



RADIAL CEMENT BOND LOG

FILE NO:

COMPANY

LARAMIE ENERGY II LLC

WELL

NICHOLS 0994-13-20E

API NO:

FIELD

VEGA

05077104030000

COUNTY

MESA

STATE COLORADO

Ver. 4.10

LOCATION:

SHL 1777 FNL 2775 FEL
BHL 340 FNL 1484 FEL

SEC 24 TWP 9 RGE 94W

OTHER SERVICES
RPM

PERMANENT DATUM

GL

ELEVATION

7137 FT

LOG MEASURED FROM

KB

24 FT

ABOVE P.D.

DRILL. MEAS. FROM

KB

ELEVATIONS:

KB 7161 FT

DF

GL 7137 FT

DATE

19-Mar-2018

RUN

TRIP

1

1

SERVICE ORDER

US133014J

DEPTH DRILLER

8032 FT

DEPTH LOGGER

7970 FT

BOTTOM LOGGED INTERVAL

7969 FT

TOP LOGGED INTERVAL

24 FT

TIME STARTED

14:30

TIME FINISHED

17:00

OPERATOR RIG TIME

LOGGER

TYPE OF FLUID IN HOLE

WATER

FLUID DENSITY

NA

FLUID SALINITY

NA

FLUID LEVEL

119 FT

LOGGED CEMENT TOP

2524 FT

WELLHEAD PRESSURE

0 PSI

MAXIMUM HOLE DEVIATION

NA

NOMINAL LOGGING SPEED

90 FMIN

MAX. RECORDED TEMP.

231 DEGF

REFERENCE LOG

NA

REFERENCE LOG DATE

NA

EQUIP. NO.

4291

LOCATION

R. ZUNIGA

RECORDED BY

GRAND JCT

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: RAL/GR/CCL RUN CENTRALIZED
LOGGED WITH 0 PSI AT WELLHEAD
SJ: 6249-6268
SJ: 7163-7182
CREW: R. ZUNIGA, J. PENA, A. SHAHNOOSHI

EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
1	1	RAL	1426XA	10404539a	CENTRALIZED
1	1	GR/CCL	1355XA	12670180	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: Tue Mar 20 09:36:15 2018

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE_NICHOLS_0994-13-20E/p012g02.prm
 LOGGING MODE: DEPTH DIRECTION: UP
 TOP DEPTH: 10.500 ft BOTTOM DEPTH: 7973.476 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*)	183	us	TOP	6255.750
		182	us	6255.750	7866.000
		181	us	7866.000	7868.500
		180	us	7868.500	7869.750
		179	us	7869.750	7871.000
		178	us	7871.000	7876.500
		177	us	7876.500	7881.750
		176	us	7881.750	BOTTOM
	TT WINDOW LENGTH	500	us	TOP	BOTTOM
	FIRST BRK THRESHOLD (ttn*)	4	mV	"	"
RAL CASING PARAMETERS	PPT NEAR	200.391	us	"	"
RAL TOOL DELAY	TOOL DELAY (str1*)	-77	us	"	"
	TOOL DELAY (str2*)	-77	us	"	"
	TOOL DELAY (str3*)	-77	us	"	"
	TOOL DELAY (str4*)	-77	us	"	"
	TOOL DELAY (str5*)	-77	us	"	"
	TOOL DELAY (str6*)	-77	us	"	"
	TOOL DELAY (str7*)	-77	us	"	"
	TOOL DELAY (str8*)	-77	us	"	"
BASELINE NOISE (NEAR)	NOISE WINDOW START	112	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 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

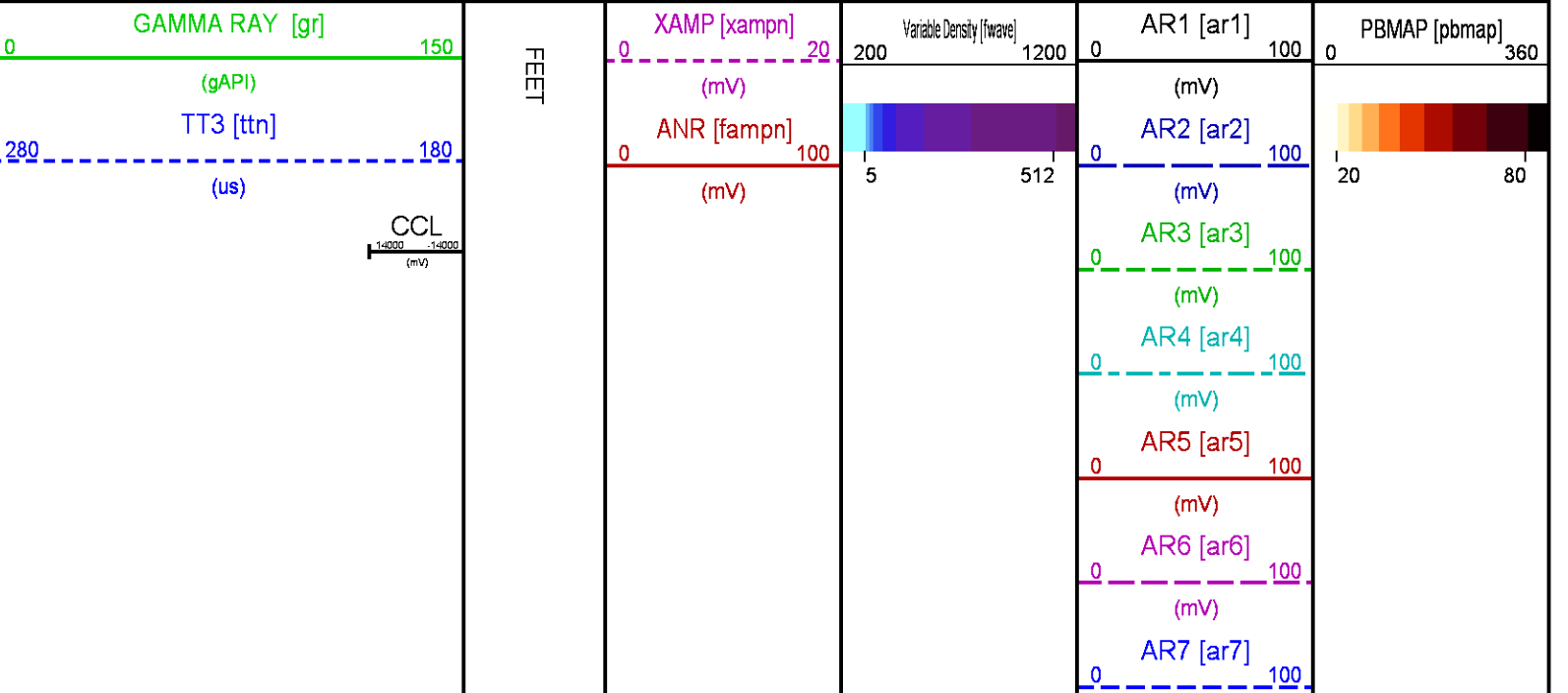
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
AR1	-11.25	AR5	-11.25	CCL	-5.75	XAMPN	-11.25
AR2	-11.25	AR6	-11.25	FAMPN	-11.25		
AR3	-11.25	AR7	-11.25	GR	-1.75		
AR4	-11.25	AR8	-11.25	TTN	-11.25		

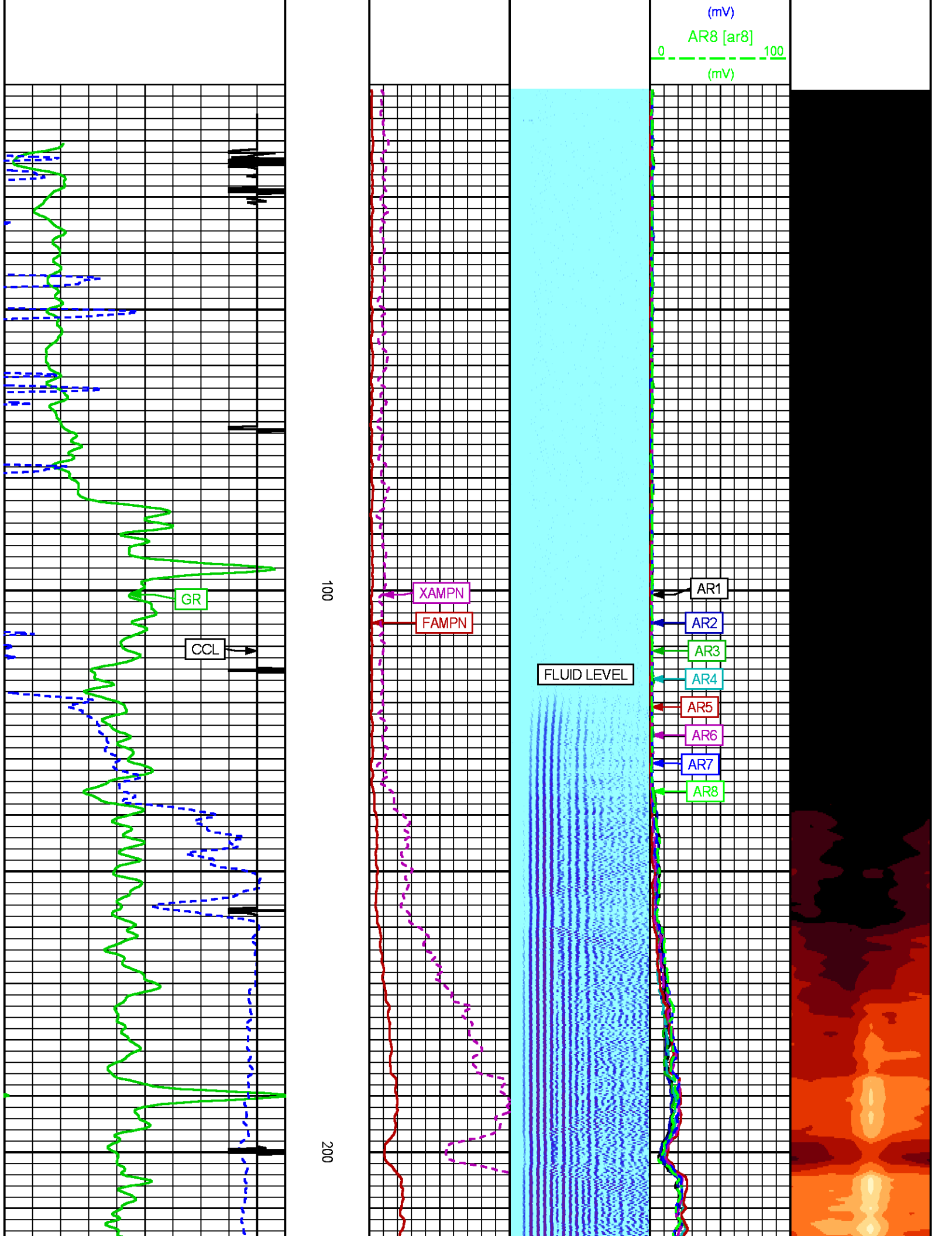
Presentation
Plot Interval

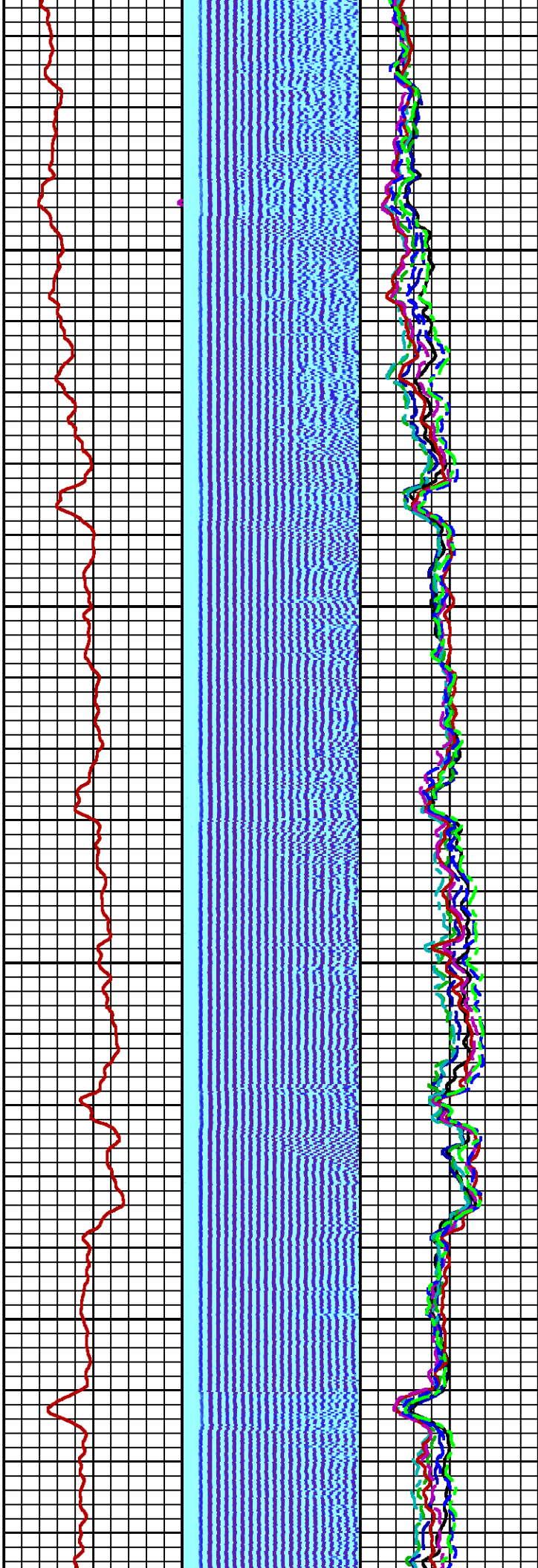
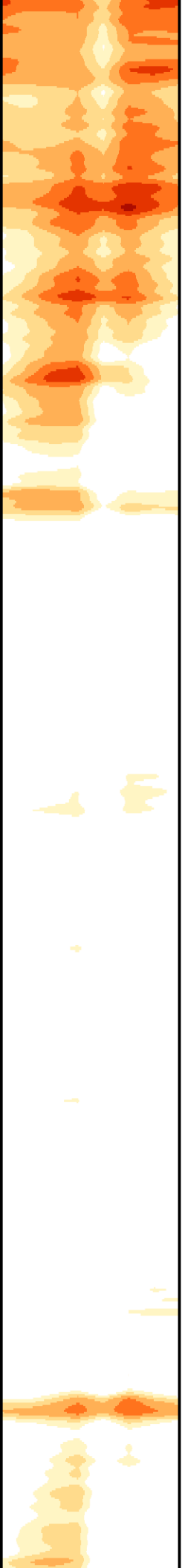
: SysA:LARAMIE_RAL_MAIN.fvpdf [5"/100' Scale]
: 10.75 - 8000 Feet

Data File 1
Created On
Company
Well
Field
File Interval
OCT

: F1 : SysA:/dat1a/LARAMIE_NICHOLS_0994-13-20E/RAL_MAIN.xtf
: N/A
: LARAMIE ENERGY II LLC
: NICHOLS 0994-13-20E
: VEGA
: 9.75 - 7979.75 Feet
: p012g

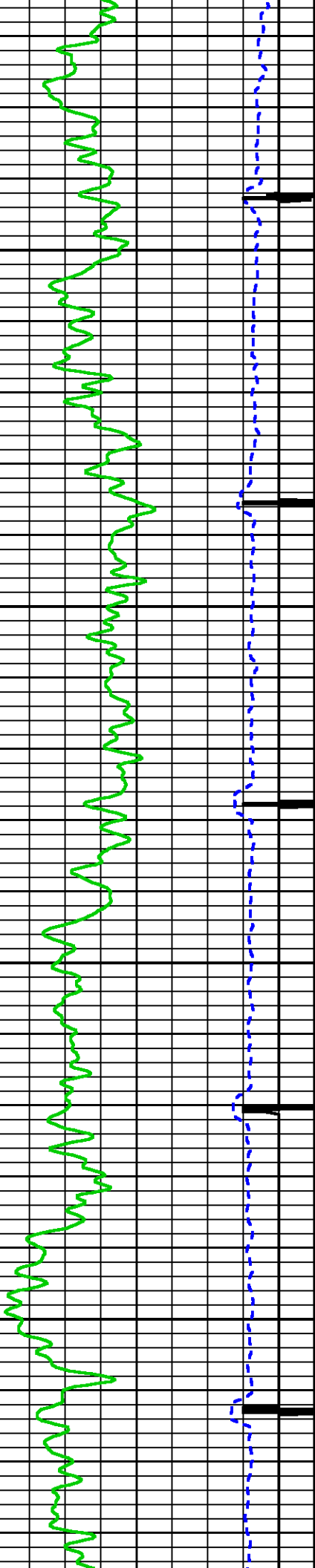


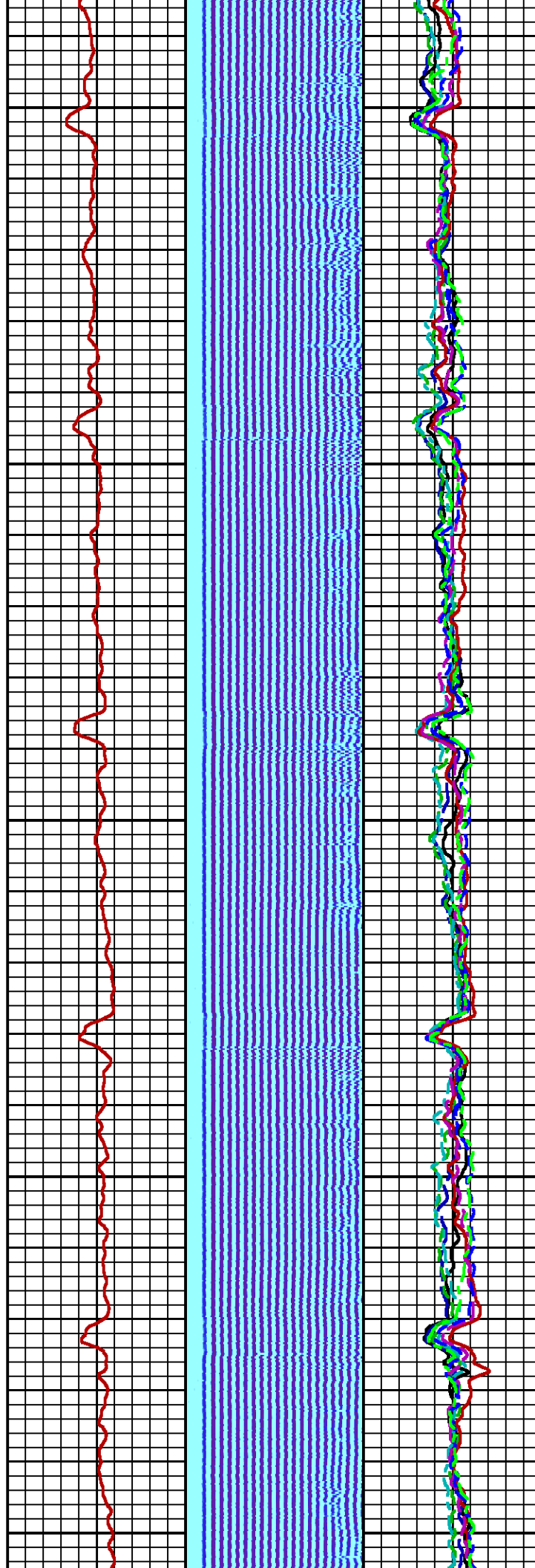
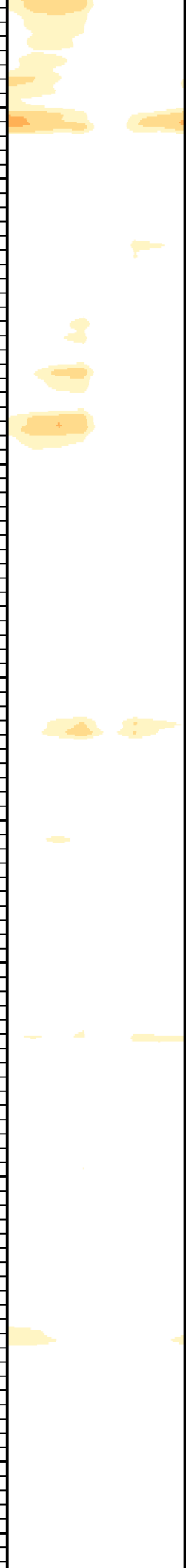




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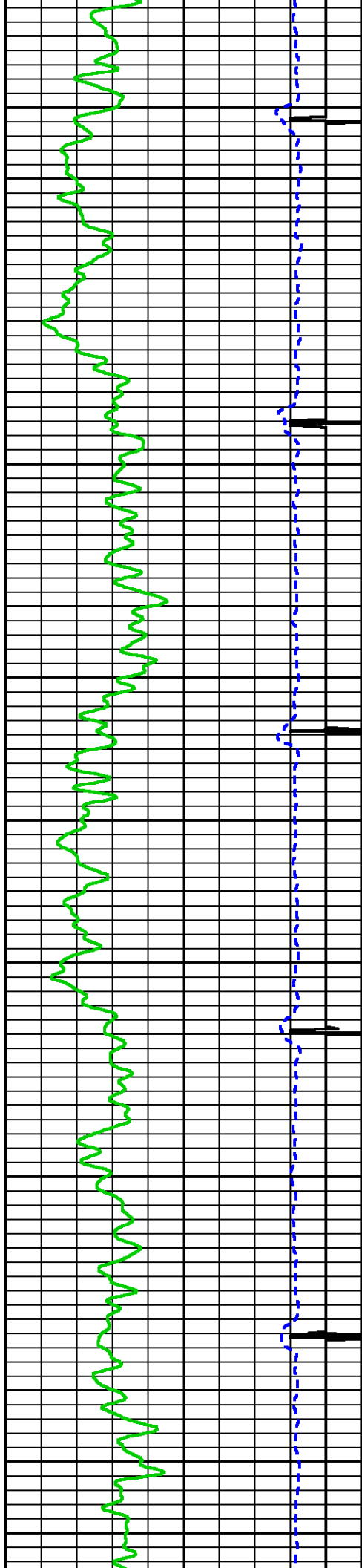
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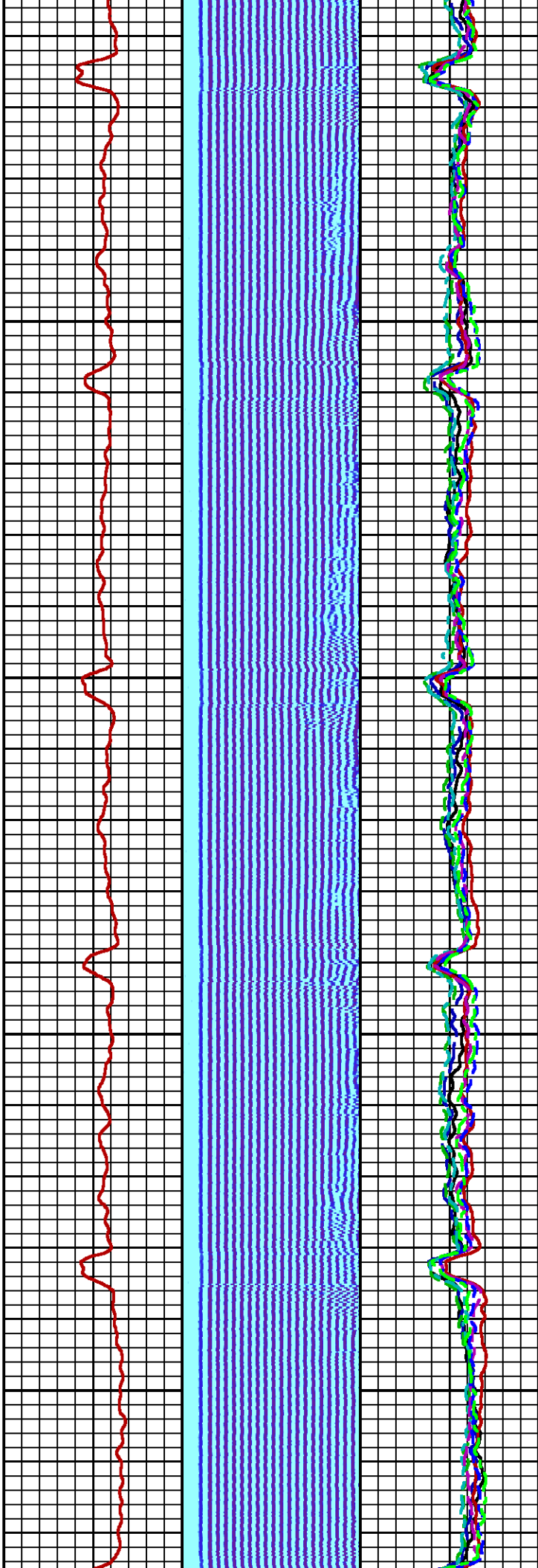




