



RADIAL CEMENT BOND LOG

FILE NO:

COMPANY

LARAMIE ENERGY

API NO:

WELL

BRUTON 19-06W

05077104260000

FIELD

VEGA

Version

COUNTY

MESA

STATE COLORADO

LOCATION:

SHL: 39.262765N; 107.815129W
BHL: 39.265826N; 107.816592W

OTHER SERVICES

SEC 19 TWP 9S RGE 93W

RPM

PERMANENT DATUM

GL

ELEVATION

7262 FT

LOG MEASURED FROM

KB

24 FT

ABOVE P.D.

DRILL. MEAS. FROM

KB

ELEVATIONS:

KB 7286 FT

DF 7285 FT

GL 7262 FT

DATE

03-Dec-2017

RUN

TRIP

1

1

SERVICE ORDER

US130063

DEPTH DRILLER

7656 FT

DEPTH LOGGER

7485 FT

BOTTOM LOGGED INTERVAL

7485 FT

TOP LOGGED INTERVAL

24 FT

TIME STARTED

10:30

TIME FINISHED

13:00

OPERATOR RIG TIME

2.5 HRS

TYPE OF FLUID IN HOLE

FRESHWATER

FLUID DENSITY

NA

FLUID SALINITY

NA

FLUID LEVEL

30 FT

LOGGED CEMENT TOP

1484 FT

WELLHEAD PRESSURE

0 PSI

MAXIMUM HOLE DEVIATION

NA

NOMINAL LOGGING SPEED

90 FMIN

MAX. RECORDED TEMP.

236 DEGF

REFERENCE LOG

NA

REFERENCE LOG DATE

NA

EQUIP. NO.

6670HL

LOCATION

WOODWARD

RECORDED BY

C.COFFELT

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 IN CENTRALIZED

LOGGED WITH 0 PSI ON WELLHEAD

SJ: 5669' - 5691'

SJ: 6672' - 6694'

CREW: J.PENA,C.BAYNE,A.SHAHNOOSHI

EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
1	1	RAL	1426 XA	10124106	CENTRALIZED
1	1	GR/CCL	1355 XA	11871507	CENTRALIZED

RAL MAIN PASS

ECLIPS 7.0w PC-ECLIPS General Release Rel 7.0w Fri Jun 09 11:02:06 Central Daylight Time 2017
Patches: 2

Plotted: Mon Dec 04 11:56:04 2017

PARAMETER AND FILTER SUMMARY REPORT

FILE: C:\dat1a\LARAMIE_BRUTON_19_06Wp012g02.prm
LOGGING MODE: DEPTH DIRECTION: UP
TOP DEPTH: 0.000 ft BOTTOM DEPTH: 7509.500 ft

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
GR	FILTER ()	medium (1)		TOP	BOTTOM
AMPLITUDE	FILTER ()	light (2a)		"	"
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*)	160	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*)	-65	us	"	"
	TOOL DELAY (str2*)	-65	us	"	"
	TOOL DELAY (str3*)	-65	us	"	"
	TOOL DELAY (str4*)	-65	us	"	"
	TOOL DELAY (str5*)	-65	us	"	"
	TOOL DELAY (str6*)	-65	us	"	"
	TOOL DELAY (str7*)	-65	us	"	"
	TOOL DELAY (str8*)	-65	us	"	"
	TOOL DELAY (strn*)	-65	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	"	"

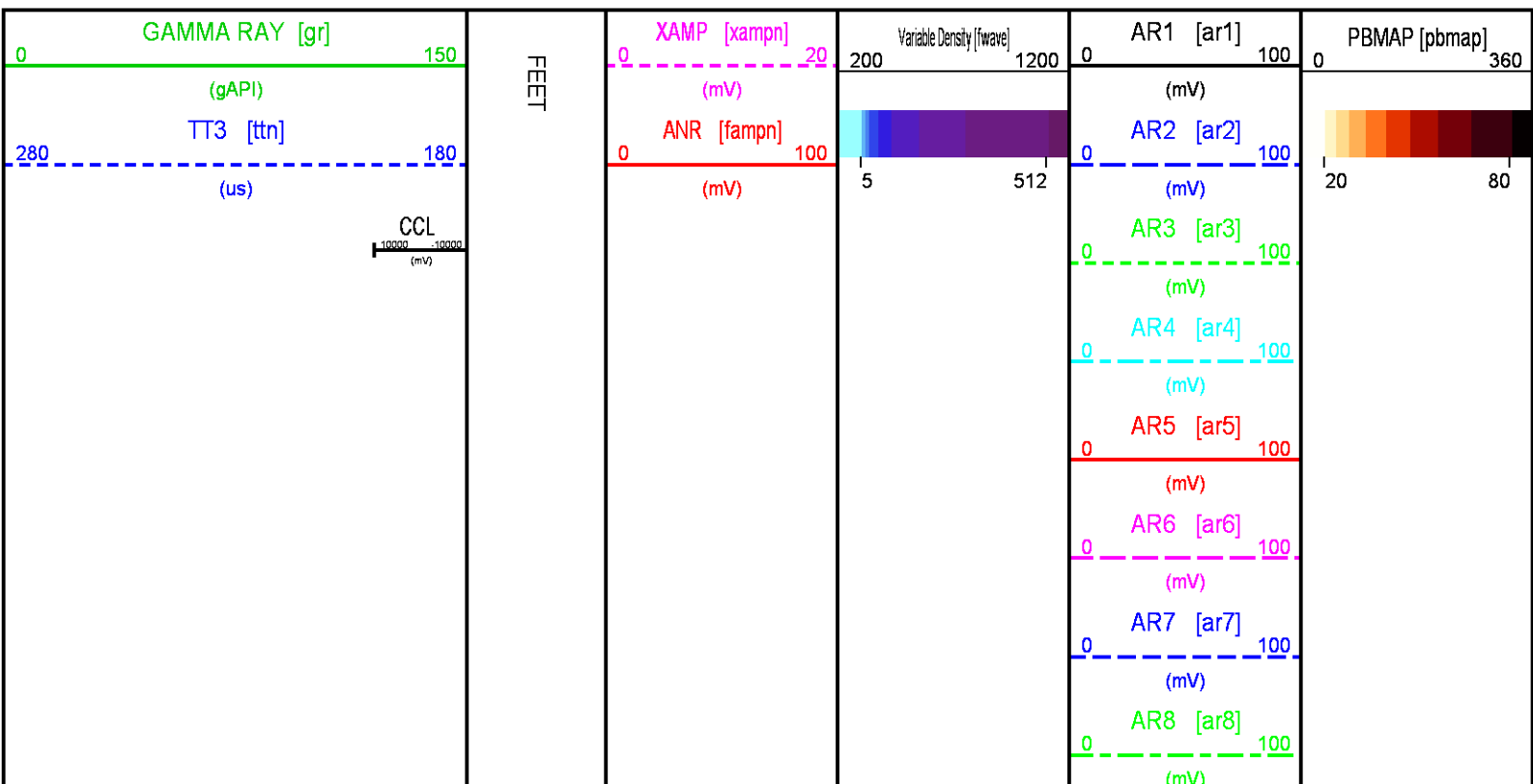
CURVE DESCRIPTION REPORT

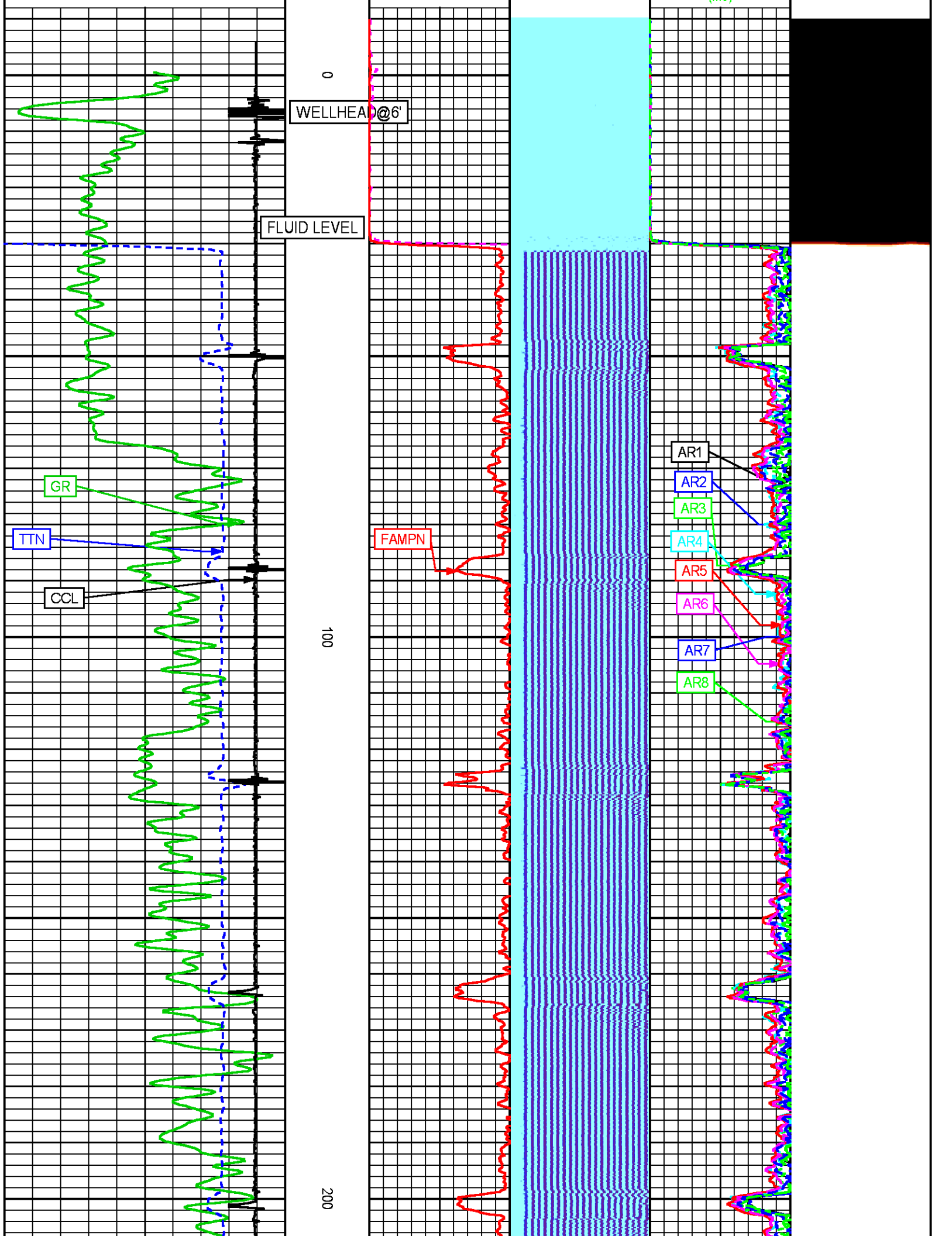
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AR1	N/A	FIXED GATE AMPLITUDE T-R1
F1:AR2	N/A	FIXED GATE AMPLITUDE T-R2
F1:AR3	N/A	FIXED GATE AMPLITUDE T-R3
F1:AR4	N/A	FIXED GATE AMPLITUDE T-R4
F1:AR5	N/A	FIXED GATE AMPLITUDE T-R5
F1:AR6	N/A	FIXED GATE AMPLITUDE T-R6
F1:AR7	N/A	FIXED GATE AMPLITUDE T-R7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

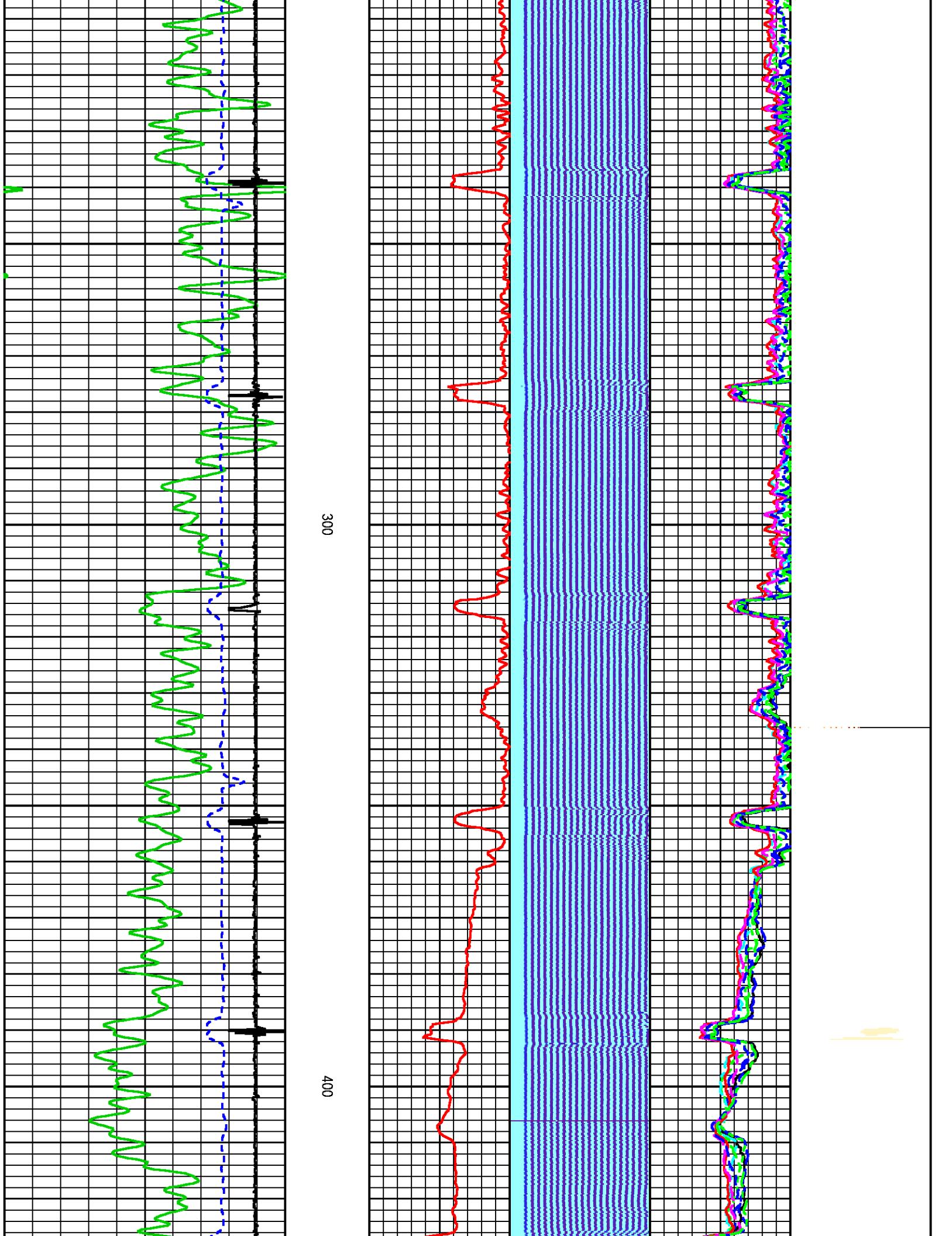
CURVE MEASURE POINT OFFSET

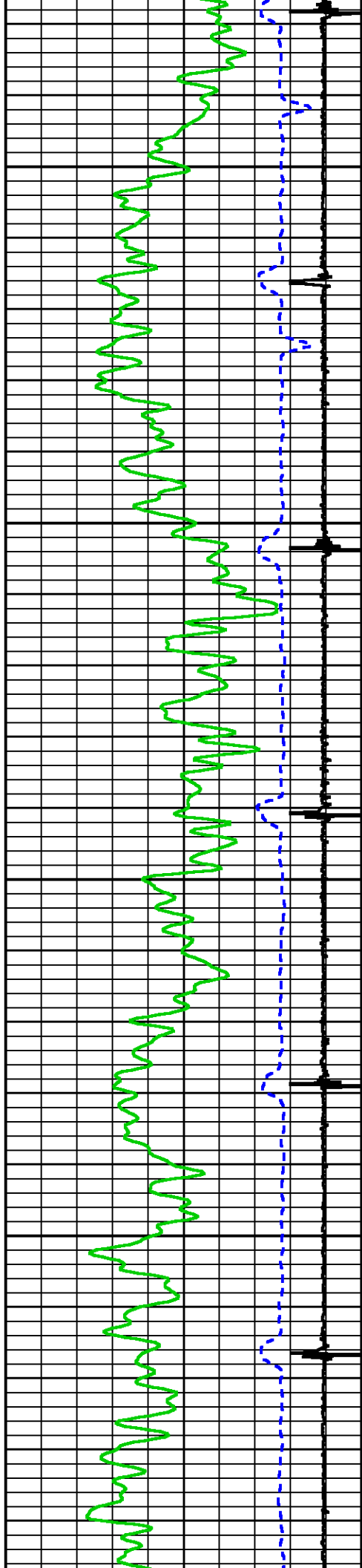
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
AR1	-11.25	AR5	-11.25	CCL	-5.75	XAMPN	-11.25
AR2	-11.25	AR6	-11.25	FAMPN	-11.25		
AR3	-11.25	AR7	-11.25	GR	-1.75		
AR4	-11.25	AR8	-11.25	TTN	-11.25		

Presentation	: BHIH2LZZF2:C:\dat1a\LARAMIE_BRUTON_19_06W\LARAMIE_RAL+RAL_MN_06W.fvpdf [5"/100' Scale]
Plot Interval	: -10.25 - 7508.5 Feet
Data File 1	: F1 : BHIH2LZZF2:C:\dat1a\LARAMIE_BRUTON_19_06W\RAL_MN_06W.xtf
Created On	: N/A
Company	: LARAMIE ENERGY
Well	: BRUTON 19-06W
Field	: VEGA
File Interval	: -11.25 - 7509.75 Feet
OCT	: p012g



