



# RADIAL CEMENT BOND LOG

FILE NO: CH132017	COMPANY <b>LARAMIE ENERGY LLC</b>
API NO: 05077104080000	WELL <b>NICHOLS 0994-24-05E</b>
	FIELD <b>VEGA</b>
	COUNTY <b>MESA</b> STATE <b>COLORADO</b>

Version	LOCATION: SHL: 39.264520 N; 107.830690 W BHL: 39.266727 N; 107.826028 W SEC <u>24</u> TWP <u>9 S</u> RGE <u>94 W</u>	OTHER SERVICES RPM
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PERMANENT DATUM LOG MEASURED FROM DRILL. MEAS. FROM	GL ELEVATION 7137 FT 24 FT ABOVE P.D. KB GL	ELEVATIONS: KB 7161 FT DF 7160 FT GL 7137 FT
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DATE	26-Jan-2018
RUN	1
TRIP	1
SERVICE ORDER	US132017
DEPTH DRILLER	7680 FT
DEPTH LOGGER	7509 FT
BOTTOM LOGGED INTERVAL	7509 FT
TOP LOGGED INTERVAL	24 FT
TIME STARTED	8:00
TIME FINISHED	10:30
OPERATOR RIG TIME	2.5 HRS
TYPE OF FLUID IN HOLE	FRESH WATER
FLUID DENSITY	NA
FLUID SALINITY	NA
FLUID LEVEL	54 FT
LOGGED CEMENT TOP	1943 FT
WELLHEAD PRESSURE	0 PSI
MAXIMUM HOLE DEVIATION	NA
NOMINAL LOGGING SPEED	90 FMIN
MAX. RECORDED TEMP.	238 DEGF
REFERENCE LOG	NA
REFERENCE LOG DATE	NA
EQUIP. NO.	ML-4290
LOCATION	GRAND JUNCT
RECORDED BY	M.MENTZER
WITNESSED BY	MR. MATT SETTLES

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: 6684' - 6706'  
SJ: 5806' - 5827'

CREW: J.PENA, C.GOLOBY

## EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
1	1	RAL	1426XA	10417452	CENTRALIZED
1	1	GR/CCL	1355XA	11871507	CENTRALIZED

# MAIN PASS 0 PSI

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

Plotted: Thu Feb 08 20:26:59 2018

## PARAMETER AND FILTER SUMMARY REPORT

FILE: C:\dat1a\NICHOLS\_0994\_24\_05\p012g02.prm  
LOGGING MODE: DEPTH DIRECTION: UP  
TOP DEPTH: 1.500 ft BOTTOM DEPTH: 7501.130 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*)	175	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*)	-63	us	"	"
	TOOL DELAY (str2*)	-63	us	"	"
	TOOL DELAY (str3*)	-63	us	"	"
	TOOL DELAY (str4*)	-63	us	"	"
	TOOL DELAY (str5*)	-63	us	"	"
	TOOL DELAY (str6*)	-63	us	"	"
	TOOL DELAY (str7*)	-63	us	"	"
	TOOL DELAY (str8*)	-63	us	"	"
	TOOL DELAY (strn*)	-63	us	"	"
BASELINE NOISE (NEAR)	NOISE WINDOW START	125	us	"	"
	NOISE WINDOW LENGTH	25	us	"	"

### PERCENT BOND CEMENT MAP

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
RAL FREE PIPE AMPLITUDE	FREE AMP REC 1	80	mV	TOP	BOTTOM
	FREE AMP REC 2	80	mV	"	"
	FREE AMP REC 3	80	mV	"	"
	FREE AMP REC 4	80	mV	"	"
	FREE AMP REC 5	80	mV	"	"
	FREE AMP REC 6	80	mV	"	"
	FREE AMP REC 7	80	mV	"	"
	FREE AMP REC 8	80	mV	"	"
RAL FULL BOND AMPLITUDE	FULL BOND AMP REC 1	2	mV	"	"
	FULL BOND AMP REC 2	2	mV	"	"

FULL BOND AMP REC 3	2	mV	"	"
FULL BOND AMP REC 4	2	mV	"	"
FULL BOND AMP REC 5	2	mV	"	"
FULL BOND AMP REC 6	2	mV	"	"
FULL BOND AMP REC 7	2	mV	"	"
FULL BOND AMP REC 8	2	mV	"	"

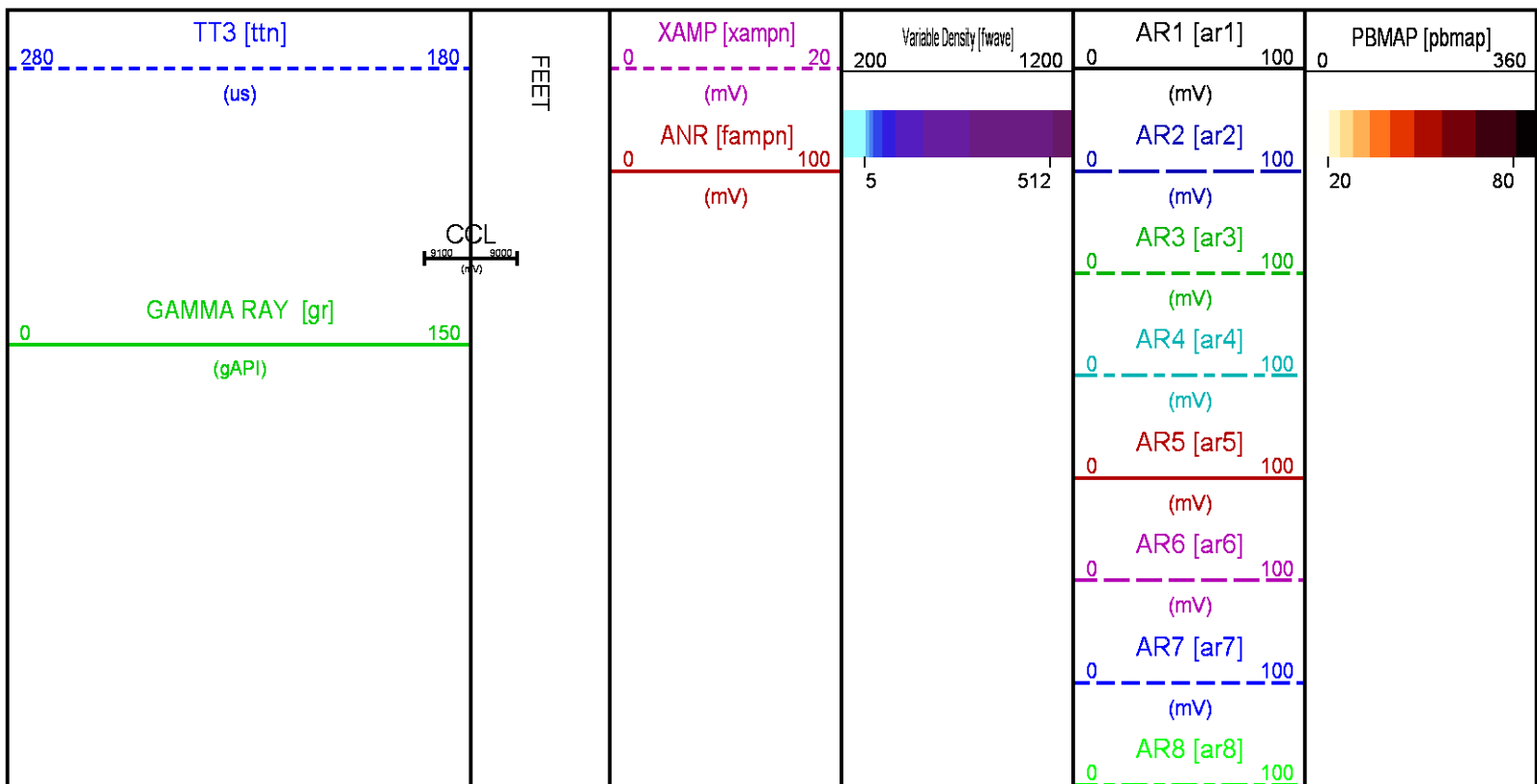
## CURVE DESCRIPTION REPORT

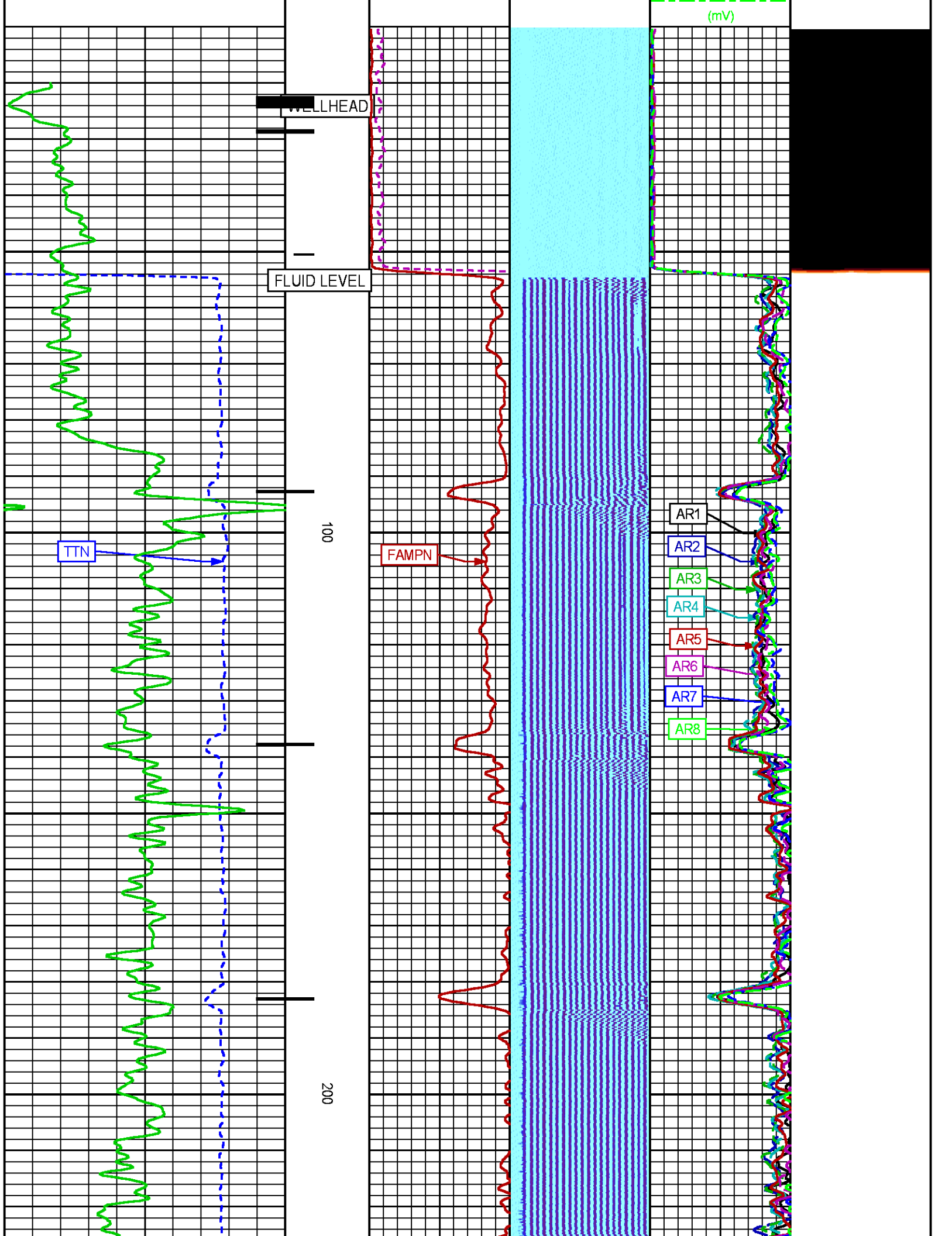
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AR1	N/A	FIXED GATE AMPLITUDE T-R1
F1:AR2	N/A	FIXED GATE AMPLITUDE T-R2
F1:AR3	N/A	FIXED GATE AMPLITUDE T-R3
F1:AR4	N/A	FIXED GATE AMPLITUDE T-R4
F1:AR5	N/A	FIXED GATE AMPLITUDE T-R5
F1:AR6	N/A	FIXED GATE AMPLITUDE T-R6
F1:AR7	N/A	FIXED GATE AMPLITUDE T-R7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

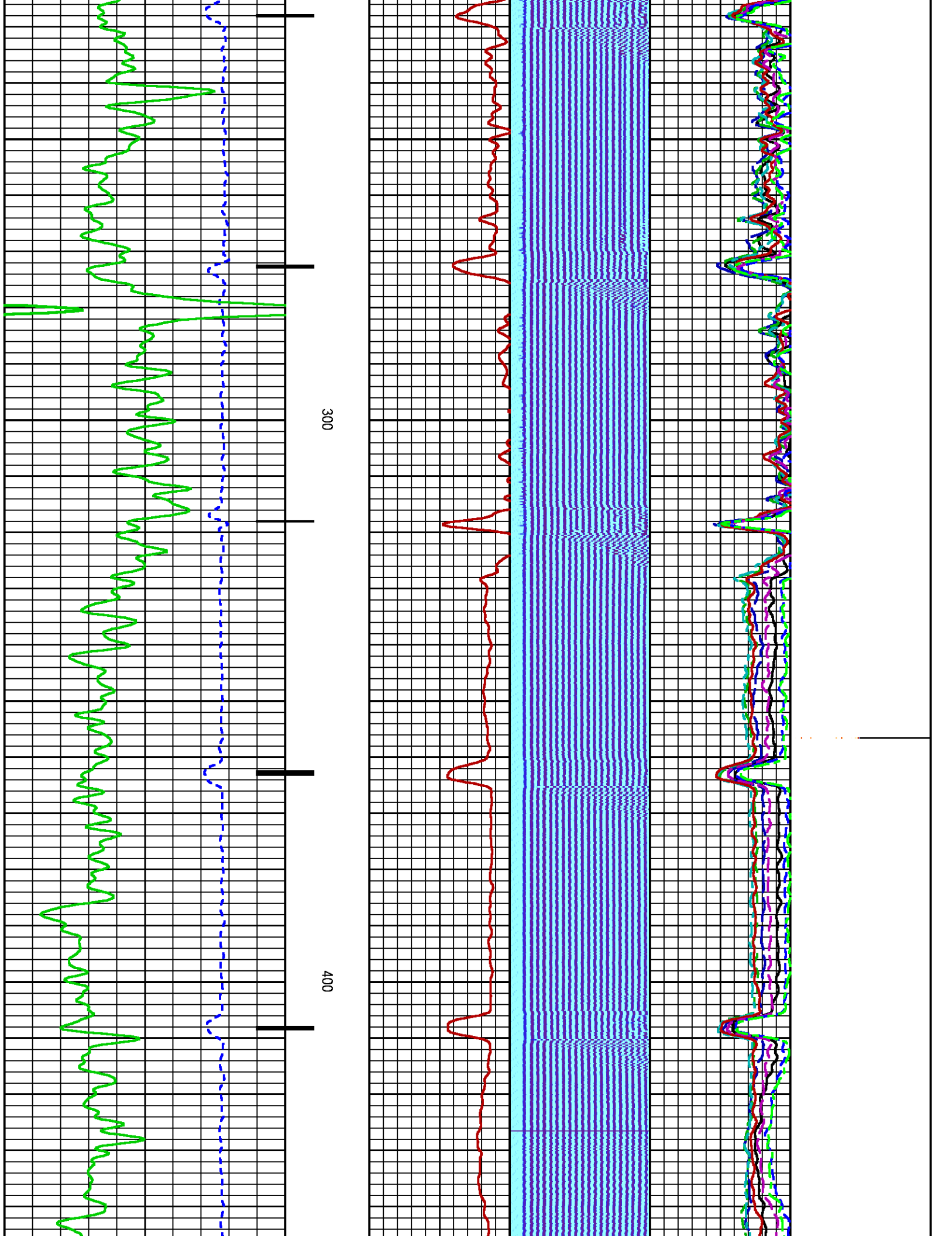
## CURVE MEASURE POINT OFFSET

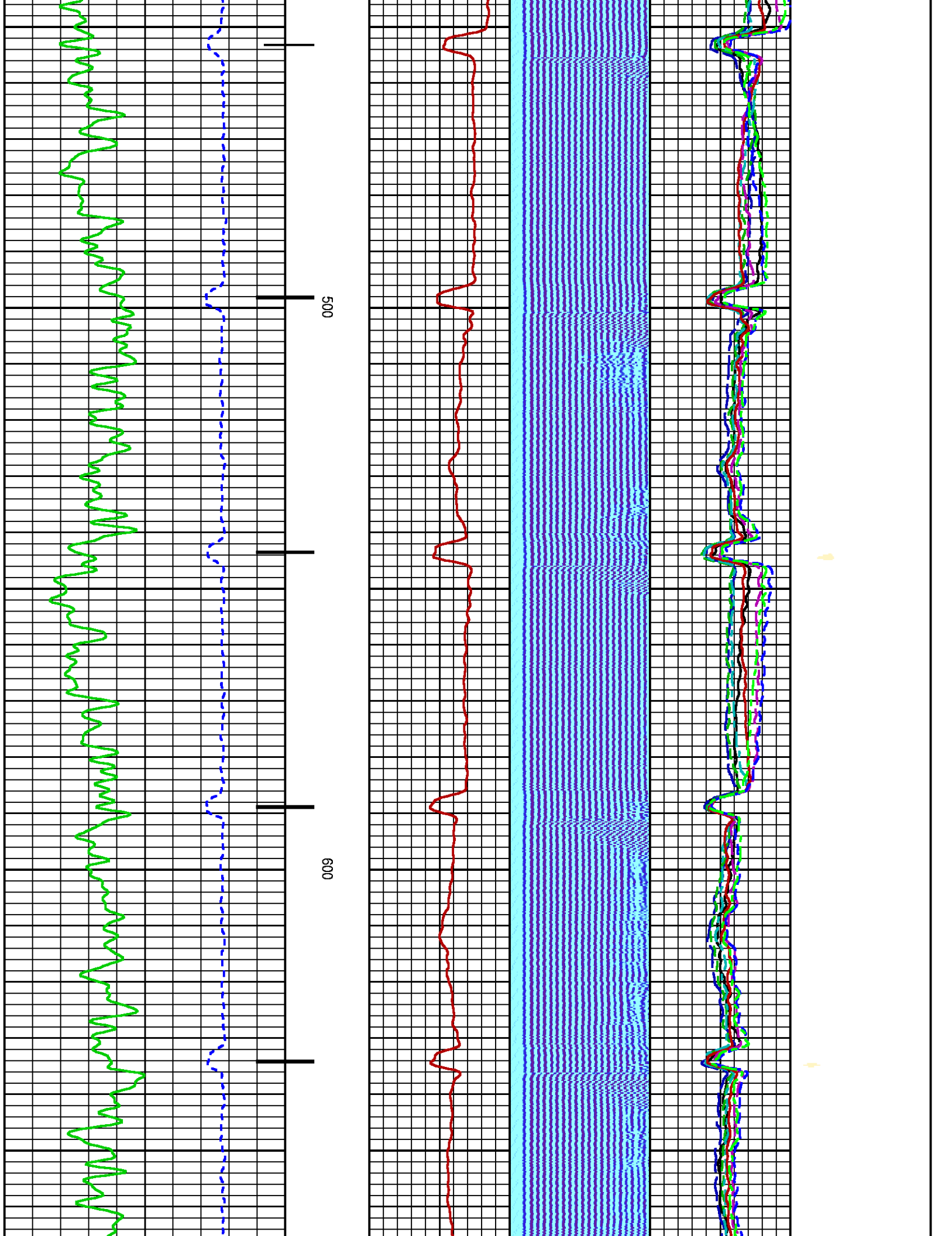
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
AR1	-11.25	AR5	-11.25	CCL	-5.75	XAMPN	-11.25
AR2	-11.25	AR6	-11.25	FAMPN	-11.25		
AR3	-11.25	AR7	-11.25	GR	-1.75		
AR4	-11.25	AR8	-11.25	TTN	-11.25		

