

Company: Crestone Peak Resources Operating LLC

Well: Sam #3G-25H-M166

Field: Wattenberg

County: Weld State: Colorado

Isolation Scanner
Cement Evaluation

County:	Weld
Field:	Wattenberg
Location:	1353' FSL & 310' FWL
Well:	Sam #3G-25H-M166
Company:	Crestone Peak Resources Operating LLC
Location:	
1353' FSL & 310' FWL	Elev.: K.B. 5105.00 ft
NWSW 25 1N 66W	G.L. 5082.00 ft
Lat/Long: 40.01873 / -104.733854	D.F. 5105.00 ft
Permanent Datum:	Ground Level
Log Measured From:	Kelly Bushing
Drilling Measured From:	Kelly Bushing
API Serial No.	Section: 25
05-123-46132	Township: 1N
	Range: 66W

Logging Date	14-Oct-2018
Run Number	One
Depth Driller	11770.00 ft
Schlumberger Depth	6720.00 ft
Bottom Log Interval	6720.00 ft
Top Log Interval	50.00 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	2357.00 ft
To	11770.00 ft
Casing/Tubing Size	5.5 in
Weight	20 lbm/ft
Grade	N/A
From	0.00 ft
To	11760.00 ft
Max Recorded Temperatures	179 degF
Logger on Bottom	14-Oct-2018 15:30:00
Unit Number	9108
Recorded By	Alan Moreno
Witnessed By	Keith Kershnik

Disclaimer

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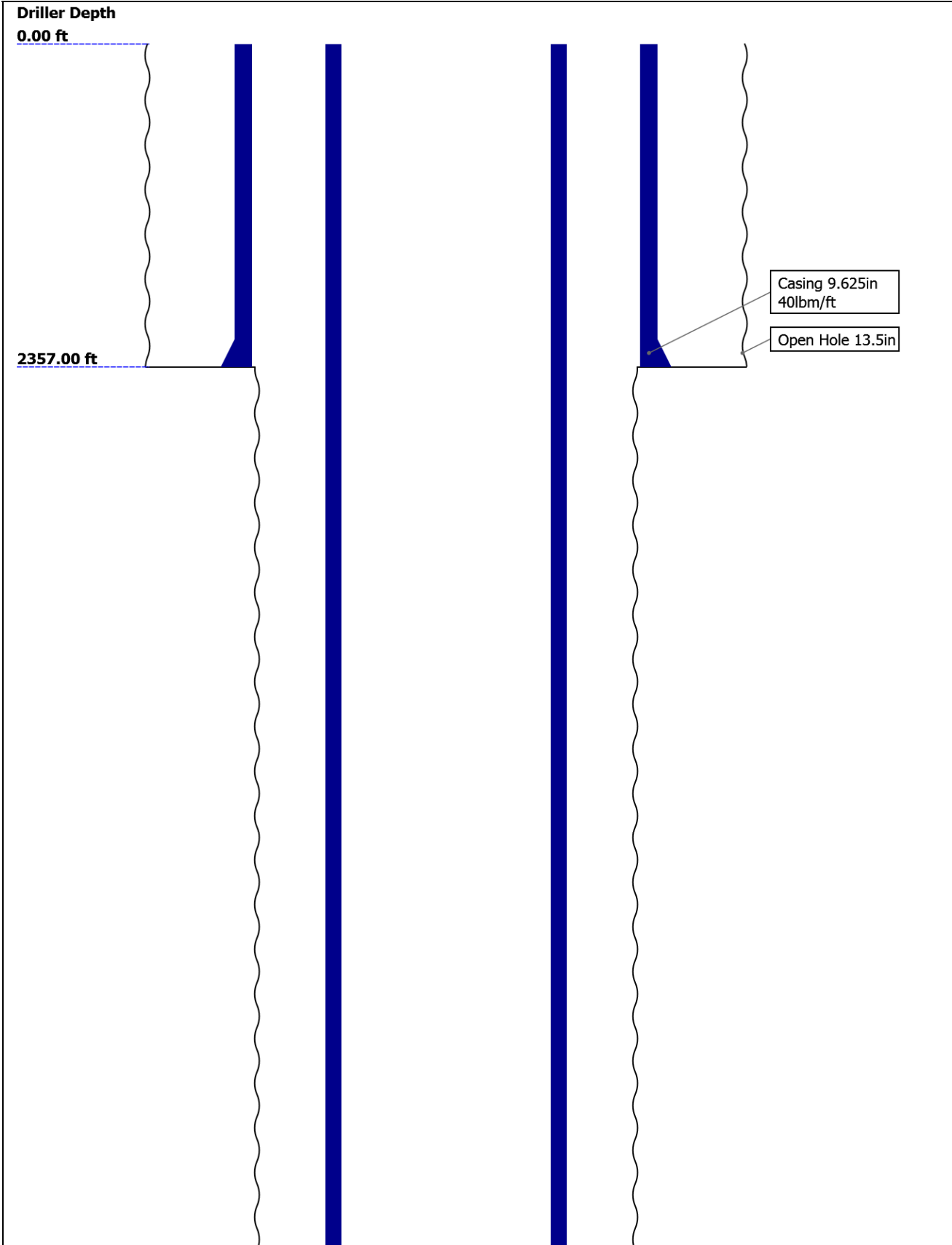
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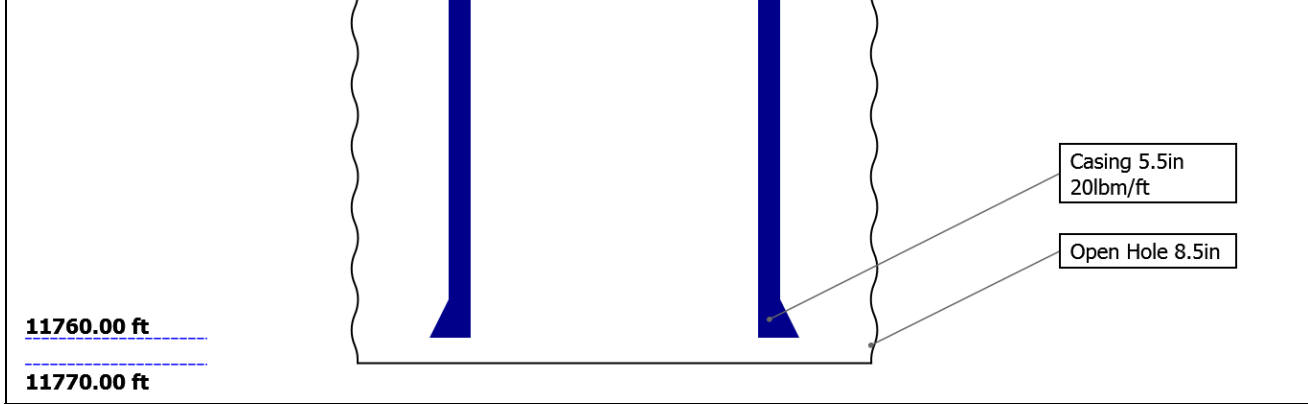
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Well Sketch



