

Company: Crestone Peak Resources Operating LLC

Well: Ruegge #3R-4H-N165

Field: Wattenberg

County: Weld State: Colorado

## Isolation Scanner

## Cement Evaluation

## Gamma Ray - CCL Log

Cement Evaluation

Gamma Ray - CCL Log

Location:		SESW Sec. 4, T1N, R65W	Elev.:	K.B.	4937.00 ft
Log Measured From:		SHL: 717' FSL & 2205' FWL		G.L.	4914.00 ft
Drilling Measured From:		Lat/Long: 40.075285 / -104.670526		D.F.	4937.00 ft
		Permanent Datum:	Ground Level	Elev.:	4914.00 f
			Kelly Bushing	23.00 ft	above Perm.Datum
			Kelly Bushing		
API Serial No.	Section:	Township:	Range:		
05-123-46568	4	1N	65W		

Logging Date			13-Aug-2018			
Run Number			One			
Depth Driller			12707.00 ft			
Schlumberger Depth			6912.00 ft			
Bottom Log Interval			6912.00 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			12707.00 ft			
Casing/Tubing Size			5.5 in			
Weight			20 lbm/ft			
Grade			P110			
From			0.00 ft			
To			12707.00 ft			
Max Recorded Temperatures			189 degF			
Logger on Bottom			Time			
Unit Number		Location:	13-Aug-2018		16:50:00	
Recorded By			9102		Fort Morgan, CO	
Witnessed By			Alan Moreno			
			Keith Kershnik			

## Disclaimer

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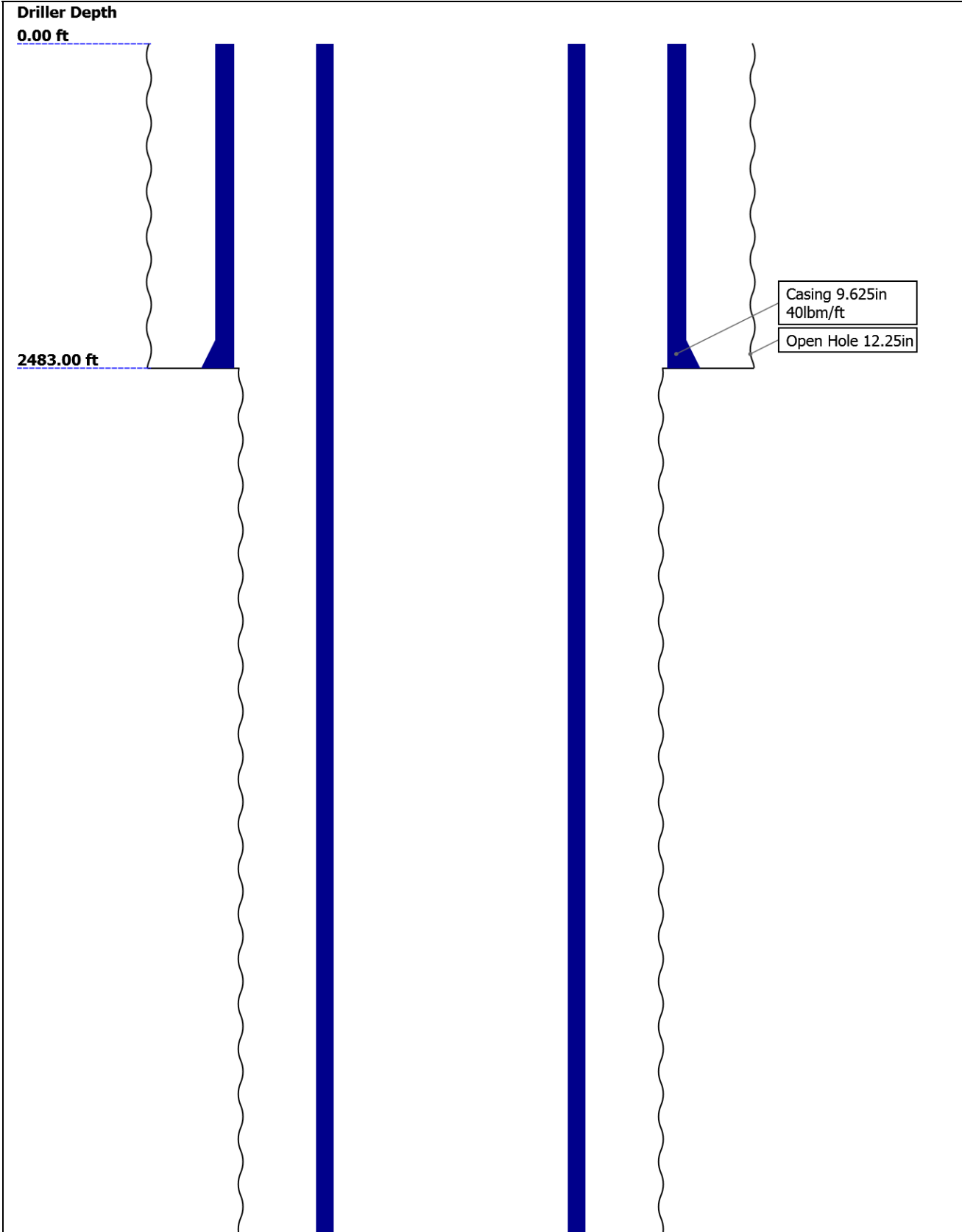
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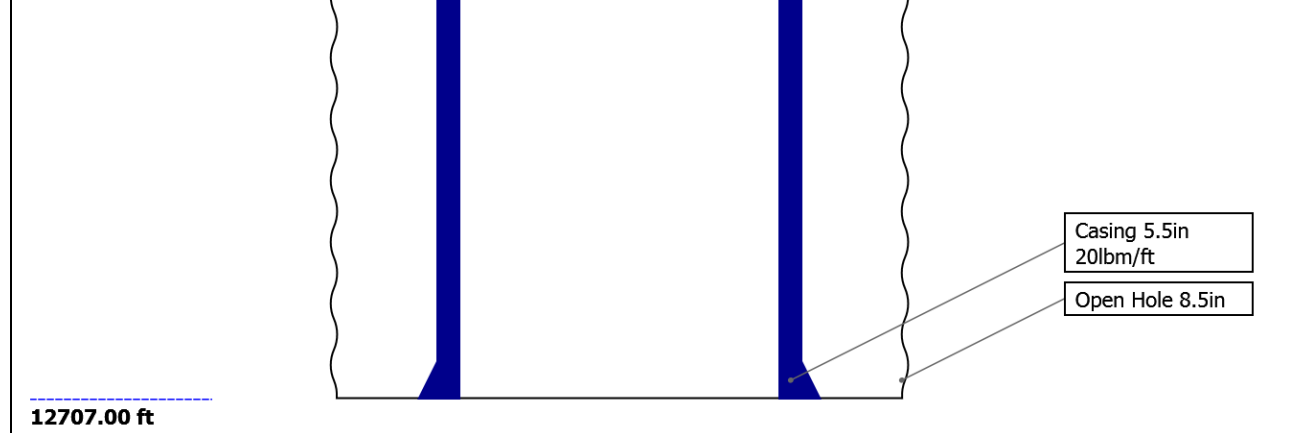
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Well Sketch





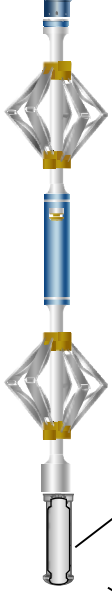
## Borehole Size/Casing/Tubing Record

Bit						
Bit Size ( in )	12.25	8.5				
Top Driller ( ft )	0	2483				
Top Logger ( ft )	0	2483				
Bottom Driller ( ft )	2483	12707				
Bottom Logger ( ft )	2483	12707				
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	12707				
Bottom Logger ( ft )	2483	12707				

## Remarks and Equipment Summary

One: Toolstring			One: Remarks
<b>Equip name</b>	<b>Length</b>	<b>MP name    Offset</b>	Thank you for choosing Schlumberger
LEH-QT:3 810	30.73		Log run for cement and casing evaluation
LEH-QT:38 10			Tool ran centralized as per tool sketch
<b>EDTC-B:9</b> <b>247</b>	27.24		IBCS-A sub run with USI-TX transducers
EDTH-B:93 09			Spacer: 11lb/gal, Lead 12.5lb/gal, Tail 13.5lb/gal
EDTG-A:7 9445		CTEM 23.74	All passes logged under 0psi
EDTC-B:92 47		ACCZ 0.00	Log affected by high deviation at bottom
		HV 0.00	
		Gamma 21.87	
		Ray	
		TelStatu s 20.74	
<b>AH-184[ 2]:2749</b>	20.74		
<b>AH-184[ 1]:2826</b>	18.74		
<b>USIT-E:90 0</b>	16.74		
ECH-MFA: 1818			
USAC-A:9			

00  
USIS-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



**USI Sensor Head Tension**  
TOOL\_ZERO

Lengths are in ft  
Maximum Outer Diameter = 5.000 in  
Line: Sensor Location, Value: Gating Offset  
All measurements are relative to TOOL\_ZERO

Depth Summary

	One		
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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
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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	7.00 ft
Tool Zero Check At Surface	

## USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 1	Log[4]:Up	6925.91	93.51

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 : 222.26m(729.19ft) to 226.89m(744.40ft)  
MUD\_N\_FRP = 1.22  
DFD = 1.01g/cm3(8.40lbm/gal)  
CZMD median computed in free pipe normalization interval = 1.73 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	93.51 ft	6925.91 ft	13-Aug-2018 6:12:05 PM	13-Aug-2018 7:50:39 PM	ON	6.51 ft	No

All depths are referenced to toolstring zero

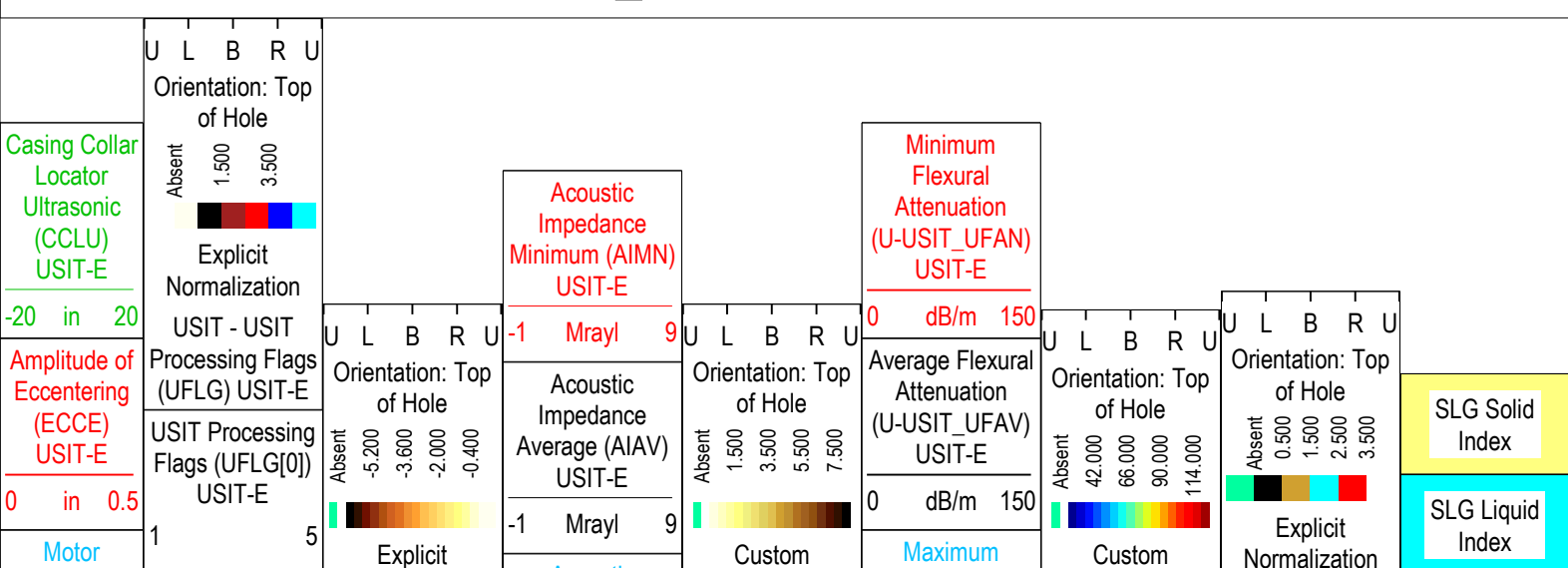
Log	Company:Crestone Peak Resources Operating LLC      Well:Ruegge #3R-4H-N165 One: Log[4]:Up:S004
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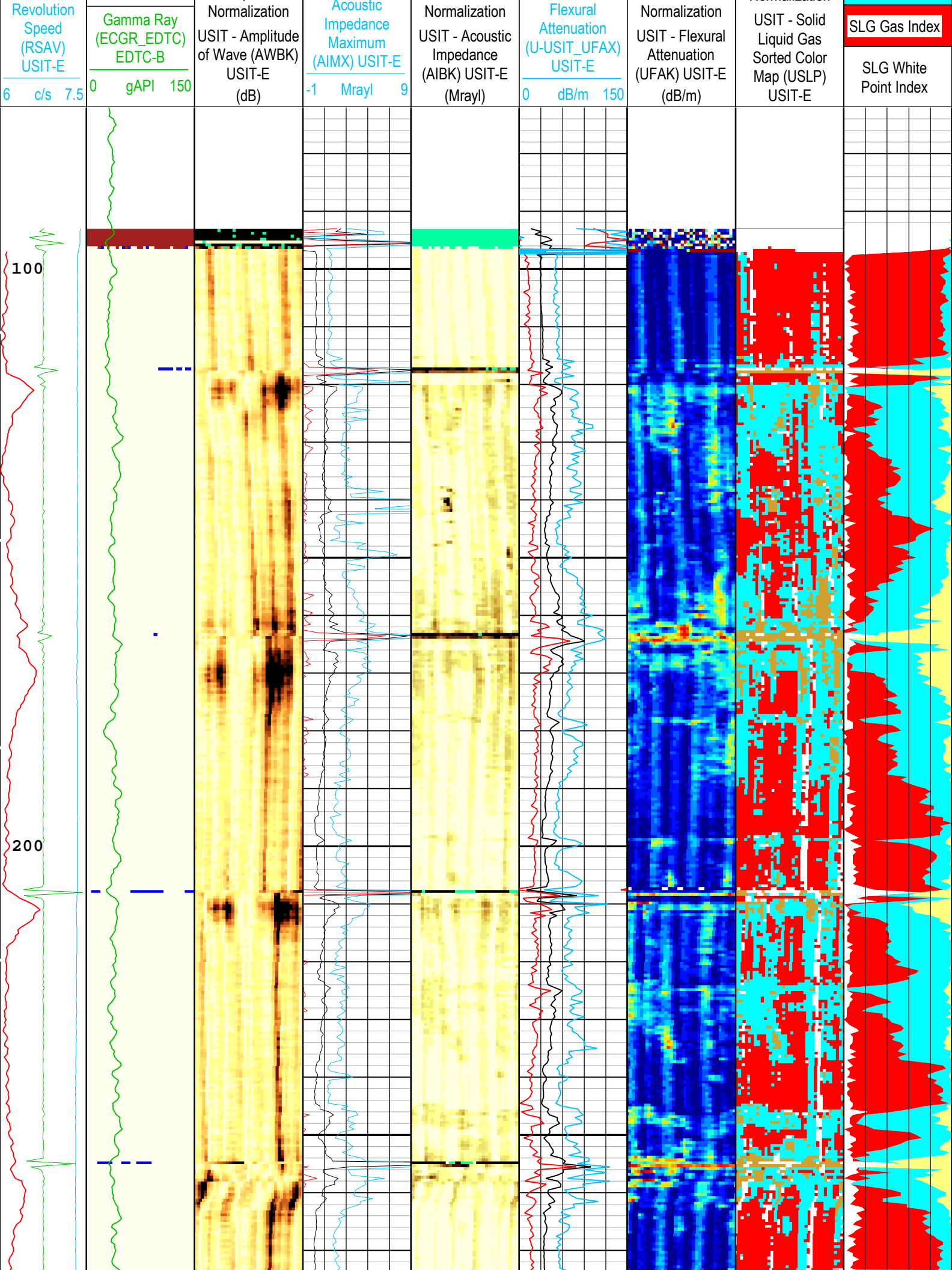
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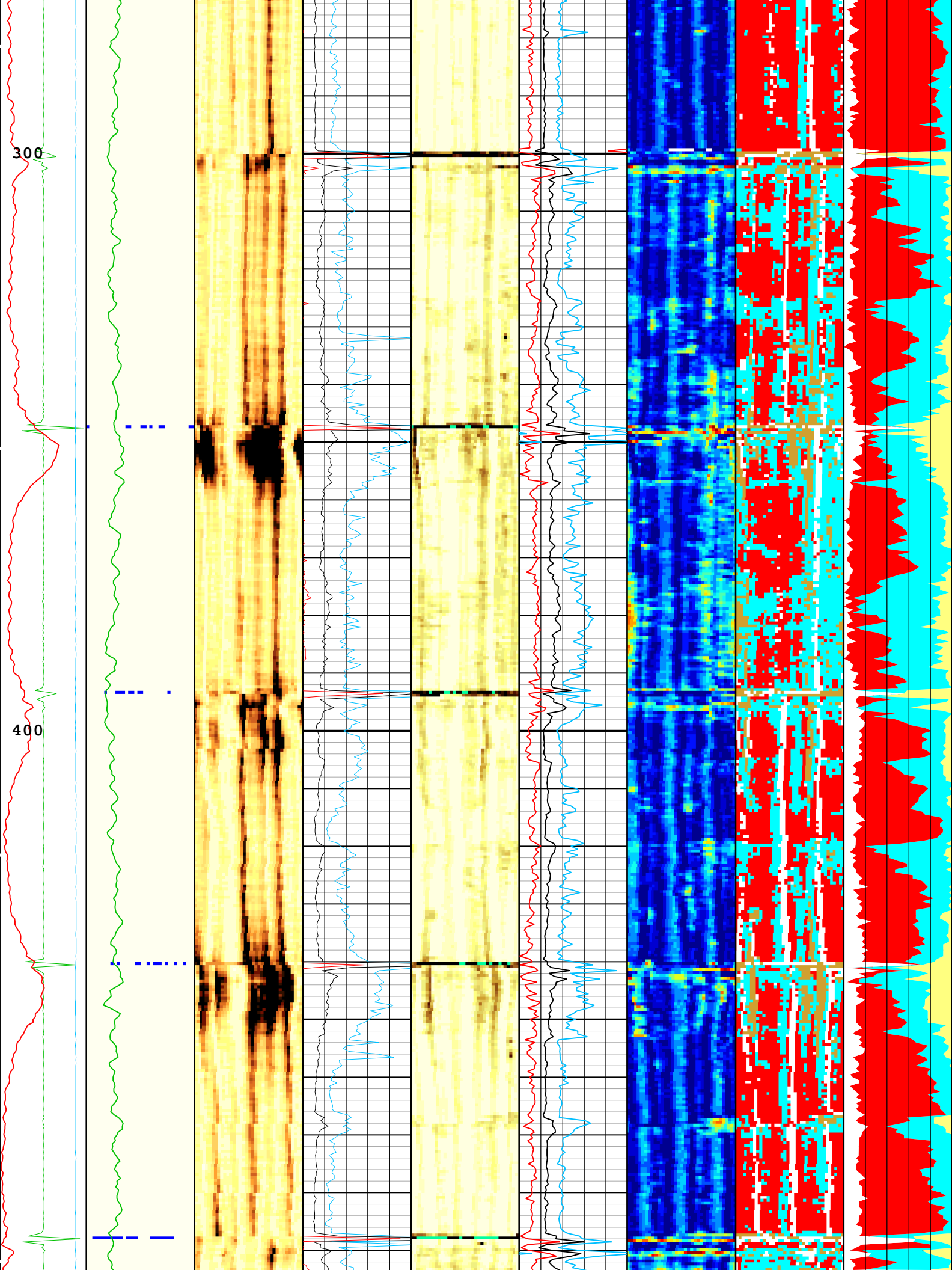
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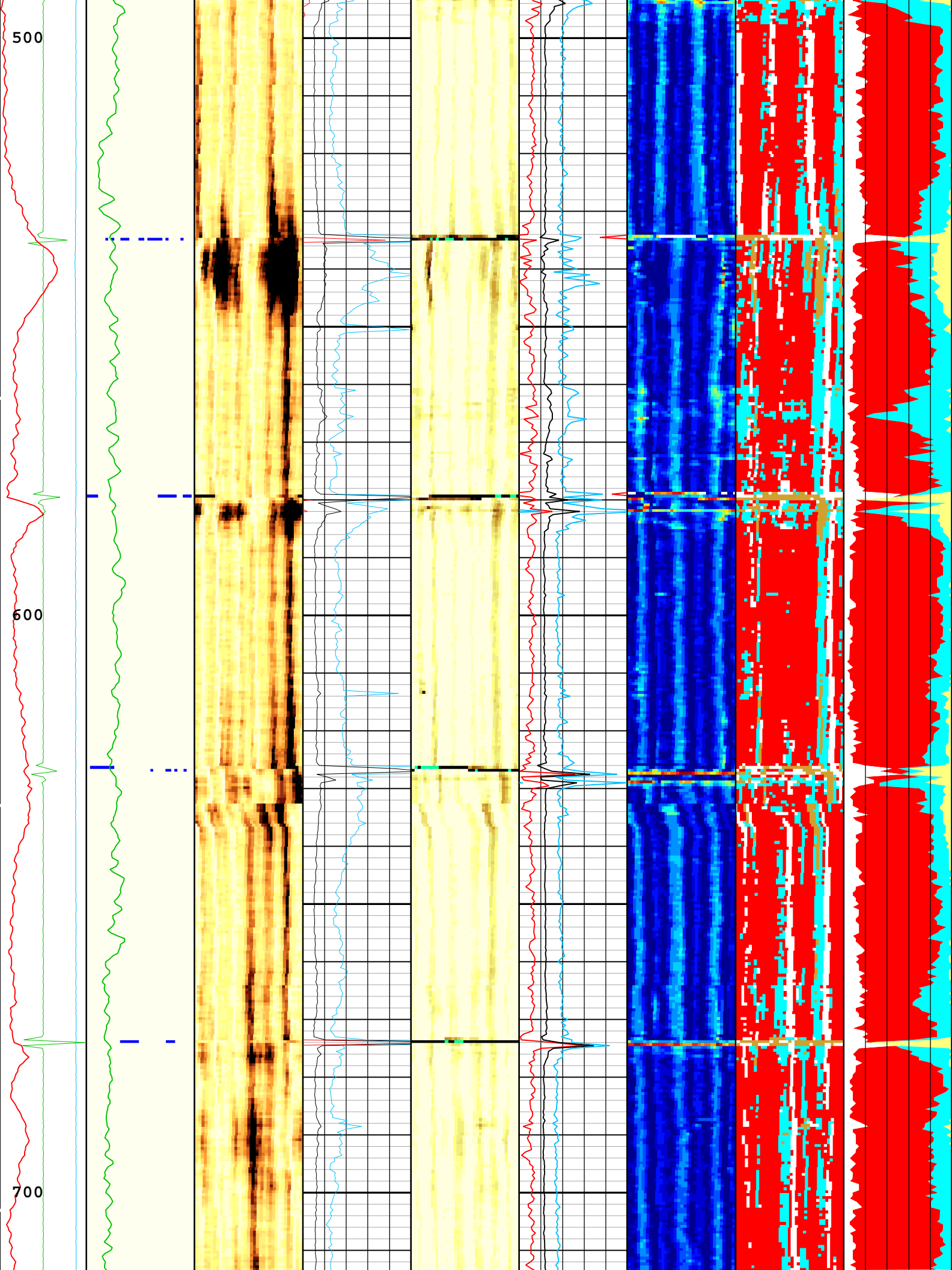
USIT Processing Flags (UFLG[0]) USIT-E

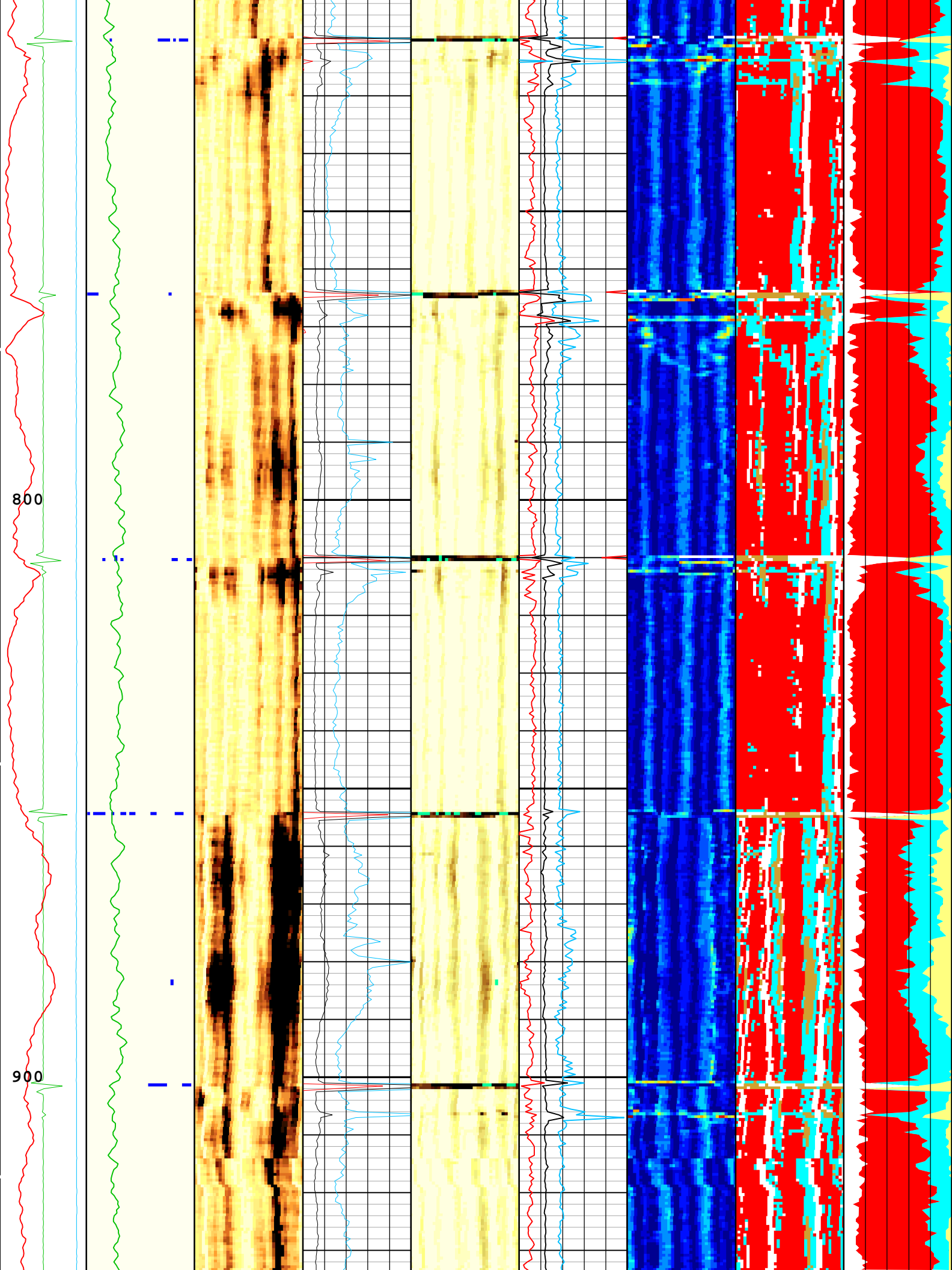
- |   |                           |
|---|---------------------------|
| 1 - UFLG 1 Value within [0.0 - 1.5] - :                     | UTIM Error                |
| 2 - UFLG 2 Value within [1.5 - 2.5] - :                     | Pulse Origin Not Detected |
| 3 - UFLG 3 Value within [2.5 - 3.5] - :                     | 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     |

