



RADIAL CEMENT BOND LOG

FILE NO:

COMPANY

LARAMIE ENERGY II LLC

WELL

NICHOLS 0994-13-21W

FIELD

VEGA

API NO:
05077104130000

COUNTY

MESA

STATE COLORADO

Ver. 4.10

LOCATION:

SHL 1779 FNL 2787 FEL
BHL 151 FNL 1606 FEL

SEC 24 TWP 9S 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 16-Mar-2018

RUN 1 TRIP 1

SERVICE ORDER USJ

DEPTH DRILLER 7834 FT

DEPTH LOGGER 7768 FT

BOTTOM LOGGED INTERVAL 7767 FT

TOP LOGGED INTERVAL 24 FT

TIME STARTED 15:00

TIME FINISHED 17:30

OPERATOR RIG TIME LOGGER

TYPE OF FLUID IN HOLE WATER

FLUID DENSITY NA

FLUID SALINITY NA

FLUID LEVEL 48 FT

LOGGED CEMENT TOP 3488 FT

WELLHEAD PRESSURE 0 PSI

MAXIMUM HOLE DEVIATION NA

NOMINAL LOGGING SPEED 90 FMIN

MAX. RECORDED TEMP. 227 DEGF

REFERENCE LOG NA

REFERENCE LOG DATE NA

EQUIP. NO. 4291 LOCATION GRAND JCT

RECORDED BY R. ZUNIGA

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: 6027-6049
SJ: 6930-6948
CREW: R. ZUNIGA, J. PENA, A. SHAHNOOSHI

EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
1	1	RAL	1426XA	10404539	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: Sun Mar 18 16:05:47 2018

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE_NICHOLS_0994-13-21W/p012gR01.prm
 LOGGING MODE: DEPTH DIRECTION: UP
 TOP DEPTH: 10.750 ft BOTTOM DEPTH: 7769.000 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*)	175	us	"	"
	TT WINDOW LENGTH	500	us	"	"
	FIRST BRK THRESHOLD (ttn*)	4	mV	"	"
RAL CASING PARAMETERS	PPT NEAR	200.391	us	"	"
RAL TOOL DELAY	TOOL DELAY (str1*)	-73	us	"	"
	TOOL DELAY (str2*)	-73	us	"	"
	TOOL DELAY (str3*)	-73	us	"	"
	TOOL DELAY (str4*)	-73	us	"	"
	TOOL DELAY (str5*)	-73	us	"	"
	TOOL DELAY (str6*)	-73	us	"	"
	TOOL DELAY (str7*)	-73	us	"	"
	TOOL DELAY (str8*)	-73	us	"	"
	TOOL DELAY (strn*)	-73	us	"	"
BASELINE NOISE (NEAR)	NOISE WINDOW START	114	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	"	"

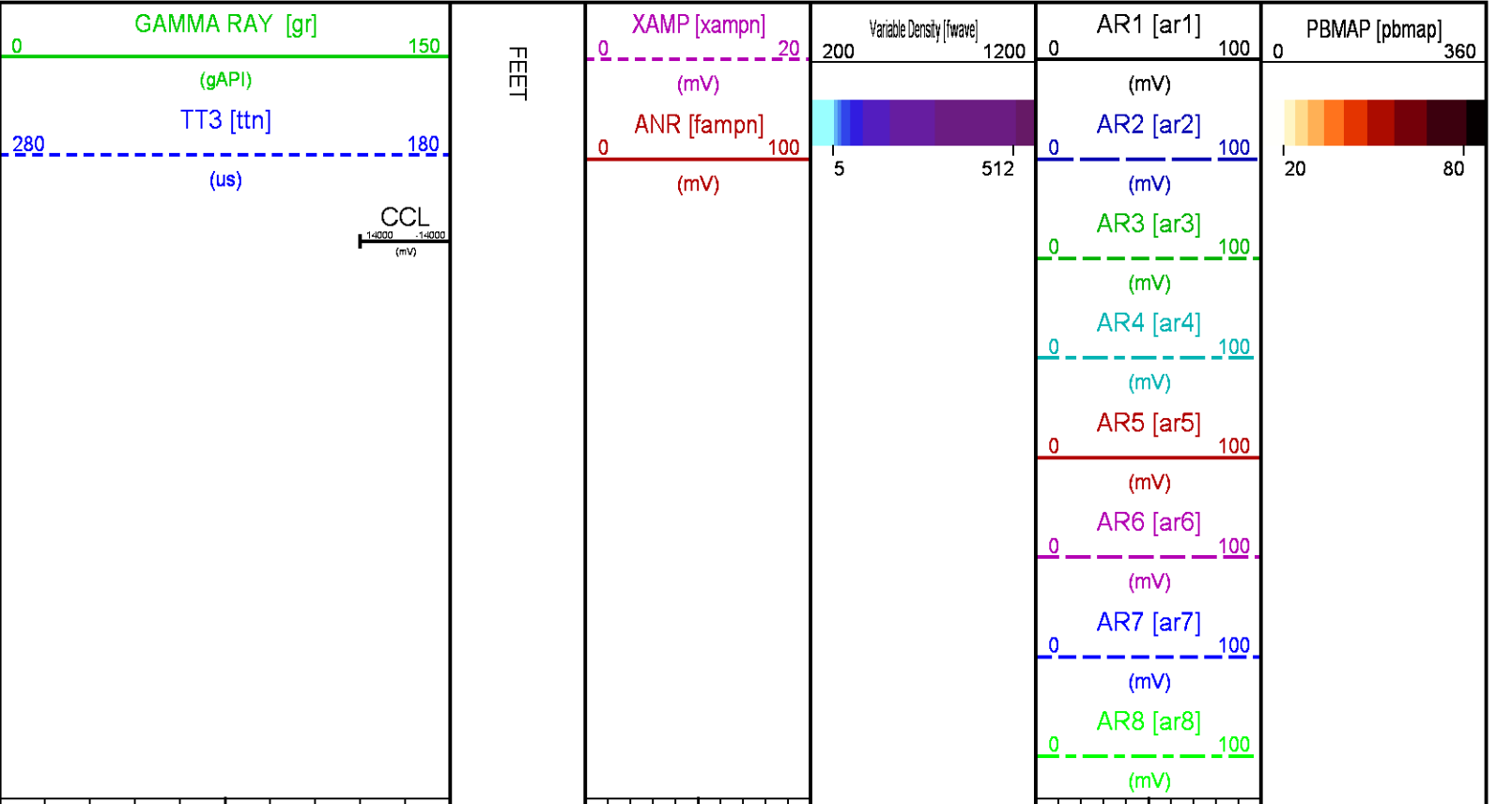
CURVE DESCRIPTION REPORT

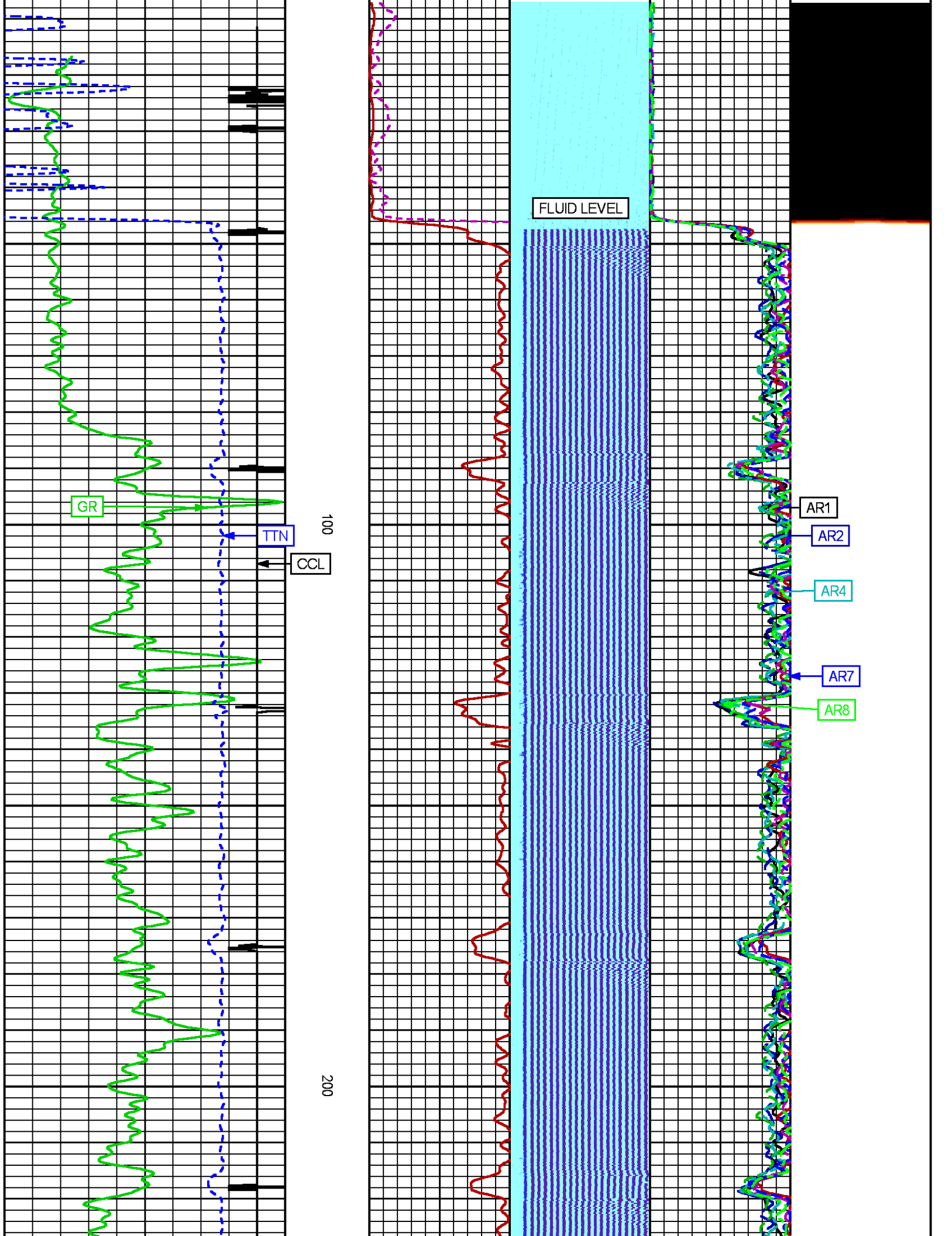
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AR1	N/A	FIXED GATE AMPLITUDE T-R1
F1:AR2	N/A	FIXED GATE AMPLITUDE T-R2
F1:AR3	N/A	FIXED GATE AMPLITUDE T-R3
F1:AR4	N/A	FIXED GATE AMPLITUDE T-R4
F1:AR5	N/A	FIXED GATE AMPLITUDE T-R5
F1:AR6	N/A	FIXED GATE AMPLITUDE T-R6
F1:AR7	N/A	FIXED GATE AMPLITUDE T-R7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

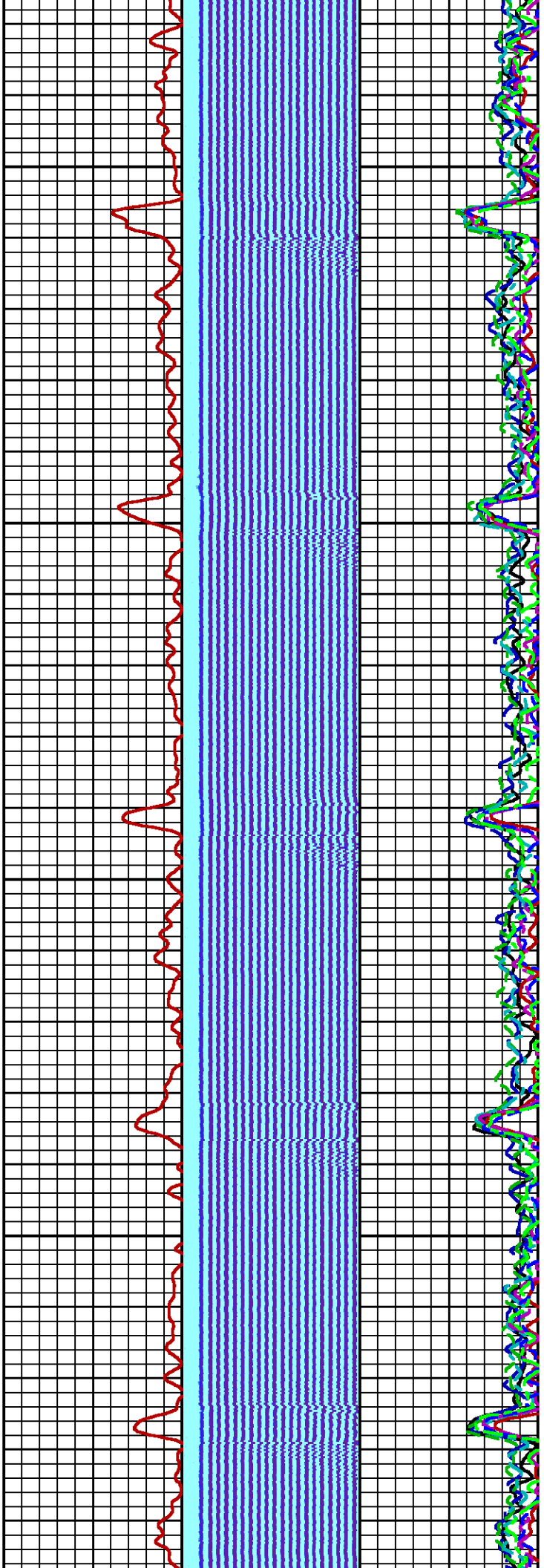
CURVE MEASURE POINT OFFSET

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_NICHOLS_0994-13-21W/LARAMIE_RAL_MAIN.fvpdf [5"/100' Scale]
Plot Interval	: 7 - 7774.25 Feet
Data File 1	: F1 : SysA:/dat1a/LARAMIE_NICHOLS_0994-13-21W/RAL_MAIN.xtf
Created On	: N/A
Company	: LARAMIE ENERGY II LLC
Well	: NICHOLS 0994-13-21W
Field	: VEGA
File Interval	: 6 - 7775.5 Feet
OCT	: p012g

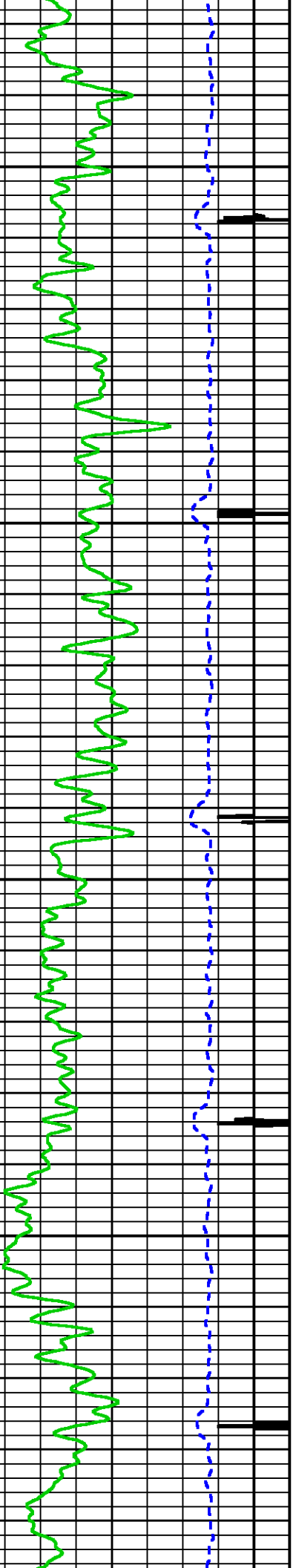


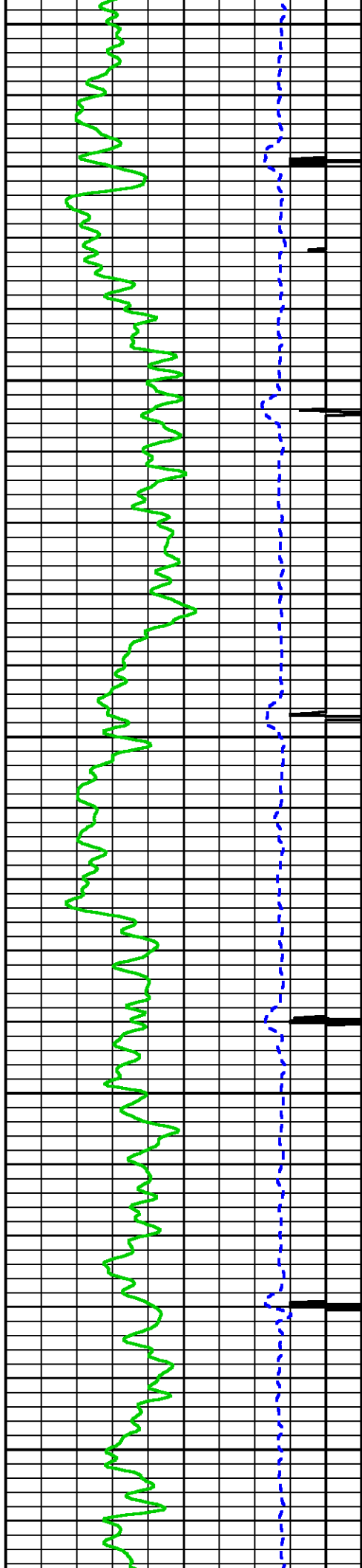




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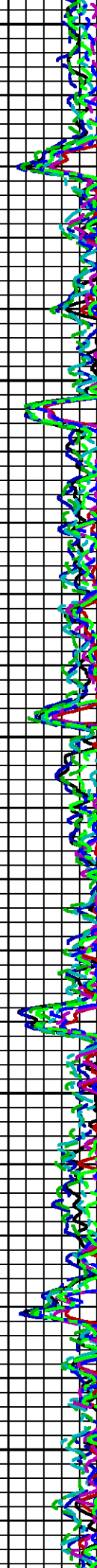
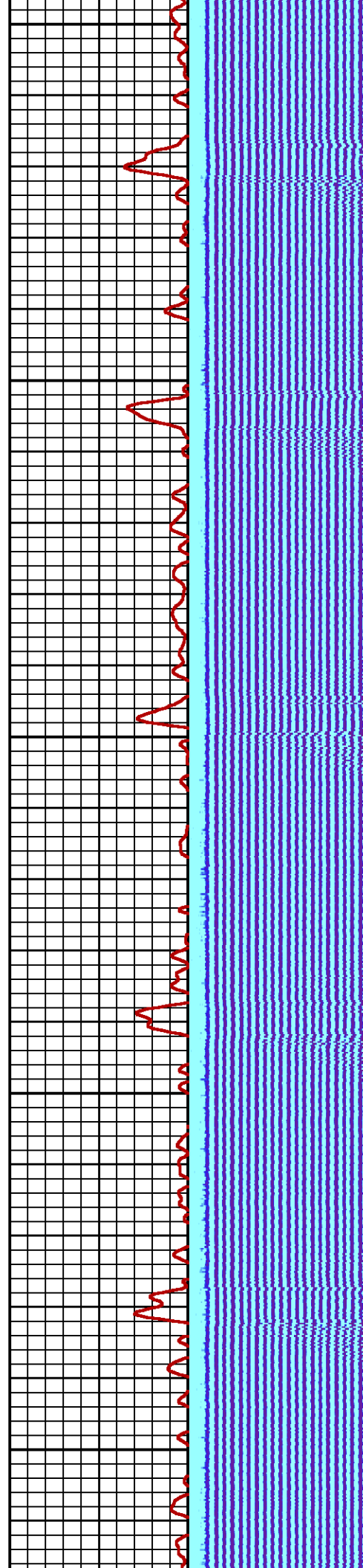
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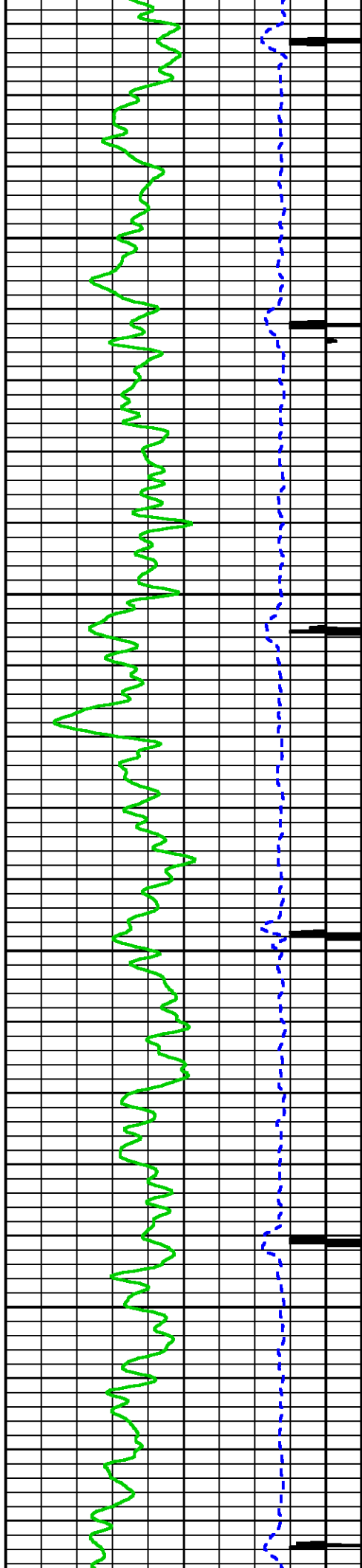




