



RADIAL CEMENT BOND LOG

FILE NO:	COMPANY	LARAMIE ENERGY
API NO:	WELL	BRUTON FEDERAL 19-09E
05077104330000	FIELD	VEGA
	COUNTY	MESA
	STATE	COLORADO

Version	LOCATION:	OTHER SERVICES
	SHL: 39.262729 N, 107.815084 W	RPM
	BHL: 39.263774 N, 107.806459 W	
	SEC 19 TWP 9S RGE 93W	

PERMANENT DATUM	GL	ELEVATION	7262 FT
LOG MEASURED FROM	KB	24 FT	ABOVE P.D.
DRILL. MEAS. FROM	KB		

ELEVATIONS:
KB 7286 FT
DF 7285 FT
GL 7262 FT

DATE	05-Dec-2017
RUN	1
TRIP	1
SERVICE ORDER	US130067
DEPTH DRILLER	8132 FT
DEPTH LOGGER	8056 FT
BOTTOM LOGGED INTERVAL	8056 FT
TOP LOGGED INTERVAL	24 FT
TIME STARTED	16:00
TIME FINISHED	18:30
OPERATOR RIG TIME	2.5 HOURS
TYPE OF FLUID IN HOLE	FRESHWATER
FLUID DENSITY	NA
FLUID SALINITY	NA
FLUID LEVEL	25 FT
LOGGED CEMENT TOP	2632 FT
WELLHEAD PRESSURE	0 PSI
MAXIMUM HOLE DEVIATION	NA
NOMINAL LOGGING SPEED	100 F/MN
MAX. RECORDED TEMP.	240 DEGF
REFERENCE LOG	NA
REFERENCE LOG DATE	NA
EQUIP. NO.	HL6670
LOCATION	T. NEWELL
GRAND JCT.	
RECORDED BY	
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.

BOREHOLE RECORD		
BIT SIZE	FROM	TO

CASING RECORD				
SIZE	WEIGHT	GRADE	FROM	TO

CEMENTING DATA							
JOB TYPE	FROM	TO	TIME	DATE	CEMENT TYPE	DENSITY	VOLUME

PERFORATION RECORD						
PERFORATION TYPE	POSITION	PHASING	SPACING	DENSITY	FROM	TO

REMARKS

RUN 1 TRIP 1: *2 OPERATIONS IN WELLBORE*

OPERATION 1: RAL/GR/CCL RUN CENTRALIZED

LOGGED WITH A BSL ON WELL HEAD

LOGGED WITH 0 PSI ON WELLHEAD

SJ: 6242' - 6265'
SJ: 7263' - 7285'

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

EQUIPMENT DATA

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

RAL MAIN PASS 0 PSI ON WELLHEAD

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

Plotted: Tue Dec 05 21:00:30 2017

PARAMETER AND FILTER SUMMARY REPORT

FILE: C:\dat1a\WELLDATA\Laramie\Laramie Bruton Federal 19-09Elp012g02.prm
LOGGING MODE: DEPTH DIRECTION: UP
TOP DEPTH: -8.500 ft BOTTOM DEPTH: 8041.000 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

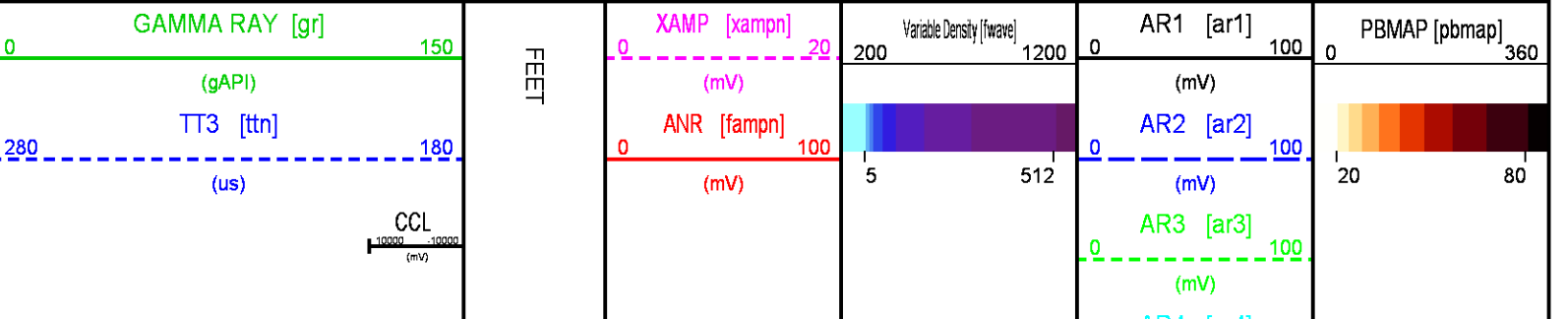
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
AMPLITUDE WINDOW (NEAR)	AMP WINDOW START (fgp1*)	182	us	TOP	BOTTOM
	AMP WINDOW START (fgp2*)	182	us	"	"
	AMP WINDOW START (fgp3*)	182	us	"	"
	AMP WINDOW START (fgp4*)	182	us	"	"
	AMP WINDOW START (fgp5*)	182	us	"	"
	AMP WINDOW START (fgp6*)	182	us	"	"
	AMP WINDOW START (fgp7*)	182	us	"	"
	AMP WINDOW START (fgp8*)	182	us	"	"
	AMP WINDOW START (fgpn*)	182	us	"	"
	AMP WINDOW LENGTH	25	us	"	"
TRAVEL TIME WINDOW (NEAR)	TT WINDOW START (ttn*)	170	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	"	"

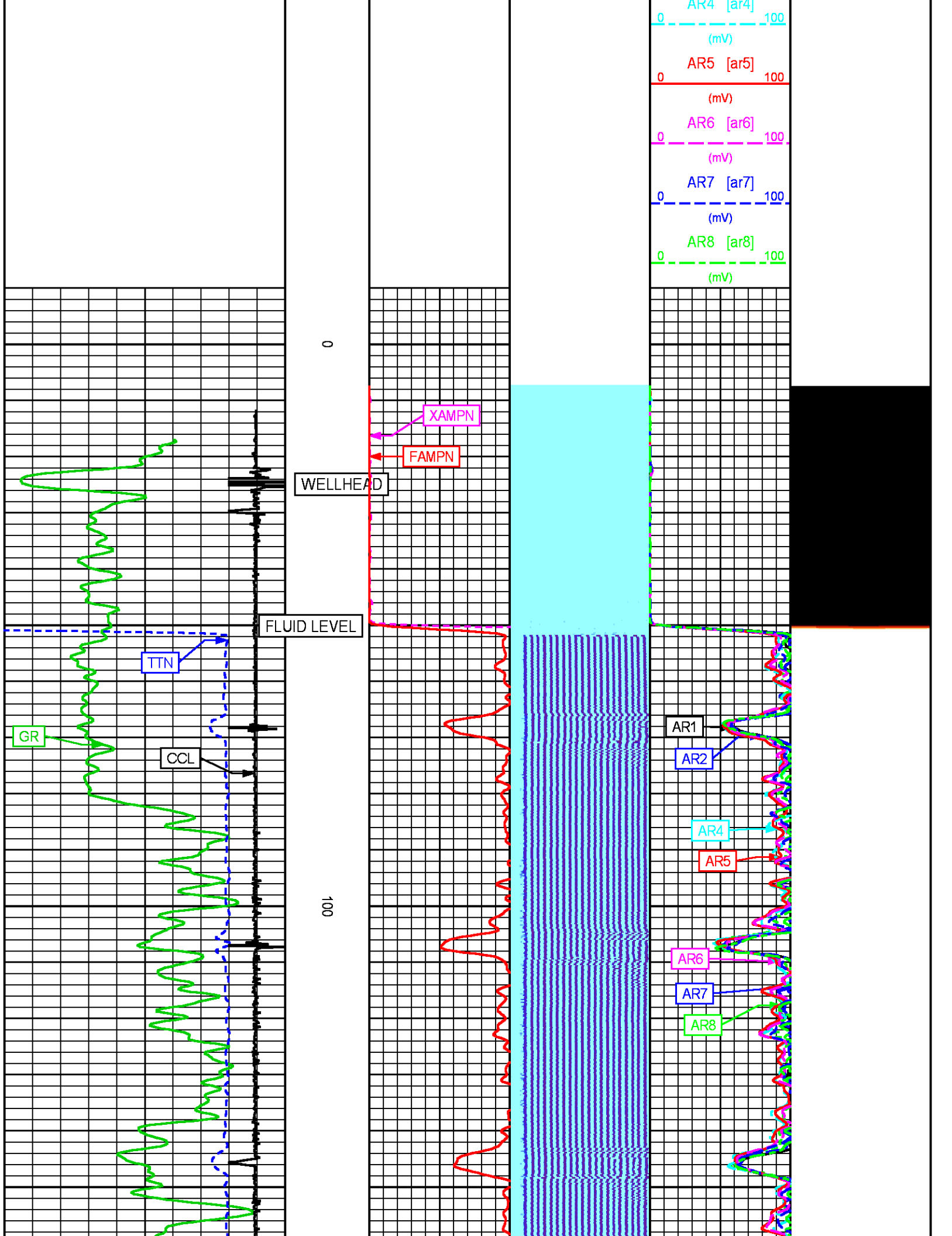
BASELINE NOISE (NEAR)		NOISE WINDOW START	125	us	"	"
		NOISE WINDOW LENGTH	25	us	"	"
PERCENT BOND CEMENT MAP						
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)		
RAL FREE PIPE AMPLITUDE	FREE AMP REC 1	80	mV	TOP	BOTTOM	
	FREE AMP REC 2	80	mV	"	"	
	FREE AMP REC 3	80	mV	"	"	
	FREE AMP REC 4	80	mV	"	"	
	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	"	"	

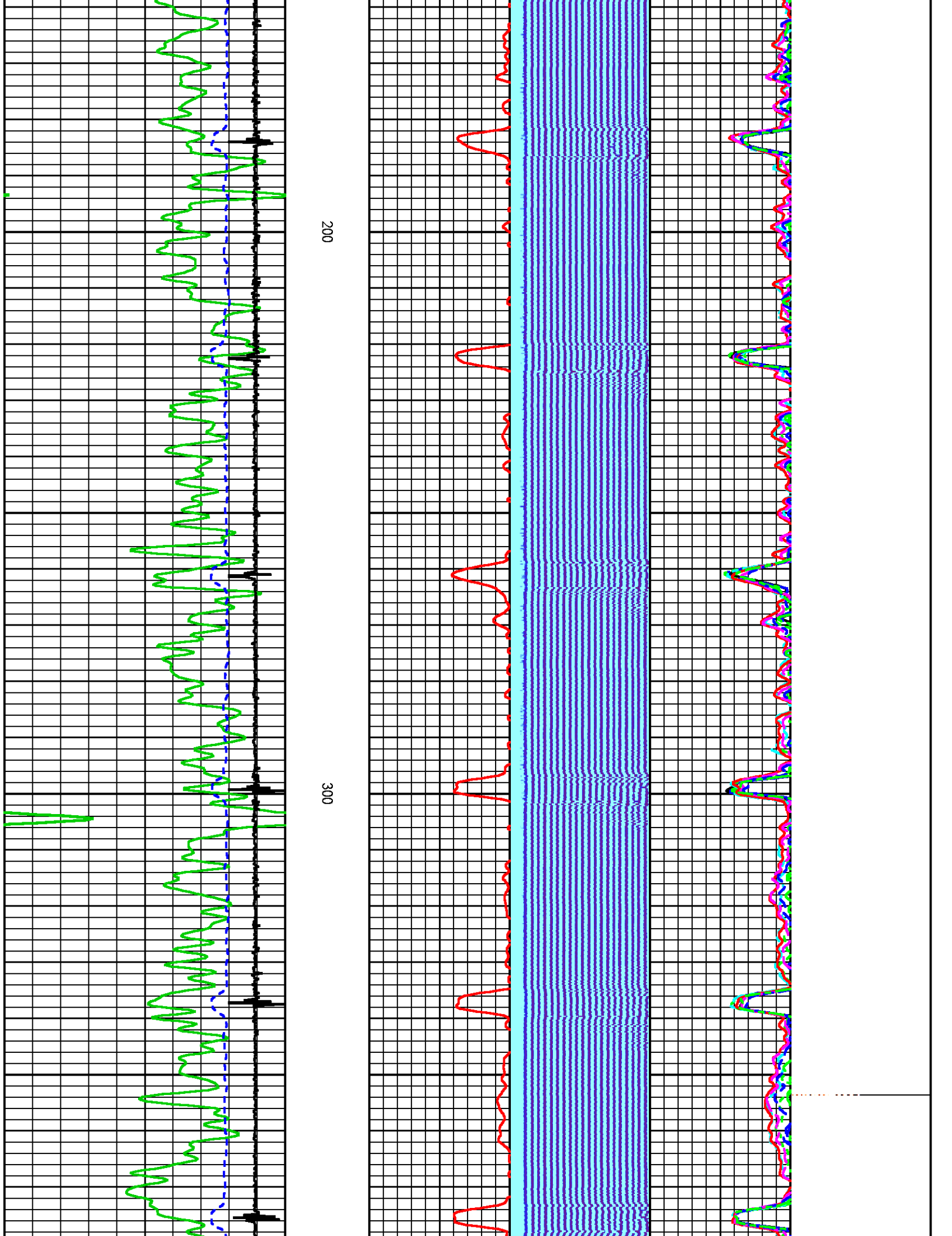
CURVE DESCRIPTION REPORT		
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AR1	N/A	FIXED GATE AMPLITUDE T-R1
F1:AR2	N/A	FIXED GATE AMPLITUDE T-R2
F1:AR3	N/A	FIXED GATE AMPLITUDE T-R3
F1:AR4	N/A	FIXED GATE AMPLITUDE T-R4
F1:AR5	N/A	FIXED GATE AMPLITUDE T-R5
F1:AR6	N/A	FIXED GATE AMPLITUDE T-R6
F1:AR7	N/A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

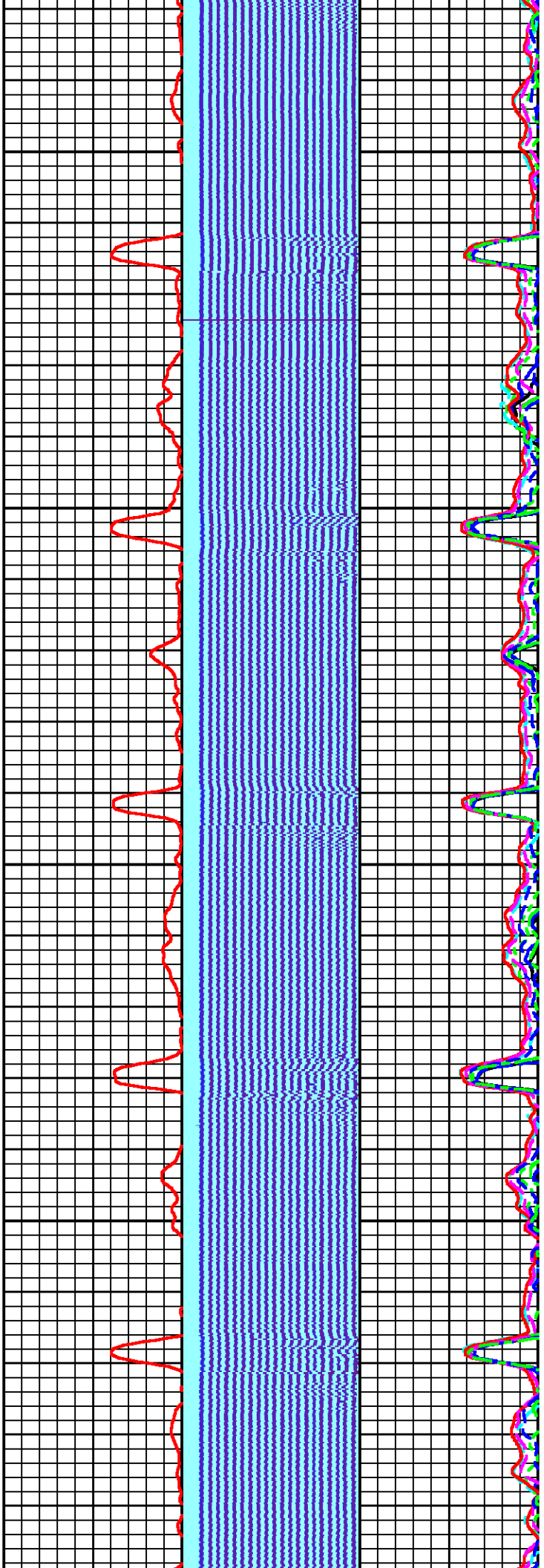
CURVE MEASURE POINT OFFSET							
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
AR1	-11.25	AR5	-11.25	CCL	-5.75	XAMPN	-11.25
AR2	-11.25	AR6	-11.25	FAMPN	-11.25		
AR3	-11.25	AR7	-11.25	GR	-1.75		
AR4	-11.25	AR8	-11.25	TTN	-11.25		

Presentation	: BHIBX9FSY1:C:\dat1a\WELLDATA\Laramie\Laramie Bruton Federal 19-09E\RAL_MN_19-09E.fvpdf [5"/100' Scale]
Plot Interval	: -10 - 8070 Feet
Data File 1	: F1 : BHIBX9FSY1:C:\dat1a\WELLDATA\Laramie\Laramie Bruton Federal 19-09E\RAL_MN_19-09E.xtf
Created On	: N/A
Company	: LARAMIE ENERGY
Well	: BRUTON 19-09E
Field	: VEGA
File Interval	: -8.5 - 8067.25 Feet
OCT	: p012g



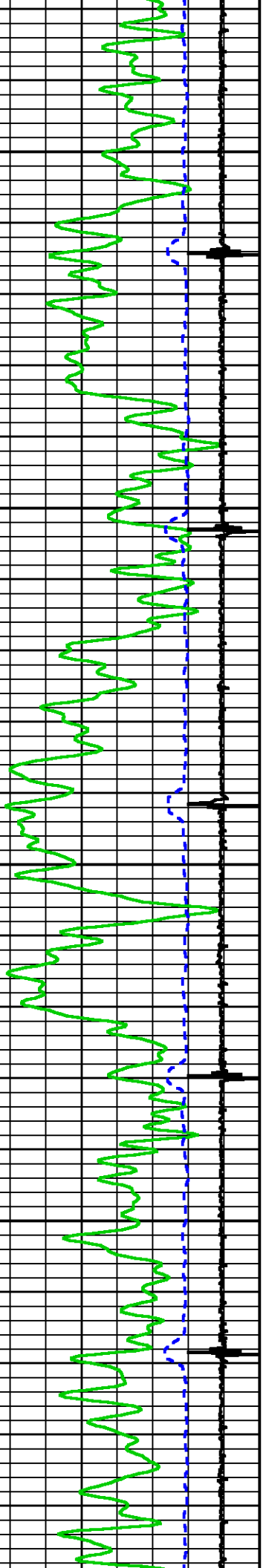


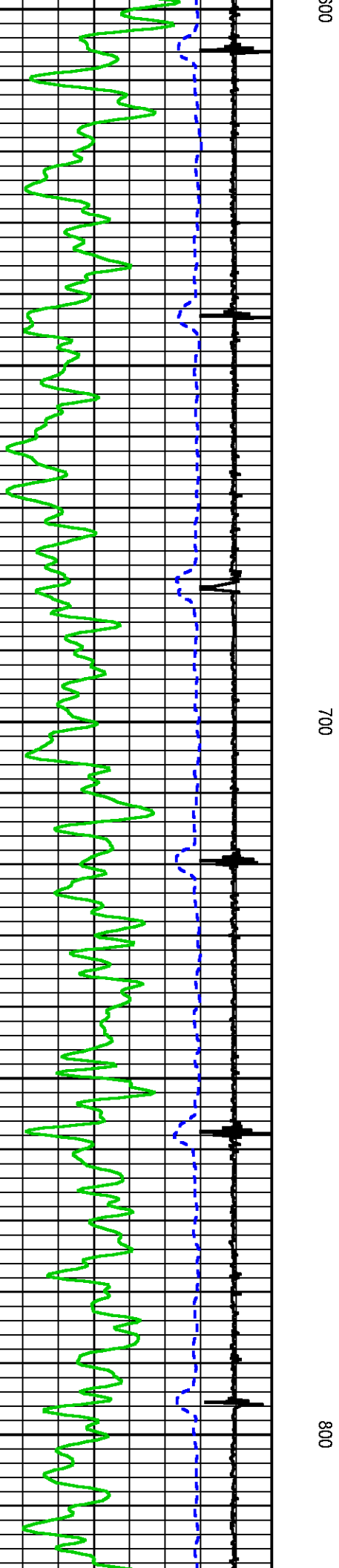
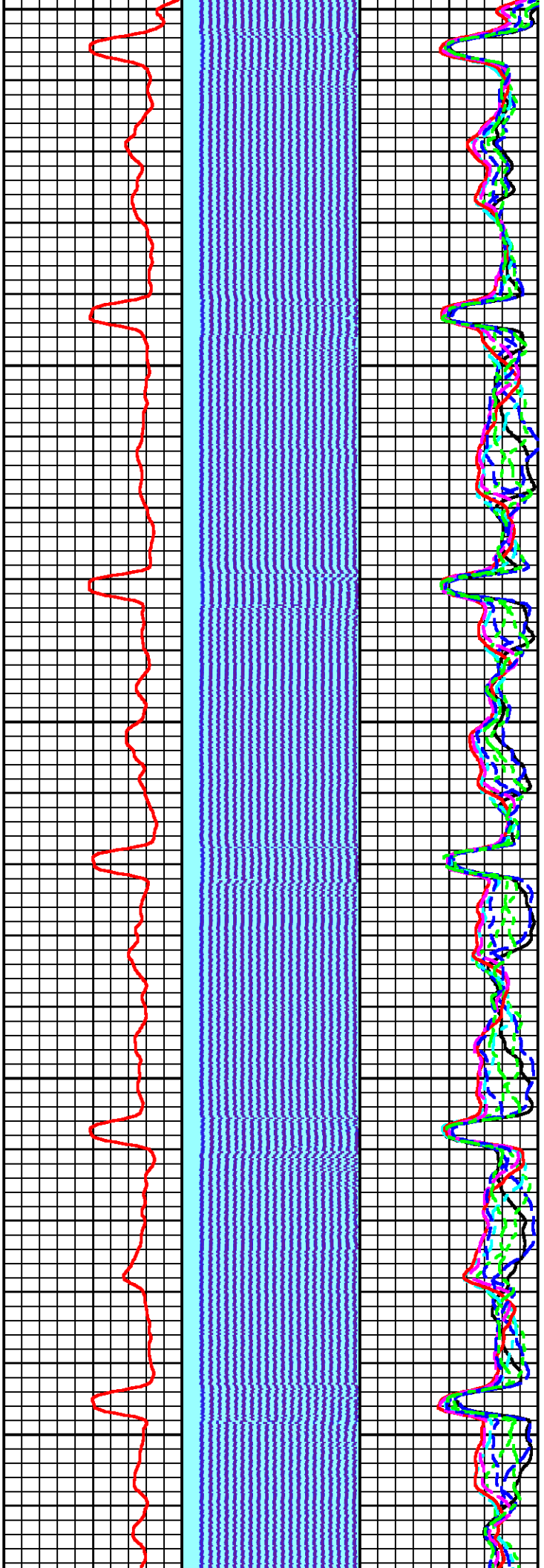