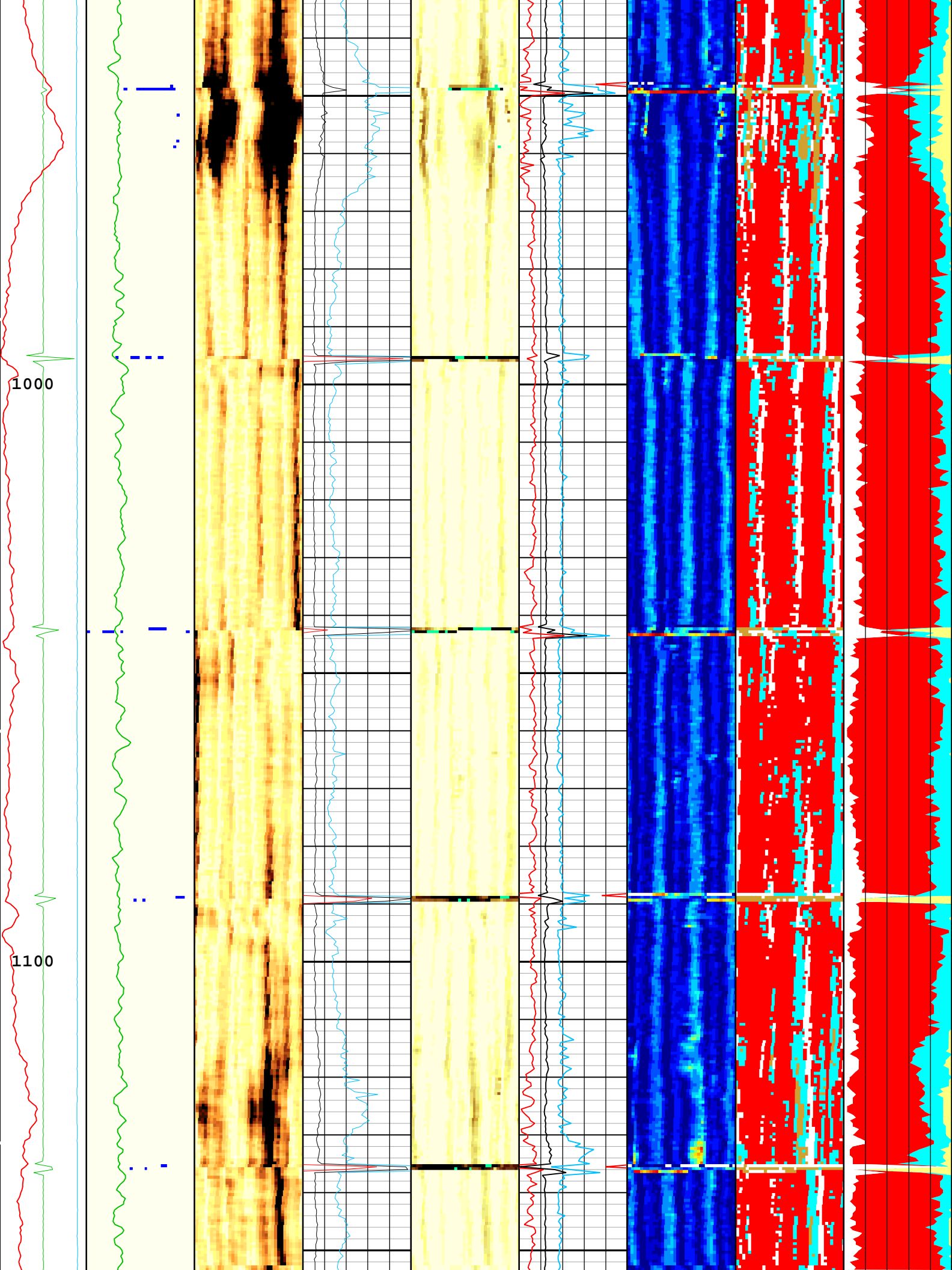




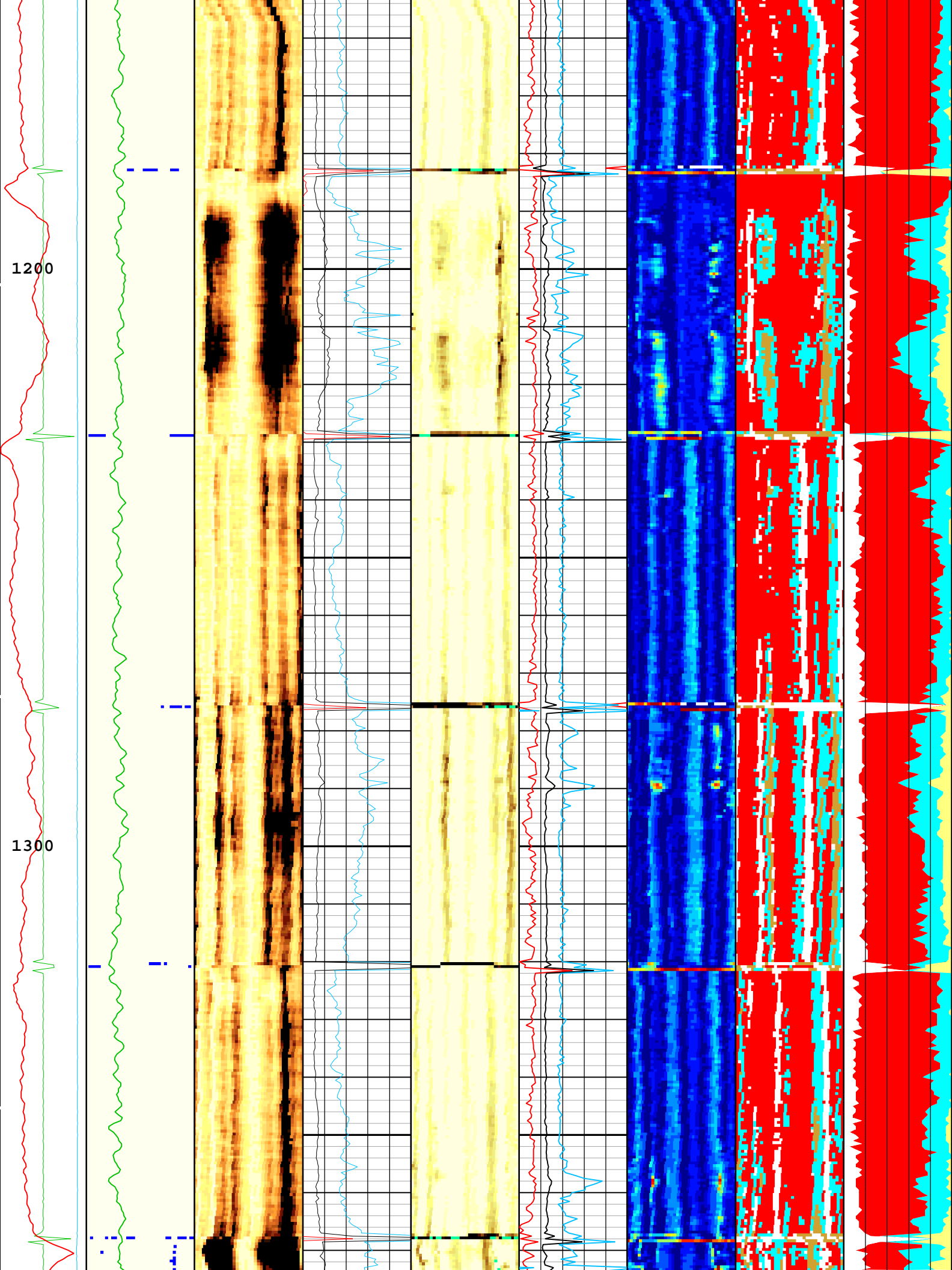


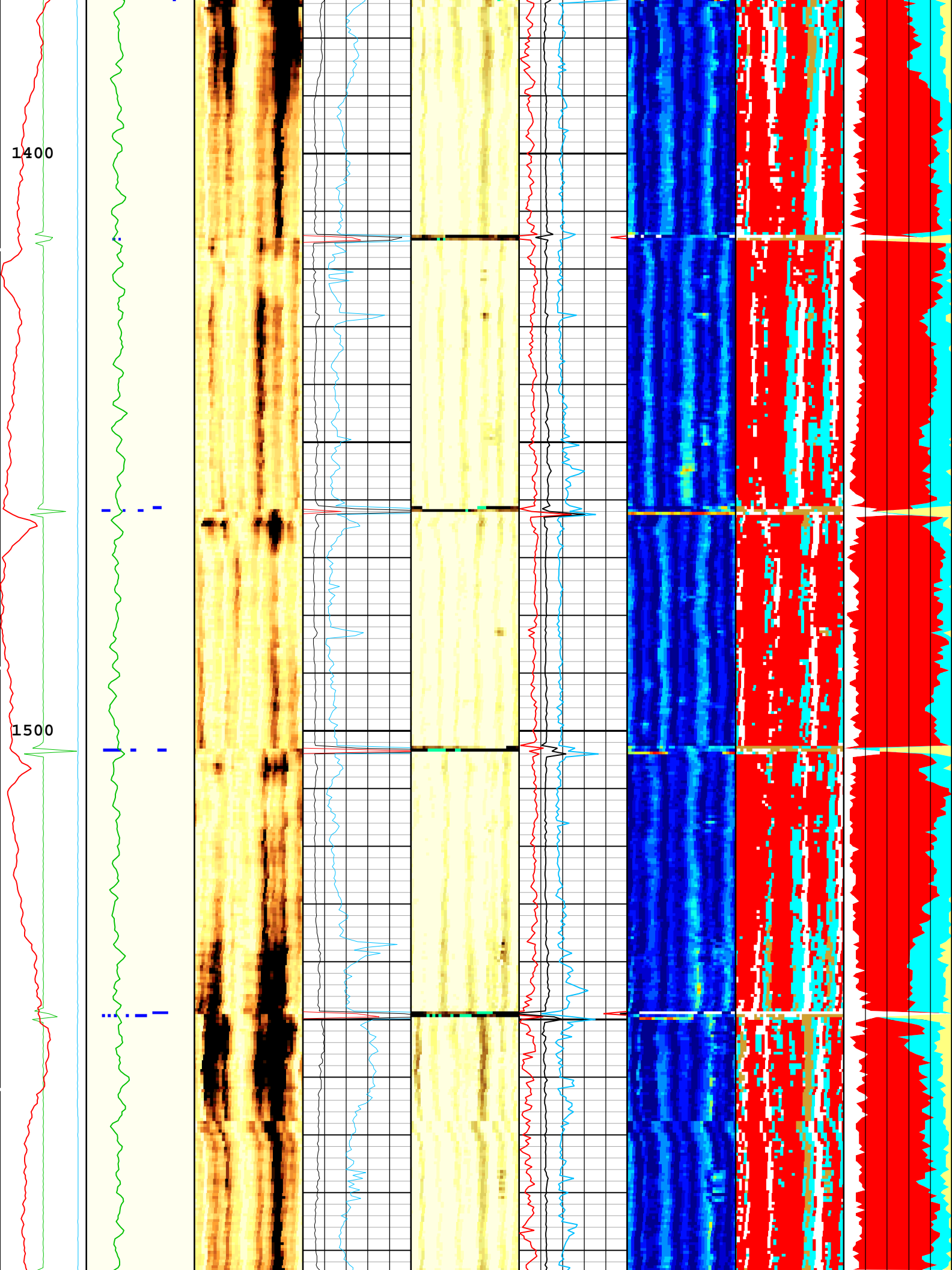




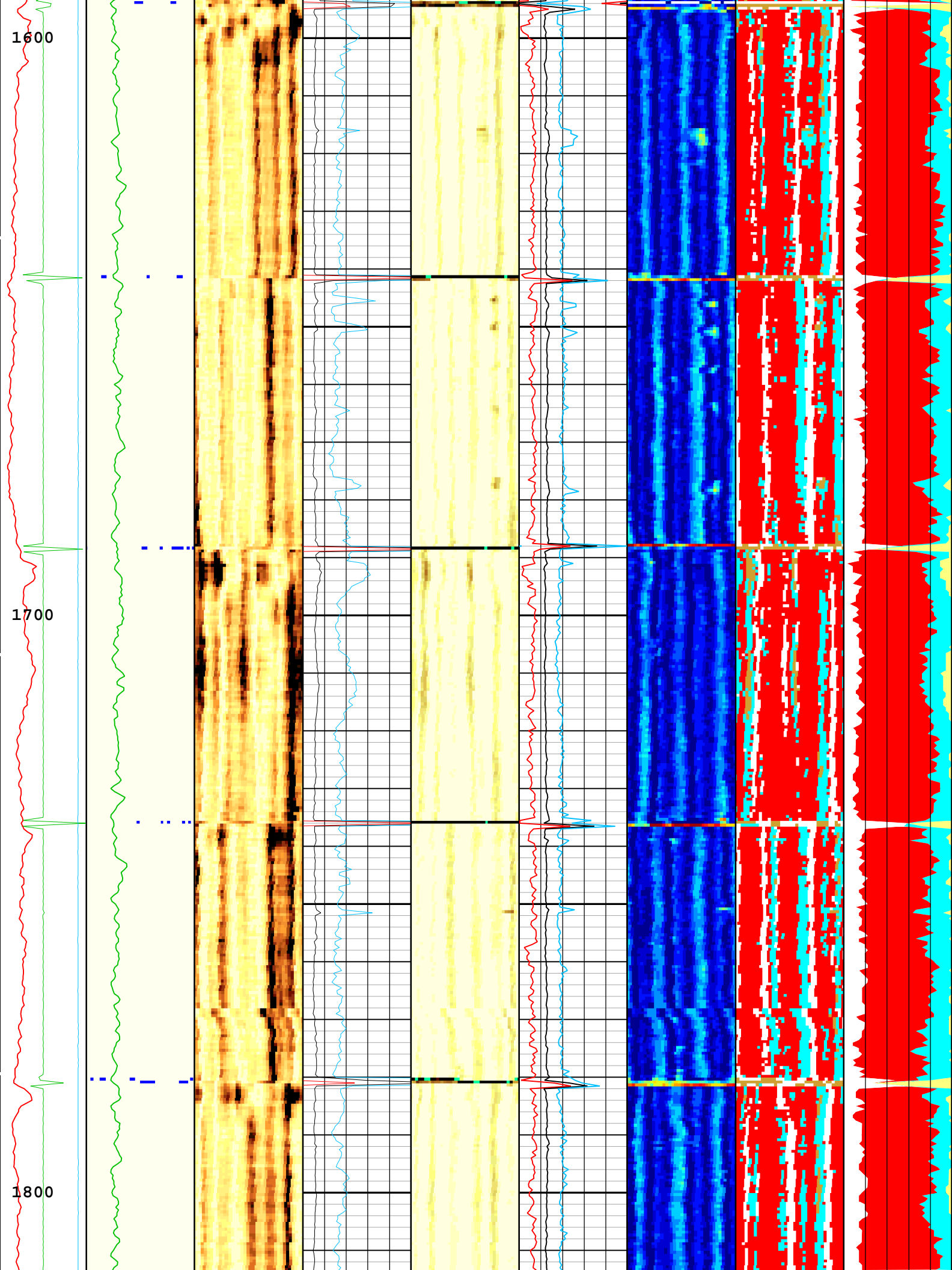


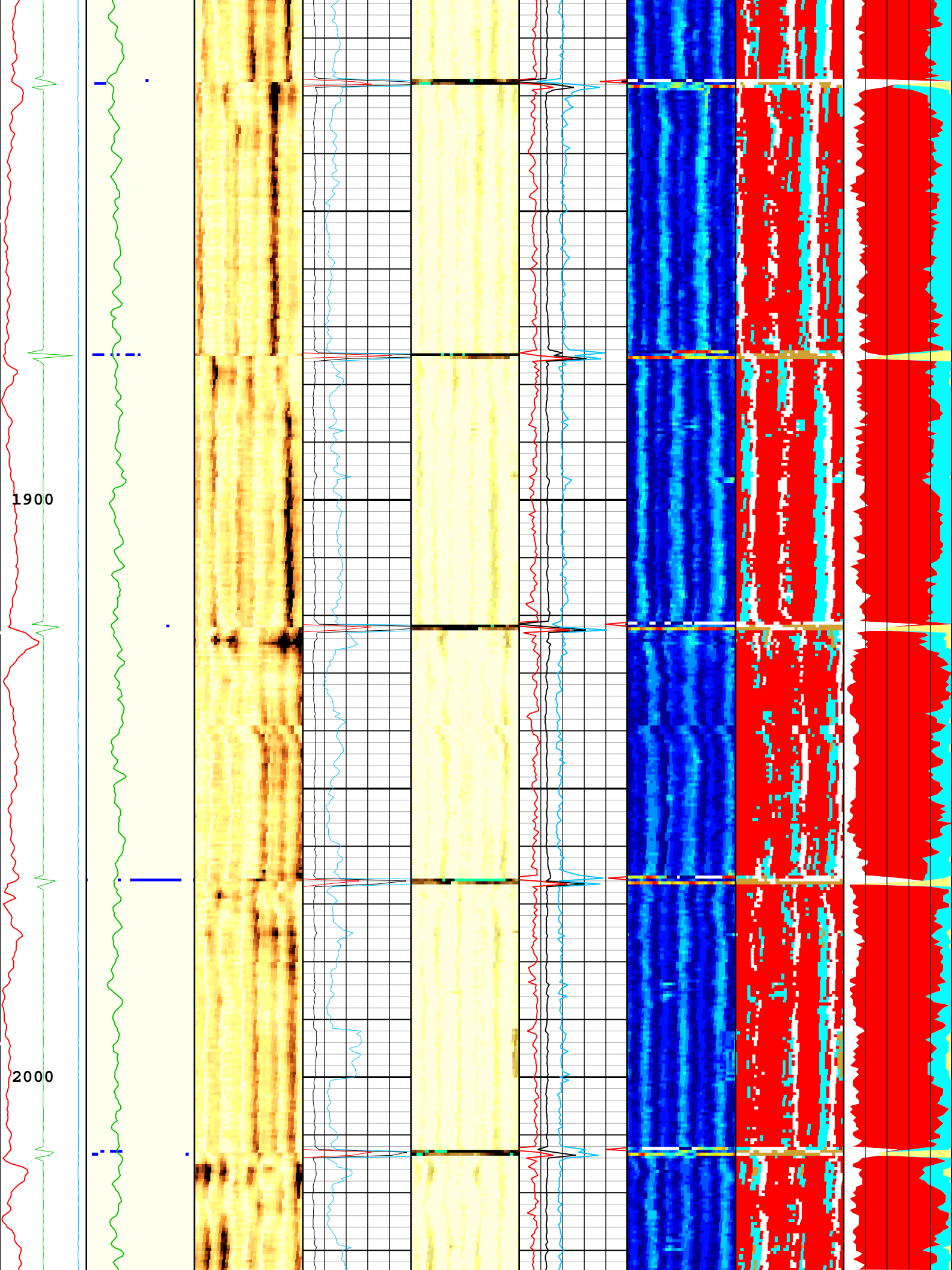


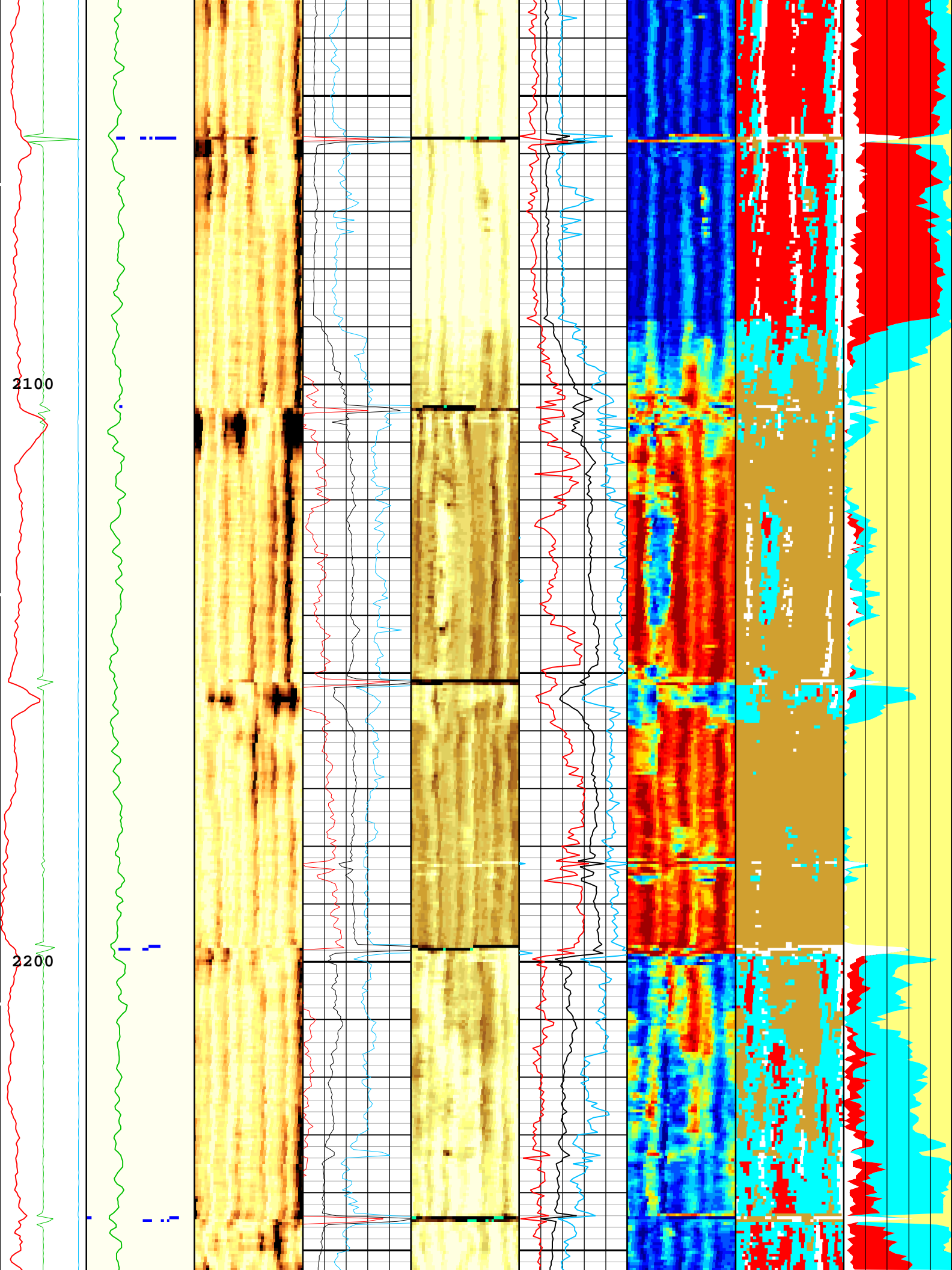


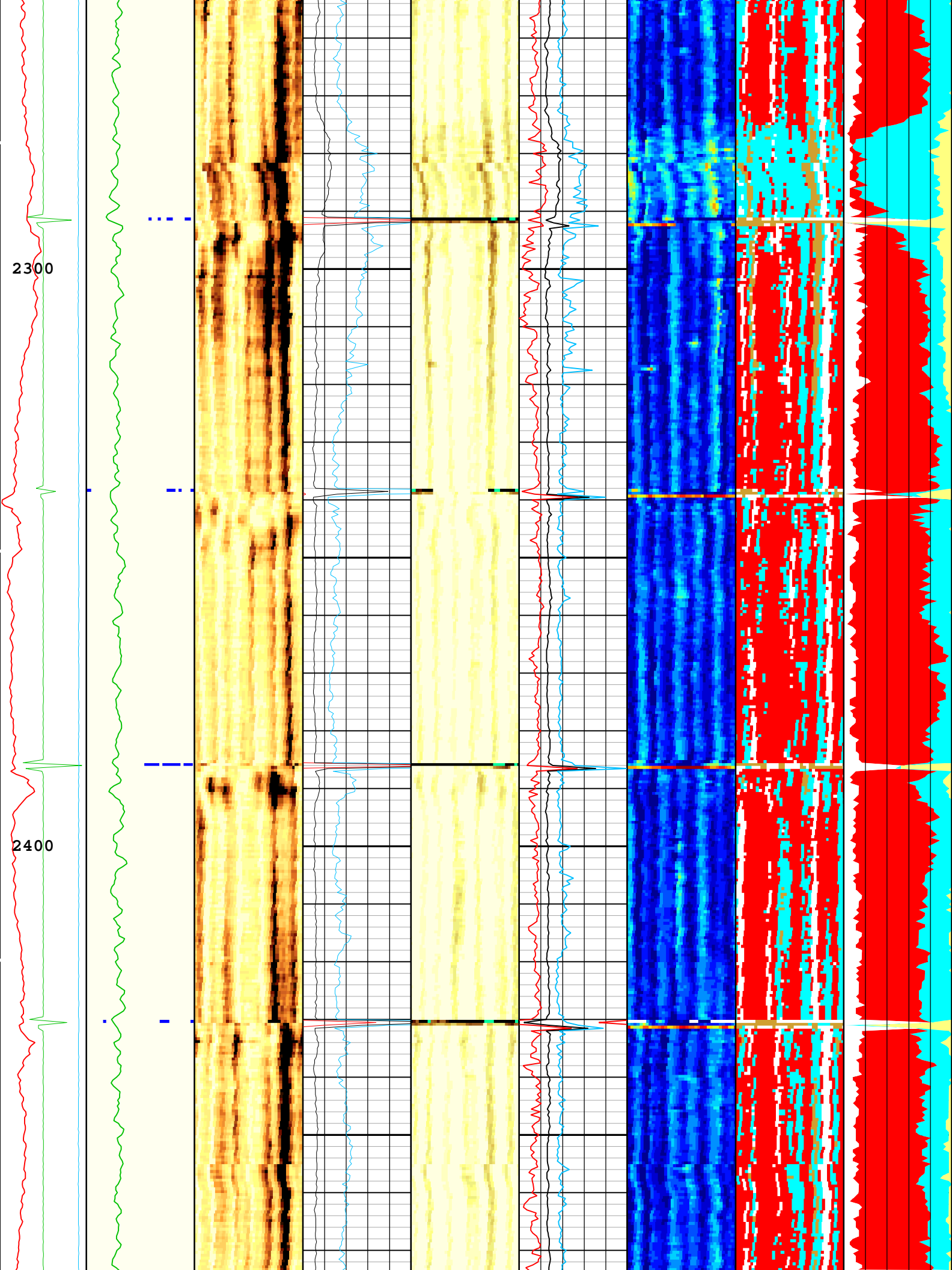


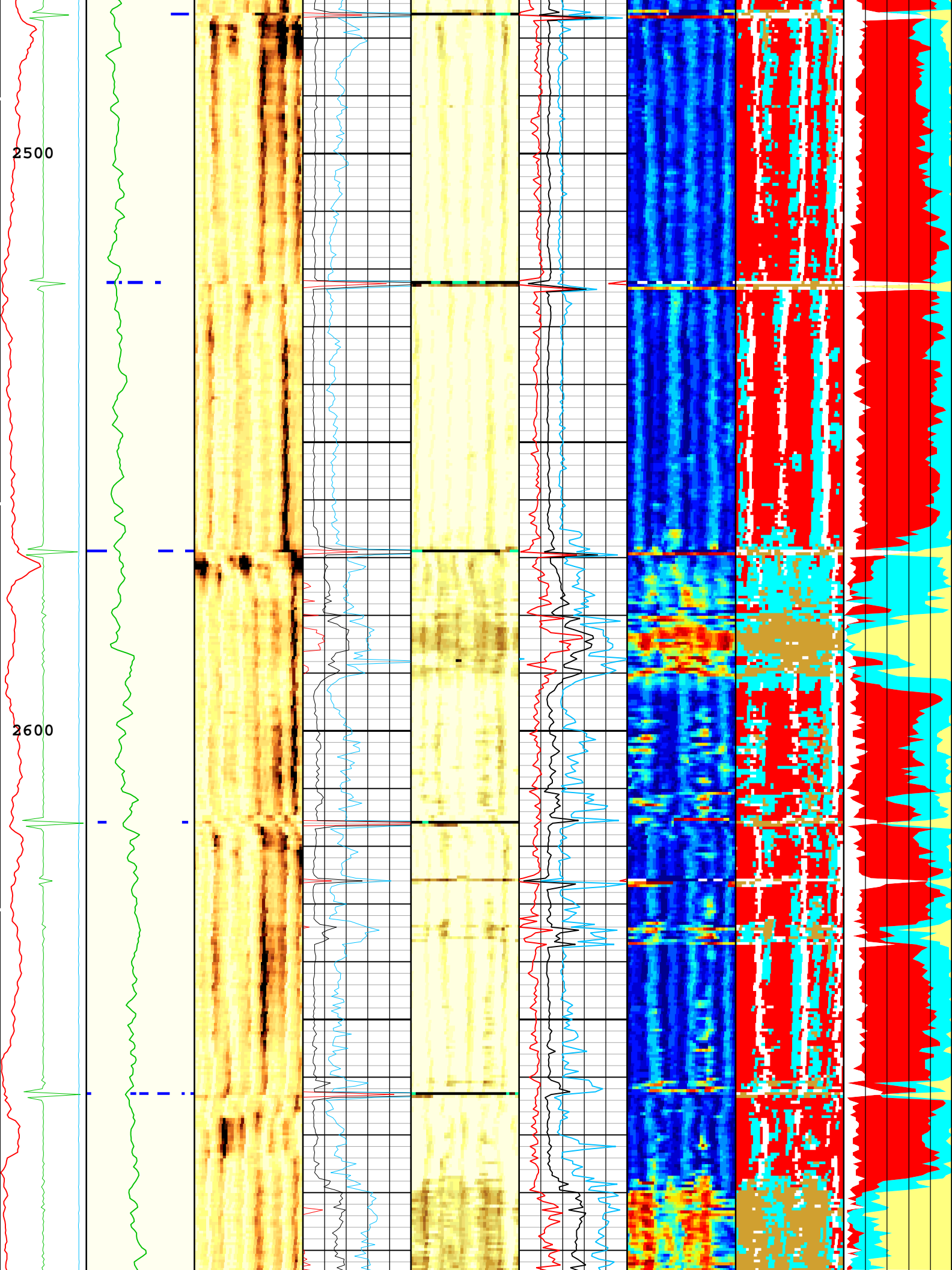




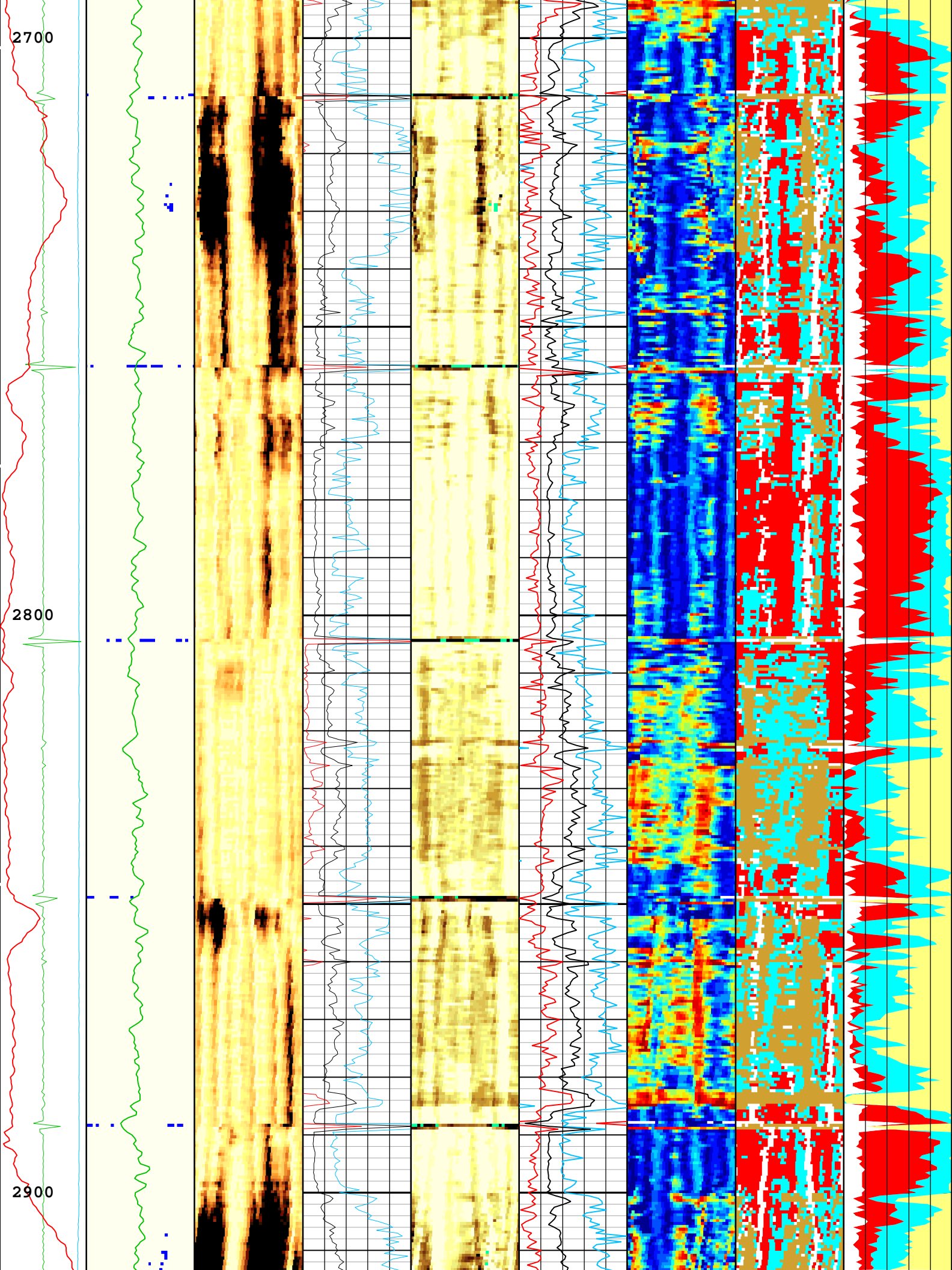


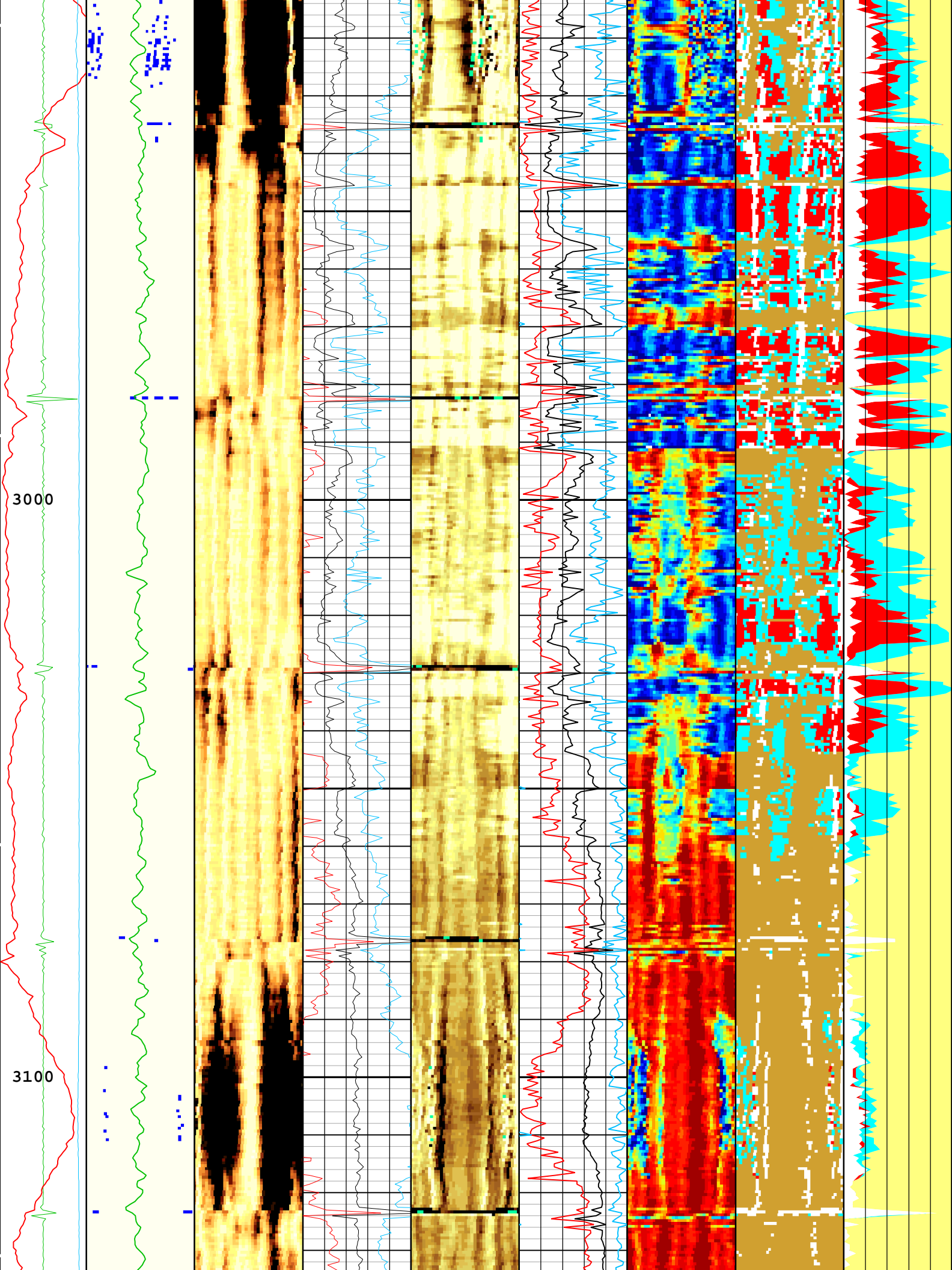


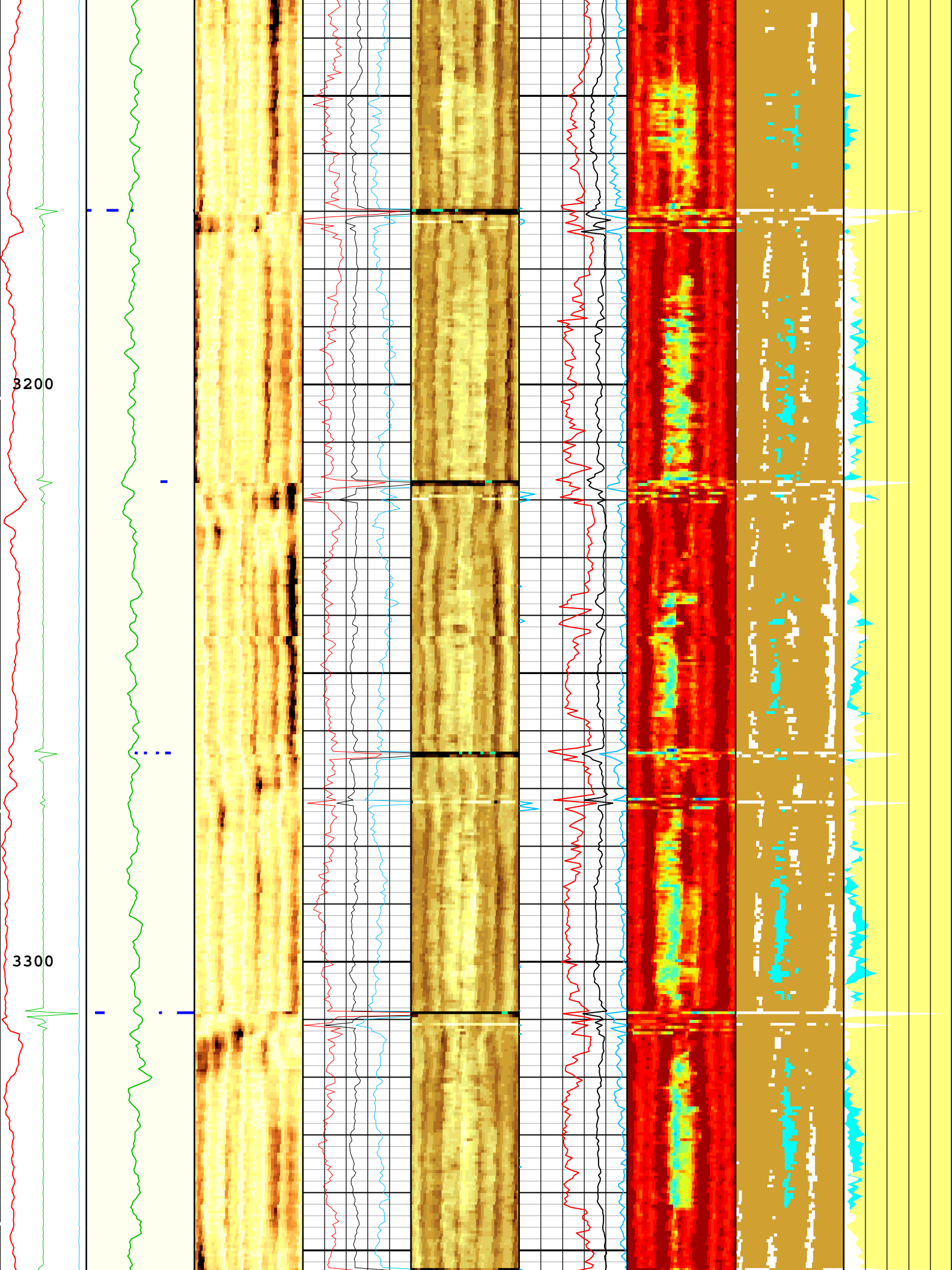




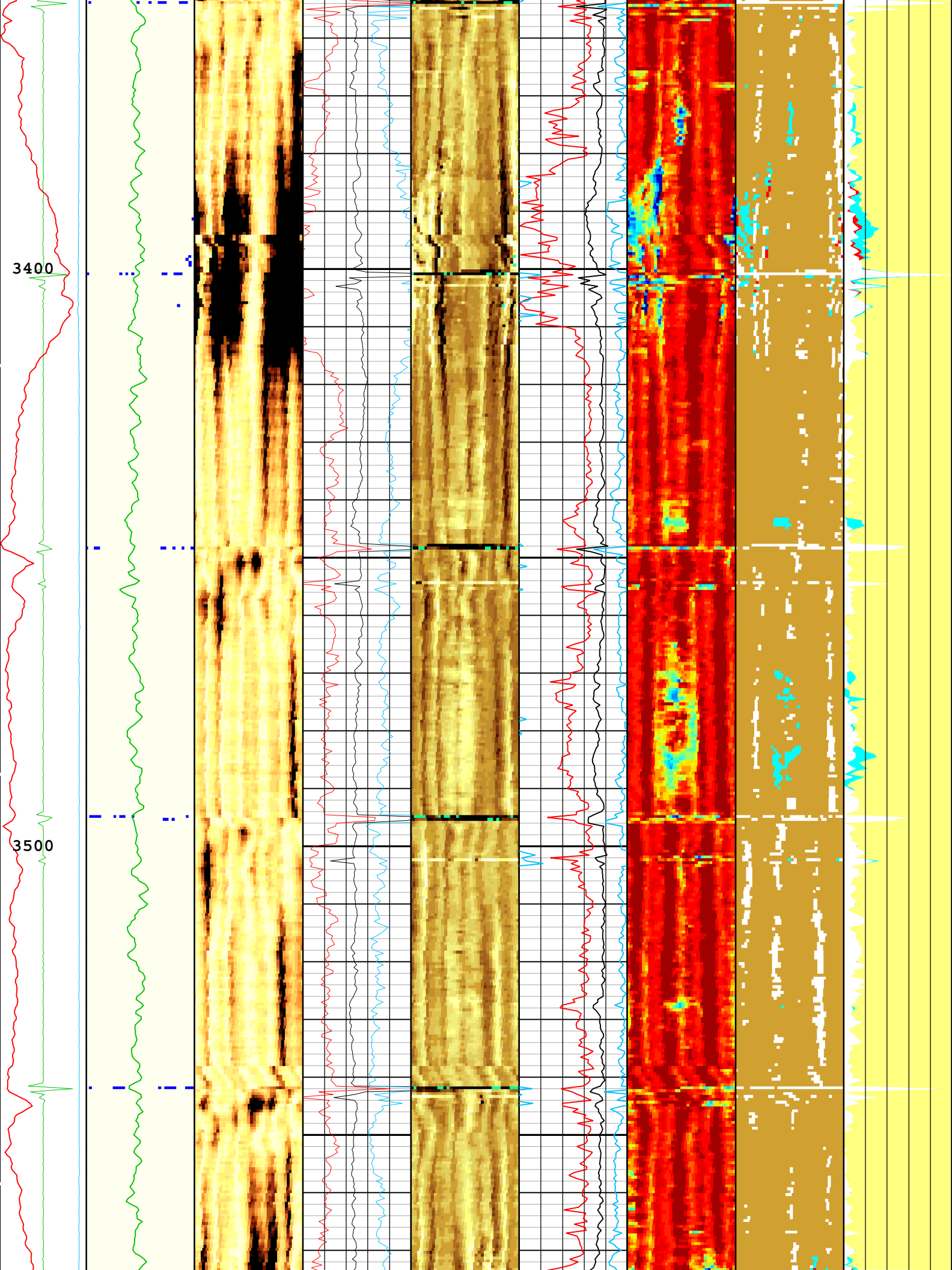


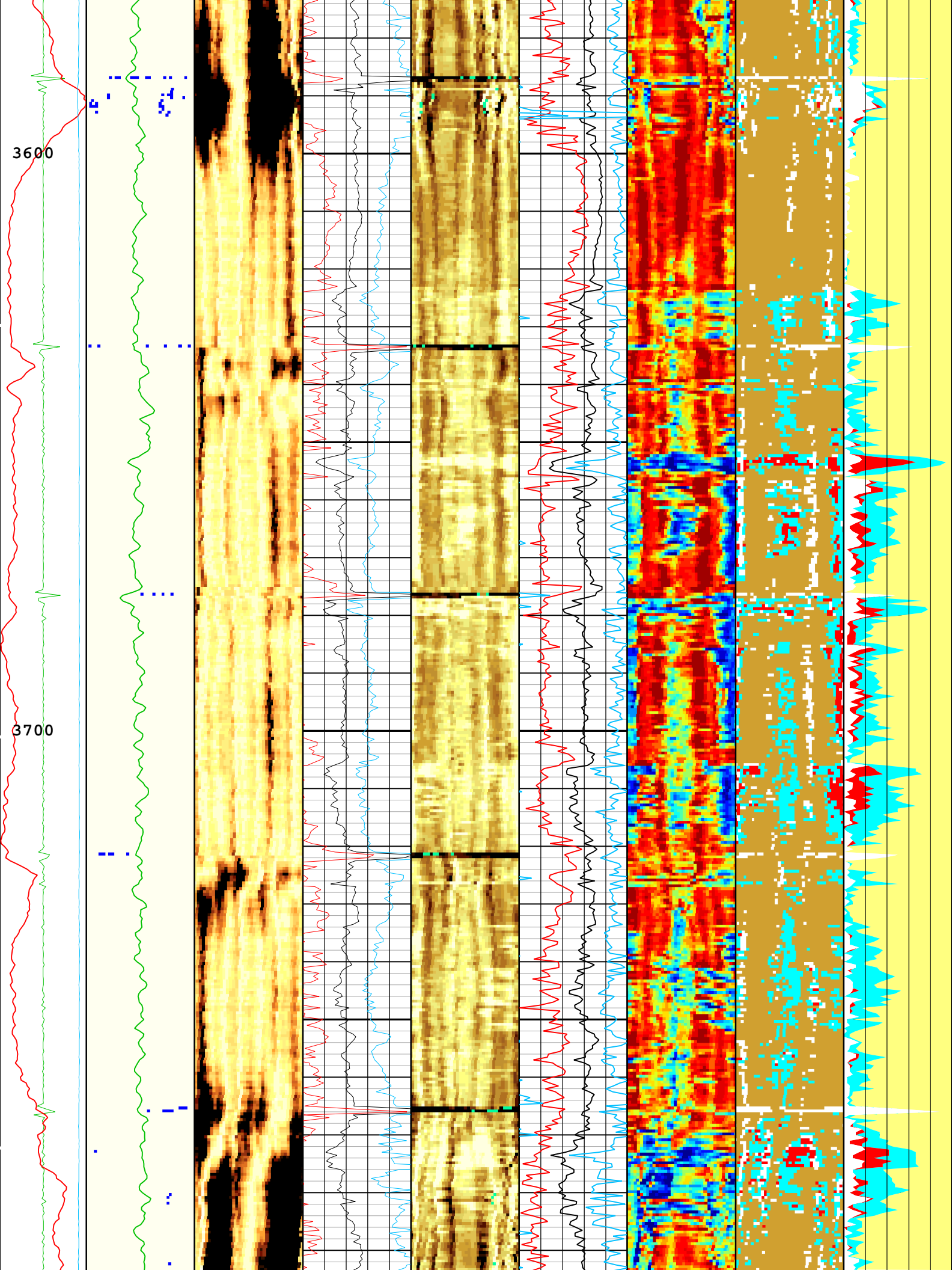


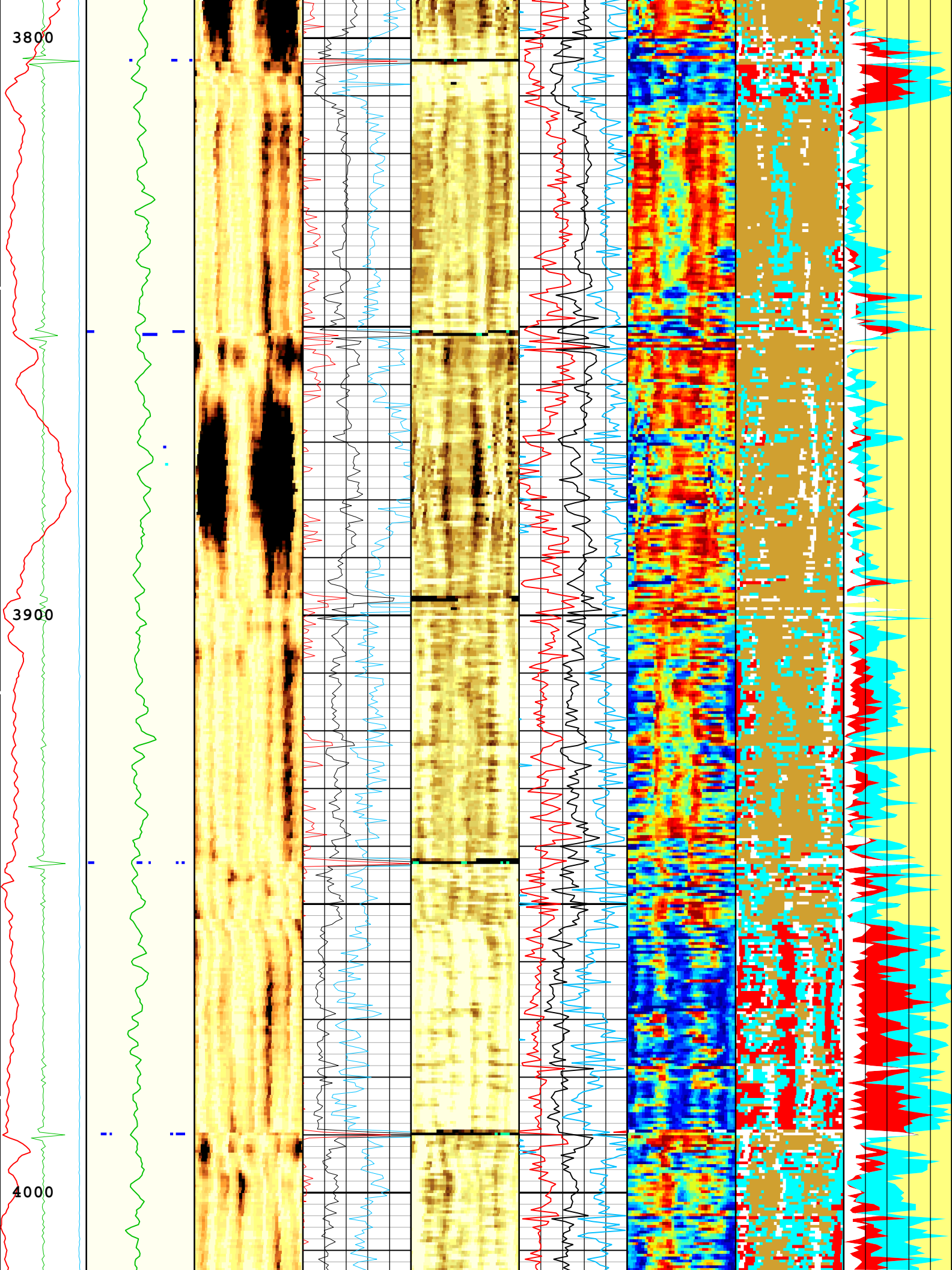


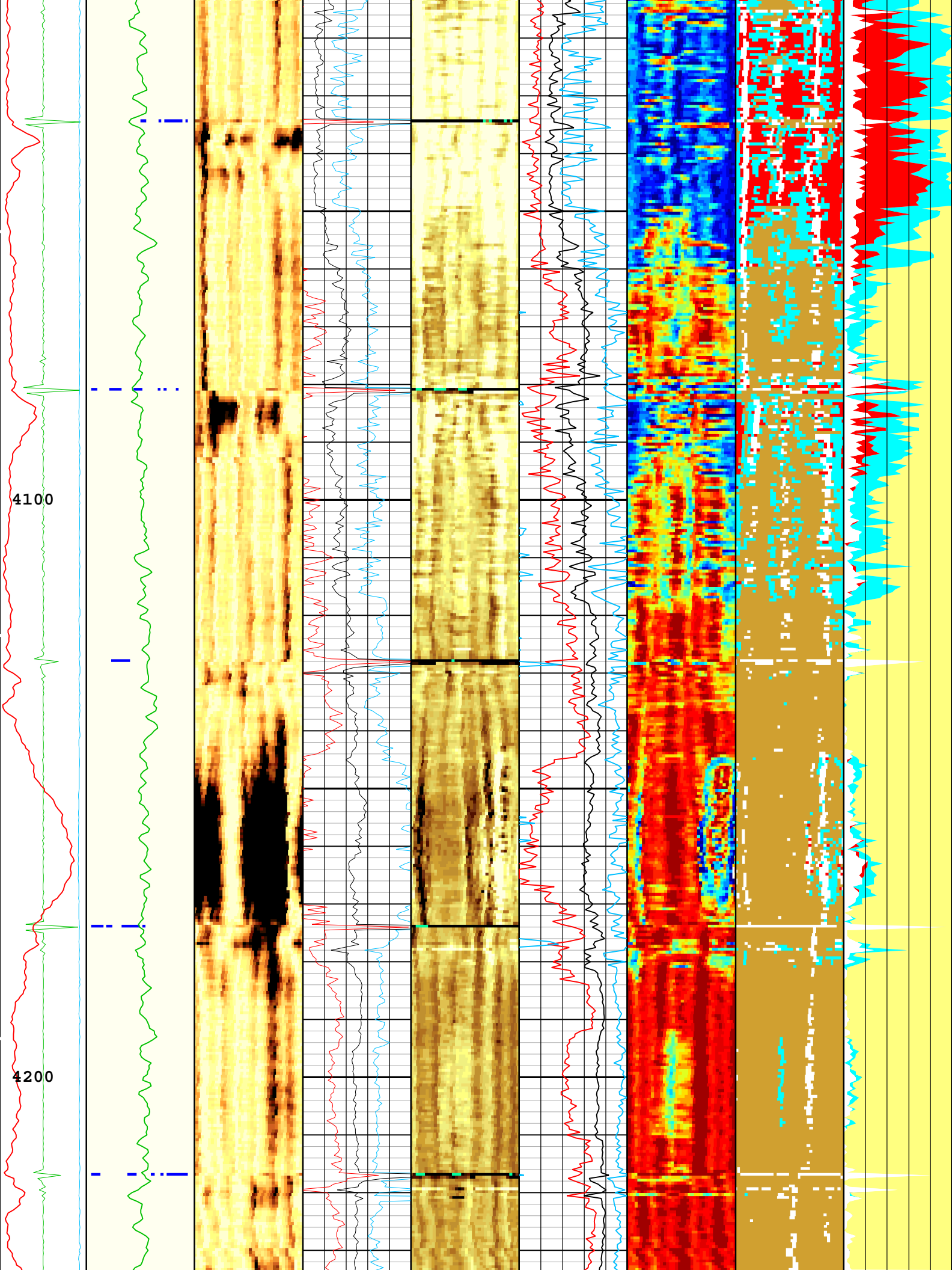




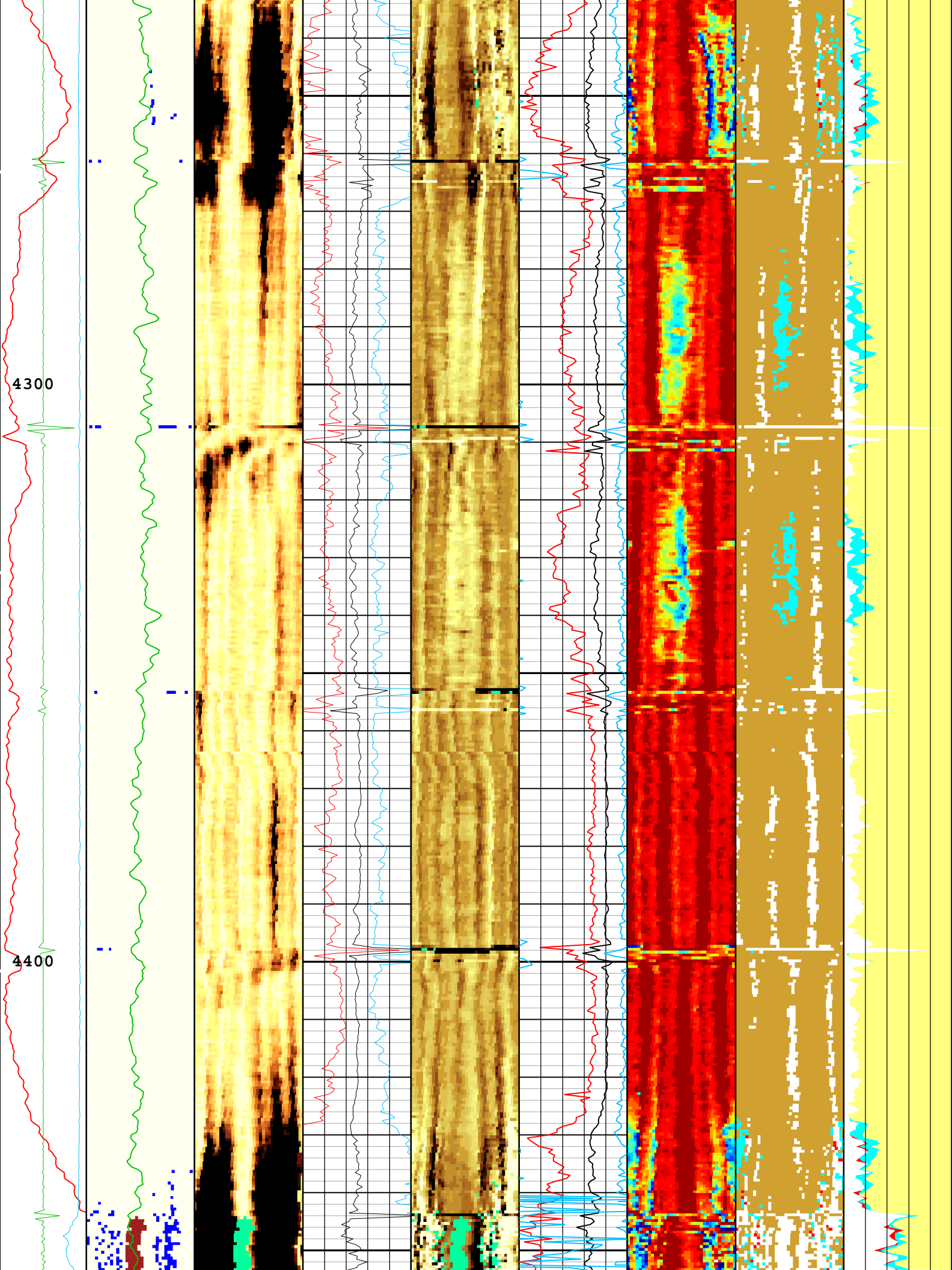


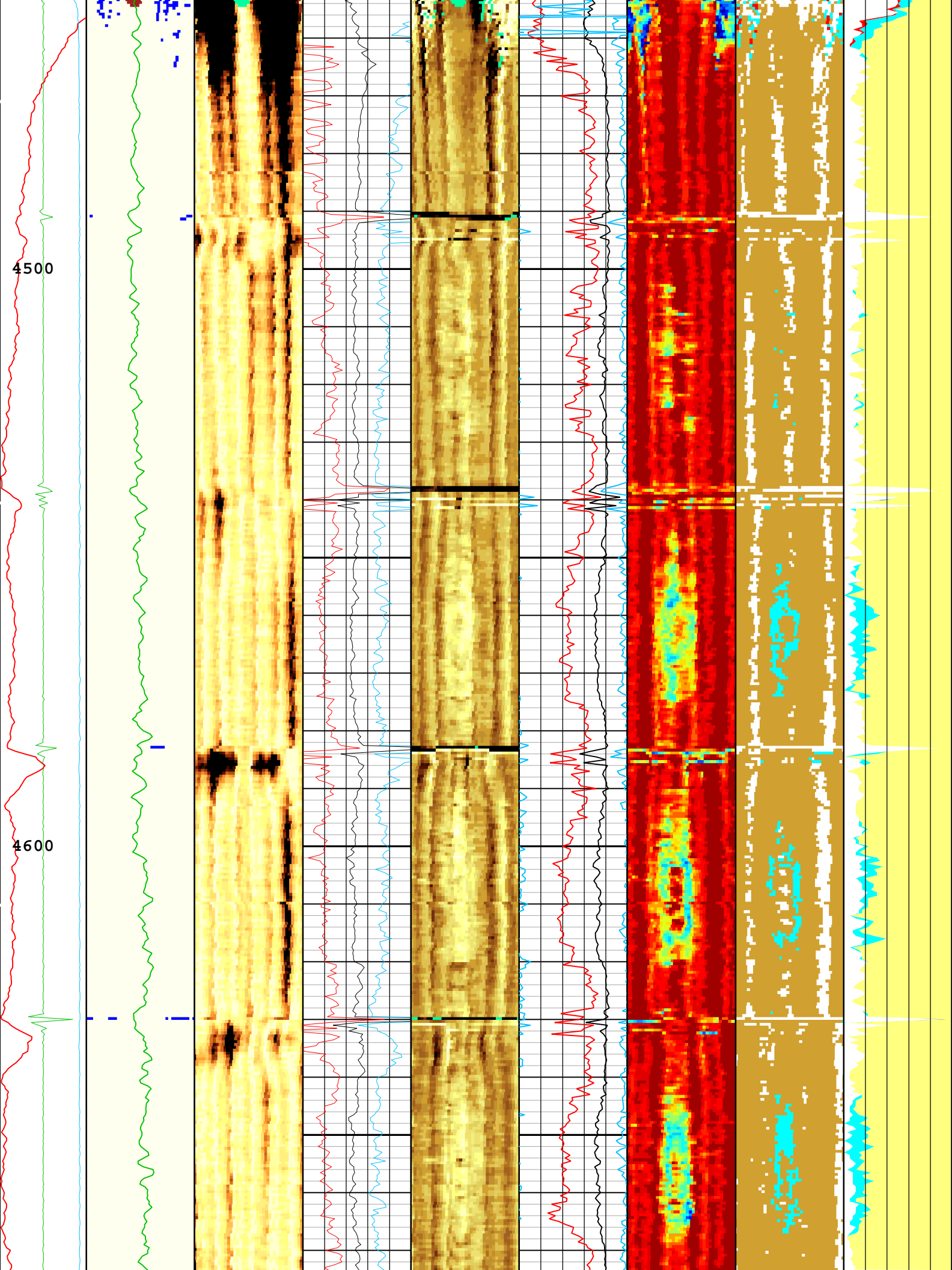


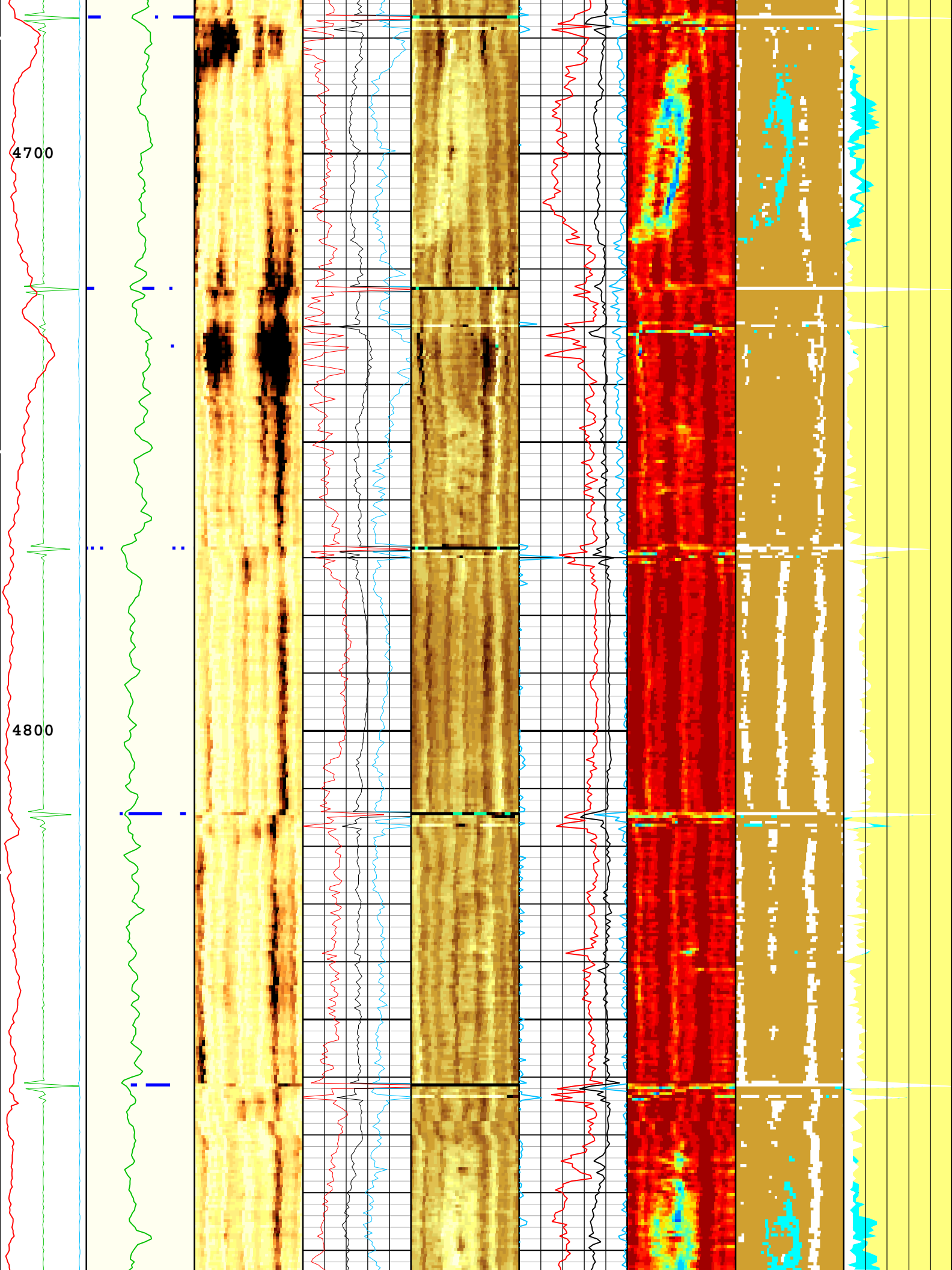


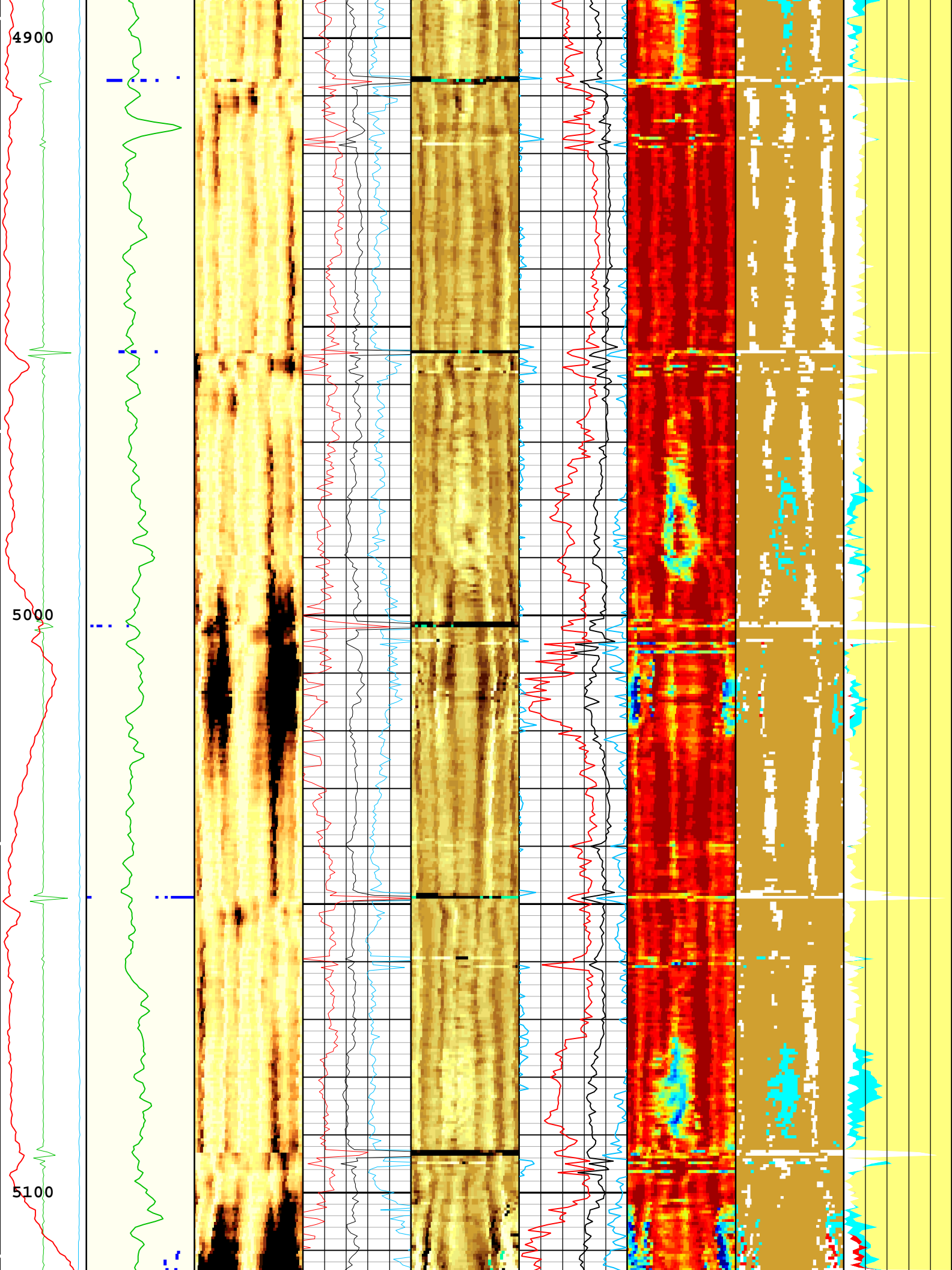




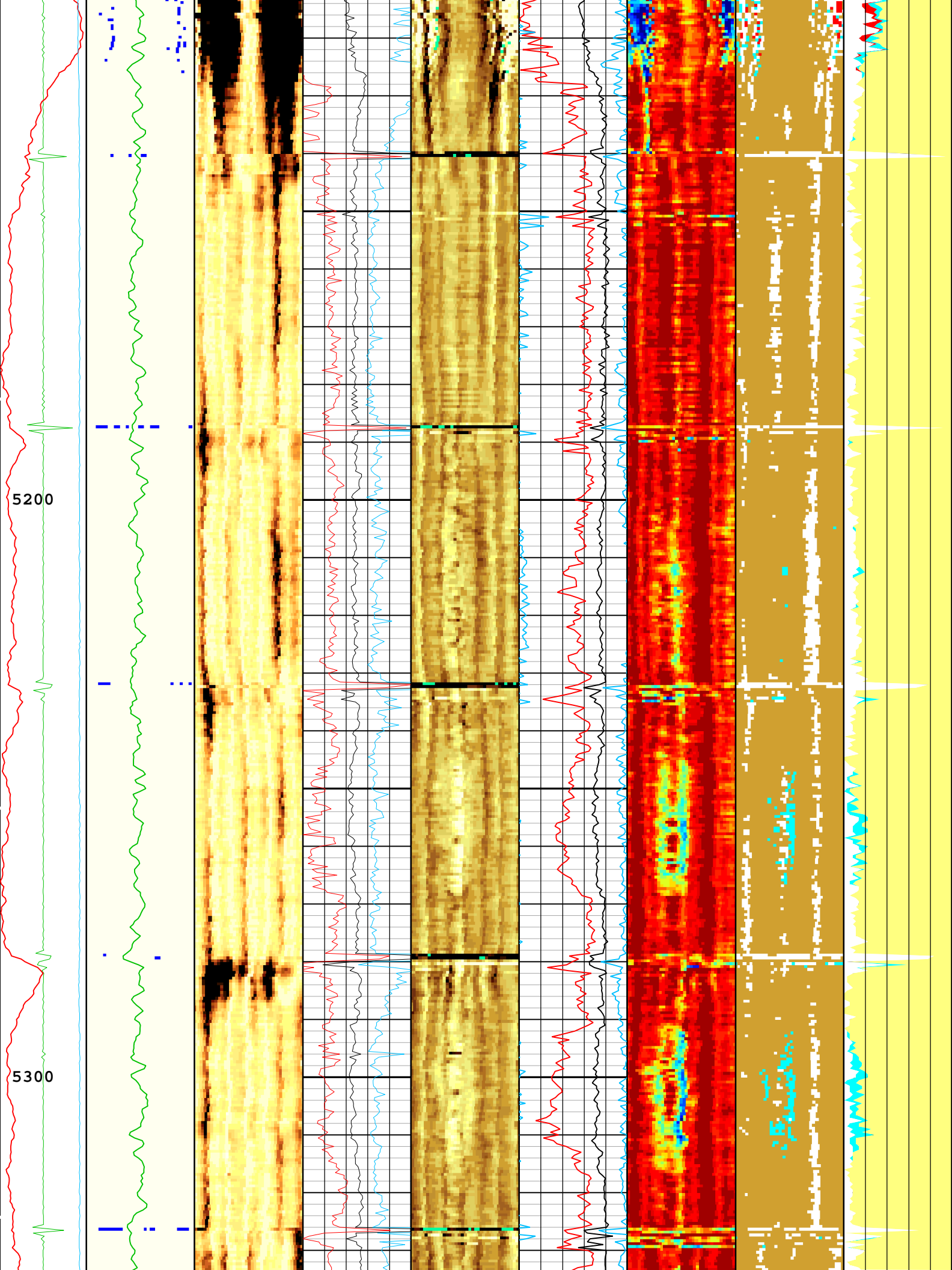


