



RADIAL CEMENT BOND LOG

FILE NO: CH146479	COMPANY LARAMIE ENERGY LLC
API NO: 05077105750000	WELL SUP & SHEP 0993-25-07W
	FIELD BUZZARD CREEK
	COUNTY MESA
	STATE COLORDAO

Version	LOCATION: SHL LAT: 39.244836 N LONG: 107.723396 W SEC 25 TWP 9S RGE 93W	OTHER SERVICES RPM
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PERMANENT DATUM	GL	ELEVATION	8078 FT
LOG MEASURED FROM	KB	30 FT	ABOVE P.D.
DRILL. MEAS. FROM	KB		

ELEVATIONS:	KB	8108 FT
	DF	
	GL	8078 FT

DATE	13-FEB-2019
RUN	1
TRIP	1
SERVICE ORDER	US146479
DEPTH DRILLER	8605.0 FT
DEPTH LOGGER	8592.0 FT
BOTTOM LOGGED INTERVAL	8592.0 FT
TOP LOGGED INTERVAL	0 FT
TIME STARTED	09:00
TIME FINISHED	13:00
OPERATOR RIG TIME	4.0 HOURS
TYPE OF FLUID IN HOLE	WATER
FLUID DENSITY	NA
FLUID SALINITY	NA
FLUID LEVEL	88.5 FT
LOGGED CEMENT TOP	1188.0 FT
WELLHEAD PRESSURE	0 PSI
MAXIMUM HOLE DEVIATION	NA
NOMINAL LOGGING SPEED	100 FMN
MAX. RECORDED TEMP.	275.0 DEGF
REFERENCE LOG	NA
REFERENCE LOG DATE	NA
EQUIP. NO.	ML-4217
LOCATION	GRAND JCT.
RECORDED BY	ATUL GUPTA
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: 6865.0' - 6887.0'

SJ: 7691.0' - 7713.0'

EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
1	1	RAL	1426XA	10222301	CENTRALIZED
1	1	GR/CCL	1355XA	12670180	CENTRALIZED

RAL MAIN PASS 0 PSI

ECLIPS 7.0wu1 PC-ECLIPS General Release Rel 7.0w Update 1 Wed Jul 25 15:19:34 Central Daylight Time 2018
Patches: 1

Plotted: Wed Feb 13 23:35:56 2019

PARAMETER AND FILTER SUMMARY REPORT

FILE: C:\dat1a\Laramie_Sup_Shep_0993-25-07WAp012g03.prm
LOGGING MODE: DEPTH DIRECTION: UP
TOP DEPTH: 16.250 ft BOTTOM DEPTH: 8581.727 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*)	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	30	us	"	"
TRAVEL TIME WINDOW (NEAR)	TT WINDOW START (ttn*)	160	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*)	-67	us	"	"
	TOOL DELAY (str2*)	-67	us	"	"
	TOOL DELAY (str3*)	-67	us	"	"
	TOOL DELAY (str4*)	-67	us	"	"
	TOOL DELAY (str5*)	-67	us	"	"
	TOOL DELAY (str6*)	-67	us	"	"
	TOOL DELAY (str7*)	-67	us	"	"
	TOOL DELAY (str8*)	-67	us	"	"
	TOOL DELAY (strn*)	-67	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	"	"

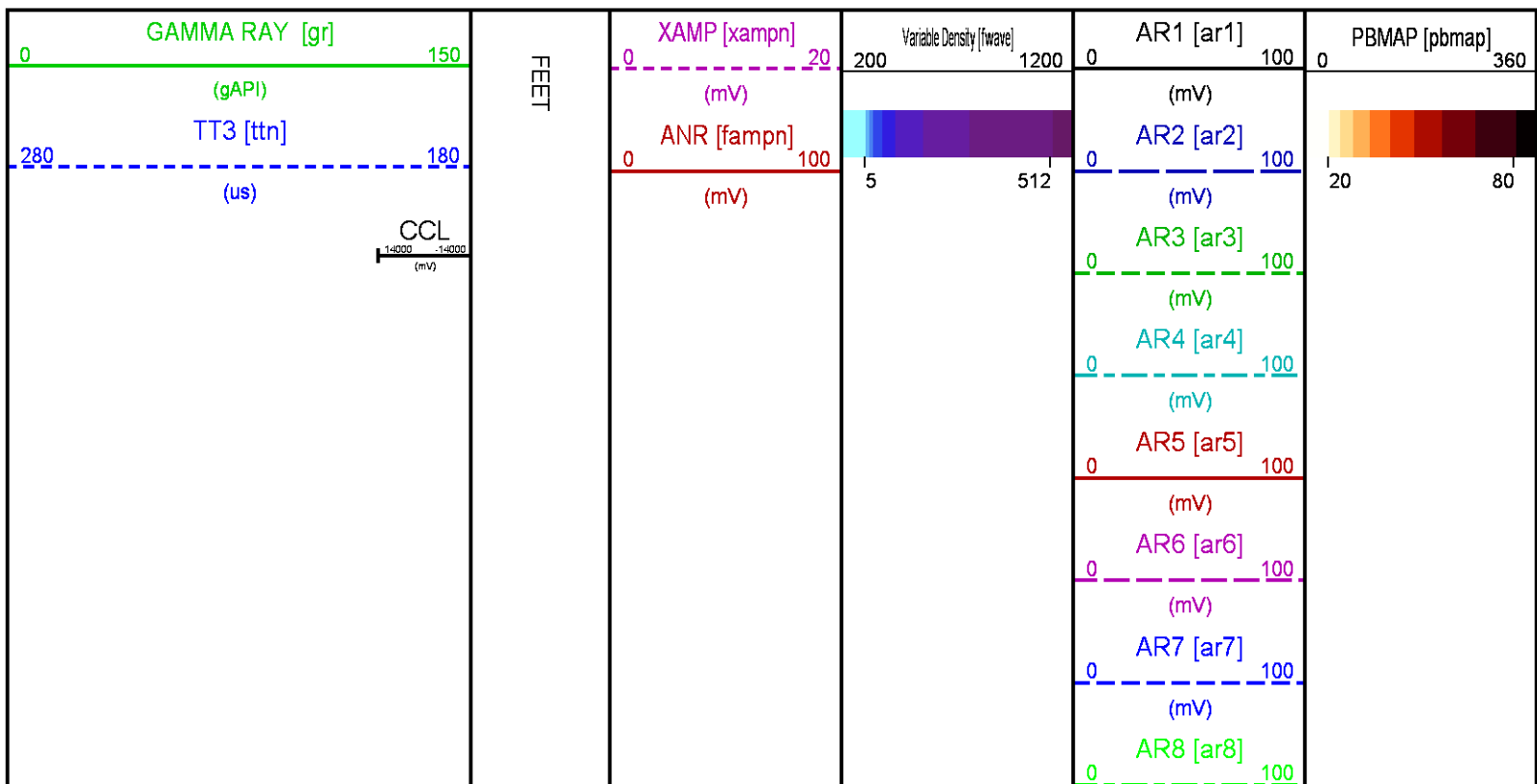
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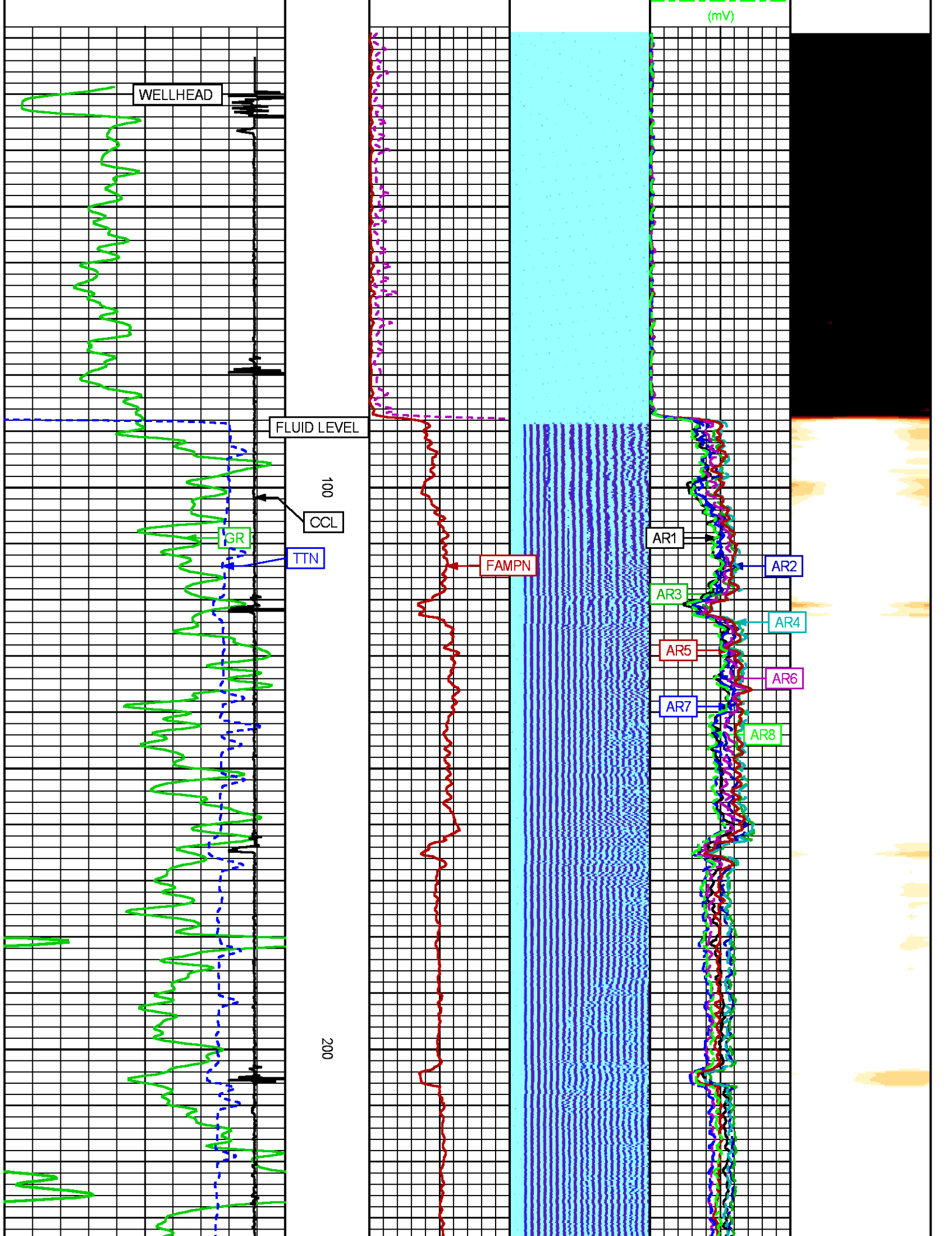
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AR1	Feb 13 11:43:17 2019	FIXED GATE AMPLITUDE T-R1
F1:AR2	Feb 13 11:43:17 2019	FIXED GATE AMPLITUDE T-R2
F1:AR3	Feb 13 11:43:17 2019	FIXED GATE AMPLITUDE T-R3
F1:AR4	Feb 13 11:43:17 2019	FIXED GATE AMPLITUDE T-R4
F1:AR5	Feb 13 11:43:17 2019	FIXED GATE AMPLITUDE T-R5
F1:AR6	Feb 13 11:43:17 2019	FIXED GATE AMPLITUDE T-R6
F1:AR7	Feb 13 11:43:17 2019	FIXED GATE AMPLITUDE T-R7
F1:AR8	Feb 13 11:43:17 2019	FIXED GATE AMPLITUDE T-R8
F1:CCL	Feb 13 11:43:17 2019	CASING COLLAR LOCATOR
F1:FAMPN	Feb 13 11:43:17 2019	FIXED GATE AMPLITUDE NEAR RECEIVER
F1:FWAVE	Feb 13 11:43:17 2019	FAR WAVE FORM
F1:GR	Feb 13 11:43:17 2019	GAMMA RAY
F1:PBMAP	Feb 13 11:43:17 2019	PERCENT BOND CEMENT MAP
F1:TTN	Feb 13 11:43:17 2019	TRAVELTIME FROM NEAR TRANSMITTER-RECEIVER
F1:XAMPN	Feb 13 11:43:17 2019	FIXED GATE AMPLITUDE NEAR RECEIVER TIMES FIVE

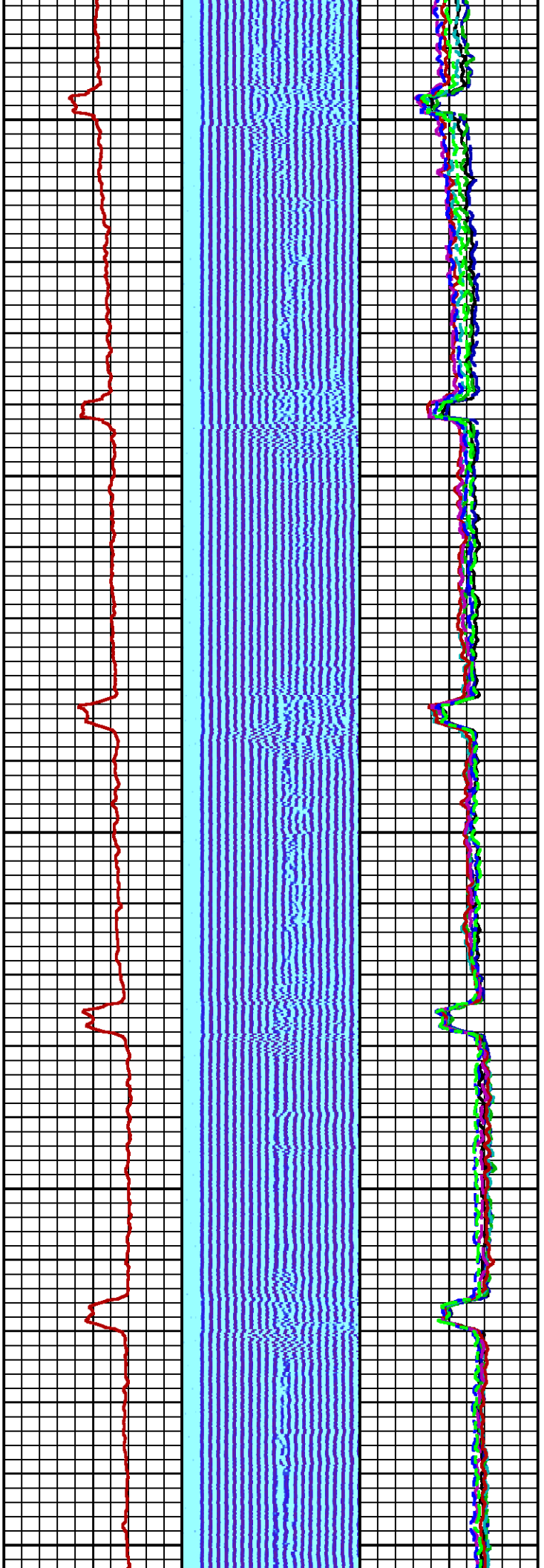
CURVE MEASURE POINT OFFSET

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	: BHIHXPM1N2:C:\dat1a\Laramie_Sup_Shep_0993-25-07W\07W_RAL_MAIN.fvpdf [5"/100' Scale]
Plot Interval	: 19 - 8600 Feet
Data File 1	: F1 : BHIHXPM1N2:C:\dat1a\Laramie_Sup_Shep_0993-25-07W\p012g03.xtf
Created On	: Feb 13 11:43:17 2019
Company	: LARAMIE ENERGY LLC
Well	: SUP & SHEP 099326-07W
Field	: BUZZARD CREEK
File Interval	: 16.25 - 8594 Feet
OCT	: p012g