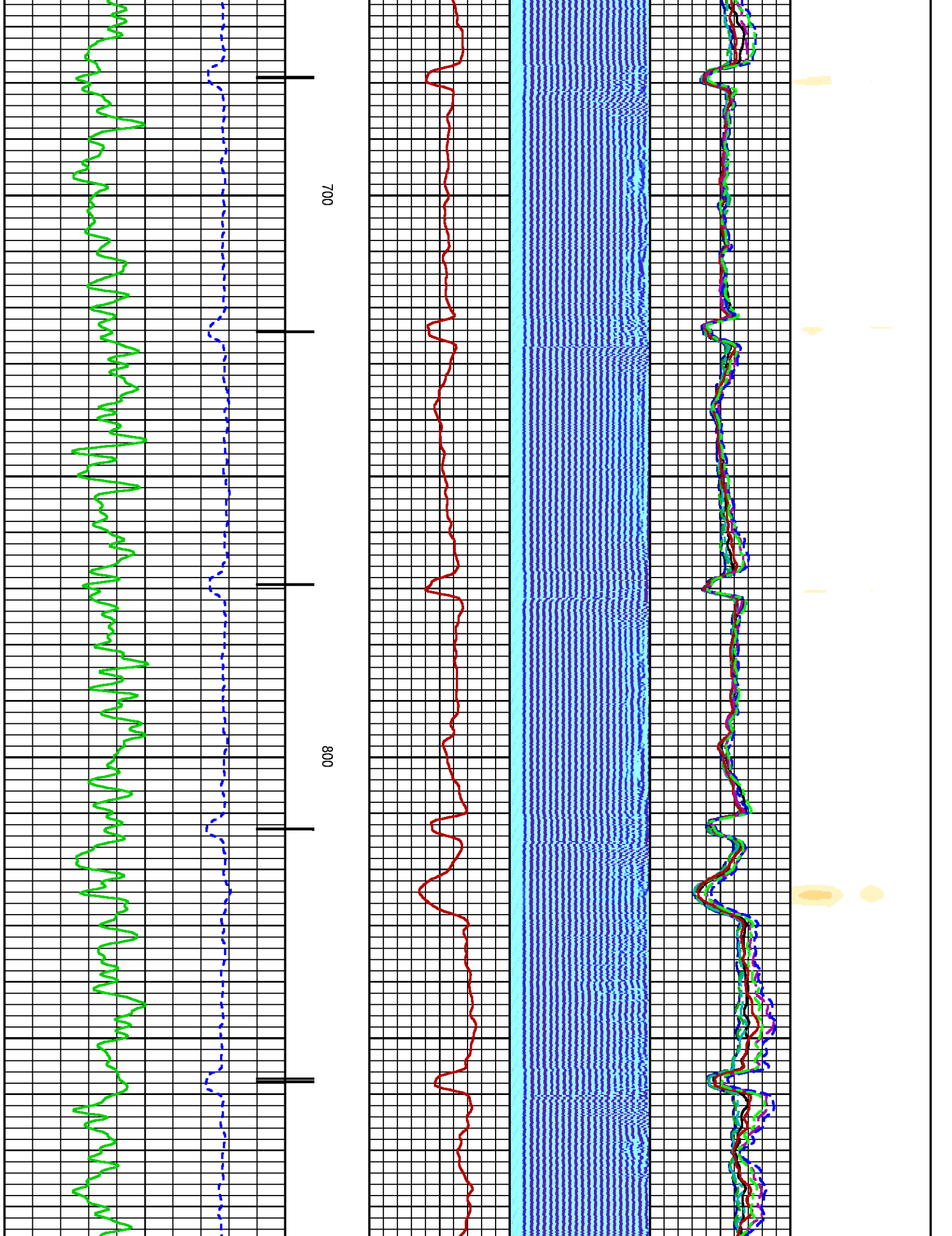
<b>Presentation</b>	: BHI4WM4ZW1:C:\dat1a\NICHOLS_0994_24_05E\LARAMIE_RAL+01-MAIN-RAL_MN_05E-5.fvpdf [5"/100' Scale]
<b>Plot Interval</b>	: 10.25 - 7519.25 Feet
<b>Data File 1</b>	: F1 : BHI4WM4ZW1:C:\dat1a\NICHOLS_0994_24_05E\RAL_MN_05E.xtf
<b>Created On</b>	: N/A
<b>Company</b>	: LARAMIE ENERGY LLC
<b>Well</b>	: NICHOLS 0994-24-05E
<b>Field</b>	: VEGA
<b>File Interval</b>	: 1.5 - 7520.5 Feet
<b>OCT</b>	: p012g

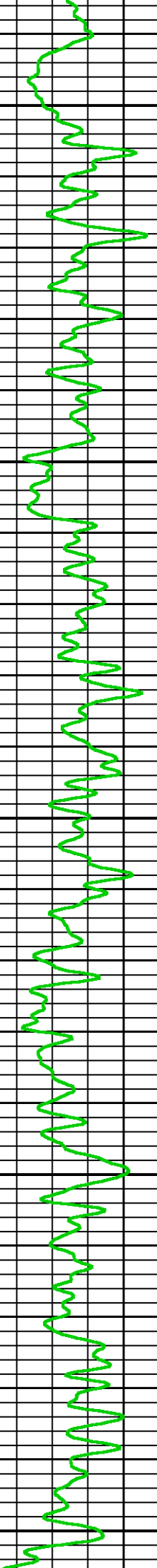
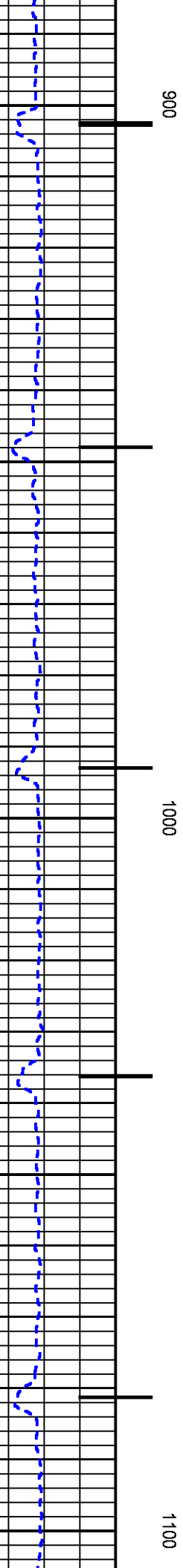
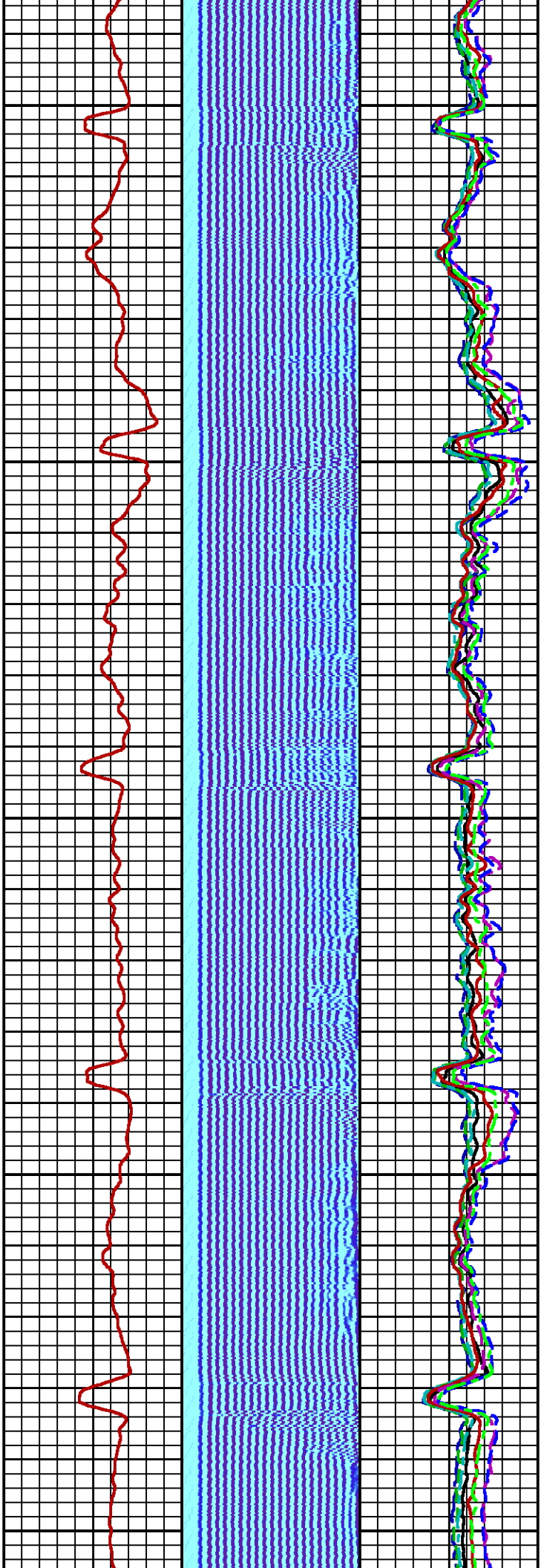


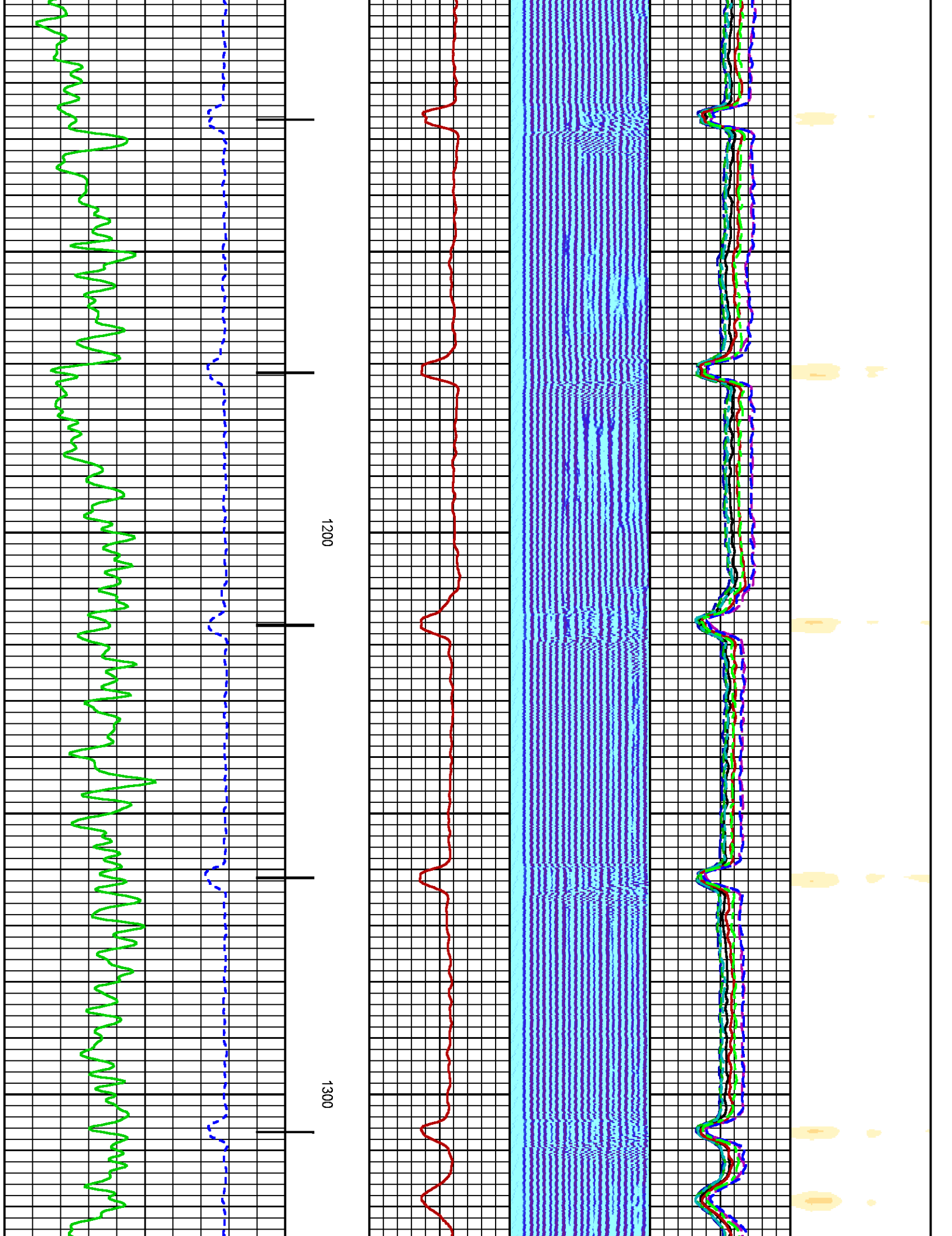


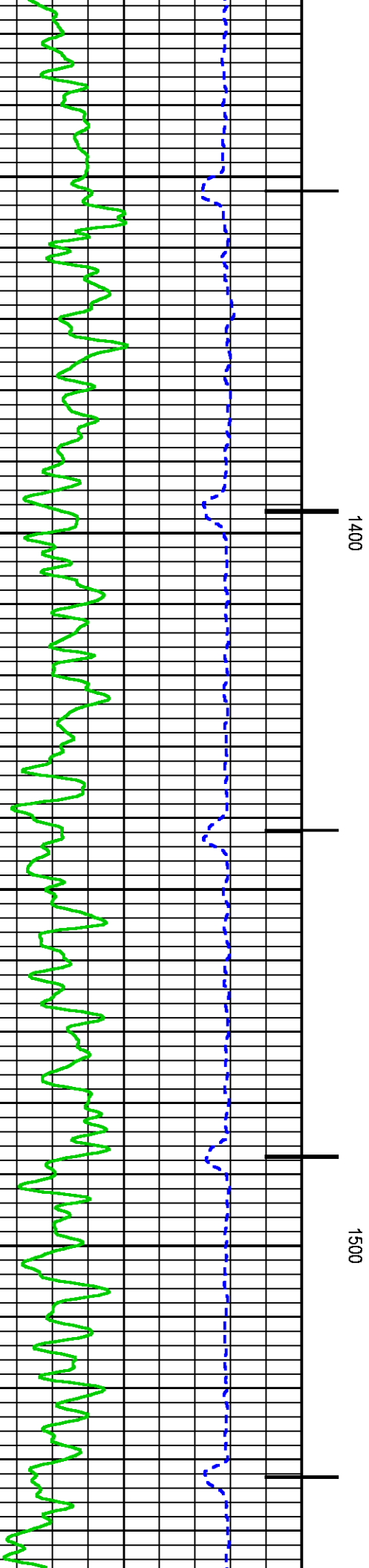
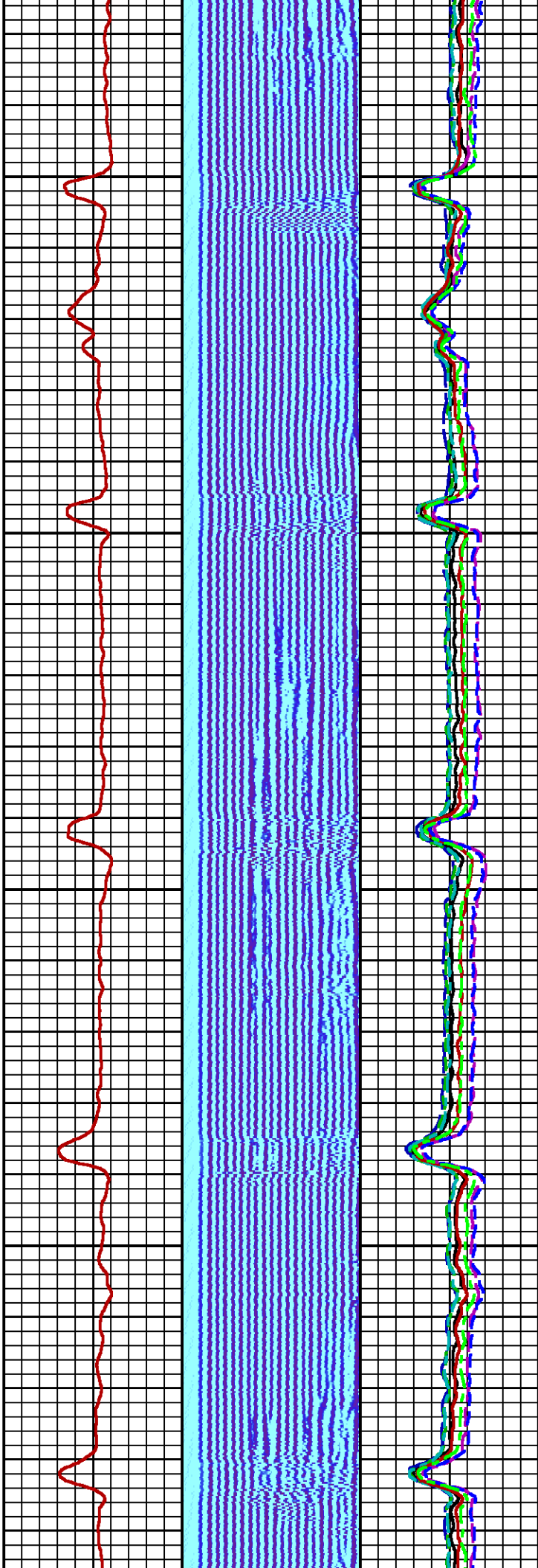
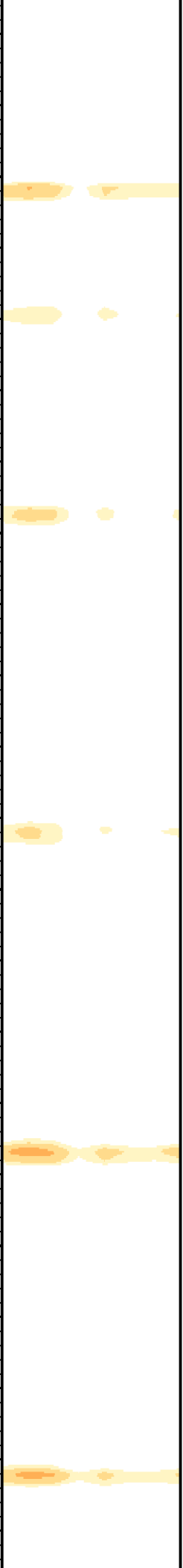


