



# RADIAL CEMENT BOND LOG

FILE NO:

COMPANY

LARAMIE ENERGY LLC

WELL

BRUTON 30-16E

FIELD

VEGA

API NO:  
05077104790000

COUNTY

MESA

STATE COLORADO

Ver. 4.10

LOCATION:

SHL: 2623' FNL & 1864' FEL  
BHL: 1367' FSL & 1338' FEL

OTHER SERVICES  
RPM

SEC 30 TWP 9S RGE 93W

PERMANENT DATUM GL ELEVATION 7643 FT  
LOG MEASURED FROM KB 30 FT ABOVE P.D.  
DRILL. MEAS. FROM KB

ELEVATIONS:  
KB 7673 FT  
DF 7672 FT  
GL 7643 FT

DATE 10-Feb-2018

RUN 1 TRIP 1

SERVICE ORDER US132070

DEPTH DRILLER 7850 FT

DEPTH LOGGER 7784 FT

BOTTOM LOGGED INTERVAL 7784 FT

TOP LOGGED INTERVAL 30 FT

TIME STARTED 13:30

TIME FINISHED 16:00

OPERATOR RIG TIME 2.5 HRS

TYPE OF FLUID IN HOLE WATER

FLUID DENSITY NA

FLUID SALINITY NA

FLUID LEVEL 56 FT

LOGGED CEMENT TOP 1040 FT

WELLHEAD PRESSURE 0 PSI

MAXIMUM HOLE DEVIATION NA

NOMINAL LOGGING SPEED 90 FMIN

MAX. RECORDED TEMP. 240 DEGF

REFERENCE LOG NA

REFERENCE LOG DATE NA

EQUIP. NO. LOCATION ML-4291 GRAND JCT.

RECORDED BY M.MENTZER

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

\*\*OPERATION 1: RAL/GR/CCL RUN CENTRALIZED\*\*

LOGGED WITH 0 PSI ON WELLHEAD

SJ: 5789' - 5809'

SJ: 6905' - 6925'

CREW: A.SHAHNOOSHI, C.GOLOBY

## EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
1	1	RAL	1426XA	10404539	CENTRALIZED
1	1	GR/CCL	1355XA	11871508	CENTRALIZED

# MAIN PASS 0 PSI

ECLIPS 7.0i ECLIPS General Release Rel 7.0i Thu Jun 08 20:36:10 CDT 2017  
Patches: 2

Plotted: Sat Feb 10 17:25:36 2018

## PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE\_BRUTON\_30\_16E/p012g02.prm  
LOGGING MODE: DEPTH DIRECTION: UP  
TOP DEPTH: 8.000 ft BOTTOM DEPTH: 7779.853 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	4000.00		TOP	BOTTOM

### ANALOG RAL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
AMPLITUDE WINDOW (NEAR)	AMP WINDOW START (fgp1*)	185	us	TOP	BOTTOM
	AMP WINDOW START (fgp2*)	185	us	"	"
	AMP WINDOW START (fgp3*)	185	us	"	"
	AMP WINDOW START (fgp4*)	185	us	"	"
	AMP WINDOW START (fgp5*)	185	us	"	"
	AMP WINDOW START (fgp6*)	185	us	"	"
	AMP WINDOW START (fgp7*)	185	us	"	"
	AMP WINDOW START (fgp8*)	185	us	"	"
	AMP WINDOW START (fgpn*)	185	us	"	"
	AMP WINDOW LENGTH	30	us	"	"
TRAVEL TIME WINDOW (NEAR)	TT WINDOW START (ttn*)	160	us	"	"
	TT WINDOW LENGTH	500	us	"	"
	FIRST BRK THRESHOLD (ttn*)	6	mV	"	"
RAL CASING PARAMETERS	PPT NEAR	200.391	us	"	"
RAL TOOL DELAY	TOOL DELAY (str1*)	-68	us	"	"
	TOOL DELAY (str2*)	-68	us	"	"
	TOOL DELAY (str3*)	-68	us	"	"
	TOOL DELAY (str4*)	-68	us	"	"
	TOOL DELAY (str5*)	-68	us	"	"
	TOOL DELAY (str6*)	-68	us	"	"
	TOOL DELAY (str7*)	-68	us	"	"
	TOOL DELAY (str8*)	-68	us	"	"
	TOOL DELAY (strn*)	-68	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	2	mV	"	"
	FULL BOND AMP REC 2	2	mV	"	"

FULL BOND AMP REC 3	2	mV	"	"
FULL BOND AMP REC 4	2	mV	"	"
FULL BOND AMP REC 5	2	mV	"	"
FULL BOND AMP REC 6	2	mV	"	"
FULL BOND AMP REC 7	2	mV	"	"
FULL BOND AMP REC 8	2	mV	"	"

## CURVE DESCRIPTION REPORT

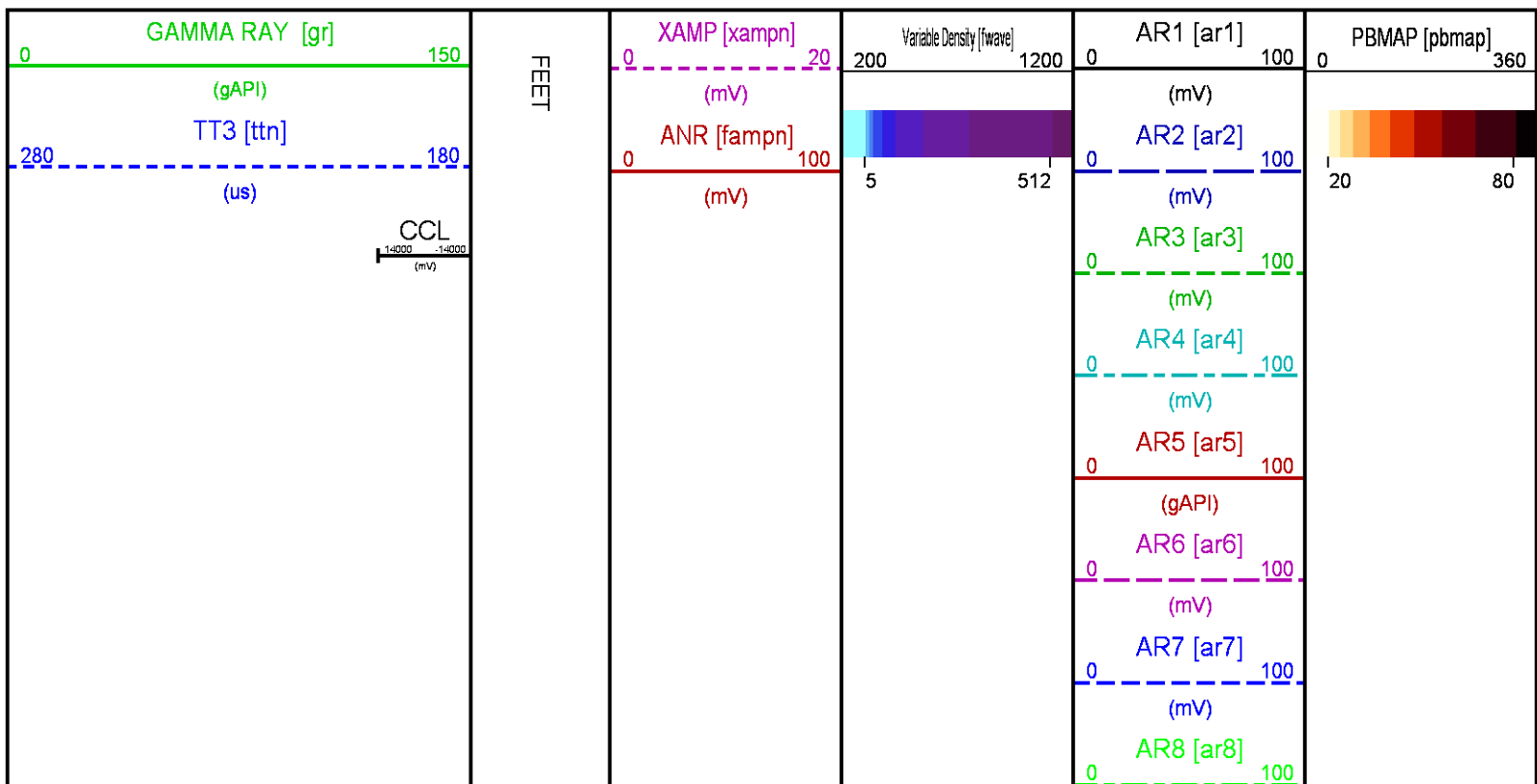
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AR1	N/A	FIXED GATE AMPLITUDE T-R1
F1:AR2	N/A	FIXED GATE AMPLITUDE T-R2
F1:AR3	N/A	FIXED GATE AMPLITUDE T-R3
F1:AR4	N/A	FIXED GATE AMPLITUDE T-R4
F1:AR5	N/A	FIXED GATE AMPLITUDE T-R5
F1:AR6	N/A	FIXED GATE AMPLITUDE T-R6
F1:AR7	N/A	FIXED GATE AMPLITUDE T-R7
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

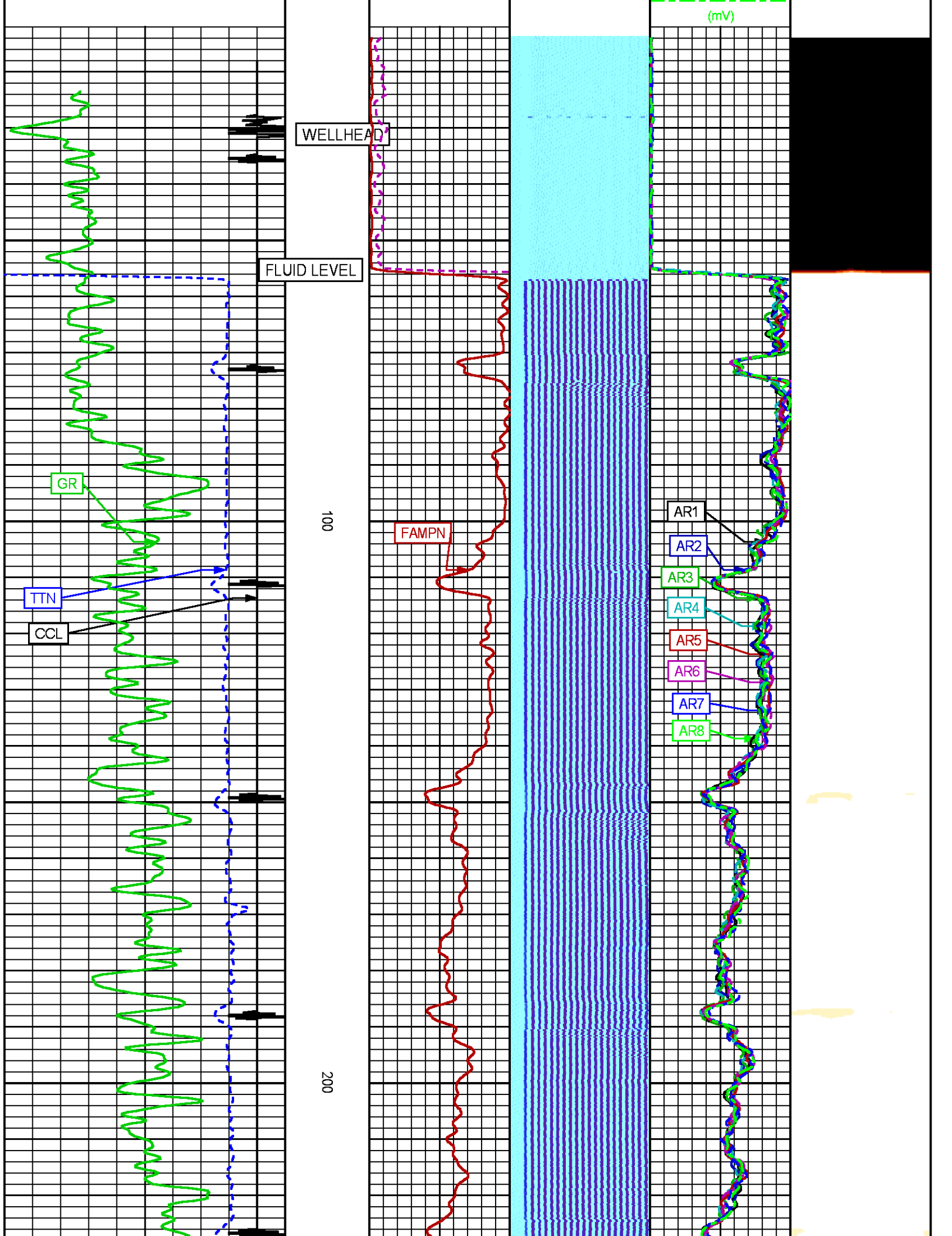
## CURVE MEASURE POINT OFFSET

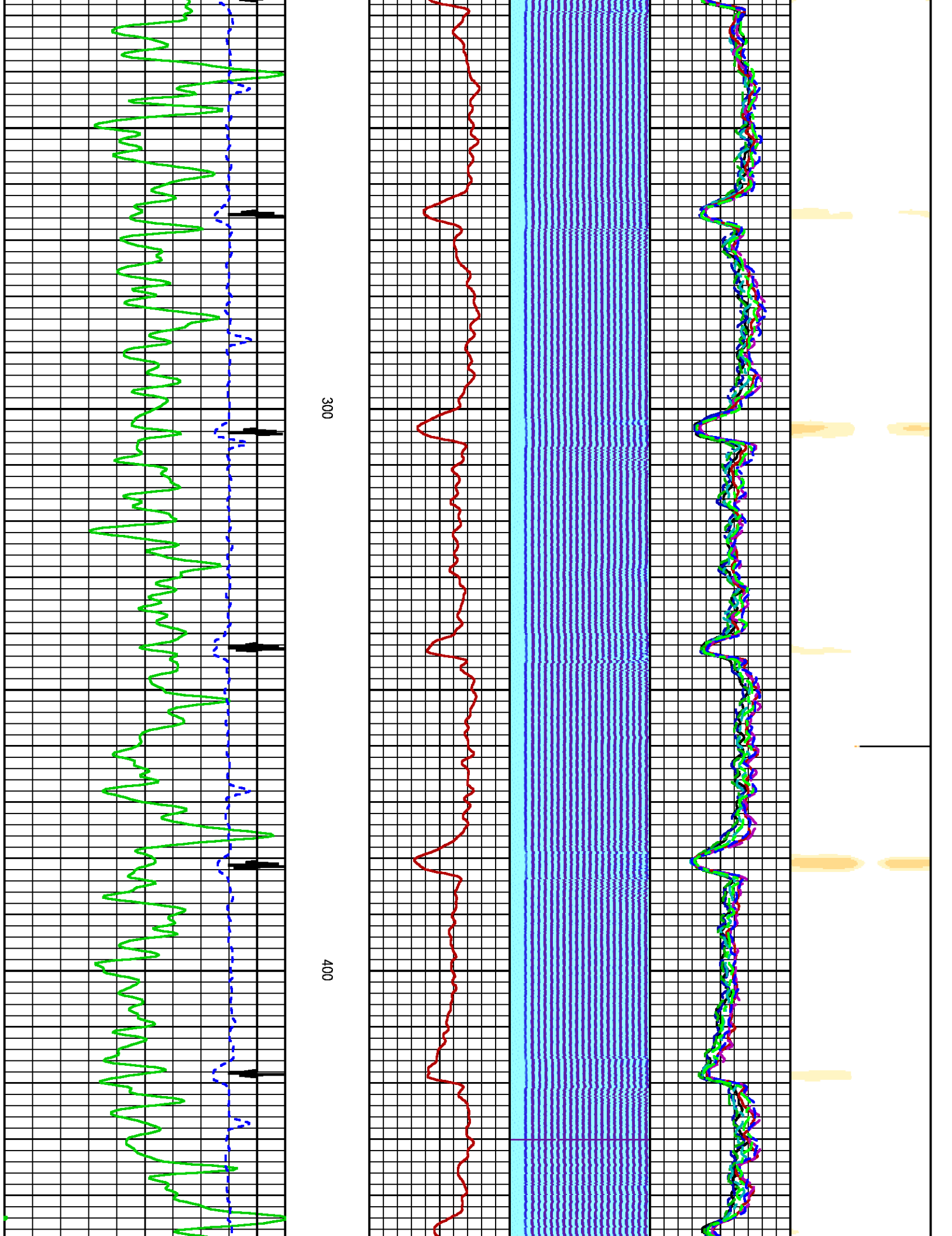
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
AR1	-11.25	AR5	-11.25	CCL	-5.75	XAMPN	-11.25
AR2	-11.25	AR6	-11.25	FAMPN	-11.25		
AR3	-11.25	AR7	-11.25	GR	-1.75		
AR4	-11.25	AR8	-11.25	TTN	-11.25		

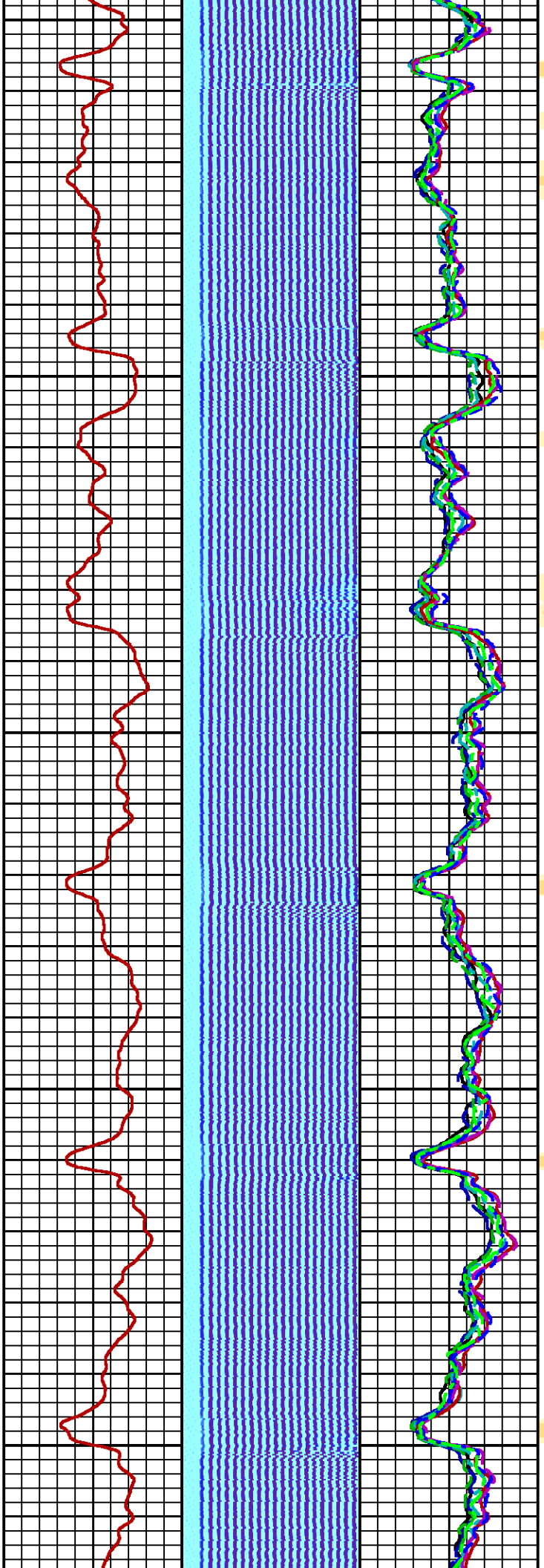
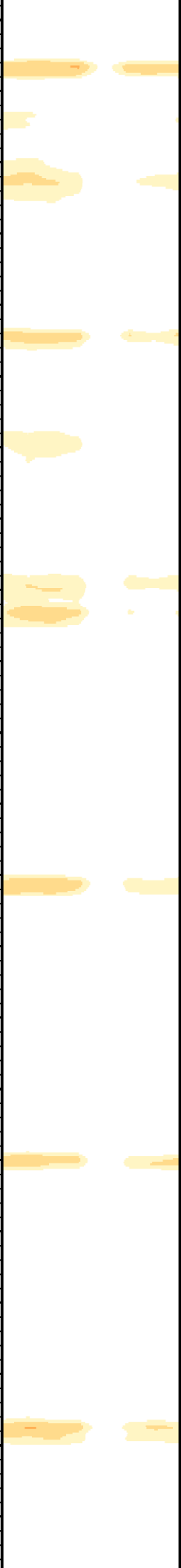
**Presentation** : SysA:/dat1a/LARAMIE\_BRUTON\_30\_16E/LARAMIE\_RAL+01-MAIN-RAL\_MN\_16E-5.fvpdf [5"/100' Scale]  
**Plot Interval** : 13.75 - 7794.5 Feet

**Data File 1** : F1 : SysA:/dat1a/LARAMIE\_BRUTON\_30\_16E/RAL\_MN\_16E.xtf  
**Created On** : N/A  
**Company** : LARAMIE ENERGY LLC  
**Well** : BRUTON 30-16E  
**Field** : VEGA  
**File Interval** : 8 - 7795.75 Feet  
**OCT** : p012g



