RADIAL ANALYSIS BOND LOG

FILE NO:	CH108534
API NO:	05045225290000
COMPANY	TERRA ENERGY PARTNERS LLC
WELL	FEDERAL GM 421-9
FIELD	GRAND VALLEY
COUNTY	GARFIELD
STATE	COLORADO
Ver. 4.06	
S.9 T.7S R.96W	
PAD: MV 16-9	
RIG: H&P 318	

LOCATION:
SHL: 644' FNL & 578' FWL
BHL: 1166' FNL & 1379' FWL
SEC 9 TWP 7S RGE 96W

OTHER SERVICES
RPM

PERMANENT DATUM	GL	ELEVATION	6087 FT
LOG MEASURED FROM	KB	24 FT	ABOVE P.D.
DRILL. MEAS. FROM	KB		

ELEVATIONS:
KB 6111 FT
DF
GL 6087 FT

DATE		27-Jul-2016			
RUN	TRIP	1	1		
SERVICE ORDER		US108534			
DEPTH DRILLER		6667 FT			
DEPTH LOGGER		6586 FT			
BOTTOM LOGGED INTERVAL		6584 FT			
TOP LOGGED INTERVAL		24 FT			
TIME STARTED		11:30			
TIME FINISHED		13:00			
OPERATOR RIG TIME		2 HOURS			
TYPE OF FLUID IN HOLE		WATER			
FLUID DENSITY		NA			
FLUID SALINITY		NA			
FLUID LEVEL		39 FT			
LOGGED CEMENT TOP		NA			
WELLHEAD PRESSURE		0 PSI			
MAXIMUM HOLE DEVIATION		NA			
NOMINAL LOGGING SPEED		100 F/MN			
MAX. RECORDED TEMP.		203 DEGF			
REFERENCE LOG		NA			
REFERENCE LOG DATE		NA			
EQUIP. NO.	LOCATION	HL-6685	GRAND JCT.		
RECORDED BY		T. NEWELL			
WITNESSED BY		D. WELSH			

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.

CASING RECORD

SIZE	WEIGHT	GRADE	FROM	TO
9.625 IN			24 FT	1303 FT
4.5 IN	11.6 LB/F		24 FT	6654 FT

BOREHOLE RECORD

BIT SIZE	FROM	TO
13.5 IN	24 FT	1303 FT
8.75 IN	1303 FT	6654 FT

REMARKS

RUN 1 TRIP 1: THIS IS THE FIRST LOGGING RUN ON THIS WELL
ALL DATA ON THIS LOG HAS BEEN DEPTH SHIFTED TO PLACE THE TOP CCL MARK ON DEPTH WITH TOP OF THE WELLHEAD (11' ABOVE GROUND LEVEL) WITH RESPECT TO KB.

AMOUNT OF LINEAR SHIFT = +5 FEET

LOGGED WITH 0 PSI AT SURFACE

BHT = 203 DEGF
SJ = 3422' - 3444'

THANKS FOR CHOOSING BAKER HUGHES WIRELINE
CREW: SPENCER / FAVORITE

EQUIPMENT DATA

RUN	TRIP	TOOL	SERIES NO.	SERIAL NO.	POSITION
1	1	RAL	1426XA	10417452	CENTRALIZED
1	1	GR / CCL	1355XA	11871508	CENTRALIZED

PRIMARY PRESENTATION 0 PSI

ECLIPS 6.2i ECLIPS General Release Rel 6.2i Wed Jun 12 12:21:40 CDT 2013
Updates: 1,36 Patches: 9

Plotted: Wed Jul 27 14:41:17 2016

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/CH108534/n012g02.prm
LOGGING MODE: DEPTH DIRECTION: UP
TOP DEPTH: 13.750 ft BOTTOM DEPTH: 6588.000 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		TOP	BOTTOM

ANALOG RAL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
AMPLITUDE WINDOW (NEAR)	AMP WINDOW START (fgpn*)	187	us	TOP	BOTTOM
	AMP WINDOW LENGTH	25	us	"	"
TRAVEL TIME WINDOW (NEAR)	TT WINDOW START (ttn*)	174	us	"	"
	TT WINDOW LENGTH	444	us	"	"
	FIRST BRK THRESHOLD (ttn*)	4	mV	"	"
RAL CASING PARAMETERS	PPT NEAR	200.391	us	"	"
RAL TOOL DELAY	TOOL DELAY (strn*)	-69	us	"	"
BASELINE NOISE (NEAR)	NOISE WINDOW START	125	us	"	"
	NOISE WINDOW LENGTH	25	us	"	"

CURVE DESCRIPTION REPORT

CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:CCL	Jul 27 11:54:59 2016	CASING COLLAR LOCATOR
F1:FAMPN	Jul 27 11:54:59 2016	FIXED GATE AMPLITUDE NEAR RECEIVER
F1:FWAVE	Jul 27 11:54:59 2016	FAR WAVE FORM
F1:GR	Jul 27 11:54:59 2016	GAMMA RAY
F1:TTN	Jul 27 11:54:59 2016	TRAVELTIME FROM NEAR TRANSMITTER-RECEIVER
F1:XAMPN	Jul 27 11:54:59 2016	FIXED GATE AMPLITUDE NEAR RECEIVER TIMES FIVE

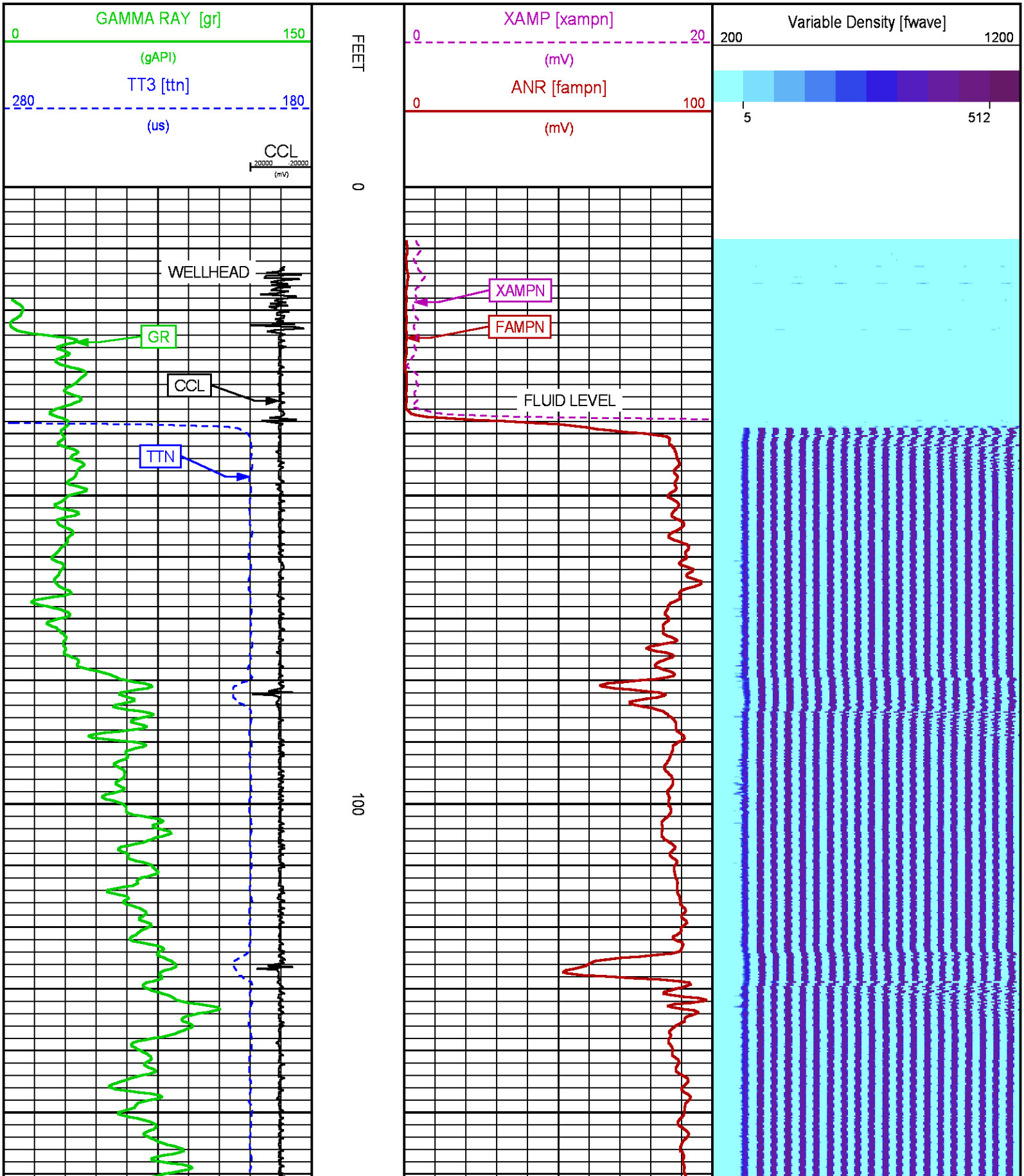
CURVE MEASURE POINT OFFSET

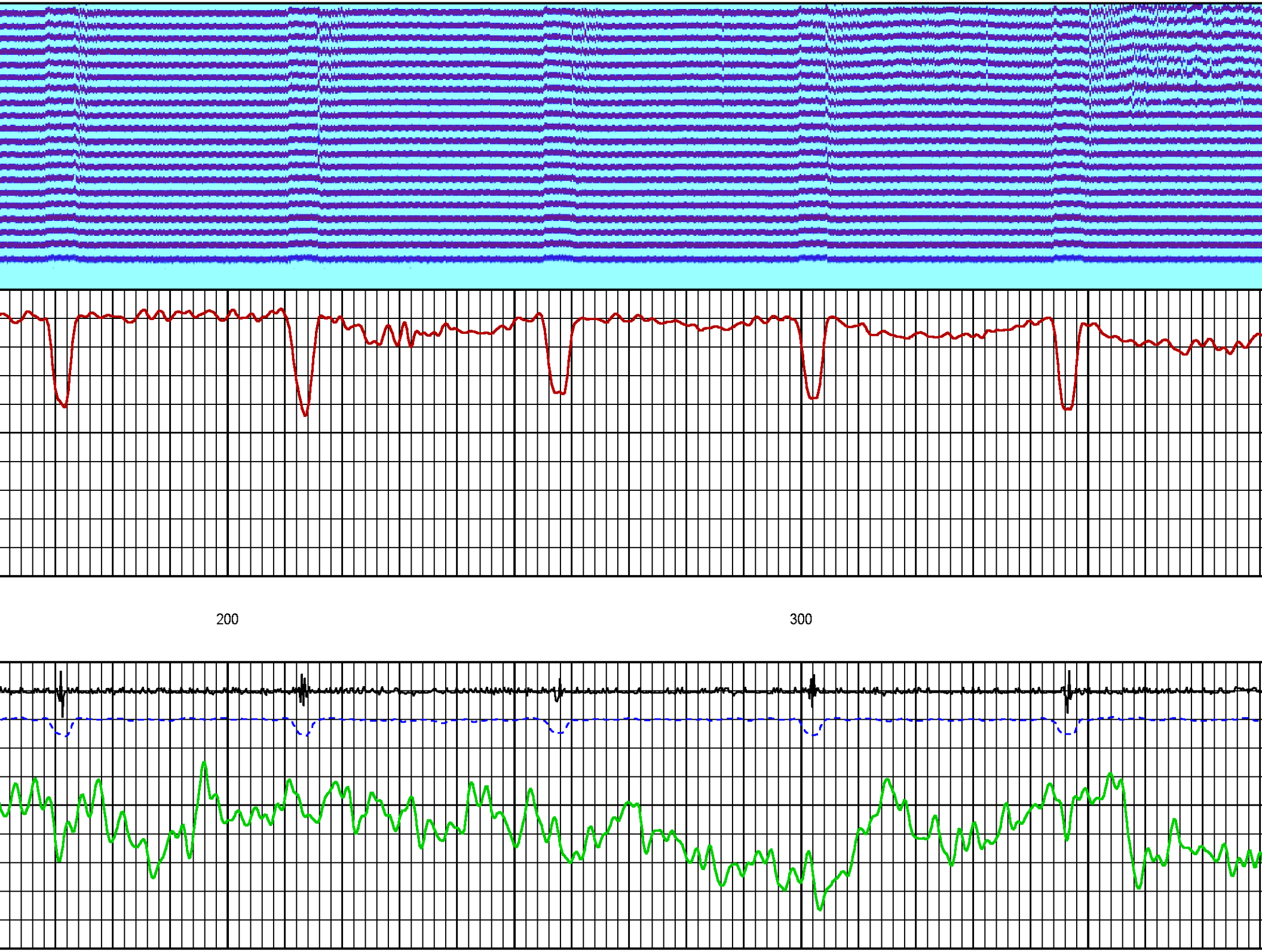
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
CCL	5.75	GR	1.75	XAMPN	11.25		
FAMPN	11.25	TTN	11.25				

Presentation : cas6685:/dat1a/CH108534/421CBL_MAIN.fvpdf [5"/100' Scale]

Presentation : cas6685:/dat1a/CH108534/421CBL_MAIN.lvpdf [5" 1/100 Scale]
Plot Interval : 0 - 6595 Feet

Data File 1 : F1 : cas6685:/dat1a/CH108534/421CBL_MAIN.xtf
Created On : Jul 27 11:54:59 2016
Company : TERRA ENERGY PARTNERS LLC
Well : FEDERAL GM 421-9
Field : GRAND VALLEY
File Interval : 7.5 - 6593 Feet
OCT : n012g