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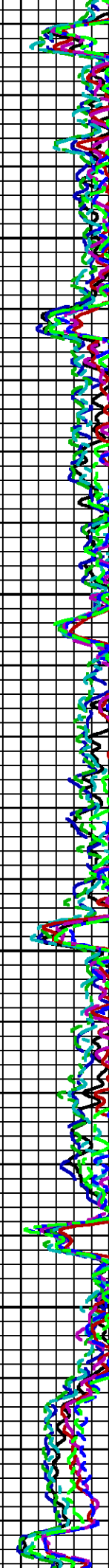
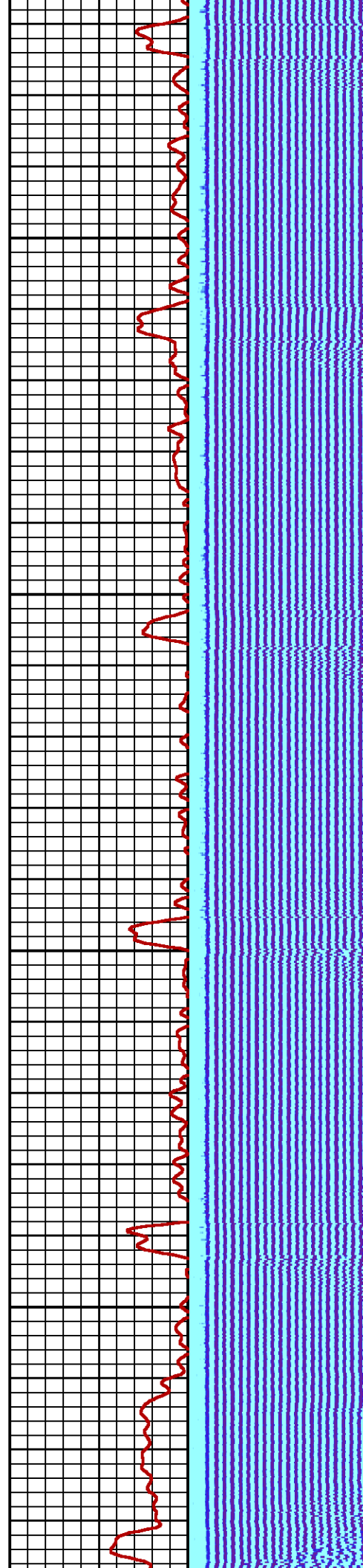
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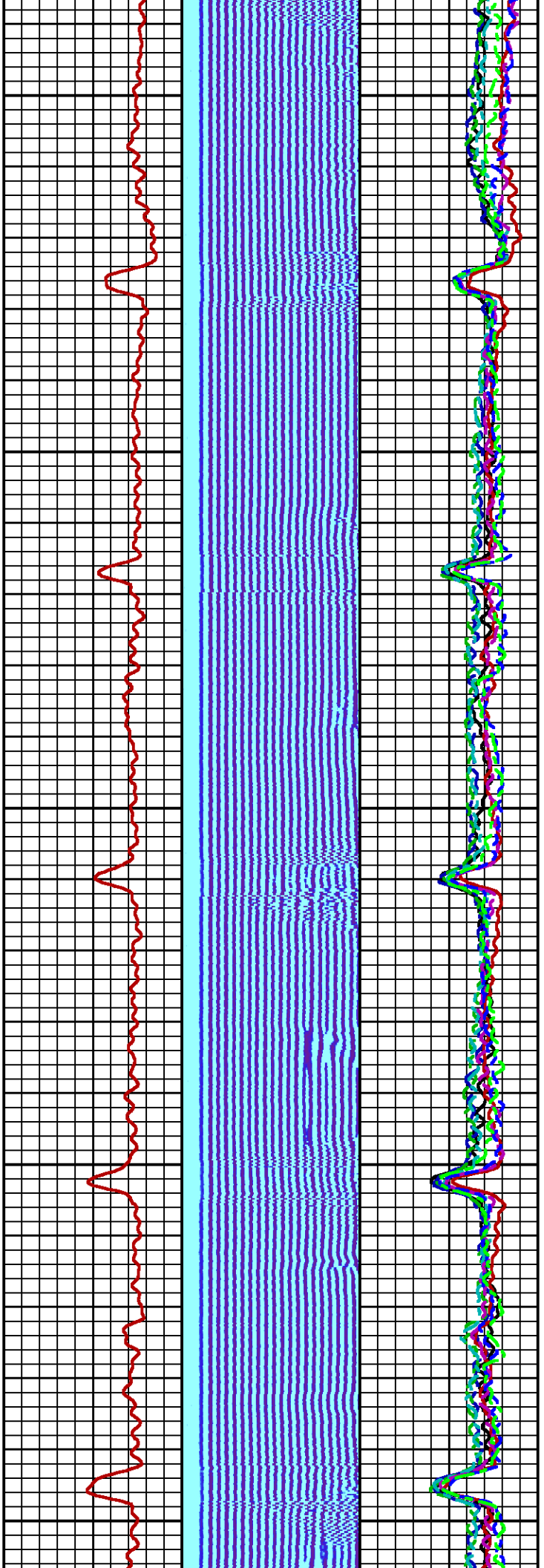




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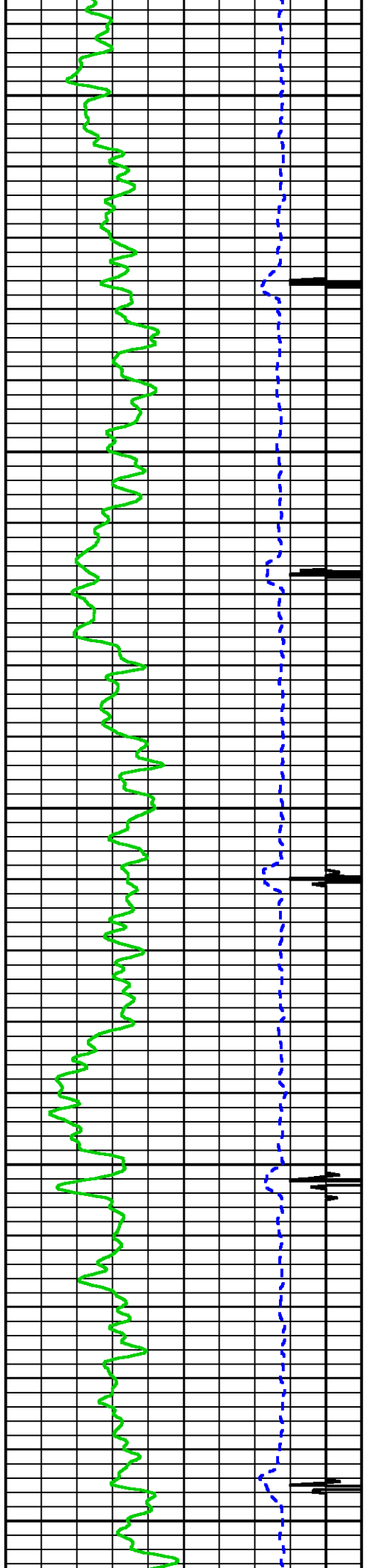


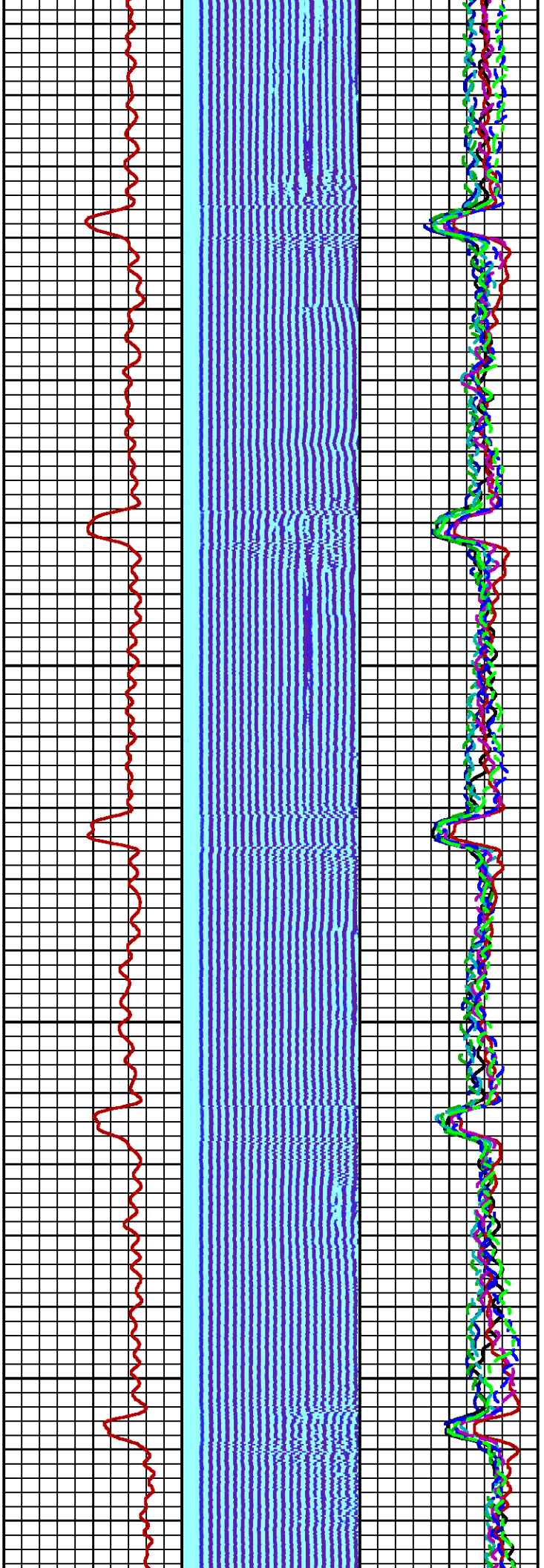


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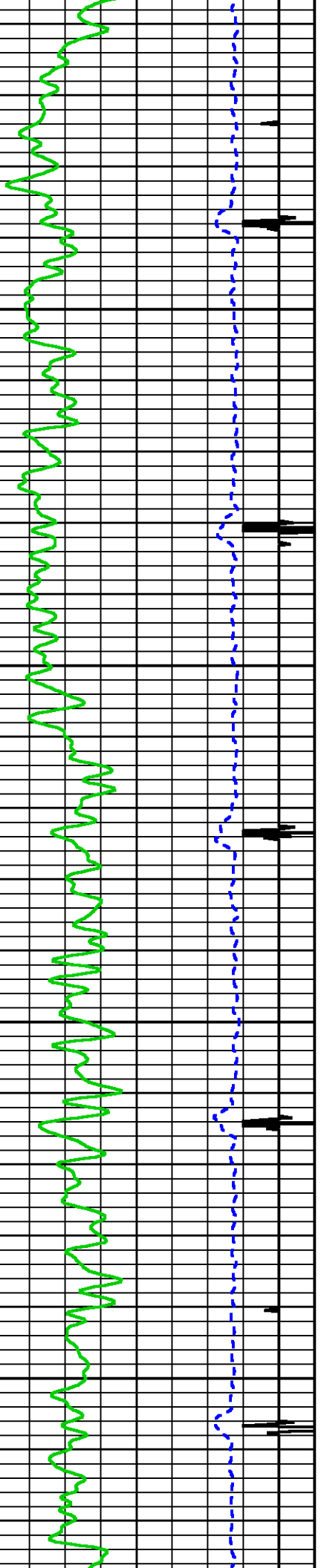
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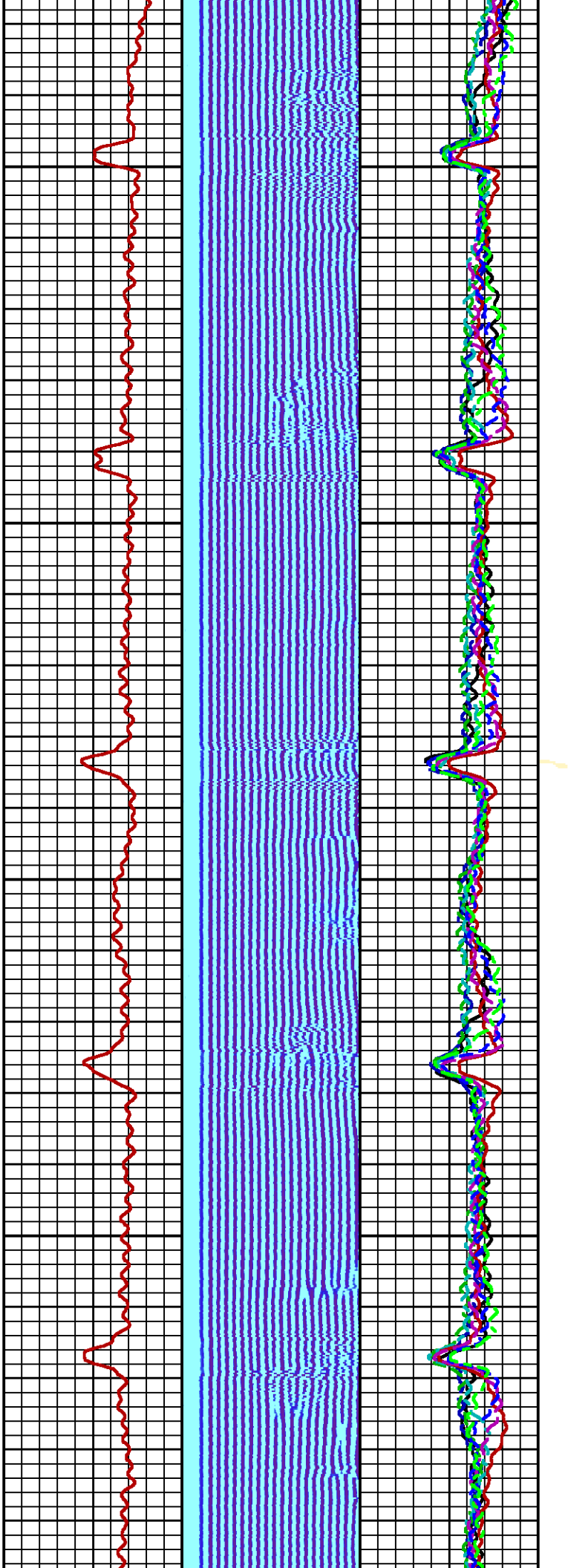




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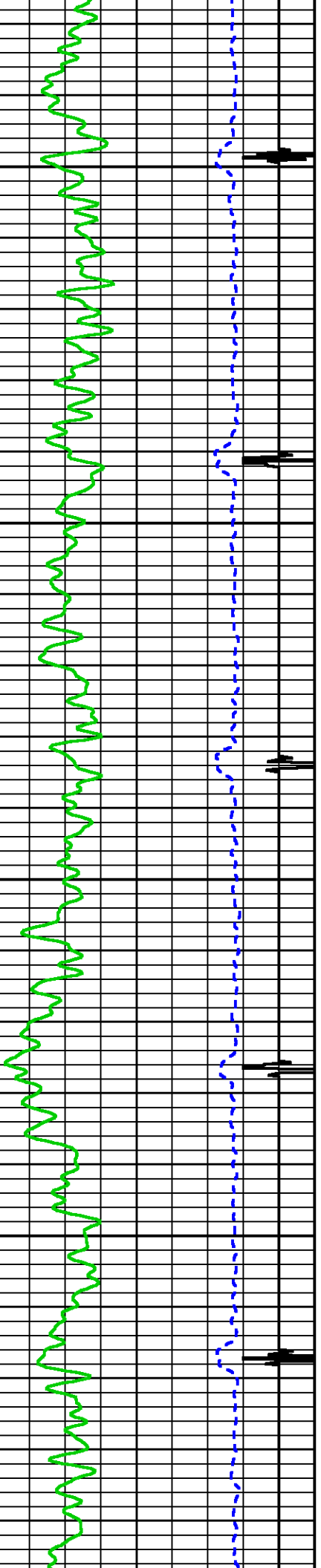
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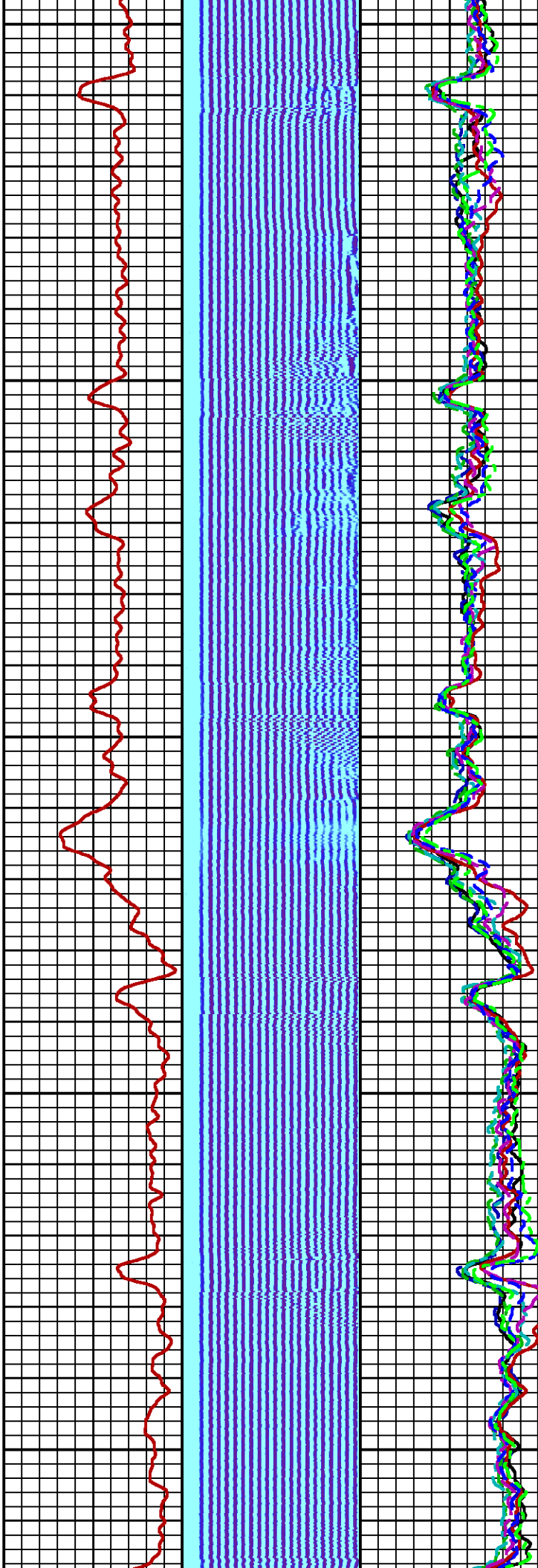




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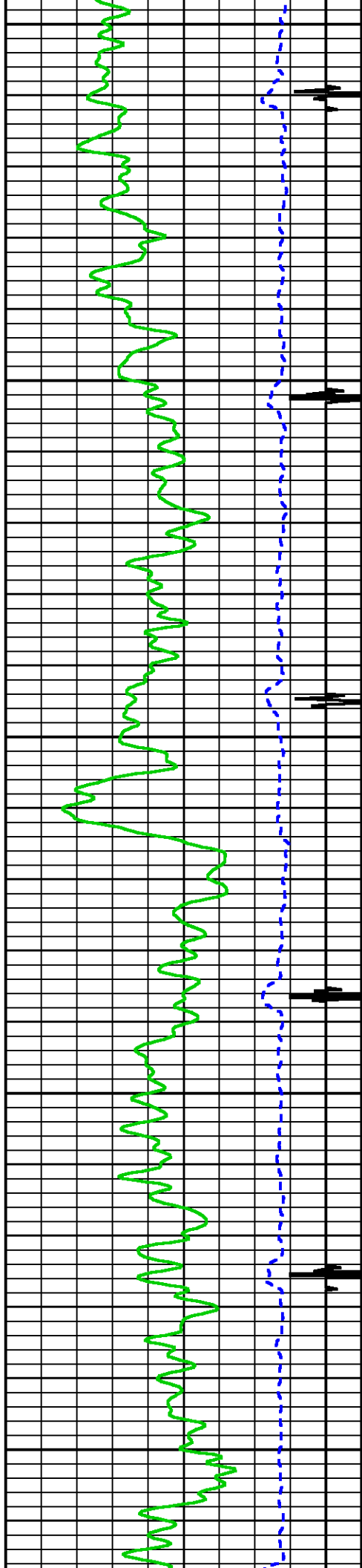
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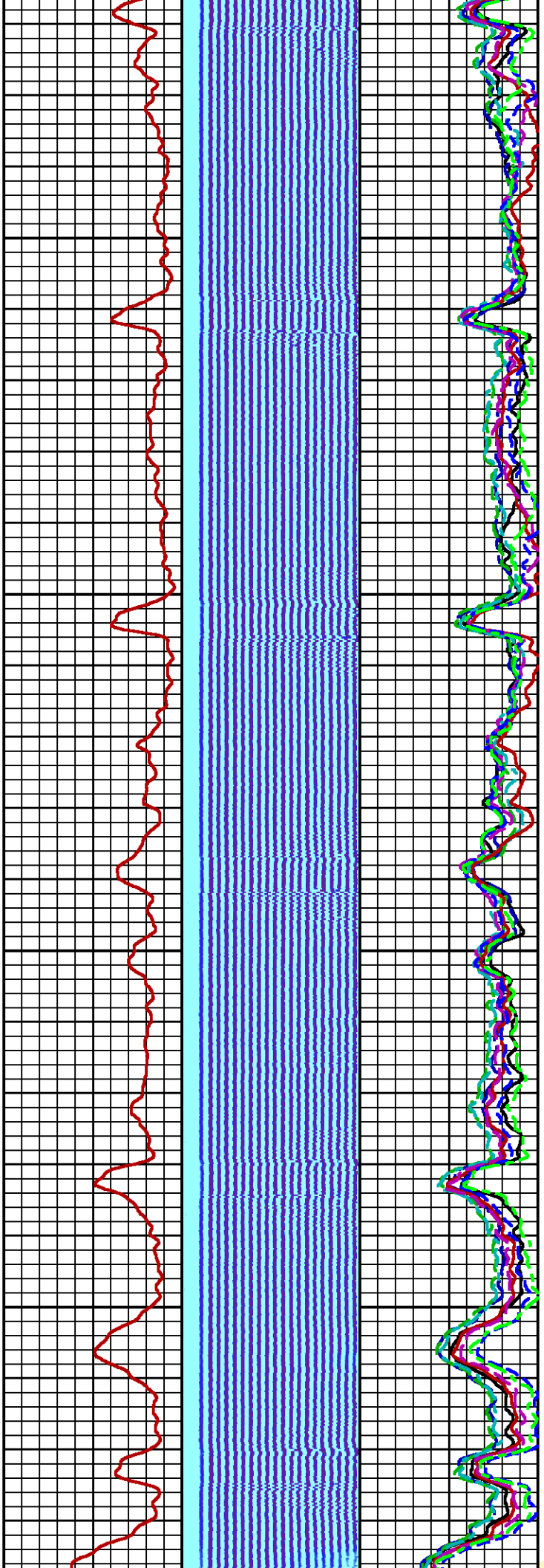




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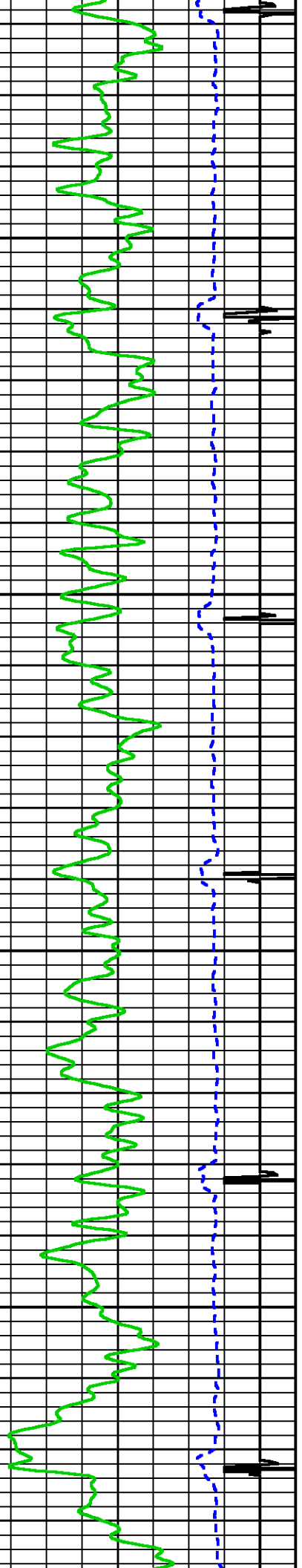
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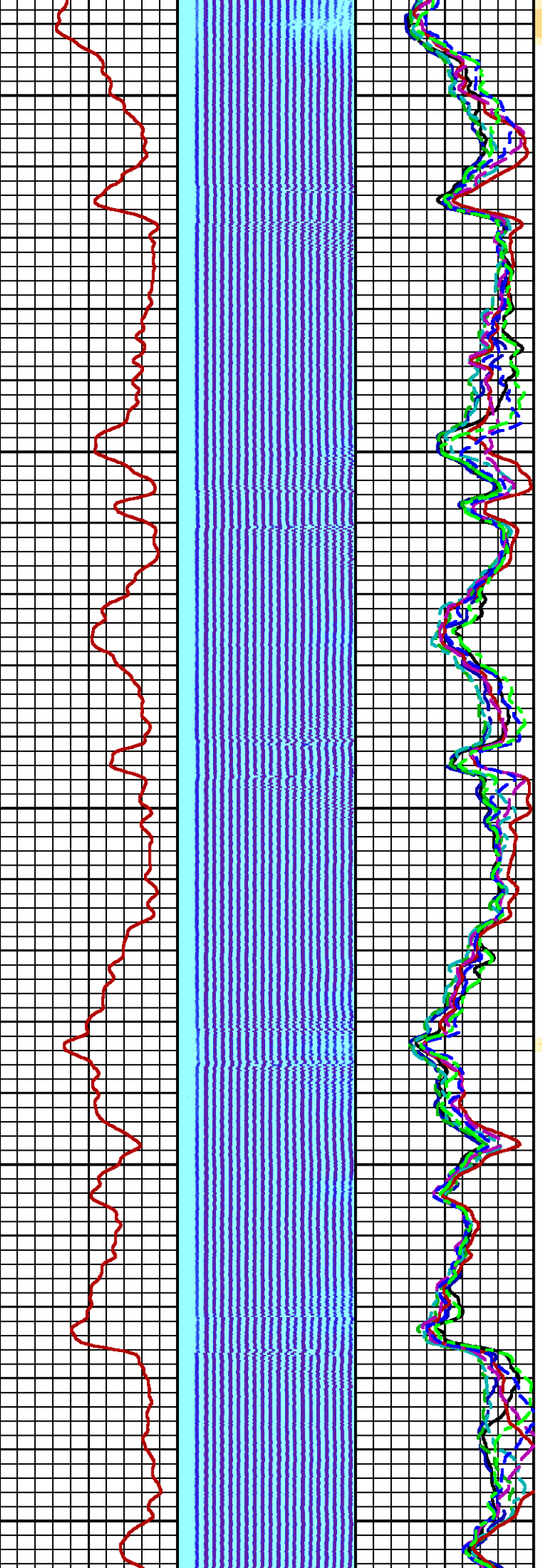