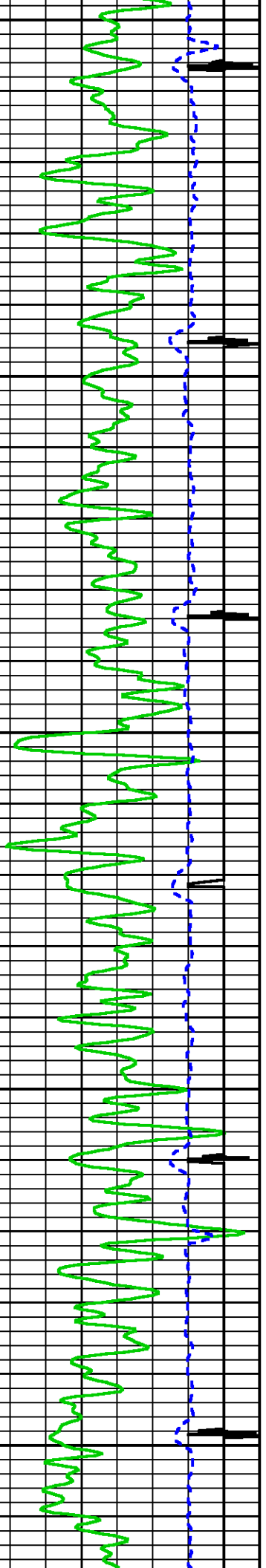




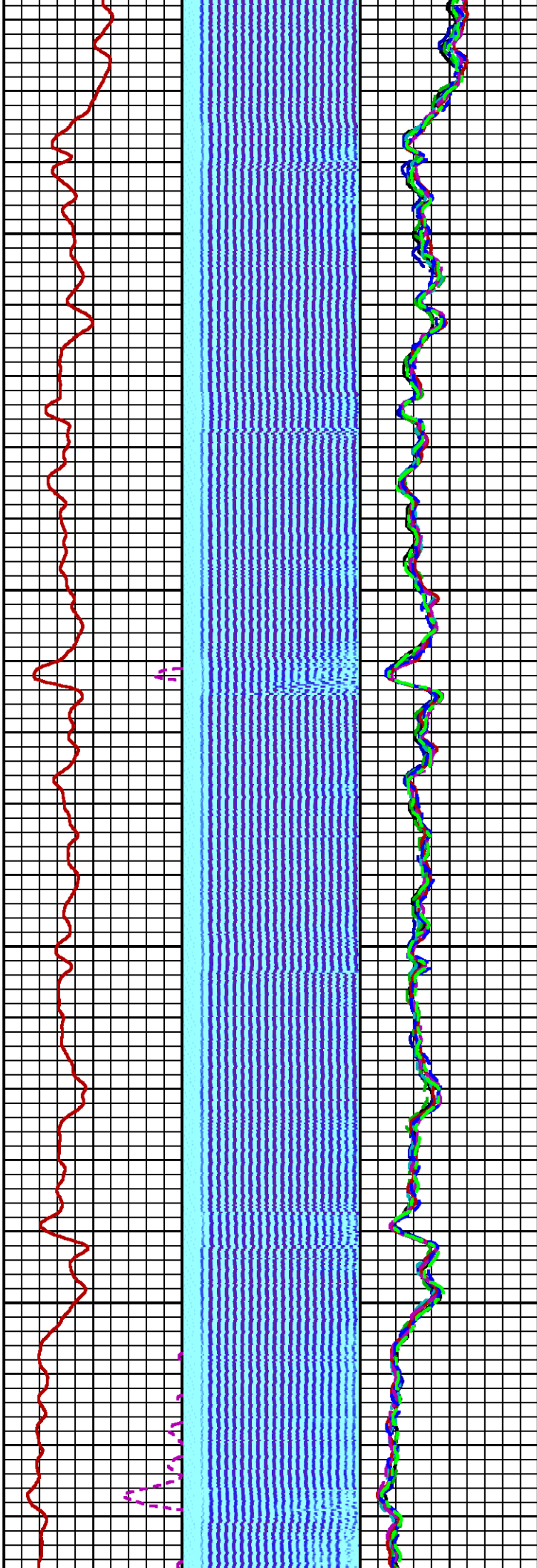


500

600

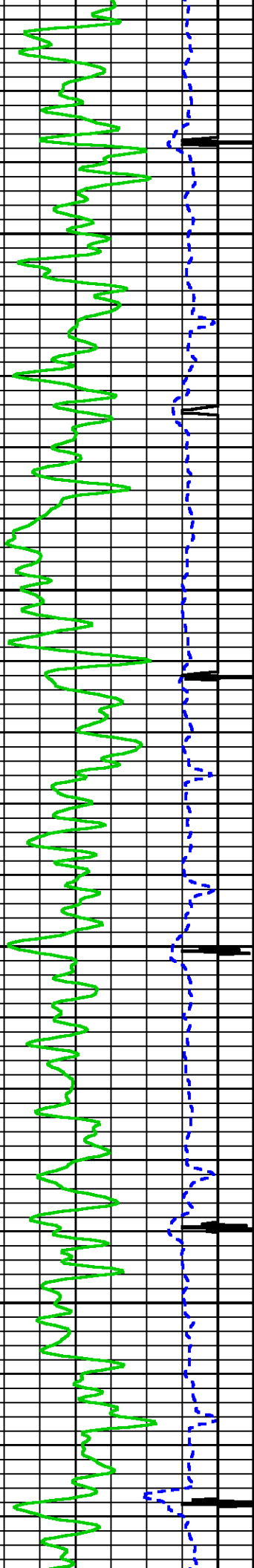


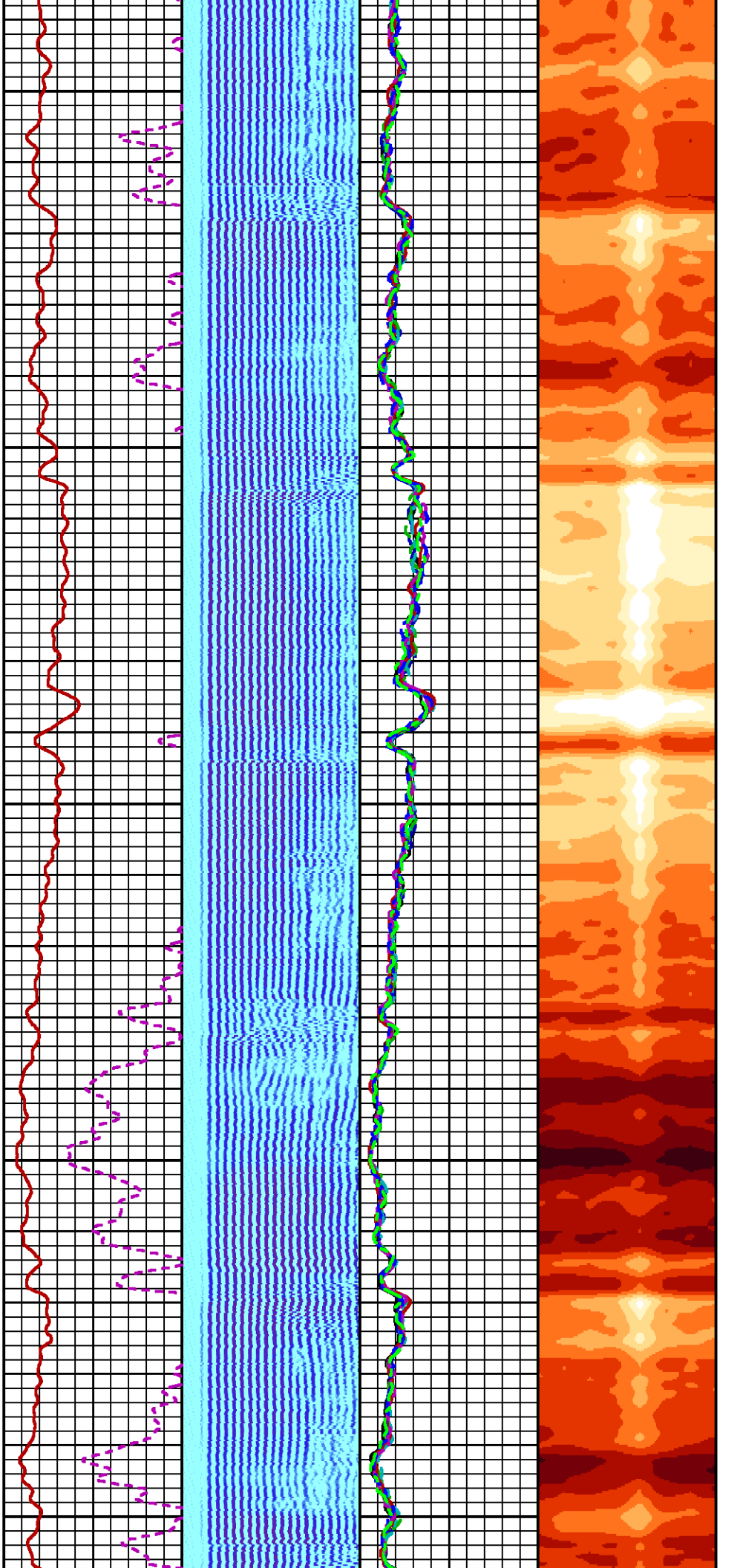




700

800



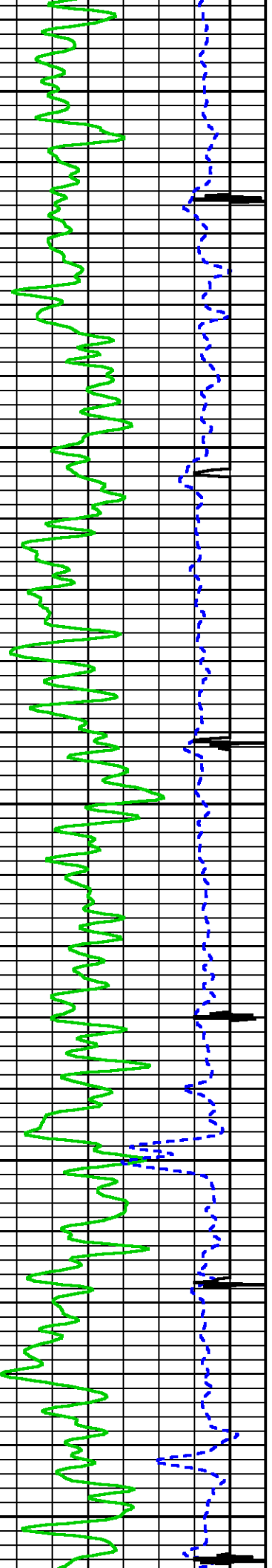


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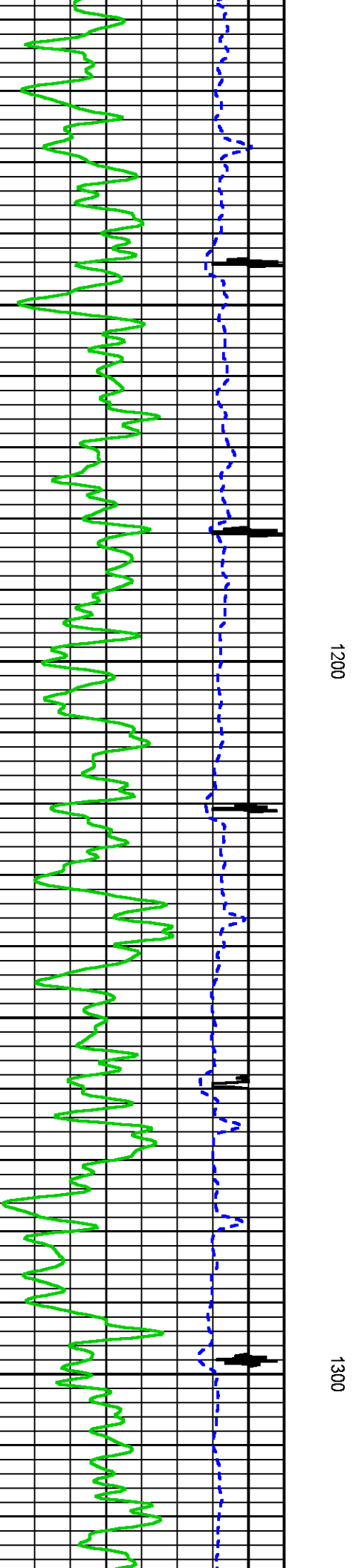
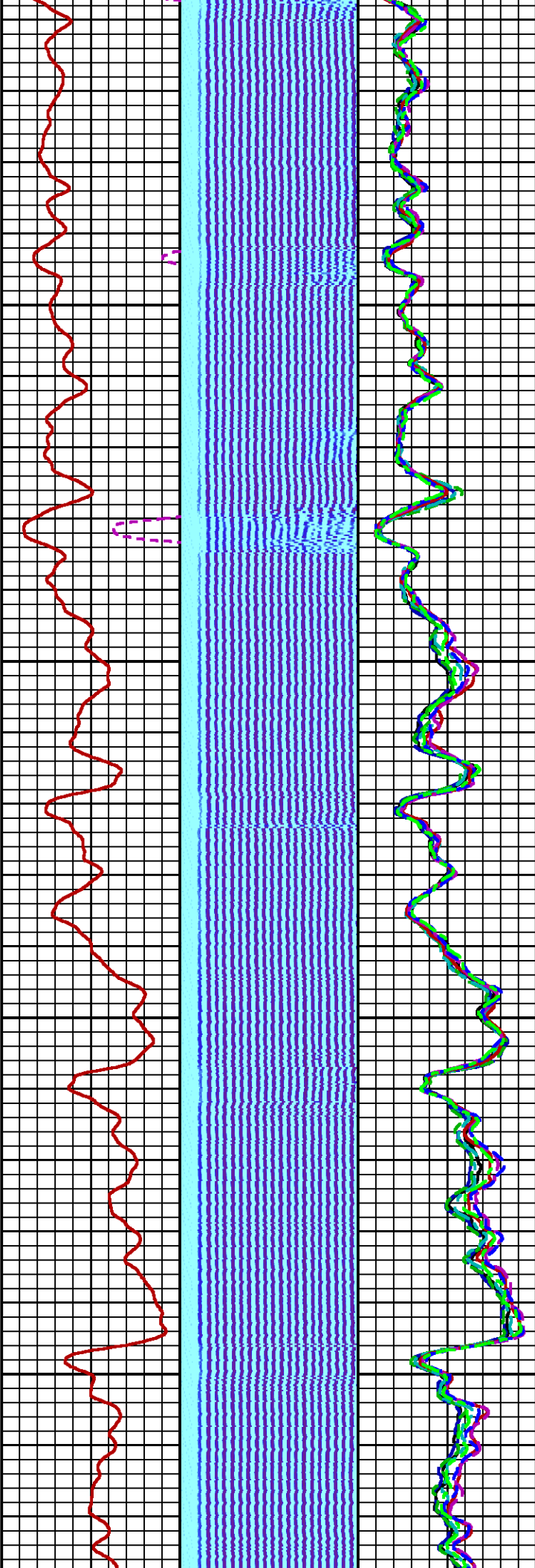
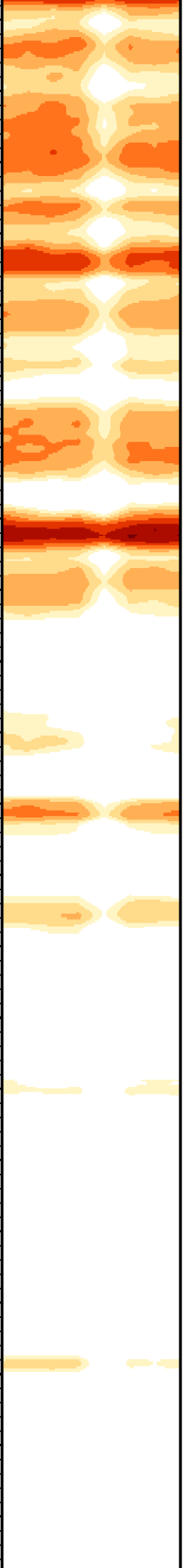
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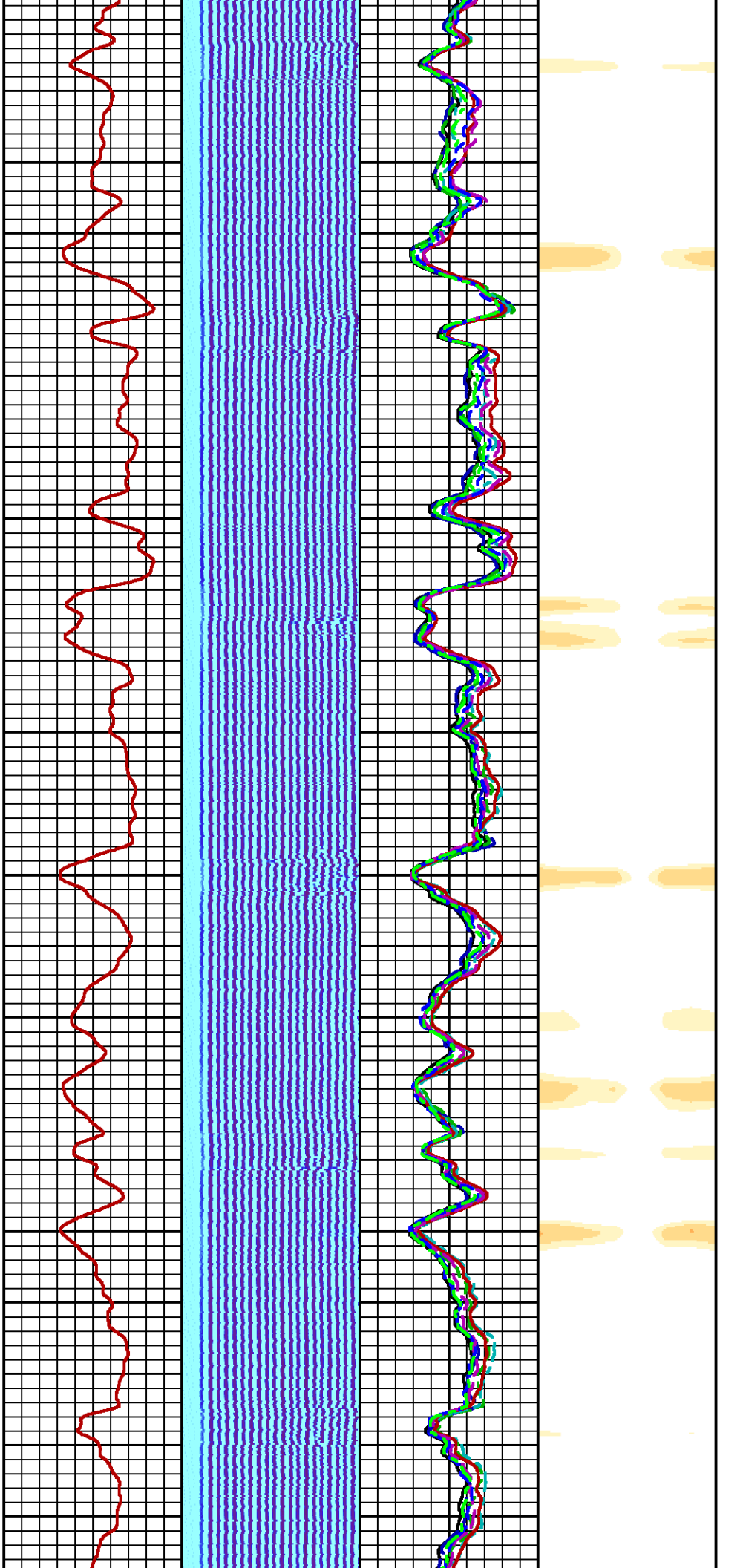
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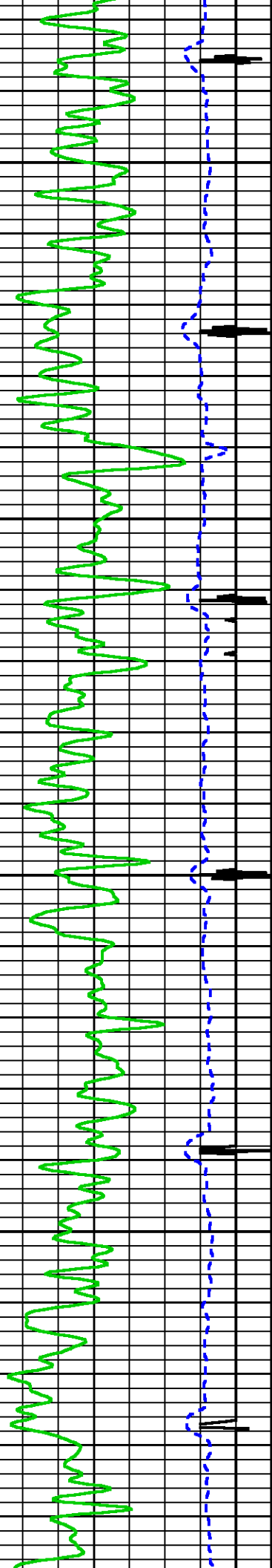