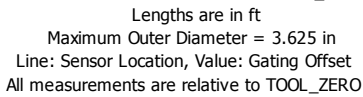


Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	13.5	8.5				
Top Driller (ft)	0	2357				
Top Logger (ft)	0	2357				
Bottom Driller (ft)	2357	11770				
Bottom Logger (ft)	2357	11770				
Casing						
Size (in)	9.625	5.5				
Weight (lbm/ft)	40	20				
Inner Diameter (in)	8.835	4.778				
Grade	N/A	N/A				
Top Driller (ft)	0	0				
Top Logger (ft)	0	0				
Bottom Driller (ft)	2357	11760				
Bottom Logger (ft)	2357	11760				

Remarks and Equipment Summary

One: Toolstring				One: Remarks	
<div><div><div>Equip nameLength</div><div>LEH-QT30.73</div><div>LEH-QT</div></div><div><div>EDTC-B27.24</div><div>EDTH-B</div><div>EDTG-A</div><div>EDTC-B</div></div><div><div>AH-184[2]20.74</div><div>AH-184[1]18.74</div><div>USIT-E16.74</div><div>ECH-MFA</div><div>USAC-A</div><div>USIS-A</div><div>USSC-B</div><div>IBCS-A</div><div>EAP-GENC</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>	Toolstring ran as per tool sketch				
	5" gemcos and houma kit ran for centralization				
	All passes ran with 0psi				
	Lead: 12.5ppg				
	Tail: 13.5ppg				
	10deg 6" resolution used for main and repeat pass				
	Data affected at bottom due to high deviation				



One

Depth Measuring Device

Type	IDW-B		
Serial Number	6455		
Calibration Date	27-Jul-2018		
Calibrator Serial Number	57		
Calibration Cable Type	7-32ASXS		
Wheel Correction 1	-1		
Wheel Correction 2	1		

