



RADIAL CEMENT BOND LOG

FILE NO: CH137650	COMPANY LARAMIE ENERGY LLC
API NO: 05077103940000	WELL NICHOLS 0994-24-17E
	FIELD VEGA
	COUNTY MESA STATE COLORADO

Ver. 4.10	LOCATION: SHL: 2302' FNL & 2792' FWL BHL: 1176' FSL & 1433' FEL SEC <u>24</u> TWP <u>9S</u> RGE <u>94W</u>	OTHER SERVICES RPM
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PERMANENT DATUM LOG MEASURED FROM DRILL. MEAS. FROM	GL ELEVATION 7212 FT KB 24 FT ABOVE P.D. KB GL 7212 FT	ELEVATIONS: KB 7236 FT DF GL 7212 FT
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DATE	RUN	TRIP		
	1	1		
SERVICE ORDER	US137650			
DEPTH DRILLER	7885 FT			
DEPTH LOGGER	7735 FT			
BOTTOM LOGGED INTERVAL	7735 FT			
TOP LOGGED INTERVAL	24 FT			
TIME STARTED	09:00			
TIME FINISHED	11:30			
OPERATOR RIG TIME	2.5 HRS			
TYPE OF FLUID IN HOLE	WATER			
FLUID DENSITY	NA			
FLUID SALINITY	NA			
FLUID LEVEL	65 FT			
LOGGED CEMENT TOP	1010 FT			
WELLHEAD PRESSURE	0 PSI			
MAXIMUM HOLE DEVIATION	NA			
NOMINAL LOGGING SPEED	100 F/MN			
MAX. RECORDED TEMP.	227 DEGF			
REFERENCE LOG	NA			
REFERENCE LOG DATE	NA			
EQUIP. NO.	LOCATION	ML-4268	GRAND JCT.	
RECORDED BY	T. NEWELL			
WITNESSED BY	NA			

IN MAKING INTERPRETATIONS OF LOGS OUR EMPLOYEES WILL GIVE THE CUSTOMER THE BENEFIT OF THEIR BEST JUDGEMENT. BUT SINCE ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS, WE CANNOT, AND WE DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATION. WE SHALL NOT BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COST, DAMAGES, OR EXPENSES WHATSOEVER INCURRED OR SUSTAINED BY THE CUSTOMER RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR EMPLOYEES.

REMARKS

RUN 1 TRIP 1: 2 OPERATIONS RUN IN THE WELL

OPERATION 1: RAL/GR/CCL RUN CENTRALIZED

OPERATION 2: RPM/GR/CCL RUN IN PNC-3D MODE

SJ: 5999' - 6019'

SJ: 6879' - 6899'

EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
1	1	RAL	1426XA	10124114	CENTRALIZED
1	1	GR/CCL	1355XA	12568544	CENTRALIZED

RAL MAIN PASS 0 PSI

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

Patches: 4

Plotted: Sun Jul 1 14:12:22 2018

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/LARAMIE_NICHOLS_FEDERAL_0994-24-18E/p012g04.prm
 LOGGING MODE: DEPTH DIRECTION: UP
 TOP DEPTH: 3.500 ft BOTTOM DEPTH: 7732.560 ft

SYMMETRIC FILTER

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
GR	FILTER ()	medium (1)		TOP	BOTTOM
AMPLITUDE	FILTER ()	medium (1)		"	"
TRAVEL TIME	FILTER ()	medium (1)		"	"

RAL CCL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
CCL FLOOR	CCL FLOOR	0.00		TOP	BOTTOM

ANALOG RAL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
AMPLITUDE WINDOW (NEAR)	AMP WINDOW START (fgp1*)	187	us	TOP	BOTTOM
	AMP WINDOW START (fgp2*)	187	us	"	"
	AMP WINDOW START (fgp3*)	187	us	"	"
	AMP WINDOW START (fgp4*)	187	us	"	"
	AMP WINDOW START (fgp5*)	187	us	"	"
	AMP WINDOW START (fgp6*)	187	us	"	"
	AMP WINDOW START (fgp7*)	187	us	"	"
	AMP WINDOW START (fgp8*)	187	us	"	"
	AMP WINDOW START (fgpn*)	187	us	"	"
	AMP WINDOW LENGTH	25	us	"	"
TRAVEL TIME WINDOW (NEAR)	TT WINDOW START (ttn*)	199	us	"	"
	TT WINDOW LENGTH	500	us	"	"
	FIRST BRK THRESHOLD (ttn*)	4	mV	"	"
RAL CASING PARAMETERS	PPT NEAR	200.391	us	"	"
RAL TOOL DELAY	TOOL DELAY (str1*)	-70	us	"	"
	TOOL DELAY (str2*)	-70	us	"	"
	TOOL DELAY (str3*)	-70	us	"	"
	TOOL DELAY (str4*)	-70	us	"	"
	TOOL DELAY (str5*)	-70	us	"	"
	TOOL DELAY (str6*)	-70	us	"	"
	TOOL DELAY (str7*)	-70	us	"	"
	TOOL DELAY (str8*)	-70	us	"	"
	TOOL DELAY (strn*)	-70	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	"	"

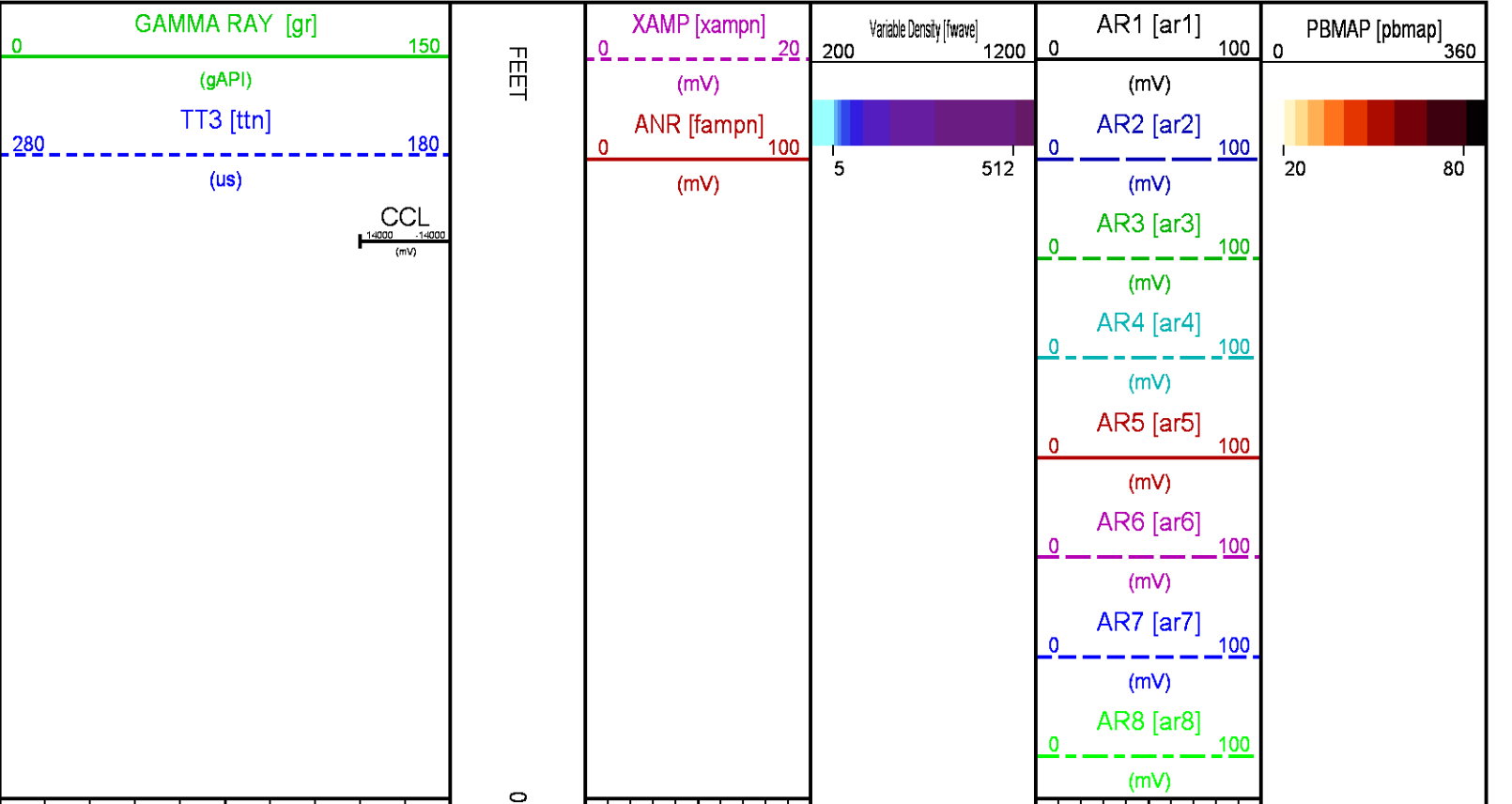
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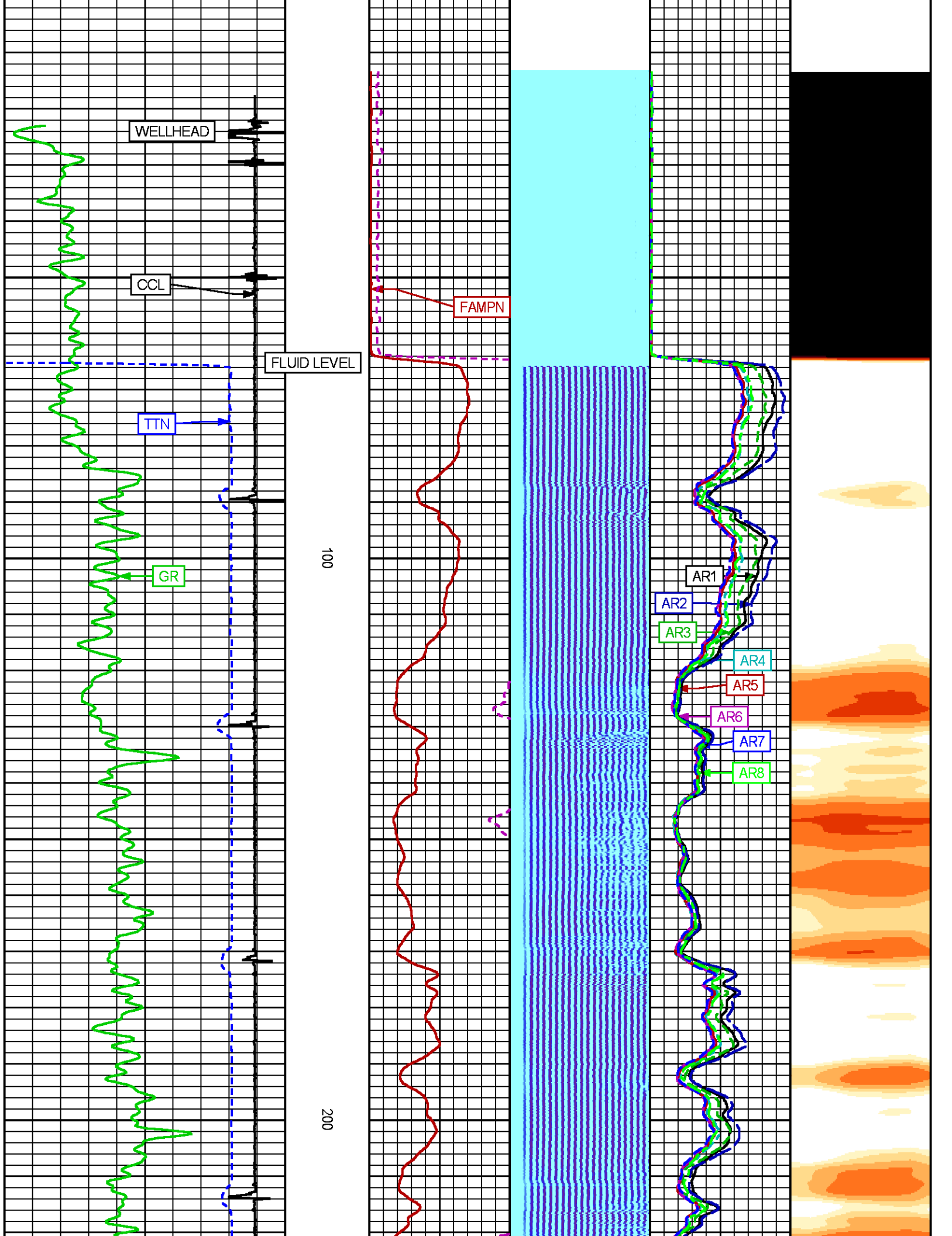
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:AR1	N/A	FIXED GATE AMPLITUDE T-R1
F1:AR2	N/A	FIXED GATE AMPLITUDE T-R2
F1:AR3	N/A	FIXED GATE AMPLITUDE T-R3
F1:AR4	N/A	FIXED GATE AMPLITUDE T-R4
F1:AR5	N/A	FIXED GATE AMPLITUDE T-R5
F1:AR6	N/A	FIXED GATE AMPLITUDE T-R6
F1:AR7	N/A	FIXED GATE AMPLITUDE T-R7
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

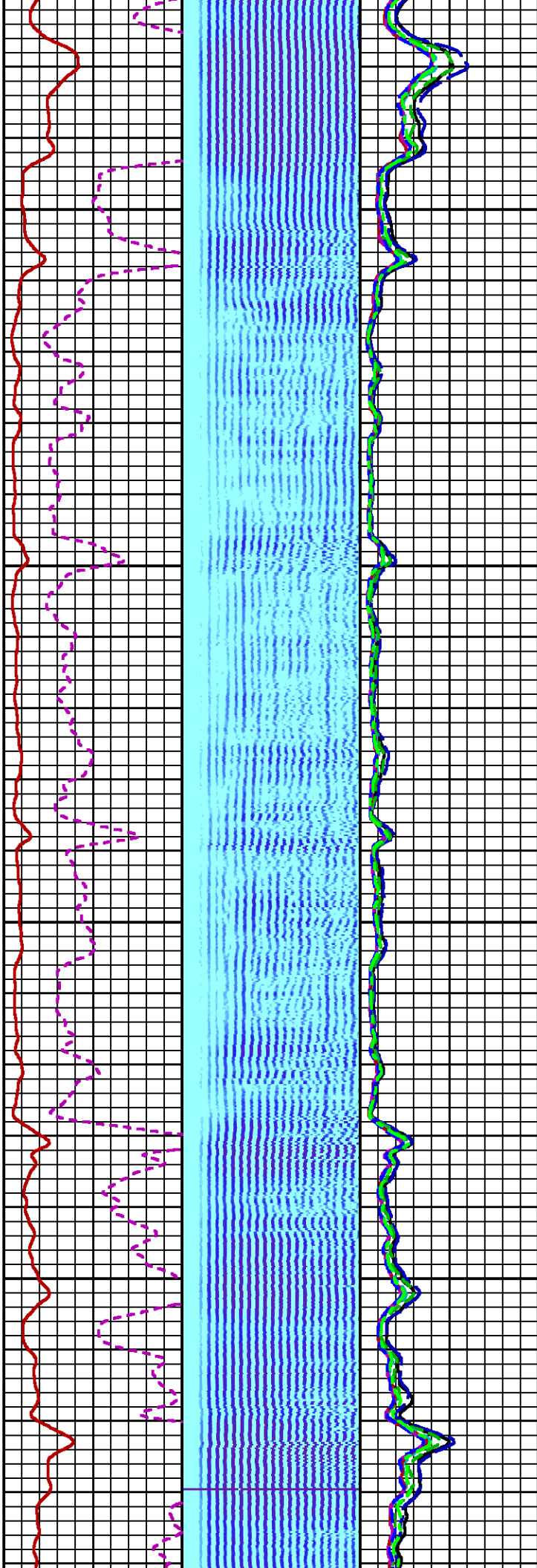
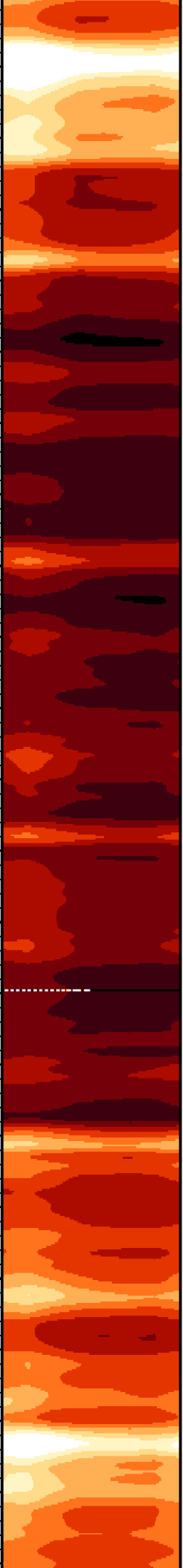
CURVE MEASURE POINT OFFSET

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:/dat1a/LARAMIE_NICHOLS_FEDERAL_0994-24-18E/17E_RAL__MAIN.fvpdf [5"/100' Scale]
Plot Interval	: 0 - 7748.5 Feet
Data File 1	: F1 : SysA:/dat1a/LARAMIE_NICHOLS_FEDERAL_0994-24-18E/17E_RAL_MAIN.xtf
Created On	: N/A
Company	: LARAMIE ENERGY LLC
Well	: NICHOLS FEDERAL 0994-24-18E
Field	: VEGA
File Interval	: 3.5 - 7749.75 Feet
OCT	: p012g

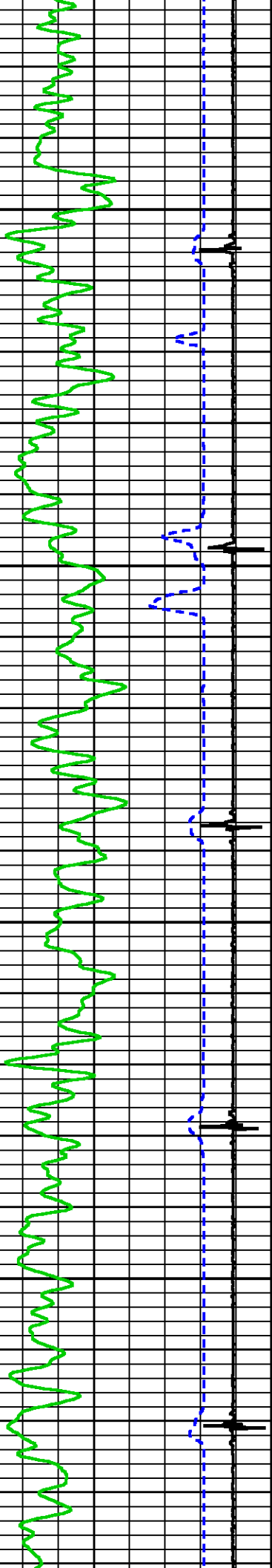


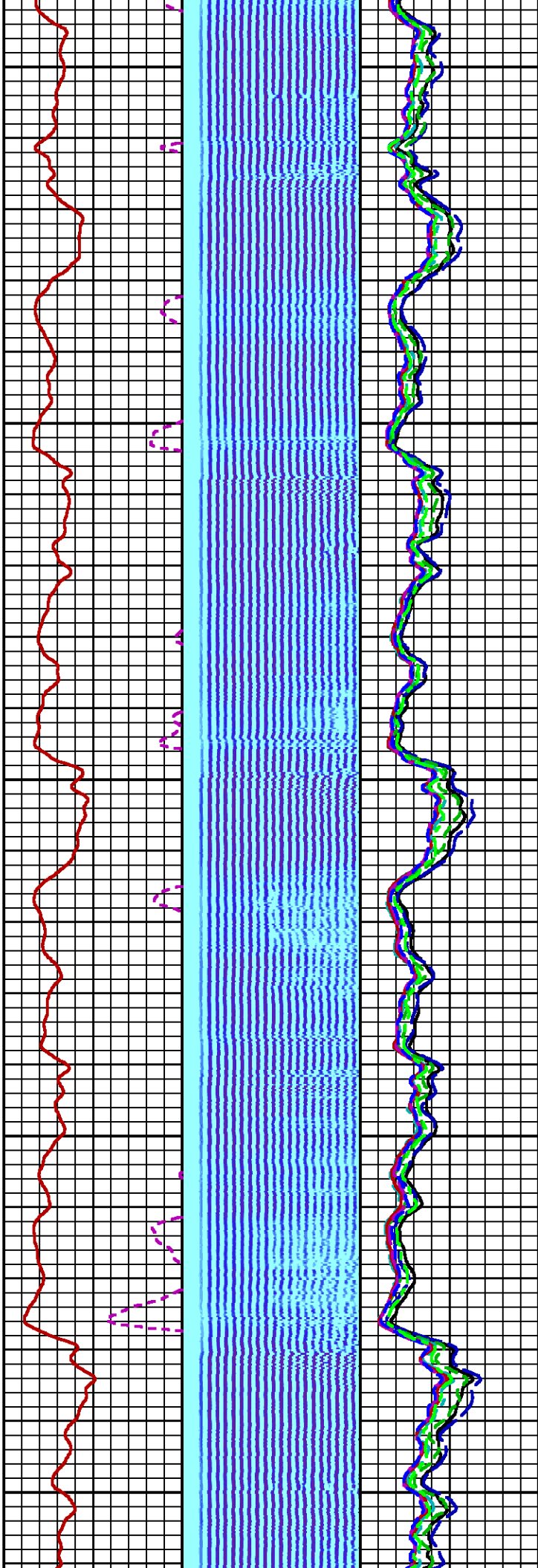
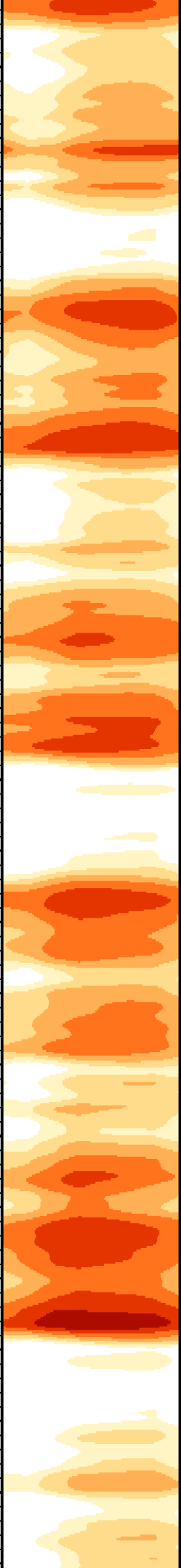