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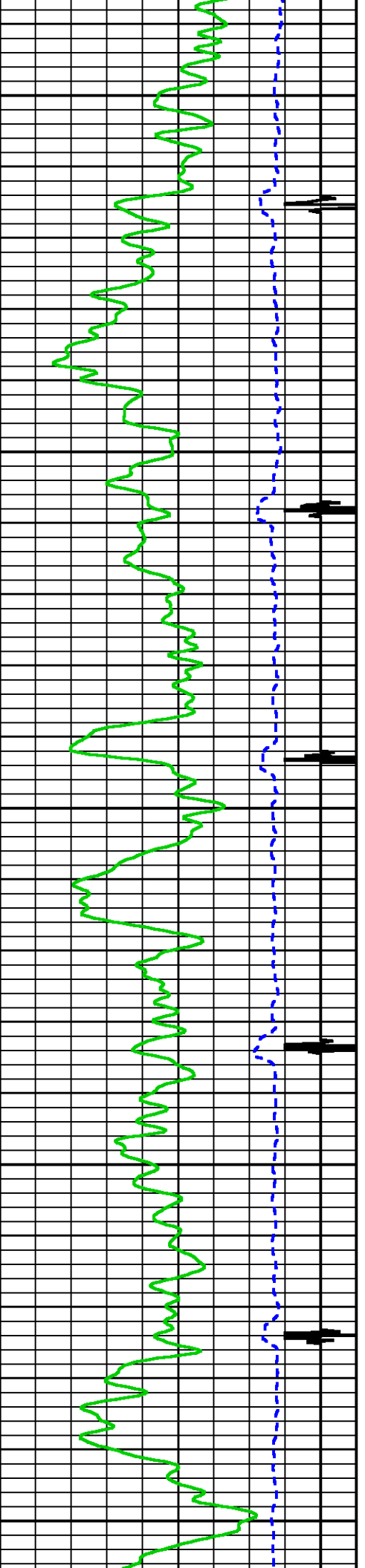


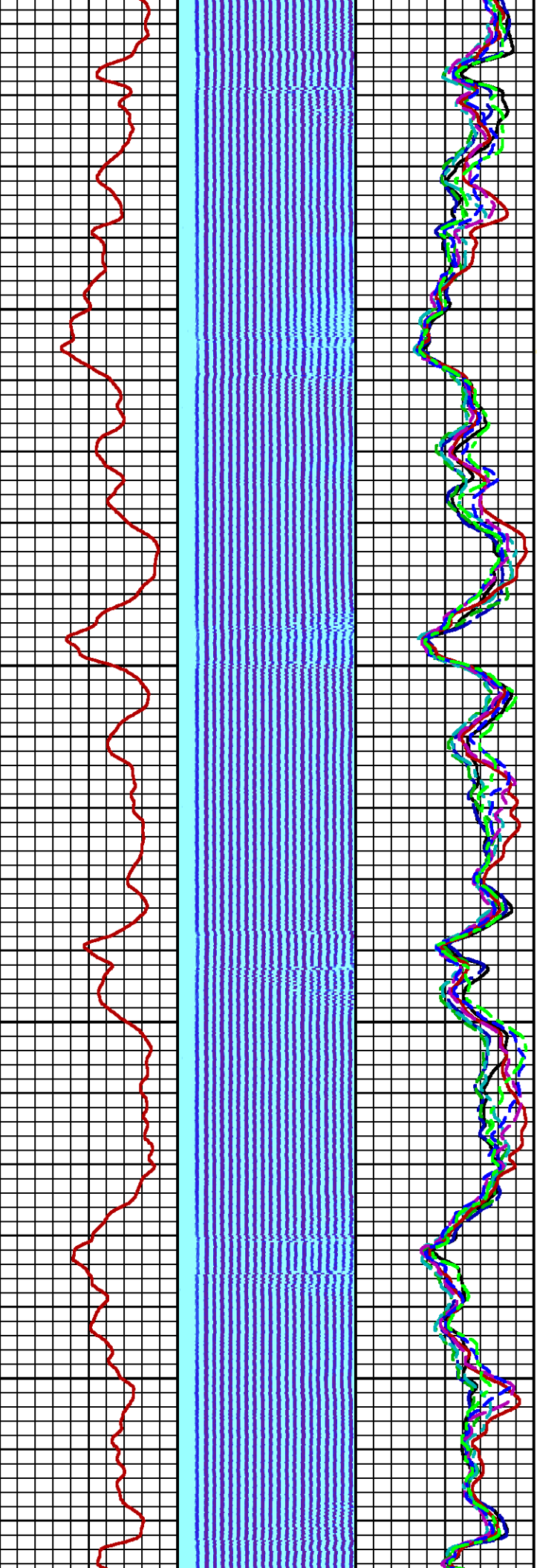


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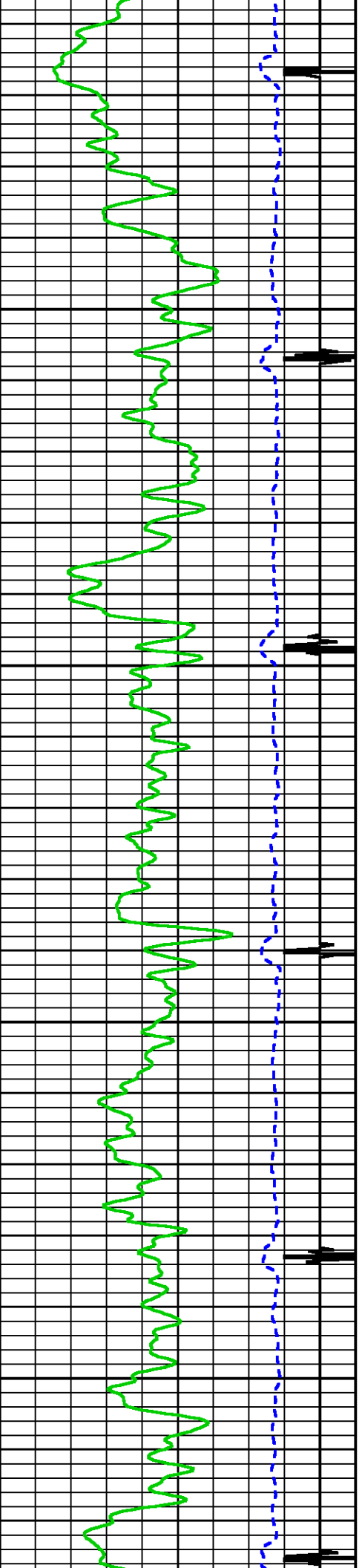
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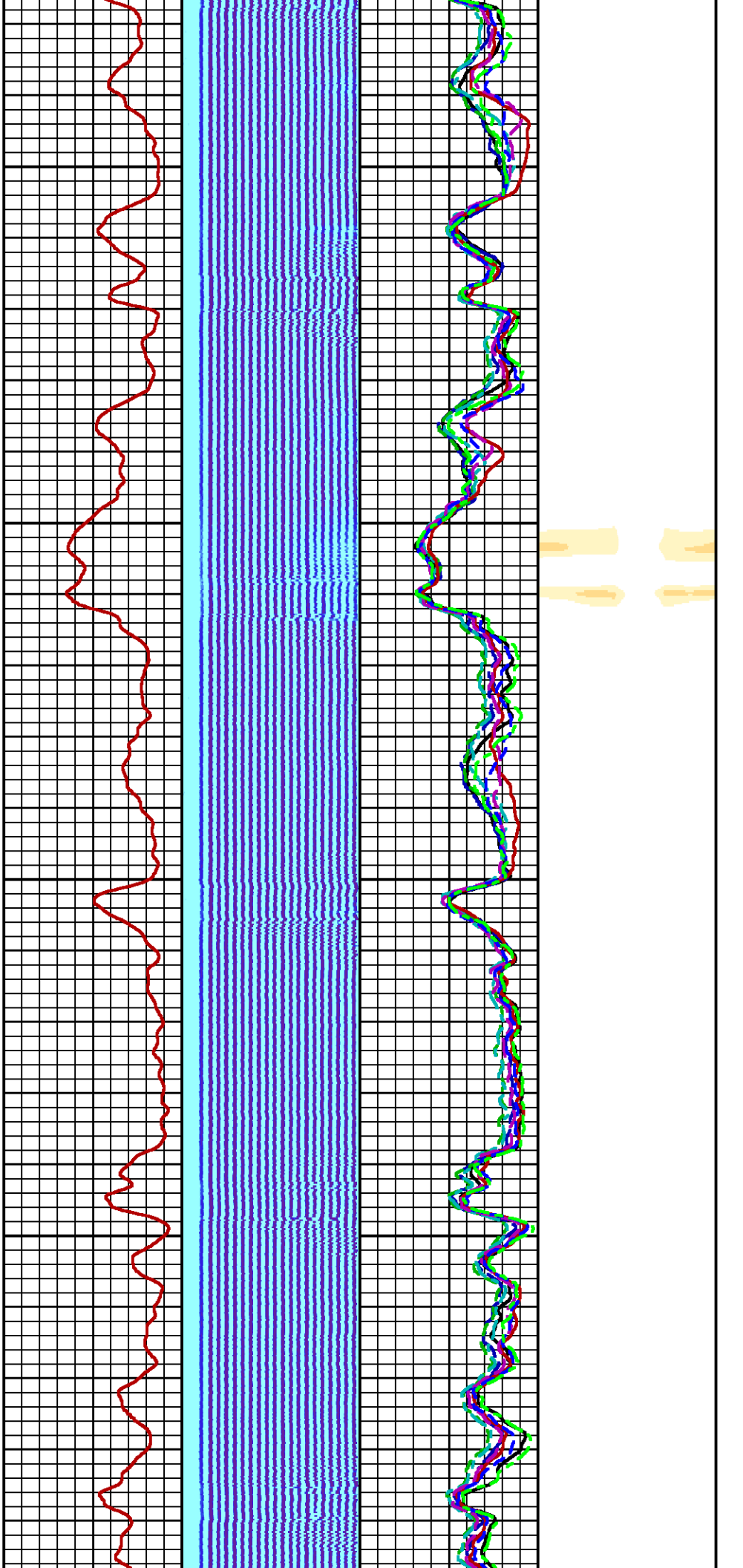




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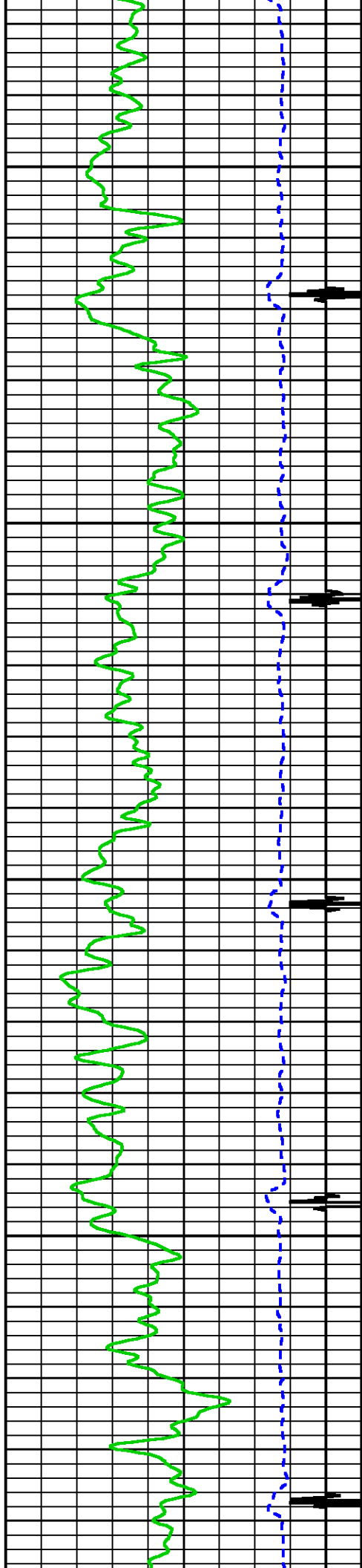
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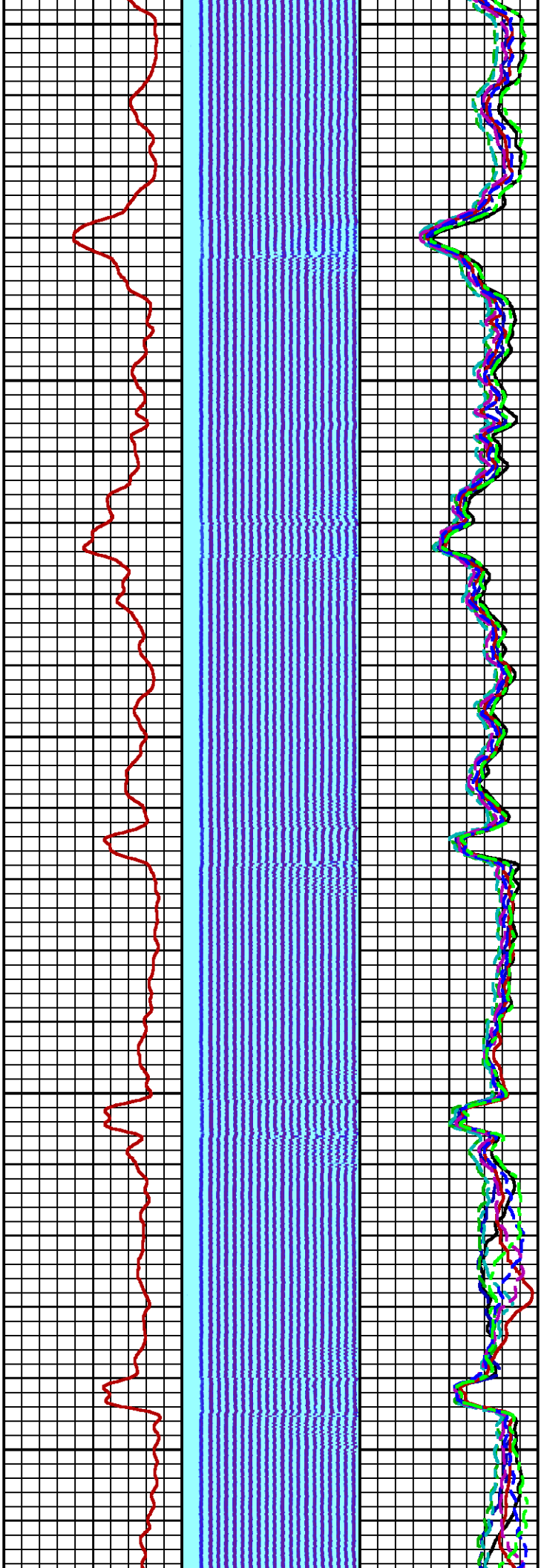




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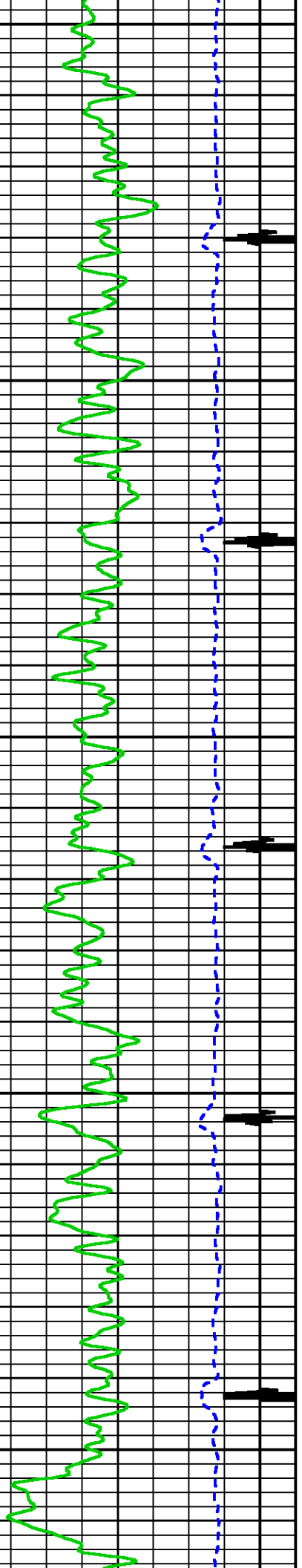
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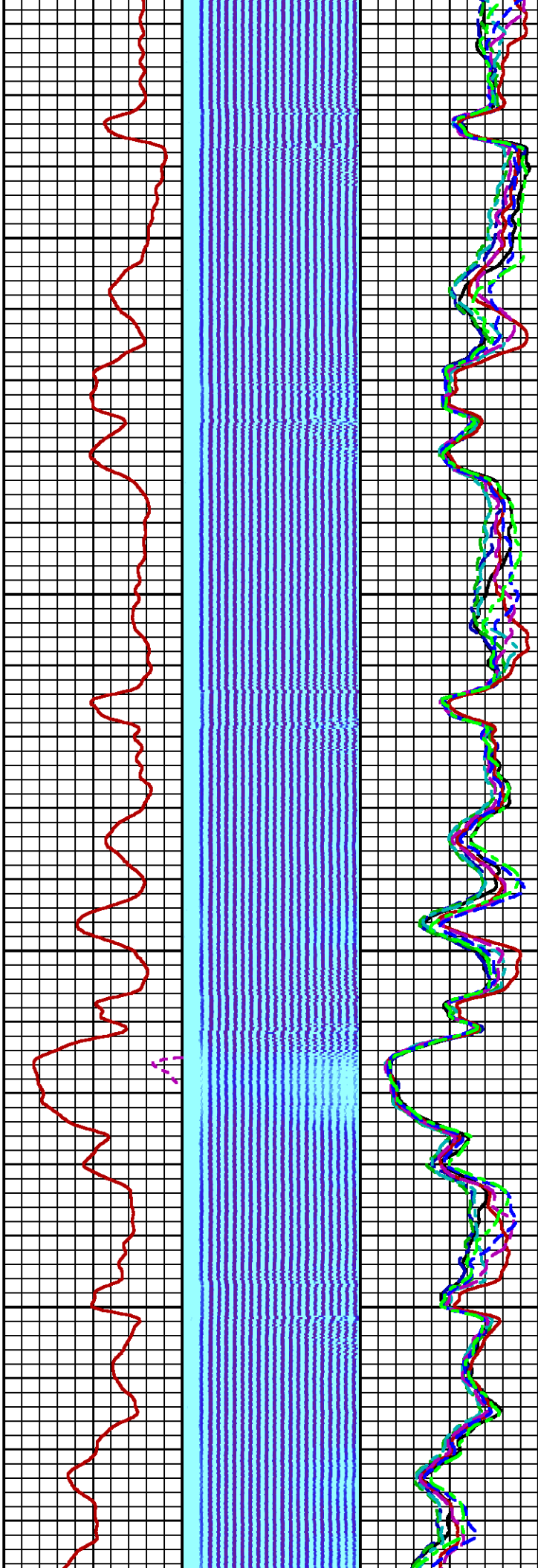




