



RADIAL CEMENT BOND LOG

FILE NO:

COMPANY

LARAMIE ENERGY LLC

WELL

BRUTON 30-17E

FIELD

VEGA

API NO:
05077104770000

COUNTY

MESA

STATE COLORADO

Ver. 4.10

LOCATION:

SHL: 2645' FSL & 1859' FEL
BHL: 1117' FSL & 1341' 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 US132072

DEPTH DRILLER 7917 FT

DEPTH LOGGER 7847 FT

BOTTOM LOGGED INTERVAL 7847 FT

TOP LOGGED INTERVAL 30 FT

TIME STARTED 16:00

TIME FINISHED 18:30

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 529 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. 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: 5962' - 5982'

SJ: 7051' - 7070'

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: Sun Feb 11 13:06:14 2018

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE_BRUTON_30_17E/p012g02.prm
 LOGGING MODE: DEPTH DIRECTION: UP
 TOP DEPTH: 11.500 ft BOTTOM DEPTH: 7841.000 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	5000.00		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*)	-69	us	"	"
	TOOL DELAY (str2*)	-69	us	"	"
	TOOL DELAY (str3*)	-69	us	"	"
	TOOL DELAY (str4*)	-69	us	"	"
	TOOL DELAY (str5*)	-69	us	"	"
	TOOL DELAY (str6*)	-69	us	"	"
	TOOL DELAY (str7*)	-69	us	"	"
	TOOL DELAY (str8*)	-69	us	"	"
	TOOL DELAY (strn*)	-69	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

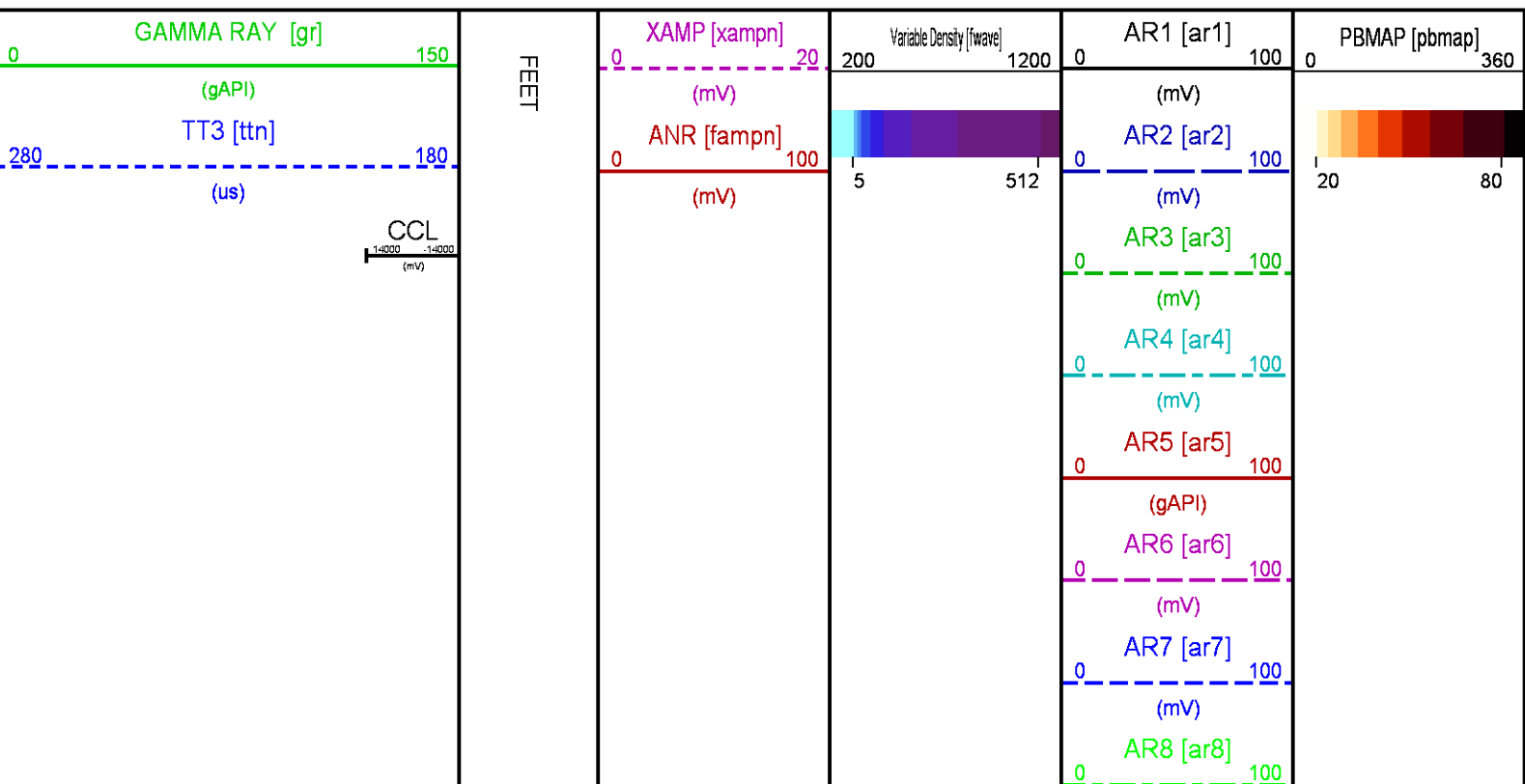
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AR1	N/A	FIXED GATE AMPLITUDE T-R1
F1:AR2	N/A	FIXED GATE AMPLITUDE T-R2
F1:AR3	N/A	FIXED GATE AMPLITUDE T-R3
F1:AR4	N/A	FIXED GATE AMPLITUDE T-R4
F1:AR5	N/A	FIXED GATE AMPLITUDE T-R5
F1:AR6	N/A	FIXED GATE AMPLITUDE T-R6
F1:AR7	N/A	FIXED GATE AMPLITUDE T-R7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

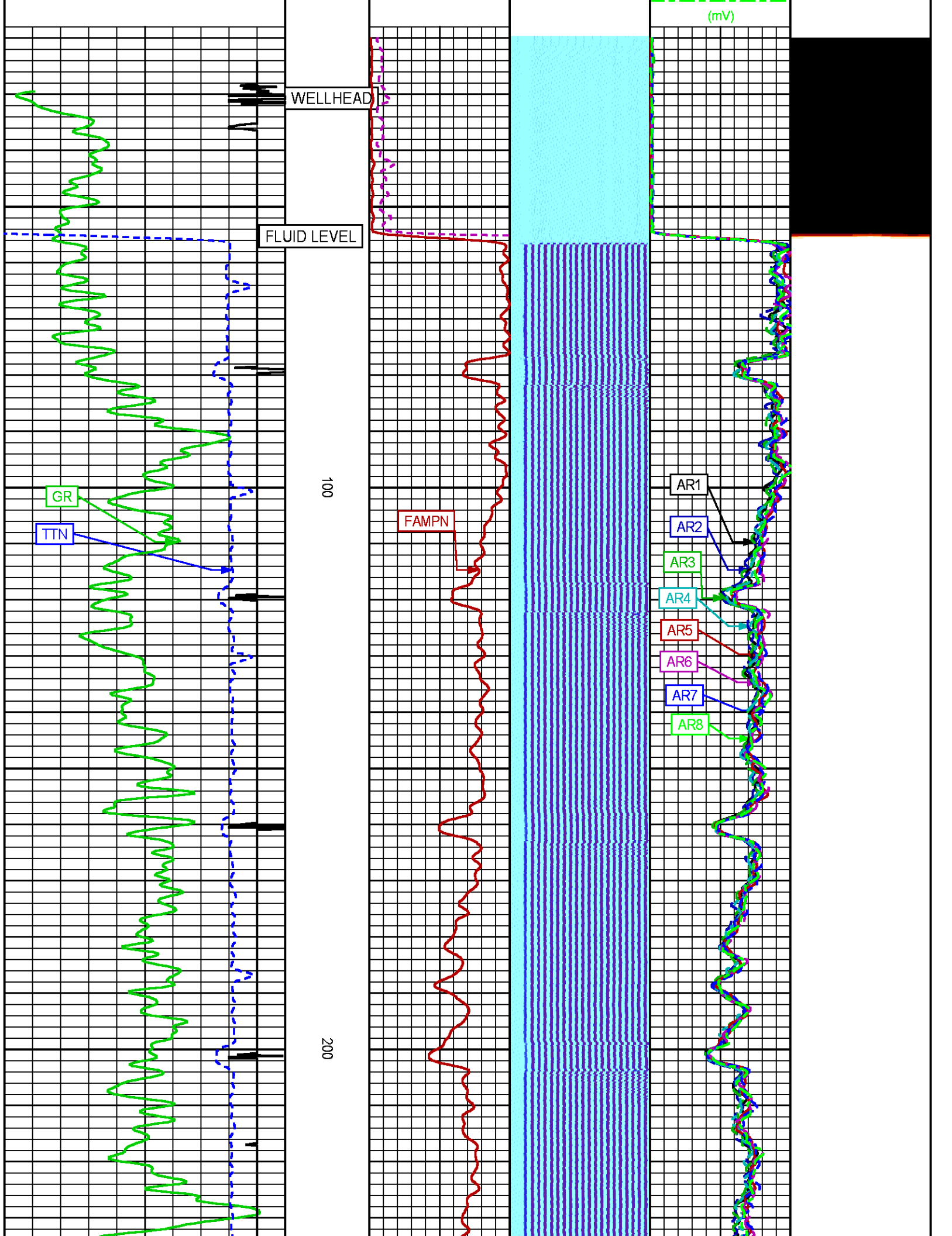
CURVE MEASURE POINT OFFSET

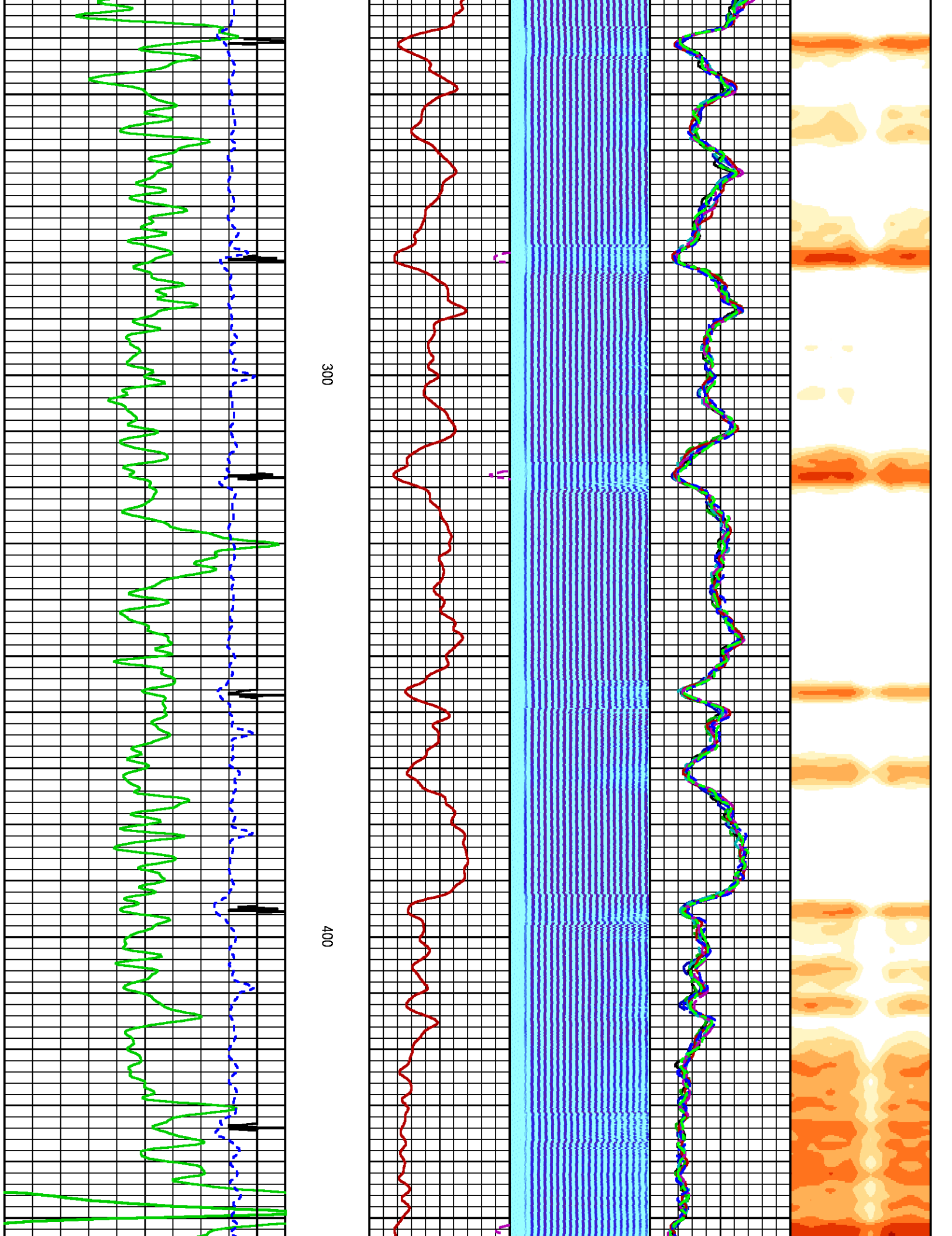
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
AR1	-11.25	AR5	-11.25	CCL	-5.75	XAMPN	-11.25
AR2	-11.25	AR6	-11.25	FAMPN	-11.25		
AR3	-11.25	AR7	-11.25	GR	-1.75		
AR4	-11.25	AR8	-11.25	TTN	-11.25		

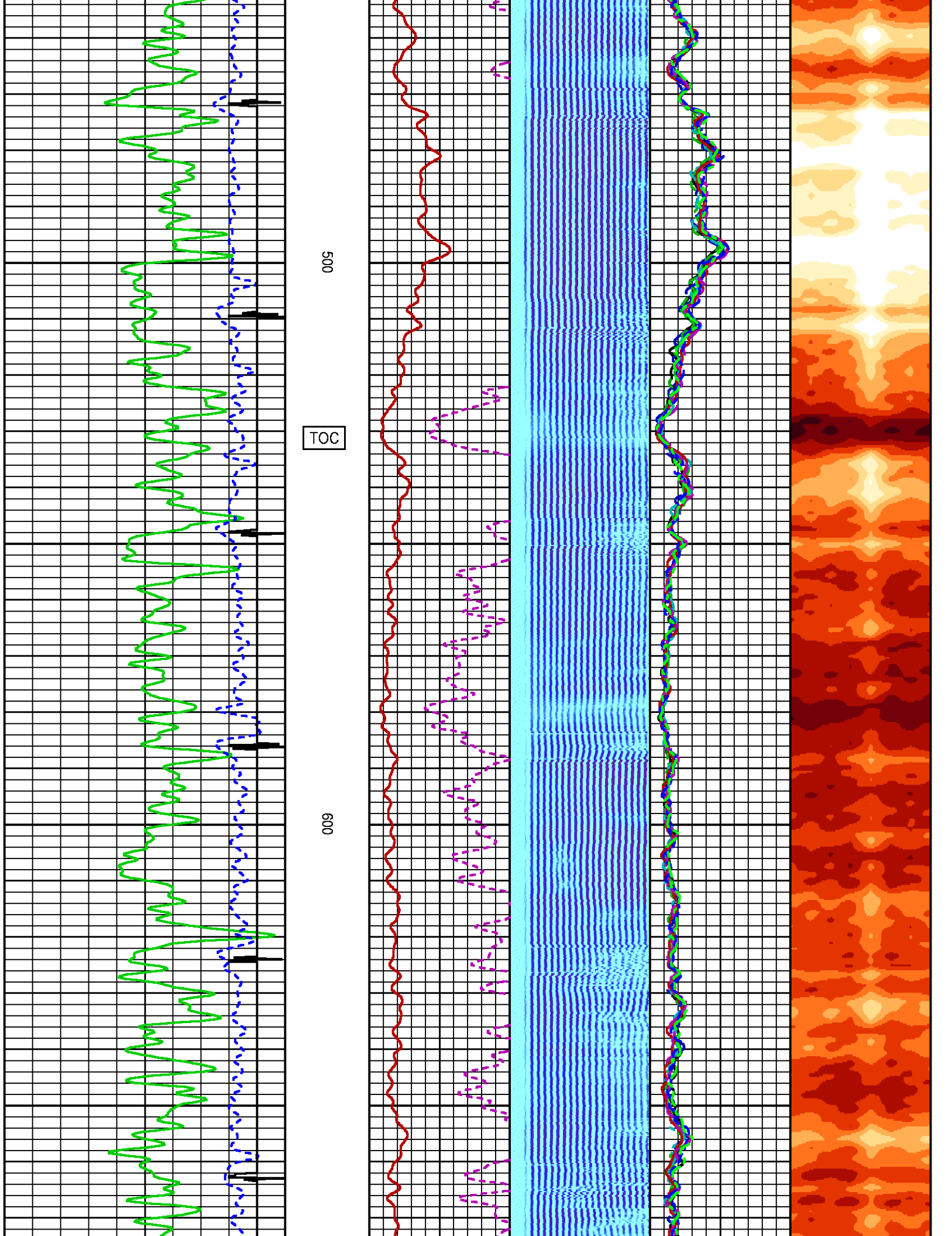
Presentation : SysA:/dat1a/LARAMIE_BRUTON_30_17E/LARAMIE_RAL+01-MAIN-RAL_MN_17E-5.fvpdf [5"/100' Scale]
Plot Interval : 19.75 - 7858.5 Feet

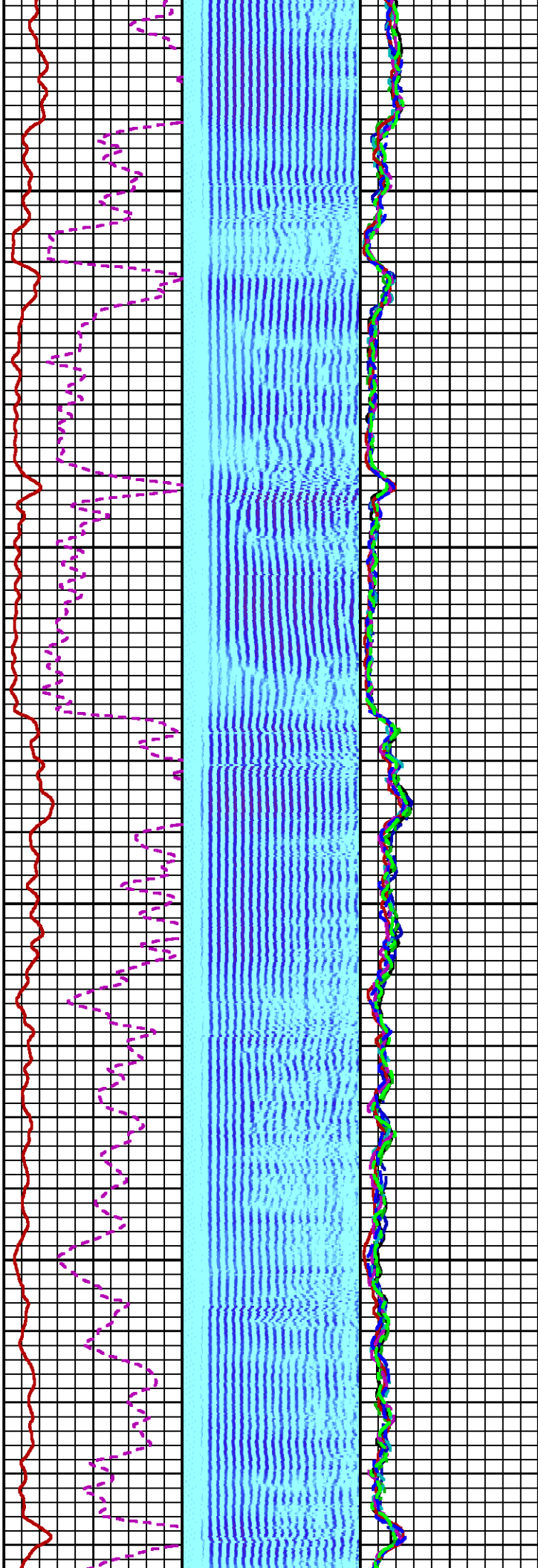
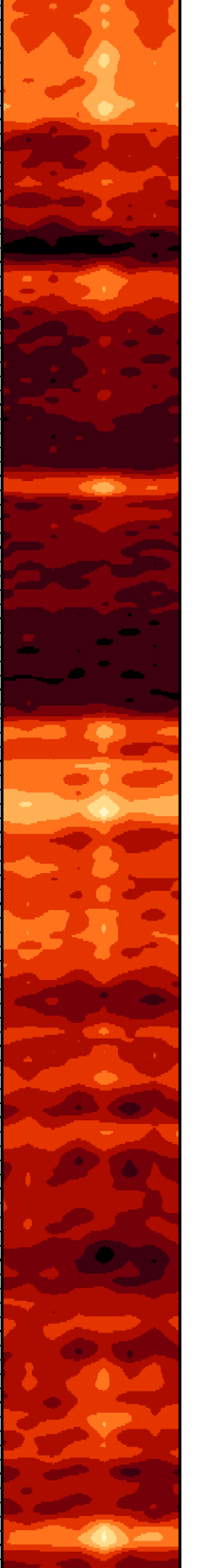
Data File 1 : F1 : SysA:/dat1a/LARAMIE_BRUTON_30_17E/RAL_MN_17E.xtf
Created On : N/A
Company : LARAMIE ENERGY LLC
Well : BRUTON 30-17E
Field : VEGA
File Interval : 11.5 - 7859.75 Feet
OCT : p012g





