



RADIAL CEMENT BOND LOG

FILE NO: CH146482	COMPANY LARAMIE ENERGY LLC
API NO: 05077105800000	WELL SUP & SHEP 0993-25-09W
	FIELD BUZZARD CREEK
	COUNTY MESA STATE COLORADO

Ver. 4.12	LOCATION: SHL LAT: 39.244812 N LONG: 107.723460 W SEC 25 TWP 9S RGE 93W	OTHER SERVICES RPM
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PERMANENT DATUM LOG MEASURED FROM DRILL. MEAS. FROM	GL KB KB GL	ELEVATION 8078 FT 30 FT ABOVE P.D. 8078 FT
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DATE	23-Jan-2019
RUN	1
TRIP	1
SERVICE ORDER	US146482
DEPTH DRILLER	8637 FT
DEPTH LOGGER	8464 FT
BOTTOM LOGGED INTERVAL	8464 FT
TOP LOGGED INTERVAL	0 FT
TIME STARTED	12:30
TIME FINISHED	14:30
OPERATOR RIG TIME	2 HOURS
TYPE OF FLUID IN HOLE	WATER
FLUID DENSITY	NA
FLUID SALINITY	NA
FLUID LEVEL	58 FT
LOGGED CEMENT TOP	1250 FT
WELLHEAD PRESSURE	0 PSI
MAXIMUM HOLE DEVIATION	NA
NOMINAL LOGGING SPEED	100 F/MN
MAX. RECORDED TEMP.	250 DEGF
REFERENCE LOG	NA
REFERENCE LOG DATE	NA
EQUIP. NO.	ML-4291
LOCATION	GRAND JCT.
RECORDED BY	TIM 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
OPERATION 2: RPM/GR/CCL RUN IN PNC-3D

LOGGED WITH 0 PSI ON WELLHEAD

SJ: 6824' - 6845'
SJ: 7633' - 7652'

EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
1	1	RAL	1426XA	10222301	CENTRALIZED
1	1	GR/CCL	1355XA	11871507	CENTRALIZED

RAL MAIN PASS 0 PSI

ECLIPS 7.0i ECLIPS General Release Rel 7.0i Thu Jun 08 20:36:10 CDT 2017
 Updates: 1 Patches: 1

Plotted: Tue Jan 22 16:54:12 2019

PARAMETER AND FILTER SUMMARY REPORT					
FILE: /dat1a/LARAMIE_SS_09W/p012g03.prm LOGGING MODE: DEPTH DIRECTION: UP TOP DEPTH: 74.250 ft BOTTOM DEPTH: 3599.000 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	0.00		TOP	BOTTOM
ANALOG RAL PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
AMPLITUDE WINDOW (NEAR)	AMP WINDOW START (fgp1*)	187	us	TOP	BOTTOM
	AMP WINDOW START (fgp2*)	187	us	"	"
	AMP WINDOW START (fgp3*)	187	us	"	"
	AMP WINDOW START (fgp4*)	187	us	"	"
	AMP WINDOW START (fgp5*)	187	us	"	"
	AMP WINDOW START (fgp6*)	187	us	"	"
	AMP WINDOW START (fgp7*)	187	us	"	"
	AMP WINDOW START (fgp8*)	187	us	"	"
	AMP WINDOW START (fgpn*)	187	us	"	"
	AMP WINDOW LENGTH	25	us	"	"
TRAVEL TIME WINDOW (NEAR)	TT WINDOW START (ttn*)	199	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*)	-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	"	"

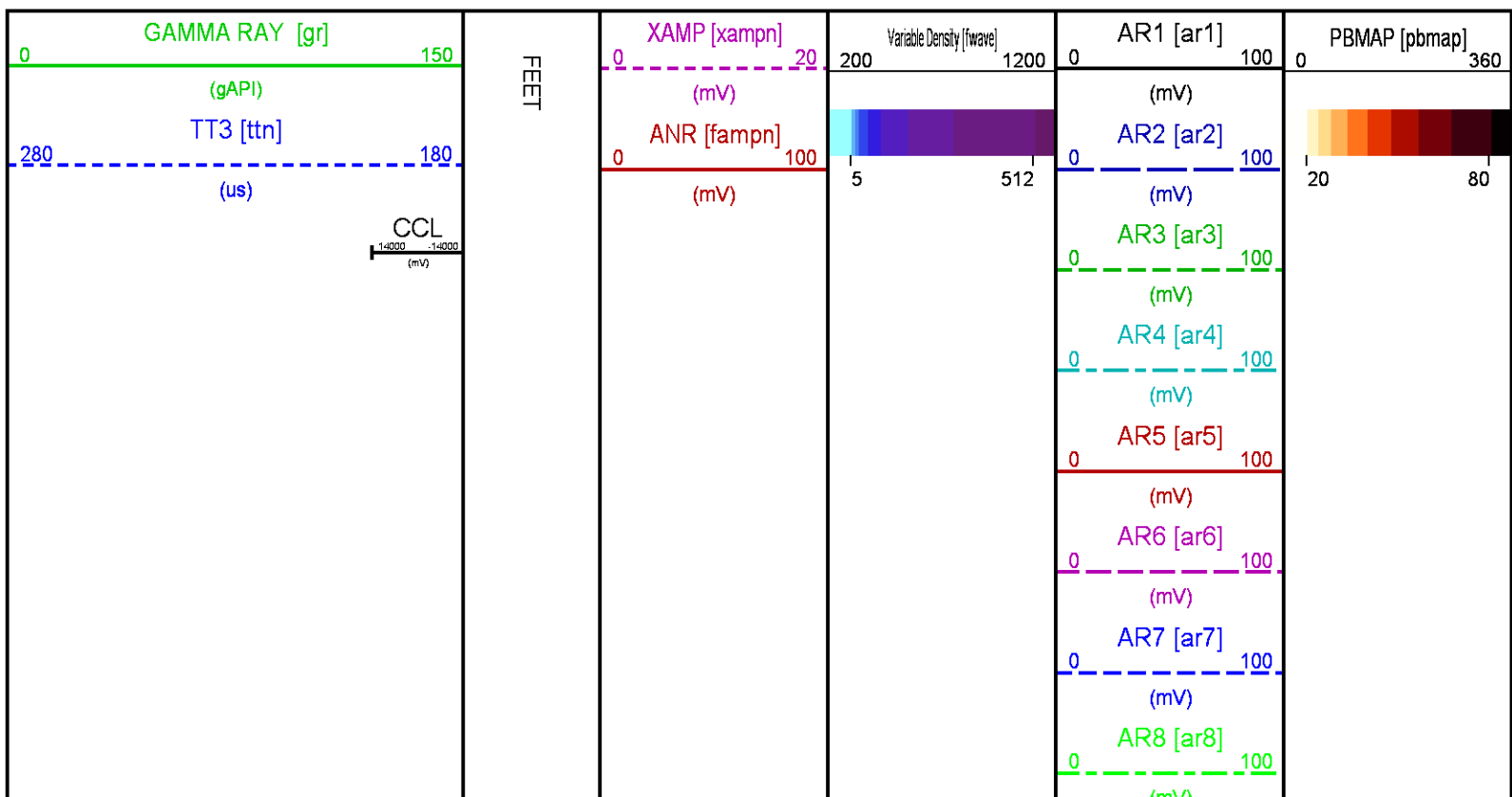
CURVE DESCRIPTION REPORT

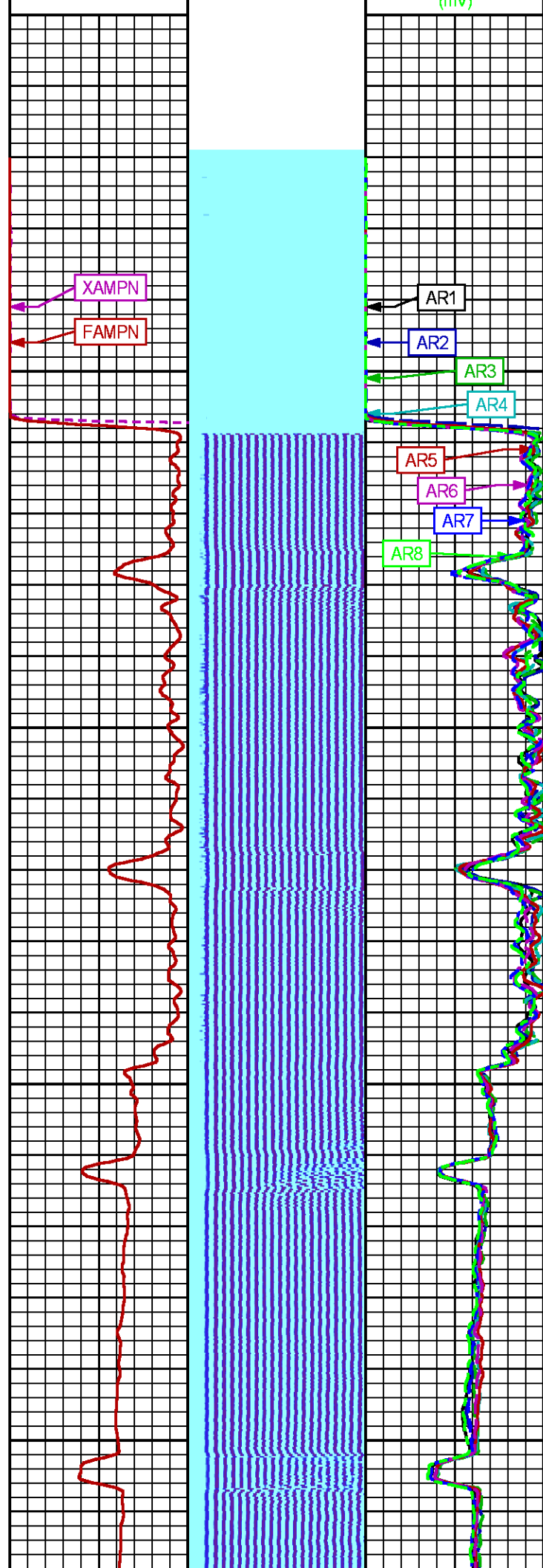
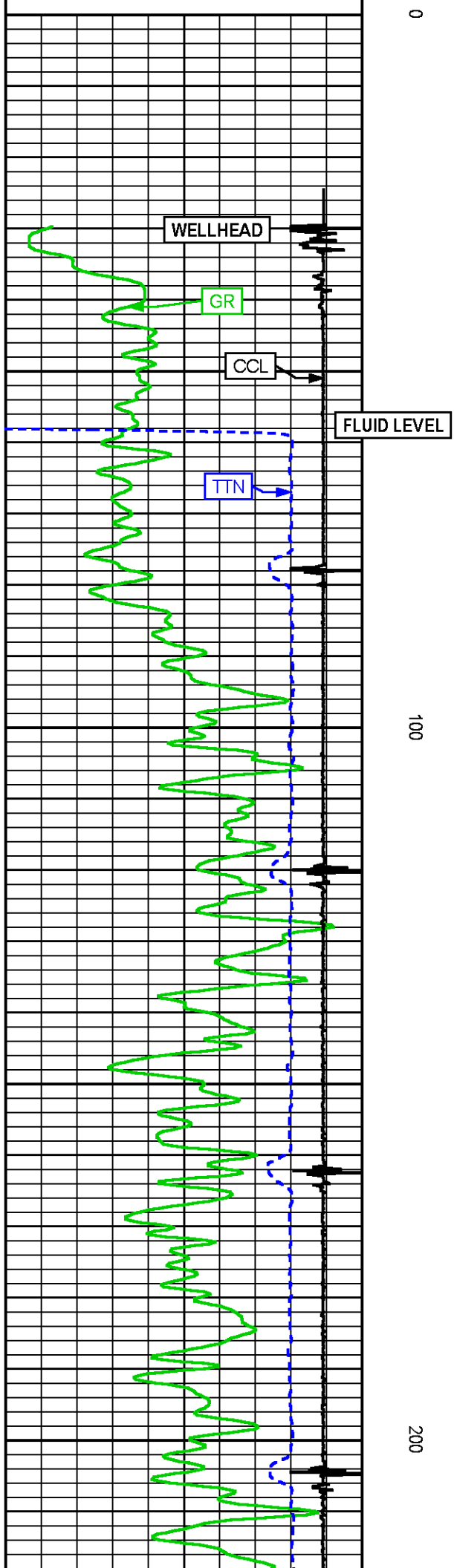
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AR1	Jan 22 14:05:04 2019	FIXED GATE AMPLITUDE T-R1
F1:AR2	Jan 22 14:05:04 2019	FIXED GATE AMPLITUDE T-R2
F1:AR3	Jan 22 14:05:04 2019	FIXED GATE AMPLITUDE T-R3
F1:AR4	Jan 22 14:05:04 2019	FIXED GATE AMPLITUDE T-R4
F1:AR5	Jan 22 14:05:04 2019	FIXED GATE AMPLITUDE T-R5
F1:AR6	Jan 22 14:05:04 2019	FIXED GATE AMPLITUDE T-R6
F1:AR7	Jan 22 14:05:04 2019	FIXED GATE AMPLITUDE T-R7
F1:AR8	Jan 22 14:05:04 2019	FIXED GATE AMPLITUDE T-R8
F1:CCL	Jan 22 14:05:04 2019	CASING COLLAR LOCATOR
F1:FAMPN	Jan 22 14:05:04 2019	FIXED GATE AMPLITUDE NEAR RECEIVER
F1:FWAVE	Jan 22 14:05:04 2019	FAR WAVE FORM
F1:GR	Jan 22 14:05:04 2019	GAMMA RAY
F1:PBMAP	Jan 22 14:05:04 2019	PERCENT BOND CEMENT MAP
F1:TTN	Jan 22 14:05:04 2019	TRAVELTIME FROM NEAR TRANSMITTER-RECEIVER
F1:XAMPN	Jan 22 14:05:04 2019	FIXED GATE AMPLITUDE NEAR RECEIVER TIMES FIVE

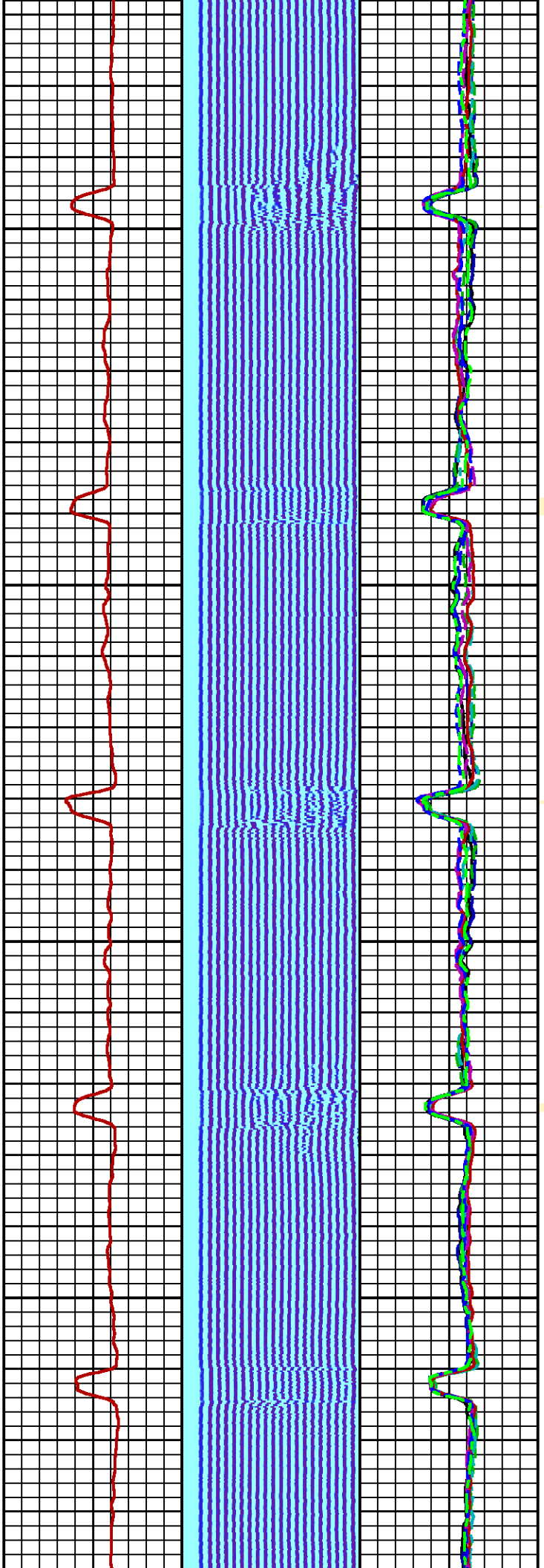
CURVE MEASURE POINT OFFSET

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_SS_09W/09W_RAL_,MAIN.fvpdf [5"/100' Scale]
Plot Interval	: 0 - 8480 Feet
Data File 1	: F1 : SysA:/dat1a/LARAMIE_SS_09W/RALMAIN.xtf
Created On	: Jan 22 14:05:04 2019
Company	: LARAMIE ENERGY LLC
Well	: SUP & SHEP 0993-25-09W
Field	: BUZZARD CREEK
File Interval	: 8.5 - 8494.75 Feet
OCT	: p012g

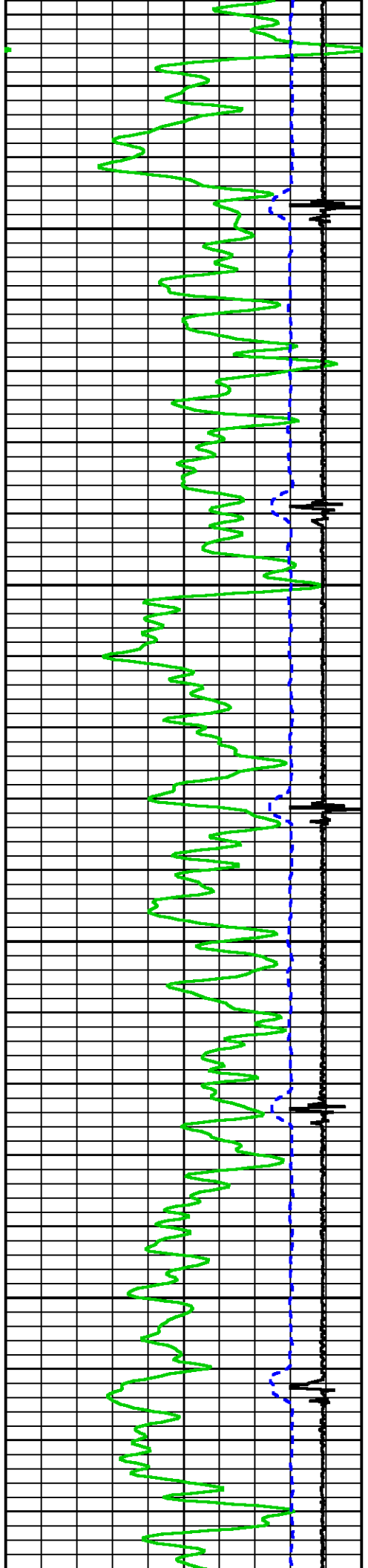


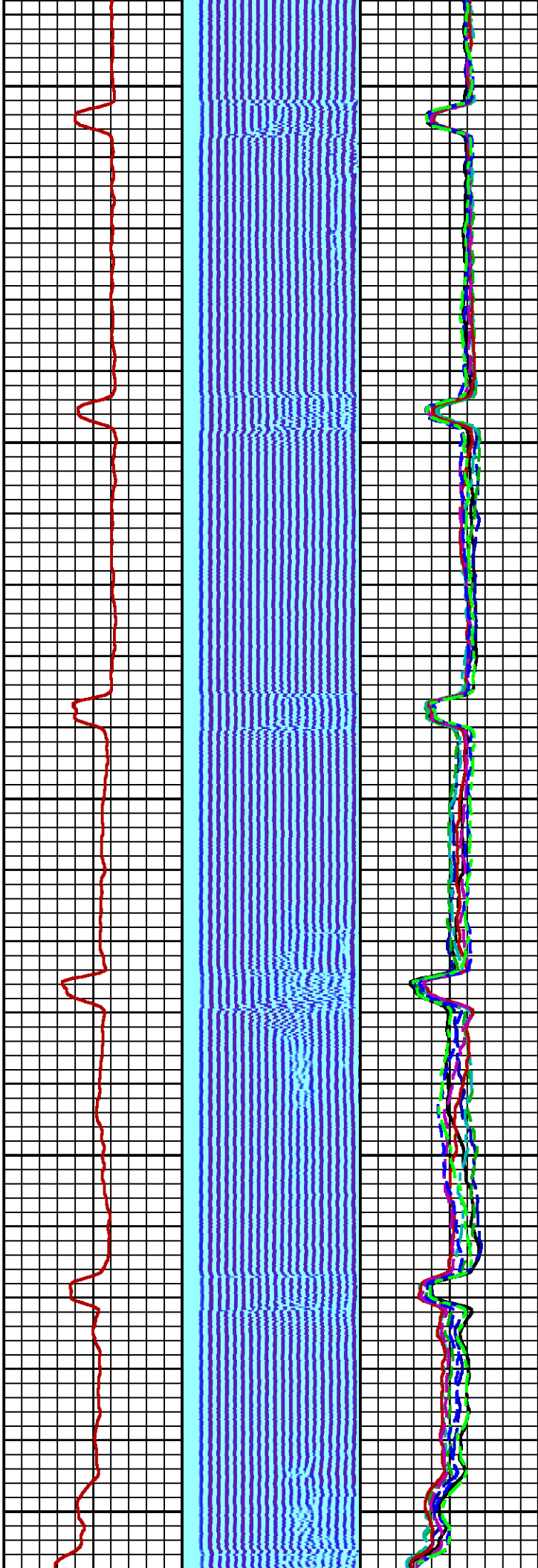
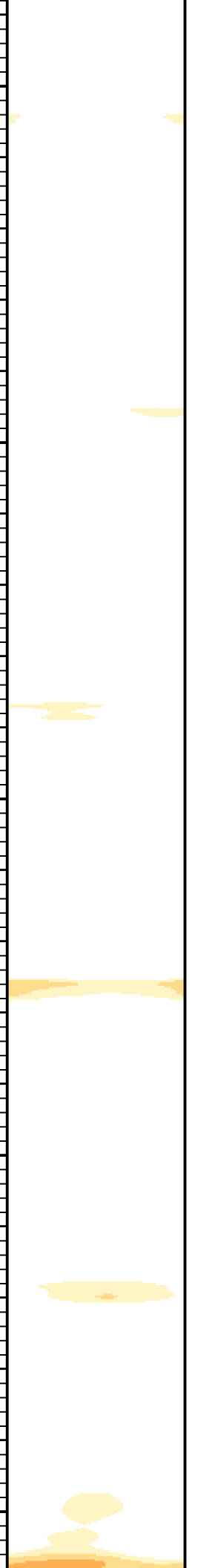