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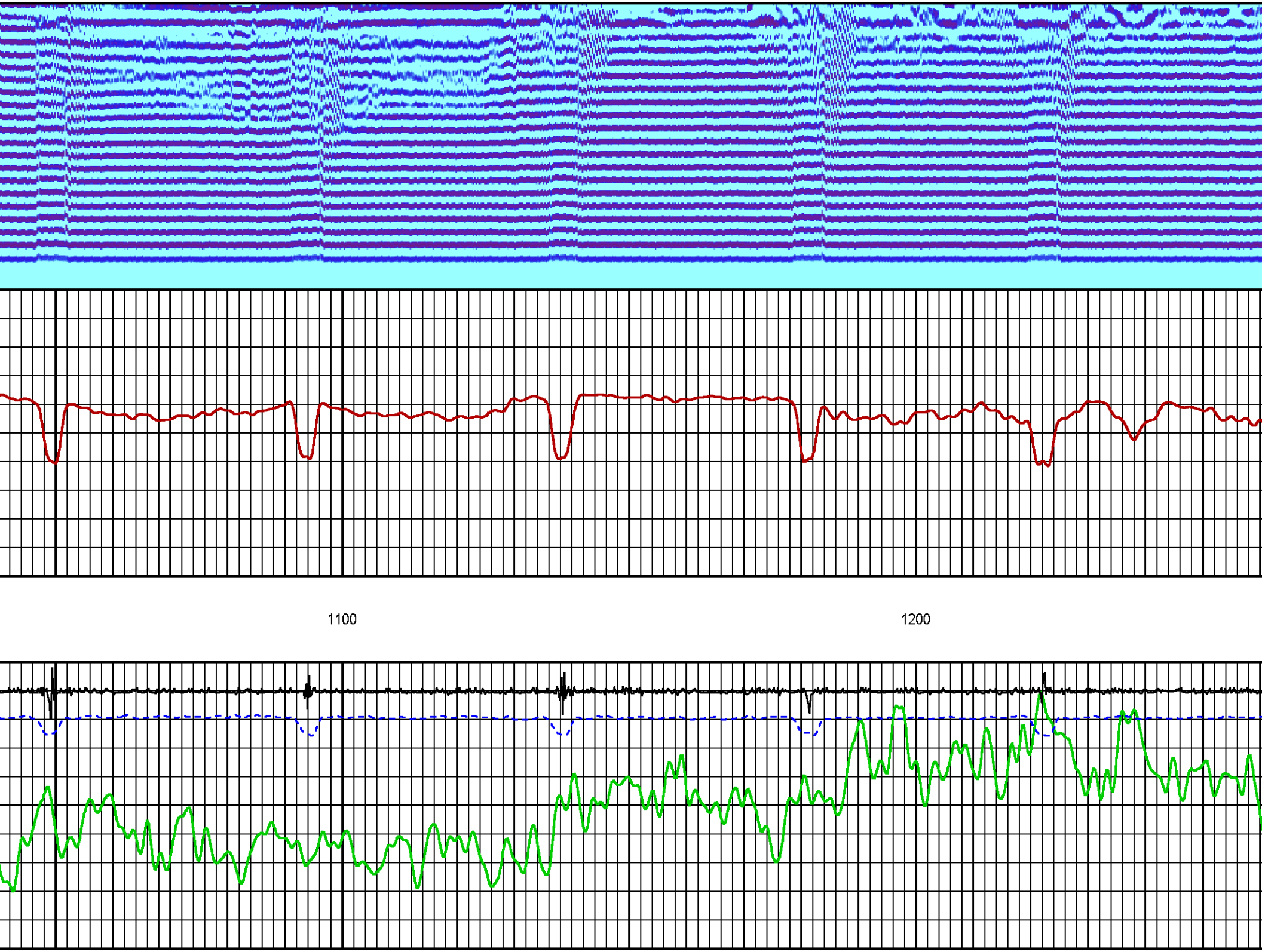
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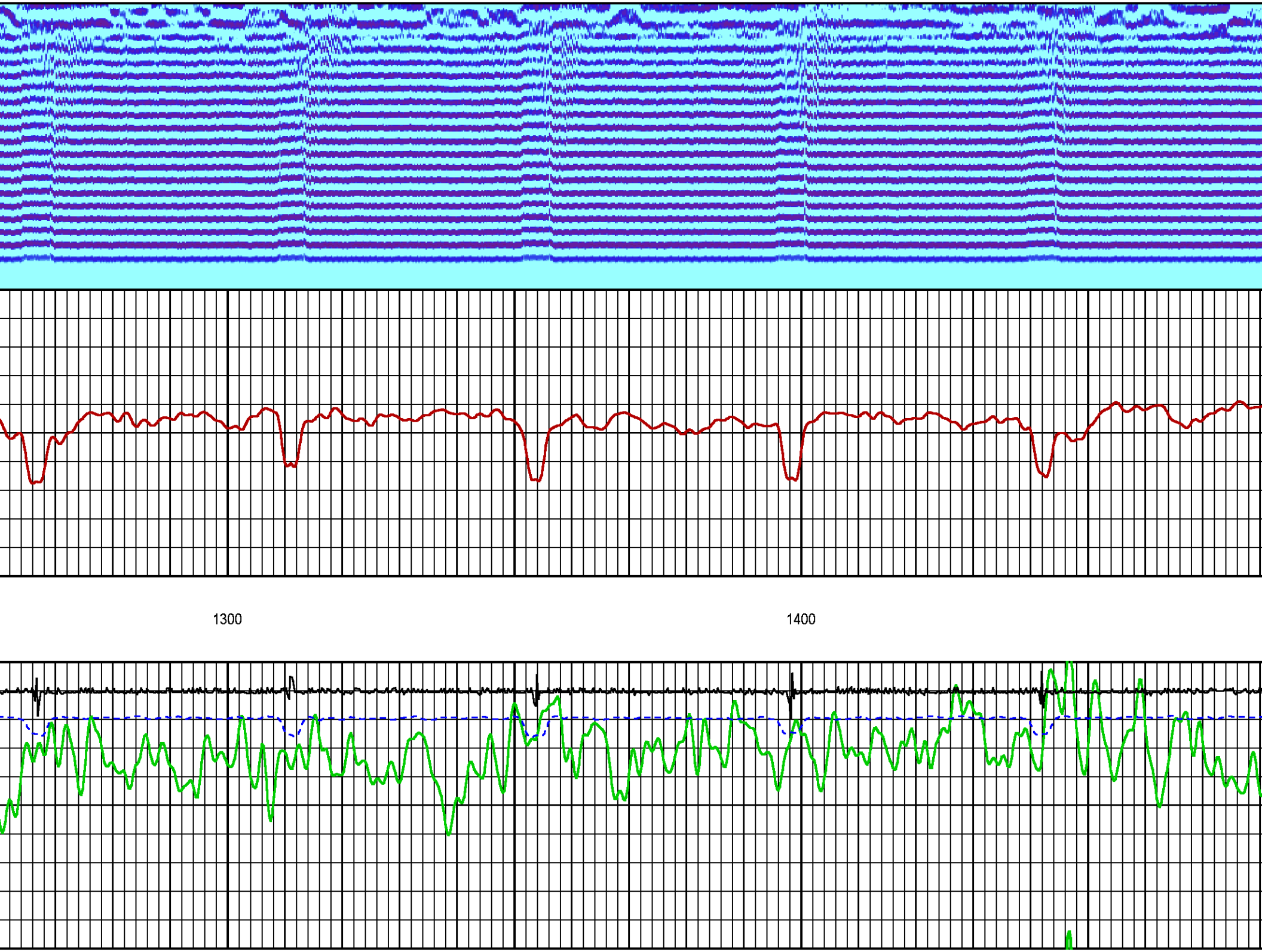
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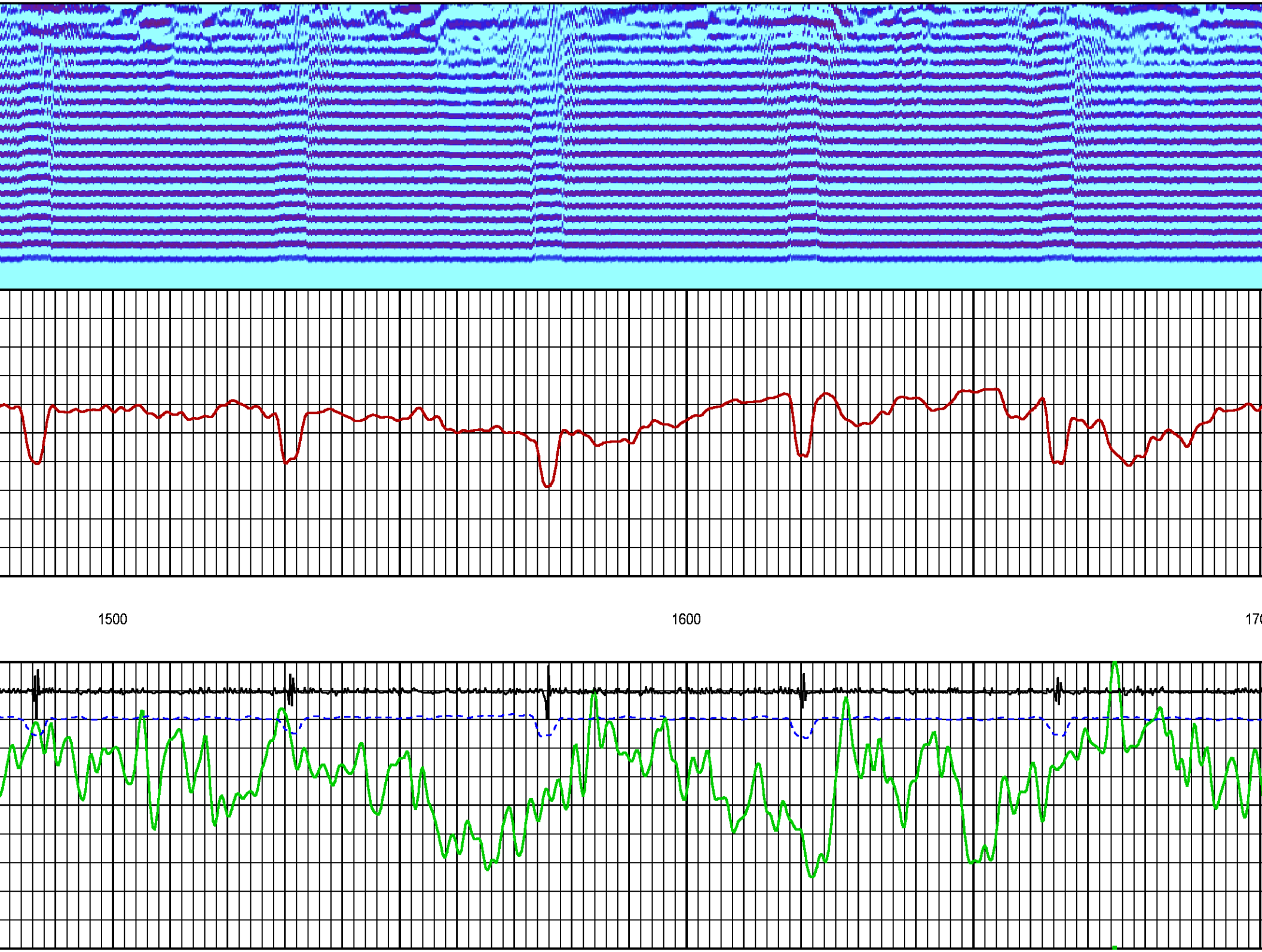
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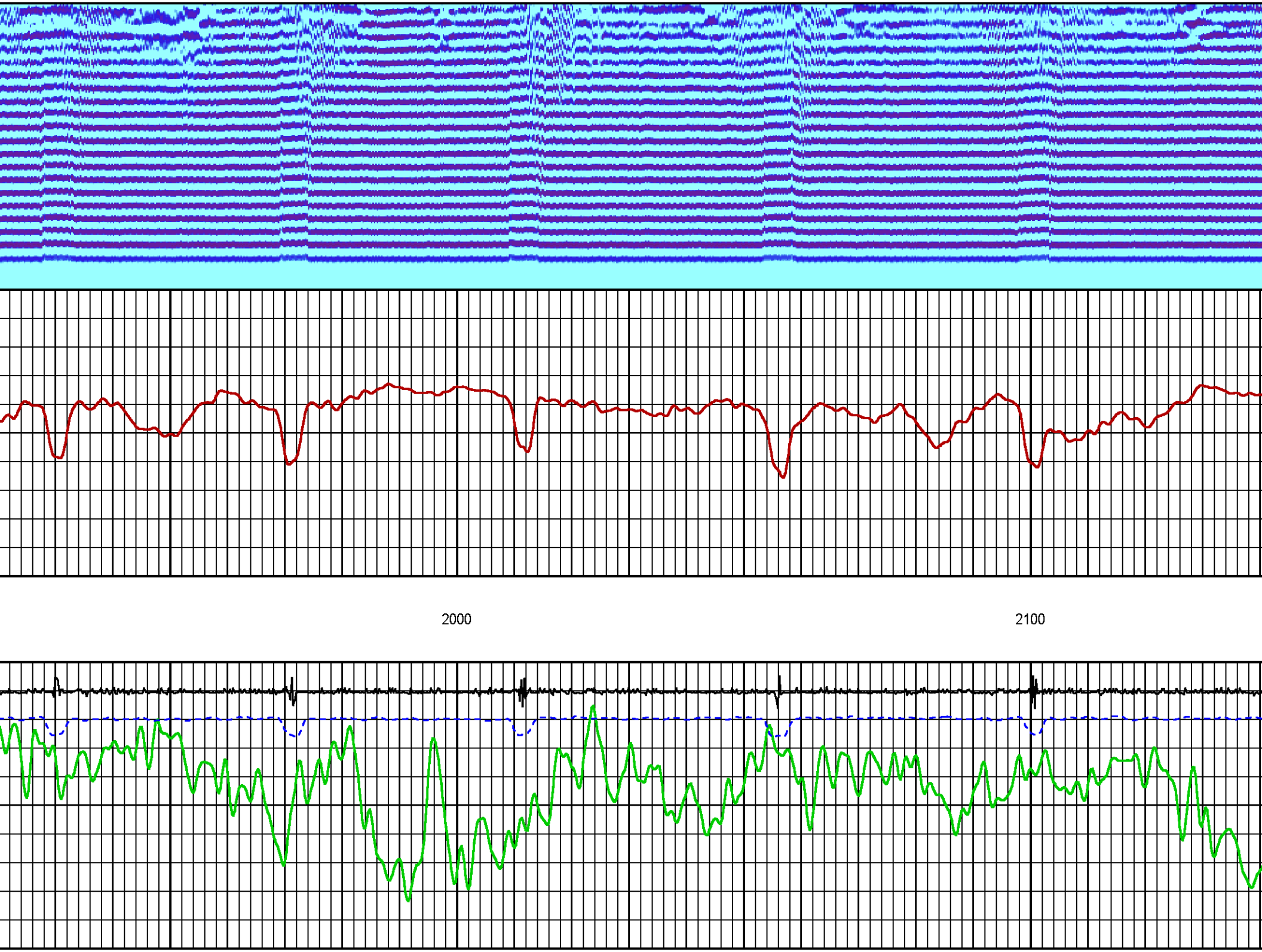
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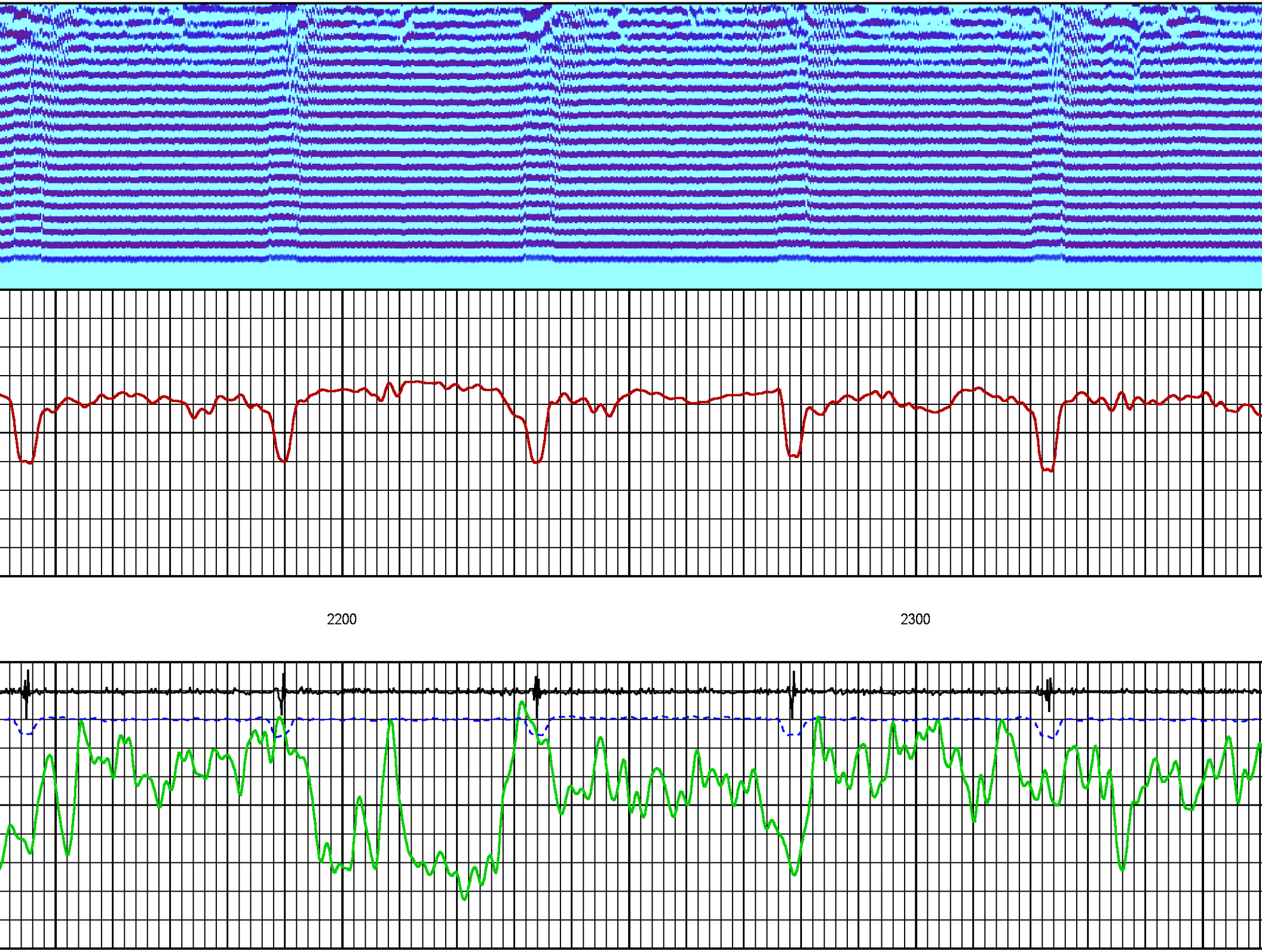
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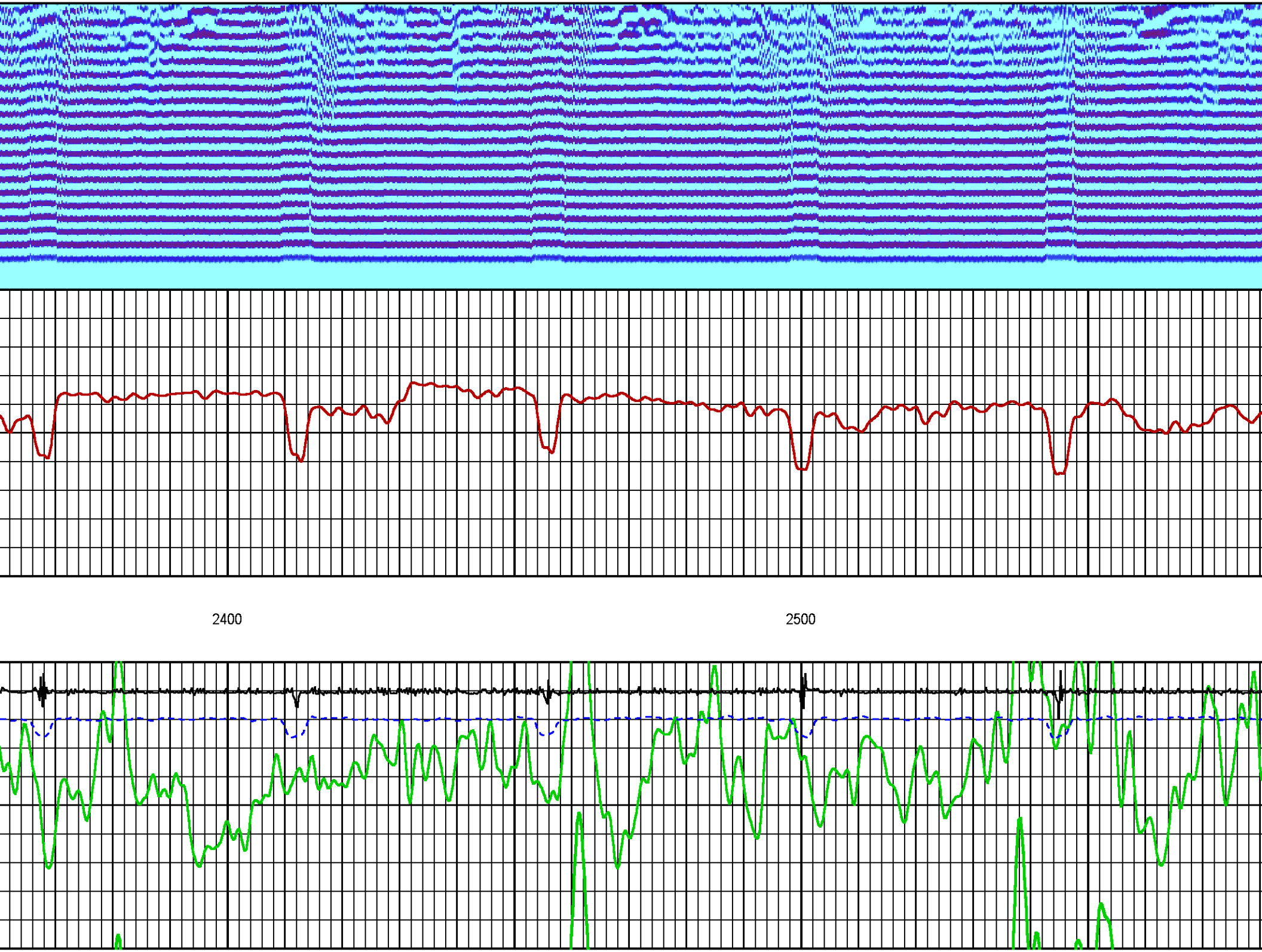
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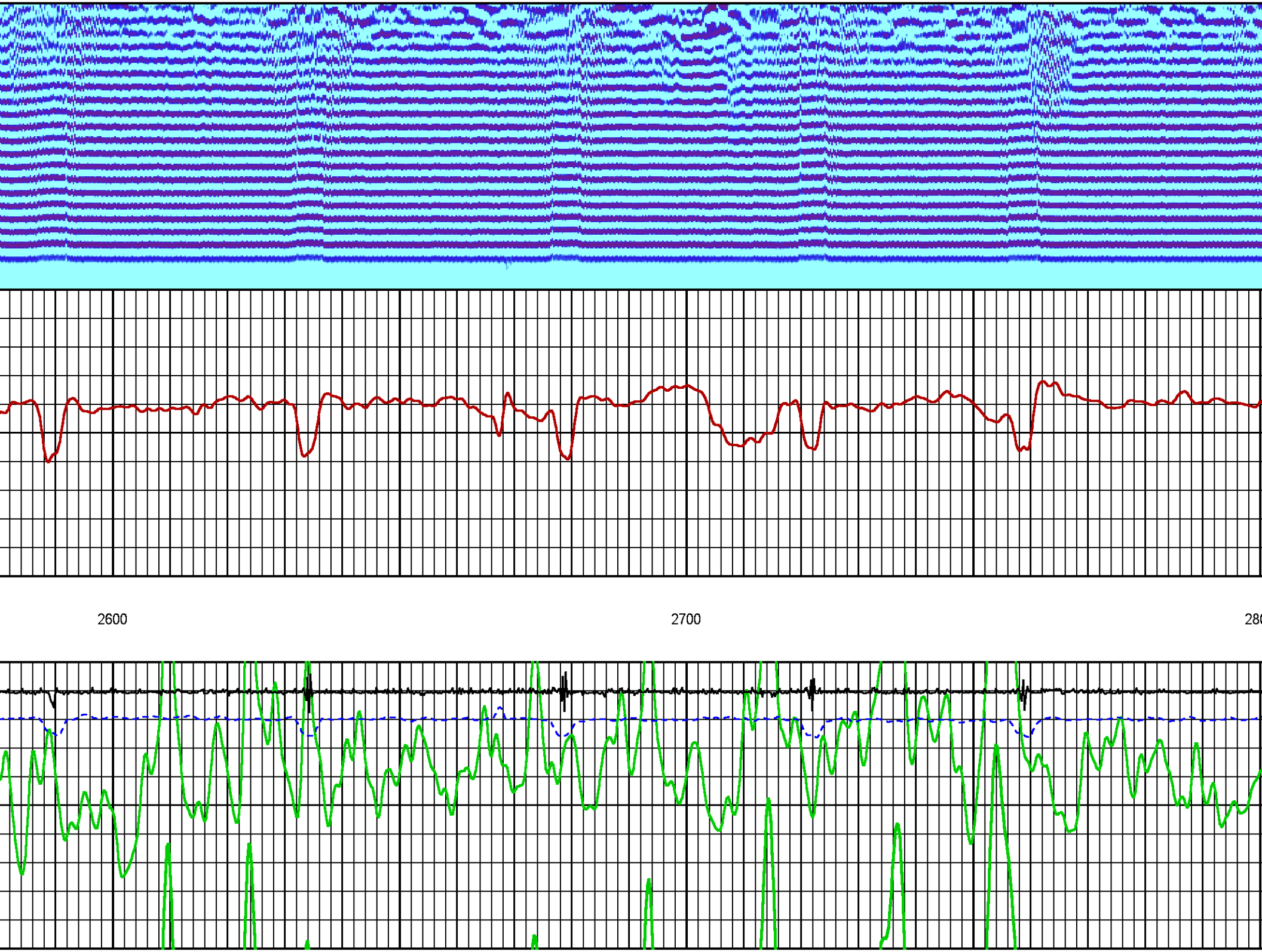
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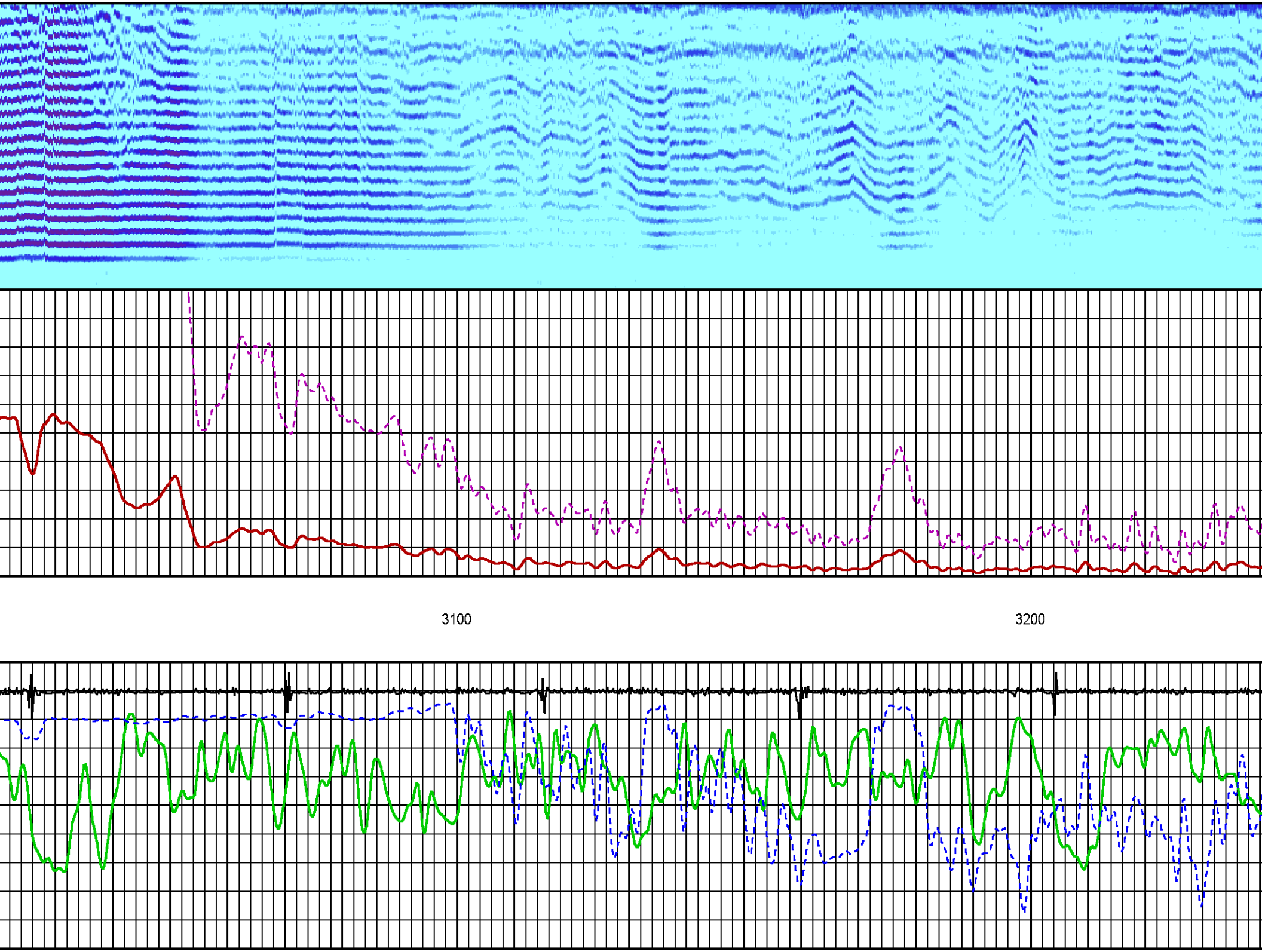
