



# RADIAL CEMENT BOND LOG

FILE NO:	COMPANY	LARAMIE ENERGY II LLC
API NO:	WELL	NICHOLS 0994-24-02W
05077104020000	FIELD	VEGA
	COUNTY	MESA
	STATE	COLORADO

Ver. 4.10	LOCATION:	OTHER SERVICES
	SHL 1792 FNL 2792 FEL	RPM
	BHL 352 FNL 1544 FEL	
	SEC 24 TWP 9S RGE 94W	

PERMANENT DATUM	GL	ELEVATION	7137 FT
LOG MEASURED FROM	KB	24 FT	ABOVE P.D.
DRILL. MEAS. FROM	KB		
		ELEVATIONS:	
		KB	7161 FT
		DF	
		GL	7137 FT

DATE	12-Mar-2018
RUN	1
TRIP	1
SERVICE ORDER	US133004J
DEPTH DRILLER	7676 FT
DEPTH LOGGER	7515 FT
BOTTOM LOGGED INTERVAL	7514 FT
TOP LOGGED INTERVAL	0 FT
TIME STARTED	11:00
TIME FINISHED	16:00
OPERATOR RIG TIME	LOGGER
TYPE OF FLUID IN HOLE	WATER
FLUID DENSITY	NA
FLUID SALINITY	NA
FLUID LEVEL	52 FT
LOGGED CEMENT TOP	3500 FT
WELLHEAD PRESSURE	0 PSI
MAXIMUM HOLE DEVIATION	NA
NOMINAL LOGGING SPEED	90 FMIN
MAX. RECORDED TEMP.	230 DEGF
REFERENCE LOG	NA
REFERENCE LOG DATE	NA
EQUIP. NO.	4291
LOCATION	R. ZUNIGA
GRAND JCT	
RECORDED BY	NA
WITNESSED BY	

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: RAL/GR/CCL RUN CENTRALIZED

LOGGED WITH 0 PSI AT WELLHEAD

SJ: 5884-5904  
SJ: 6782-6800

TOP OF CEMENT COULD NOT BE DETERMINED USING AS PER CUSTOMER REQUEST.

TD LOGGER MEASURED 161FT SHALLOW FROM PBTD. WIRELINE DEPTH WAS VERIFIED WITH RPM TRIP.

CREW: R. ZUNIGA, J. PENA, A. SHAHNOOSHI

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

Patches: 2

Plotted: Mon Mar 12 18:02:17 2018

## PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE\_NICHOLS\_0994-24-02W/p012g03.prm  
 LOGGING MODE: DEPTH DIRECTION: UP  
 TOP DEPTH: 14.250 ft BOTTOM DEPTH: 7539.250 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	4000.00		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	"	"
TRAVEL TIME WINDOW (NEAR)	AMP WINDOW LENGTH	30	us	"	"
	TT WINDOW START (ttn*)	171	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*)	-72	us	"	"
	TOOL DELAY (str2*)	-72	us	"	"
	TOOL DELAY (str3*)	-72	us	"	"
	TOOL DELAY (str4*)	-72	us	"	"
	TOOL DELAY (str5*)	-72	us	"	"
	TOOL DELAY (str6*)	-72	us	"	"
	TOOL DELAY (str7*)	-72	us	"	"
	TOOL DELAY (str8*)	-72	us	"	"
BASELINE NOISE (NEAR)	TOOL DELAY (strn*)	-72	us	"	"
	NOISE WINDOW START	96	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	"	"

	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	"	"

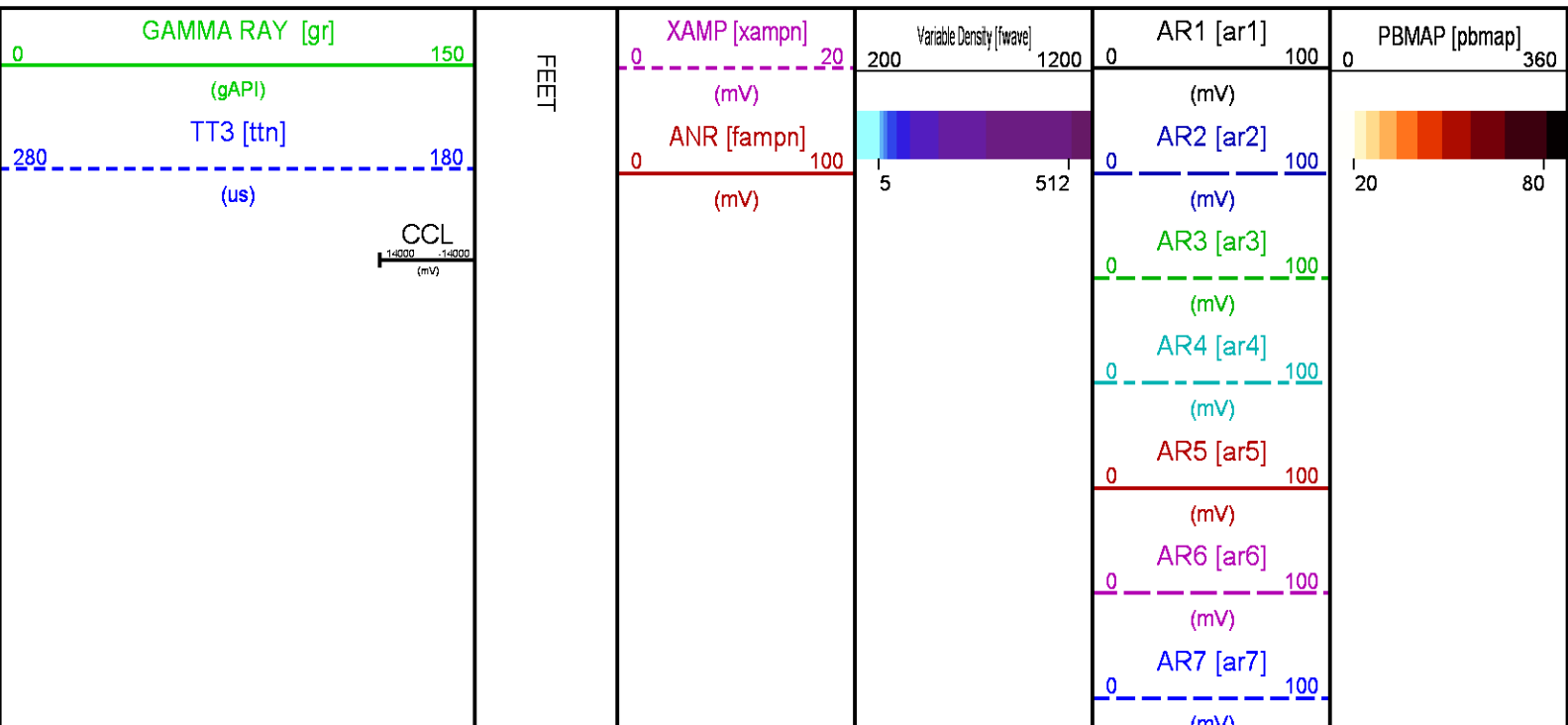
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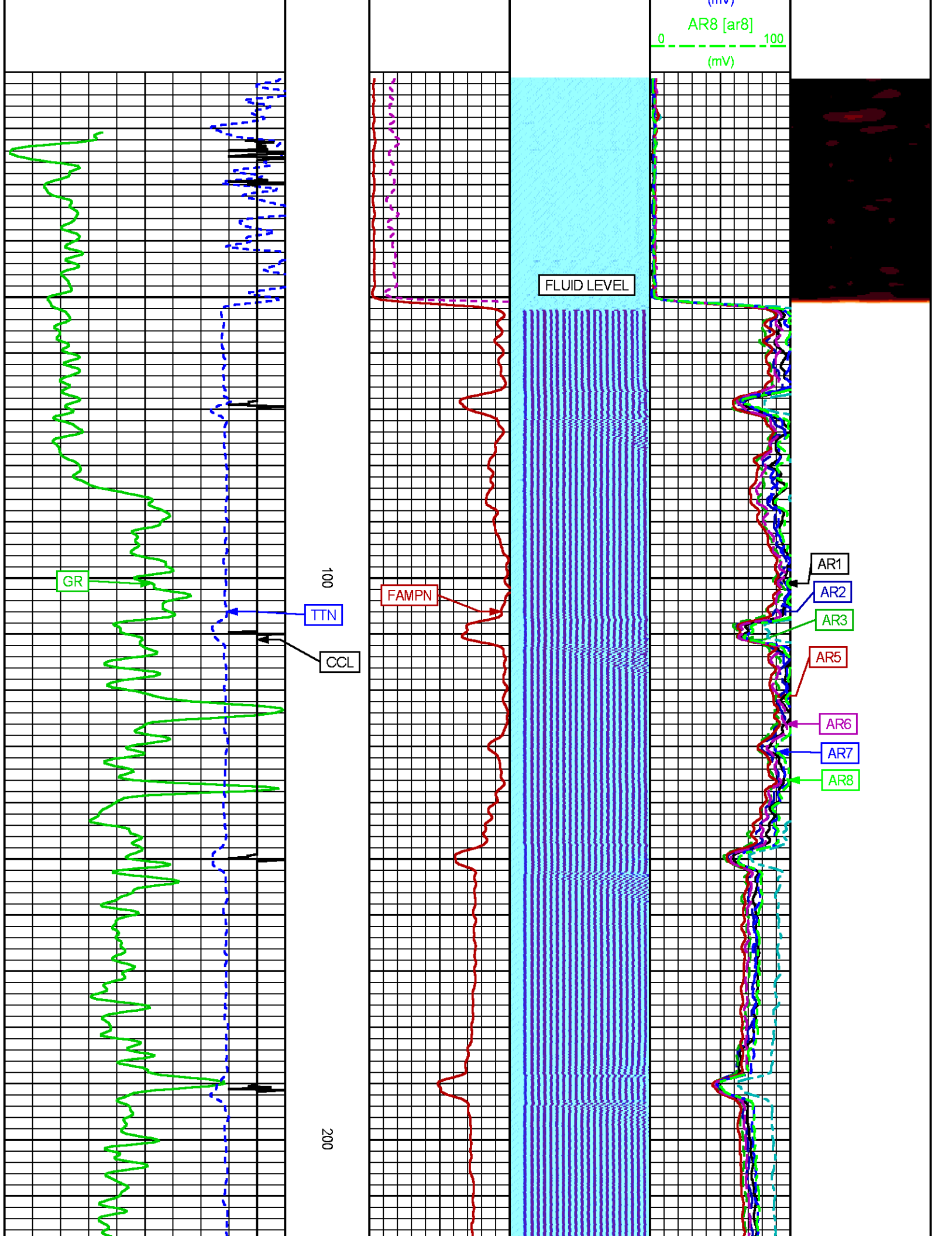
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AR1	N/A	FIXED GATE AMPLITUDE T-R1
F1:AR2	N/A	FIXED GATE AMPLITUDE T-R2
F1:AR3	N/A	FIXED GATE AMPLITUDE T-R3
F1:AR4	N/A	FIXED GATE AMPLITUDE T-R4
F1:AR5	N/A	FIXED GATE AMPLITUDE T-R5
F1:AR6	N/A	FIXED GATE AMPLITUDE T-R6
F1:AR7	N/A	FIXED GATE AMPLITUDE T-R7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

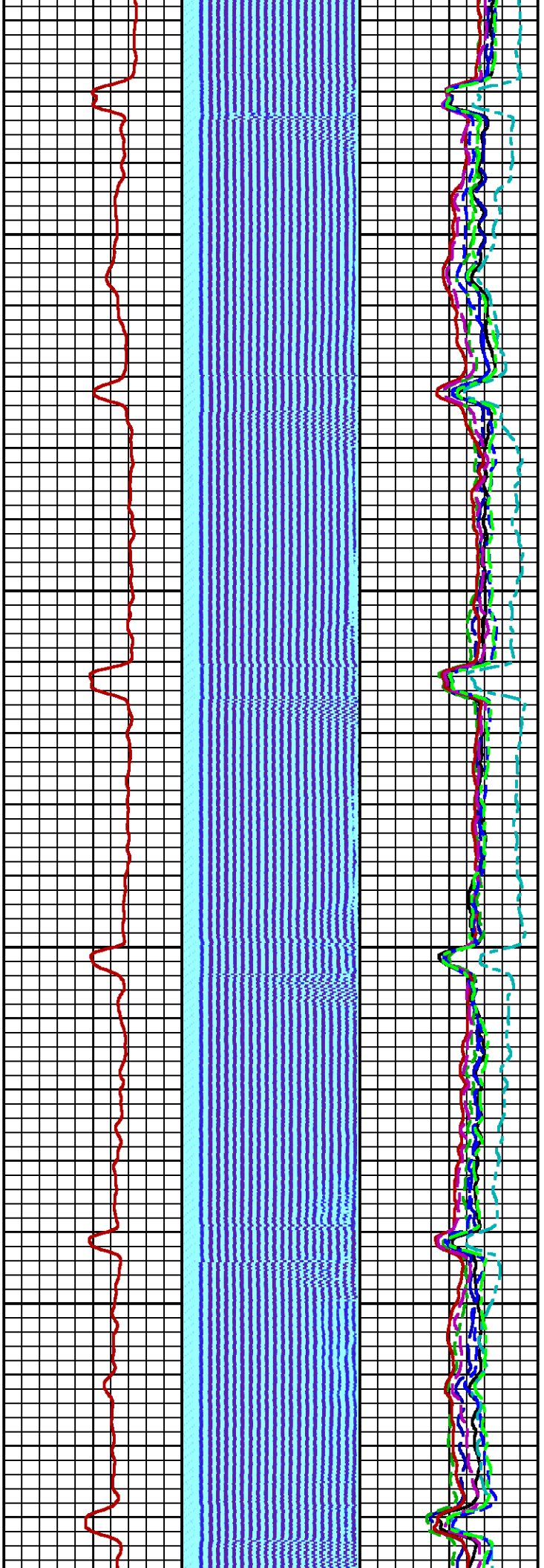
## CURVE MEASURE POINT OFFSET

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

**Presentation** : SysA:LARAMIE\_RAL\_MAIN.fvpdf [5"/100' Scale]  
**Plot Interval** : 11 - 7545 Feet  
  
**Data File 1** : F1 : SysA:/dat1a/LARAMIE\_NICHOLS\_0994-24-02W/RAL\_MAIN.xtf  
**Created On** : N/A  
**Company** : LARAMIE ENERGY II LLC  
**Well** : NICHOLS 0994-24-02W  
**Field** : VEGA  
**File Interval** : 10 - 7546.25 Feet  
**OCT** : p012g

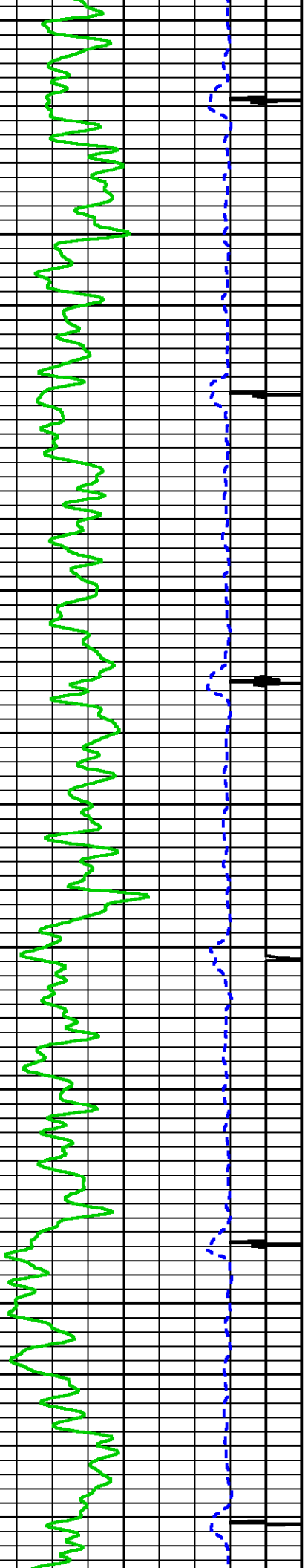


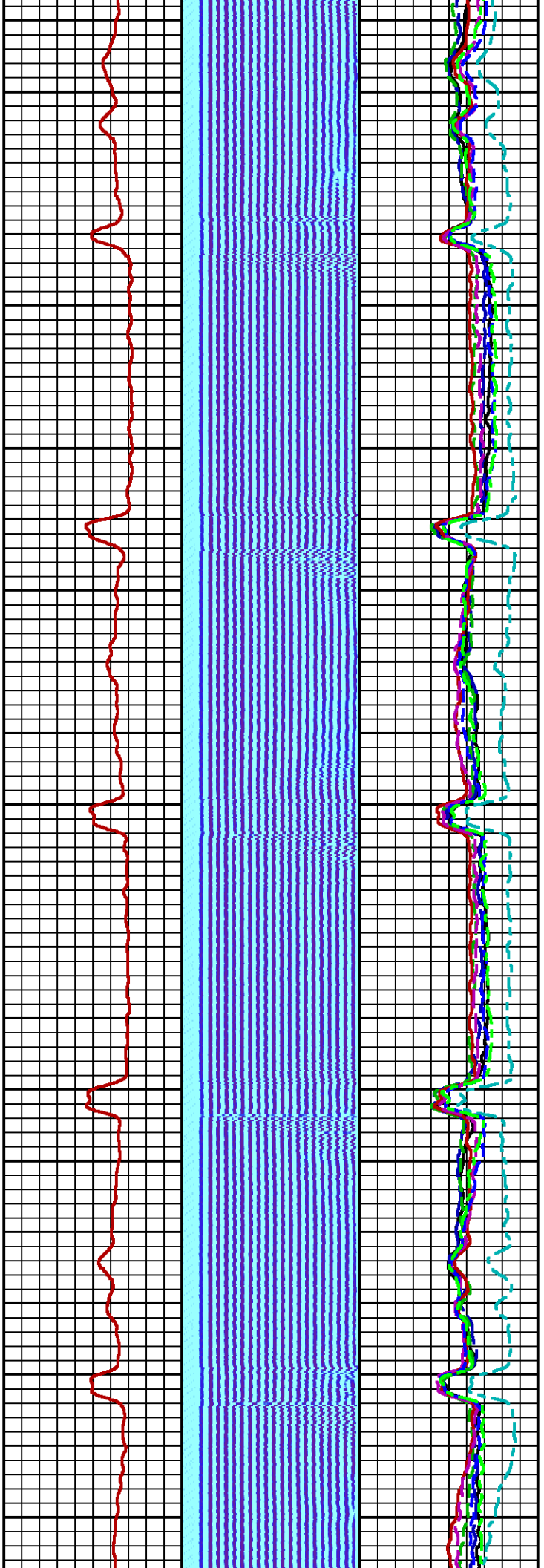




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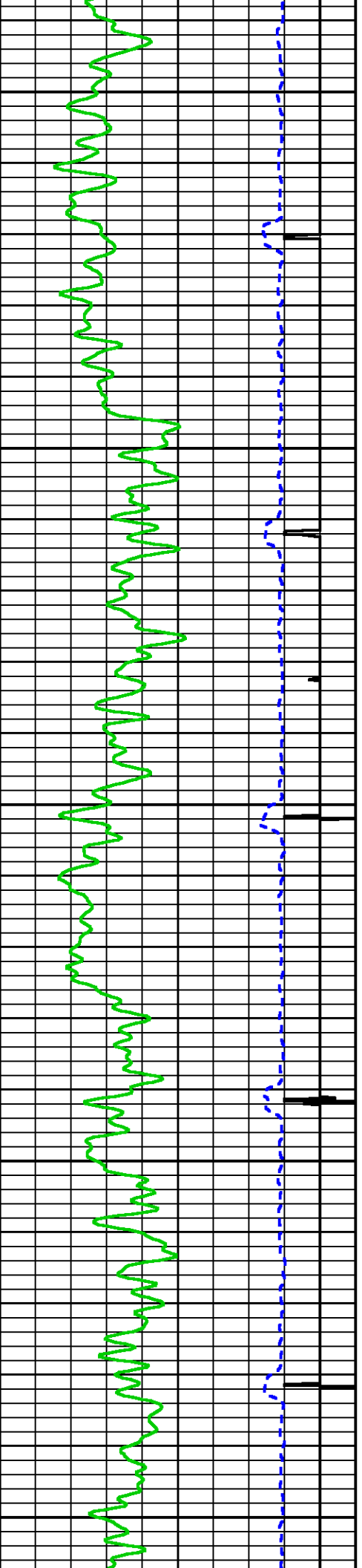
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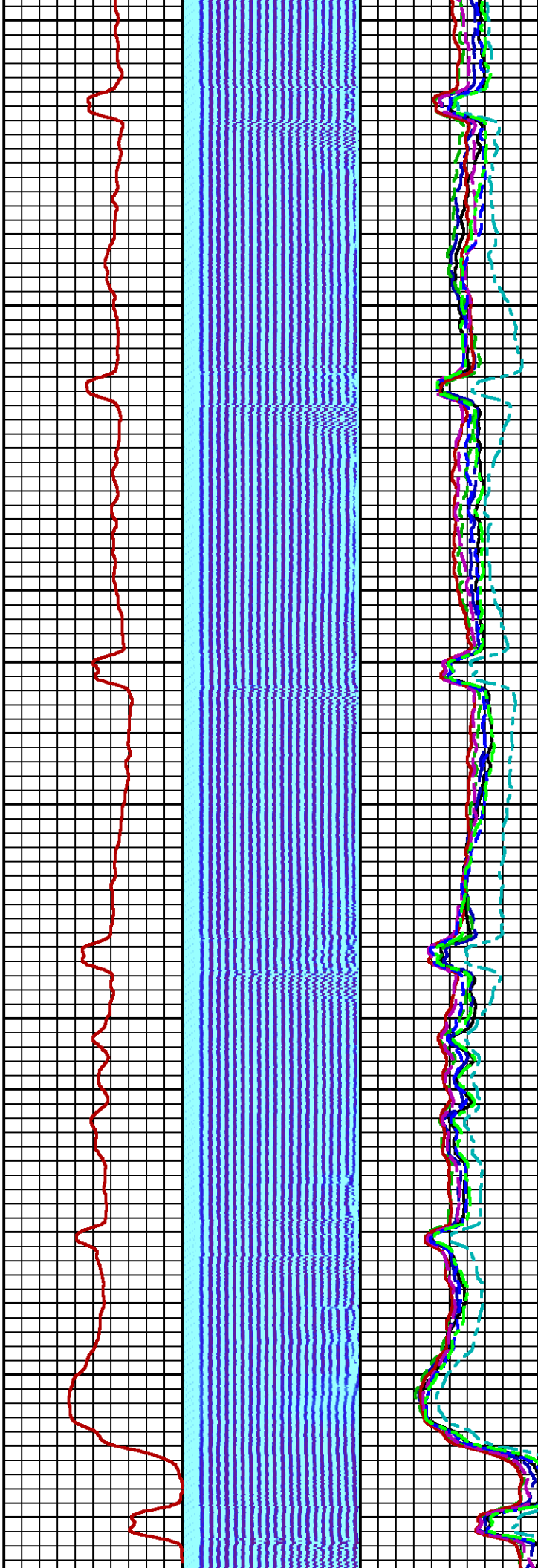
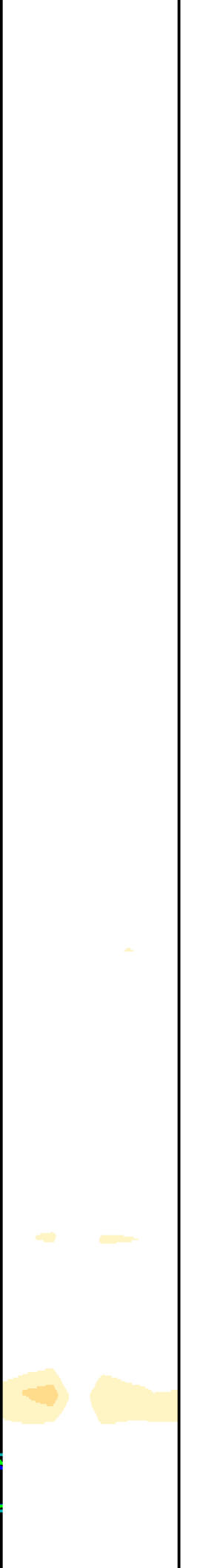