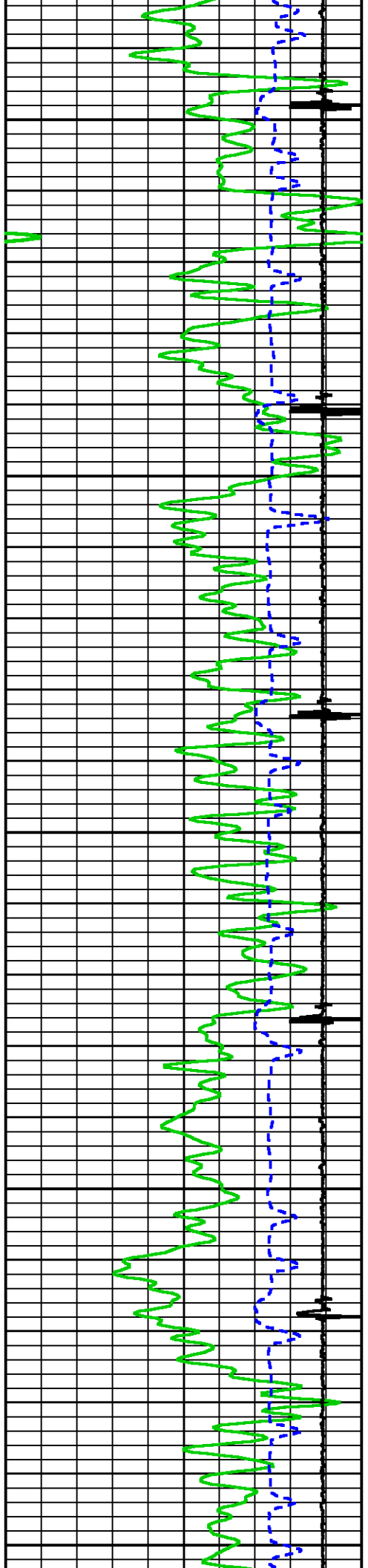


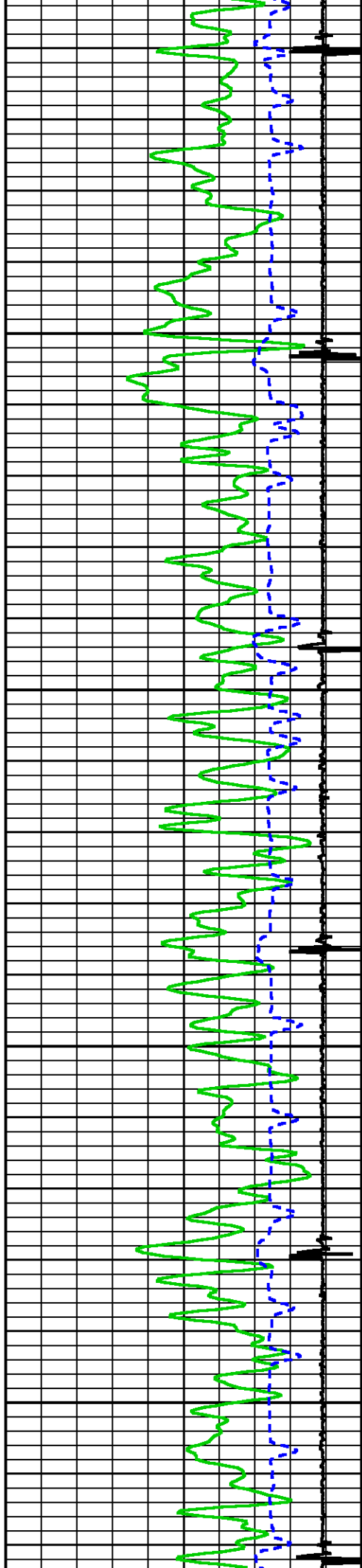




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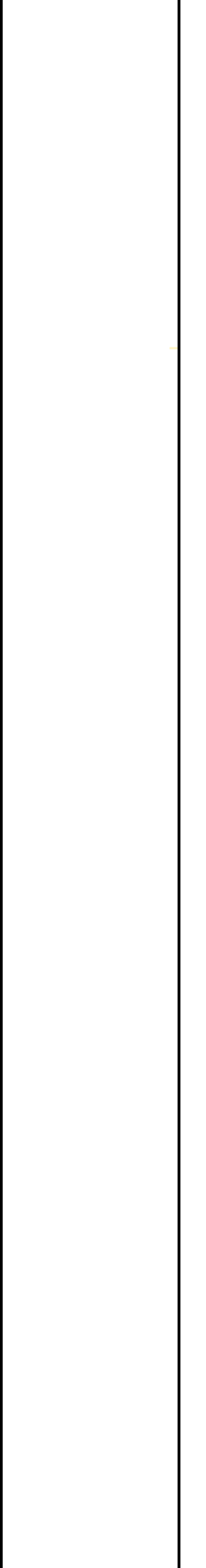
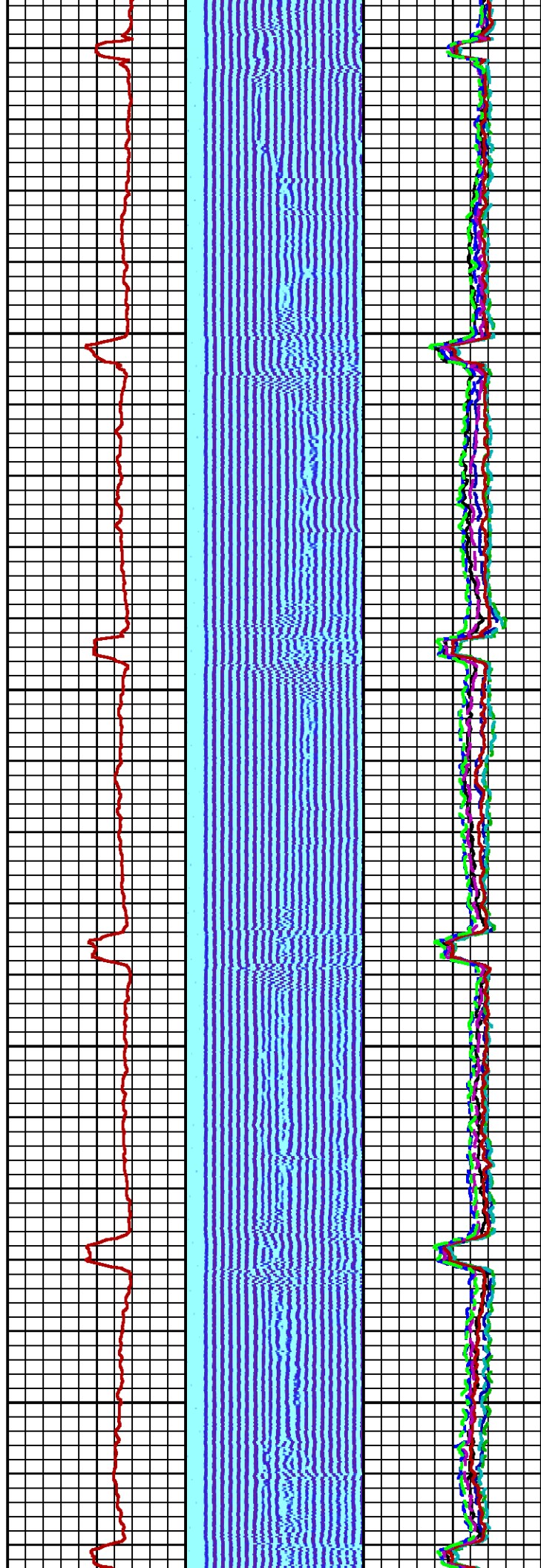
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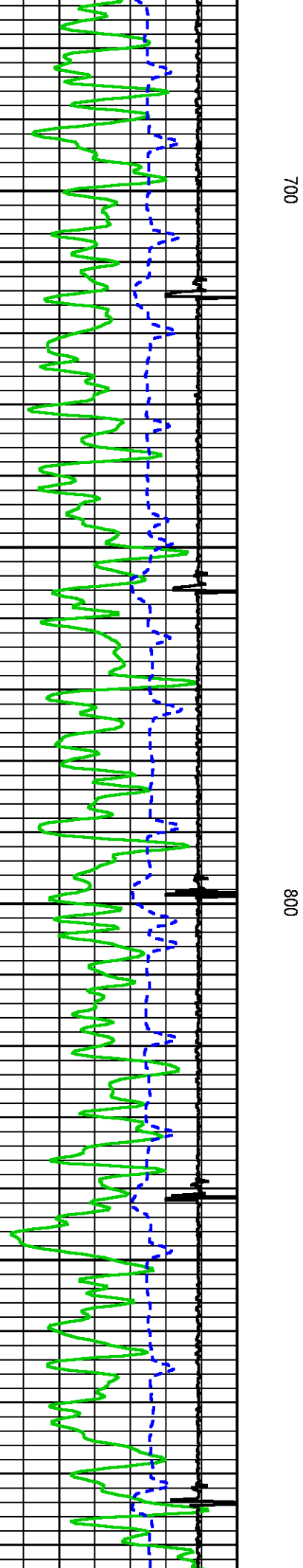
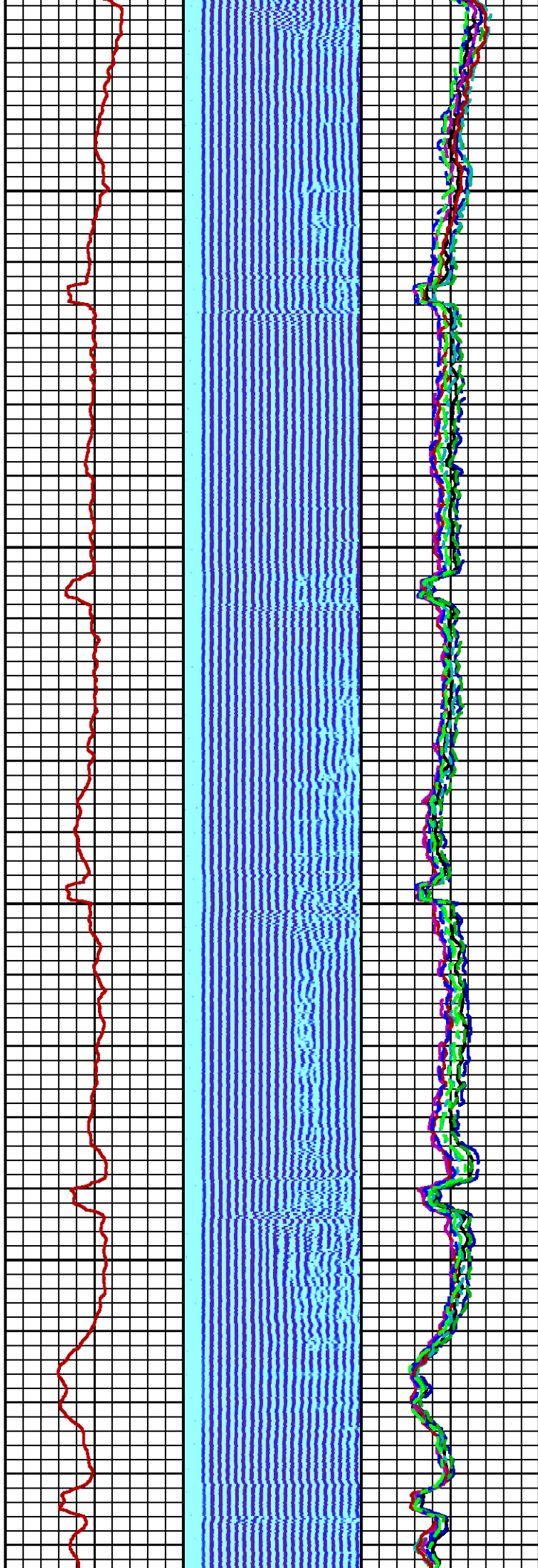


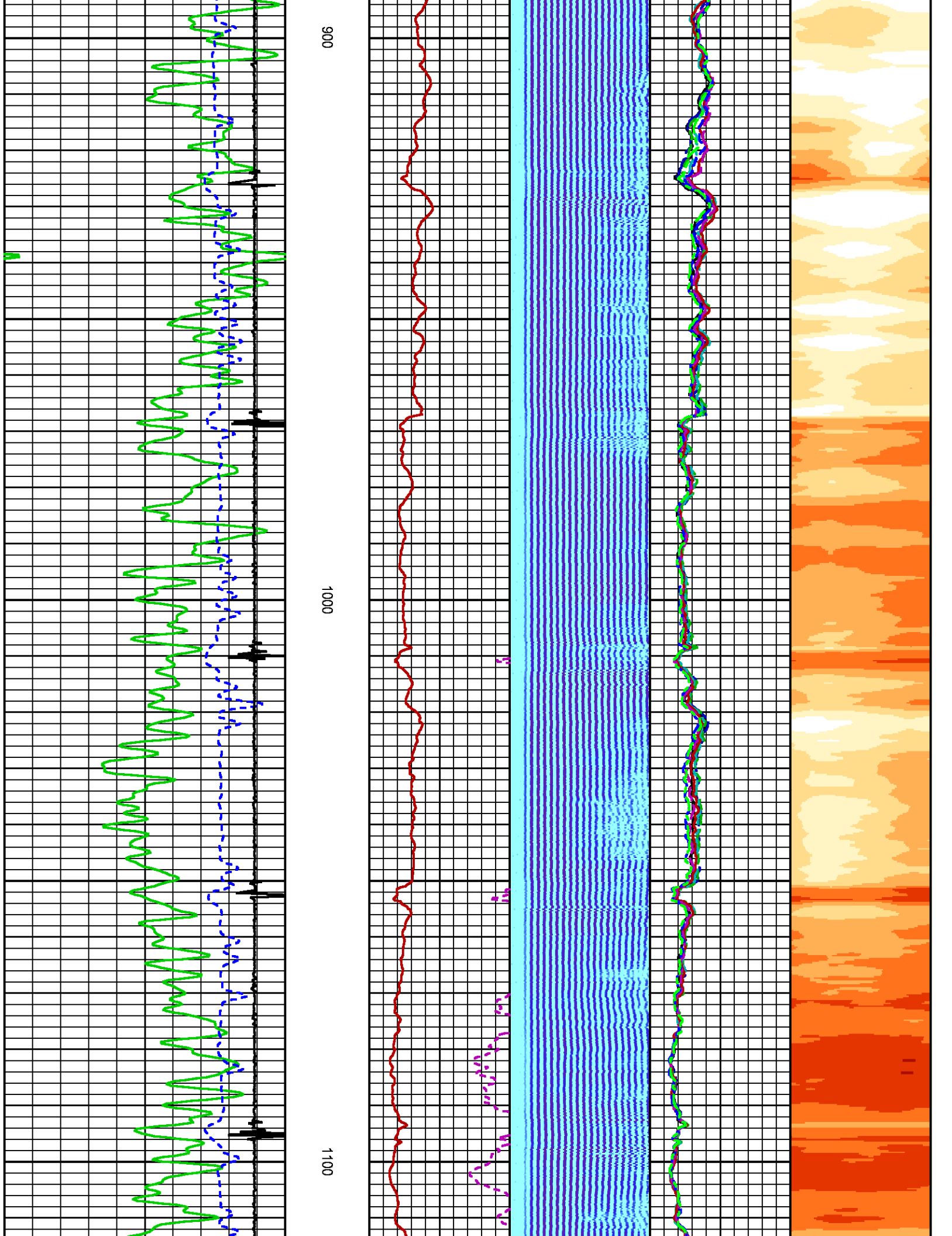


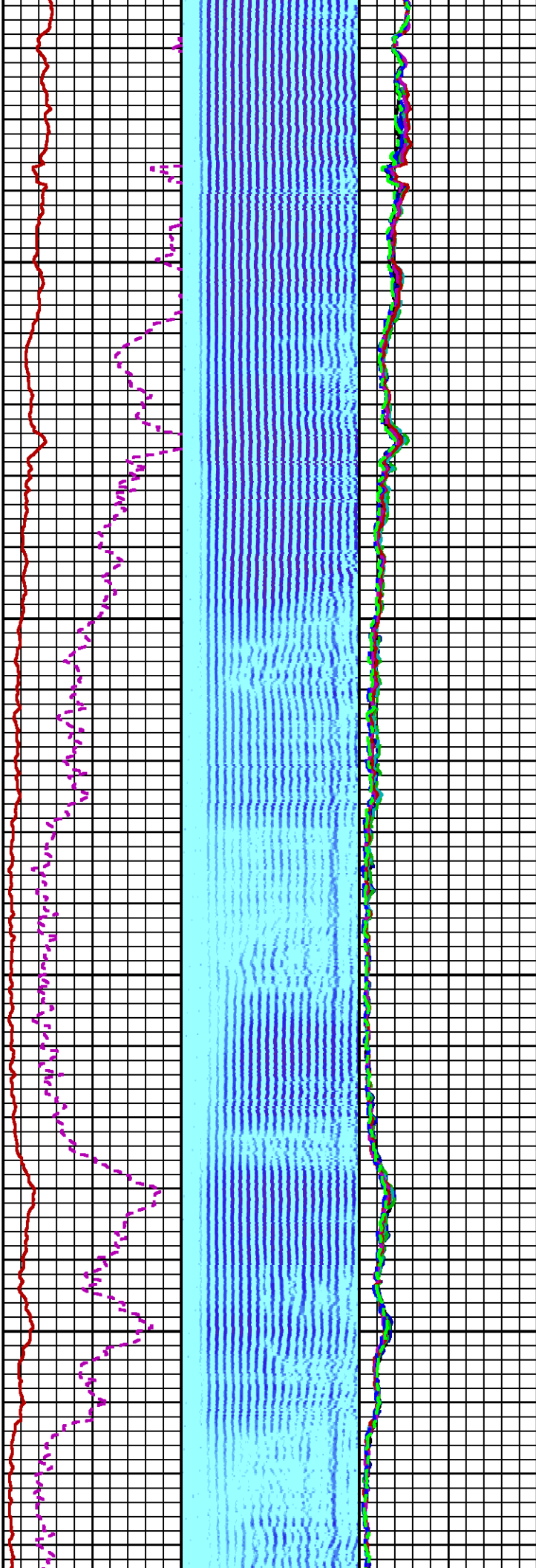
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600