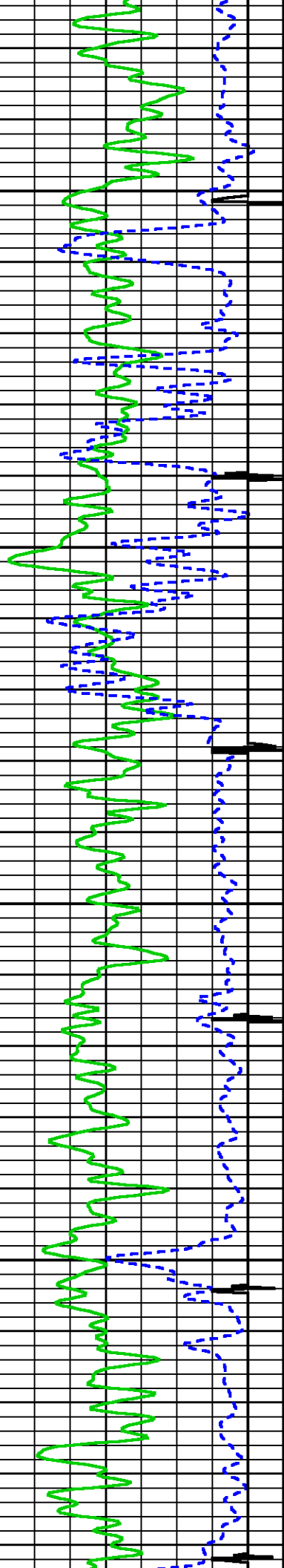


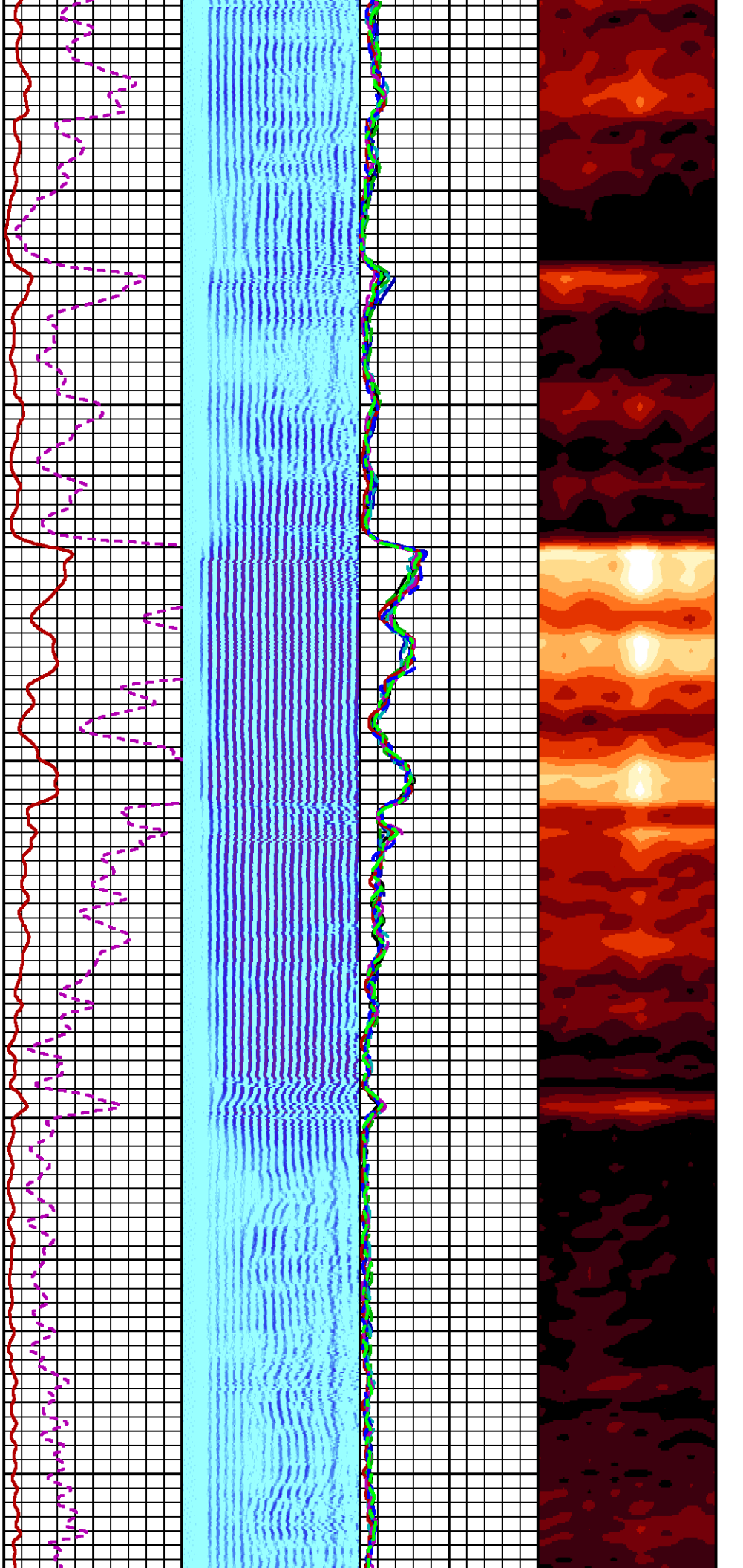




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800

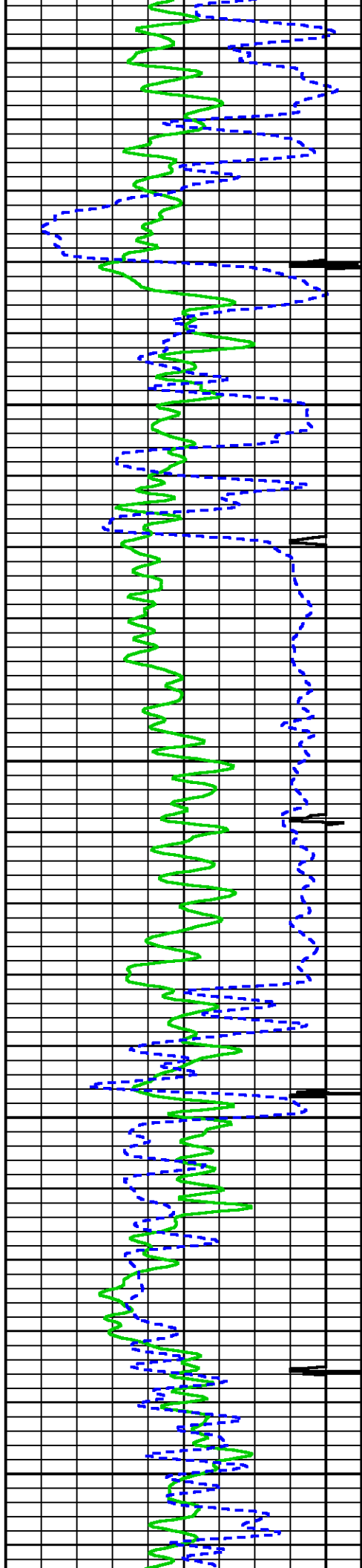


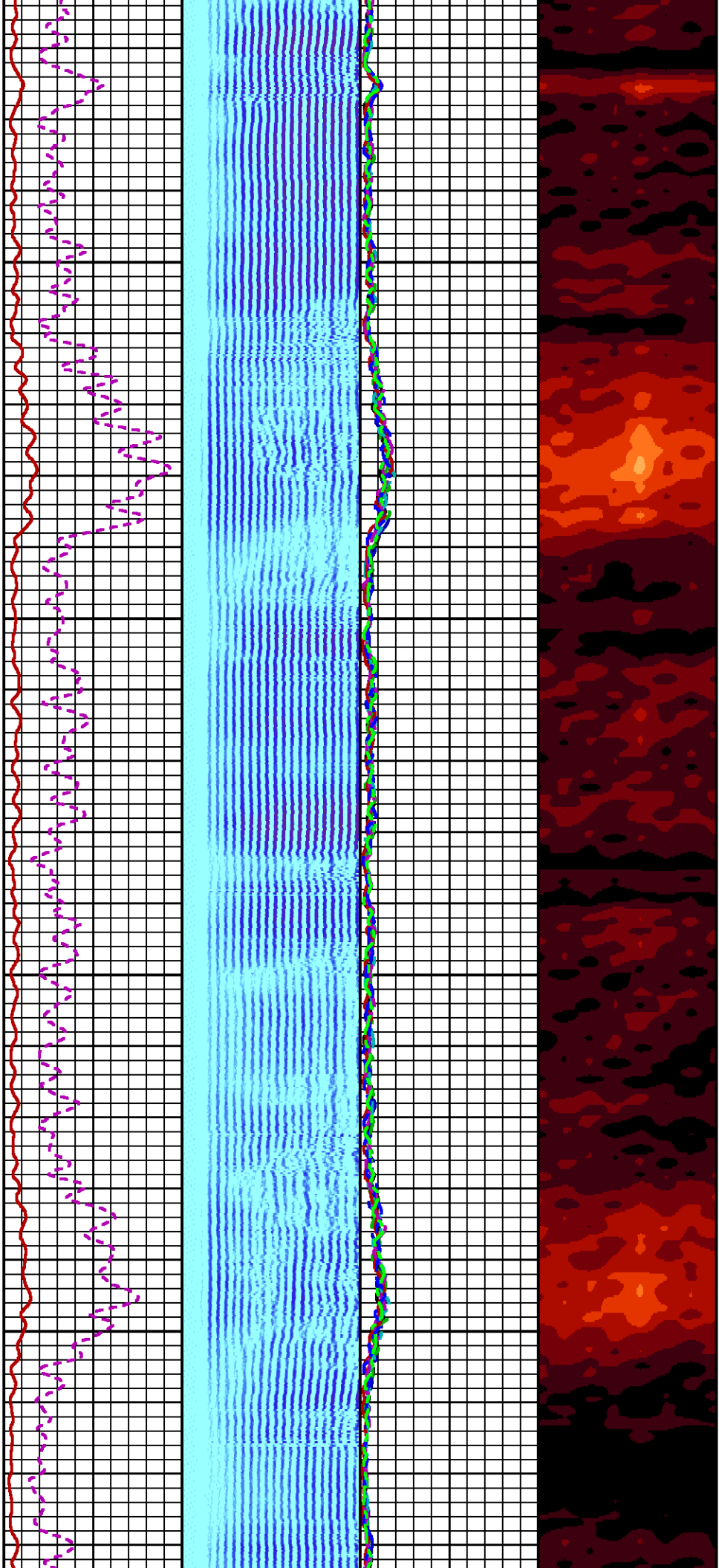


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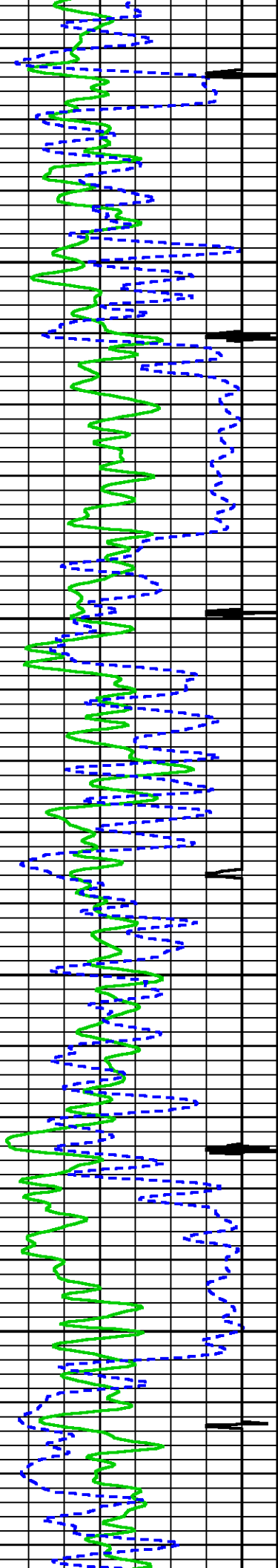
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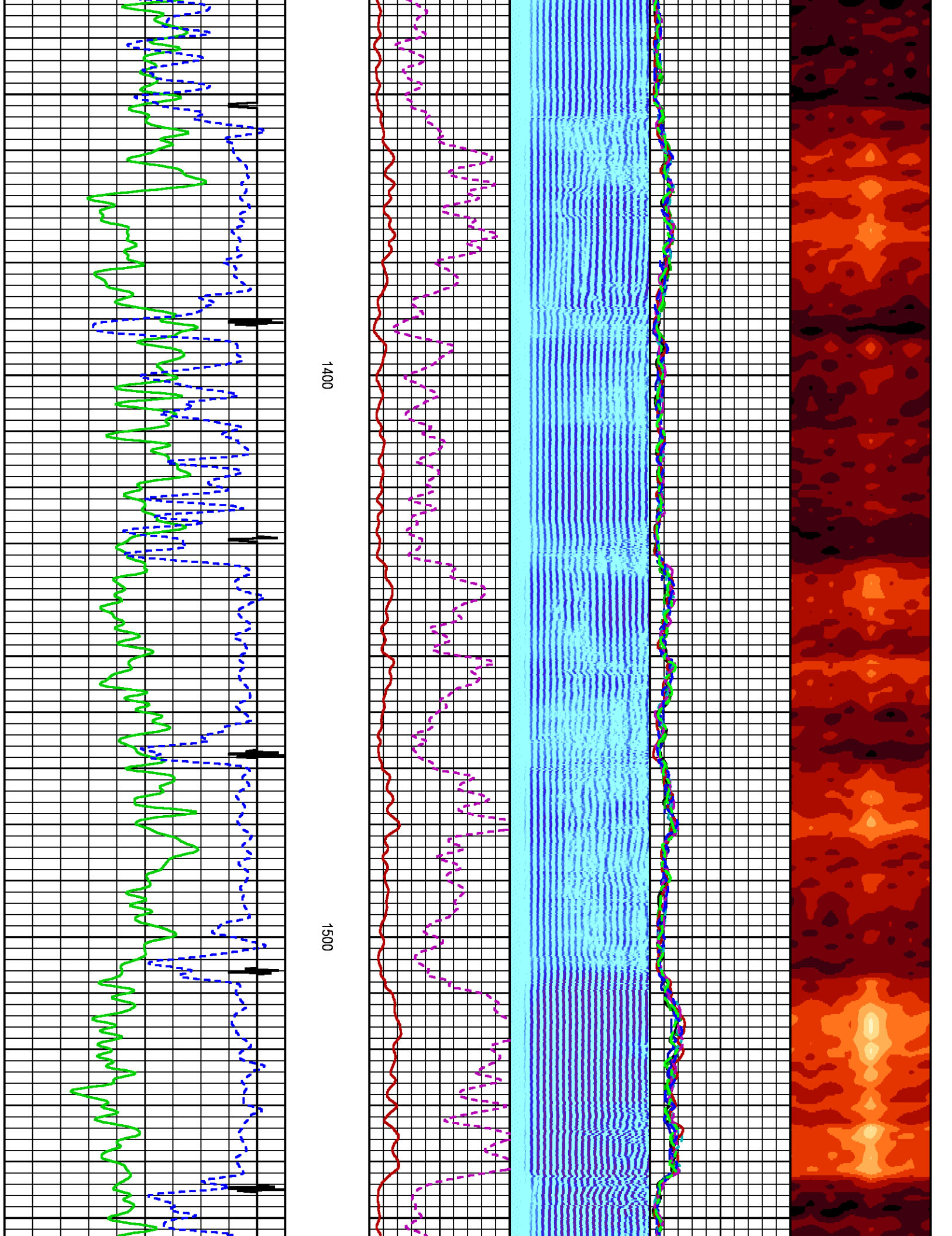


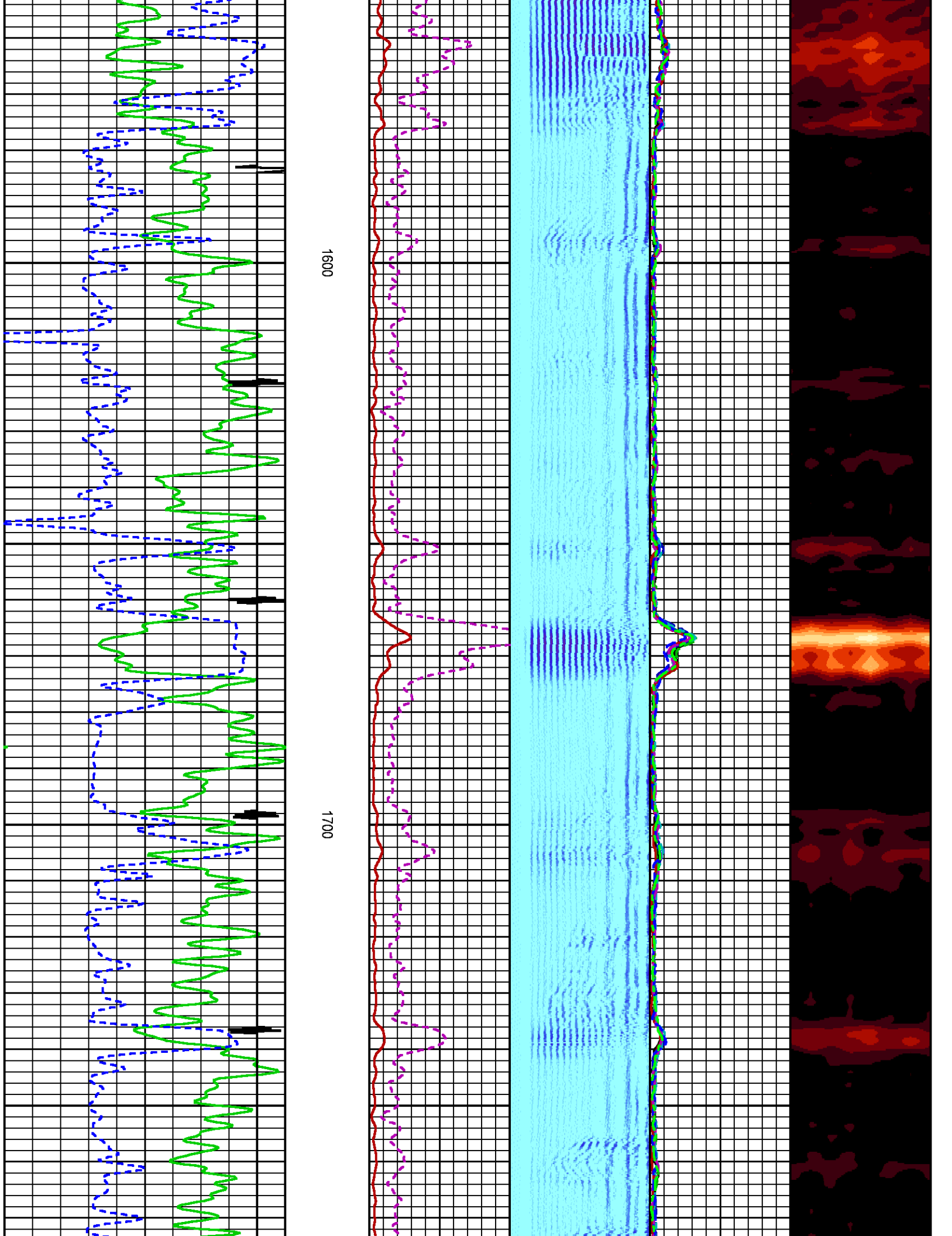


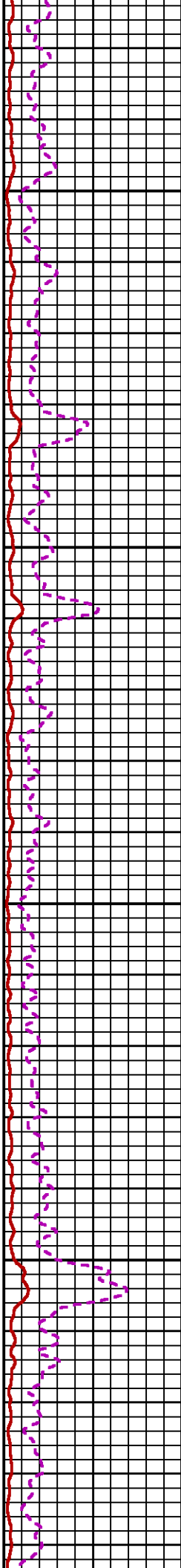
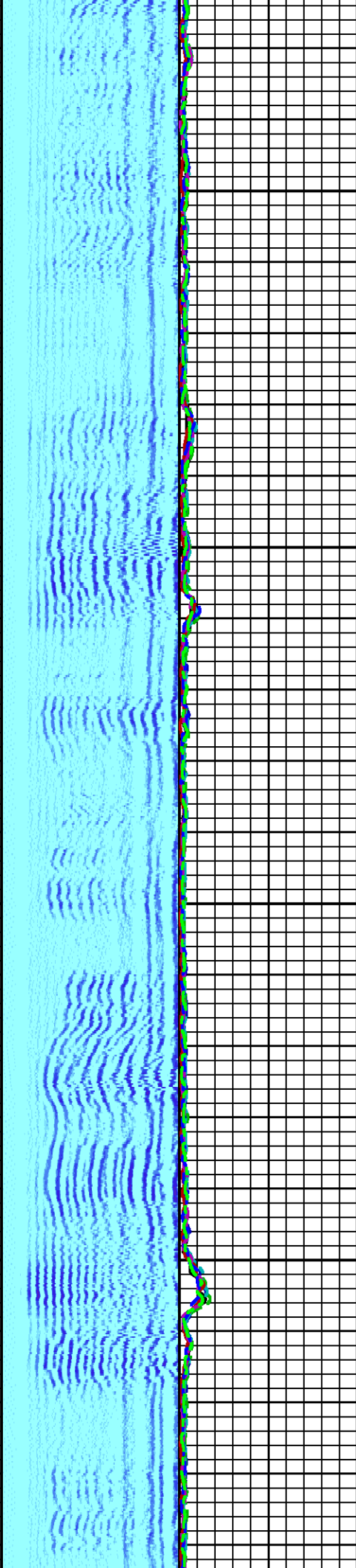
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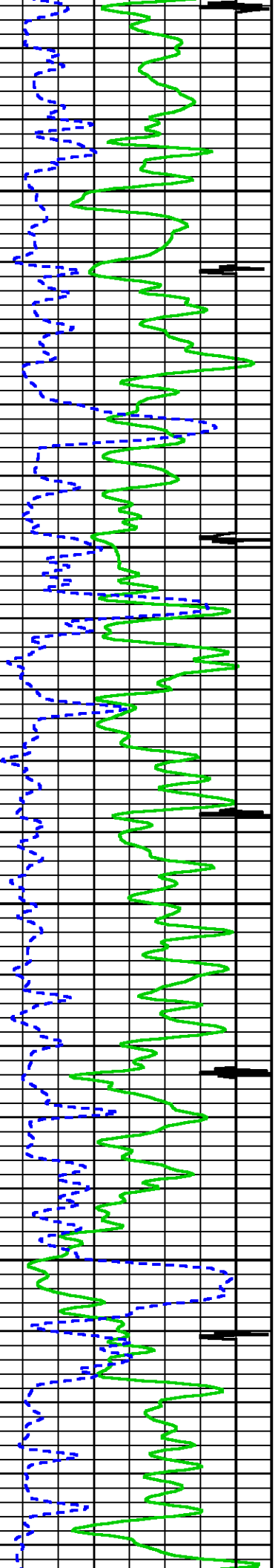