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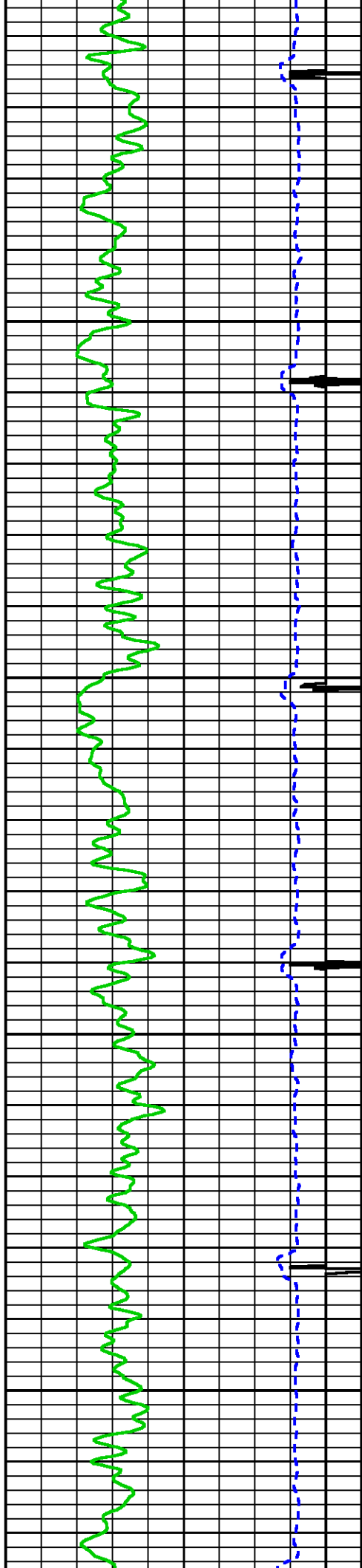
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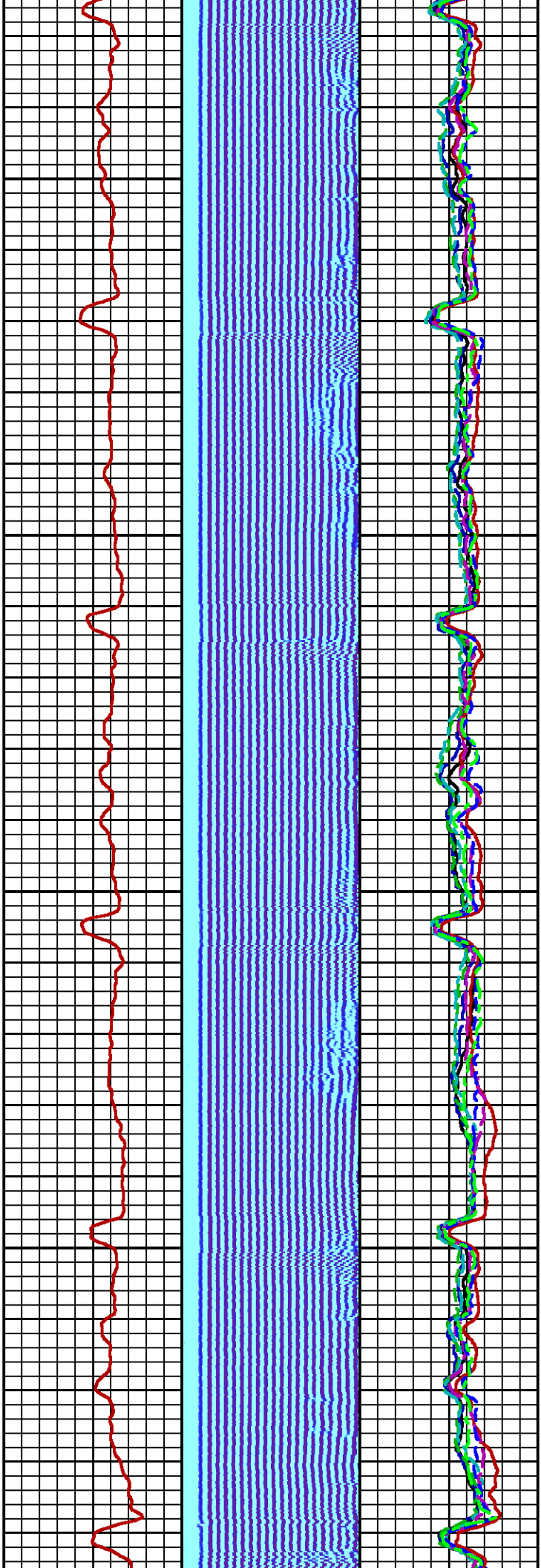


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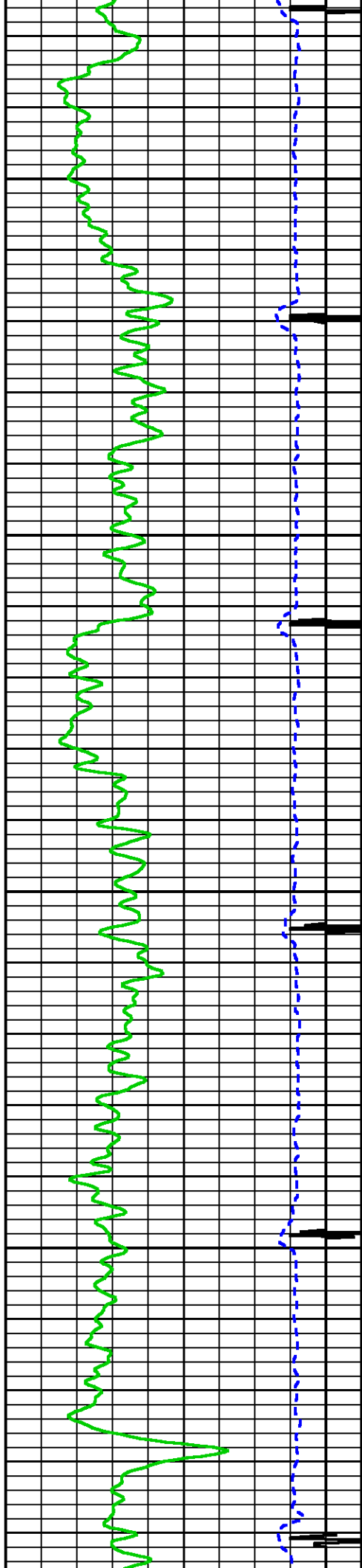


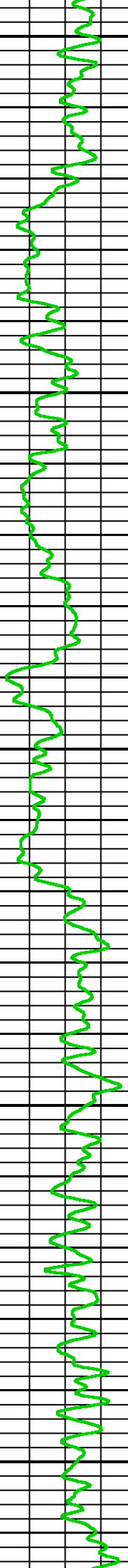
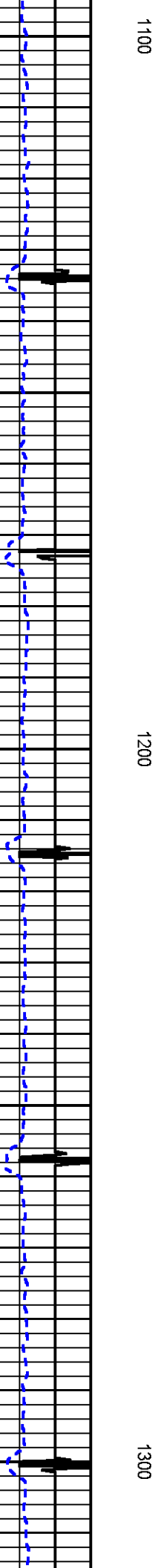
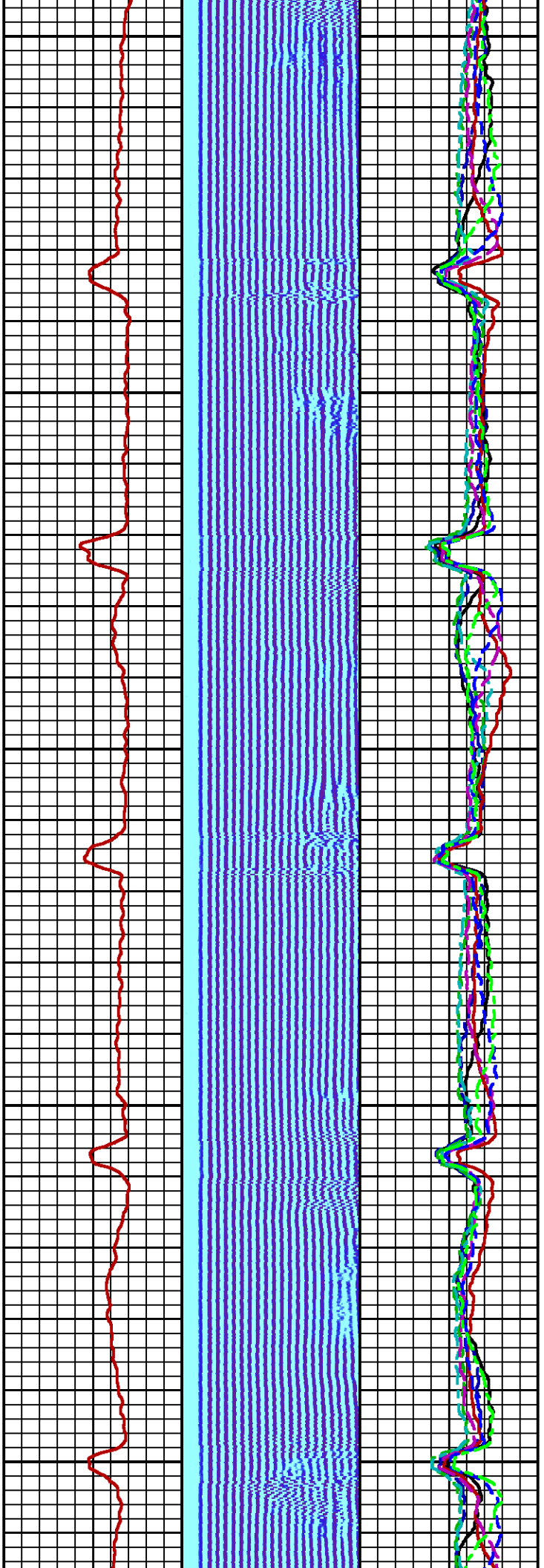
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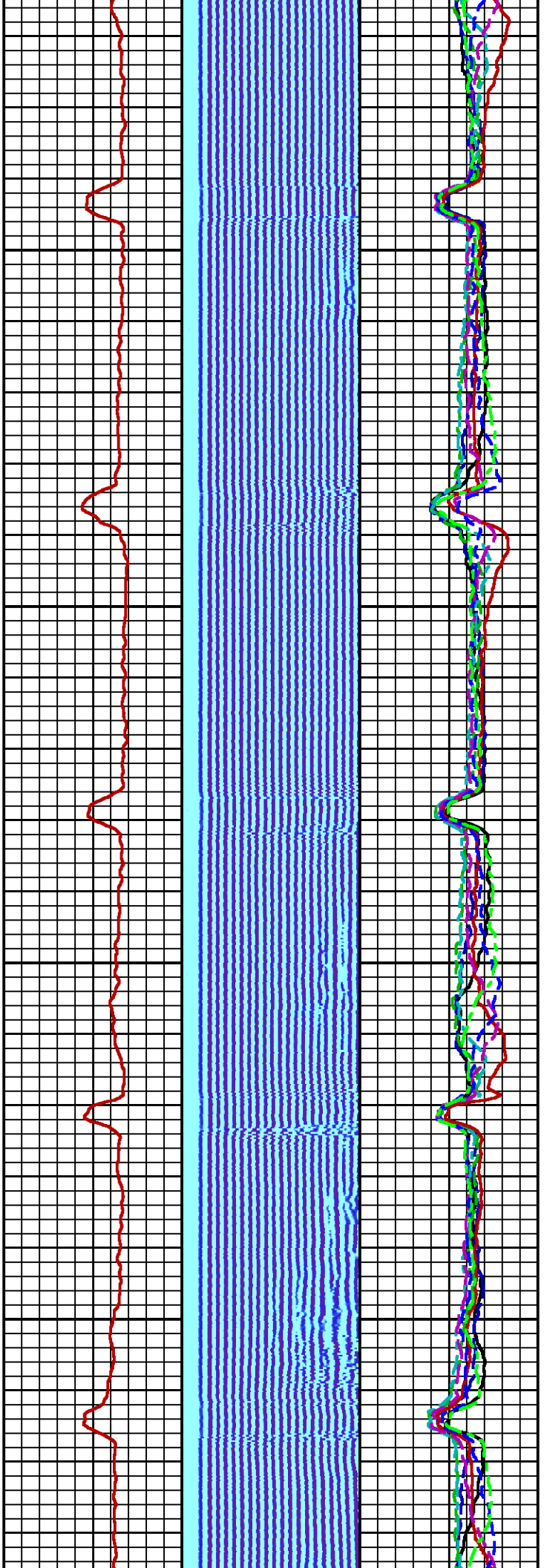


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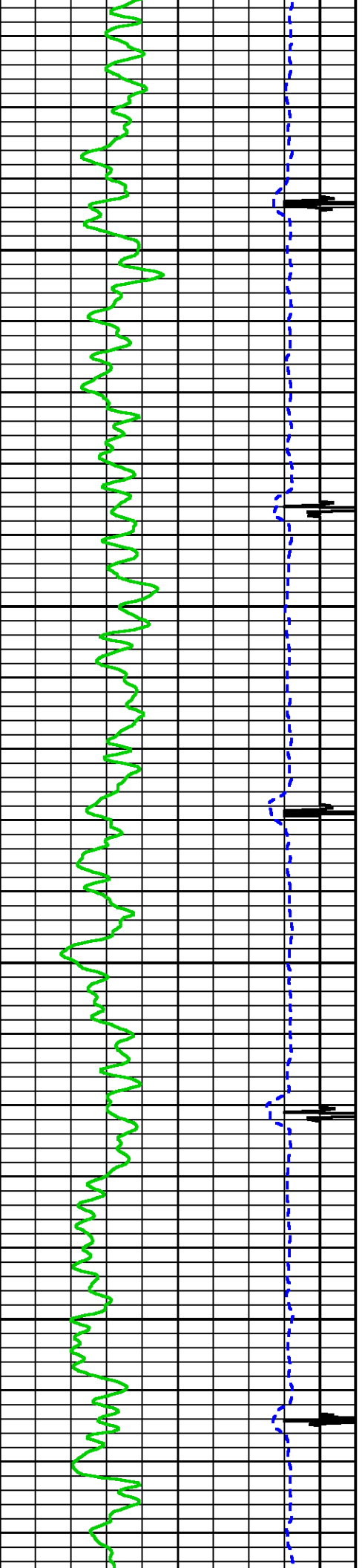


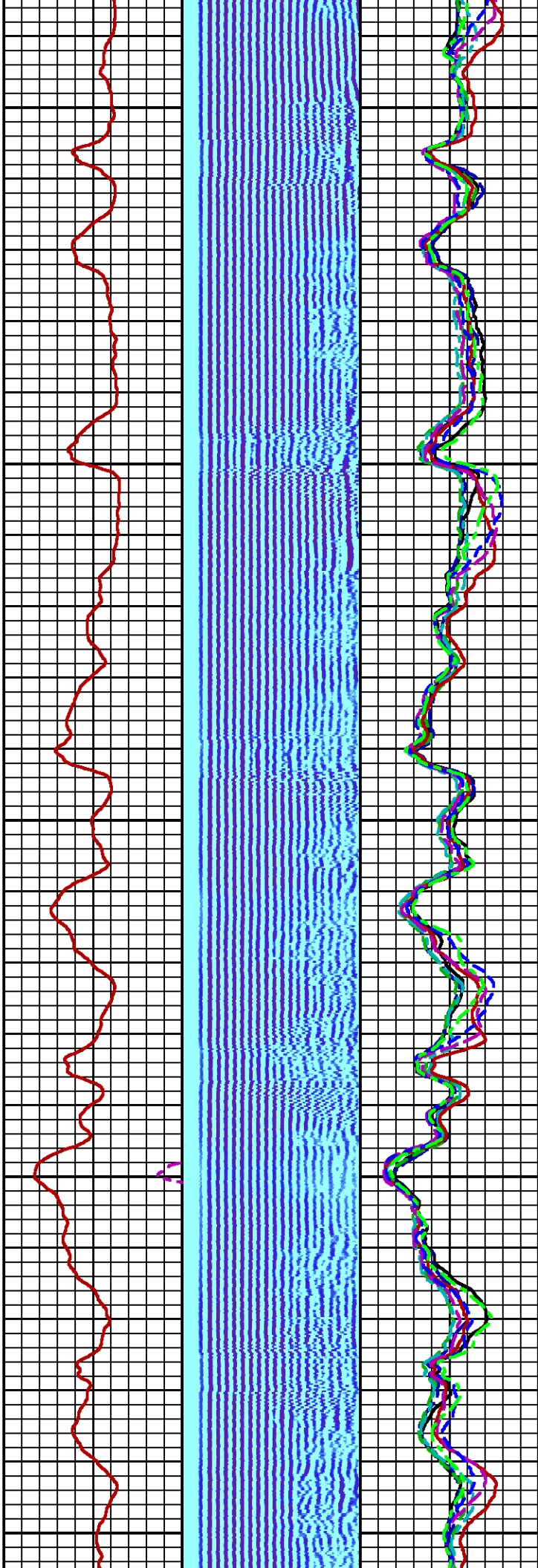
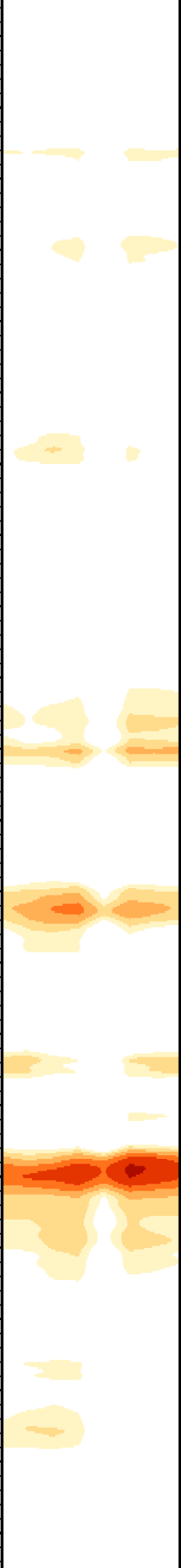




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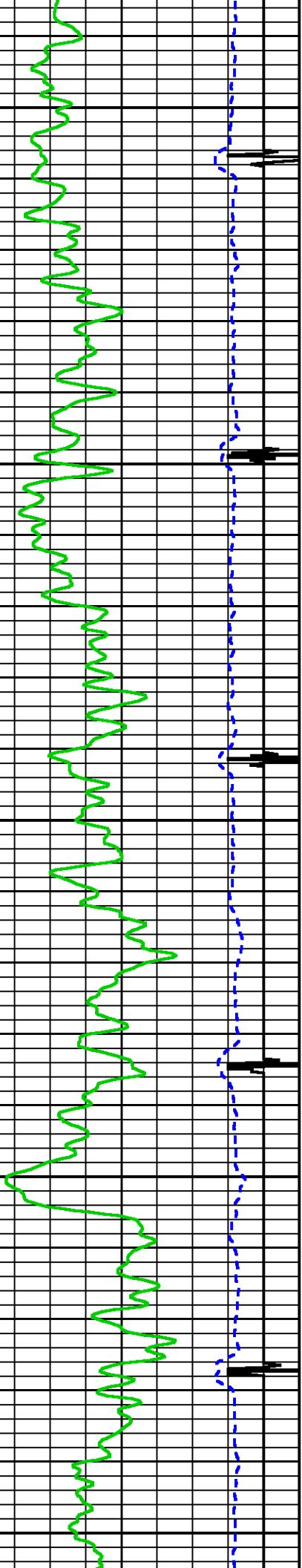
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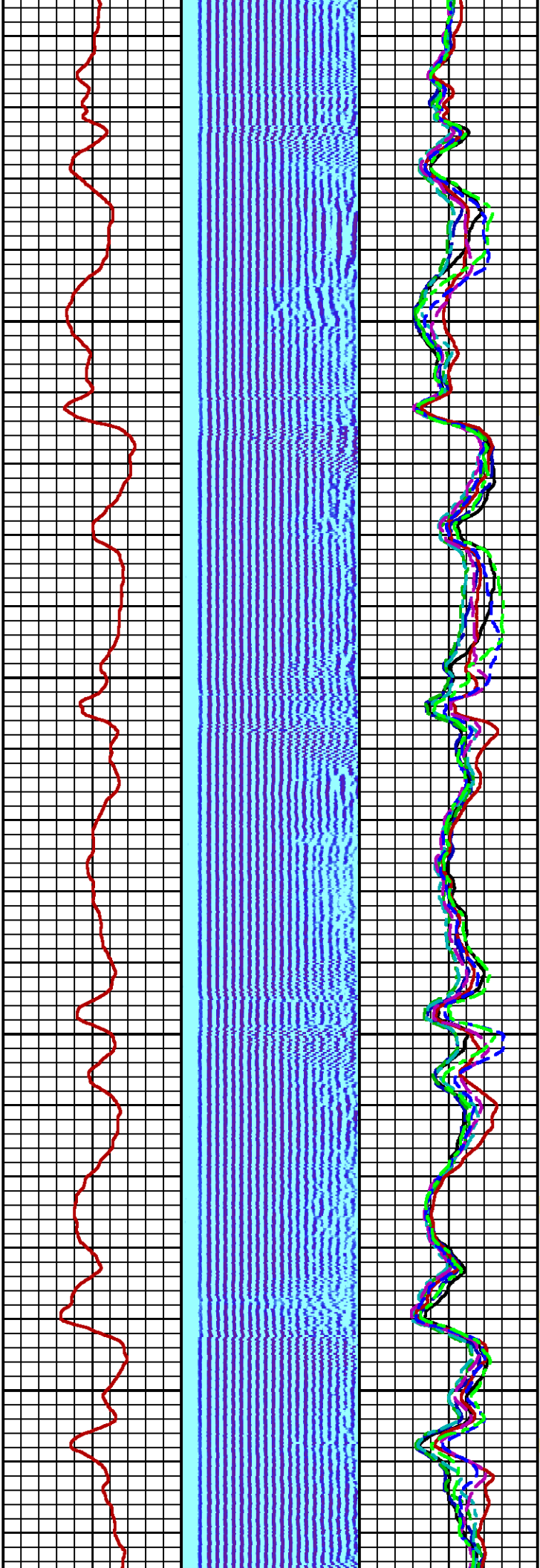
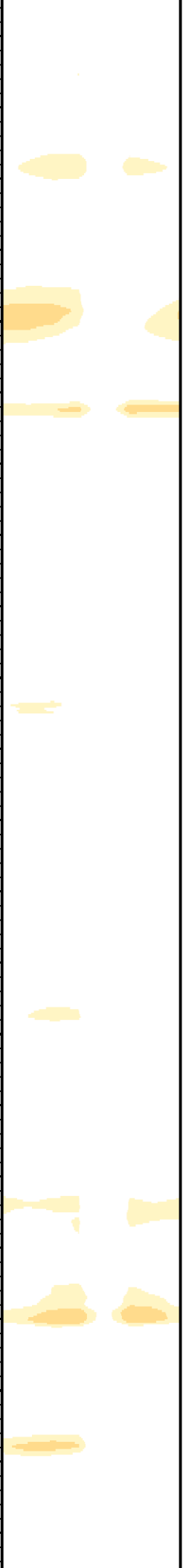