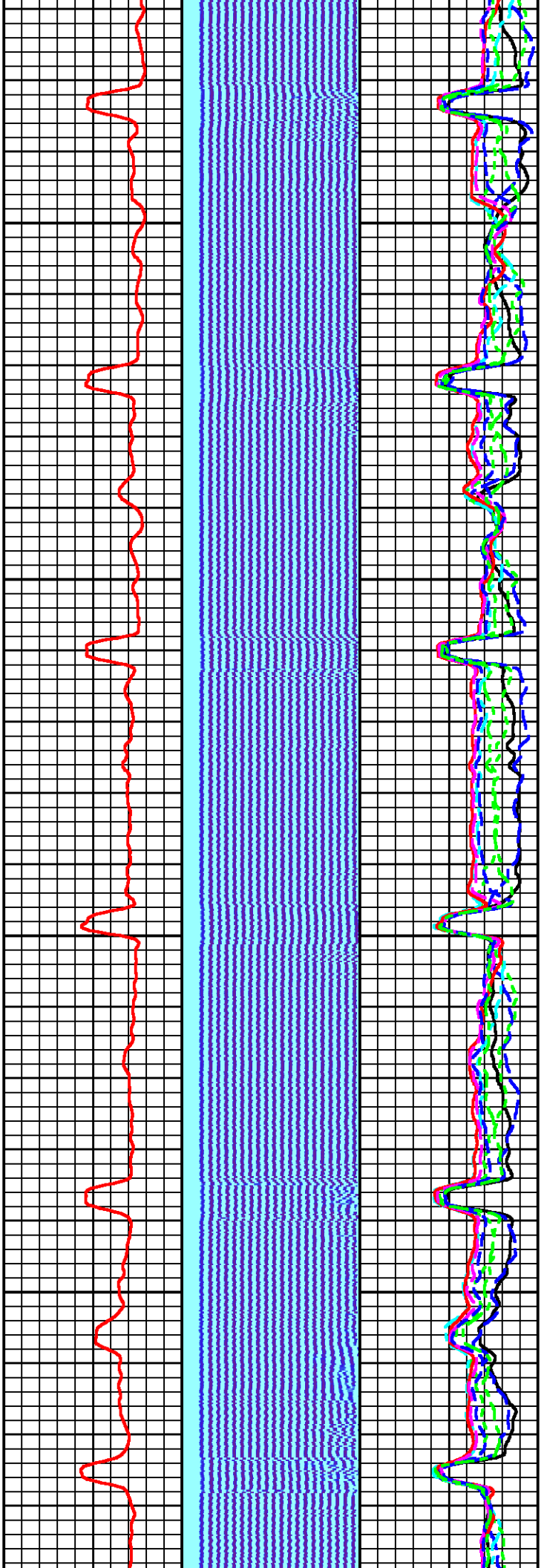


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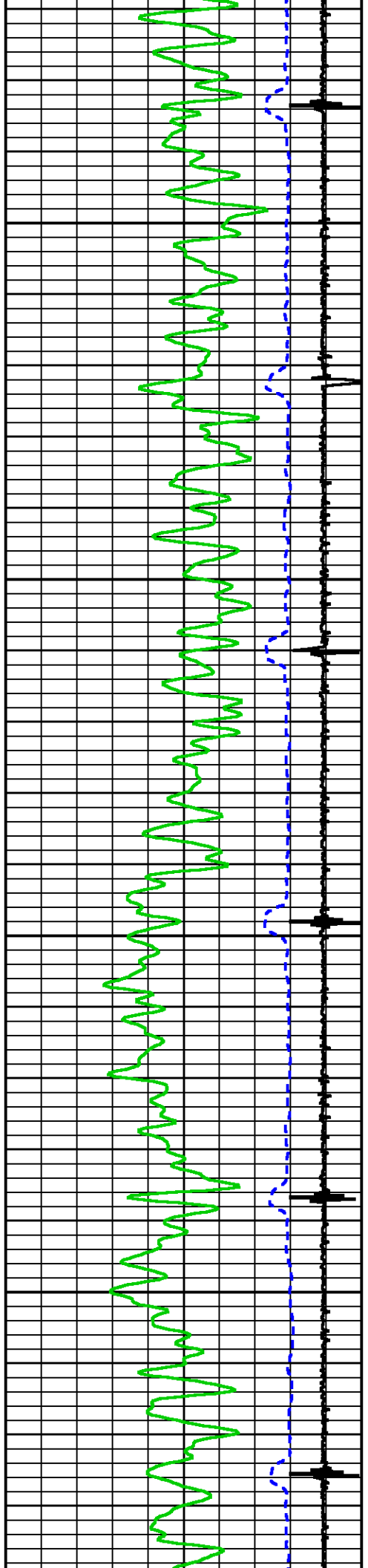


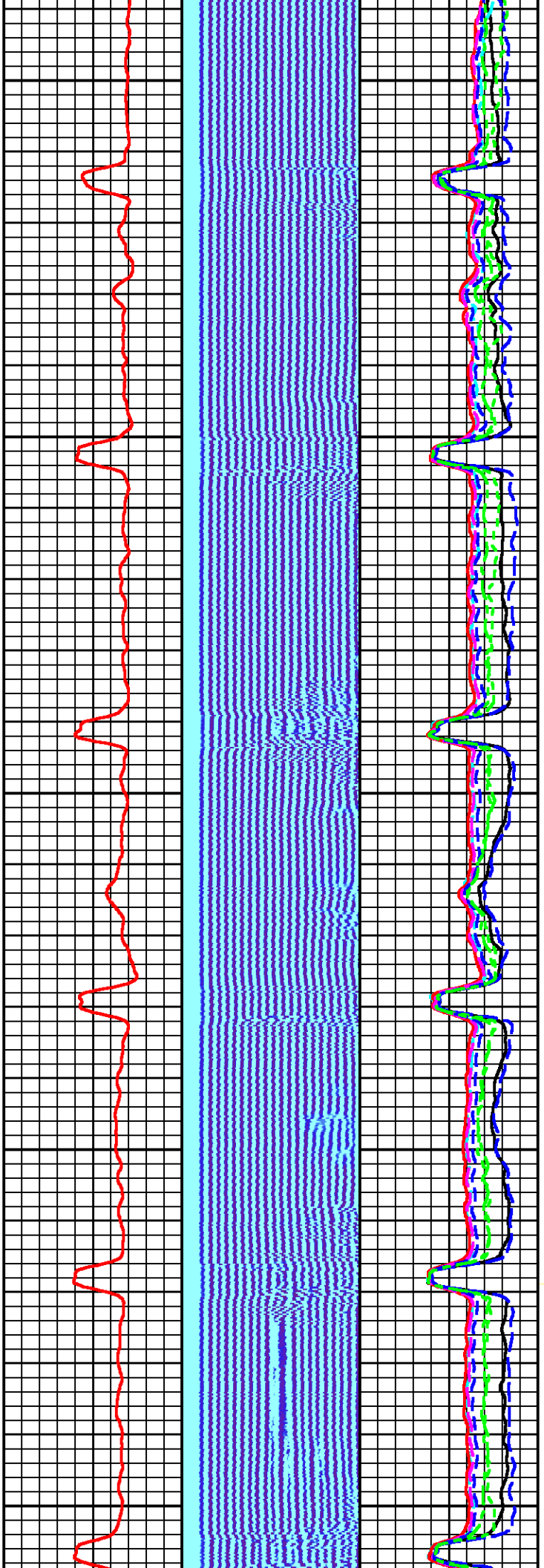




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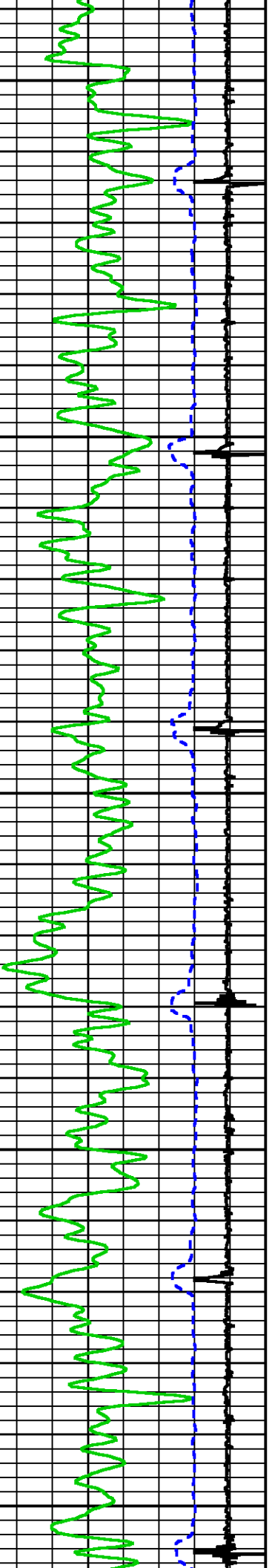
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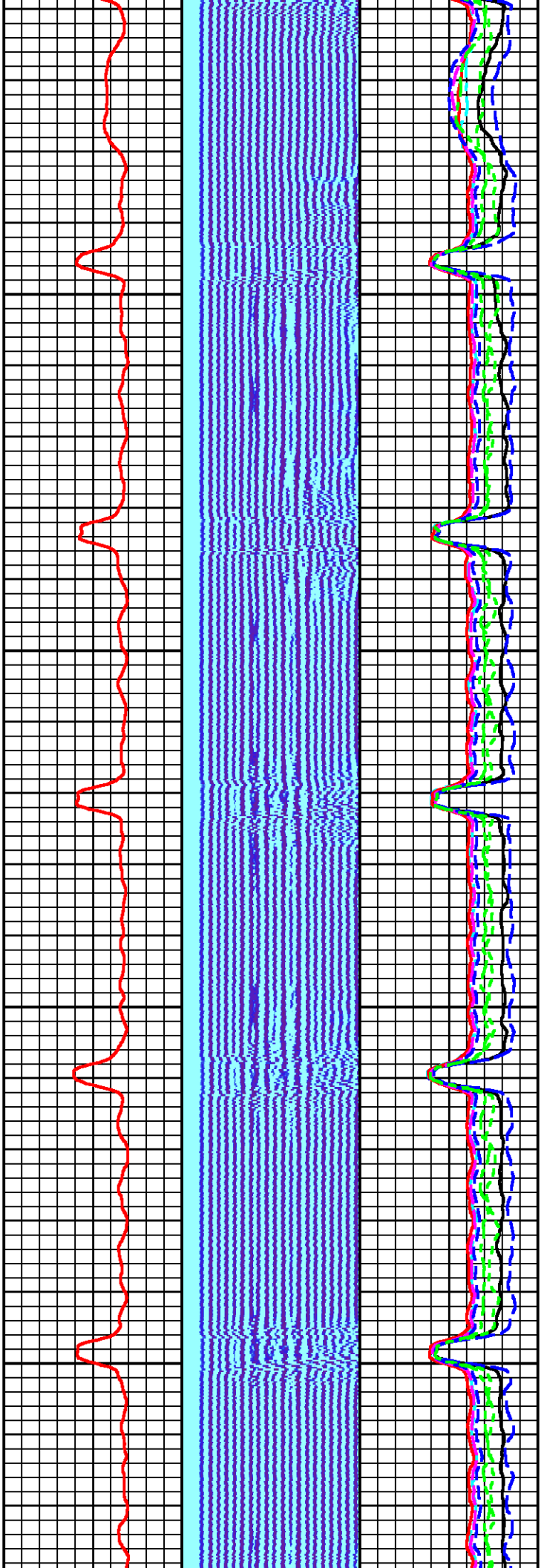




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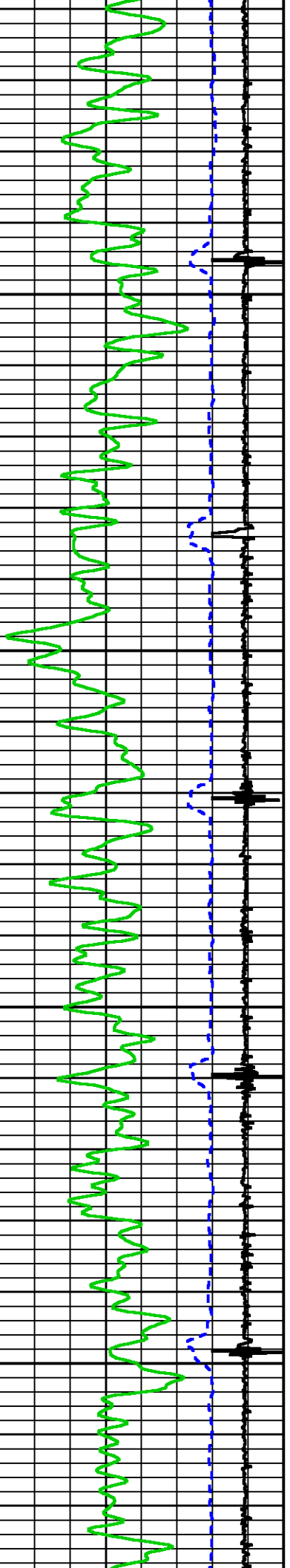
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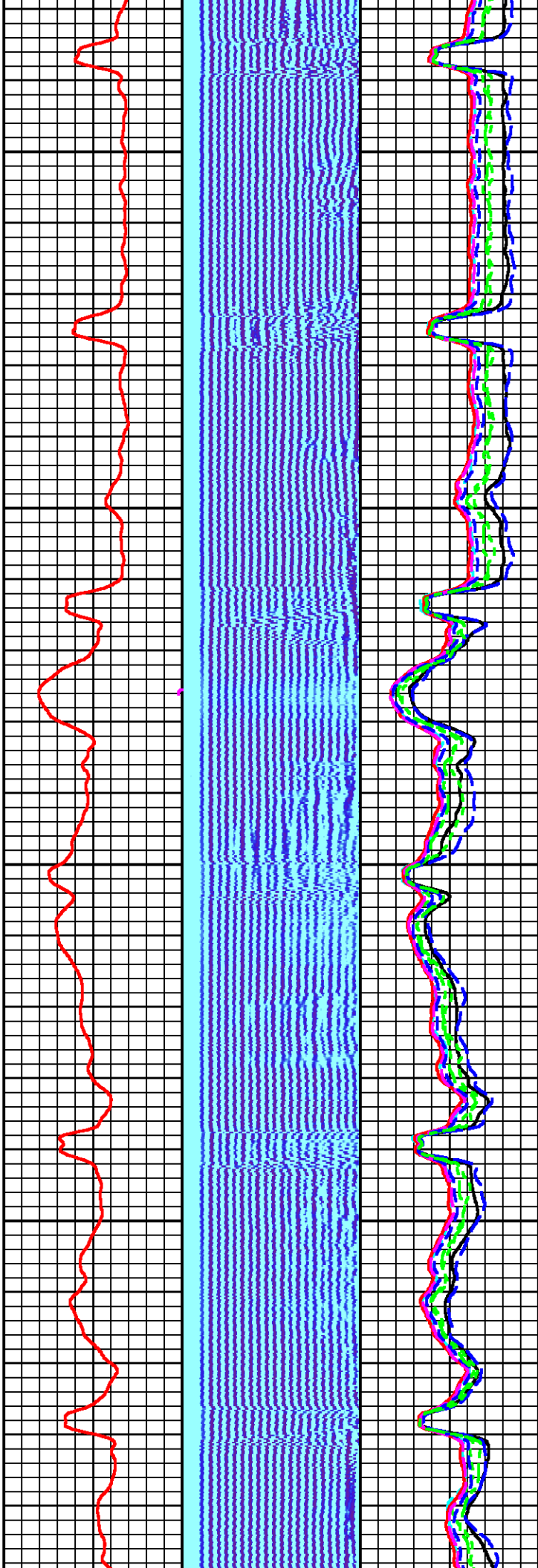
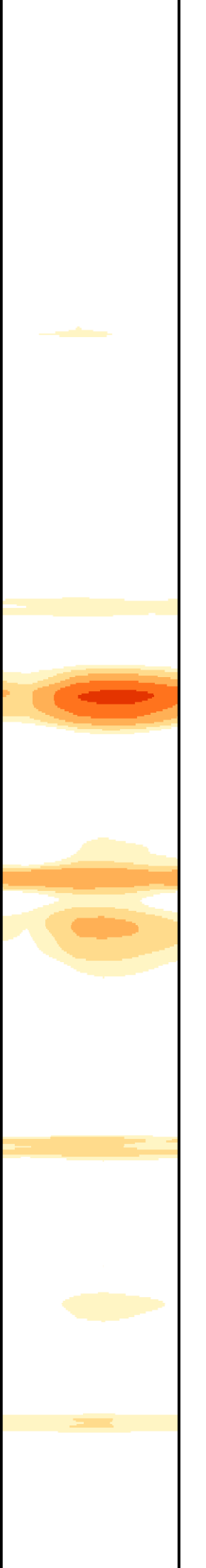




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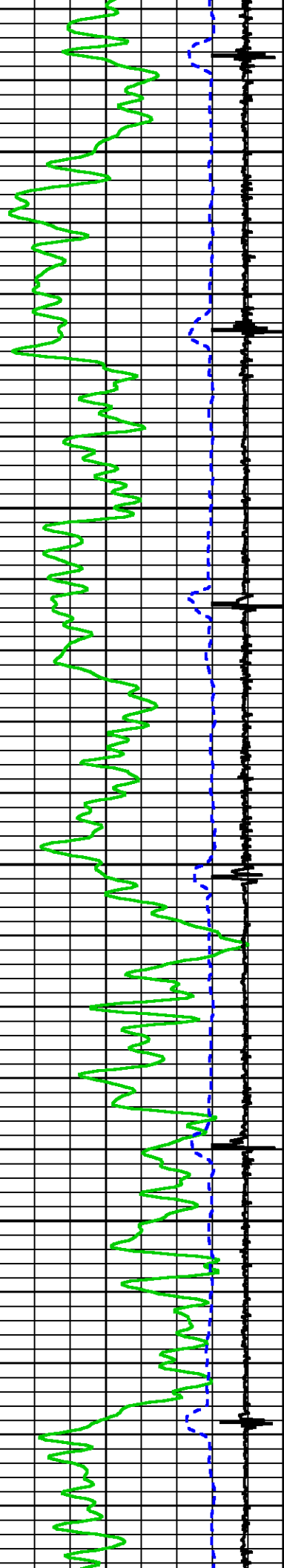


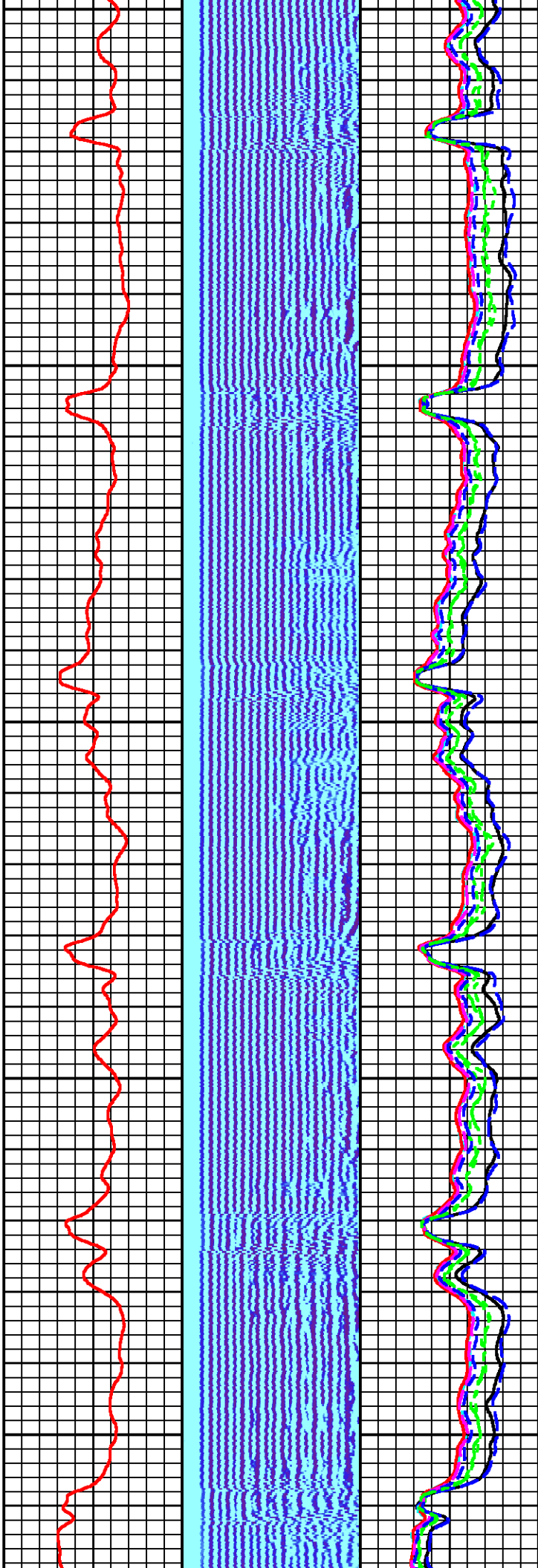
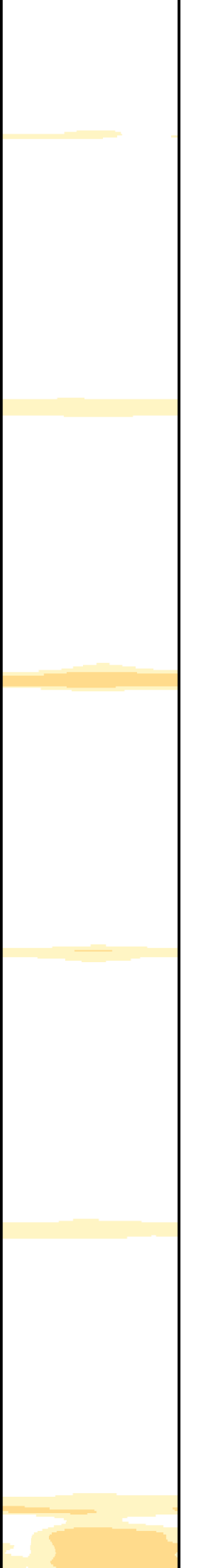