Tension Device

Type	CMTD-B/A		
Serial Number	1703		
Calibration Date	29-Jul-2018		
Calibrator Serial Number	88310A		
Number of Calibration Points	10		
Calibration Root Mean Square Error	6		
Calibration Peak Error	9		

Logging Cable

Type	7-32AS-XS		
Serial Number			
Length	21111.00 ft		
Conveyance Type	Wireline		
Rig Type			

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[3]:Up	2500.2	1983.17

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 = "Inversion Norm."
IBC Inversion normalization zone is : 1973.36m(6474.27ft) to 1976.85m(6485.72ft)
MUD_N_INV = 1.27
DFD = 1.01g/cm3(8.40lbm/gal)
CZMD median computed in inversion normalization interval = 1.88 MRayl

Start Depth(ft)	Stop Depth(ft)	Start Value(Mrayl)	End Value(Mrayl)
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Composite 1

IBC SLG

Software Version

Acquisition System	Version
Maxwell 2018 SP2	8.2.104493.3100

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[5]:Up	Up	2234.28 ft	6725.93 ft	14-Oct-2018 3:34:14 PM	14-Oct-2018 4:39:34 PM	ON	5.94 ft	Yes
One	Log[6]:Up	Up	94.88 ft	2434.17 ft	14-Oct-2018 4:44:06 PM	14-Oct-2018 5:19:36 PM	ON	6.44 ft	Yes
One	Log[7]:Up	Up	40.65 ft	206.39 ft	14-Oct-2018 5:27:09 PM	14-Oct-2018 5:31:06 PM	ON	6.44 ft	Yes

All depths are referenced to toolstring zero

Log	Company:Crestone Peak Resources Operating LLC Well:Sam #3G-25H-M166 Composite 1:S012
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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: 14-Oct-2018 22:19:21

USIT Processing Flags (UFLG[0]) USIT-E[1]

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)

Casing Collar Locator Ultrasonic (CCLU) USIT-E[1]

-20 in 20

Amplitude of Eccentering (ECCE)

U L B R U

Orientation: Top of Hole

Absent 1.500 3.500

Explicit Normalization

USIT - USIT

Processing Flags (UFLG) USIT-E[1]

USIT Processing

Acoustic Impedance Minimum (AIMN) USIT-E[1]

-1 Mrayl 9

Acoustic Impedance Average (AIAV)

int 00 00 00 00

Orientation: Top of Hole

Minimum Flexural Attenuation (U-USIT_UFAN) USIT-E[1]

0 dB/m 150

Average Flexural Attenuation (U-USIT_UFAV)