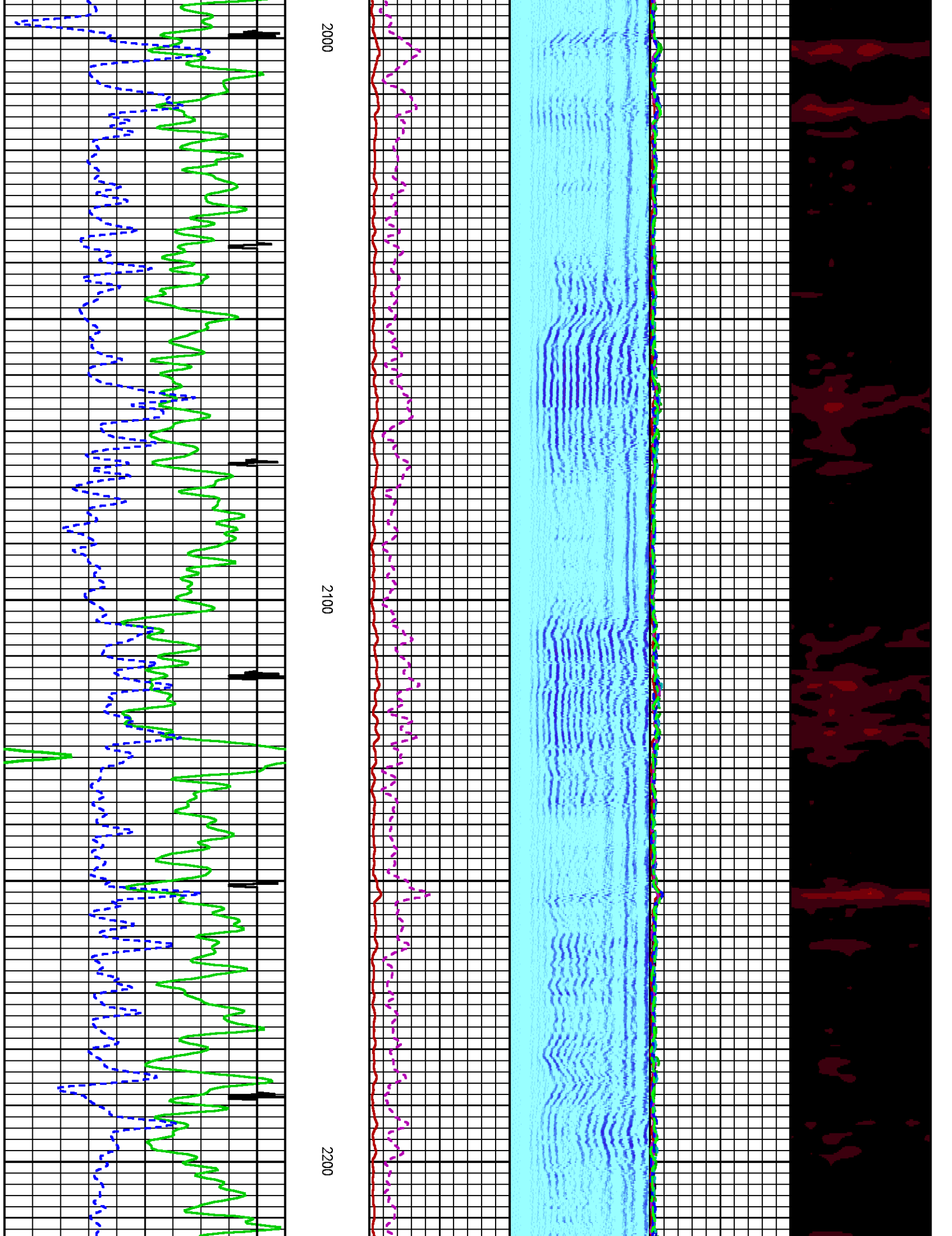


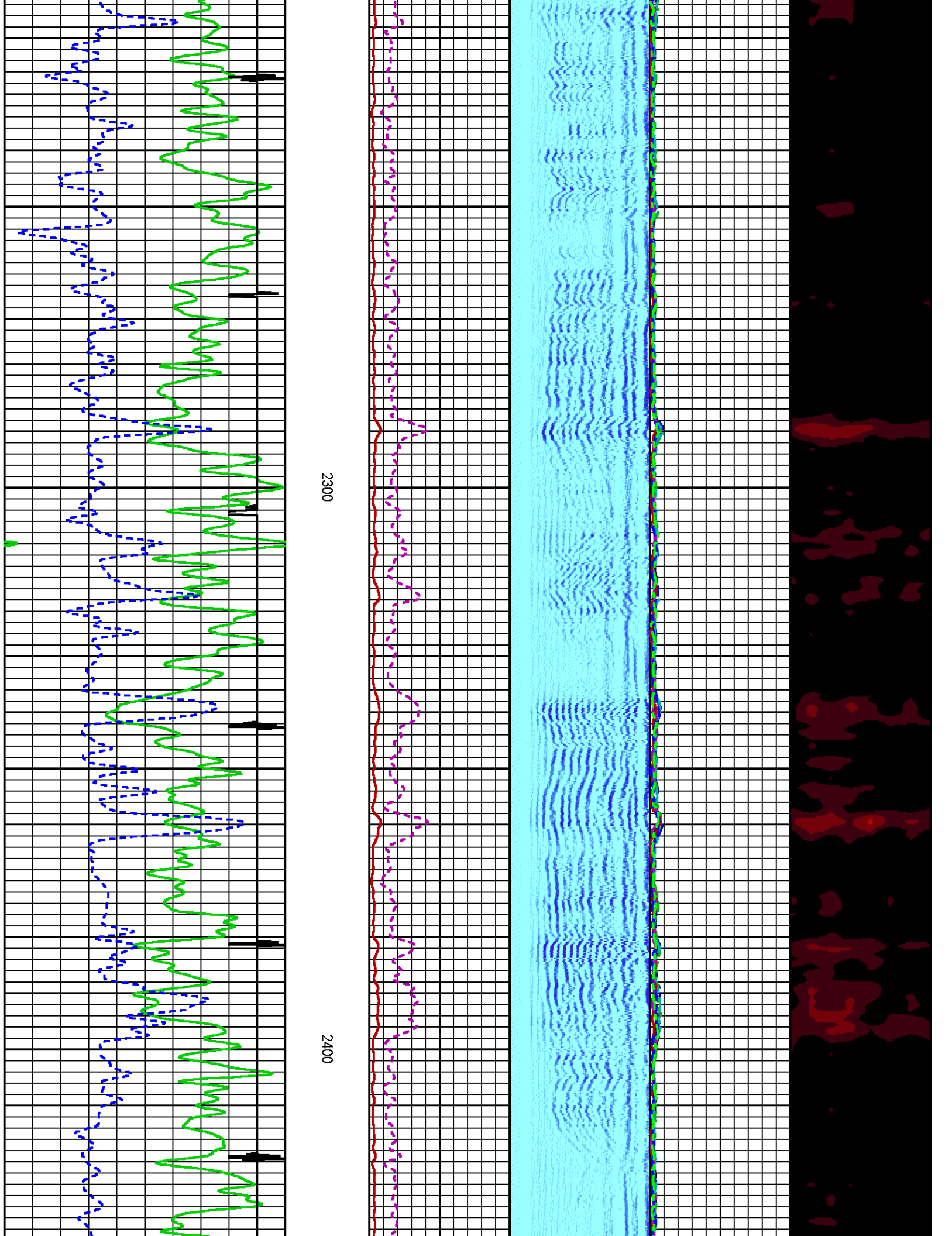


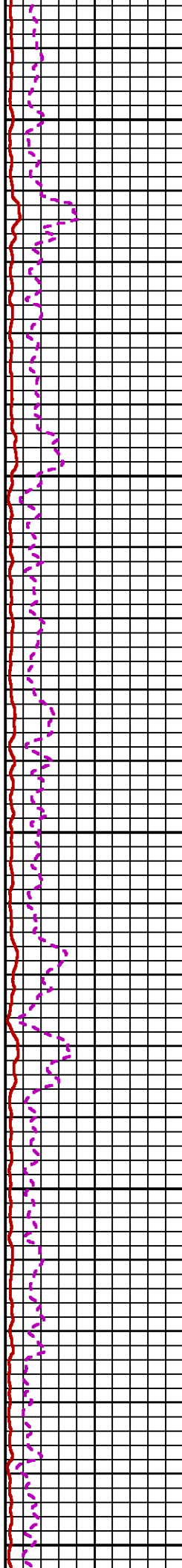
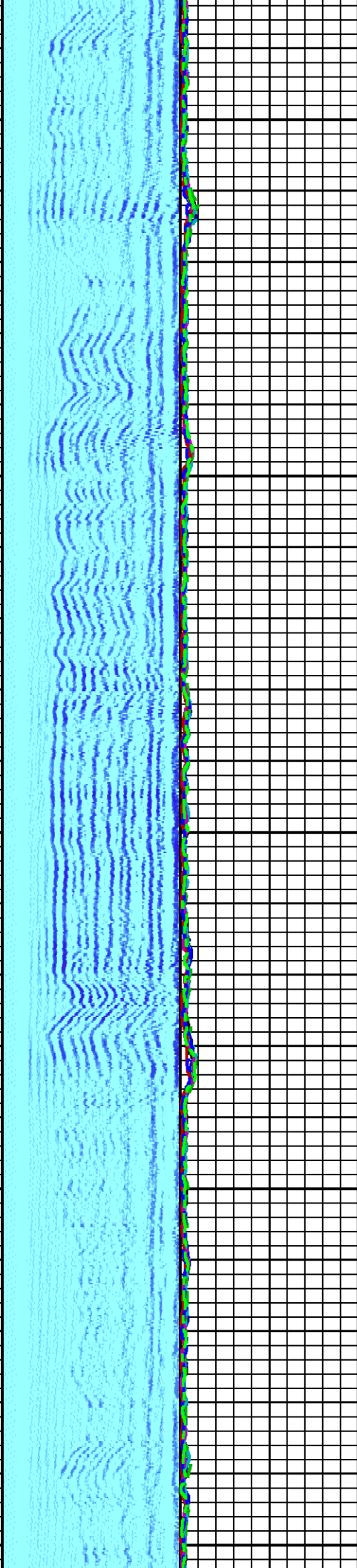
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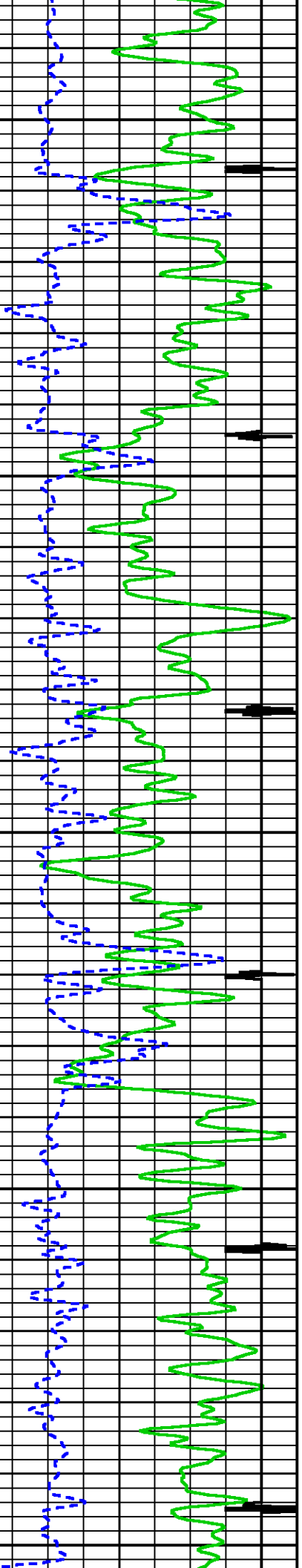


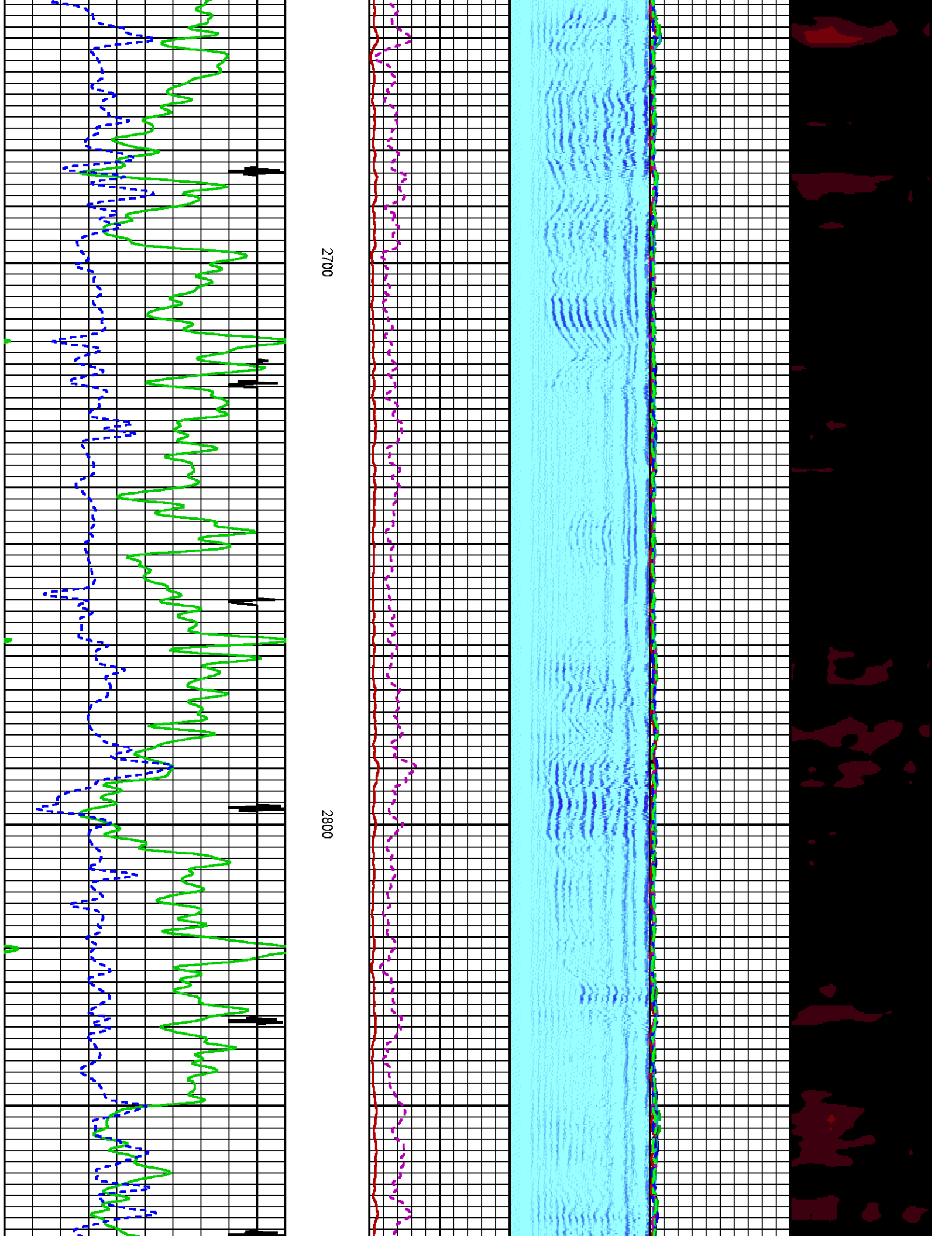


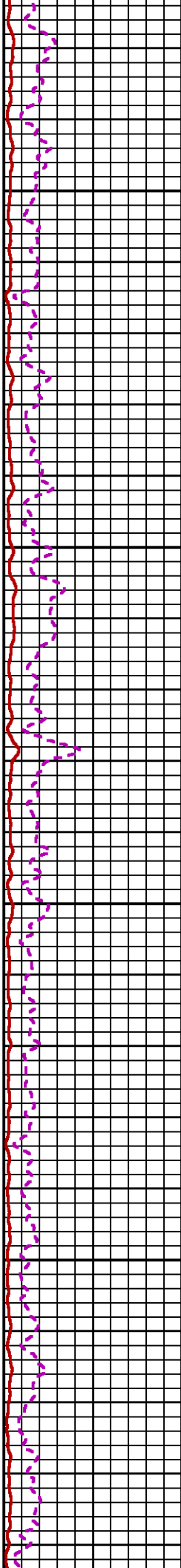
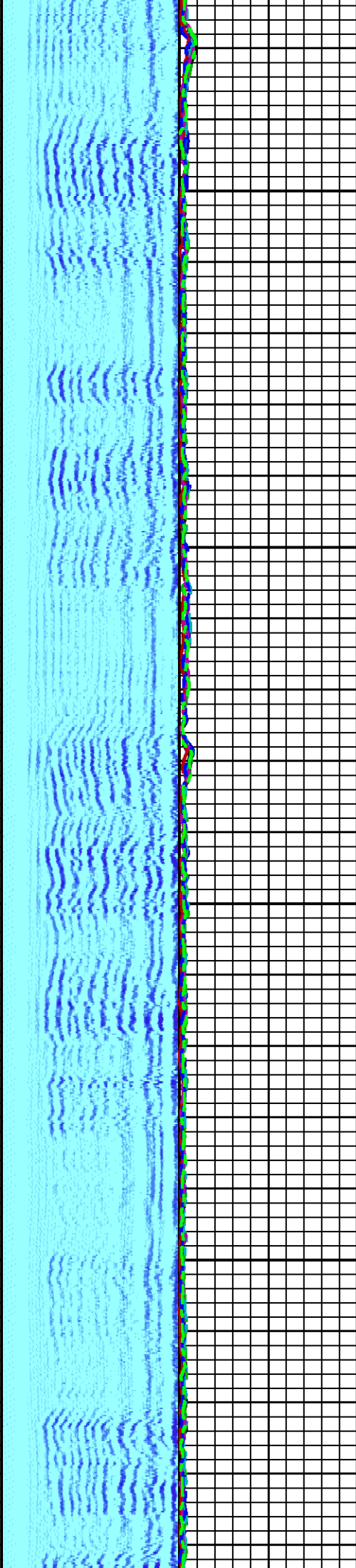