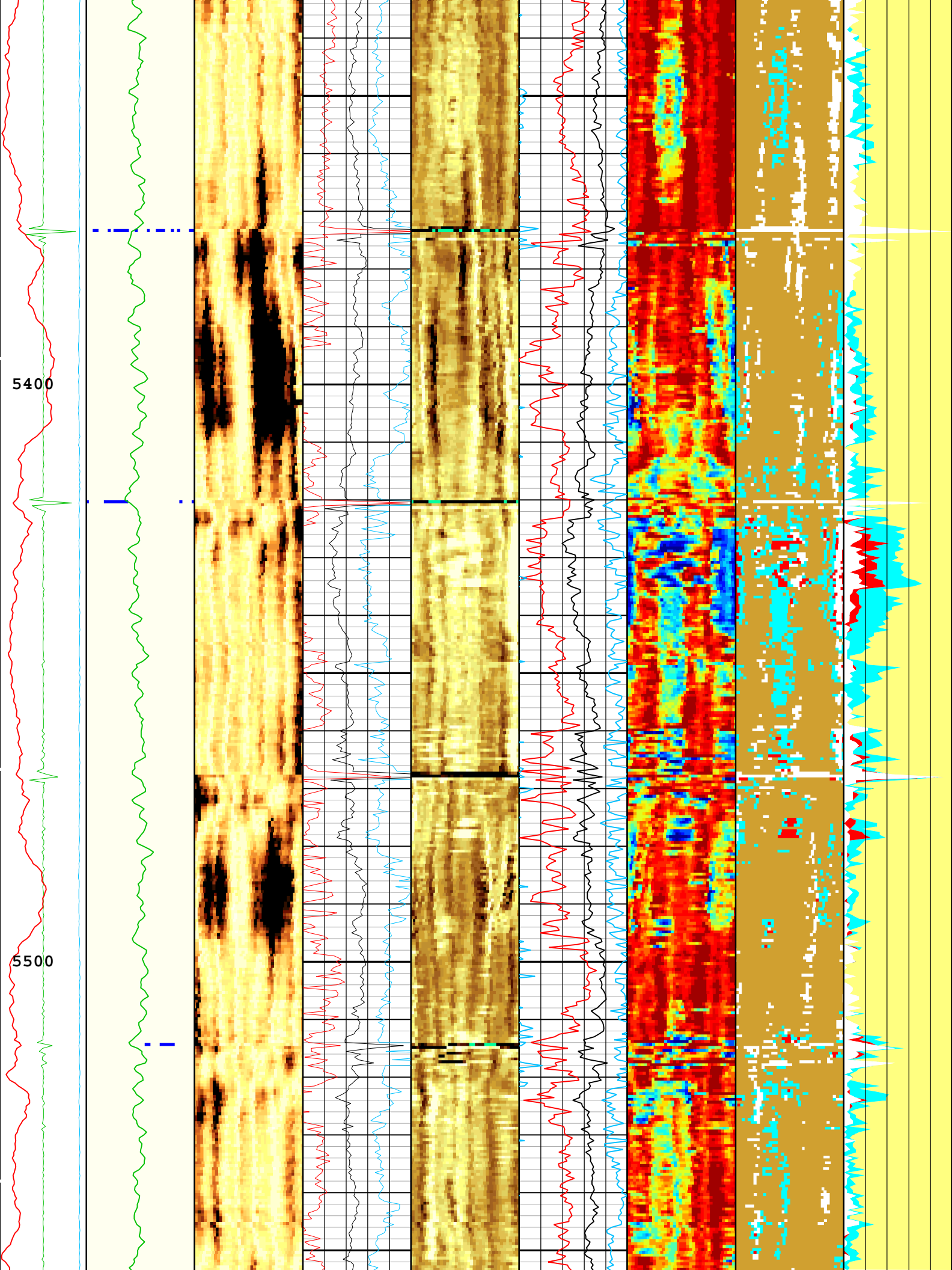


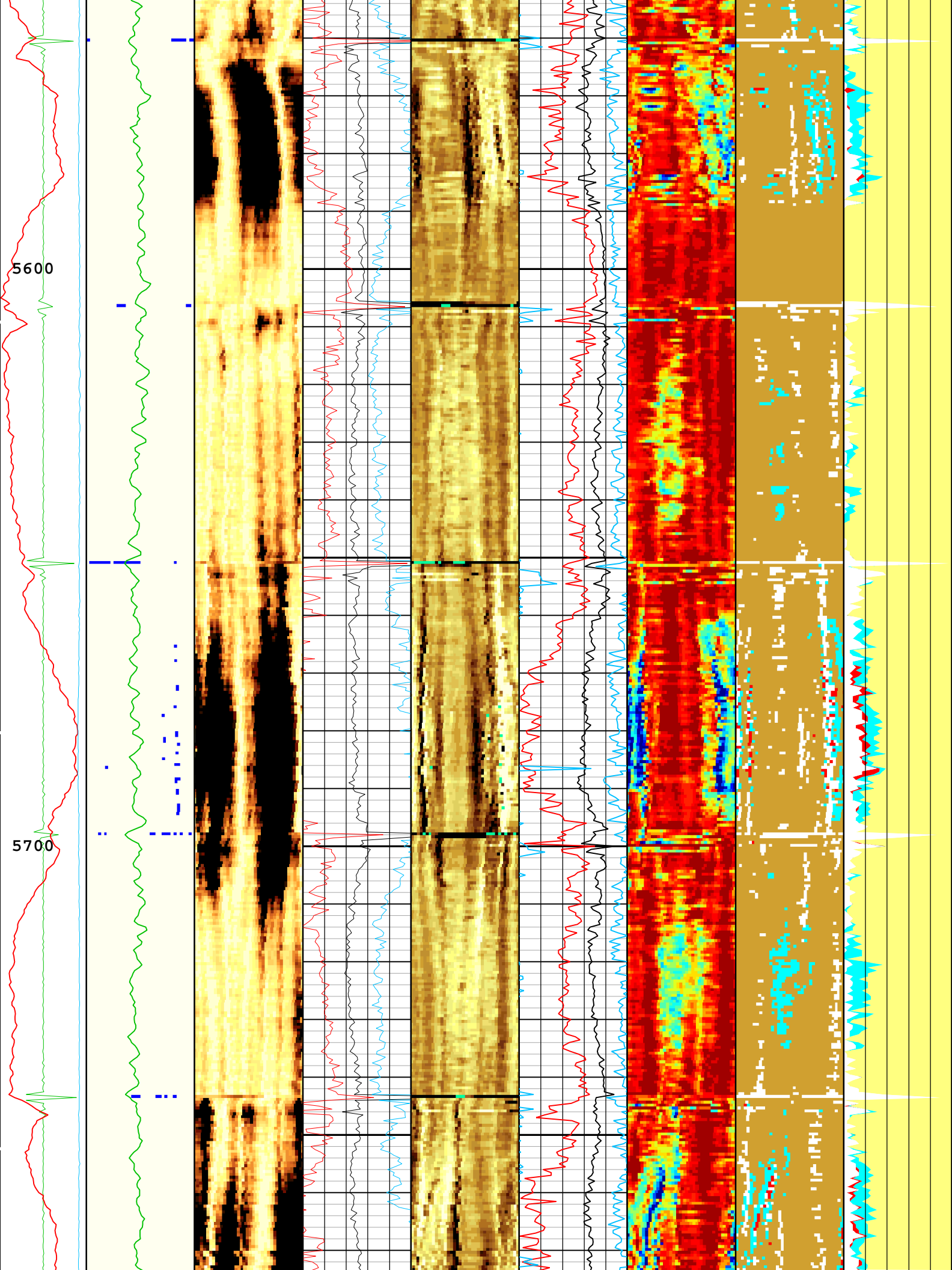


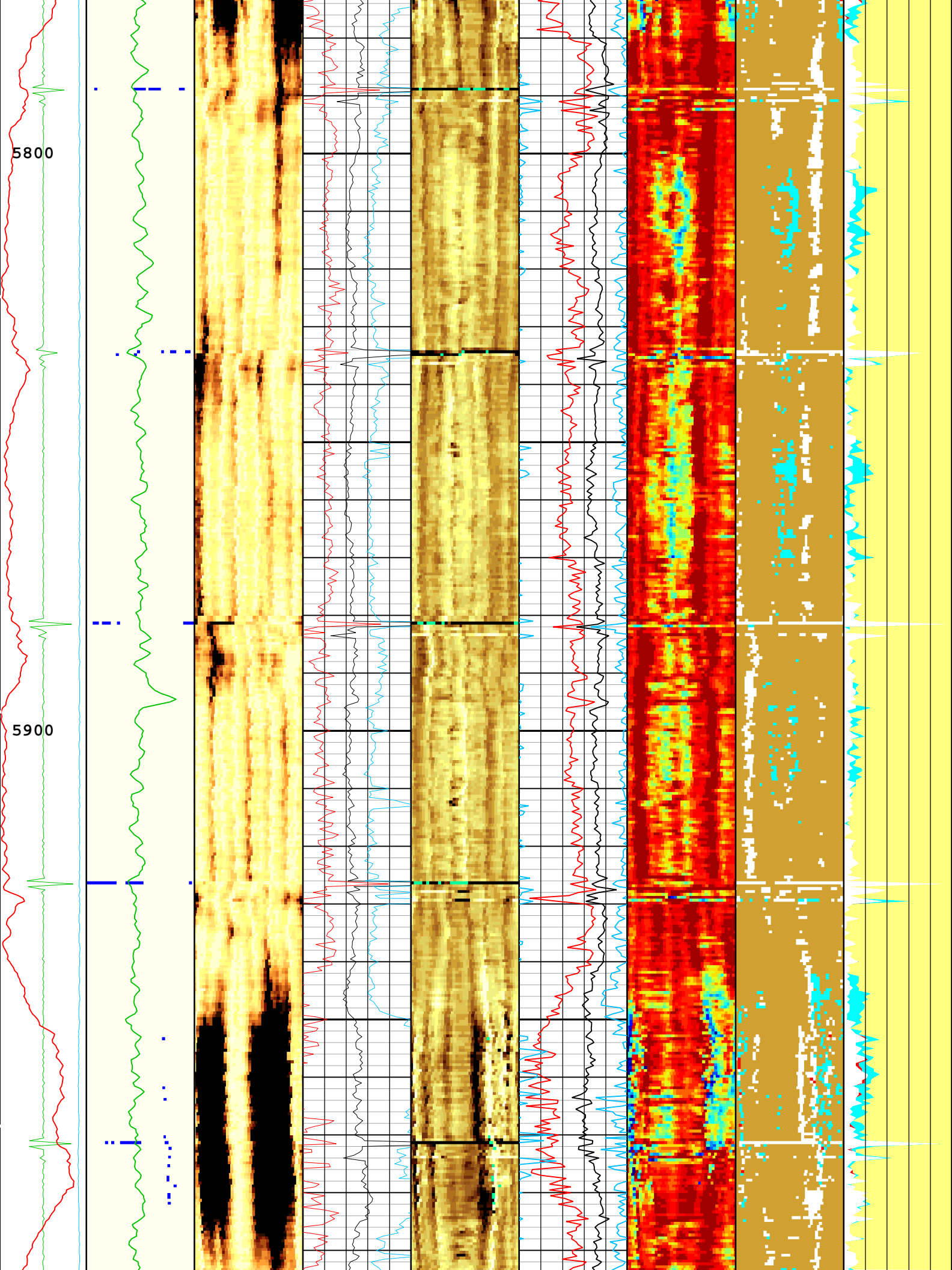




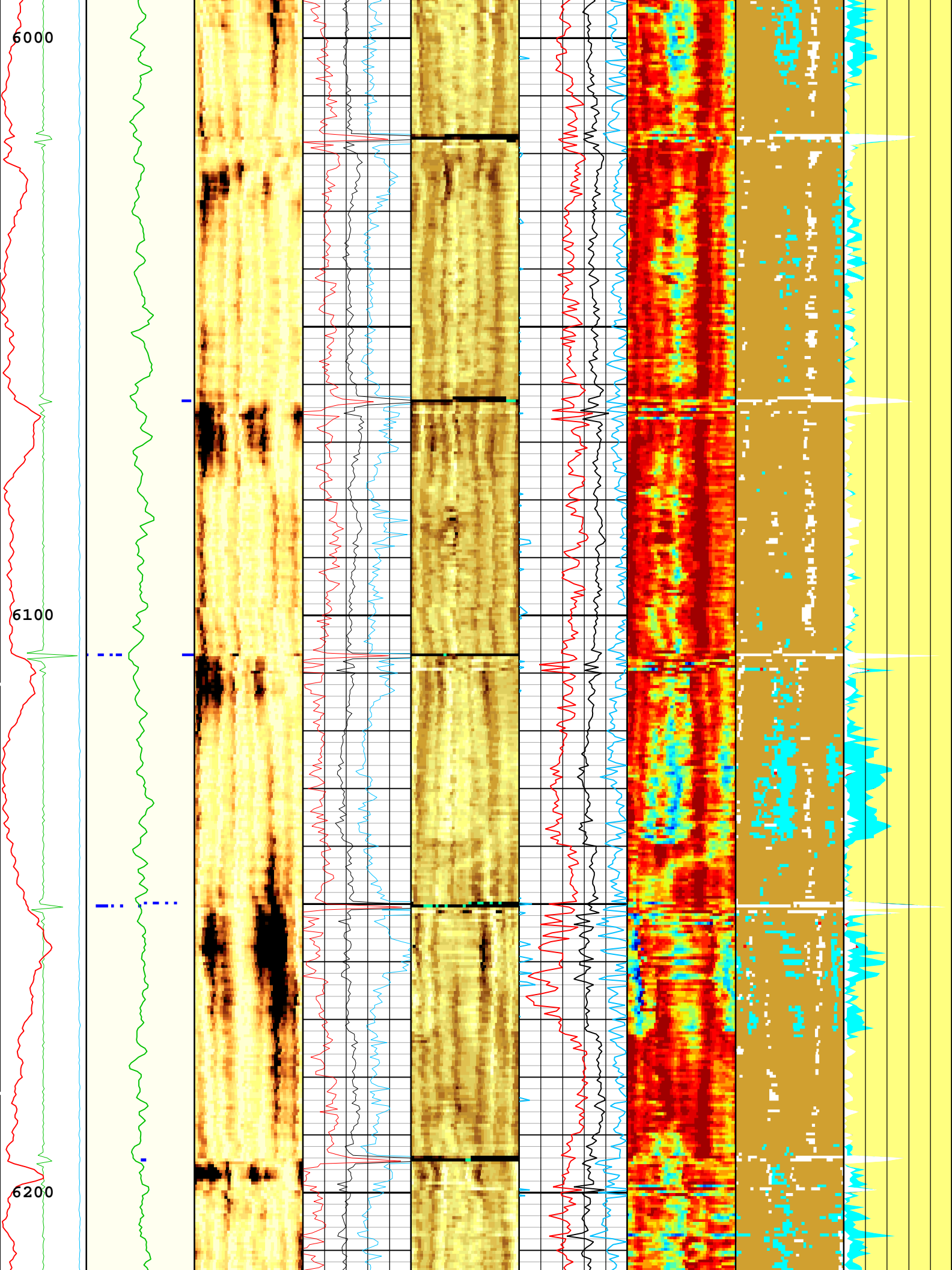


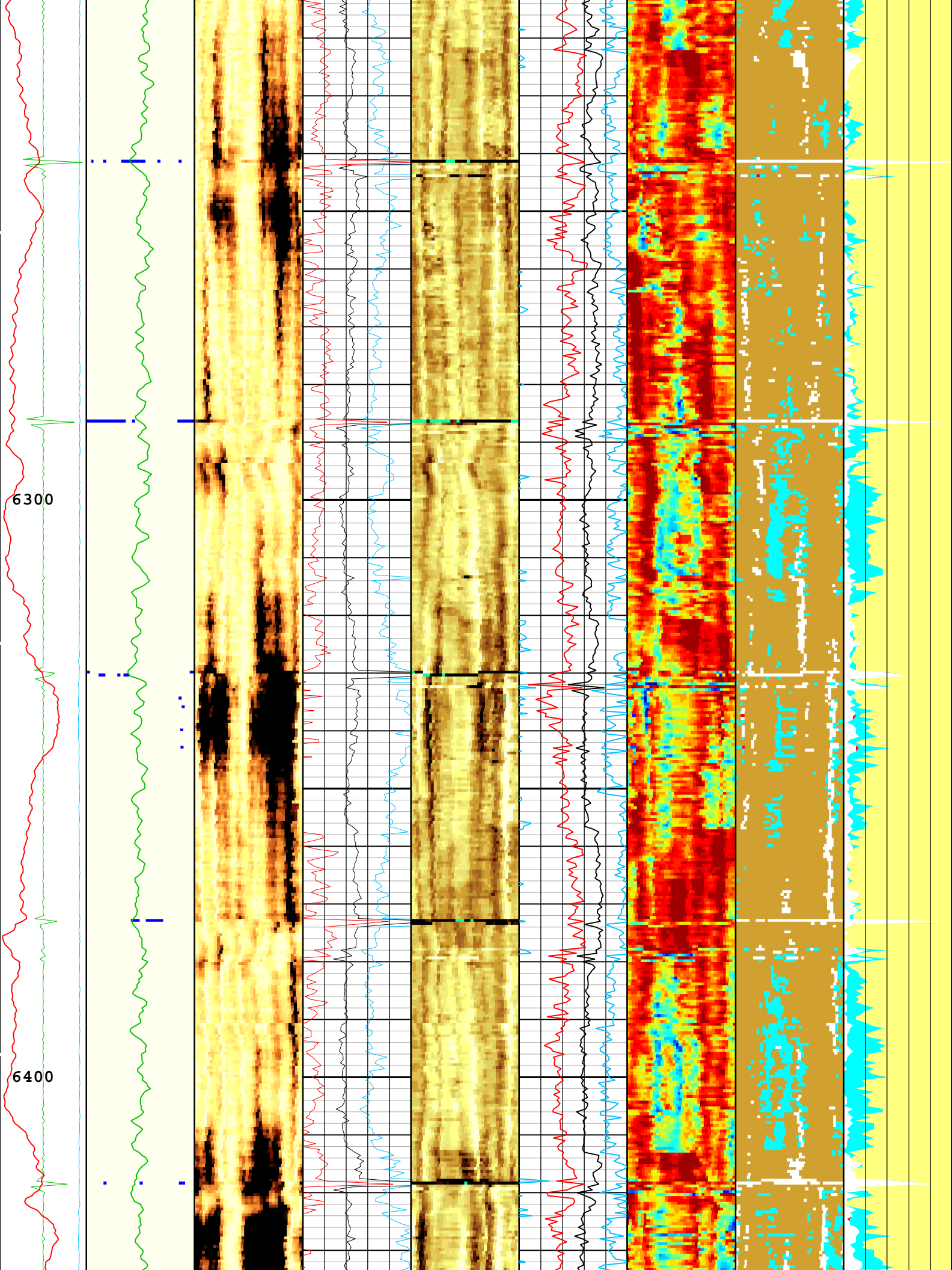


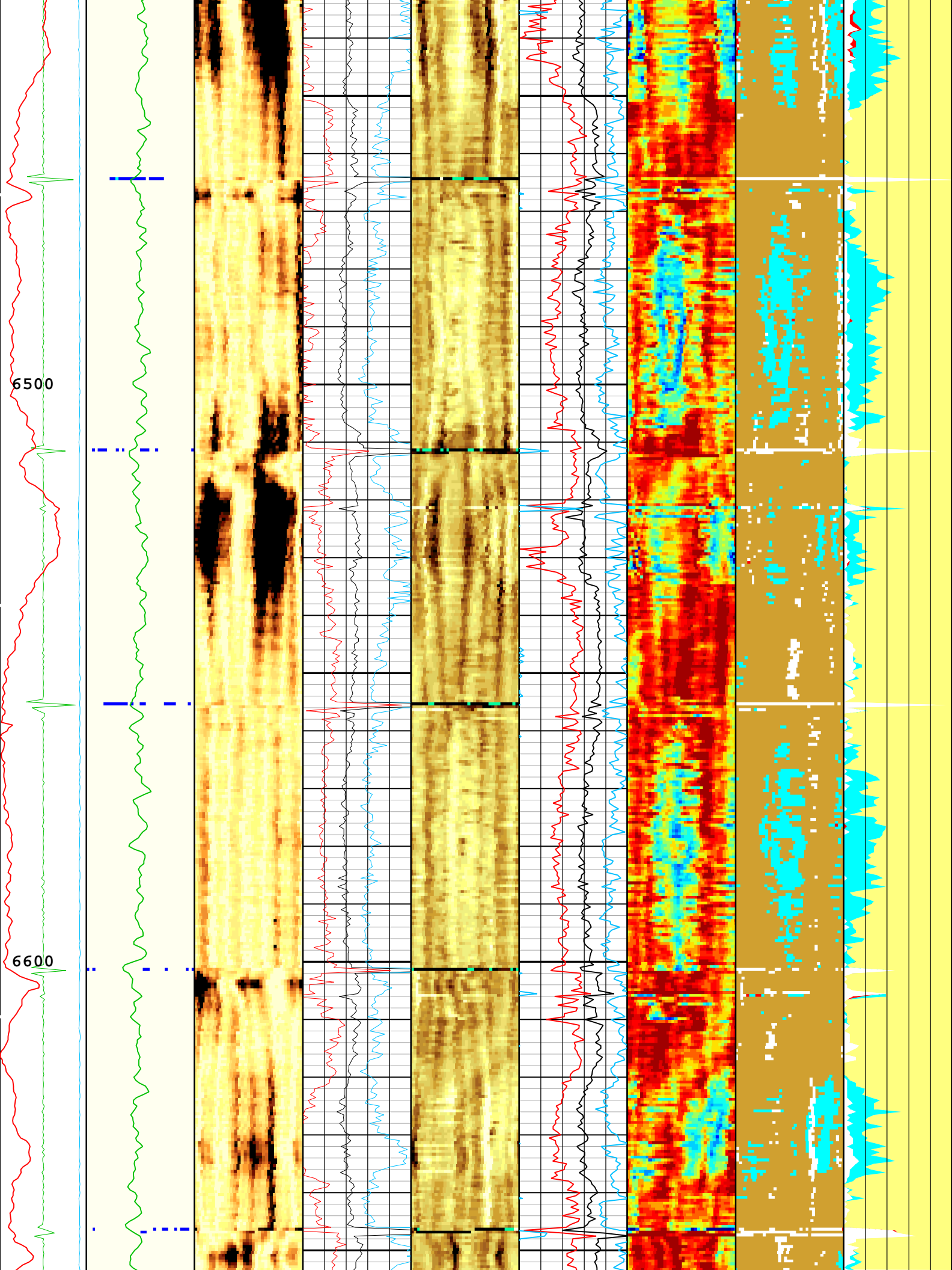


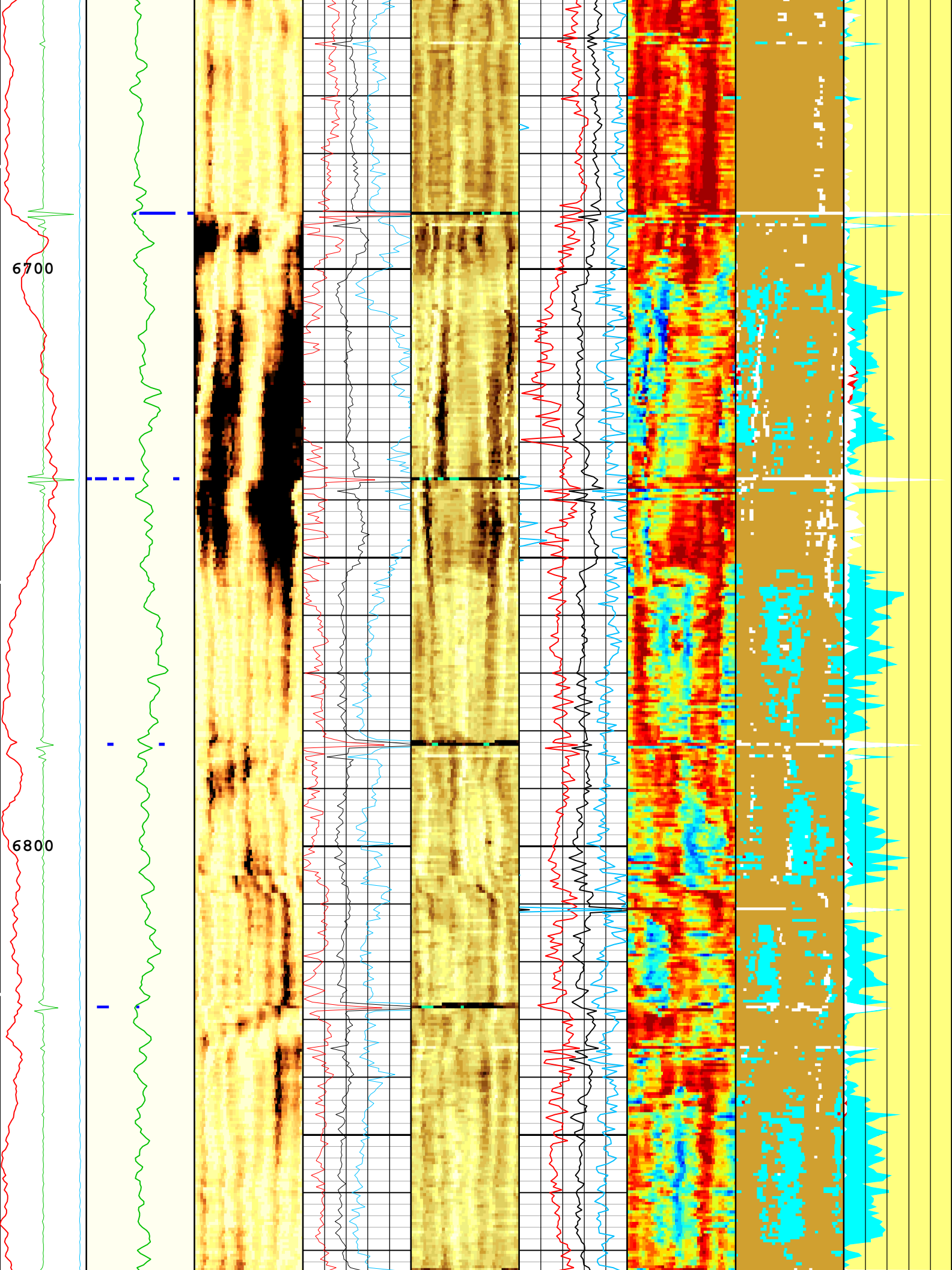




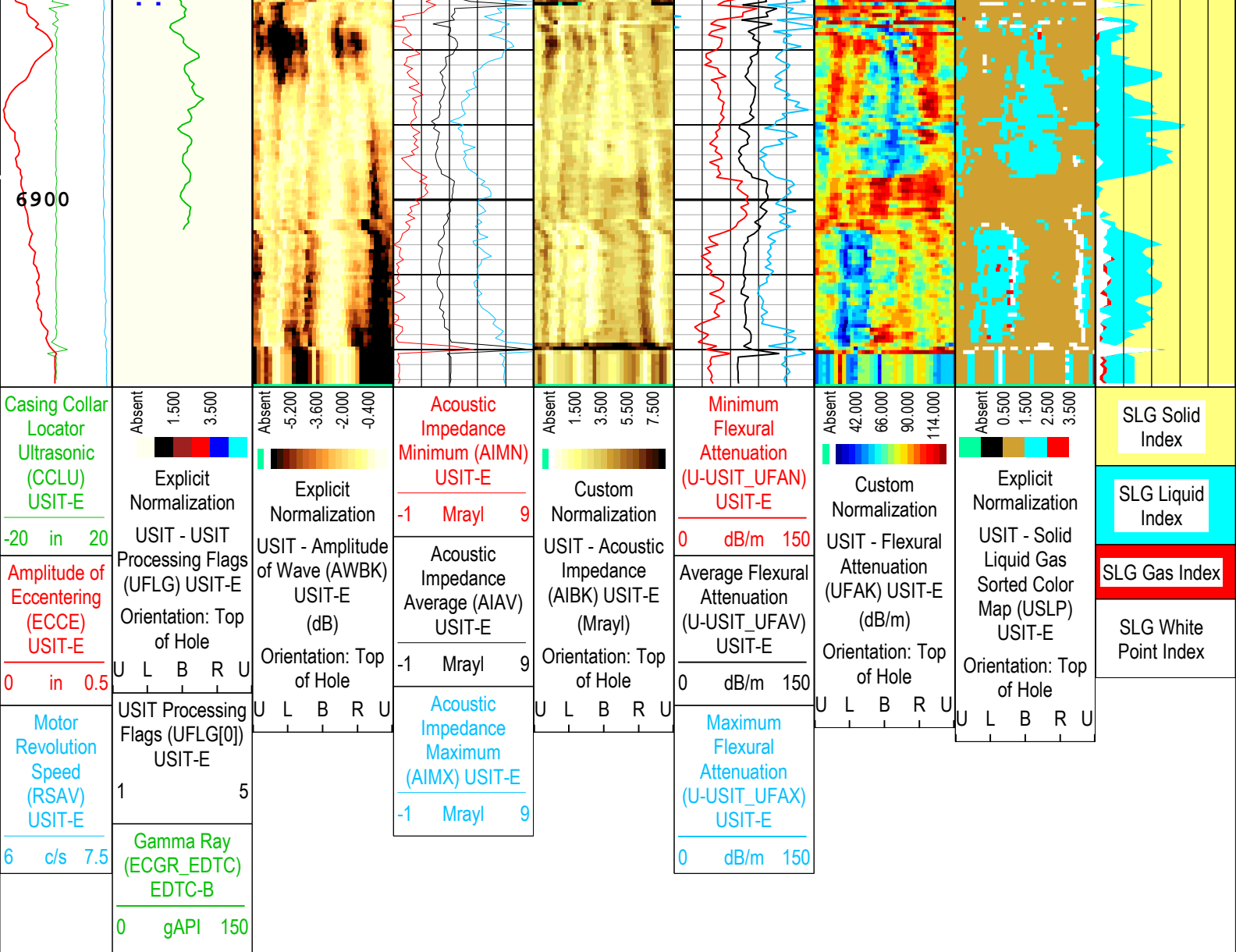












USIT Processing Flags (UFLG[0]) USIT-E	
1 - UFLG 1 Value within [0.0 - 1.5] - :	UTIM Error
2 - UFLG 2 Value within [1.5 - 2.5] - :	Pulse Origin Not Detected
3 - UFLG 3 Value within [2.5 - 3.5] - :	WINLEN Error
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :	Casing Thickness Error
5 - UFLG 7 UFLG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

TIME\_1900 - Time Marked every 60.00 (s)

Description: USI IBC SLG    Format: Log ( IBC SLG )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 13-Aug-2018 21:22:57

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	12707	ft
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	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	8.4	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	-7.09	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	1.22	
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	72	2483	
BS	8.5	2483	6925	

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	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	Time Zoned	us

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth ( ft )	Stop Depth ( ft )
WINE	71.88	13-Aug-2018 18:12:05	13-Aug-2018 18:13:57	6925.91	6828.28
WINE	72.09	13-Aug-2018 18:13:57	13-Aug-2018 18:14:11	6828.28	6812.05
WINE	73.14	13-Aug-2018 18:14:11	13-Aug-2018 19:50:39	6812.05	93.51

All depth are at tool zero.