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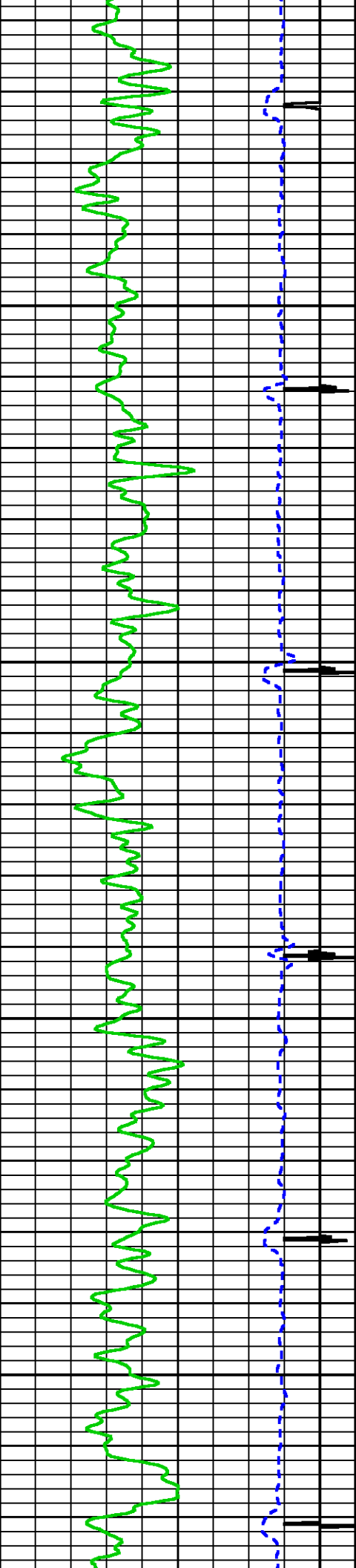


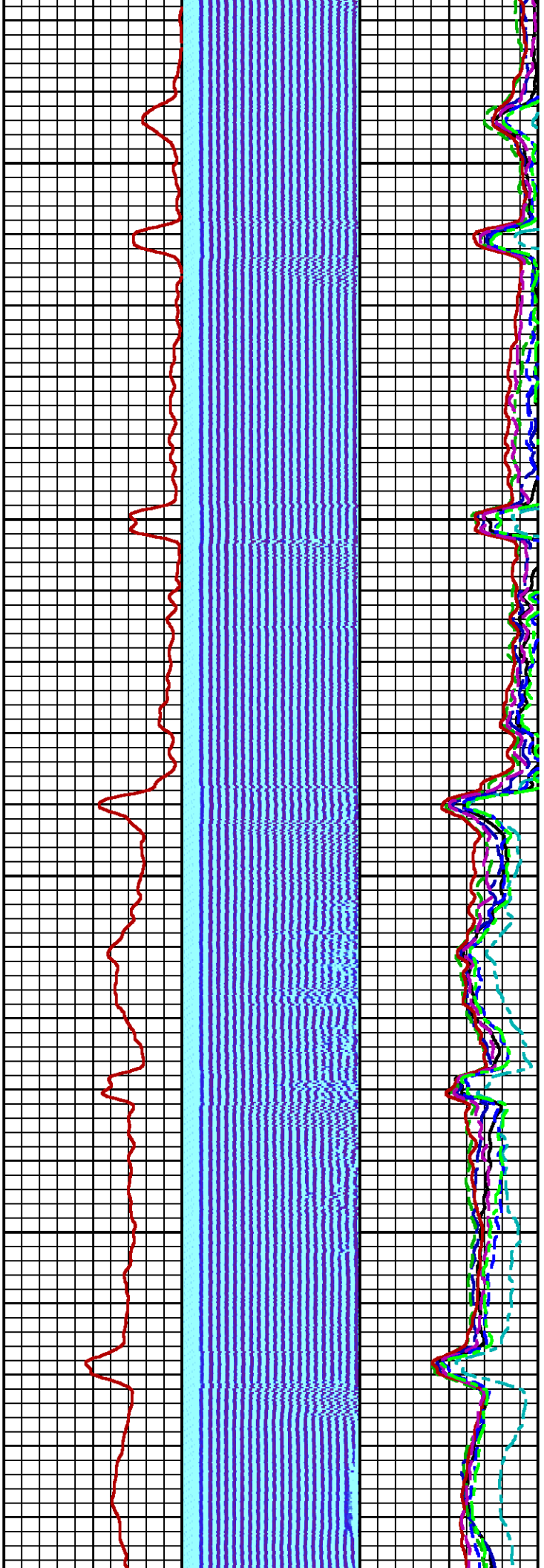




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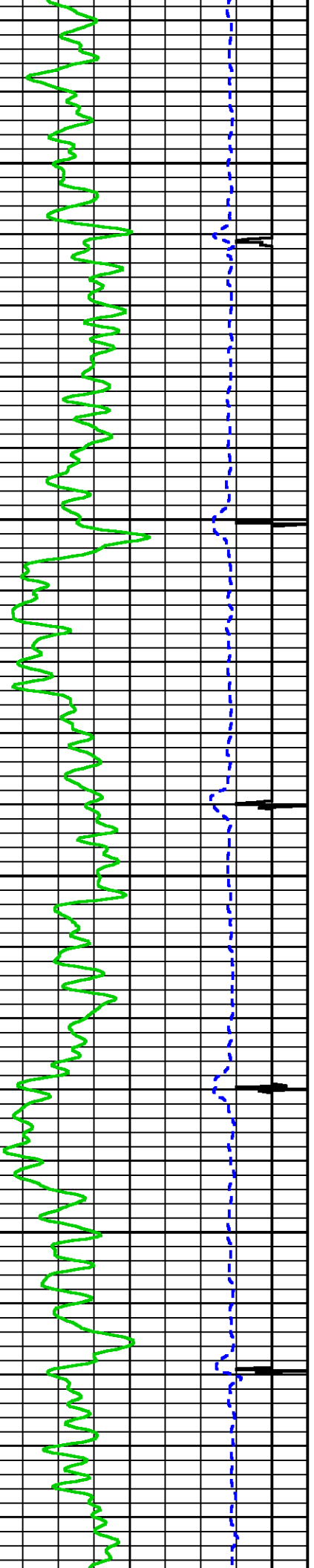
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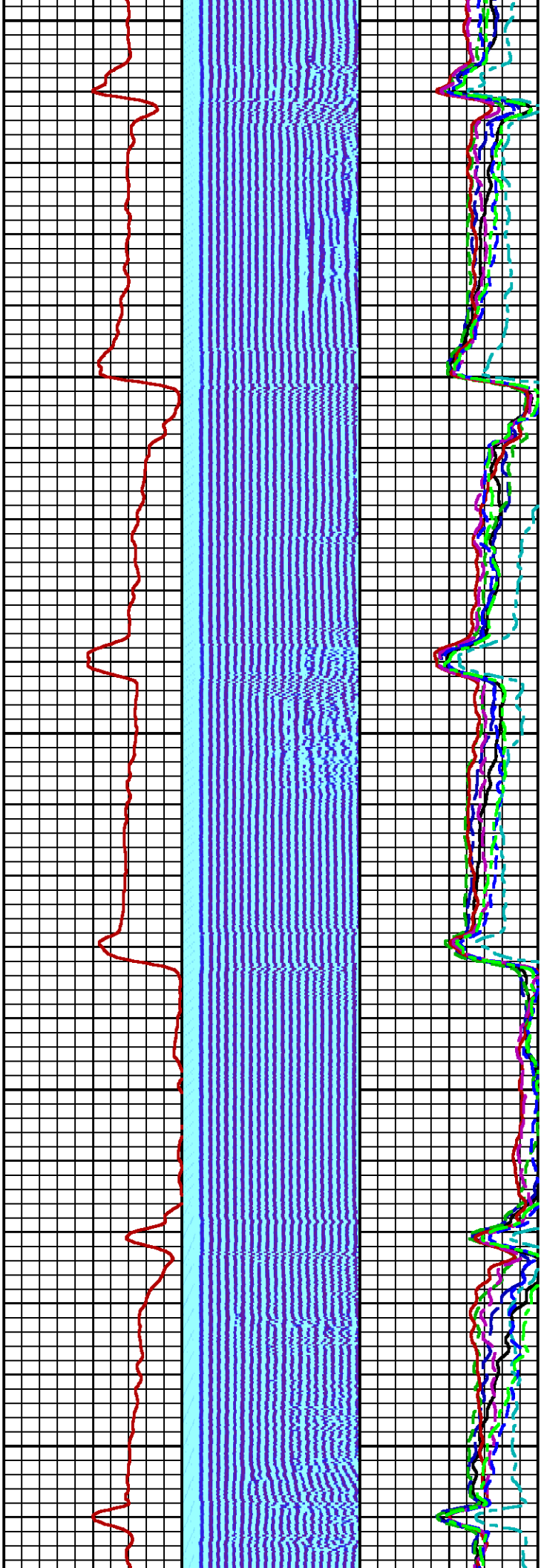


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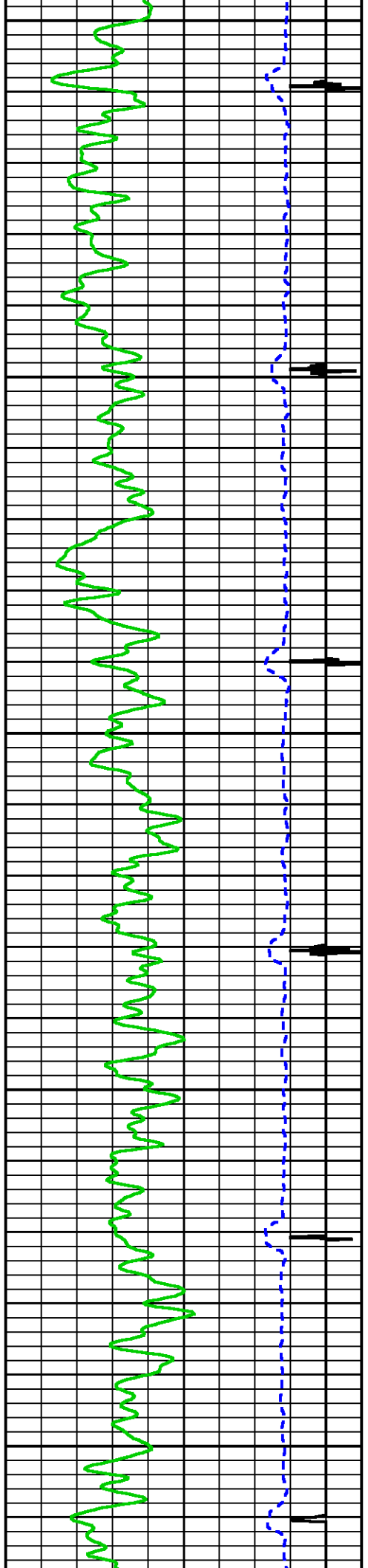


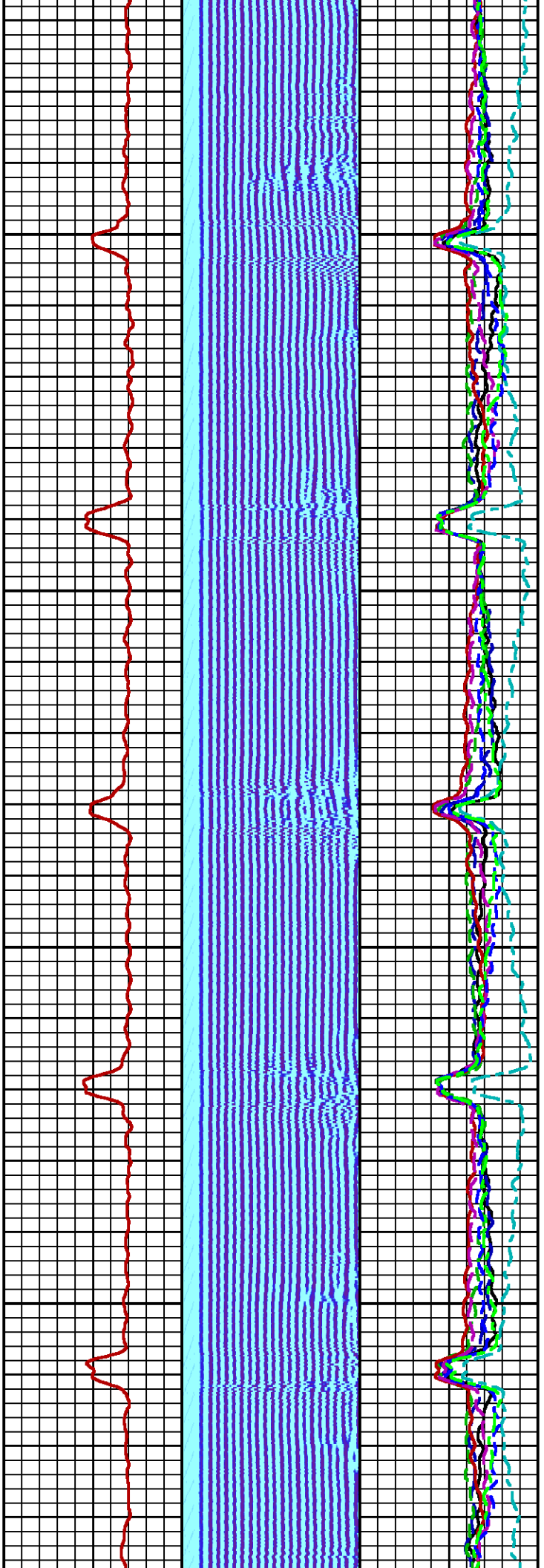


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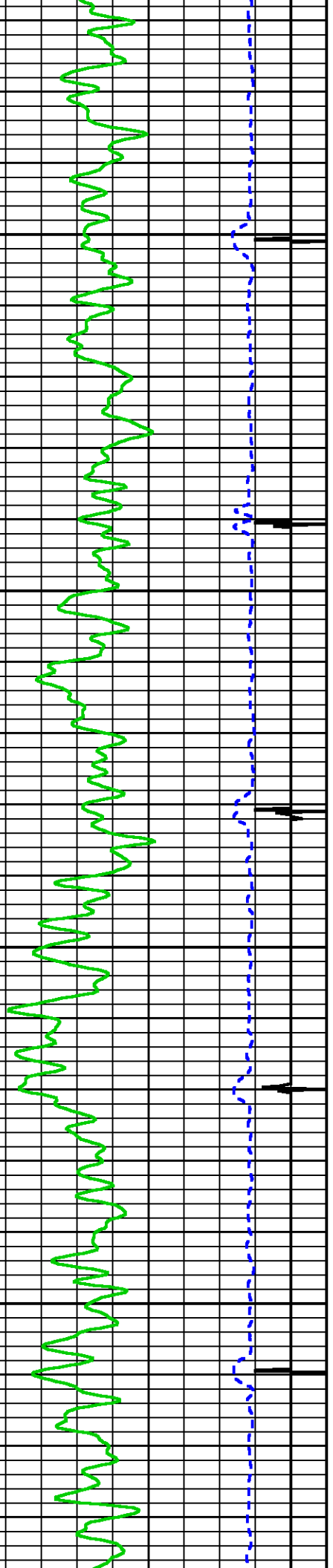
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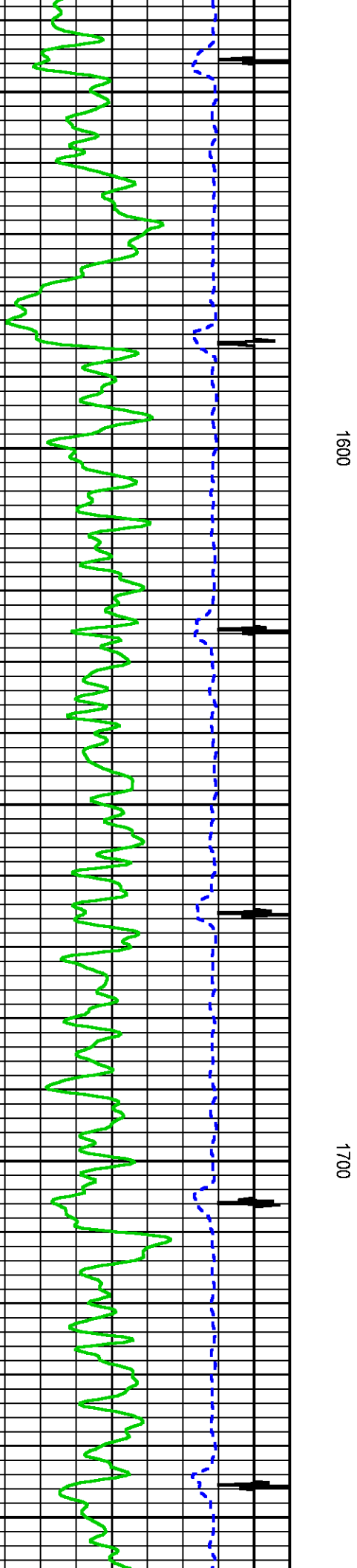
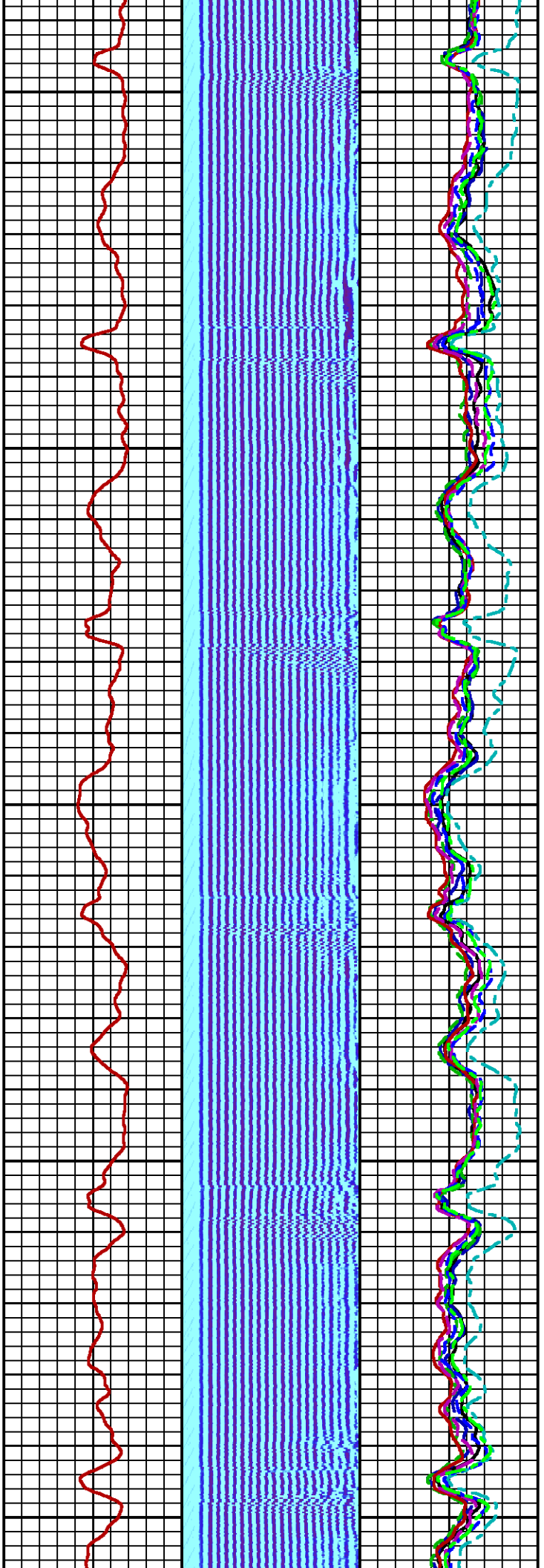


