



**DISCLAIMER**  
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**OTHER SERVICES1**  
 OS1:  
 OS2:  
 OS3:  
 OS4:  
 OS5:

**OTHER SERVICES2**  
 OS1:  
 OS2:  
 OS3:  
 OS4:  
 OS5:

**REMARKS: RUN NUMBER 1**  
 Hole drilled with RCB bottom hole assembly (BHA) at 9-7/8" BS  
 Bit dropped using Mechanical Bit Release (MBR) prior to logging.  
 Drilled TD was 3782.5 mbrf.  
 Drill pipe set at 3151.57 mbrf.  
 Tcombo run with upper part eccentralized, lower centralized with MCD tools. See toolsketch.  
 Fluid type was Sepeolite mud weighted with Barite to a density of ppg (g/cc)  
 Depth recorded from drill floor; logs presented as-logged without depth corrections or shifts, as per client instructions.  
 All logs presented in wireline measured depth below rig floor (MDBRF).  
 Caliper opened during upward passes; closed inside pipe.  
 Hole size corrections made using caliper measurements for upward passes.  
 DSI run with P&S Mode in standard frequency, DDBHC mode; LD run in low-freq, UD run in std. freq.  
 AHC used from TD then switched off to facilitate pipe entry.  
 10.5 lb/gal mud pumped in hole prior to logging.  
 1st uplog (repeat pass) caliper not open fully due orientation and deviation.  
 2nd uplog (main pass) caliper fully opened.

**REMARKS: RUN NUMBER 2**

RUN 1		
SERVICE ORDER #:		
PROGRAM VERSION:	19C0-187	
FLUID LEVEL:		
LOGGED INTERVAL	START	STOP

RUN 2		
SERVICE ORDER #:		
PROGRAM VERSION:		
FLUID LEVEL:		
LOGGED INTERVAL	START	STOP

## EQUIPMENT DESCRIPTION






**RUN 1**

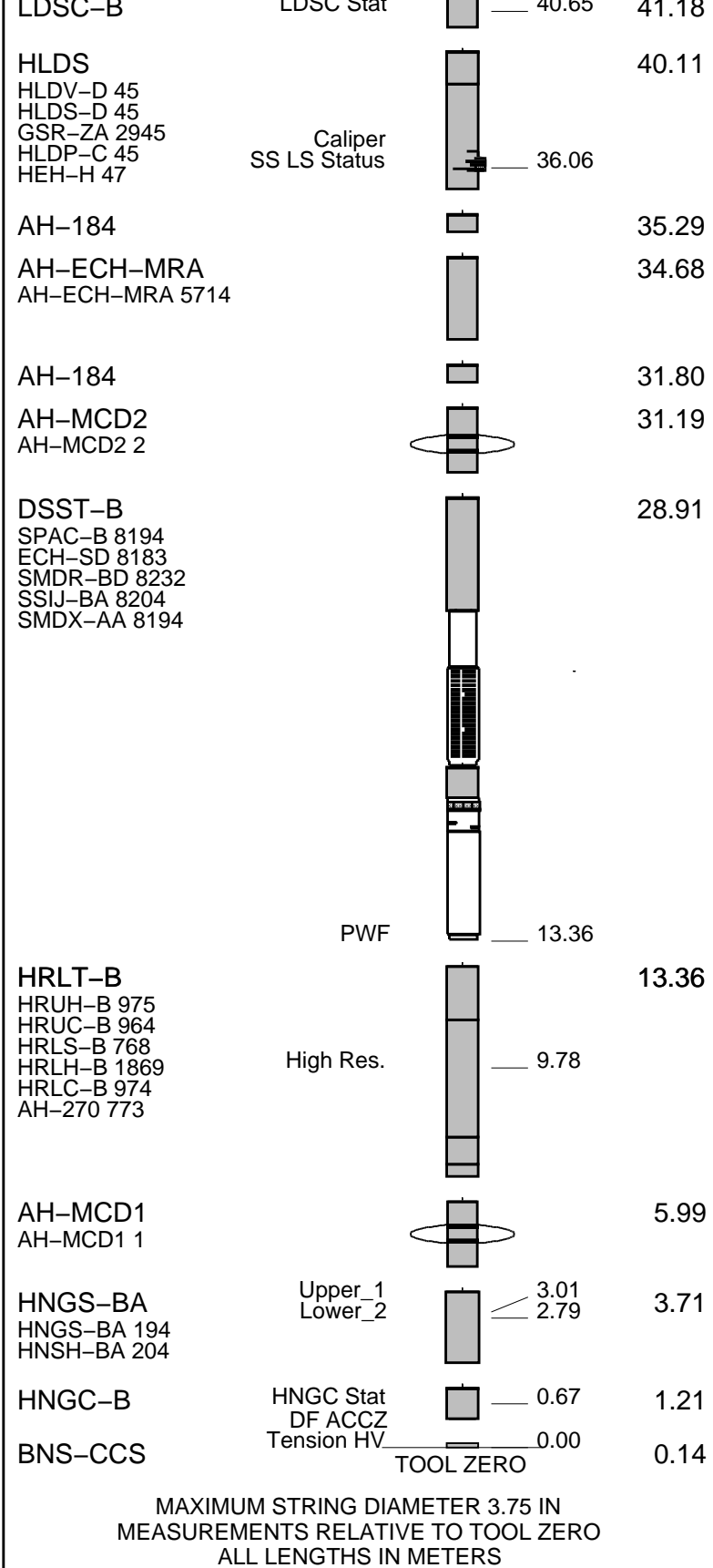
**SURFACE EQUIPMENT**

GSR-U 6098  
 WITM (EDTS)-A 1

**RUN 2**

**DOWNHOLE EQUIPMENT**

LEH-QT	MDSB_EDTC		43.16	44.48
	Mud Tempe		42.09	
AH-369	CTEM		41.52	43.60
	Gamma Ray		41.52	
EDTC-B	EFTB DIAG		41.18	43.16
EDTH-B 8303	TelStatus			
EDTC-B 8317	EDTCB Ele		41.18	
LDSC-B	LDSC Stat		40.65	41.18

MAXIMUM STRING DIAMETER 3.75 IN  
 MEASUREMENTS RELATIVE TO TOOL ZERO  
 ALL LENGTHS IN METERS

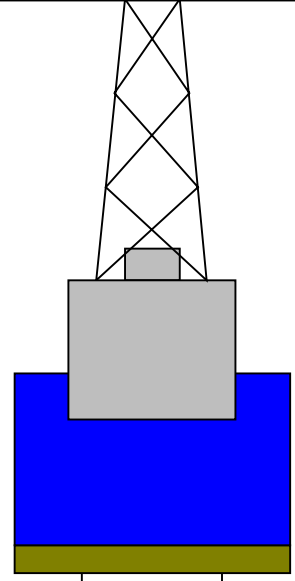
Production String	(in)	(M)	Well Schematic	(M)	(in)	Casing String
	OD	ID		MD	MD	

Kelly Bushing Elevation  
Derrick Floor Elevation

Mean Sea Level

0  
0

11



4.1



3081.7 4.1  
3151.57 9.875  
3782.5

Sea Floor

Open Hole

Total Depth

**Input DLIS Files**

DEFAULT	Flip_NGS_HRLA_DSI_055LUP	PRODUCER	14-Oct-2017 14:04	3781.2 M	3031.2 M
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**Output DLIS Files**

DEFAULT	NGS_HRLA_DSI_LDL_061PUP	FN:61	PRODUCER	15-Oct-2017 17:57	3781.2 M	3031.2 M
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**OP System Version: 19C0-187**

HNGC-B	19C0-187	HNGS-BA	19C0-187
HRLT-B	19C0-187	DSST-B	19C0-187
HLDS	19C0-187	LDSC-B	19C0-187
EDTC-B	SKK-5169-EDTCB		

**PIP SUMMARY**

Time Mark Every 60 S

<b>HNGS Spectroscopy Gamma Ray (HSGR)</b>		
0	(GAPI)	100
<b>Peak Coherence / TA - Upper Dipole (CHT2)</b>		
-2	(-----)	8
<b>Peak Coherence / RA - Upper Dipole (CHR2)</b>		
0	(-----)	10

Waveform Data Copy Indicator 2 - Upper Dipole (WC12)

0 (----) 10

Flipped Downlog

SAM2 Waveform Gain (WFG2)

0 (----) 1000

Calibrated Downhole Force (CDF) (LBF)

5000 0

Min Amplitude Max Tr.Array U.Dipole Slow Proj. CVDL (SPT2) (US/F) 1040

Min Amplitude Max Rec.Array U.Dipole Slow Proj. CVDL (SPR2) (US/F) 1040

Bit Size (BS)

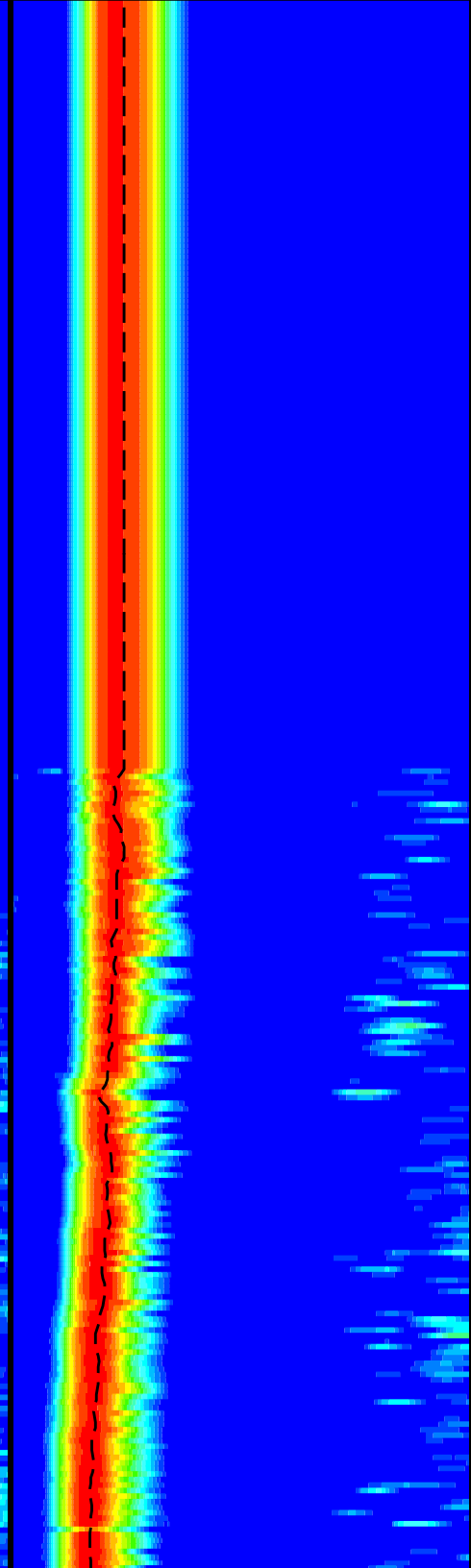
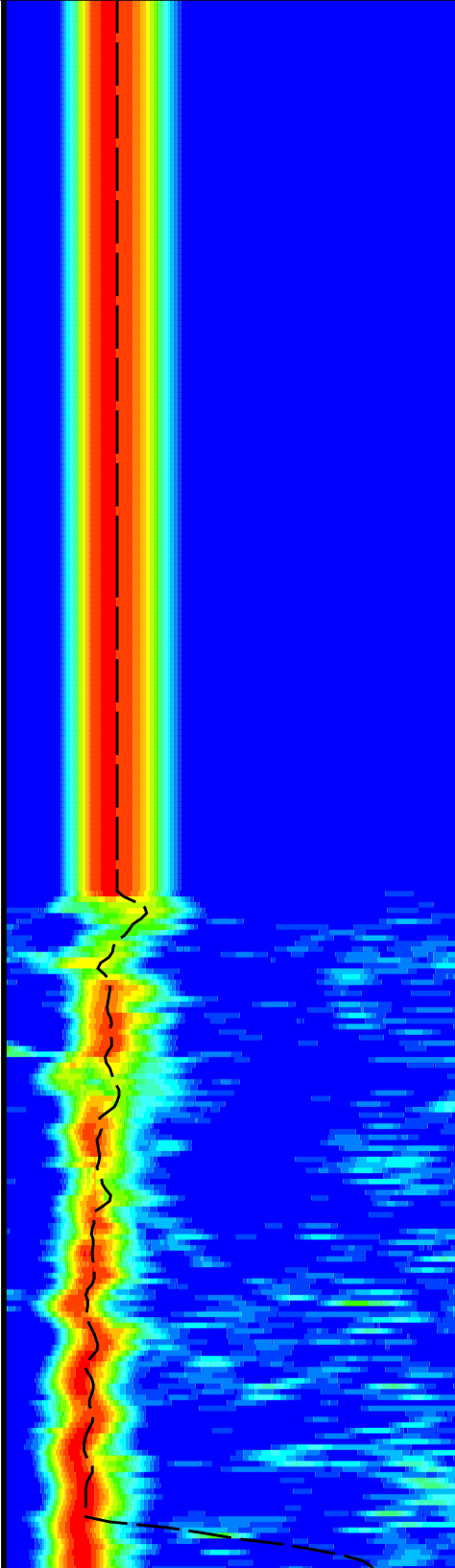
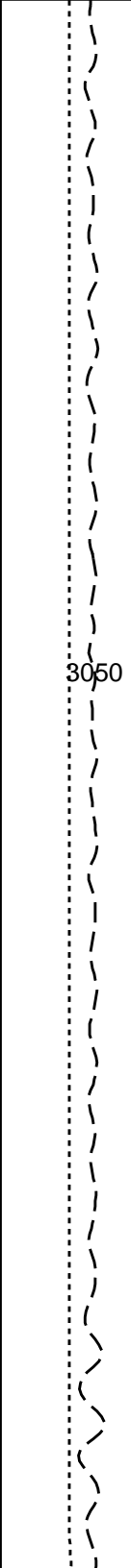
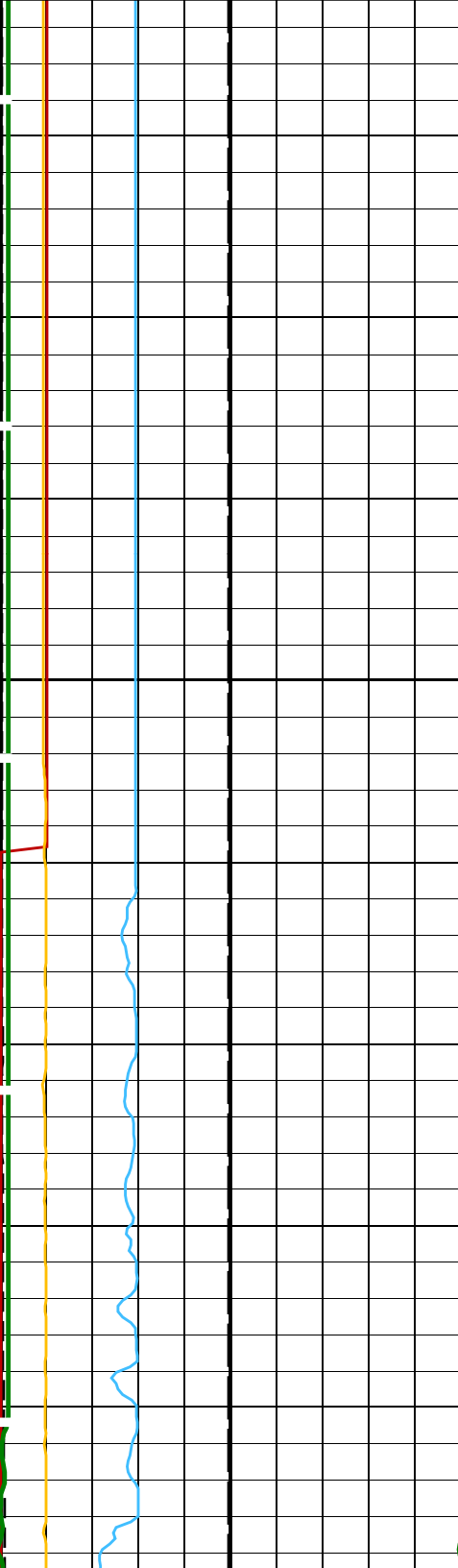
0 (IN) 20

Tension (TENS) (LBF)

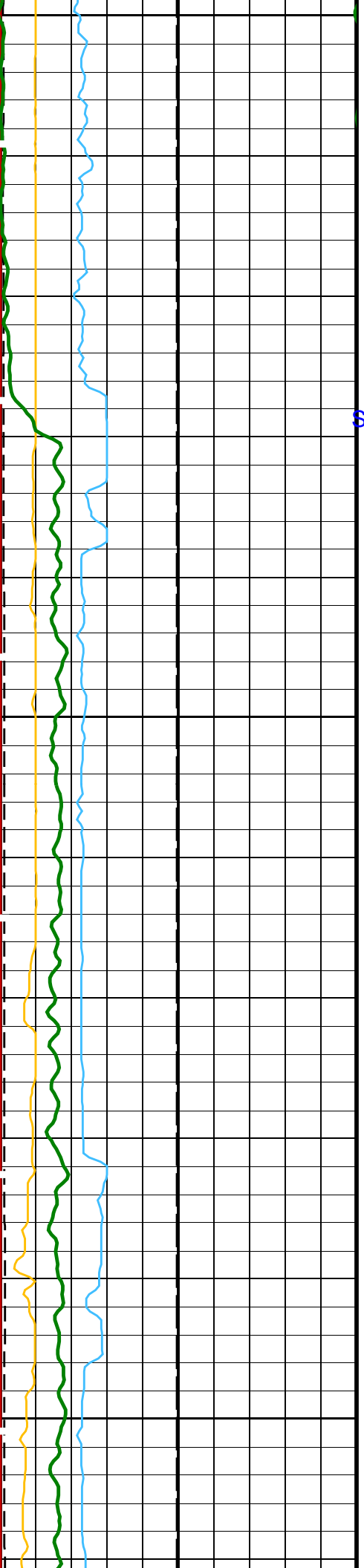
10000 0

Delta-T Shear / TA - Upper Dipole (DT2T) (US/F) 1040

Delta-T Shear / RA - Upper Dipole (DT2R) (US/F) 1040



3050

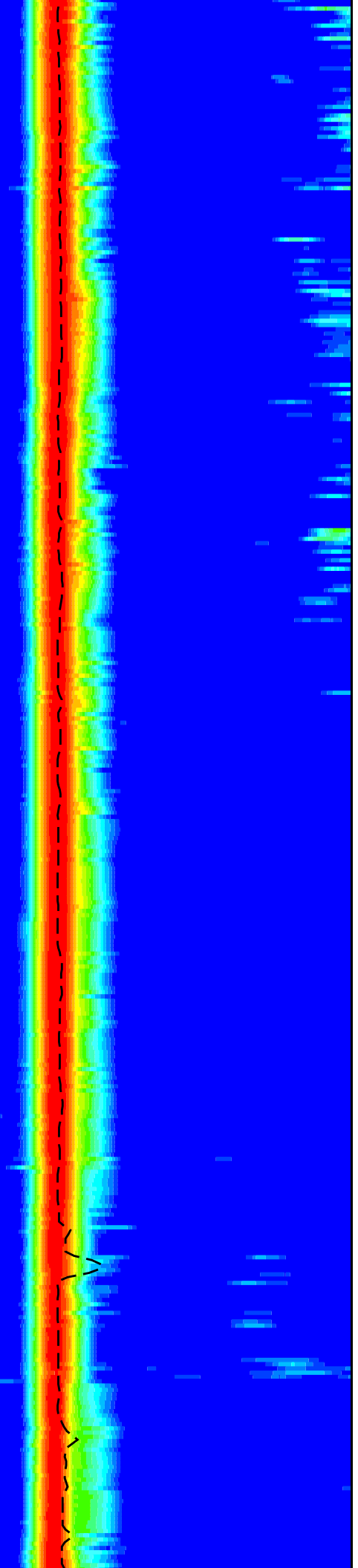
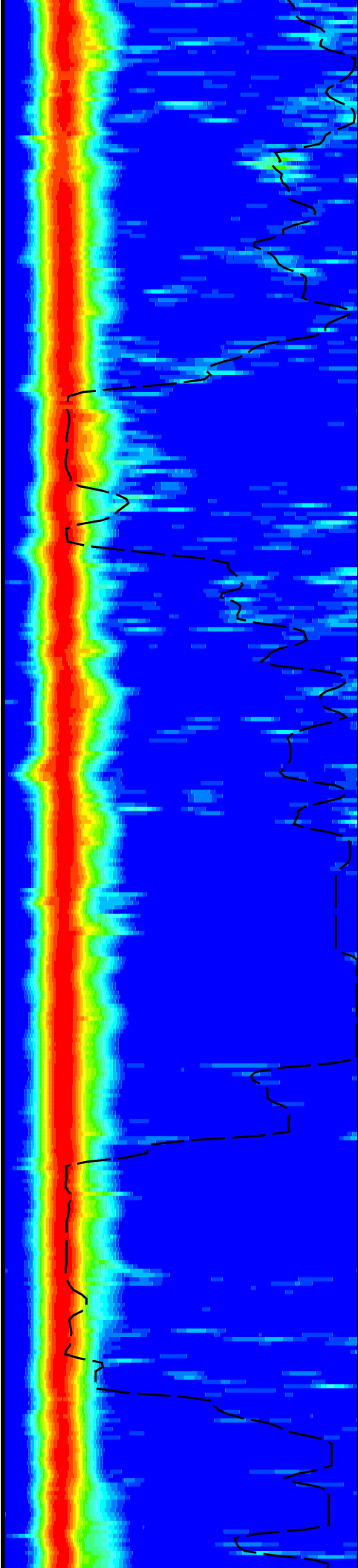


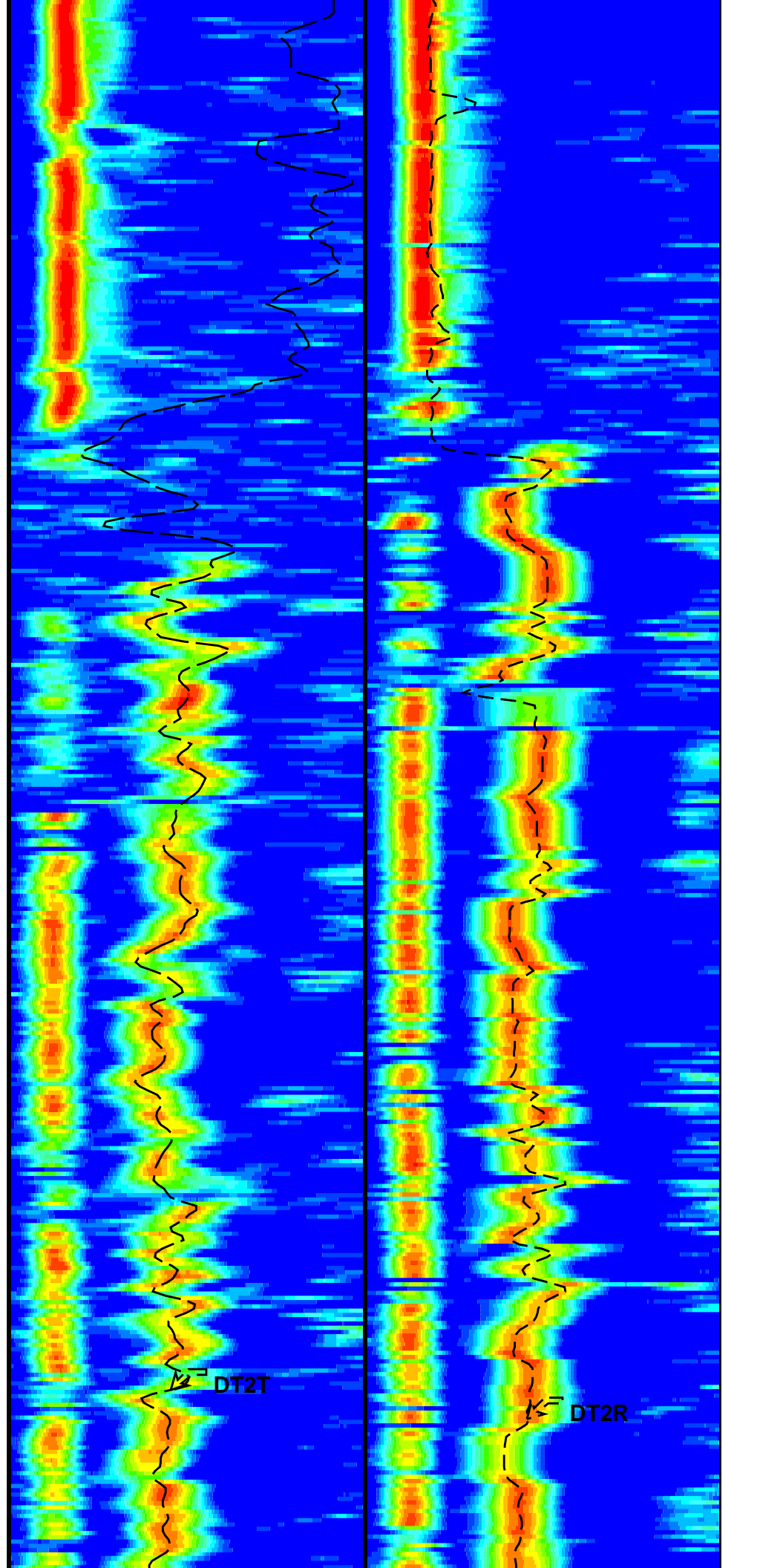
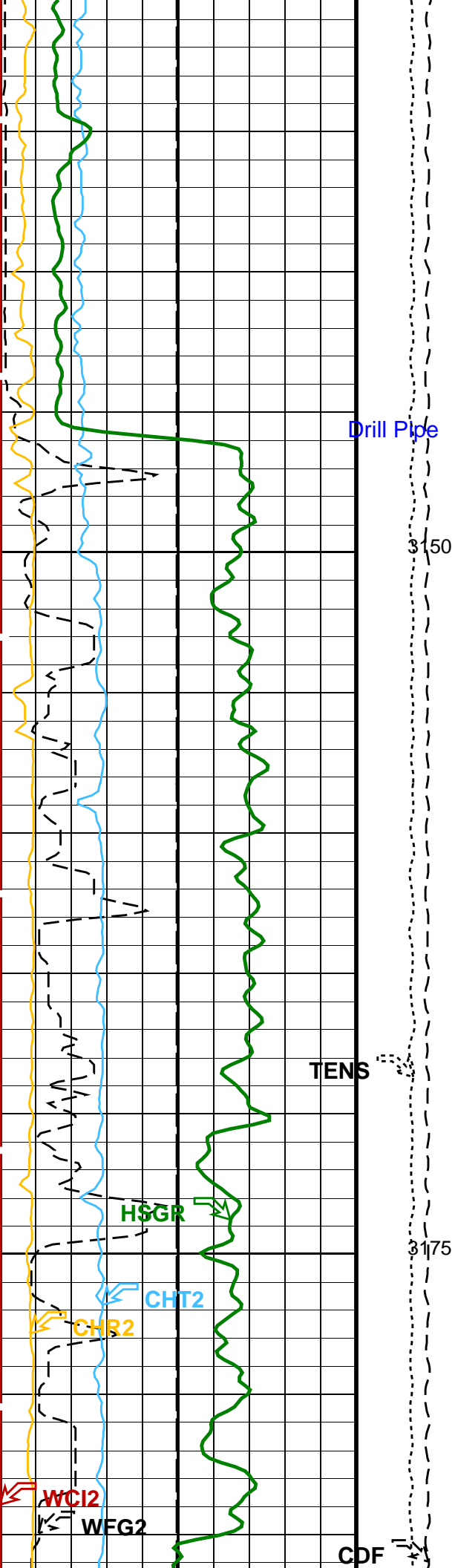
Sea Floor

3075

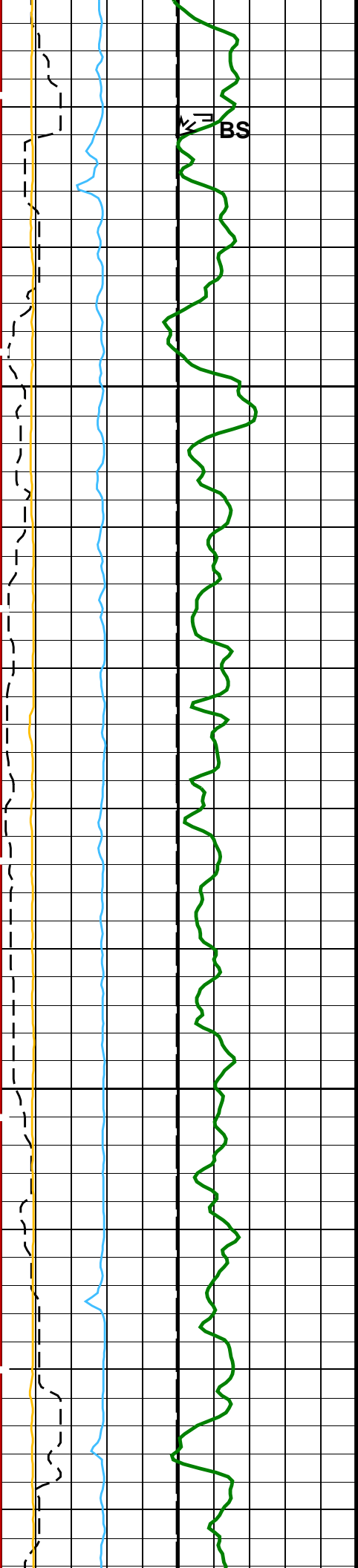
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3125



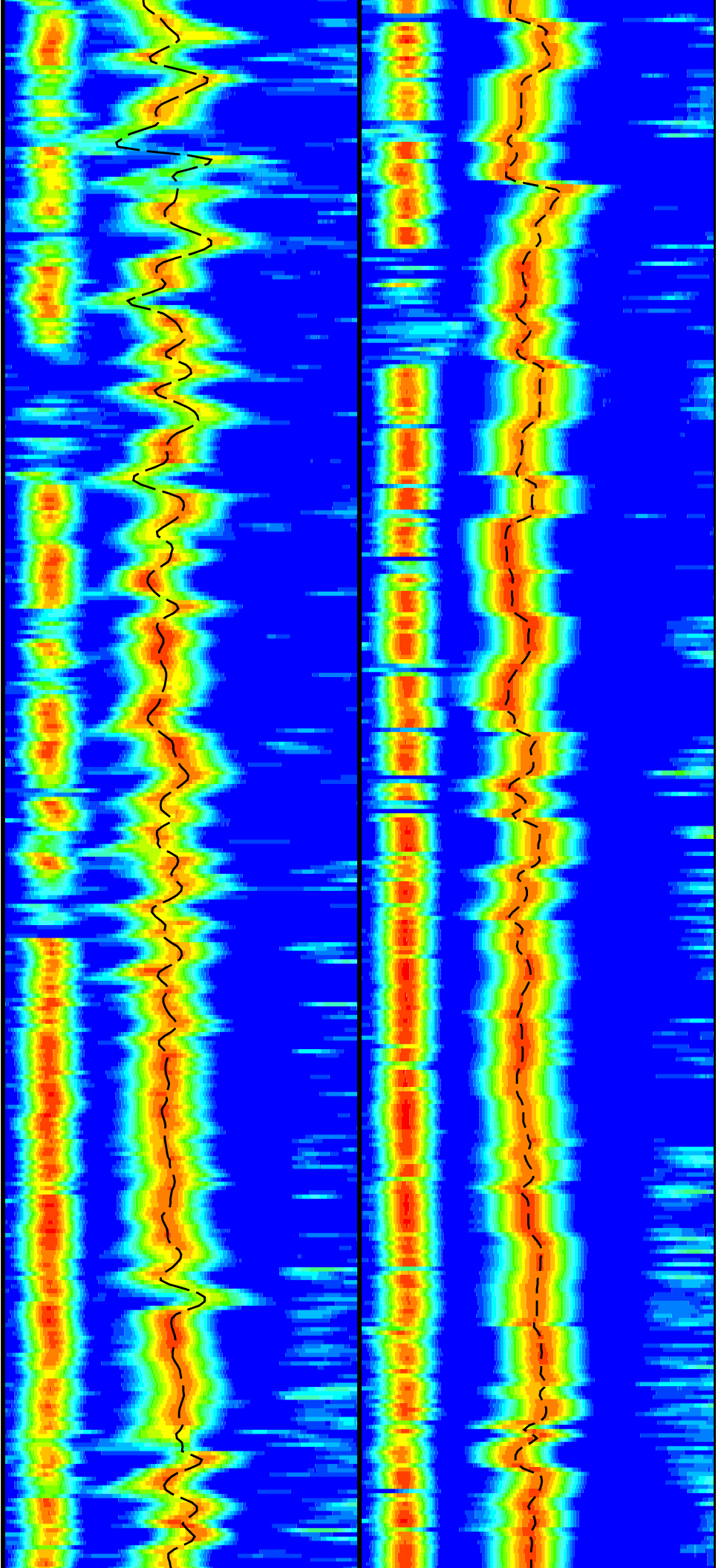


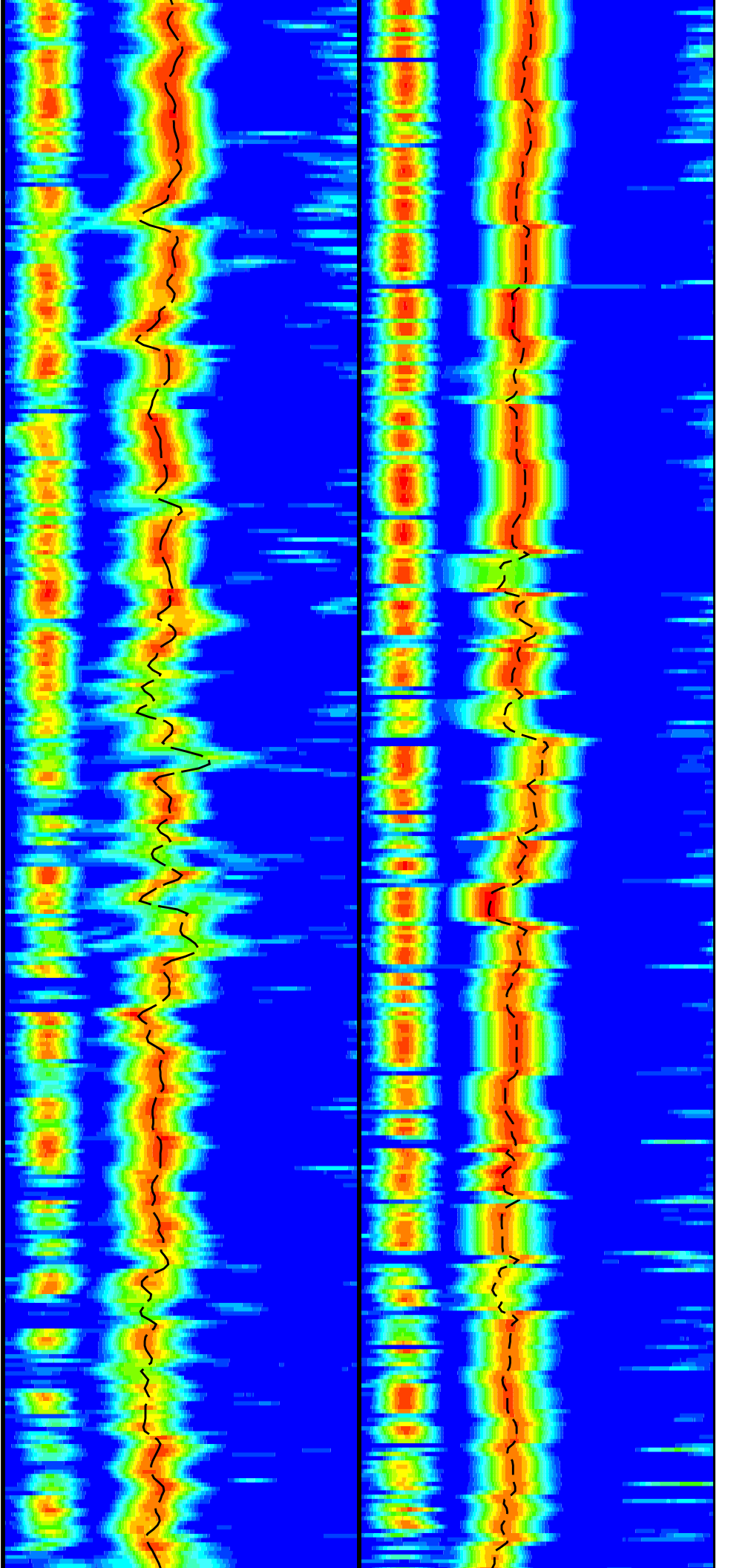
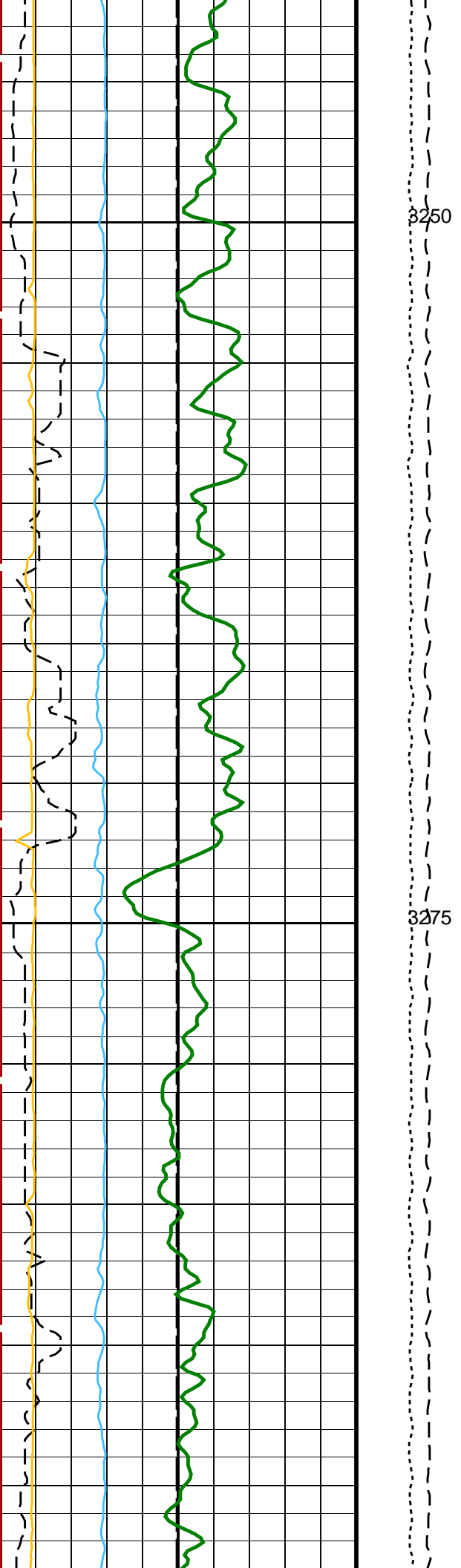


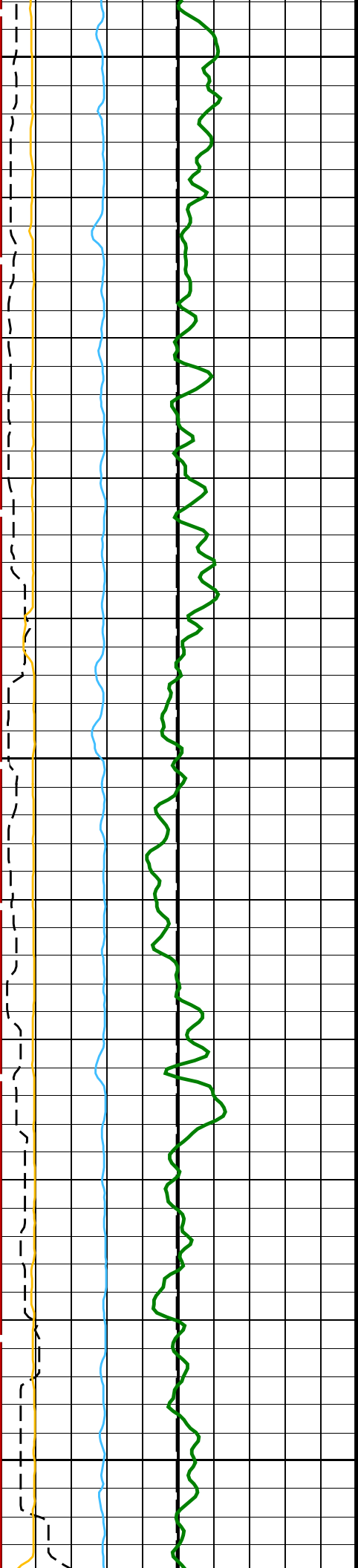


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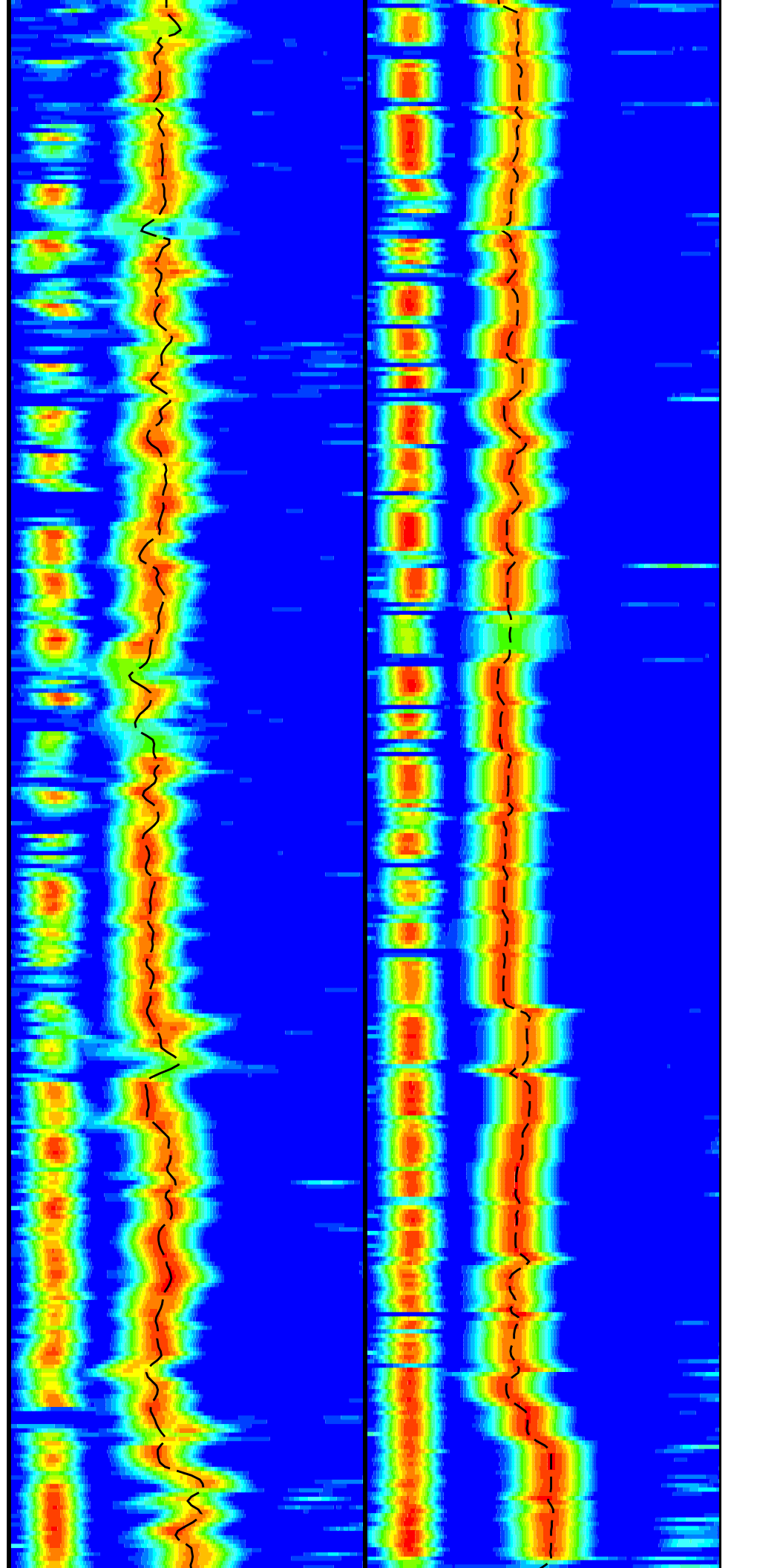
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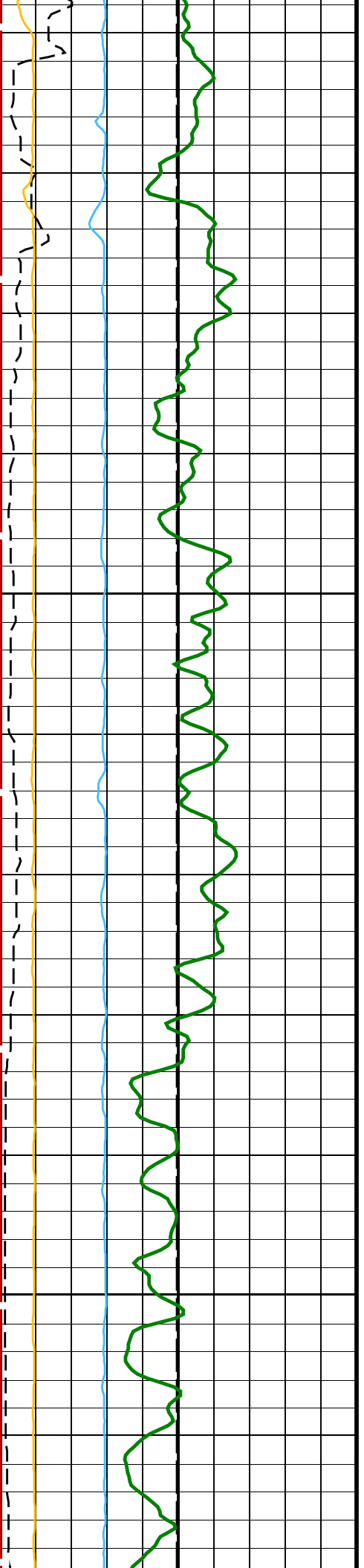






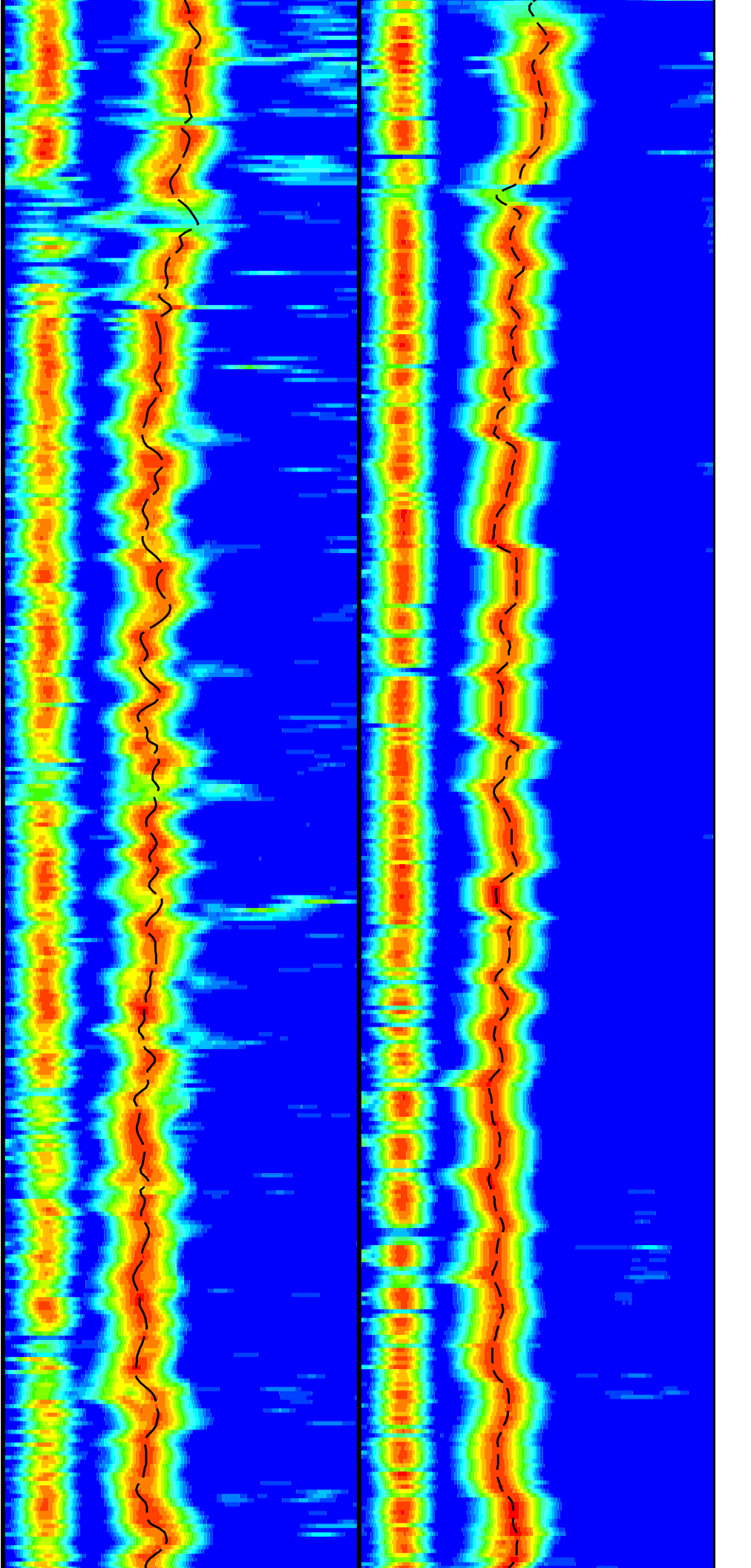
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3350