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	93.51 ft	6925.91 ft	13-Aug-2018 6:12:05 PM	13-Aug-2018 7:50:39 PM	ON	6.51 ft	No

All depths are referenced to toolstring zero

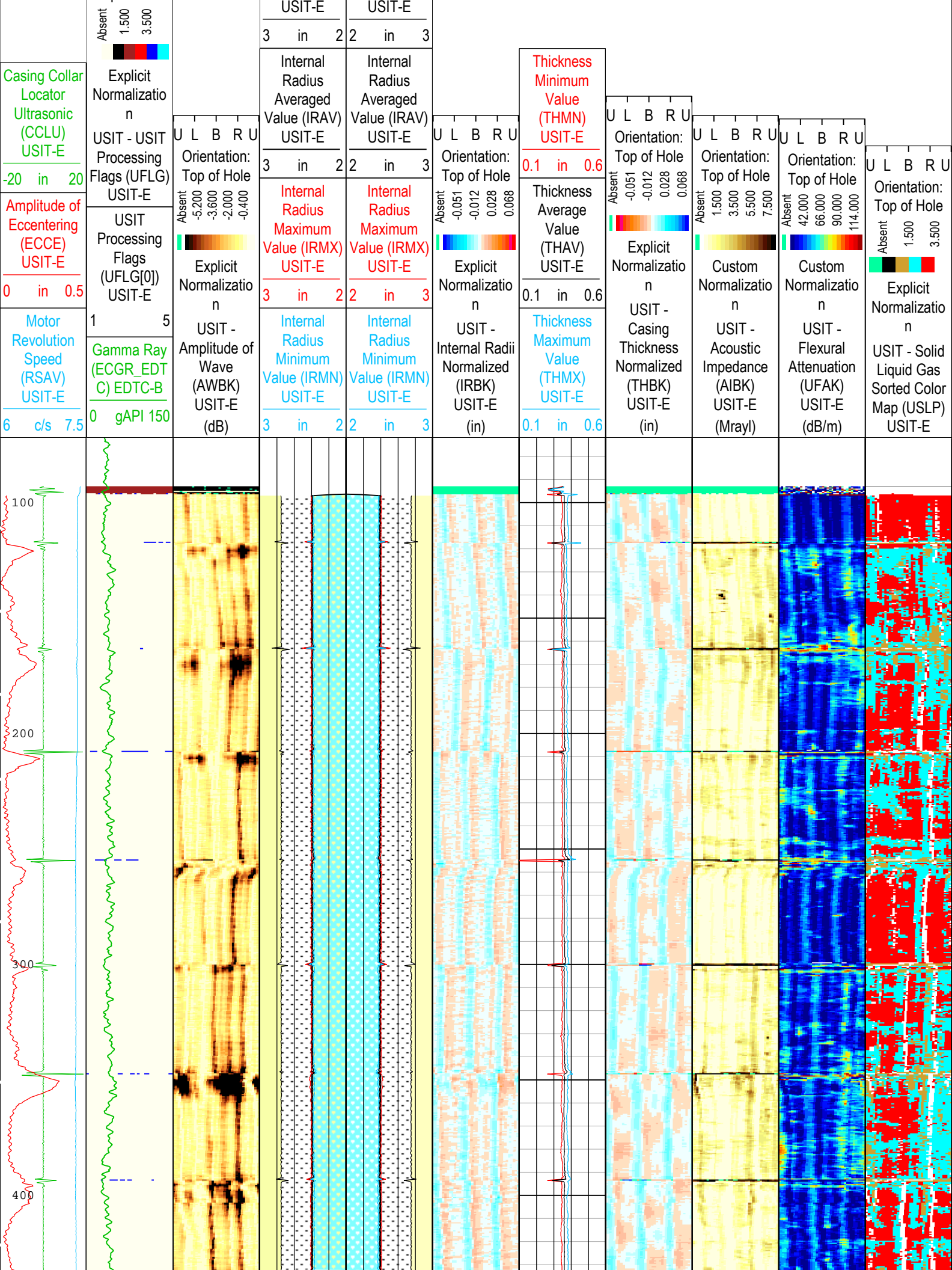
Log	Company:Crestone Peak Resources Operating LLC	Well:Ruegge #3R-4H-N165
		One: Log[4]:Up:S004

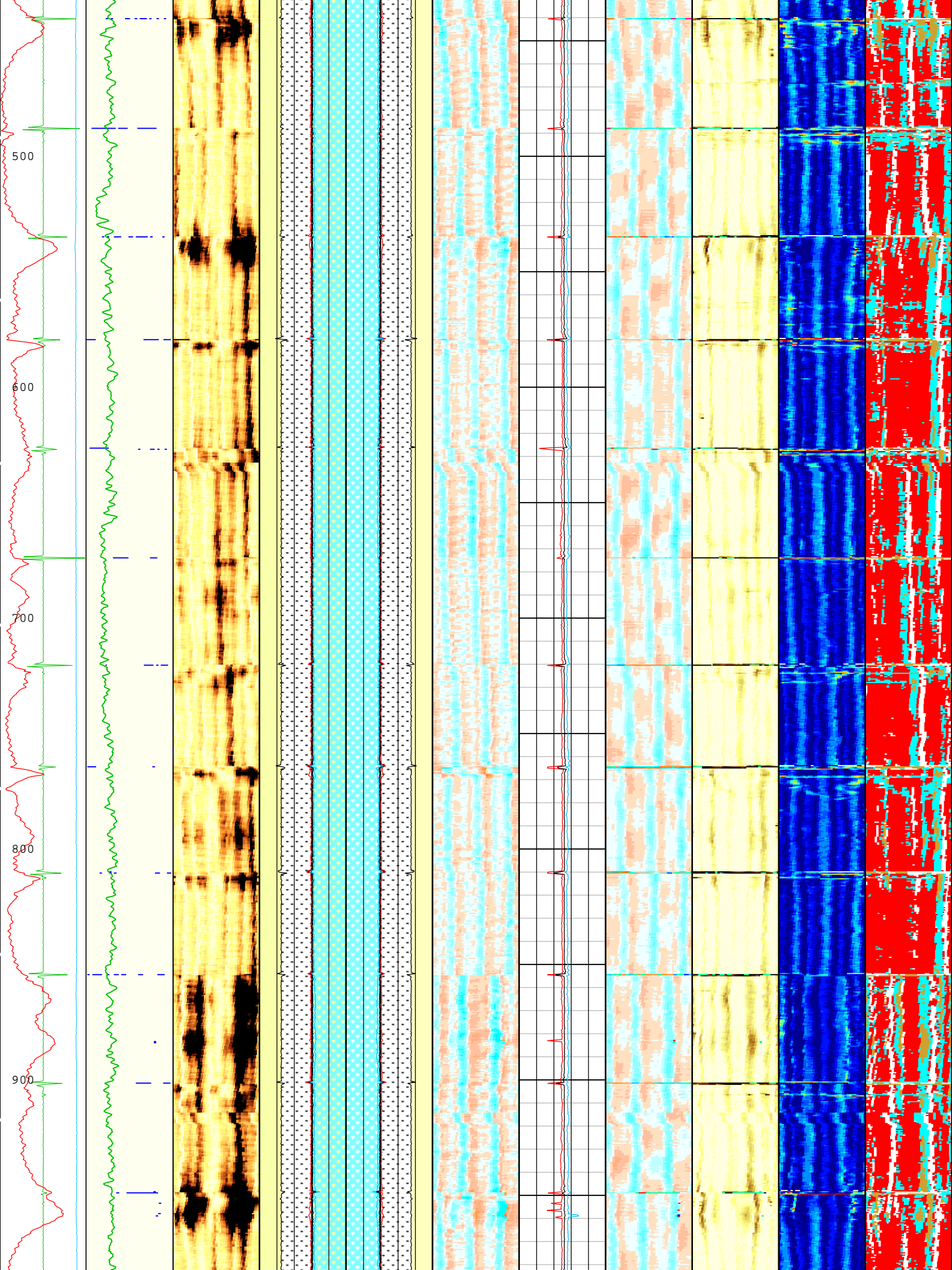
Description: USI IBC SLG Composite    Format: Log ( IBC SLG Composite )    Index Scale: 2 in per 100 ft    Index Unit: ft    Index Type: Measured Depth  
Creation Date: 13-Aug-2018 21:23:10

TIME\_1900 - Time Marked every 60.00 (s)

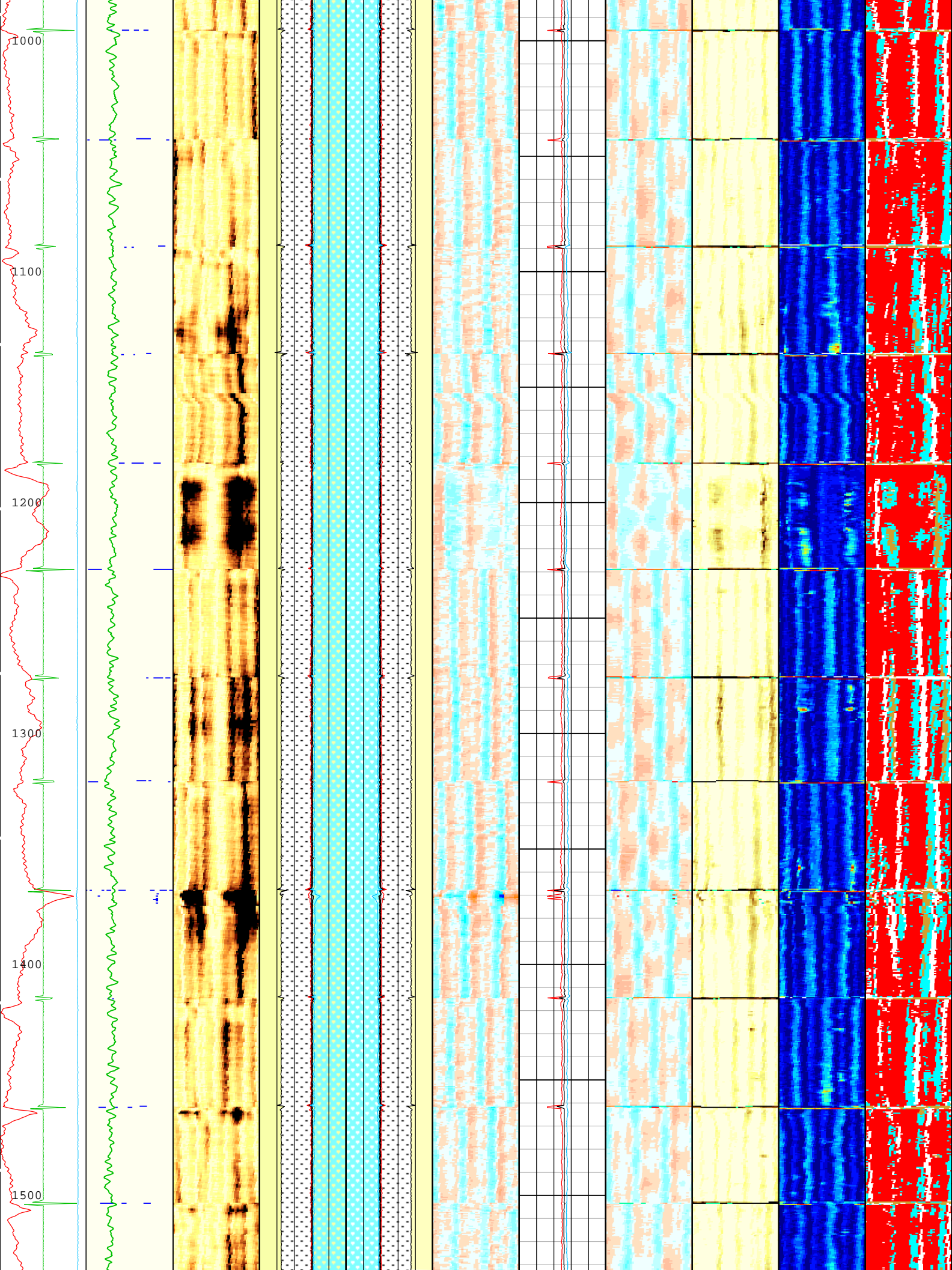
USIT Processing Flags (UFLG[0]) USIT-E			
1 - UFLG 1 Value within [0.0 - 1.5] - :	<div></div>	UTIM Error	
2 - UFLG 2 Value within [1.5 - 2.5] - :	<div></div>	Pulse Origin Not Detected	
3 - UFLG 3 Value within [2.5 - 3.5] - :	<div></div>	WINLEN Error	
4 - UFLG 4    UFLG 5    UFLG 6    Value within [3.5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

<div> <div>U   L   B   R   U</div> <div>Orientation: Top of Hole</div> </div>	External Radii Average (ERAV)	External Radii Average (ERAV)	
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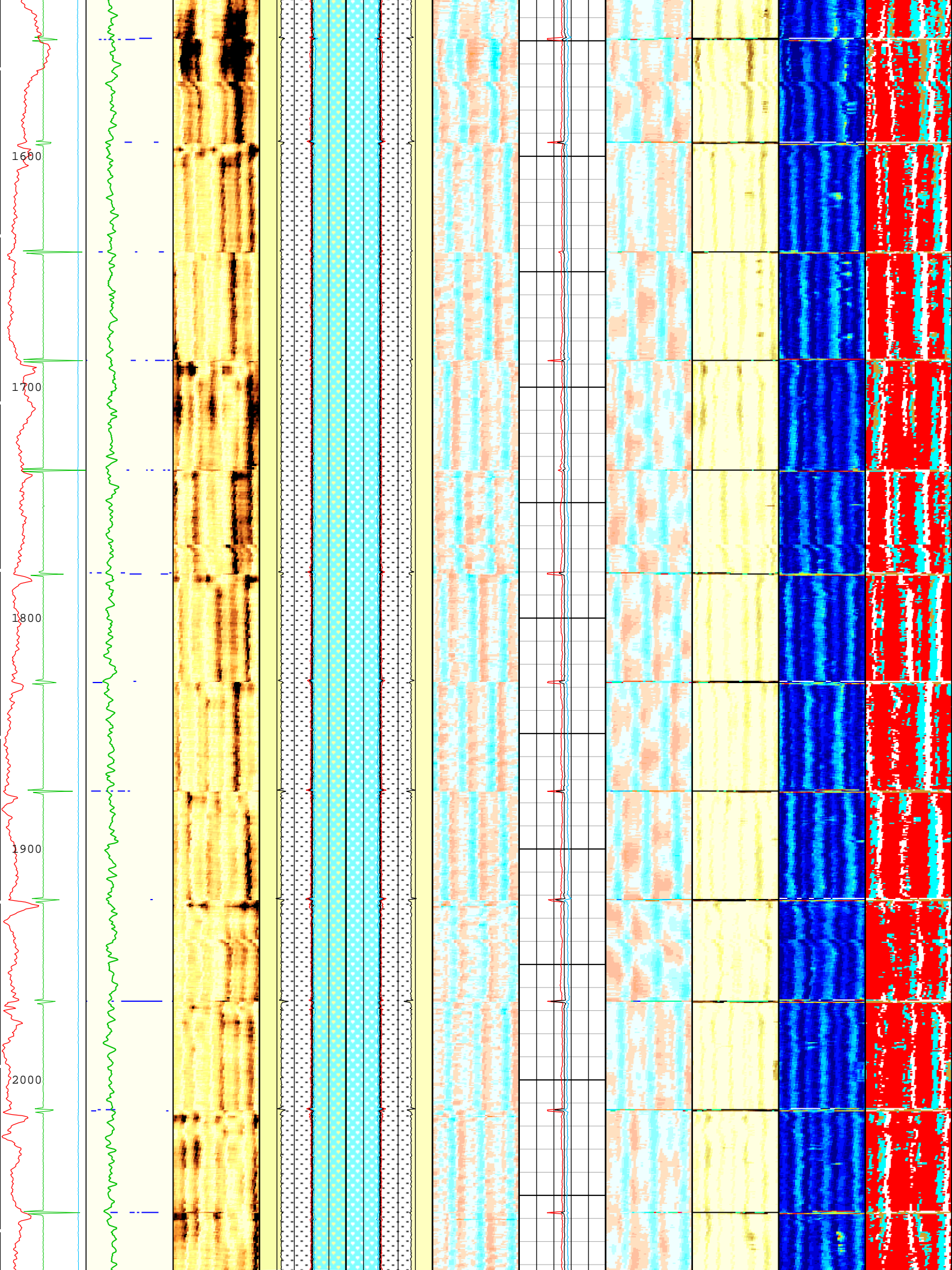