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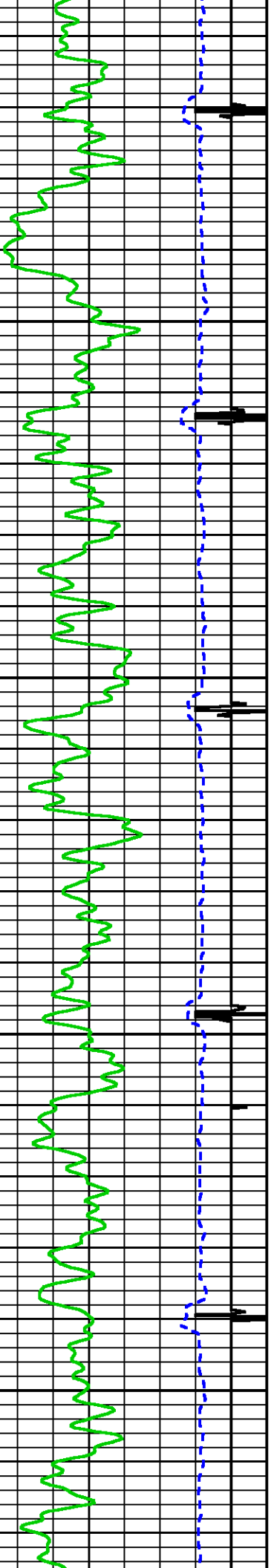
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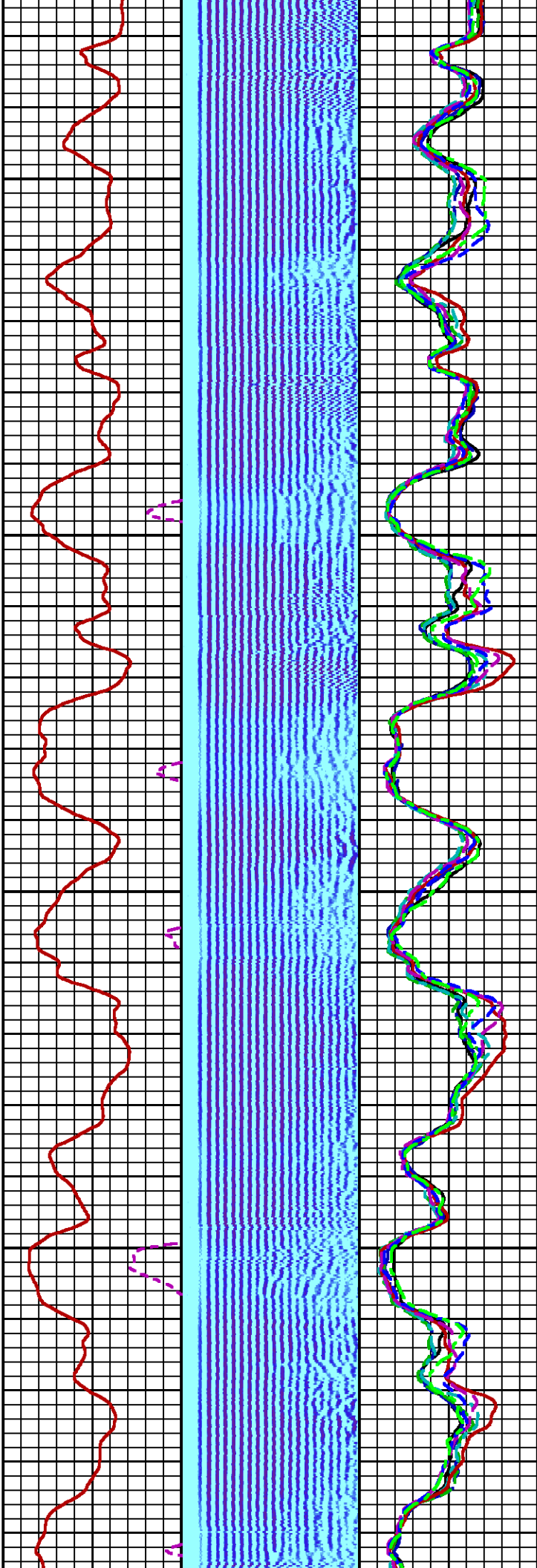
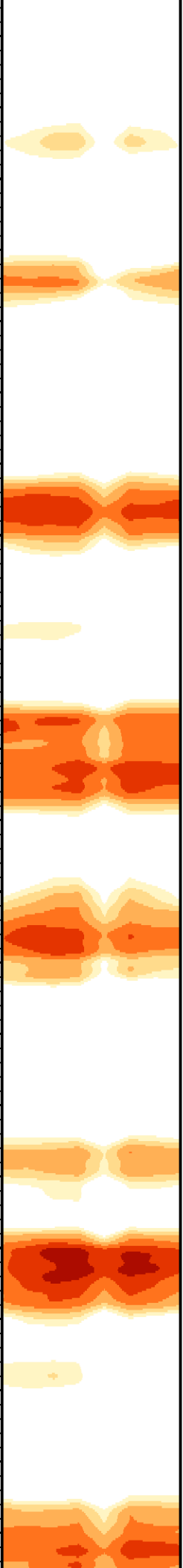




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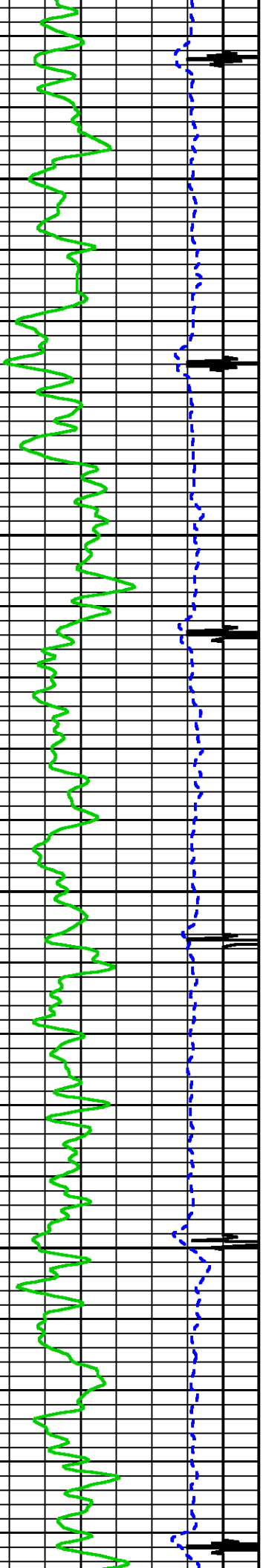
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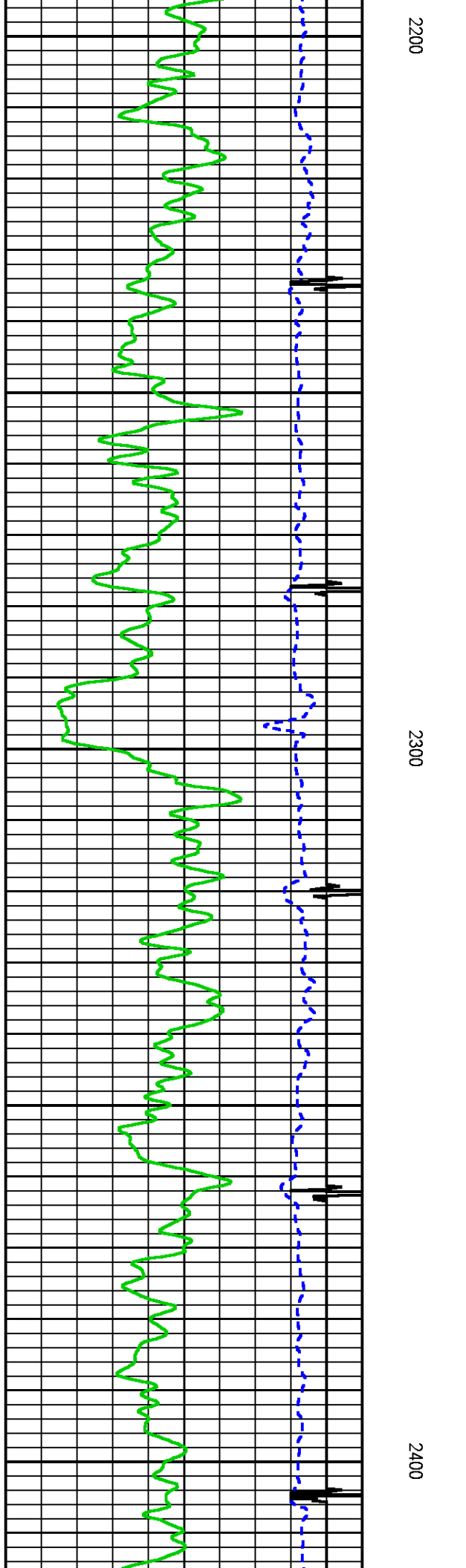
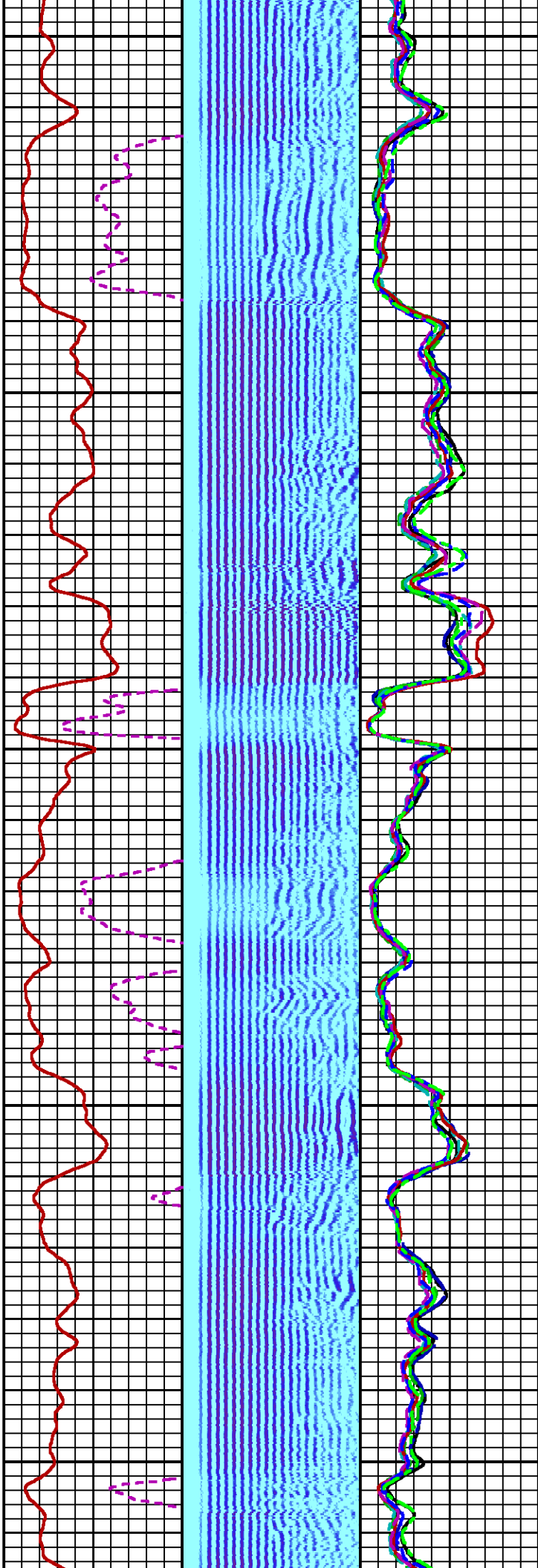


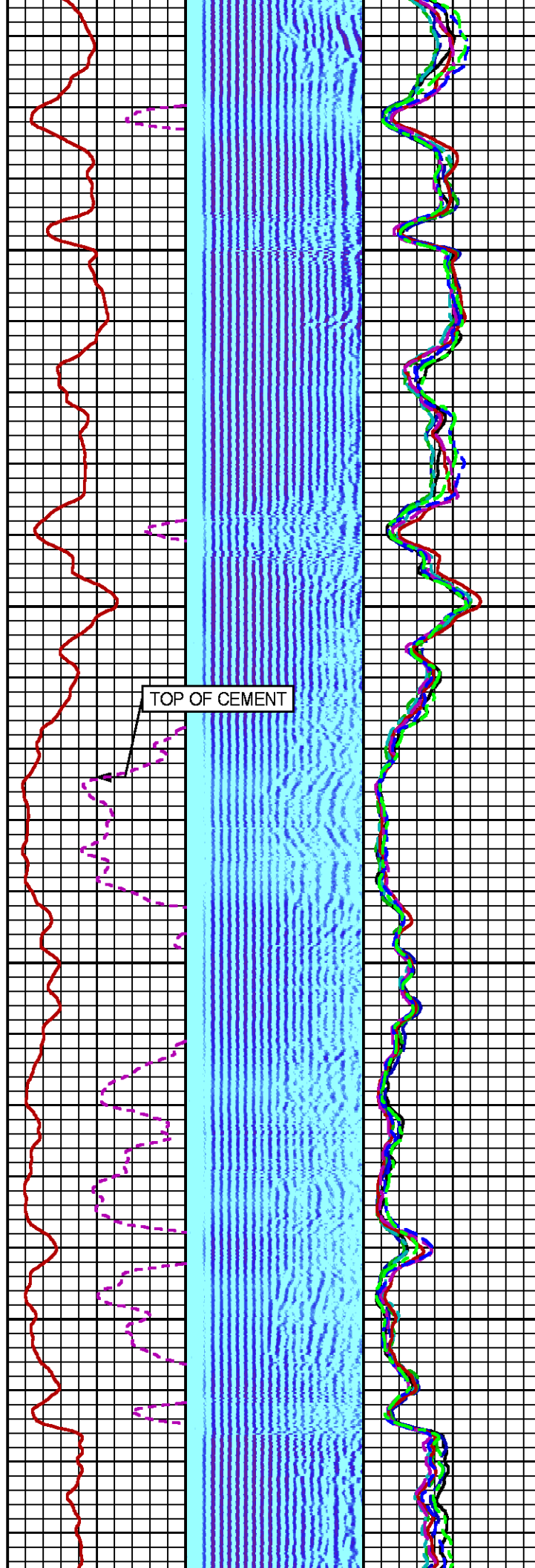
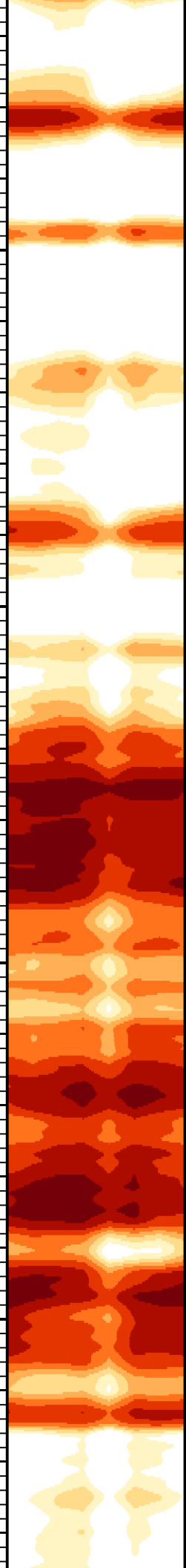


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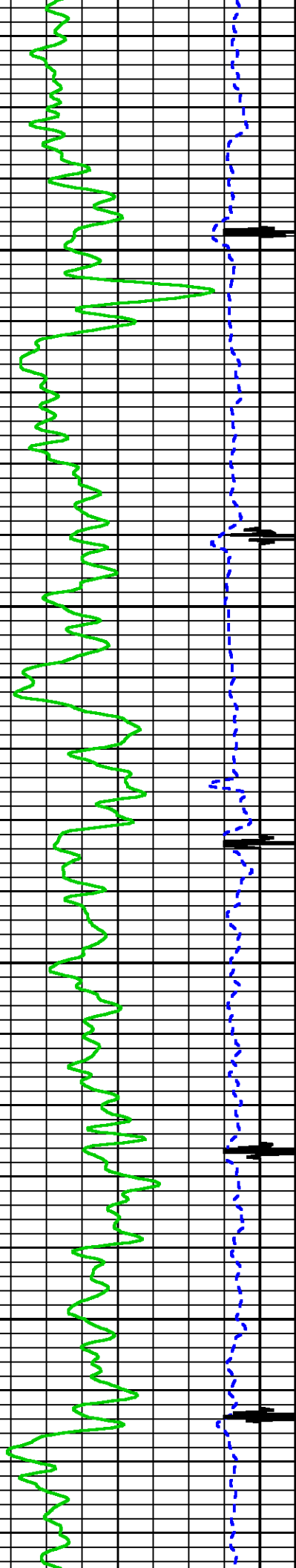


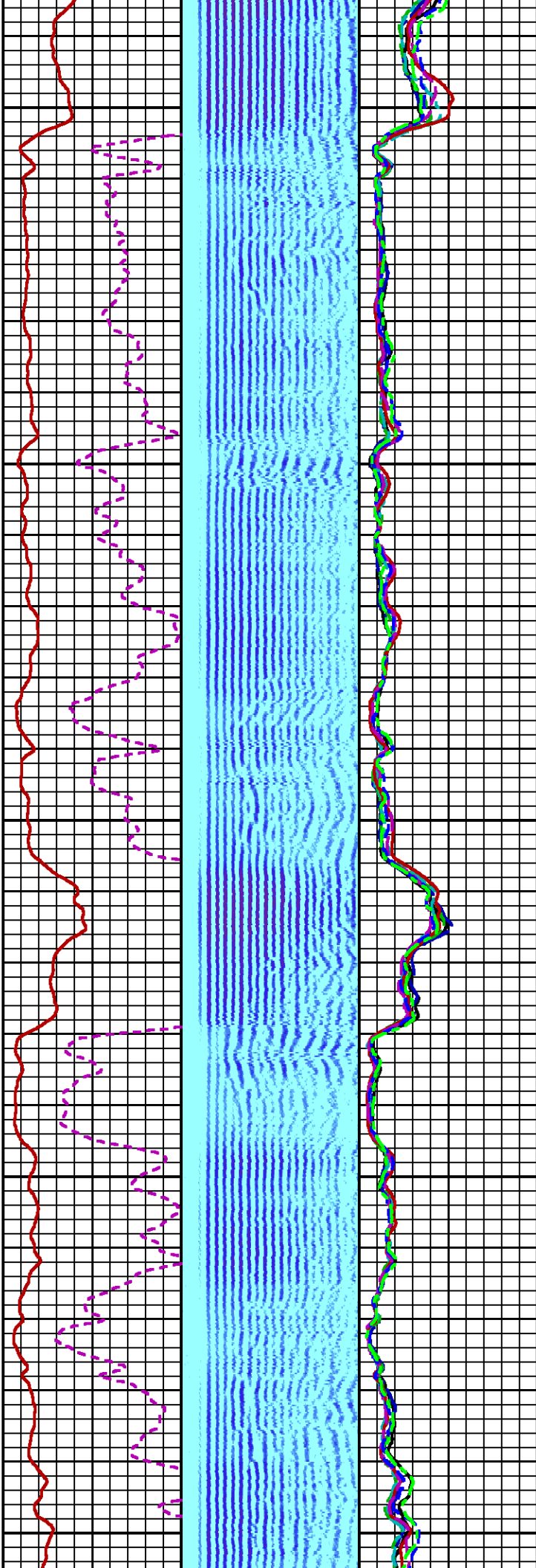
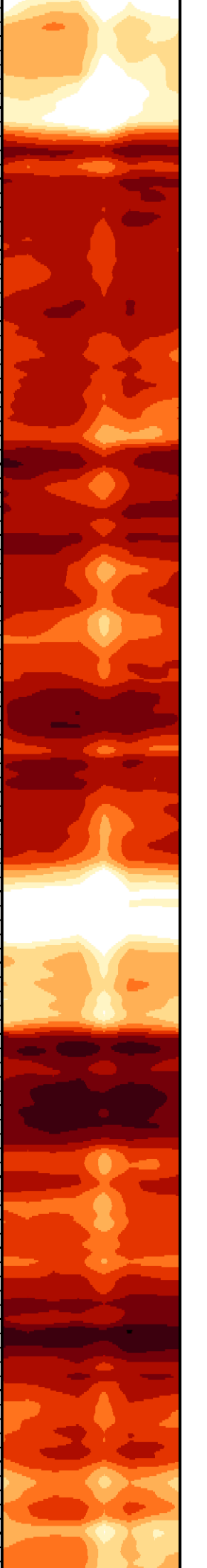




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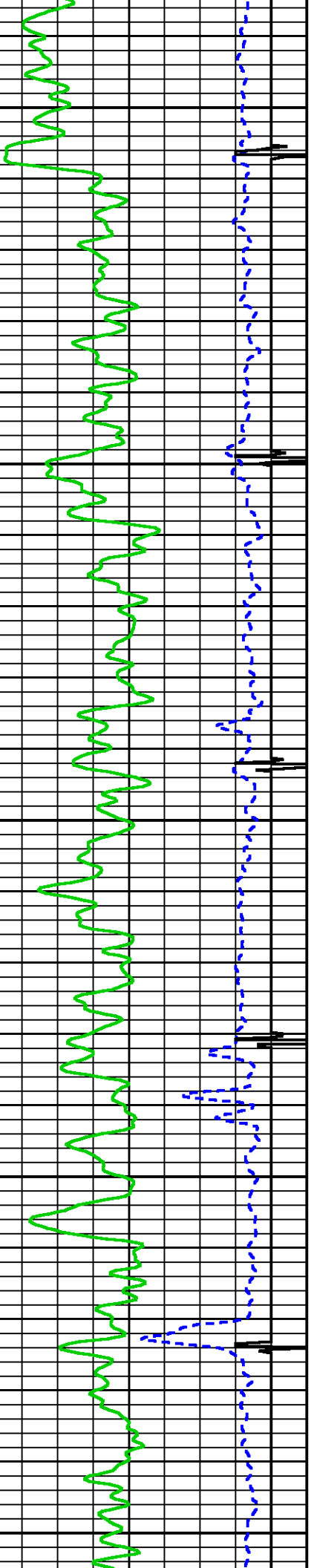
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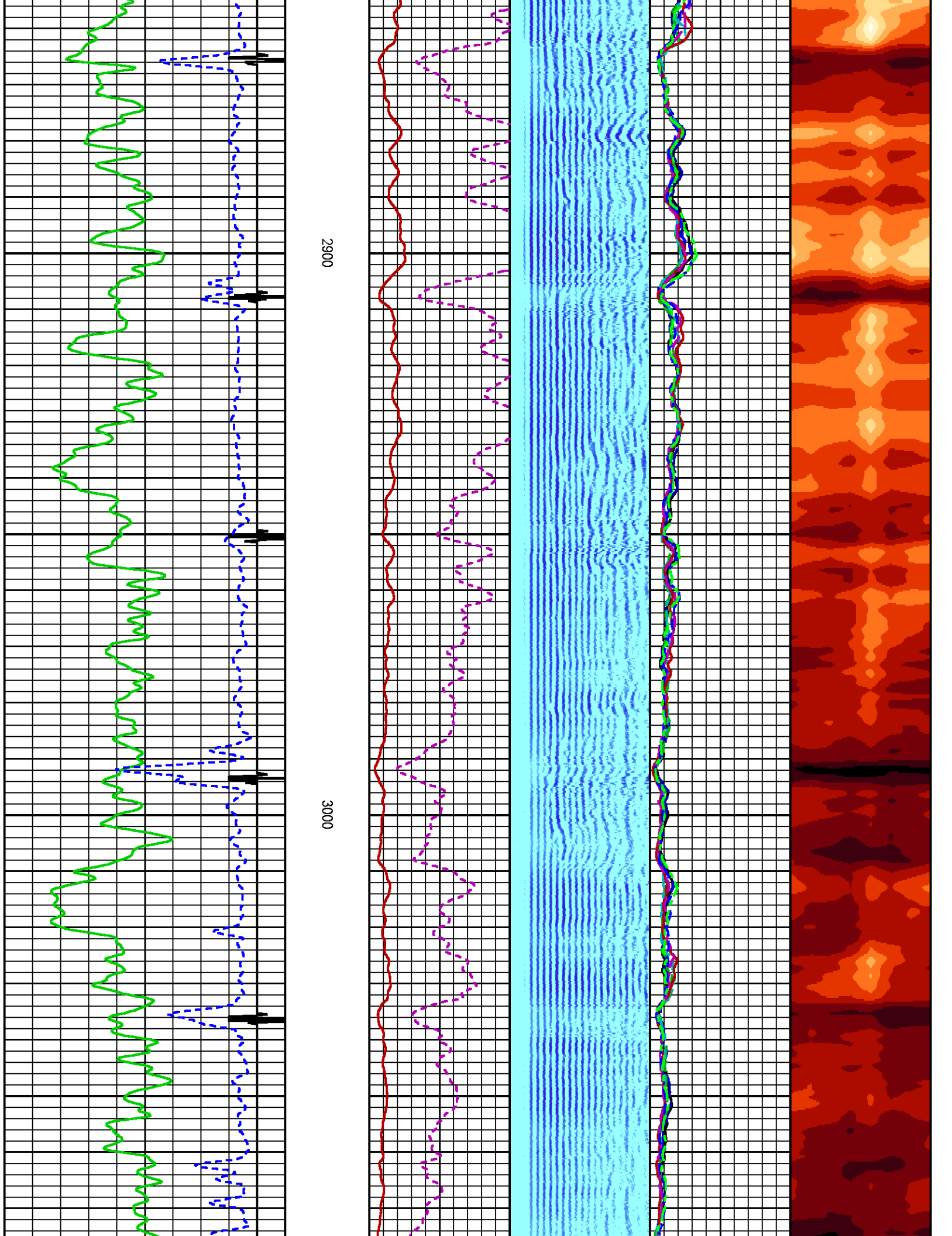