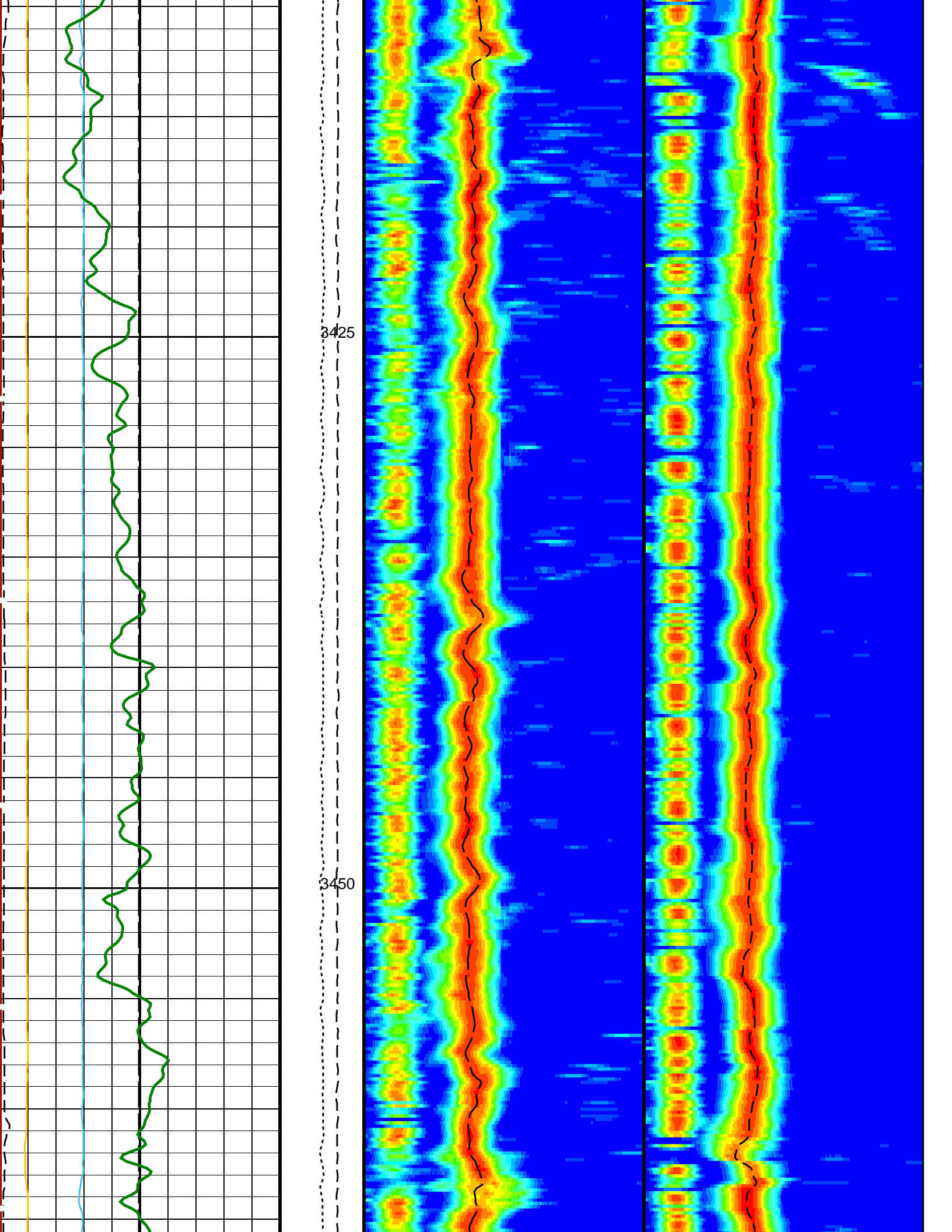




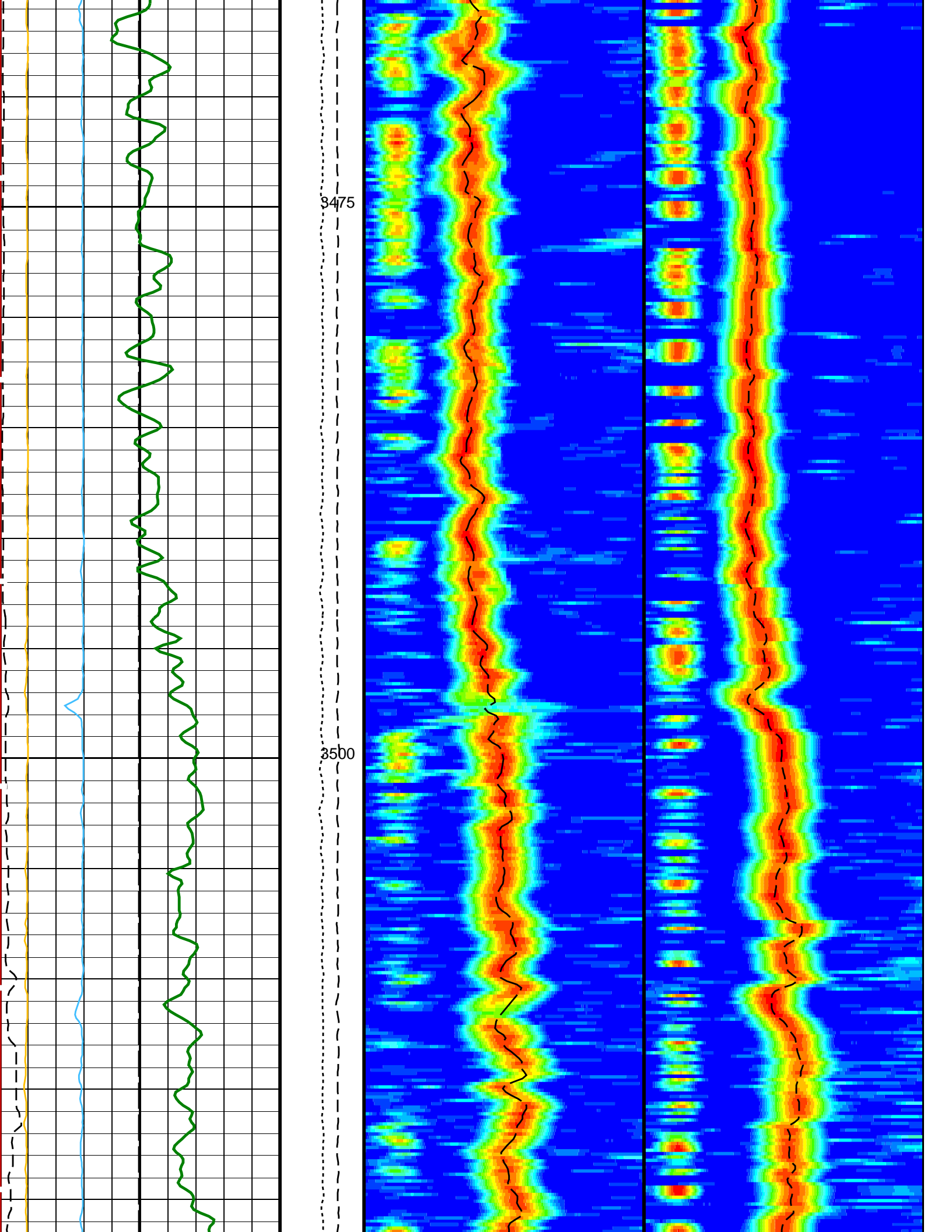
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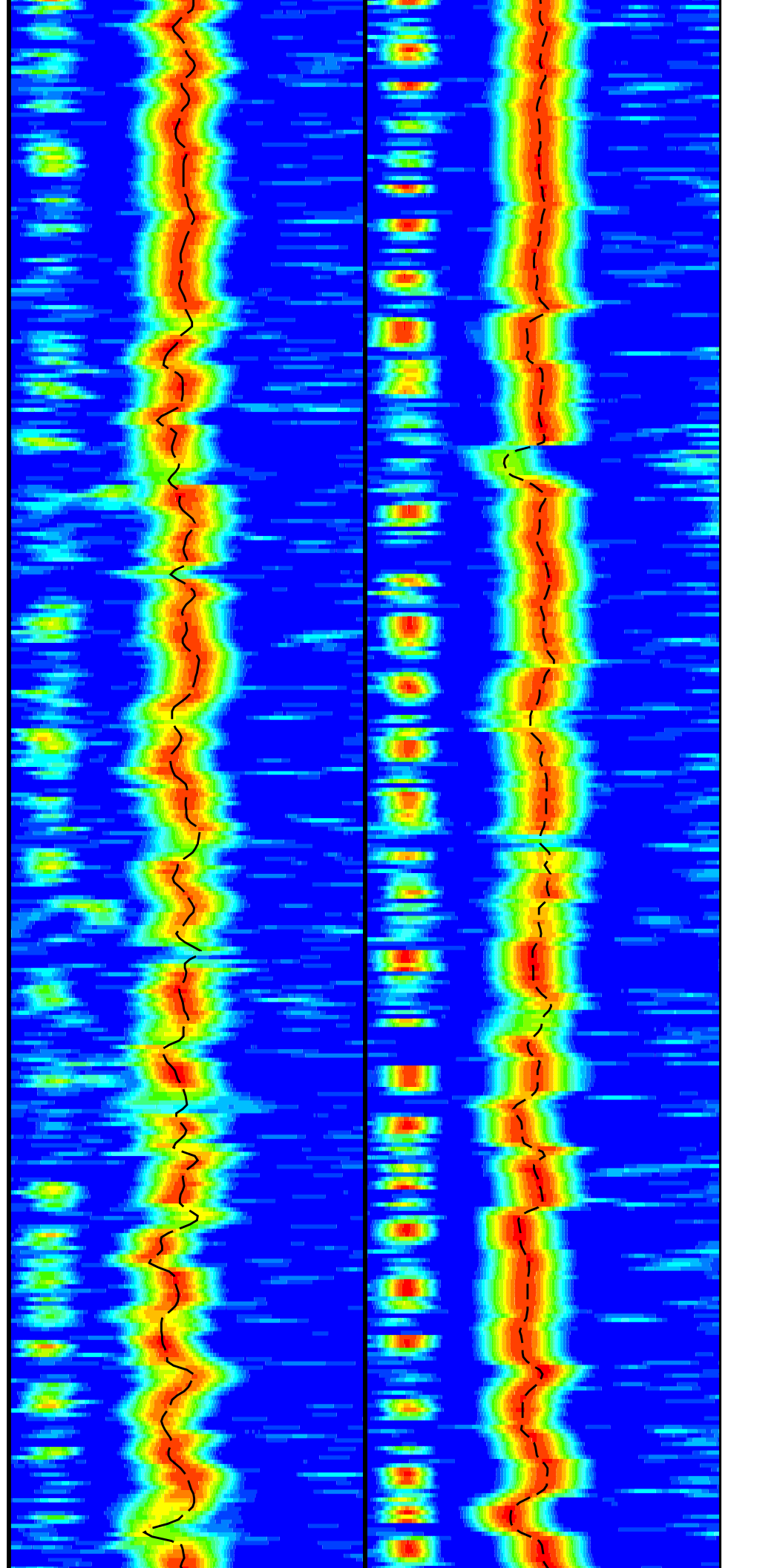
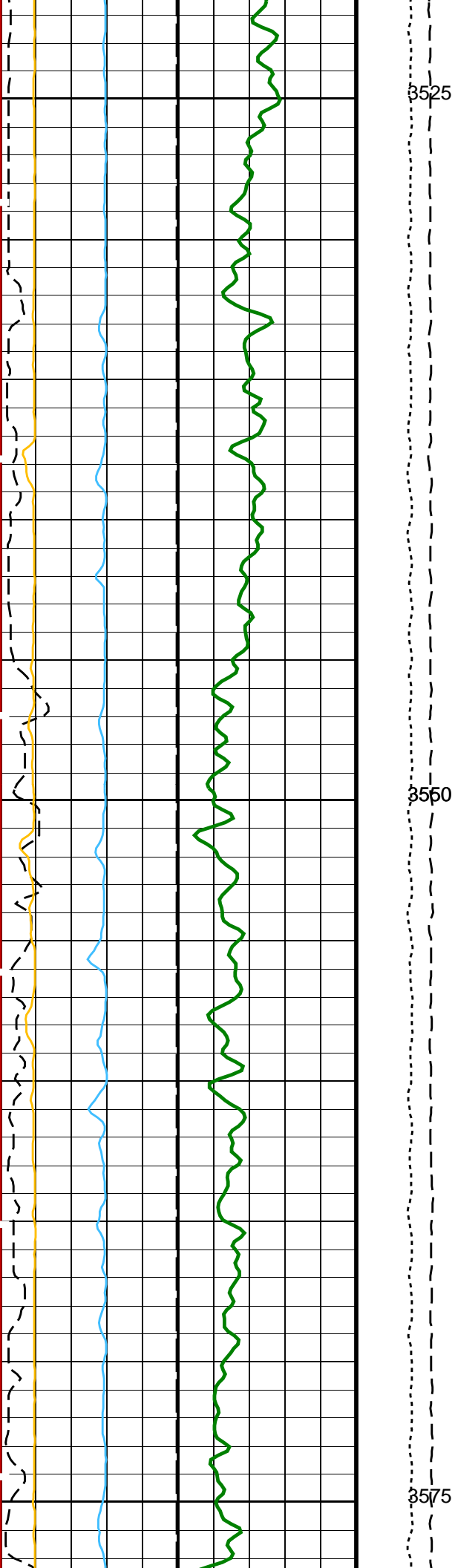
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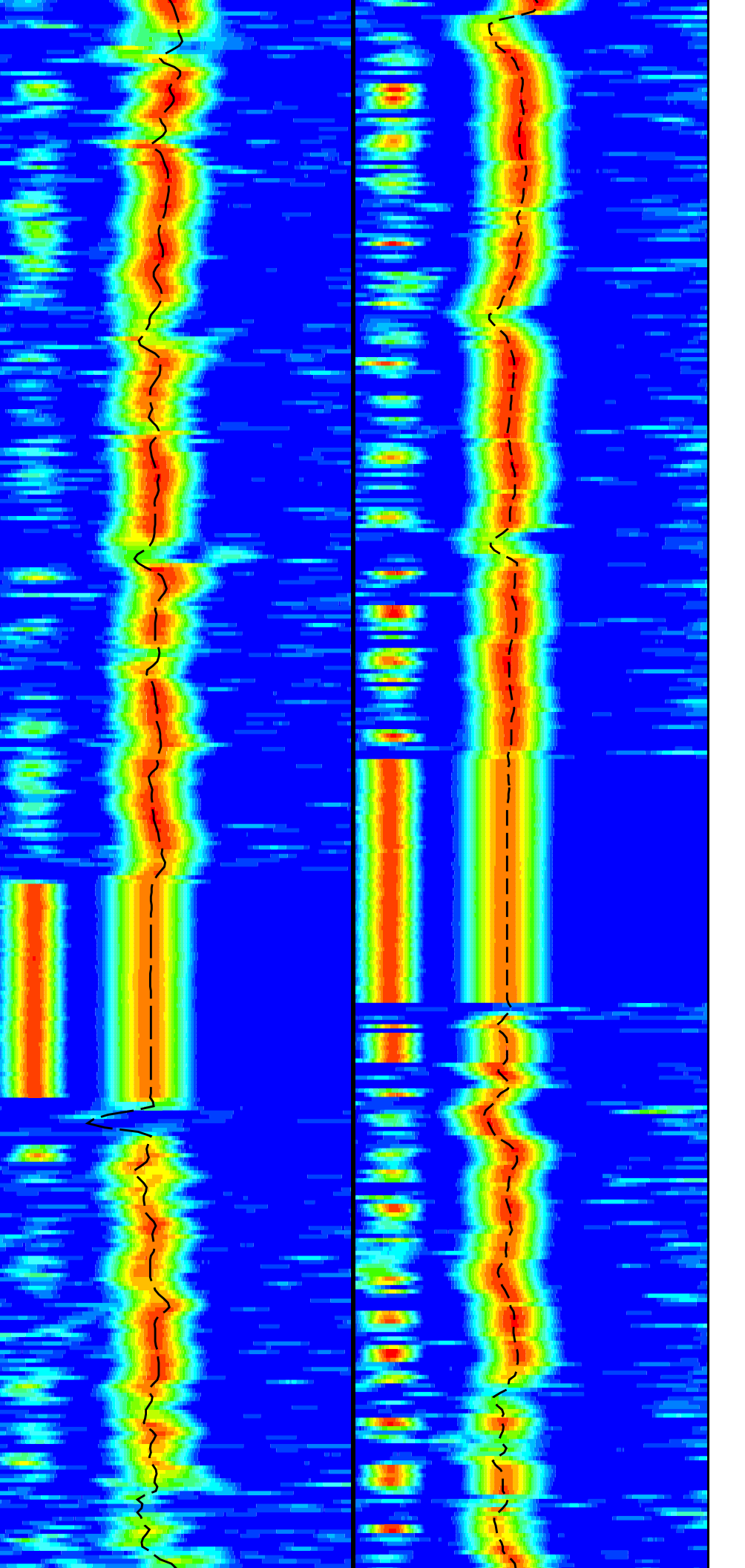
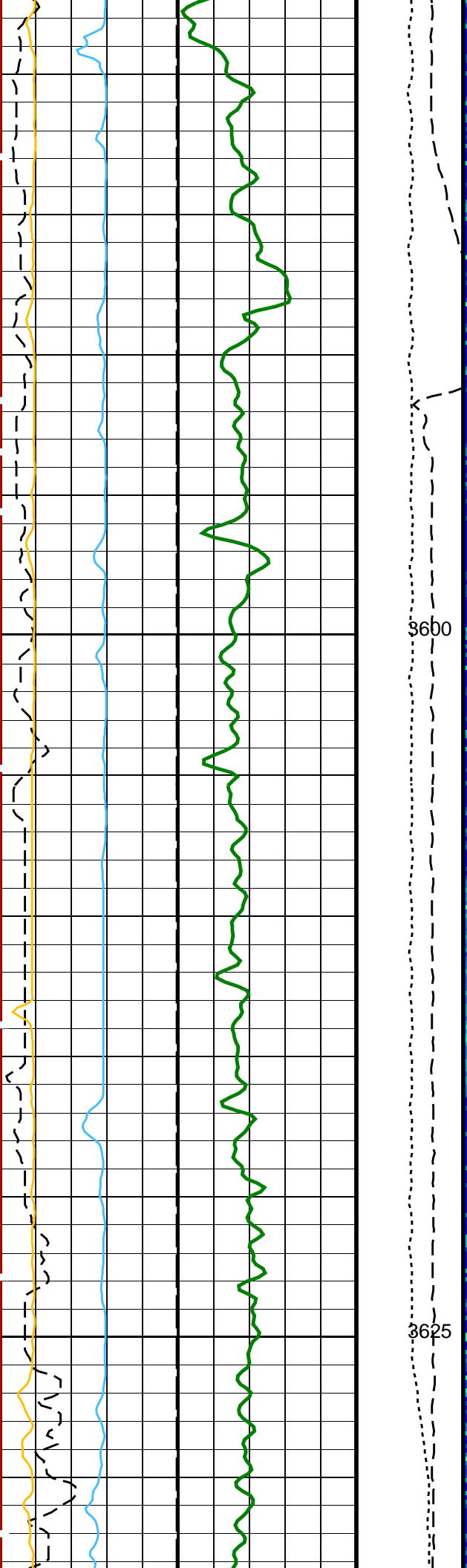




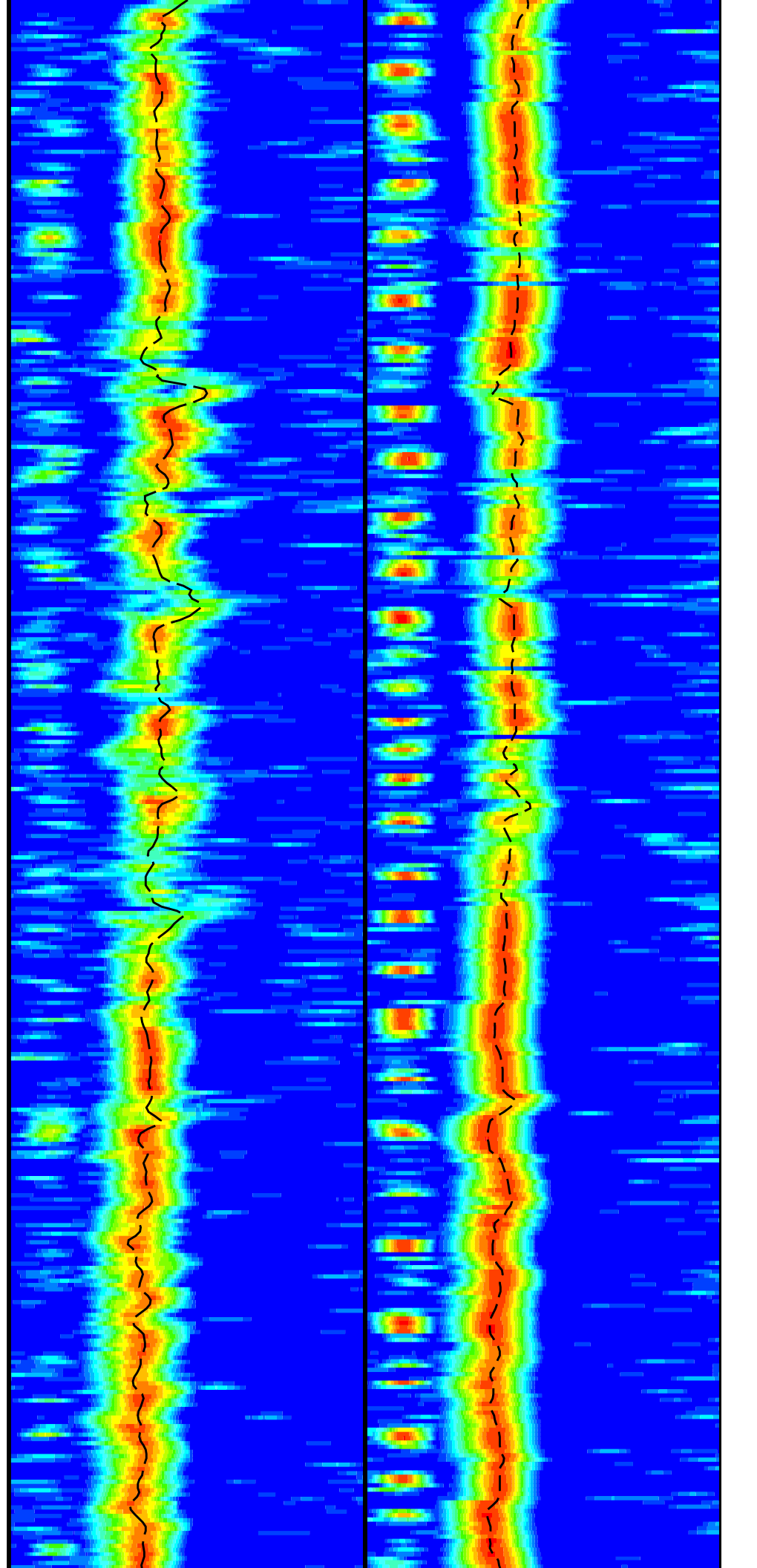
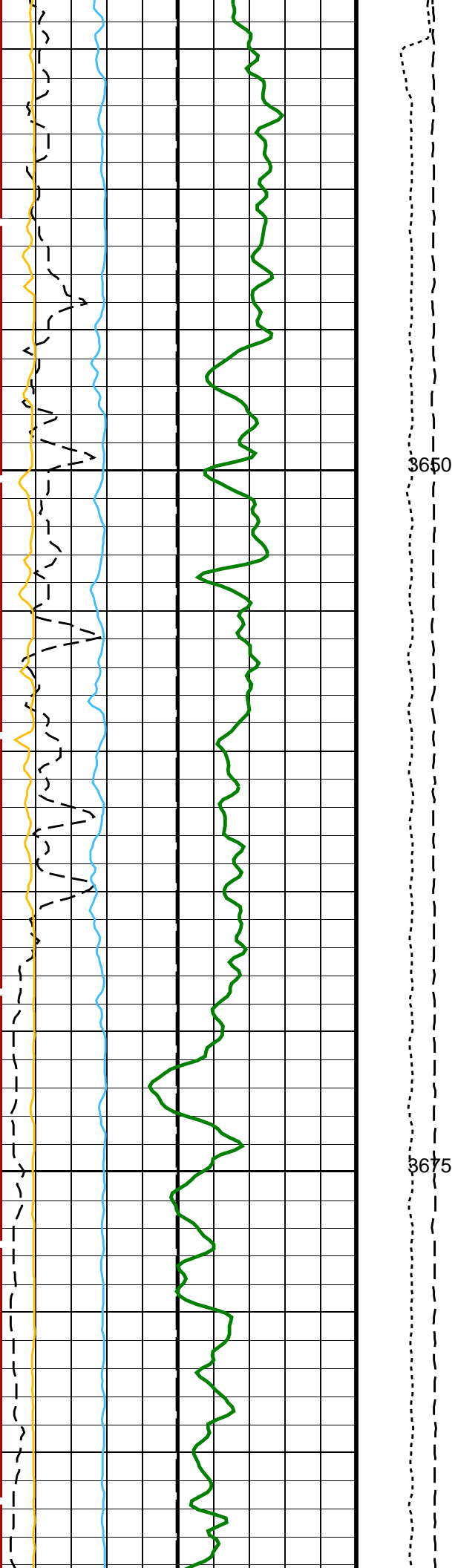


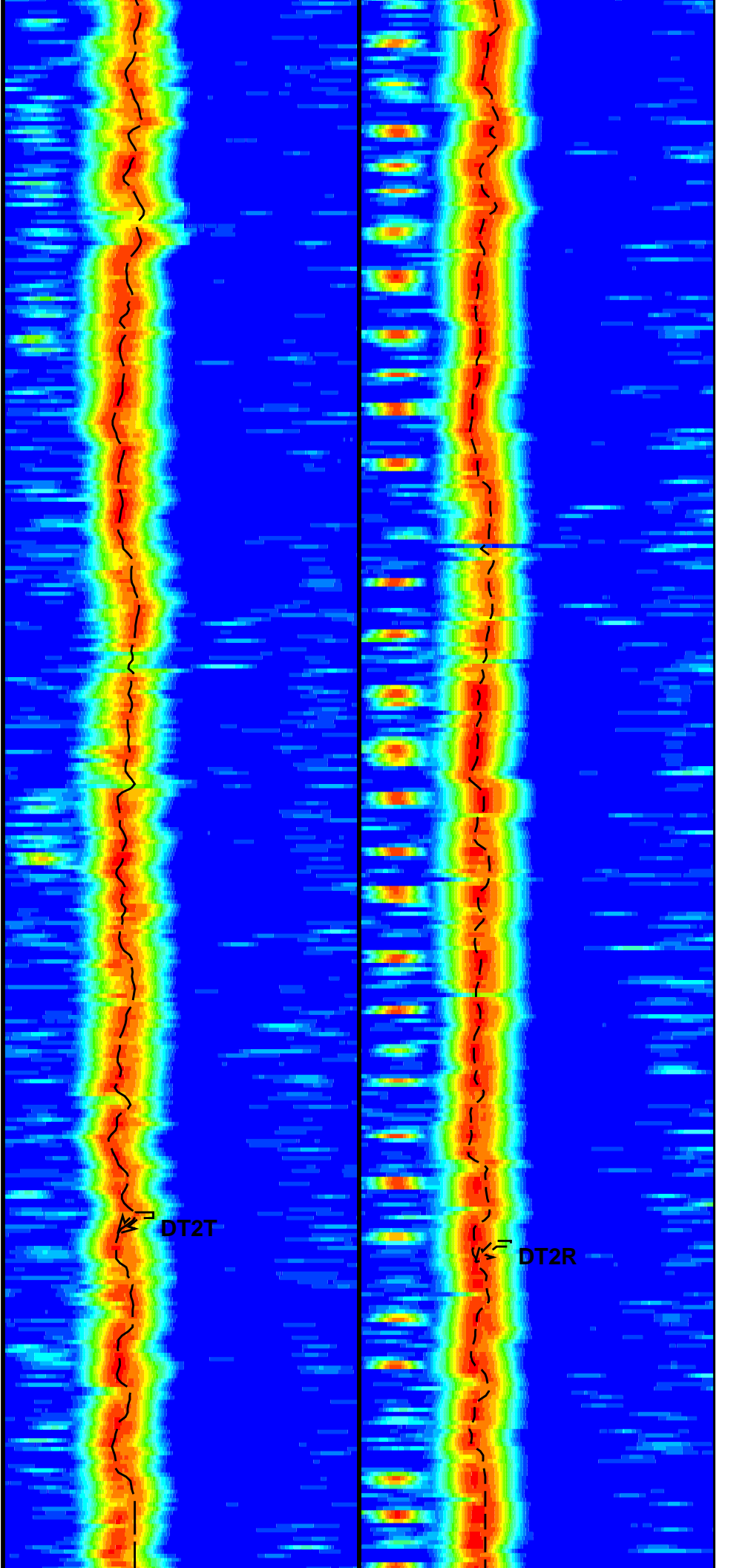
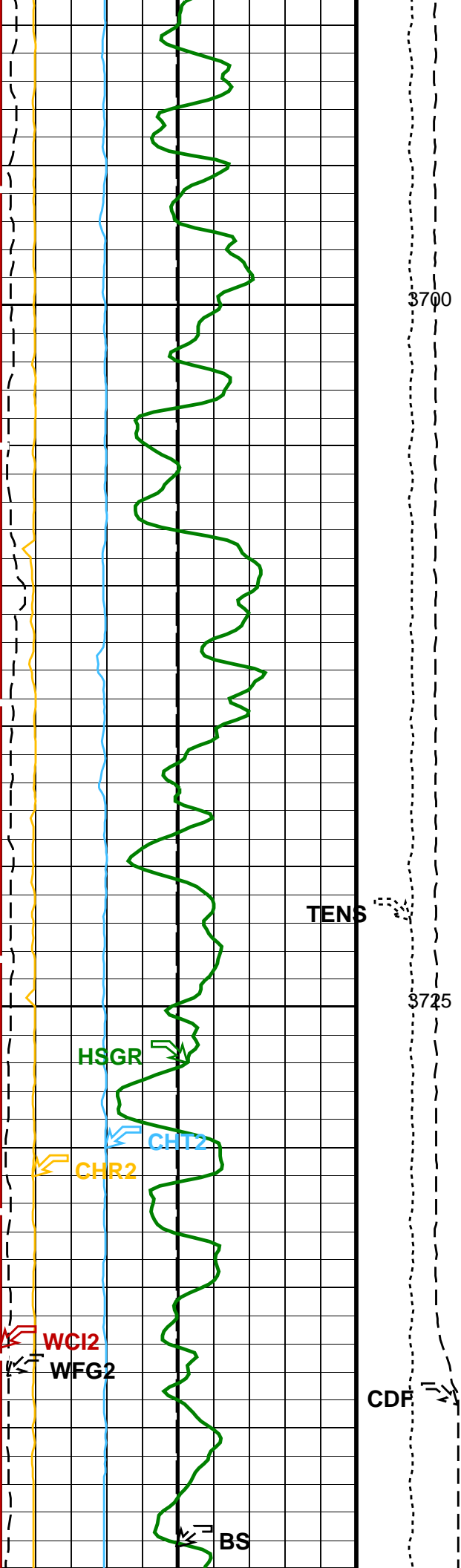


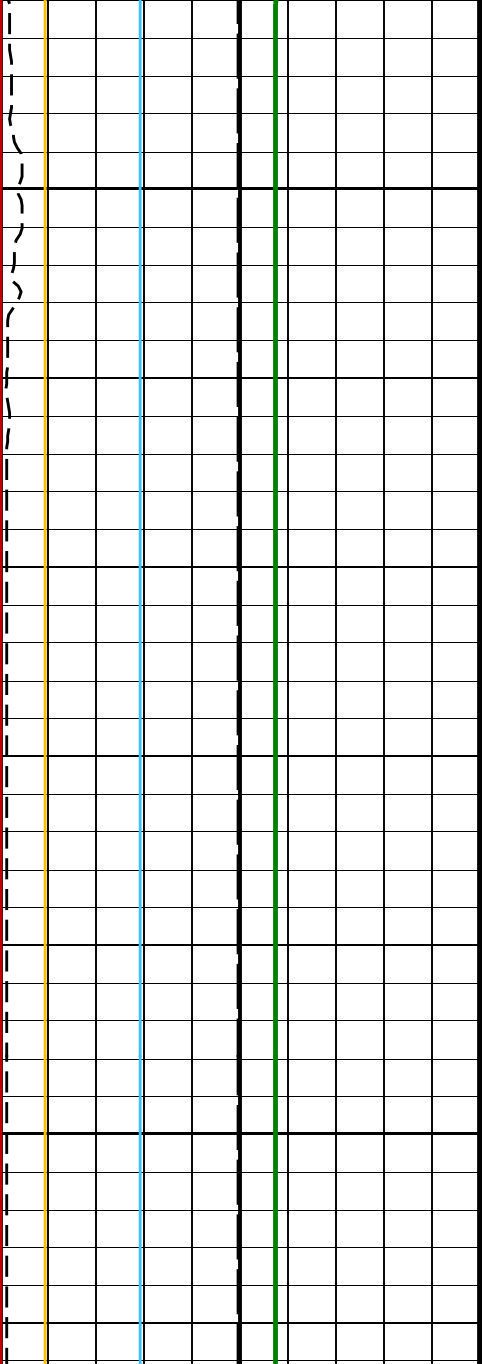






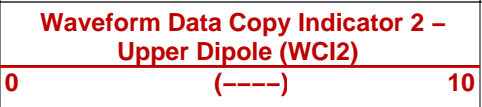
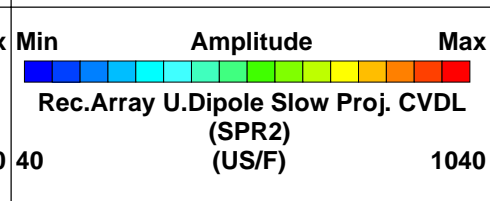
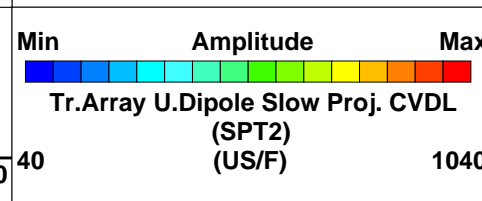
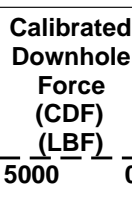
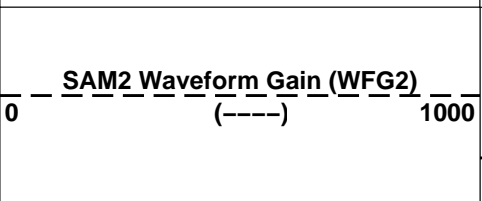
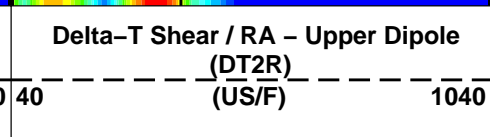
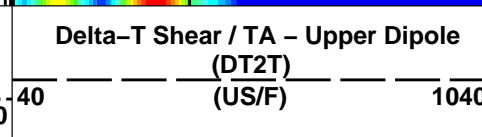
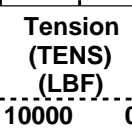
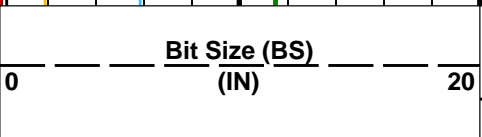
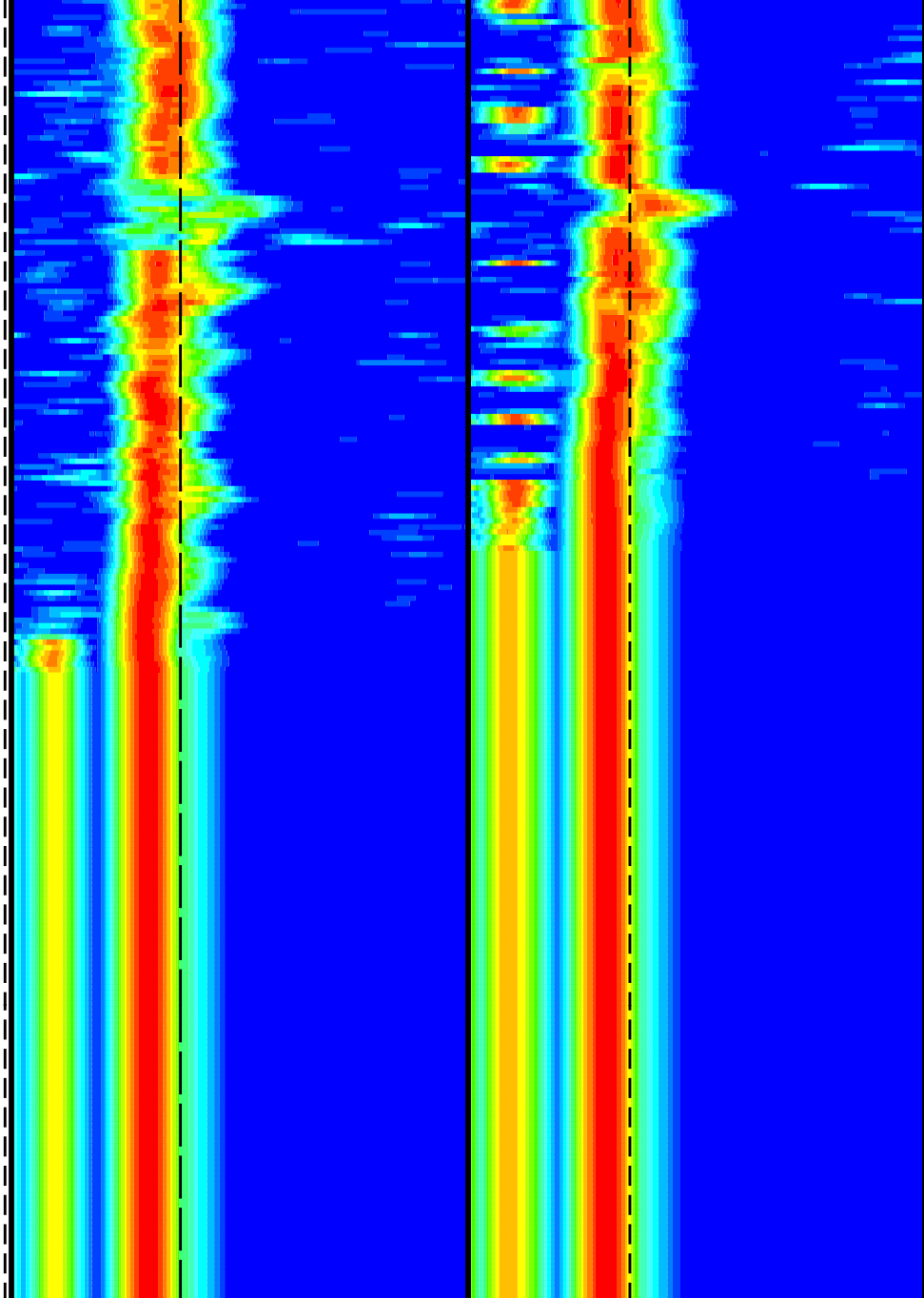




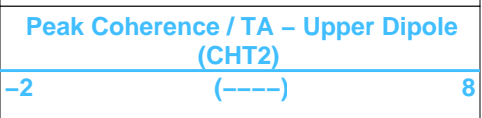
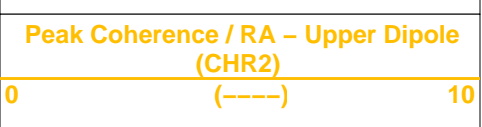


3750

3775



Flipped Downlog



## PIP SUMMARY

Time Mark Every 60 S

## Parameters

DLIS Name	Description	Value	
<b>HNGS-BA: Hostile Natural Gamma Ray Sonde</b>			
BAR1	HNGS Detector 1 Barite Constant	1	
BAR2	HNGS Detector 2 Barite Constant	1	
BHK	HNGS Borehole Potassium Correction Concentration	0	
BHS	Borehole Status	OPEN	
CSD1	Inner Casing Outer Diameter	0	IN
CSD2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	BS	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	0	
HALF	HNGS Apply Borehole Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	BARI	
HNPE	HNGS Processing Enable	YES	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES	
TPOS	Tool Position	CENT	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0	
<b>HRLT-B: High Resolution Laterolog Array - B</b>			
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	BS	
<b>DSST-B: Dipole Shear Imager - B</b>			
BHS	Borehole Status	OPEN	
DDE2	Digitizing Delay 2	0	US
DDEX	Digitizing Delay X	0	US
DLCS	Label Compressional Source - Dipole Shear	USE	
DSHL	Label Slowness Lower Limit - Dipole Shear	40	US/F
DSHU	Label Slowness Upper Limit - Dipole Shear	1040	US/F
DSI2	Digitizer Sample Interval 2	40	US
DSIX	Digitizer Sample Interval X	40	US
DTCS	Compressional Delta-T Source for DTCO Channel	PS_COMP	
DWC2	Digitizer Word Count 2	512	
DWCX	Digitizer Word Count X	512	
GCSE	Generalized Caliper Selection	BS	
NWI2	Number Waveform Items 2	8	
NWIX	Number Waveform Items X	0	
RX1G	Receiver 1 Geometry	294	IN
RX2G	Receiver 2 Geometry	300	IN
RX3G	Receiver 3 Geometry	306	IN
RX4G	Receiver 4 Geometry	312	IN
RX5G	Receiver 5 Geometry	318	IN
RX6G	Receiver 6 Geometry	324	IN
RX7G	Receiver 7 Geometry	330	IN
RX8G	Receiver 8 Geometry	336	IN
SAM2	DSST Sonic Acquisition Mode 2 - Upper Dipole Mode	ODD	
SAMX	DSST Sonic Acquisition Mode X - Both Dipoles or Monopole Mode for Expert	OFF	
SAS2	STC Sonic Array Status - Upper Dipole	255	
SBO2	STC Search Band Offset - Upper Dipole	3000	US
SBW2	STC Search Bandwidth - Upper Dipole	800	US
SFC2	STC Formation Character - Upper Dipole	SELECTABLE	
SFM2	STC Filter - Upper Dipole	B1-2K	
SLL2	STC Slowness Lower Limit - Upper Dipole	40	US/F
SST2	STC Slowness Step - Upper Dipole	4	US/F
SSW2	STC Source Waveform - Upper Dipole	WF_SAM2	
SUL2	STC Slowness Upper Limit - Upper Dipole	1040	US/F
SWD2	STC Slowness Width - Upper Dipole	40	US/F
TBF2	STC Time for Baseline Fill - Upper Dipole	0	US
TLL2	STC Time Lower Limit - Upper Dipole	600	US
TST2	STC Time Step - Upper Dipole	200	US
TUL2	STC Time Upper Limit - Upper Dipole	18440	US
TWD2	STC Time Width - Upper Dipole	2000	US
TWI2	STC Integration Time Window - Upper Dipole	1600	US
TWSX	Transmitter Waveform Select X	0	
UTXG	Upper Dipole Transmitter Geometry	162	IN
WFM2	Waveform Mode 2	W1	
<b>EDTC-B: Enhanced DTS Cartridge</b>			
BHS	Borehole Status	OPEN	

BHS	Borehole Status	OPEN
GCSE	Generalized Caliper Selection	BS
BS	System and Miscellaneous	
DFD	Bit Size	9.875 IN
DO	Drilling Fluid Density	1.26 G/C3
PP	Depth Offset for Playback	0.0 M
	Playback Processing	NORMAL

Format: DSST\_UPPER\_DIPOLE\_RC\_TR\_VDL\_COLOR Vertical Scale: 1:200 Graphics File Created: 15-Oct-2017 17:58

### OP System Version: 19C0-187

HNGC-B	19C0-187	HNGS-BA	19C0-187
HRLT-B	19C0-187	DSST-B	19C0-187
HLDS	19C0-187	LDSC-B	19C0-187
EDTC-B	SKK-5169-EDTCB		

#### Input DLIS Files

DEFAULT	Flip_NGS_HRLA_DSI_055LUP	PRODUCER	14-Oct-2017 14:04	3781.2 M	3031.2 M
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#### Output DLIS Files

DEFAULT	NGS_HRLA_DSI_LDL_061PUP	FN:61	PRODUCER	15-Oct-2017 17:57	
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Company: International Ocean Discovery Program Well: Expedition 369, Site U1512A

#### Input DLIS Files

DEFAULT	Flip_NGS_HRLA_DSI_055LUP	PRODUCER	14-Oct-2017 14:04	3781.2 M	3031.2 M
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#### Output DLIS Files

DEFAULT	NGS_HRLA_DSI_LDL_061PUP	FN:61	PRODUCER	15-Oct-2017 17:57	3781.2 M	3031.2 M
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### OP System Version: 19C0-187

HNGC-B	19C0-187	HNGS-BA	19C0-187
HRLT-B	19C0-187	DSST-B	19C0-187
HLDS	19C0-187	LDSC-B	19C0-187
EDTC-B	SKK-5169-EDTCB		

#### PIP SUMMARY

Time Mark Every 60 S

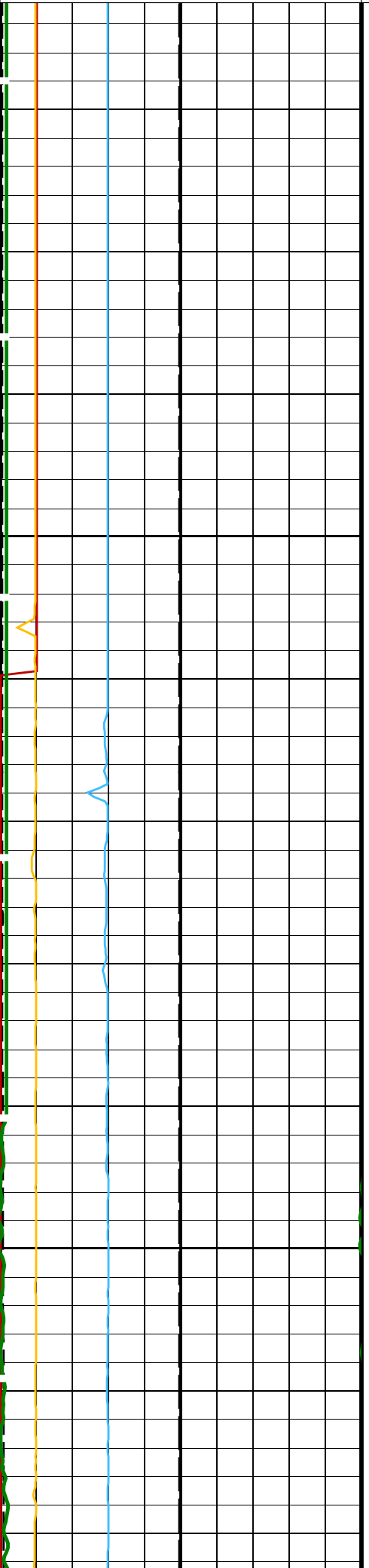
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<b>Peak Coherence / TA - Lower Dipole (CHT1)</b> -2 (----) 8	
<b>Peak Coherence / RA - Lower Dipole (CHR1)</b> 0 (----) 10	
<b>Waveform Data Copy Indicator 1 - Lower Dipole (WC11)</b> 0 (----) 10	

<b>SAM1 Waveform Gain (WFG1)</b> 0 (----) 1000	Calibrated Downhole Force (CDF) (LBF)	Min 40 Max 1040	Min 40 Max 1040		Min 40 Max 1040	Min 40 Max 1040	
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<b>Bit Size (BS)</b> 0 (IN) 20	Tension (TENS) (LBF)	Min 40 Max 1040	Min 40 Max 1040		Min 40 Max 1040	Min 40 Max 1040	
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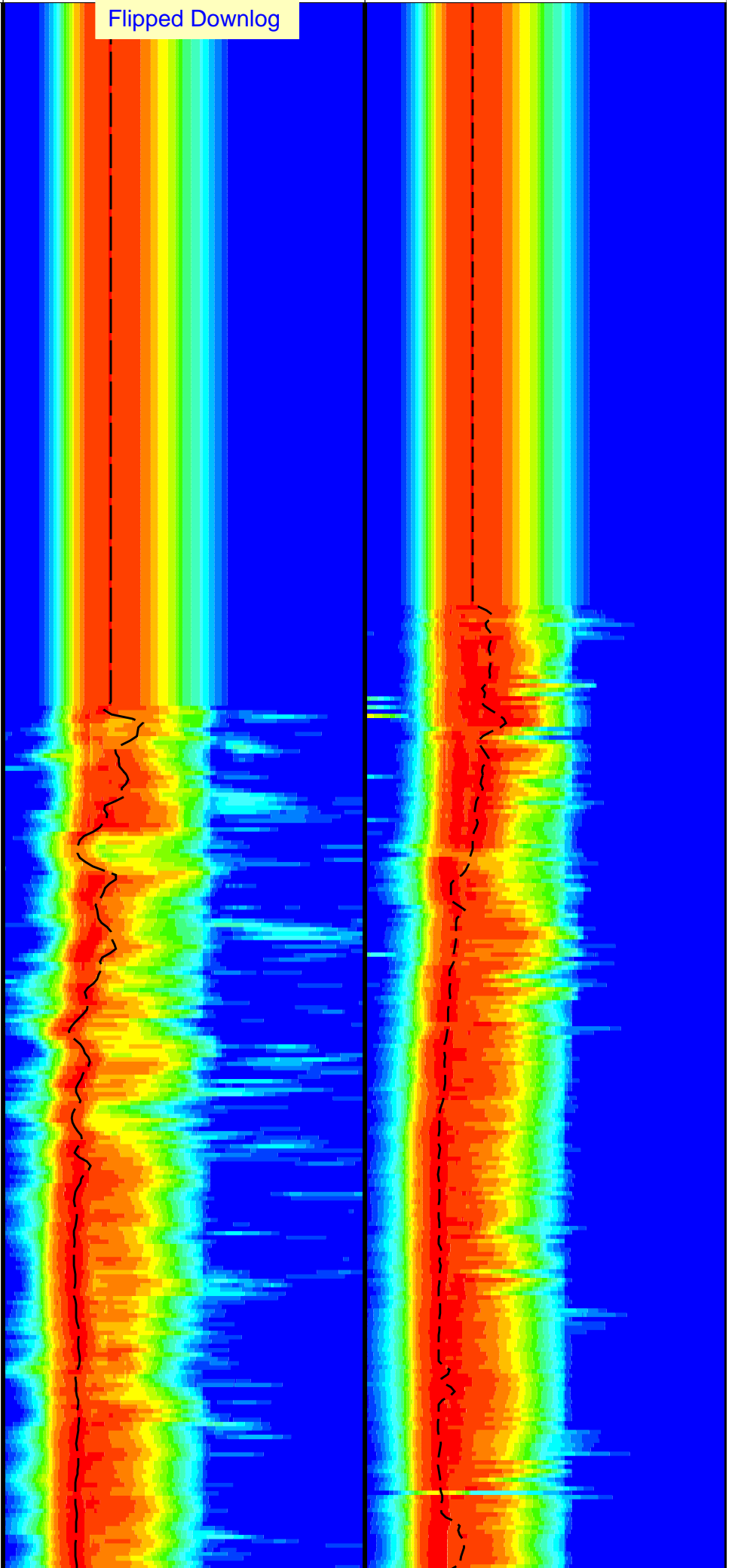
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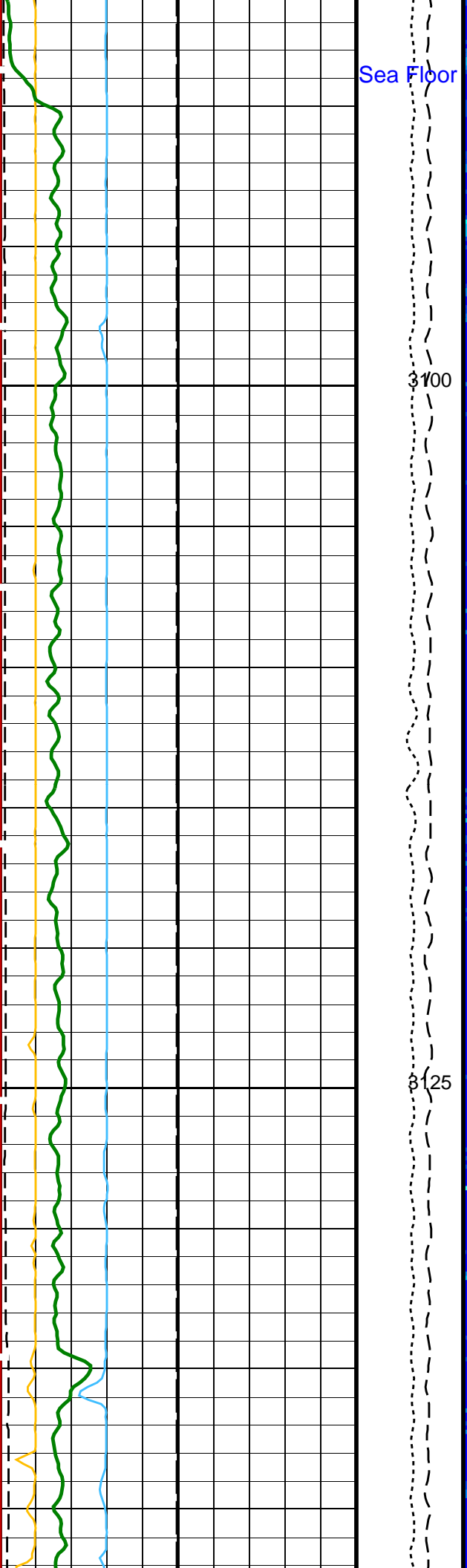
Flipped Downlog



3050

3075

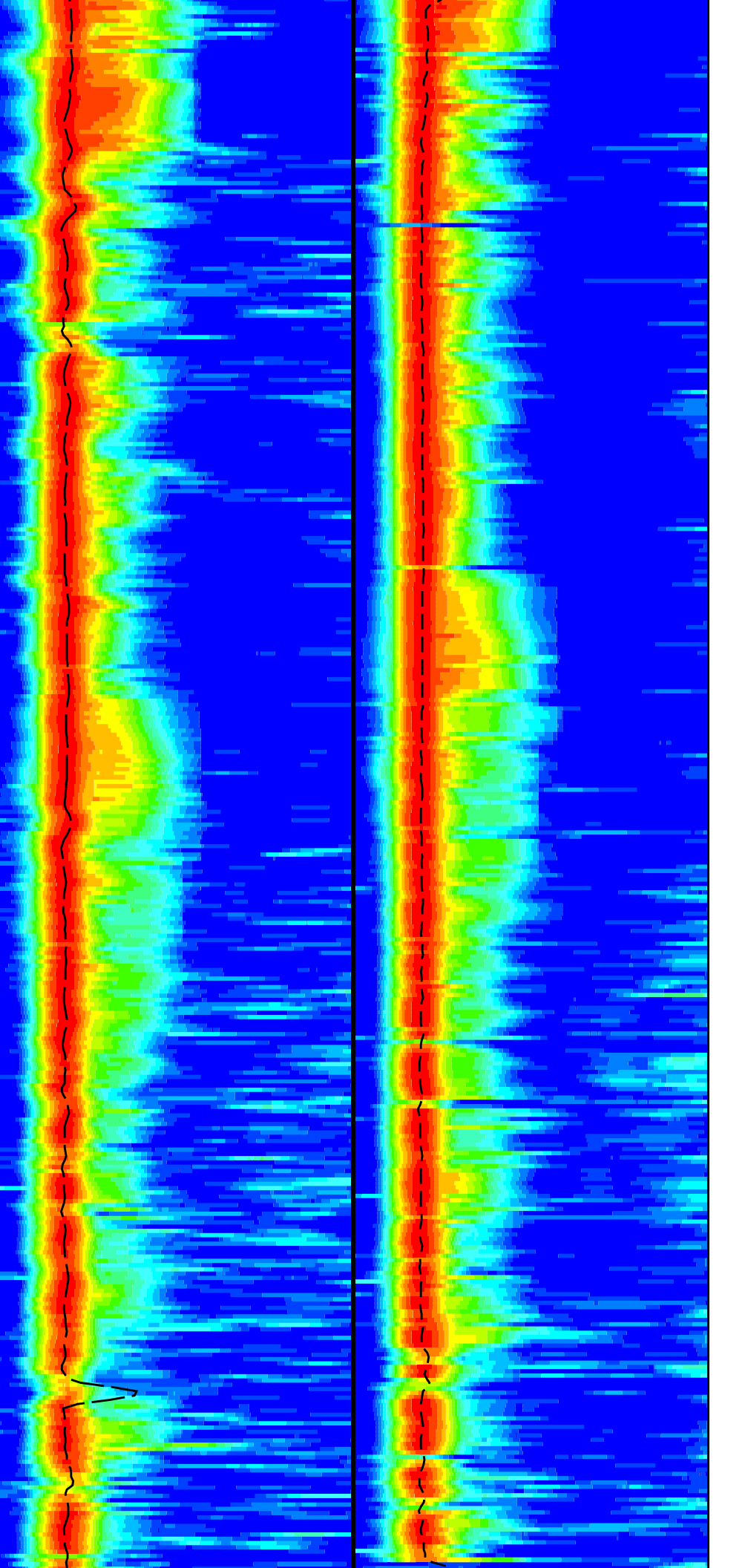




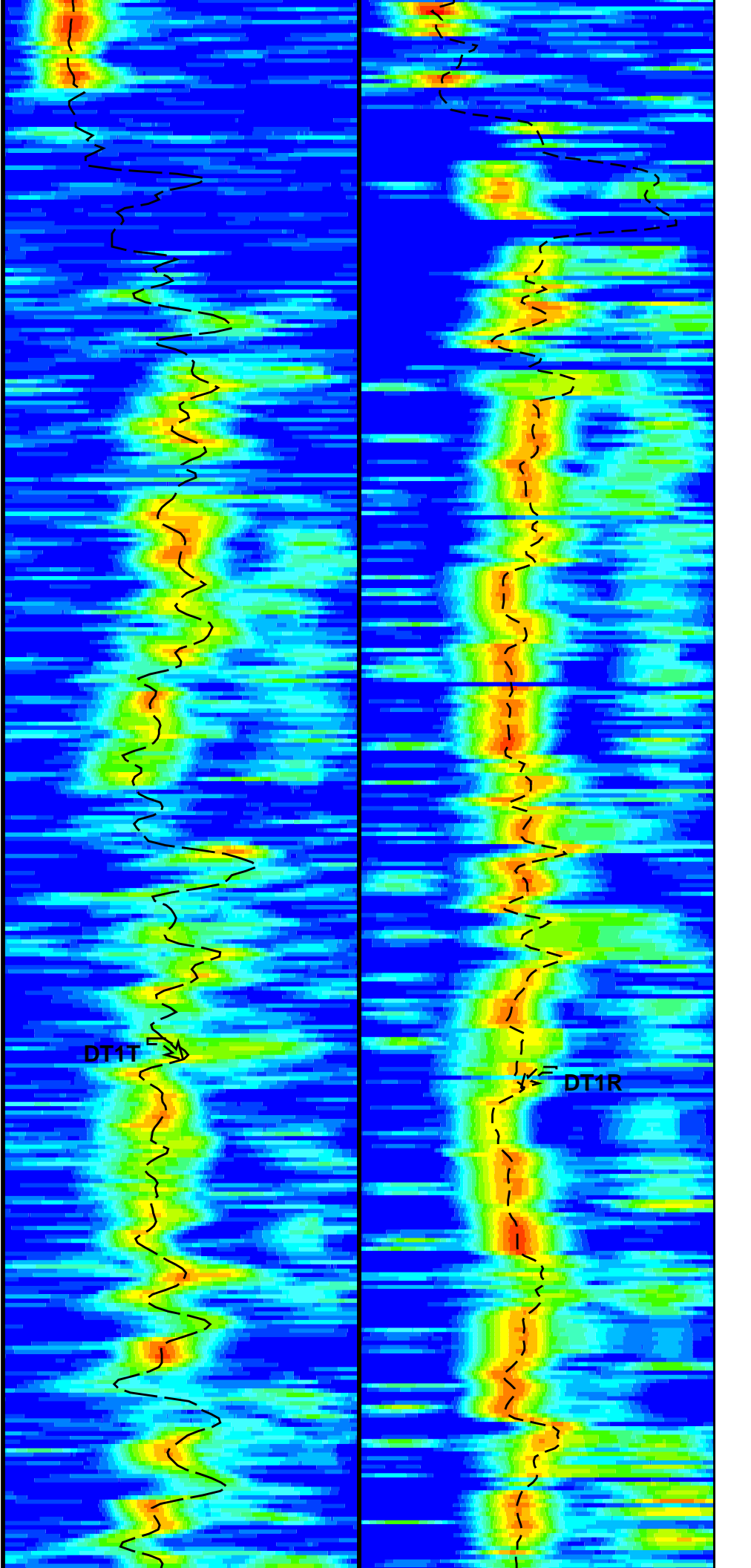
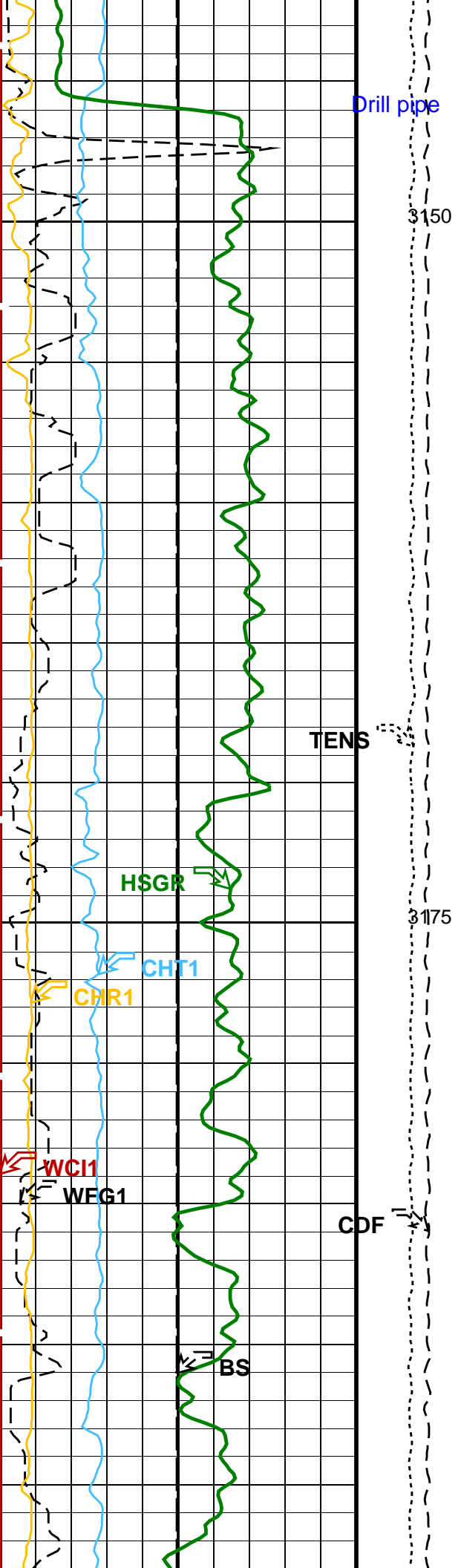
Sea Floor