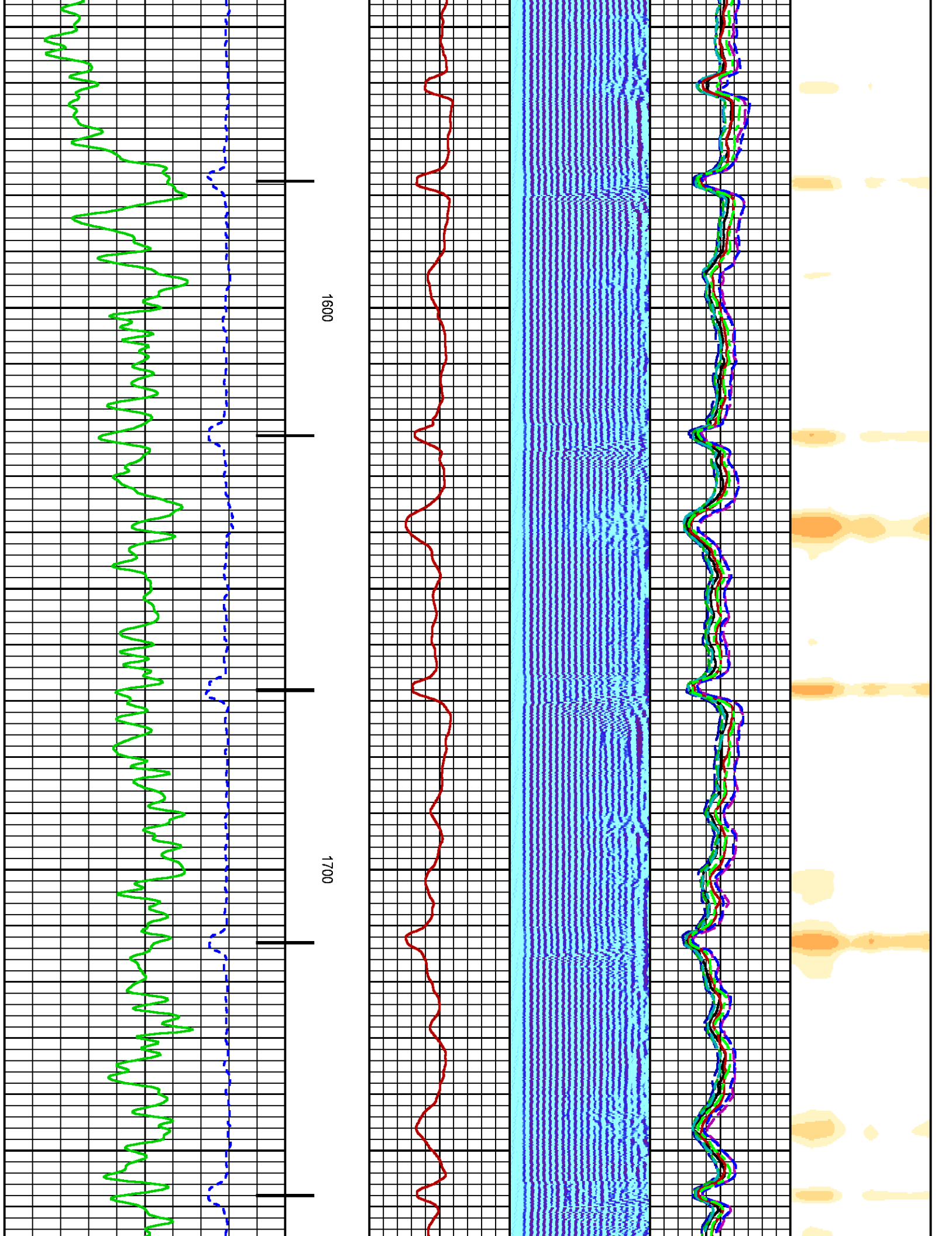


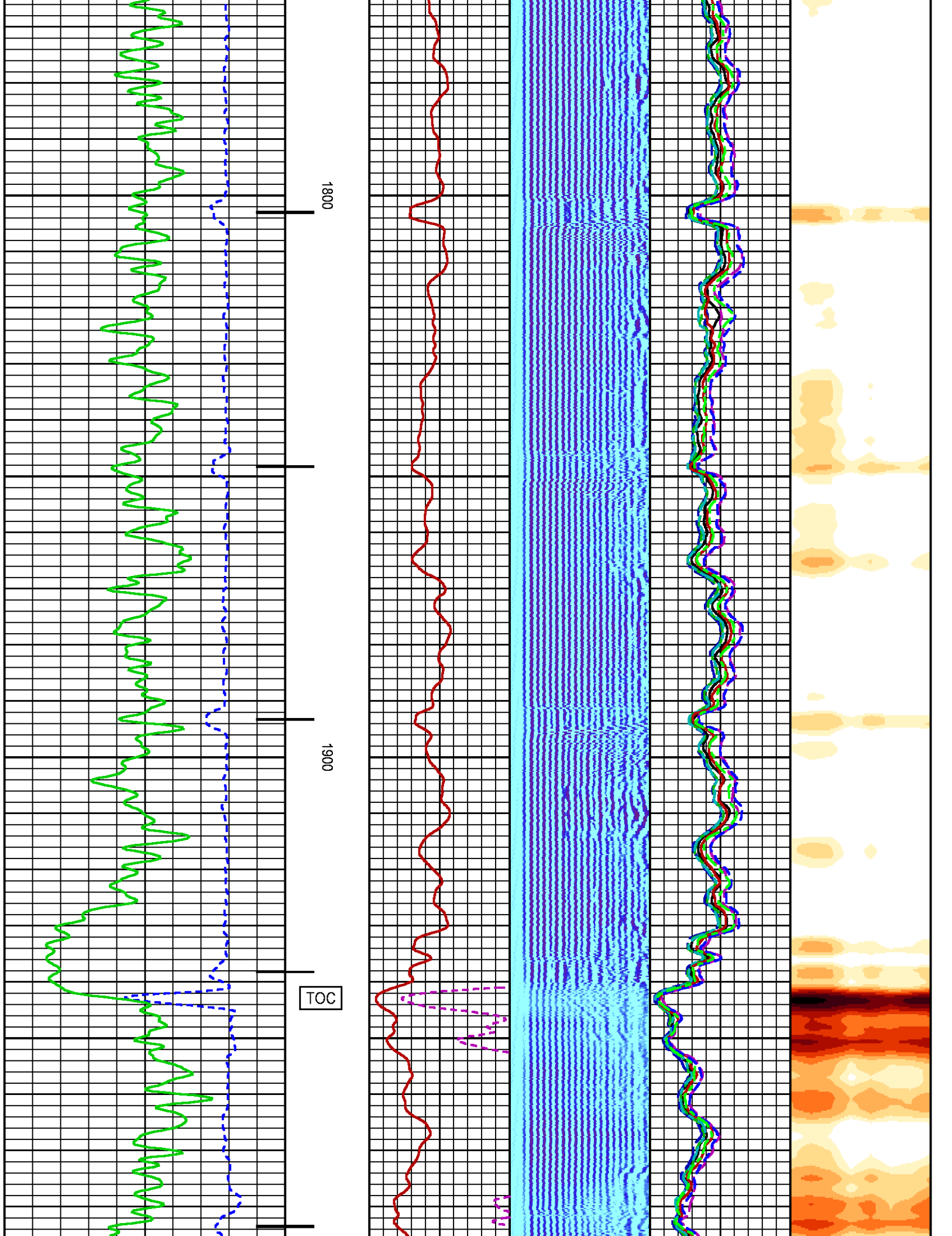


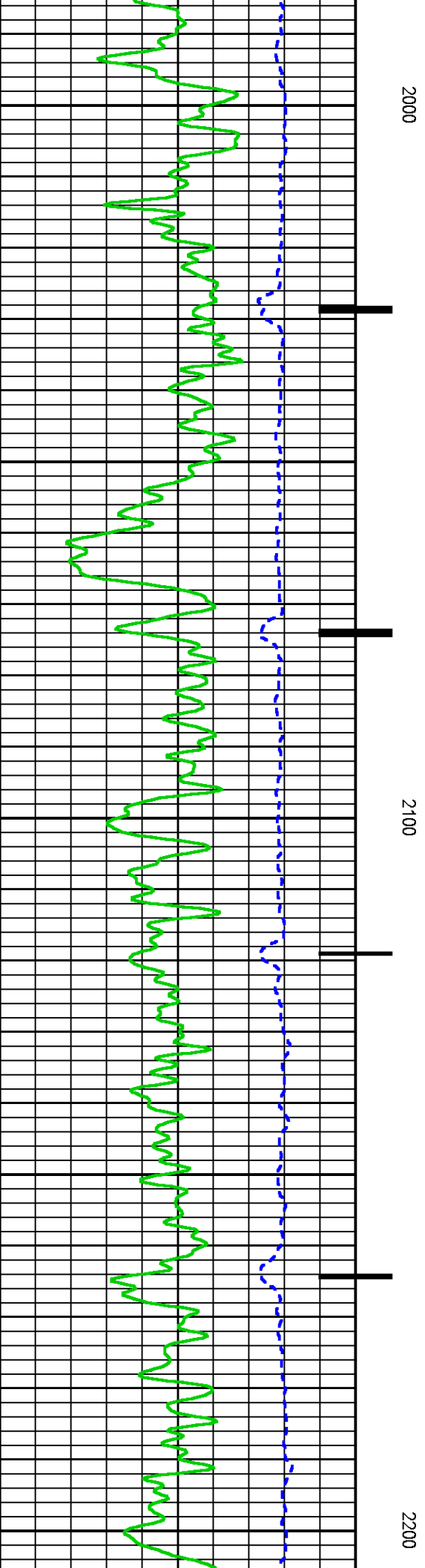
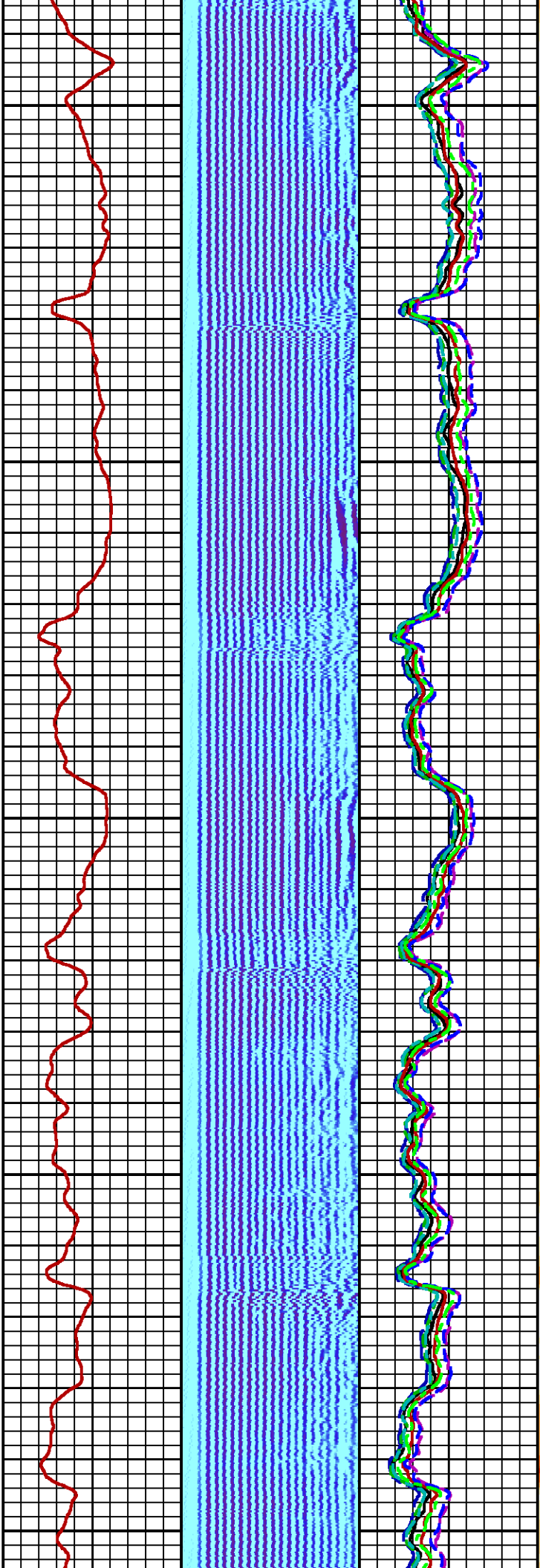
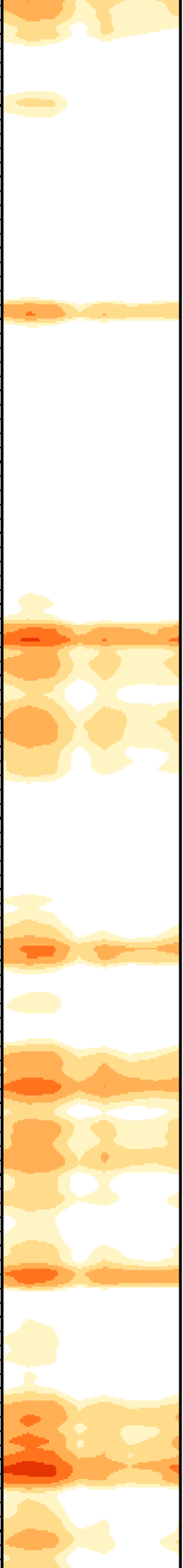