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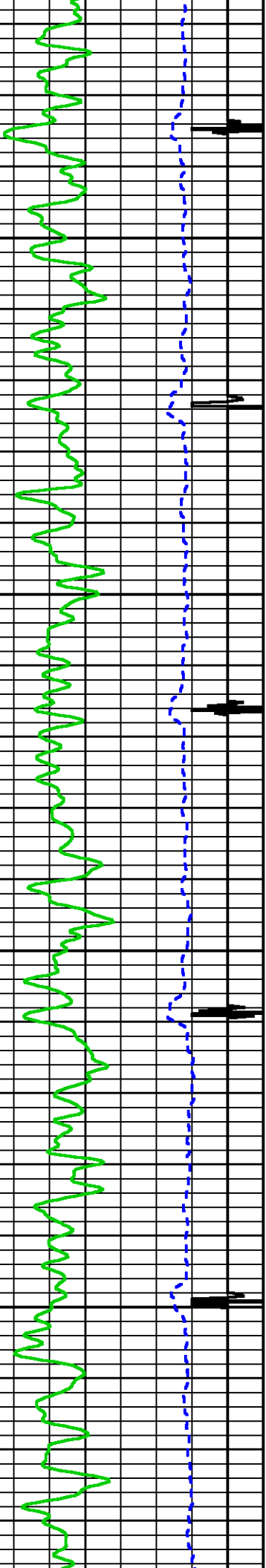
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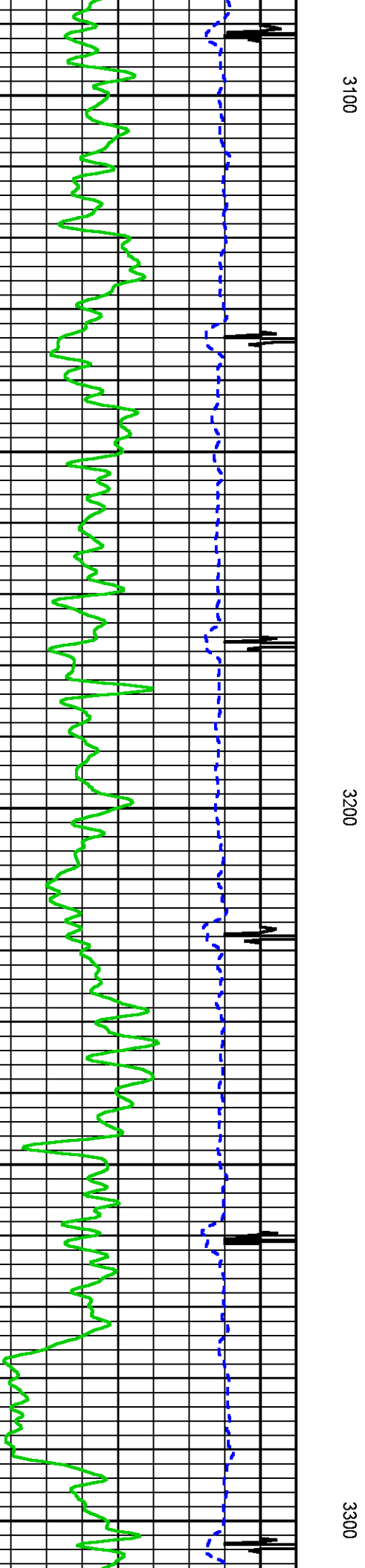
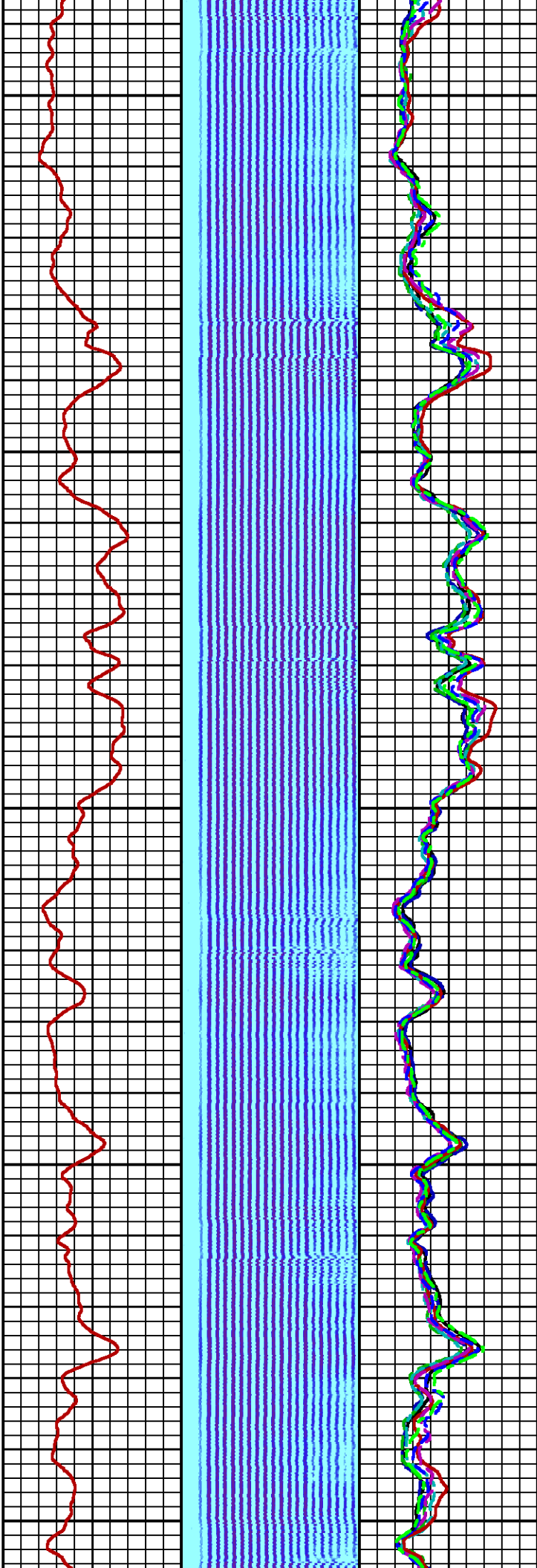
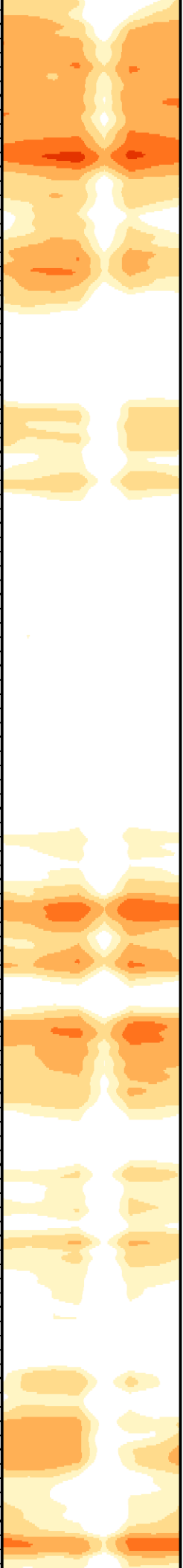


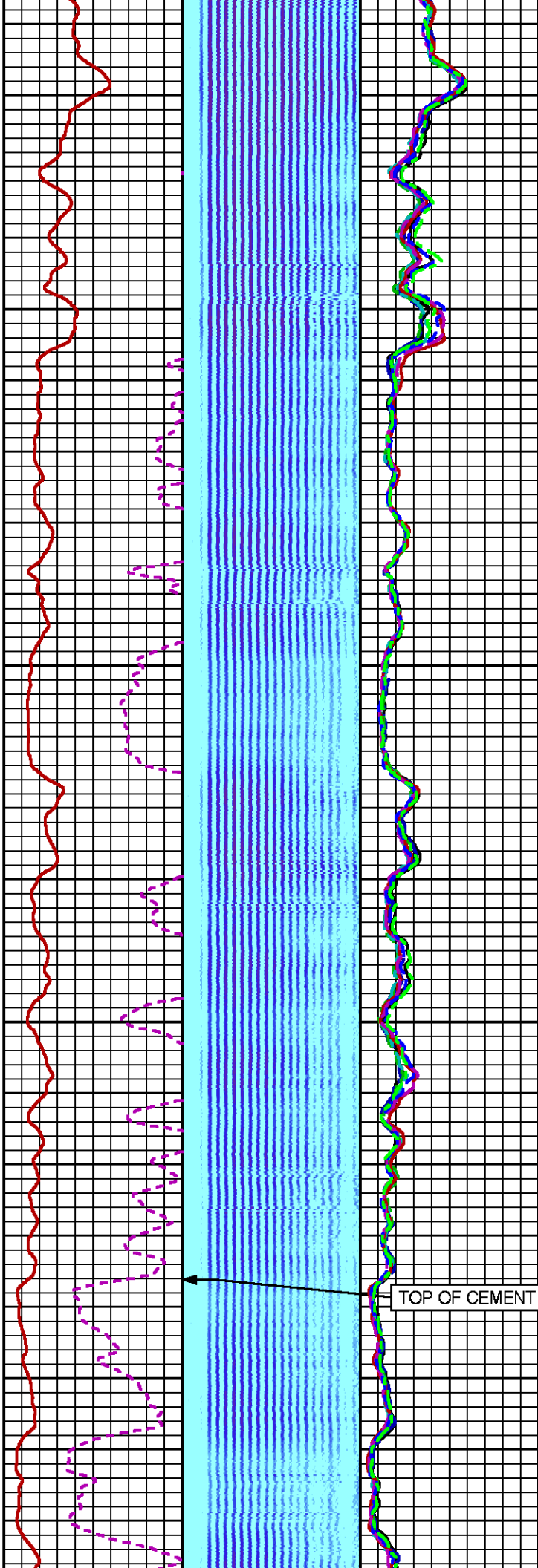
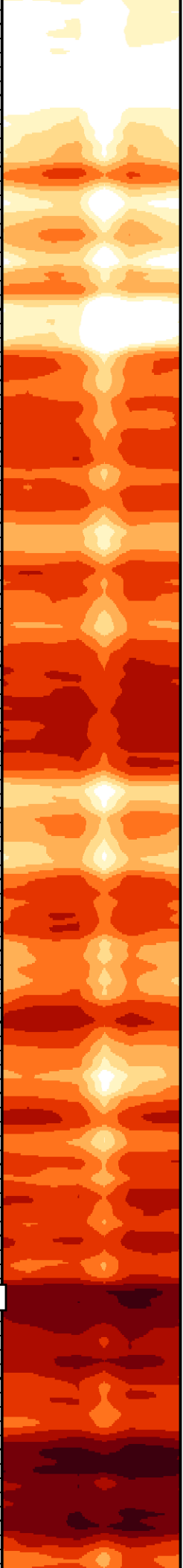


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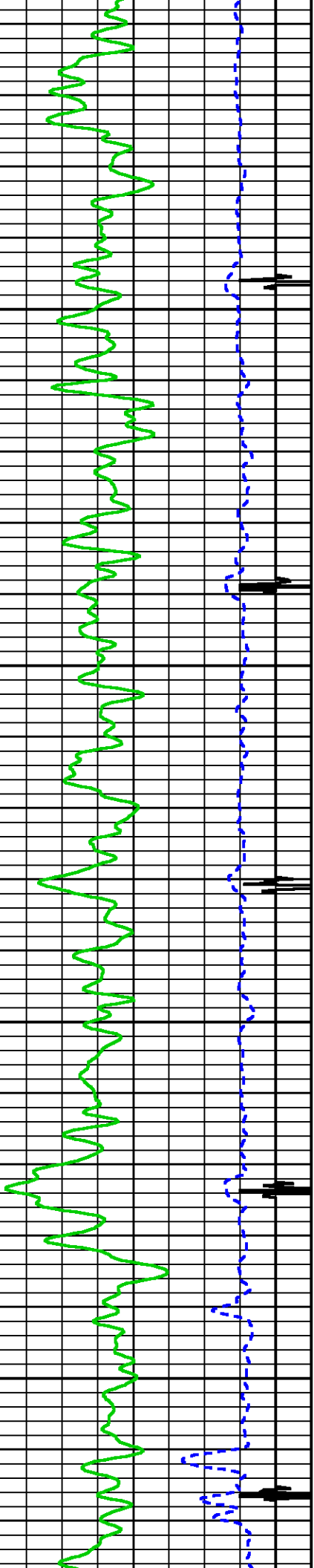


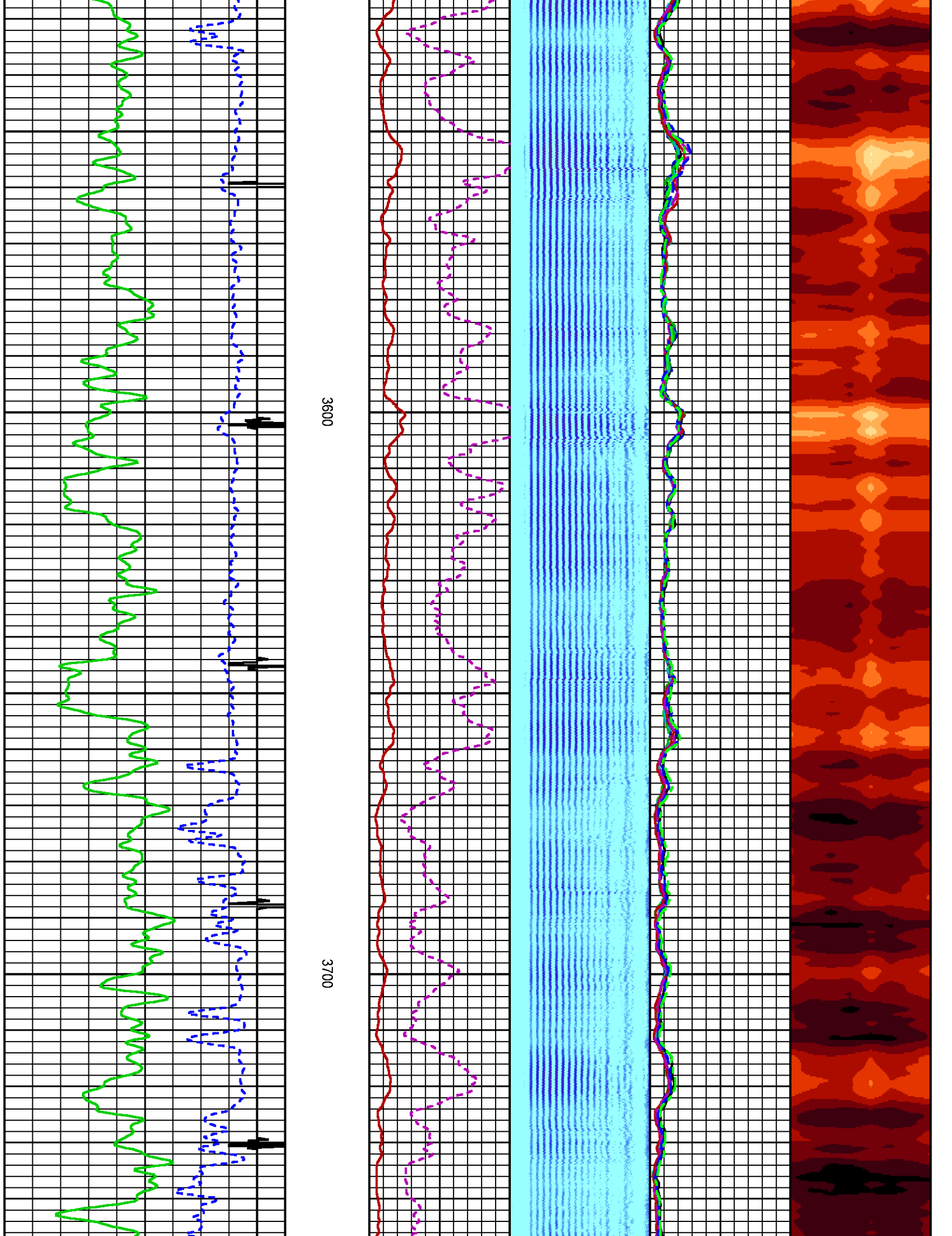


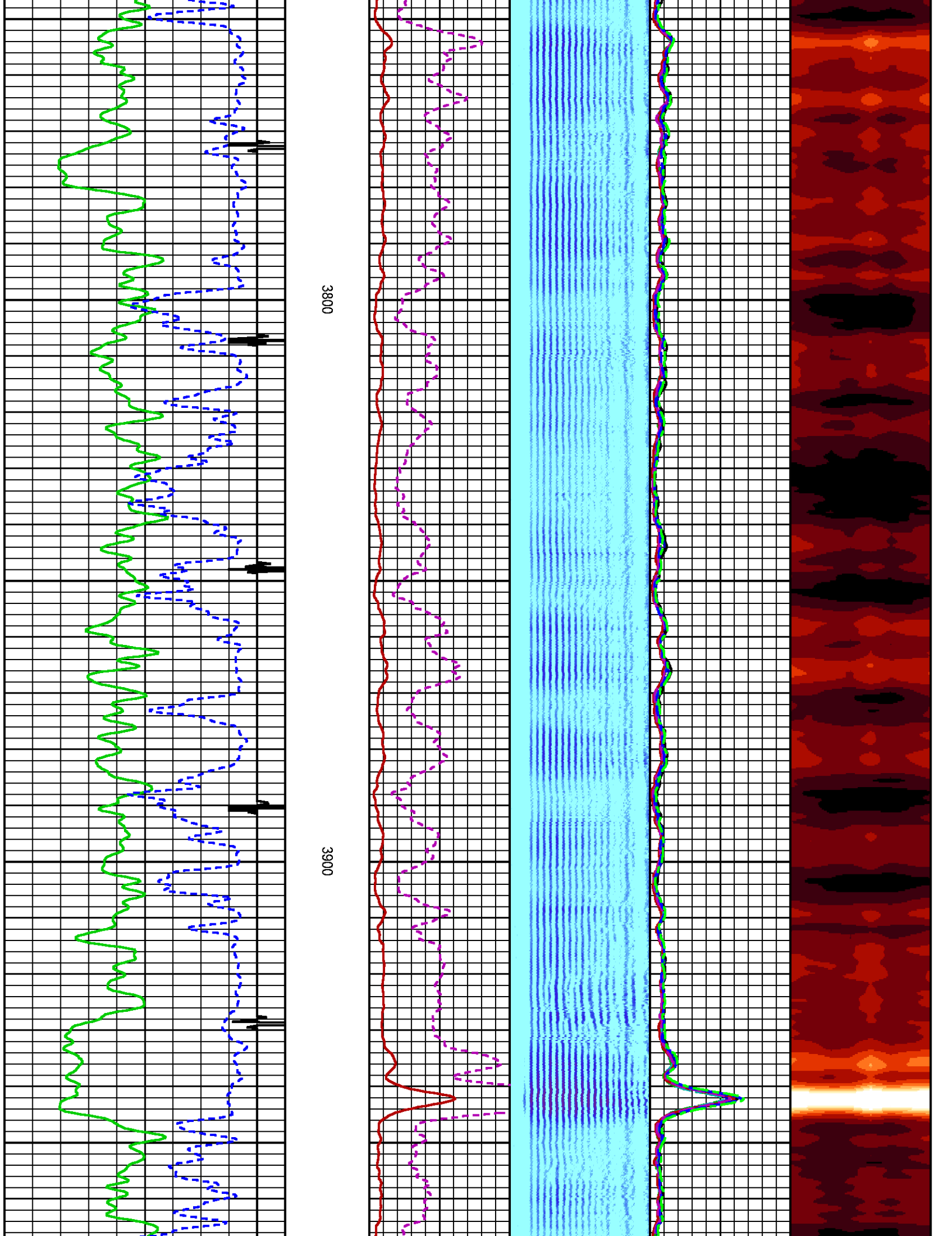


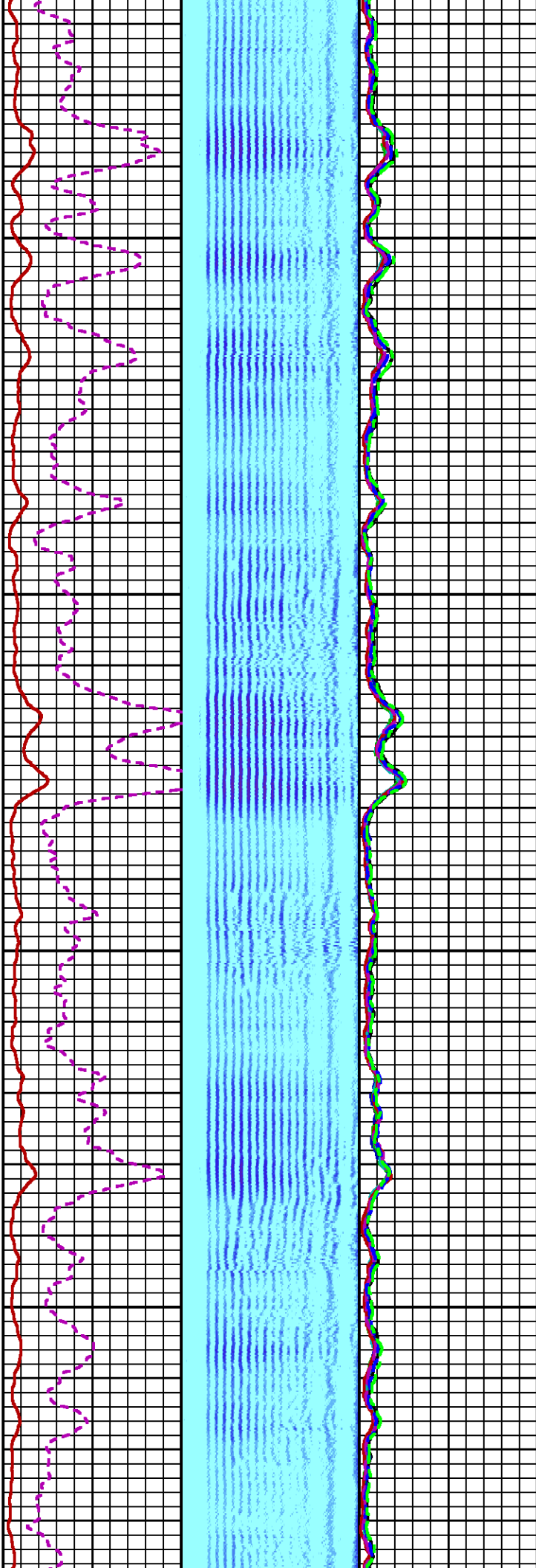
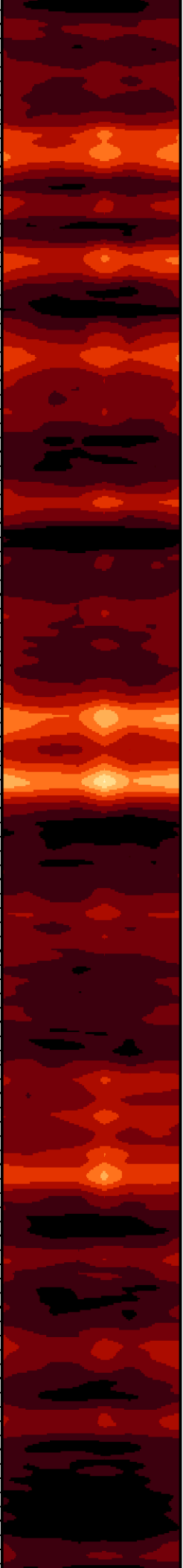
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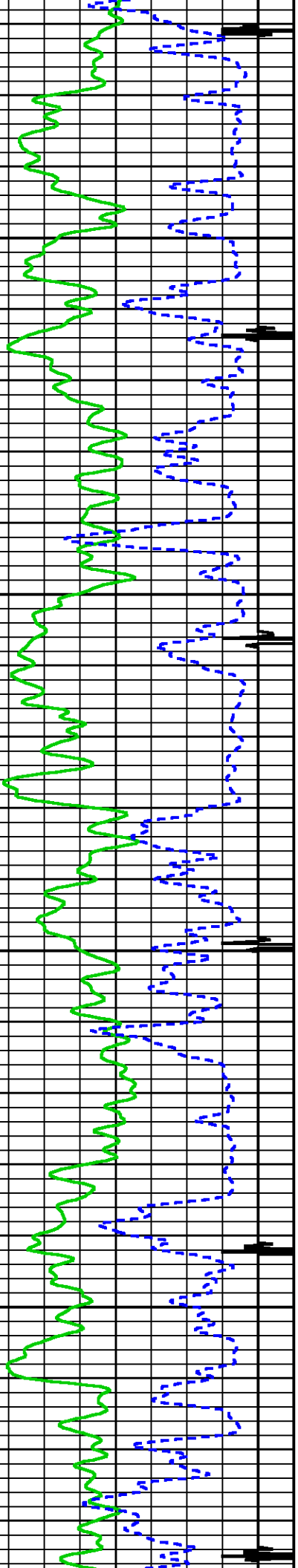


