



RADIAL CEMENT BOND LOG

FILE NO: CH133068	COMPANY LARAMIE ENERGY LLC
API NO: 05077104690000	WELL BRUTON FEDERAL 30-19W
	FIELD VEGA
	COUNTY MESA STATE COLORADO

Ver. 4.10	LOCATION: SHL: 2622' FSL & 1858' FEL BHL: 658' FSL & 1306' FWL SEC <u>30</u> TWP <u>9S</u> RGE <u>93W</u>	OTHER SERVICES RPM
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PERMANENT DATUM LOG MEASURED FROM DRILL. MEAS. FROM	GL ELEVATION <u>7643 FT</u> KB 30 FT ABOVE P.D. KB GL	ELEVATIONS: KB 7673 FT DF GL 7643 FT
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DATE	RUN	TRIP		
	1	1		
SERVICE ORDER	US133068			
DEPTH DRILLER	8324 FT			
DEPTH LOGGER	8289 FT			
BOTTOM LOGGED INTERVAL	8289 FT			
TOP LOGGED INTERVAL	30 FT			
TIME STARTED	13:00			
TIME FINISHED	15:30			
OPERATOR RIG TIME	2.5 HOURS			
TYPE OF FLUID IN HOLE	WATER			
FLUID DENSITY	NA			
FLUID SALINITY	NA			
FLUID LEVEL	54 FT			
LOGGED CEMENT TOP	1800 FT			
WELLHEAD PRESSURE	0 PSI			
MAXIMUM HOLE DEVIATION	NA			
NOMINAL LOGGING SPEED	100 F/MIN			
MAX. RECORDED TEMP.	226 DEGF			
REFERENCE LOG	NA			
REFERENCE LOG DATE	NA			
EQUIP. NO.	LOCATION	ML-4291	GRAND JCT.	
RECORDED BY	T. NEWELL			
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: 6274' - 6293'
SJ: 7414' - 7423'

EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
1	1	RAL	1426XA	10154958	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: Wed Apr 11 17:24:29 2018

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE_BRUTON_30_19W/p012g02.prm
 LOGGING MODE: DEPTH DIRECTION: UP
 TOP DEPTH: 18.750 ft BOTTOM DEPTH: 8290.750 ft

SYMMETRIC FILTER

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

RAL CCL PROCESSING

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

ANALOG RAL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
AMPLITUDE WINDOW (NEAR)	AMP WINDOW START (fgp1*)	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*)	2	mV	"	"
RAL CASING PARAMETERS	PPT NEAR	200.391	us	"	"
RAL TOOL DELAY	TOOL DELAY (str1*)	-63	us	"	"
	TOOL DELAY (str2*)	-63	us	"	"
	TOOL DELAY (str3*)	-63	us	"	"
	TOOL DELAY (str4*)	-63	us	"	"
	TOOL DELAY (str5*)	-63	us	"	"
	TOOL DELAY (str6*)	-63	us	"	"
	TOOL DELAY (str7*)	-63	us	"	"
	TOOL DELAY (str8*)	-63	us	"	"
	TOOL DELAY (strn*)	-63	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

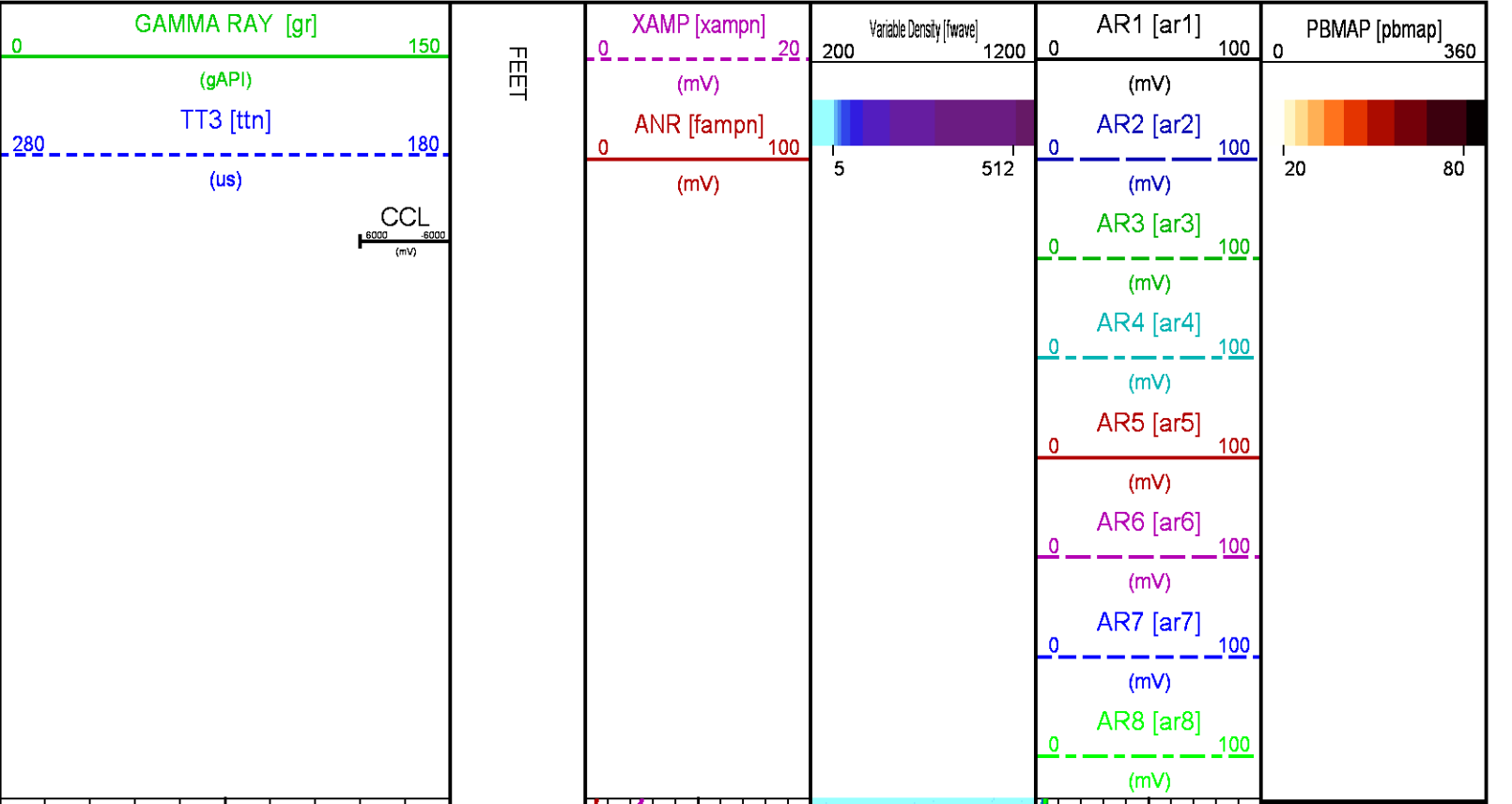
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AR1	N/A	FIXED GATE AMPLITUDE T-R1
F1:AR2	N/A	FIXED GATE AMPLITUDE T-R2
F1:AR3	N/A	FIXED GATE AMPLITUDE T-R3
F1:AR4	N/A	FIXED GATE AMPLITUDE T-R4
F1:AR5	N/A	FIXED GATE AMPLITUDE T-R5
F1:AR6	N/A	FIXED GATE AMPLITUDE T-R6
F1:AR7	N/A	FIXED GATE AMPLITUDE T-R7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

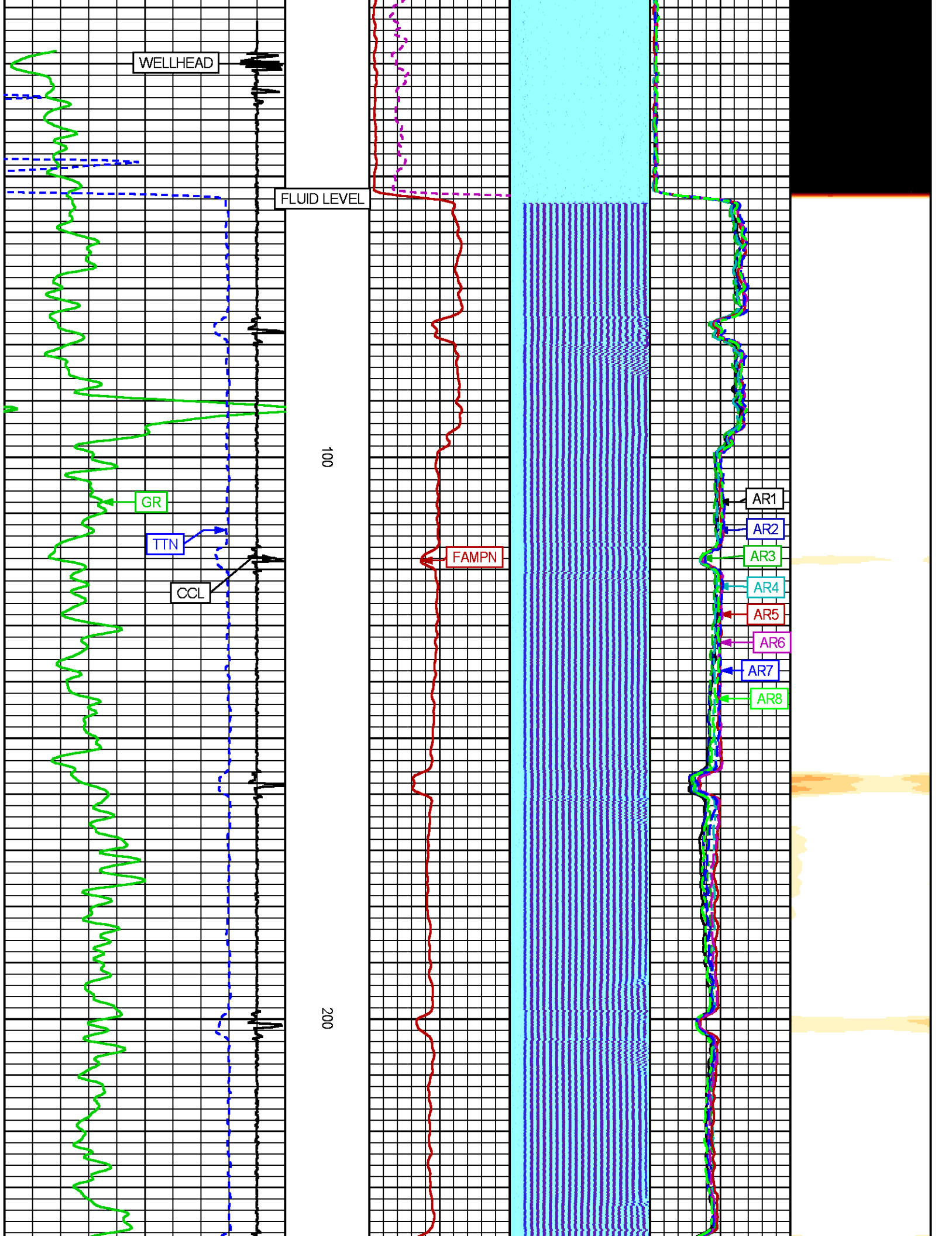
CURVE MEASURE POINT OFFSET

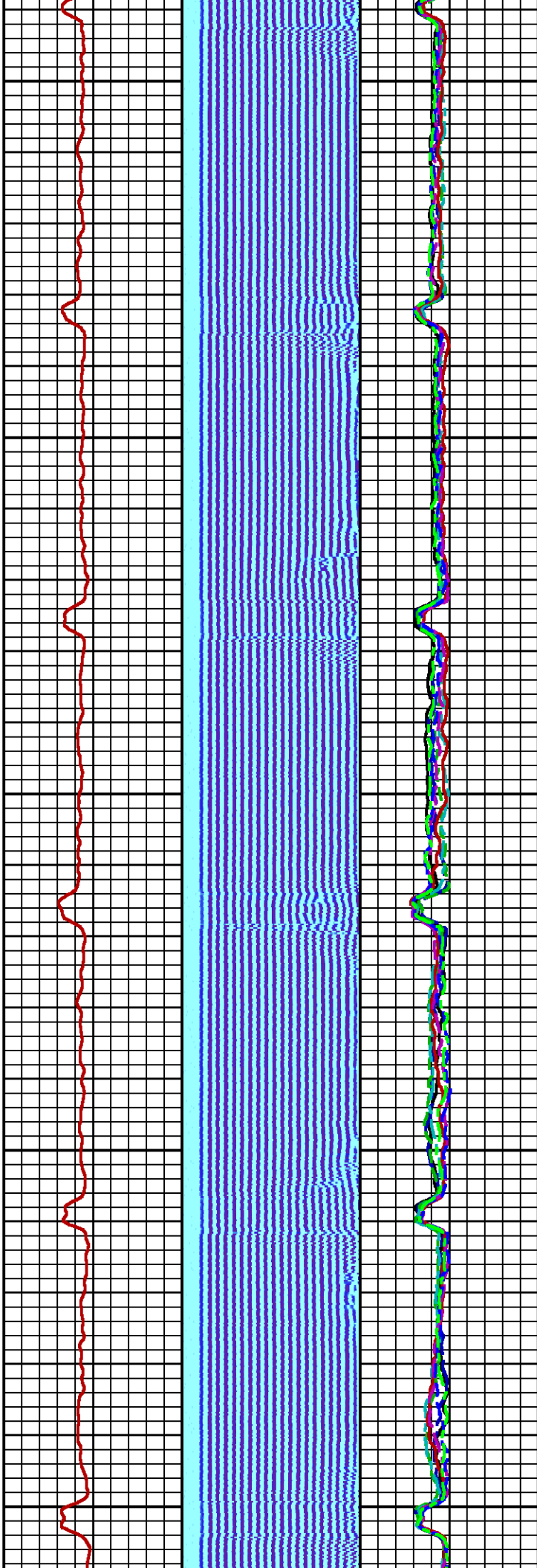
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
AR1	-11.25	AR5	-11.25	CCL	-5.75	XAMPN	-11.25
AR2	-11.25	AR6	-11.25	FAMPN	-11.25		
AR3	-11.25	AR7	-11.25	GR	-1.75		
AR4	-11.25	AR8	-11.25	TTN	-11.25		

Presentation : SysA:/dat1a/LARAMIE_BRUTON_30_19W/30-19W_RAL_MAIN.fvpdf [5"/100' Scale]
Plot Interval : 18 - 8308.5 Feet

Data File 1 : F1 : SysA:/dat1a/LARAMIE_BRUTON_30_19W/30-19W_RAL_MAIN.xtf
Created On : N/A
Company : LARAMIE ERNGY LLC
Well : BRUTON FEDERAL 30-19W
Field : VEGA
File Interval : 17 - 8309.75 Feet
OCT : p012g

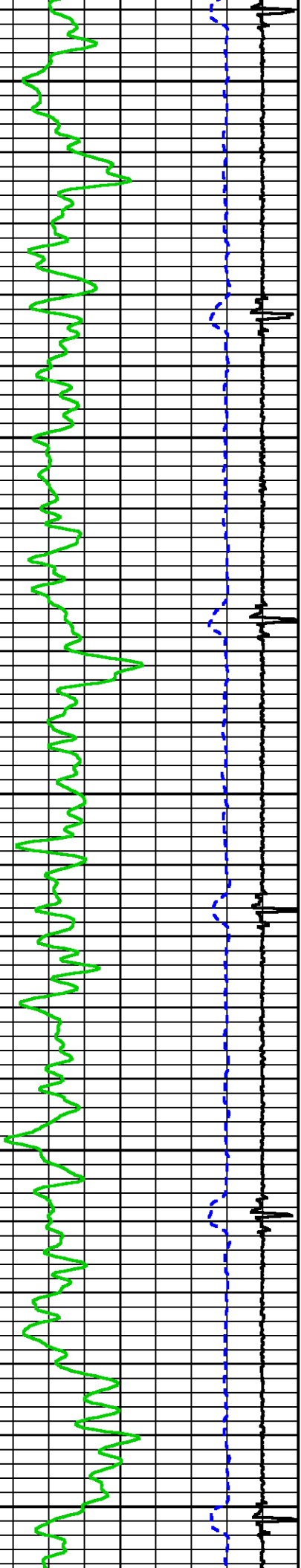


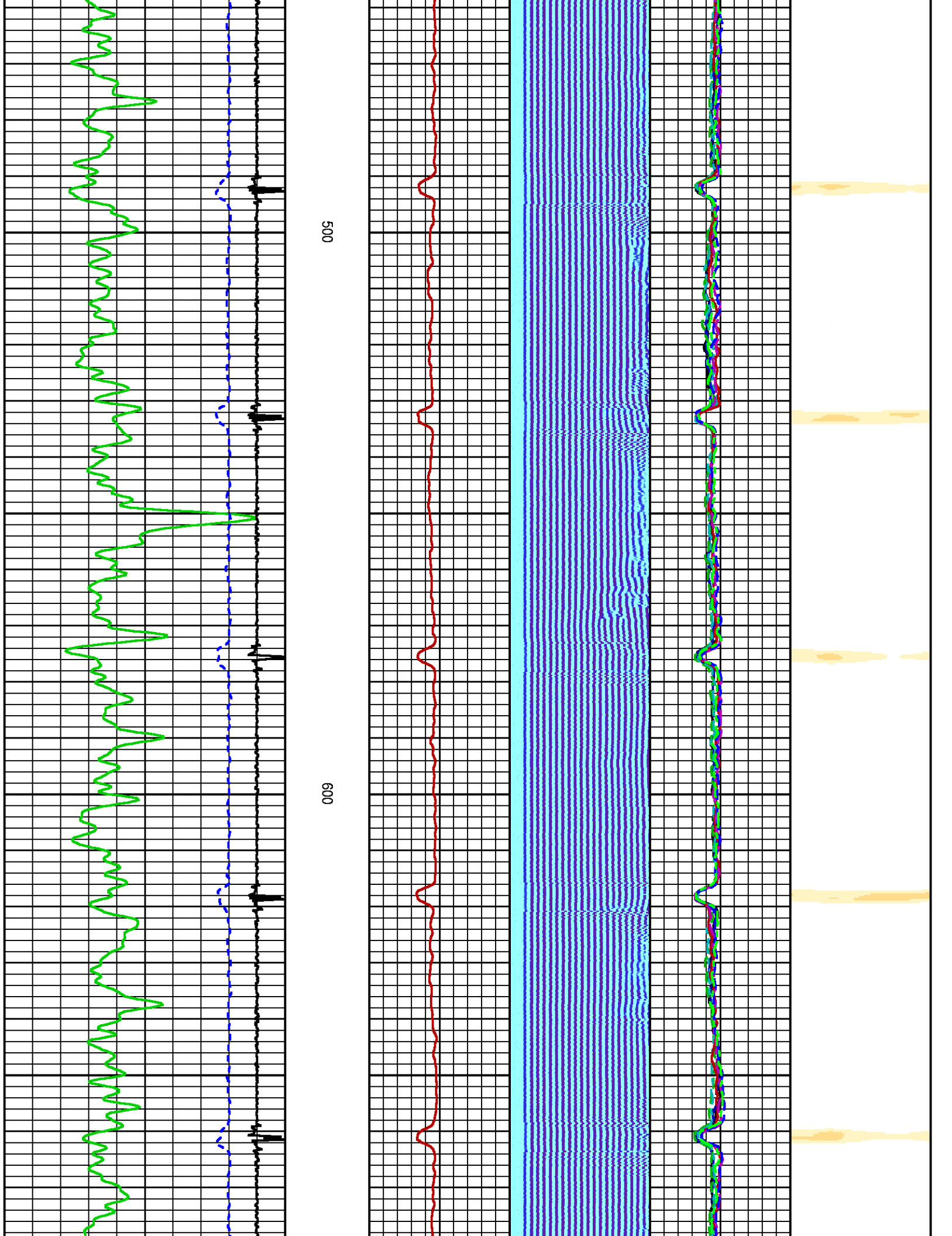


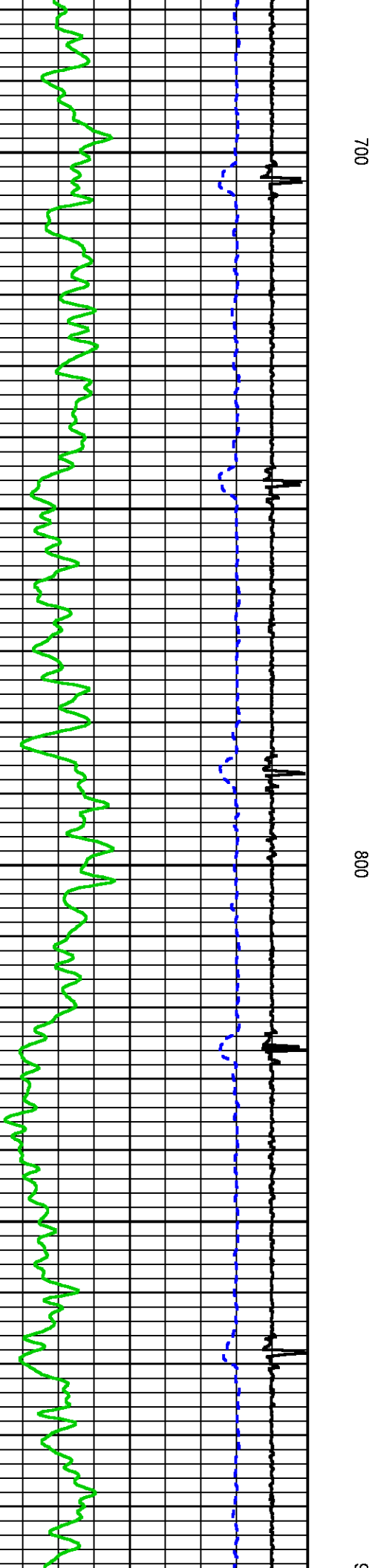
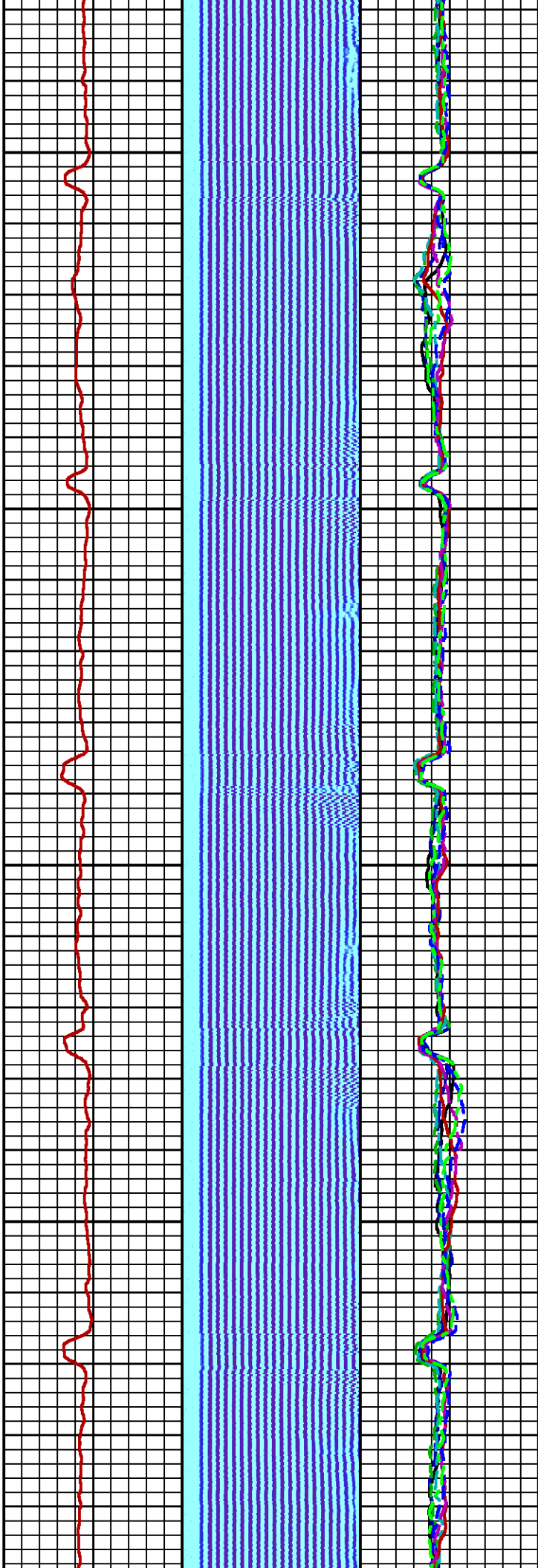