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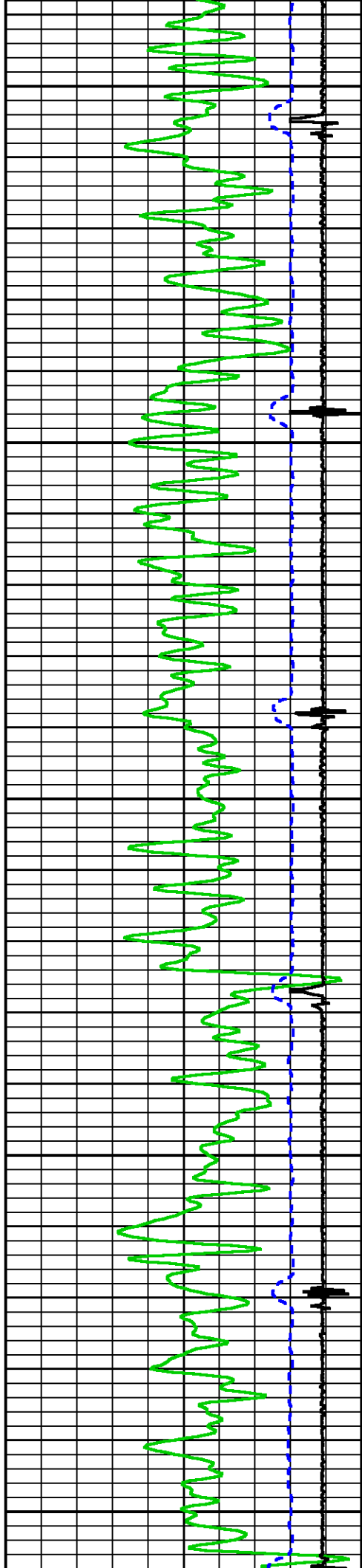
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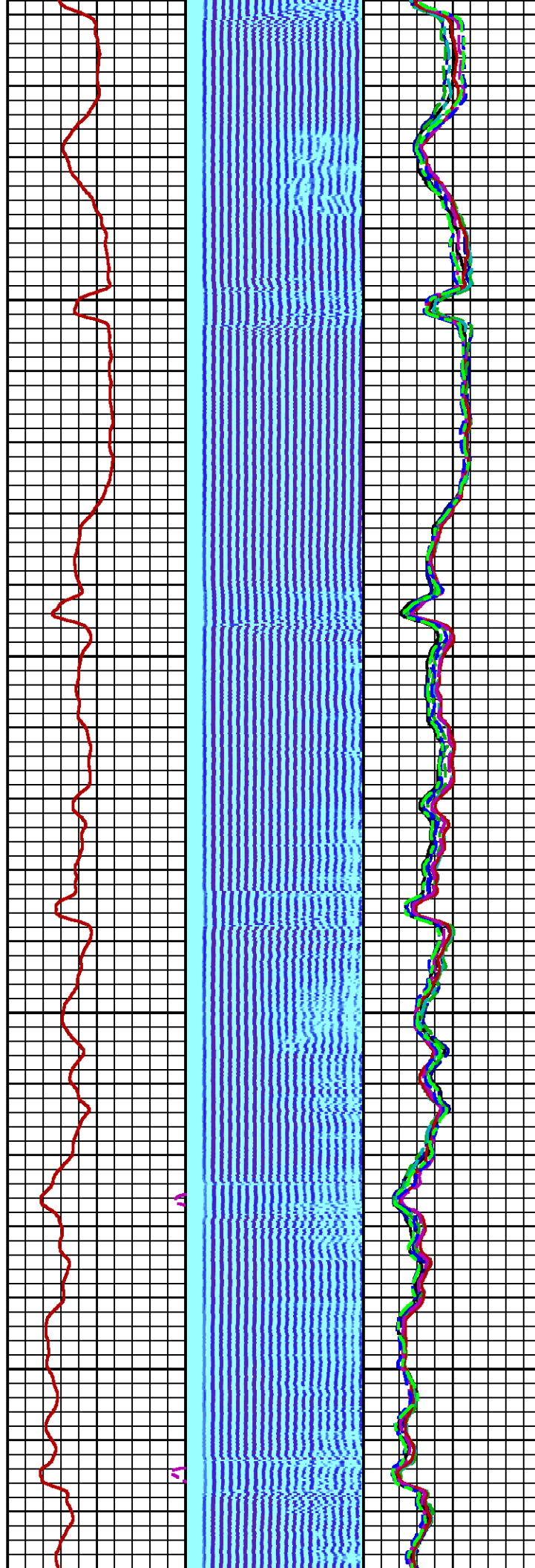
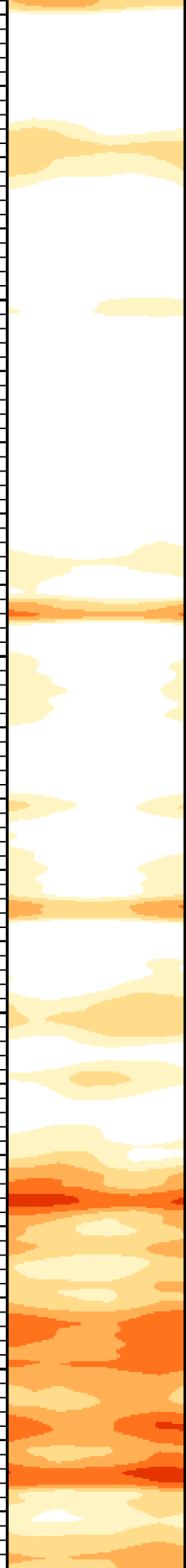




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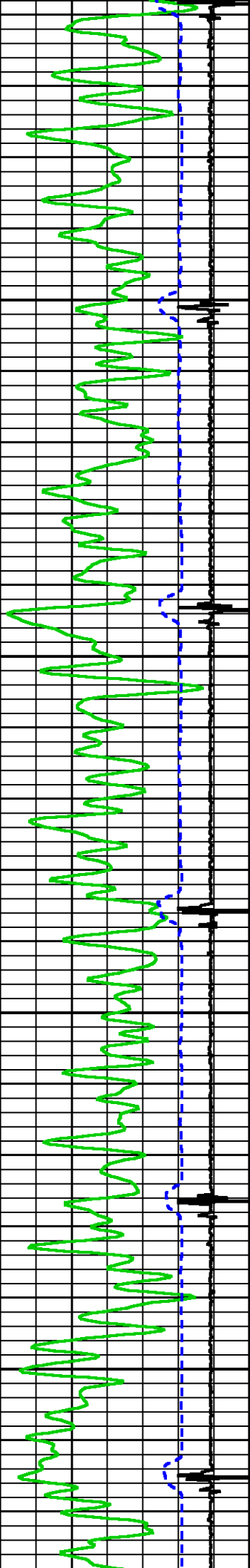
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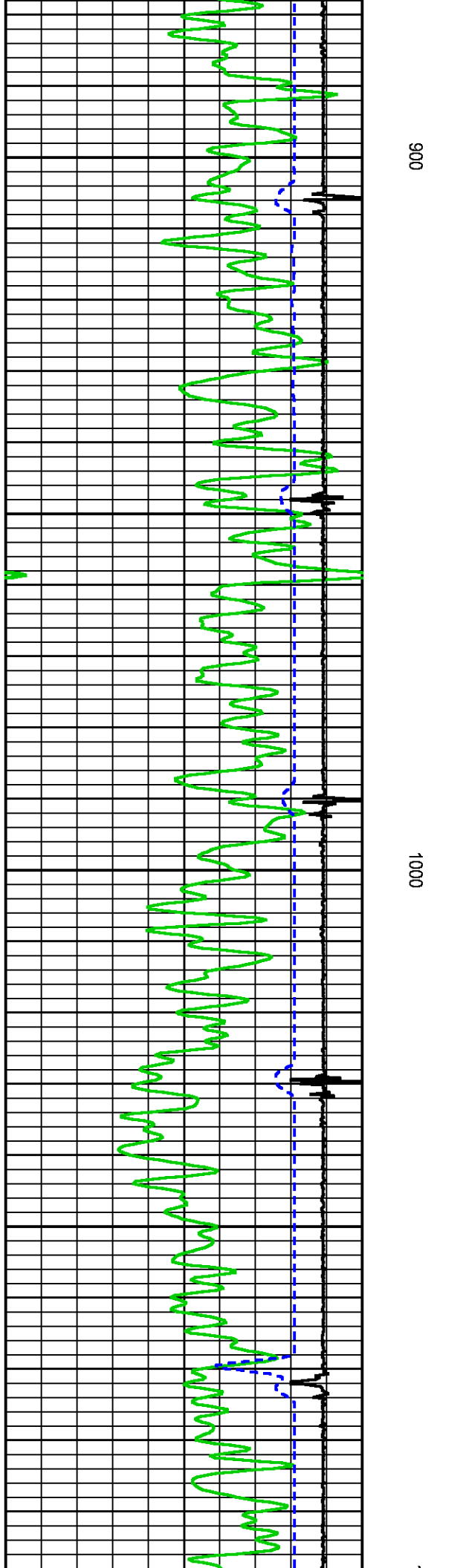
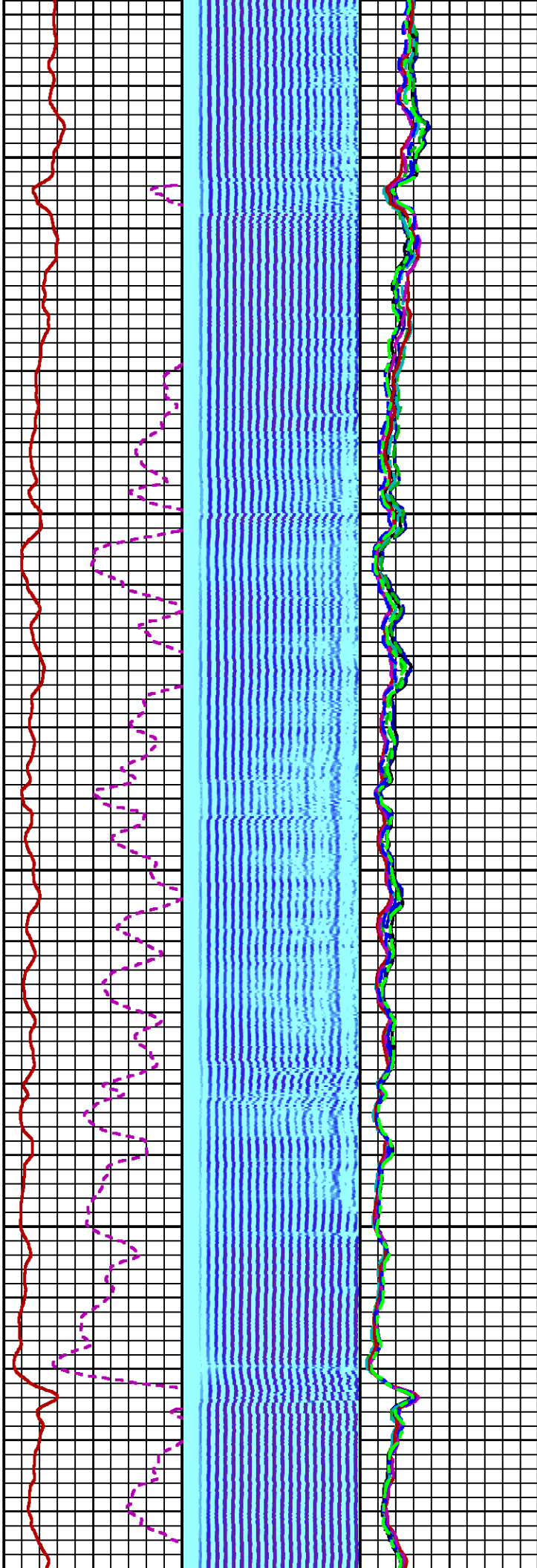
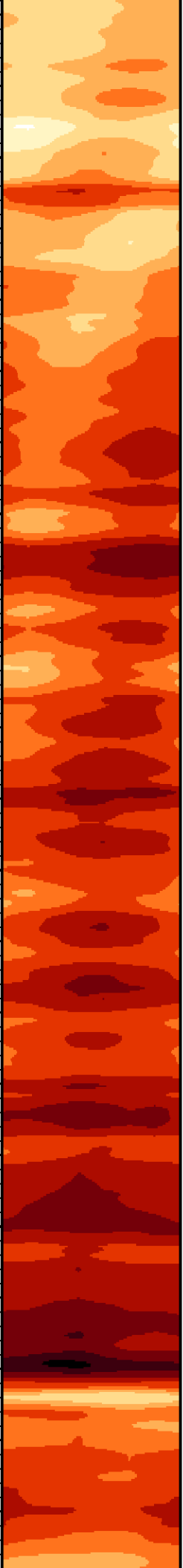


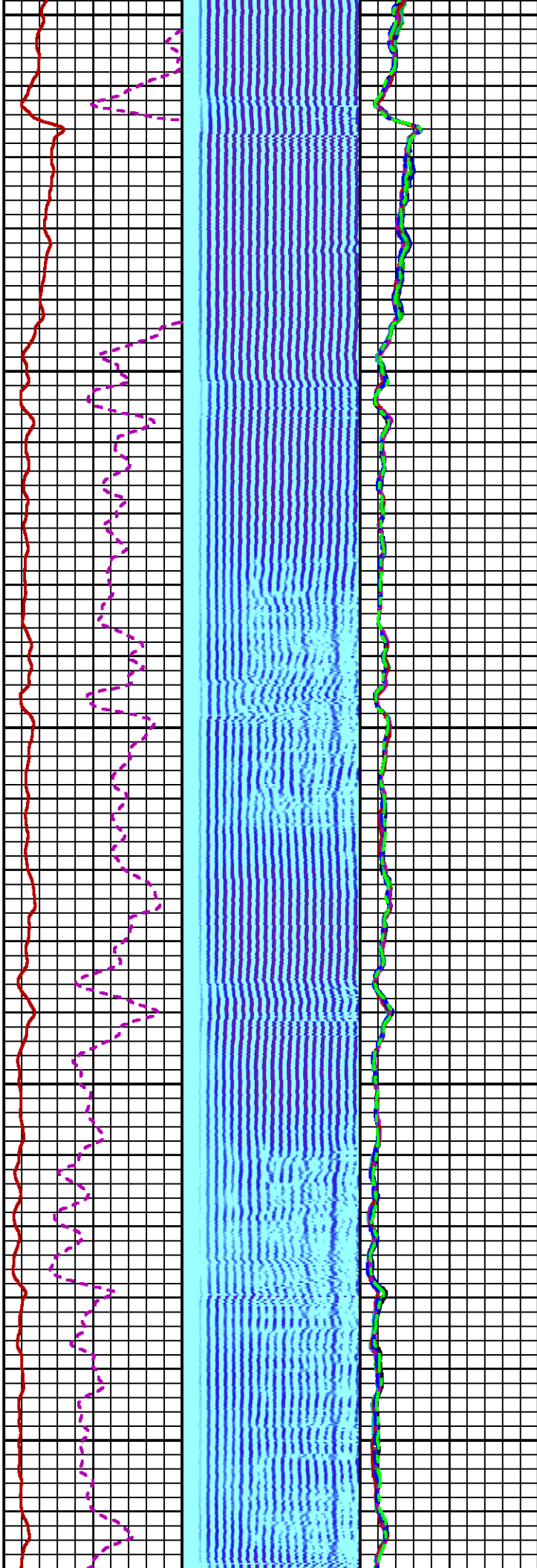
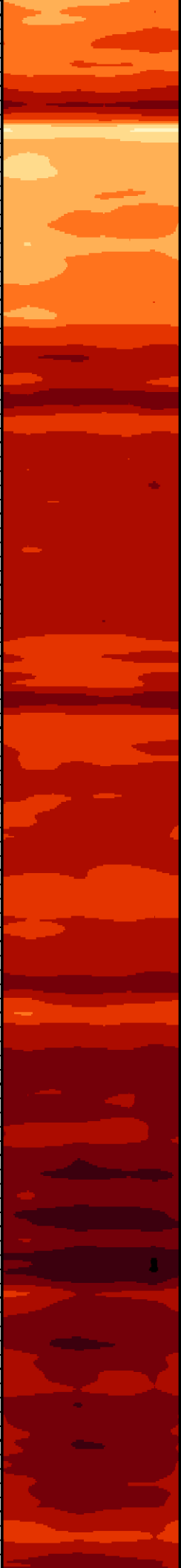