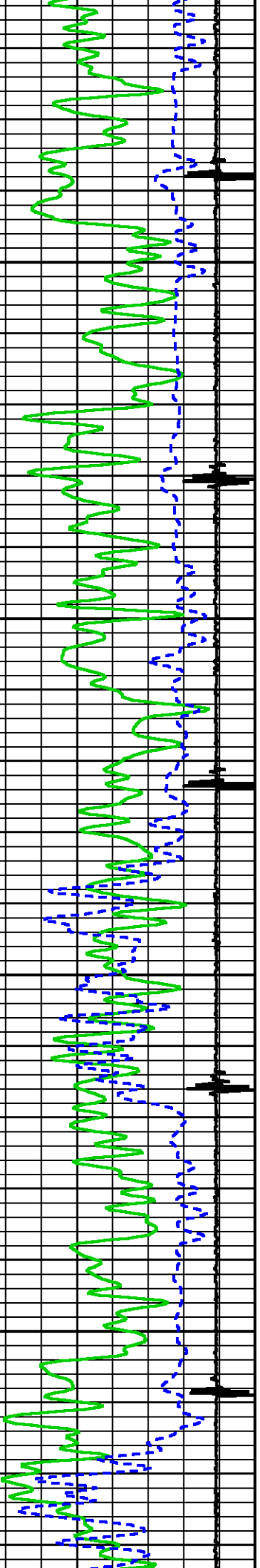


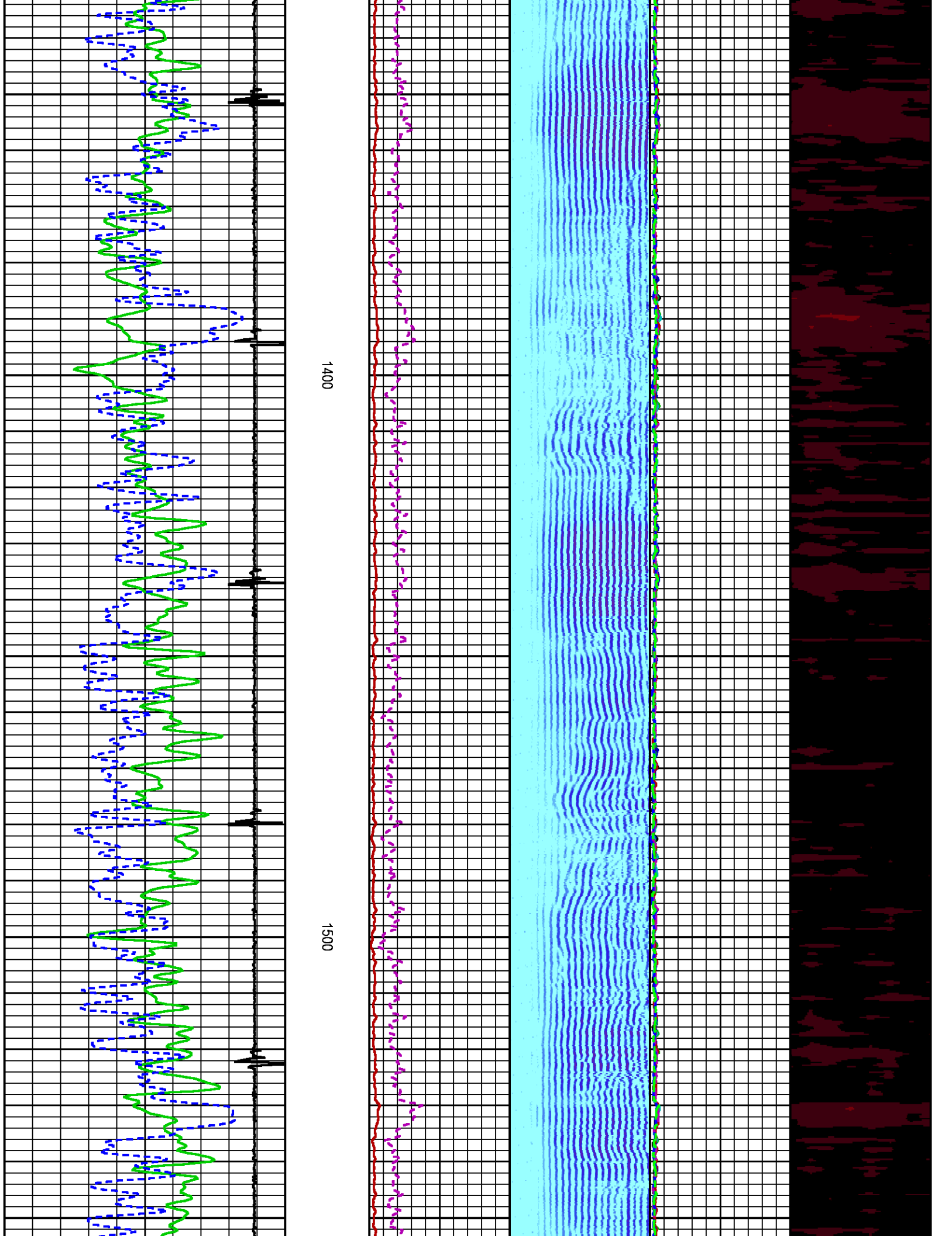


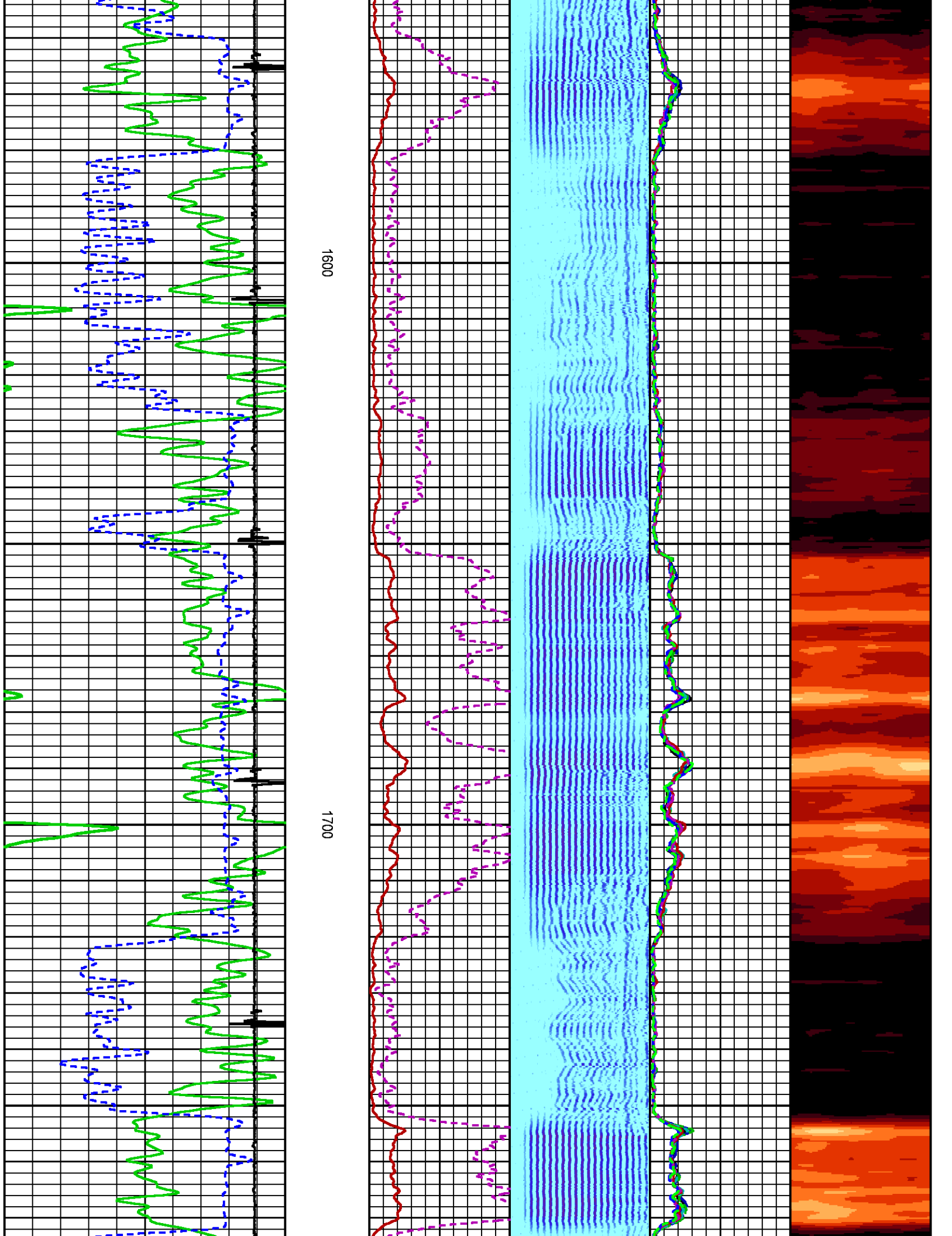
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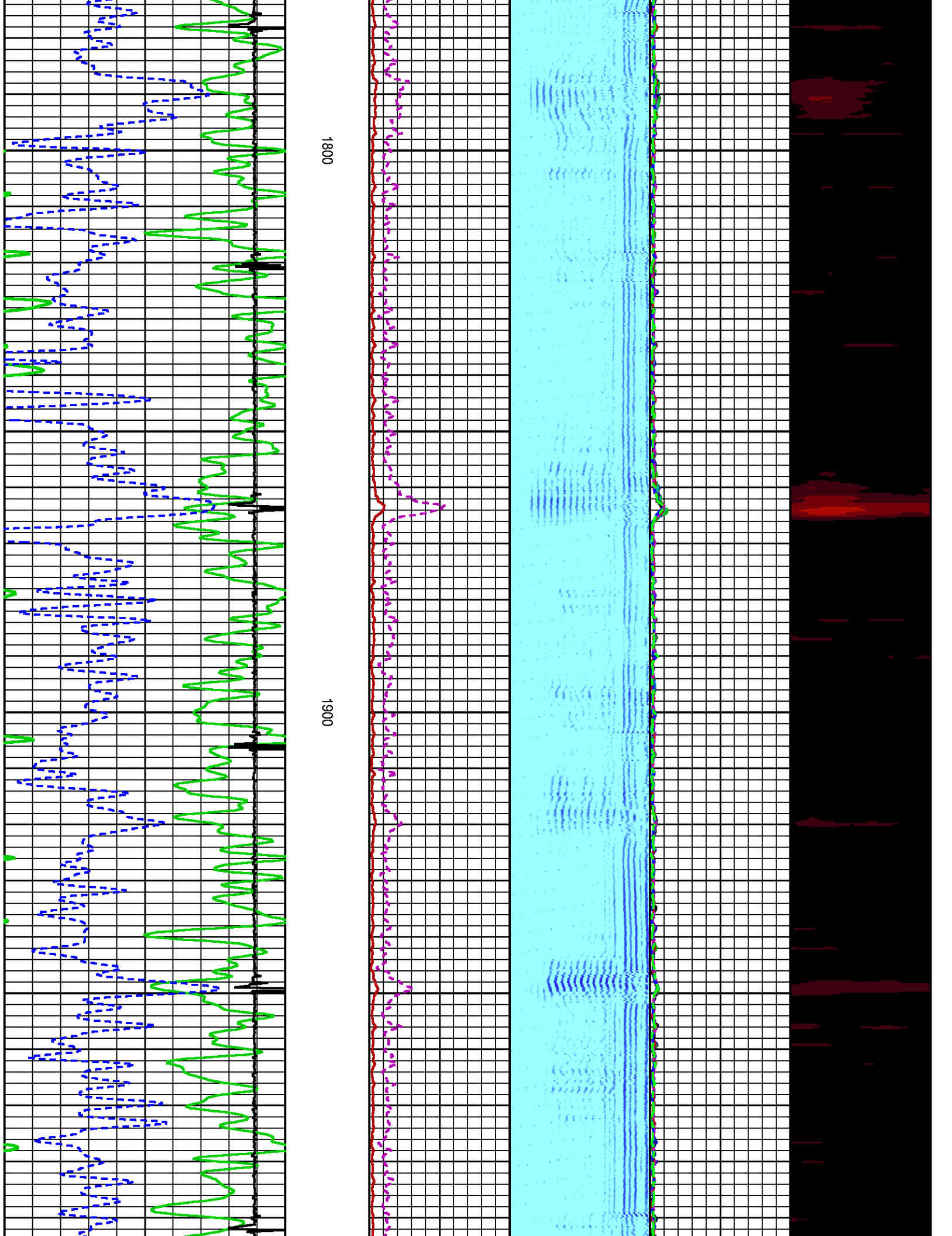
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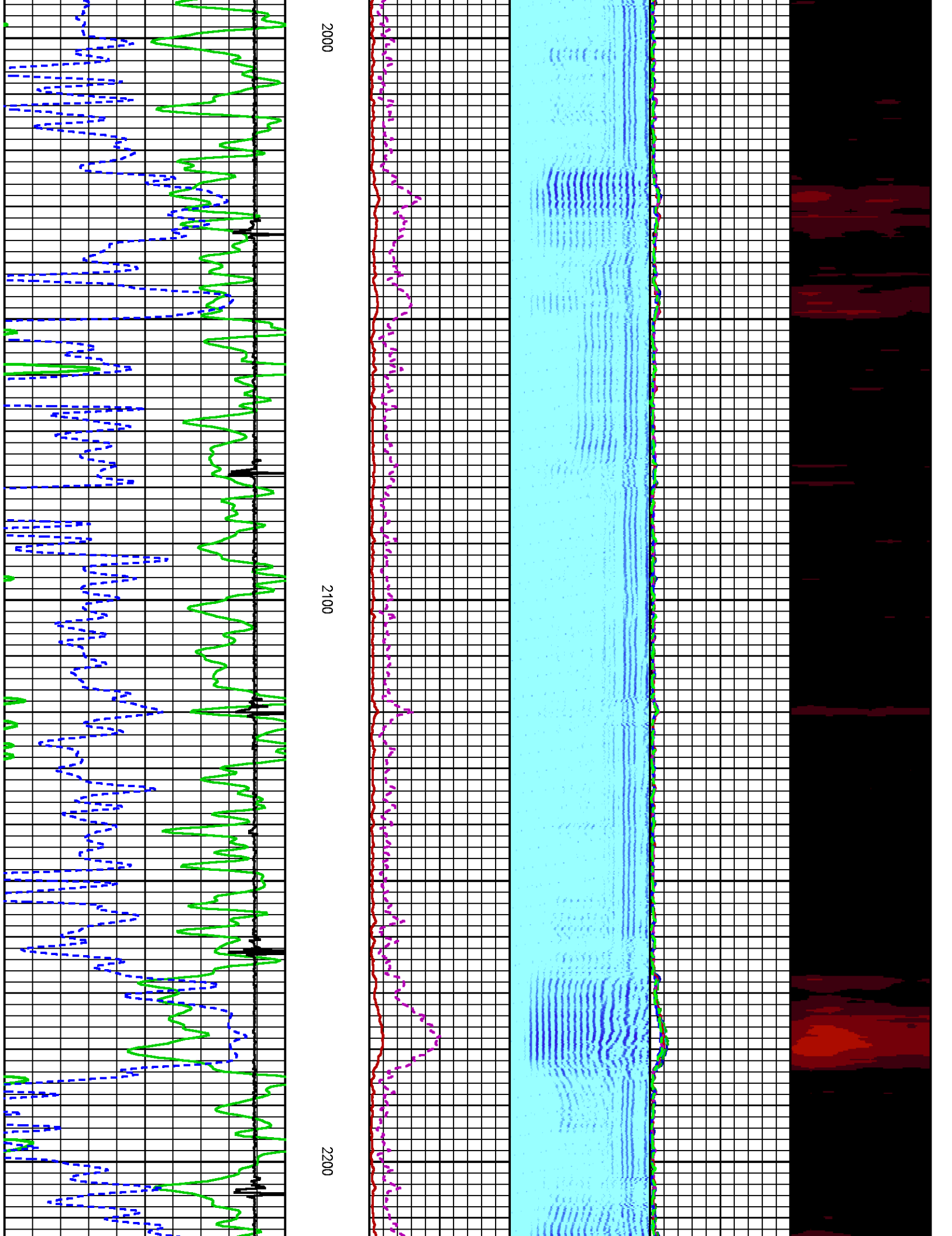
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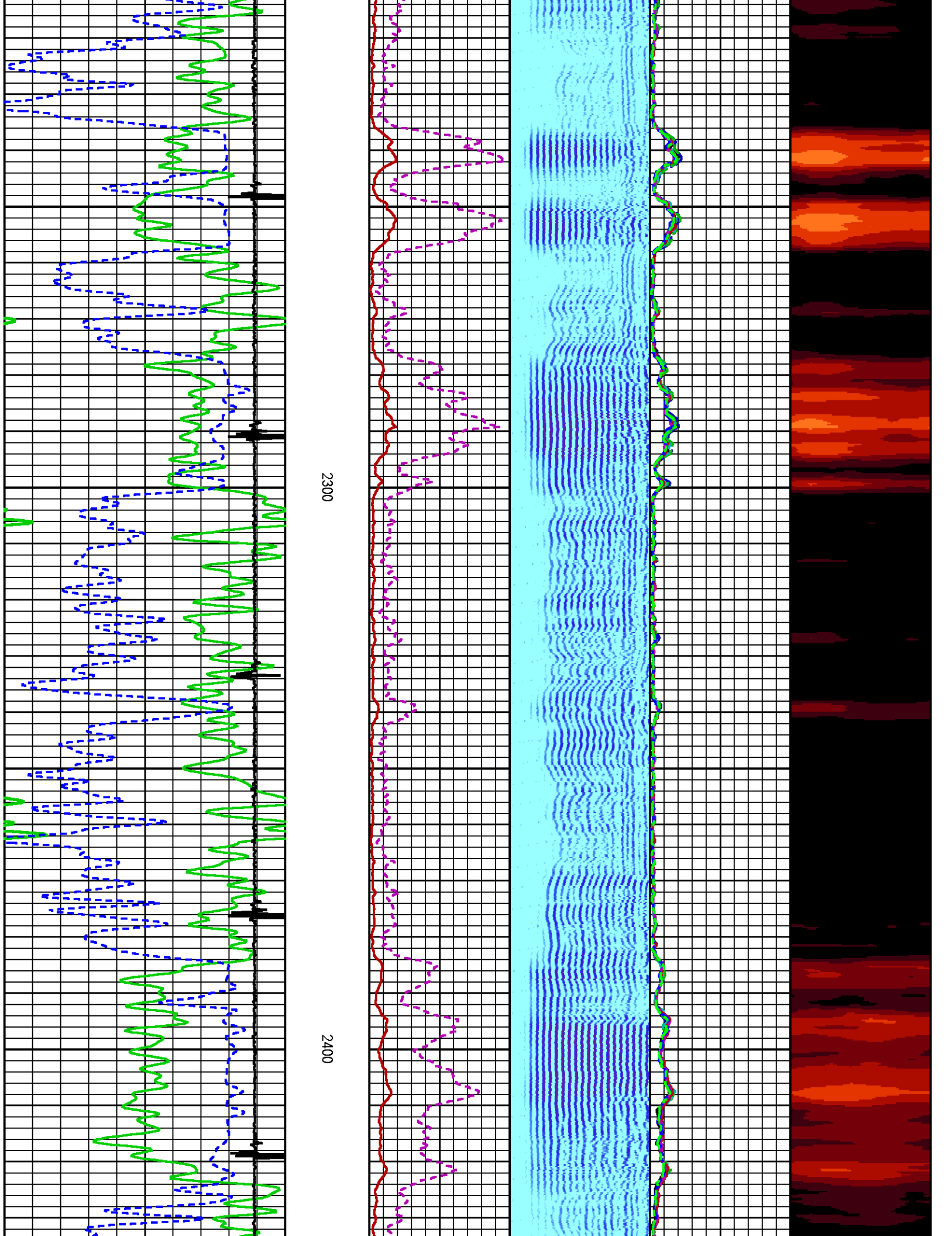