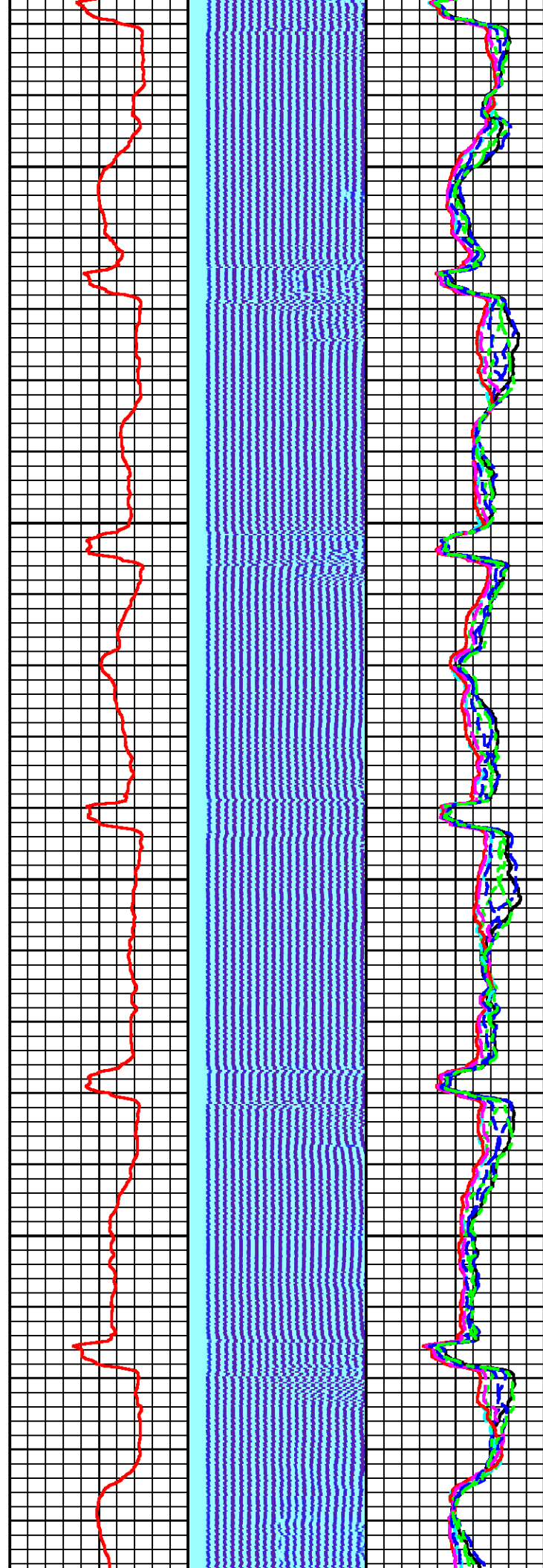


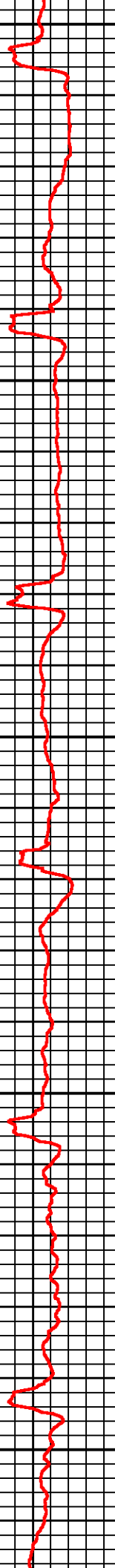
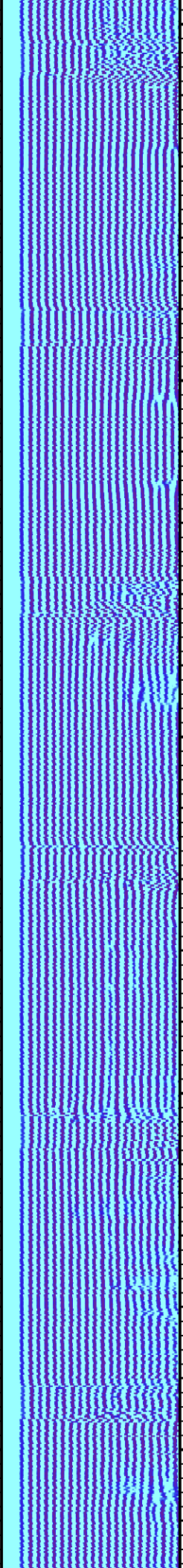
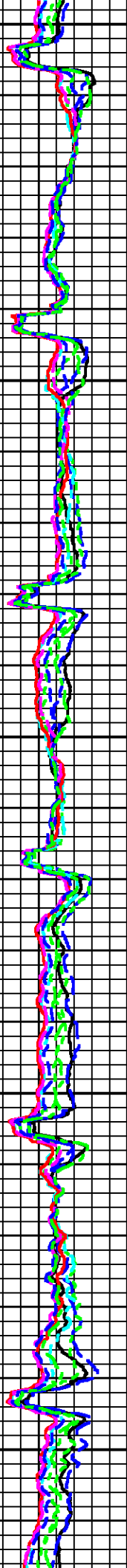




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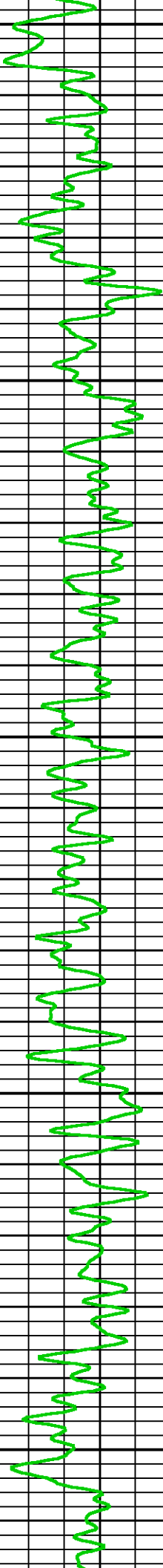
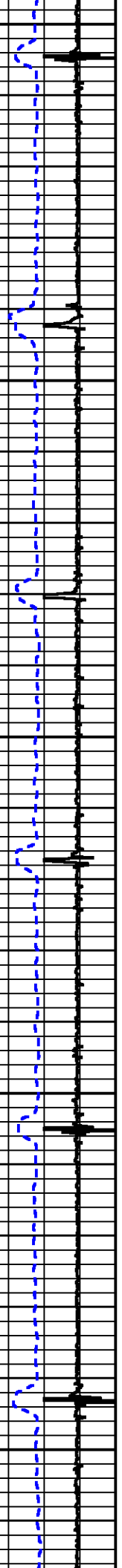
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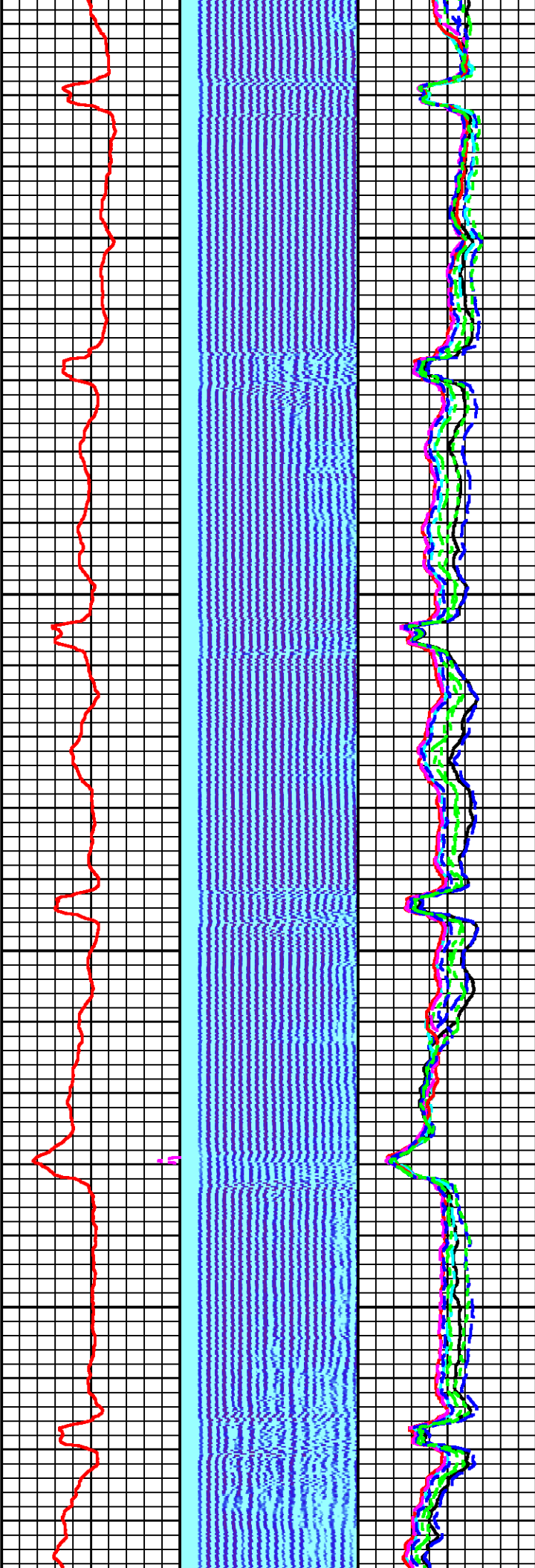




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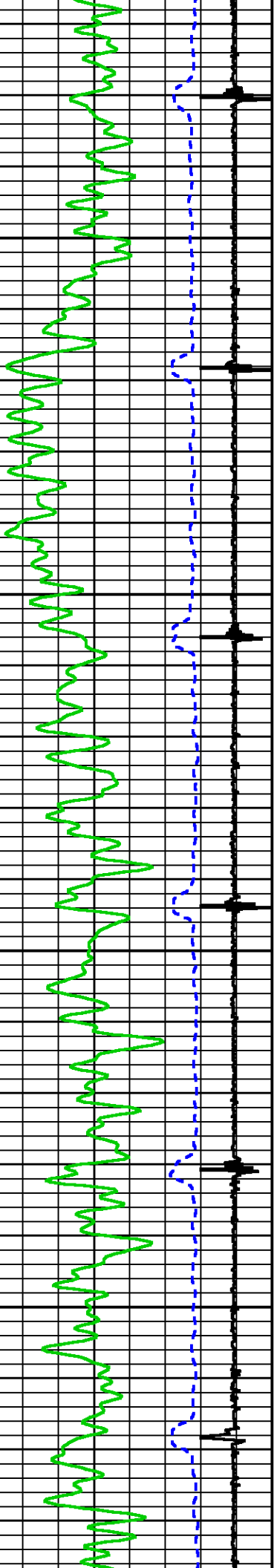
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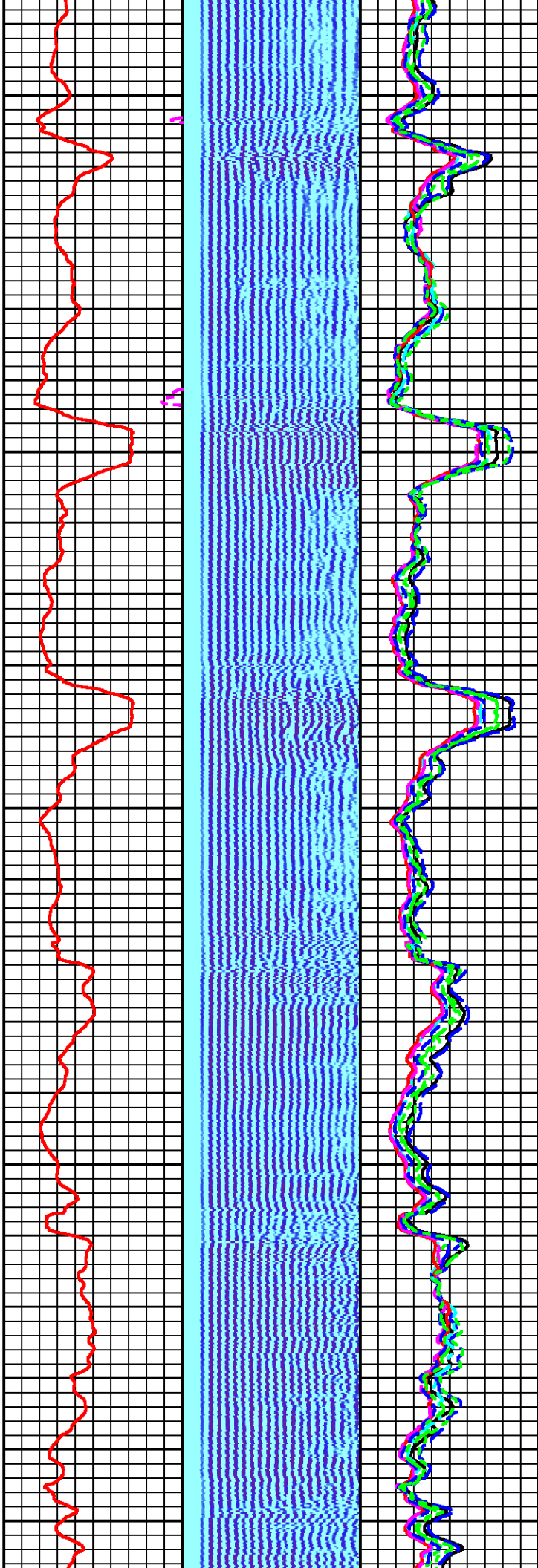
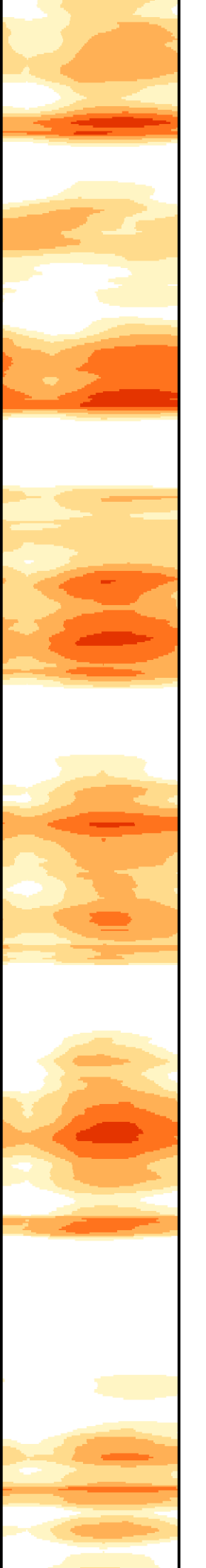




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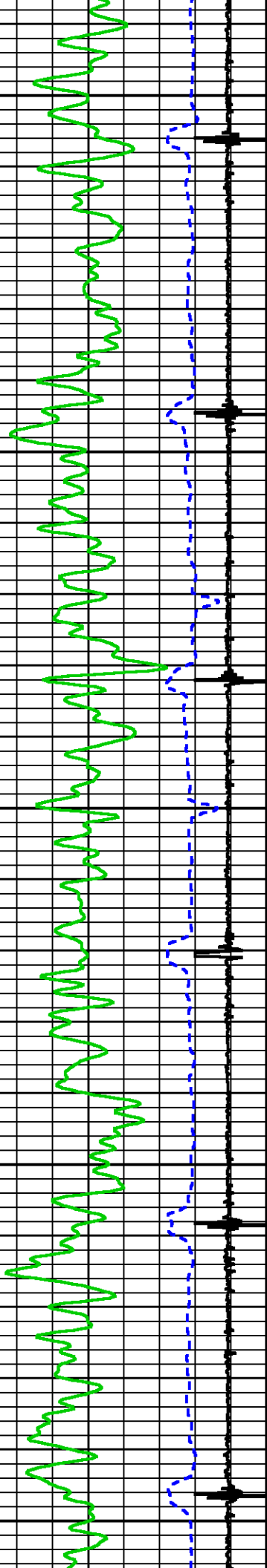


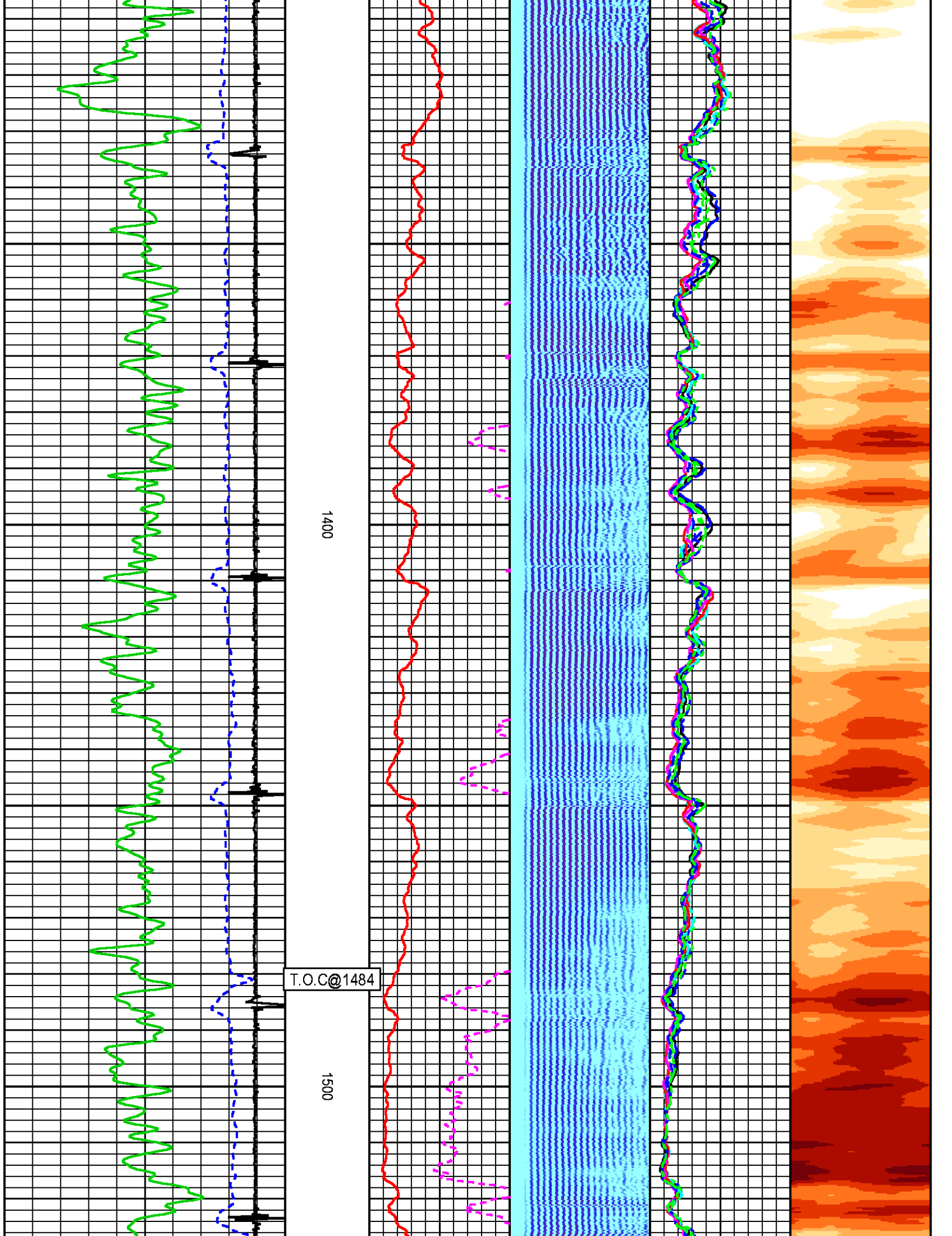


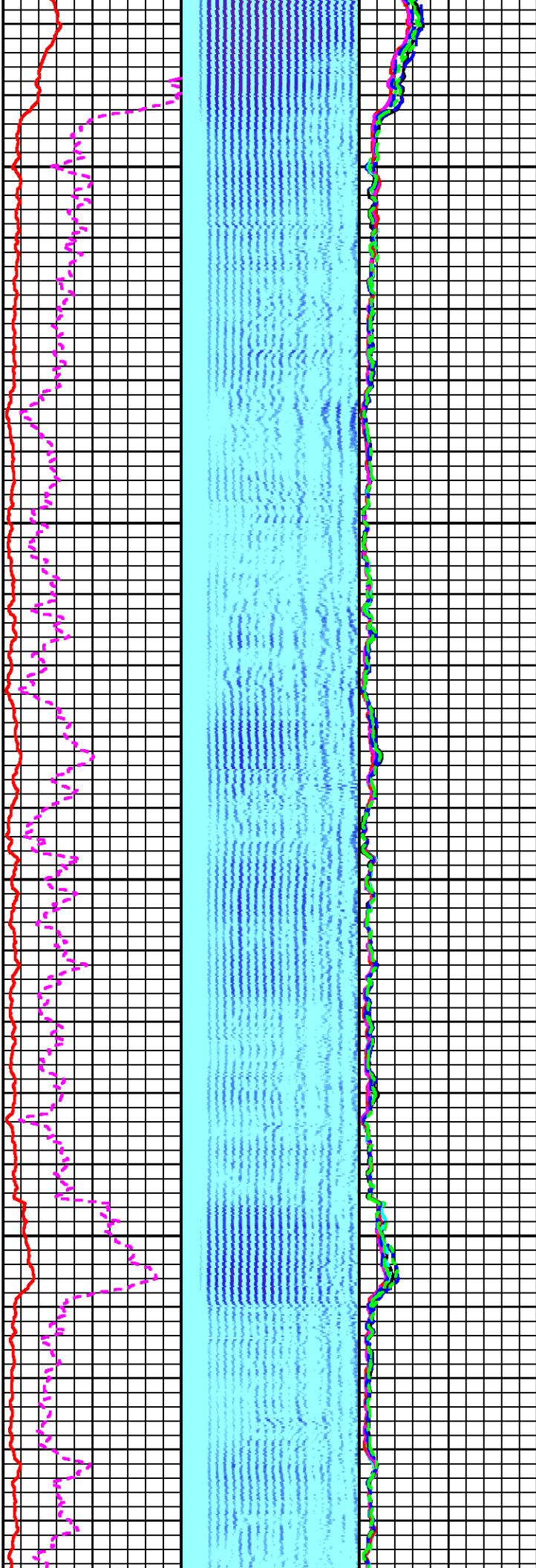
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1200