3100

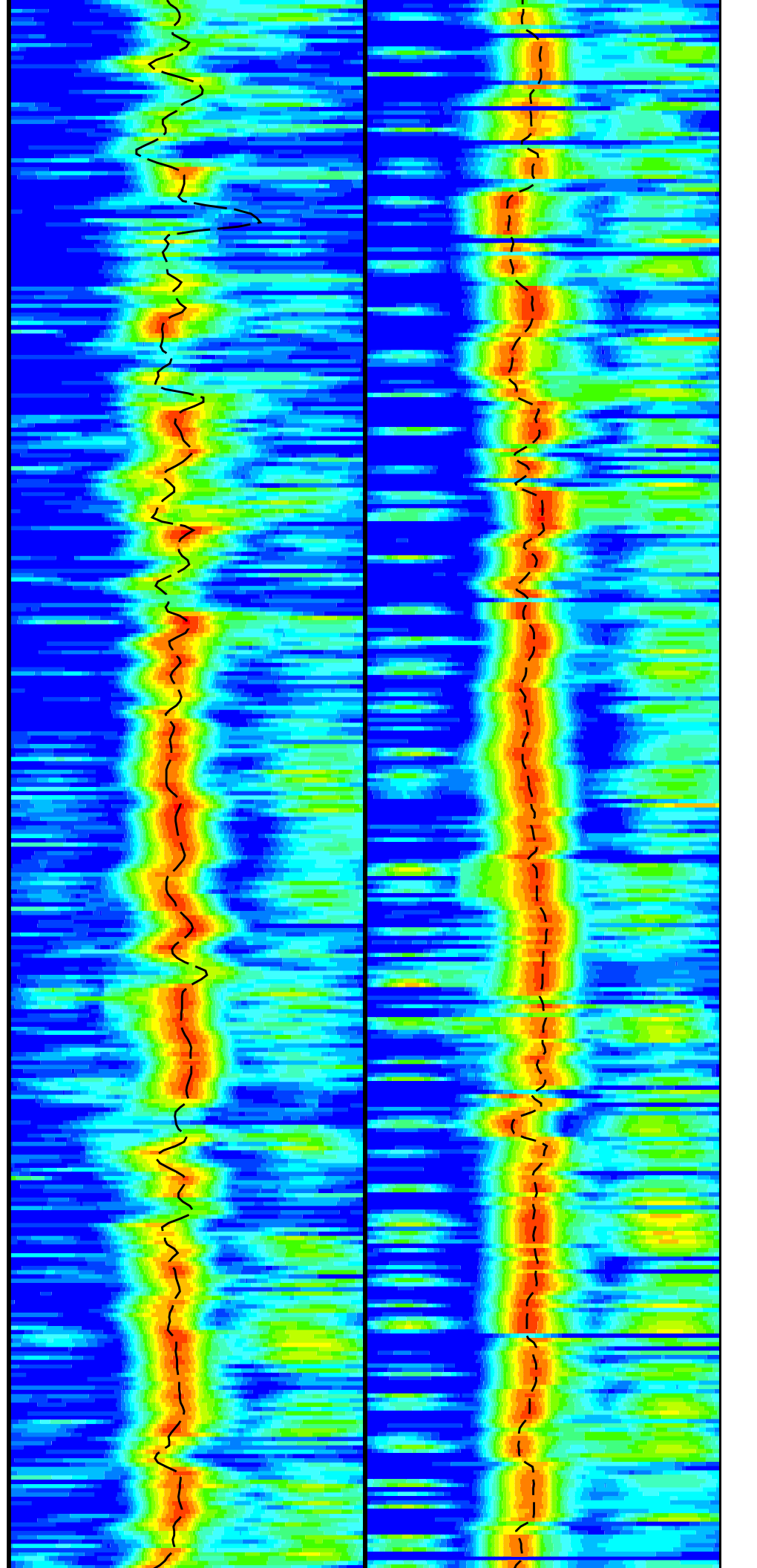
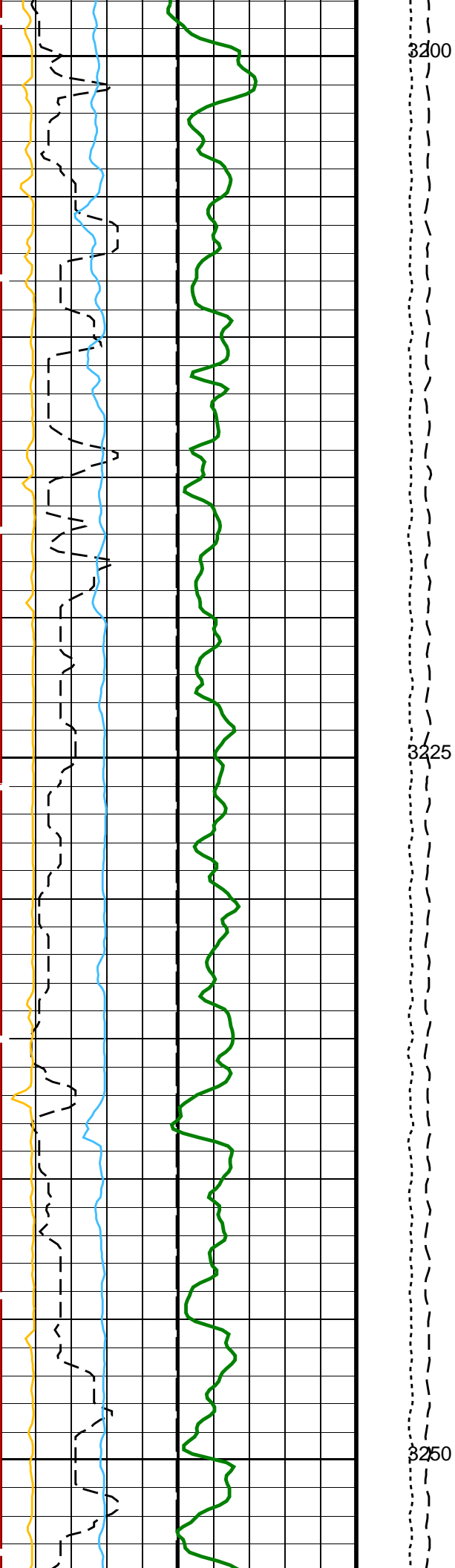
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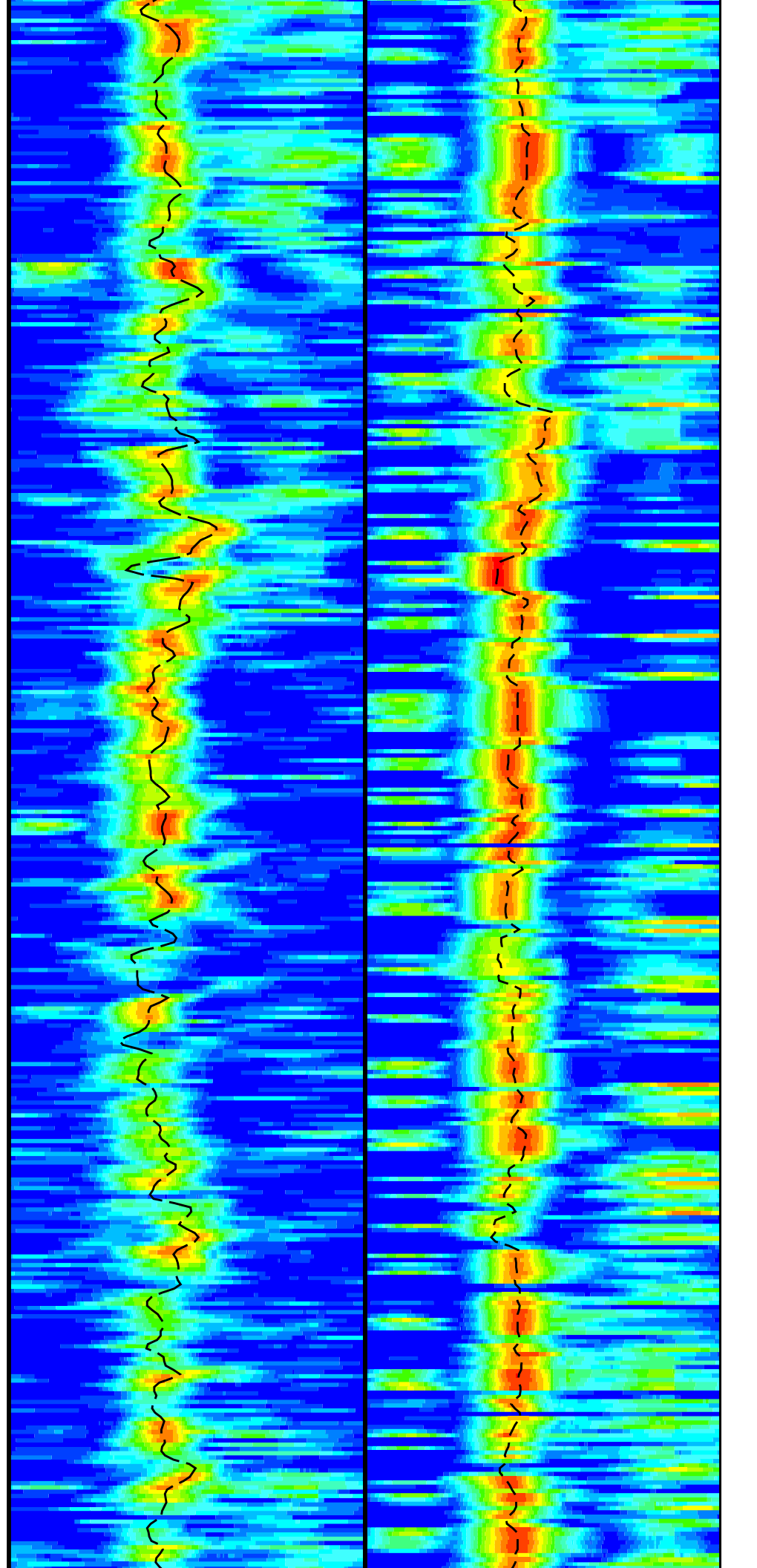
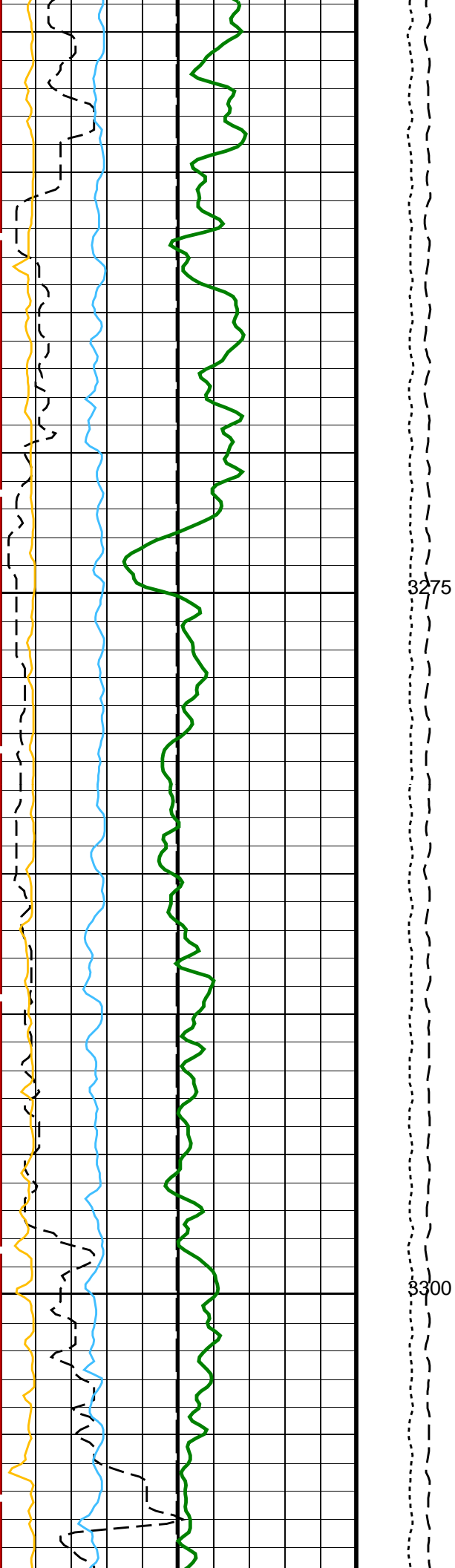


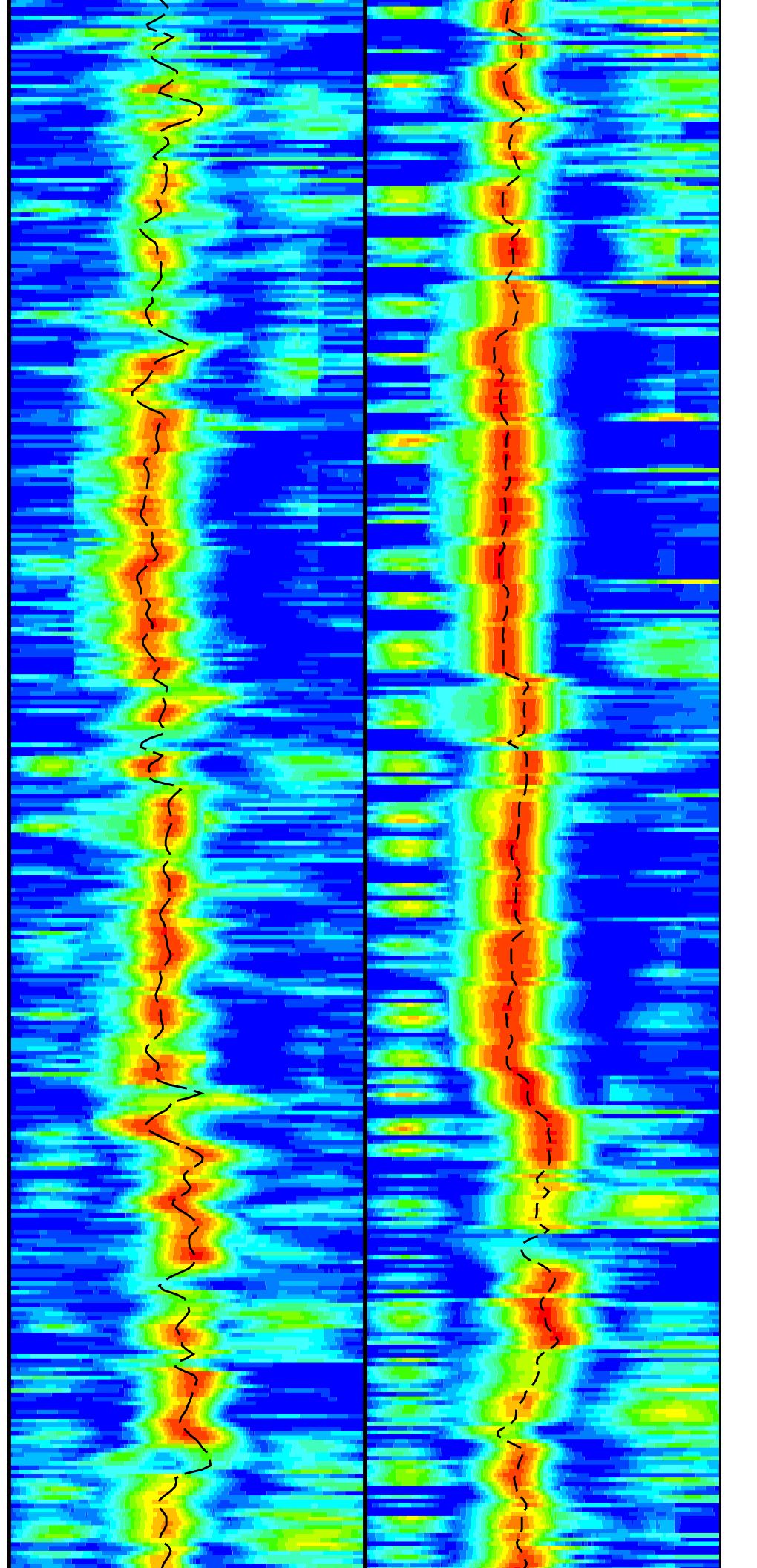
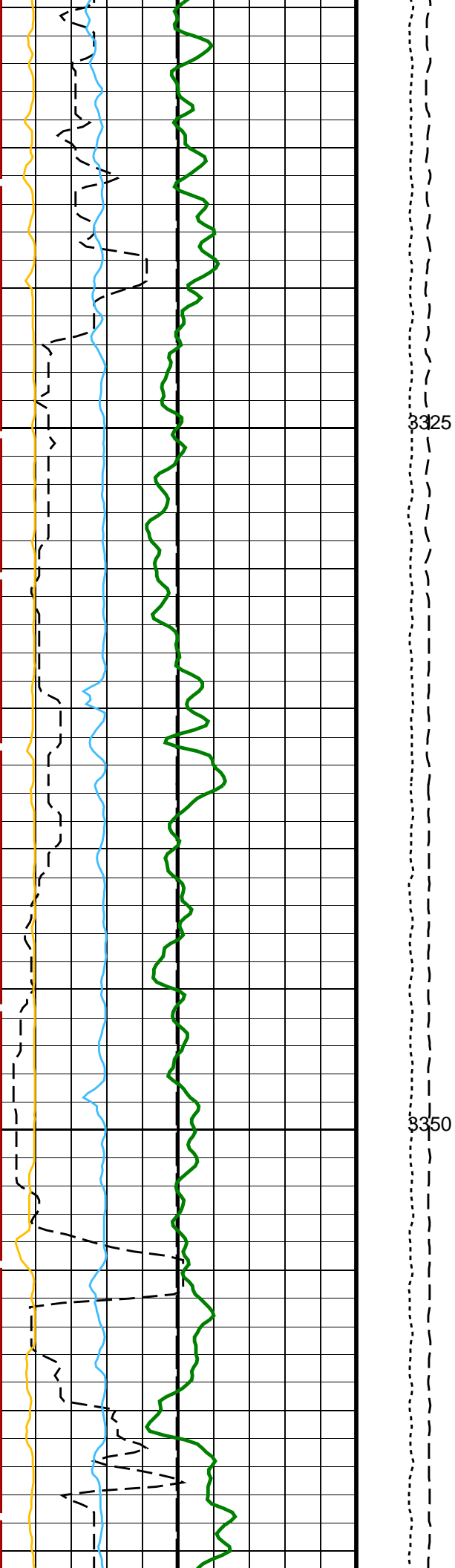


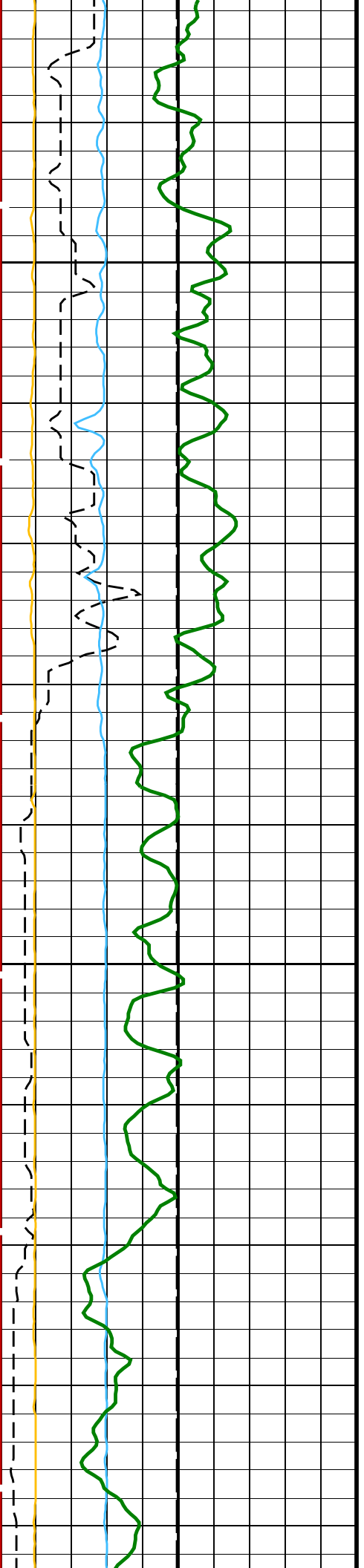






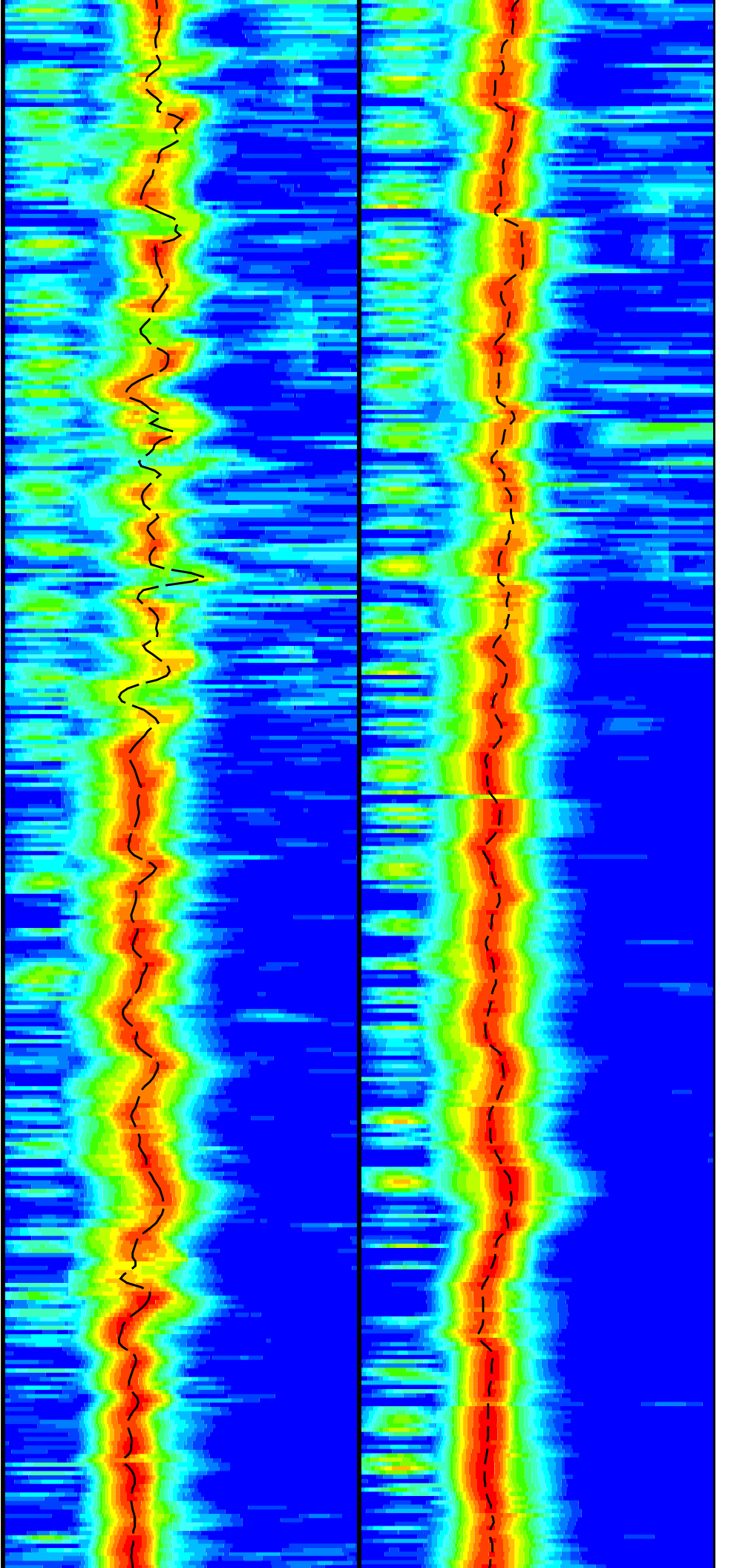


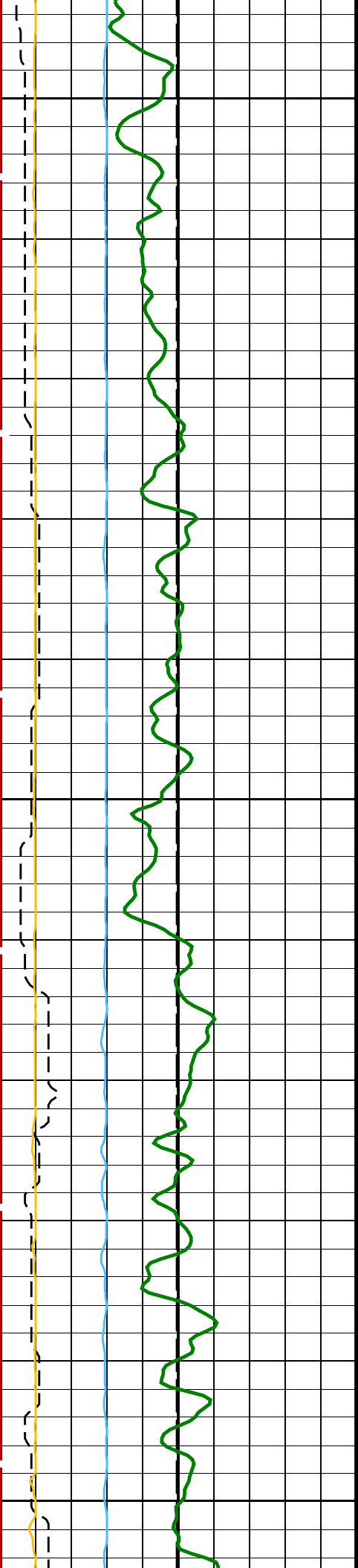




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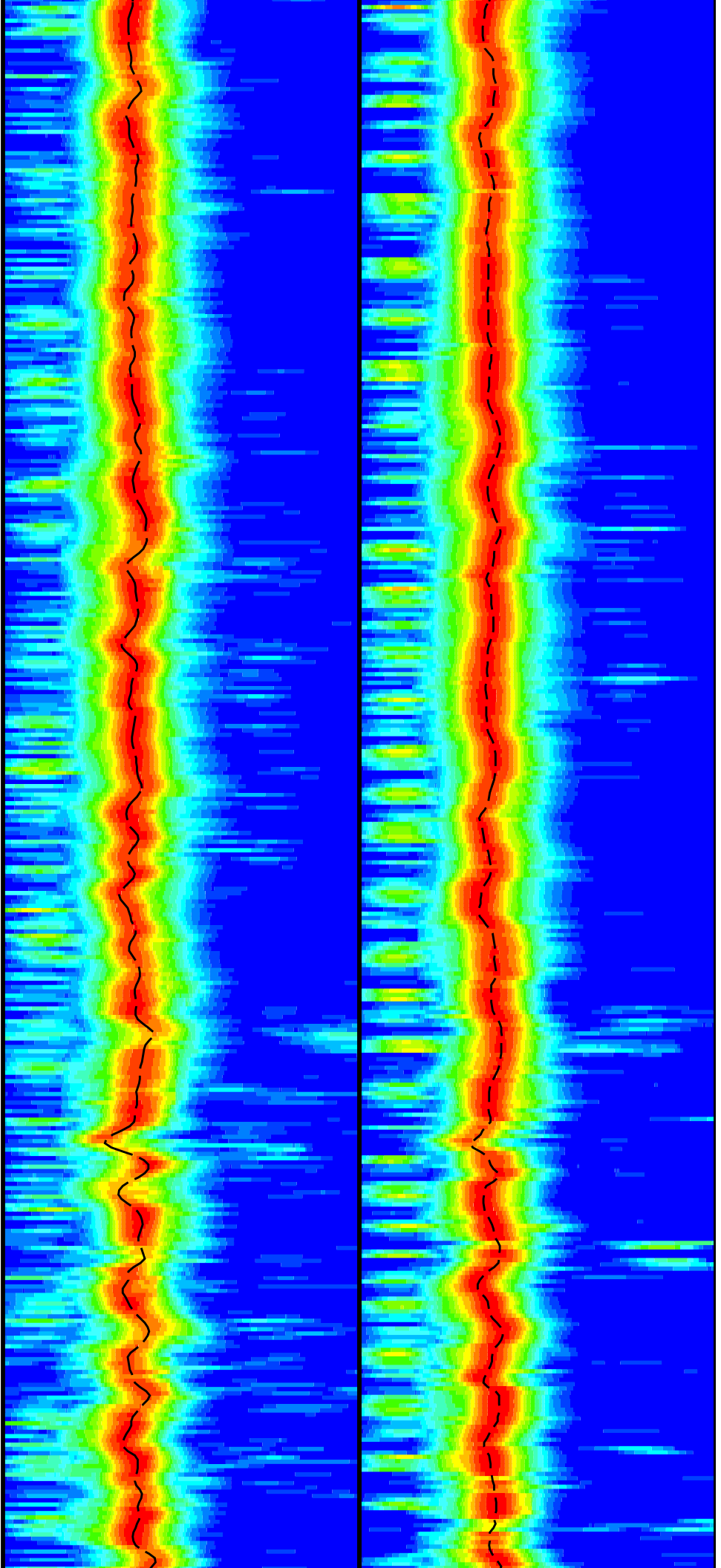


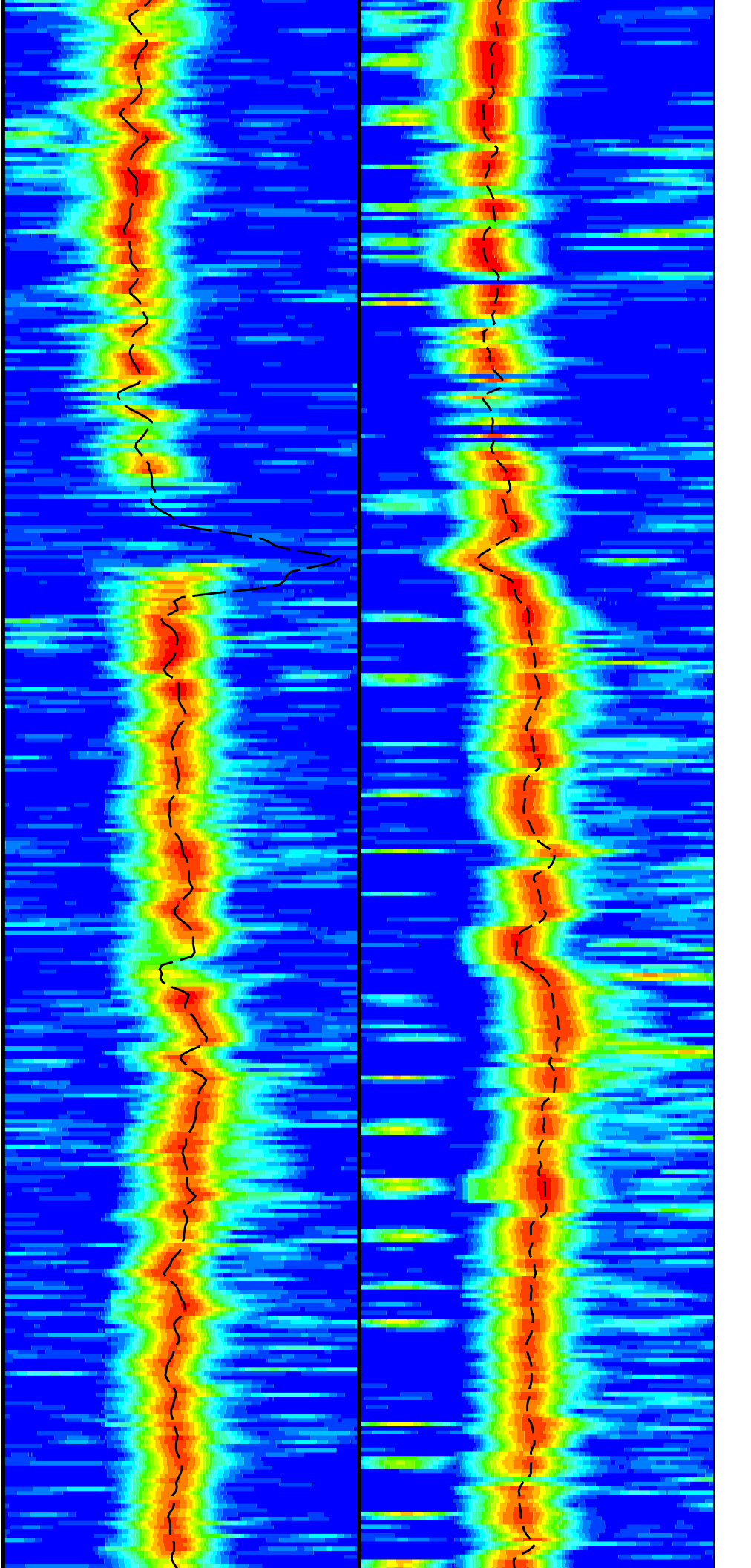
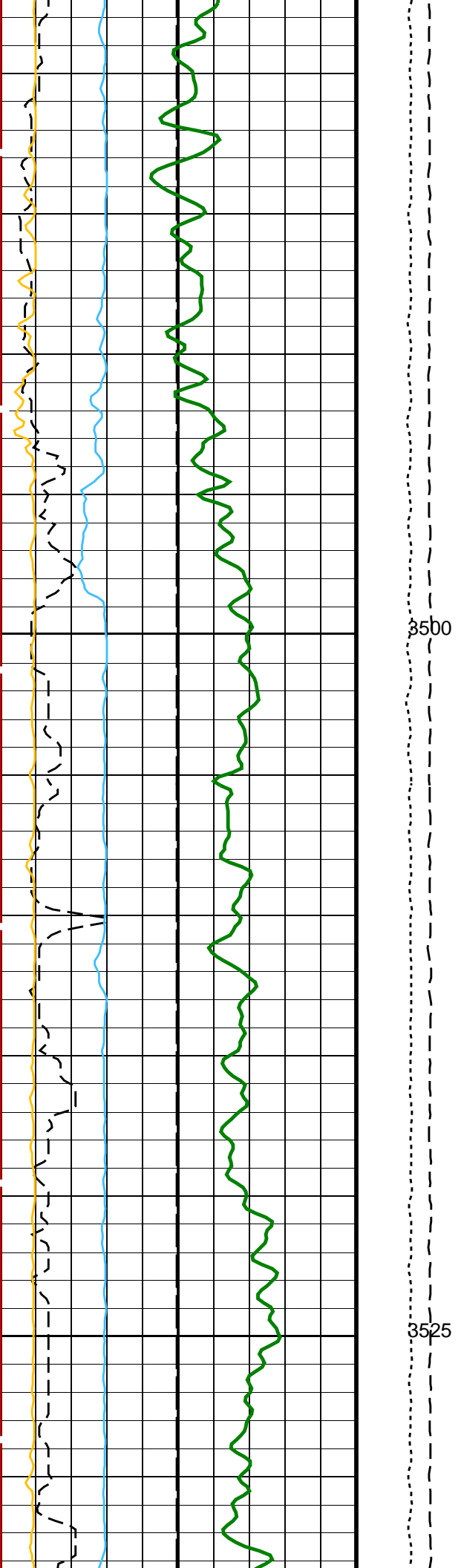


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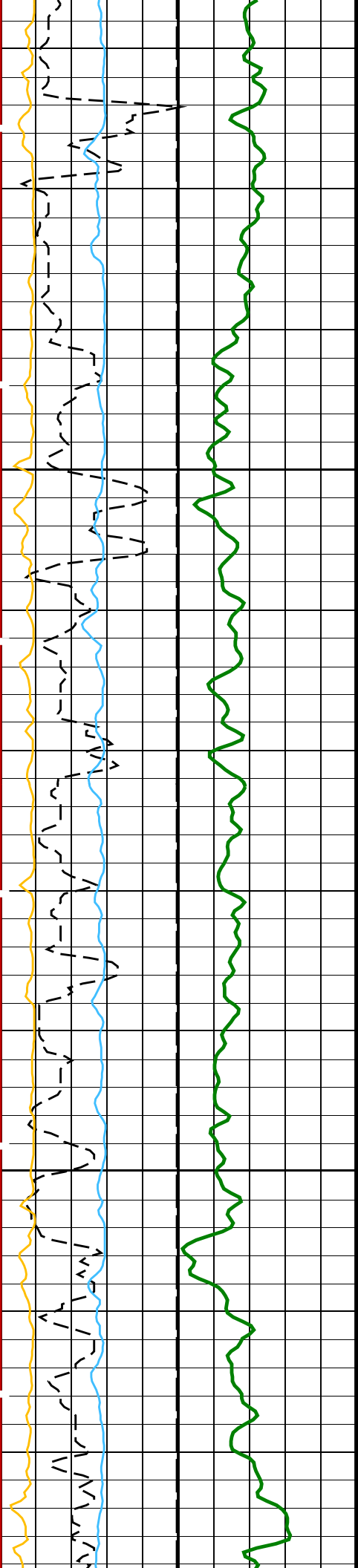
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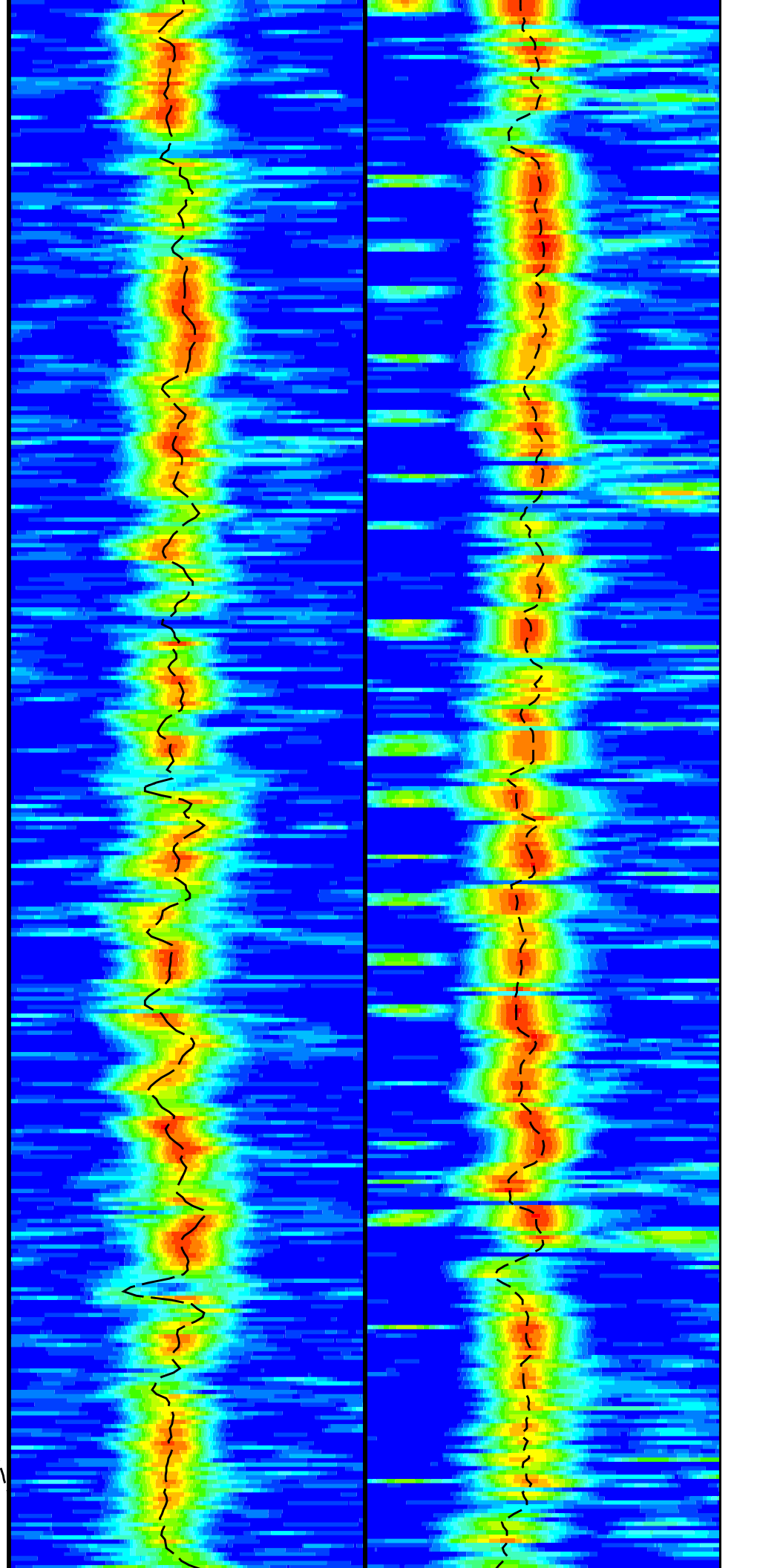


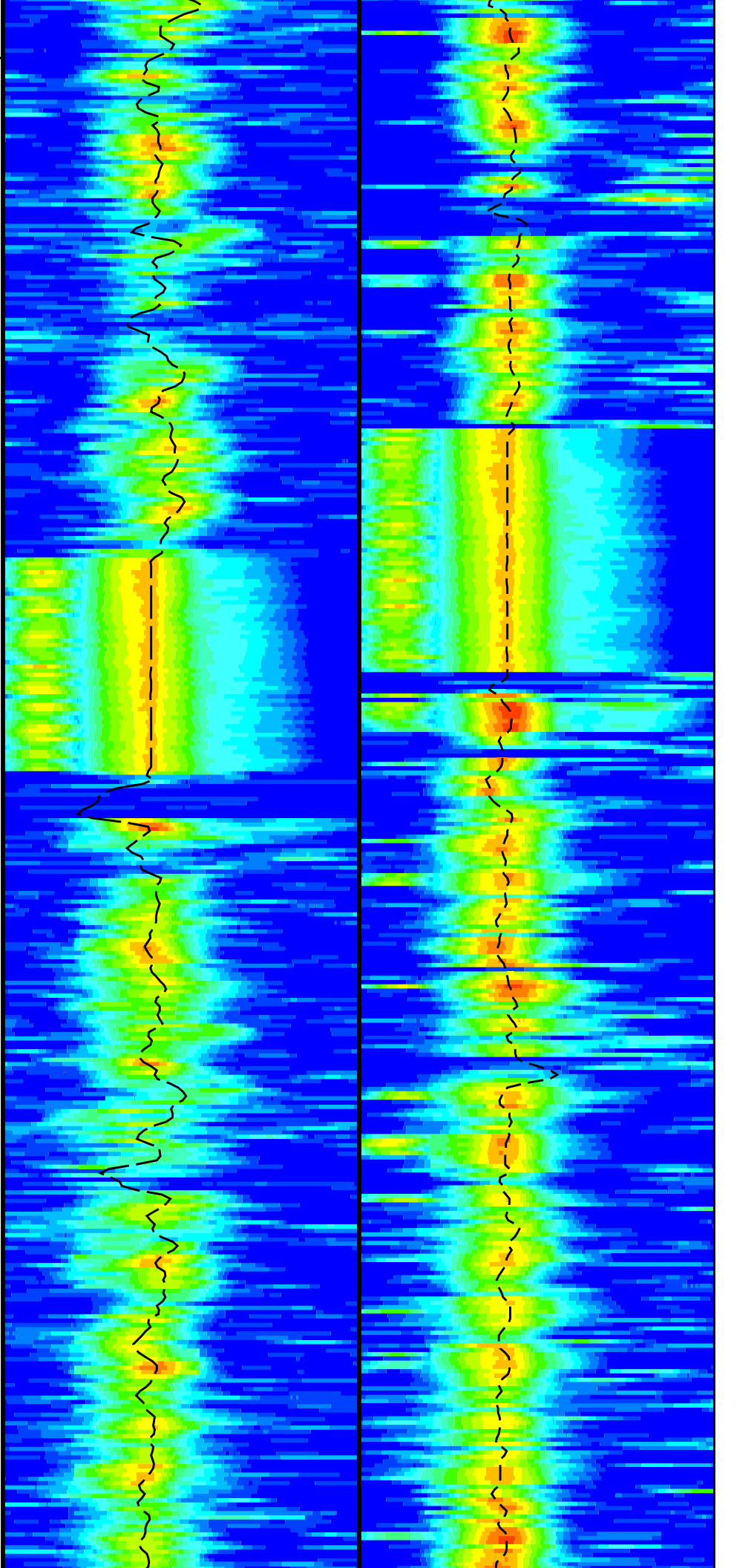
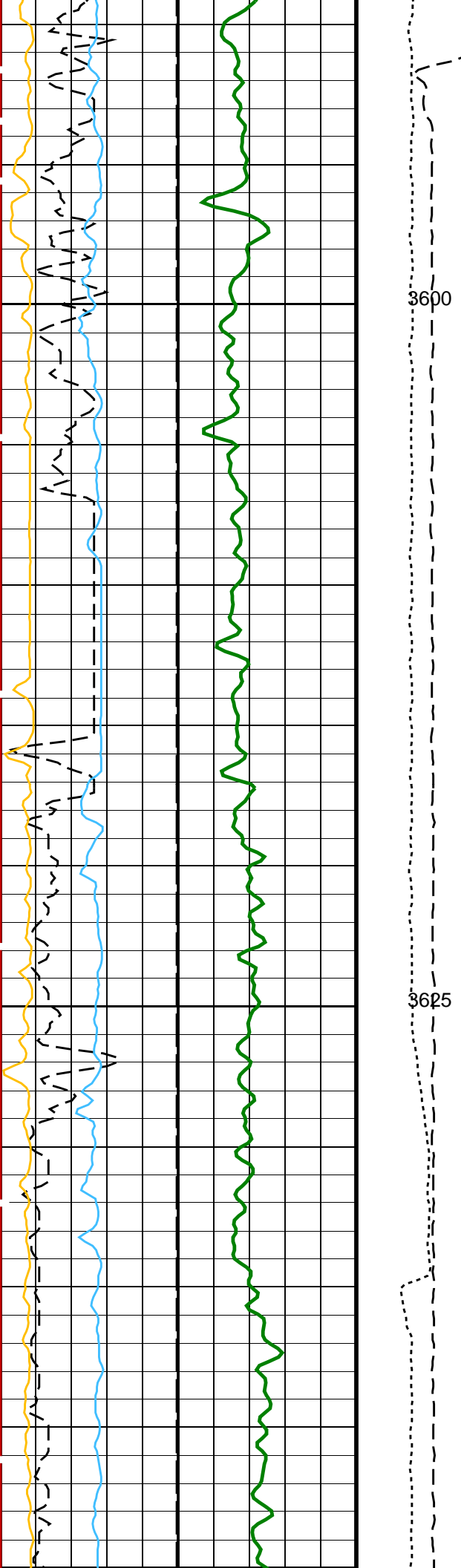




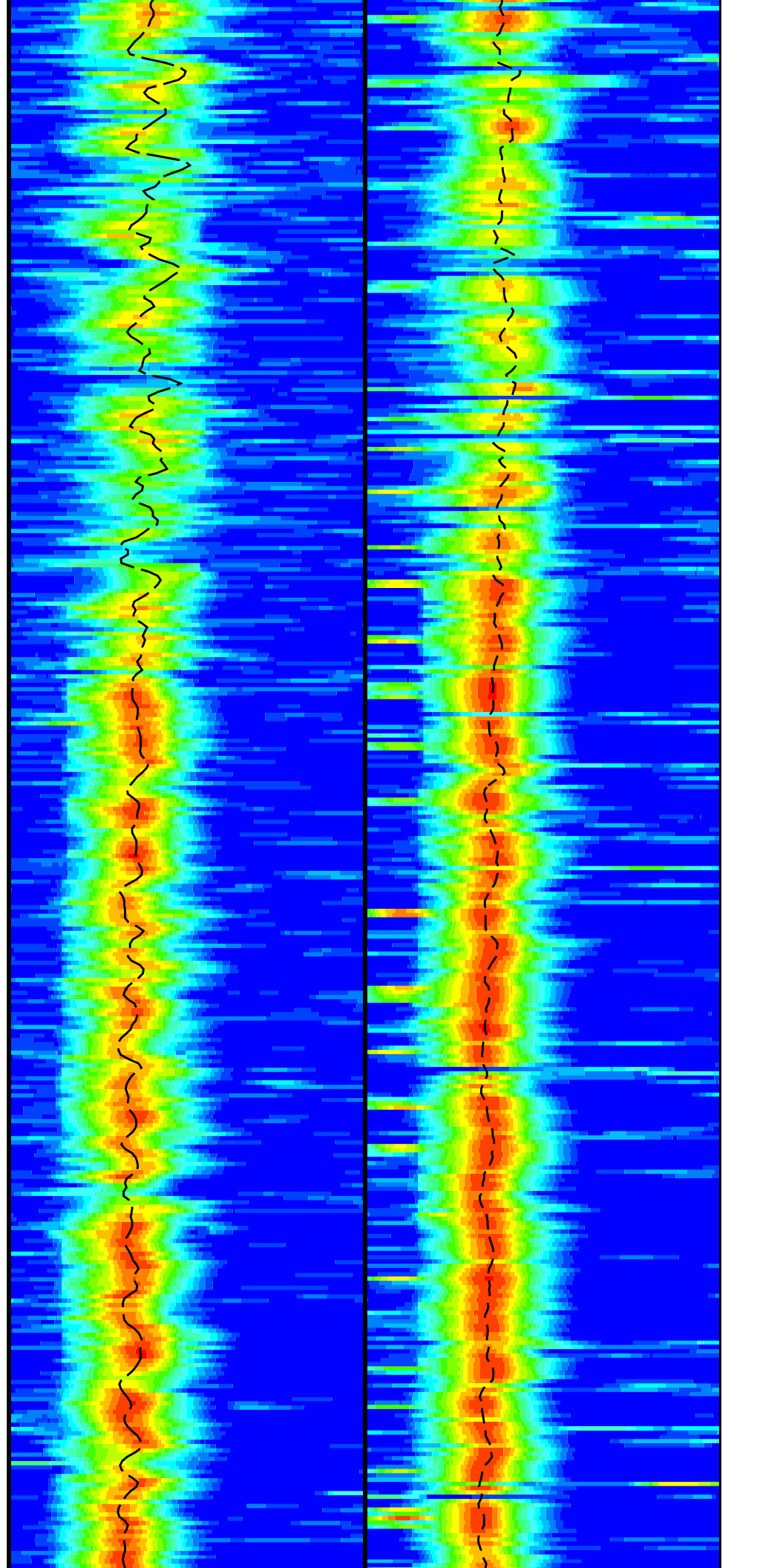
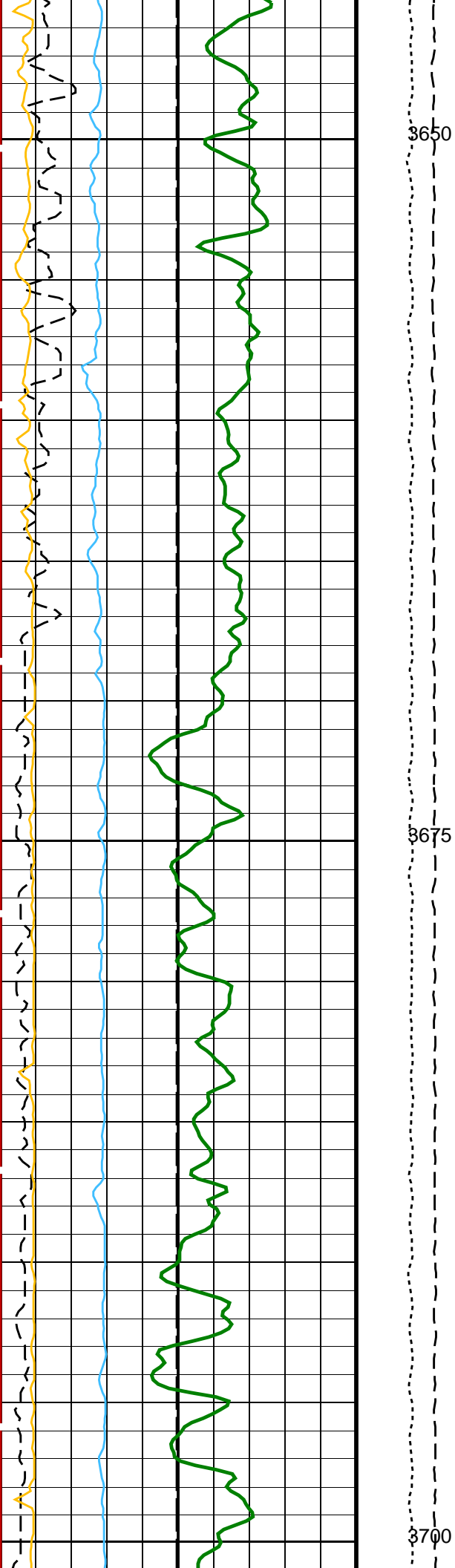
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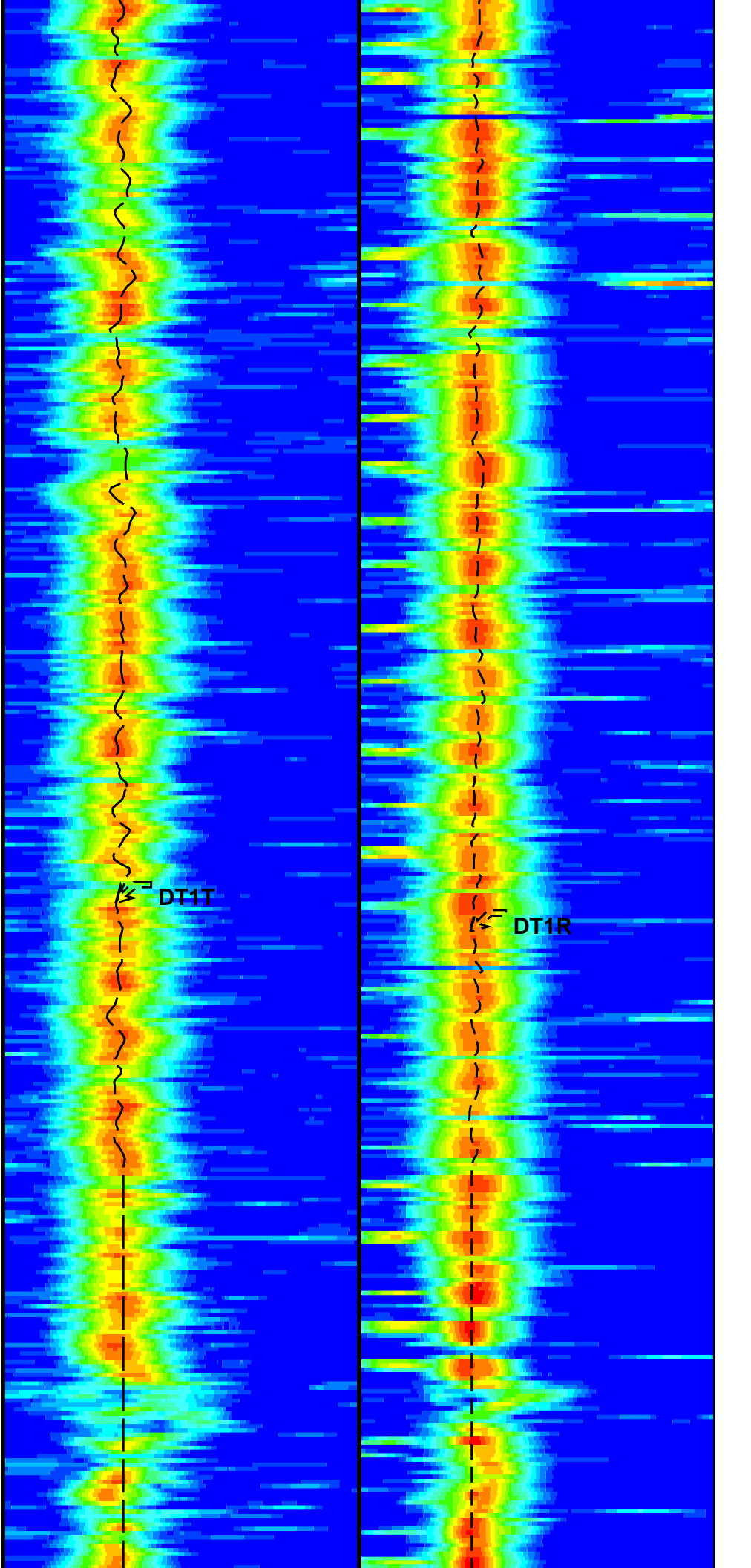
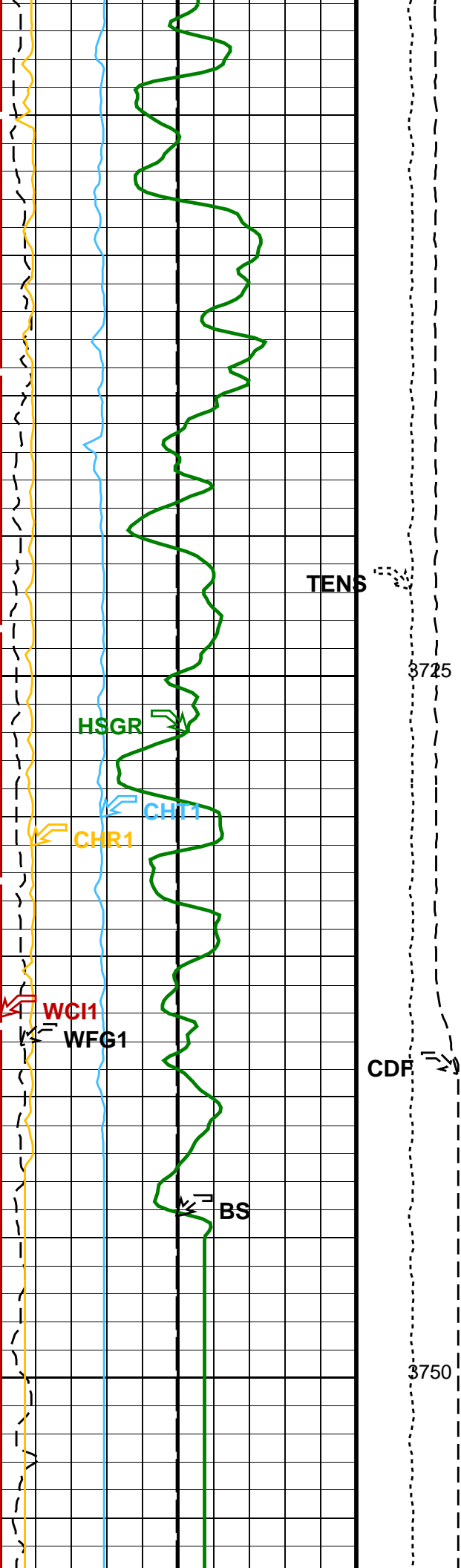
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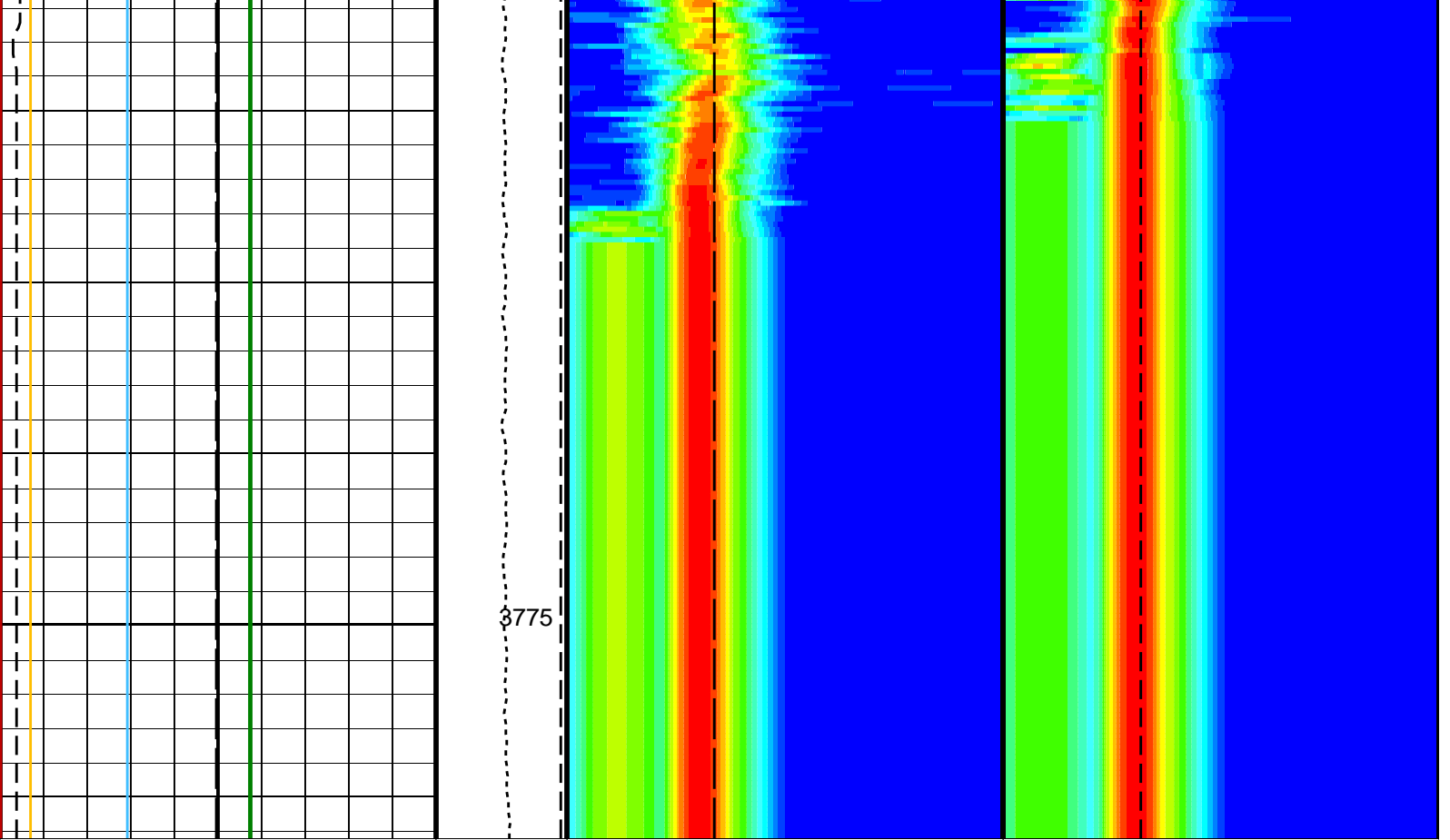