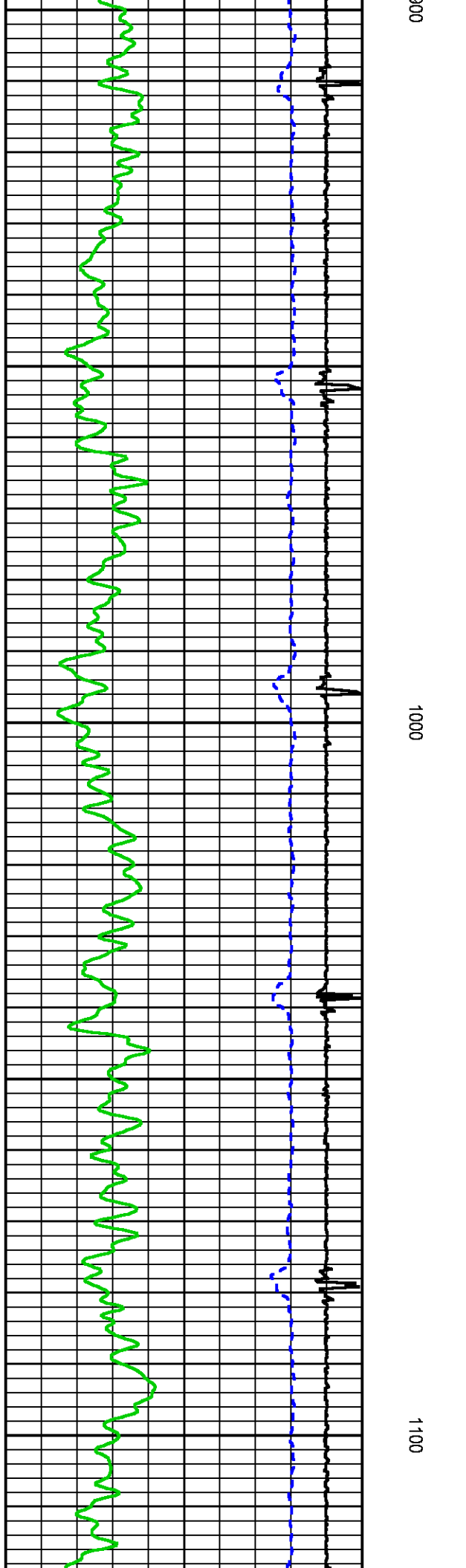
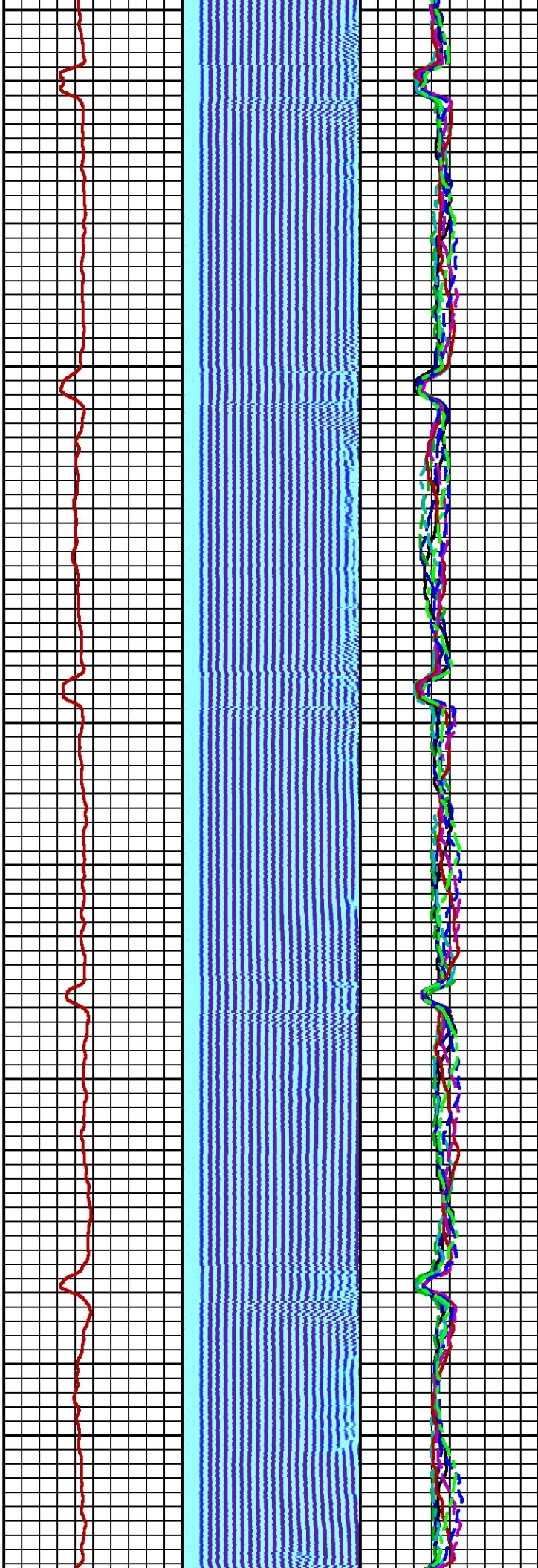
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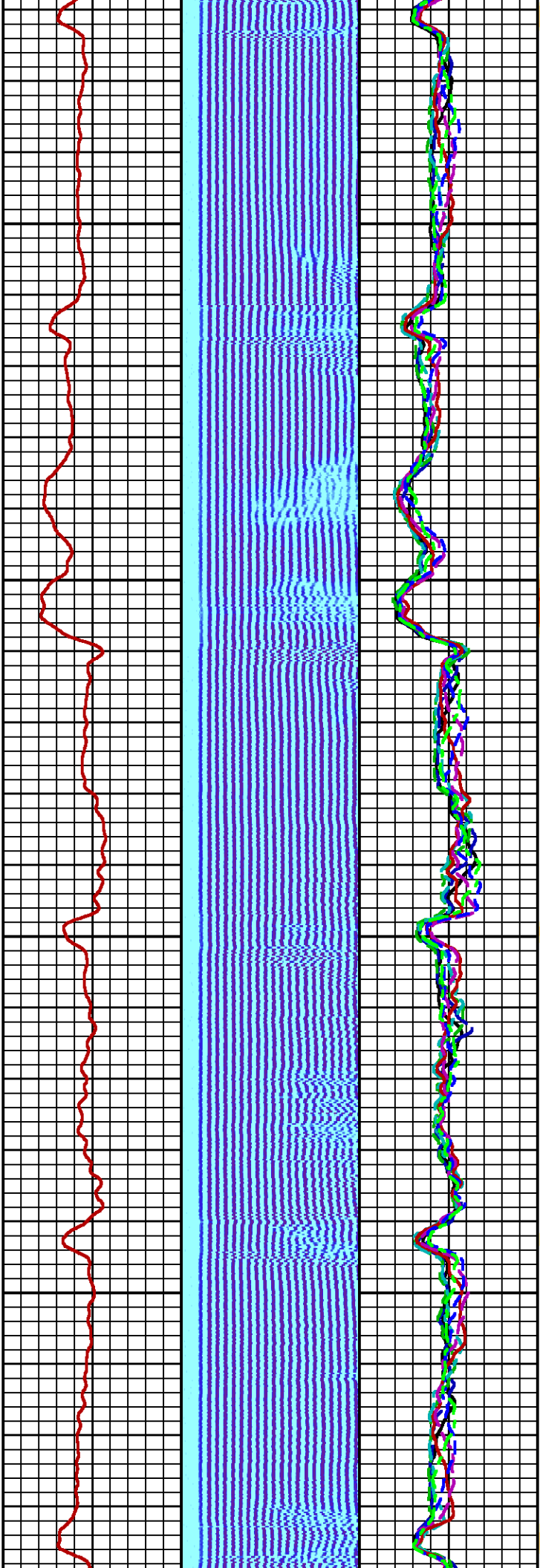
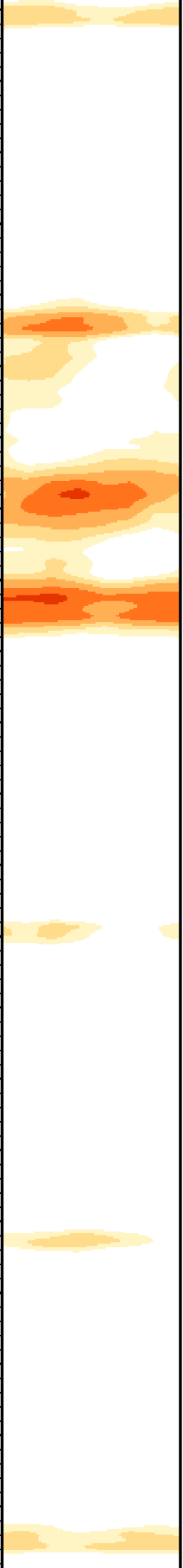
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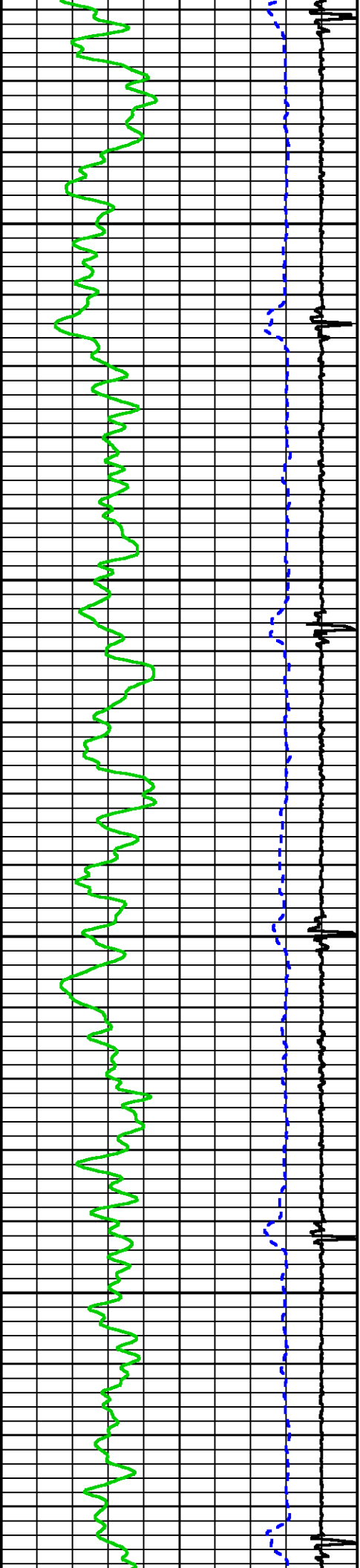


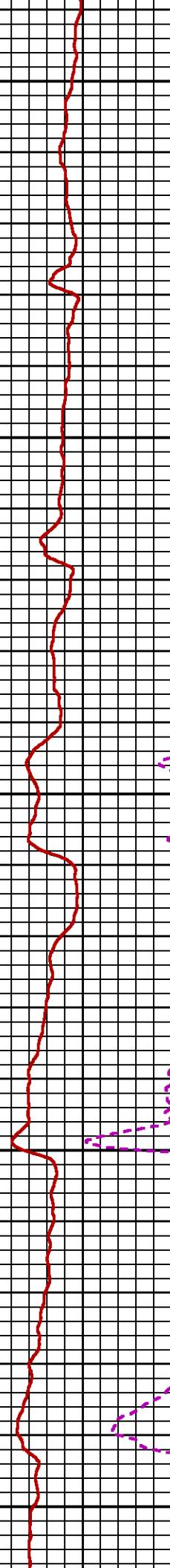
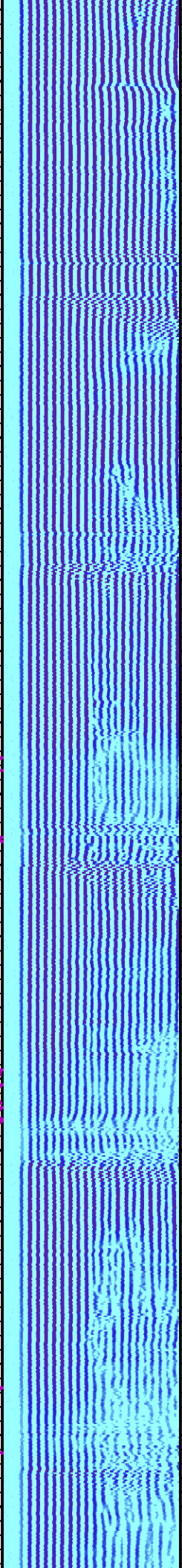
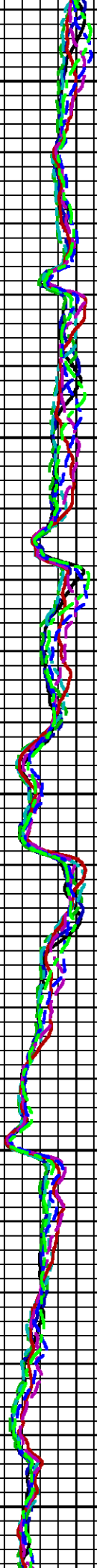
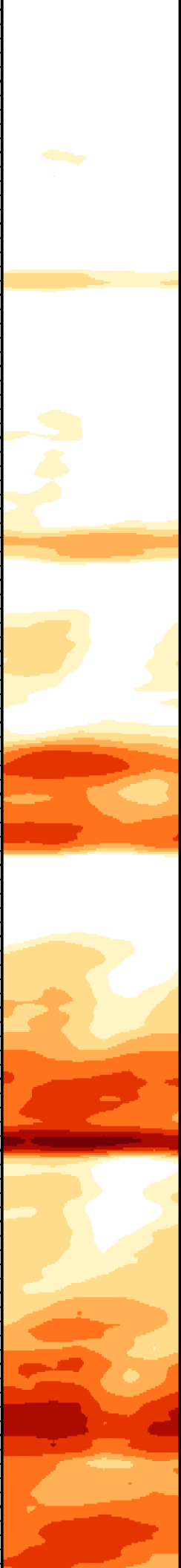




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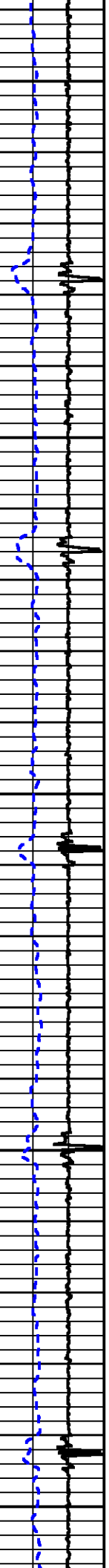
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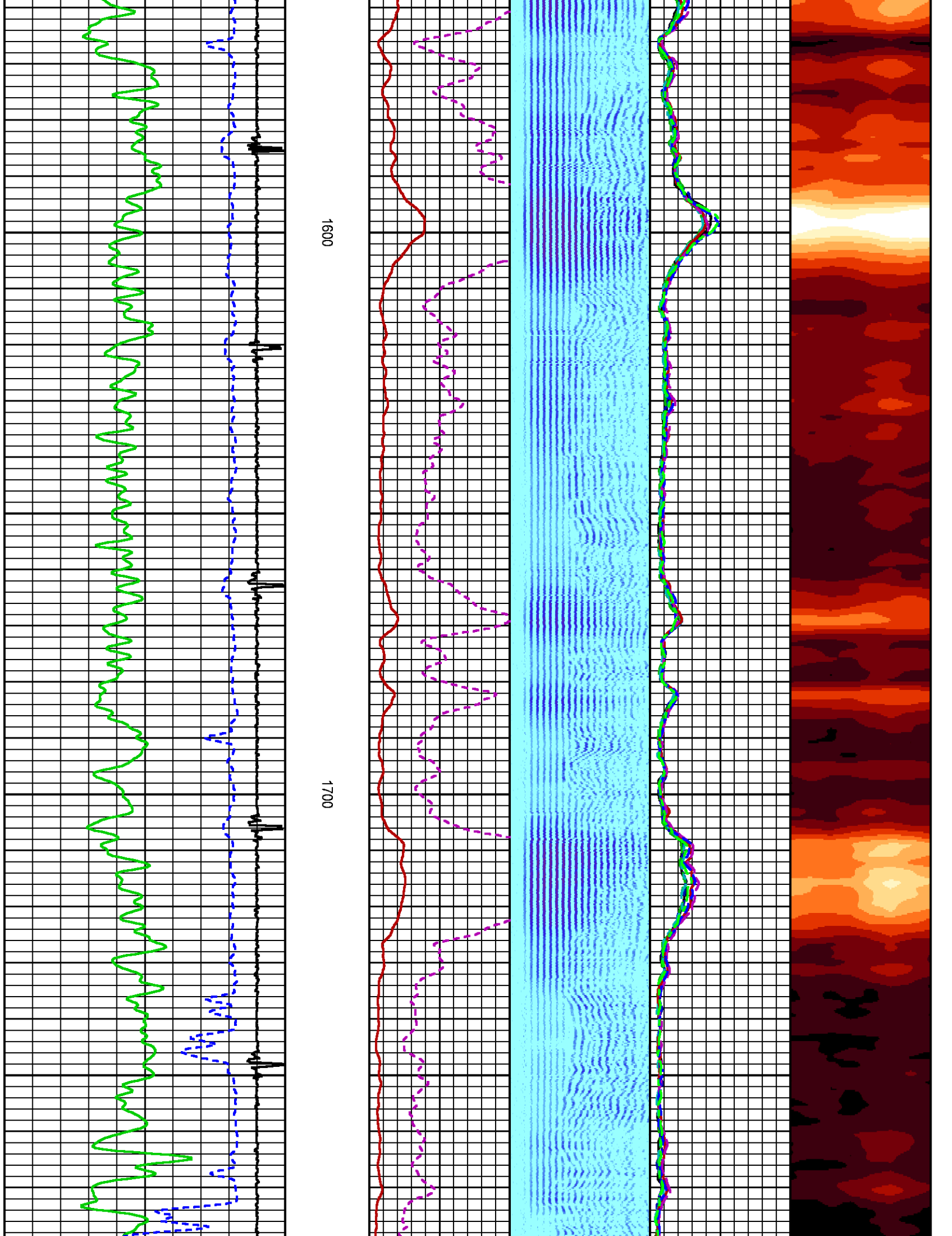


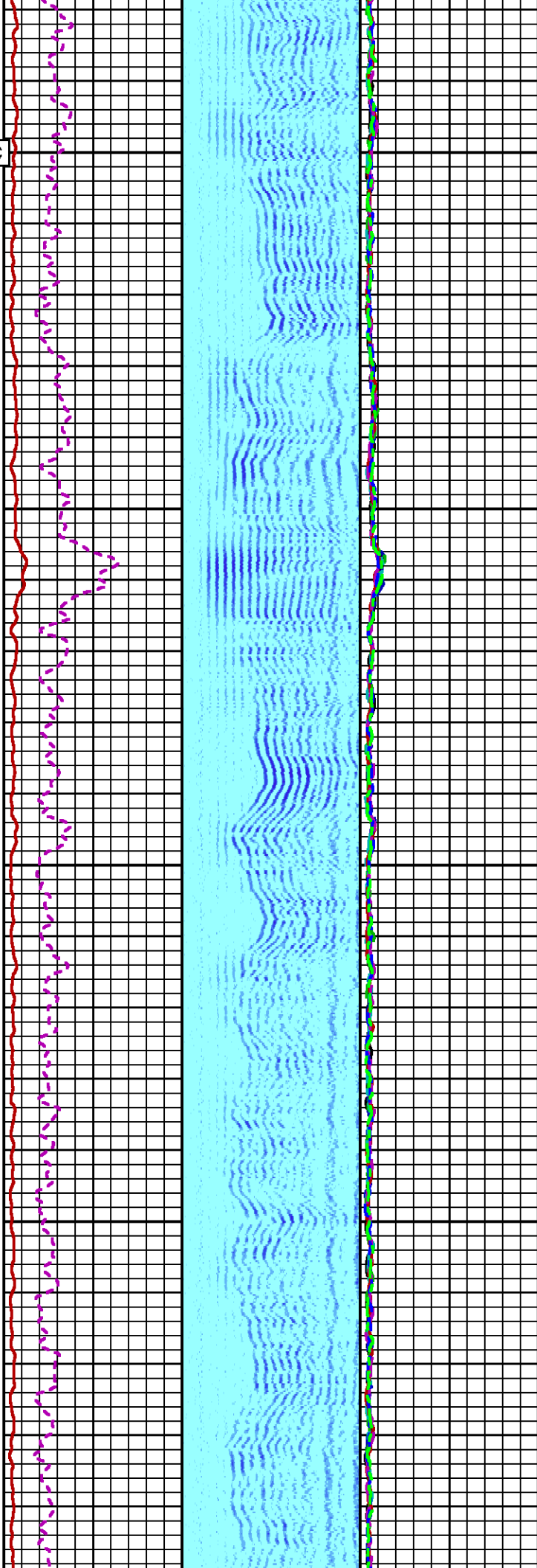


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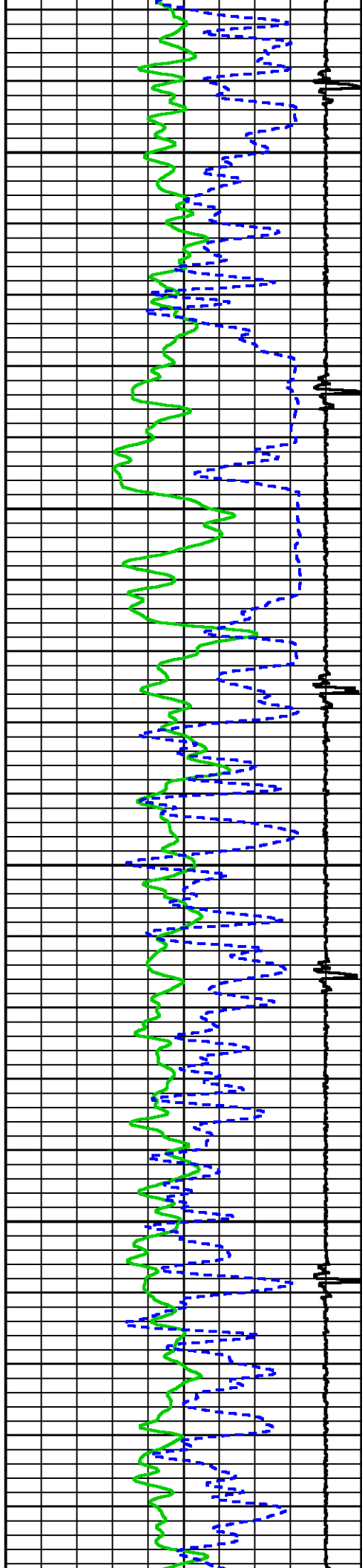