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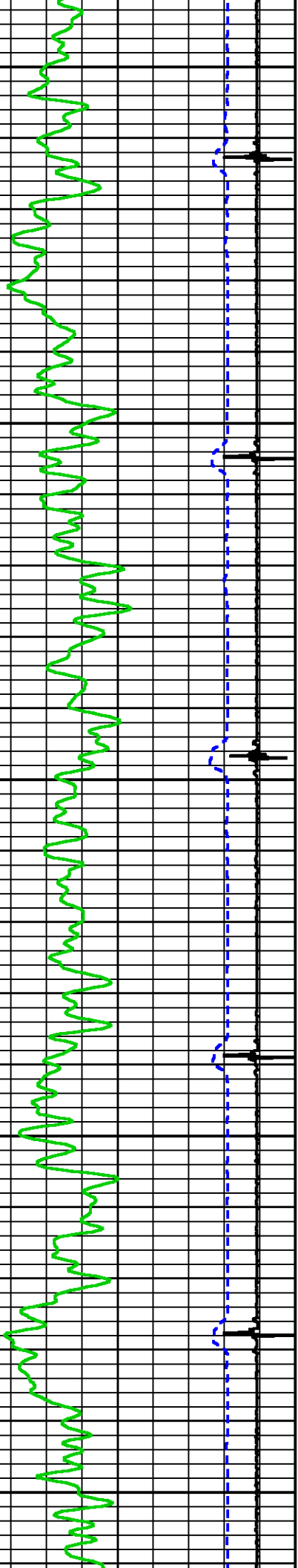
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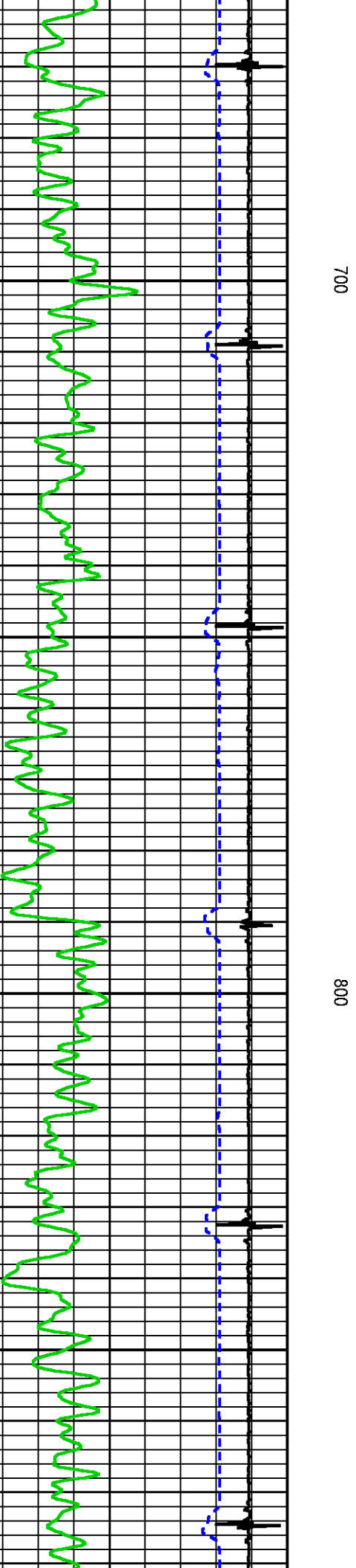
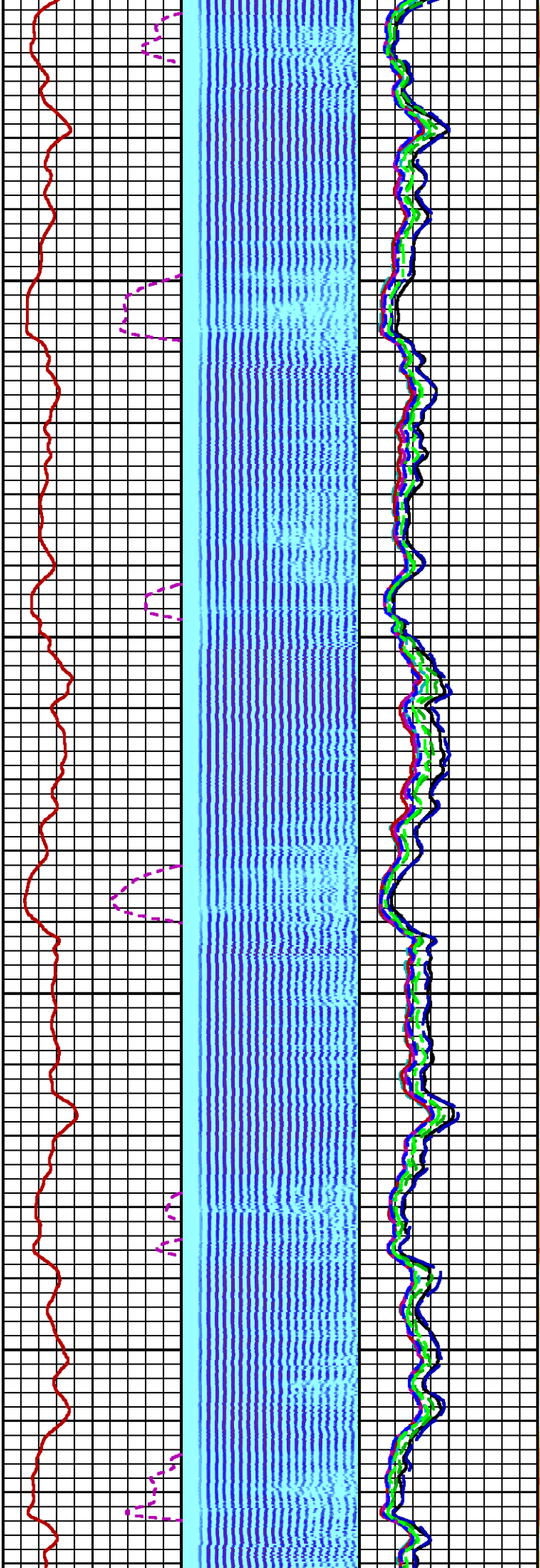
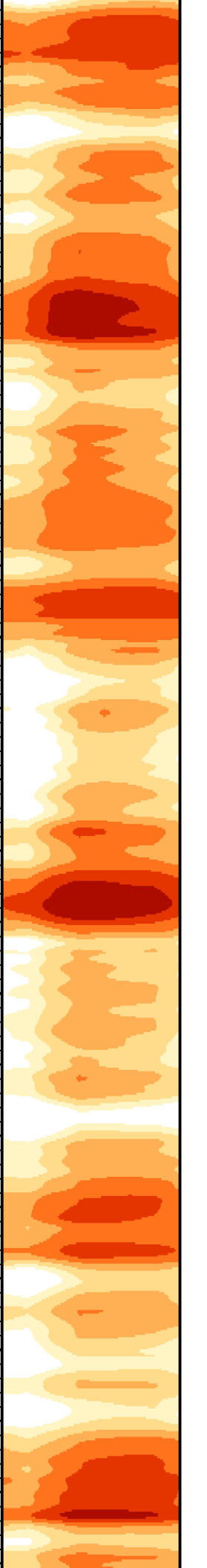


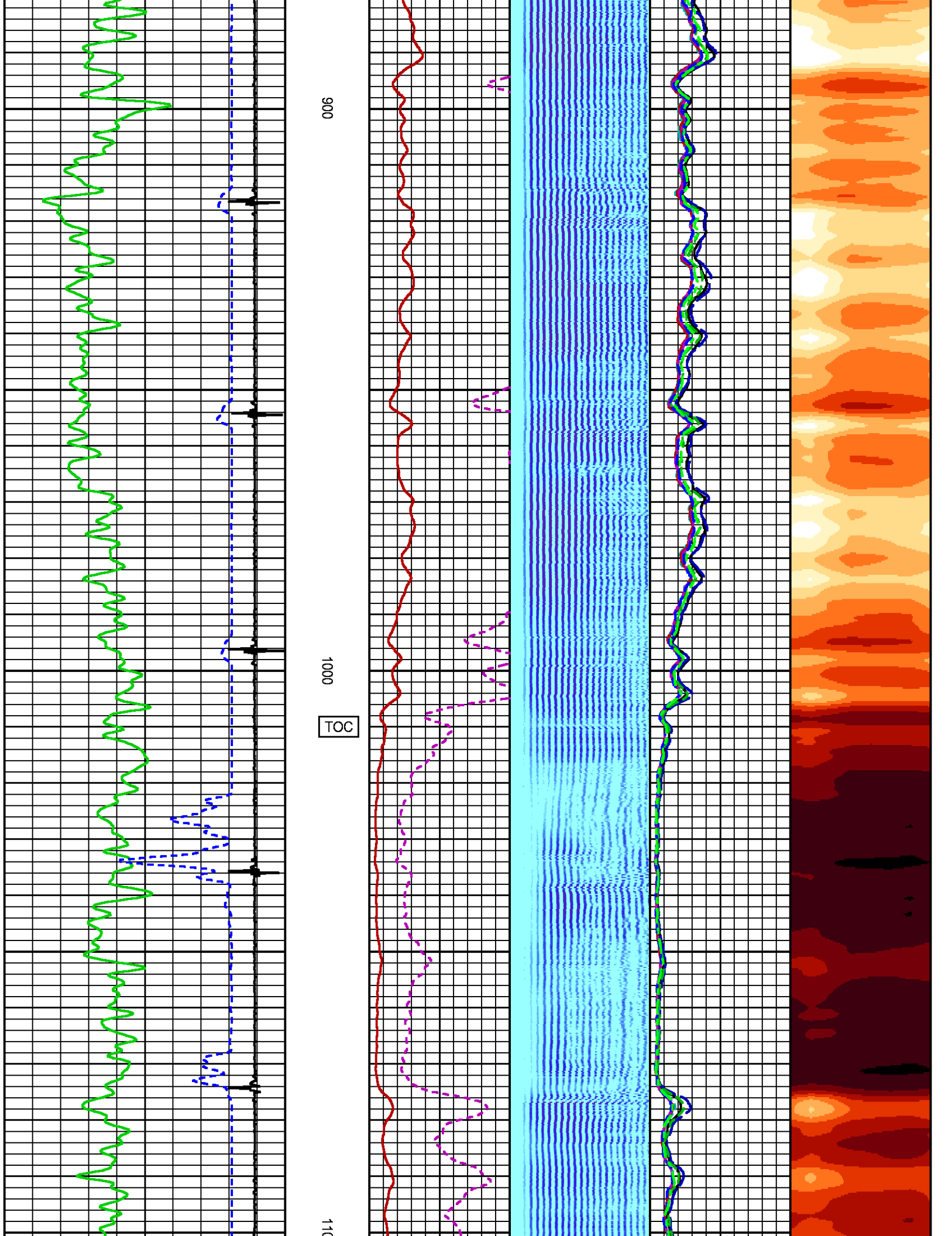


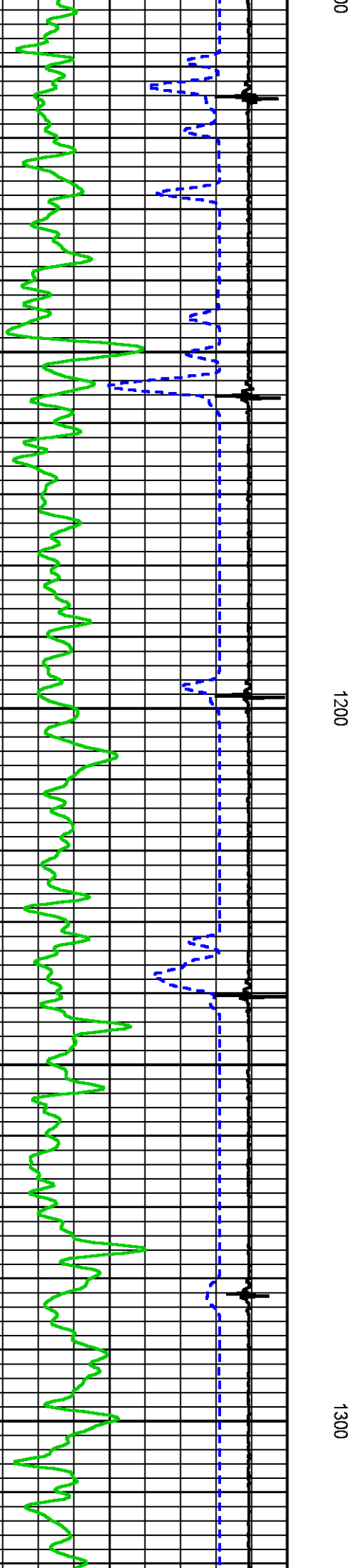
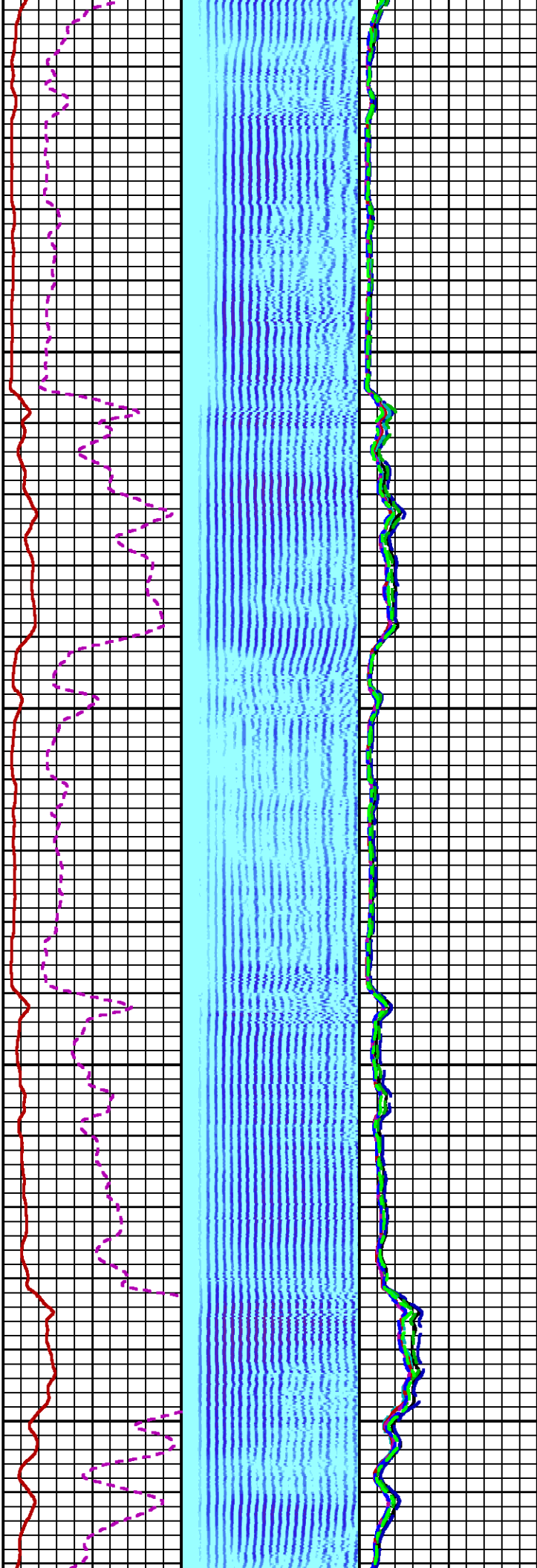
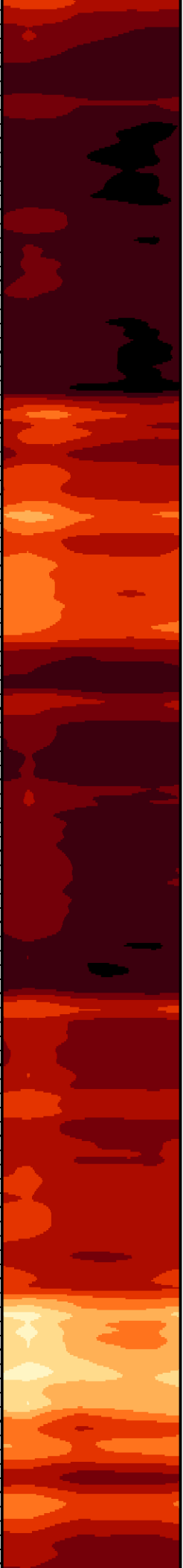
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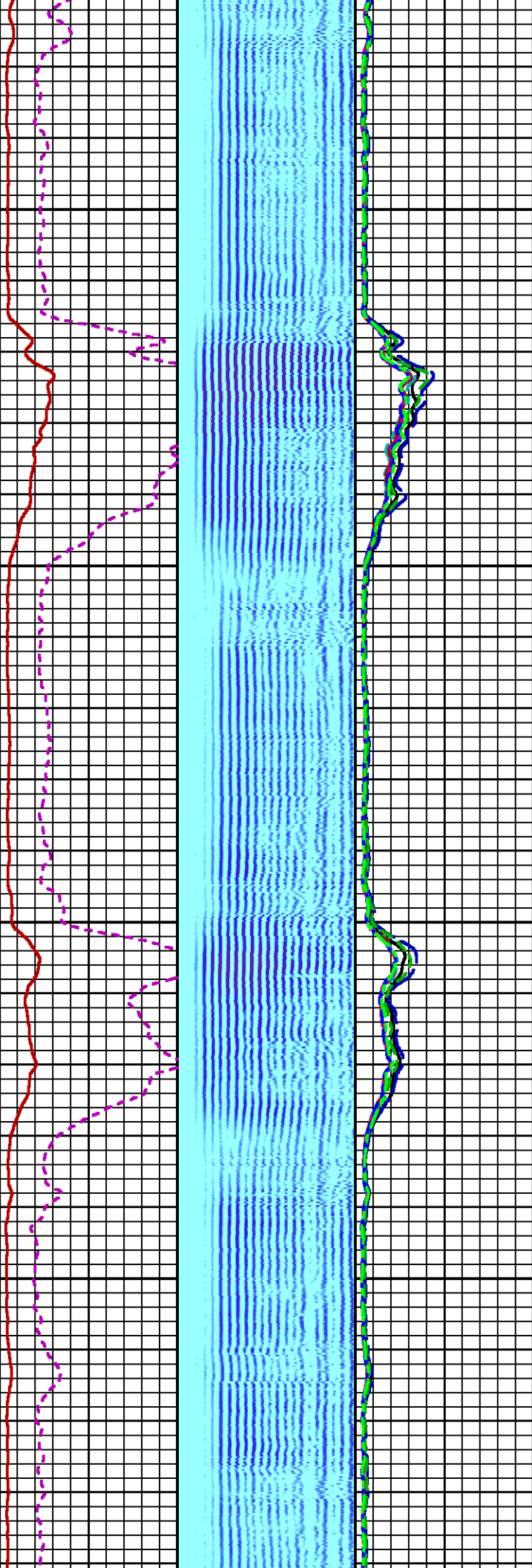
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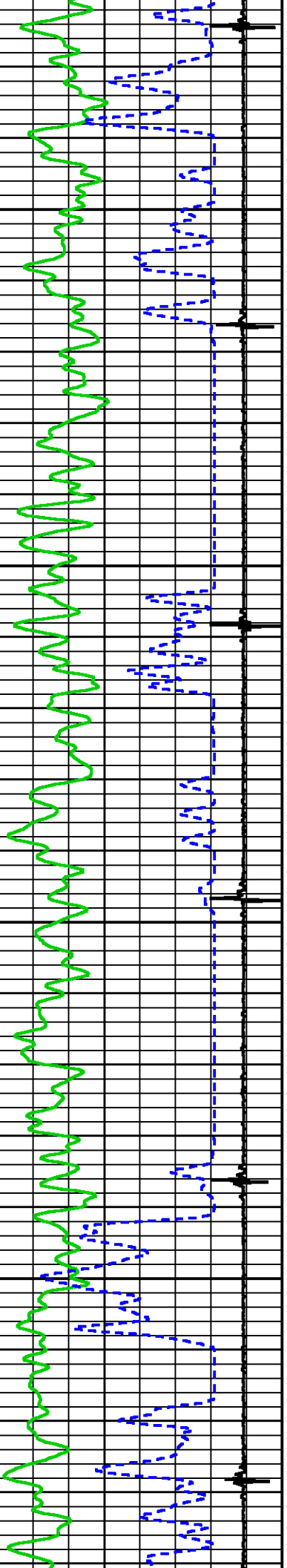