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800





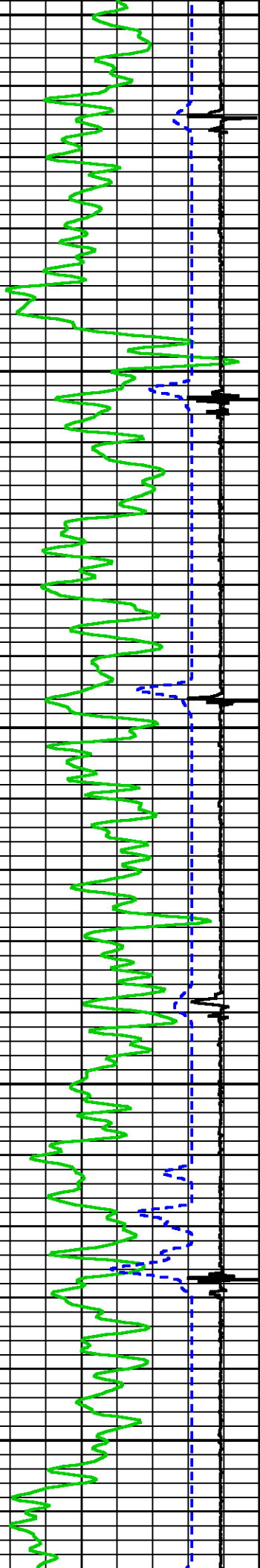


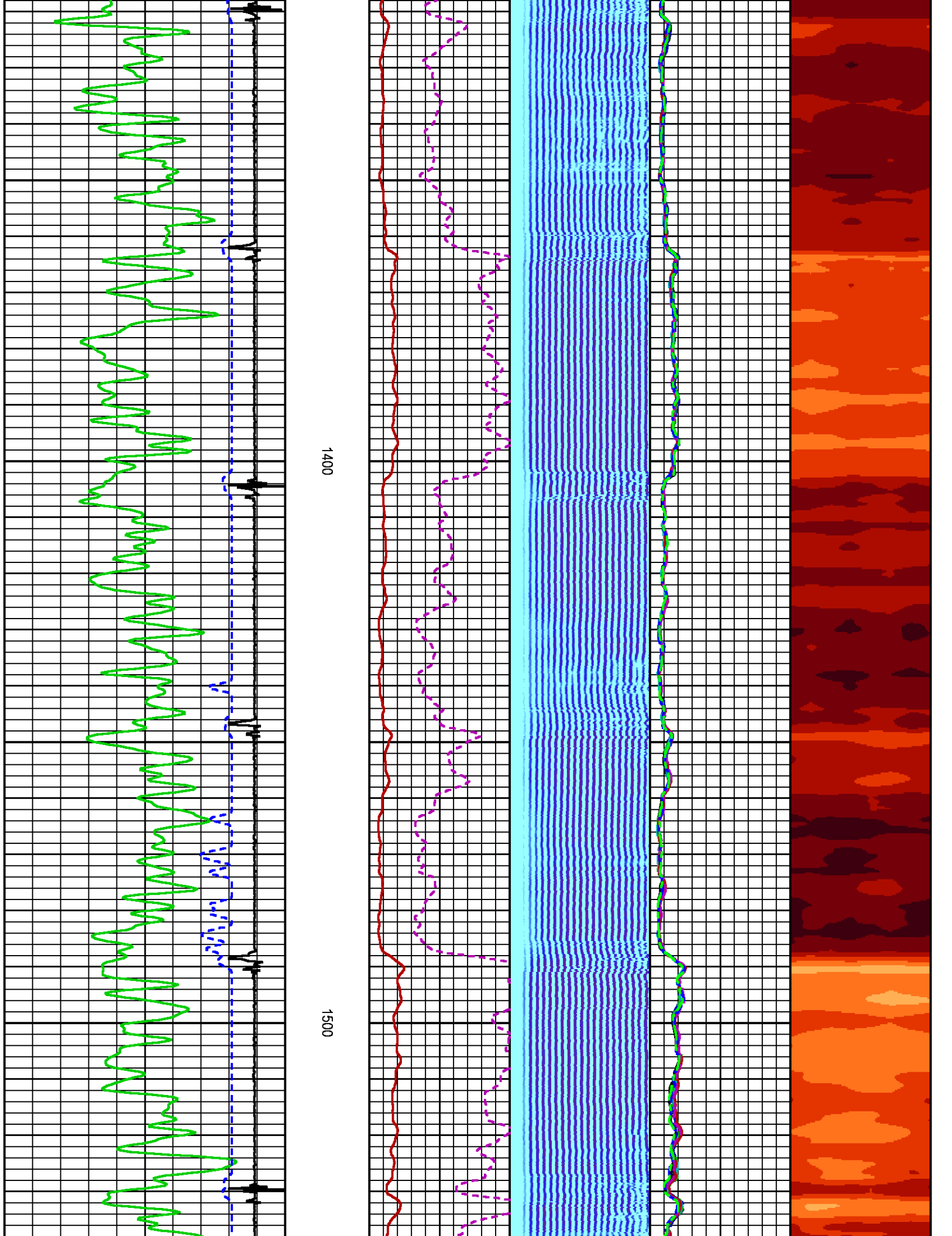
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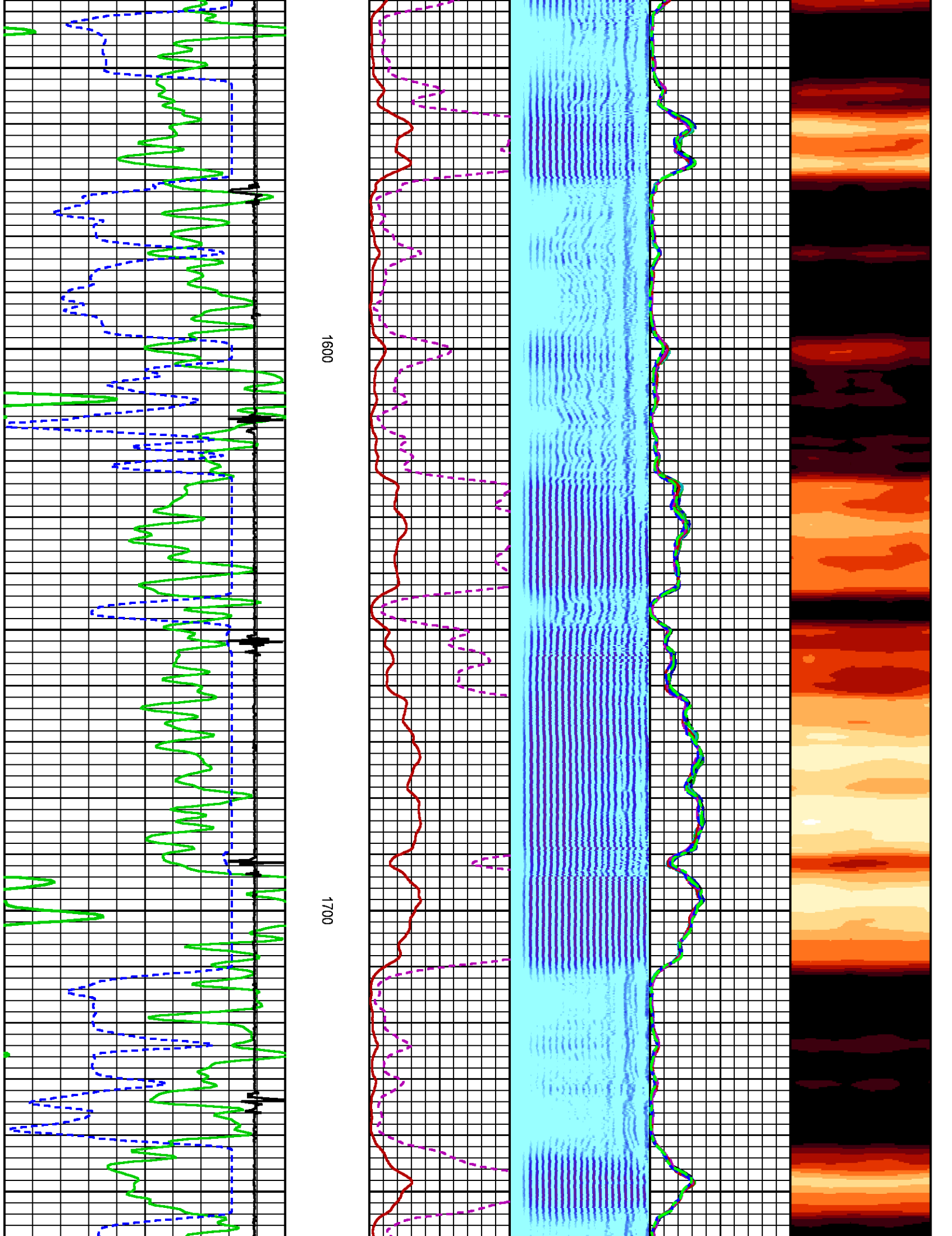
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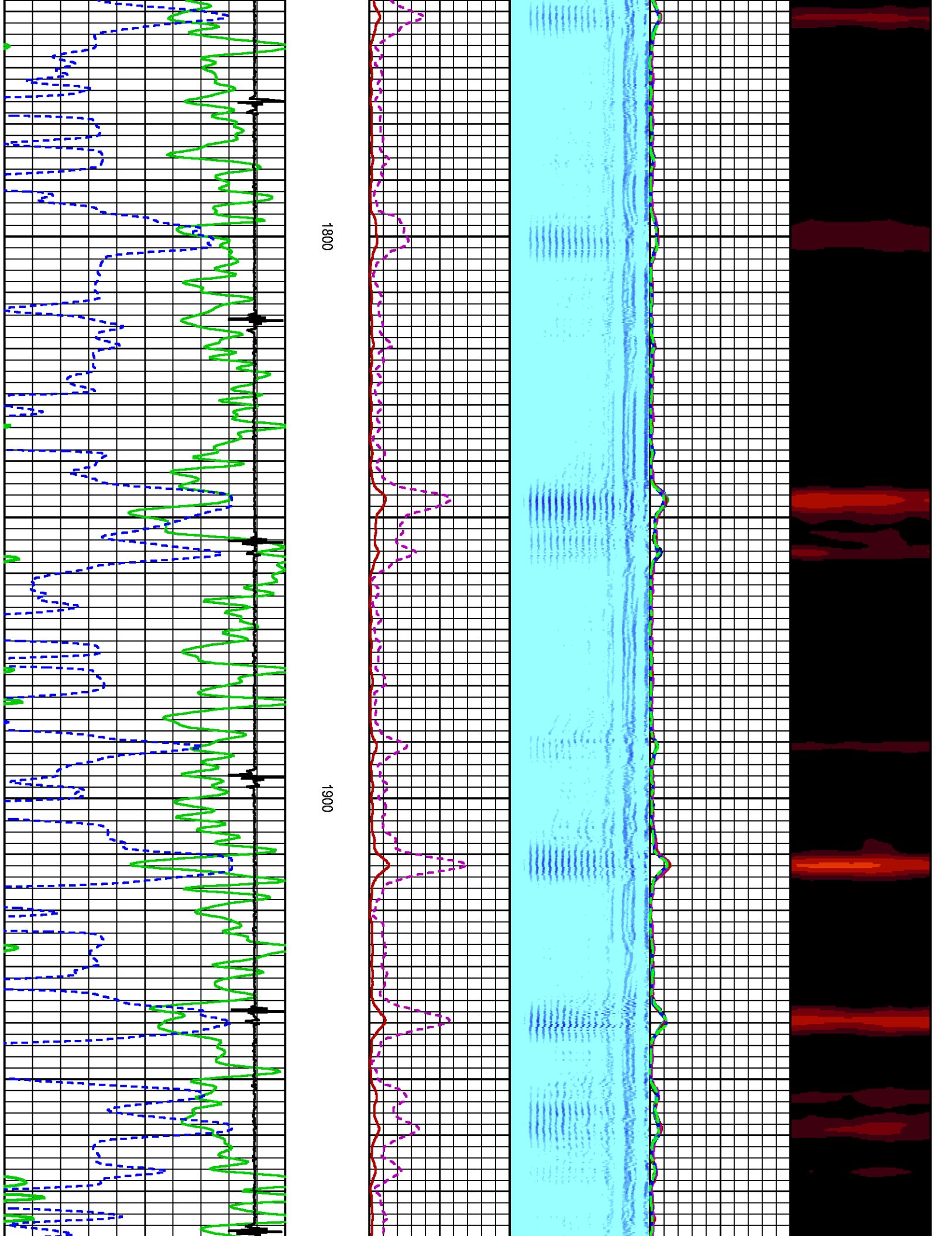
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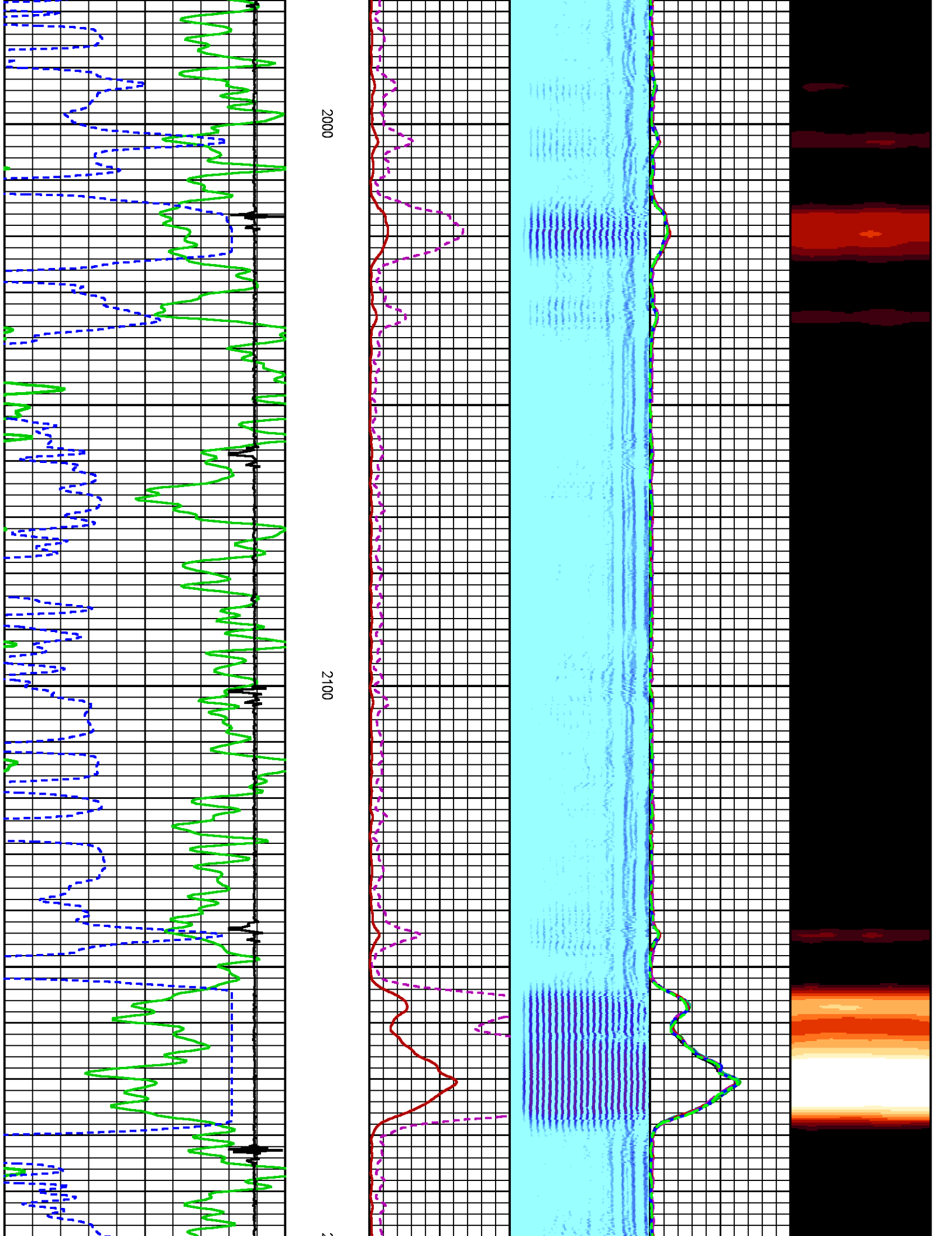
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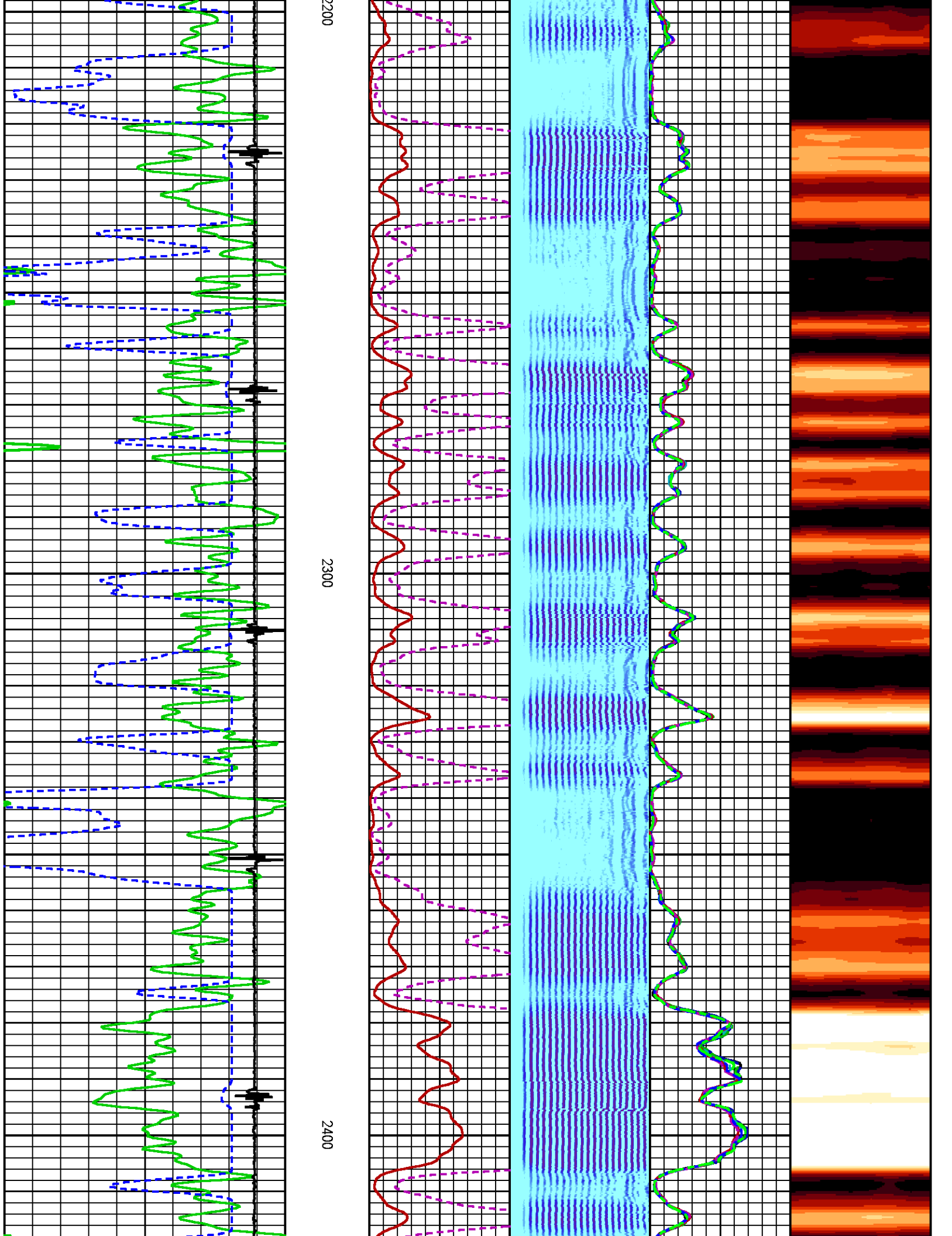