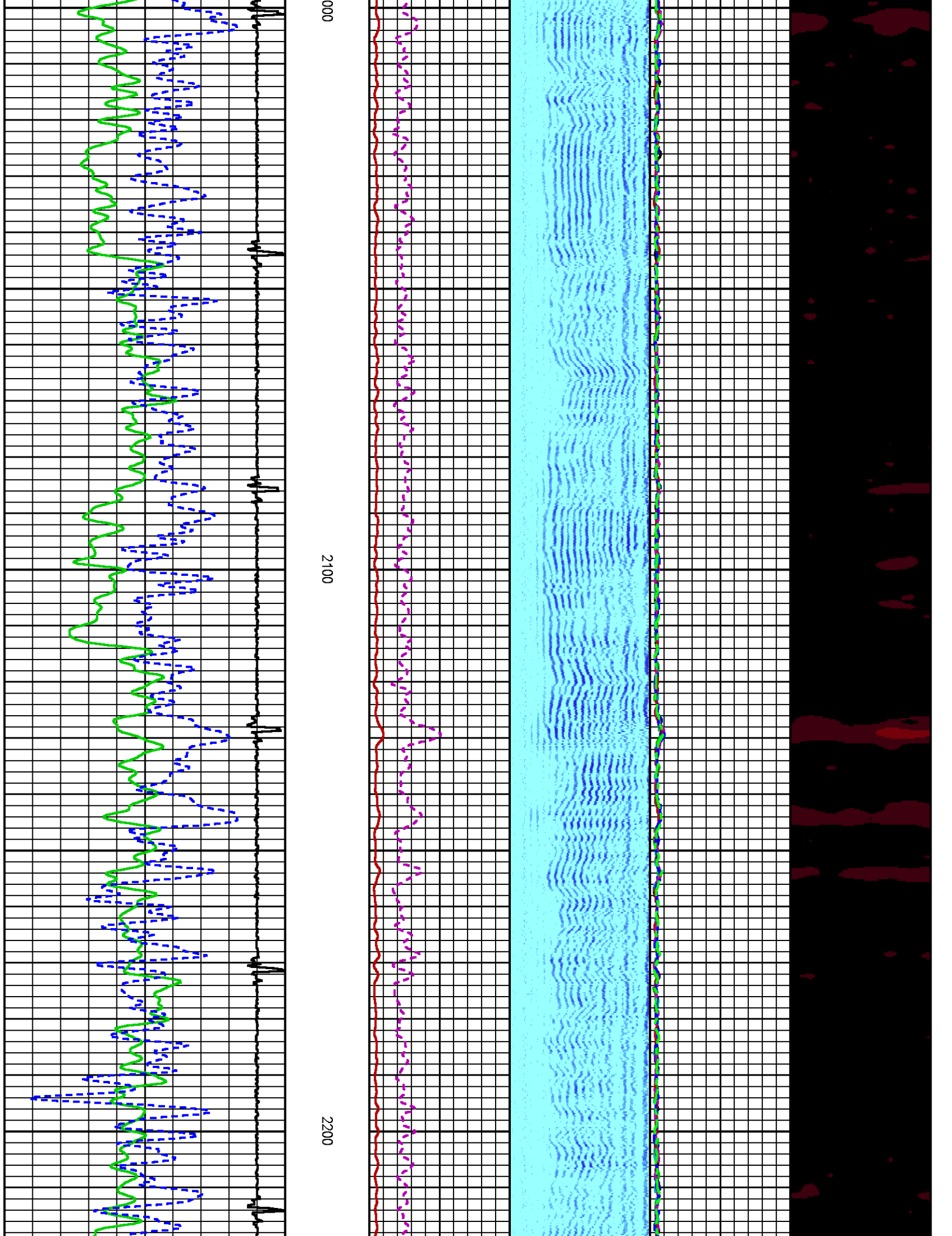


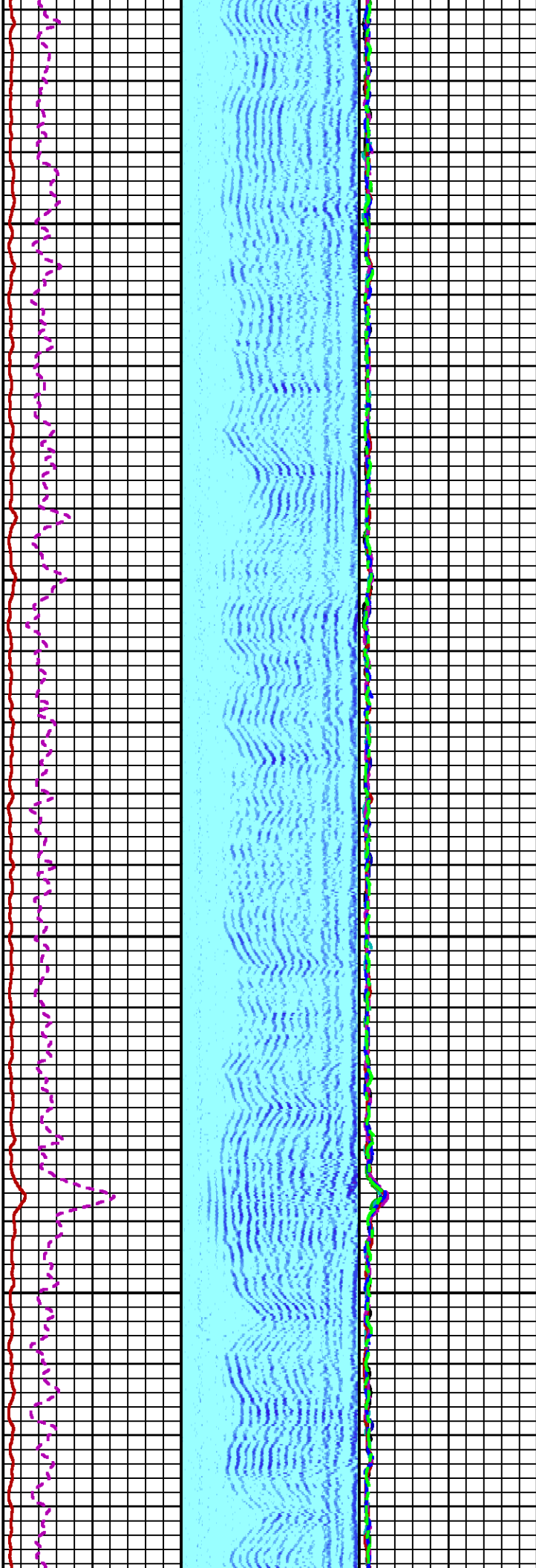
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2

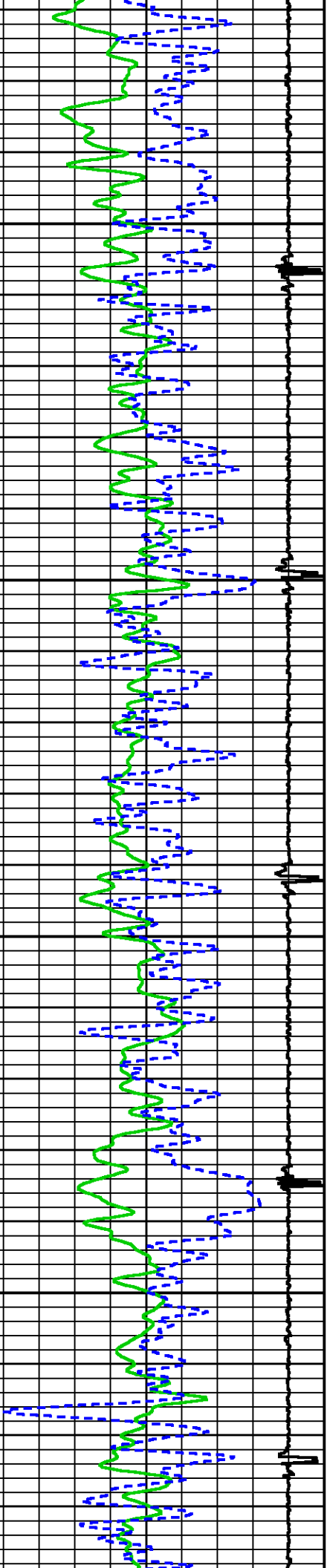


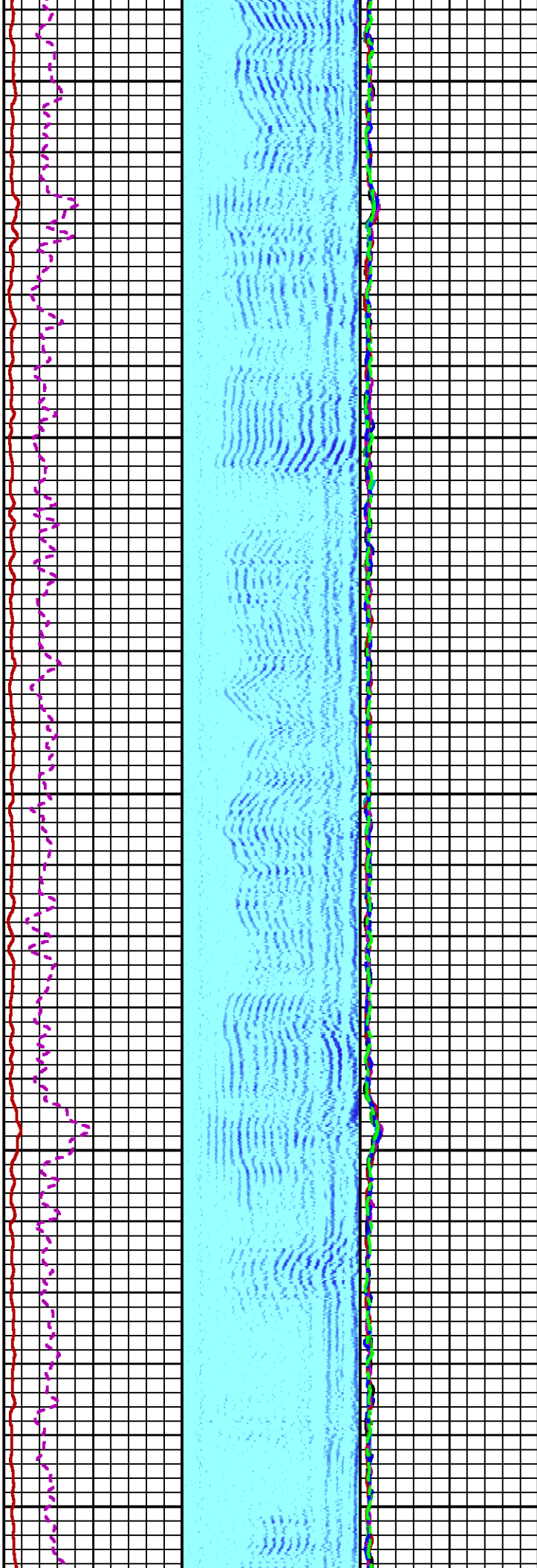




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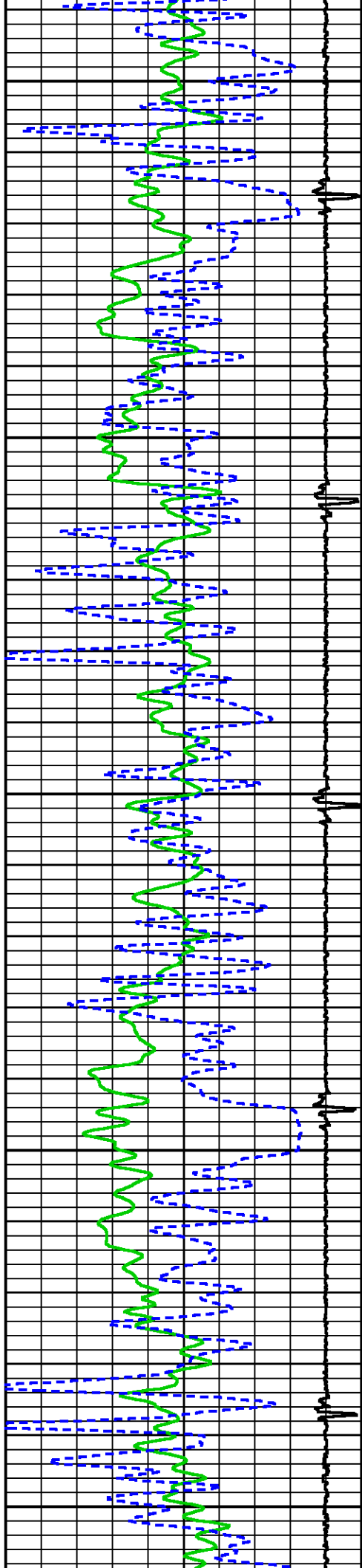
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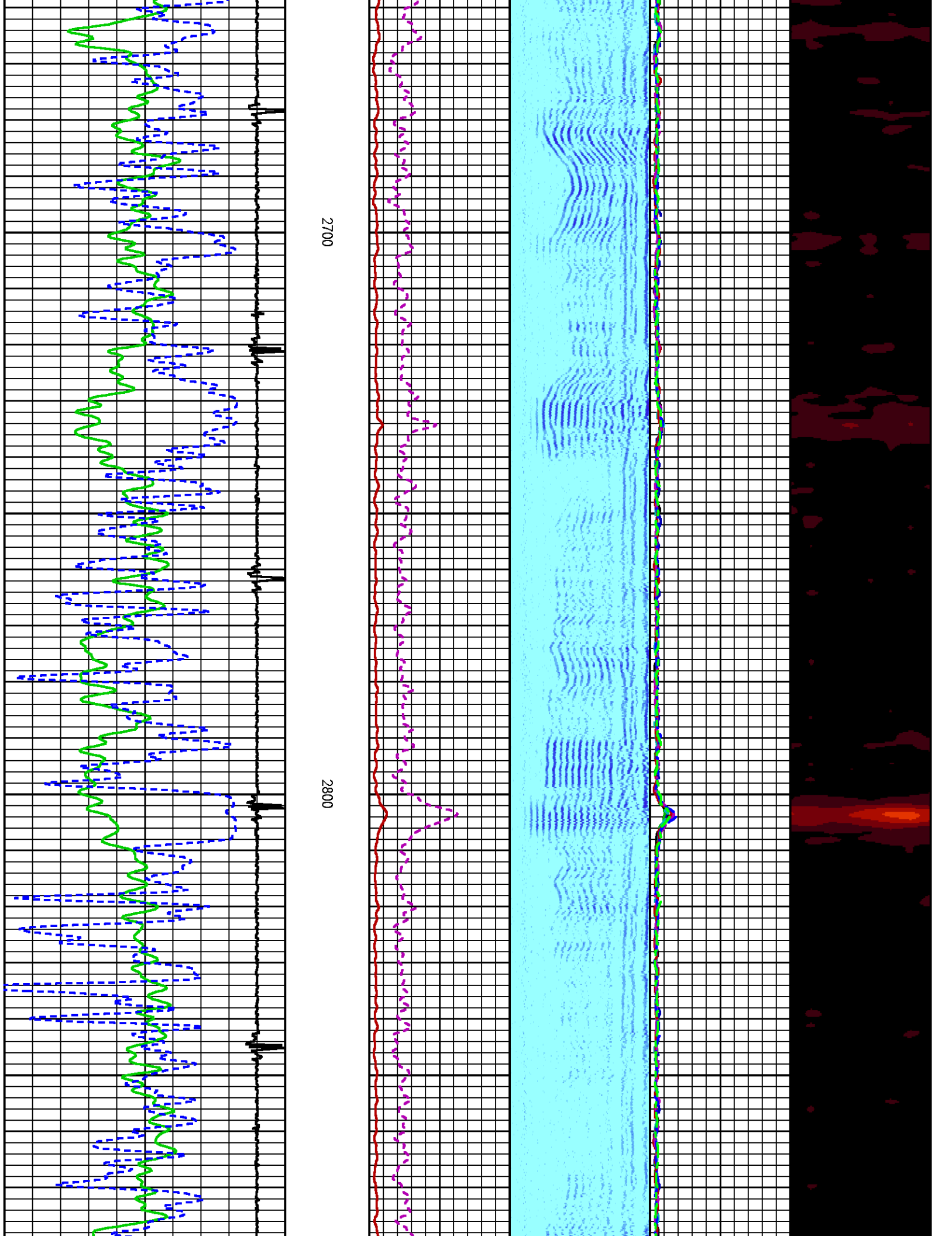