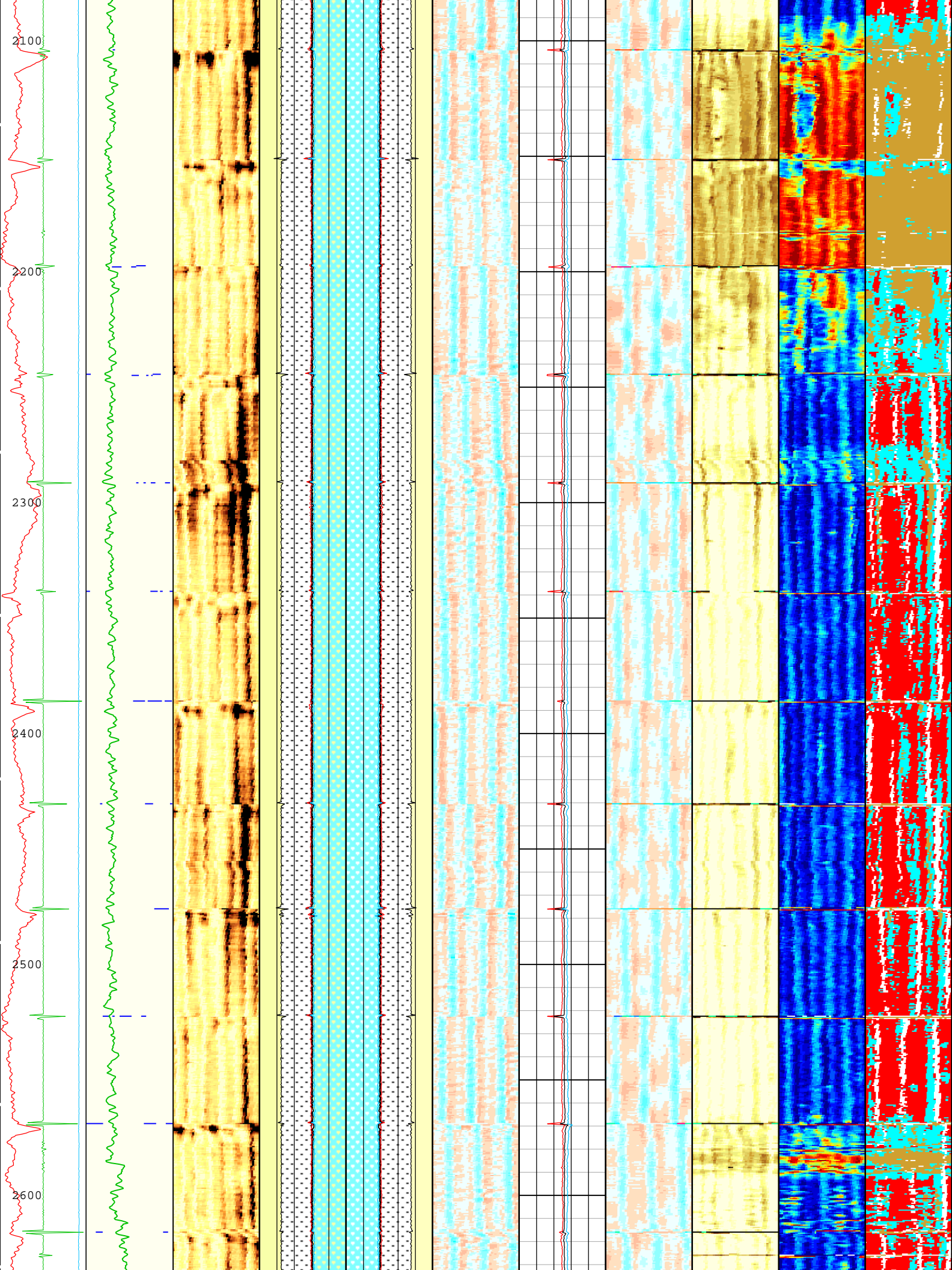




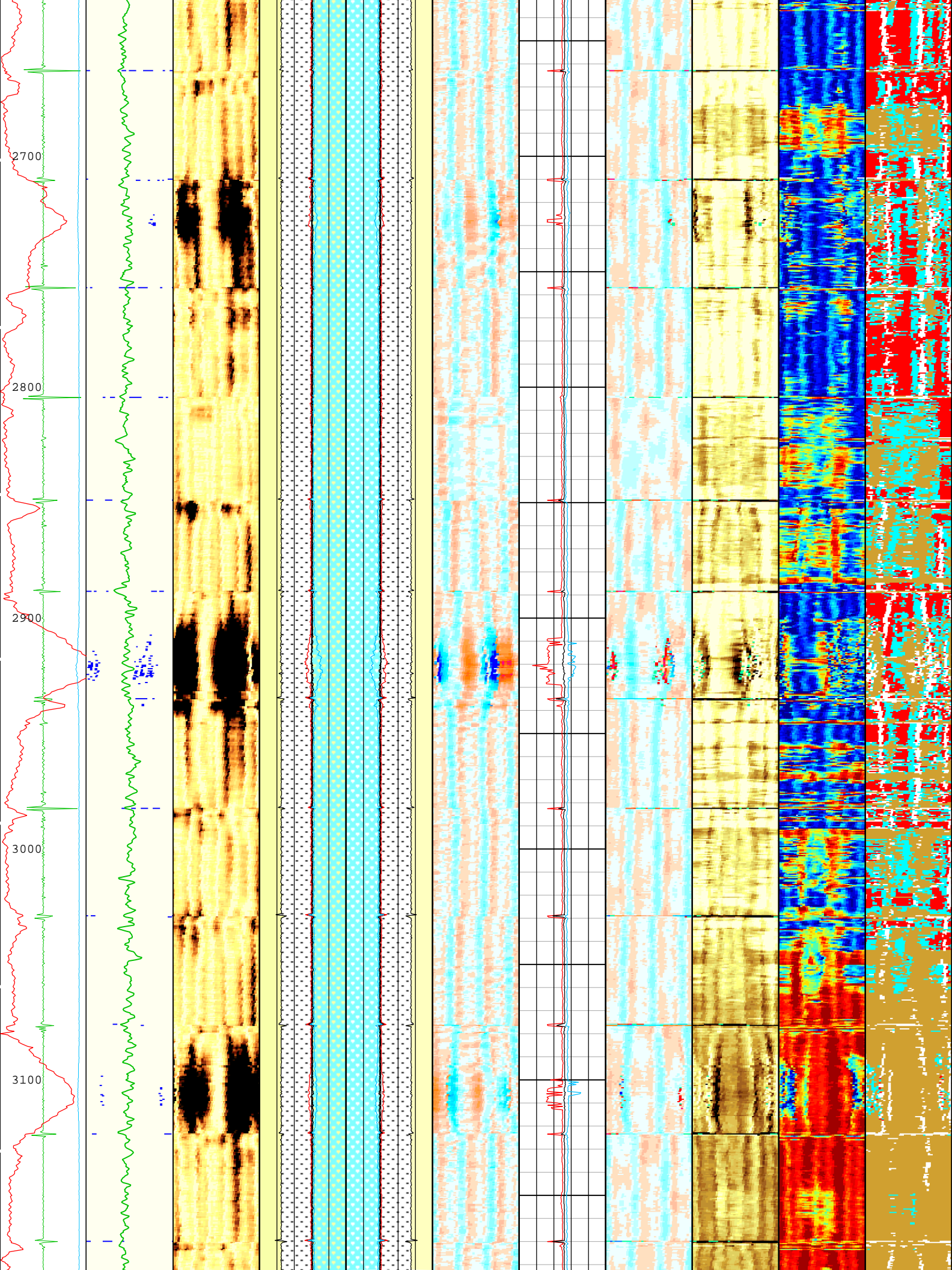


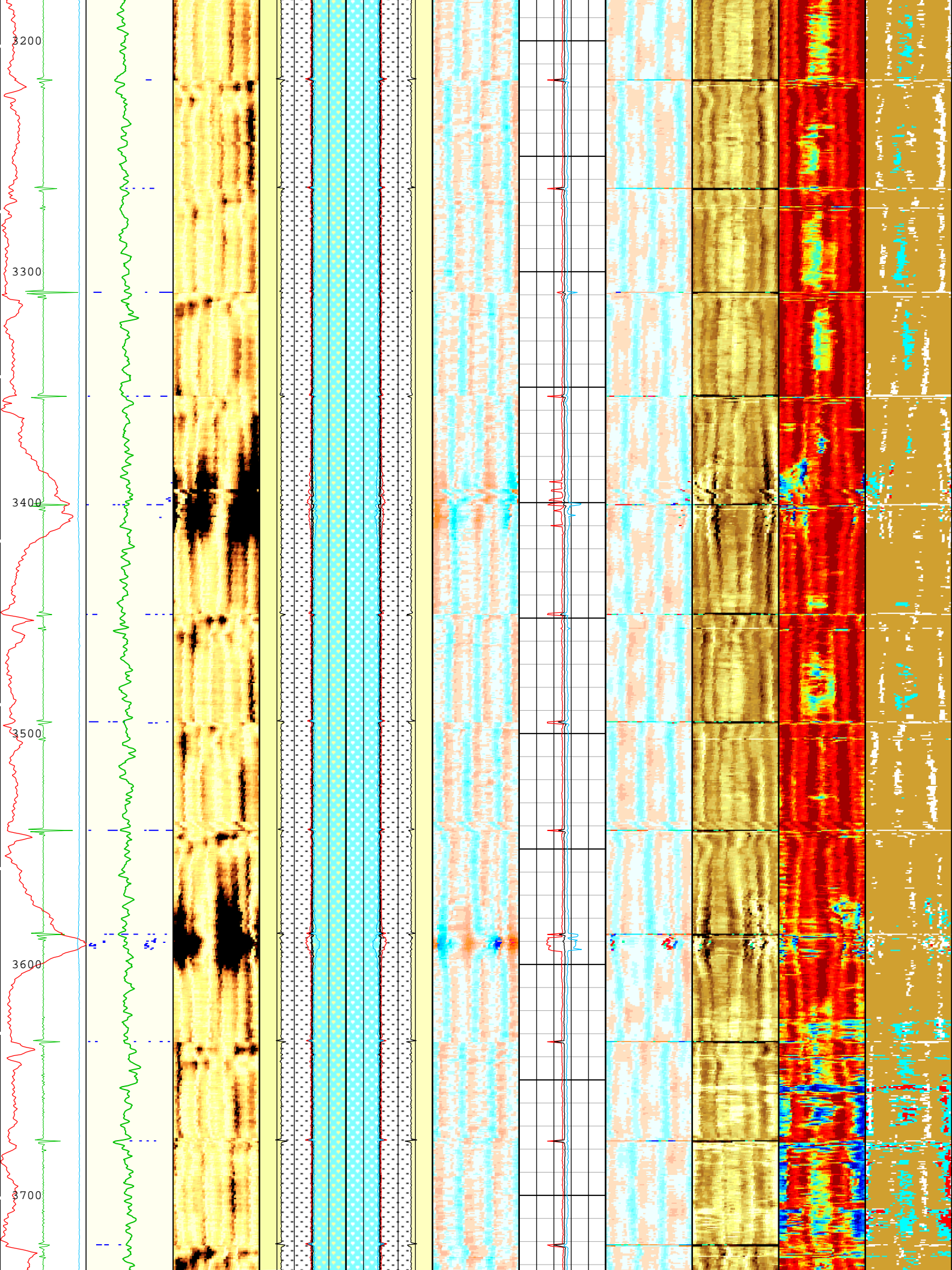




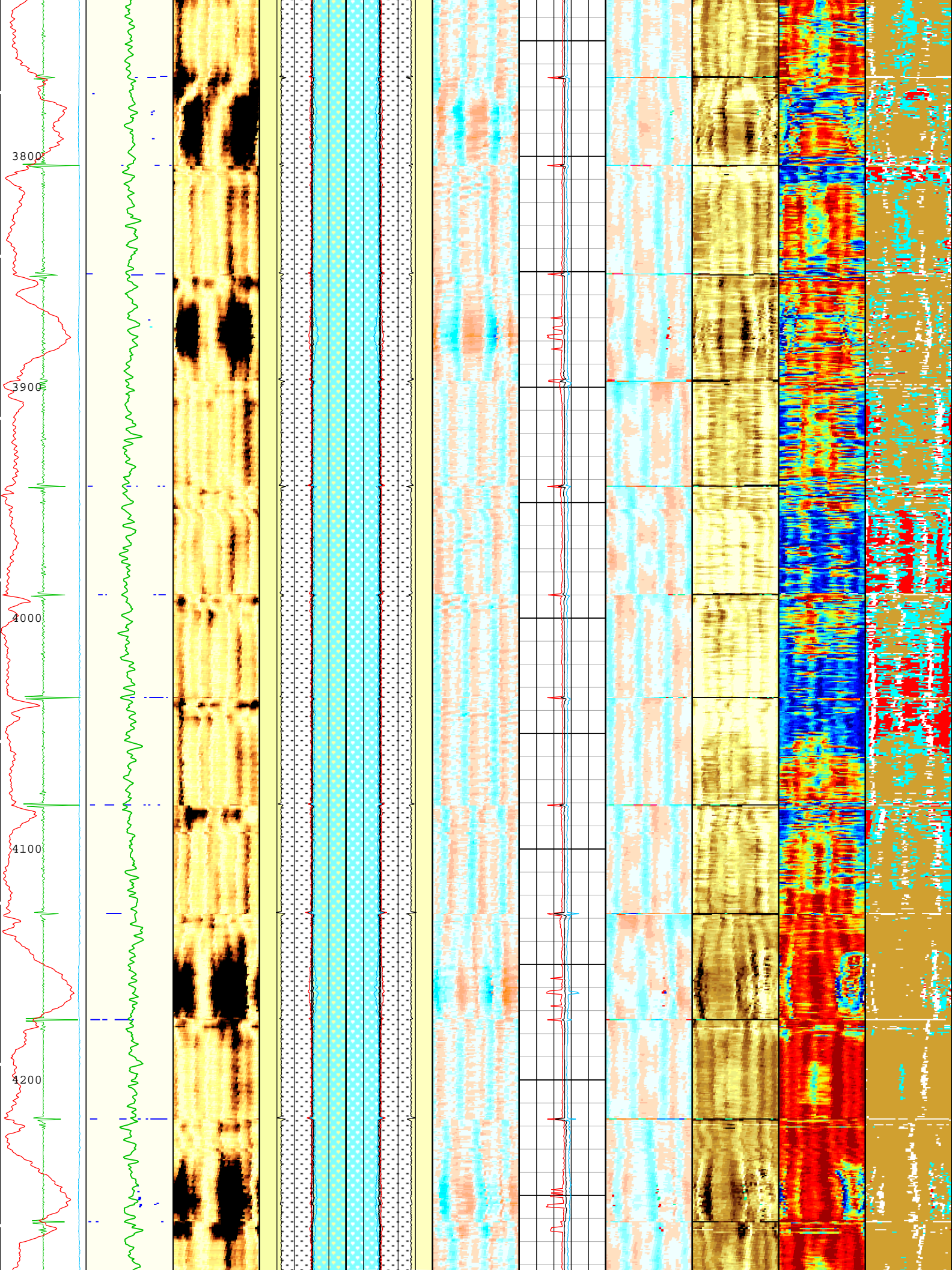


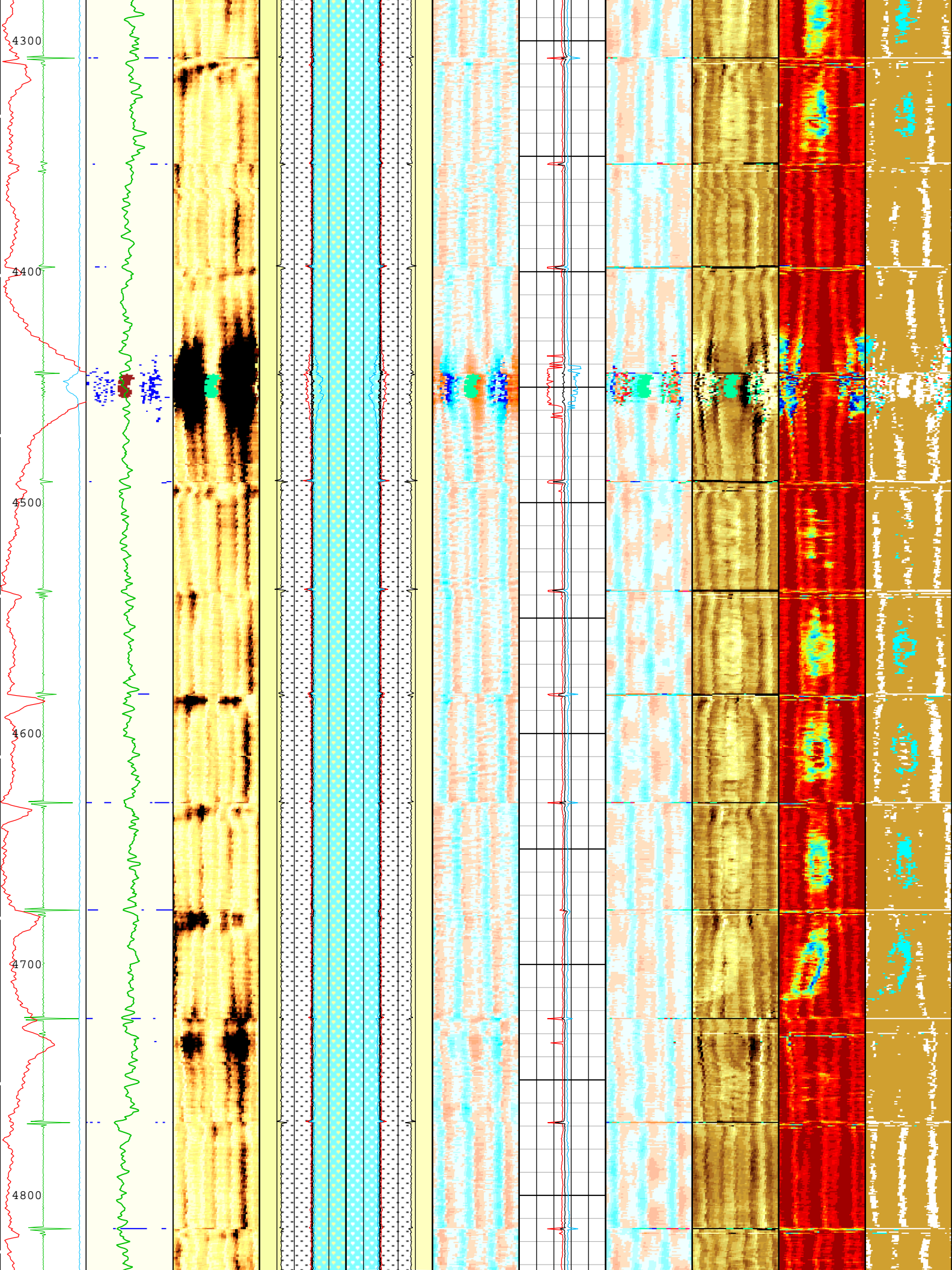




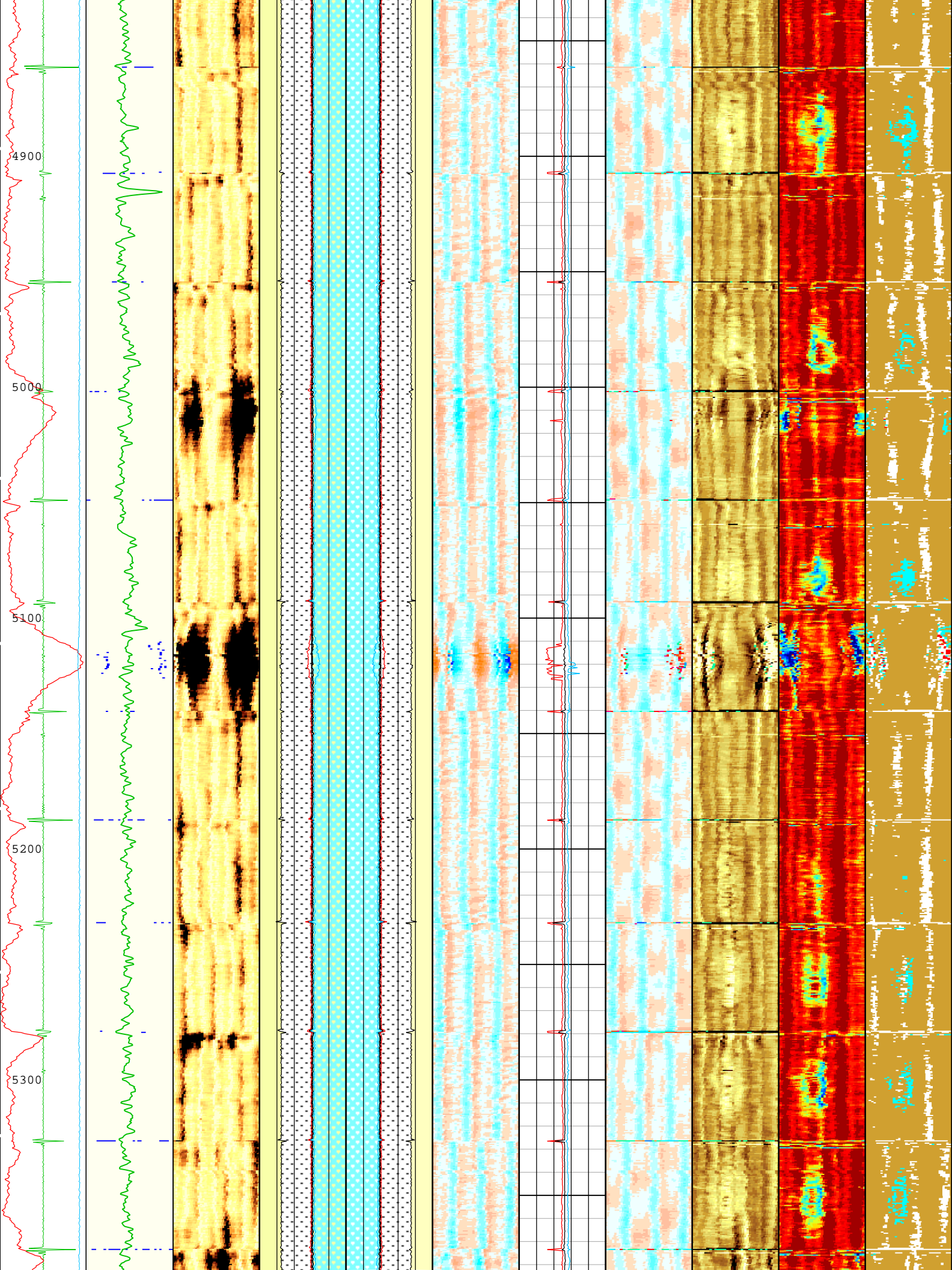


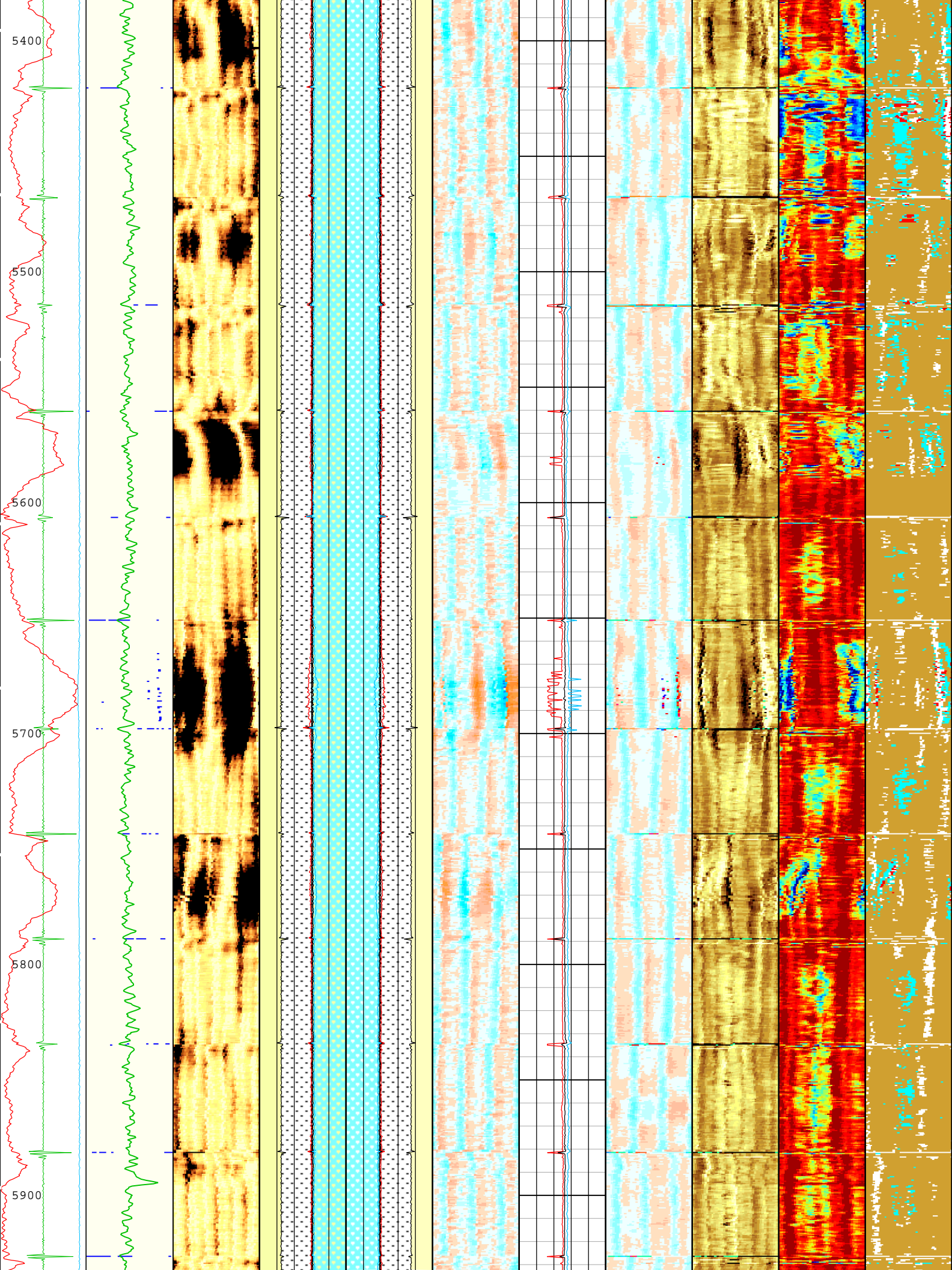




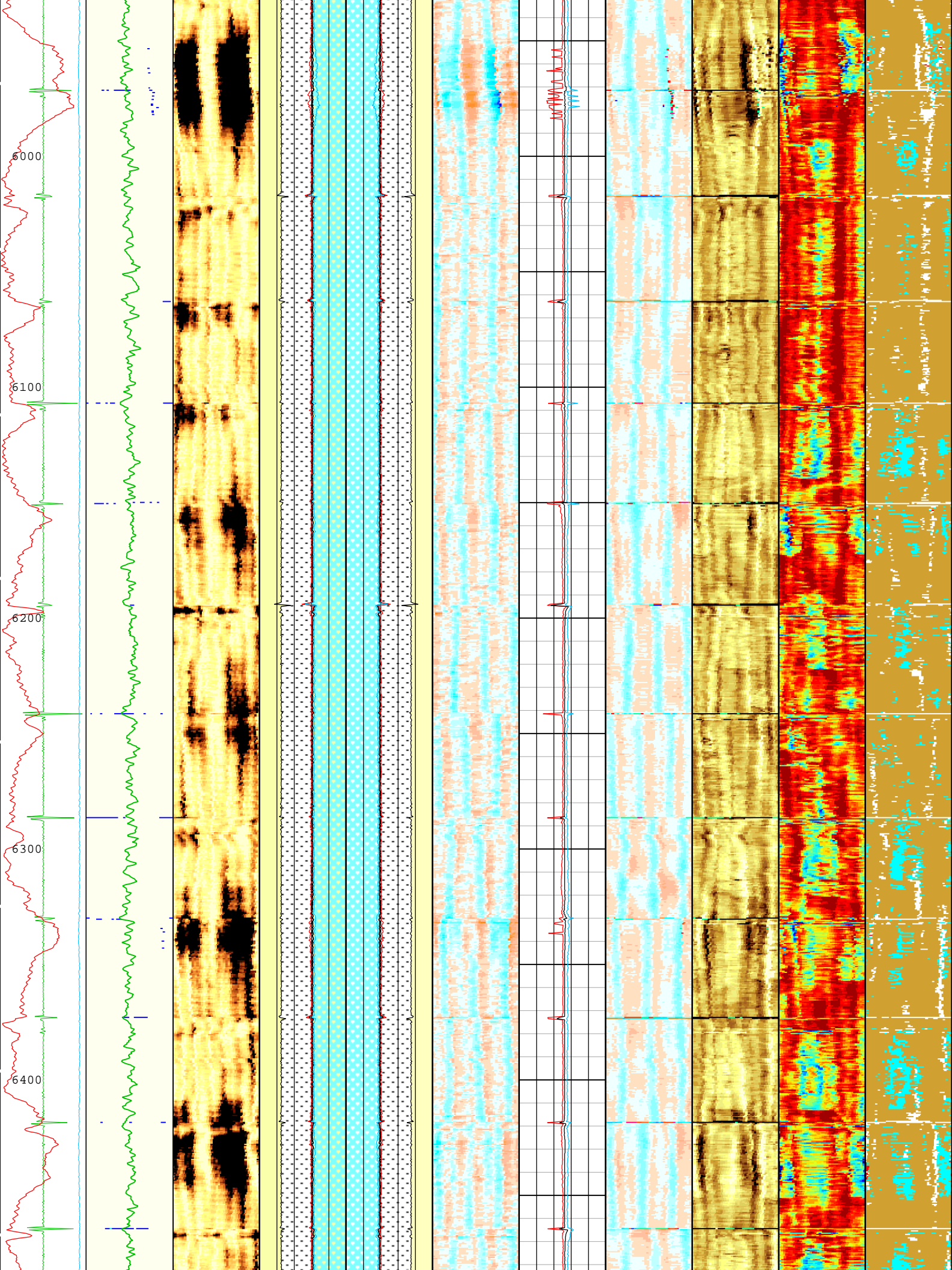


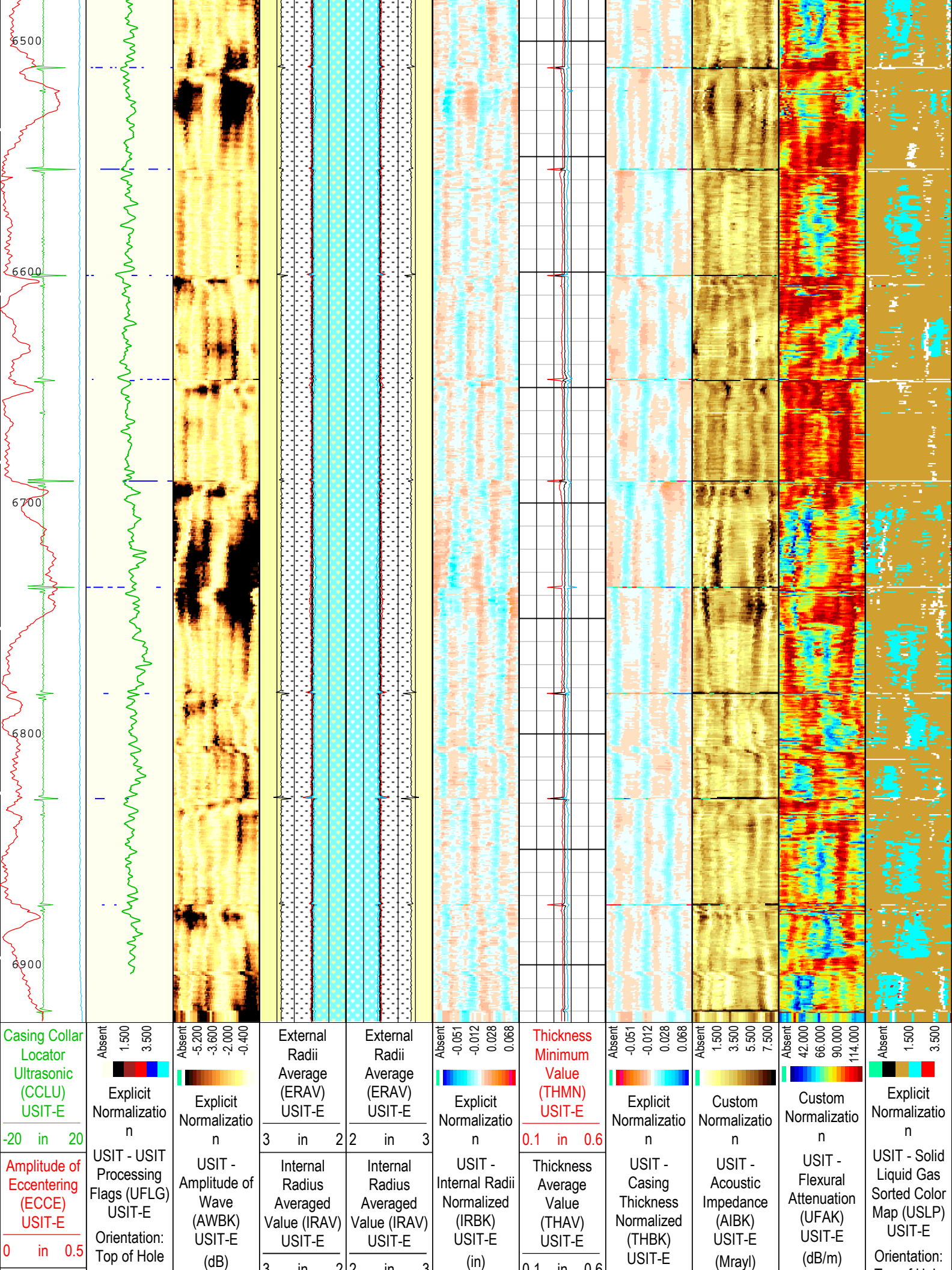

















Motor Revolution Speed (RSAV) USIT-E	U L B R U	USIT Processing Flags (UFLG[0]) USIT-E	Orientation: Top of Hole	U L B R U	Internal Radius Maximum Value (IRMX) USIT-E	Internal Radius Maximum Value (IRMX) USIT-E	Orientation: Top of Hole	U L B R U	Thickness Maximum Value (THMX) USIT-E	(in)	Orientation: Top of Hole	U L B R U	Orientation: Top of Hole	U L B R U	Top of Hole	U L B R U	Top of Hole	U L B R U
6 c/s 7.5		1 5			3 in 2	2 in 3			0.1 in 0.6									
		Gamma Ray (ECGR_EDT C) EDTC-B			Internal Radius Minimum Value (IRMN) USIT-E	Internal Radius Minimum Value (IRMN) USIT-E												
		0 gAPI 150			3 in 2	2 in 3												

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: 13-Aug-2018 21:23:10

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	12707	ft
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	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	8.4	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	-7.09	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	1.22	
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



Depth Zone Parameters			
Parameter	Value	Start ( ft )	Stop ( ft )
BS	12.25	72	2483
BS	8.5	2483	6925

Tool Control Parameters	
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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	Time Zoned	us

Parameter	Value	Start Time	Stop Time	Start Depth ( ft )	Stop Depth ( ft )
WINE	71.88	13-Aug-2018 18:12:05	13-Aug-2018 18:13:57	6925.91	6828.28
WINE	72.09	13-Aug-2018 18:13:57	13-Aug-2018 18:14:11	6828.28	6812.05
WINE	73.14	13-Aug-2018 18:14:11	13-Aug-2018 19:50:39	6812.05	93.51

One

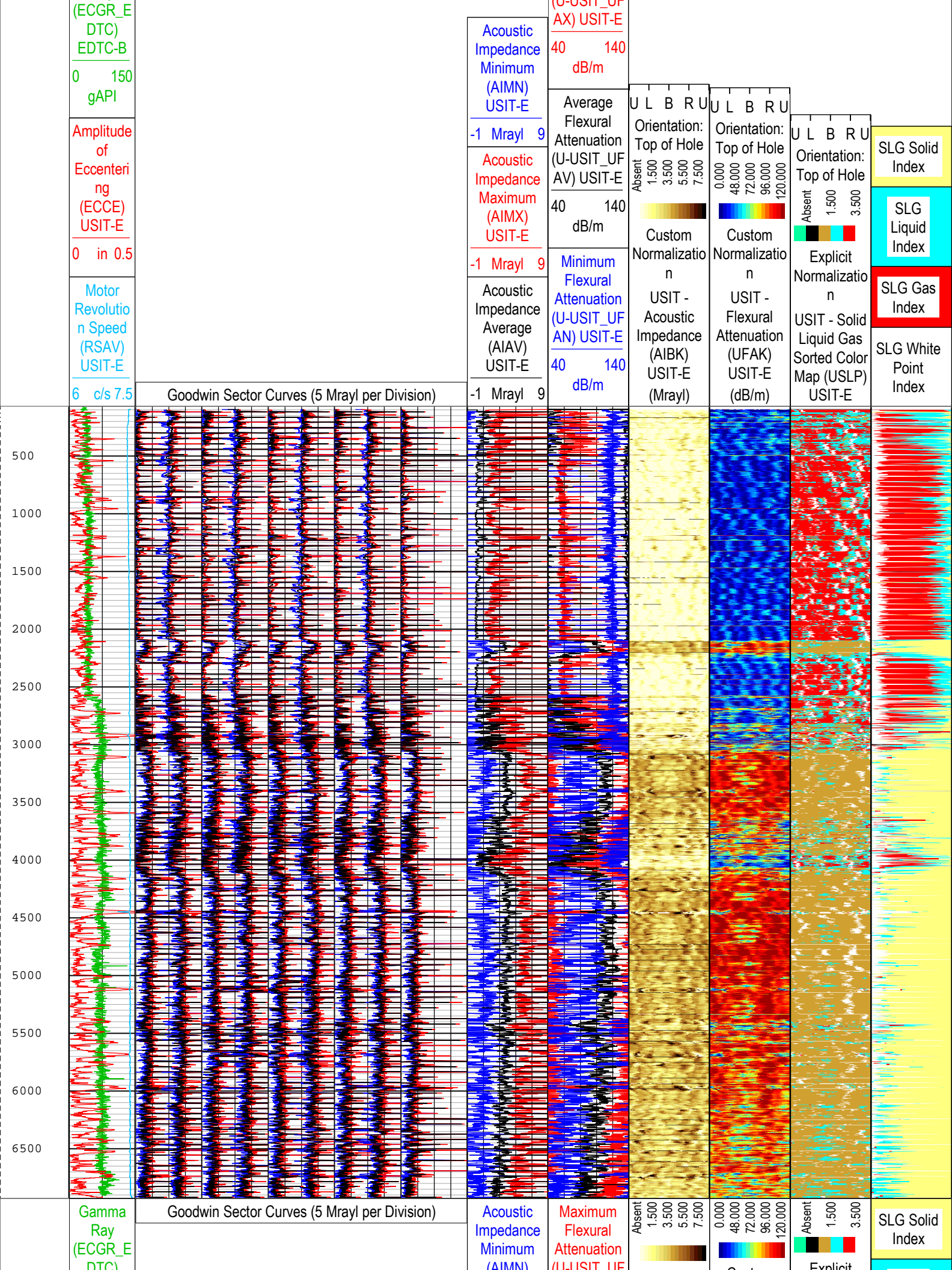
Pass Summary	

									Parallel Data
One	Log[4]:Up	Up	93.51 ft	6925.91 ft	13-Aug-2018 6:12:05 PM	13-Aug-2018 7:50:39 PM	ON	6.51 ft	No

Log	Company:Crestone Peak Resources Operating LLC	Well:Ruegge #3R-4H-N165
		One: Log[4]:Up:S004

TIME 1900 - Time Marked every 60.00 (s)

Maximum  
Flexural  
Attenuation  
(ULSIT-11)



<div> <div> <div>DTG)</div> <div>EDTC-B</div> </div> <div> <div>0150</div> <div>gAPI</div> </div> </div> <div> <div>Amplitude of Eccentering (ECCE)</div> <div>USIT-E</div> </div> <div> <div>0in0.5</div> </div> <div> <div>Motor Revolution Speed (RSAV)</div> <div>USIT-E</div> </div> <div> <div>6c/s7.5</div> </div>	<div> <div>(AIMN)</div> <div>USIT-E</div> </div> <div> <div>-1Mrayl9</div> </div> <div> <div>Acoustic Impedance Maximum (AIMX)</div> <div>USIT-E</div> </div> <div> <div>-1Mrayl9</div> </div> <div> <div>Acoustic Impedance Average (AIAV)</div> <div>USIT-E</div> </div> <div> <div>-1Mrayl9</div> </div>	<div> <div>(U-USIT_UFAX)</div> <div>USIT-E</div> </div> <div> <div>40140</div> </div> <div> <div>dB/m</div> </div> <div> <div>Average Flexural Attenuation (U-USIT_UF AV)</div> <div>USIT-E</div> </div> <div> <div>40140</div> </div> <div> <div>dB/m</div> </div> <div> <div>Minimum Flexural Attenuation (U-USIT_UFAN)</div> <div>USIT-E</div> </div> <div> <div>40140</div> </div> <div> <div>dB/m</div> </div>	<div>Custom Normalization</div> <div>USIT - Acoustic Impedance (AIBK)</div> <div>USIT-E (Mrayl)</div> <div>Orientation: Top of Hole</div> <div>U L B R U</div>	<div>Custom Normalization</div> <div>USIT - Flexural Attenuation (UFAK)</div> <div>USIT-E (dB/m)</div> <div>Orientation: Top of Hole</div> <div>U L B R U</div>	<div>Explicit Normalization</div> <div>USIT - Solid Liquid Gas Sorted Color Map (USLP)</div> <div>USIT-E</div> <div>Orientation: Top of Hole</div> <div>U L B R U</div>	<div>SLG Liquid Index</div> <div>SLG Gas Index</div> <div>SLG White Point Index</div>
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TIME\_1900 - Time Marked every 60.00 (s)

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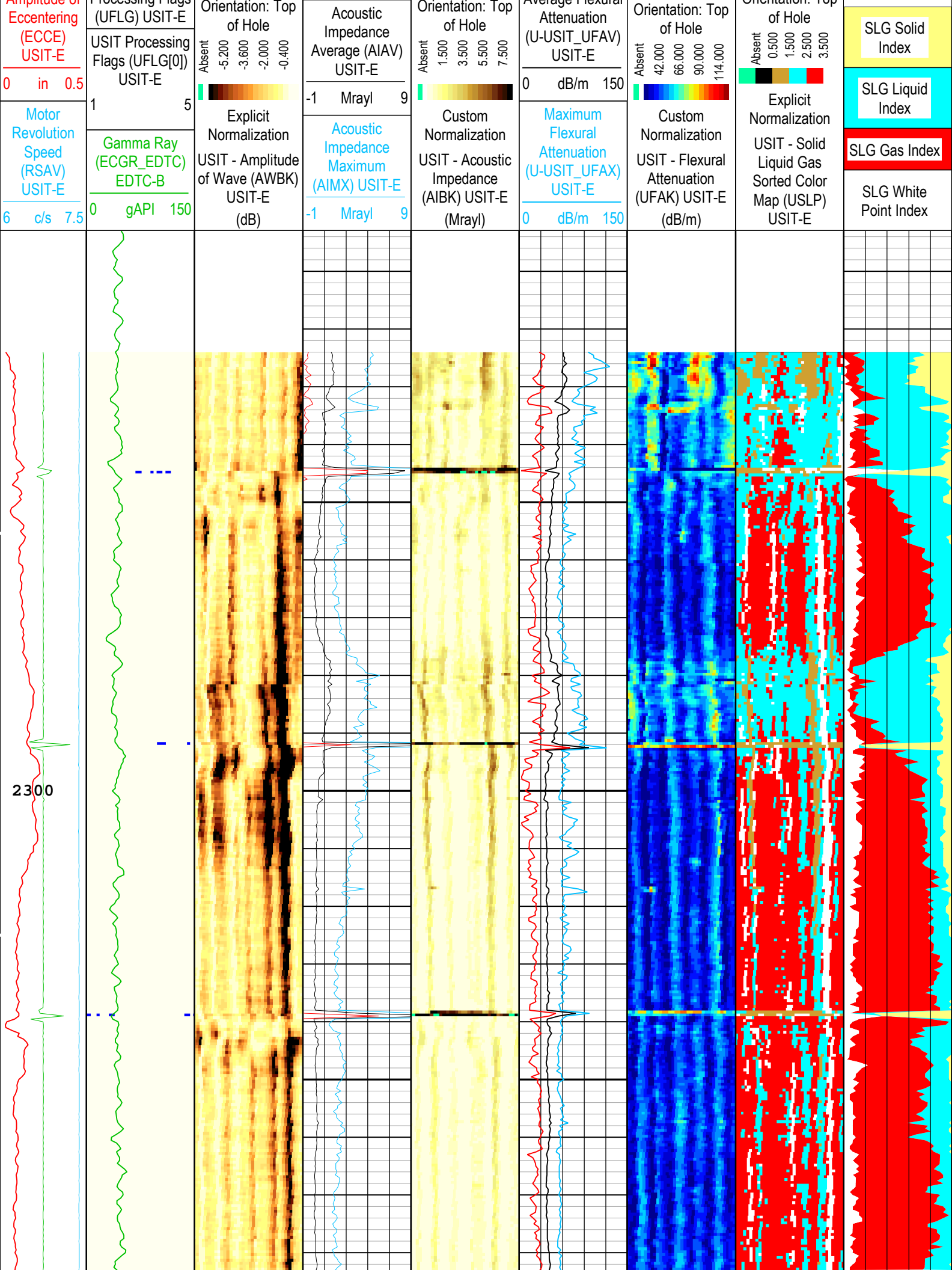
One									
IBC SLG									
Software Version									
Acquisition System						Version			
Maxwell 2018 SP2						8.2.104493.3100			
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[2]:Up	Up	2224.60 ft	2606.98 ft	13-Aug-2018 5:45:34 PM	13-Aug-2018 5:52:00 PM	ON	3.00 ft	No
All depths are referenced to toolstring zero									
Log	Company:Crestone Peak Resources Operating LLC						Well:Ruegge #3R-4H-N165		
One: Log[2]:Up:S004									

Description: USI IBC SLG    Format: Log ( IBC SLG )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 13-Aug-2018 21:23:23

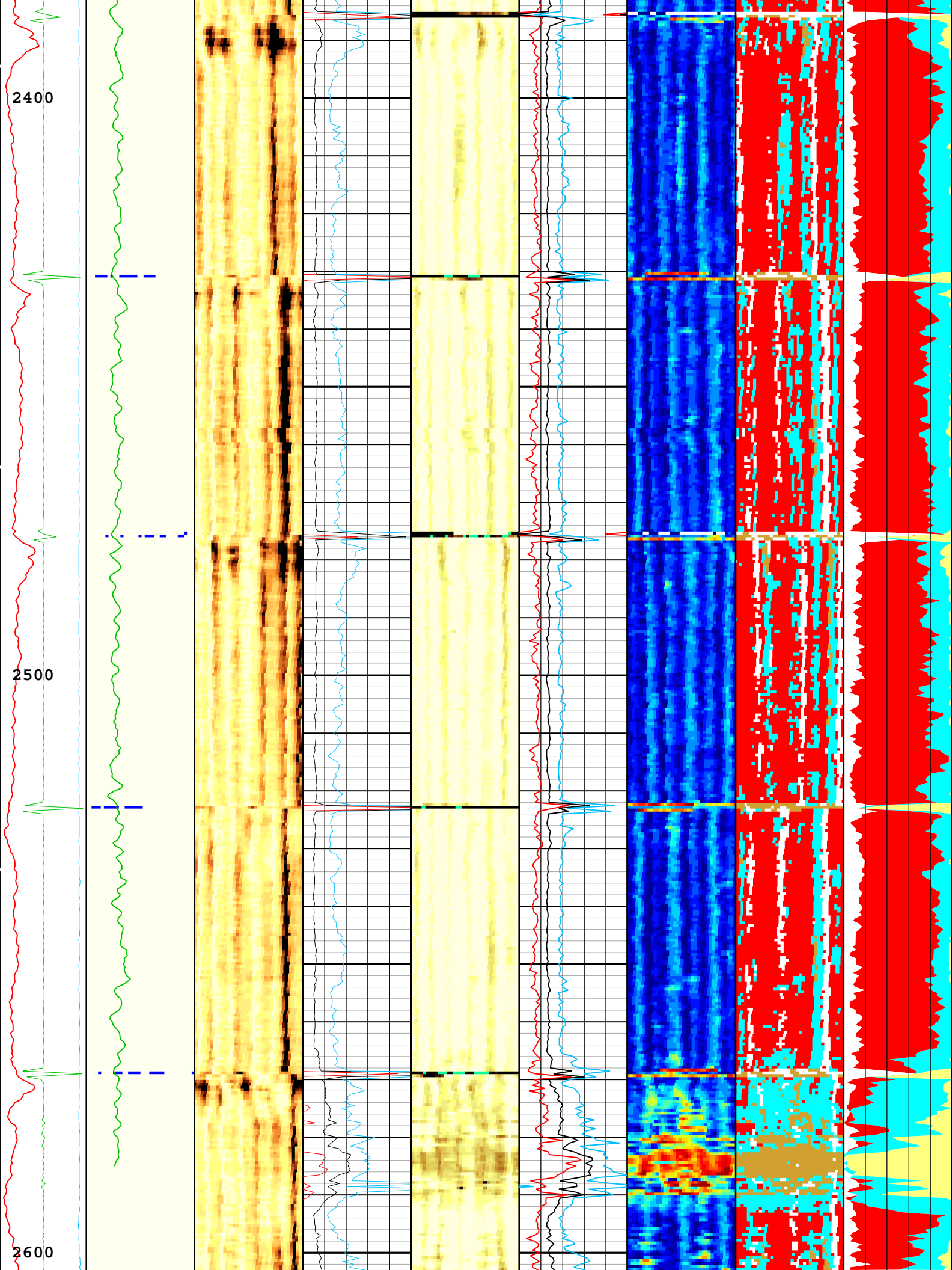
TIME\_1900 - Time Marked every 60.00 (s)

USIT Processing Flags (UFLG[0]) USIT-E									
1 - UFLG 1 Value within [0.0 - 1.5] - :			<div> <div> <div></div> <div>UTIM Error</div> </div> <div> <div></div> <div>Pulse Origin Not Detected</div> </div> <div> <div></div> <div>WINLEN Error</div> </div> <div> <div></div> <div>Casing Thickness Error</div> </div> <div> <div></div> <div>Loop Processing Error</div> </div> </div>						
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] - :									







<div> <div> <div>U L B R U</div> <div>Orientation: Top of Hole</div> </div> <div> <div>Absent</div> <div>1.500</div> <div>3.500</div> </div> <div> <div>Explicit Normalization</div> <div>USIT - USIT Processing Flags</div> </div> </div> <div> <div>Casing Collar Locator Ultrasonic (CCLU)</div> <div>USIT-E</div> </div> <div> <div>-20in20</div> </div> <div> <div>Amplitude of</div> </div>	<div> <div>U L B R U</div> <div>Orientation: Top of Hole</div> </div> <div> <div>Acoustic Impedance Minimum (AIMN)</div> <div>USIT-E</div> </div> <div> <div>-1Mrayl9</div> </div>	<div> <div>U L B R U</div> <div>Orientation: Top of Hole</div> </div> <div> <div>Minimum Flexural Attenuation (U-USIT_UFAN)</div> <div>USIT-E</div> </div> <div> <div>0dB/m150</div> </div> <div> <div>Average Flexural Attenuation (U-USIT_UFAN)</div> <div>USIT-E</div> </div>	<div> <div>U L B R U</div> <div>Orientation: Top of Hole</div> </div> <div> <div>U L B R U</div> <div>Orientation: Top of Hole</div> </div>
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 <p>Casing Collar 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>Absent 1.500 3.500</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>Acoustic 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>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>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>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_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	1.22	
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	2203	2483
BS	8.5	2483	2606

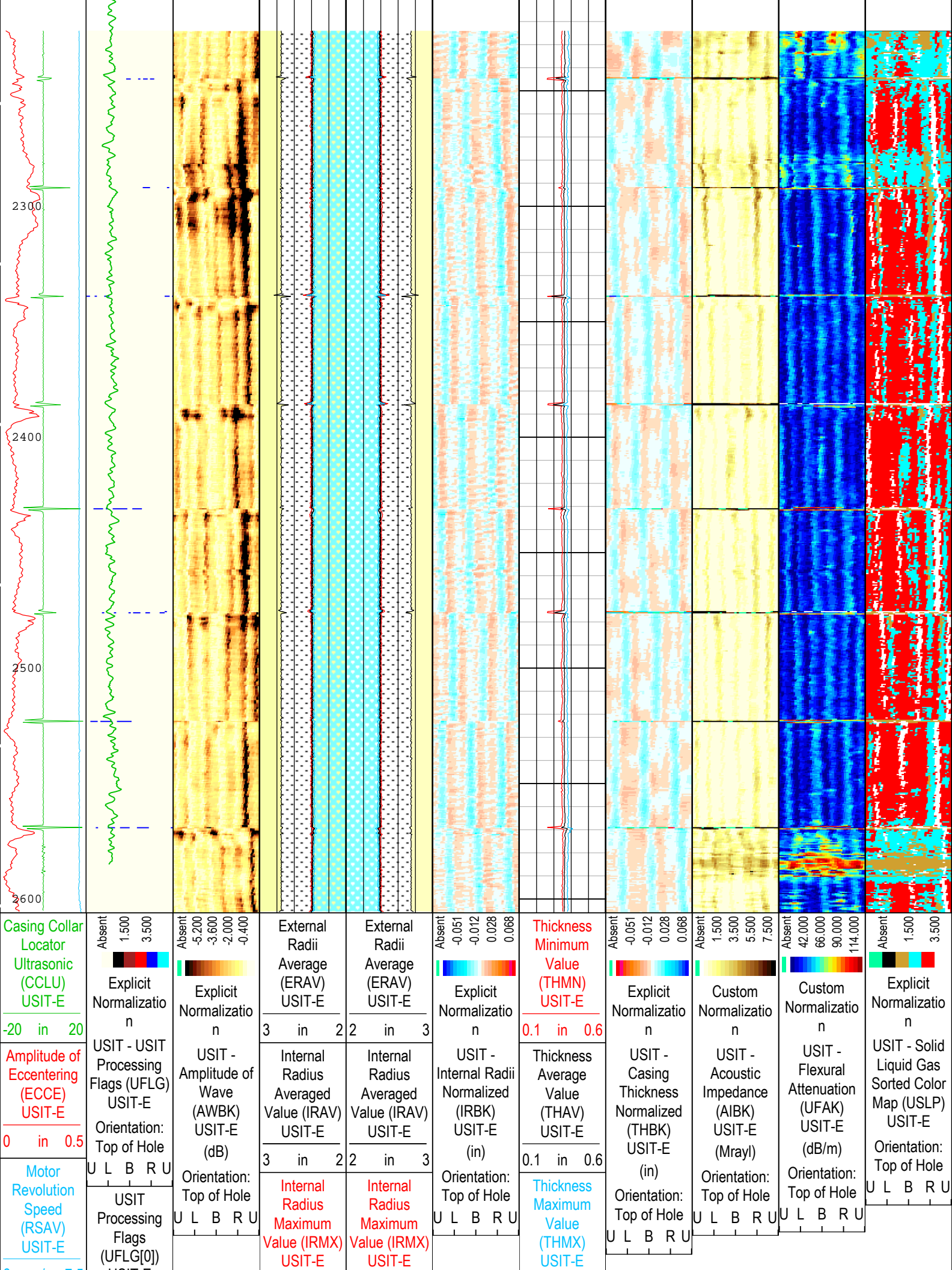
All depth are actual.