0	Bit Size (BS) (IN)	20	Tension (TENS) (LBF)	40	Delta-T Shear / TA - Lower Dipole (DT1T) (US/F)	1040	40	Delta-T Shear / RA - Lower Dipole (DT1R) (US/F)	1040
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0	SAM1 Waveform Gain (WFG1) (----	1000	Calibrated Downhole Force (CDF) (LBF)	5000	0	Min	Amplitude	Max	Min	Amplitude	Max
						Tr.Array L.Dipole Slow Proj. CVDL (SPT1) (US/F)			Rec.Array L.Dipole Slow Proj. CVDL (SPR1) (US/F)		

0	Waveform Data Copy Indicator 1 - Lower Dipole (WC11) (----	10	Flipped Downlog								
0	Peak Coherence / RA - Lower Dipole (CHR1) (----	10									
-2	Peak Coherence / TA - Lower Dipole (CHT1) (----	8									
0	HNGS Spectroscopy Gamma Ray (HSGR) (GAPI)	100									

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
HNGS-BA: Hostile Natural Gamma Ray Sonde		
BAR1	HNGS Detector 1 Barite Constant	1
BAR2	HNGS Detector 2 Barite Constant	1
BHK	HNGS Borehole Potassium Correction Concentration	0
BHS	Borehole Status	OPEN
CSD1	Inner Casing Outer Diameter	0 IN
CSD2	Outer Casing Outer Diameter	0 IN

CSW2	Outer Casing Outer Diameter	0	IN
CSW1	Inner Casing Weight	0	LB/F
CSW2	Outer Casing Weight	0	LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE	
GCSE	Generalized Caliper Selection	BS	
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW	
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW	
HABK	HNGS Borehole Potassium Running Average	0	
HALF	HNGS Alpha Filter Length	60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE	
HMWM	Mud Weighting Material	BARI	
HNPE	HNGS Processing Enable	YES	
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3	CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3	CPS
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES	
TPOS	Tool Position	CENT	
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0	
<b>HRLT-B: High Resolution Laterolog Array - B</b>			
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	BS	
<b>DSST-B: Dipole Shear Imager - B</b>			
BHS	Borehole Status	OPEN	
DDE1	Digitizing Delay 1	0	US
DDEX	Digitizing Delay X	0	US
DLCS	Label Compressional Source - Dipole Shear	USE	
DSHL	Label Slowness Lower Limit - Dipole Shear	40	US/F
DSHU	Label Slowness Upper Limit - Dipole Shear	1040	US/F
DSI1	Digitizer Sample Interval 1	40	US
DSIX	Digitizer Sample Interval X	40	US
DTCS	Compressional Delta-T Source for DTCO Channel	PS_COMP	
DWC1	Digitizer Word Count 1	512	
DWCX	Digitizer Word Count X	512	
GCSE	Generalized Caliper Selection	BS	
LTXG	Lower Dipole Transmitter Geometry	156	IN
NW11	Number Waveform Items 1	8	
NW1X	Number Waveform Items X	0	
RX1G	Receiver 1 Geometry	294	IN
RX2G	Receiver 2 Geometry	300	IN
RX3G	Receiver 3 Geometry	306	IN
RX4G	Receiver 4 Geometry	312	IN
RX5G	Receiver 5 Geometry	318	IN
RX6G	Receiver 6 Geometry	324	IN
RX7G	Receiver 7 Geometry	330	IN
RX8G	Receiver 8 Geometry	336	IN
SAM1	DSST Sonic Acquisition Mode 1 - Lower Dipole Mode	LFD_EVEN	
SAMX	DSST Sonic Acquisition Mode X - Both Dipoles or Monopole Mode for Expert	OFF	
SAS1	STC Sonic Array Status - Lower Dipole	255	
SBO1	STC Search Band Offset - Lower Dipole	3000	US
SBW1	STC Search Bandwidth - Lower Dipole	8000	US
SFC1	STC Formation Character - Lower Dipole	SELECTABLE	
SFM1	STC Filter - Lower Dipole	B.3-1.5K	
SLL1	STC Slowness Lower Limit - Lower Dipole	40	US/F
SST1	STC Slowness Step - Lower Dipole	4	US/F
SSW1	STC Source Waveform - Lower Dipole	WF_SAM1	
SUL1	STC Slowness Upper Limit - Lower Dipole	1040	US/F
SWD1	STC Slowness Width - Lower Dipole	40	US/F
TBF1	STC Time for Baseline Fill - Lower Dipole	0	US
TLL1	STC Time Lower Limit - Lower Dipole	600	US
TST1	STC Time Step - Lower Dipole	200	US
TUL1	STC Time Upper Limit - Lower Dipole	18960	US
TWD1	STC Time Width - Lower Dipole	2000	US
TWI1	STC Integration Time Window - Lower Dipole	1600	US
TWSX	Transmitter Waveform Select X	0	
WFM1	Waveform Mode 1	W1	
<b>EDTC-B: Enhanced DTS Cartridge</b>			
BHS	Borehole Status	OPEN	
GCSE	Generalized Caliper Selection	BS	
<b>System and Miscellaneous</b>			
BS	Bit Size	9.875	IN
DFD	Drilling Fluid Density	1.26	G/C3
DO	Depth Offset for Playback	0.0	M
PP	Playback Processing	NORMAL	

Format: DSST\_LOWER\_DIPOLE\_RC\_TR\_VDL\_COLOR Vertical Scale: 1:200 Graphics File Created: 15-Oct-2017 17:58

## OP System Version: 19C0-187

HNGC-B	19C0-187	HNGS-BA	19C0-187
HRLT-B	19C0-187	DSST-B	19C0-187
HLDS	19C0-187	LDSC-B	19C0-187
EDTC-B	SKK-5169-EDTCB		

## Input DLIS Files

DEFAULT Flip\_NGS\_HRLA\_DSI\_055LUP PRODUCER 14-Oct-2017 14:04 3781.2 M 3031.2 M

## Output DLIS Files

DEFAULT NGS\_HRLA\_DSI\_LDL\_061PUP FN:61 PRODUCER 15-Oct-2017 17:57

Company: International Ocean Discovery Program Well: Expedition 369, Site U1512A

## Input DLIS Files

DEFAULT Flip\_NGS\_HRLA\_DSI\_055LUP PRODUCER 14-Oct-2017 14:04 3781.2 M 3031.2 M

## Output DLIS Files

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## OP System Version: 19C0-187

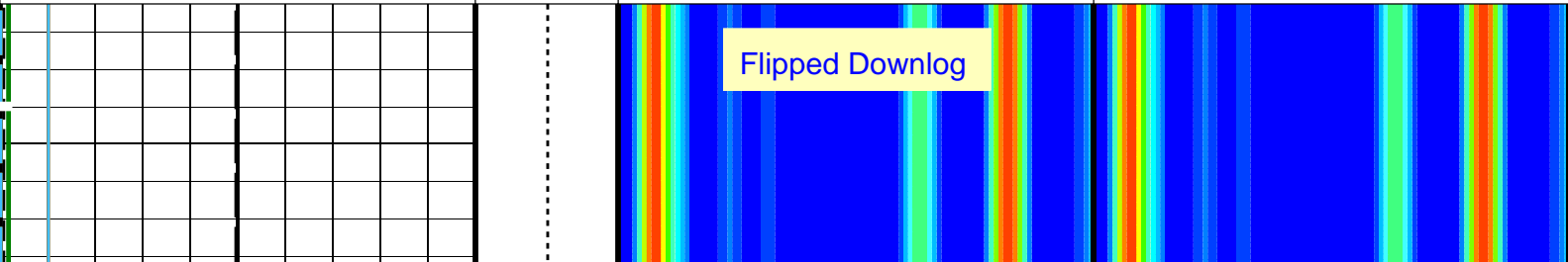
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EDTC-B	SKK-5169-EDTCB		

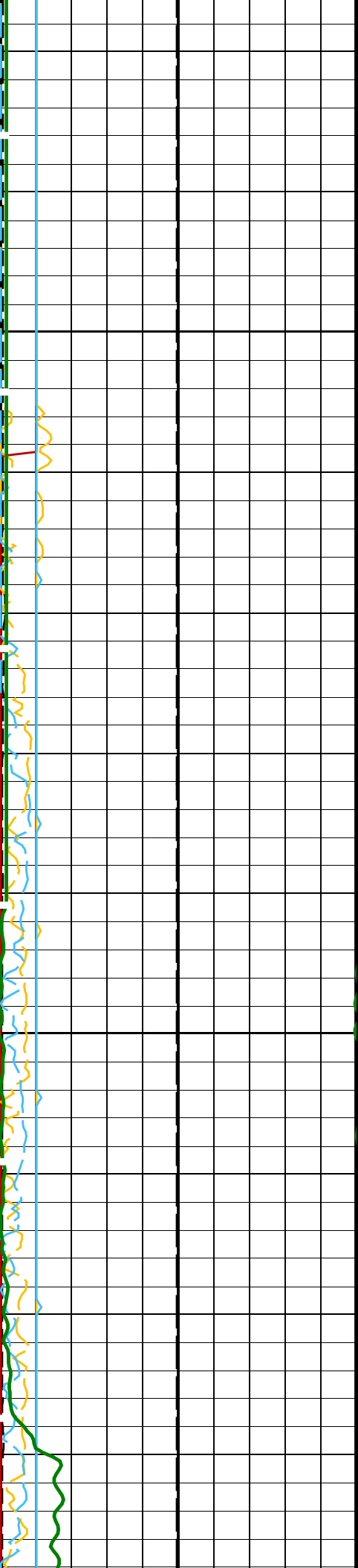
### PIP SUMMARY

Time Mark Every 60 S

<p style="color: green; text-align: center;"><b>HNGS Spectroscopy Gamma Ray (HSGR)</b></p> <hr style="border: 1px solid green;"/> <p style="text-align: center;">0 (GAPI) 100</p>																																																																																																						
<p style="color: blue; text-align: center;"><b>Peak Coherence / TA - P &amp; S Shear (CHTS)</b></p> <hr style="border: 1px dashed blue;"/> <p style="text-align: center;">-1 (----) 9</p>																																																																																																						
<p style="color: orange; text-align: center;"><b>Peak Coherence / RA - P &amp; S Shear (CHRS)</b></p> <hr style="border: 1px dashed orange;"/> <p style="text-align: center;">-1 (----) 9</p>																																																																																																						
<p style="color: blue; text-align: center;"><b>Peak Coherence / TA - P &amp; S Comp (CHTP)</b></p> <hr style="border: 1px dashed blue;"/> <p style="text-align: center;">0 (----) 10</p>																																																																																																						
<p style="color: orange; text-align: center;"><b>Peak Coherence / RA - P &amp; S Comp (CHRP)</b></p> <hr style="border: 1px dashed orange;"/> <p style="text-align: center;">0 (----) 10</p>																																																																																																						
<p style="color: red; text-align: center;"><b>Waveform Data Copy Indicator 4 - Monopole P&amp;S (WCI4)</b></p> <hr style="border: 1px solid red;"/> <p style="text-align: center;">0 (----) 10</p>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>Min</td> <td colspan="10">Amplitude</td> <td>Max</td> <td>Min</td> <td colspan="10">Amplitude</td> <td>Max</td> </tr> <tr> <td></td> <td colspan="20"></td> <td></td> </tr> <tr> <td colspan="11">Tr.Array P&amp;S Slow Proj. CVDL (SPT4)</td> <td colspan="11">Rec.Array P&amp;S Slow Proj. CVDL (SPR4)</td> </tr> <tr> <td colspan="11">40 (US/F)</td> <td colspan="11">40 (US/F)</td> <td colspan="11">240</td> </tr> </table>	Min	Amplitude										Max	Min	Amplitude										Max																							Tr.Array P&S Slow Proj. CVDL (SPT4)											Rec.Array P&S Slow Proj. CVDL (SPR4)											40 (US/F)											40 (US/F)											240										
Min	Amplitude										Max	Min	Amplitude										Max																																																																															
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40 (US/F)											40 (US/F)											240																																																																																
<p style="text-align: center;"><b>SAM4 Waveform Gain (WFG4)</b></p> <hr style="border: 1px dashed black;"/> <p style="text-align: center;">0 (----) 1000</p>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="11">Delta-T Shear / TA - P &amp; S (DTTS)</td> <td colspan="11">Delta-T Shear / RA - P &amp; S (DTRS)</td> </tr> <tr> <td colspan="11">40 (US/F)</td> <td colspan="11">40 (US/F)</td> <td colspan="11">240</td> </tr> </table>	Delta-T Shear / TA - P & S (DTTS)											Delta-T Shear / RA - P & S (DTRS)											40 (US/F)											40 (US/F)											240																																																								
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40 (US/F)											40 (US/F)											240																																																																																
<p style="text-align: center;"><b>Bit Size (BS)</b></p> <hr style="border: 1px dashed black;"/> <p style="text-align: center;">0 (IN) 20</p>	<table border="1" style="width: 100%; text-align: center;"> <tr> <td colspan="11">Delta-T Comp / TA - P &amp; S (DTPP)</td> <td colspan="11">Delta-T Comp / RA - P &amp; S (DTRP)</td> </tr> <tr> <td colspan="11">40 (US/F)</td> <td colspan="11">40 (US/F)</td> <td colspan="11">240</td> </tr> </table>	Delta-T Comp / TA - P & S (DTPP)											Delta-T Comp / RA - P & S (DTRP)											40 (US/F)											40 (US/F)											240																																																								
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40 (US/F)											40 (US/F)											240																																																																																
<p style="text-align: center;"><b>Tension (TENS)</b></p> <hr style="border: 1px dashed black;"/> <p style="text-align: center;">10000 (LBF) 0</p>																																																																																																						

Flipped Downlog

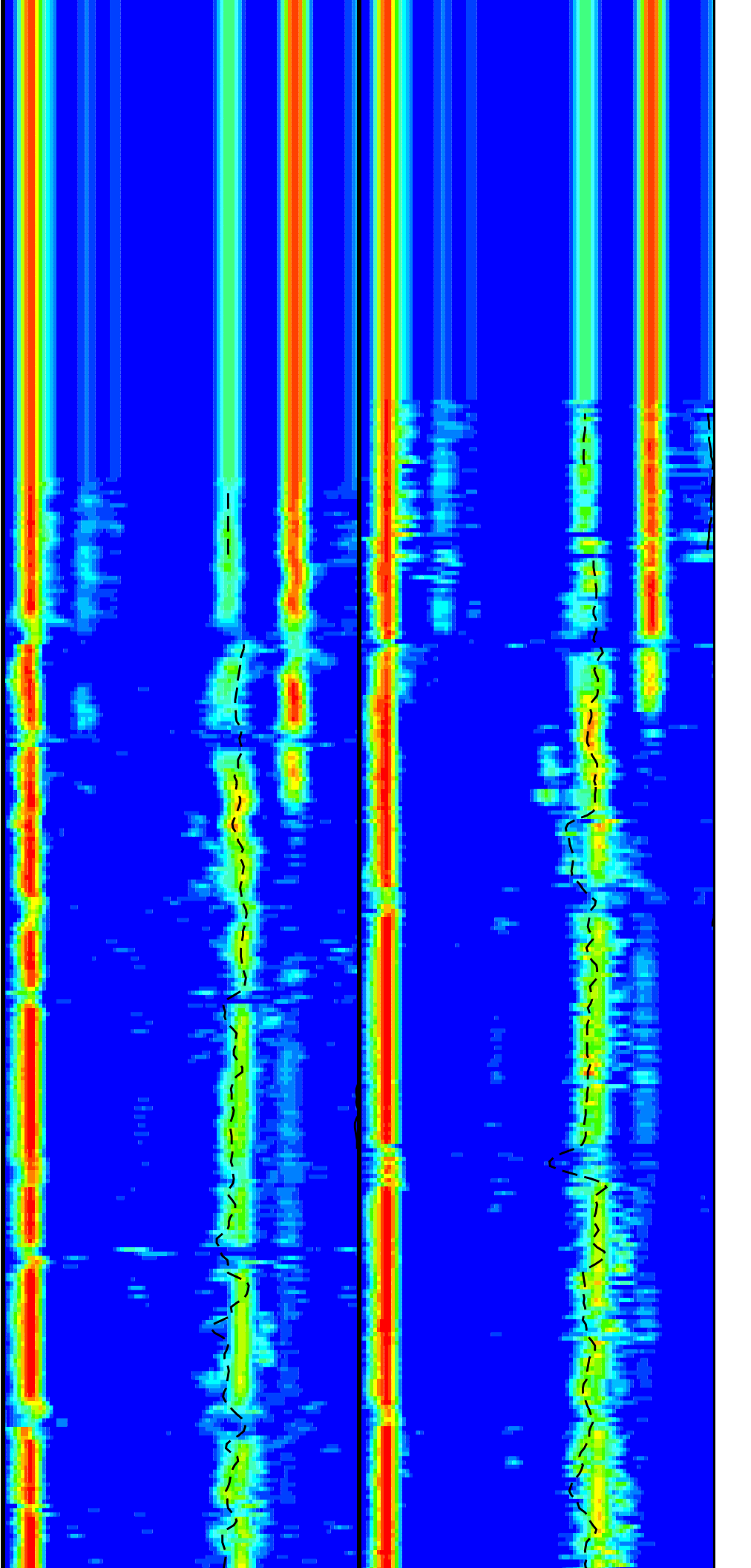


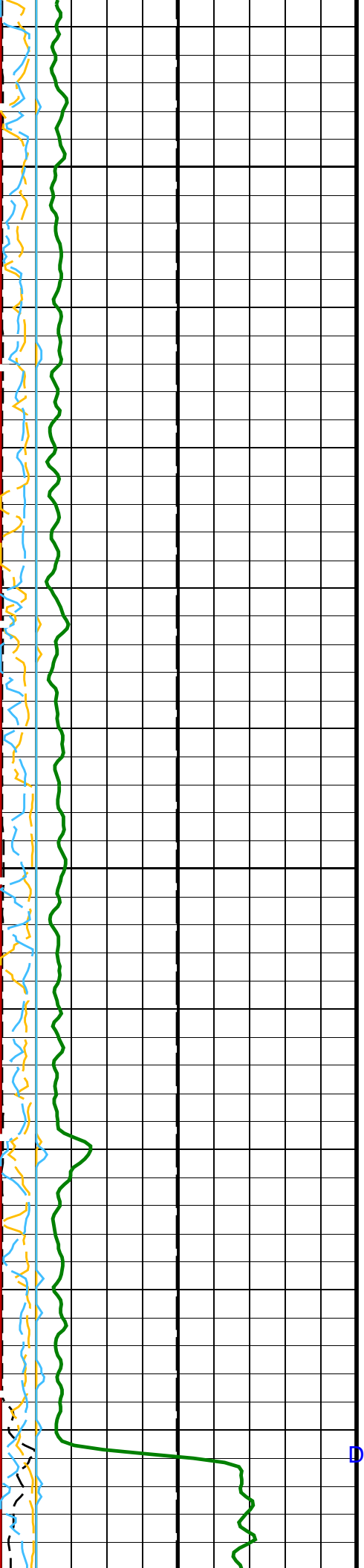


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Sea Floor



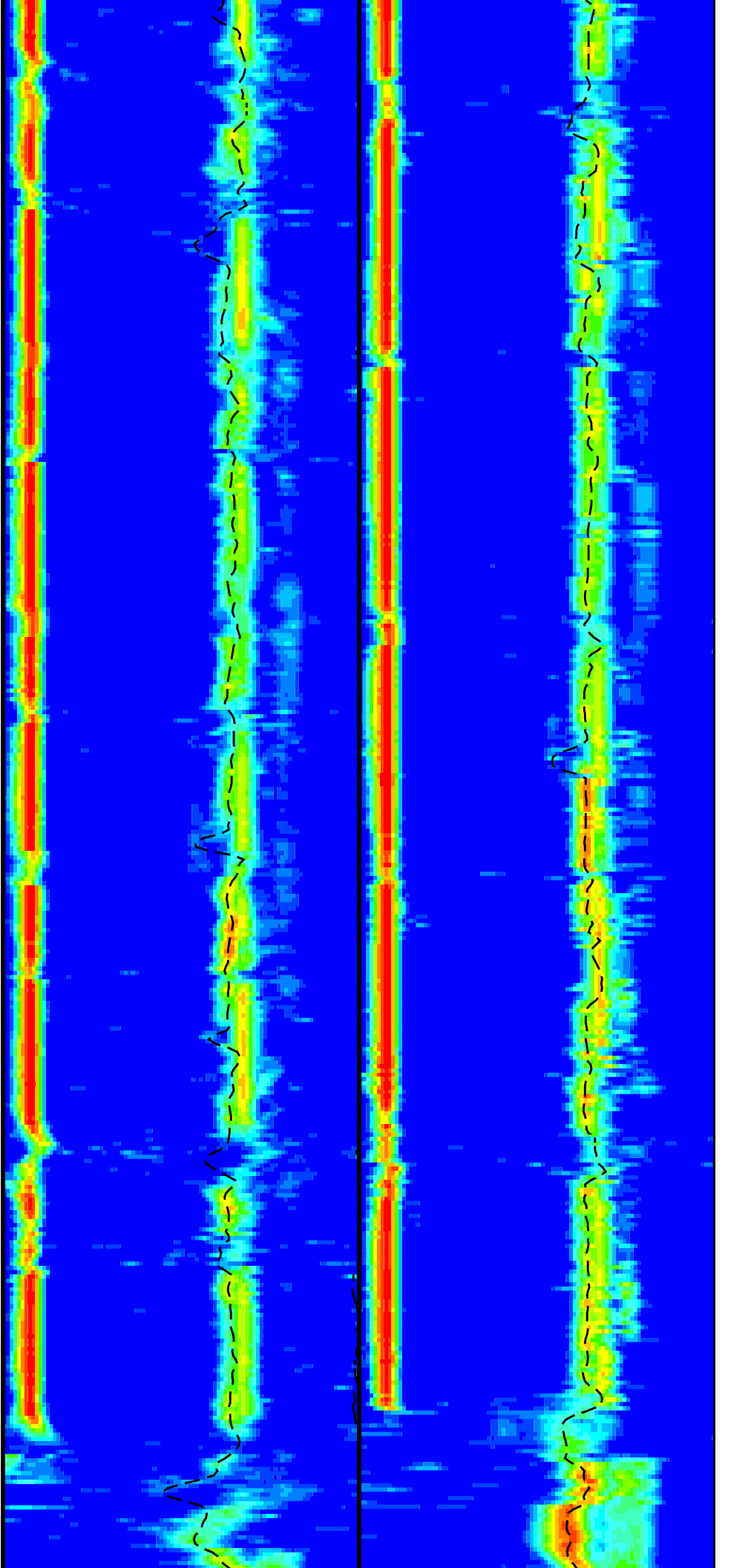


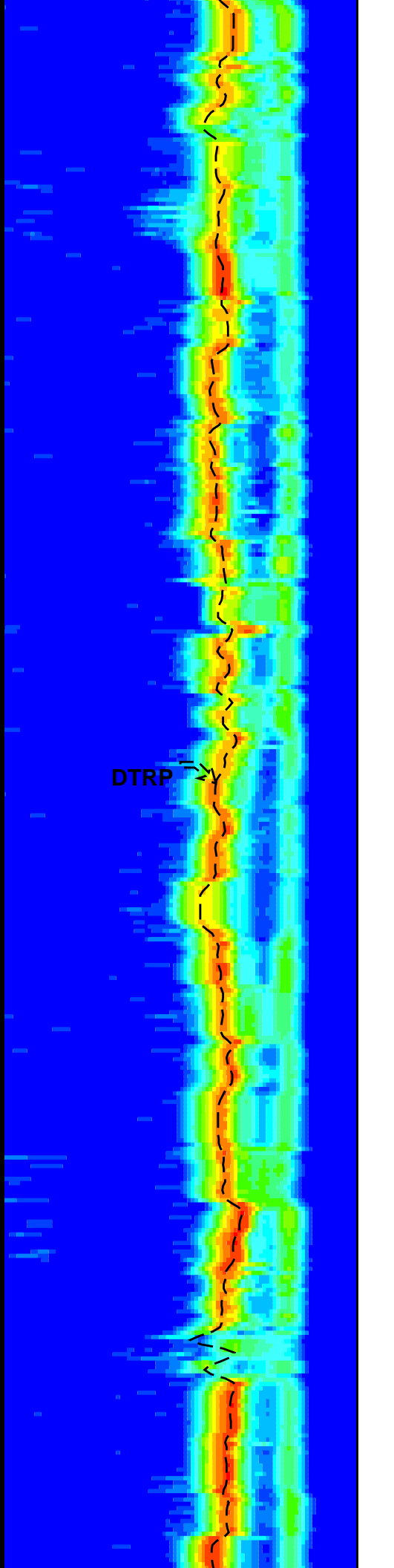
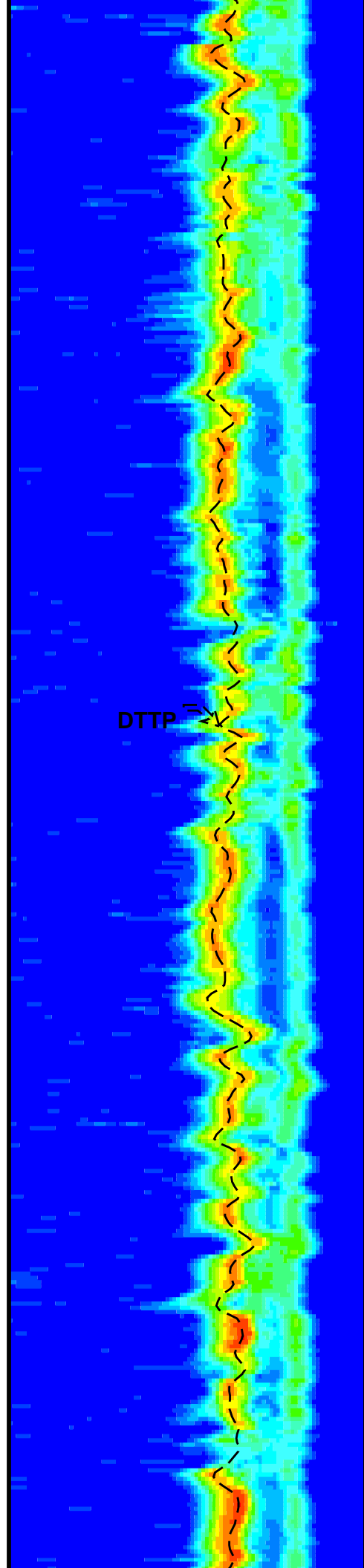
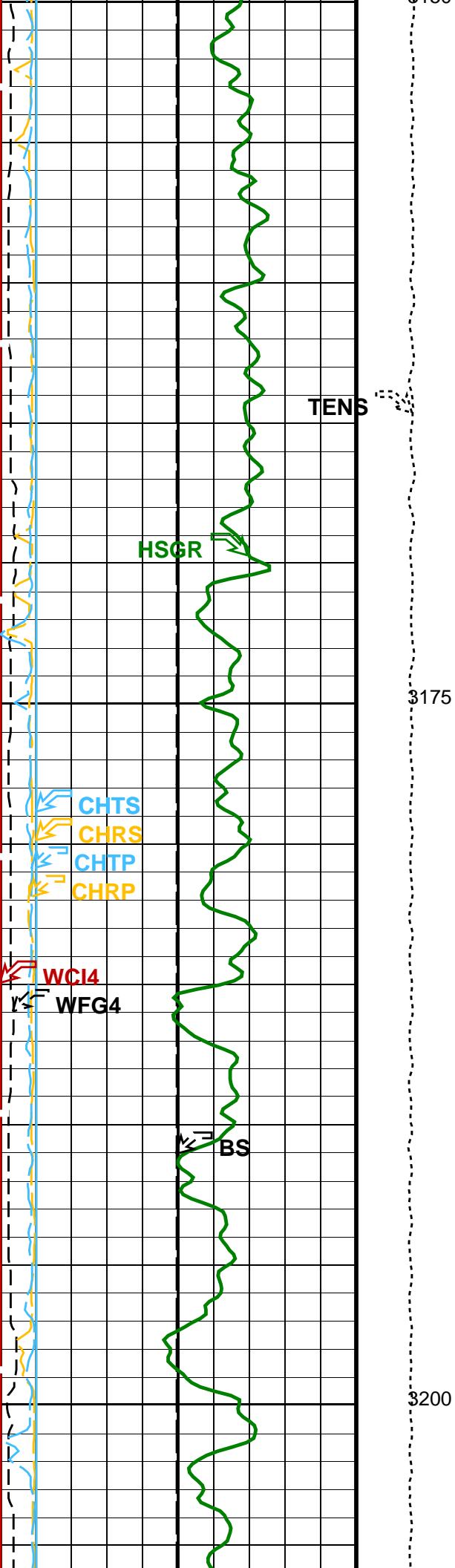
Drill Pipe

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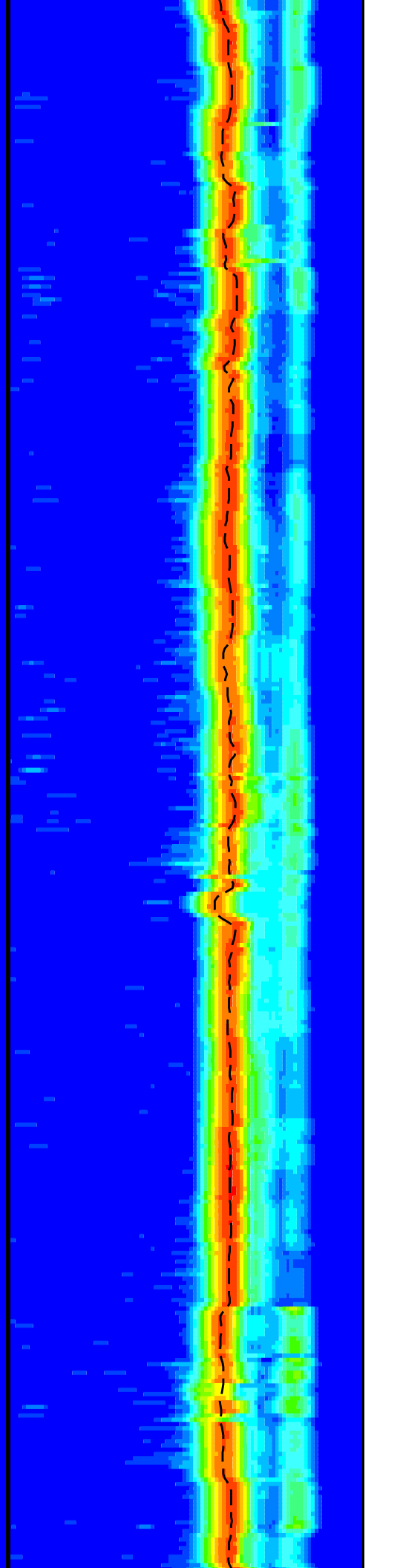
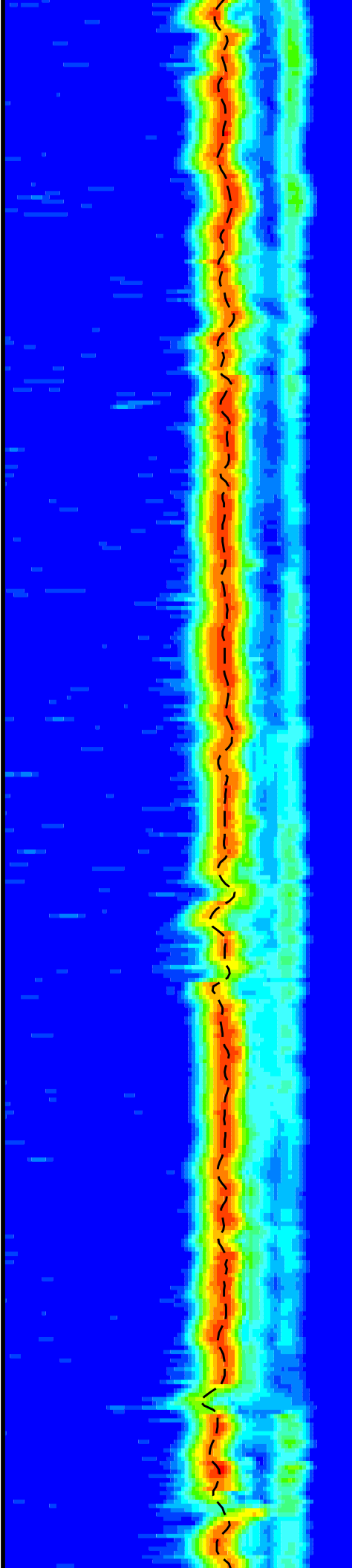
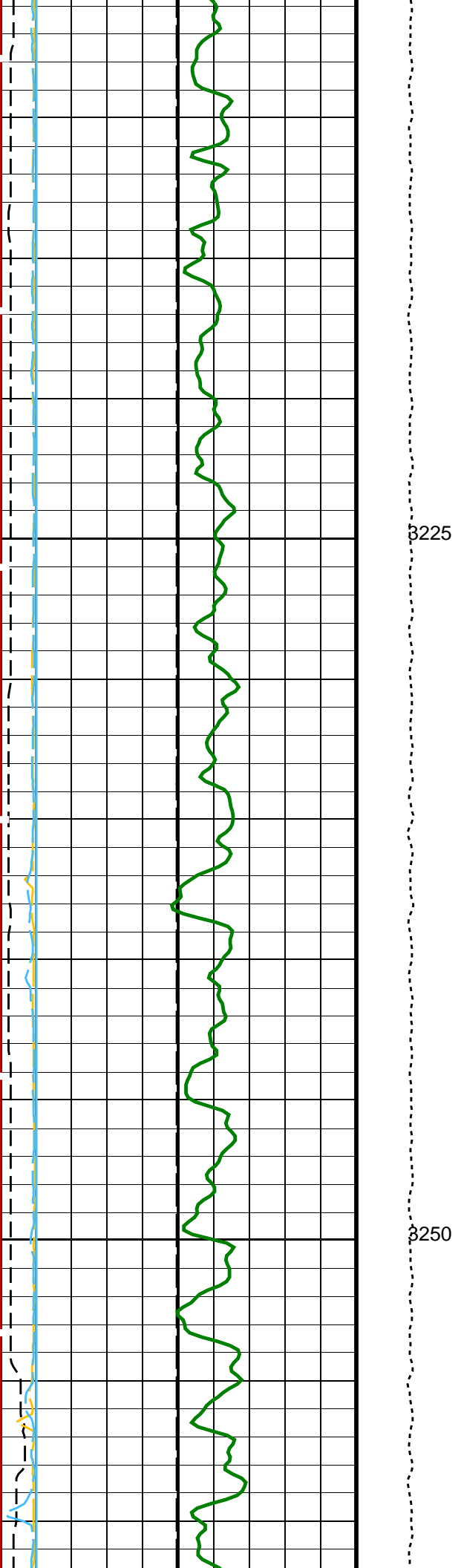
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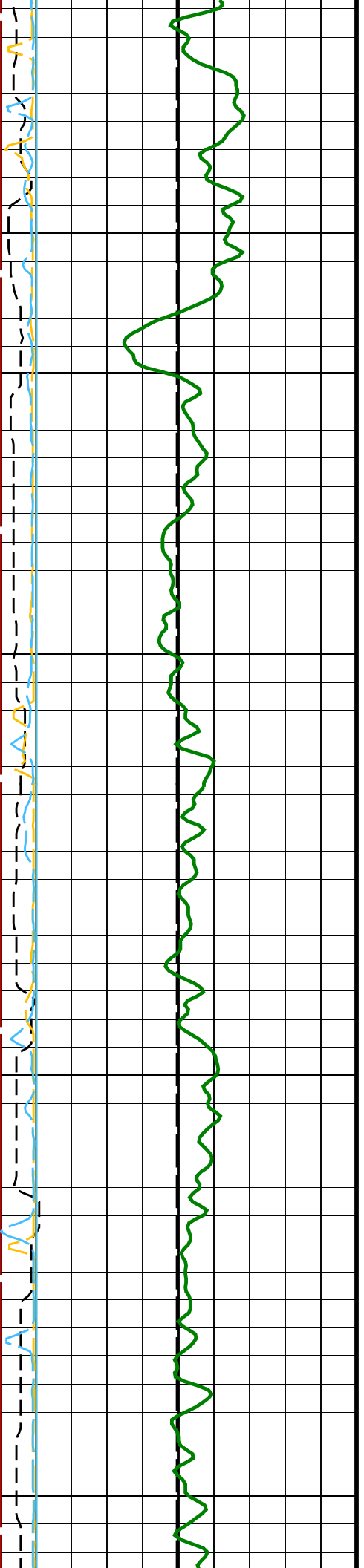
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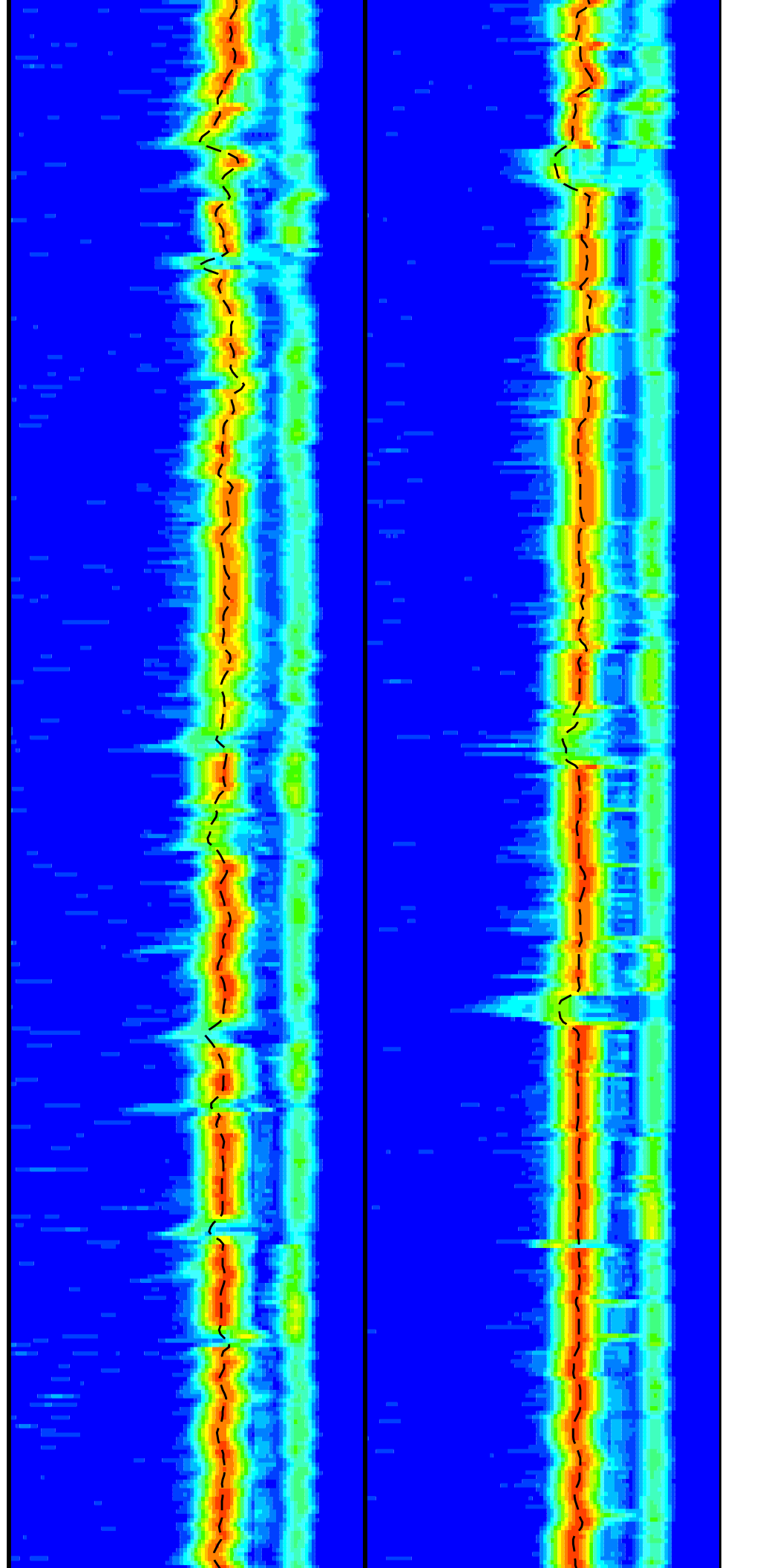


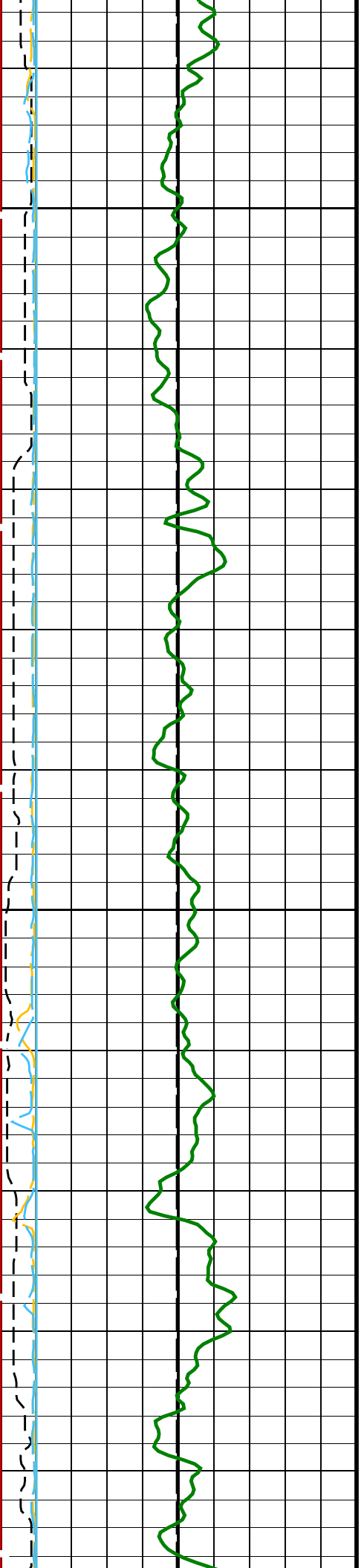




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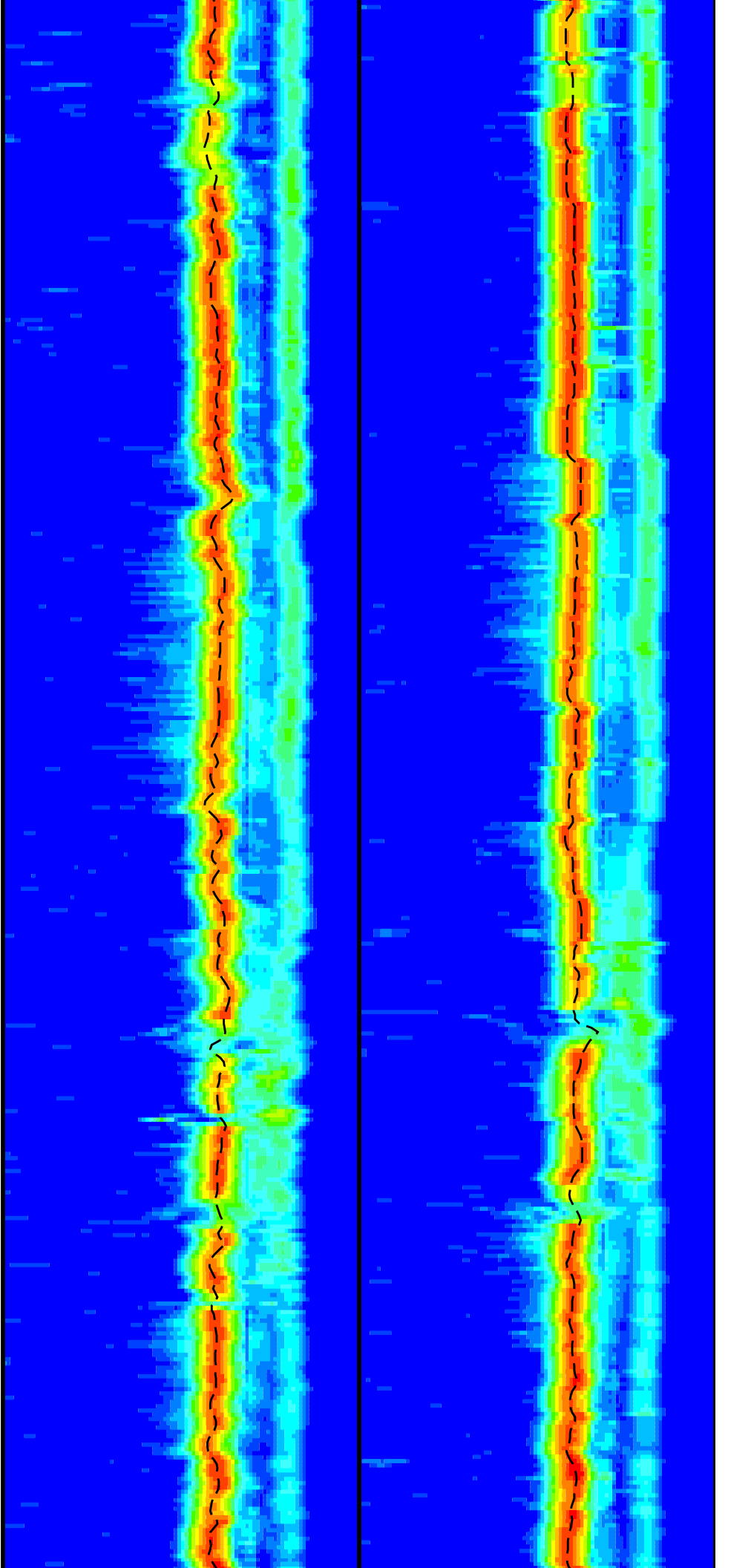
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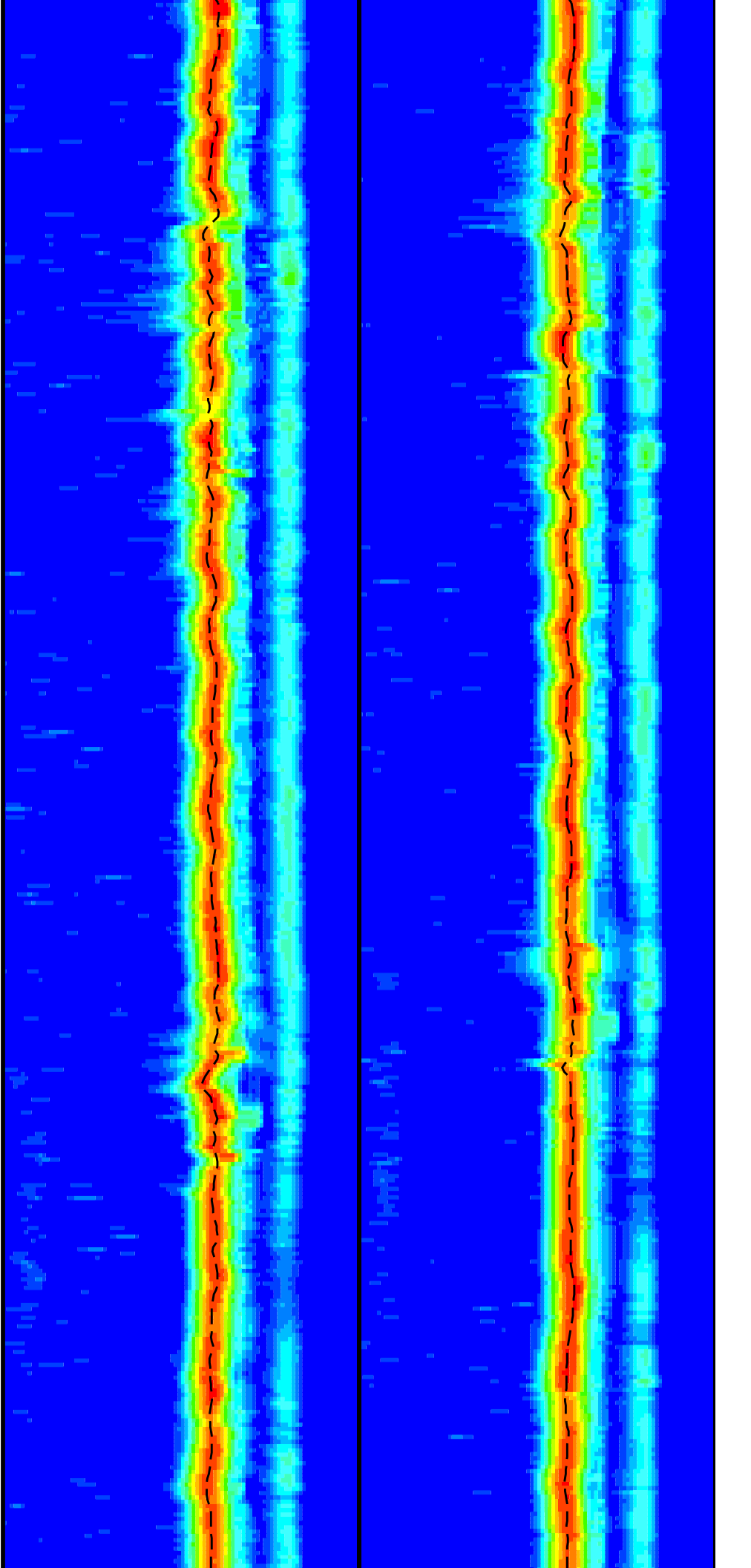
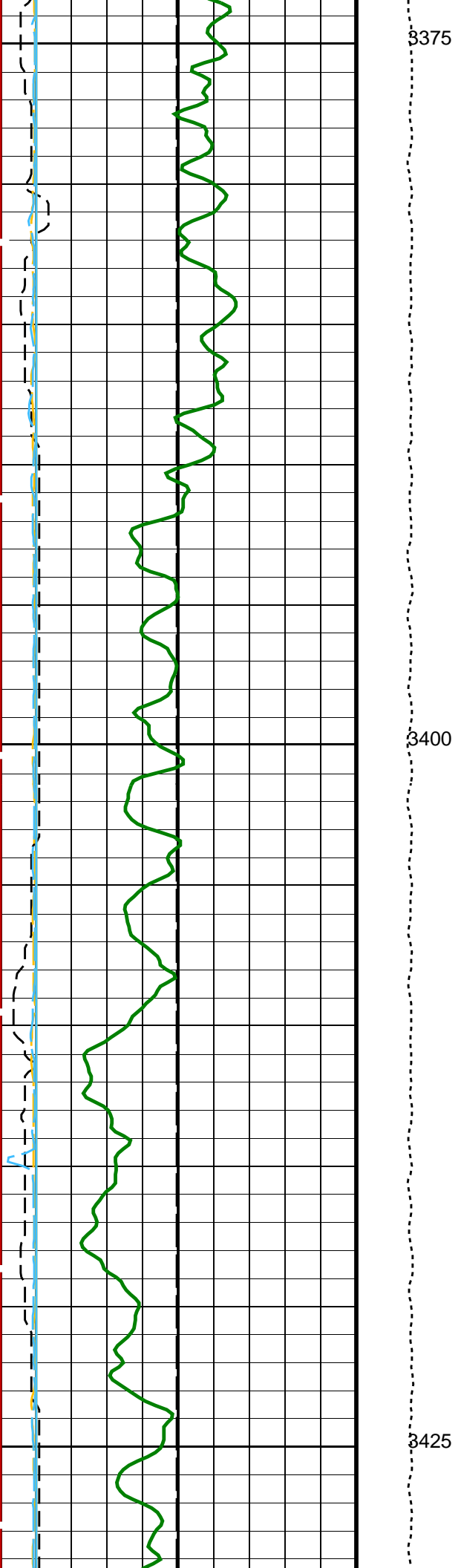


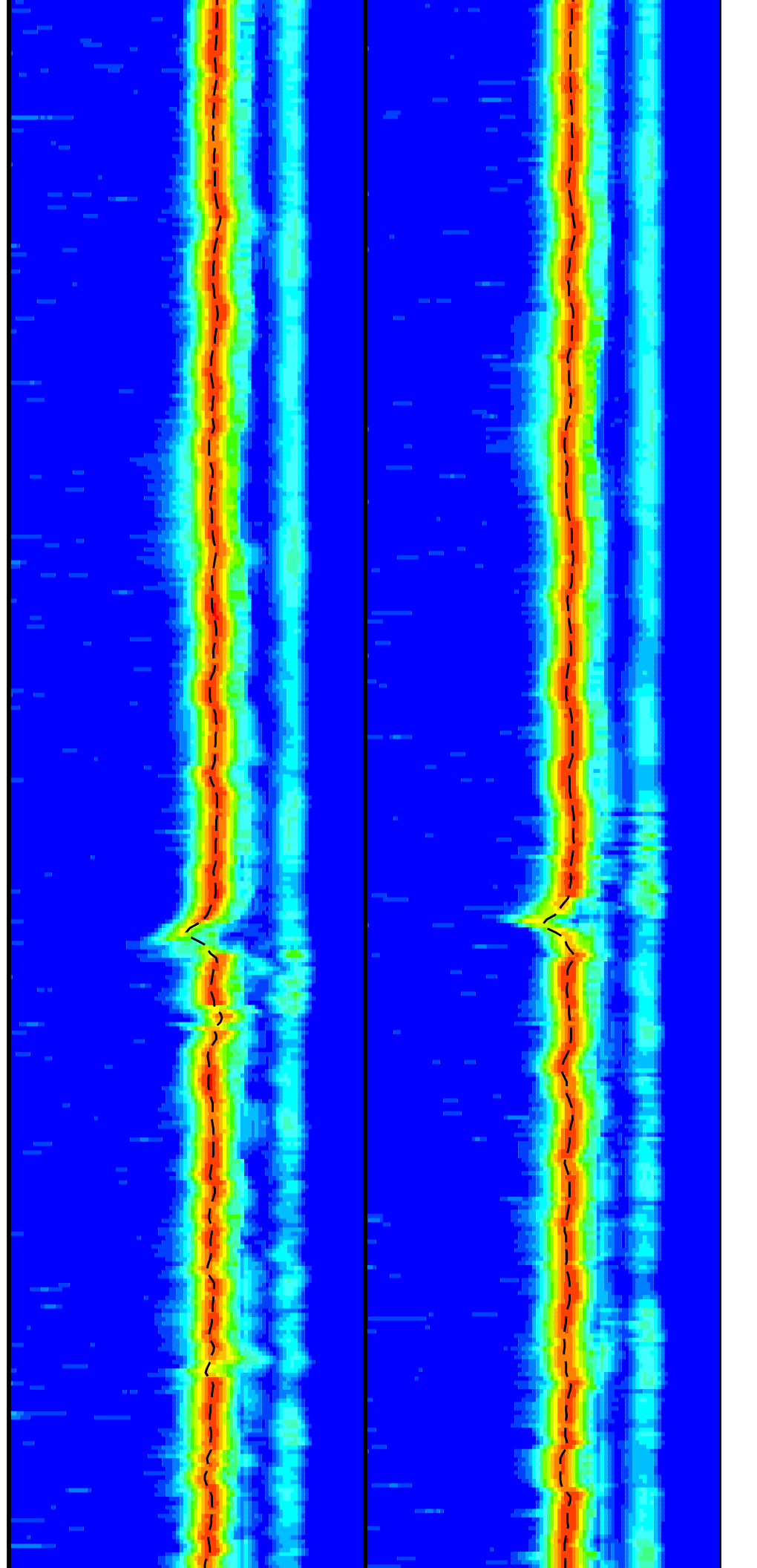
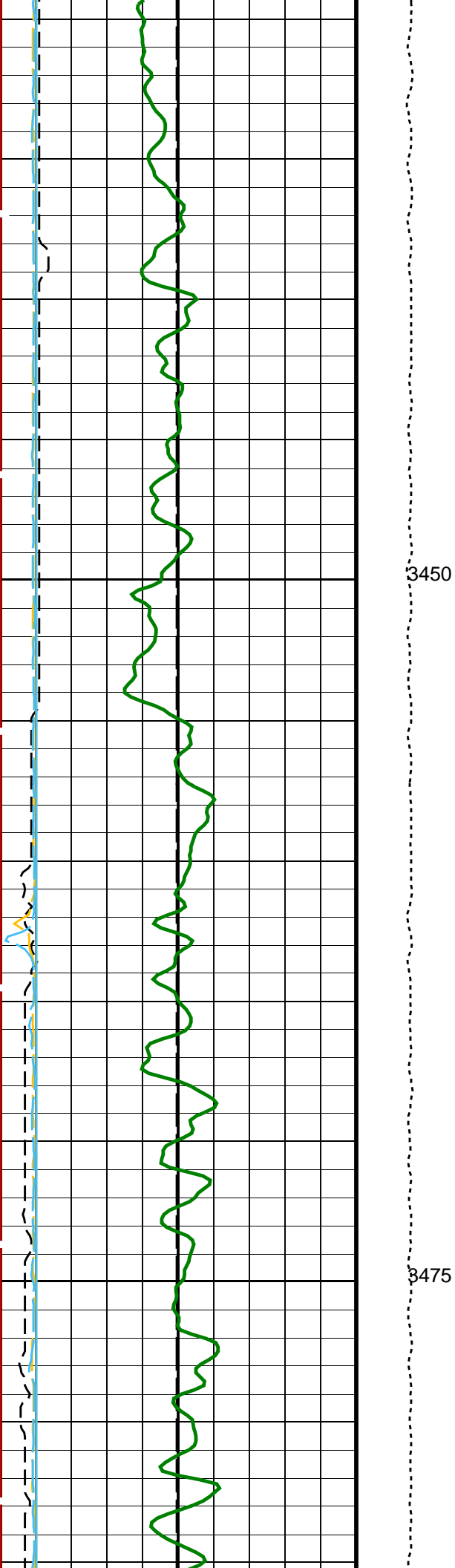