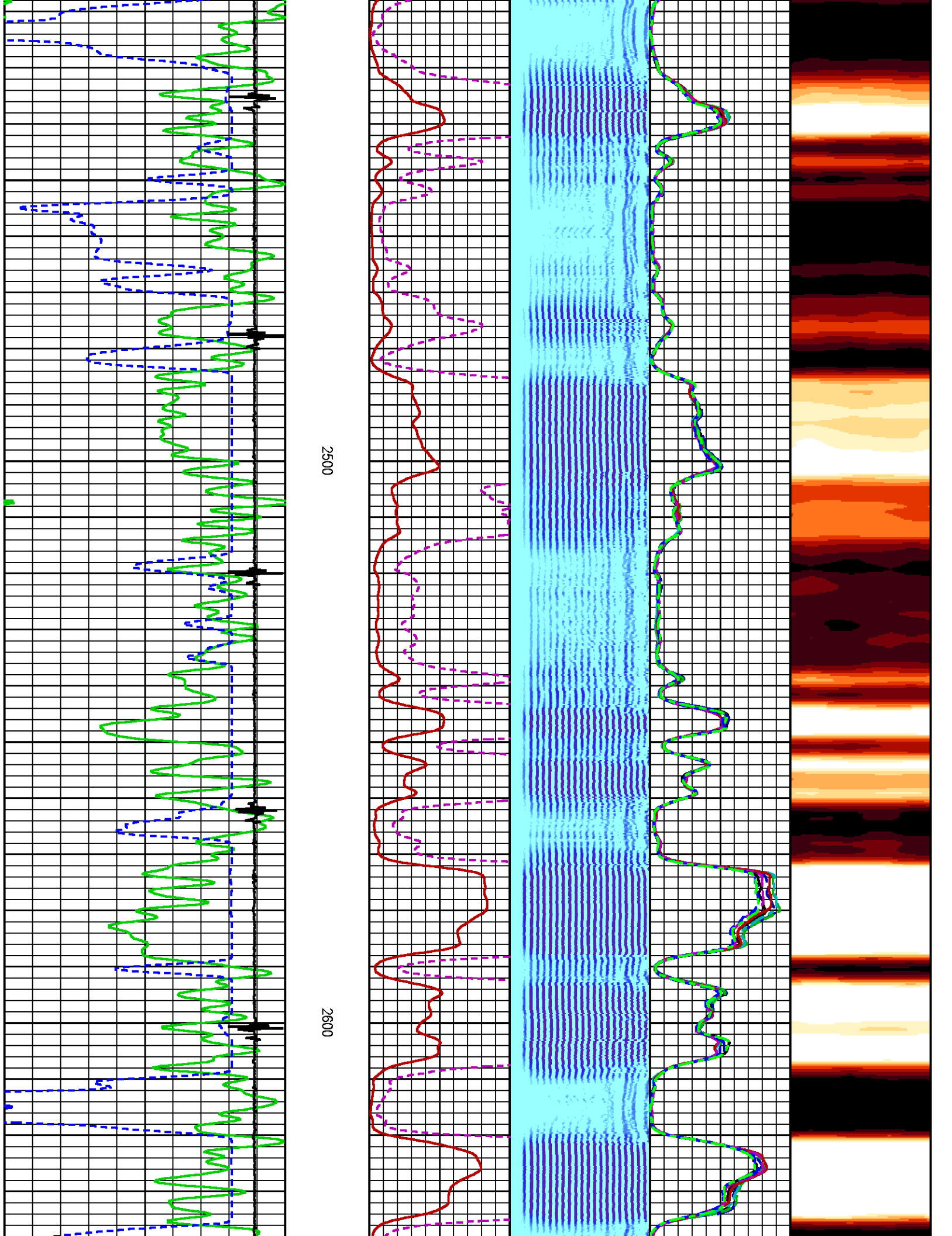


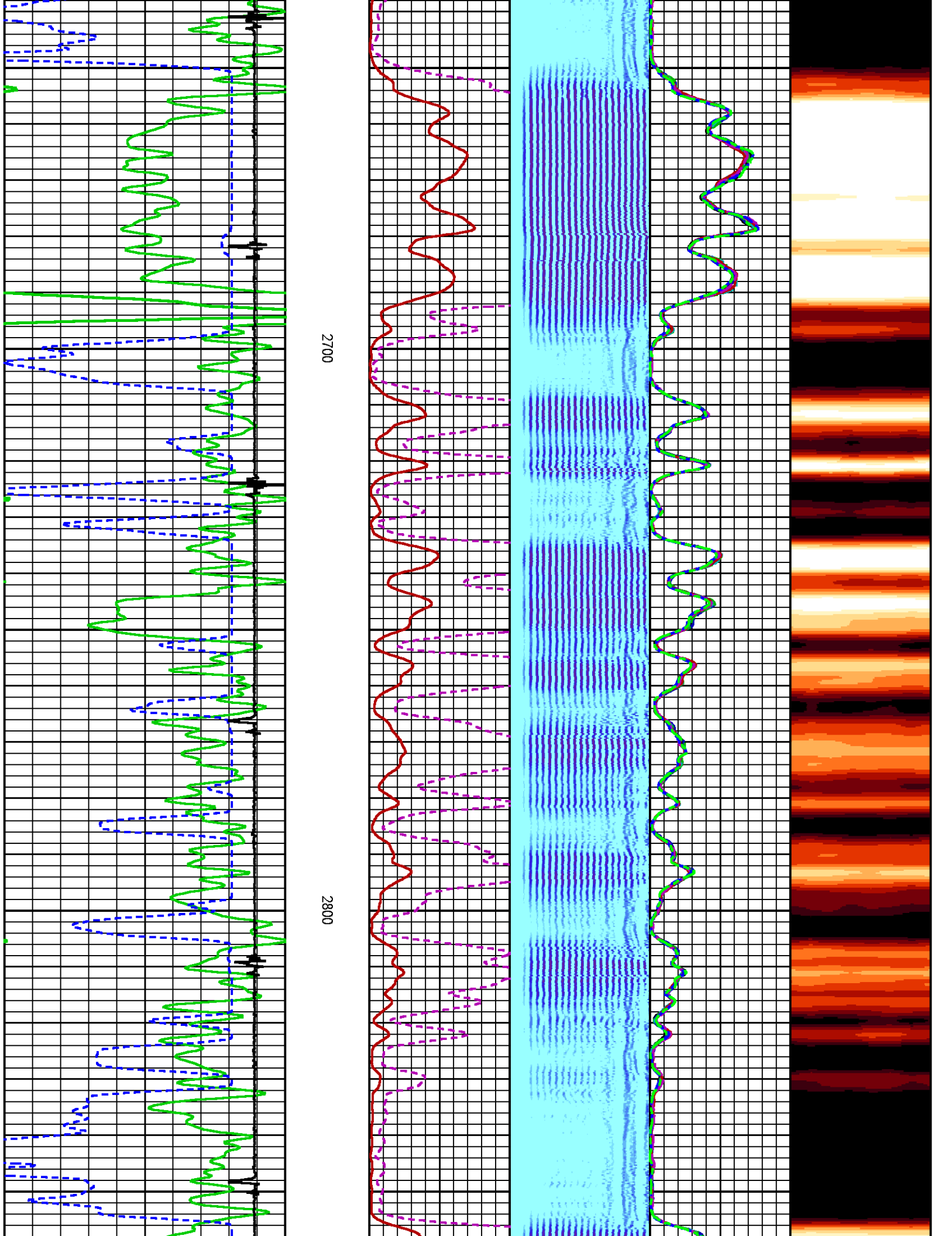


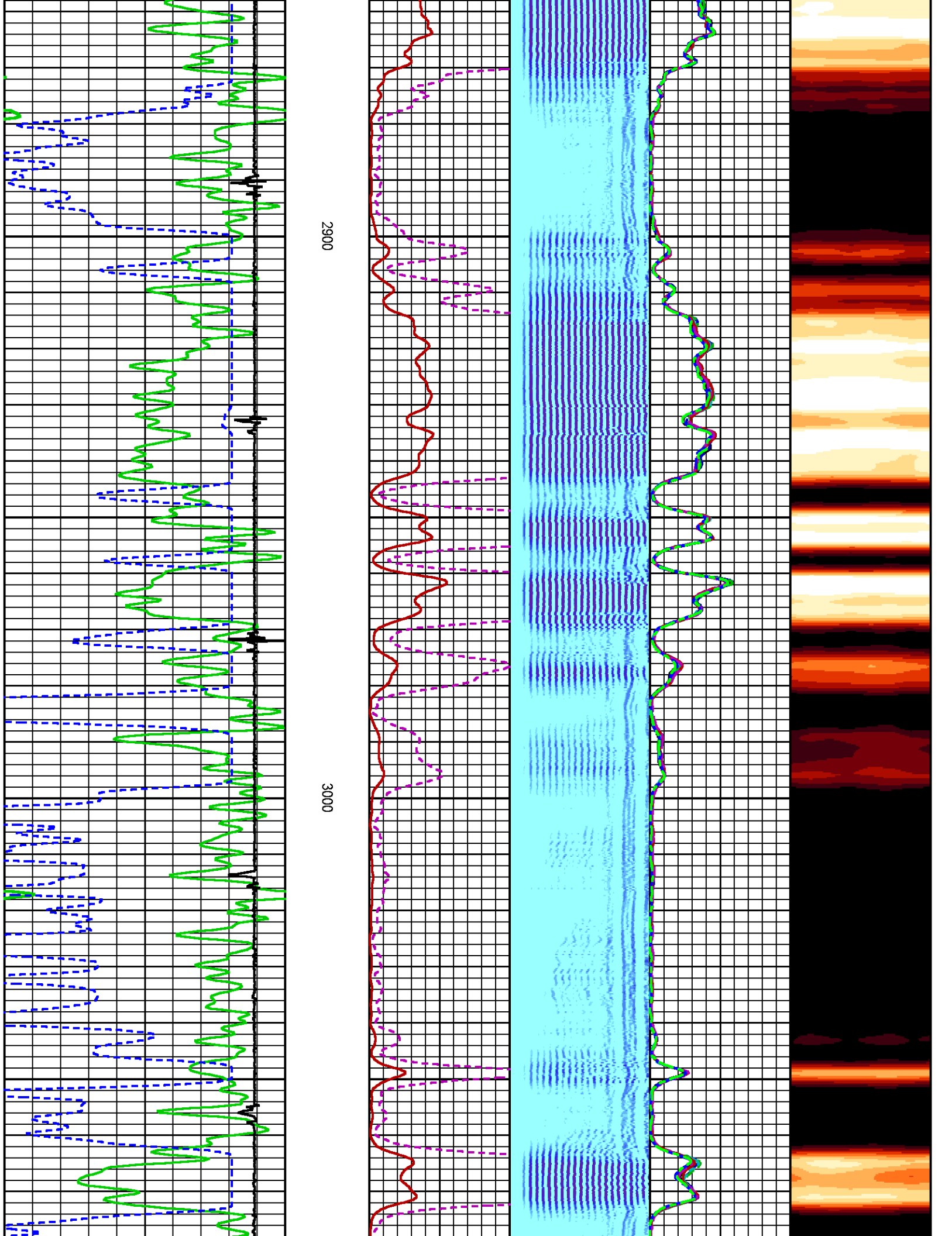


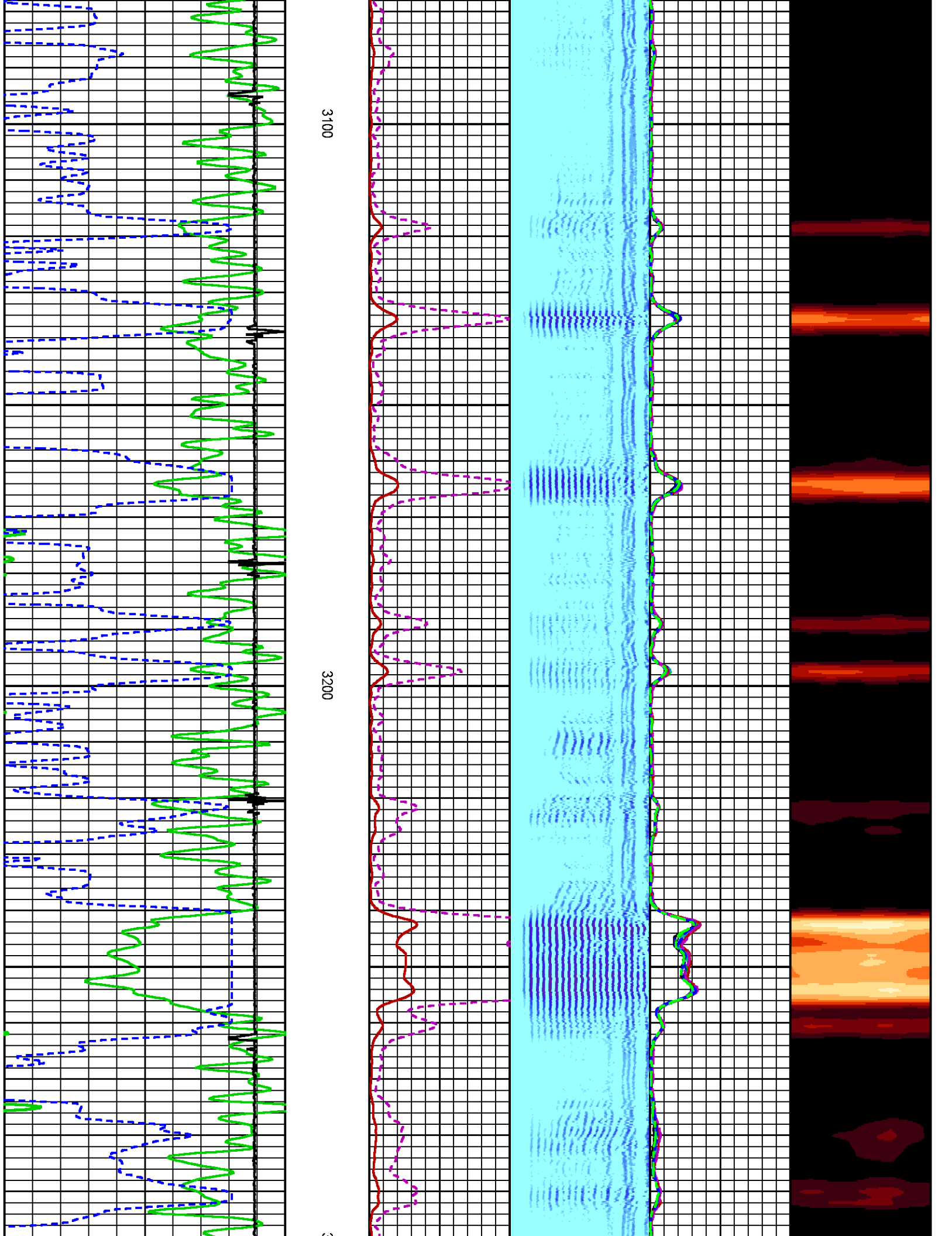


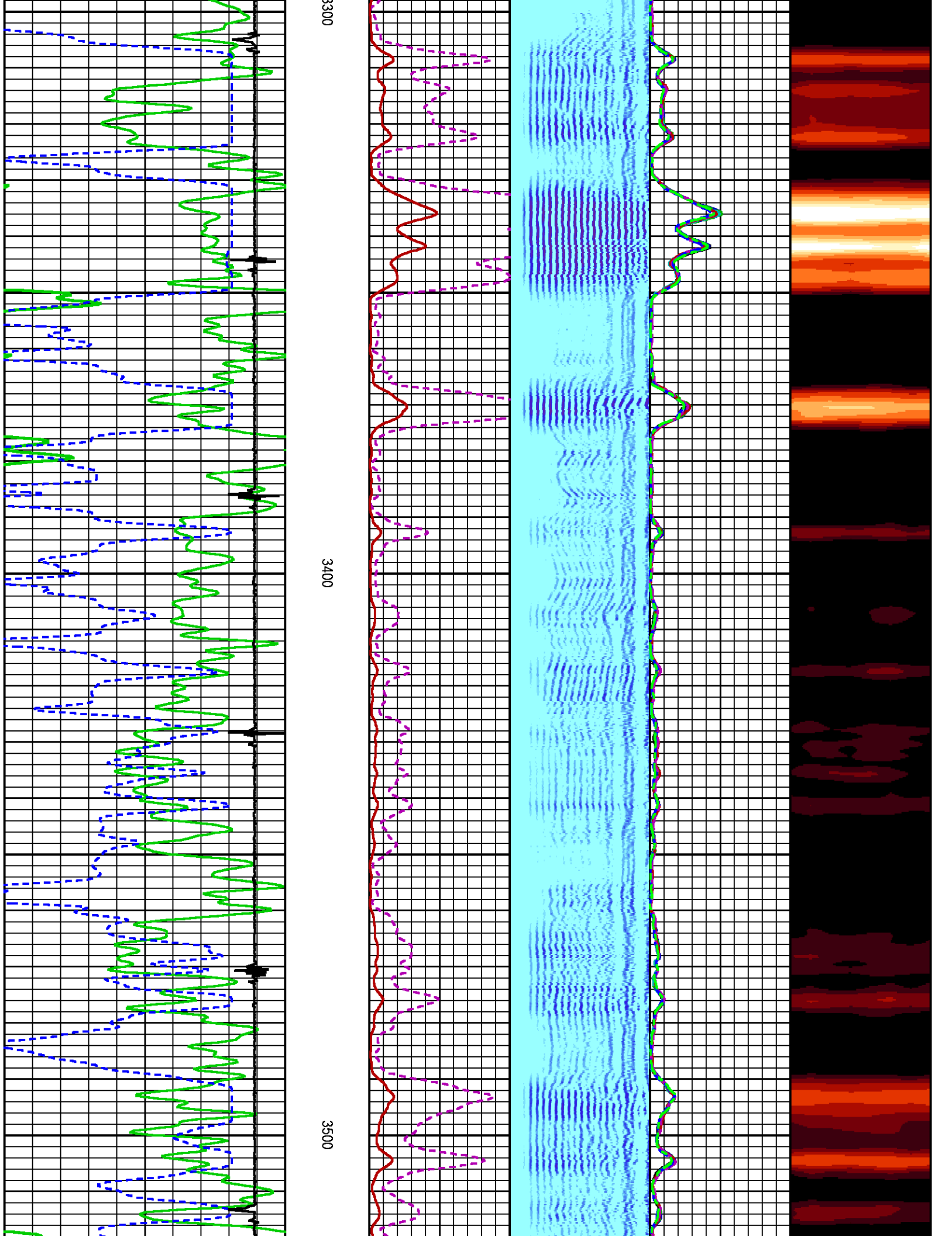


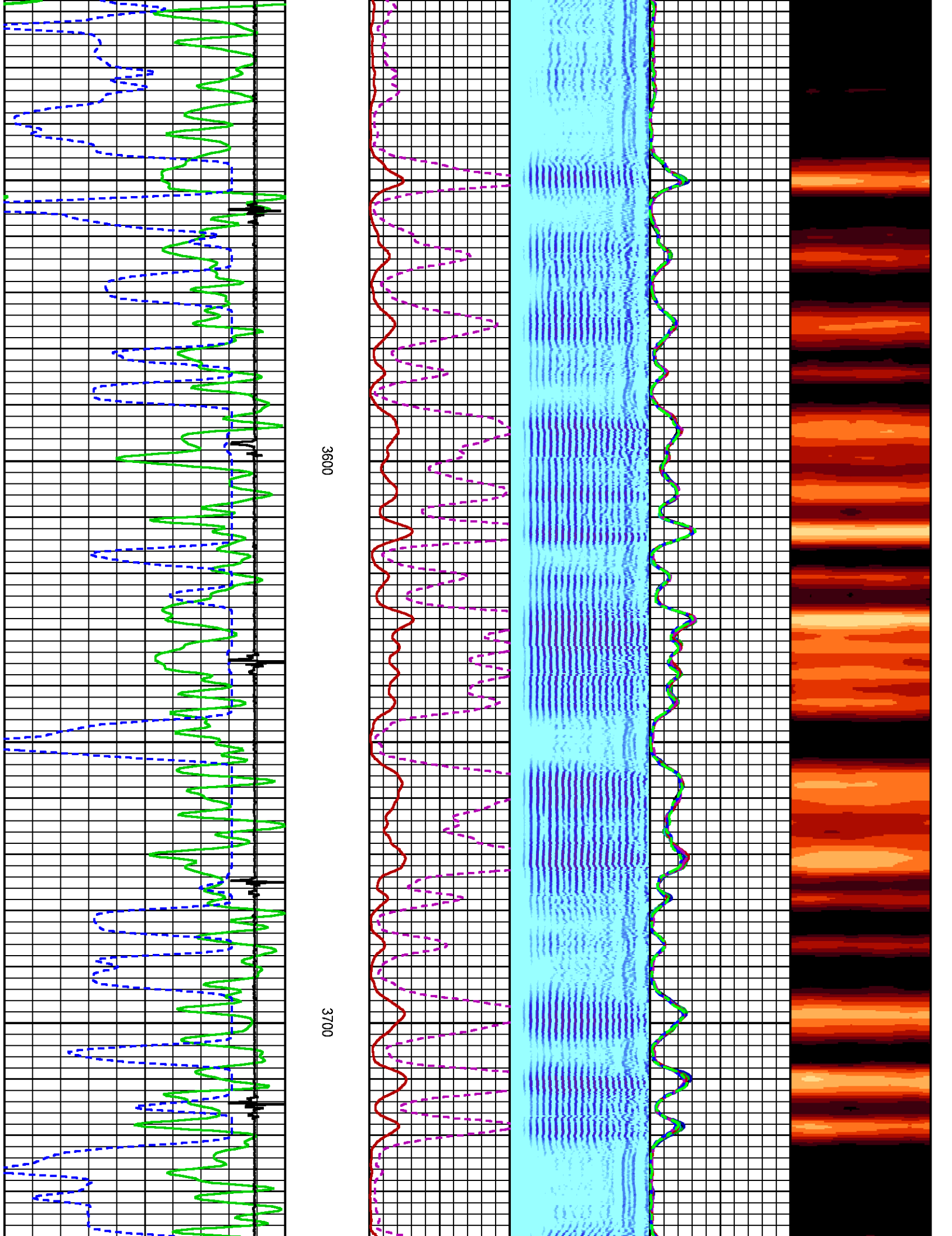


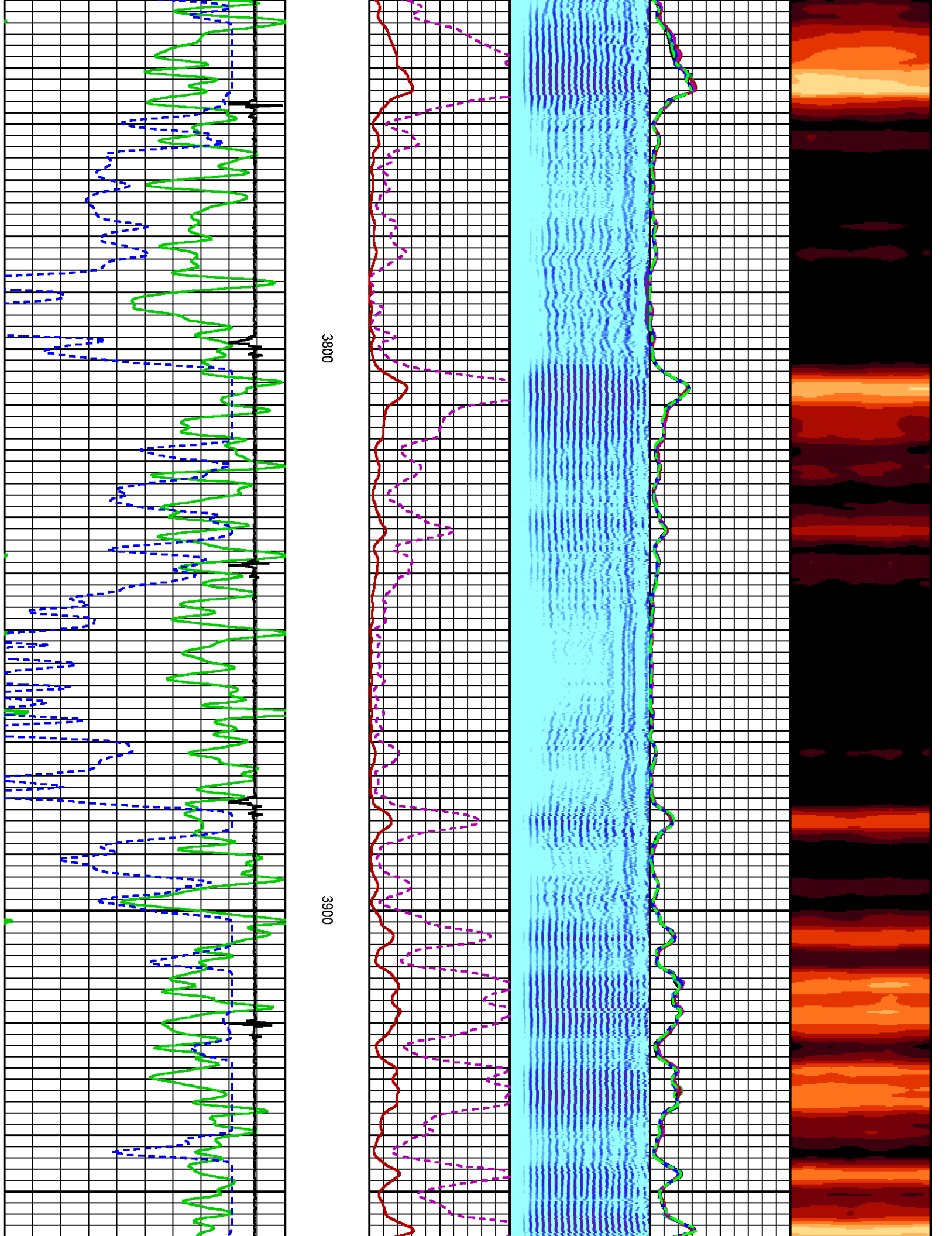


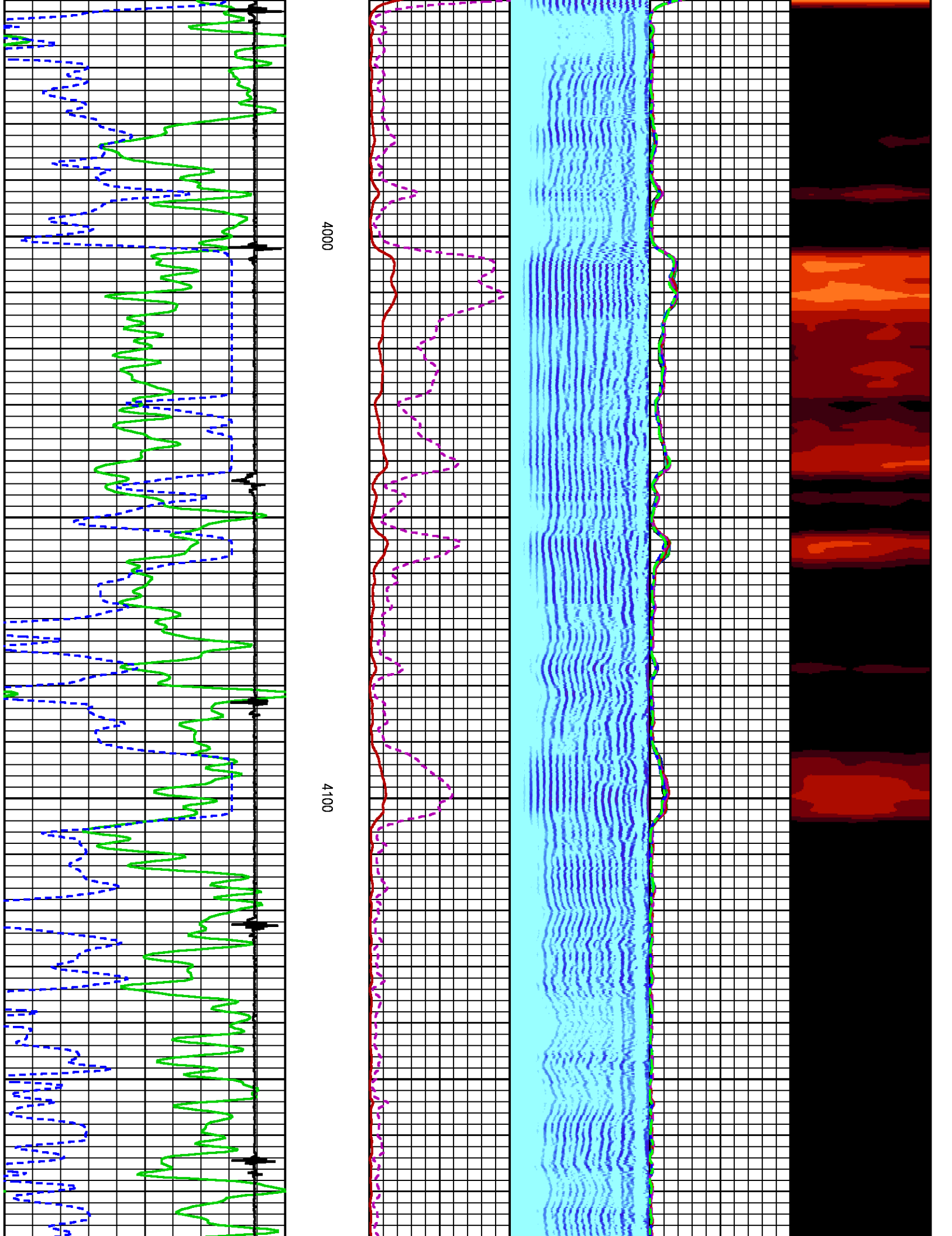