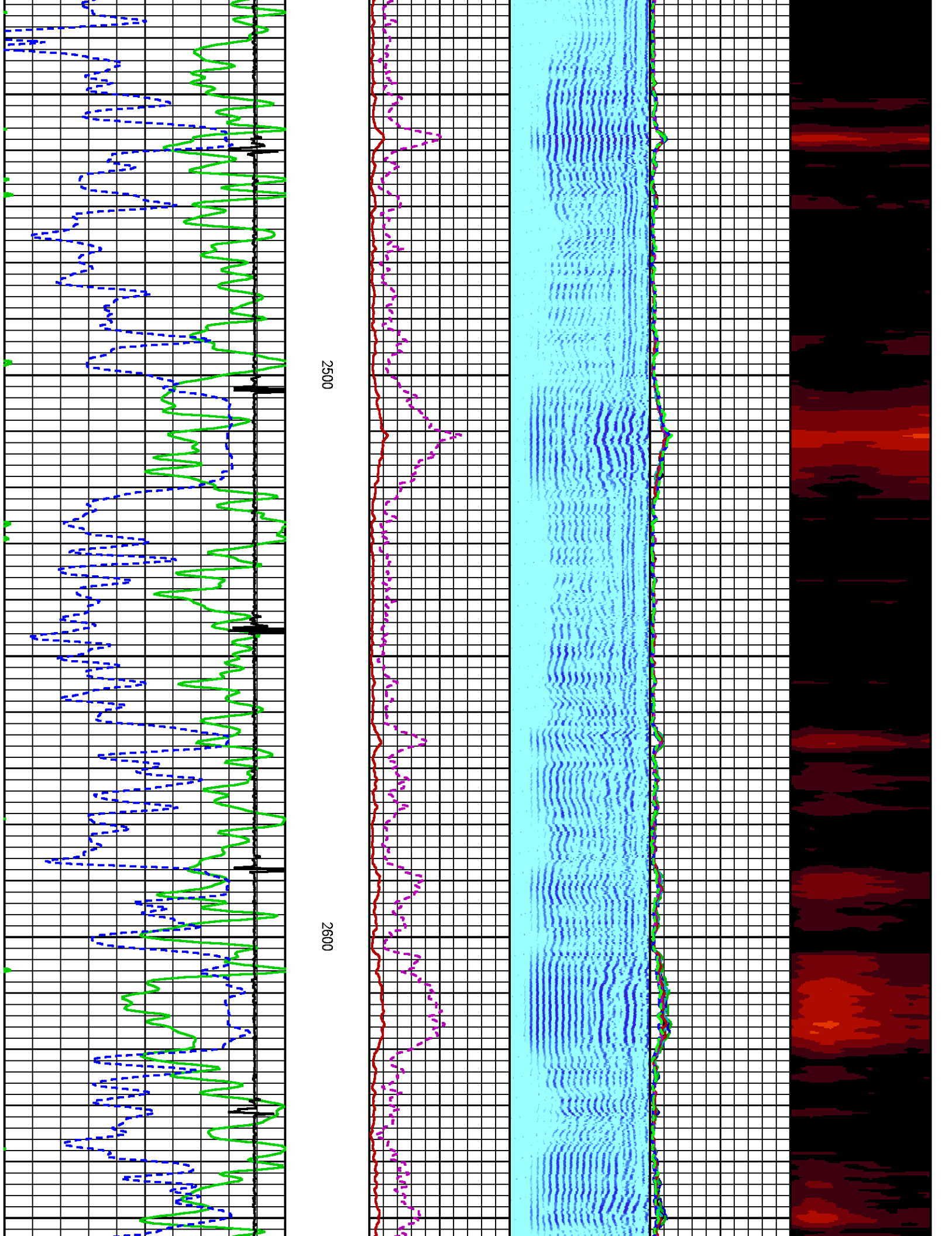


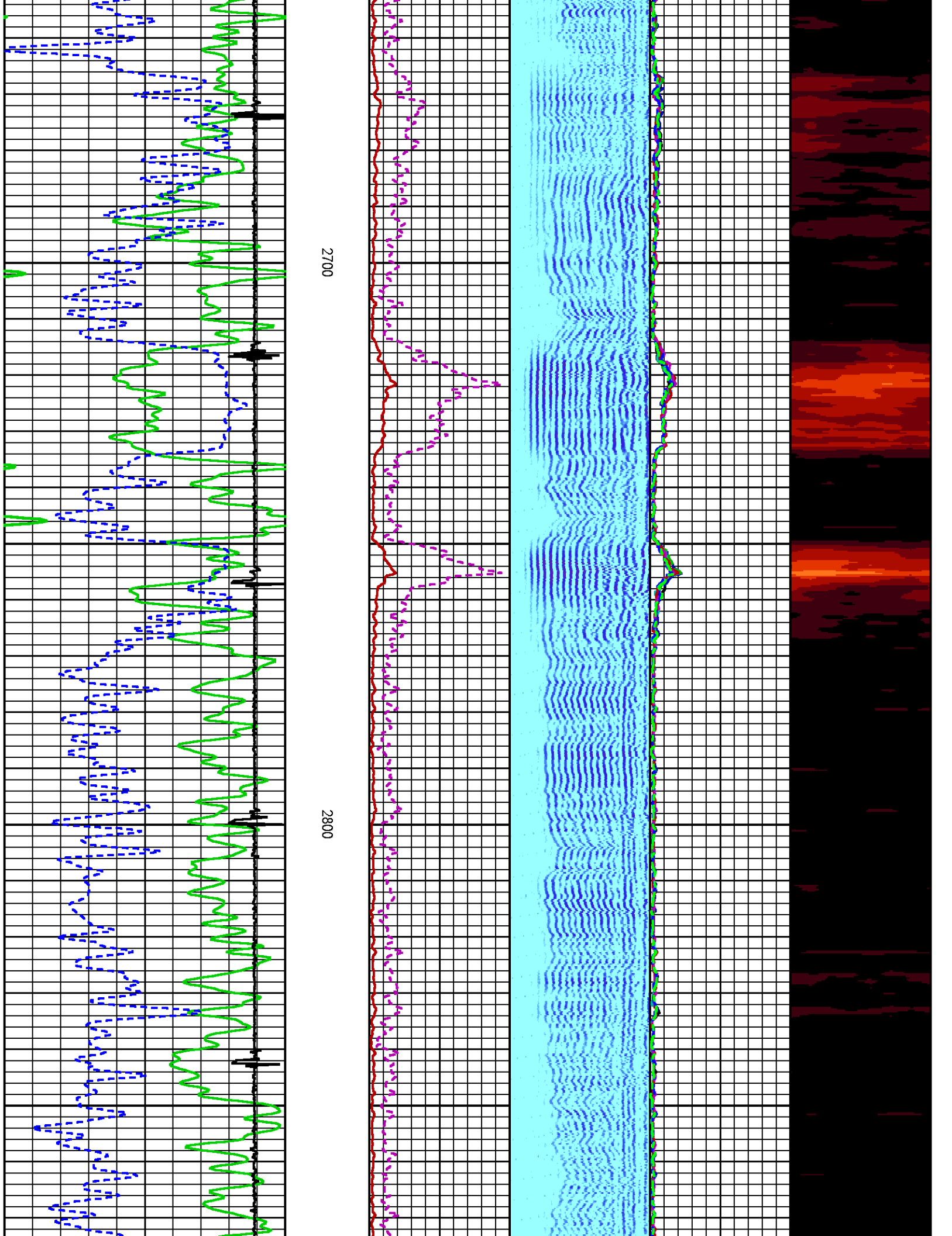


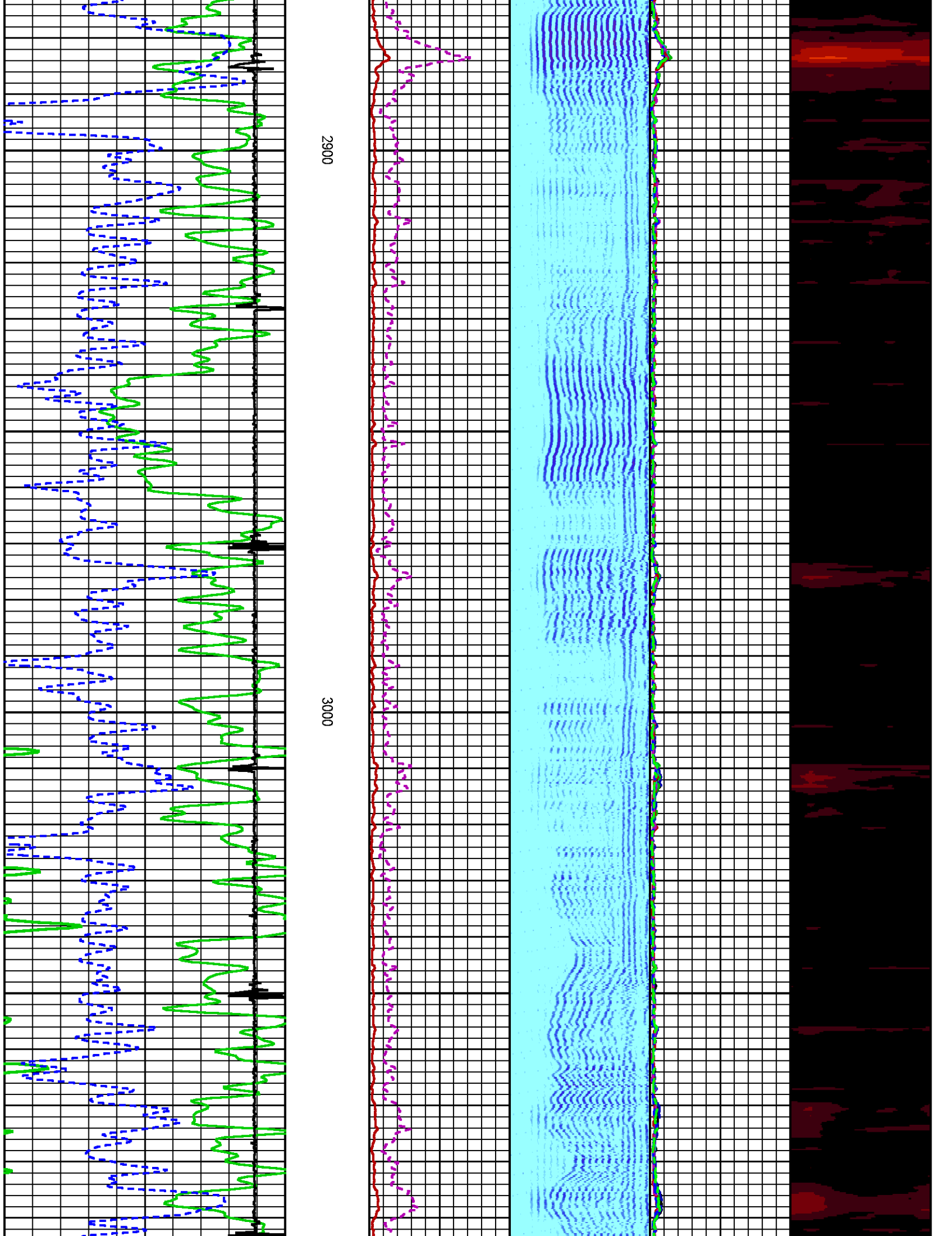


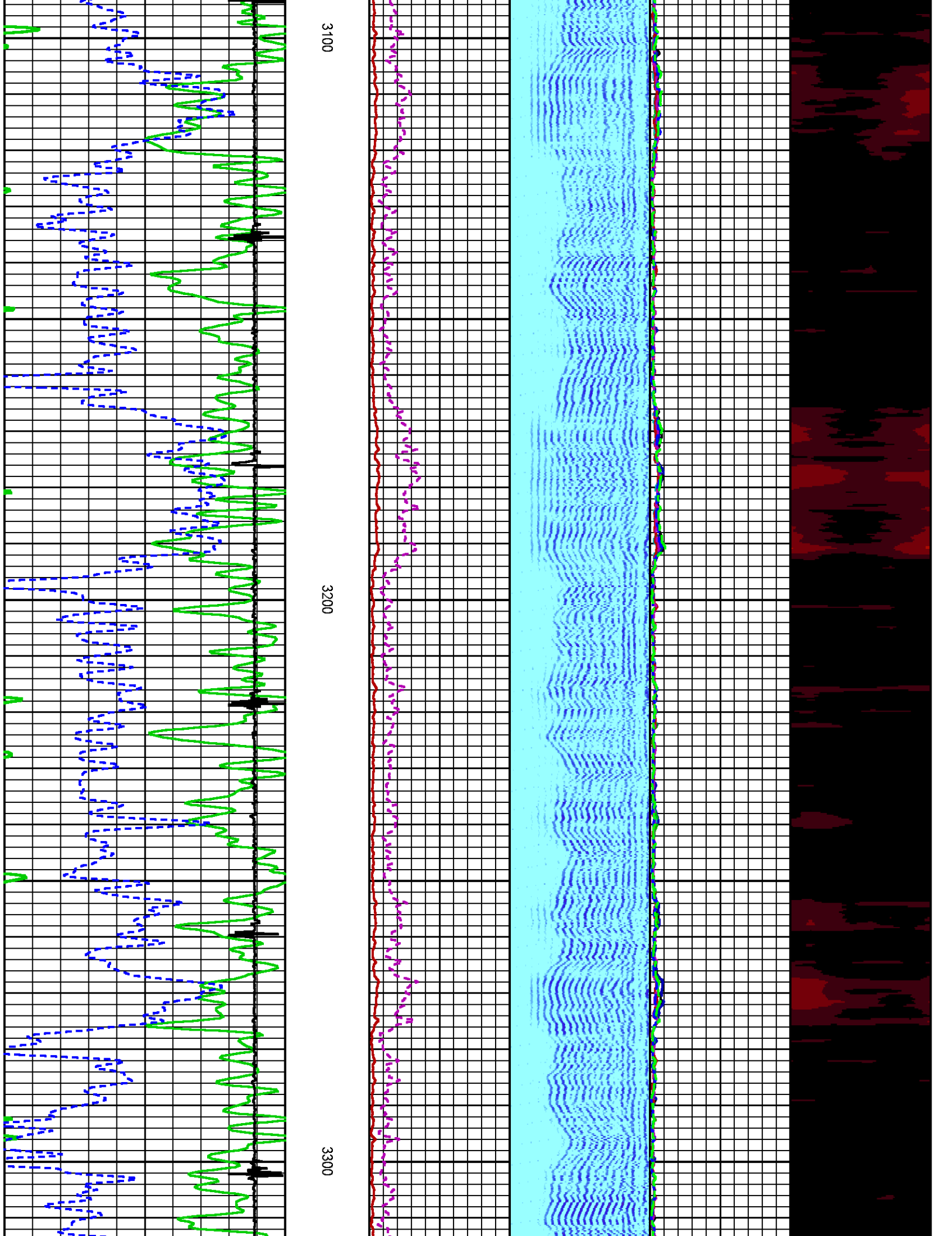


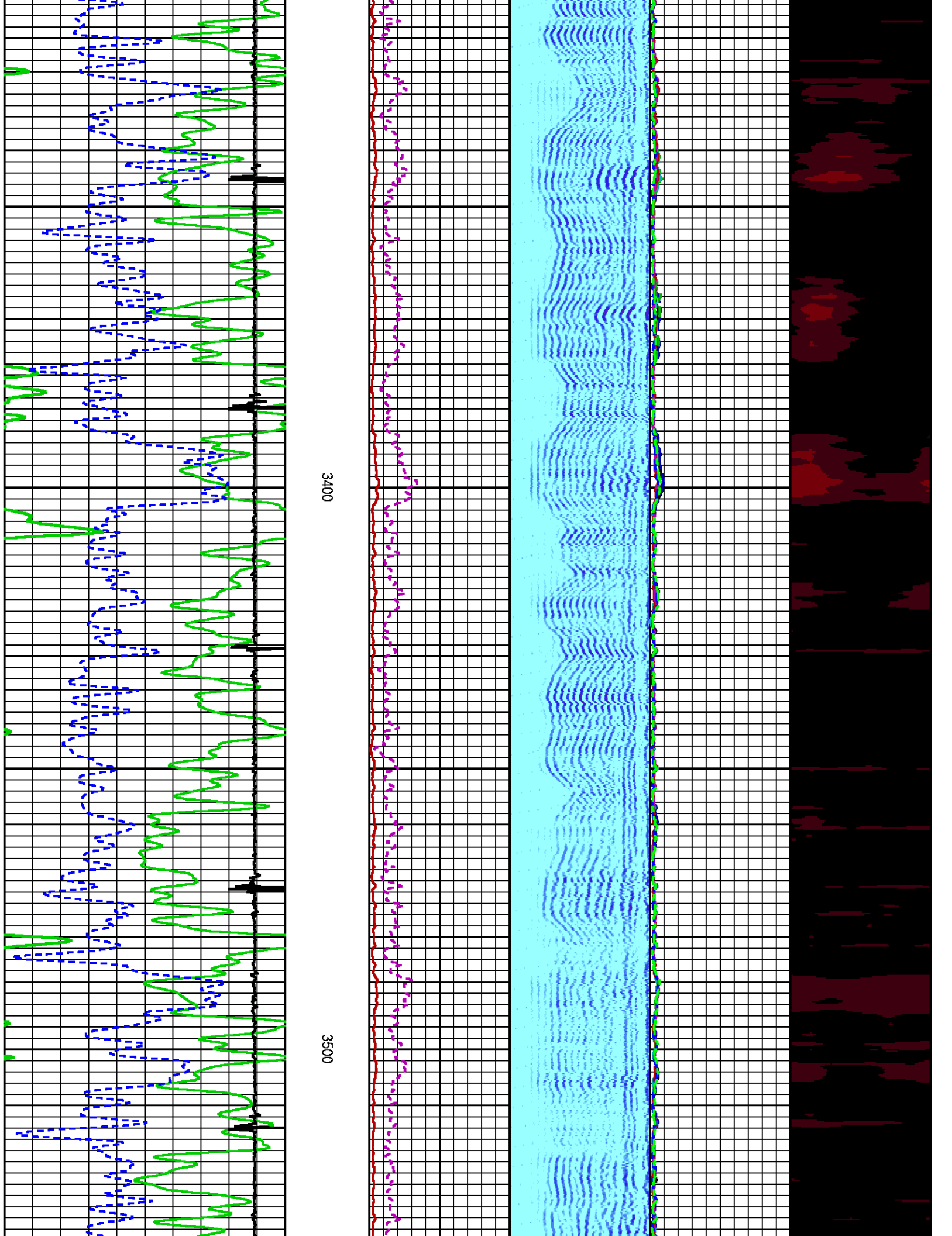


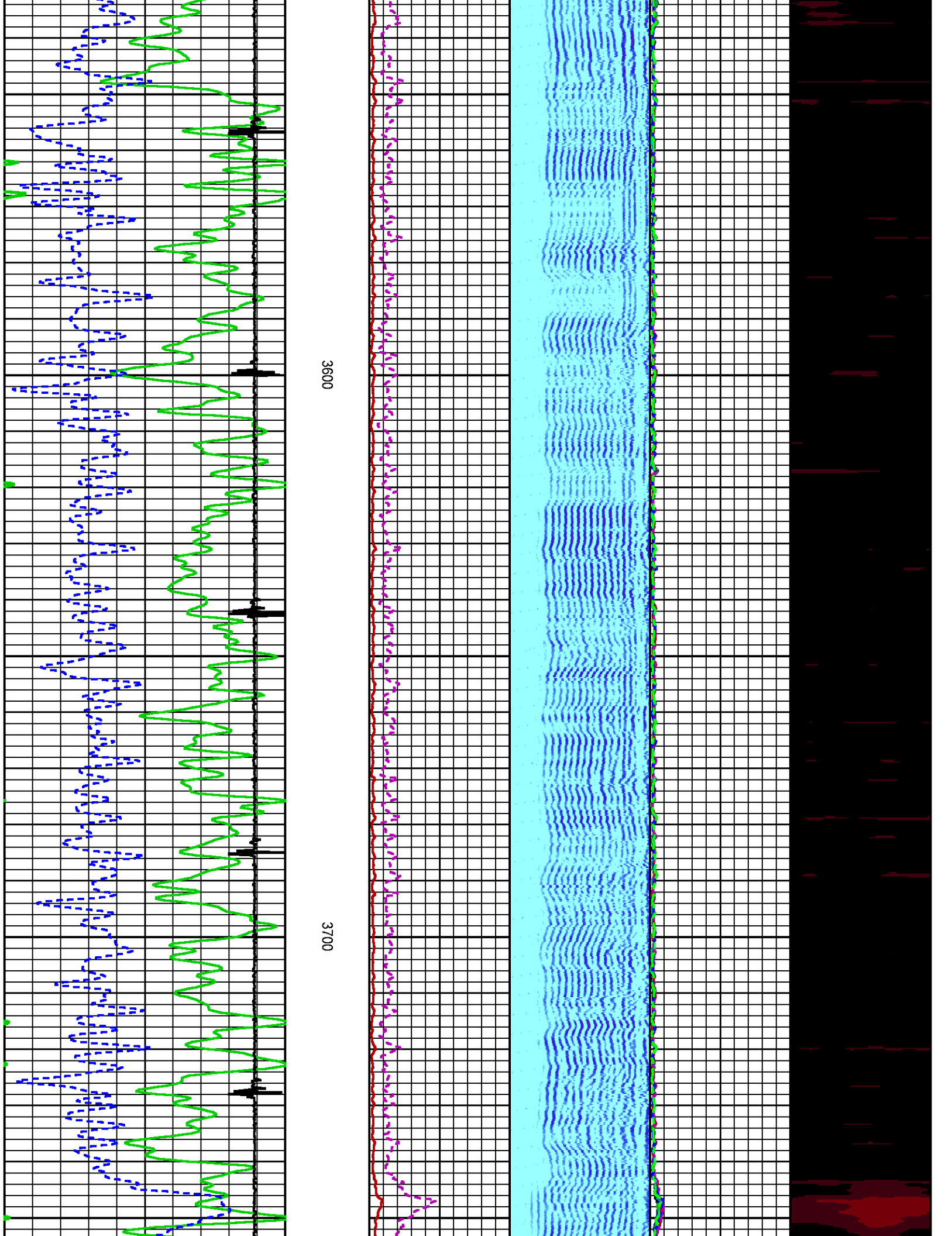


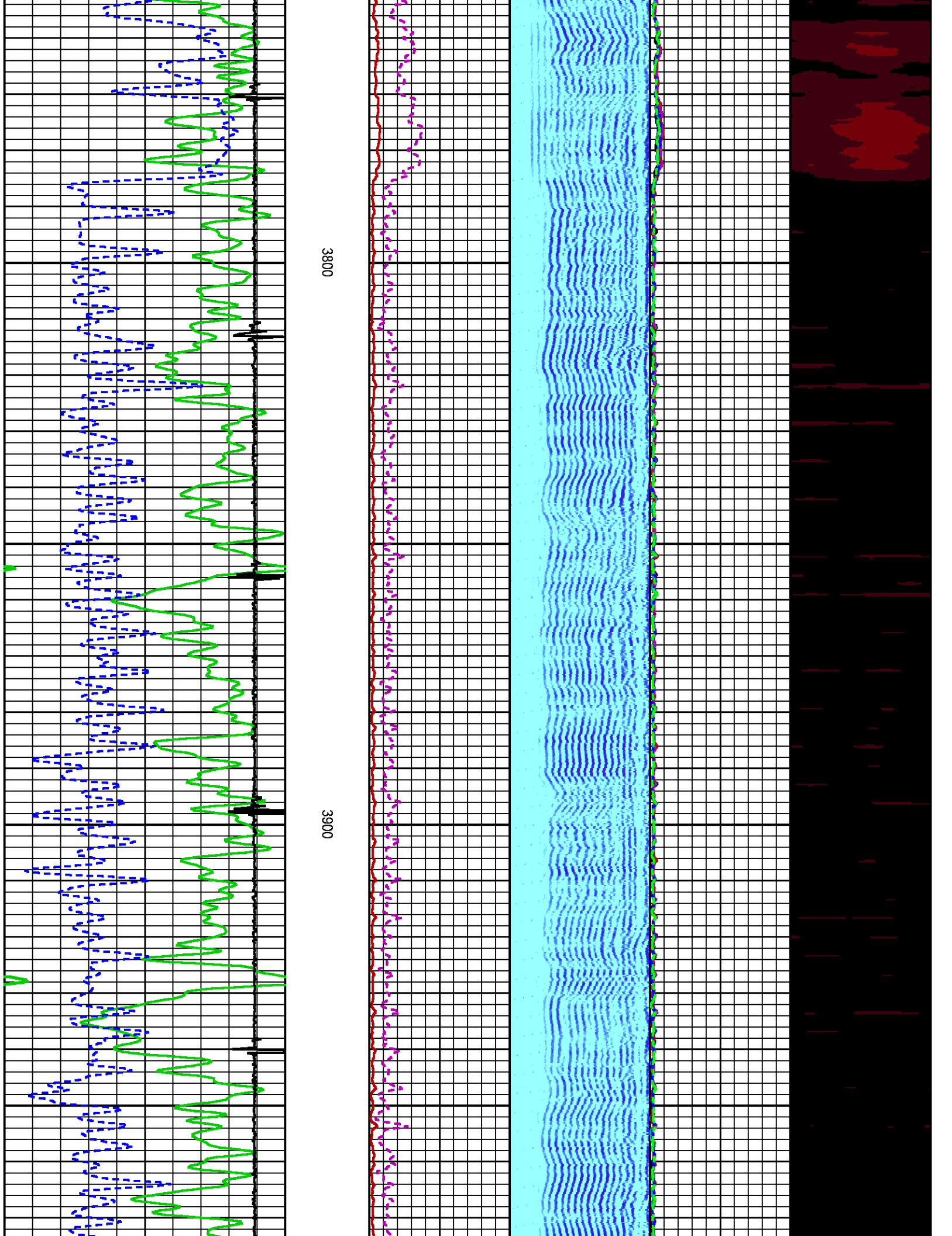


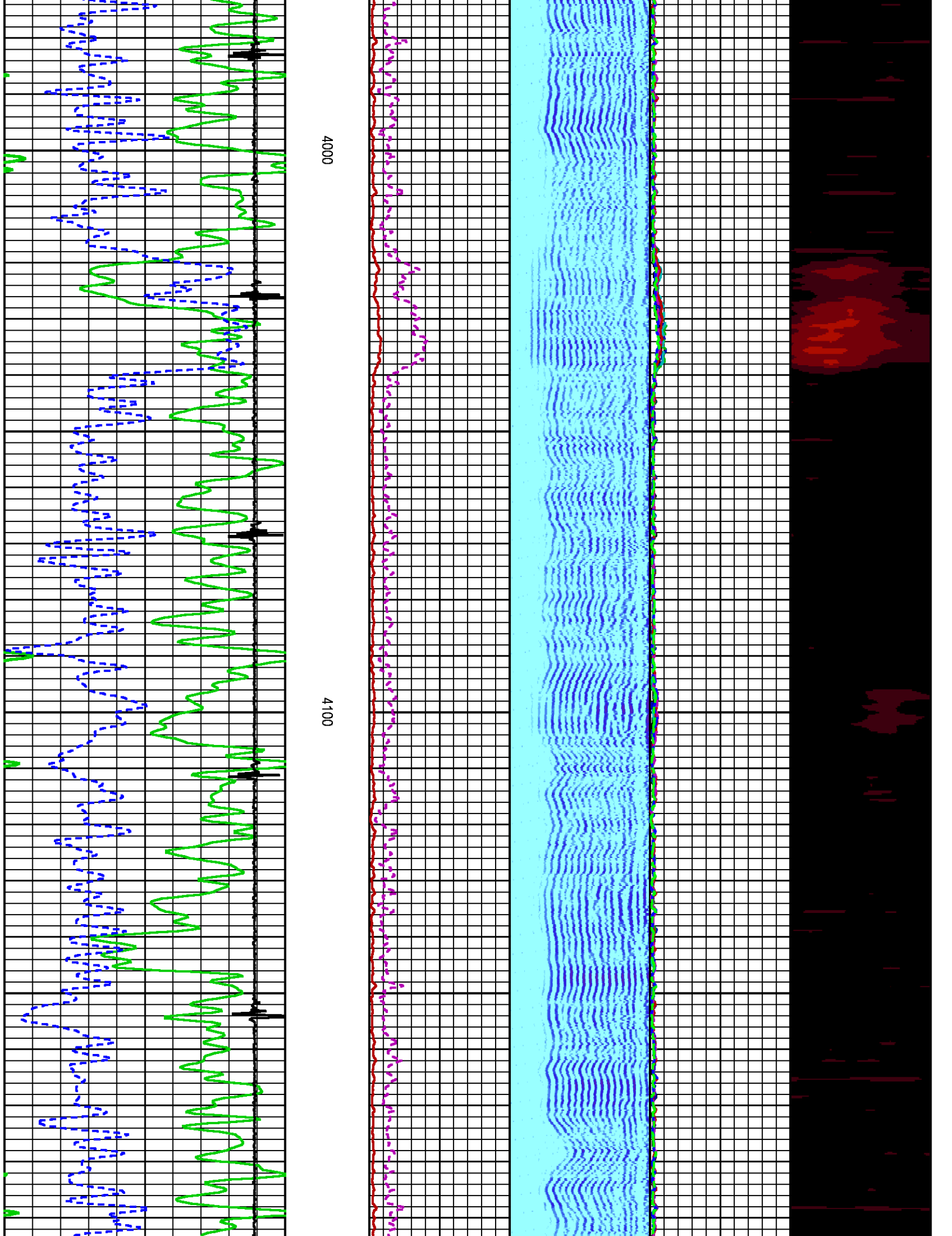


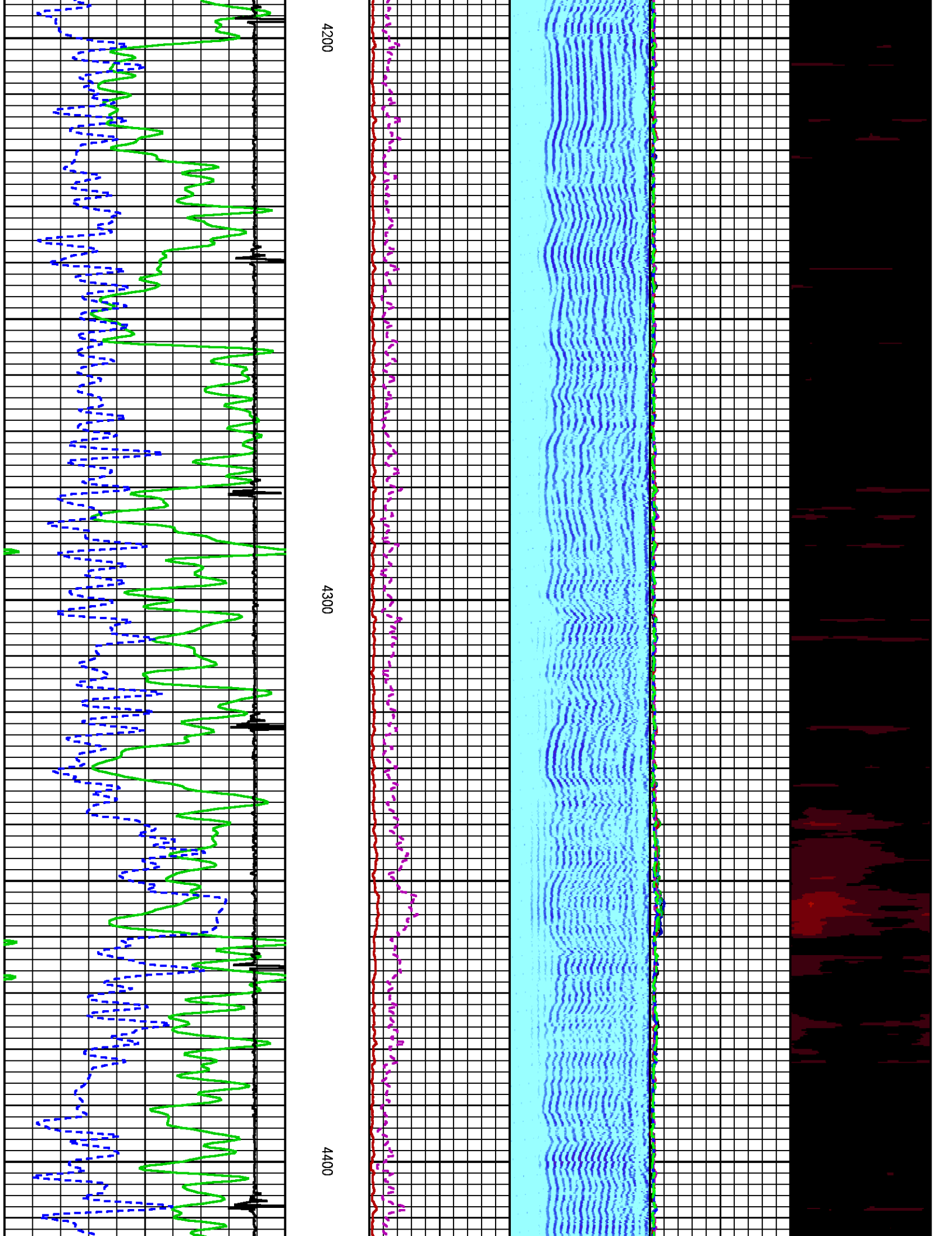


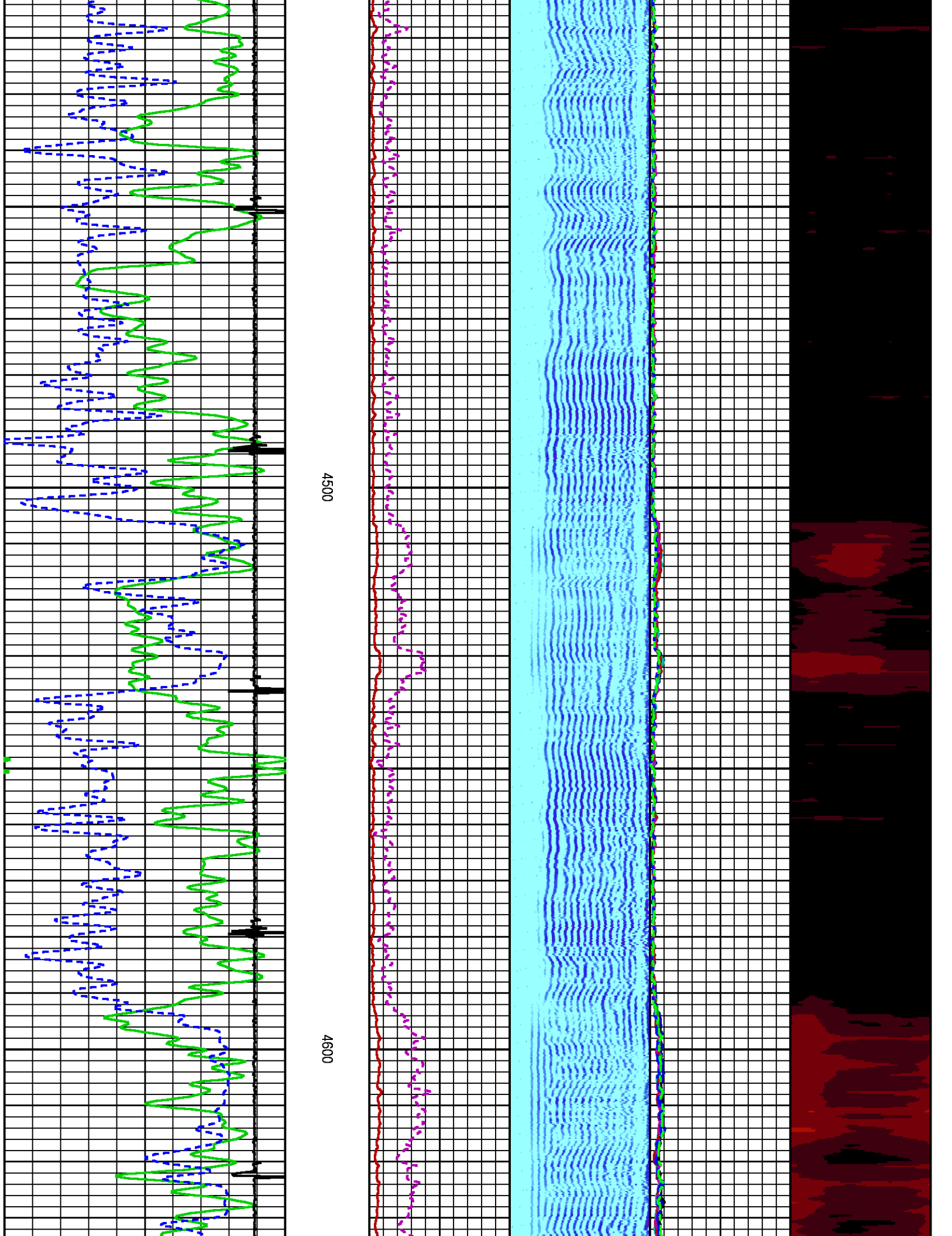


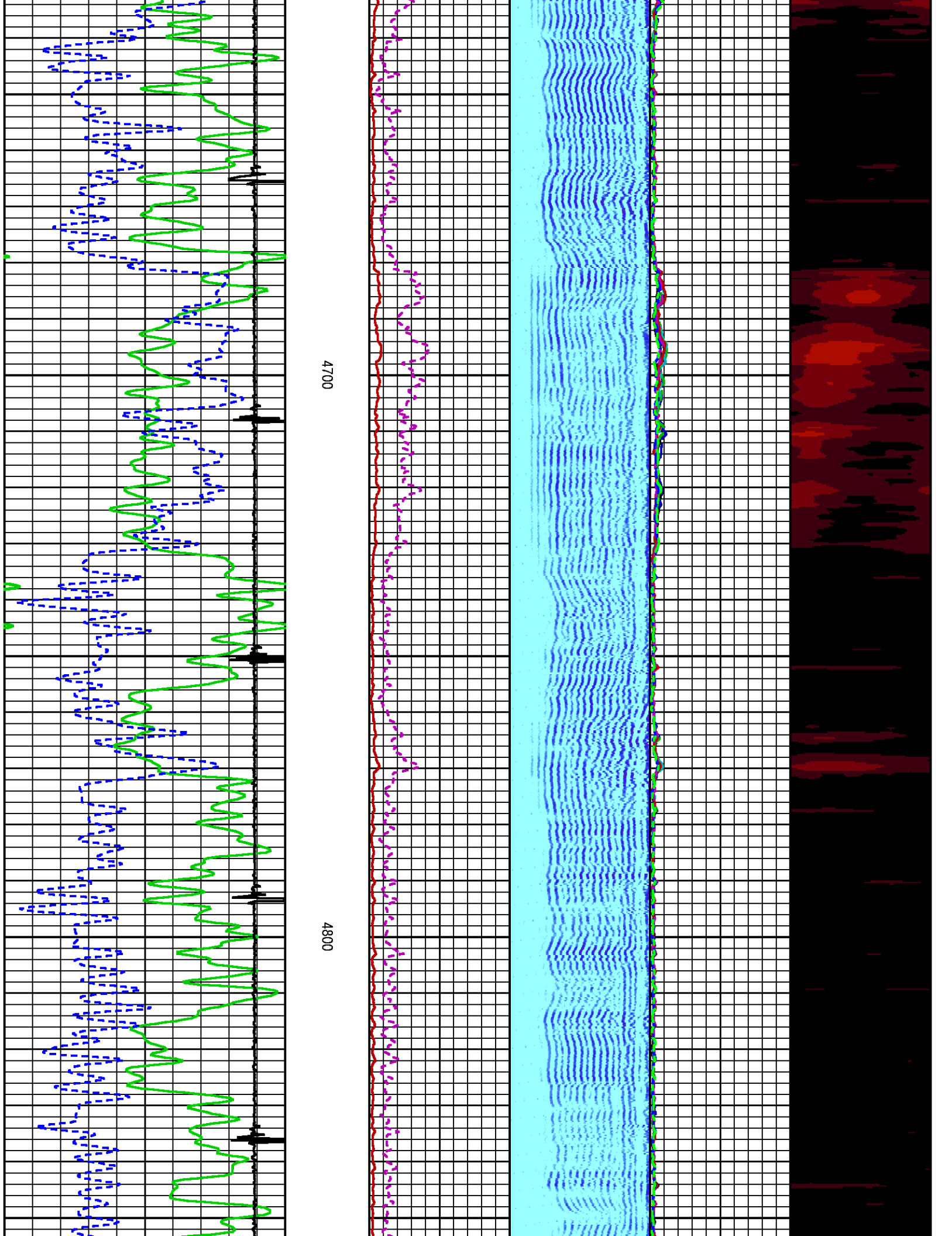


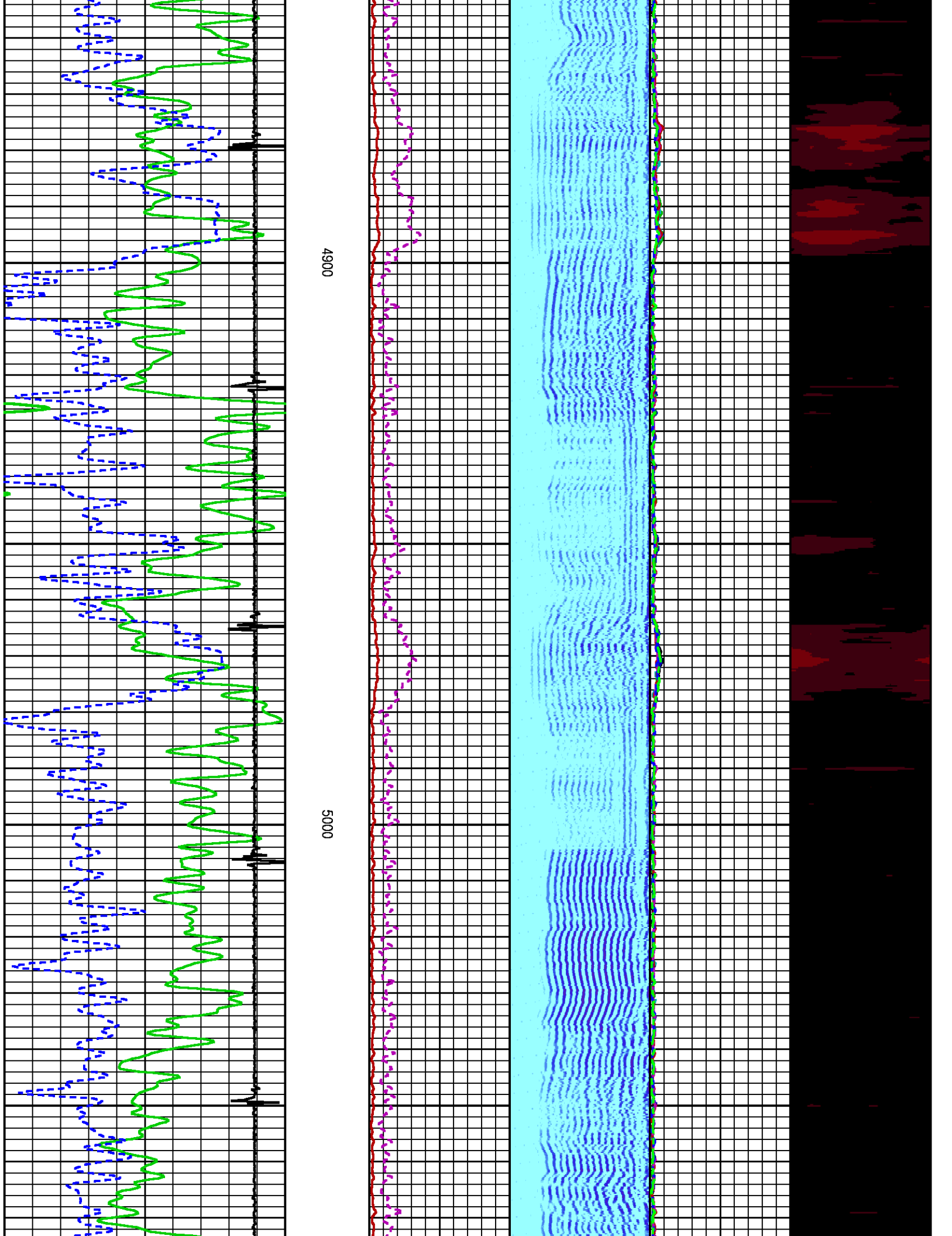


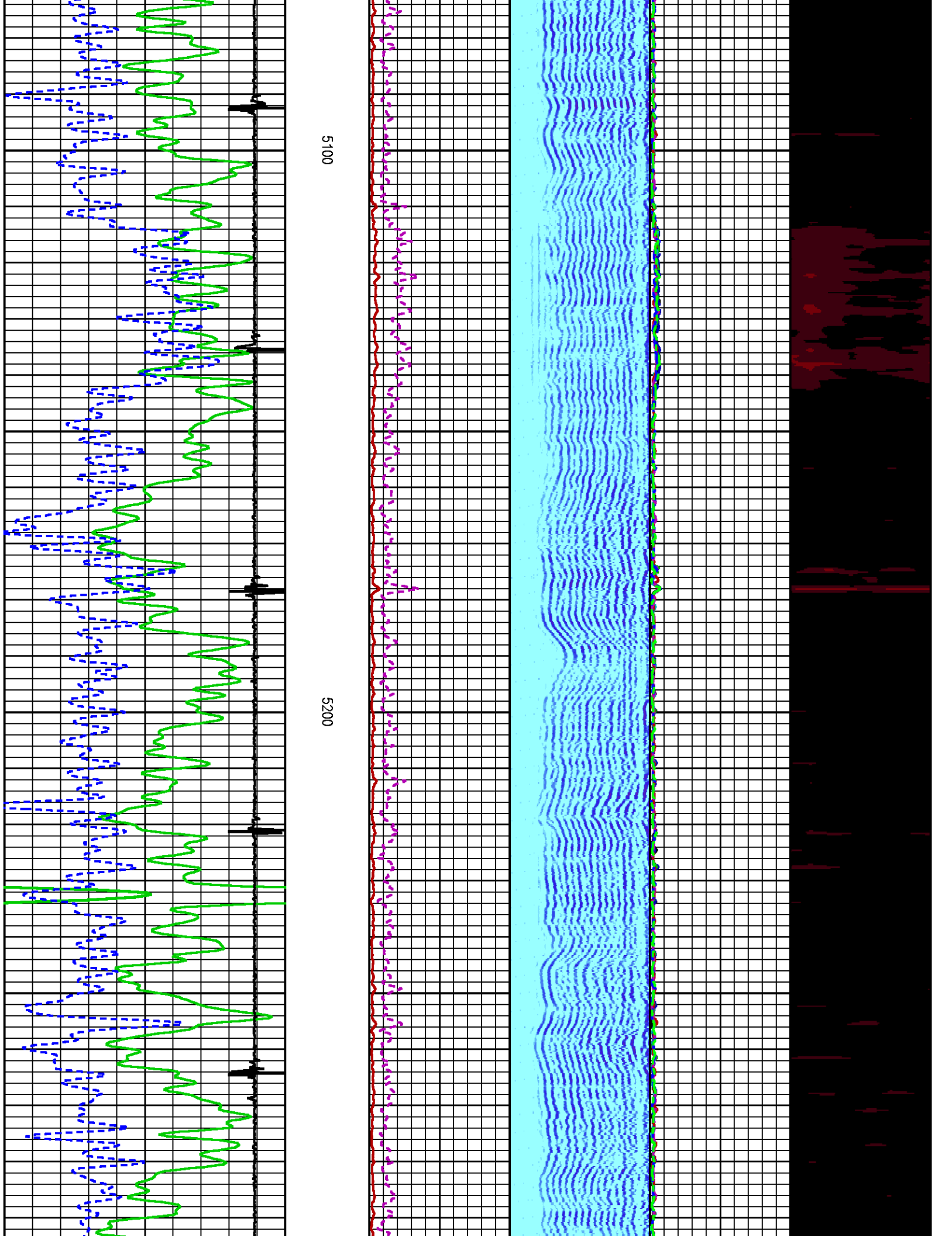


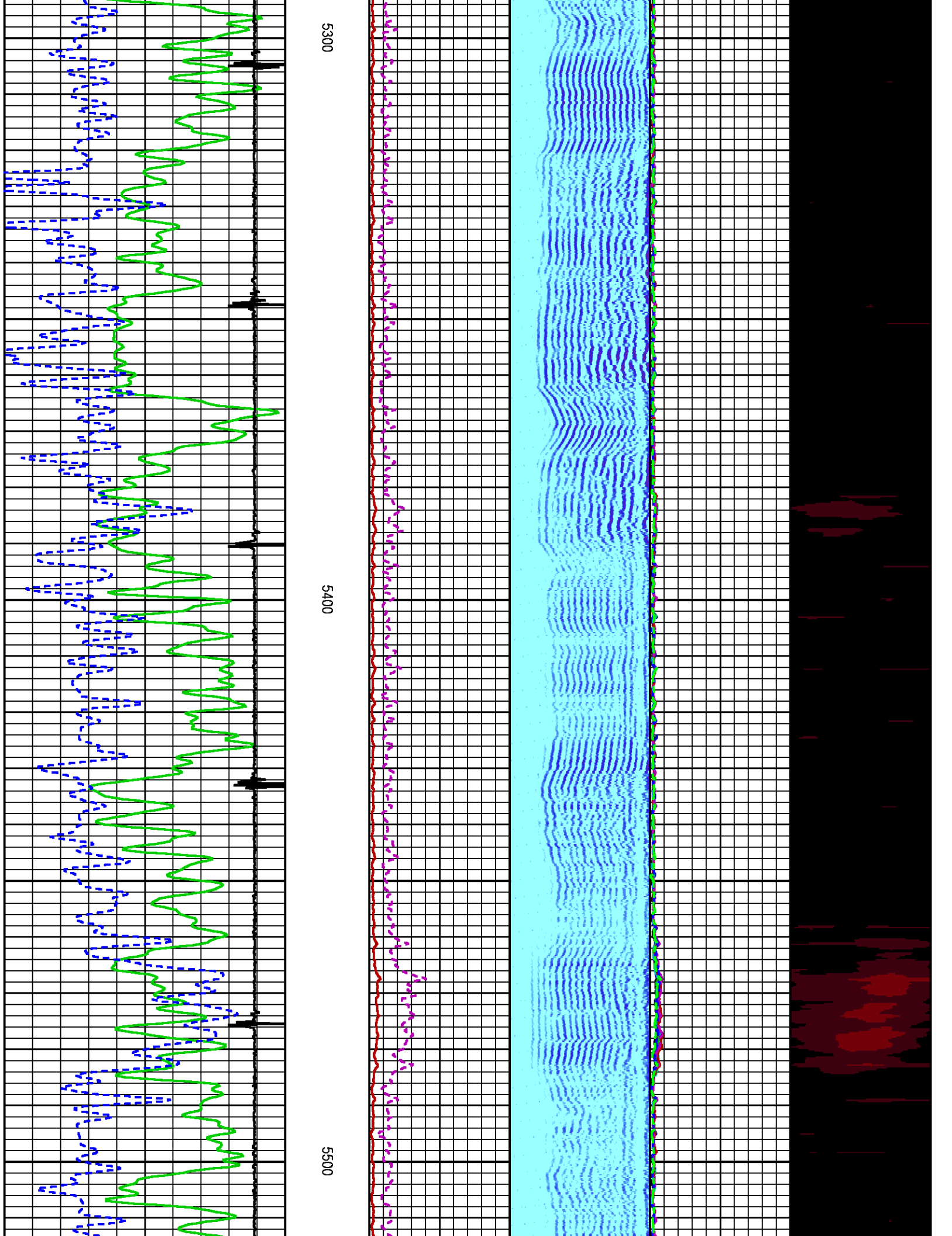


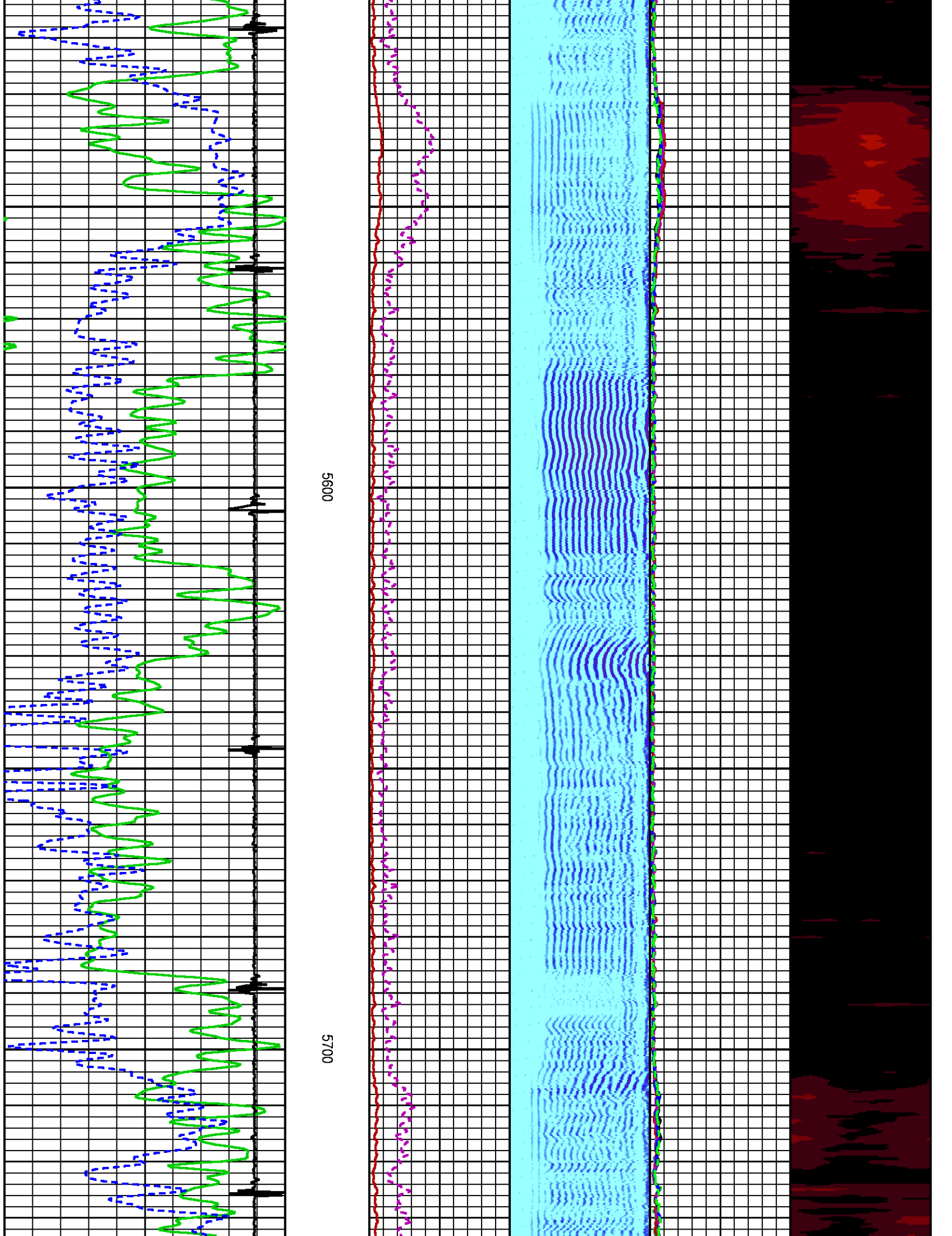


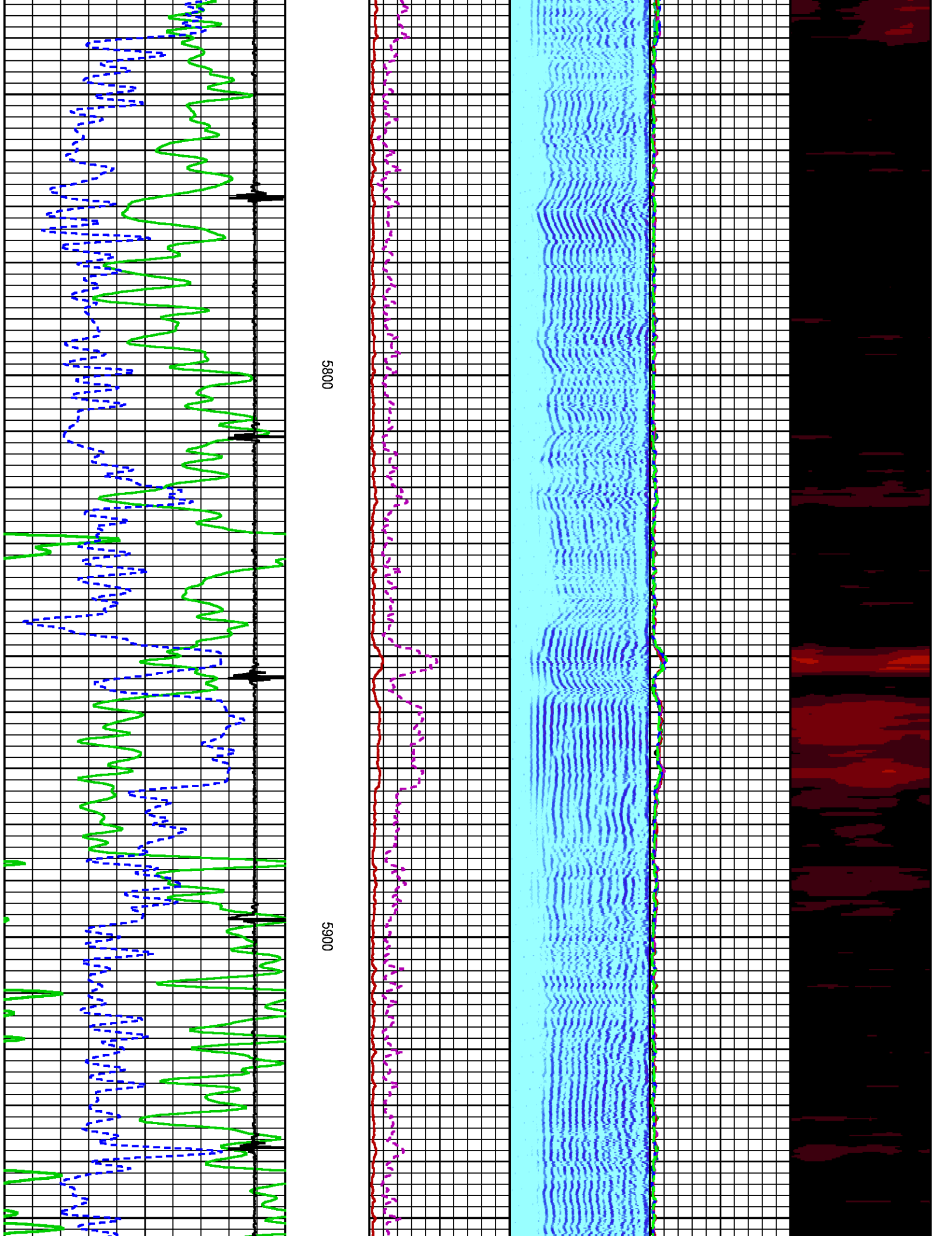


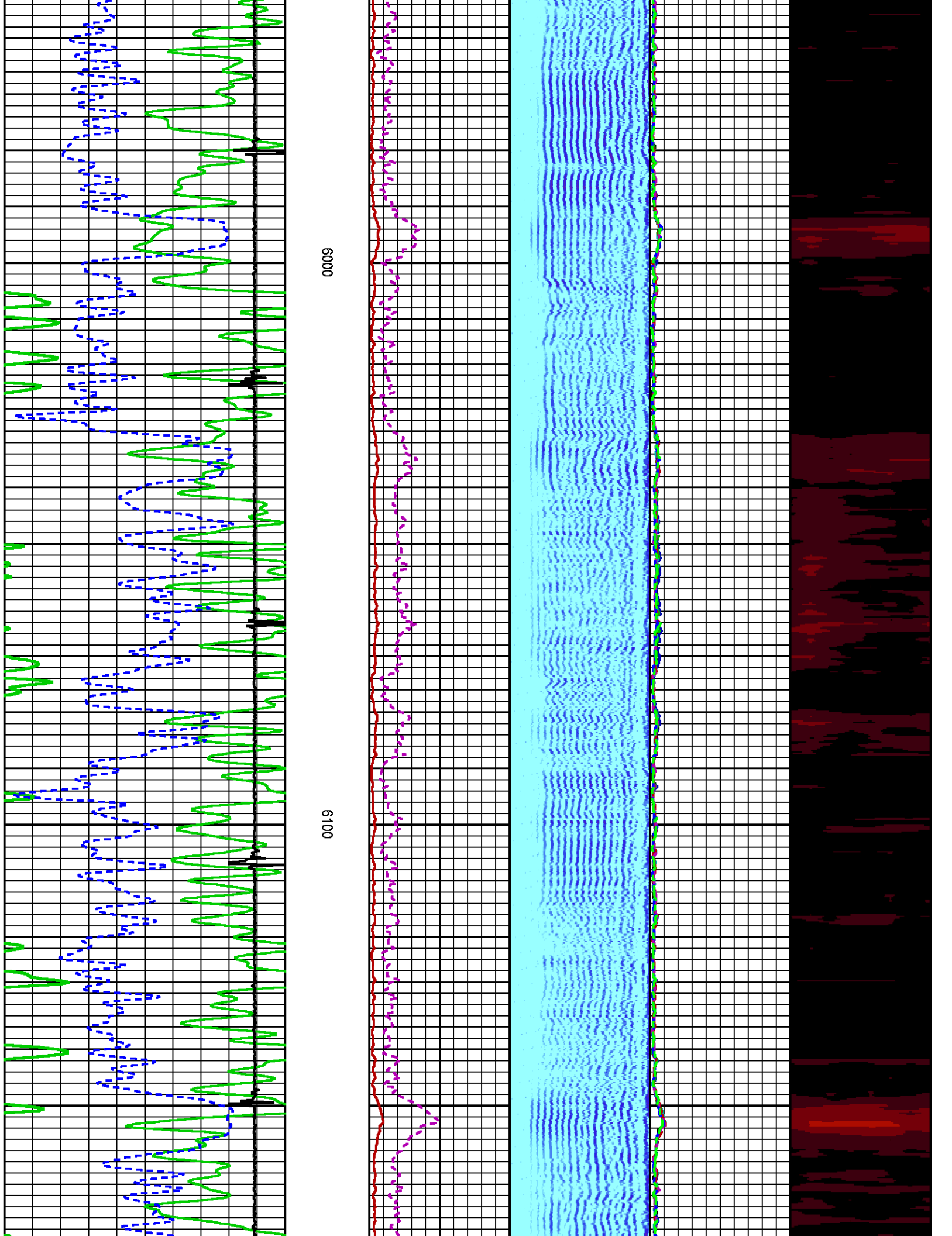


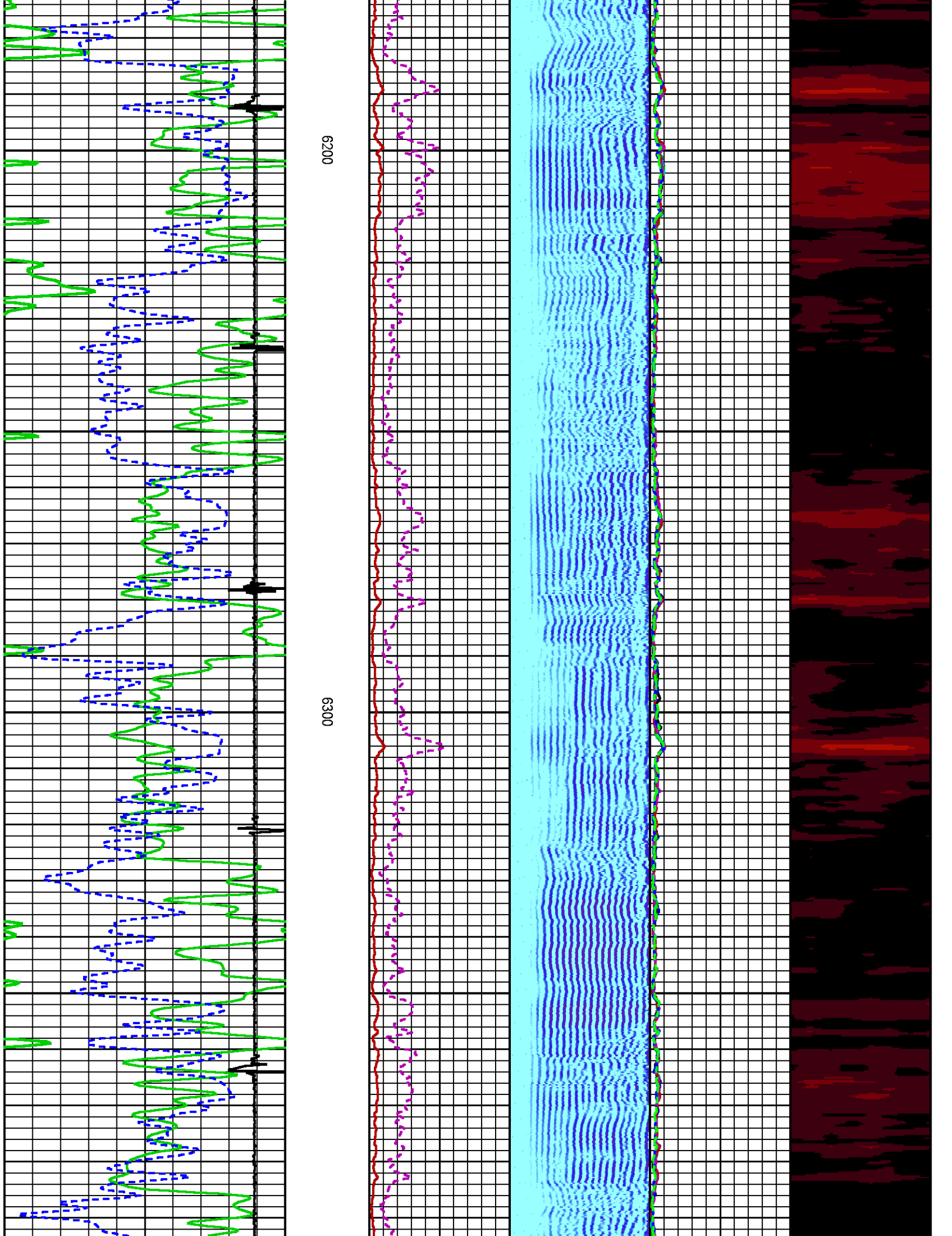


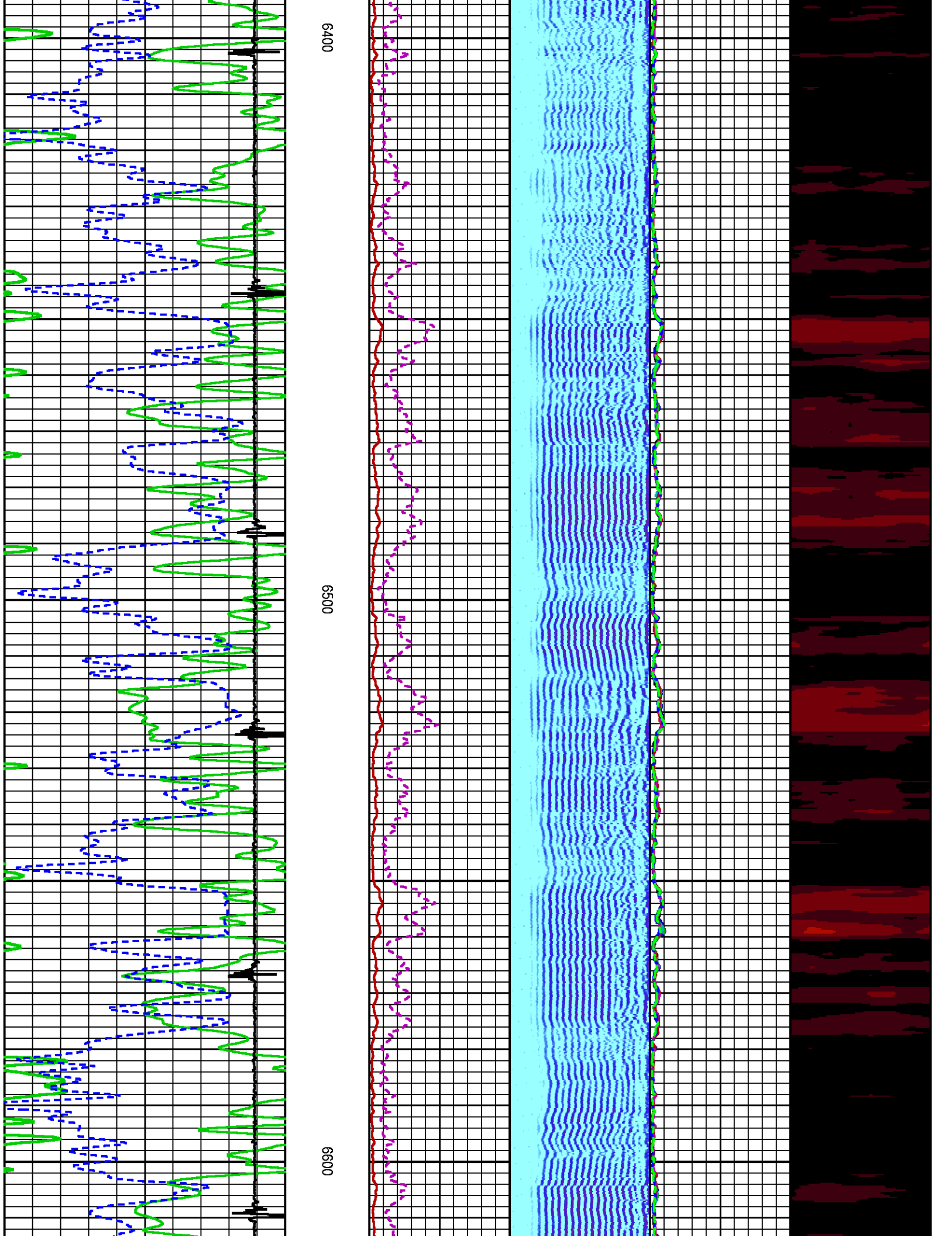


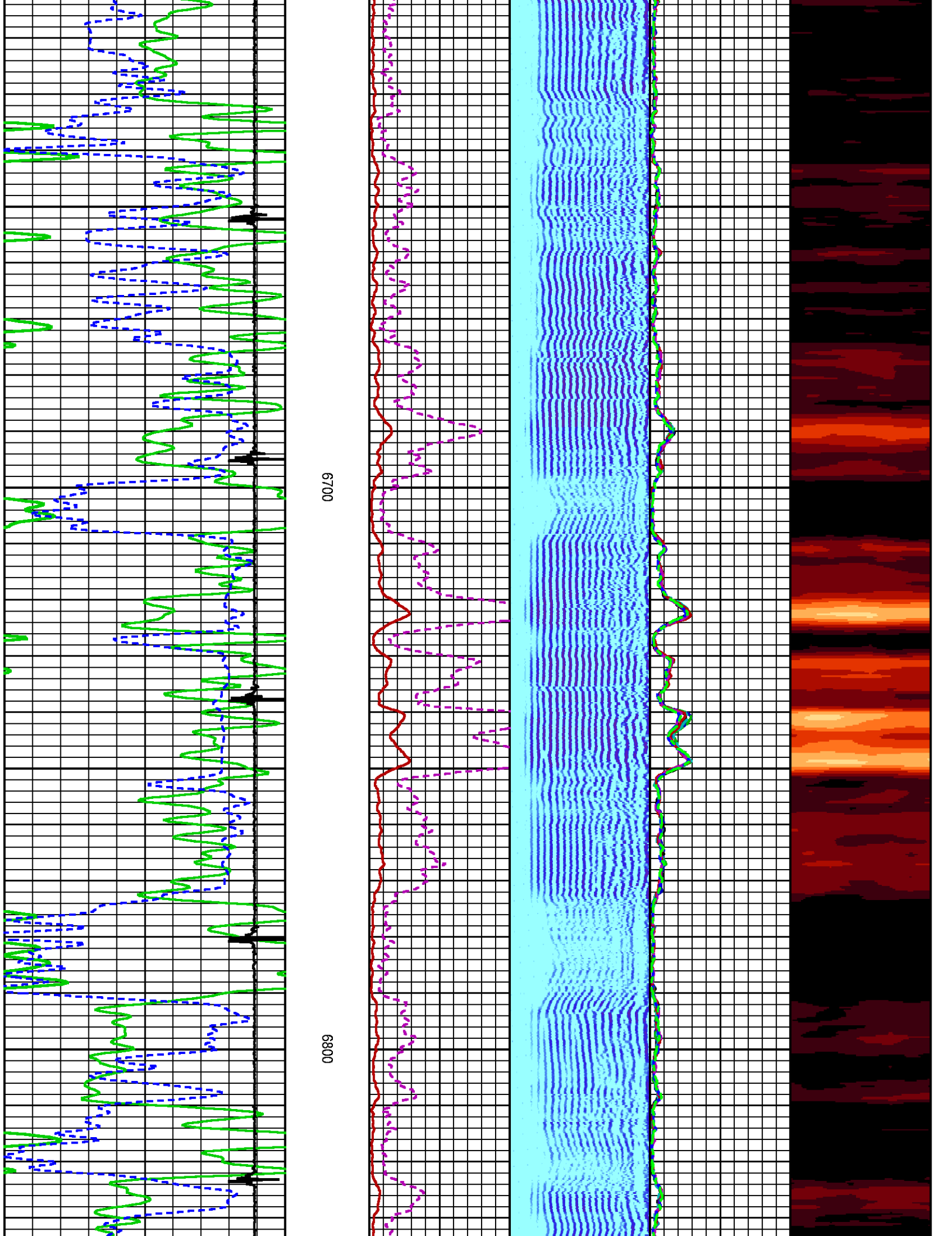


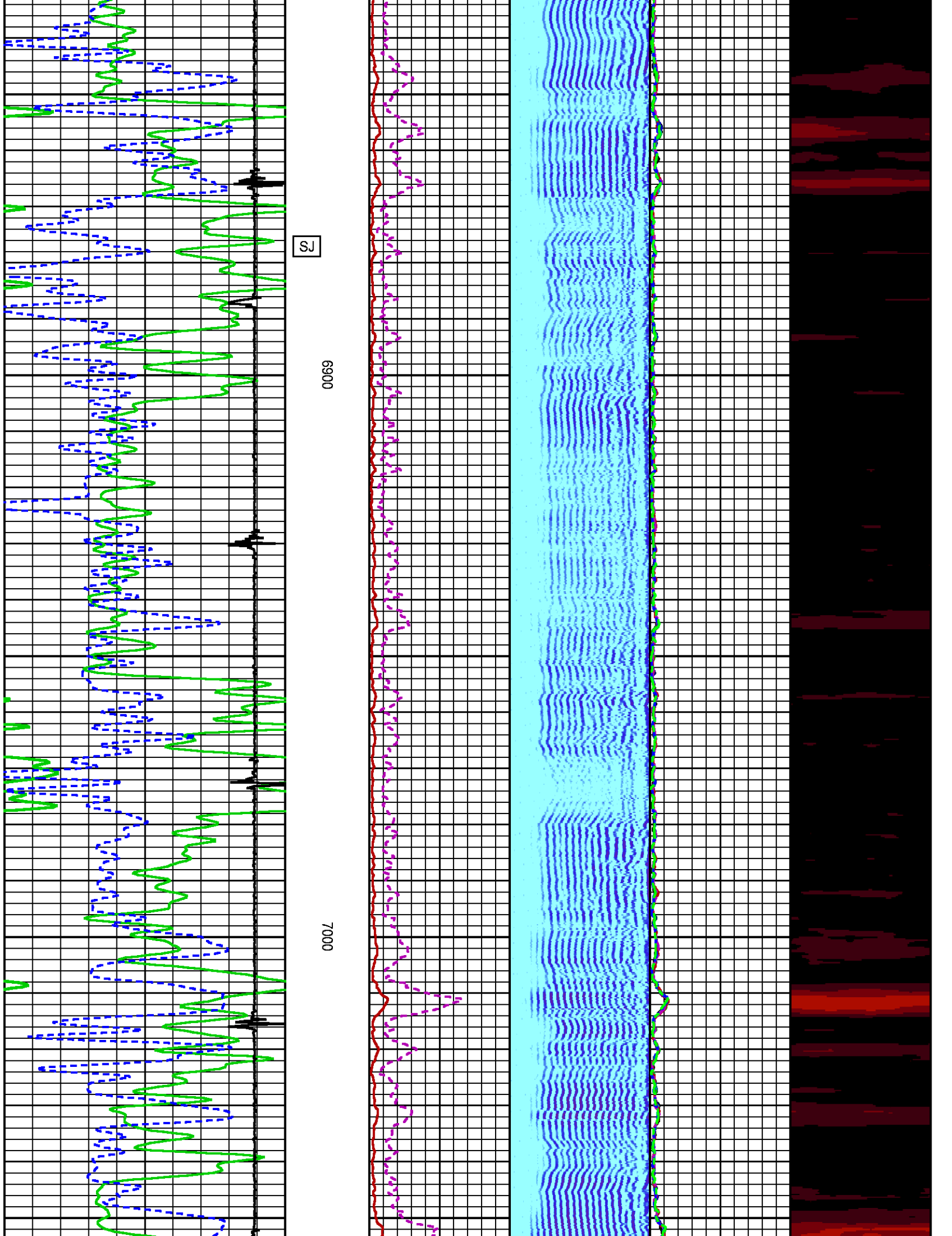


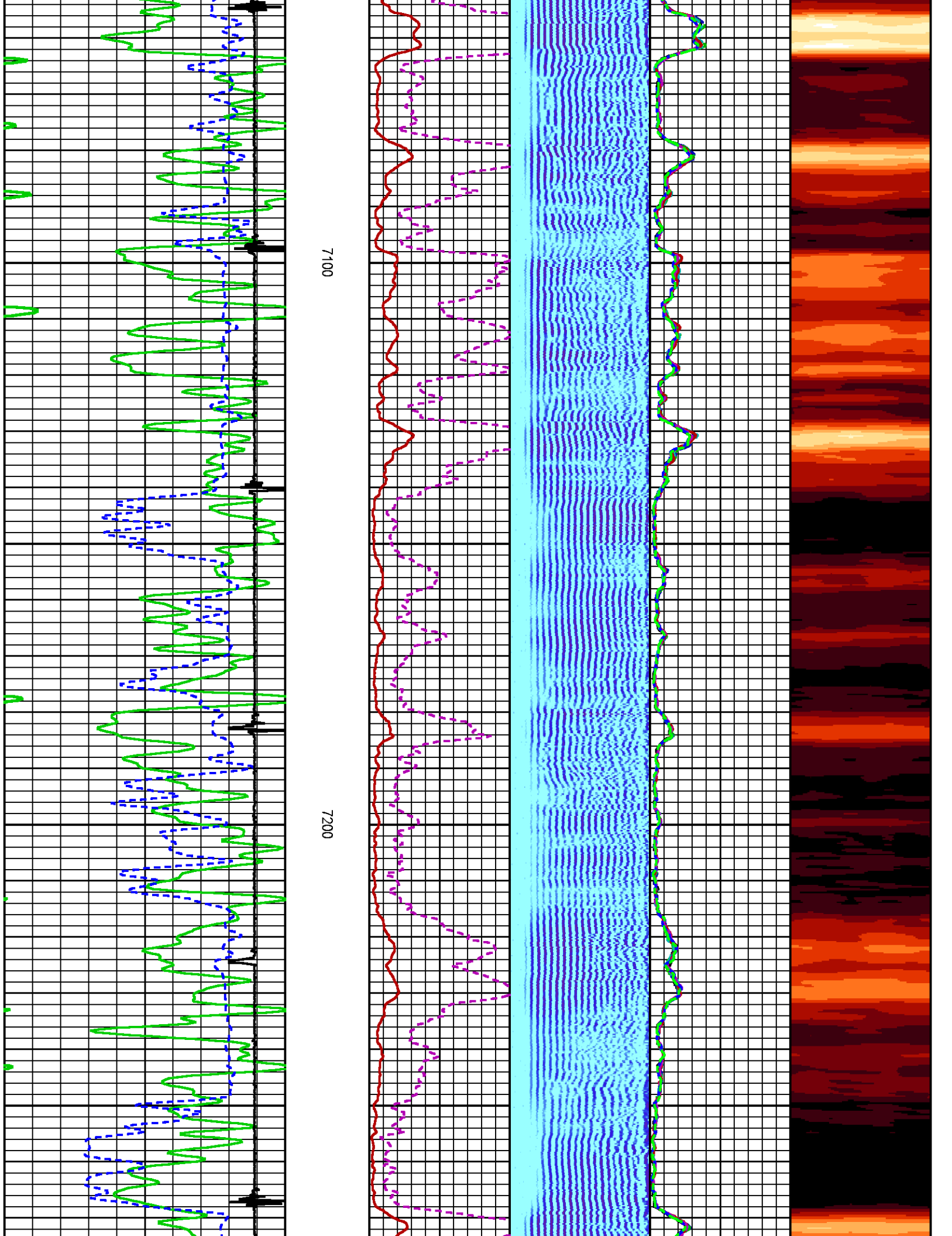


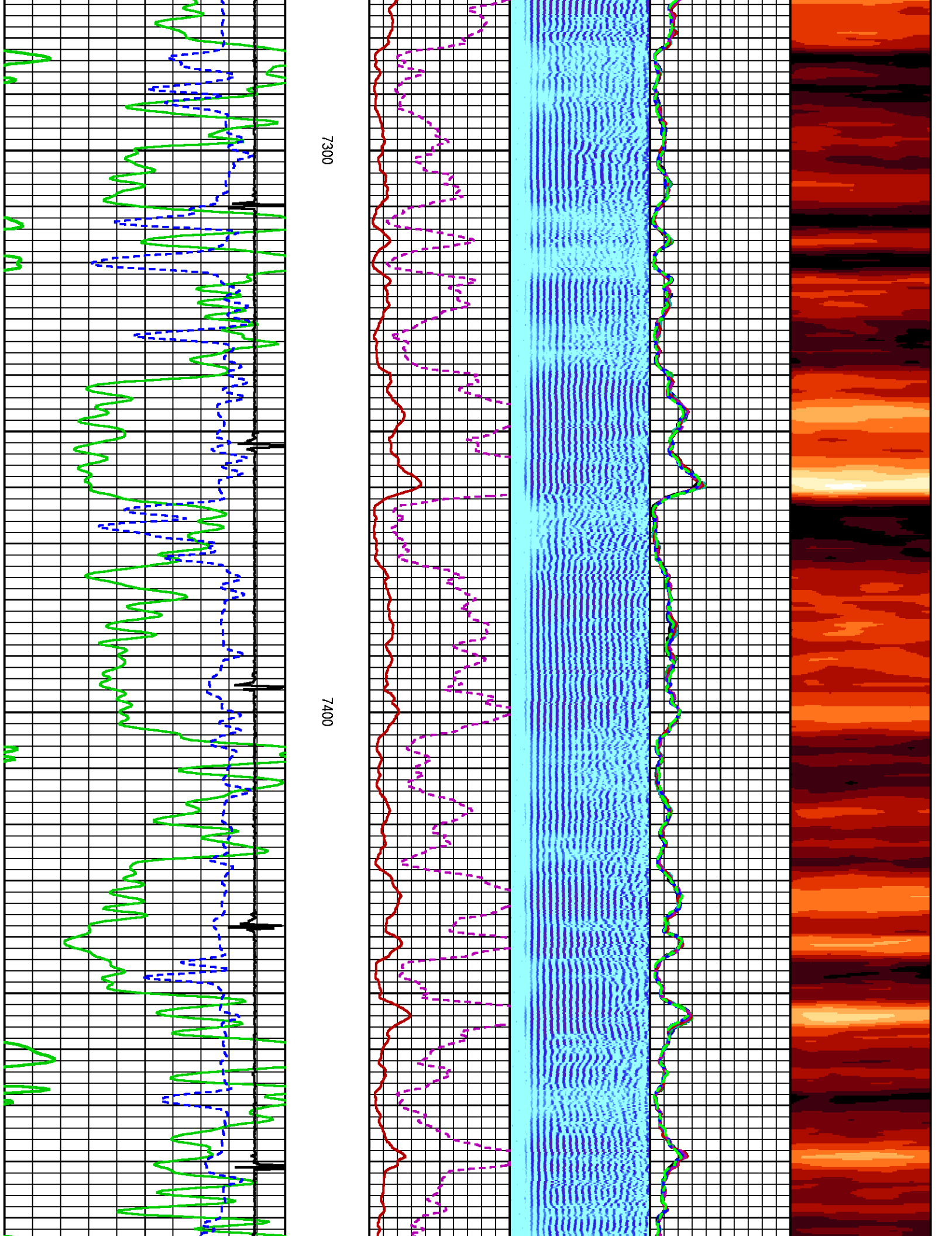


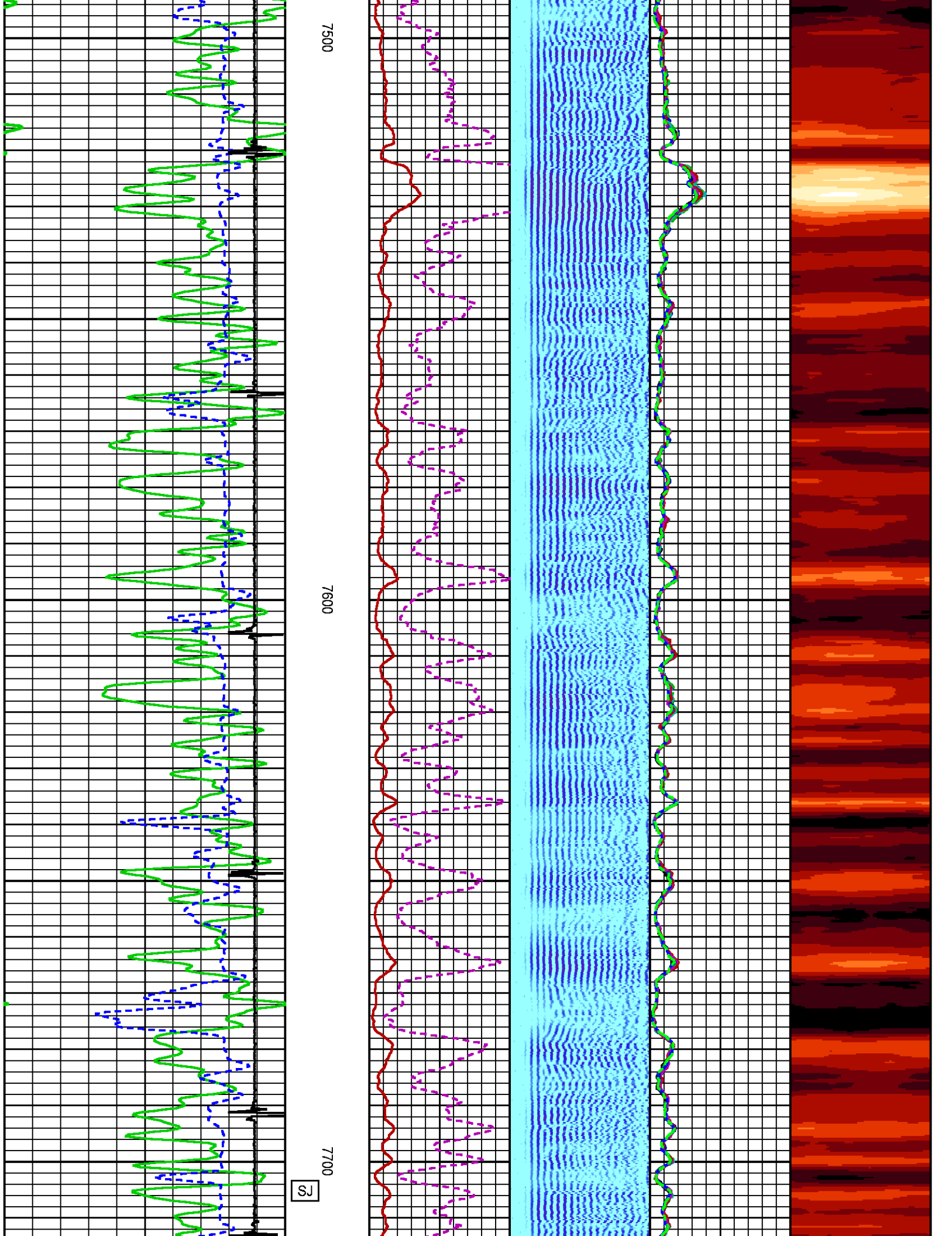


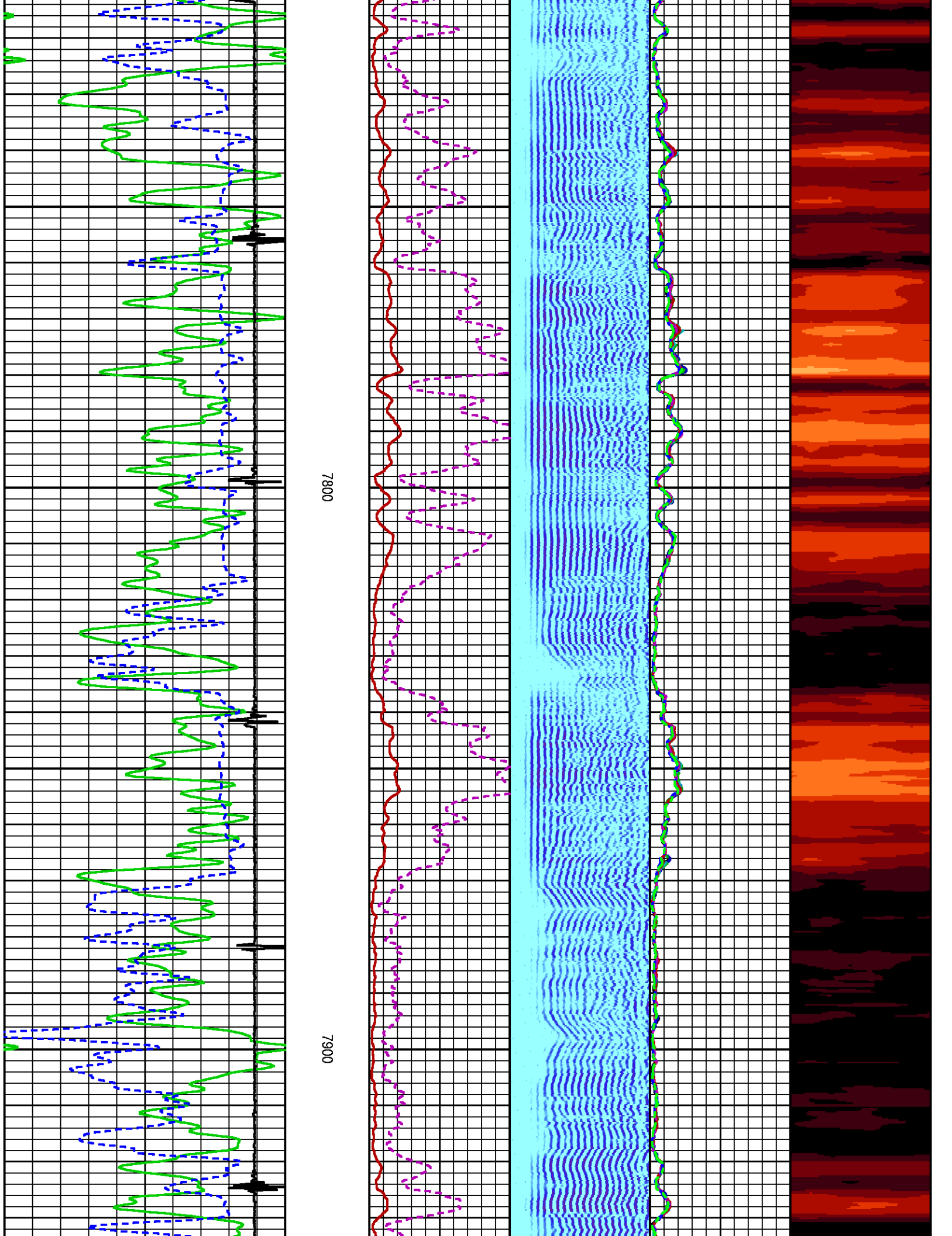


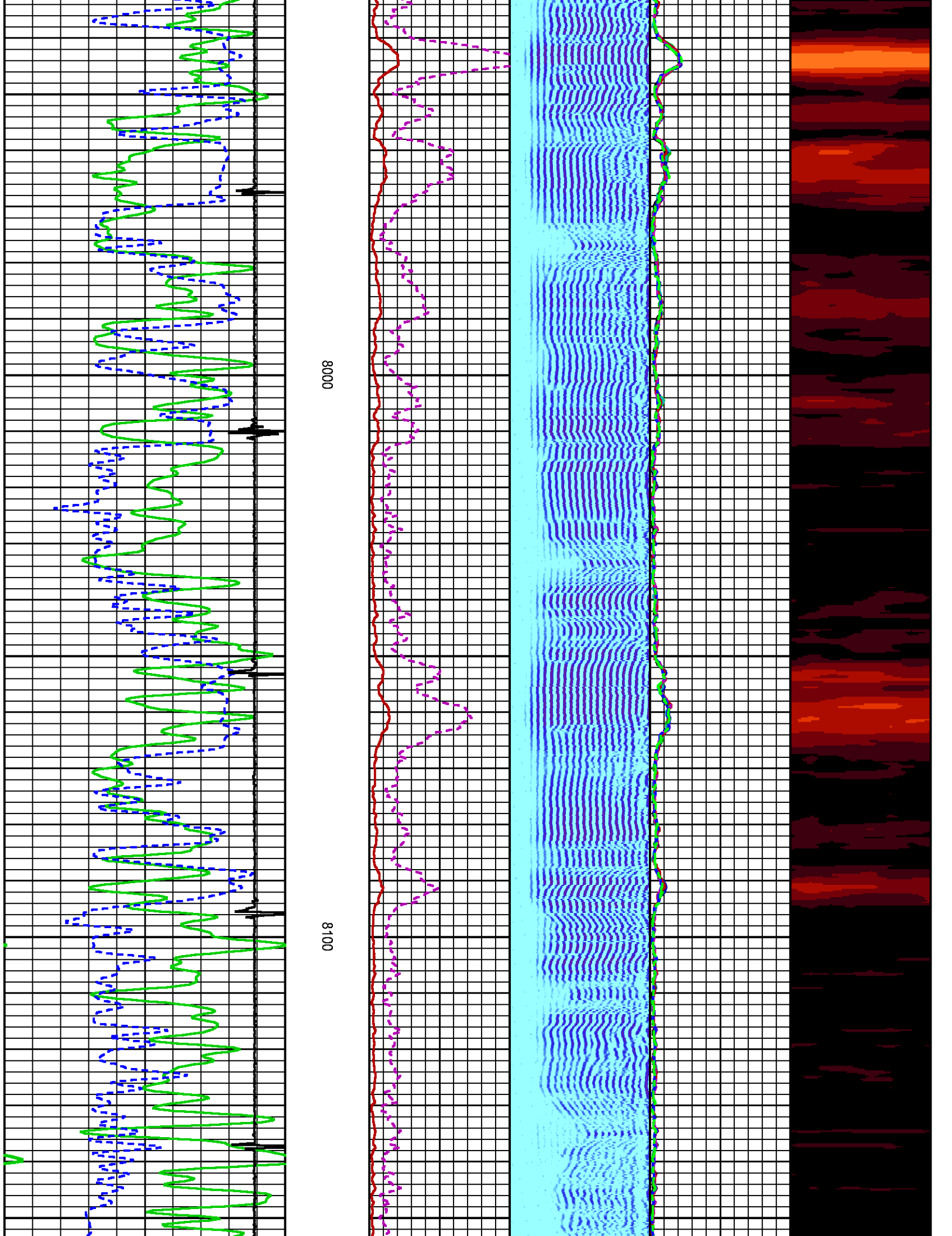


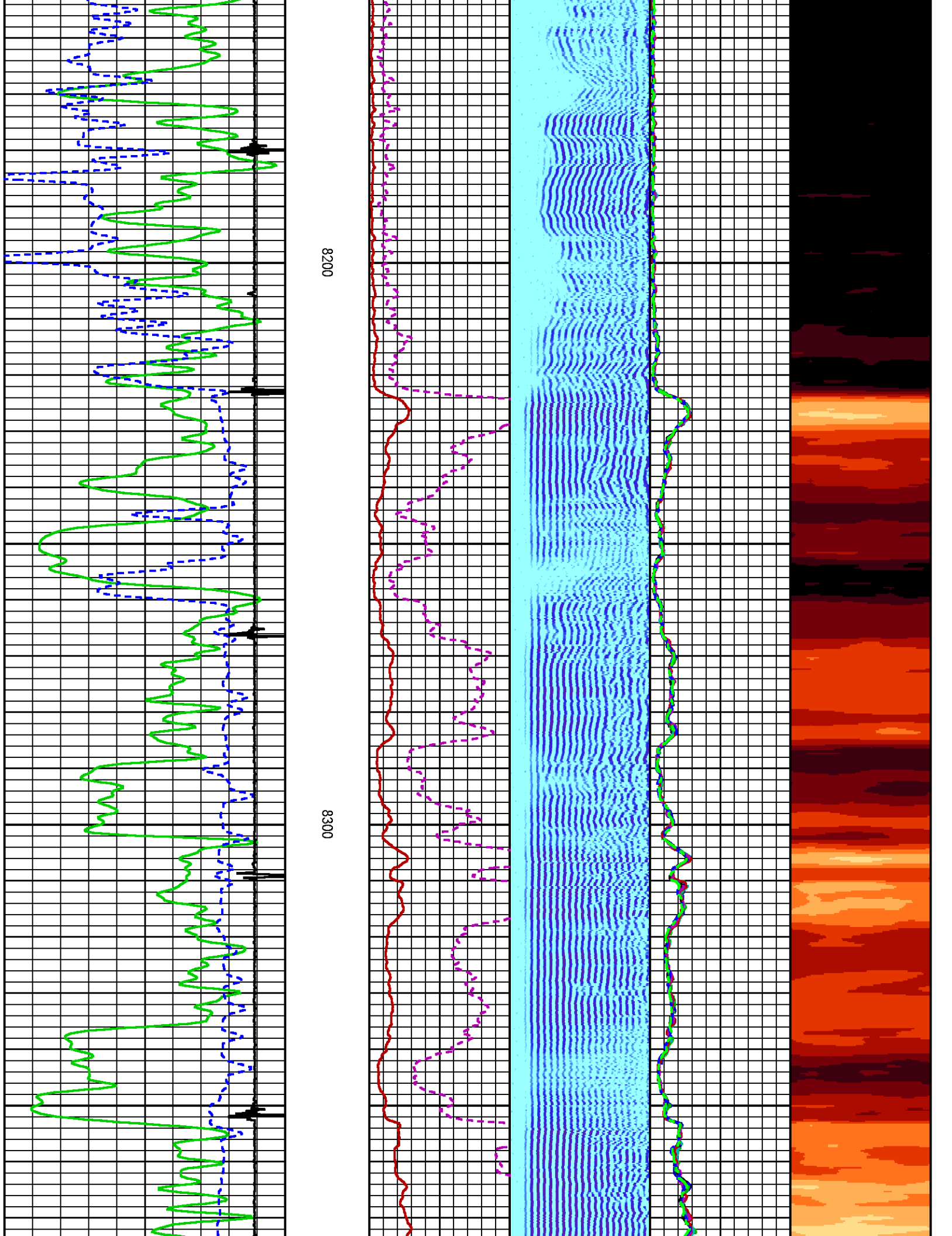


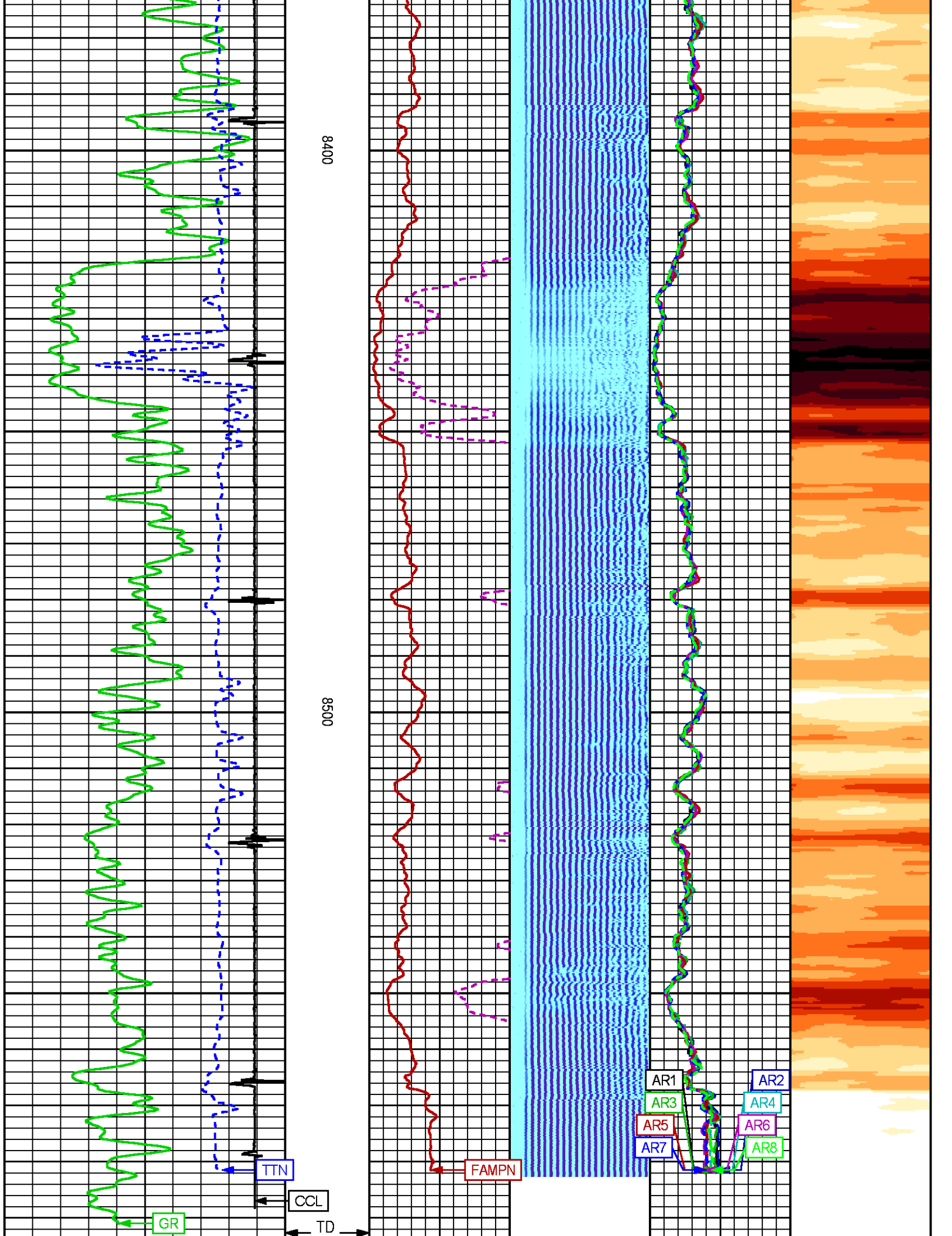