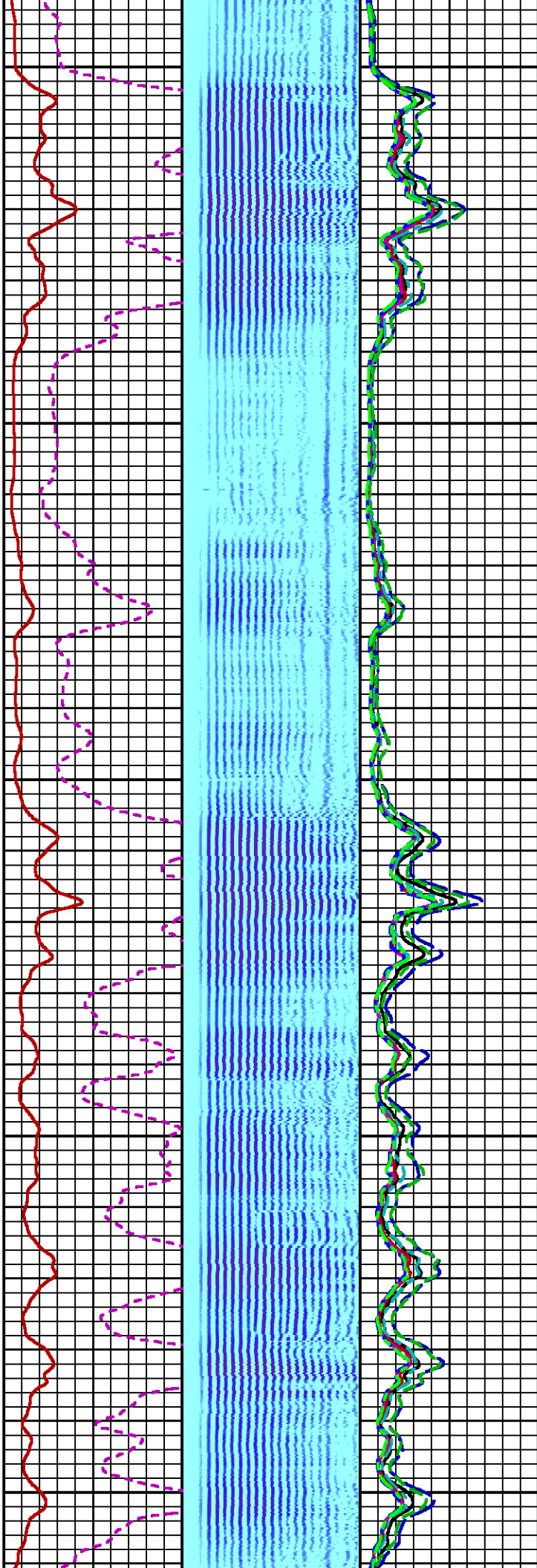
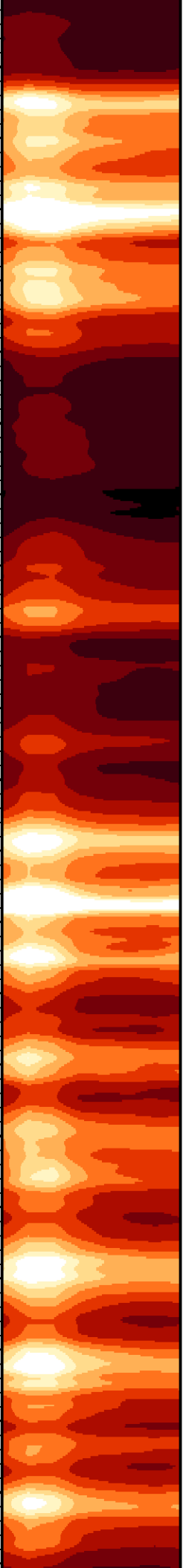




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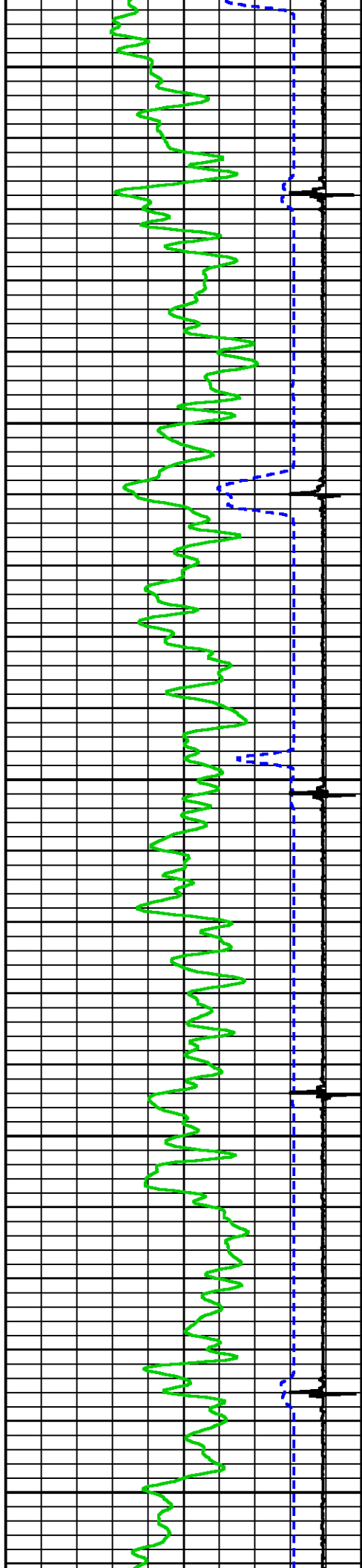
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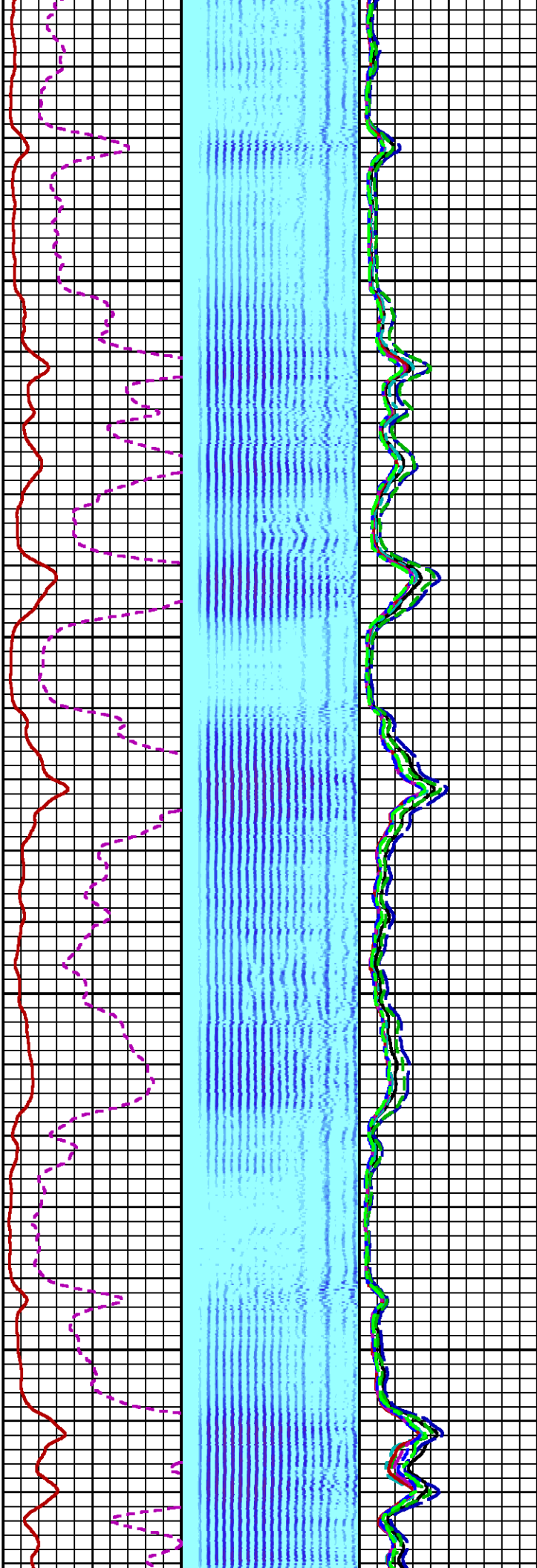
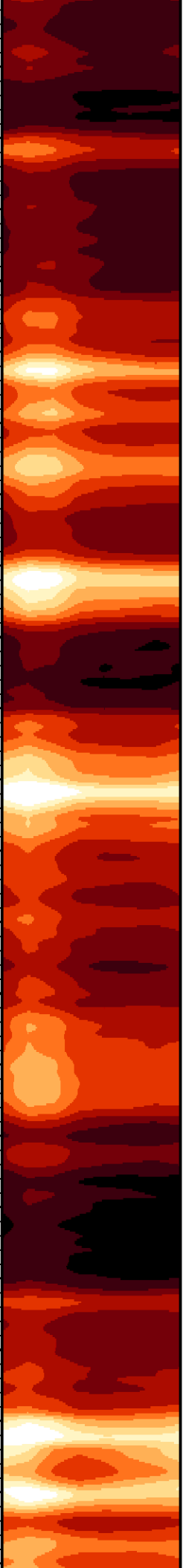




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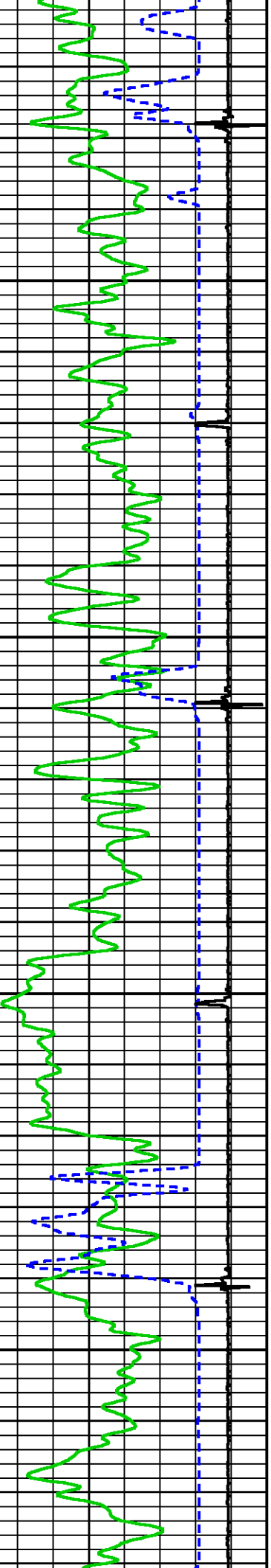
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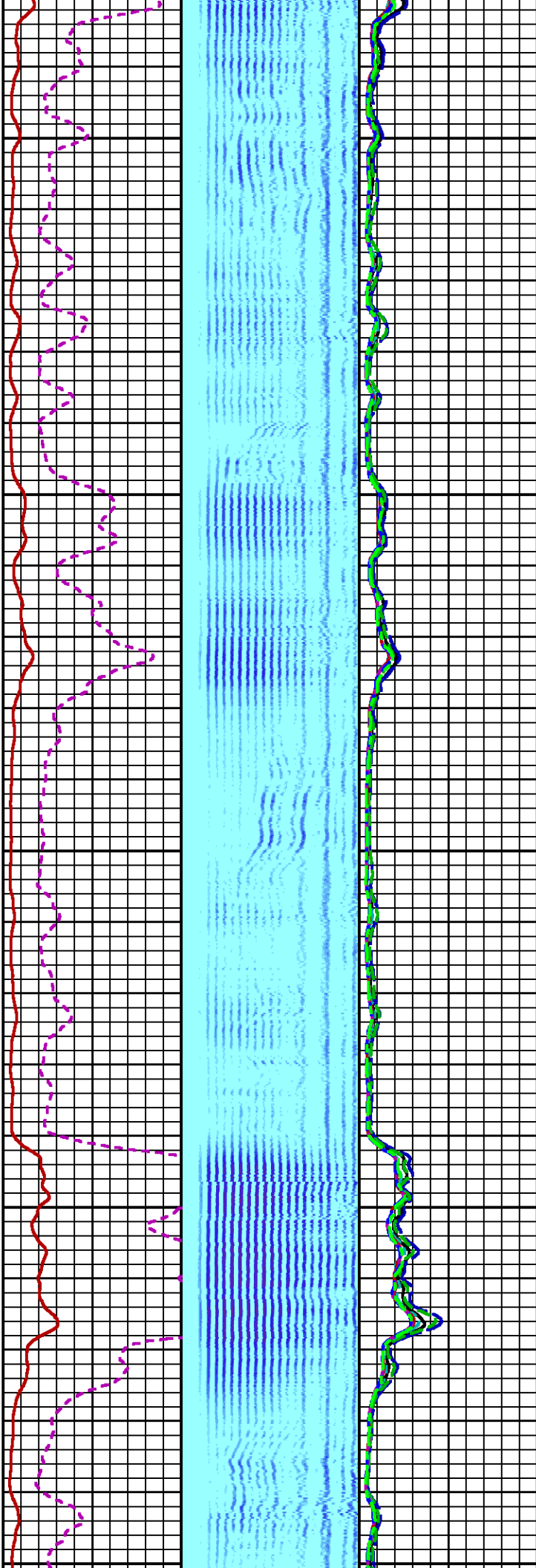




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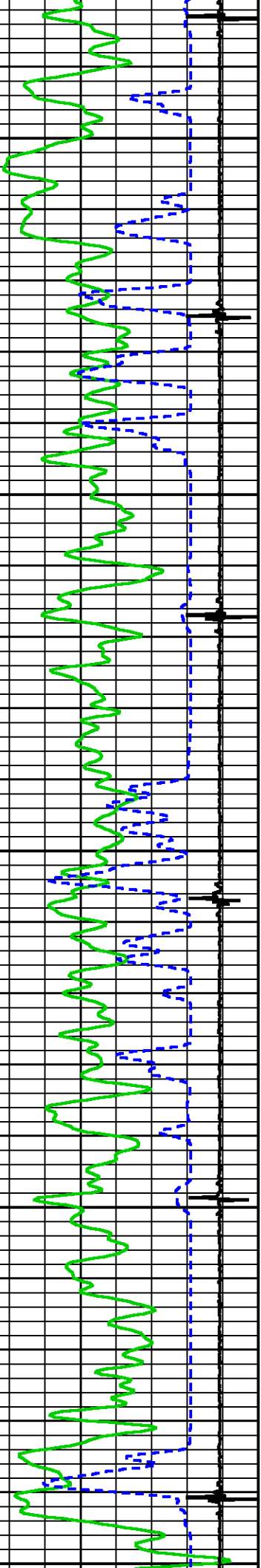


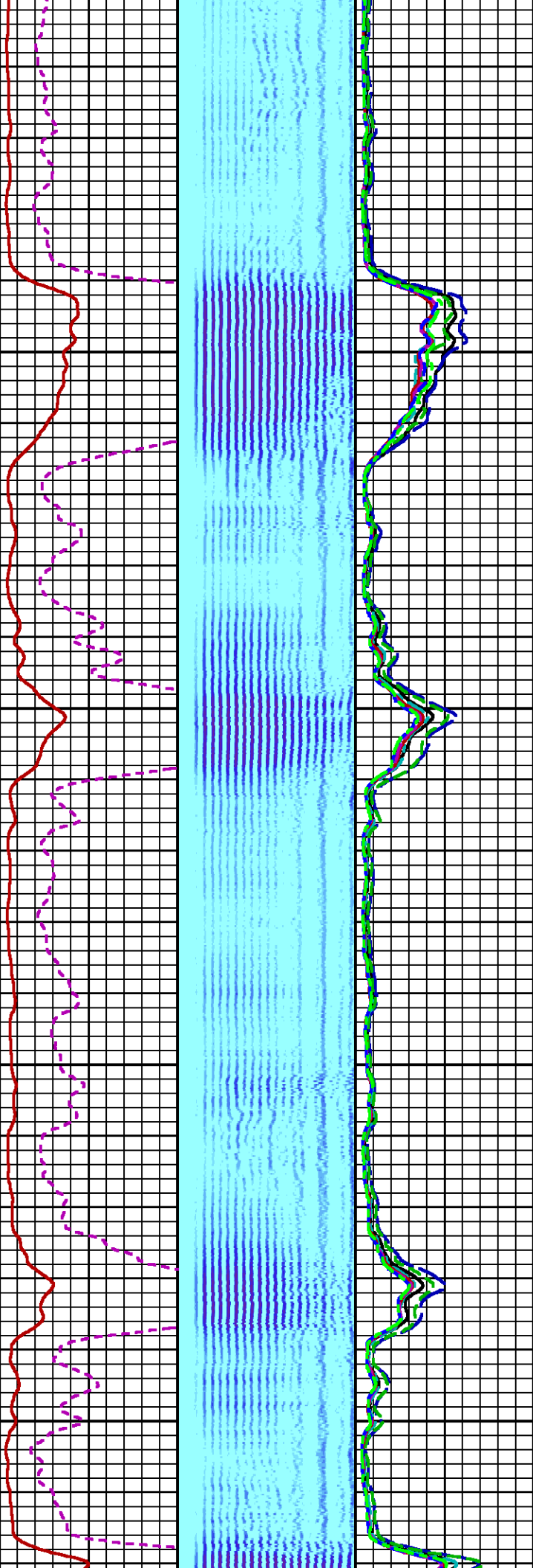
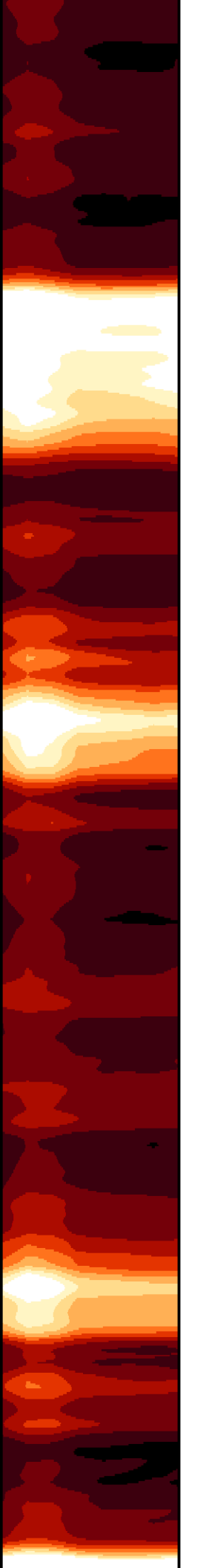


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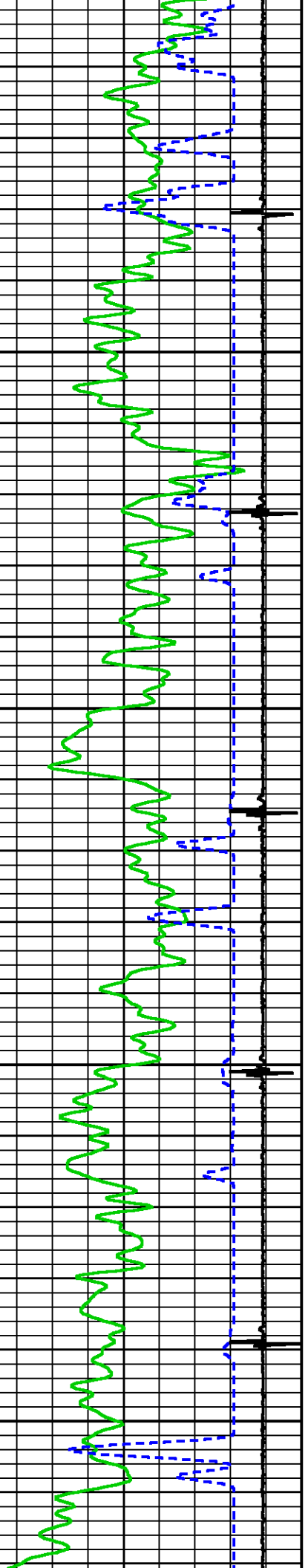
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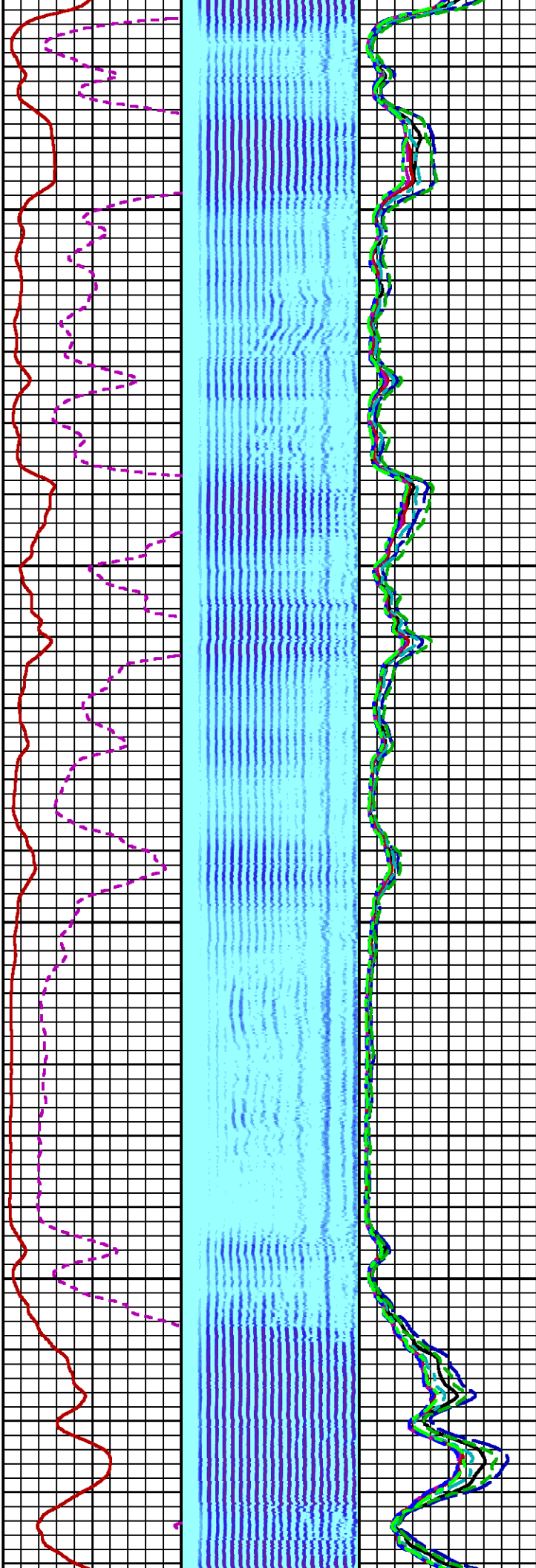
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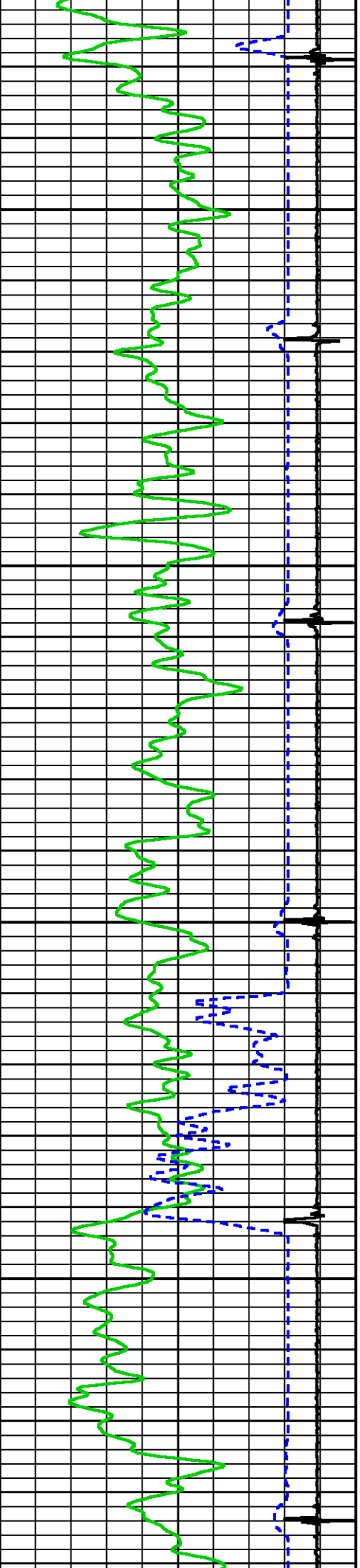
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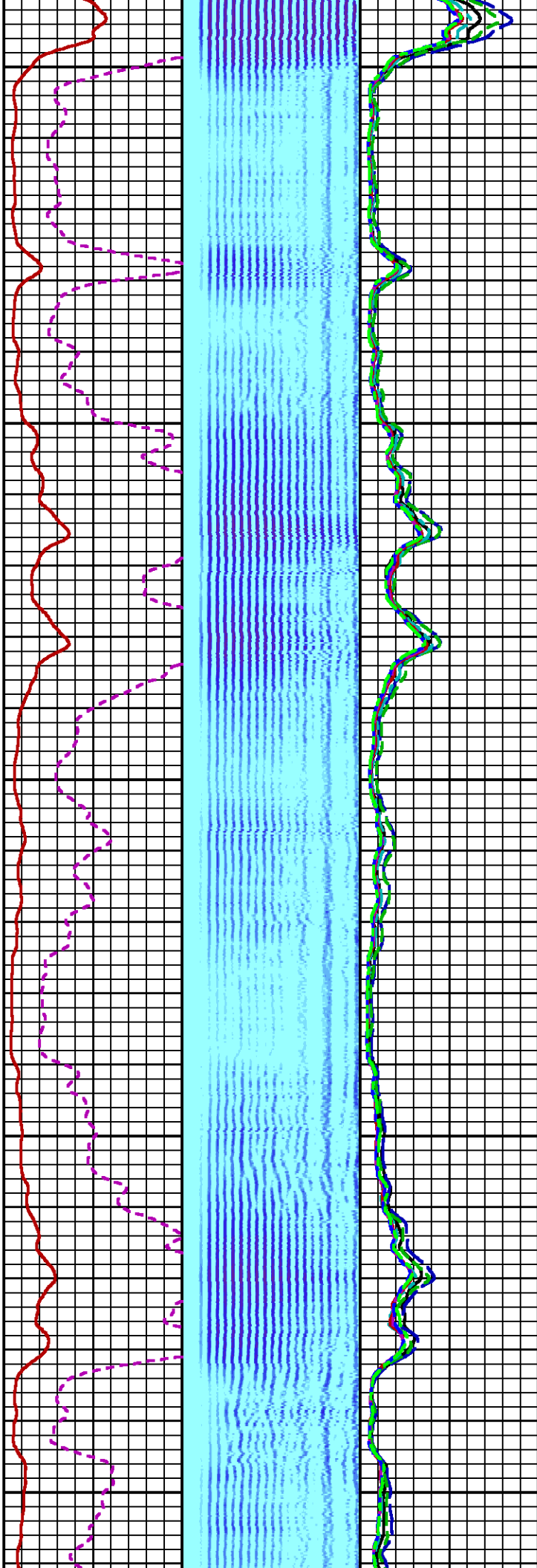
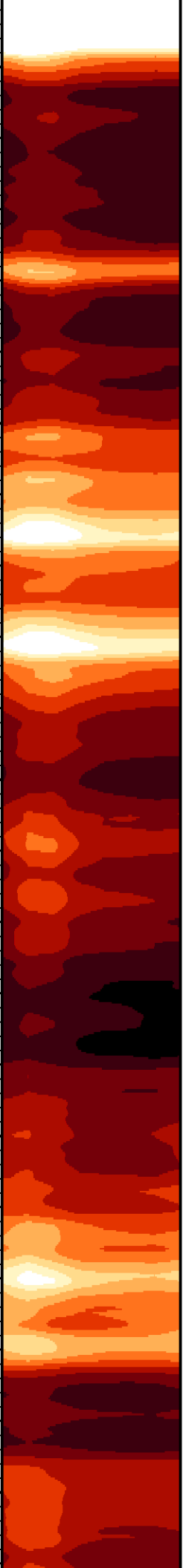