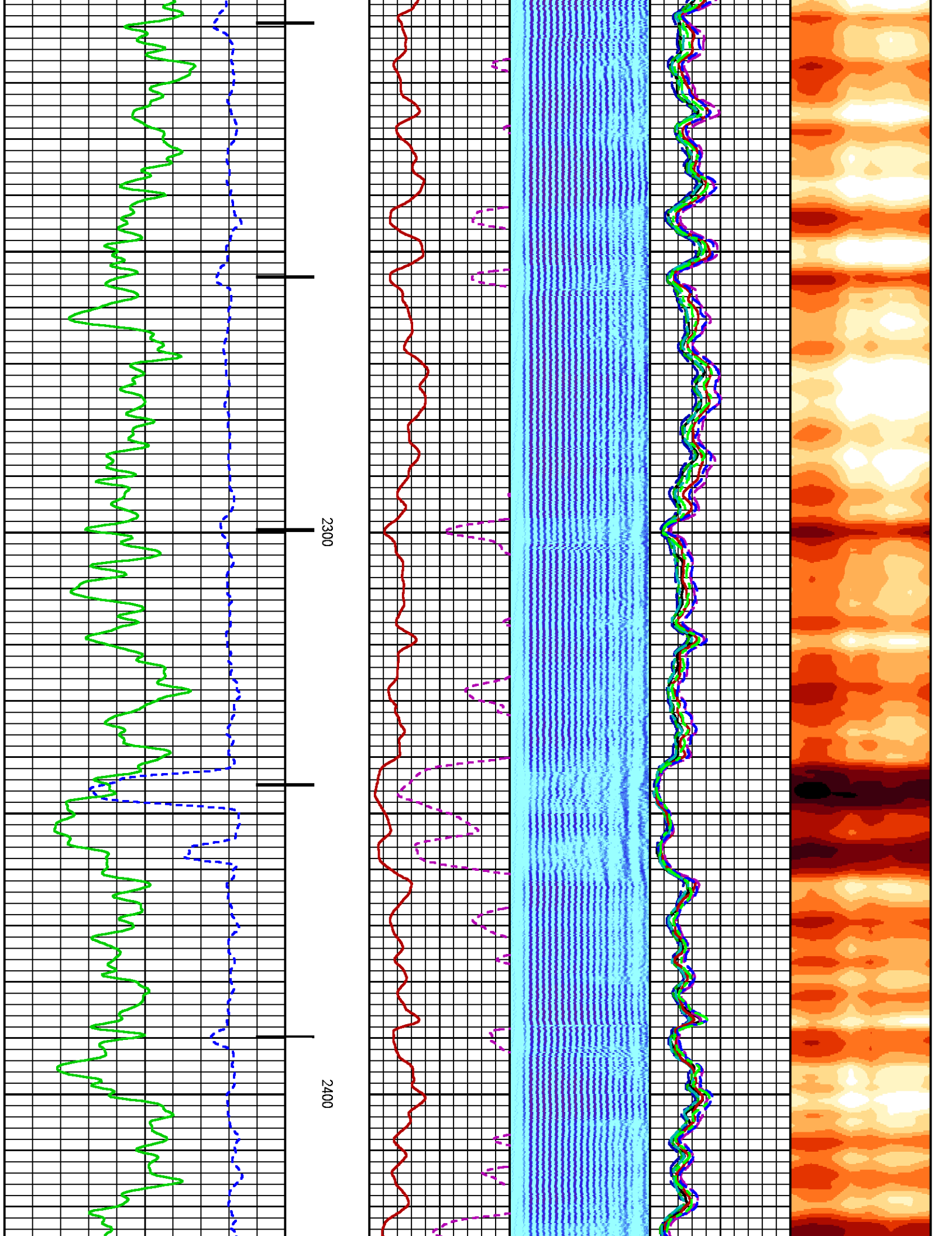


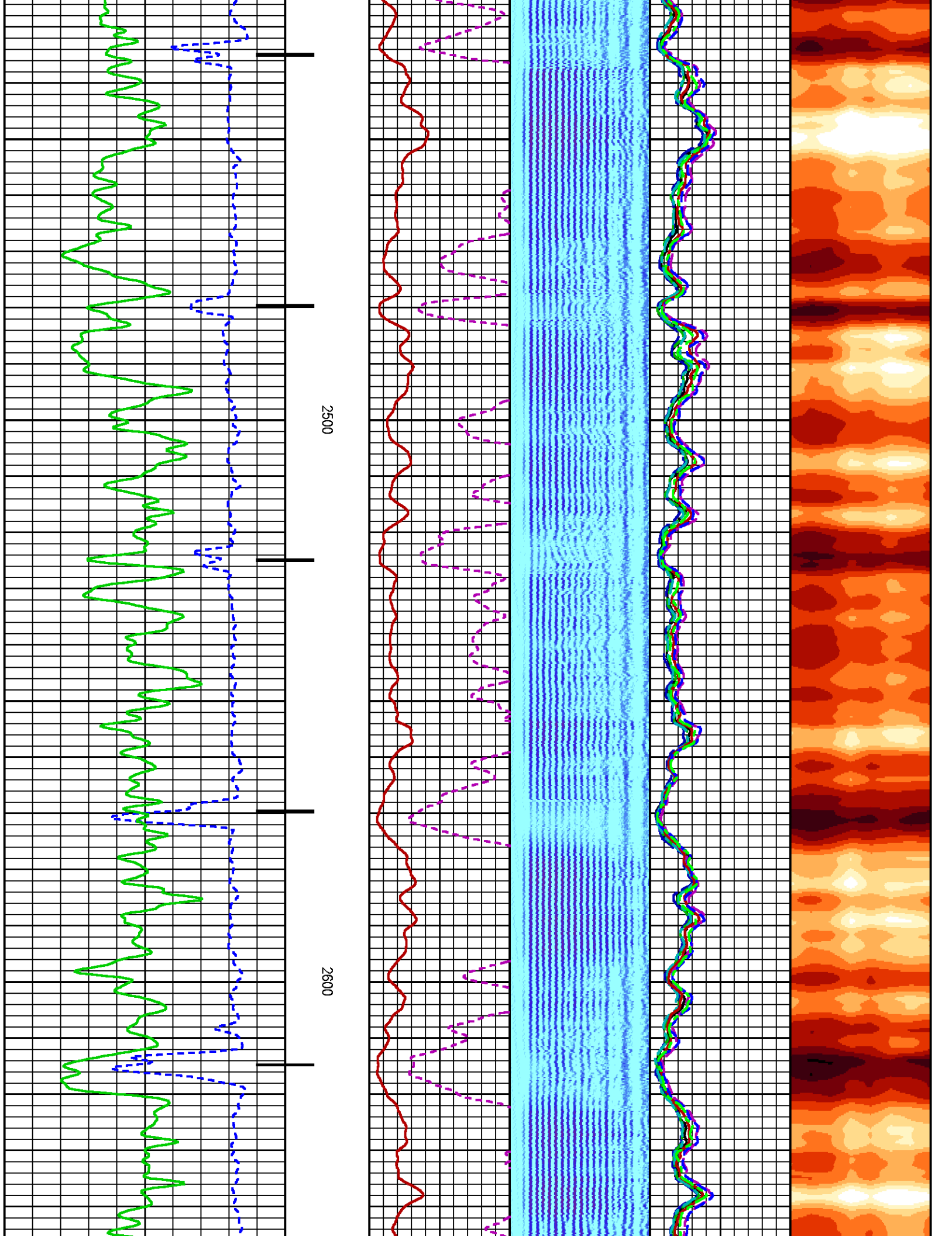


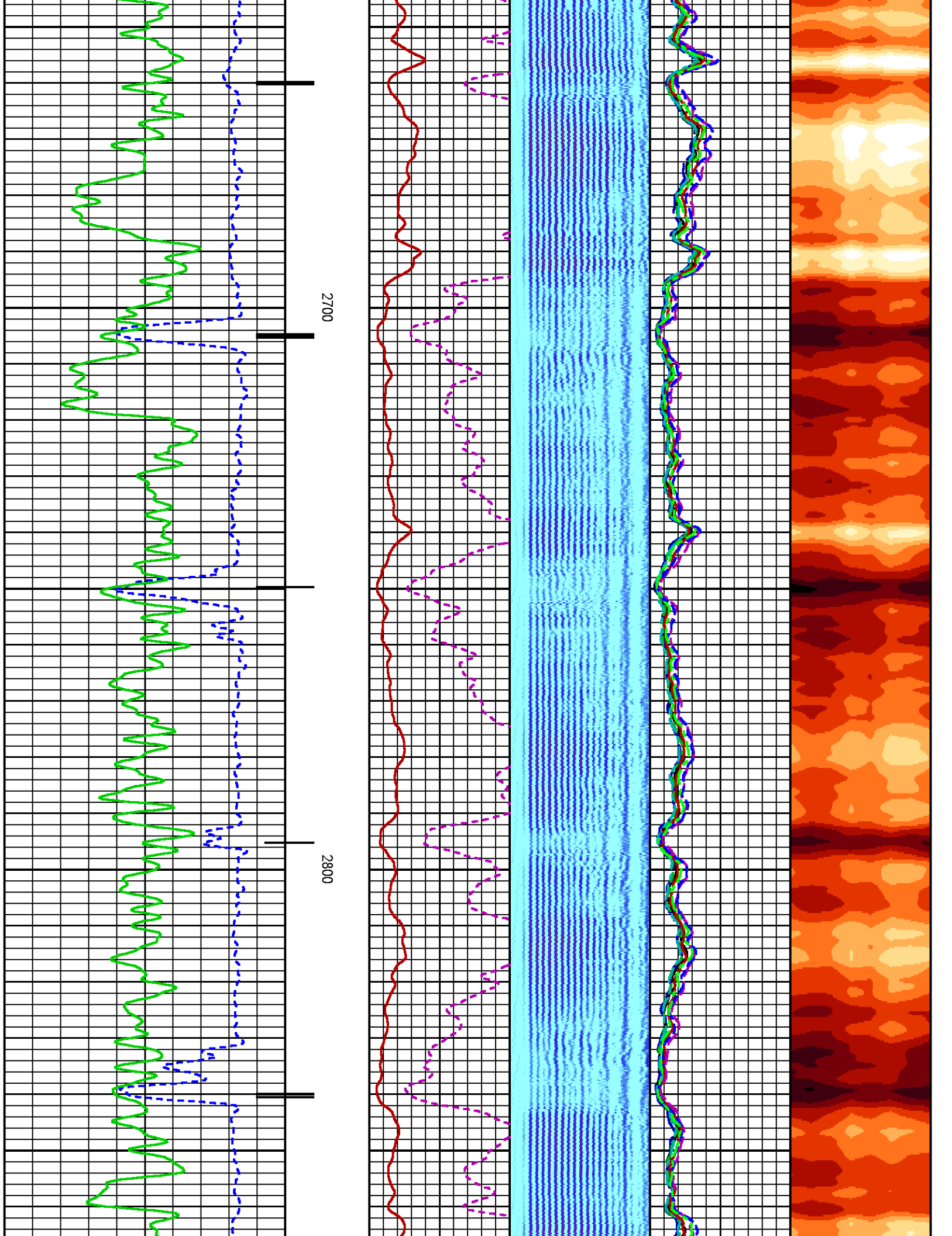


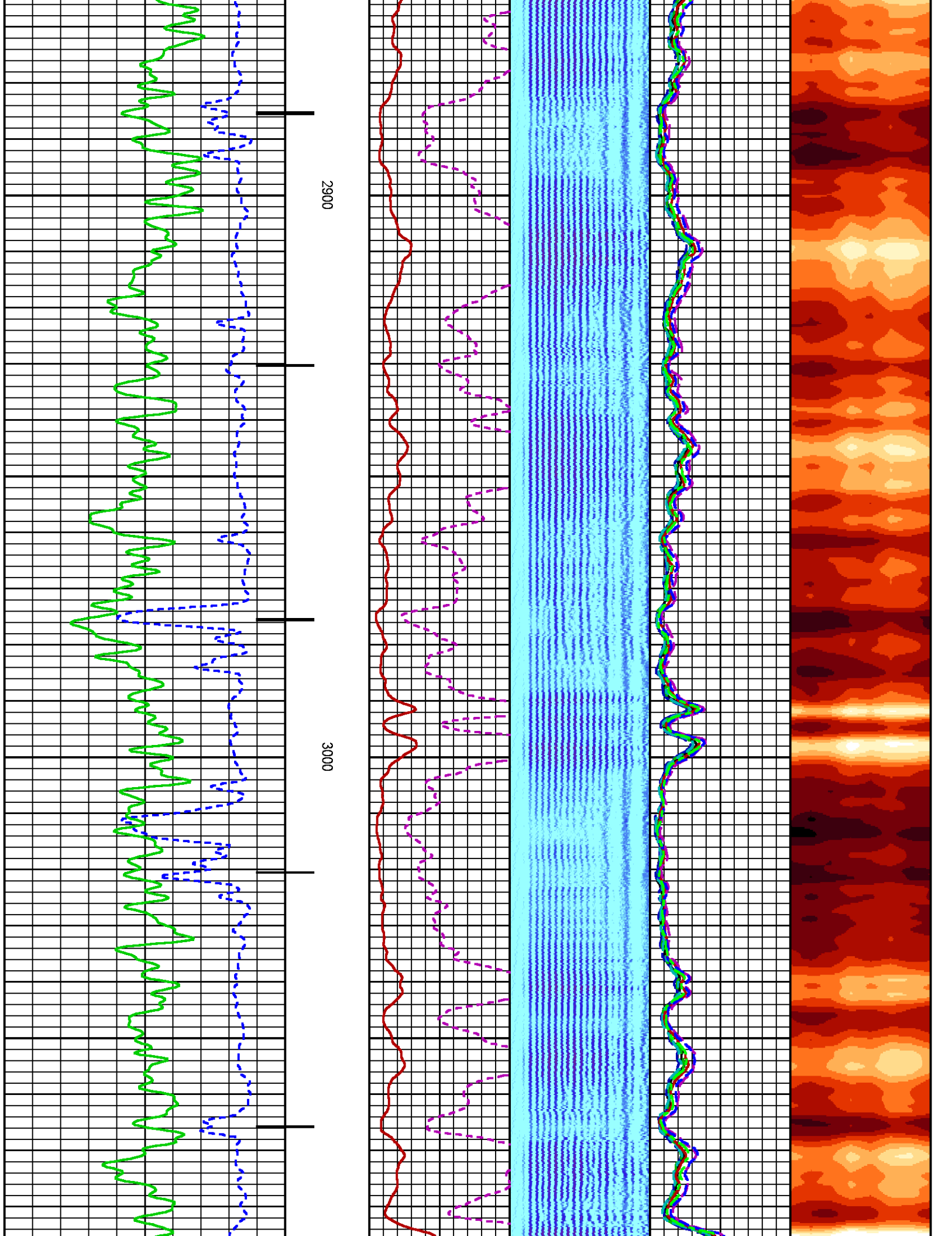


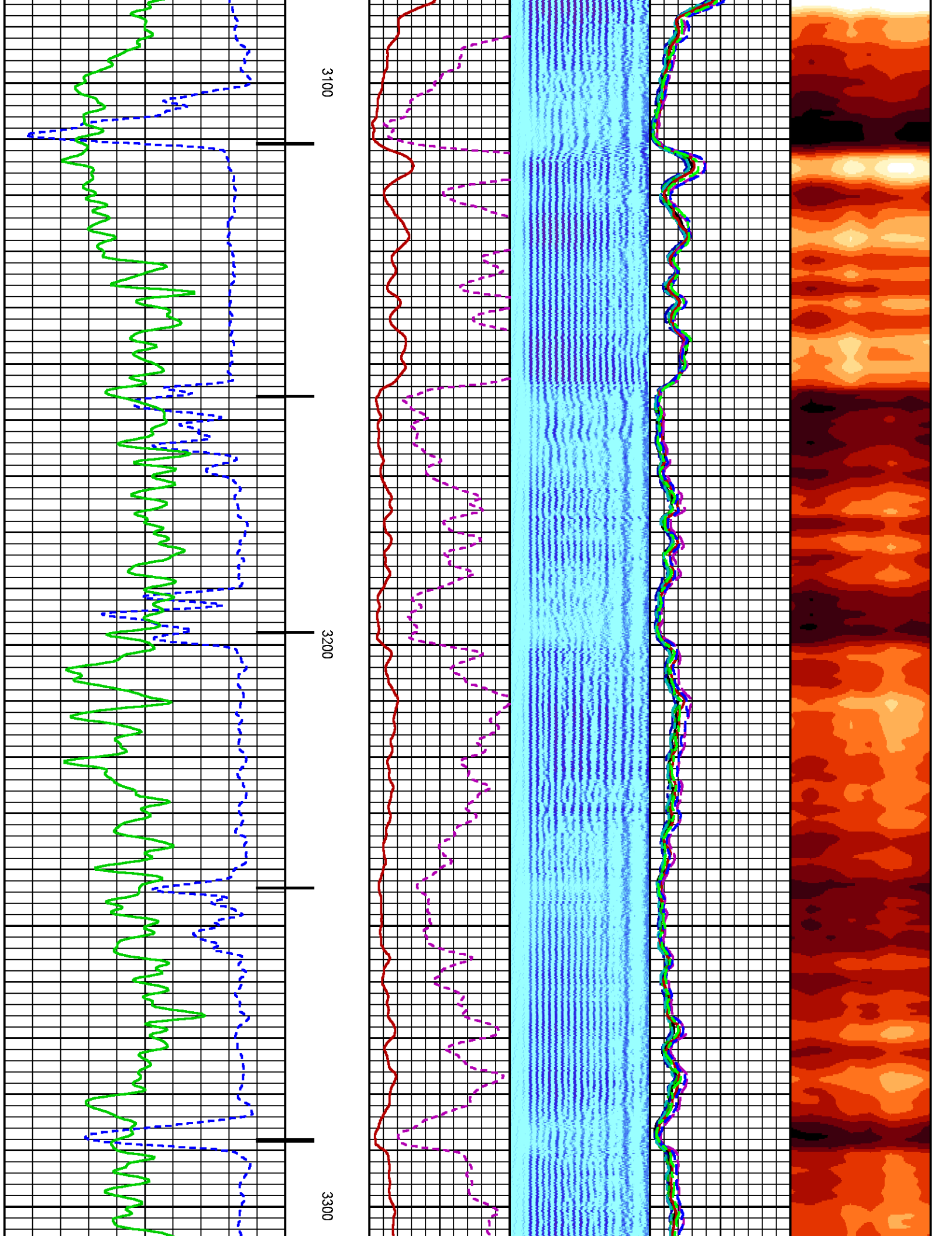


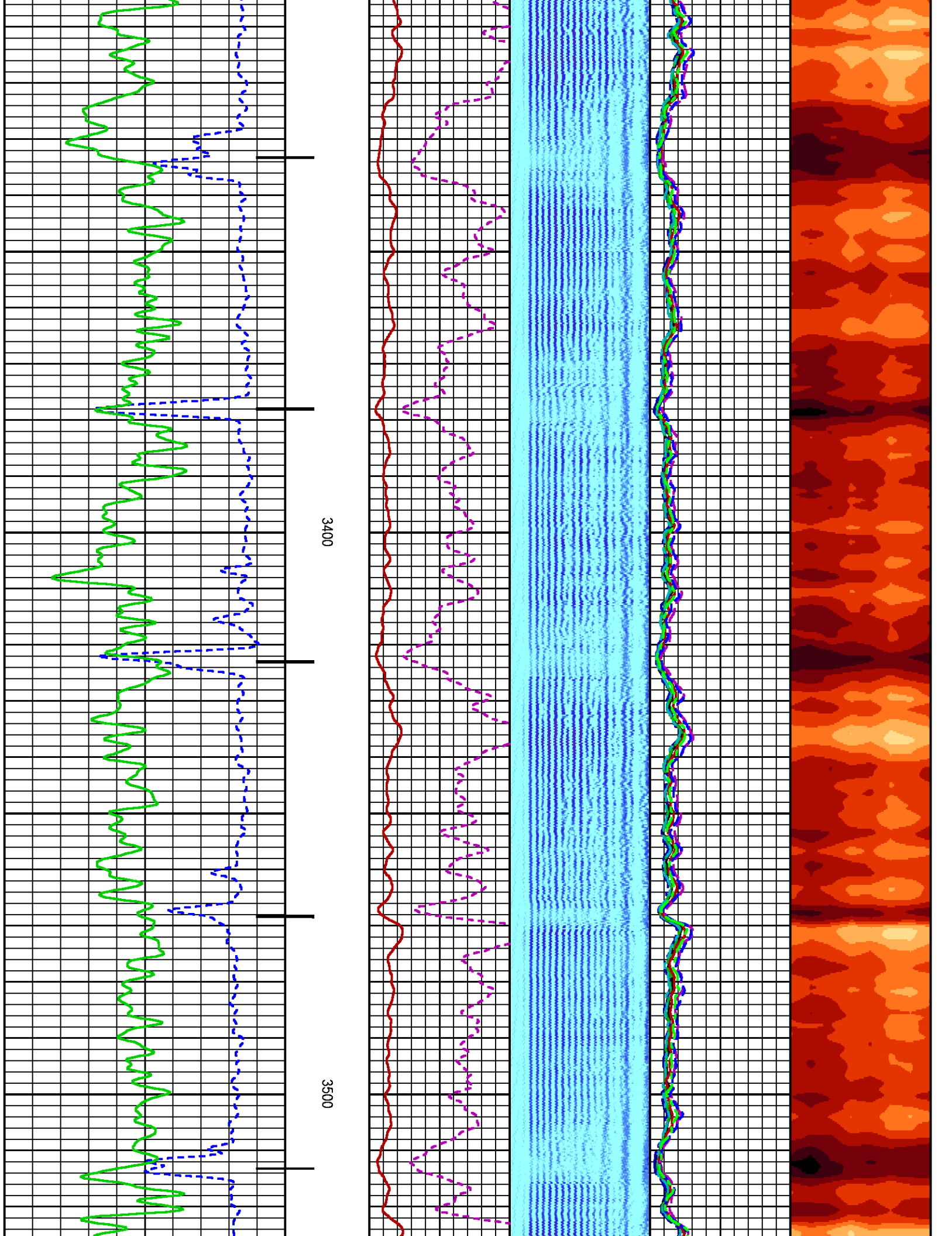


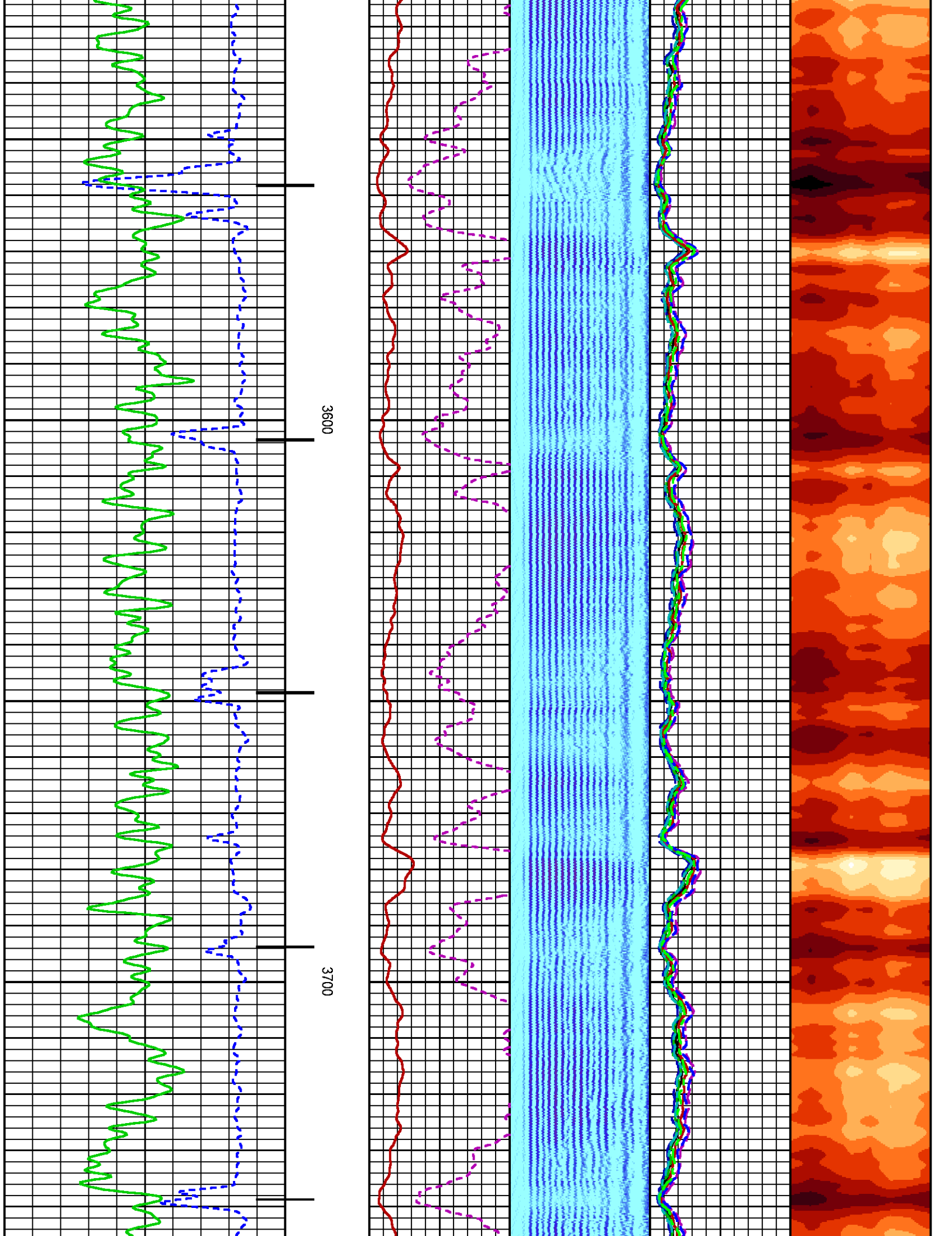


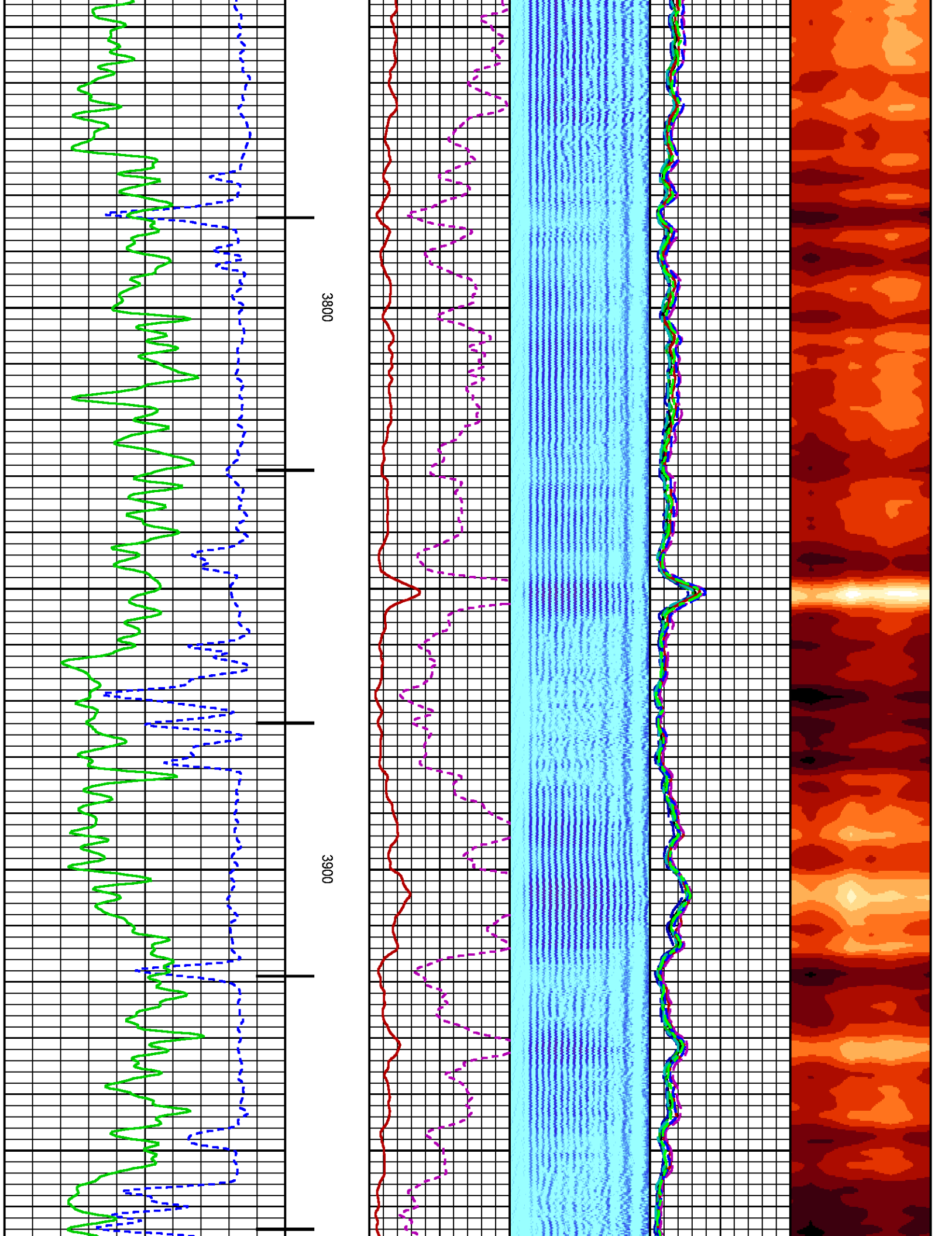


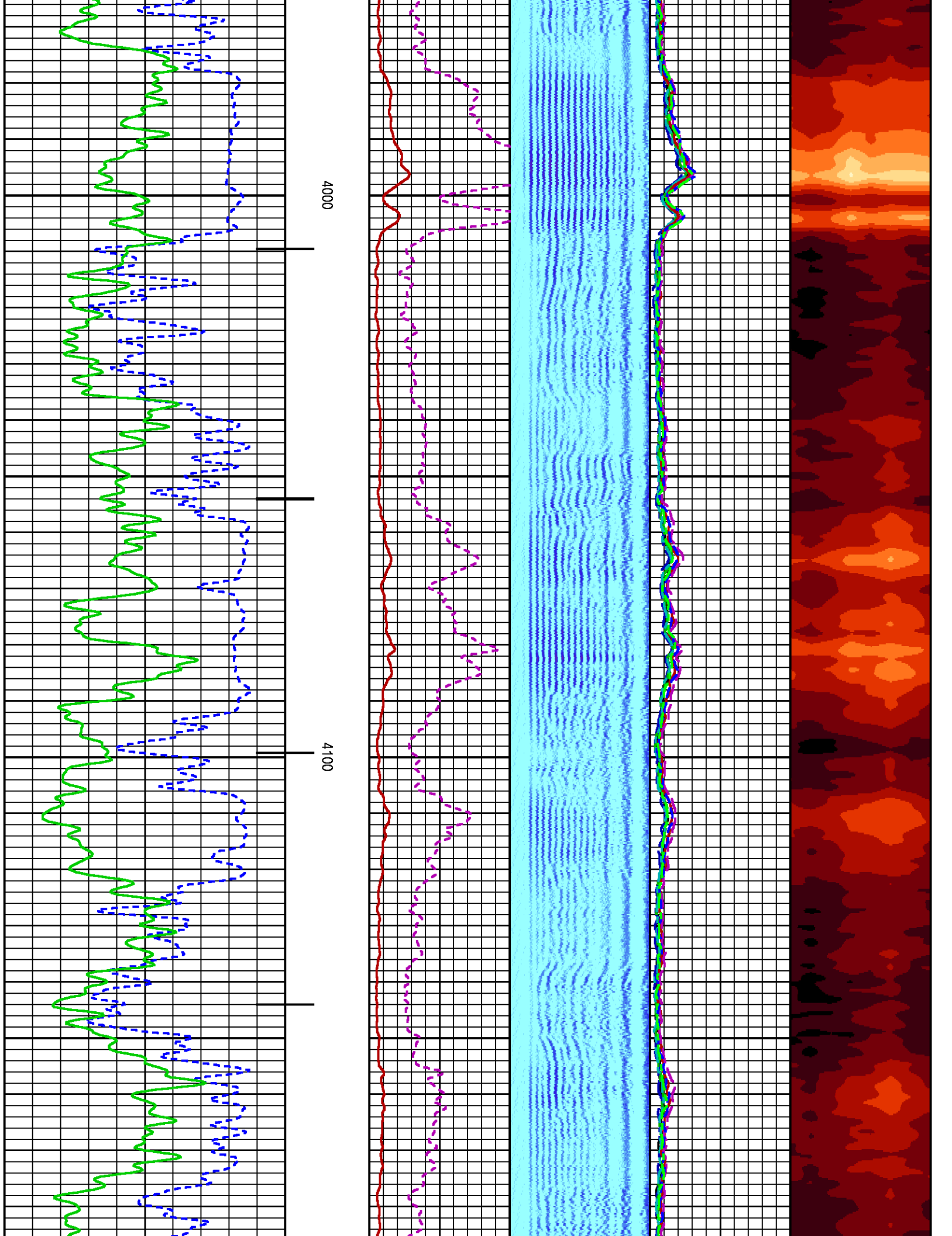


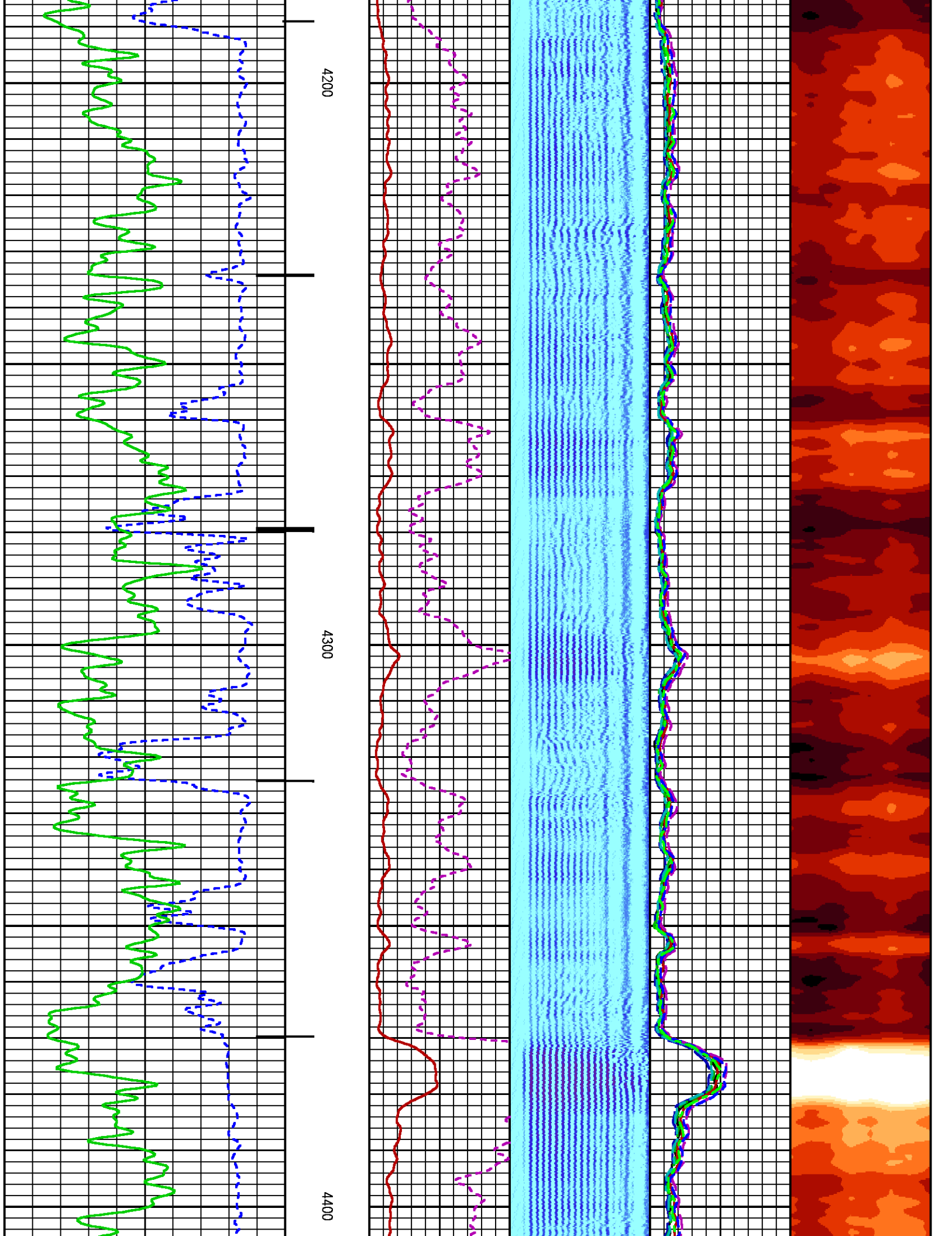


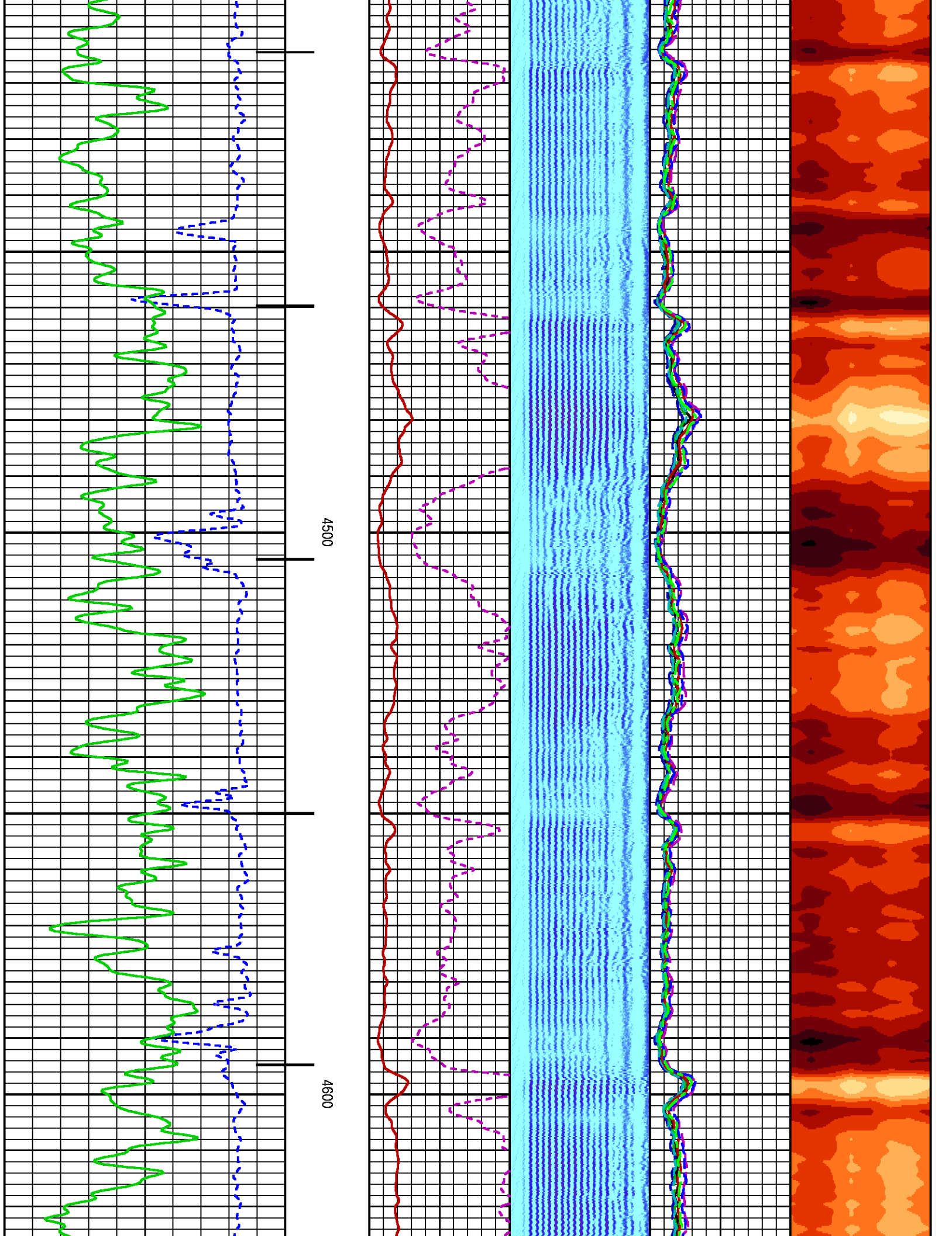


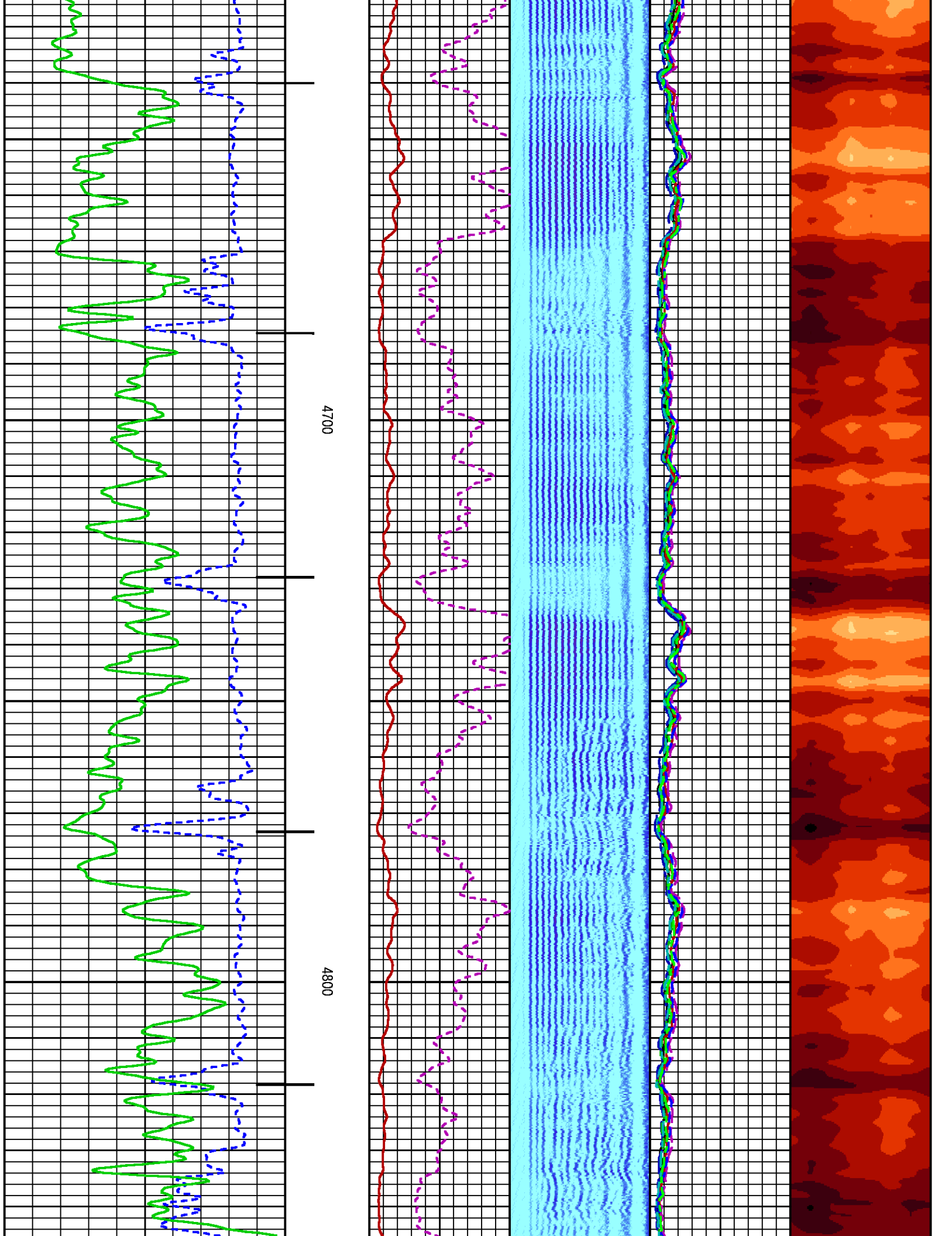


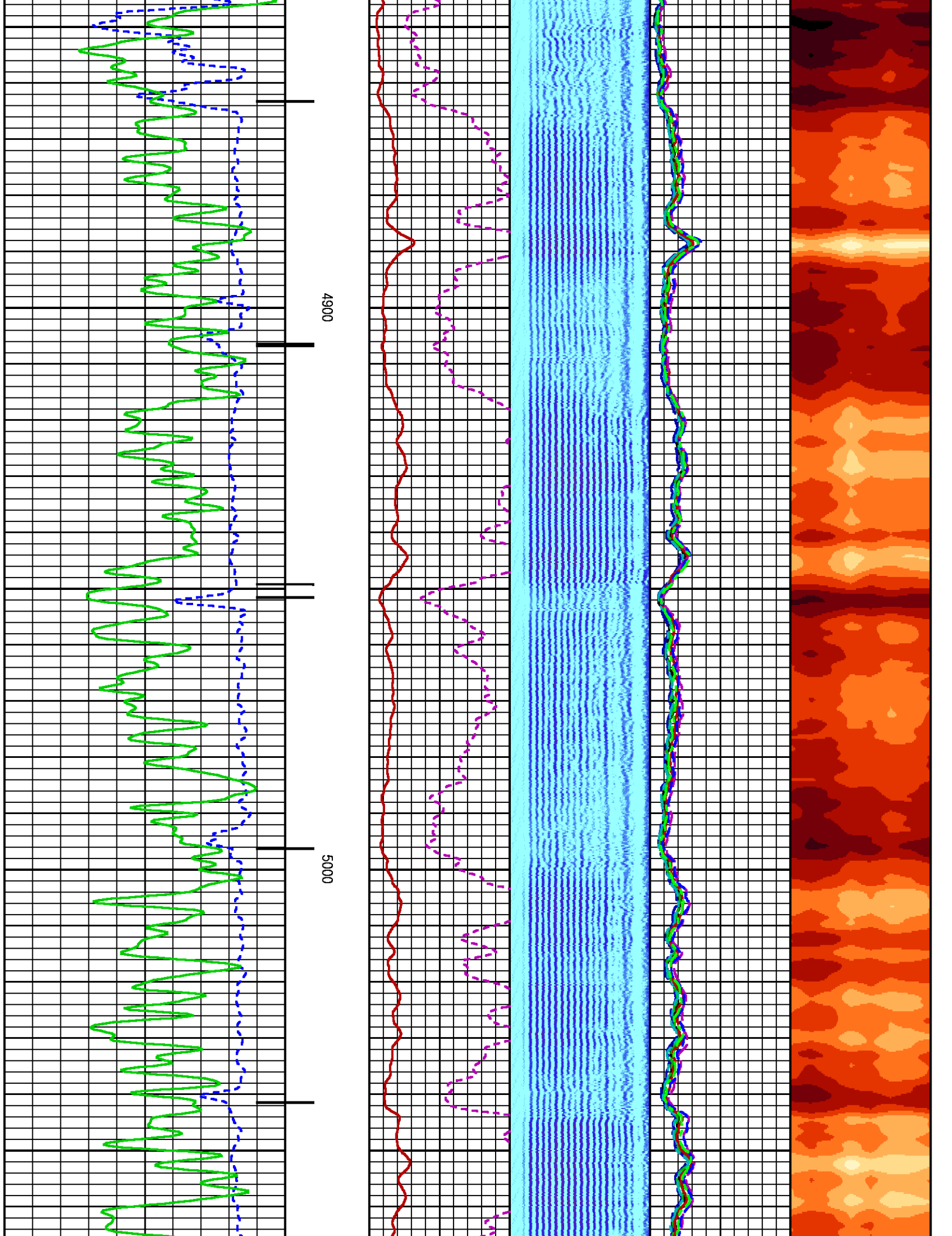


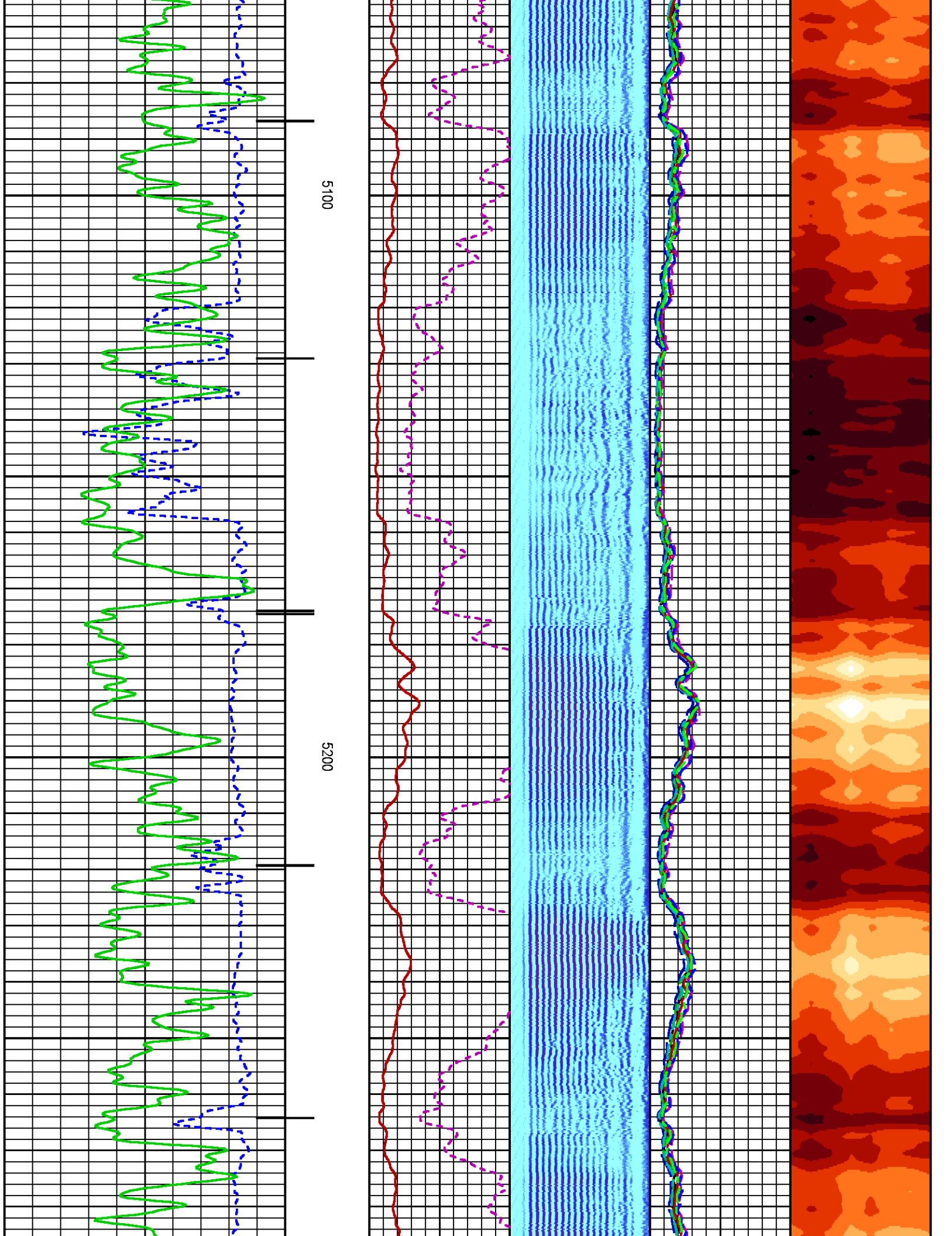


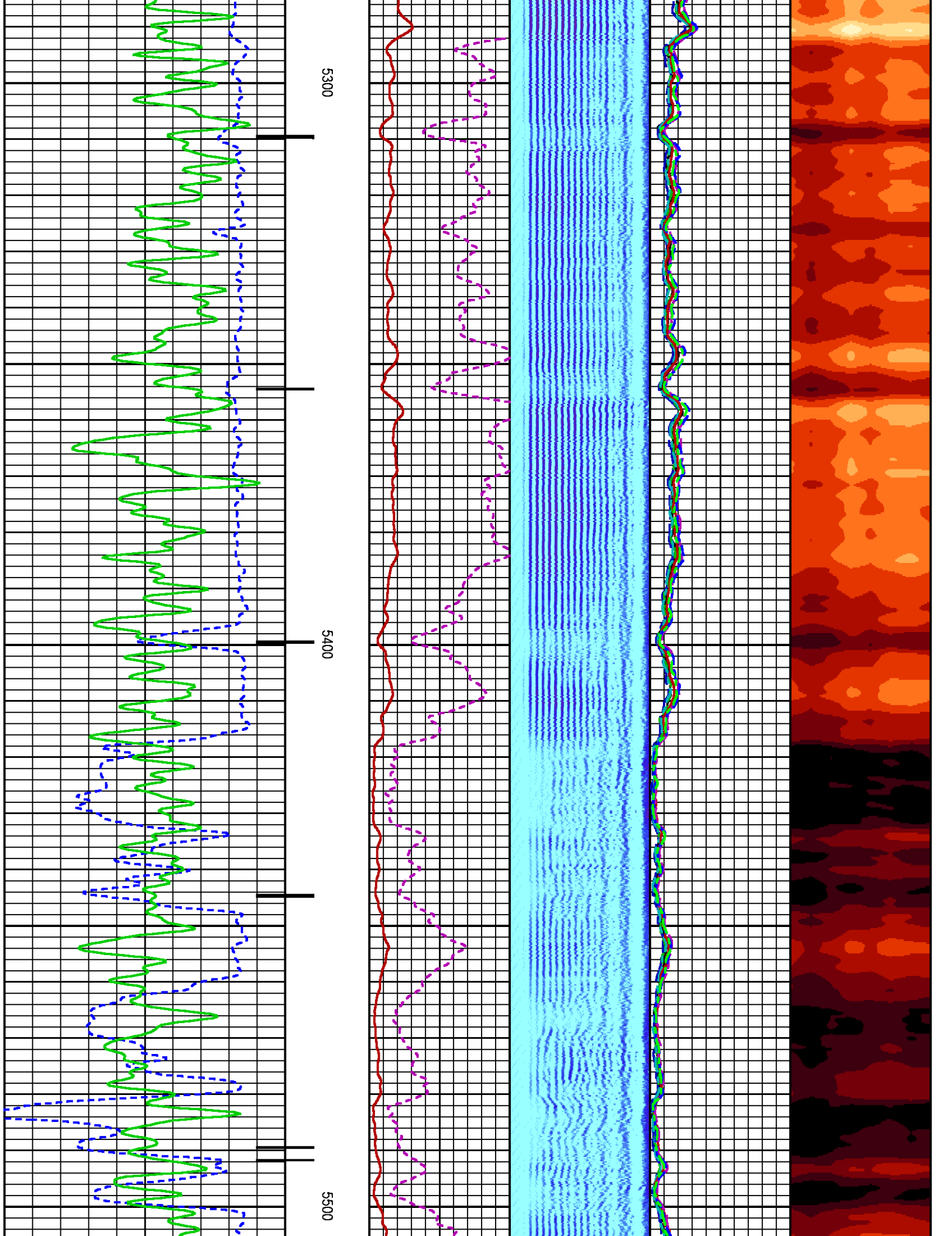


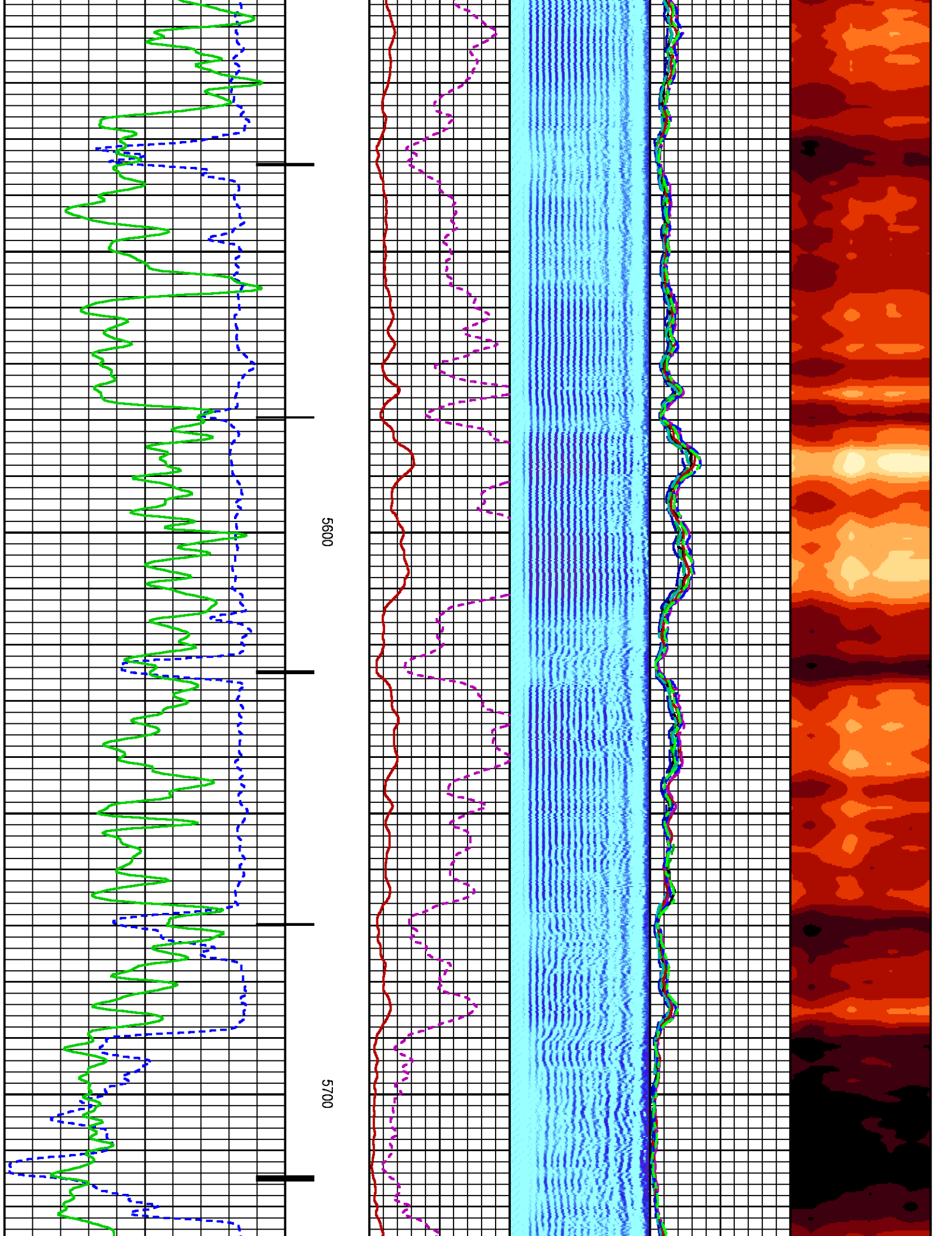


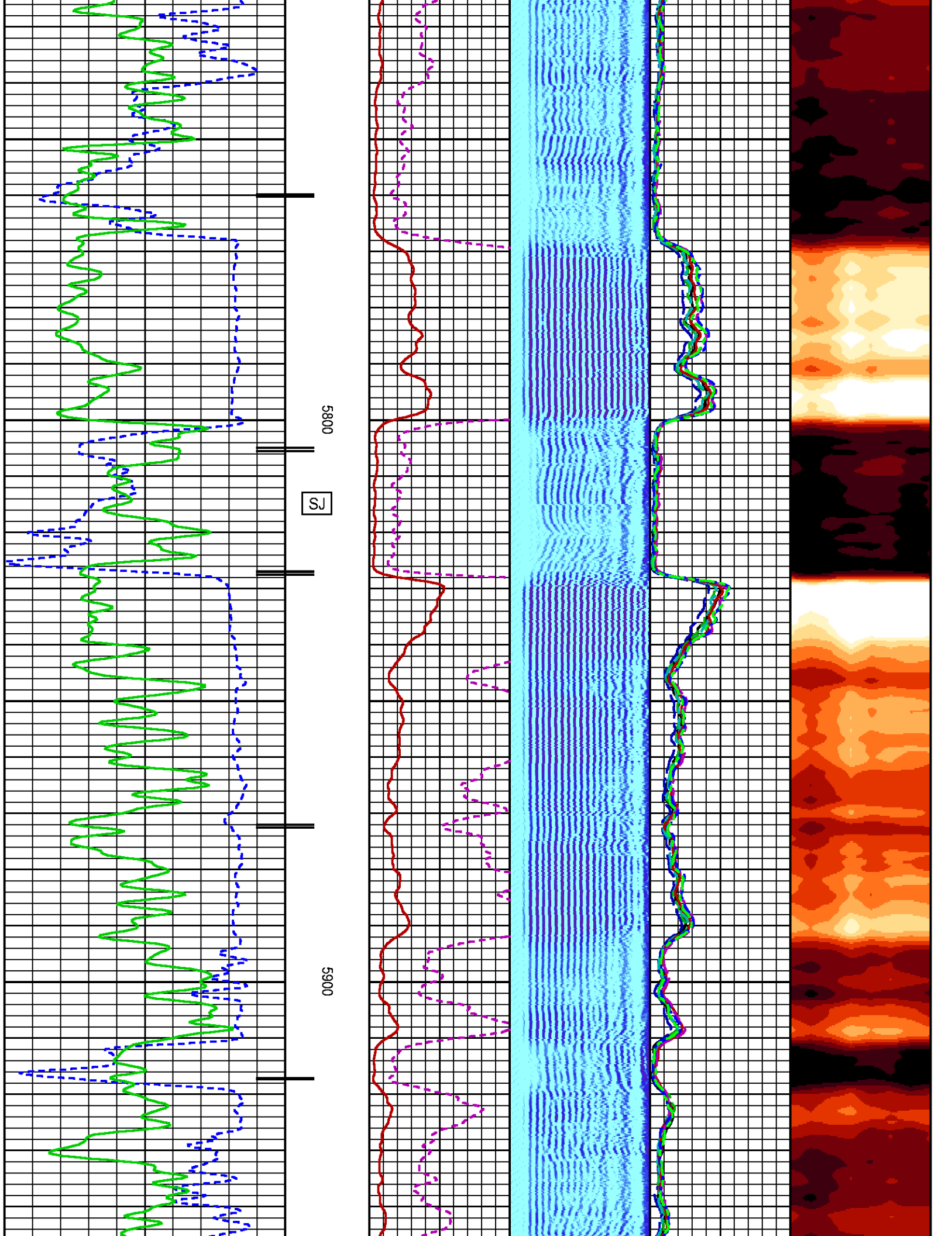