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1600

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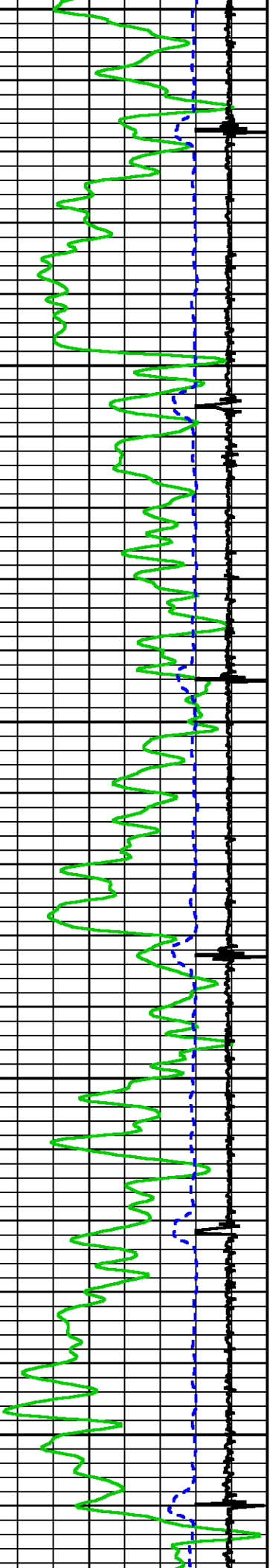


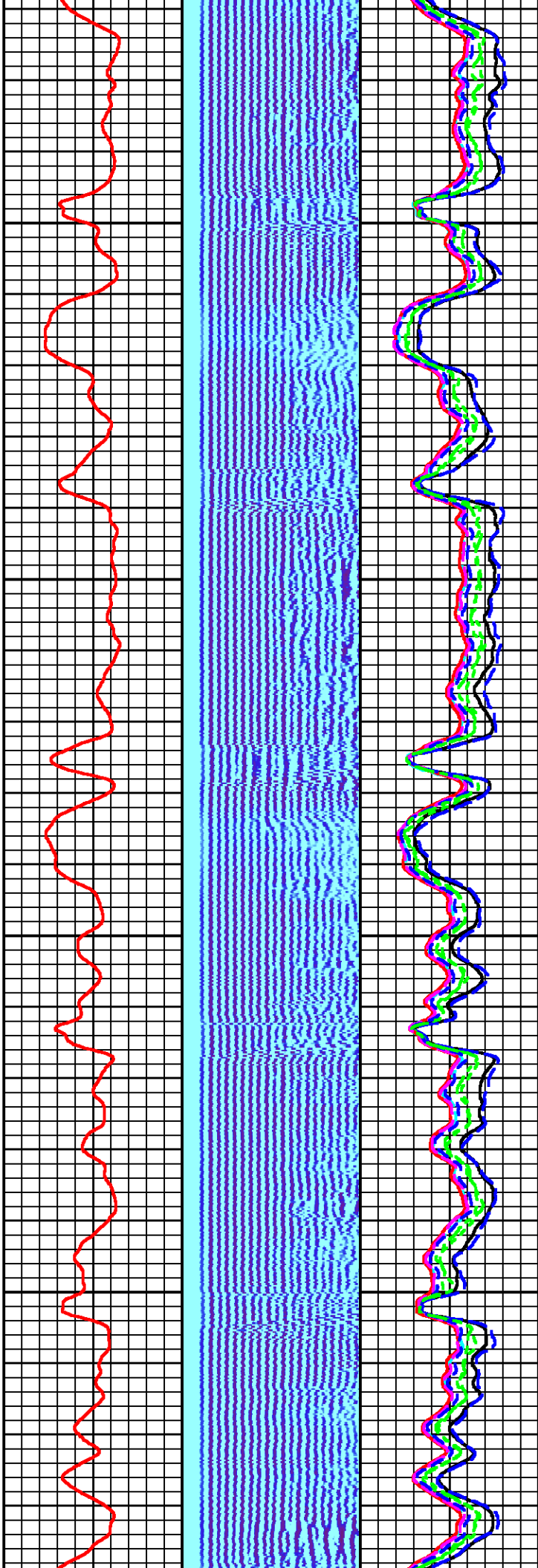
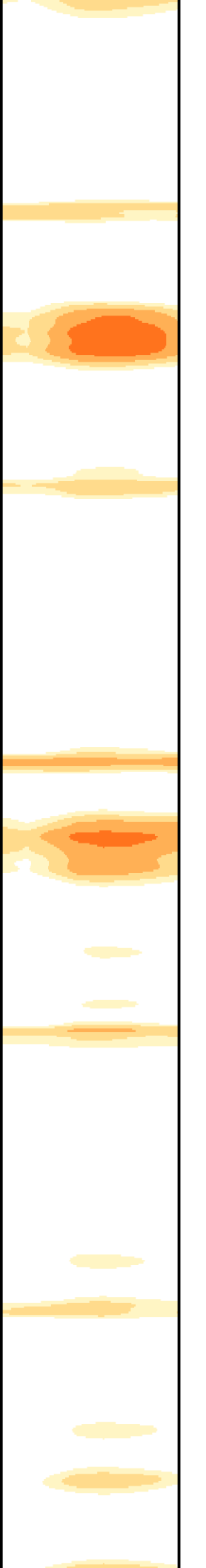


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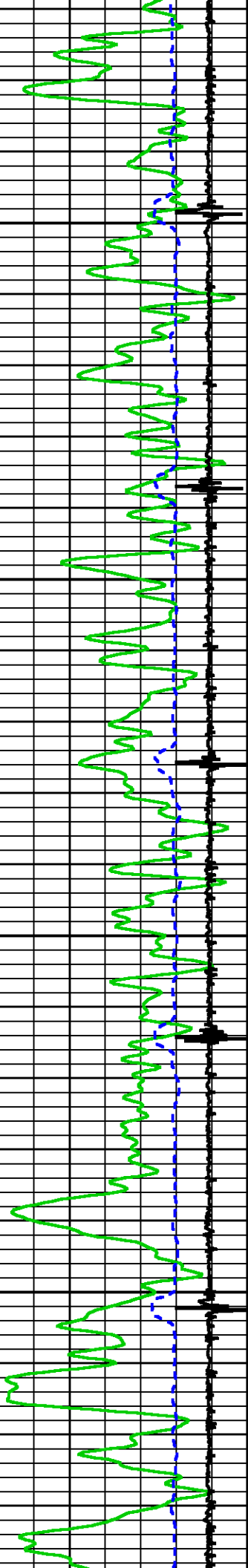
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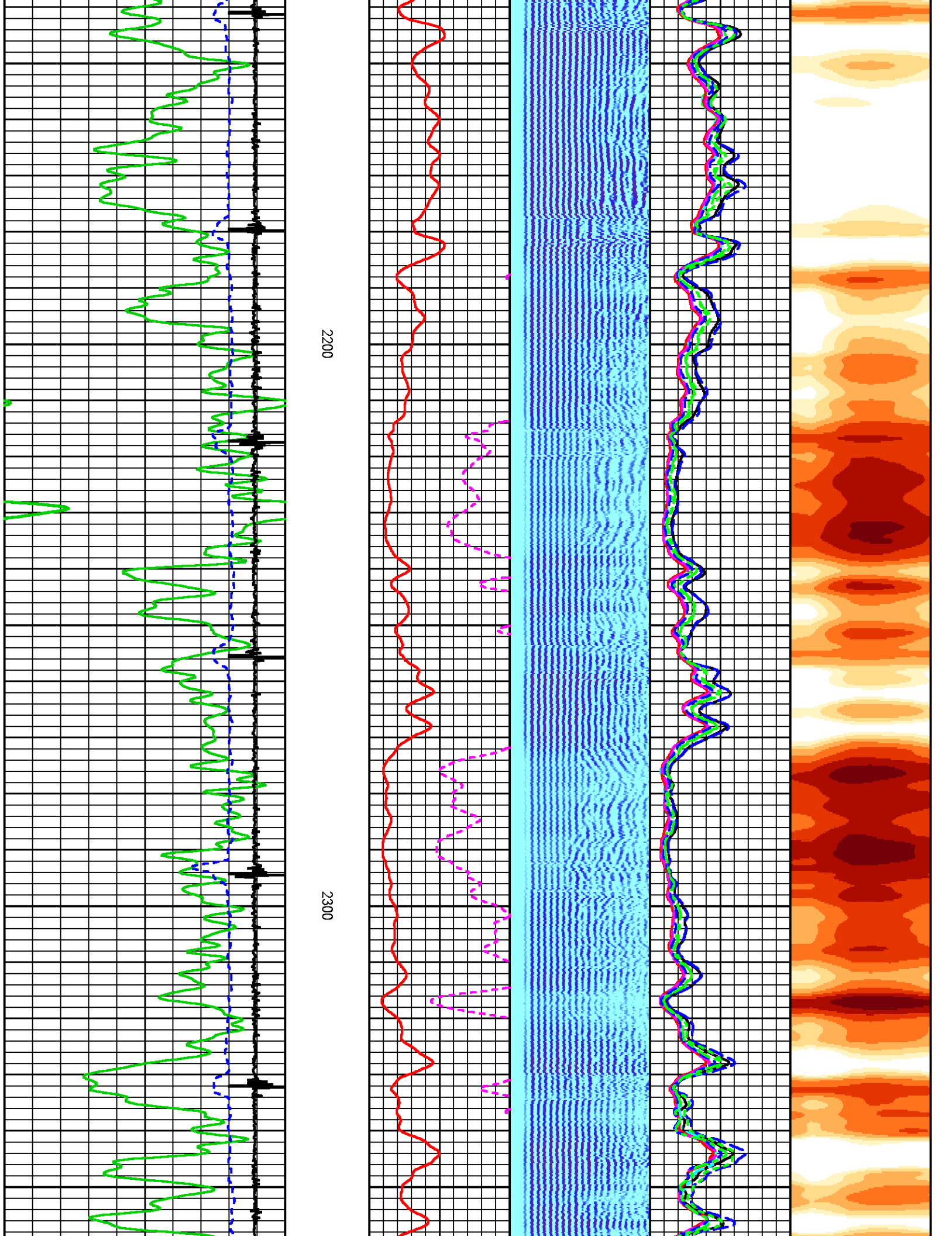


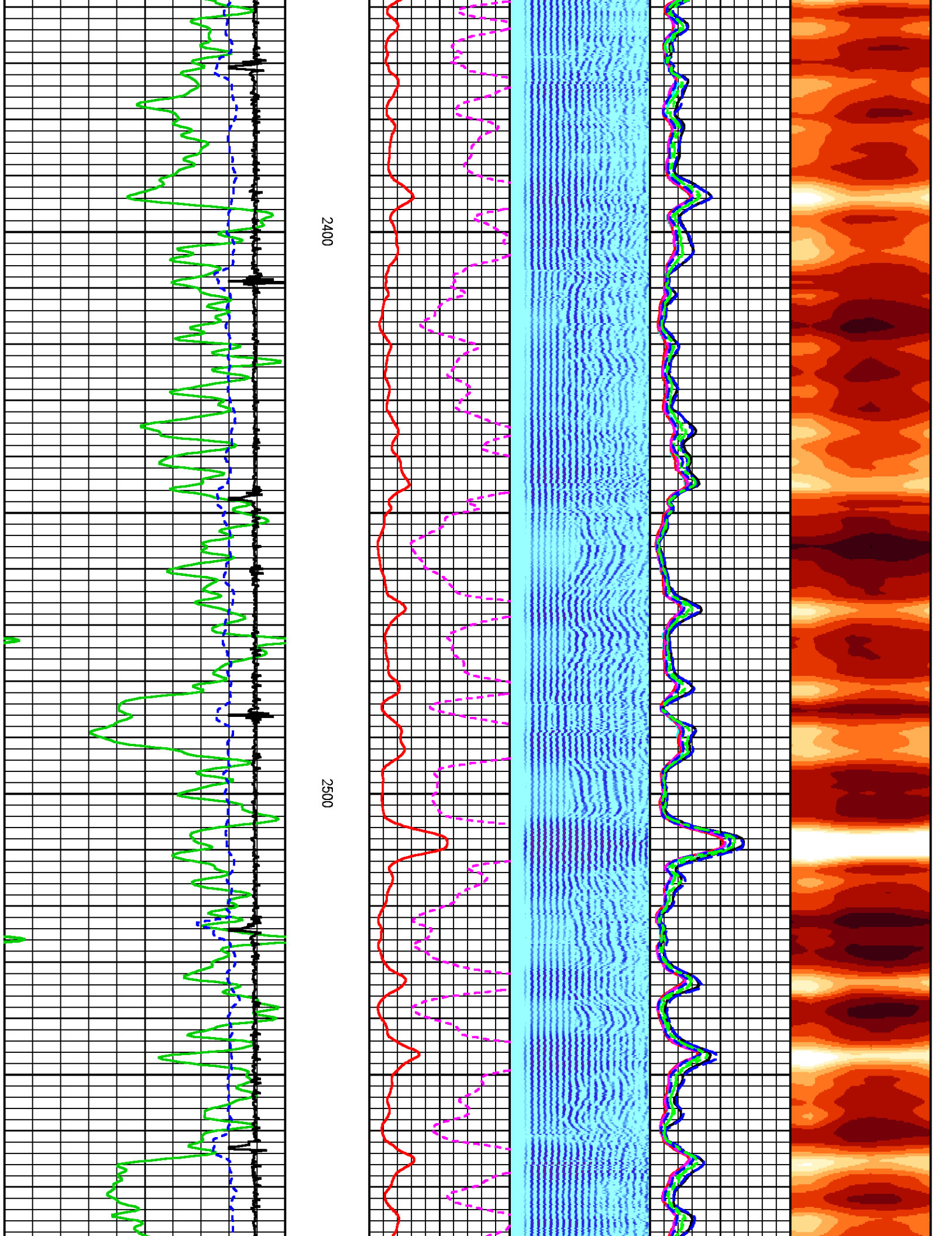


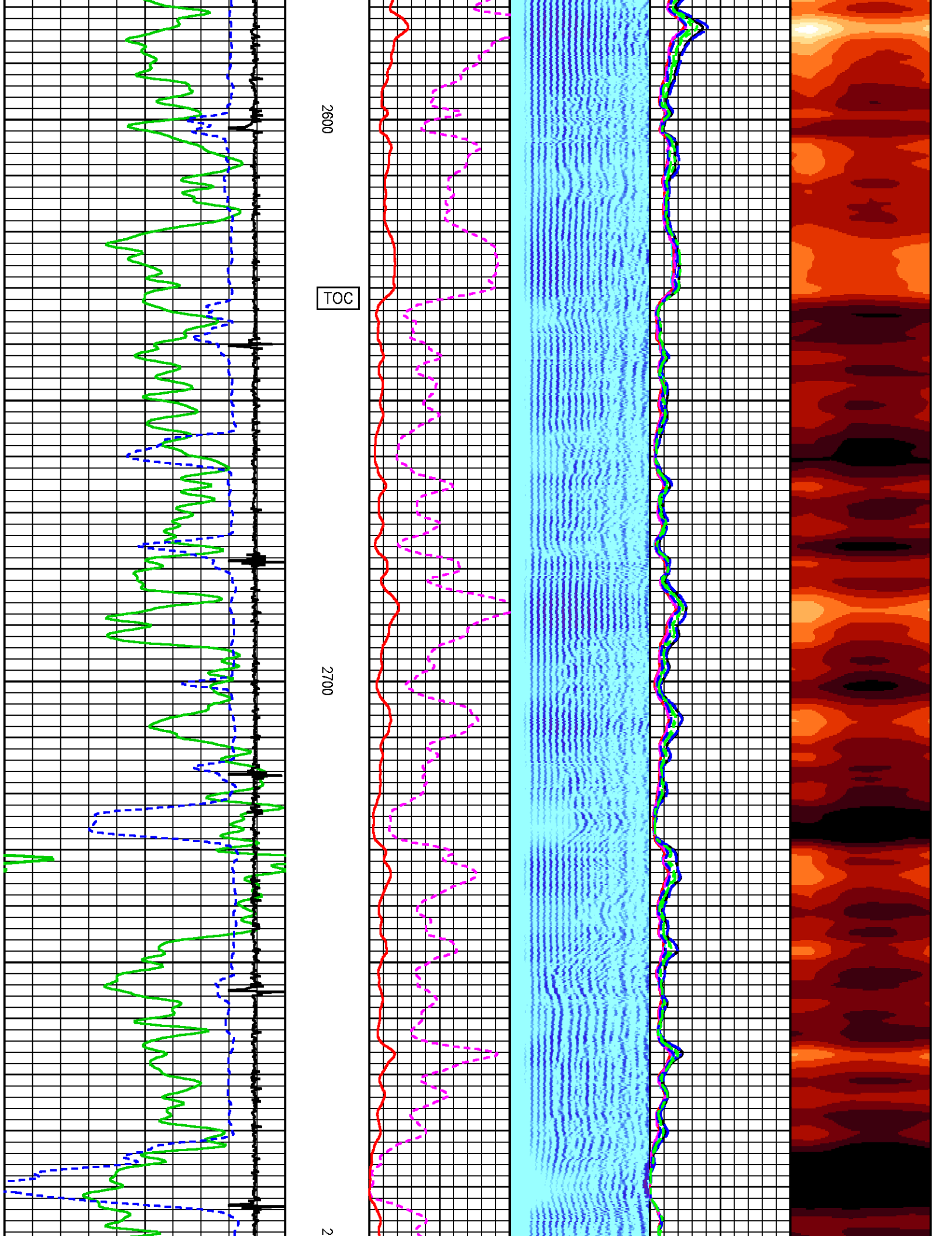
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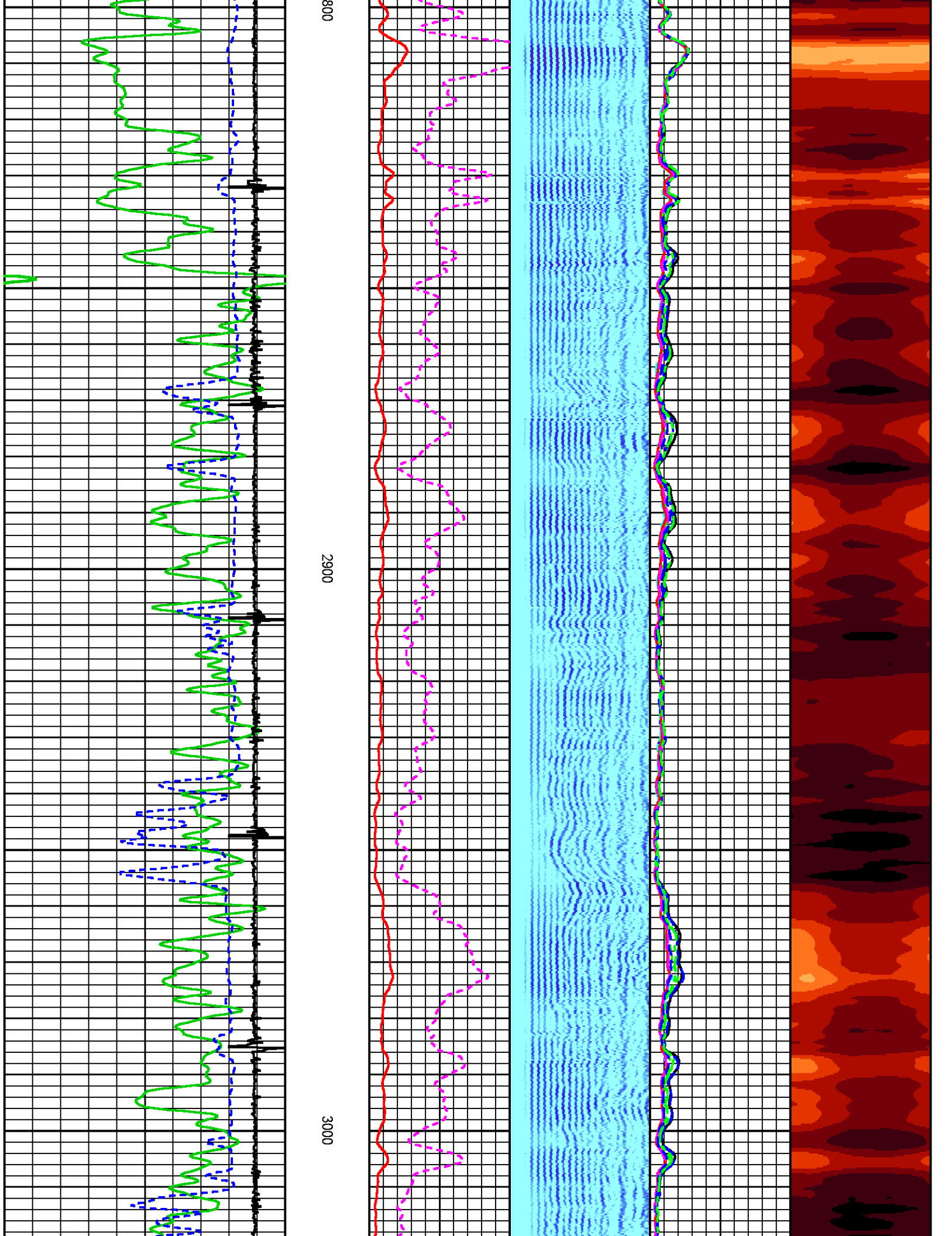
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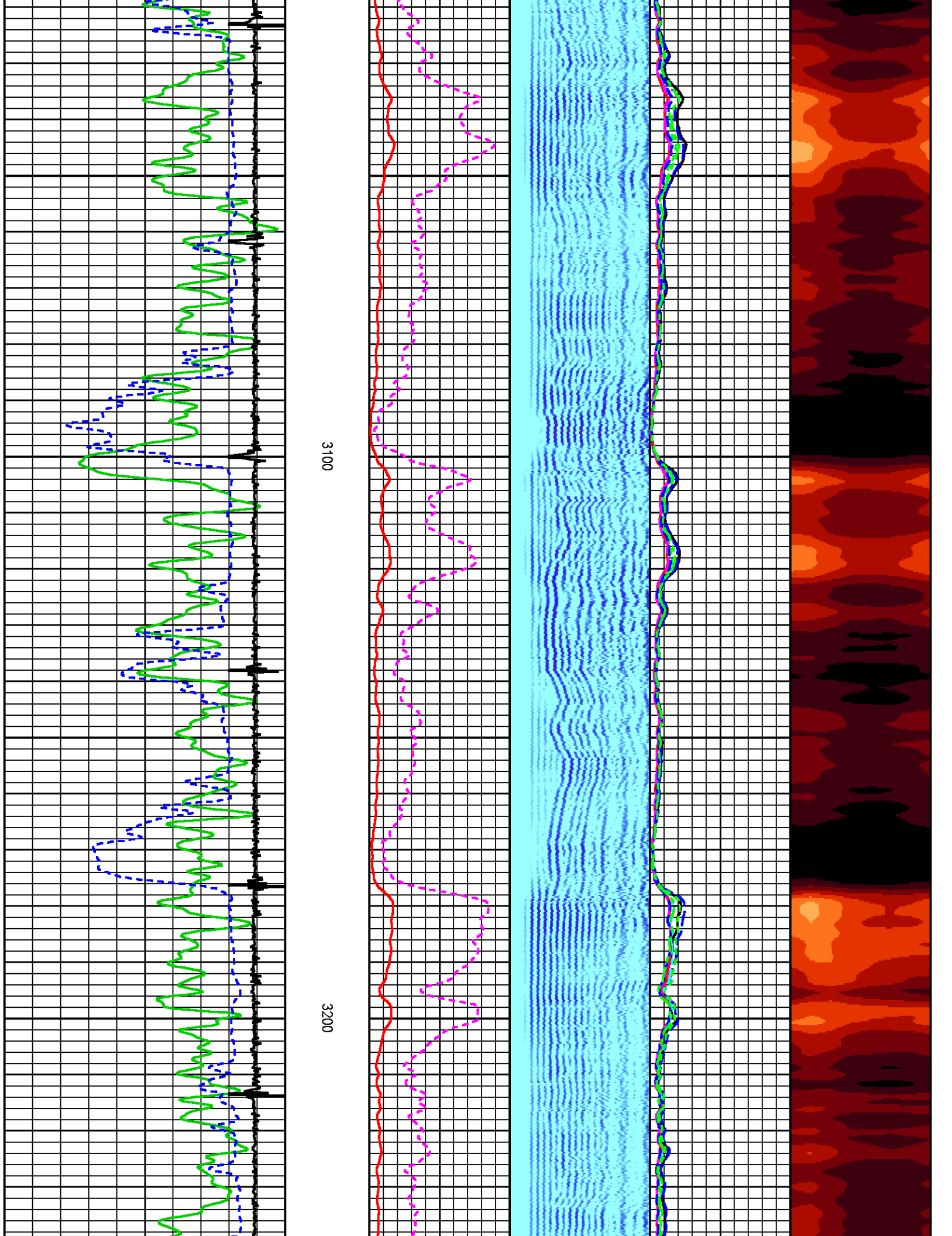


