

Company: Crestone Peak Resources Operating LLC

Well: Ruegge #3K-4H-N165

Field: Wattenberg

County: Weld State: Colorado

Isolation Scanner
Cement Evaluation
Gamma Ray - CCL Log

County: Weld
Field: Wattenberg
Location: SESW Sec 4, T 1N, R 65W
Well: Ruegge #3K-4H-N165
Company: Crestone Peak Resources Operating LLC

Location:	SESW Sec 4, T 1N, R 65W	Elev.:	K.B.	4938.00 ft
	706' FSL & 2136' FWL		G.L.	4915.00 ft
	Lat/Long: 40.075257 / -104.670774		D.F.	4938.00 ft
	Permanent Datum:	Ground Level	Elev.:	4915.00 f
Log Measured From:		Kelly Bushing		23.00 ft
Drilling Measured From:		Kelly Bushing		above Perm.Datum
API Serial No.	Section:	Township:	Range:	
05-123-46563	4	1N	65W	

Logging Date 10-Aug-2018

Run Number One

Depth Driller 12024.00 ft

Schlumberger Depth 6642.00 ft

Bottom Log Interval 6642.00 ft

Top Log Interval 100.00 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 2483.00 ft

To 12024.00 ft

Casing/Tubing Size 5.5 in

Weight 20 lbm/ft

Grade P110

From 0.00 ft

To 12024.00 ft

Max Recorded Temperatures 191 degF

Logger on Bottom 10-Aug-2018 15:00:00

Unit Number 9102

Recorded By Location: Alan Moreno

Fort Morgan, CO

Witnessed By Keith Kershnik

Disclaimer

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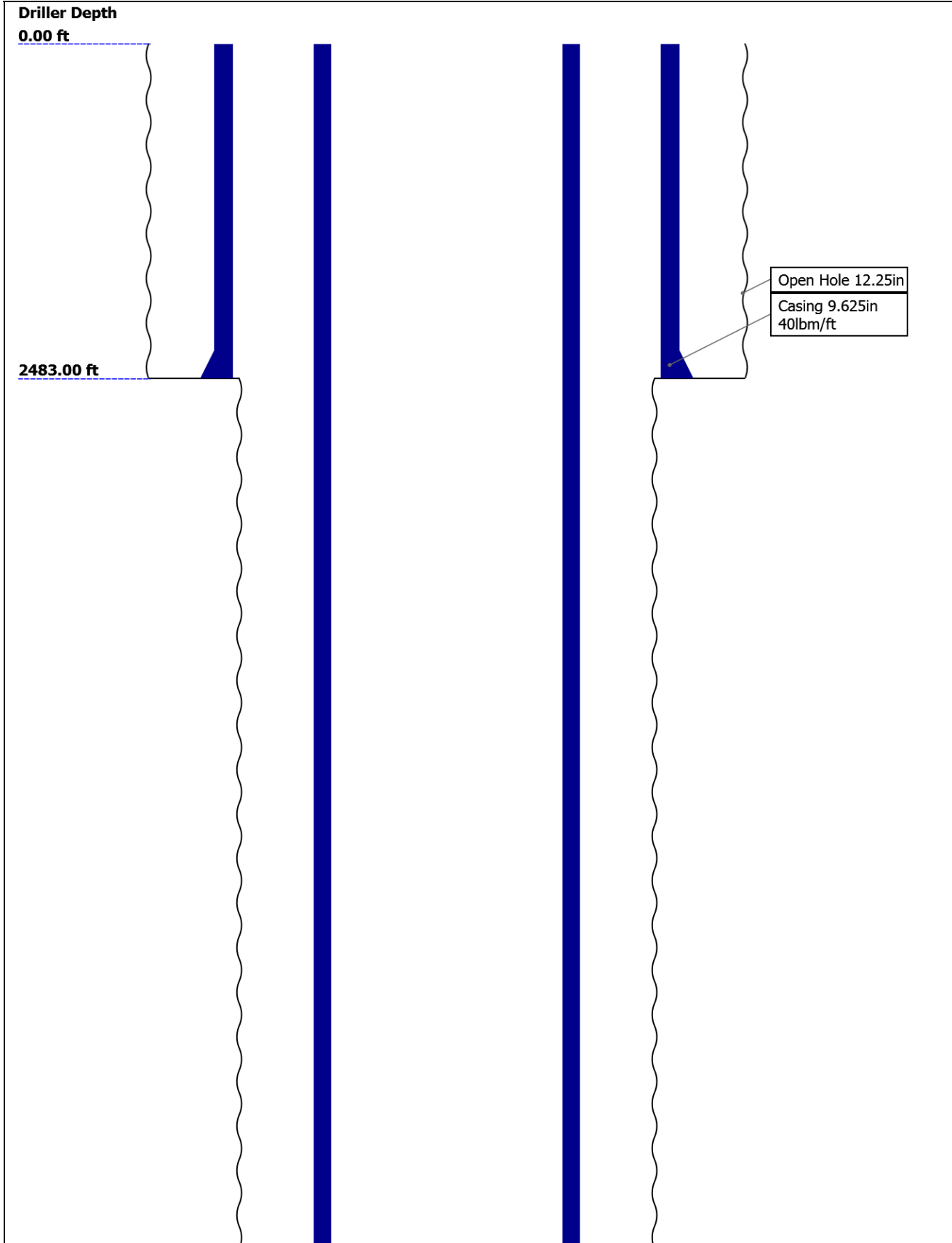
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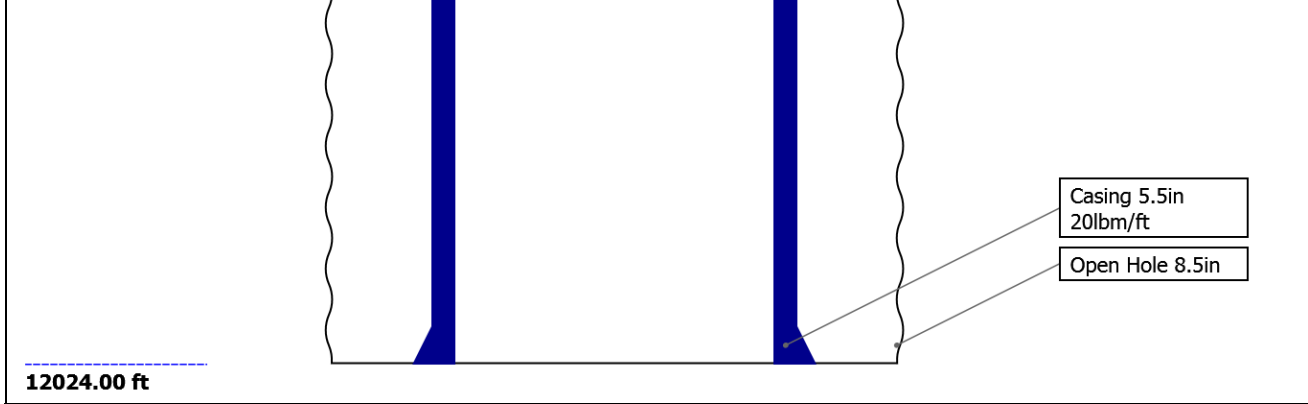
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Well Sketch



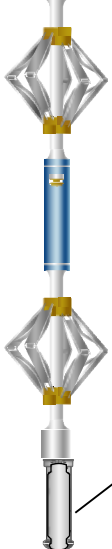


Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	12.25	8.5				
Top Driller (ft)	0	2483				
Top Logger (ft)	0	2483				
Bottom Driller (ft)	2483	12024				
Bottom Logger (ft)	2483	12024				
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)	2483	12024				
Bottom Logger (ft)	2483	12024				

Remarks and Equipment Summary

One: Toolstring			One: Remarks		
<div><div><div>Equip nameLength</div><div>LEH-QT:330.73</div><div>810</div><div>LEH-QT:3810</div></div><div><div>EDTC-B:927.24</div><div>247</div><div>EDTH-B:9309</div><div>EDTG-A:79445</div><div>EDTC-B:9247</div></div><div><div>AH-184[2]:2749</div><div>20.74</div></div><div><div>AH-184[1]:2826</div><div>18.74</div></div><div><div>USIT-E:9016.74</div><div>0</div><div>ECH-MFA:1818</div><div>USAC-A:900</div><div>USIT-A:10</div></div></div> <div><div><div>CTEM23.74</div><div>ACCZ0.00</div><div>HV0.00</div><div>Gamma21.87</div><div>Ray</div><div>TelStatu20.74</div><div>s</div></div></div>	Thank you for choosing Schlumberger				
	Log run for cement and casing evaluation				
	Tool ran centralized as per tool sketch				
	IBCS-A sub run with USI-TX transducers				
	Spacer 11ppg, Lead 12.5ppg, Tail 13.5ppg				
	All passes logged under 0psi				
	Log affected by high deviation at bottom				

USLS-A:19 94 USSC-B:92 5 IBCS-A:78 3 FAR-SENS OR:4626 IBC-TX NEAR-SEN SOR:4624 IBC-TX USI-SENS OR:2005 IBC-TX EMITTER- SENSOR:4 625 IBC-TX	 <p>USI Sensor Head Tension 0.84</p> <p>TOOL_ZERO</p> <p>Lengths are in ft Maximum Outer Diameter = 5.000 in Line: Sensor Location, Value: Gating Offset All measurements are relative to TOOL_ZERO</p>	
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Depth Summary			
	One		
Depth Measuring Device			
Type	IDW-B		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Calibration Cable Type			
Wheel Correction 1	0		
Wheel Correction 2	0		
Tension Device			
Type	CMTD-B/A		
Serial Number			
Calibration Date	14-Jul-2018		
Calibrator Serial Number			
Number of Calibration Points	10		
Calibration Root Mean Square Error			
Calibration Peak Error			
Logging Cable			
Type	7-46A-XS		
Serial Number			
Length	22770.00 ft		
Conveyance Type	Wireline		
Rig Type	Crane USA		
One:Depth Control Parameters		Depth Control Remarks	
Log Sequence	First Log In the Well	All Schlumberger depth control procedures followed	
Rig Up Length At Surface		IDW used as primary depth control, Z-chart used as secondary	
Rig Up Length At Bottom			
Rig Up Length Correction			

Stretch Correction
Tool Zero Check At Surface

USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 1	Log[2]:Up	2623.09	2226.17

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 : 716.14m(2349.54ft) to 722.11m(2369.12ft)
MUD_N_FRP = 1.20
DFD = 1.01g/cm3(8.40lbm/gal)
CZMD median computed in free pipe normalization interval = 1.78 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[4]:Up	Up	92.52 ft	6645.64 ft	10-Aug-2018 4:06:38 PM	10-Aug-2018 5:41:58 PM	ON	6.51 ft	No

All depths are referenced to toolstring zero

Log	Company:Crestone Peak Resources Operating LLC Well:Ruegge #3K-4H-N165 One: Log[4]:Up:S006
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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: 10-Aug-2018 22:02:10

TIME_1900 - Time Marked every 60.00 (s)

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

■

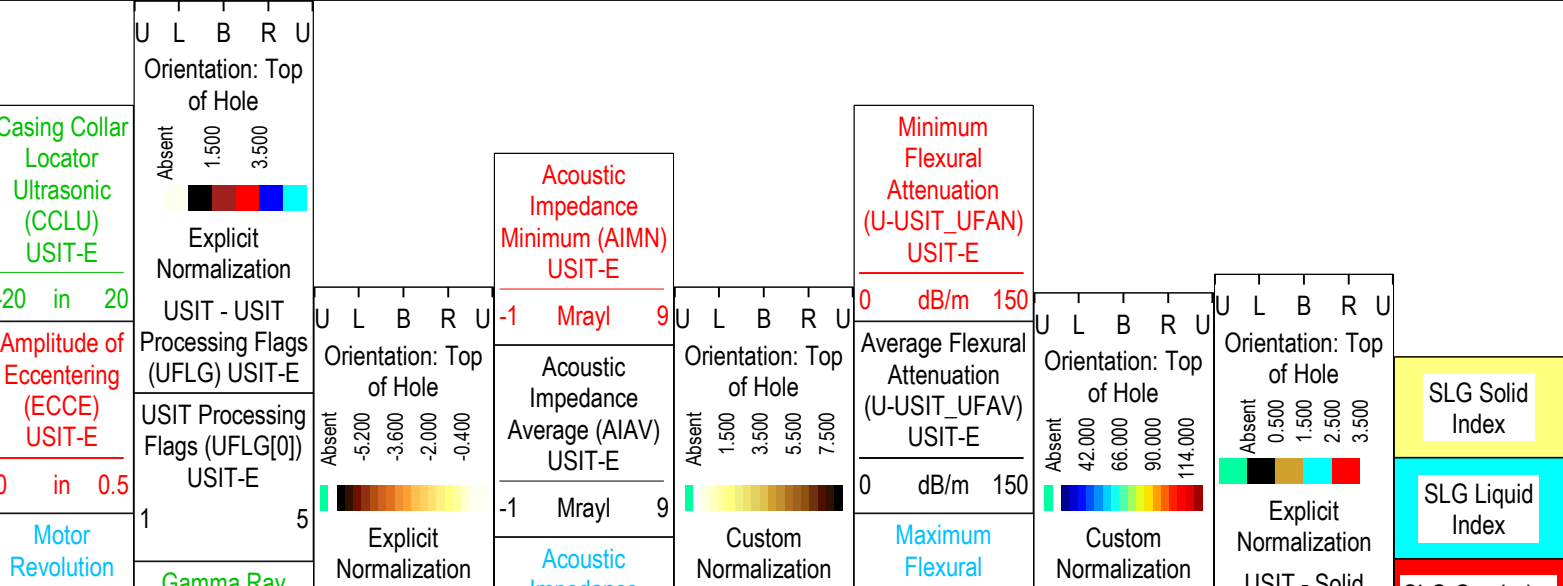
 WINLEN Error

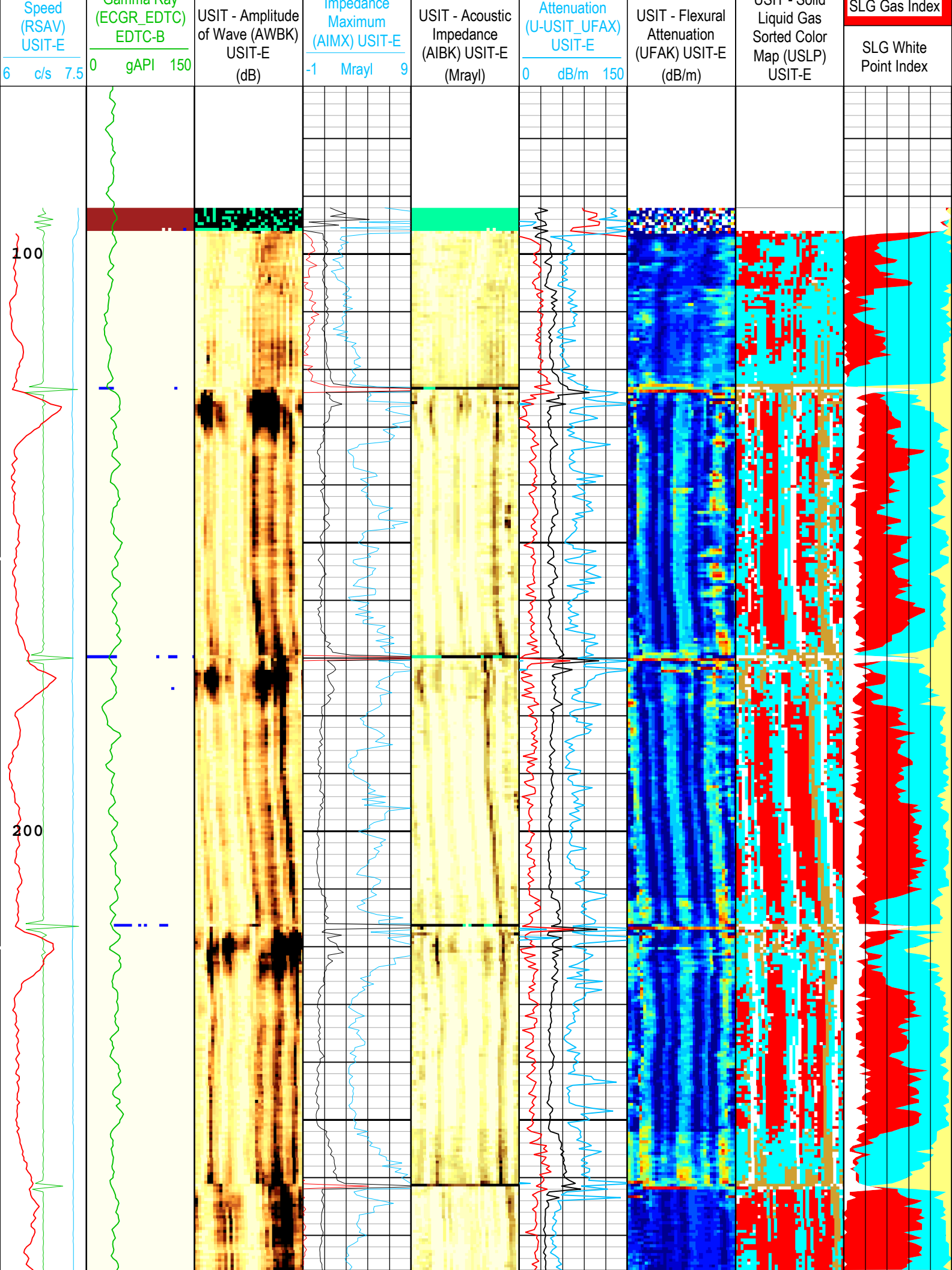
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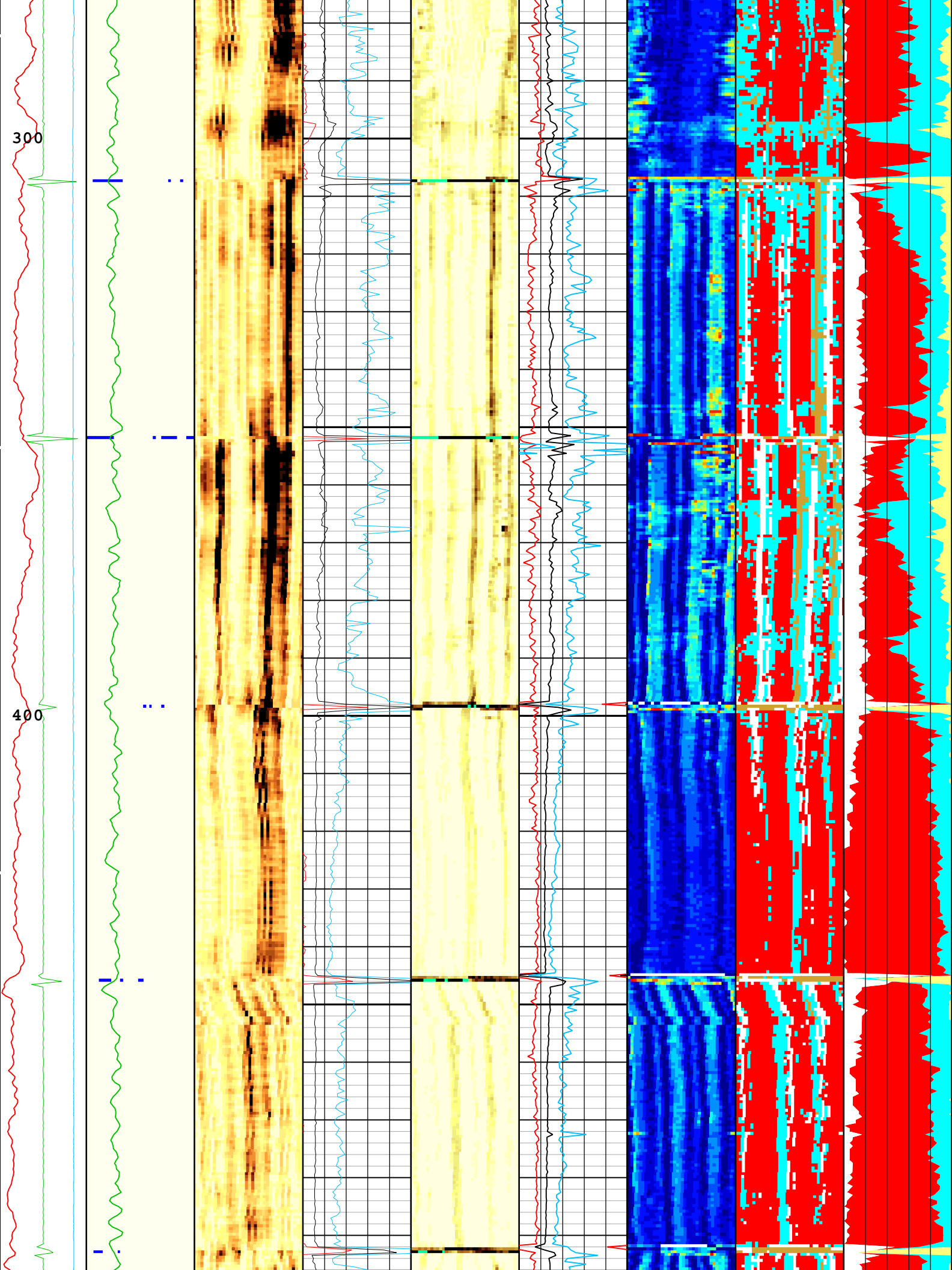
 Casing Thickness Error

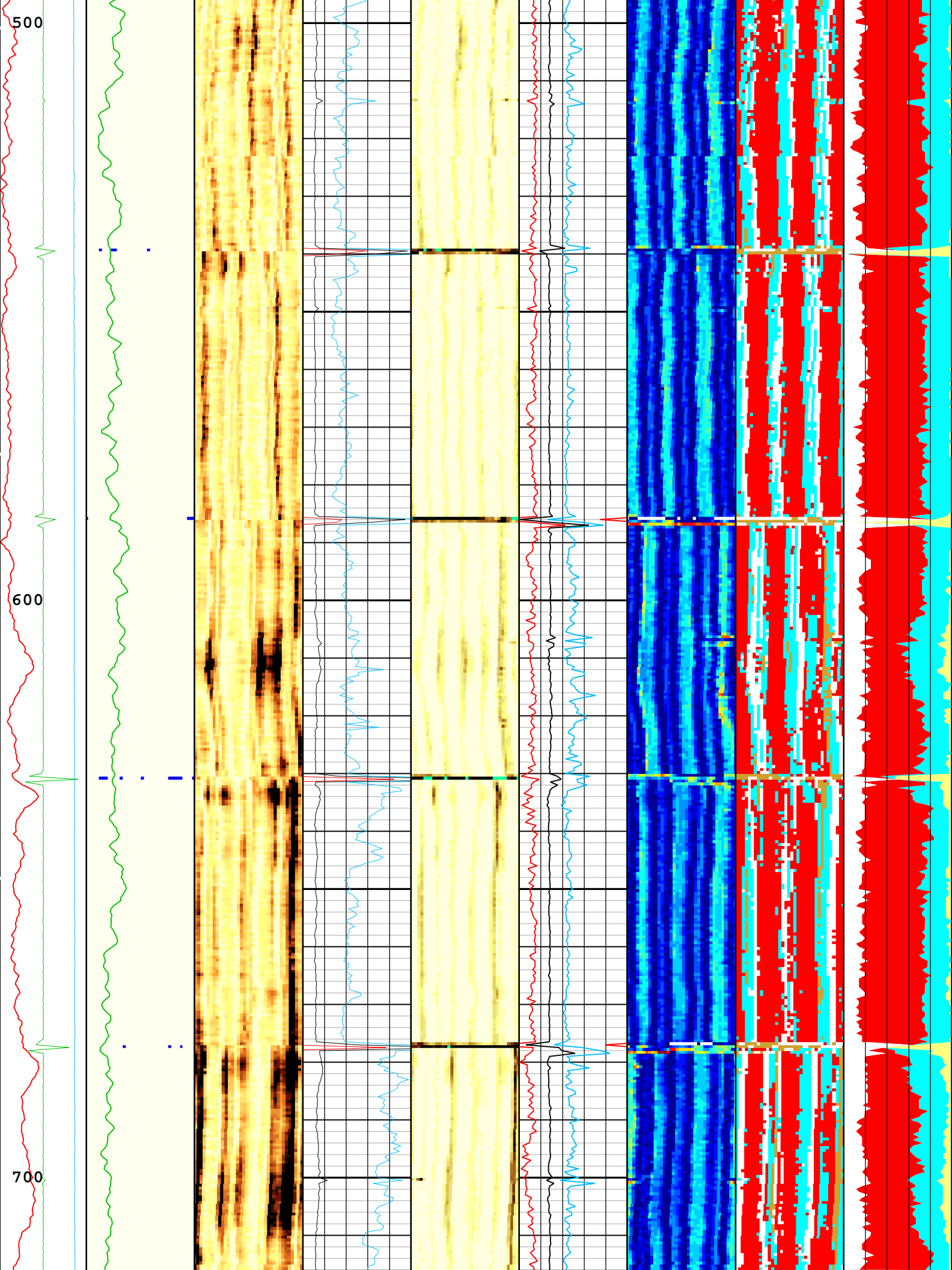
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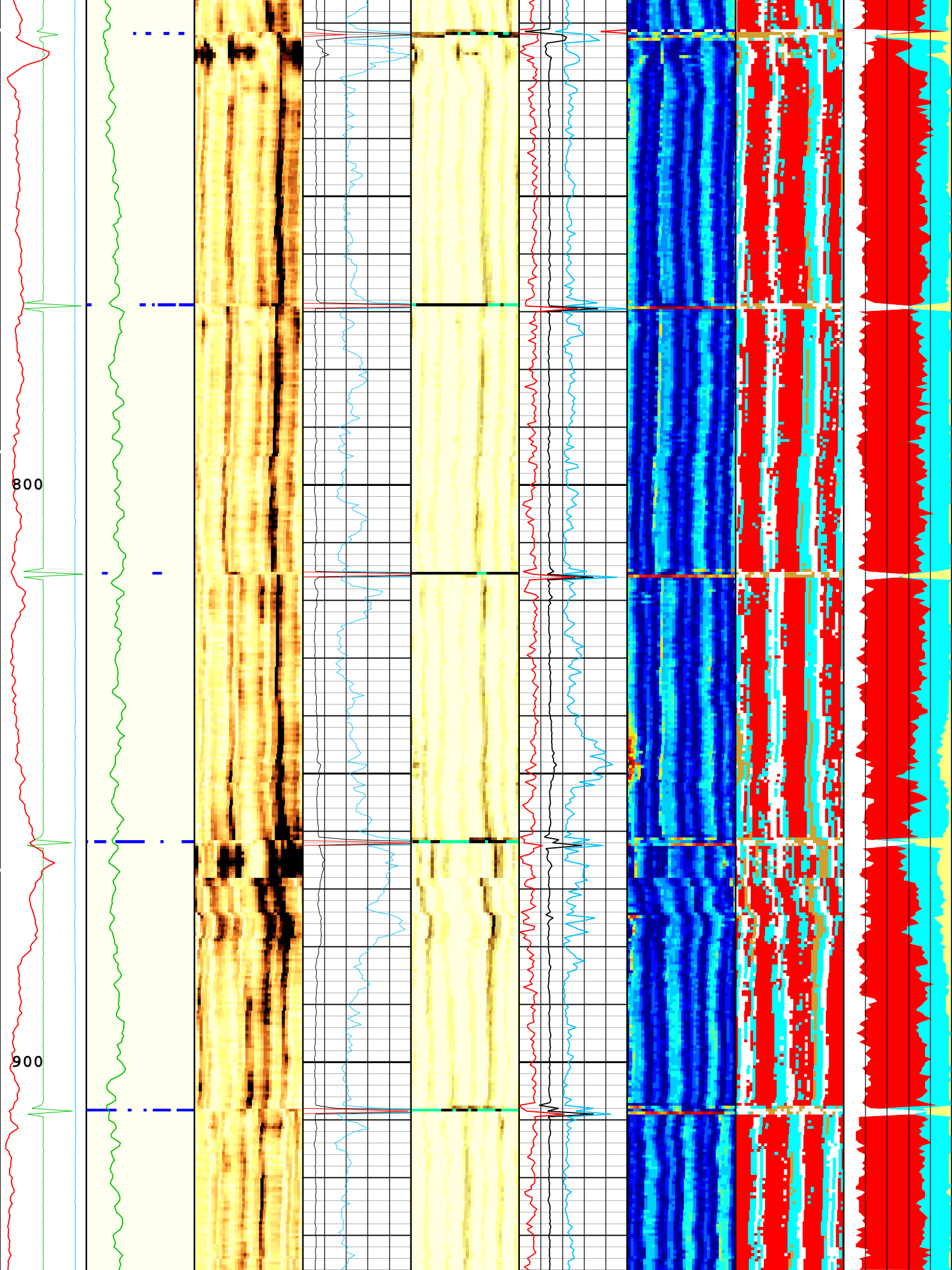
 Loop Processing Error