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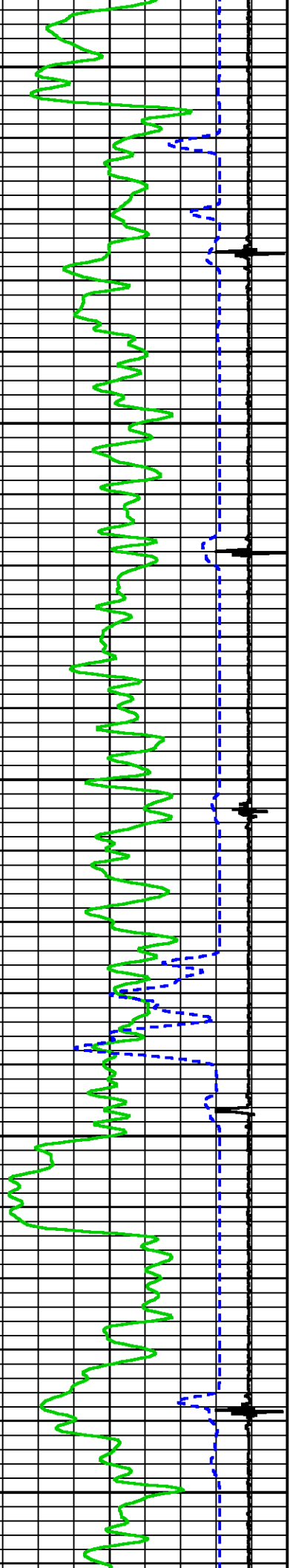
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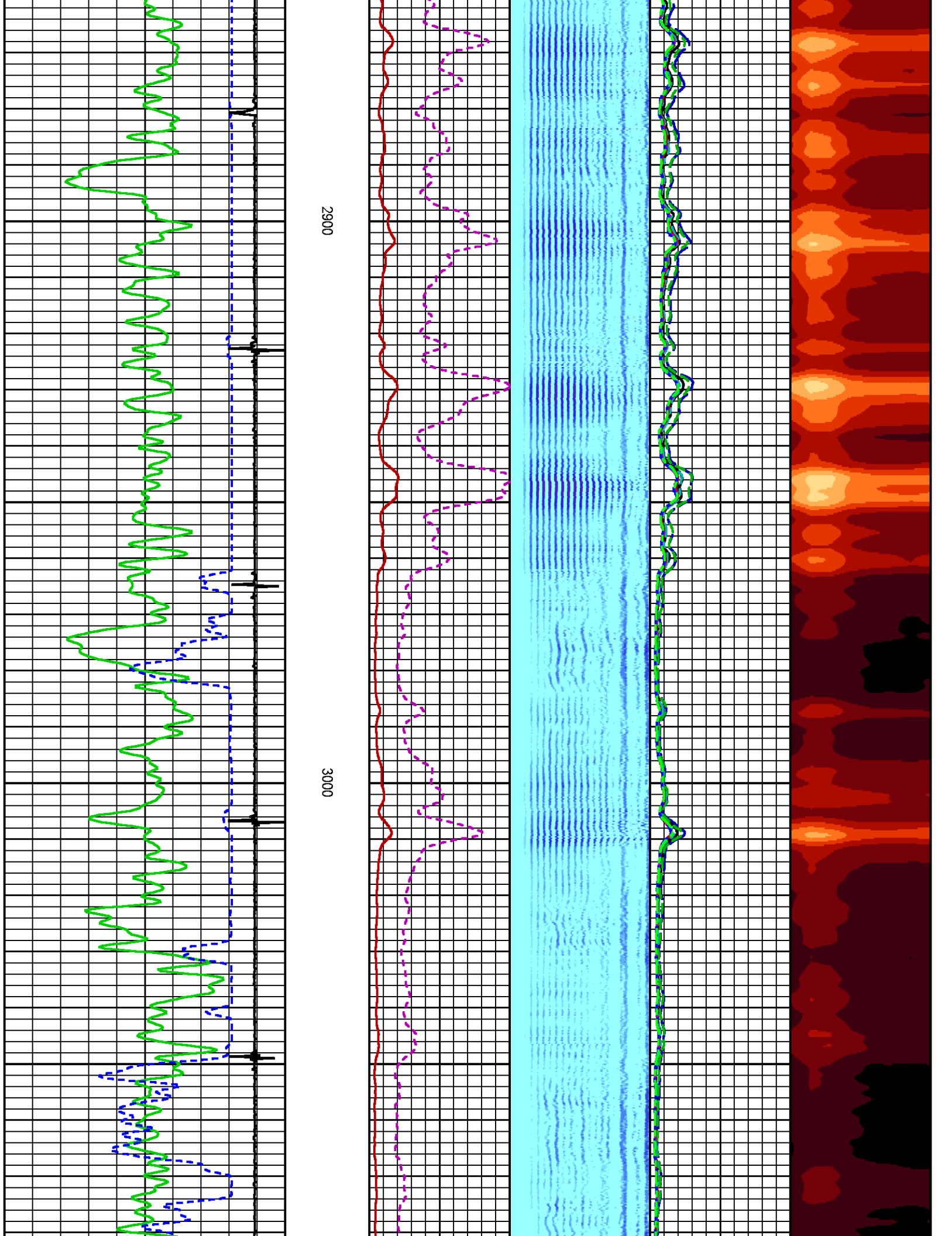


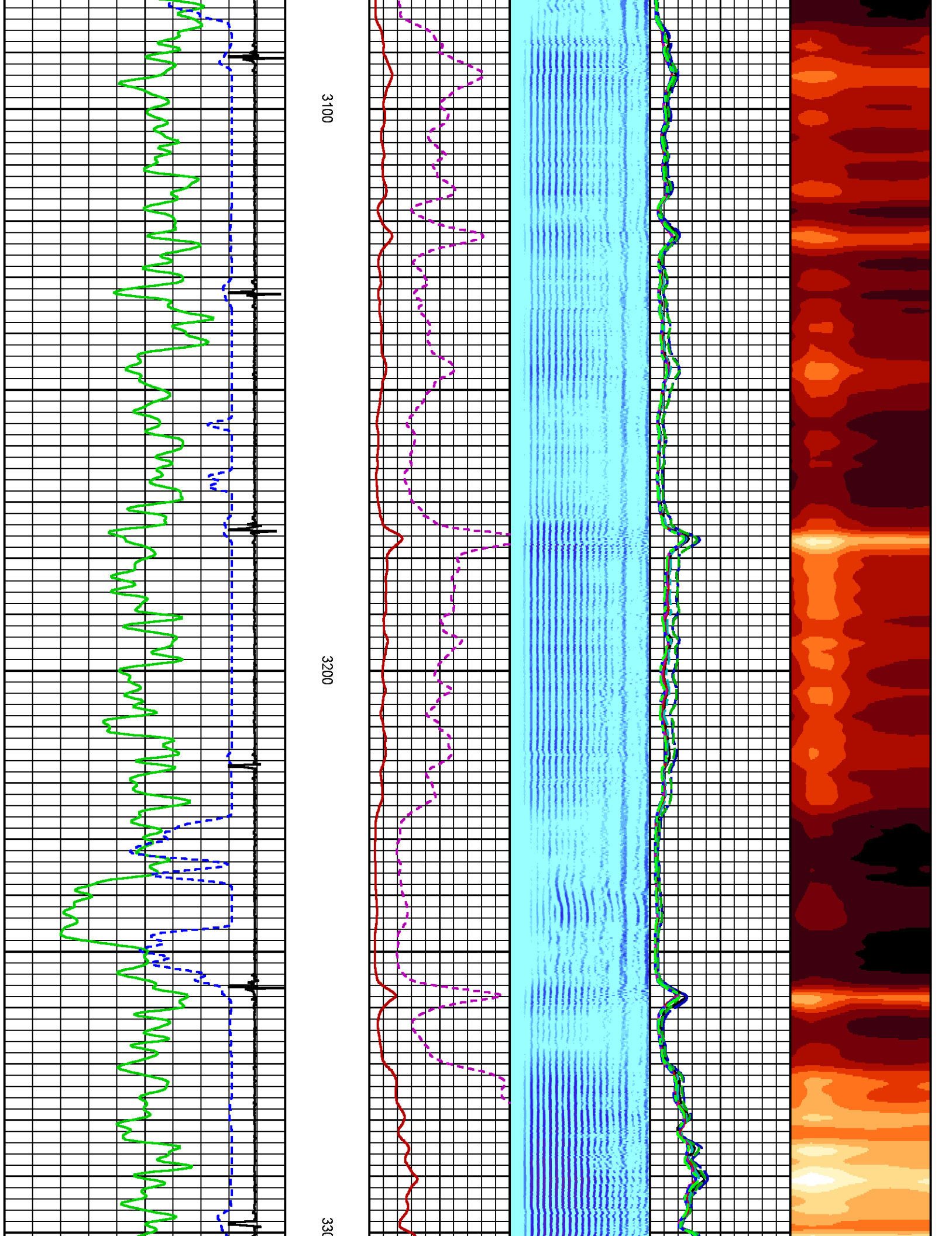


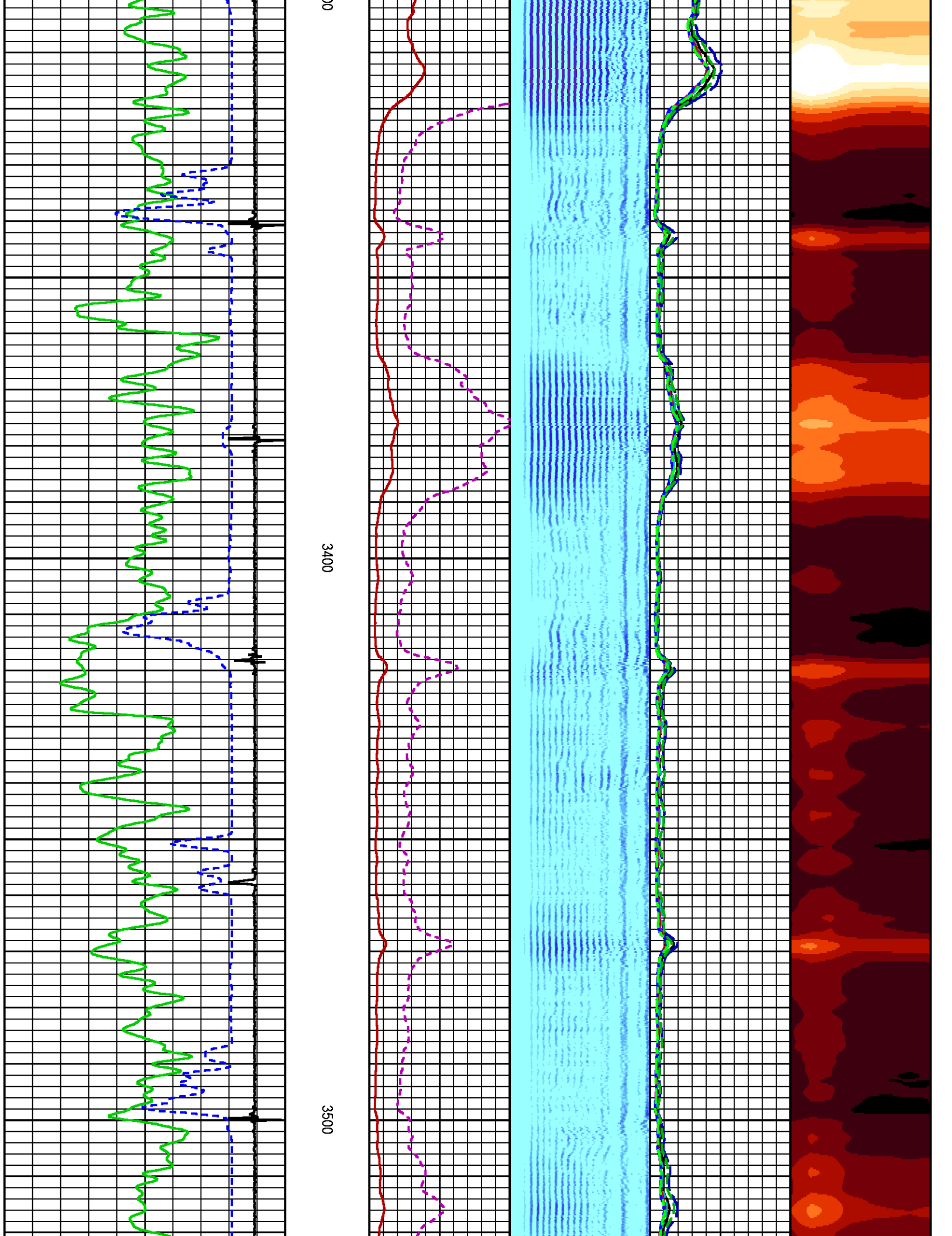
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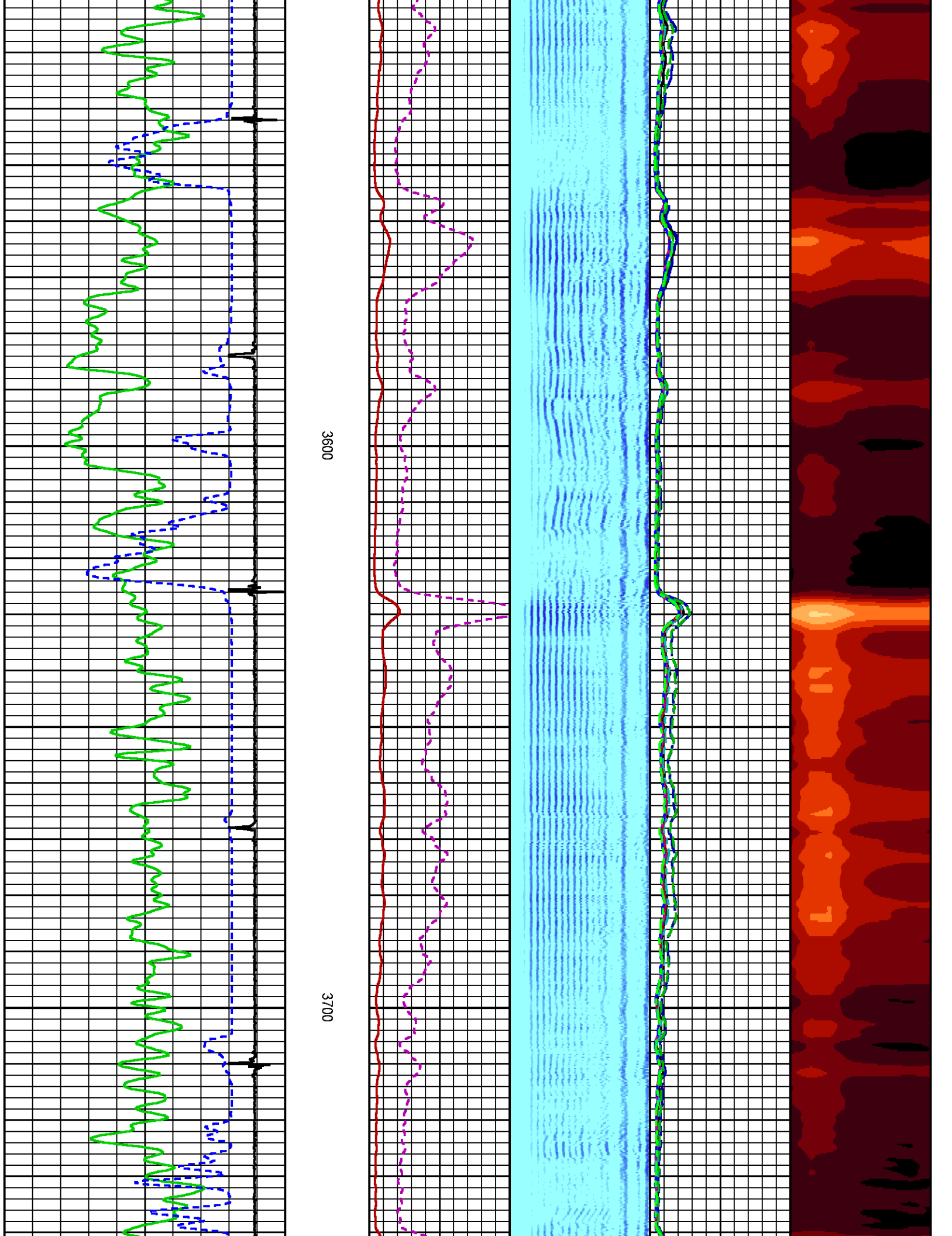
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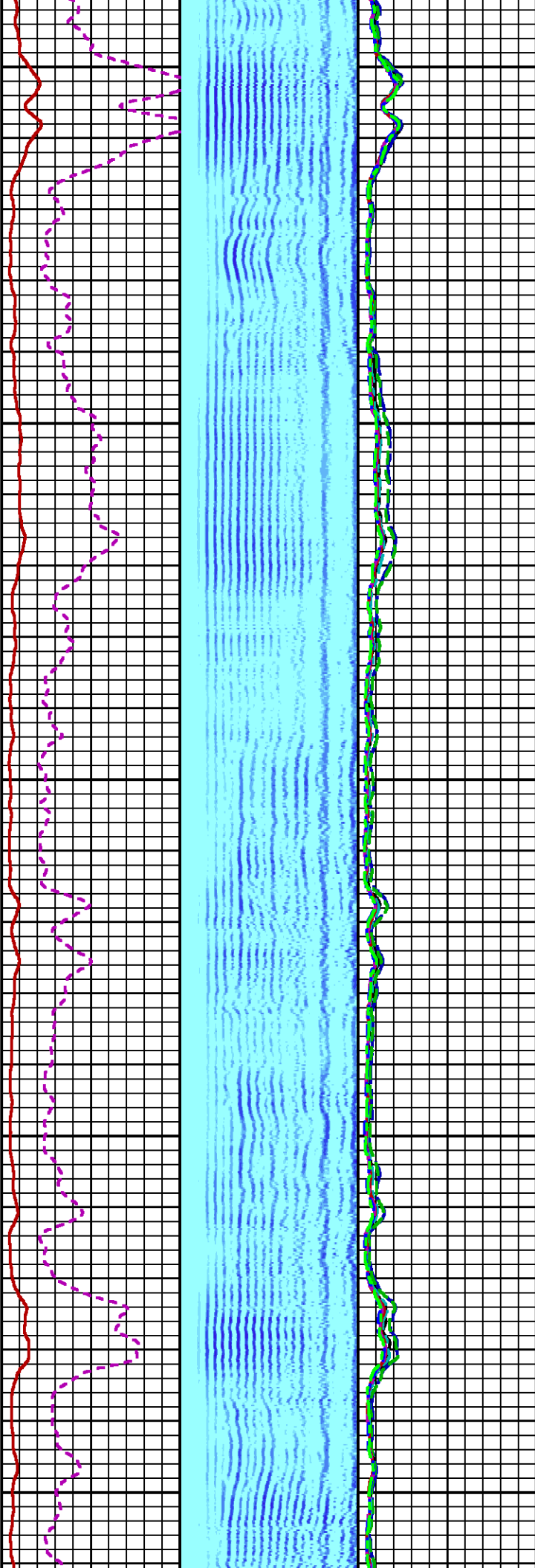
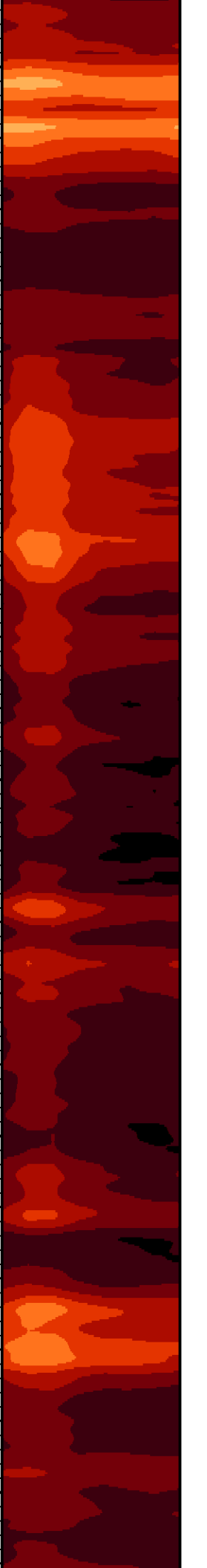