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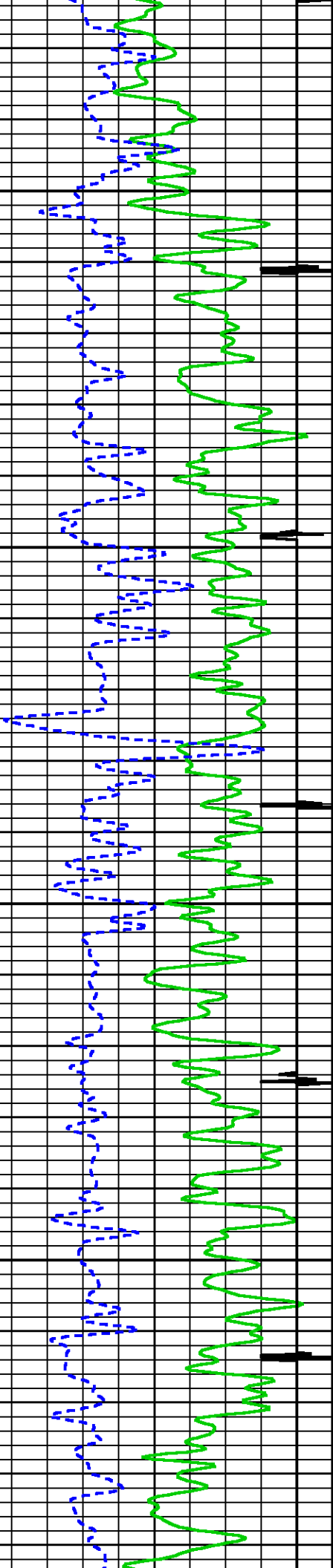


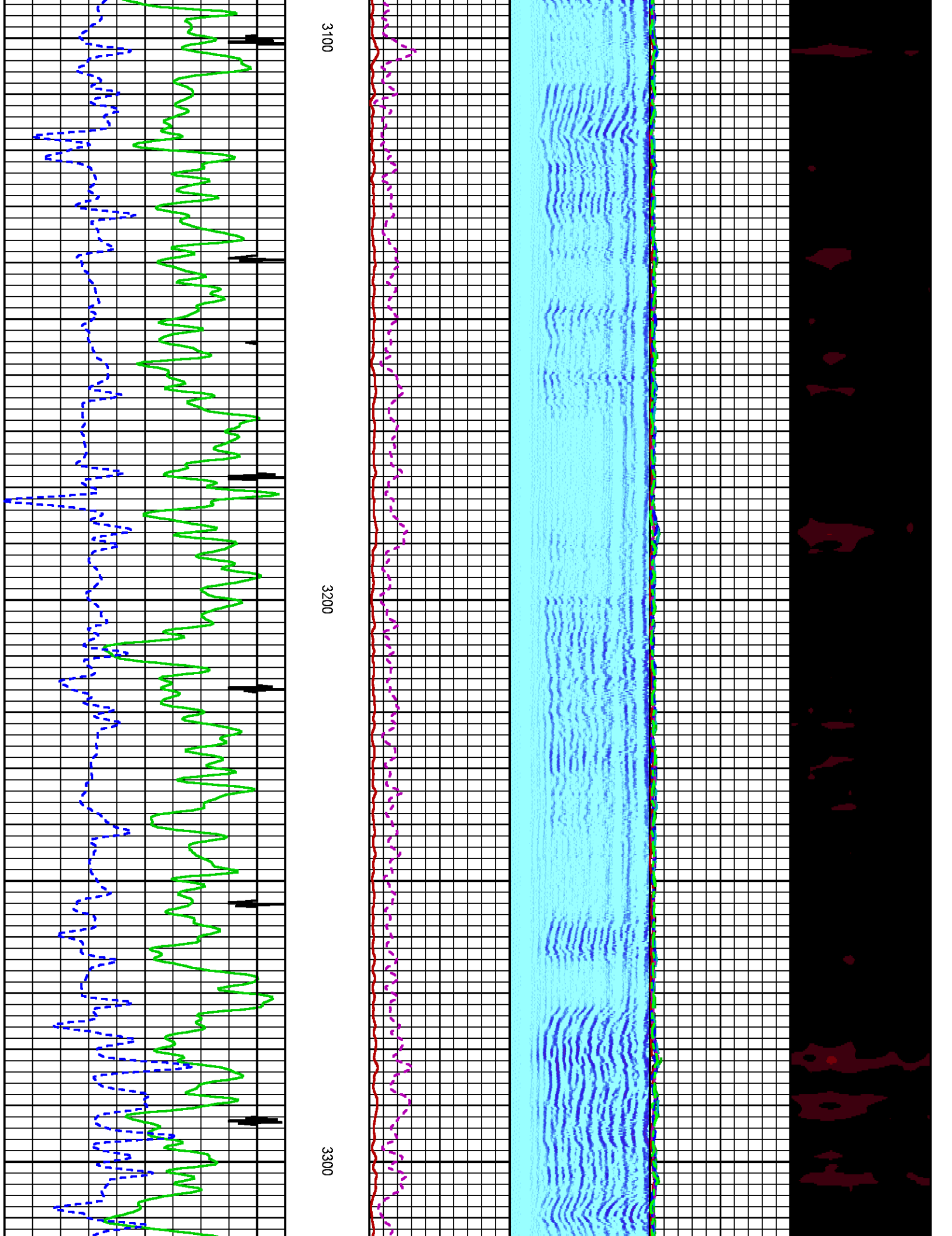




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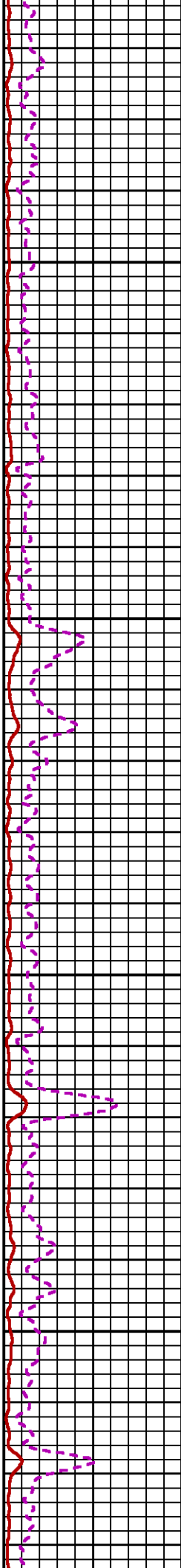
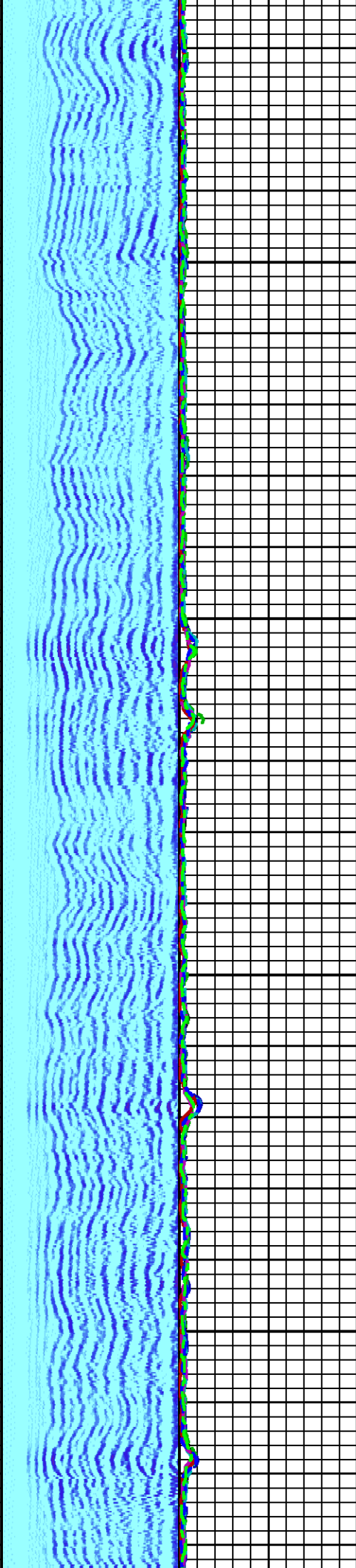
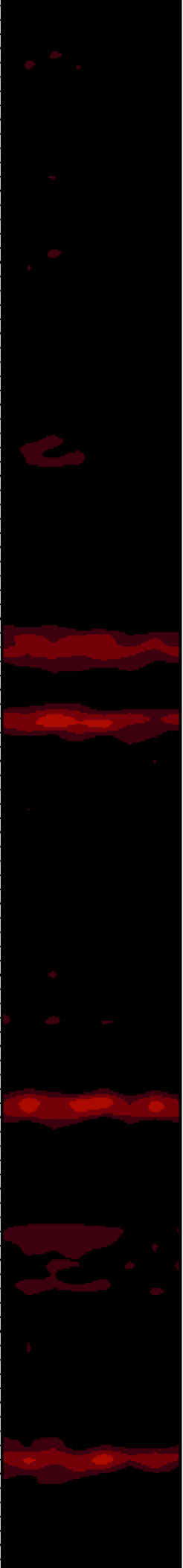




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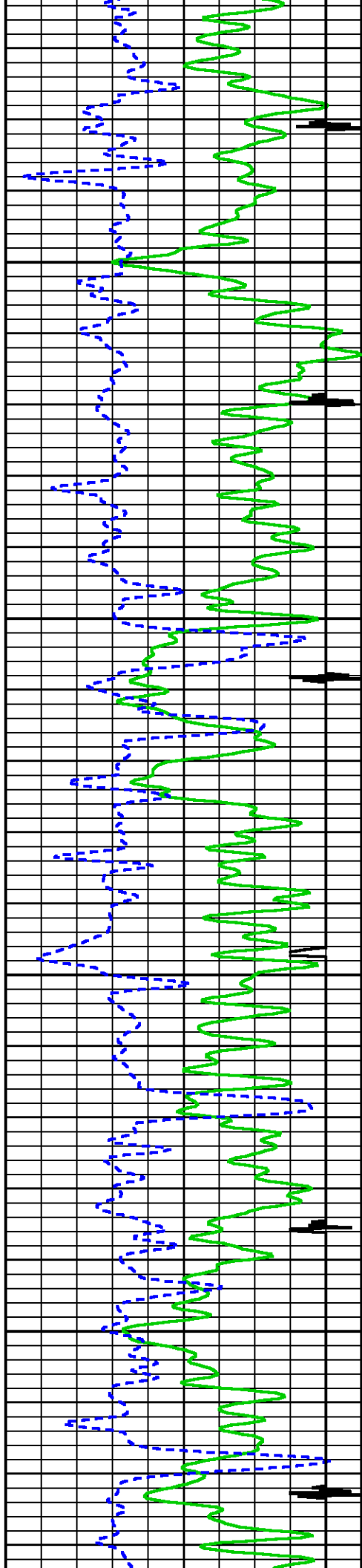
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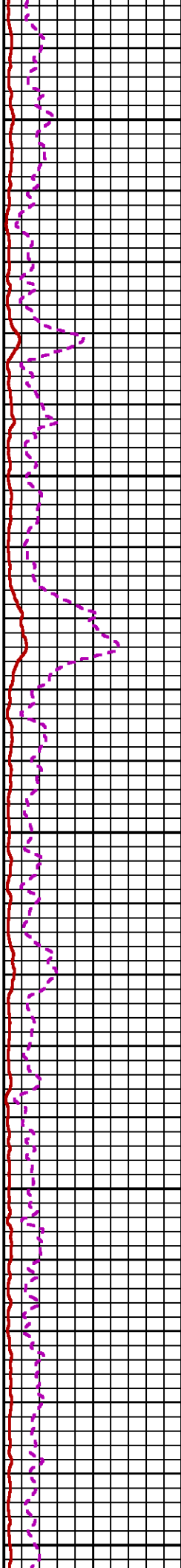
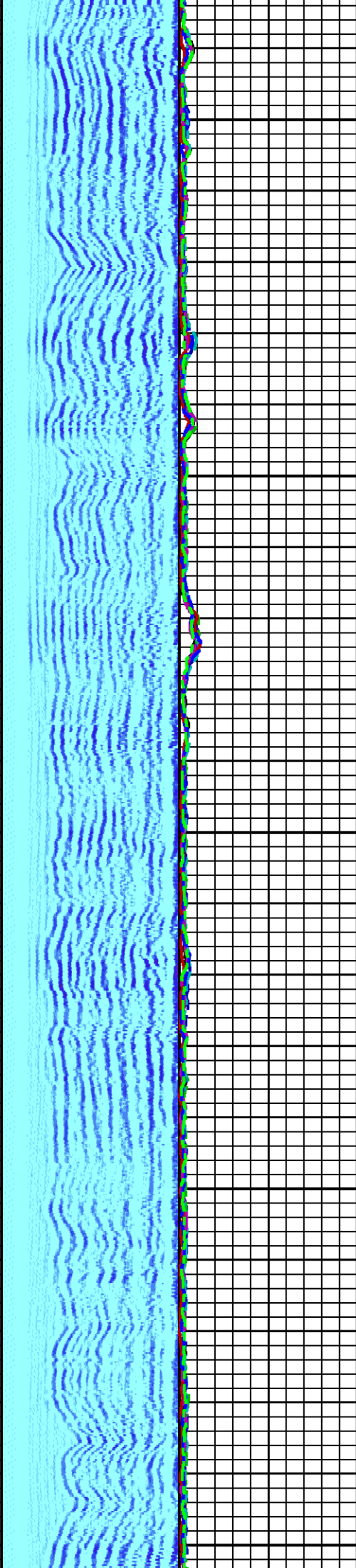
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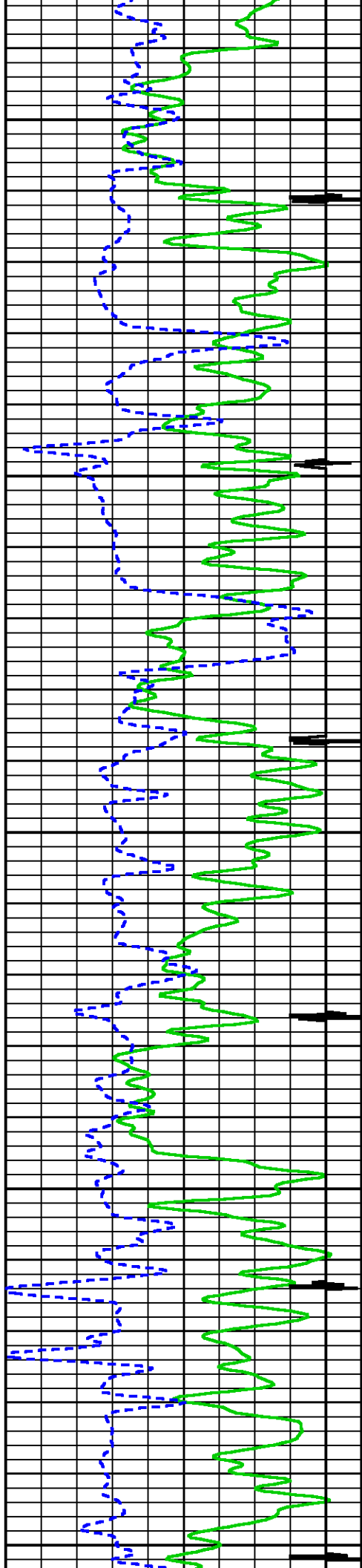
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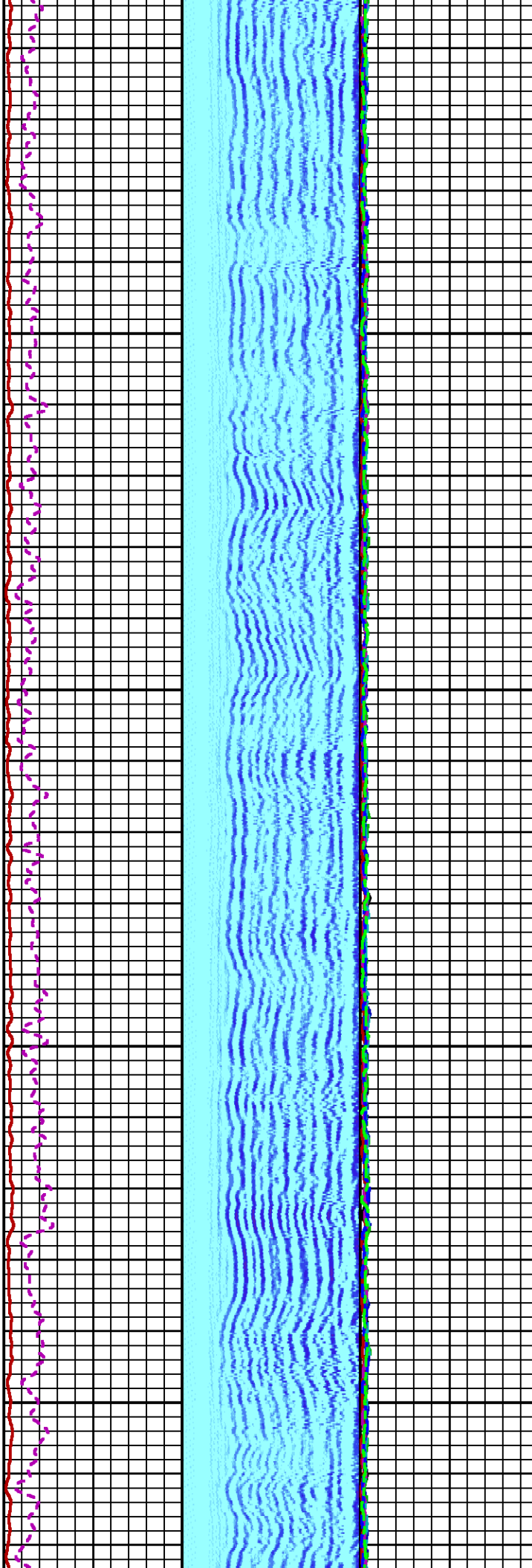
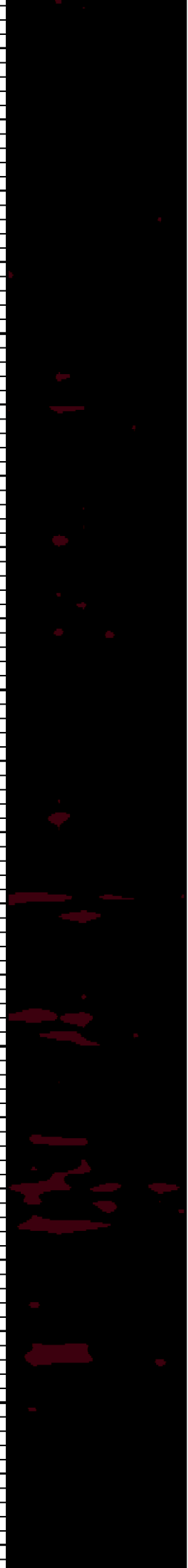




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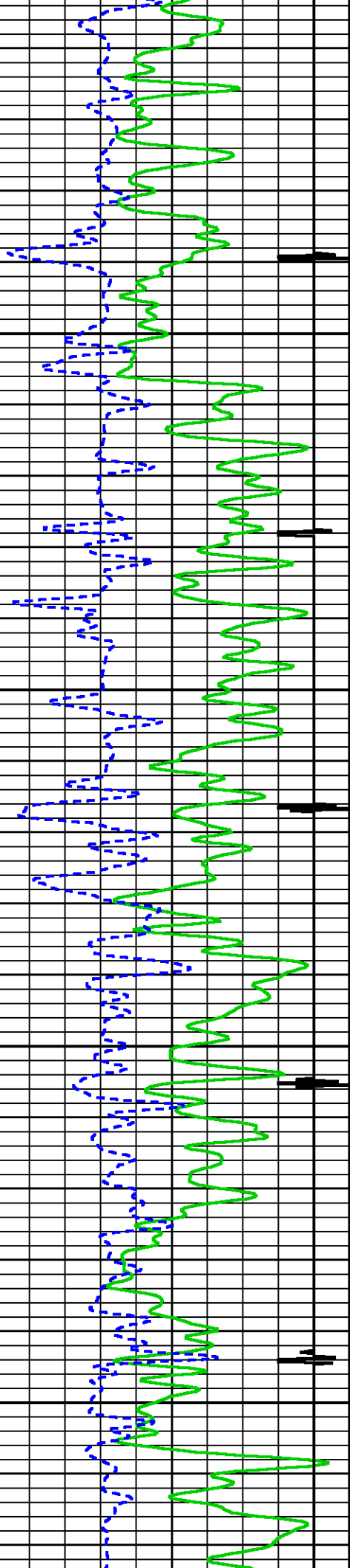
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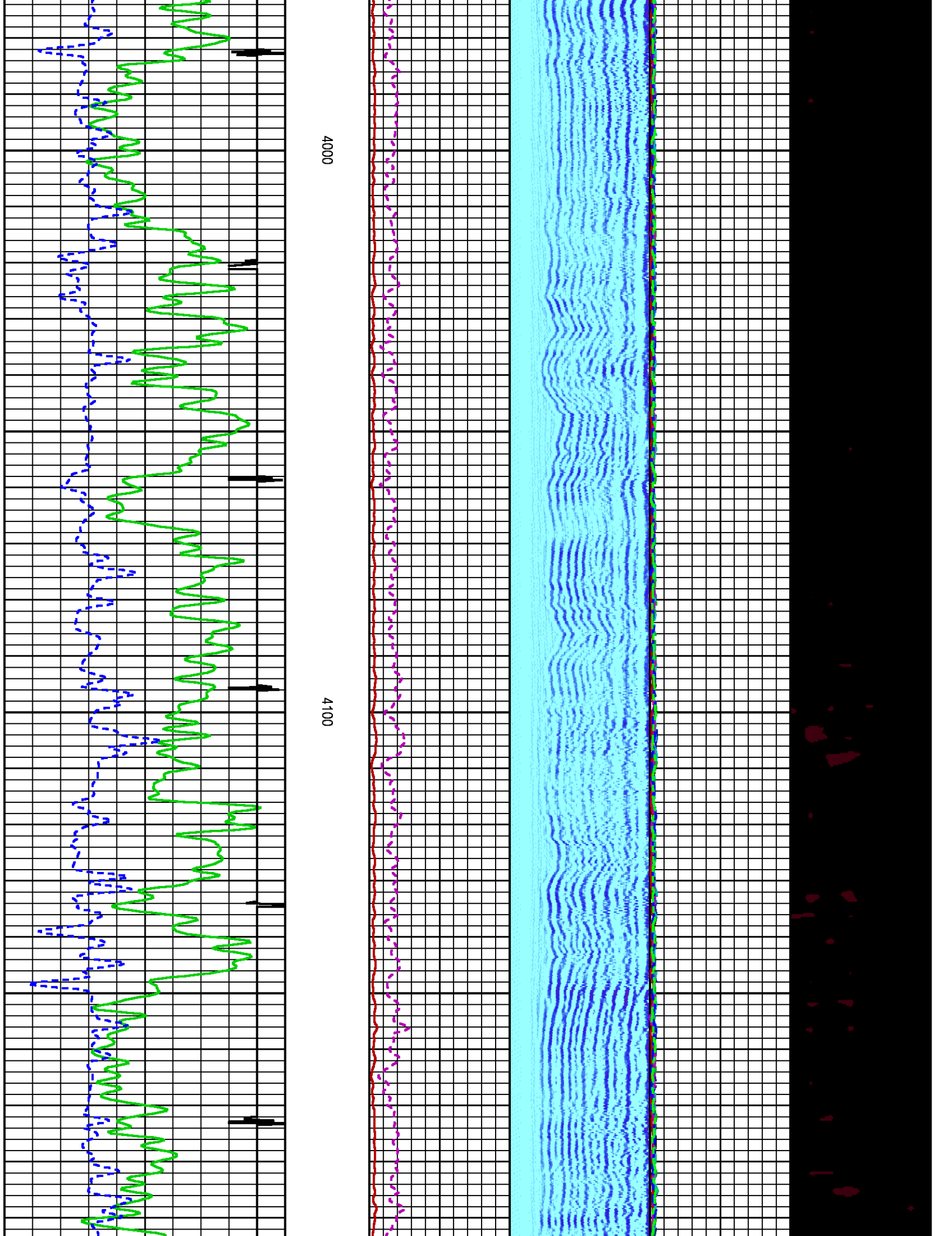