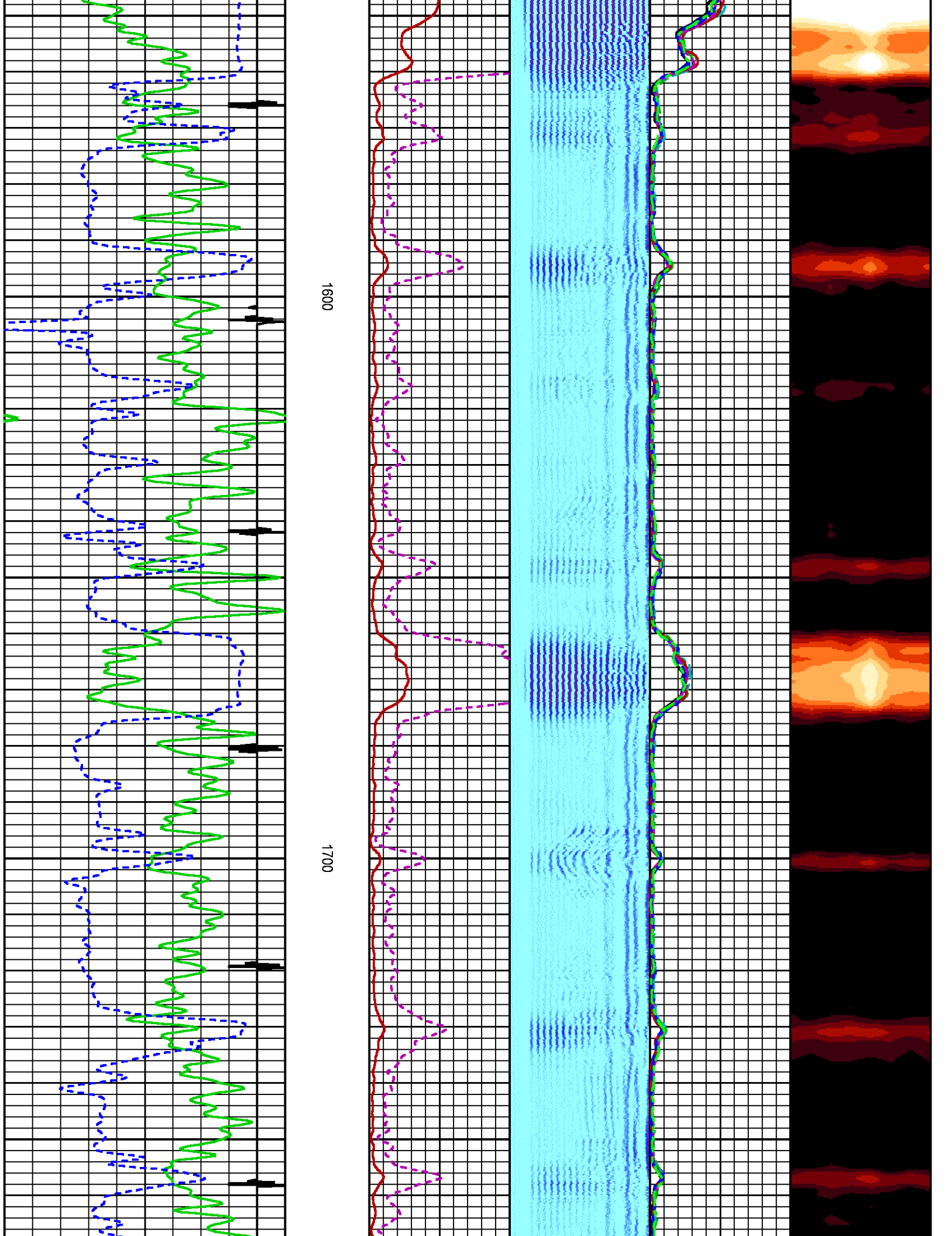


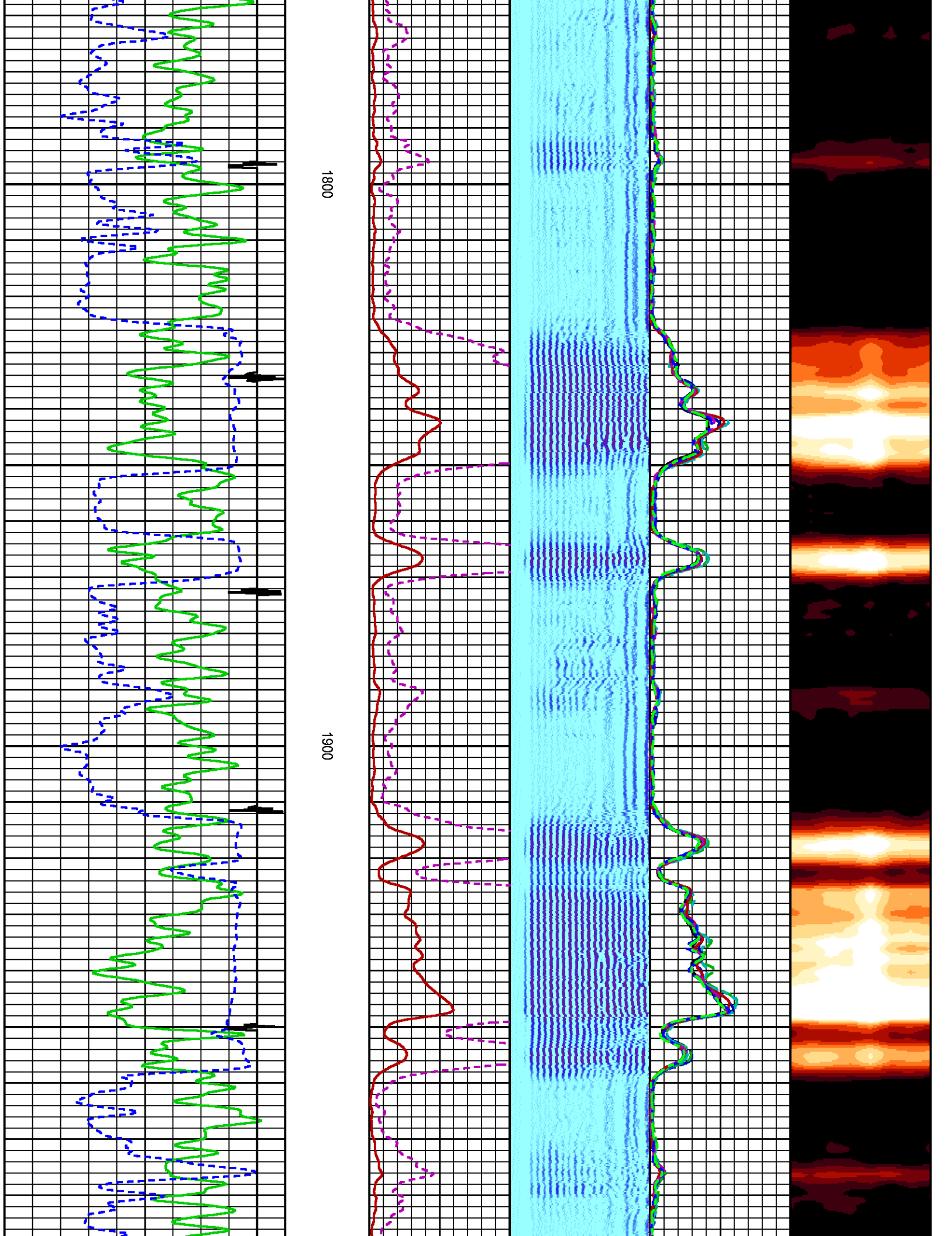


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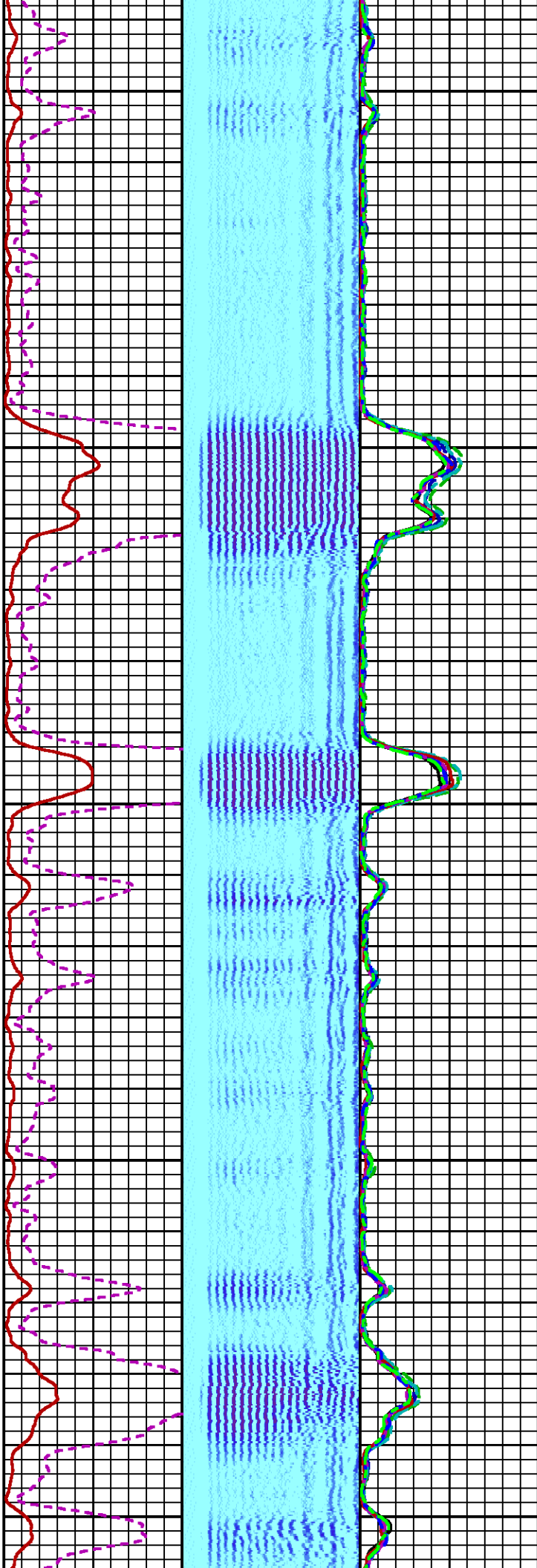
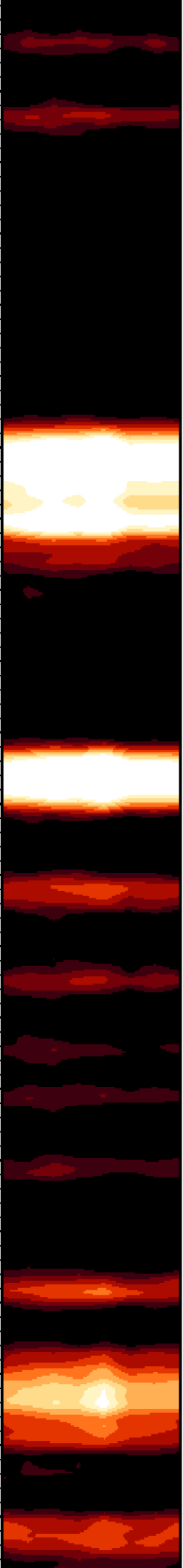
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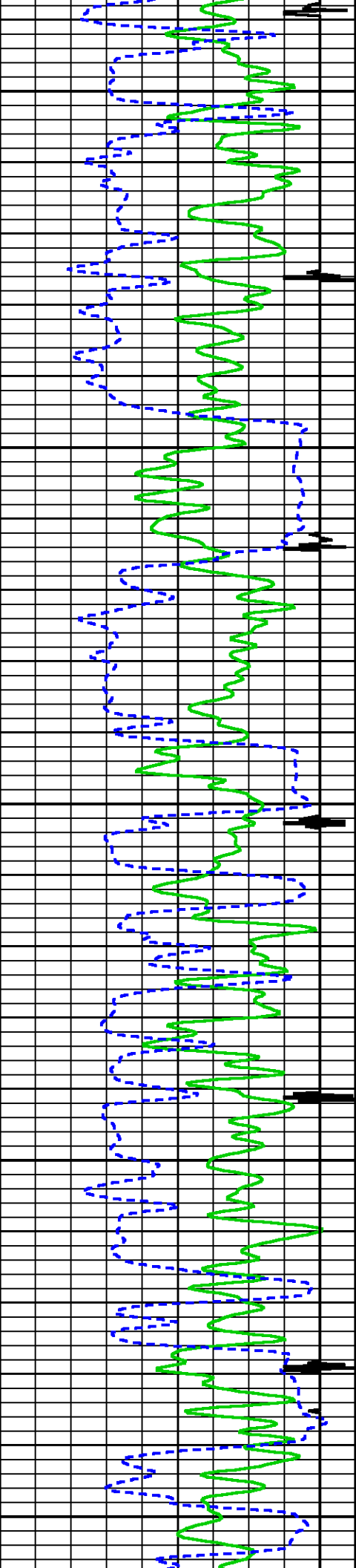




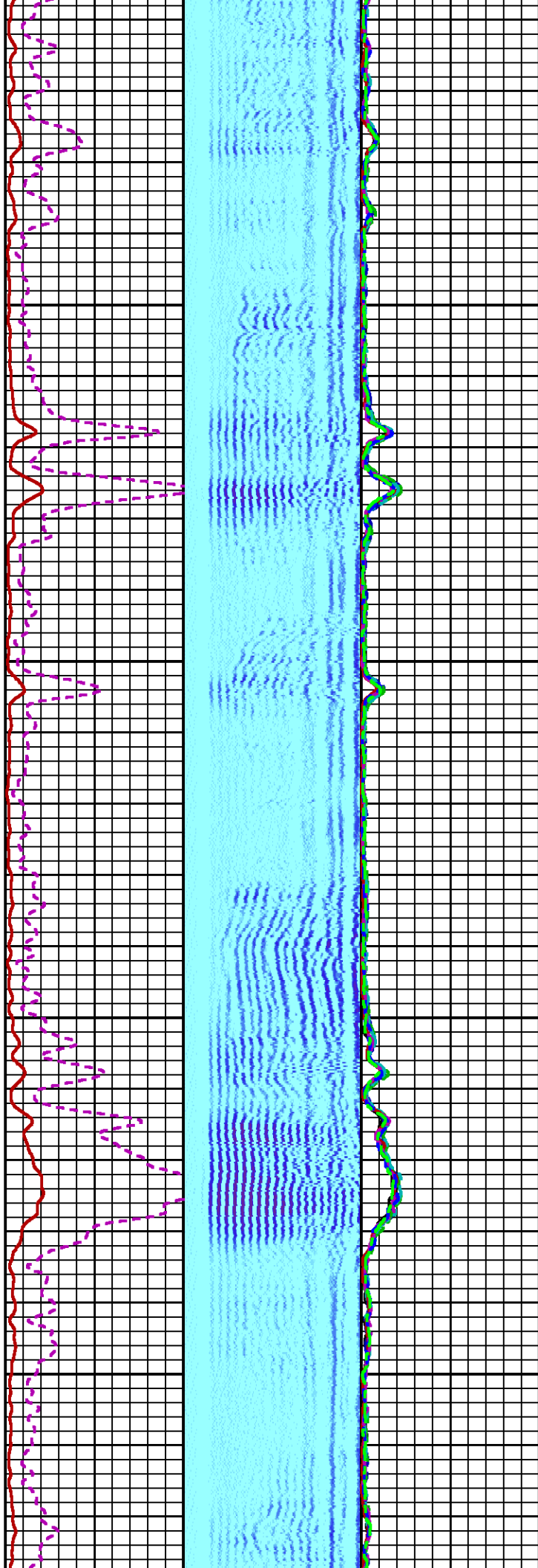
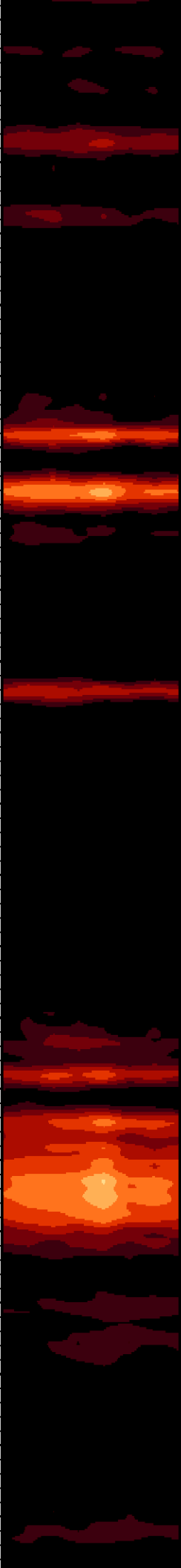
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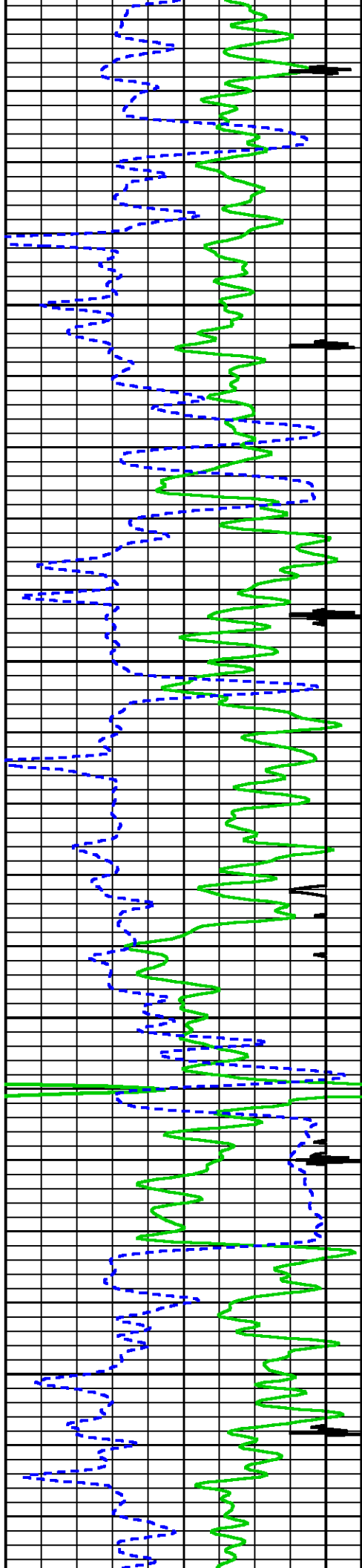


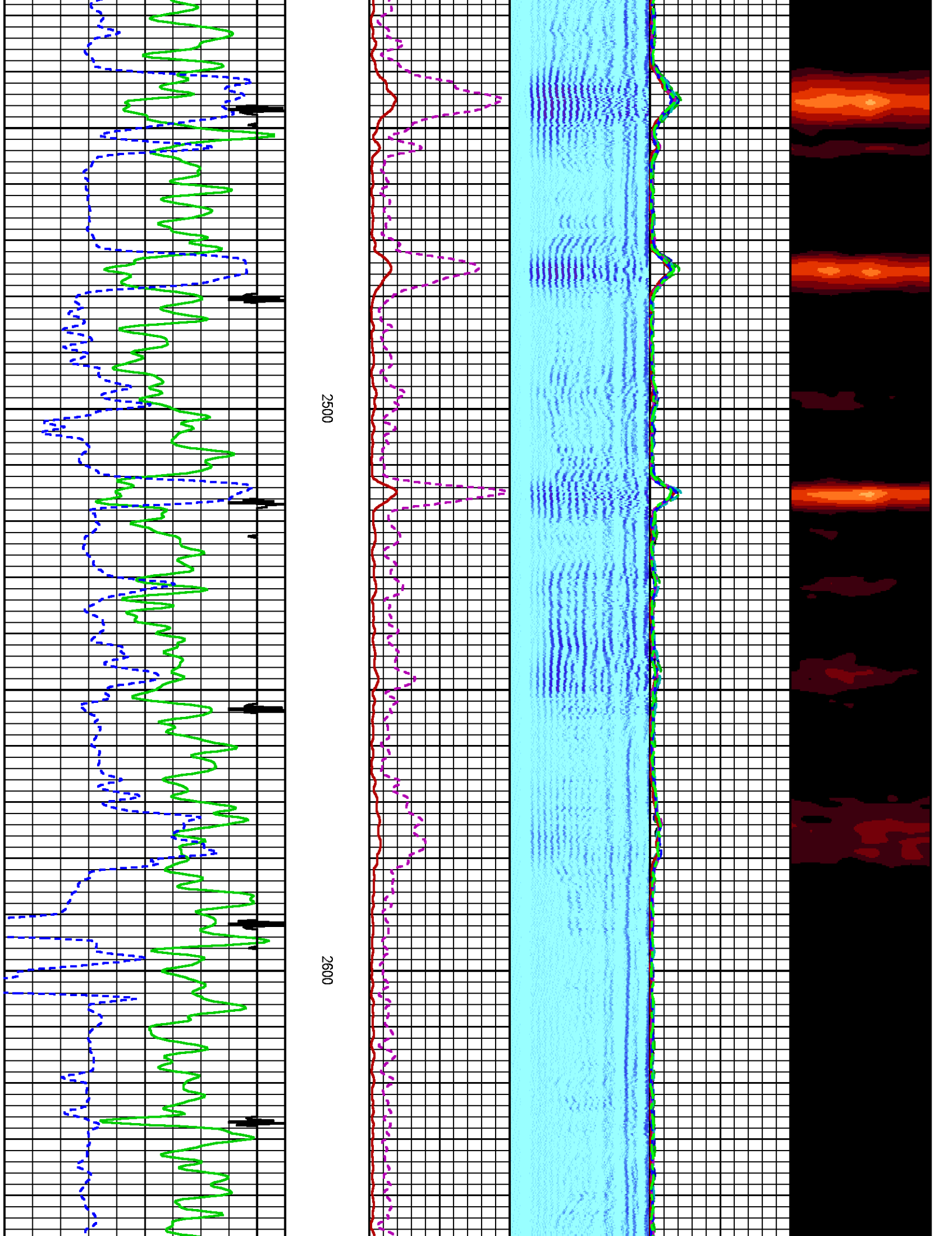


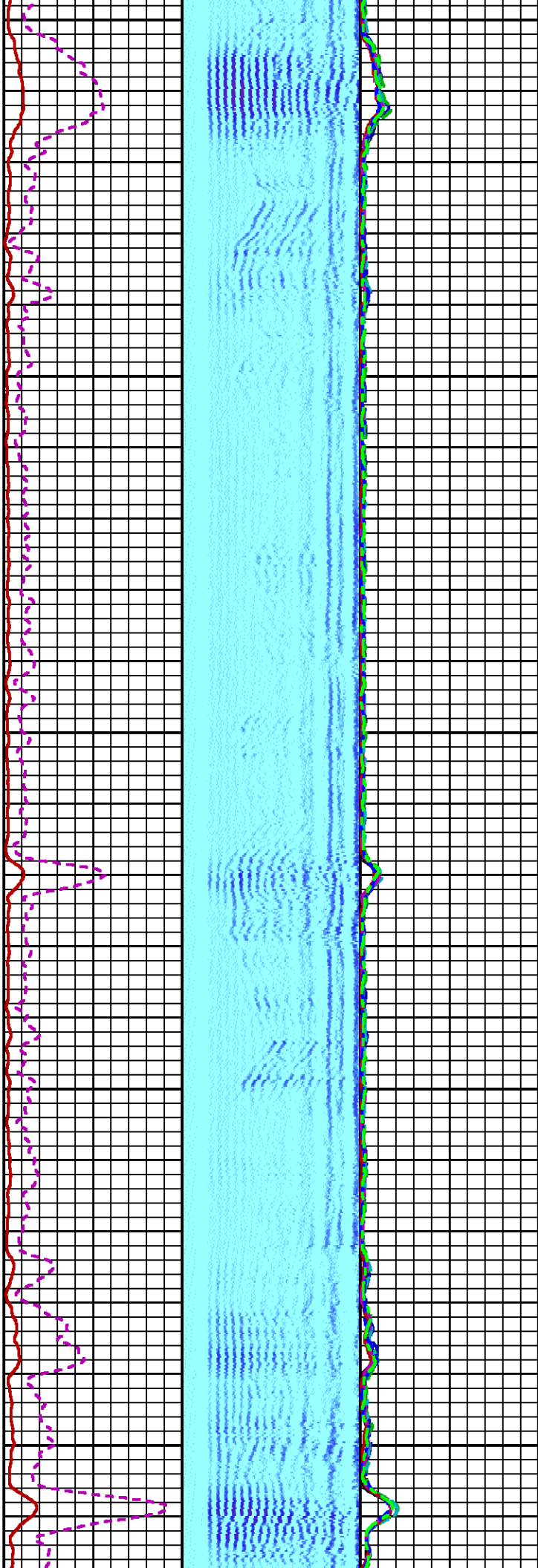
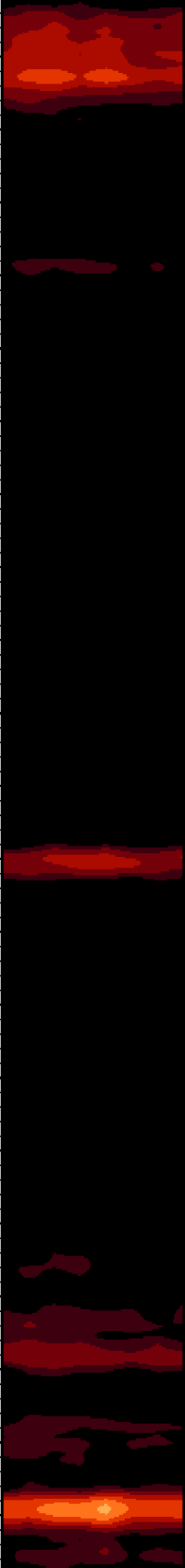


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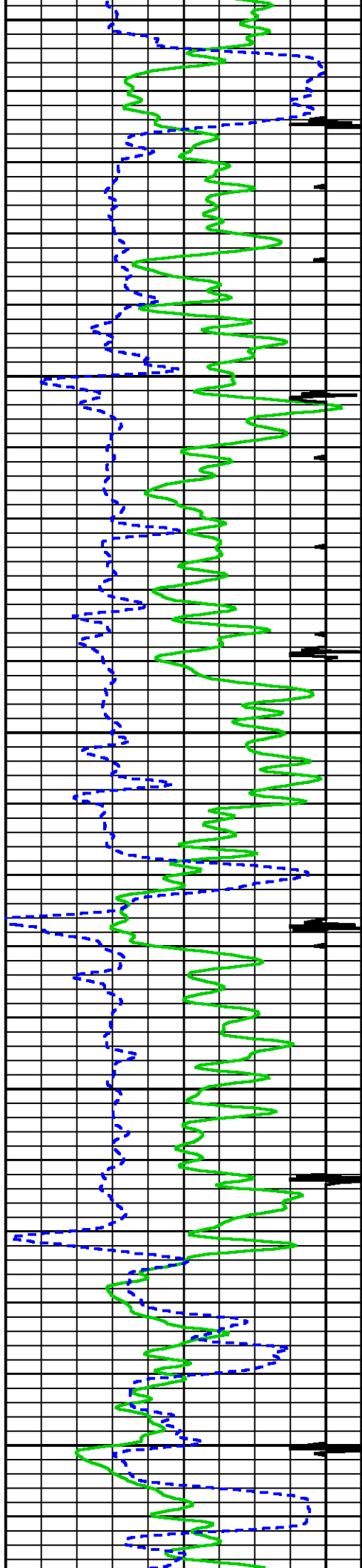