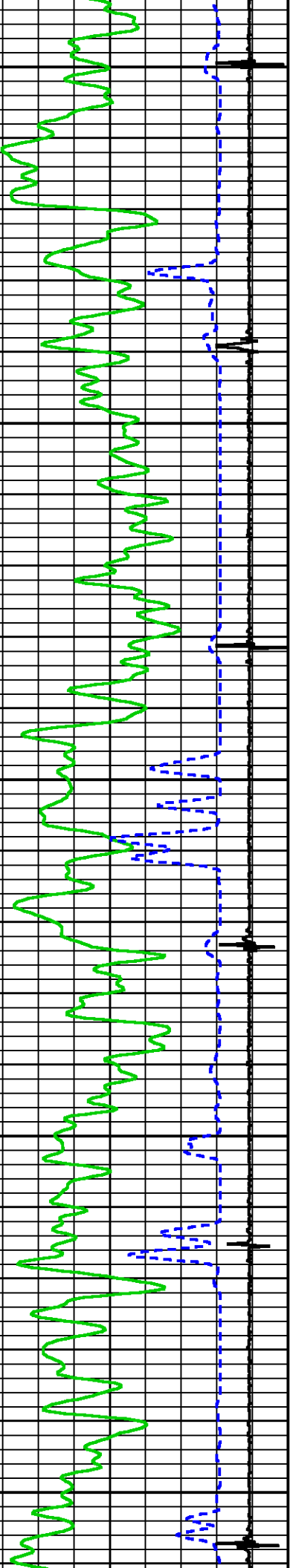


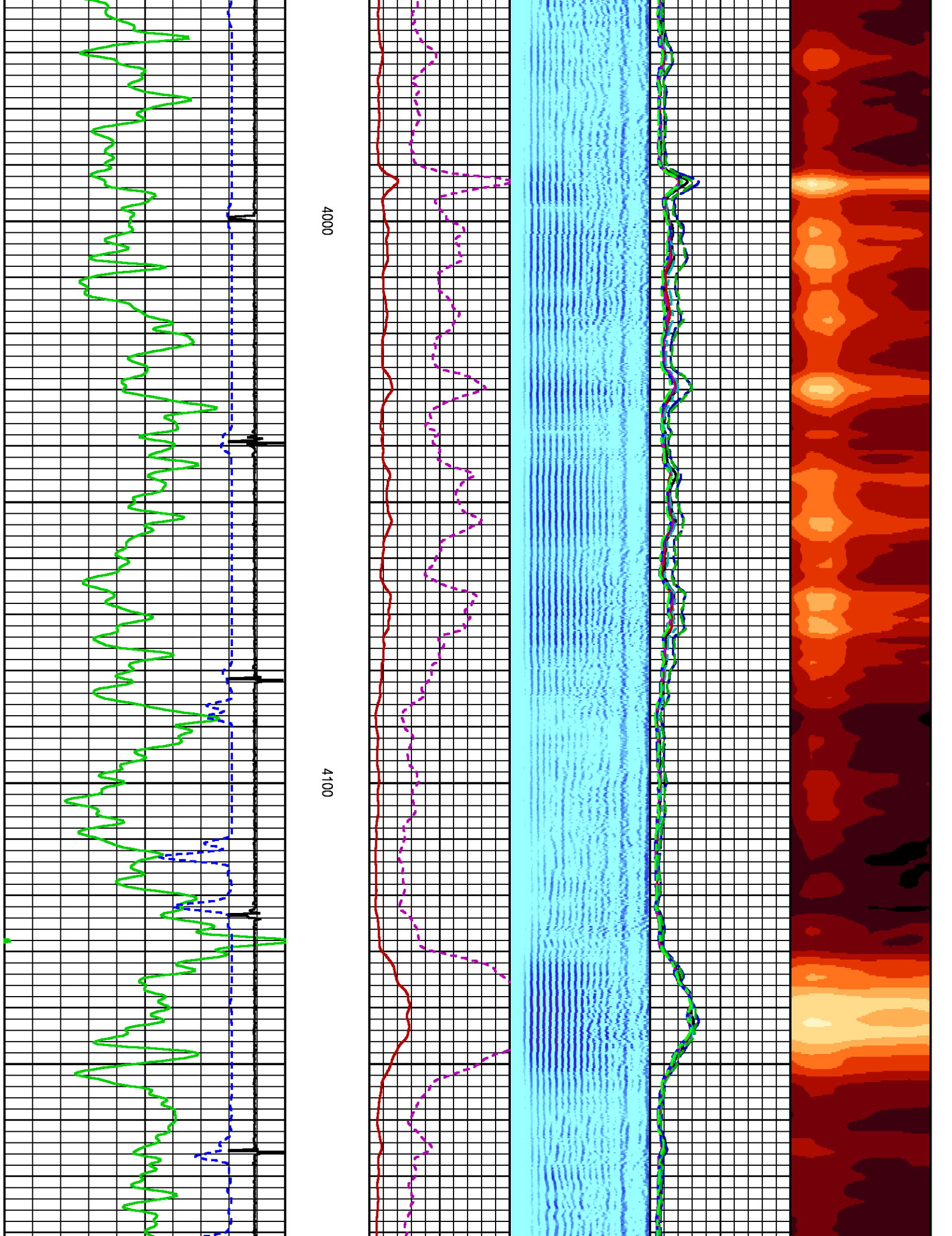


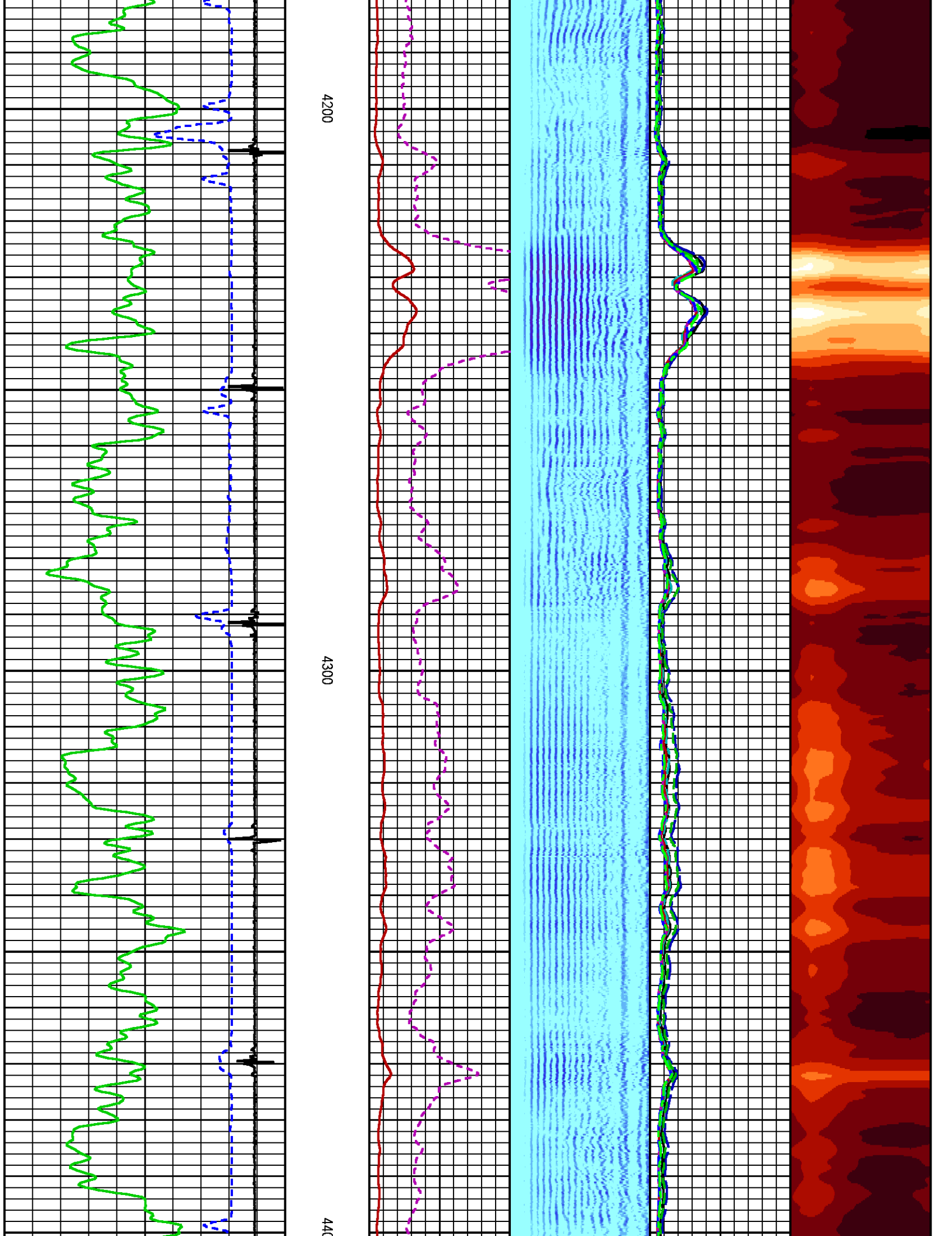


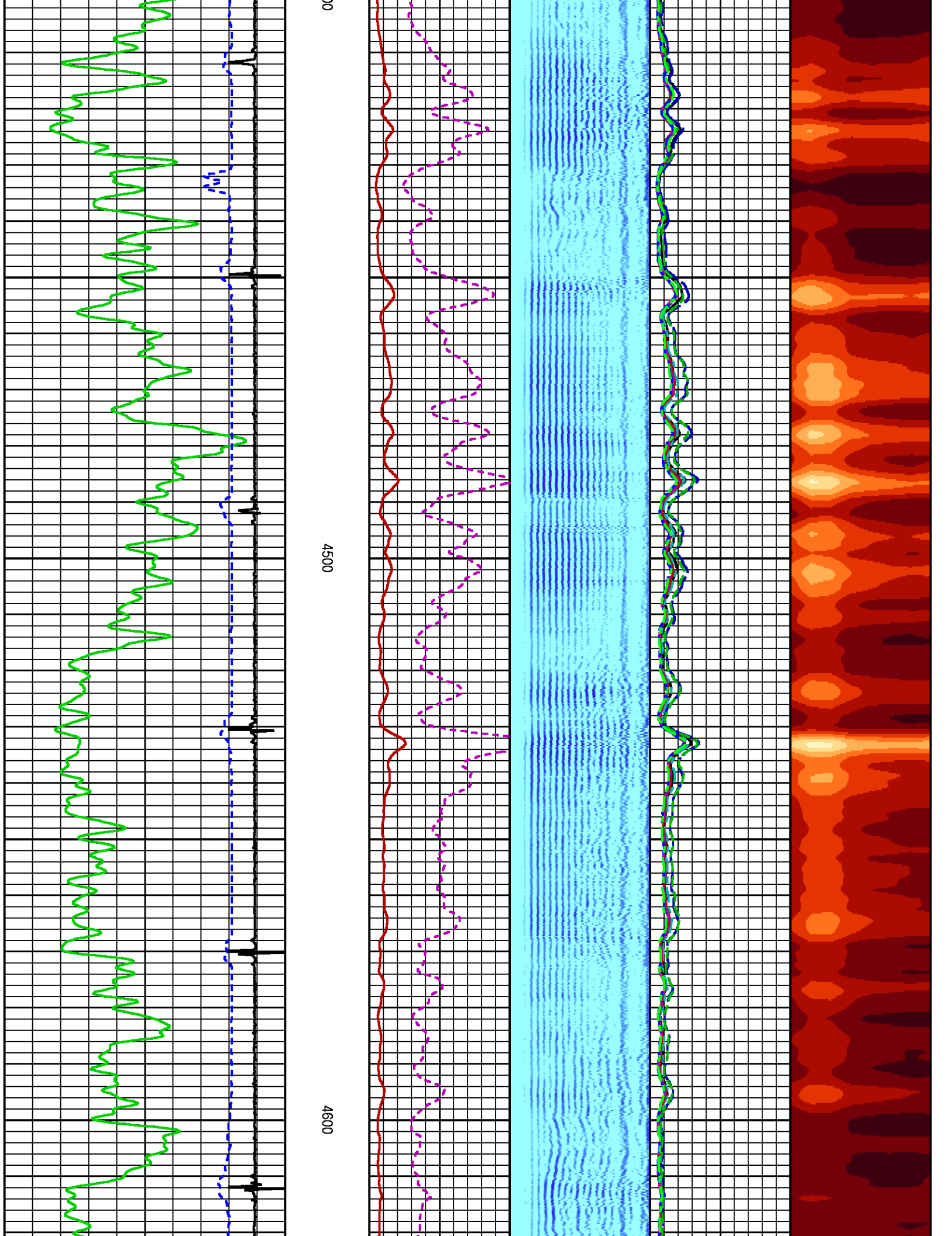
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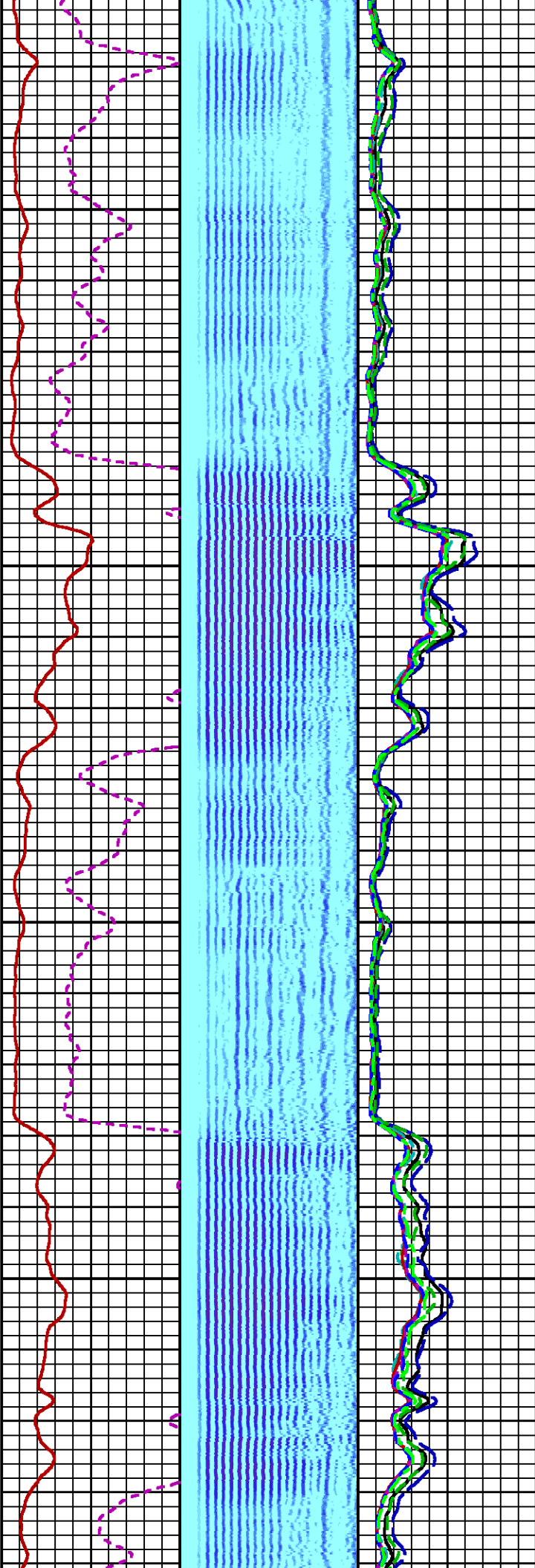
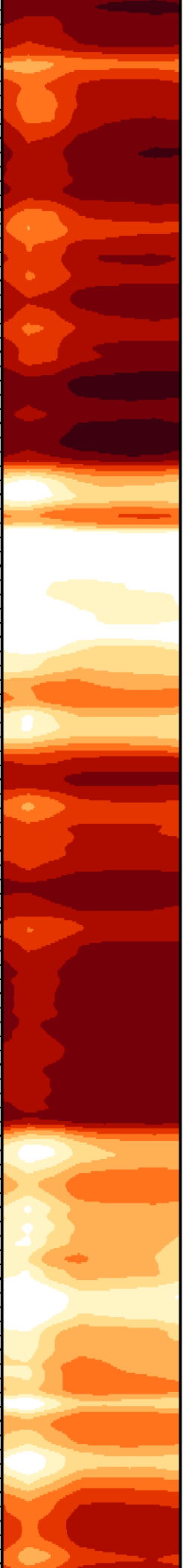
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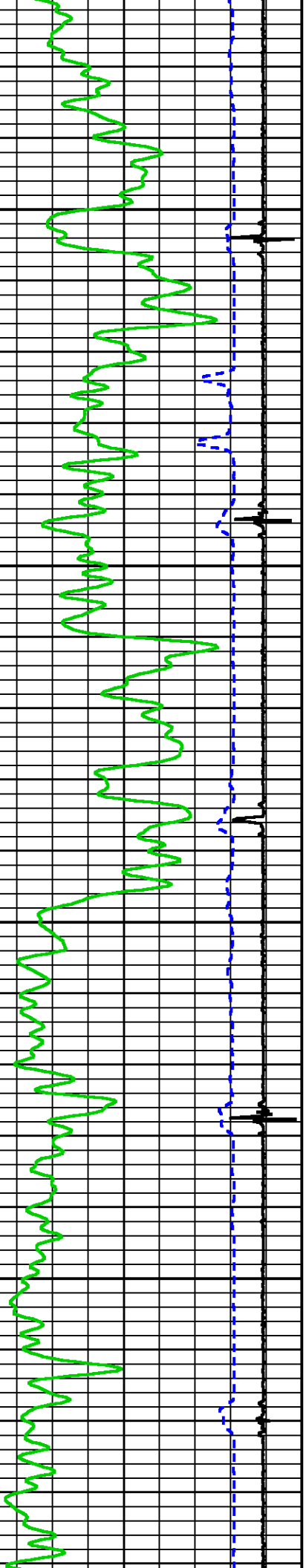


