

Company: Crestone Peak Resources Operating LLC

Well: Cosslett 1D-22H-B168

Field: Wattenberg

County: Weld State: Colorado

Isolation Scanner  
Cement Evaluation  
Gamma Ray - CCL Log

Cement Evaluation

Gamma Ray - CCL Log

Location:		NWNE Sec. 22, T1N, R68W		Elev.:	K.B.	5197.00 ft
Permanent Datum:		SHL: 925' FNL & 2220' FEL			G.L.	5174.00 ft
Log Measured From:					D.F.	5197.00 ft
Drilling Measured From:		Ground Level		Elev.:	5174.00 f	
		Kelly Bushing		23.00 ft		
		Kelly Bushing		above Perm.Datum		
API Serial No.	Section:	Township:	Range:			
05-123-47677	22	1N	68W			

Run Number	ONE
Depth Driller	17524.00 ft
Schlumberger Depth	17524.00 ft
Bottom Log Interval	7405.00 ft
Top Log Interval	85.00 ft
Casing Fluid Type	water
Salinity	
Density	8.4 lbm/gal
Fluid Level	8.00 ft
BIT/CASING/TUBING STRING	
Bit Size	8.50 in
From	16160.00 ft
To	17524.00 ft
Casing/Tubing Size	5.5 in
Weight	20 lbm/ft
Grade	P110
From	0.00 ft
To	17507.00 ft
Max Recorded Temperatures	218.92 degF
Logger on Bottom	08-Mar-2019
Unit Number	9115
Recorded By	A. Blochowicz
Witnessed By	Garet Wood

Disclaimer

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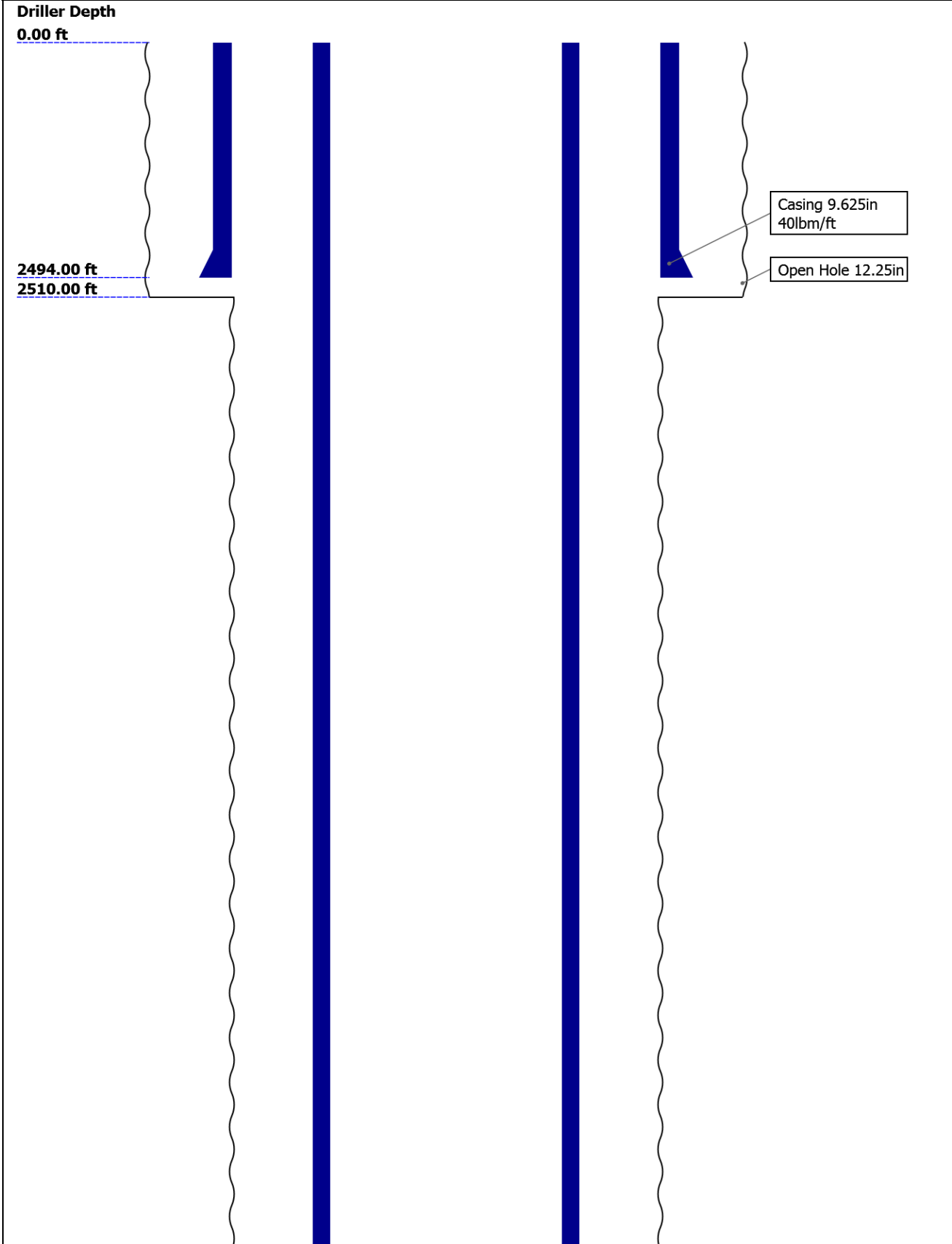
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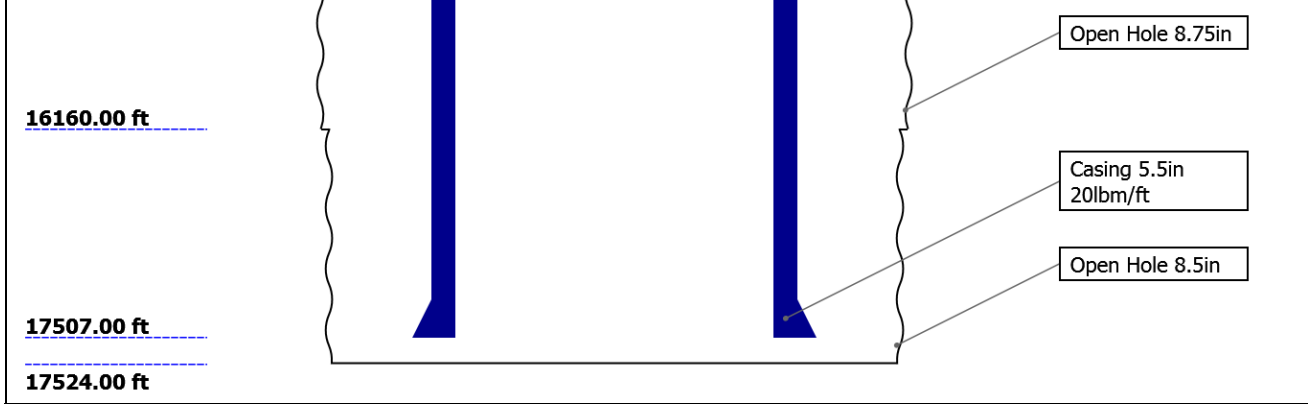
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Well Sketch



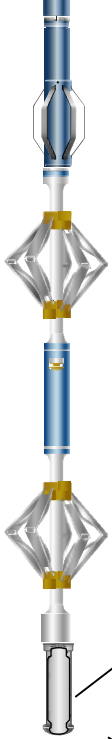


## Borehole Size/Casing/Tubing Record

Bit						
Bit Size ( in )	12.25	8.75	8.5			
Top Driller ( ft )	0	2510	16160			
Top Logger ( ft )	0	2510	16160			
Bottom Driller ( ft )	2510	16160	17524			
Bottom Logger ( ft )	2510	16160	17524			
Casing						
Size ( in )	9.625	5.5				
Weight ( lbm/ft )	40	20				
Inner Diameter ( in )	8.835	4.778				
Grade	J55	P110				
Top Driller ( ft )	0	0				
Top Logger ( ft )	0	0				
Bottom Driller ( ft )	2494	17507				
Bottom Logger ( ft )	2494	17507				

## Remarks and Equipment Summary

ONE: Toolstring				ONE: Remarks	
<b>Equip name</b>	<b>Length</b>	<b>MP name</b>	<b>Offset</b>	Thank you for choosing Schlumberger!	
LEH-QT:1	34.23			Tool string run as per tool sketch and client logging program.	
LEH-QT:10	0			5" Gemco and in-line centralizers with small hole kit and booster/houma kit used for centrali	
CAL-YA	30.74			All passes run under 0 PSI	
CAL-YA		CCL	29.95	Lead: 12.5 ppg Tail: 13.5 ppg Spacer: 11 ppg	
EDTC-B:9	27.24			High deviation and dogleg severity affected data throughout well	
EDTH-B					
EDTG-A					
EDTC-B:90					
38		CTEM	23.74		
		ACCZ	0.00		
		HV	0.00		
		Gamma	21.87		
		Ray			
		TelStatu	20.74		
		s			
AH-184[	20.74				
2]		5941			
AH-184[	18.74				
1]		3709			

<div> <div>USIT-E:90 16.740</div> <div> <div>ECH-MFA:900</div> <div>USAC-A:900</div> <div>USIS-A:1820</div> <div>USSC-B</div> <div>IBCS-A:800</div> <div>FAR-SENS</div> <div>OR:4561</div> <div>IBC-TX</div> <div>NEAR-SEN</div> <div>SOR:2115</div> <div>IBC-TX</div> <div>USI-SENS</div> <div>OR:3172</div> <div>IBC-TX</div> <div>EMITTER-SENSOR:4215</div> <div>IBC-TX</div> </div> <div>  <div> <div>USI Sensor Head Tension</div> <div>0.84</div> <div>TOOL_ZERO</div> </div> <div> <div>Lengths are in ft</div> <div>Maximum Outer Diameter = 5.000 in</div> <div>Line: Sensor Location, Value: Gating Offset</div> <div>All measurements are relative to TOOL_ZERO</div> </div> </div> </div>		
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Depth Summary			
	ONE		
Depth Measuring Device			
Type	IDW-JA		
Serial Number	6199		
Calibration Date	30-Jul-2018		
Calibrator Serial Number	IDWC-C-57		
Calibration Cable Type	7-46 PXS		
Wheel Correction 1	-4		
Wheel Correction 2	-3		
Tension Device			
Type	CMTD-B/A		
Serial Number			
Calibration Date			
Calibrator Serial Number	147		
Number of Calibration Points	0		
Logging Cable			
Type	7-46P-XS		
Serial Number	U709078		
Length	24100.00 ft		
Conveyance Type	Wireline		
Rig Type	Land		
ONE:Depth Control Parameters		Depth Control Remarks	
Log Sequence	First Log In the Well	All Schlumberger depth control policies followed.  IDW used as primary depth reference.  Z-chart used as secondary depth reference.	
Rig Up Length At Surface			
Rig Up Length At Bottom			

Rig Up Length Correction	Logs correlated to downlog
Stretch Correction	
Tool Zero Check At Surface	

USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 1	Log[1]:Up	2601.13	2344.72

Fluid Velocity = "Automatic".  
CFVL equals DFSL channel

Start Depth(ft)	Stop Depth(ft)	Start Value(us/ft)	End Value(us/ft)
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Mud Impedance = "FreePipe Norm."  
Free Pipe normalization zone is : 743.73m(2440.07ft) to 749.68m(2459.57ft)  
MUD\_N\_FRP = 1.12  
DFD = 1.01g/cm3(8.40lbm/gal)  
CZMD median computed in free pipe normalization interval = 1.64 MRayl

Start Depth(ft)	Stop Depth(ft)	Start Value(Mrayl)	End Value(Mrayl)
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ONE

IBC SLG

Software Version

Acquisition System	Version
Maxwell 2018 SP2	8.2.104493.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[3]:Up	Up	67.96 ft	7413.88 ft	08-Mar-2019 8:02:57 AM	08-Mar-2019 9:48:12 AM	ON	4.01 ft	Yes

All depths are referenced to toolstring zero

Log	Company:Crestone Peak Resources Operating LLC      Well:Cosslett 1D-22H-B168 ONE: Log[3]:Up:S003
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Description: USI IBC SLG    Format: Log ( IBC SLG )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 08-Mar-2019 11:06:28

USIT Processing Flags (UFLG[0]) USIT-E

1 - UFLG 1 Value within [0.0 - 1.5] - :

2 - UFLG 2 Value within [1.5 - 2.5] - :

3 - UFLG 3 Value within [2.5 - 3.5] - :

4 - UFLG 4    UFLG 5    UFLG 6 Value within [3.5 - 6.5] - :

5 - UFLG 7    UFLG 8    UFLG 9 Value within [6.5 - 10 ] - :

UTIM Error

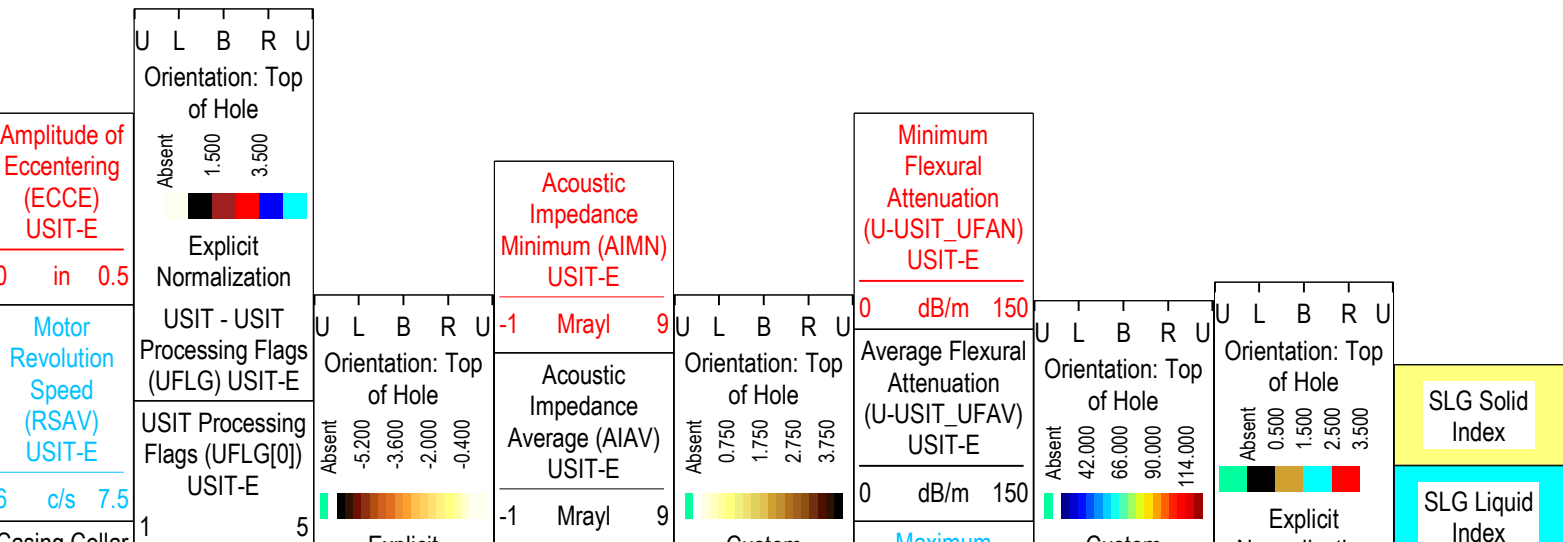
Pulse Origin Not Detected

WINLEN Error

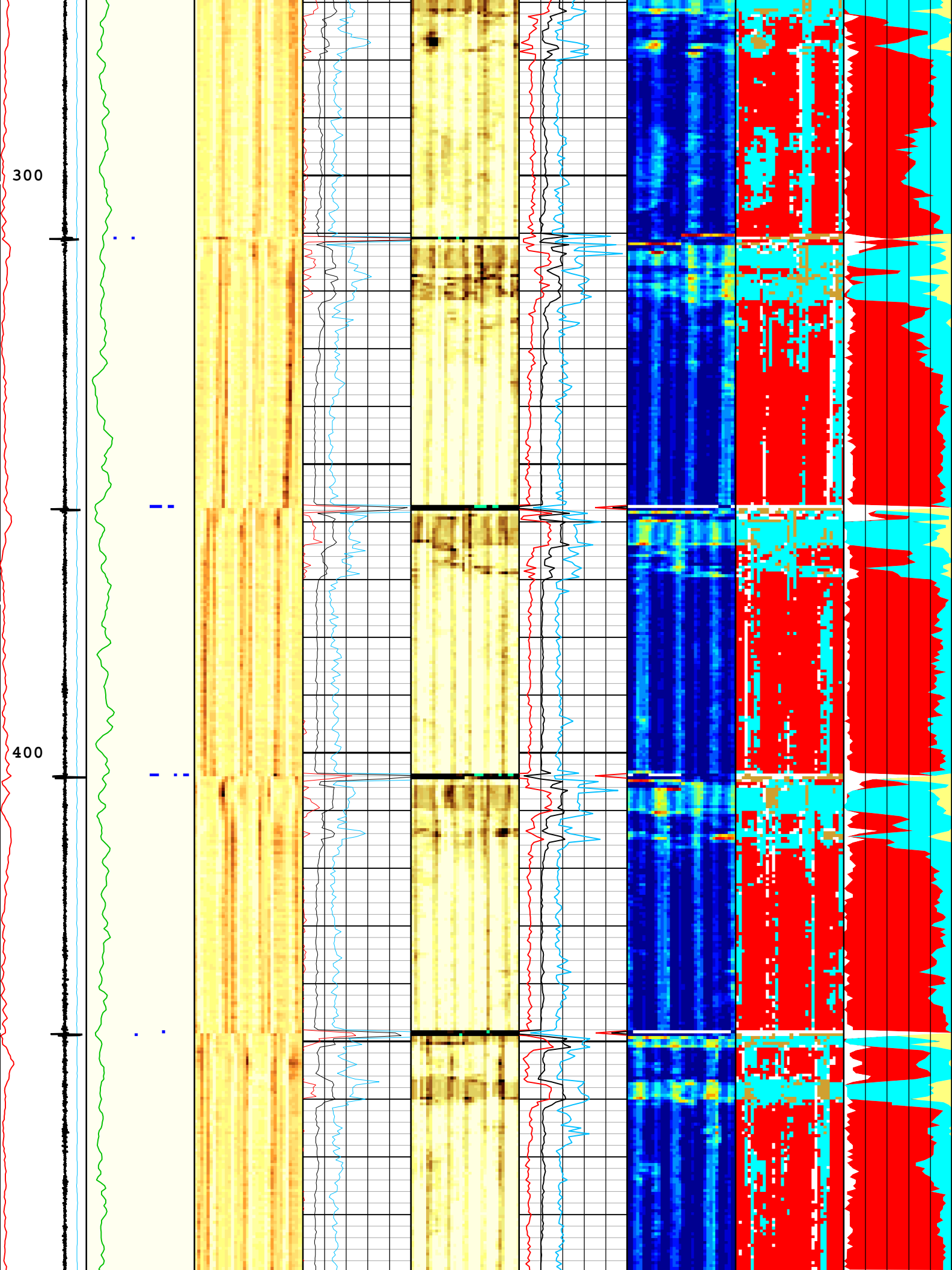
Casing Thickness Error

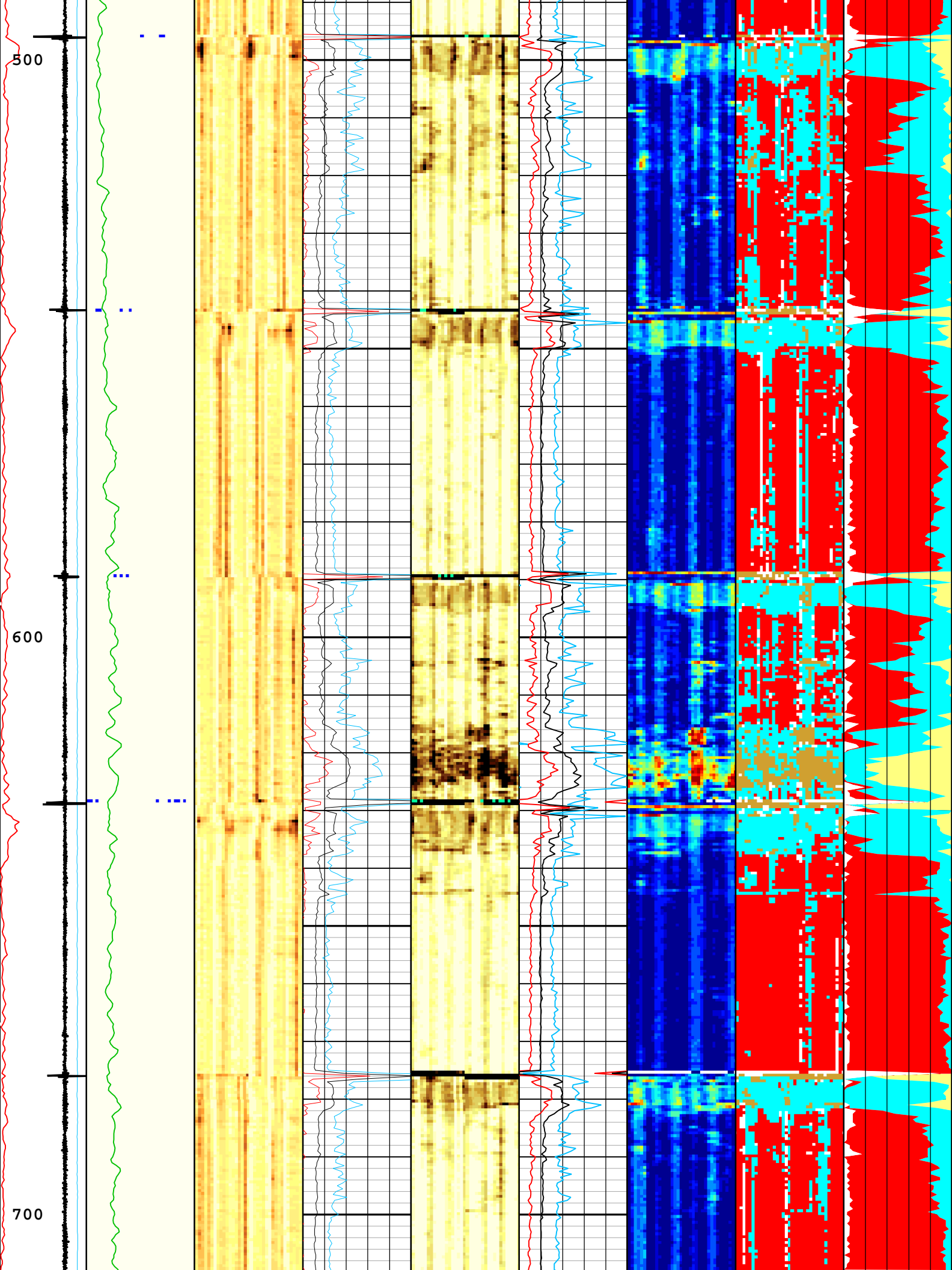
Loop Processing Error

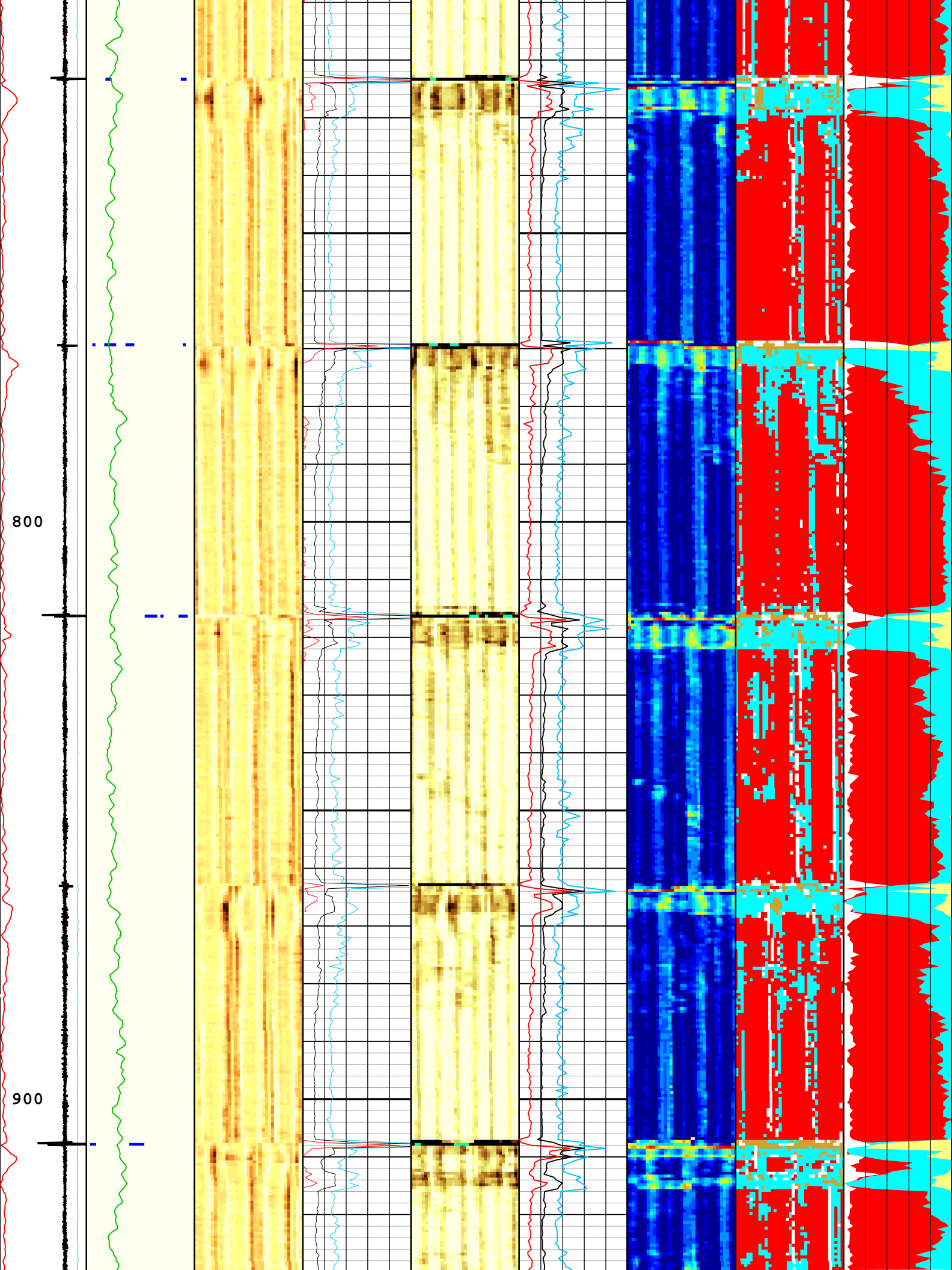
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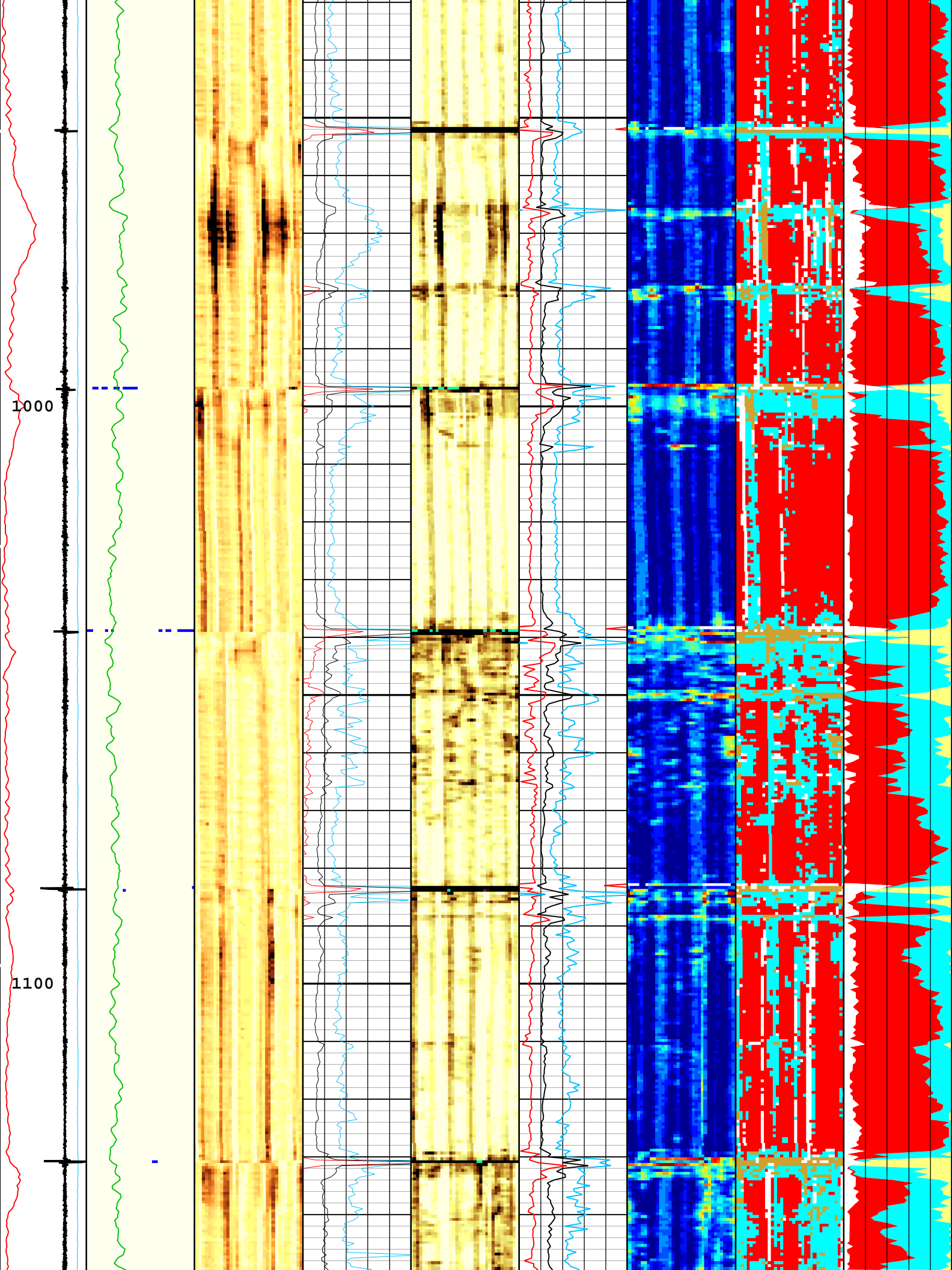