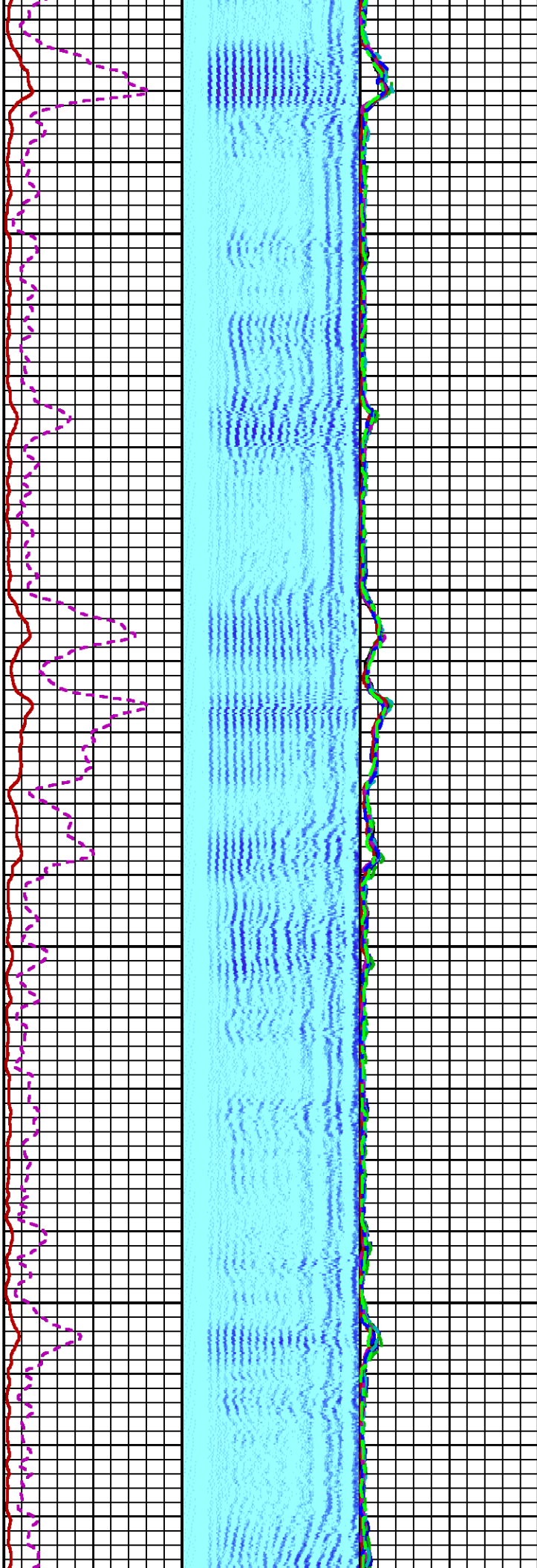
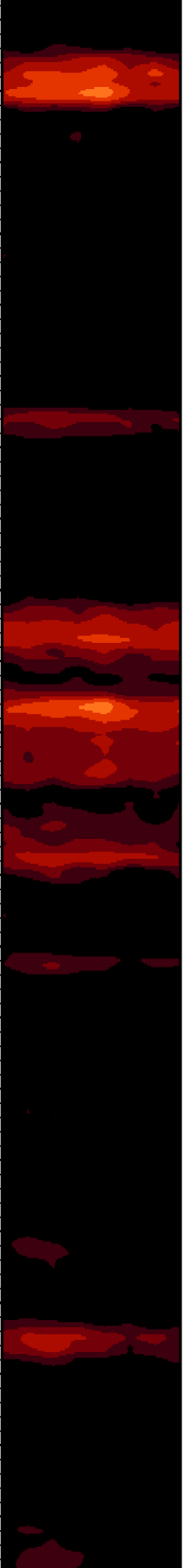




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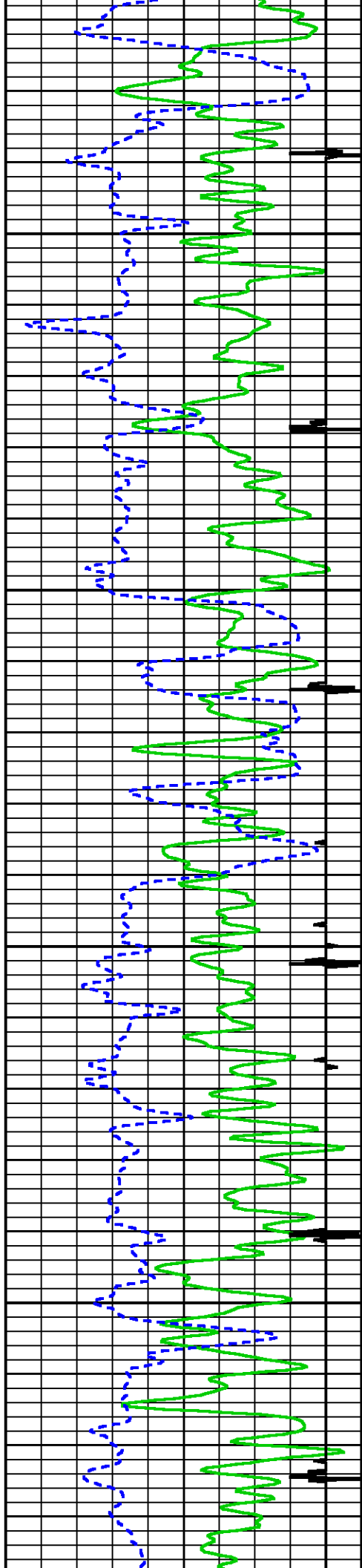
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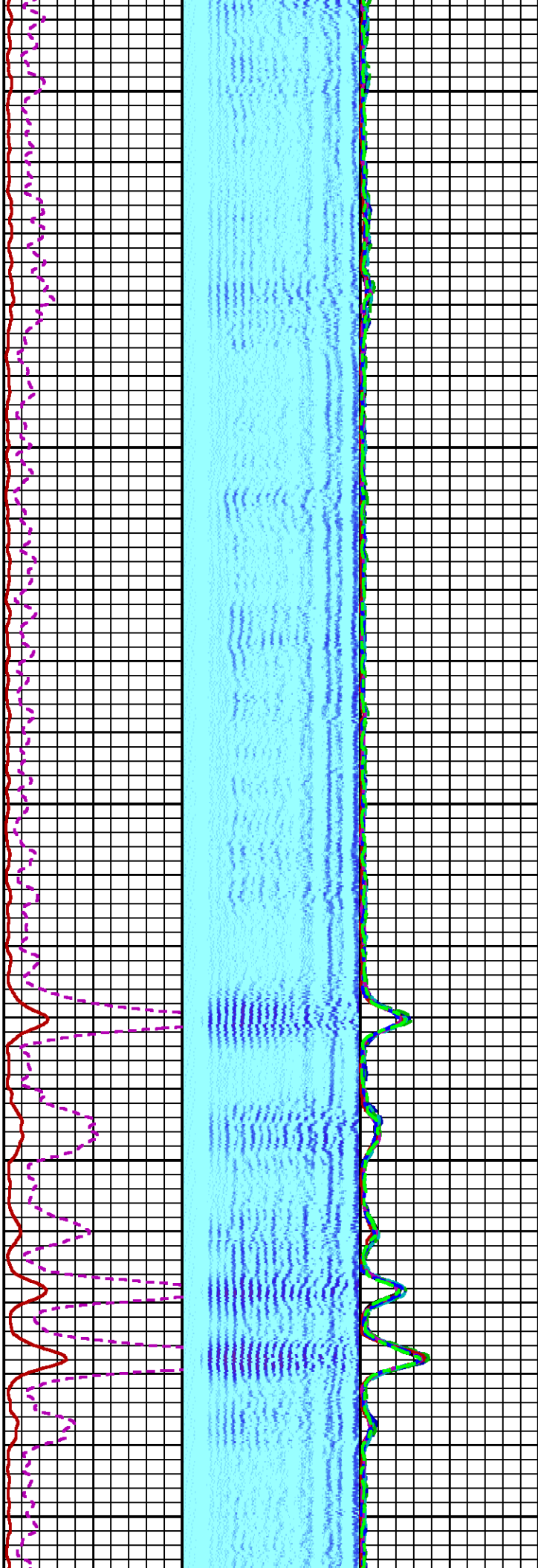
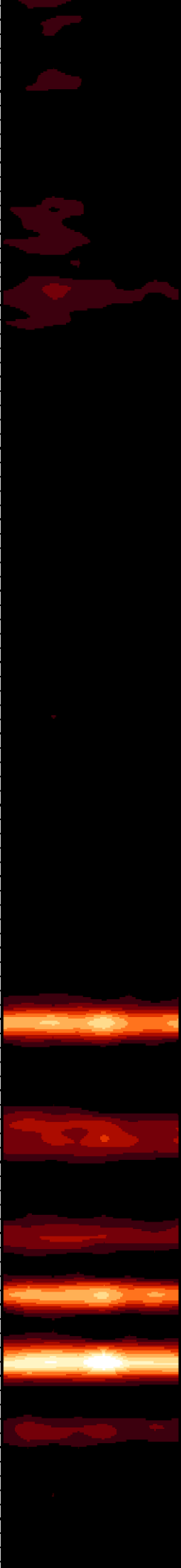


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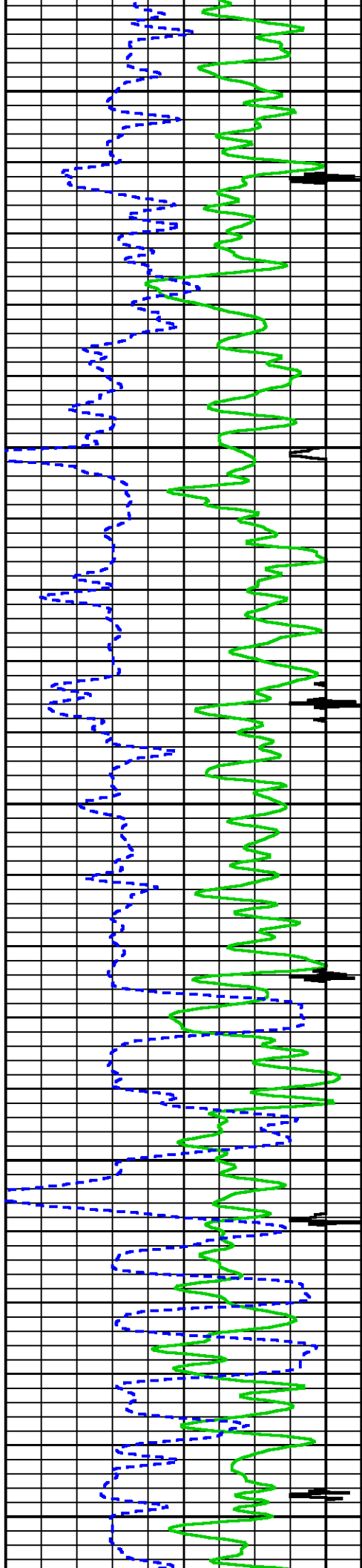




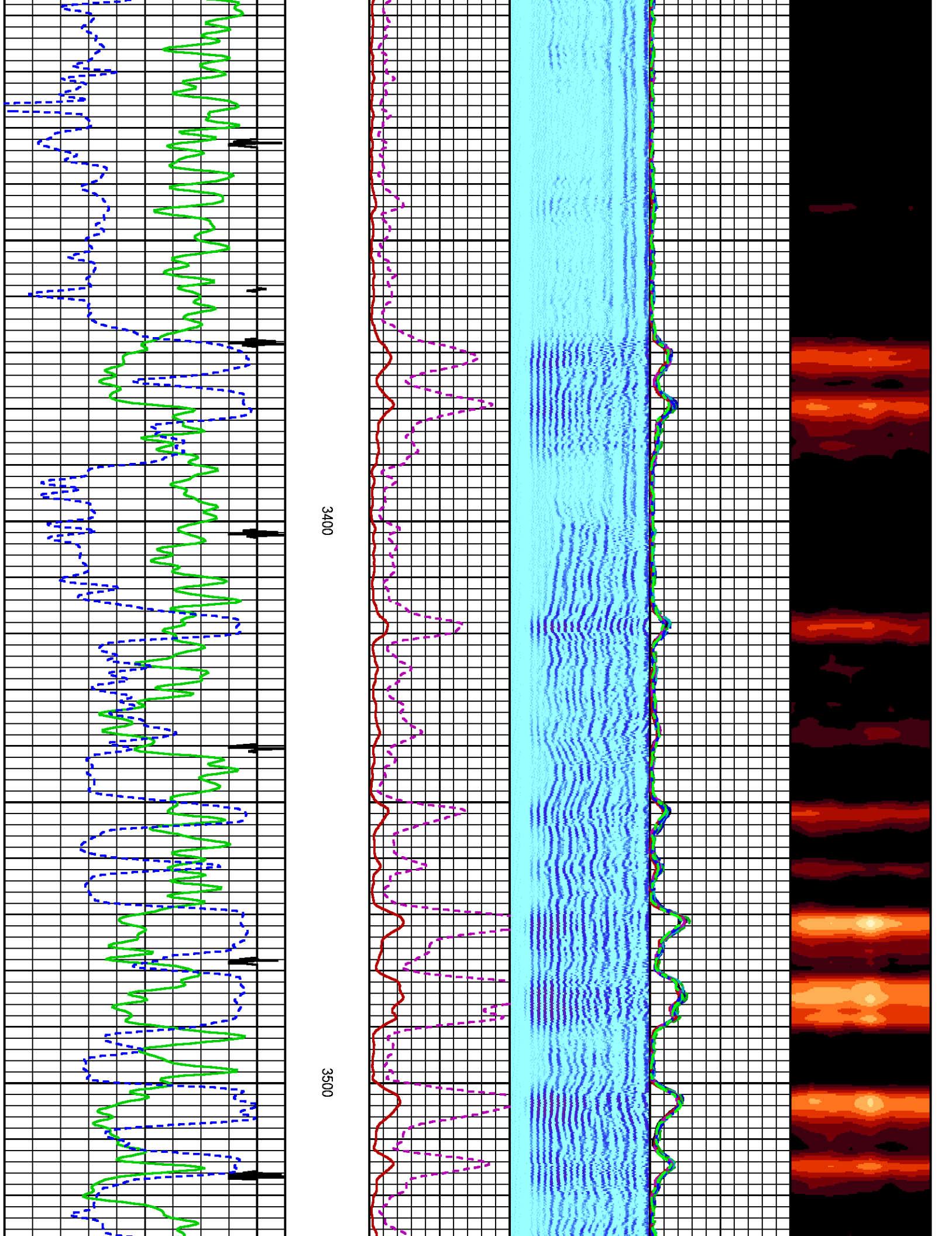
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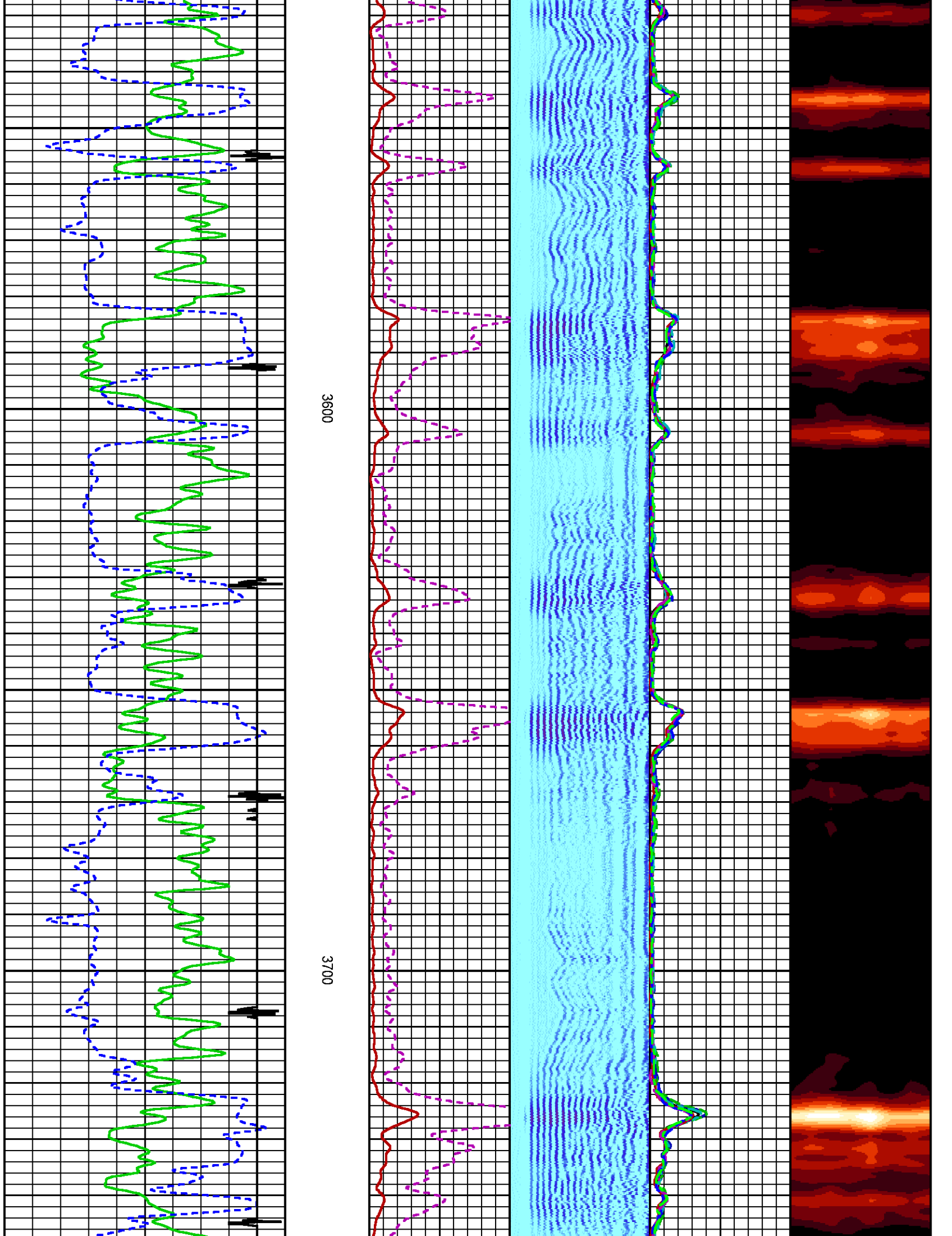
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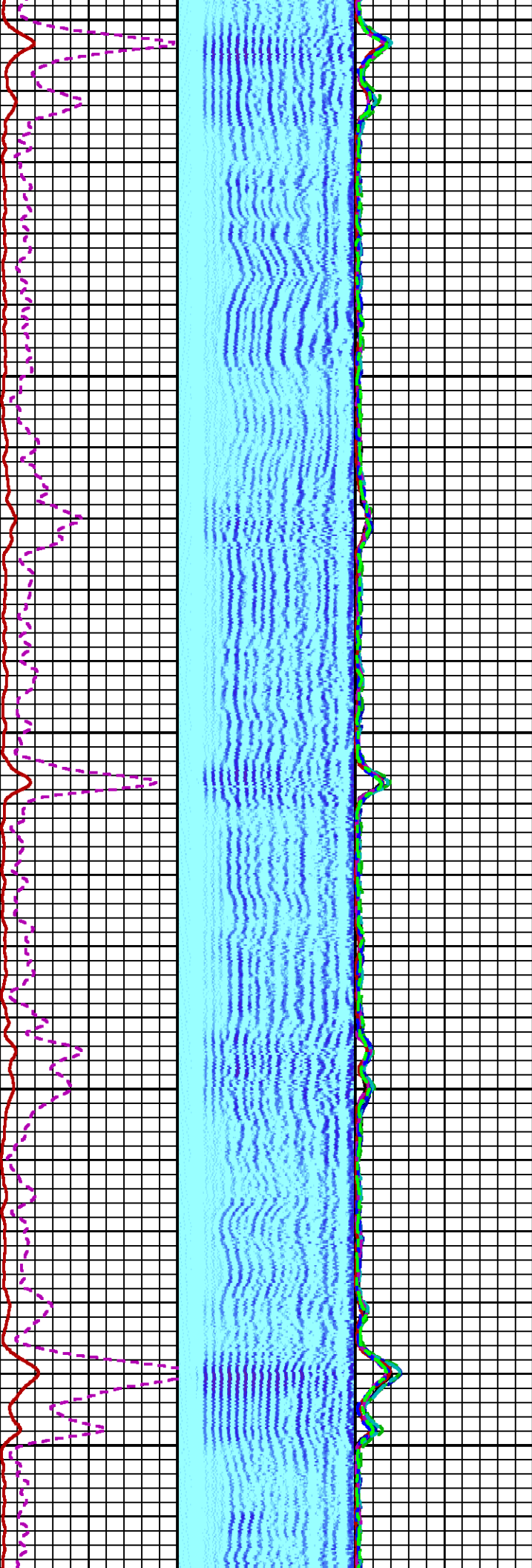
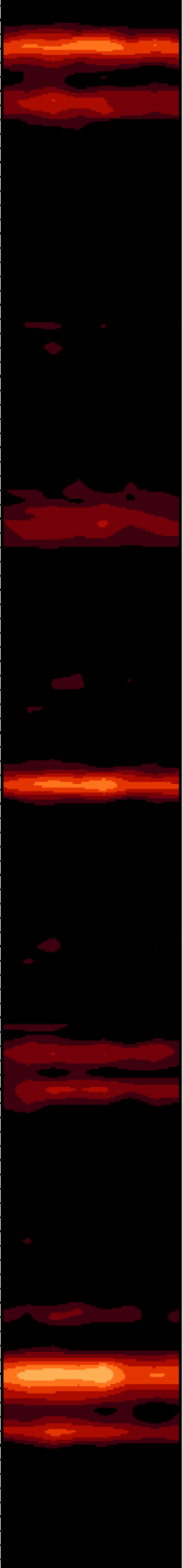
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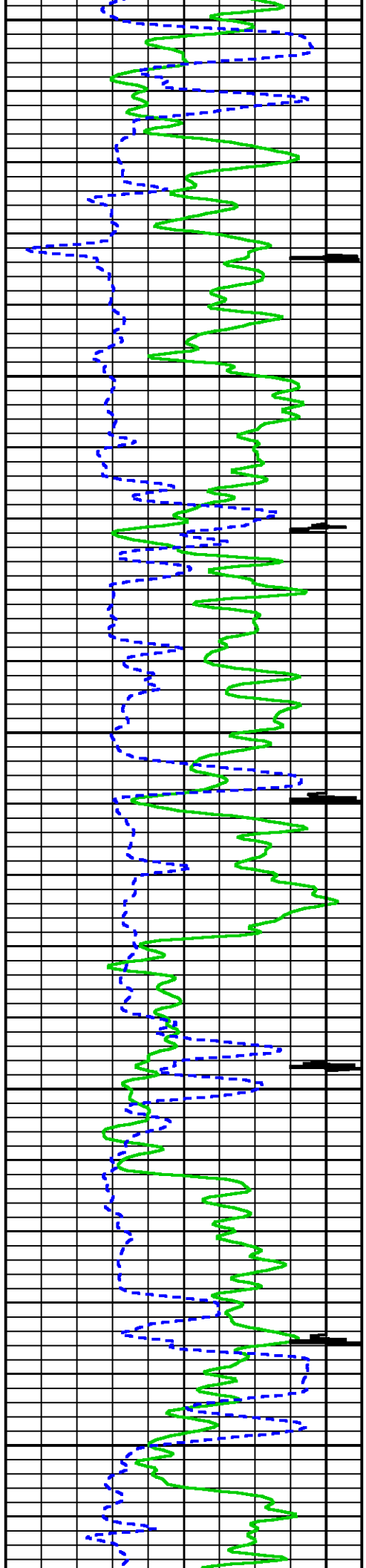