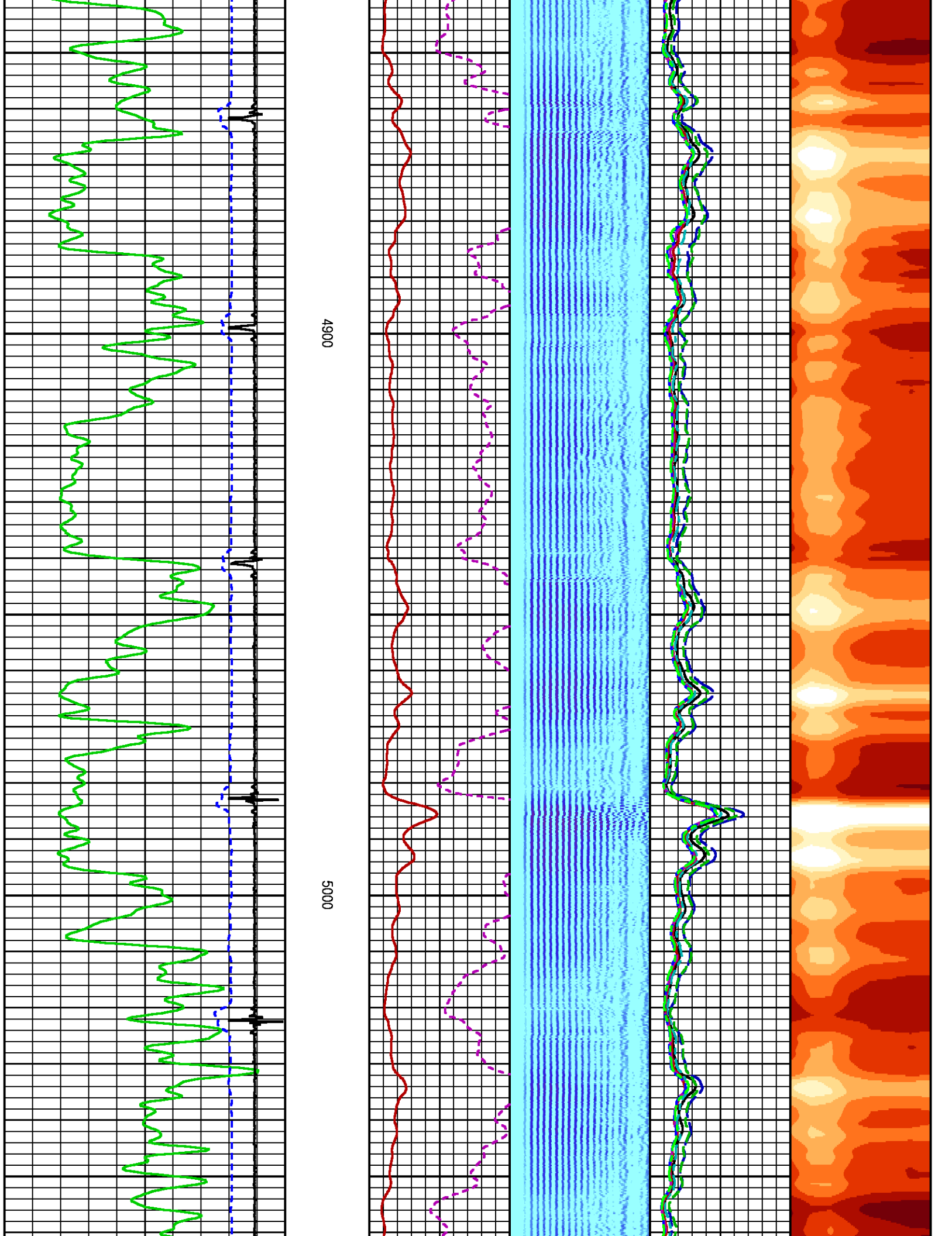


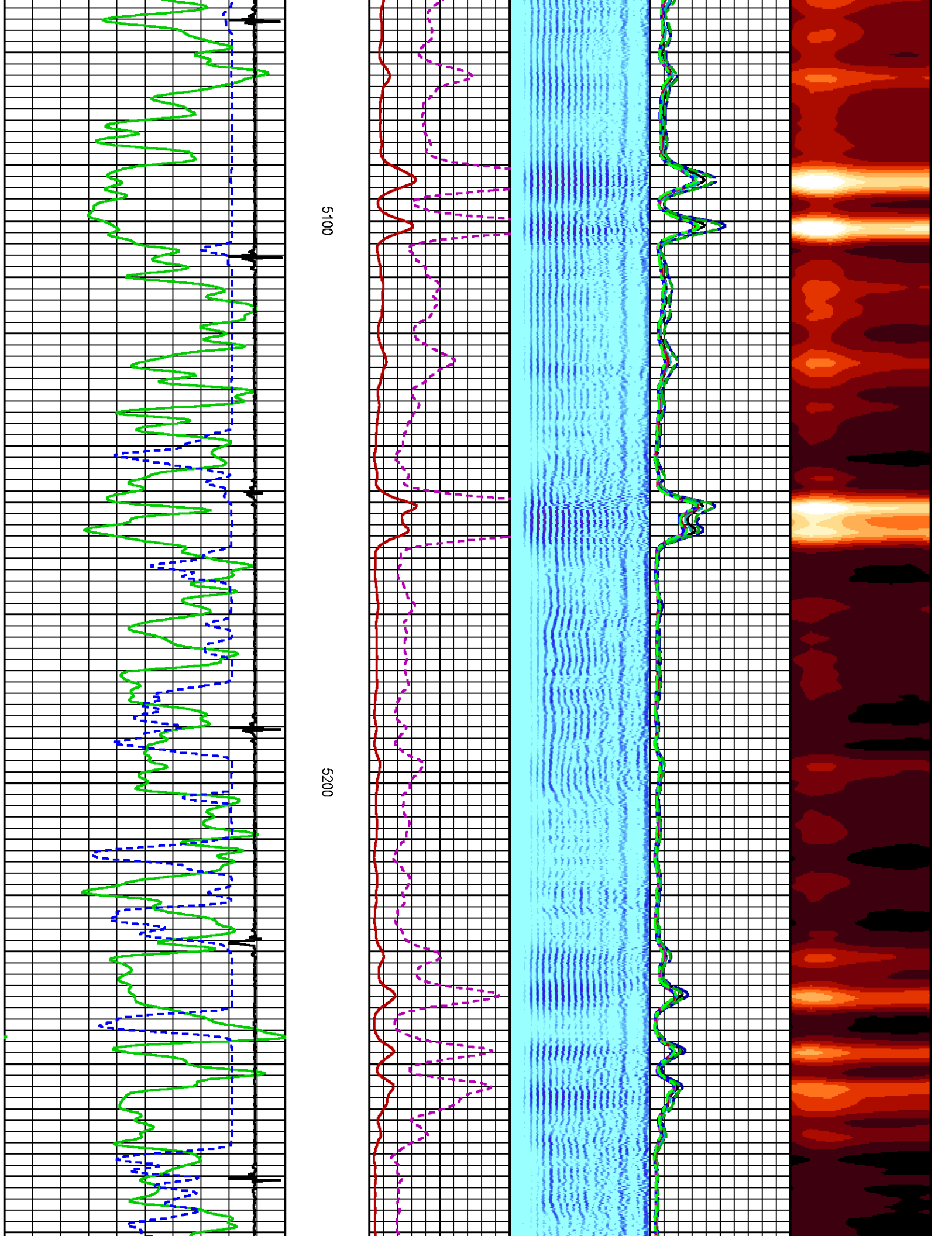


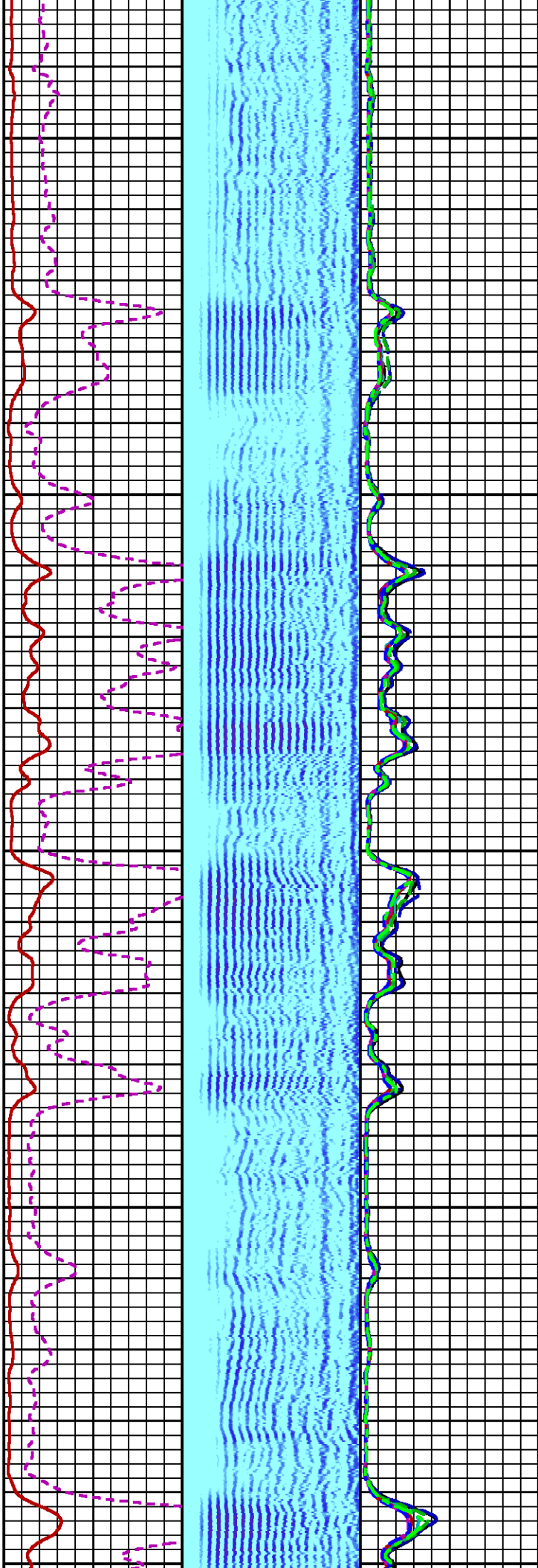
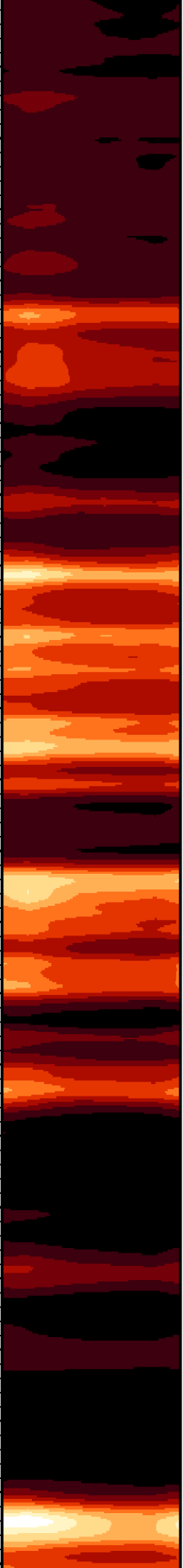
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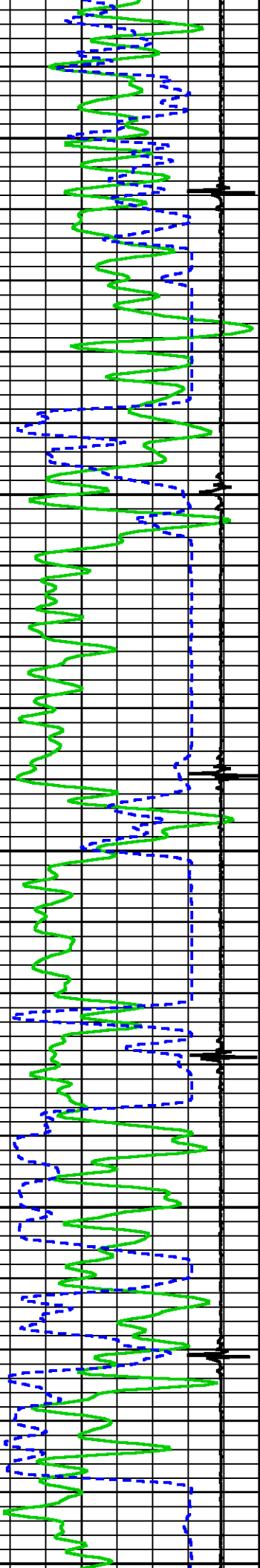


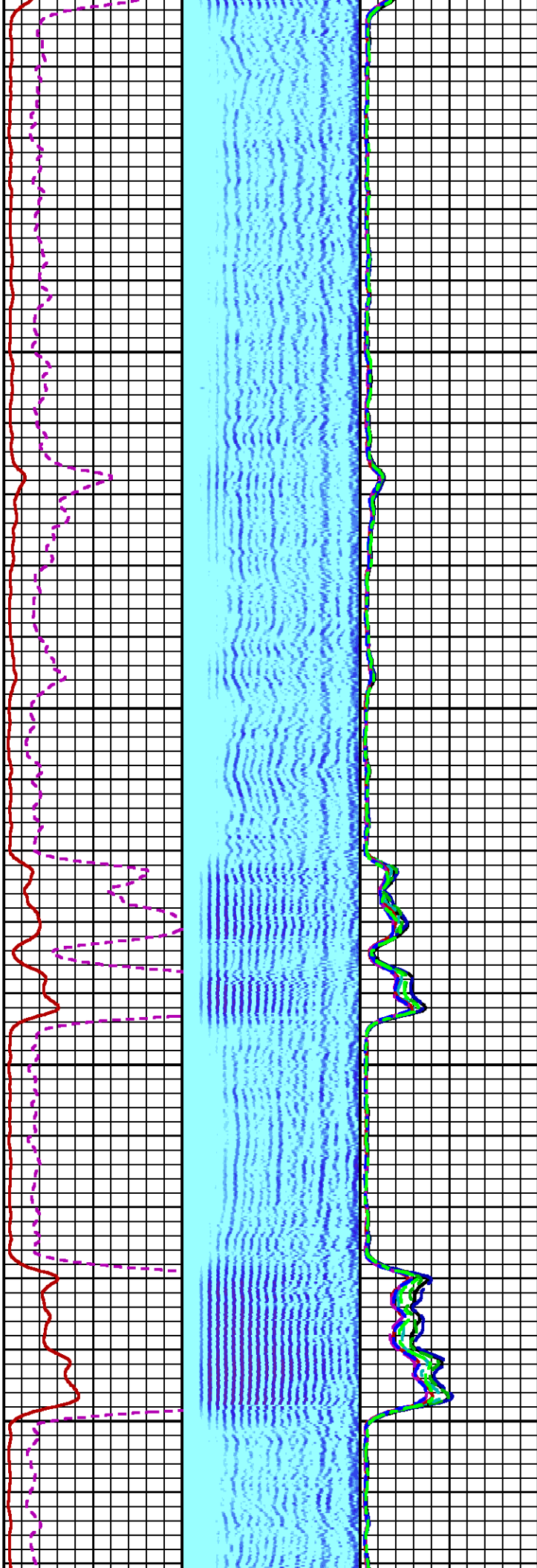
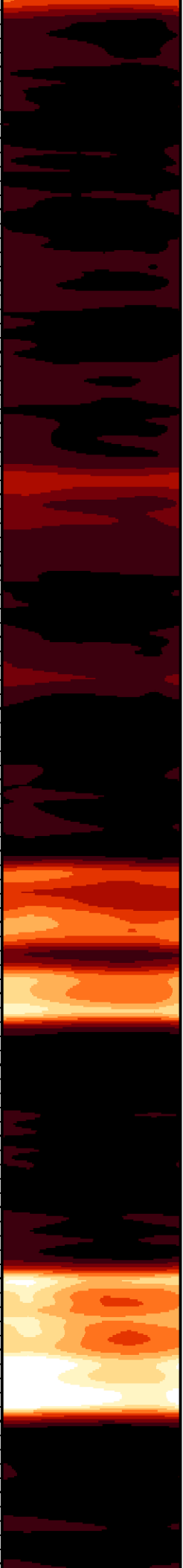


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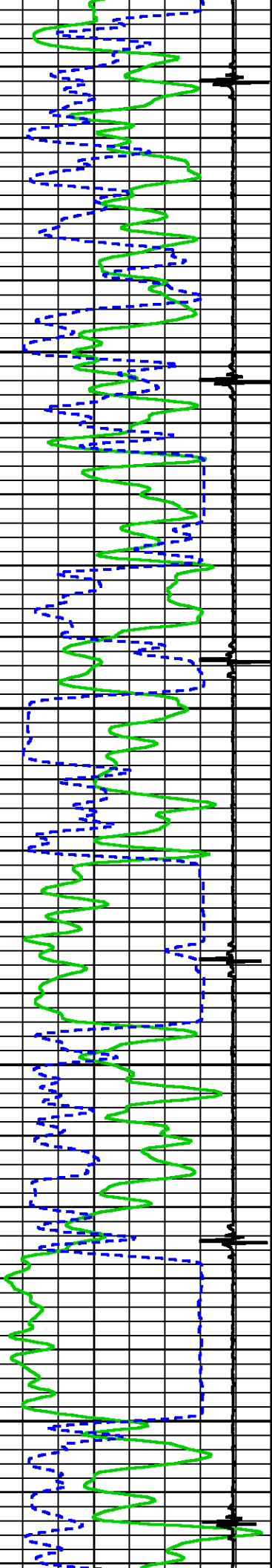
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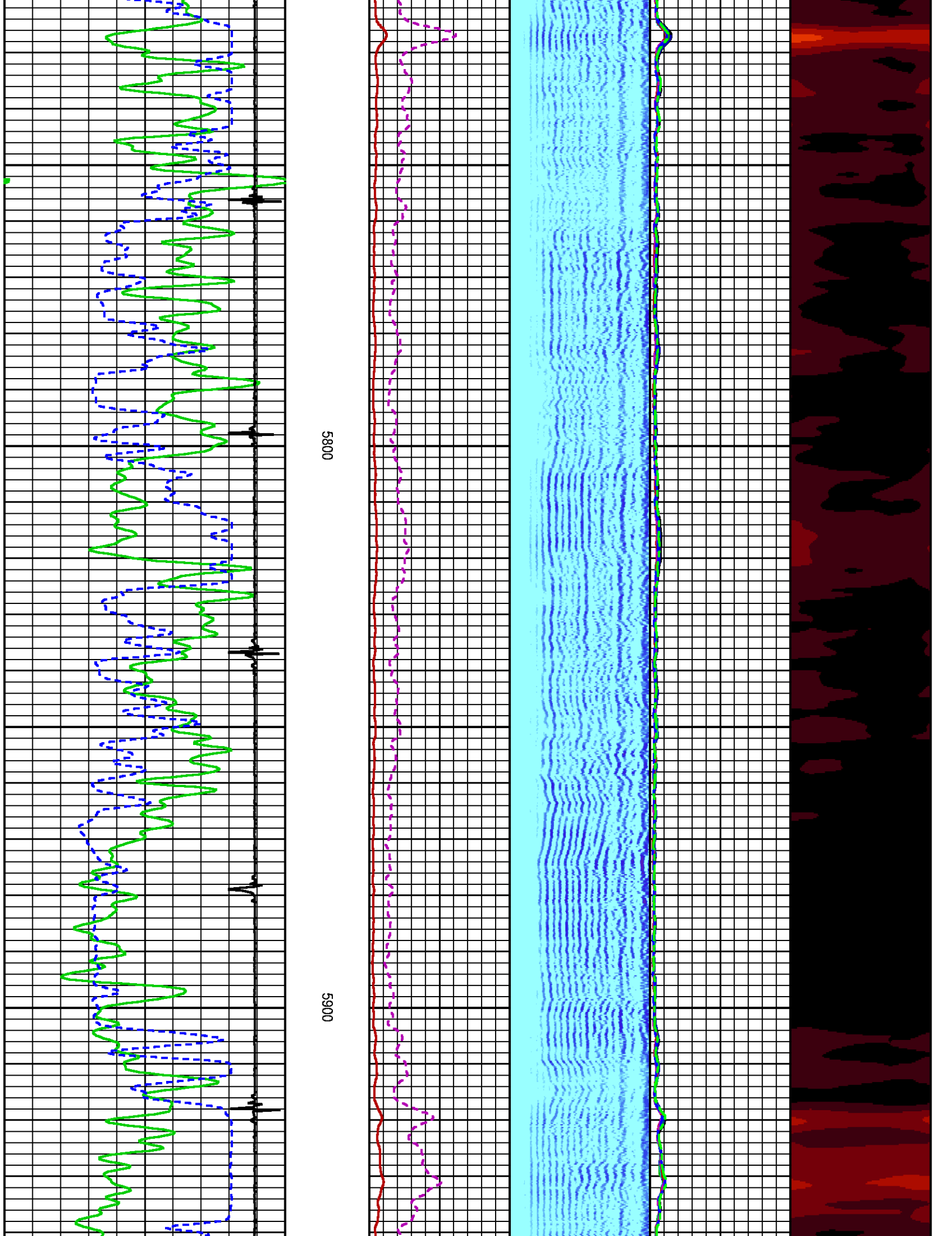
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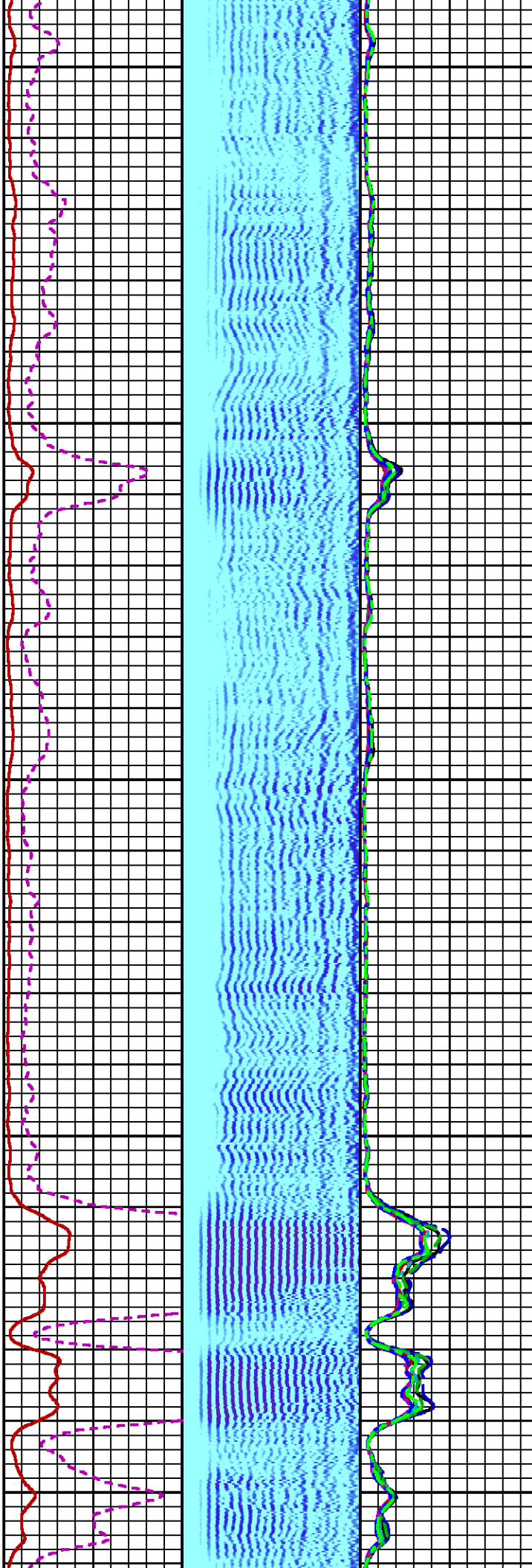