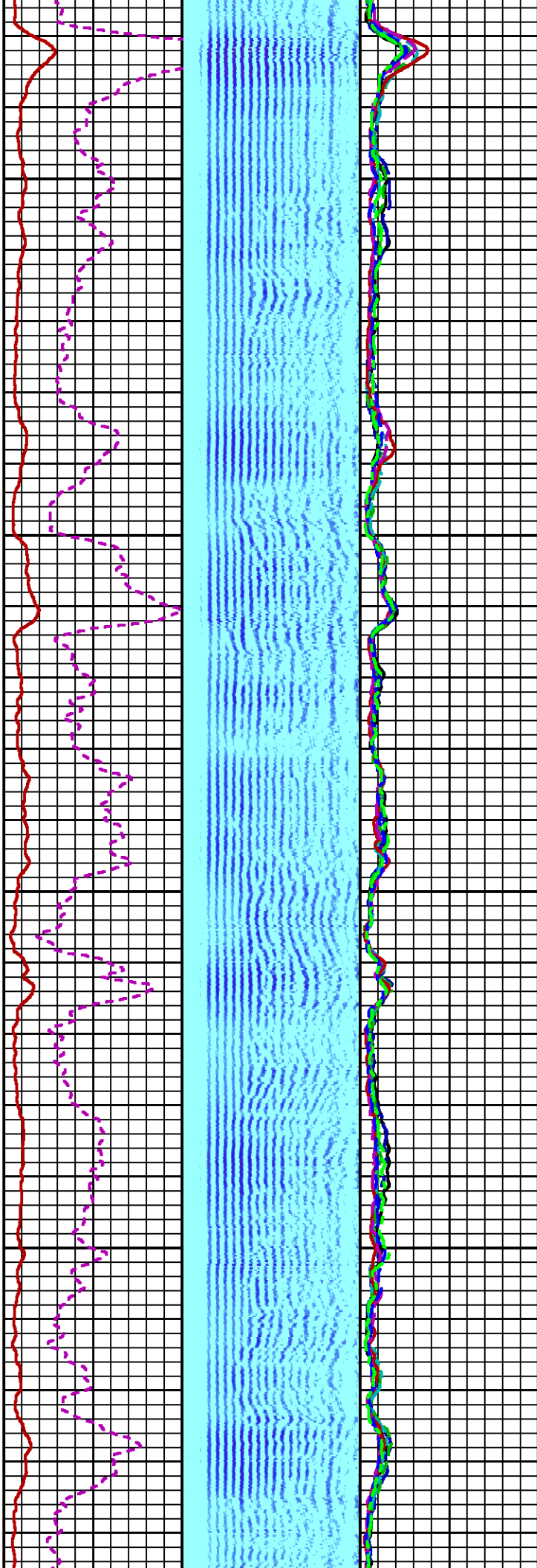
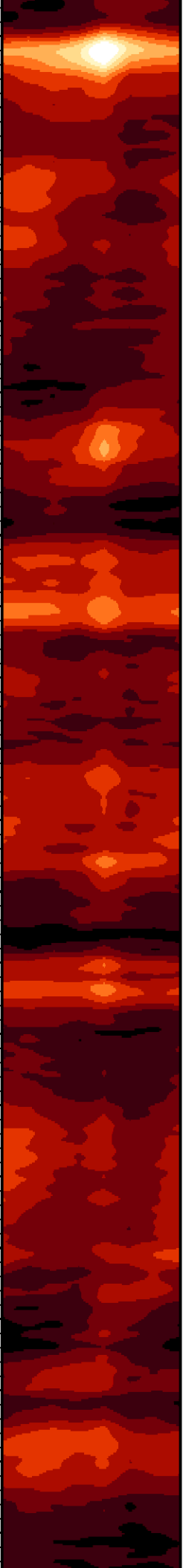


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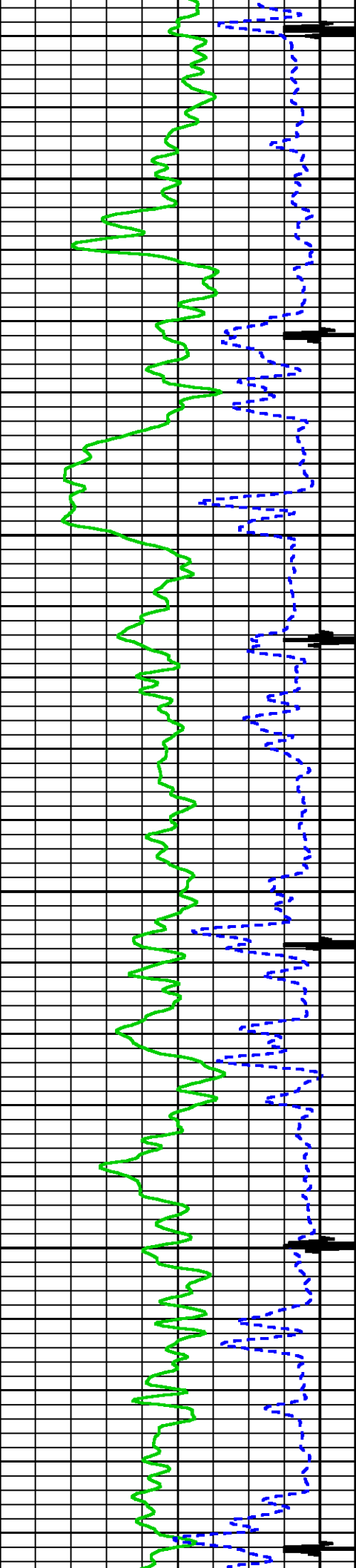


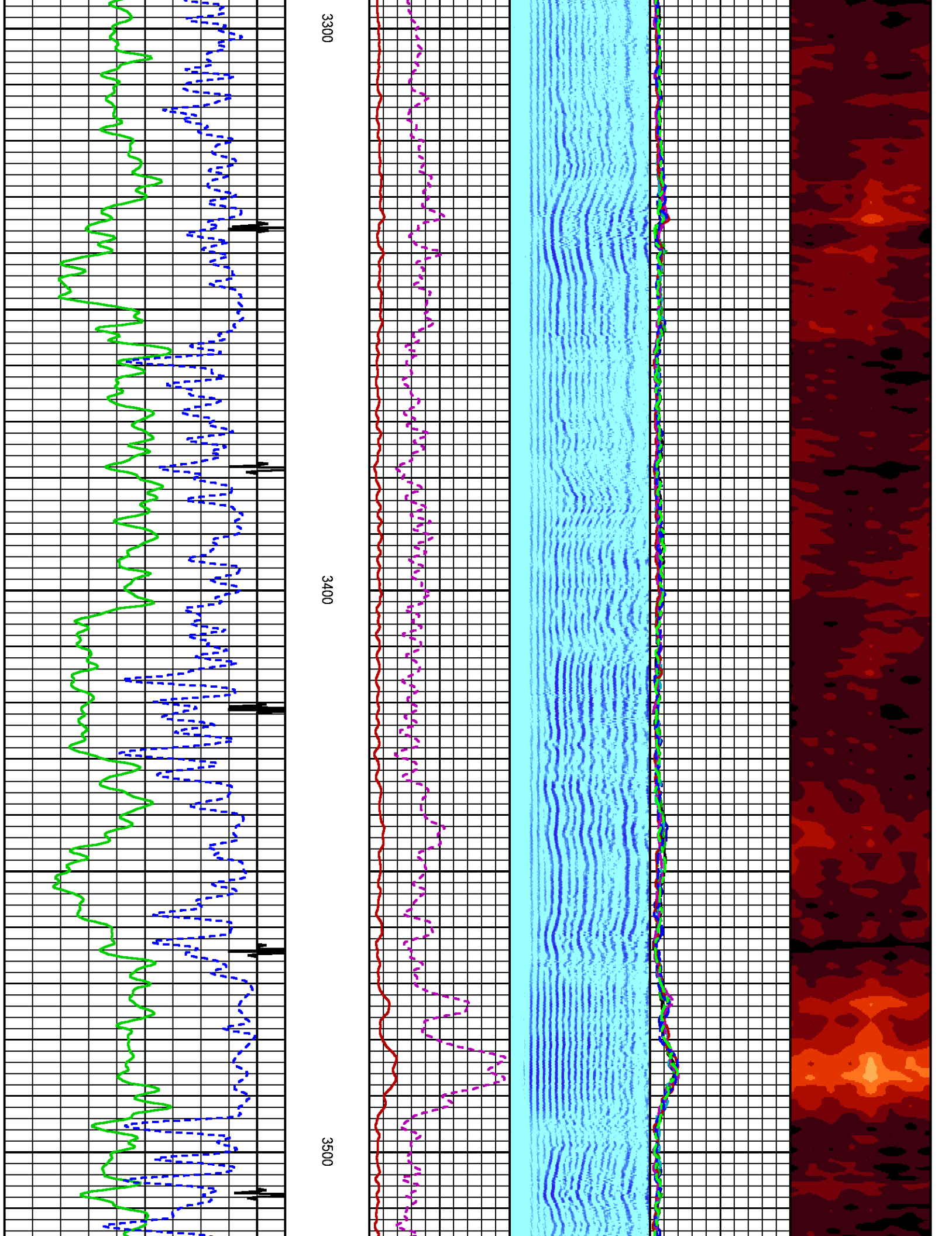


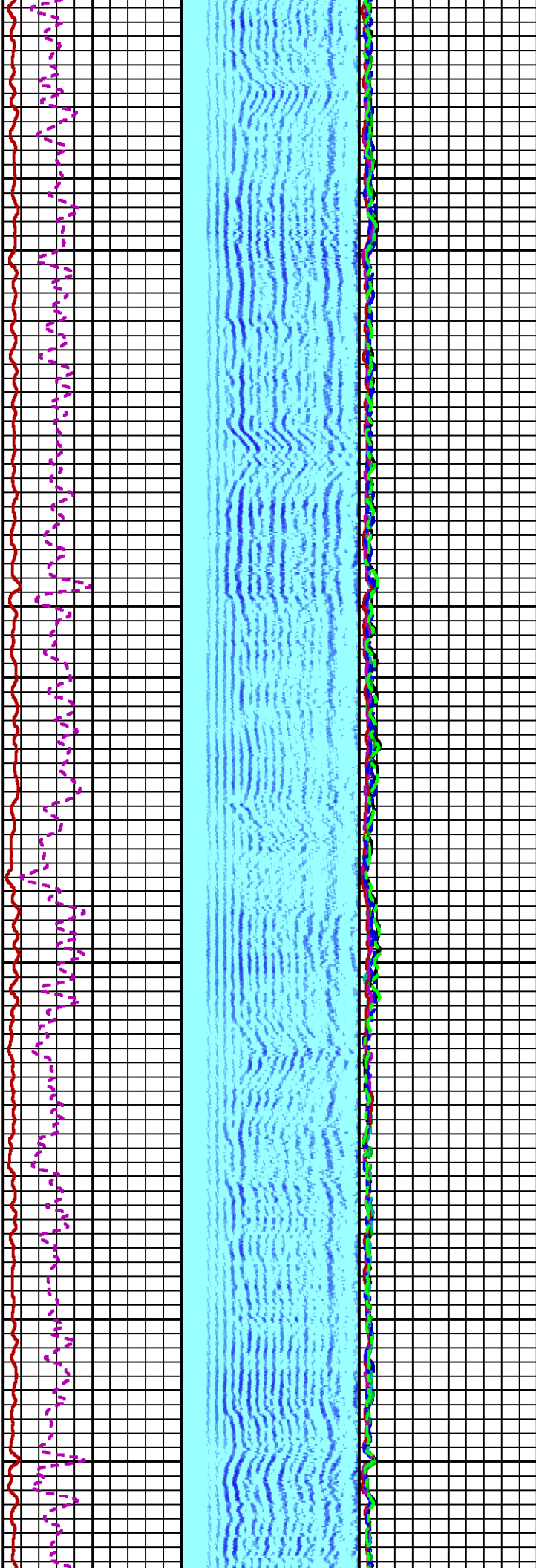


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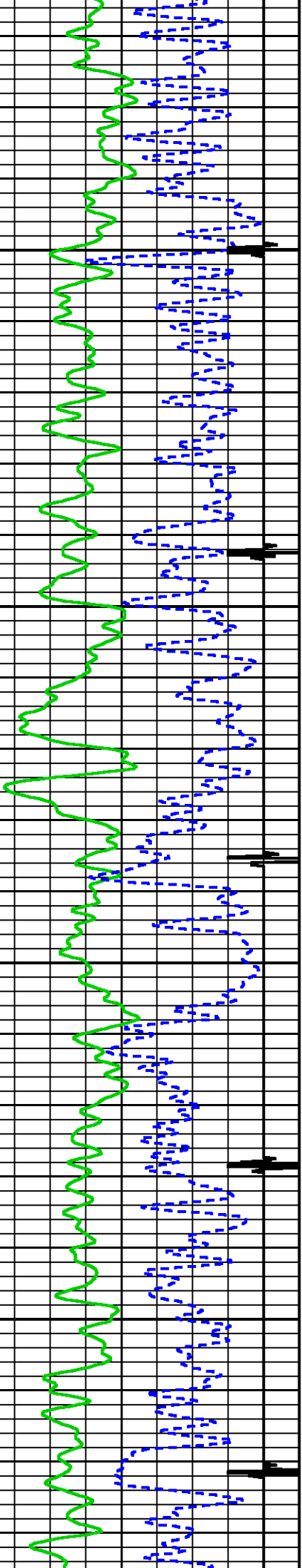


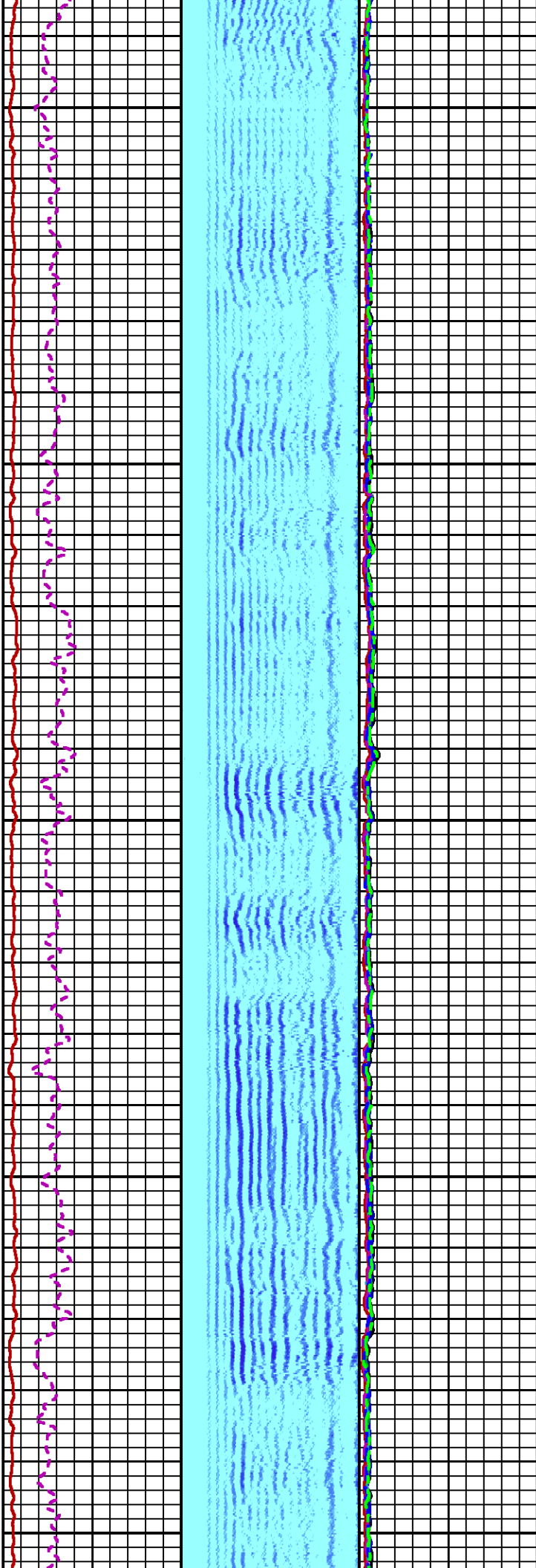
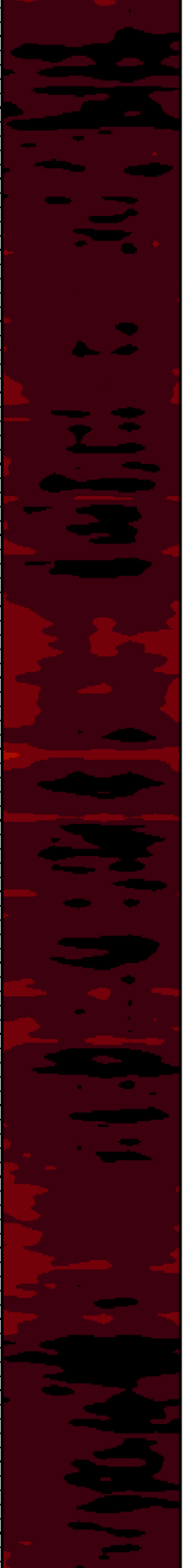




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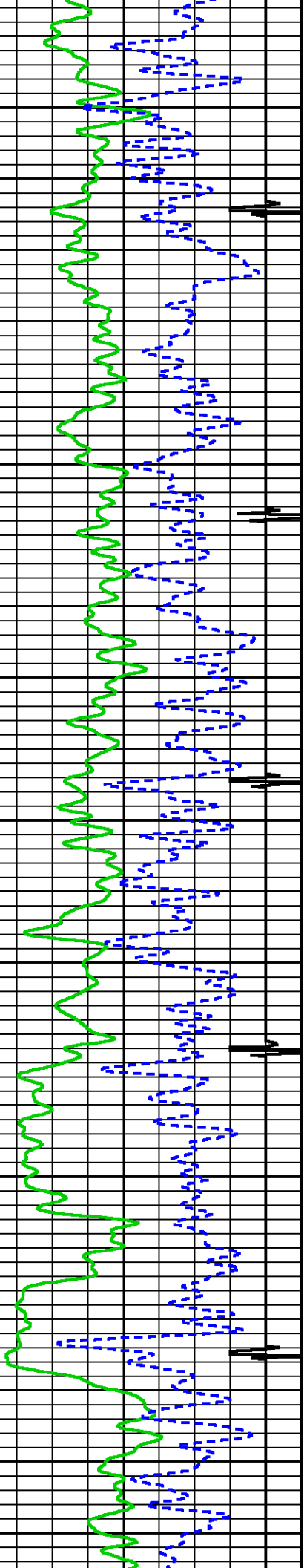
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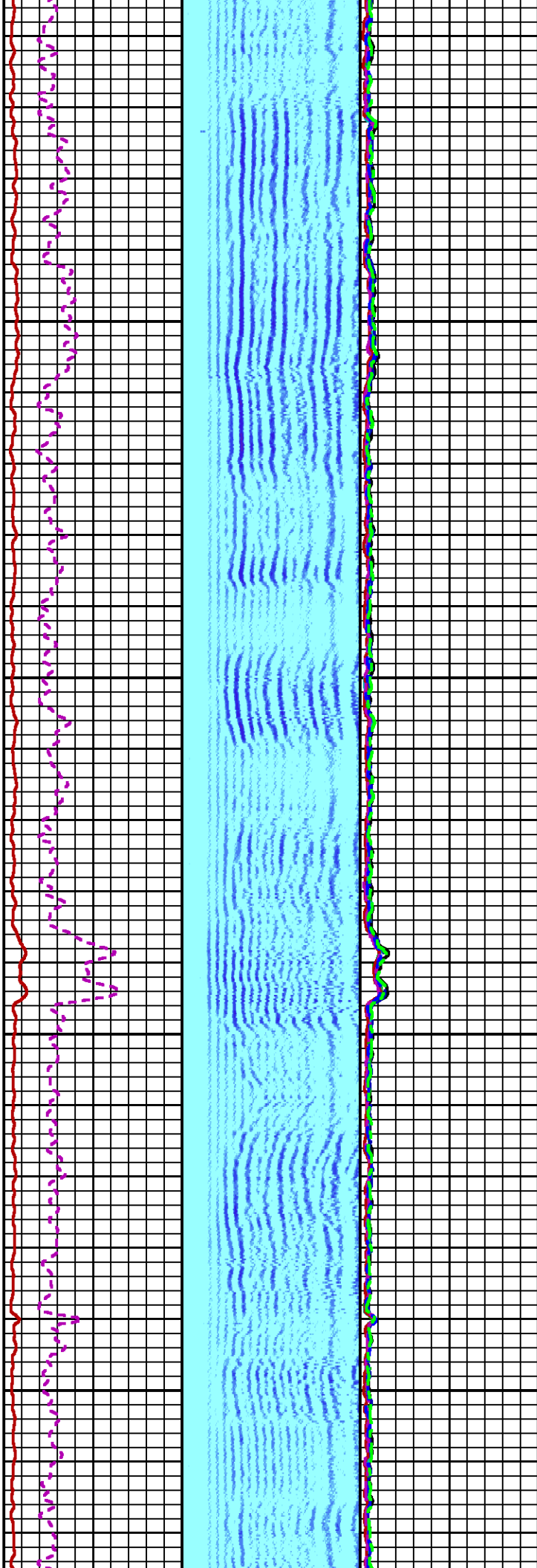




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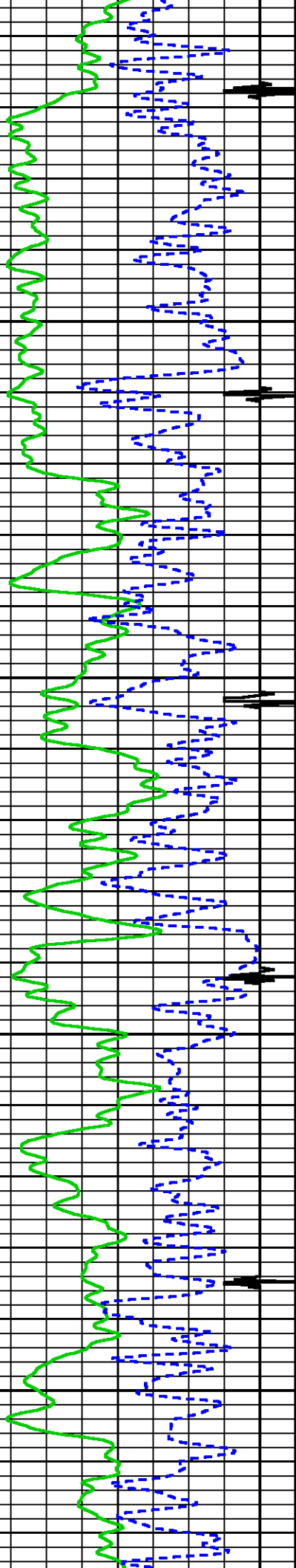
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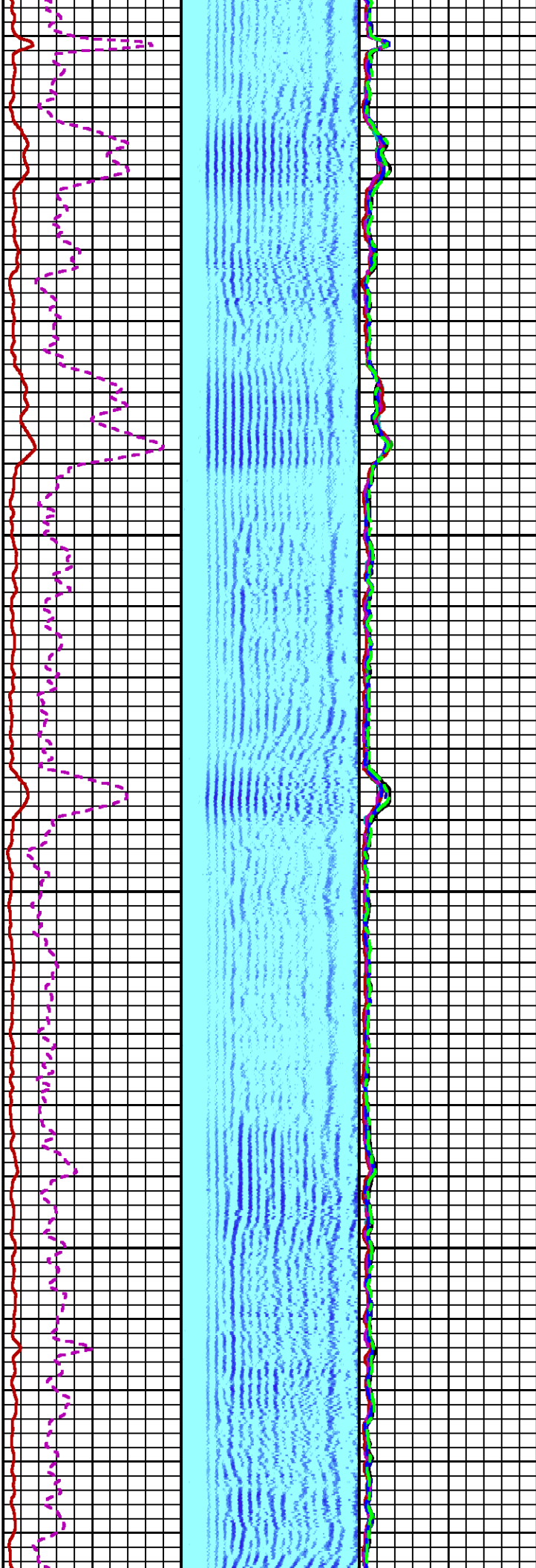