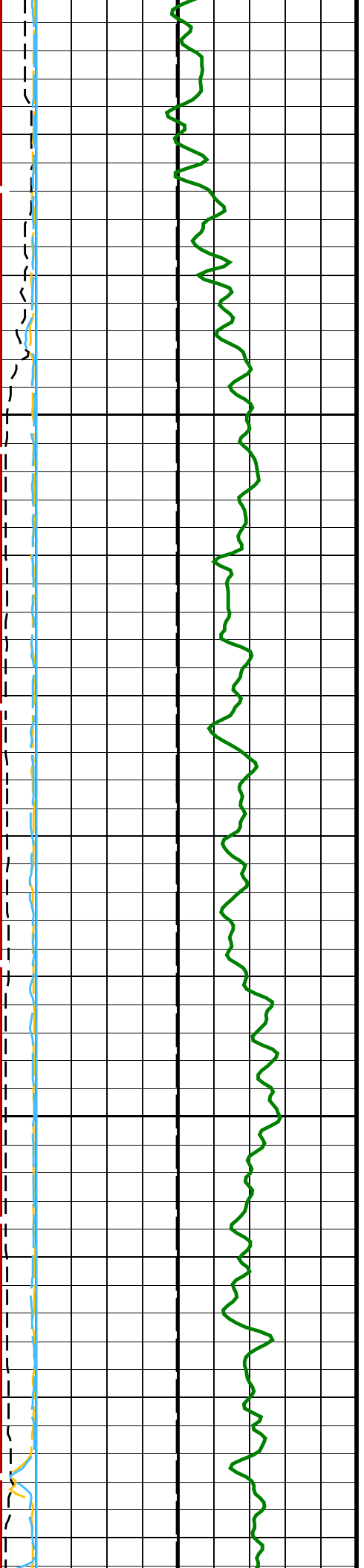
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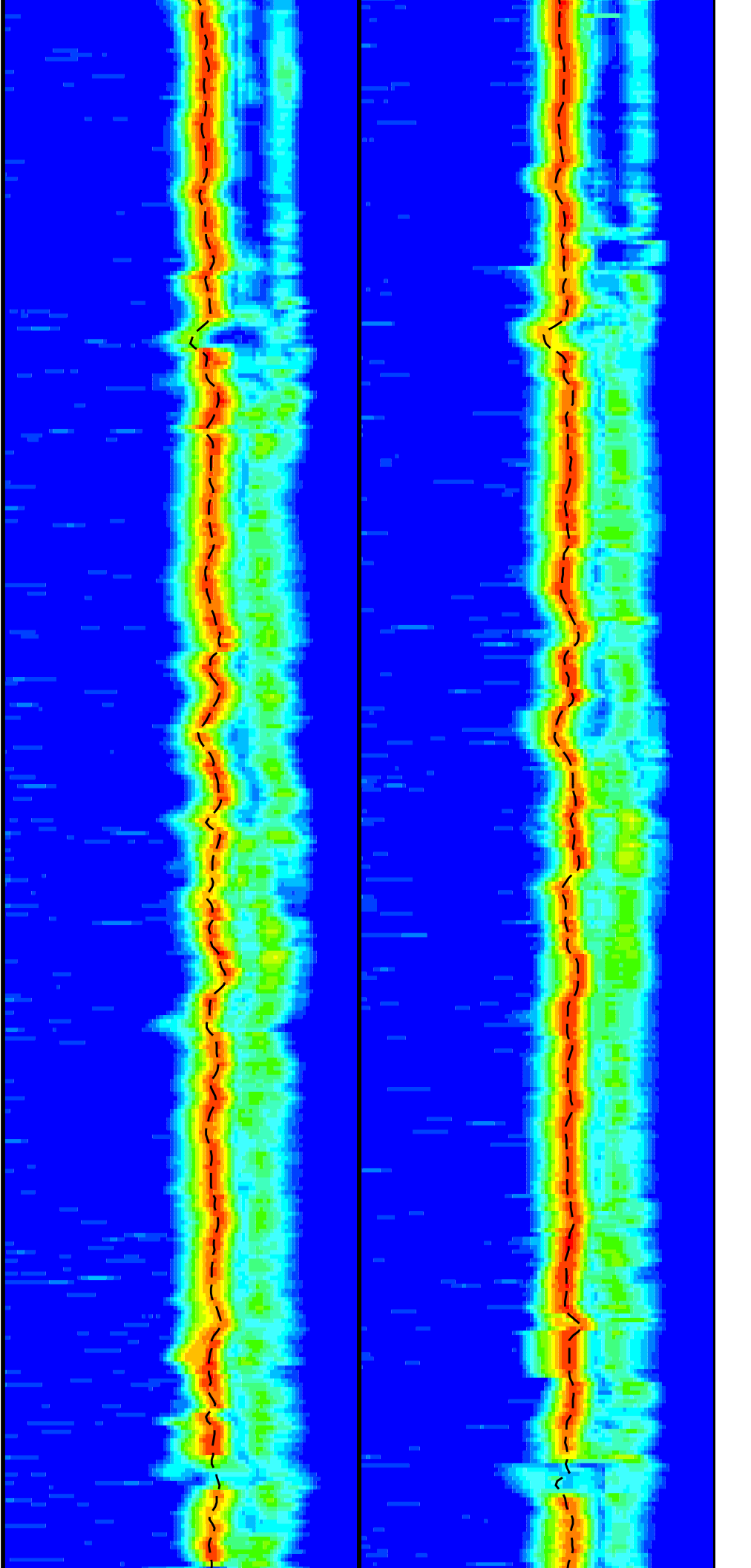


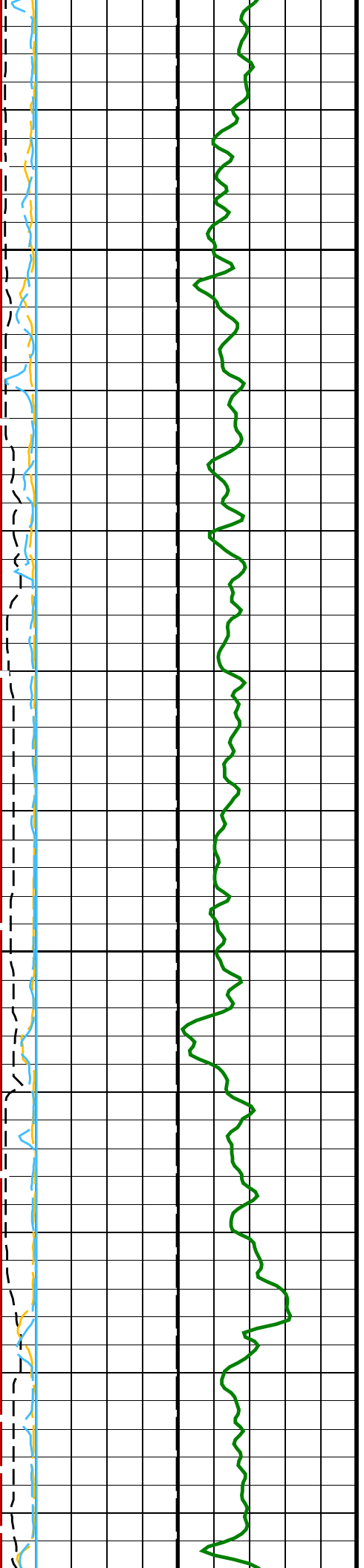




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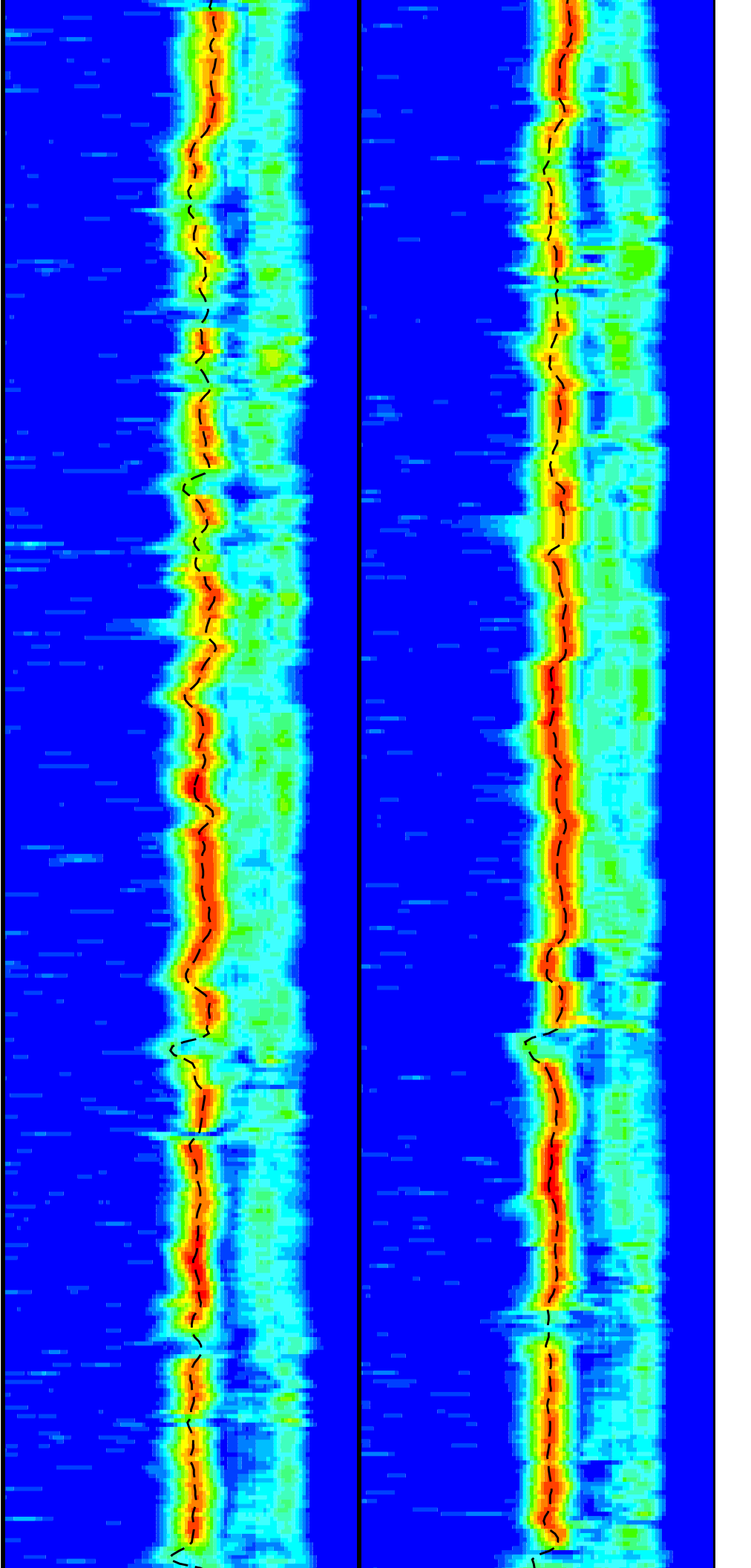
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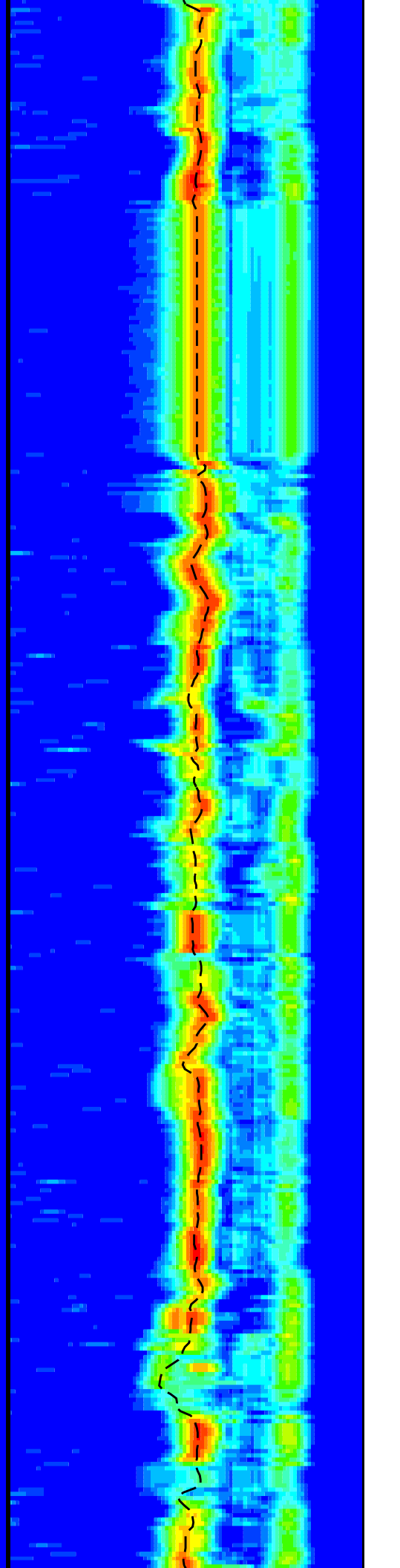
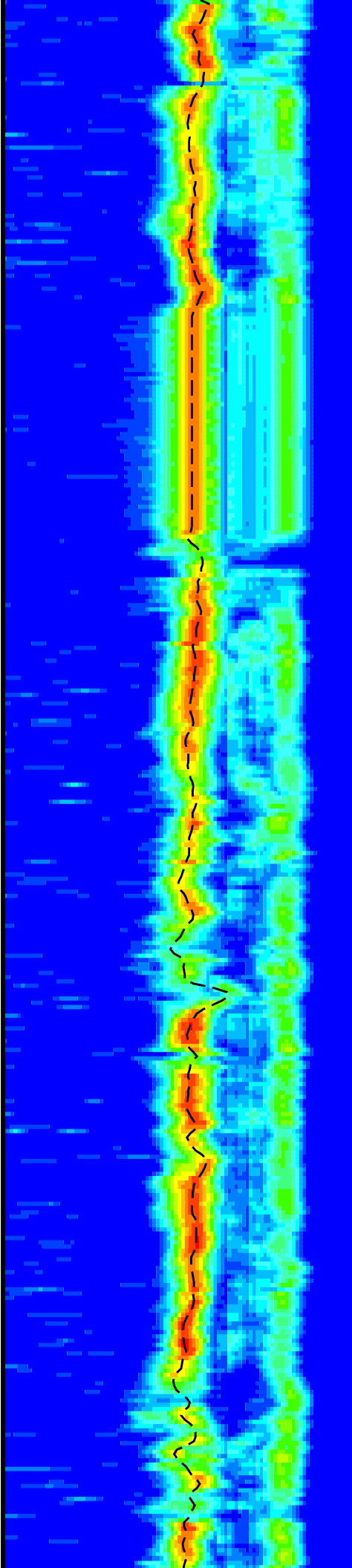
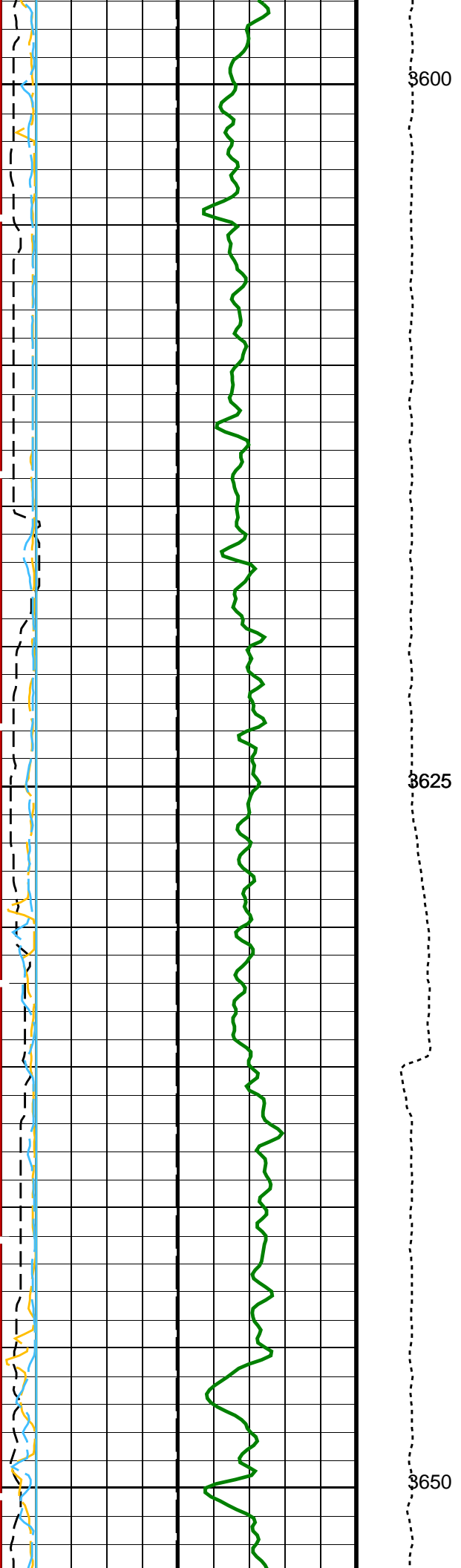


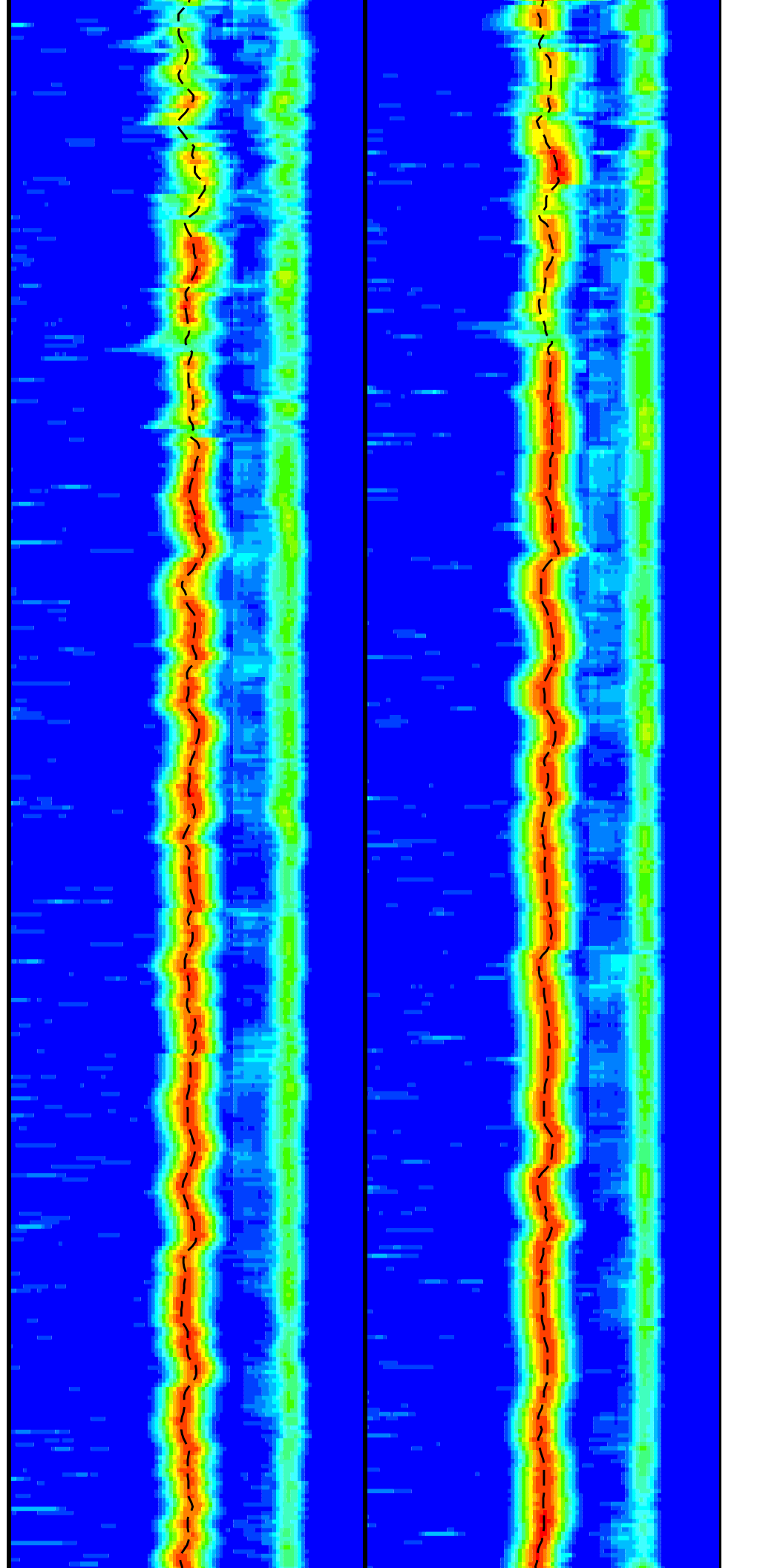
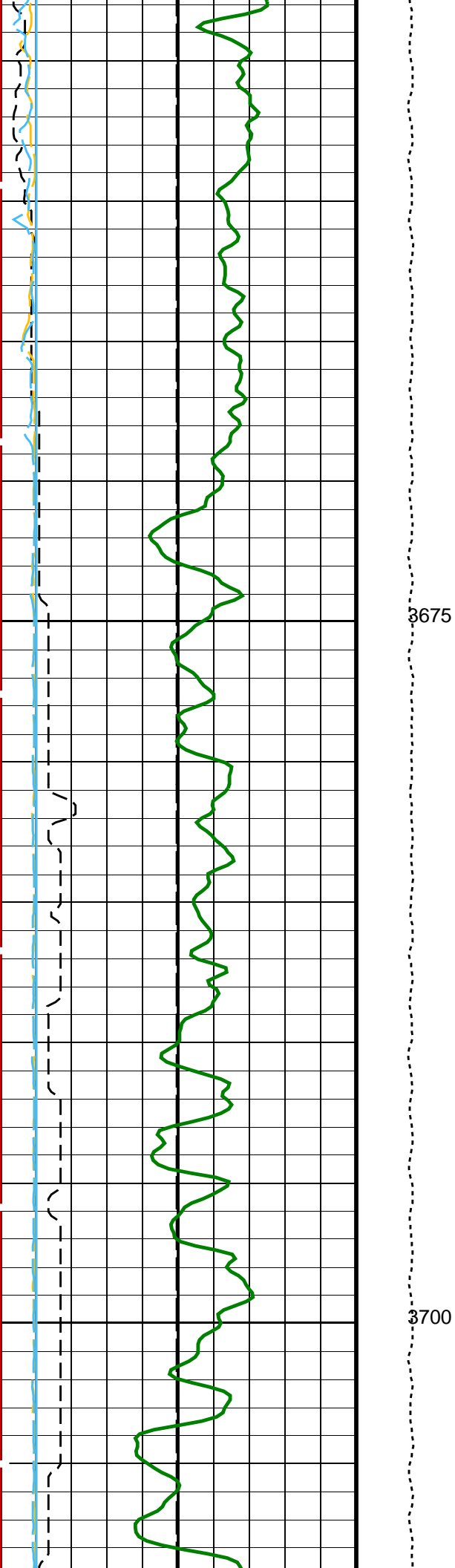
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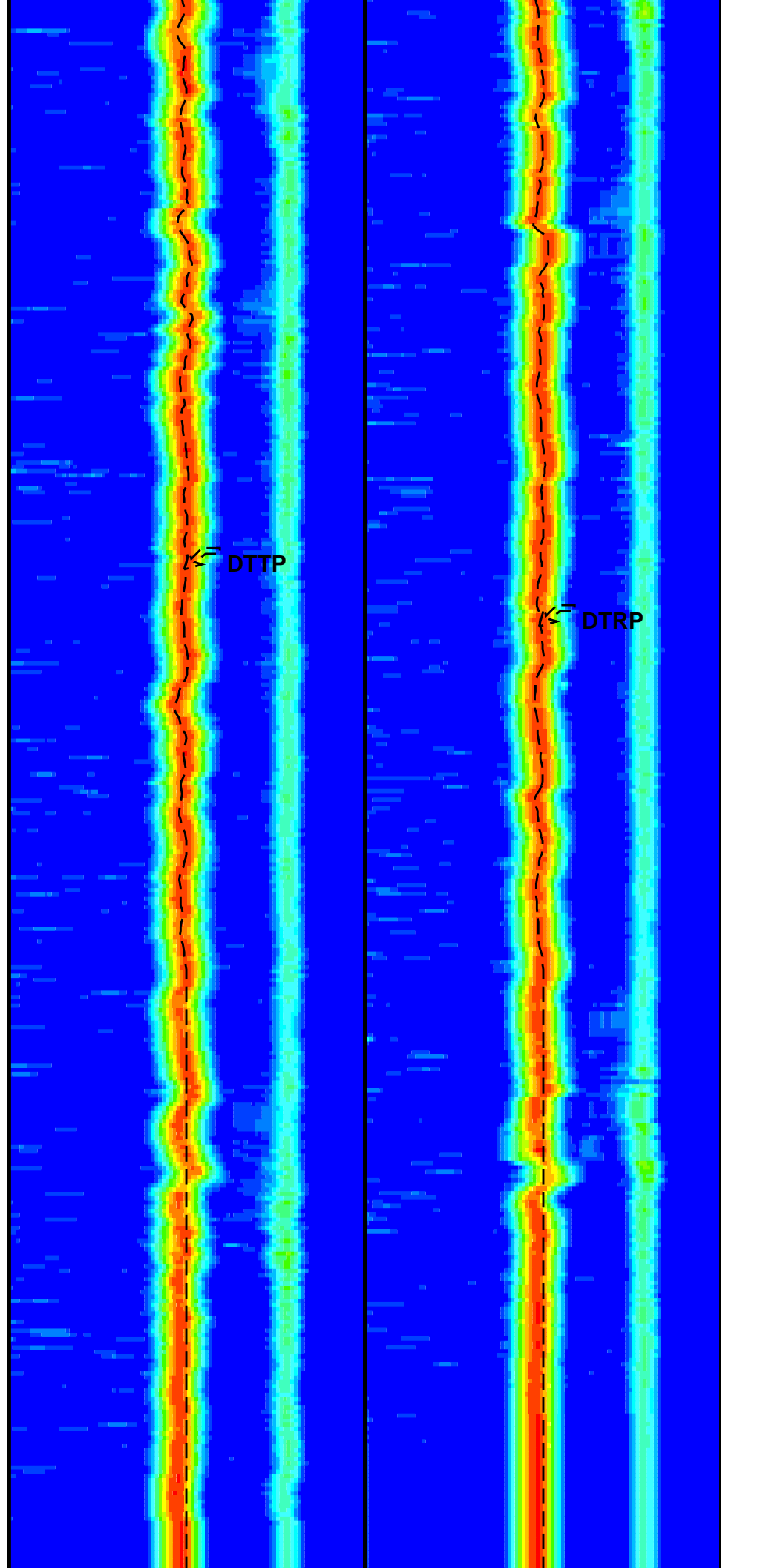
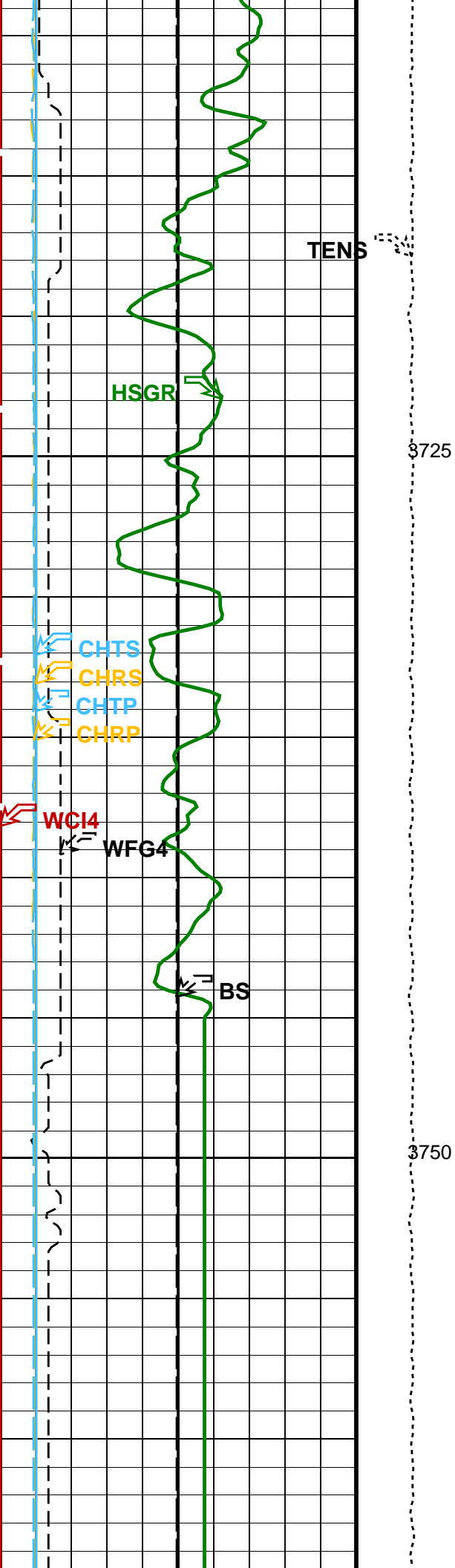
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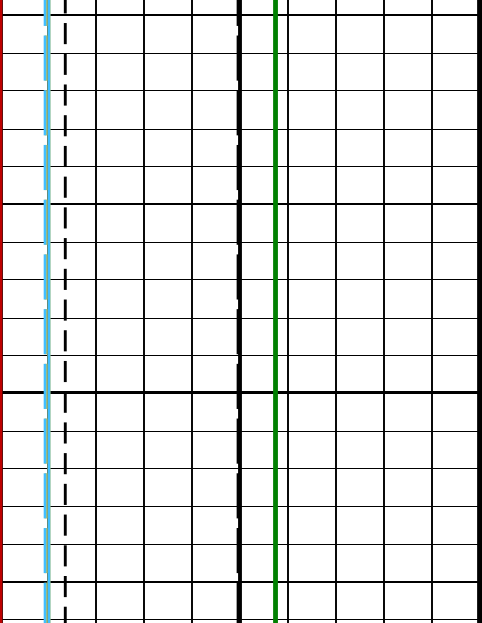




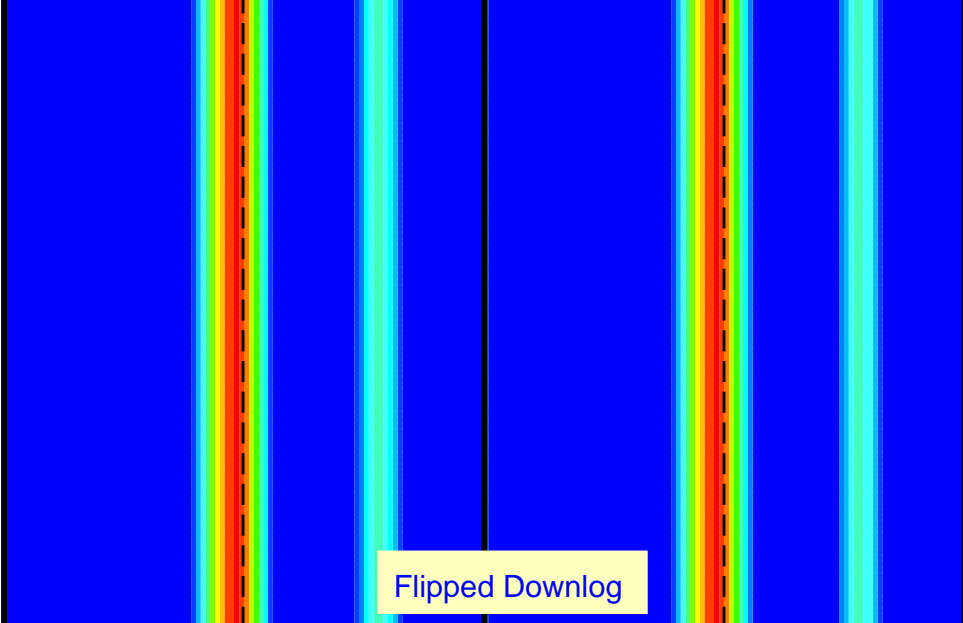








3775



Bit Size (BS) (IN)	0	20
SAM4 Waveform Gain (WFG4) (-----)	0	1000
Waveform Data Copy Indicator 4 – Monopole P&S (WCI4) (-----)	0	10
Peak Coherence / RA – P & S Comp (CHRP) (-----)	0	10
Peak Coherence / TA – P & S Comp (CHTP) (-----)	0	10
Peak Coherence / RA – P & S Shear (CHRS) (-----)	-1	9
Peak Coherence / TA – P & S Shear (CHTS) (-----)	-1	9
HNGS Spectroscopy Gamma Ray (HSGR) (GAPI)	0	100

Tension (TENS) (LBF)	10000	0
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Delta-T Comp / TA – P & S (DTTP) (US/F)	40	240
Delta-T Shear / TA – P & S (DTTS) (US/F)	40	240
Min	Amplitude	Max
Tr.Array P&S Slow Proj. CVDL (SPT4) (US/F)		
40		240

Delta-T Comp / RA – P & S (DTRP) (US/F)	40	240
Delta-T Shear / RA – P & S (DTRS) (US/F)	40	240
Min	Amplitude	Max
Rec.Array P&S Slow Proj. CVDL (SPR4) (US/F)		
40		240

PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
HNGS-BA: Hostile Natural Gamma Ray Sonde		
BAR1	HNGS Detector 1 Barite Constant	1
BAR2	HNGS Detector 2 Barite Constant	1
BHK	HNGS Borehole Potassium Correction Concentration	0
BHS	Borehole Status	OPEN
CSD1	Inner Casing Outer Diameter	0 IN
CSD2	Outer Casing Outer Diameter	0 IN
CSW1	Inner Casing Weight	0 LB/F
CSW2	Outer Casing Weight	0 LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE
GCSE	Generalized Caliper Selection	BS
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW

H2P	HNGS Detector 2 Allow/Disallow in Processing	ALLOW	0	
HABK	HNGS Borehole Potassium Running Average		0	
HALF	HNGS Alpha Filter Length		60	IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE		
HMWM	Mud Weighting Material	BARI		
HNPE	HNGS Processing Enable	YES		
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3		CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3		CPS
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES		
TPOS	Tool Position	CENT		
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0		
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0		
<b>HRLT-B: High Resolution Laterolog Array - B</b>				
BHS	Borehole Status	OPEN		
GCSE	Generalized Caliper Selection	BS		
<b>DSST-B: Dipole Shear Imager - B</b>				
BHS	Borehole Status	OPEN		
CASF	Label Casing Function - Monopole P&S	50		
COLL	Label Slowness Lower Limit - Monopole P&S Compressional	120		US/F
COUL	Label Slowness Upper Limit - Monopole P&S Compressional	180		US/F
DDE4	Digitizing Delay 4	0		US
DDEX	Digitizing Delay X	0		US
DSI4	Digitizer Sample Interval 4	10		US
DSIX	Digitizer Sample Interval X	40		US
DTF	Delta-T Fluid	193		US/F
DWC4	Digitizer Word Count 4	512		
DWCX	Digitizer Word Count X	512		
FILG	Label Fill Gap Control - Monopole P&S	COMP_SHEAR		
GCSE	Generalized Caliper Selection	BS		
LFC	Label Formation Character - Monopole P&S	DYNAMIC		
MCS	Mean Casing Slowness	57		US/F
MTXG	Monopole Transmitter Geometry	186		IN
NWI4	Number Waveform Items 4	8		
NWIX	Number Waveform Items X	0		
RSMN	Label Shear/Compressional Minimum Ratio - Monopole P&S	1.4		
RSMX	Label Shear/Compressional Maximum Ratio - Monopole P&S	2.12		
RX1G	Receiver 1 Geometry	294		IN
RX2G	Receiver 2 Geometry	300		IN
RX3G	Receiver 3 Geometry	306		IN
RX4G	Receiver 4 Geometry	312		IN
RX5G	Receiver 5 Geometry	318		IN
RX6G	Receiver 6 Geometry	324		IN
RX7G	Receiver 7 Geometry	330		IN
RX8G	Receiver 8 Geometry	336		IN
SAM4	DSST Sonic Acquisition Mode 4 - Monopole Mode for P&S	EVEN		
SAMX	DSST Sonic Acquisition Mode X - Both Dipoles or Monopole Mode for Expert	OFF		
SAS4	STC Sonic Array Status - Monopole P&S	255		
SBO4	STC Search Band Offset - Monopole P&S	500		US
SBR4	STC Baseline Removal - Monopole P&S	ON		
SBW4	STC Search Bandwidth - Monopole P&S	2000		US
SFC4	STC Formation Character - Monopole P&S	SELECTABLE		
SFM4	STC Filter - Monopole P&S	B3-20K		
SHLL	Label Slowness Lower Limit - Monopole P&S Shear	235		US/F
SHUL	Label Slowness Upper Limit - Monopole P&S Shear	240		US/F
SLL4	STC Slowness Lower Limit - Monopole P&S	40		US/F
SST4	STC Slowness Step - Monopole P&S	2		US/F
SSW4	STC Source Waveform - Monopole P&S	WF_SAM4		
STLL	Label Slowness Lower Limit - Monopole Stoneley	180		US/F
STUL	Label Slowness Upper Limit - Monopole Stoneley	780		US/F
SUL4	STC Slowness Upper Limit - Monopole P&S	240		US/F
SWD4	STC Slowness Width - Monopole P&S	10		US/F
TBF4	STC Time for Baseline Fill - Monopole P&S	300		US
TLL4	STC Time Lower Limit - Monopole P&S	150		US
TST4	STC Time Step - Monopole P&S	50		US
TUL4	STC Time Upper Limit - Monopole P&S	3660		US
TWD4	STC Time Width - Monopole P&S	1000		US
TWI4	STC Integration Time Window - Monopole P&S	500		US
TWSX	Transmitter Waveform Select X	0		
WFM4	Waveform Mode 4	W1		
<b>EDTC-B: Enhanced DTS Cartridge</b>				
BHS	Borehole Status	OPEN		
GCSE	Generalized Caliper Selection	BS		
<b>System and Miscellaneous</b>				
BS	Bit Size	9.875		IN
DFD	Drilling Fluid Density	1.26		G/C3
DO	Depth Offset for Playback	0.0		M
PP	Playback Processing	NORMAL		

Format: DSST\_P\_S\_RC\_TR\_VDL\_COLOR Vertical Scale: 1:200 Graphics File Created: 15-Oct-2017 17:58

## OP System Version: 19C0-187

HRLT-B	19C0-187	DSST-B	19C0-187
HLDS	19C0-187	LDSC-B	19C0-187
EDTC-B	SKK-5169-EDTCB		

### Input DLIS Files

DEFAULT	Flip_NGS_HRLA_DSI_055LUP	PRODUCER	14-Oct-2017 14:04	3781.2 M	3031.2 M
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### Output DLIS Files

DEFAULT	NGS_HRLA_DSI_LDL_061PUP	FN:61	PRODUCER	15-Oct-2017 17:57	
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### Input DLIS Files

DEFAULT	Flip_NGS_HRLA_DSI_055LUP	PRODUCER	14-Oct-2017 14:04	3781.2 M	3031.2 M
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### Output DLIS Files

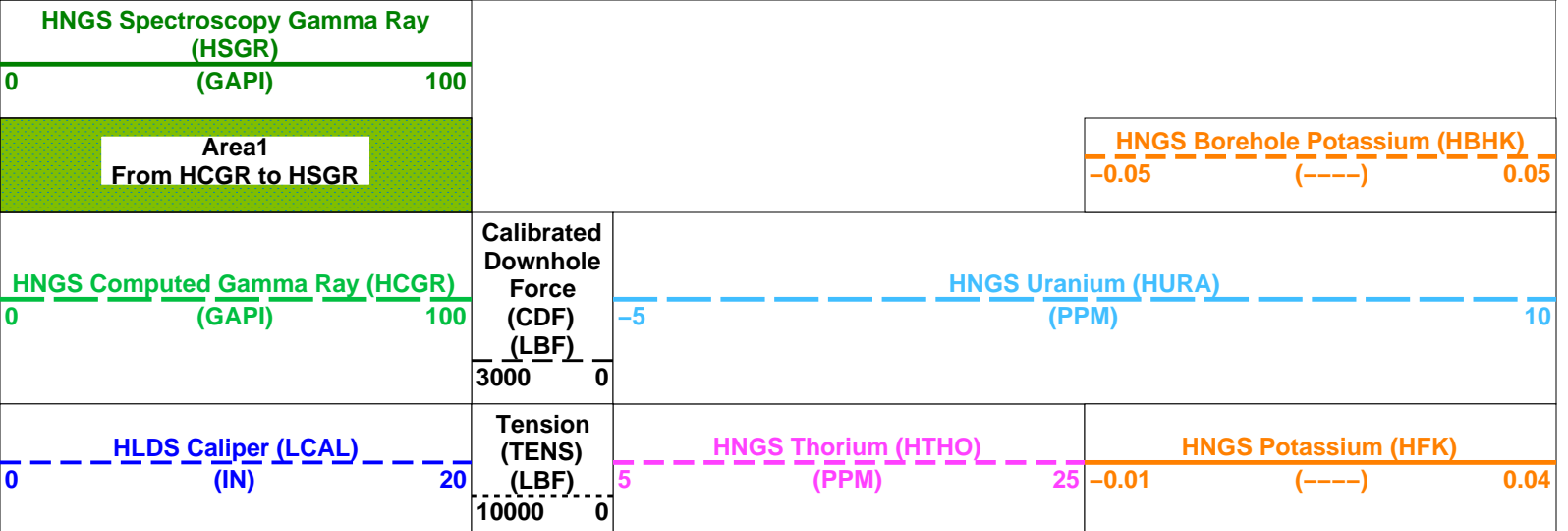
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## OP System Version: 19C0-187

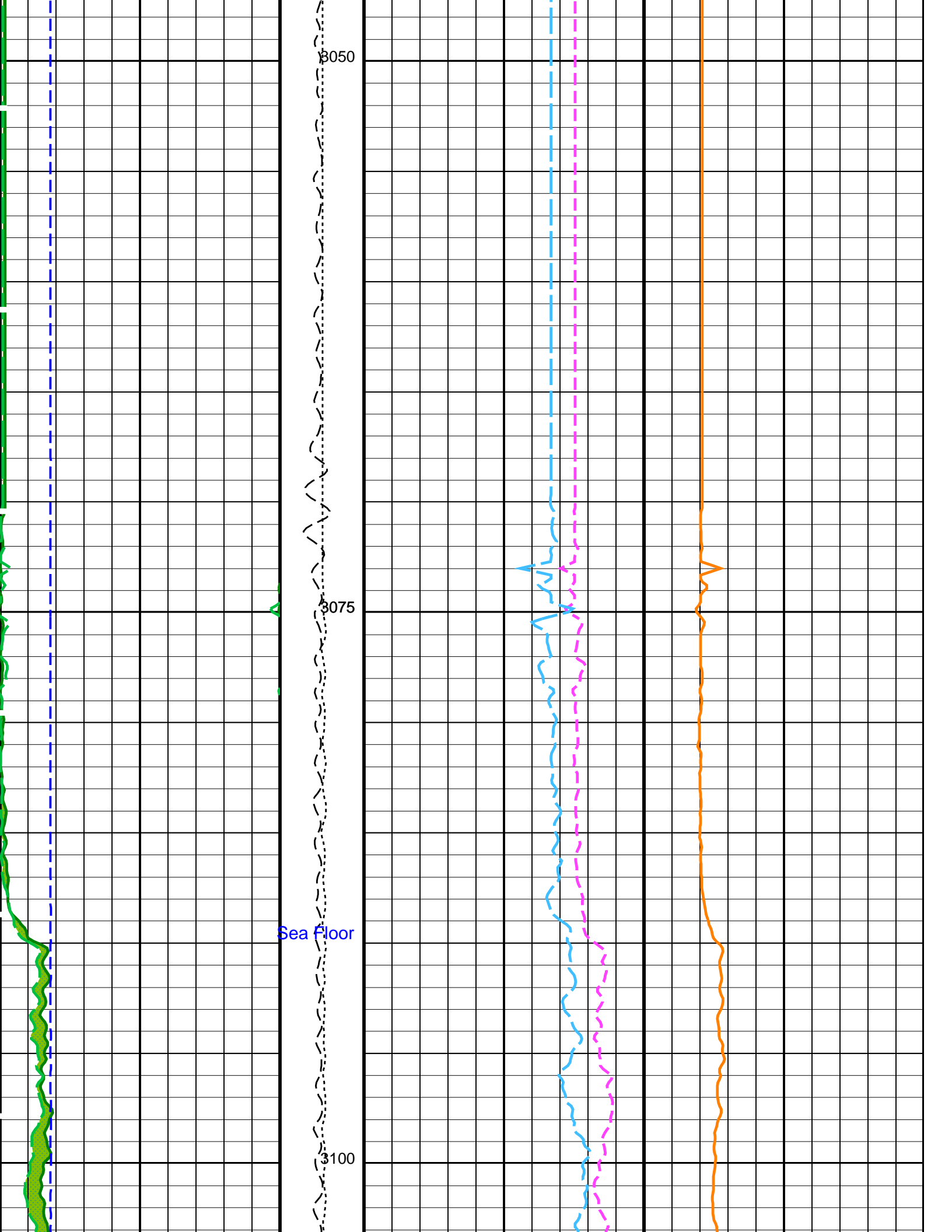
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HRLT-B	19C0-187	DSST-B	19C0-187
HLDS	19C0-187	LDSC-B	19C0-187
EDTC-B	SKK-5169-EDTCB		

### PIP SUMMARY

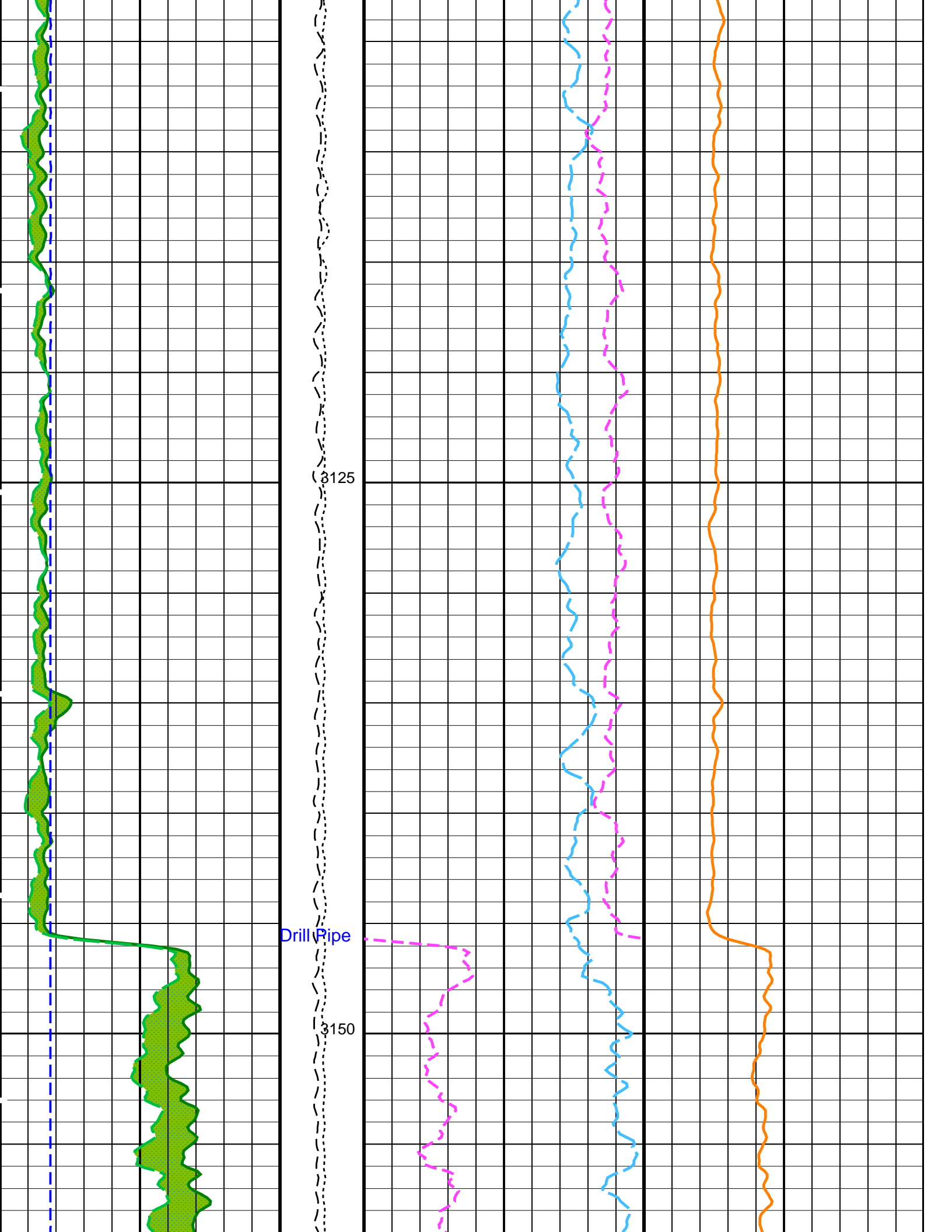
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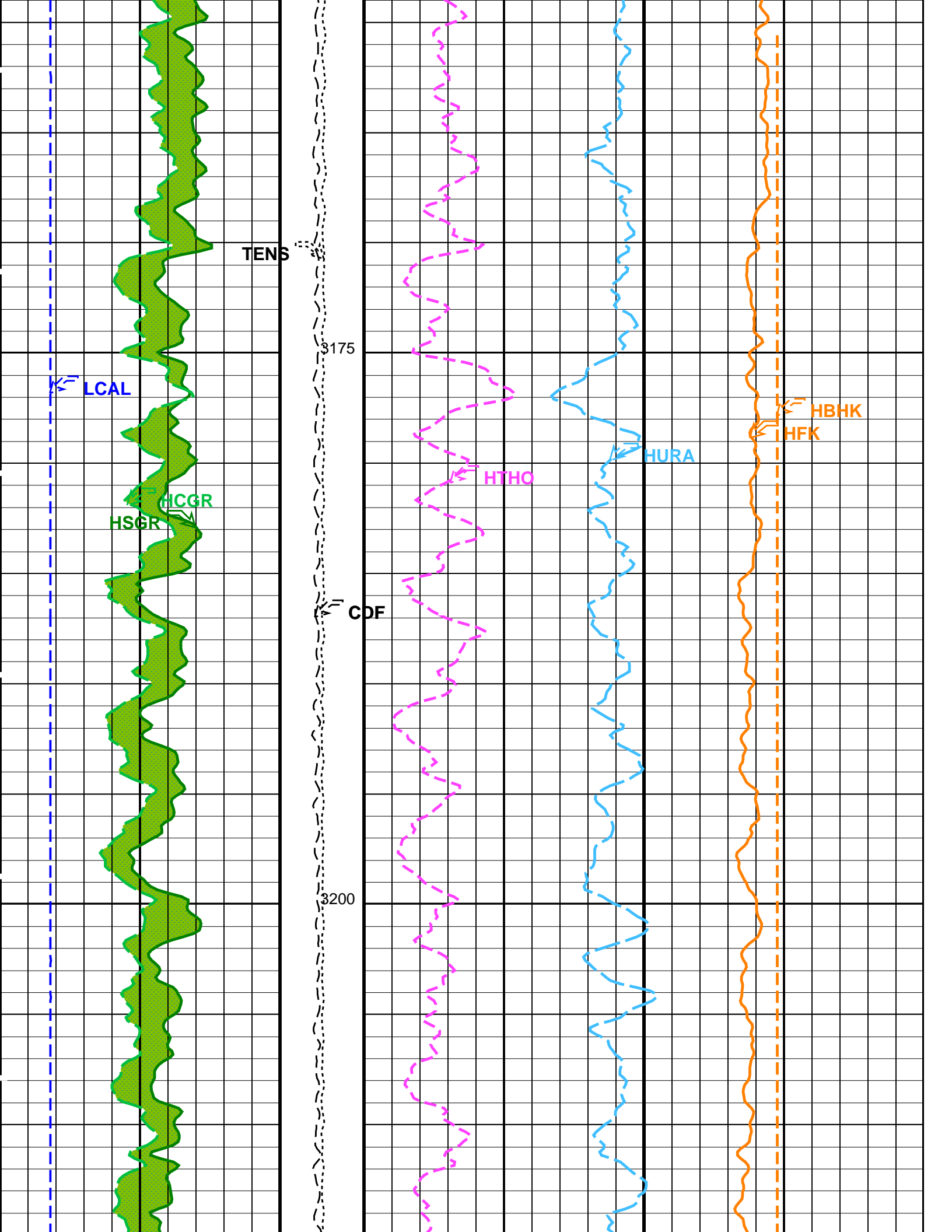


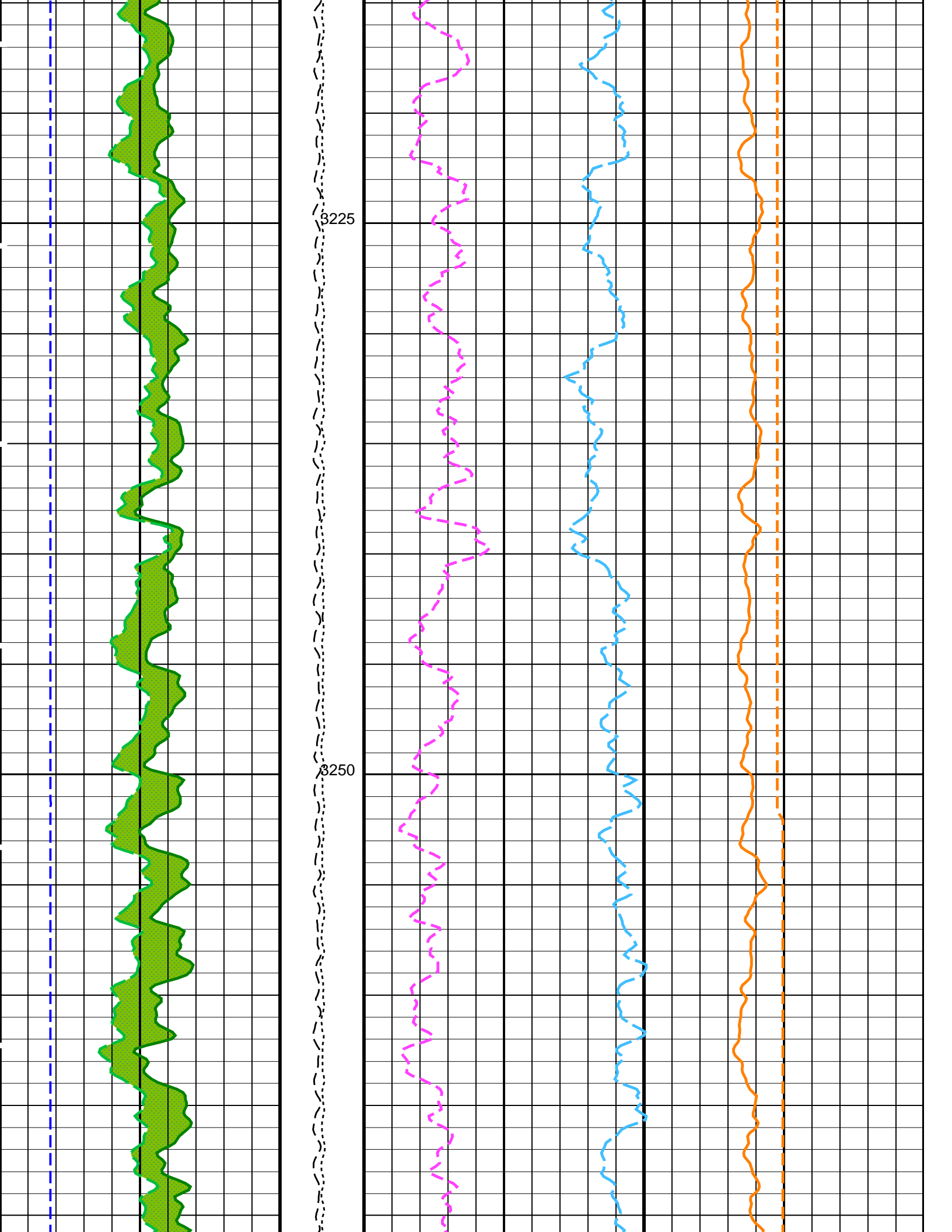
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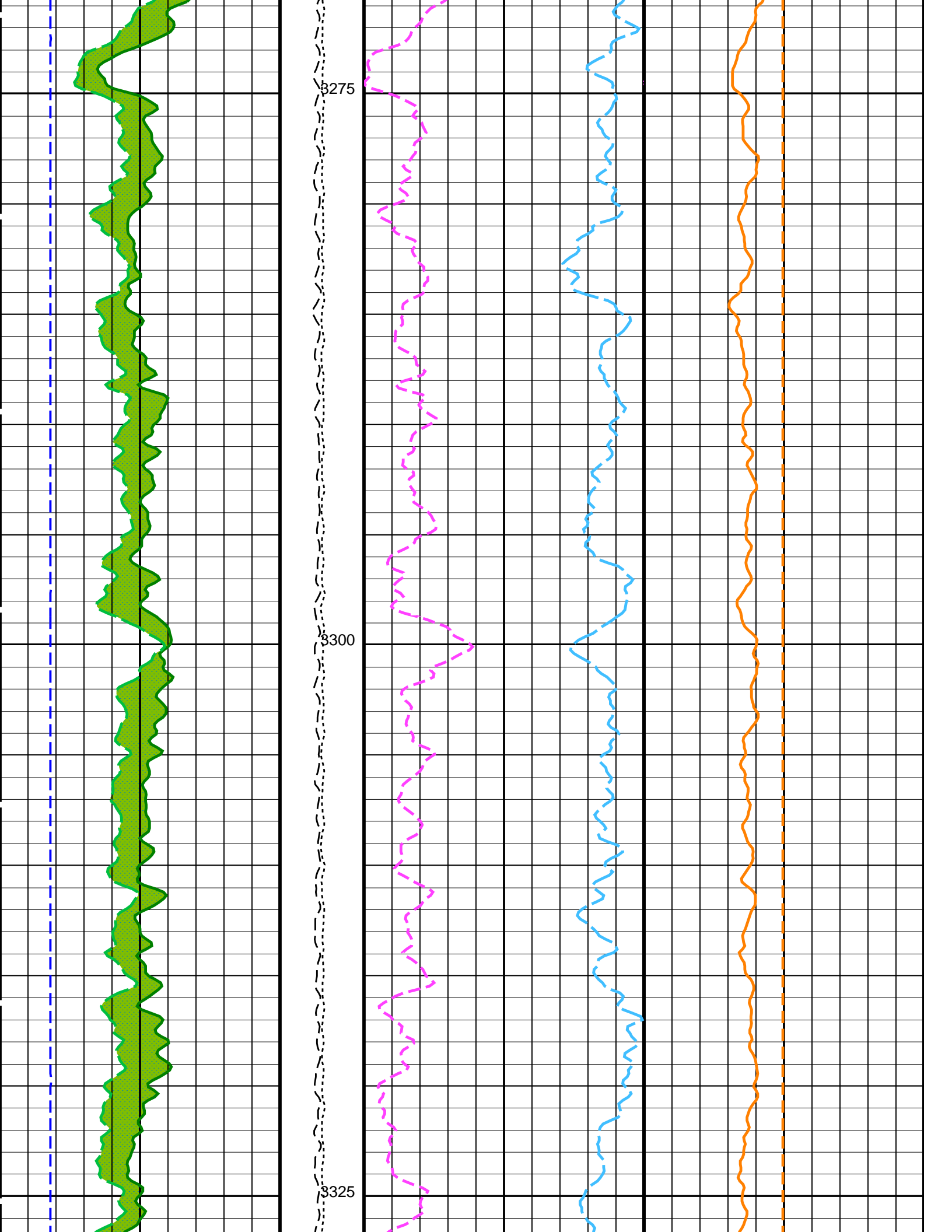