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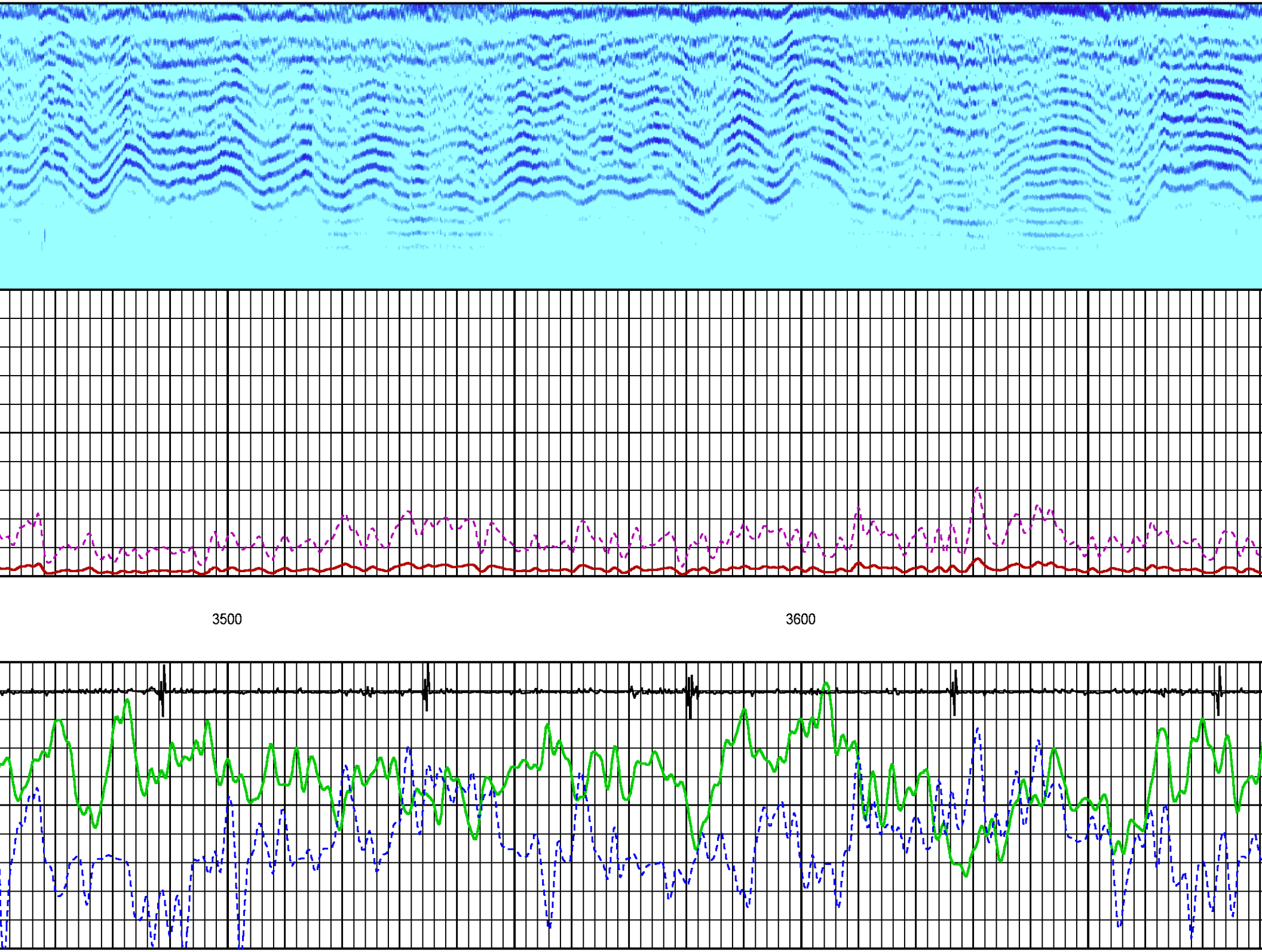
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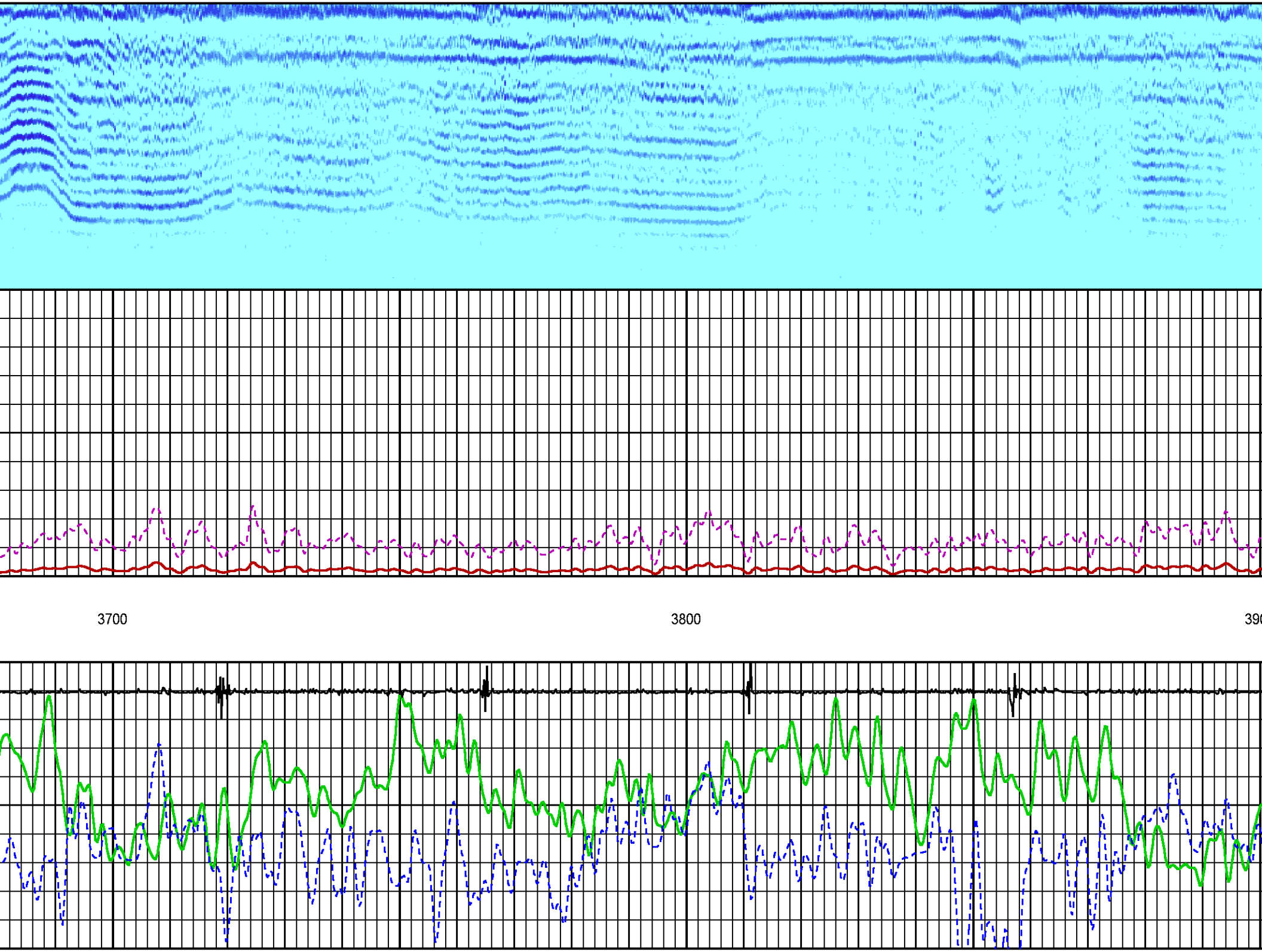
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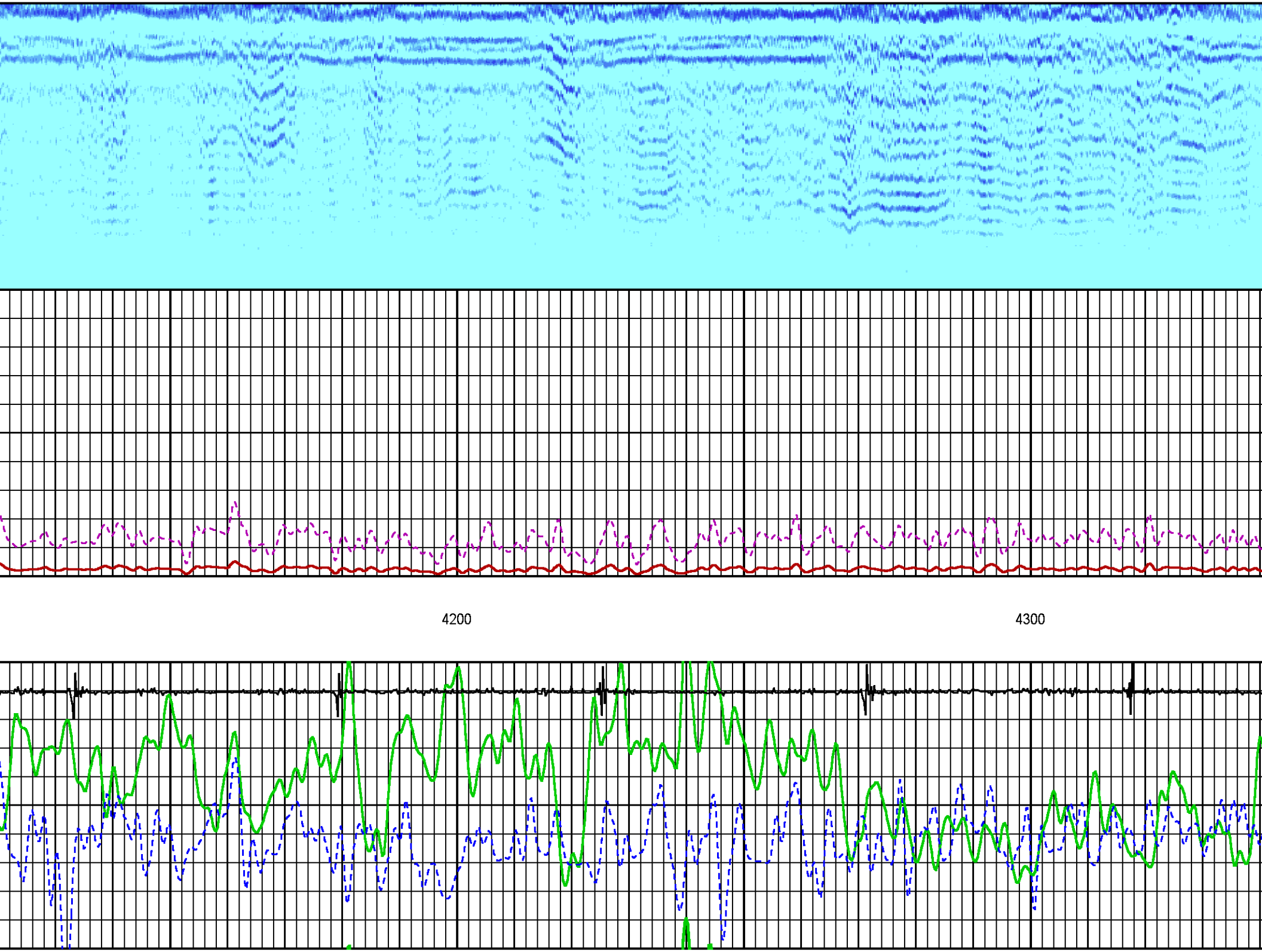
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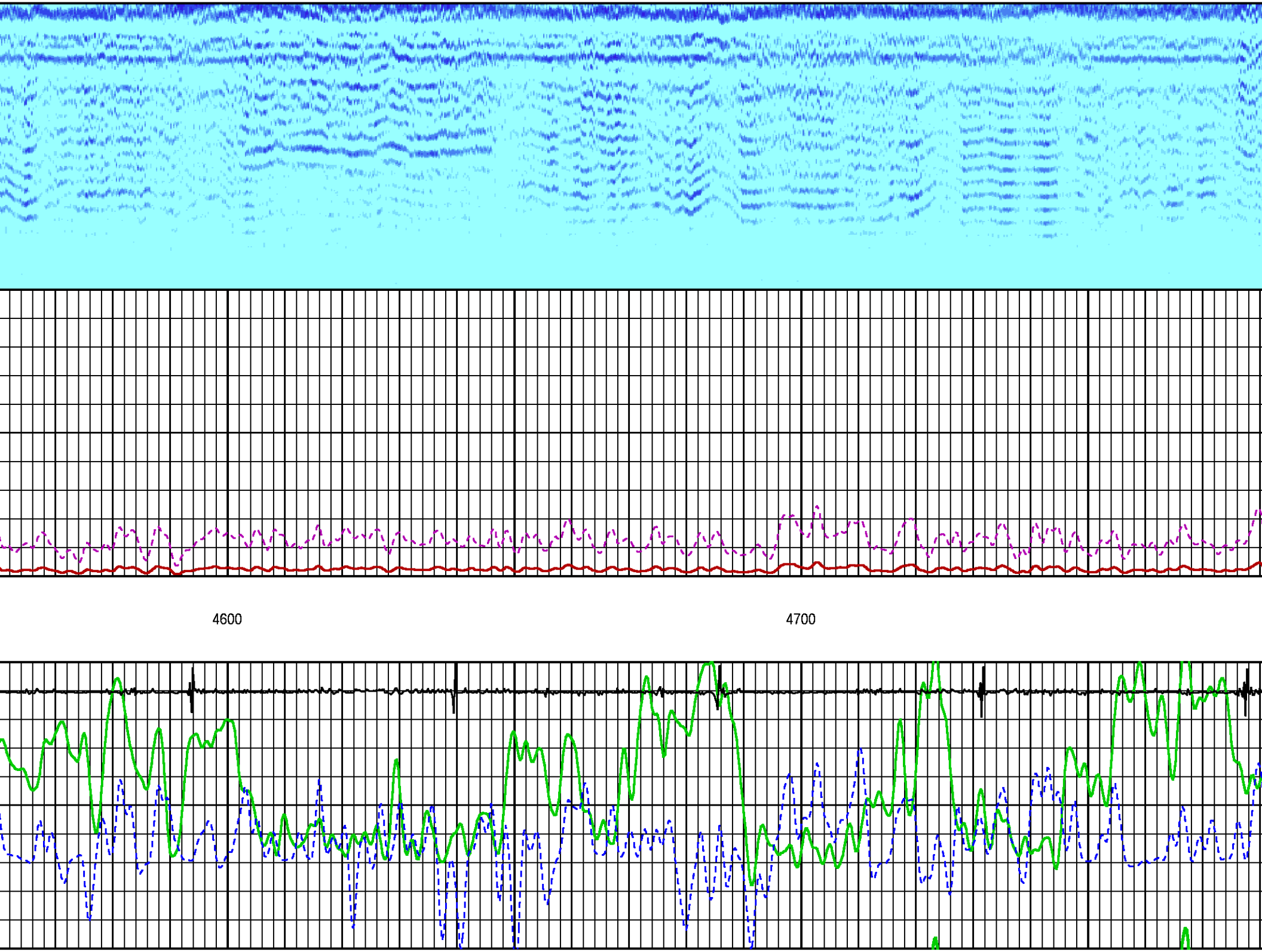
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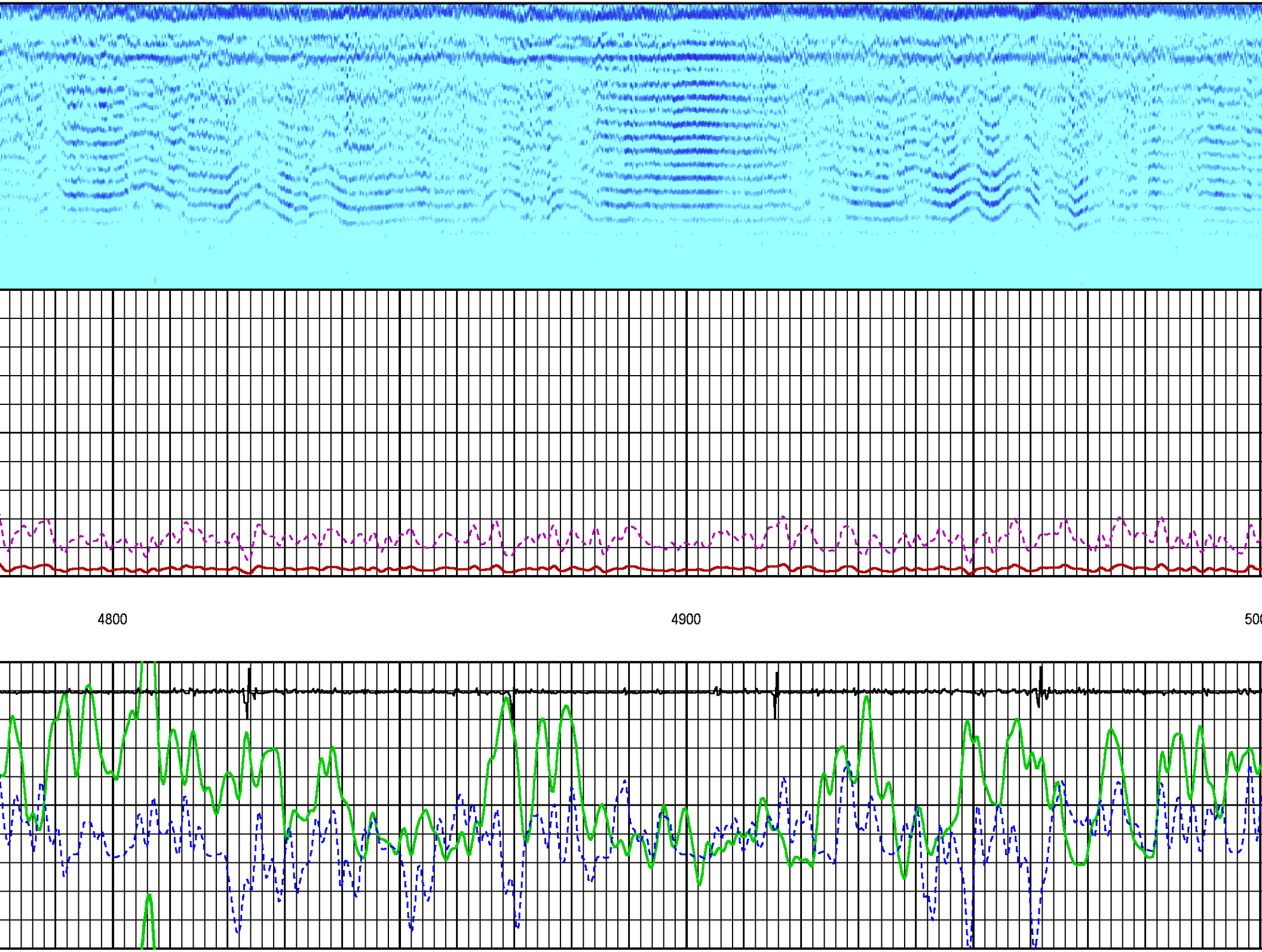
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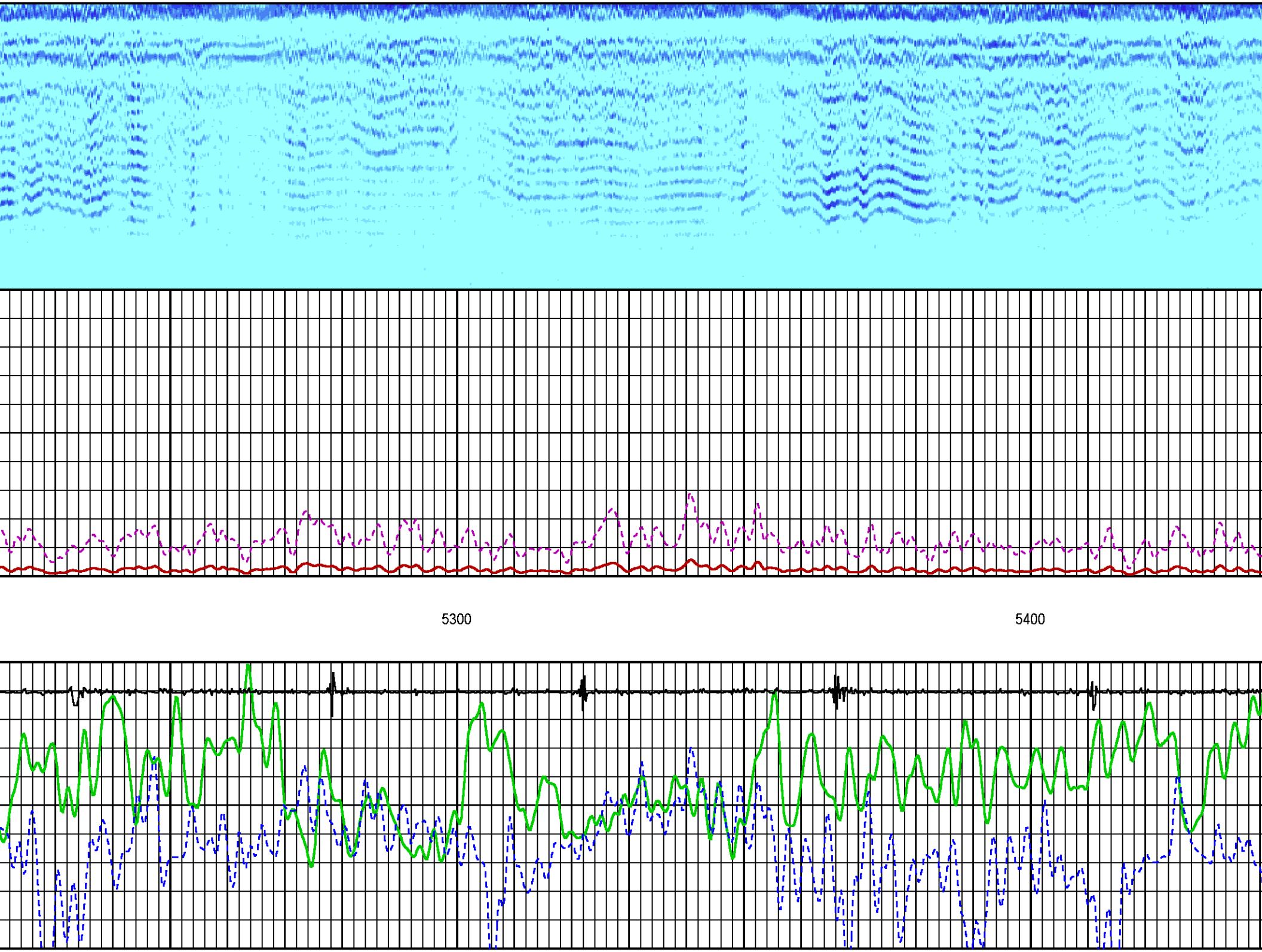
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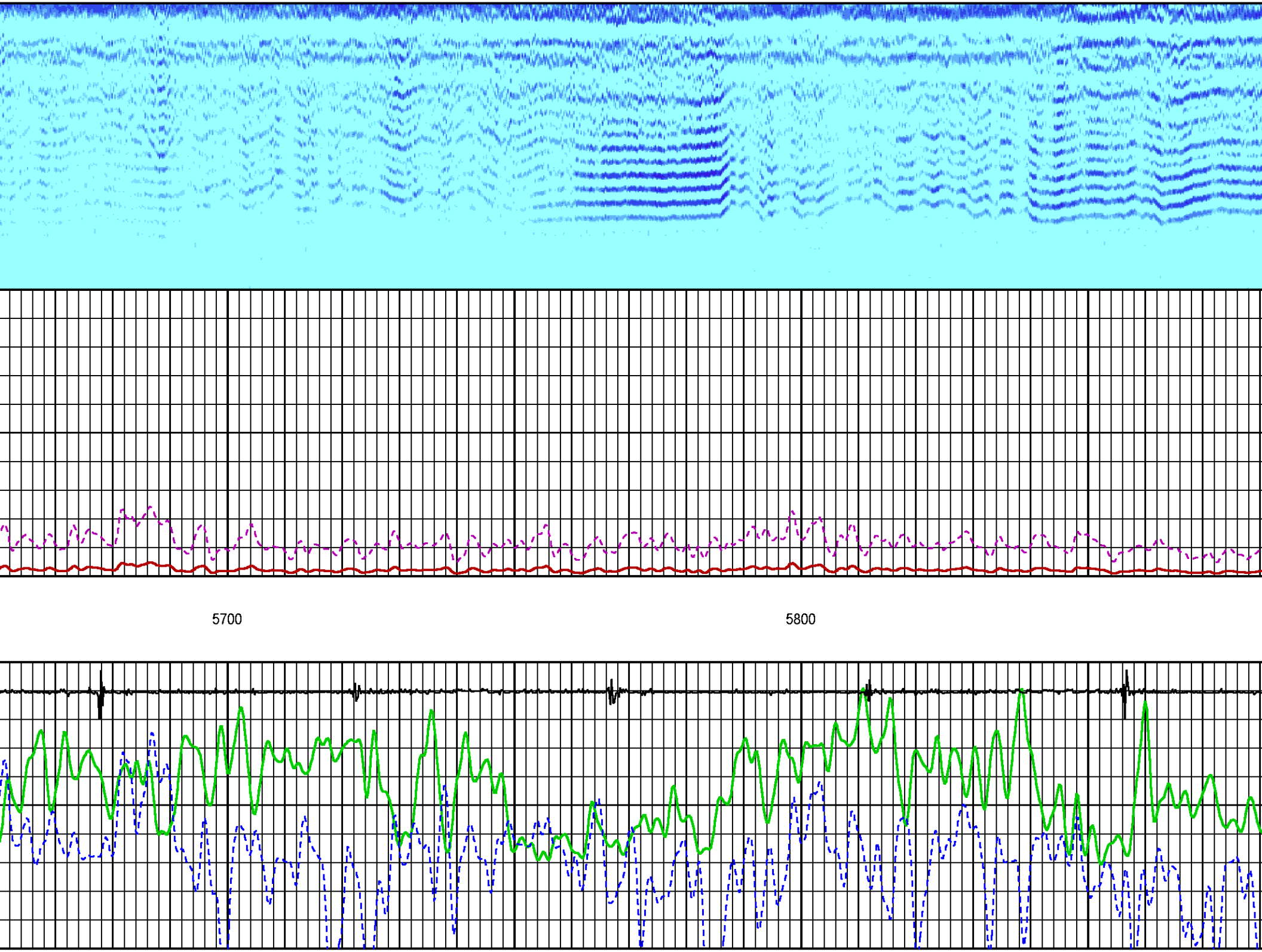
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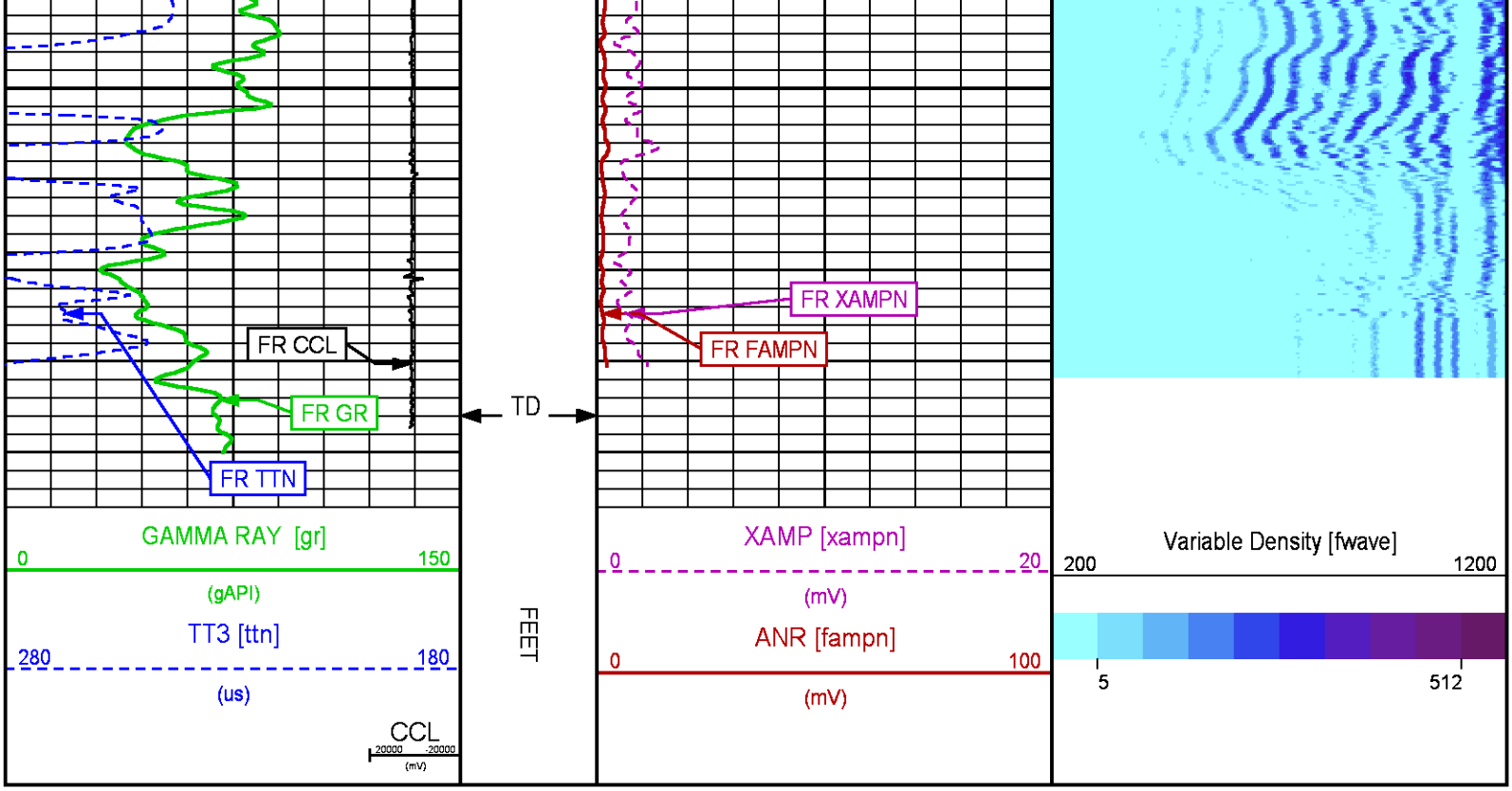