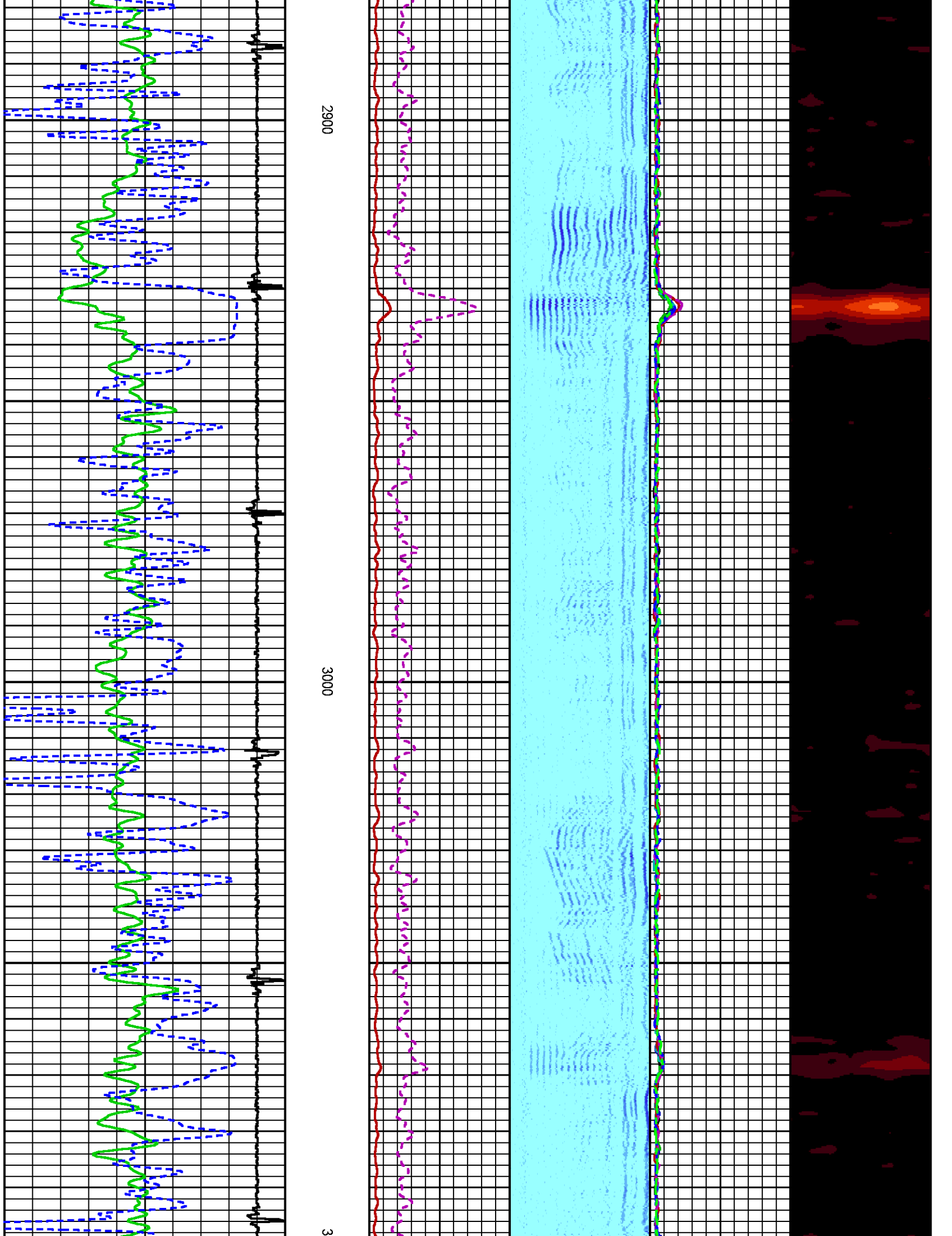


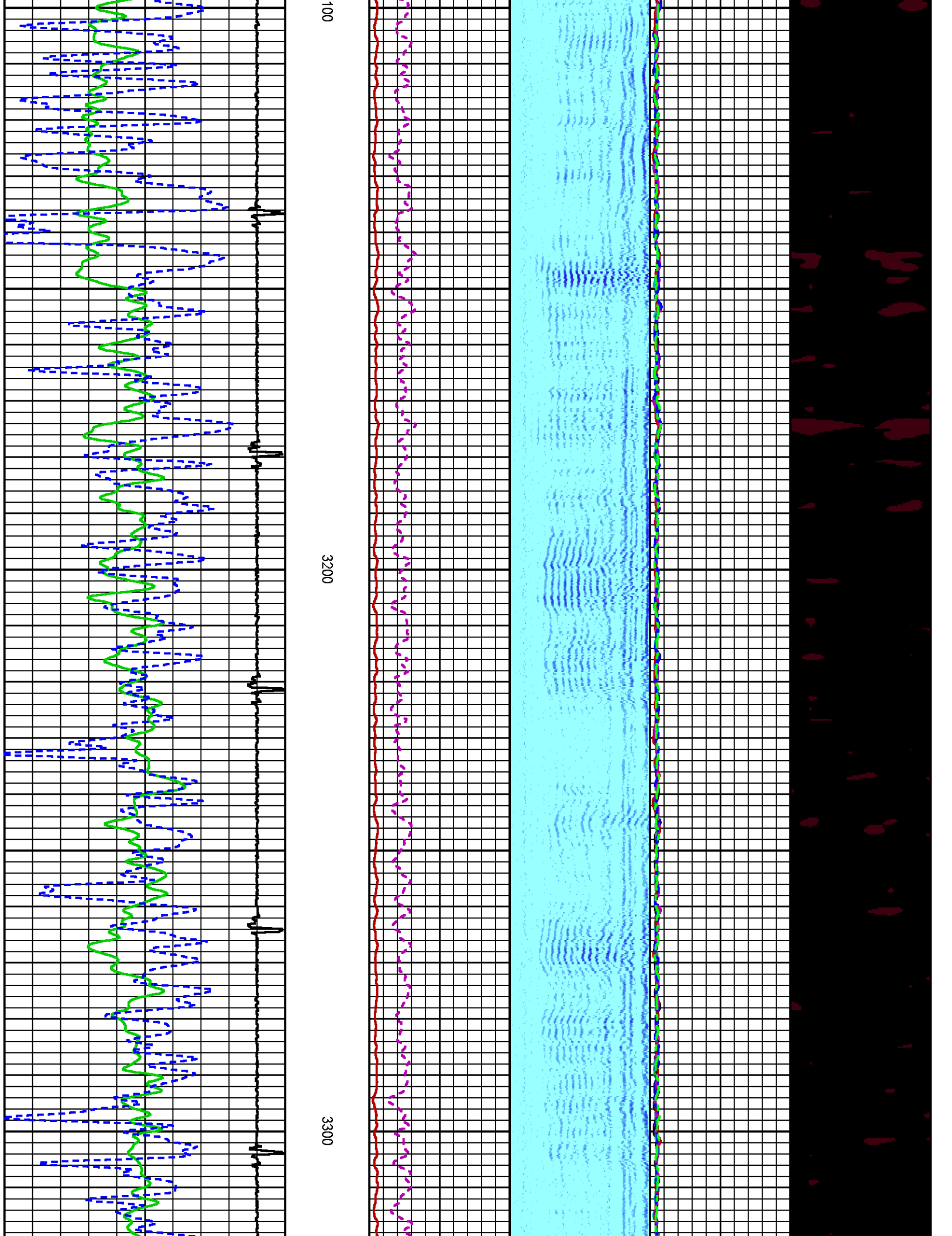
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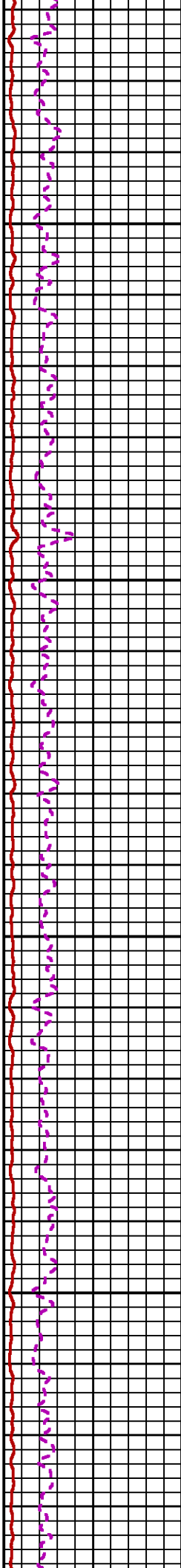
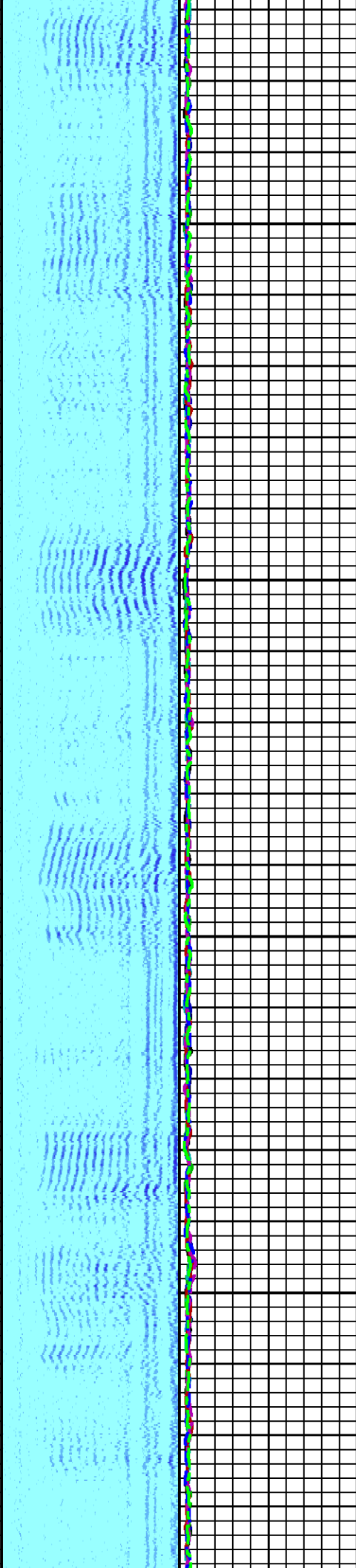
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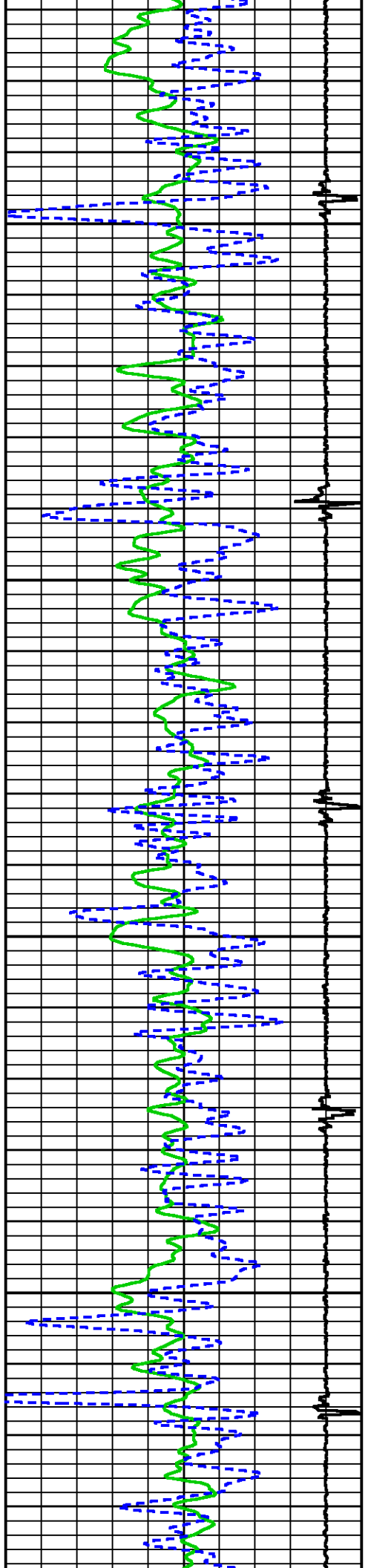


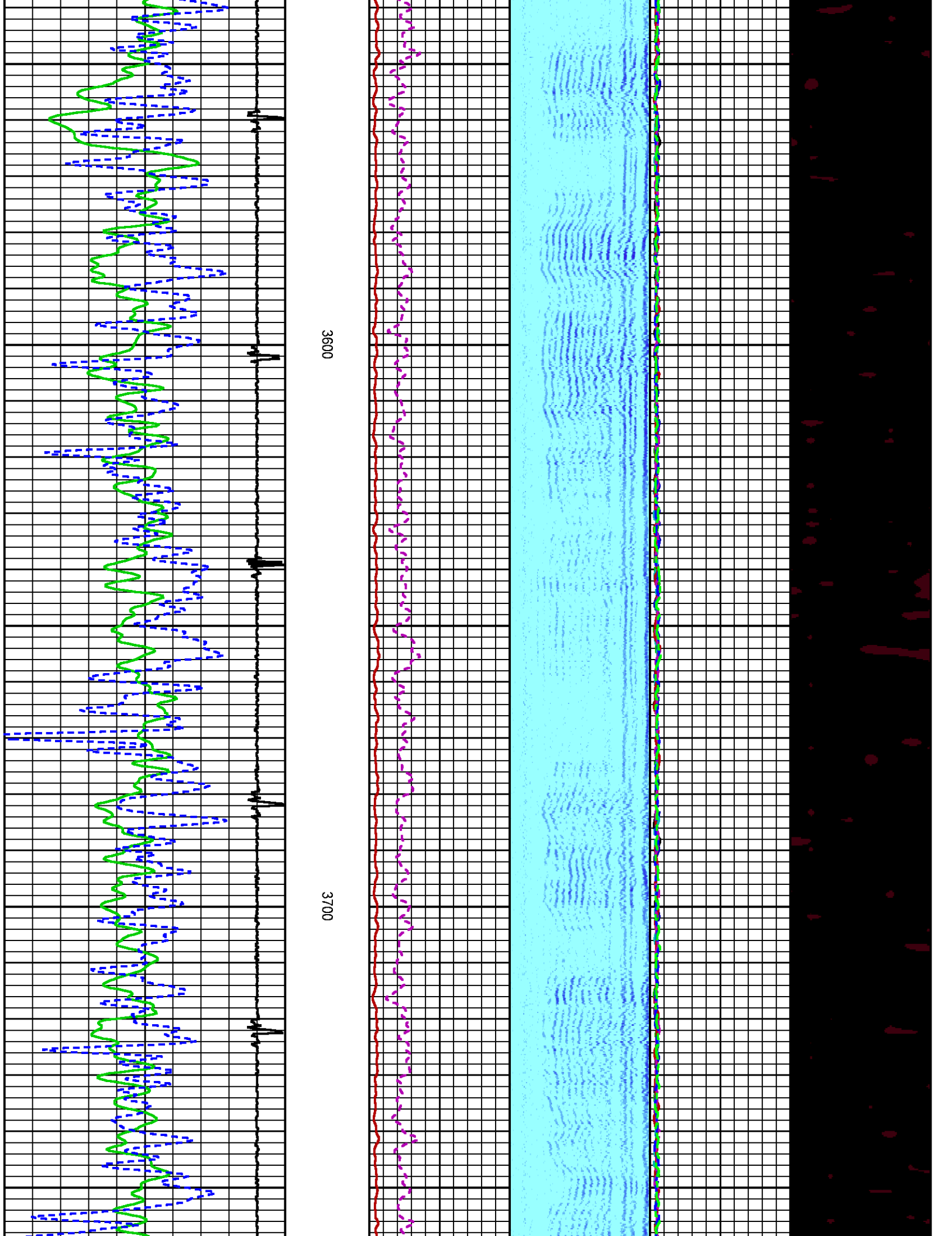


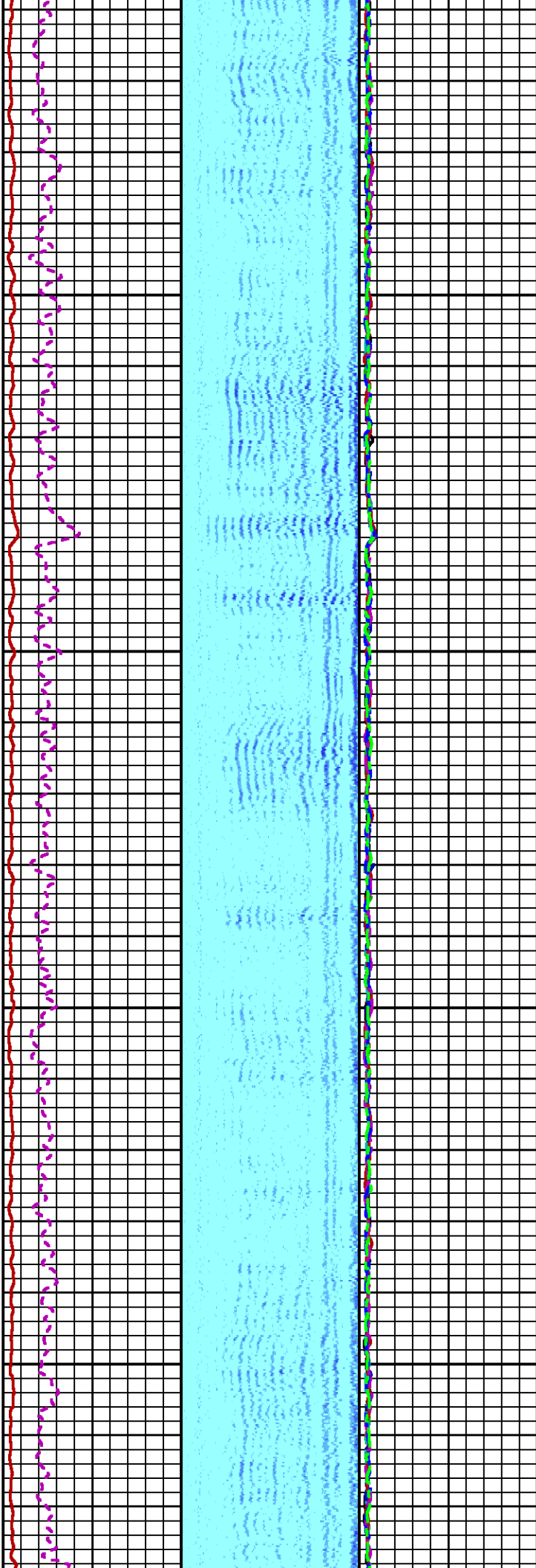


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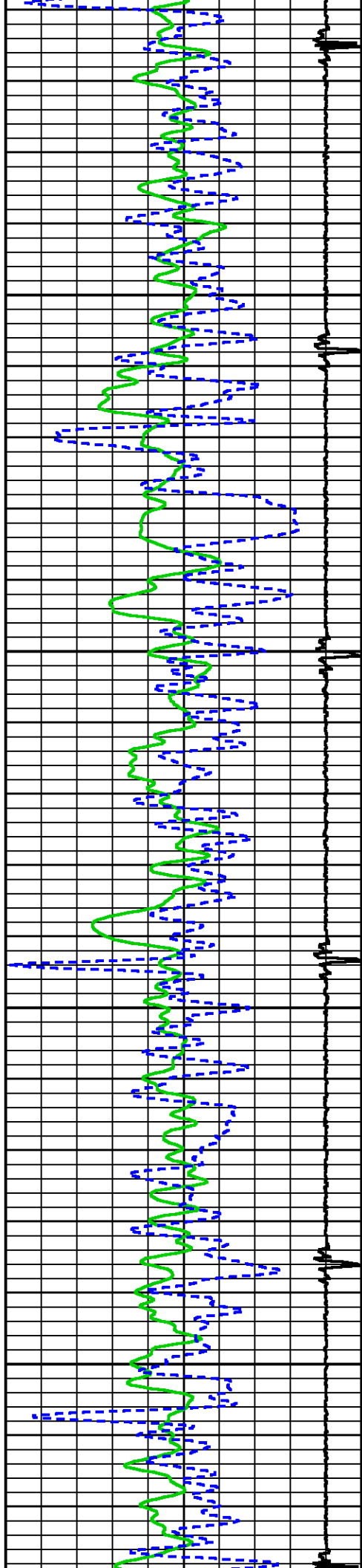


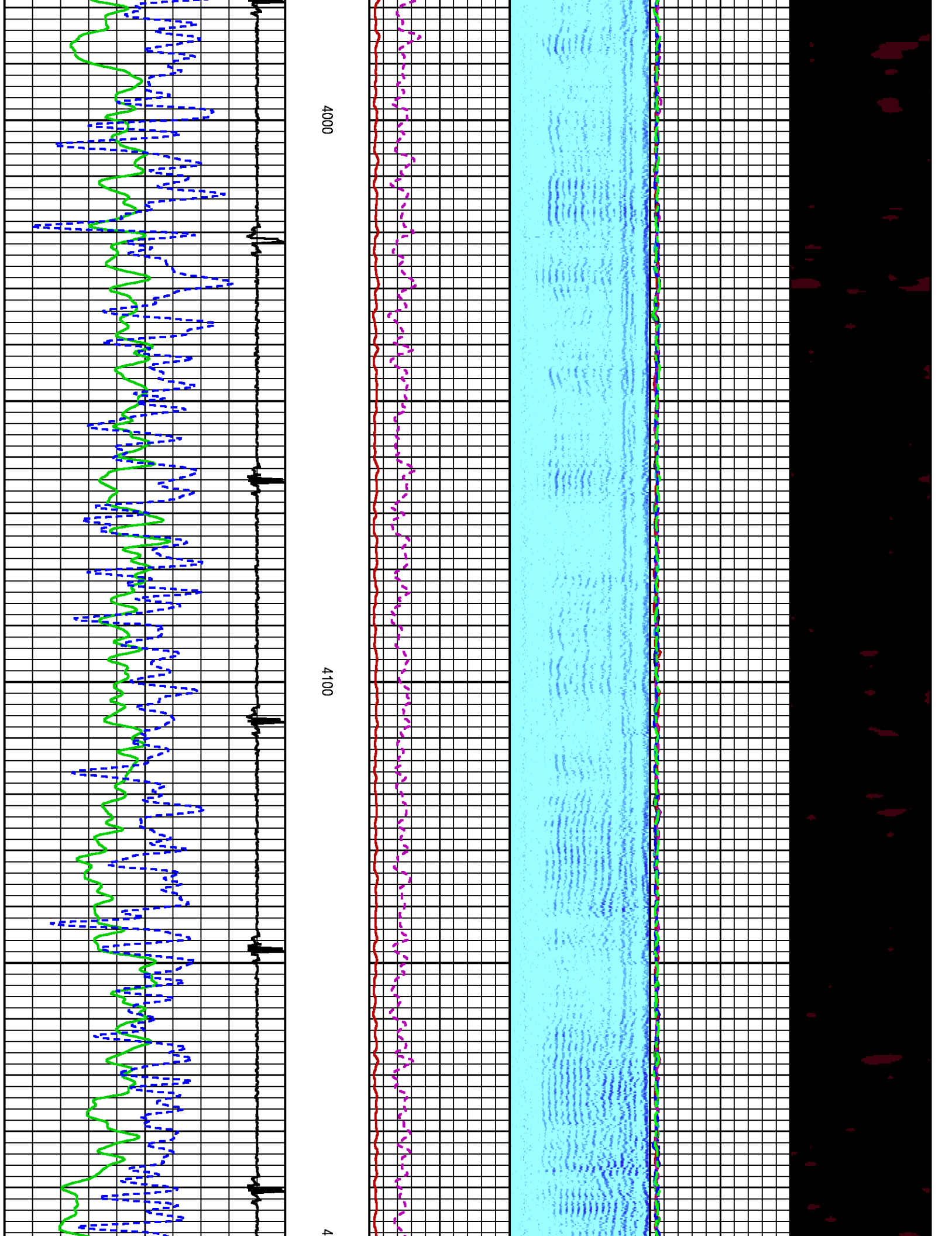


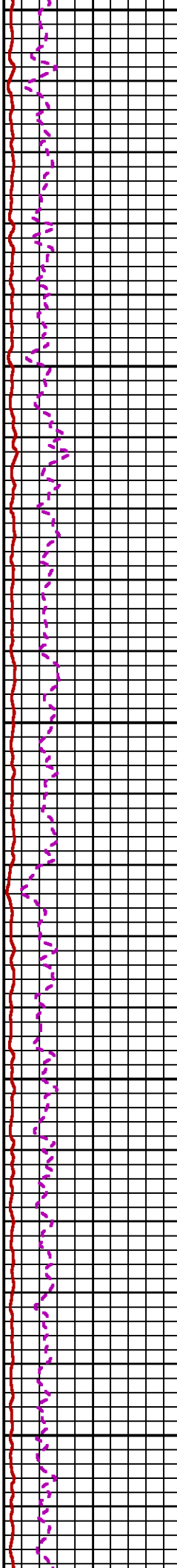
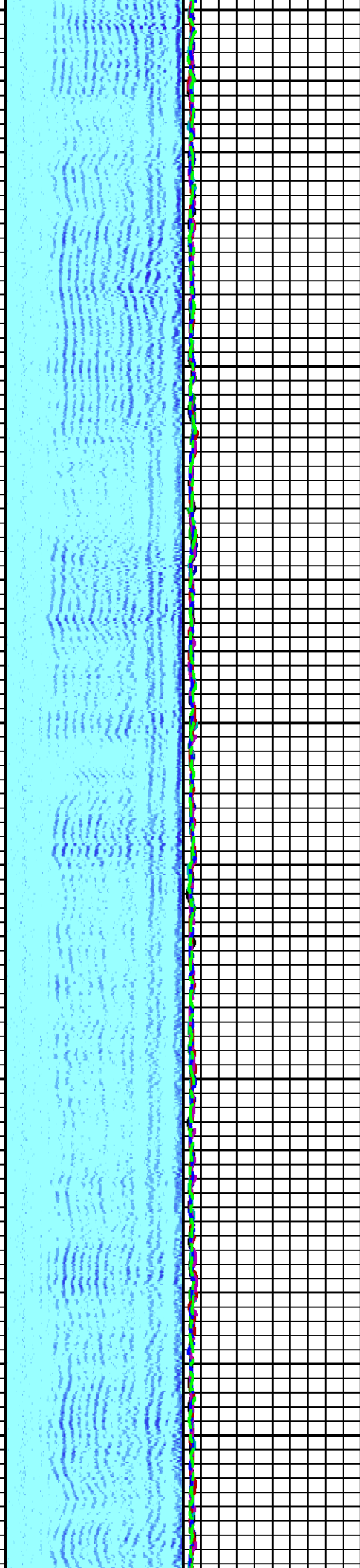