## 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





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

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: 13-Aug-2018 21:23:29												

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	12707	ft
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	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	8.4	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	-7.09	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	1.22	
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 )
DC	12.25	2000	2100



BS	12.25	2203	2483
BS	8.5	2483	2606

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 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[5]:Up	Up	2797.83 ft	4509.77 ft	13-Aug-2018 8:13:59 PM	13-Aug-2018 8:48:42 PM	ON	8.80 ft	No

All depths are referenced to toolstring zero

Log	Company:Crestone Peak Resources Operating LLC      Well:Ruegge #3R-4H-N165 One: Log[5]:Up:S004
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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: 13-Aug-2018 21:23:33

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

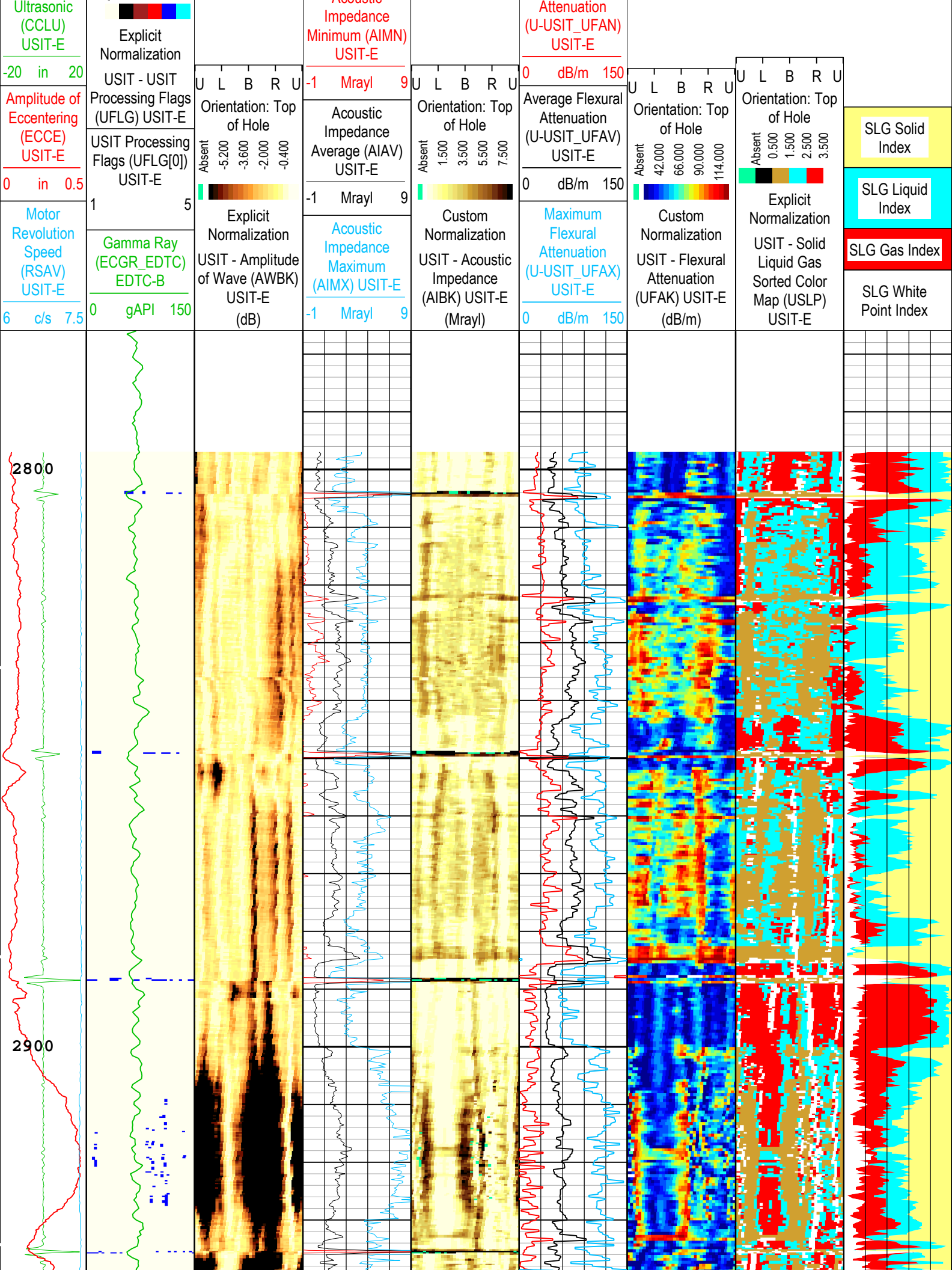
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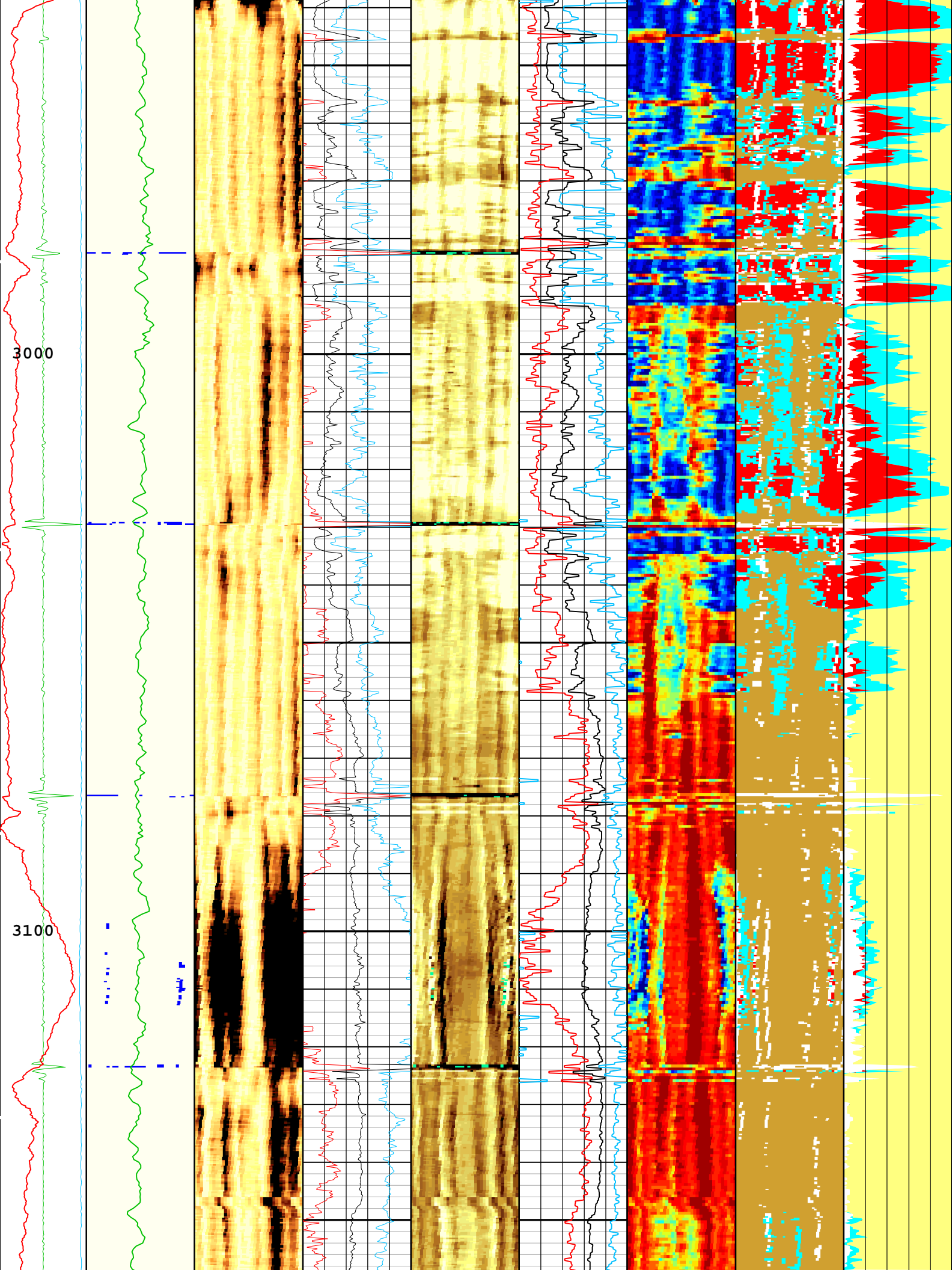
WINLEN Error

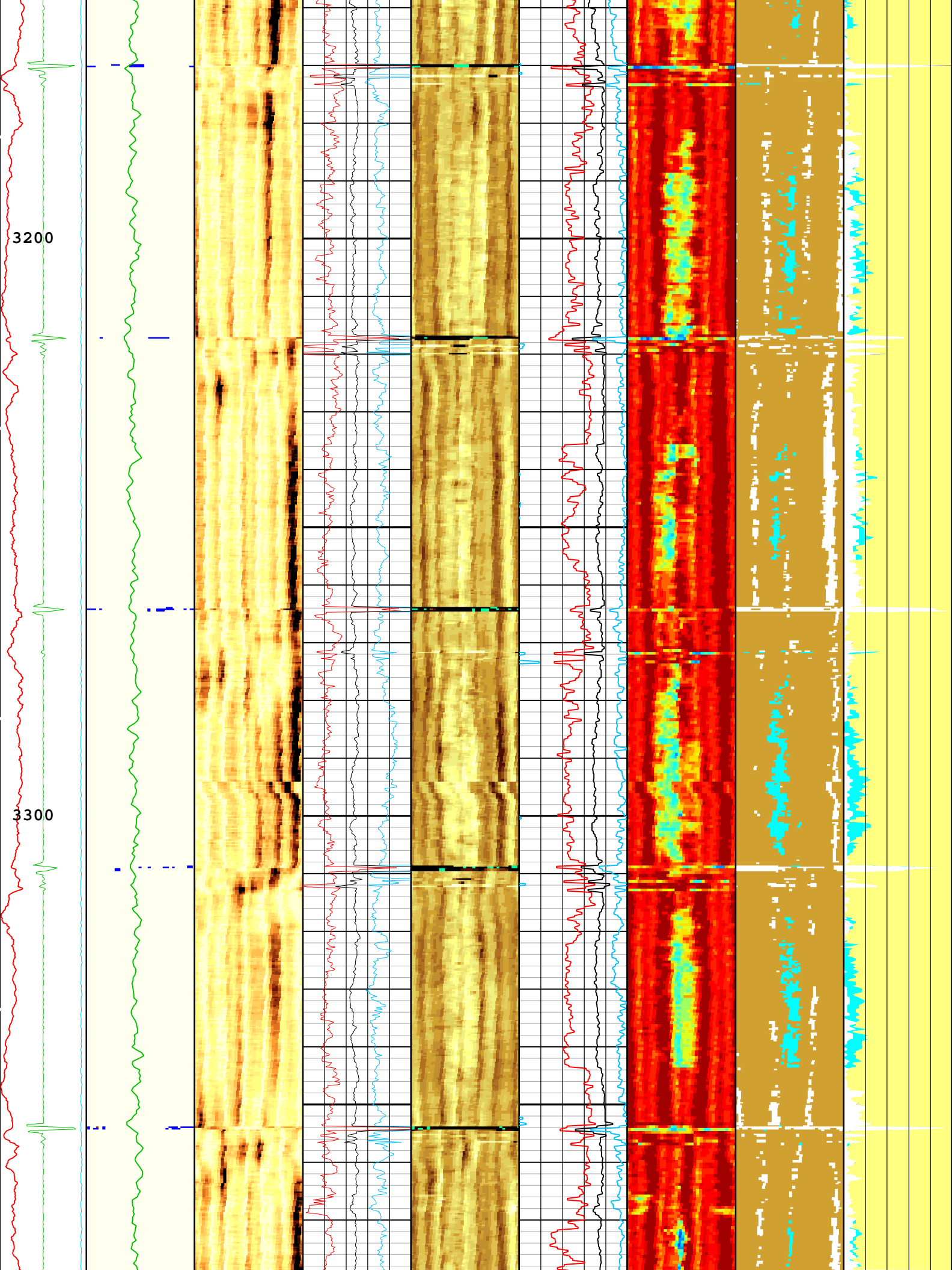
Casing Thickness Error

Loop Processing Error

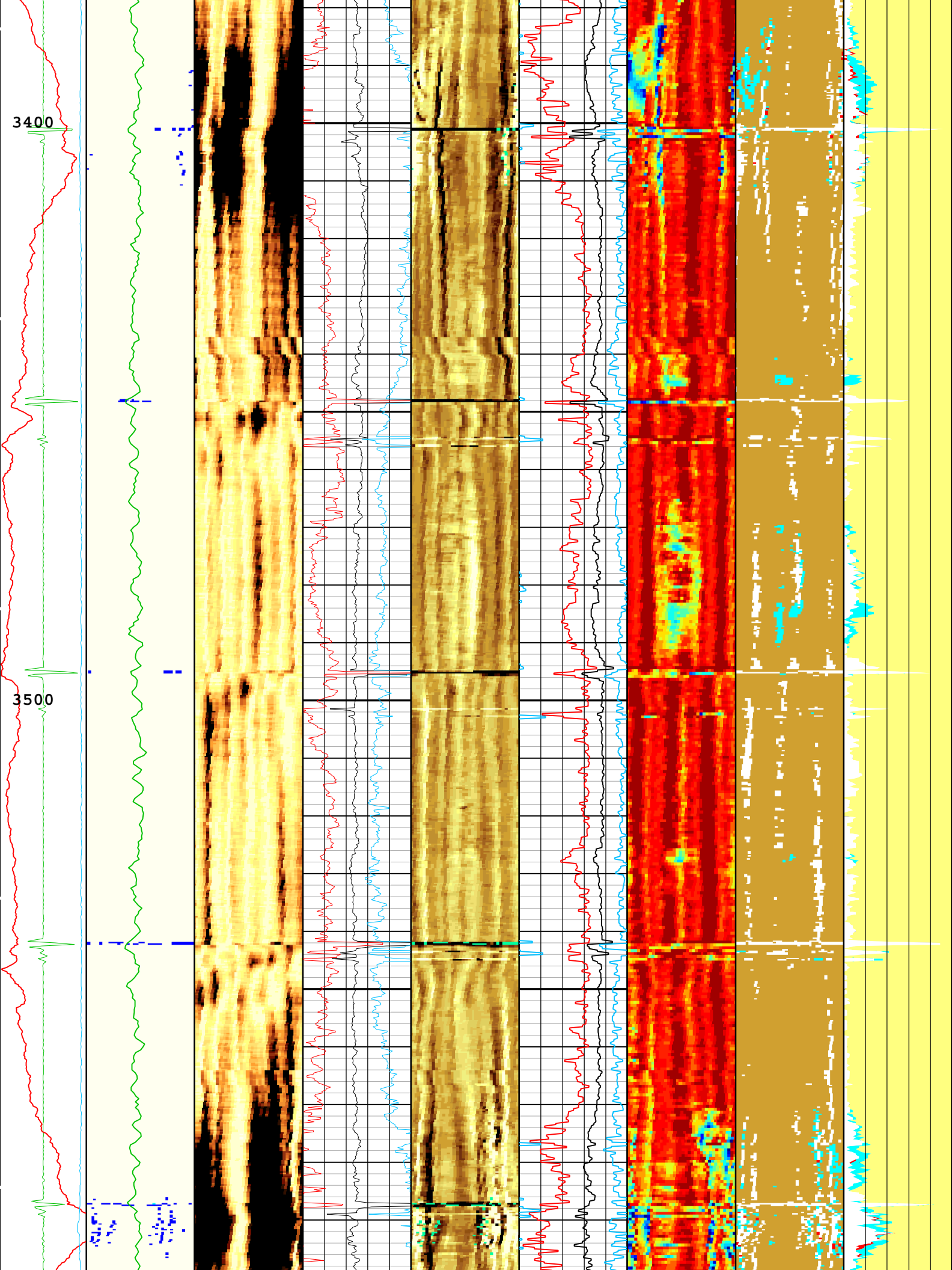
	U L B R U Orientation: Top of Hole		
Casing Collar Locator	Absent 1.500 3.500	Acoustic	Minimum Flexural