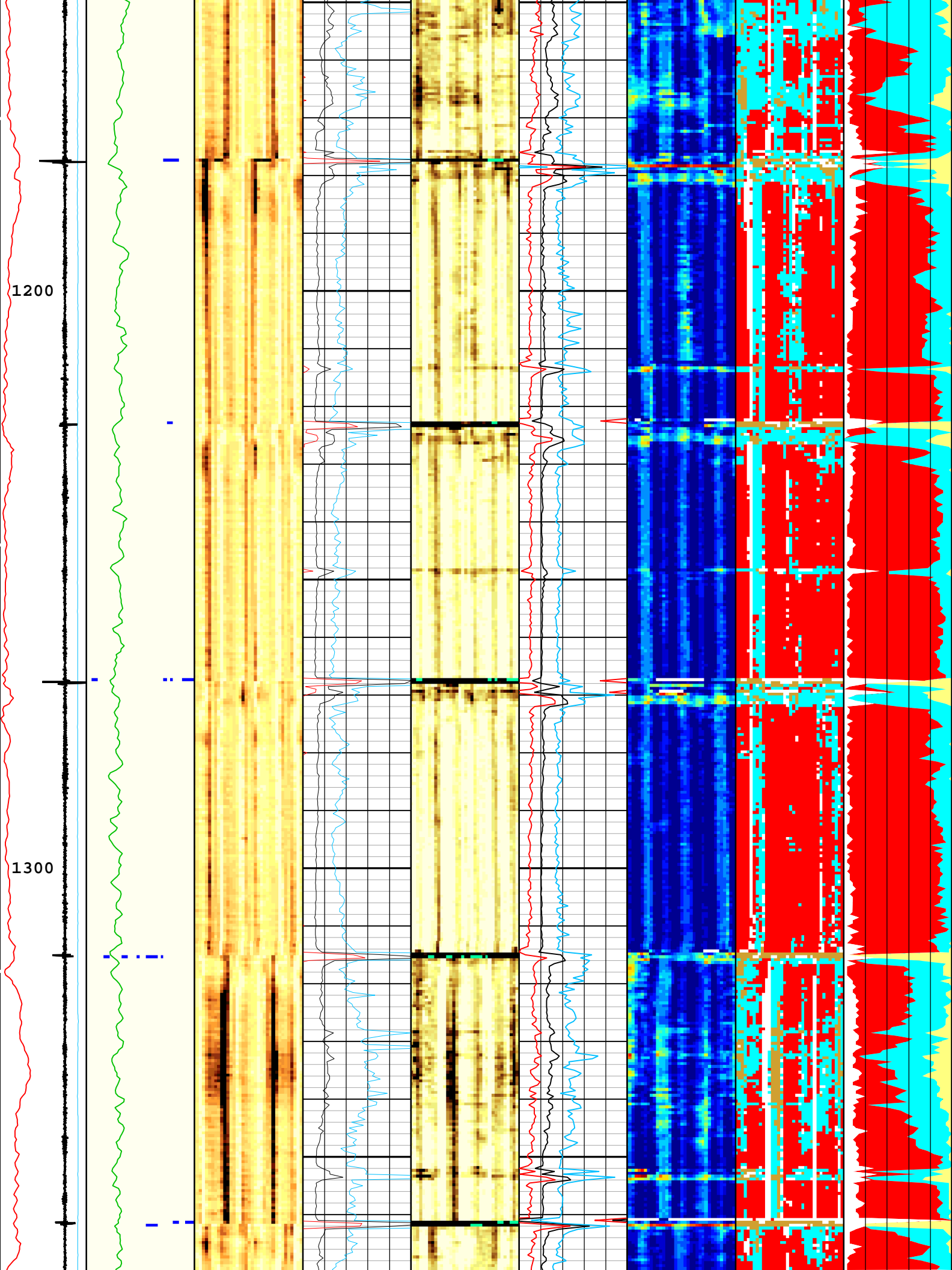
Casing Collar Locator Amplitude (CCL) CAL-YA	Gamma Ray (ECGR_EDTC) EDTC-B	Explicit Normalization USIT - Amplitude of Wave (AWBK) USIT-E (dB)	Acoustic Impedance Maximum (AIMX) USIT-E	Custom Normalization USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)	Maximum Flexural Attenuation (U-USIT_UFAX) USIT-E	Custom Normalization USIT - Flexural Attenuation (UFAK) USIT-E (dB/m)	Normalization USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E	SLG Gas Index
-3 1	0 gAPI 150		-1 Mrayl 9		0 dB/m 150			SLG White Point Index