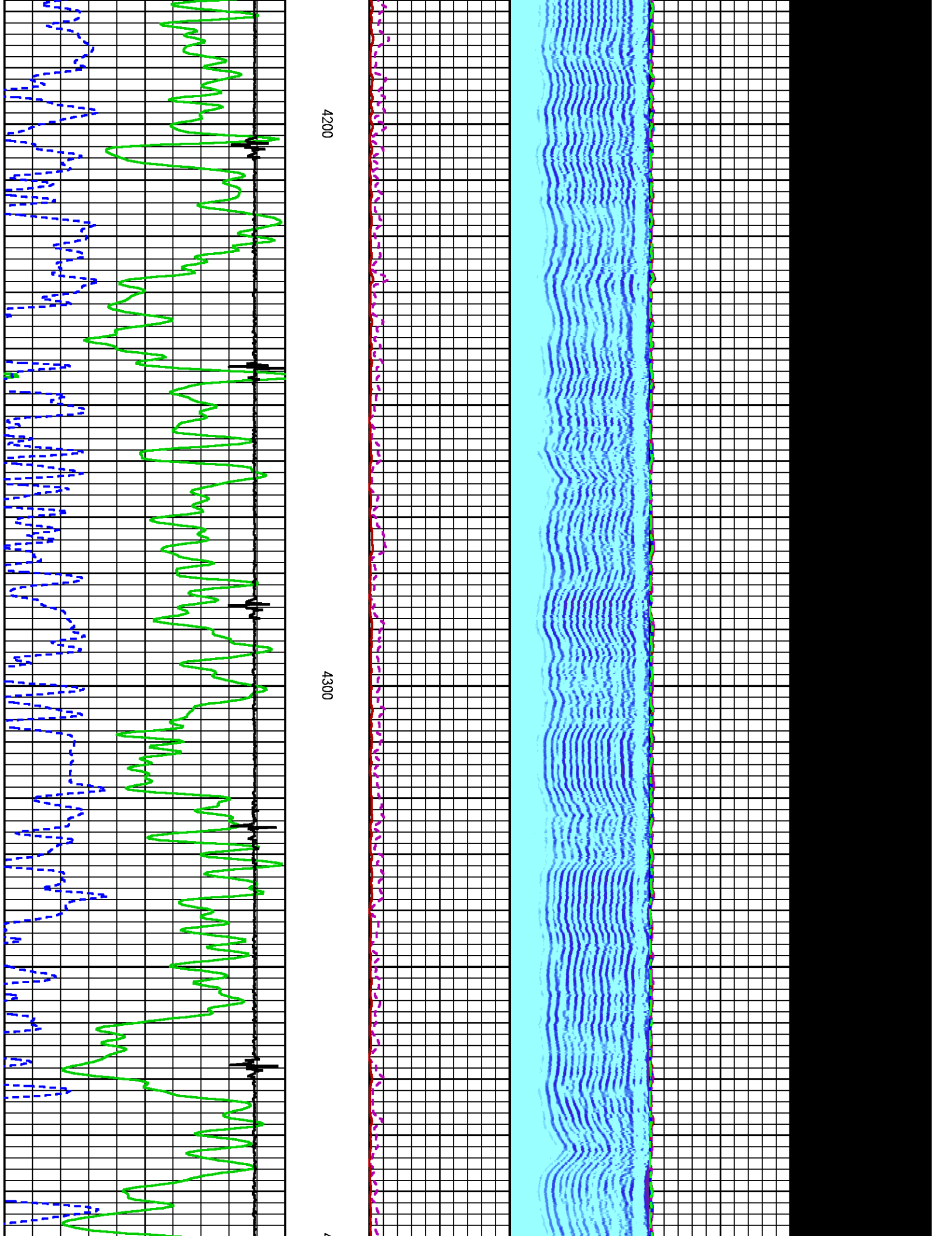






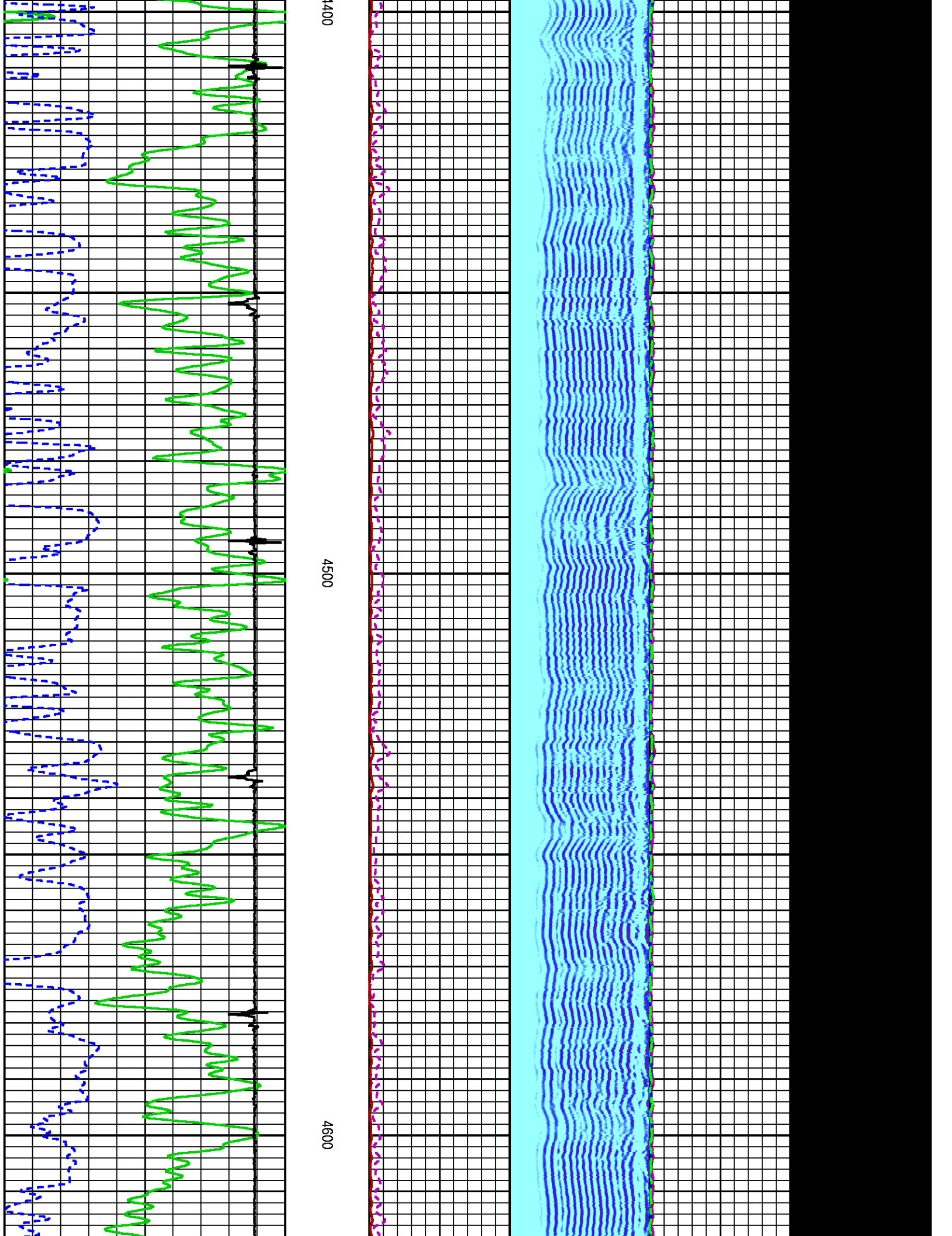


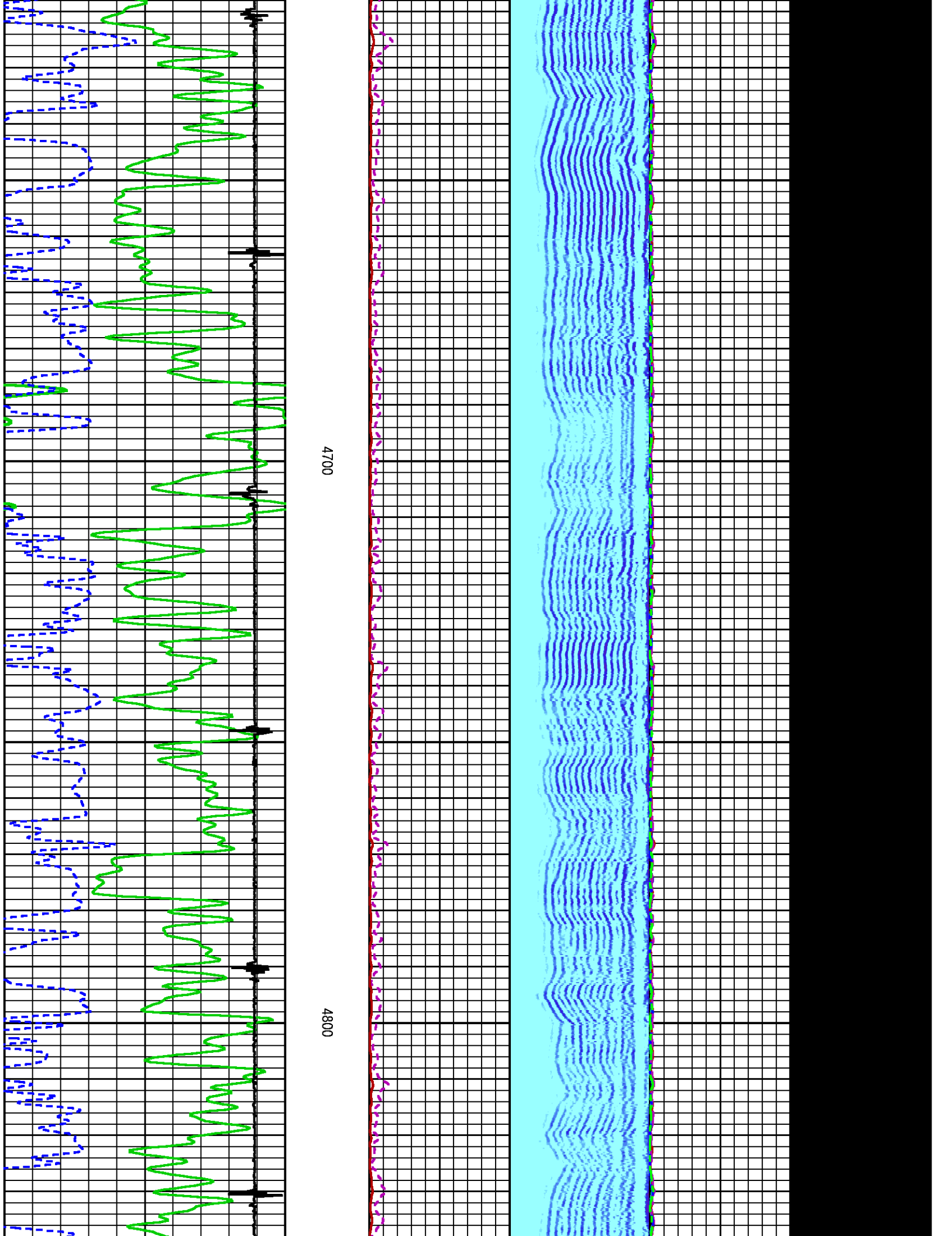


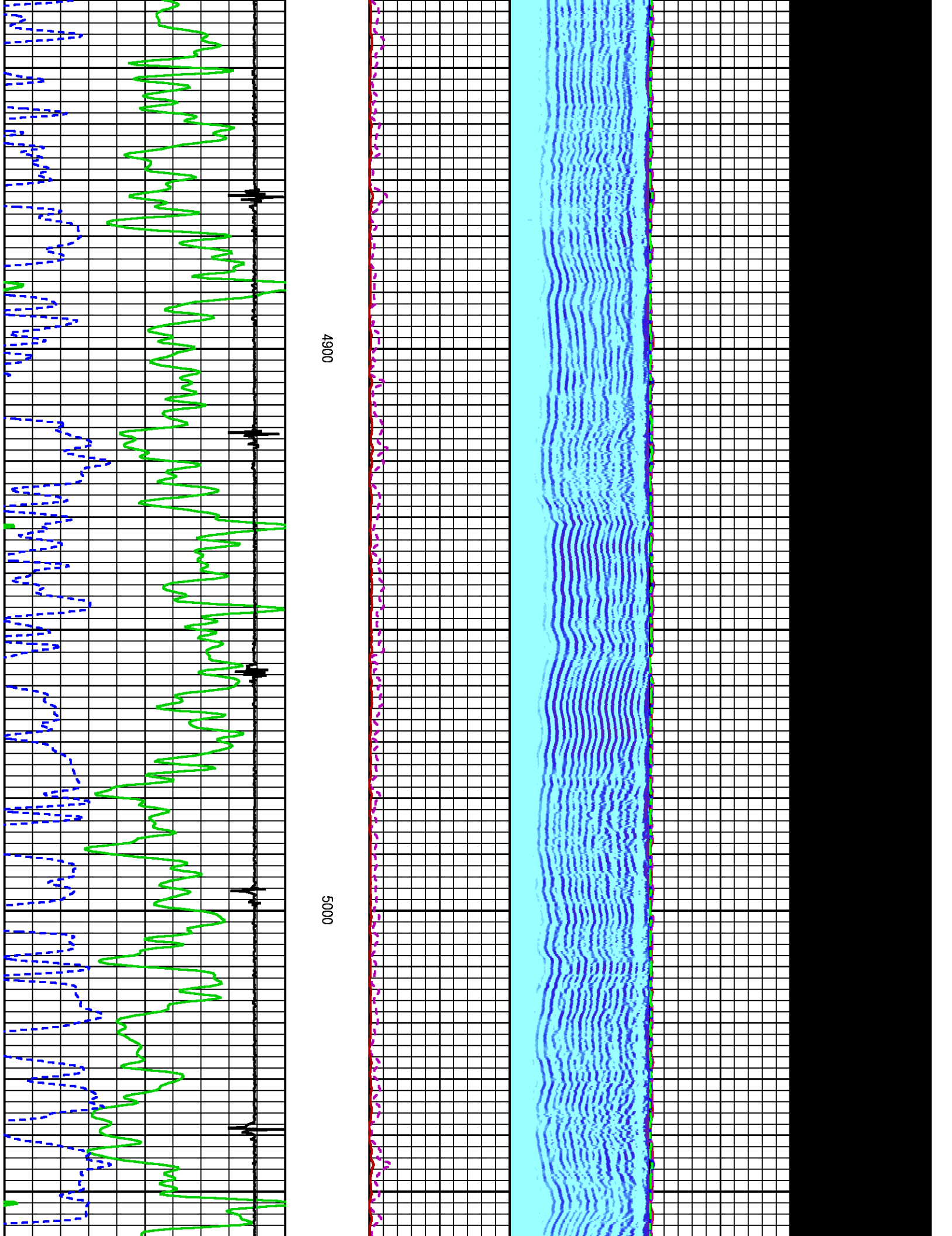


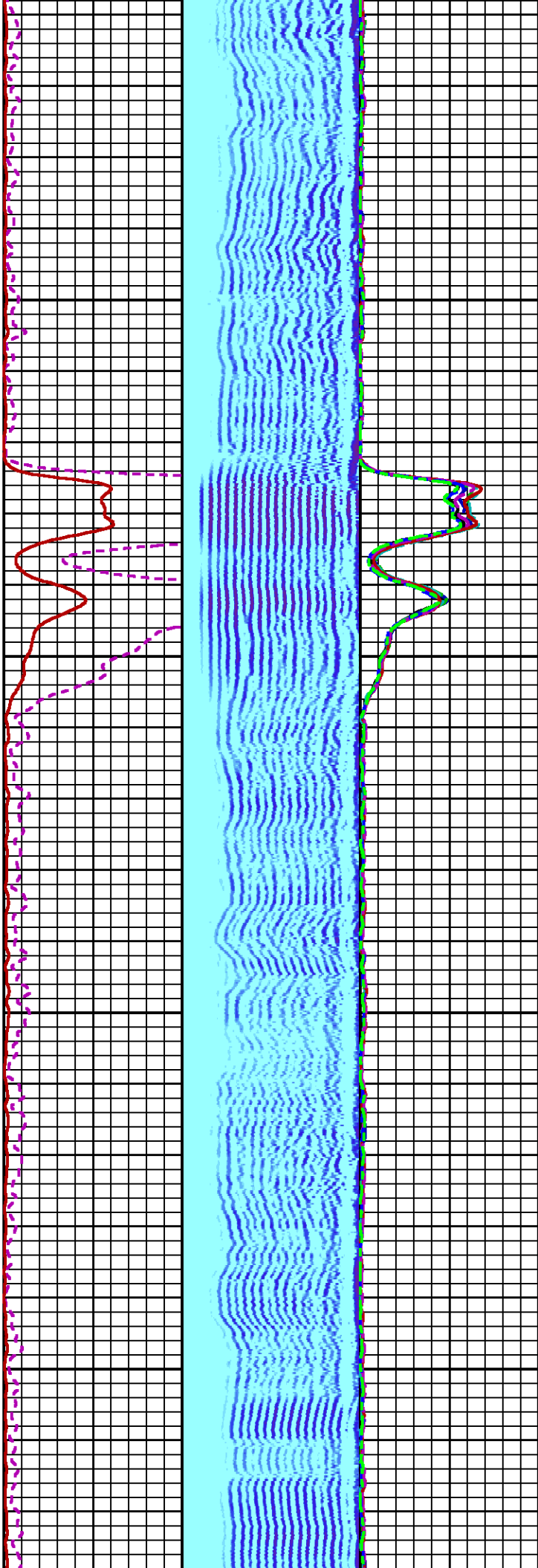
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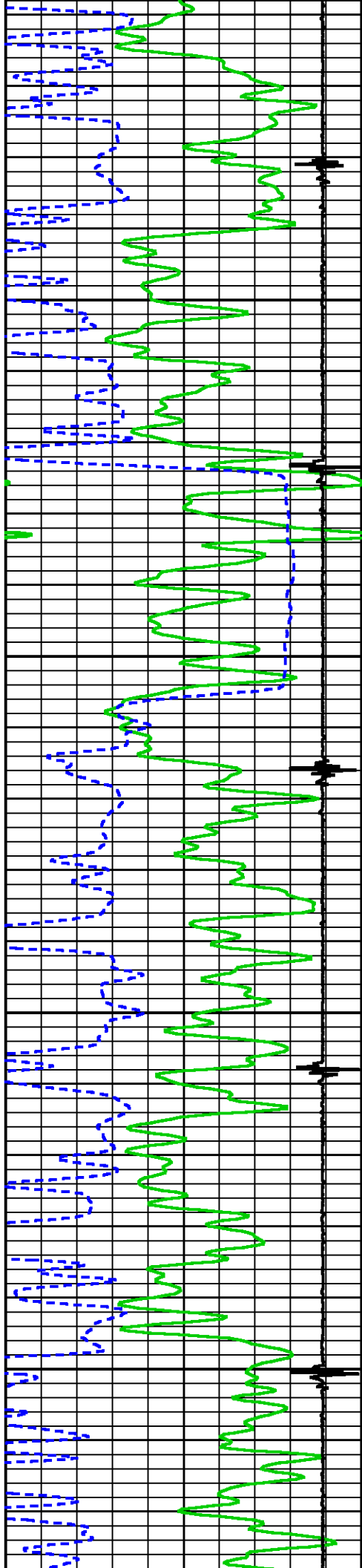