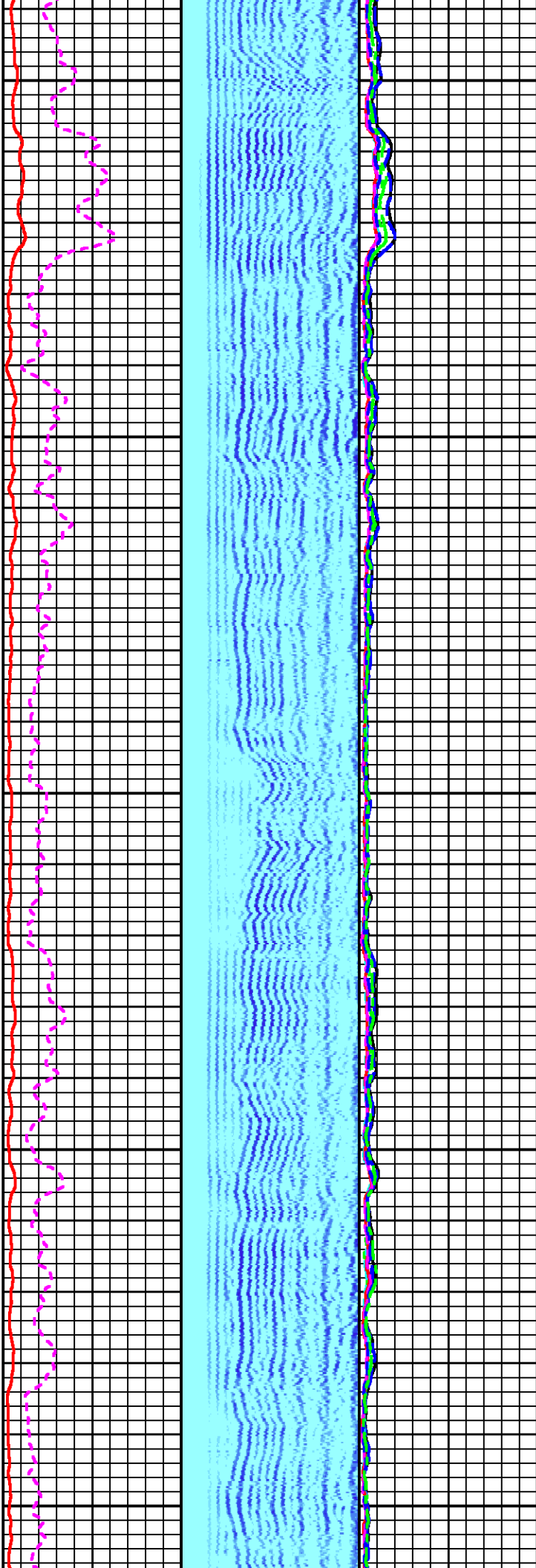






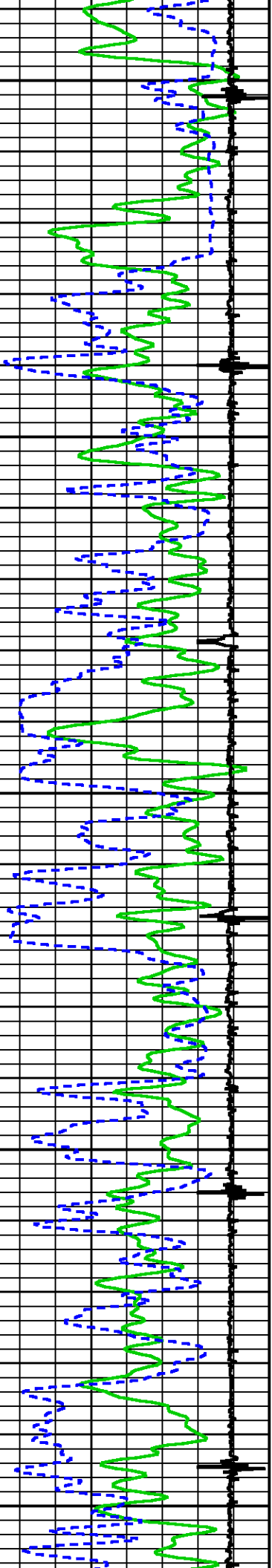


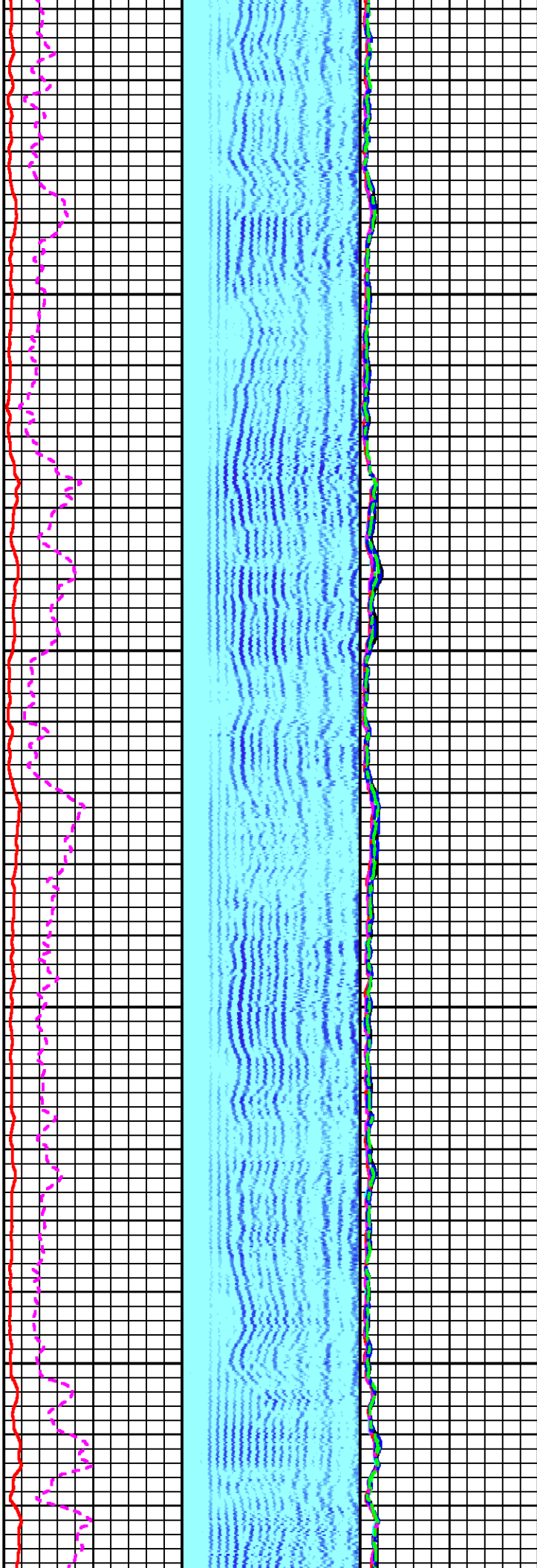
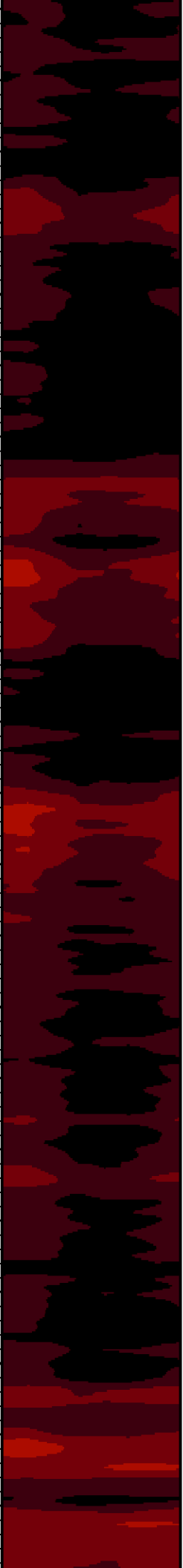




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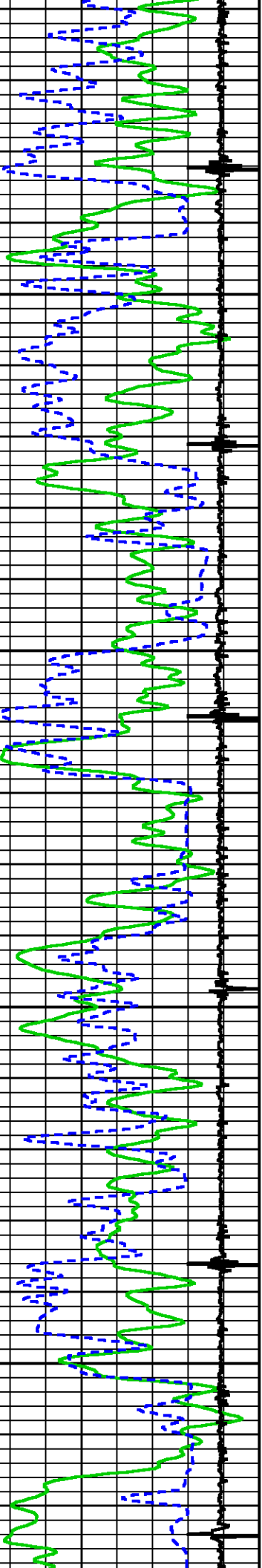
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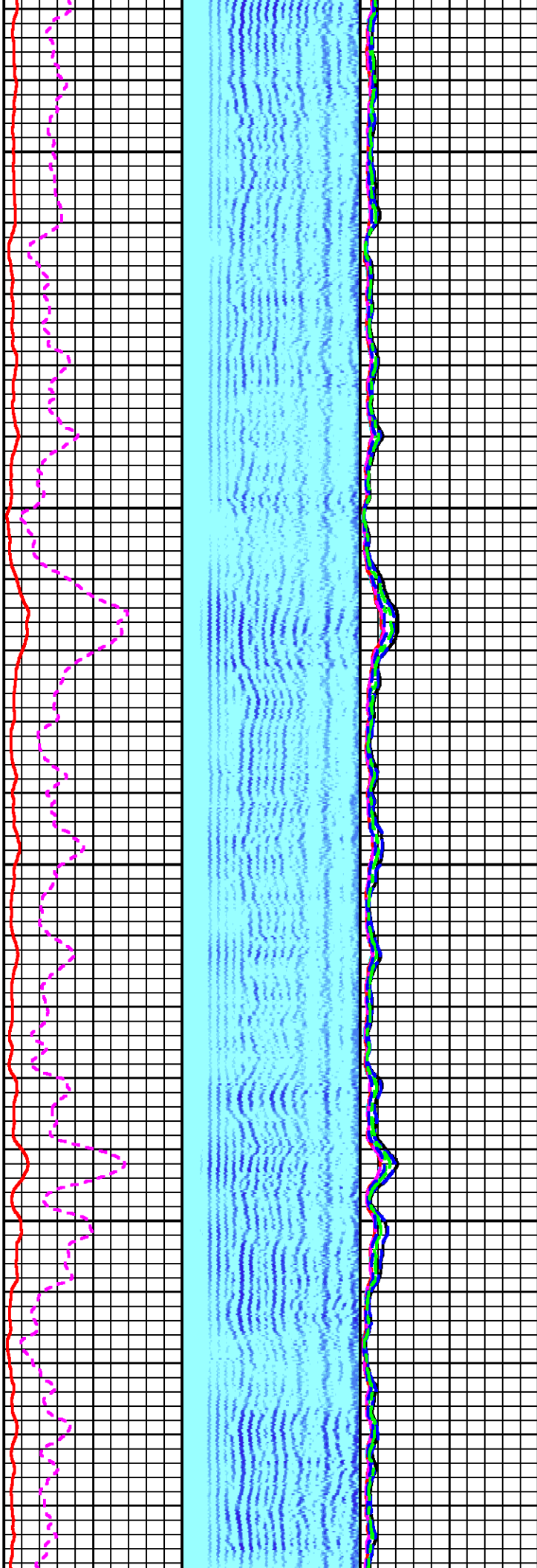
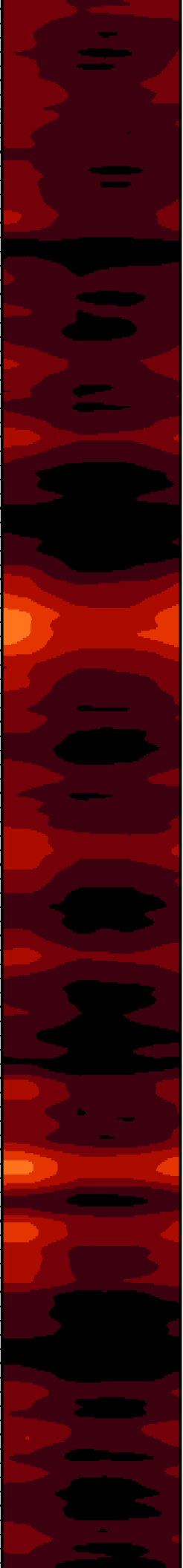




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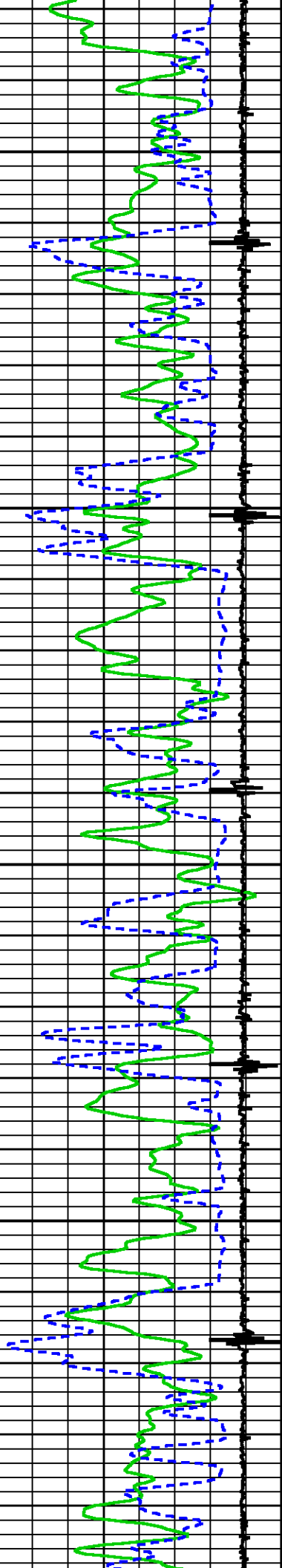