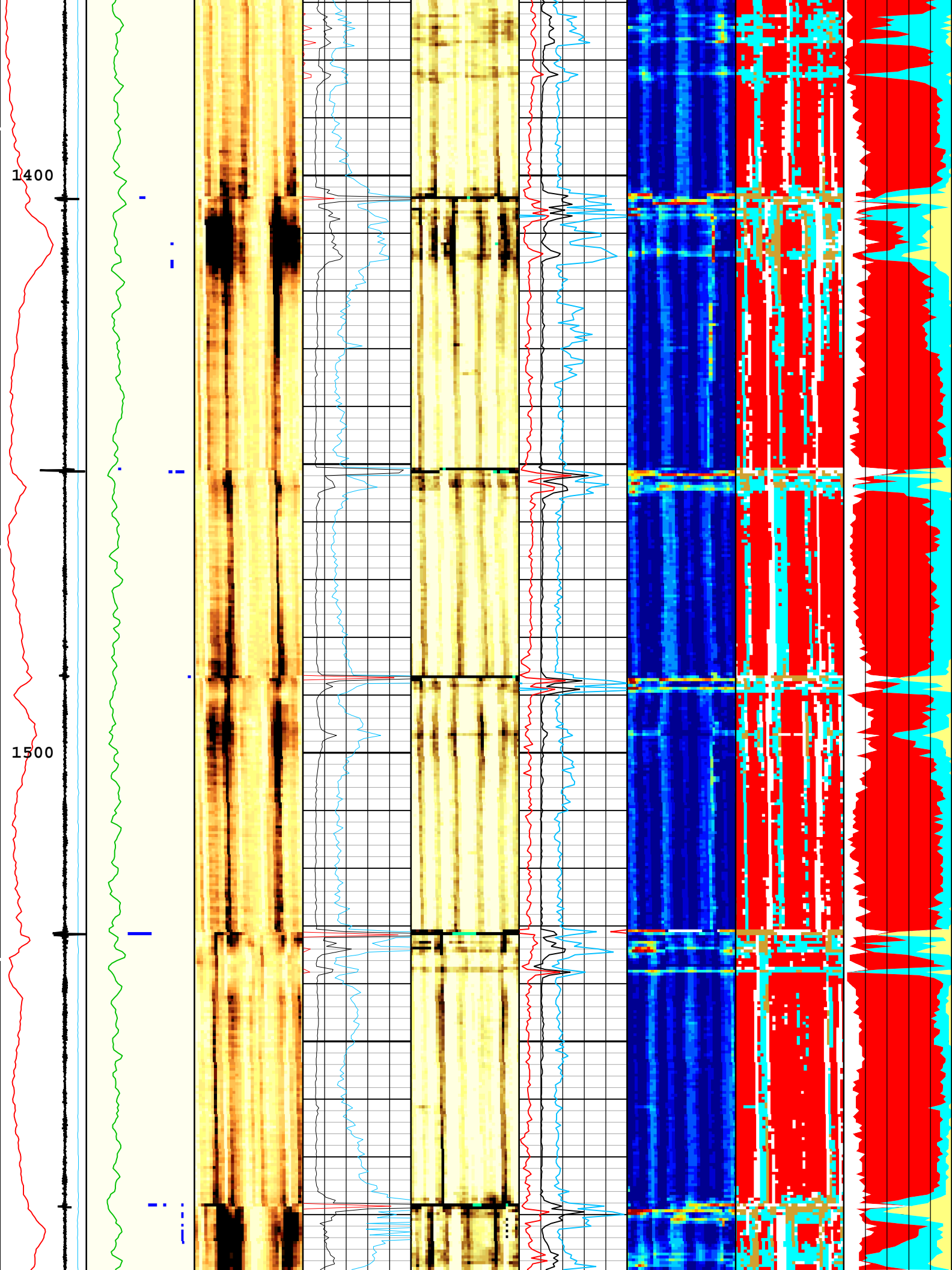


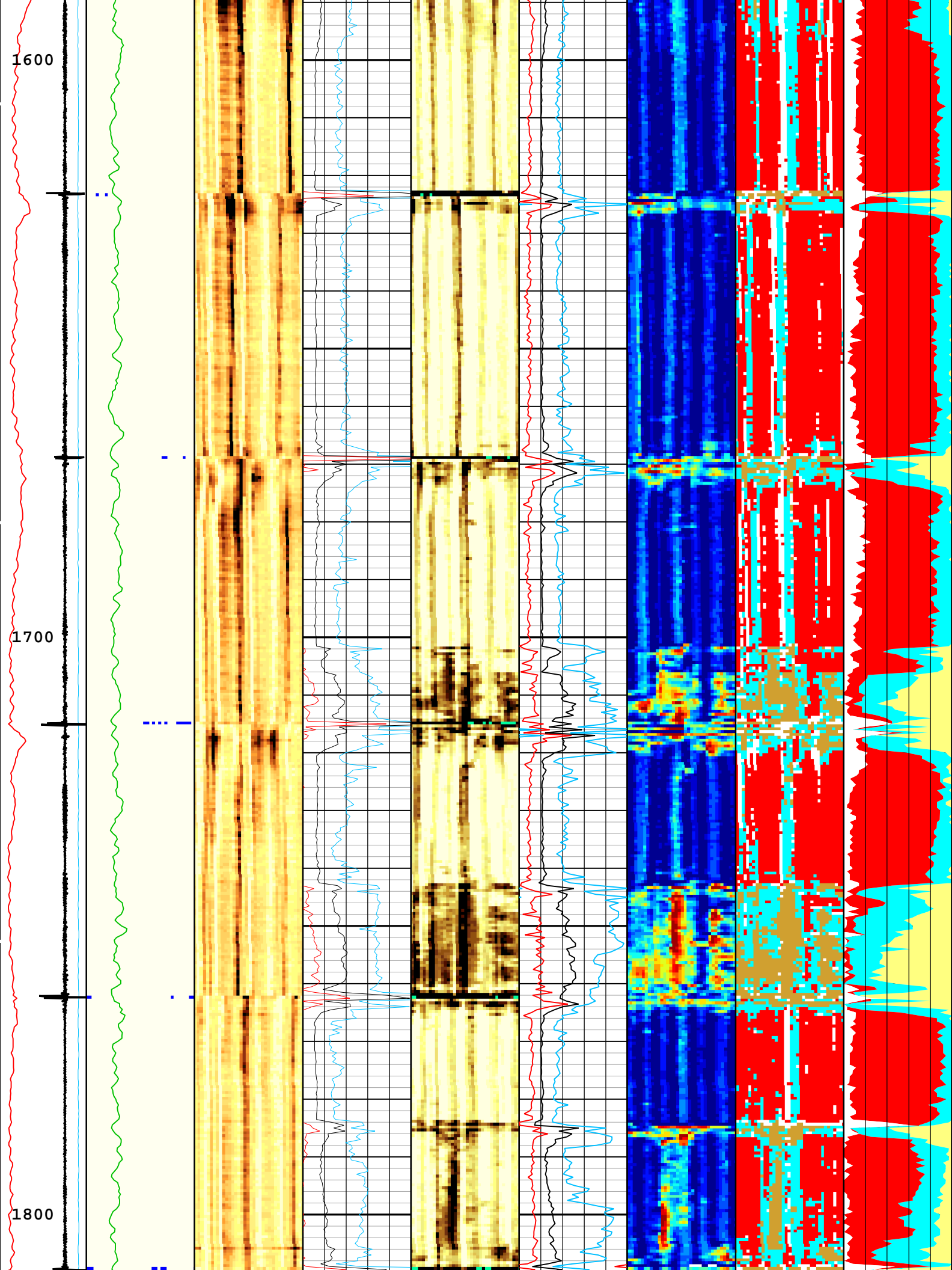


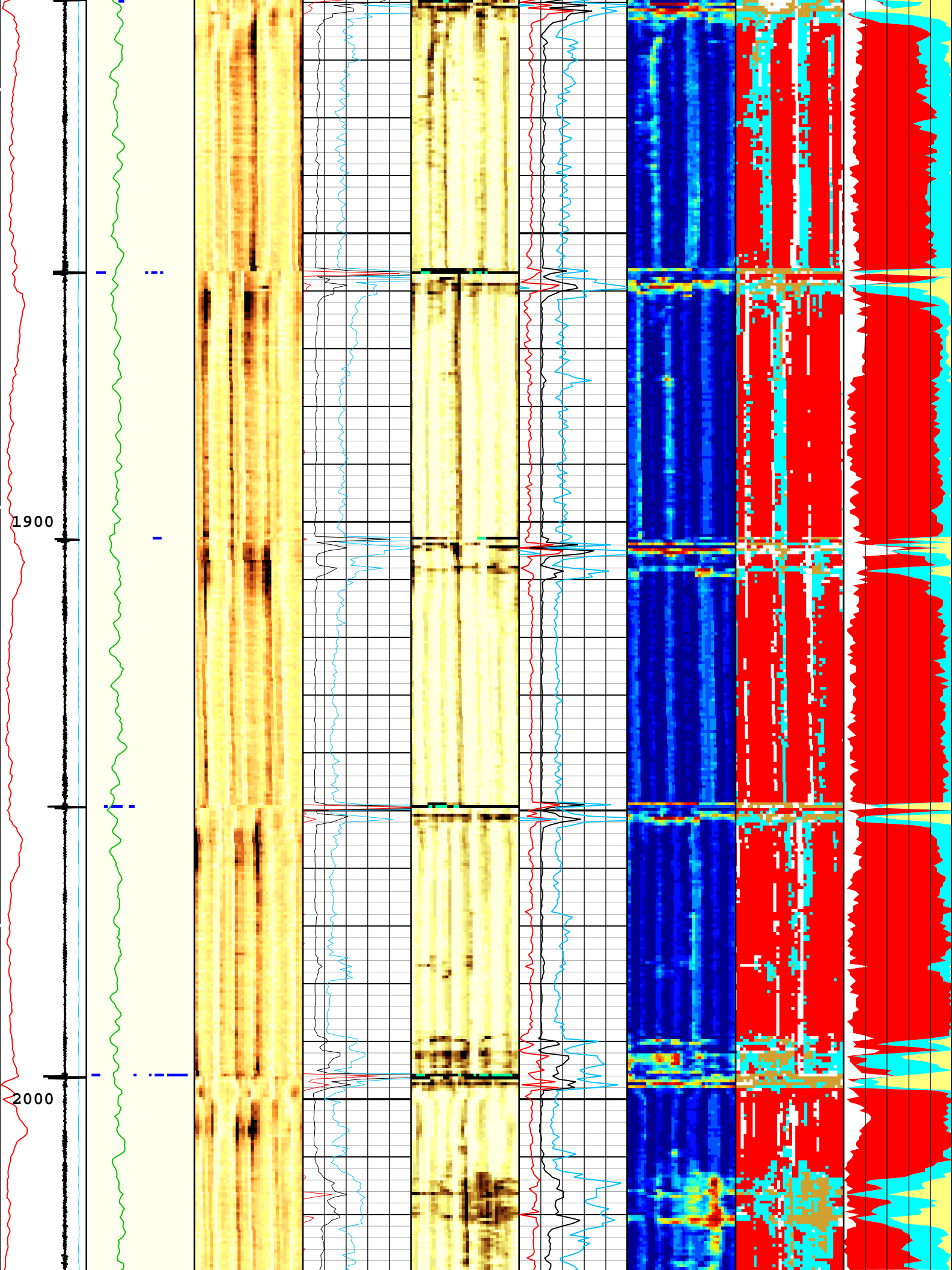


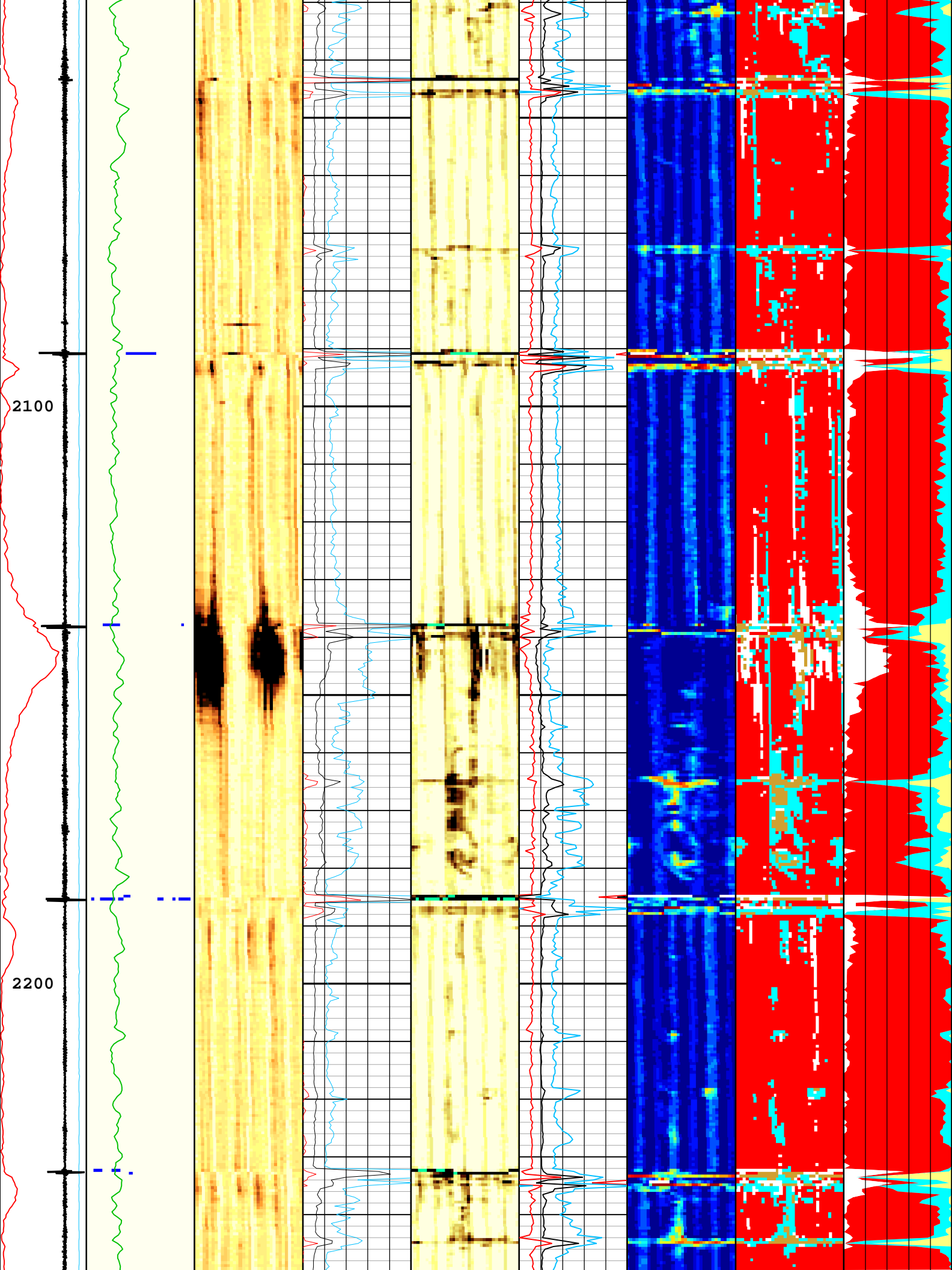


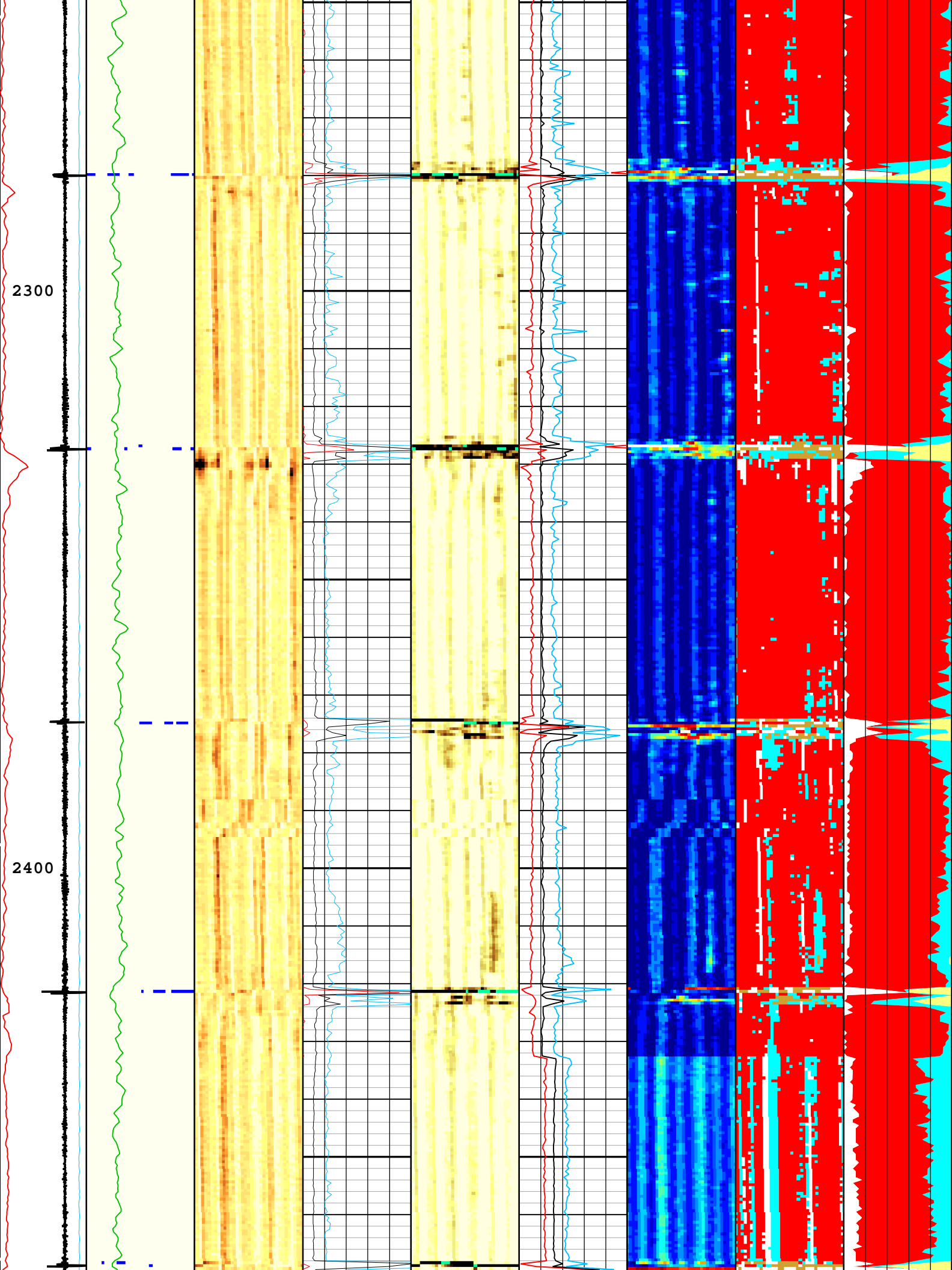


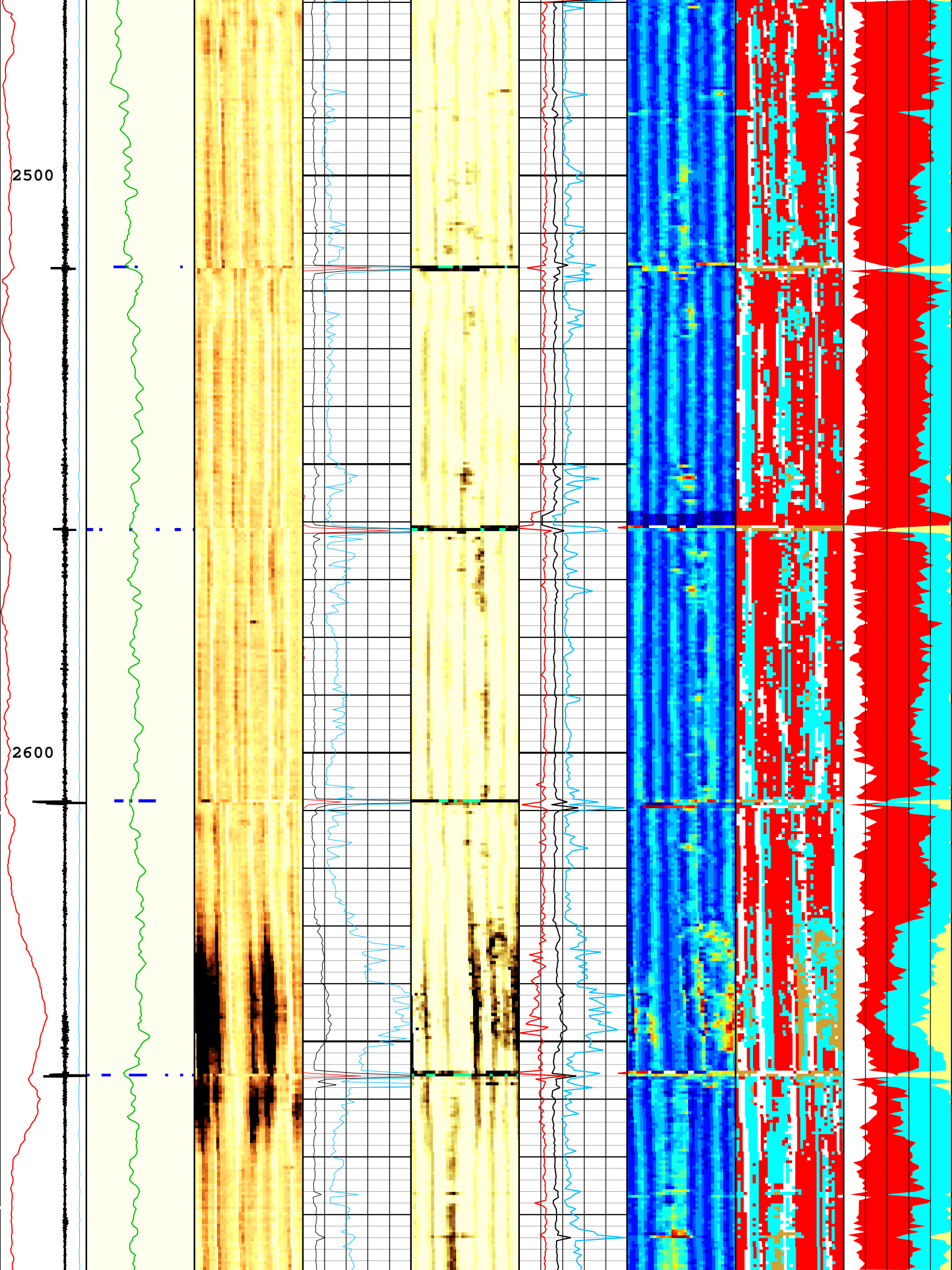


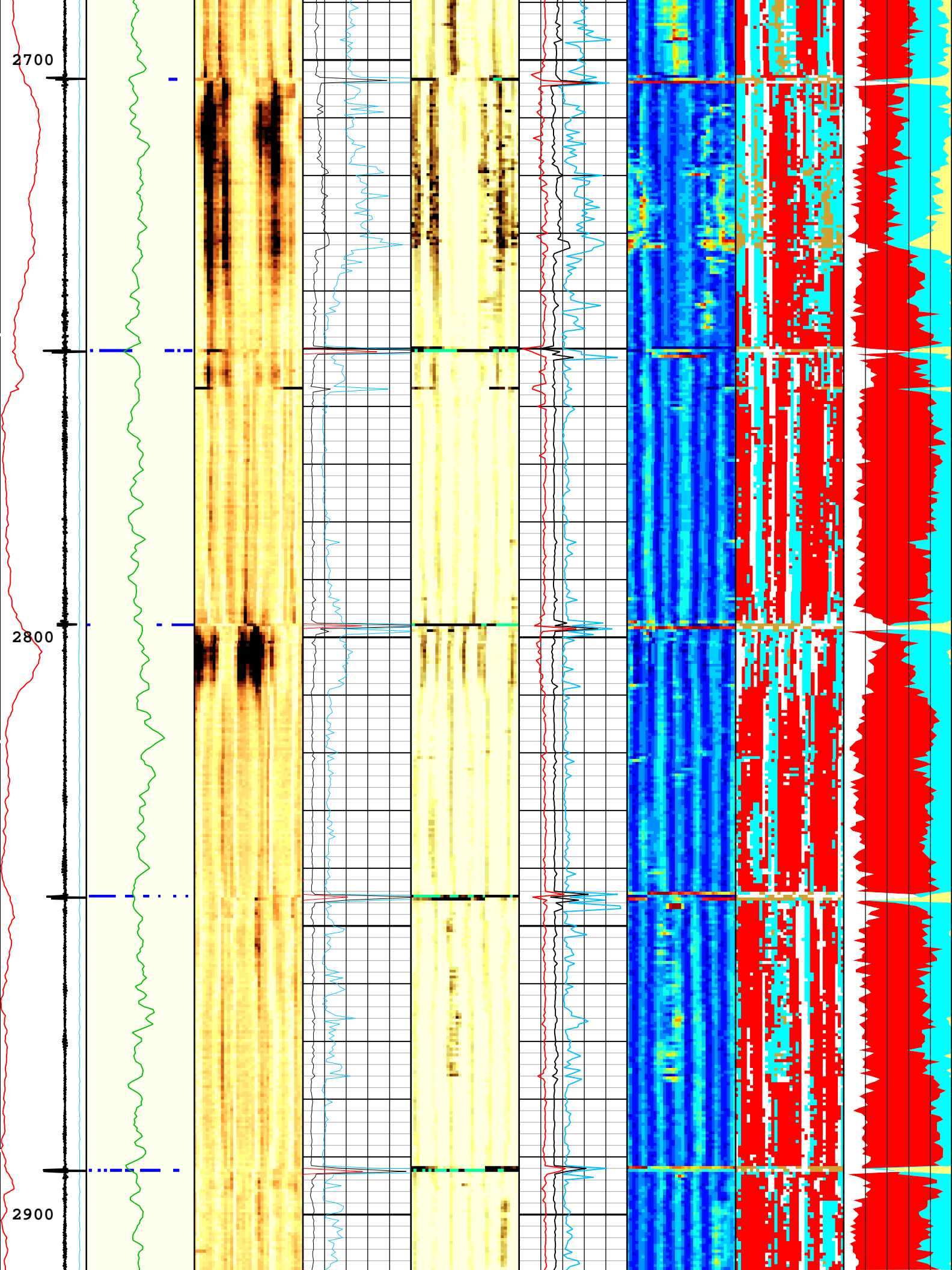


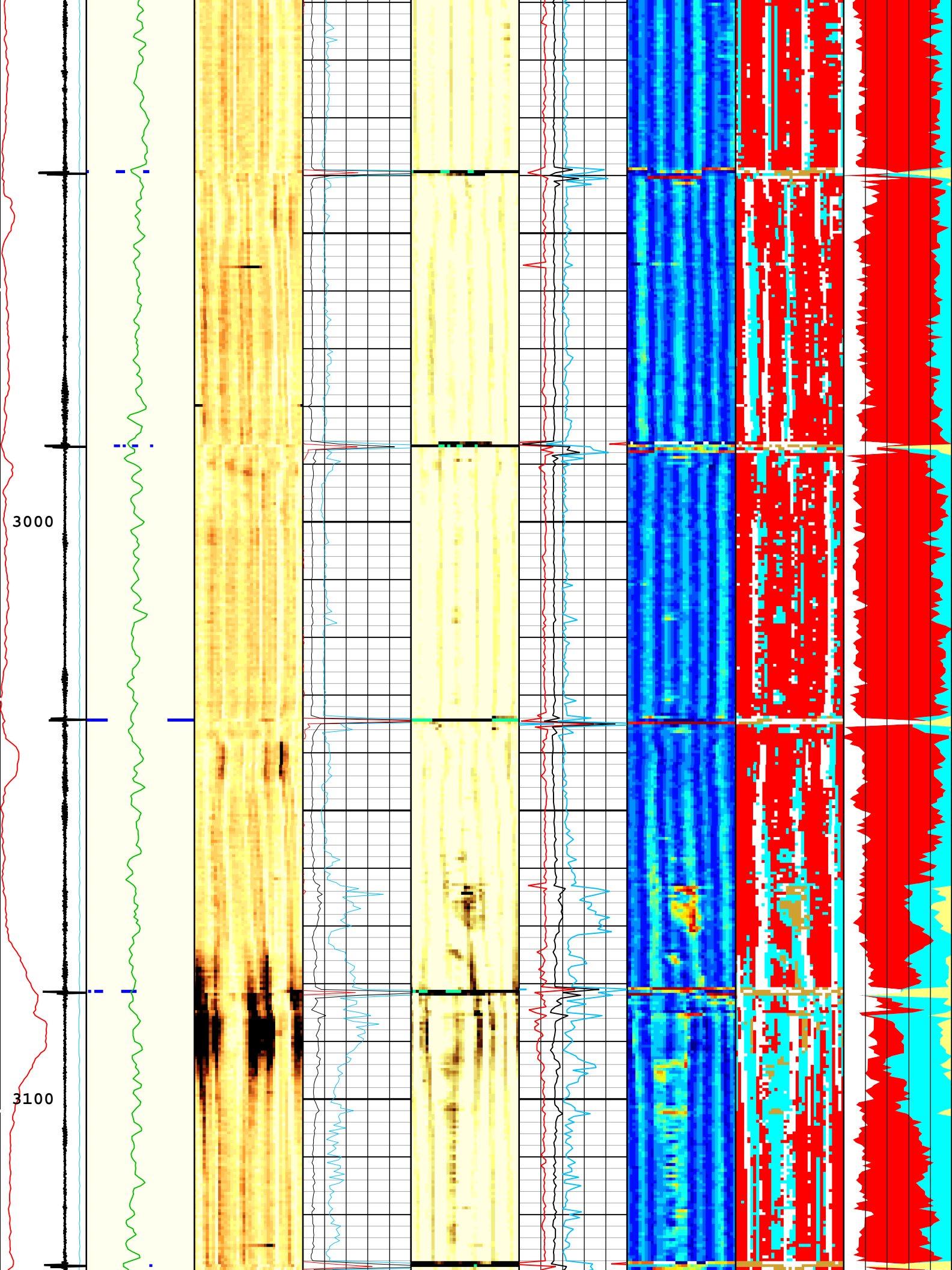


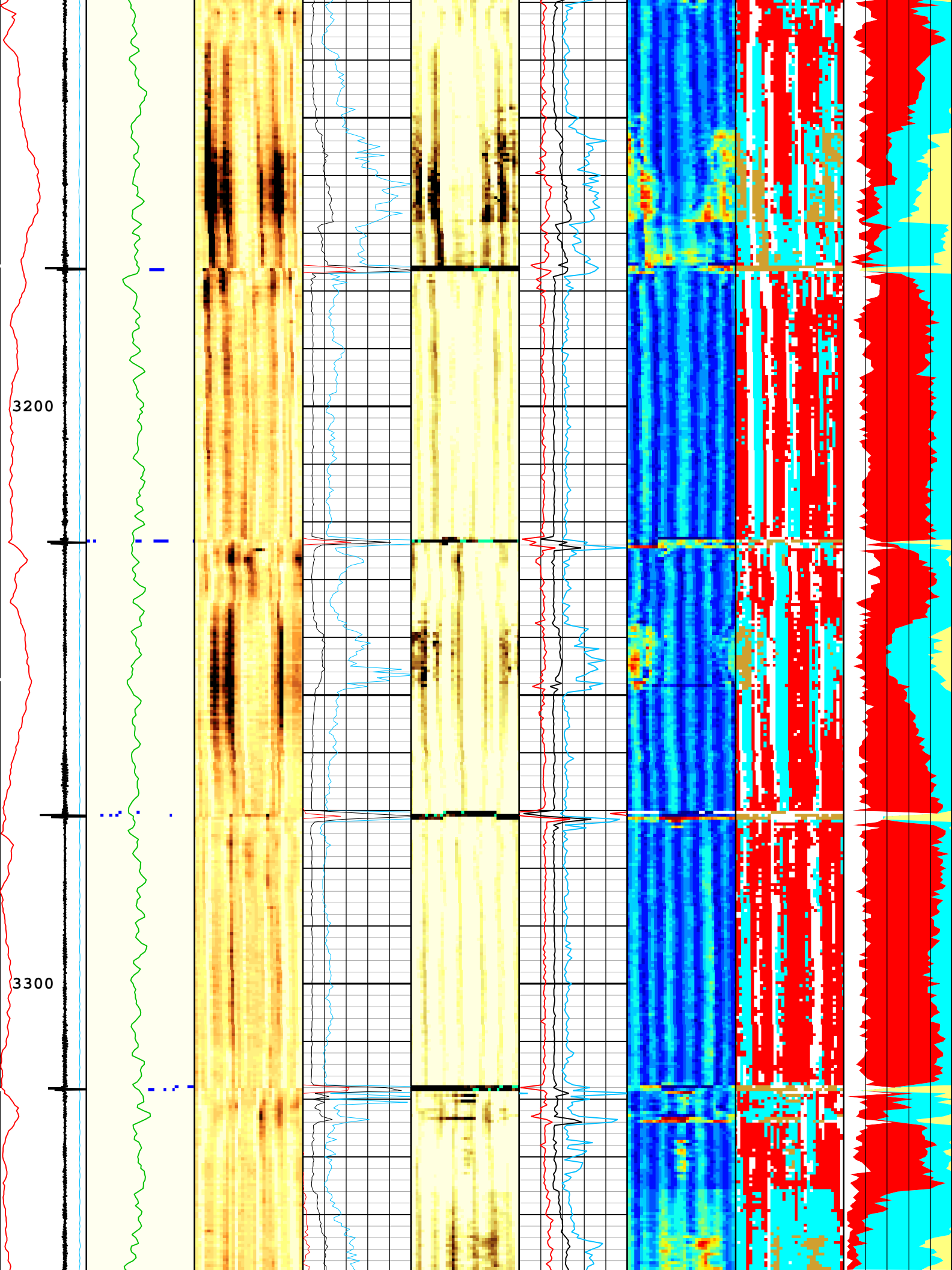


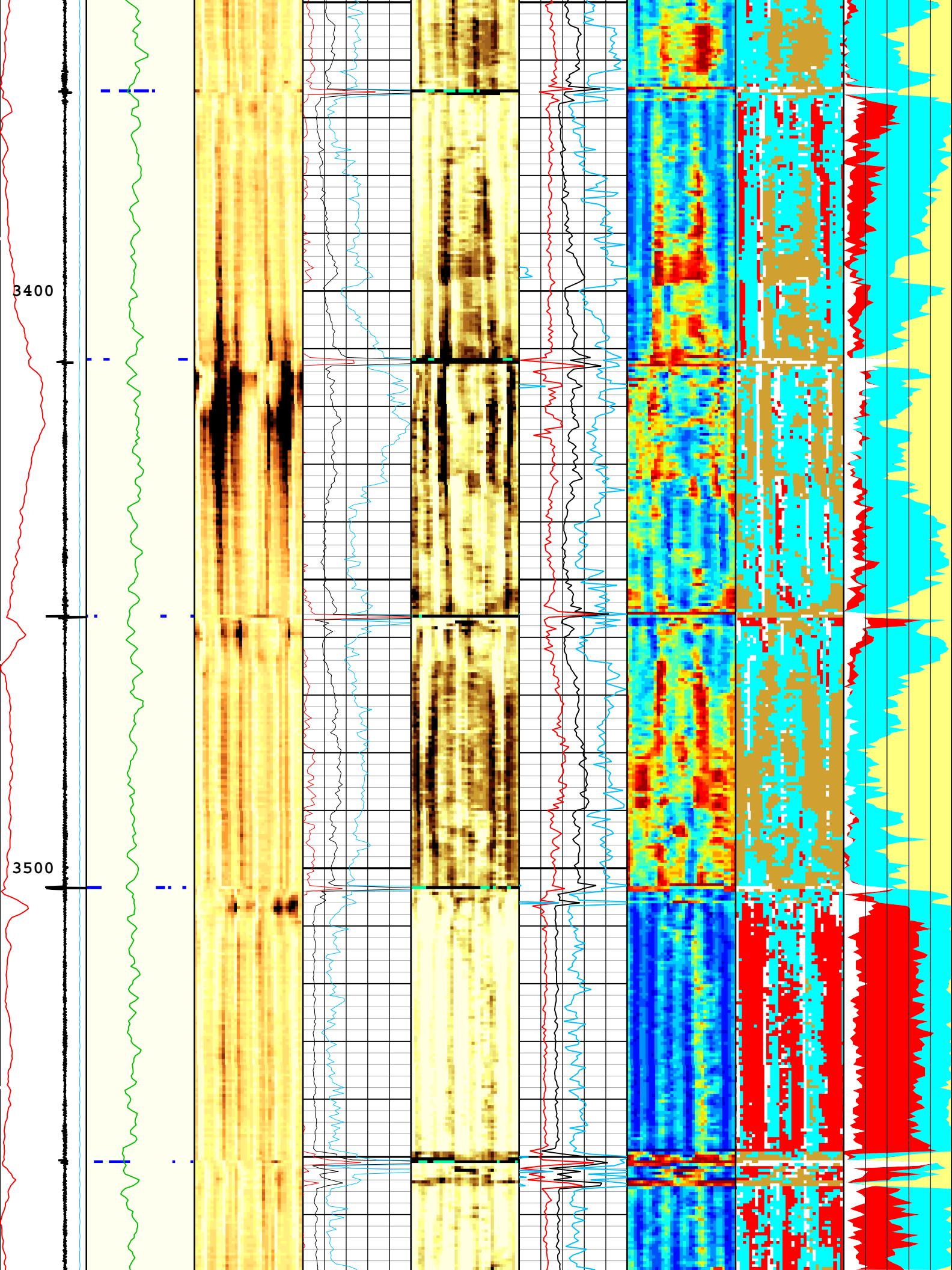


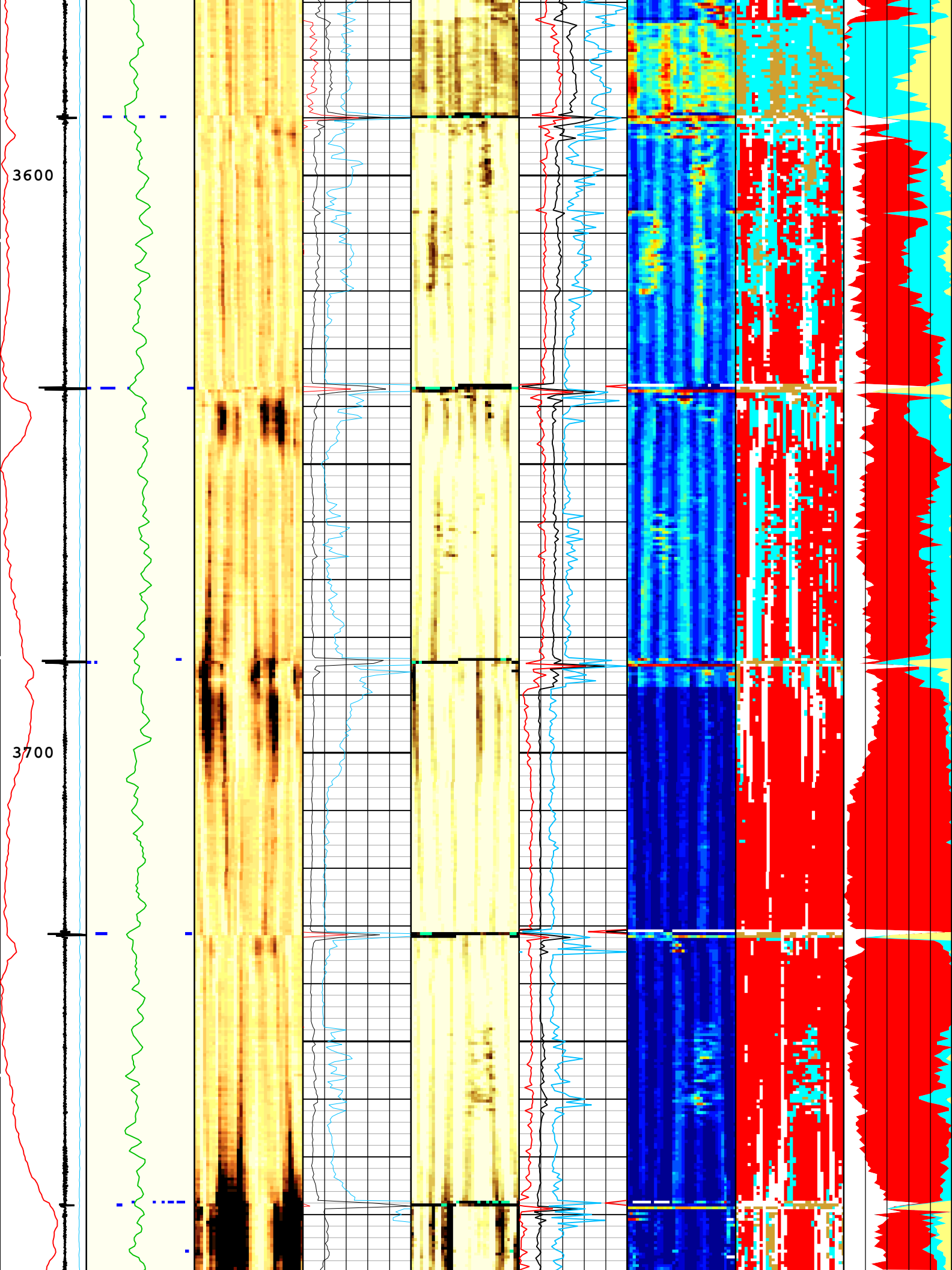


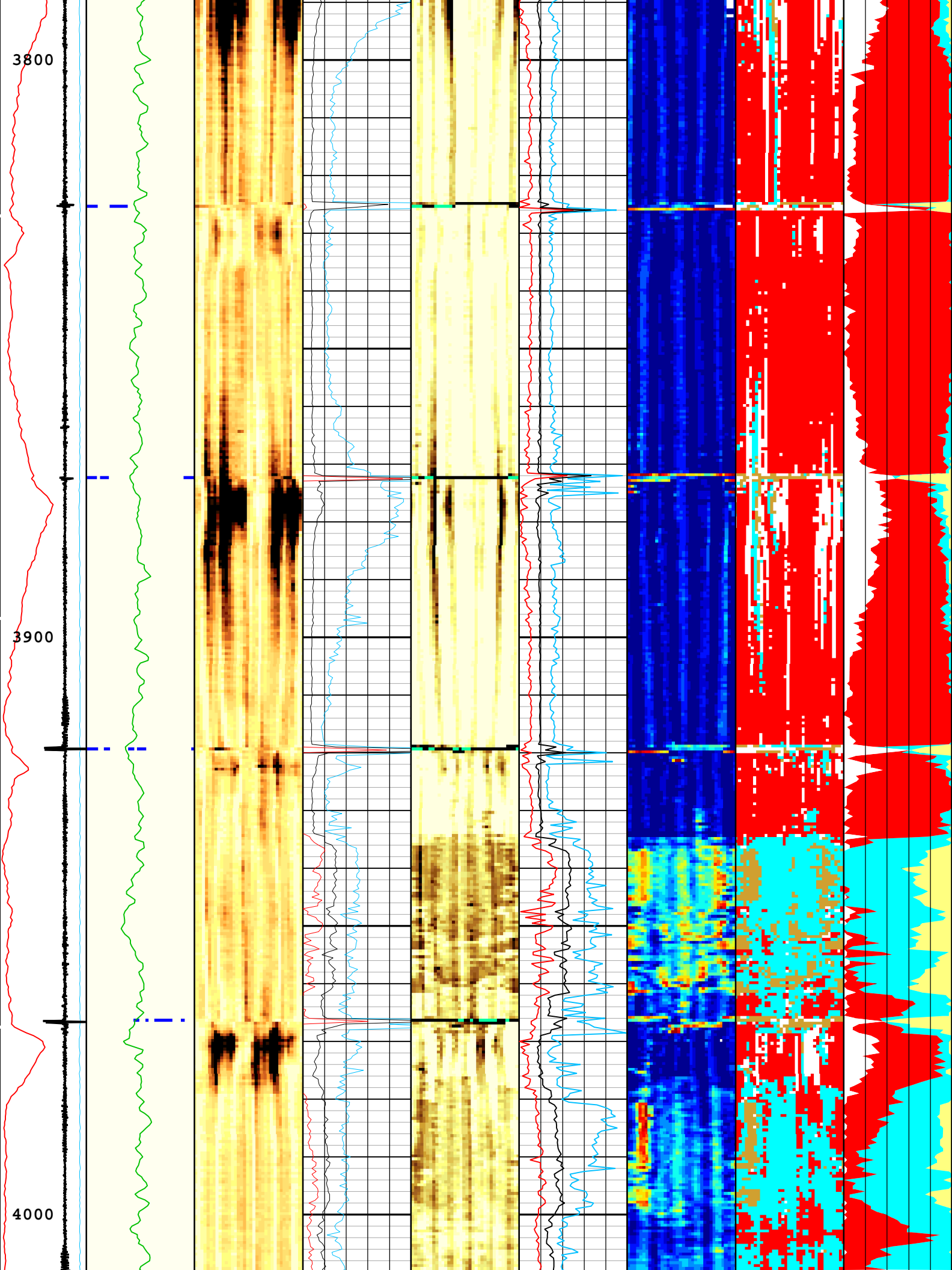


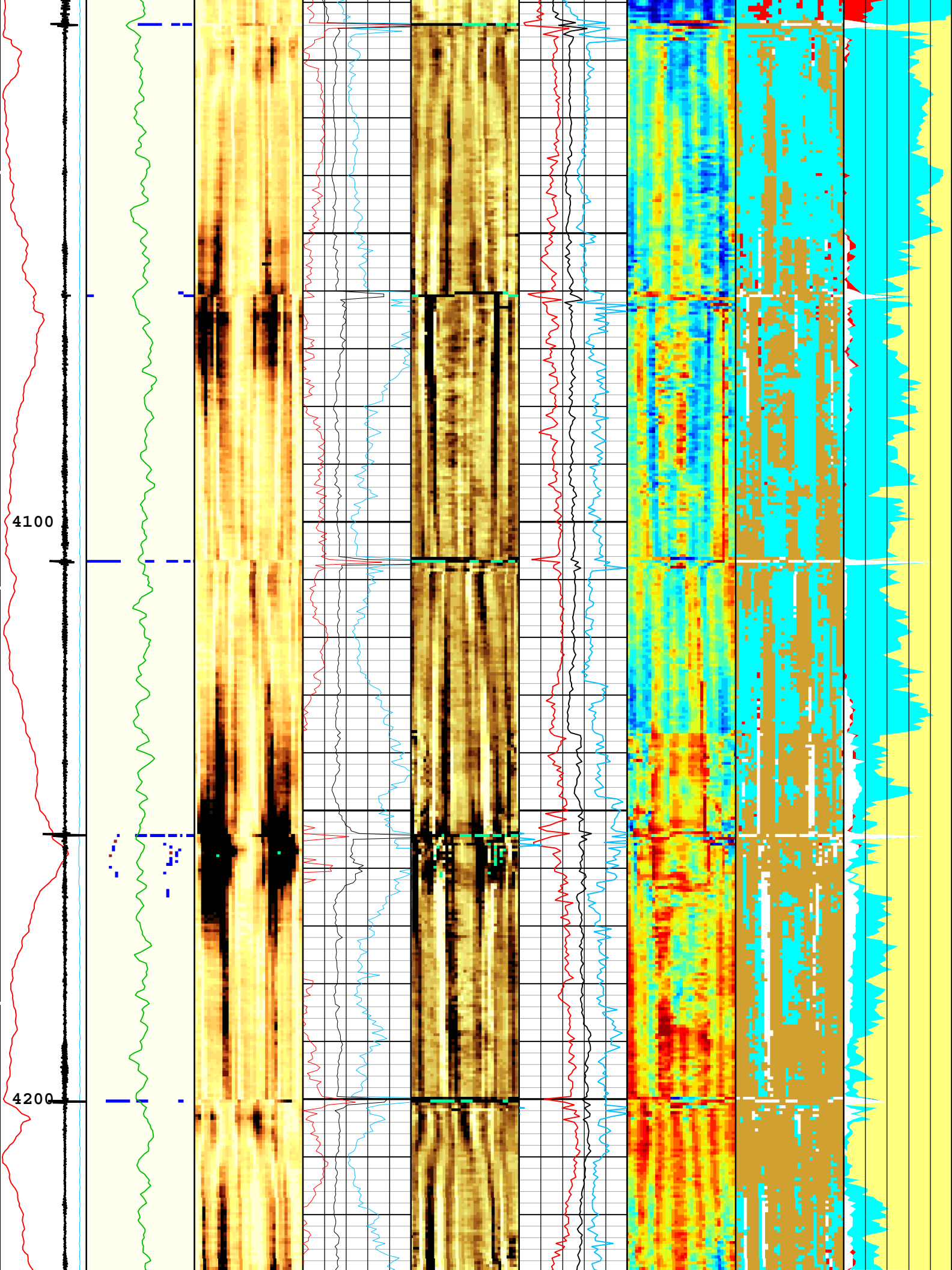


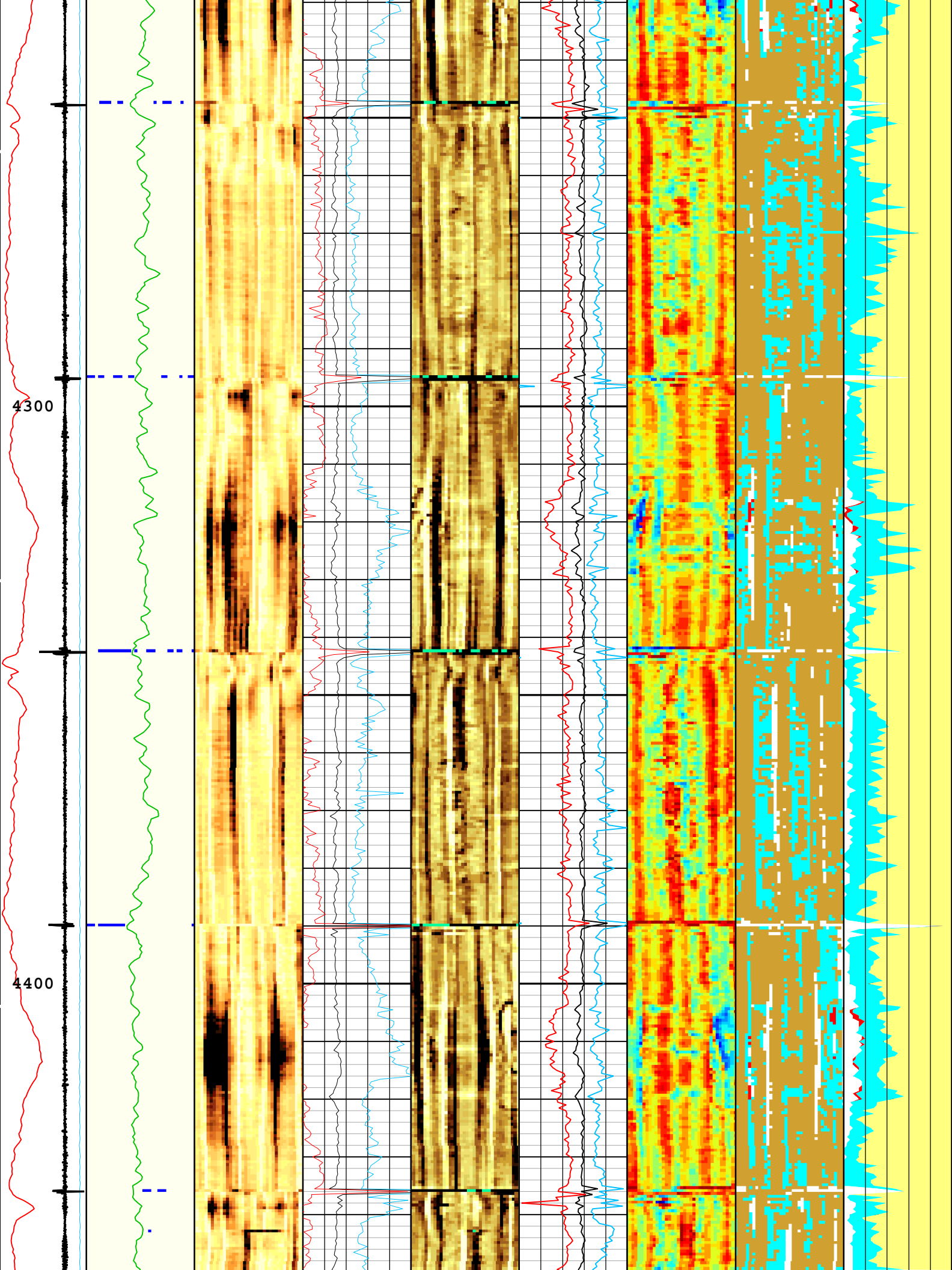


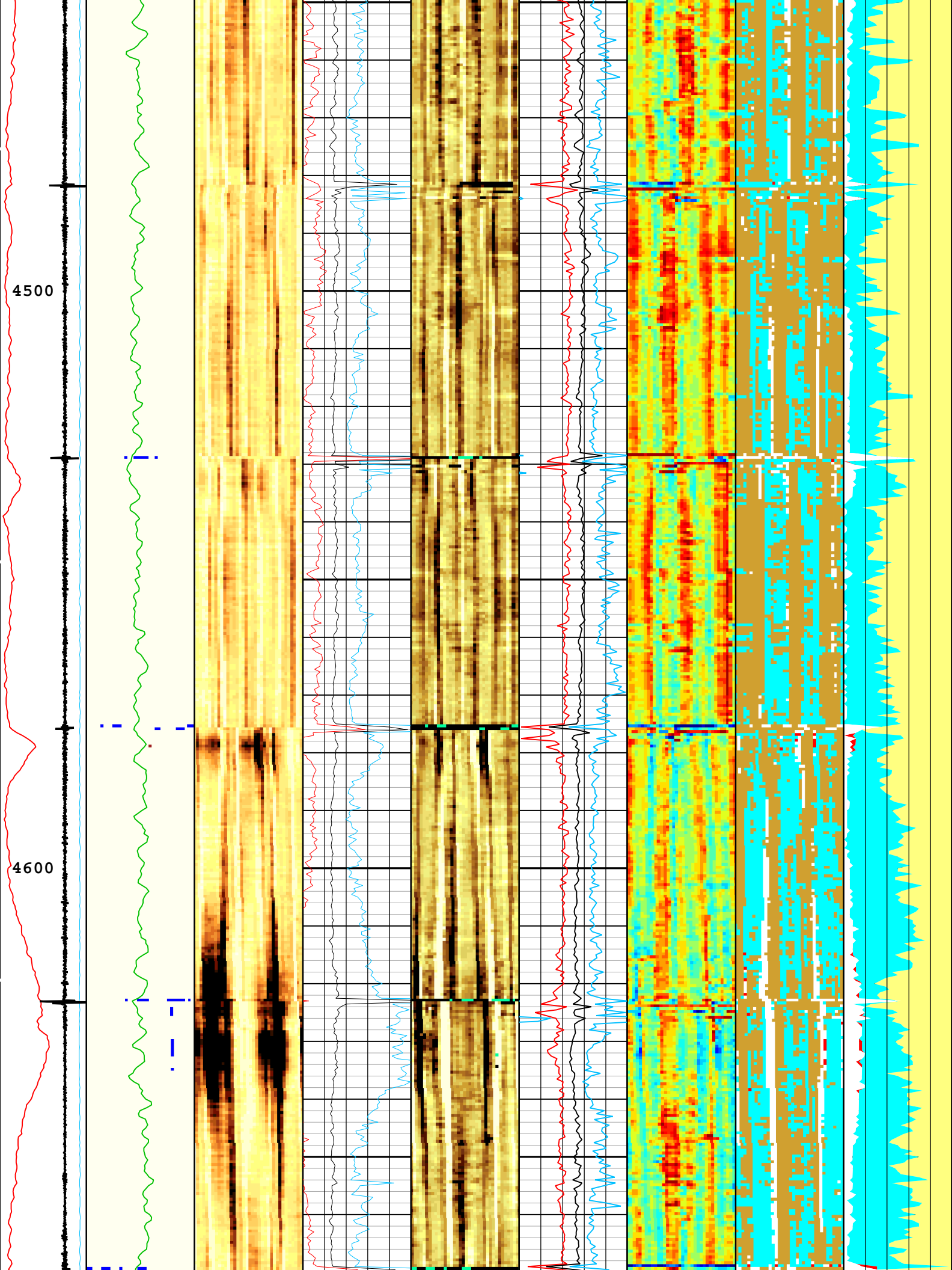


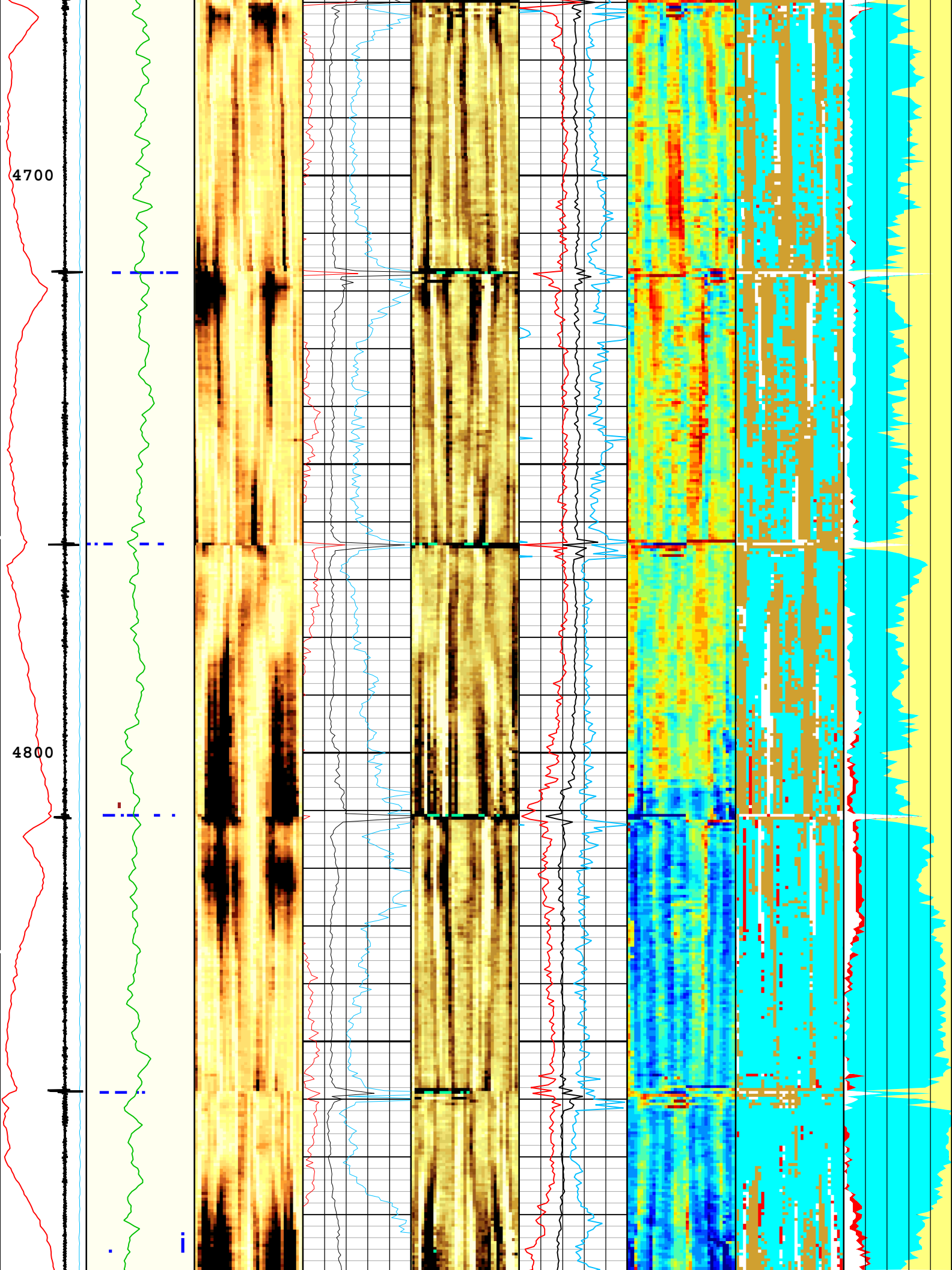


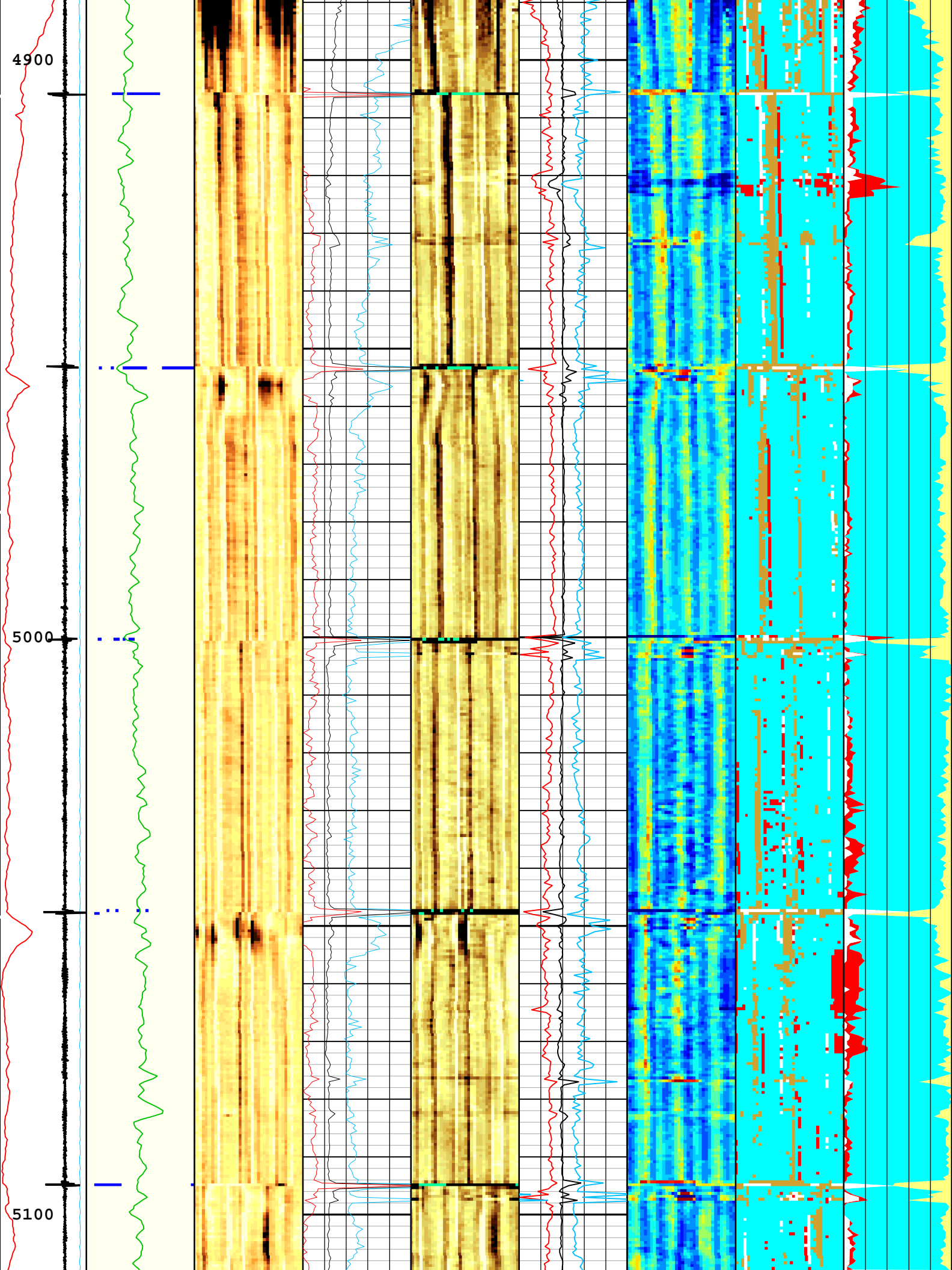


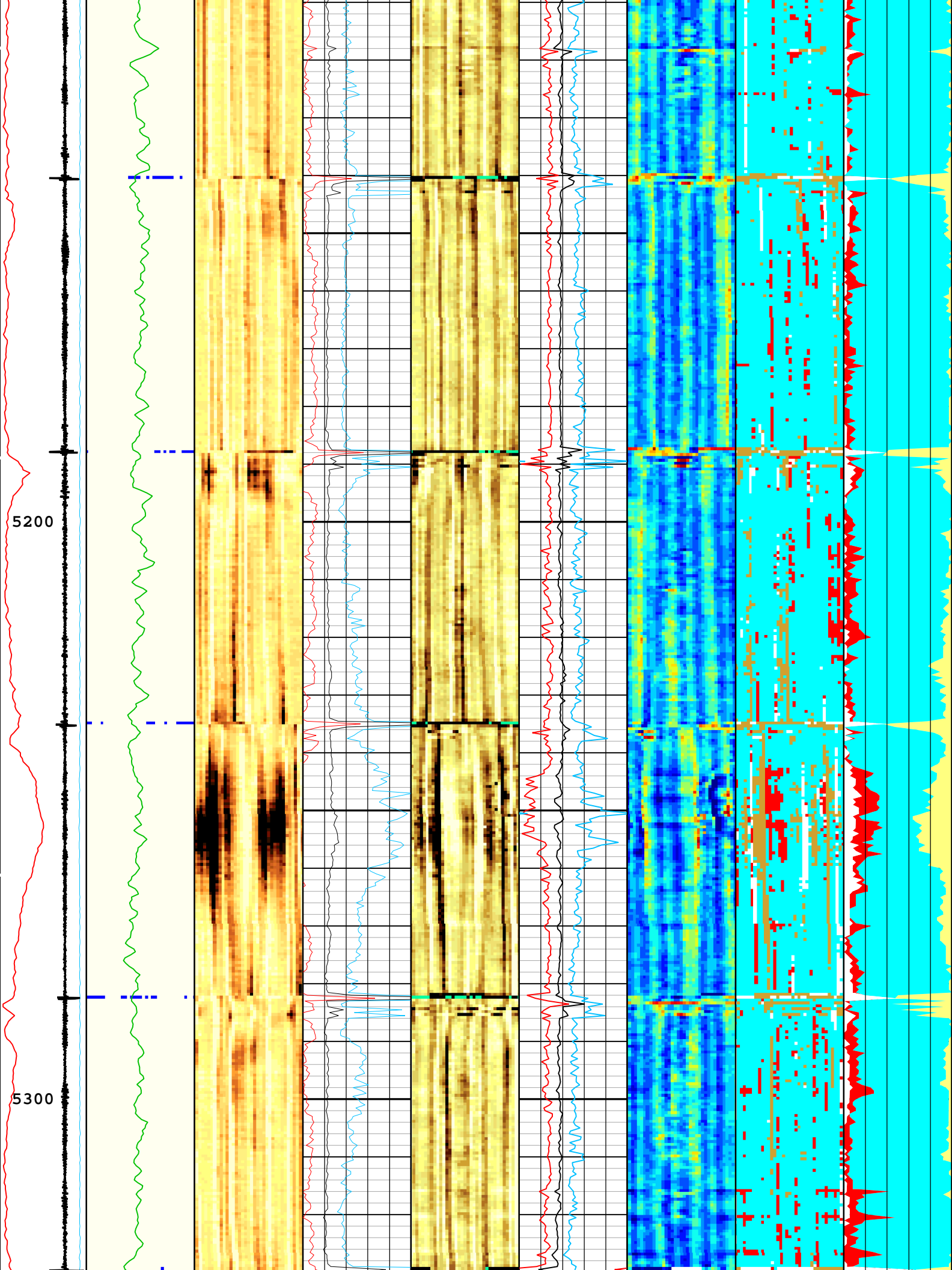


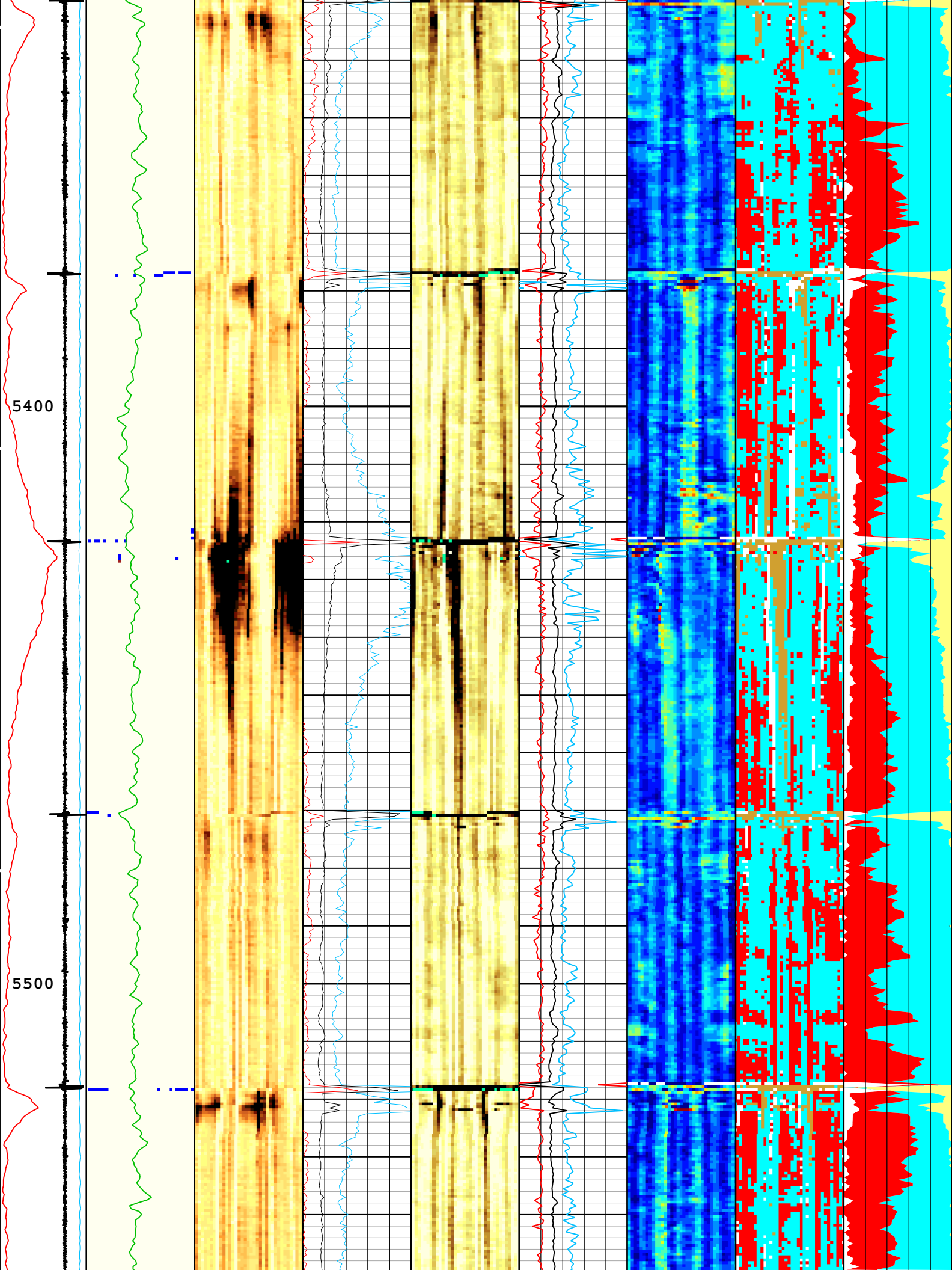


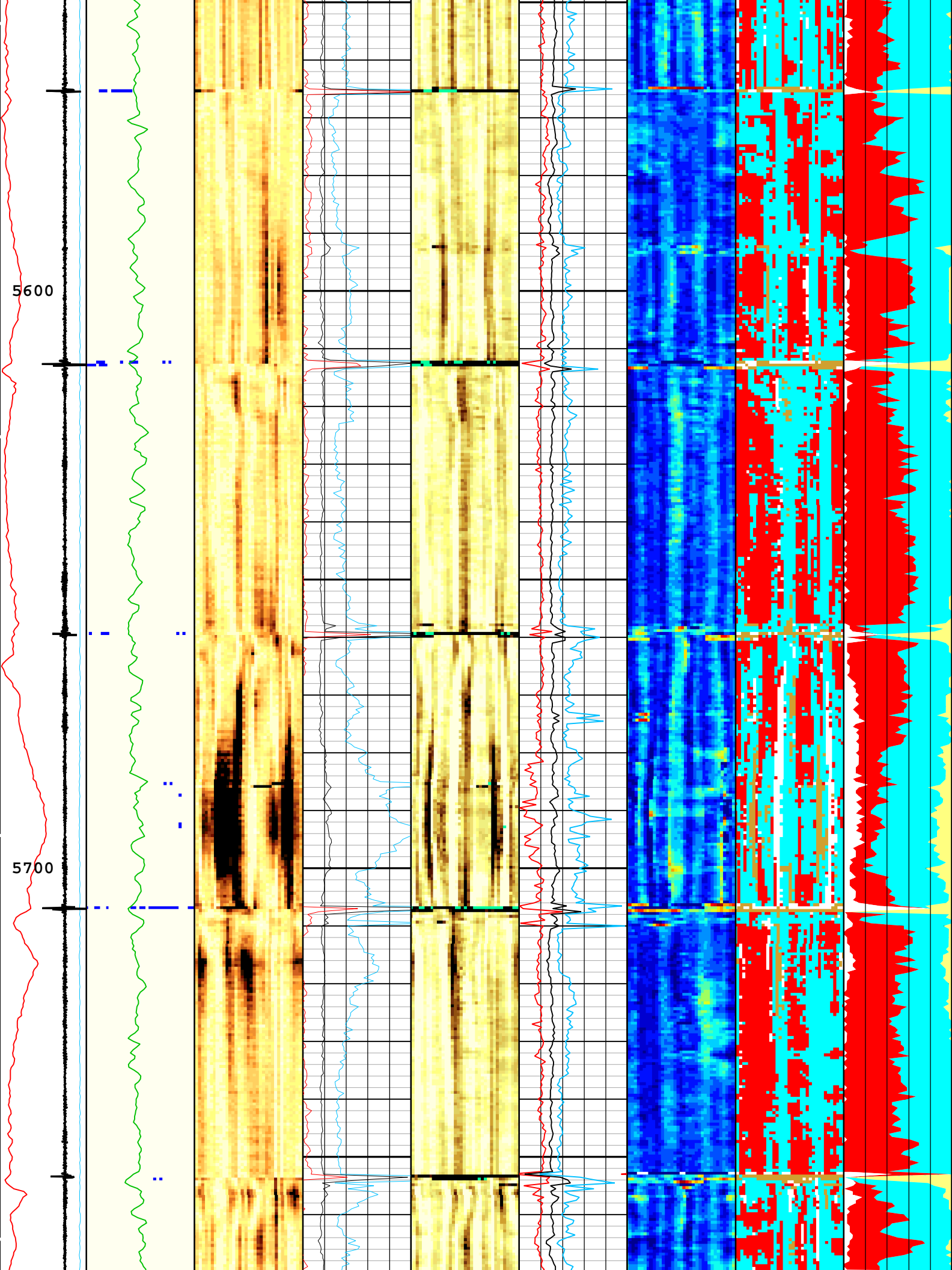


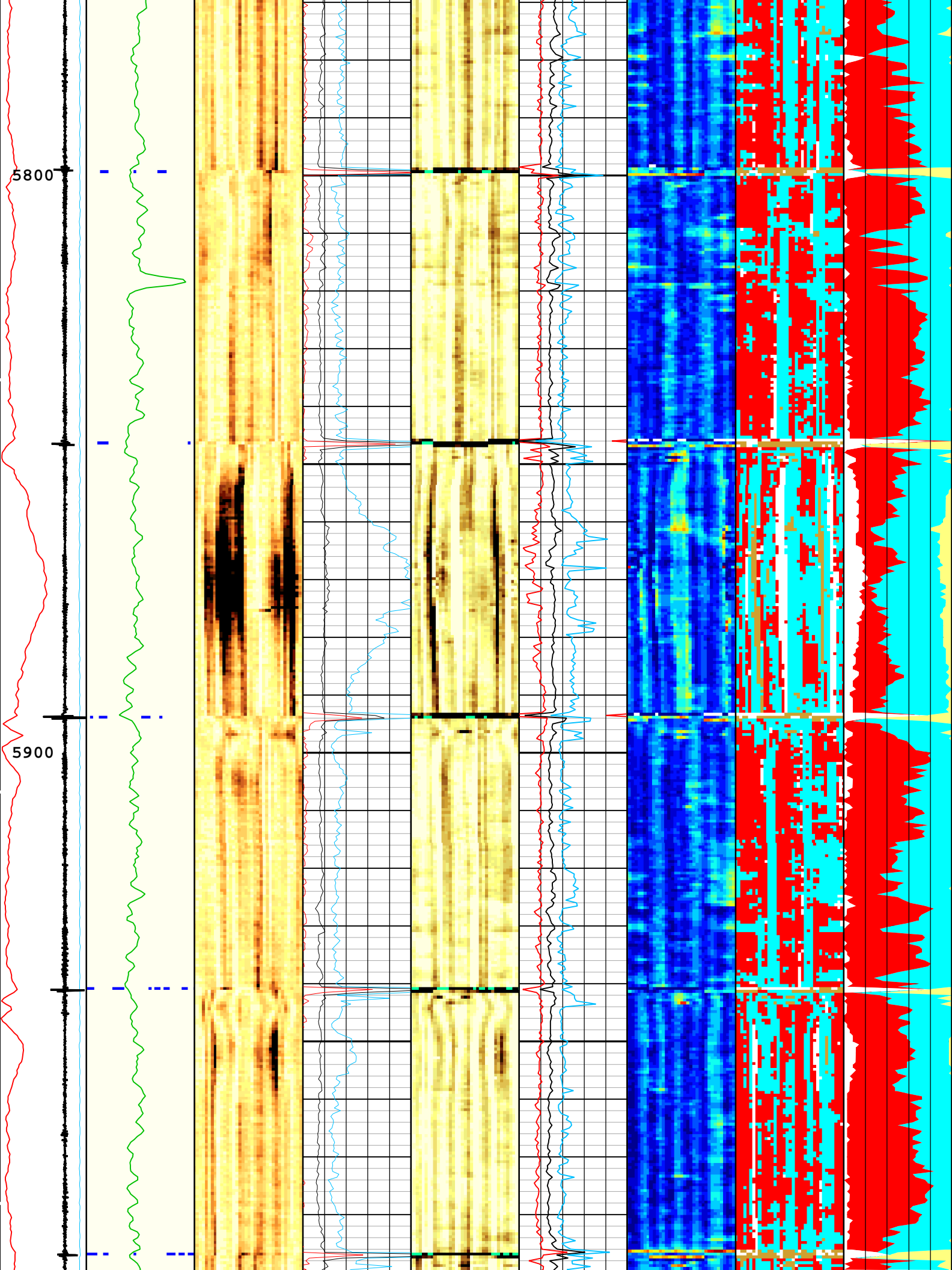


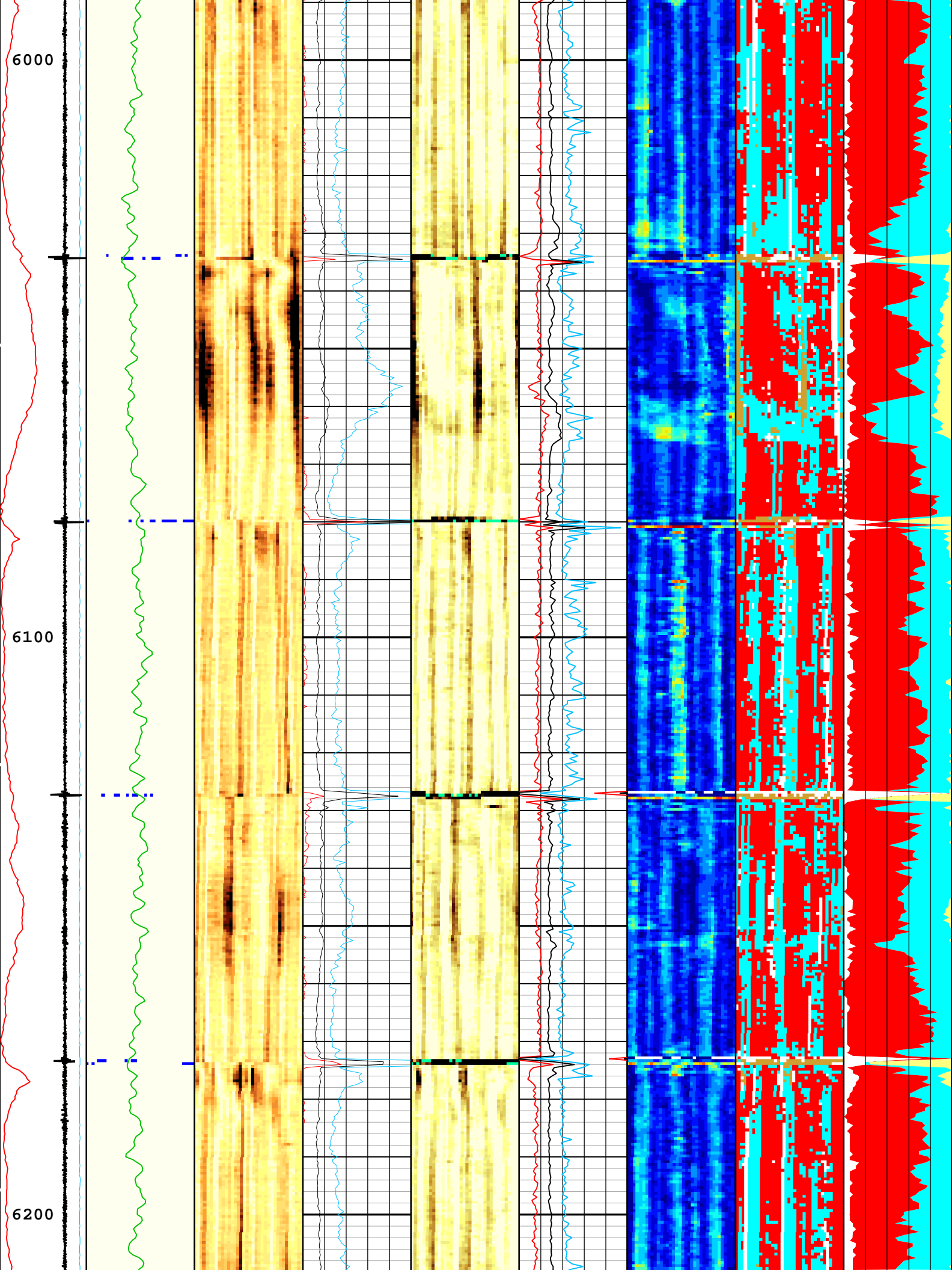


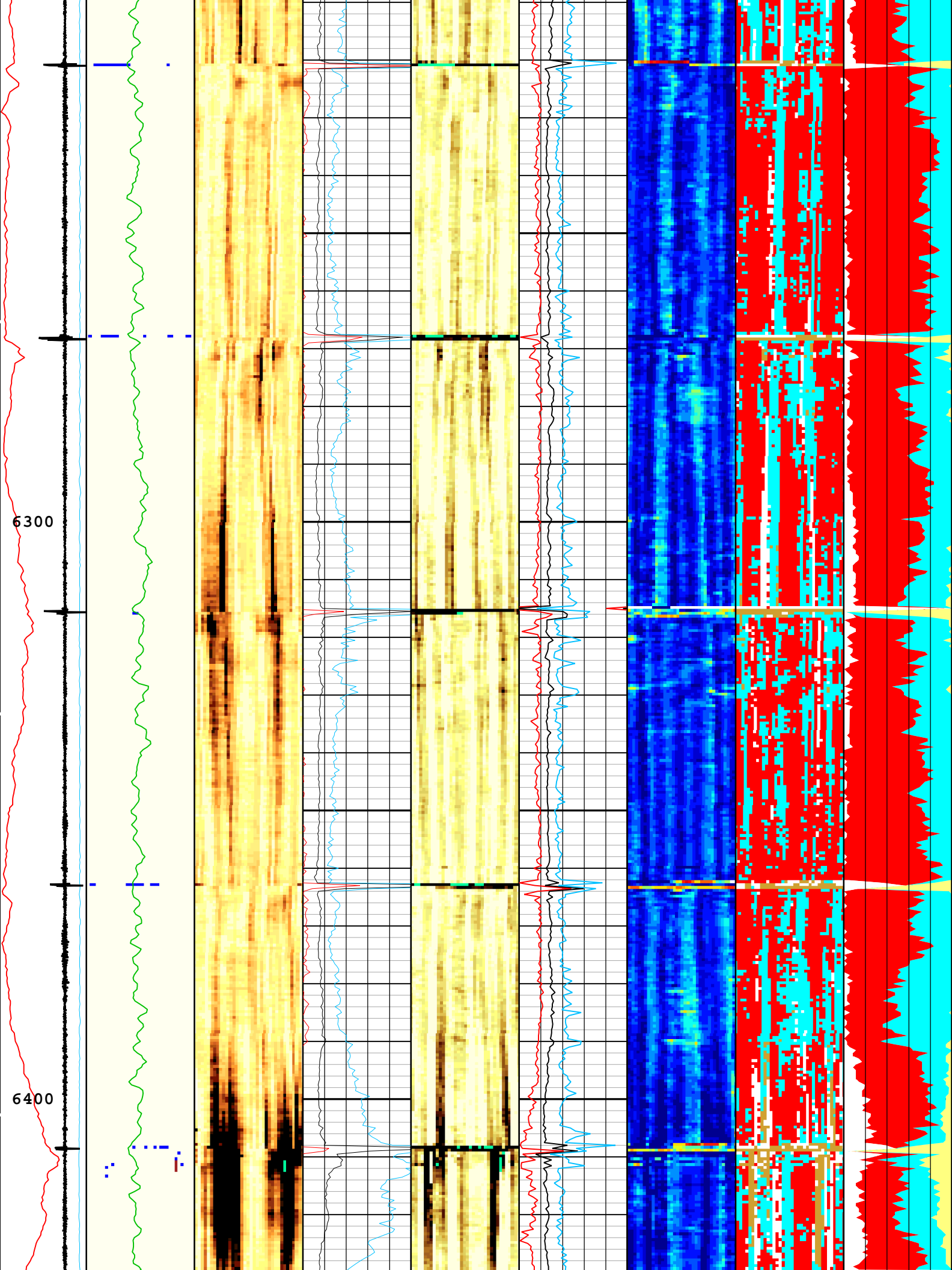


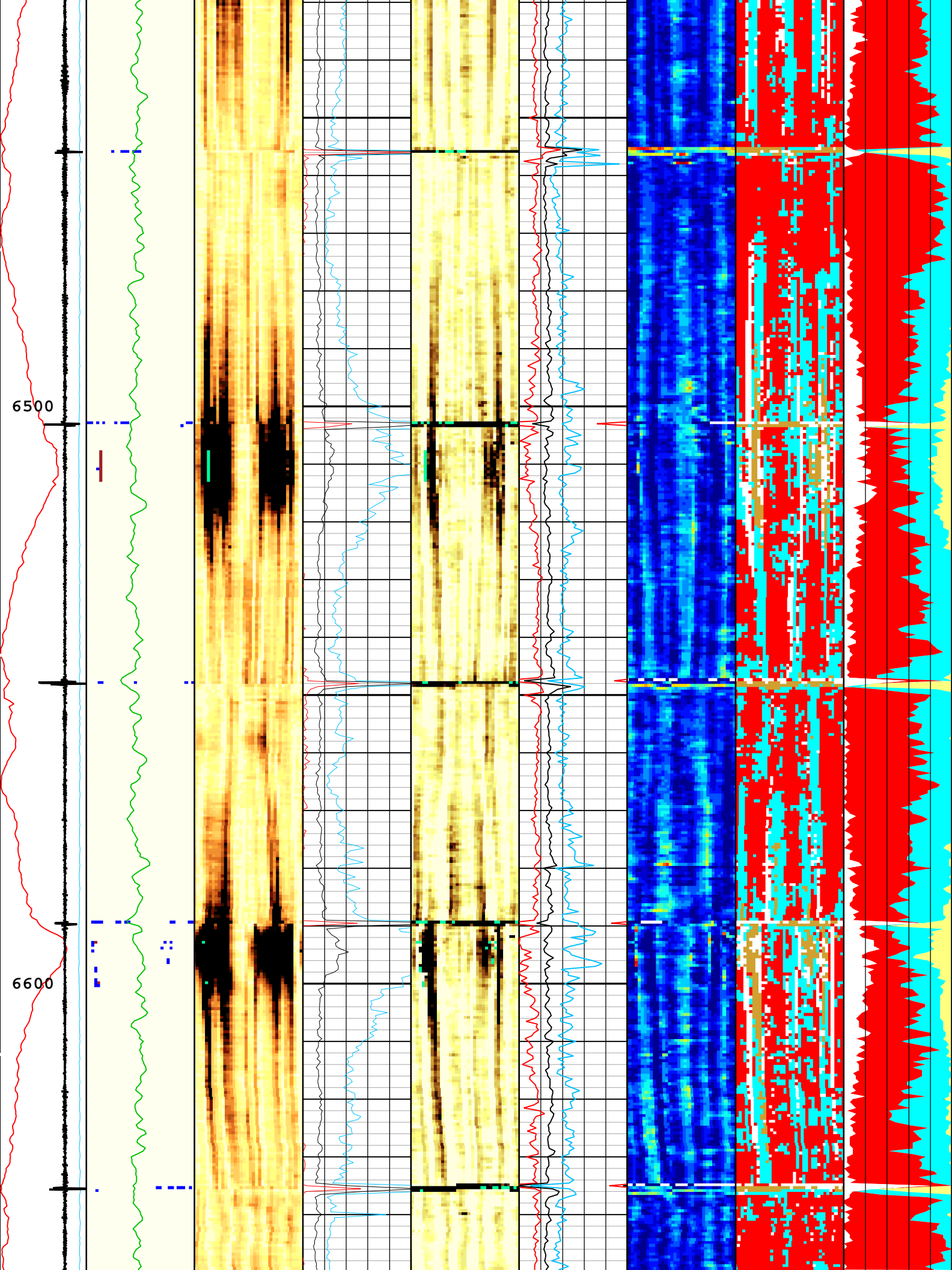


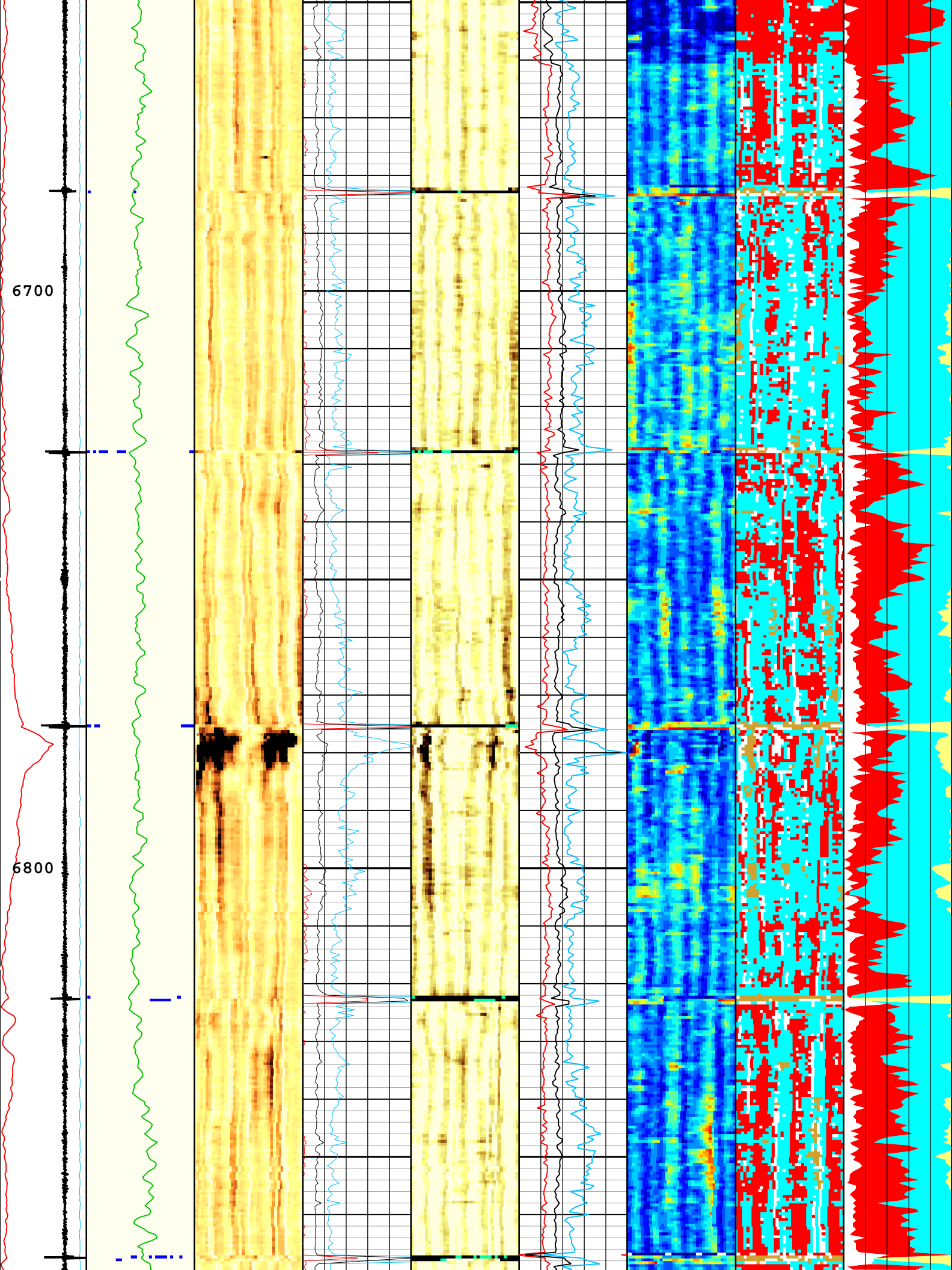


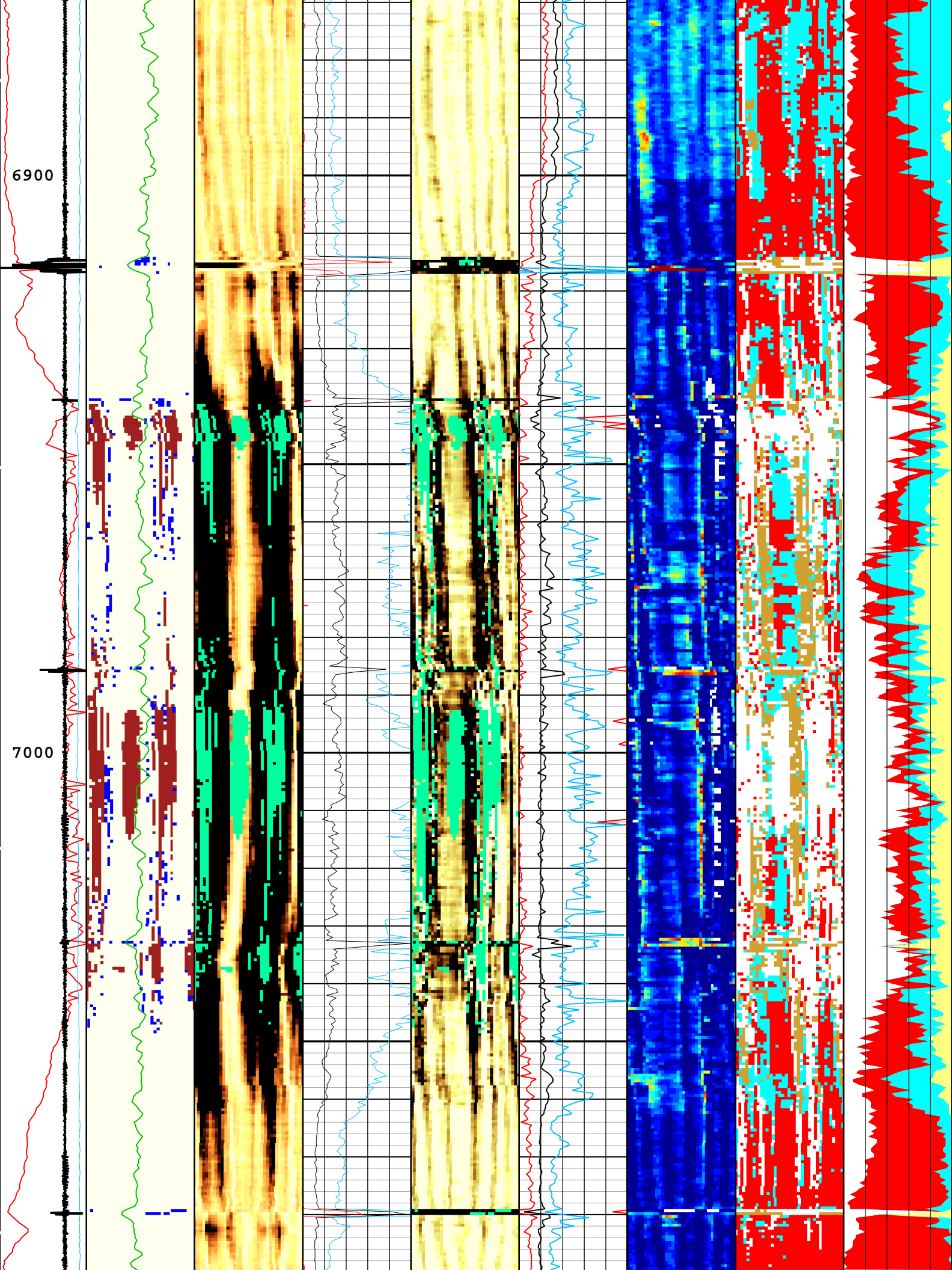


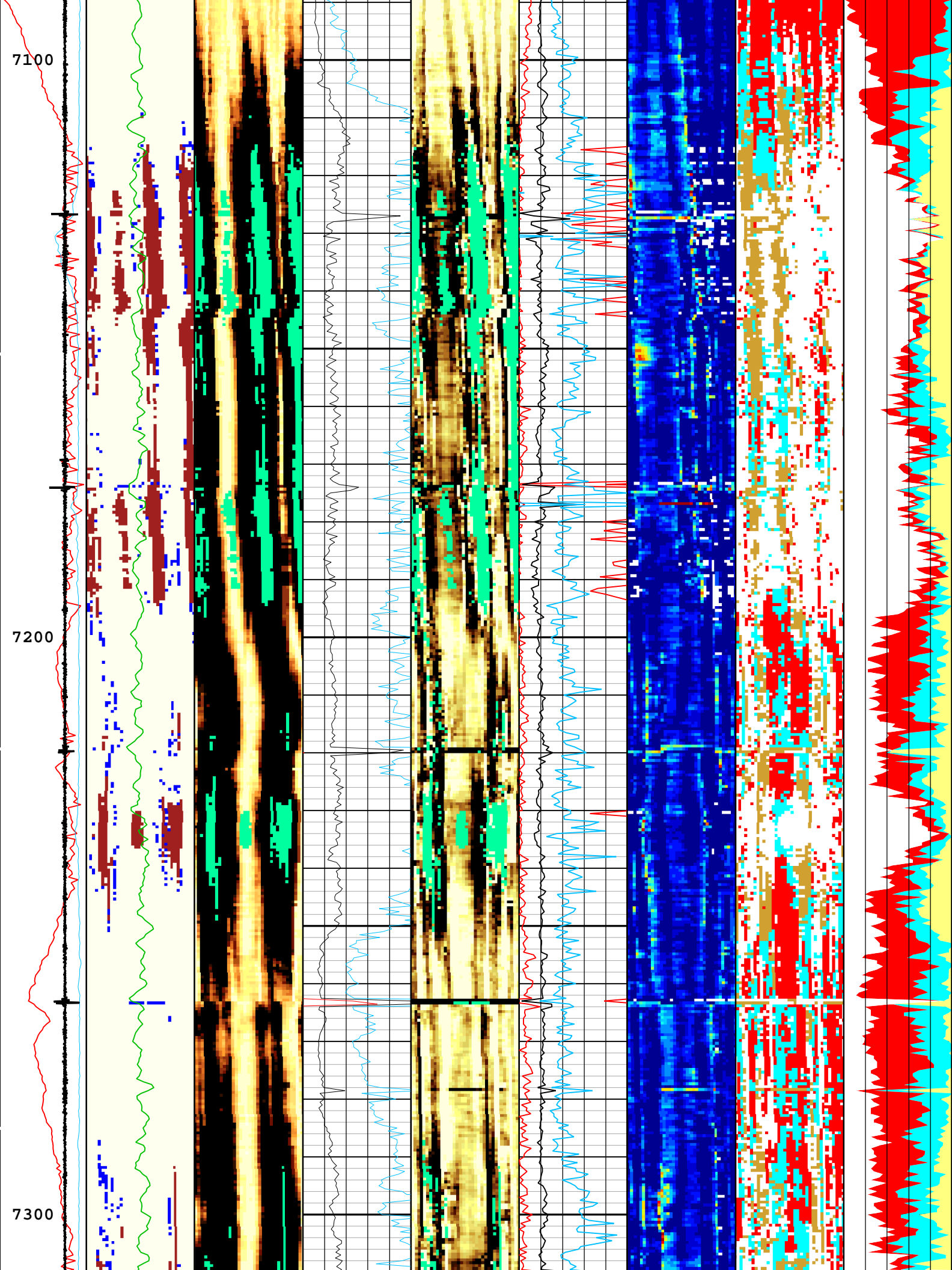


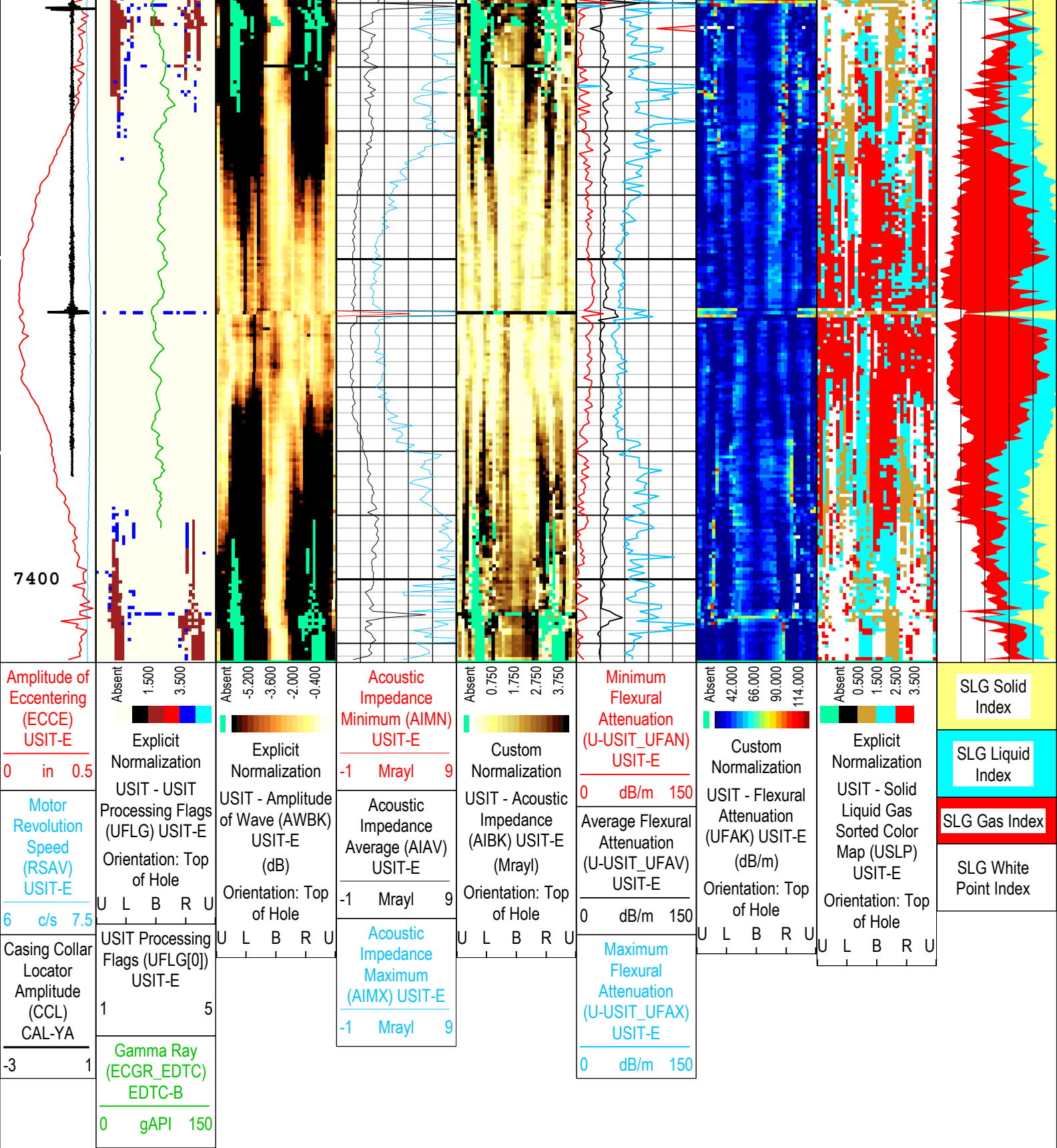












TIME\_1900 - Time Marked every 60.00 (s)

USIT Processing Flags (UFLG[0]) USIT-E

- 1 - UFLG 1 Value within [0.0 - 1.5] - : UTIM Error
- 2 - UFLG 2 Value within [1.5 - 2.5] - : Pulse Origin Not Detected
- 3 - UFLG 3 Value within [2.5 - 3.5] - : WINLEN Error
- 4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - : Casing Thickness Error
- 5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - : Loop Processing Error

Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BERJ	Bad Echo Rejection	USIT-E	On	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
CASING_PRATIO	Casing Poisson Ratio	USIT-E	Standard Poisson Ratio	
CBLO	Casing Bottom (Logger)	WLSESSION	17507	ft
CCL_MULTIPLIER	Casing Collar Locator Multiplier	CAL-YA	1	