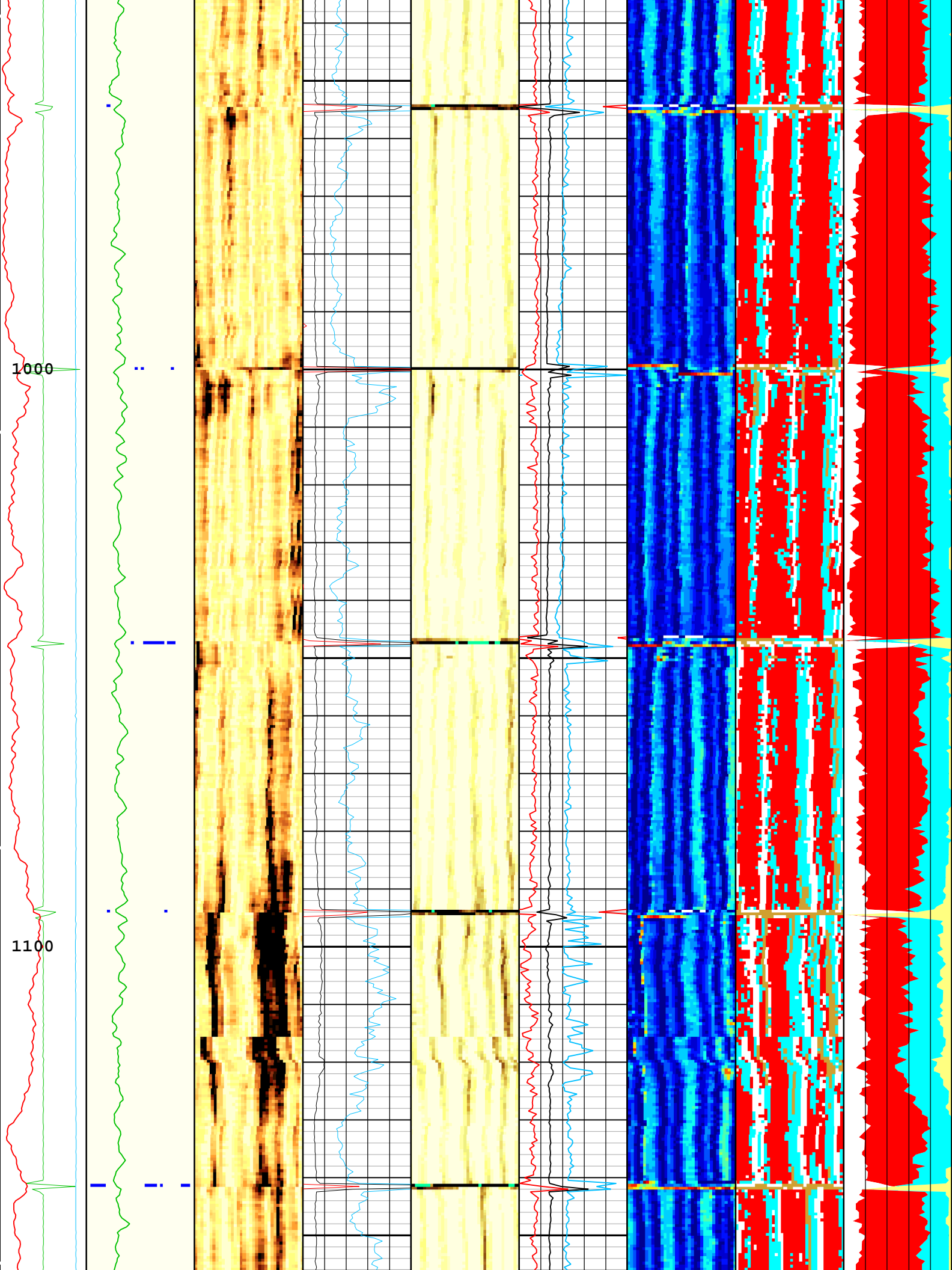


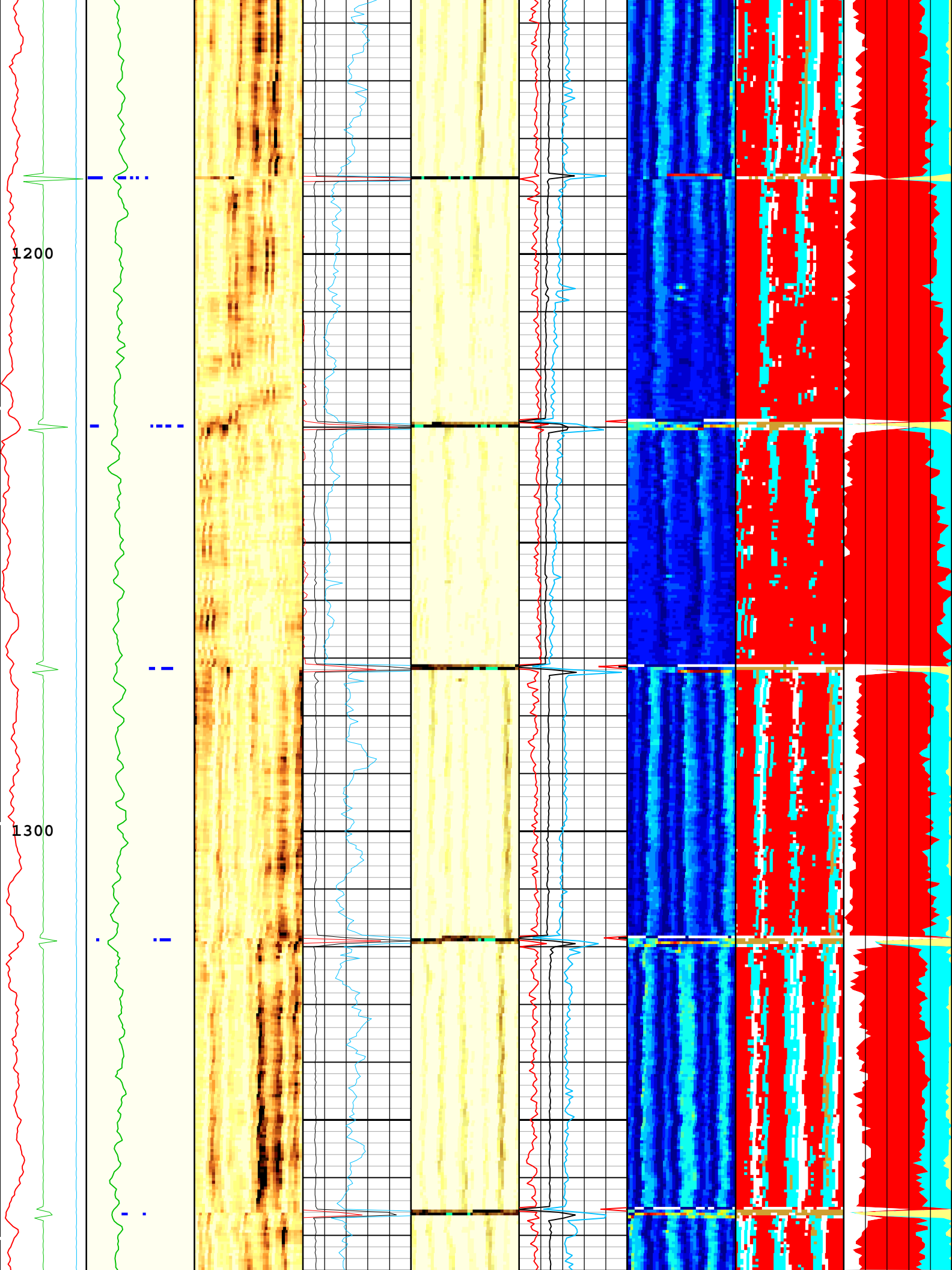


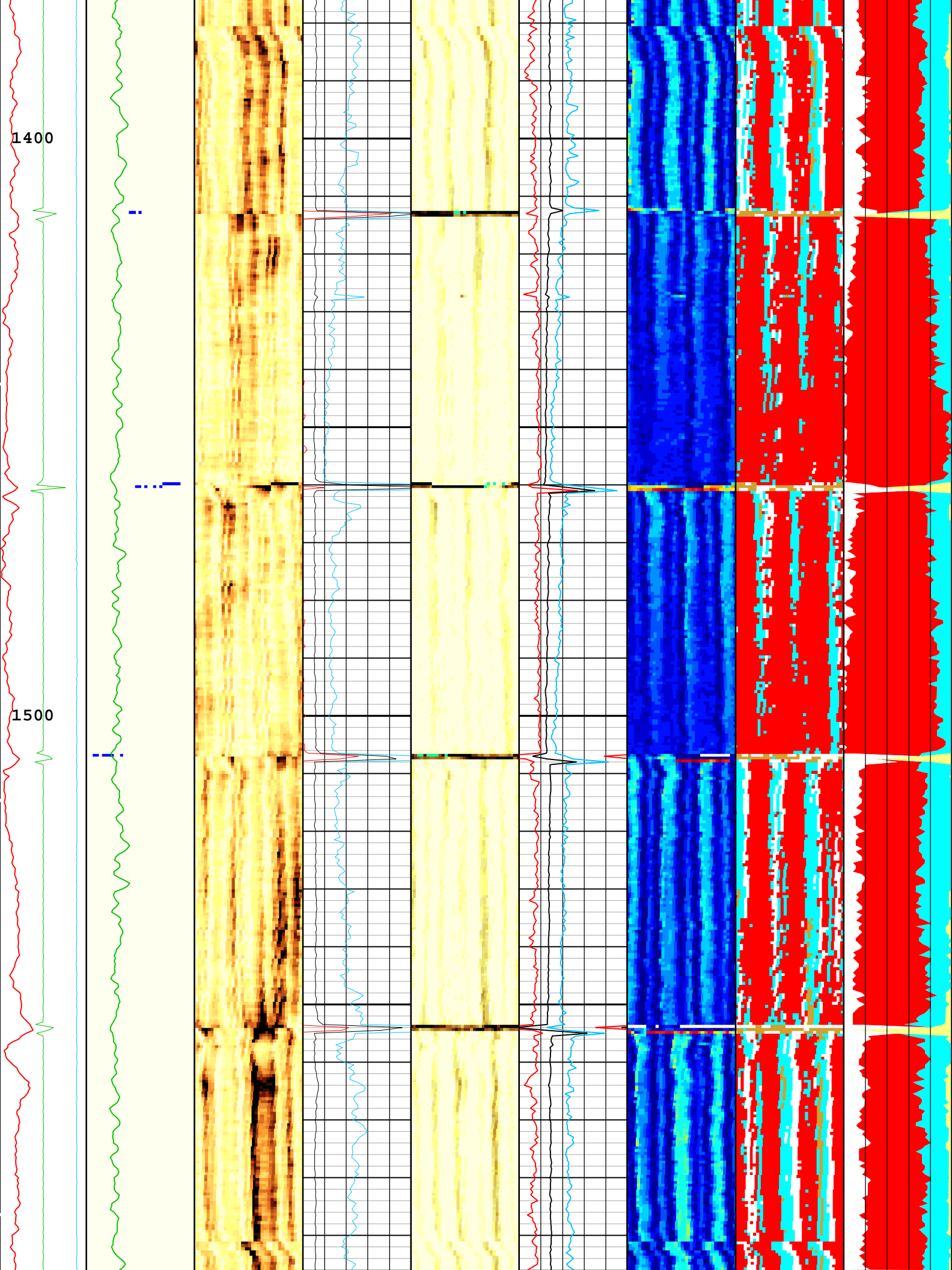


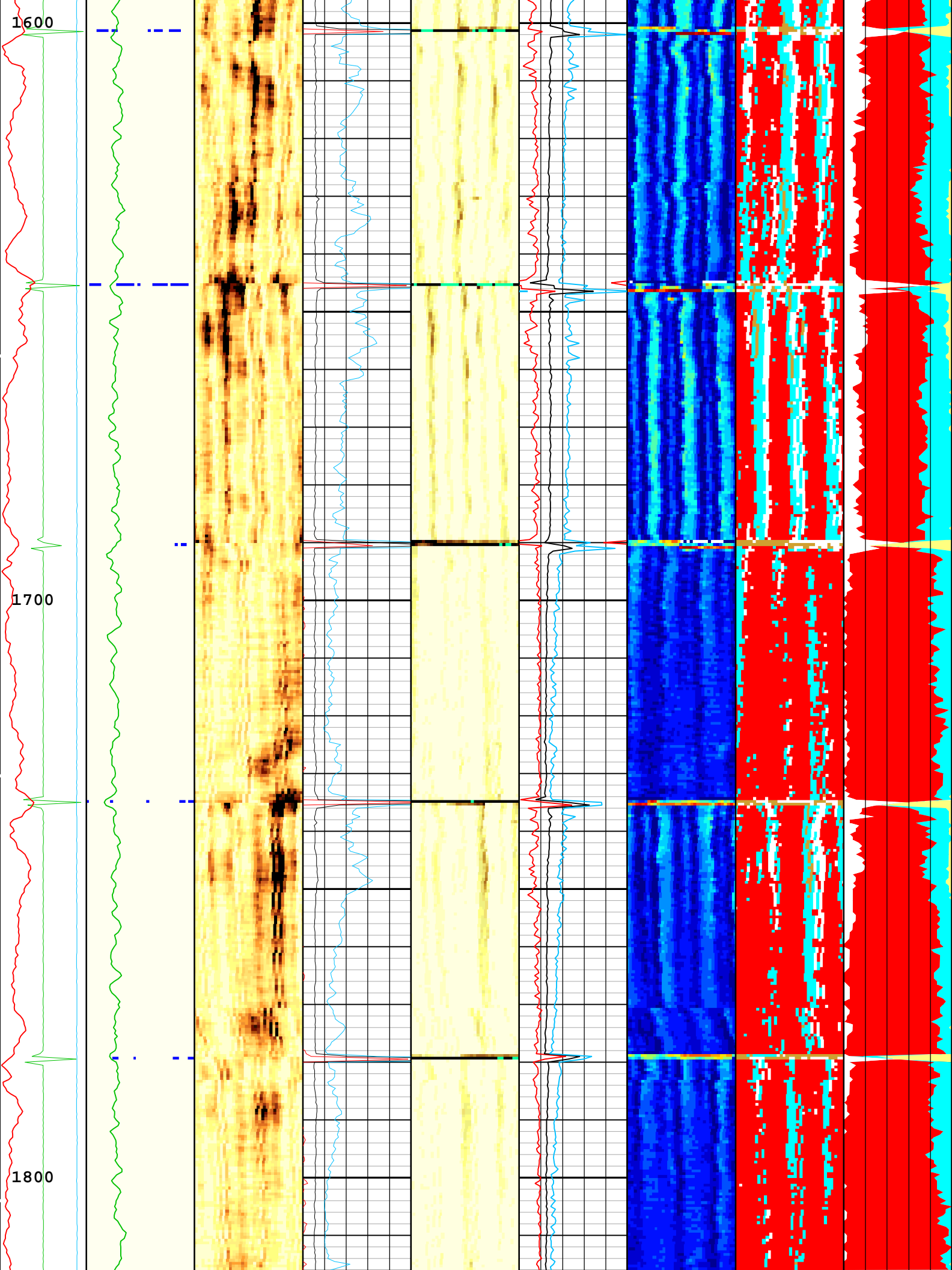


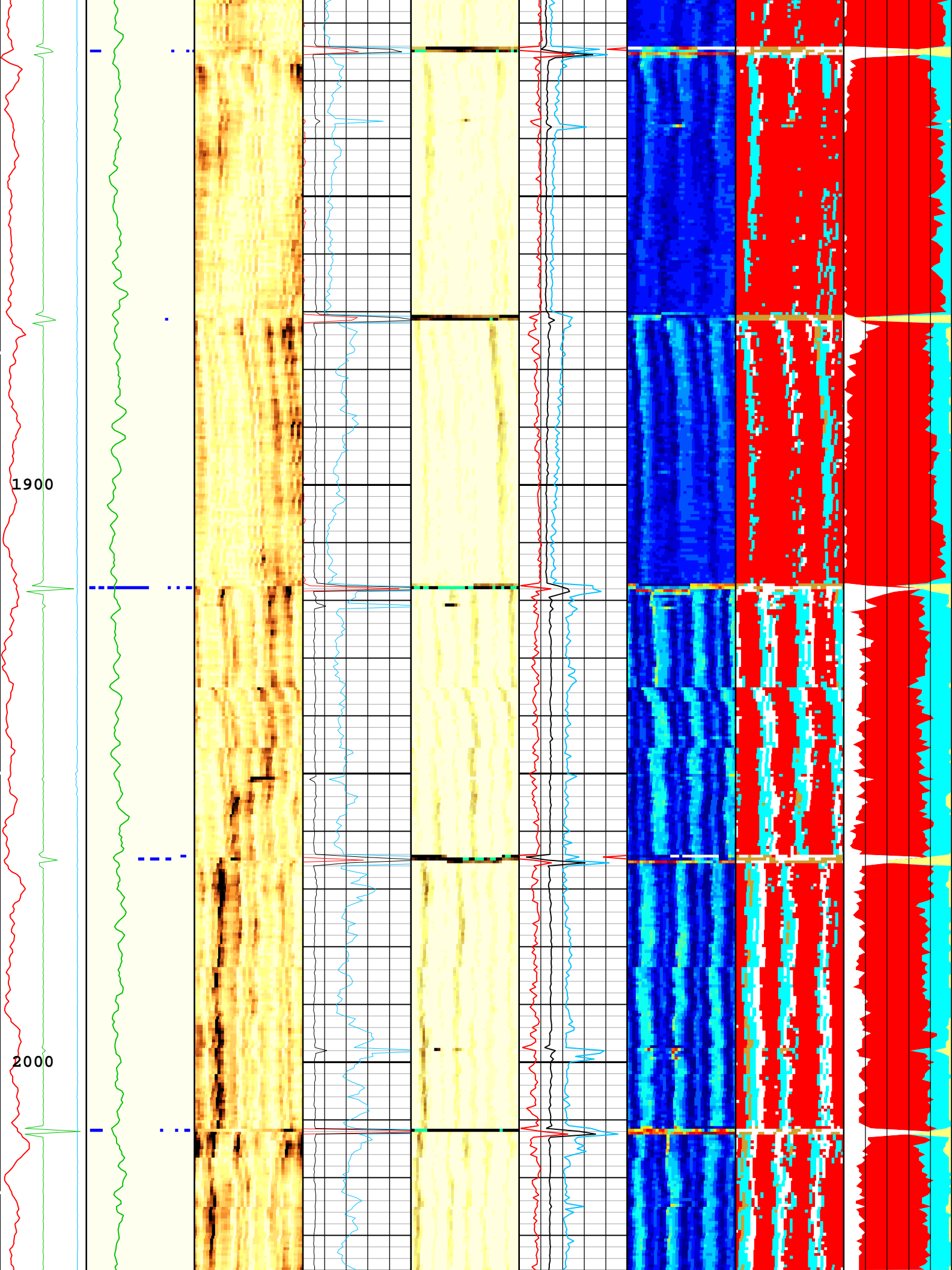


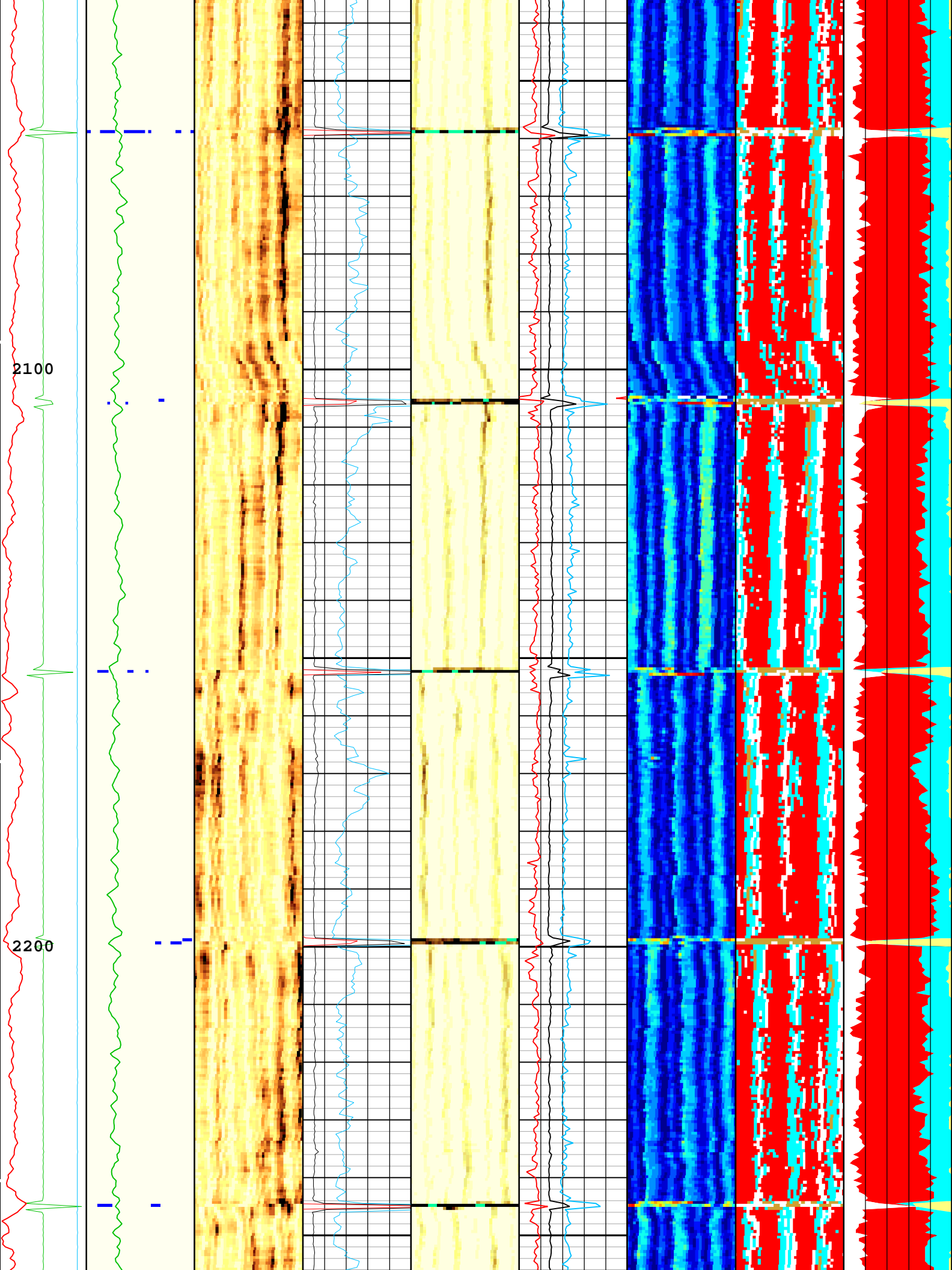


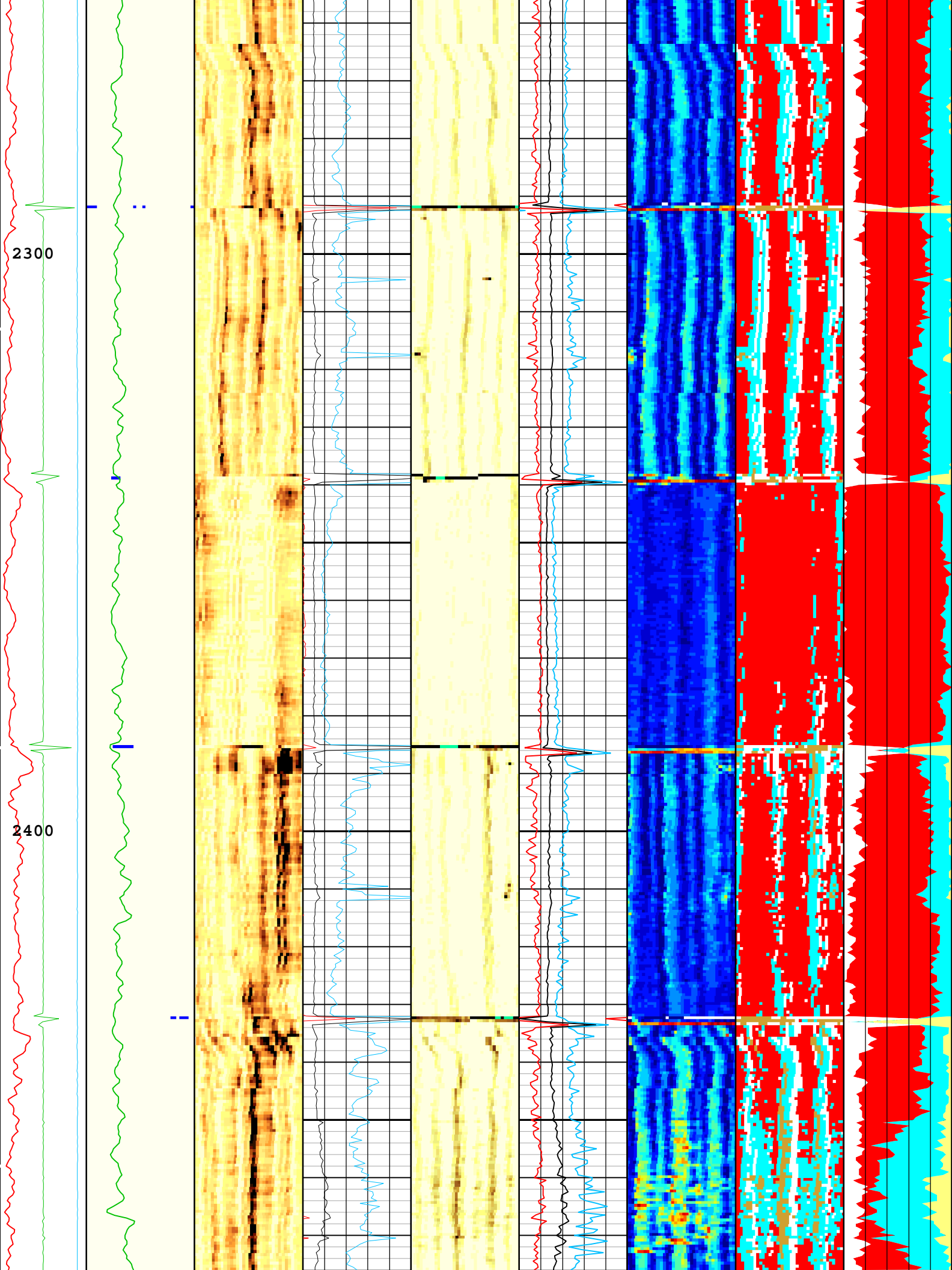


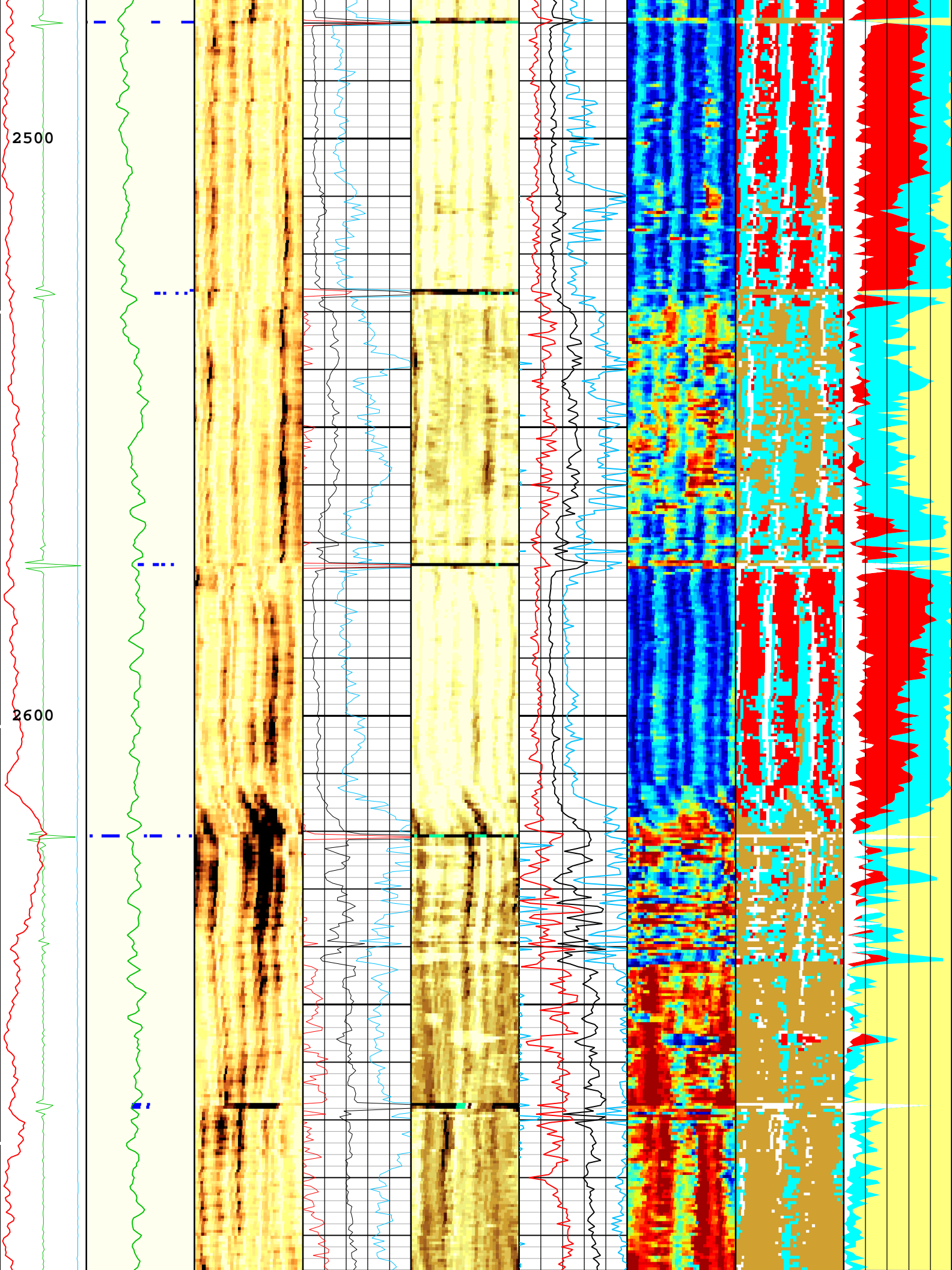


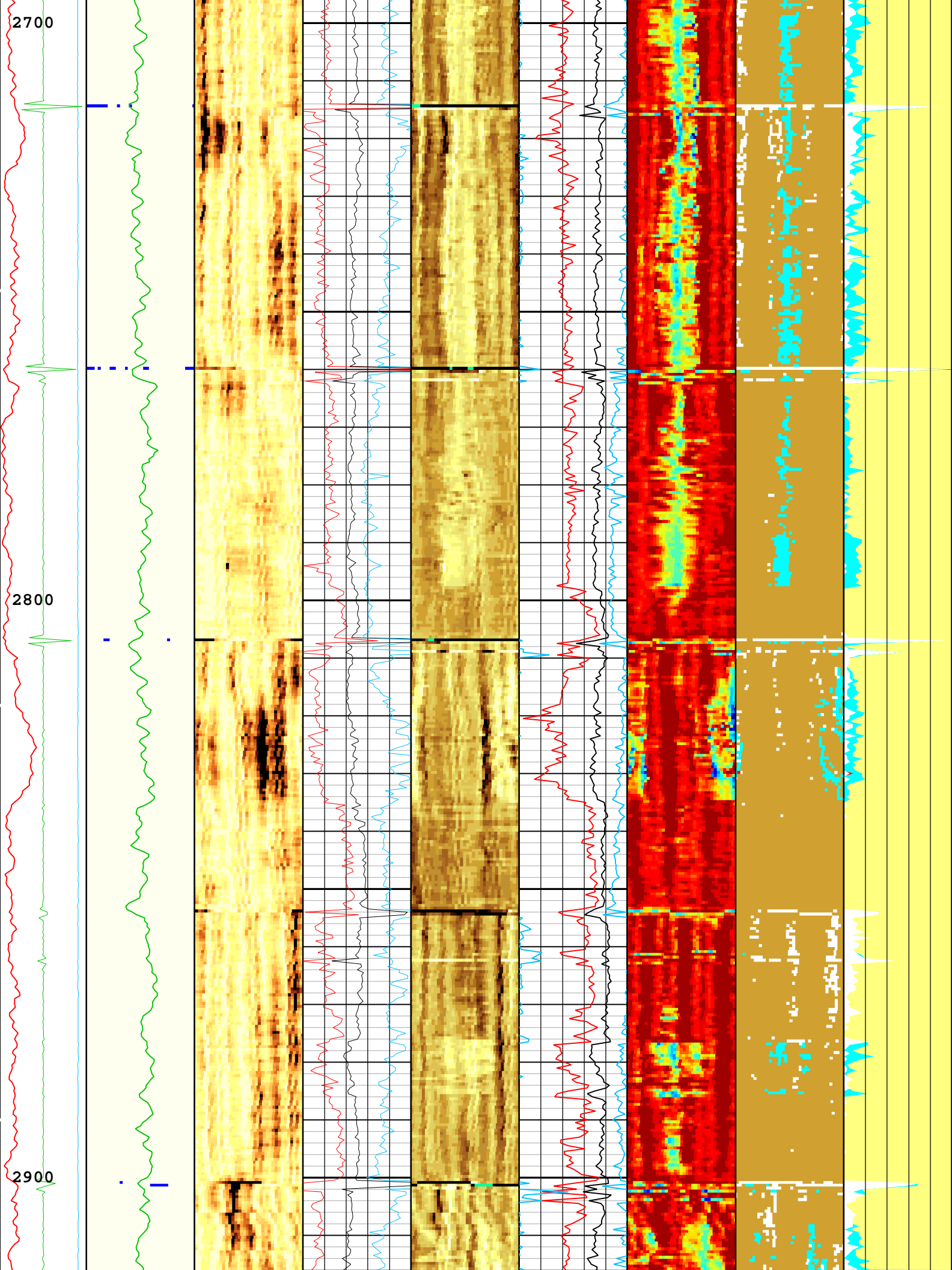


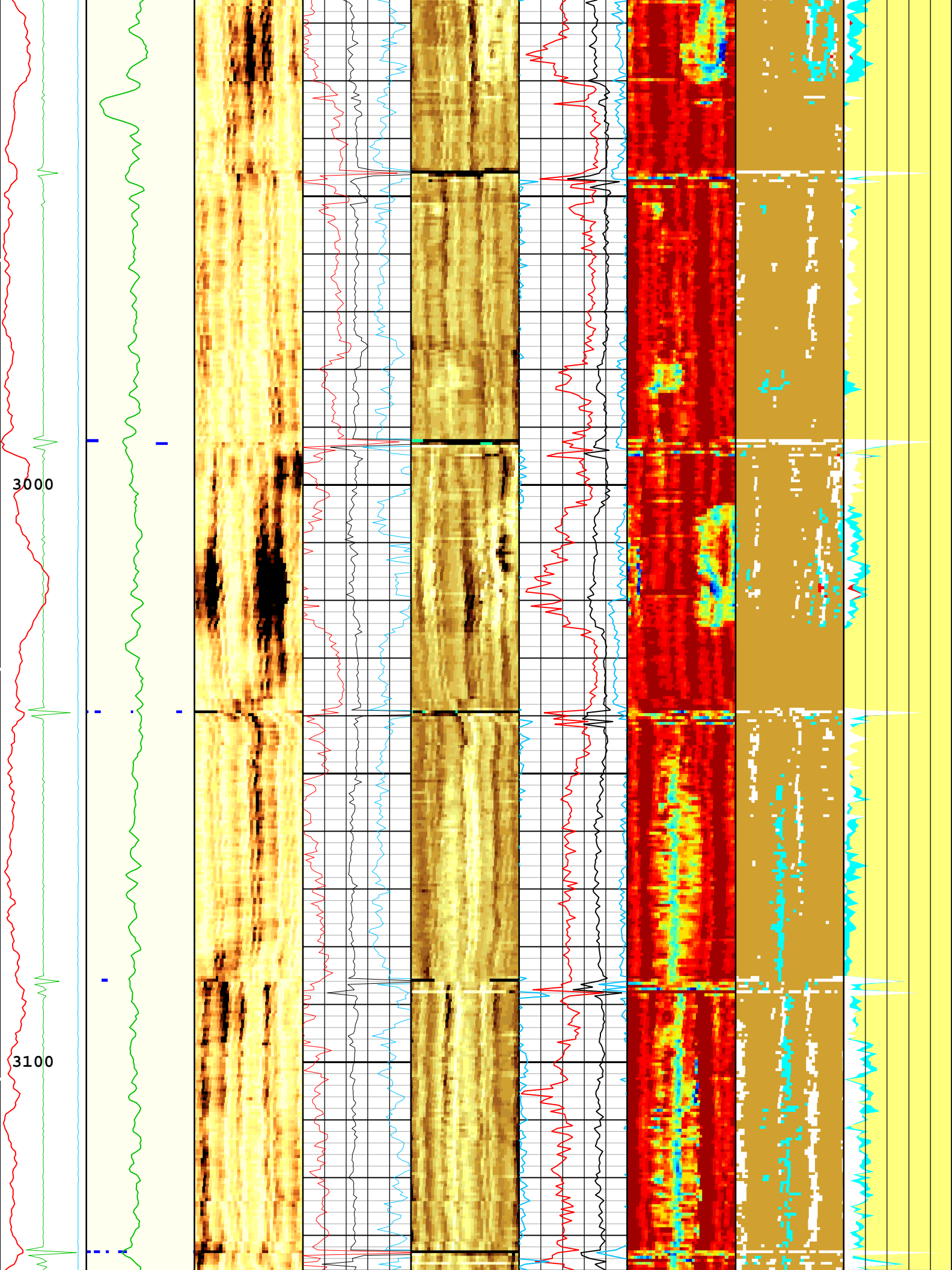


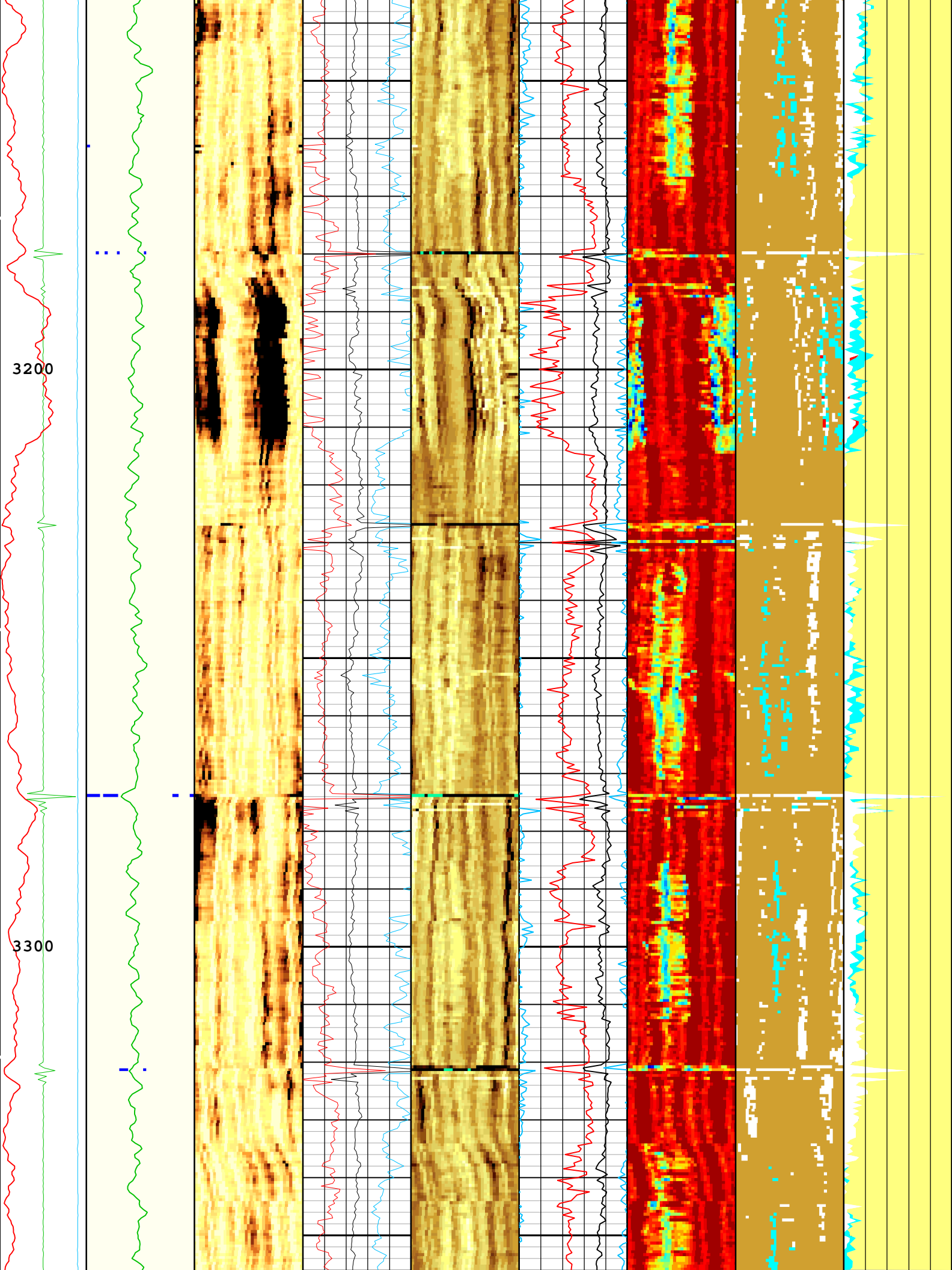


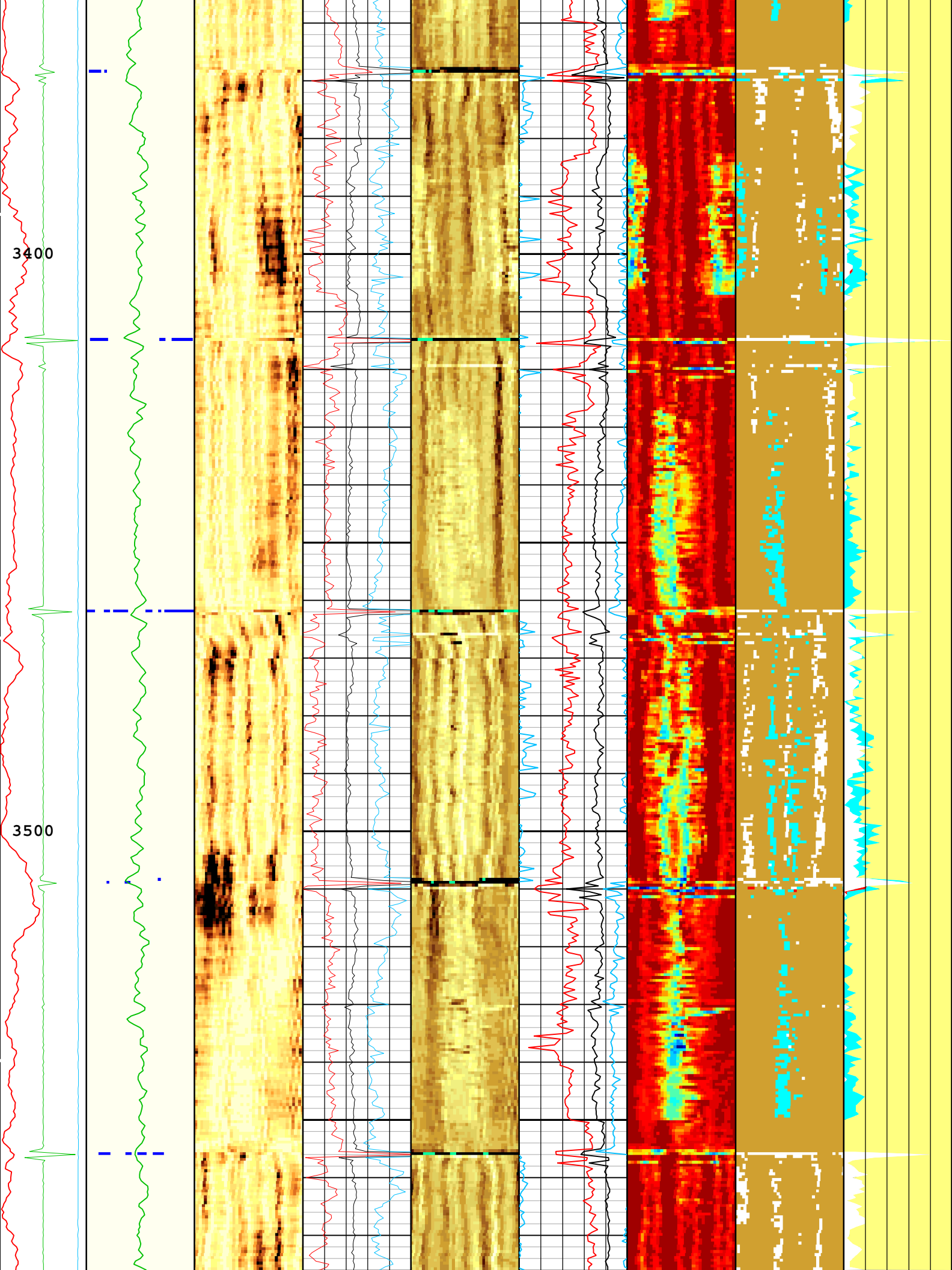


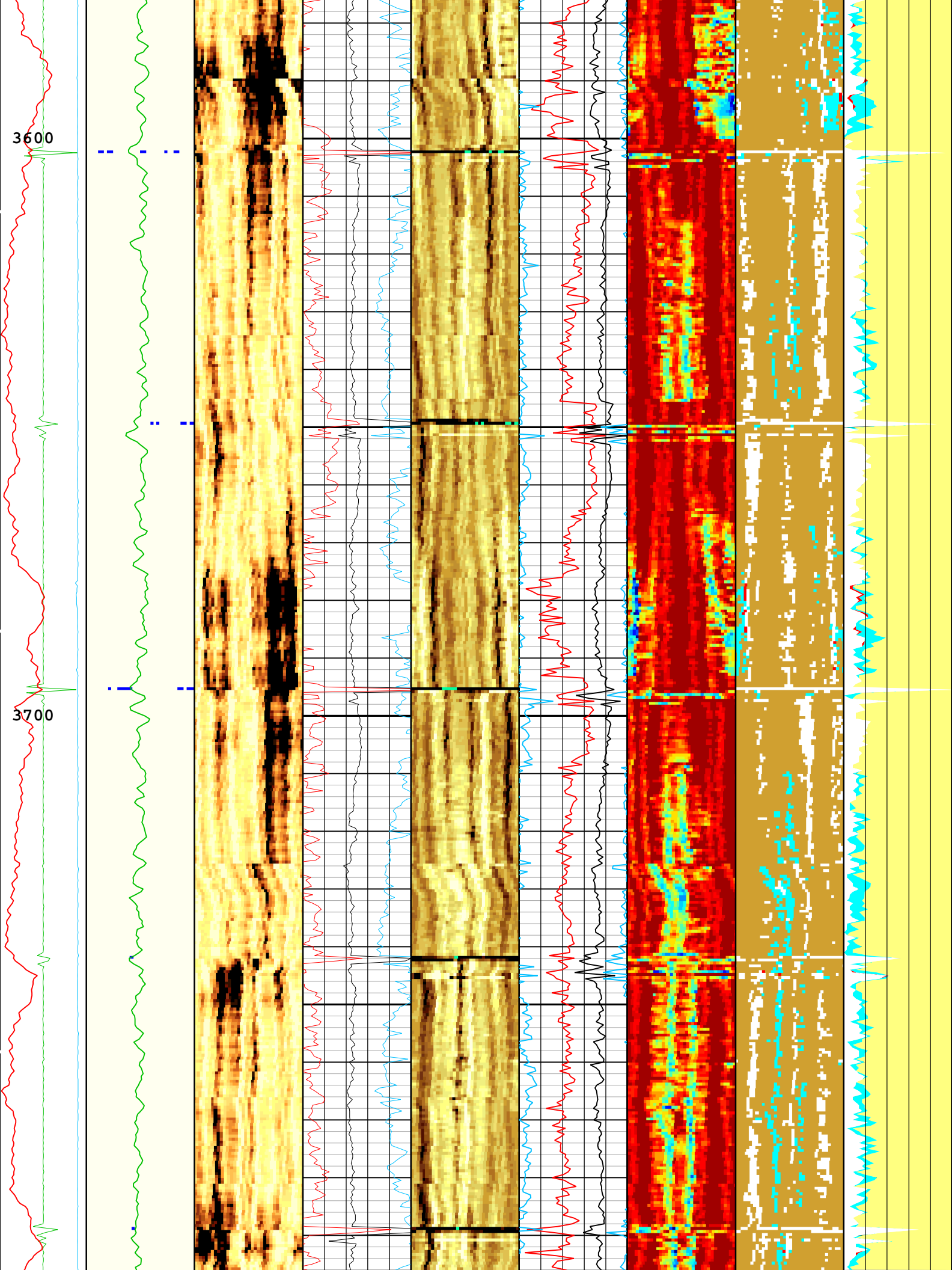


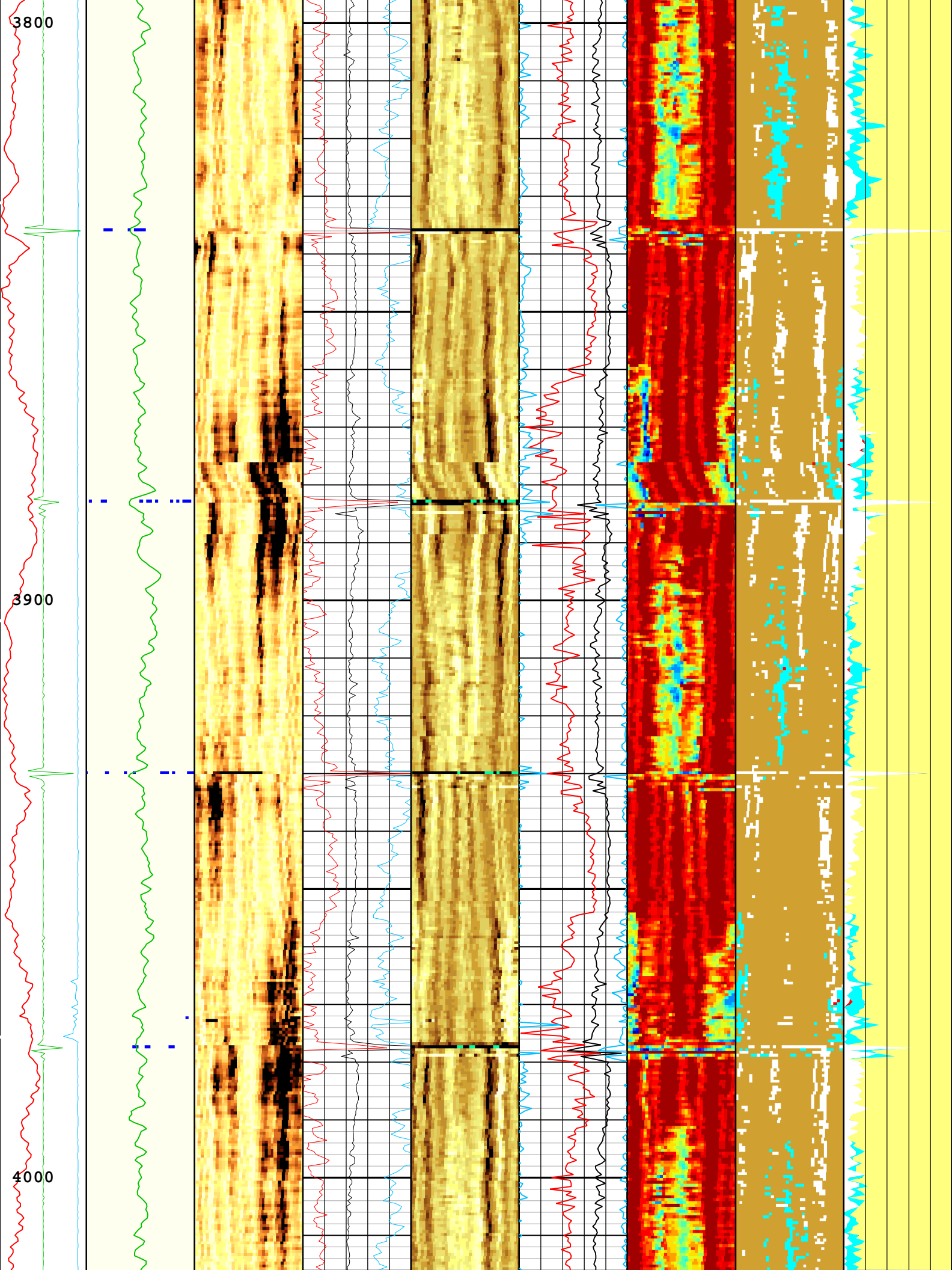


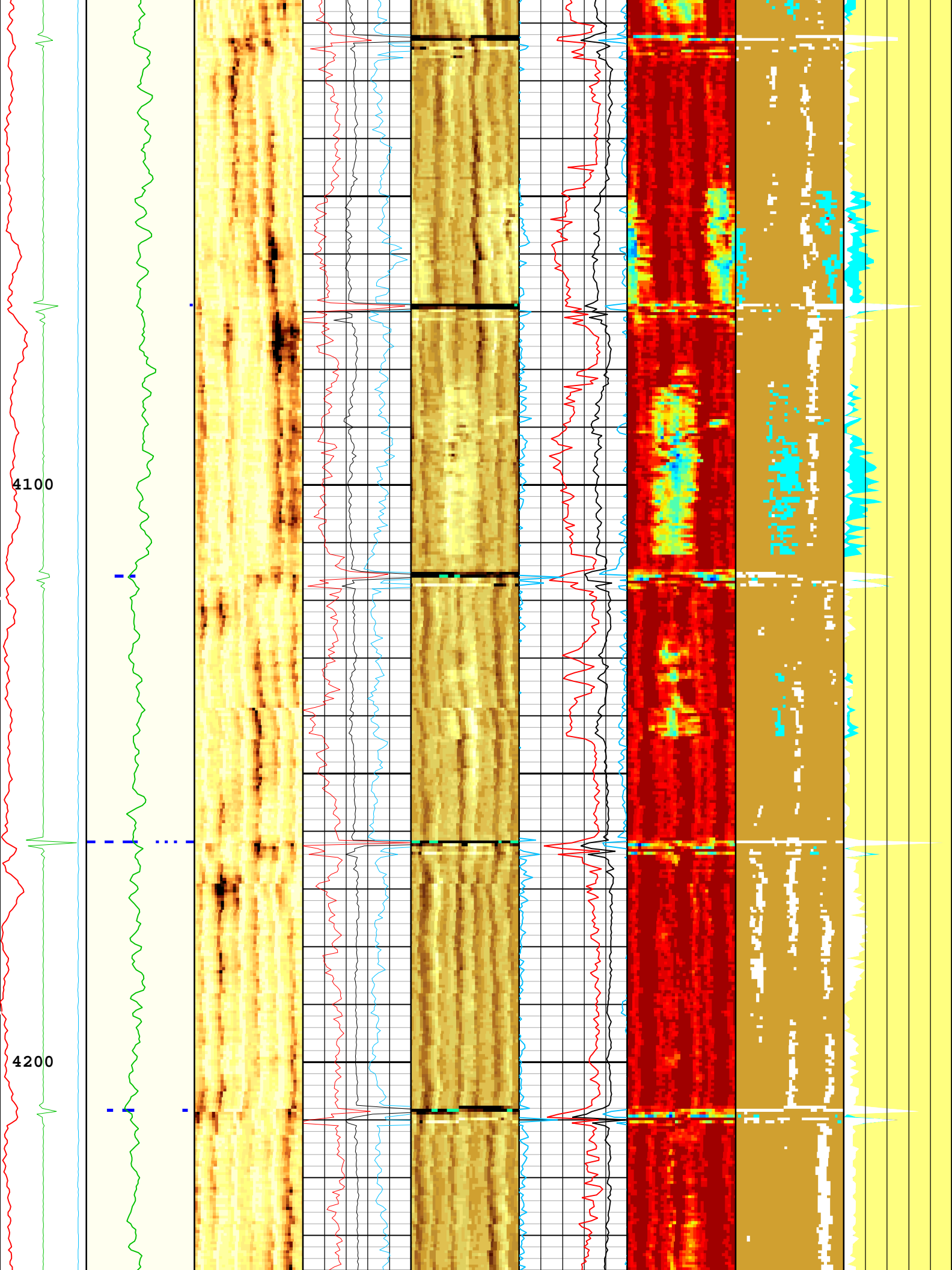


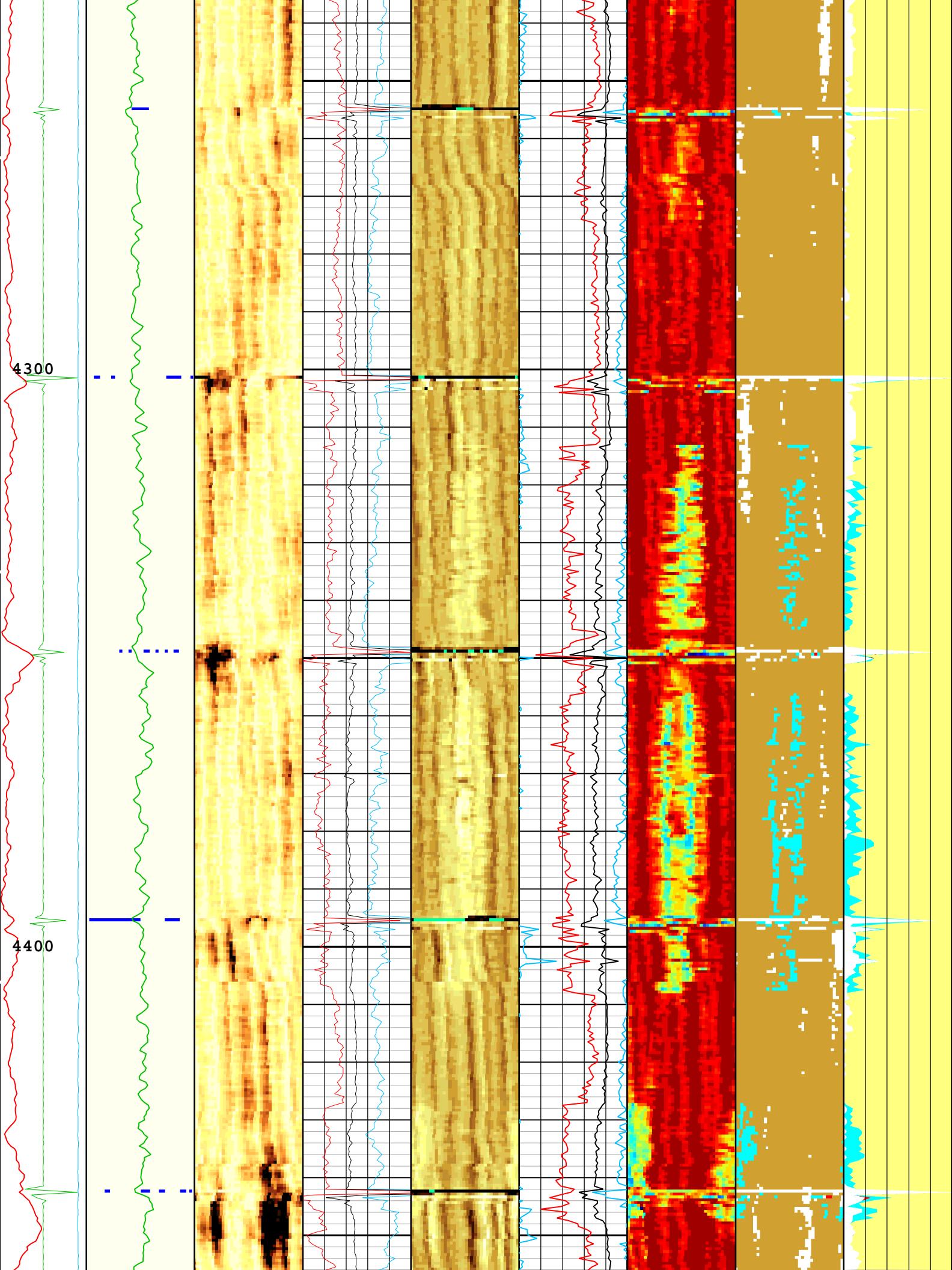


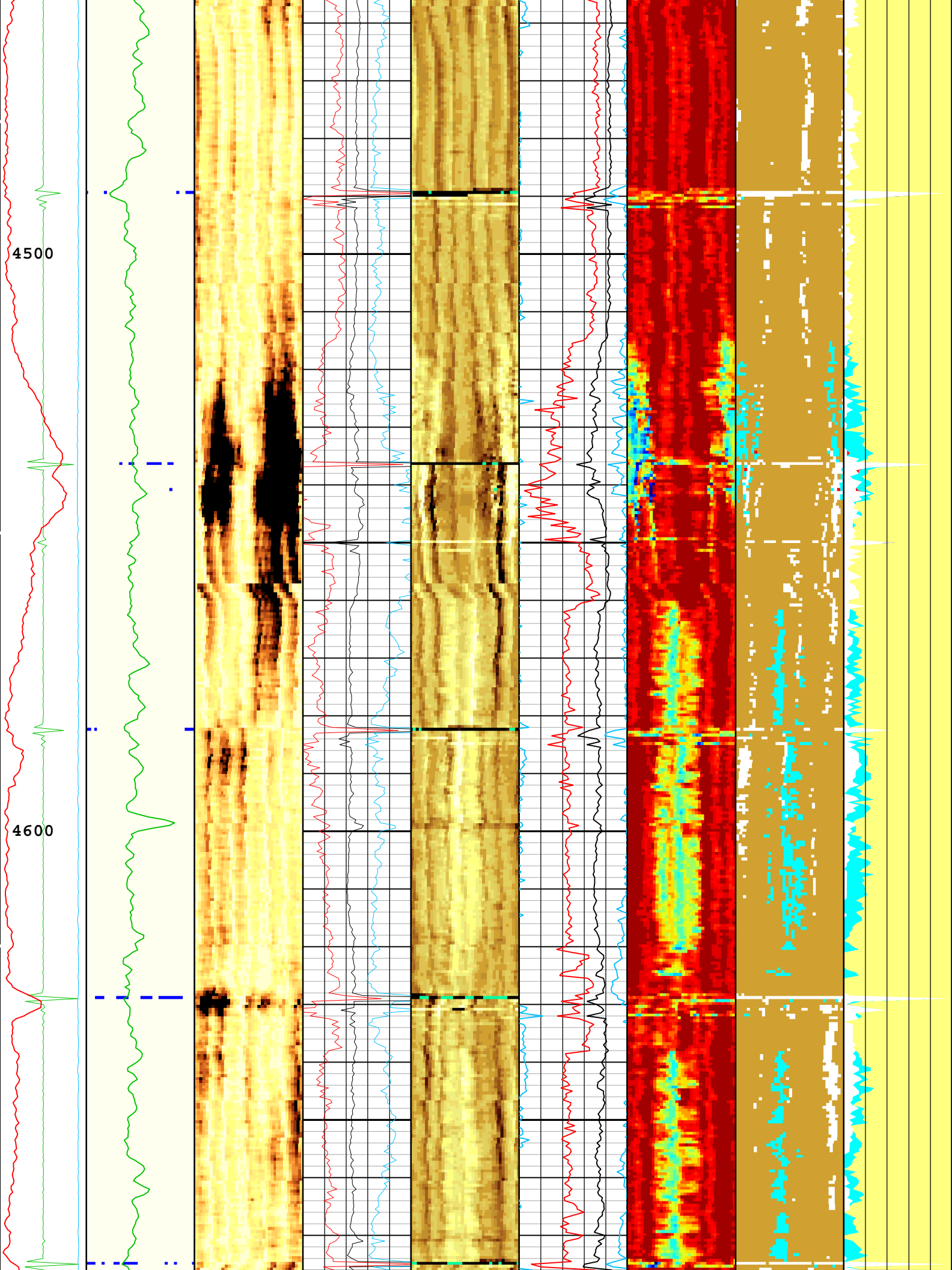


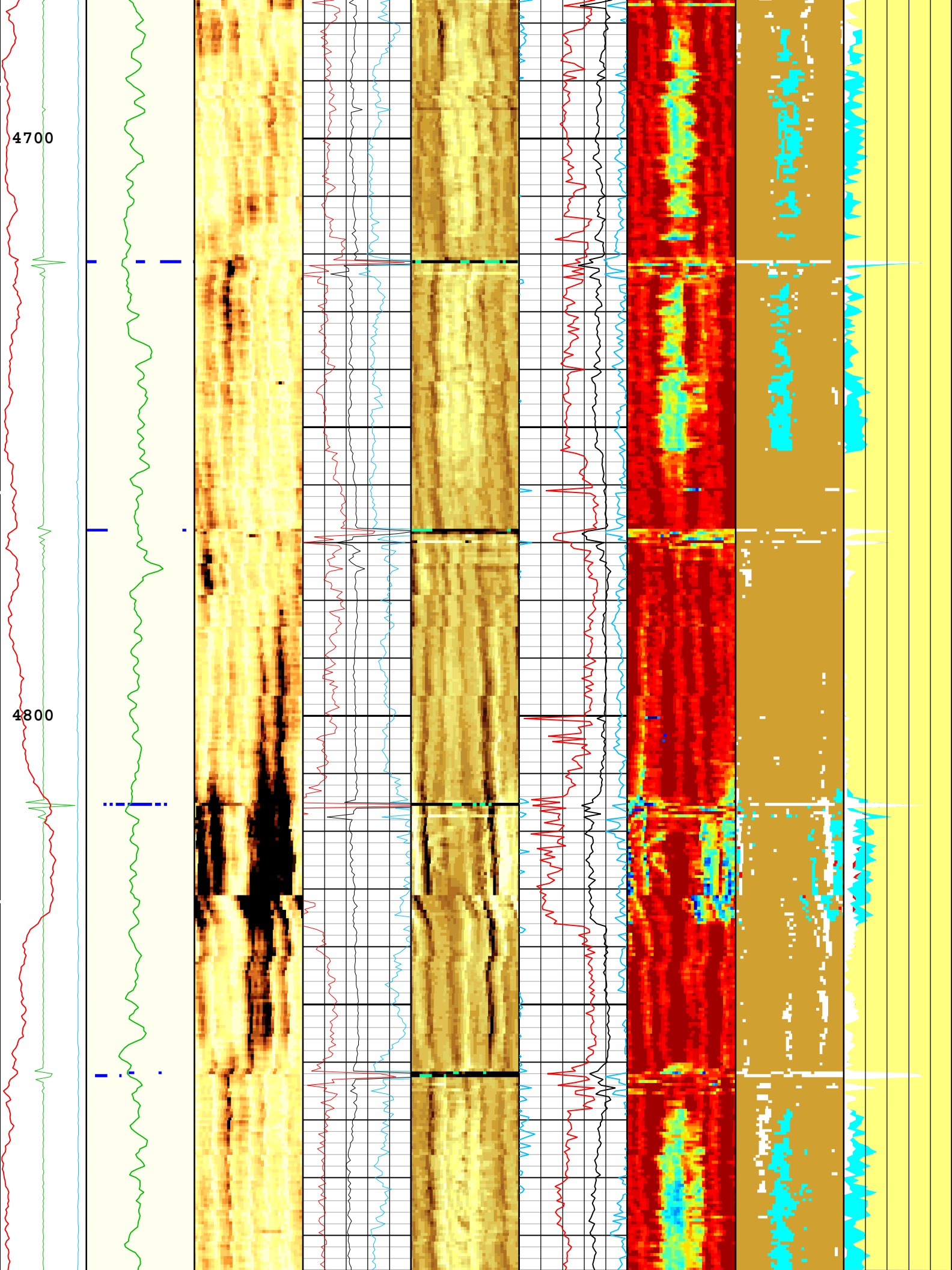


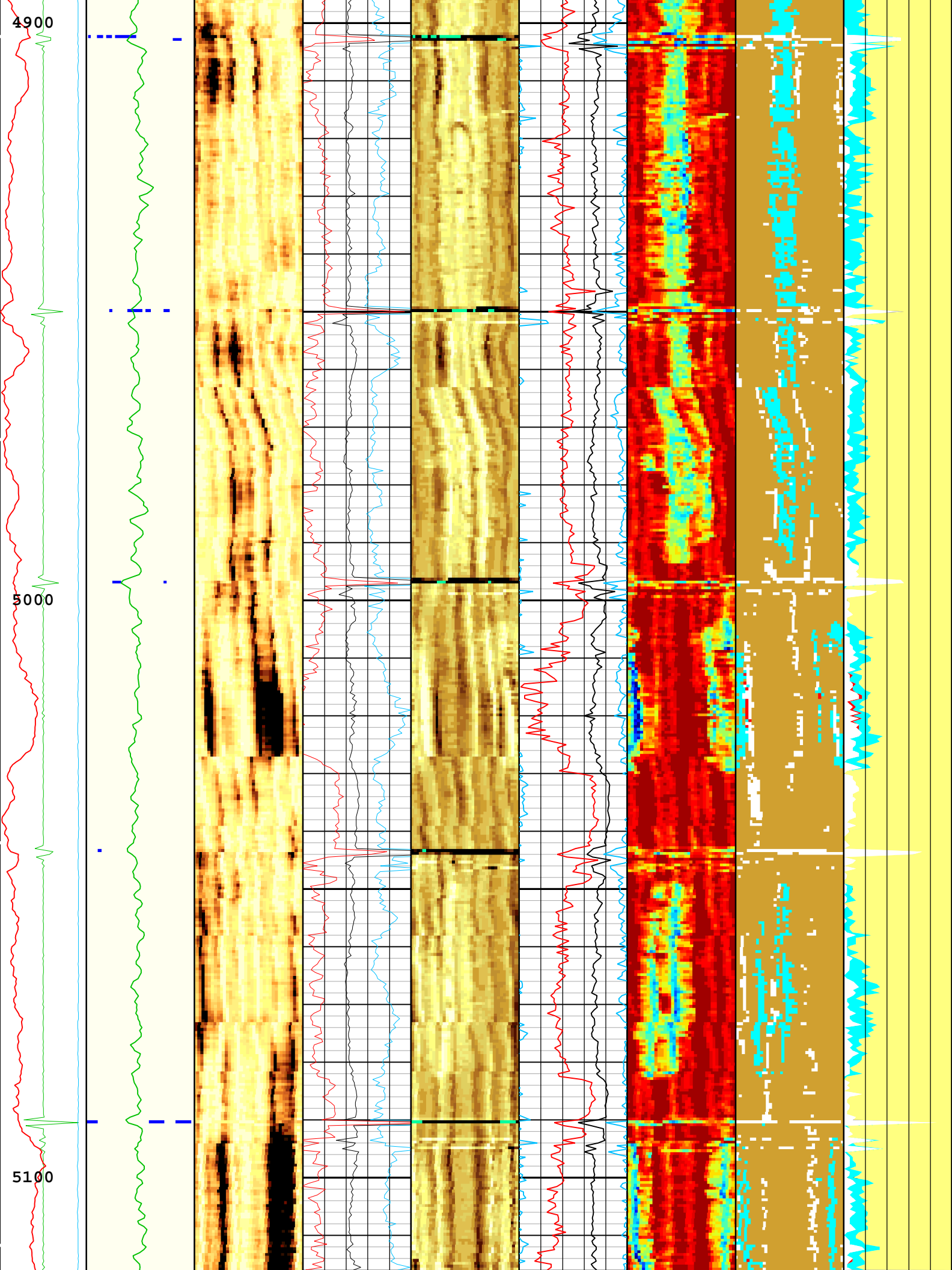


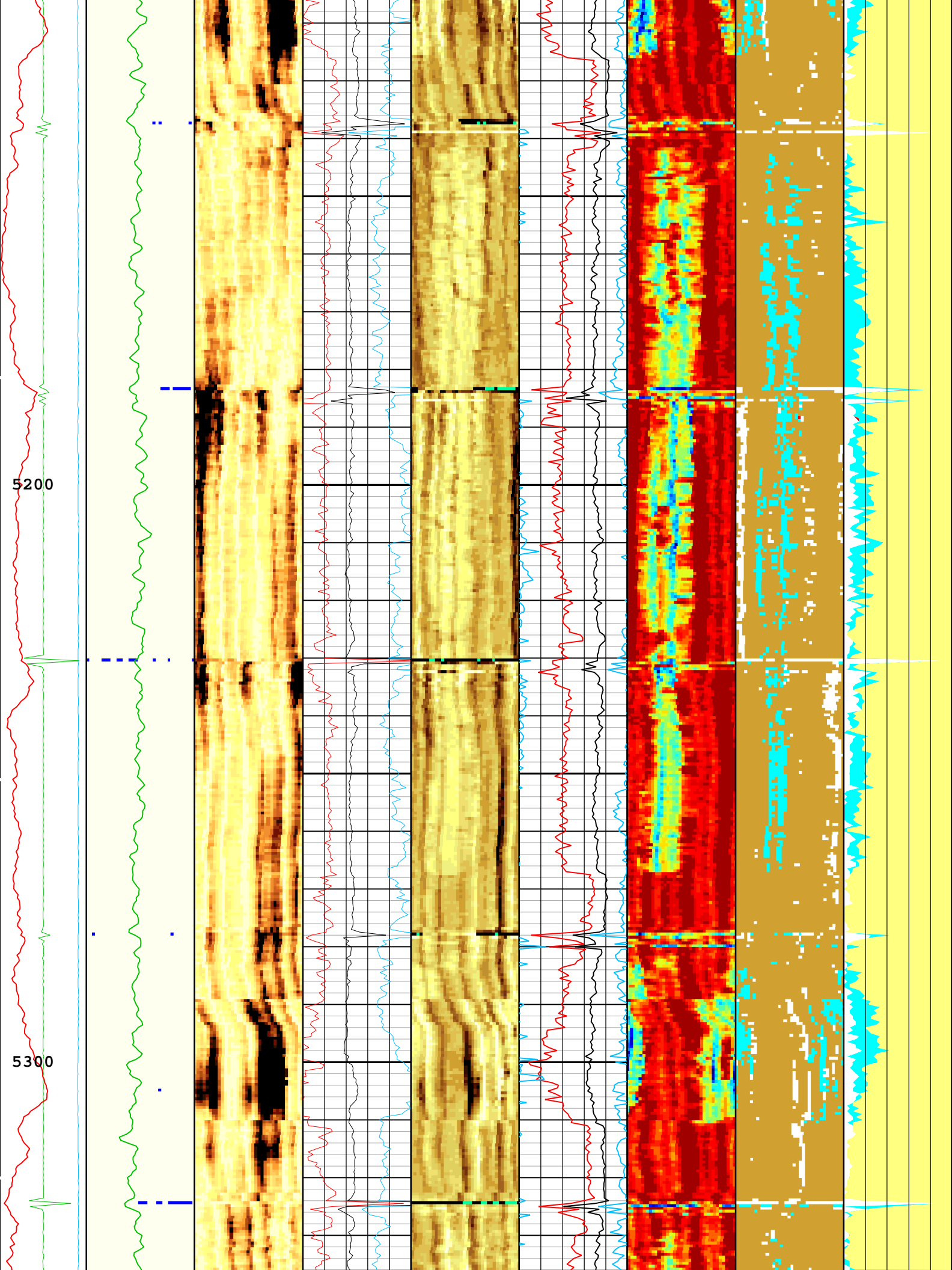


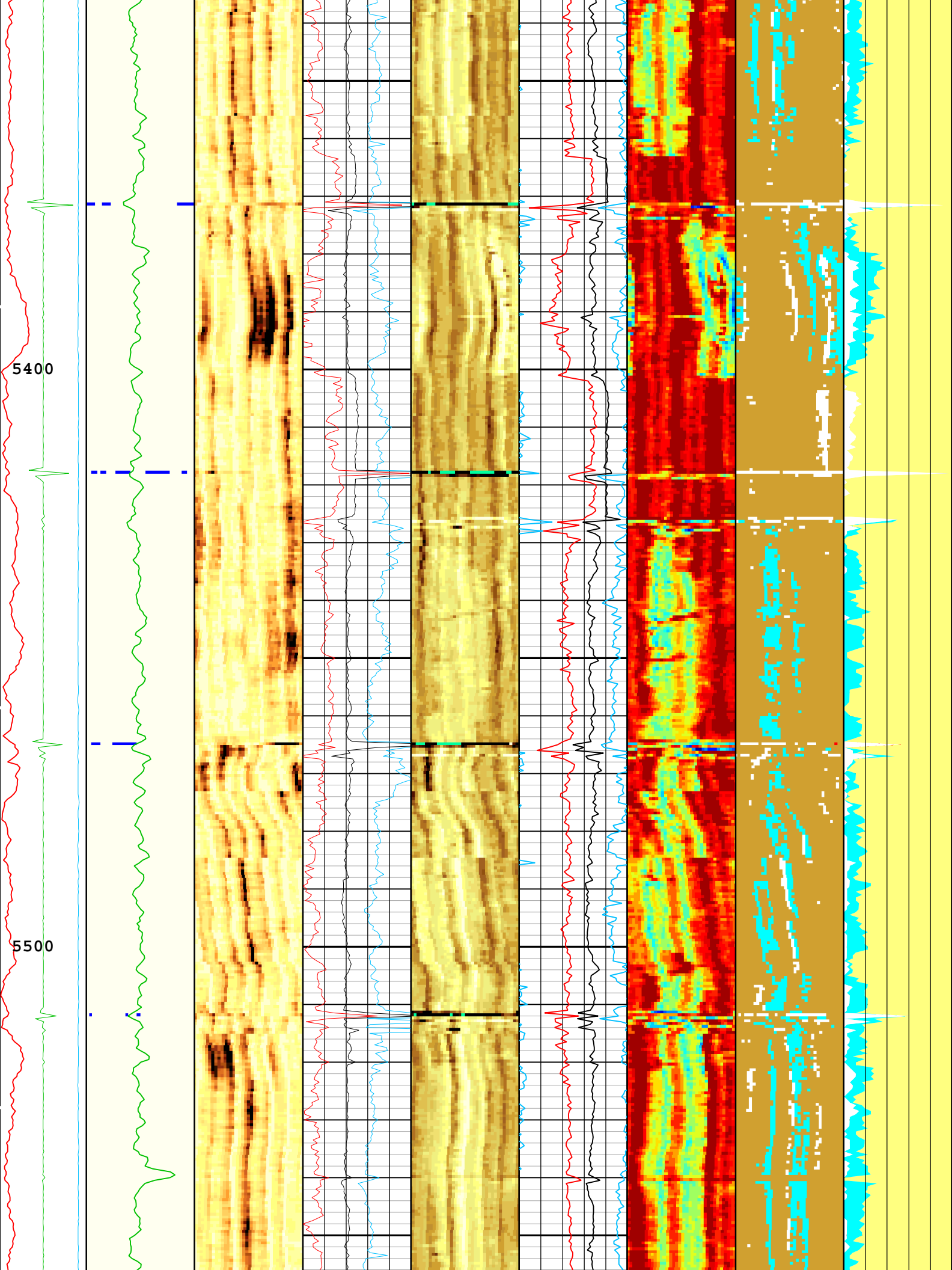


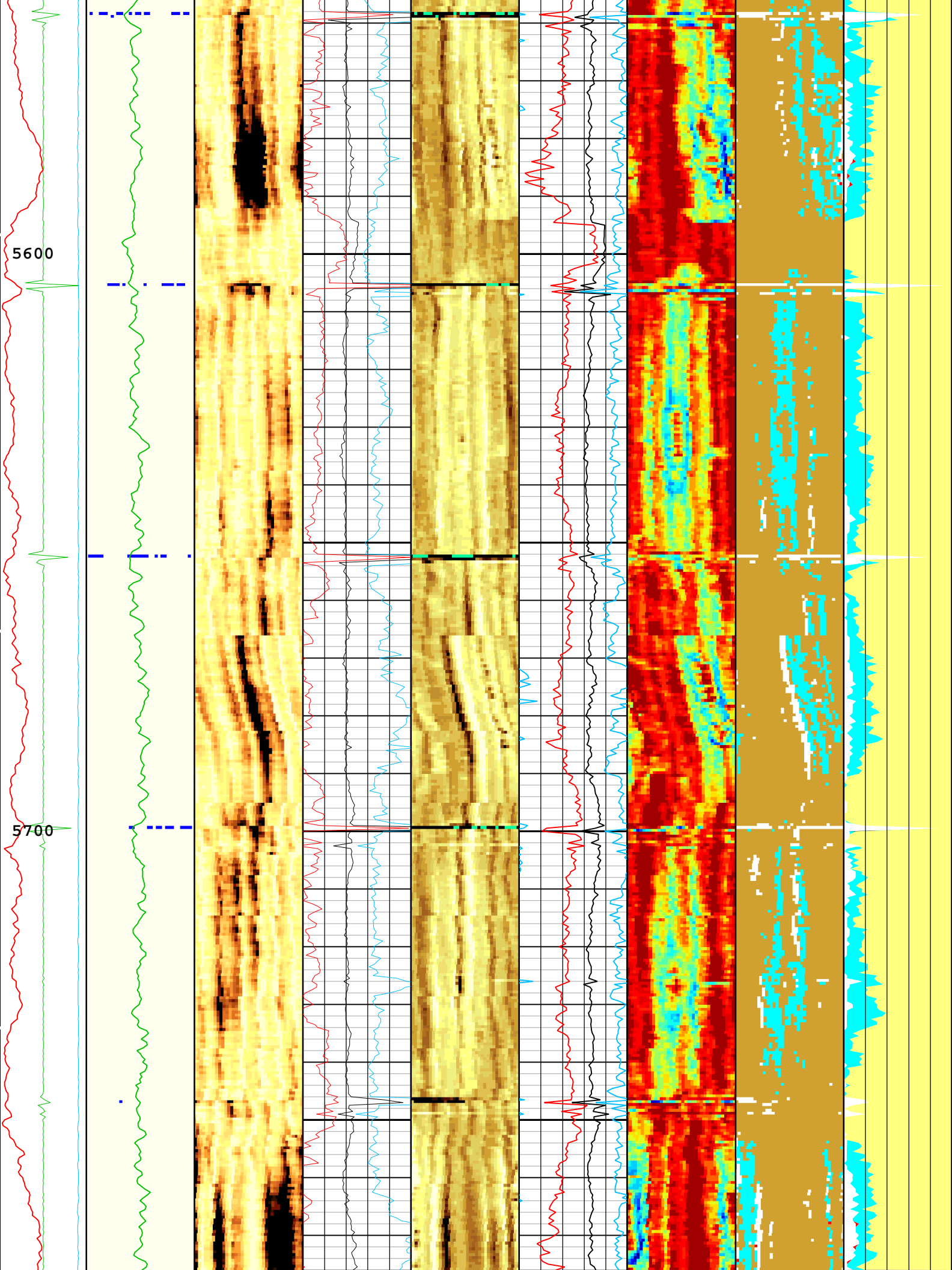