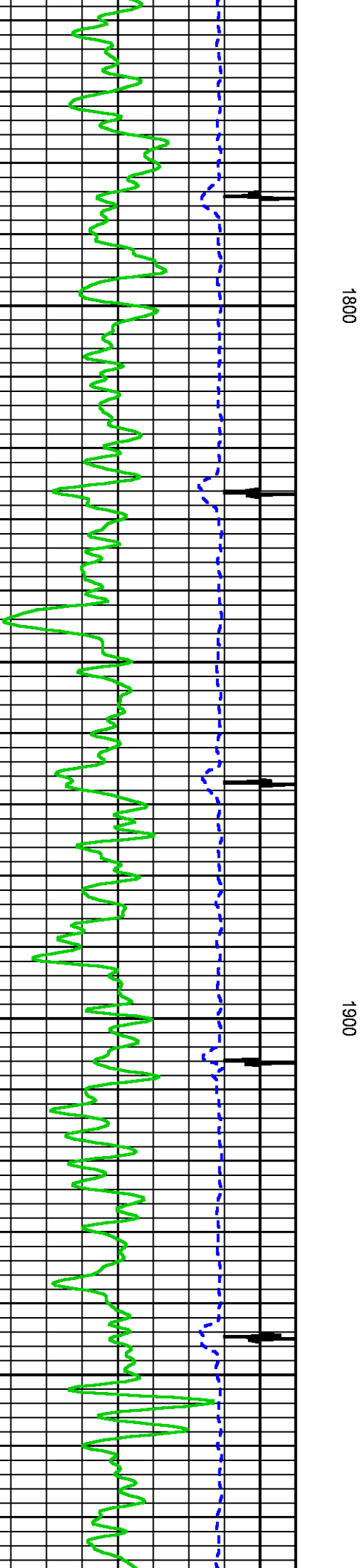
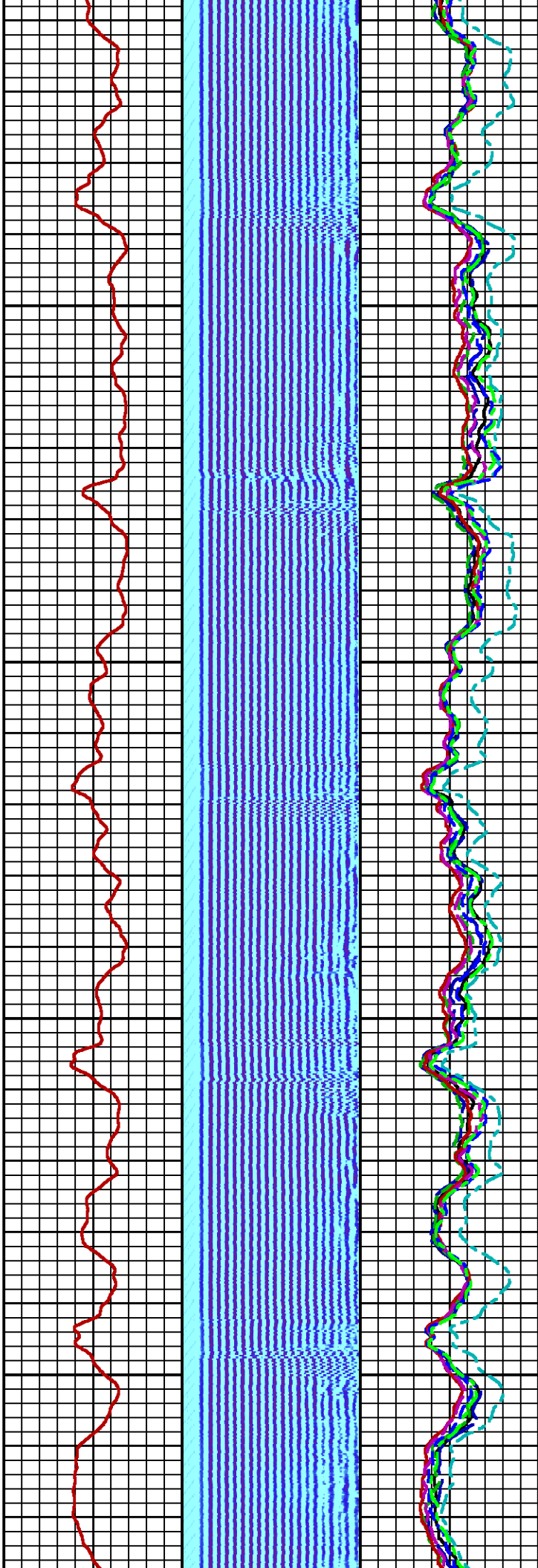
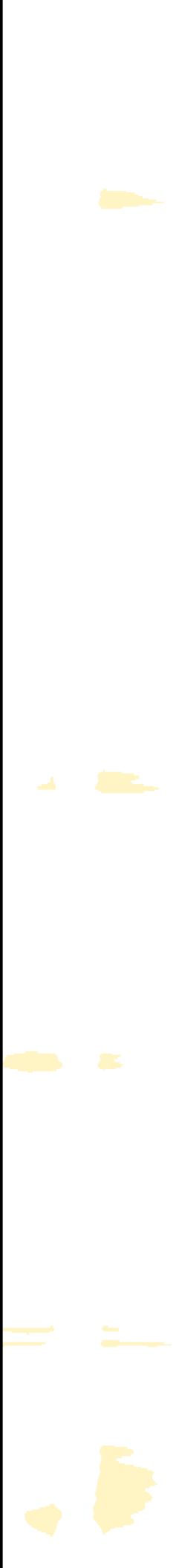


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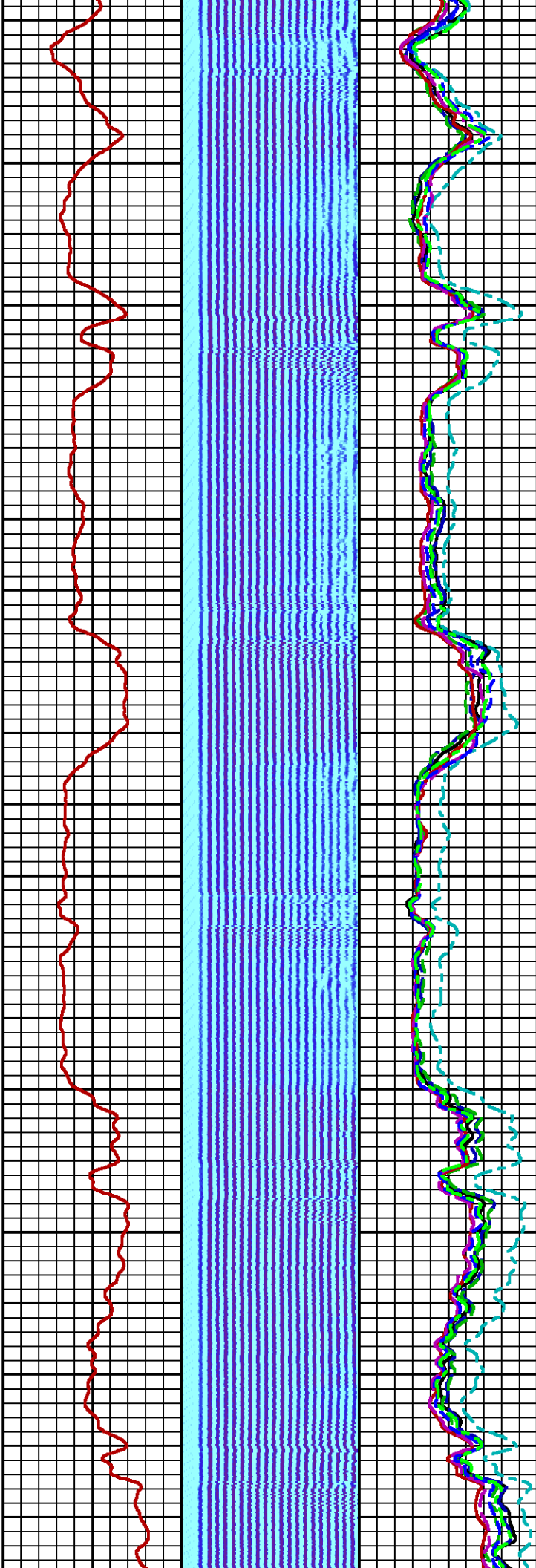
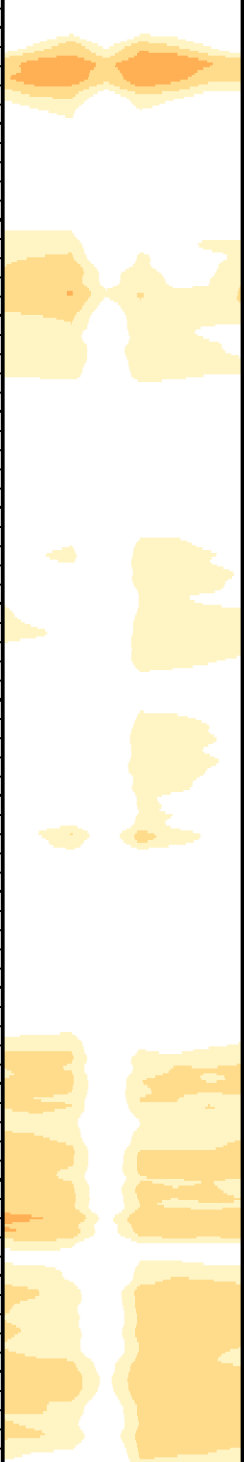
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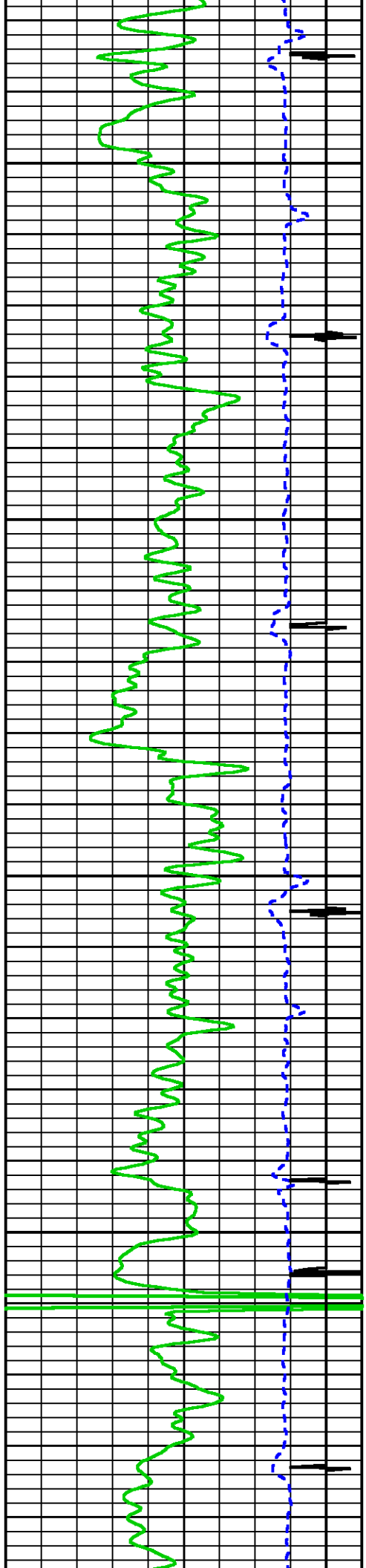




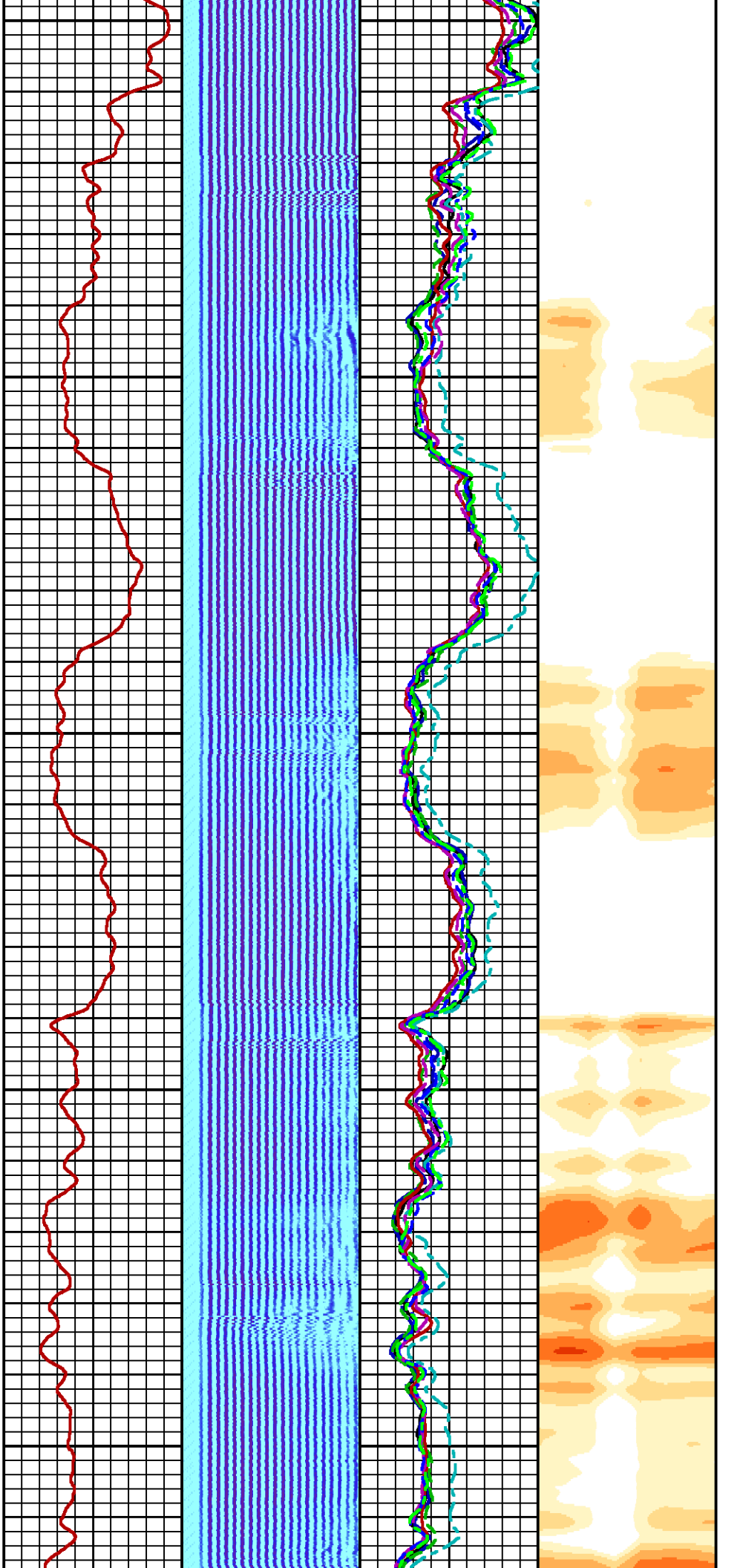


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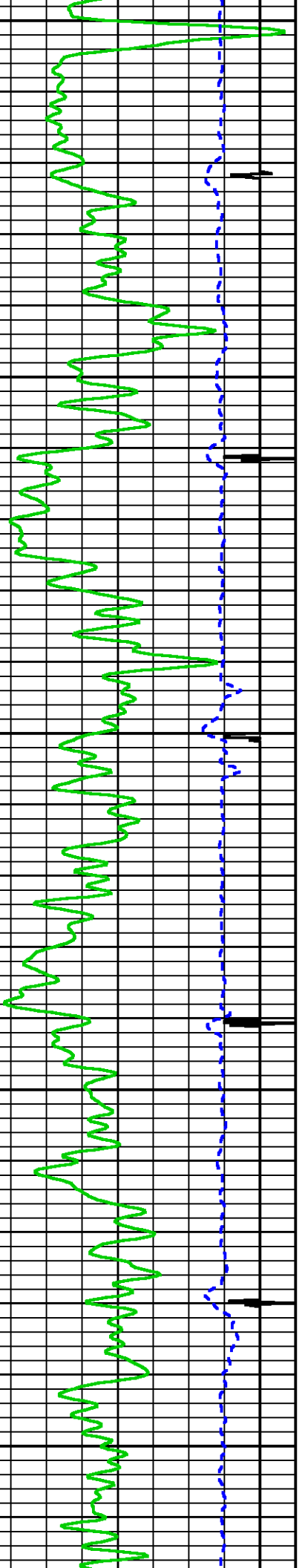


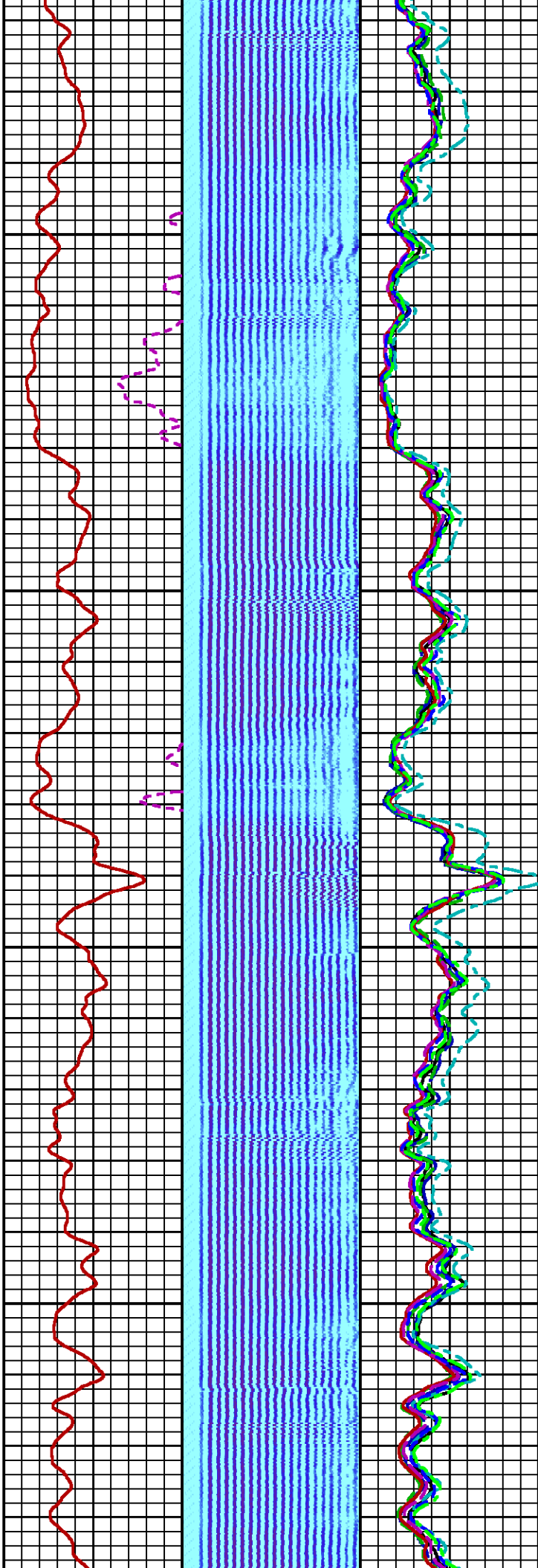
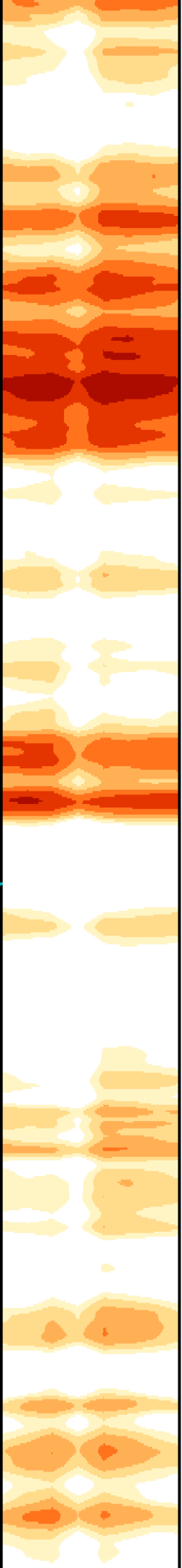


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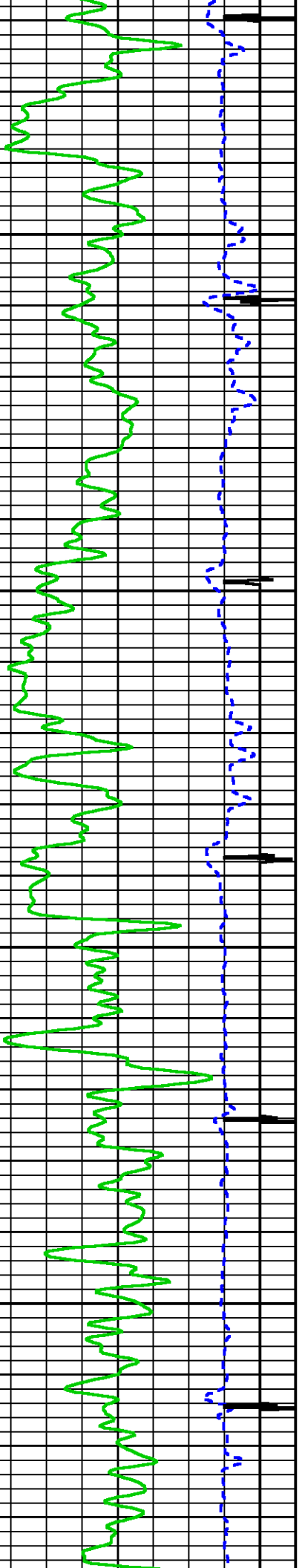
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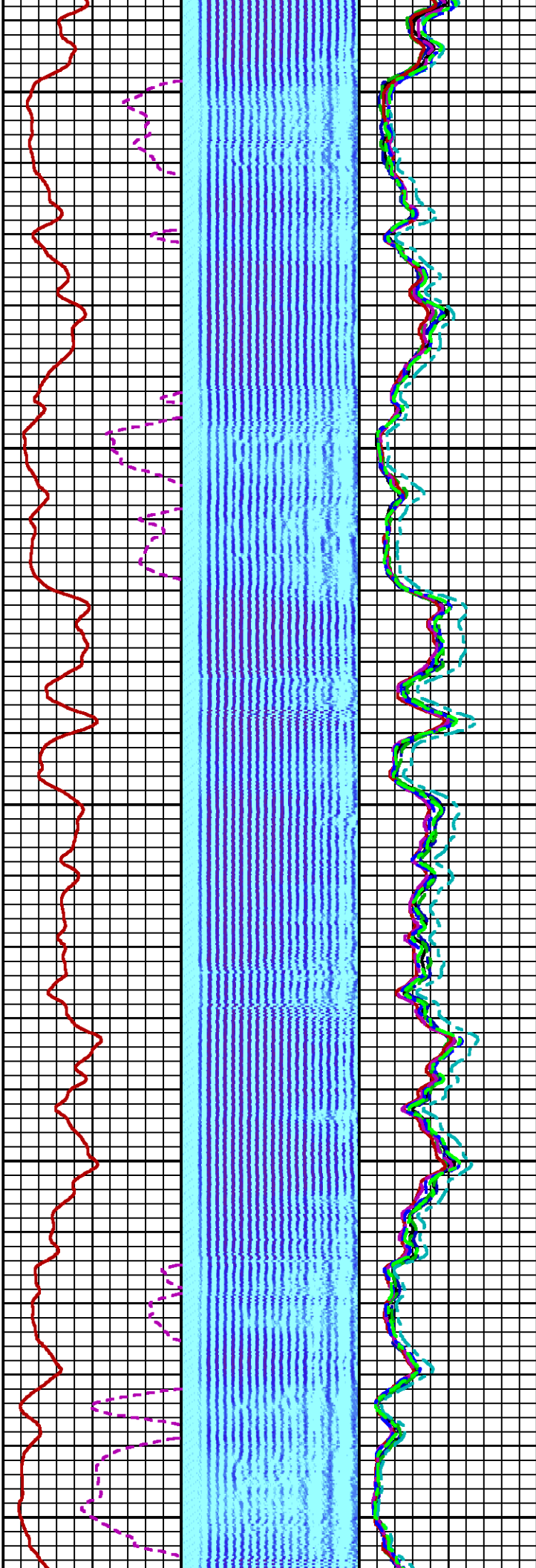
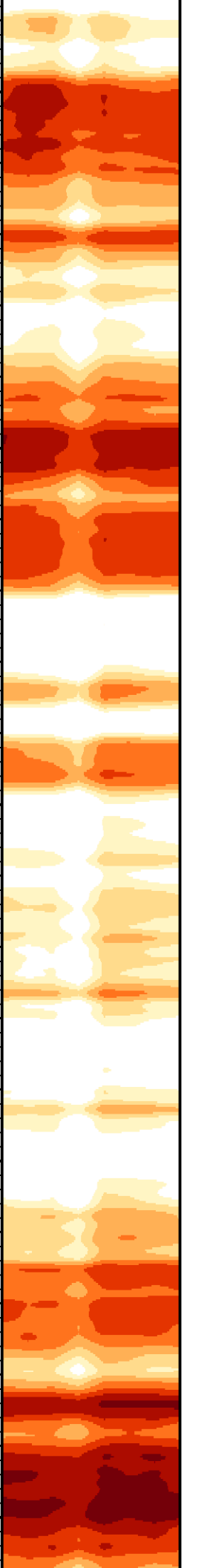