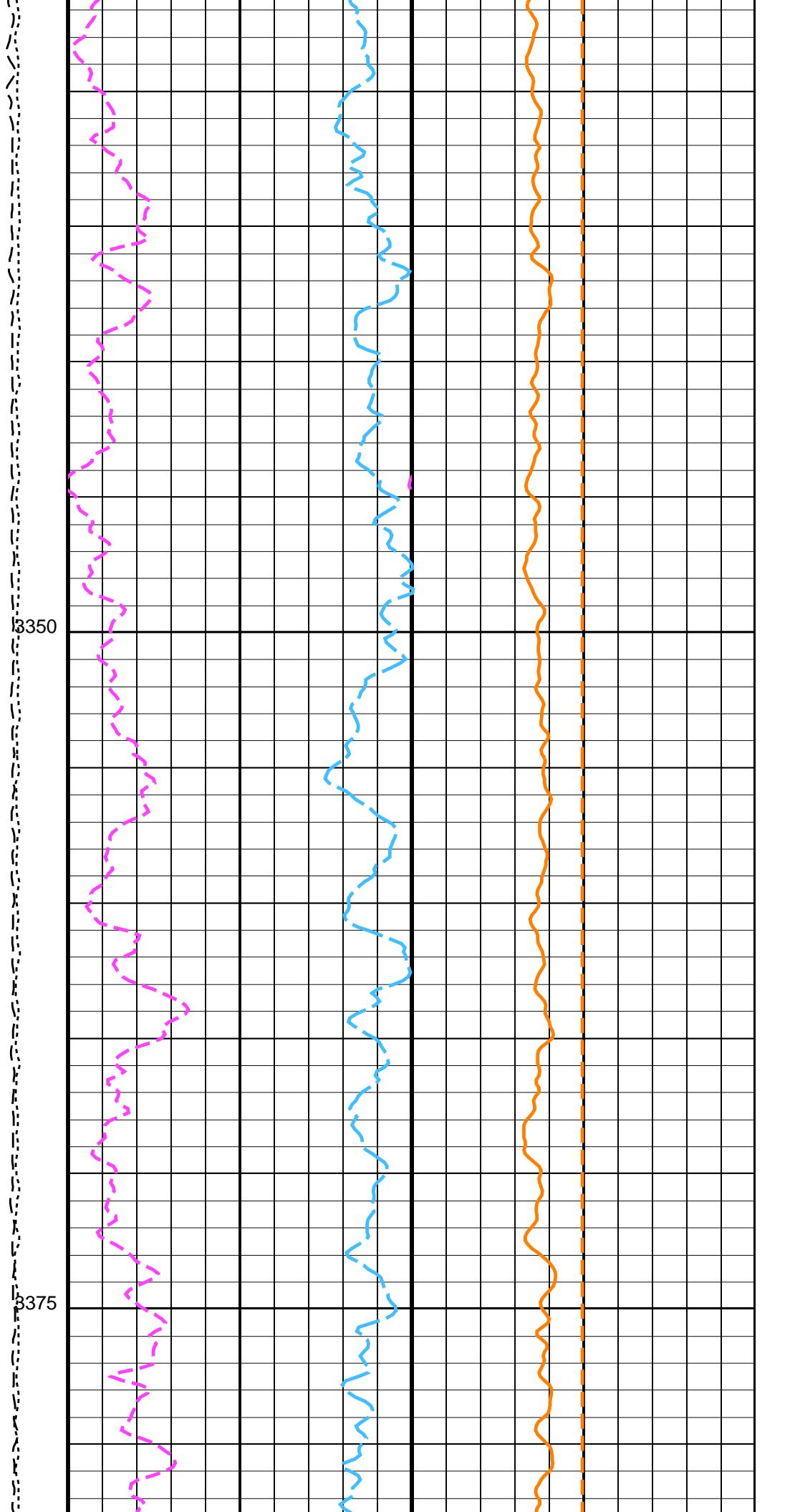
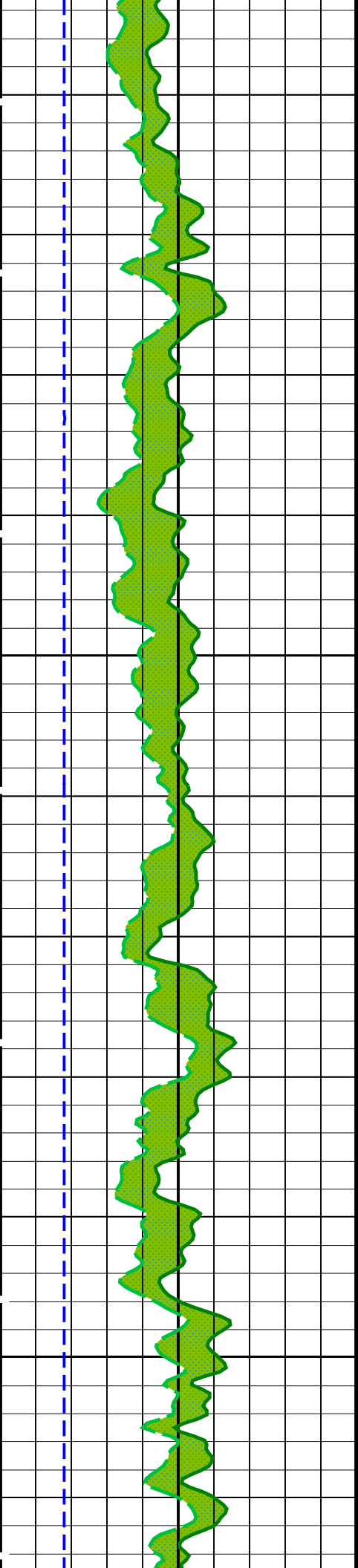


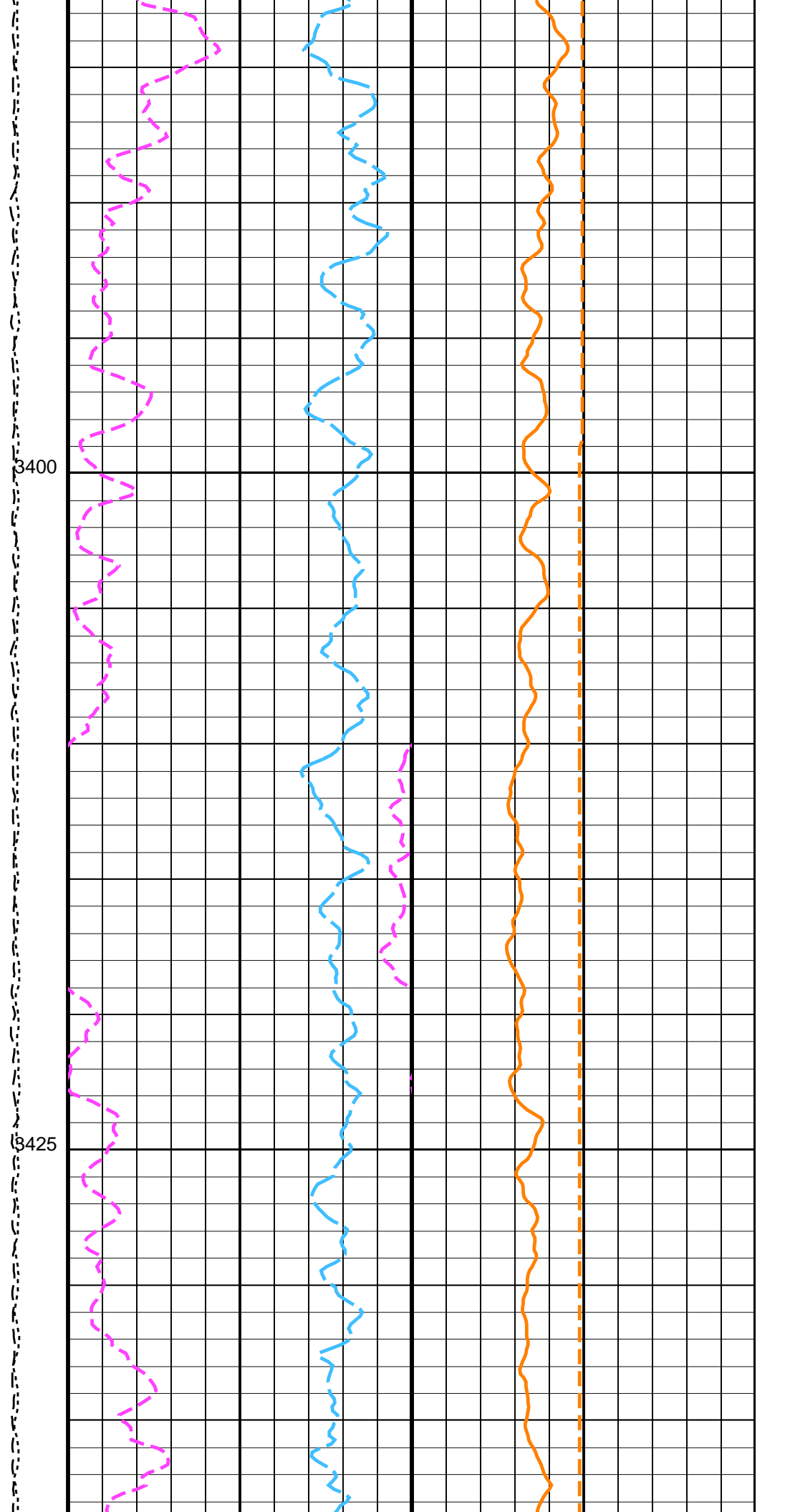
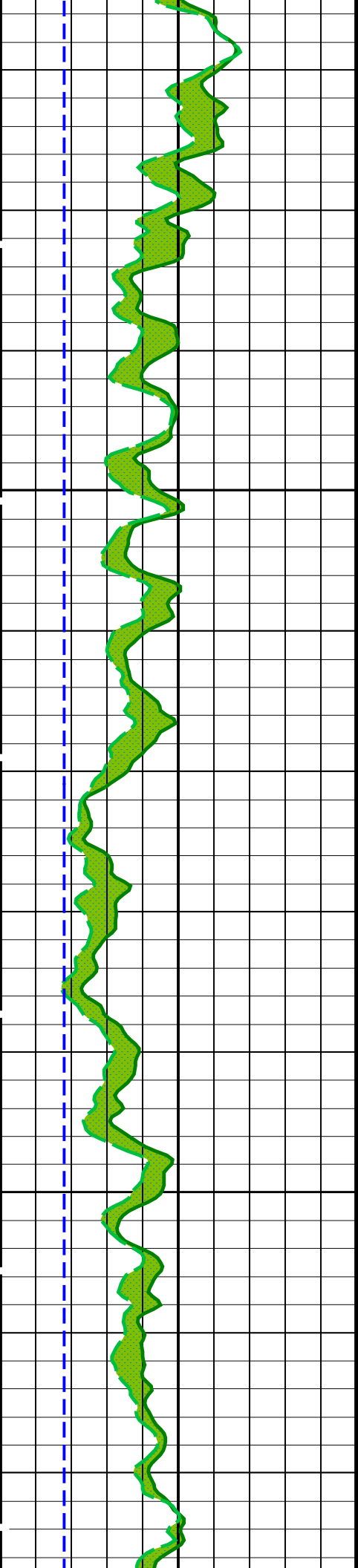


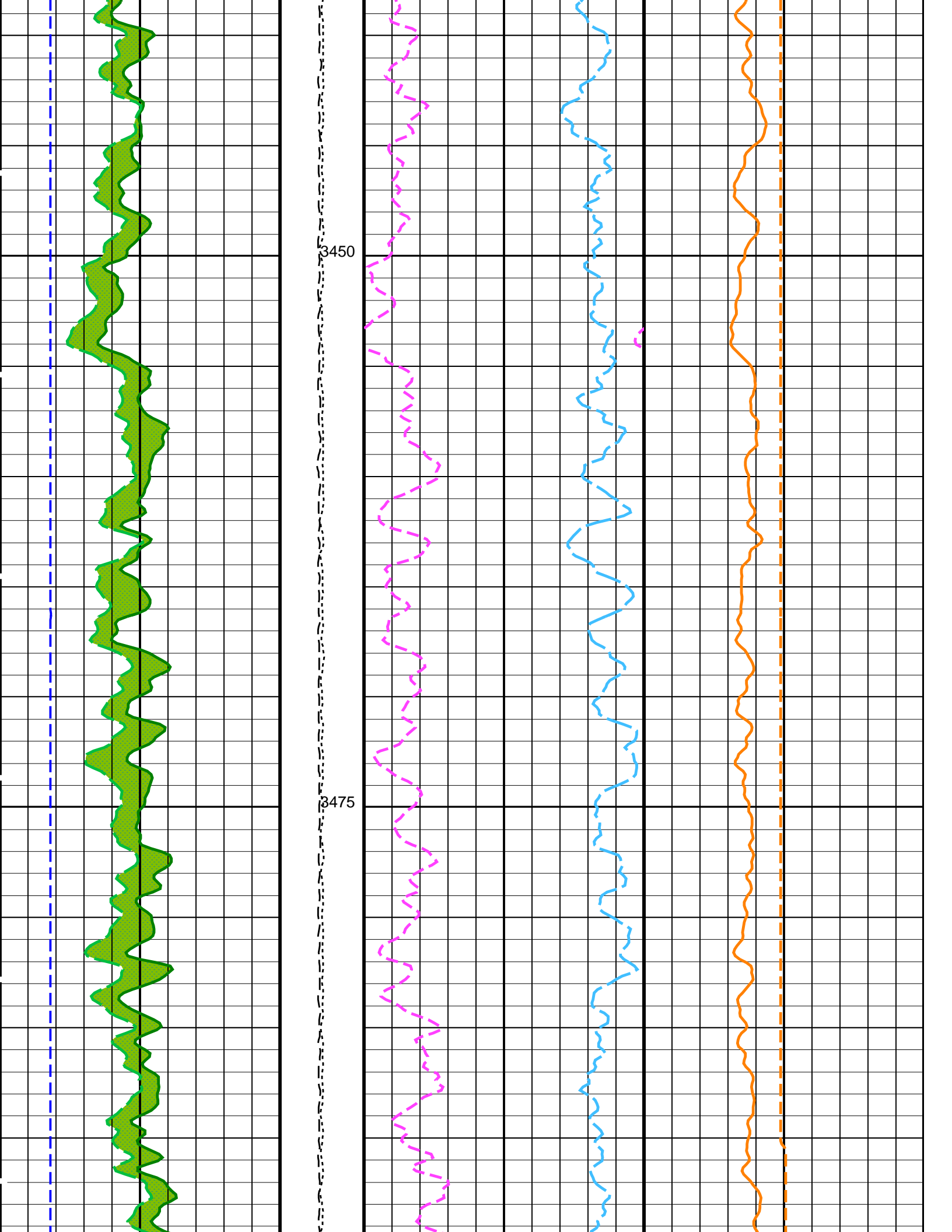




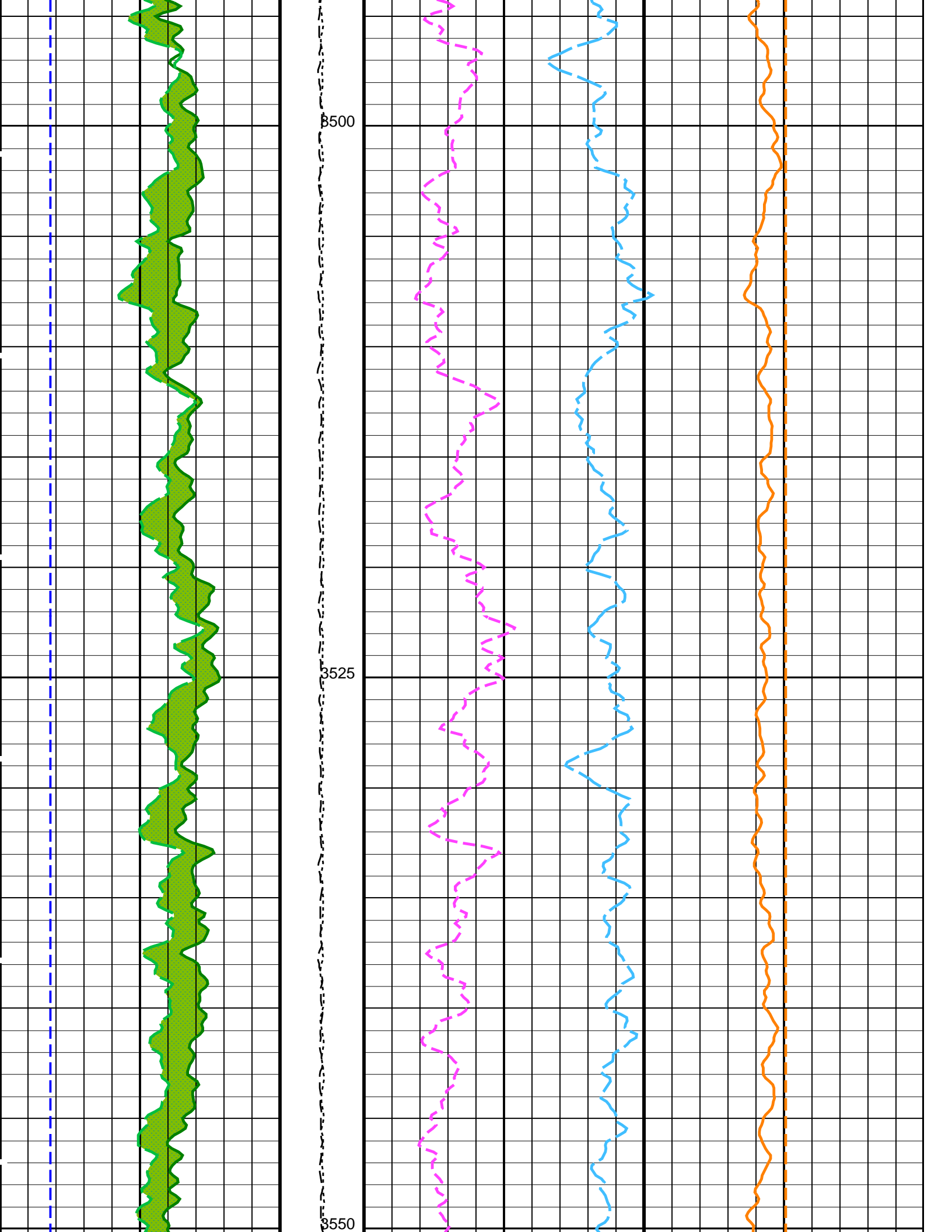


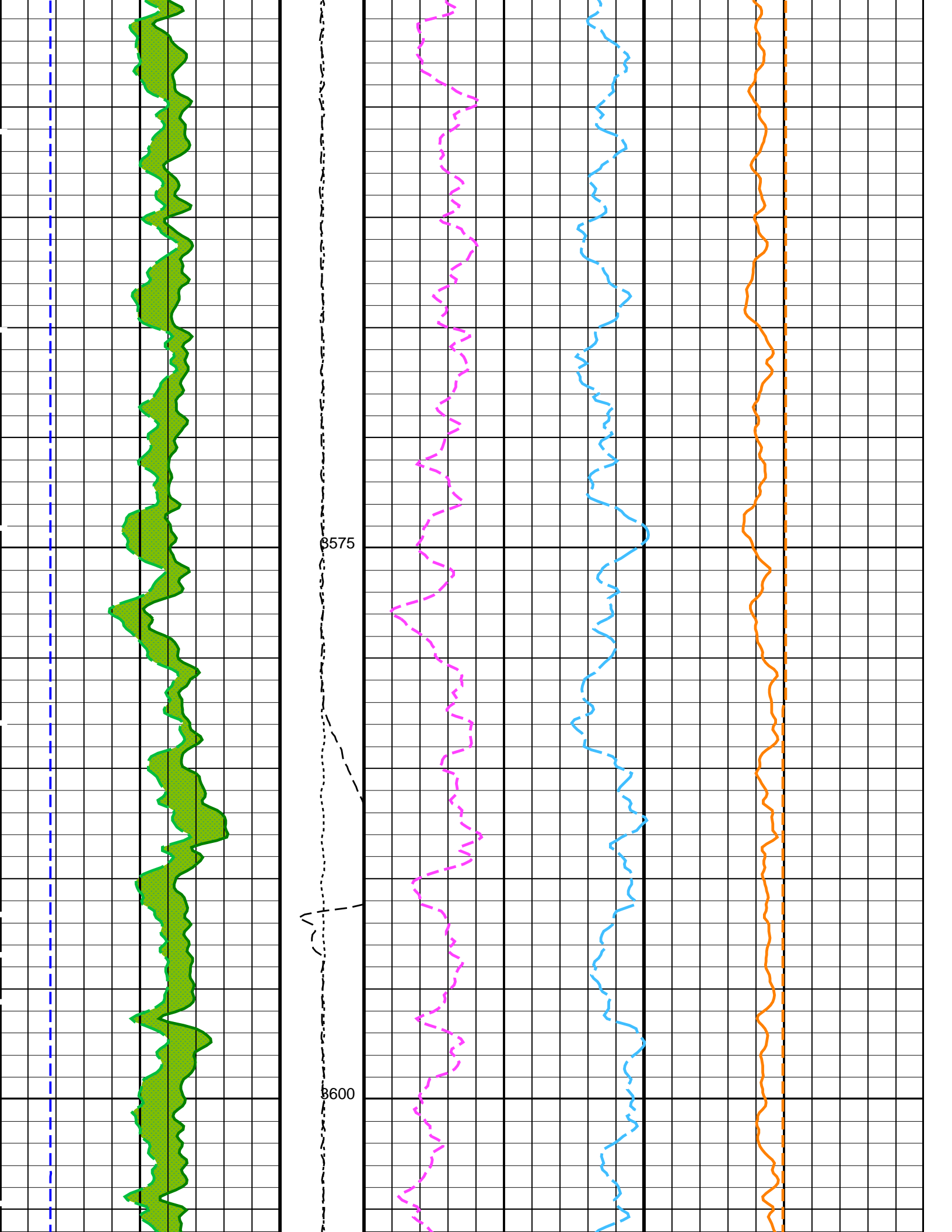


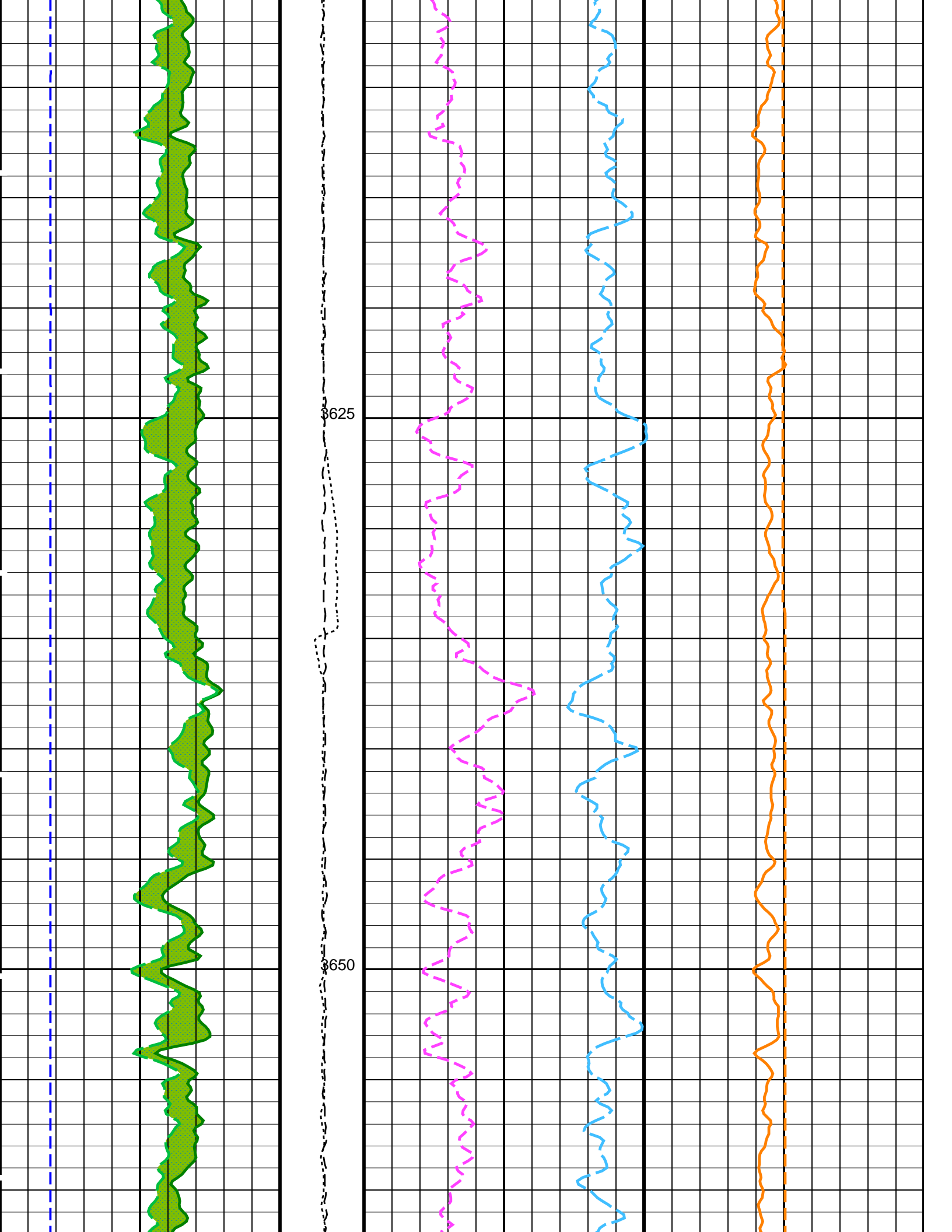


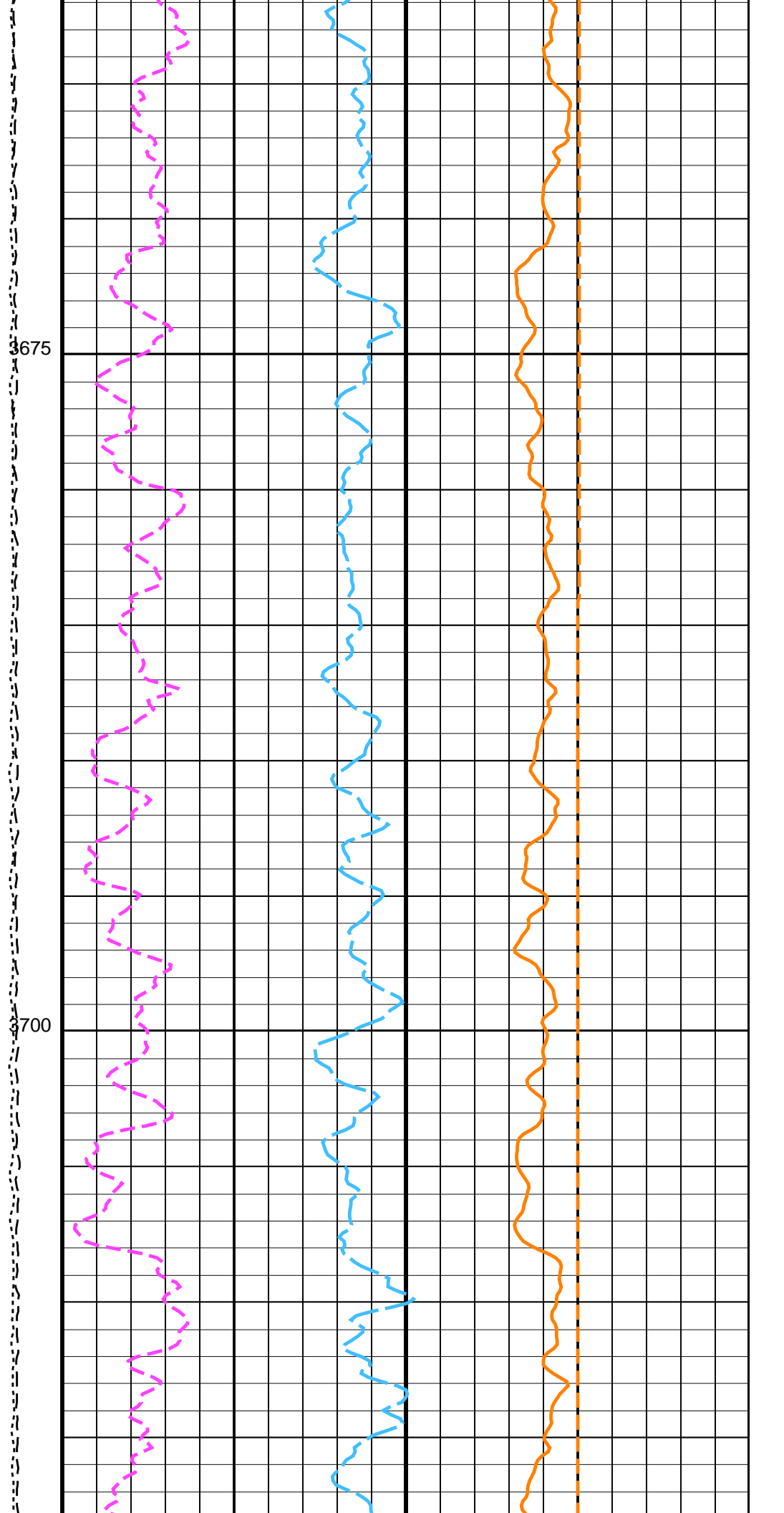
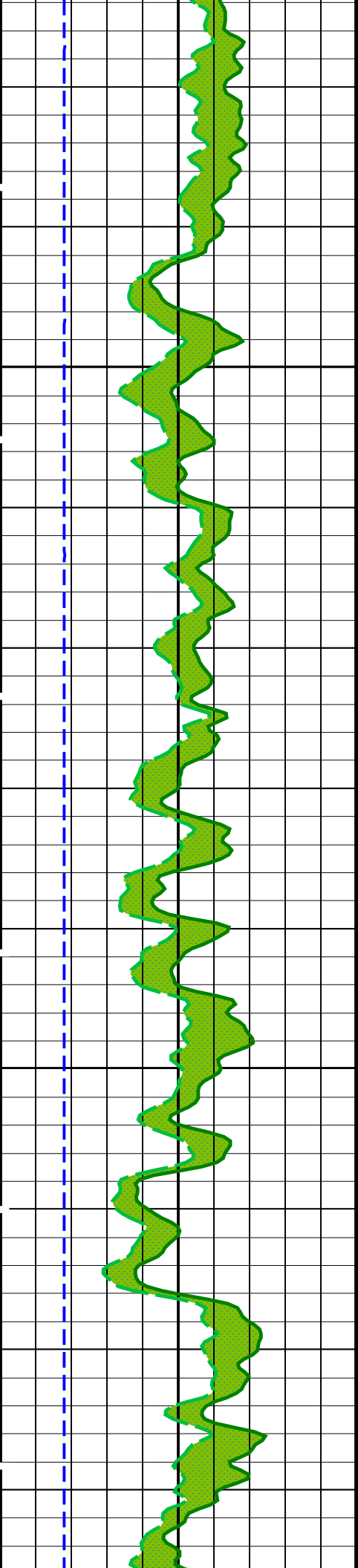


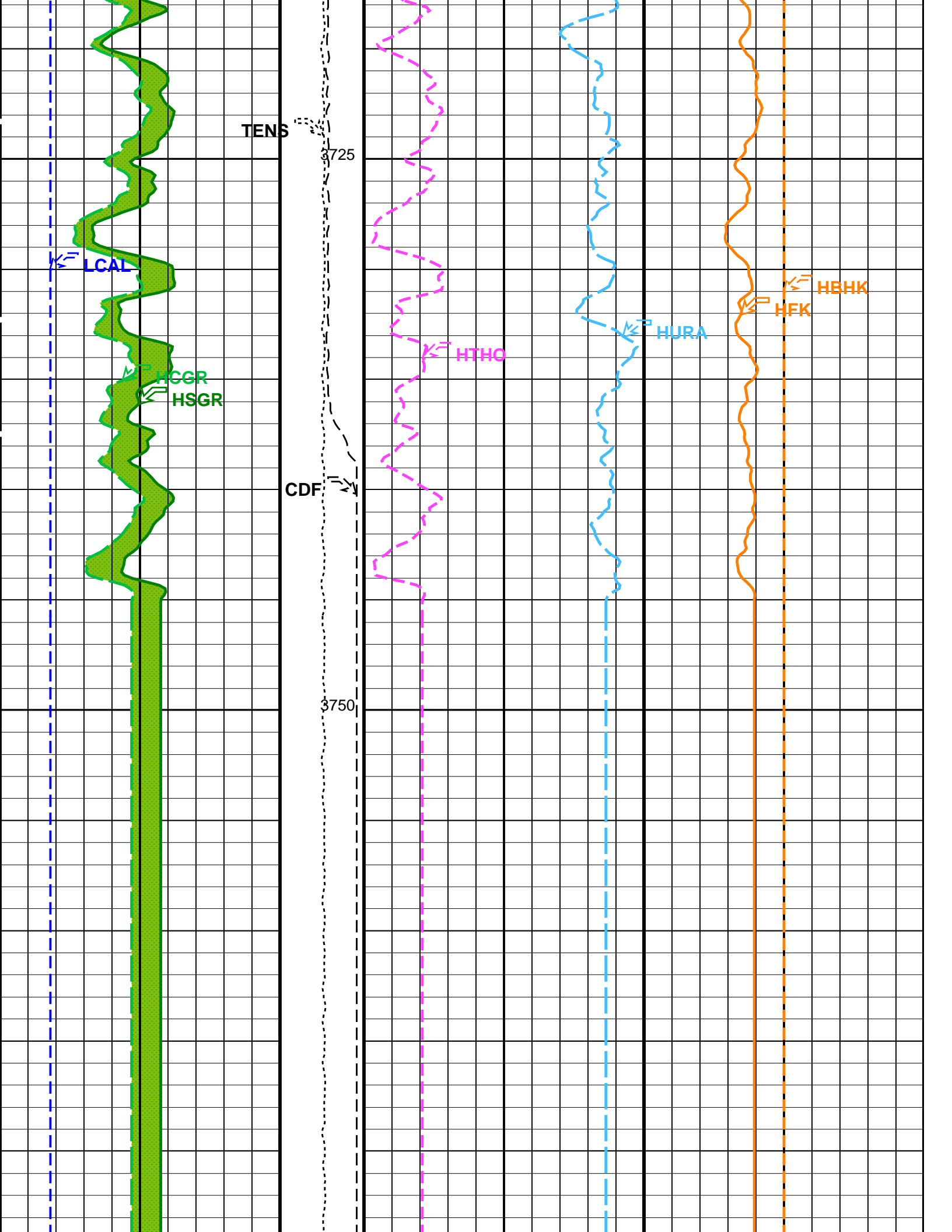


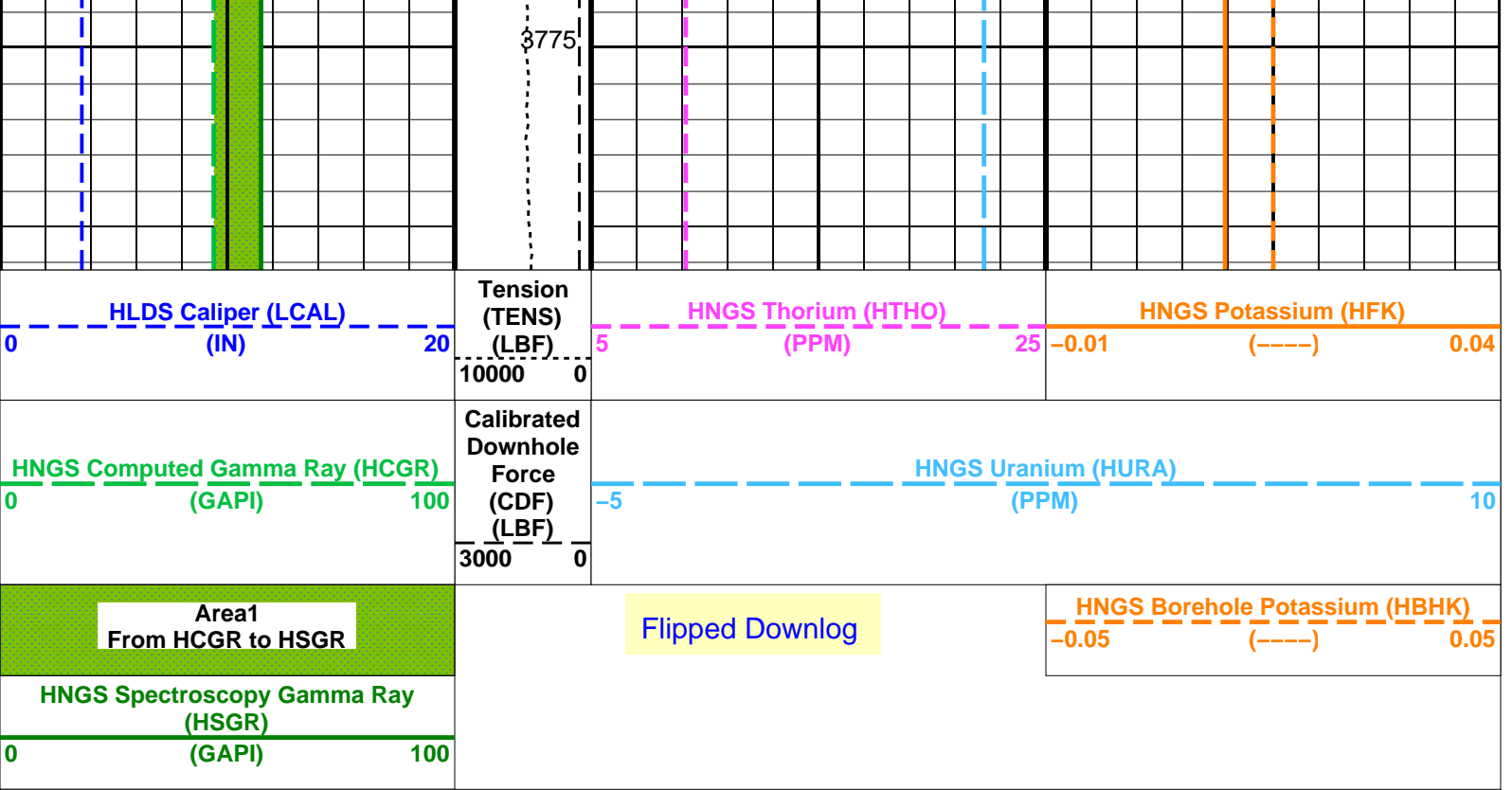












PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
<b>HNGS-BA: Hostile Natural Gamma Ray Sonde</b>		
BAR1	HNGS Detector 1 Barite Constant	1
BAR2	HNGS Detector 2 Barite Constant	1
BHK	HNGS Borehole Potassium Correction Concentration	0
BHS	Borehole Status	OPEN
CSD1	Inner Casing Outer Diameter	0 IN
CSD2	Outer Casing Outer Diameter	0 IN
CSW1	Inner Casing Weight	0 LB/F
CSW2	Outer Casing Weight	0 LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE
GCSE	Generalized Caliper Selection	BS
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW
HABK	HNGS Borehole Potassium Running Average	0
HALF	HNGS Alpha Filter Length	60 IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE
HMWM	Mud Weighting Material	BARI
HNPE	HNGS Processing Enable	YES
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3 CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3 CPS
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES
TPOS	Tool Position	CENT
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0
<b>HRLT-B: High Resolution Laterolog Array - B</b>		
BHS	Borehole Status	OPEN
GCSE	Generalized Caliper Selection	BS
<b>DSST-B: Dipole Shear Imager - B</b>		
BHS	Borehole Status	OPEN
GCSE	Generalized Caliper Selection	BS
<b>EDTC-B: Enhanced DTS Cartridge</b>		
BHS	Borehole Status	OPEN
GCSE	Generalized Caliper Selection	BS
<b>System and Miscellaneous</b>		
BS	Bit Size	9.875 IN
DFD	Drilling Fluid Density	1.26 G/C3
DO	Depth Offset for Playback	0.0 M
PP	Playback Processing	NORMAL

Format: HNGSYields

Vertical Scale: 1:200

Graphics File Created: 15-Oct-2017 17:58

HNGC-B	19C0-187	HNGS-BA	19C0-187
HRLT-B	19C0-187	DSST-B	19C0-187
HLDS	19C0-187	LDSC-B	19C0-187
EDTC-B	SKK-5169-EDTCB		

### Input DLIS Files

DEFAULT	Flip_NGS_HRLA_DSI_055LUP	PRODUCER	14-Oct-2017 14:04	3781.2 M	3031.2 M
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### Output DLIS Files

DEFAULT	NGS_HRLA_DSI_LDL_061PUP	FN:61	PRODUCER	15-Oct-2017 17:57
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### Input DLIS Files

DEFAULT	Flip_NGS_HRLA_DSI_055LUP	PRODUCER	14-Oct-2017 14:04	3781.2 M	3031.2 M
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### Output DLIS Files

DEFAULT	NGS_HRLA_DSI_LDL_061PUP	FN:61	PRODUCER	15-Oct-2017 17:57	3781.2 M	3031.2 M
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## OP System Version: 19C0-187

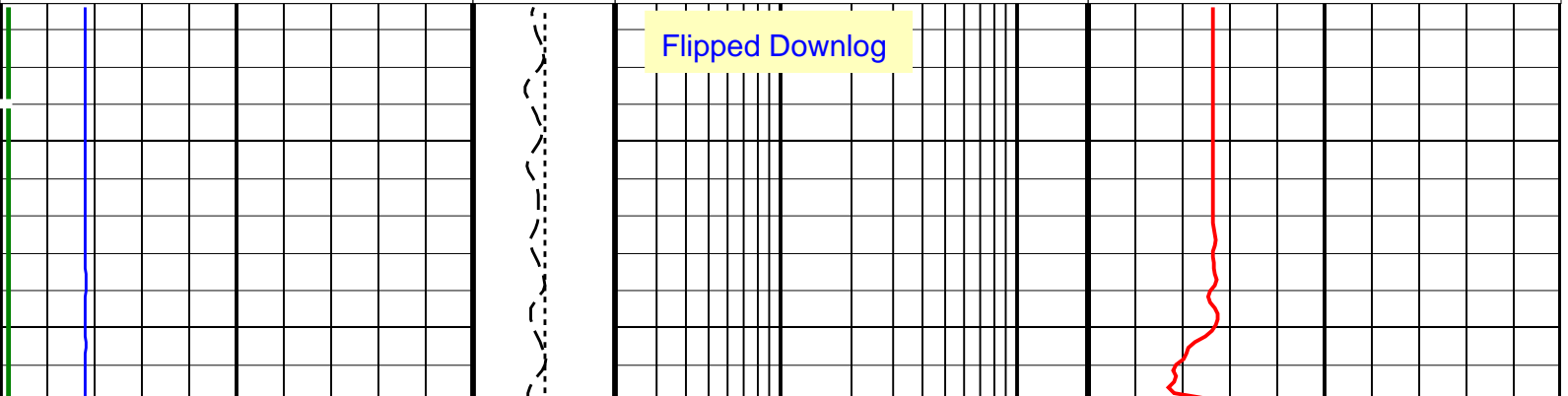
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HRLT-B	19C0-187	DSST-B	19C0-187
HLDS	19C0-187	LDSC-B	19C0-187
EDTC-B	SKK-5169-EDTCB		

### PIP SUMMARY

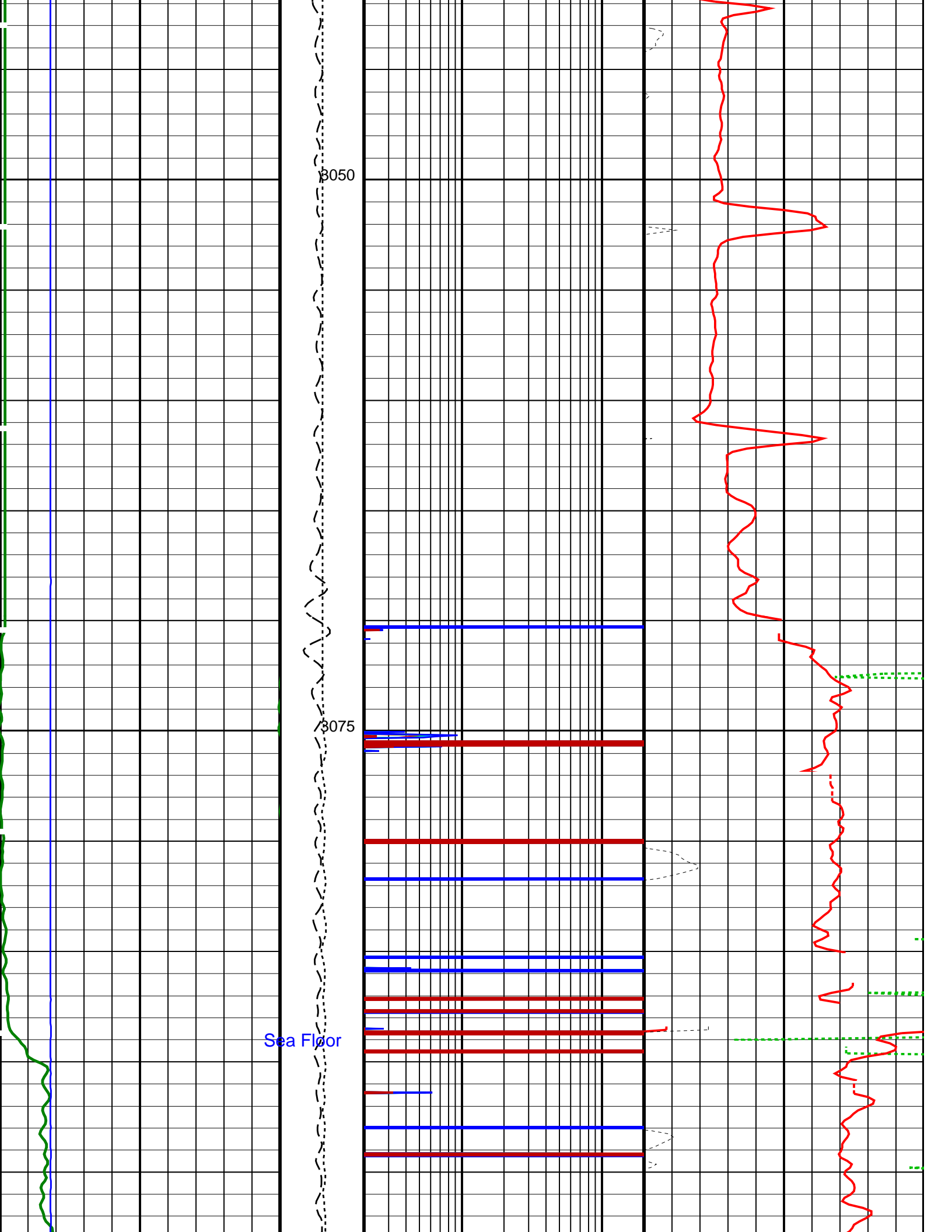
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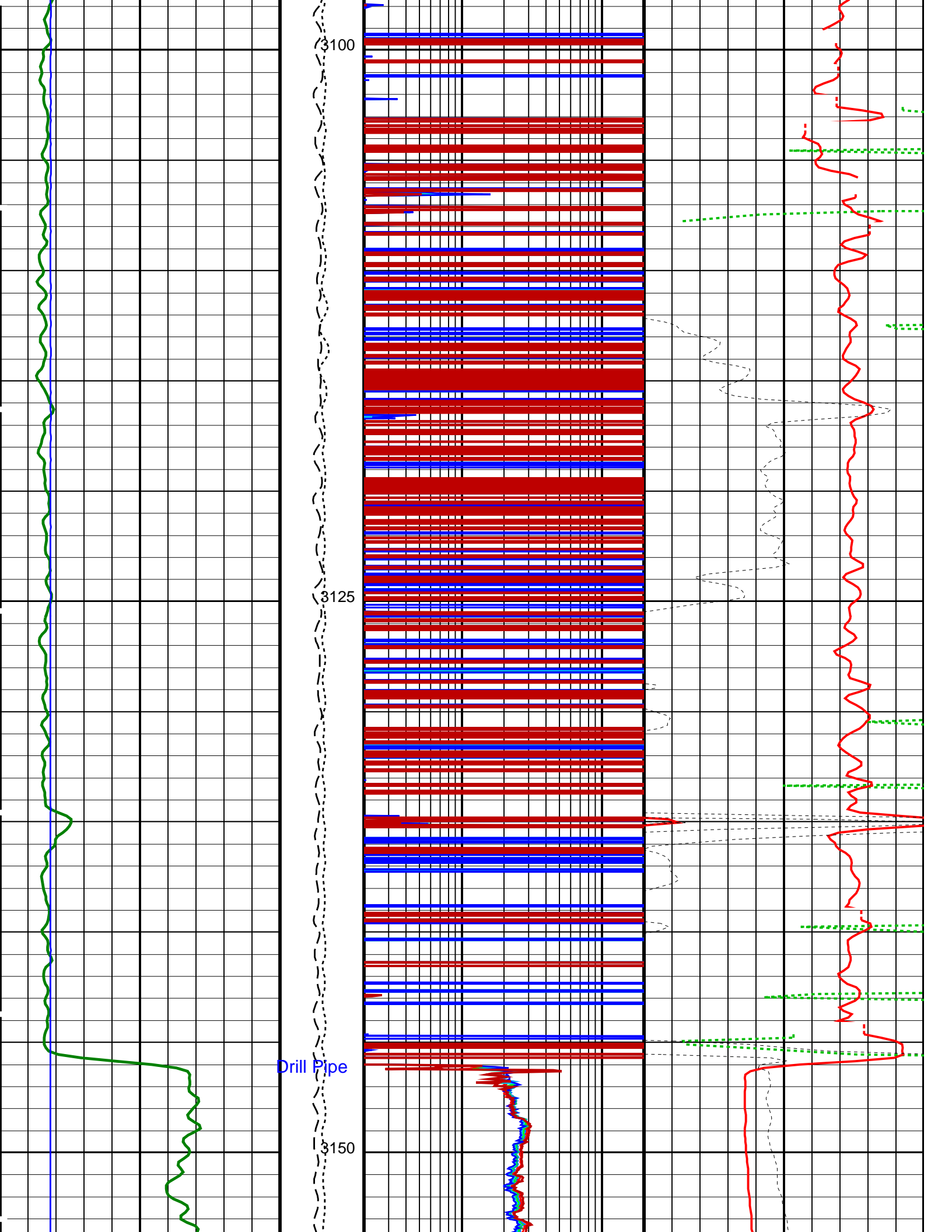
		<b>HRLT True Resistivity (RT_HRLT)</b>			
		0.2	(OHMM)	20	
		<b>HRLT Resistivity 1 (RLA1)</b>			
		0.2	(OHMM)	20	
		<b>HRLT Resistivity 2 (RLA2)</b>			
		0.2	(OHMM)	20	
		<b>HRLT Resistivity 3 (RLA3)</b>		<b>HLDS Bulk Density Correction (DRH)</b>	
		0.2	(OHMM)	20	-0.25 (G/C3) 0.25
<b>HNGS Spectroscopy Gamma Ray (HSGR)</b>	<b>Calibrated Downhole Force (CDF) (LBF)</b>	<b>HRLT Resistivity 5 (RLA5)</b>		<b>HLDS Bulk Density (RHOM)</b>	
0 (GAPI) 100	3000 0	0.2	(OHMM)	20	0 (G/C3) 4
<b>HLDS Caliper (LCAL)</b>	<b>Tension (TENS) (LBF)</b>	<b>HRLT Resistivity 4 (RLA4)</b>		<b>HLDS Long Spaced Photoelectric Effect (PEFL)</b>	
0 (IN) 20	10000 0	0.2	(OHMM)	20	0 (----) 10

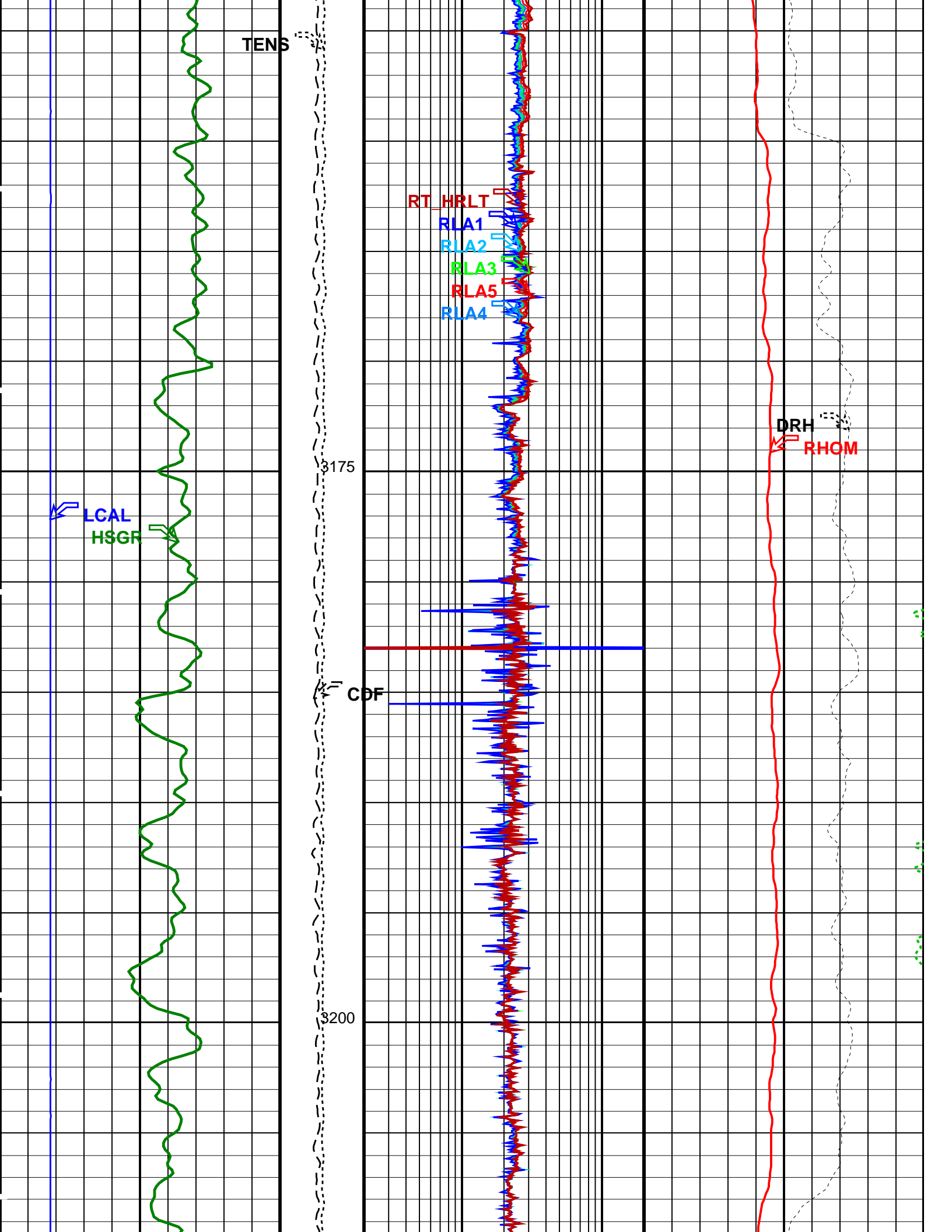
Flipped Downlog

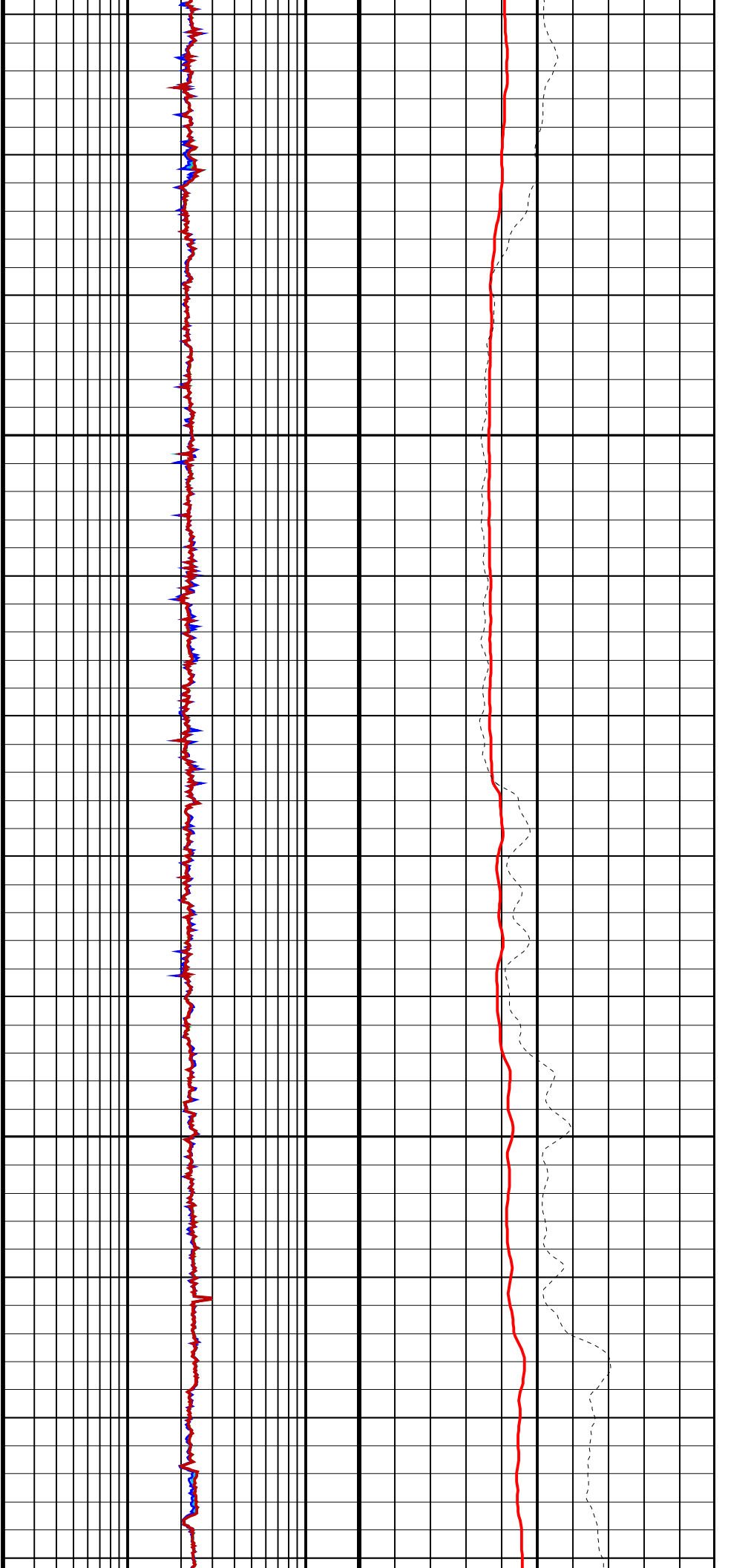
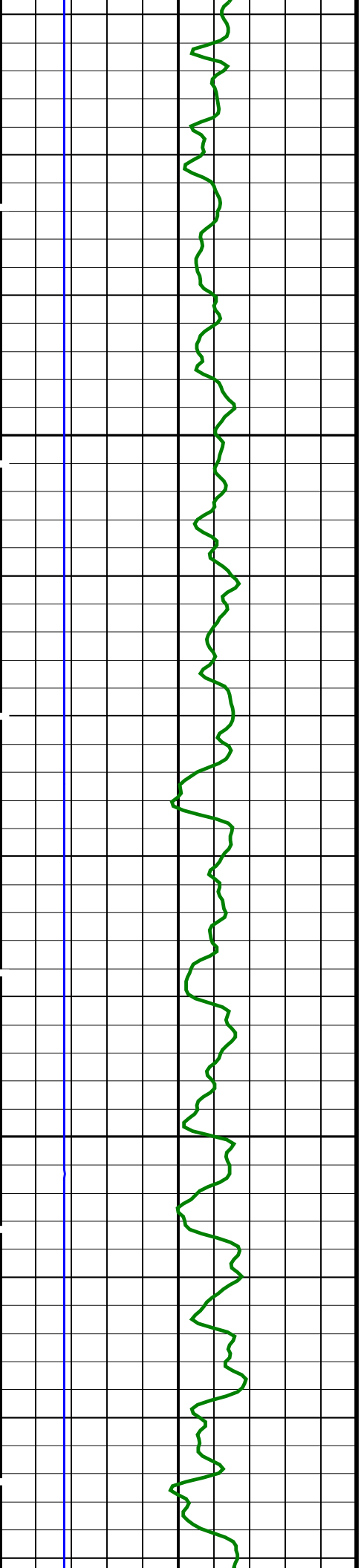