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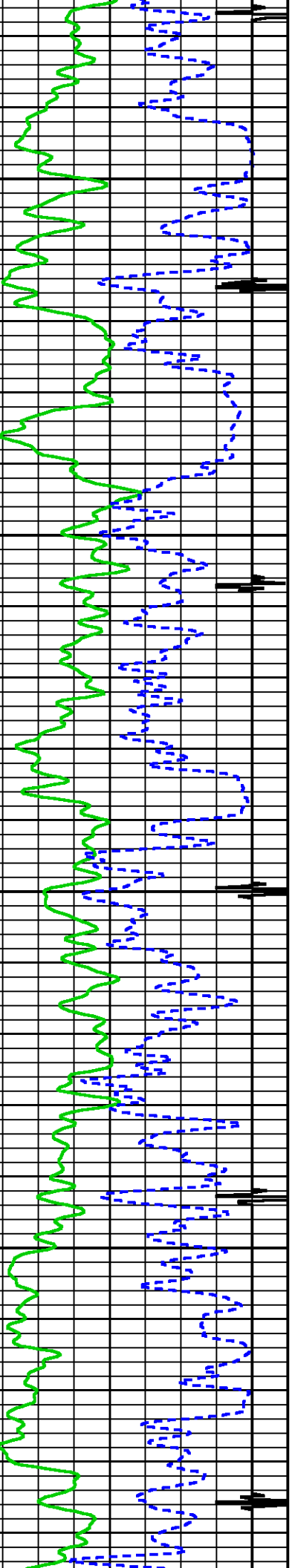
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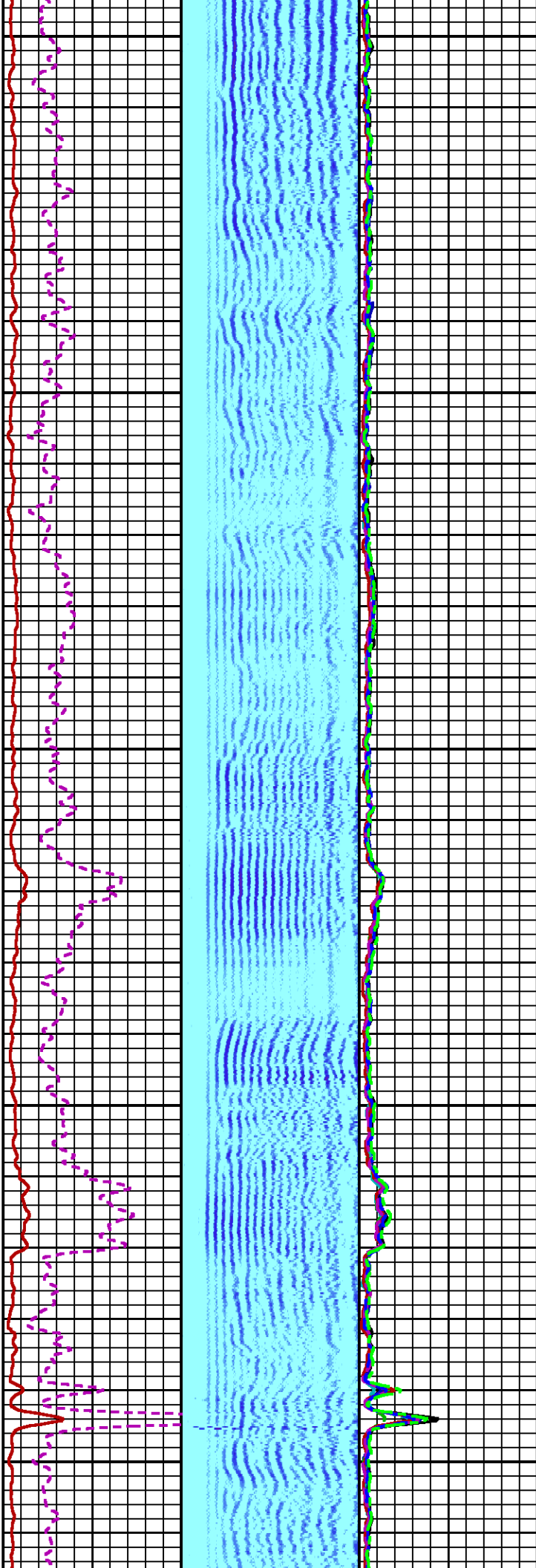
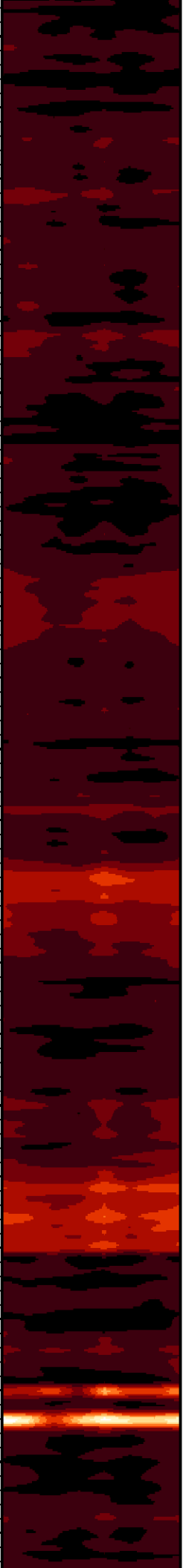




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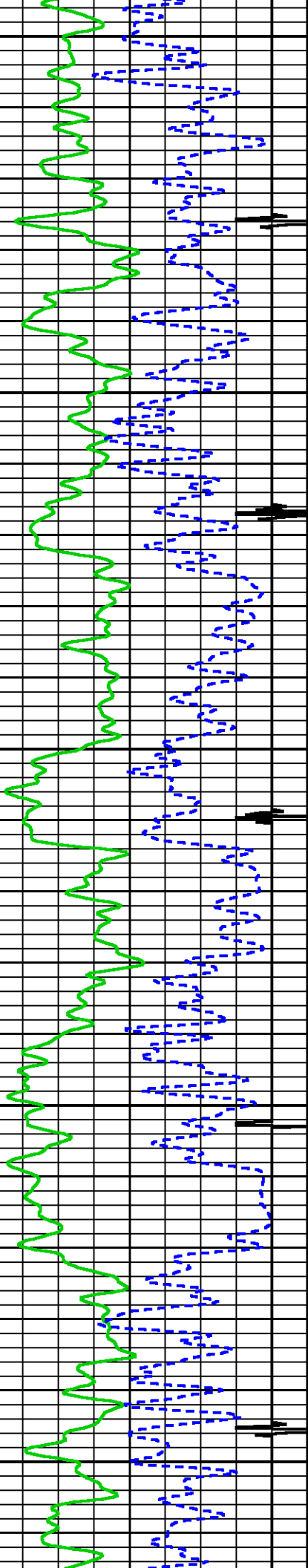


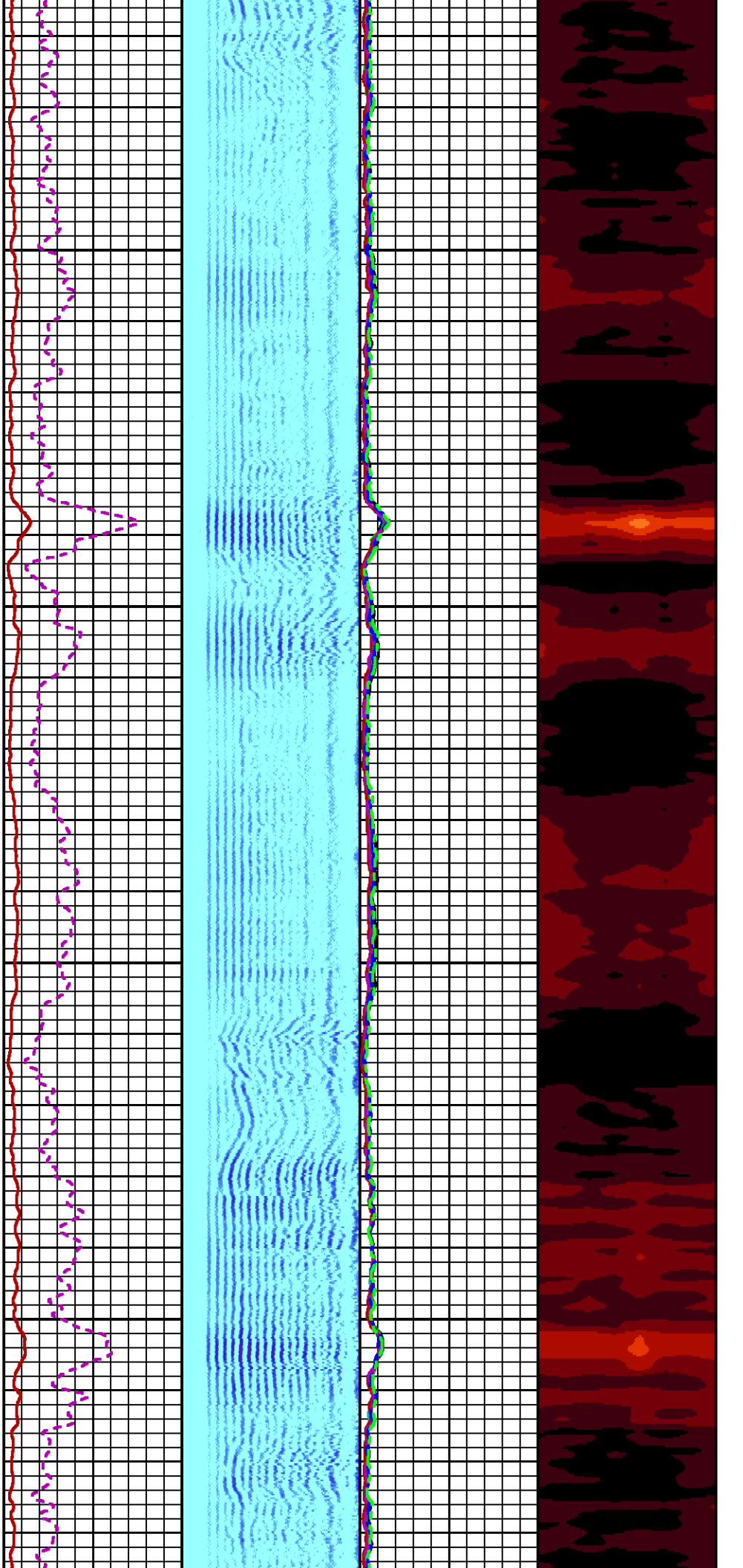


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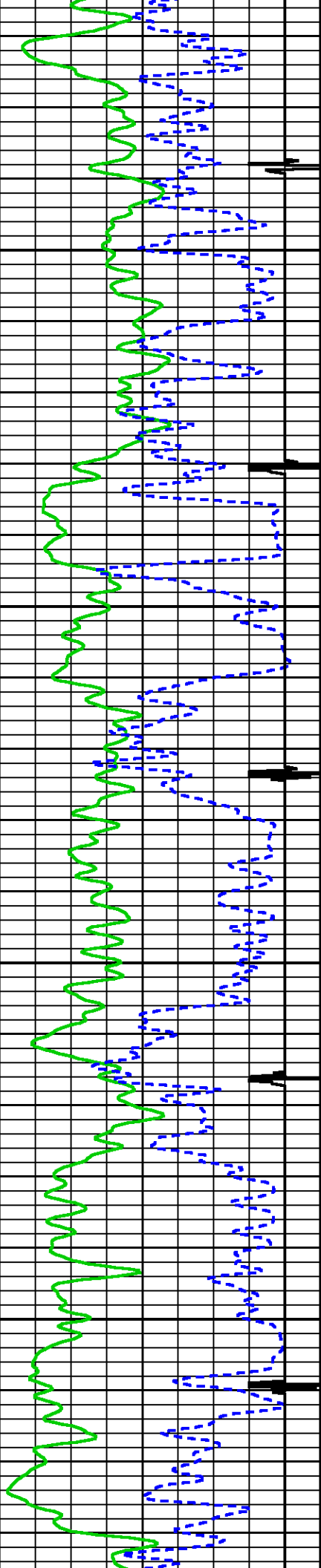
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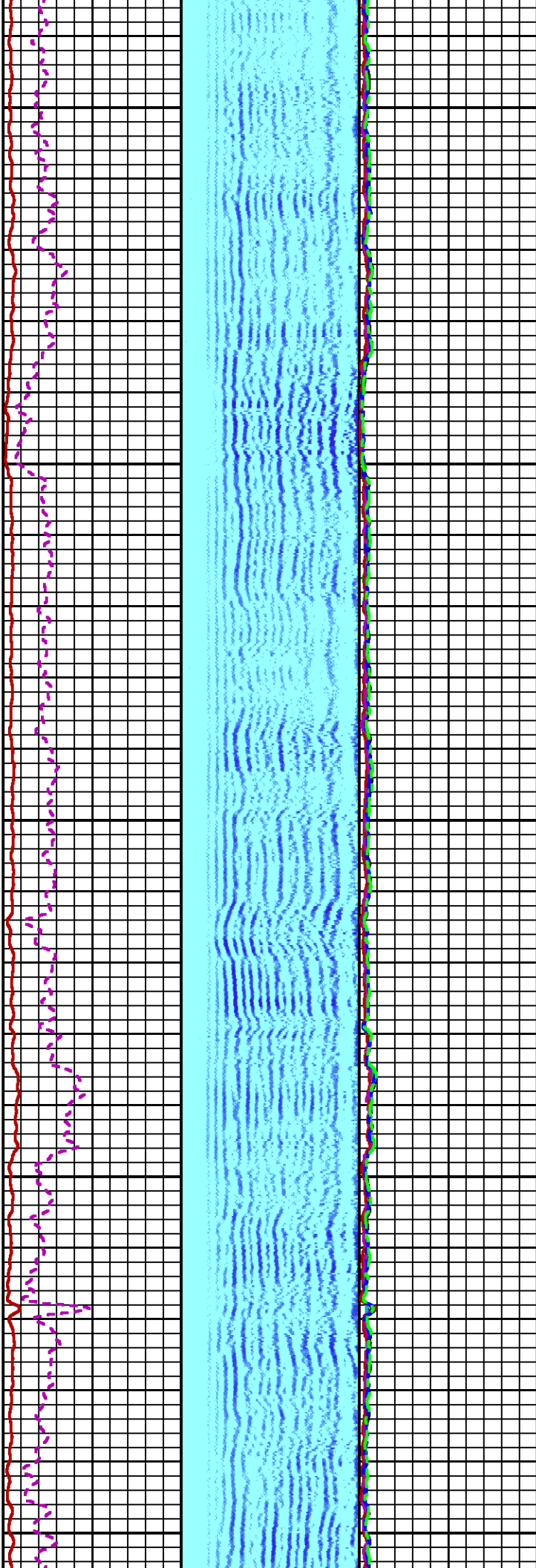
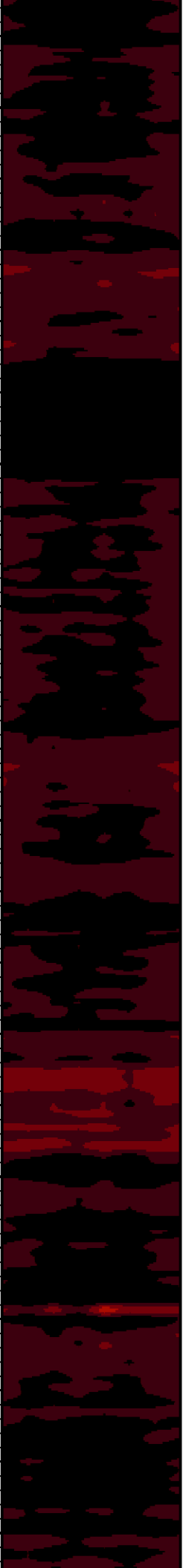




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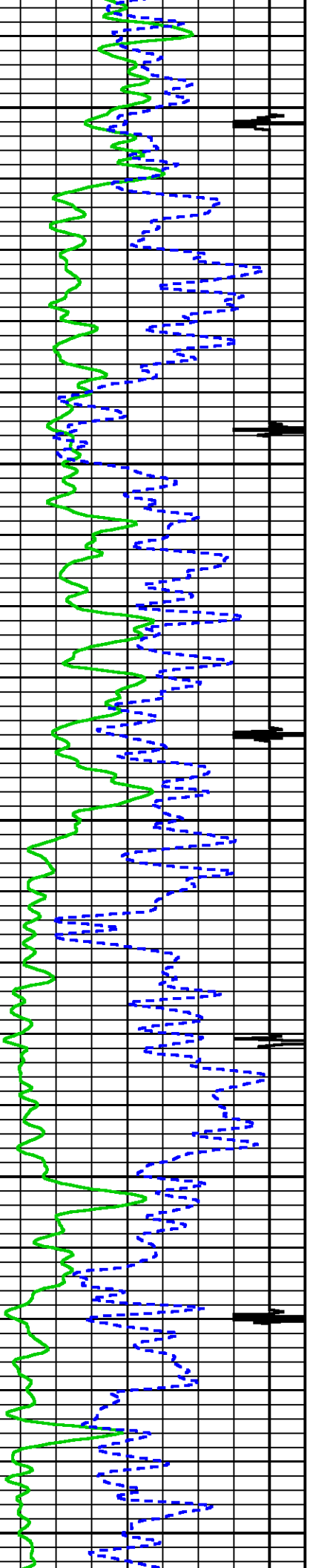
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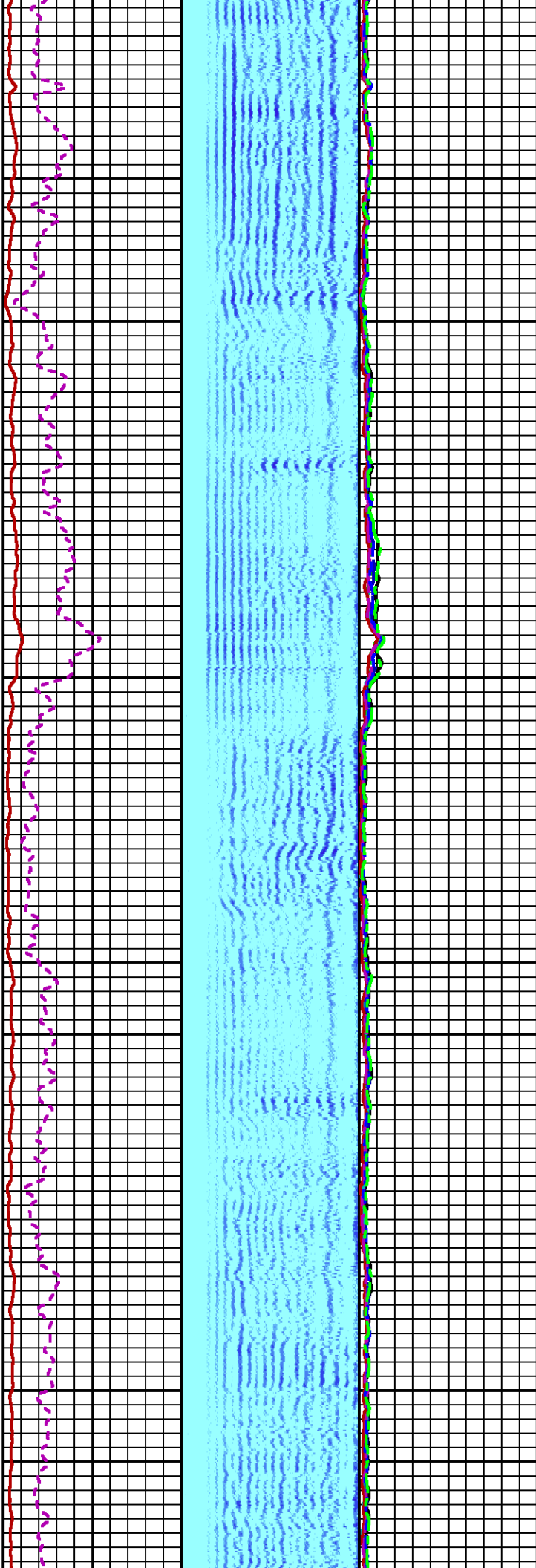




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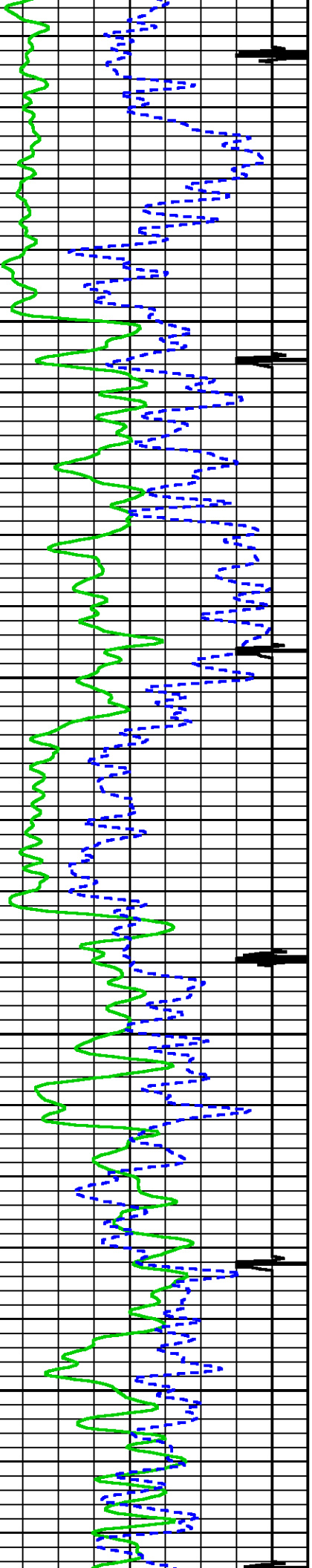
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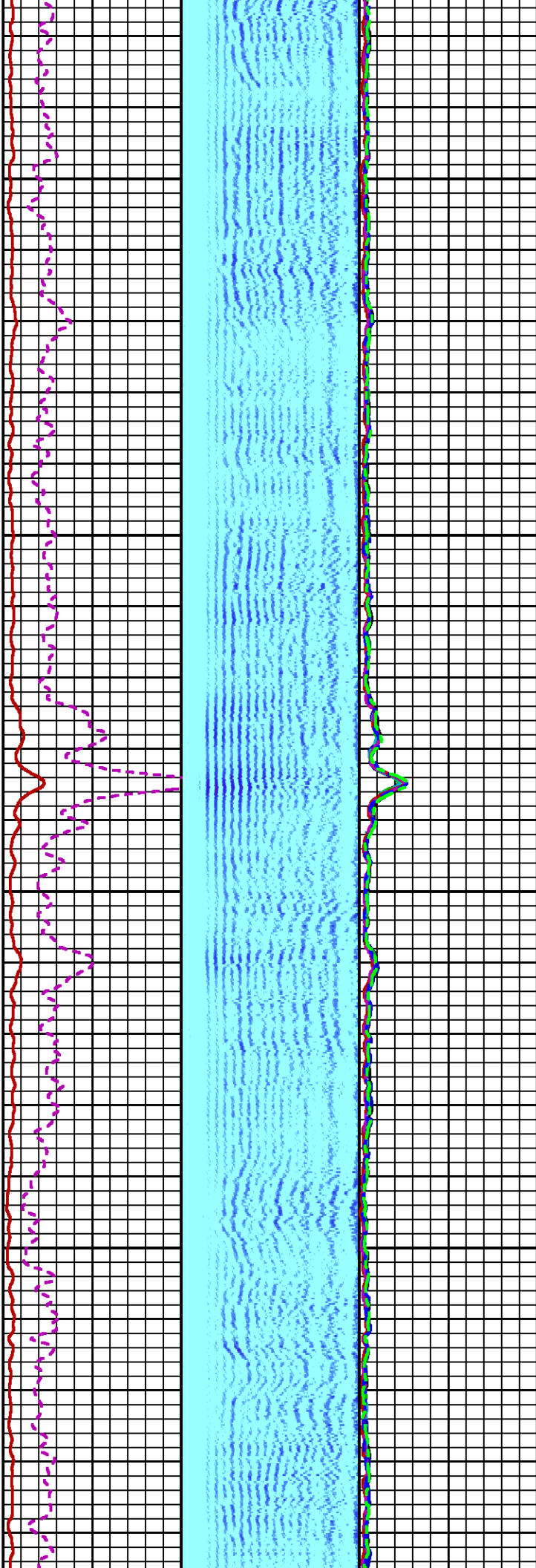
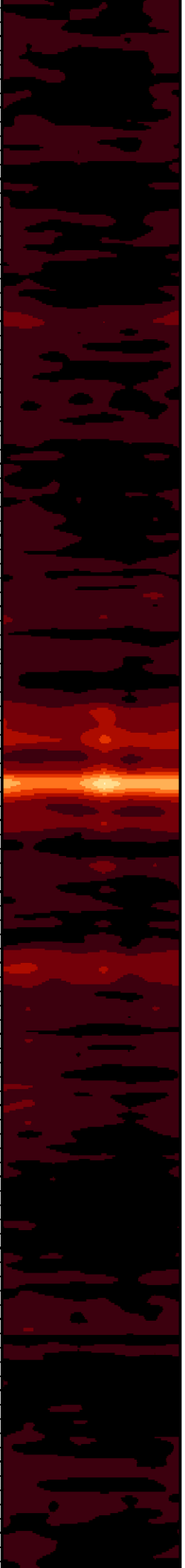