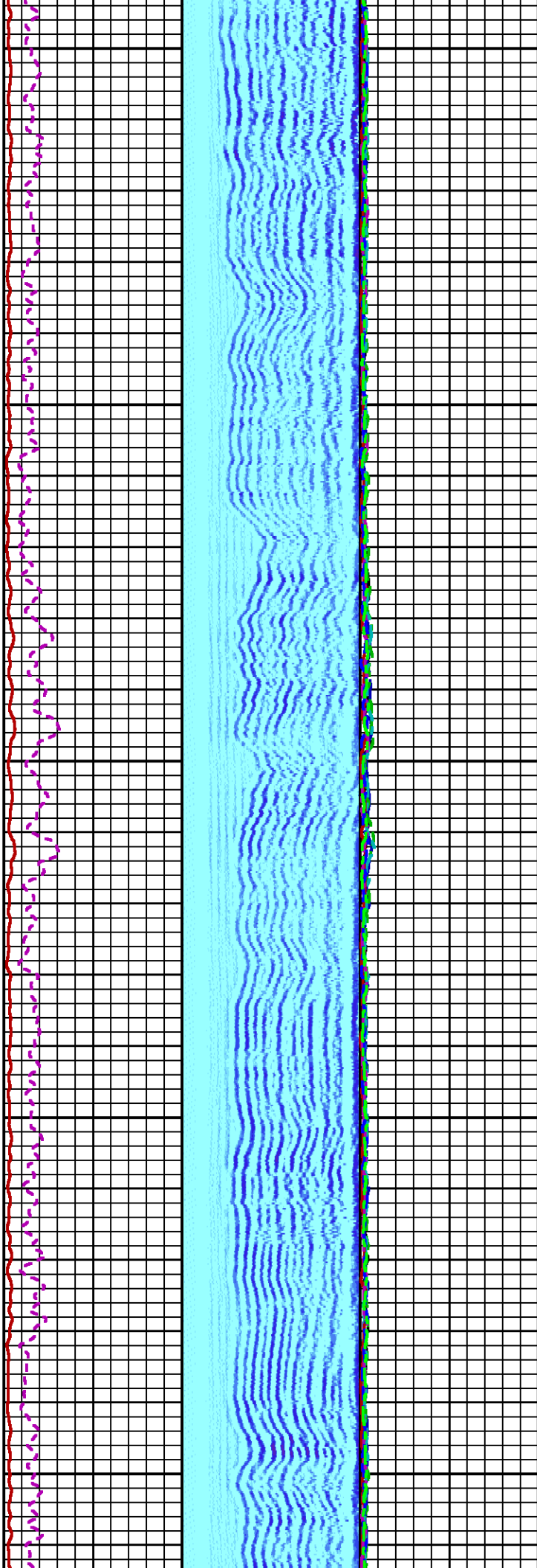


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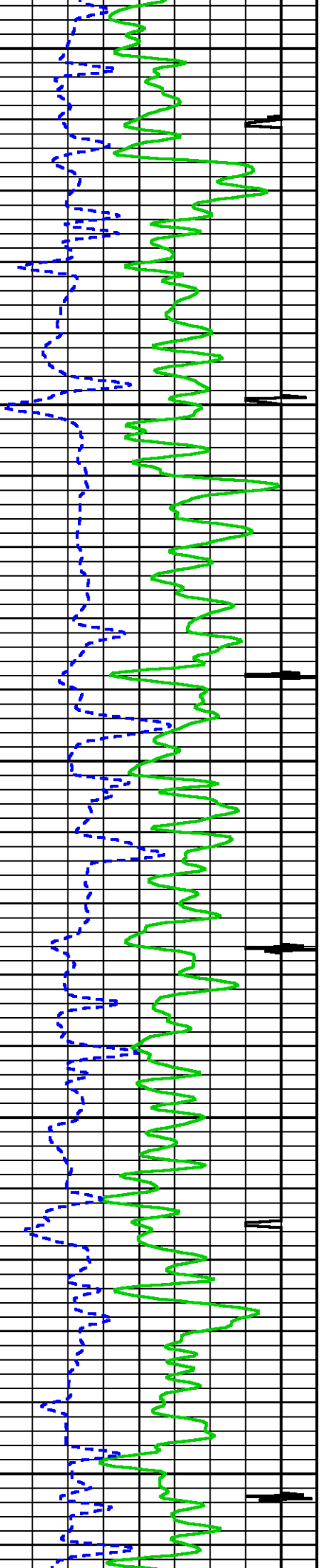


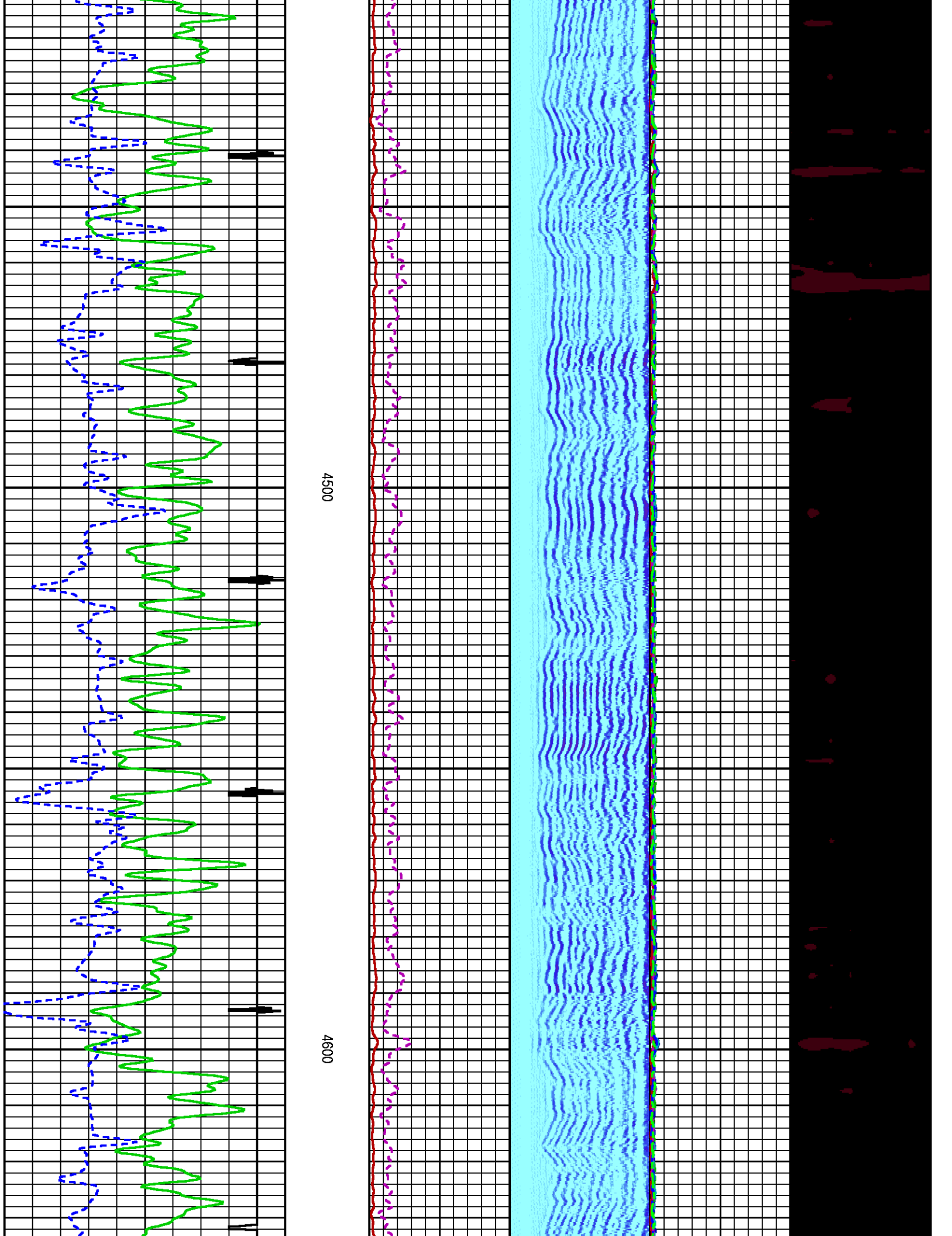


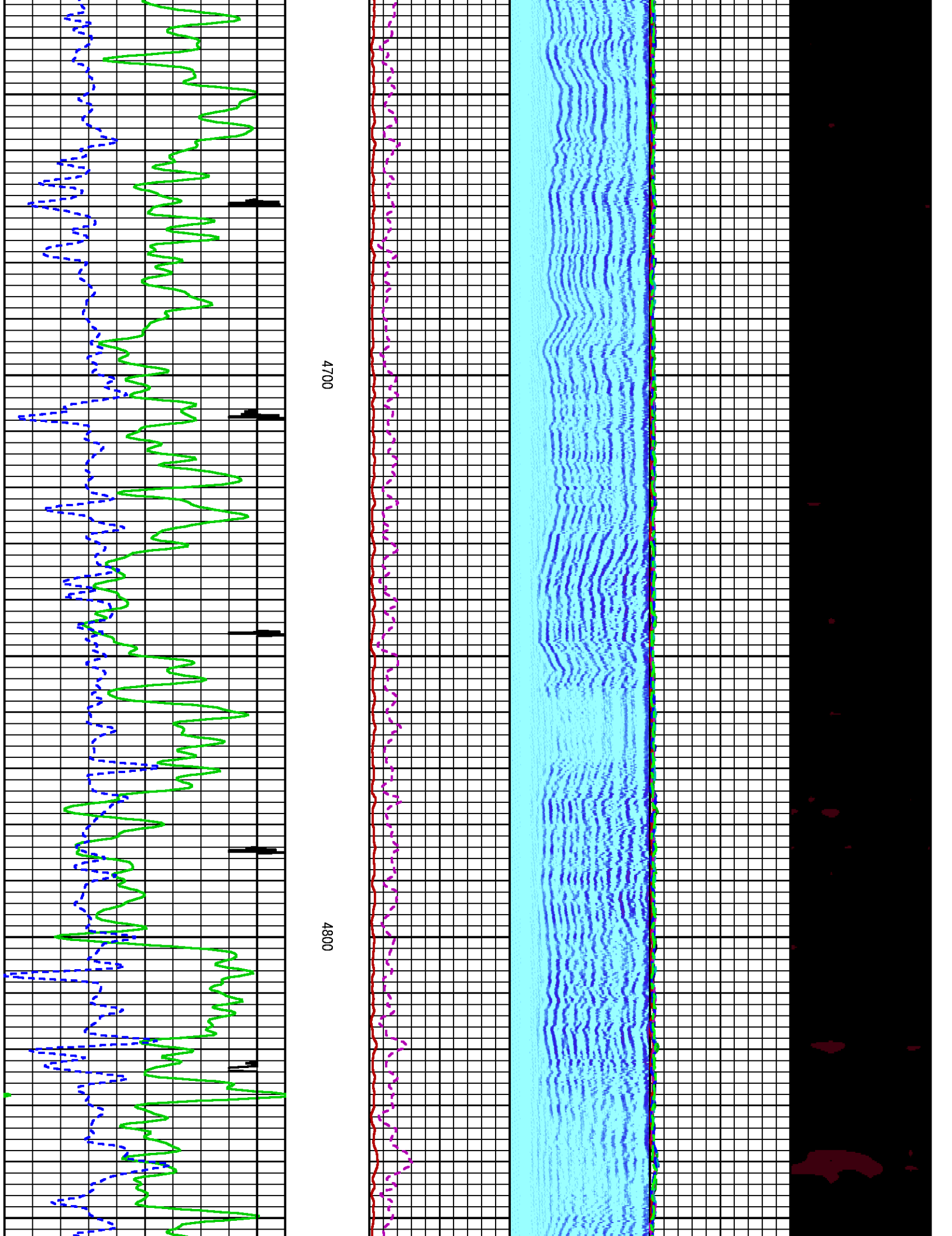
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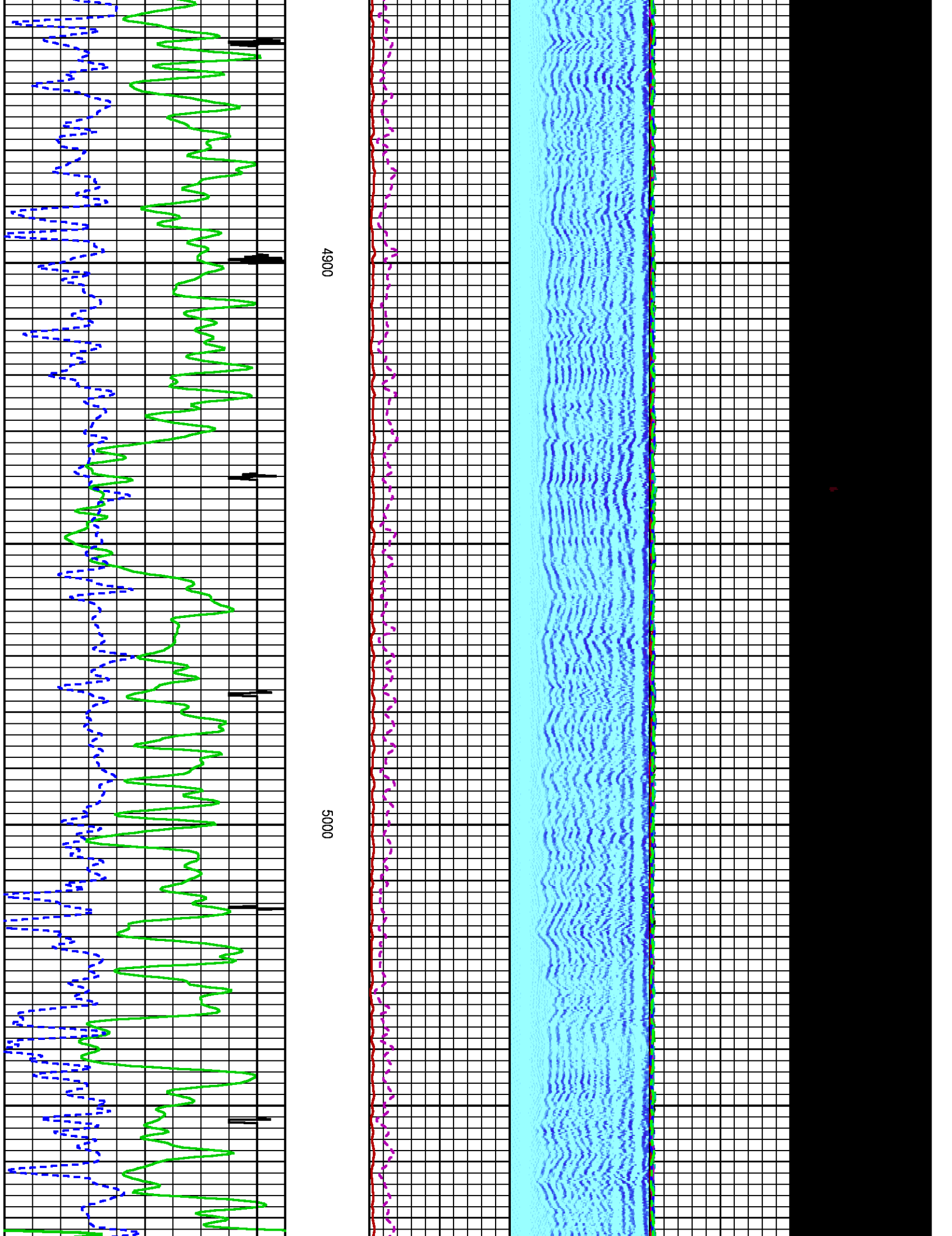
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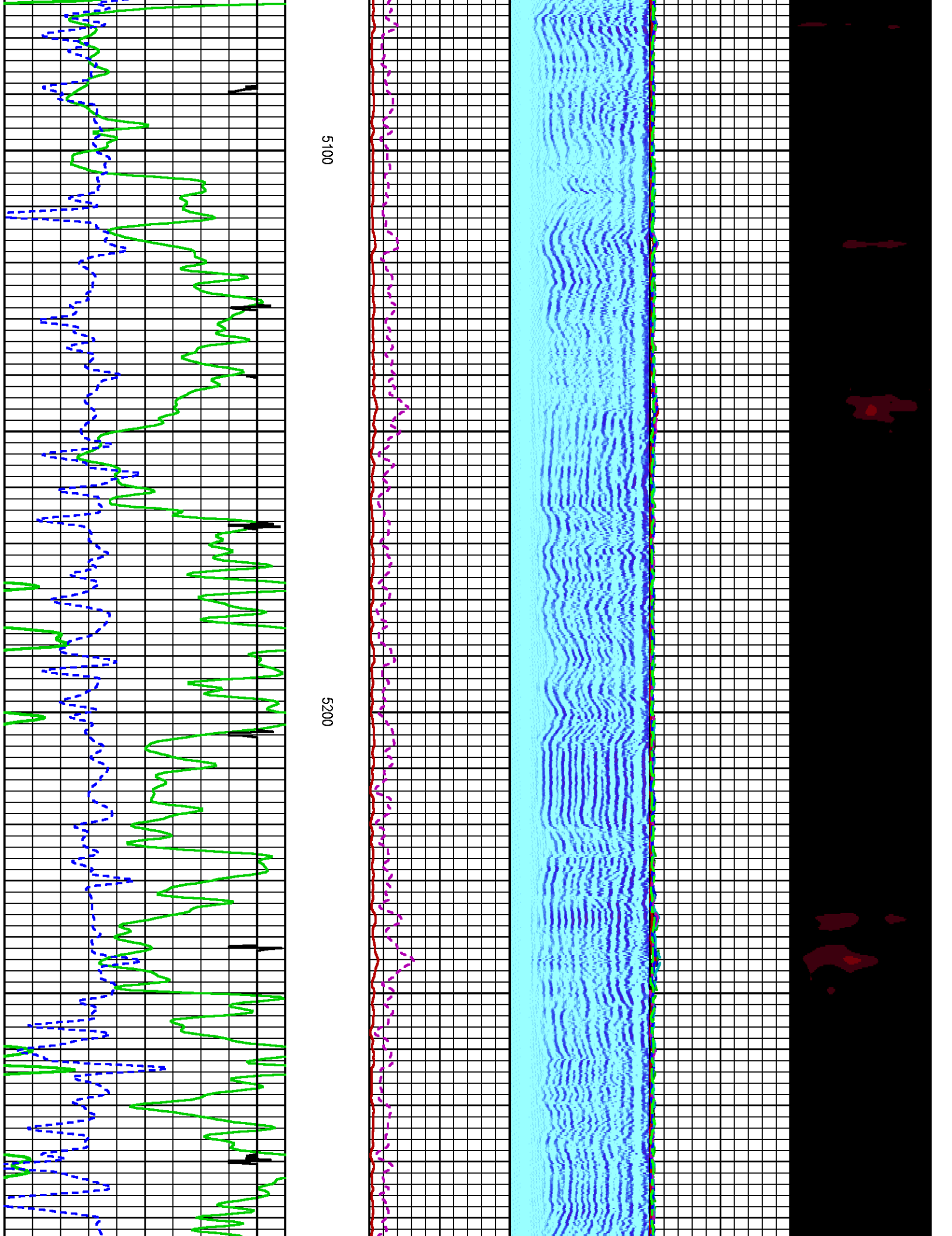
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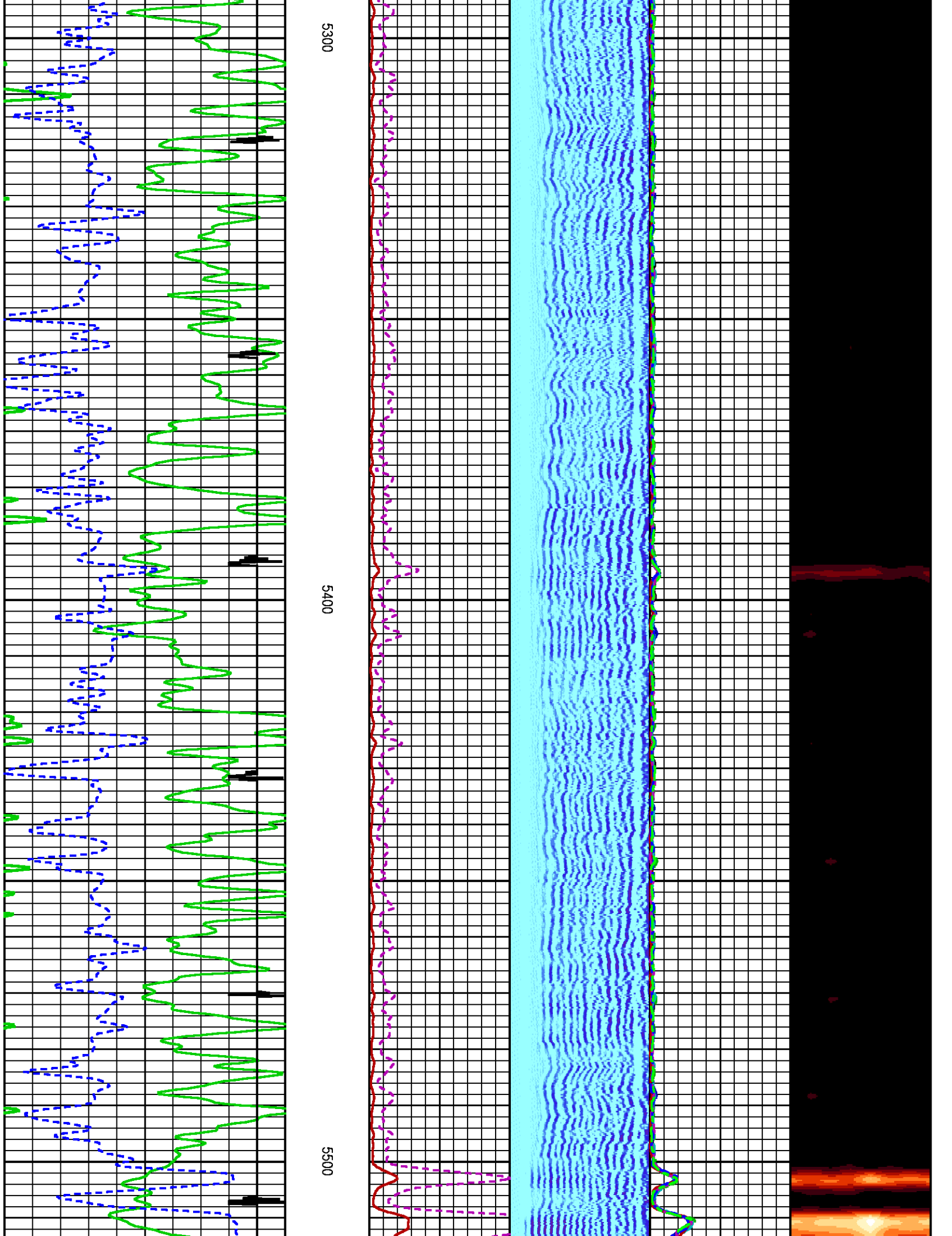