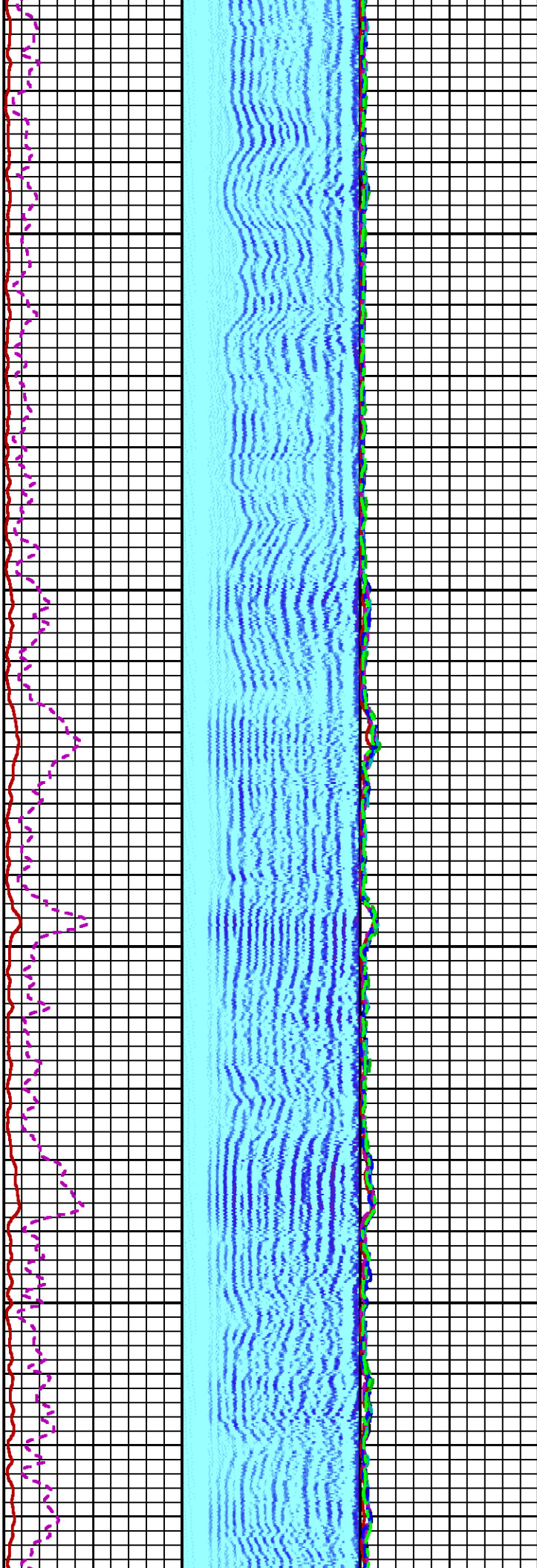
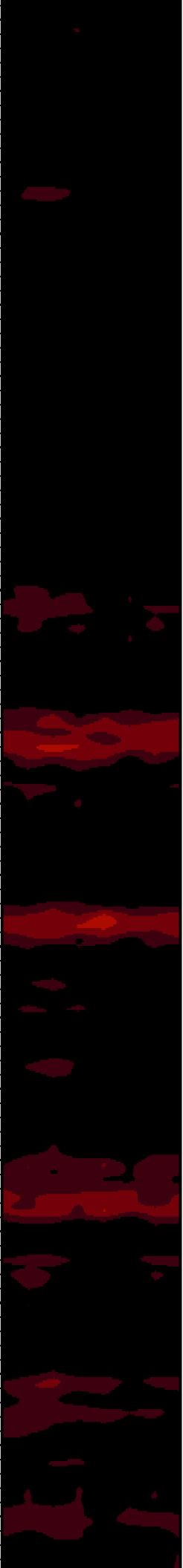




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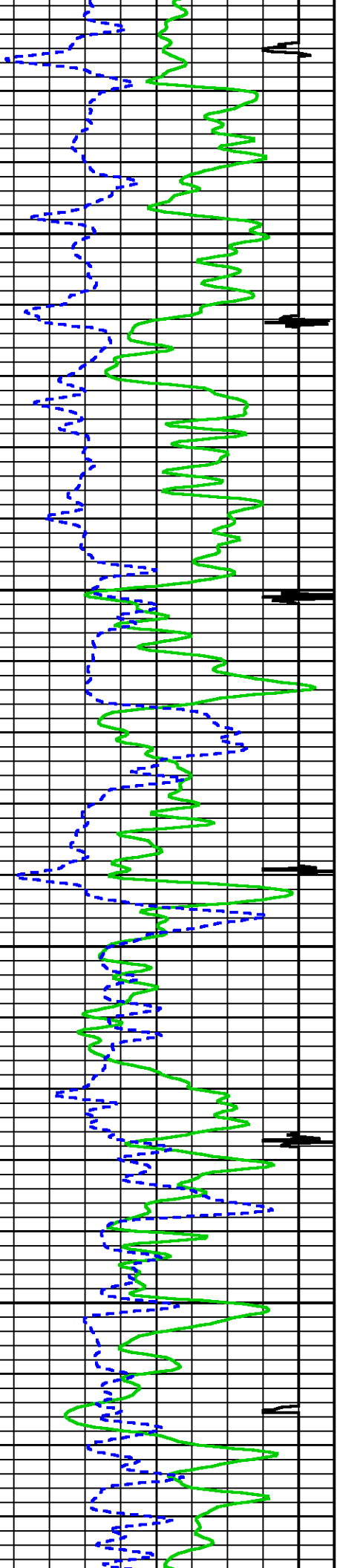
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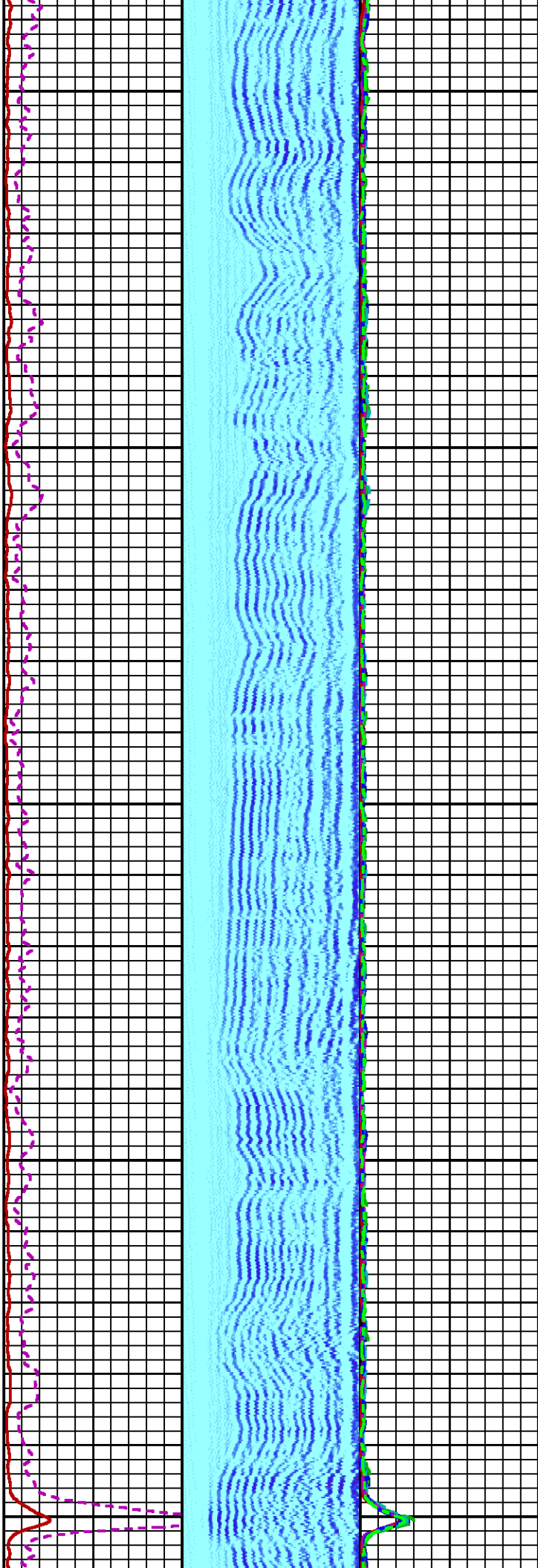
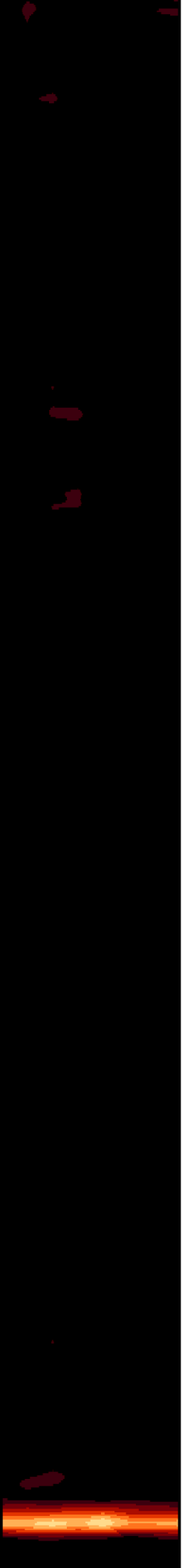


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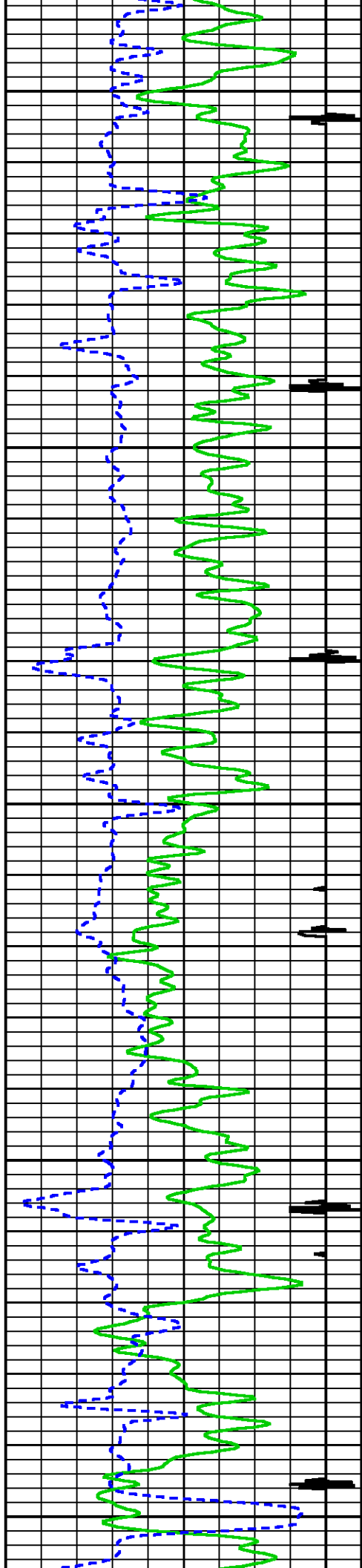




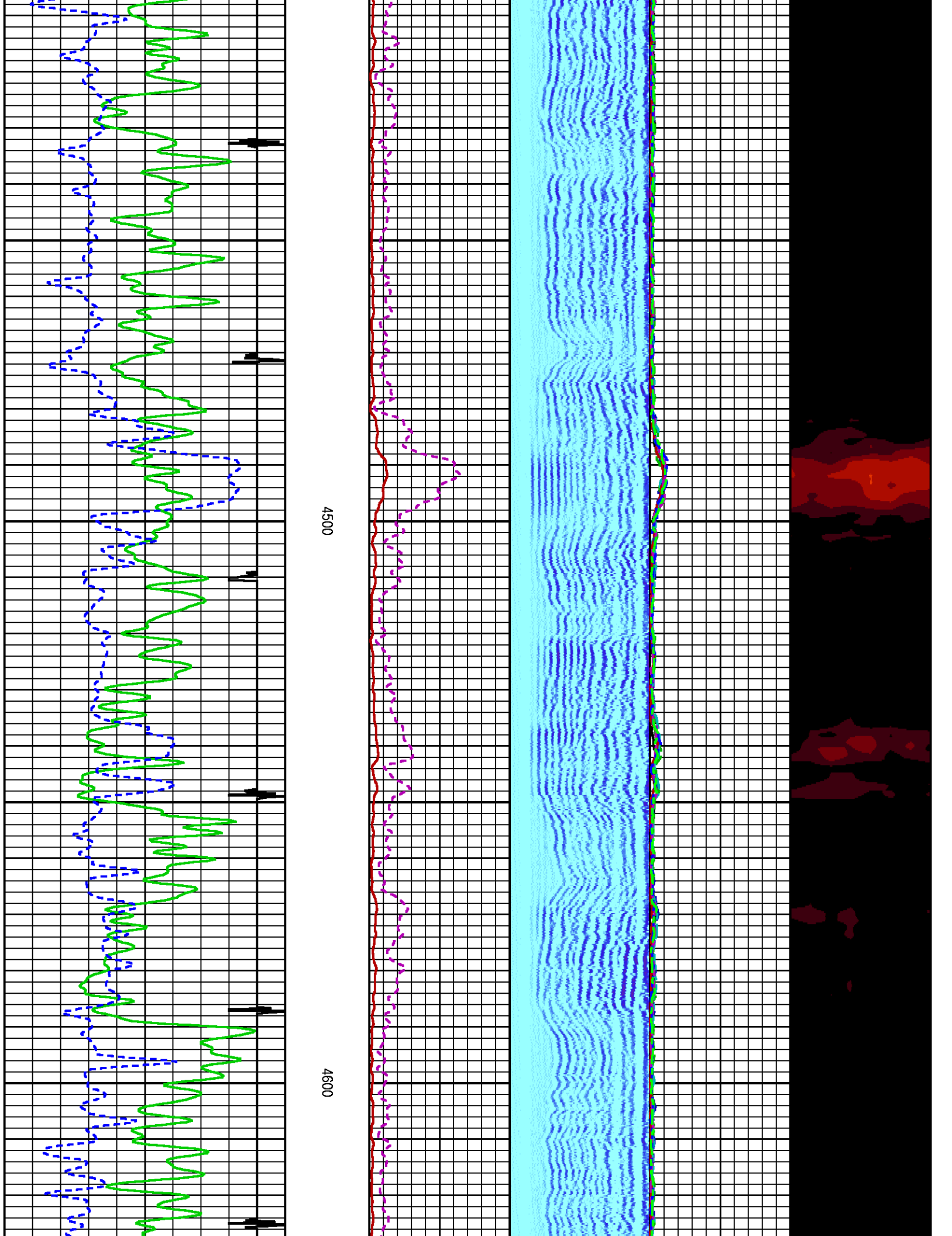
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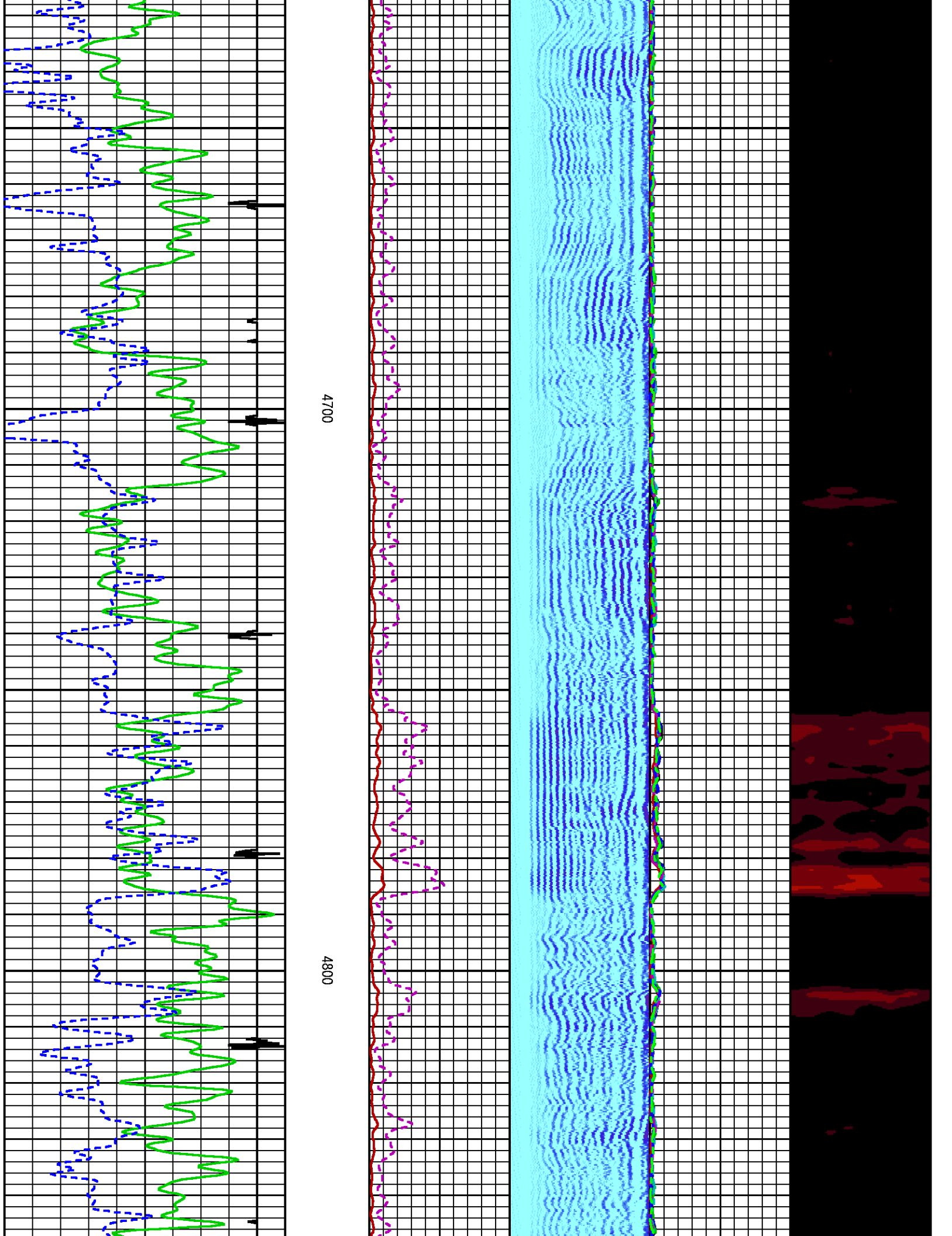
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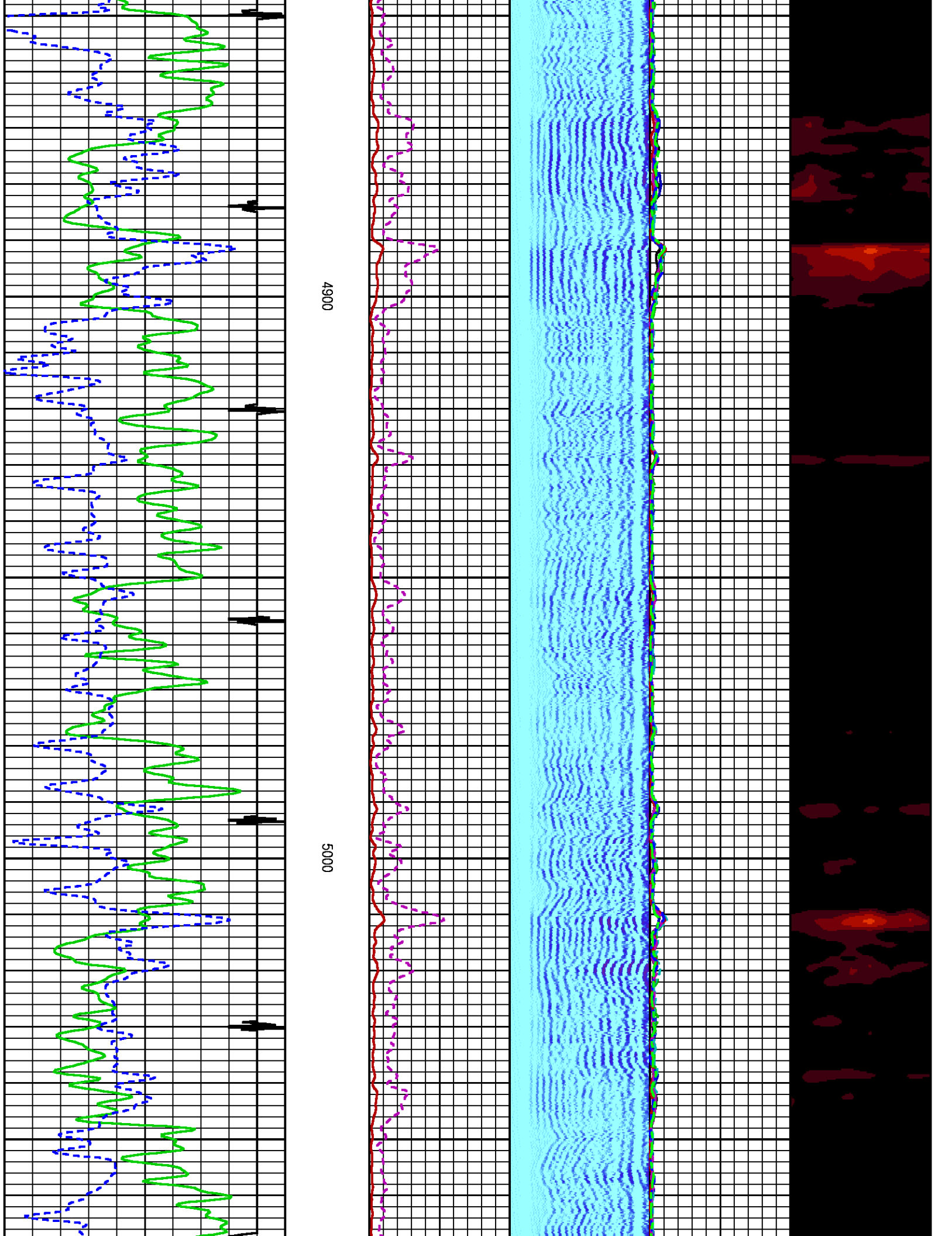
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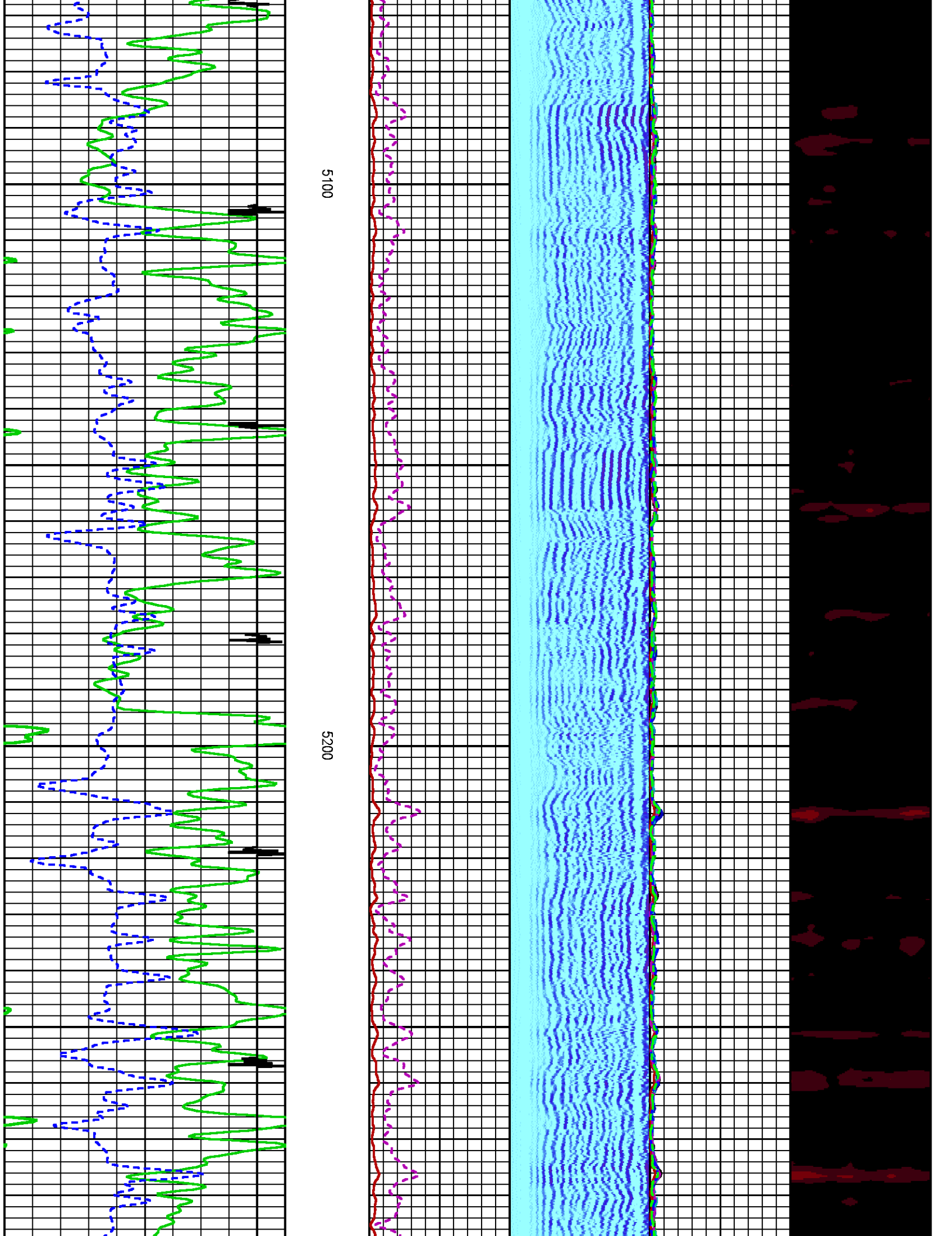