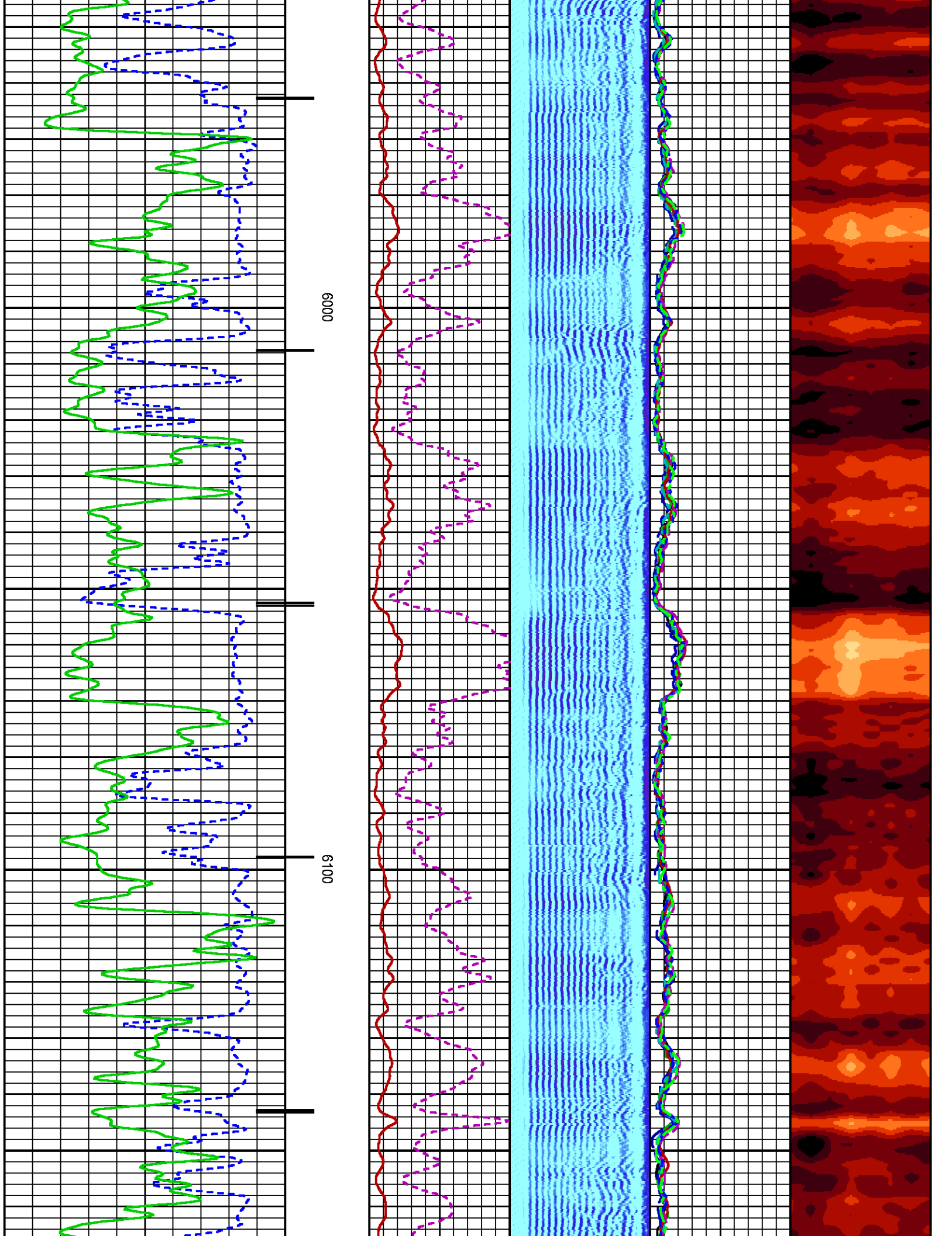


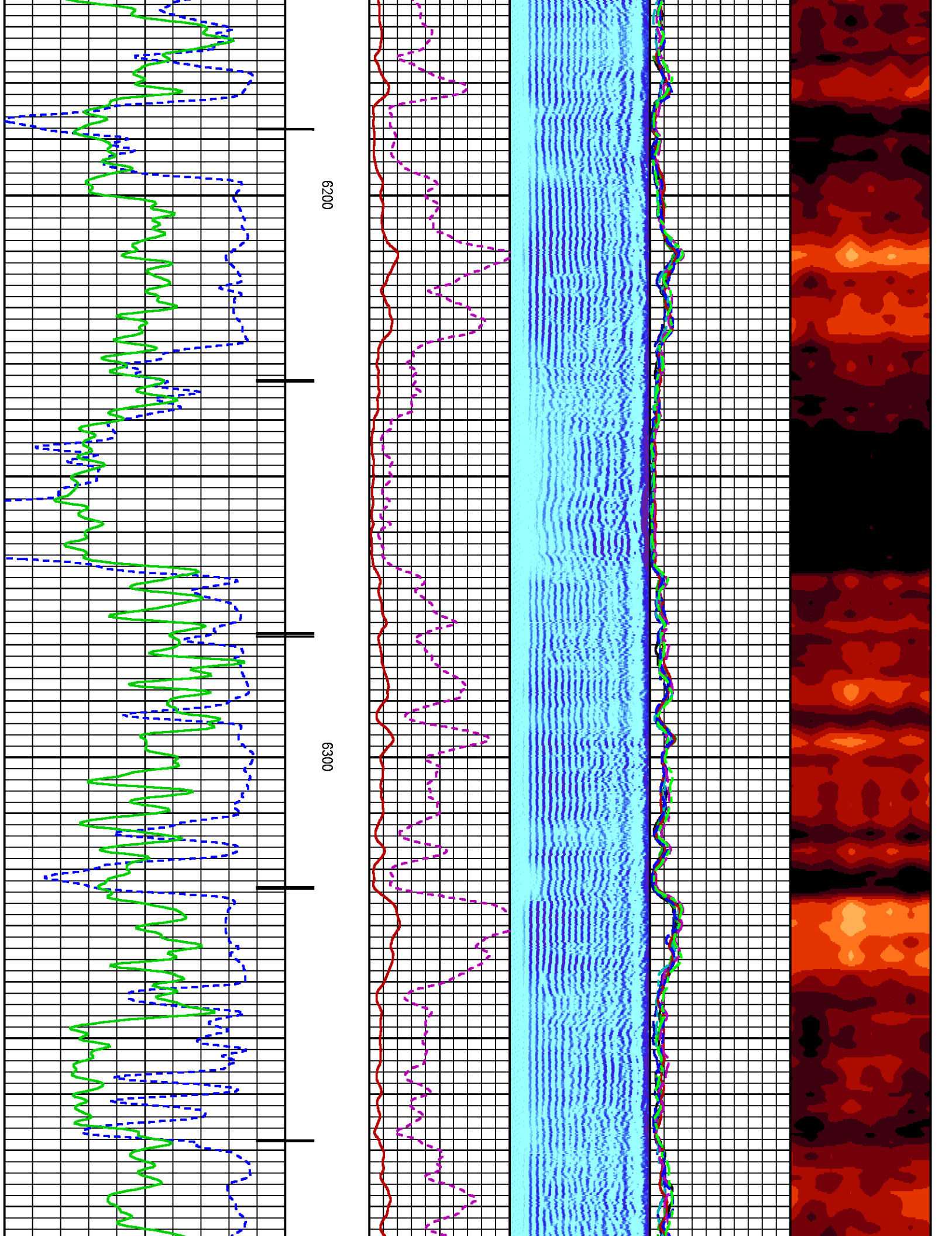


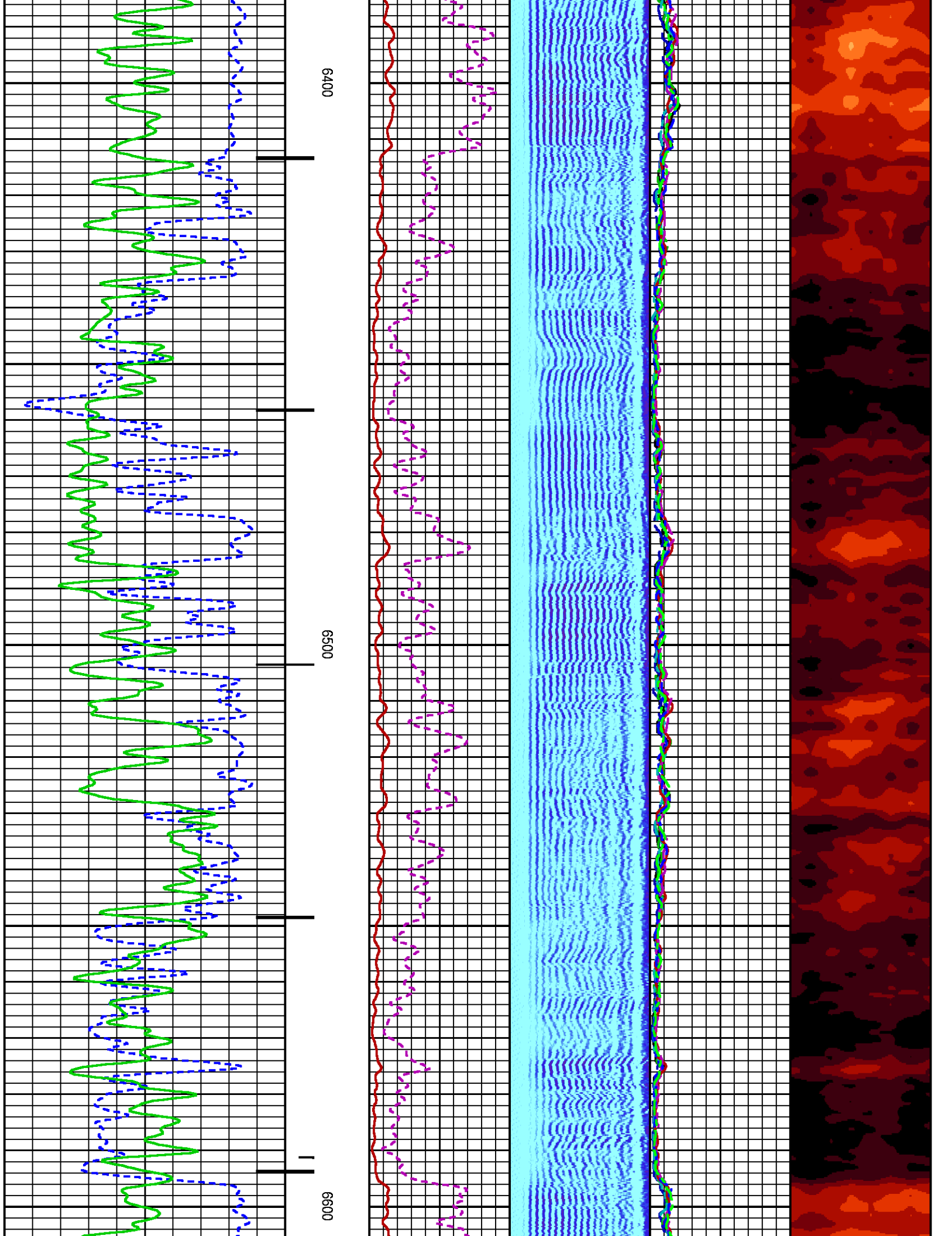


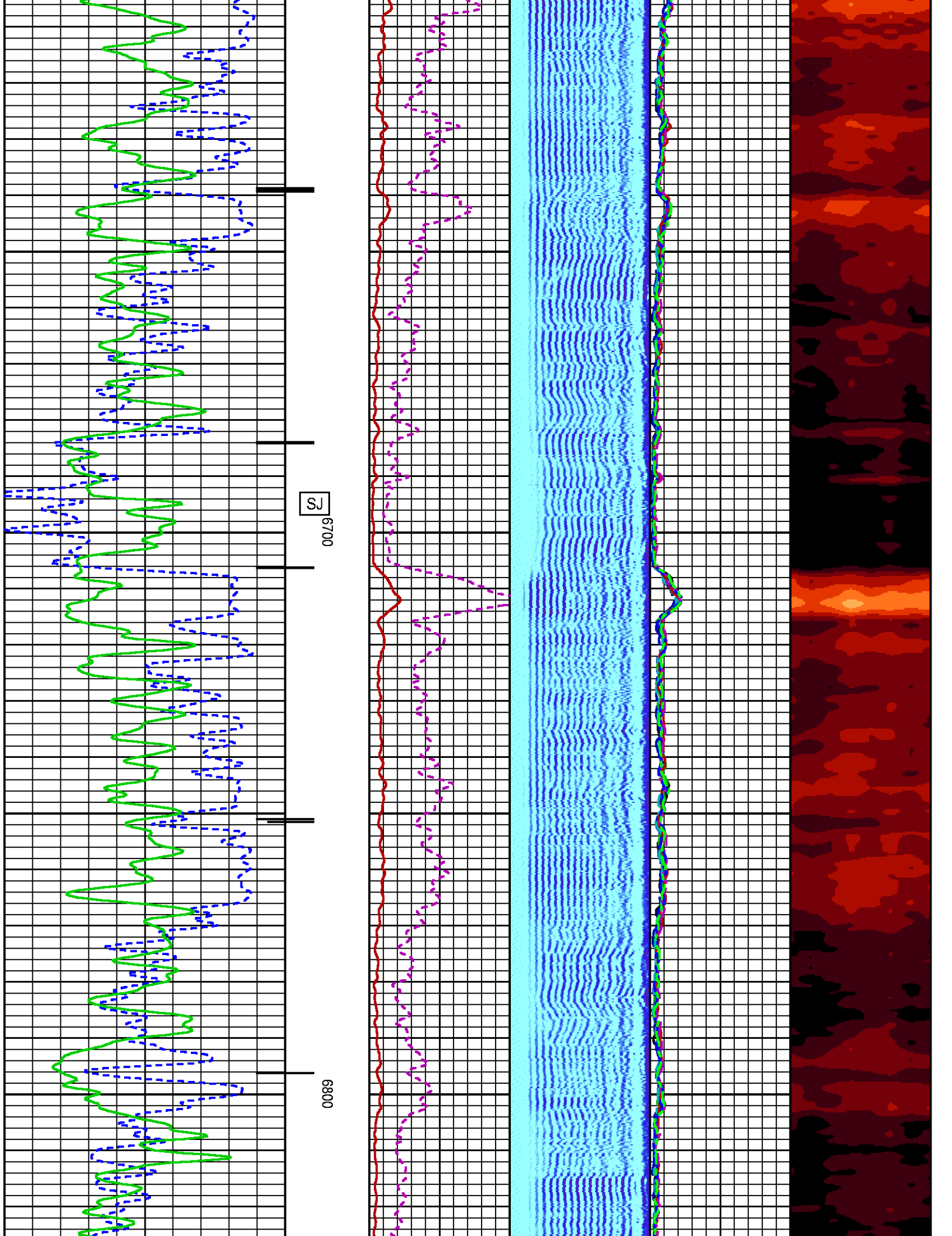


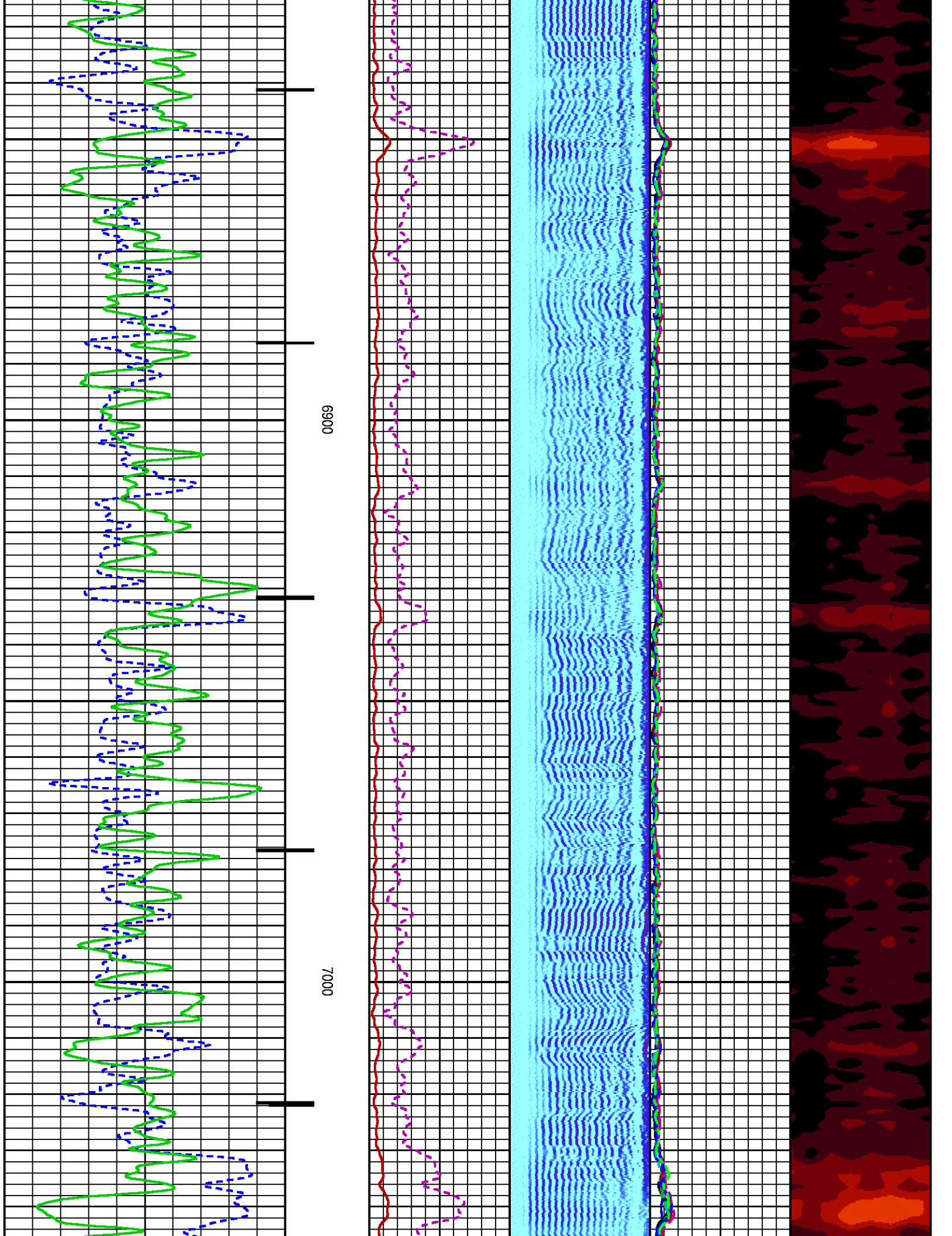


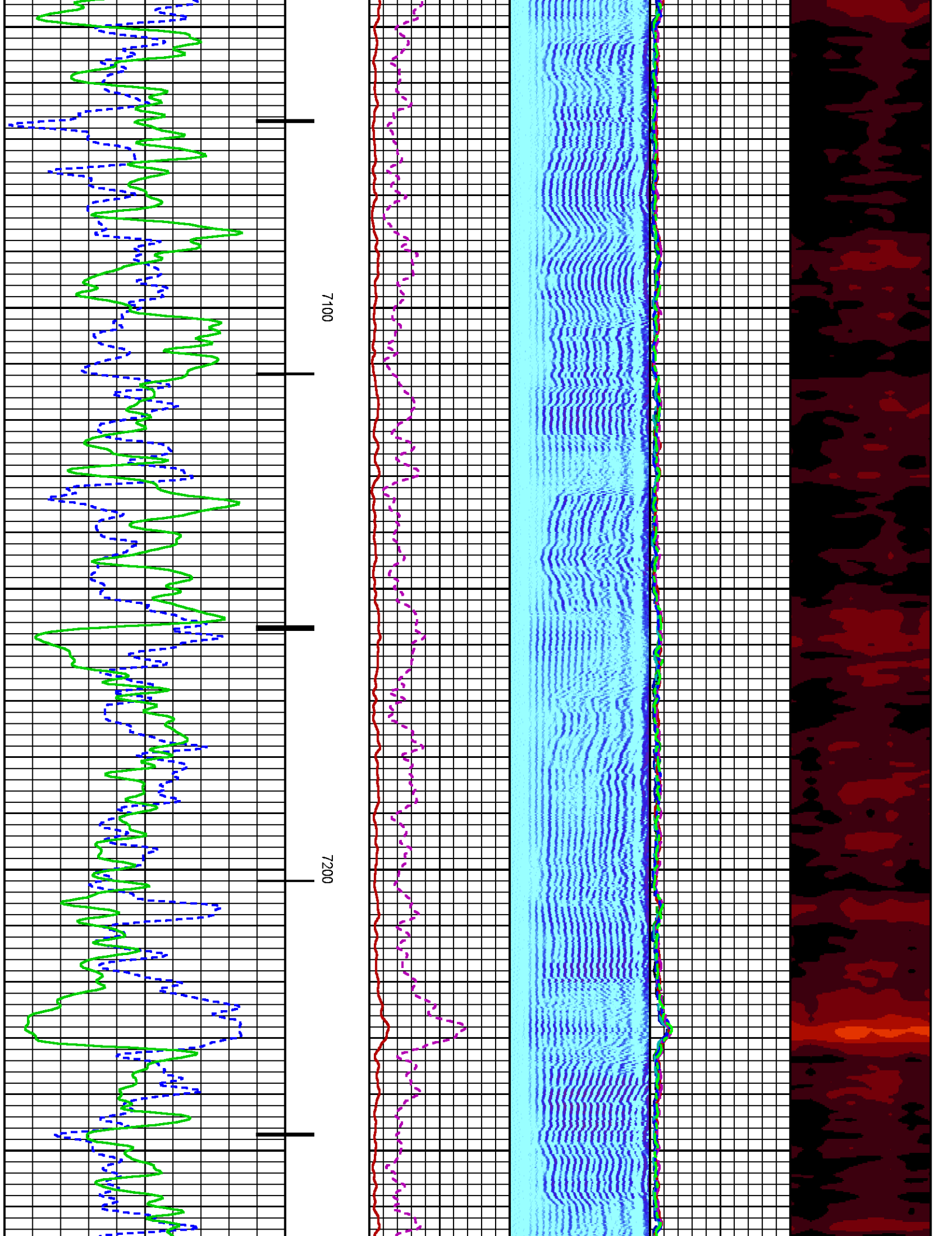


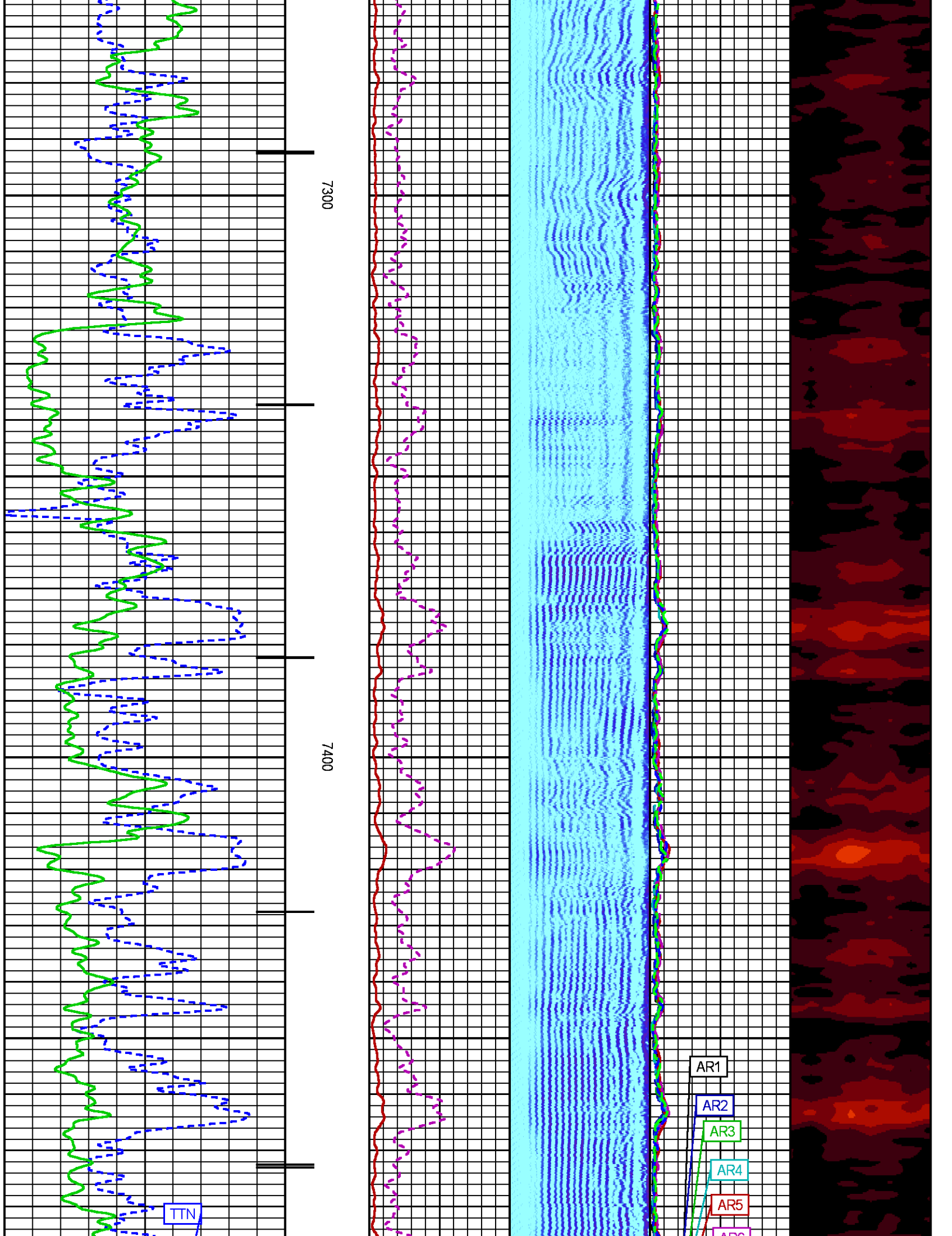


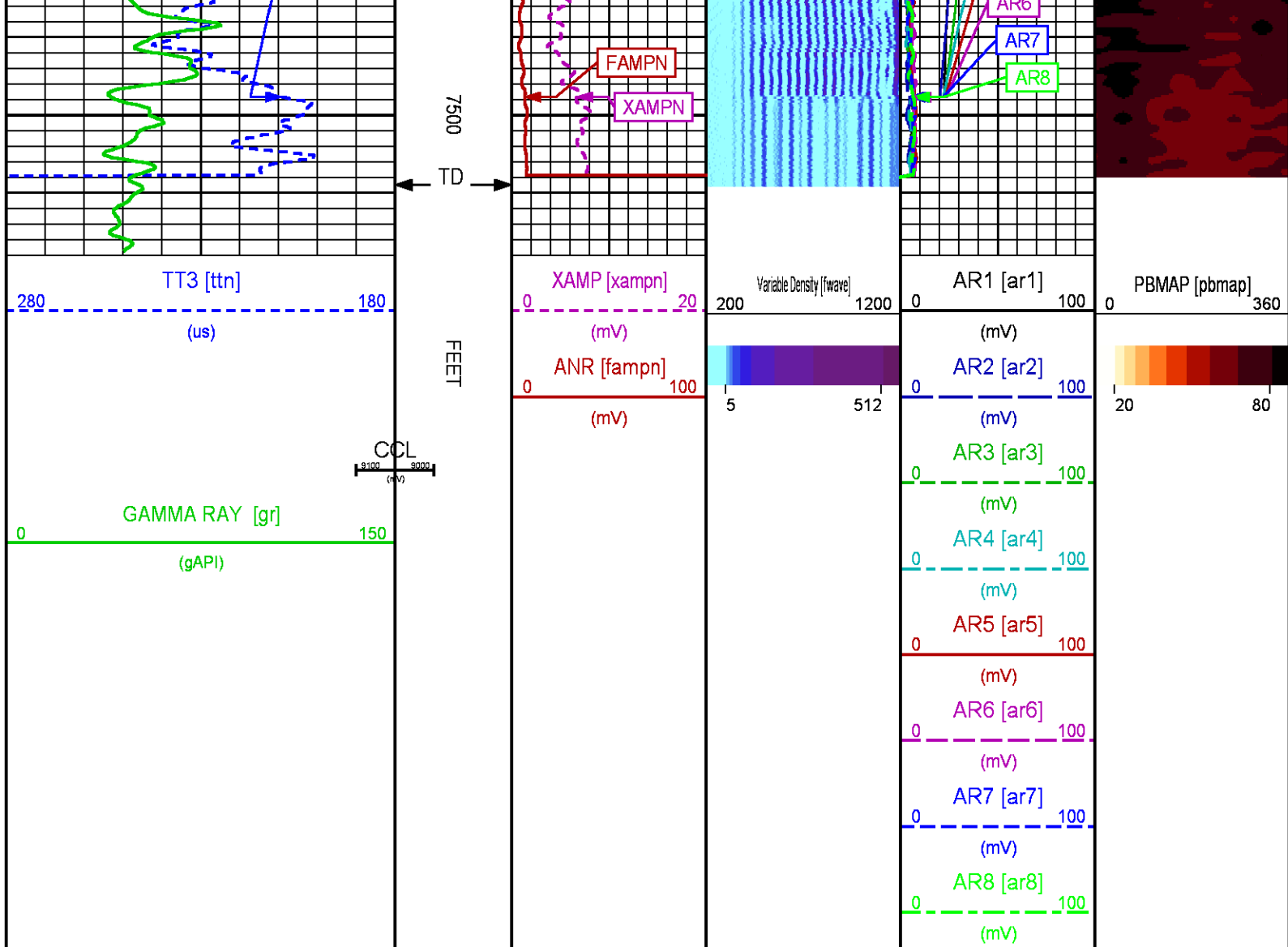












REPEAT PASS 0 PSI

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

Plotted: Thu Feb 08 20:28:01 2018

### PARAMETER AND FILTER SUMMARY REPORT

FILE: C:\dat1a\NICHOLS\_0994\_24\_05Ep012g01.prm  
LOGGING MODE: DEPTH DIRECTION: UP  
TOP DEPTH: 7275.000 ft BOTTOM DEPTH: 7500.000 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)		"	"

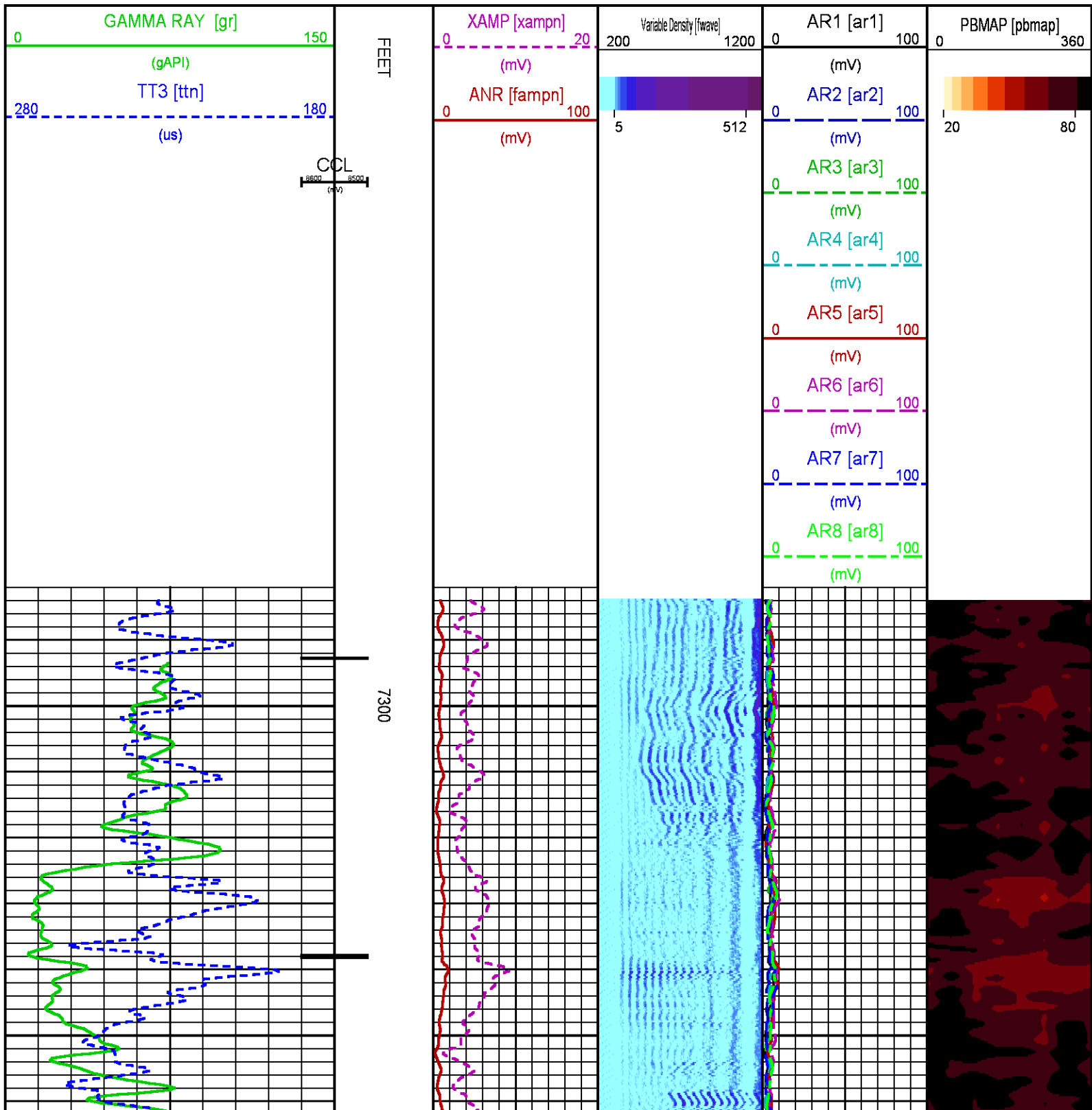