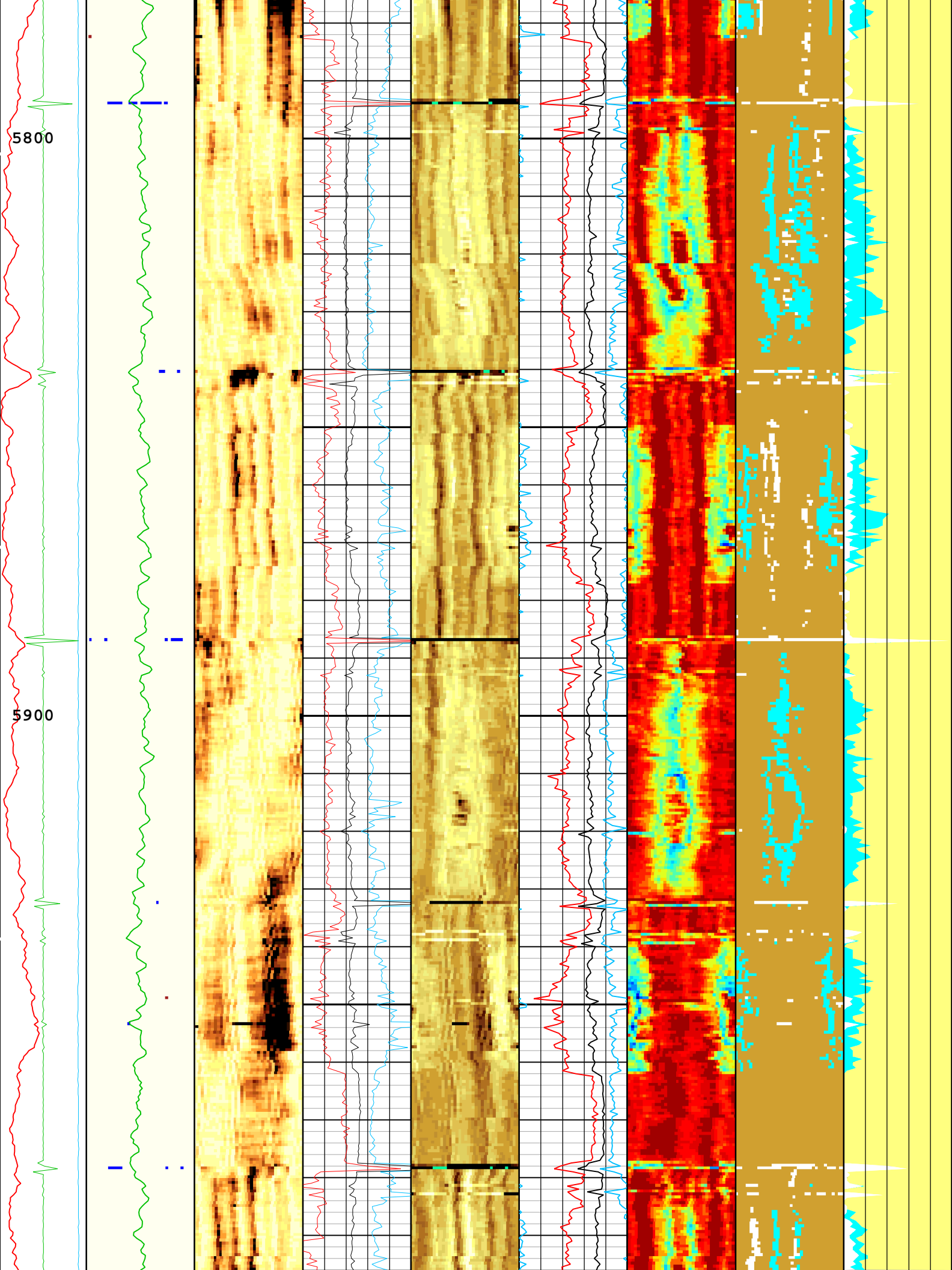


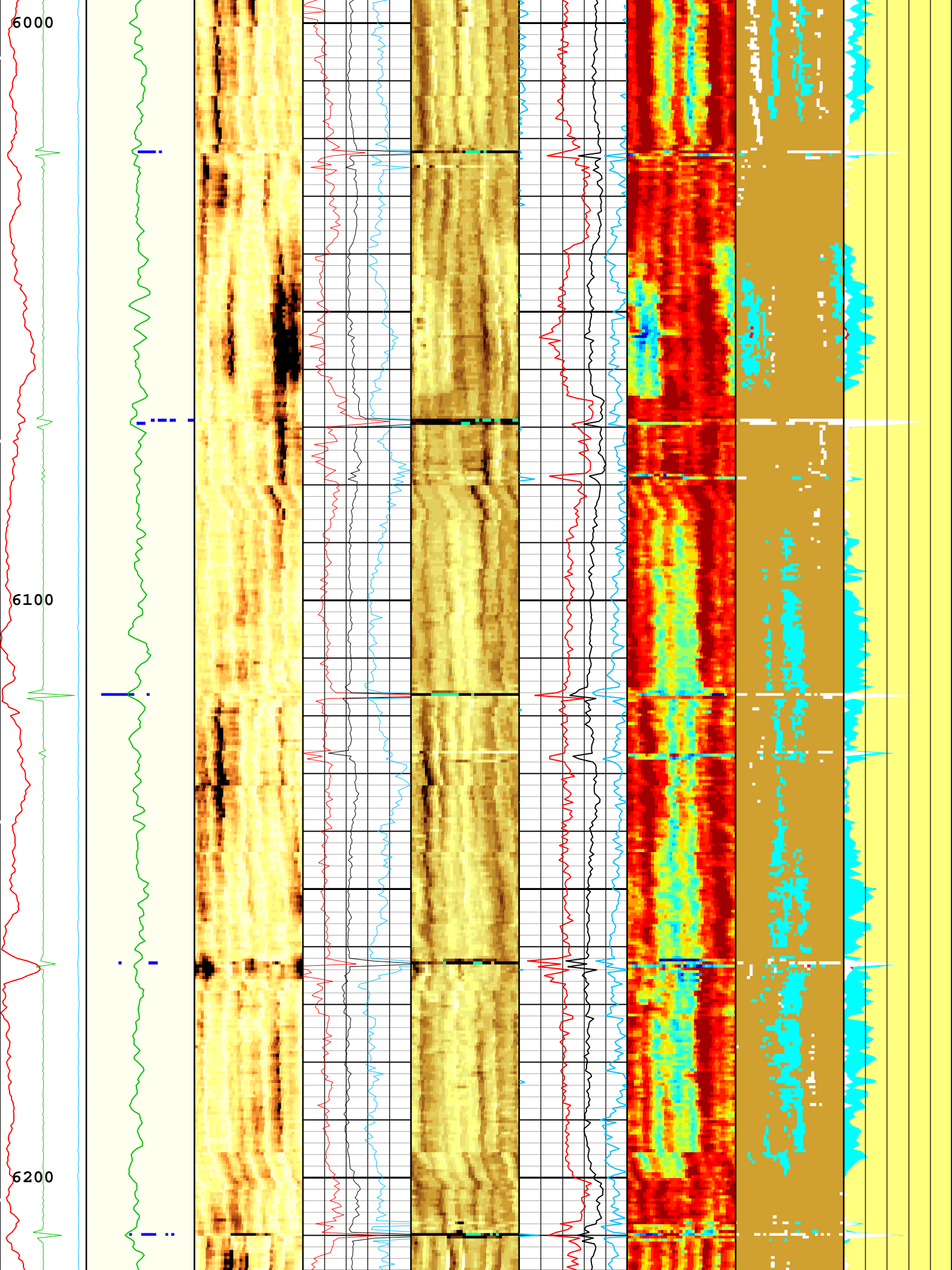


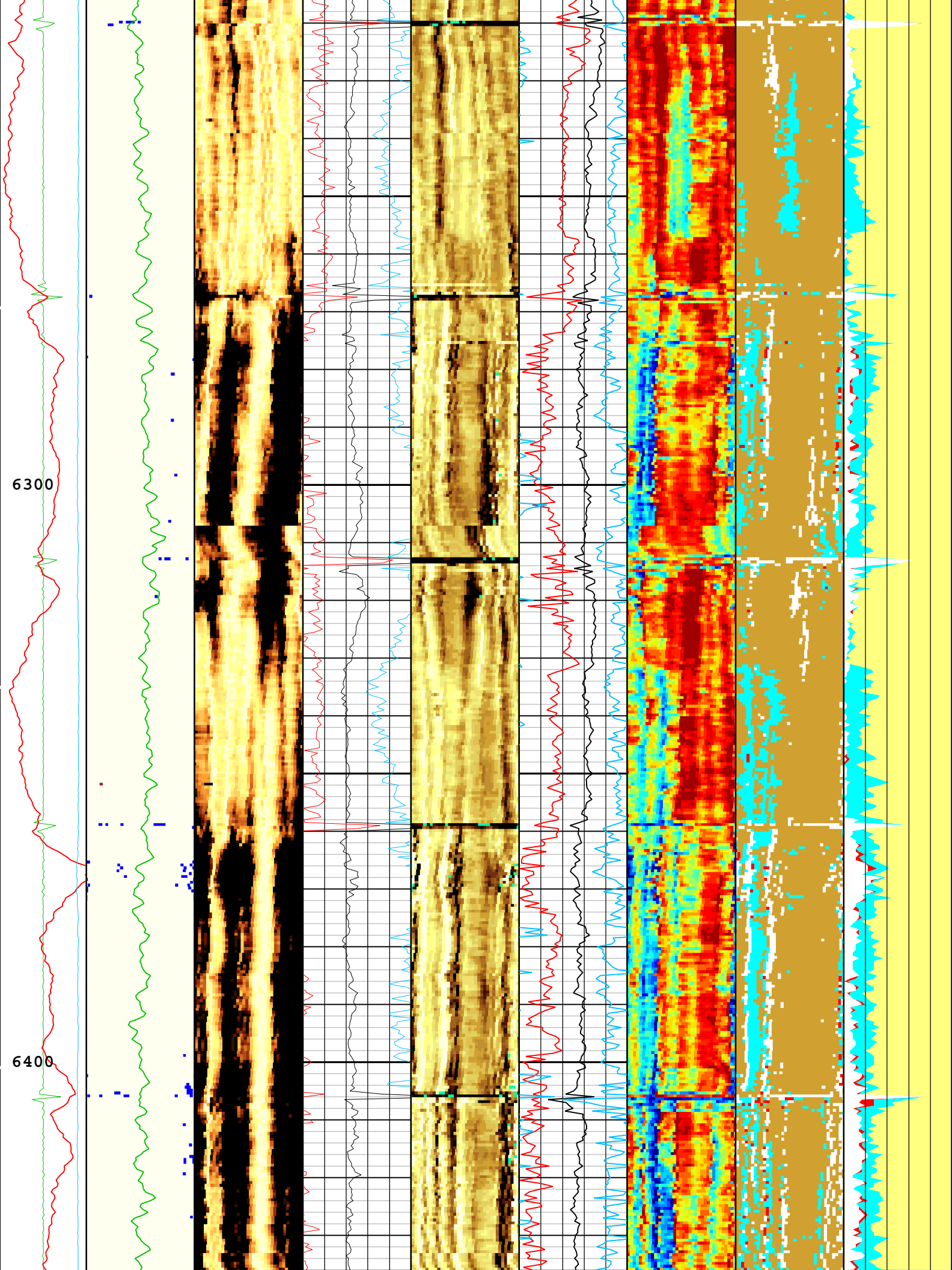


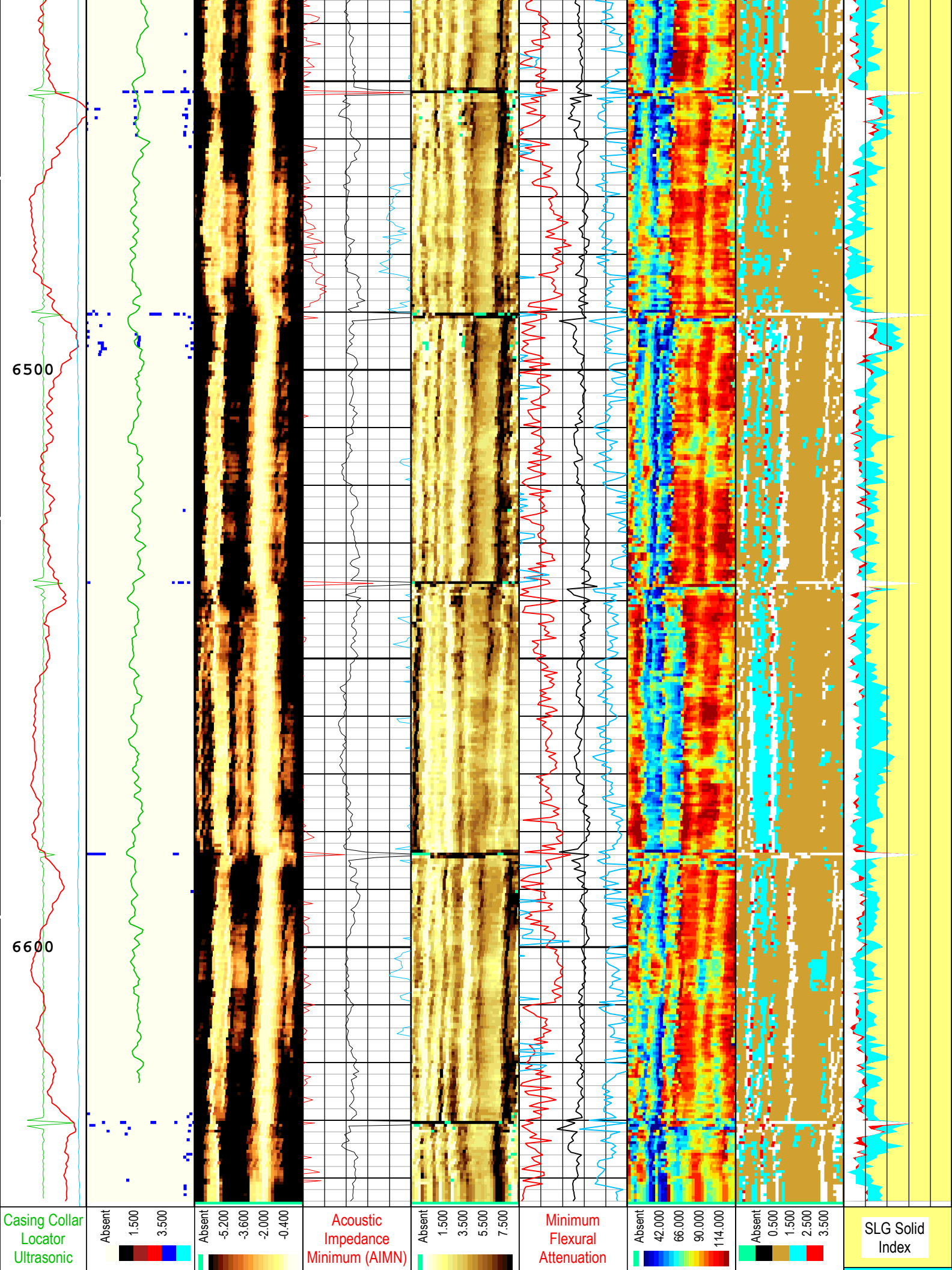












6500

6600

Casing Collar
Locator
Ultrasonic

Absent
1,500
3,500

Absent
5,200
3,600
2,000
0,400

Acoustic
Impedance
Minimum (AIMN)

Absent
1,500
3,500
5,500
7,500

Minimum
Flexural
Attenuation

Absent
42,000
66,000
90,000
114,000

Absent
0,500
1,500
2,500
3,500

SLG Solid
Index

(CCLU) USIT-E	Explicit Normalization USIT - USIT Processing Flags (UFLG) USIT-E Orientation: Top of Hole U L B R U	Explicit Normalization USIT - Amplitude of Wave (AWBK) USIT-E (dB) Orientation: Top of Hole U L B R U	USIT-E -1 Mrayl 9 Acoustic Impedance Average (AIAV) USIT-E -1 Mrayl 9 Acoustic Impedance Maximum (AIMX) USIT-E -1 Mrayl 9	Custom Normalization USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl) Orientation: Top of Hole U L B R U	(U-USIT_UFAN) USIT-E 