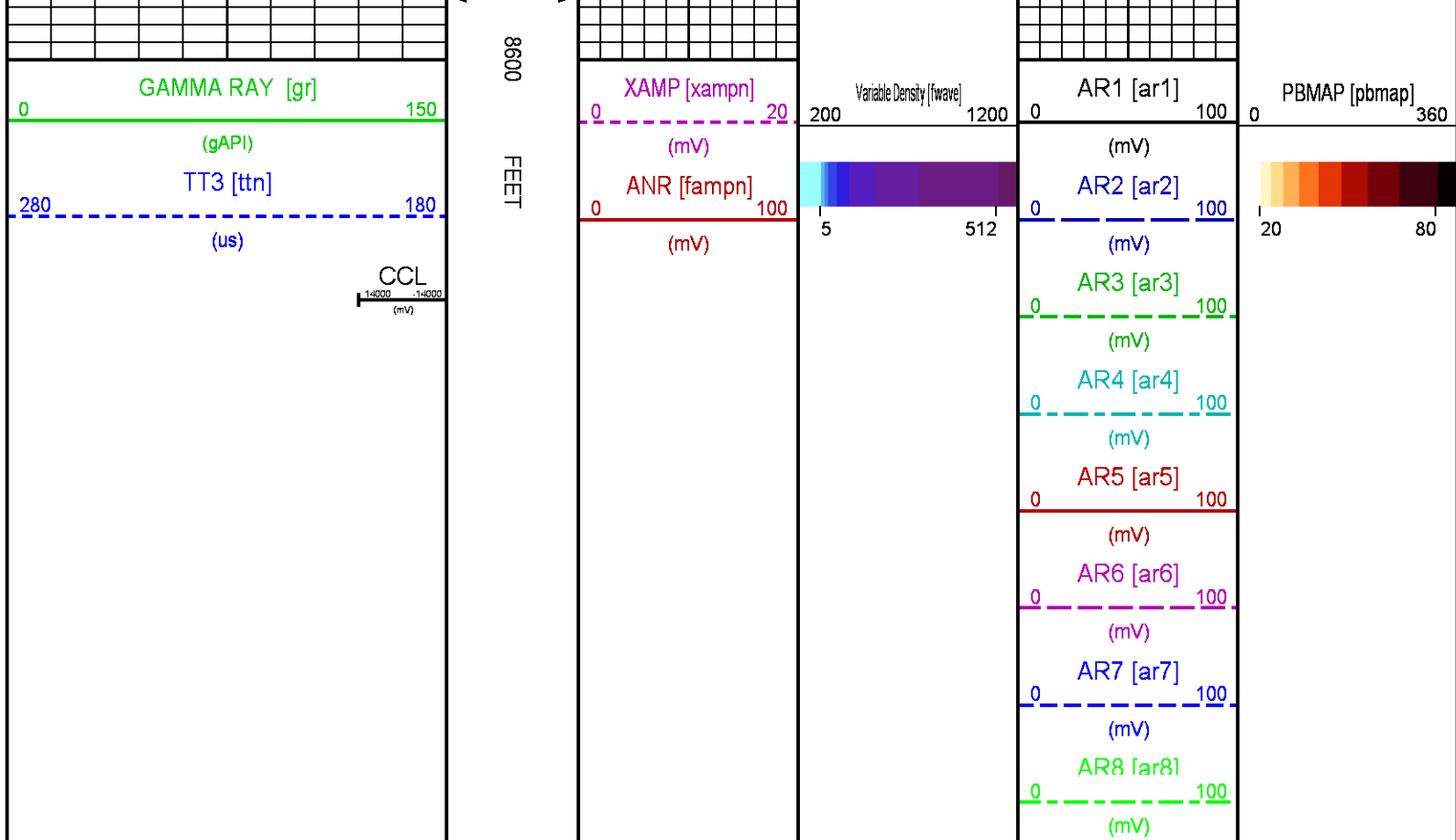












RAL REPEAT PASS 0 PSI

ECLIPS 7.0wu1 PC-ECLIPS General Release Rel 7.0w Update 1 Wed Jul 25 15:19:34 Central Daylight Time 2018
Patches: 1

Plotted: Wed Feb 13 23:38:28 2019

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FILE: C:\dat1a\Laramie_Sup_Shep_0993-25-07W\p012g02.prm
LOGGING MODE: DEPTH DIRECTION: UP
TOP DEPTH: 8200.000 ft BOTTOM DEPTH: 8578.000 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)	
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ANALOG RAL PROCESSING

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	TOOL DELAY (str7*)	-67	us	"	"
	TOOL DELAY (str8*)	-67	us	"	"
	TOOL DELAY (strn*)	-67	us	"	"
BASELINE NOISE (NEAR)	NOISE WINDOW START	125	us	"	"
	NOISE WINDOW LENGTH	25	us	"	"

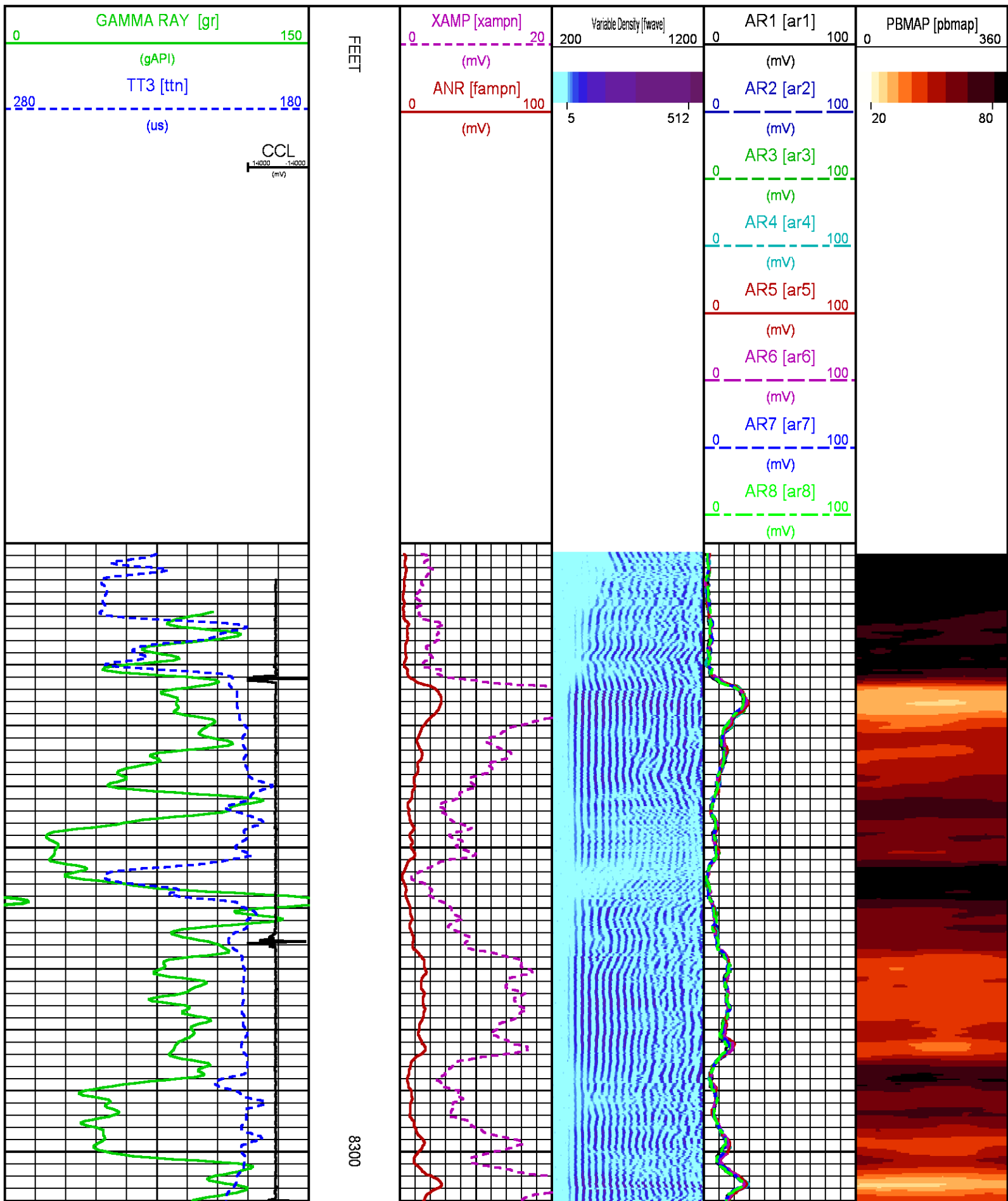
PERCENT BOND CEMENT MAP					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
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	FREE AMP REC 3	80	mV	"	"
	FREE AMP REC 4	80	mV	"	"
	FREE AMP REC 5	80	mV	"	"
	FREE AMP REC 6	80	mV	"	"
	FREE AMP REC 7	80	mV	"	"
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RAL 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	"	"