SECONDARY PRESENTATION 0 PSI

ECLIPS 6.2i ECLIPS General Release Rel 6.2i Wed Jun 12 12:21:40 CDT 2013
Updates: 1,36 Patches: 9

Plotted: Wed Jul 27 14:41:01 2016

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/CH108534/n012g02.prm
LOGGING MODE: DEPTH DIRECTION: UP
TOP DEPTH: 13.750 ft BOTTOM DEPTH: 6588.000 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		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 (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*)	174	us	"	"
	TT WINDOW LENGTH	444	us	"	"
	FIRST BRK THRESHOLD (ttn*)	4	mV	"	"
RAL CASING PARAMETERS	PPT NEAR	200.391	us	"	"
RAL TOOL DELAY	TOOL DELAY (str1*)	-69	us	"	"
	TOOL DELAY (str2*)	-69	us	"	"
	TOOL DELAY (str3*)	-69	us	"	"
	TOOL DELAY (str4*)	-69	us	"	"
	TOOL DELAY (str5*)	-69	us	"	"
	TOOL DELAY (str6*)	-69	us	"	"
	TOOL DELAY (str7*)	-69	us	"	"
	TOOL DELAY (str8*)	-69	us	"	"
	TOOL DELAY (strn*)	-69	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	81	mV	TOP	BOTTOM
	FREE AMP REC 2	81	mV	"	"
	FREE AMP REC 3	81	mV	"	"
	FREE AMP REC 4	81	mV	"	"
	FREE AMP REC 5	81	mV	"	"
	FREE AMP REC 6	81	mV	"	"
	FREE AMP REC 7	81	mV	"	"
	FREE AMP REC 8	81	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	Jul 27 11:54:59 2016	FIXED GATE AMPLITUDE T-R1
F1:AR2	Jul 27 11:54:59 2016	FIXED GATE AMPLITUDE T-R2
F1:AR3	Jul 27 11:54:59 2016	FIXED GATE AMPLITUDE T-R3
F1:AR4	Jul 27 11:54:59 2016	FIXED GATE AMPLITUDE T-R4
F1:AR5	Jul 27 11:54:59 2016	FIXED GATE AMPLITUDE T-R5
F1:AR6	Jul 27 11:54:59 2016	FIXED GATE AMPLITUDE T-R6
F1:AR7	Jul 27 11:54:59 2016	FIXED GATE AMPLITUDE T-R7
F1:AR8	Jul 27 11:54:59 2016	FIXED GATE AMPLITUDE T-R8
F1:CCL	Jul 27 11:54:59 2016	CASING COLLAR LOCATOR
F1:FAMPN	Jul 27 11:54:59 2016	FIXED GATE AMPLITUDE NEAR RECEIVER
F1:FWAVE	Jul 27 11:54:59 2016	FAR WAVE FORM
F1:GR	Jul 27 11:54:59 2016	GAMMA RAY
F1:PBMAP	Jul 27 11:54:59 2016	PERCENT BOND CEMENT MAP
F1:TTN	Jul 27 11:54:59 2016	TRAVELTIME FROM NEAR TRANSMITTER-RECEIVER
F1:XAMPN	Jul 27 11:54:59 2016	FIXED GATE AMPLITUDE NEAR RECEIVER TIMES FIVE

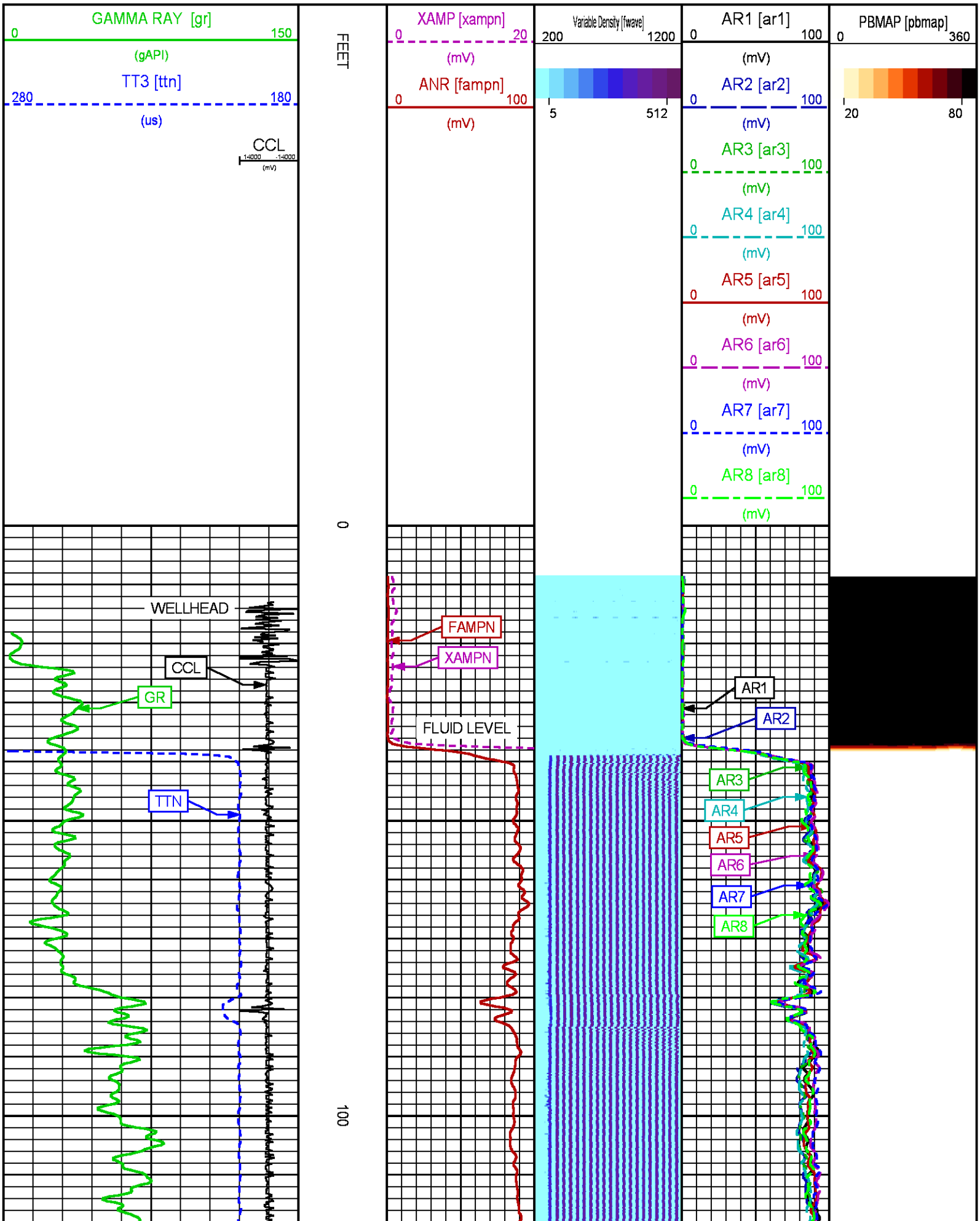
CURVE MEASURE POINT OFFSET

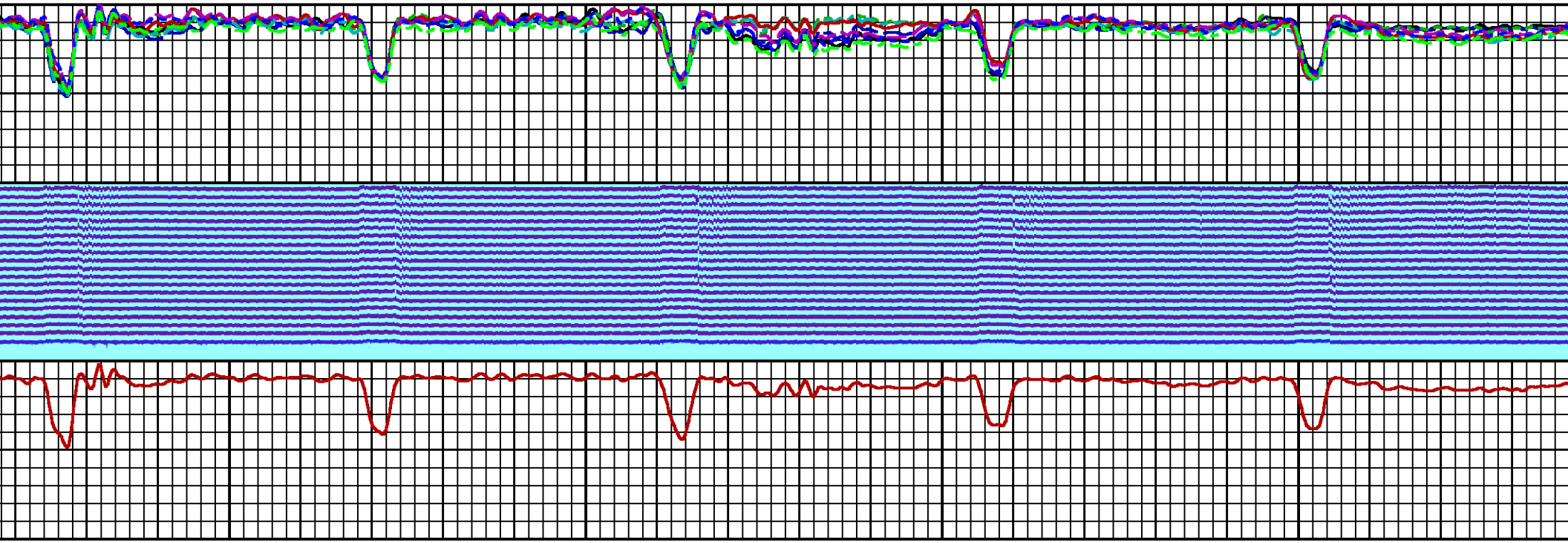
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
AR1	11.25	AR5	11.25	CCL	5.75	XAMPN	11.25
AR2	11.25	AR6	11.25	FAMPN	11.25		
AR3	11.25	AR7	11.25	GR	1.75		
AR4	11.25	AR8	11.25	TTN	11.25		

Presentation : cas6685:/dat1a/CH108534/421CBL_SECONDARY.fvpdf [5"/100' Scale]
Plot Interval : 0 - 6596 Feet

Data File 1 : F1 : cas6685:/dat1a/CH108534/421CBL_MAIN.xtf
Created On : Jul 27 11:54:59 2016
Company : TERRA ENERGY PARTNERS LLC
Well : FEDERAL CM 401-9

Well : FEDERAL GM 421-9
Field : GRAND VALLEY
File Interval : 7.5 - 6593 Feet
OCT : n012g





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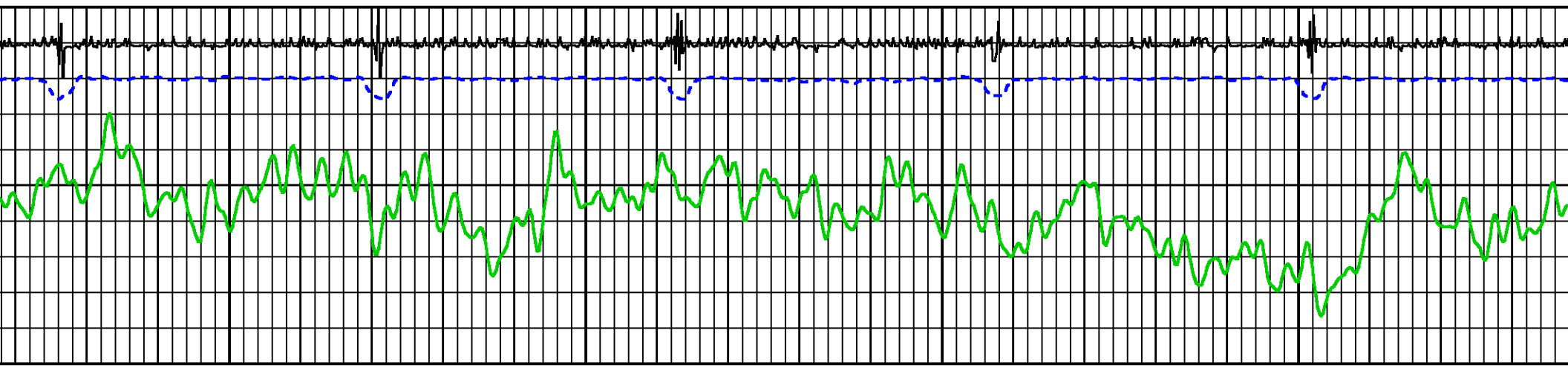

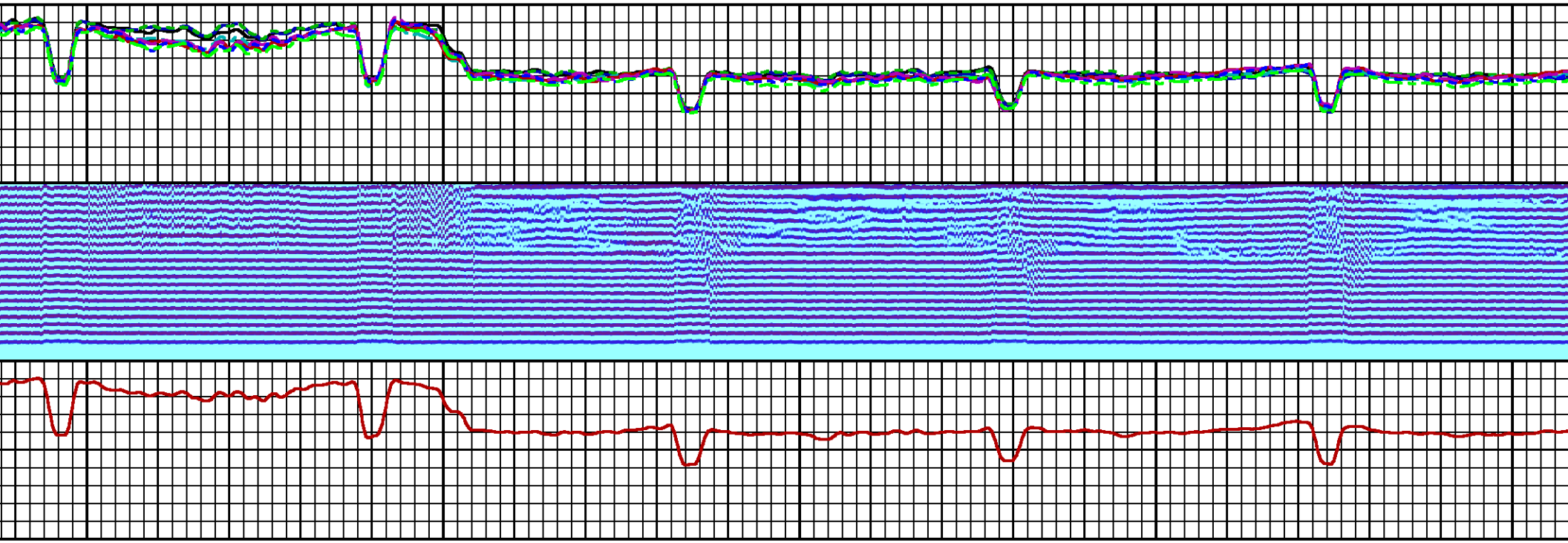

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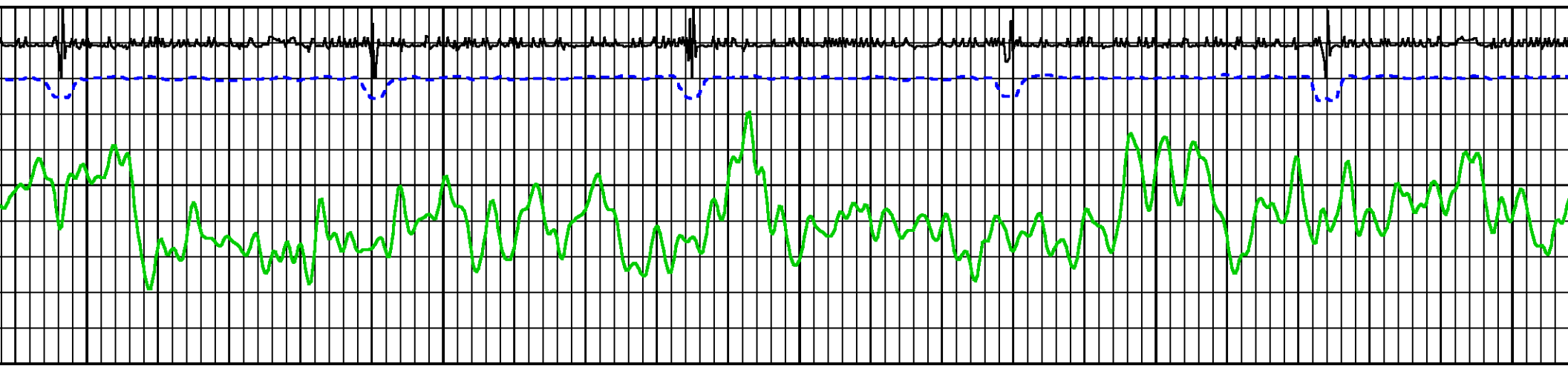