CDEN	Cement Density	USIT-E	12.5	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Light Cement	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	10.5	lbm/gal
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
GR_MULTIPLIER	Gamma Ray Multiplier	EDTC-B	1	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	-9.17	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	UFAO	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	FreePipe Norm.	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	RB	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	22.44	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.12	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1	
RCOD	Reference Calibrator Outer Diameter	USIT-E	4.5	in
RCSO	Reference Calibrator Standoff	USIT-E	0.842	in
RCTH	Reference Calibrator Thickness	USIT-E	0.216	in
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	70	%
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.68	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-5.28	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
USI_RPLUS	Ultrasonic R+ Processing	USIT-E	No	
THDP	Thickness Detection Policy	USIT-E	Fundamental	
VCAS	Ultrasonic Transversal Velocity in Casing	USIT-E	51.4	us/ft
ZCAS	Acoustic Impedance of Casing	USIT-E	46.25	Mrayl
ZINI	Initial Estimate of Cement Impedance	USIT-E	-1	Mrayl
ZMUD	Acoustic Impedance of Mud	Borehole	1.6	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

ETGS	Acoustic Impedance Threshold for Gas	USIT-E	0.5	Ways
Depth Zone Parameters				
Parameter	Value	Start ( ft )	Stop ( ft )	
BS	12.25	70	2510	
BS	8.75	2510	7413	
All depth are actual.				

Tool Control Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
DOT(DOS)	Distance between Opposite Transducer Faces	USIT-E	1.756	in
EMXV	EMEX Voltage	USIT-E	Time Zoned	V
HRES	Horizontal Resolution	USIT-E	10 deg	
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	4408.8	ft/h