1300

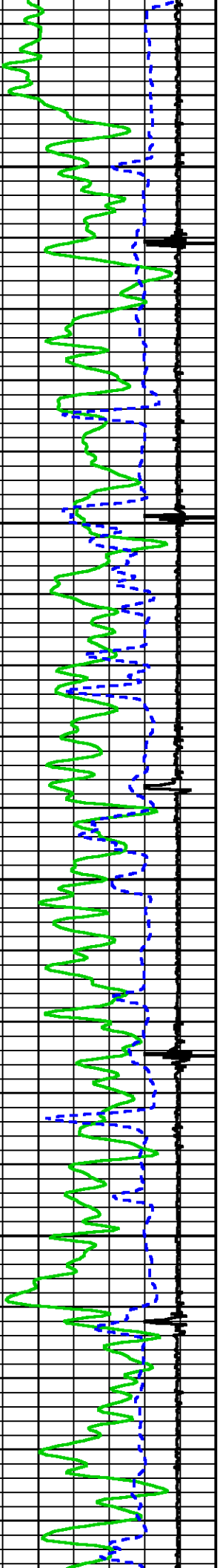


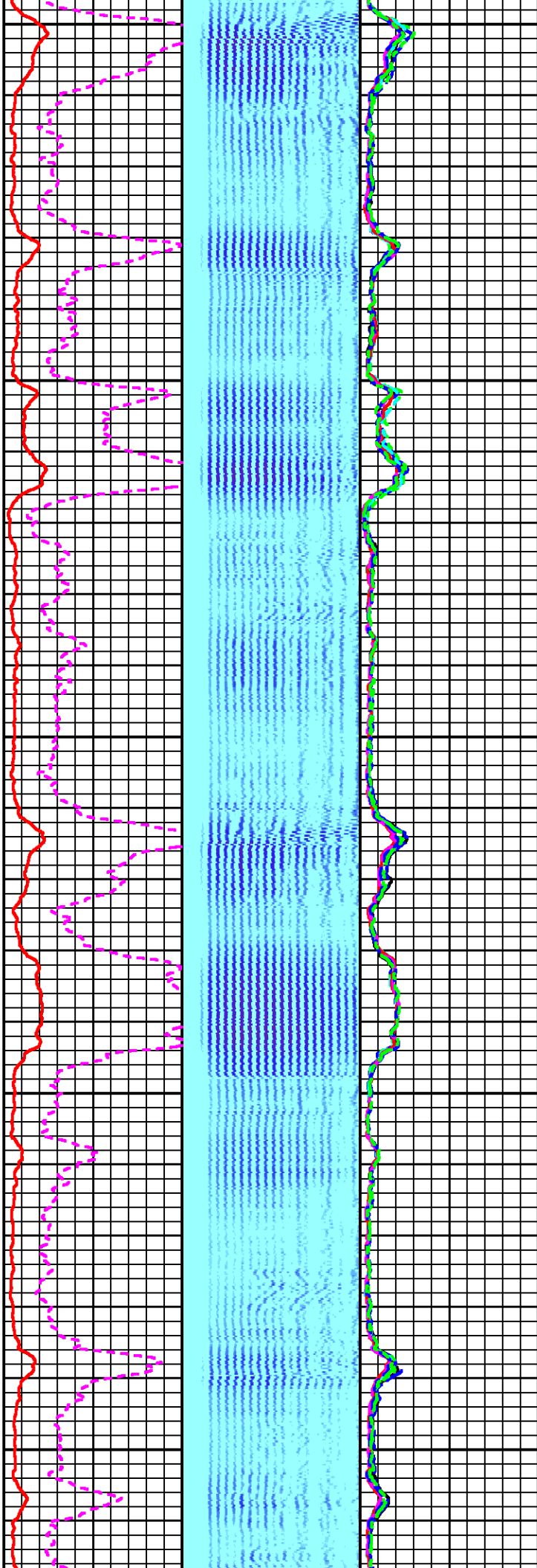




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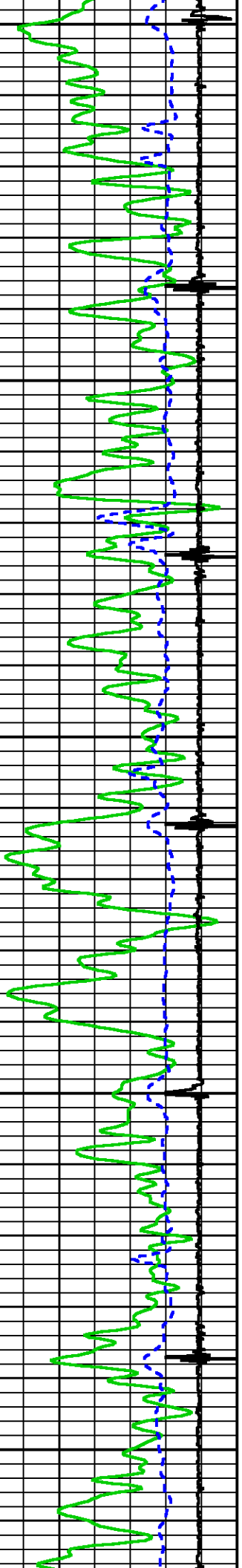
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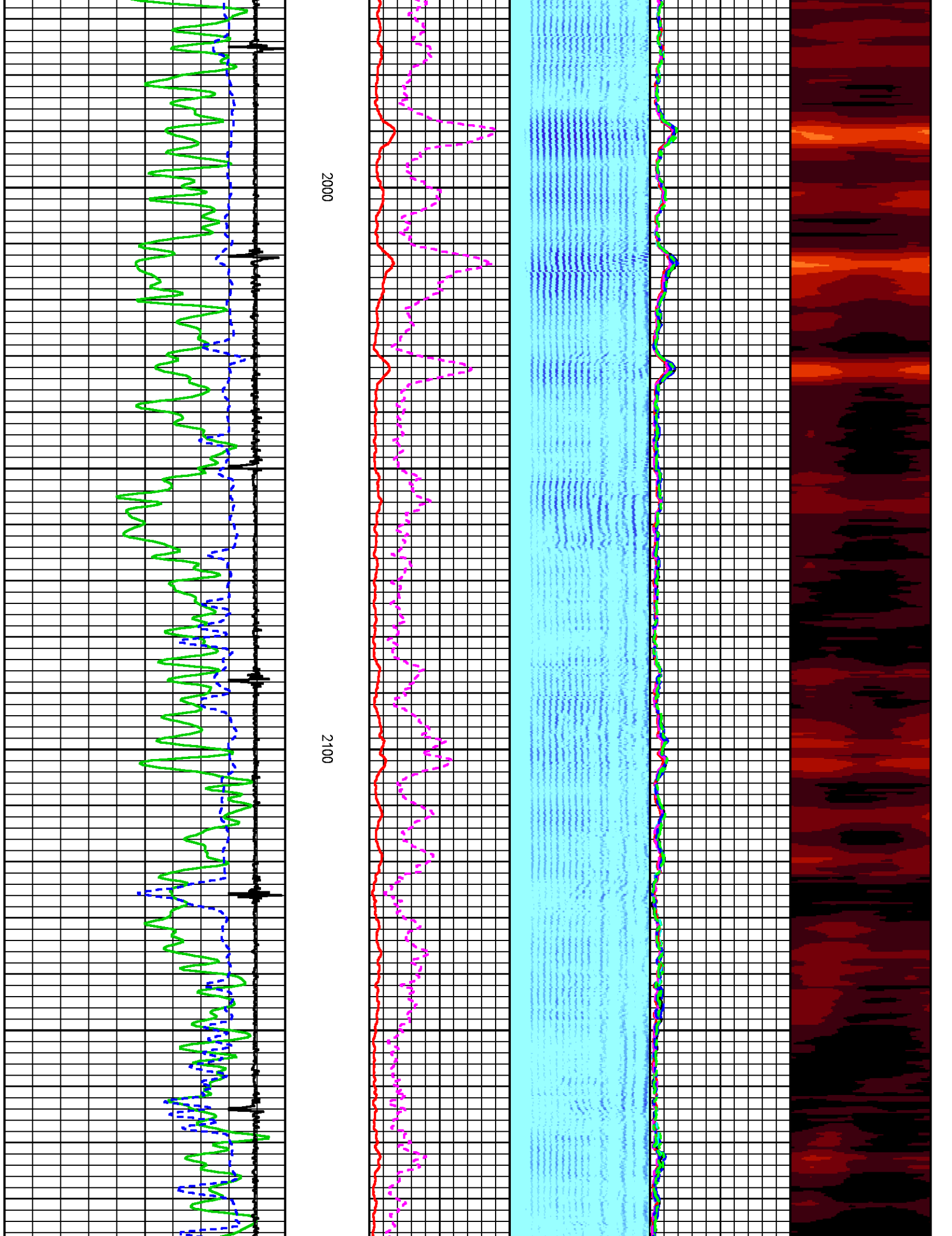


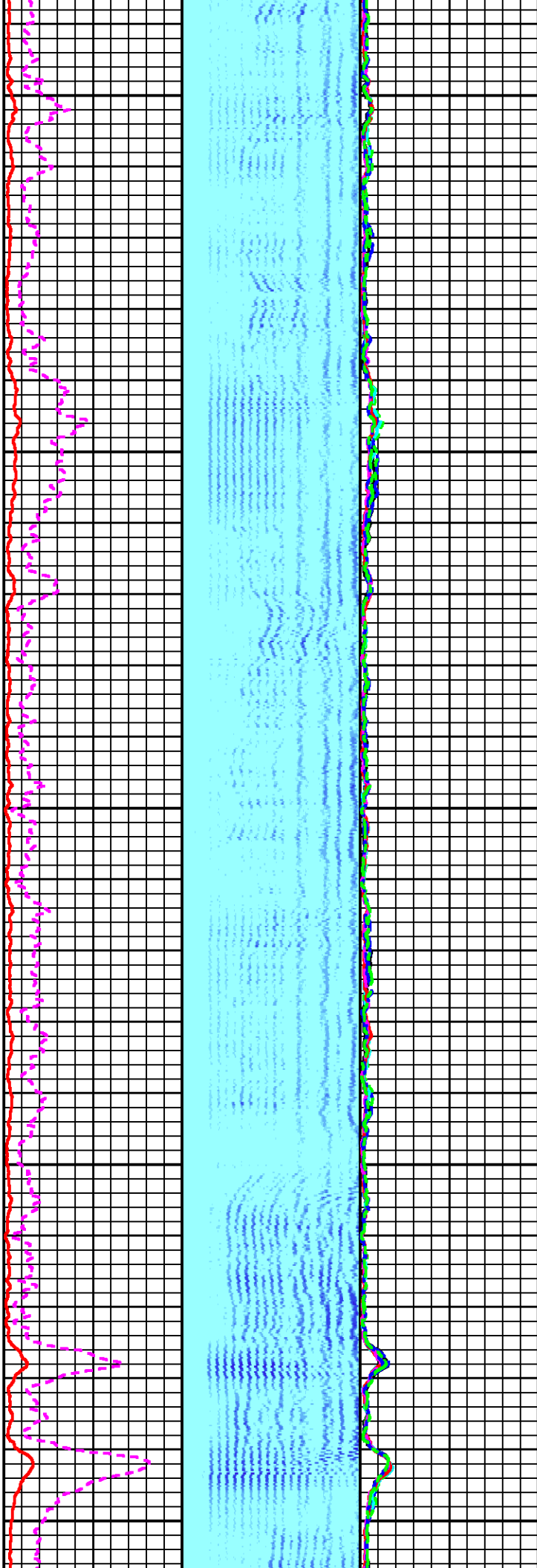


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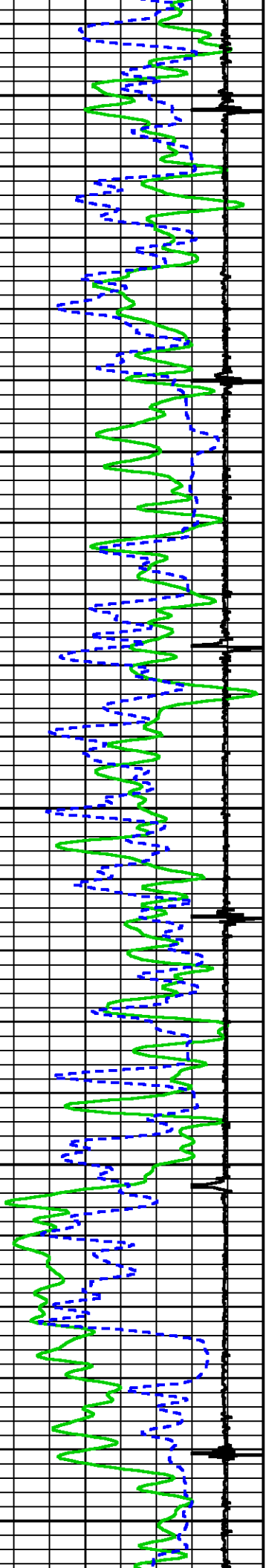


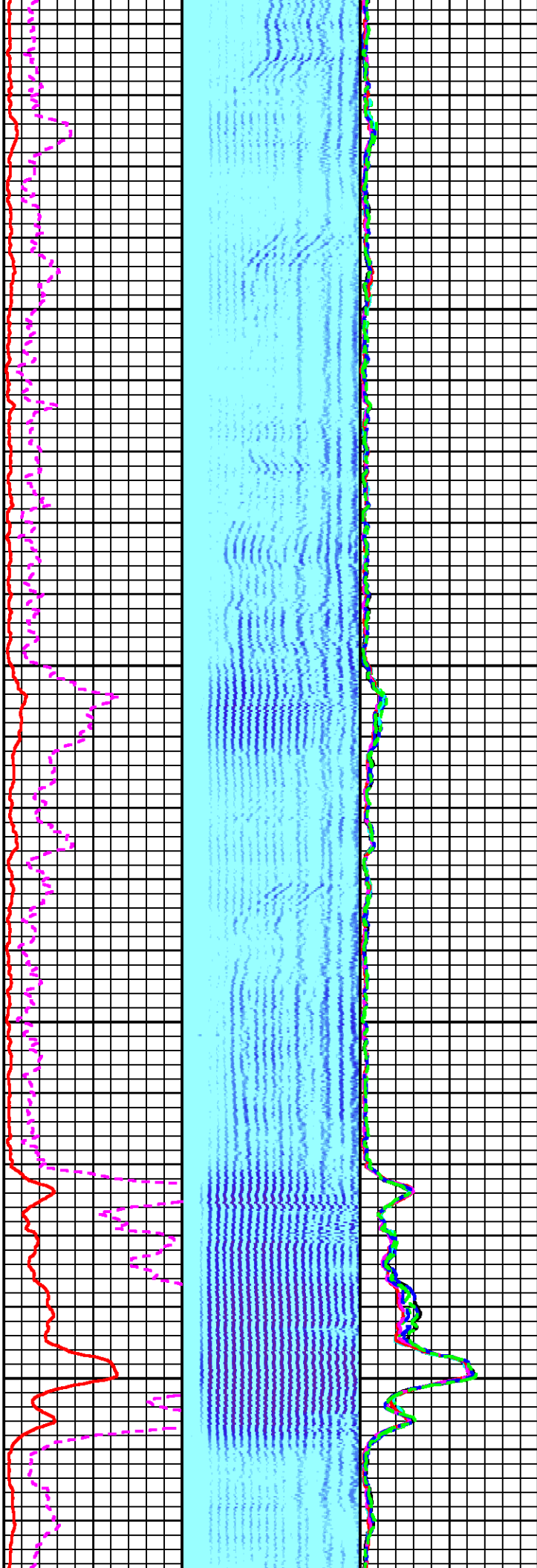


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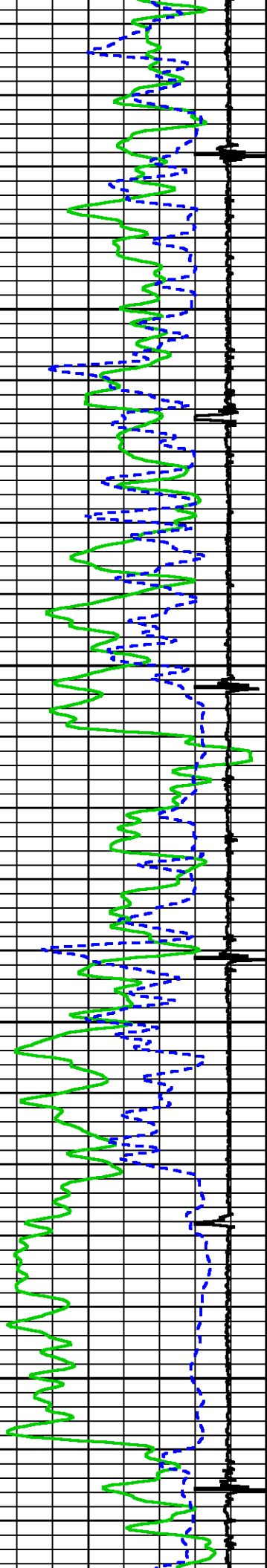
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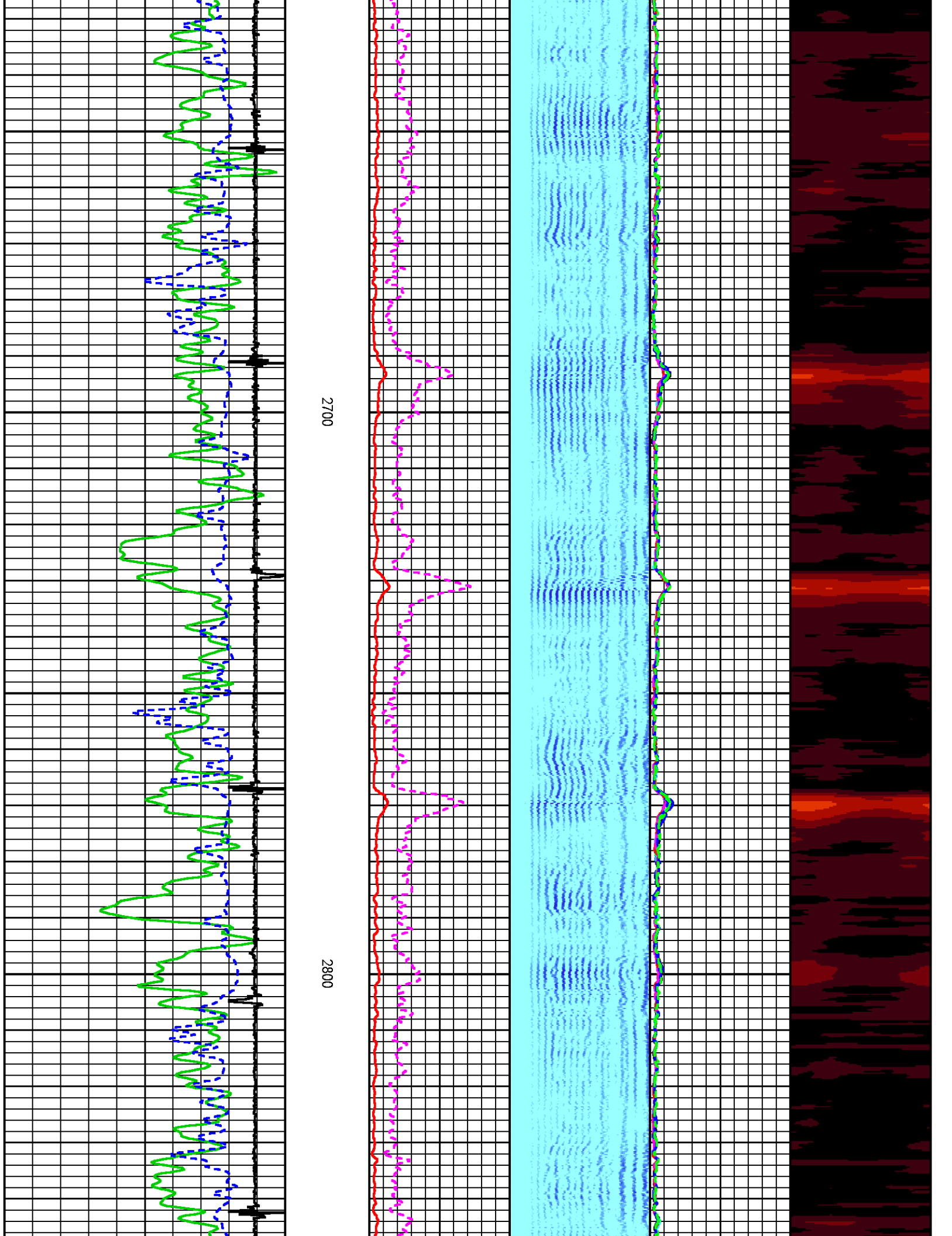