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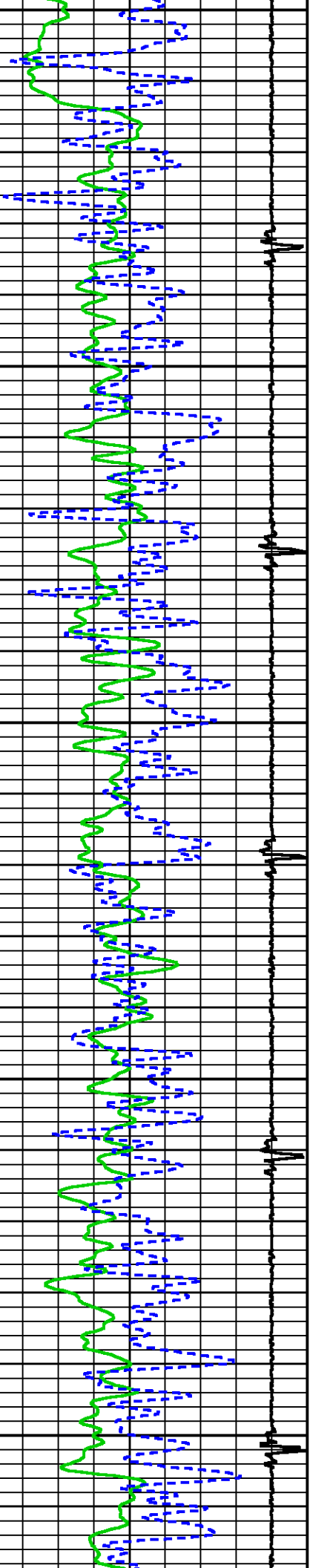


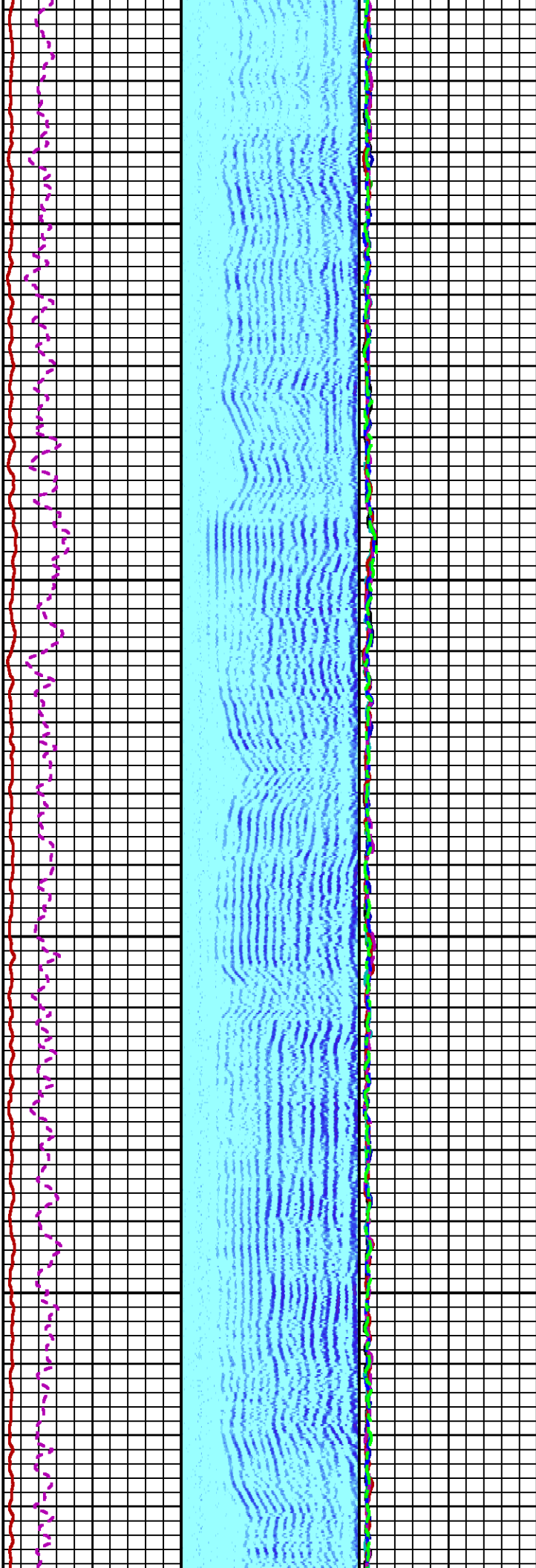


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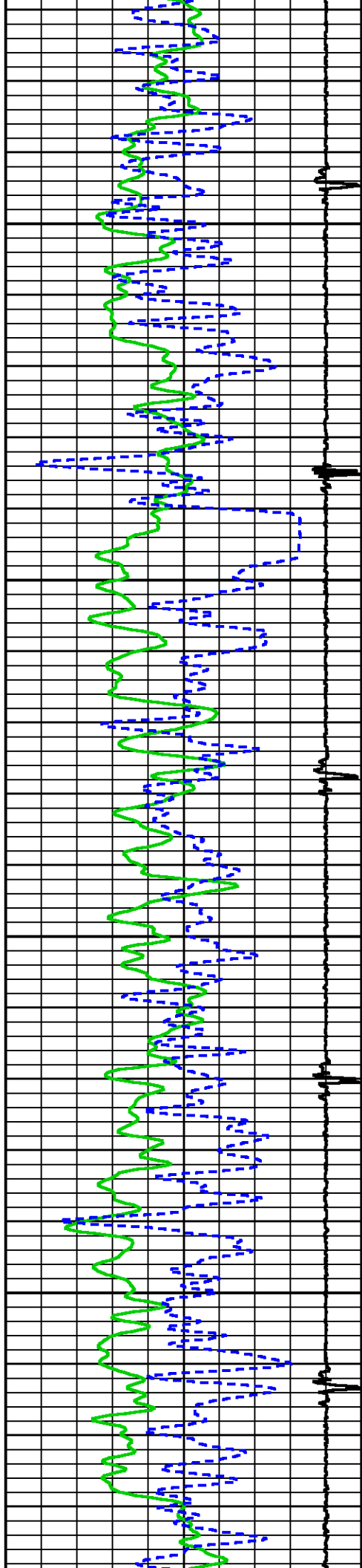
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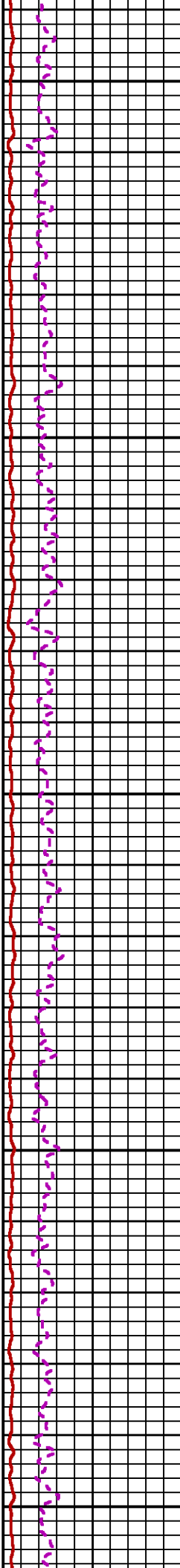
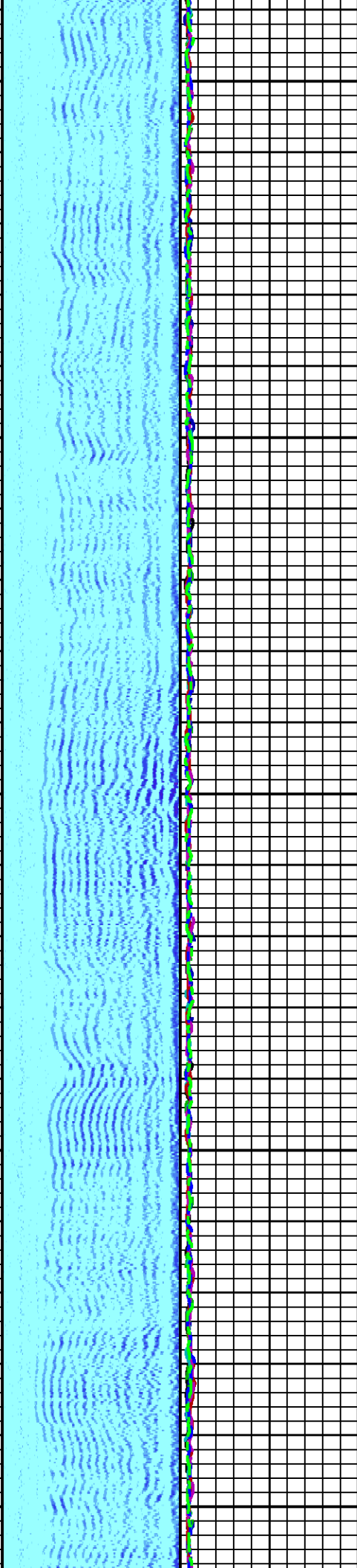




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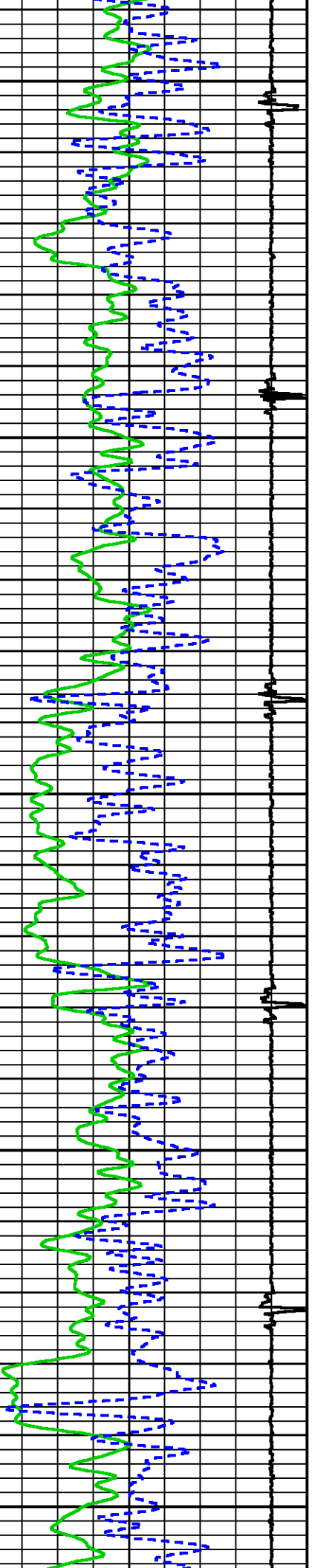
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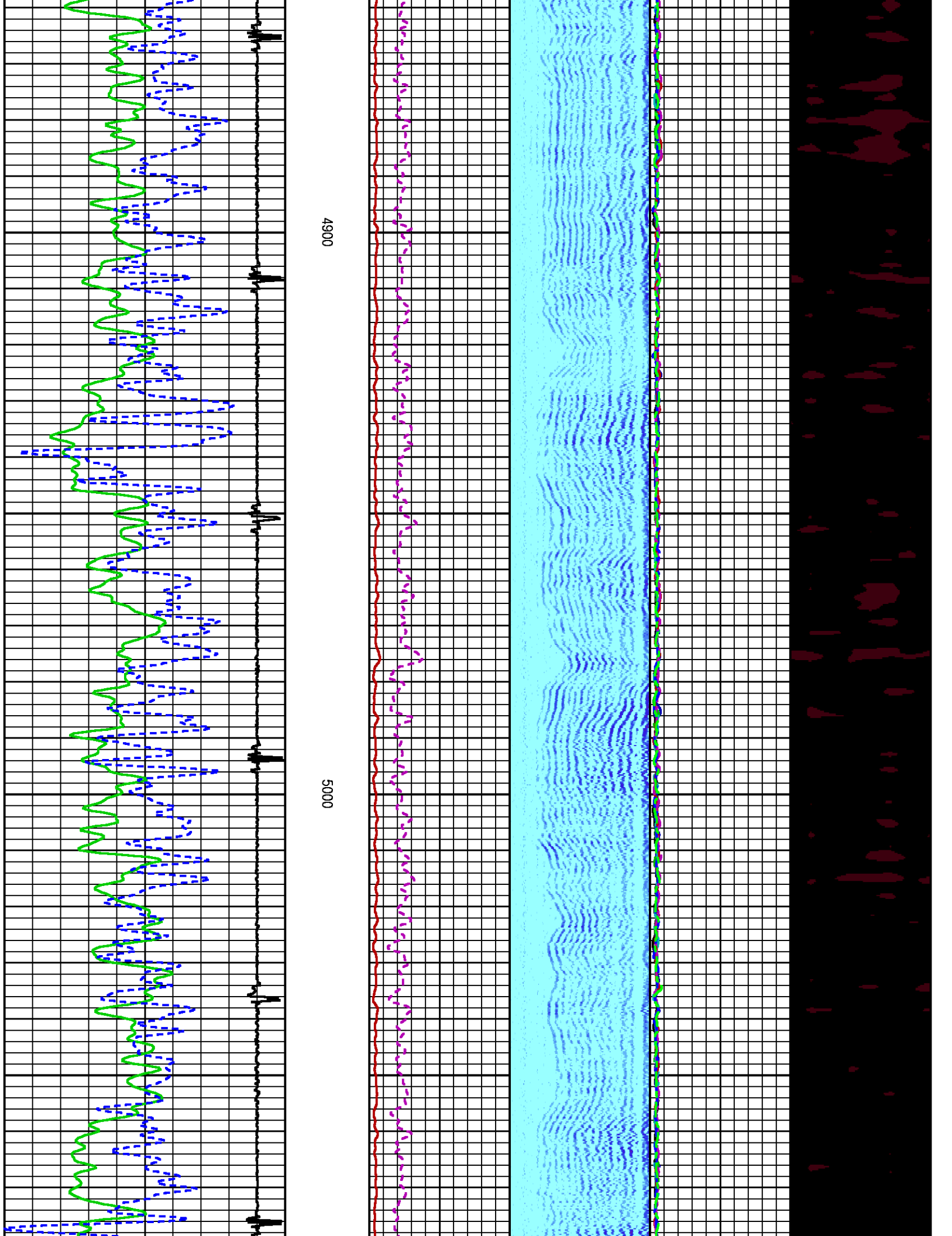


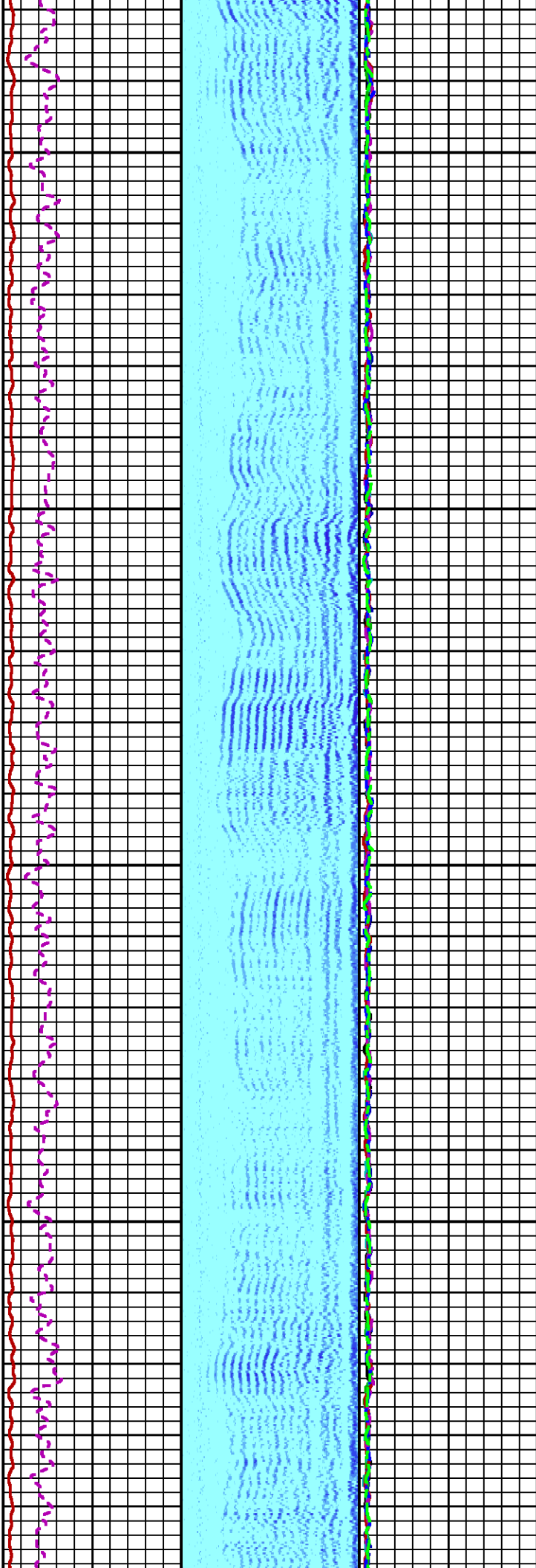


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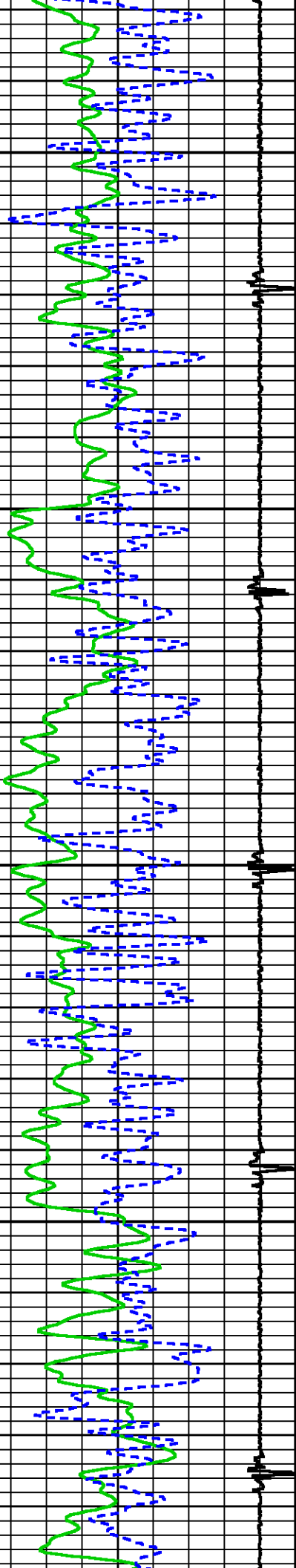


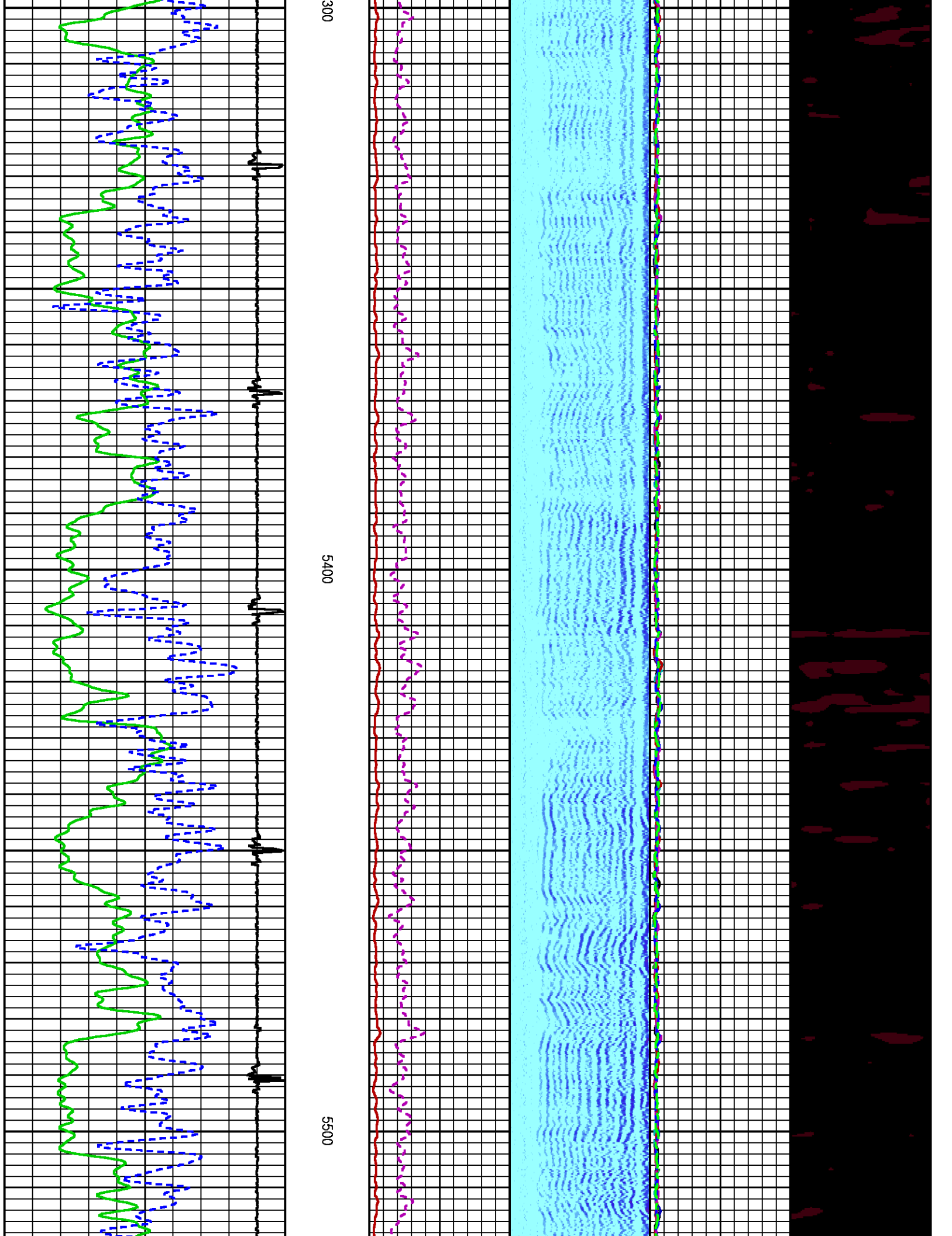


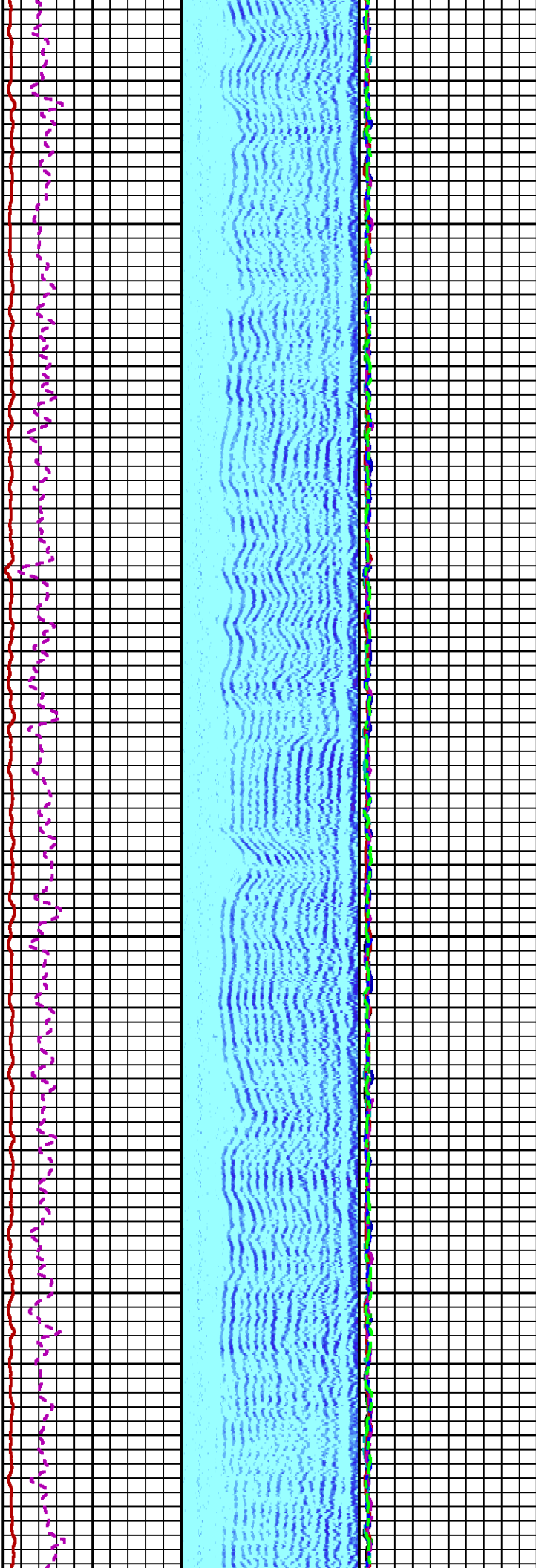
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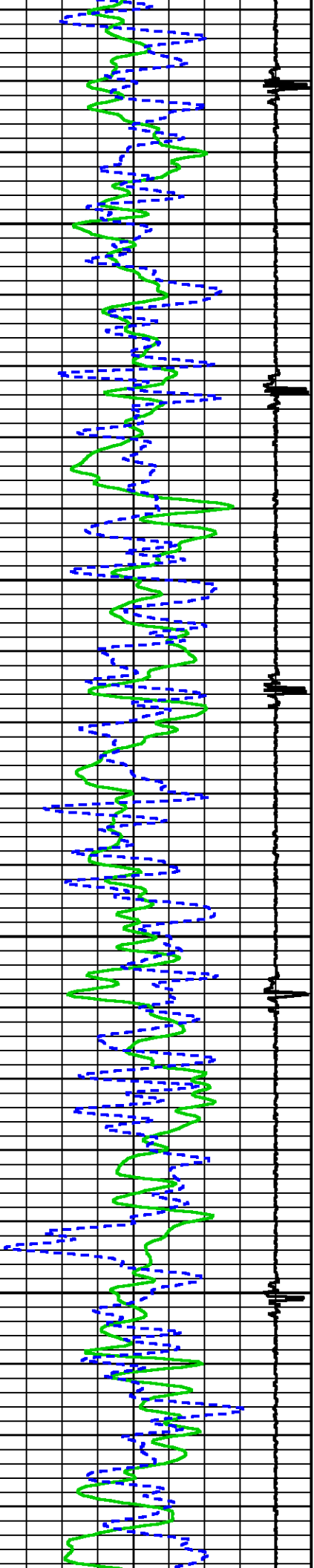