MOTOR_PROTECT	Motor Protection	USIT-E	On	
UACLV_PERM	Ultrasonic ACLV Permanent	USIT-E	Yes	
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	137	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	177	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	106	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	146	us
USFR	Ultrasonic Sampling Frequency	USIT-E	666667	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 375 KHz	
UWKM	USIT Working Mode	USIT-E	10 deg at 6.0 in	
USSP	Ultrasonic Service	USIT-E	IBC	
U-USIT_UTAN	Transducer Angles	USIT-E	33_DEG	
VRES	Vertical Resolution	USIT-E	6.0 in	
WINB	Window Begin Time	USIT-E	Time Zoned	us
WINE	Window End Time	USIT-E	Time Zoned	us

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth ( ft )	Stop Depth ( ft )
EMXV	70	08-Mar-2019 08:02:57	08-Mar-2019 08:03:32	7413.88	7395.75
EMXV	80	08-Mar-2019 08:03:32	08-Mar-2019 08:05:58	7395.75	7287.27
EMXV	90	08-Mar-2019 08:05:58	08-Mar-2019 09:43:47	7287.27	315.73
EMXV	80	08-Mar-2019 09:43:47	08-Mar-2019 09:43:58	315.73	303.39
EMXV	70	08-Mar-2019 09:43:58	08-Mar-2019 09:48:12	303.39	67.96
WINB	31.88	08-Mar-2019 08:02:57	08-Mar-2019 08:09:55	7413.88	7022
WINB	32.97	08-Mar-2019 08:09:55	08-Mar-2019 09:48:12	7022	67.96
WINE	71.88	08-Mar-2019 08:02:57	08-Mar-2019 08:07:36	7413.88	7178.01
WINE	74.16	08-Mar-2019 08:07:36	08-Mar-2019 09:48:12	7178.01	67.96
All depth are at tool zero.					

ONE

IBC LOG Composite

## IBC SLG Composite

## Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[3]:Up	Up	67.96 ft	7413.88 ft	08-Mar-2019 8:02:57 AM	08-Mar-2019 9:48:12 AM	ON	4.01 ft	Yes

All depths are referenced to toolstring zero

## Log

Company:Crestone Peak Resources Operating LLC

Well:Cosslett 1D-22H-B168






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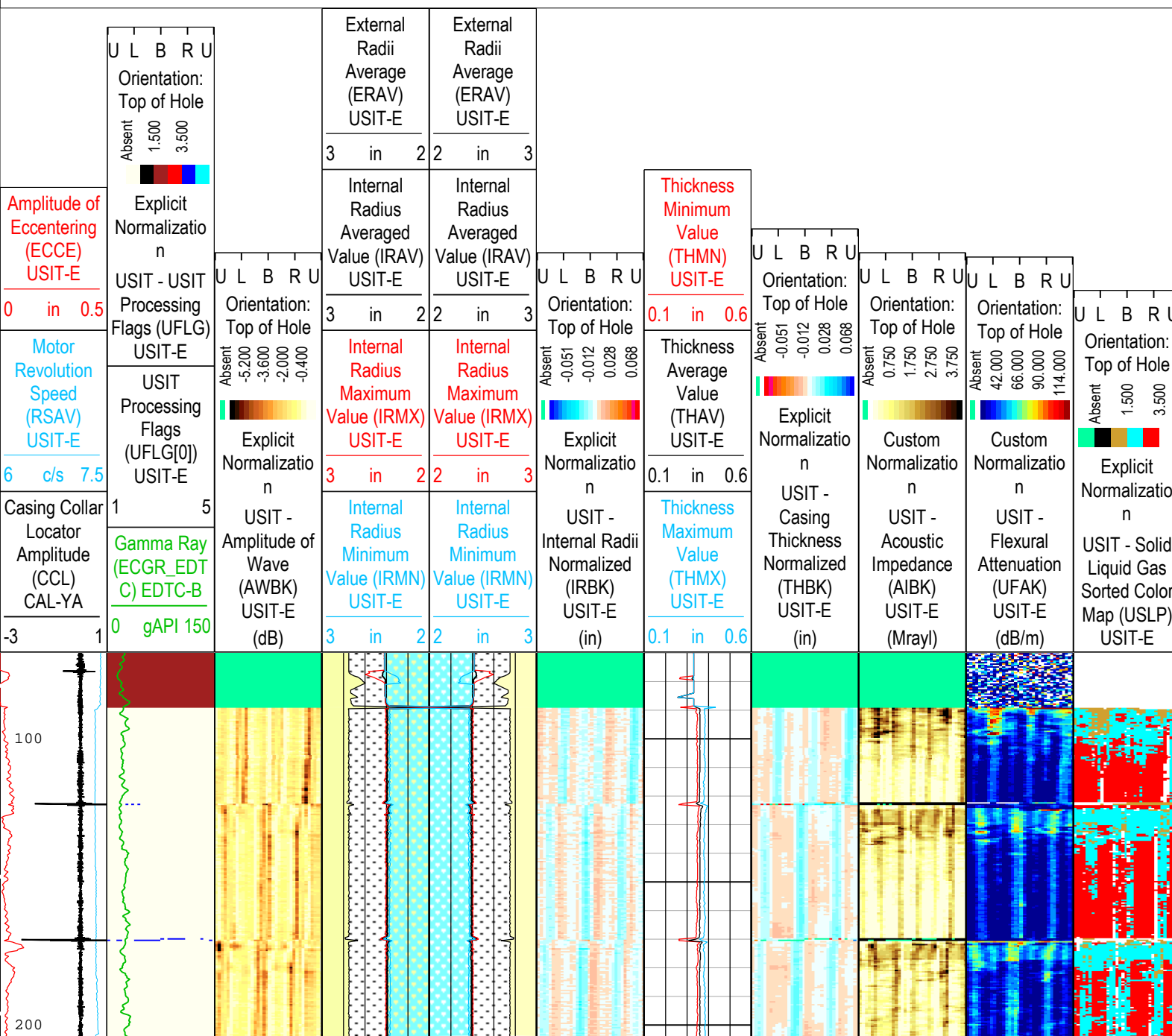
Description: USI IBC SLG Composite Format: Log ( IBC SLG Composite ) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth

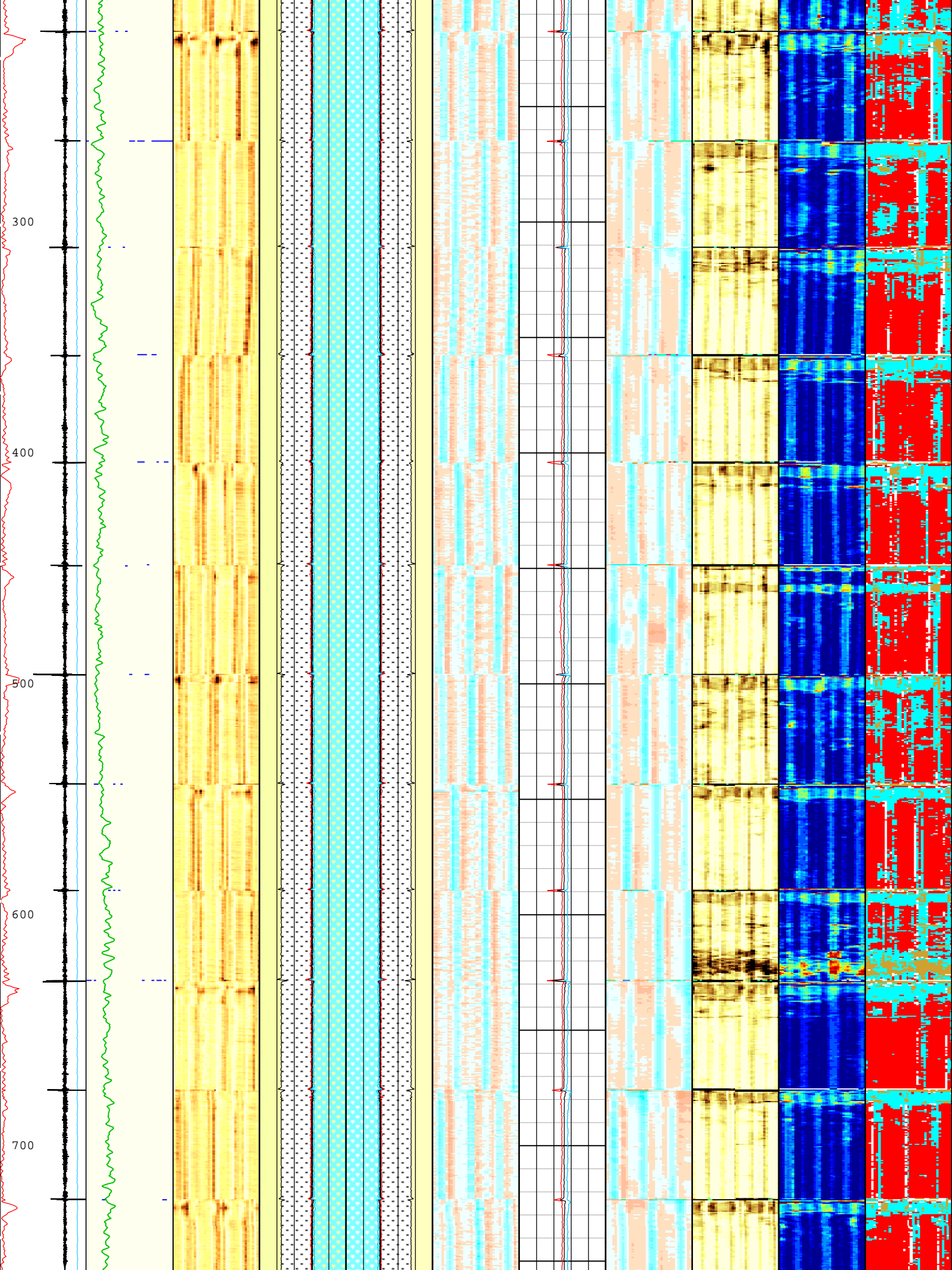
Creation Date: 08-Mar-2019 11:07:07

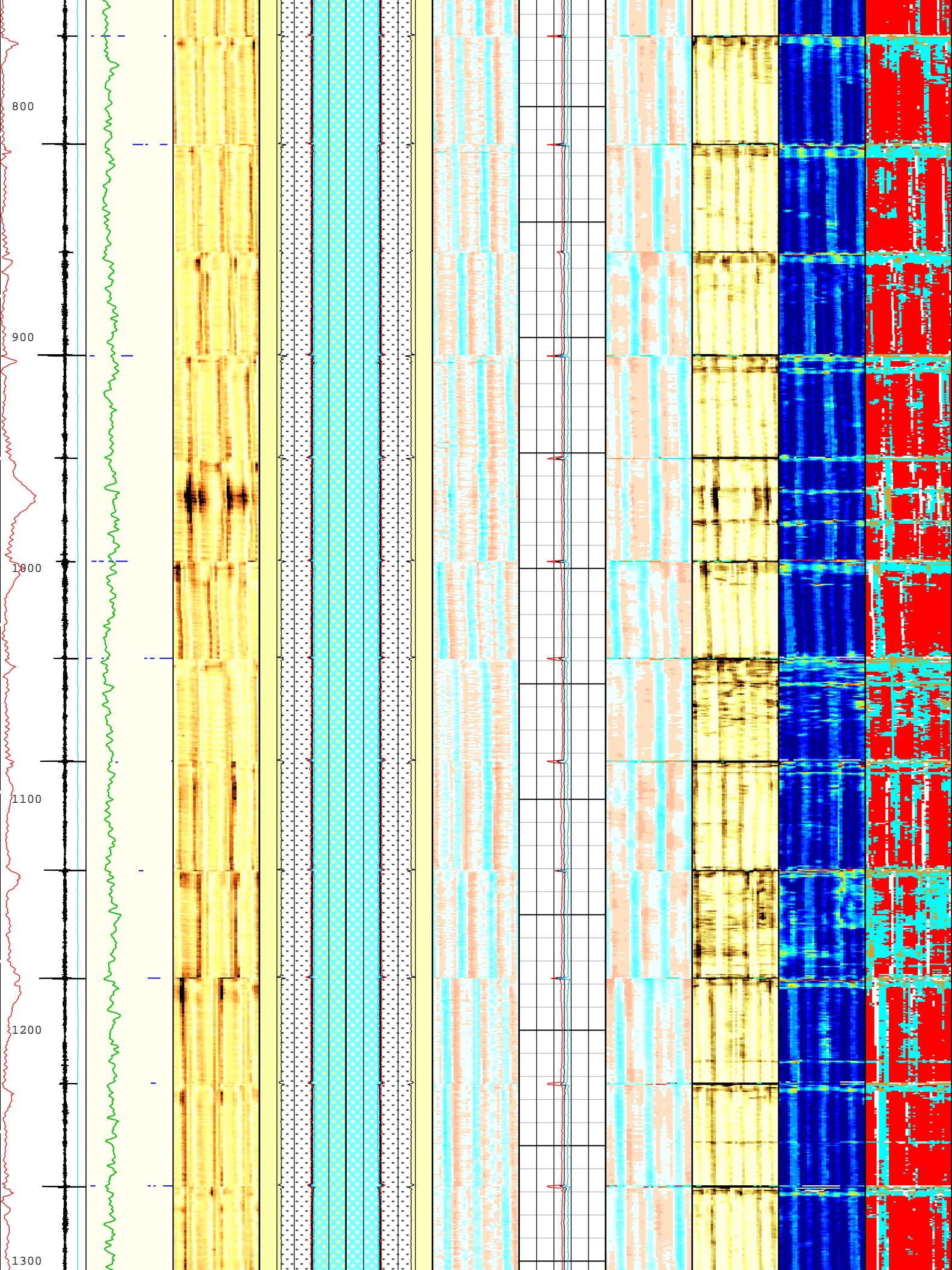
TIME\_1900 - Time Marked every 60.00 (s)

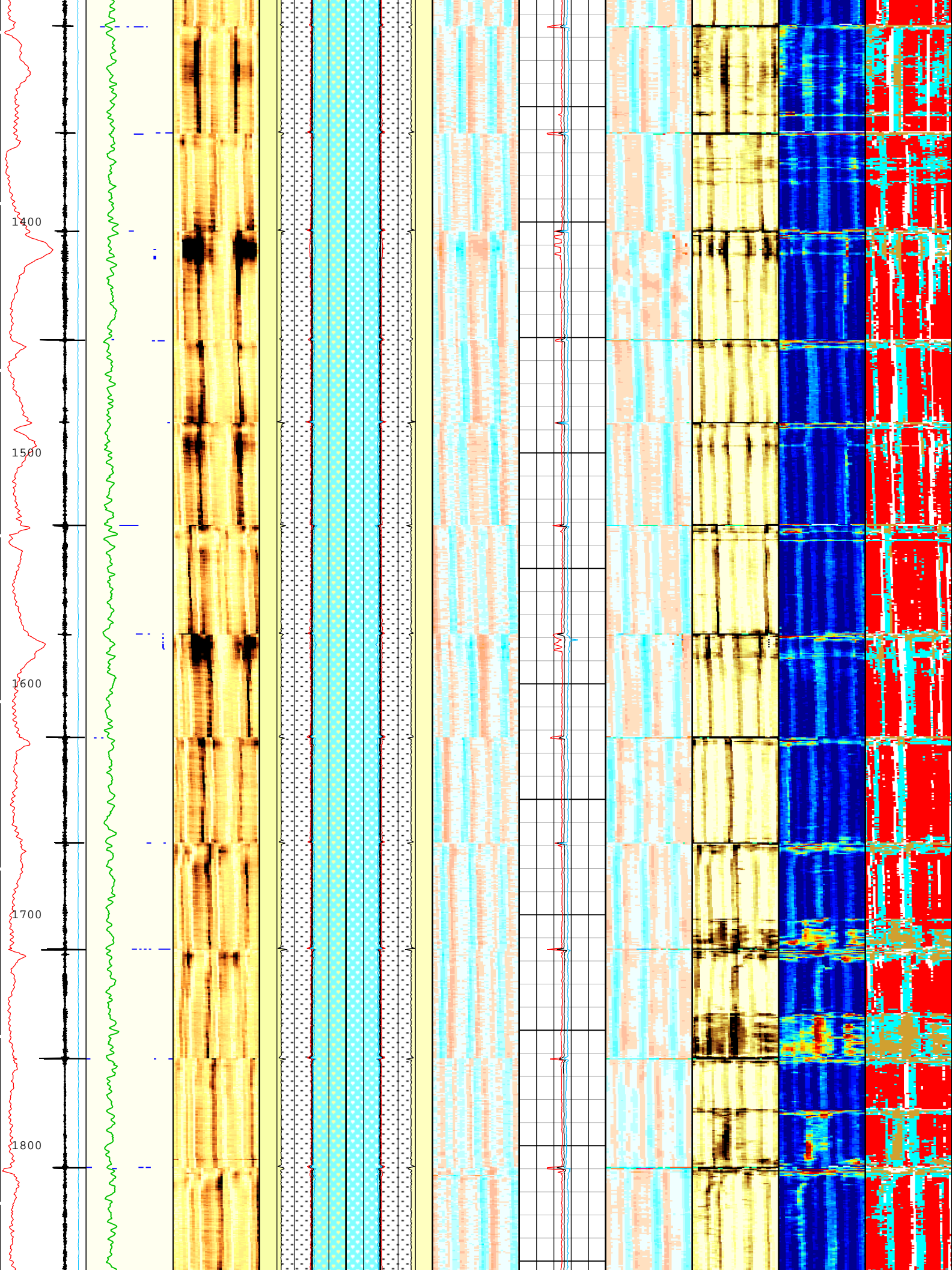
USIT Processing Flags (UFLG[0]) USIT-E

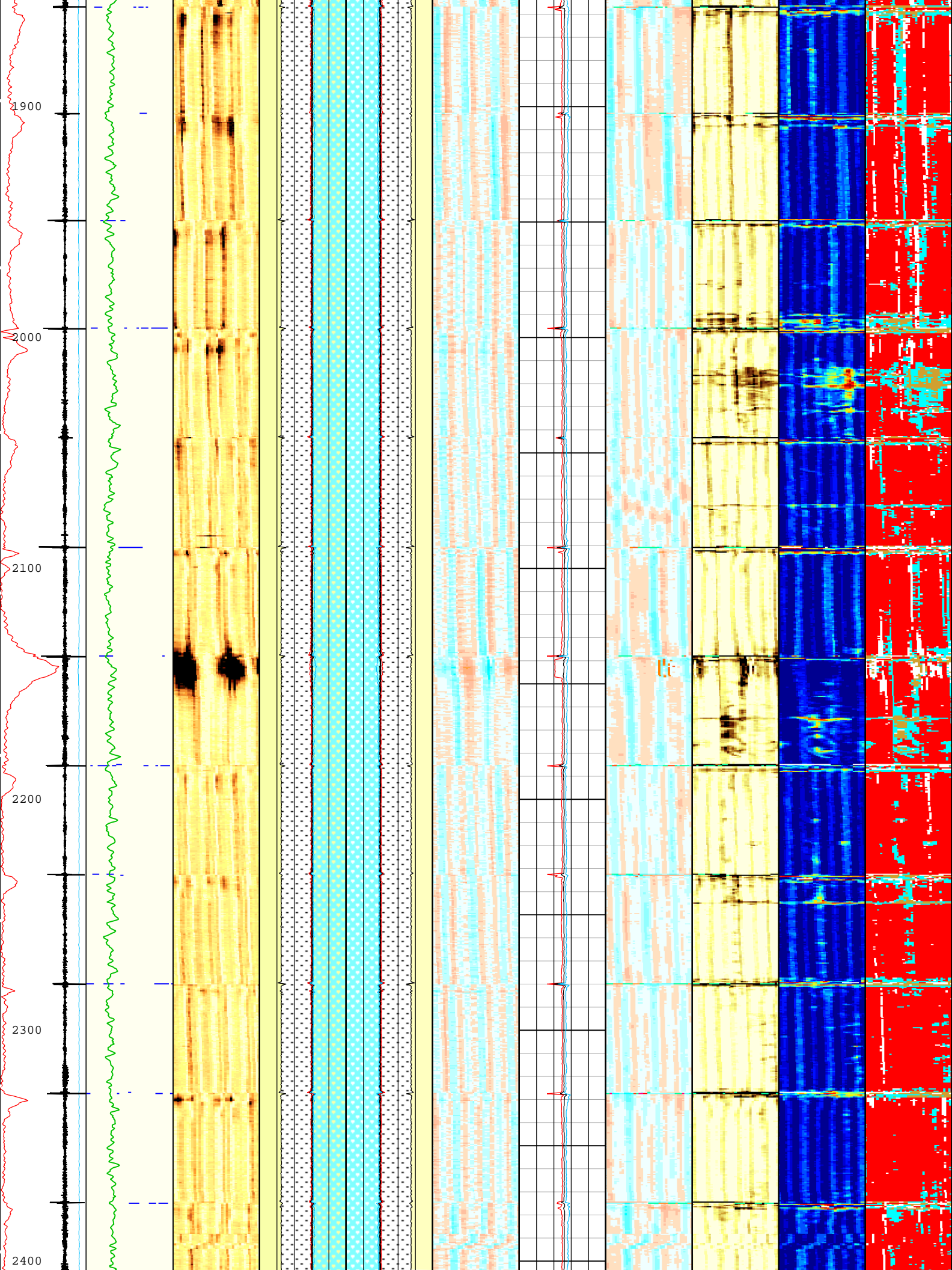
- 1 - UFLG 1 Value within [0.0 - 1.5] - :  UTIM Error
- 2 - UFLG 2 Value within [1.5 - 2.5] - :  Pulse Origin Not Detected
- 3 - UFLG 3 Value within [2.5 - 3.5] - :  WINLEN Error
- 4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :  Casing Thickness Error
- 5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :  Loop Processing Error