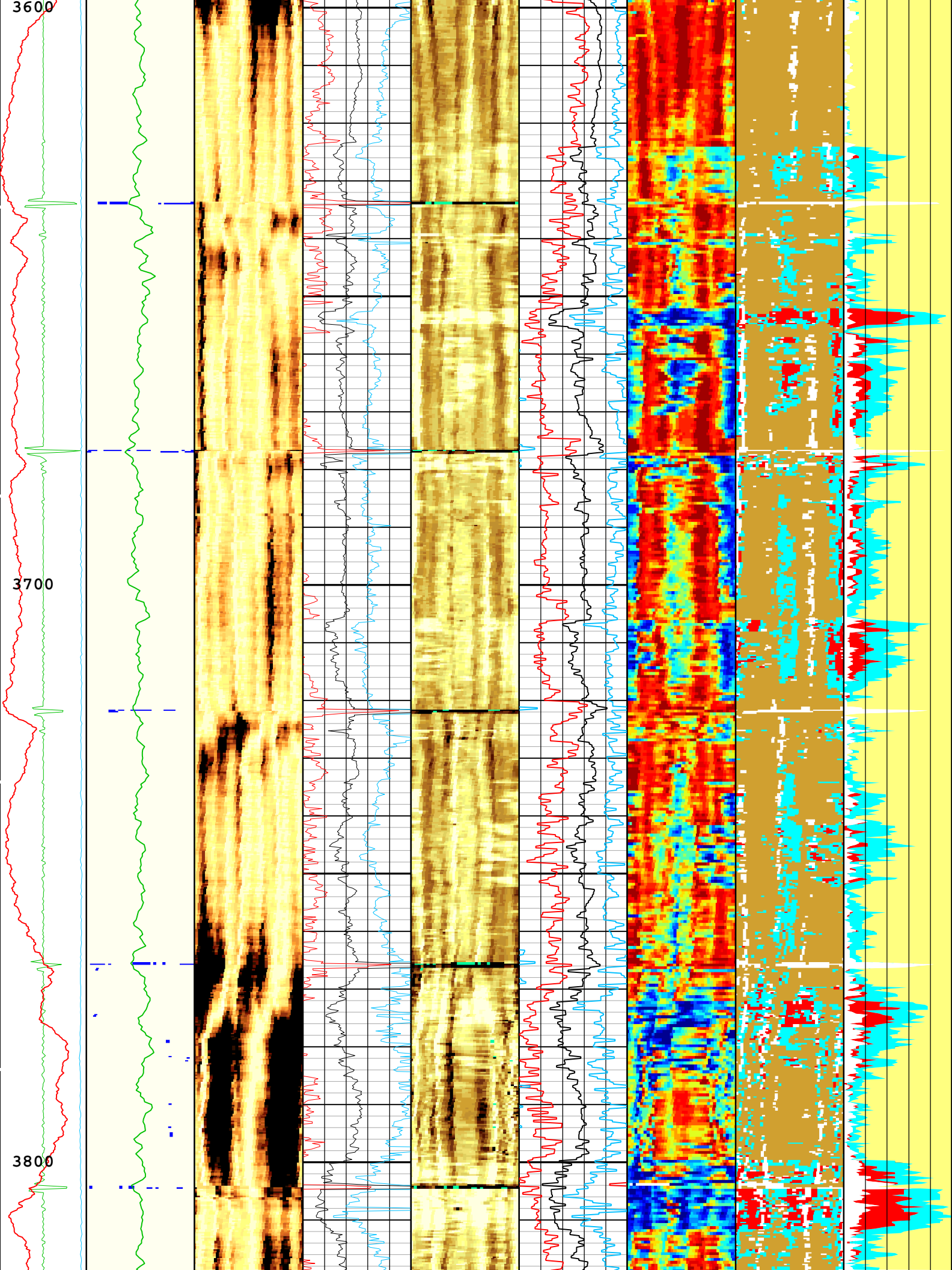


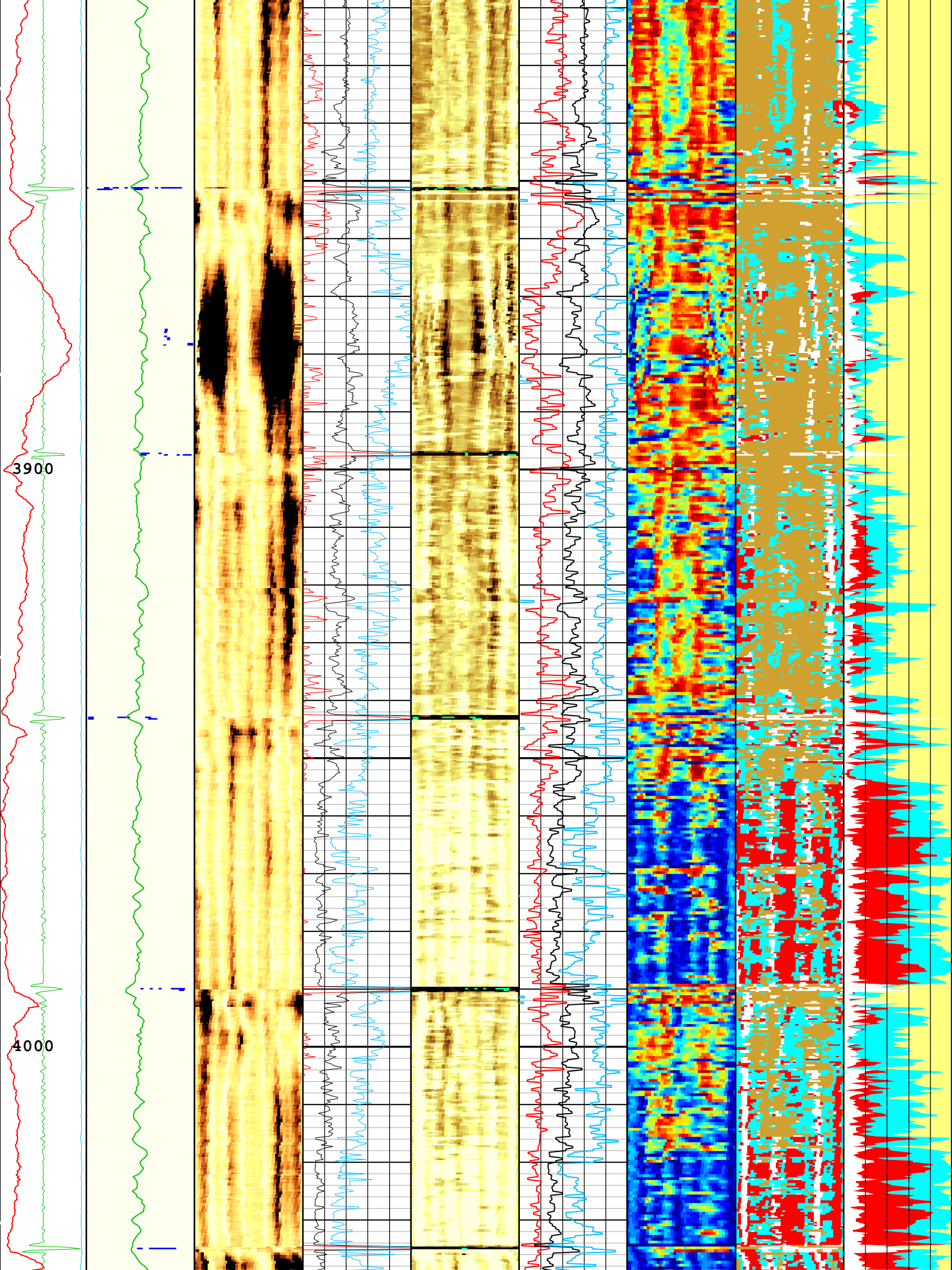




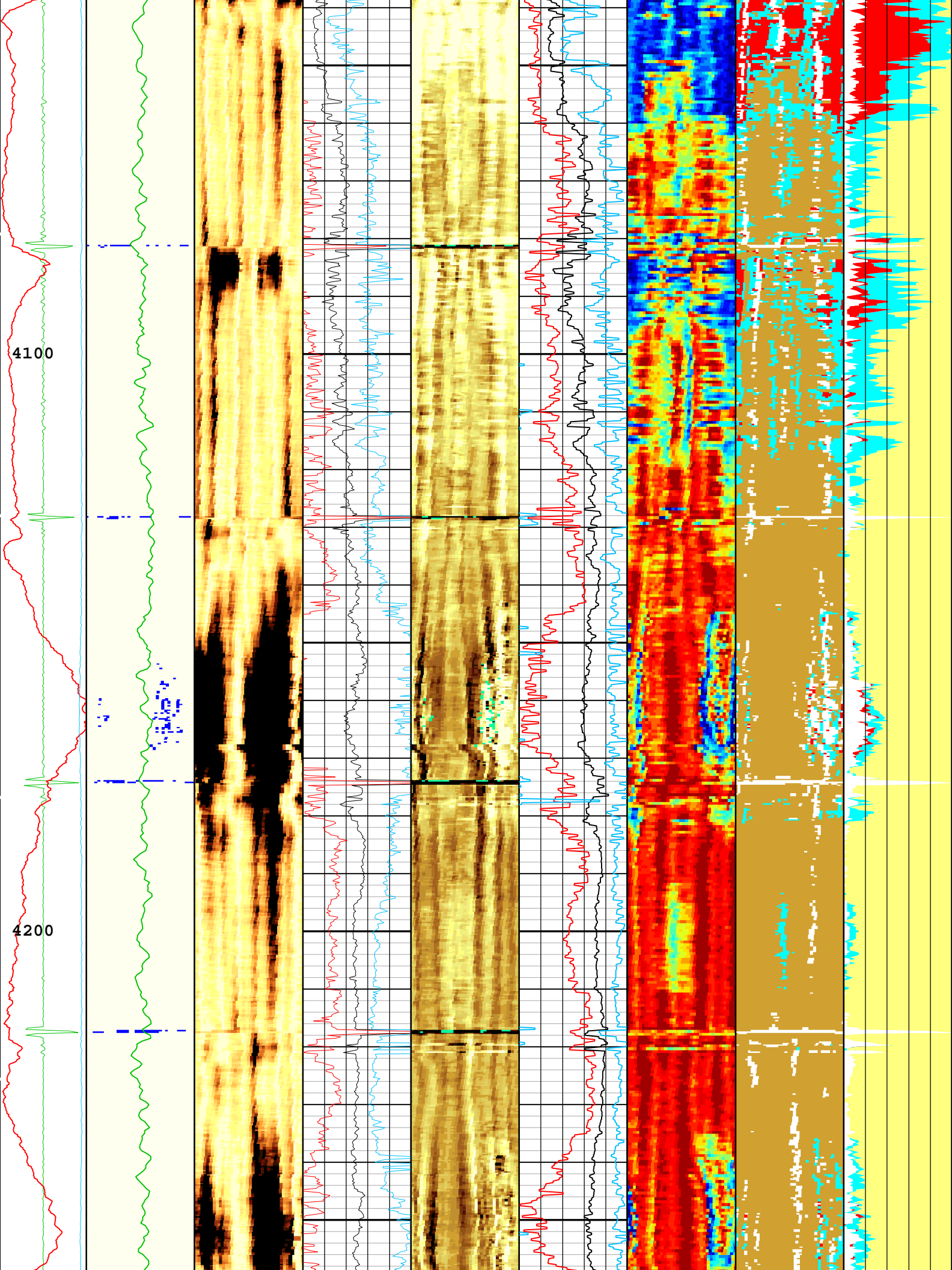




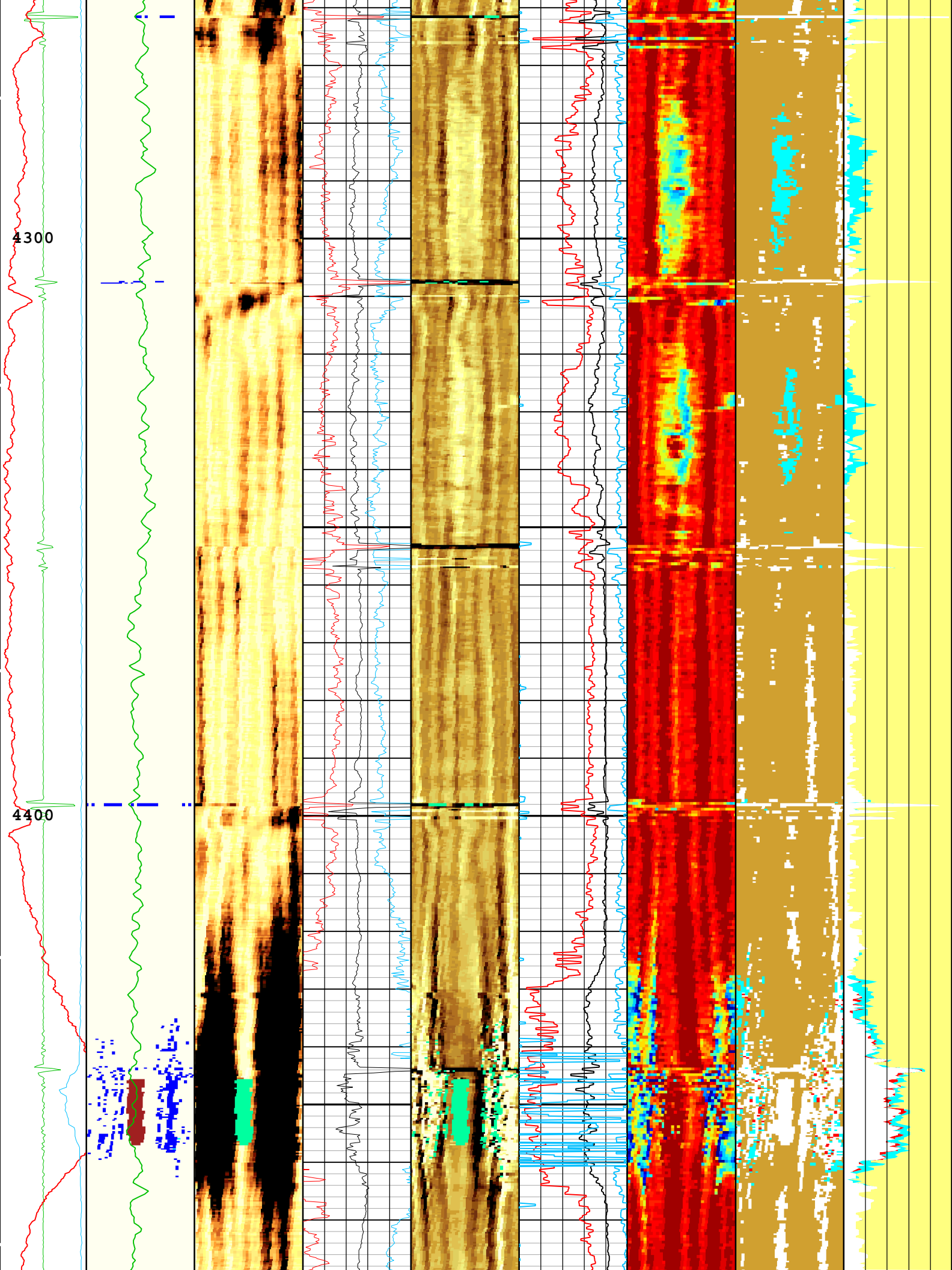


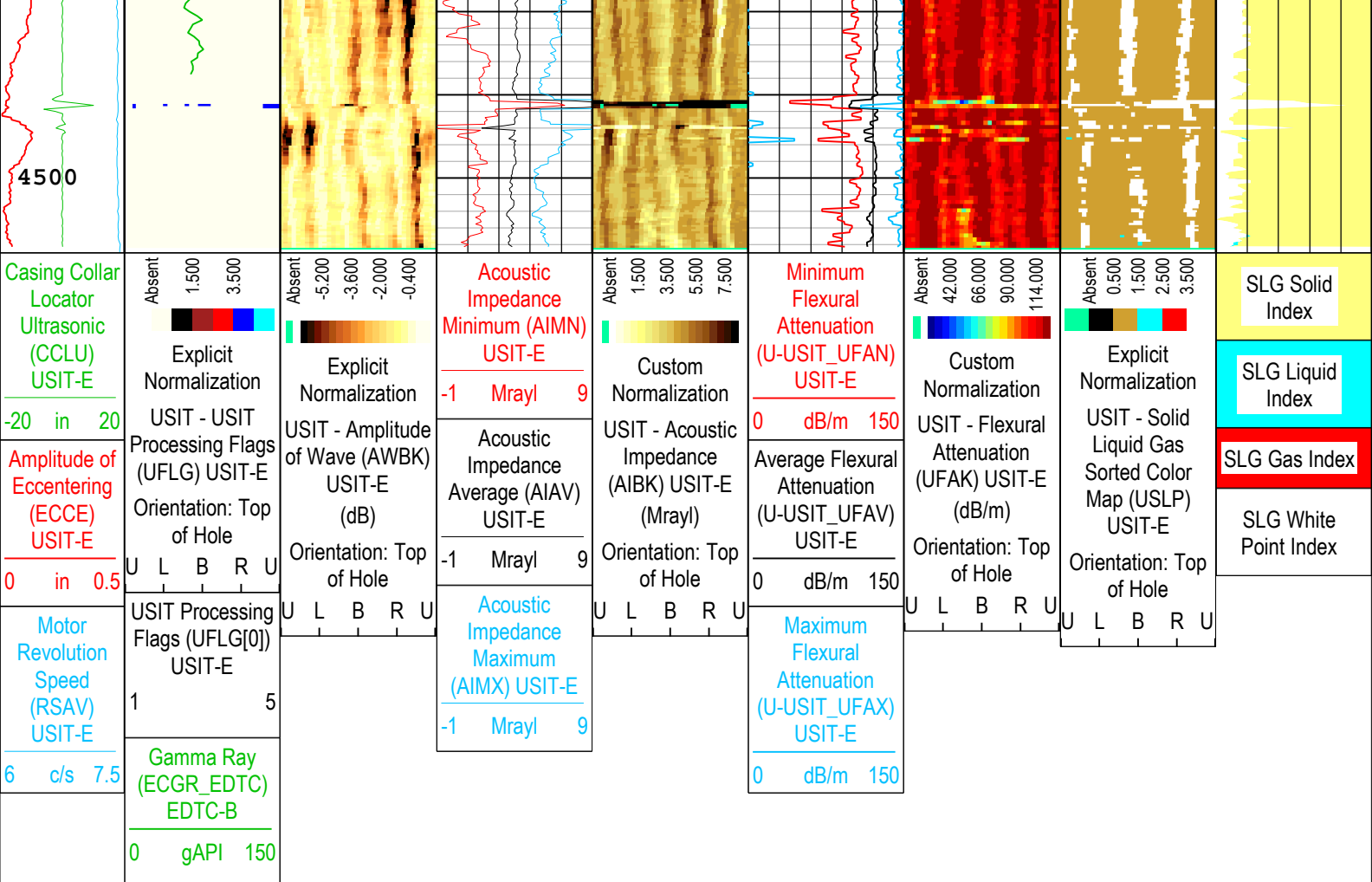

















USIT Processing Flags (UFLG[0]) USIT-E

- 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 Format: Log ( IBC SLG ) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 13-Aug-2018 21:23:33

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	8.5	in
CASING_PRATIO	Casing Poisson Ratio	USIT-E	Standard Poisson Ratio	
CBLO	Casing Bottom (Logger)	WLSESSION	12707	ft
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	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	8.4	lbm/gal

FDII	FDM 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	-7.09	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	1.22	
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

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	DVR 1/2 and 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 3.0 in	
USSP	Ultrasonic Service	USIT-E	IBC	
U-USIT_UTAN	Transducer Angles	USIT-E	33_DEG	
VRES	Vertical Resolution	USIT-E	3.0 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 )
WINB	31.88	13-Aug-2018 20:13:59	13-Aug-2018 20:15:33	4509.77	4446.37
WINB	27.79	13-Aug-2018 20:15:33	13-Aug-2018 20:48:42	4446.37	2797.83
WINE	71.88	13-Aug-2018 20:13:59	13-Aug-2018 20:15:25	4509.77	4453.53
WINE	73.83	13-Aug-2018 20:15:25	13-Aug-2018 20:48:42	4453.53	2797.83

All depth are at tool zero.

## One

## IBC SLG Composite

## Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[5]:Up	Up	2797.83 ft	4509.77 ft	13-Aug-2018 8:13:59 PM	13-Aug-2018 8:48:42 PM	ON	8.80 ft	No






All depths are referenced to toolstring zero

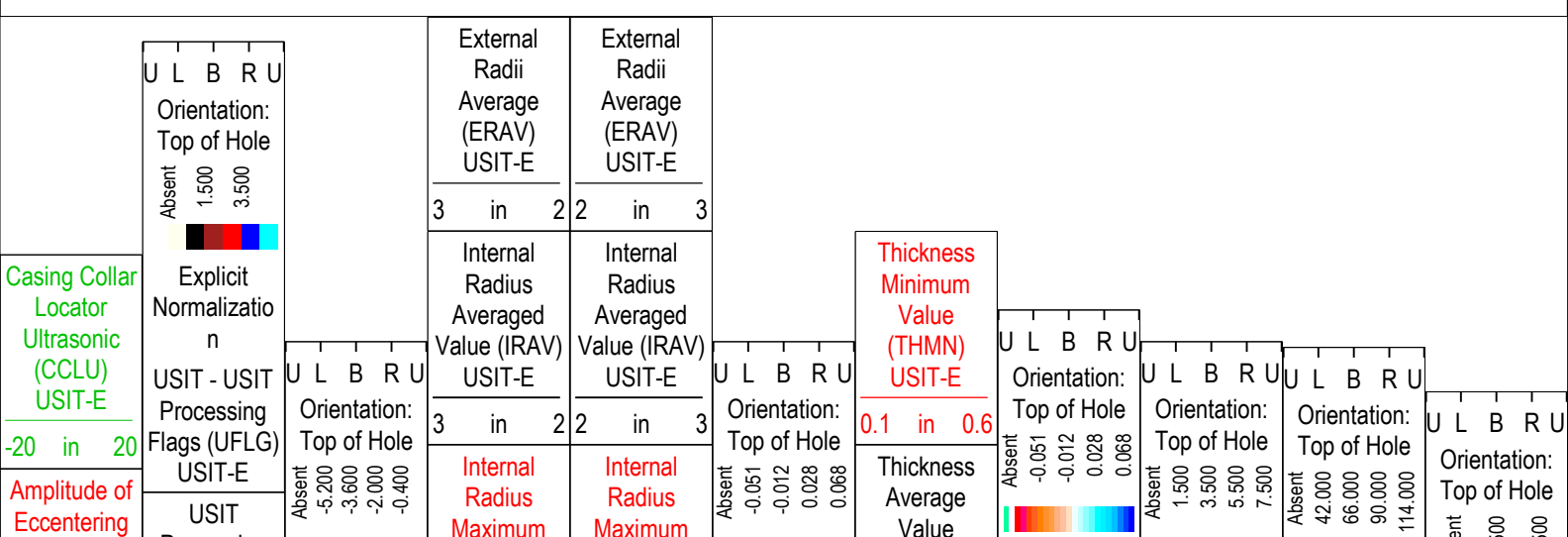
Log	Company:Crestone Peak Resources Operating LLC	Well:Ruegge #3R-4H-N165
		One: Log[5]:Up:S004

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: 13-Aug-2018 21:23:40

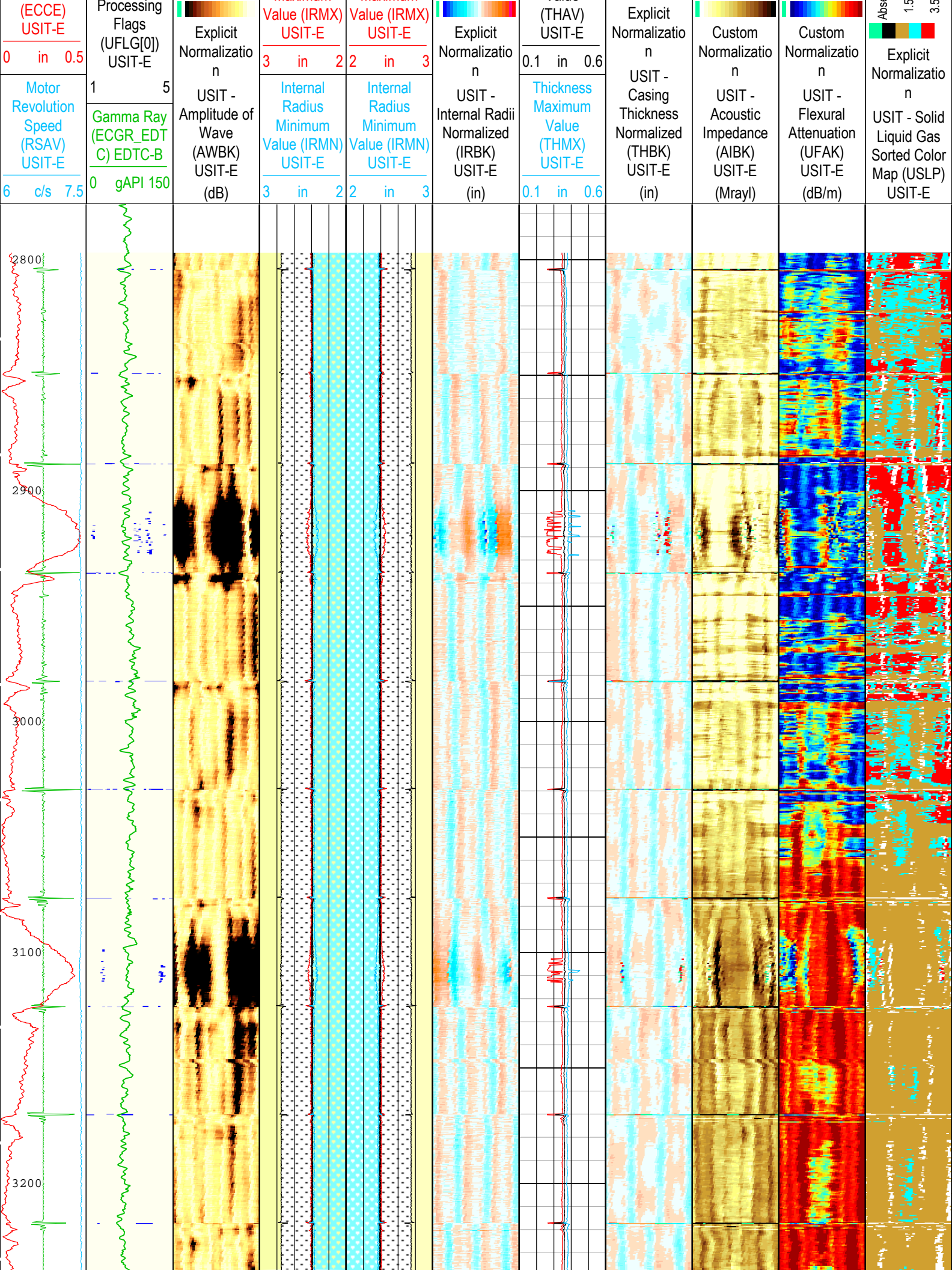
TIME\_1900 - Time Marked every 60.00 (s)

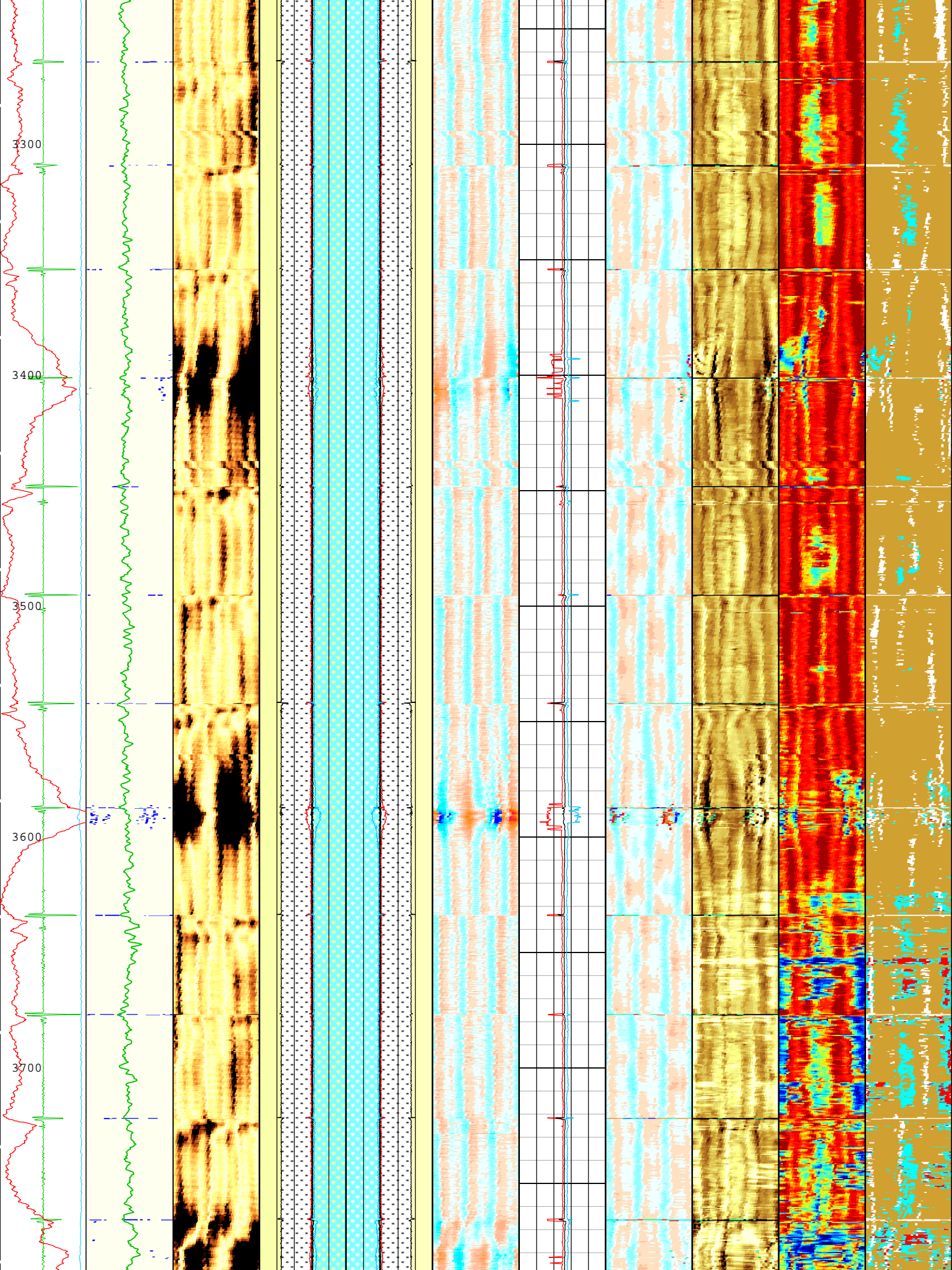
USIT Processing Flags (UFLG[0]) USIT-E

- 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

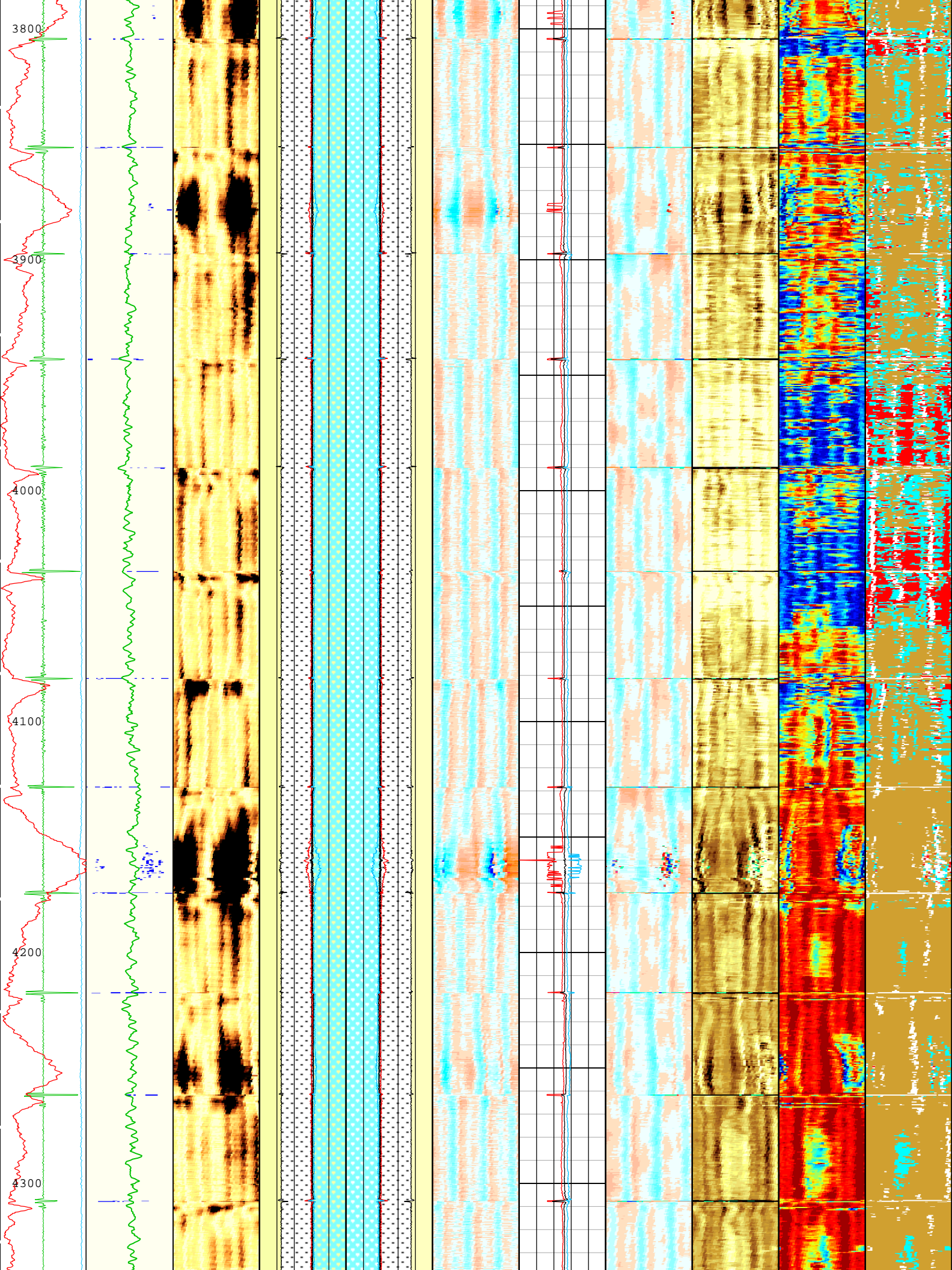


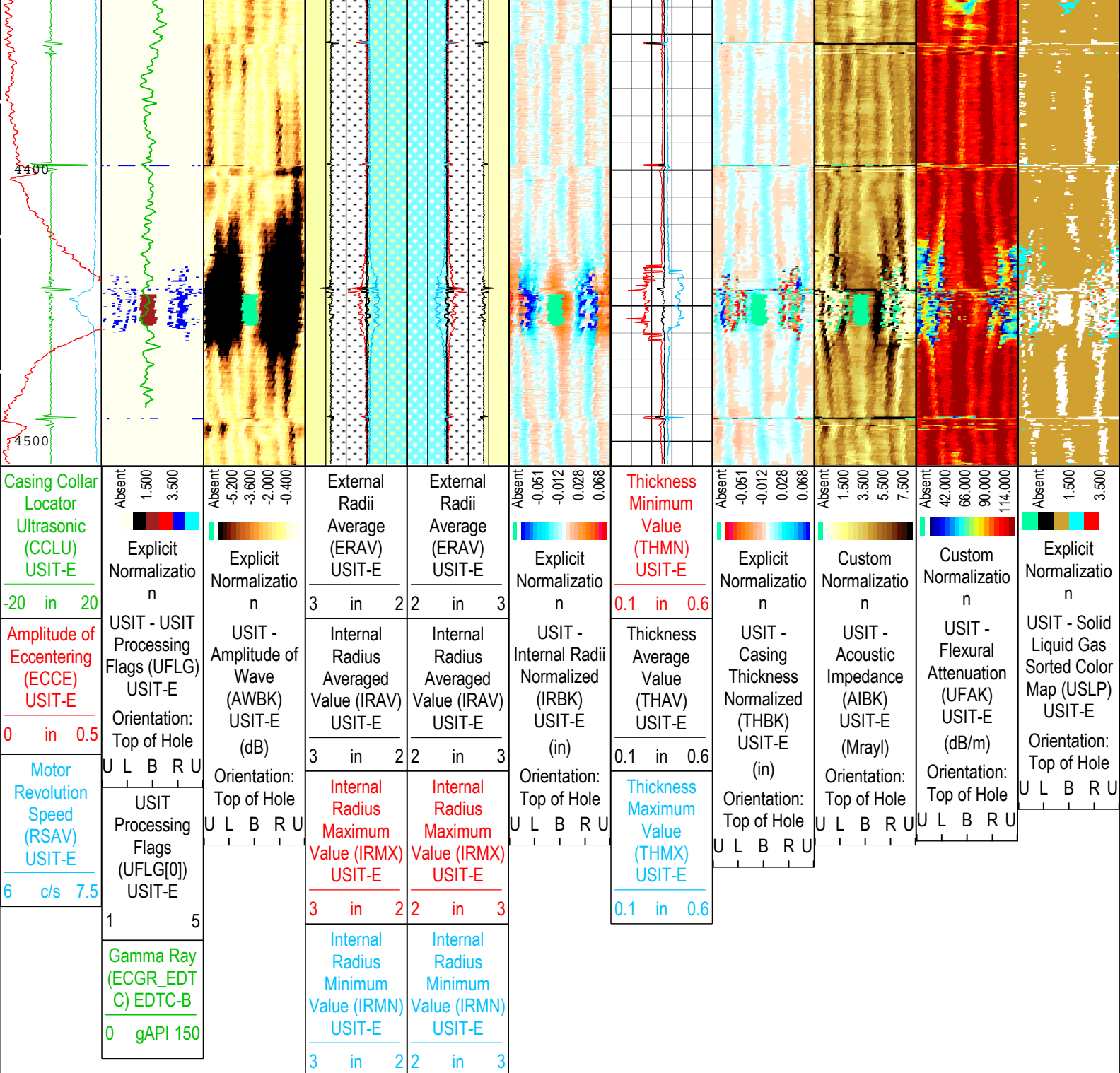












USIT Processing Flags (UFLG[0]) USIT-E

- 1 - UFLG 1 Value within [0.0 - 1.5] - :
- 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 Composite Format: Log ( IBC SLG Composite ) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth  
Creation Date: 13-Aug-2018 21:23:40

## 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	8.5	in
CBLO	Casing Bottom (Logger)	WLSESSION	12707	ft
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	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	8.4	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	-7.09	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	1.22	
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

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	DVR 1/2 and 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 3.0 in	
U-USIT_UTAN	Transducer Angles	USIT-E	33_DEG	
VRES	Vertical Resolution	USIT-E	3.0 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 )
WINB	31.88	13-Aug-2018 20:13:59	13-Aug-2018 20:15:33	4509.77	4446.37

WINB	27.79	13-Aug-2018 20:15:33	13-Aug-2018 20:48:42	4446.37	2797.83
WINE	71.88	13-Aug-2018 20:13:59	13-Aug-2018 20:15:25	4509.77	4453.53
WINE	73.83	13-Aug-2018 20:15:25	13-Aug-2018 20:48:42	4453.53	2797.83

All depth are at tool zero.

XYZ

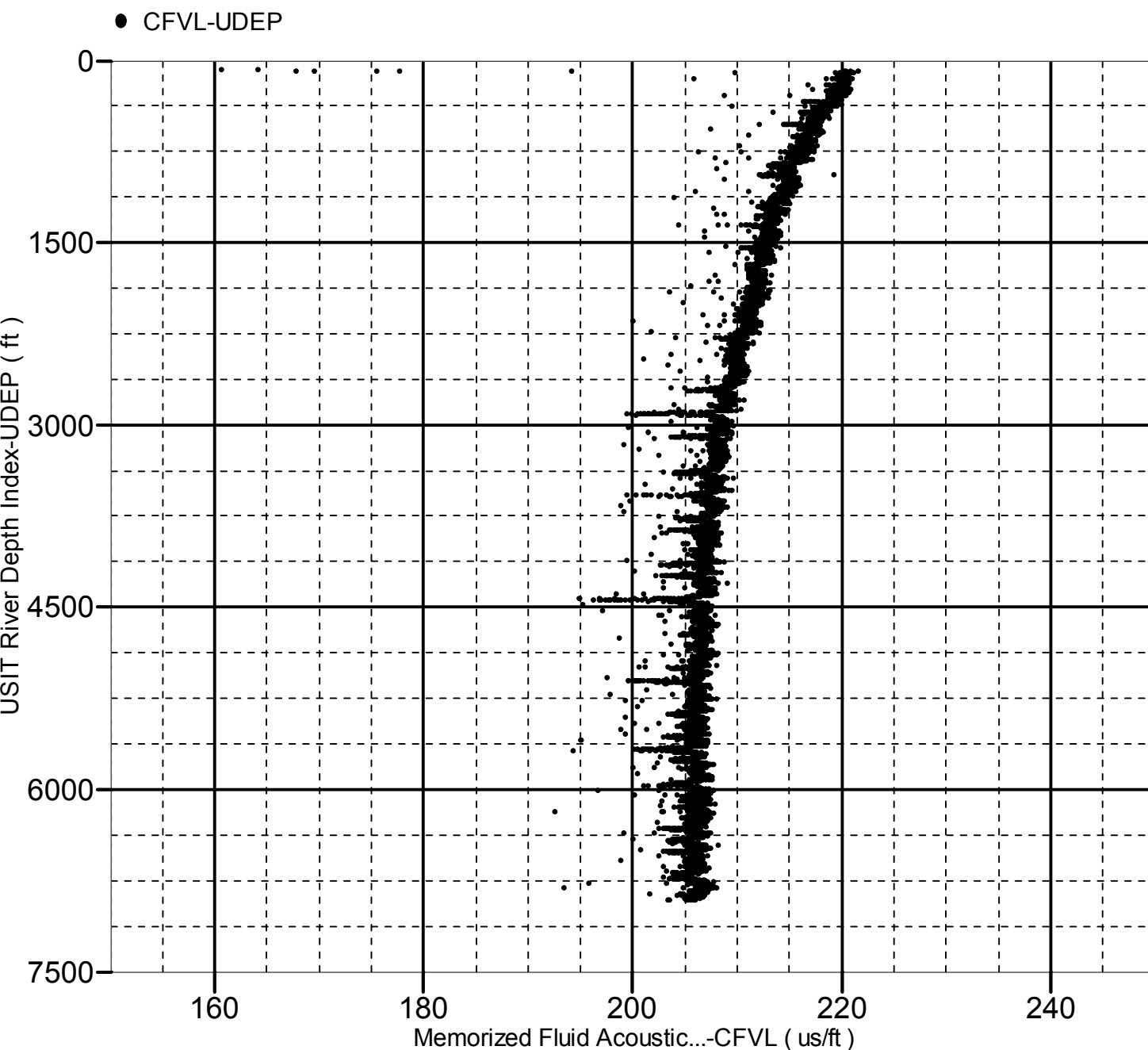
Company:Crestone Peak Resources Operating LLC Well:Ruegge #3R-4H-N165

One: Log[4]:Up:S004

## Fluid Acoustic Slowness vs Depth

### 2D Cross Plot

Index Range: From 6925.00 to 93.00 ft



XYZ

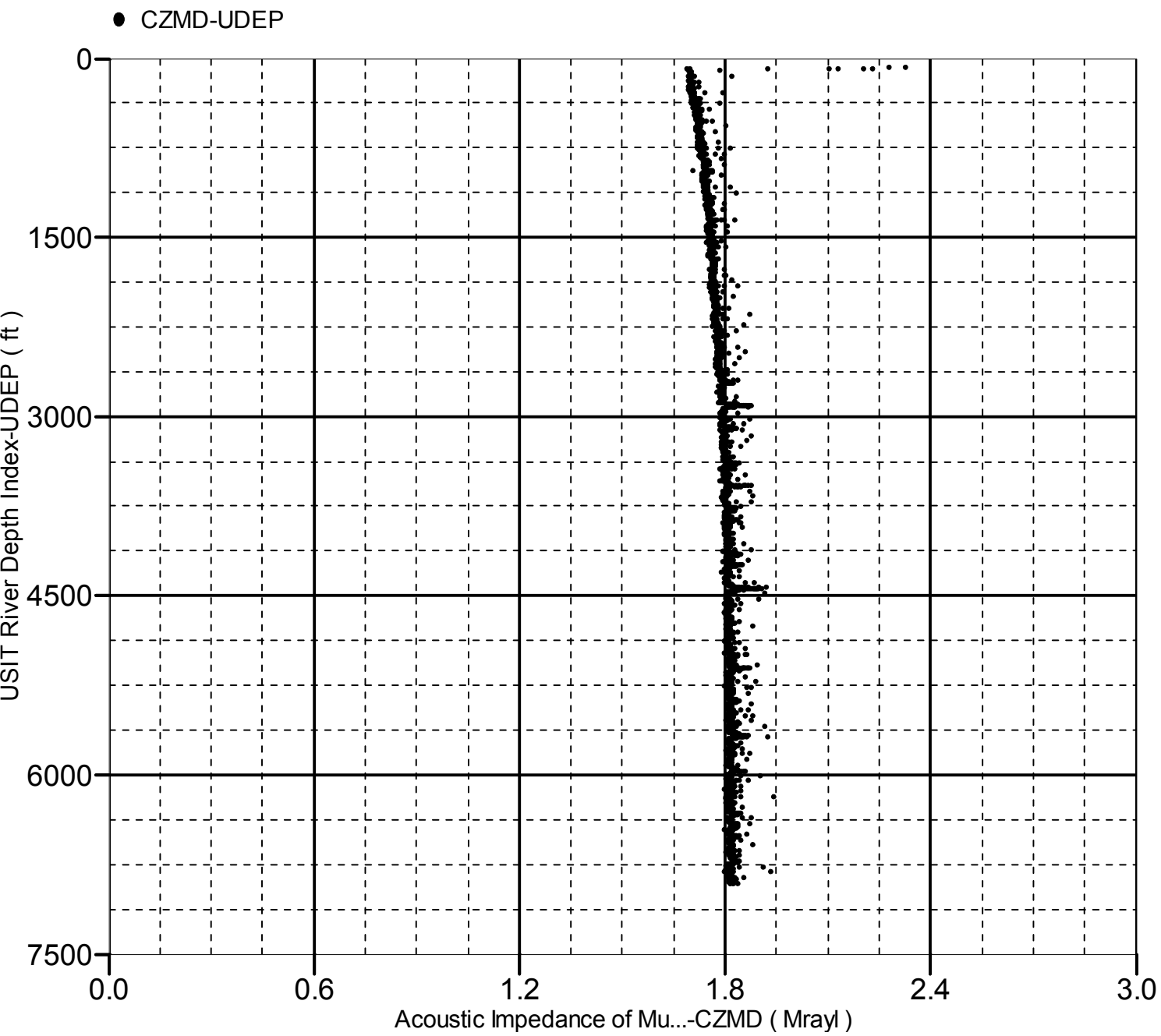
Company:Crestone Peak Resources Operating LLC Well:Ruegge #3R-4H-N165

One: Log[4]:Up:S004

## Acoustic Impedance of Mud vs Depth

### 2D Cross Plot

Index Range: From 6925.00 to 93.00 ft



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