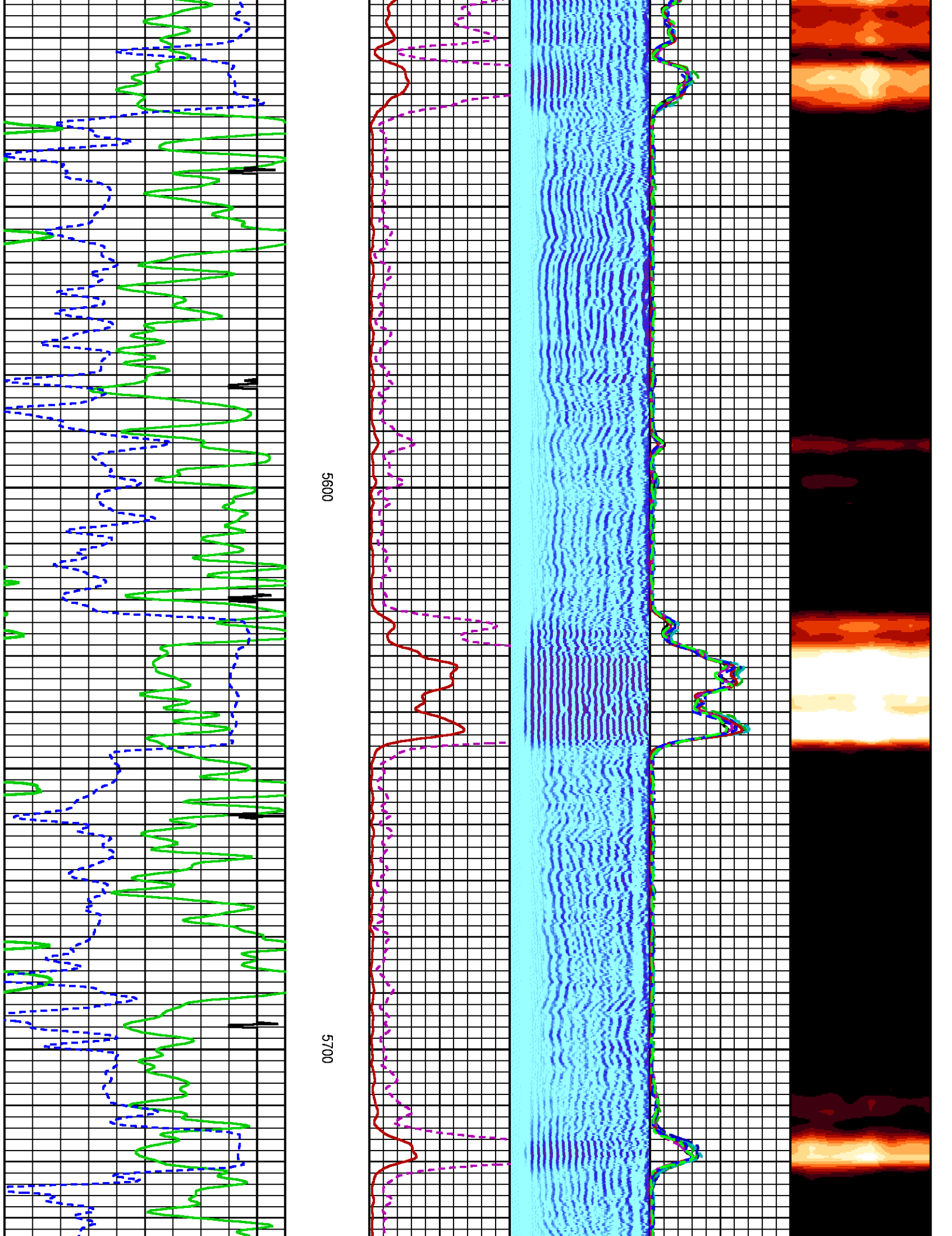


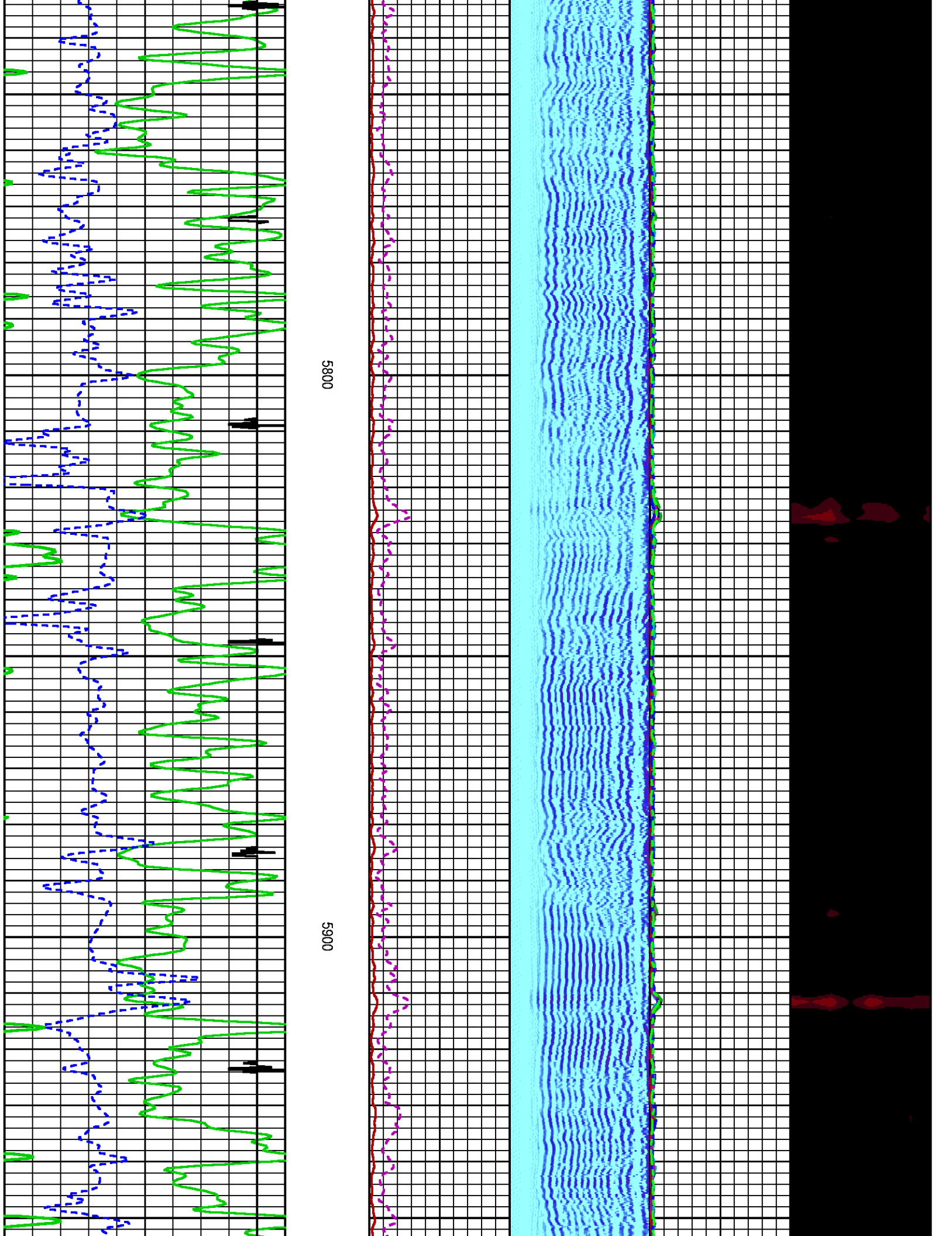


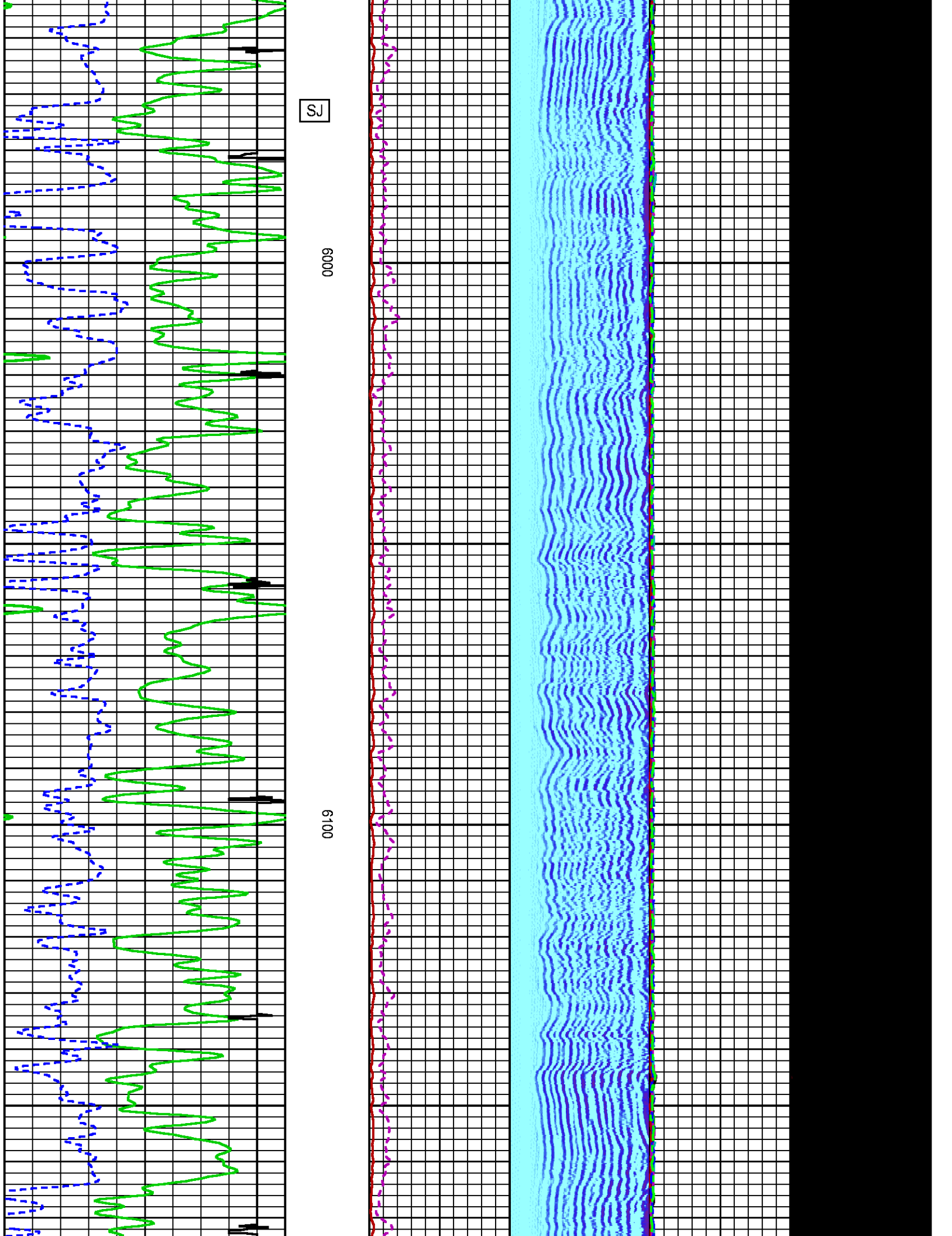


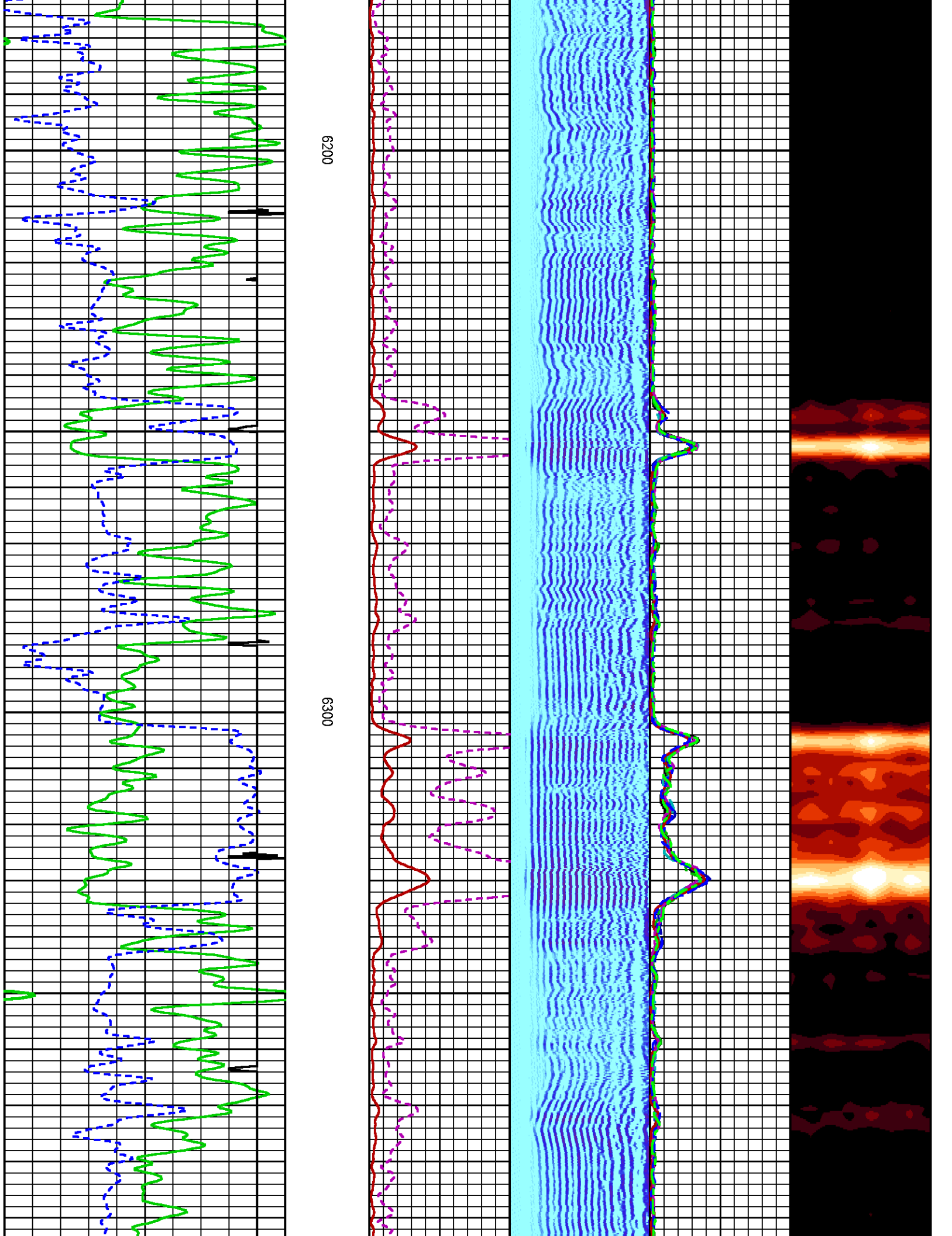


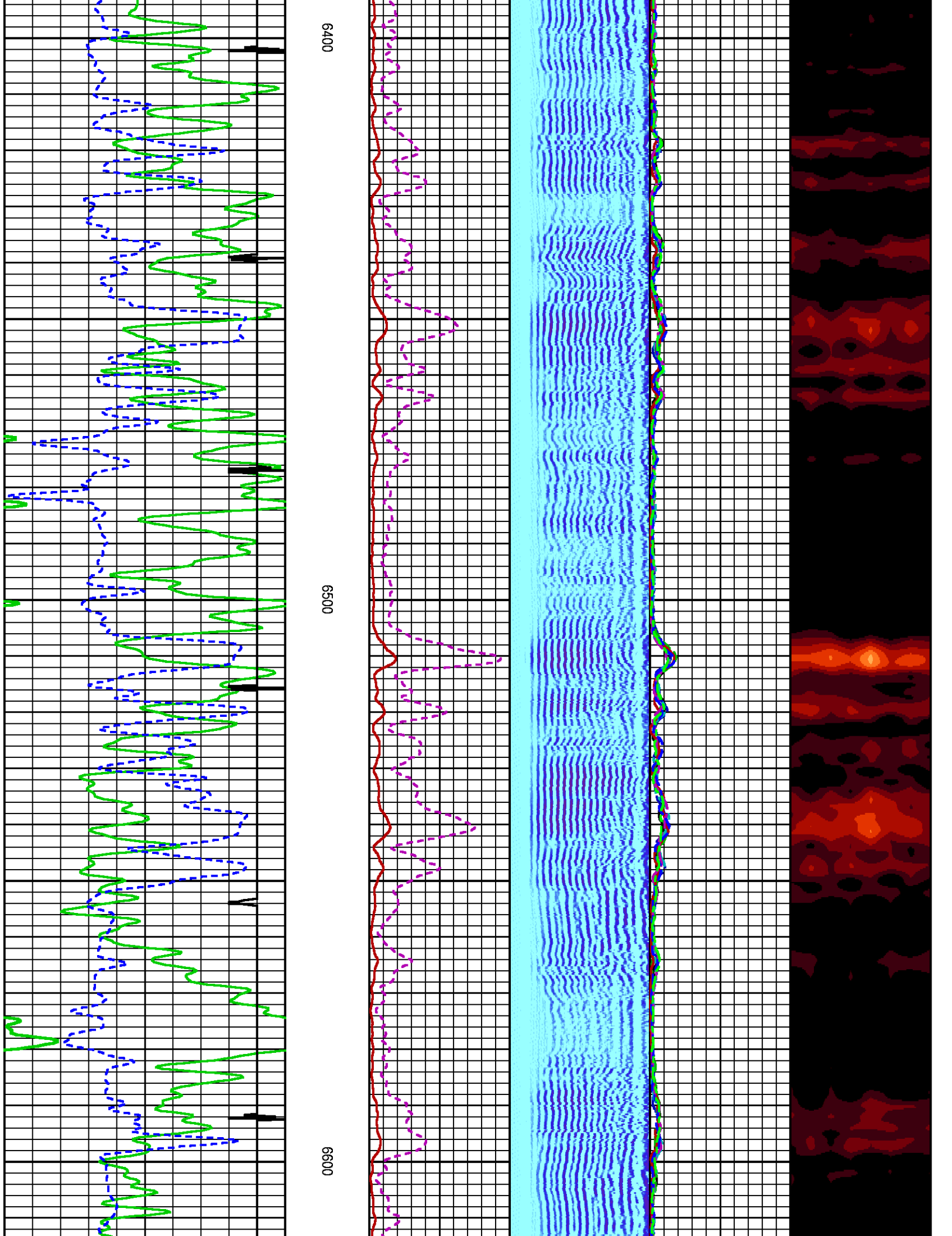


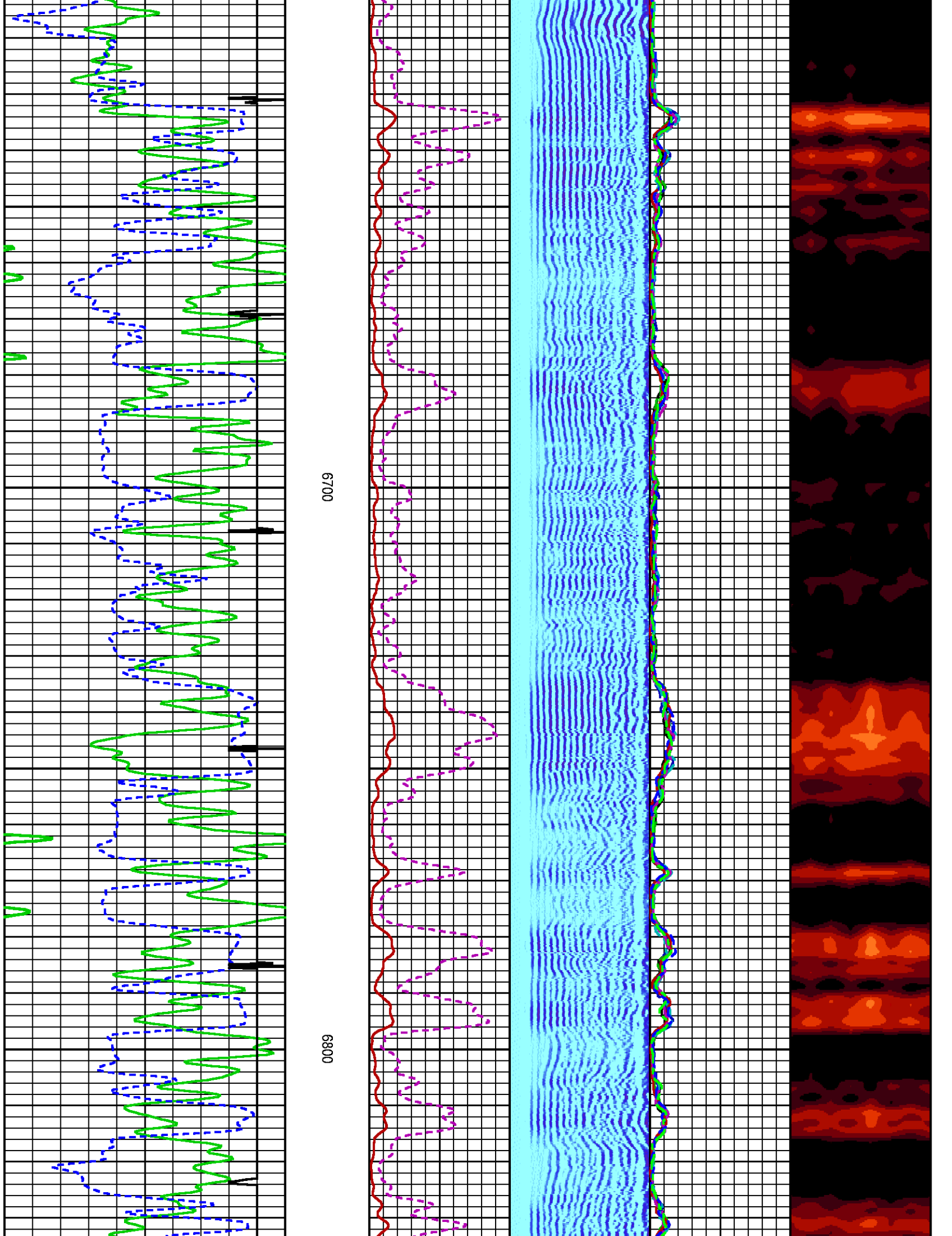


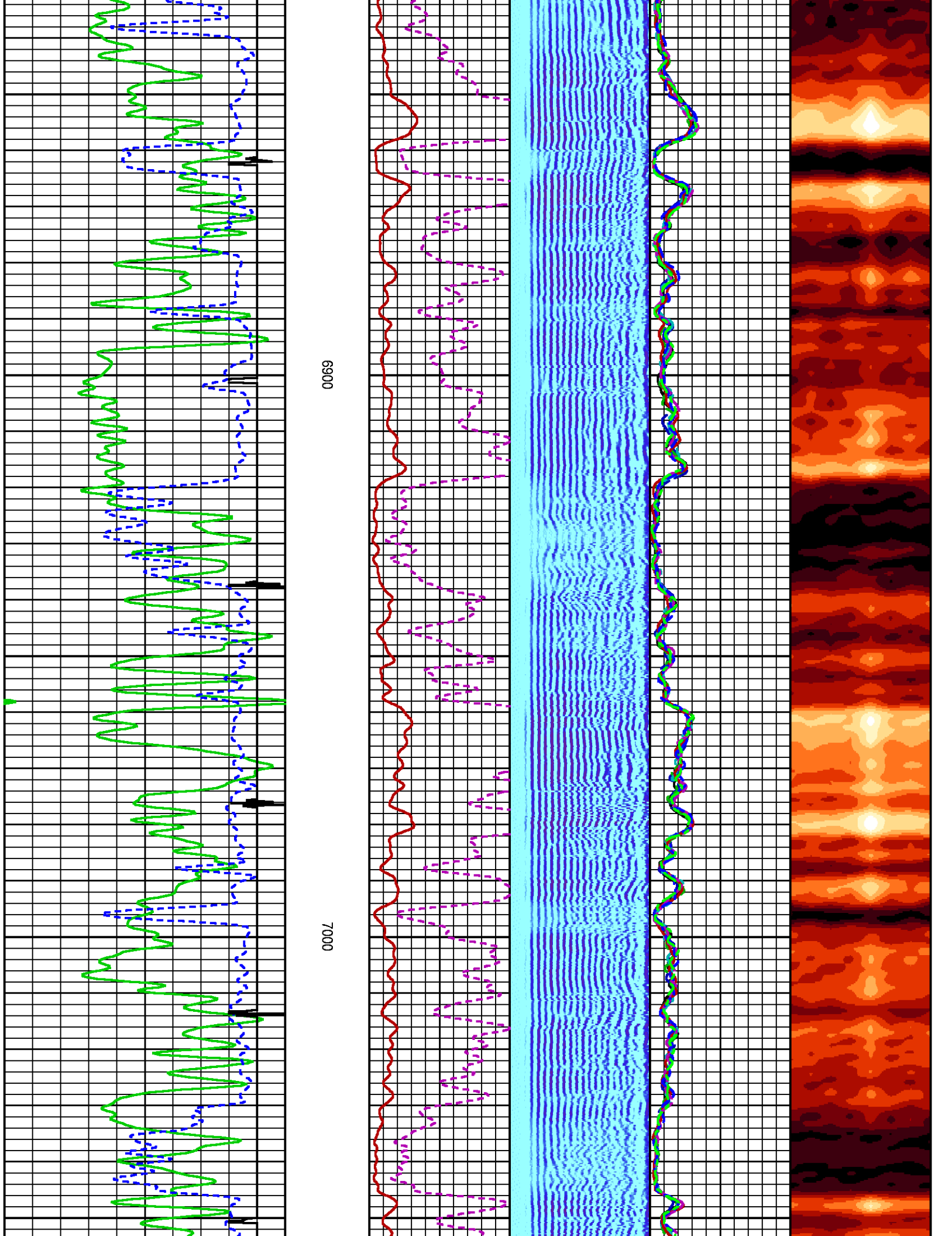


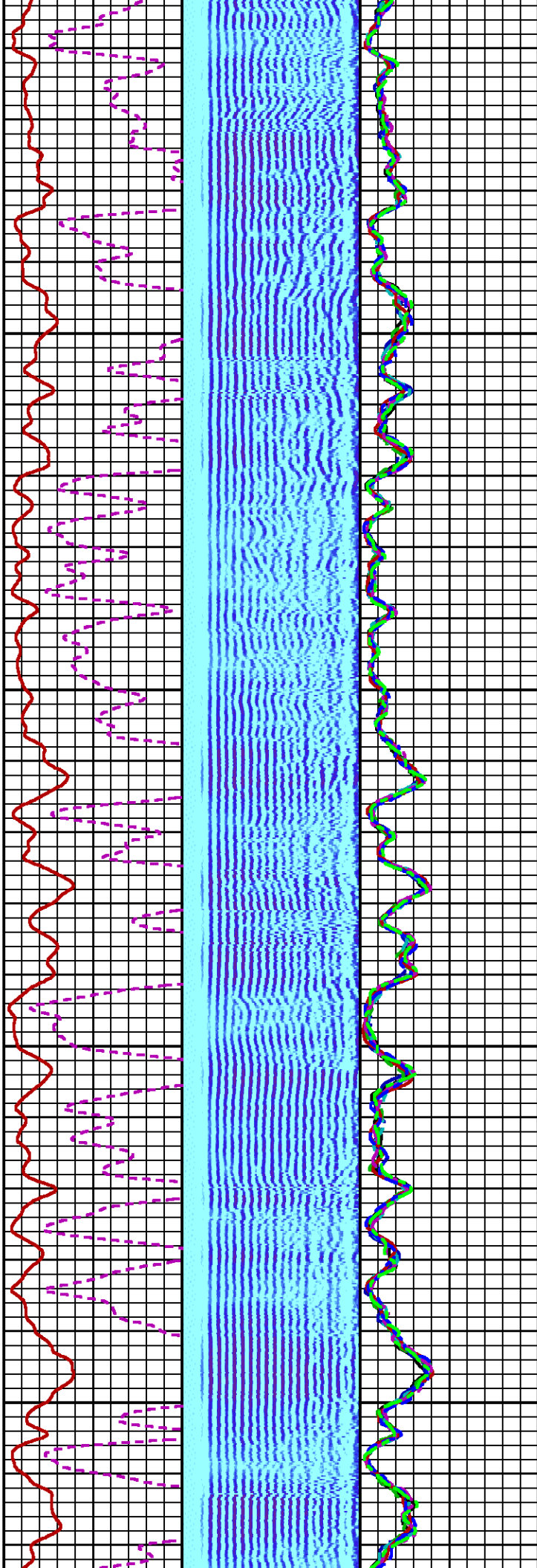