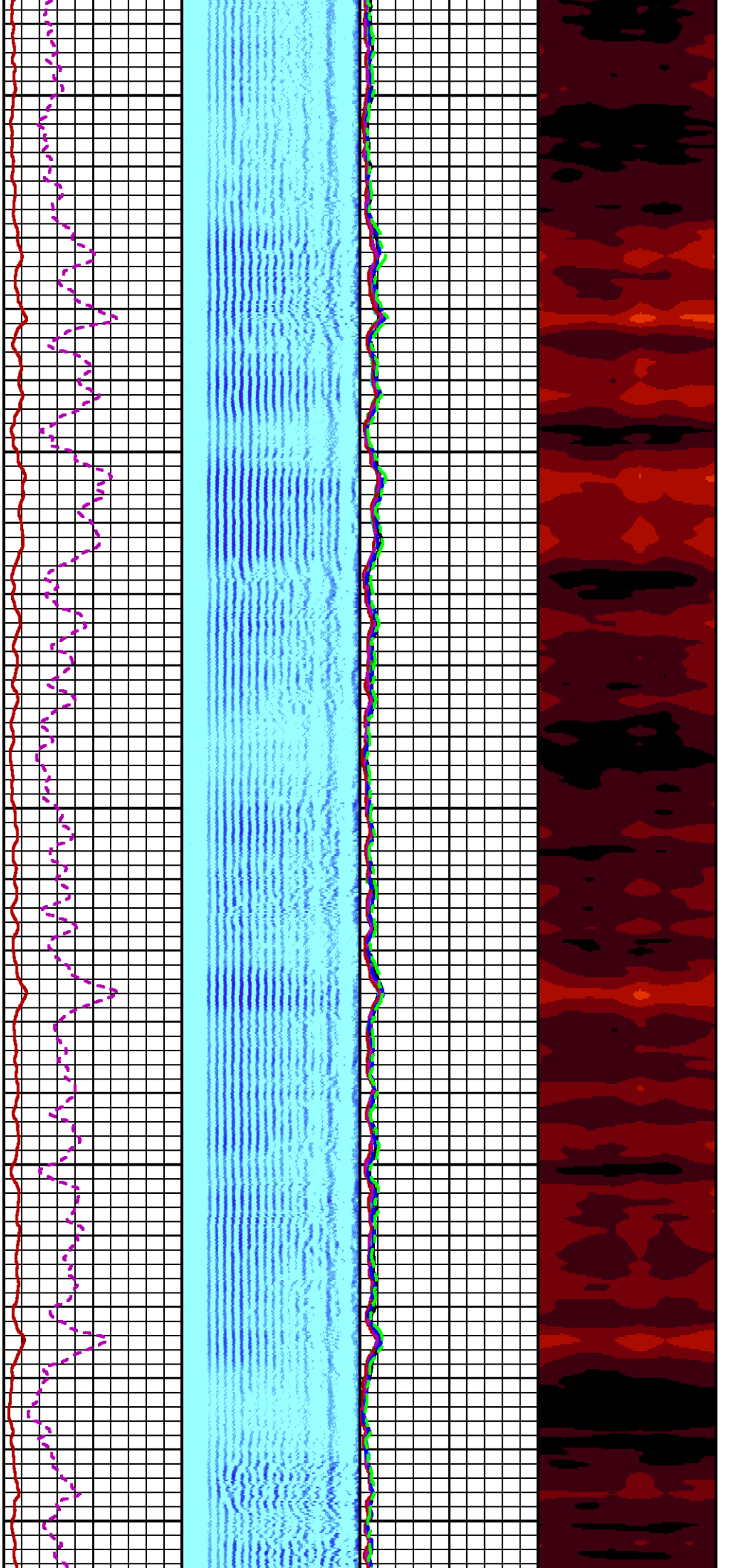




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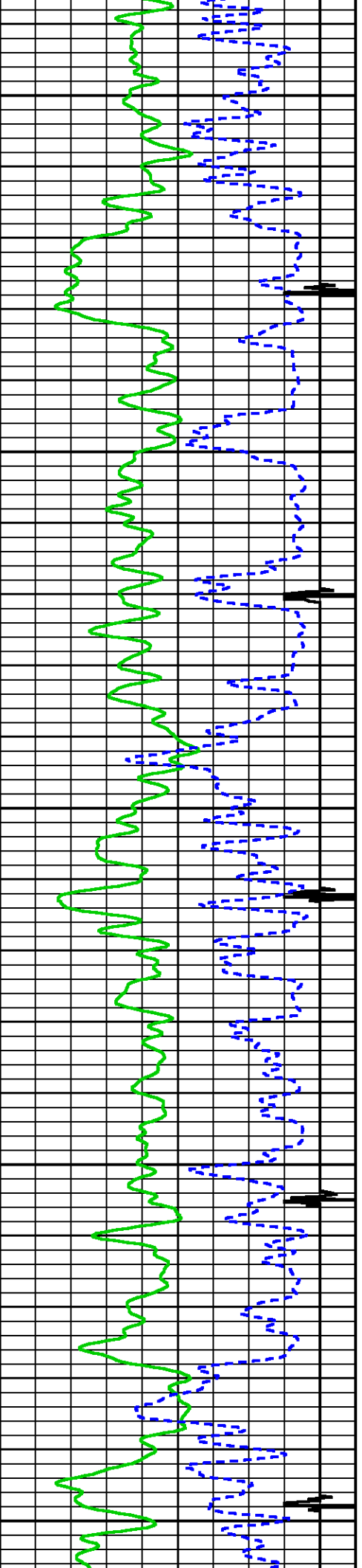


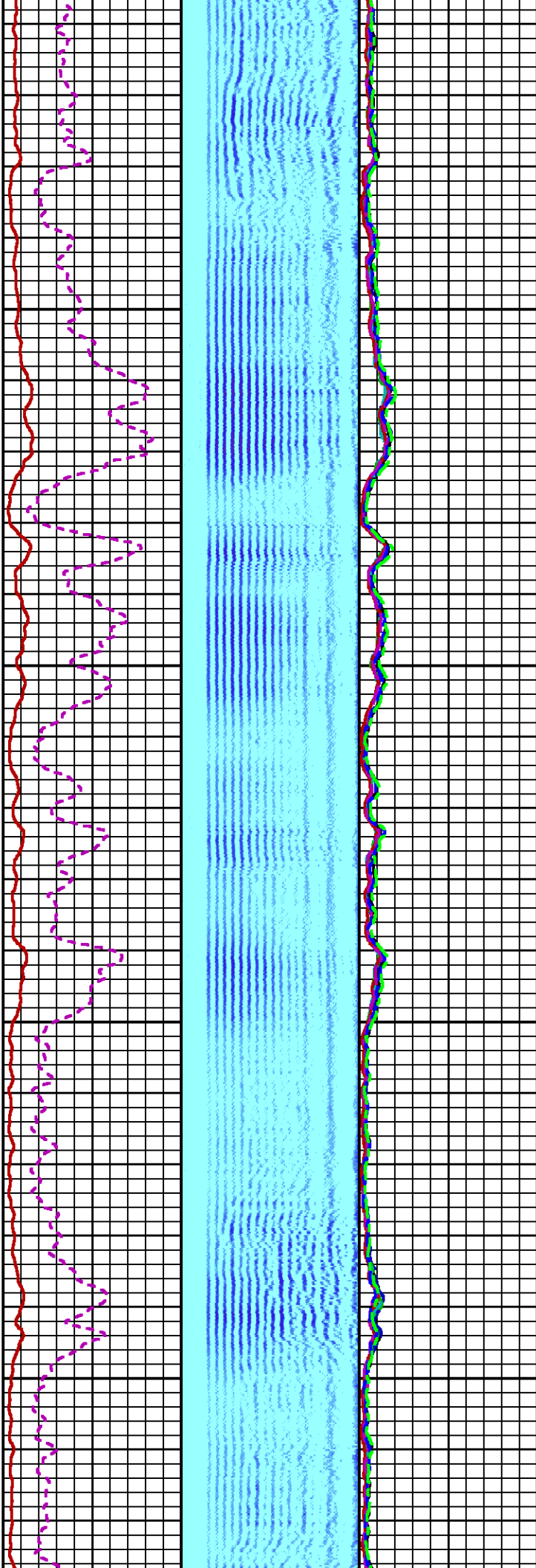


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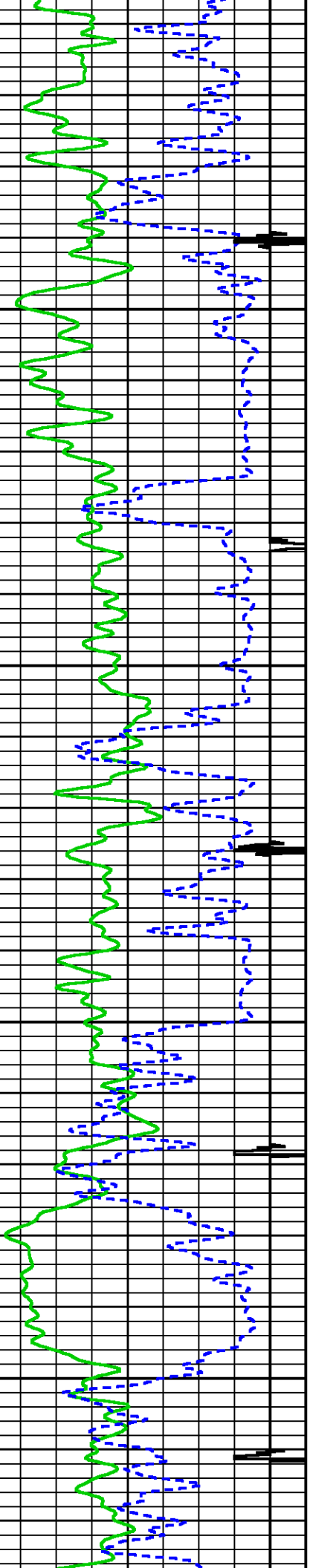
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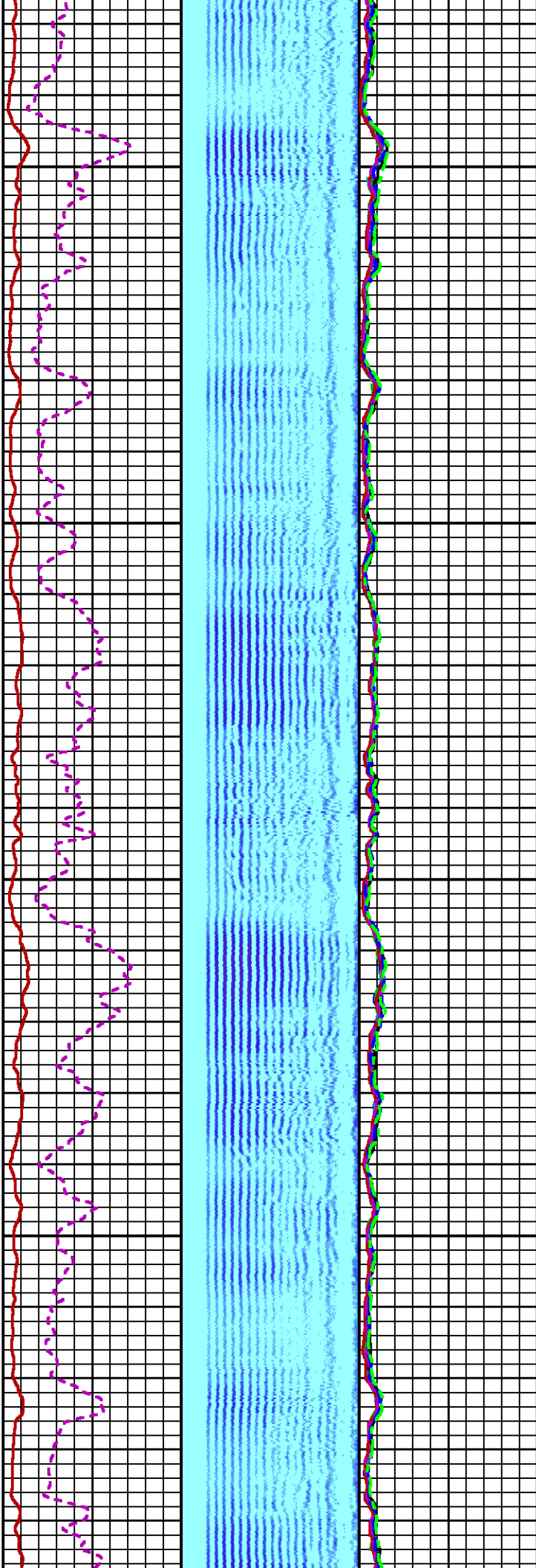




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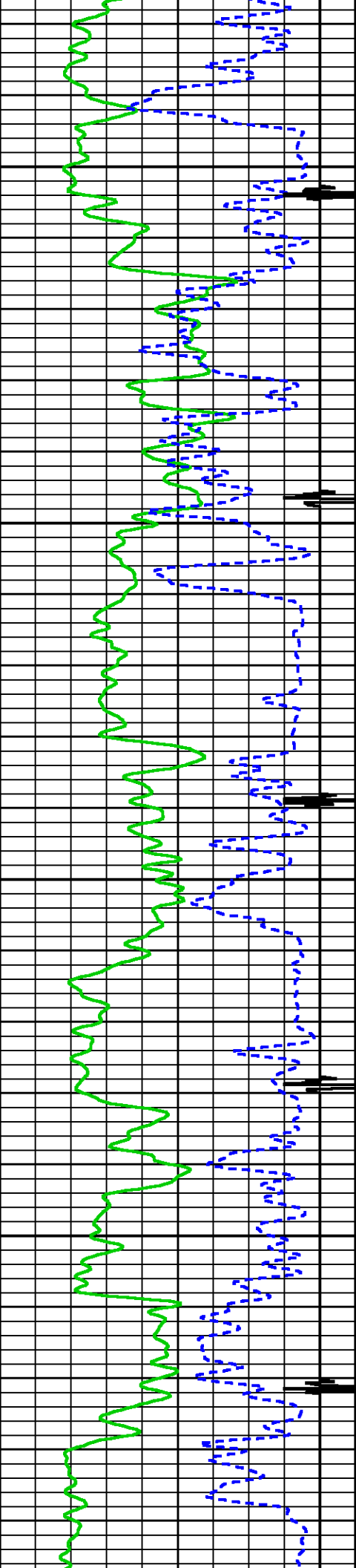
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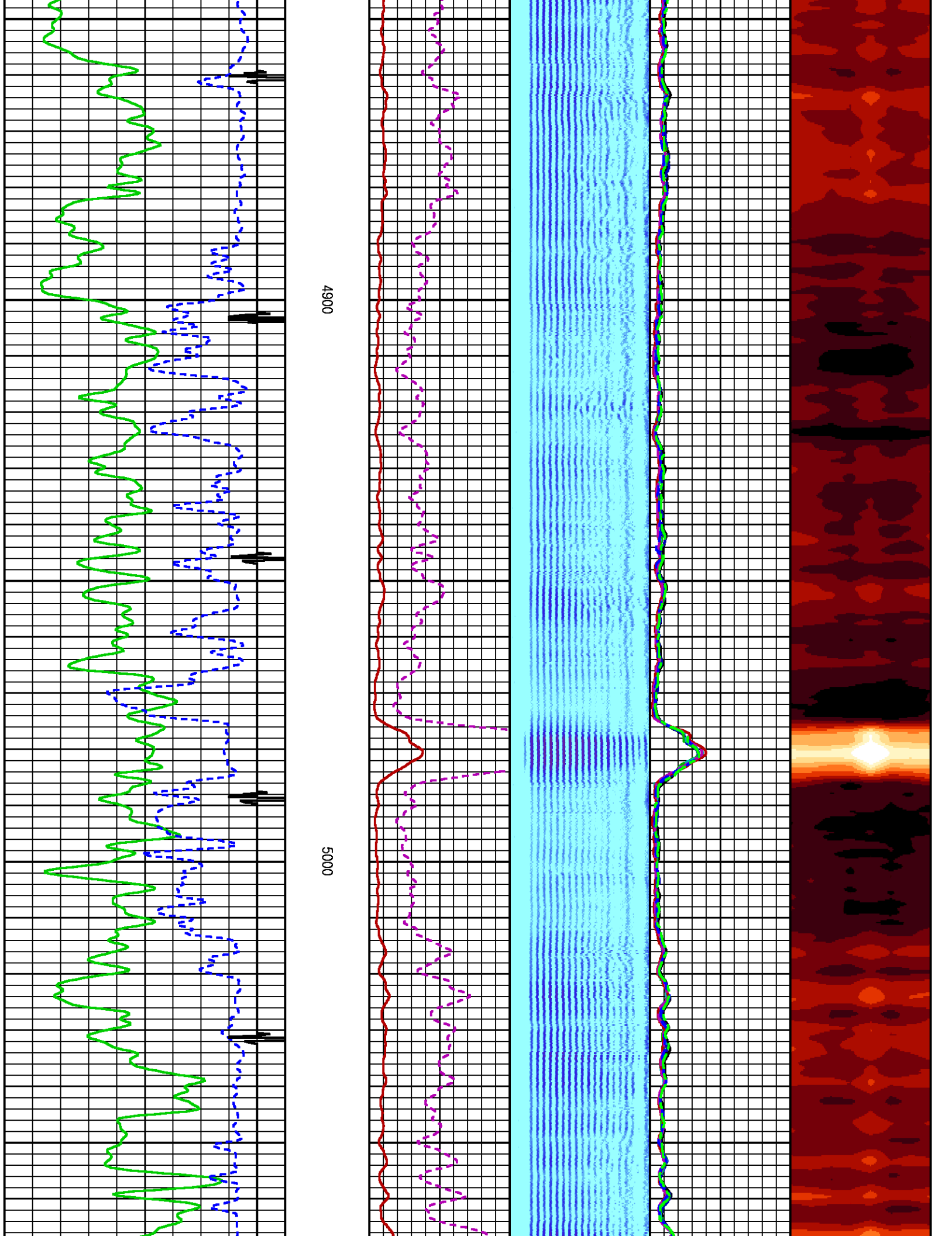


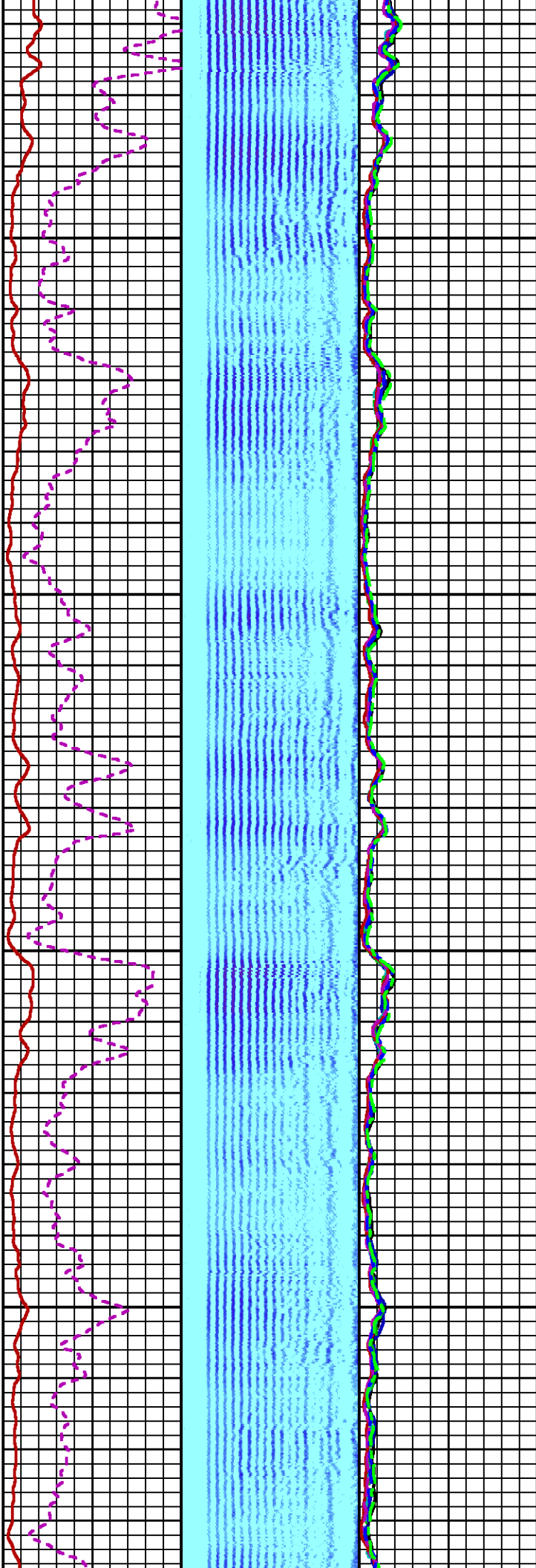
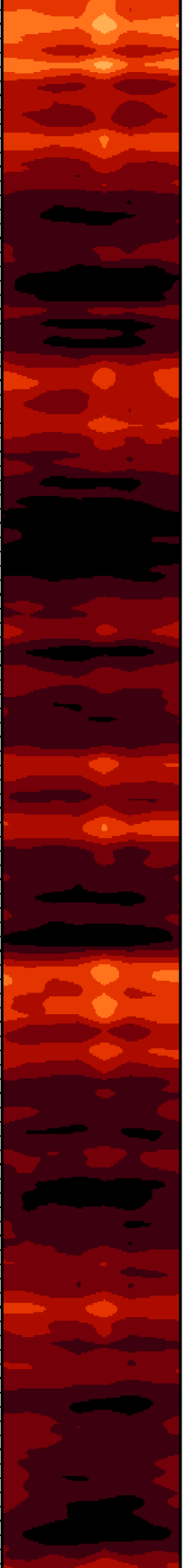


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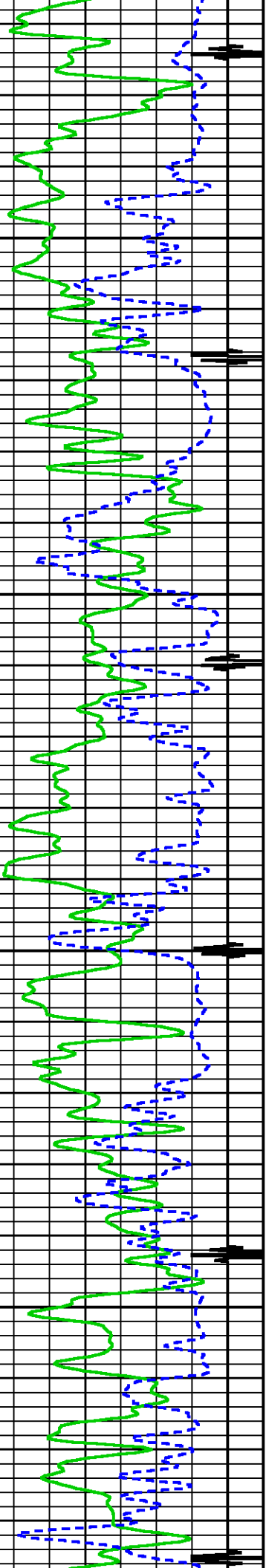