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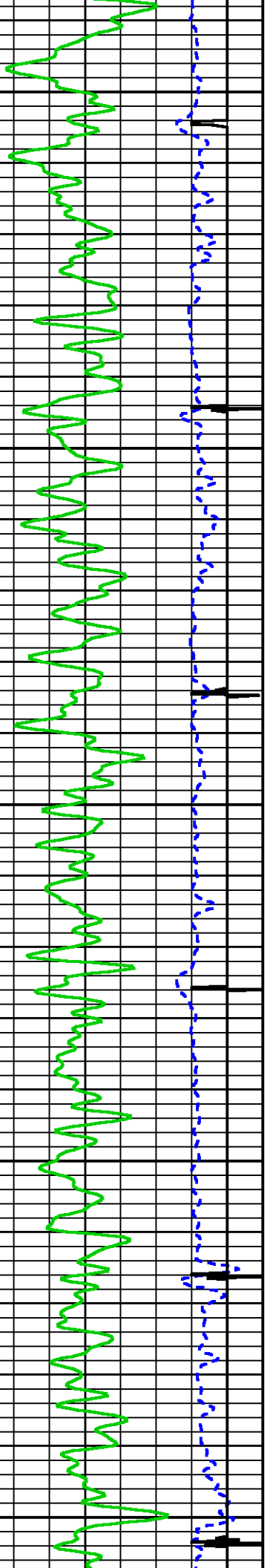
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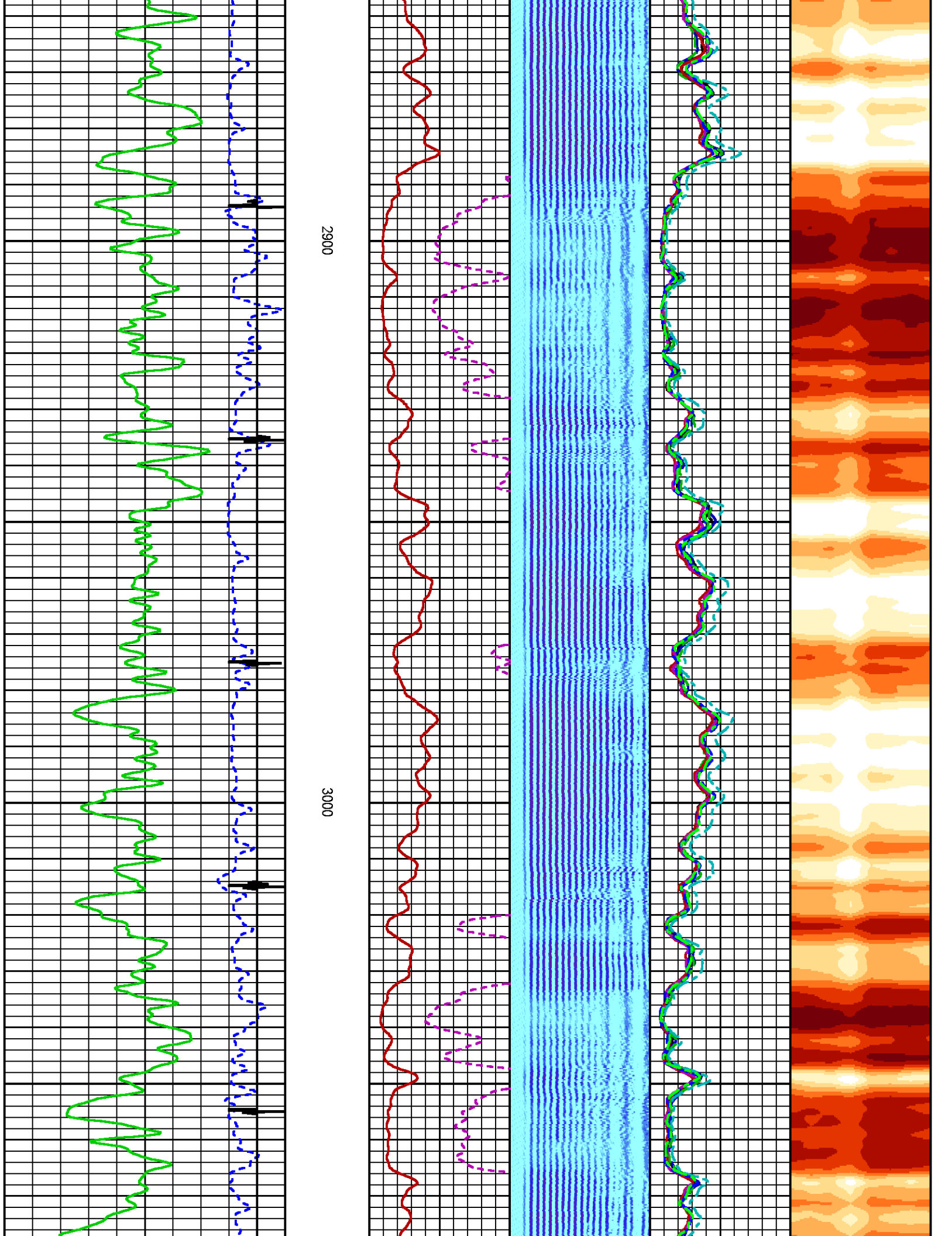




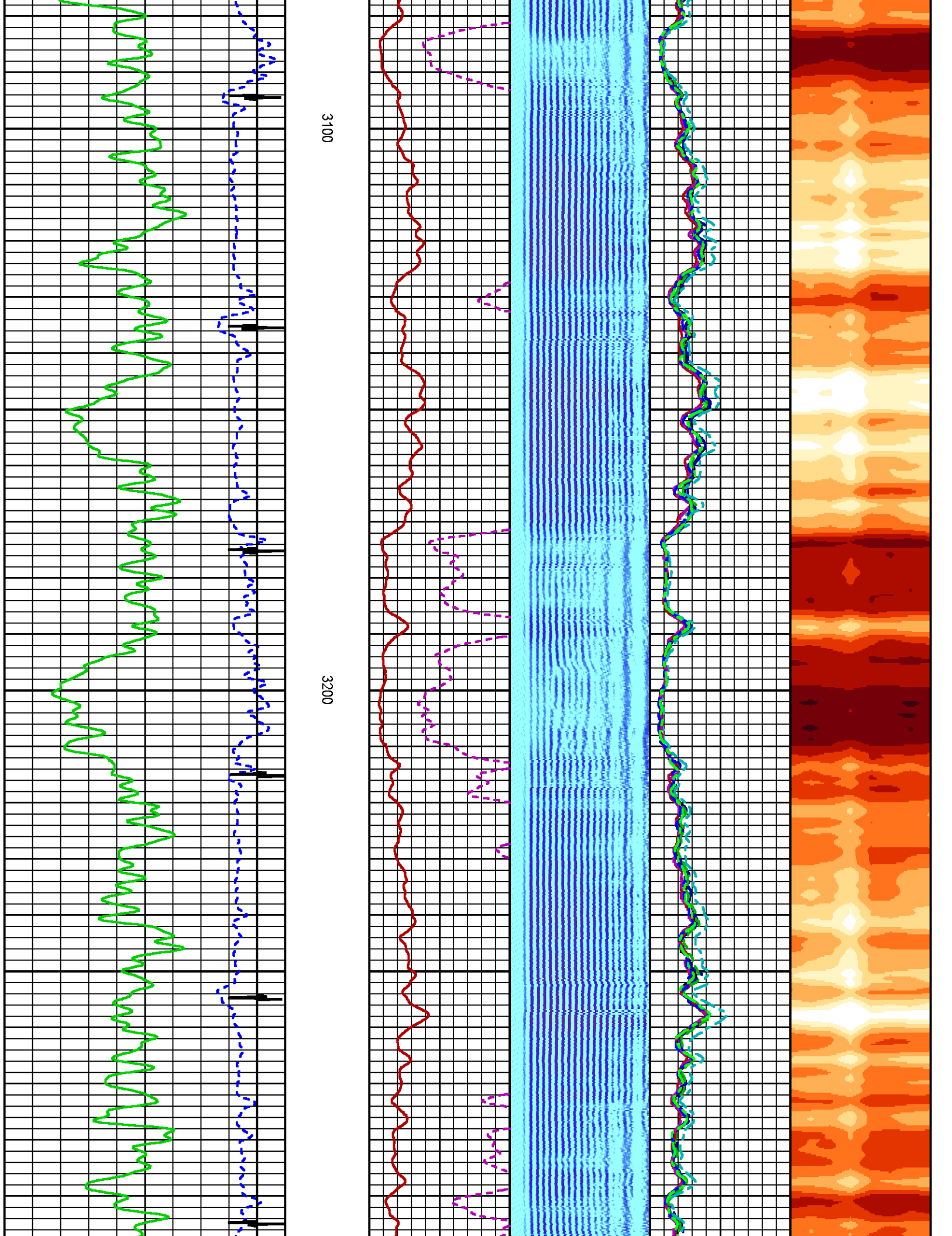
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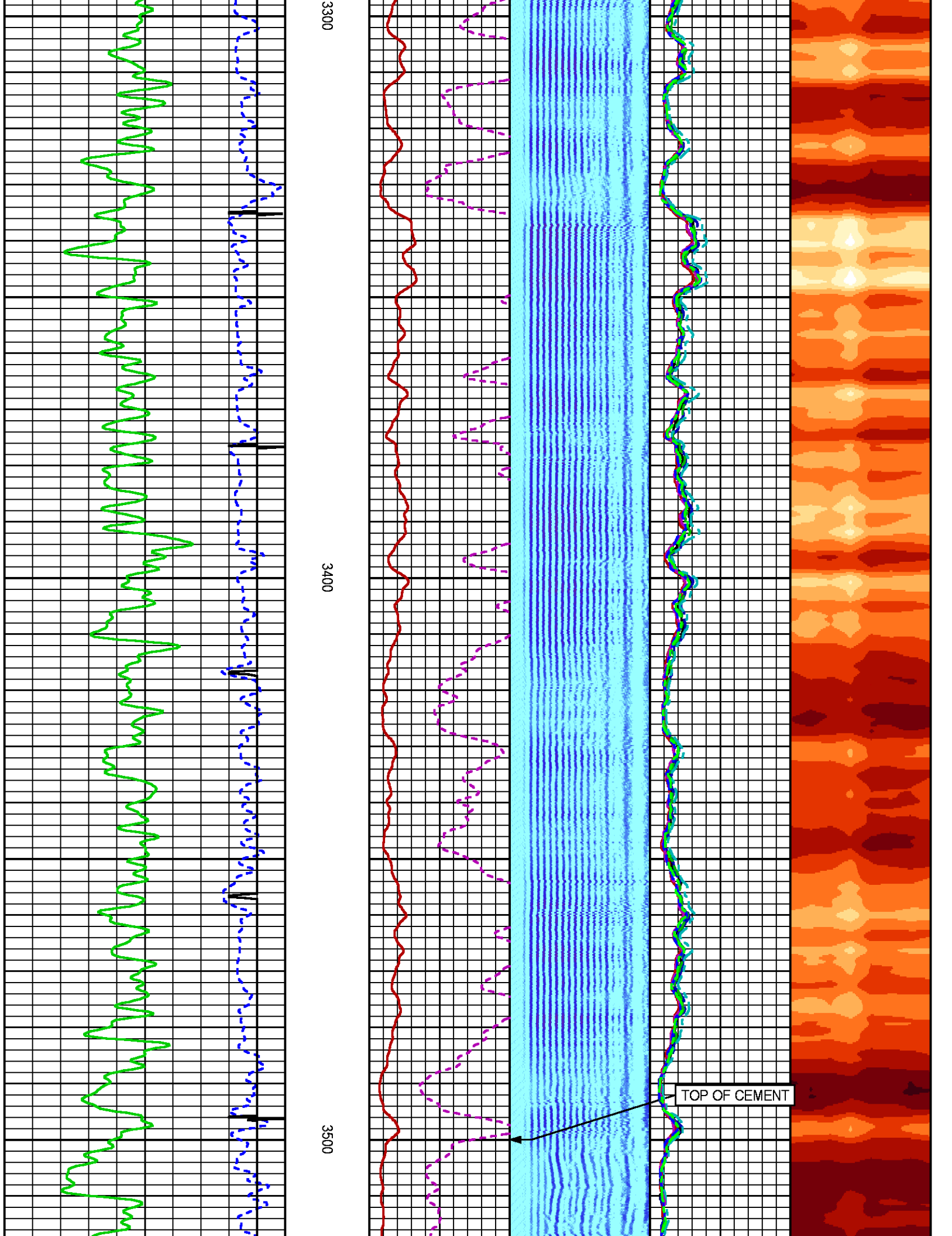