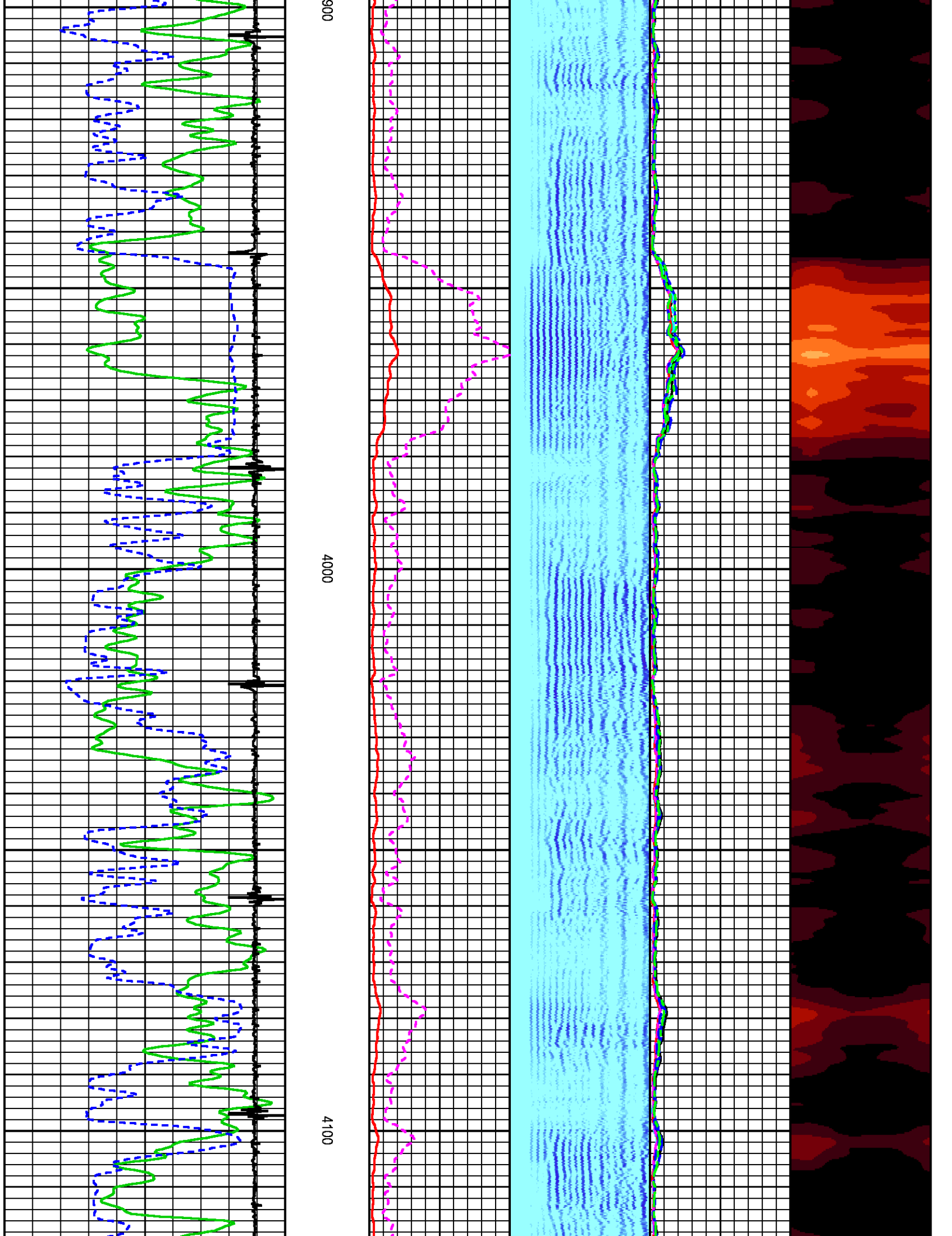


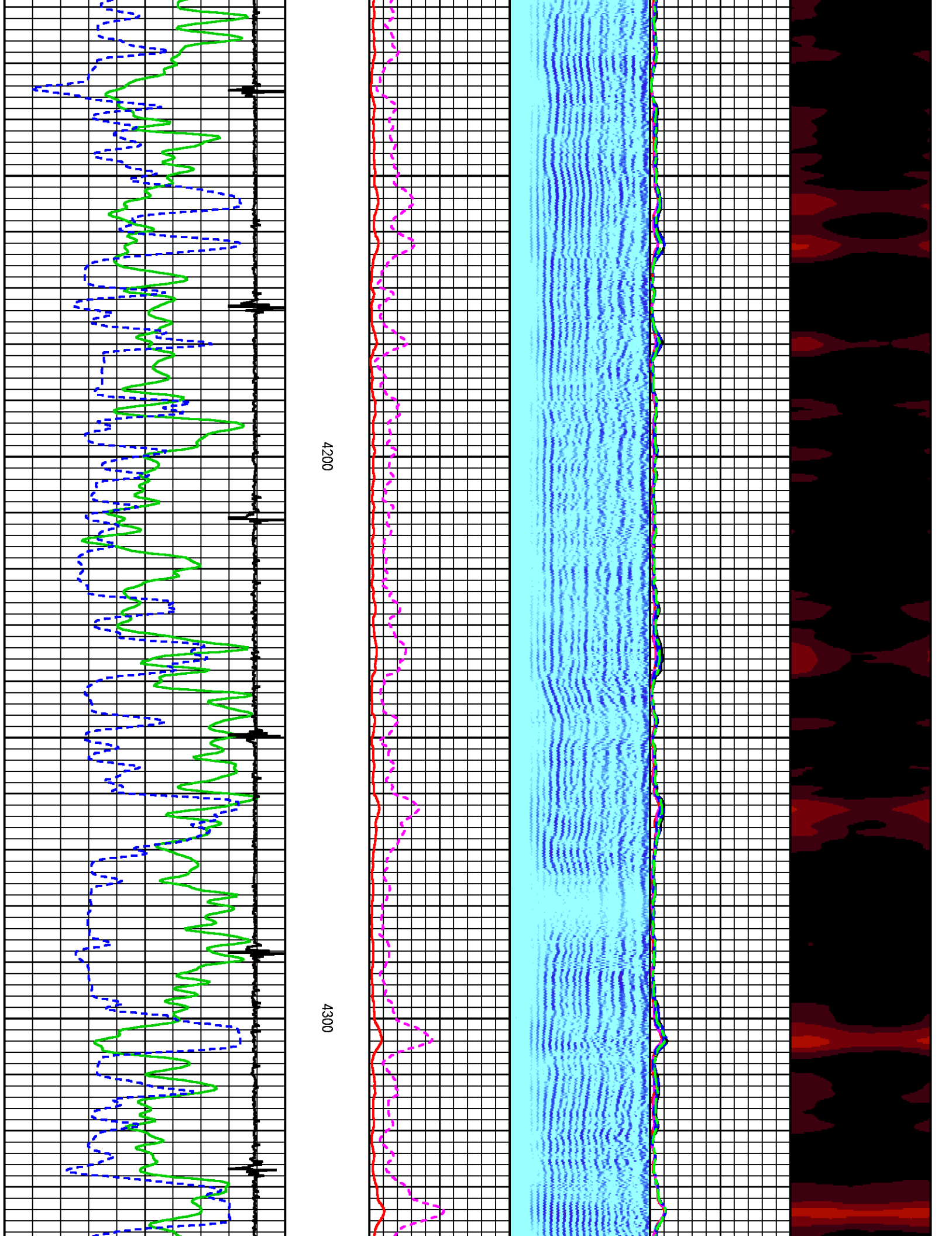
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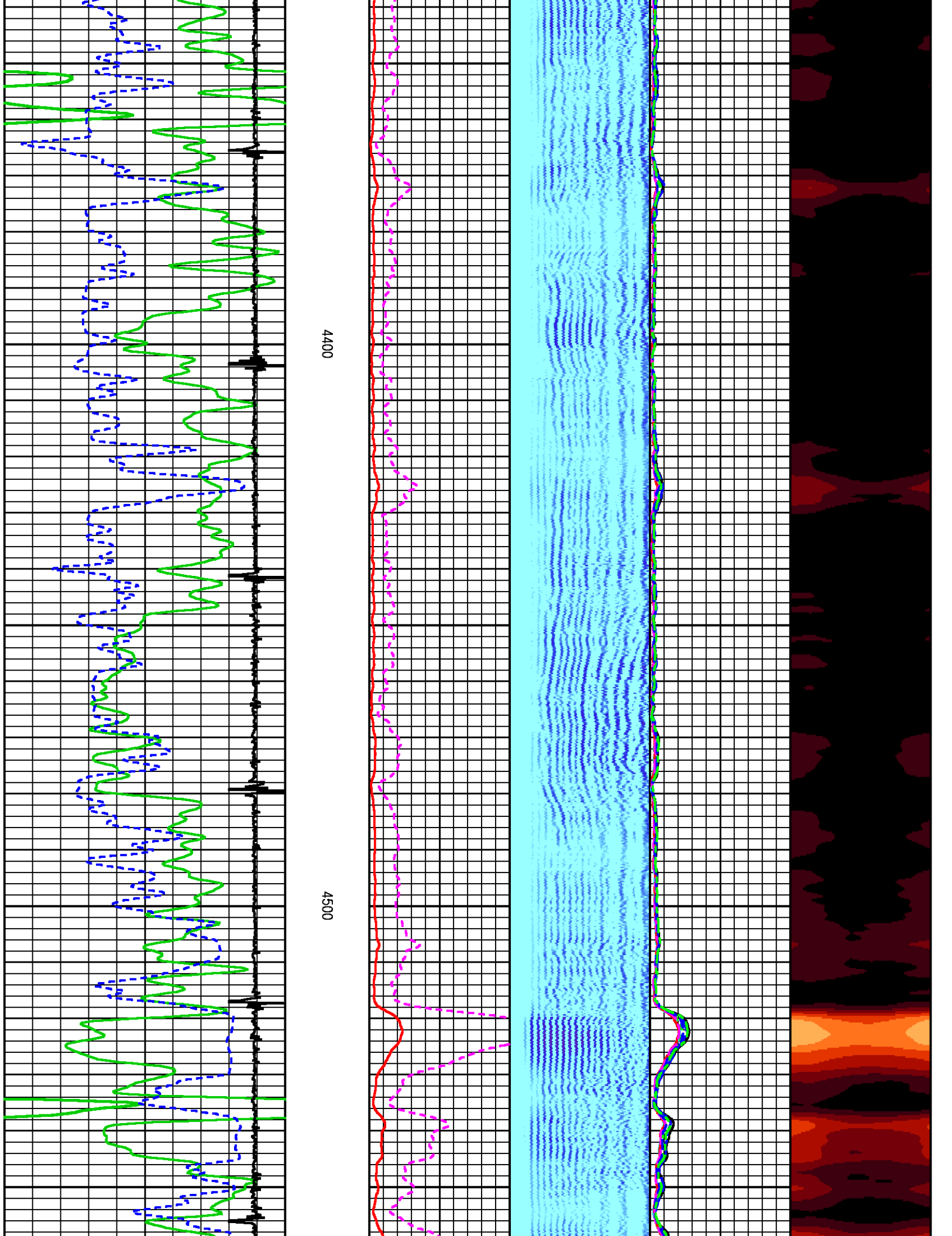
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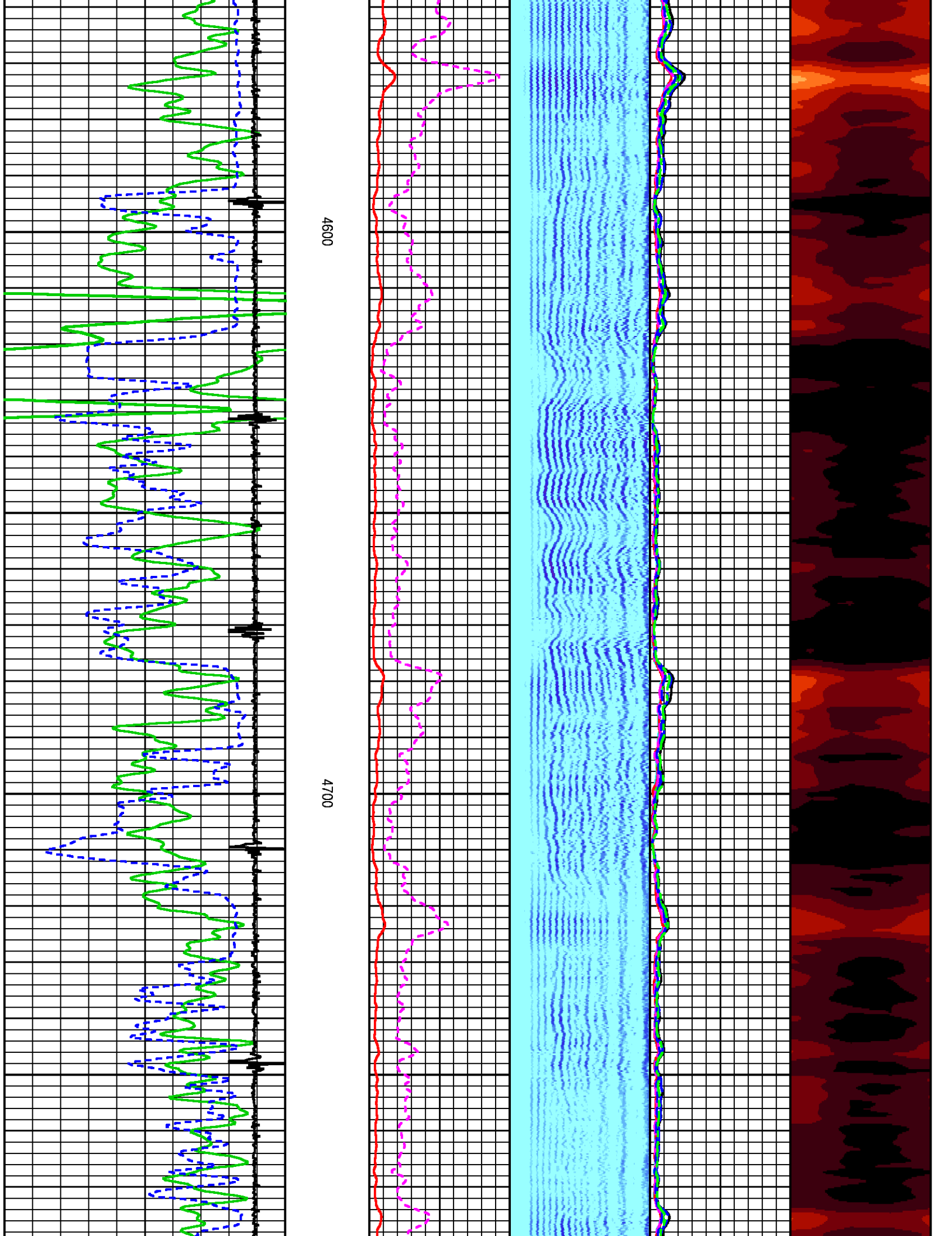
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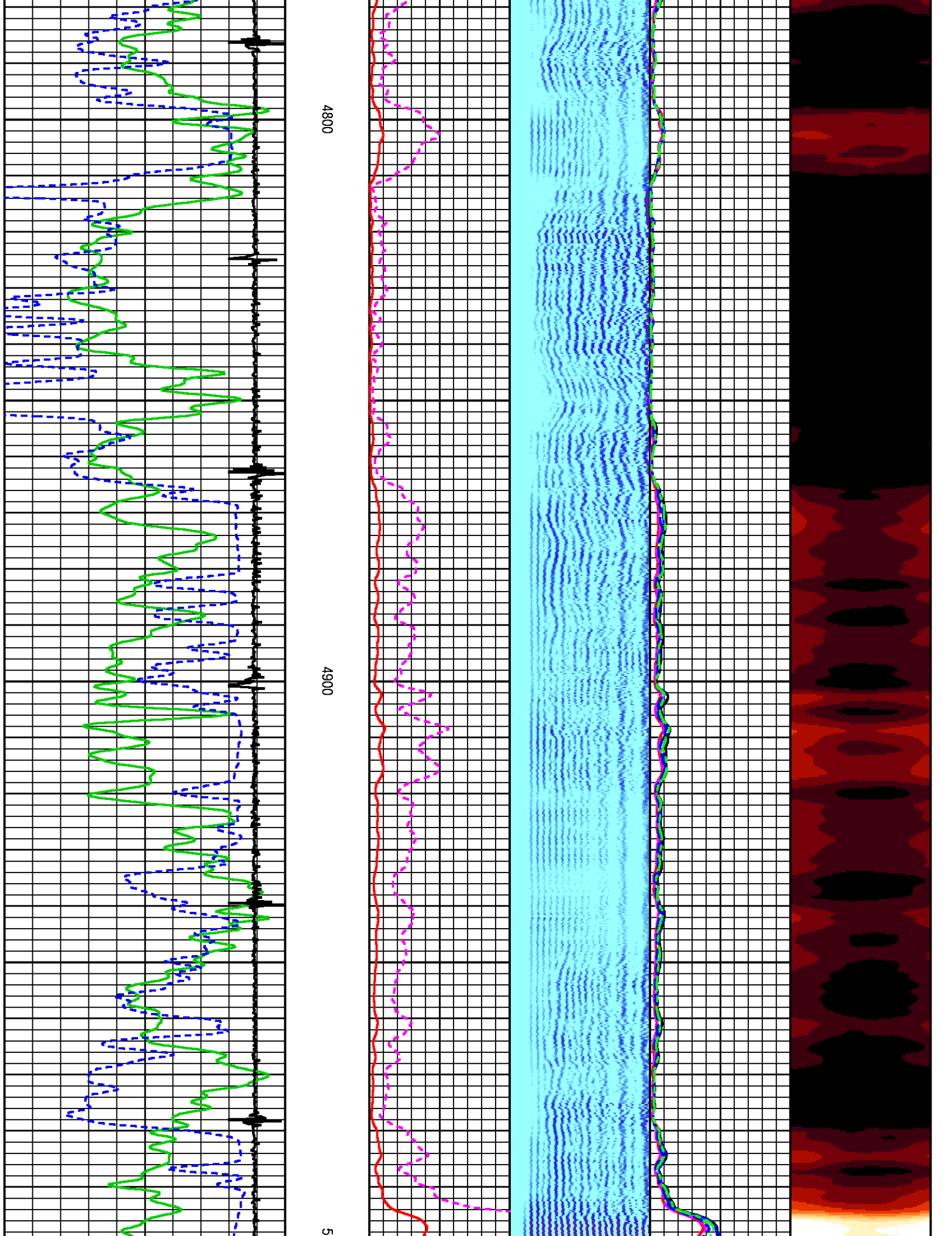