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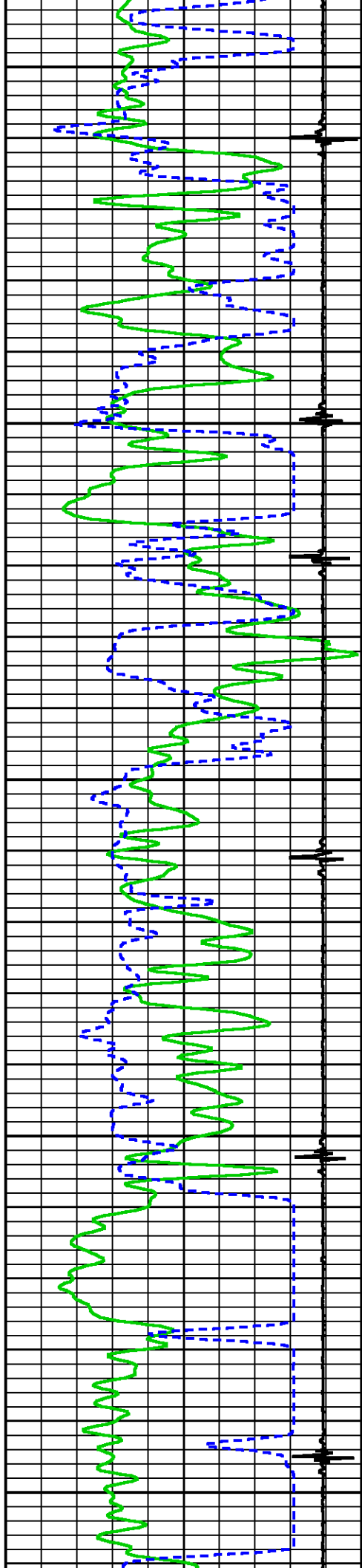


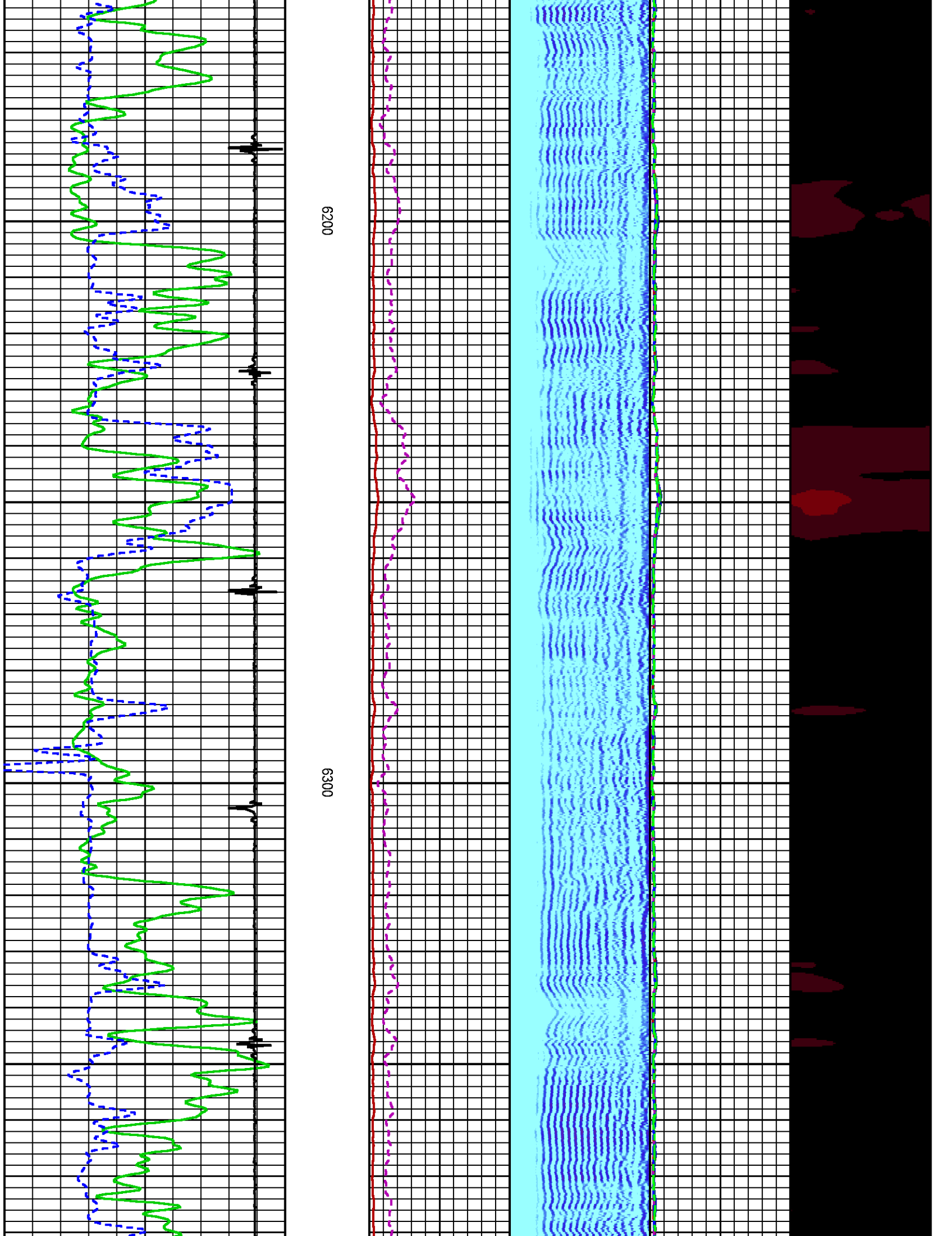


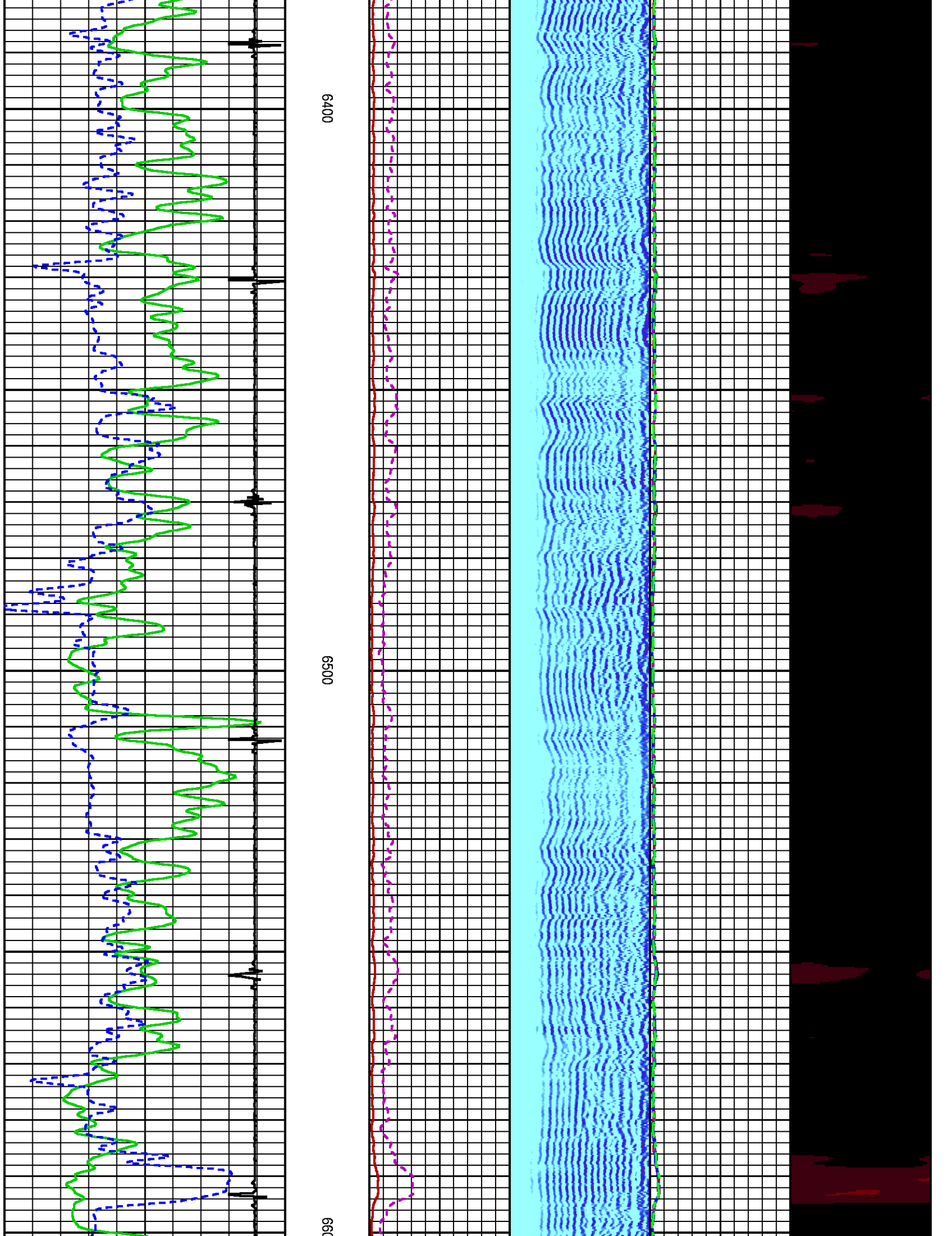


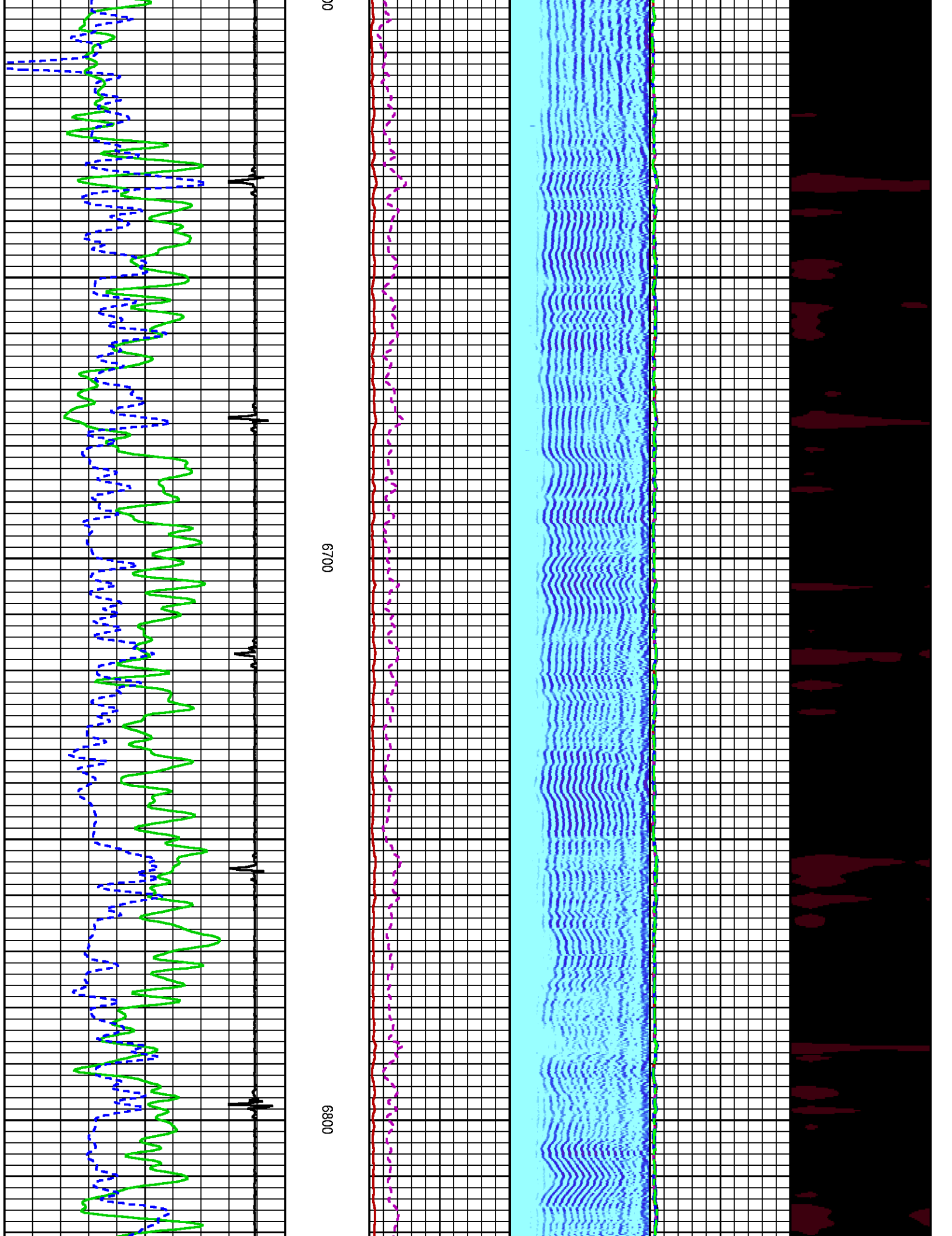
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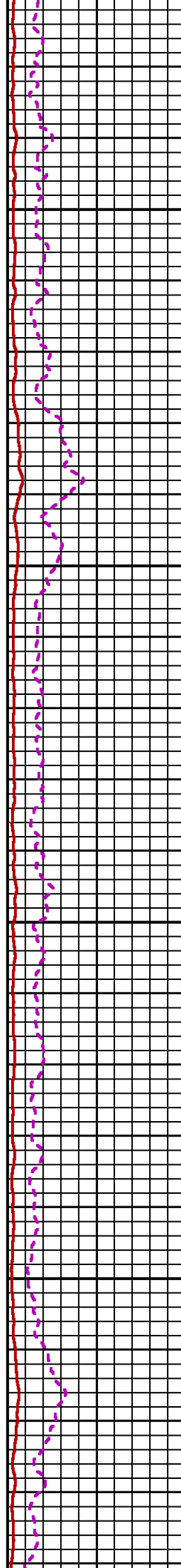
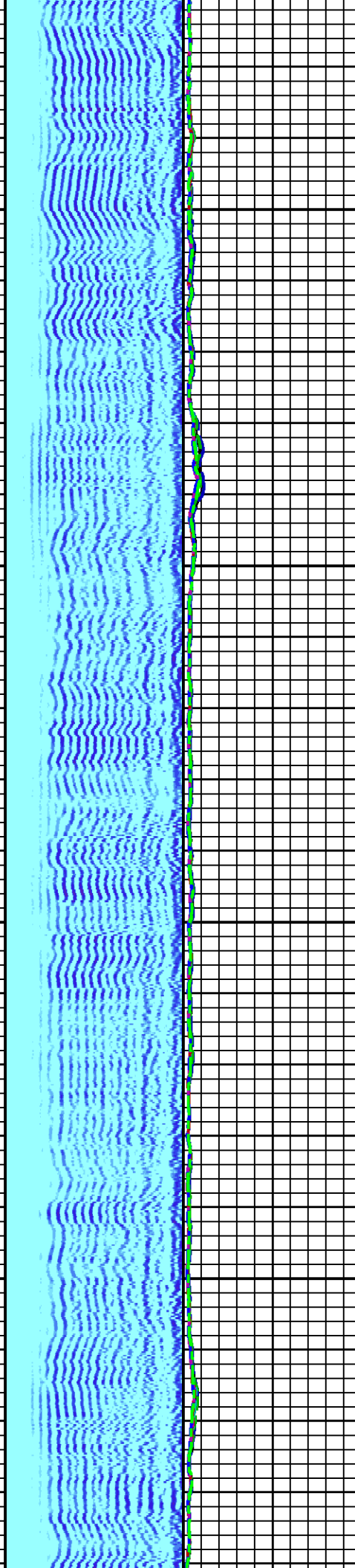
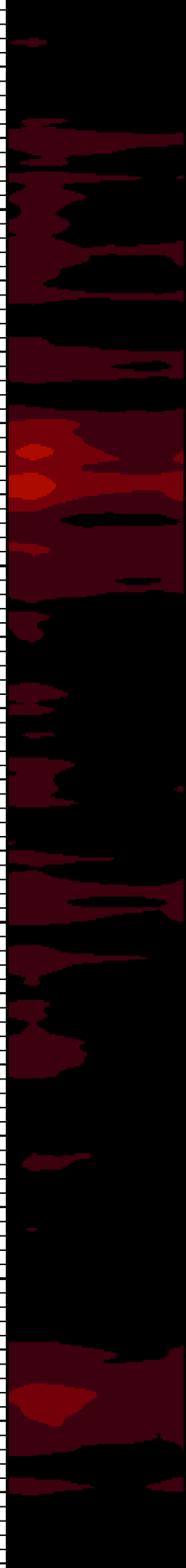
6100





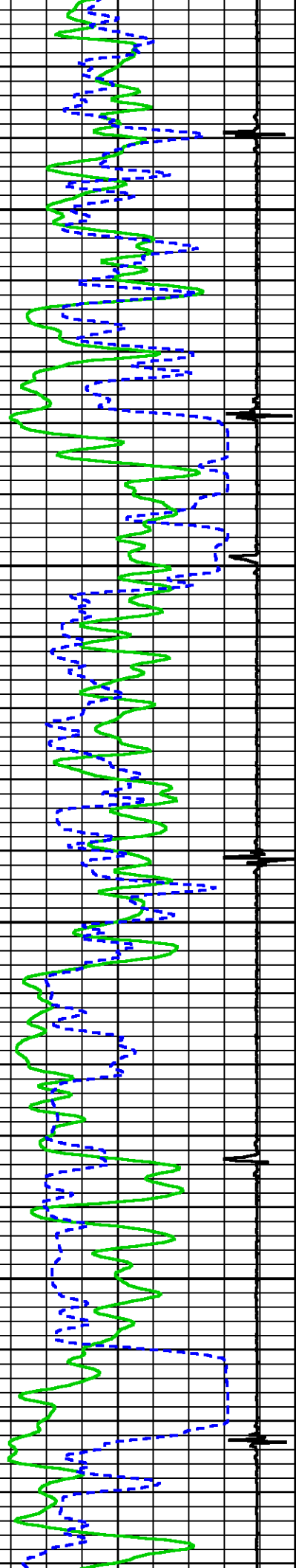


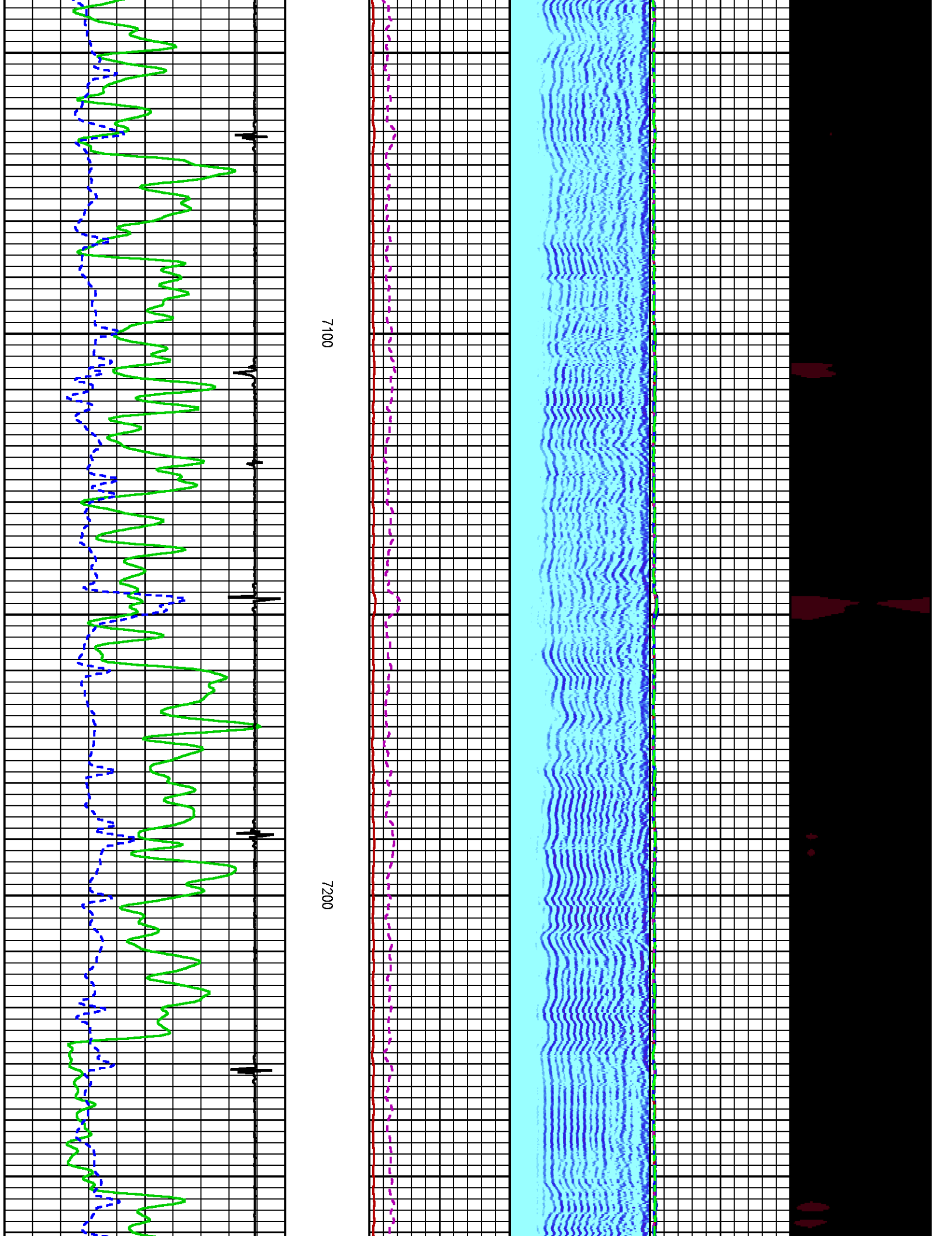


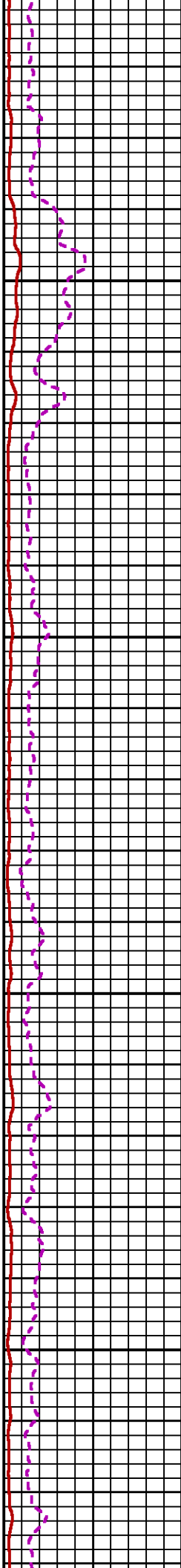
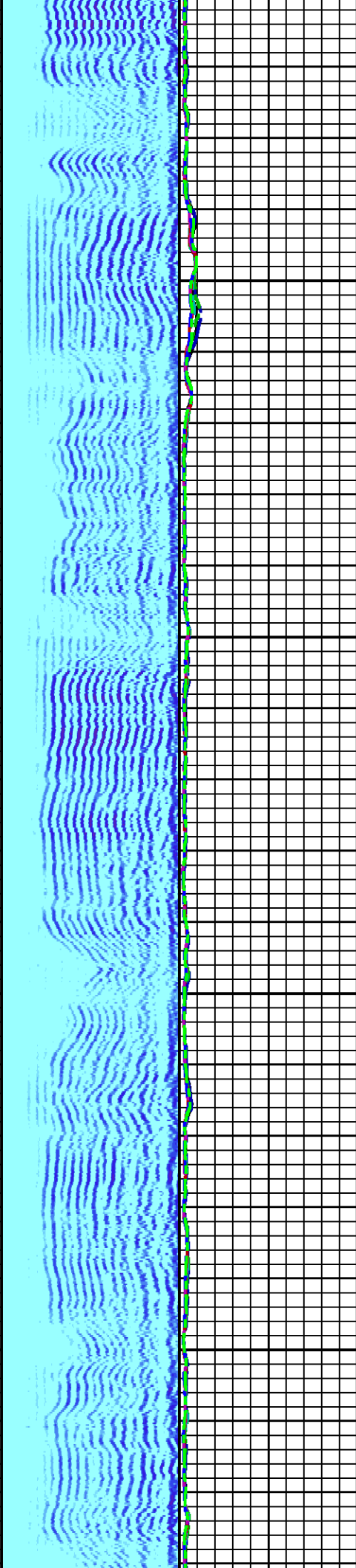