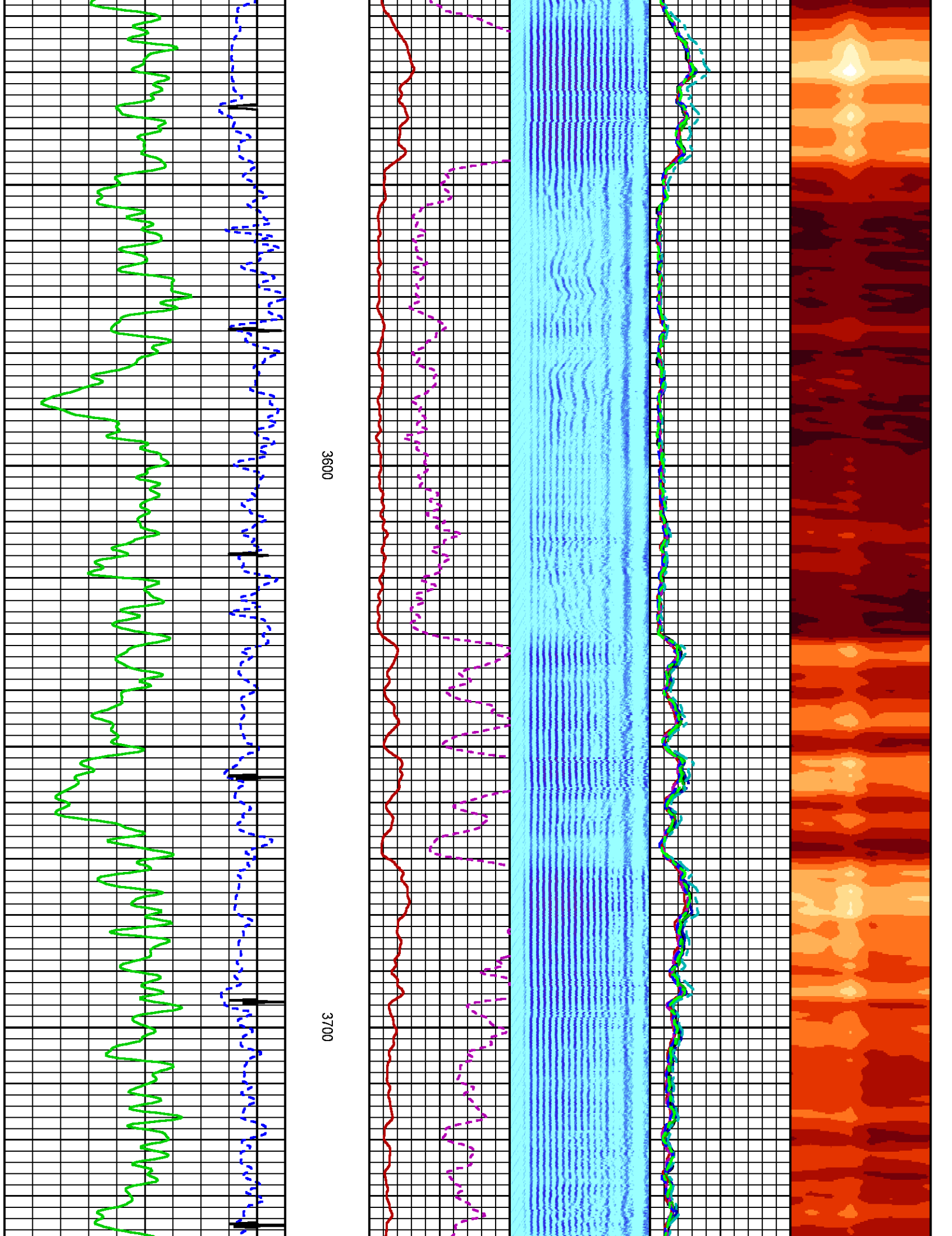


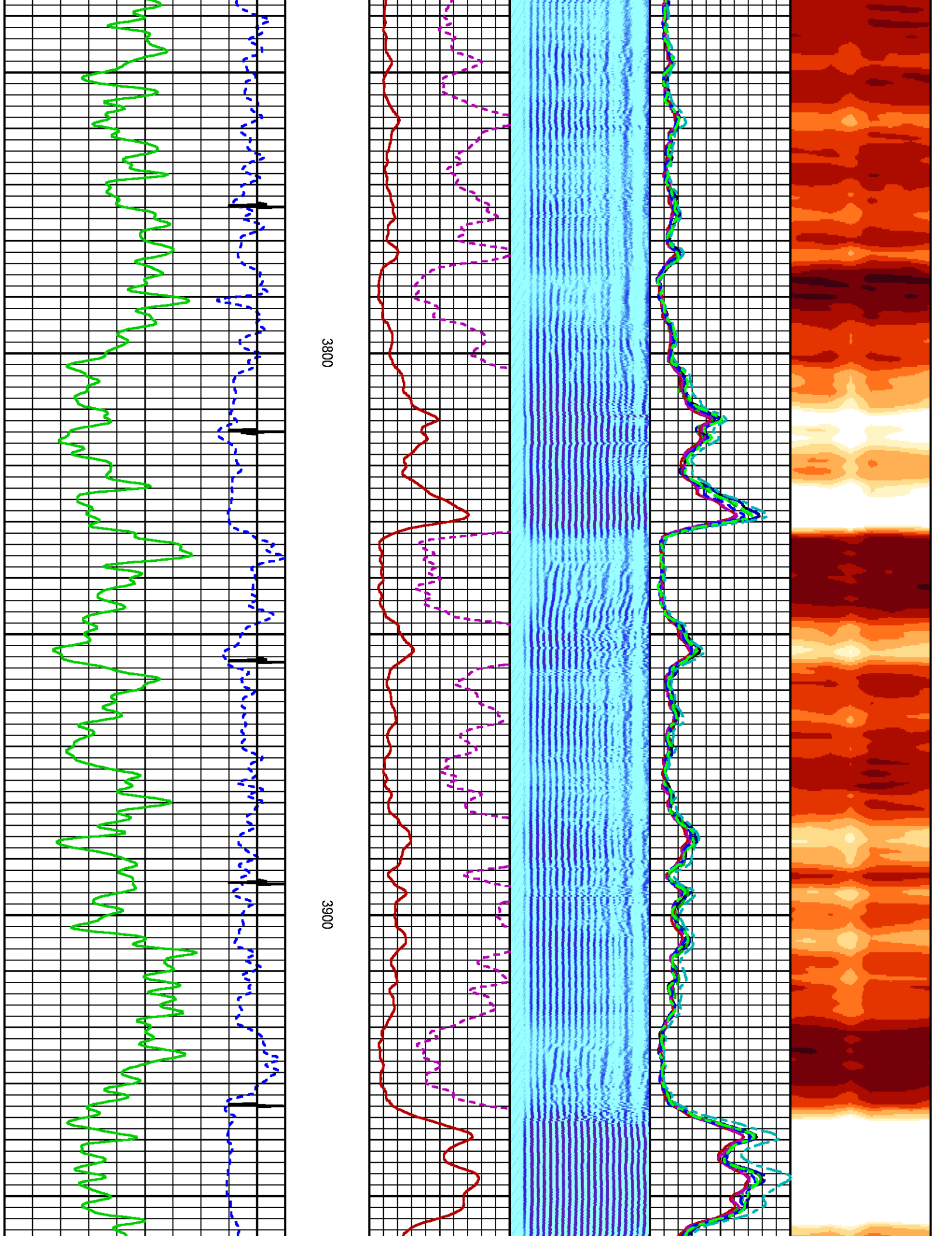


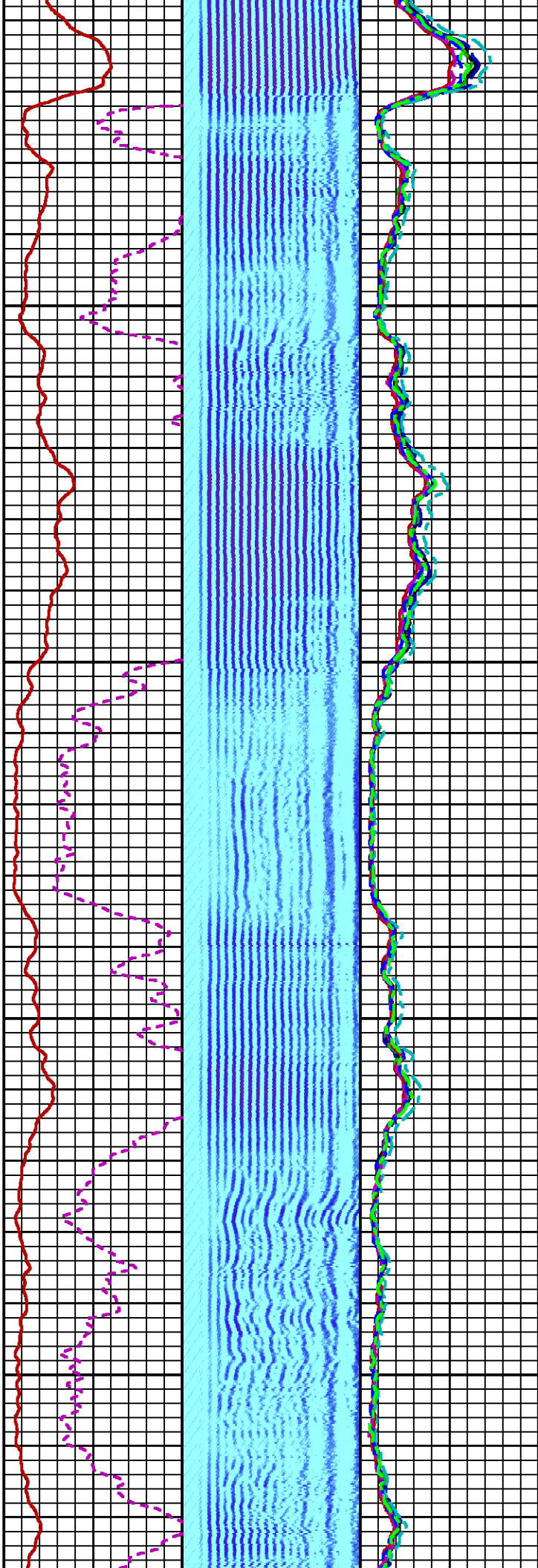
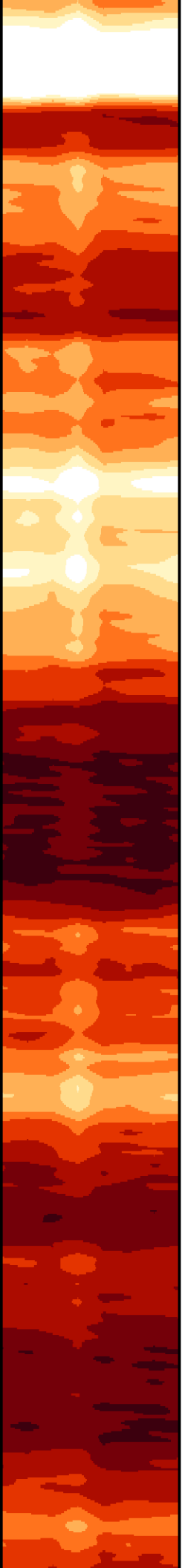






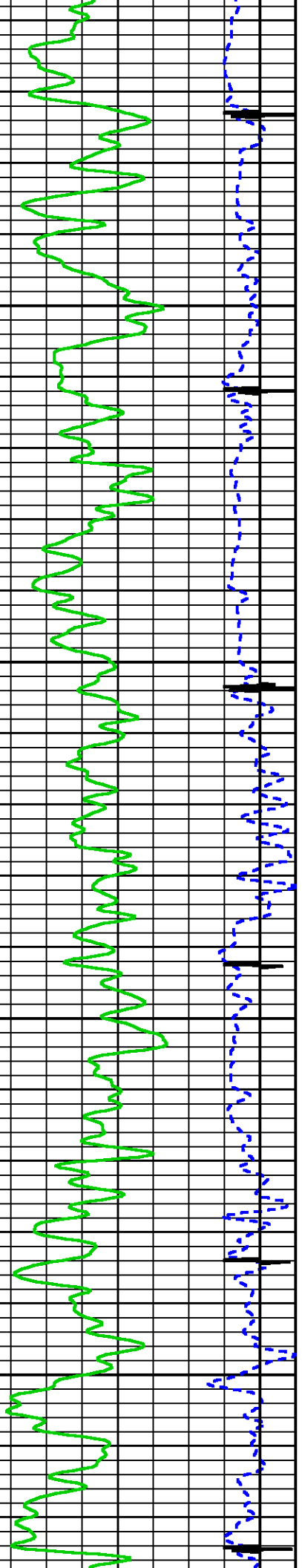




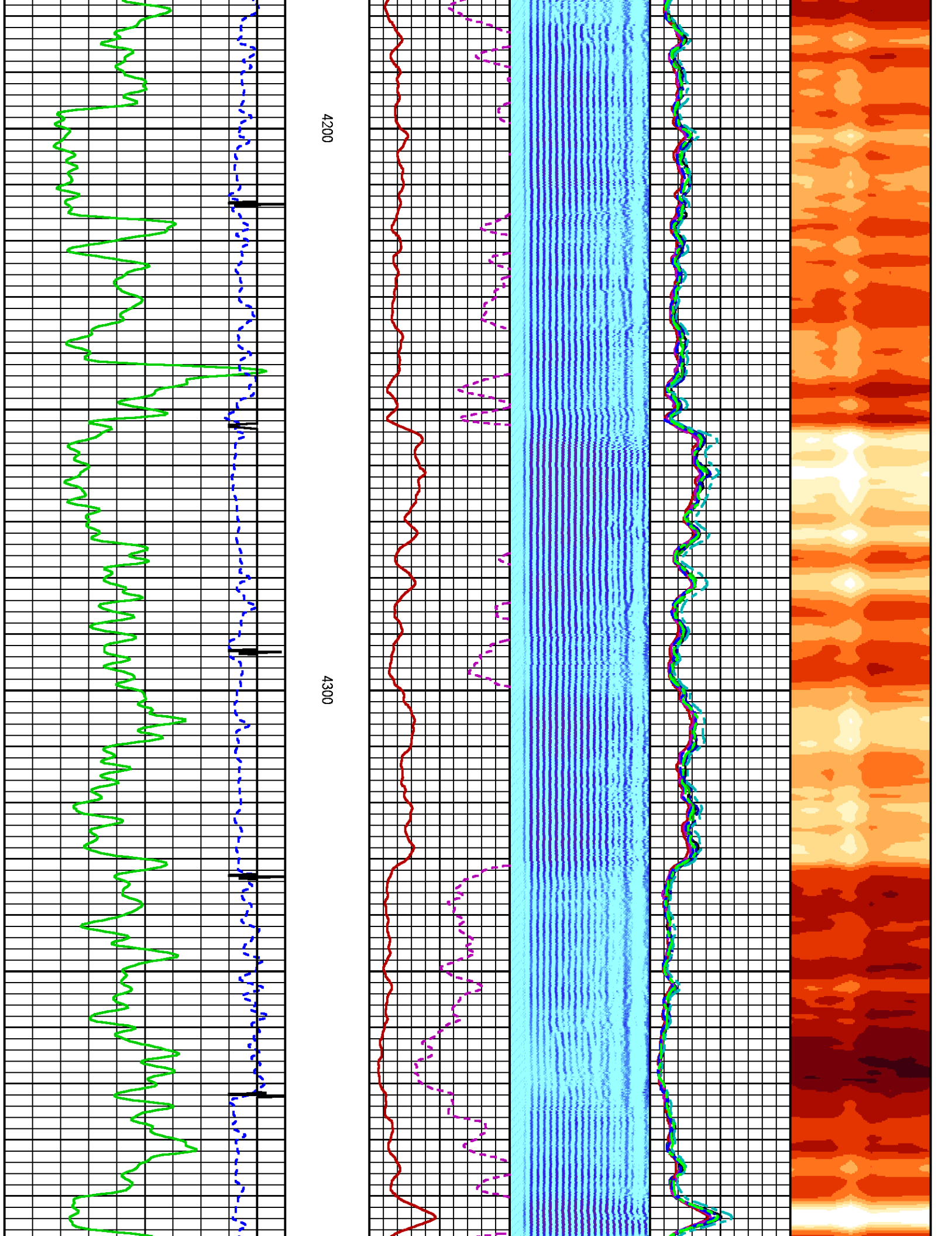


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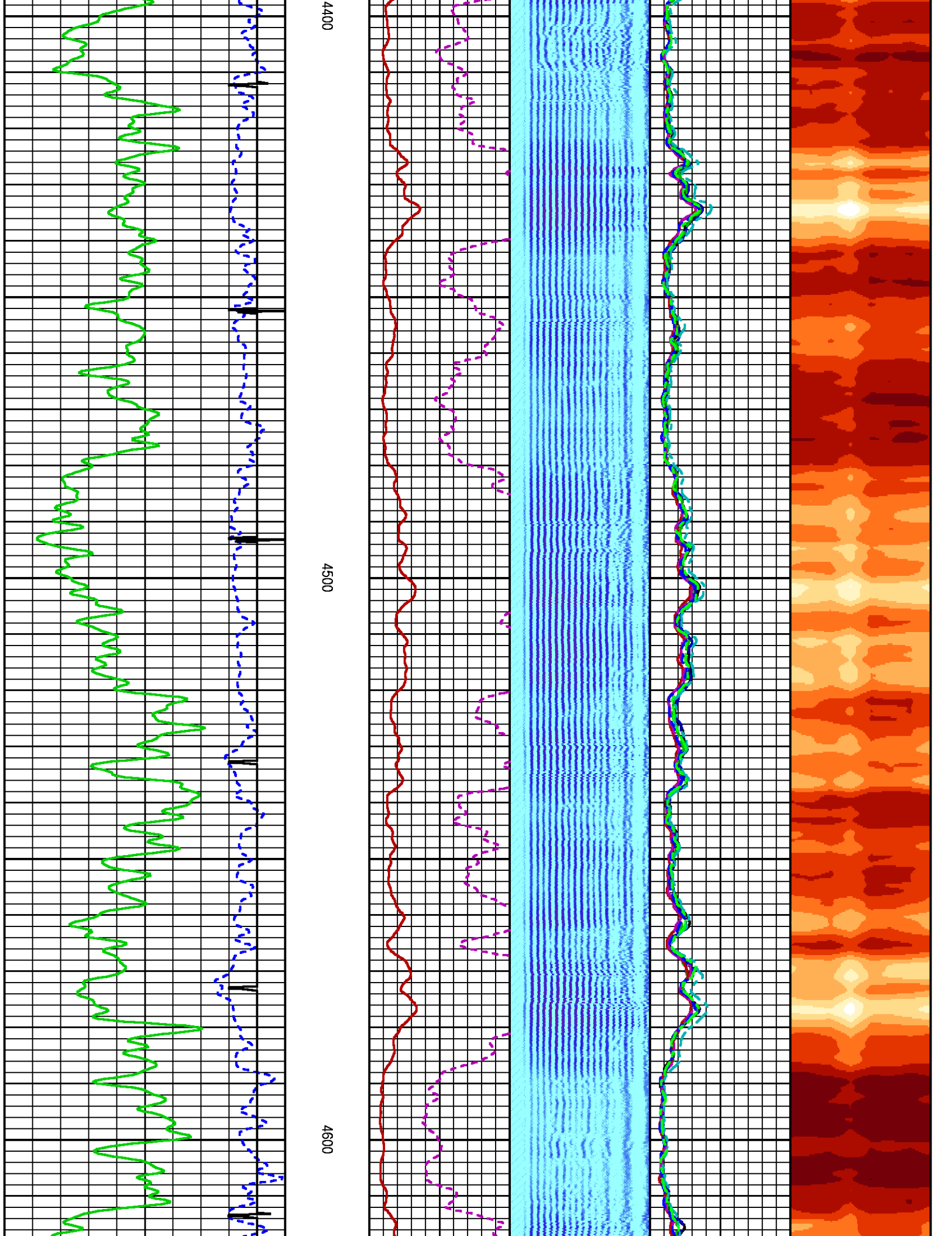
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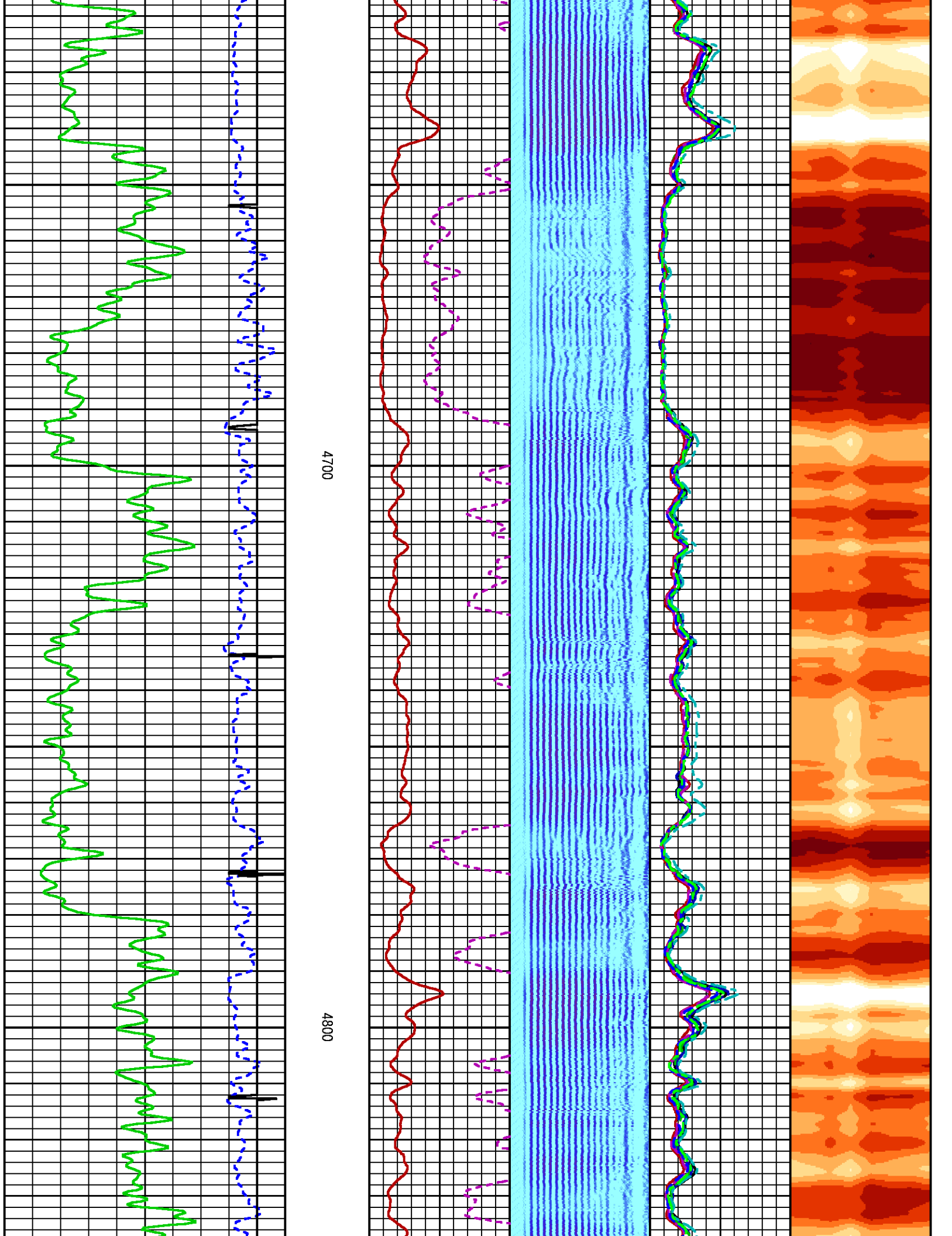