0 dB/m 150 Average Flexural Attenuation (U-USIT_UFAV) USIT-E 0 dB/m 150 Maximum Flexural Attenuation (U-USIT_UFAX) USIT-E 0 dB/m 150	Custom Normalization USIT - Flexural Attenuation (UFAK) USIT-E (dB/m) Orientation: Top of Hole U L B R U	Explicit Normalization USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E Orientation: Top of Hole U L B R U	SLG Liquid Index
-20 in 20 Amplitude of Eccentering (ECCE) USIT-E 0 in 0.5								SLG Gas Index
Motor Revolution Speed (RSAV) USIT-E 6 c/s 7.5	USIT Processing Flags (UFLG[0]) USIT-E 1 5 Gamma Ray (ECGR_EDTC) EDTC-B 0 gAPI 150							SLG White Point Index

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

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: 10-Aug-2018 22:02:10

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	12024	ft
CDEN	Cement Density	USIT-E	13.5	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular 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	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	-6.78	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	

ICE2_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	1.2	
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	1.61	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-4.85	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	1.75	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.3	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters			
Parameter	Value	Start (ft)	Stop (ft)
BS	12.25	71	2483
BS	8.5	2483	6645

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	60	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	
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	31.88	us
WINE	Window End Time	USIT-E	71.88	us

One

IBC SLG Composite

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[4]:Up	Up	92.52 ft	6645.64 ft	10-Aug-2018 4:06:38 PM	10-Aug-2018 5:41:58 PM	ON	6.51 ft	No