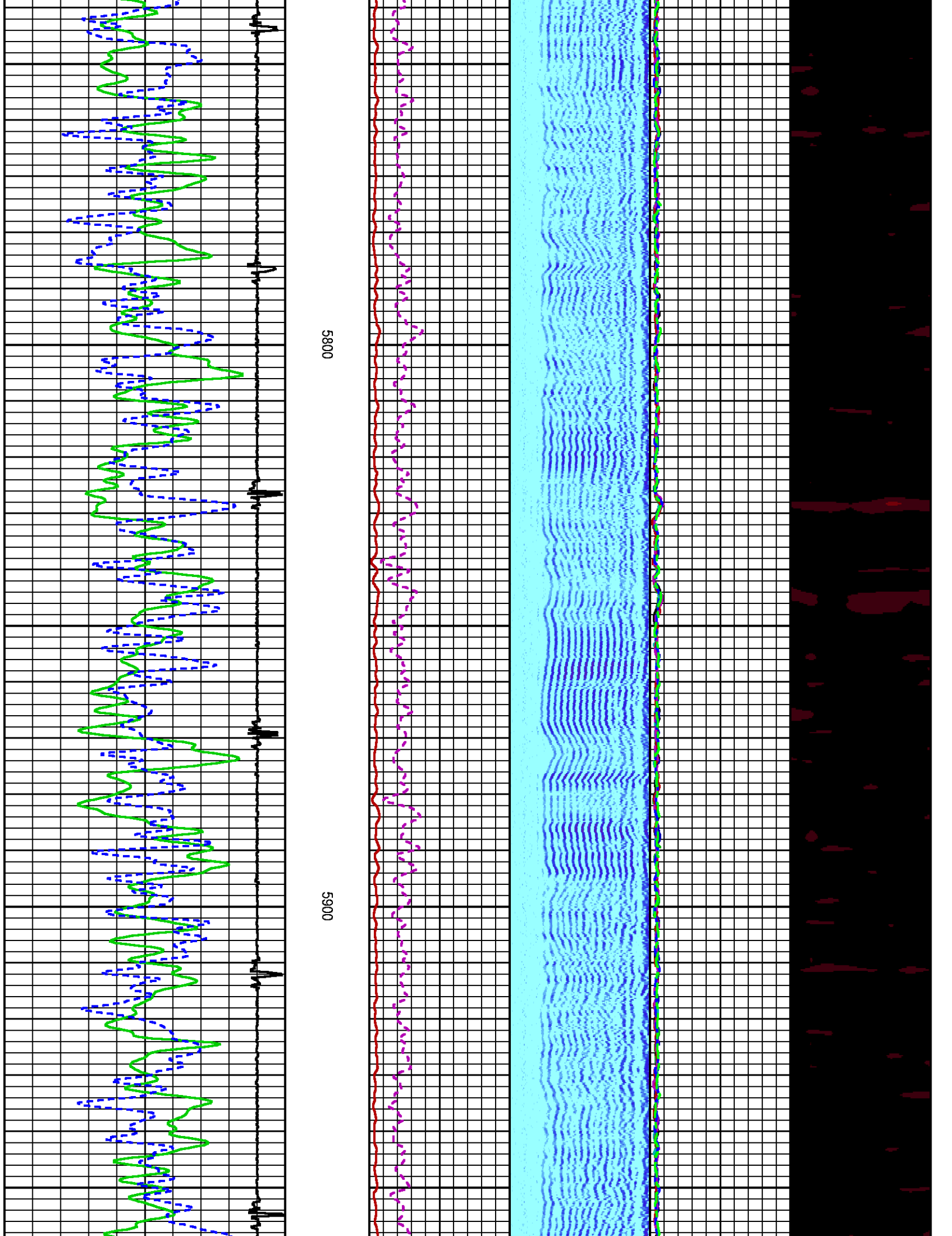


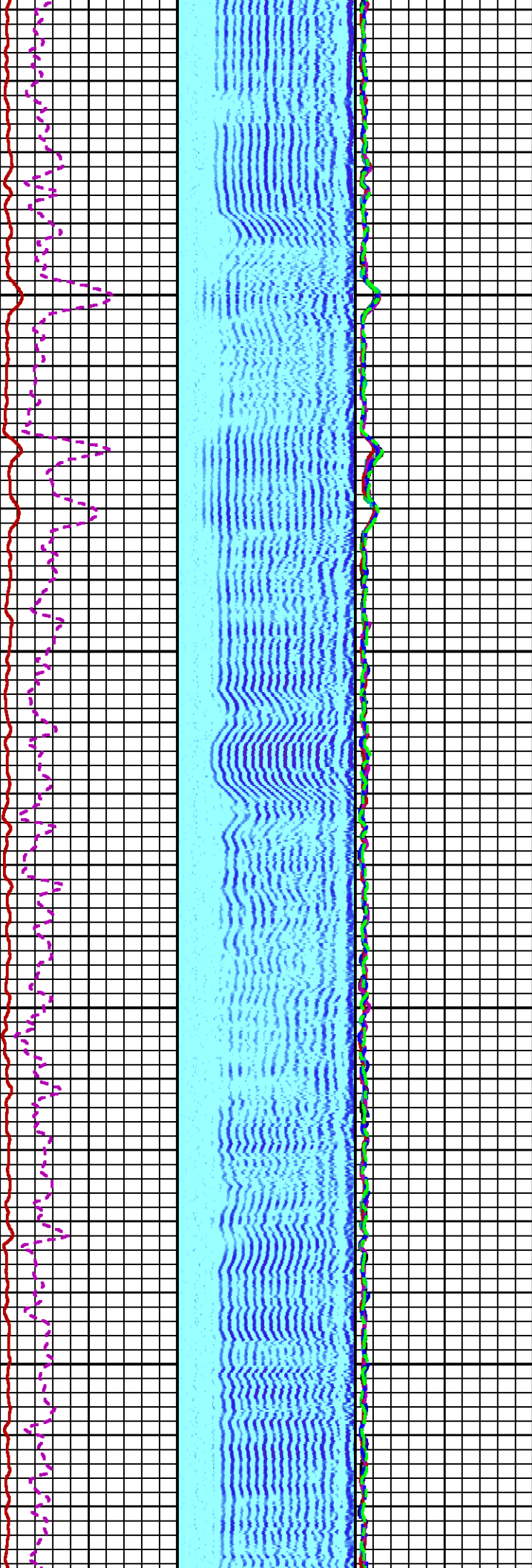


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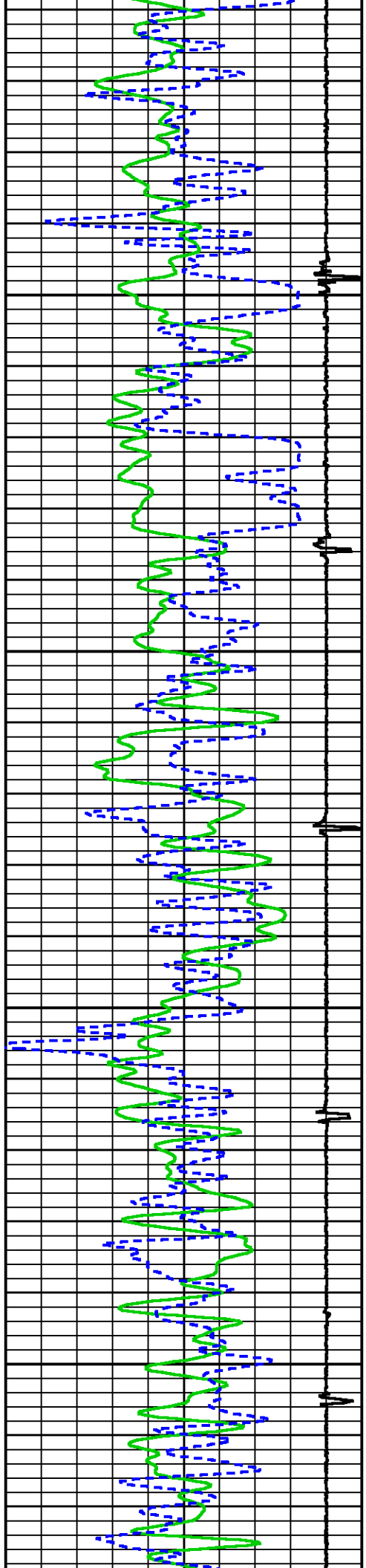


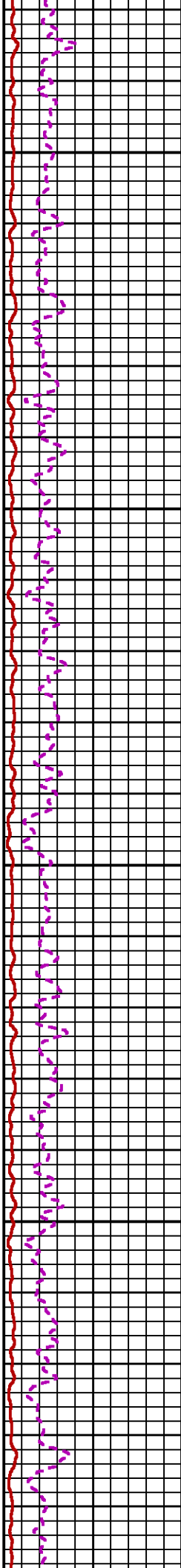
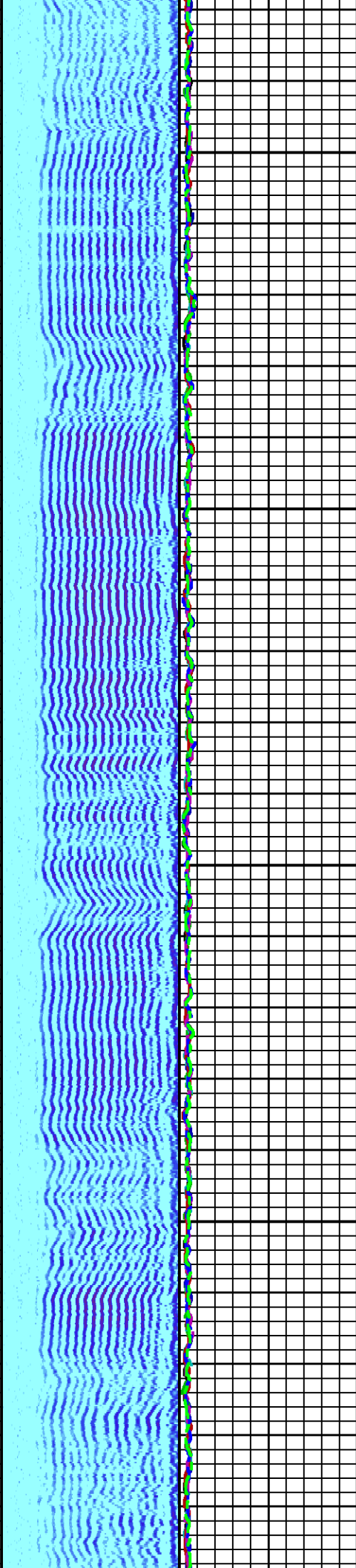




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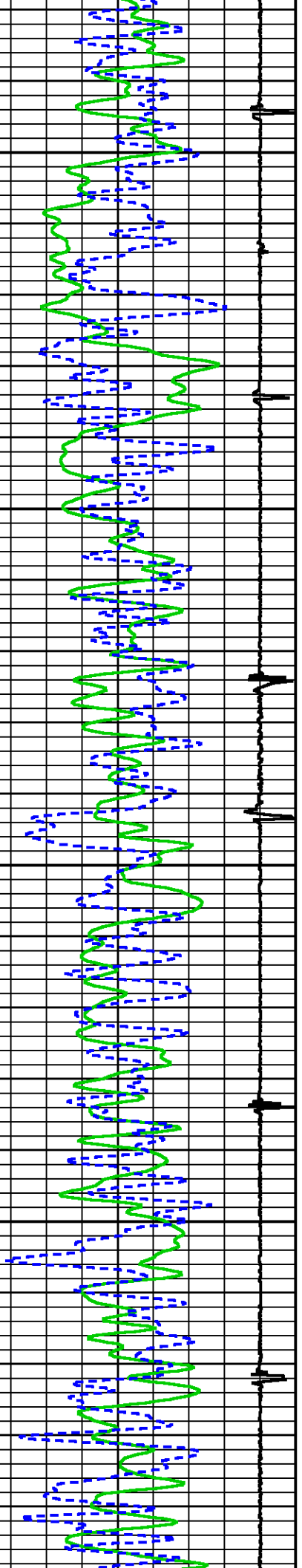


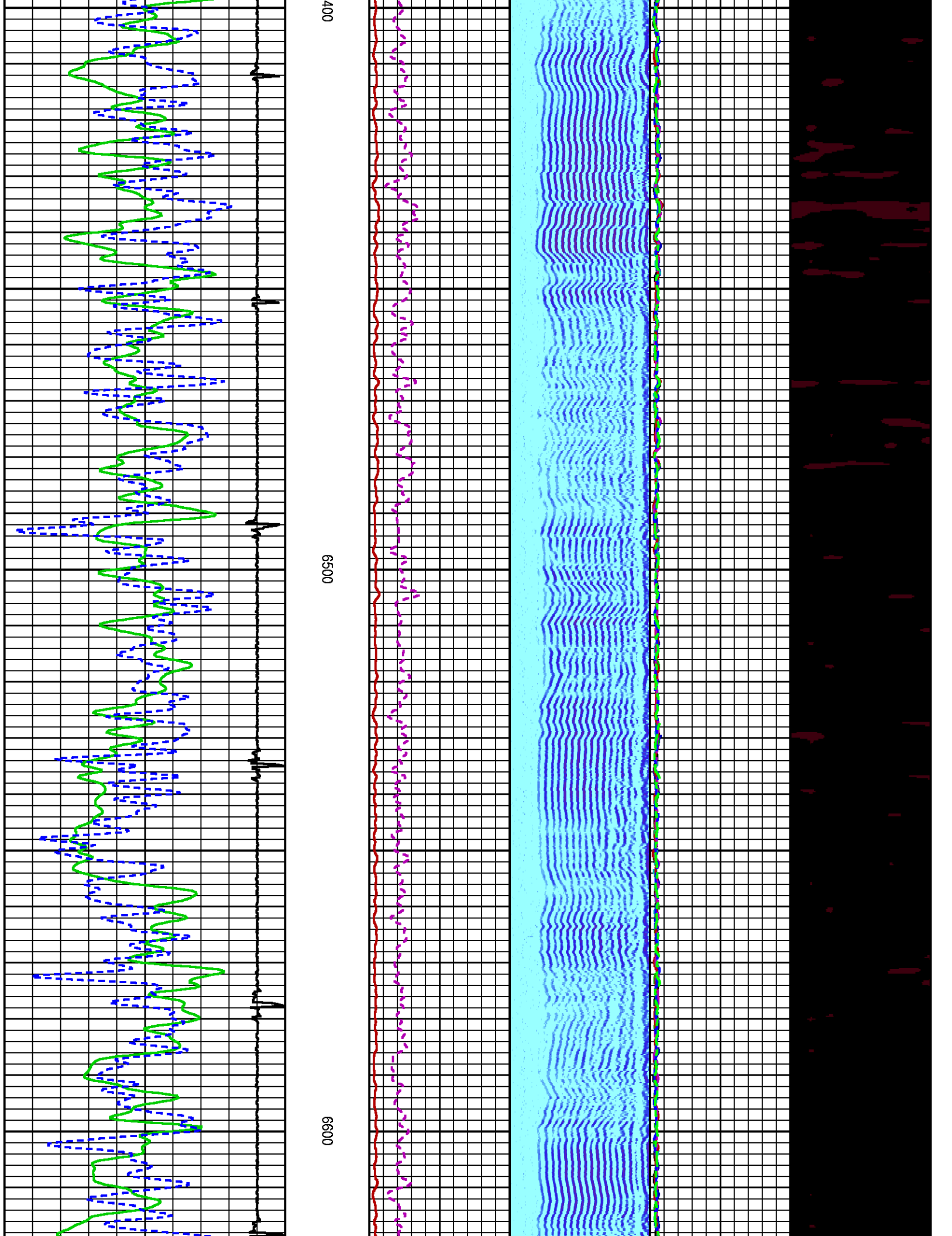
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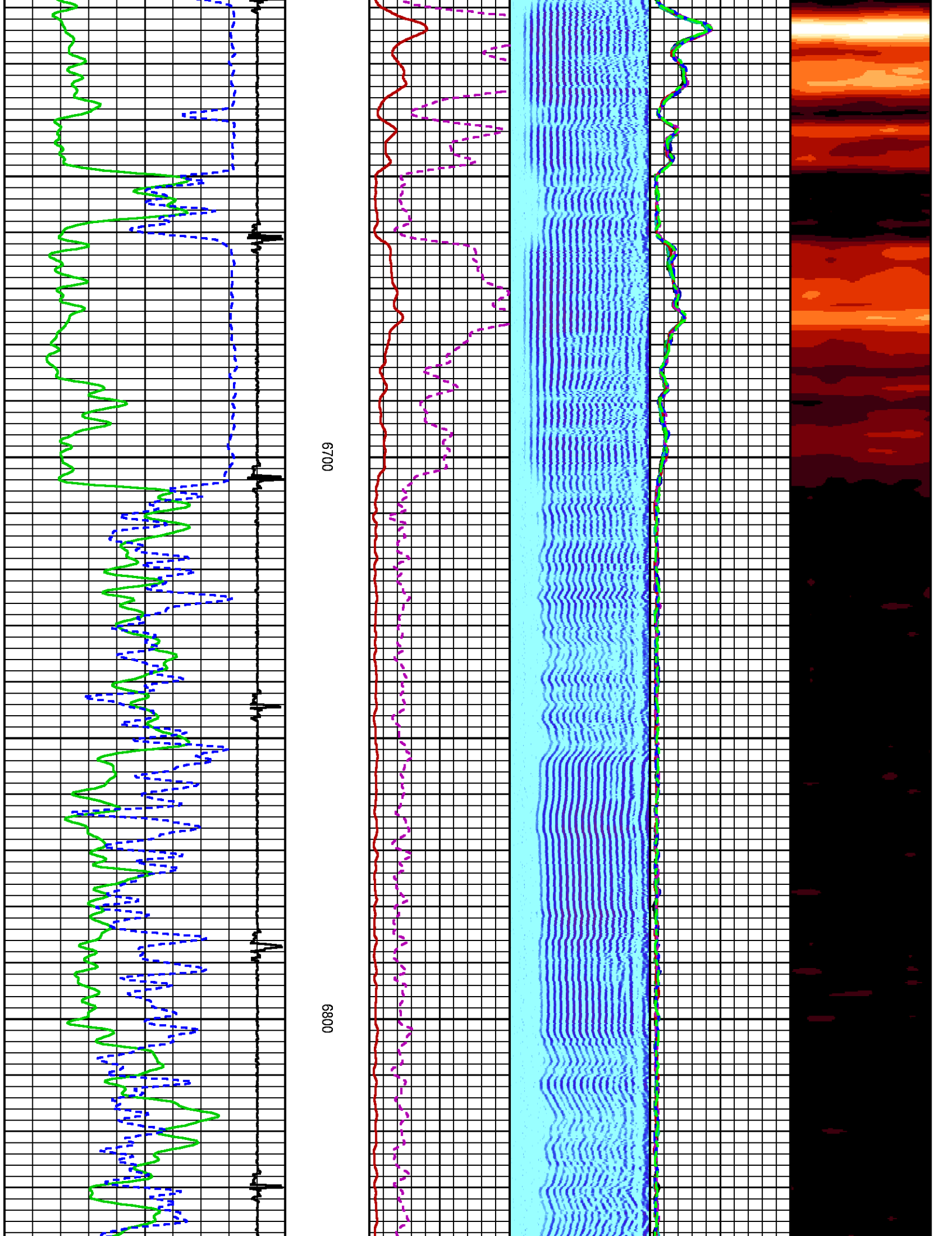
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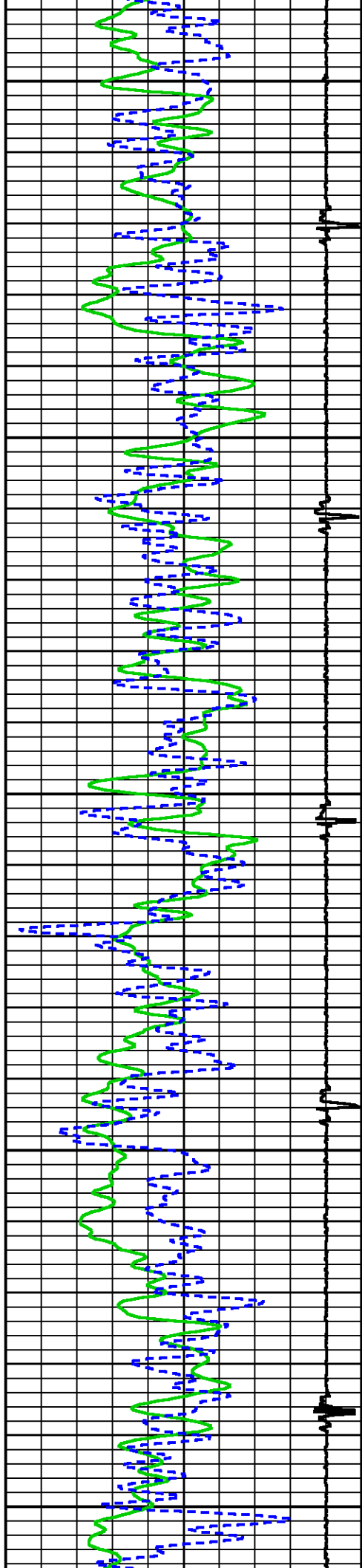
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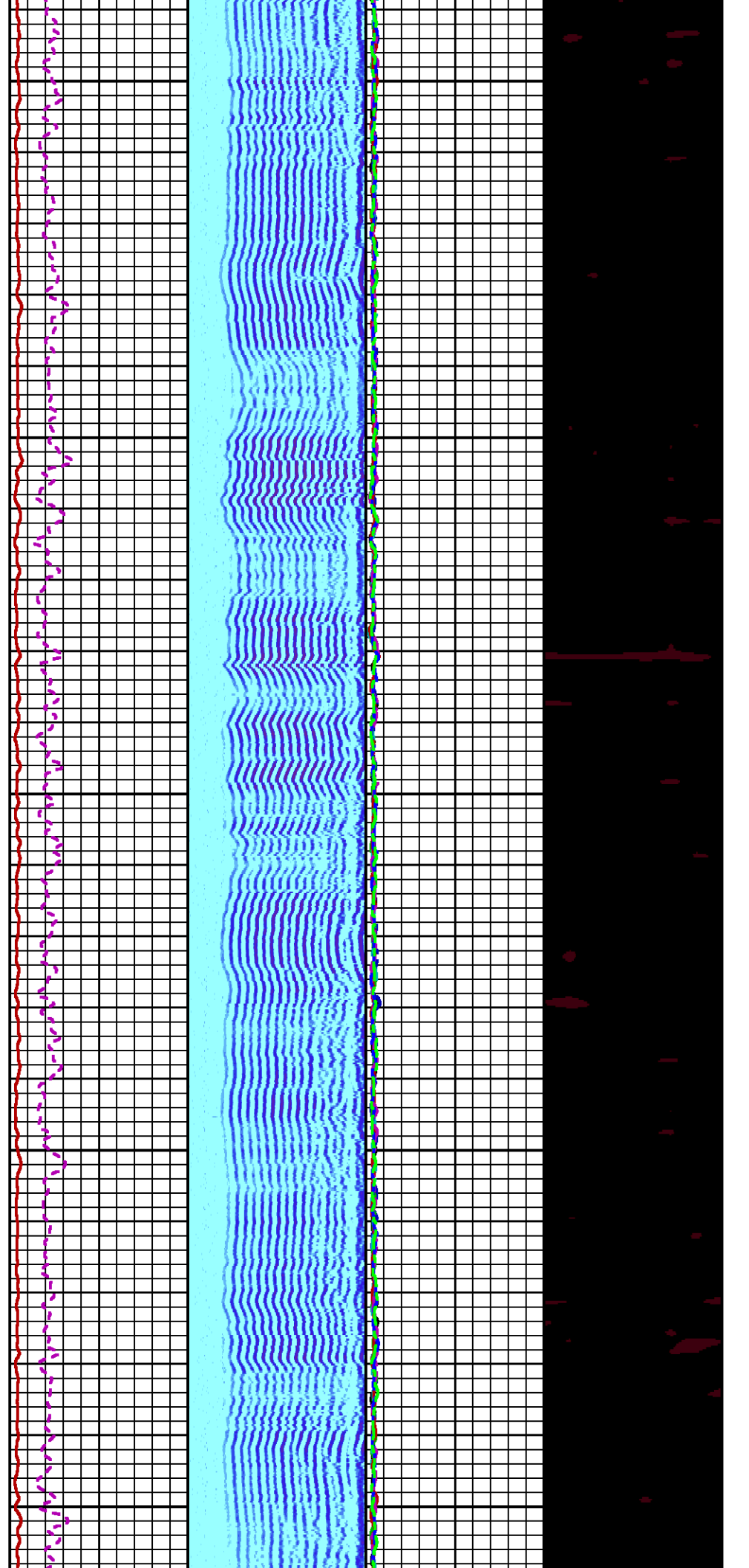