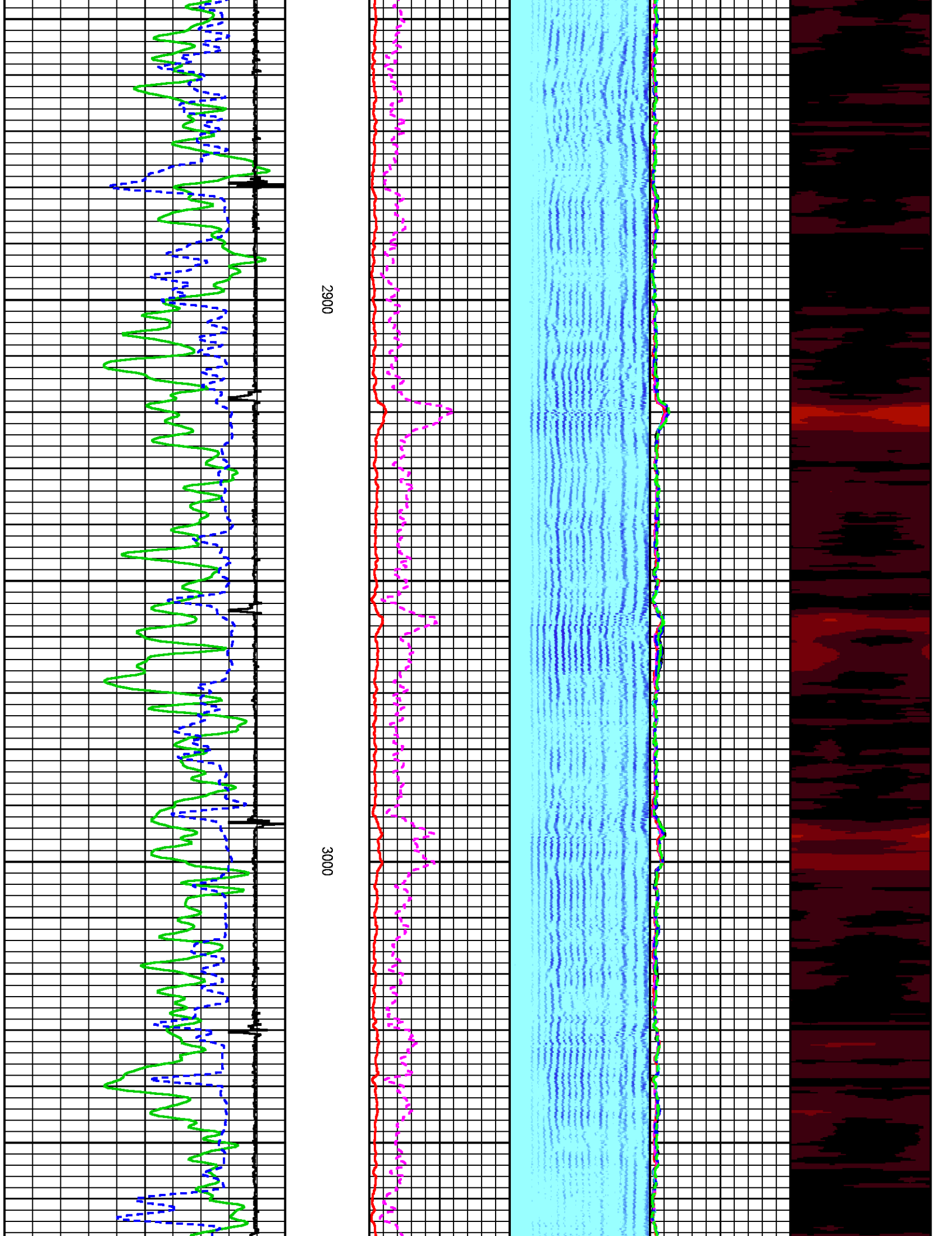


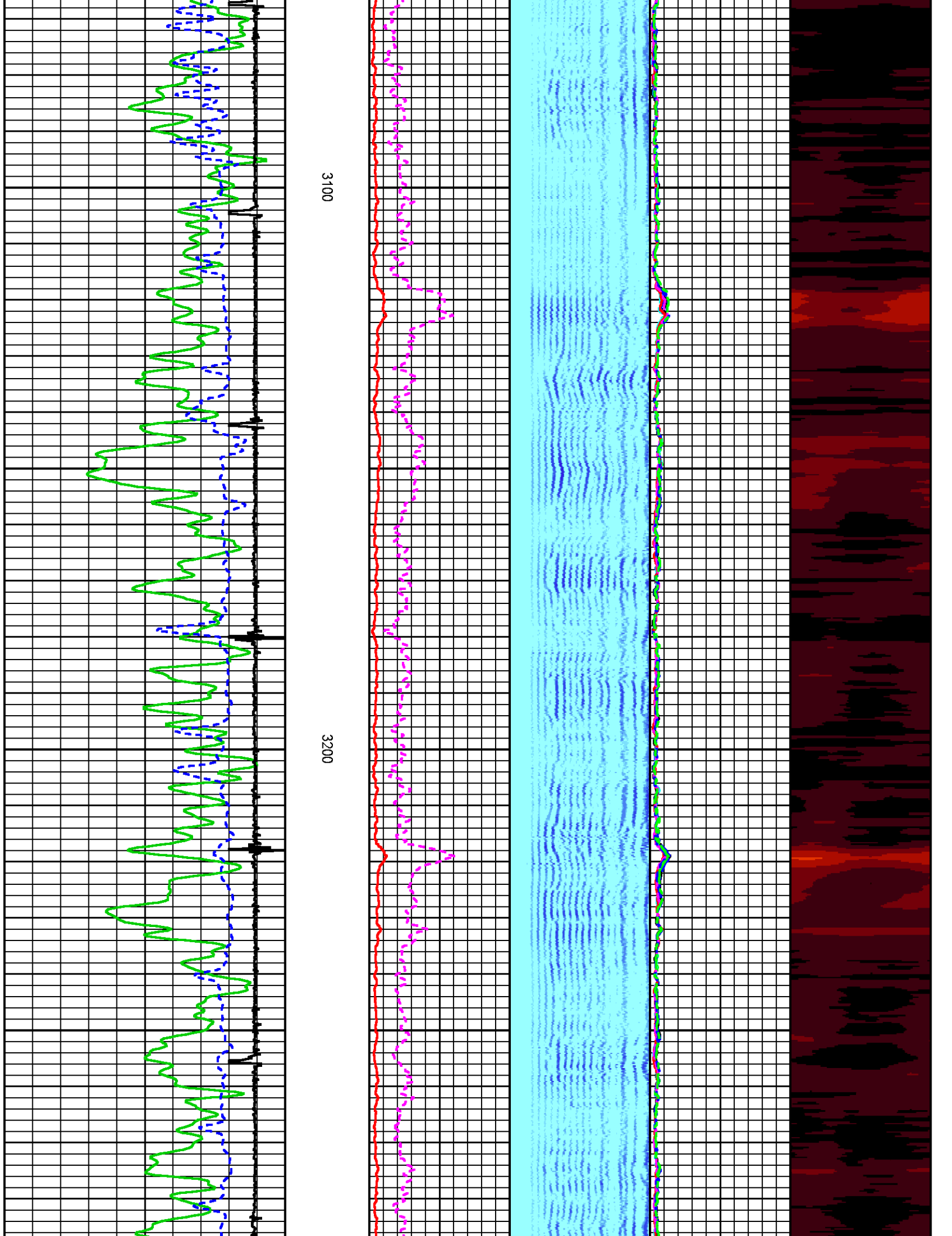
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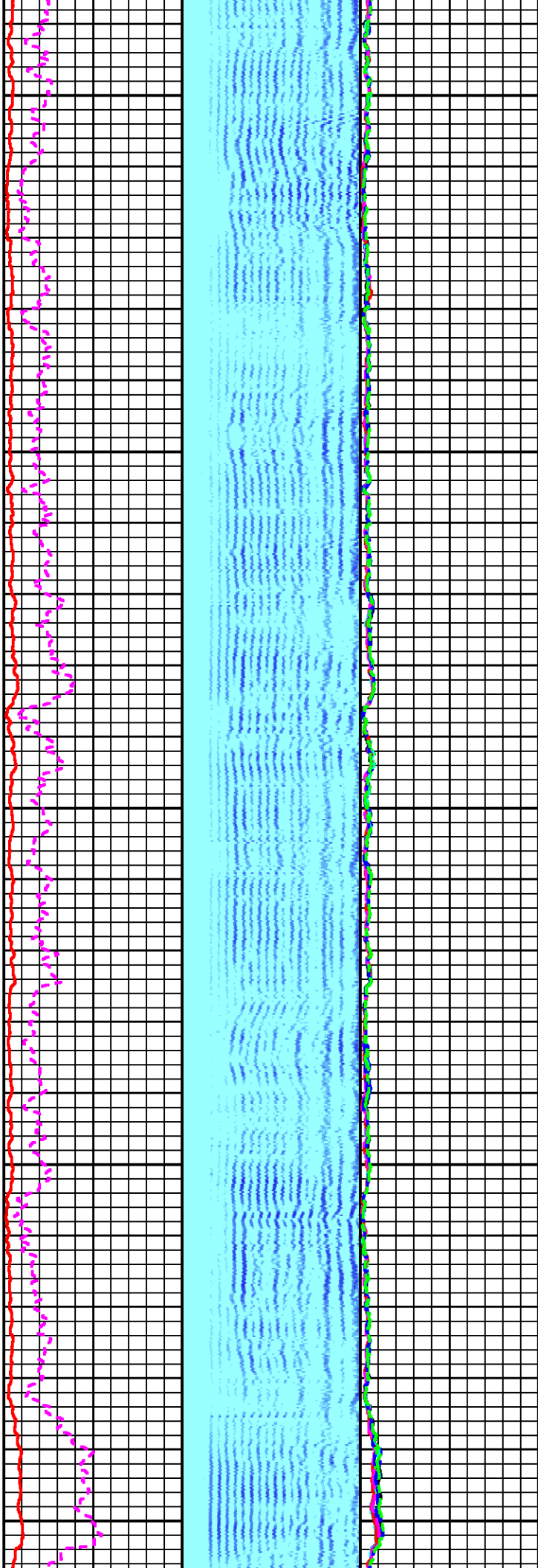
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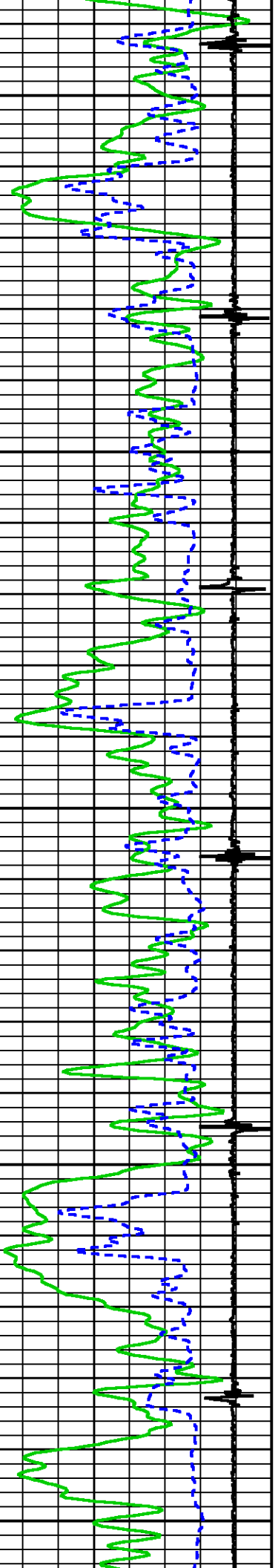


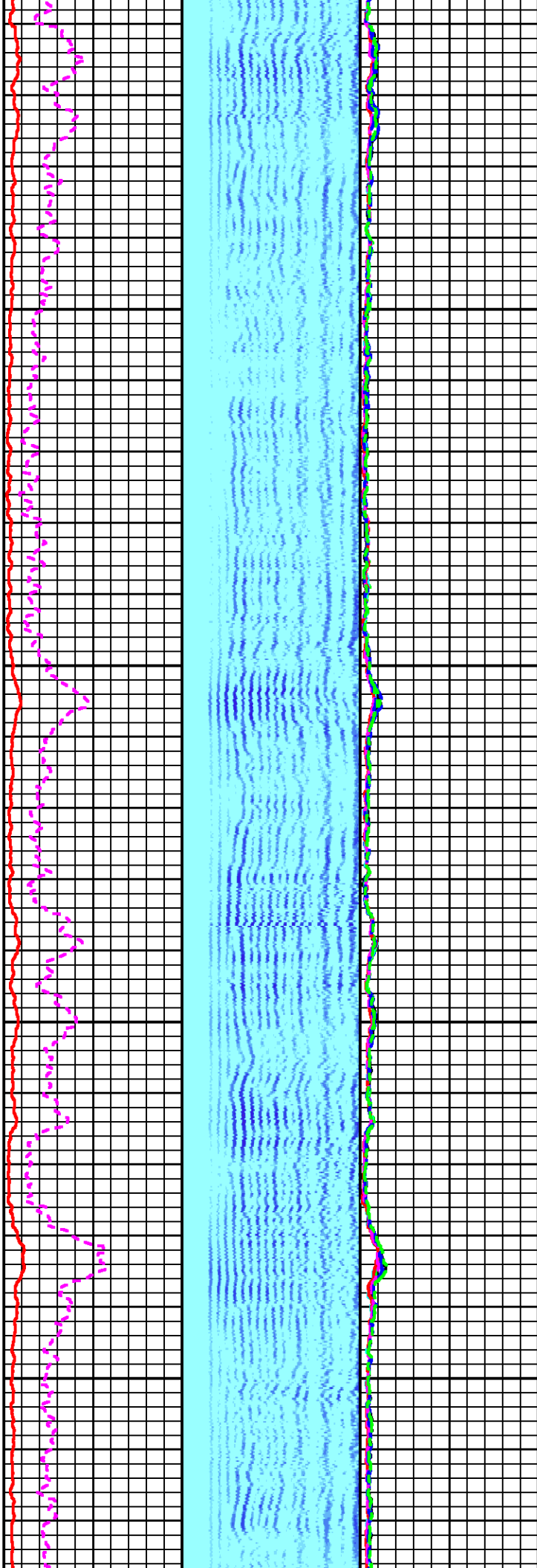


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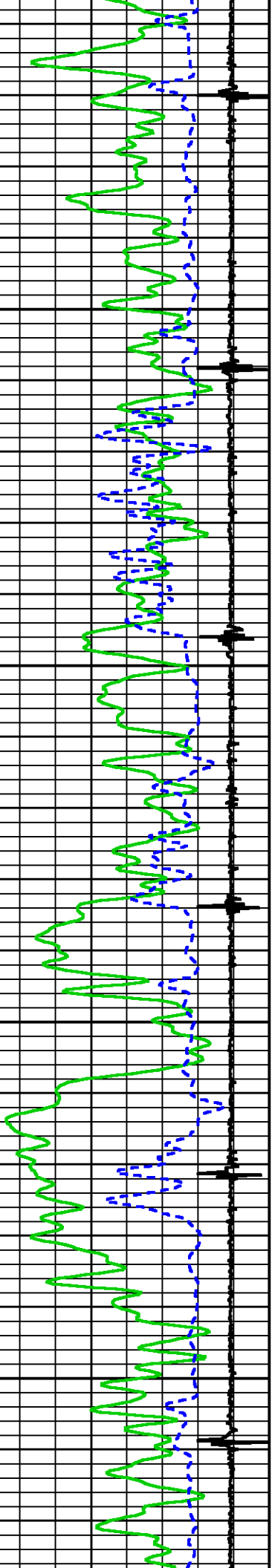
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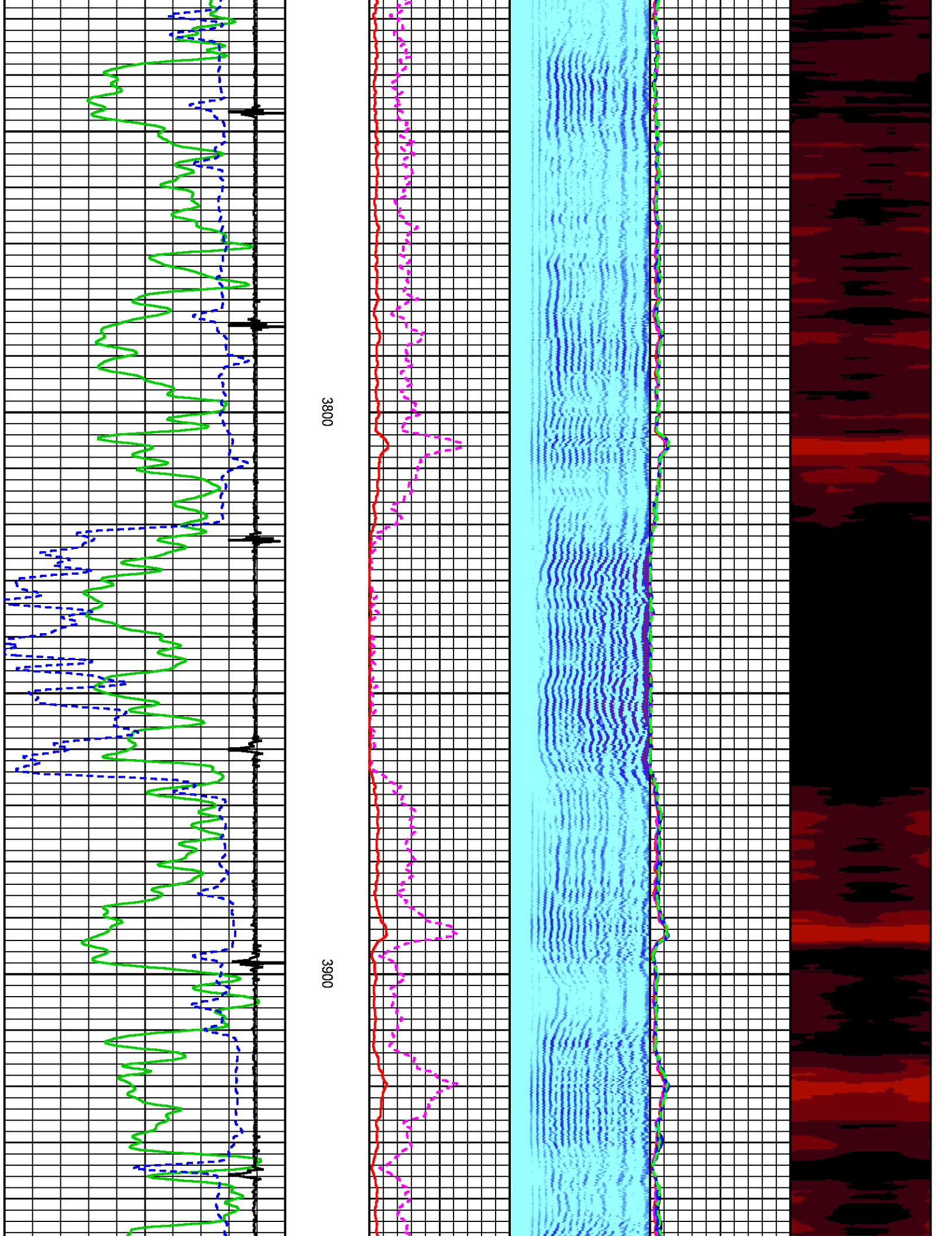