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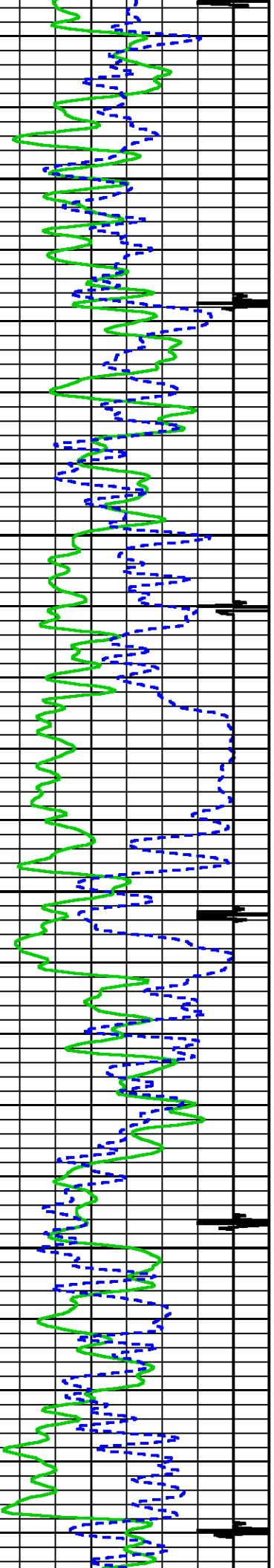
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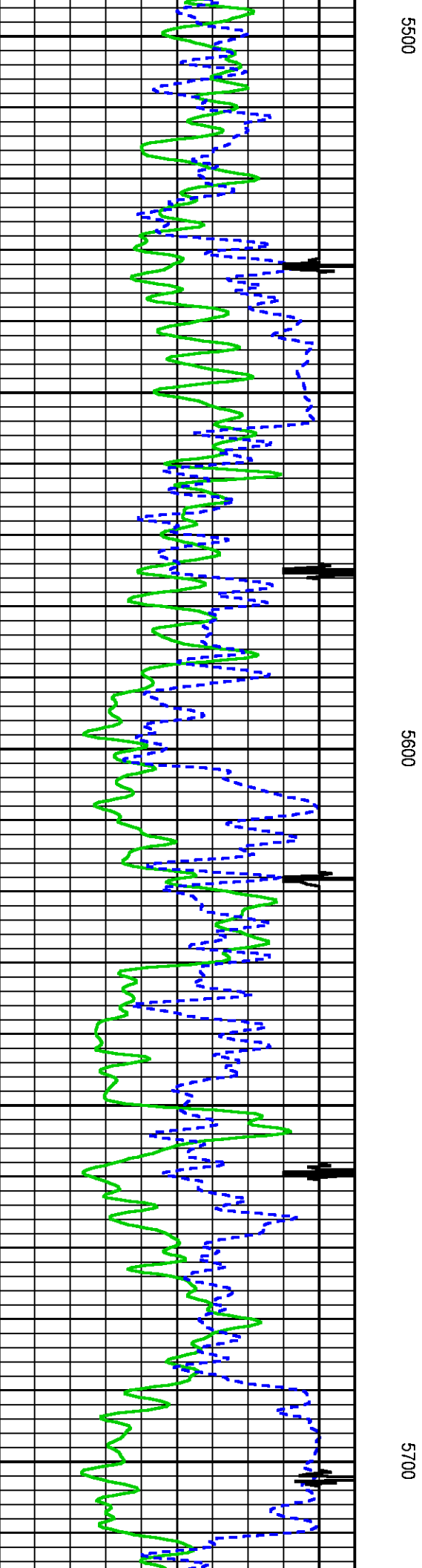
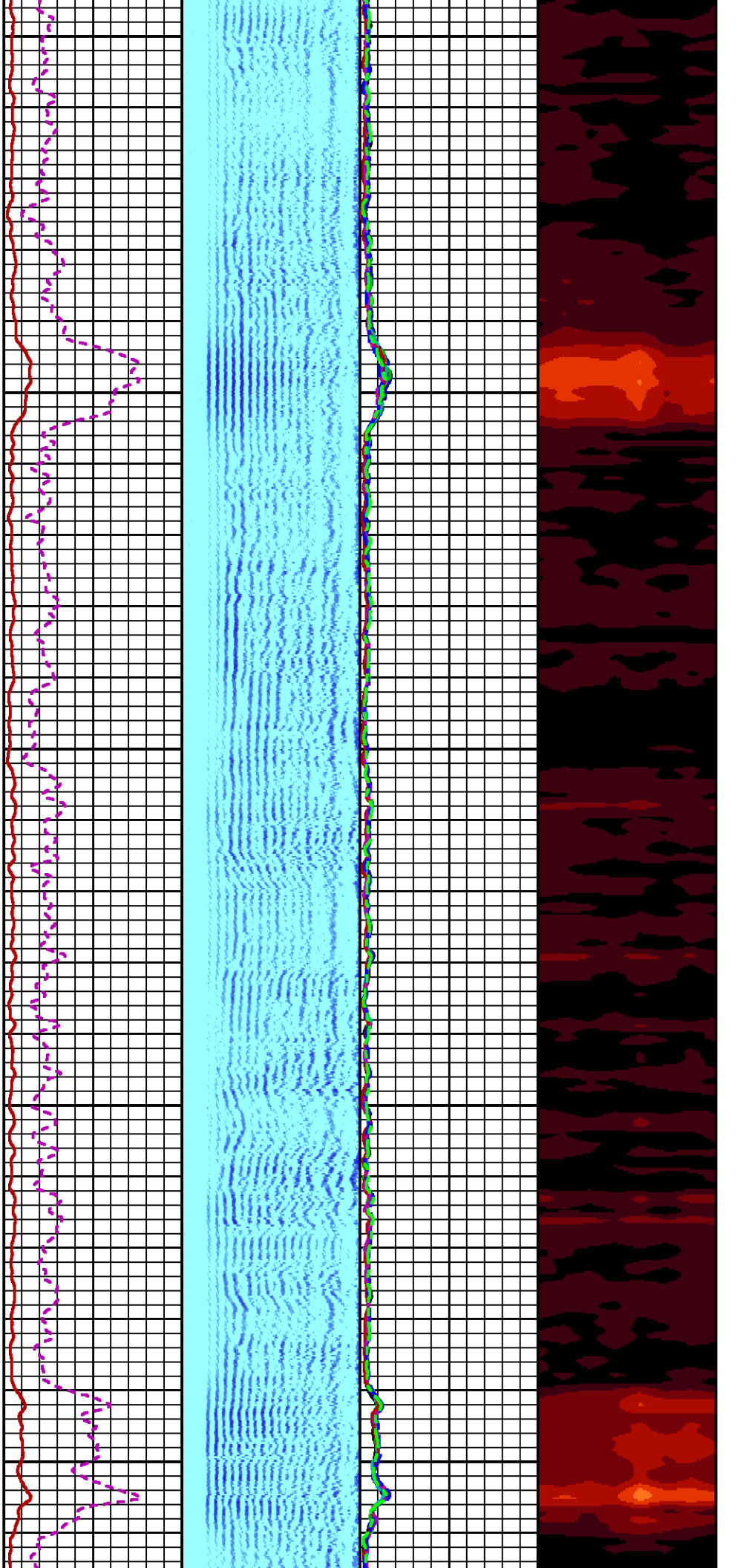


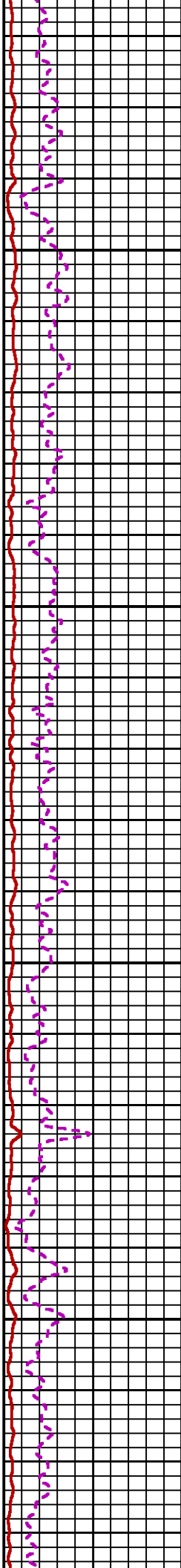
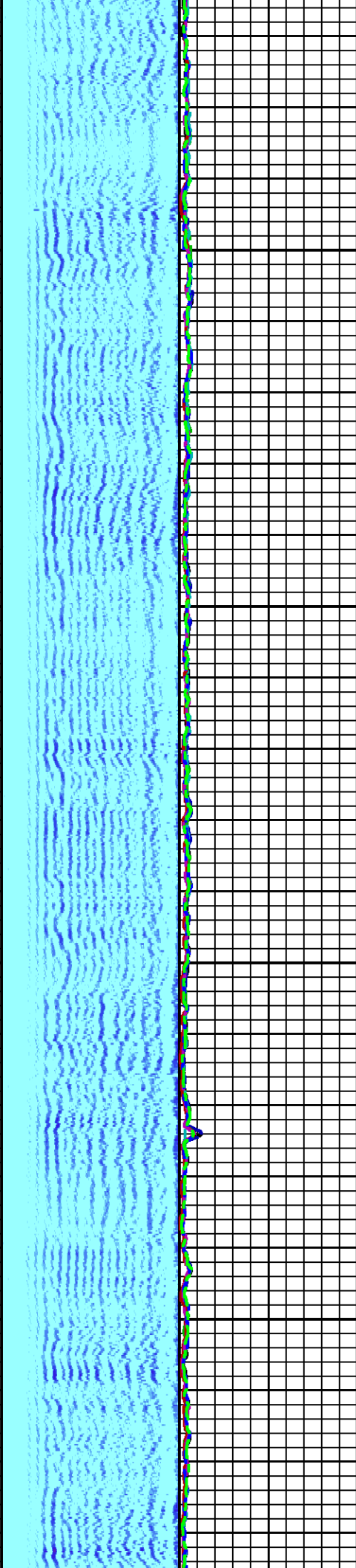


5300

5400

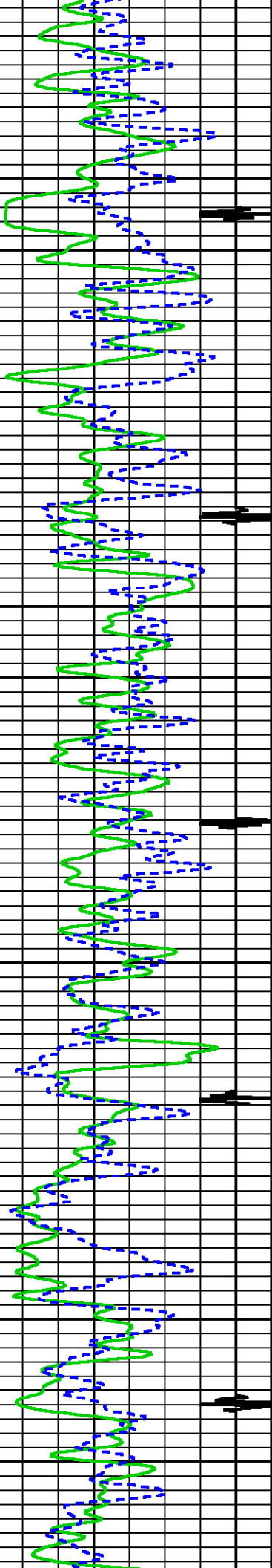


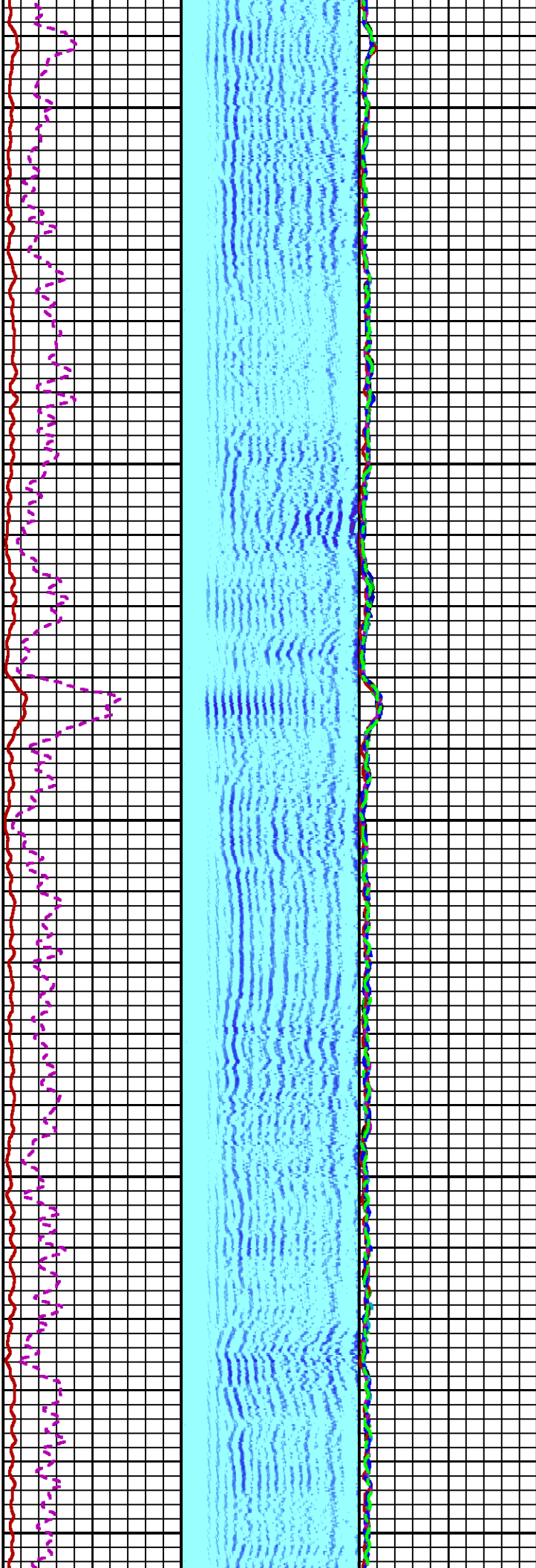




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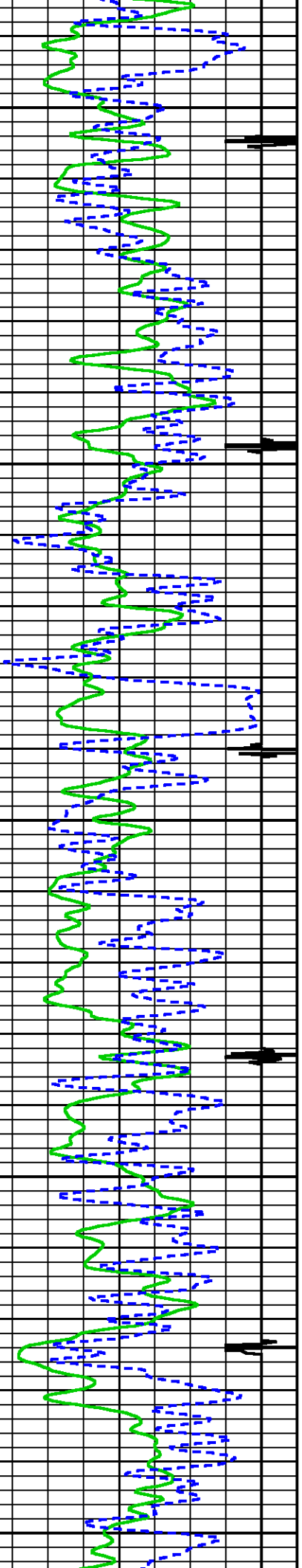
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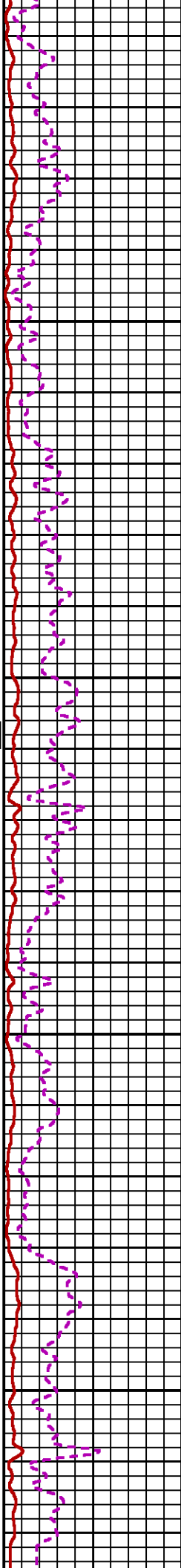
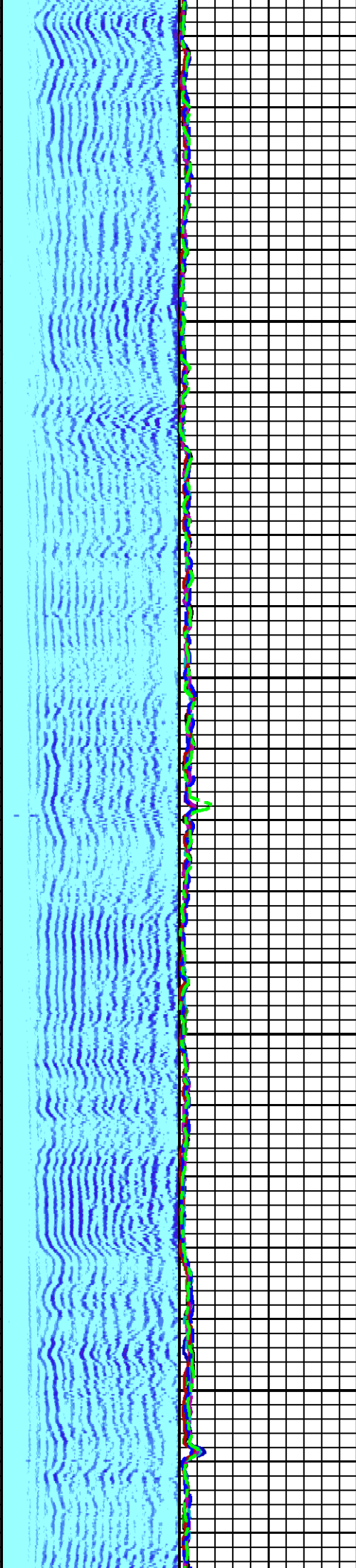
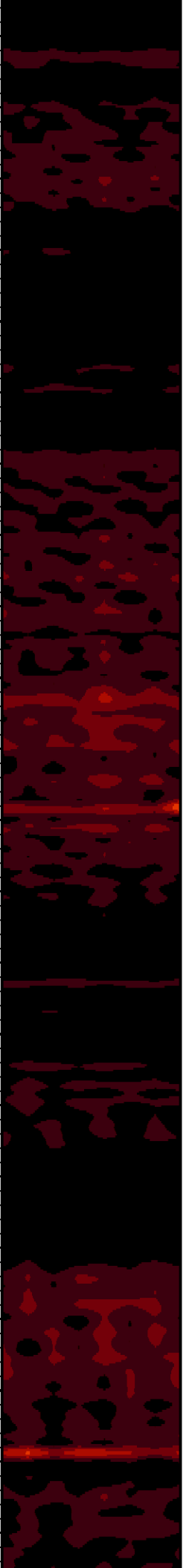