All depths are referenced to toolstring zero

Log

Company:Crestone Peak Resources Operating LLC






Well:Ruegge #3K-4H-N165

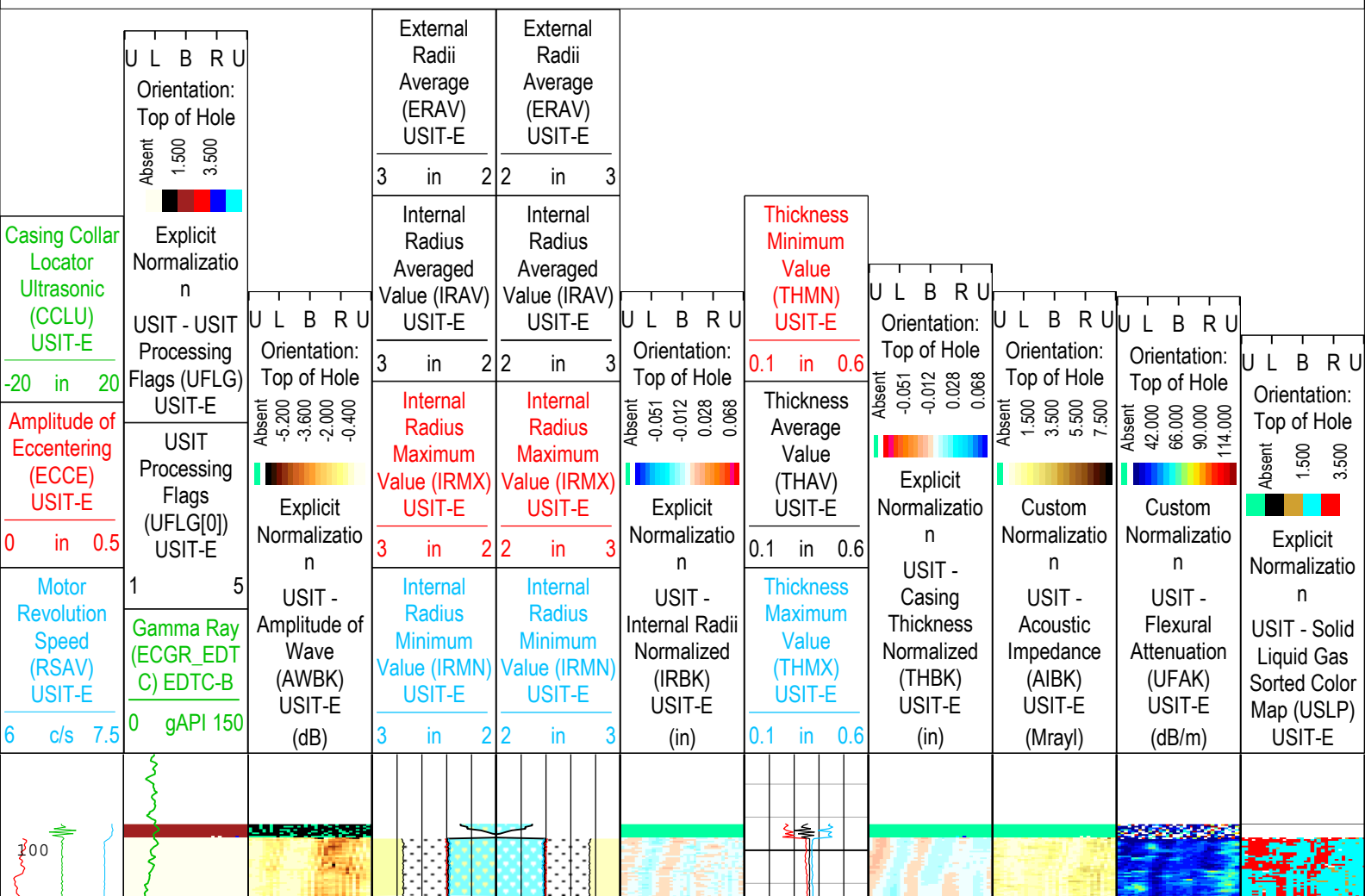
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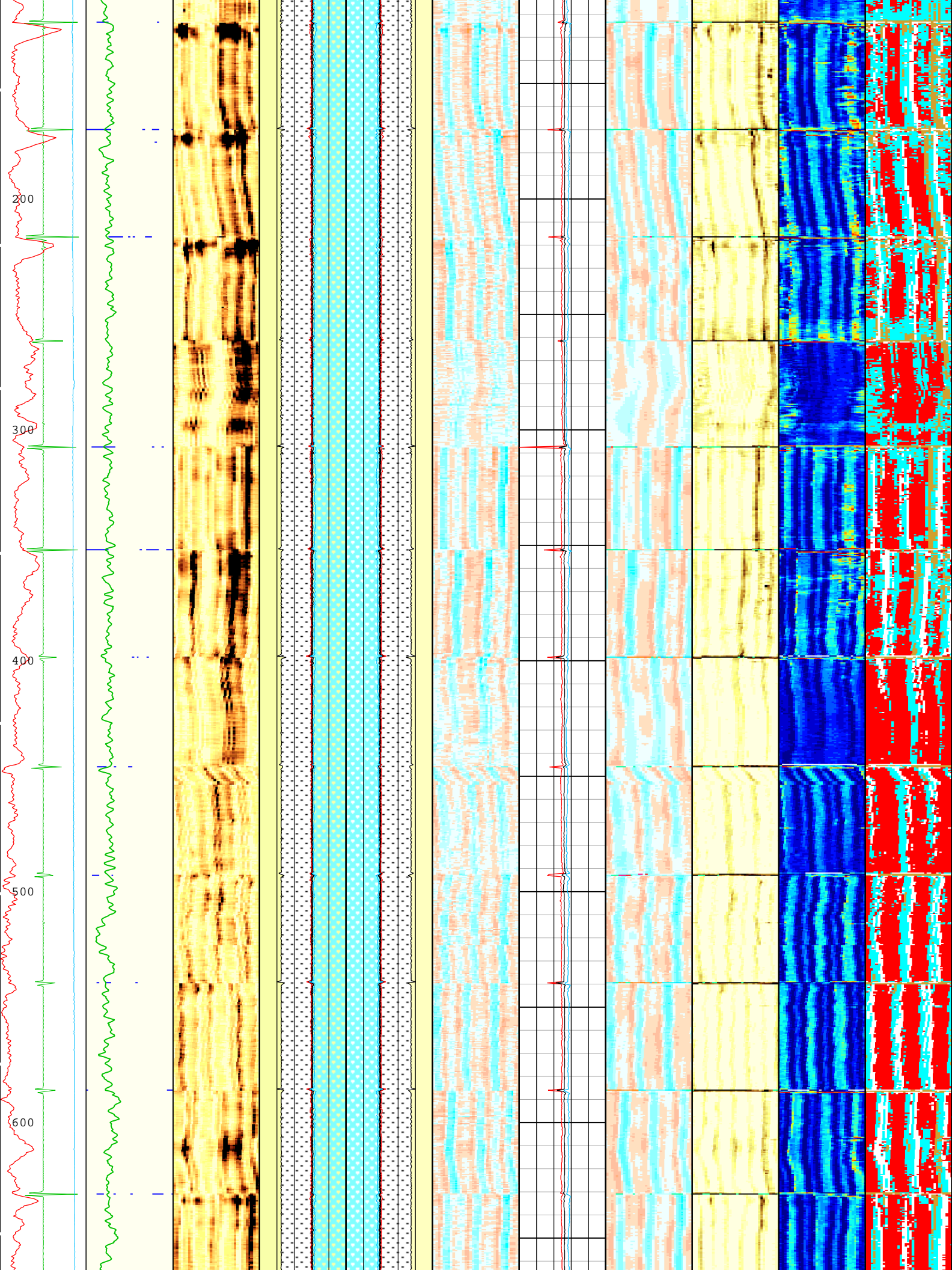
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Creation Date: 10-Aug-2018 22:03:37

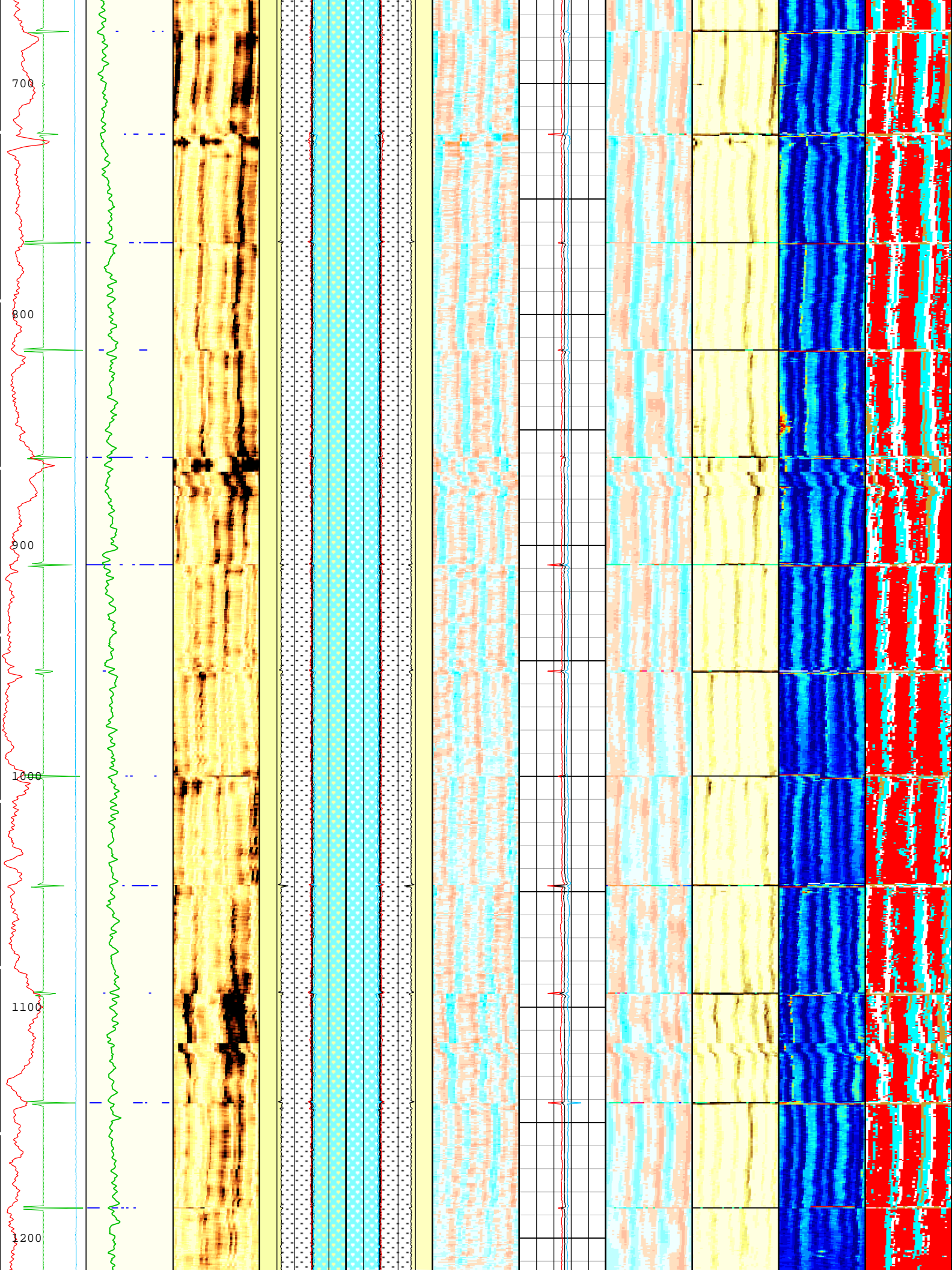
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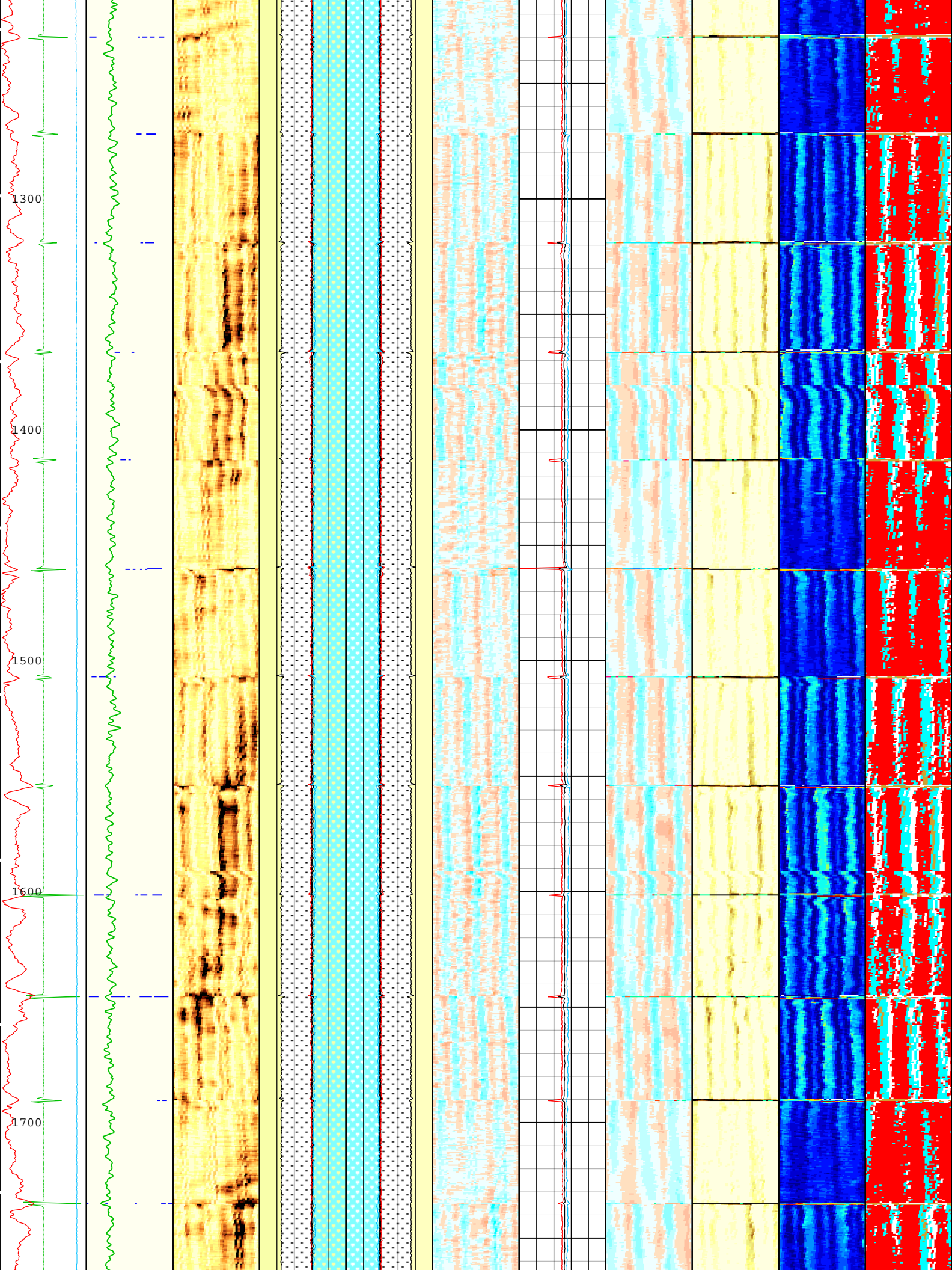
USIT Processing Flags (UFLG[0]) USIT-E

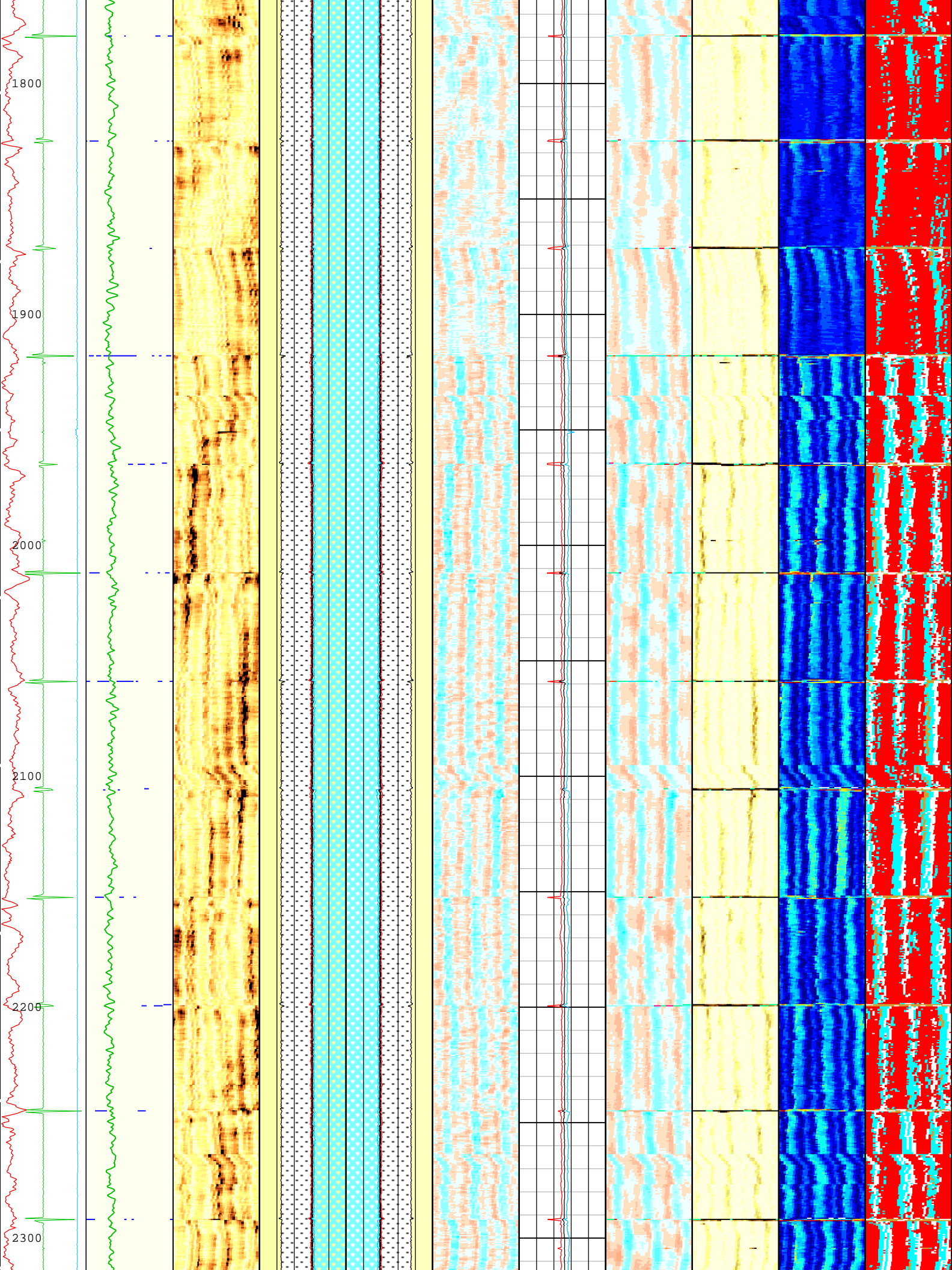
- 1 - UFLG 1 Value within [0.0 - 1.5] - :  UTIM Error
- 2 - UFLG 2 Value within [1.5 - 2.5] - :  Pulse Origin Not Detected
- 3 - UFLG 3 Value within [2.5 - 3.5] - :  WINLEN Error
- 4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :  Casing Thickness Error
- 5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5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