### RAL CCL PROCESSING

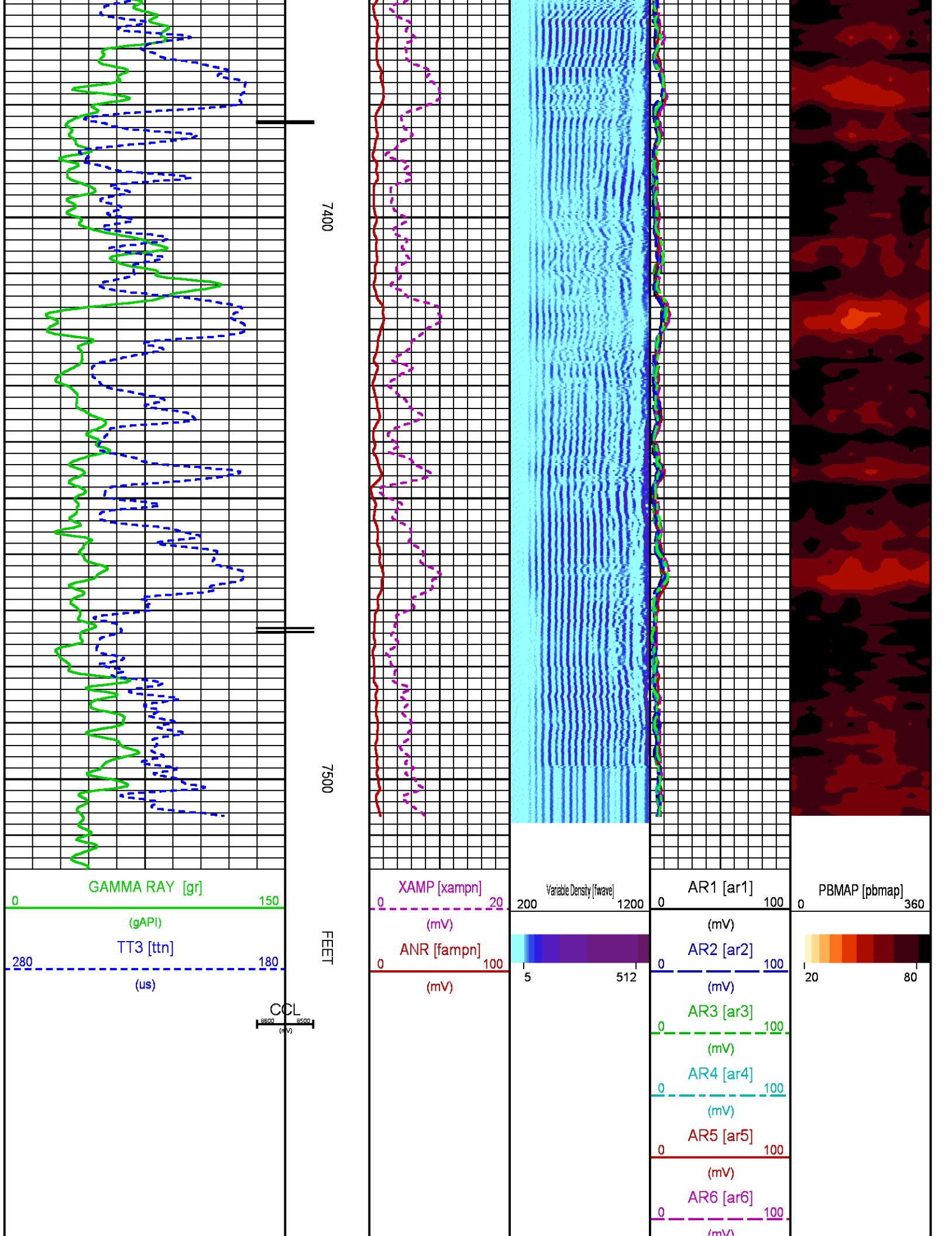
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
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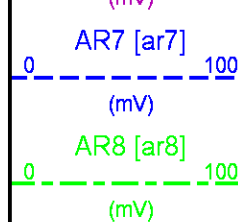


CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
AR1	-11.25	AR5	-11.25	CCL	-5.75	XAMPN	-11.25
AR2	-11.25	AR6	-11.25	FAMPN	-11.25		
AR3	-11.25	AR7	-11.25	GR	-1.75		
AR4	-11.25	AR8	-11.25	TTN	-11.25		

<b>Presentation</b>	: BHI4WM4ZW1:C:\dat1a\NICHOLS_0994_24_05E\
	LARAMIE_RAL+01-REPEAT-RAL_RPT_05E-5.fvpdf [5"/100' Scale]
<b>Plot Interval</b>	: 7283.75 - 7517.75 Feet
<b>Data File 1</b>	: F1 : BHI4WM4ZW1:C:\dat1a\NICHOLS_0994_24_05E\RAL_RPT_05E.xtf
<b>Created On</b>	: N/A
<b>Company</b>	: LARAMIE ENERGY LLC
<b>Well</b>	: NICHOLS 0994-24-05E
<b>Field</b>	: VEGA