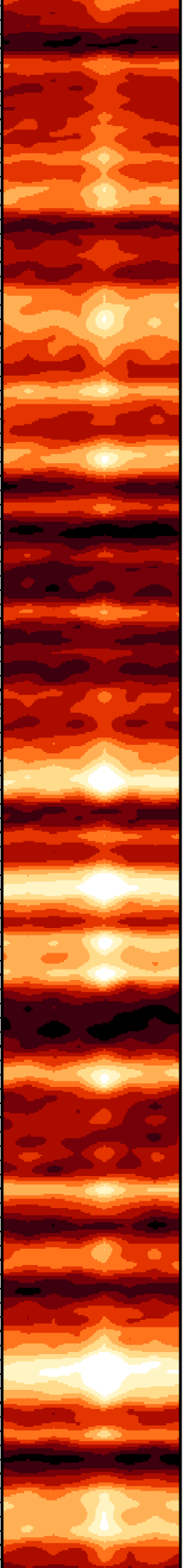








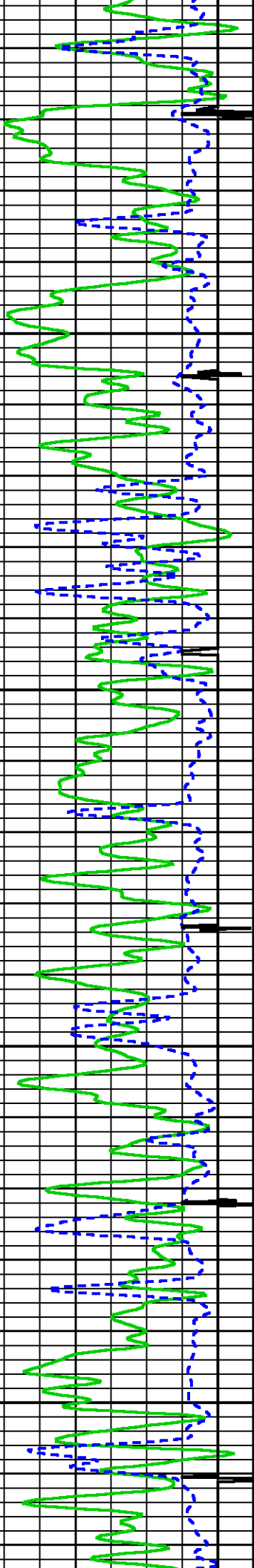


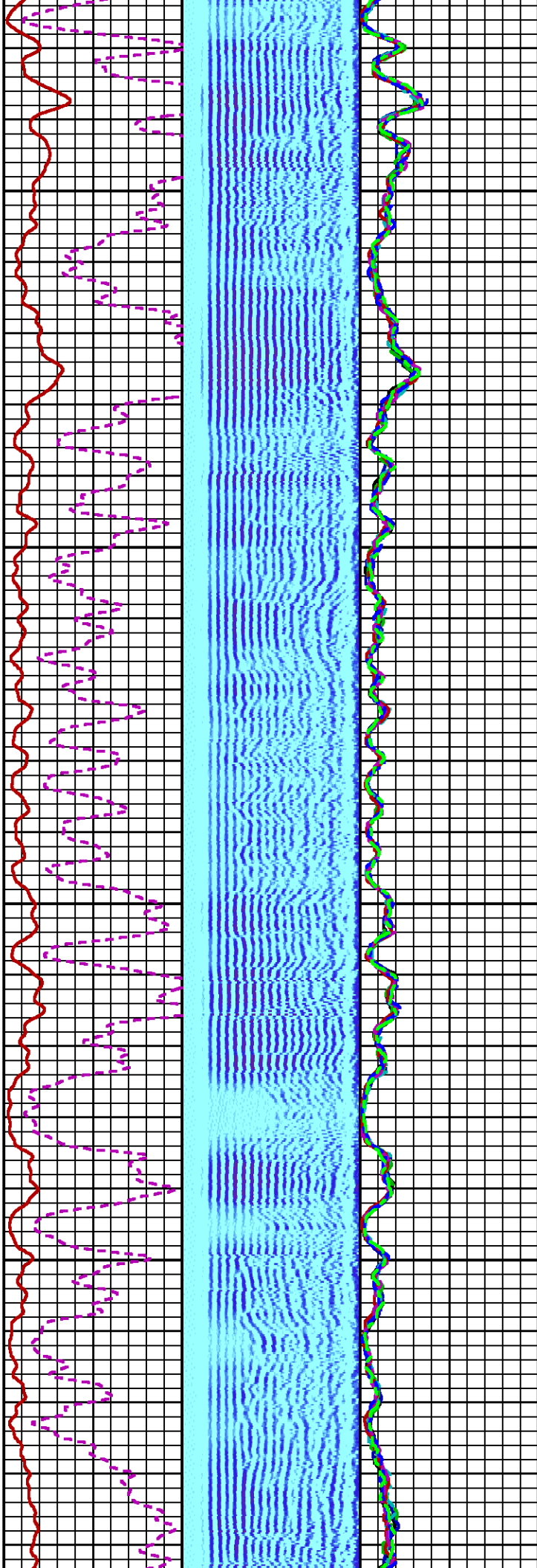
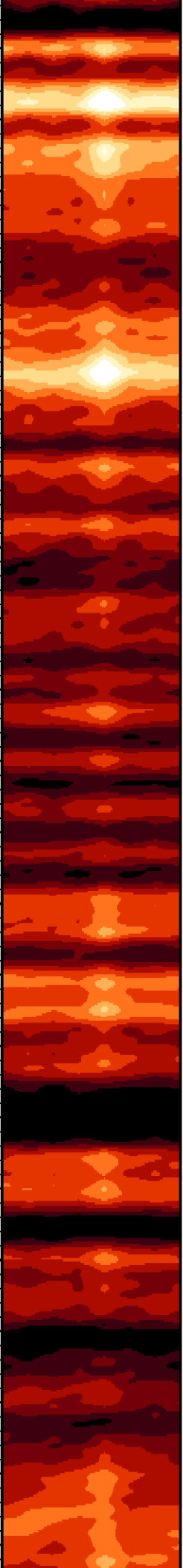


SJ

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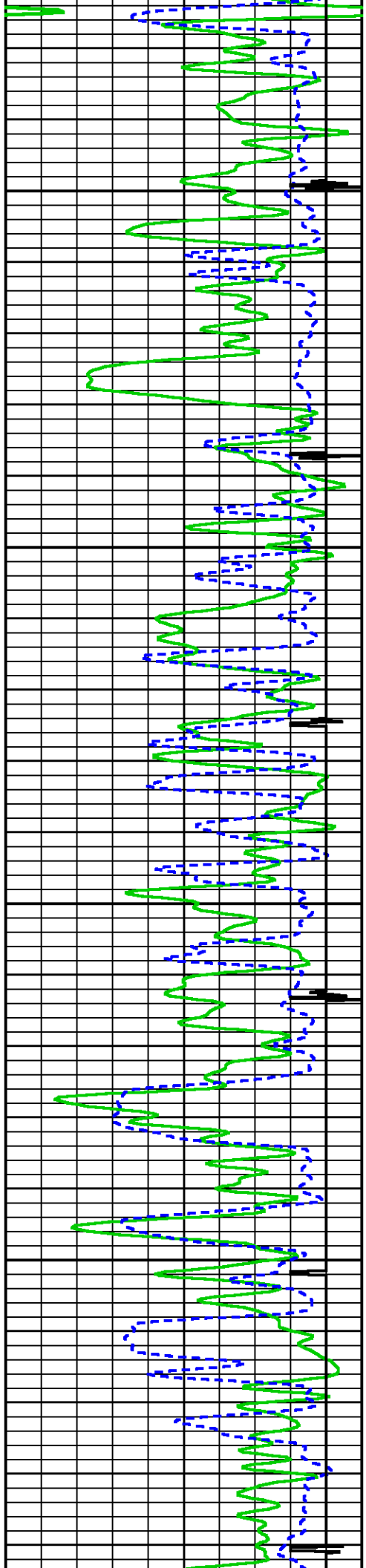
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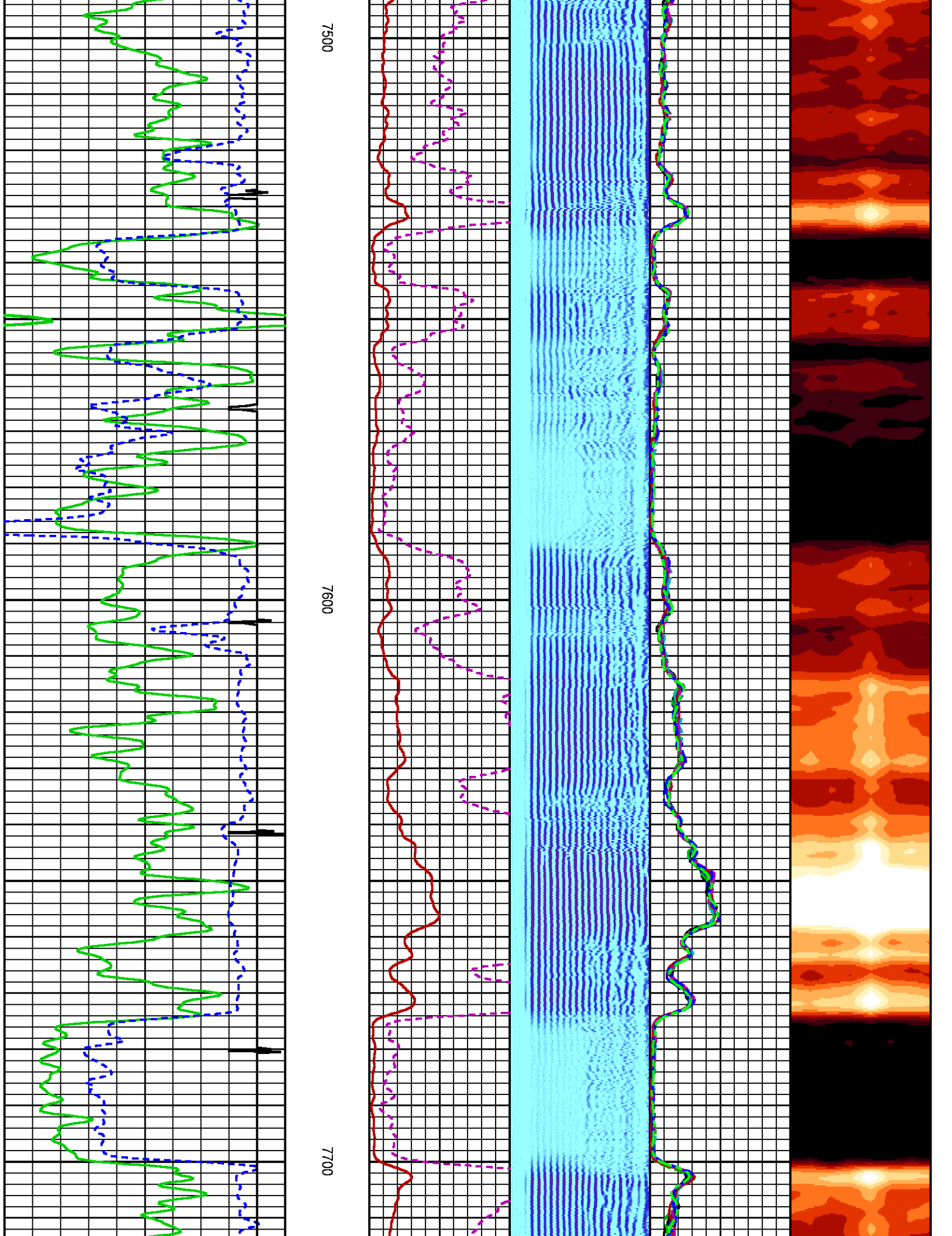