int 50 50 50 50

Orientation: Top of Hole

U L B R U

Orientation: Top of Hole

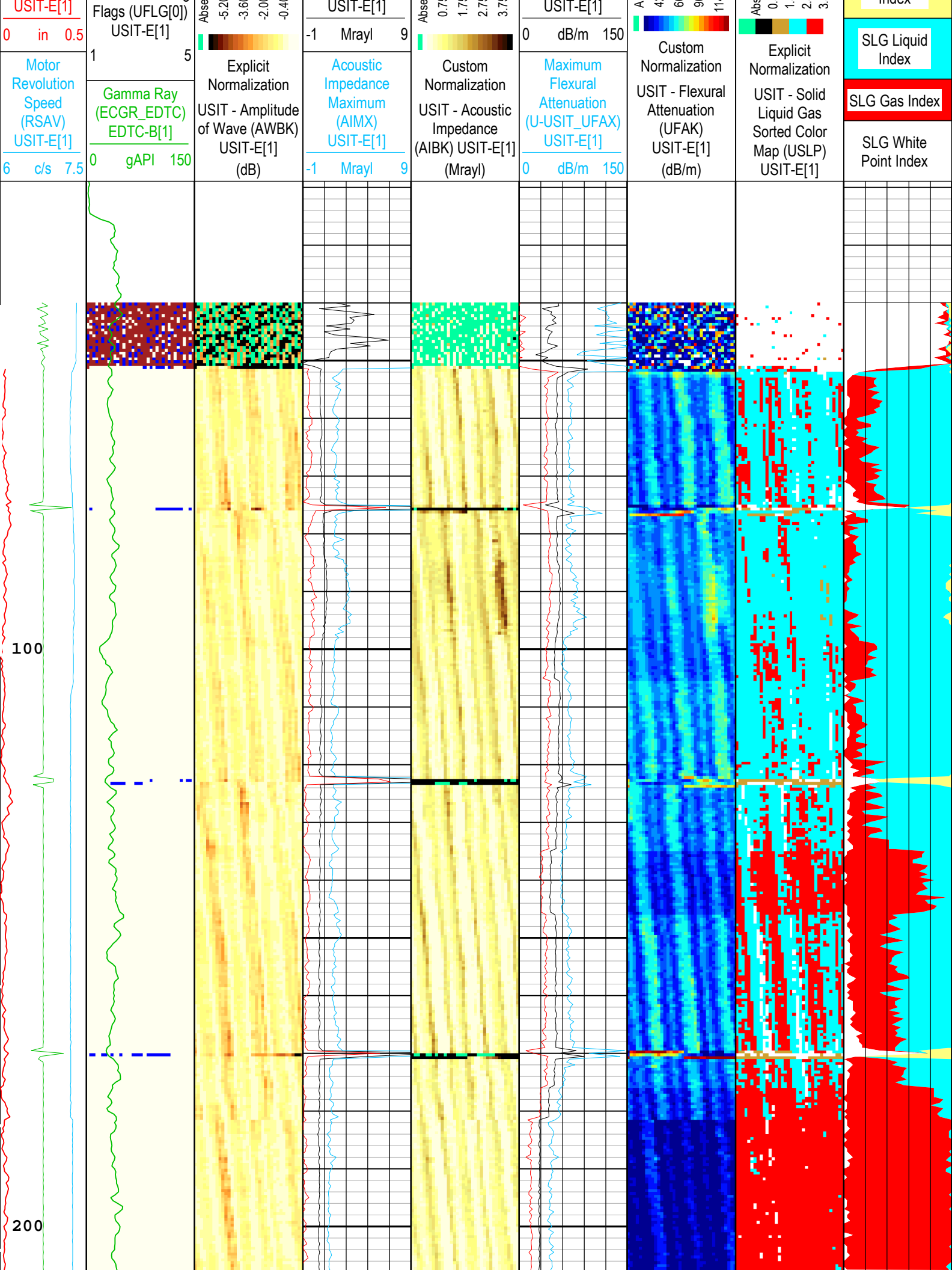
Absent 2.000 6.000 0.000 4.000

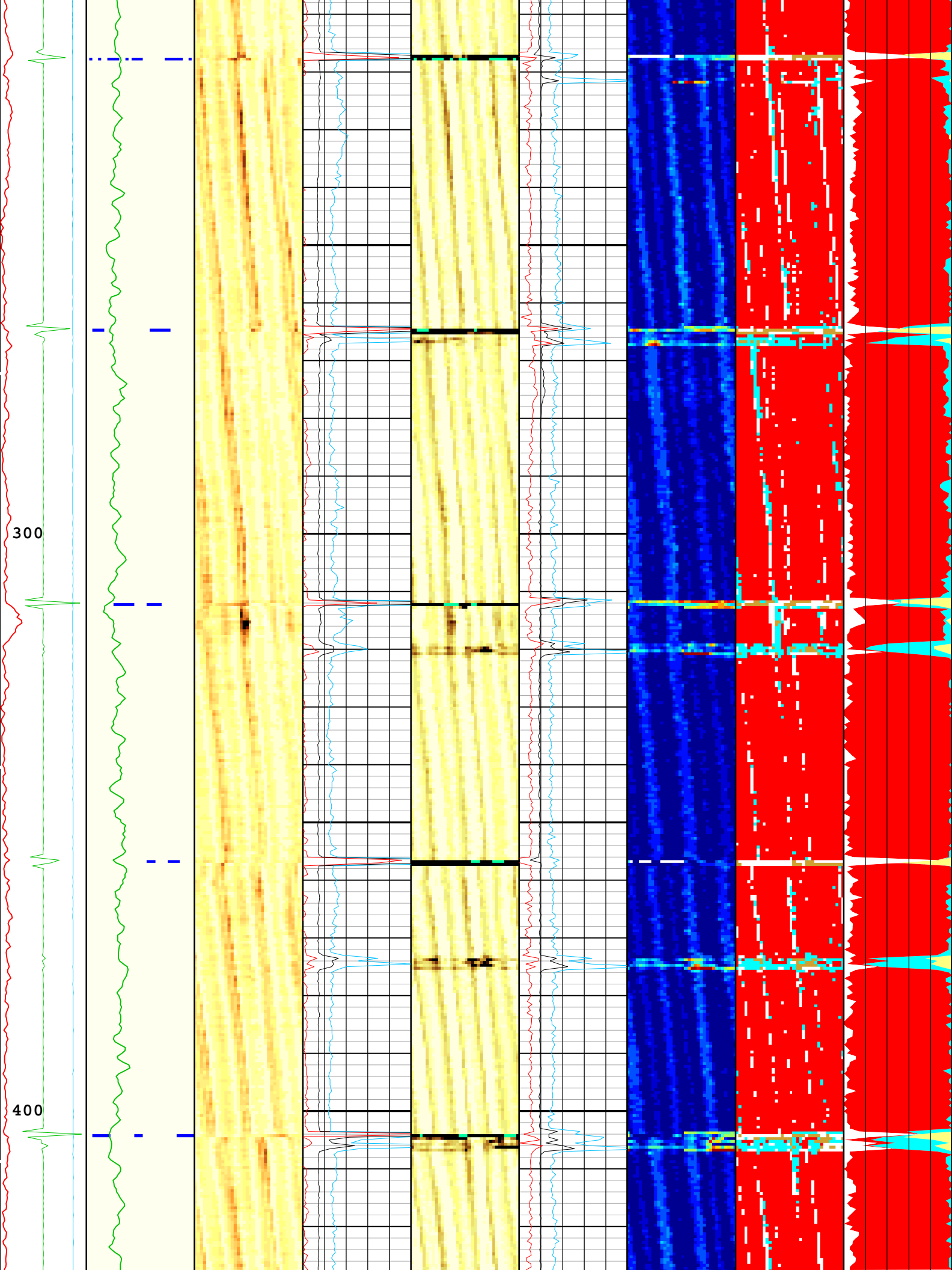