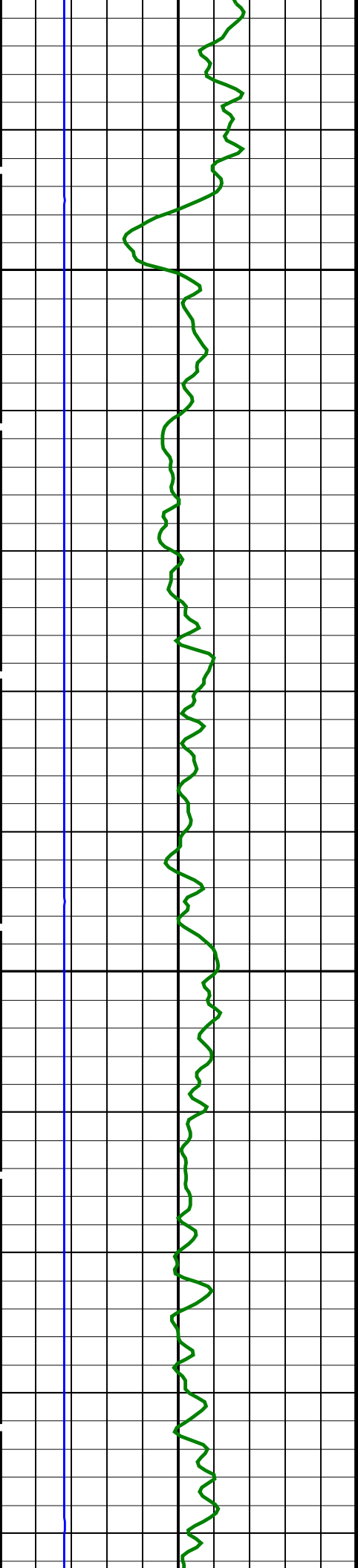




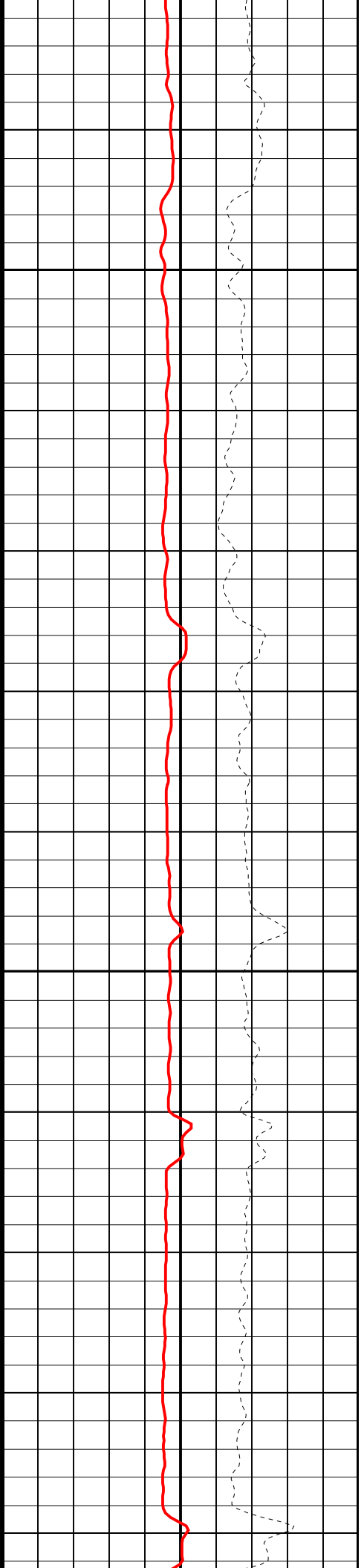
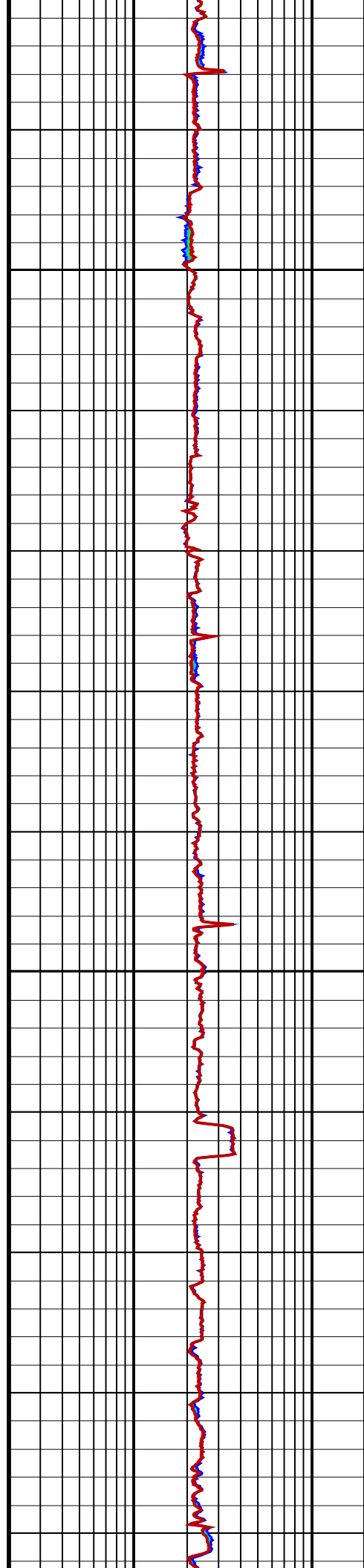


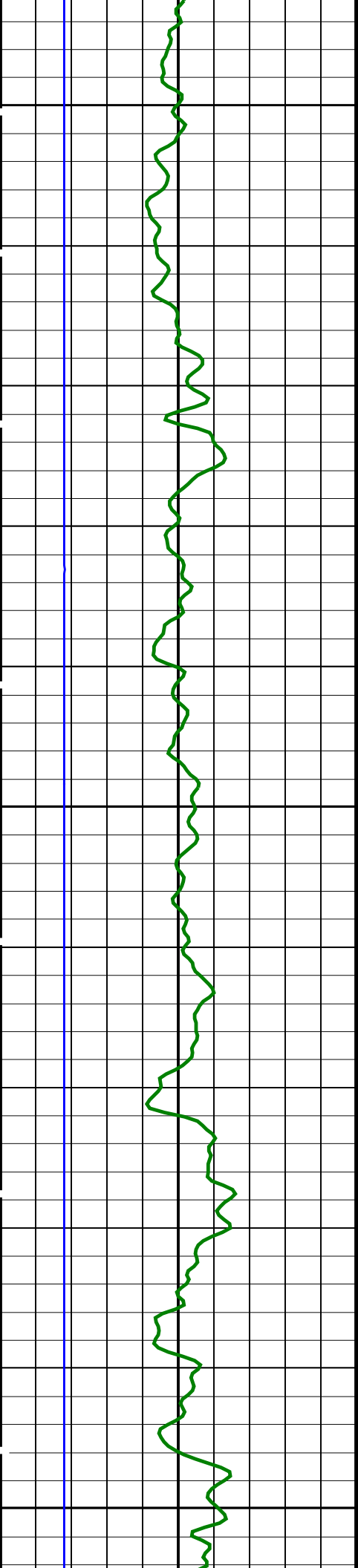




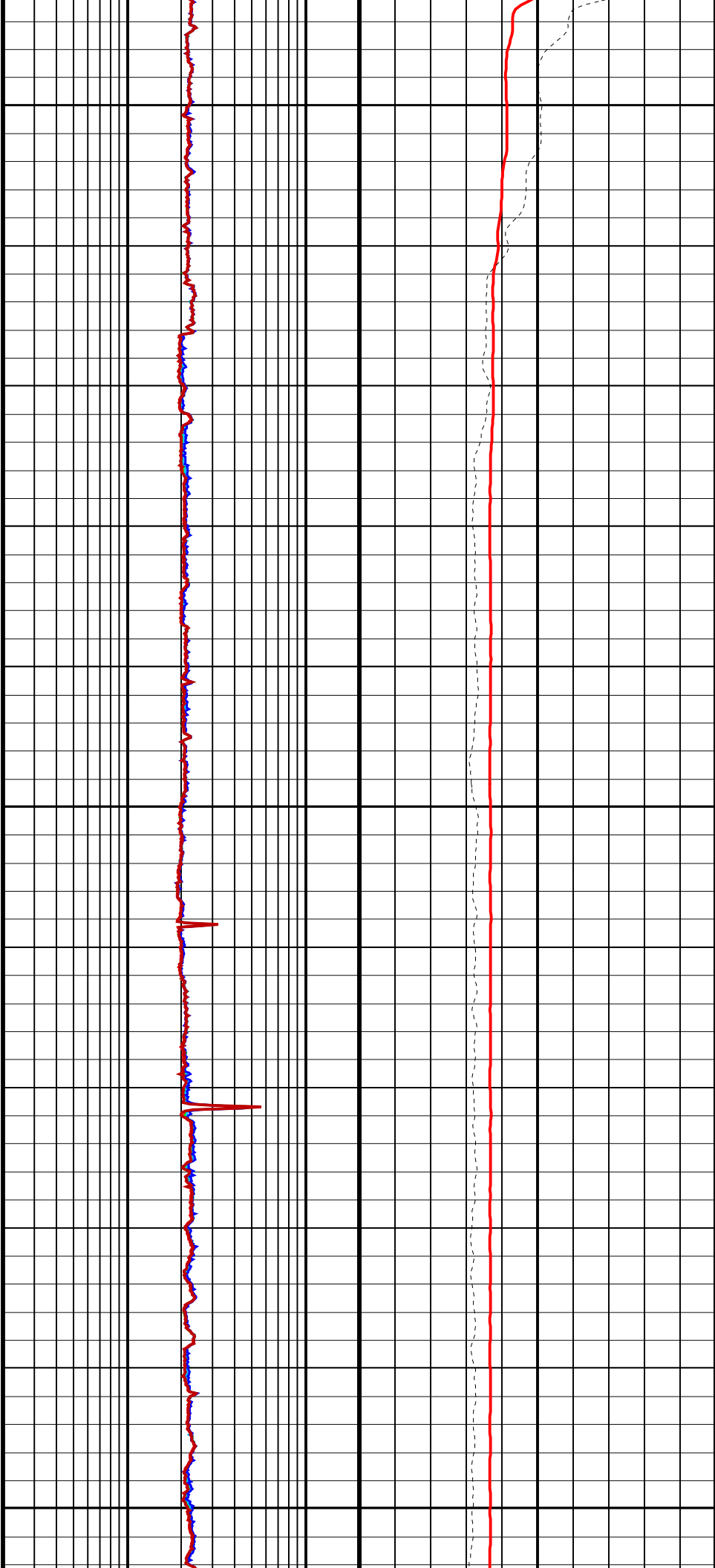


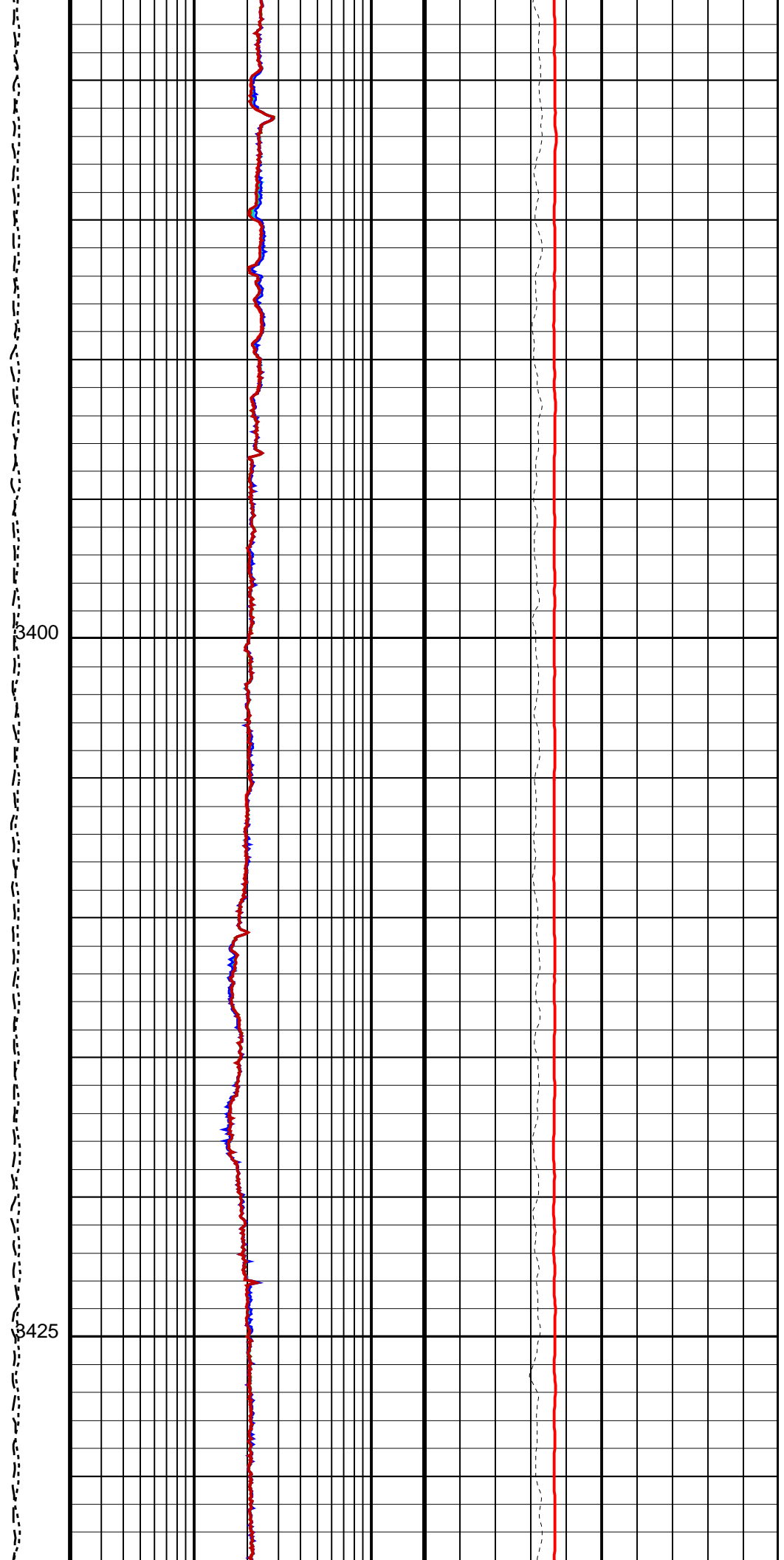
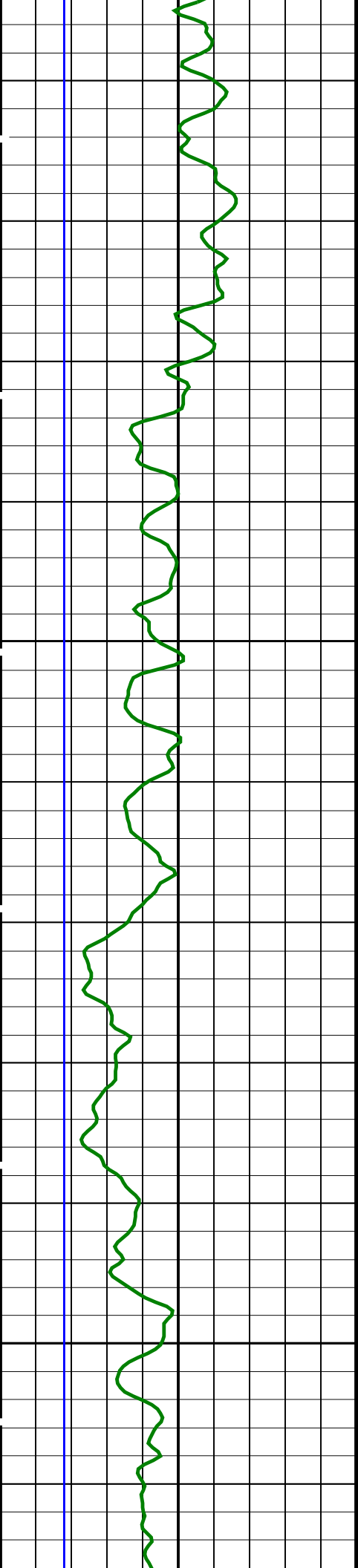
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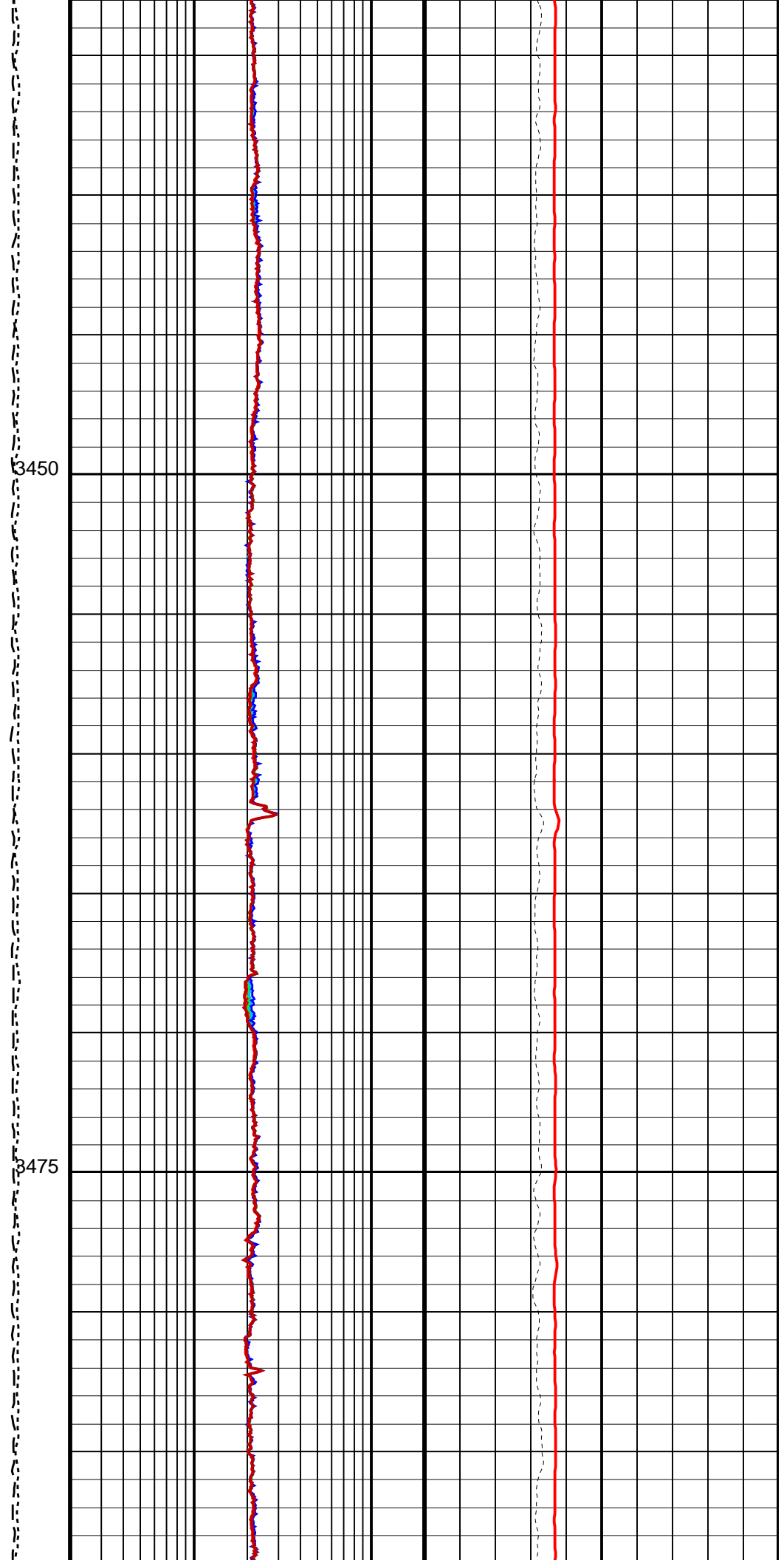
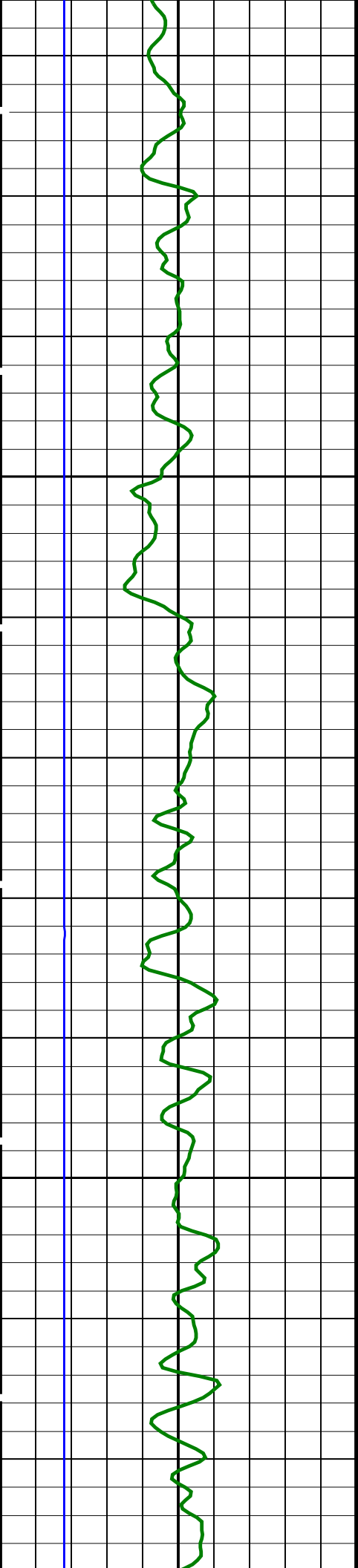




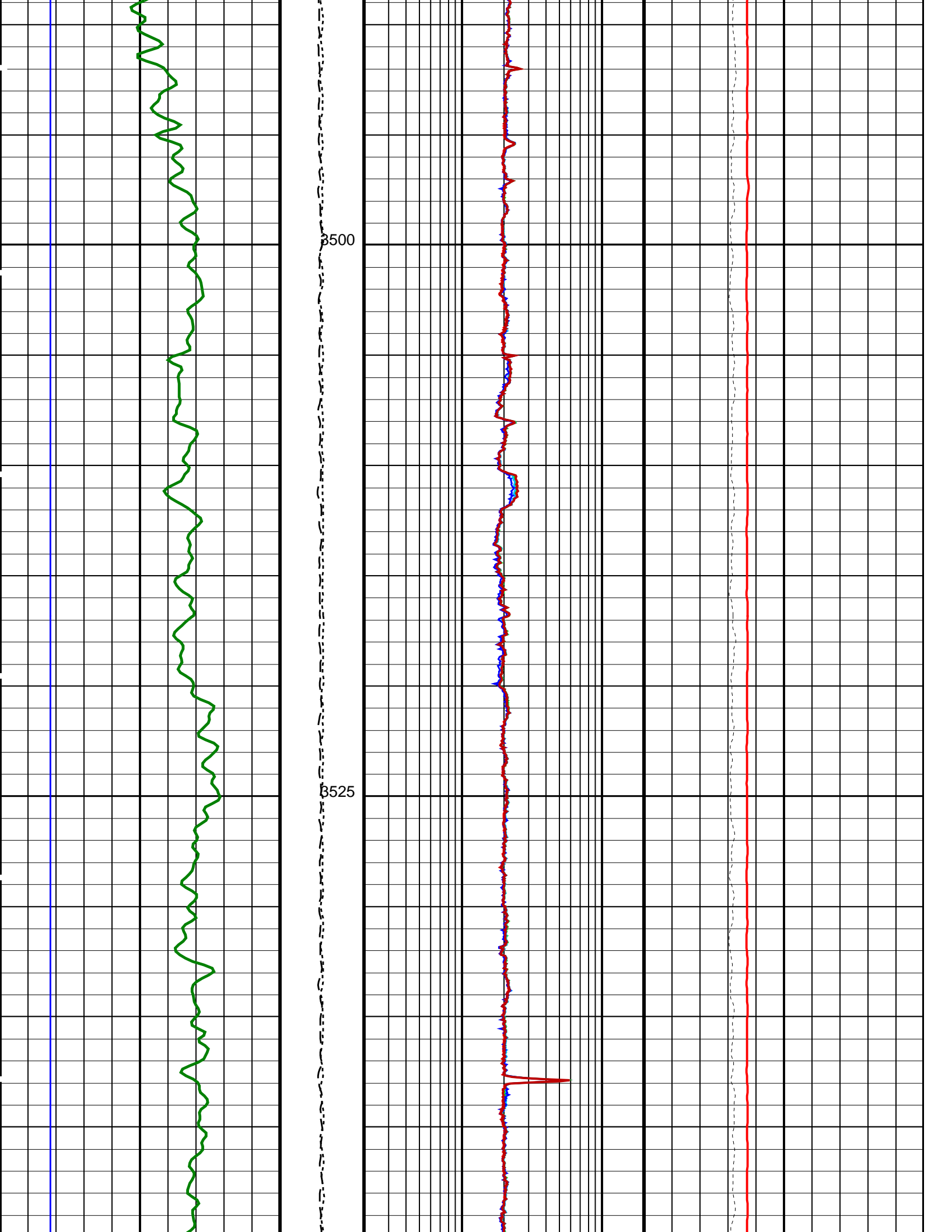
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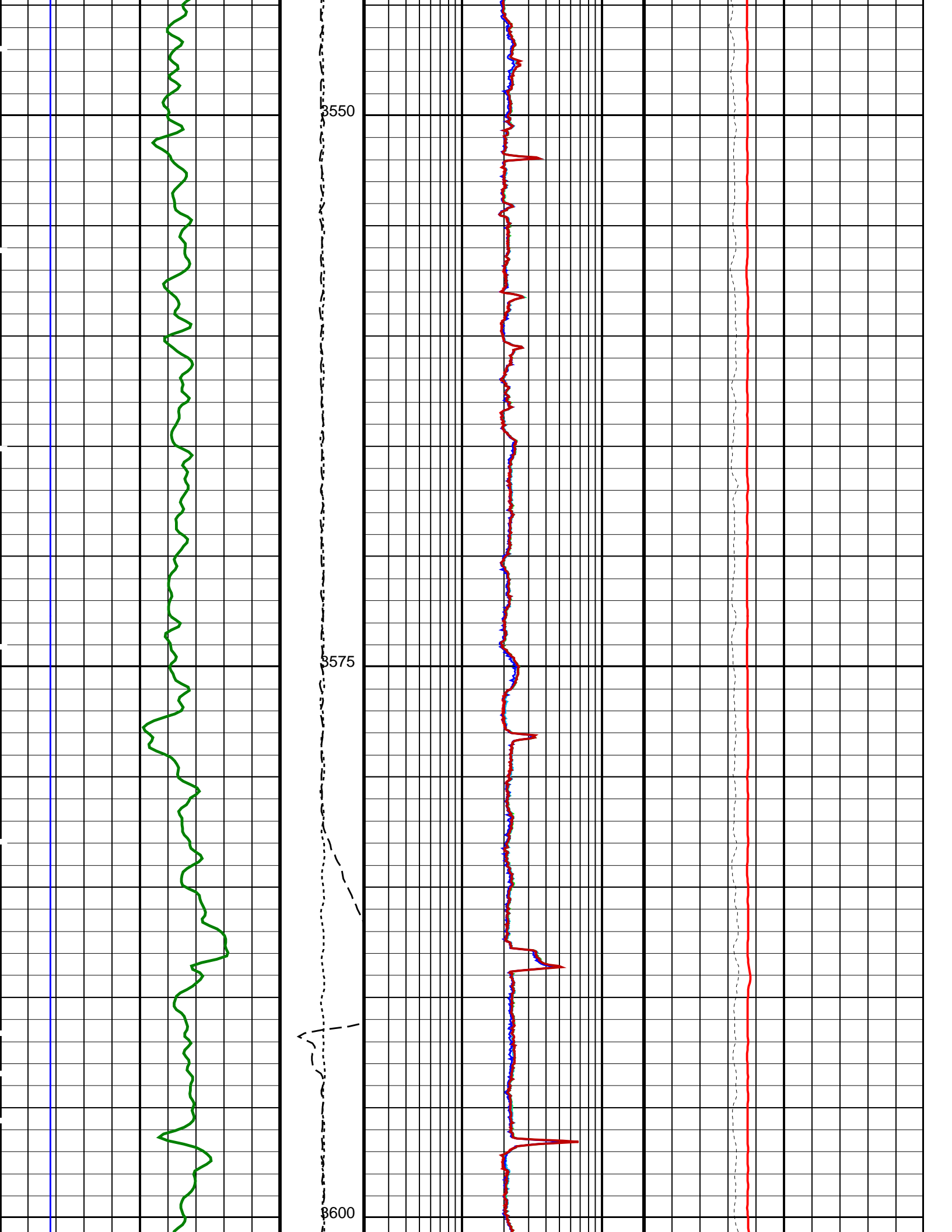


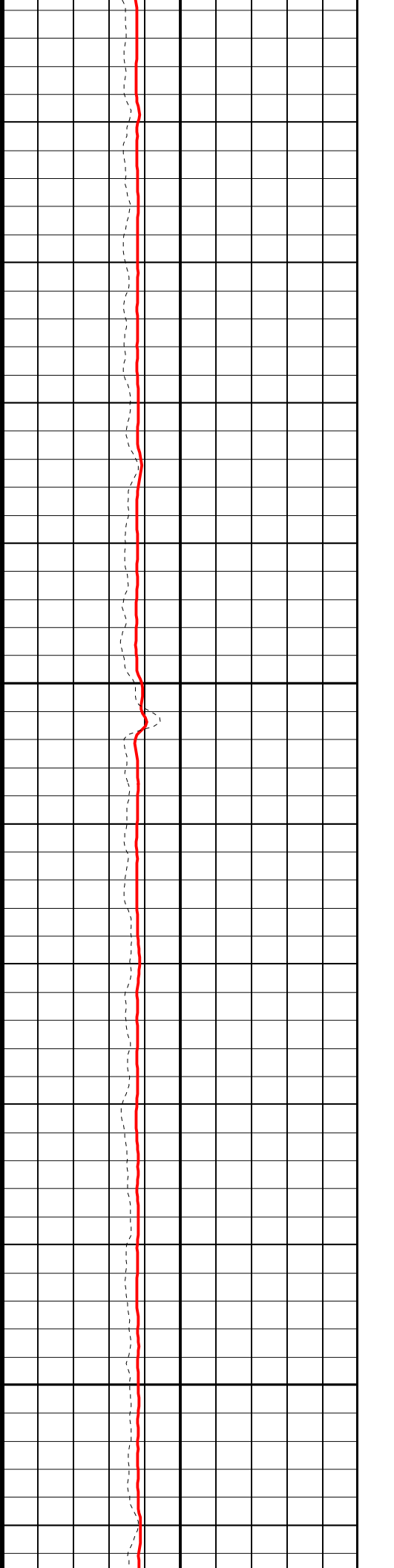
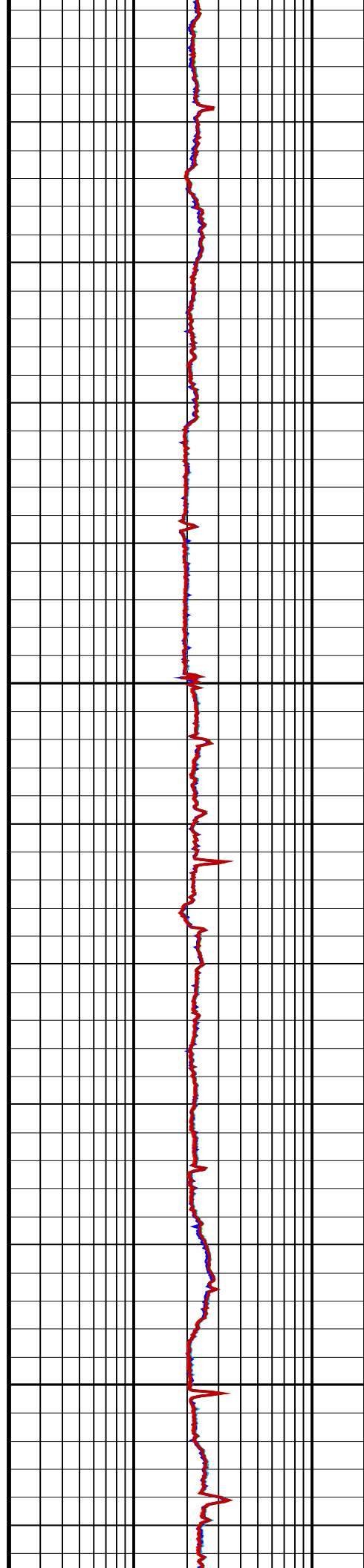
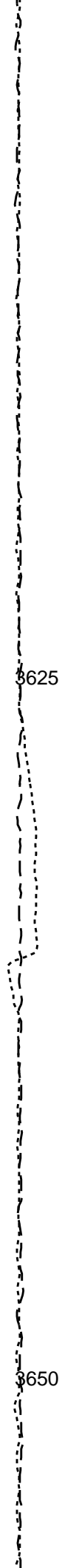
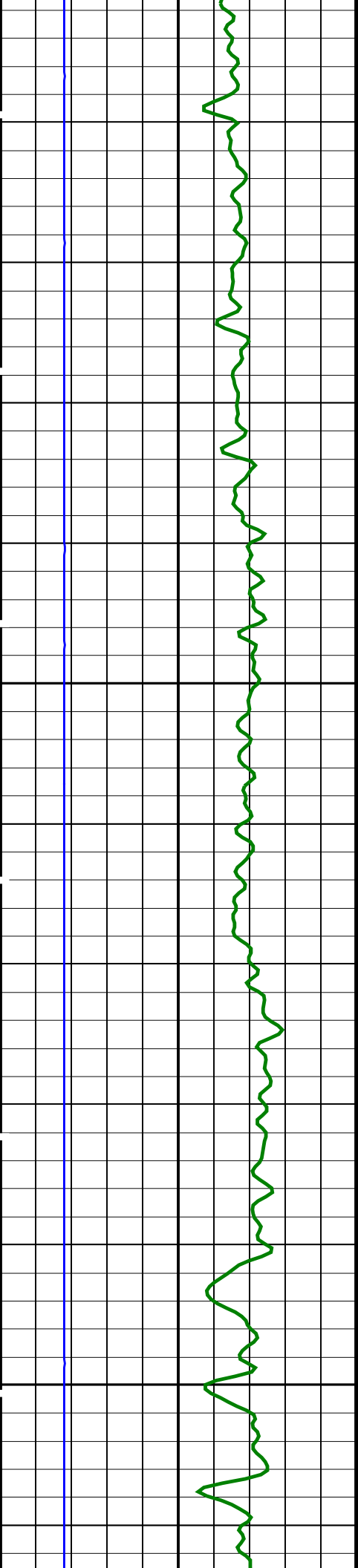


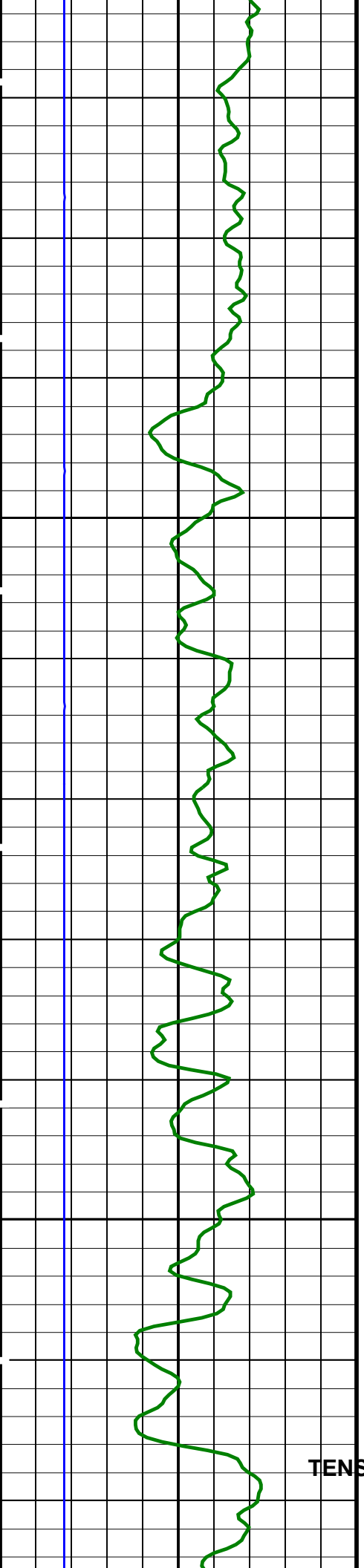








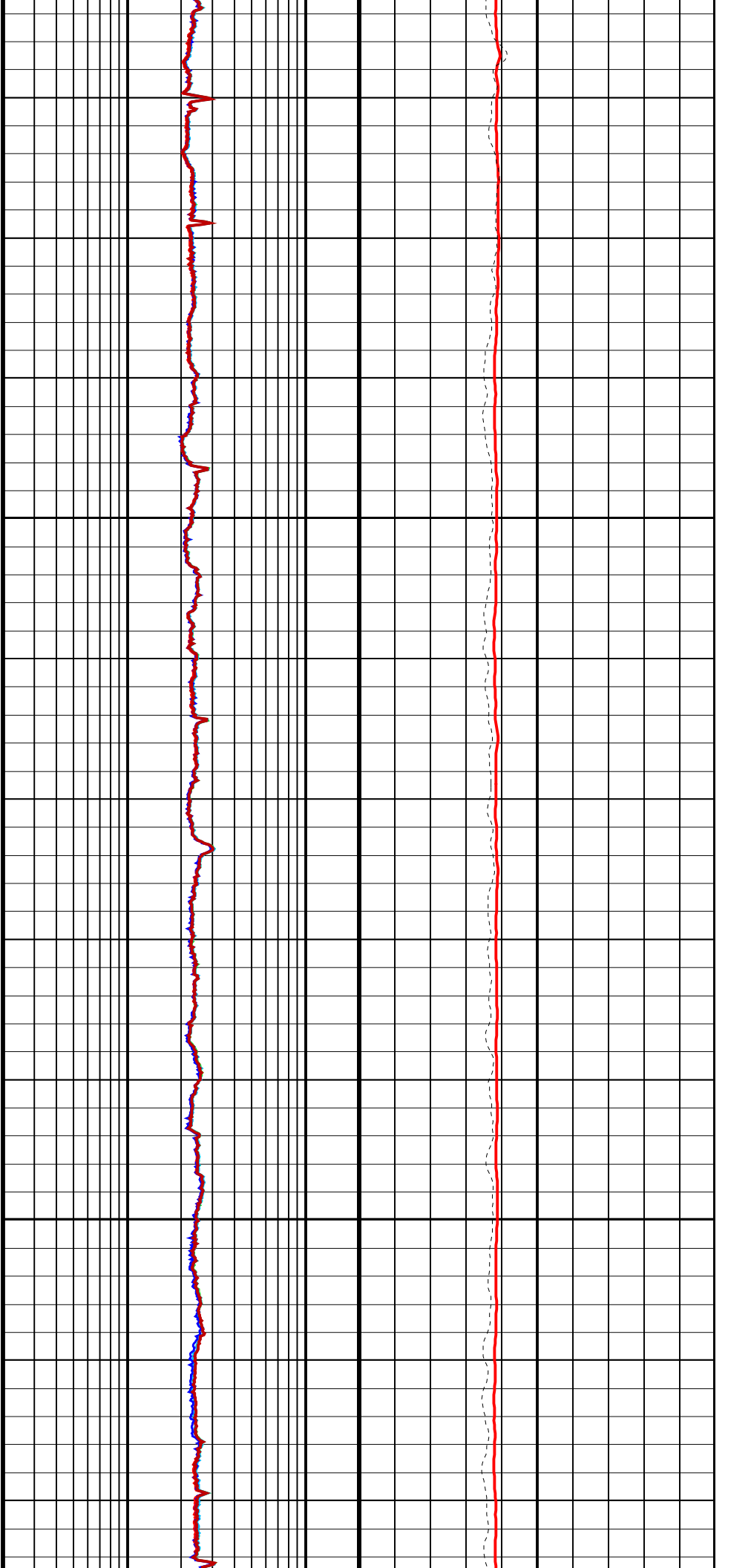


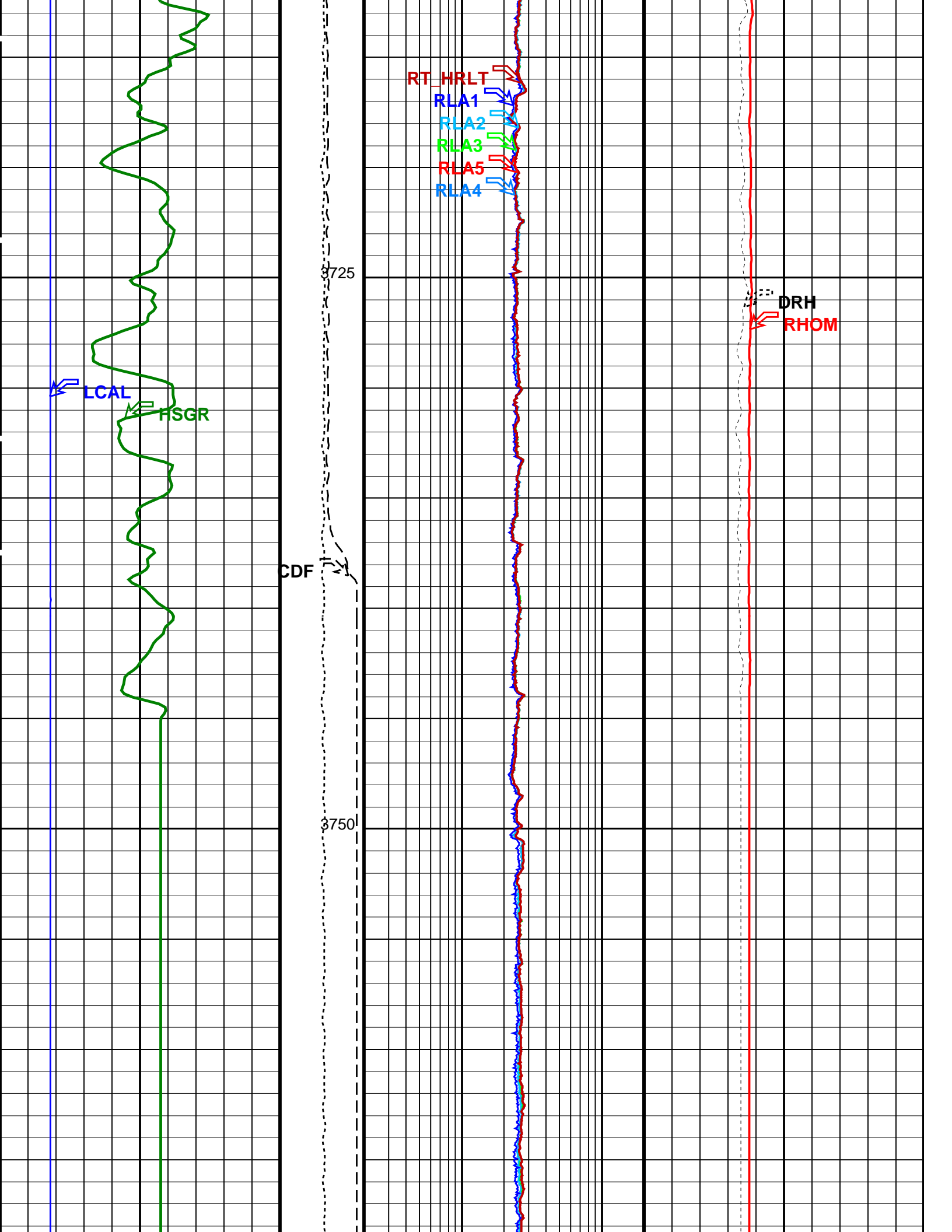


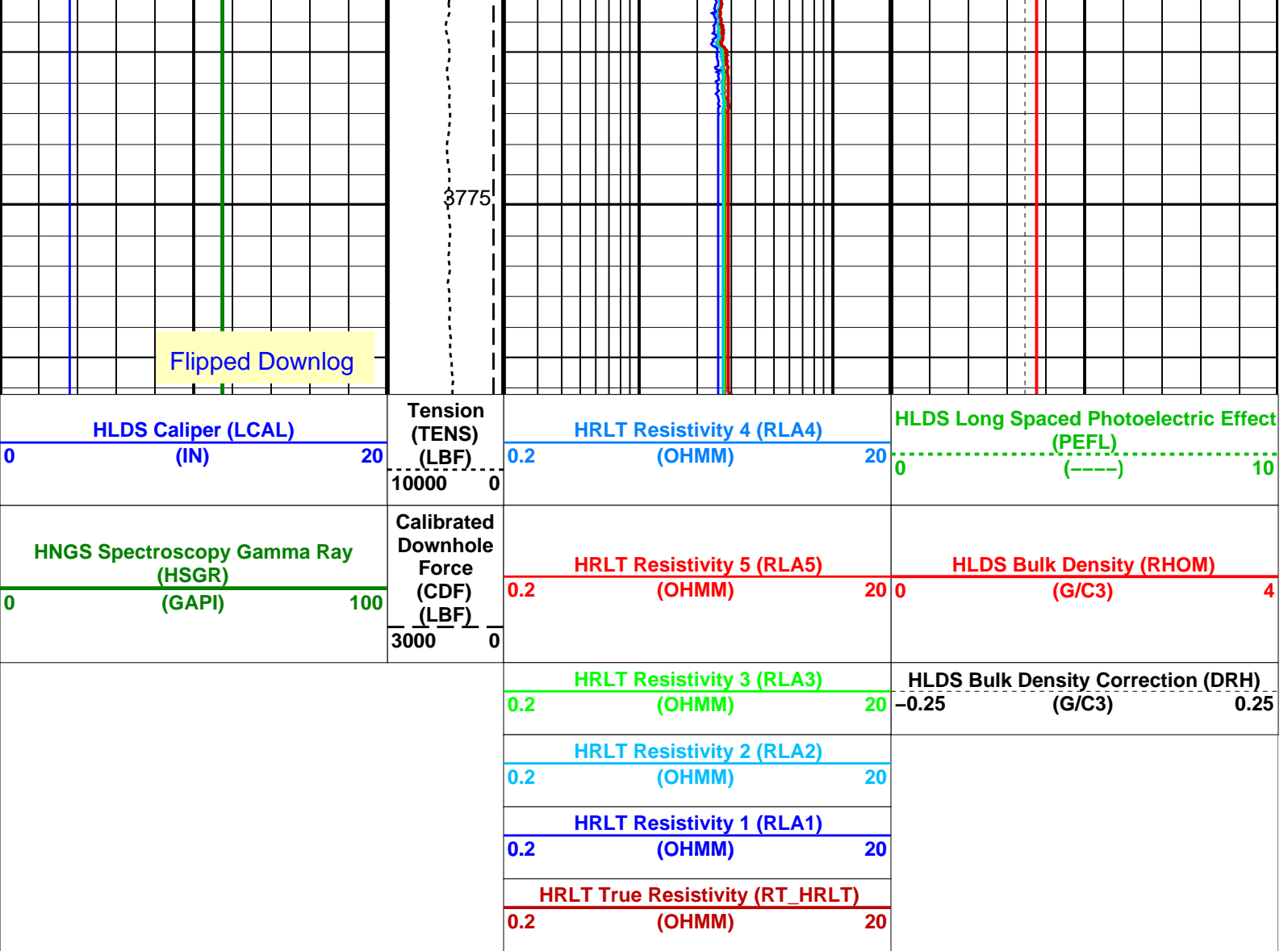
3675

3700

TENS







PIP SUMMARY

Time Mark Every 60 S

Parameters

DLIS Name	Description	Value
HNGS-BA: Hostile Natural Gamma Ray Sonde		
BAR1	HNGS Detector 1 Barite Constant	1
BAR2	HNGS Detector 2 Barite Constant	1
BHK	HNGS Borehole Potassium Correction Concentration	0
BHS	Borehole Status	OPEN
BHT	Bottom Hole Temperature (used in calculations)	212 DEGF
CSD1	Inner Casing Outer Diameter	0 IN
CSD2	Outer Casing Outer Diameter	0 IN
CSW1	Inner Casing Weight	0 LB/F
CSW2	Outer Casing Weight	0 LB/F
DBCC	HNGS Barite Constant Correction Flag	NONE
GCSE	Generalized Caliper Selection	BS
GDEV	Average Angular Deviation of Borehole from Normal	0 DEG
GGRD	Geothermal Gradient	0.01 DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE
H1P	HNGS Detector 1 Allow/Disallow In Processing	ALLOW
H2P	HNGS Detector 2 Allow/Disallow In Processing	ALLOW
HABK	HNGS Borehole Potassium Running Average	0
HALF	HNGS Alpha Filter Length	60 IN
HCRB	HNGS Apply Borehole Potassium Correction	NONE
HMWM	Mud Weighting Material	BARI
HNPE	HNGS Processing Enable	YES
ISSBAR	Barite Mud Switch	BARITE
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE
S1BI	HNGS Detector 1 Calibration Bismuth Count Rate	1.3 CPS
S2BI	HNGS Detector 2 Calibration Bismuth Count Rate	1.3 CPS
SGRC	HNGS Standard Gamma-Ray Correction Flag	YES
SHT	Surface Hole Temperature	55 DEGF

CHT	Surface Hole Temperature	35	DEGF
TPOS	Tool Position		
VBA1	HNGS Detector 1 Variable Barite Factor Running Average	0	
VBA2	HNGS Detector 2 Variable Barite Factor Running Average	0	
HRLT-B: High Resolution Laterolog Array - B			
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	212	DEGF
CALSTAT	HRLTB Calibration Status	SHALLOW_DONE	
CALTEMP	HRLTB Calibration Temperature	13.6213	DEGC
FREQ0	HRLT Frequency Index for Mode 0	32	
FREQ1	HRLT Frequency Index for Mode 1	128	
FREQ2	HRLT Frequency Index for Mode 2	104	
FREQ3	HRLT Frequency Index for Mode 3	86	
FREQ4	HRLT Frequency Index for Mode 4	56	
FREQ5	HRLT Frequency Index for Mode 5	44	
FREQ6	HRLT Frequency Index for Mode 6	116	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN 9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
ISSBAR	Barite Mud Switch	BARITE	
KFAC_HRLT	HRLT K Factor Option	SONDE	
LOOPCOEF_S	HRLT Loop Coefficient for Shallow Modes	LOW	
LOOPMOD0	HRLT Mode 0 Loop Mode	AUTO	
LOOPMOD1	HRLT Mode 1 Loop Mode	AUTO	
LOOPMOD2	HRLT Mode 2 Loop Mode	AUTO	
LOOPMOD3	HRLT Mode 3 Loop Mode	AUTO	
LOOPMOD4	HRLT Mode 4 Loop Mode	AUTO	
LOOPMOD5	HRLT Mode 5 Loop Mode	AUTO	
LOOPMOD6	HRLT Mode 6 Loop Mode	AUTO	
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
PROGINV	Inversion Selection	ON	
PROCMFL	Inversion Micro-Resistivity Selection	NO_EXTERNAL_RXO	
PROCMSO	Mechanical Standoff Fin Size	0	IN
PROCRM	Processing Mud Resistivity Select	HRLT_Compute	
PROCSPO	Sonde Position	Centered	
SHT	Surface Hole Temperature	55	DEGF
DSST-B: Dipole Shear Imager - B			
AGC1	Automatic Gain Control 1	ON	
AGC2	Automatic Gain Control 2	ON	
AGC3	Automatic Gain Control 3	ON	
AGC4	Automatic Gain Control 4	ON	
AGC5	Automatic Gain Control 5	ON	
AGCX	Automatic Gain Control X	ON	
BARS_MTR1	Length for Monopole Transmitter to Receiver 1	2.7432	M
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	212	DEGF
CASF	Label Casing Function - Monopole P&S	50	
CDTS	C-Delta-T Shale	100	US/F
COLL	Label Slowness Lower Limit - Monopole P&S Compressional	120	US/F
COUL	Label Slowness Upper Limit - Monopole P&S Compressional	180	US/F
DDE1	Digitizing Delay 1	0	US
DDE2	Digitizing Delay 2	0	US
DDE3	Digitizing Delay 3	0	US
DDE4	Digitizing Delay 4	0	US
DDE5	Digitizing Delay 5	0	US
DDEX	Digitizing Delay X	0	US
DLCS	Label Compressional Source - Dipole Shear	USE	
DLHS	Label Hole Diameter Source for SOBS Channel	AUTO	
DSHL	Label Slowness Lower Limit - Dipole Shear	40	US/F
DSHU	Label Slowness Upper Limit - Dipole Shear	1040	US/F
DSI1	Digitizer Sample Interval 1	40	US
DSI2	Digitizer Sample Interval 2	40	US
DSI3	Digitizer Sample Interval 3	40	US
DSI4	Digitizer Sample Interval 4	10	US
DSI5	Digitizer Sample Interval 5	10	US
DSIX	Digitizer Sample Interval X	40	US
DTCS	Compressional Delta-T Source for DTCO Channel	PS_COMP	
DTF	Delta-T Fluid	193	US/F
DTM	Delta-T Matrix	56	US/F
DTSS	Shear Delta-T Source for DTSM Channel	LOWER_DIPOLE	
DWC1	Digitizer Word Count 1	512	
DWC2	Digitizer Word Count 2	512	
DWC3	Digitizer Word Count 3	512	
DWC4	Digitizer Word Count 4	512	
DWC5	Digitizer Word Count 5	512	
DWCX	Digitizer Word Count X	512	
FDE1	Firing Delay 1	0	
FDE2	Firing Delay 2	0	
FDE3	Firing Delay 3	0	
FDE4	Firing Delay 4	0	
FDE5	Firing Delay 5	0	
FDEX	Firing Delay X	0	
FGM5	First Motion Gate Moveout 5	40	US/F