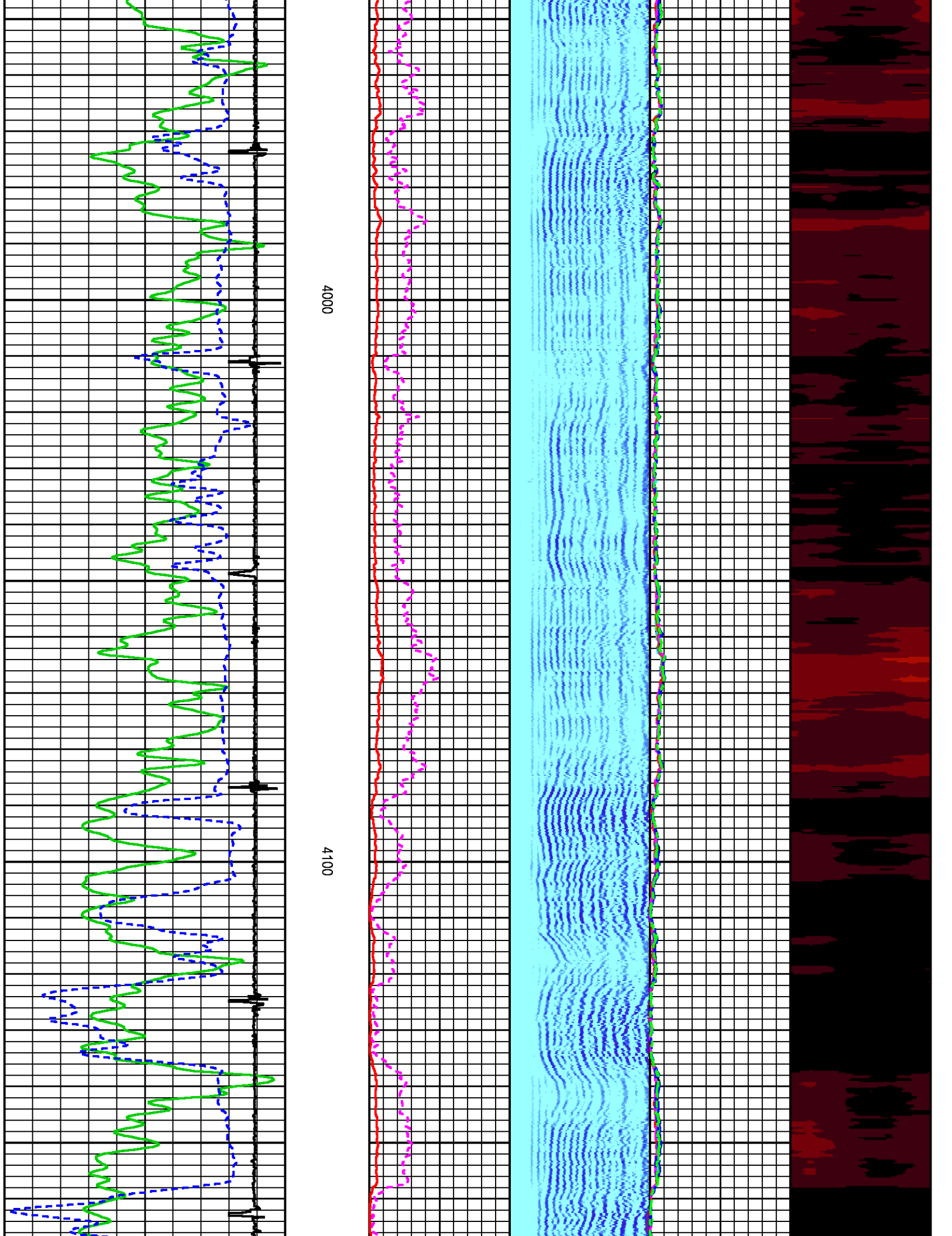


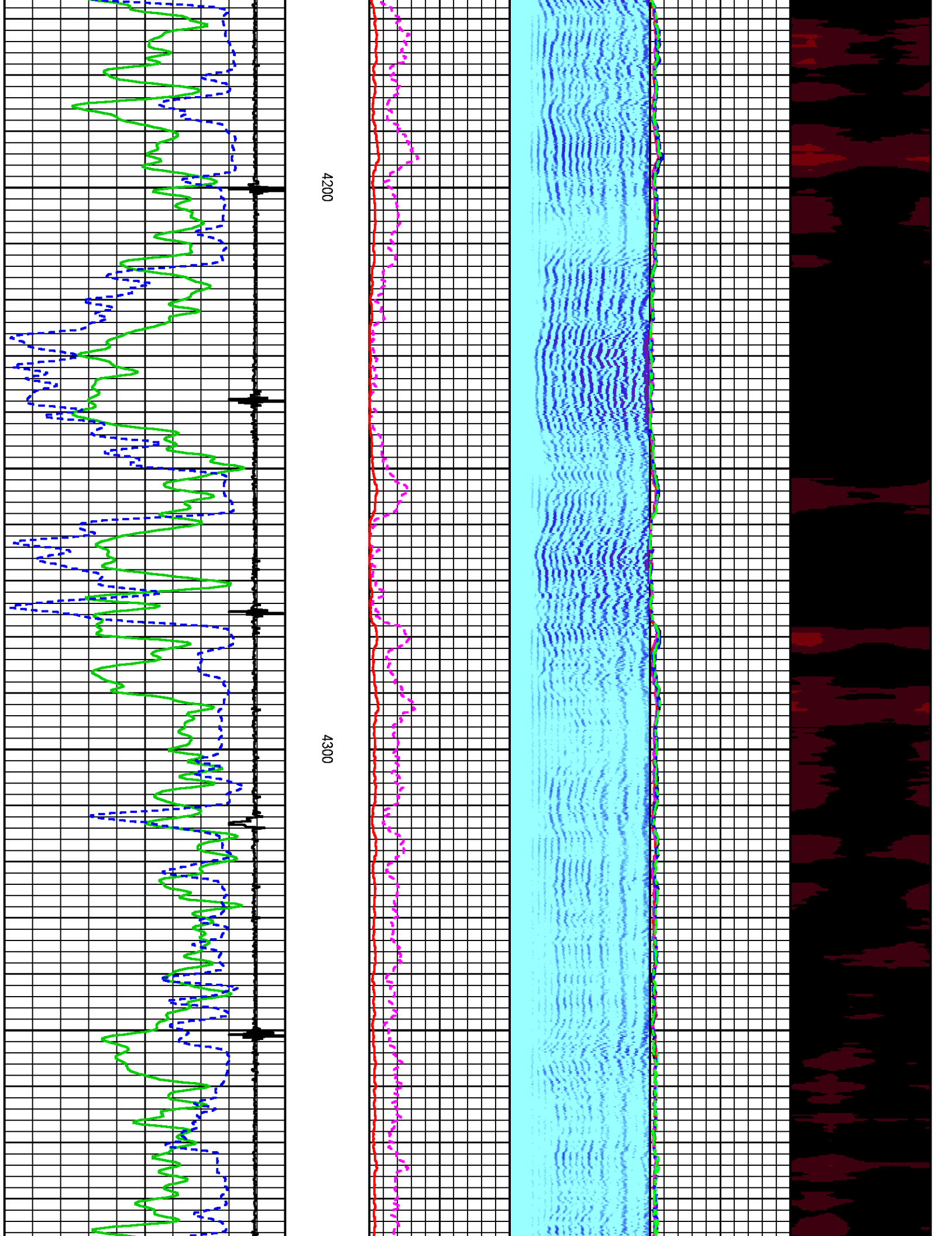
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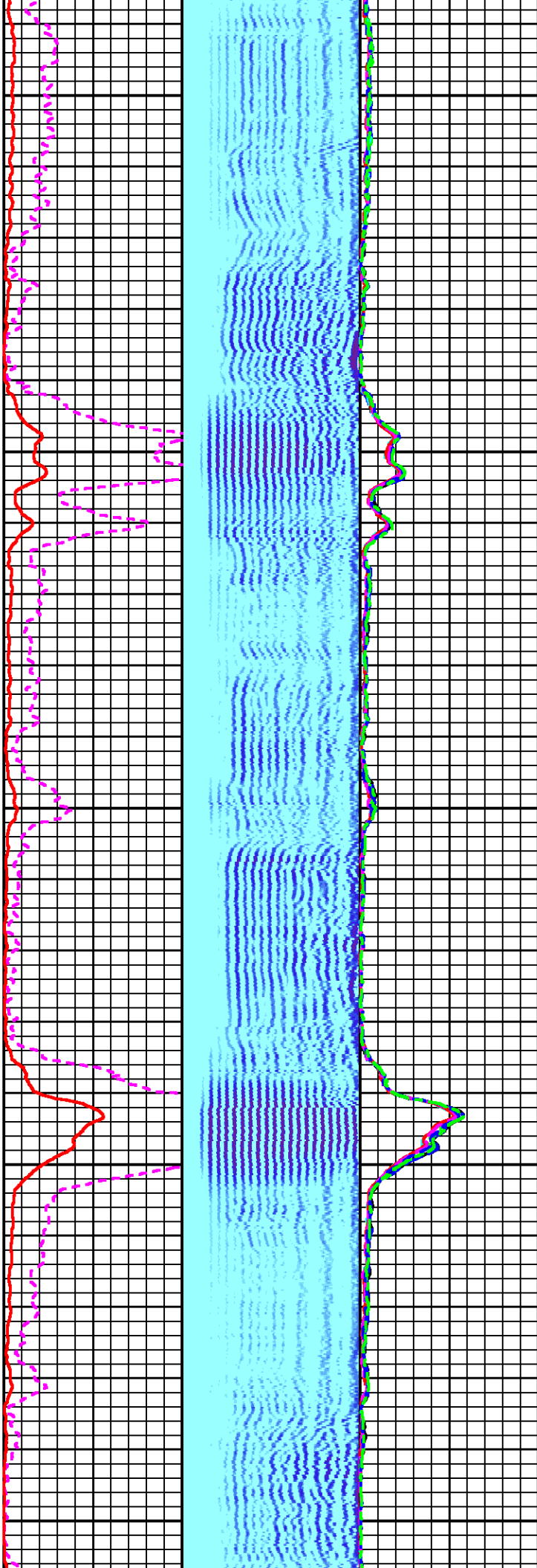
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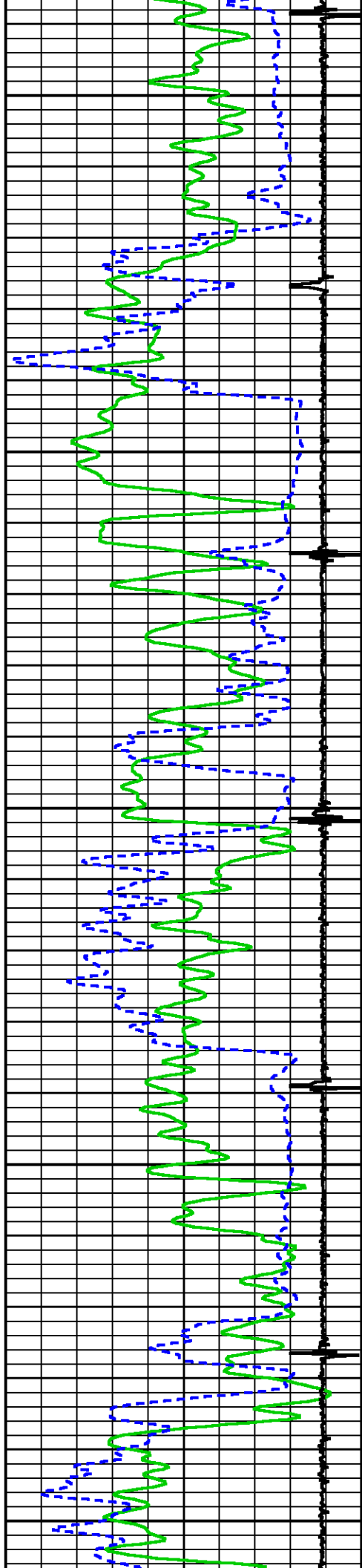