U L B R U

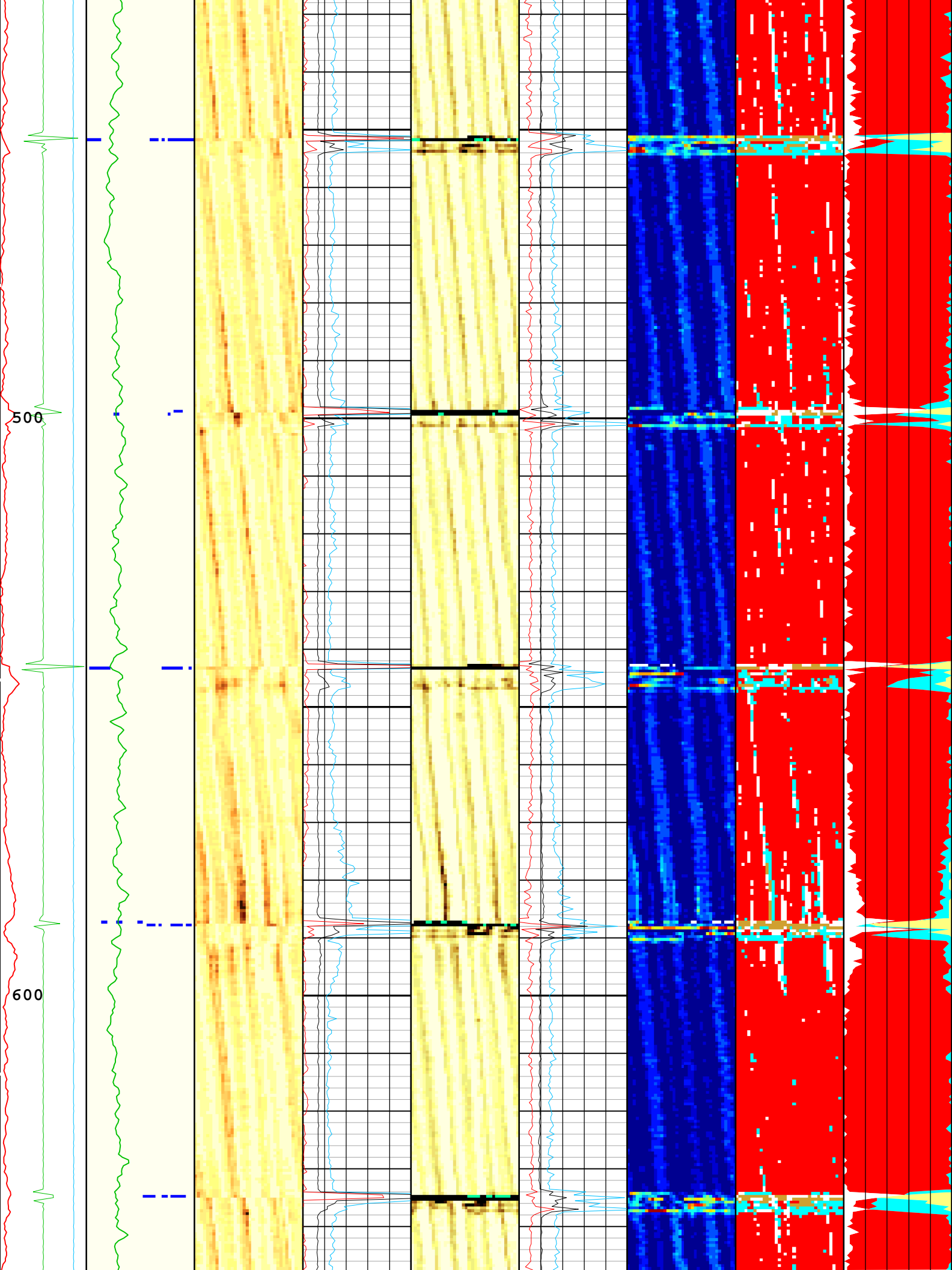
Orientation: Top of Hole