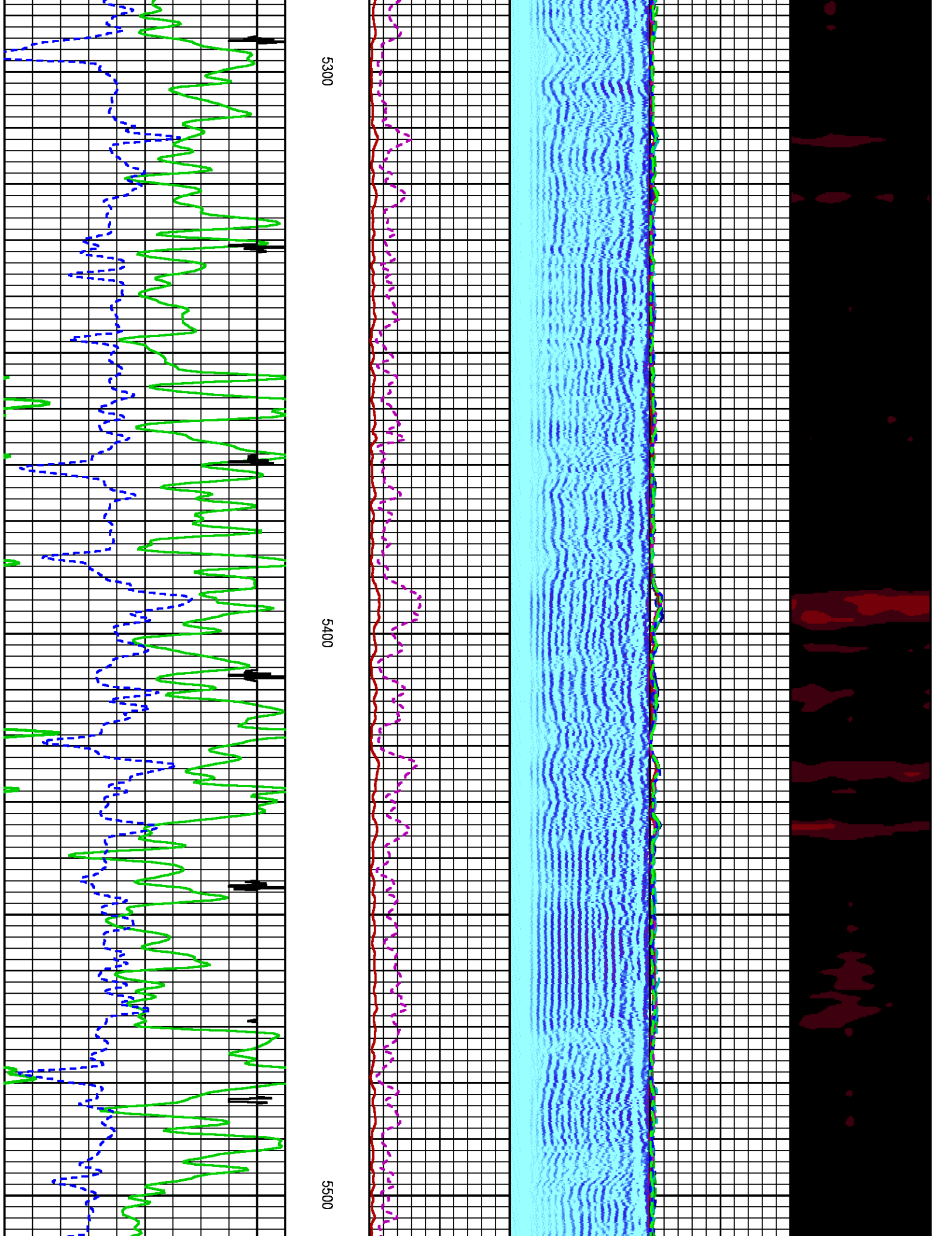




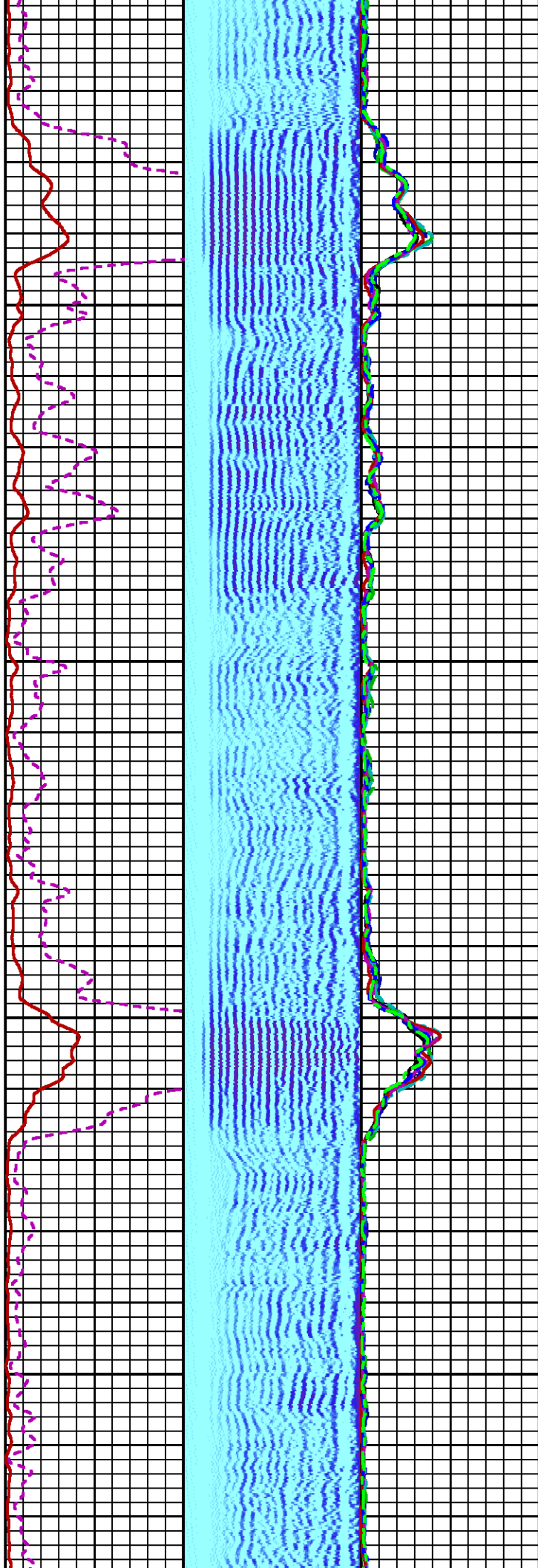
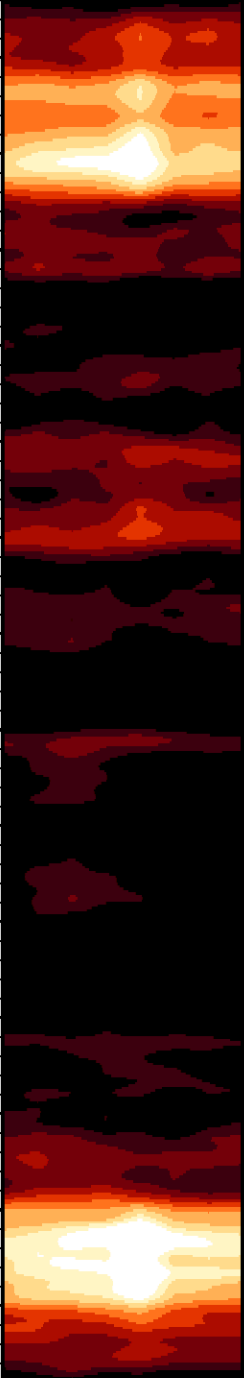






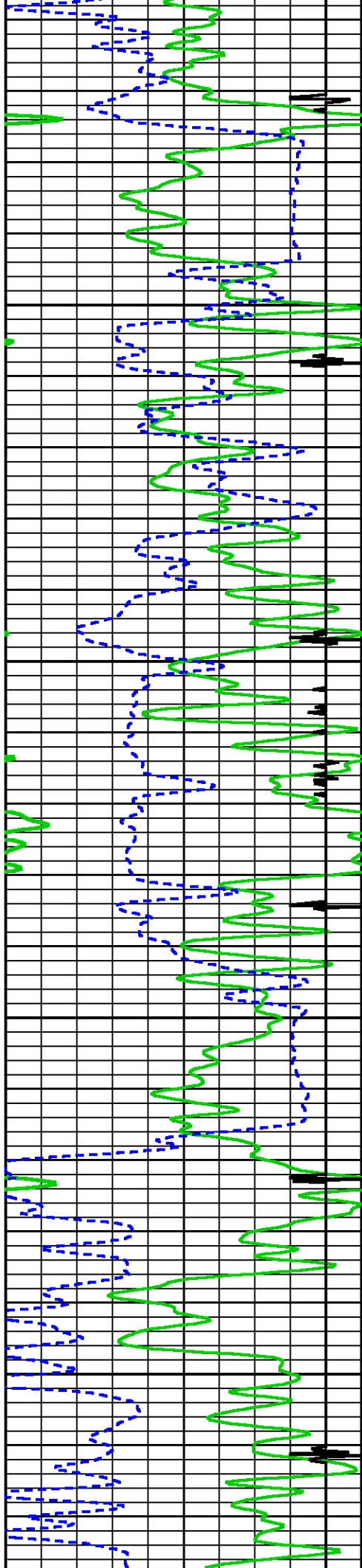


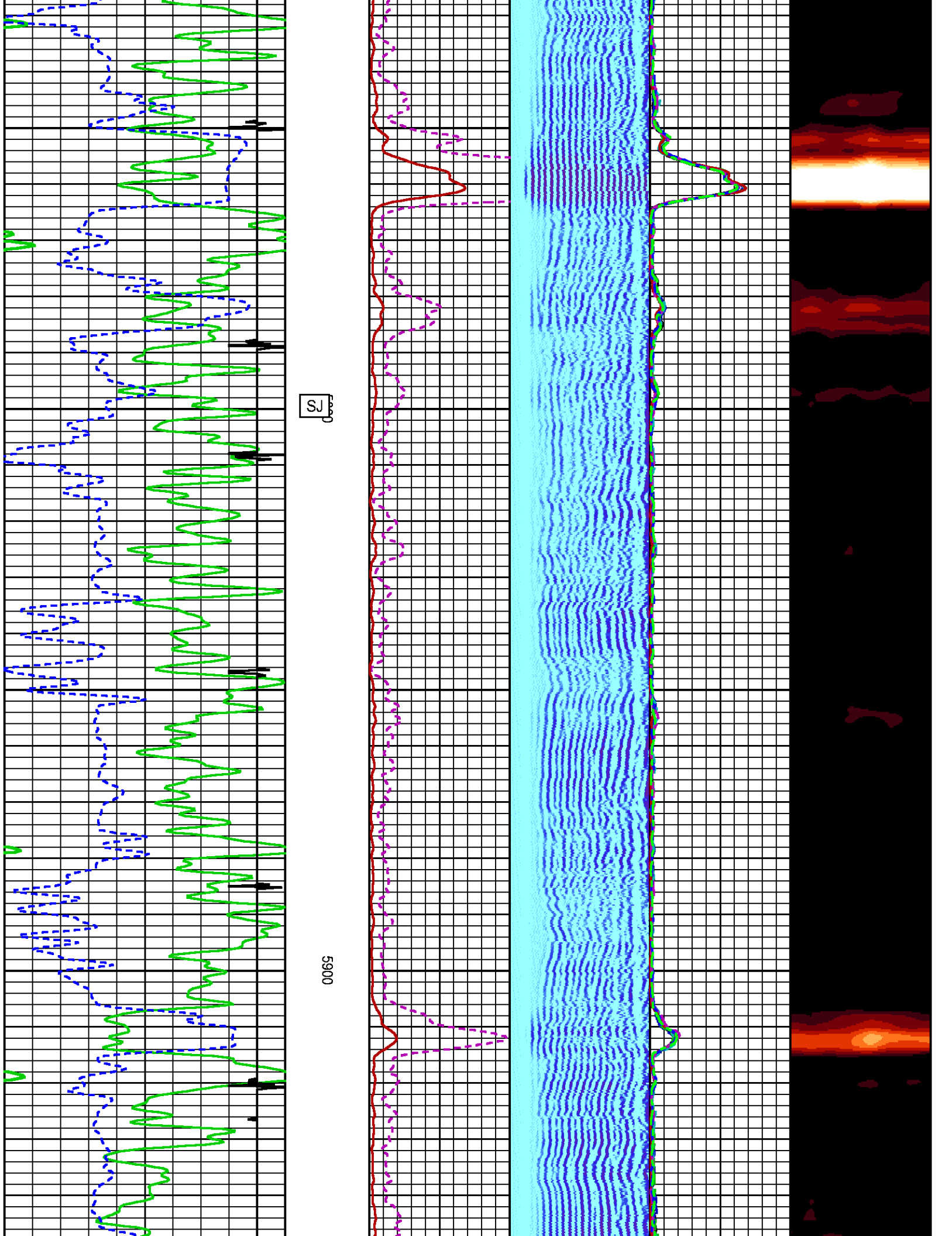


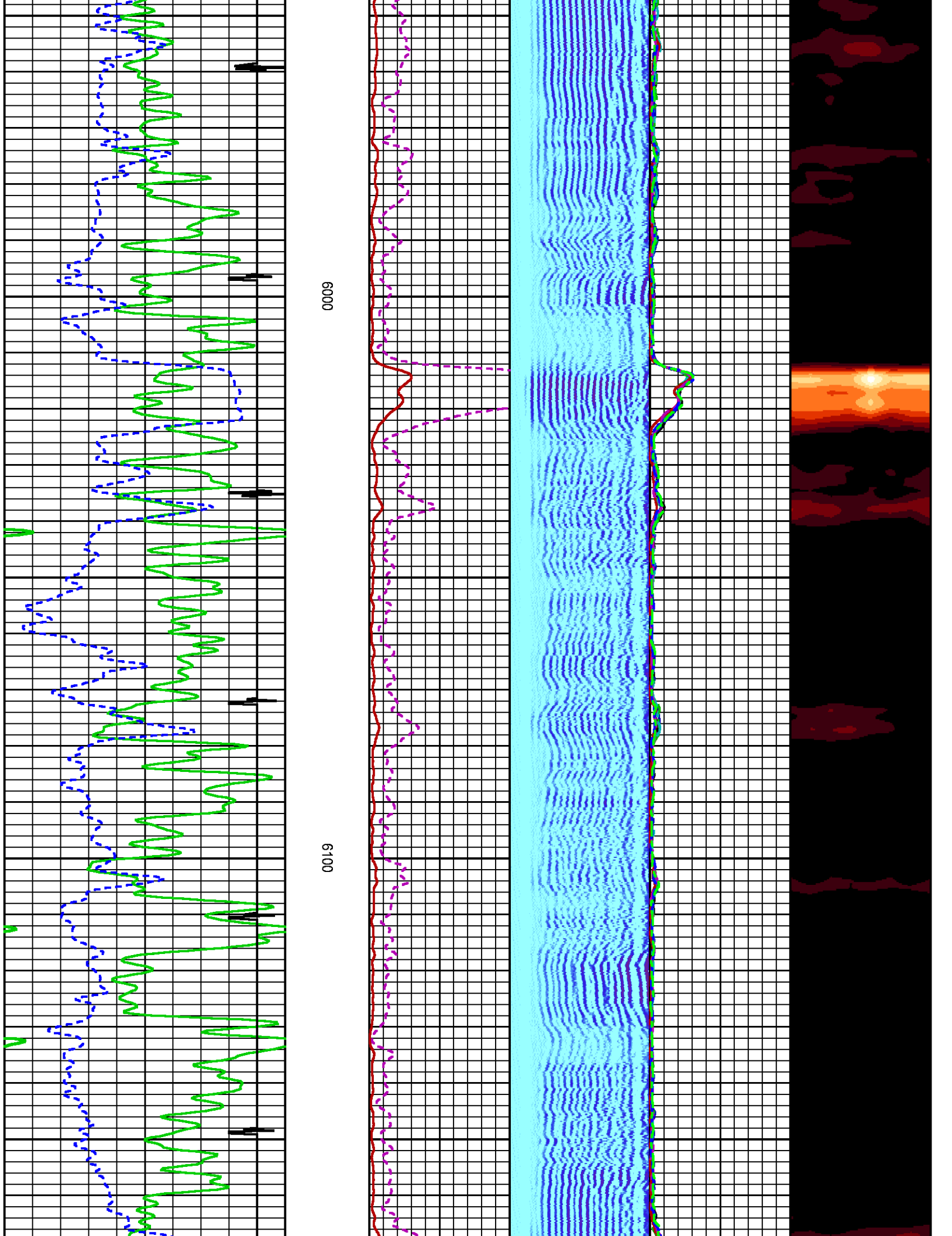


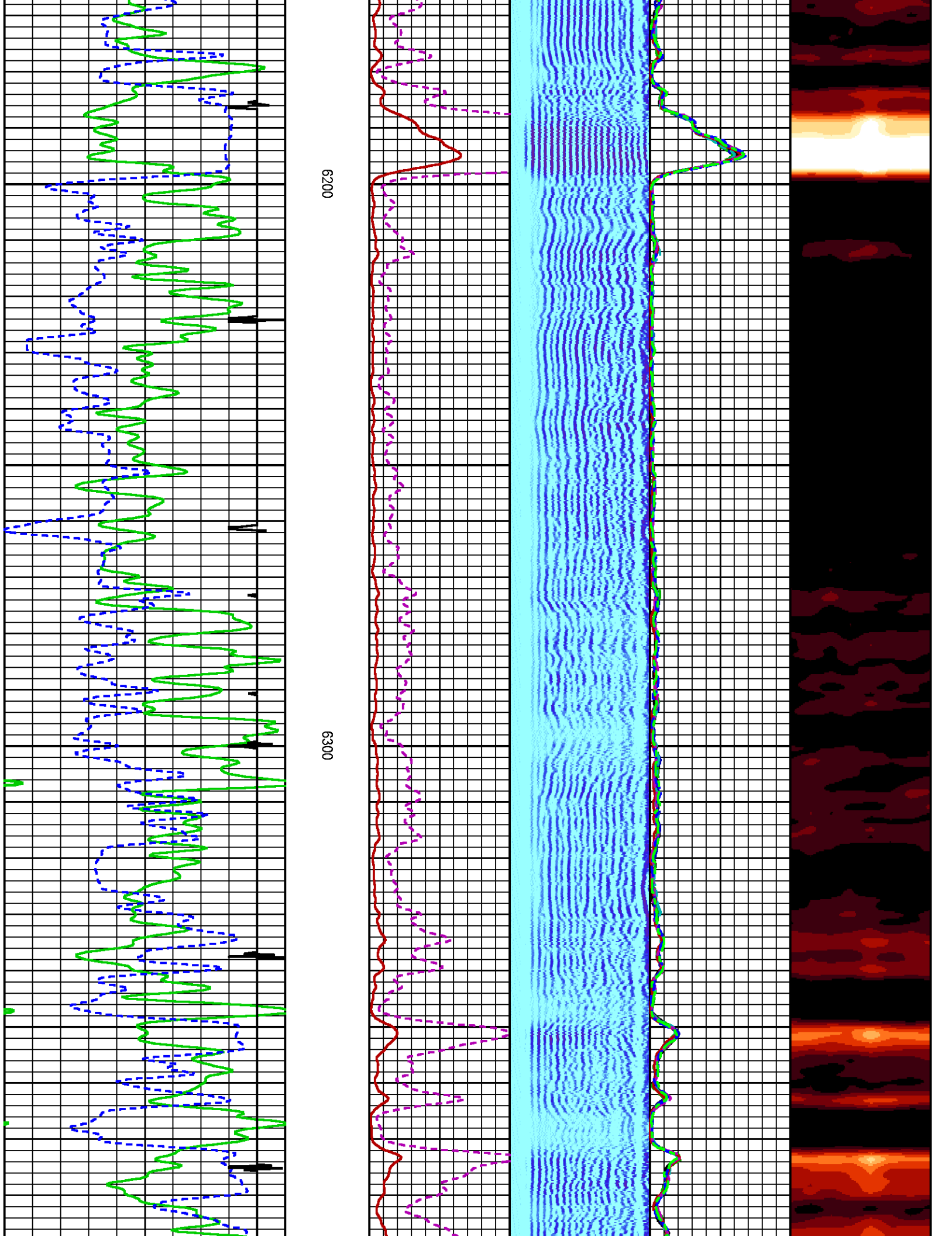
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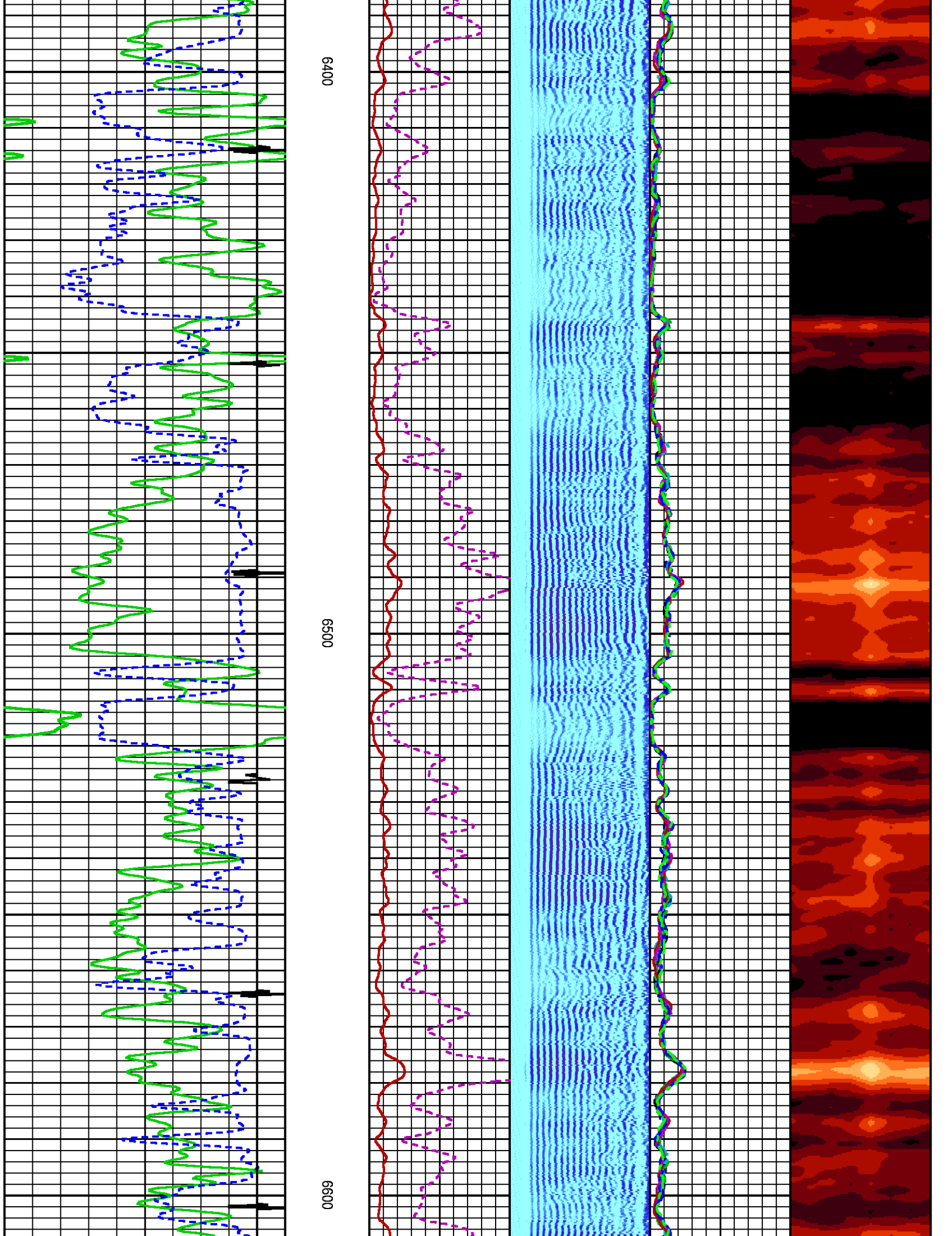