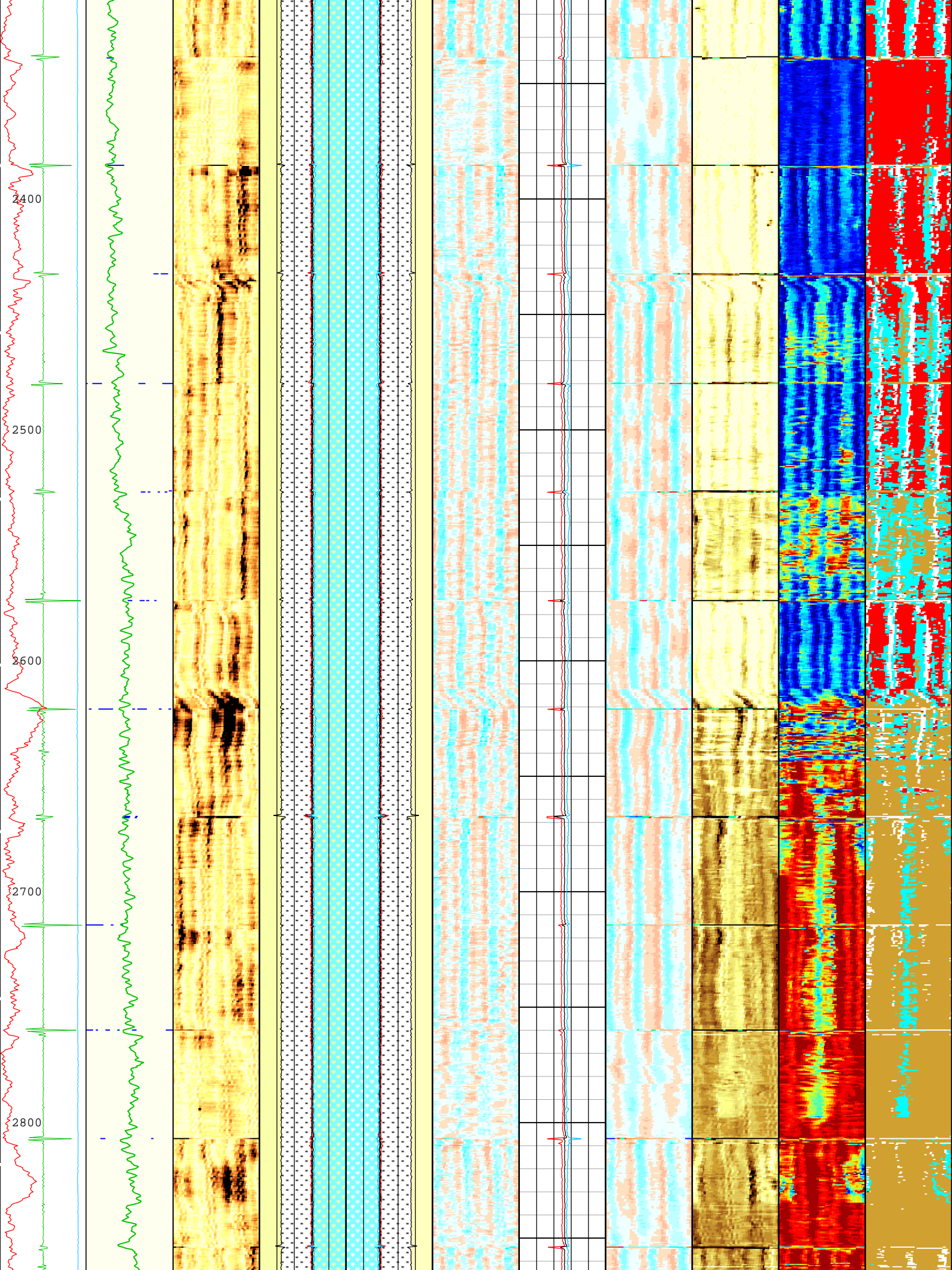


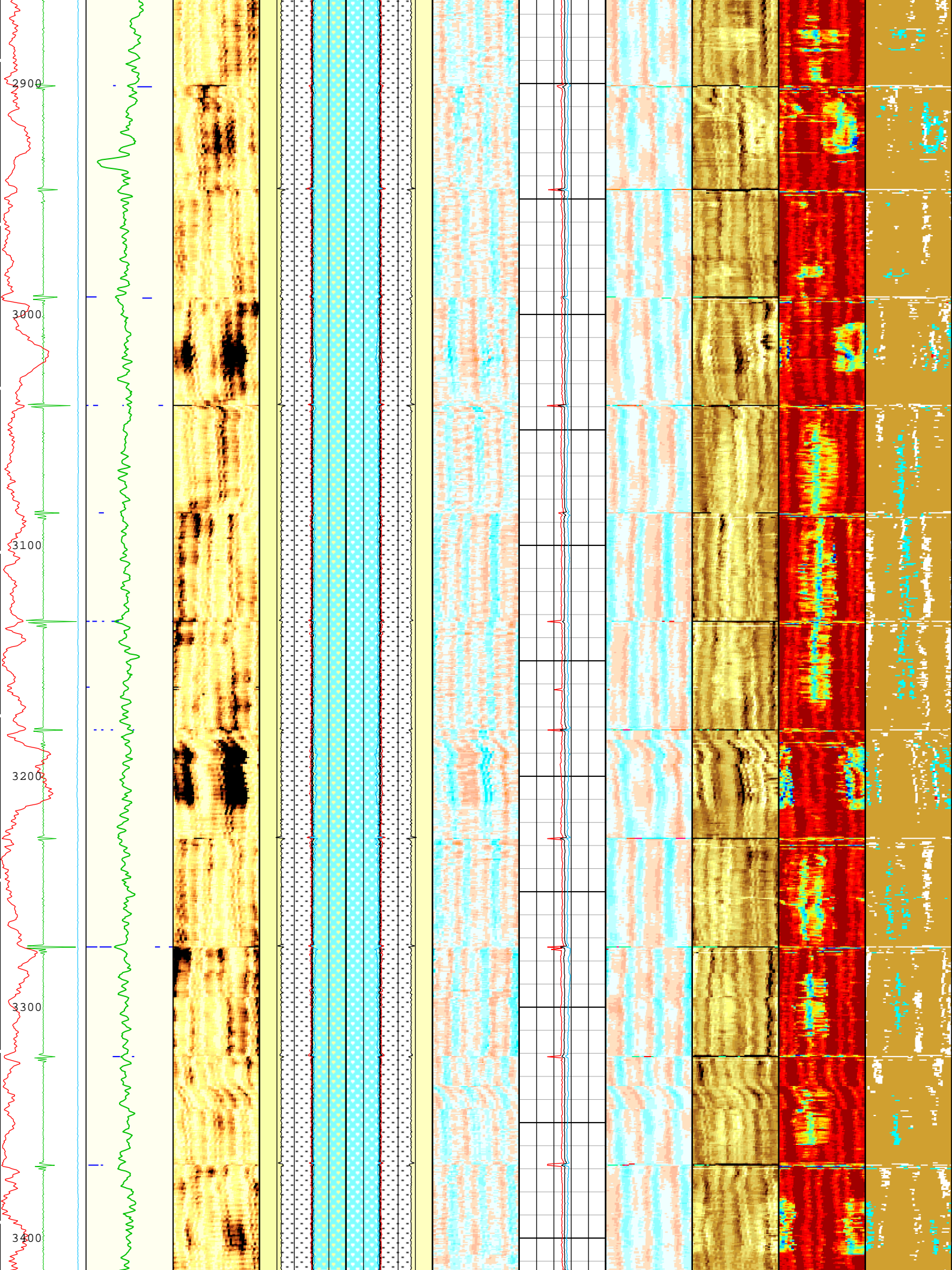


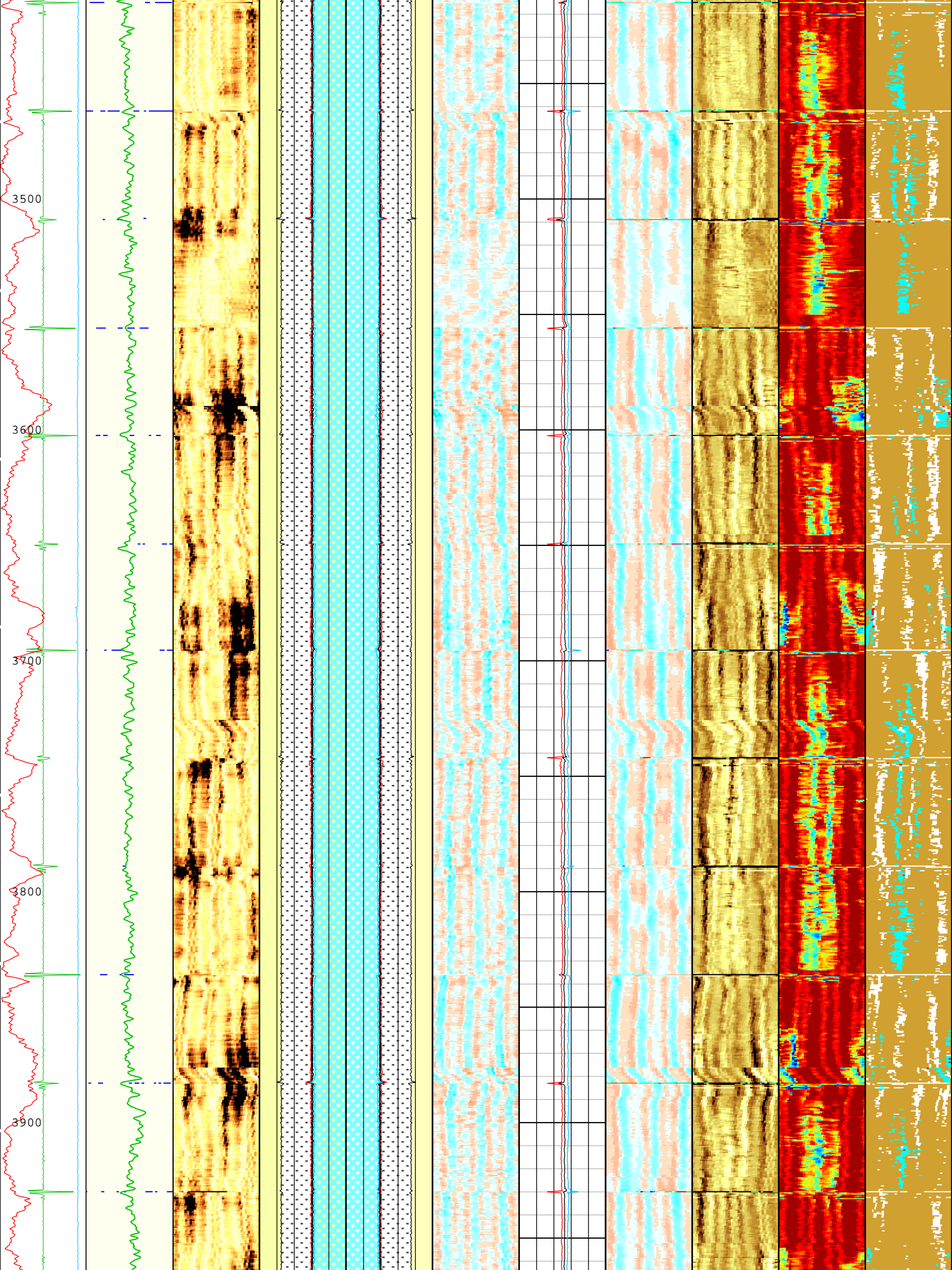


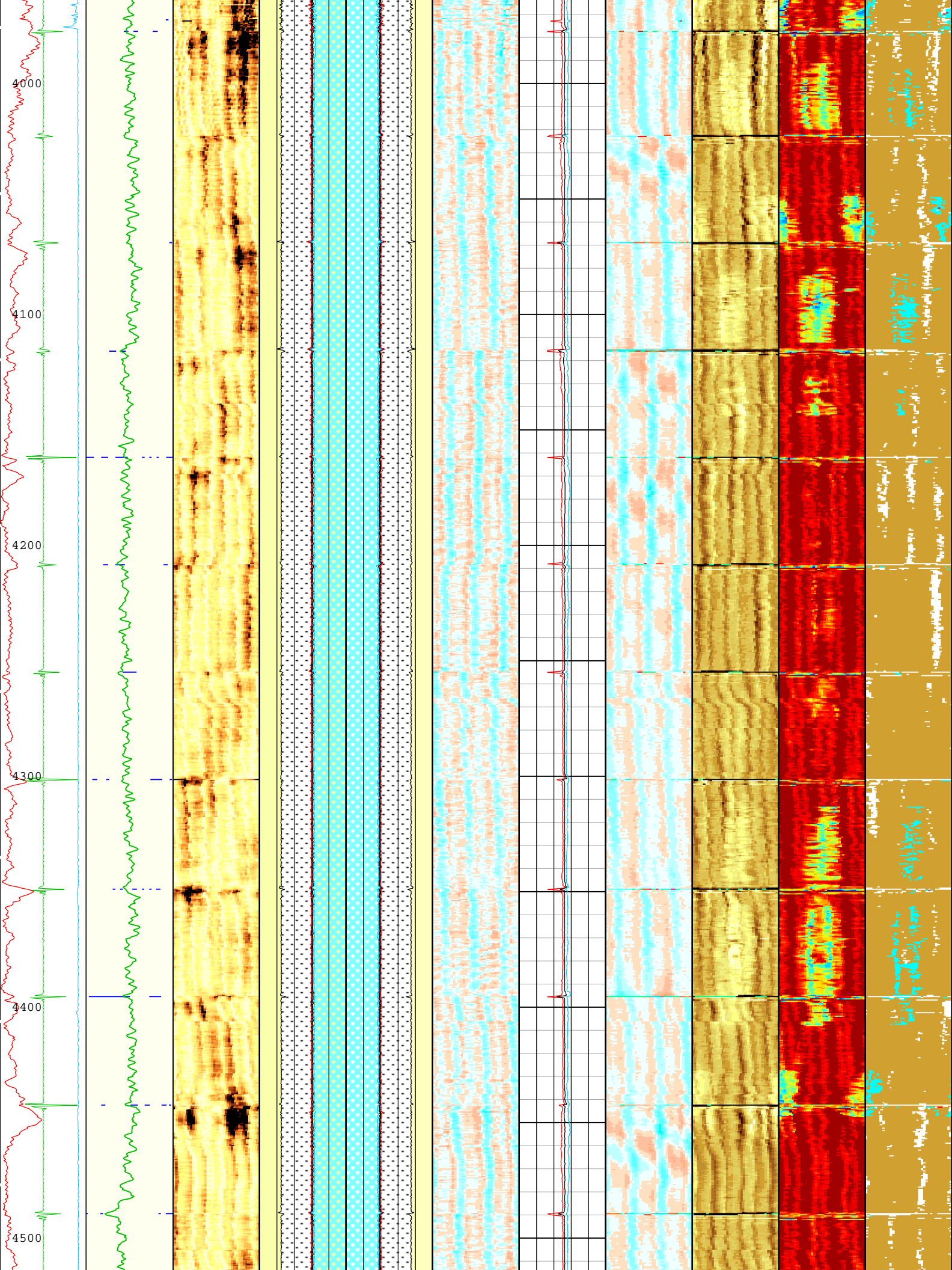


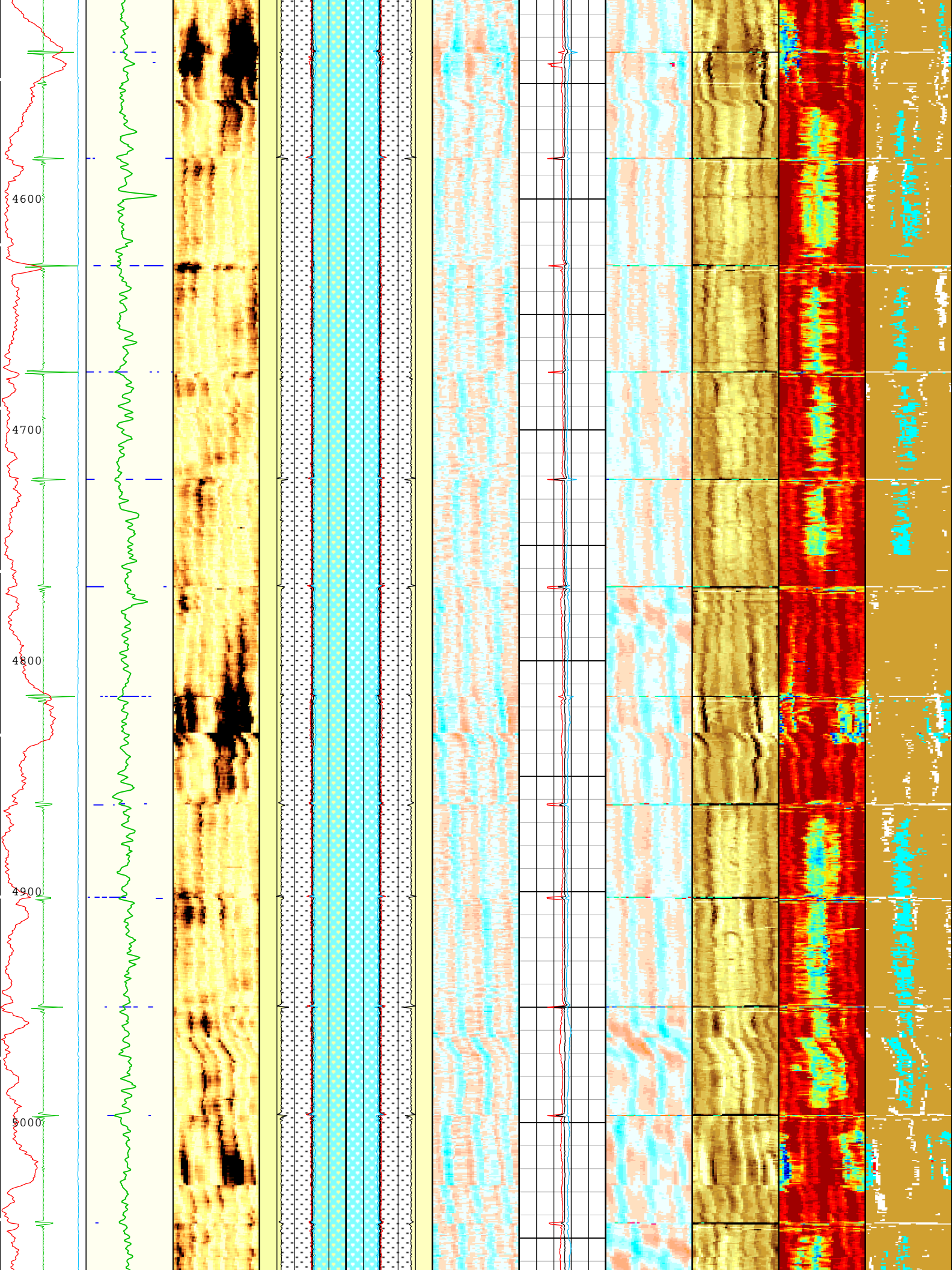


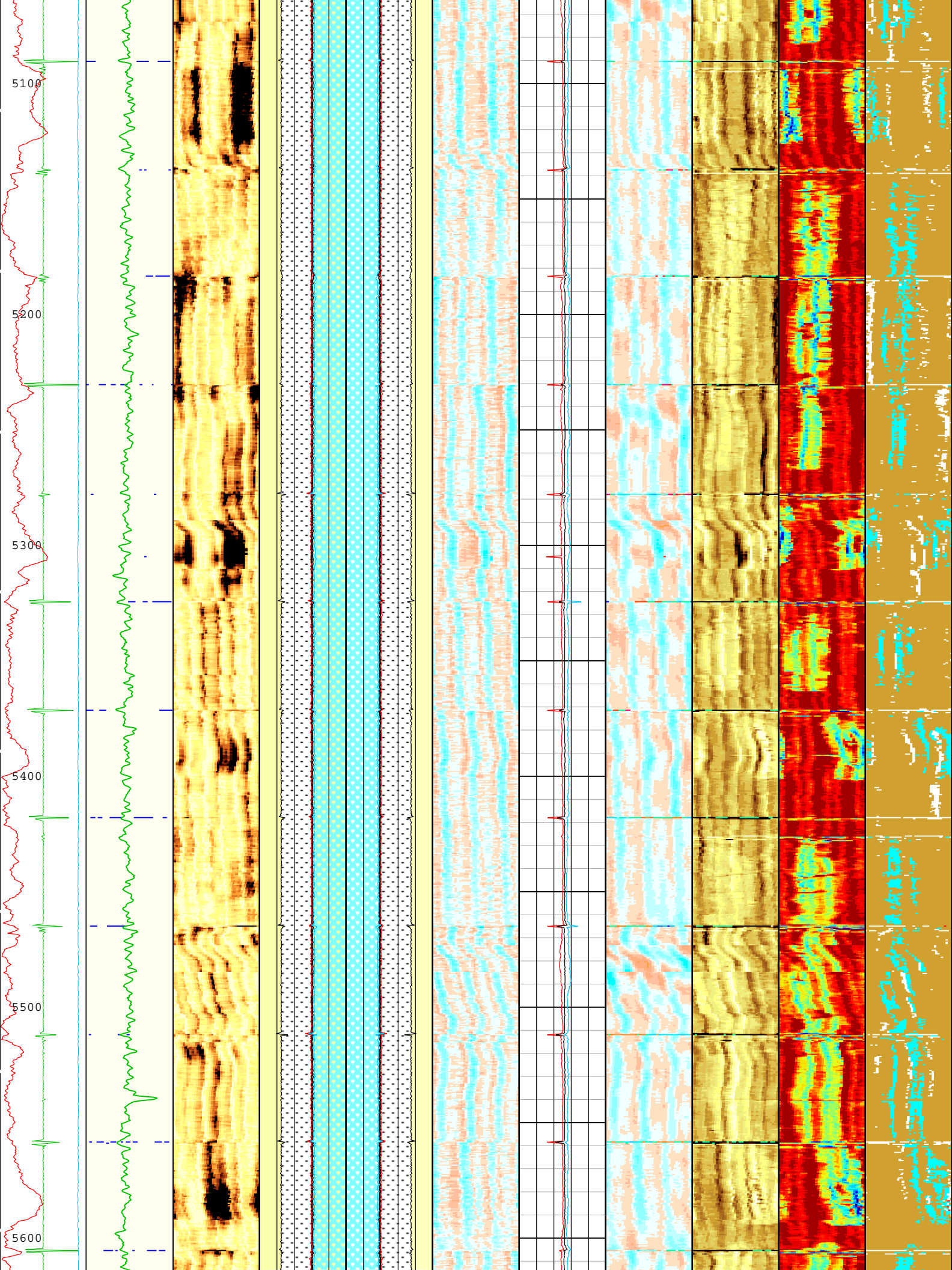


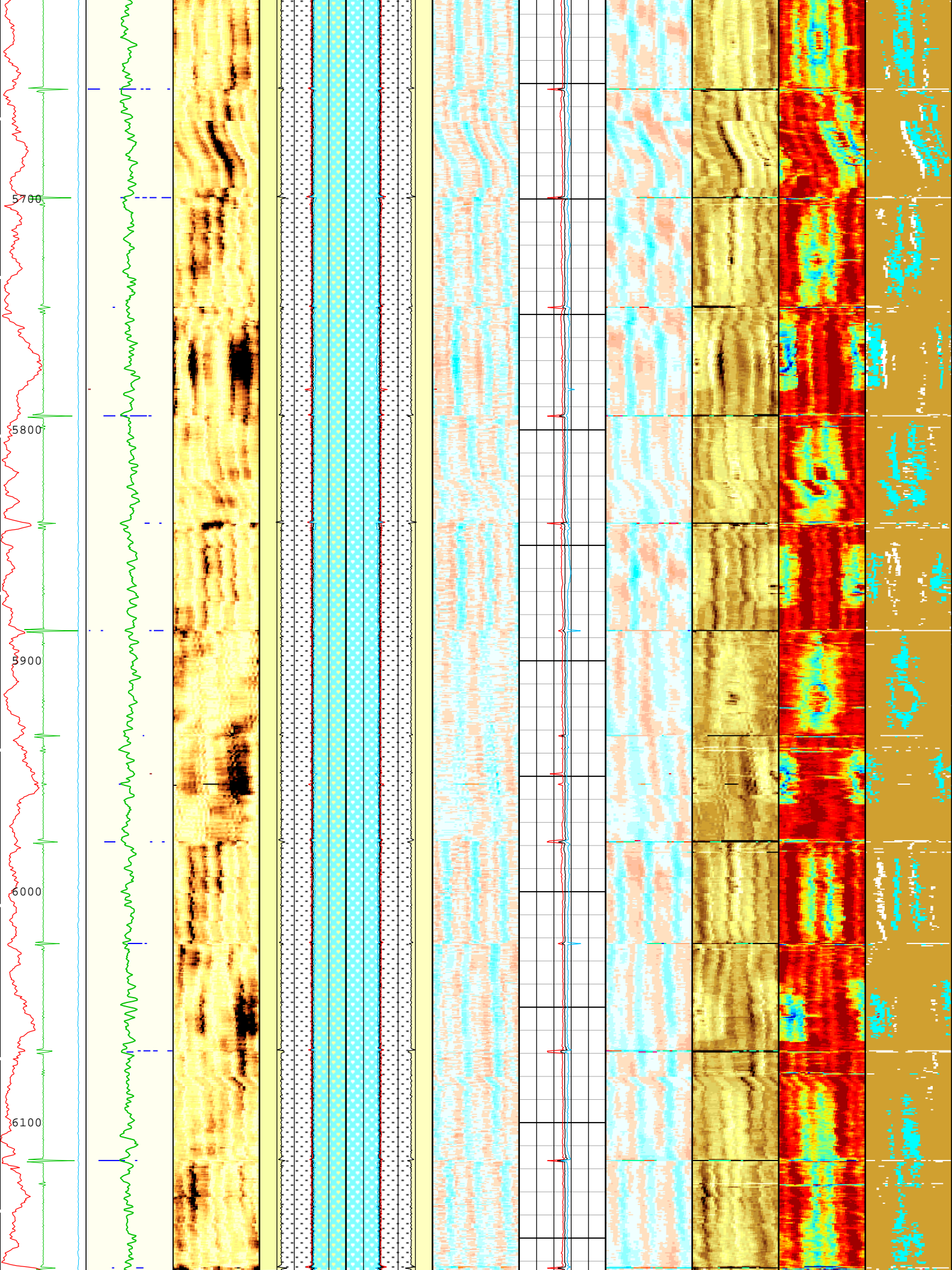


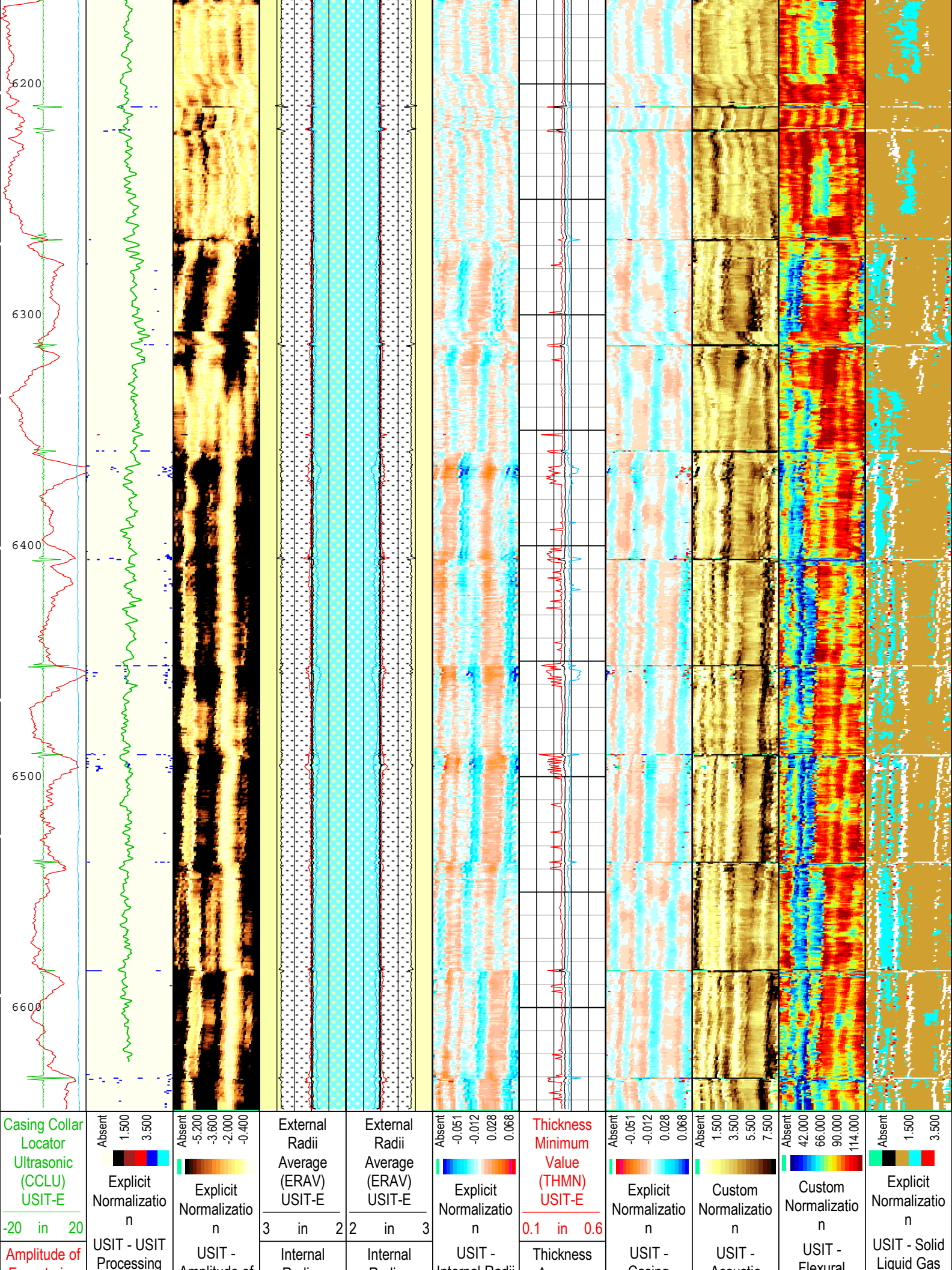






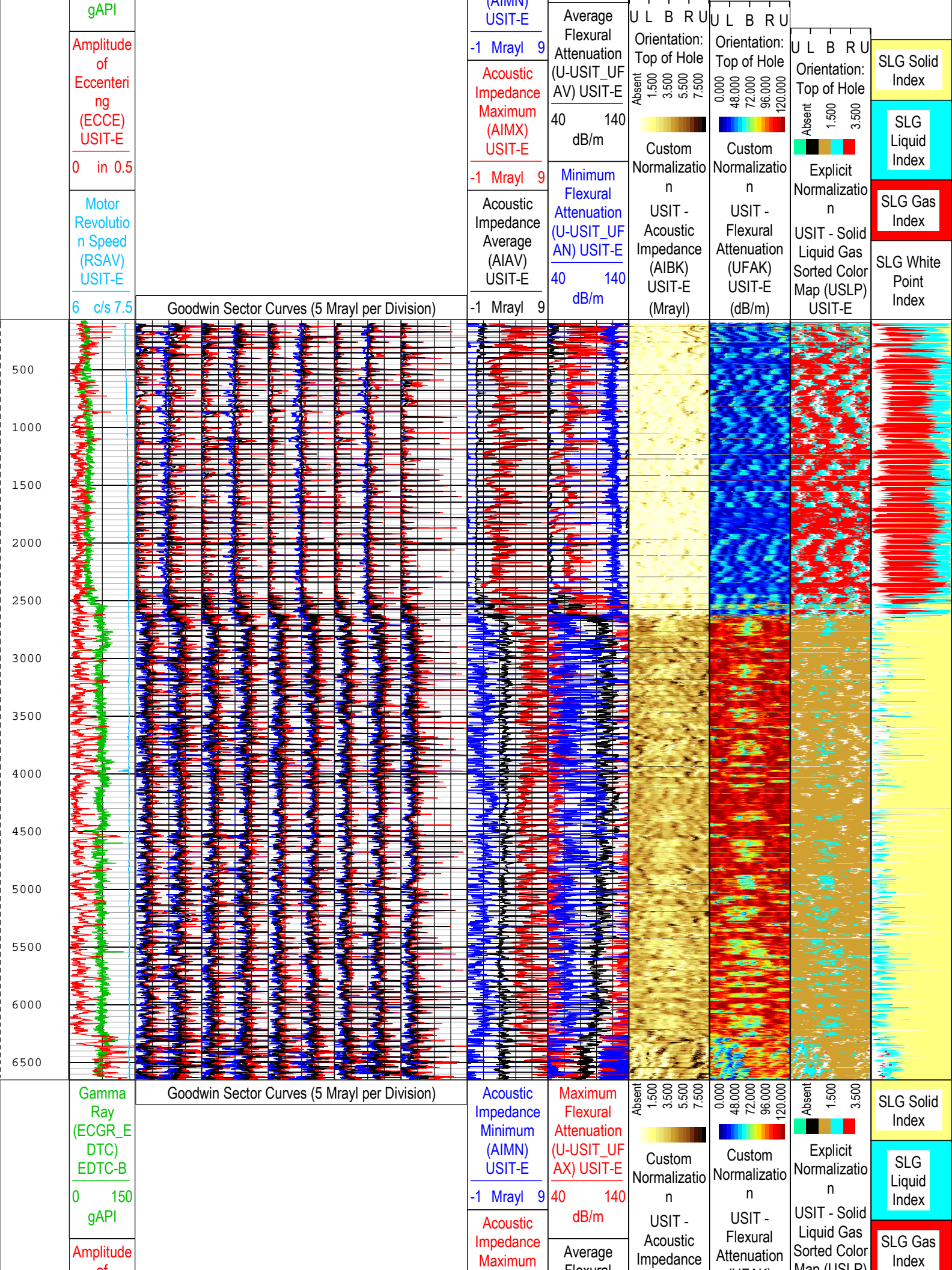


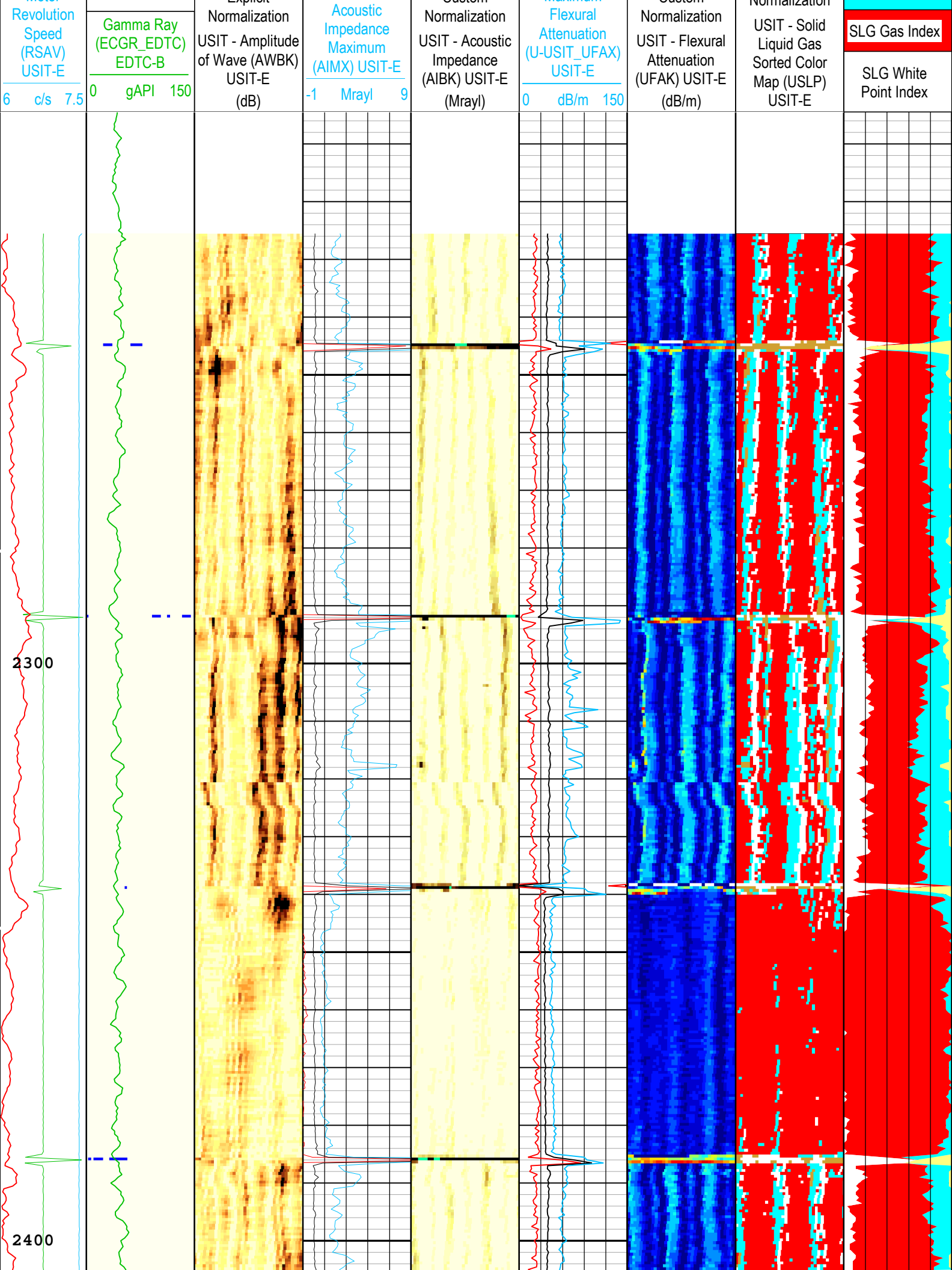


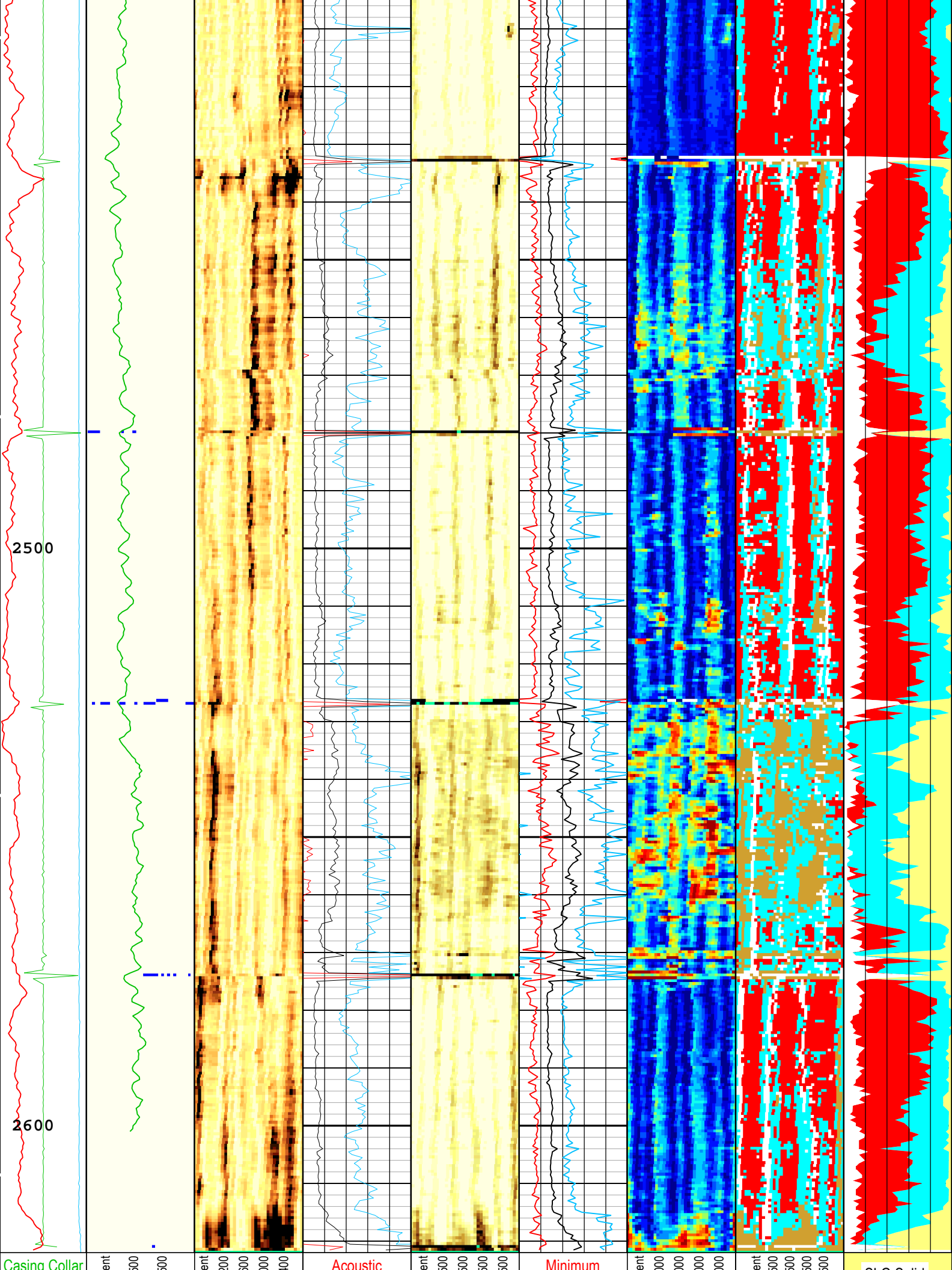


Channel Processing Parameters				
One: Parameters				
Parameter	Description	Tool	Value	Unit
BAR(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	12024	ft
CDEN	Cement Density	USIT-E	13.5	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular 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	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	-6.78	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	1.2	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.61	Mrayl

U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-4.85	dB/m					
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap						
ZMUD	Acoustic Impedance of Mud	Borehole	1.75	Mrayl					
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.3	Mrayl					
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl					
Depth Zone Parameters									
Parameter	Value	Start (ft)	Stop (ft)						
BS	12.25	71	2483						
BS	8.5	2483	6645						
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	60	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						
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					
One									
IBC Goodwin Compressed									
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[4]:Up	Up	92.52 ft	6645.64 ft	10-Aug-2018 4:06:38 PM	10-Aug-2018 5:41:58 PM	ON	6.51 ft	No
All depths are referenced to toolstring zero									
Log	Company:Crestone Peak Resources Operating LLC				Well:Ruegge #3K-4H-N165				
					One: Log[4]:Up:S006				
Description: USI Goodwin Format: Log (IBC Goodwin) Index Scale: 0.1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 10-Aug-2018 22:04:45									
TIME_1900 - Time Marked every 60.00 (s)									
<div>Gamma Ray (ECGR_E DTC) EDTC-B</div> <div>0150</div>					<div>Acoustic Impedance Minimum (AIMN)</div> <div>40140</div> <div>dB/m</div>				
					<div>Maximum Flexural Attenuation (U-USIT_UFAX) USIT-E</div> <div>40140</div> <div>dB/m</div>				







<p>Locating Color</p> <p>Locator Ultrasonic (CCLU) USIT-E</p> <p>-20 in 20</p> <p>Amplitude of Eccentering (ECCE) USIT-E</p> <p>0 in 0.5</p> <p>Motor Revolution Speed (RSAV) USIT-E</p> <p>6 c/s 7.5</p>	<p>Abs 1.5 3.5</p> <p>Explicit Normalization</p> <p>USIT - USIT</p> <p>Processing Flags (UFLG) USIT-E</p> <p>Orientation: Top of Hole</p> <p>U L B R U</p> <p>USIT Processing Flags (UFLG[0]) USIT-E</p> <p>1 5</p> <p>Gamma Ray (ECGR_EDTC) EDTC-B</p> <p>0 gAPI 150</p>	<p>Abs -5.2 -3.8 -2.2 -0.4</p> <p>Explicit Normalization</p> <p>USIT - Amplitude of Wave (AWBK) USIT-E (dB)</p> <p>Orientation: Top of Hole</p> <p>U L B R U</p>	<p>Impedance Minimum (AIMN) USIT-E</p> <p>-1 Mrayl 9</p> <p>Acoustic Impedance Average (AIAV) USIT-E</p> <p>-1 Mrayl 9</p> <p>Acoustic Impedance Maximum (AIMX) USIT-E</p> <p>-1 Mrayl 9</p>	<p>Abs 1.9 3.9 5.5 7.5</p> <p>Custom Normalization</p> <p>USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)</p> <p>Orientation: Top of Hole</p> <p>U L B R U</p>	<p>Minimum Flexural Attenuation (U-USIT_UFAN) USIT-E</p> <p>0 dB/m 150</p> <p>Average Flexural Attenuation (U-USIT_UFAV) USIT-E</p> <p>0 dB/m 150</p> <p>Maximum Flexural Attenuation (U-USIT_UFAX) USIT-E</p> <p>0 dB/m 150</p>	<p>Abs 42.0 66.0 90.0 114.0</p> <p>Custom Normalization</p> <p>USIT - Flexural Attenuation (UFAK) USIT-E (dB/m)</p> <p>Orientation: Top of Hole</p> <p>U L B R U</p>	<p>Abs 0.5 1.5 2.5 3.5</p> <p>Explicit Normalization</p> <p>USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E</p> <p>Orientation: Top of Hole</p> <p>U L B R U</p>	<p>SLG Solid Index</p> <p>SLG Liquid Index</p> <p>SLG Gas Index</p> <p>SLG White Point Index</p>
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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	1.2	
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	1.61	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-4.85	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	1.75	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.3	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters

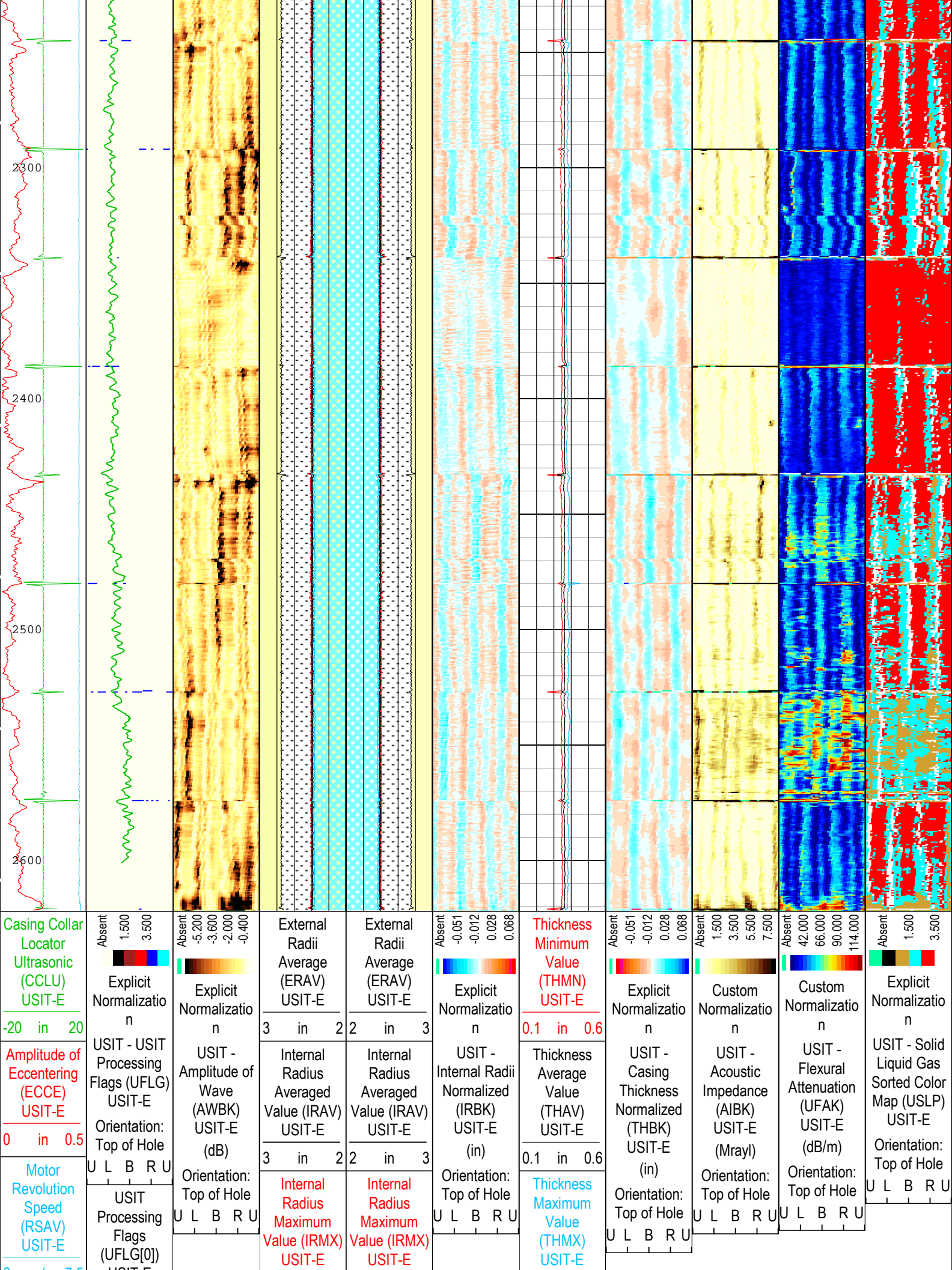
Parameter	Value	Start (ft)	Stop (ft)
BS	12.25	2204.5	2483
BS	8.5	2483	2622

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	60	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	
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



c/s		7.5	USIT-E		3 in 2			2 in 3			0.1 in 0.6		
		1	5		Internal Radius Minimum Value (IRMN) USIT-E			Internal Radius Minimum Value (IRMN) USIT-E					
		Gamma Ray (ECGR_EDT C) EDTC-B											
		0 gAPI 150											

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

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: 10-Aug-2018 22:06:05											

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	12024	ft
CDEN	Cement Density	USIT-E	13.5	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular 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	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	-6.78	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	1.2	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.61	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-4.85	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
ZMUD	Acoustic Impedance of Mud	Borehole	1.75	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.3	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters			
Parameter	Value	Start (ft)	Stop (ft)
BS	13.25	2204.5	2482

	12.25	2204.5	2463
BS	8.5	2483	2622

All depth are actual.

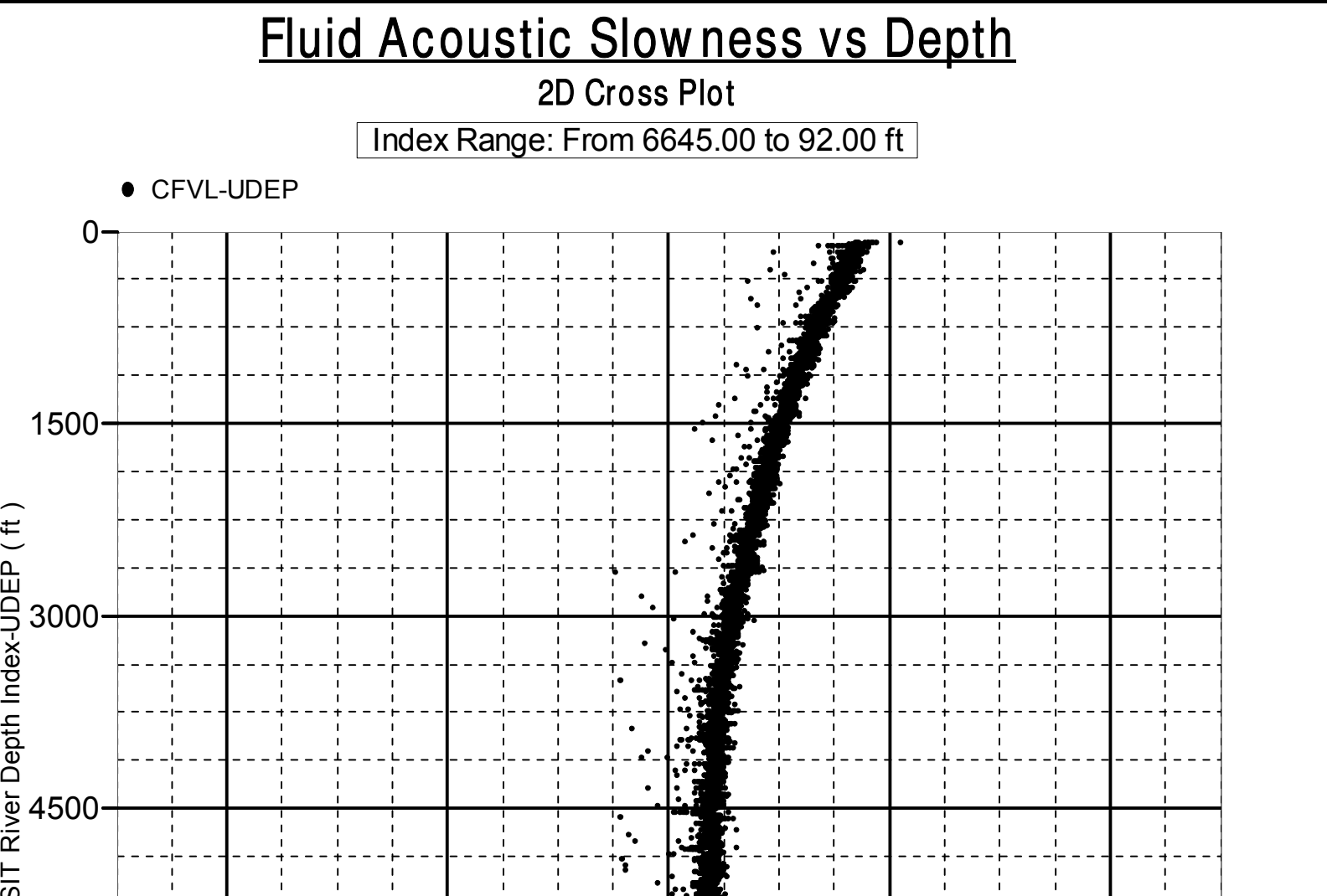
Tool Control Parameters

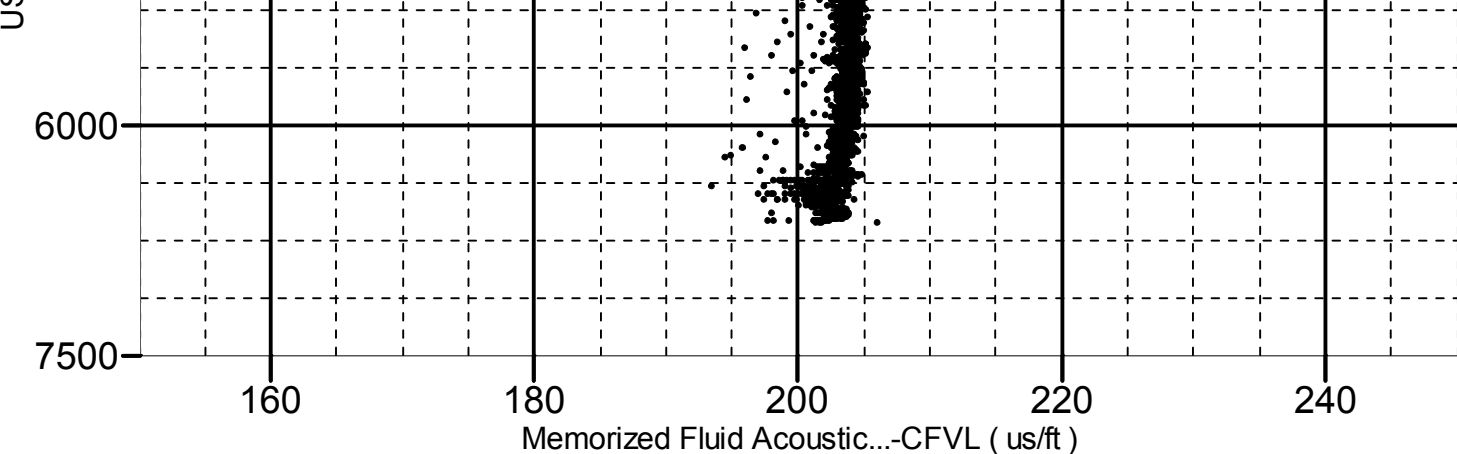
One: Parameters

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	60	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	
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:Ruegge #3K-4H-N165
One: Log[4]:Up:S006





XYZ

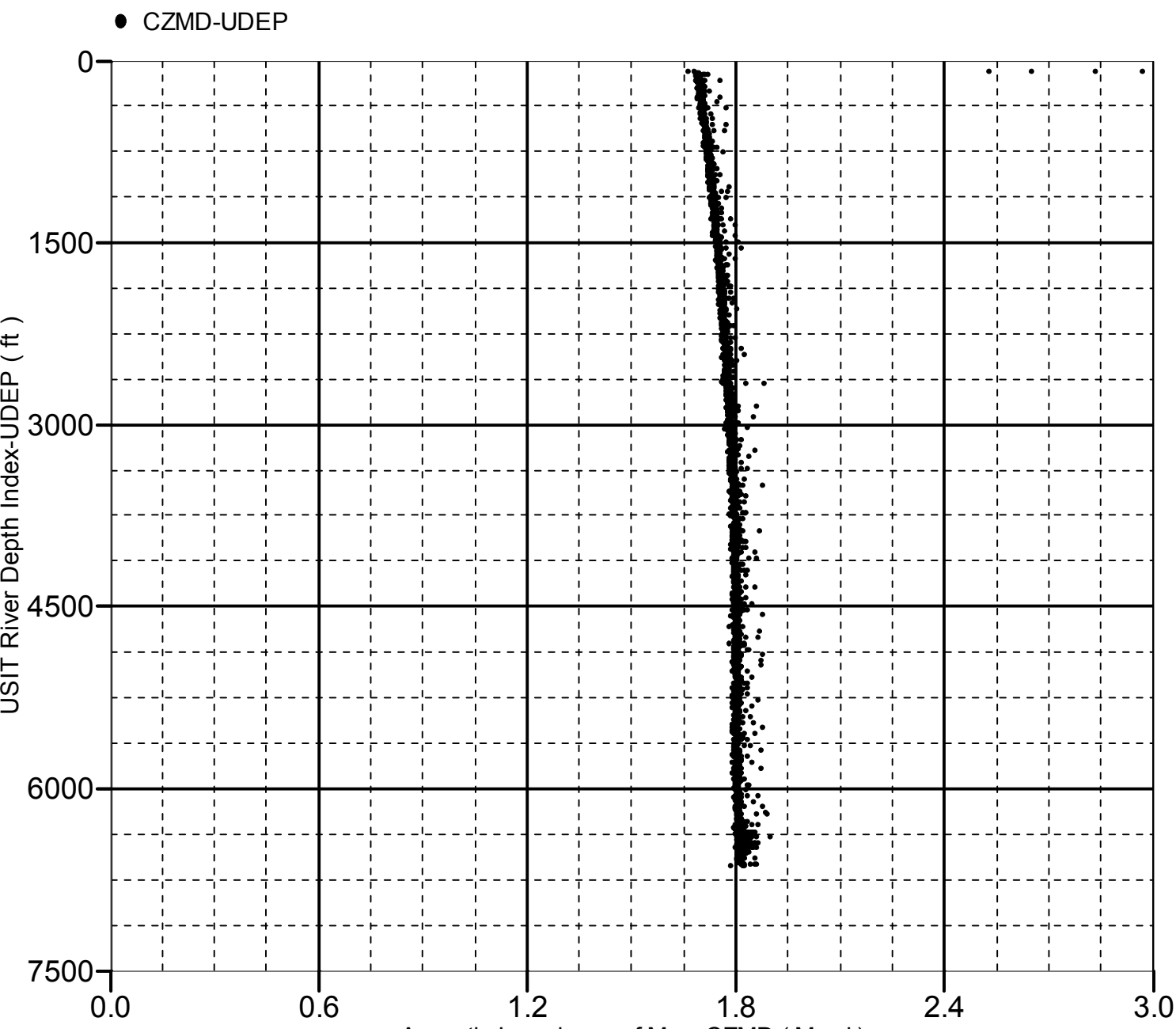
Company:Crestone Peak Resources Operating LLC Well:Ruegge #3K-4H-N165

One: Log[4]:Up:S006

Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 6645.00 to 92.00 ft



Company:	Crestone Peak Resources Operating LLC	Schlumberger
Well:	Ruegge #3K-4H-N165	
Field:	Wattenberg	
County:	Weld	
State:	Colorado	
Isolation Scanner		
Cement Evaluation		
Gamma Ray - CCL Log		