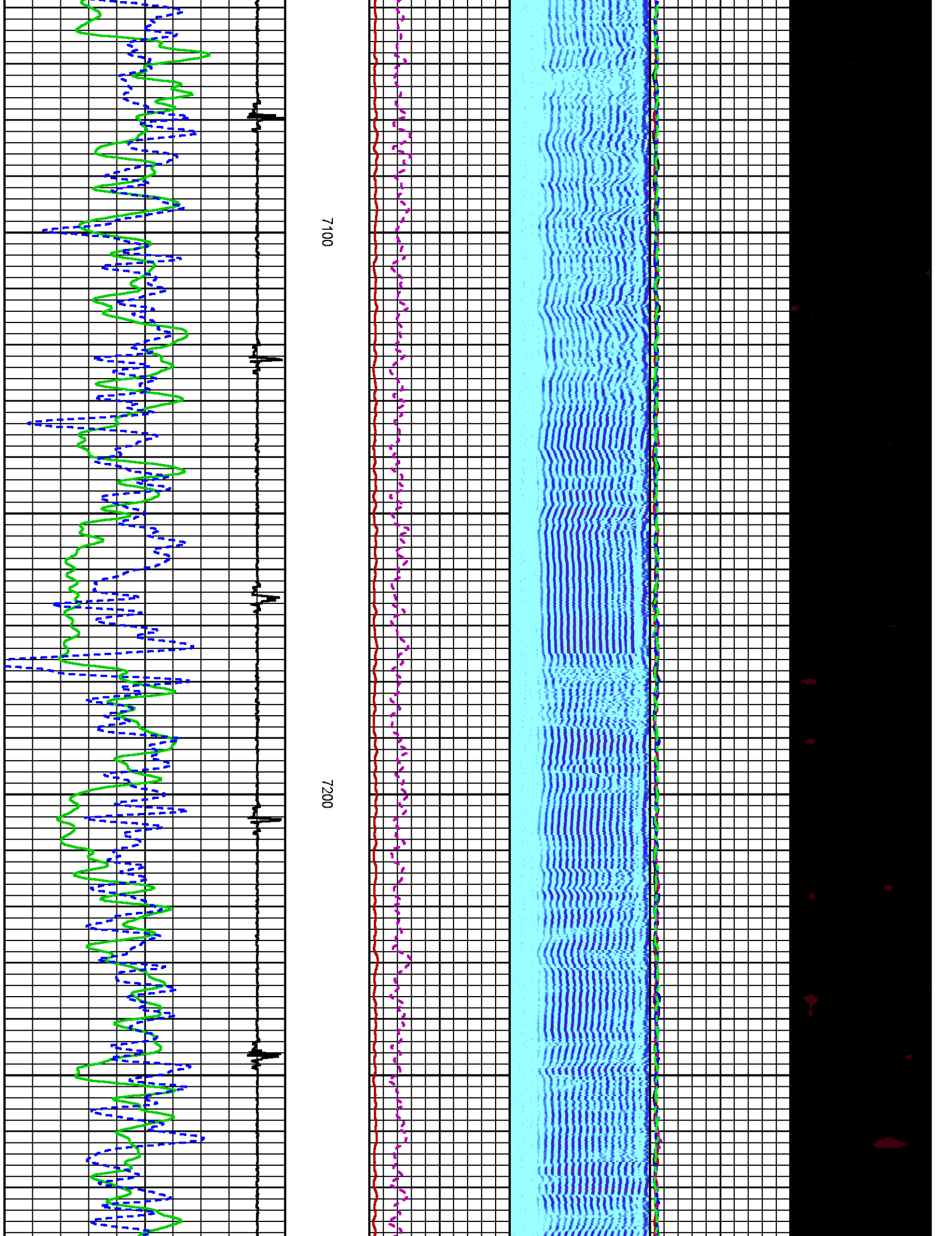




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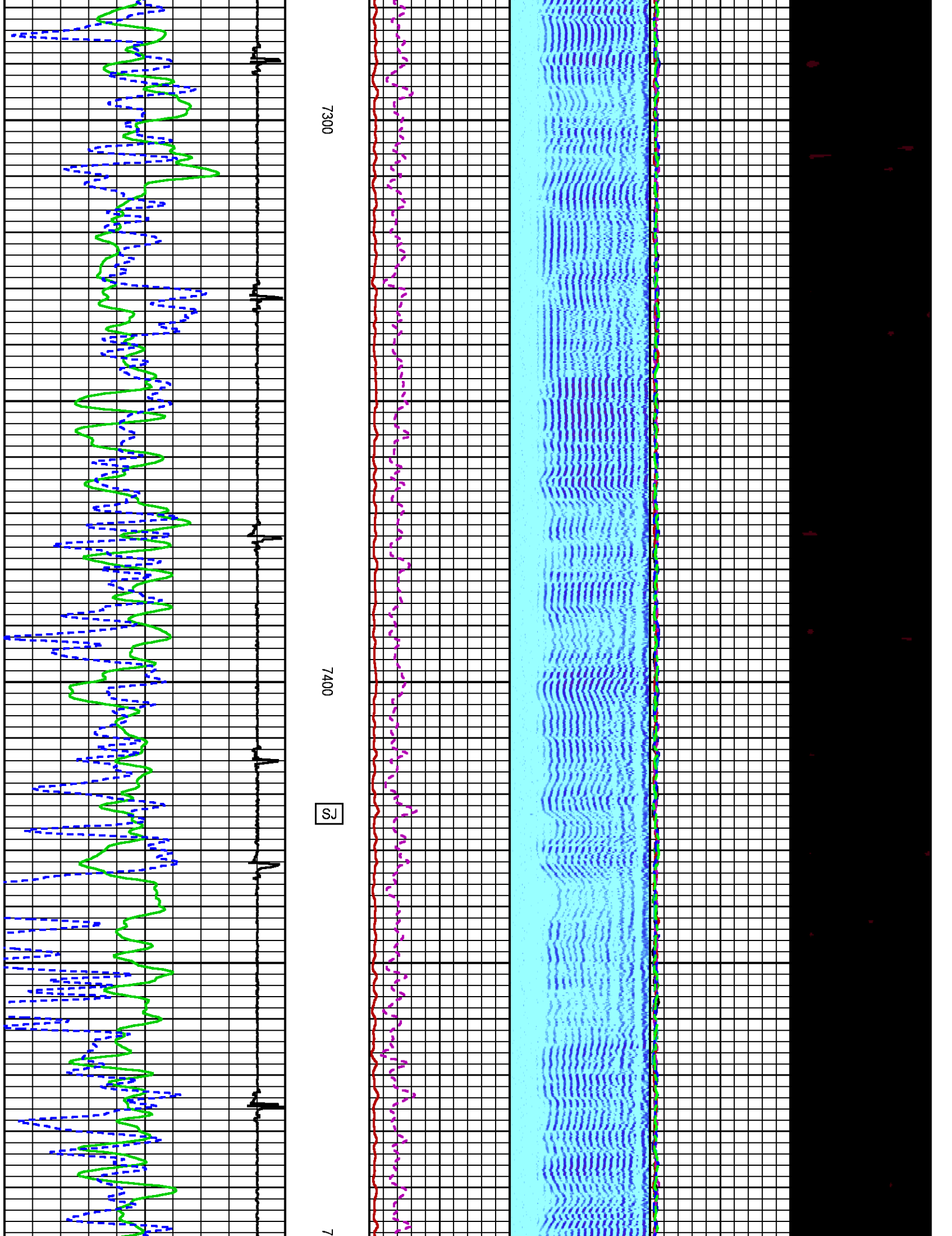
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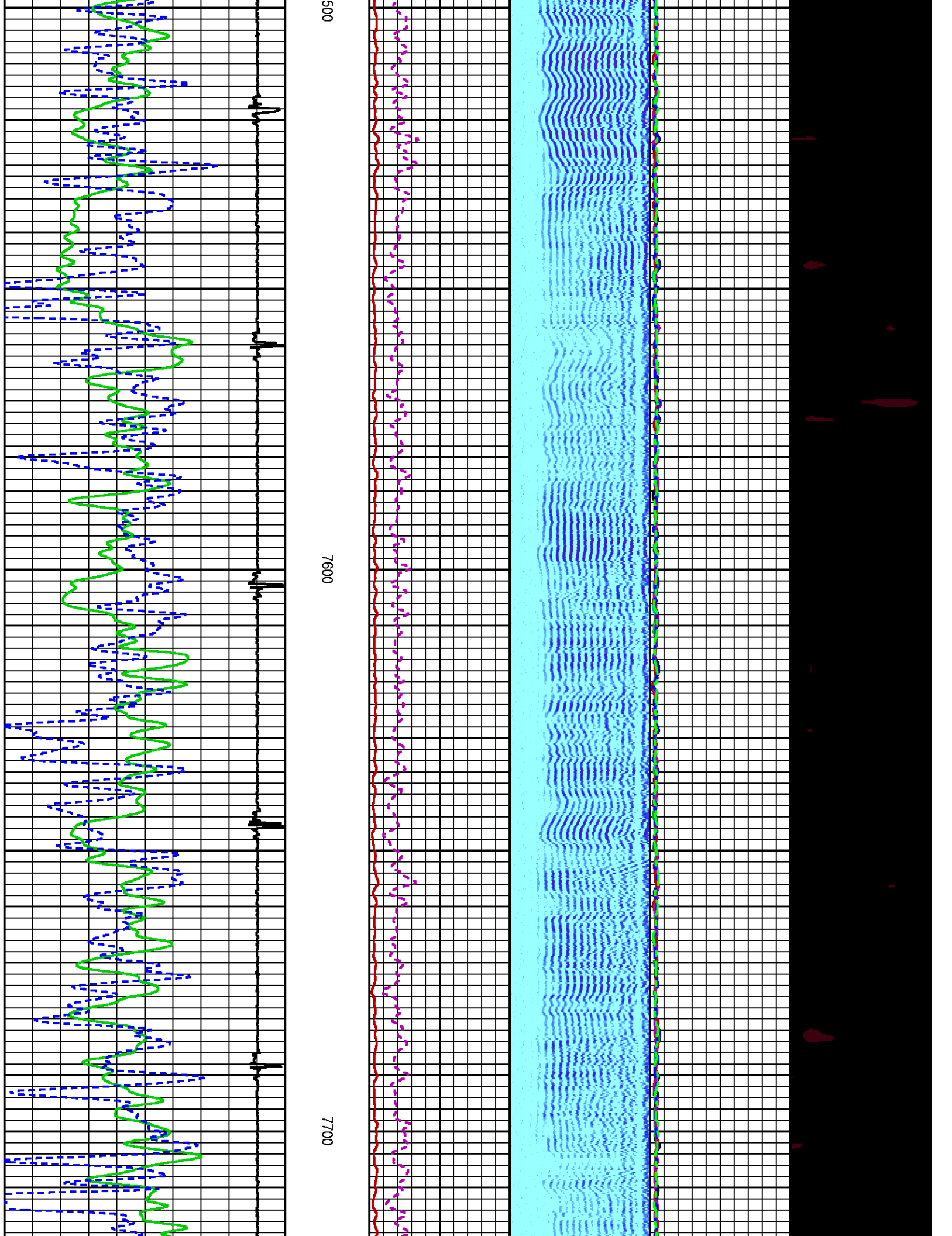