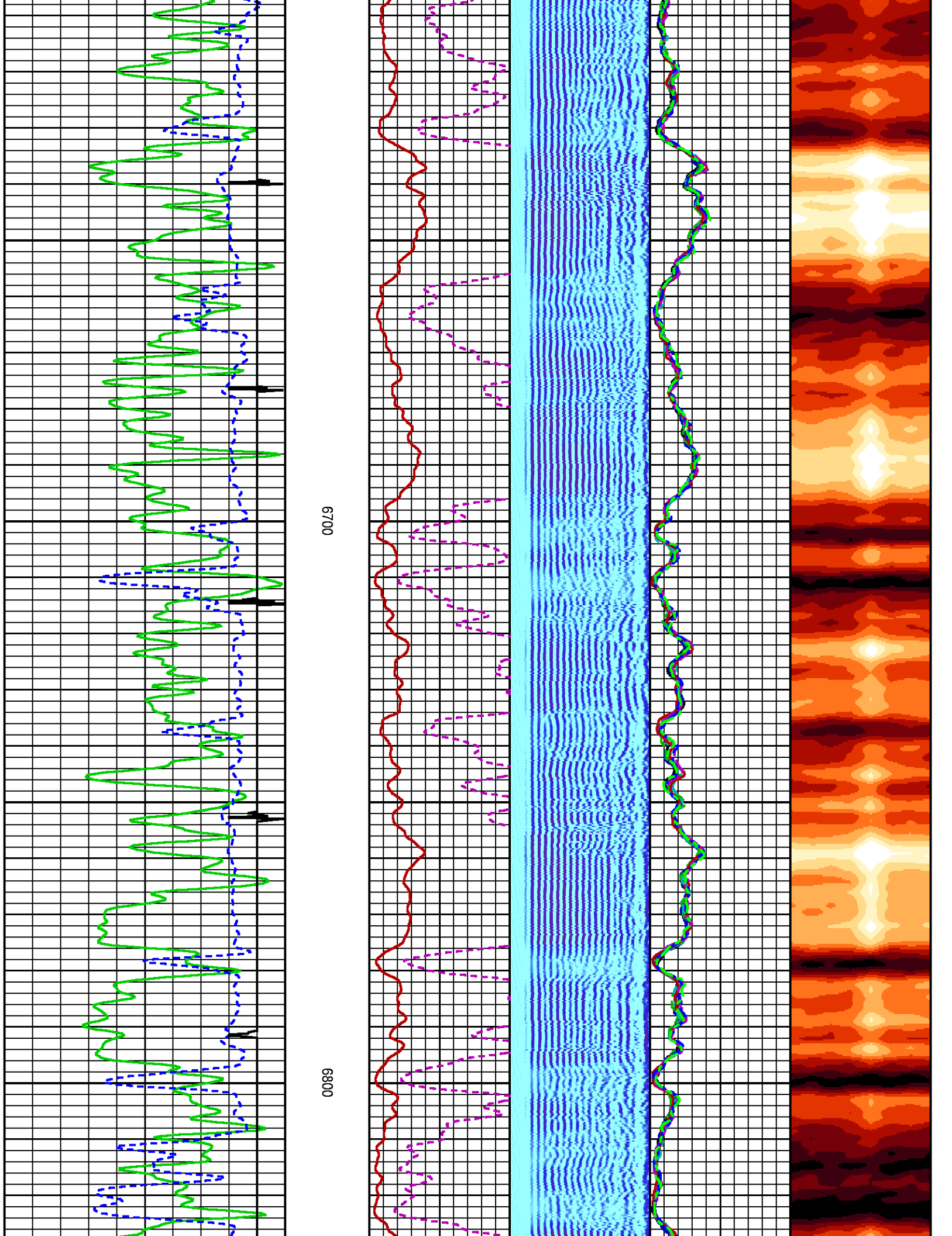


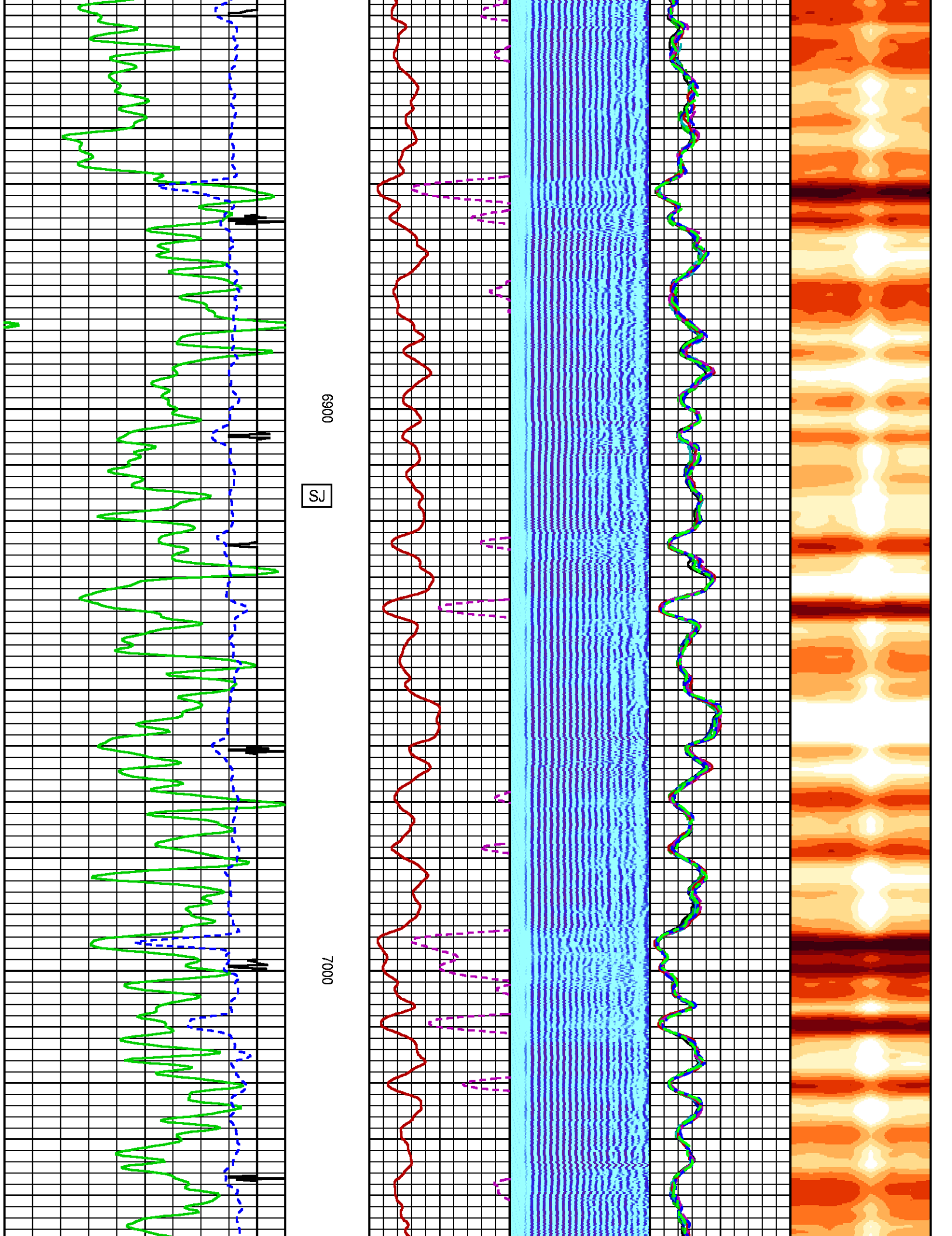




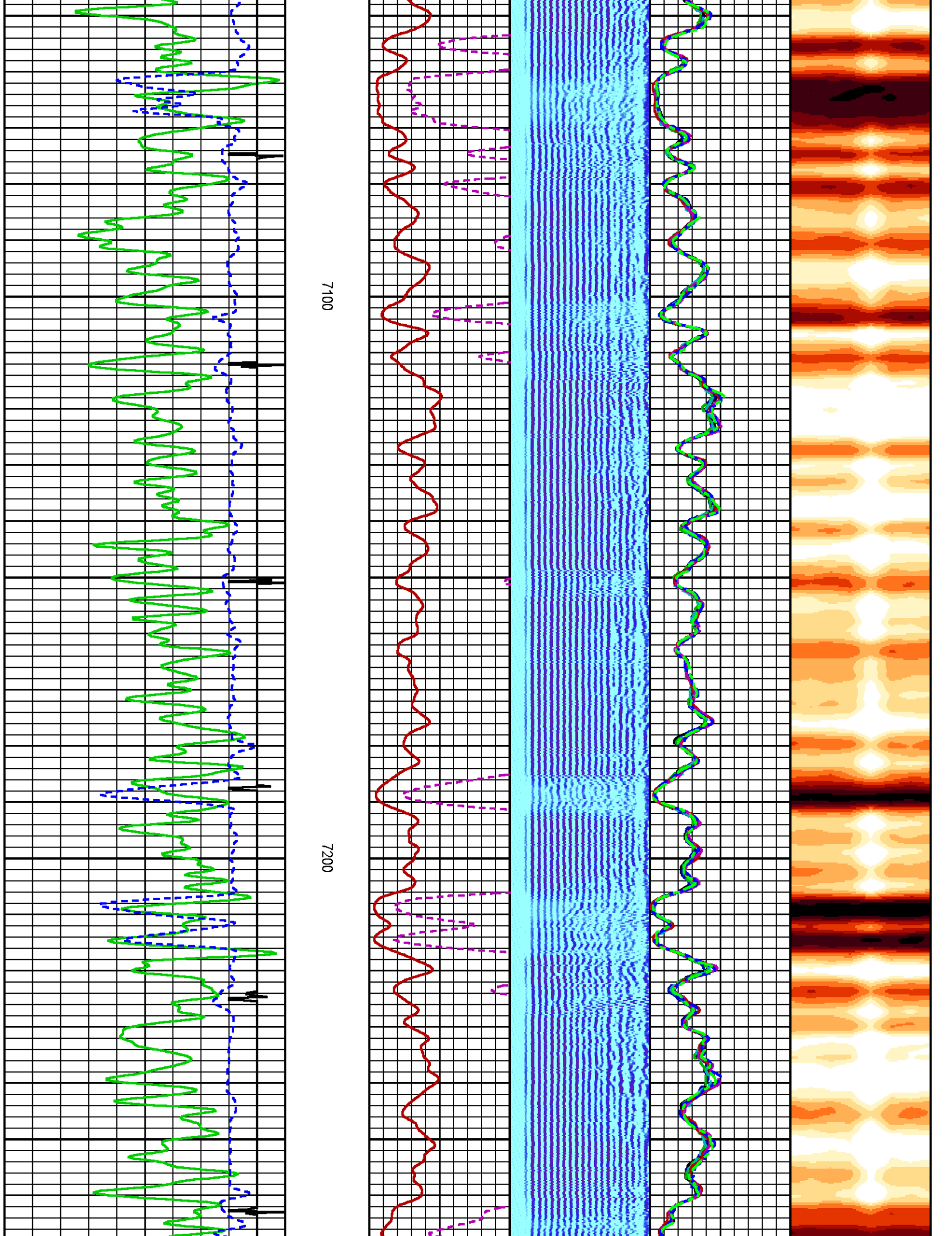




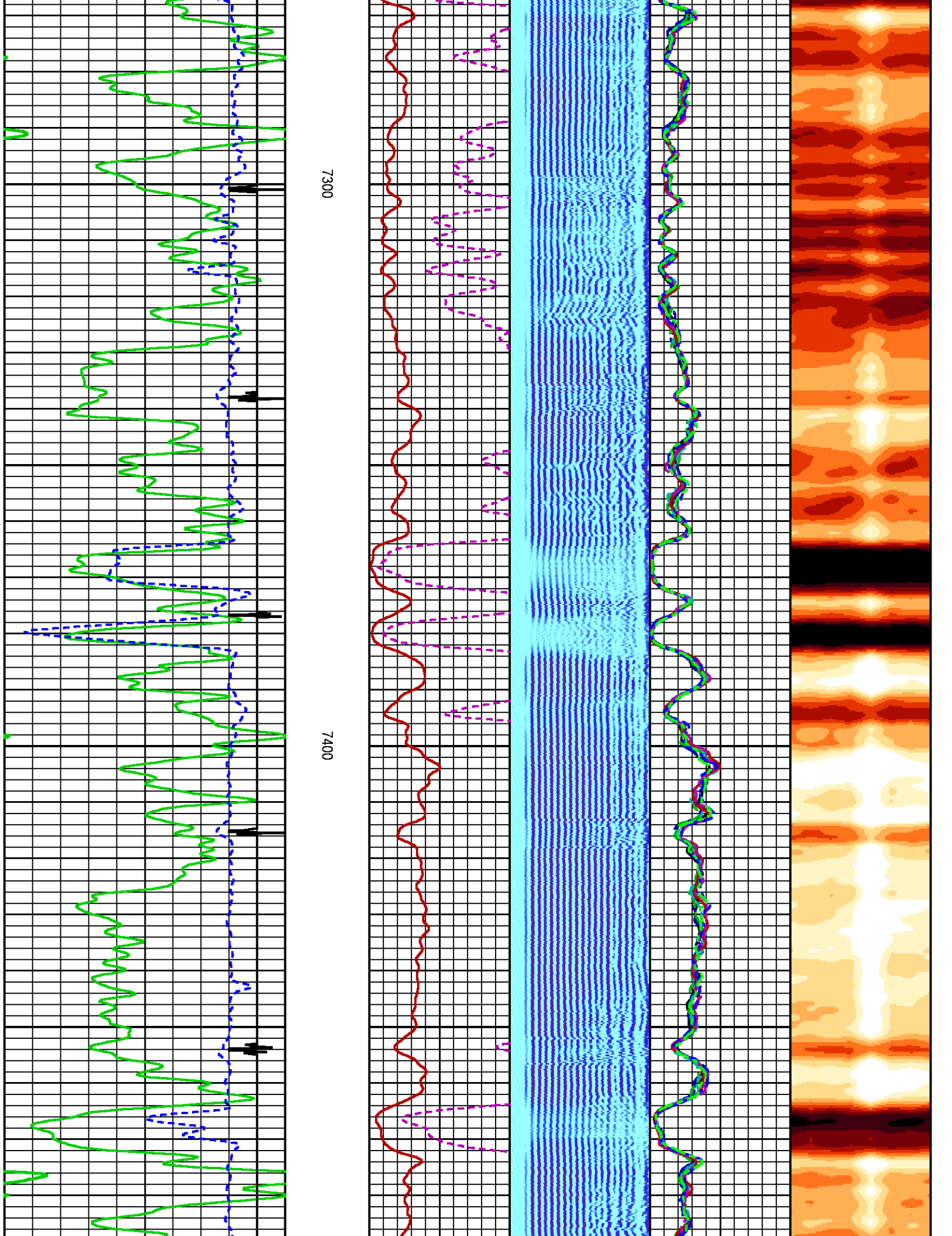


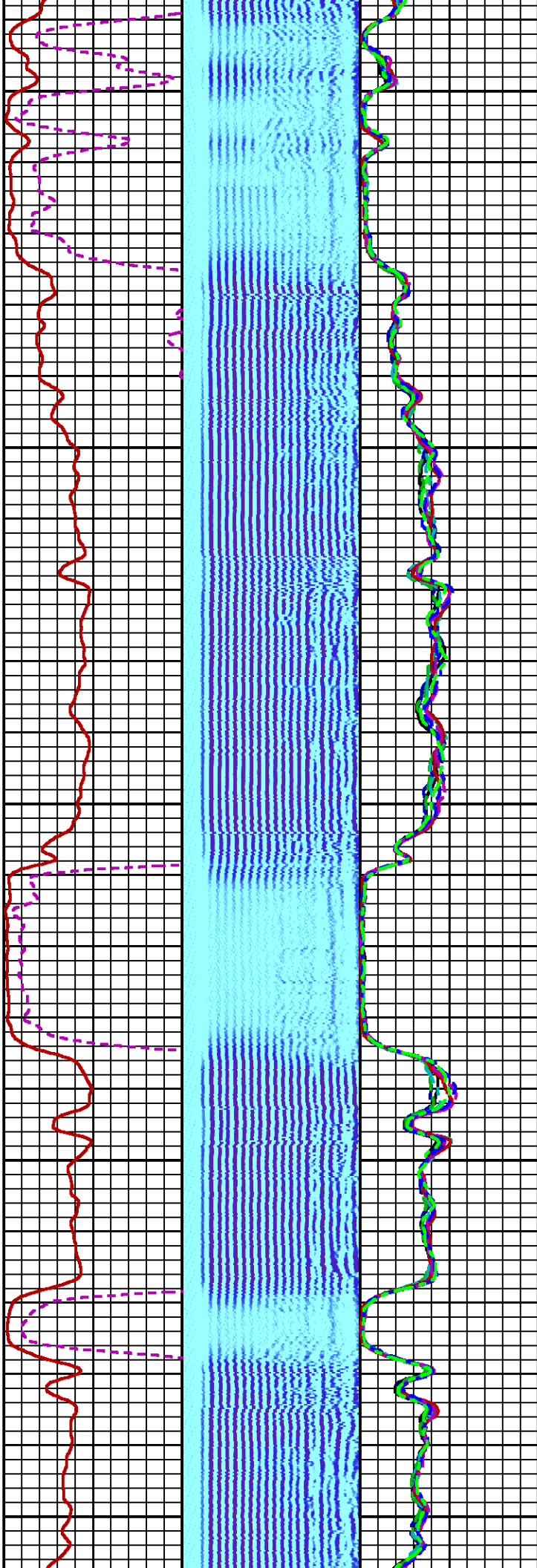
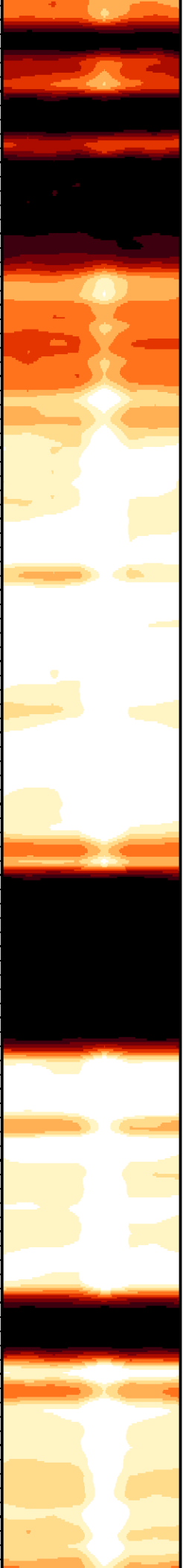








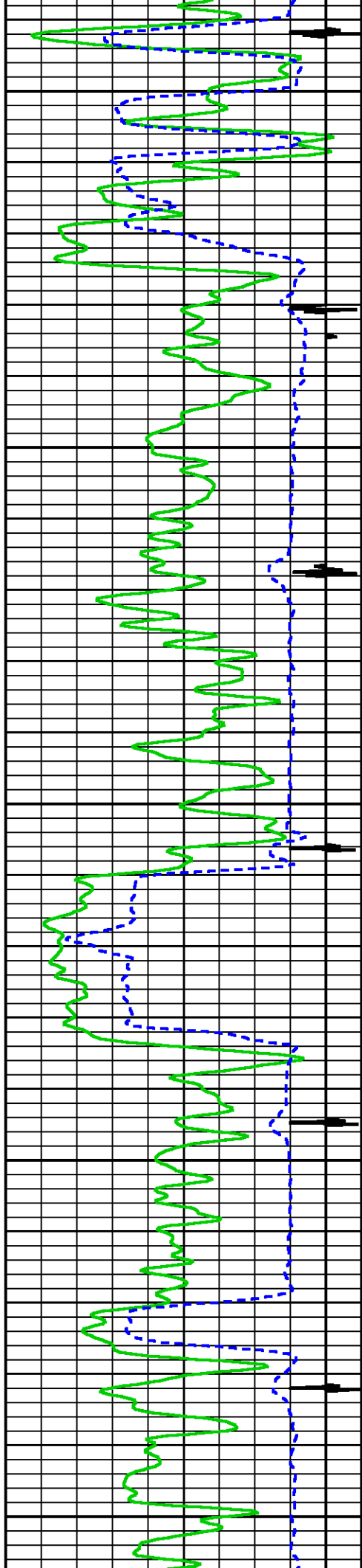


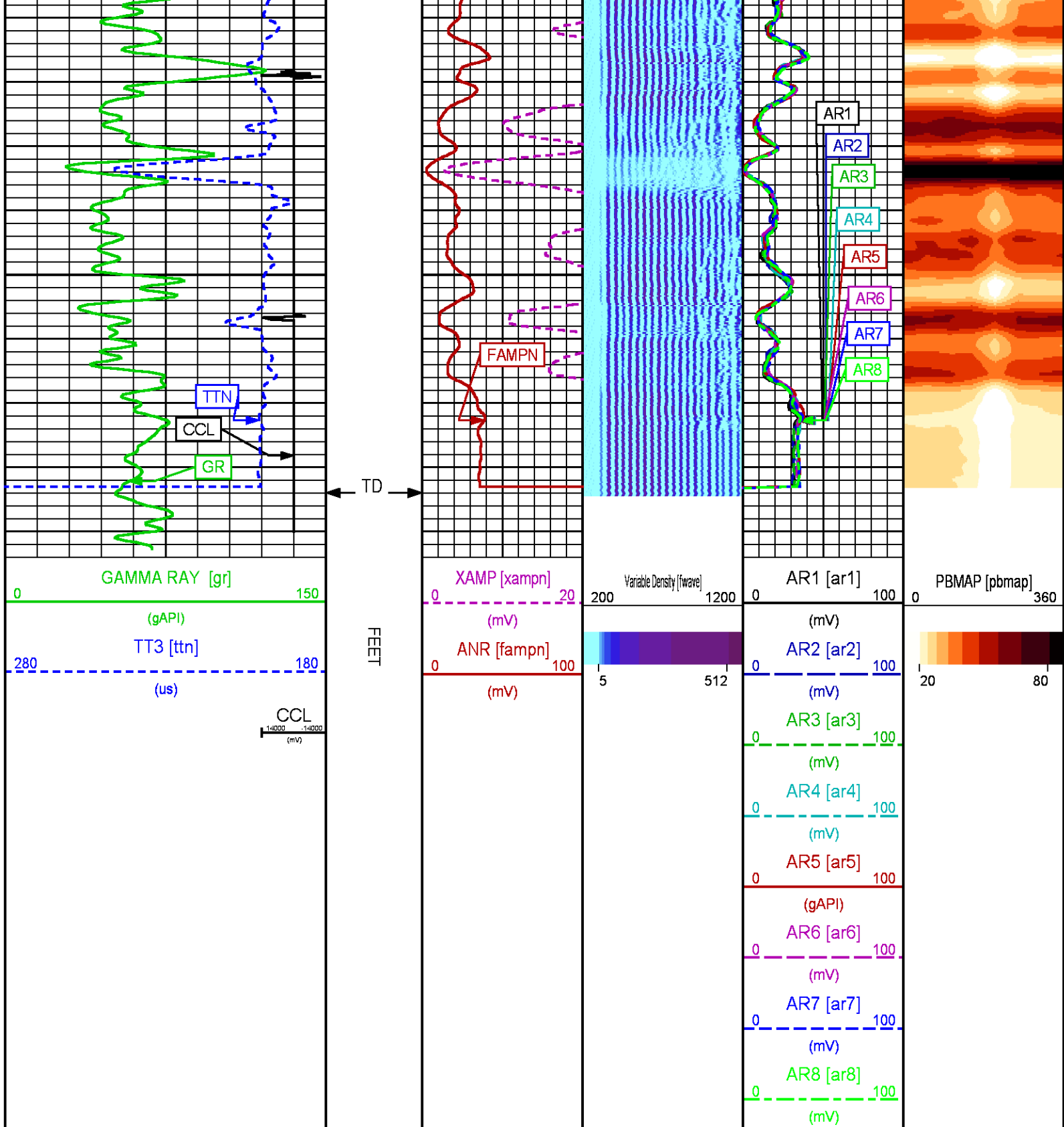


7500

7600

7700





REPEAT PASS 0 PSI

PARAMETER AND FILTER SUMMARY REPORT					
FILE: /dat1a/LARAMIE_BRUTON_30_16E/p012g01.prm LOGGING MODE: DEPTH DIRECTION: UP TOP DEPTH: 7527.000 ft BOTTOM DEPTH: 7785.500 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	4000.00		TOP	BOTTOM
ANALOG RAL PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
AMPLITUDE WINDOW (NEAR)	AMP WINDOW START (fgp1*)	185	us	TOP	BOTTOM
	AMP WINDOW START (fgp2*)	185	us	"	"
	AMP WINDOW START (fgp3*)	185	us	"	"
	AMP WINDOW START (fgp4*)	185	us	"	"
	AMP WINDOW START (fgp5*)	185	us	"	"
	AMP WINDOW START (fgp6*)	185	us	"	"
	AMP WINDOW START (fgp7*)	185	us	"	"
	AMP WINDOW START (fgp8*)	185	us	"	"
	AMP WINDOW START (fgpn*)	185	us	"	"
TRAVEL TIME WINDOW (NEAR)	AMP WINDOW LENGTH	30	us	"	"
	TT WINDOW START (ttn*)	160	us	"	"
	TT WINDOW LENGTH	500	us	"	"
	FIRST BRK THRESHOLD (ttn*)	6	mV	"	"
RAL CASING PARAMETERS	PPT NEAR	200.391	us	"	"
RAL TOOL DELAY	TOOL DELAY (str1*)	-68	us	"	"
	TOOL DELAY (str2*)	-68	us	"	"
	TOOL DELAY (str3*)	-68	us	"	"
	TOOL DELAY (str4*)	-68	us	"	"
	TOOL DELAY (str5*)	-68	us	"	"
	TOOL DELAY (str6*)	-68	us	"	"
	TOOL DELAY (str7*)	-68	us	"	"
	TOOL DELAY (str8*)	-68	us	"	"
BASELINE NOISE (NEAR)	TOOL DELAY (strn*)	-68	us	"	"
	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	2	mV	"	"
	FULL BOND AMP REC 2	2	mV	"	"
	FULL BOND AMP REC 3	2	mV	"	"
	FULL BOND AMP REC 4	2	mV	"	"
	FULL BOND AMP REC 5	2	mV	"	"
	FULL BOND AMP REC 6	2	mV	"	"
	FULL BOND AMP REC 7	2	mV	"	"
	FULL BOND AMP REC 8	2	mV	"	"