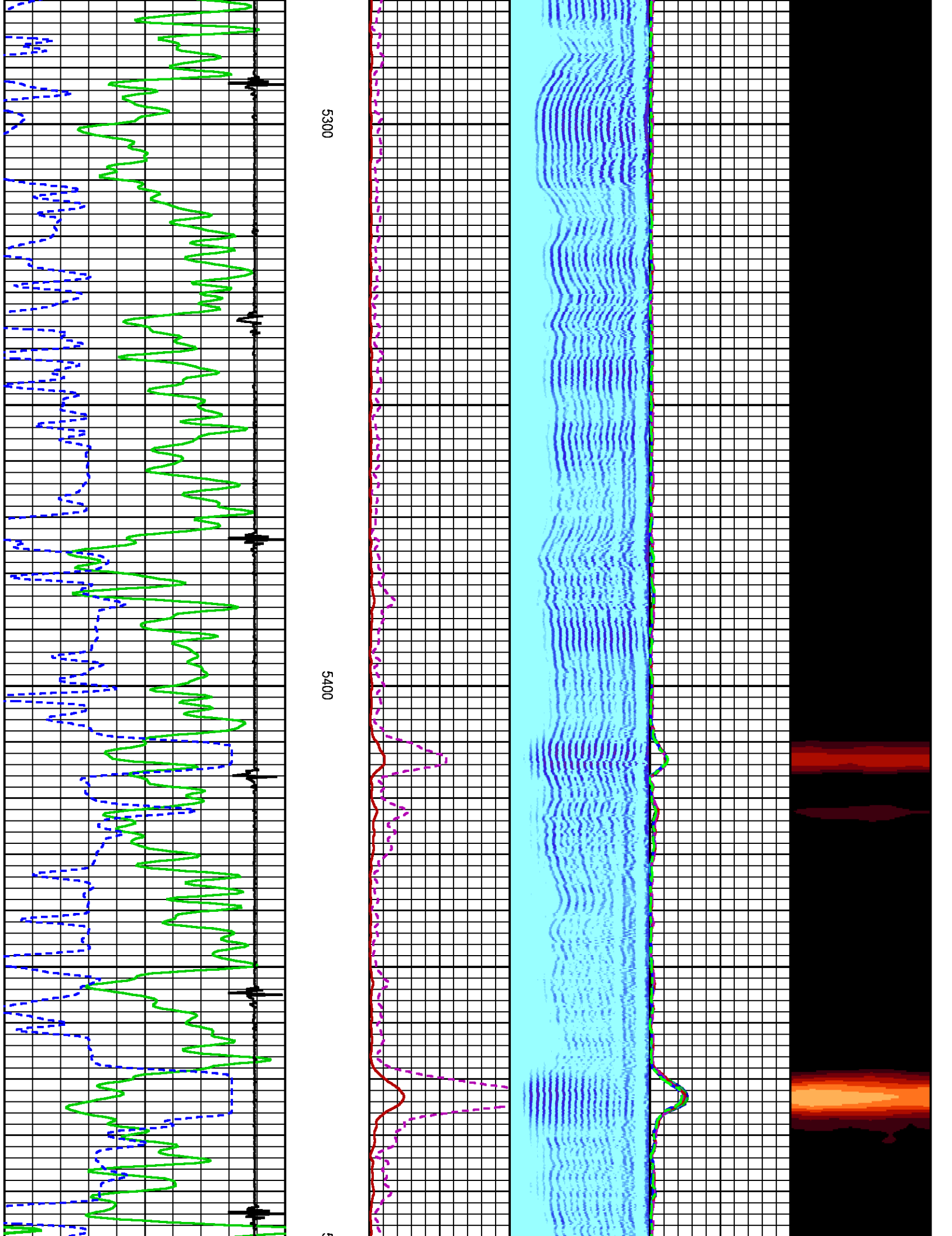


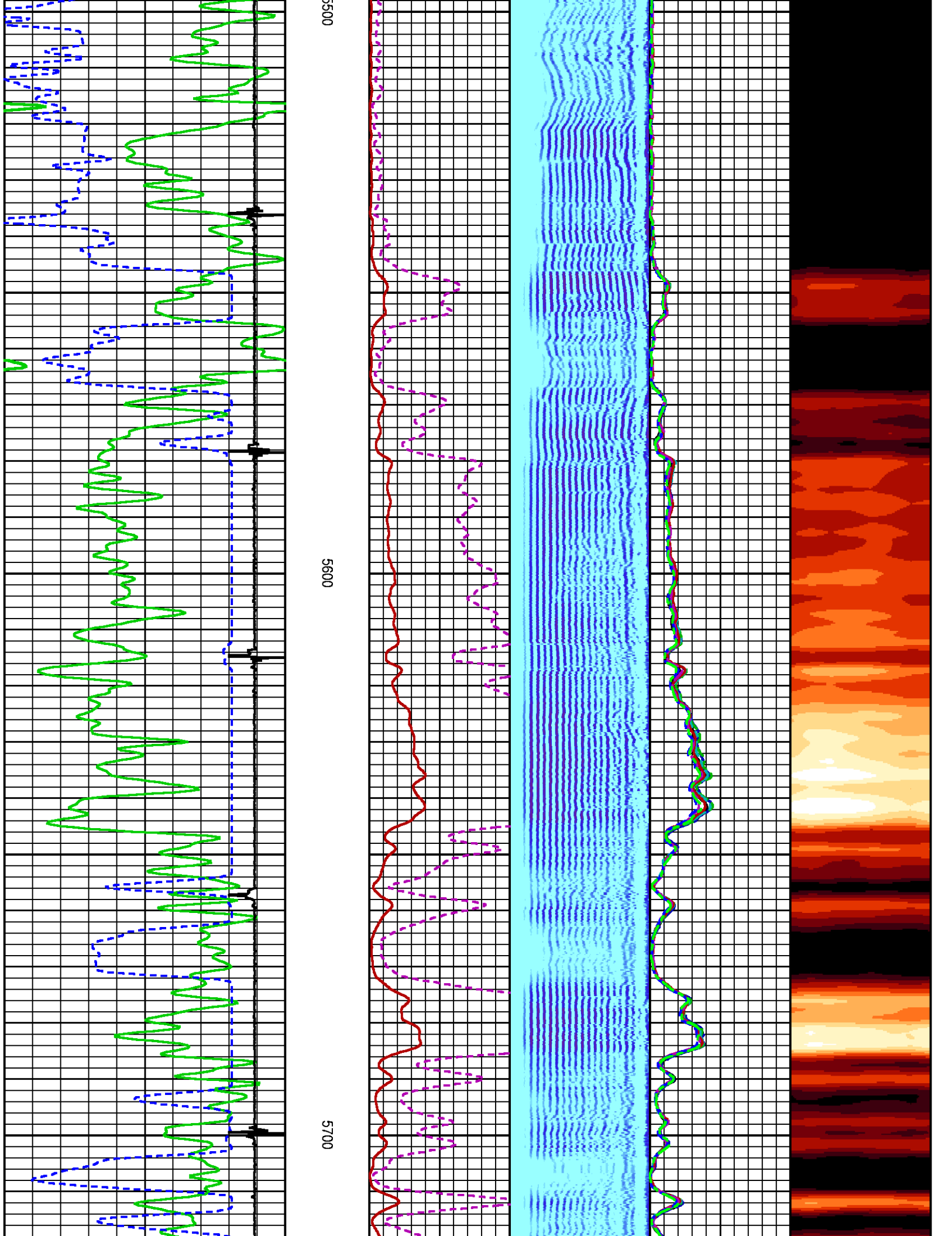


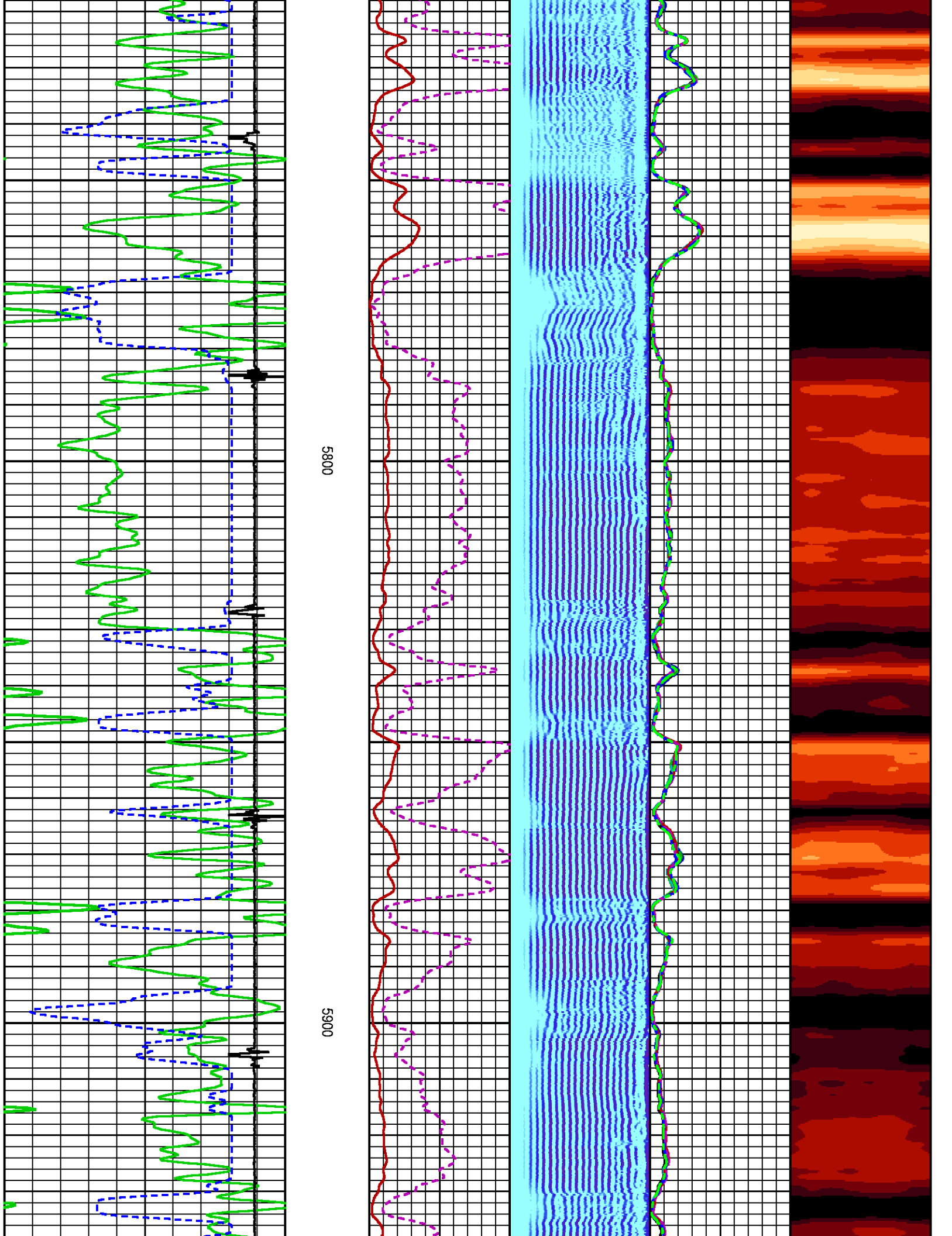
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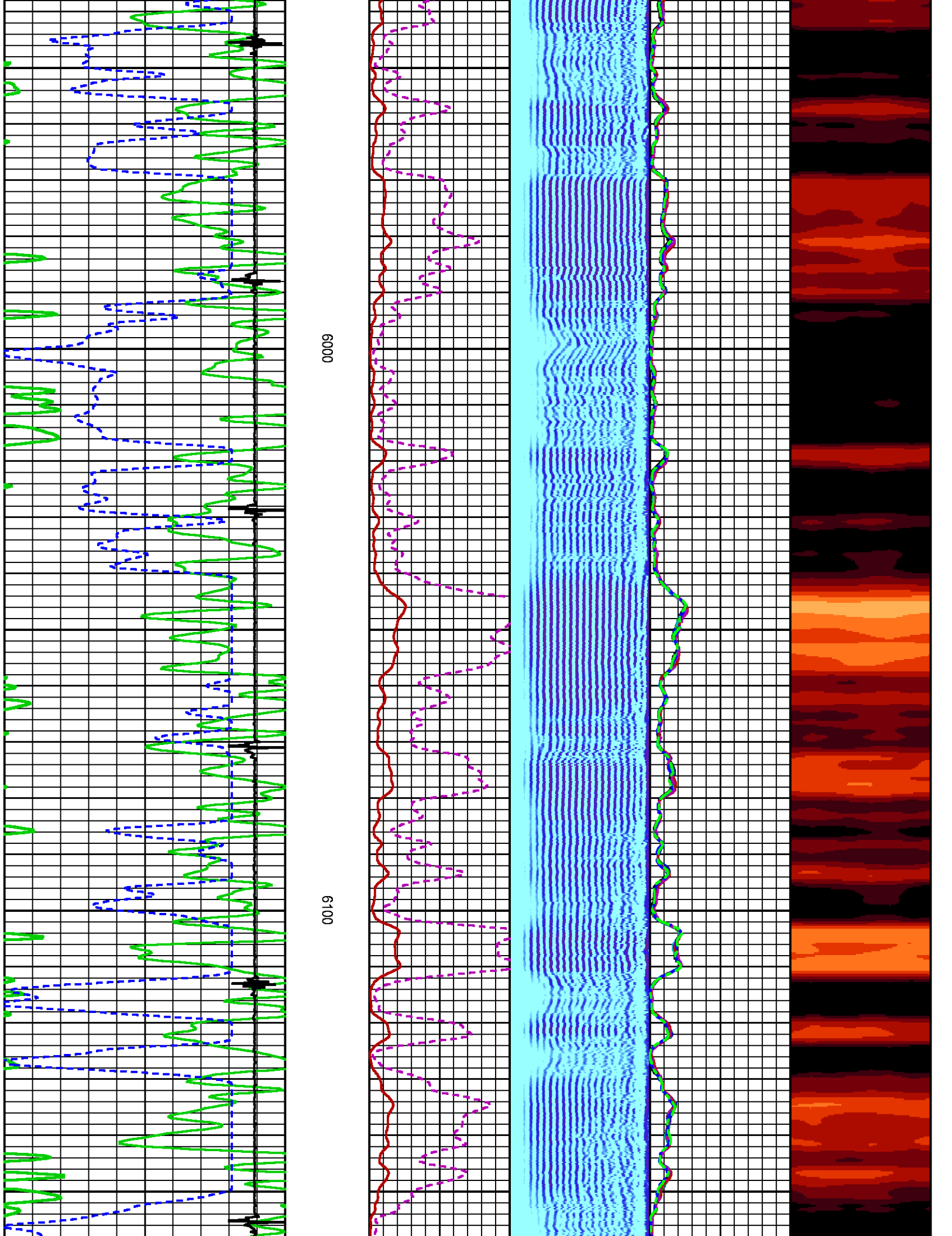
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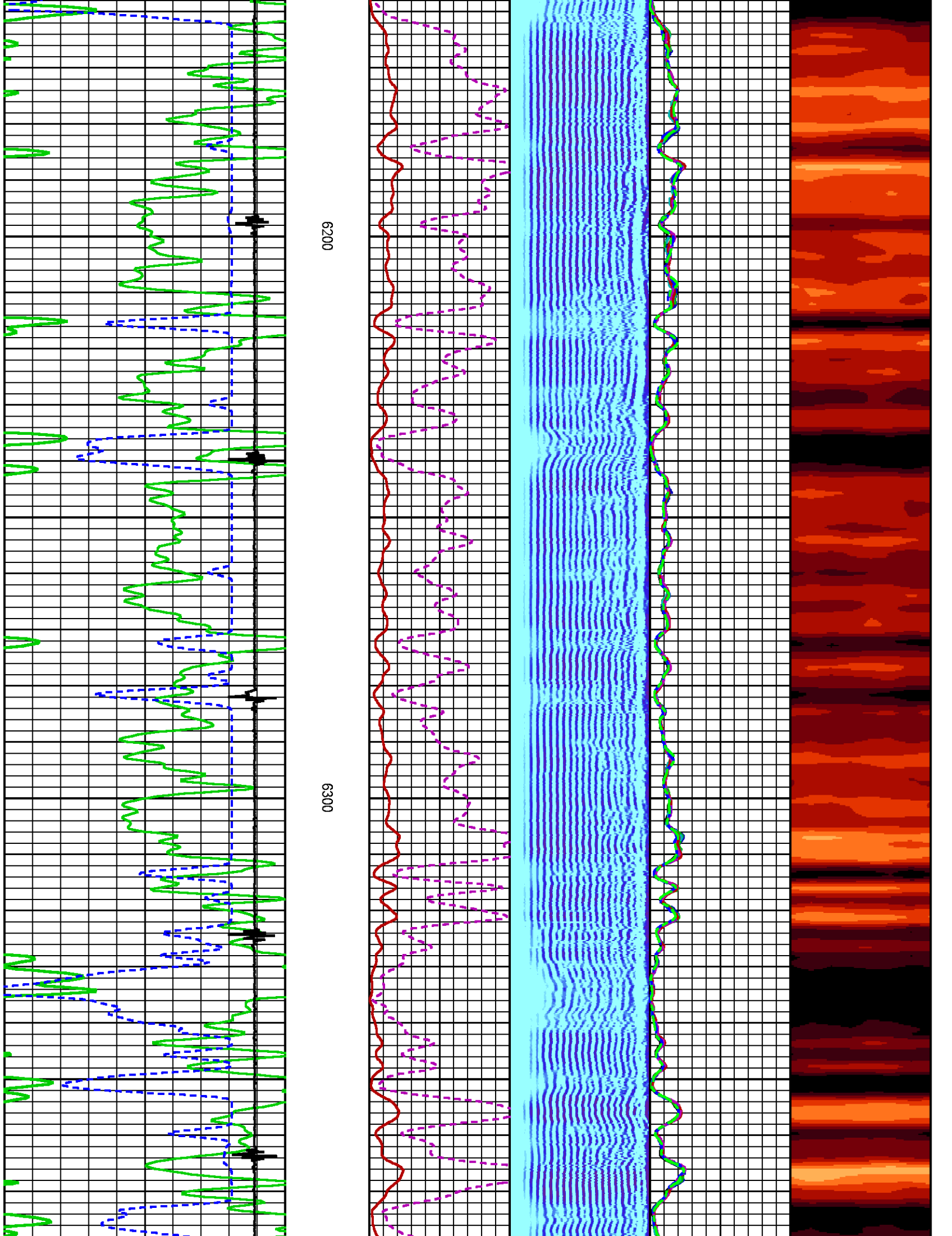