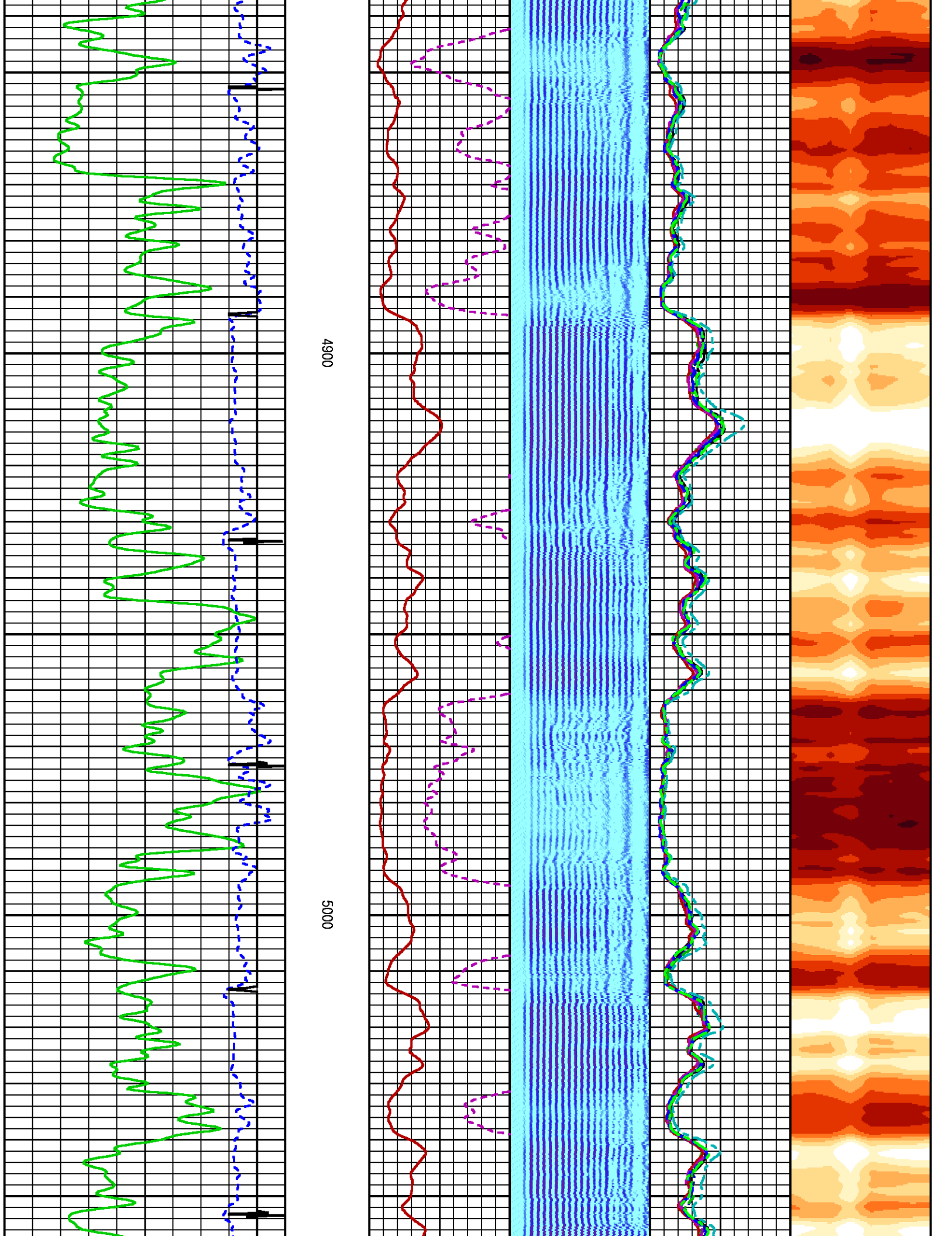


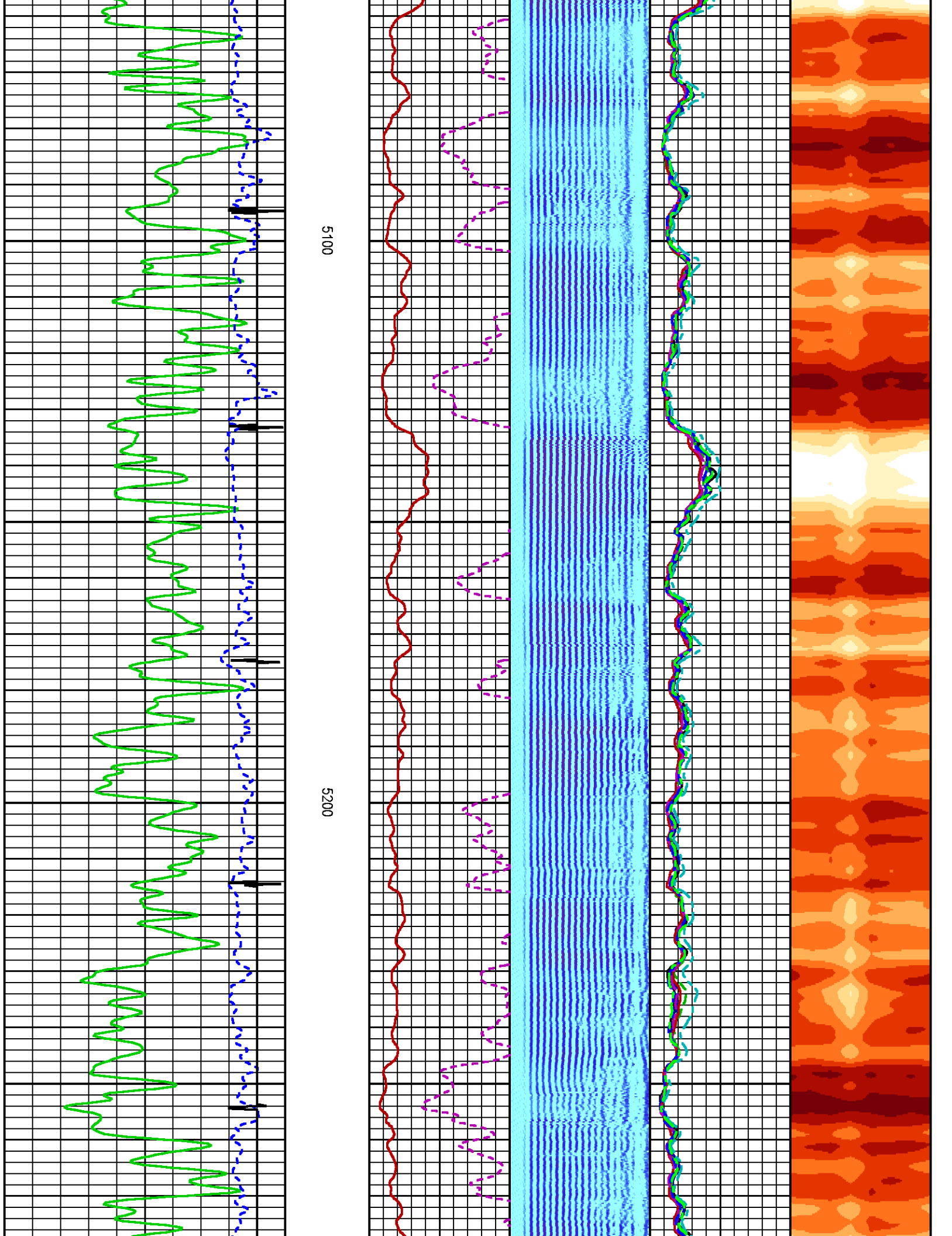




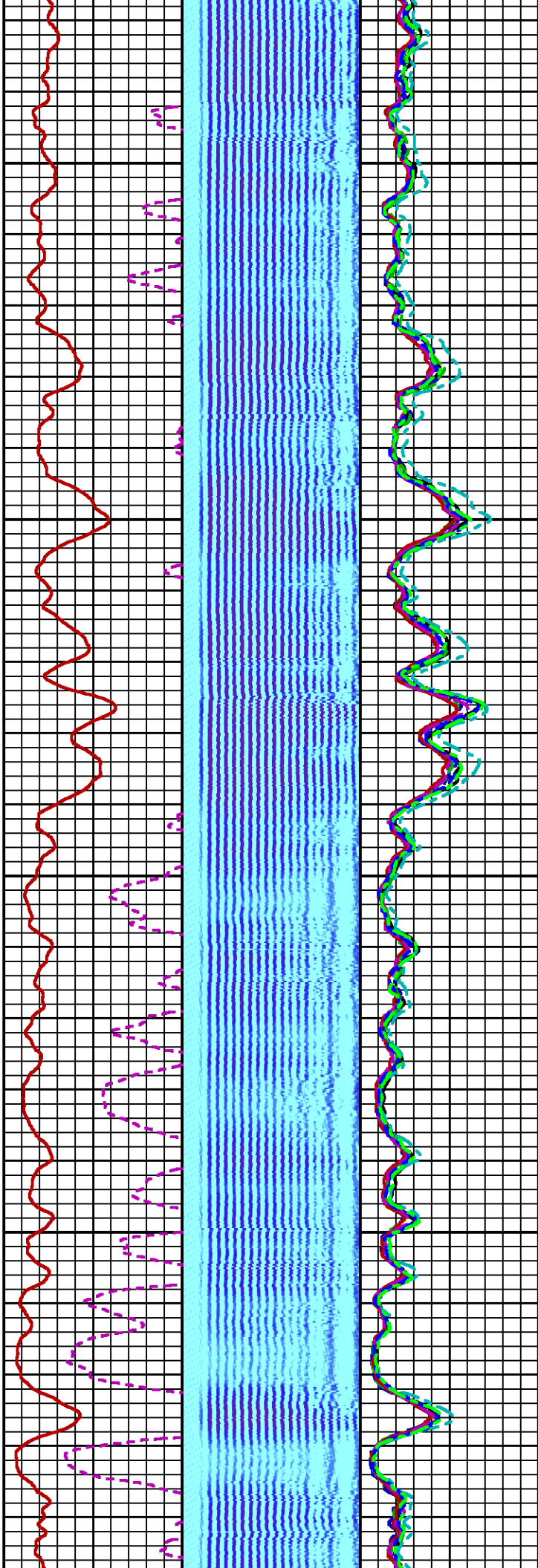
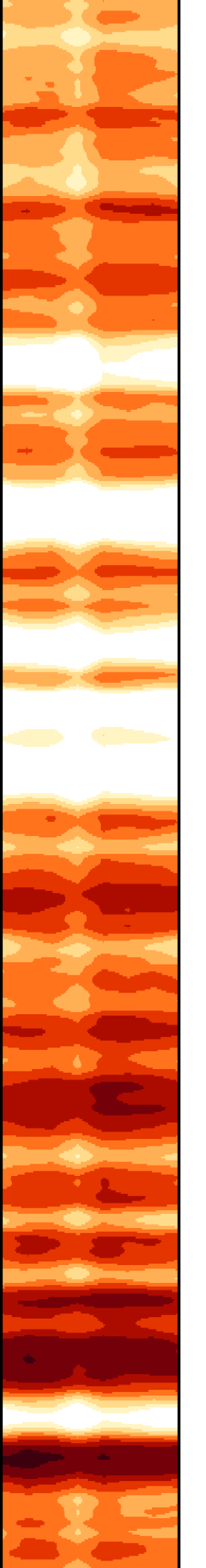






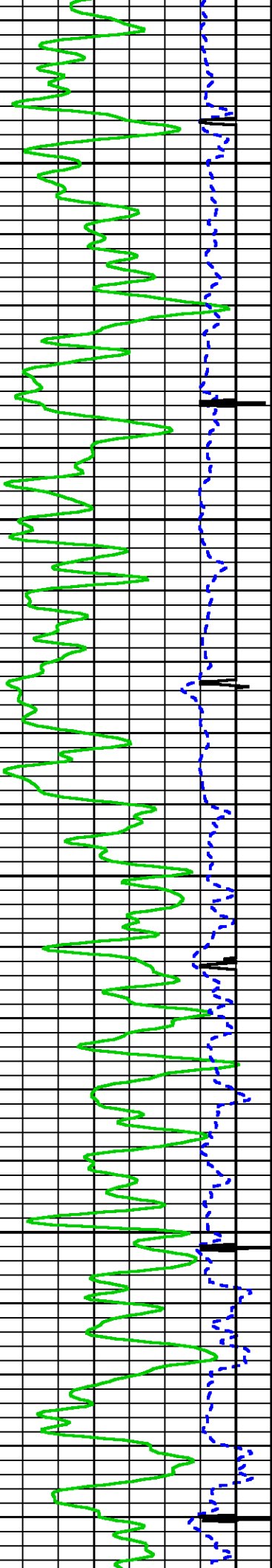




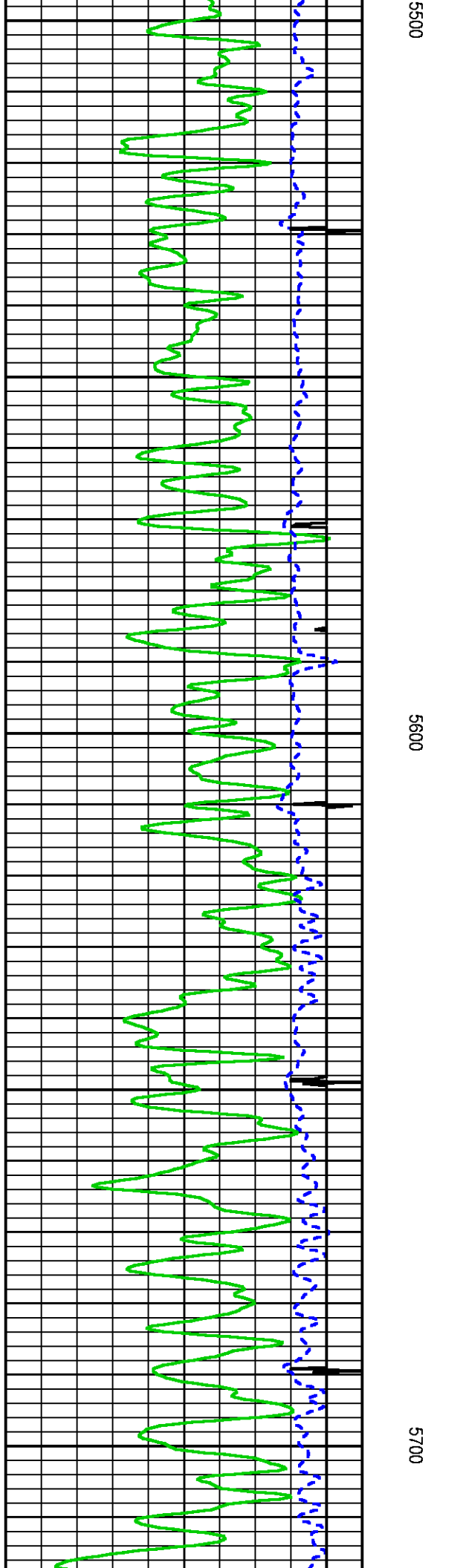
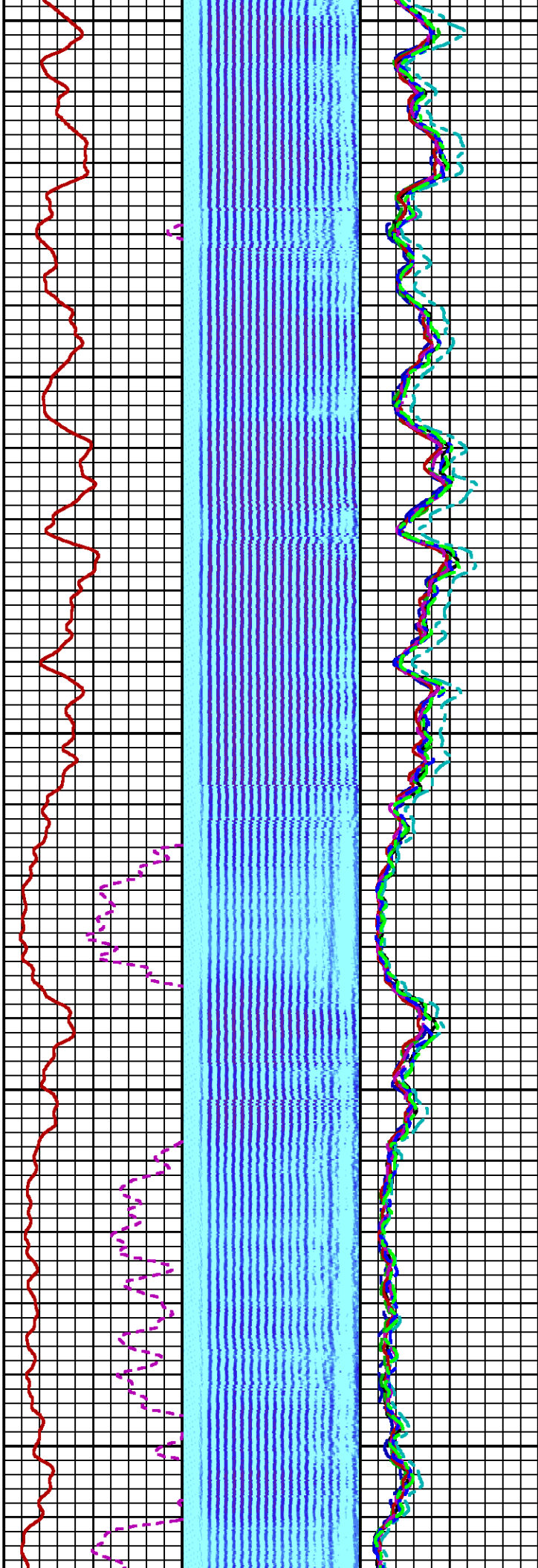
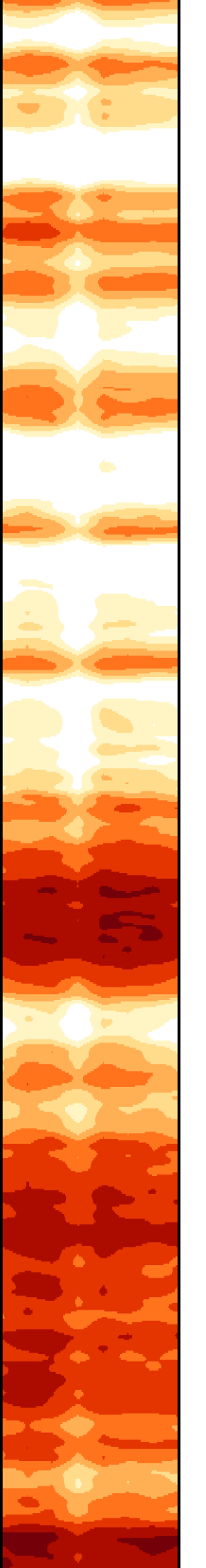


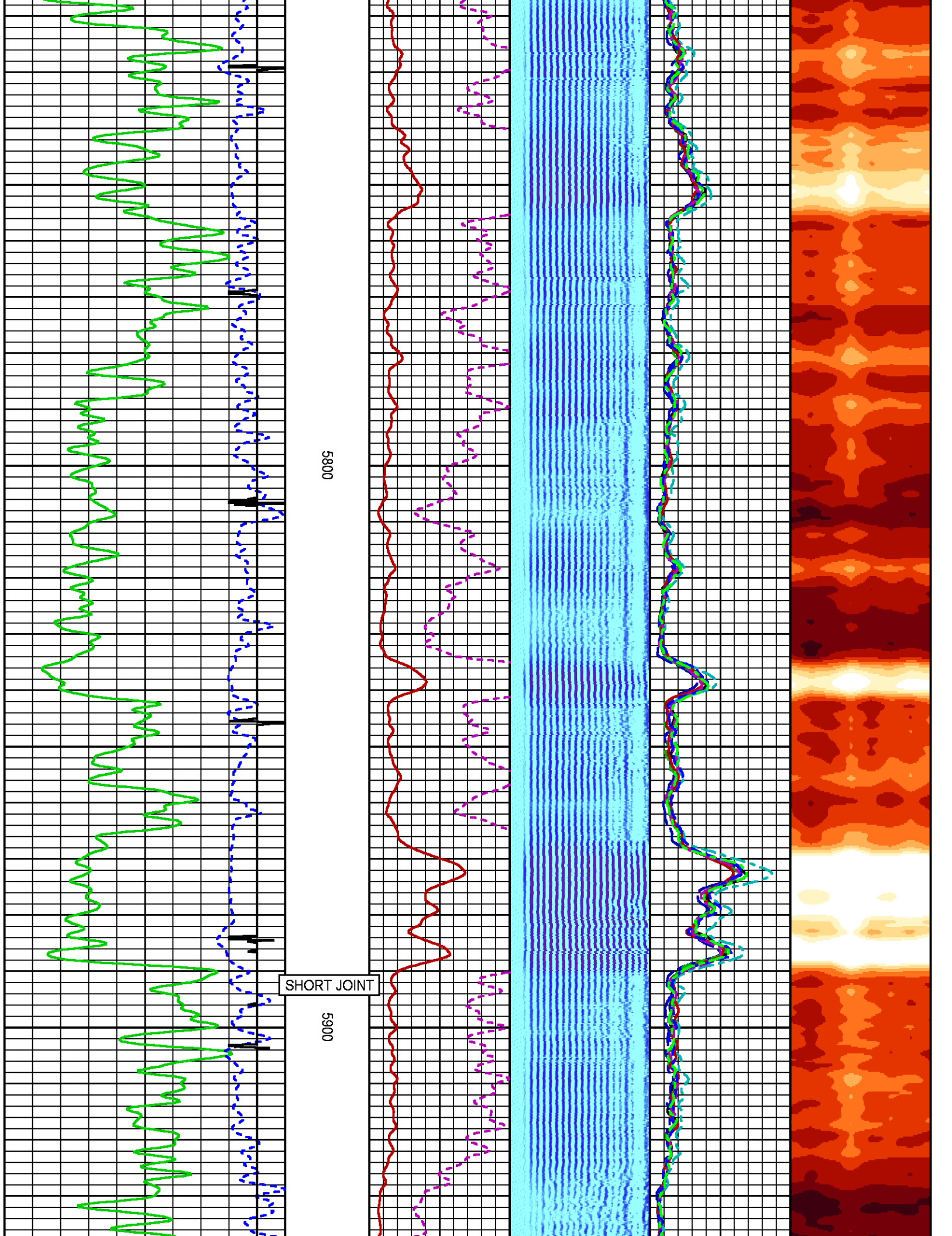
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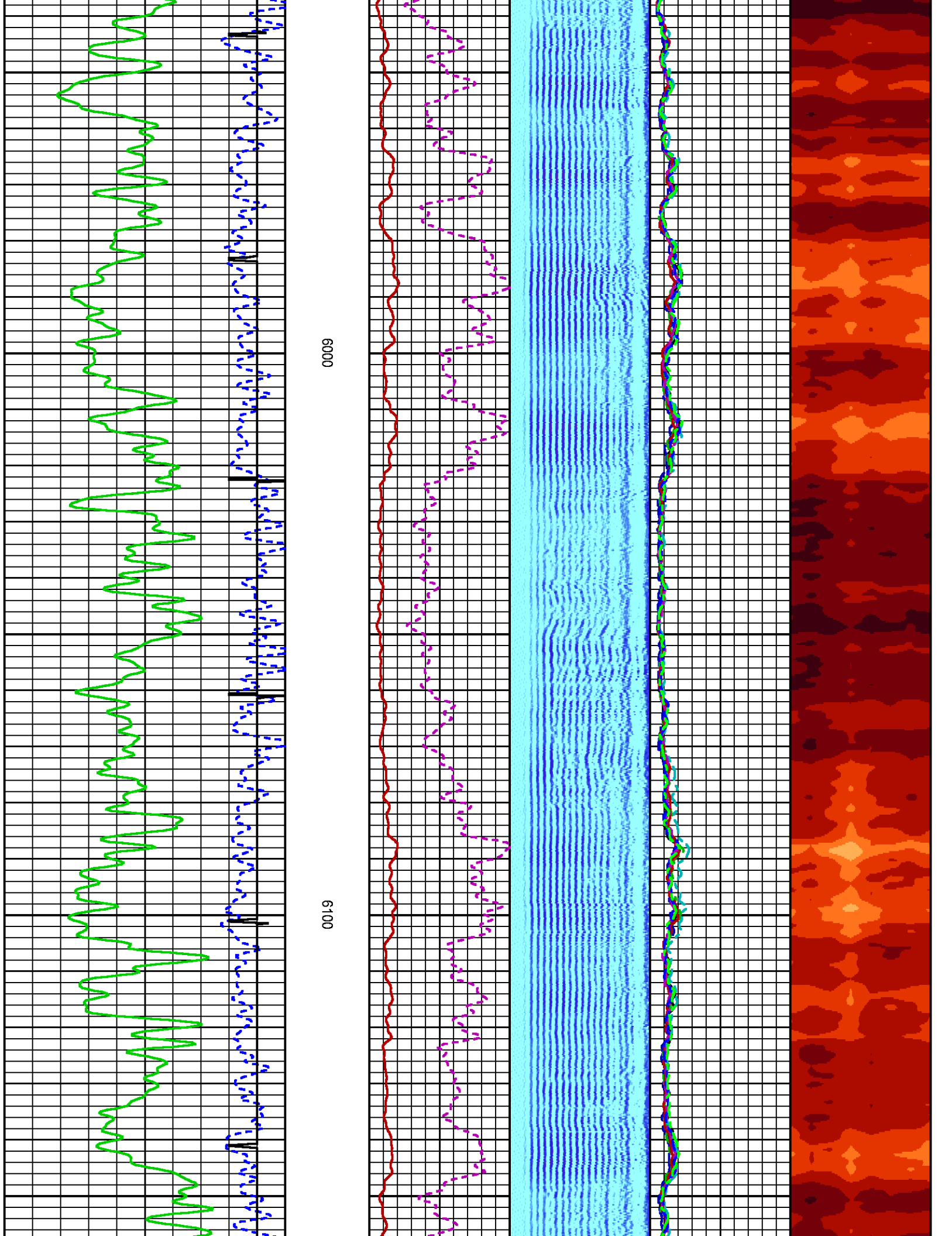
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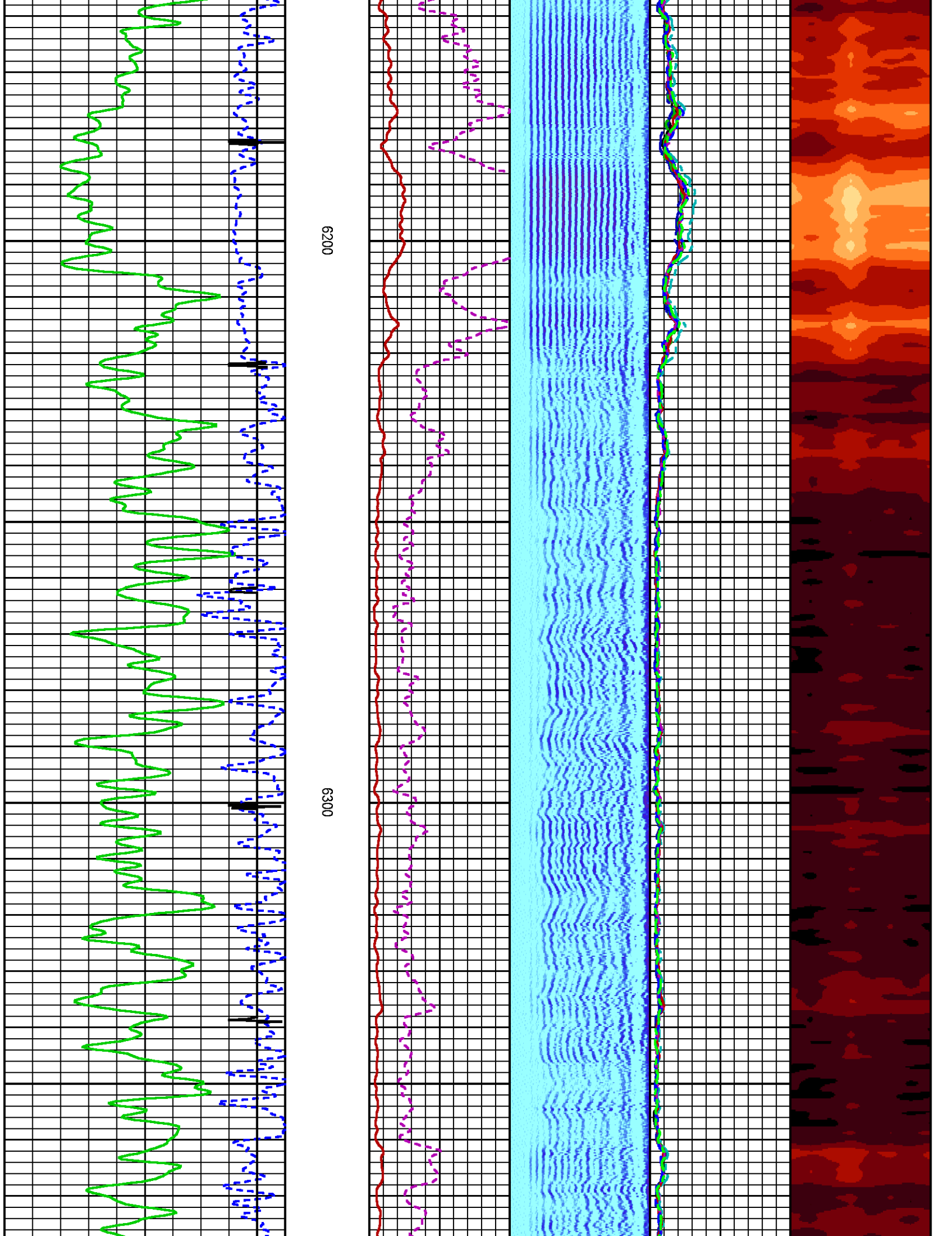