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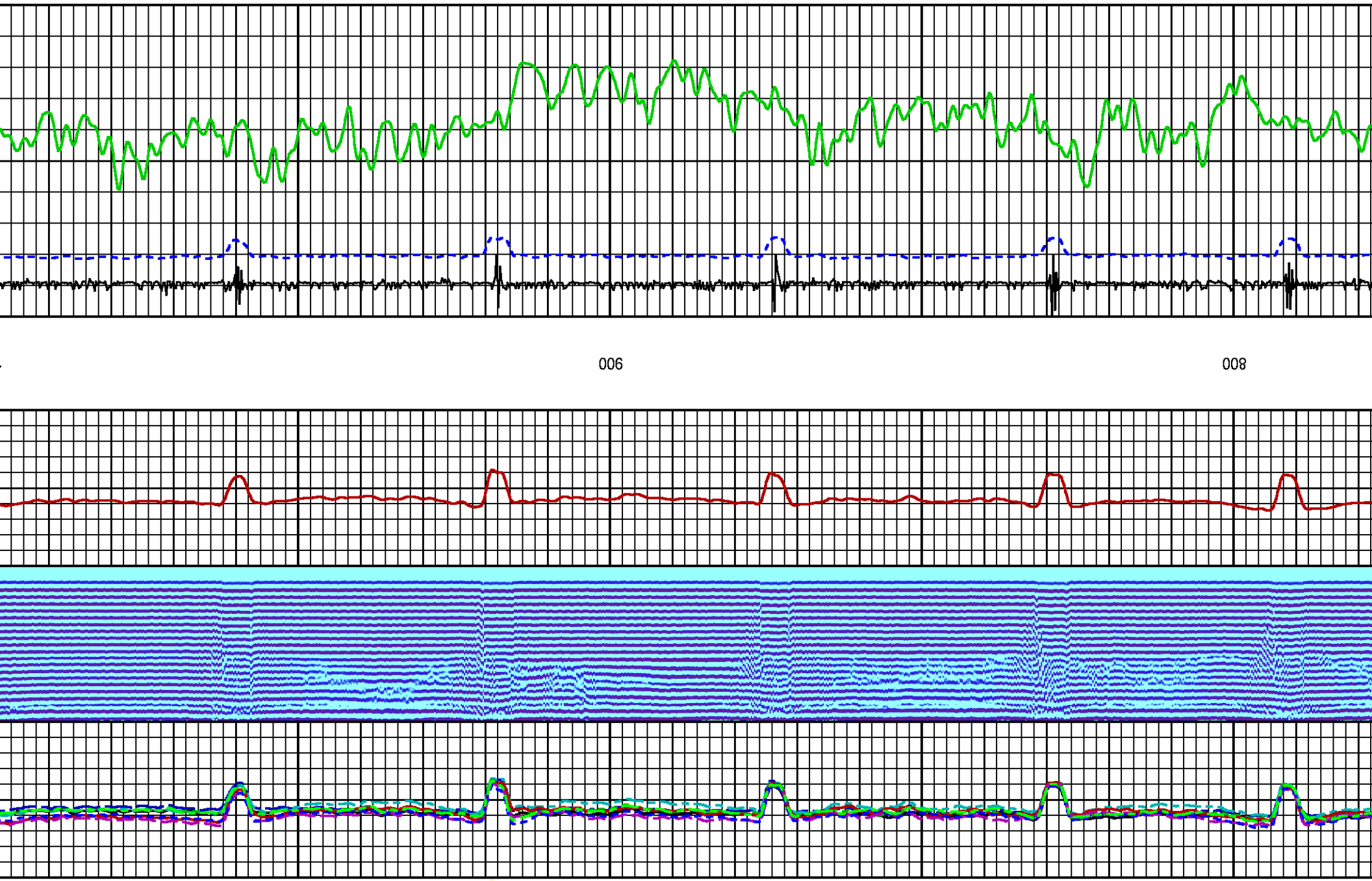
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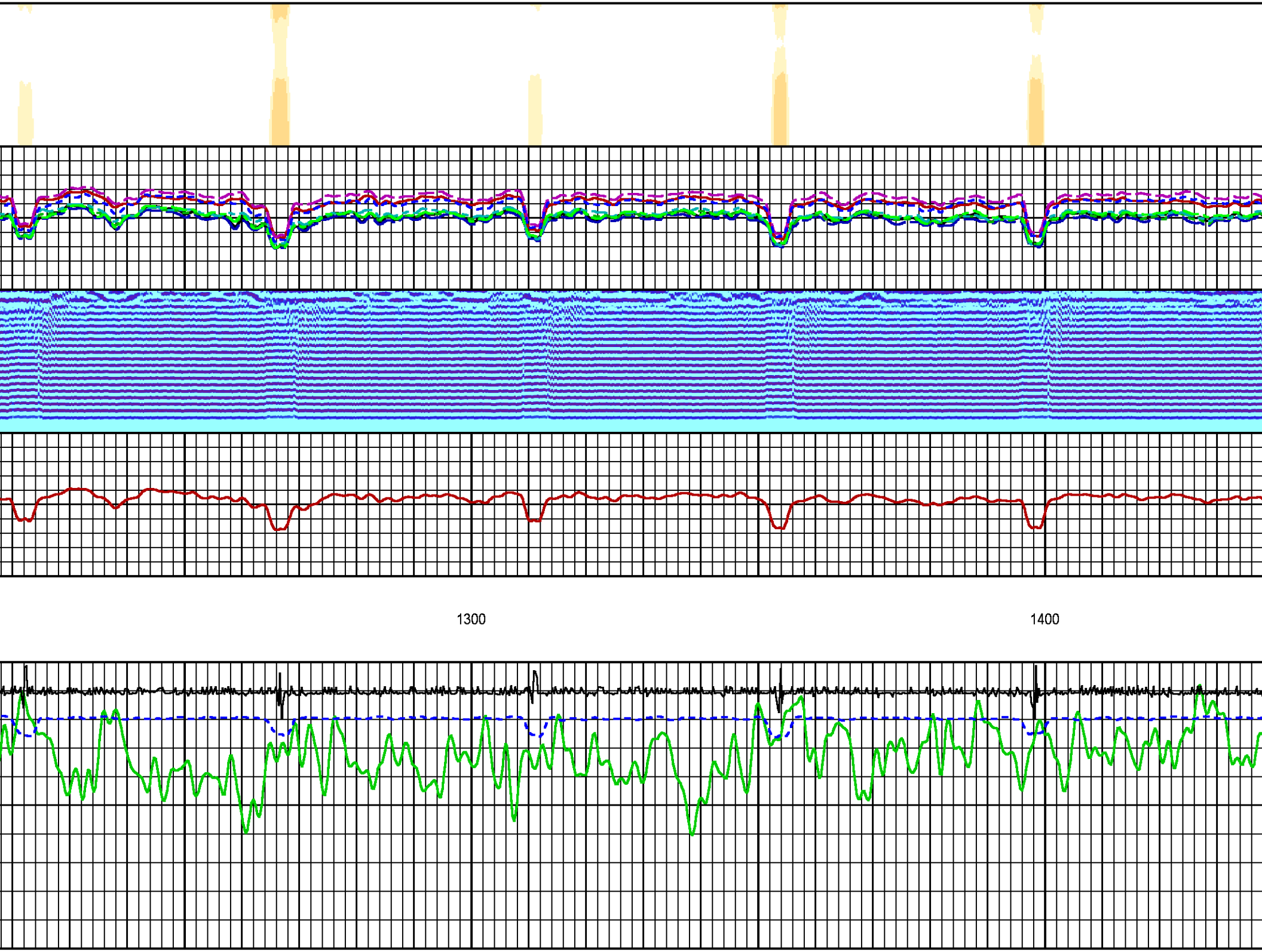
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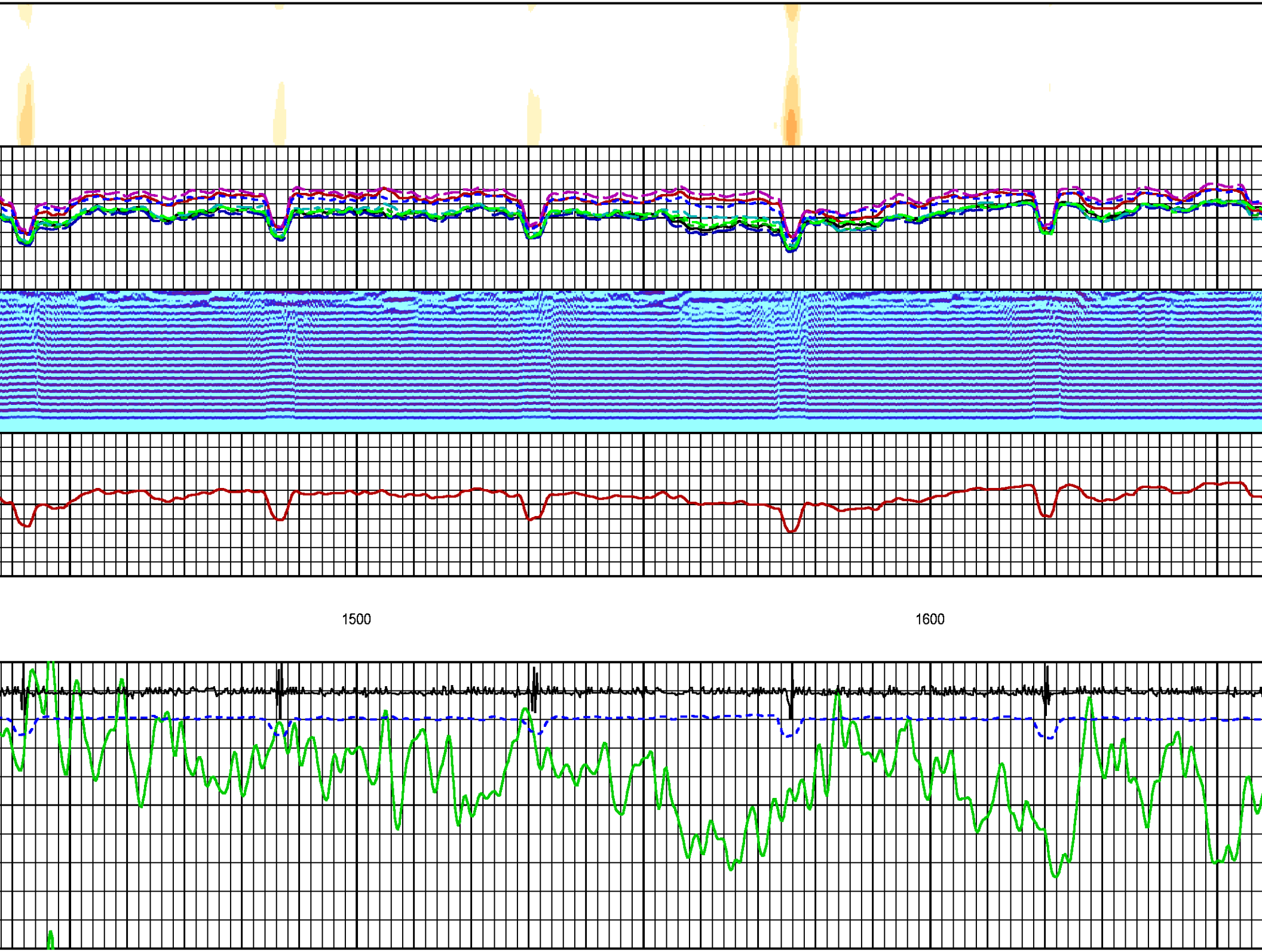
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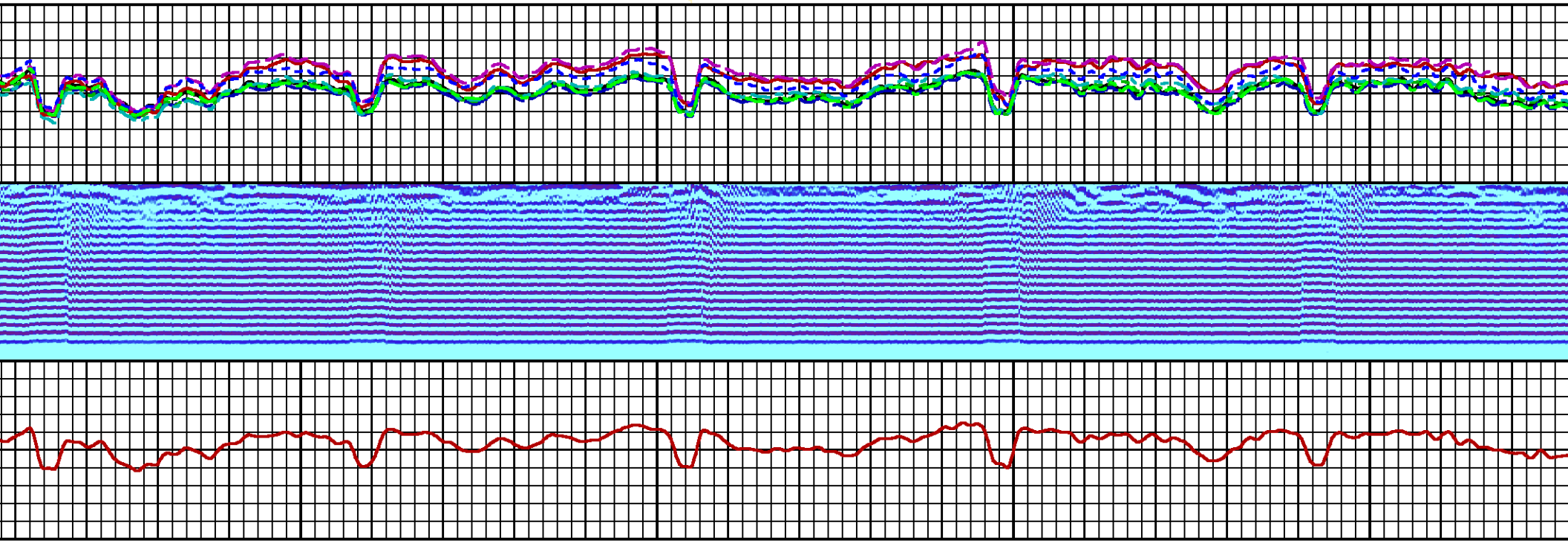

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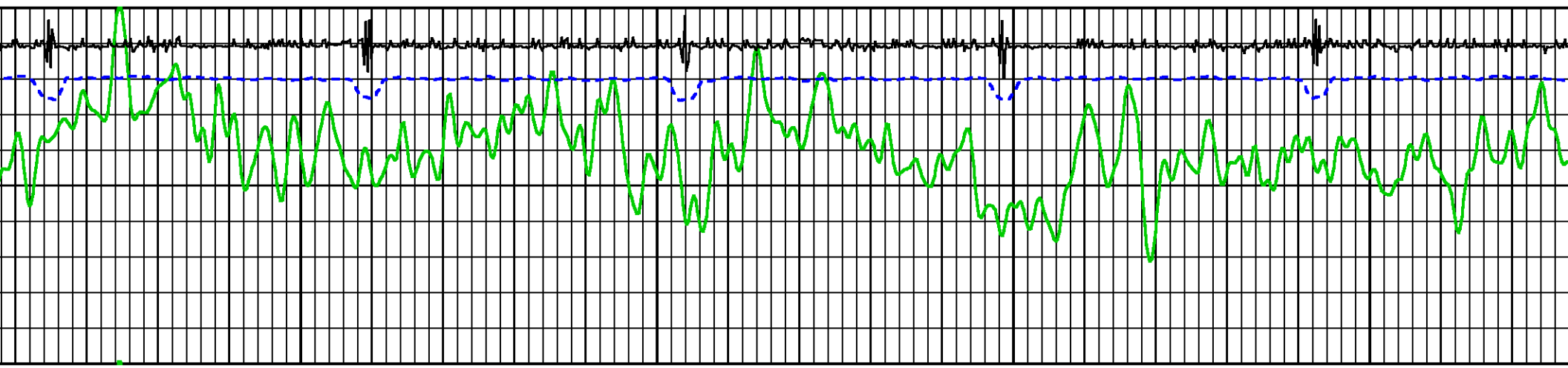

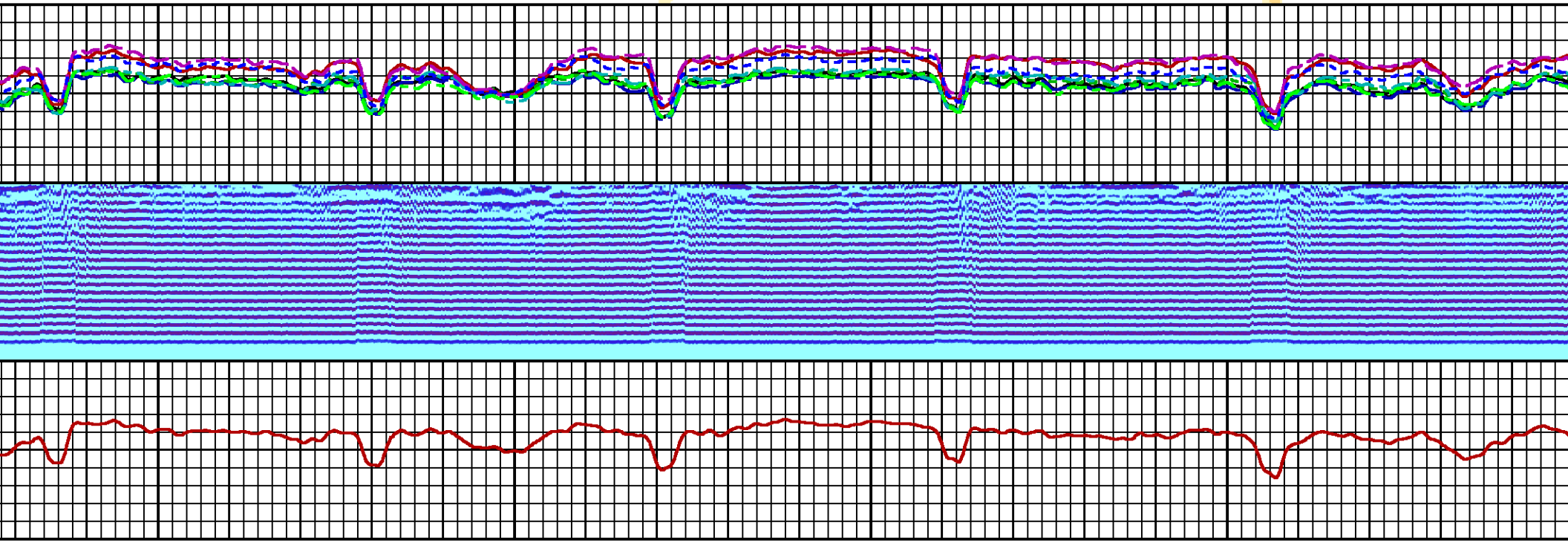

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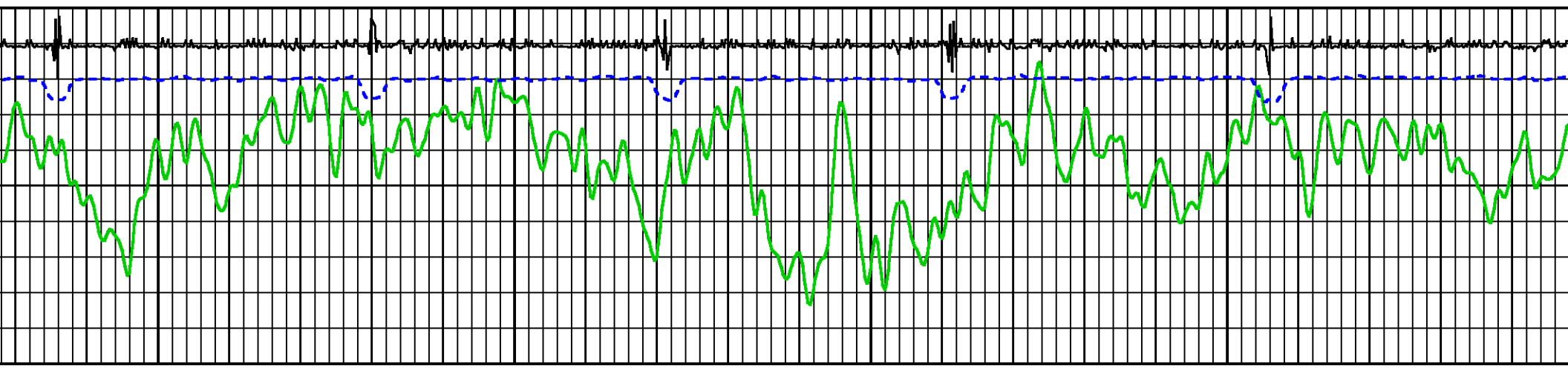

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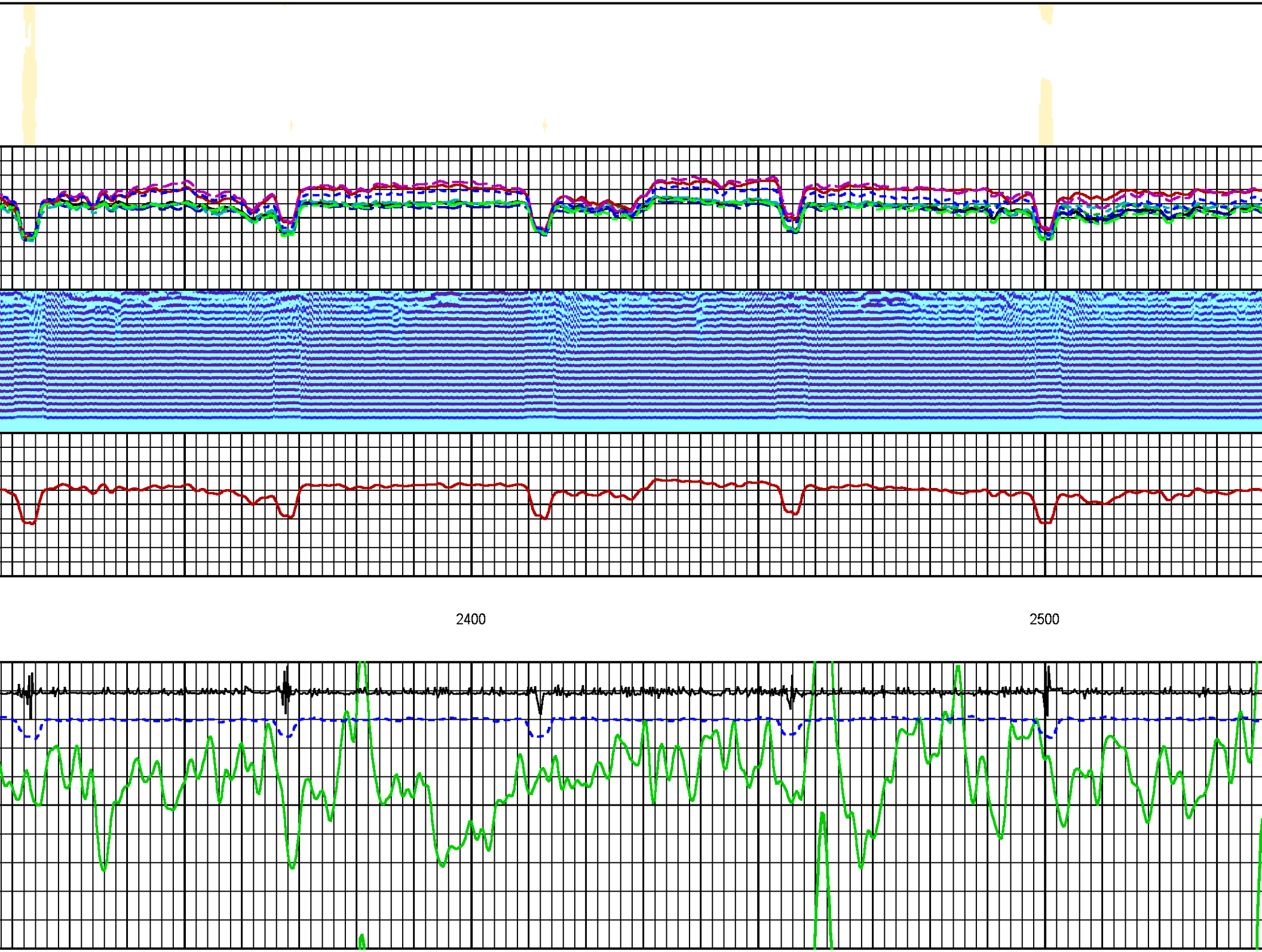
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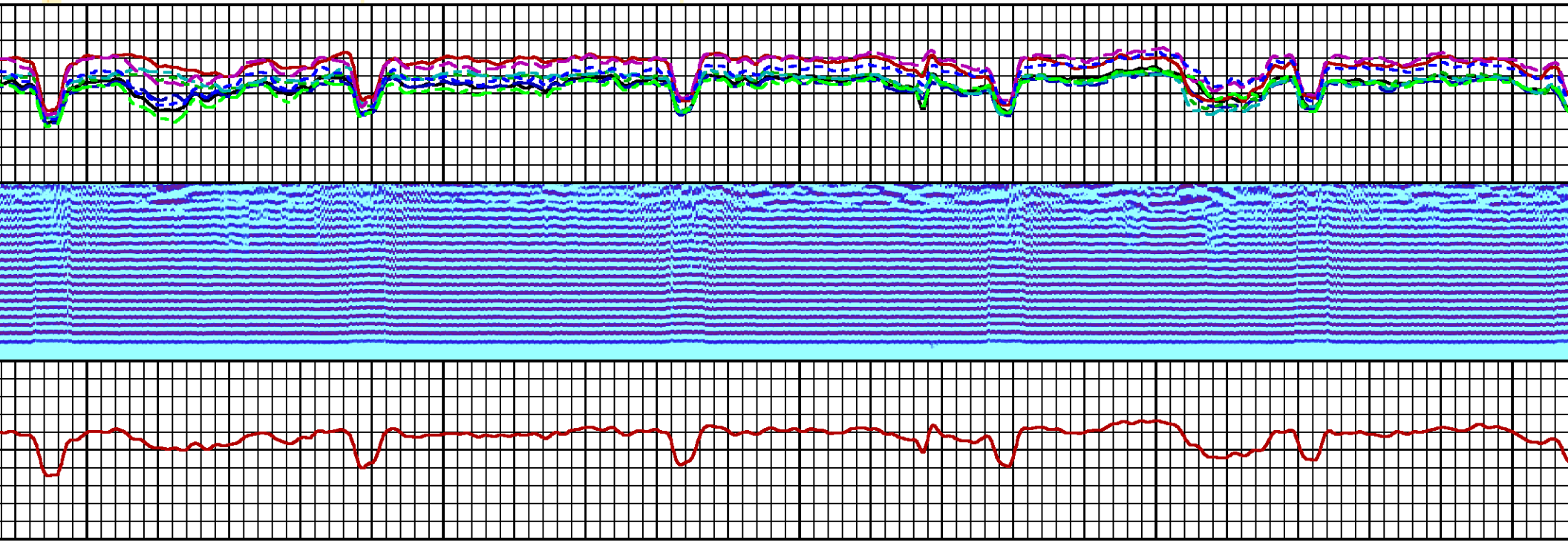

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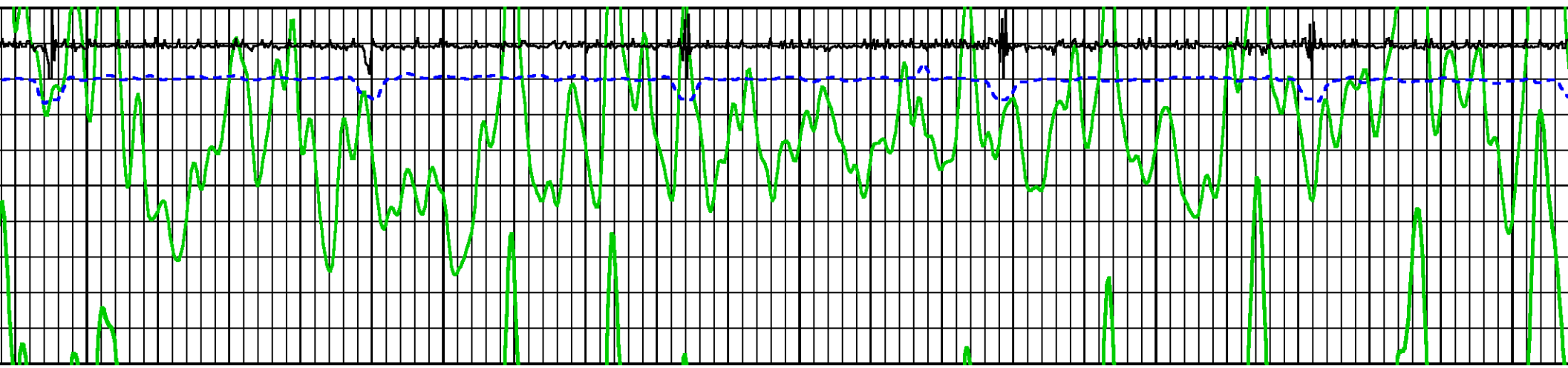