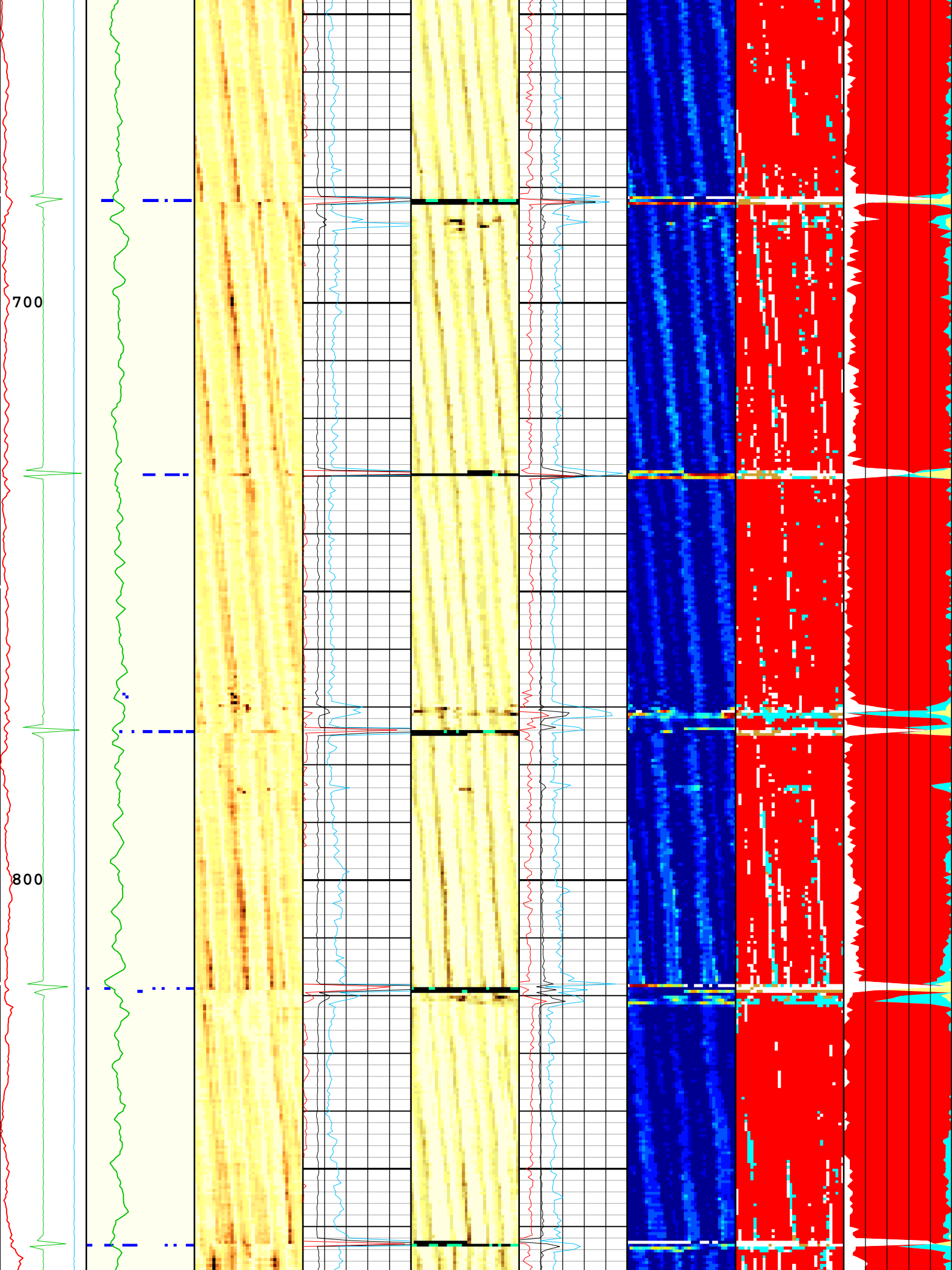
Absent 500 500 500 500