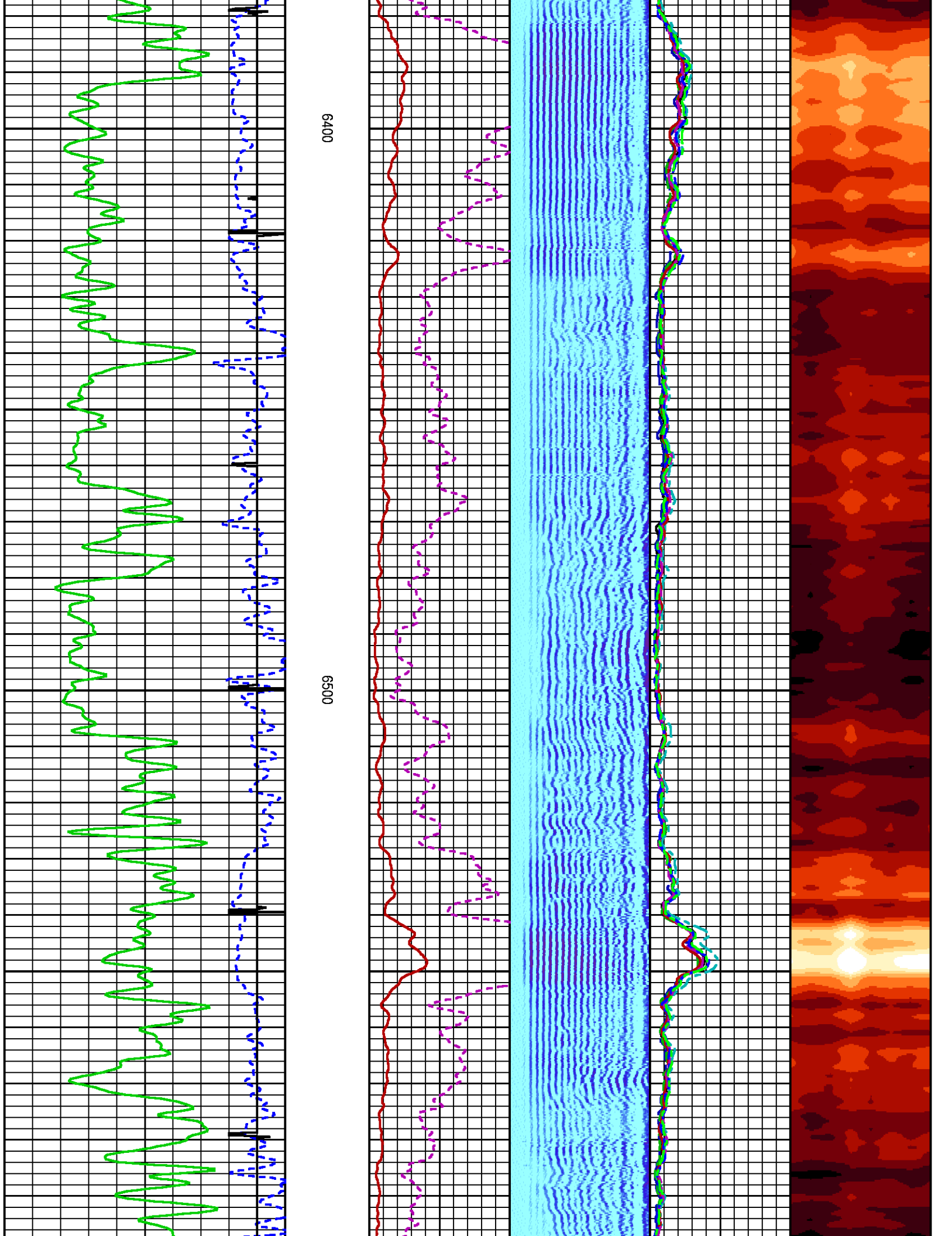


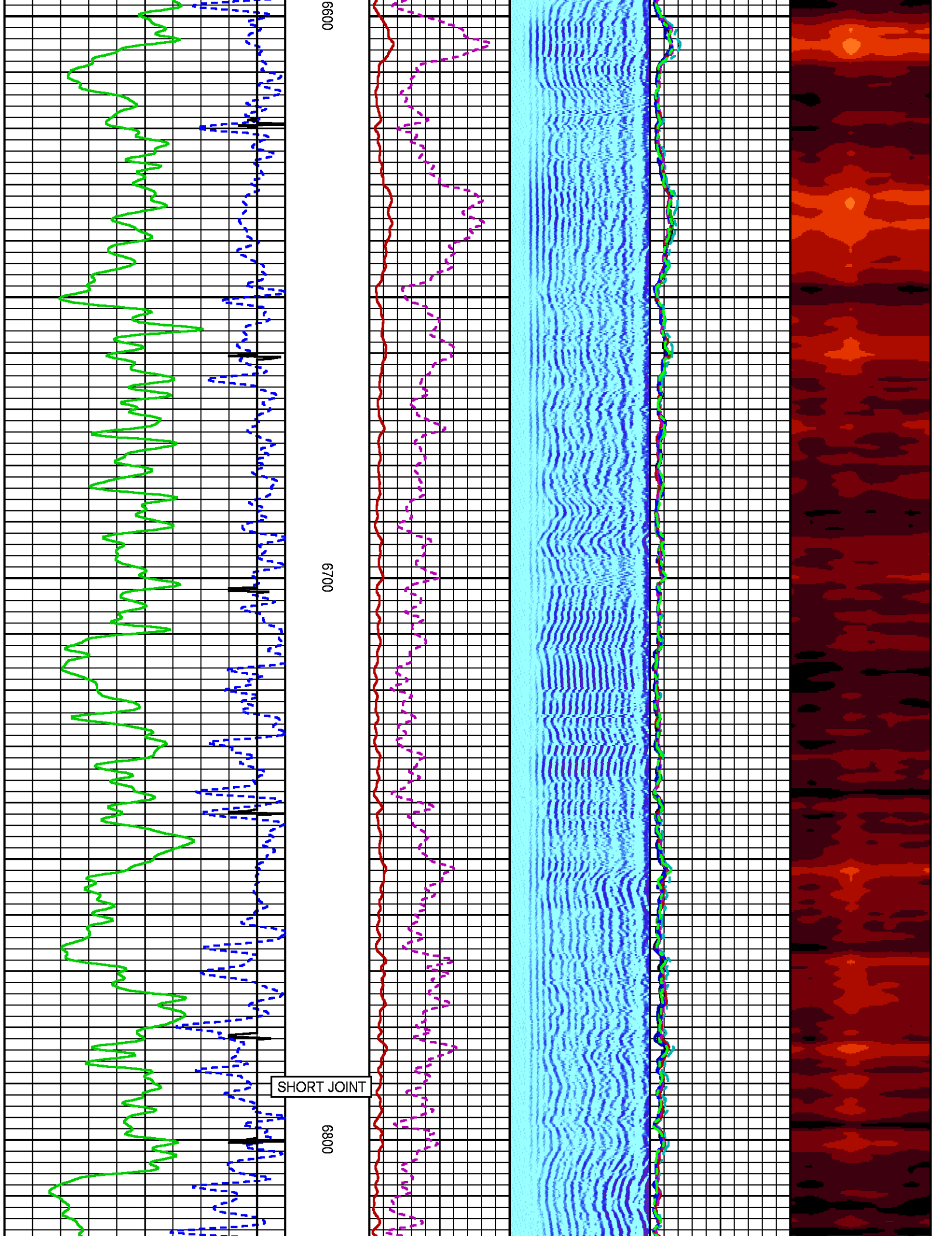


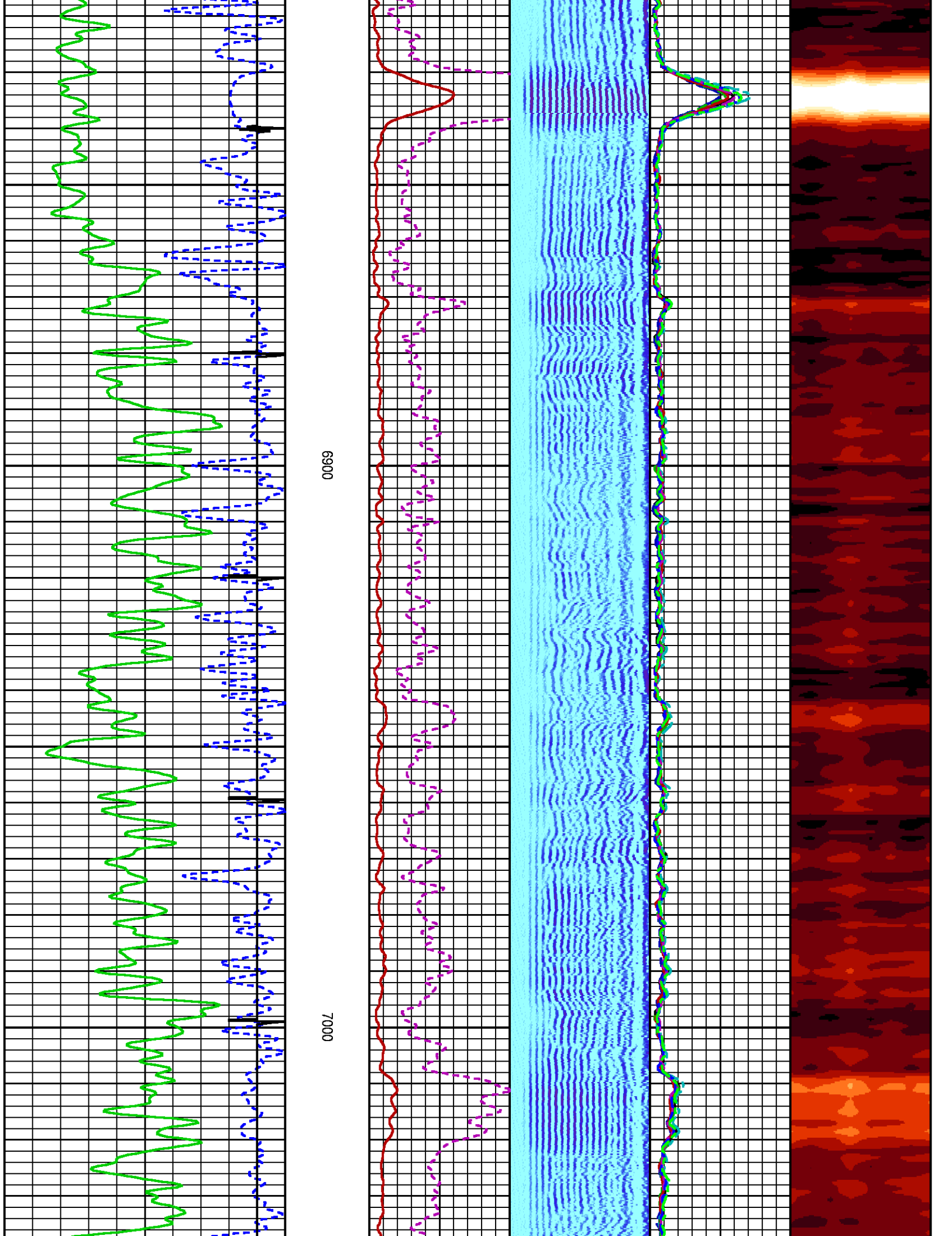


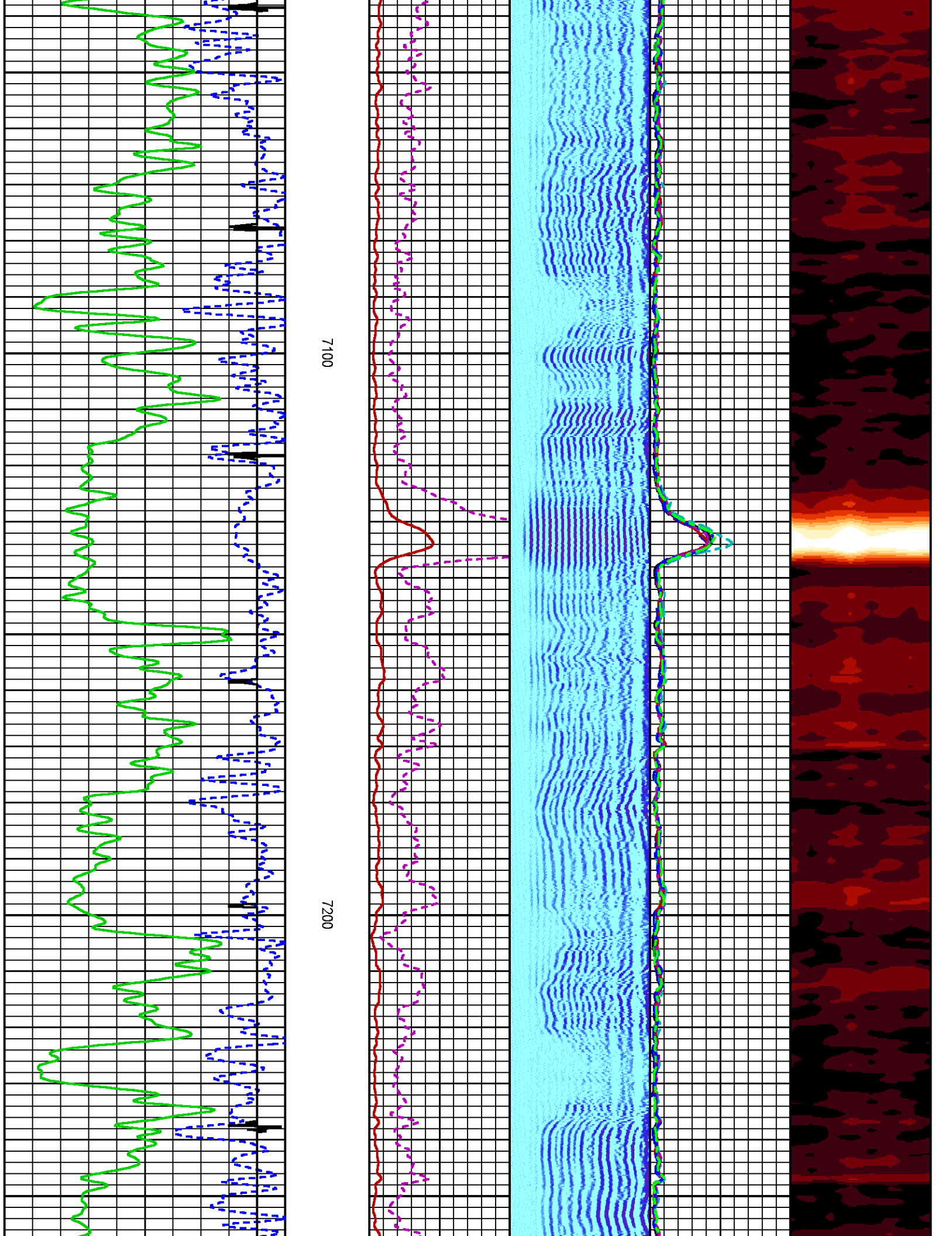




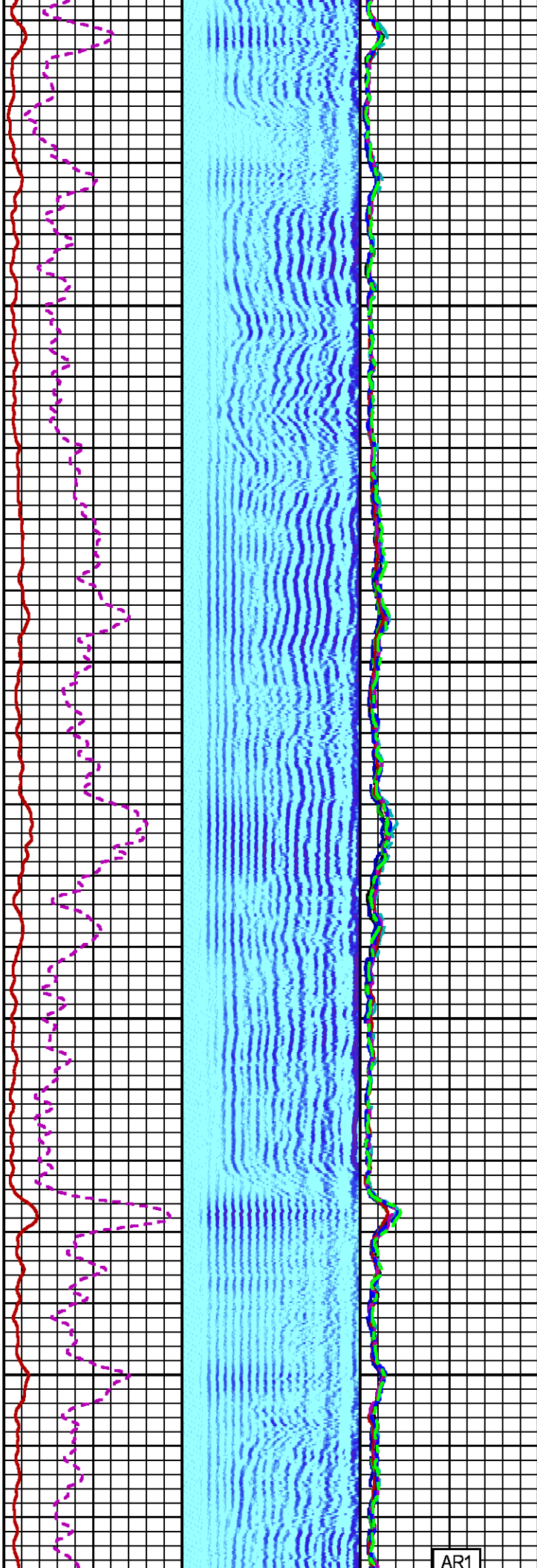
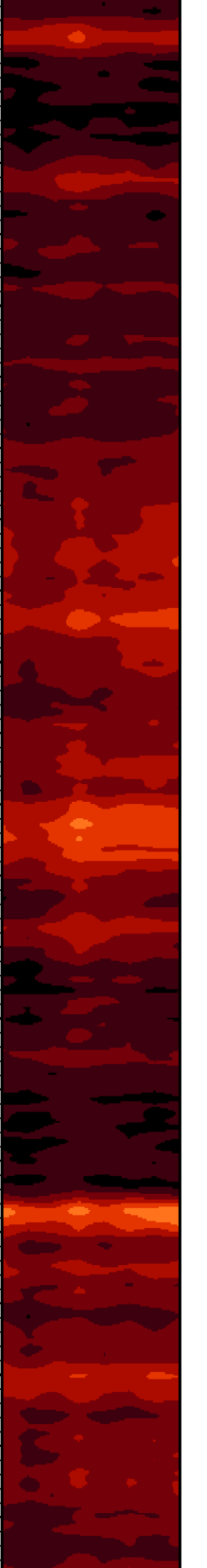