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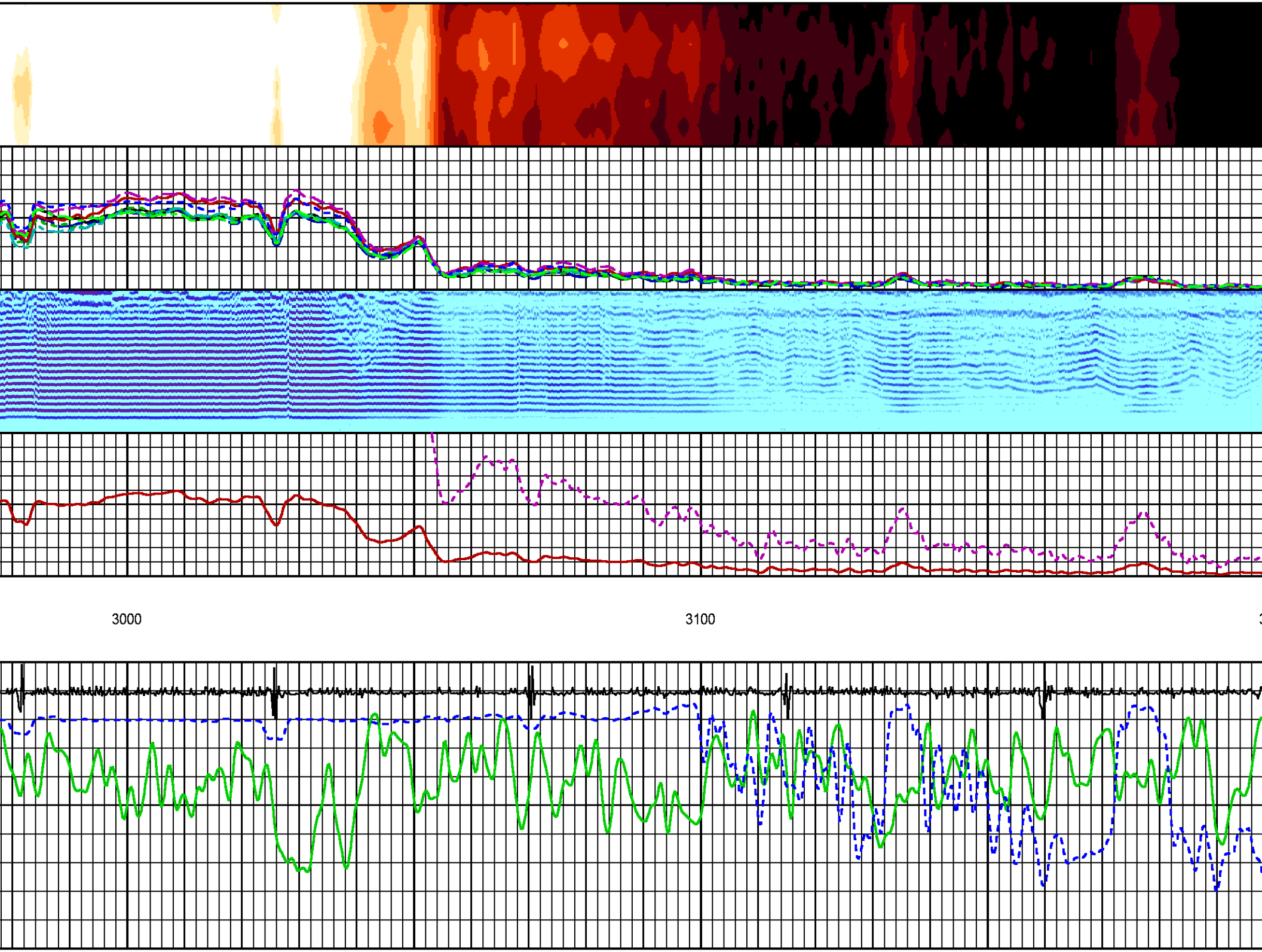
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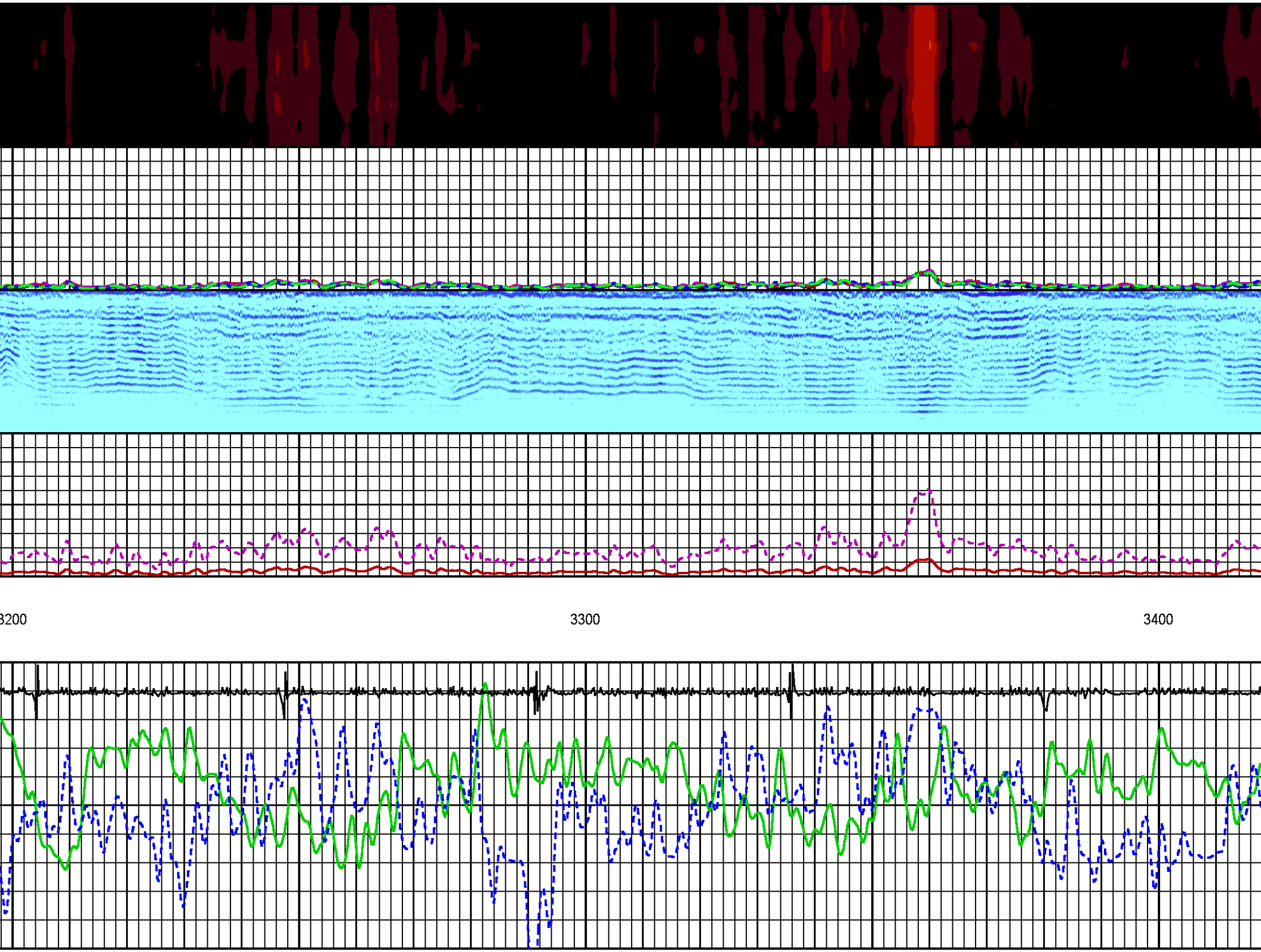
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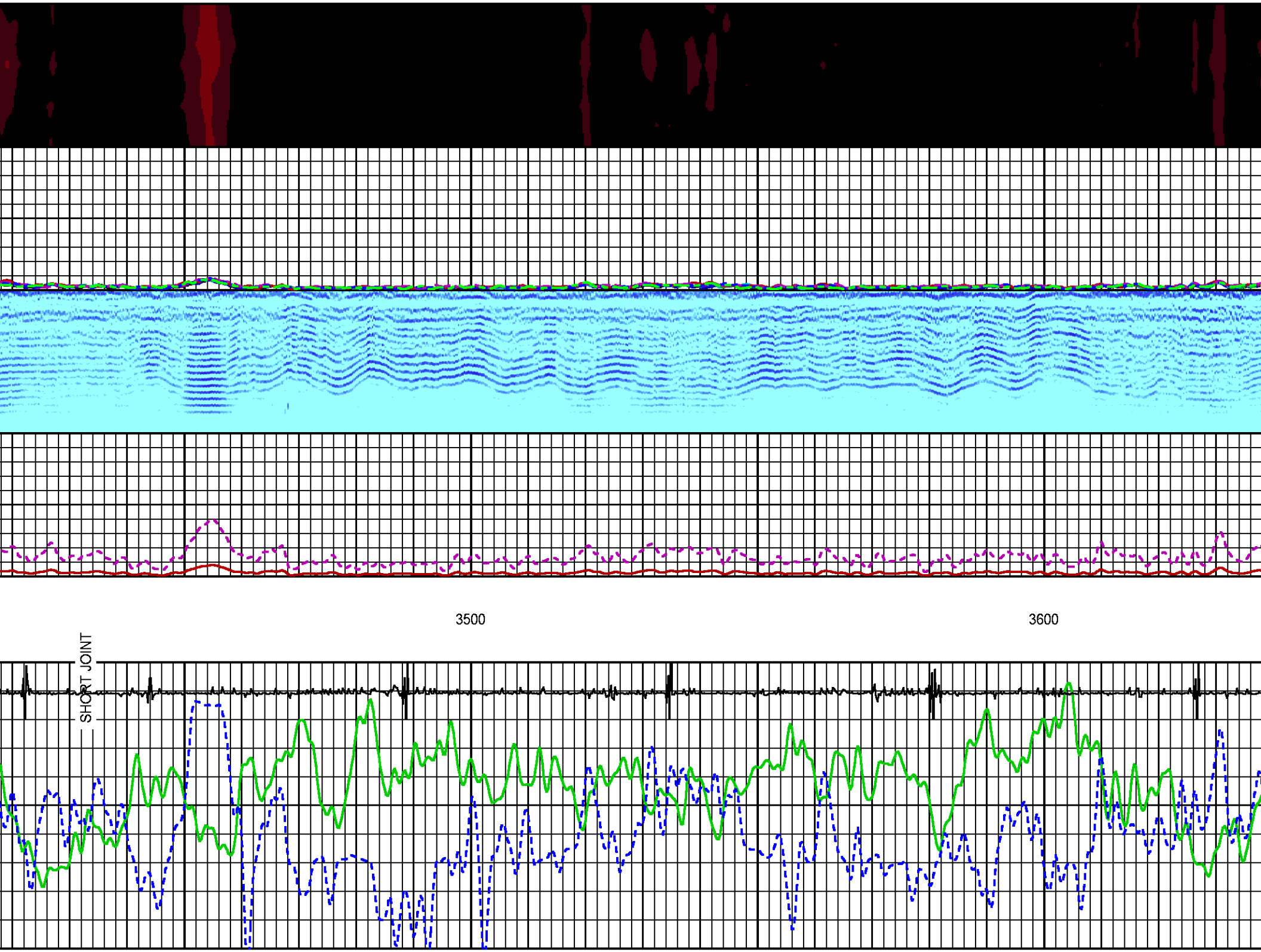
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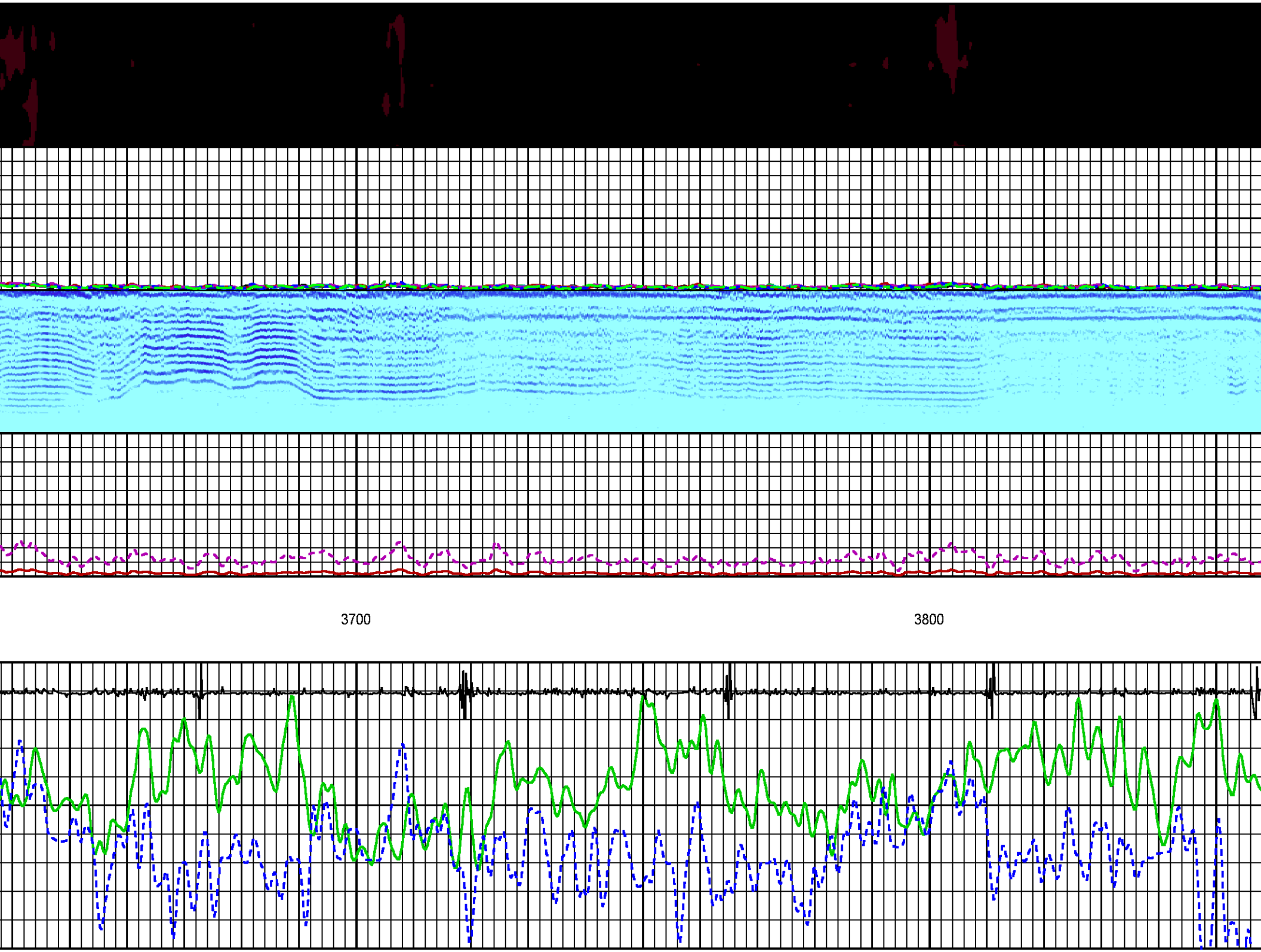
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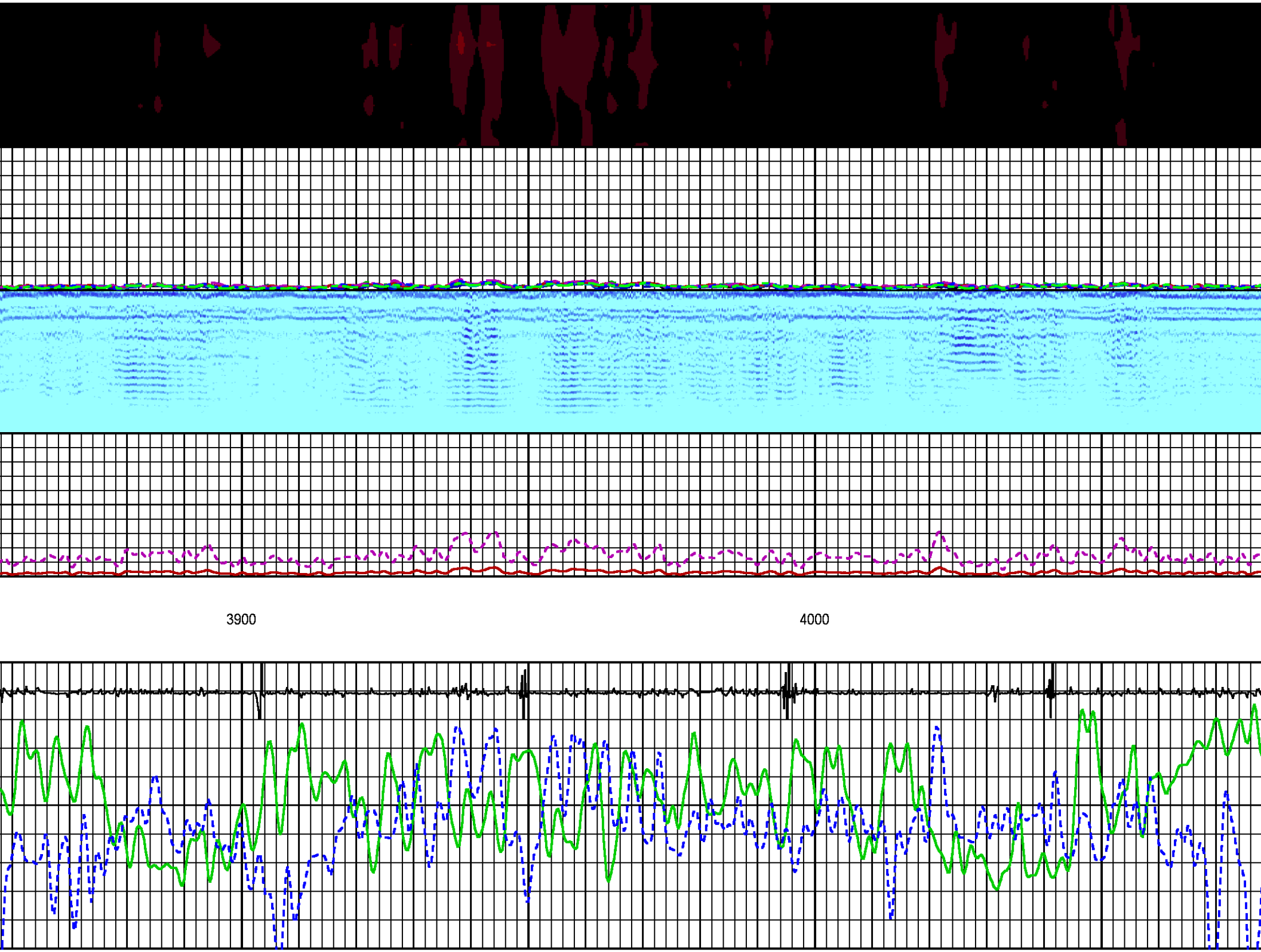
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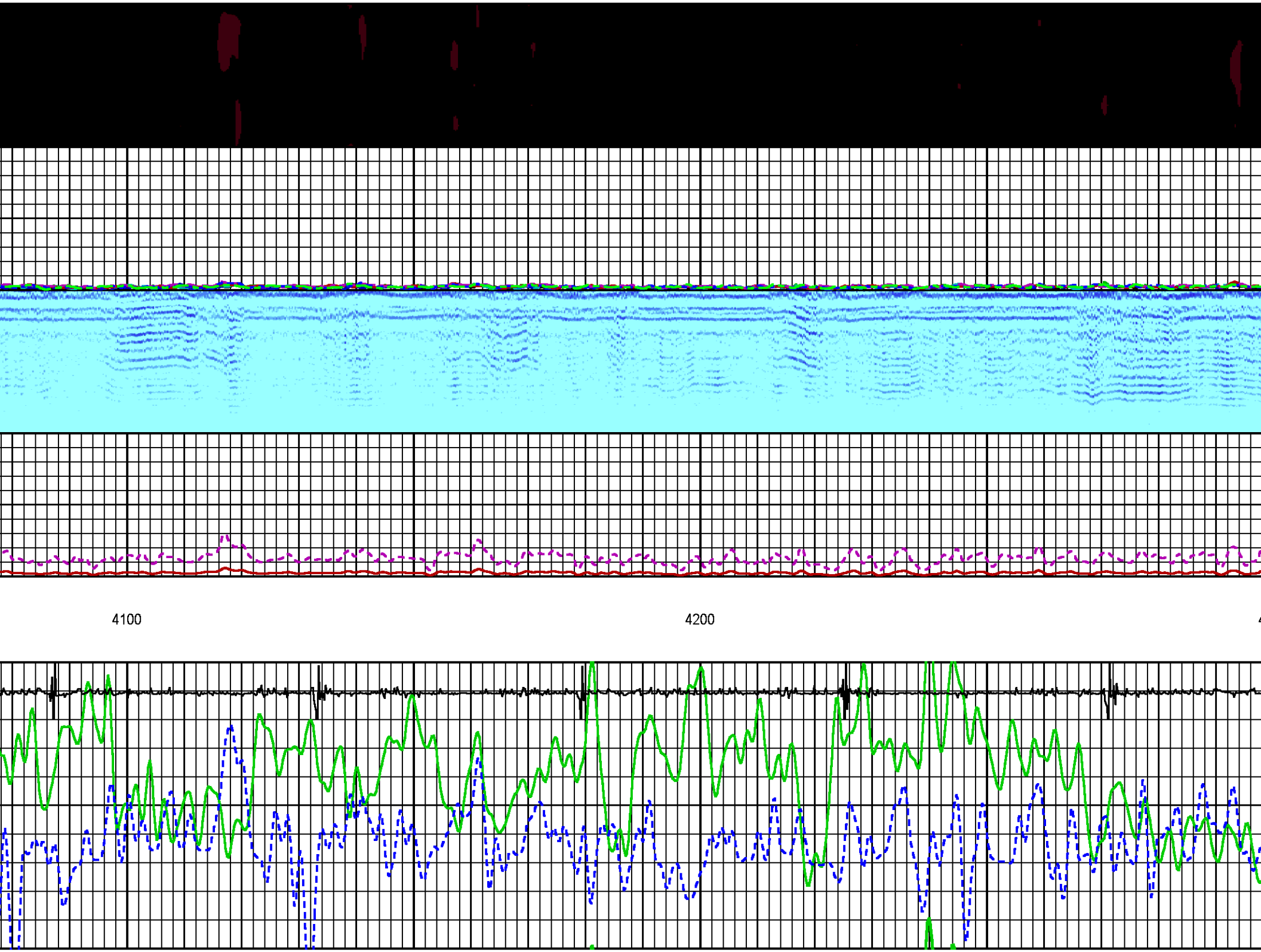
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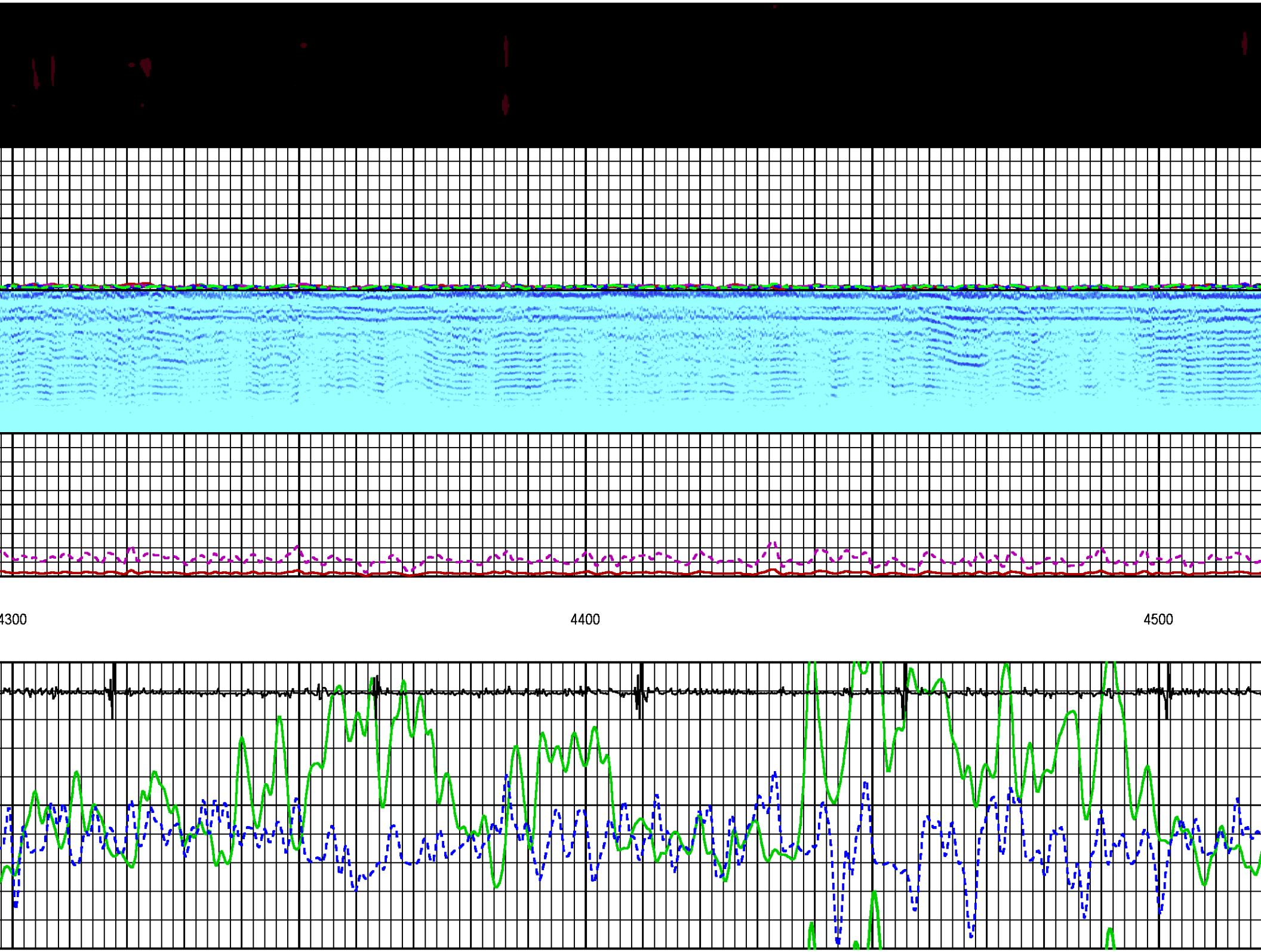
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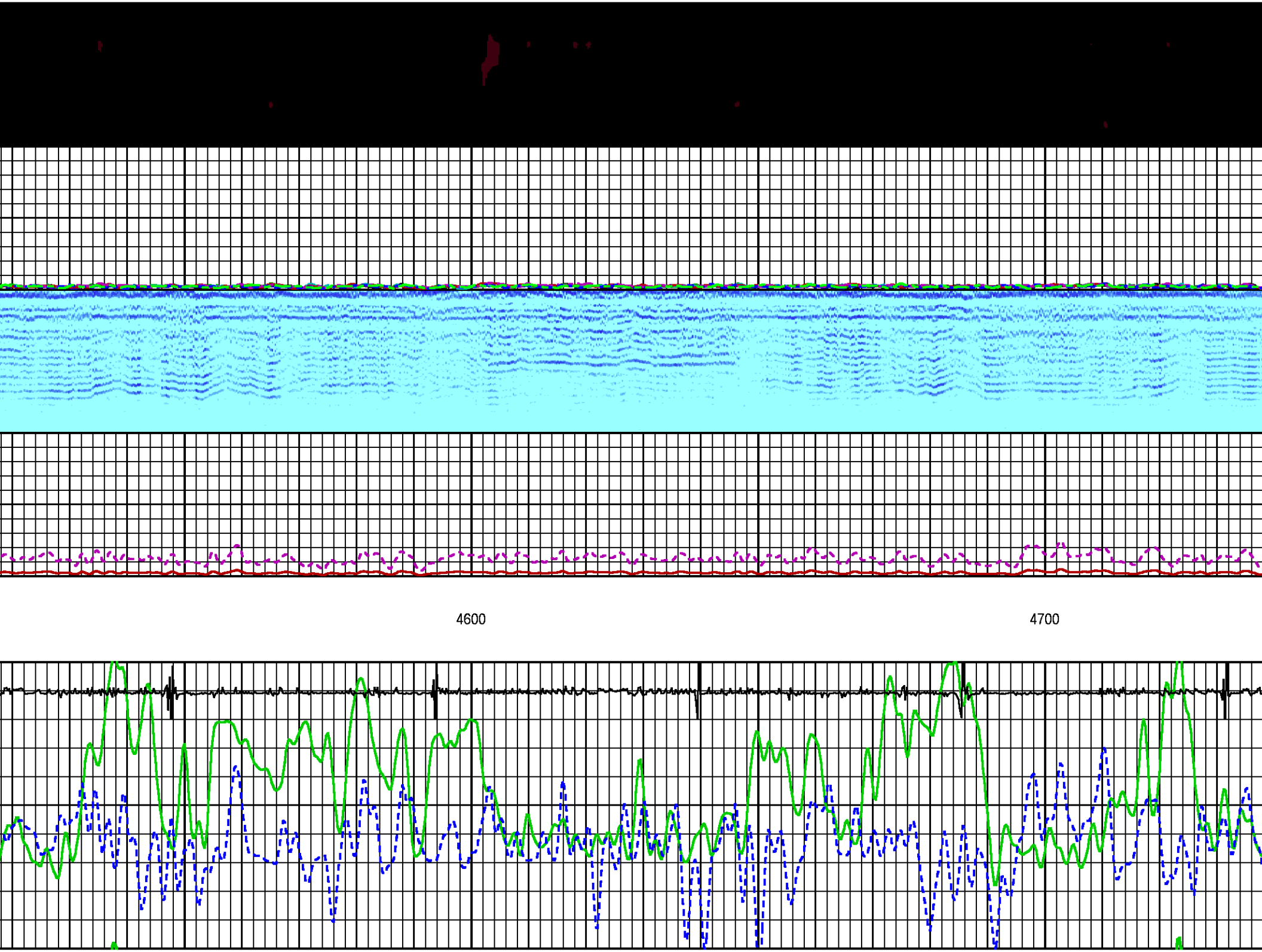