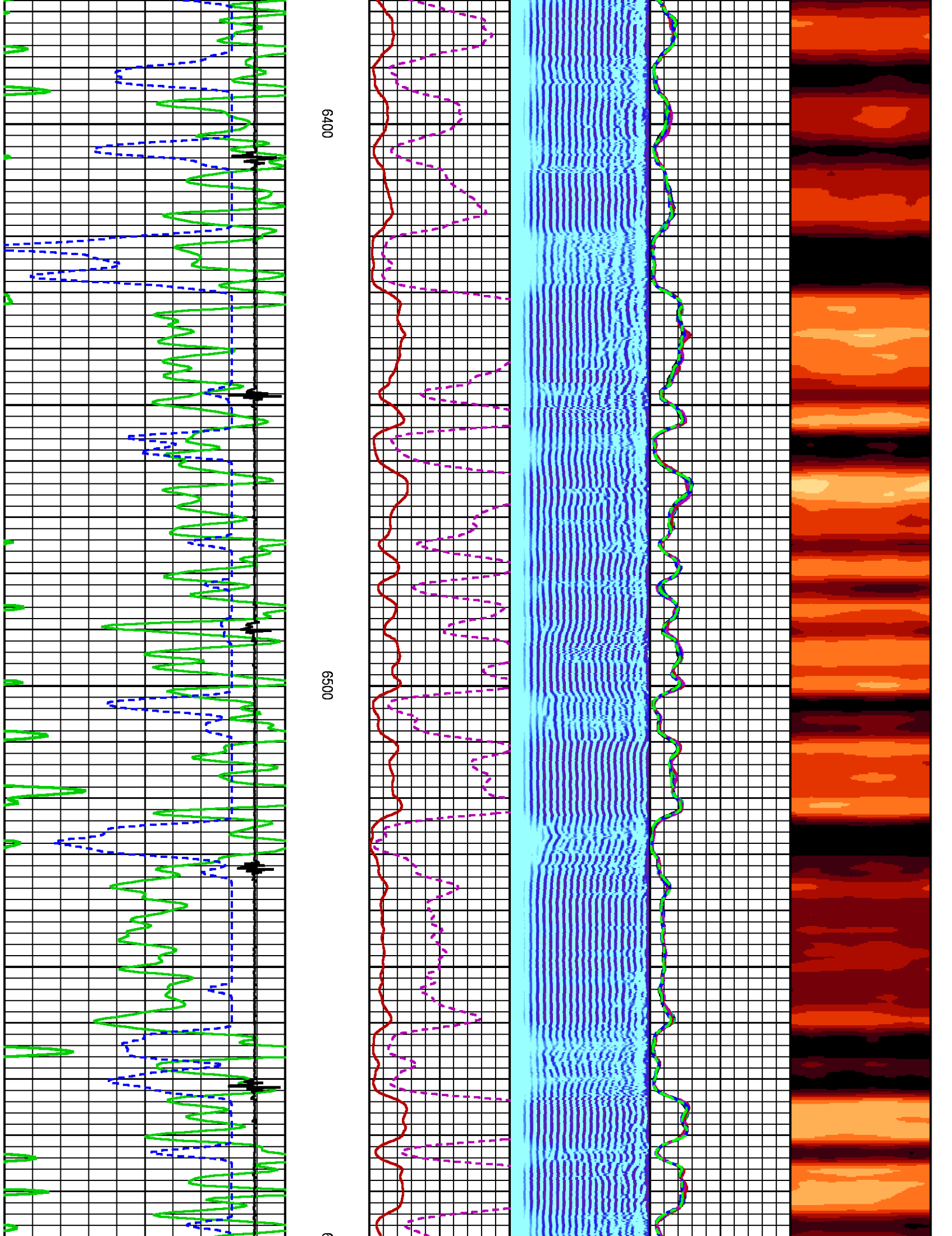


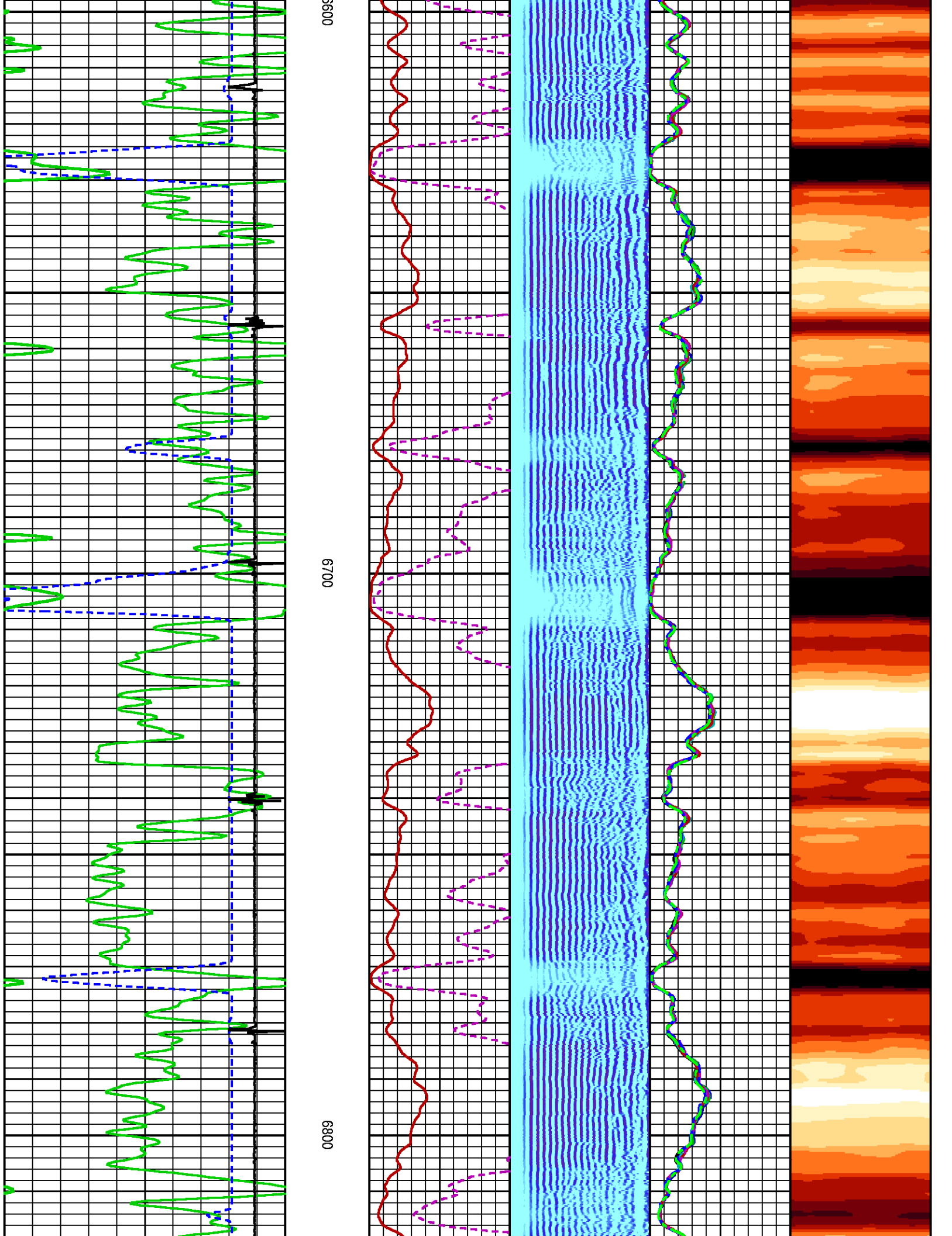


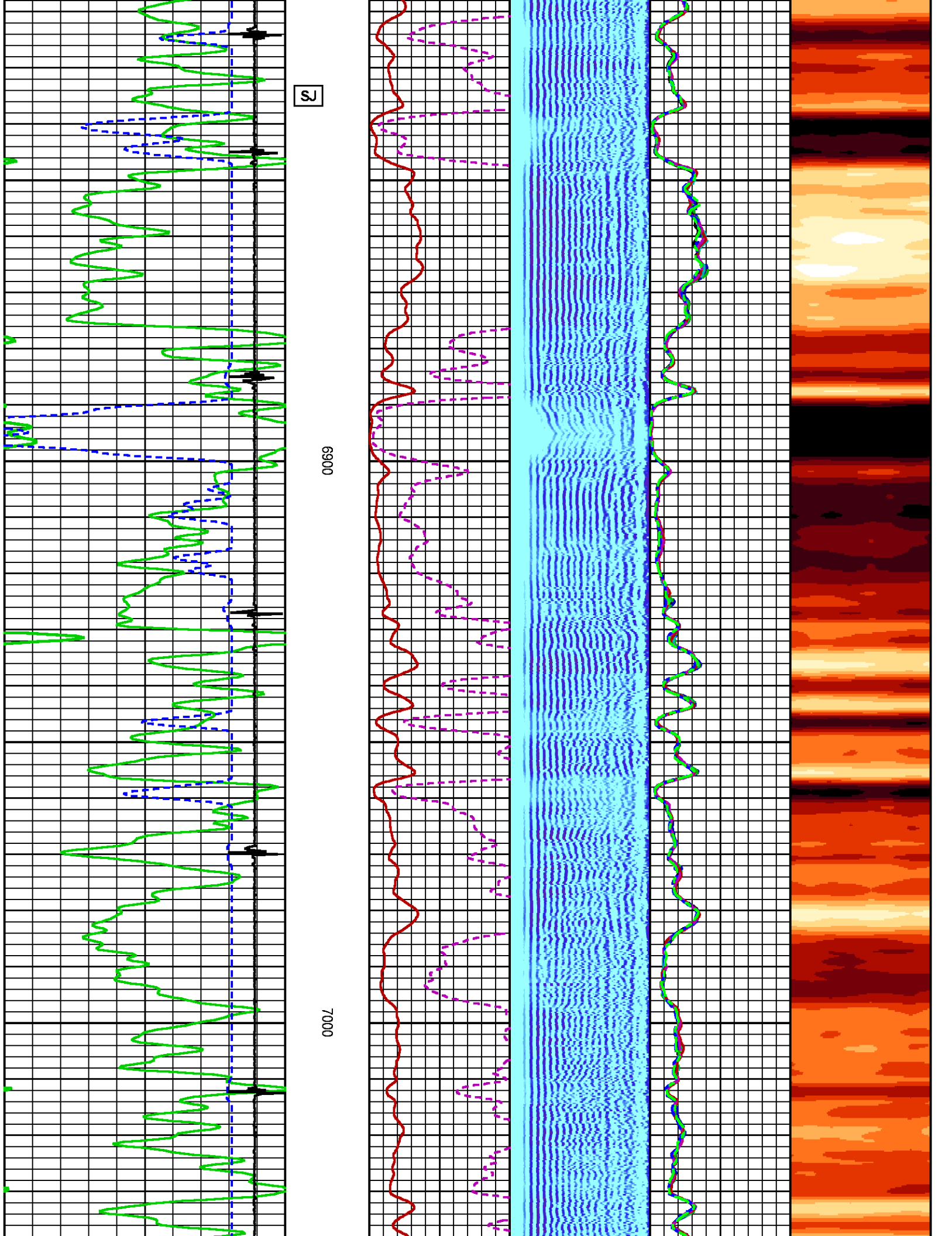


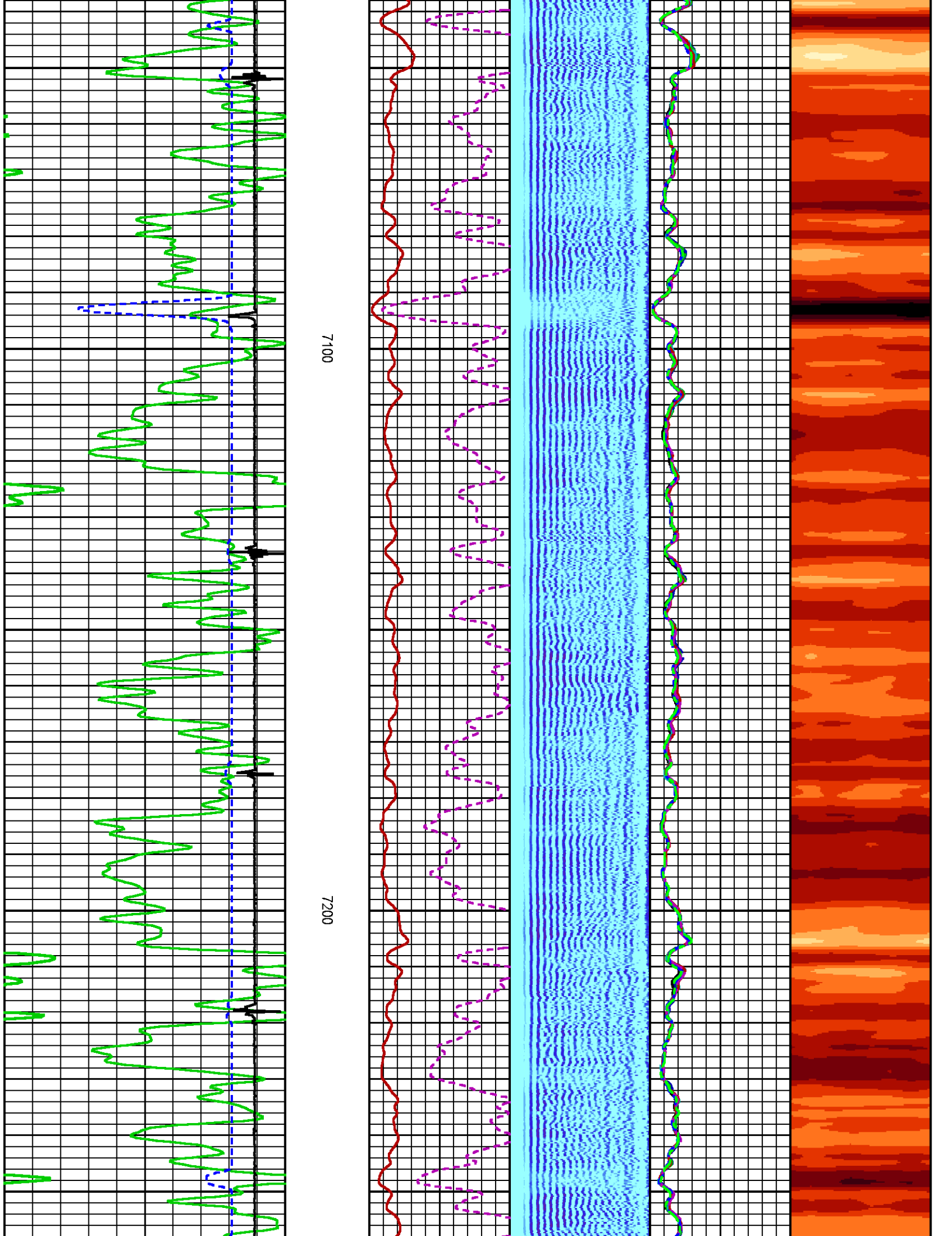


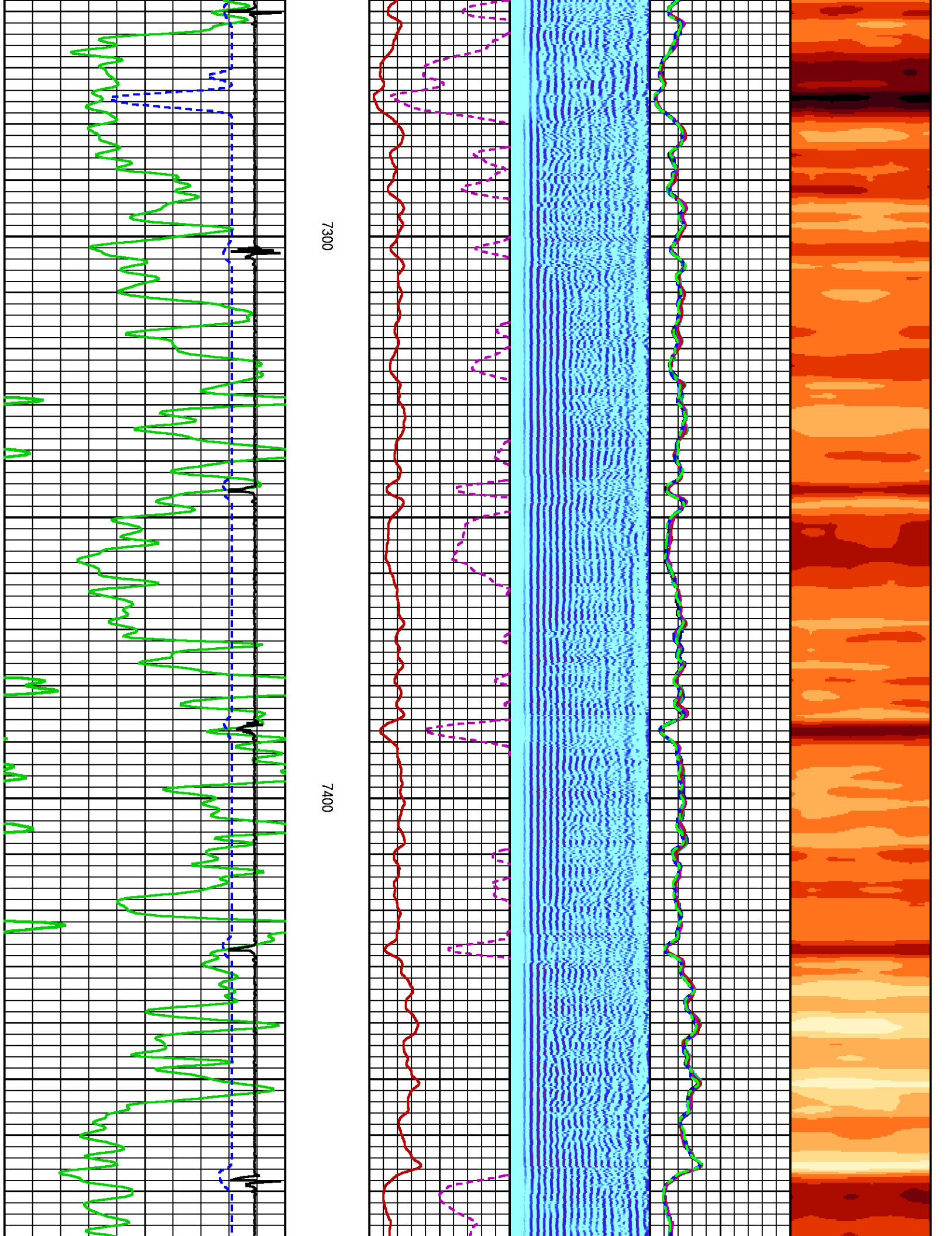


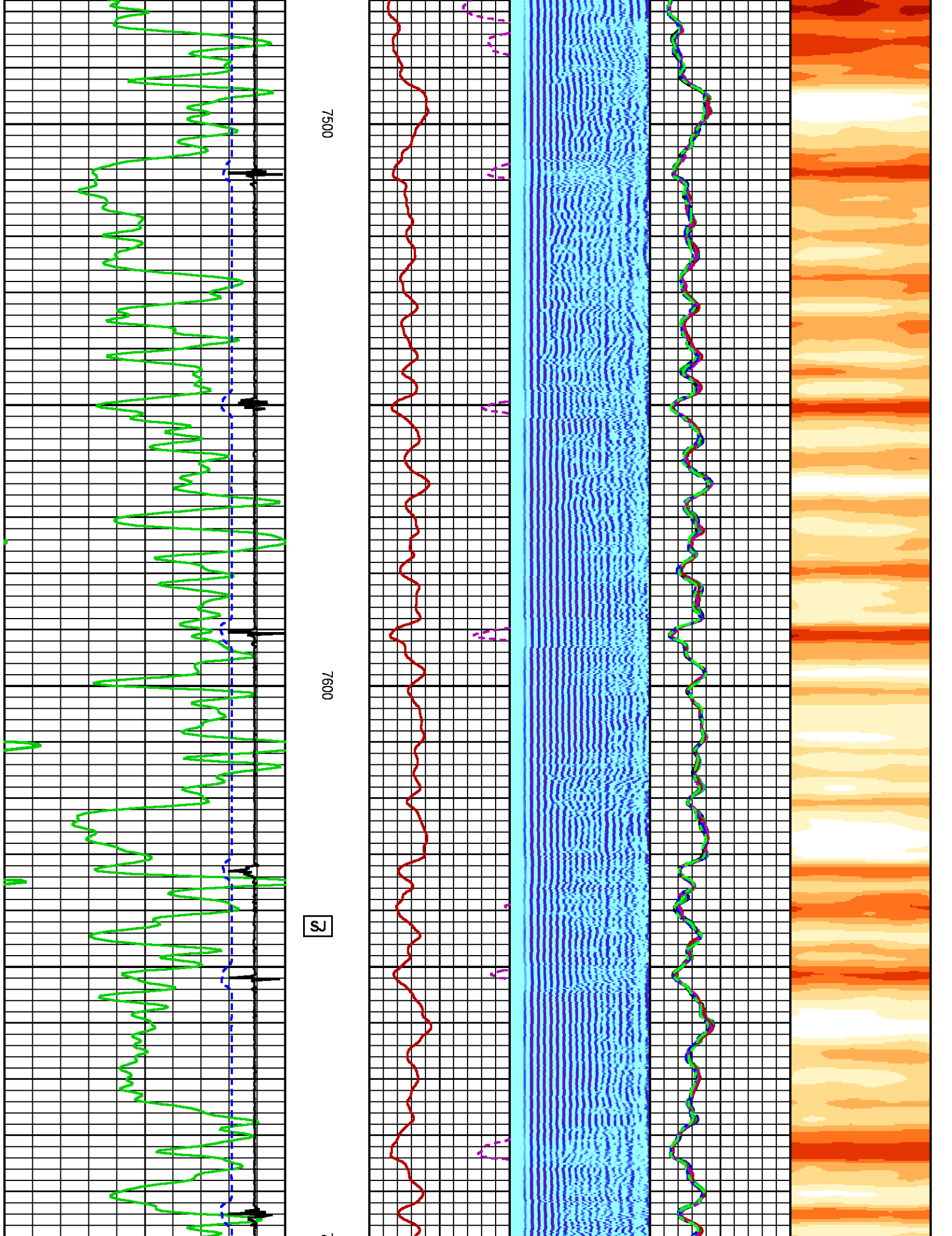


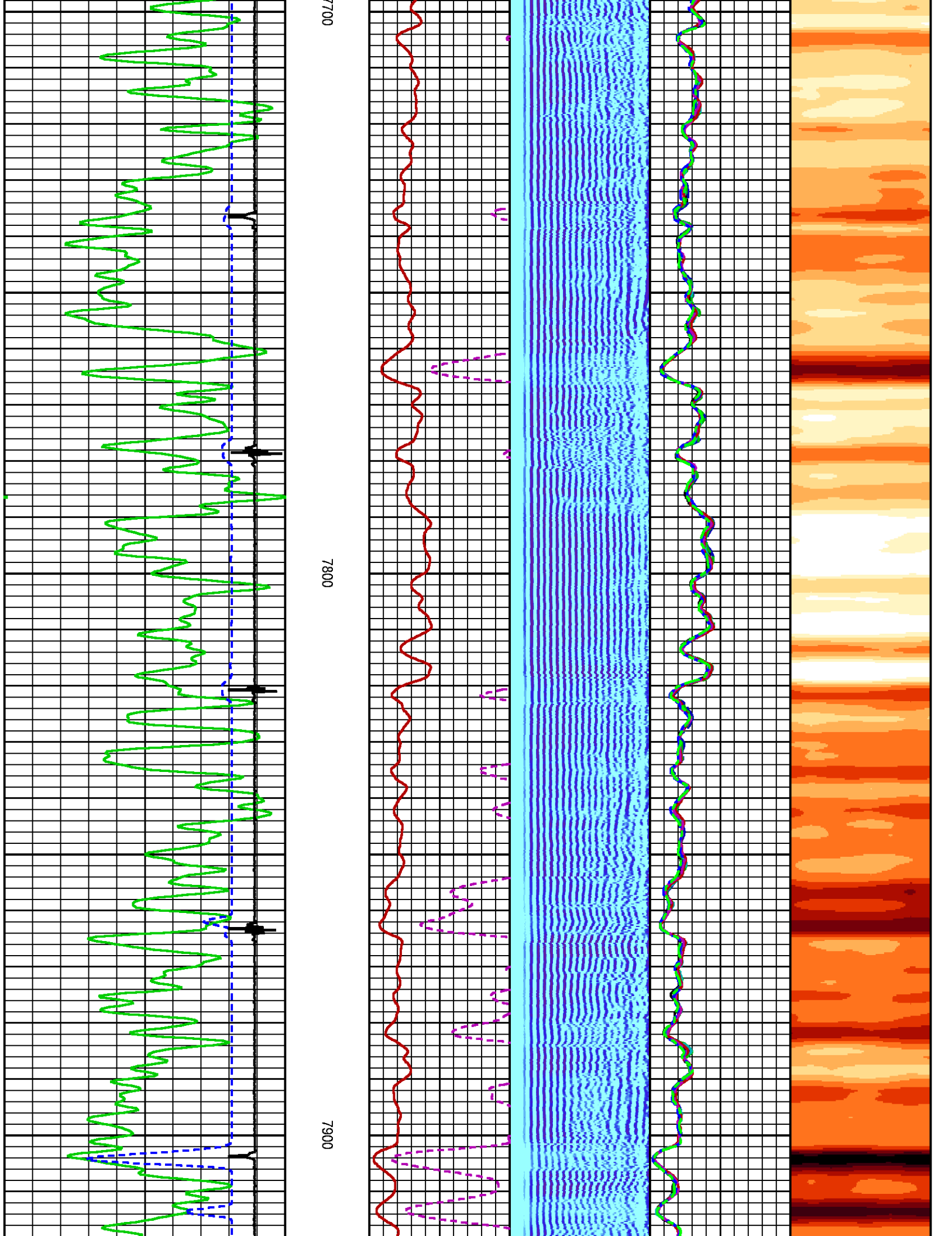


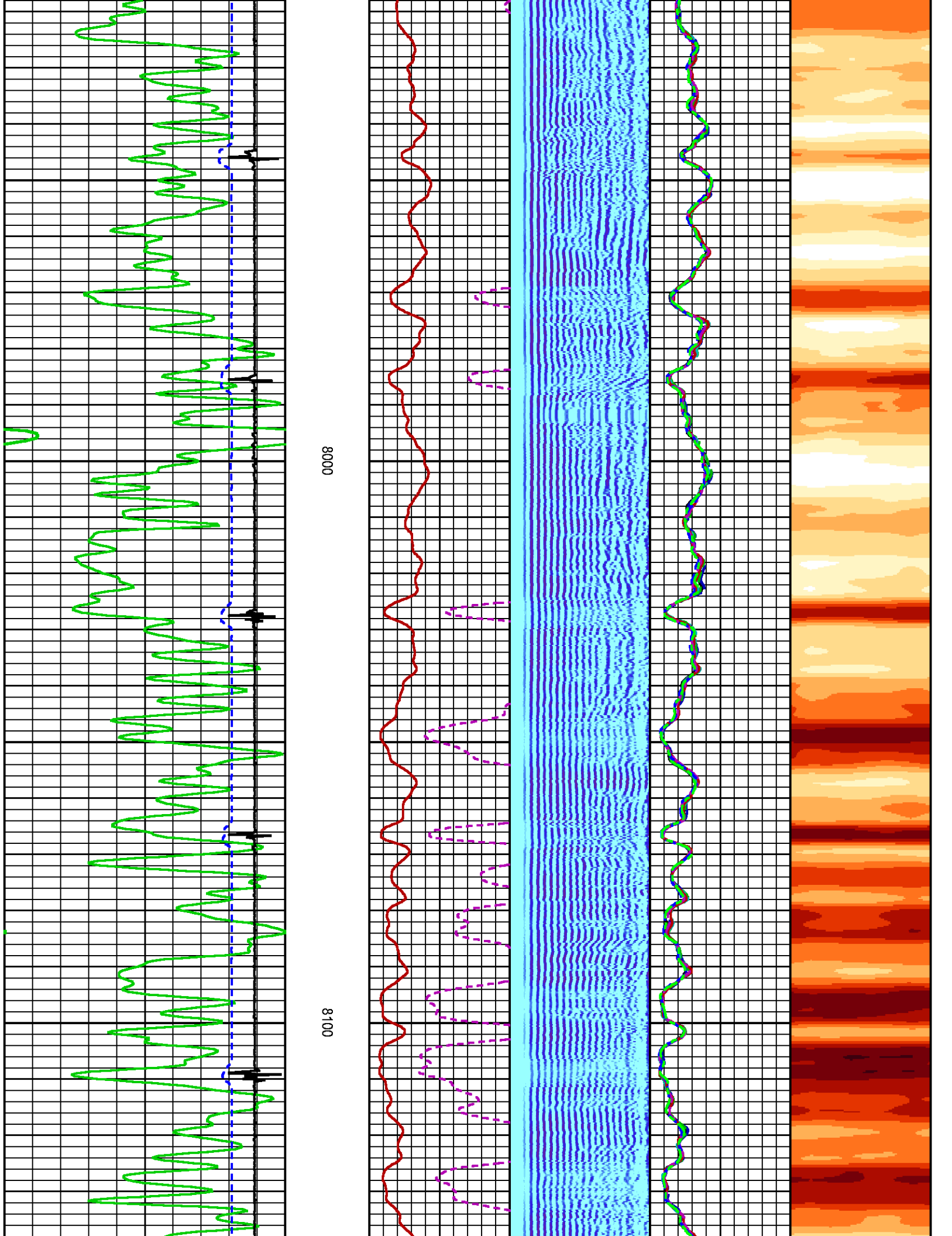


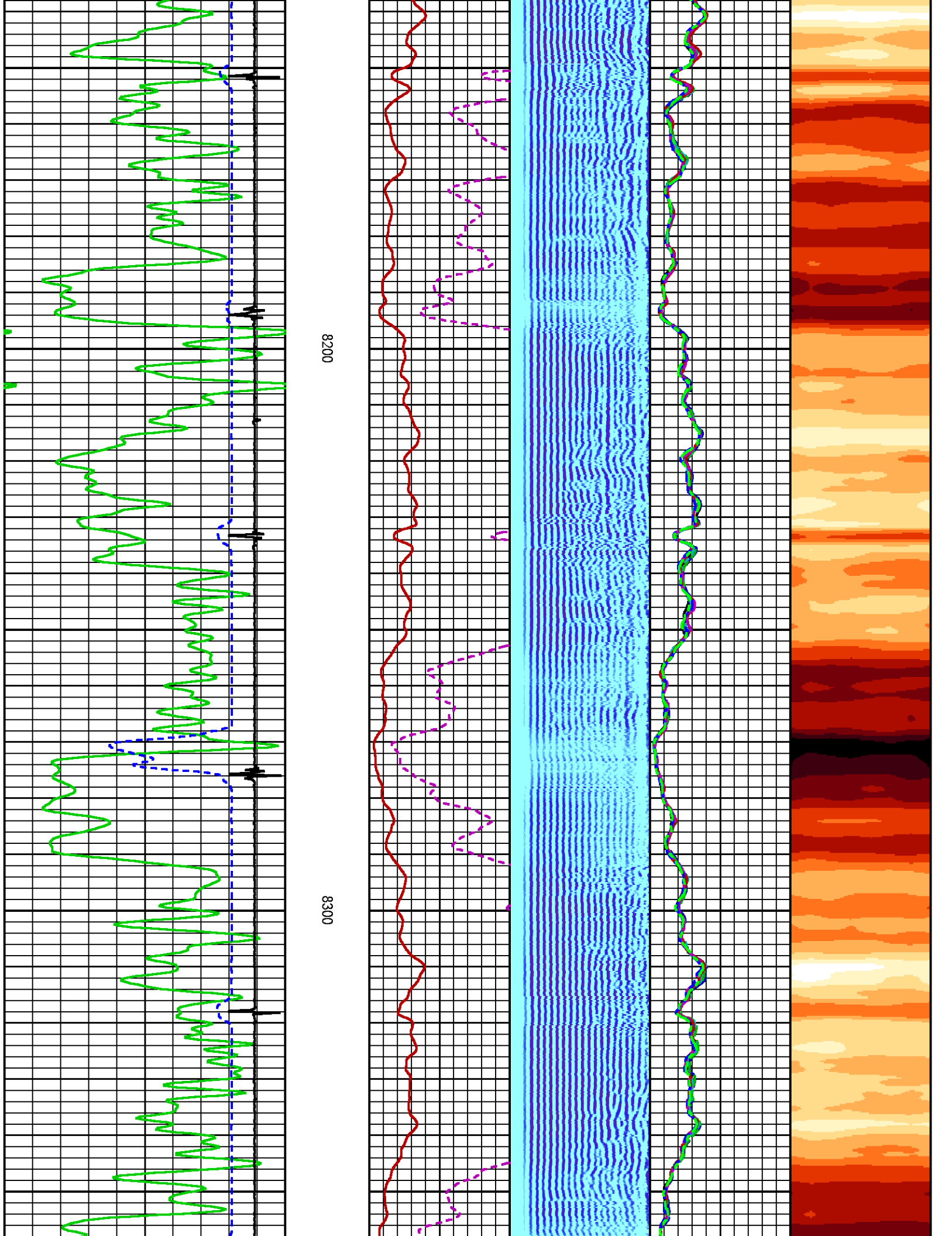


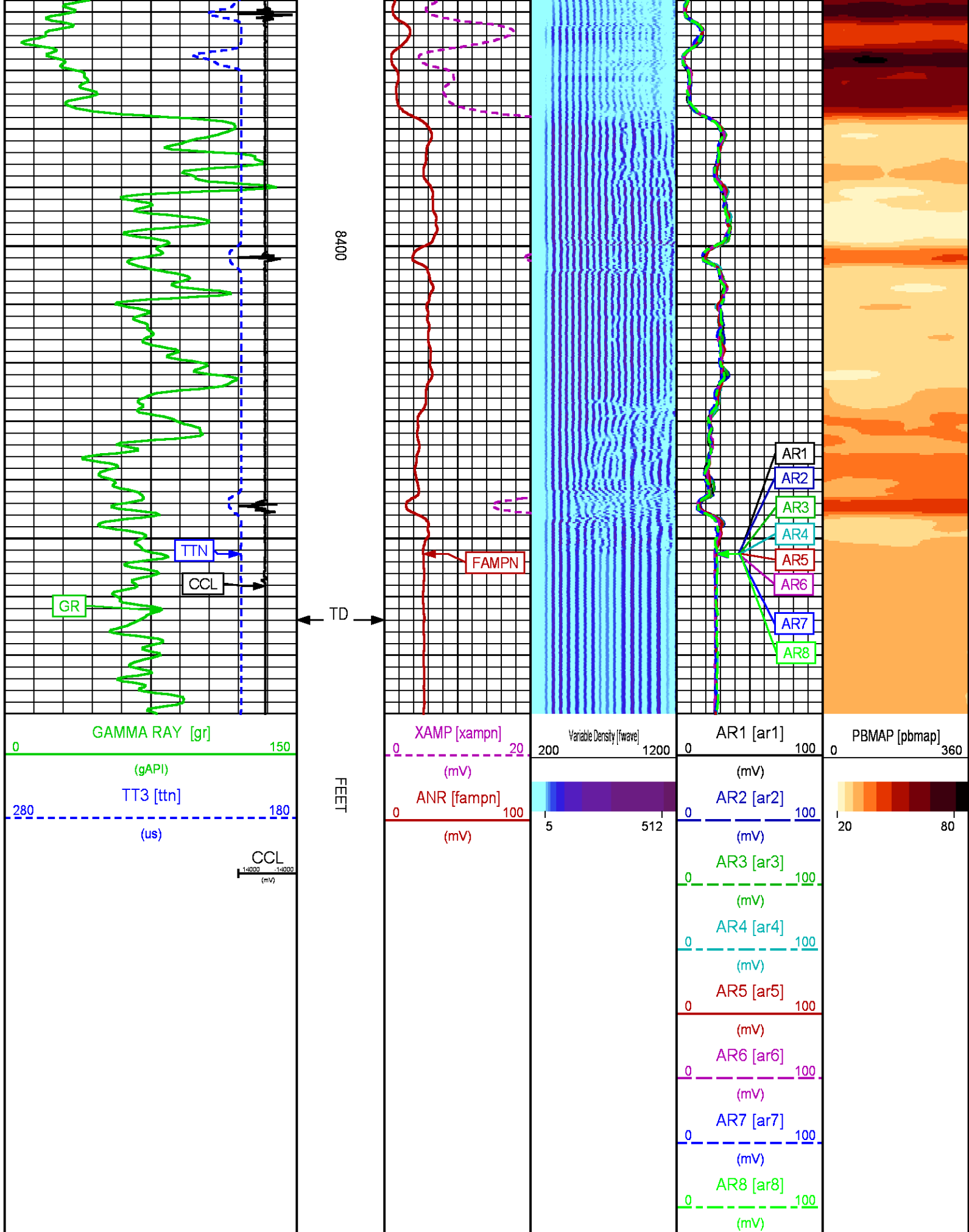












REPEAT PASS

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

Updates: 1 Patches: 1

Plotted: Tue Jan 22 16:54:52 2019

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE_SS_09W/p012g01.prm
 LOGGING MODE: DEPTH DIRECTION: UP
 TOP DEPTH: 8215.500 ft BOTTOM DEPTH: 8510.500 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	0.00		TOP	BOTTOM

ANALOG RAL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
AMPLITUDE WINDOW (NEAR)	AMP WINDOW START (fgp1*)	187	us	TOP	BOTTOM
	AMP WINDOW START (fgp2*)	187	us	"	"
	AMP WINDOW START (fgp3*)	187	us	"	"
	AMP WINDOW START (fgp4*)	187	us	"	"
	AMP WINDOW START (fgp5*)	187	us	"	"
	AMP WINDOW START (fgp6*)	187	us	"	"
	AMP WINDOW START (fgp7*)	187	us	"	"
	AMP WINDOW START (fgp8*)	187	us	"	"
	AMP WINDOW START (fgpn*)	187	us	"	"
TRAVEL TIME WINDOW (NEAR)	AMP WINDOW LENGTH	25	us	"	"
	TT WINDOW START (ttn*)	199	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*)	-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	"	"
BASELINE NOISE (NEAR)	TOOL DELAY (strn*)	-69	us	"	"
	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 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

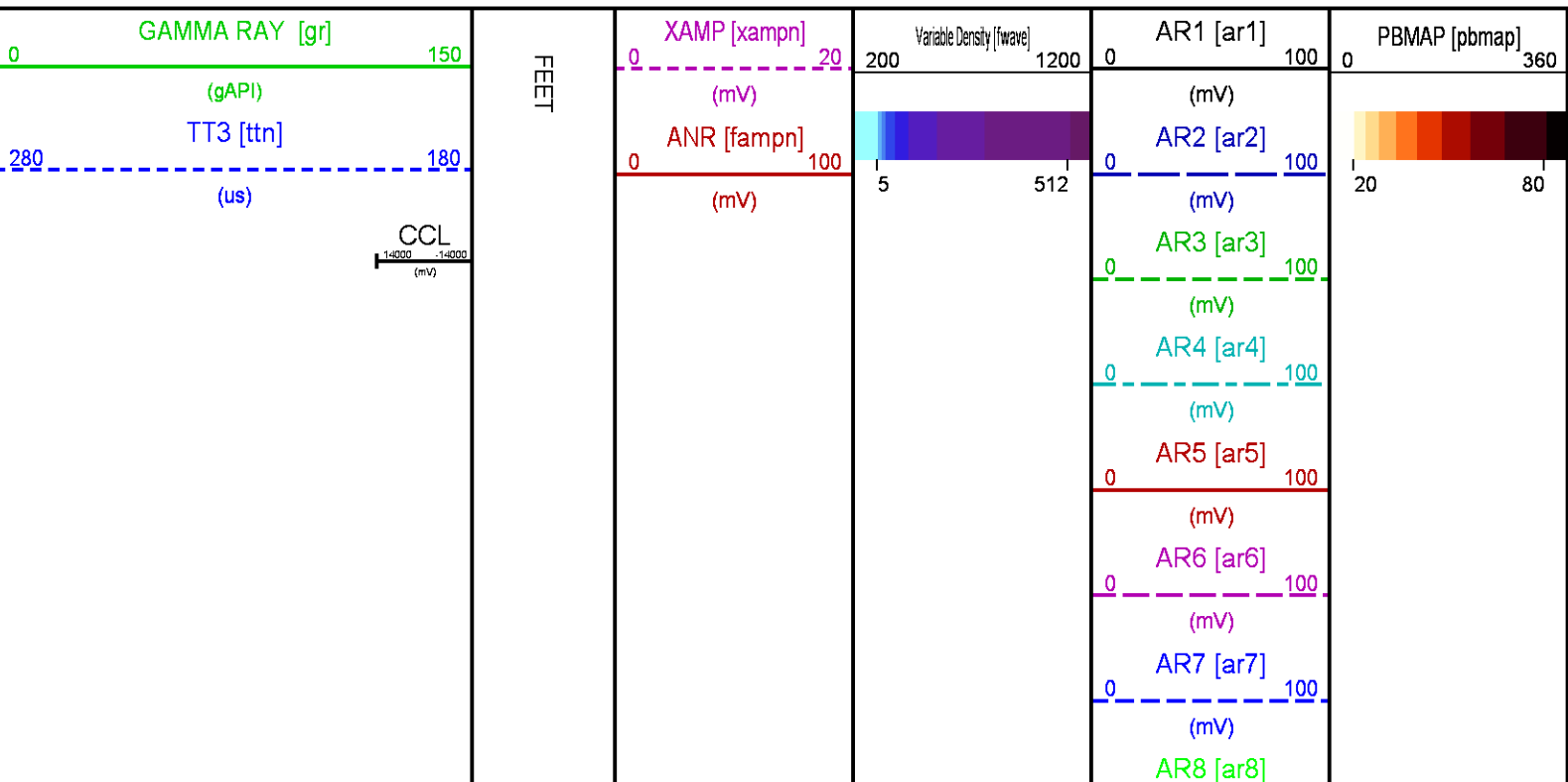
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AR1	Jan 22 13:02:04 2019	FIXED GATE AMPLITUDE T-R1
F1:AR2	Jan 22 13:02:04 2019	FIXED GATE AMPLITUDE T-R2
F1:AR3	Jan 22 13:02:04 2019	FIXED GATE AMPLITUDE T-R3
F1:AR4	Jan 22 13:02:04 2019	FIXED GATE AMPLITUDE T-R4
F1:AR5	Jan 22 13:02:04 2019	FIXED GATE AMPLITUDE T-R5
F1:AR6	Jan 22 13:02:04 2019	FIXED GATE AMPLITUDE T-R6
F1:AR7	Jan 22 13:02:04 2019	FIXED GATE AMPLITUDE T-R7
F1:AR8	Jan 22 13:02:04 2019	FIXED GATE AMPLITUDE T-R8
F1:CCL	Jan 22 13:02:04 2019	CASING COLLAR LOCATOR
F1:FAMPN	Jan 22 13:02:04 2019	FIXED GATE AMPLITUDE NEAR RECEIVER
F1:FWAVE	Jan 22 13:02:04 2019	FAR WAVE FORM
F1:GR	Jan 22 13:02:04 2019	GAMMA RAY
F1:PBMAP	Jan 22 13:02:04 2019	PERCENT BOND CEMENT MAP
F1:TTN	Jan 22 13:02:04 2019	TRAVELTIME FROM NEAR TRANSMITTER-RECEIVER
F1:XAMPN	Jan 22 13:02:04 2019	FIXED GATE AMPLITUDE NEAR RECEIVER TIMES FIVE

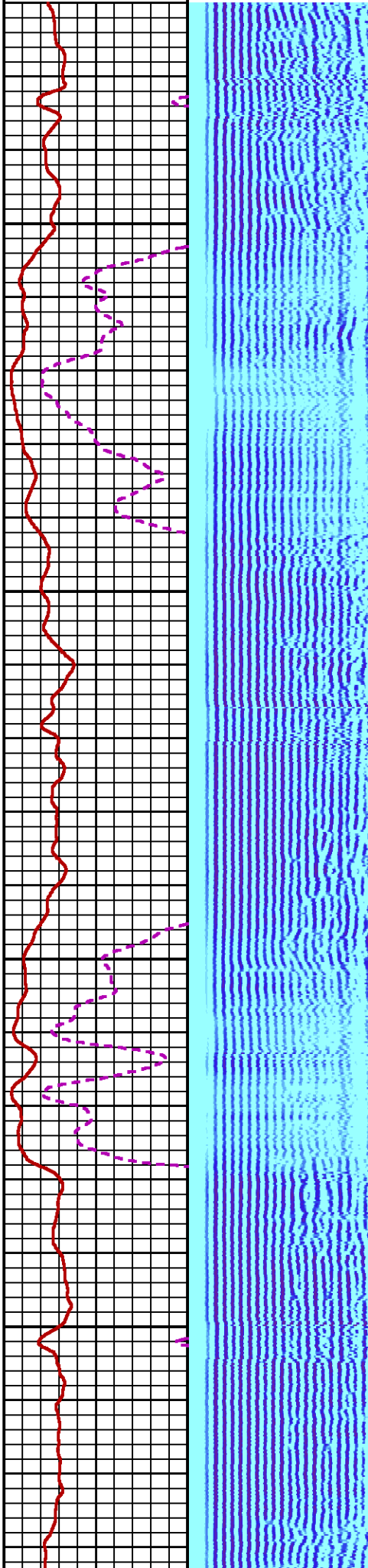
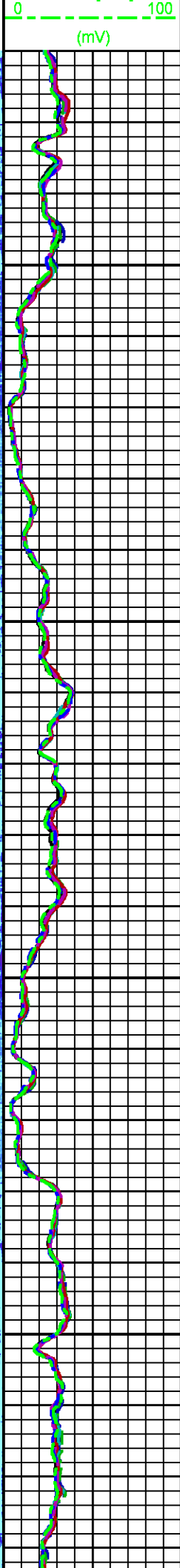