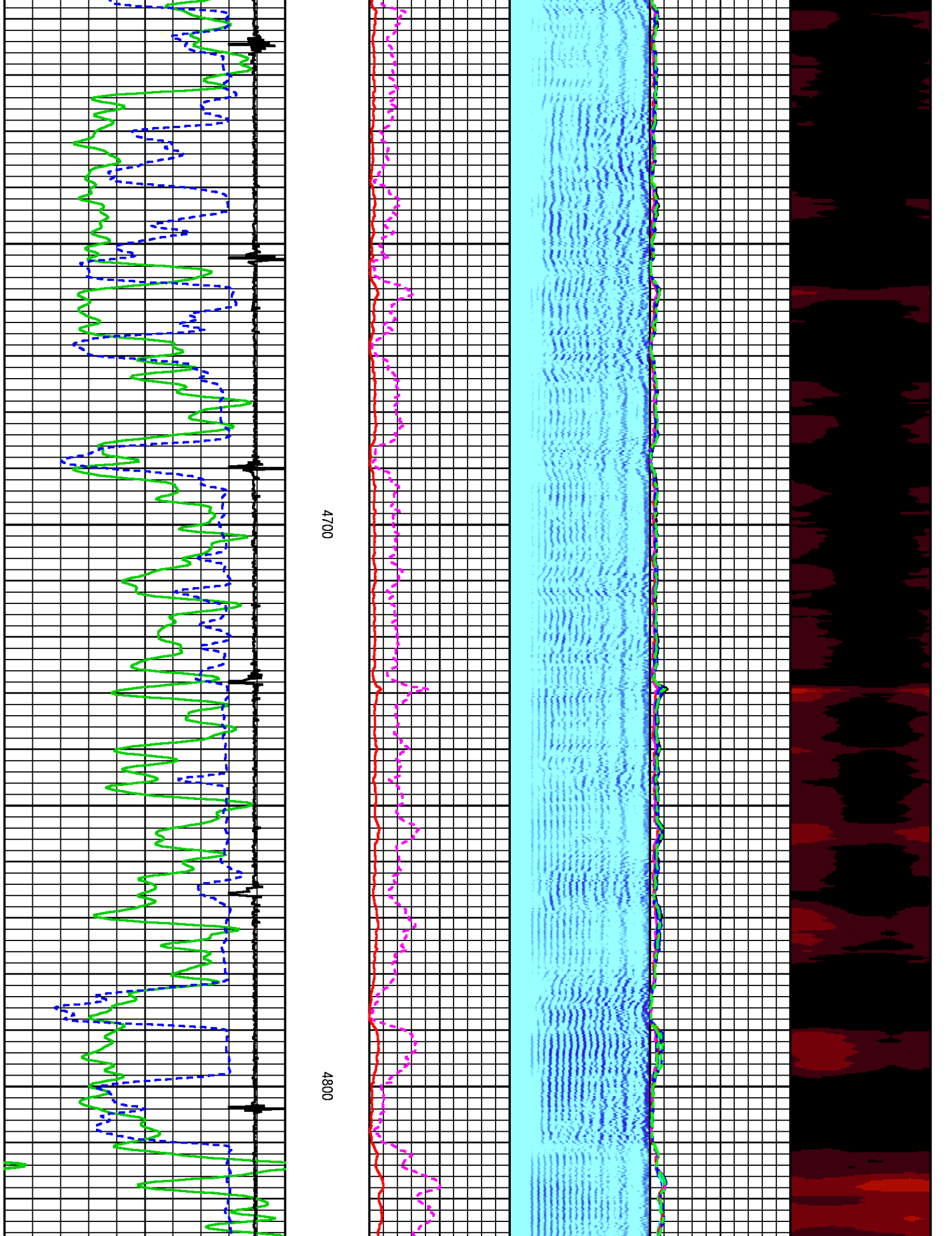


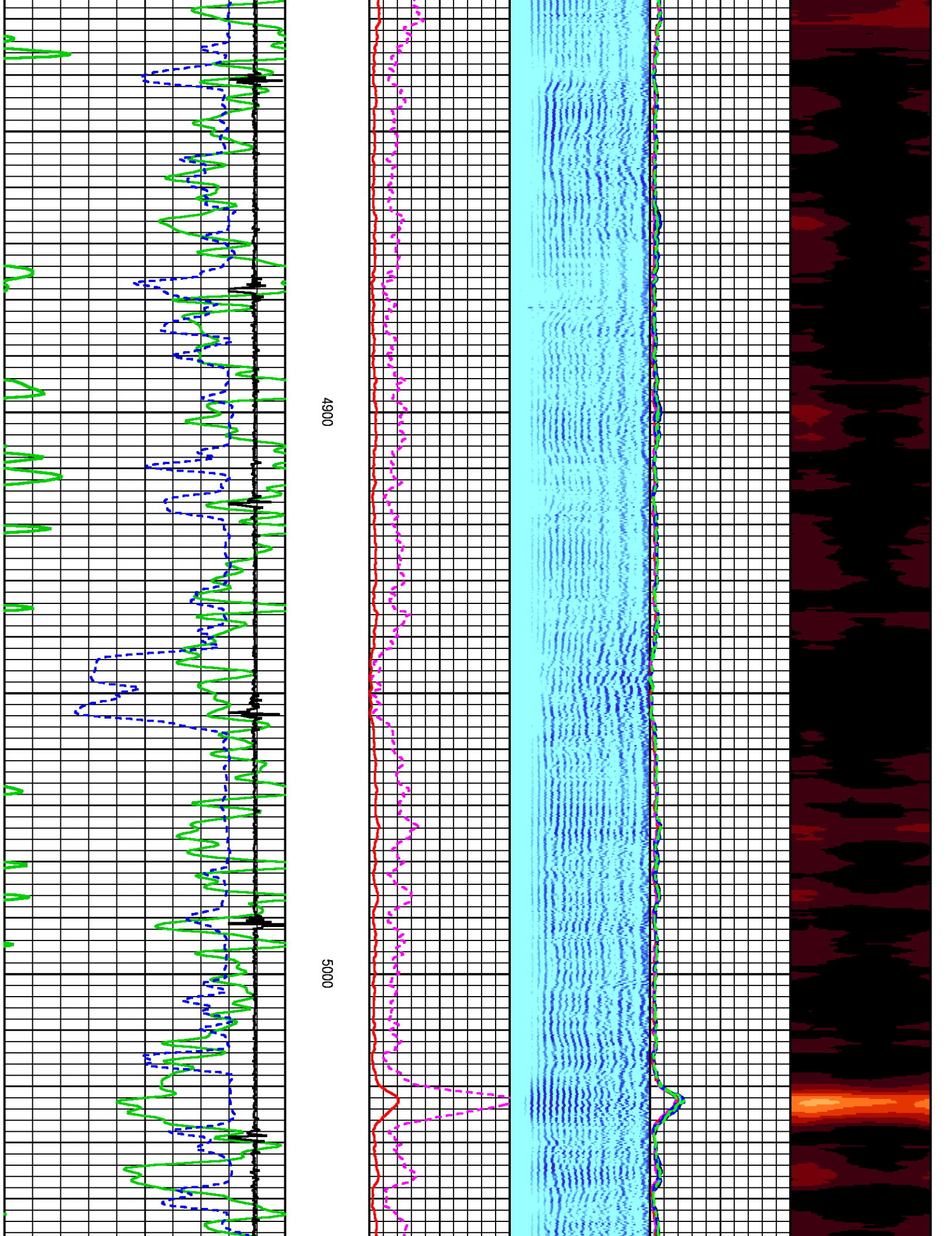
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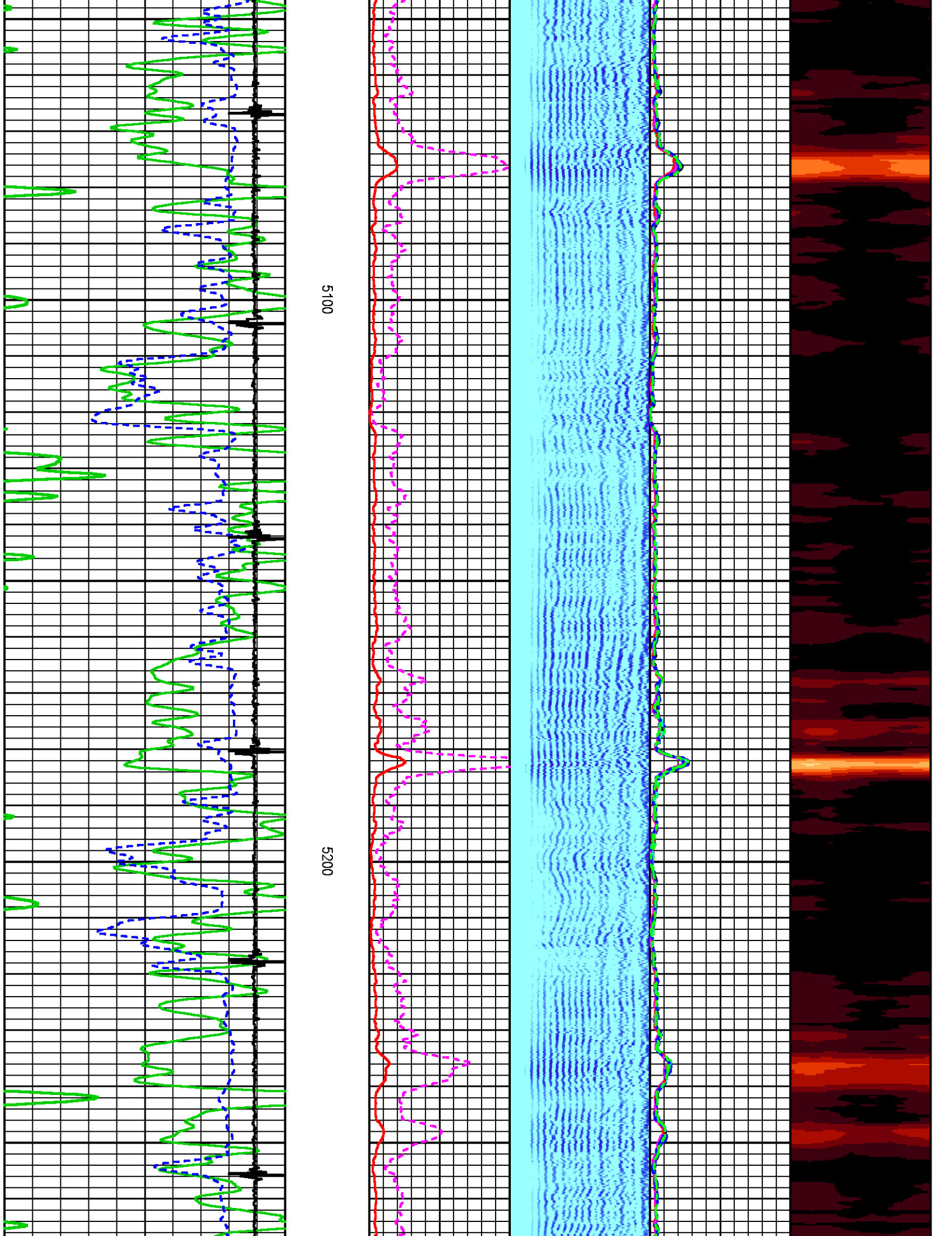
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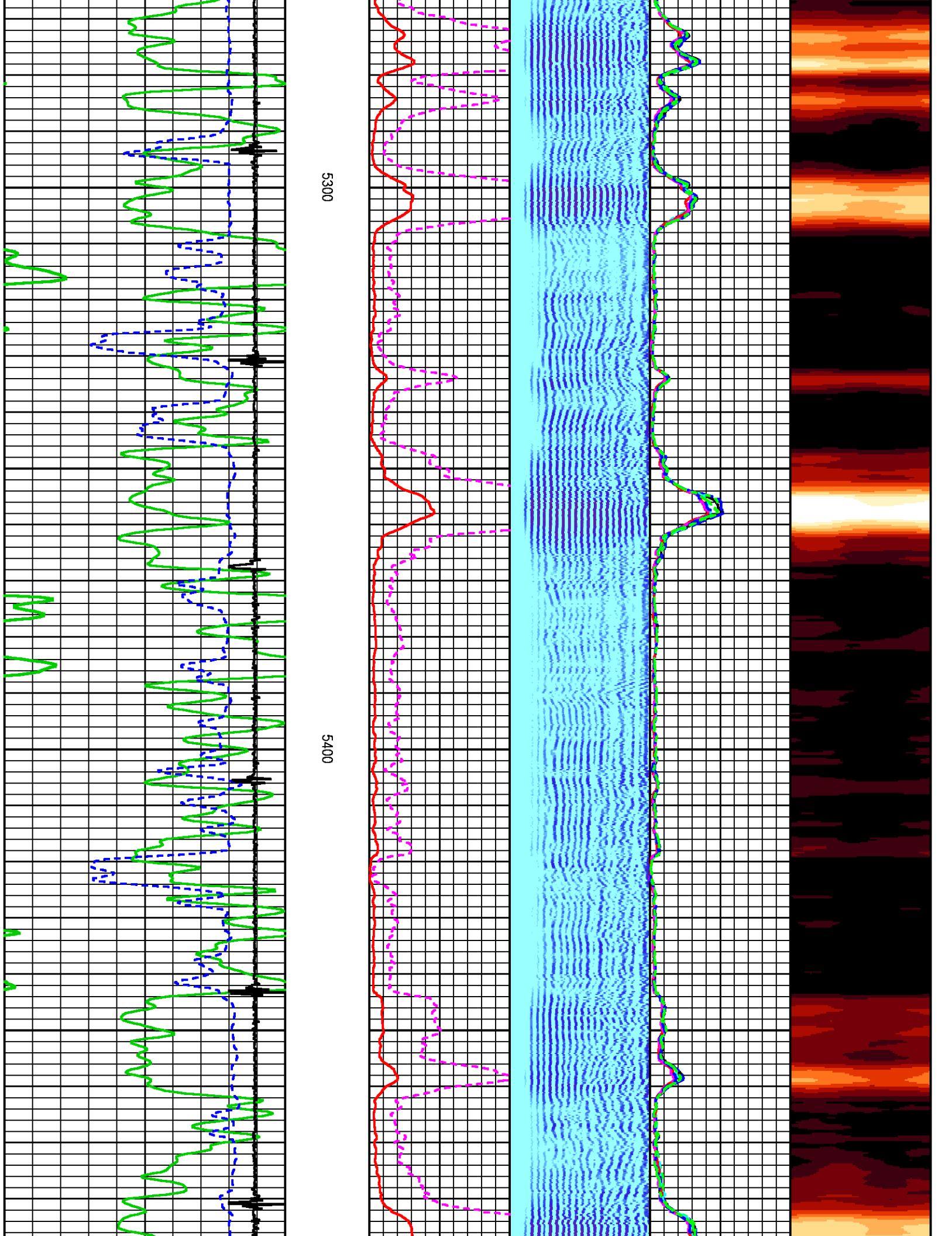
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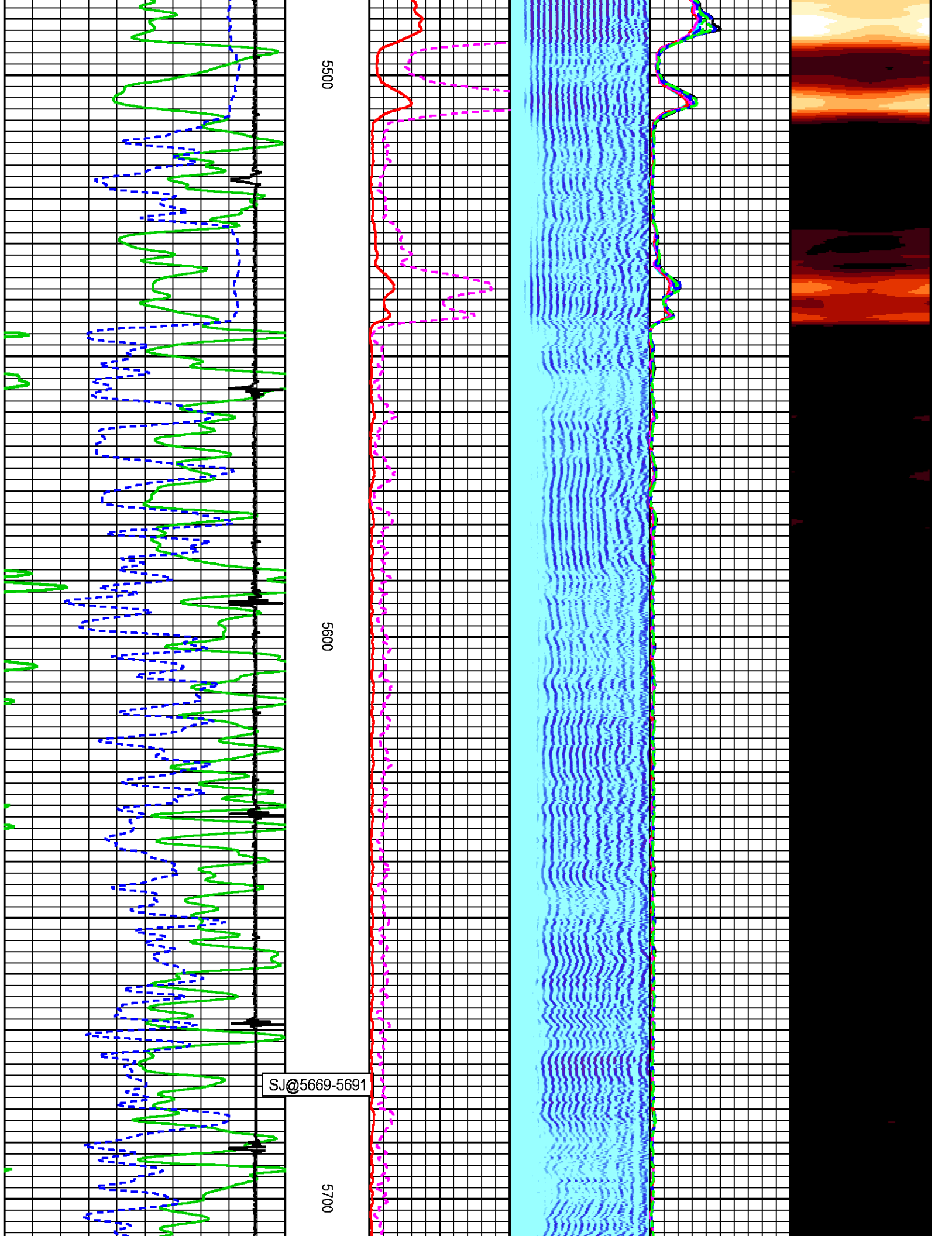