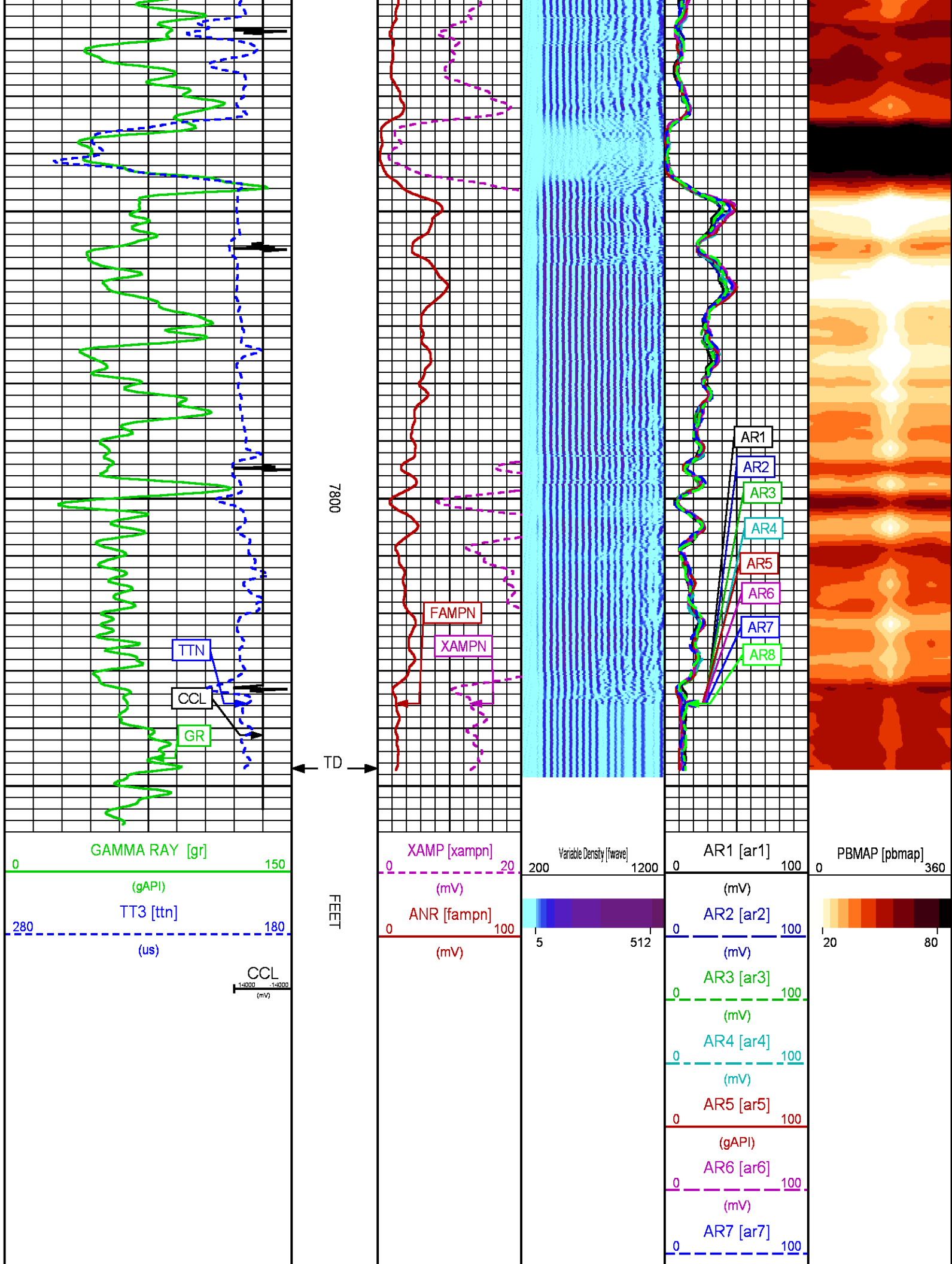


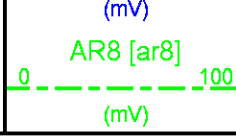
7300

7400









REPEAT 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 18:14:11 2018

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE_BRUTON_30_17E/p012g01.prm
LOGGING MODE: DEPTH DIRECTION: UP
TOP DEPTH: 7604.500 ft BOTTOM DEPTH: 7839.000 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	5000.00		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*)	-69	us	"	"
	TOOL DELAY (str2*)	-69	us	"	"
	TOOL DELAY (str3*)	-69	us	"	"
	TOOL DELAY (str4*)	-69	us	"	"
	TOOL DELAY (str5*)	-69	us	"	"
	TOOL DELAY (str6*)	-69	us	"	"
	TOOL DELAY (str7*)	-69	us	"	"
	TOOL DELAY (str8*)	-69	us	"	"
	TOOL DELAY (strn*)	-69	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	"	"

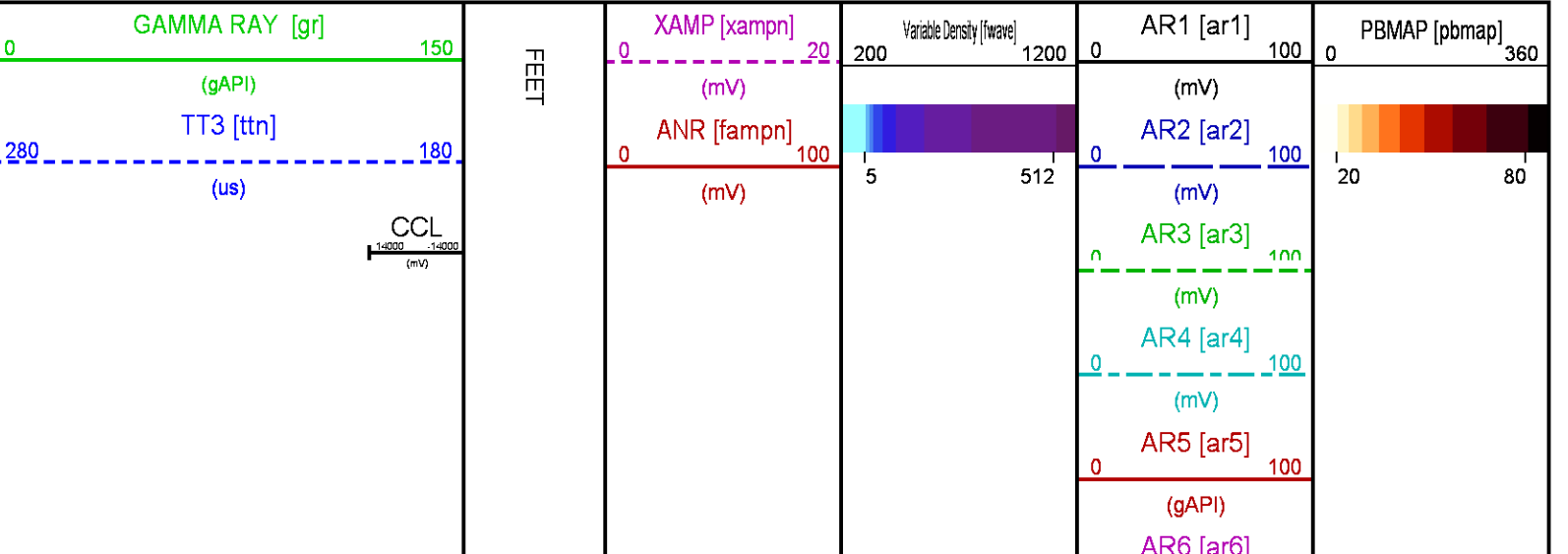
CURVE DESCRIPTION REPORT

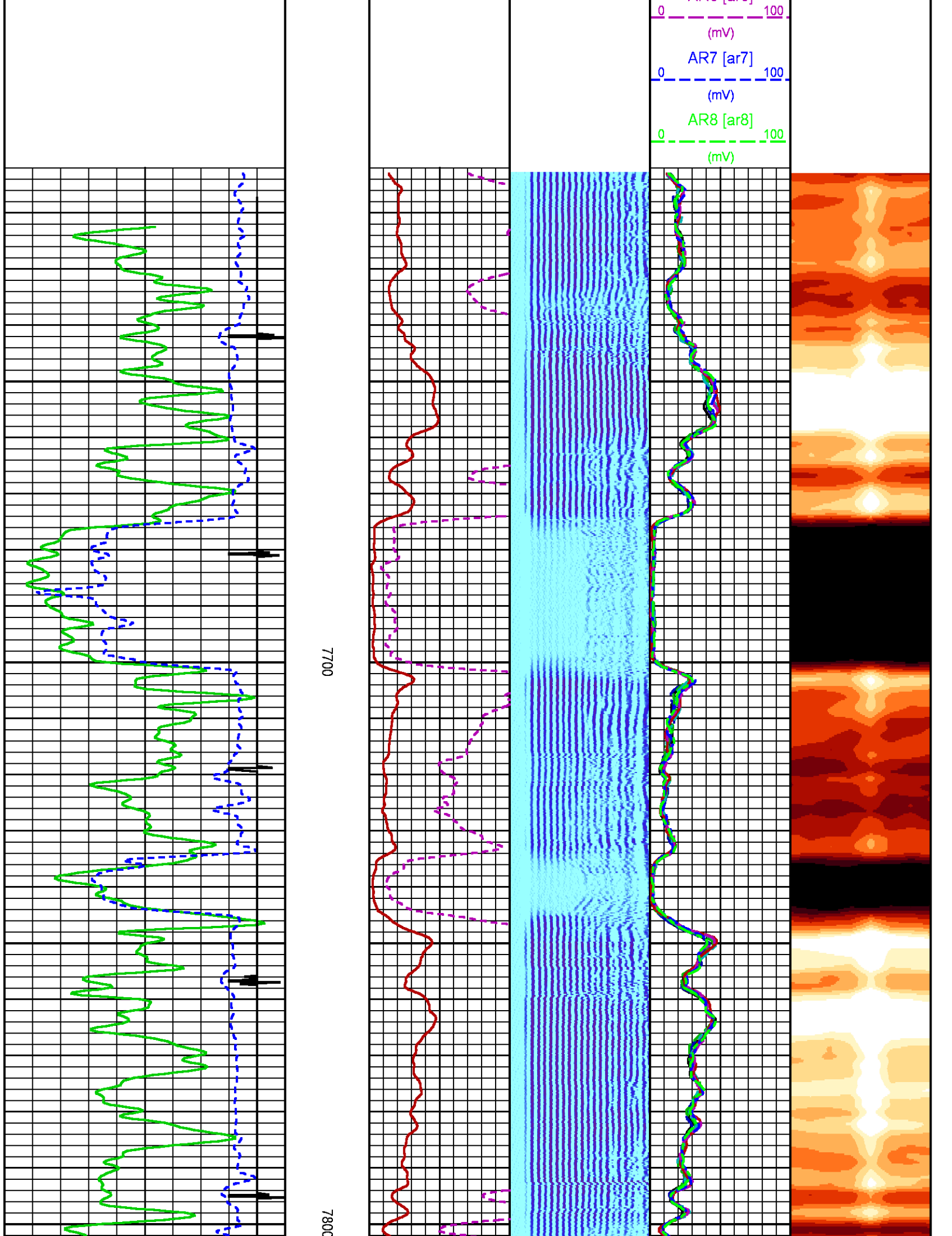
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AR1	N/A	FIXED GATE AMPLITUDE T-R1
F1:AR2	N/A	FIXED GATE AMPLITUDE T-R2
F1:AR3	N/A	FIXED GATE AMPLITUDE T-R3
F1:AR4	N/A	FIXED GATE AMPLITUDE T-R4
F1:AR5	N/A	FIXED GATE AMPLITUDE T-R5
F1:AR6	N/A	FIXED GATE AMPLITUDE T-R6
F1:AR7	N/A	FIXED GATE AMPLITUDE T-R7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

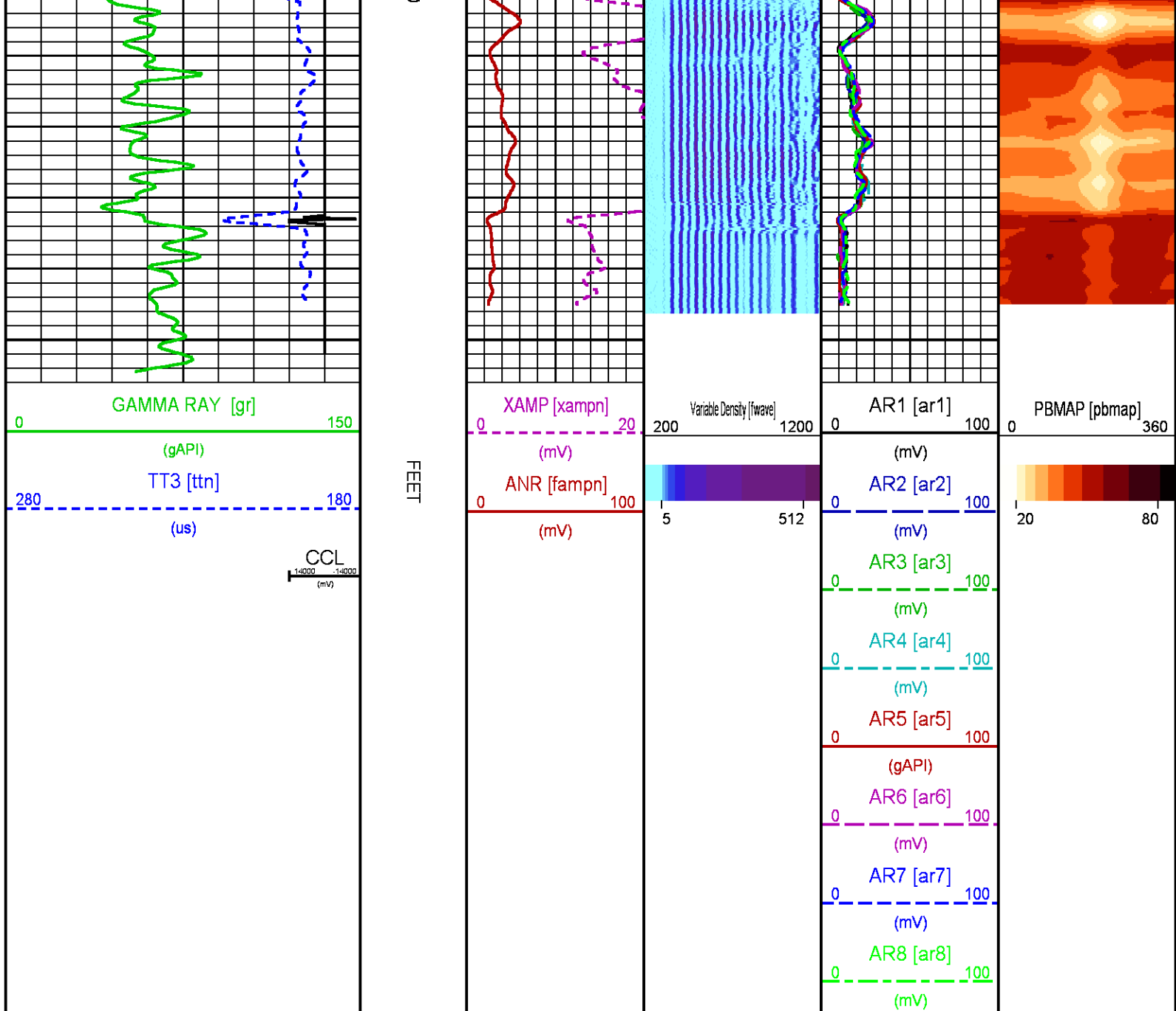
CURVE MEASURE POINT OFFSET

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_17E/LARAMIE_RAL+01-REPEAT-RAL_RPT_17E-5.fvpdf [5"/100' Scale]
Plot Interval	: 7594.25 - 7837.75 Feet
Data File 1	: F1 : SysA:/dat1a/LARAMIE_BRUTON_30_17E/RAL_RPT_17E.xtf
Created On	: N/A
Company	: LARAMIE ENERGY LLC
Well	: BRUTON 30-17E
Field	: VEGA
File Interval	: 7593.25 - 7839 Feet
OCT	: p012g







CALIBRATION / VERIFICATION SUMMARY

Source File: /dat1a/LARAMIE_BRUTON_30_17E/p012g.tp1

RAL PRIMARY CALIBRATION SUMMARY

TOOL #: 1426XA 10124106

DATE/TIME PERFORMED: Sat Feb 10 15:02:01 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)	-0.13	-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 #: 1426XA 10124106 DATE/TIME PERFORMED: Sat Feb 10 17:06:13 2018 DAYS SINCE CAL: 0

UNIT #: 5753XD 111111 CABLE #: 4291CH SMALLLINE

	NEAR (mV)	R1 (mV)	R2 (mV)	R3 (mV)	R4 (mV)	R5 (mV)	R6 (mV)	R7 (mV)	R8 (mV)	FAR (mV)	CAL (mV)
ZERO	-0.26	-0.30	-0.30	-0.29	-0.35	-0.58	-0.32	-0.48	-0.34	-1.45	-0.10
AMP AIR	3.51	3.12	3.42	3.08	3.18	2.56	3.10	3.28	3.10	5.04	100.80

SHOP M FACTOR	SHOP A FACTOR	WIRELINE FACTOR
2.53	0.00	0.99

GR PRIMARY CALIBRATION SUMMARY

TOOL #: 1355XA 11871507 DATE/TIME PERFORMED: Fri Nov 17 14:10:53 2017

UNIT #: 3882TD HL6728 CALB JIG #: 4702NK DA_228

	BACKGROUND (cts)	CALBRTR ON (cts)	CR DIFF (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	CALBRTR (gAPI)
GR	59.07	162.98	103.9	0.962	56.84	156.84	100

GR PRIMARY VERIFICATION SUMMARY

TOOL #: 1355XA 11871507 DATE/TIME PERFORMED: Fri Nov 17 14:12:49 2017

UNIT #: 3882TD HL6728 VERI JIG #: 4702NK DA_228

	BACKGROUND (cts)	CALBRTR ON (cts)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	DIFF. (gAPI)
GR	59.73	170.53	0.962	57.49	164.11	106.63
						90.00 110.00

INSTRUMENT CONFIGURATION

Source File: /dat1a/LARAMIE_BRUTON_30_17E/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



ECLIPS

COMPANY

LARAMIE ENERGY LLC

WELL

BRUTON 30-17E

FIELD

VEGA

COUNTY

MESA

STATE COLORADO

FILE NO:

API NO:

05077104770000

LOCATION:

SHL: 2645' FSL & 1859' FEL

BHL: 1117' FSL & 1341' FEL

ELEVATIONS:

KB 7673 FT

DF 7672 FT

GL 7643 FT

SEC 30 TWP 9S RGE 93W

DATE **10-Feb-2018**