6900 S

7000

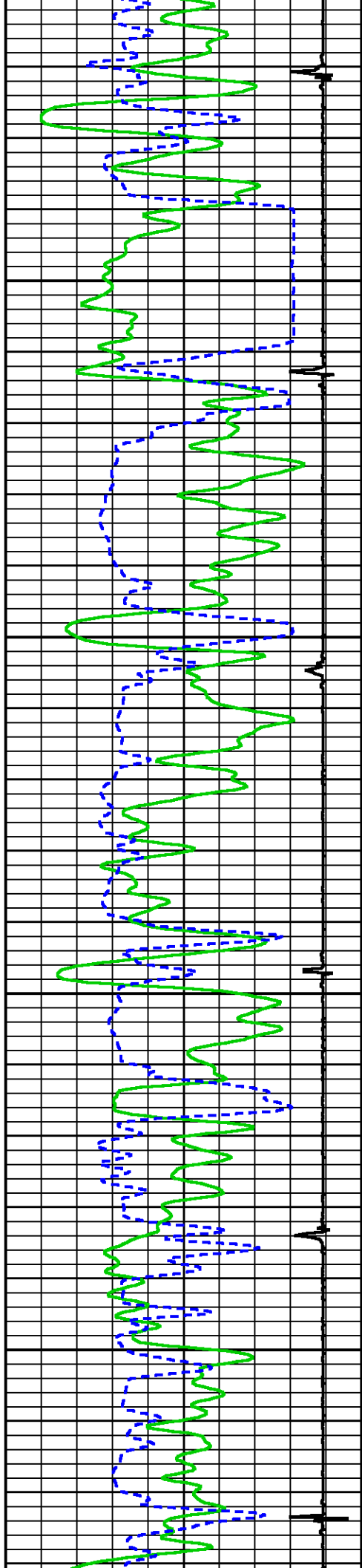


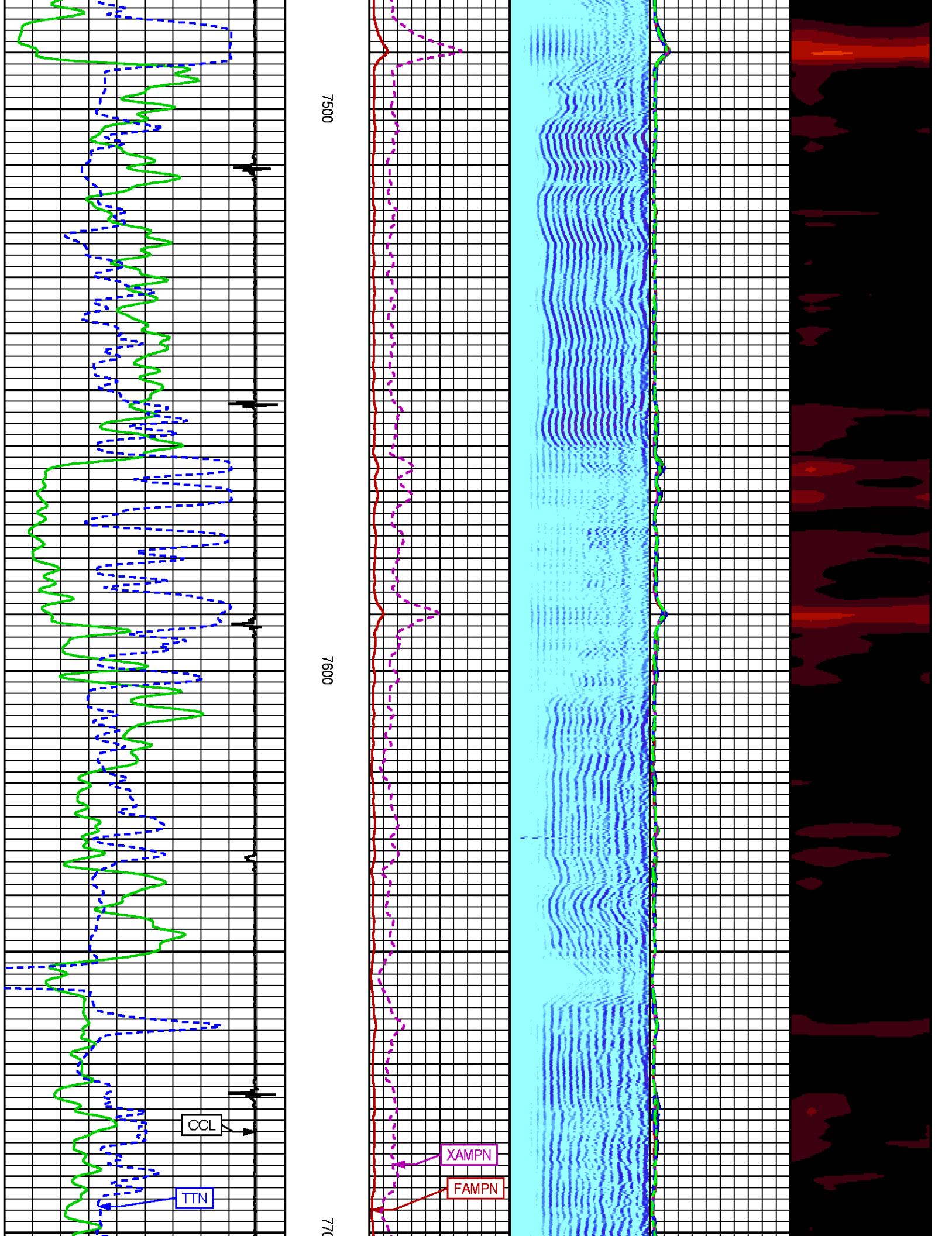




7300

7400





AMPLITUDE	FILTER ()	medium (1)	"	"
TRAVEL TIME	FILTER ()	medium (1)	"	"

RAL CCL PROCESSING				
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)
CCL FLOOR	CCL FLOOR	0.00	TOP	BOTTOM

ANALOG RAL PROCESSING					
MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
AMPLITUDE WINDOW (NEAR)	AMP WINDOW START (fgp1*)	187	us	TOP	BOTTOM
	AMP WINDOW START (fgp2*)	187	us	"	"
	AMP WINDOW START (fgp3*)	187	us	"	"
	AMP WINDOW START (fgp4*)	187	us	"	"
	AMP WINDOW START (fgp5*)	187	us	"	"
	AMP WINDOW START (fgp6*)	187	us	"	"
	AMP WINDOW START (fgp7*)	187	us	"	"
	AMP WINDOW START (fgp8*)	187	us	"	"
	AMP WINDOW START (fgpn*)	187	us	"	"
	AMP WINDOW LENGTH	25	us	"	"
TRAVEL TIME WINDOW (NEAR)	TT WINDOW START (ttn*)	199	us	"	"
	TT WINDOW LENGTH	500	us	"	"
	FIRST BRK THRESHOLD (ttn*)	4	mV	"	"
RAL CASING PARAMETERS	PPT NEAR	200.391	us	"	"
RAL TOOL DELAY	TOOL DELAY (str1*)	-70	us	"	"
	TOOL DELAY (str2*)	-70	us	"	"
	TOOL DELAY (str3*)	-70	us	"	"
	TOOL DELAY (str4*)	-70	us	"	"
	TOOL DELAY (str5*)	-70	us	"	"
	TOOL DELAY (str6*)	-70	us	"	"
	TOOL DELAY (str7*)	-70	us	"	"
	TOOL DELAY (str8*)	-70	us	"	"
	TOOL DELAY (strn*)	-70	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

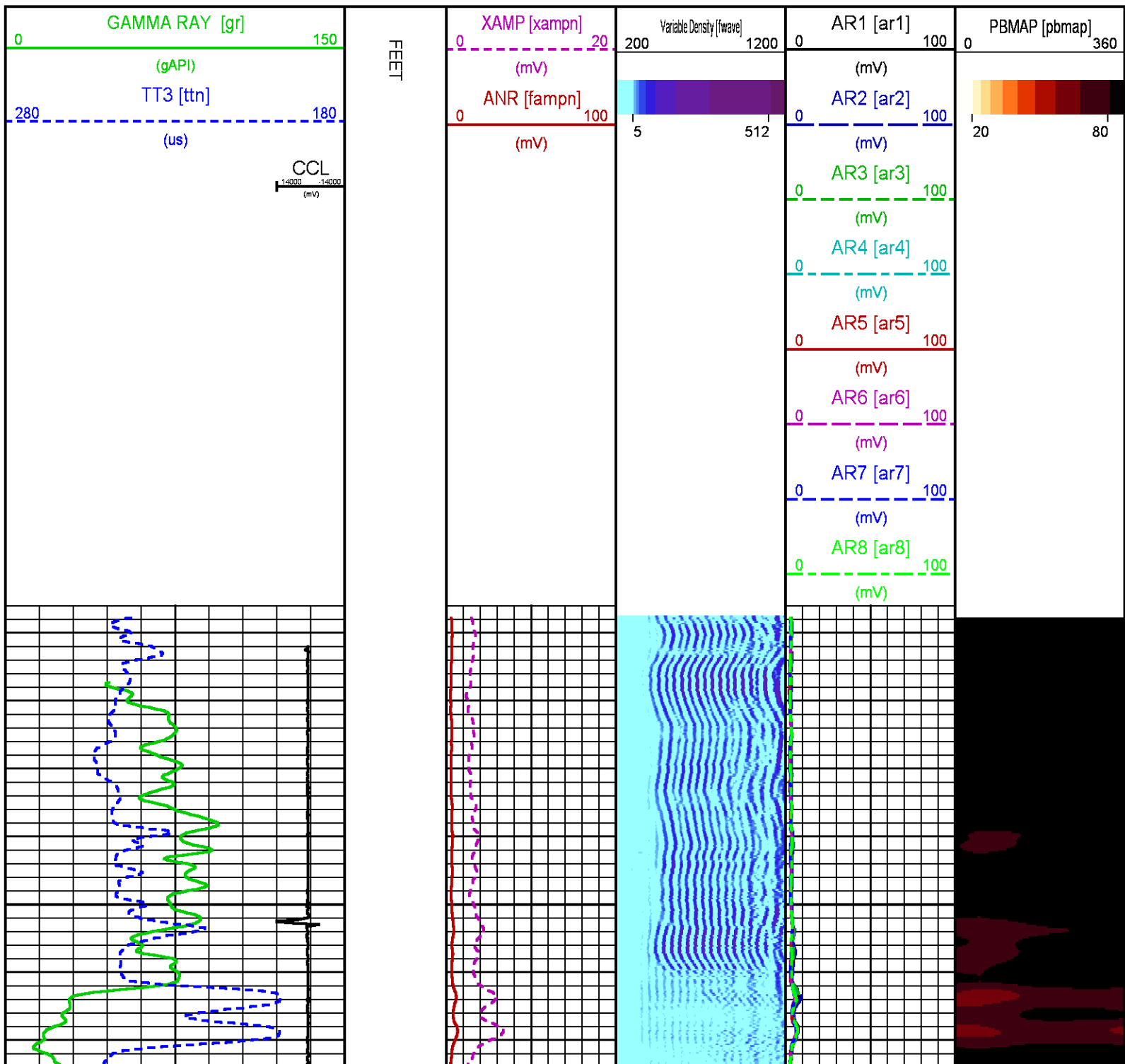
CURVE MEASURE POINT OFFSET

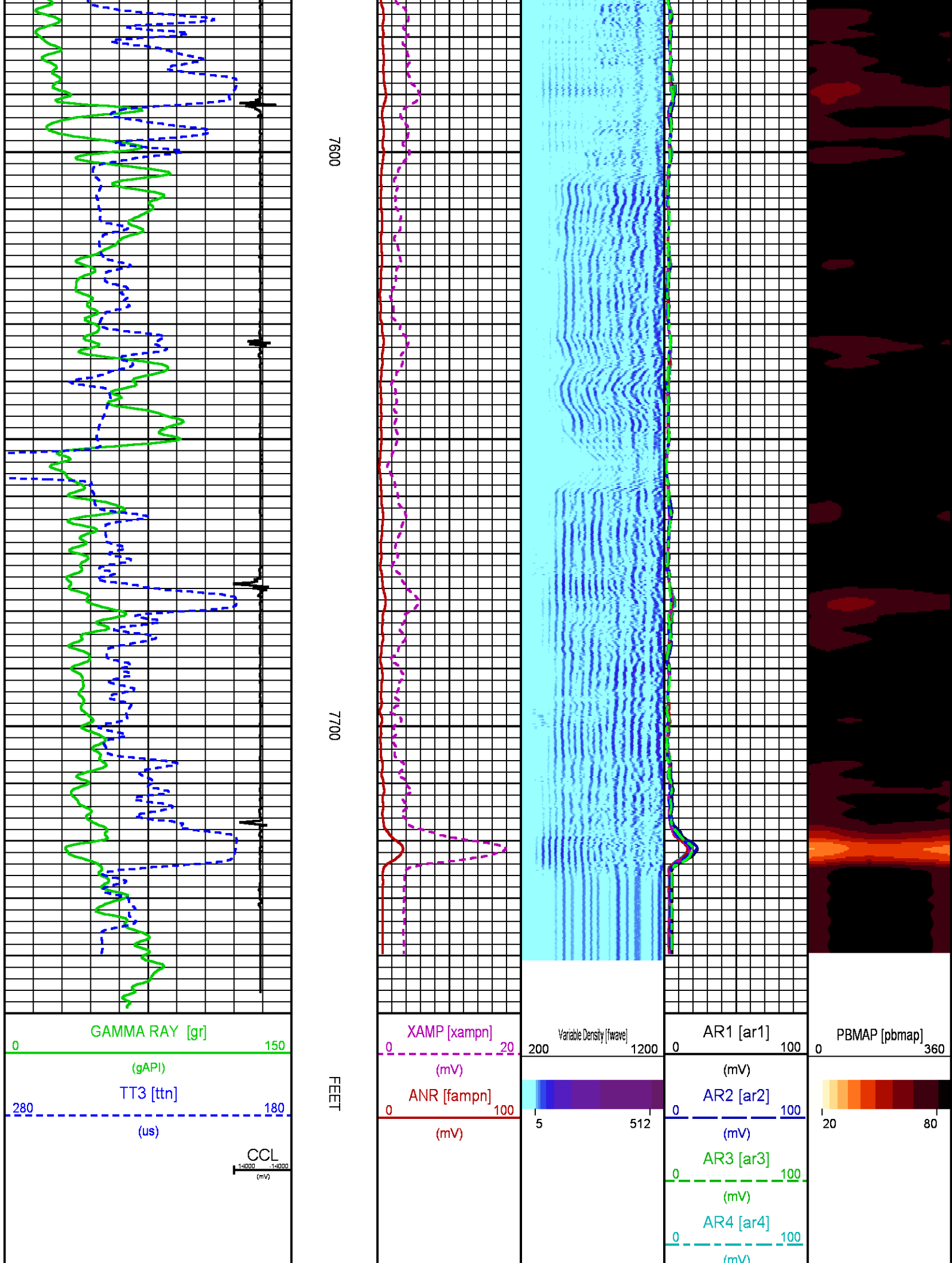
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
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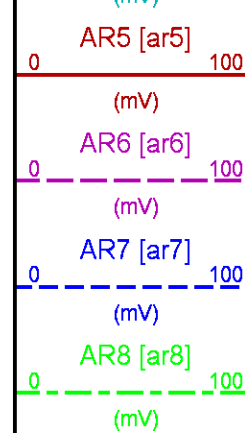
AR1	-11.25	AR5	-11.25	CCL	-5.75	XAMPN	-11.25
AR2	-11.25	AR6	-11.25	FAMPN	-11.25		
AR3	-11.25	AR7	-11.25	GR	-1.75		
AR4	-11.25	AR8	-11.25	TTN	-11.25		

Presentation : SysA:/dat1a/LARAMIE_NICHOLS_FEDERAL_0994-24-18E/17E_RAL_REPEAT.fvpdf [5"/100' Scale]
Plot Interval : 7507.5 - 7750.75 Feet

Data File 1 : F1 : SysA:/dat1a/LARAMIE_NICHOLS_FEDERAL_0994-24-18E/17E_RAL_REPEAT.xtf
Created On : N/A
Company : LARAMIE ENERGY LLC
Well : NICHOLS FEDERAL 0994-24-18E
Field : VEGA
File Interval : 7498.75 - 7752 Feet
OCT : p012g







CALIBRATION / VERIFICATION SUMMARY

Source File: /dat1a/LARAMIE_NICHOLS_FEDERAL_0994-24-18E/p012g.tp1

RAL PRIMARY CALIBRATION SUMMARY

TOOL #: 1426XA 10124114

DATE/TIME PERFORMED: Sun Jul 1 11:17:45 2018

UNIT #: 5753XD 10412898

	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)	-0.04	0.01	-0.04	0.07	0.01	0.04	-0.00	0.03	-0.04	0.51	-0.07
AMP FLUID (mV)	296	299	300	298	297	296	295	297	296	413	296
TT (us)	213	218	217	217	218	216	217	217	218	327	217
M FACTOR	0.34	0.33	0.33	0.34	0.34	0.34	0.34	0.34	0.34	0.36	0.34

RAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1426XA 10124114

DATE/TIME PERFORMED: Sun Jul 1 11:18:51 2018

DAYS SINCE CAL: 0

UNIT #: 5753XD 10412898

CABLE #: 4268SM SMALL1

	NEAR (mV)	R1 (mV)	R2 (mV)	R3 (mV)	R4 (mV)	R5 (mV)	R6 (mV)	R7 (mV)	R8 (mV)	FAR (mV)	CAL (mV)
ZERO	-0.01	-0.00	0.00	-0.00	0.00	-0.01	0.01	0.00	0.01	0.52	0.00
AMP AIR	1.08	0.87	0.86	1.04	0.89	0.95	0.91	0.89	0.94	1.27	99.99

SHOP M FACTOR	SHOP A FACTOR	WIRELINE FACTOR
0.34	0.00	1.00

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

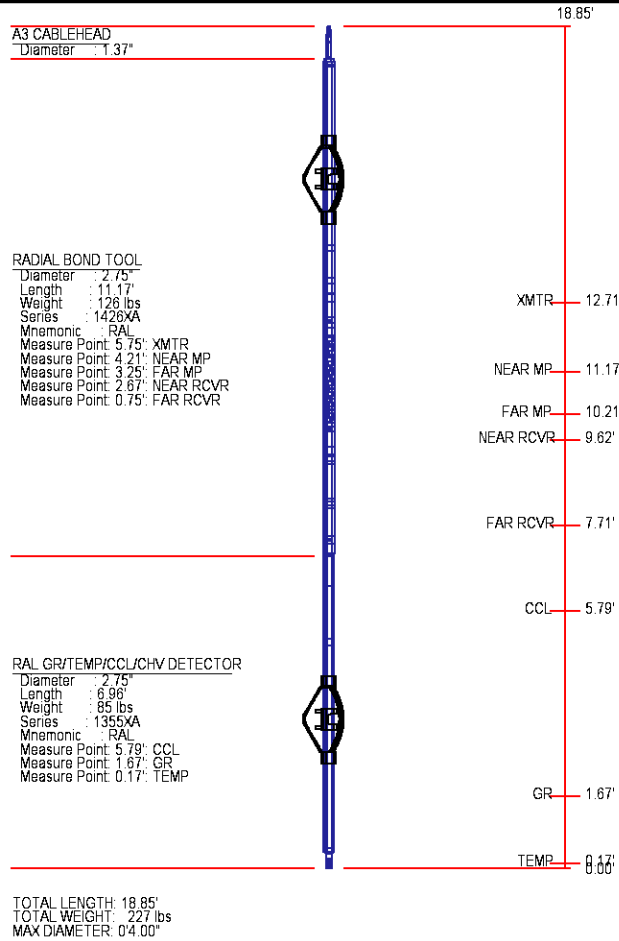
UNIT #: 4352 ML4352

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: /dat1a/LARAMIE_GUNDERSON_0994-14-17E/RAL-tdg





COMPANY LARAMIE ENERGY LLC
WELL NICHOLS 0994-24-17E
FIELD VEGA
COUNTY MESA STATE COLORADO

FILE NO:
CH137650
API NO:
05077103940000

LOCATION:

SHL: 2302' FNL & 2792' FWL
BHL: 1176' FSL & 1433' FEL

SEC 24 TWP 9S RGE 94W

ELEVATIONS:

KB 7236 FT
DF
GL 7212 FT

DATE 01-Jul-2018