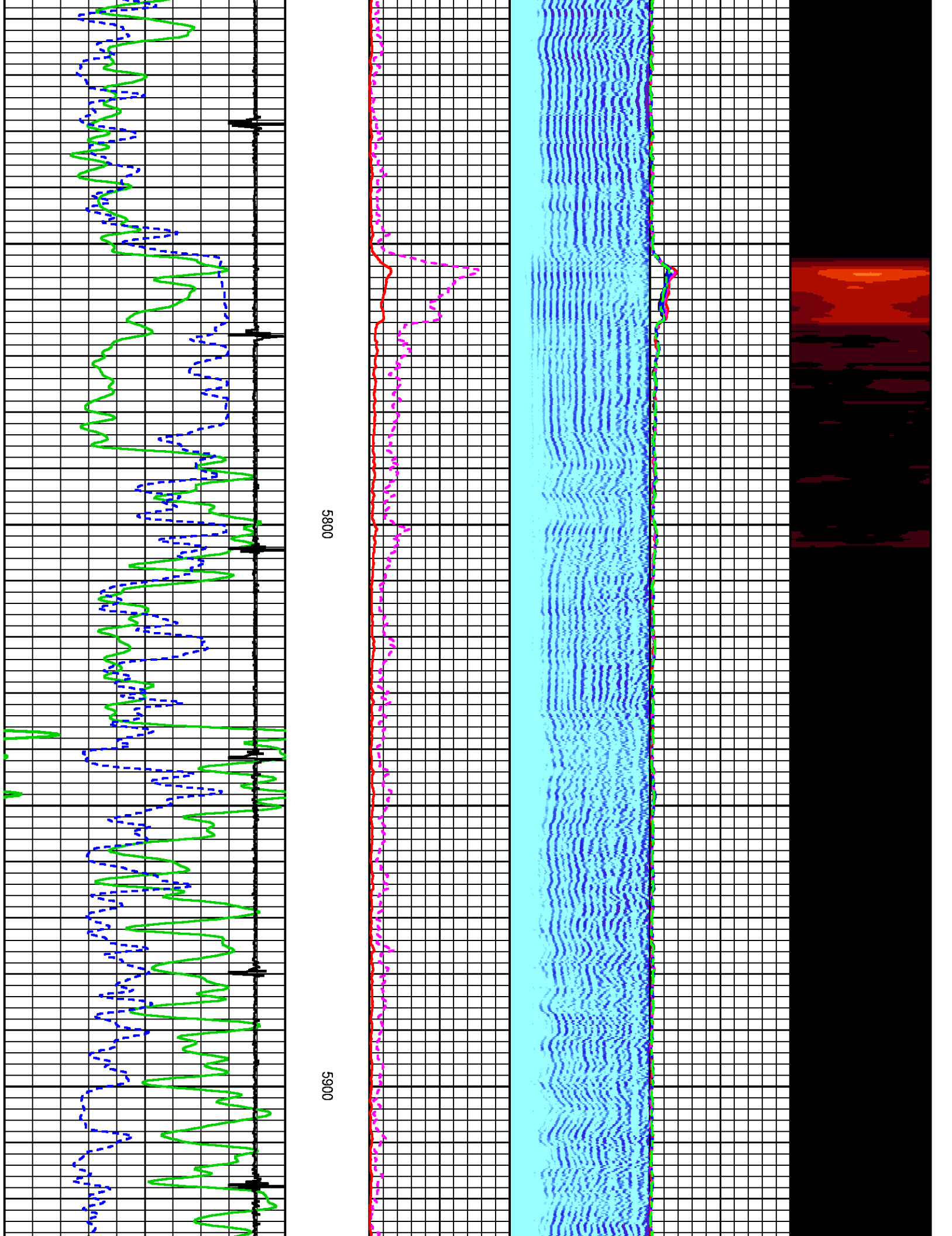


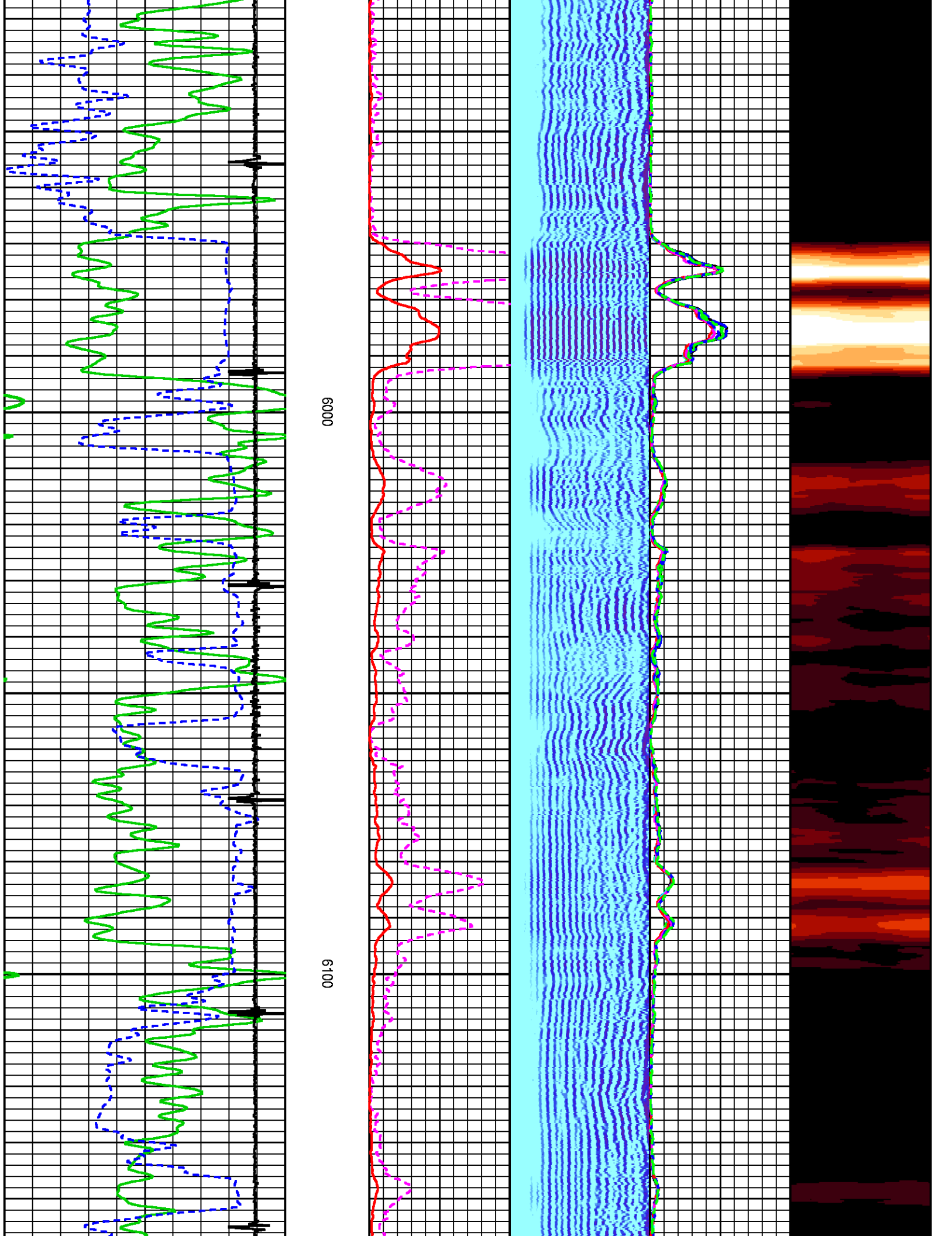


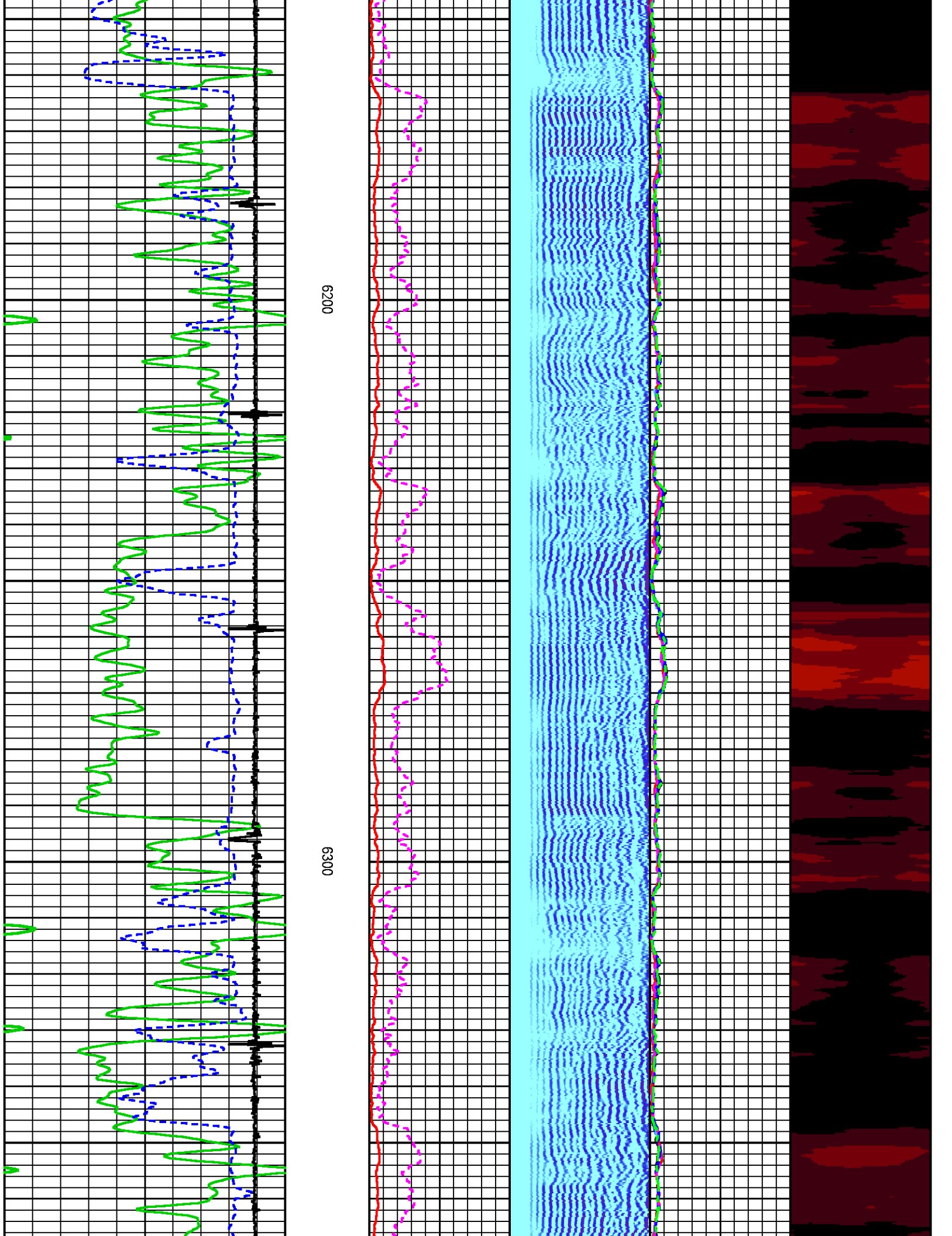


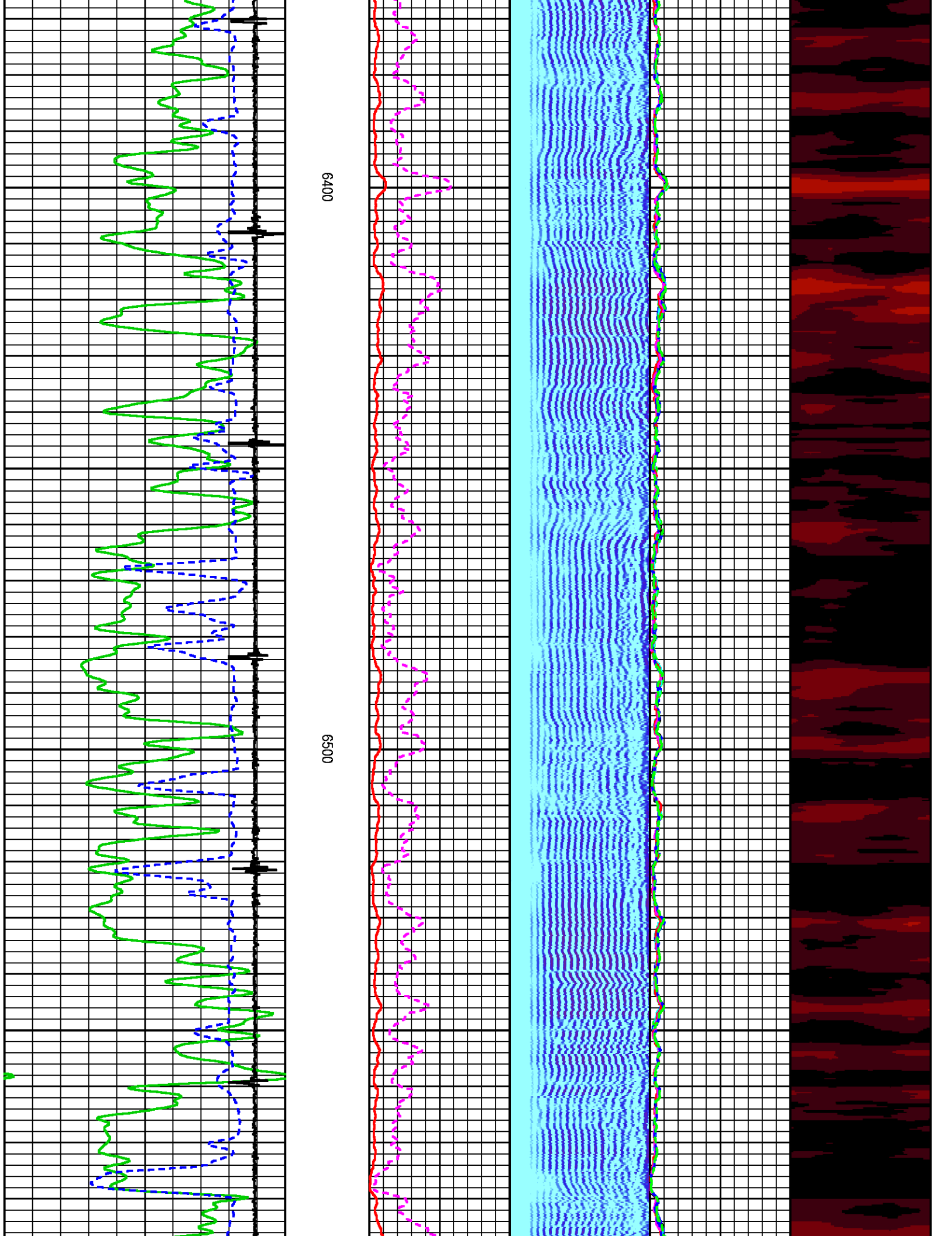


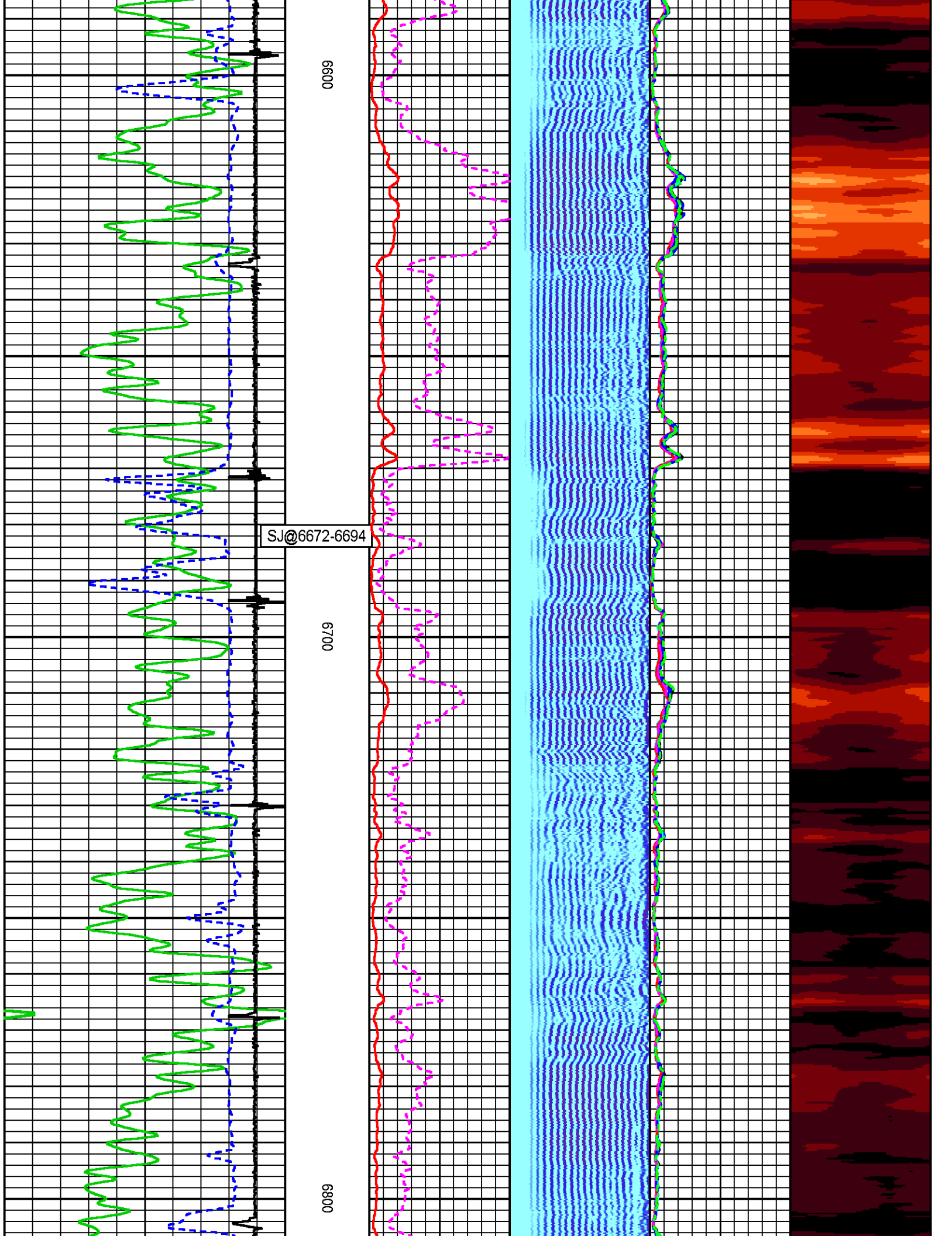


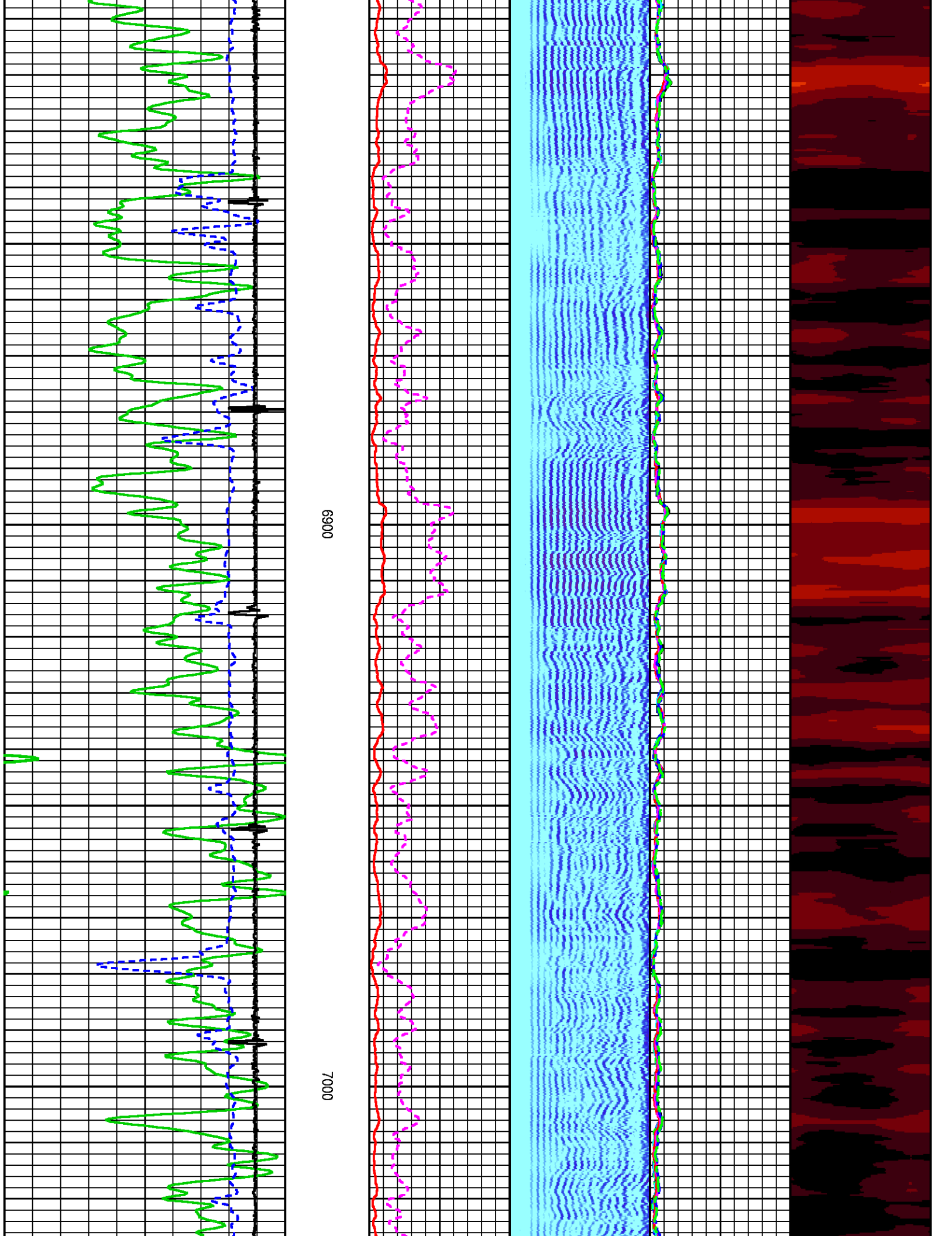


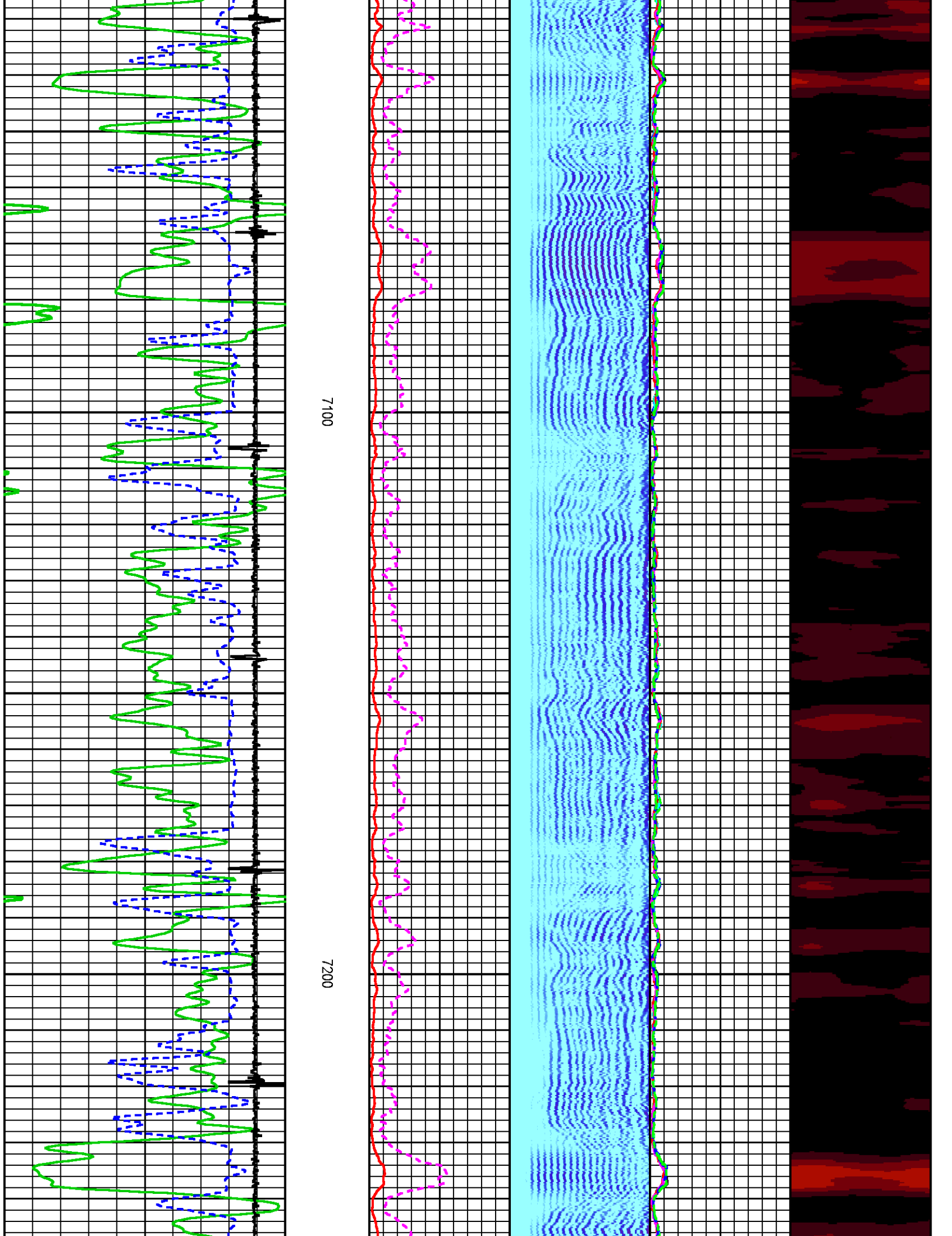


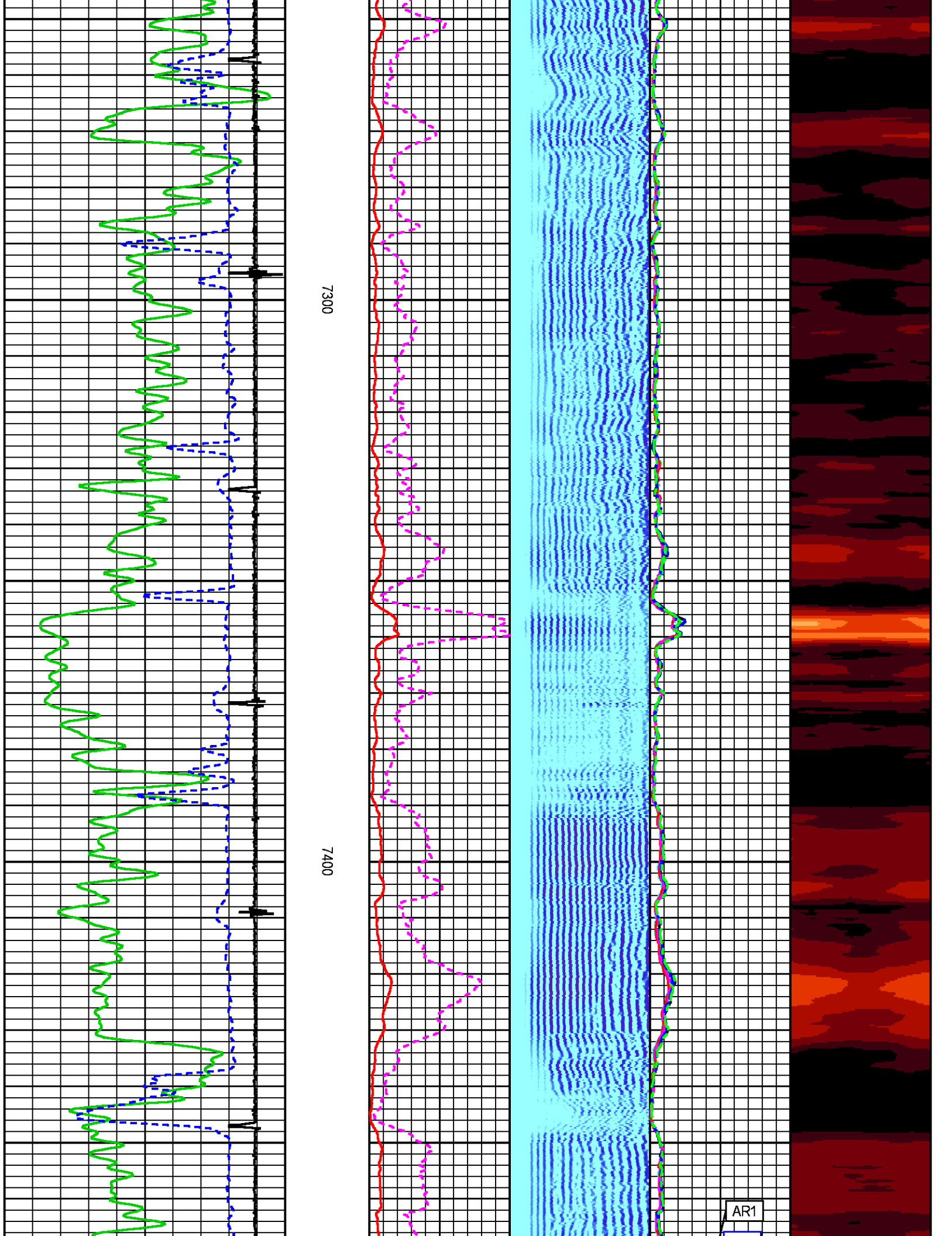


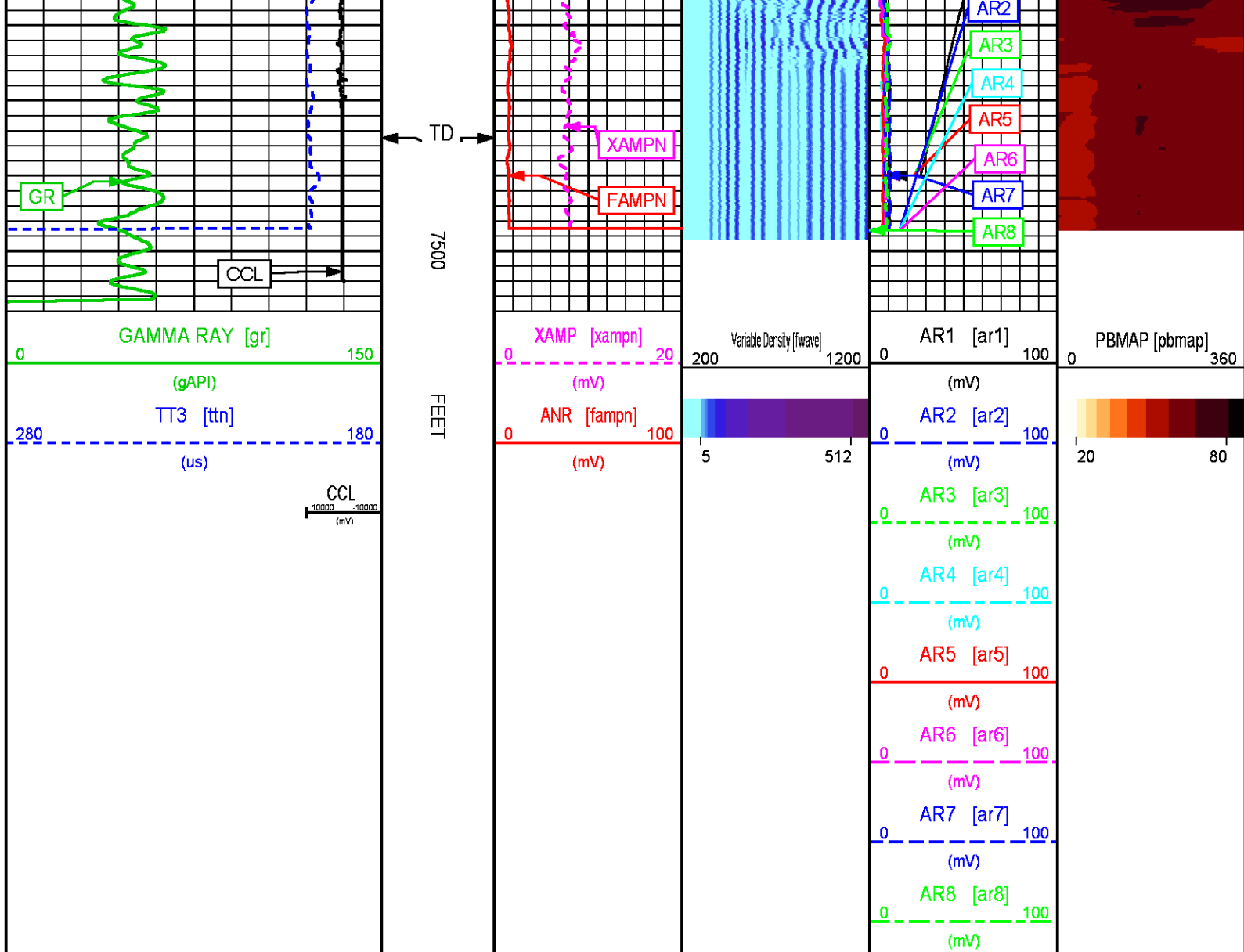












RAL REPEAT PASS

ECLIPS 7.0w PC-ECLIPS General Release Rel 7.0w Fri Jun 09 11:02:06 Central Daylight Time 2017
Patches: 2