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	FULL BOND AMP REC 6	2	mV	"	"
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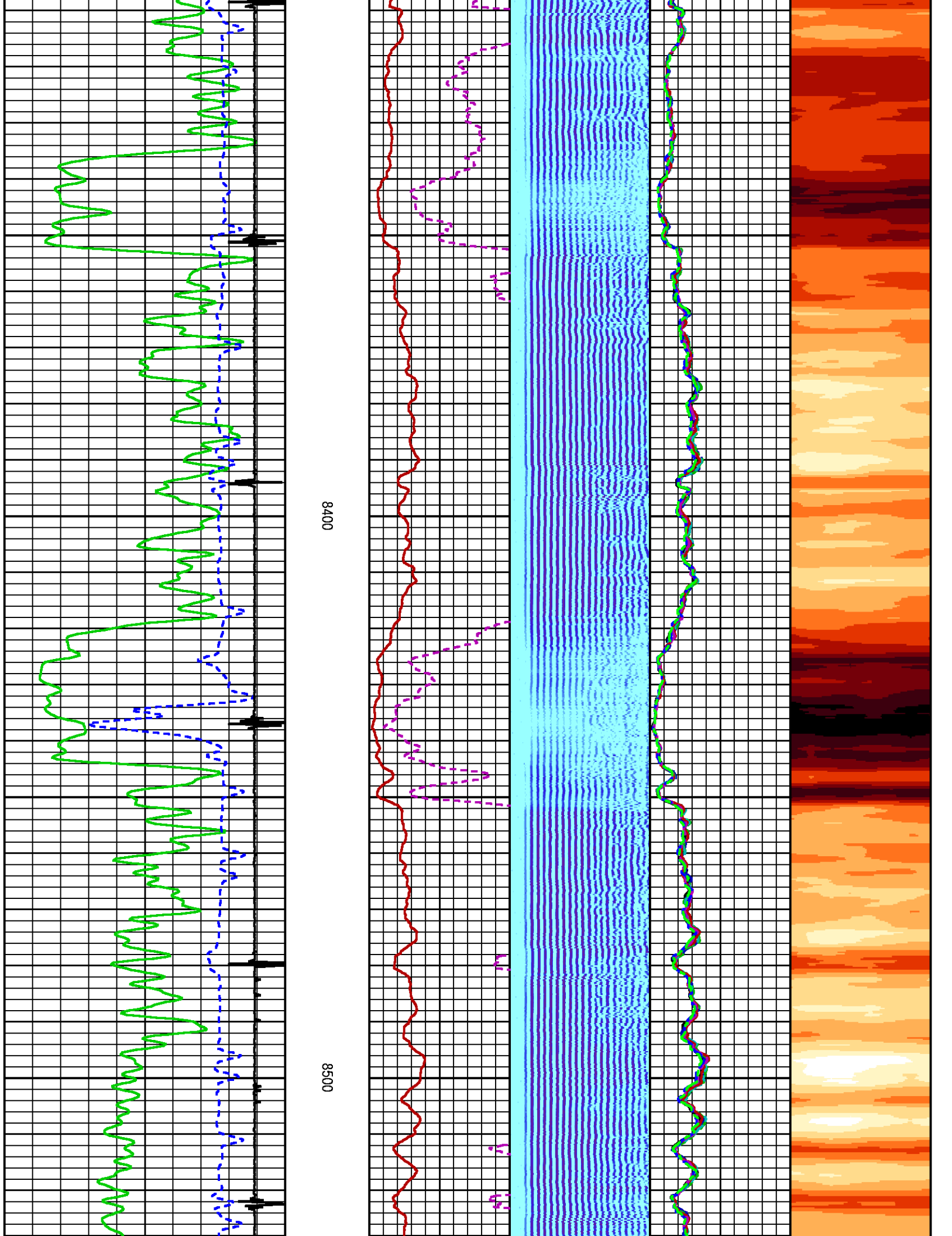
CURVE DESCRIPTION REPORT		
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AR1	Feb 13 11:33:57 2019	FIXED GATE AMPLITUDE T-R1
F1:AR2	Feb 13 11:33:57 2019	FIXED GATE AMPLITUDE T-R2
F1:AR3	Feb 13 11:33:57 2019	FIXED GATE AMPLITUDE T-R3
F1:AR4	Feb 13 11:33:57 2019	FIXED GATE AMPLITUDE T-R4
F1:AR5	Feb 13 11:33:57 2019	FIXED GATE AMPLITUDE T-R5
F1:AR6	Feb 13 11:33:57 2019	FIXED GATE AMPLITUDE T-R6
F1:AR7	Feb 13 11:33:57 2019	FIXED GATE AMPLITUDE T-R7
F1:AR8	Feb 13 11:33:57 2019	FIXED GATE AMPLITUDE T-R8
F1:CCL	Feb 13 11:33:57 2019	CASING COLLAR LOCATOR
F1:FAMPN	Feb 13 11:33:57 2019	FIXED GATE AMPLITUDE NEAR RECEIVER
F1:FWAVE	Feb 13 11:33:57 2019	FAR WAVE FORM
F1:GR	Feb 13 11:33:57 2019	GAMMA RAY
F1:PBMAP	Feb 13 11:33:57 2019	PERCENT BOND CEMENT MAP
F1:TTN	Feb 13 11:33:57 2019	TRAVELTIME FROM NEAR TRANSMITTER-RECEIVER
F1:XAMPN	Feb 13 11:33:57 2019	FIXED GATE AMPLITUDE NEAR RECEIVER TIMES FIVE

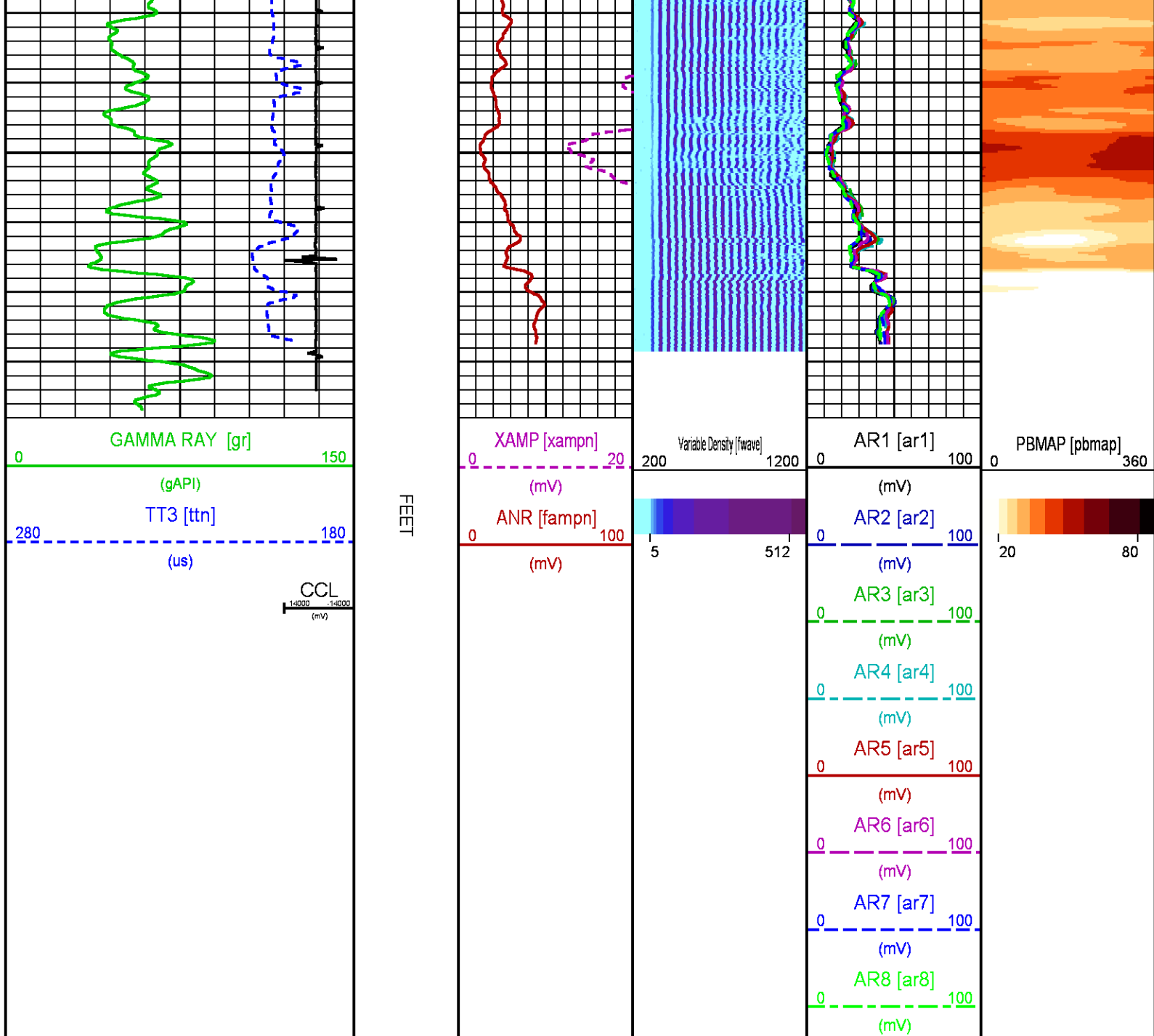
CURVE MEASURE POINT OFFSET							
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
AR1	-11.25	AR5	-11.25	CCL	-5.75	XAMPN	-11.25