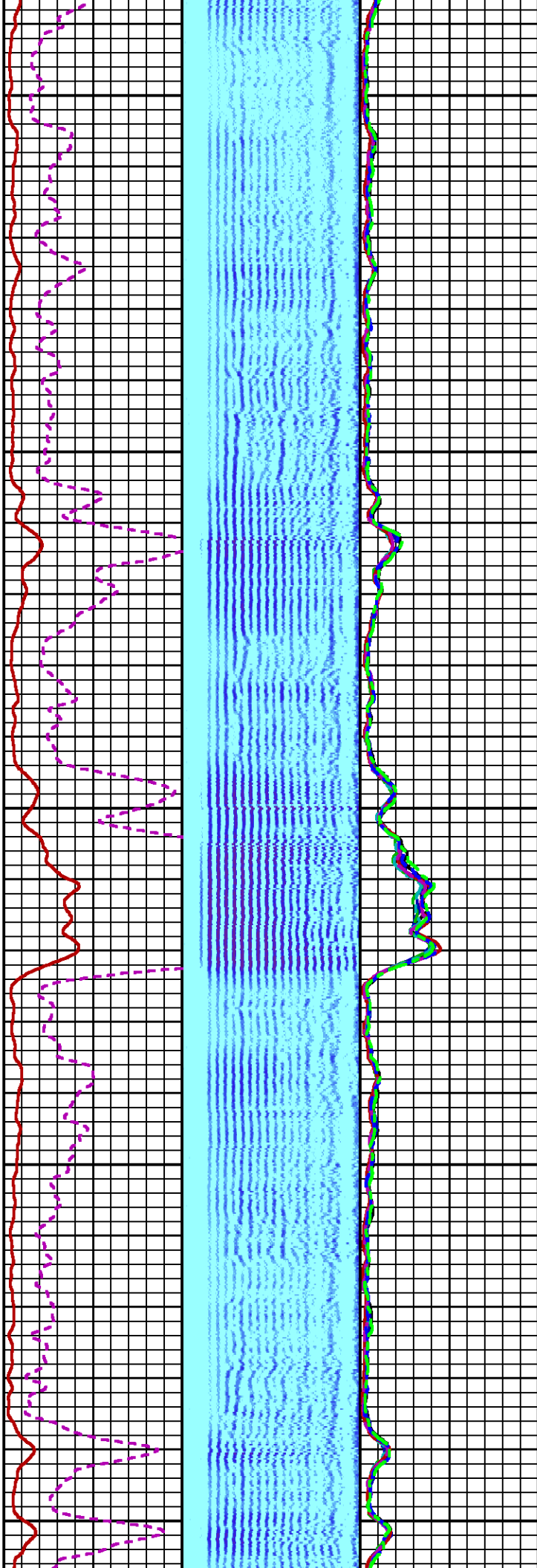
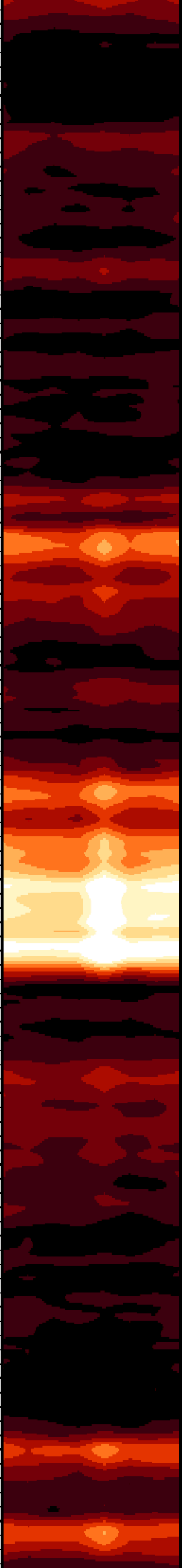




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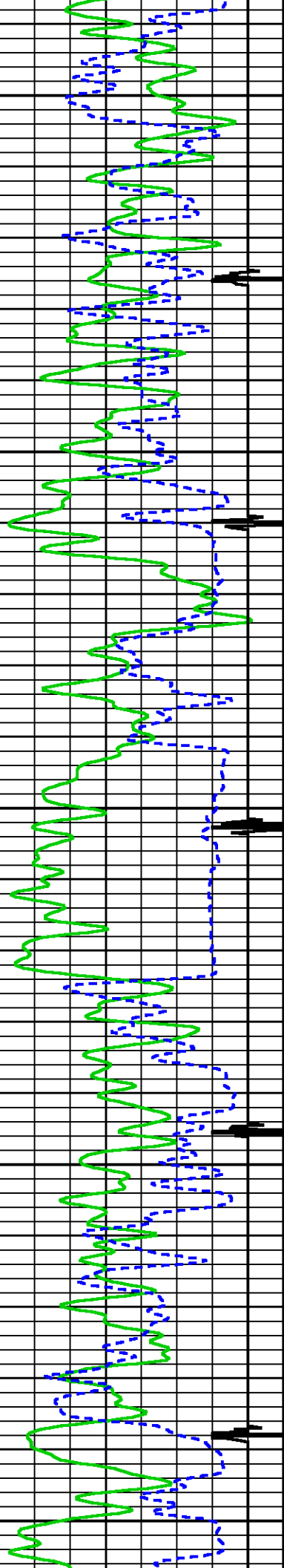


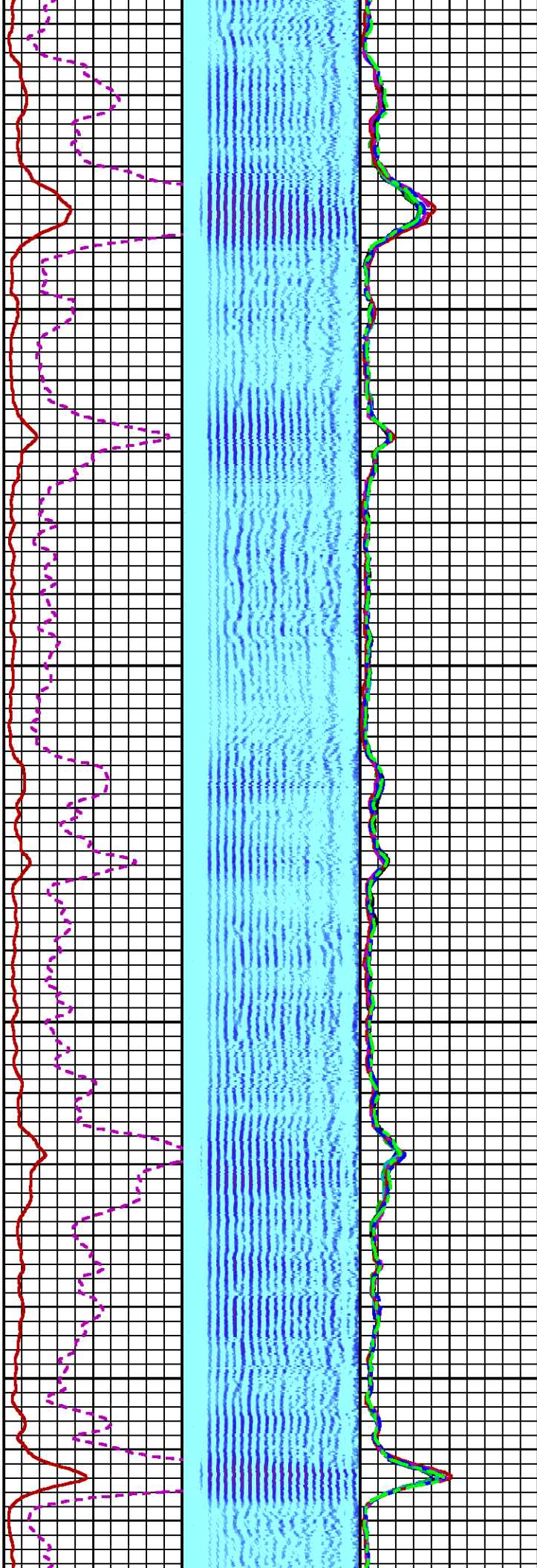


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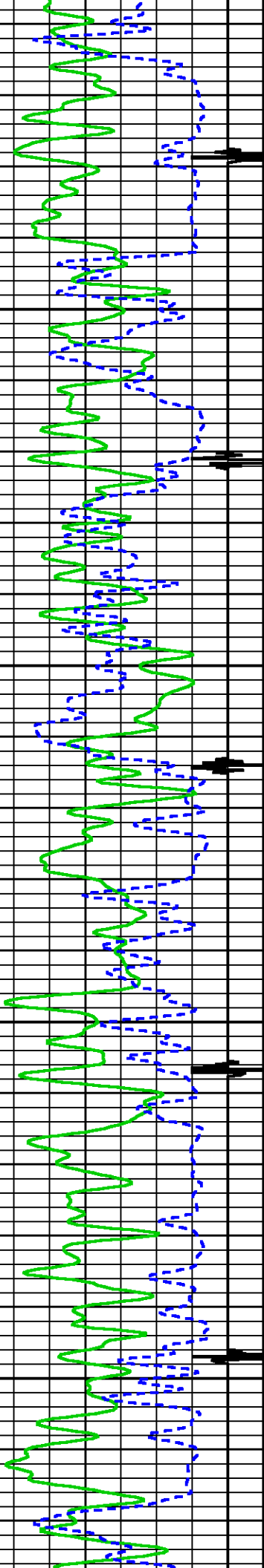
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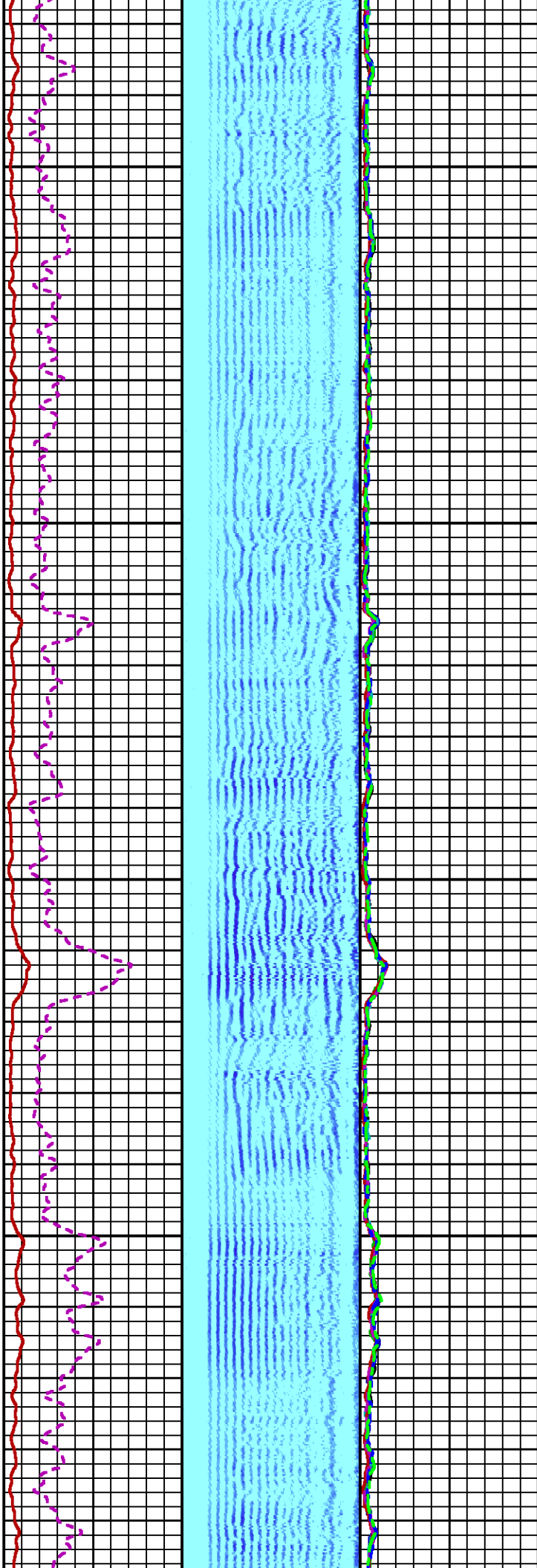




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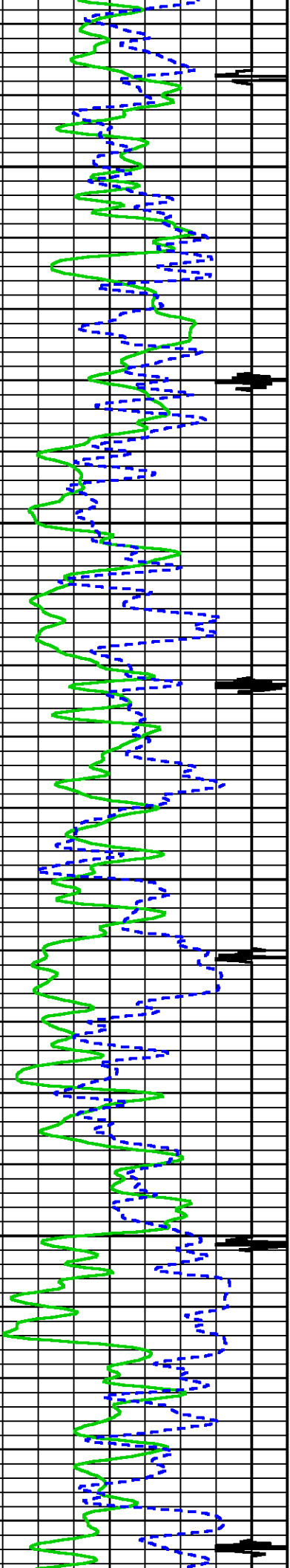
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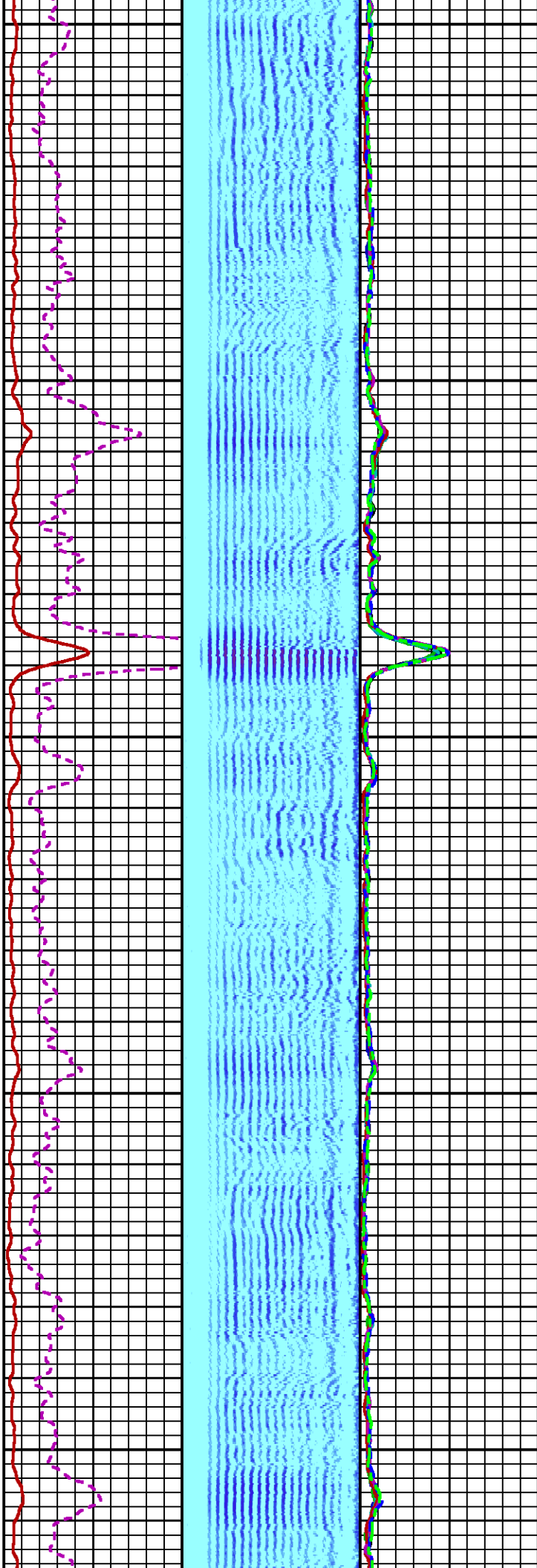
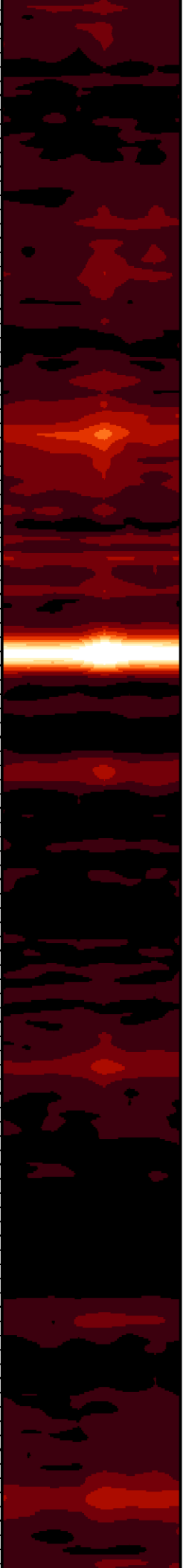




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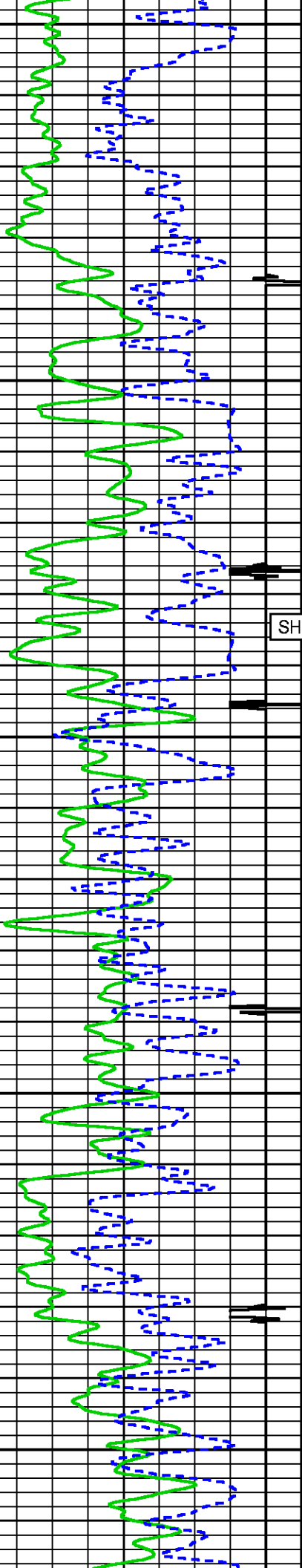


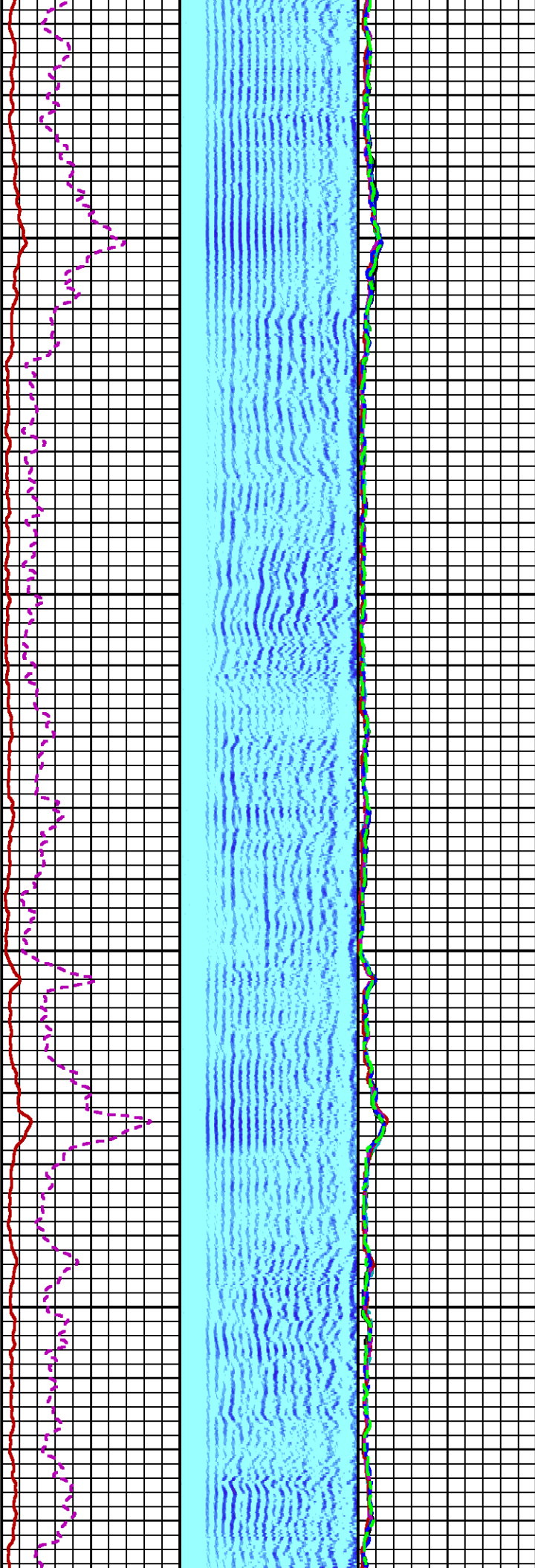


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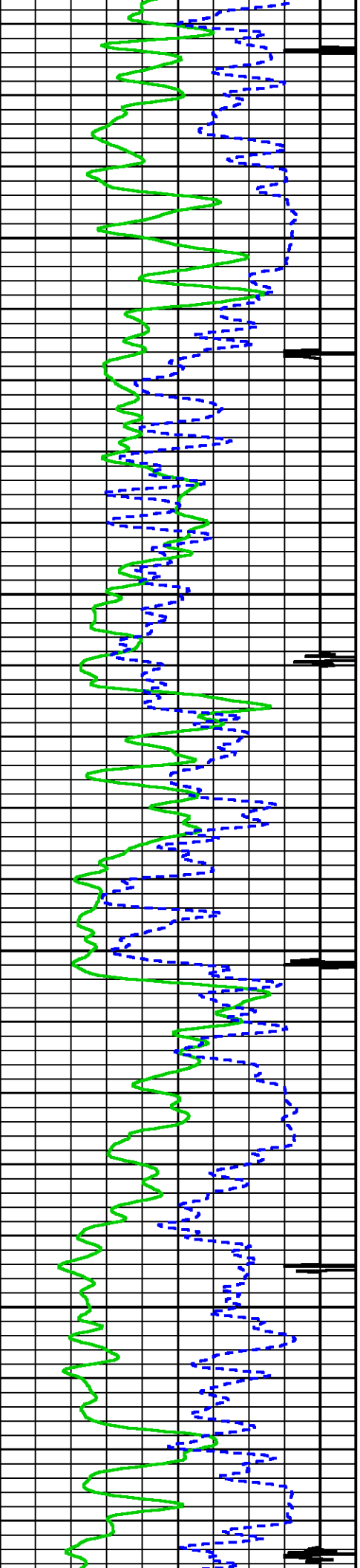
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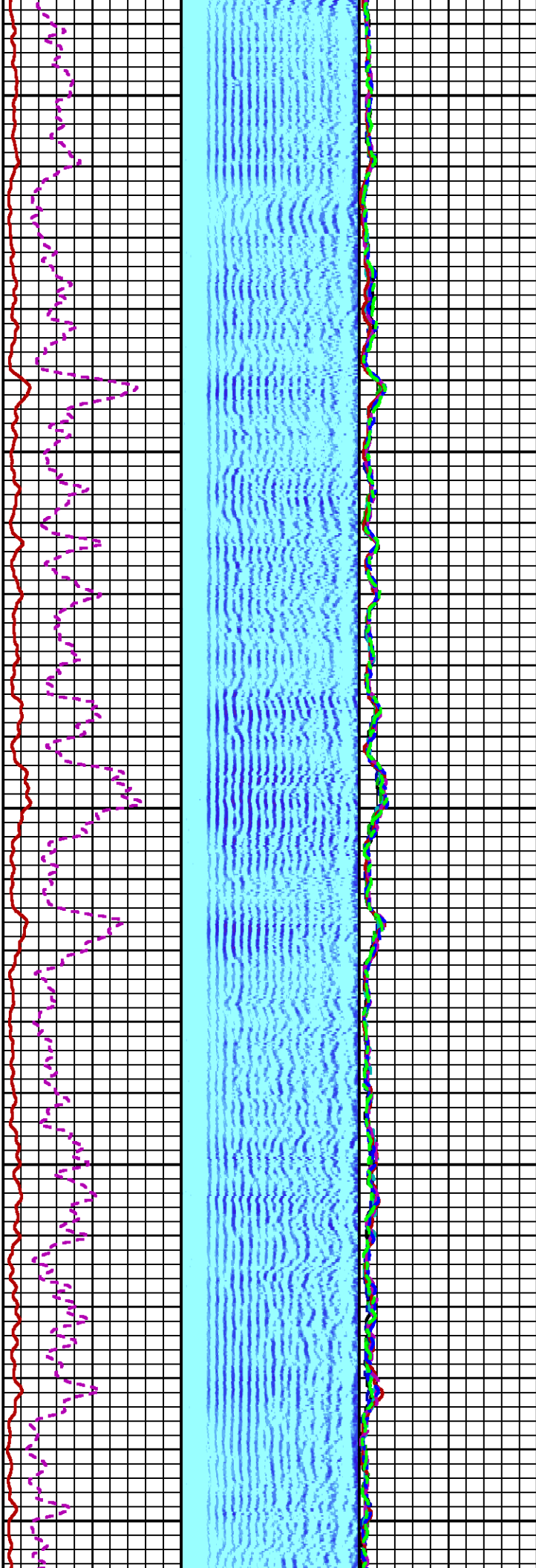
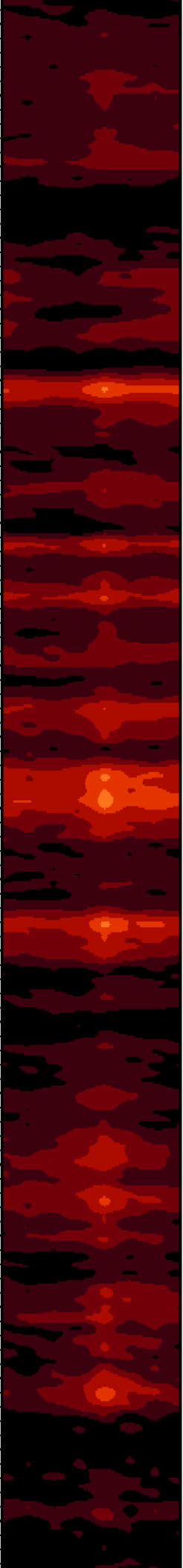