Plotted: Mon Dec 04 11:57:31 2017

PARAMETER AND FILTER SUMMARY REPORT

FILE: C:\dat1a\LARAMIE_BRUTON_19_06W\p012g01.prm
LOGGING MODE: DEPTH DIRECTION: UP
TOP DEPTH: 7236.000 ft BOTTOM DEPTH: 7535.750 ft

SYMMETRIC FILTER

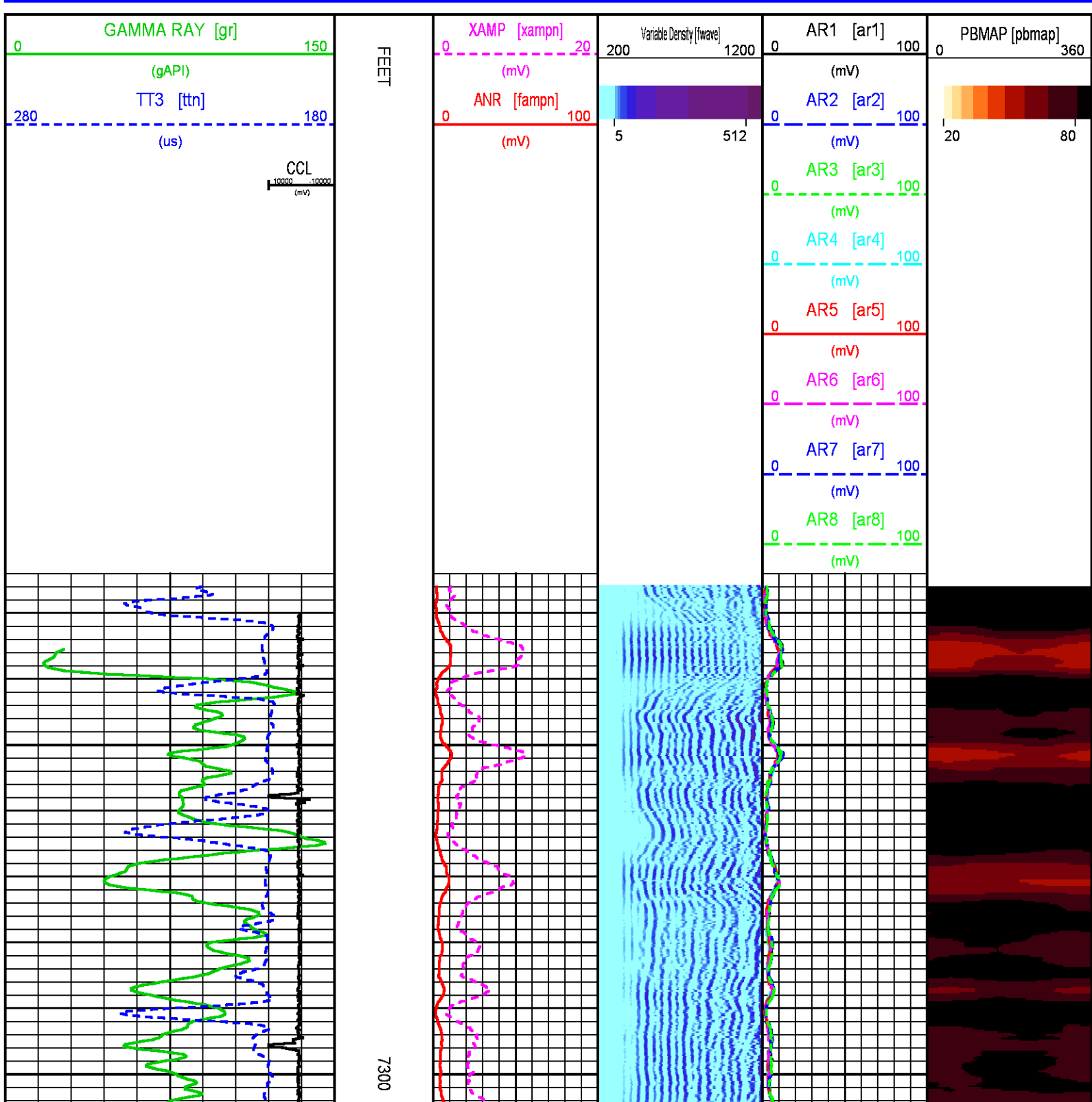
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)
GR	FILTER ()	medium (1)		TOP BOTTOM
AMPLITUDE	FILTER ()	light (2a)		" "
TRAVEL TIME	FILTER ()	medium (1)		" "

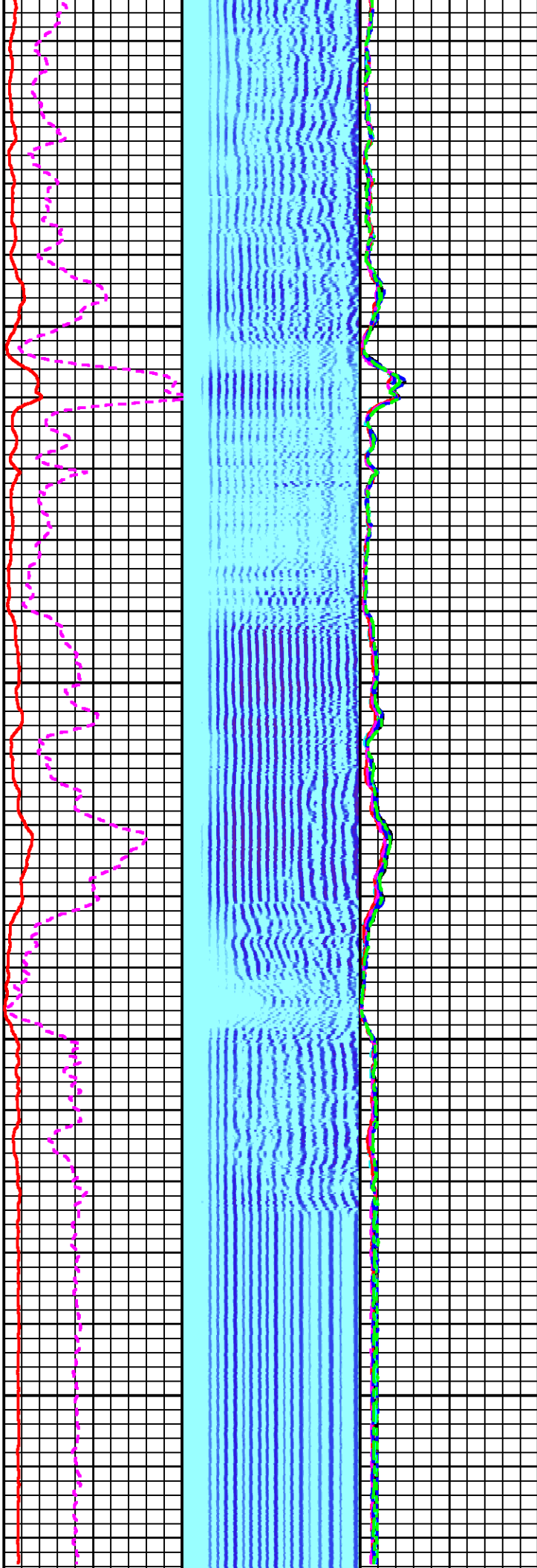
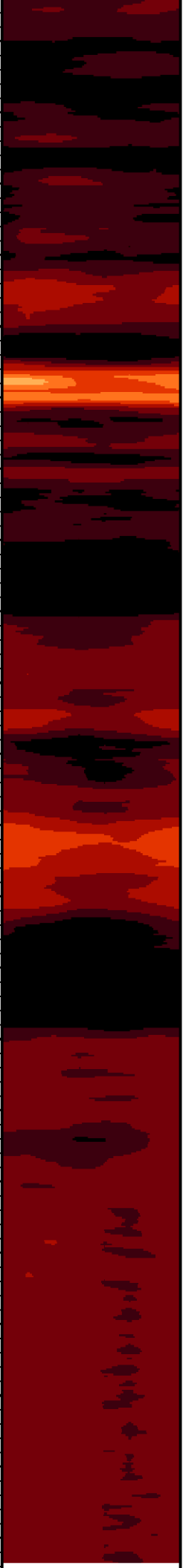
RAL CCL PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
CCL FLOOR	CCL FLOOR	0.00		TOP	BOTTOM
ANALOG RAL PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
AMPLITUDE WINDOW (NEAR)	AMP WINDOW START (fgp1*)	185	us	TOP	BOTTOM
	AMP WINDOW START (fgp2*)	185	us	"	"
	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*)	160	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*)	-65	us	"	"
	TOOL DELAY (str2*)	-65	us	"	"
	TOOL DELAY (str3*)	-65	us	"	"
	TOOL DELAY (str4*)	-65	us	"	"
	TOOL DELAY (str5*)	-65	us	"	"
	TOOL DELAY (str6*)	-65	us	"	"
	TOOL DELAY (str7*)	-65	us	"	"
	TOOL DELAY (str8*)	-65	us	"	"
	TOOL DELAY (strn*)	-65	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	"	"
	FRFF 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		

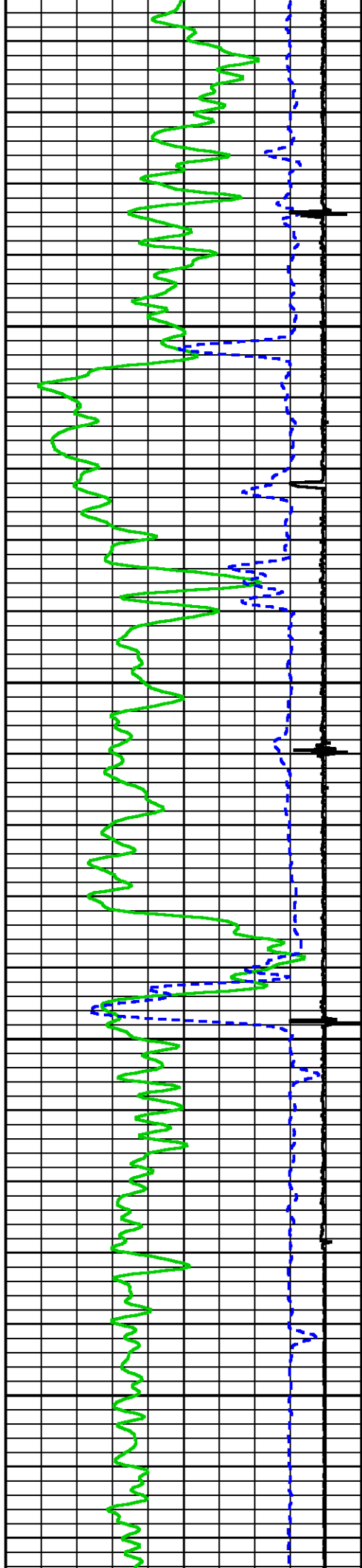
Presentation	: BHIH2LZZF2:C:\dat1a\LARAMIE_BRUTON_19_06W\LARAMIE_RAL+RAL_RPT_06W.fvpdf [5"/100' Scale]
Plot Interval	: 7225.75 - 7534.75 Feet
Data File 1	: F1 : BHIH2LZZF2:C:\dat1a\LARAMIE_BRUTON_19_06W\RAL_RPT_06W.xtf
Created On	: N/A
Company	: LARAMIE ENERGY
Well	: BRUTON 19-06W
Field	: VEGA
File Interval	: 7224.75 - 7536 Feet
OCT	: p012g

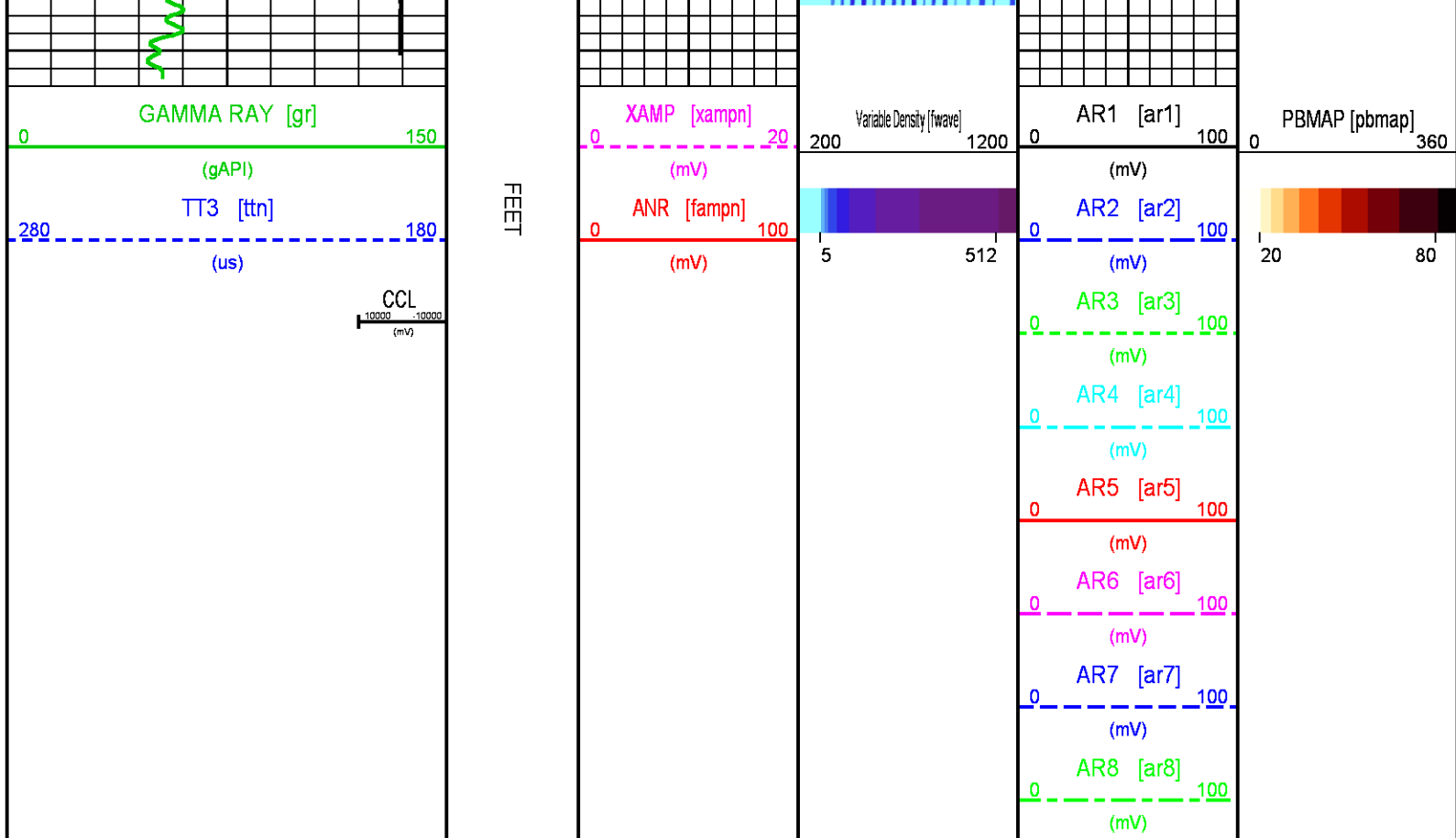




7400

7500





CALIBRATION / VERIFICATION SUMMARY

Source File: C:\dat1a\LARAMIE_BRUTON_19_06Wp012g.tp1

RAL PRIMARY CALIBRATION SUMMARY

TOOL #: 1426XA 10124106

DATE/TIME PERFORMED: Sun Dec 03 11:43:32 2017

UNIT #: HOIST 6670

	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)	-0.07	-0.20	-0.10	-0.04	-0.07	-0.11	-0.04	-0.08	-0.02	-0.69	-0.17
AMP FLUID (mV)	118	118	117	117	116	116	117	117	118	158	116
TT (us)	218	218	218	218	219	218	218	217	218	330	218
M FACTOR	0.85	0.85	0.85	0.85	0.86	0.86	0.86	0.85	0.84	0.85	0.86

M FACTOR 0.85 0.85 0.85 0.85 0.86 0.86 0.86 0.85 0.84 0.95 0.86

RAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1426XA 10124106 DATE/TIME PERFORMED: Sun Dec 03 11:49:19 2017 DAYS SINCE CAL: 0

UNIT #: HOIST 6670 CABLE #: 6670CH 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	-0.06	0.02	0.00	-0.01	-0.04	0.00	-0.04	-0.02	-0.17	-0.08
AMP AIR	0.23	-0.12	0.09	0.11	-0.14	0.30	0.05	0.18	0.06	-0.06	100.05

SHOP M FACTOR	SHOP A FACTOR	WIRELIN E FACTOR
0.86	0.00	1.00

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

CABLEHEAD

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

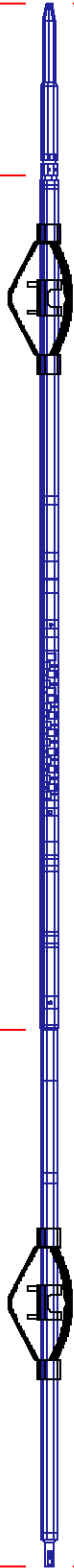
RADIAL BOND TOOL

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

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

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



20.38'

NEAR RCVR 11.17'

FAR RCVR 10.21'

CCL 5.79'

GR 1.67'

TEMP 0.17'



COUNTY	MESA	STATE	COLORADO	05077104260000
LOCATION: SHL: 39.262765N;107.815129W BHL:39.265826N;107.816592W SEC 19 TWP 9S RGE 93W		ELEVATIONS: KB 7286 FT DF 7285 FT GL 7262 FT		
		DATE 03-Dec-2017		