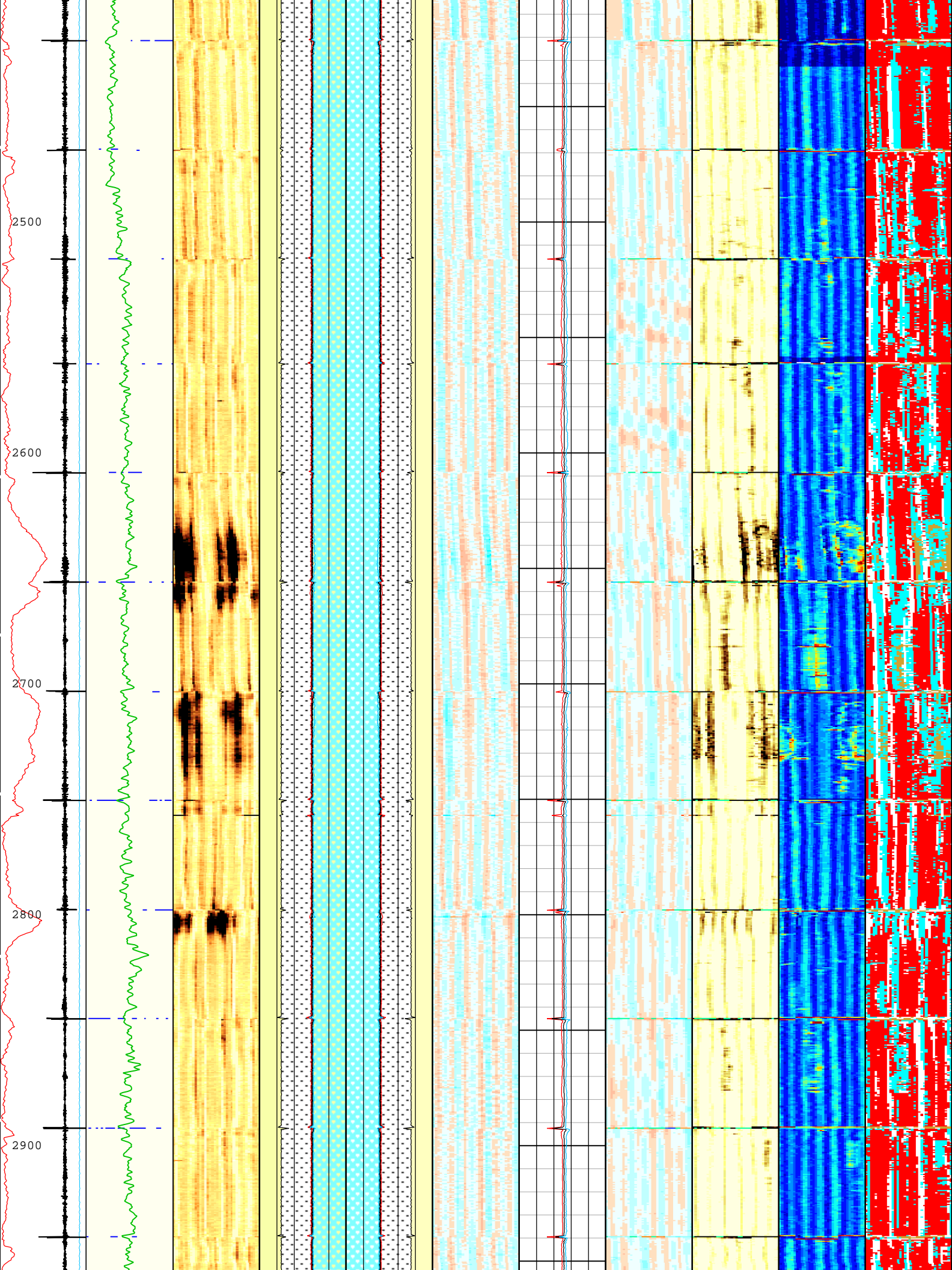


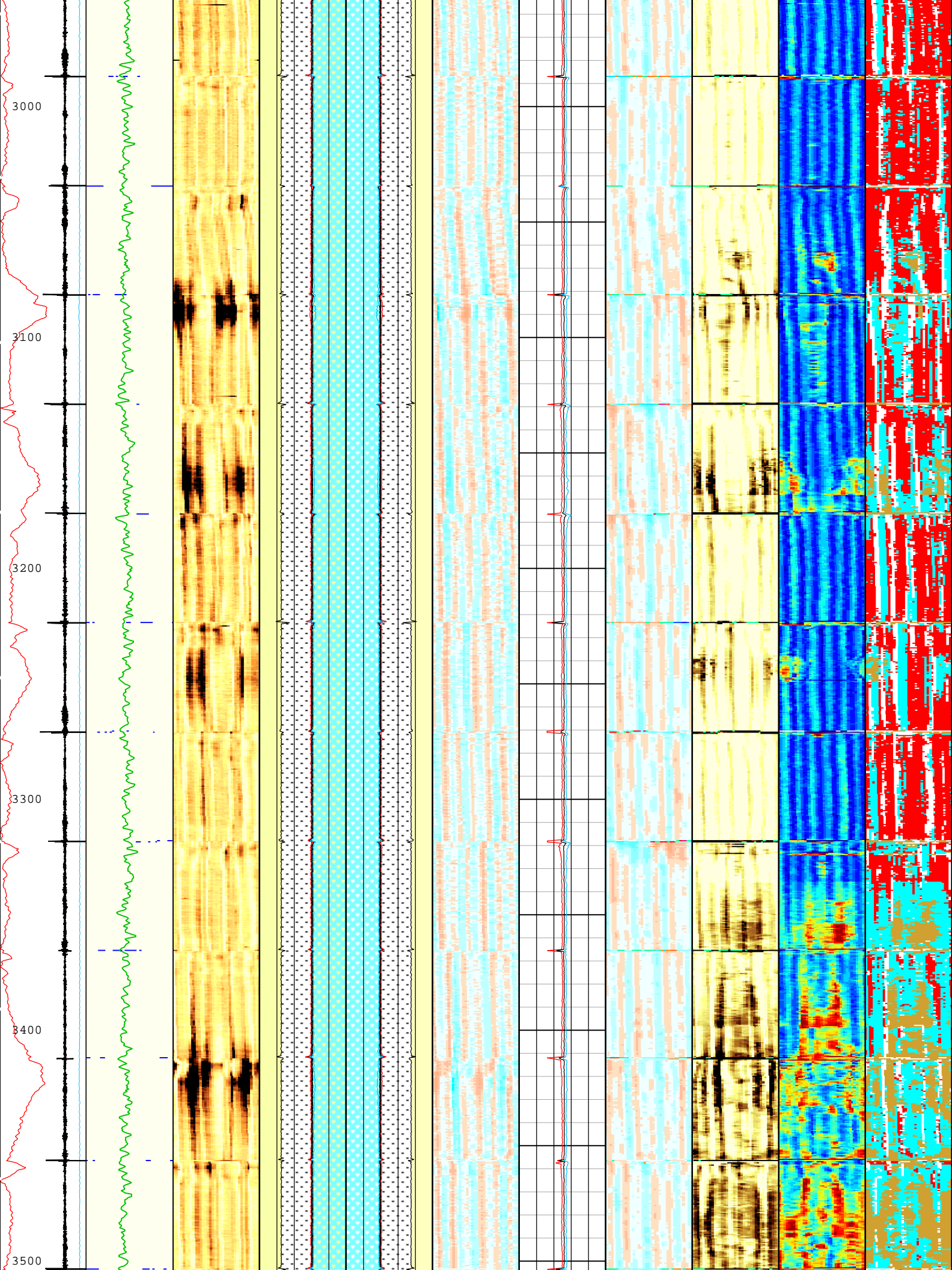


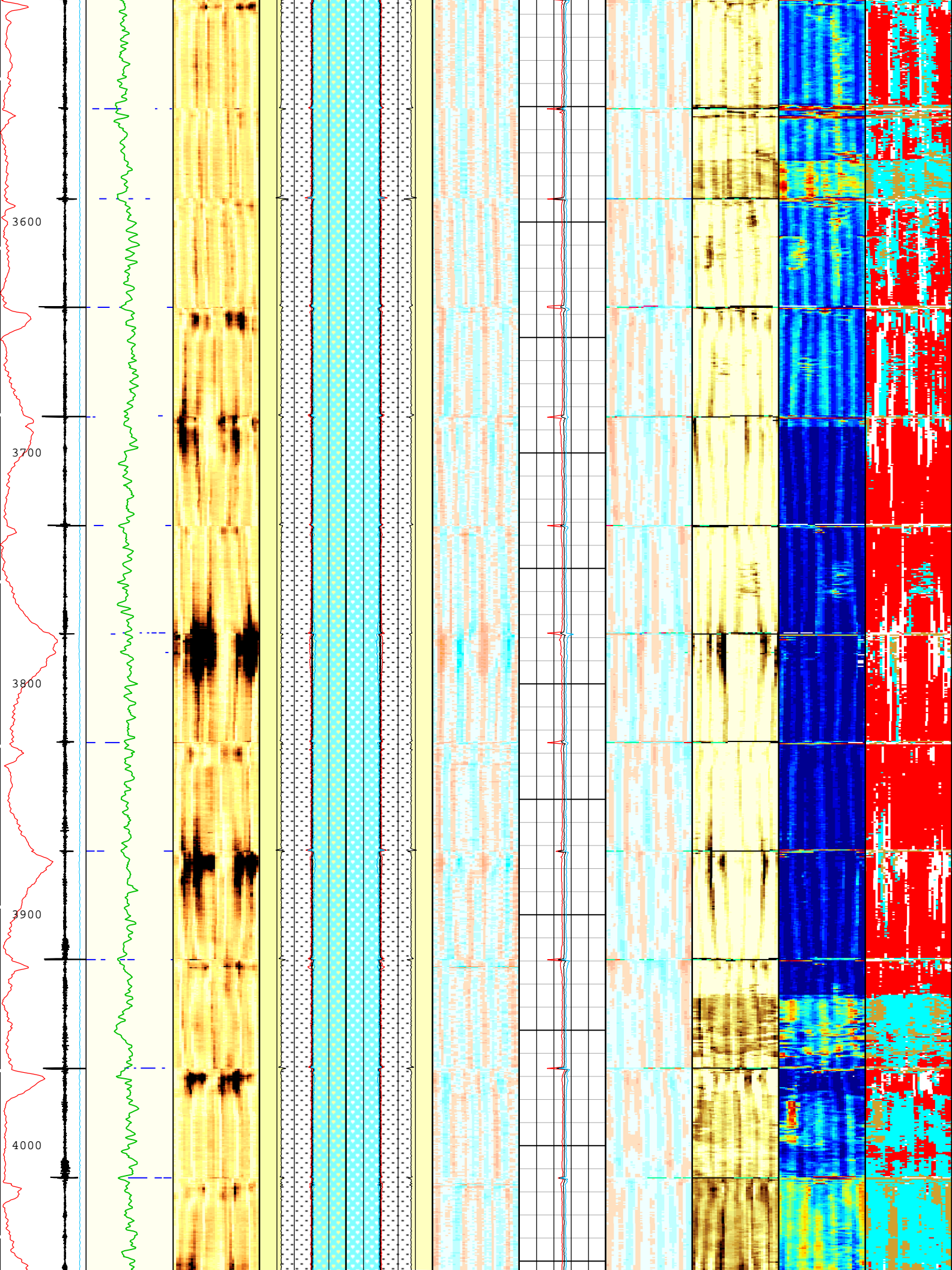


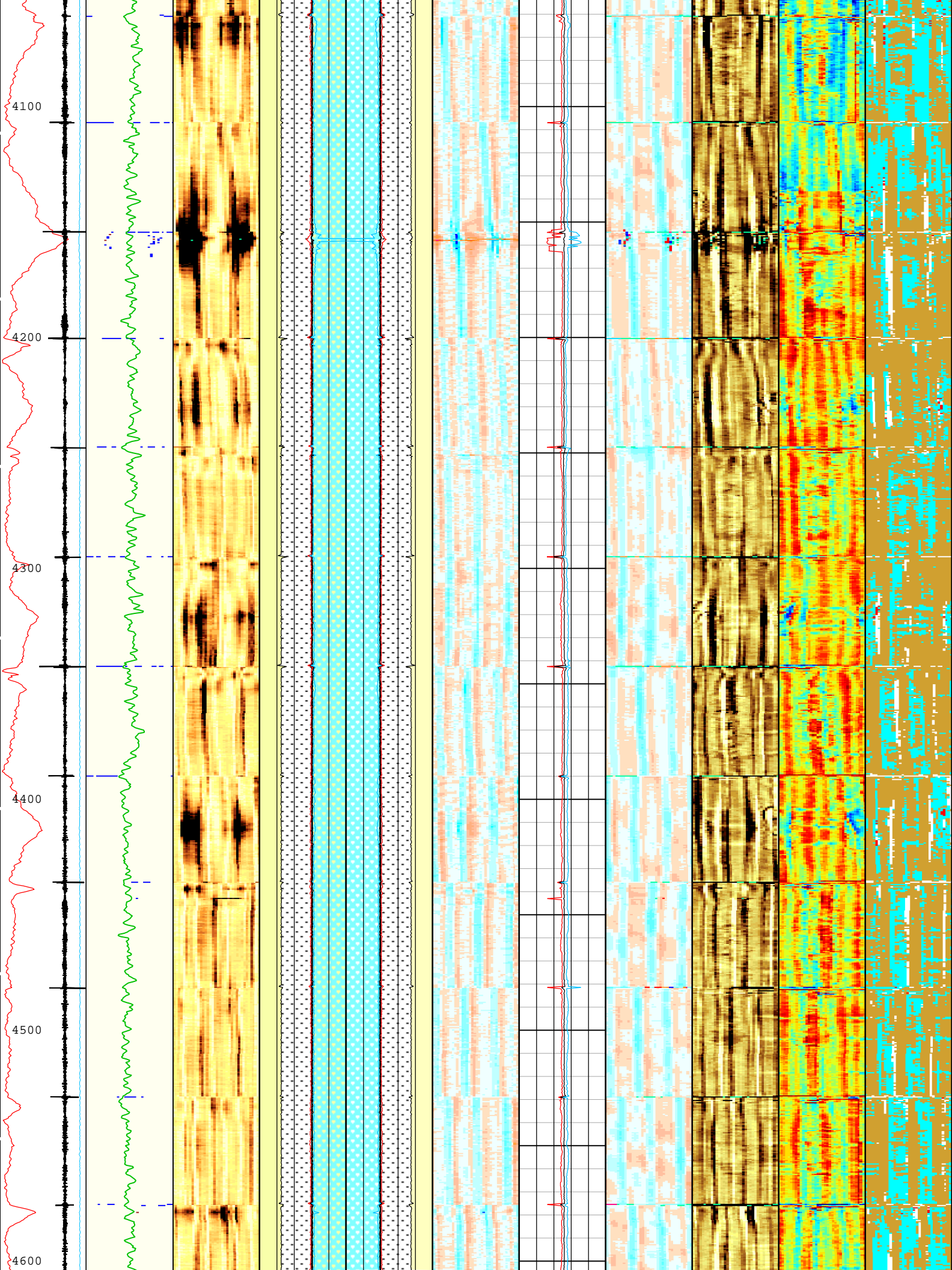


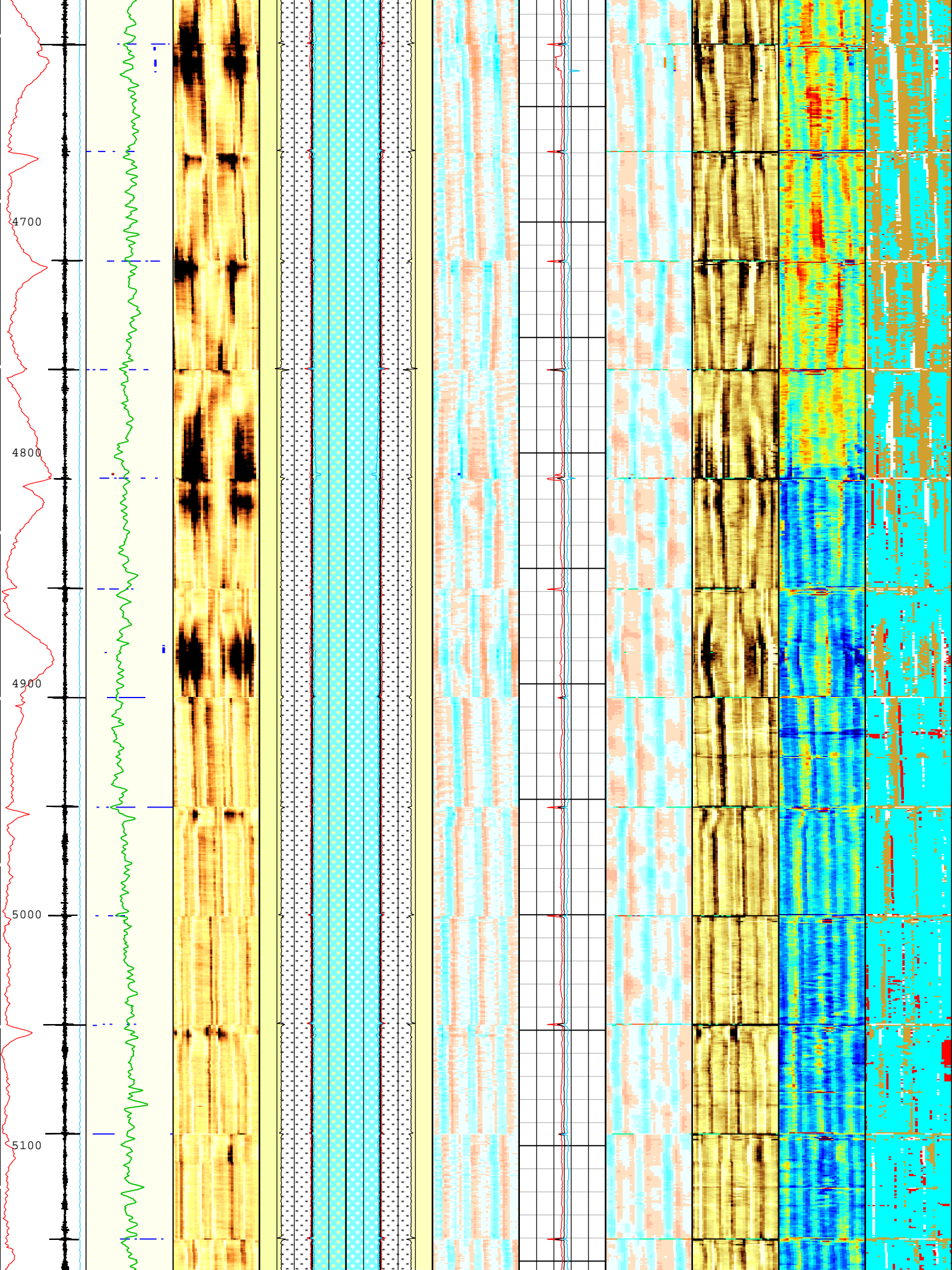


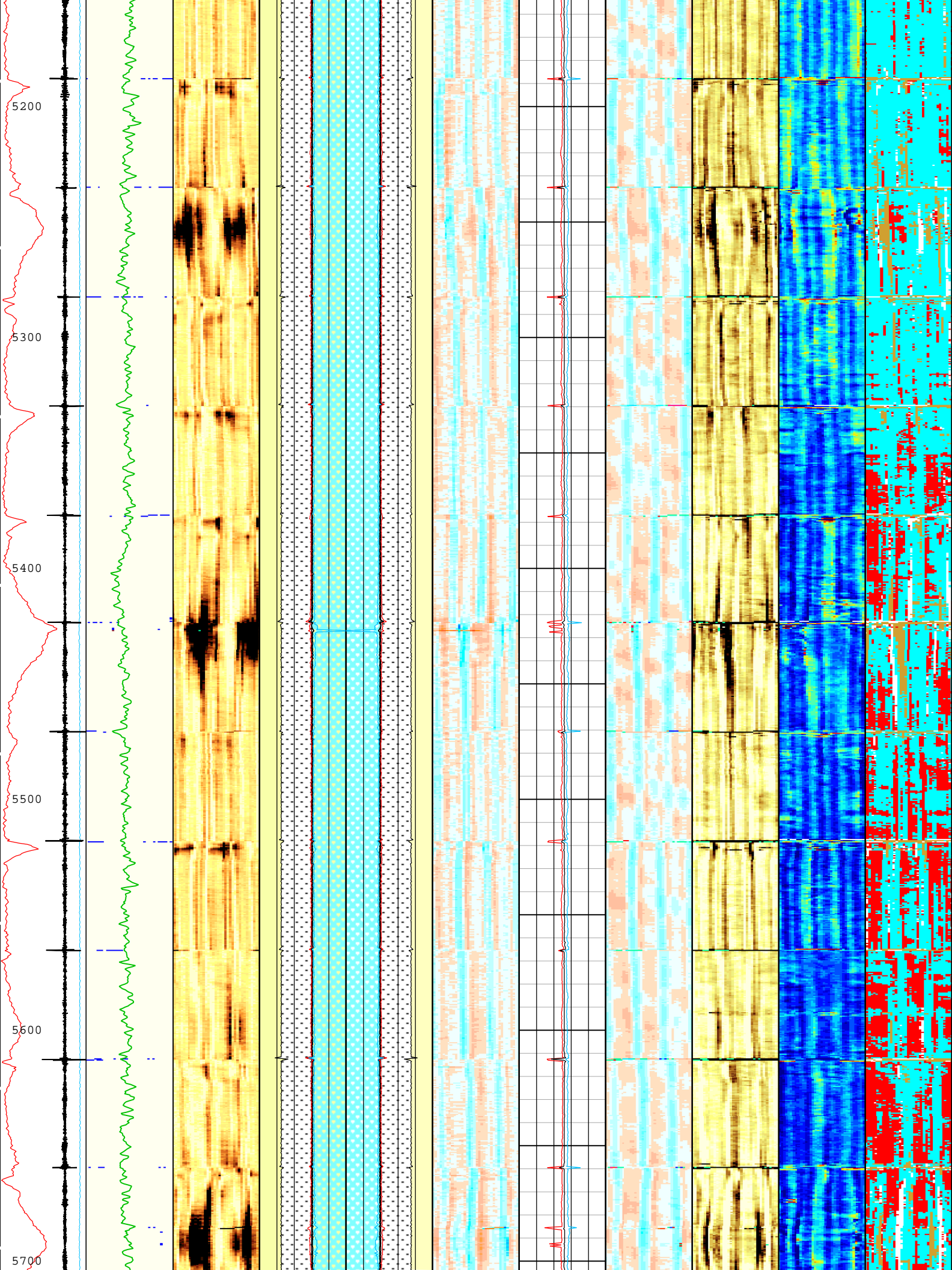


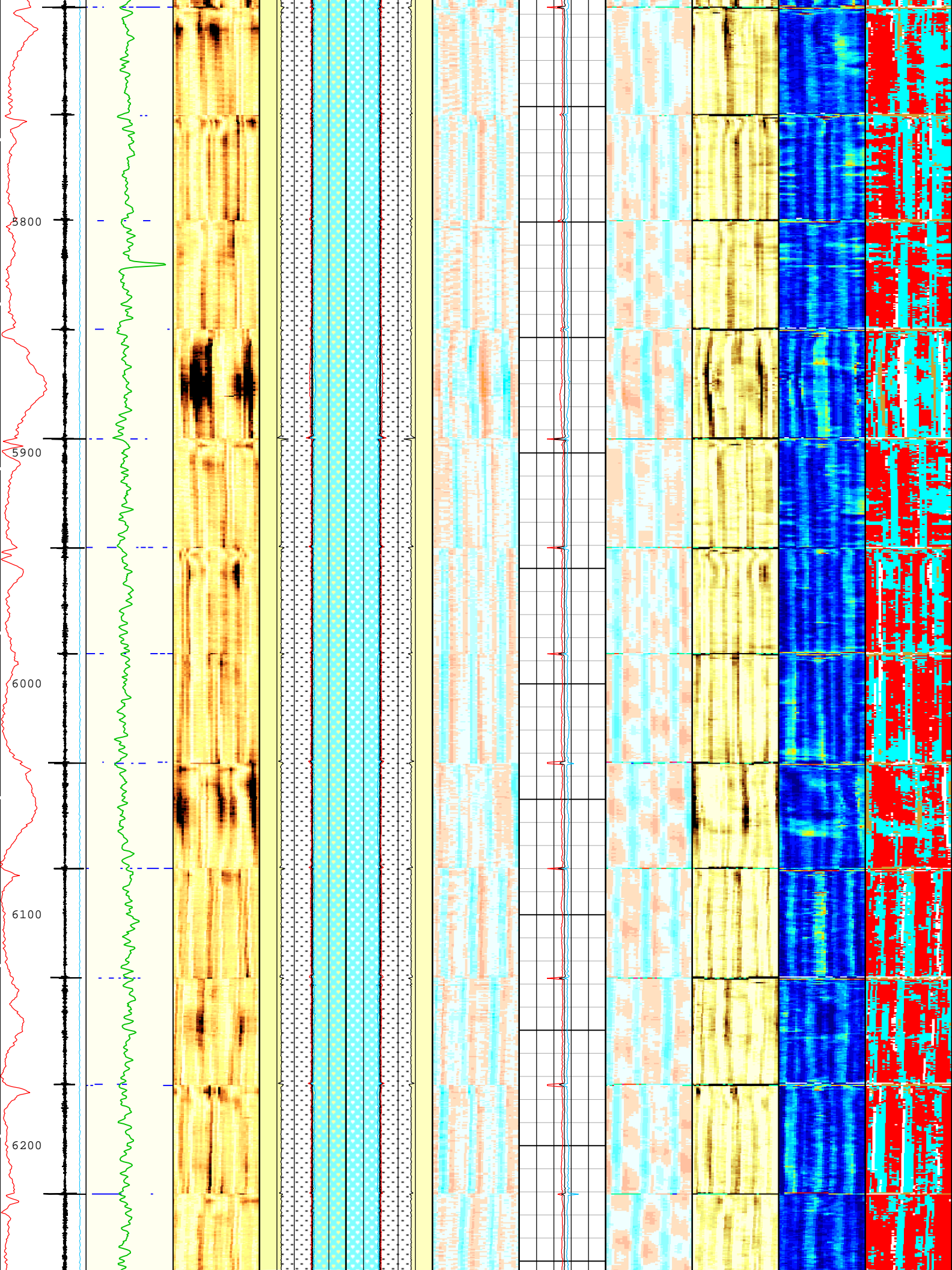


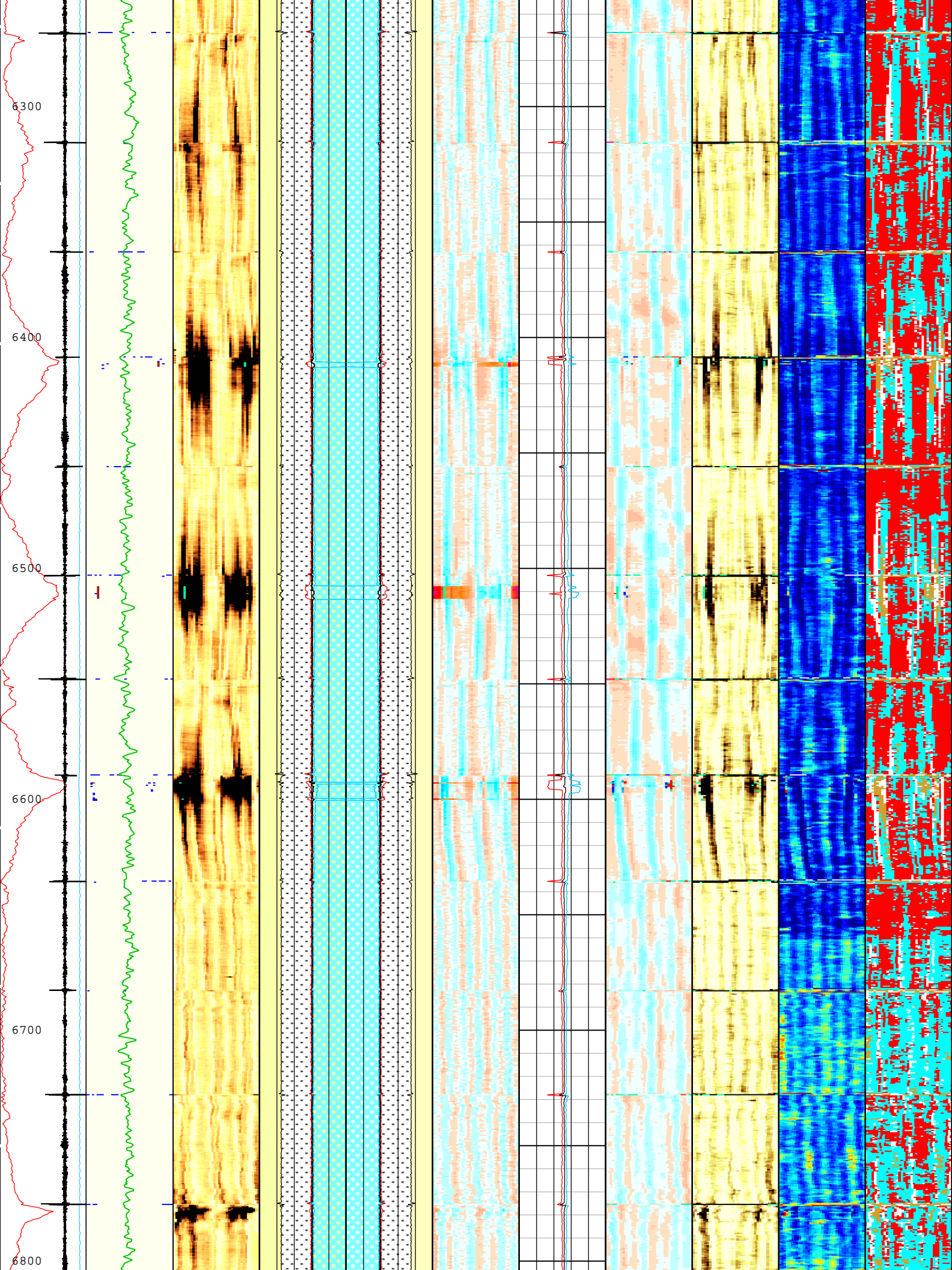


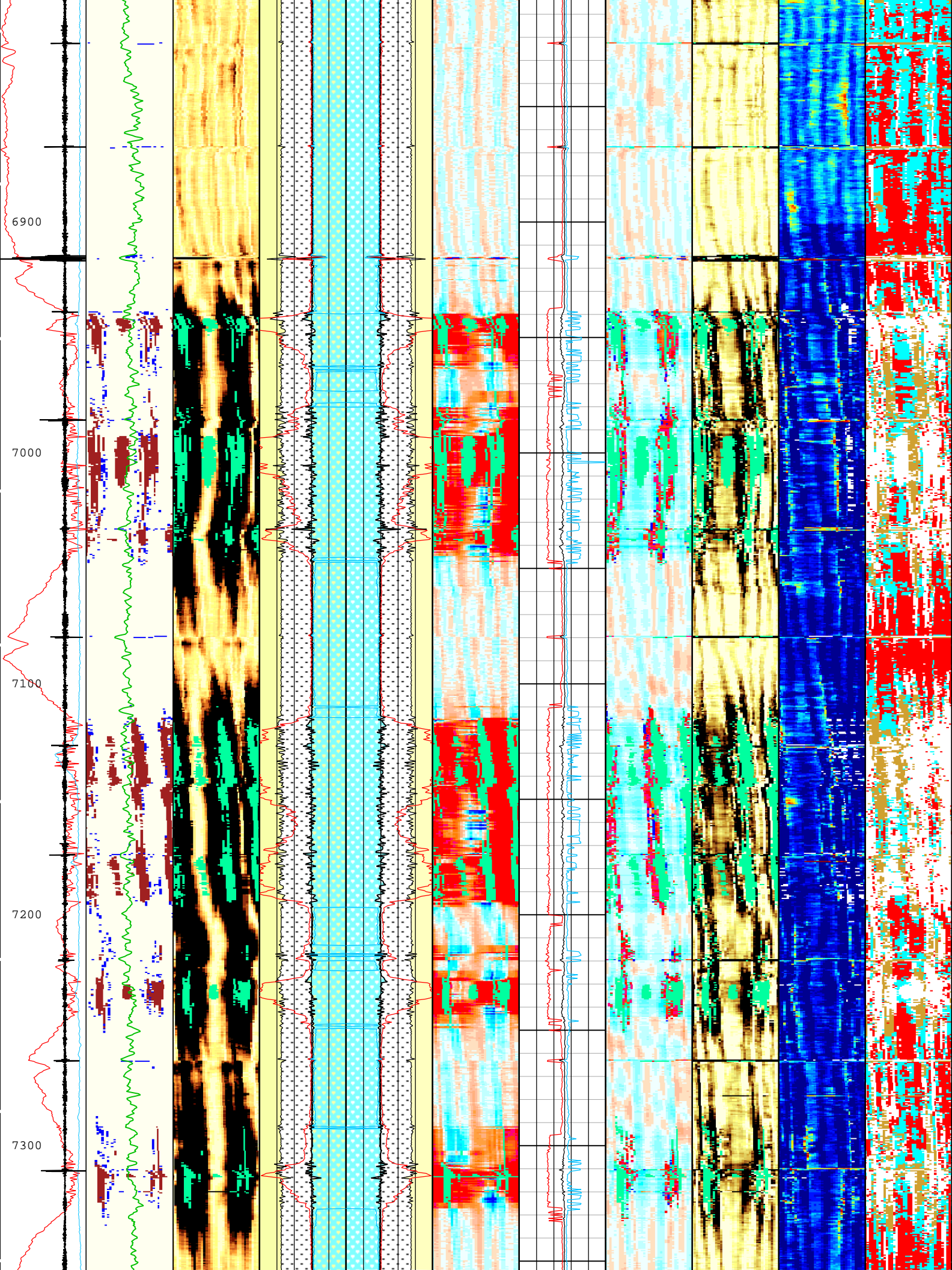


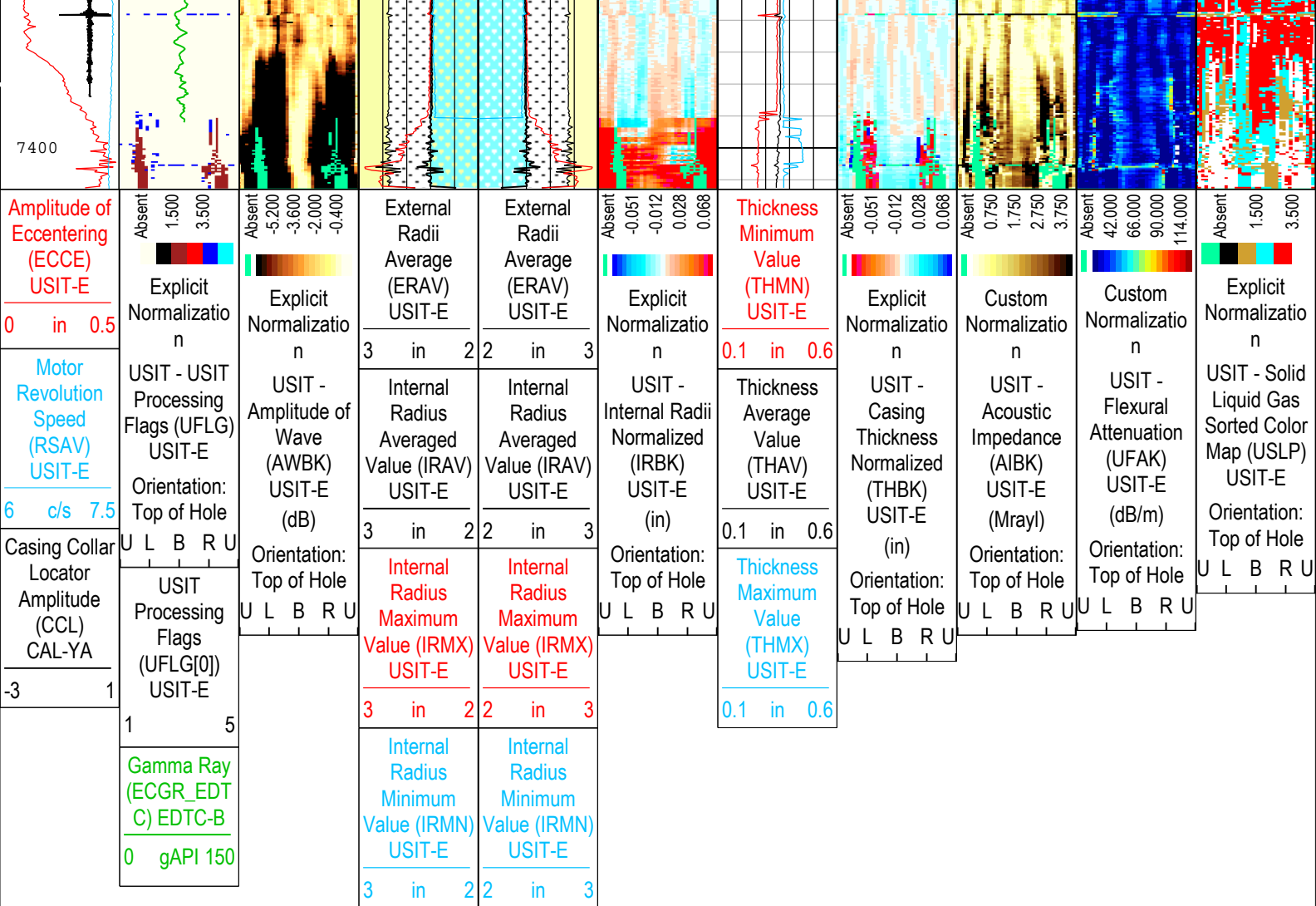

















USIT Processing Flags (UFLG[0]) USIT-E				
1 - UFLG 1 Value within [0.0 - 1.5] - :		UTIM Error		
2 - UFLG 2 Value within [1.5 - 2.5] - :		Pulse Origin Not Detected		
3 - UFLG 3 Value within [2.5 - 3.5] - :		WINLEN Error		
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :		Casing Thickness Error		
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10 ] - :		Loop Processing Error		
TIME_1900 - Time Marked every 60.00 (s)				
Description: USI IBC SLG Composite    Format: Log ( IBC SLG Composite )    Index Scale: 2 in per 100 ft    Index Unit: ft    Index Type: Measured Depth				
Creation Date: 08-Mar-2019 11:07:07				

Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
BAR(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	17507	ft
CCL_MULTIPLIER	Casing Collar Locator Multiplier	CAL-YA	1	
CDEN	Cement Density	USIT-E	12.5	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Light Cement	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
ED	Fluid Density	USIT-E	12.5	lbm/gal

FD	Fluid Density	USIT-E	10.5	lbm/gal
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	-9.17	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	UFAO	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	FreePipe Norm.	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	RB	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	22.44	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.12	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.68	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-5.28	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
ZMUD	Acoustic Impedance of Mud	Borehole	1.6	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters				
Parameter	Value	Start ( ft )	Stop ( ft )	
BS	12.25	70	2510	
BS	8.75	2510	7413	
All depth are actual.				

Tool Control Parameters	
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ONE: Parameters				
Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB
EMXV	EMEX Voltage	USIT-E	Time Zoned	V
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	4408.8	ft/h
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	137	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	177	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	106	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	146	us
UPAT	USIT Emission Pattern	USIT-E	Pattern 375 KHz	
UWKM	USIT Working Mode	USIT-E	10 deg at 6.0 in	
U-USIT_UTAN	Transducer Angles	USIT-E	33_DEG	
VRES	Vertical Resolution	USIT-E	6.0 in	
WINB	Window Begin Time	USIT-E	Time Zoned	us
WINE	Window End Time	USIT-E	Time Zoned	us

Time Zone Parameters					
Parameter	Value	Start Time	Stop Time	Start Depth ( ft )	Stop Depth ( ft )
EMXV	70	08-Mar-2019 08:02:57	08-Mar-2019 08:03:32	7413.88	7395.75
EMXV	80	08-Mar-2019 08:03:32	08-Mar-2019 08:05:58	7395.75	7287.27
EMXV	90	08-Mar-2019 08:05:58	08-Mar-2019 09:43:47	7287.27	315.73

EMXV	80	08-Mar-2019 09:43:47	08-Mar-2019 09:43:58	315.73	303.39
EMXV	70	08-Mar-2019 09:43:58	08-Mar-2019 09:48:12	303.39	67.96
WINB	31.88	08-Mar-2019 08:02:57	08-Mar-2019 08:09:55	7413.88	7022
WINB	32.97	08-Mar-2019 08:09:55	08-Mar-2019 09:48:12	7022	67.96
WINE	71.88	08-Mar-2019 08:02:57	08-Mar-2019 08:07:36	7413.88	7178.01
WINE	74.16	08-Mar-2019 08:07:36	08-Mar-2019 09:48:12	7178.01	67.96

All depth are at tool zero.

ONE

IBC Goodwin Compressed

Pass Summary

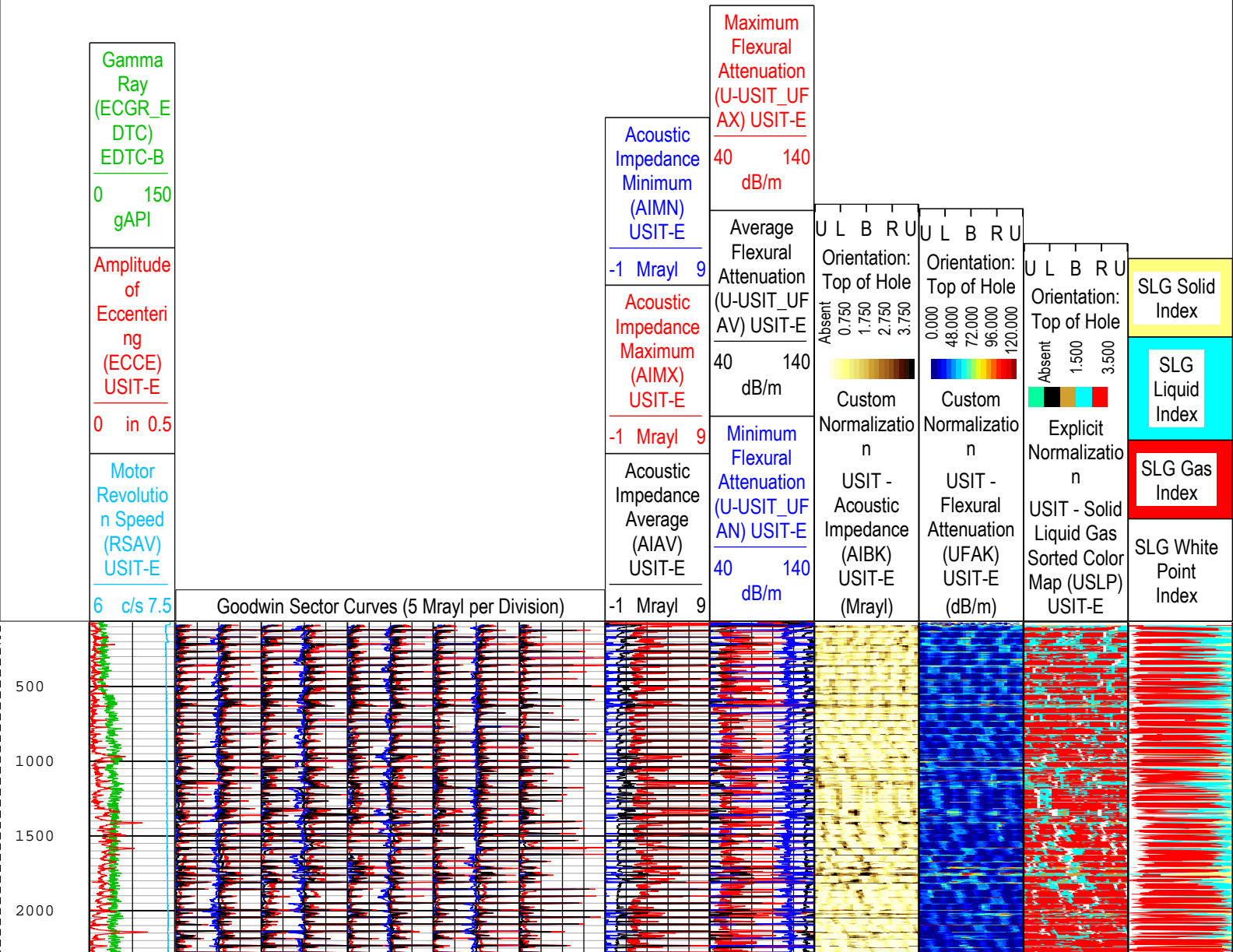
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[3]:Up	Up	67.96 ft	7413.88 ft	08-Mar-2019 8:02:57 AM	08-Mar-2019 9:48:12 AM	ON	4.01 ft	Yes

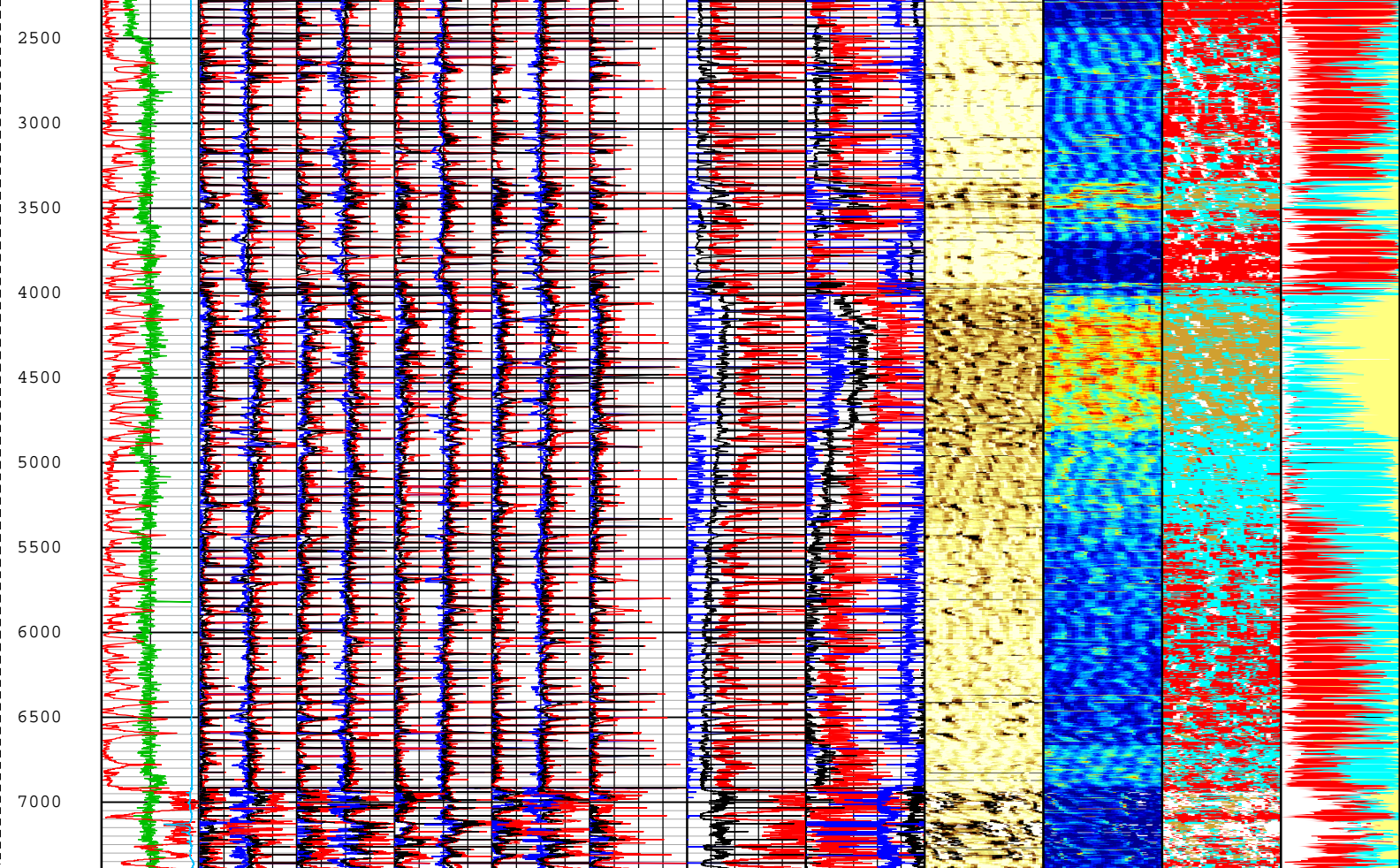
All depths are referenced to toolstring zero