FGMX	First Motion Gate Moveout X	40	
FILG	Label Fill Gap Control – Monopole P&S	COMP_SHEAR	
FMG5	First Motion Minimum Gate 5	500	US
FMGX	First Motion Minimum Gate X	500	US
FMLL	Slowness Lower Limit – FMD	40	US/F
FMRC	Restart Control – FMD	CONTINUE	
FMT5	First Motion Threshold 5	UP	
FMTX	First Motion Threshold X	NONE	
FMUL	Slowness Upper Limit – FMD	180	US/F
FNC5	First Motion Noise Counter Input 5	ALO	
FNCX	First Motion Noise Counter Input X	ALO	
FPM	Processing Mode – FMD	NONE	
FTD5	First Motion Threshold Direction 5	UP	
FTDX	First Motion Threshold Direction X	UP	
GAI1	Manual Gain 1	10	
GAI2	Manual Gain 2	10	
GAI3	Manual Gain 3	6	
GAI4	Manual Gain 4	16	
GAI5	Manual Gain 5	16	
GAIX	Manual Gain X	10	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GDT1	Gain Delta-T 1	800	US/F
GDT2	Gain Delta-T 2	800	US/F
GDT3	Gain Delta-T 3	800	US/F
GDT4	Gain Delta-T 4	160	US/F
GDT5	Gain Delta-T 5	160	US/F
GDTX	Gain Delta-T X	800	US/F
GGRD	Geothermal Gradient	0.01	DF/F
GIN1	Gain Interval 1	15360	US
GIN2	Gain Interval 2	15360	US
GIN3	Gain Interval 3	15360	US
GIN4	Gain Interval 4	2560	US
GIN5	Gain Interval 5	1600	US
GINX	Gain Interval X	15360	US
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HPF1	High Pass Filter 1	F80	
HPF2	High Pass Filter 2	F80	
HPF3	High Pass Filter 3	F80	
HPF4	High Pass Filter 4	F8K	
HPF5	High Pass Filter 5	F8K	
HPFX	High Pass Filter X	F80	
ISSBAR	Barite Mud Switch	BARITE	
ITTS	Integrated Transit Time Source	DTCO	
LFC	Label Formation Character – Monopole P&S	DYNAMIC	
LPF1	Low Pass Filter 1	F5K	
LPF2	Low Pass Filter 2	F5K	
LPF3	Low Pass Filter 3	F5K	
LPF4	Low Pass Filter 4	F30K	
LPF5	Low Pass Filter 5	F30K	
LPFX	Low Pass Filter X	F5K	
LTXG	Lower Dipole Transmitter Geometry	156	IN
MAI5	Slowness Averaging Interval – FMD	42	IN
MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCS	Mean Casing Slowness	57	US/F
MDS5	Multishot Delta-T Scatter – FMD	20	US
MTXG	Monopole Transmitter Geometry	186	IN
MUX1	Sum Difference Multiplexor Input 1	RR	
MUX2	Sum Difference Multiplexor Input 2	RR	
MUX3	Sum Difference Multiplexor Input 3	RR	
MUX4	Sum Difference Multiplexor Input 4	RR	
MUX5	Sum Difference Multiplexor Input 5	RR	
MUXX	Sum Difference Multiplexor Input X	RR	
NTI5	Number Threshold Items 5	0	
NTIX	Number Threshold Items X	0	
NWI1	Number Waveform Items 1	8	
NWI2	Number Waveform Items 2	8	
NWI3	Number Waveform Items 3	0	
NWI4	Number Waveform Items 4	8	
NWI5	Number Waveform Items 5	0	
NWIX	Number Waveform Items X	0	
NWS1	Number Waveforms Stacked 1	1	
NWS2	Number Waveforms Stacked 2	1	
NWS3	Number Waveforms Stacked 3	1	
NWS4	Number Waveforms Stacked 4	1	
NWS5	Number Waveforms Stacked 5	1	
NWSX	Number Waveforms Stacked X	1	
RATE	Firing Rate	R7	
RSMN	Label Shear/Compressional Minimum Ratio – Monopole P&S	1.4	
RSMX	Label Shear/Compressional Maximum Ratio – Monopole P&S	2.12	
RX1G	Receiver 1 Geometry	294	IN
RX2G	Receiver 2 Geometry	300	IN
RX3G	Receiver 3 Geometry	306	IN
RX4G	Receiver 4 Geometry	312	IN



RX5G	Receiver 5 Geometry	318	IN
RX6G	Receiver 6 Geometry	324	IN
RX7G	Receiver 7 Geometry	330	IN
RX8G	Receiver 8 Geometry	336	IN
SAM1	DSST Sonic Acquisition Mode 1 – Lower Dipole Mode	LFD_EVEN	
SAM2	DSST Sonic Acquisition Mode 2 – Upper Dipole Mode	ODD	
SAM3	DSST Sonic Acquisition Mode 3 – Monopole Mode for Stoneley	OFF	
SAM4	DSST Sonic Acquisition Mode 4 – Monopole Mode for P&S	EVEN	
SAM5	DSST Sonic Acquisition Mode 5 – Monopole Mode for FMD	OFF	
SAMX	DSST Sonic Acquisition Mode X – Both Dipoles or Monopole Mode for Expert	OFF	
SAS1	STC Sonic Array Status – Lower Dipole	255	
SAS2	STC Sonic Array Status – Upper Dipole	255	
SAS3	STC Sonic Array Status – Monopole Stoneley	255	
SAS4	STC Sonic Array Status – Monopole P&S	255	
SAS5	Sonic Array Status – FMD	255	
SBO1	STC Search Band Offset – Lower Dipole	3000	US
SBO2	STC Search Band Offset – Upper Dipole	3000	US
SBO3	STC Search Band Offset – Monopole Stoneley	3000	US
SBO4	STC Search Band Offset – Monopole P&S	500	US
SBR4	STC Baseline Removal – Monopole P&S	ON	
SBW1	STC Search Bandwidth – Lower Dipole	8000	US
SBW2	STC Search Bandwidth – Upper Dipole	8000	US
SBW3	STC Search Bandwidth – Monopole Stoneley	8000	US
SBW4	STC Search Bandwidth – Monopole P&S	2000	US
SFC1	STC Formation Character – Lower Dipole	SELECTABLE	
SFC2	STC Formation Character – Upper Dipole	SELECTABLE	
SFC3	STC Formation Character – Monopole Stoneley	SELECTABLE	
SFC4	STC Formation Character – Monopole P&S	SELECTABLE	
SFM1	STC Filter – Lower Dipole	B.3–1.5K	
SFM2	STC Filter – Upper Dipole	B1–2K	
SFM3	STC Filter – Monopole Stoneley	B.5–1.5K	
SFM4	STC Filter – Monopole P&S	B3–20K	
SHLL	Label Slowness Lower Limit – Monopole P&S Shear	235	US/F
SHT	Surface Hole Temperature	55	DEGF
SHUL	Label Slowness Upper Limit – Monopole P&S Shear	240	US/F
SLL1	STC Slowness Lower Limit – Lower Dipole	40	US/F
SLL2	STC Slowness Lower Limit – Upper Dipole	40	US/F
SLL3	STC Slowness Lower Limit – Monopole Stoneley	180	US/F
SLL4	STC Slowness Lower Limit – Monopole P&S	40	US/F
SPFS	Sonic Porosity Formula	RAYMER_HUNT	
SPSO	Sonic Porosity Source	DTCO	
SST1	STC Slowness Step – Lower Dipole	4	US/F
SST2	STC Slowness Step – Upper Dipole	4	US/F
SST3	STC Slowness Step – Monopole Stoneley	4	US/F
SST4	STC Slowness Step – Monopole P&S	2	US/F
SSW1	STC Source Waveform – Lower Dipole	WF_SAM1	
SSW2	STC Source Waveform – Upper Dipole	WF_SAM2	
SSW3	STC Source Waveform – Monopole Stoneley	WF_SAM3	
SSW4	STC Source Waveform – Monopole P&S	WF_SAM4	
STLL	Label Slowness Lower Limit – Monopole Stoneley	180	US/F
STUL	Label Slowness Upper Limit – Monopole Stoneley	780	US/F
SUL1	STC Slowness Upper Limit – Lower Dipole	1040	US/F
SUL2	STC Slowness Upper Limit – Upper Dipole	1040	US/F
SUL3	STC Slowness Upper Limit – Monopole Stoneley	780	US/F
SUL4	STC Slowness Upper Limit – Monopole P&S	240	US/F
SWD1	STC Slowness Width – Lower Dipole	40	US/F
SWD2	STC Slowness Width – Upper Dipole	40	US/F
SWD3	STC Slowness Width – Monopole Stoneley	40	US/F
SWD4	STC Slowness Width – Monopole P&S	10	US/F
TBDB	Tool String Bottom to DSST Bottom	526.05	IN
TBF1	STC Time for Baseline Fill – Lower Dipole	0	US
TBF2	STC Time for Baseline Fill – Upper Dipole	0	US
TBF3	STC Time for Baseline Fill – Monopole Stoneley	0	US
TBF4	STC Time for Baseline Fill – Monopole P&S	300	US
TLL1	STC Time Lower Limit – Lower Dipole	600	US
TLL2	STC Time Lower Limit – Upper Dipole	600	US
TLL3	STC Time Lower Limit – Monopole Stoneley	600	US
TLL4	STC Time Lower Limit – Monopole P&S	150	US
TST1	STC Time Step – Lower Dipole	200	US
TST2	STC Time Step – Upper Dipole	200	US
TST3	STC Time Step – Monopole Stoneley	200	US
TST4	STC Time Step – Monopole P&S	50	US
TTDB	Tool String Top to DSST Bottom	1225.31	IN
TUL1	STC Time Upper Limit – Lower Dipole	18960	US
TUL2	STC Time Upper Limit – Upper Dipole	18440	US
TUL3	STC Time Upper Limit – Monopole Stoneley	12000	US
TUL4	STC Time Upper Limit – Monopole P&S	3660	US
TWA1	Transmitter Waveform Amplitude 1	179	
TWA2	Transmitter Waveform Amplitude 2	179	
TWA3	Transmitter Waveform Amplitude 3	166	
TWA4	Transmitter Waveform Amplitude 4	150	
TWA5	Transmitter Waveform Amplitude 5	150	
TWAX	Transmitter Waveform Amplitude X	179	
TWD1	STC Time Width – Lower Dipole	2000	US

TWD1	STC Time Width - Lower Dipole	2000	US
TWD2	STC Time Width - Upper Dipole	2000	US
TWD3	STC Time Width - Monopole Stoneley	2000	US
TWD4	STC Time Width - Monopole P&S	1000	US
TWI1	STC Integration Time Window - Lower Dipole	1600	US
TWI2	STC Integration Time Window - Upper Dipole	1600	US
TWI3	STC Integration Time Window - Monopole Stoneley	2400	US
TWI4	STC Integration Time Window - Monopole P&S	500	US
TWR1	Transmitter Waveform Sample Rate 1	20	US
TWR2	Transmitter Waveform Sample Rate 2	5	US
TWR3	Transmitter Waveform Sample Rate 3	5	US
TWR4	Transmitter Waveform Sample Rate 4	5	US
TWR5	Transmitter Waveform Sample Rate 5	5	US
TWRX	Transmitter Waveform Sample Rate X	5	US
TWS1	Transmitter Waveform Select 1	2	
TWS2	Transmitter Waveform Select 2	0	
TWS3	Transmitter Waveform Select 3	4	
TWS4	Transmitter Waveform Select 4	6	
TWS5	Transmitter Waveform Select 5	6	
TWSX	Transmitter Waveform Select X	0	
UTXG	Upper Dipole Transmitter Geometry	162	IN
WFDTSP1	SAM1 Waveform Delta for Spectrum	0	US/F
WFDTSP2	SAM2 Waveform Delta for Spectrum	0	US/F
WFDTSP3	SAM3 Waveform Delta for Spectrum	0	US/F
WFDTSP4	SAM4 Waveform Delta for Spectrum	0	US/F
WFDTSPX	SAMX Waveform Delta for Spectrum	0	US/F
WFLDSP1	SAM1 Waveform Lower Limit for Spectrum	0	US
WFLDSP2	SAM2 Waveform Lower Limit for Spectrum	0	US
WFLDSP3	SAM3 Waveform Lower Limit for Spectrum	0	US
WFLDSP4	SAM4 Waveform Lower Limit for Spectrum	0	US
WFLDSPX	SAMX Waveform Lower Limit for Spectrum	0	US
WFM1	Waveform Mode 1	W1	
WFM2	Waveform Mode 2	W1	
WFM3	Waveform Mode 3	W1	
WFM4	Waveform Mode 4	W1	
WFM5	Waveform Mode 5	W1	
WFMX	Waveform Mode X	W1	
WFULSP1	SAM1 Waveform Upper Limit for Spectrum	20000	US
WFULSP2	SAM2 Waveform Upper Limit for Spectrum	20000	US
WFULSP3	SAM3 Waveform Upper Limit for Spectrum	20000	US
WFULSP4	SAM4 Waveform Upper Limit for Spectrum	5000	US
WFULSPX	SAMX Waveform Upper Limit for Spectrum	20000	US
XMT1	Transmitter Select 1	DLO	
XMT2	Transmitter Select 2	DUP	
XMT3	Transmitter Select 3	MONO	
XMT4	Transmitter Select 4	MONO	
XMT5	Transmitter Select 5	MONO	
XMTX	Transmitter Select X	DUP	
HLDS: Hostile Litho-Density Sonde			
CLCL	HLDS LS Control Loop Controller Mode	AUTO_DEFAULT	
CLCS	HLDS SS Control Loop Controller Mode	AUTO_DEFAULT	
CLLS	HLDS Mode Loop Long Spacing	AUTO	
CLSS	HLDS Mode Loop Short Spacing	AUTO	
DHC	Density Hole Correction	BS	
DPPM	Density Porosity Processing Mode	HIRS	
FD	Fluid Density	1	G/C3
LATC	HLDS Activation Correction	OFF	
LLDL	HLDS LS Low Level Discriminator DAC	14000	
LLDS	HLDS SS Low Level Discriminator DAC	14000	
LLML	HLDS LS Low Level Discriminator Mode	AUTO	
LLMS	HLDS SS Low Level Discriminator Mode	AUTO	
MDEN	Matrix Density	2.6	G/C3
PHVL	HLDS Long Spacing High Voltage Setting	1000	V
PHVS	HLDS Short Spacing High Voltage Setting	1000	V
PSDL	HLDS LS Pulse Shape Compensation DAC	30000	
PSDS	HLDS SS Pulse Shape Compensation DAC	30000	
PSML	HLDS LS Pulse Shape Compensation Mode	AUTO	
PSMS	HLDS SS Pulse Shape Compensation Mode	AUTO	
EDTC-B: Enhanced DTS Cartridge			
BHFL	Borehole Fluid Type	WATER	
BHS	Borehole Status	OPEN	
BHT	Bottom Hole Temperature (used in calculations)	212	DEGF
BSCO	Borehole Salinity Correction Option	NO	
CCCO	Casing & Cement Thickness Correction Option	NO	
DPPM	Density Porosity Processing Mode	HIRS	
FSAL	Formation Salinity	-50000	PPM
FSCO	Formation Salinity Correction Option	NO	
GCSE	Generalized Caliper Selection	BS	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.01	DF/F
GRSE	Generalized Mud Resistivity Selection	CHART_GEN_9	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCO	Hole Size Correction Option	YES	
ISSBAR	Barite Mud Switch	BARITE	
ISSBAR_EDTC	Nuclear Mud Type	BARITE	

MATR	Rock Matrix for Neutron Porosity Corrections	LIMESTONE	
MCCO	Mud Cake Correction Option	NO	
MCOR	Mud Correction	BARI	
MWCO	Mud Weight Correction Option	YES	
PTCO	Pressure/Temperature Correction Option	NO	
SDAT	Standoff Data Source	SOCN	
SHT	Surface Hole Temperature	55	DEGF
SOCN	Standoff Distance	0.5	IN
SOCO	Standoff Correction Option	NO	
TPOS_EDTC	EDTC Tool Centered/Eccentered	Eccentered	
U-ETELM_EDTS	Telemetry Mode for eWAFE	Standard_EDTS	
U-TELM_EDTS	Telemetry Mode for WAFE	Standard_EDTS	
System and Miscellaneous			
ALTDPCCHAN	Name of alternate depth channel	SpeedCorrectedDepth	
BS	Bit Size	9.875	IN
BSAL	Borehole Salinity	38000.00	PPM
CSIZ	Current Casing Size	5.500	IN
CWEI	Casing Weight	168.00	LB/F
DFD	Drilling Fluid Density	1.26	G/C3
DO	Depth Offset for Playback	0.0	M
FLEV	Fluid Level	-50000.00	M
MST	Mud Sample Temperature	23.00	DEGC
PBVSADP	Use alternate depth channel for playback	NO	
PP	Playback Processing	NORMAL	
RMFS	Resistivity of Mud Filtrate Sample	-50000.0000	OHMM
RW	Resistivity of Connate Water	1.0000	OHMM
TD	Total Depth	12409.8	FT
TDD	Total Depth - Driller	3782.50	M
TDL	Total Depth - Logger	3775.00	M
TWS	Temperature of Connate Water Sample	37.78	DEGC

Format: TripleCombo Vertical Scale: 1:200 Graphics File Created: 15-Oct-2017 17:58

### OP System Version: 19C0-187

HNGC-B	19C0-187	HNGS-BA	19C0-187
HRLT-B	19C0-187	DSST-B	19C0-187
HLDS	19C0-187	LDSC-B	19C0-187
EDTC-B	SKK-5169-EDTCB		

### Input DLIS Files

DEFAULT	Flip_NGS_HRLA_DSI_055LUP	PRODUCER	14-Oct-2017 14:04	3781.2 M	3031.2 M
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### Output DLIS Files

DEFAULT	NGS_HRLA_DSI_LDL_061PUP	FN:61	PRODUCER	15-Oct-2017 17:57
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### Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
Hostile Natural Gamma Ray Sonde Wellsite Calibration - Detector 1 Check							
Master: 24-Sep-2017 9:26 Before: 9-Oct-2017 23:50 After: 24-Sep-2017 9:36							
Na 511 Peak Loc	40.00	39.76	39.63	39.68	0.05351	1.000	
Na 511 Peak Res	15.50	14.97	14.78	15.12	0.3384	2.000	%
High Voltage	1150	1156	1164	1155	-9.536	N/A	V
Na 1785 Peak Loc	142.6	142.6	142.4	141.8	-0.5373	7.000	
Na 1785 Peak Res	8.500	9.098	8.297	8.997	0.7002	2.000	%
Temperature	15.50	18.30	22.61	18.27	-4.336	N/A	DEGC
Na Count Rate	45.00	27.65	26.76	27.40	0.6426	8.000	CPS
Hostile Natural Gamma Ray Sonde Wellsite Calibration - Detector 2 Check							
Master: 24-Sep-2017 9:26 Before: 9-Oct-2017 23:50 After: 24-Sep-2017 9:36							
Na 511 Peak Loc	40.00	39.51	39.64	39.54	-0.1000	1.000	
Na 511 Peak Res	15.50	15.77	15.02	16.14	1.121	2.000	%
High Voltage	1150	1088	1096	1088	-7.456	N/A	V
Na 1785 Peak Loc	142.6	141.7	140.7	141.7	1.005	7.000	
Na 1785 Peak Res	8.500	8.872	9.283	7.911	-1.371	2.000	%
Temperature	15.50	18.97	23.56	18.96	-4.591	N/A	DEGC
Na Count Rate	45.00	27.04	26.46	27.03	0.5627	8.000	CPS
Hostile Natural Gamma Ray Sonde Wellsite Calibration - Ratio Of Detector 1 To Detector 2							
Master: 24-Sep-2017 9:26 Before: 9-Oct-2017 23:50 After: 24-Sep-2017 9:36							
Coincidence Count Rate Ratio	1.000	1.020	1.012	1.014	0.001632	0.05000	

Hostile Natural Gamma Ray Sonde Master Calibration – Detector 1 Calibration							
Master: 24-Sep-2017 9:22							
Na 511 Peak Set Point	40.00	41.00	--	--	--	--	
Th Peak Loc	209.6	210.1	--	--	--	--	
Th Peak Res	7.000	7.030	--	--	--	--	%
Background Count Rate	142.5	20.14	--	--	--	--	CPS
Gain Ratio	1.000	1.005	--	--	--	--	
Hostile Natural Gamma Ray Sonde Master Calibration – Detector 2 Calibration							
Master: 24-Sep-2017 9:22							
Na 511 Peak Set Point	40.00	41.00	--	--	--	--	
Th Peak Loc	209.6	208.2	--	--	--	--	
Th Peak Res	7.000	7.022	--	--	--	--	%
Background Count Rate	142.5	17.54	--	--	--	--	CPS
Gain Ratio	1.000	1.003	--	--	--	--	
High Resolution Laterolog Array – B Wellsite Calibration – HRLT M01							
Before: 14-Oct-2017 7:14 After: 14-Oct-2017 13:46							
HRLT M0-M1 Voltage Plus – 0	0	N/A	-318.7	-318.2	0.5489	9.681	UV
HRLT M0-M1 Voltage Plus – 1	0	N/A	-329.9	-327.7	2.263	9.681	UV
HRLT M0-M1 Voltage Plus – 2	0	N/A	-338.0	-335.9	2.069	9.681	UV
HRLT M0-M1 Voltage Plus – 3	0	N/A	-328.5	-326.8	1.776	9.681	UV
HRLT M0-M1 Voltage Plus – 4	0	N/A	-319.7	-319.0	0.7266	9.681	UV
HRLT M0-M1 Voltage Plus – 5	0	N/A	-321.6	-320.9	0.7577	9.681	UV
HRLT M0-M1 Voltage Plus – 6	0	N/A	319.5	317.3	-2.182	9.681	UV
HRLT M0-M1 Voltage Plus – 7	0	N/A	-322.7	-322.7	0	9.681	UV
High Resolution Laterolog Array – B Wellsite Calibration – HRLT M12							
Before: 14-Oct-2017 7:14 After: 14-Oct-2017 13:46							
HRLT M1-M2 Voltage Plus – 0	0	N/A	1740	1735	-5.013	53.42	UV
HRLT M1-M2 Voltage Plus – 1	0	N/A	1808	1794	-14.21	53.42	UV
HRLT M1-M2 Voltage Plus – 2	0	N/A	1845	1832	-12.96	53.42	UV
HRLT M1-M2 Voltage Plus – 3	0	N/A	1792	1780	-11.75	53.42	UV
HRLT M1-M2 Voltage Plus – 4	0	N/A	1743	1737	-5.934	53.42	UV
HRLT M1-M2 Voltage Plus – 5	0	N/A	1754	1748	-5.995	53.42	UV
HRLT M1-M2 Voltage Plus – 6	0	N/A	-1759	-1745	13.96	53.42	UV
HRLT M1-M2 Voltage Plus – 7	0	N/A	1781	1781	0	53.42	UV
High Resolution Laterolog Array – B Wellsite Calibration – HRLT M23							
Before: 14-Oct-2017 7:14 After: 14-Oct-2017 13:46							
HRLT M2-M3 Voltage Plus – 0	0	N/A	1732	1728	-4.786	53.42	UV
HRLT M2-M3 Voltage Plus – 1	0	N/A	1811	1796	-15.02	53.42	UV
HRLT M2-M3 Voltage Plus – 2	0	N/A	1850	1836	-13.56	53.42	UV
HRLT M2-M3 Voltage Plus – 3	0	N/A	1800	1789	-11.39	53.42	UV
HRLT M2-M3 Voltage Plus – 4	0	N/A	1745	1739	-5.972	53.42	UV
HRLT M2-M3 Voltage Plus – 5	0	N/A	1757	1751	-6.183	53.42	UV
HRLT M2-M3 Voltage Plus – 6	0	N/A	-1750	-1736	14.68	53.42	UV
HRLT M2-M3 Voltage Plus – 7	0	N/A	1781	1781	0	53.42	UV
High Resolution Laterolog Array – B Wellsite Calibration – HRLT V34							
Before: 14-Oct-2017 7:14 After: 14-Oct-2017 13:46							
HRLT A3-A4 Voltage Plus – 0	0	N/A	68620	68480	-143.0	2100	UV
HRLT A3-A4 Voltage Plus – 1	0	N/A	71590	71040	-551.4	2100	UV
HRLT A3-A4 Voltage Plus – 2	0	N/A	73400	72950	-447.8	2100	UV
HRLT A3-A4 Voltage Plus – 3	0	N/A	71670	71270	-398.5	2100	UV
HRLT A3-A4 Voltage Plus – 4	0	N/A	69450	69260	-193.9	2100	UV
HRLT A3-A4 Voltage Plus – 5	0	N/A	69950	69750	-194.2	2100	UV
HRLT A3-A4 Voltage Plus – 6	0	N/A	-68230	-67710	519.2	2100	UV
HRLT A3-A4 Voltage Plus – 7	0	N/A	70000	70000	0	2100	UV
High Resolution Laterolog Array – B Wellsite Calibration – HRLT V45							
Before: 14-Oct-2017 7:14 After: 14-Oct-2017 13:46							
HRLT A4-A5 Voltage Plus – 0	0	N/A	68700	68560	-139.2	2100	UV
HRLT A4-A5 Voltage Plus – 1	0	N/A	71800	71250	-551.4	2100	UV
HRLT A4-A5 Voltage Plus – 2	0	N/A	73580	73140	-443.6	2100	UV
HRLT A4-A5 Voltage Plus – 3	0	N/A	71840	71440	-397.0	2100	UV
HRLT A4-A5 Voltage Plus – 4	0	N/A	69570	69370	-201.9	2100	UV
HRLT A4-A5 Voltage Plus – 5	0	N/A	70040	69850	-192.9	2100	UV
HRLT A4-A5 Voltage Plus – 6	0	N/A	-68430	-67910	523.5	2100	UV
HRLT A4-A5 Voltage Plus – 7	0	N/A	70000	70000	0	2100	UV
High Resolution Laterolog Array – B Wellsite Calibration – HRLT V56							
Before: 14-Oct-2017 7:14 After: 14-Oct-2017 13:46							
HRLT A5-A6 Voltage Plus – 0	0	N/A	68540	68410	-138.0	2100	UV
HRLT A5-A6 Voltage Plus – 1	0	N/A	71630	71110	-523.9	2100	UV
HRLT A5-A6 Voltage Plus – 2	0	N/A	73440	72960	-482.3	2100	UV
HRLT A5-A6 Voltage Plus – 3	0	N/A	71670	71270	-401.5	2100	UV
HRLT A5-A6 Voltage Plus – 4	0	N/A	69430	69240	-190.5	2100	UV
HRLT A5-A6 Voltage Plus – 5	0	N/A	69910	69710	-198.0	2100	UV
HRLT A5-A6 Voltage Plus – 6	0	N/A	-68270	-67760	509.7	2100	UV

High Resolution Laterolog Array – B Wellsite Calibration – HRLT VTP								
Before: 14–Oct–2017 7:14 After: 14–Oct–2017 13:46								
HRLT Torpedo–M0 Voltage – 0	0	N/A	-68080	-67970	115.0	2100	UV	
HRLT Torpedo–M0 Voltage – 1	0	N/A	-71440	-70930	515.5	2100	UV	
HRLT Torpedo–M0 Voltage – 2	0	N/A	-73280	-72830	448.9	2100	UV	
HRLT Torpedo–M0 Voltage – 3	0	N/A	-71610	-71220	387.7	2100	UV	
HRLT Torpedo–M0 Voltage – 4	0	N/A	-69390	-69220	175.5	2100	UV	
HRLT Torpedo–M0 Voltage – 5	0	N/A	-69870	-69700	174.3	2100	UV	
HRLT Torpedo–M0 Voltage – 6	0	N/A	68040	67530	-506.3	2100	UV	
HRLT Torpedo–M0 Voltage – 7	0	N/A	-70000	-70000	0	2100	UV	

High Resolution Laterolog Array – B Wellsite Calibration – HRLT VBD								
Before: 14–Oct–2017 7:14 After: 14–Oct–2017 13:46								
HRLT Bridle#9–M0 Voltage – 0	0	N/A	-68120	-68000	119.2	2100	UV	
HRLT Bridle#9–M0 Voltage – 1	0	N/A	-71520	-71010	516.4	2100	UV	
HRLT Bridle#9–M0 Voltage – 2	0	N/A	-73360	-72910	445.8	2100	UV	
HRLT Bridle#9–M0 Voltage – 3	0	N/A	-71670	-71280	385.5	2100	UV	
HRLT Bridle#9–M0 Voltage – 4	0	N/A	-69430	-69260	171.7	2100	UV	
HRLT Bridle#9–M0 Voltage – 5	0	N/A	-69900	-69730	168.8	2100	UV	
HRLT Bridle#9–M0 Voltage – 6	0	N/A	68120	67620	-506.3	2100	UV	
HRLT Bridle#9–M0 Voltage – 7	0	N/A	-70000	-70000	0	2100	UV	

High Resolution Laterolog Array – B Wellsite Calibration – HRLT ISO								
Before: 14–Oct–2017 7:14 After: 14–Oct–2017 13:46								
HRLT Source Current Plus – 0	0	N/A	284.2	283.8	-0.3833	8.520	UA	
HRLT Source Current Plus – 1	0	N/A	281.1	281.1	0	8.520	UA	
HRLT Source Current Plus – 2	0	N/A	281.1	281.1	0	8.520	UA	
HRLT Source Current Plus – 3	0	N/A	281.1	281.1	0	8.520	UA	
HRLT Source Current Plus – 4	0	N/A	281.1	281.1	0	8.520	UA	
HRLT Source Current Plus – 5	0	N/A	281.1	281.1	0	8.520	UA	
HRLT Source Current Plus – 6	0	N/A	281.1	281.1	0	8.520	UA	
HRLT Source Current Plus – 7	0	N/A	281.1	281.1	0	8.520	UA	

High Resolution Laterolog Array – B Wellsite Calibration – HRLT MV								
Before: 14–Oct–2017 7:14 After: 14–Oct–2017 13:46								
HRLT Vertical Voltage PI – 0	0	N/A	-320.6	-320.1	0.4480	9.681	UV	
HRLT Vertical Voltage PI – 1	0	N/A	-324.8	-322.7	2.109	9.681	UV	
HRLT Vertical Voltage PI – 2	0	N/A	-331.5	-329.4	2.093	9.681	UV	
HRLT Vertical Voltage PI – 3	0	N/A	-320.4	-318.8	1.589	9.681	UV	
HRLT Vertical Voltage PI – 4	0	N/A	-308.9	-308.2	0.6566	9.681	UV	
HRLT Vertical Voltage PI – 5	0	N/A	-325.6	-325.0	0.6814	9.681	UV	
HRLT Vertical Voltage PI – 6	0	N/A	327.1	324.9	-2.160	9.681	UV	
HRLT Vertical Voltage PI – 7	0	N/A	-322.7	-322.7	0	9.681	UV	

Hostile Litho–Density Sonde Wellsite Calibration – Background Measurement								
Master: 26–Sep–2017 11:25 Before: 10–Oct–2017 0:31 After: 26–Sep–2017 12:12								
SS Cs Resolution Bkg	9.000	8.040	7.940	8.001	0.06125	1.800	%	
LS Cs Resolution Bkg	9.000	8.146	8.231	8.085	-0.1465	1.800	%	
LSW1 Background	100.0	64.16	63.82	64.71	0.8853	3.000	CPS	
LSW2 Background	100.0	60.11	58.87	59.58	0.7093	3.000	CPS	
LSW3 Background	200.0	130.3	131.2	130.1	-1.114	6.000	CPS	
LSW4 Background	250.0	160.5	158.3	158.7	0.3287	7.500	CPS	
LSW5 Background	600.0	364.8	364.2	367.2	3.052	18.00	CPS	
SSW1 Background	100.0	72.43	72.50	71.14	-1.369	3.000	CPS	
SSW2 Background	200.0	129.4	130.2	130.2	-0.007904	6.000	CPS	
SSW3 Background	500.0	348.7	344.6	345.6	1.040	15.00	CPS	
SSW4 Background	270.0	180.4	180.4	181.5	1.118	8.100	CPS	
SSW5 Background	200.0	130.3	131.2	130.2	-1.063	6.000	CPS	

Hostile Litho–Density Sonde Wellsite Calibration – Aluminum Measurement								
Master: 26–Sep–2017 11:51								
LSW1 Aluminum	600.0	510.2	N/A	N/A	N/A	N/A	CPS	
LSW2 Aluminum	900.0	739.5	N/A	N/A	N/A	N/A	CPS	
LSW3 Aluminum	1100	888.4	N/A	N/A	N/A	N/A	CPS	
LSW4 Aluminum	580.0	445.5	N/A	N/A	N/A	N/A	CPS	
LSW5 Aluminum	570.0	411.4	N/A	N/A	N/A	N/A	CPS	
SSW1 Aluminum	2800	2381	N/A	N/A	N/A	N/A	CPS	
SSW2 Aluminum	8000	6444	N/A	N/A	N/A	N/A	CPS	
SSW3 Aluminum	11600	8933	N/A	N/A	N/A	N/A	CPS	
SSW4 Aluminum	5000	3653	N/A	N/A	N/A	N/A	CPS	
SSW5 Aluminum	660.0	444.5	N/A	N/A	N/A	N/A	CPS	

Hostile Litho–Density Sonde Wellsite Calibration – Lithology Measurement								
Master: 26–Sep–2017 11:46								
LSW1 Iron	400.0	346.9	N/A	N/A	N/A	N/A	CPS	
LSW2 Iron	730.0	593.4	N/A	N/A	N/A	N/A	CPS	
LSW3 Iron	1000	777.9	N/A	N/A	N/A	N/A	CPS	
LSW4 Iron	520.0	401.6	N/A	N/A	N/A	N/A	CPS	
LSW5 Iron	470.0	376.3	N/A	N/A	N/A	N/A	CPS	
SSW1 Iron	2100	1735	N/A	N/A	N/A	N/A	CPS	

SSW1 Iron	2100	1700	N/A	N/A	N/A	N/A	CPS
SSW2 Iron	6800	5380	N/A	N/A	N/A	N/A	CPS
SSW3 Iron	10800	8127	N/A	N/A	N/A	N/A	CPS
SSW4 Iron	4600	3318	N/A	N/A	N/A	N/A	CPS
SSW5 Iron	580.0	389.8	N/A	N/A	N/A	N/A	CPS

Hostile Litho-Density Sonde Wellsite Calibration – Caliper Calibration

Before: 10-Oct-2017 0:01

HLDS Caliper Small Ring	12.00	N/A	15.97	N/A	N/A	N/A	IN
HLDS Caliper Large Ring	15.19	N/A	20.08	N/A	N/A	N/A	IN

Enhanced DTS Cartridge Wellsite Calibration – EDTC Accelerometer Calibration

Before: 14-Oct-2017 7:13

EDTC Z-Axis Acceleration	9.810	N/A	9.749	N/A	N/A	N/A	M/S2
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Enhanced DTS Cartridge Wellsite Calibration – Detector Calibration

Before: 9-Oct-2017 23:47

Gamma Ray (Jig – Bkg)	140.5	N/A	140.5	N/A	N/A	12.77	GAPI
Gamma Ray (Calibrated)	164.0	N/A	164.0	N/A	N/A	15.00	GAPI

Hostile Natural Gamma Ray Cartridge – B / Equipment Identification

Primary Equipment:

HNGC Cartridge HNGC – B 304

Auxiliary Equipment:

HNGC Housing HNGH – A 3

Hostile Natural Gamma Ray Sonde / Equipment Identification

Primary Equipment:

HNGS Sonde HNGS – BA 194

Auxiliary Equipment:

HNGS Sonde Housing HNSH – BA 204  
Gamma Source Radioactive GSR – U 6098

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 1 Check

Phase	Na 511 Peak Loc	Value	Phase	Na 511 Peak Res %	Value	Phase	High Voltage V	Value
Master		39.76	Master		14.97	Master		1156
Before		39.63	Before		14.78	Before		1164
After		39.68	After		15.12	After		1155
	37.50 (Minimum) 40.00 (Nominal) 43.50 (Maximum)			12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)			900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)	

Phase	Na 1785 Peak Loc	Value	Phase	Na 1785 Peak Res %	Value	Phase	Temperature DEGC	Value
Master		142.6	Master		9.098	Master		18.30
Before		142.4	Before		8.297	Before		22.61
After		141.8	After		8.997	After		18.27
	135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)			7.000 (Minimum) 8.500 (Nominal) 11.00 (Maximum)			-28.89 (Minimum) 15.50 (Nominal) 60.00 (Maximum)	

Phase	Na Count Rate CPS	Value
Master		27.65
Before		26.76
After		27.40
	10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)	

Master: 24-Sep-2017 9:26 Before: 9-Oct-2017 23:50 After: 24-Sep-2017 9:36

Hostile Natural Gamma Ray Sonde Wellsite Calibration

Detector 2 Check

Phase	Na 511 Peak Loc	Value	Phase	Na 511 Peak Res %	Value	Phase	High Voltage V	Value
Master		39.51	Master		15.77	Master		1088

Before		39.64	Before		15.02	Before		1096
After		39.54	After		16.14	After		1088
37.50 (Minimum) 40.00 (Nominal) 43.50 (Maximum)			12.00 (Minimum) 15.50 (Nominal) 19.00 (Maximum)			900.0 (Minimum) 1150 (Nominal) 1600 (Maximum)		
Phase	Na 1785 Peak Loc	Value	Phase	Na 1785 Peak Res %	Value	Phase	Temperature DEGC	Value
Master		141.7	Master		8.872	Master		18.97
Before		140.7	Before		9.283	Before		23.56
After		141.7	After		7.911	After		18.96
135.0 (Minimum) 142.6 (Nominal) 150.3 (Maximum)			7.000 (Minimum) 8.500 (Nominal) 11.00 (Maximum)			-28.89 (Minimum) 15.50 (Nominal) 60.00 (Maximum)		
Phase	Na Count Rate CPS	Value						
Master		27.04						
Before		26.46						
After		27.03						
10.00 (Minimum) 45.00 (Nominal) 100.0 (Maximum)								
Master: 24-Sep-2017 9:26			Before: 9-Oct-2017 23:50			After: 24-Sep-2017 9:36		

Hostile Natural Gamma Ray Sonde Wellsite Calibration		
Ratio Of Detector 1 To Detector 2		
Phase	Coincidence Count Rate Ratio	Value
Master		1.020
Before		1.012
After		1.014
0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		
Master: 24-Sep-2017 9:26		
Before: 9-Oct-2017 23:50		
After: 24-Sep-2017 9:36		

Hostile Natural Gamma Ray Sonde Master Calibration								
Detector 1 Calibration								
Phase	Na 511 Peak Set Point	Value	Phase	Th Peak Loc	Value	Phase	Th Peak Res %	Value
Master		41.00	Master		210.1	Master		7.030
38.00 (Minimum) 40.00 (Nominal) 43.00 (Maximum)			201.0 (Minimum) 209.6 (Nominal) 218.3 (Maximum)			5.000 (Minimum) 7.000 (Nominal) 9.000 (Maximum)		
Phase	Background Count Rate CPS	Value	Phase	Gain Ratio	Value			
Master		20.14	Master		1.005			
10.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)			0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)					
Master: 24-Sep-2017 9:22								

Hostile Natural Gamma Ray Sonde Master Calibration								
Detector 2 Calibration								
Phase	Na 511 Peak Set Point	Value	Phase	Th Peak Loc	Value	Phase	Th Peak Res %	Value
Master		41.00	Master		208.2	Master		7.022
38.00 (Minimum) 40.00 (Nominal) 43.00 (Maximum)			201.0 (Minimum) 209.6 (Nominal) 218.3 (Maximum)			5.000 (Minimum) 7.000 (Nominal) 9.000 (Maximum)		
Phase	Background Count Rate CPS	Value	Phase	Gain Ratio	Value			
Master		17.54	Master		1.003			
10.00 (Minimum) 142.5 (Nominal) 265.0 (Maximum)			0.9400 (Minimum) 1.000 (Nominal) 1.060 (Maximum)					
Master: 24-Sep-2017 9:22								

High Resolution Laterolog Array - B / Equipment Identification		
Primary Equipment:	HRLT Sonde	HRLS - B 768
Auxiliary Equipment:	HRLT lower Housing	HRLH - B 1869
	HRLT Lower Cartridge	HRLC - B 974
	HRLT upper Housing	HRLH - B 975

High Resolution Laterolog Array – B Wellsite Calibration						
HRLT M01						
Idx	Phase	HRLT M0-M1 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		-318.7	-322.7	-280.7	-379.7
	After		-318.2			
1	Before		-329.9	-322.7	-280.7	-379.7
	After		-327.7			
2	Before		-338.0	-322.7	-280.7	-379.7
	After		-335.9			
3	Before		-328.5	-322.7	-280.7	-379.7
	After		-326.8			
4	Before		-319.7	-322.7	-280.7	-379.7
	After		-319.0			
5	Before		-321.6	-322.7	-280.7	-379.7
	After		-320.9			
6	Before		319.5	322.7	379.7	280.7
	After		317.3			
7	Before		-322.7	-322.7	-280.7	-379.7
	After		-322.7			
		(Minimum) (Nominal) (Maximum)				
Before: 14-Oct-2017 7:14						
After: 14-Oct-2017 13:46						

High Resolution Laterolog Array – B Wellsite Calibration						
HRLT M12						
Idx	Phase	HRLT M1-M2 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		1740	1781	2095	1549
	After		1735			
1	Before		1808	1781	2095	1549
	After		1794			
2	Before		1845	1781	2095	1549
	After		1832			
3	Before		1792	1781	2095	1549
	After		1780			
4	Before		1743	1781	2095	1549
	After		1737			
5	Before		1754	1781	2095	1549
	After		1748			
6	Before		-1759	-1781	-1549	-2095
	After		-1745			
7	Before		1781	1781	2095	1549
	After		1781			
		(Minimum) (Nominal) (Maximum)				
Before: 14-Oct-2017 7:14						
After: 14-Oct-2017 13:46						



High Resolution Laterolog Array – B Wellsite Calibration

HRLT M23

Idx	Phase	HRLT M2–M3 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		1732	1781	2095	1549
	After		1728			
1	Before		1811	1781	2095	1549
	After		1796			
2	Before		1850	1781	2095	1549
	After		1836			
3	Before		1800	1781	2095	1549
	After		1789			
4	Before		1745	1781	2095	1549
	After		1739			
5	Before		1757	1781	2095	1549
	After		1751			
6	Before		-1750	-1781	-1549	-2095
	After		-1736			
7	Before		1781	1781	2095	1549
	After		1781			
		(Minimum) (Nominal) (Maximum)				

Before: 14–Oct–2017 7:14

After: 14–Oct–2017 13:46

High Resolution Laterolog Array – B Wellsite Calibration

HRLT V34

Idx	Phase	HRLT A3–A4 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68620	70000	82360	60900
	After		68480			
1	Before		71590	70000	82360	60900
	After		71040			
2	Before		73400	70000	82360	60900
	After		72950			
3	Before		71670	70000	82360	60900
	After		71270			
4	Before		69450	70000	82360	60900
	After		69260			
5	Before		69950	70000	82360	60900
	After		69750			
6	Before		-68230	-70000	-60900	-82360
	After		-67710			
7	Before		70000	70000	82360	60900
	After		70000			
		(Minimum) (Nominal) (Maximum)				

Before: 14–Oct–2017 7:14

After: 14–Oct–2017 13:46

High Resolution Laterolog Array – B Wellsite Calibration

HRLT V45

Idx	Phase	HRLT A4–A5 Voltage Plus UV	Value	Nominal	Maximum	Minimum
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Idx	Phase	HRLT A5-A6 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68700	70000	82360	60900
	After		68560			
1	Before		71800	70000	82360	60900
	After		71250			
2	Before		73580	70000	82360	60900
	After		73140			
3	Before		71840	70000	82360	60900
	After		71440			
4	Before		69570	70000	82360	60900
	After		69370			
5	Before		70040	70000	82360	60900
	After		69850			
6	Before		-68430	-70000	-60900	-82360
	After		-67910			
7	Before		70000	70000	82360	60900
	After		70000			
			(Minimum)	(Nominal)	(Maximum)	

Before: 14-Oct-2017 7:14

After: 14-Oct-2017 13:46

High Resolution Laterolog Array – B Wellsite Calibration						
HRLT V56						
Idx	Phase	HRLT A5-A6 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		68540	70000	82360	60900
	After		68410			
1	Before		71630	70000	82360	60900
	After		71110			
2	Before		73440	70000	82360	60900
	After		72960			
3	Before		71670	70000	82360	60900
	After		71270			
4	Before		69430	70000	82360	60900
	After		69240			
5	Before		69910	70000	82360	60900
	After		69710			
6	Before		-68270	-70000	-60900	-82360
	After		-67760			
7	Before		70000	70000	82360	60900
	After		70000			
			(Minimum)	(Nominal)	(Maximum)	

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High Resolution Laterolog Array – B Wellsite Calibration						
HRLT VTP						
Idx	Phase	HRLT Torpedo-M0 Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		-68080	-70000	-60900	-82360
	After		-67970			

Idx	Phase	HRLT Voltage Plus UV	Value	Nominal	Maximum	Minimum
1	Before		-71440	-70000	-60900	-82360
	After		-70930			
2	Before		-73280	-70000	-60900	-82360
	After		-72830			
3	Before		-71610	-70000	-60900	-82360
	After		-71220			
4	Before		-69390	-70000	-60900	-82360
	After		-69220			
5	Before		-69870	-70000	-60900	-82360
	After		-69700			
6	Before		68040	70000	82360	60900
	After		67530			
7	Before		-70000	-70000	-60900	-82360
	After		-70000			
			(Minimum)	(Nominal)	(Maximum)	

Before: 14-Oct-2017 7:14  
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High Resolution Laterolog Array – B Wellsite Calibration						
HRLT VBD						
Idx	Phase	HRLT Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		-68120	-70000	-60900	-82360
	After		-68000			
1	Before		-71520	-70000	-60900	-82360
	After		-71010			
2	Before		-73360	-70000	-60900	-82360
	After		-72910			
3	Before		-71670	-70000	-60900	-82360
	After		-71280			
4	Before		-69430	-70000	-60900	-82360
	After		-69260			
5	Before		-69900	-70000	-60900	-82360
	After		-69730			
6	Before		68120	70000	82360	60900
	After		67620			
7	Before		-70000	-70000	-60900	-82360
	After		-70000			
			(Minimum)	(Nominal)	(Maximum)	

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High Resolution Laterolog Array – B Wellsite Calibration						
HRLT ISO						
Idx	Phase	HRLT Source Current Plus UA	Value	Nominal	Maximum	Minimum
0	Before		284.2	284.0	334.1	247.0
	After		283.8			
1	Before		281.1	281.1	330.7	244.4
	After		281.1			

2	Before		281.1	281.1	330.7	244.4
	After		281.1			
3	Before		281.1	281.1	330.7	244.4
	After		281.1			
4	Before		281.1	281.1	330.7	244.4
	After		281.1			
5	Before		281.1	281.1	330.7	244.4
	After		281.1			
6	Before		281.1	281.1	330.7	244.4
	After		281.1			
7	Before		281.1	281.1	330.7	244.4
	After		281.1			
(Minimum) (Nominal) (Maximum)						
Before: 14-Oct-2017 7:14						
After: 14-Oct-2017 13:46						

High Resolution Laterolog Array – B Wellsite Calibration						
HRLT MV						
Idx	Phase	HRLT Vertical Voltage Plus UV	Value	Nominal	Maximum	Minimum
0	Before		-320.6	-322.7	-280.7	-379.7
	After		-320.1			
1	Before		-324.8	-322.7	-280.7	-379.7
	After		-322.7			
2	Before		-331.5	-322.7	-280.7	-379.7
	After		-329.4			
3	Before		-320.4	-322.7	-280.7	-379.7
	After		-318.8			
4	Before		-308.9	-322.7	-280.7	-379.7
	After		-308.2			
5	Before		-325.6	-322.7	-280.7	-379.7
	After		-325.0			
6	Before		327.1	322.7	379.7	280.7
	After		324.9			
7	Before		-322.7	-322.7	-280.7	-379.7
	After		-322.7			
(Minimum) (Nominal) (Maximum)						
Before: 14-Oct-2017 7:14						
After: 14-Oct-2017 13:46						

#### Hostile Litho-Density Sonde / Equipment Identification

##### Primary Equipment:

Gamma Source Radioactive	GSR – ZA	2945
Hostile Litho Density Sonde	HLDS – D	45
Hostile Litho Density High Voltage	HLDV – D	45

##### Auxiliary Equipment:

Hostile Litho Density High Voltage Housi	HEH – H	47
Hostile Litho Density Pad	HLDP – C	45

**Hostile Litho-Density Sonde Wellsite Calibration**

**Background Measurement**

Phase	SS Cs Resolution Bkg %	Value	Phase	LS Cs Resolution Bkg %	Value	Phase	LSW1 Background CPS	Value
Master		8.040	Master		8.146	Master		64.16
Before		7.940	Before		8.231	Before		63.82
After		8.001	After		8.085	After		64.71
7.000 (Minimum) 9.000 (Nominal) 11.000 (Maximum)			7.000 (Minimum) 9.000 (Nominal) 11.000 (Maximum)			55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)		
Phase	LSW2 Background CPS	Value	Phase	LSW3 Background CPS	Value	Phase	LSW4 Background CPS	Value
Master		60.11	Master		130.3	Master		160.5
Before		58.87	Before		131.2	Before		158.3
After		59.58	After		130.1	After		158.7
50.00 (Minimum) 100.0 (Nominal) 140.0 (Maximum)			110.0 (Minimum) 200.0 (Nominal) 290.0 (Maximum)			140.0 (Minimum) 250.0 (Nominal) 360.0 (Maximum)		
Phase	LSW5 Background CPS	Value	Phase	SSW1 Background CPS	Value	Phase	SSW2 Background CPS	Value
Master		364.8	Master		72.43	Master		129.4
Before		364.2	Before		72.50	Before		130.2
After		367.2	After		71.14	After		130.2
330.0 (Minimum) 600.0 (Nominal) 830.0 (Maximum)			55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)			100.0 (Minimum) 200.0 (Nominal) 260.0 (Maximum)		
Phase	SSW3 Background CPS	Value	Phase	SSW4 Background CPS	Value	Phase	SSW5 Background CPS	Value
Master		348.7	Master		180.4	Master		130.3
Before		344.6	Before		180.4	Before		131.2
After		345.6	After		181.5	After		130.2
280.0 (Minimum) 500.0 (Nominal) 700.0 (Maximum)			150.0 (Minimum) 270.0 (Nominal) 380.0 (Maximum)			110.0 (Minimum) 200.0 (Nominal) 270.0 (Maximum)		
Master: 26-Sep-2017 11:25			Before: 10-Oct-2017 0:31			After: 26-Sep-2017 12:12		

**Hostile Litho-Density Sonde Master Calibration**

**Detector Background Measurement**

Phase	LSW1 Background CPS	Value	Phase	LSW2 Background CPS	Value	Phase	LSW3 Background CPS	Value
Master		64.16	Master		60.11	Master		130.3
55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)			50.00 (Minimum) 100.0 (Nominal) 140.0 (Maximum)			110.0 (Minimum) 200.0 (Nominal) 290.0 (Maximum)		
Phase	LSW4 Background CPS	Value	Phase	LSW5 Background CPS	Value	Phase	LS Cs Resolution Bkg %	Value
Master		160.5	Master		364.8	Master		8.146
140.0 (Minimum) 250.0 (Nominal) 360.0 (Maximum)			330.0 (Minimum) 600.0 (Nominal) 830.0 (Maximum)			7.000 (Minimum) 9.000 (Nominal) 11.000 (Maximum)		
Phase	SSW1 Background CPS	Value	Phase	SSW2 Background CPS	Value	Phase	SSW3 Background CPS	Value
Master		72.43	Master		129.4	Master		348.7
55.00 (Minimum) 100.0 (Nominal) 150.0 (Maximum)			100.0 (Minimum) 200.0 (Nominal) 260.0 (Maximum)			280.0 (Minimum) 500.0 (Nominal) 700.0 (Maximum)		
Phase	SSW4 Background CPS	Value	Phase	SSW5 Background CPS	Value	Phase	SS Cs Resolution Bkg %	Value
Master		180.4	Master		130.3	Master		8.040
150.0 (Minimum) 270.0 (Nominal) 380.0 (Maximum)			110.0 (Minimum) 200.0 (Nominal) 270.0 (Maximum)			7.000 (Minimum) 9.000 (Nominal) 11.000 (Maximum)		
Master: 26-Sep-2017 11:25								

**Hostile Litho-Density Sonde Master Calibration**

**Detector Aluminum Measurement (bkgd-subtracted)**

Phase	LSW1 Aluminum CPS	Value	Phase	LSW2 Aluminum CPS	Value	Phase	LSW3 Aluminum CPS	Value
Master		510.2	Master		739.5	Master		888.4
420.0 (Minimum) 600.0 (Nominal) 770.0 (Maximum)			650.0 (Minimum) 900.0 (Nominal) 1150 (Maximum)			800.0 (Minimum) 1100 (Nominal) 1450 (Maximum)		
Phase	LSW4 Aluminum CPS	Value	Phase	LSW5 Aluminum CPS	Value	Phase	SSW1 Aluminum CPS	Value
Master		445.5	Master		411.4	Master		2381
410.0 (Minimum) 580.0 (Nominal) 740.0 (Maximum)			410.0 (Minimum) 570.0 (Nominal) 740.0 (Maximum)			2000 (Minimum) 2800 (Nominal) 3200 (Maximum)		
Phase	SSW2 Aluminum CPS	Value	Phase	SSW3 Aluminum CPS	Value	Phase	SSW4 Aluminum CPS	Value
Master		6444	Master		8933	Master		3653
5800 (Minimum) 8000 (Nominal) 9300 (Maximum)			8200 (Minimum) 11600 (Nominal) 12500 (Maximum)			3500 (Minimum) 5000 (Nominal) 5800 (Maximum)		

Phase	SSW5 Aluminum CPS	Value
Master		444.5
	430.0 (Minimum) 660.0 (Nominal) 770.0 (Maximum)	

Master: 26-Sep-2017 11:51

Hostile Litho-Density Sonde Master Calibration											
Detector Litholog Measurement (bkgd-subtracted)											
Phase	LSW1 Iron CPS		Value	Phase	LSW2 Iron CPS		Value	Phase	LSW3 Iron CPS		Value
Master			346.9	Master			593.4	Master			777.9
	290.0 (Minimum) 400.0 (Nominal) 560.0 (Maximum)				520.0 (Minimum) 730.0 (Nominal) 950.0 (Maximum)				720.0 (Minimum) 1000 (Nominal) 1350 (Maximum)		
Phase	LSW4 Iron CPS		Value	Phase	LSW5 Iron CPS		Value	Phase	SSW1 Iron CPS		Value
Master			401.6	Master			376.3	Master			1735
	370.0 (Minimum) 520.0 (Nominal) 700.0 (Maximum)				340.0 (Minimum) 470.0 (Nominal) 750.0 (Maximum)				1500 (Minimum) 2100 (Nominal) 2400 (Maximum)		
Phase	SSW2 Iron CPS		Value	Phase	SSW3 Iron CPS		Value	Phase	SSW4 Iron CPS		Value
Master			5380	Master			8127	Master			3318
	4900 (Minimum) 6800 (Nominal) 7900 (Maximum)				7800 (Minimum) 10800 (Nominal) 12600 (Maximum)				3300 (Minimum) 4600 (Nominal) 5400 (Maximum)		
Phase	SSW5 Iron CPS		Value								
Master			389.8								
	420.0 (Minimum) 580.0 (Nominal) 680.0 (Maximum)										

Master: 26-Sep-2017 11:46

Hostile Litho-Density Sonde Master Calibration											
Quality Ratios											
Phase	AL CALIBRATION RATIO 1		Value	Phase	AL CALIBRATION RATIO 2		Value	Phase	AL CALIBRATION RATIO 3		Value
Master			1.037	Master			2.180	Master			0.5955
	0.9000 (Minimum) 1.000 (Nominal) 1.100 (Maximum)				1.900 (Minimum) 2.100 (Nominal) 2.300 (Maximum)				0.4500 (Minimum) 0.5500 (Nominal) 0.6500 (Maximum)		
Phase	AL CALIBRATION RATIO 4		Value	Phase	Pad-Wear SS Ratio		Value	Phase	Pad-Wear LS Ratio		Value
Master			0.5810	Master			0.9903	Master			0.9809
	0.4000 (Minimum) 0.5500 (Nominal) 0.6500 (Maximum)				0.9800 (Minimum) 0.9880 (Nominal) 0.9960 (Maximum)				0.9800 (Minimum) 0.9880 (Nominal) 0.9960 (Maximum)		
Phase	Pad-Position SS Ratio		Value	Phase	Pad-Position LS Ratio		Value				
Master			1.002	Master			0.9798				
	0.9900 (Minimum) 0.9940 (Nominal) 1.015 (Maximum)				0.9850 (Minimum) 0.9940 (Nominal) 1.010 (Maximum)						

Master: 26-Sep-2017 11:41

### Litho-Density Spectroscopy Cartridge - B / Equipment Identification

Primary Equipment:  
 LDSC Cartridge LDSC - B 521


Auxiliary Equipment:  
 LDSC Housing LDSC - A 319




### Enhanced DTS Cartridge / Equipment Identification

Primary Equipment:  
 EDTC Gamma Ray Detector EDTG - A/B 8305  
 Enhanced DTS Cartridge EDTC - B 8317

Auxiliary Equipment:  
 EDTC Housing EDTH - B 8303

Enhanced DTS Cartridge Wellsite Calibration		
EDTC Accelerometer Calibration		
Phase	EDTC Z-Axis Acceleration M/S2	Value

Before		9.749
9.610 (Minimum)	9.810 (Nominal)	10.01 (Maximum)
Before: 14-Oct-2017 7:13		

Enhanced DTS Cartridge Wellsite Calibration														
Detector Calibration														
Phase	Gamma Ray Background GAPI			Value	Phase	Gamma Ray (Jig - Bkg) GAPI			Value	Phase	Gamma Ray (Calibrated) GAPI			Value
Before				7.866	Before				140.5	Before				164.0
0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)			127.7 (Minimum)	140.5 (Nominal)	153.3 (Maximum)			149.0 (Minimum)	164.0 (Nominal)	179.0 (Maximum)		
Before: 9-Oct-2017 23:47														

Company: **International Ocean Discovery Program**

**Schlumberger**

Well: **Expedition 369, Site U1512A**

Field: **Australia Cretaceous Climate & Tectonics**

Rig: **JOIDES Resolution**

Ocean: **Southern**

High Resolution Laterolog Array (HRLA)  
 Natural Gamma Ray, Density (HNGS, HLDS)  
 Dipole Shear Sonic (DSI)–Downlogs Only