AR2	-11.25	AR6	-11.25	FAMPN	-11.25		
AR3	-11.25	AR7	-11.25	GR	-1.75		
AR4	-11.25	AR8	-11.25	TTN	-11.25		

Presentation	: BHIHXPM1N2:C:\dat1a\Laramie_Sup_Shep_0993-25-07W07W_RAL_REPEAT.fvpdf [5"/100' Scale]
Plot Interval	: 8201.5 - 8588.5 Feet

Data File 1 : F1 : BHIHXP1N2:C:\dat1a\Laramie_Sup_Shep_0993-25-07Wp012g02.xtf
Created On : Feb 13 11:33:57 2019
Company : LARAMIE ENERGY LLC
Well : SUP & SHEP 099326-07W
Field : BUZZARD CREEK
File Interval : 8200 - 8589.75 Feet
OCT : p012g







CALIBRATION / VERIFICATION SUMMARY

Source File: C:\dat1a\Laramie_Sup_Shep_0993-25-07W\p012g.tp1

RAL PRIMARY CALIBRATION SUMMARY

TOOL #: 1426XA 10222301

DATE/TIME PERFORMED: Wed Feb 13 10:34:58 2019

UNIT #: CHANGE ME

	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)	-0.09	-0.02	-0.07	0.02	-0.10	-0.02	-0.01	-0.12	0.00	-0.01	-0.05
AMP FLUID (mV)	102	101	102	103	102	102	101	101	102	122	101
TT (us)	200	201	200	200	200	200	200	200	201	306	200
M FACTOR	0.98	0.99	0.98	0.97	0.97	0.98	0.99	0.99	0.98	1.23	0.99

RAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1426XA 10222301 DATE/TIME PERFORMED: Wed Feb 13 10:36:17 2019 DAYS SINCE CAL: 0

UNIT #: CHANGE ME CABLE #: 4217 Multi