Log	Company:Crestone Peak Resources Operating LLC	Well:Cosslett 1D-22H-B168	ONE: Log[3]:Up:S003
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Description: USI Goodwin    Format: Log ( IBC Goodwin )    Index Scale: 0.1 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 08-Mar-2019 11:07:46

TIME\_1900 - Time Marked every 60.00 (s)





Goodwin Sector Curves (5 Mrayl per Division)		Acoustic Impedance Minimum (AIMN) USIT-E	Maximum Flexural Attenuation (U-USIT_UF AX) USIT-E	Absent 0.750 1.750 2.750 3.750	0.000 48.000 72.000 96.000 120.000	Absent 1.500 3.500	SLG Solid Index
Gamma Ray (ECGR_E DTC) EDTC-B		-1 Mrayl 9	40 140 dB/m	Custom Normalization	Custom Normalization	Explicit Normalization	SLG Liquid Index
0 150 gAPI				USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)	USIT - Flexural Attenuation (UFAK) USIT-E (dB/m)	USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E	SLG Gas Index
Amplitude of Eccentering (ECCE) USIT-E		Acoustic Impedance Maximum (AIMX) USIT-E	Average Flexural Attenuation (U-USIT_UF AV) USIT-E	Orientation: Top of Hole U L B R U	Orientation: Top of Hole U L B R U	Orientation: Top of Hole U L B R U	SLG White Point Index
0 in 0.5		-1 Mrayl 9	40 140 dB/m				
Motor Revolution Speed (RSAV) USIT-E		Acoustic Impedance Average (AIAV) USIT-E	Minimum Flexural Attenuation (U-USIT_UF AN) USIT-E				
6 c/s 7.5		-1 Mrayl 9	40 140 dB/m				

TIME\_1900 - Time Marked every 60.00 (s)

Description: USI Goodwin    Format: Log ( IBC Goodwin )    Index Scale: 0.1 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 08-Mar-2019 11:07:46

ONE

IBC SLG

Software Version

Acquisition System    Version






Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[1]:Up	Up	2344.72 ft	2601.13 ft	08-Mar-2019 7:34:02 AM	08-Mar-2019 7:38:36 AM	ON	0.76 ft	Yes

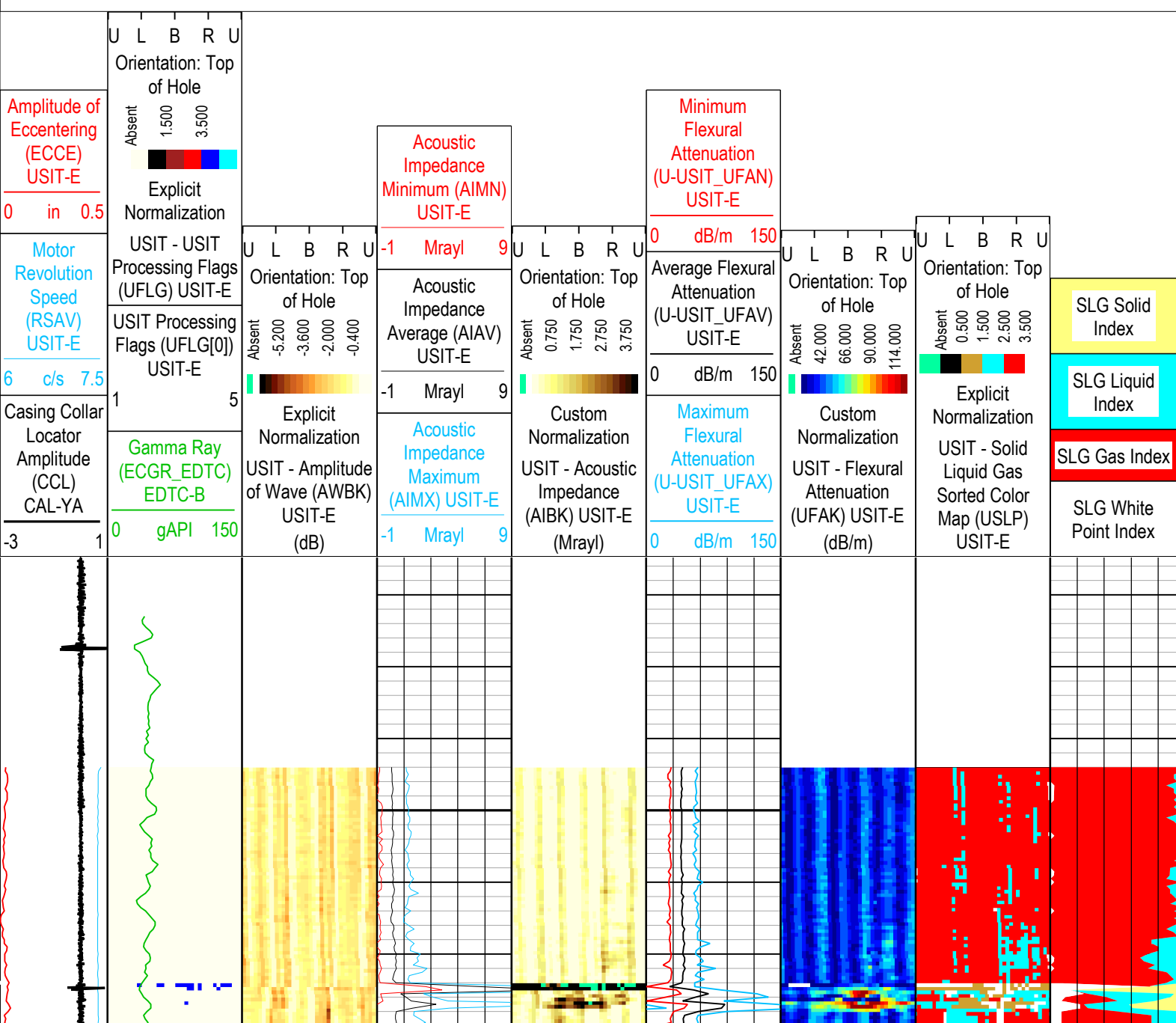
Log	Company:Crestone Peak Resources Operating LLC	Well:Cosslett 1D-22H-B168 ONE: Log[1]:Up:S003
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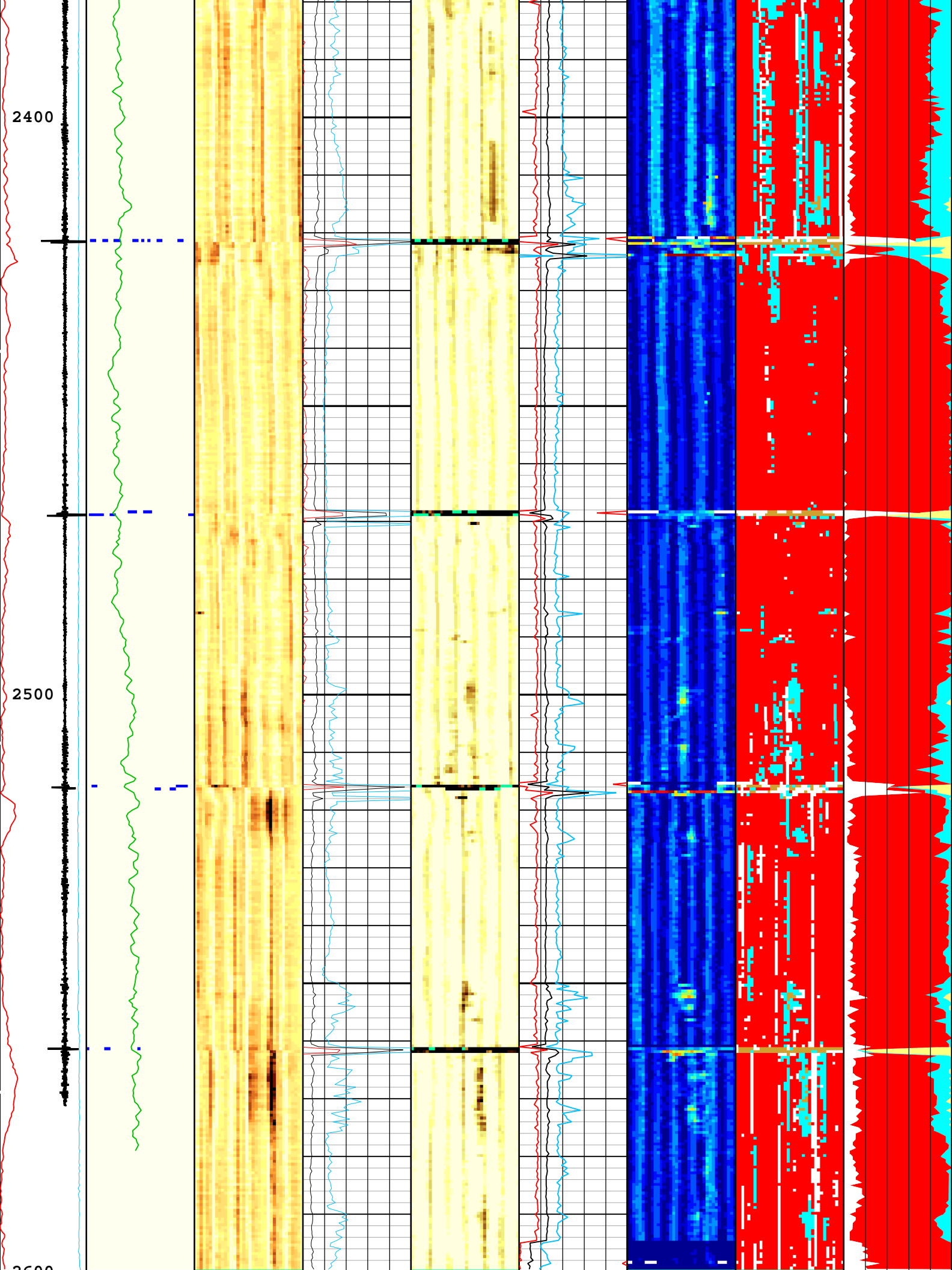
Description: USI IBC SLG   Format: Log ( IBC SLG )   Index Scale: 5 in per 100 ft   Index Unit: ft   Index Type: Measured Depth   Creation Date: 08-Mar-2019 11:07:59

TIME\_1900 - Time Marked every 60.00 (s)

USIT Processing Flags (UFLG[0]) USIT-E

- |   |   |                           |
|---|---|---------------------------|
| 1 - UFLG 1 Value within [0.0 - 1.5] - :               |  | UTIM Error                |
| 2 - UFLG 2 Value within [1.5 - 2.5] - :               |  | Pulse Origin Not Detected |
| 3 - UFLG 3 Value within [2.5 - 3.5] - :               |  | WINLEN Error              |
| 4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - : |  | Casing Thickness Error    |
| 5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10 ] - : |  | Loop Processing Error     |





Amplitude of Eccentering (ECCE) USIT-E	<div> <div> <div>Absent</div> <div>1.500</div> <div>3.500</div> </div> <div> <div></div> <div></div> <div></div> </div> </div> <div>Explicit Normalization</div> <div>USIT - USIT</div> <div>Processing Flags (UFLG) USIT-E</div> <div>Orientation: Top of Hole</div> <div>U L B R U</div>	<div> <div> <div>Absent</div> <div>-5.200</div> <div>-3.600</div> <div>-2.000</div> <div>-0.400</div> </div> <div> <div></div> <div></div> <div></div> <div></div> <div></div> </div> </div> <div>Explicit Normalization</div> <div>USIT - Amplitude of Wave (AWBK) USIT-E (dB)</div> <div>Orientation: Top of Hole</div> <div>U L B R U</div>	<div> <div>Acoustic Impedance Minimum (AIMN) USIT-E</div> <div>-1 Mrayl 9</div> </div> <div> <div>Acoustic Impedance Average (AIAV) USIT-E</div> <div>-1 Mrayl 9</div> </div> <div> <div>Acoustic Impedance Maximum (AIMX) USIT-E</div> <div>-1 Mrayl 9</div> </div>	<div> <div>Absent</div> <div>0.750</div> <div>1.750</div> <div>2.750</div> <div>3.750</div> </div> <div> <div></div> <div></div> <div></div> <div></div> <div></div> </div>
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Custom Normalization

USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)

Orientation: Top of Hole

U L B R U

USIT Processing Flags (UFLG[0]) USIT-E	
1 - UFLG 1 Value within [0.0 - 1.5] - :	<div>UTIM Error</div>
2 - UFLG 2 Value within [1.5 - 2.5] - :	<div>Pulse Origin Not Detected</div>
3 - UFLG 3 Value within [2.5 - 3.5] - :	<div>WINLEN Error</div>
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :	<div>Casing Thickness Error</div>
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10 ] - :	<div>Loop Processing Error</div>

TIME_1900 - Time Marked every 60.00 (s)
Description: USI IBC SLG    Format: Log ( IBC SLG )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 08-Mar-2019 11:07:59

Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
BAR(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BERJ	Bad Echo Rejection	USIT-E	On	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
CASING_PRATIO	Casing Poisson Ratio	USIT-E	Standard Poisson Ratio	
CBLO	Casing Bottom (Logger)	WLSESSION	17507	ft
CCL_MULTIPLIER	Casing Collar Locator Multiplier	CAL-YA	1	
CDEN	Cement Density	USIT-E	12.5	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Light Cement	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	10.5	lbm/gal
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
GR_MULTIPLIER	Gamma Ray Multiplier	EDTC-B	1	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	-9.17	dB/m

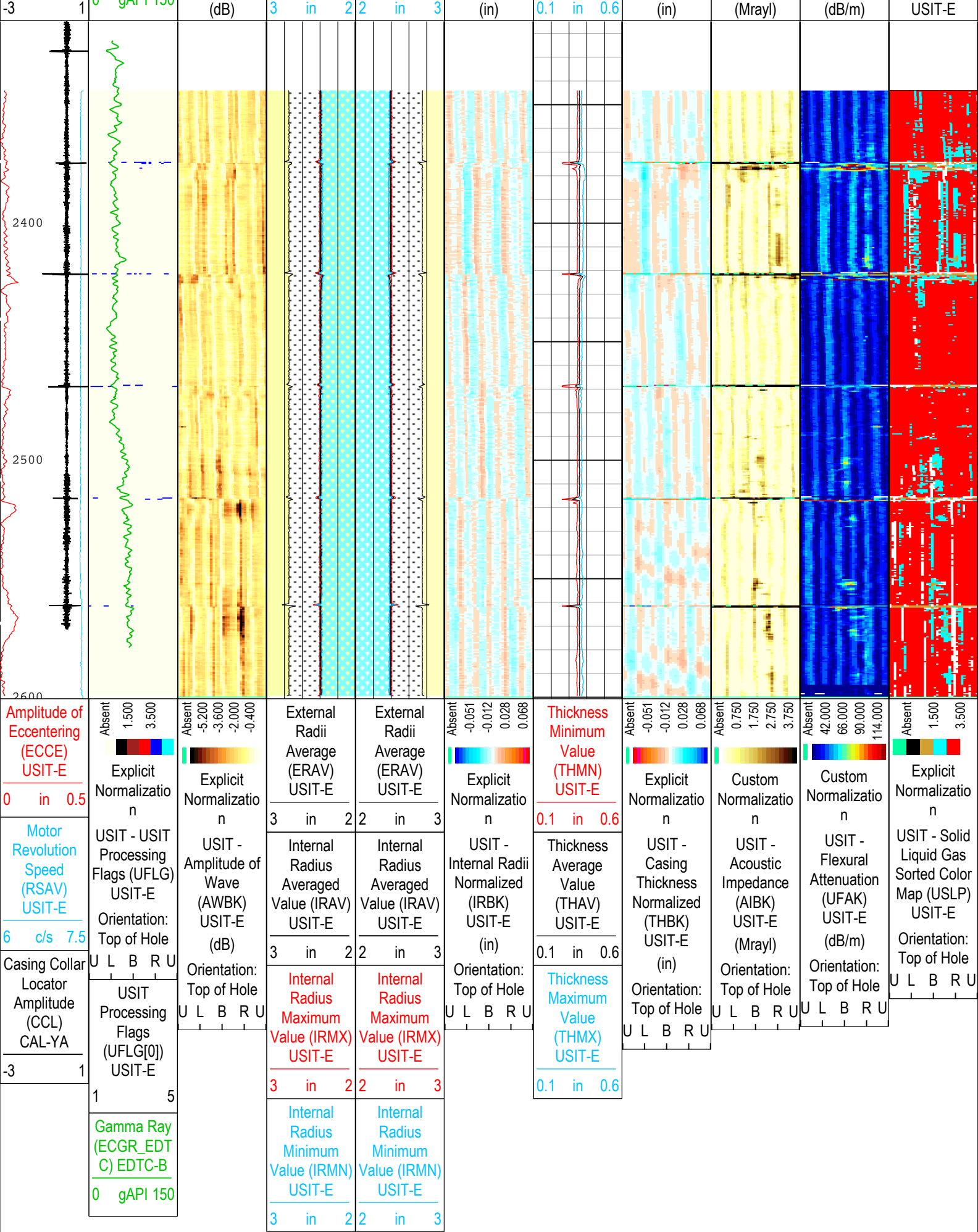
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	UFAO	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	FreePipe Norm.	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	RB	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	22.44	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.12	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1	
RCOD	Reference Calibrator Outer Diameter	USIT-E	4.5	in
RCSO	Reference Calibrator Standoff	USIT-E	0.842	in
RCTH	Reference Calibrator Thickness	USIT-E	0.216	in
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	70	%
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.68	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-5.28	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
USI_RPLUS	Ultrasonic R+ Processing	USIT-E	No	
THDP	Thickness Detection Policy	USIT-E	Fundamental	
VCAS	Ultrasonic Transversal Velocity in Casing	USIT-E	51.4	us/ft
ZCAS	Acoustic Impedance of Casing	USIT-E	46.25	Mrayl
ZINI	Initial Estimate of Cement Impedance	USIT-E	-1	Mrayl
ZMUD	Acoustic Impedance of Mud	Borehole	1.6	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters			
Parameter	Value	Start ( ft )	Stop ( ft )
BS	12.25	2314.83	2510
BS	8.75	2510	2600.5
All depth are actual.			

Tool Control Parameters				
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ONE: Parameters				
Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
DOT(DOS)	Distance between Opposite Transducer Faces	USIT-E	1.756	in
EMXV	EMEX Voltage	USIT-E	70	V
HRES	Horizontal Resolution	USIT-E	10 deg	
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	4408.8	ft/h
MOTOR_PROTECT	Motor Protection	USIT-E	On	
UACLV_PERM	Ultrasonic ACLV Permanent	USIT-E	Yes	
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	137	us
U-USIT_UFEF	Far Receiver Window End Time	USIT-E	137	us





TIME\_1900 - Time Marked every 60.00 (s)

USIT Processing Flags (UFLG[0]) USIT-E

1 - UFLG 1 Value within [0.0 - 1.5] -

USIT Error

- UFLG 1 Value within [0.0 - 1.0] - :

UFLG 2 Value within [1.5 - 2.5] - :

UFLG 3 Value within [2.5 - 3.5] - :

UFLG 4   UFLG 5   UFLG 6 Value within [3.5 - 6.5] - :

UFLG 7   UFLG 8   UFLG 9 Value within [6.5 - 10 ] - :
- USIT Error

Pulse Origin Not Detected

WINLEN Error

Casing Thickness Error

Loop Processing Error

Description: USI IBC SLG Composite   Format: Log ( IBC SLG Composite )   Index Scale: 2 in per 100 ft   Index Unit: ft   Index Type: Measured Depth  
Creation Date: 08-Mar-2019 11:08:11

Channel Processing Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	17507	ft
CCL_MULTIPLIER	Casing Collar Locator Multiplier	CAL-YA	1	
CDEN	Cement Density	USIT-E	12.5	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Light Cement	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	10.5	lbm/gal
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	-9.17	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	UFAO	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	FreePipe Norm.	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	RB	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	22.44	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.12	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.68	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-5.28	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
ZMUD	Acoustic Impedance of Mud	Borehole	1.6	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters

Parameter	Value	Start ( ft )	Stop ( ft )
BS	12.25	2314.83	2510
BS	8.75	2510	2600.5

All depth are actual.

Tool Control Parameters

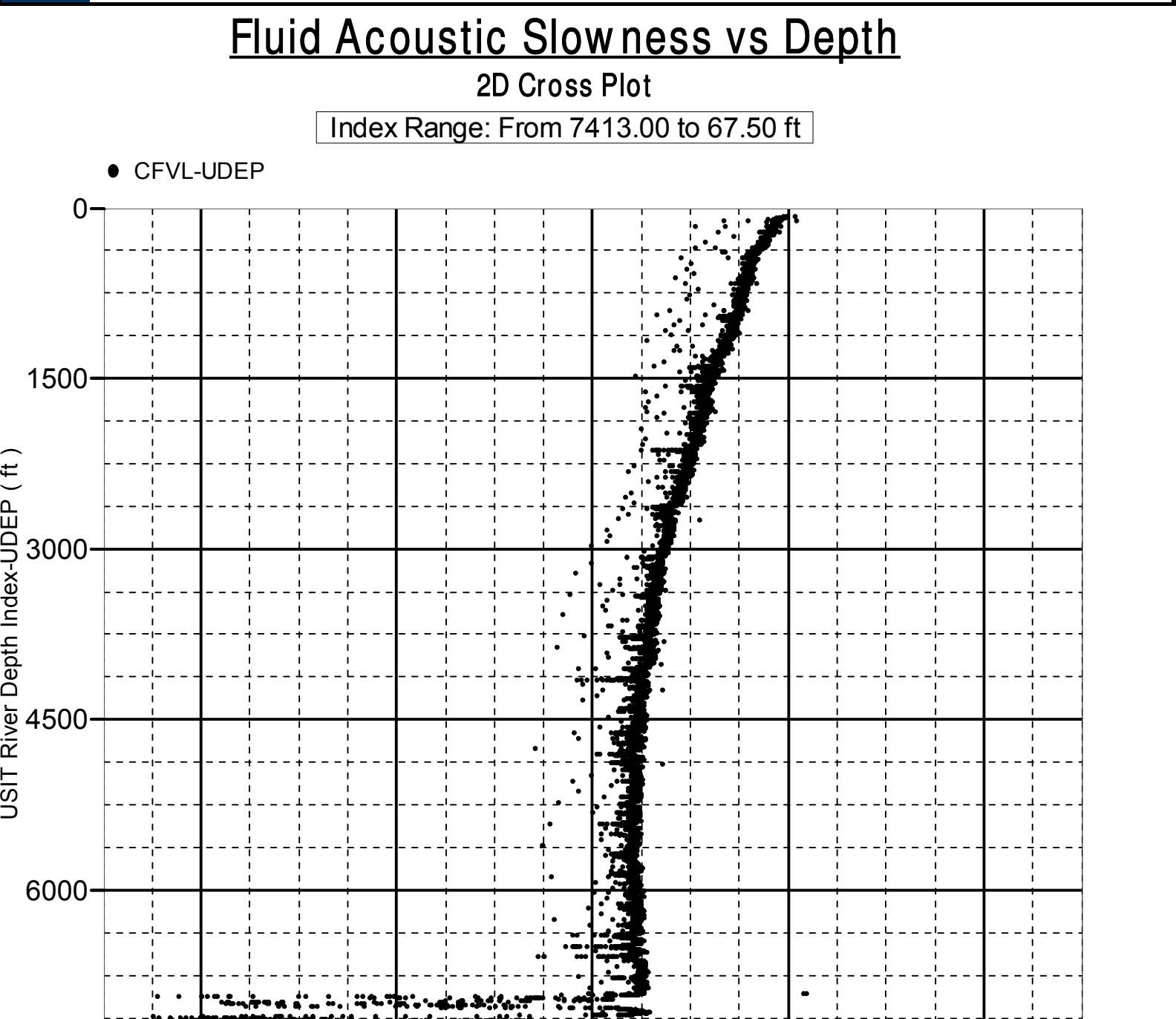
ONE: Parameters

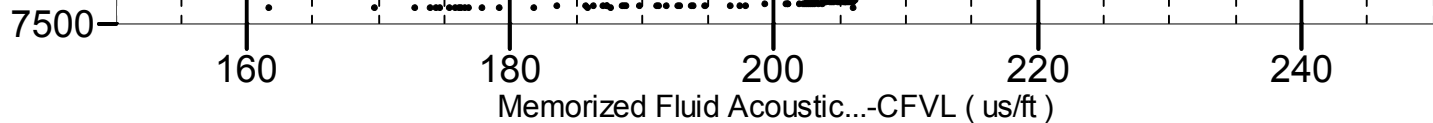
Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB

EMXV	EMEX Voltage	USIT-E	70	V
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	4408.8	ft/h
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	137	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	177	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	106	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	146	us
UPAT	USIT Emission Pattern	USIT-E	Pattern 375 KHz	
UWKM	USIT Working Mode	USIT-E	10 deg at 6.0 in	
U-USIT_UTAN	Transducer Angles	USIT-E	33_DEG	
VRES	Vertical Resolution	USIT-E	6.0 in	
WINB	Window Begin Time	USIT-E	31.88	us
WINE	Window End Time	USIT-E	71.88	us

XYZ

Company:Crestone Peak Resources Operating LLC Well:Cosslett 1D-22H-B168  
ONE: Log[3]:Up:S003





XYZ

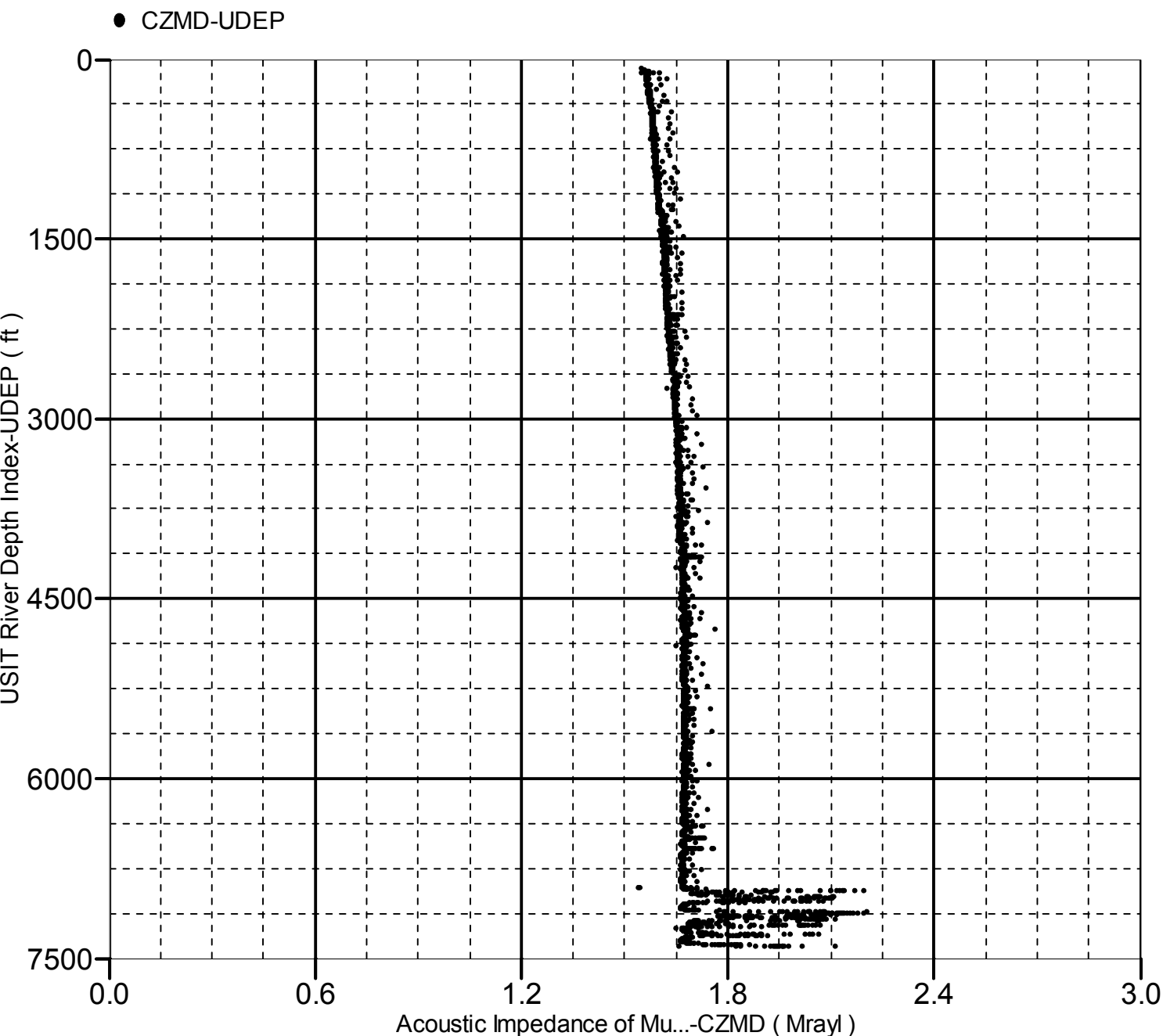
Company:Crestone Peak Resources Operating LLC Well:Cosslett 1D-22H-B168

ONE: Log[3]:Up:S003

# Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 7413.00 to 67.50 ft





Company:	Crestone Peak Resources Operating LLC	Schlumberger
Well:	Cosslett 1D-22H-B168	
Field:	Wattenberg	
County:	Weld	
State:	Colorado	

Isolation Scanner
Cement Evaluation
Gamma Ray - CCL Log