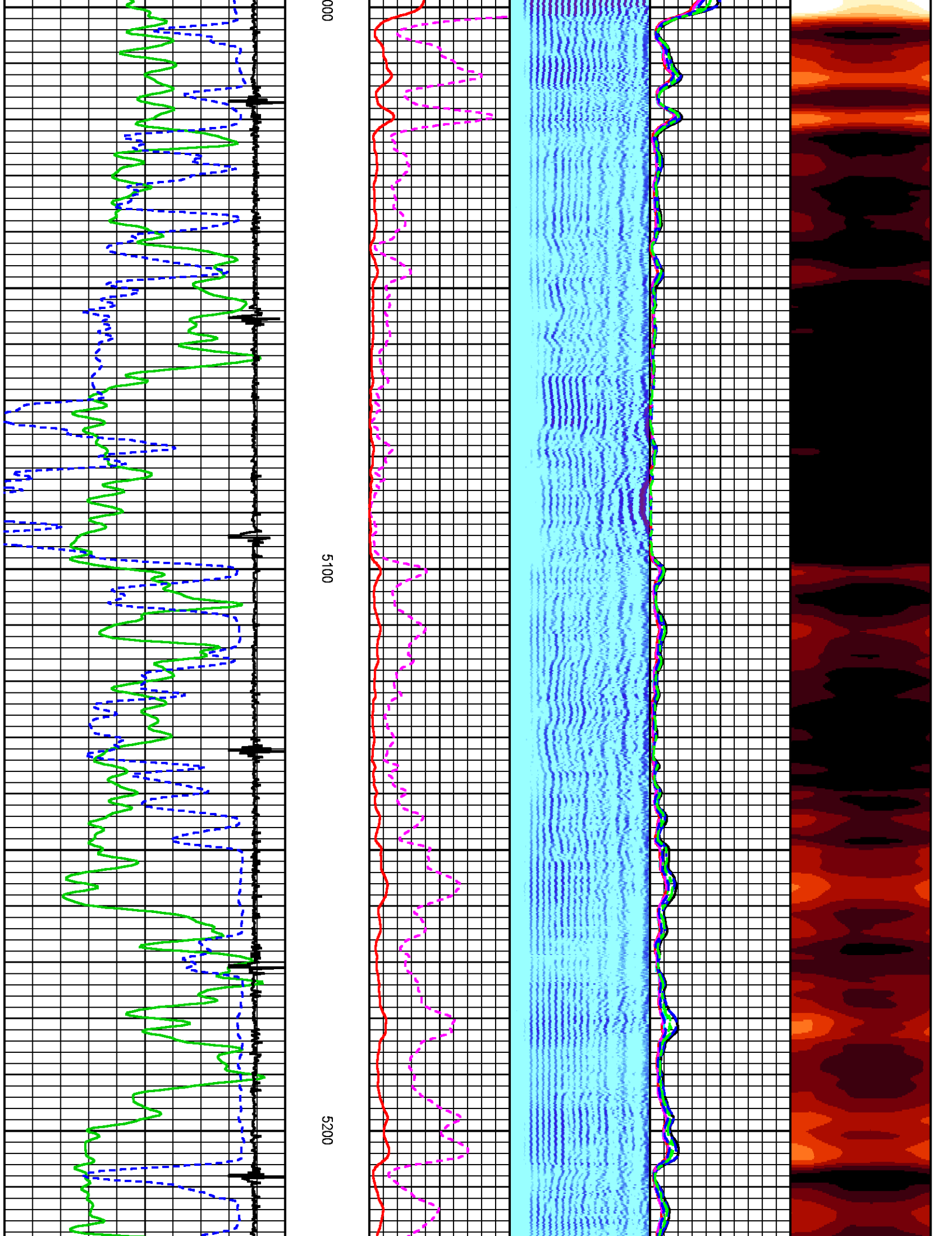


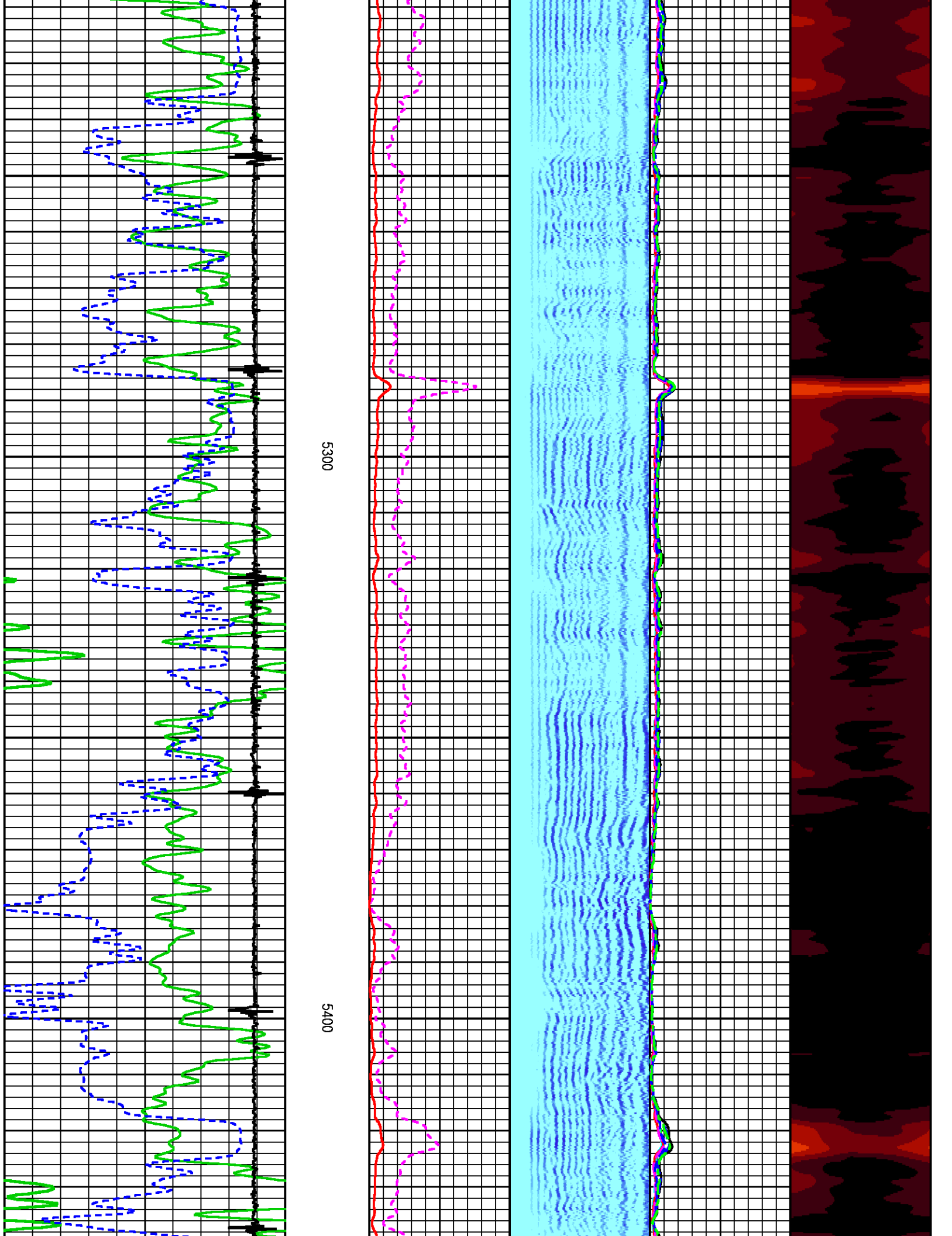


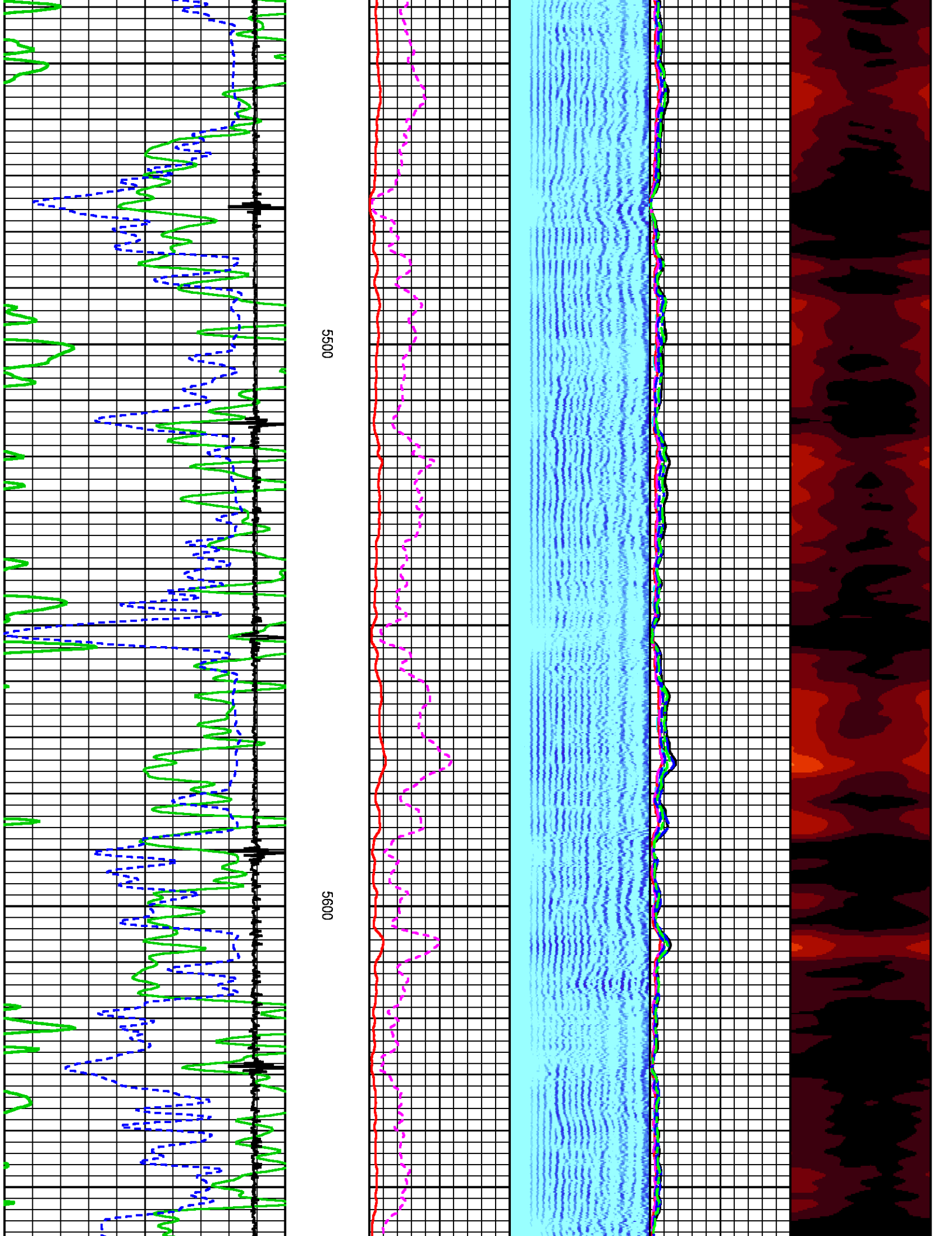


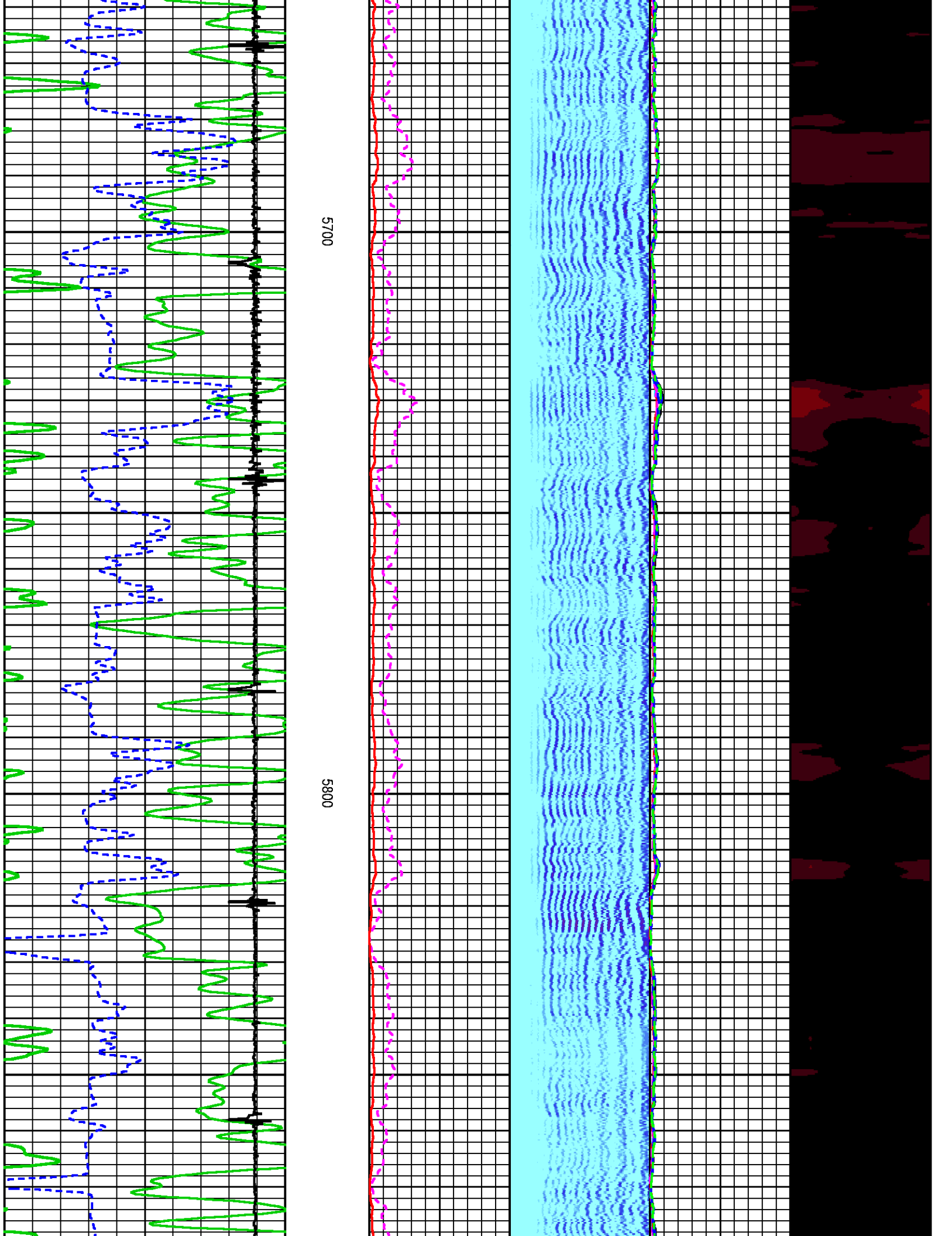


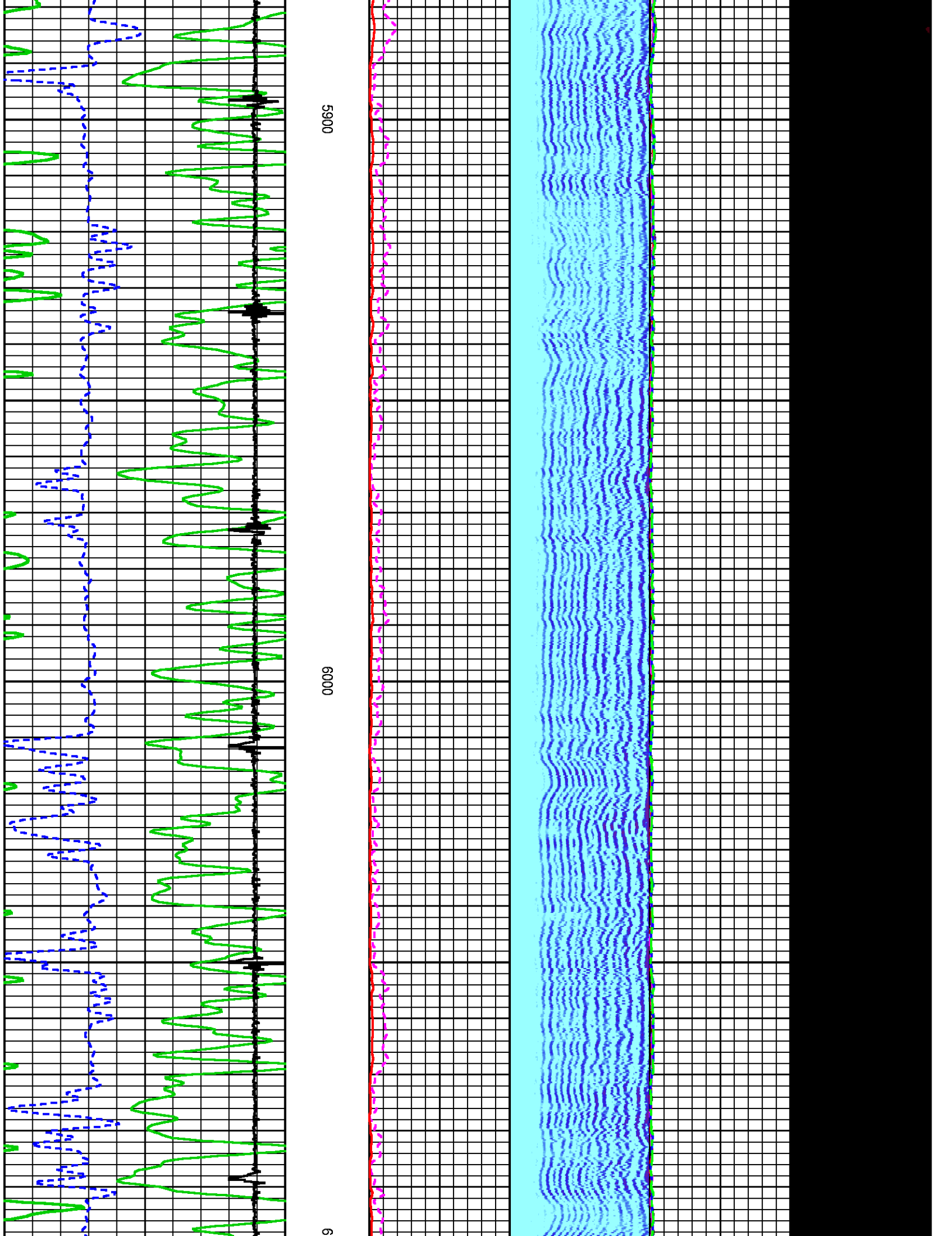








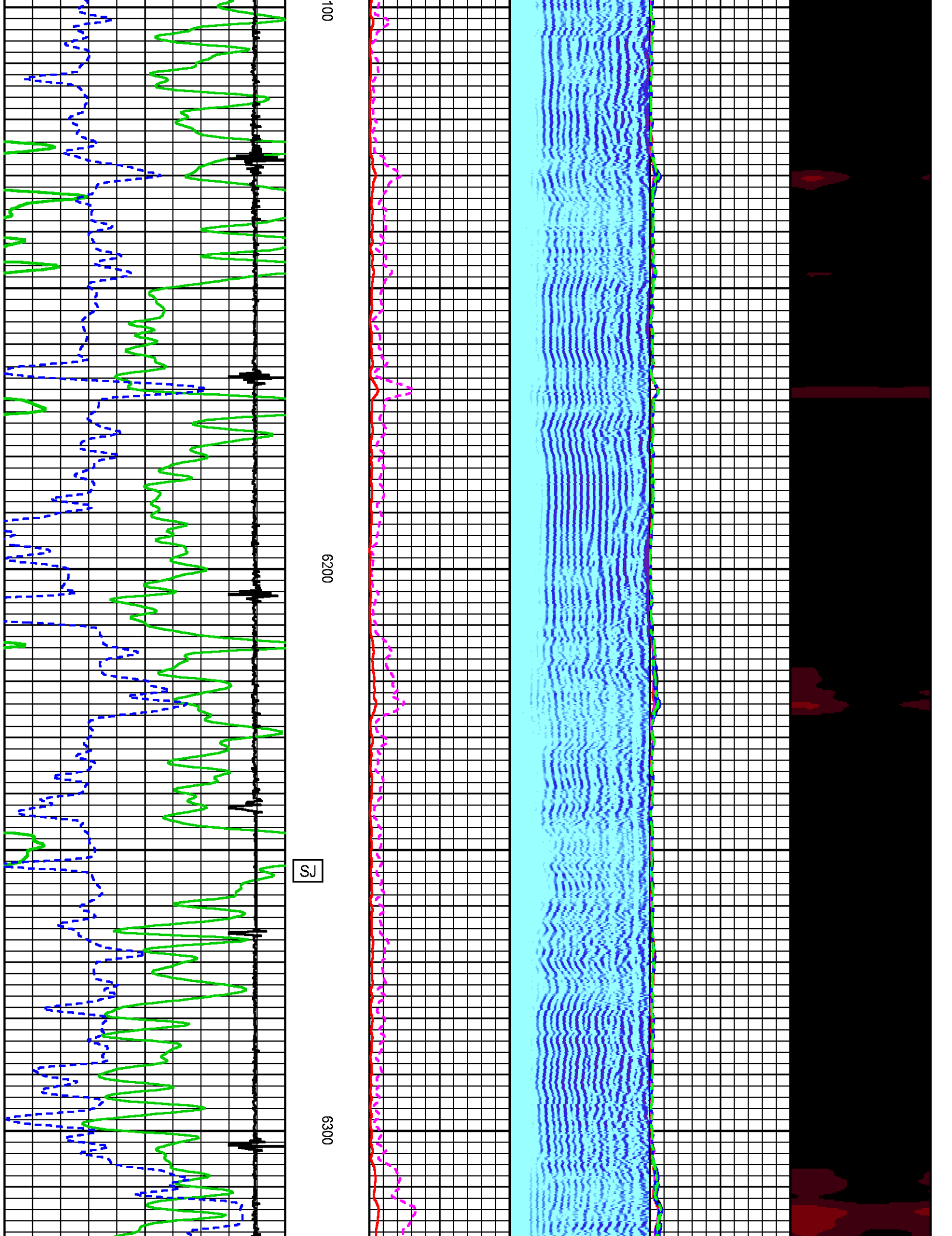


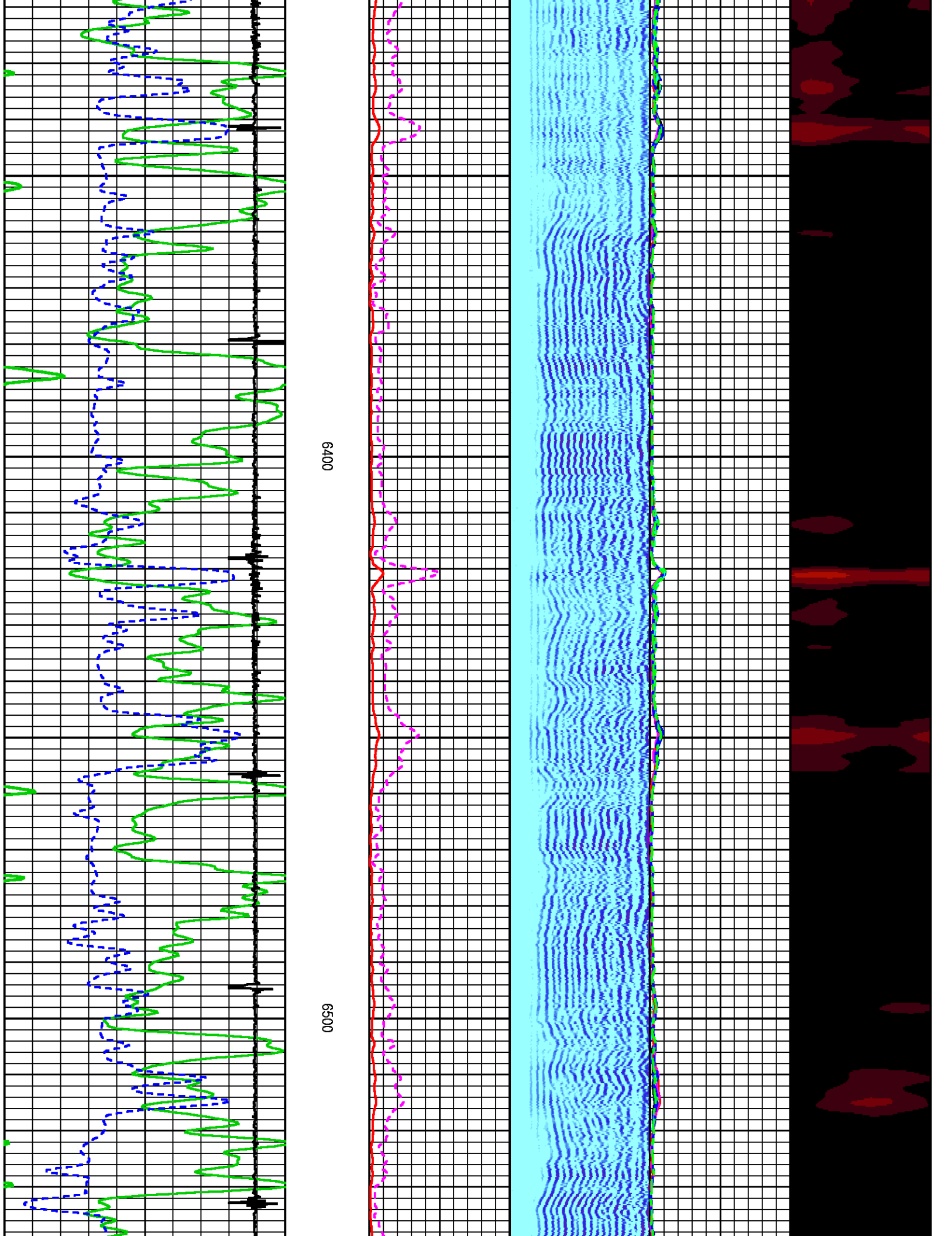


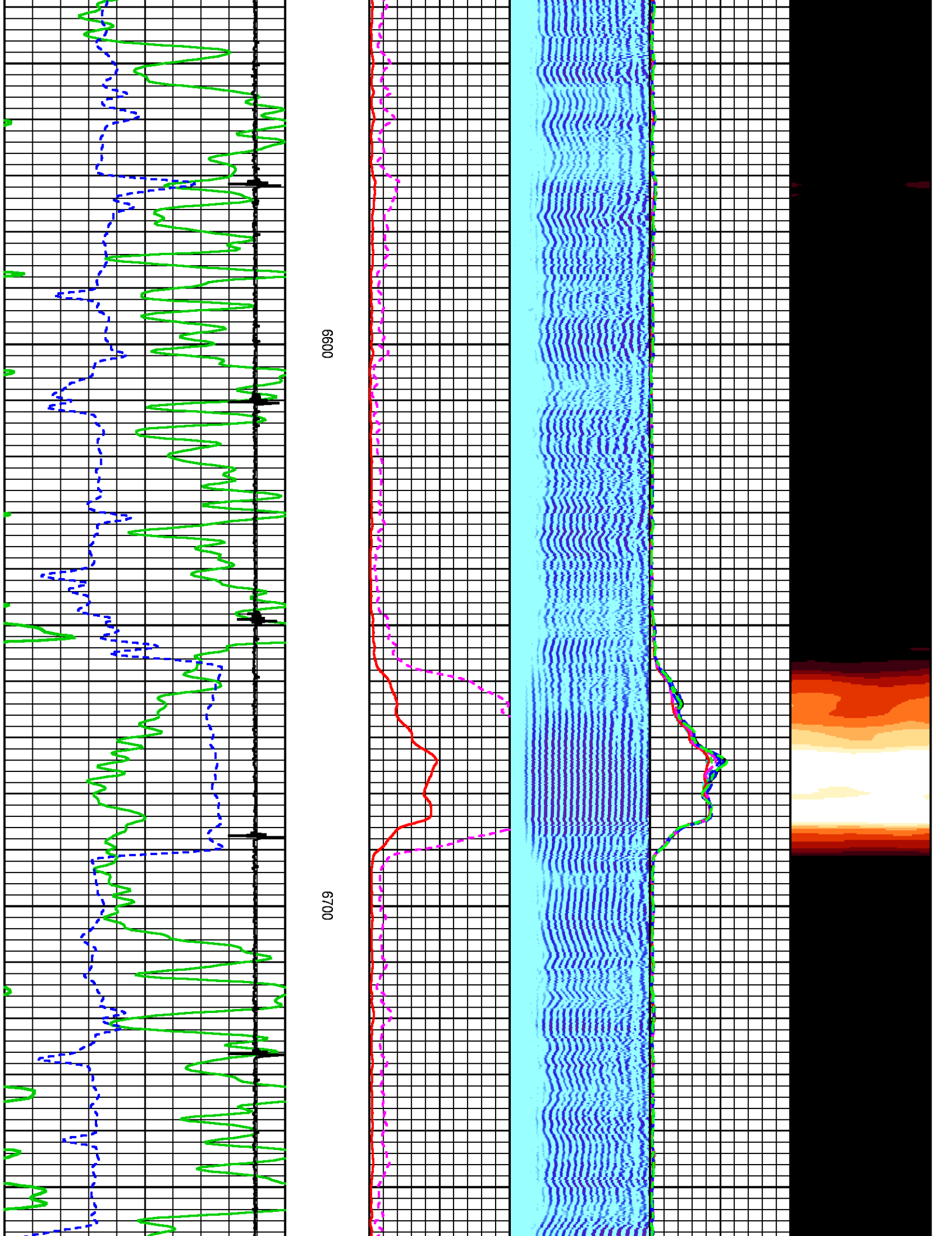
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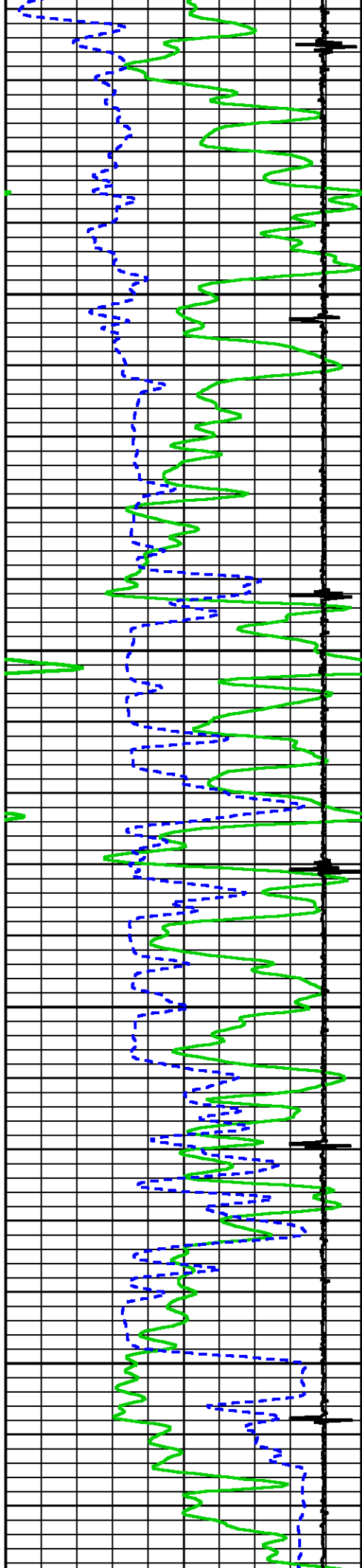
