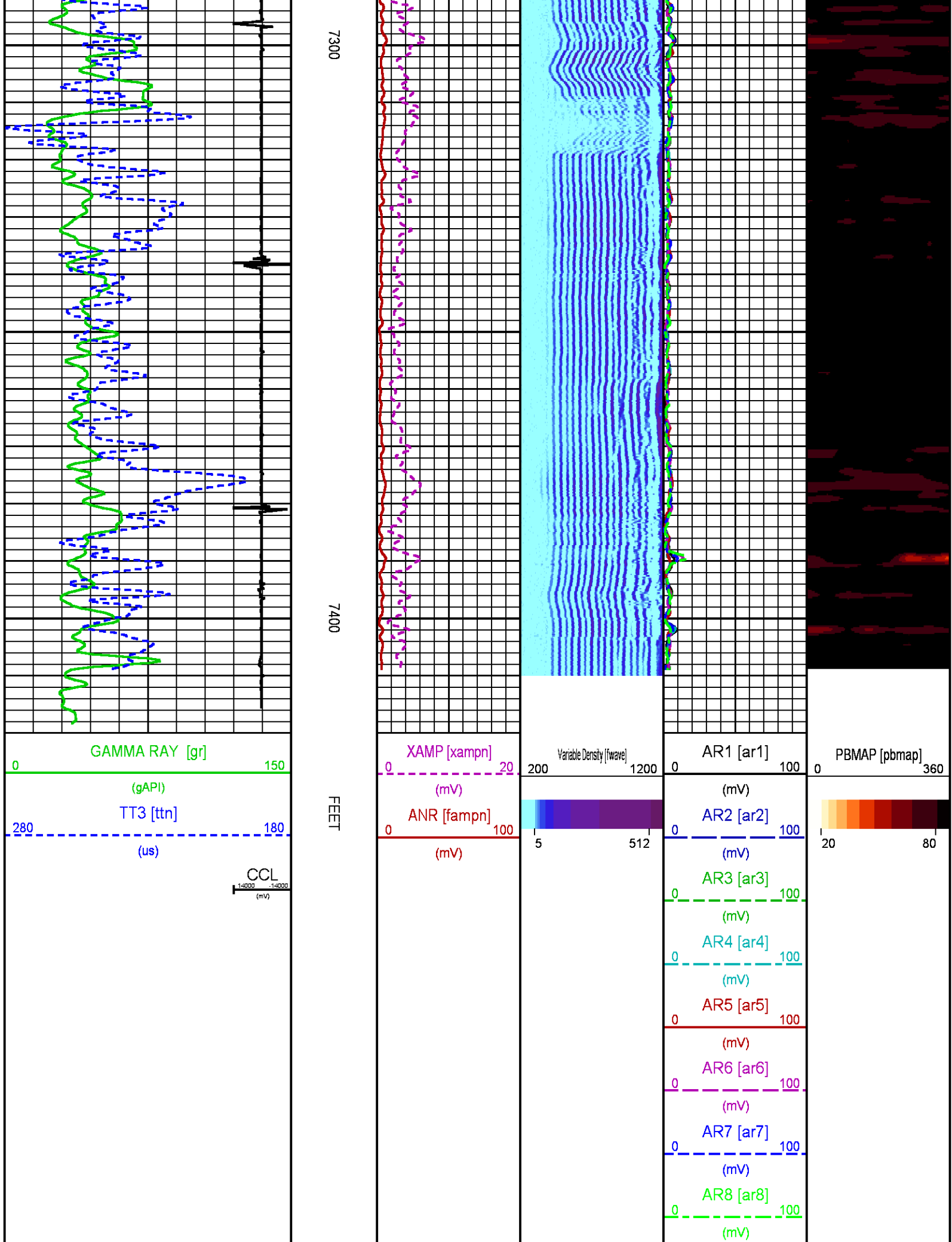
0 100

(mV)

20

60

7200



<b>CALIBRATION / VERIFICATION SUMMARY</b>
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Source File: /dat1a/LARAMIE_NICHOLS_0994_24_12W/p012g.lp1
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<b>RAL PRIMARY CALIBRATION SUMMARY</b>
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NOT IN DATABASE
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<b>RAL BEFORE LOG VERIFICATION SUMMARY</b>
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NOT IN DATABASE
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<b>GR PRIMARY CALIBRATION SUMMARY</b>
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NOT IN DATABASE
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<b>GR PRIMARY VERIFICATION SUMMARY</b>
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NOT IN DATABASE
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**BAKER  
HUGHES**  
a GE company



**COMPANY** LARAMIE ENERGY LLC  
**WELL** NICHOLS 0994-24-12W  
**FIELD** VEGA  
**COUNTY** MESA **STATE** COLORADO

**FILE NO:**  
CH136251  
**API NO:**  
05077103820000



**LOCATION:**

SHL: 2271' FNL & 2785' FWL  
BHL: 2299' FSL & 1491' FWL

**SEC** 24 **TWP** 9 S **RGE** 94 W

**ELEVATIONS:**

**KB** 7236 FT  
**DF**  
**GL** 7212 FT

**DATE** 25-Apr-2018