6000

6100

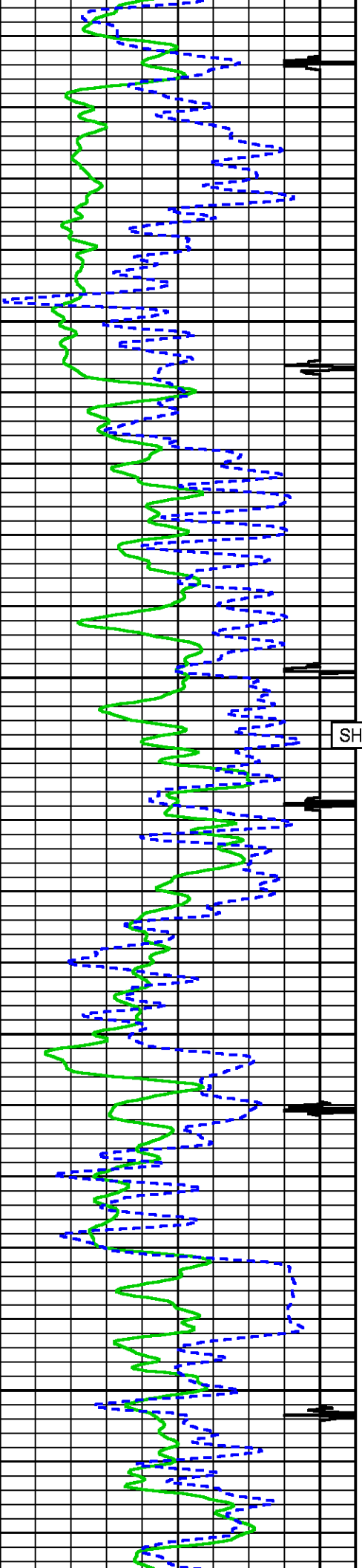


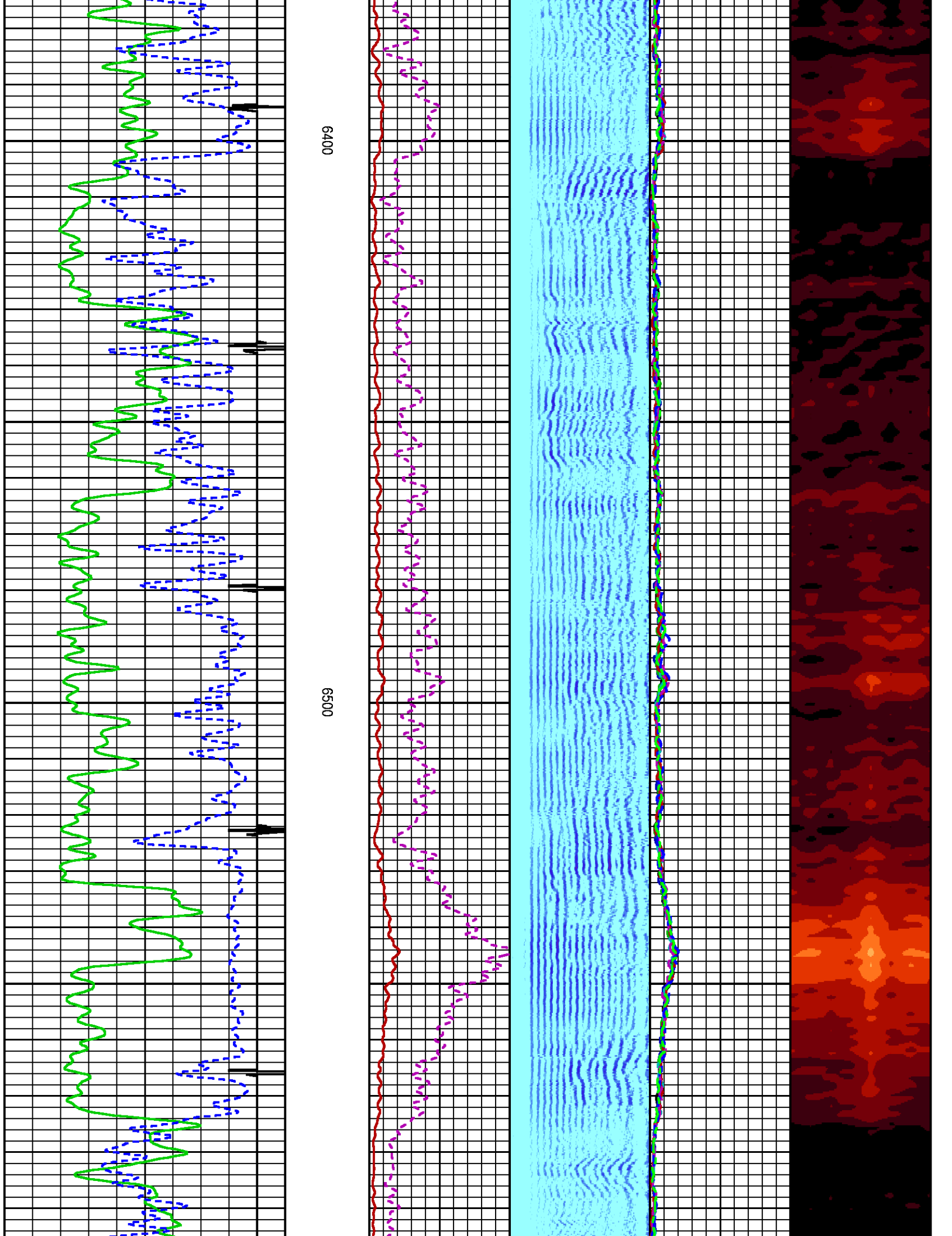


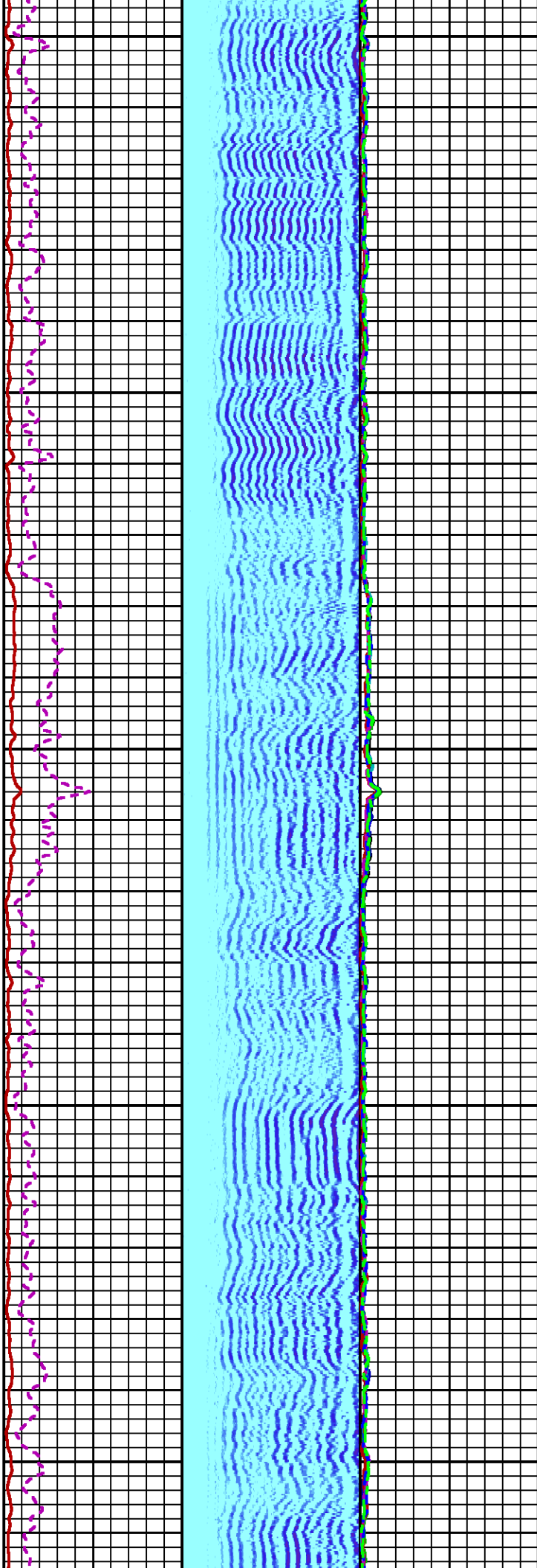
6200

6300

SHORT JOINT



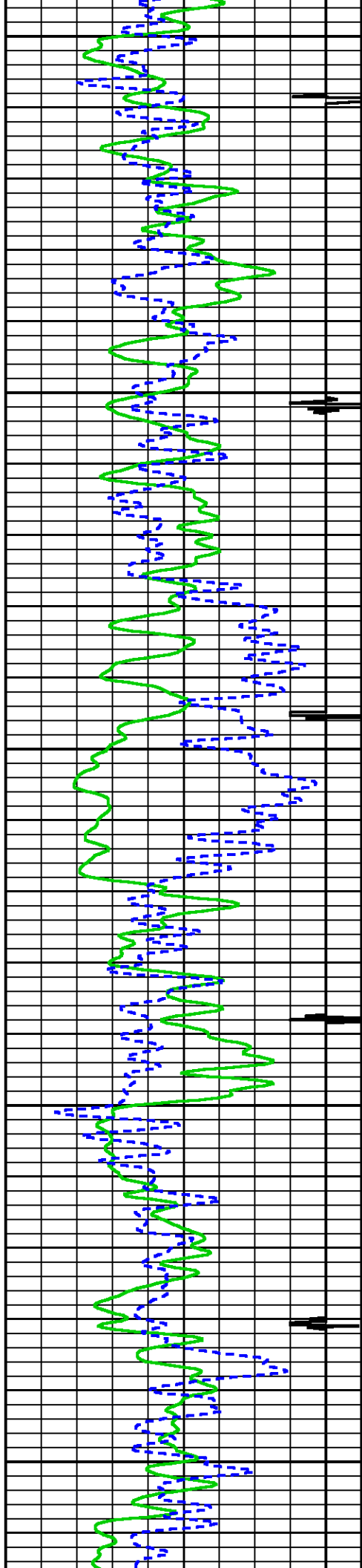


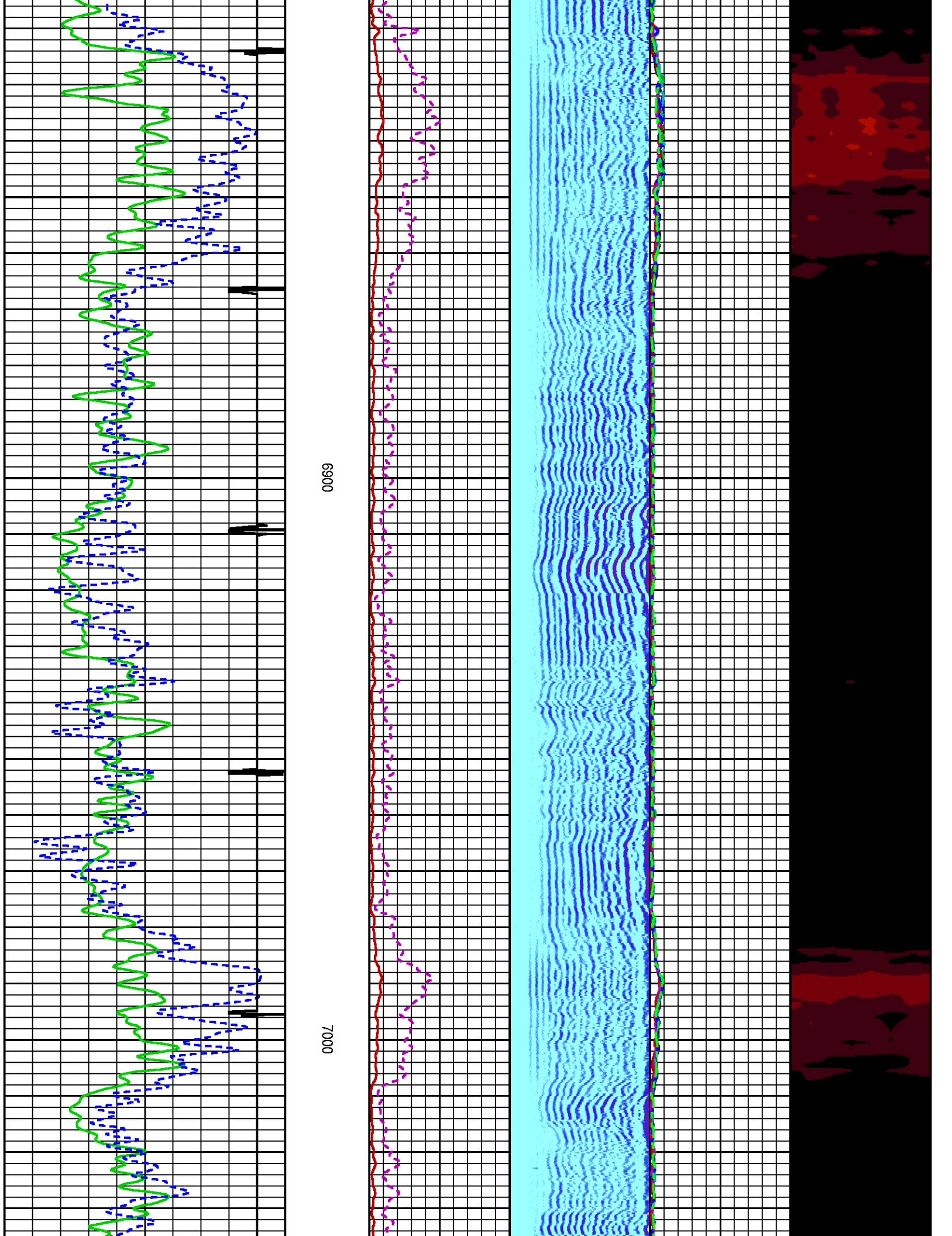


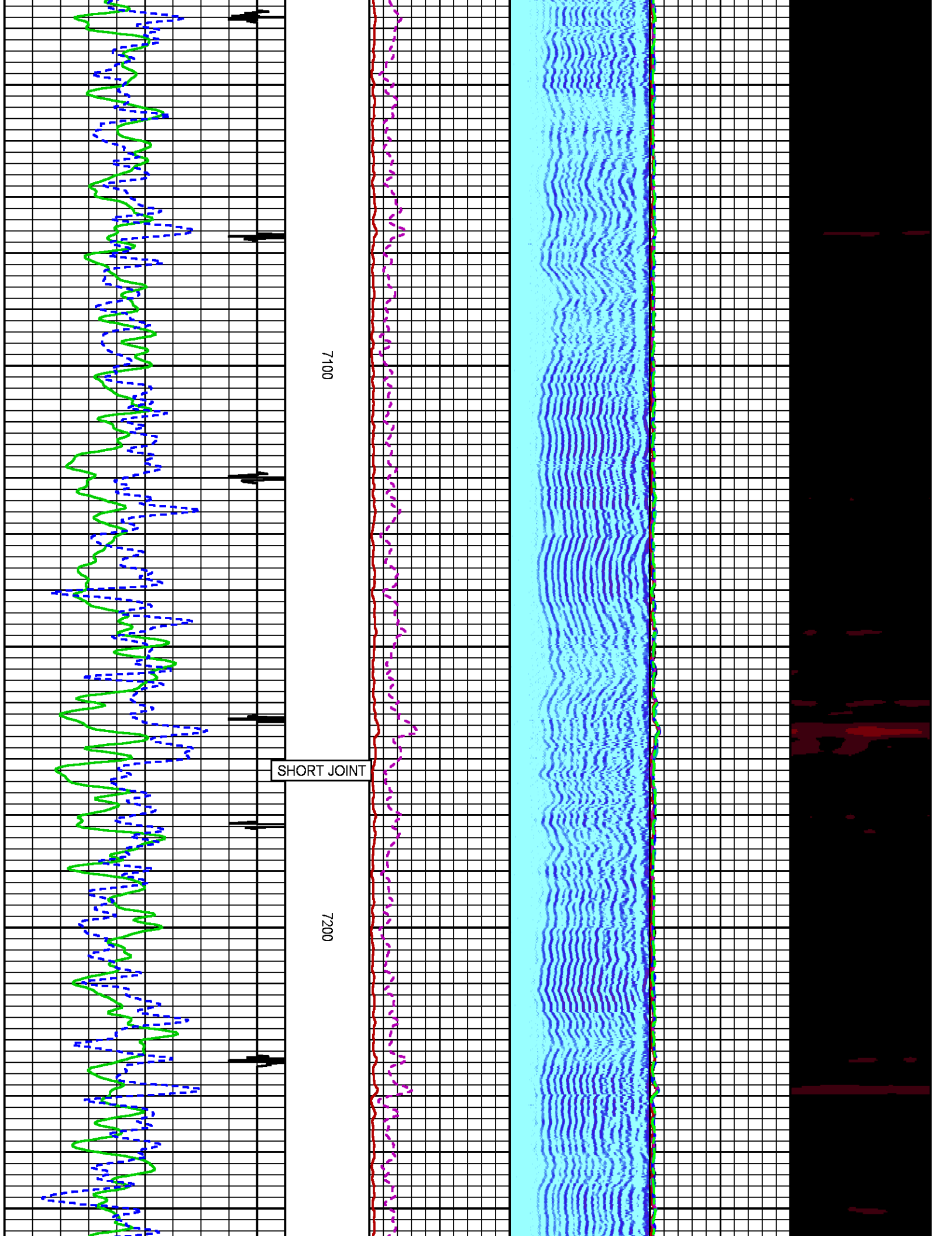
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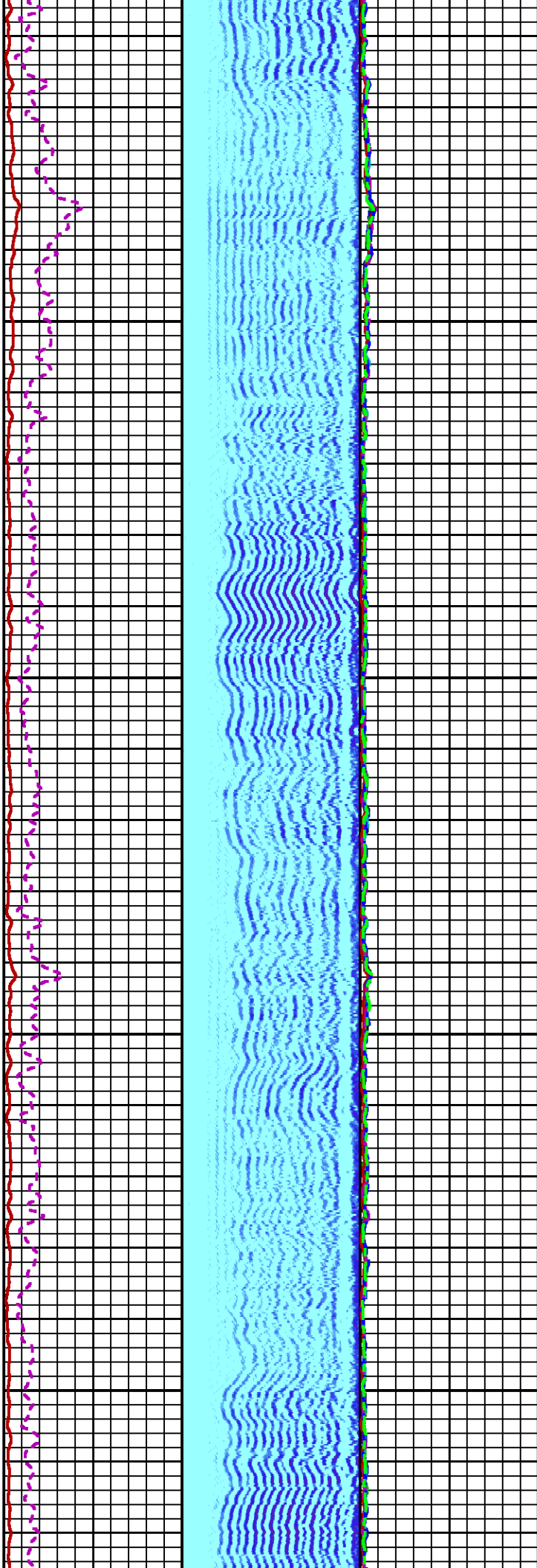
6700

6800



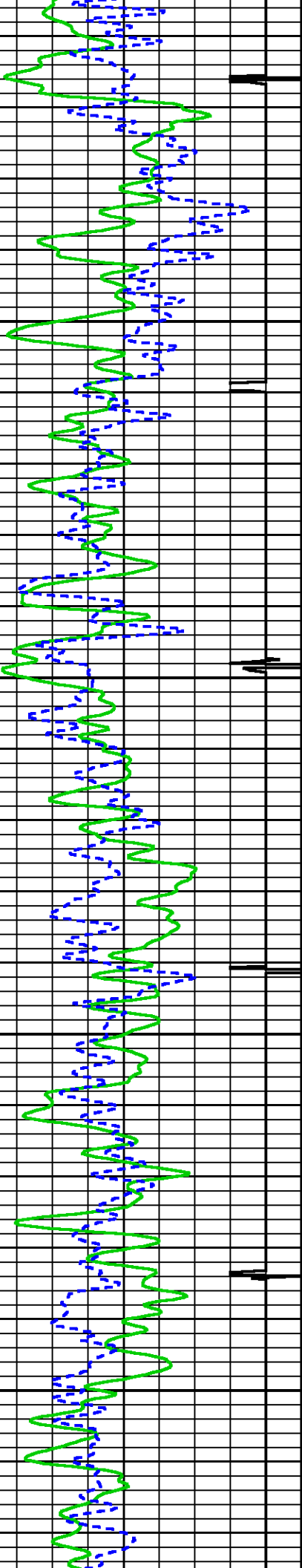


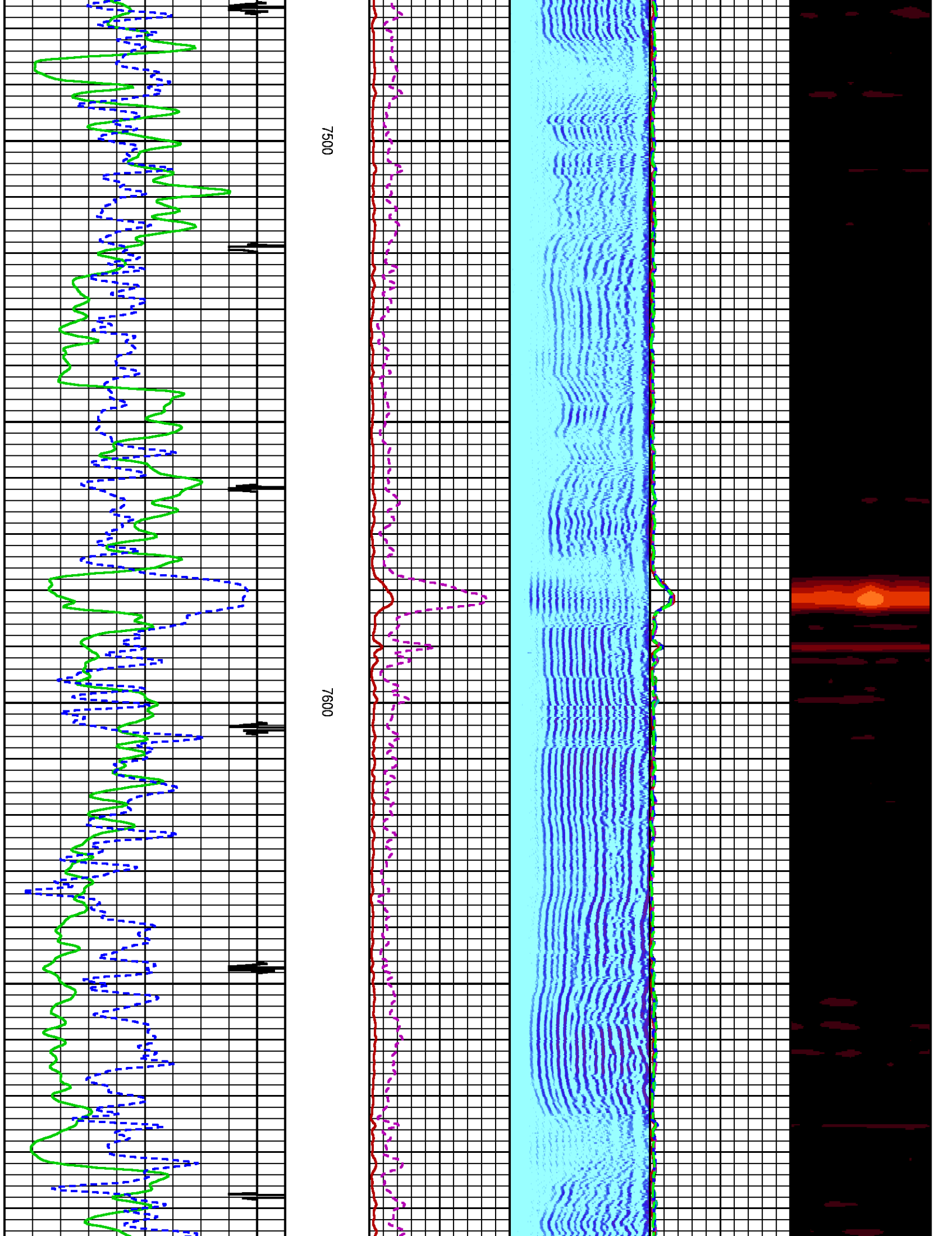


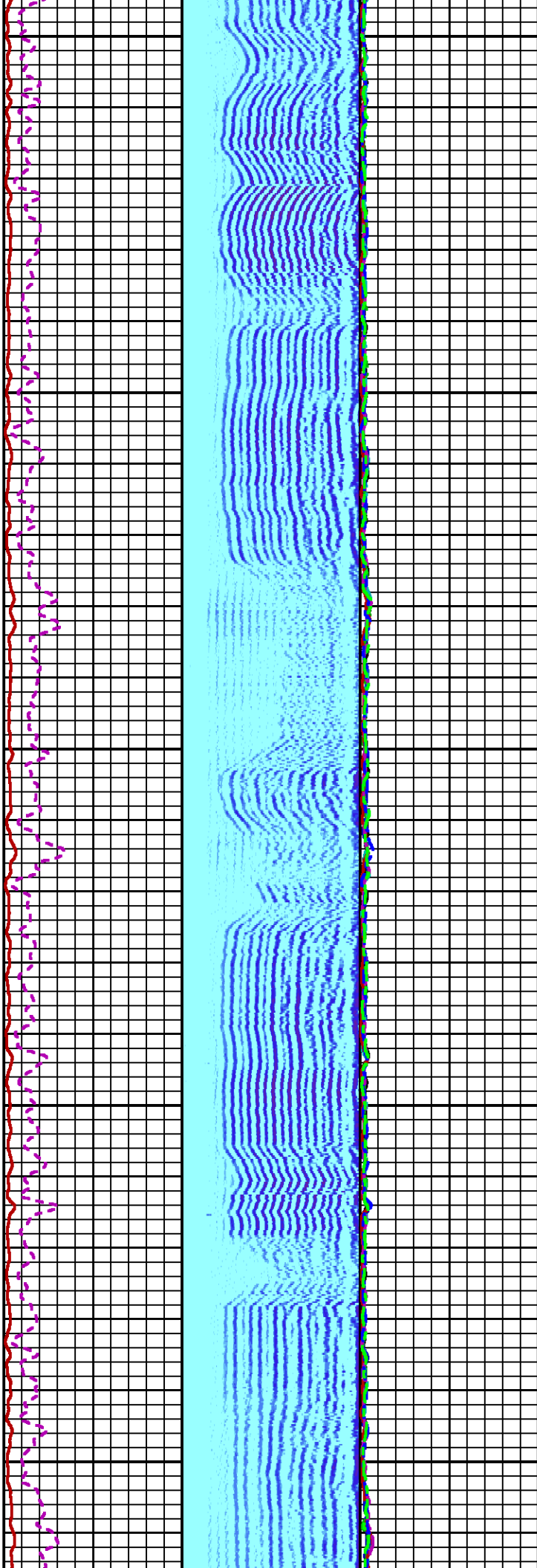


7300

7400



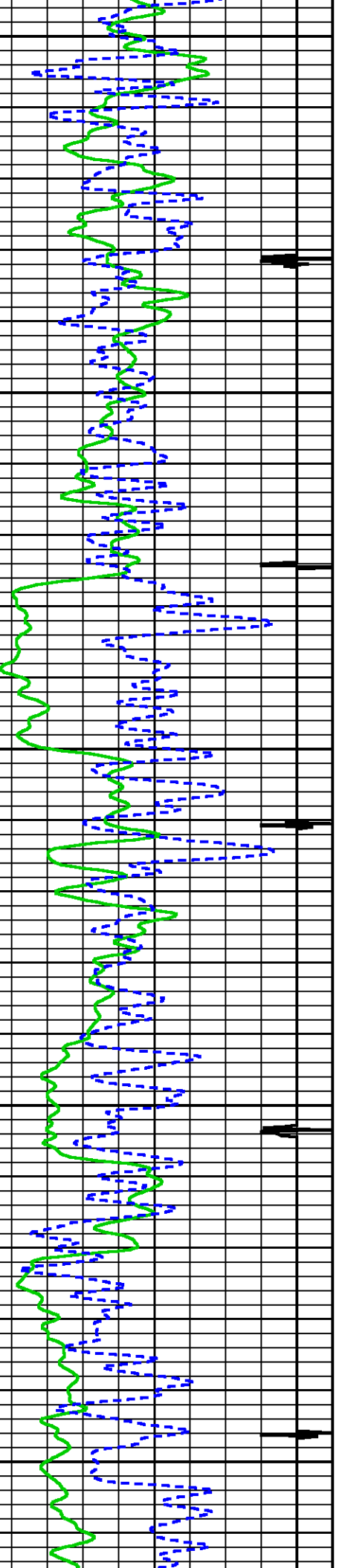
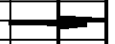