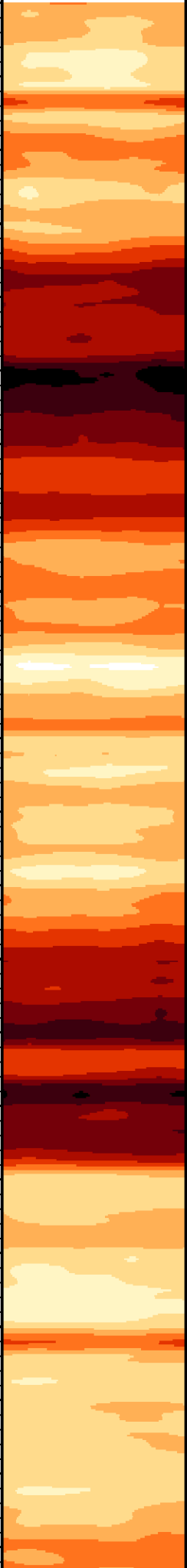
CURVE MEASURE POINT OFFSET

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_SS_09W/09W_RAL_,REPEAT.fvpdf [5"/100' Scale]
Plot Interval : 8220 - 8480 Feet

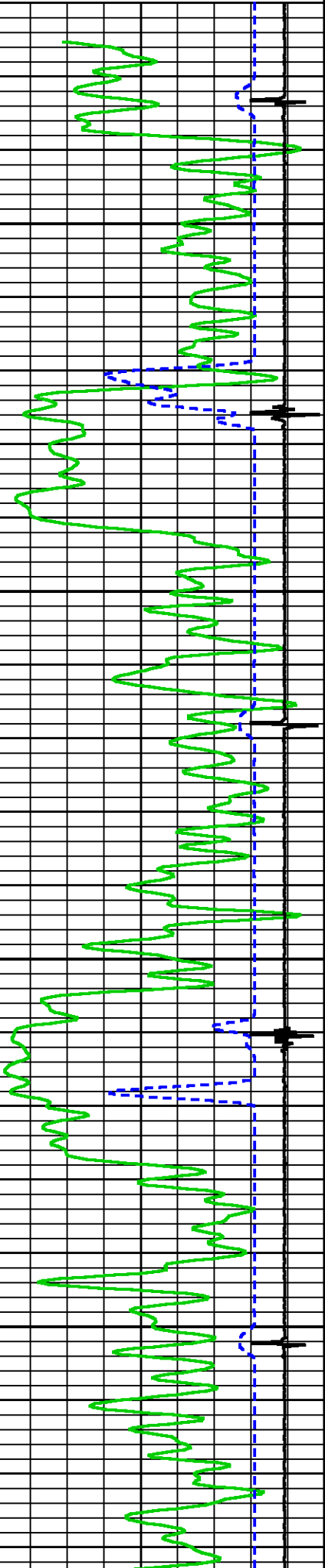
Data File 1 : F1 : SysA:/dat1a/LARAMIE_SS_09W/09W_RAL_REPEAT.xtf
Created On : Jan 22 13:02:04 2019
Company : LARAMIE ENERGY LLC
Well : SUP & SHEP 0993-25-09W
Field : BUZZARD CREEK
File Interval : 8214.5 - 8521 Feet
OCT : p012g

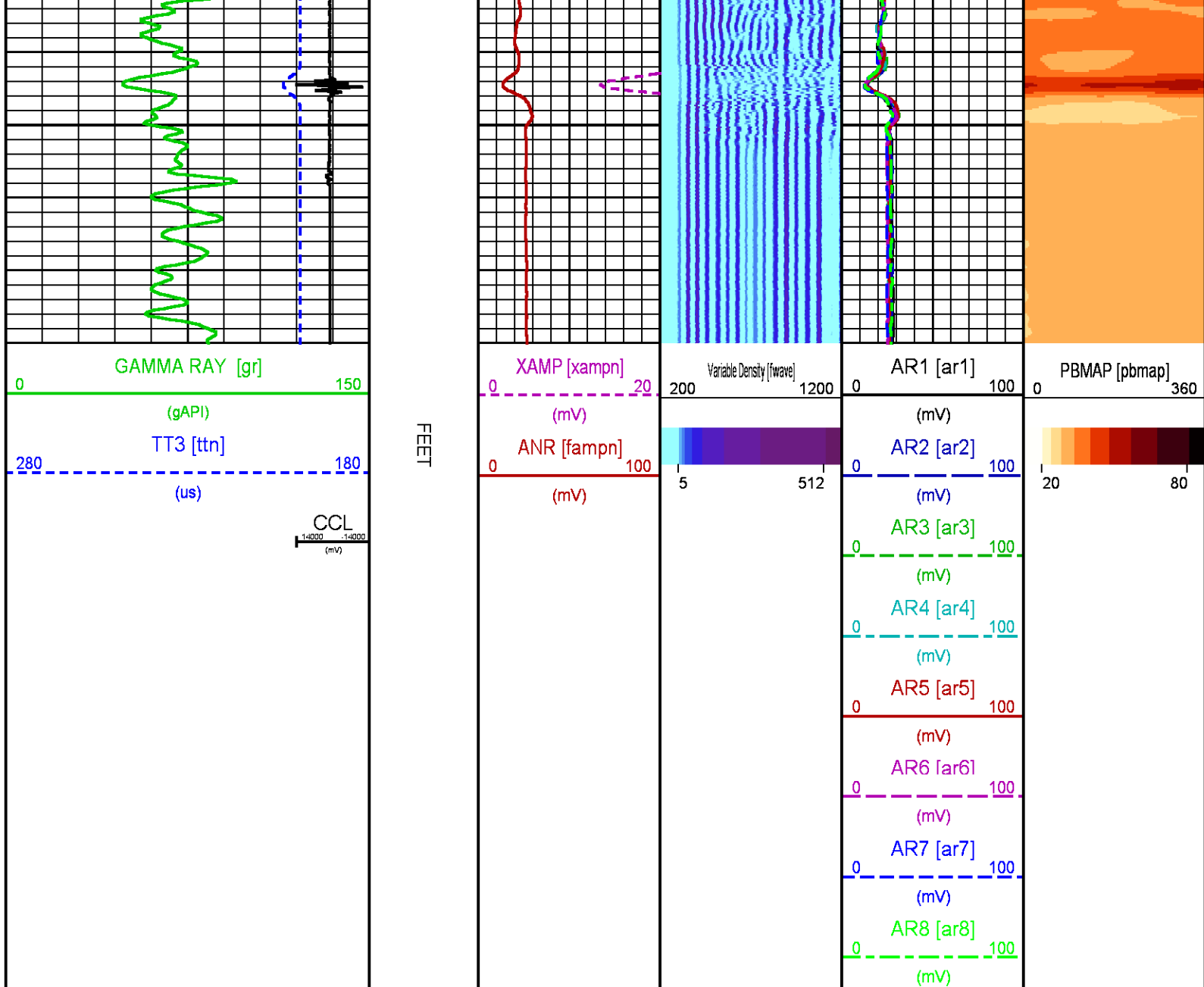




8300

8400





CALIBRATION / VERIFICATION SUMMARY

Source File: /dat1a/LARAMIE_SS_09W/p012g.tp1

RAL PRIMARY CALIBRATION SUMMARY

TOOL #: 1426XA 10222301

DATE/TIME PERFORMED: Tue Jan 22 12:22:12 2019

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)	-0.01	0.01	-0.01	-0.01	-0.01	-0.02	0.00	-0.01	-0.00	-0.05	-0.01
AMP FLUID (mV)	59	58	60	60	60	59	58	58	58	80	58

TT (us)	217	217	217	216	216	217	217	217	218	324	217
M FACTOR	1.69	1.71	1.68	1.67	1.67	1.69	1.71	1.73	1.73	1.88	1.73

RAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1426XA 10222301
 DATE/TIME PERFORMED: Tue Jan 22 12:24:31 2019
 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	0.00	0.05	0.01	0.00	-0.01	-0.01	0.01	-0.01	0.00	0.06	-0.01
AMP AIR	0.23	0.06	0.08	0.01	-0.04	0.35	0.49	0.12	0.07	1.95	100.15

GR PRIMARY CALIBRATION SUMMARY

TOOL #: 1355XA 11871507
 DATE/TIME PERFORMED: Sun Jul 22 17:33:05 2018

UNIT #: 5753XD 10412898
 CALB JIG #: 4702NK DA-438

	BACKGROUND (cts)	CALBRTR ON (cts)	CR DIFF (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	CALBRTR (gAPI)
GR	145.29	316.44	171.2	0.876	127.33	277.33	150

GR PRIMARY VERIFICATION SUMMARY

TOOL #: 1355XA 11871507
 DATE/TIME PERFORMED: Sun Jul 22 17:34:29 2018

UNIT #: 5753XD 10412898
 VERI JIG #: 4702NK DA-438

	BACKGROUND (cts)	CALBRTR ON (cts)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	DIFF. (gAPI)
GR	148.04	317.09	0.876	129.75	277.90	148.16
						140.00 160.00

INSTRUMENT CONFIGURATION

Source File: /dat1a/LARAMIE_SS_09W/RAL-tdg

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



20.38'

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'
 CCL — 5.79'
 GR — 1.67'
 TEMP — 0.17'

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"

**BAKER
HUGHES**
a GE company



COMPANY

LARAMIE ENERGY LLC

WELL

SUP & SHEP 0993-25-09W

FIELD

BUZZARD CREEK

COUNTY

MESA

STATE COLORADO

FILE NO:

CH146482

API NO:

05077105800000

LOCATION:

SHL

LAT: 39.244812 N

LONG: 107.723460 W

SEC 25

TWP 9S

RGE 93W

ELEVATIONS:

KB 8108 FT

DF

GL 8078 FT

DATE

23-Jan-2019

ECLIPS