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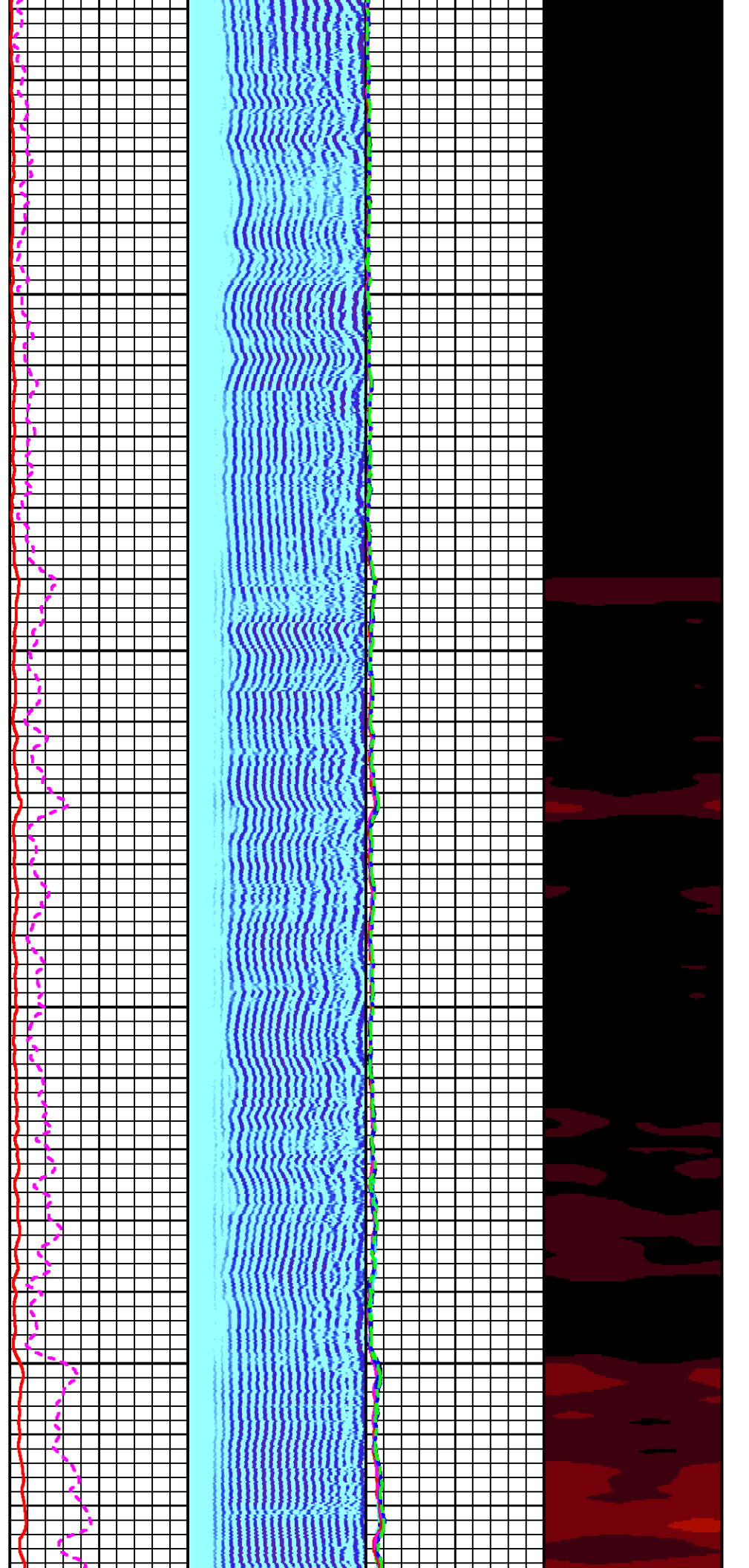


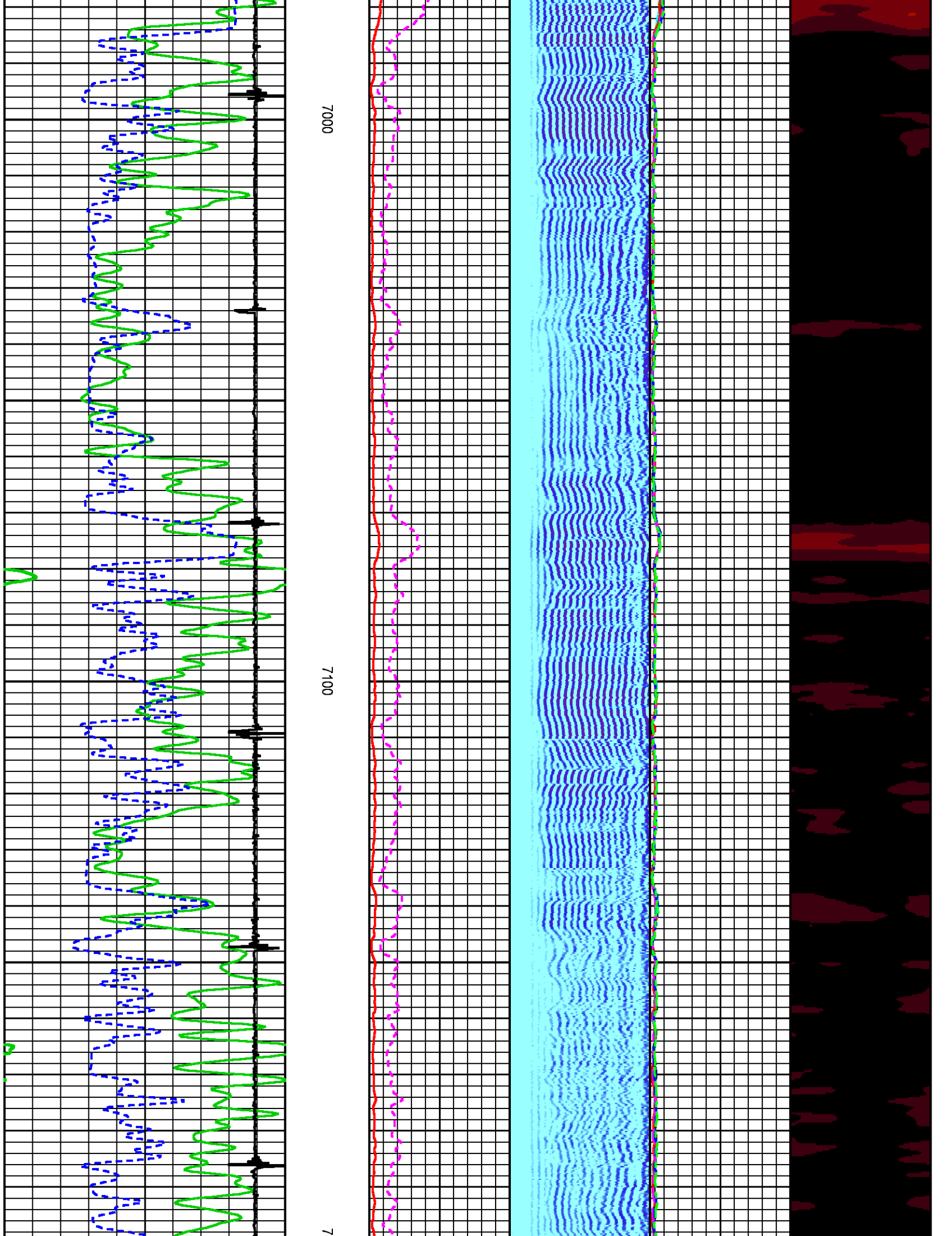


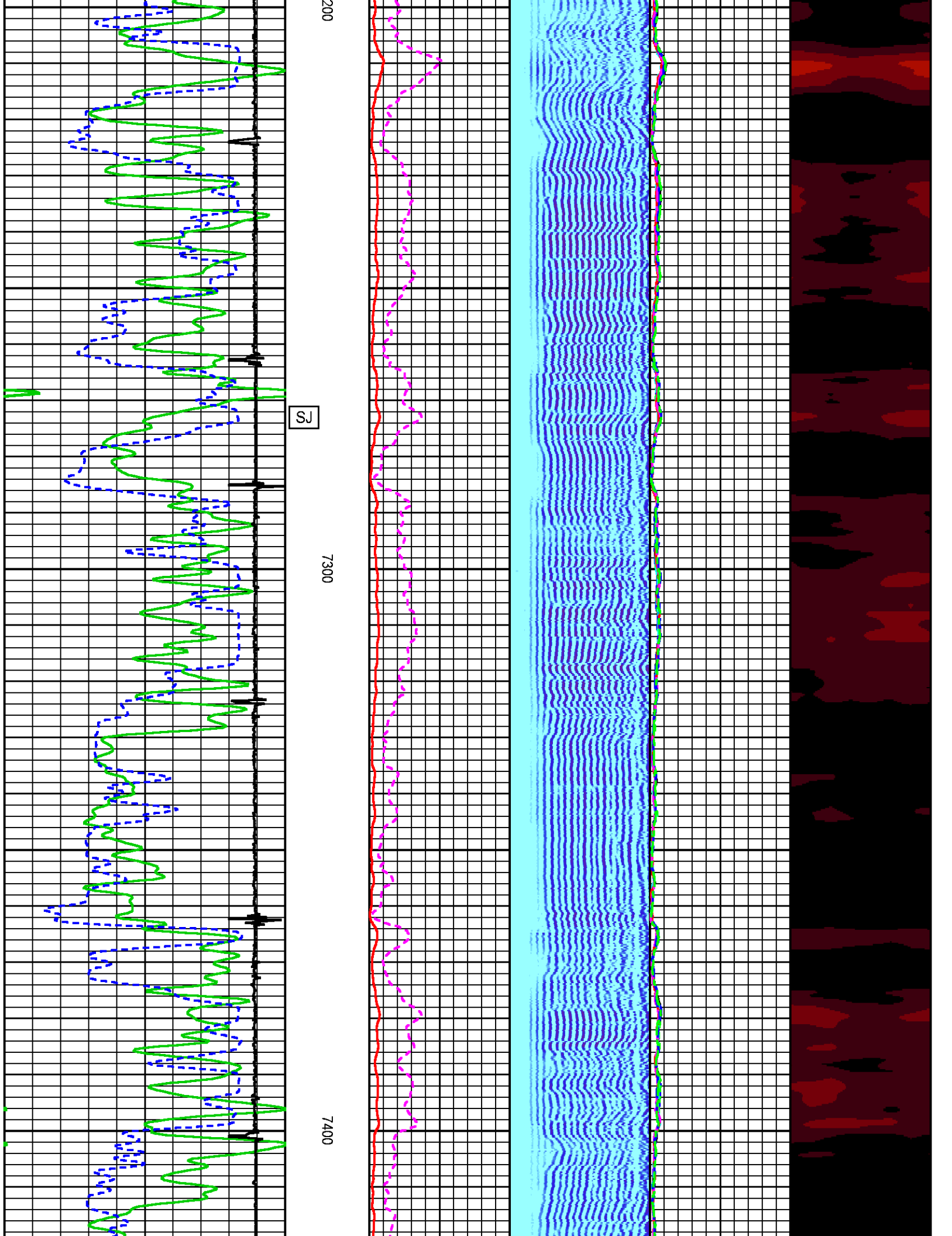


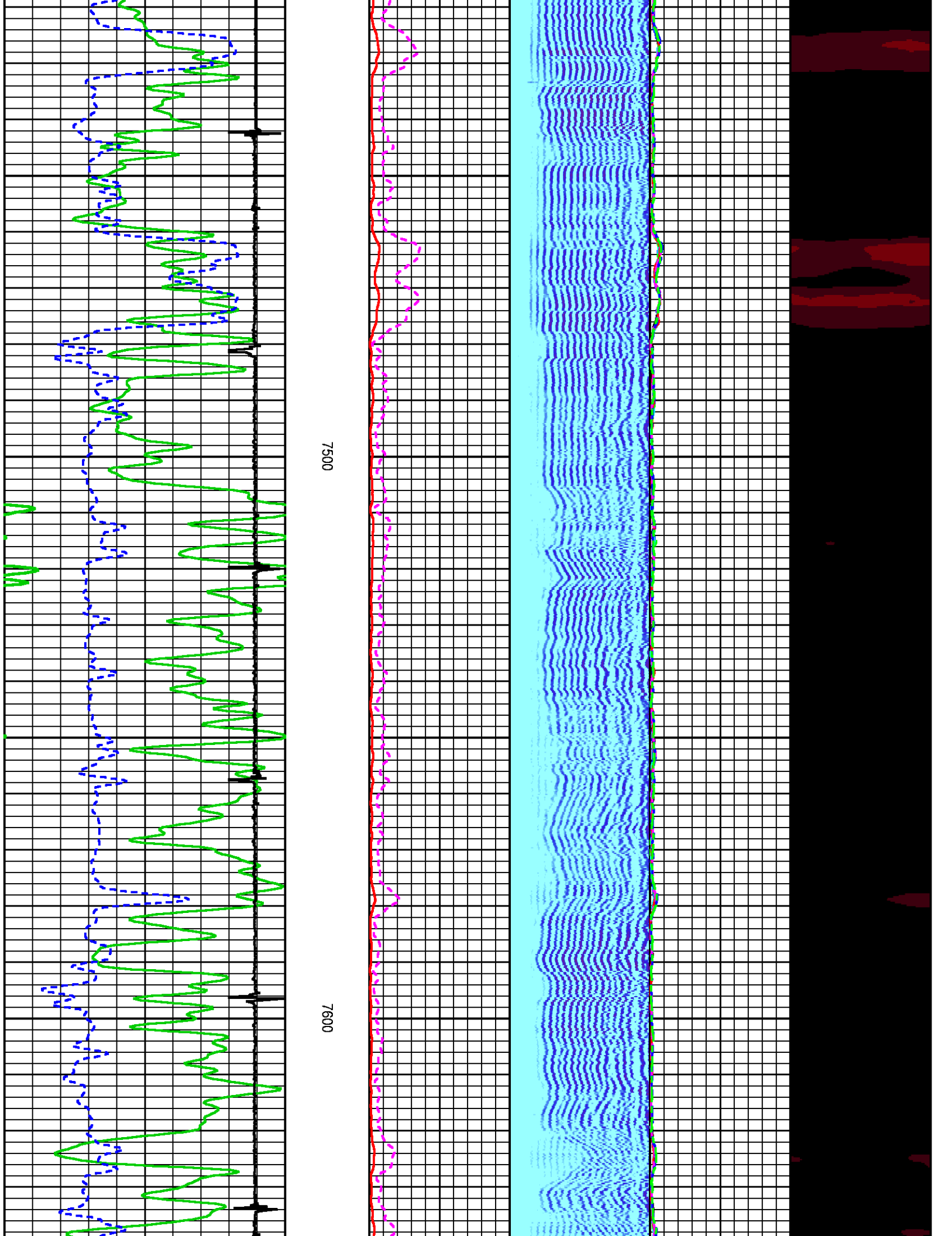
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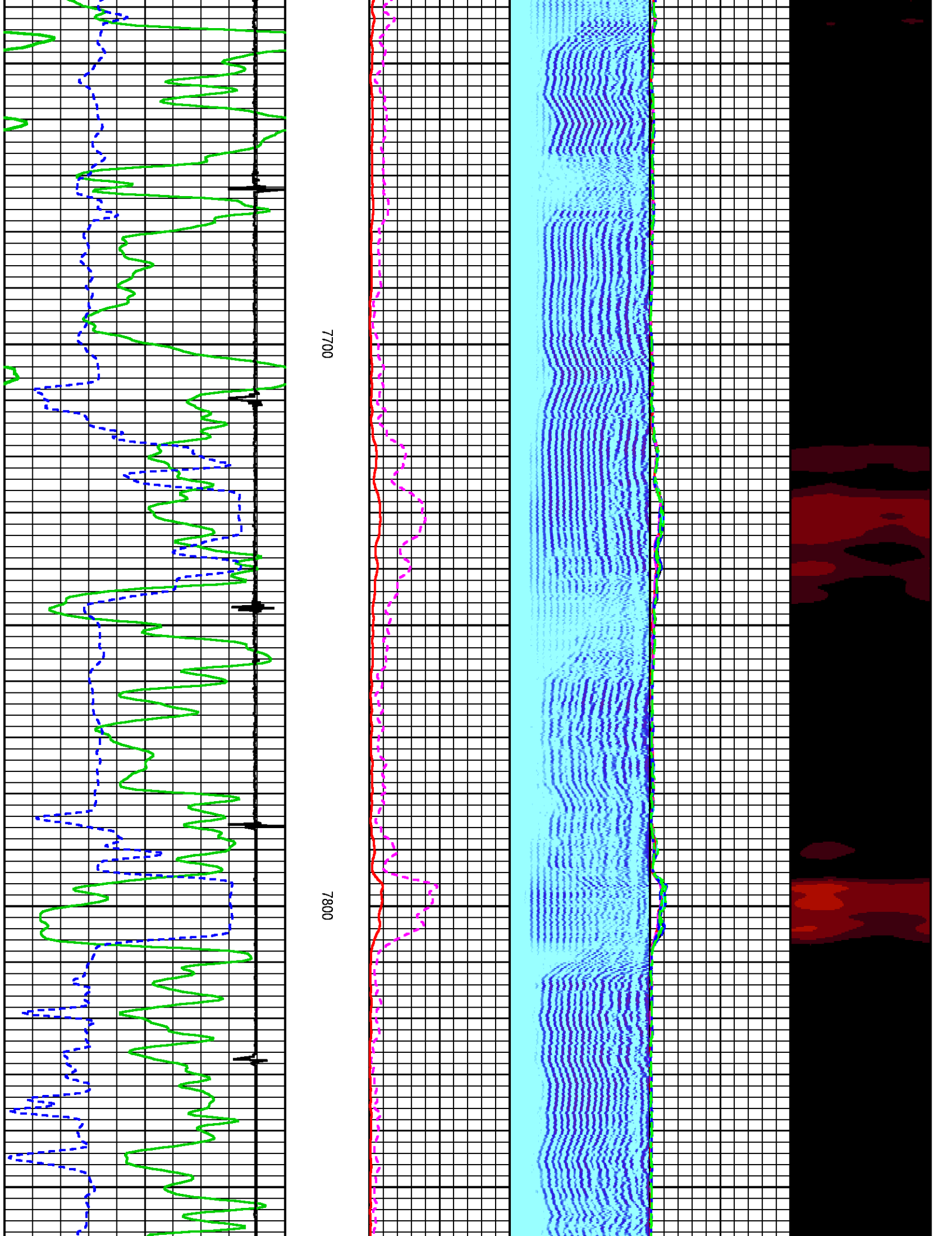
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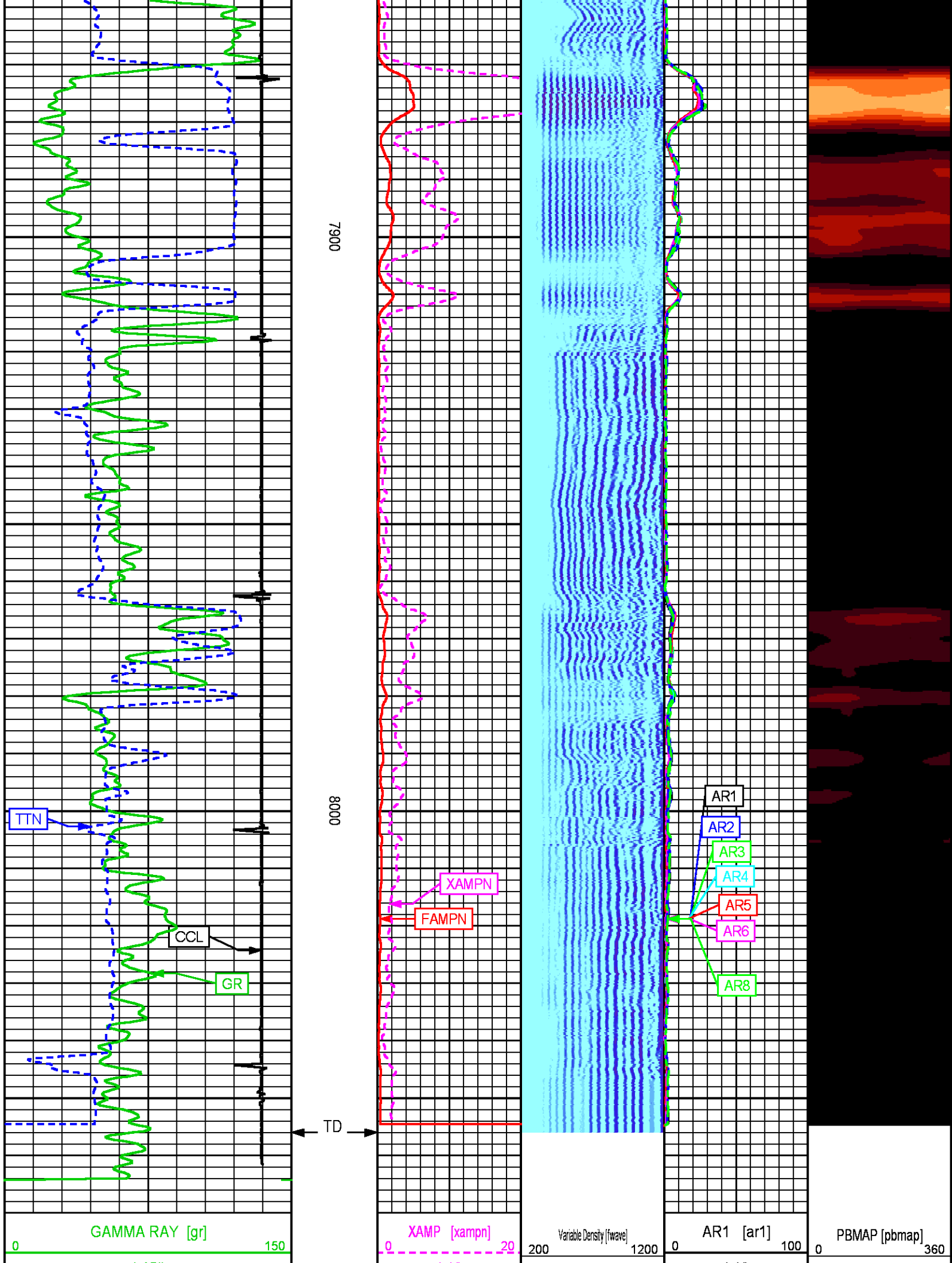