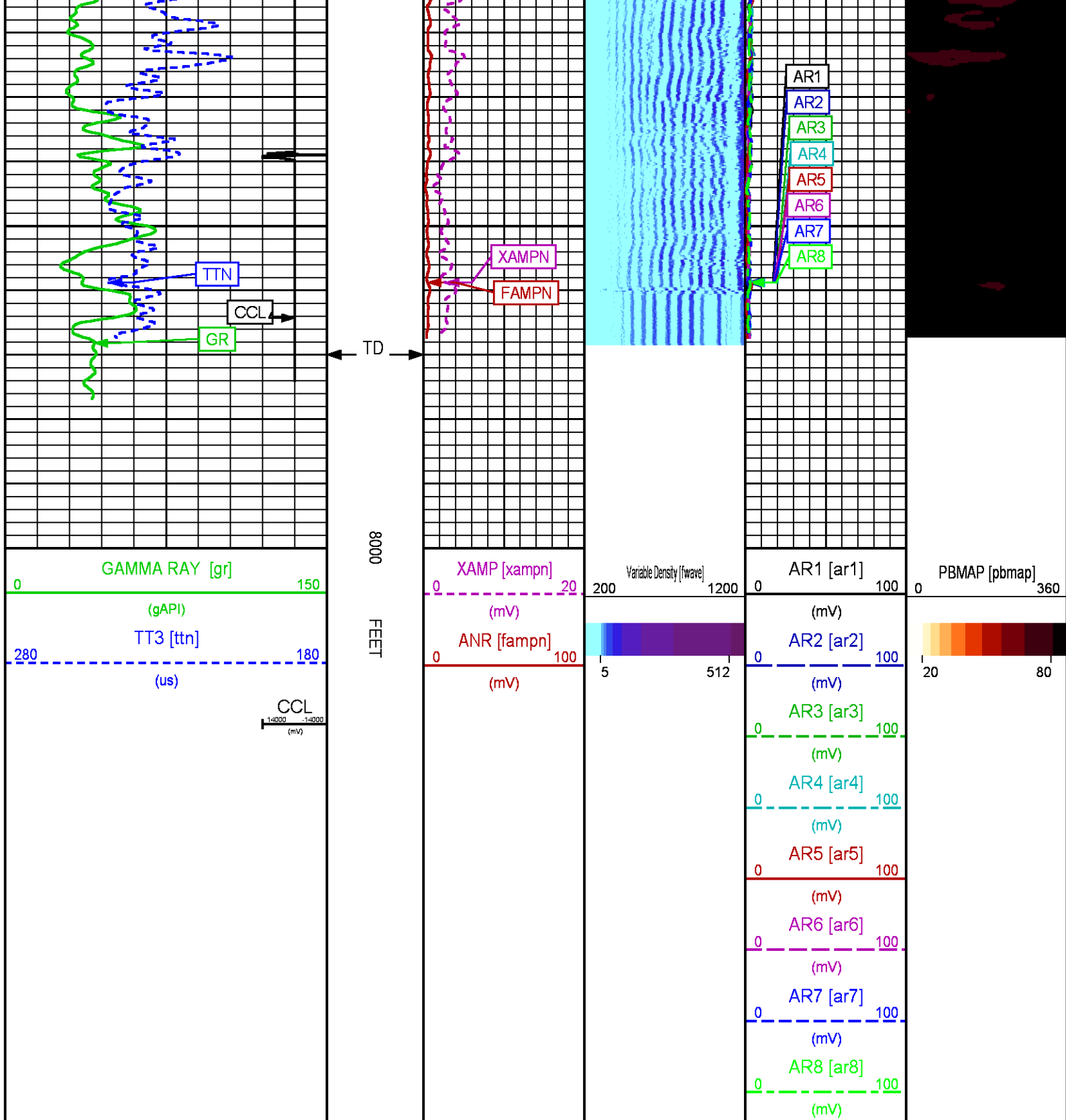


7700

7800

7900





REPEAT PASS 0 PSI

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE_NICHOLS_0994-13-20E/p012g01.prm
LOGGING MODE: DEPTH DIRECTION: UP
TOP DEPTH: 7727.500 ft BOTTOM DEPTH: 7984.424 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*)	176	us	TOP	7726.750
		175	us	7726.750	BOTTOM
	TT WINDOW LENGTH	500	us	TOP	BOTTOM
	FIRST BRK THRESHOLD (ttn*)	4	mV	"	"
RAL CASING PARAMETERS	PPT NEAR	200.391	us	"	"
RAL TOOL DELAY	TOOL DELAY (str1*)	-77	us	"	"
	TOOL DELAY (str2*)	-77	us	"	"
	TOOL DELAY (str3*)	-77	us	"	"
	TOOL DELAY (str4*)	-77	us	"	"
	TOOL DELAY (str5*)	-77	us	"	"
	TOOL DELAY (str6*)	-77	us	"	"
	TOOL DELAY (str7*)	-77	us	"	"
	TOOL DELAY (str8*)	-77	us	"	"
	TOOL DELAY (strn*)	-77	us	"	"
BASELINE NOISE (NEAR)	NOISE WINDOW START	112	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	"	"

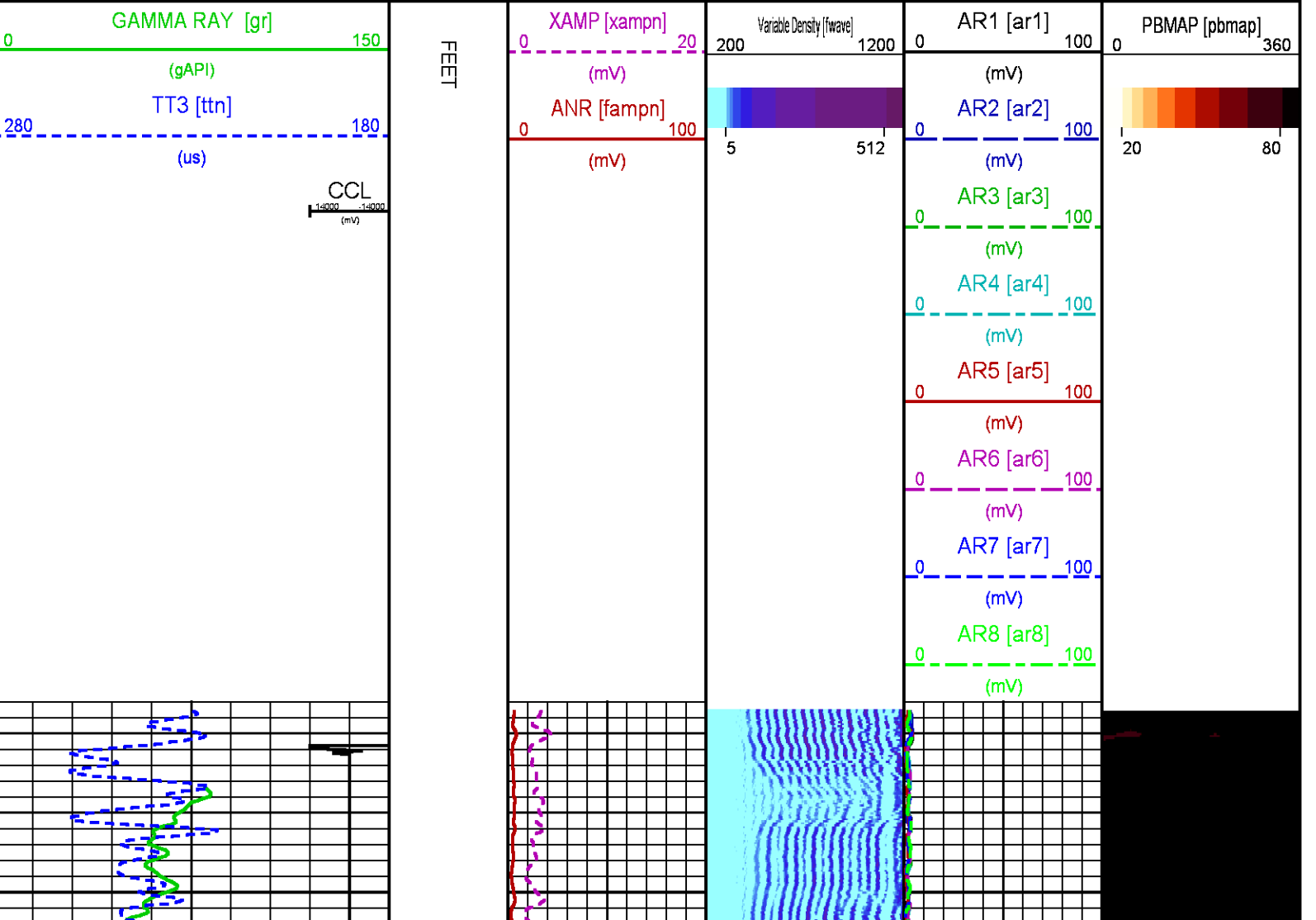
CURVE DESCRIPTION REPORT		
CURVE NAME	CREATION DATE	CURVE DESCRIPTION

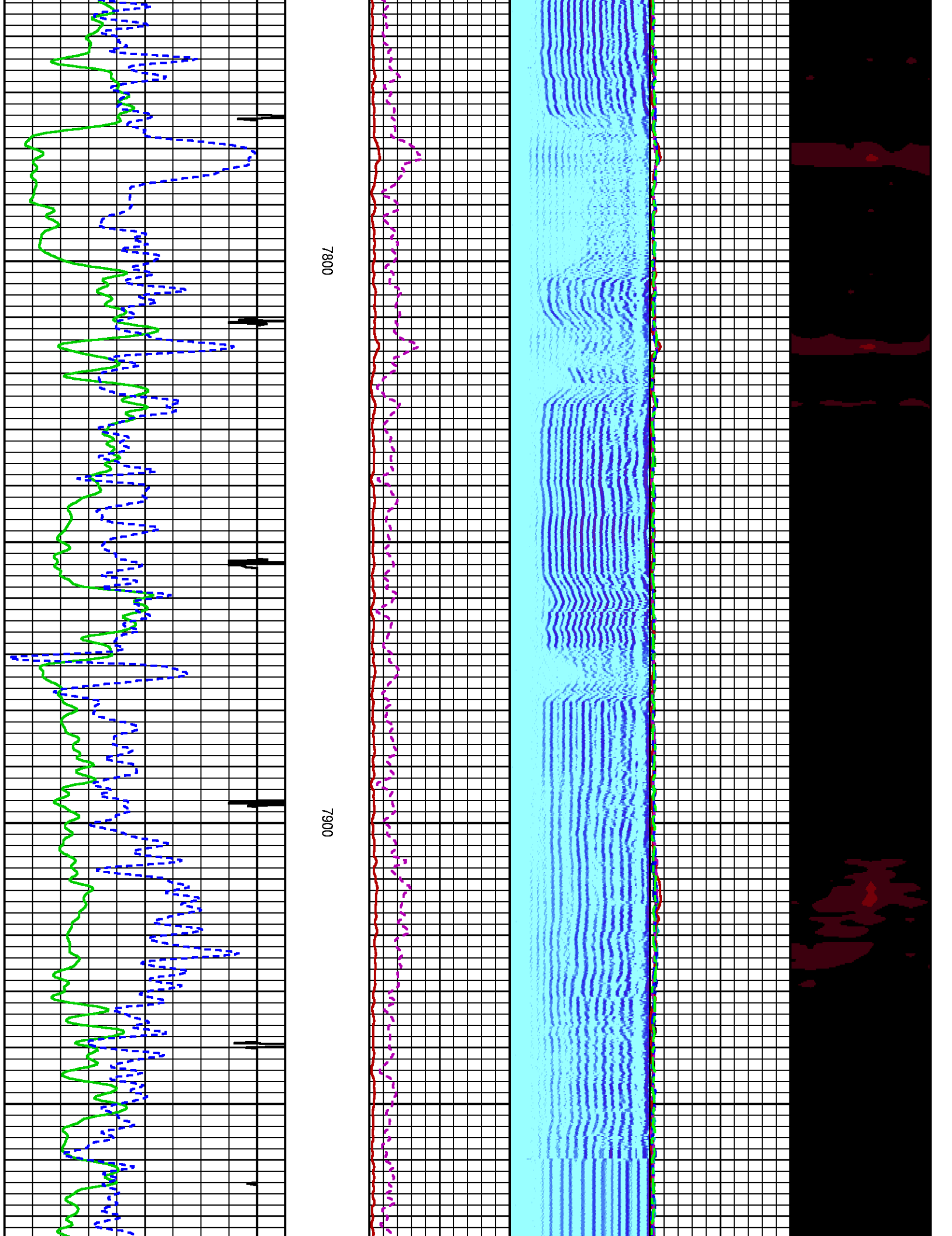
F1:AR1	N/A	FIXED GATE AMPLITUDE T-R1
F1:AR2	N/A	FIXED GATE AMPLITUDE T-R2
F1:AR3	N/A	FIXED GATE AMPLITUDE T-R3
F1:AR4	N/A	FIXED GATE AMPLITUDE T-R4
F1:AR5	N/A	FIXED GATE AMPLITUDE T-R5
F1:AR6	N/A	FIXED GATE AMPLITUDE T-R6
F1:AR7	N/A	FIXED GATE AMPLITUDE T-R7
F1:AR8	N/A	FIXED GATE AMPLITUDE T-R8
F1:CCL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

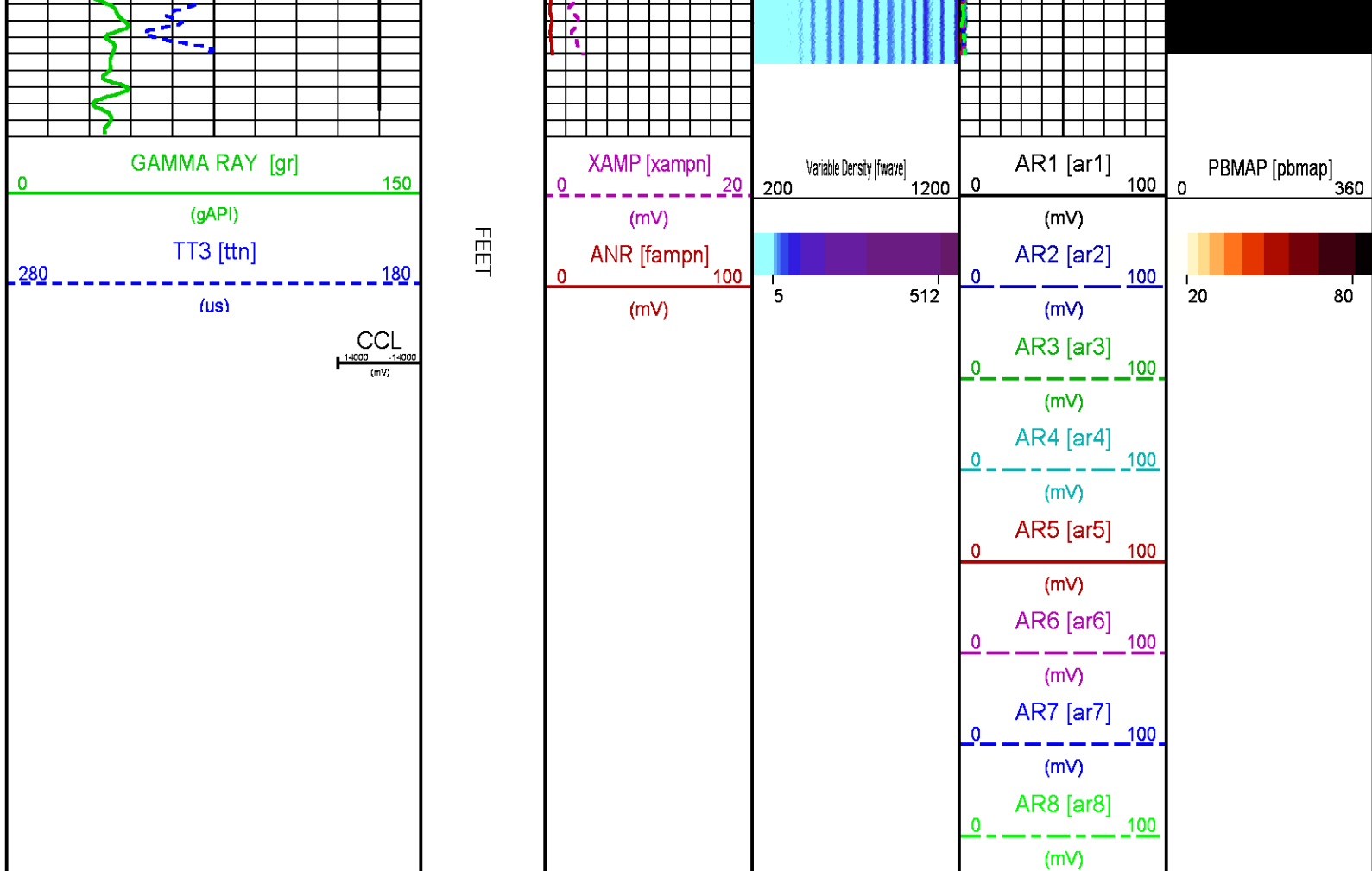
CURVE MEASURE POINT OFFSET

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:LARAMIE_RALRPT.fvpdf [5"/100' Scale]
Plot Interval	: 7727 - 7991.25 Feet
Data File 1	: F1 : SysA:/dat1a/LARAMIE_NICHOLS_0994-13-20E/RAL_REPEAT.xtf
Created On	: N/A
Company	: LARAMIE ENERGY II LLC
Well	: NICHOLS 0994-13-20E
Field	: VEGA
File Interval	: 7726 - 7992.5 Feet
OCT	: p012g







CALIBRATION / VERIFICATION SUMMARY

Source File: /dat1a/LARAMIE_NICHOLS_0994-13-20E/p012g.tp1

RAL PRIMARY CALIBRATION SUMMARY

TOOL #: 1426XA 10404539a

DATE/TIME PERFORMED: Mon Mar 19 15:51:46 2018

UNIT #: 5753XD 111111

	NEAR (mV)	RADIAL (mV)	FAR (mV)
TARGETS	100.00	100.00	150.00

	NEAR	R1	R2	R3	R4	R5	R6	R7	R8	FAR	CAL
ZERO (mV)	-0.16	-0.17	-0.14	-0.13	-0.21	-0.21	-0.24	-0.13	-0.22	-1.13	0.03
AMP FLUID (mV)	47	47	46	46	46	46	47	47	47	64	47
TT (us)	216	216	216	216	215	215	214	214	216	322	218
M FACTOR	2.14	2.13	2.16	2.16	2.17	2.14	2.12	2.14	2.12	2.29	2.12

RAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1426XA 10404539a

DATE/TIME PERFORMED: Mon Mar 19 15:57:24 2018

DAYS SINCE CAL: 0

UNIT #: 5753XD 111111

CABLE #: m14291 smallline

	NEAR (mV)	R1 (mV)	R2 (mV)	R3 (mV)	R4 (mV)	R5 (mV)	R6 (mV)	R7 (mV)	R8 (mV)	FAR (mV)	CAL (mV)
ZERO	-0.02	-0.02	0.04	0.01	0.10	-0.03	-0.07	0.01	0.00	0.15	-0.05
AMP AIR	1.97	1.42	1.47	1.91	1.45	0.28	0.94	1.10	1.64	2.37	99.46

SHOP M FACTOR	SHOP A FACTOR	WIRELINE FACTOR
2.12	0.00	1.00

GR PRIMARY CALIBRATION SUMMARY

TOOL #:		1355XA 12670180		DATE/TIME PERFORMED:		Wed Feb 7 16:57:59 2018	
UNIT #:		3882TD HL6741		CALB JIG #:		4702NK DA_228	
GR	BACKGROUND	CALBRTR ON	CR DIFF	MULT	BACKGROUND	CALBRTR ON	CALBRTR
	(cts)	(cts)	(cts/s)		(gAPI)	(gAPI)	(gAPI)
	48.98	223.16	174.2	0.574	28.12	128.12	100

GR PRIMARY VERIFICATION SUMMARY

TOOL #:		1355XA 12670180		DATE/TIME PERFORMED:		Wed Feb 7 16:59:44 2018	
UNIT #:		3882TD HL6741		VERI JIG #:		4702NK DA_228	
	BACKGROUND	CALBRTR ON	MULT	BACKGROUND	CALBRTR ON	DIFF.	
	(cts)	(cts)		(gAPI)	(gAPI)	(gAPI)	
GR	49.82	213.56	0.574	28.60	122.61	94.00	
						90.00	110.00

INSTRUMENT CONFIGURATION

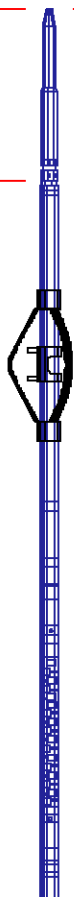
Source File: /dat1a/LARAMIE_NICHOLS_0994-13-20E/p012g~tdg

CABLEHEAD

Diameter : 2.75"
Length : 2.25'
Weight : 10 lbs
Series : CABL234
Mnemonic : CBLH

RADIAL BOND TOOL

Diameter : 2.75"
Length : 11.17'
Weight : 126 lbs
Series : 1426XA
Mnemonic : RAL
Measure Point: 5.75': XMTR
Measure Point: 4.21': NEAR MP
Measure Point: 3.25': FAR MP
Measure Point: 2.67': NEAR RCVR
Measure Point: 0.75': FAR RCVR

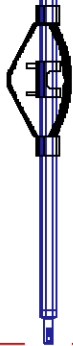


20.38'

XMTR — 12.71'
NEAR MP — 11.17'
FAR MP — 10.21'
NEAR RCVR — 9.62'

RAL GR/TEMP/CCL/CHV DETECTOR

Diameter : 2.75"
 Length : 6.96'
 Weight : 85 lbs
 Series : 1355XA
 Mnemonic : RAL
 Measure Point: 5.79': CCL
 Measure Point: 1.67': GR
 Measure Point: 0.17': TEMP



FAR RCVR 7.71'

CCL 5.79'

GR 1.67'

TEMP 0.17'
0.00'

TOTAL LENGTH: 20.38'
 TOTAL WEIGHT: 235 lbs
 MAX DIAMETER: 0'4.00"

**BAKER
HUGHES**
a GE company



ECLIPS

COMPANY

LARAMIE ENERGY II LLC

WELL

NICHOLS 0994-13-20E

FIELD

VEGA

COUNTY

MESA

STATE COLORADO

FILE NO:

API NO:

05077104030000

LOCATION:

SHL 1777 FNL 2775 FEL
 BHL 340 FNL 1484 FEL

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

ELEVATIONS:

KB 7161 FT

DF

GL 7137 FT

DATE 19-Mar-2018