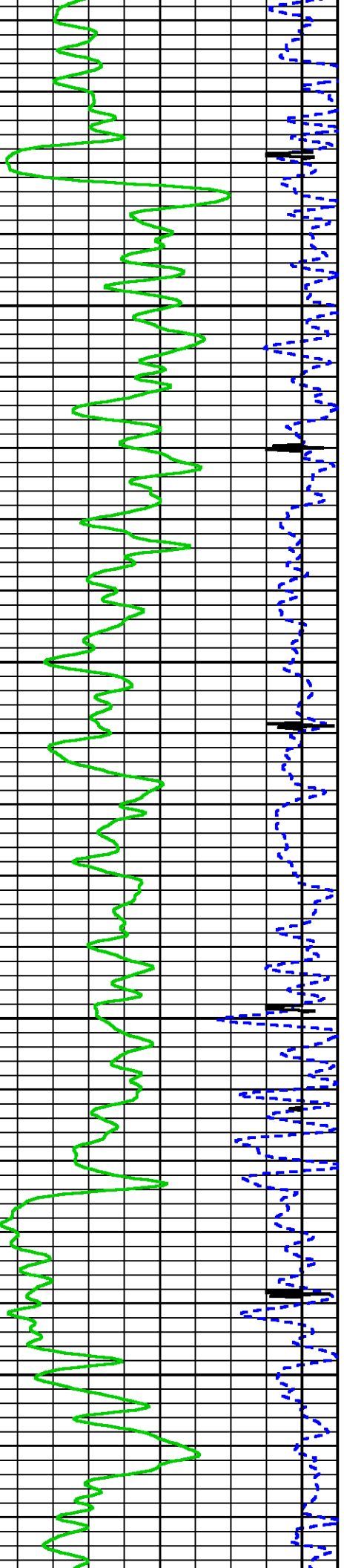


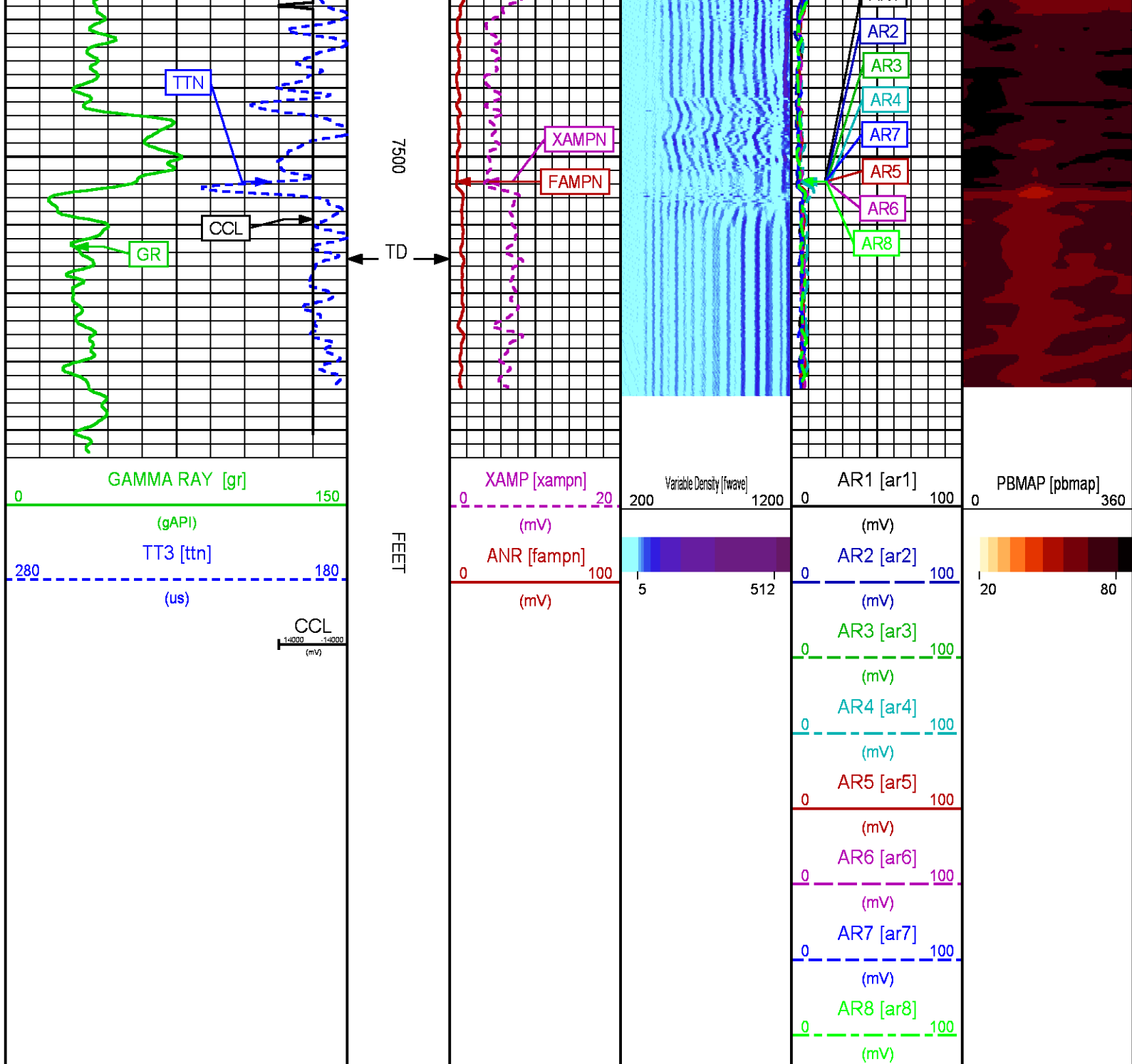


7300

7400

AR1





REPEAT PASS 0 PSI

ECLIPS 7.0i ECLIPS General Release Rel 7.0i Thu Jun 08 20:36:10 CDT 2017  
Patches: 2

Plotted: Mon Mar 12 15:36:26 2018

## PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE\_NICHOLS\_0994-24-02W/p012g01.prm  
LOGGING MODE: DEPTH DIRECTION: LIP

ECHO MODE: 2L					
TOP DEPTH: 7141.750 ft		BOTTOM DEPTH: 7605.250 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	4000.00		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*)	171	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*)	-72	us	"	"
	TOOL DELAY (str2*)	-72	us	"	"
	TOOL DELAY (str3*)	-72	us	"	"
	TOOL DELAY (str4*)	-72	us	"	"
	TOOL DELAY (str5*)	-72	us	"	"
	TOOL DELAY (str6*)	-72	us	"	"
	TOOL DELAY (str7*)	-72	us	"	"
	TOOL DELAY (str8*)	-72	us	"	"
	TOOL DELAY (strn*)	-72	us	"	"
BASELINE NOISE (NEAR)	NOISE WINDOW START	96	us	"	"
	NOISE WINDOW LENGTH	25	us	"	"
PERCENT BOND CEMENT MAP					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
RAL FREE PIPE AMPLITUDE	FREE AMP REC 1	80	mV	TOP	BOTTOM
	FREE AMP REC 2	80	mV	"	"
	FREE AMP REC 3	80	mV	"	"
	FREE AMP REC 4	80	mV	"	"
	FREE AMP REC 5	80	mV	"	"
	FREE AMP REC 6	80	mV	"	"
	FREE AMP REC 7	80	mV	"	"
	FREE AMP REC 8	80	mV	"	"
RAL FULL BOND AMPLITUDE	FULL BOND AMP REC 1	2	mV	"	"
	FULL BOND AMP REC 2	2	mV	"	"
	FULL BOND AMP REC 3	2	mV	"	"
	FULL BOND AMP REC 4	2	mV	"	"
	FULL BOND AMP REC 5	2	mV	"	"
	FULL BOND AMP REC 6	2	mV	"	"
	FULL BOND AMP REC 7	2	mV	"	"
	FULL BOND AMP REC 8	2	mV	"	"
CURVE DESCRIPTION REPORT					
CURVE NAME	CREATION DATE	CURVE DESCRIPTION			
F1:AR1	N/A	FIXED GATE AMPLITUDE T-R1			
F1:AR2	N/A	FIXED GATE AMPLITUDE T-R2			
F1:AR3	N/A	FIXED GATE AMPLITUDE T-R3			
F1:AR4	N/A	FIXED GATE AMPLITUDE T-R4			
F1:AR5	N/A	FIXED GATE AMPLITUDE T-R5			
F1:AR6	N/A	FIXED GATE AMPLITUDE T-R6			
F1:AR7	N/A	FIXED GATE AMPLITUDE T-R7			

F1:AR8	N/A	FIXED GATE AMPLITUDE T-R8
F1:CCL	N/A	CASING COLLAR LOCATOR
F1:FAMPN	N/A	FIXED GATE AMPLITUDE NEAR RECEIVER
F1:FWAVE	N/A	FAR WAVE FORM
F1:GR	N/A	GAMMA RAY
F1:PBMAP	N/A	PERCENT BOND CEMENT MAP
F1:TTN	N/A	TRAVELTIME FROM NEAR TRANSMITTER-RECEIVER
F1:XAMPN	N/A	FIXED GATE AMPLITUDE NEAR RECEIVER TIMES FIVE

CURVE MEASURE POINT OFFSET

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

Presentation
: SysA:LARAMIE\_RALRPT.fvpdf [5"/100' Scale]

Plot Interval
: 7131.25 - 7520 Feet

Data File 1
: F1 : SysA:/dat1a/LARAMIE\_NICHOLS\_0994-24-02W/RAL\_REPEAT.xtf

Created On
: N/A

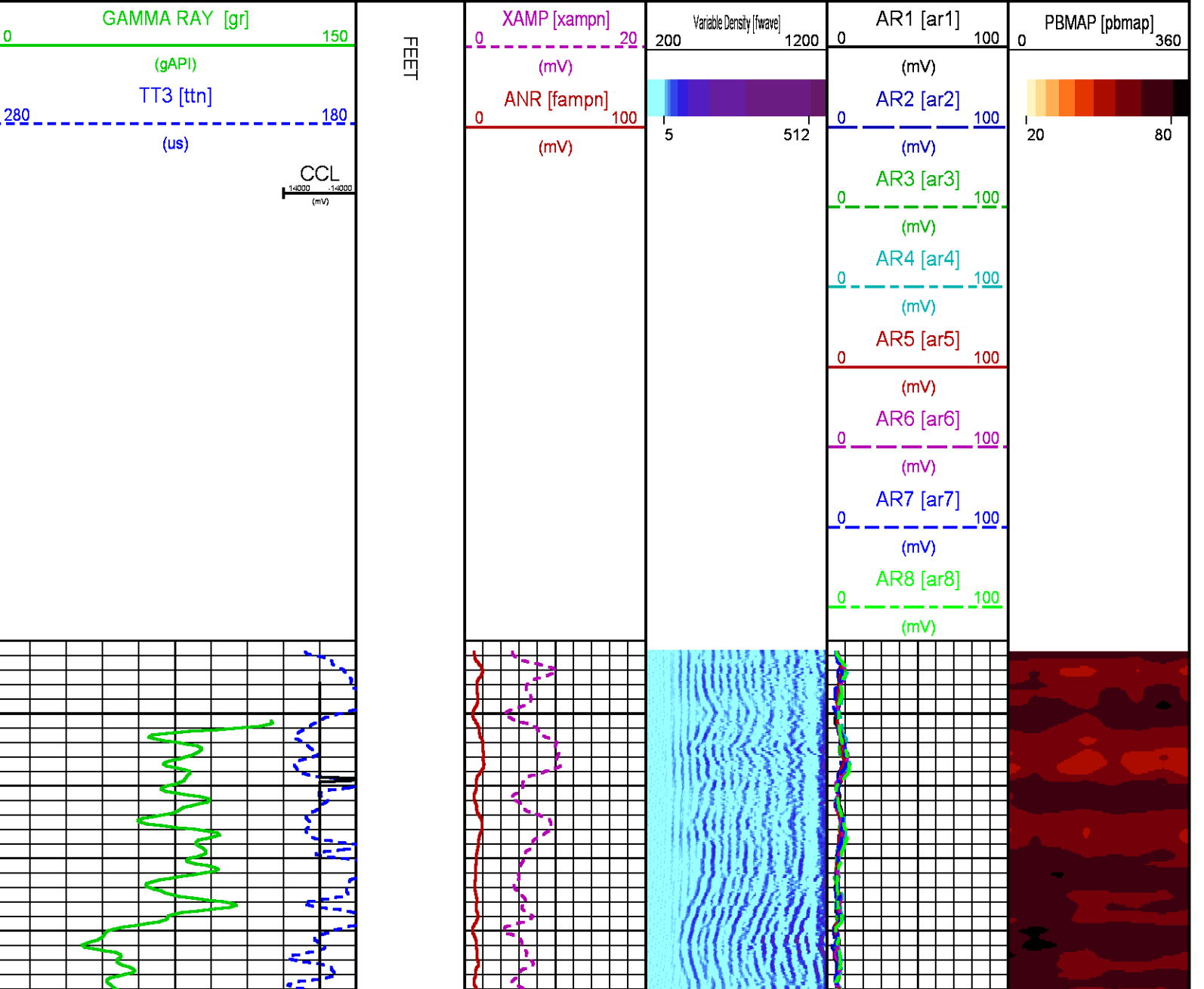
Company
: LARAMIE ENERGY II LLC

Well
: NICHOLS 0994-24-02W

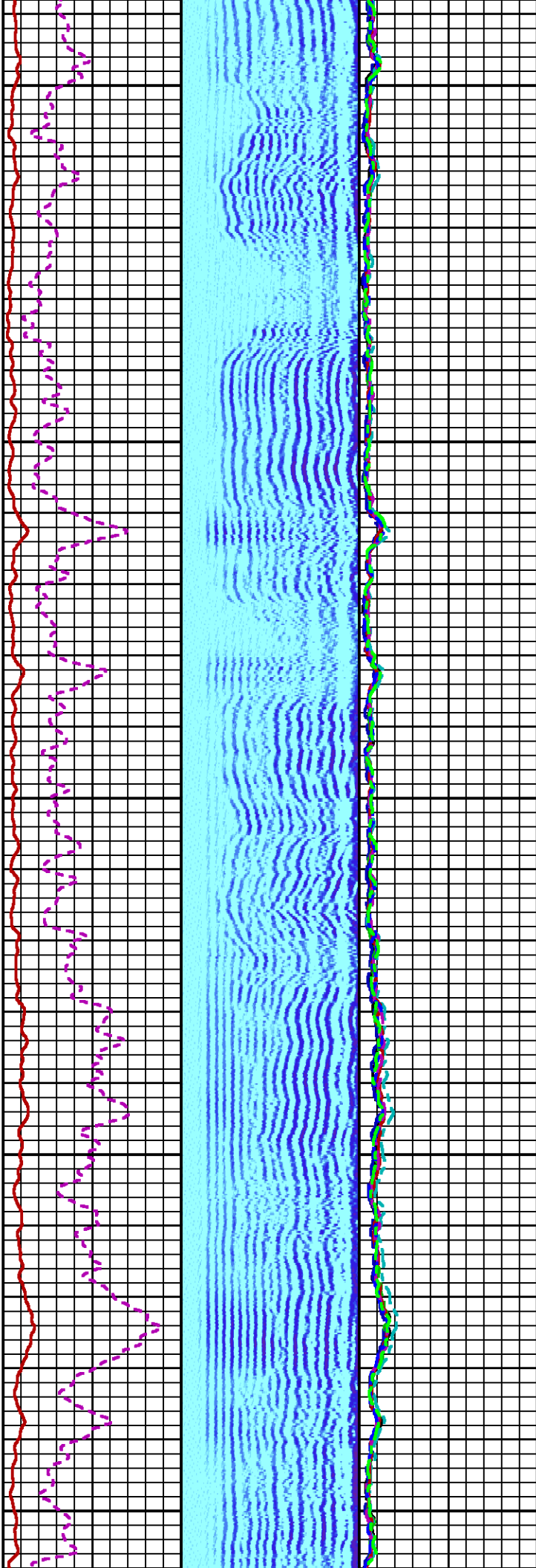
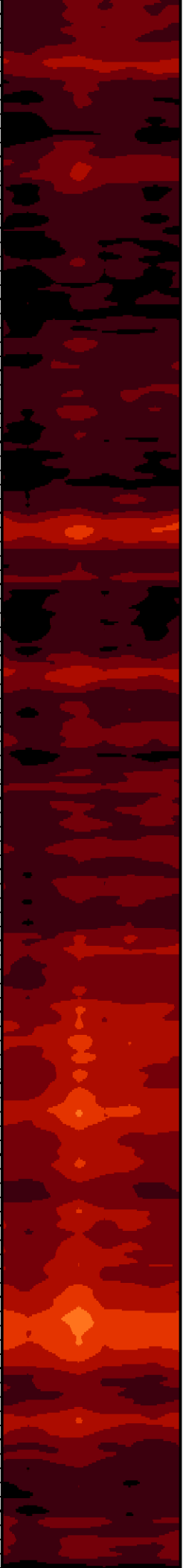
Field
: VEGA

File Interval
: 7130.25 - 7605.25 Feet

OCT
: p012g



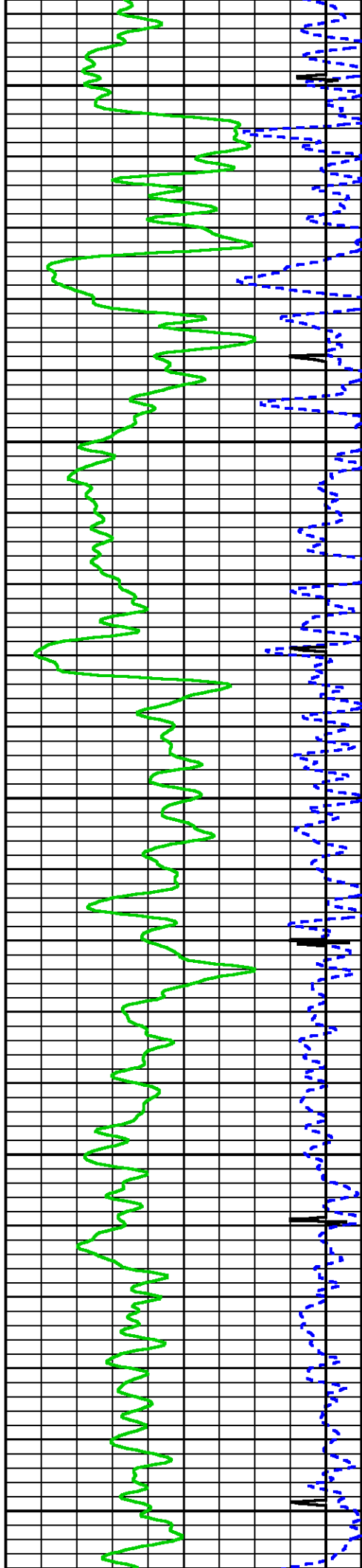




7200

7300

7400





RAL PRIMARY CALIBRATION SUMMARY

TOOL #: 1426XA 10417452

DATE/TIME PERFORMED: Mon Mar 12 13:33:00 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)	-0.01	0.03	-0.03	0.01	0.08	-0.02	-0.02	-0.01	-0.07	0.11	-0.02
AMP FLUID (mV)	43	43	43	43	41	42	43	43	43	56	43
TT (us)	215	215	215	214	213	215	214	213	215	322	215
M FACTOR	2.32	2.33	2.32	2.34	2.42	2.36	2.33	2.31	2.30	2.69	2.32

RAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1426XA 10417452

DATE/TIME PERFORMED: Mon Mar 12 13:38:48 2018

DAYS SINCE CAL: 0

UNIT #: 5753XD 111111

CABLE #: ML4291 SMALLINE

	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	-0.10	0.00	-0.00	0.15	-0.09	-0.19	0.04	0.07	0.45	-0.07
AMP AIR	3.88	3.30	2.59	3.21	4.07	4.05	4.18	3.51	3.52	4.53	100.09

SHOP M FACTOR	SHOP A FACTOR	WIREFLINE FACTOR
2.32	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

TEMP PRIMARY CALIBRATION SUMMARY

TOOL #: 1355XA 11871507

DATE/TIME PERFORMED: Fri Nov 17 14:01:05 2017

UNIT #: 3882TD HL6728

	T(0)	T(1)	T(2)	T(3)
Corr Coeff for Temp	0.000000E+00	1.000000E-01	0.000000E+00	0.000000E+00

# INSTRUMENT CONFIGURATION

Source File: /dat1a/LARAMIE\_NICHOLS\_0994-24-02W/p012g~-tdg

## CABLEHEAD

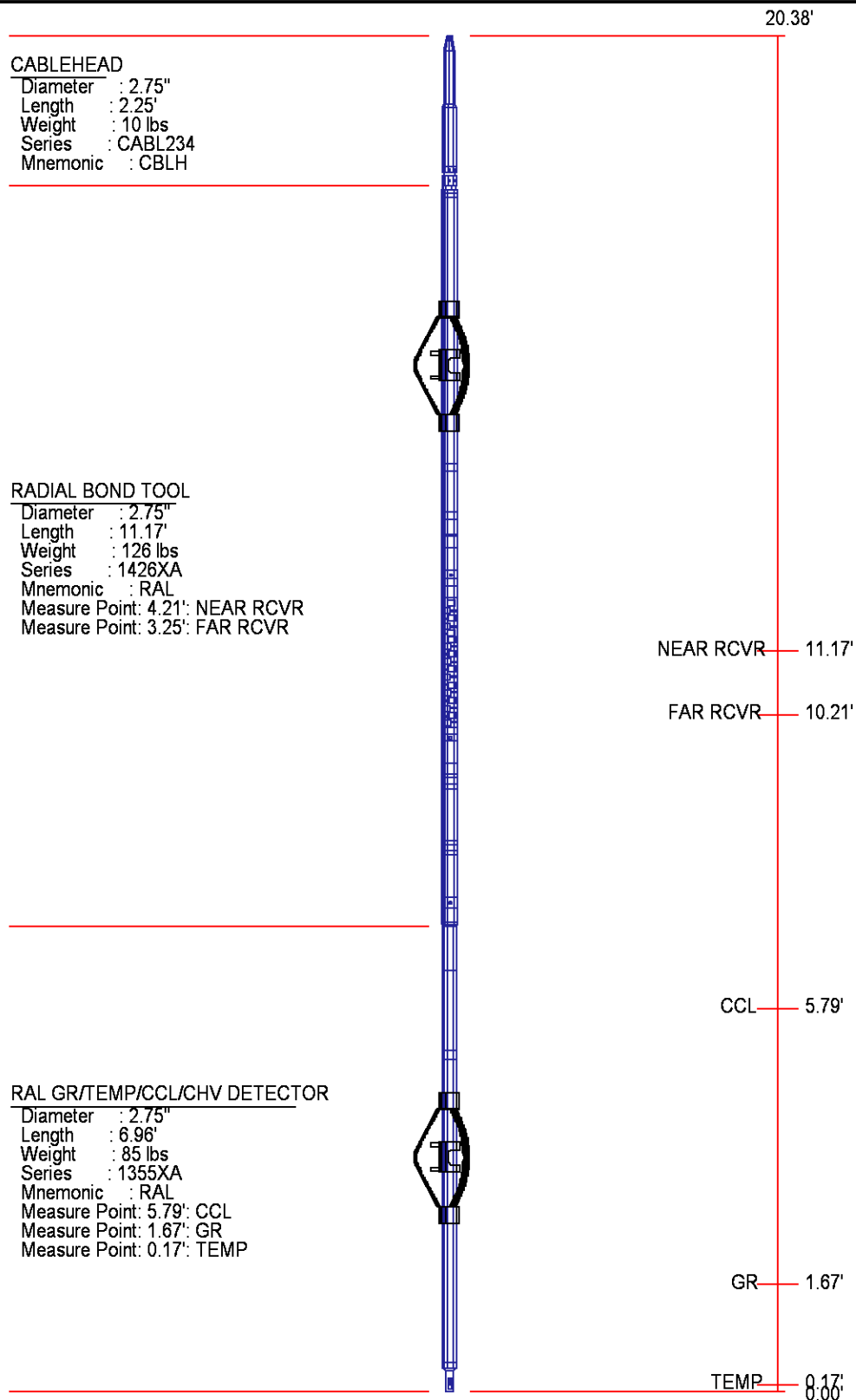
Diameter : 2.75"  
Length : 2.25'  
Weight : 10 lbs  
Series : CABL234  
Mnemonic : CBLH

## 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



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





COMPANY	LARAMIE ENERGY II LLC	
WELL	NICHOLS 0994-24-02W	
FIELD	VEGA	
COUNTY	MESA	STATE COLORADO

FILE NO:	
API NO:	05077104020000

LOCATION:
SHL 1792 FNL 2792 FEL
BHL 352 FNL 1544 FEL
SEC 24 TWP 9S RGE 94W

ELEVATIONS:
KB 7161 FT
DF
GL 7137 FT

DATE	12-Mar-2018
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