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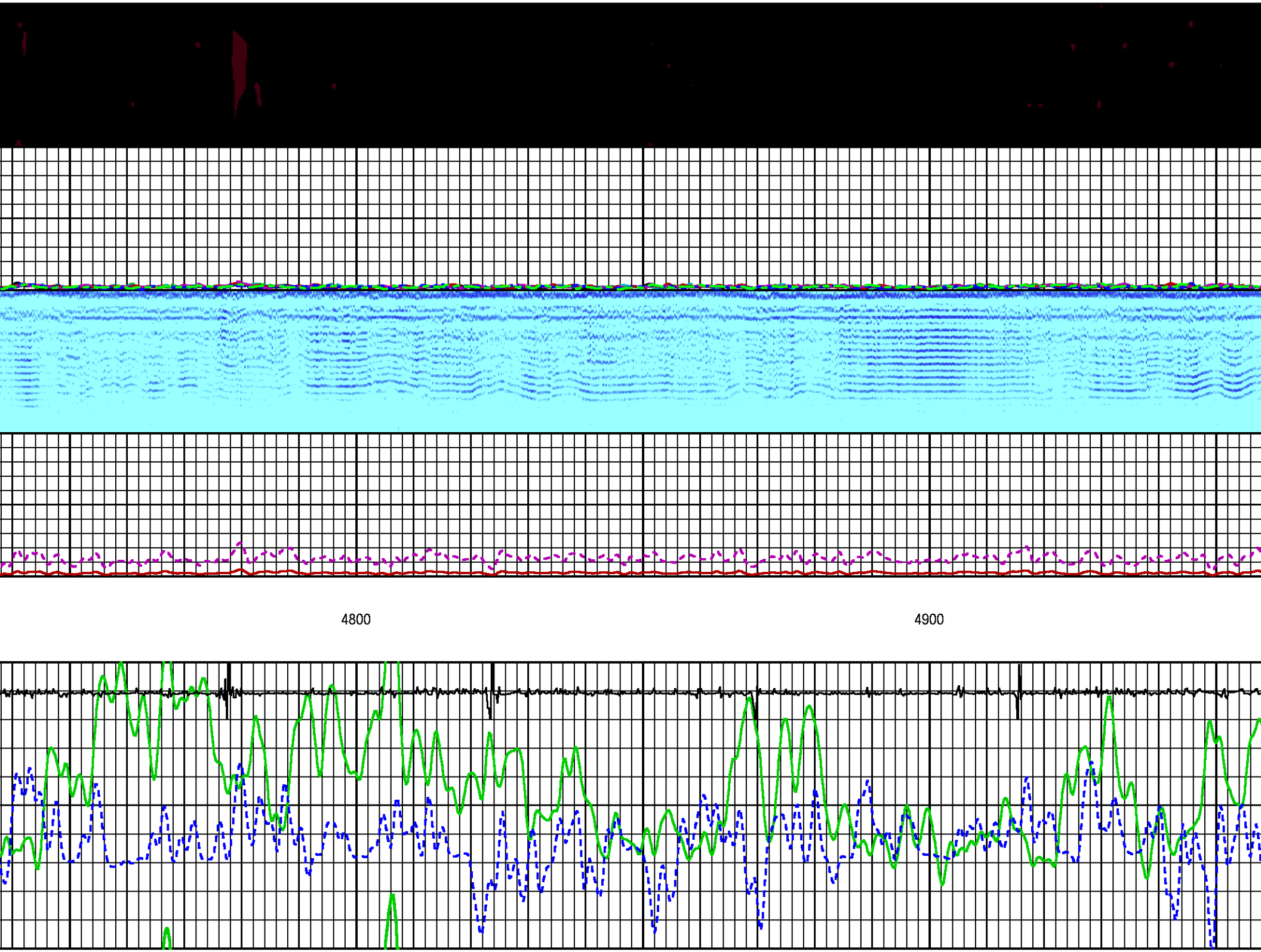
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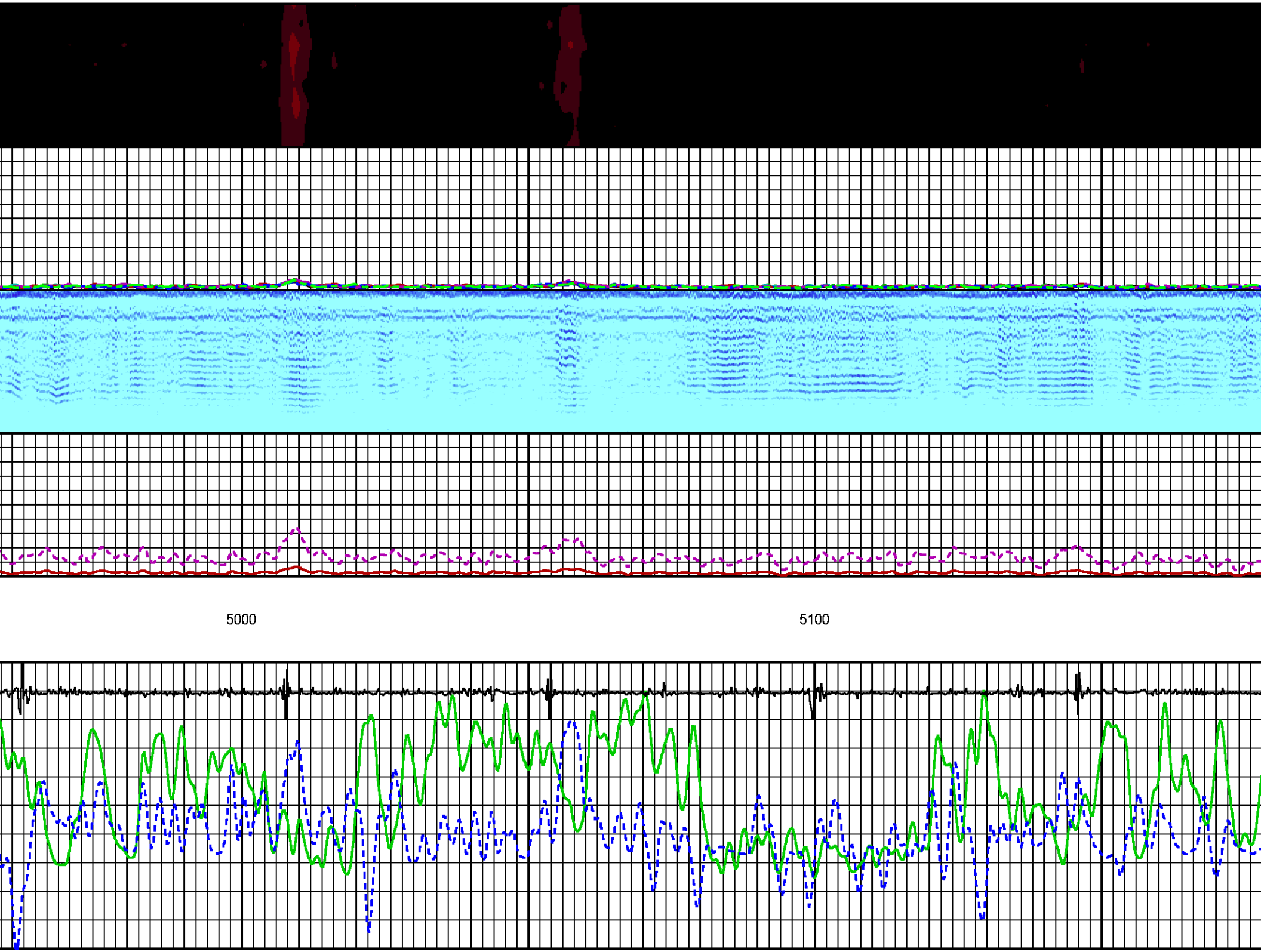
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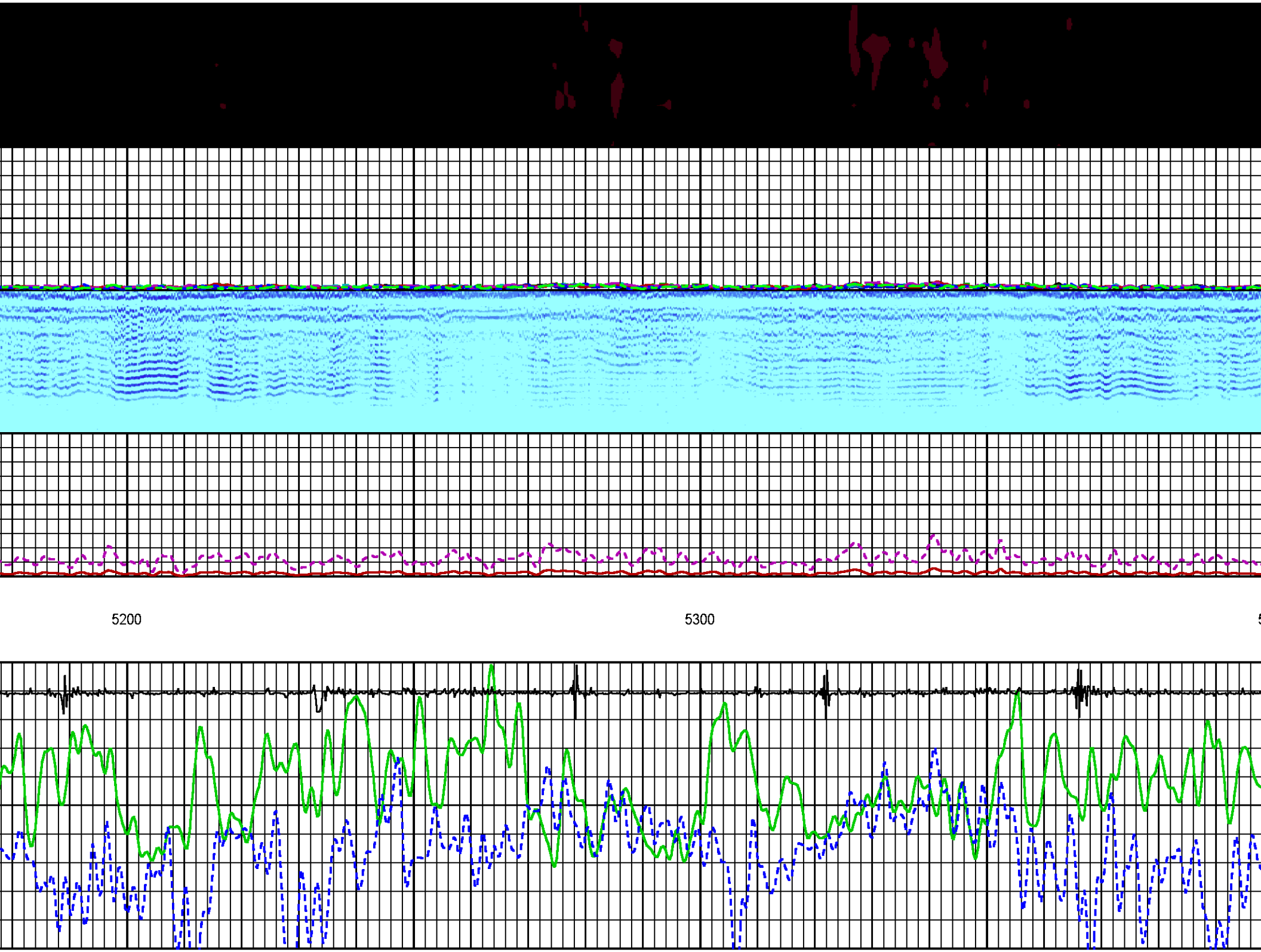
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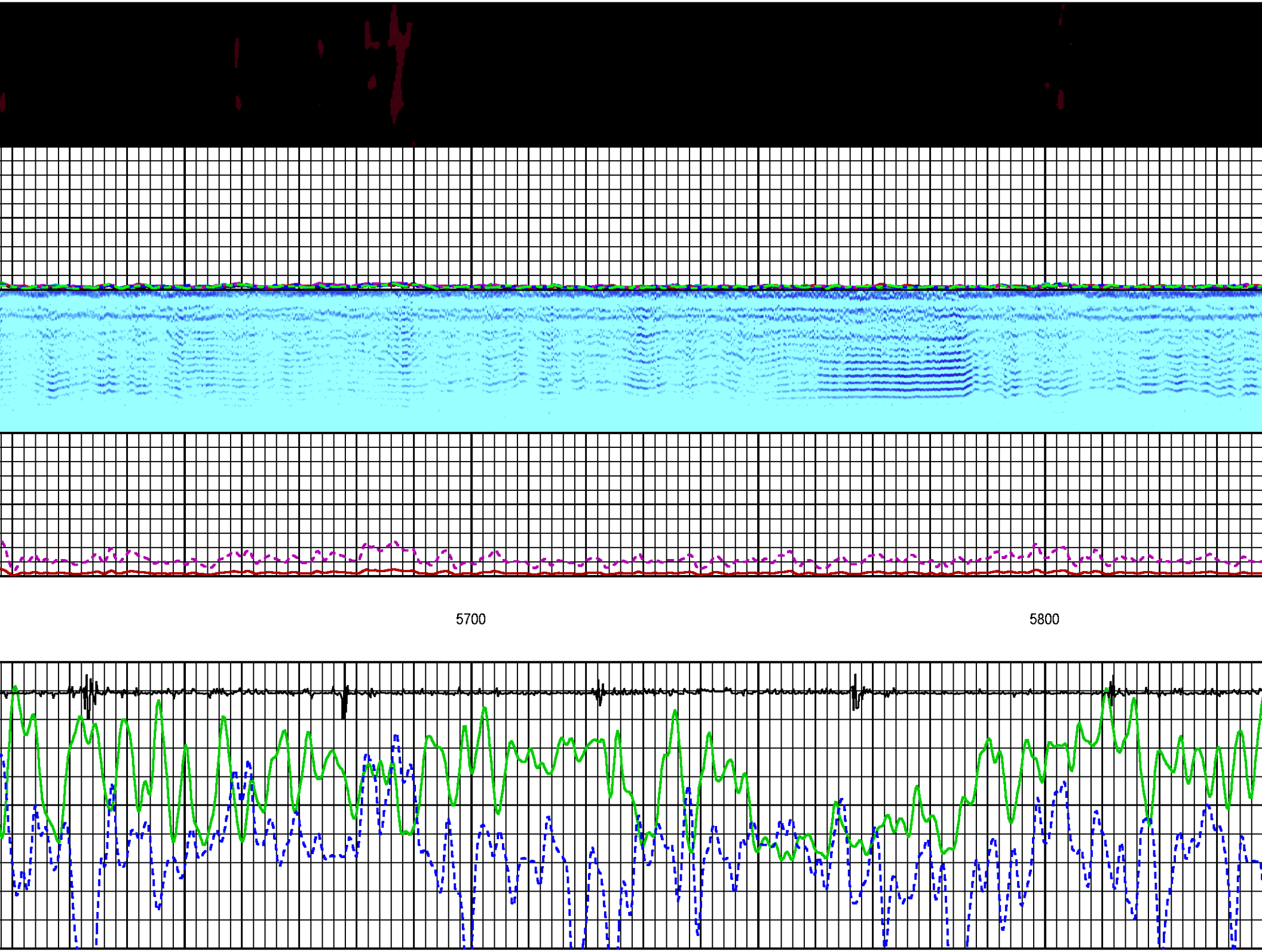
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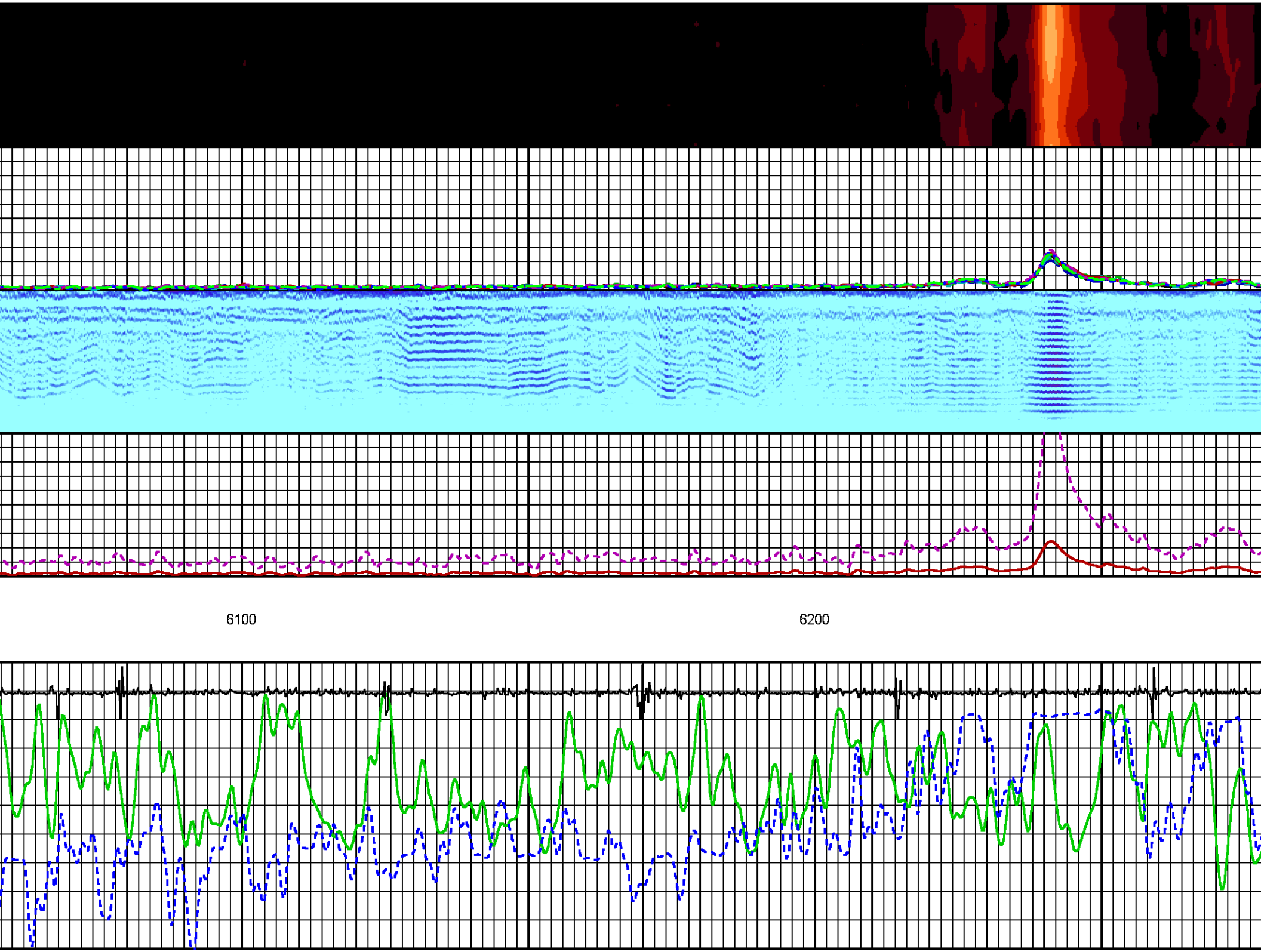
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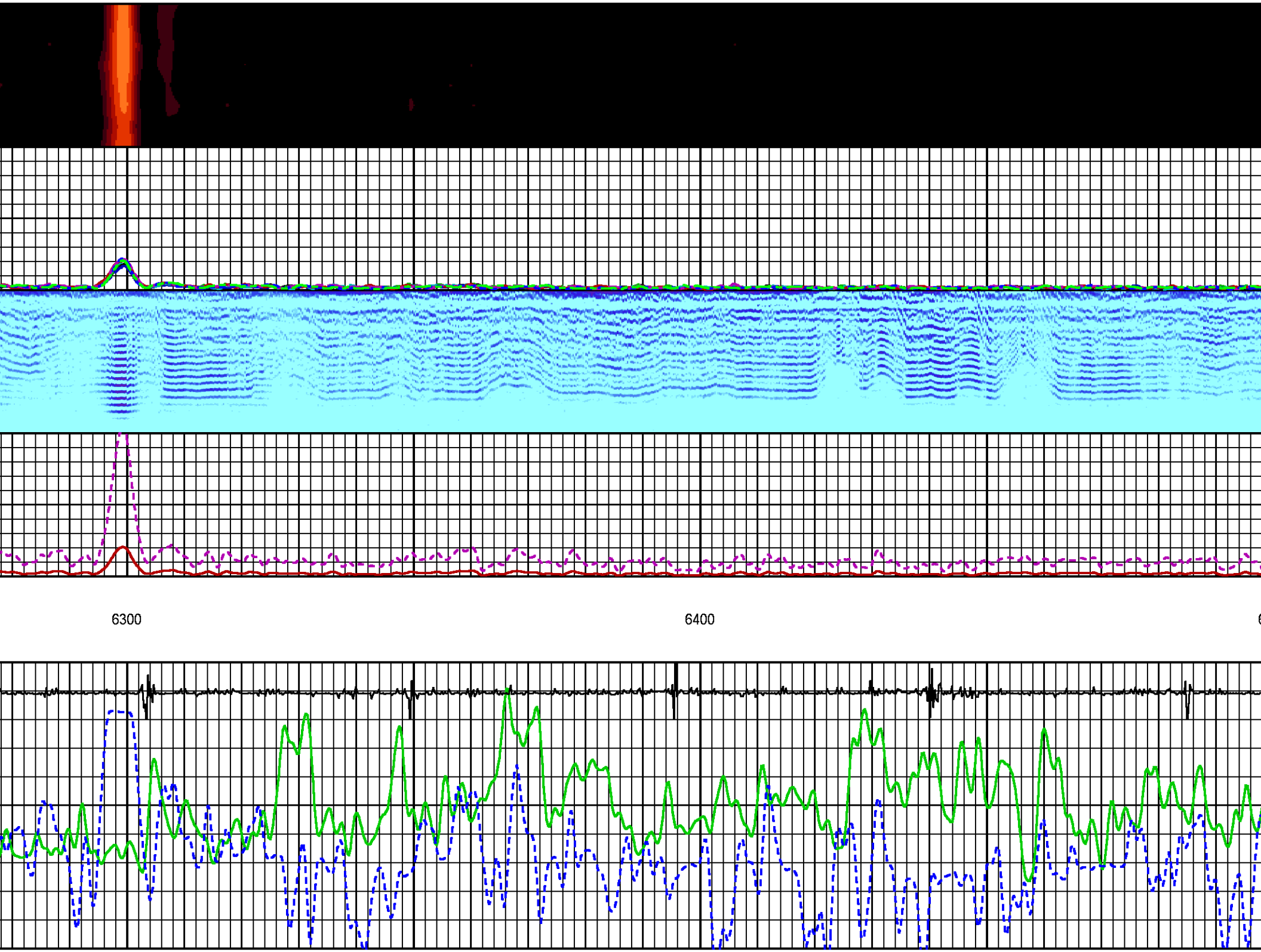
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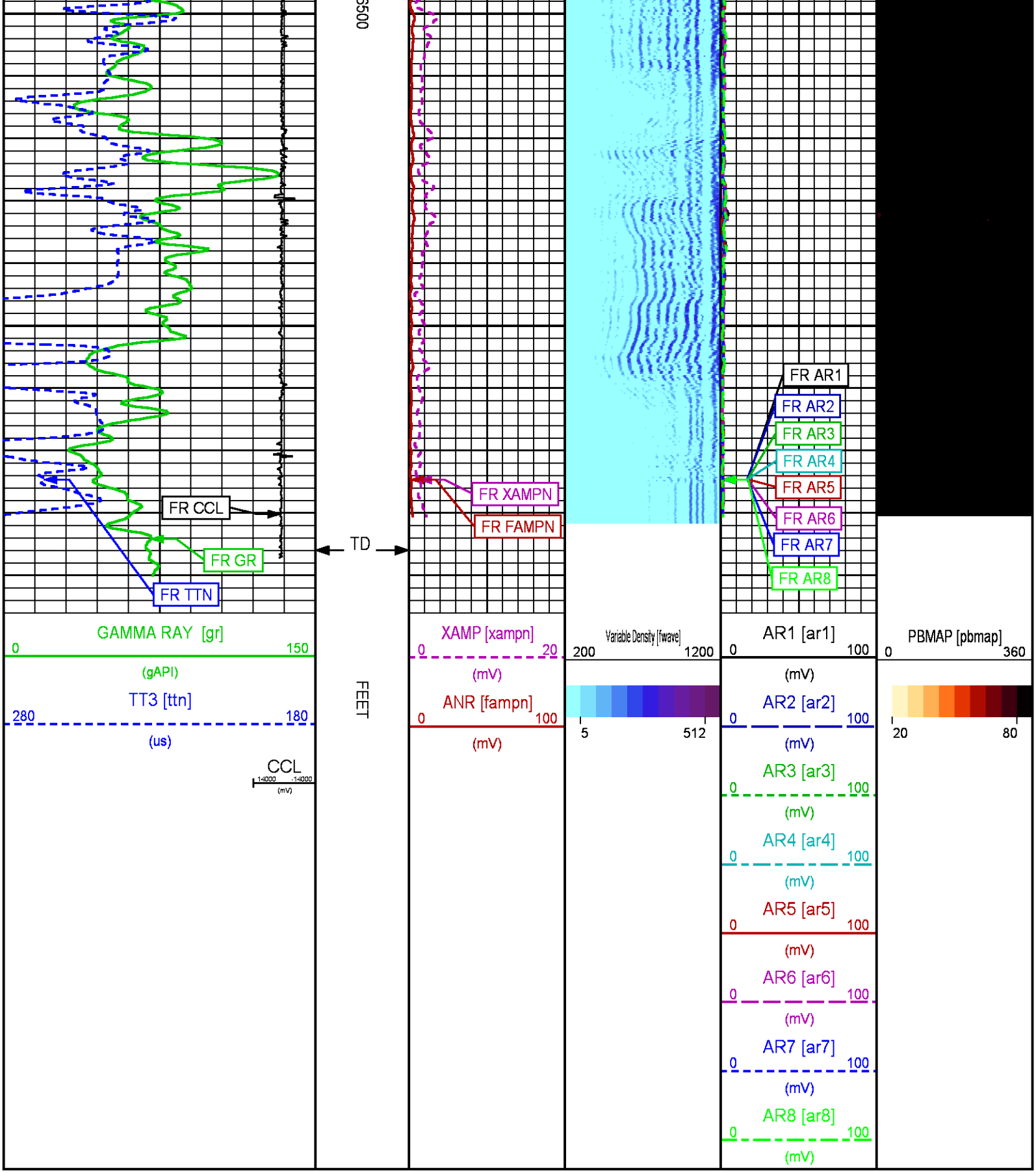