<b>File Interval</b>	: 7275 - 7519 Feet
<b>OCT</b>	: p012g







## CALIBRATION / VERIFICATION SUMMARY

Source File: C:\dat1a\NICHOLS\_0994\_24\_05E\p012g.lp1

### RAL PRIMARY CALIBRATION SUMMARY

TOOL #: 1426XA 10417452

DATE/TIME PERFORMED: Fri Jan 26 08:45:19 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)	0.03	-0.03	-0.04	0.04	0.01	-0.02	0.00	0.03	0.06	0.23	0.02
AMP FLUID (mV)	43	43	43	42	41	42	42	43	43	55	43
TT (us)	217	216	217	218	217	217	216	215	217	324	217
M FACTOR	2.35	2.33	2.34	2.37	2.45	2.41	2.38	2.34	2.33	2.75	2.35

### RAL BEFORE LOG VERIFICATION SUMMARY

NOT IN DATABASE

### 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: C:\dat1a\NICHOLS\_0994\_24\_05E\RAL55-tdg.meta

## INSTRUMENT CONFIGURATION

Source File: /dat1a/LARAMIE\_NICHOLAS\_0994\_24\_09E/RAL55-tdg

### CABLEHEAD

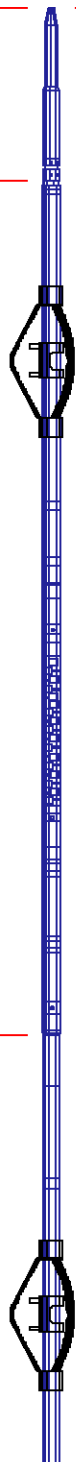
Diameter : 2.75"  
Length : 2.25'  
Weight : 10 lbs  
Series : CABL234  
Mnemonic : CBLH

### 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



TEMP 0.17'  
0.00'

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

**BAKER  
HUGHES**  
a GE company



**ECLIPS**

**COMPANY** LARAMIE ENERGY LLC  
**WELL** NICHOLS 0994-24-05E  
**FIELD** VEGA  
**COUNTY** MESA **STATE** COLORADO

**FILE NO:**  
CH132017  
**API NO:**  
05077104080000

**LOCATION:**

SHL: 39.264520 N; 107.830690 W  
BHL: 39.266727 N; 107.826028 W

**SEC** 24 **TWP** 9 S **RGE** 94 W

**ELEVATIONS:**

KB 7161 FT  
DF 7160 FT  
GL 7137 FT

**DATE** 26-Jan-2018