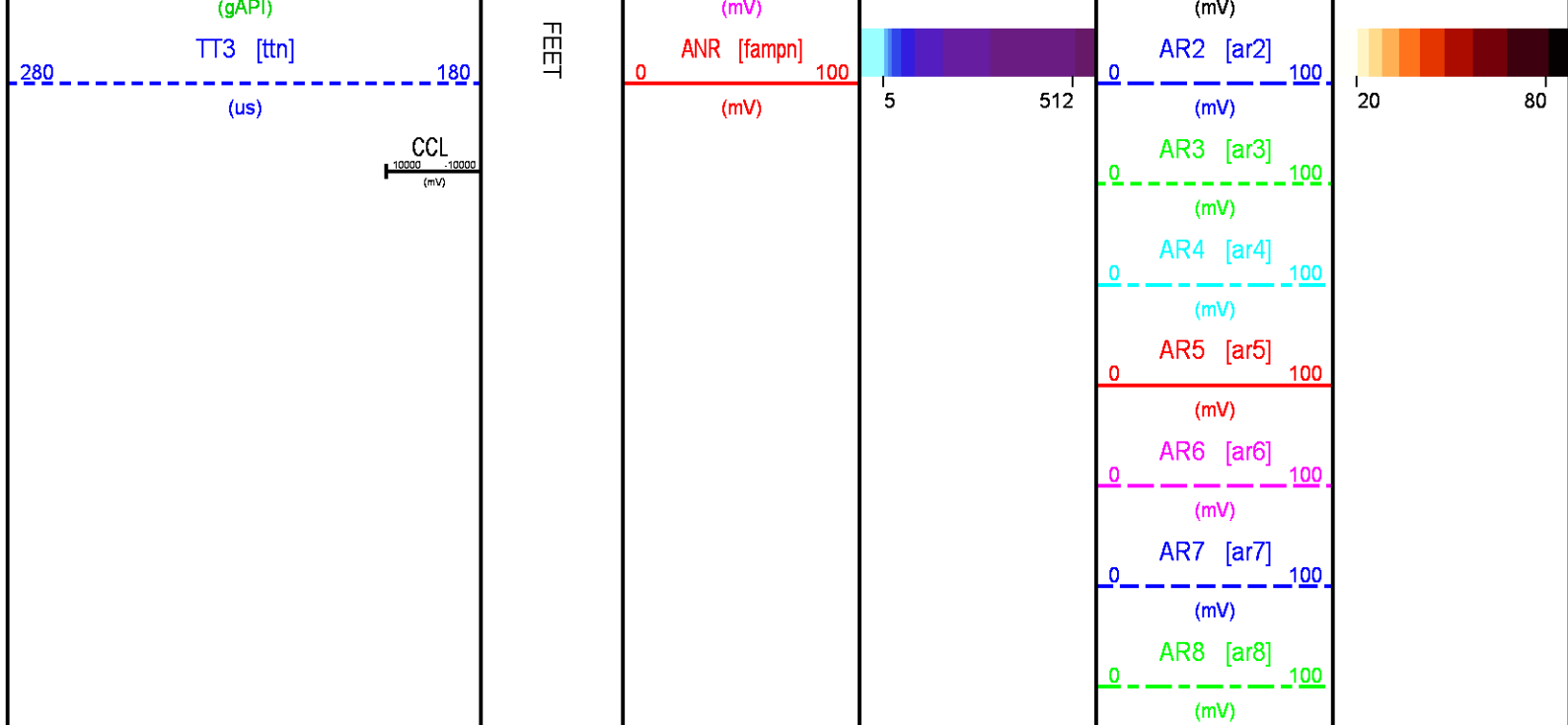












REPEAT PASS

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

Plotted: Tue Dec 05 21:01:08 2017

PARAMETER AND FILTER SUMMARY REPORT

FILE: C:\dat1a\WELLDATA\Laramie\Laramie Bruton Federal 19-09E\p012g01.prm
LOGGING MODE: DEPTH DIRECTION: UP
TOP DEPTH: 7799.000 ft BOTTOM DEPTH: 8044.000 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*)	182	us	TOP	BOTTOM
	AMP WINDOW START (fgp2*)	182	us	"	"
	AMP WINDOW START (fgp3*)	182	us	"	"
	AMP WINDOW START (fgp4*)	182	us	"	"
	AMP WINDOW START (fgp5*)	182	us	"	"
	AMP WINDOW START (fgp6*)	182	us	"	"
	AMP WINDOW START (fgp7*)	182	us	"	"
	AMP WINDOW START (fgp8*)	182	us	"	"
	AMP WINDOW START (fgpn*)	182	us	"	"

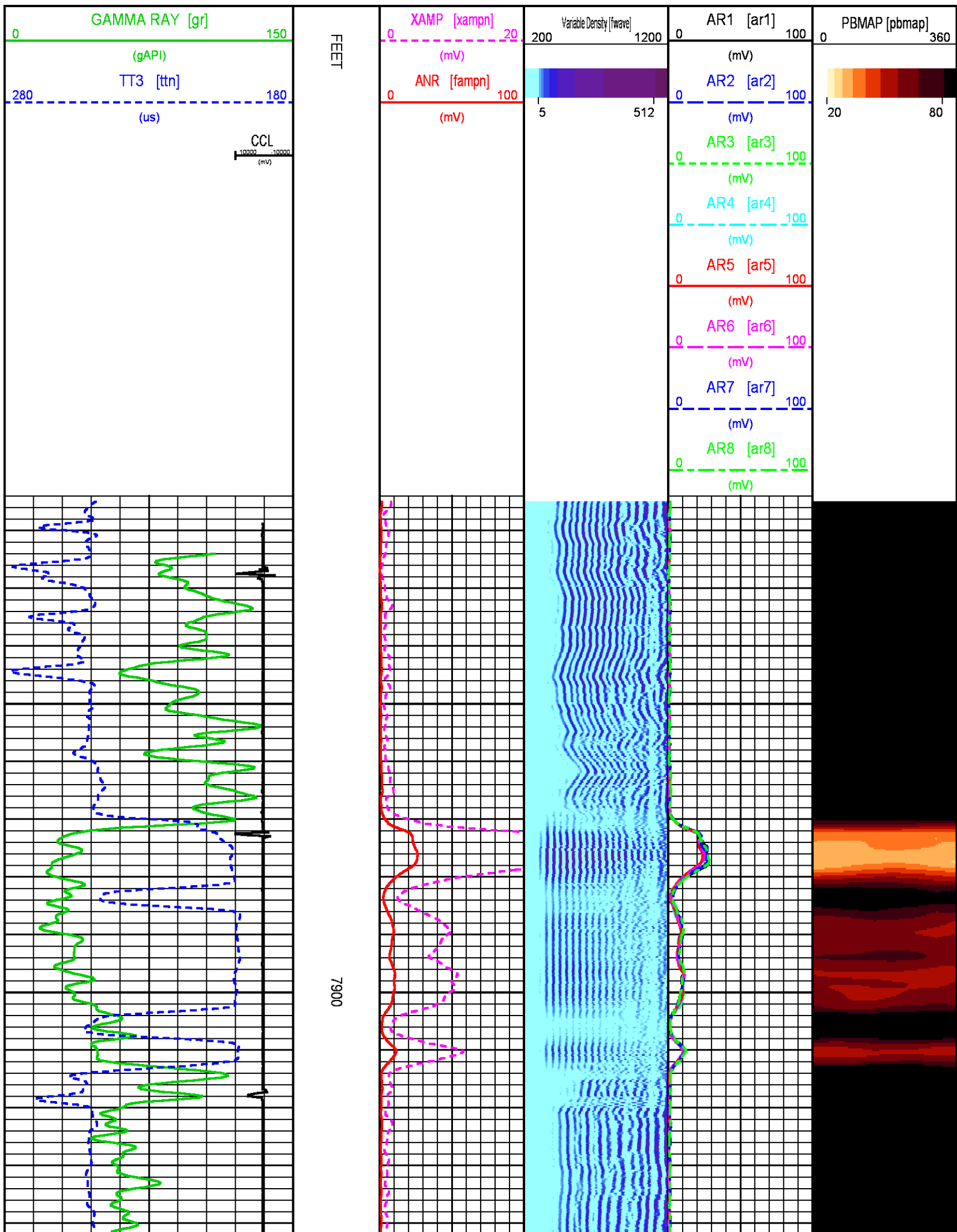
	AMP WINDOW LENGTH	25	us	"	"
TRAVEL TIME WINDOW (NEAR)	TT WINDOW START (ttn*)	170	us	"	"
	TT WINDOW LENGTH	500	us	"	"
	FIRST BRK THRESHOLD (ttn*)	4	mV	"	"
RAL CASING PARAMETERS	PPT NEAR	200.391	us	"	"
RAL TOOL DELAY	TOOL DELAY (str1*)	-67	us	"	"
	TOOL DELAY (str2*)	-67	us	"	"
	TOOL DELAY (str3*)	-67	us	"	"
	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	"	"

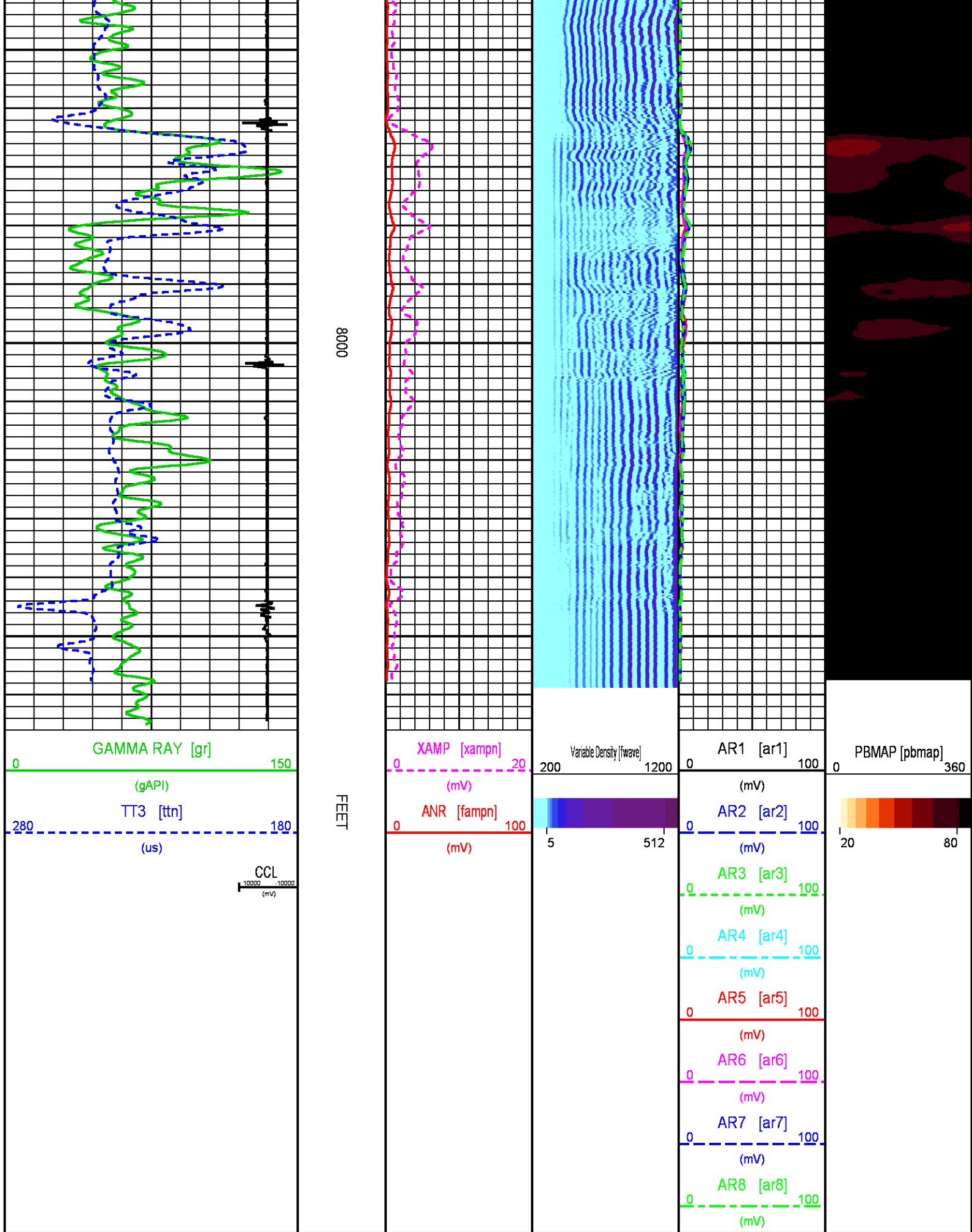
PERCENT BOND CEMENT MAP					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
RAL FREE PIPE AMPLITUDE	FREE AMP REC 1	80	mV	TOP	BOTTOM
	FREE AMP REC 2	80	mV	"	"
	FREE AMP REC 3	80	mV	"	"
	FREE AMP REC 4	80	mV	"	"
	FREE AMP REC 5	80	mV	"	"
	FREE AMP REC 6	80	mV	"	"
	FREE AMP REC 7	80	mV	"	"
	FREE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

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)
AR1	-11.25	AR5	-11.25	CCL	-5.75
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
				XAMPN	-11.25

Presentation	: BHIBX9FSY1:C:\dat1a\WELLDATA\Laramie\Laramie Bruton Federal 19-09E\RAL_RPT_19-09E.fvpdf [5"/100' Scale]
Plot Interval	: 7815 - 8065 Feet
Data File 1	: F1 : BHIBX9FSY1:C:\dat1a\WELLDATA\Laramie\Laramie Bruton Federal 19-09E\RAL_RPT_19-09E.xtf
Created On	: N/A
Company	: LARAMIE ENERGY
Well	: BRUTON 19-09E
Field	: VEGA
File Interval	: 7700 - 8070 Feet





CALIBRATION / VERIFICATION SUMMARY

RAL PRIMARY CALIBRATION SUMMARY

TOOL #: 1426XA 10124106

DATE/TIME PERFORMED: Tue Dec 05 15:53:13 2017

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)	-0.11	-0.04	-0.13	-0.17	-0.11	-0.11	-0.12	-0.09	-0.10	-0.45	0.02
AMP FLUID (mV)	136	136	135	135	135	135	135	136	137	174	133
TT (us)	218	217	217	218	218	218	217	216	218	331	217
M FACTOR	0.73	0.73	0.74	0.74	0.74	0.74	0.74	0.74	0.73	0.86	0.75

RAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1426XA 10124106

DATE/TIME PERFORMED: Tue Dec 05 15:56:35 2017

DAYS SINCE CAL: 0

UNIT #: CHANGE ME

CABLE #: 6670 6670SM

	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	-0.01	-0.02	0.02	0.01	0.02	0.04	-0.01	0.00	0.13	-0.02
AMP AIR	-0.06	-0.25	-0.18	0.03	-0.32	-0.02	-0.01	0.08	-0.02	-0.22	98.63

SHOP M FACTOR	SHOP A FACTOR	WIRELINE FACTOR
0.75	0.00	1.01

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

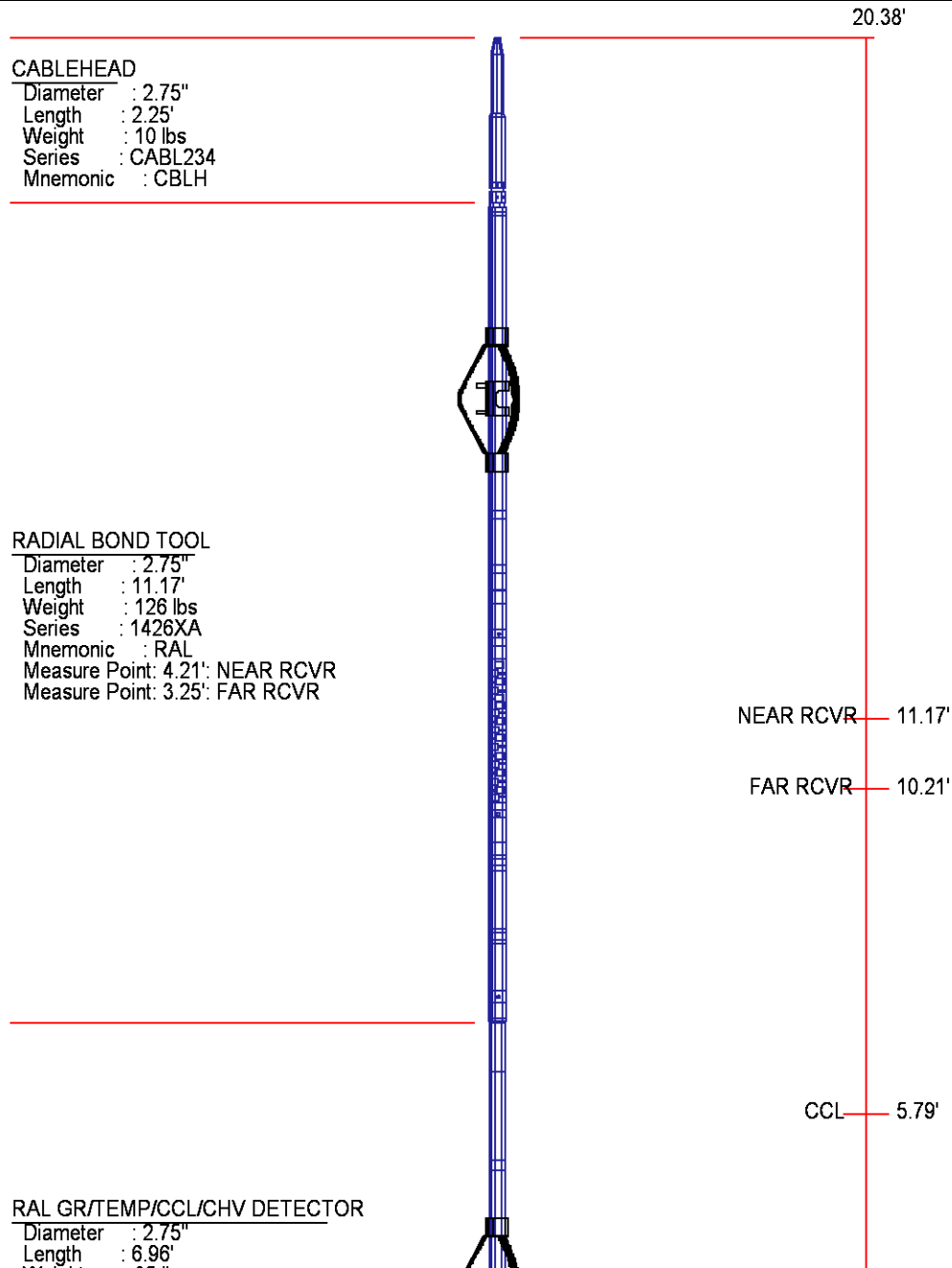
DATE/TIME PERFORMED: Fri Nov 17 14:12:49 2017

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

INSTRUMENT CONFIGURATION



Weight : 85 lbs
Series : 1355XA
Mnemonic : RAL
Measure Point: 5.79': CCL
Measure Point: 1.67': GR
Measure Point: 0.17': TEMP



GR 1.67'

TEMP 0.17'

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

**BAKER
HUGHES**
a GE company



ECLIPS

COMPANY

LARAMIE ENERGY

WELL

BRUTON FEDERAL 19-09E

FIELD

VEGA

COUNTY

MESA

STATE COLORADO

FILE NO:

API NO:

05077104330000

LOCATION:

SHL: 39.262729 N, 107.815084 W

BHL: 39.263774 N, 107.806459 W

ELEVATIONS:

KB 7286 FT

DF 7285 FT

GL 7262 FT

SEC **19** TWP **9S** RGE **93W**

DATE **05-Dec-2017**