	NEAR (mV)	R1 (mV)	R2 (mV)	R3 (mV)	R4 (mV)	R5 (mV)	R6 (mV)	R7 (mV)	R8 (mV)	FAR (mV)	CAL (mV)
ZERO	0.04	-0.02	-0.03	0.03	-0.03	-0.04	-0.00	0.09	-0.06	0.29	-0.01
AMP AIR	1.45	1.08	1.29	1.28	0.92	1.56	1.43	1.18	1.28	2.08	100.05

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: C:\dat1a\Laramie_Sup_Shep_0993-25-07\WRAL-tdg.meta

CABLEHEAD

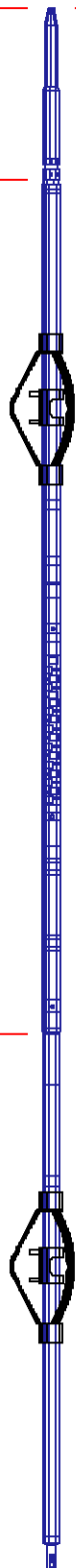
Diameter : 2.75"
Length : 2.25'
Weight : 10 lbs
Series : CABL234
Mnemonic : CBLH

RADIAL BOND TOOL

Diameter : 2.75"
Length : 11.17'
Weight : 126 lbs
Series : 1426XA
Mnemonic : RAL
Measure Point: 5.75': XMTR
Measure Point: 4.21': NEAR MP
Measure Point: 3.25': FAR MP
Measure Point: 2.67': NEAR RCVR
Measure Point: 0.75': FAR RCVR

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



20.38'

XMTR — 12.71'

NEAR MP — 11.17'

FAR MP — 10.21'

NEAR RCVR — 9.63'

FAR RCVR — 7.71'

CCL — 5.79'

GR — 1.67'

TEMP — 0.17'

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



COMPANY LARAMIE ENERGY LLC
WELL SUP & SHEP 0993-25-07W
FIELD BUZZARD CREEK
COUNTY MESA STATE COLORDAO

FILE NO: CH146479
API NO: 05077105750000

LOCATION:

SHL
LAT: 39.244836 N
LONG: 107.723396 W

SEC 25 TWP 9S RGE 93W

ELEVATIONS:

KB 8108 FT
DF
GL 8078 FT

DATE 13-FEB-2019