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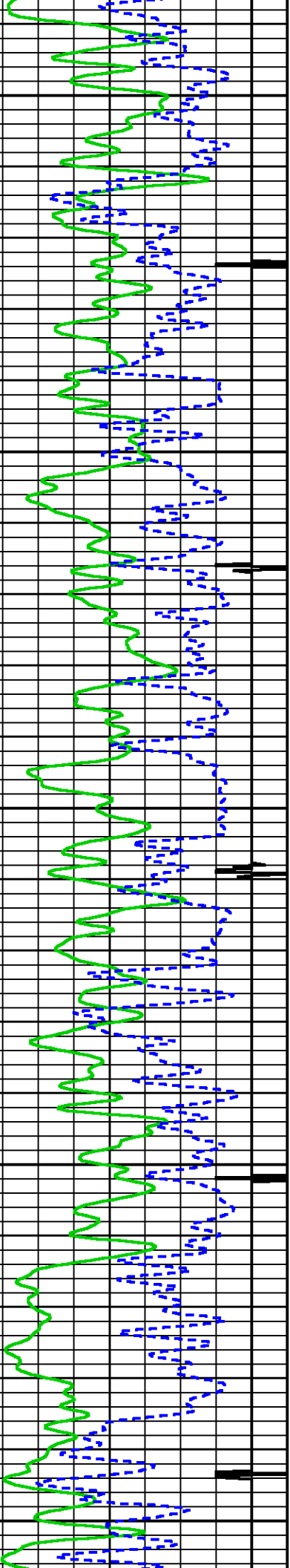


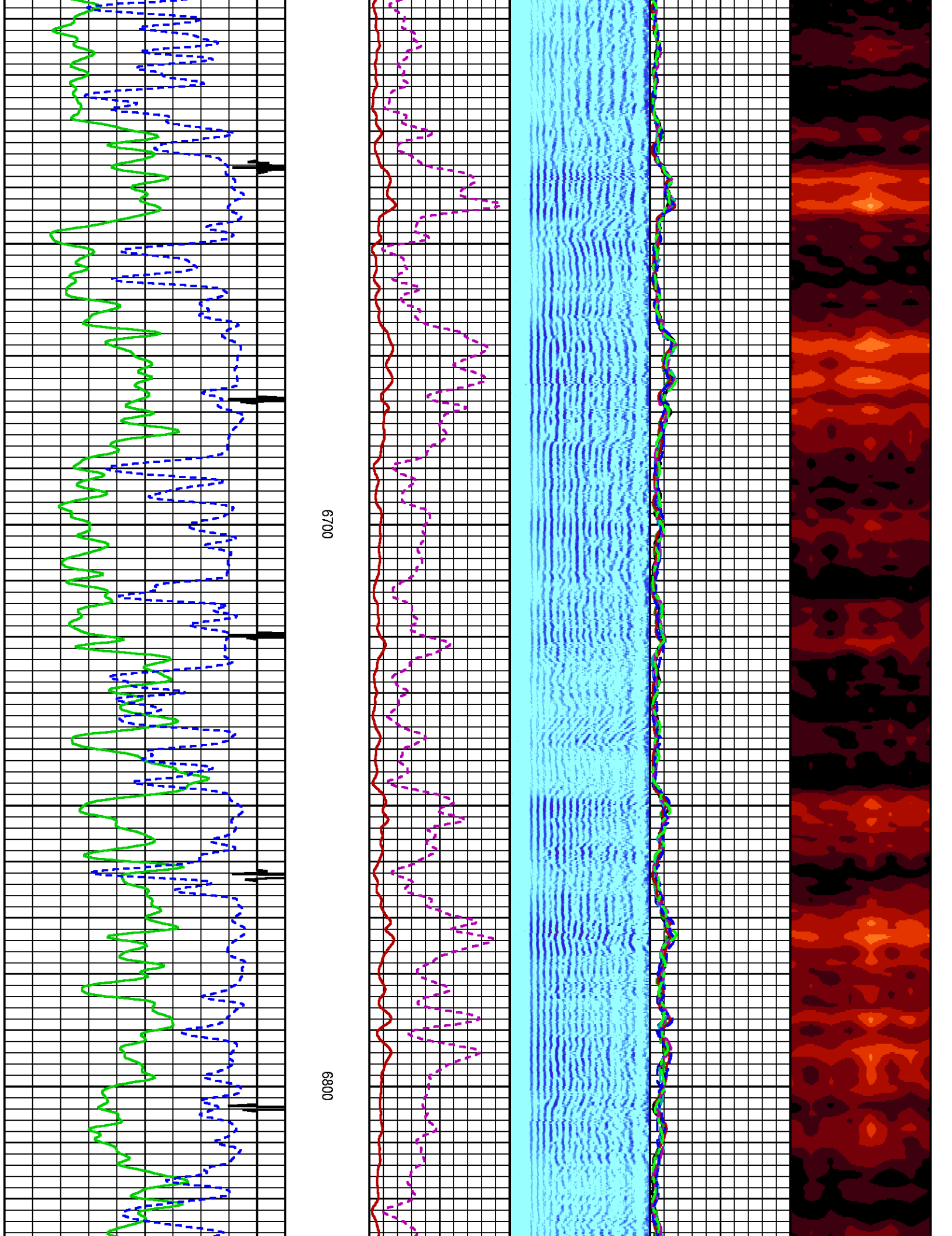


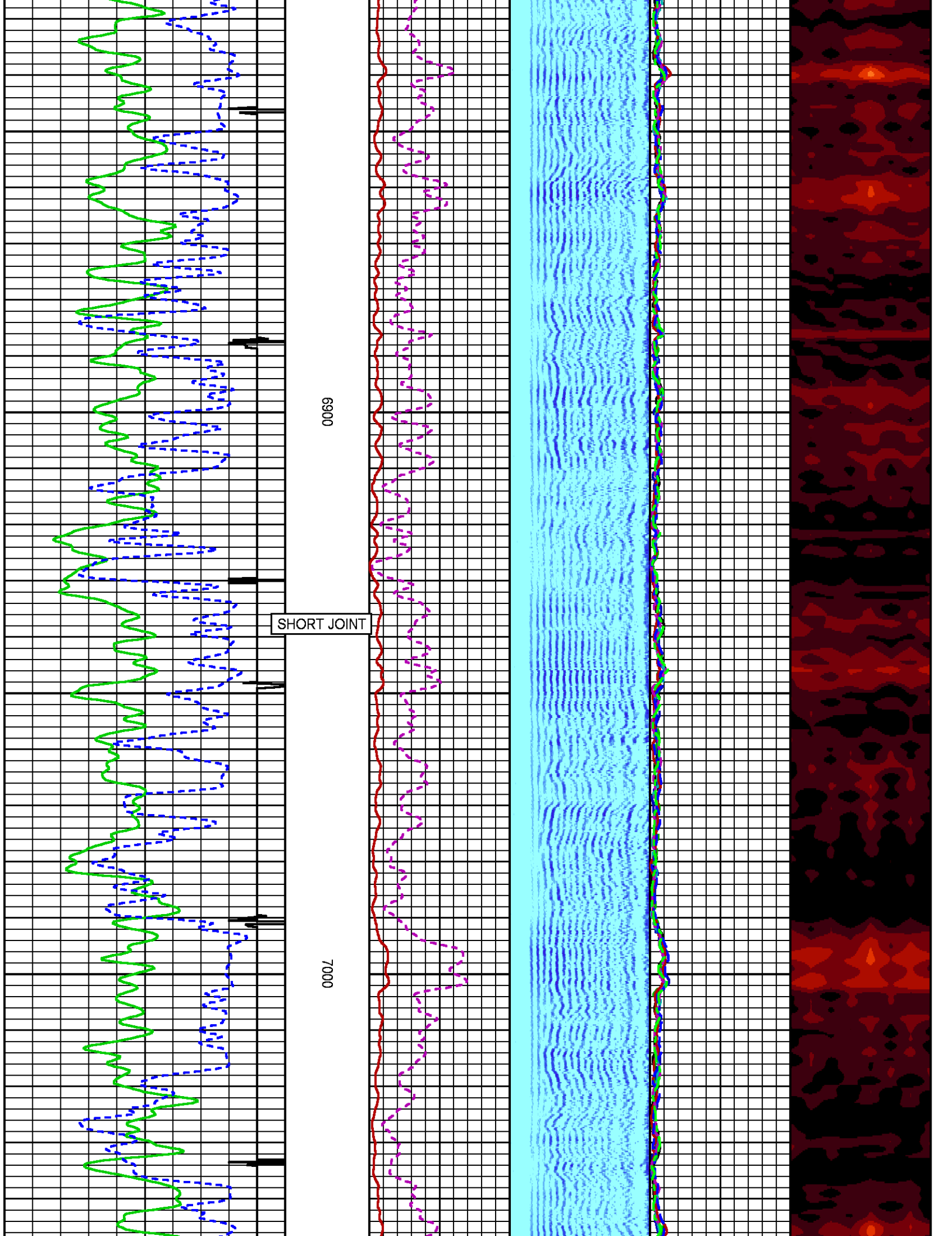
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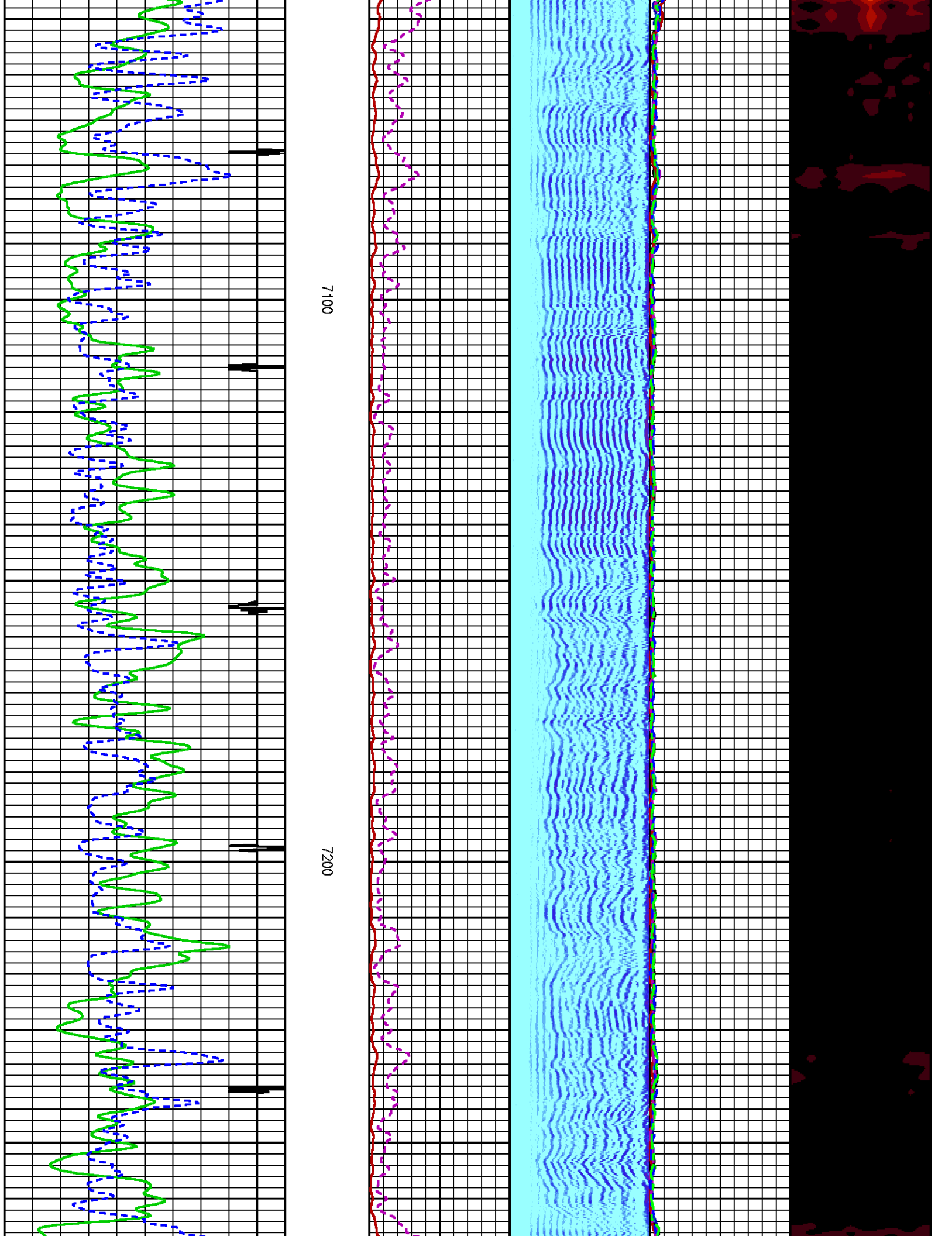
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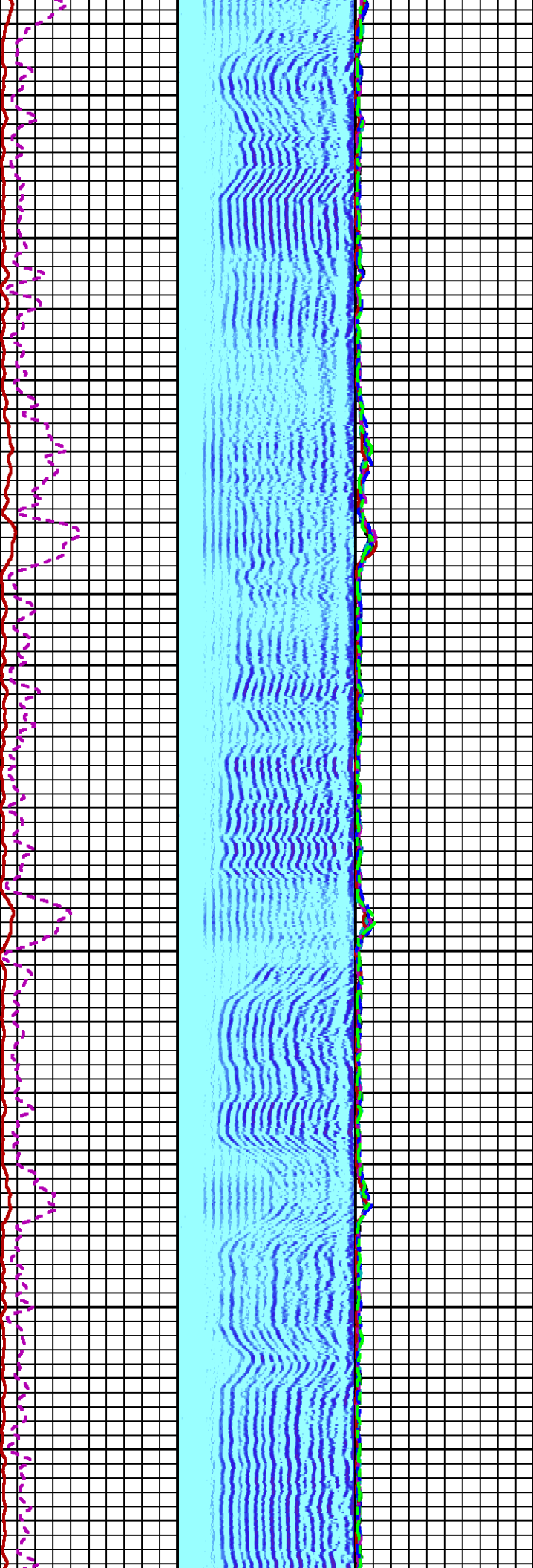
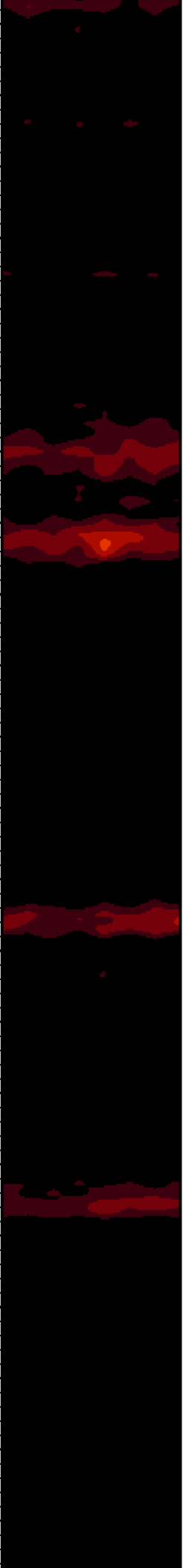
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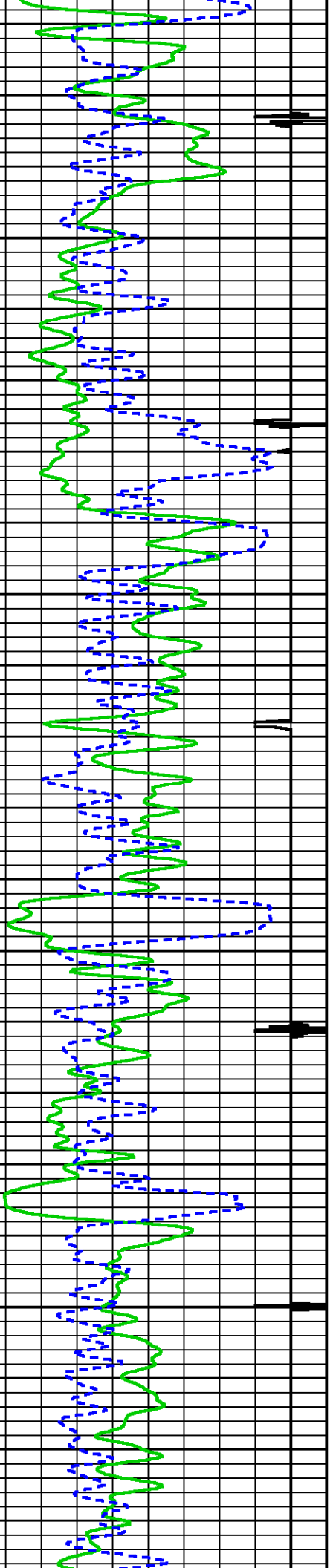


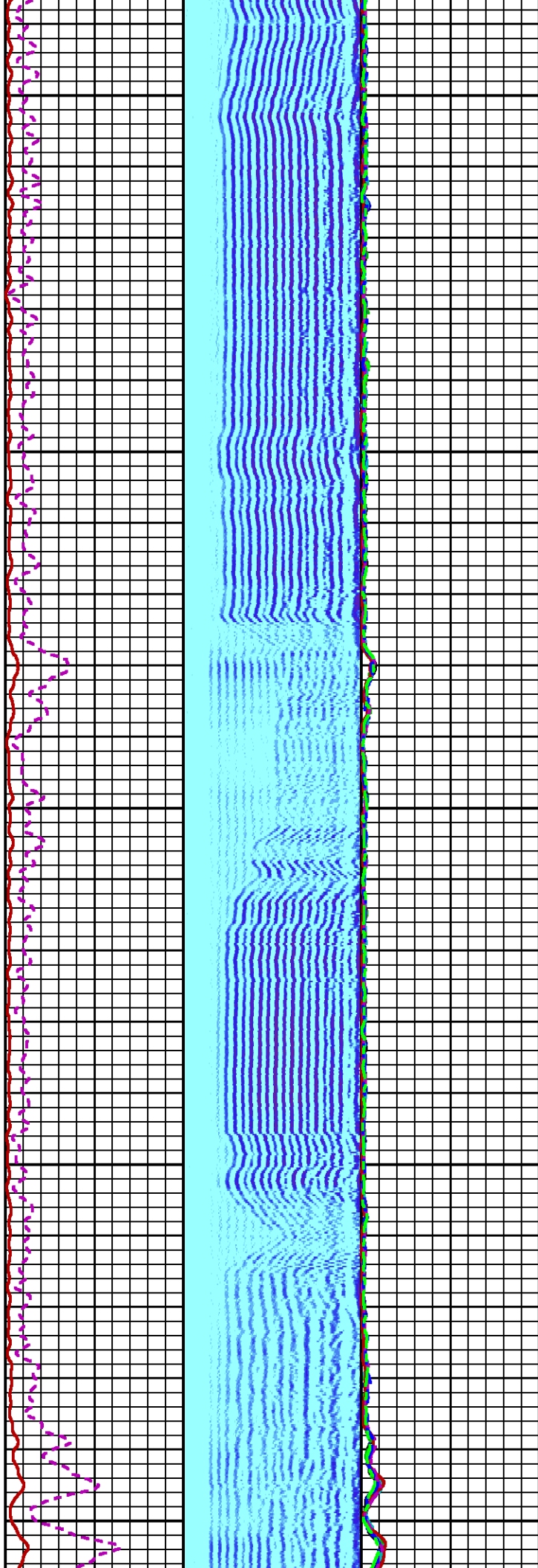




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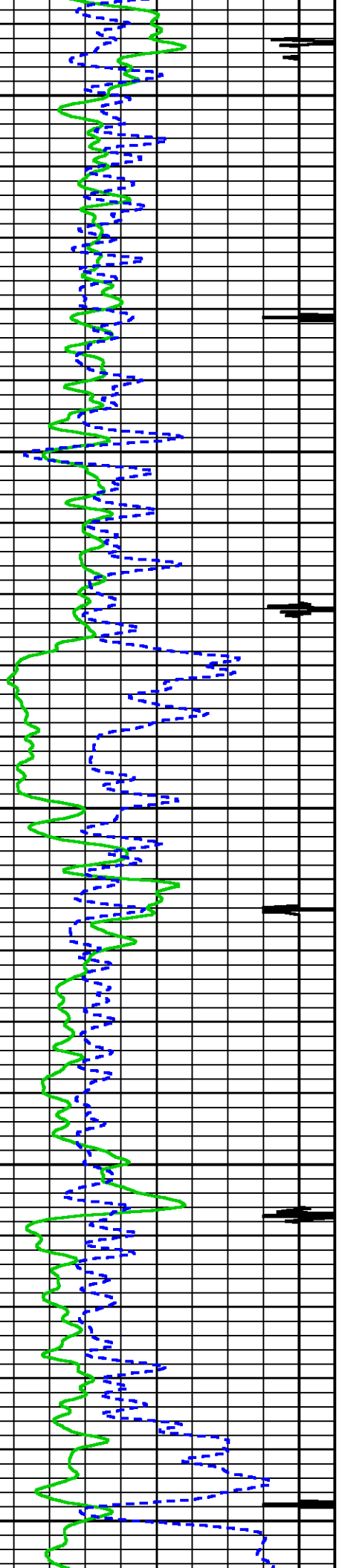