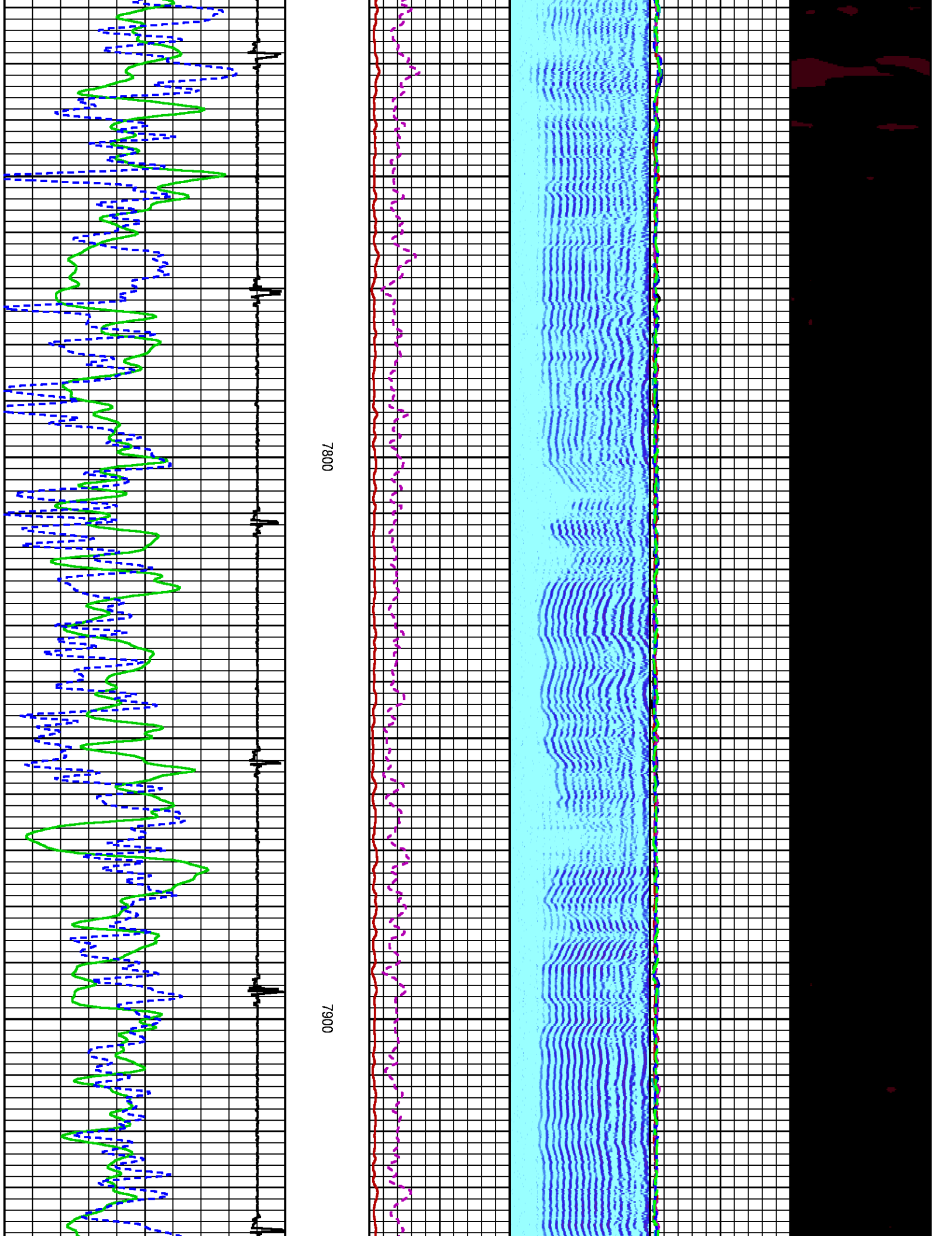


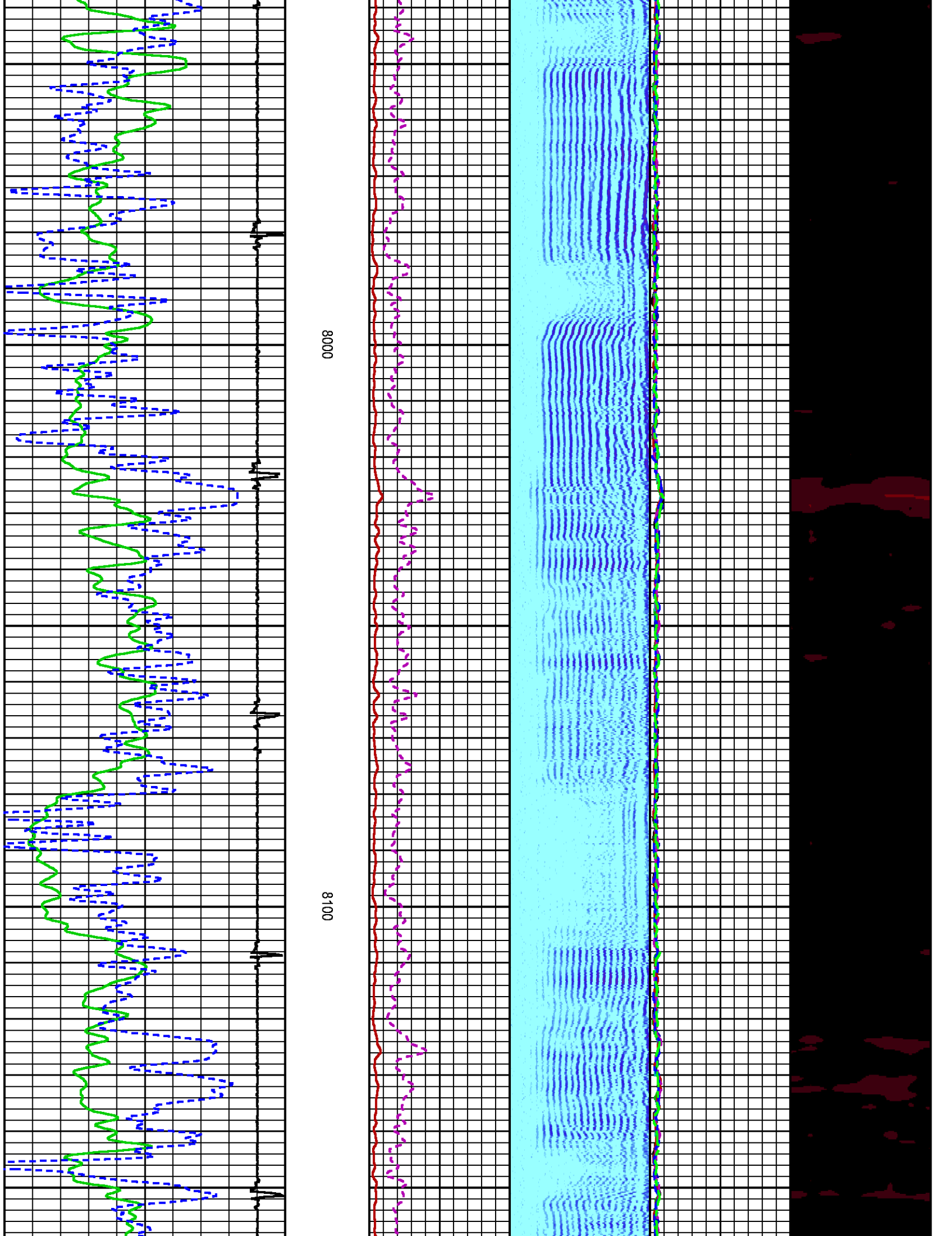
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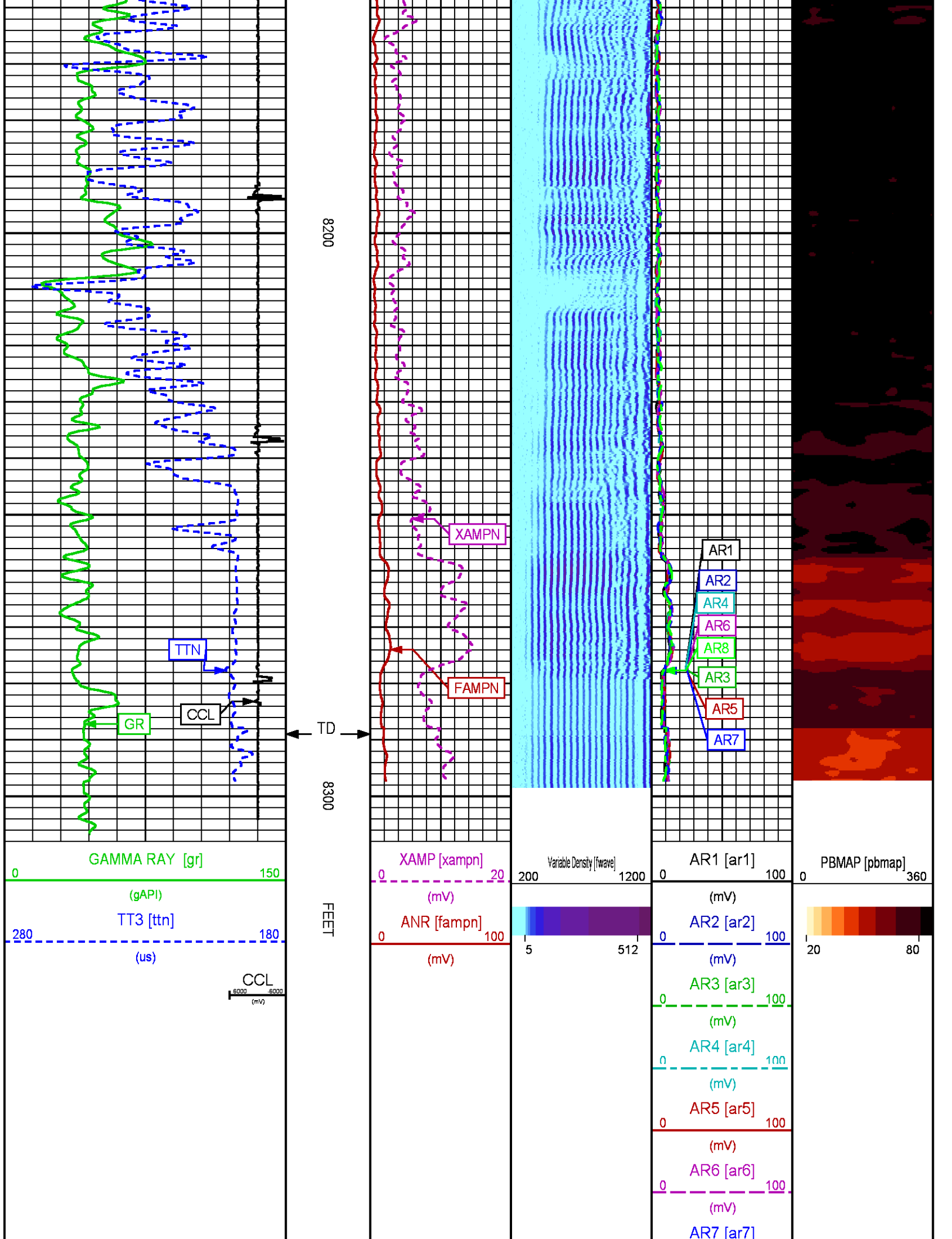
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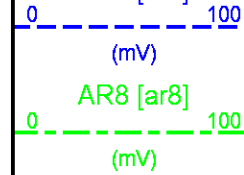












REPEAT PASS 0 PSI

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

Plotted: Wed Apr 11 17:09:49 2018

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE_BRUTON_30_19W/p012g01.prm
LOGGING MODE: DEPTH DIRECTION: UP
TOP DEPTH: 8069.500 ft BOTTOM DEPTH: 8295.750 ft

SYMMETRIC FILTER

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

RAL CCL PROCESSING

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

ANALOG RAL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
AMPLITUDE WINDOW (NEAR)	AMP WINDOW START (fgp1*)	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*)	2	mV	"	"
RAL CASING PARAMETERS	PPT NEAR	200.391	us	"	"
RAL TOOL DELAY	TOOL DELAY (str1*)	-63	us	"	"
	TOOL DELAY (str2*)	-63	us	"	"
	TOOL DELAY (str3*)	-63	us	"	"
	TOOL DELAY (str4*)	-63	us	"	"
	TOOL DELAY (str5*)	-63	us	"	"
	TOOL DELAY (str6*)	-63	us	"	"
	TOOL DELAY (str7*)	-63	us	"	"
	TOOL DELAY (str8*)	-63	us	"	"
BASELINE NOISE (NEAR)	TOOL DELAY (strn*)	-63	us	"	"
	NOISE WINDOW START	125	us	"	"
	NOISE WINDOW LENGTH	25	us	"	"

PERCENT BOND CEMENT MAP

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
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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	"	"

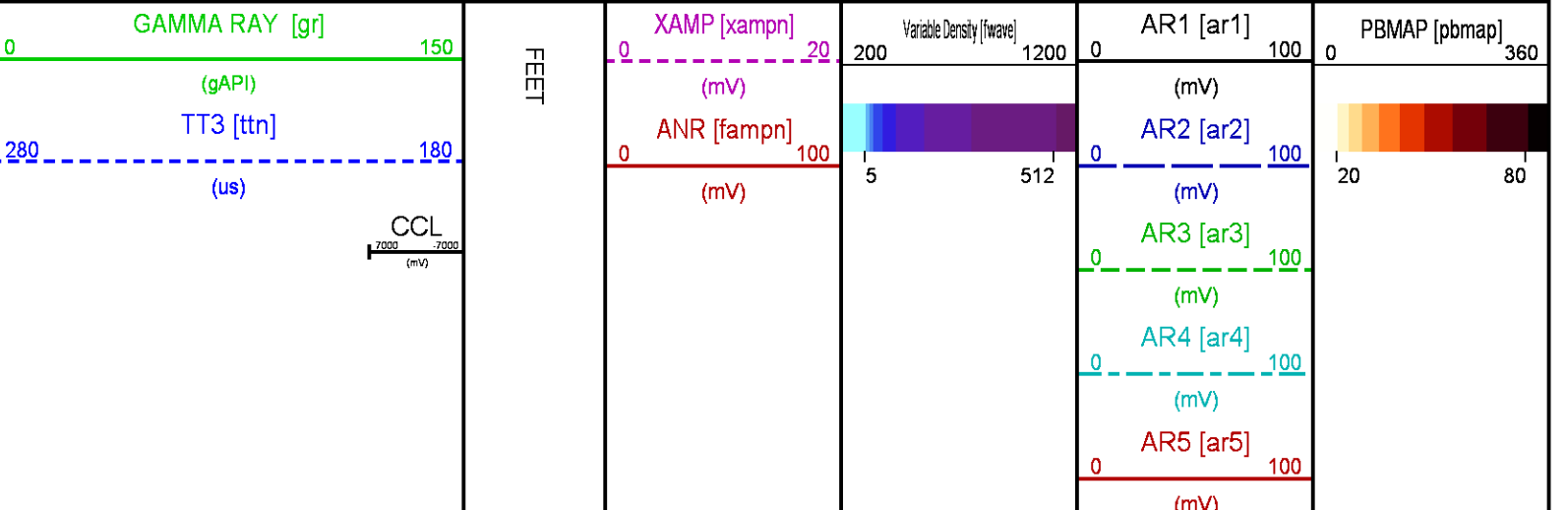
CURVE DESCRIPTION REPORT

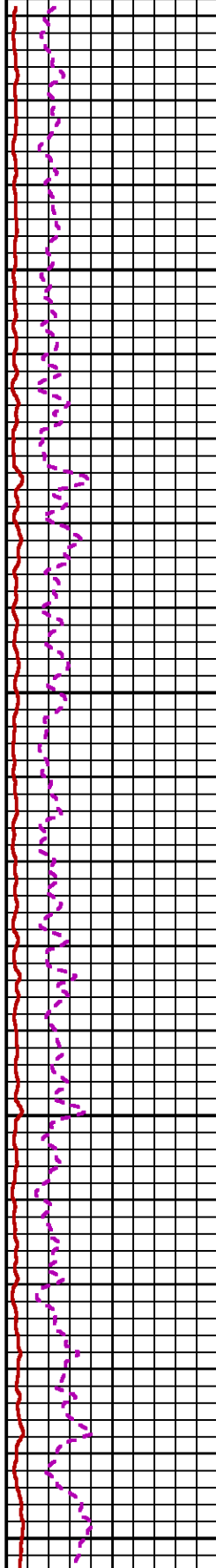
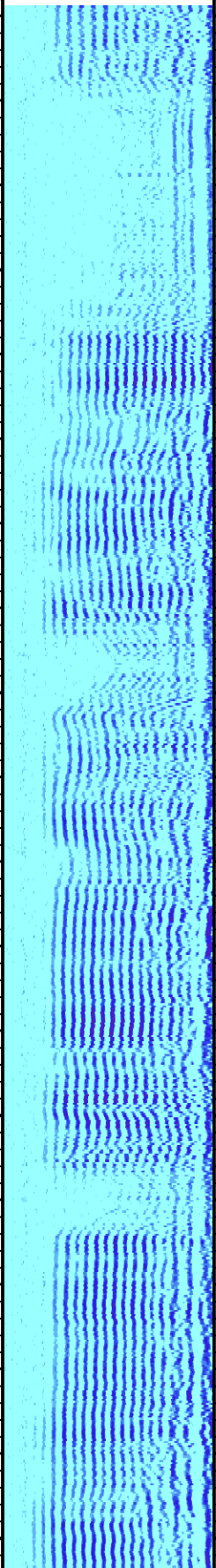
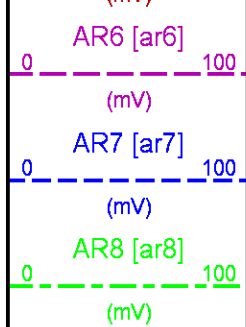
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AR1	N/A	FIXED GATE AMPLITUDE T-R1
F1:AR2	N/A	FIXED GATE AMPLITUDE T-R2
F1:AR3	N/A	FIXED GATE AMPLITUDE T-R3
F1:AR4	N/A	FIXED GATE AMPLITUDE T-R4
F1:AR5	N/A	FIXED GATE AMPLITUDE T-R5
F1:AR6	N/A	FIXED GATE AMPLITUDE T-R6
F1:AR7	N/A	FIXED GATE AMPLITUDE T-R7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

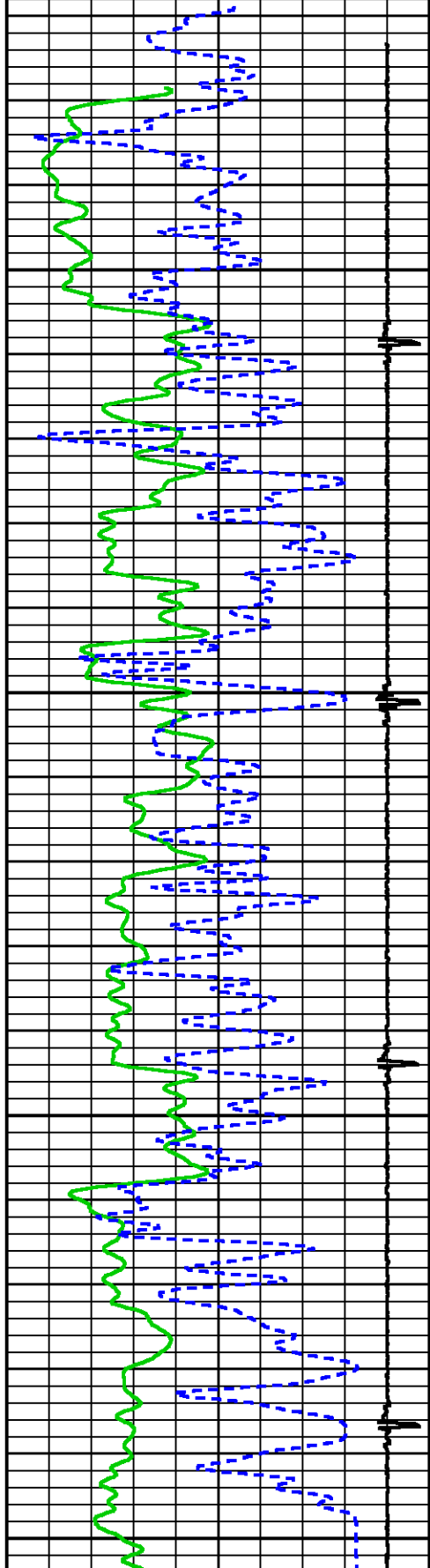
Presentation	: SysA:/dat1a/LARAMIE_BRUTON_30_19W/30-19W_RAL_REPEAT.fvpdf [5"/100' Scale]
Plot Interval	: 8068.75 - 8313.5 Feet
Data File 1	: F1 : SysA:/dat1a/LARAMIE_BRUTON_30_19W/30-19W_RAL_REPEAT.xtf
Created On	: N/A
Company	: LARAMIE ERNGY LLC
Well	: BRUTON FEDERAL 30-19W
Field	: VEGA
File Interval	: 8067.75 - 8314.75 Feet
OCT	: p012g

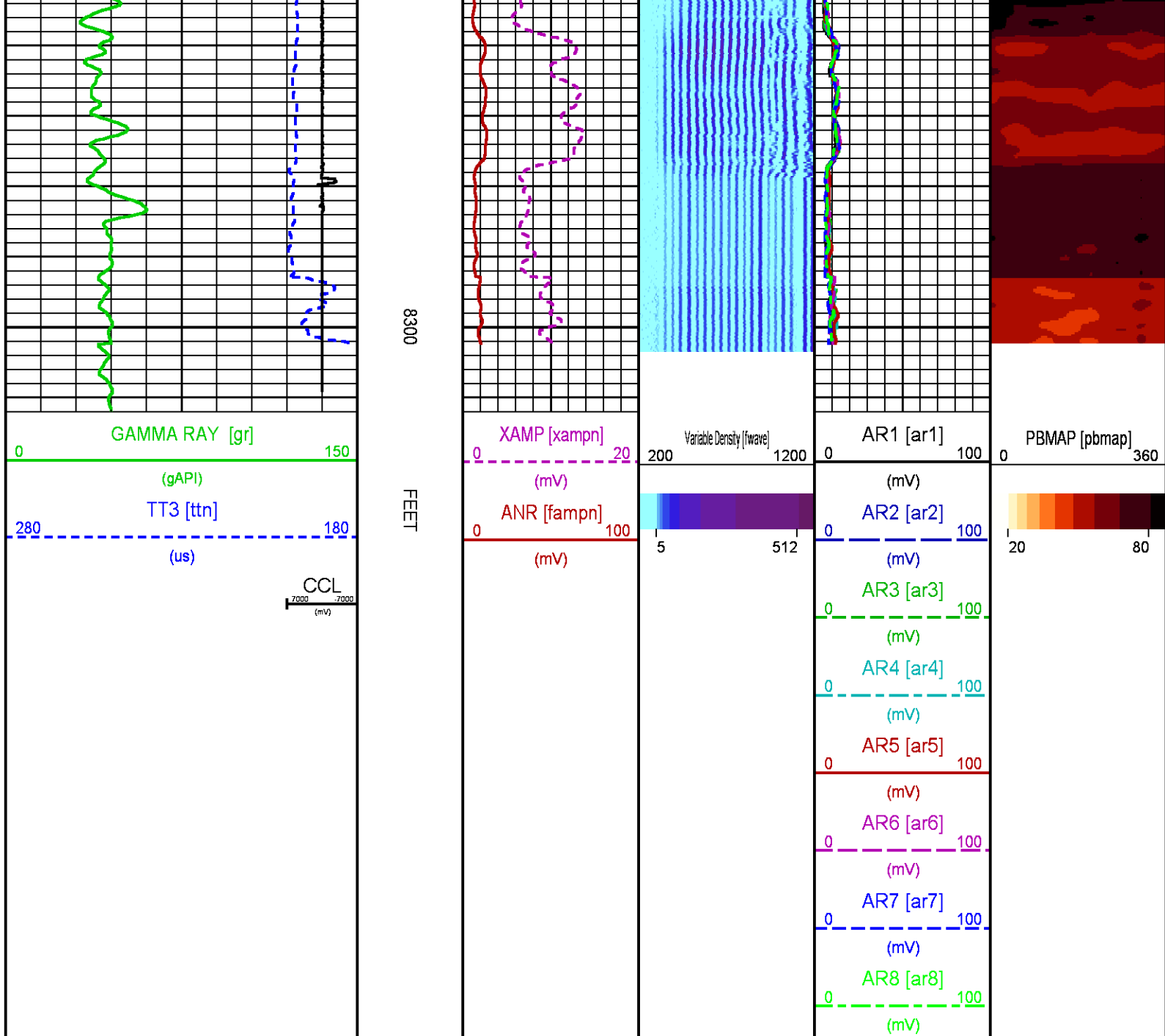




8100

8200





CALIBRATION / VERIFICATION SUMMARY

Source File: /dat1a/LARAMIE_BRUTON_30_19W/p012g.tp1

RAL PRIMARY CALIBRATION SUMMARY

TOOL #: 1426XA 10417451

DATE/TIME PERFORMED: Tue Apr 3 09:32:39 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)	-0.11	-0.30	0.38	-0.12	0.05	0.23	-0.14	0.20	-0.10	0.08	0.12
AMP FLUID (mV)	48	47	47	48	48	48	48	48	48	66	48
TT (us)	217	219	218	217	216	216	216	216	218	325	218
M FACTOR	2.08	2.10	2.14	2.09	2.07	2.09	2.07	2.10	2.09	2.28	2.11

RAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1426XA 10417451 DATE/TIME PERFORMED: Tue Apr 3 09:35:38 2018 DAYS SINCE CAL: 0

UNIT #: 5753XD 111111 CABLE #: 4291SM SMALL1

	NEAR (mV)	R1 (mV)	R2 (mV)	R3 (mV)	R4 (mV)	R5 (mV)	R6 (mV)	R7 (mV)	R8 (mV)	FAR (mV)	CAL (mV)
ZERO	-0.21	-0.55	0.93	-0.40	-0.21	0.60	-0.43	0.01	0.25	-0.08	0.22
AMP AIR	3.41	4.60	3.57	3.76	2.75	3.76	4.11	3.42	3.34	6.84	100.59

SHOP M FACTOR	SHOP A FACTOR	WIRELINE FACTOR
2.11	0.00	1.00

GR PRIMARY CALIBRATION SUMMARY

TOOL #: 1355XA 12670180 DATE/TIME PERFORMED: Thu Mar 29 16:39:27 2018

UNIT #: 4352 ML4352 CALB JIG #: 4702NK DA_228

	BACKGROUND (cts)	CALBRTR ON (cts)	CR DIFF (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	CALBRTR (gAPI)
GR	41.51	221.16	179.6	0.557	23.11	123.11	100

GR PRIMARY VERIFICATION SUMMARY

TOOL #: 1355XA 12670180 DATE/TIME PERFORMED: Thu Mar 29 16:50:56 2018

UNIT #: 4352 ML4352 VERI JIG #: 4702NK DA_228

	BACKGROUND (cts)	CALBRTR ON (cts)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	DIFF. (gAPI)
GR	40.09	214.13	0.557	22.32	119.20	96.88
						90.00 110.00

INSTRUMENT CONFIGURATION

Source File: /dat1a/LARAMIE_BRUTON_30_19W/RAL-tdg

A3 CABLEHEAD
Diameter : 1.37"

18.85'

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

XMTR — 12.71'
 NEAR MP — 11.17'
 FAR MP — 10.21'
 NEAR RCVR — 9.62'
 FAR RCVR — 7.71'

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

CCL — 5.79'
 GR — 1.67'
 TEMP — 0.17'

TOTAL LENGTH: 18.85'
 TOTAL WEIGHT: 227 lbs
 MAX DIAMETER: 0'4.00"

**BAKER
HUGHES**
a GE company



COMPANY
WELL
FIELD
COUNTY

LARAMIE ENERGY LLC
BRUTON FEDERAL 30-19W
VEGA
MESA STATE **COLORADO**

FILE NO:
CH133068
API NO:
05077104690000

LOCATION:

SHL: 2622' FSL & 1858' FEL
 BHL: 658' FSL & 1306' FWL

SEC 30 TWP 9S RGE 93W

ELEVATIONS:

KB 7673 FT
 DF
 GL 7643 FT

DATE 01-Apr-2018