REPEAT PRESENTATION 0 PSI

ECLIPS 6.2i ECLIPS General Release Rel 6.2i Wed Jun 12 12:21:40 CDT 2013
Updates: 1,36 Patches: 9

Plotted: Wed Jul 27 14:22:29 2016

PARAMETER AND FILTER SUMMARY REPORT

FILE: /dat1a/CH108534/n012g01.prm
LOGGING MODE: DEPTH DIRECTION: UP
TOP DEPTH: 6260.250 ft BOTTOM DEPTH: 6588.000 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		TOP	BOTTOM

ANALOG RAL PROCESSING

MEASUREMENT TYPE	PARAMETER	VALUE	UNITS	INTERVAL (ft)	
AMPLITUDE WINDOW (NEAR)	AMP WINDOW START (fgpn*)	187	us	TOP	BOTTOM
	AMP WINDOW LENGTH	25	us	"	"
TRAVEL TIME WINDOW (NEAR)	TT WINDOW START (ttn*)	174	us	"	"
	TT WINDOW LENGTH	444	us	"	"
	FIRST BRK THRESHOLD (ttn*)	4	mV	"	"
RAL CASING PARAMETERS	PPT NEAR	200.391	us	"	"
RAL TOOL DELAY	TOOL DELAY (strn*)	-69	us	"	"
BASELINE NOISE (NEAR)	NOISE WINDOW START	125	us	"	"
	NOISE WINDOW LENGTH	25	us	"	"

CURVE DESCRIPTION REPORT

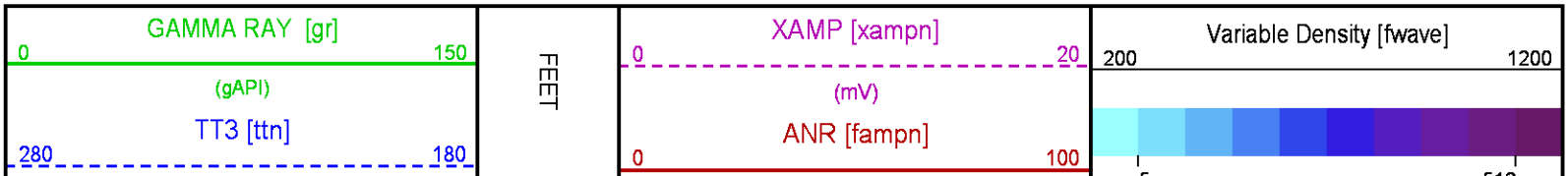
CURVE NAME	CREATION DATE	CURVE DESCRIPTION
F1:CCL	Jul 27 11:49:13 2016	CASING COLLAR LOCATOR
F1:FAMPN	Jul 27 11:49:13 2016	FIXED GATE AMPLITUDE NEAR RECEIVER
F1:FWAVE	Jul 27 11:49:13 2016	FAR WAVE FORM
F1:GR	Jul 27 11:49:13 2016	GAMMA RAY
F1:TTN	Jul 27 11:49:13 2016	TRAVELTIME FROM NEAR TRANSMITTER-RECEIVER
F1:XAMPN	Jul 27 11:49:13 2016	FIXED GATE AMPLITUDE NEAR RECEIVER TIMES FIVE

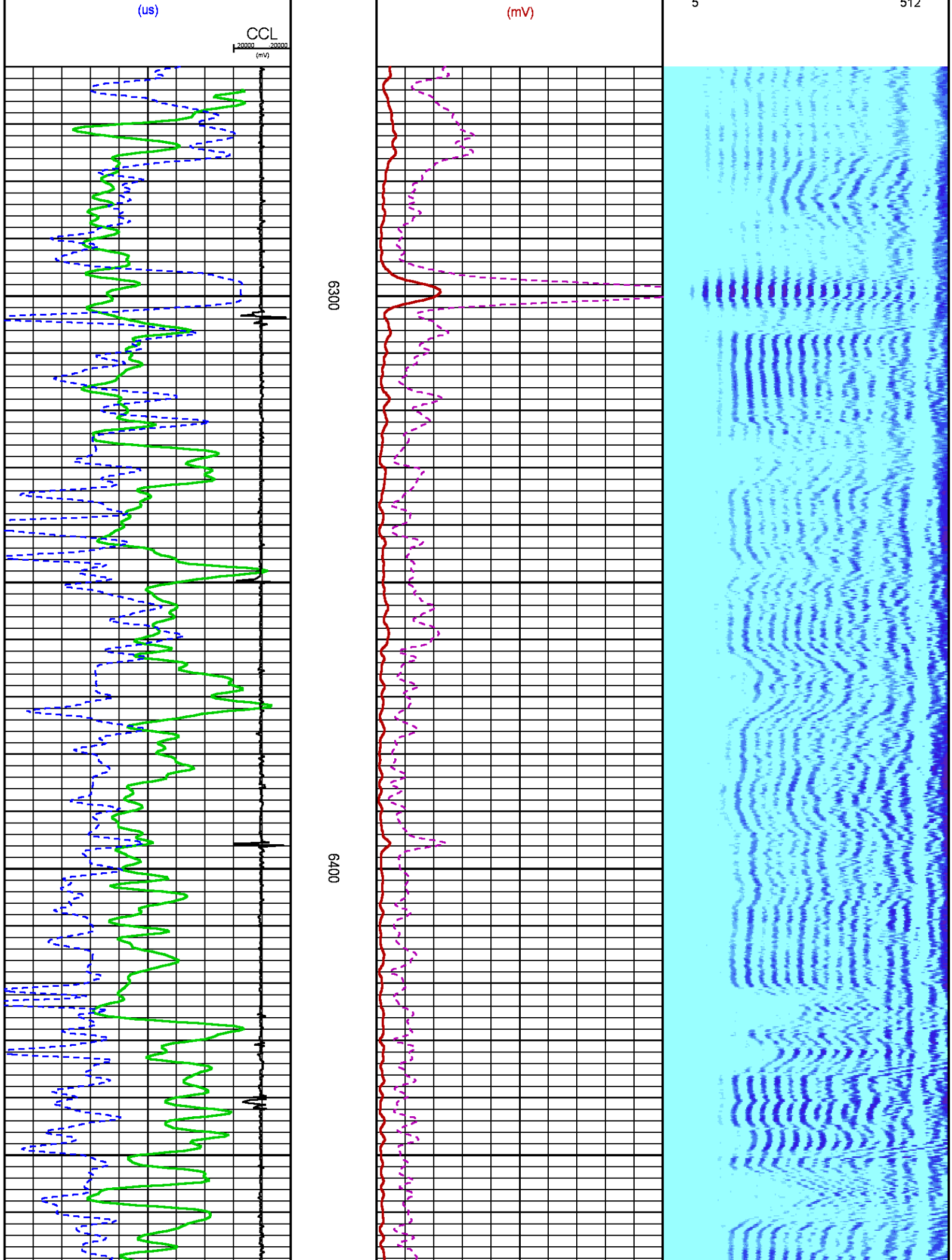
CURVE MEASURE POINT OFFSET

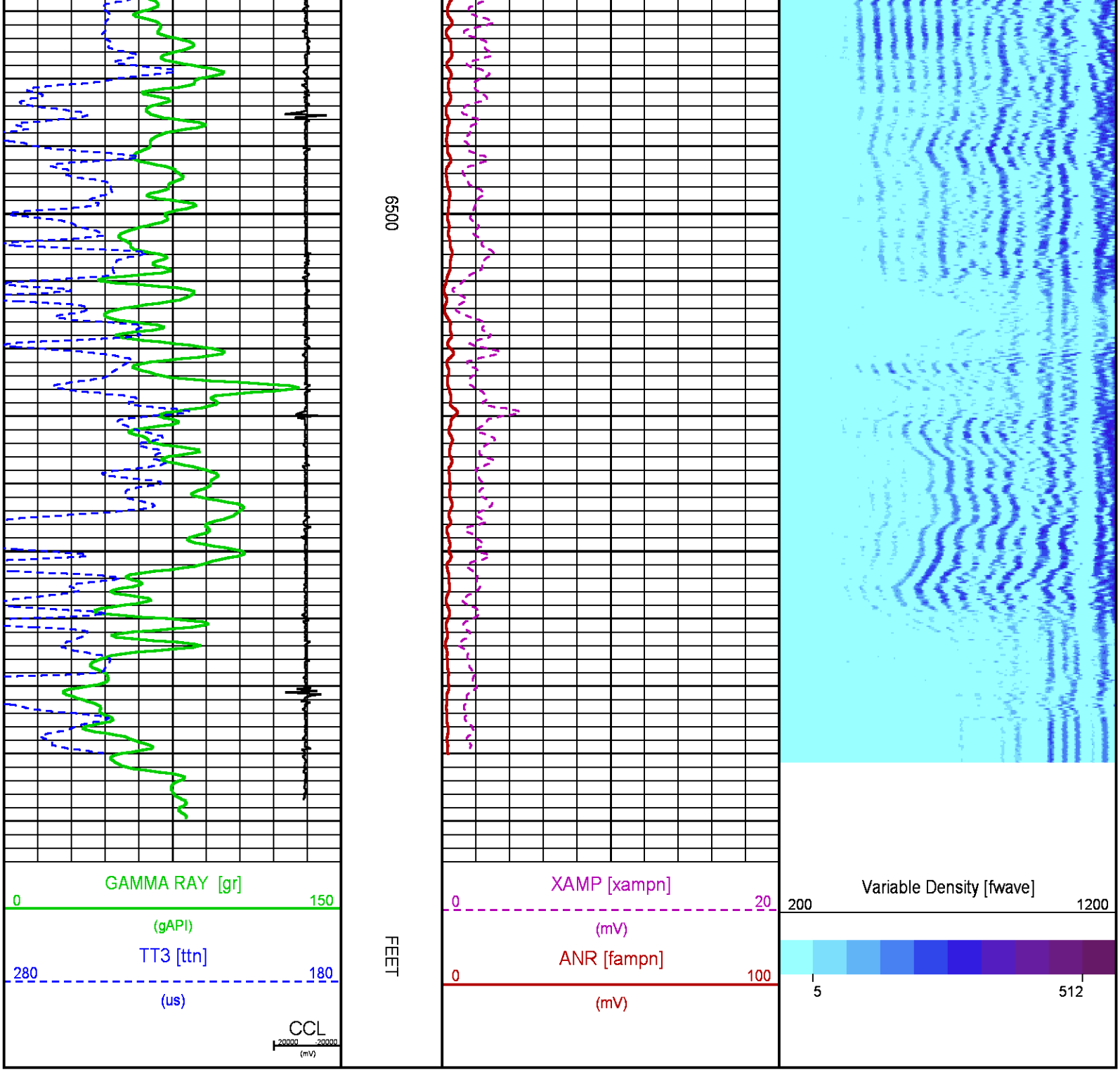
CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)	CURVE	OFFSET (ft)
CCL	5.75	GR	1.75	XAMPN	11.25		
FAMPN	11.25	TTN	11.25				

Presentation : cas6685:/dat1a/CH108534/421CBL_REPEAT.fvpdf [5"/100' Scale]
Plot Interval : 6260 - 6595 Feet

Data File 1 : F1 : cas6685:/dat1a/CH108534/421CBL_REPEAT.xtf
Created On : Jul 27 11:49:13 2016
Company : TERRA ENERGY PARTNERS LLC
Well : FEDERAL GM 421-9
Field : GRAND VALLEY
File Interval : 6253.25 - 6592.5 Feet
OCT : n012g




(us)
CCL
20000
-20000
(mV)
6300
6400
(mV)
5
512



CALIBRATION / VERIFICATION SUMMARY

Source File: /dat1a/CH108534/n012g.tp1

RAL PRIMARY CALIBRATION SUMMARY

TOOL #: 1426XA 10417452

DATE/TIME PERFORMED: Wed Jul 27 11:21:08 2016

UNIT #: 3885TC 6685

	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	0.11	0.01	0.07	0.02	-0.02	-0.04	-0.03	0.03	0.48	-0.01
AMP FLUID (mV)	115	115	114	114	114	114	114	114	114	152	113
TT (us)	216	216	216	217	217	216	215	214	216	325	216
M FACTOR	0.87	0.87	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.99	0.88

RAL BEFORE LOG VERIFICATION SUMMARY

TOOL #: 1426XA 10417452 DATE/TIME PERFORMED: Wed Jul 27 11:23:05 2016 DAYS SINCE CAL: 0

UNIT #: 3885TC 6685 CABLE #: SM6670 SMALL1

	NEAR (mV)	R1 (mV)	R2 (mV)	R3 (mV)	R4 (mV)	R5 (mV)	R6 (mV)	R7 (mV)	R8 (mV)	FAR (mV)	CAL (mV)
ZERO	-0.08	-0.00	0.05	-0.05	0.03	-0.03	0.03	-0.05	0.00	0.12	-0.02
AMP AIR	0.53	0.38	0.13	0.65	0.43	0.48	0.69	0.45	0.35	0.43	100.14

SHOP M FACTOR	SHOP A FACTOR	WIRELINE FACTOR
0.88	0.00	1.00

GR PRIMARY CALIBRATION SUMMARY

TOOL #: 1355XA 11871508 DATE/TIME PERFORMED: Mon Jul 25 09:27:32 2016

UNIT #: 3885TC 6685 CALB JIG #: 4702NK BA-905

	BACKGROUND (cts)	CALBRTR ON (cts)	CR DIFF (cts/s)	MULT	BACKGROUND (gAPI)	CALBRTR ON (gAPI)	CALBRTR (gAPI)
GR	54.76	202.27	147.5	1.017	55.68	205.68	150

TEMP PRIMARY CALIBRATION SUMMARY

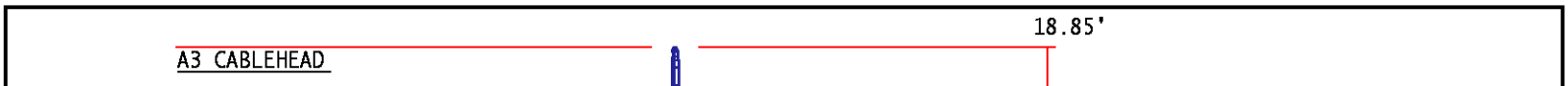
TOOL #: 1355XA 11871508 DATE/TIME PERFORMED: Tue Jul 26 08:33:08 2016

UNIT #: 3885TC 6685

	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/CH108534/CBL-tdg



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

NEAR RCVR — 11.17'
FAR RCVR — 10.21'
CCL — 5.79'
GR — 1.67'
TEMP — 0.17'
0.00

TOTAL LENGTH: 18.85'
TOTAL WEIGHT: 213 lbs
MAX DIAMETER: 0'2.75"

BAKER HUGHES / ECLIPS	COMPANY	TERRA ENERGY PARTNERS LLC	FILE NO: CH108534
	WELL	FEDERAL GM 421-9	API NO: 05045225290000
	FIELD	GRAND VALLEY	
	COUNTY	GARFIELD STATE COLORADO	
	LOCATION: SHL: 644' FNL & 578' FWL; BHL: 1166' FNL & 1379' FWL	ELEVATIONS: KB 6111 FT; DF; GL 6087 FT	S.9 T.7S R.96W; PAD: MV 16-9; RIG: H&P 318
	SEC 9 TWP 7S RGE 96W	DATE 27-Jul-2016	