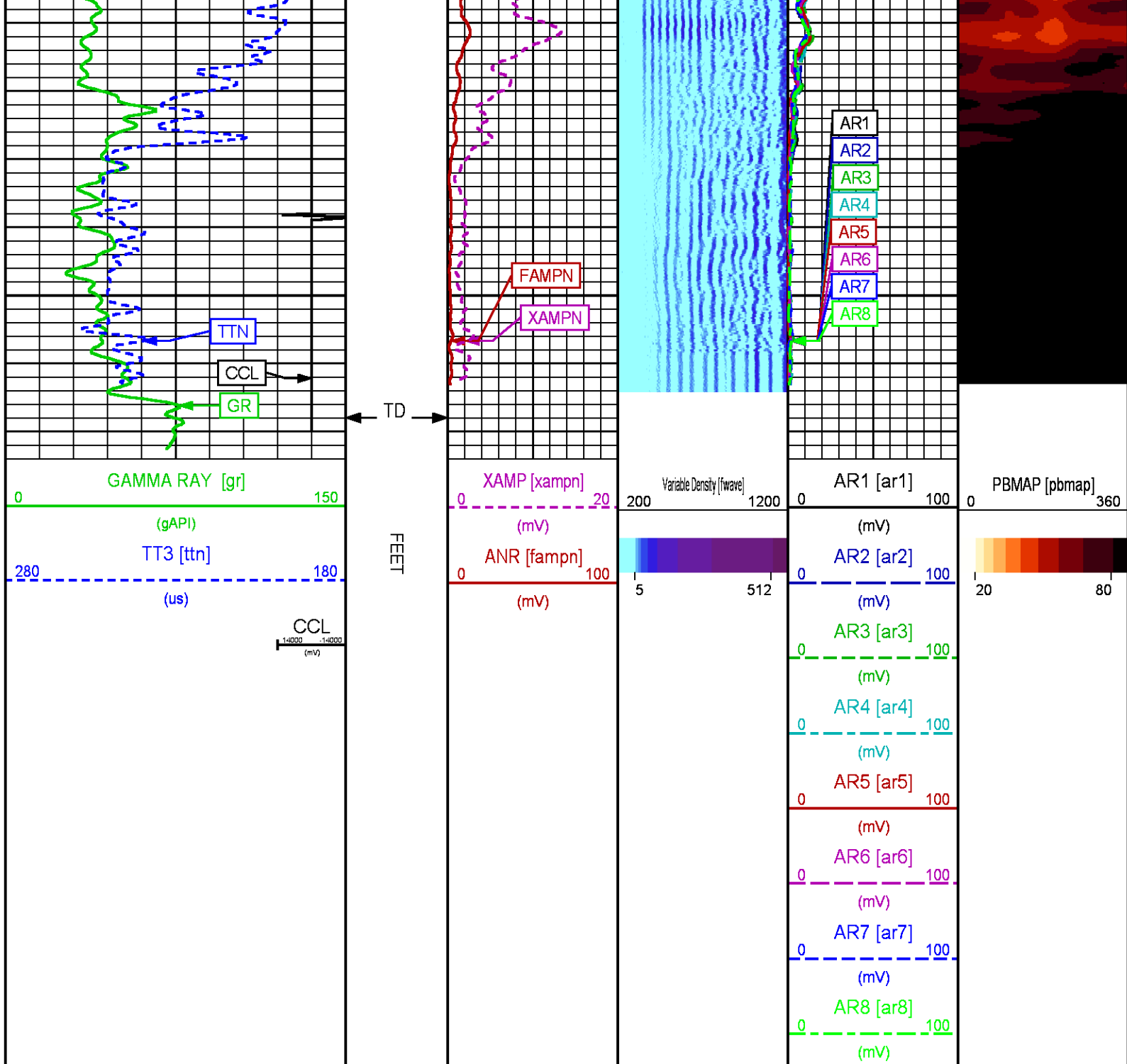


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REPEAT PASS 0 PSI

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

Plotted: Sun Mar 18 15:43:11 2018

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE_NICHOLS_0994-13-21W/p012g01.prm
LOGGING MODE: DEPTH DIRECTION: UP

LOGGING MODE: DEPTH: 7501.250 ft

DIRECTION: UP

TOP DEPTH: 7501.250 ft

BOTTOM DEPTH: 7786.500 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*)	175	us	"	"
	TT WINDOW LENGTH	500	us	"	"
	FIRST BRK THRESHOLD (ttn*)	4	mV	"	"
RAL CASING PARAMETERS	PPT NEAR	200.391	us	"	"
RAL TOOL DELAY	TOOL DELAY (str1*)	-73	us	"	"
	TOOL DELAY (str2*)	-73	us	"	"
	TOOL DELAY (str3*)	-73	us	"	"
	TOOL DELAY (str4*)	-73	us	"	"
	TOOL DELAY (str5*)	-73	us	"	"
	TOOL DELAY (str6*)	-73	us	"	"
	TOOL DELAY (str7*)	-73	us	"	"
	TOOL DELAY (str8*)	-73	us	"	"
BASELINE NOISE (NEAR)	TOOL DELAY (strn*)	-73	us	"	"
	NOISE WINDOW START	114	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

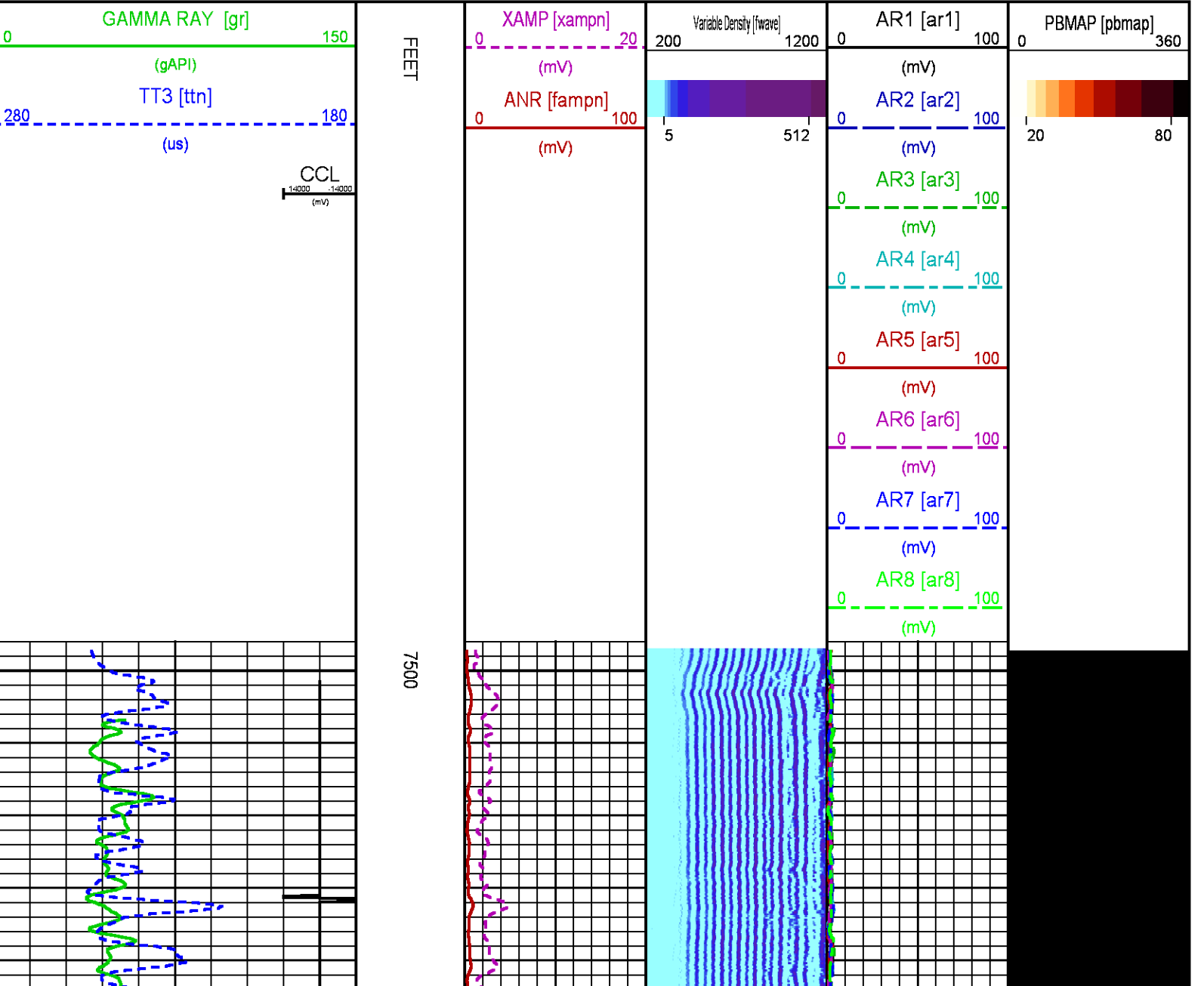
F1:AR8	N/A	FIXED GATE AMPLITUDE T-R8
F1:CCL	N/A	CASING COLLAR LOCATOR
F1:FAMPN	N/A	FIXED GATE AMPLITUDE NEAR RECEIVER
F1:FWAVE	N/A	FAR WAVE FORM
F1:GR	N/A	GAMMA RAY
F1:PBMAP	N/A	PERCENT BOND CEMENT MAP
F1:TTN	N/A	TRAVELTIME FROM NEAR TRANSMITTER-RECEIVER
F1:XAMPN	N/A	FIXED GATE AMPLITUDE NEAR RECEIVER TIMES FIVE

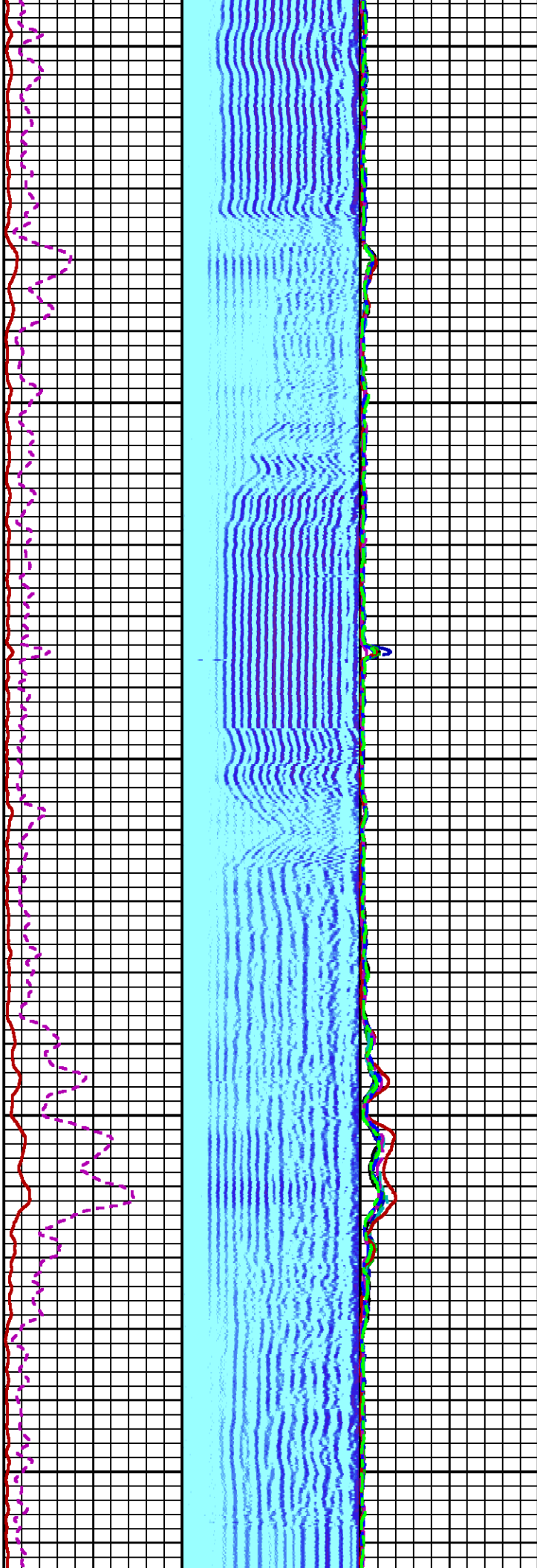
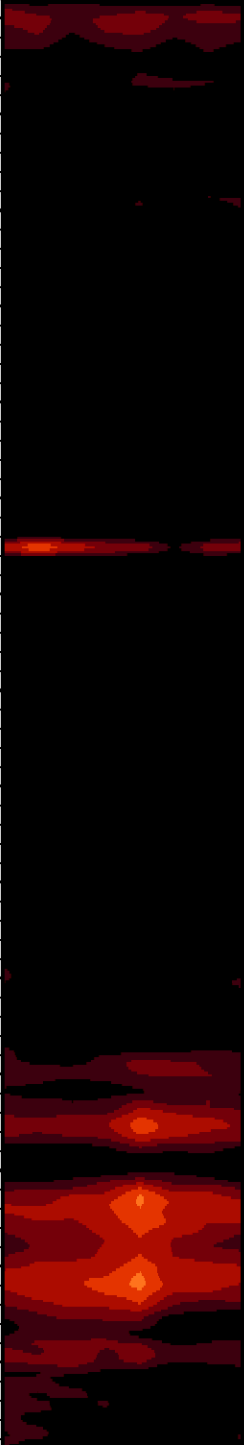
CURVE MEASURE POINT OFFSET

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 : 7497 - 7791.75 Feet

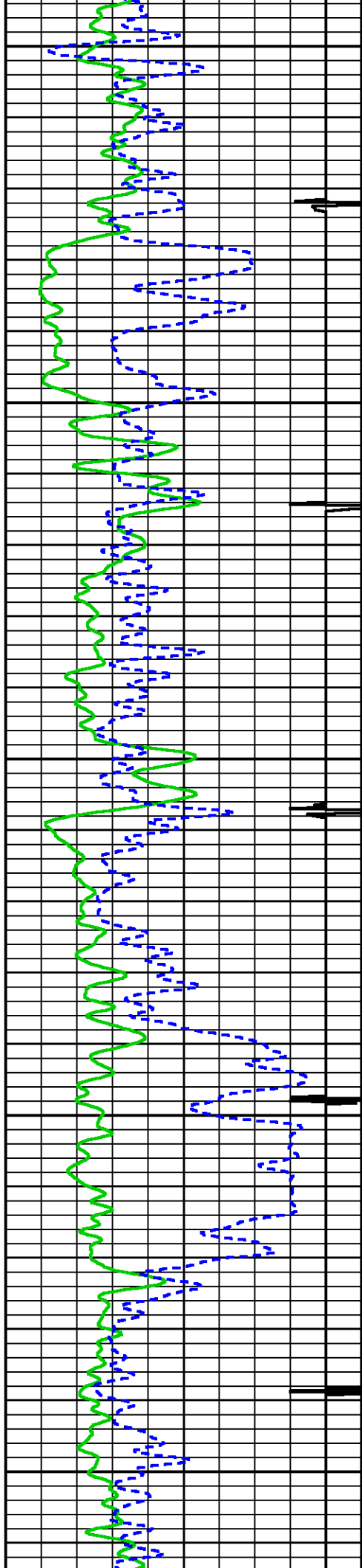
Data File 1 : F1 : SysA:/dat1a/LARAMIE_NICHOLS_0994-13-21W/RAL_REPEAT.xtf
Created On : N/A
Company : LARAMIE ENERGY
Well : NICHOLS 0994-13-21W
Field : VEGA
File Interval : 7496 - 7793 Feet
OCT : p012g

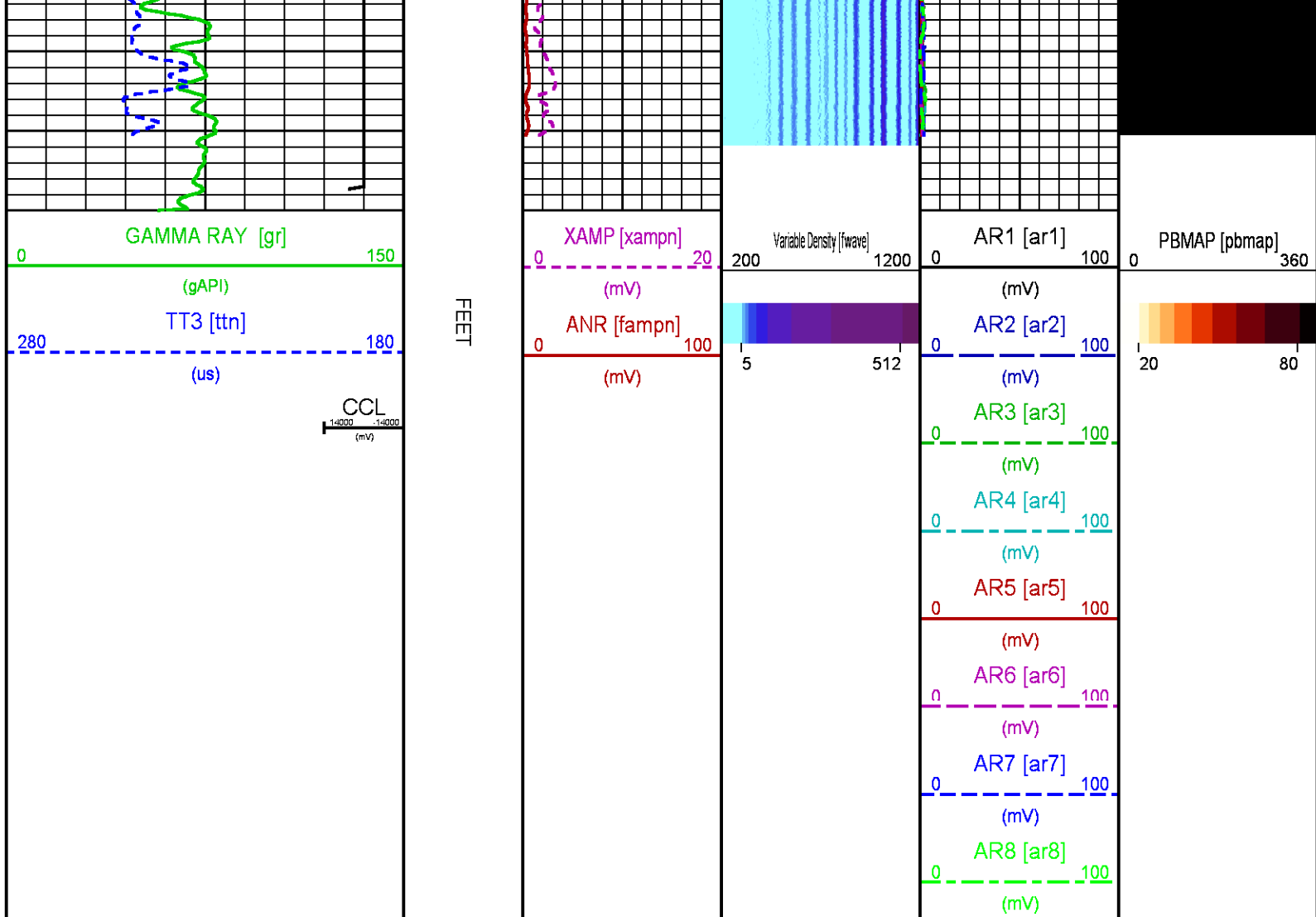




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CALIBRATION / VERIFICATION SUMMARY

Source File: /dat1a/LARAMIE_NICHOLS_0994-13-21W/p012g.tp1

RAL PRIMARY CALIBRATION SUMMARY

TOOL #: 1426XA 10404539a

DATE/TIME PERFORMED: Fri Mar 16 13:36:17 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)	-0.26	-0.10	-0.12	-0.29	-0.30	-0.27	-0.15	-0.16	-0.25	-1.23	-0.08
AMP FLUID (mV)	47	47	47	47	46	46	47	47	47	65	48
TT (us)	216	216	216	216	215	215	215	214	216	322	218
M FACTOR	2.13	2.12	2.12	2.13	2.16	2.14	2.11	2.10	2.11	2.26	2.10

RAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1426XA 10404539a

DATE/TIME PERFORMED: Fri Mar 16 16:06:39 2018

DAYS SINCE CAL: 0

UNIT #: 5753XD 111111

CABLE #: ml4291 smallline

NEAR	R1	R2	R3	R4	R5	R6	R7	R8	FAR	CAL
------	----	----	----	----	----	----	----	----	-----	-----

	(mV)	(mV)	(mV)	(mV)	(mV)	(mV)	(mV)	(mV)	(mV)	(mV)	(mV)
ZERO	-0.12	-0.03	-0.18	0.01	-0.09	0.06	-0.10	-0.18	0.01	0.08	-0.03
AMP AIR	1.28	0.26	0.68	0.53	0.28	-1.47	0.12	0.37	-0.13	0.94	98.37

SHOP M FACTOR	SHOP A FACTOR	WIRELINE FACTOR
2.10	0.00	1.02

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

	BACKGROUND (cts)	CALBRTR ON (cts)	CR DIFF (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	CALBRTR (gAPI)
GR	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 (cts)	CALBRTR ON (cts)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	DIFF. (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_0994-13-21W/p012g--tdg

CABLEHEAD

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



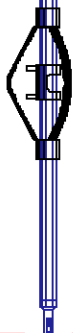
RADIAL BOND TOOL

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'

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



NEAR RCVR 9.62'
 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



COMPANY
WELL
FIELD
COUNTY

LARAMIE ENERGY II LLC
NICHOLS 0994-13-21W
VEGA
MESA

STATE **COLORADO**

FILE NO:

API NO:

05077104130000

LOCATION:

SHL 1779 FNL 2787 FEL
 BHL 151 FNL 1606 FEL

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

ELEVATIONS:

KB 7161 FT
 DF
 GL 7137 FT

DATE **16-Mar-2018**

ECLIPS