CURVE DESCRIPTION REPORT		
CURVE NAME	CREATION DATE	CURVE DESCRIPTION

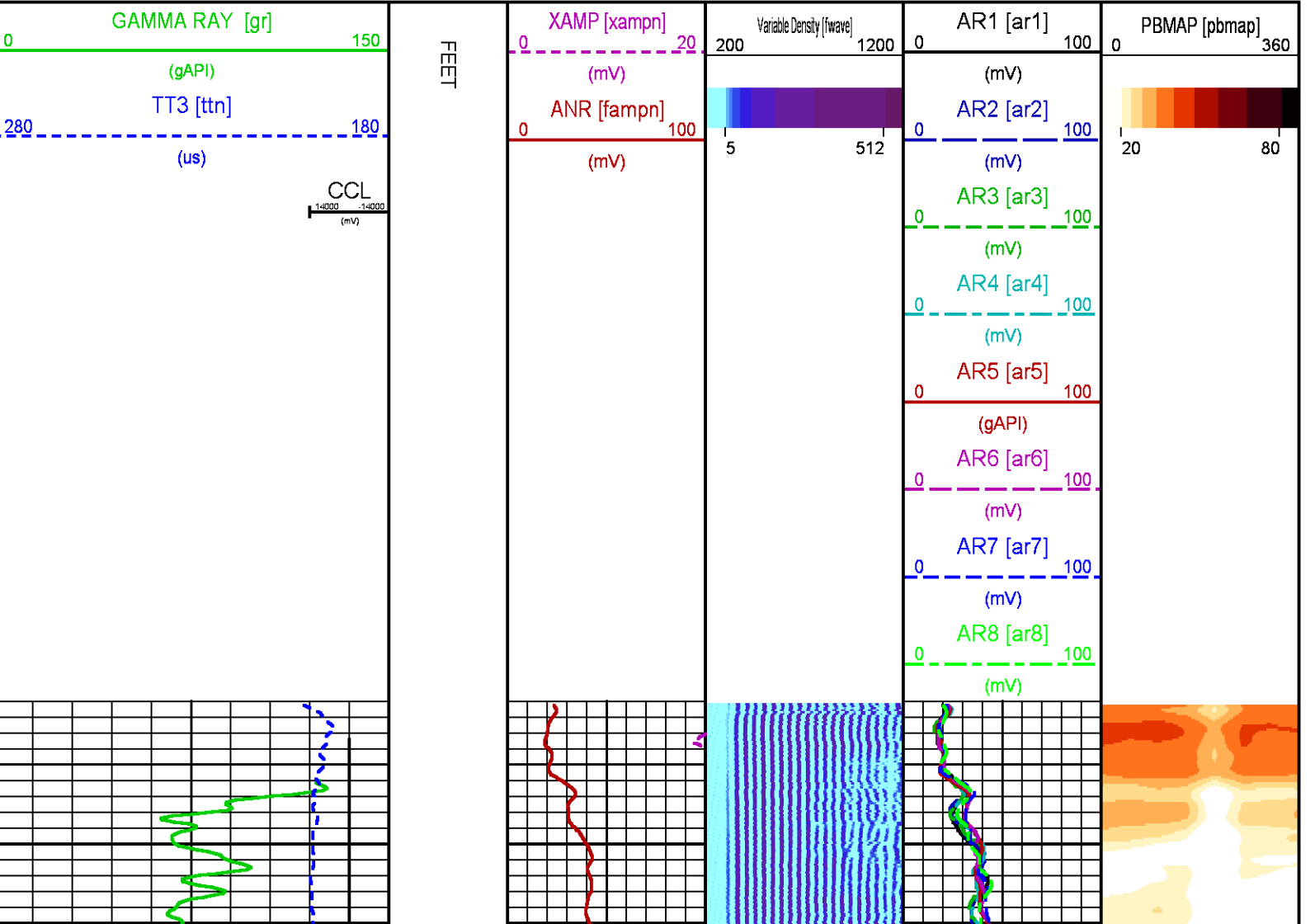


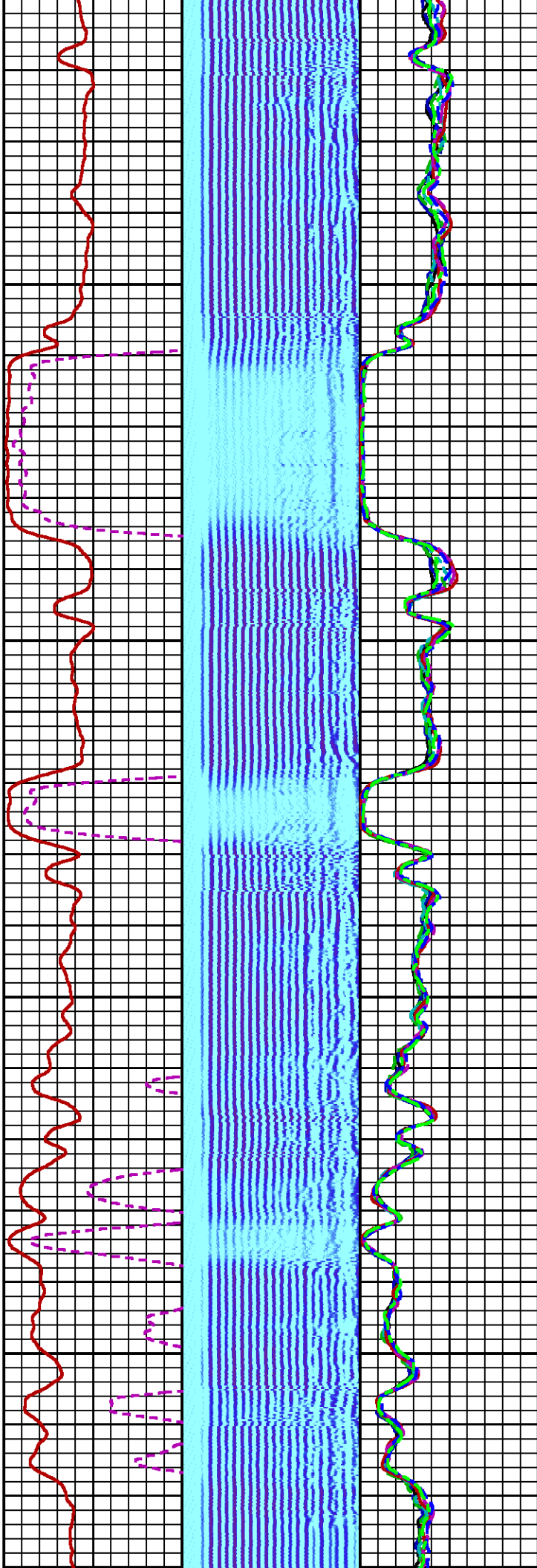
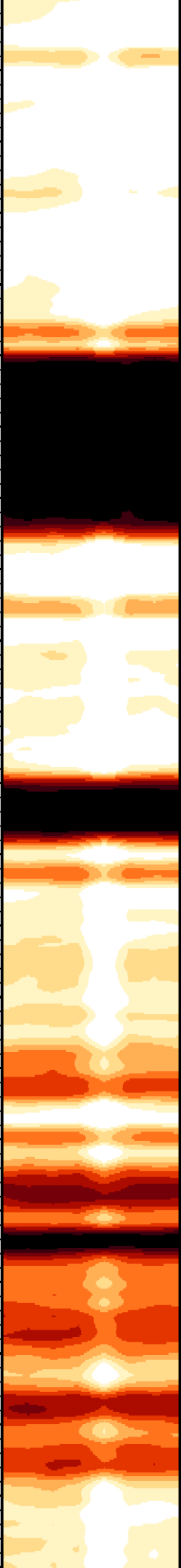
F1:AR1	N/A	FIXED GATE AMPLITUDE T-R1
F1:AR2	N/A	FIXED GATE AMPLITUDE T-R2
F1:AR3	N/A	FIXED GATE AMPLITUDE T-R3
F1:AR4	N/A	FIXED GATE AMPLITUDE T-R4
F1:AR5	N/A	FIXED GATE AMPLITUDE T-R5
F1:AR6	N/A	FIXED GATE AMPLITUDE T-R6
F1:AR7	N/A	FIXED GATE AMPLITUDE T-R7
F1:AR8	N/A	FIXED GATE AMPLITUDE T-R8
F1:CCL	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		

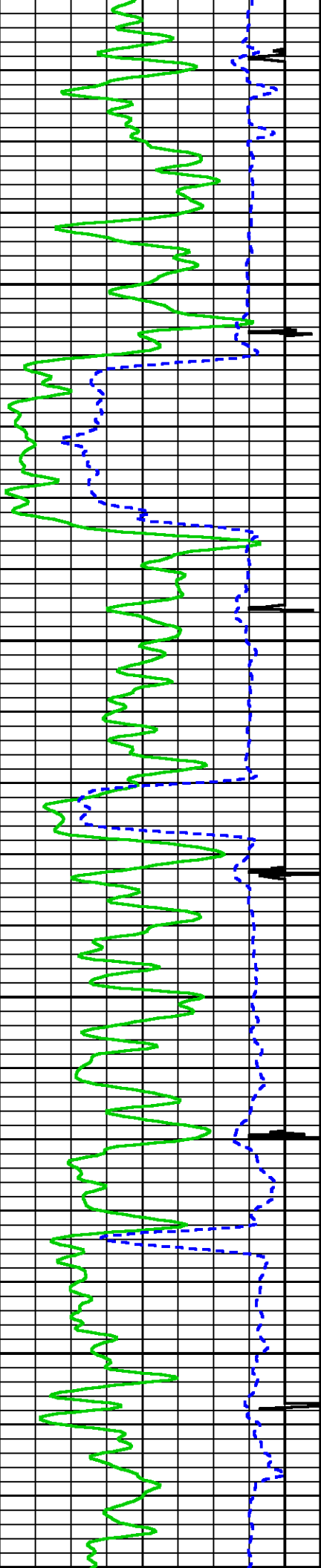
Presentation	: SysA:/dat1a/LARAMIE_BRUTON_30_16E/LARAMIE_RAL+01-REPEAT-RAL_RPT_16E-5.fvpdf [5"/100' Scale]
Plot Interval	: 7516.25 - 7784.25 Feet
Data File 1	: F1 : SysA:/dat1a/LARAMIE_BRUTON_30_16E/RAL_RPT_16E.xtf
Created On	: N/A
Company	: LARAMIE ENERGY LLC
Well	: BRUTON 30-16E
Field	: VEGA
File Interval	: 7515.25 - 7785.5 Feet
OCT	: p012g

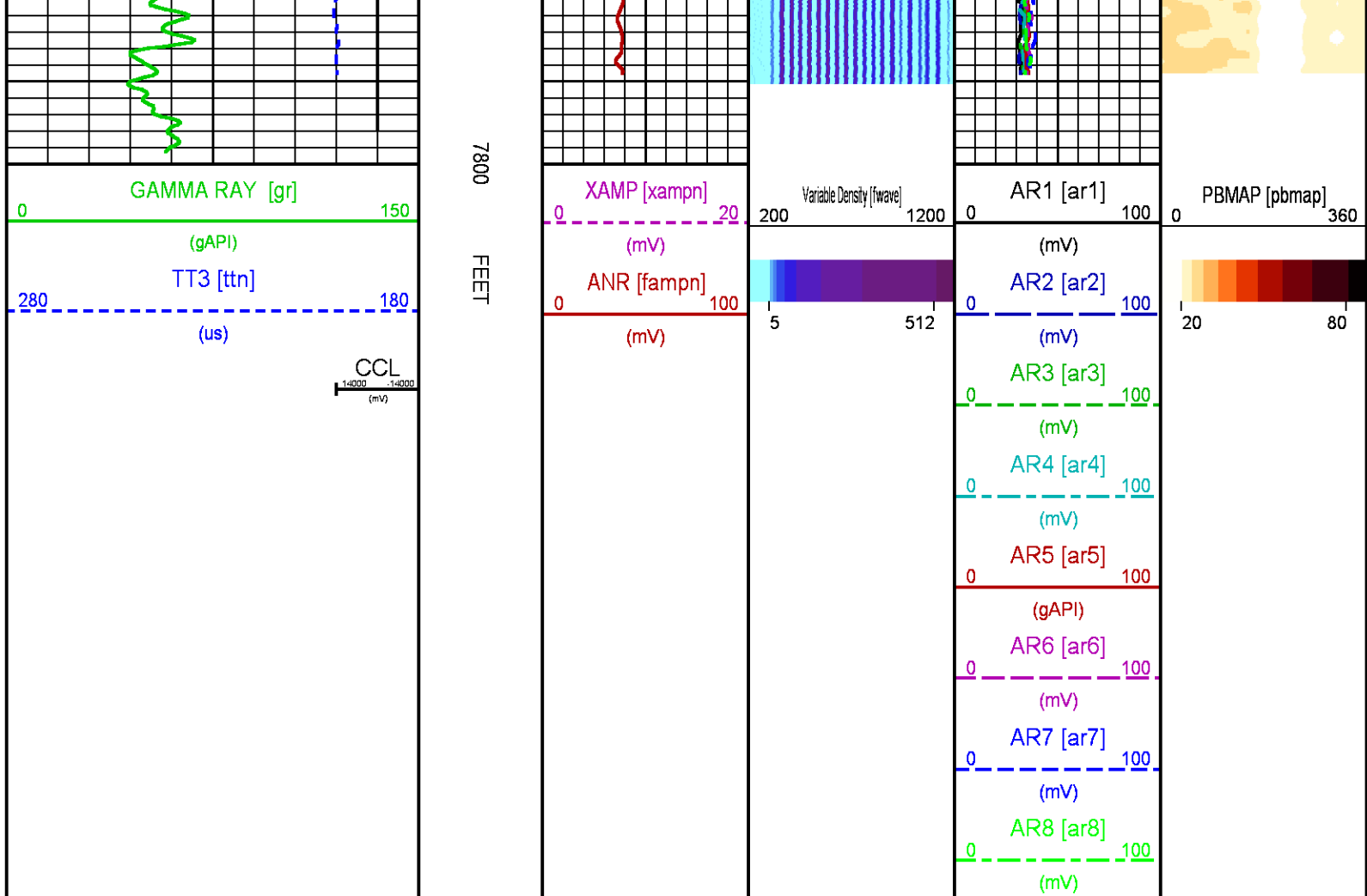




7600

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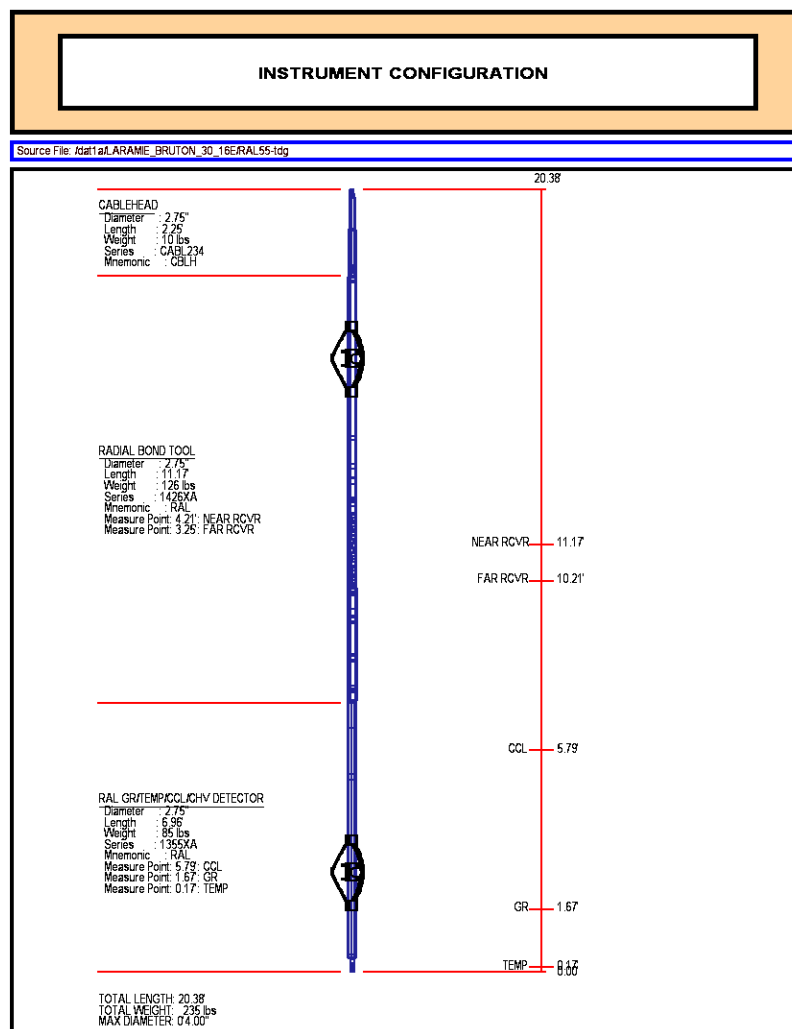


CALIBRATION / VERIFICATION SUMMARY												
Source File: /data1/at/ARAMIS_BRUTON_30_16E/p012g.lp1												
RAL PRIMARY CALIBRATION SUMMARY												
TOOL #:		1426XA10124106		DATE/TIME PERFORMED:		Sat Feb 10 15:02:01 2018						
UNIT #:		5753XD111111										
TARGETS		NEAR (mV)		RADIAL (mV)		FAR (mV)						
		100.00		100.00		150.00						
NEAR		R1	R2	R3	R4	R5	R6	R7	R8	FAR	CAL	
ZERO (mV)		-0.13	-0.26	-0.08	-0.08	-0.13	-0.25	-0.14	-0.12	-0.06	-0.58	-0.05
AMP FLUID (mV)		39	39	39	39	39	40	40	40	40	54	39
TT (us)		217	218	217	217	217	216	216	216	218	328	219
M FACTOR		2.53	2.53	2.56	2.57	2.56	2.49	2.52	2.52	2.52	2.75	2.53
RAL BEFORE LOG VERIFICATION SUMMARY												
TOOL #:		1426XA10124106		DATE/TIME PERFORMED:		Sat Feb 10 15:03:26 2018		DAYS SINCE CAL:				0
UNIT #:		5753XD111111		CABLE #:		4291CH SMALLLINE						
NEAR		R1	R2	R3	R4	R5	R6	R7	R8	FAR	CAL	
(mV)		(mV)	(mV)	(mV)	(mV)	(mV)	(mV)	(mV)	(mV)	(mV)	(mV)	
ZERO		0.14	-0.28	-0.26	-0.05	0.24	0.08	-0.12	-0.28	-0.13	-0.46	-0.22
AMP AIR		1.40	0.31	0.55	0.84	0.76	0.26	0.78	0.14	0.65	1.07	99.76
SHOP		SHOP		WIRELINE								
M FACTOR		A FACTOR		FACTOR								
2.53		0.00		1.00								

GR PRIMARY CALIBRATION SUMMARY						
TOOL #: 1355XA11871507		DATE/TIME PERFORMED: Fri Nov 17 14:10:53 2017				
UNIT #: 3882TD HL6728		CALB JIG #: 4702NK DA_228				
BACKGROUND	CALBRTR ON	GR DIFF	MULT	BACKGROUND	CALBRTR ON	CALBRTR
(cts)	(cts)	(cts/fs)		(gAPI)	(gAPI)	(gAPI)
GR 59.07	162.98	103.9	0.962	56.84	156.84	100

GR PRIMARY VERIFICATION SUMMARY						
TOOL #: 1355XA11871507		DATE/TIME PERFORMED: Fri Nov 17 14:12:49 2017				
UNIT #: 3882TD HL6728		VERI JIG #: 4702NK DA_228				
BACKGROUND	CALBRTR ON	MULT	BACKGROUND	CALBRTR ON	DIFF.	
(cts)	(cts)		(gAPI)	(gAPI)	(gAPI)	
GR 59.73	170.53	0.962	57.49	164.11	106.63	
					NOISE 110.00	



**COMPANY** LARAMIE ENERGY LLC

**WELL** BRUTON 30-16E

**FIELD** VEGA

**COUNTY** MESA **STATE** COLORADO

**FILE NO:** \_\_\_\_\_

**API NO:** 05077104790000

**LOCATION:**

SHL: 2623' FNL & 1864' FEL

BHL: 1367' FSL & 1338' FEL

**SEC** 30 **TWP** 9S **RGE** 93W

**ELEVATIONS:**

KB 7673 FT

DF 7672 FT

GL 7643 FT

**DATE** 10-Feb-2018