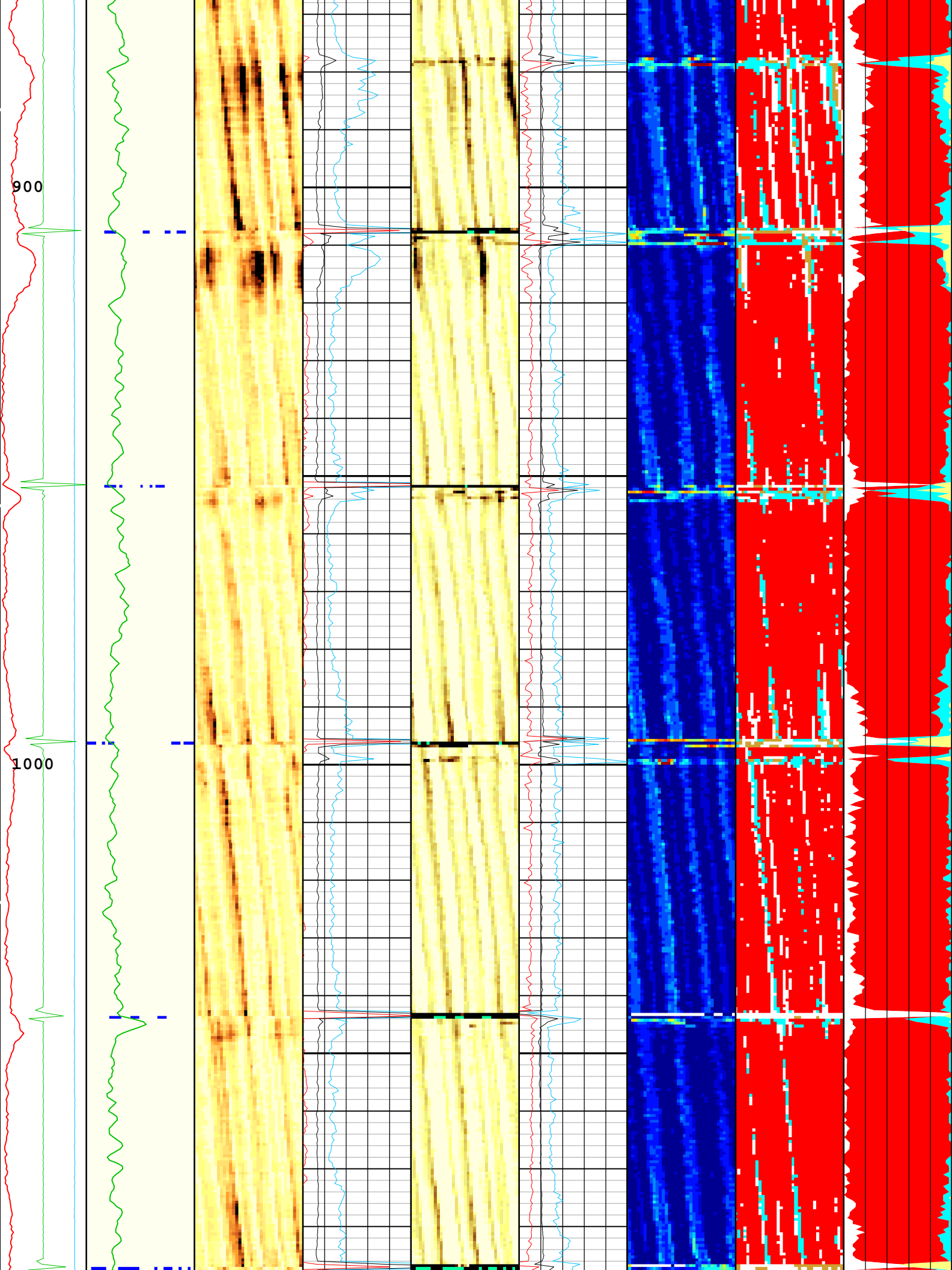
SLG Solid Index

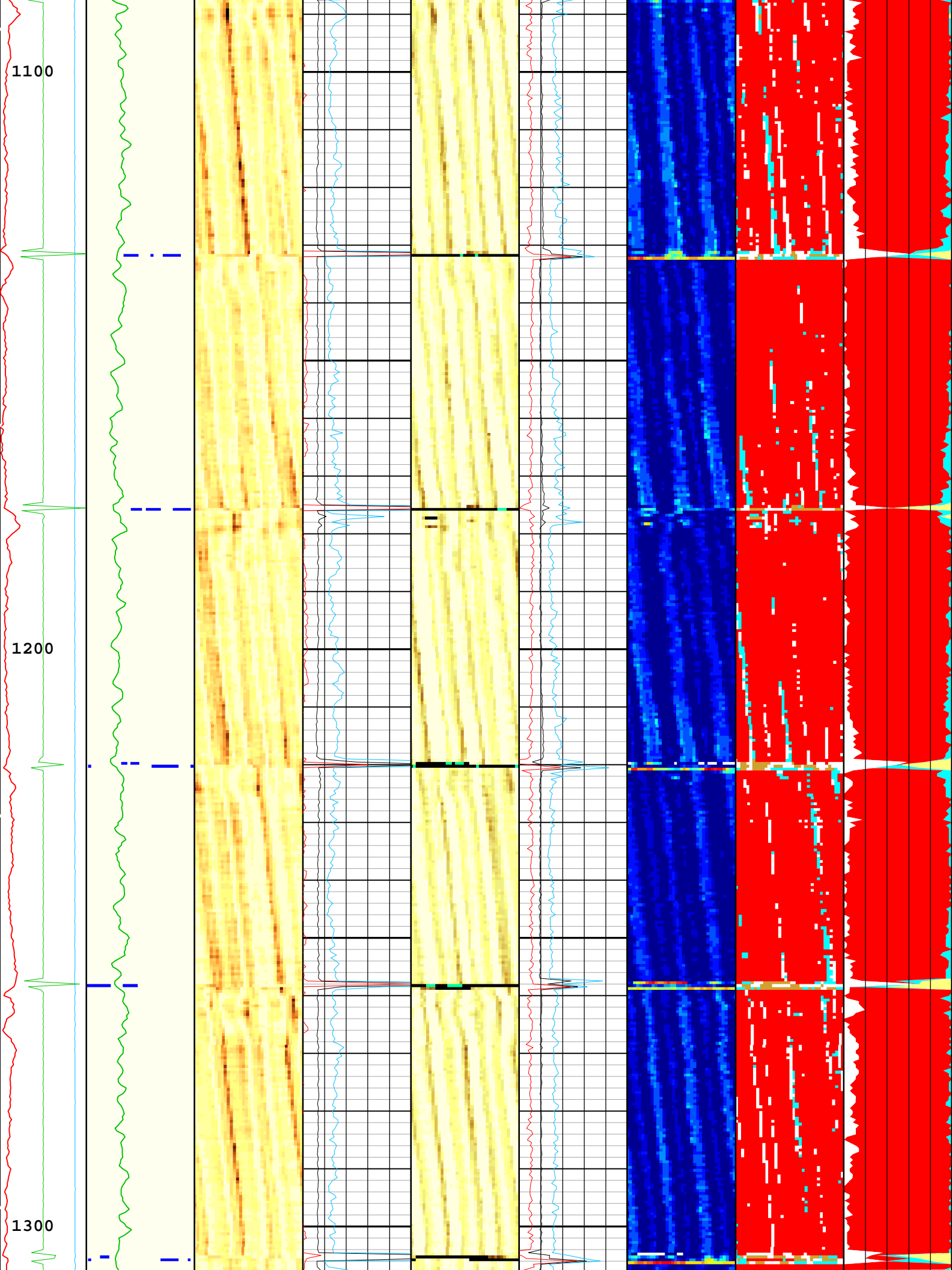


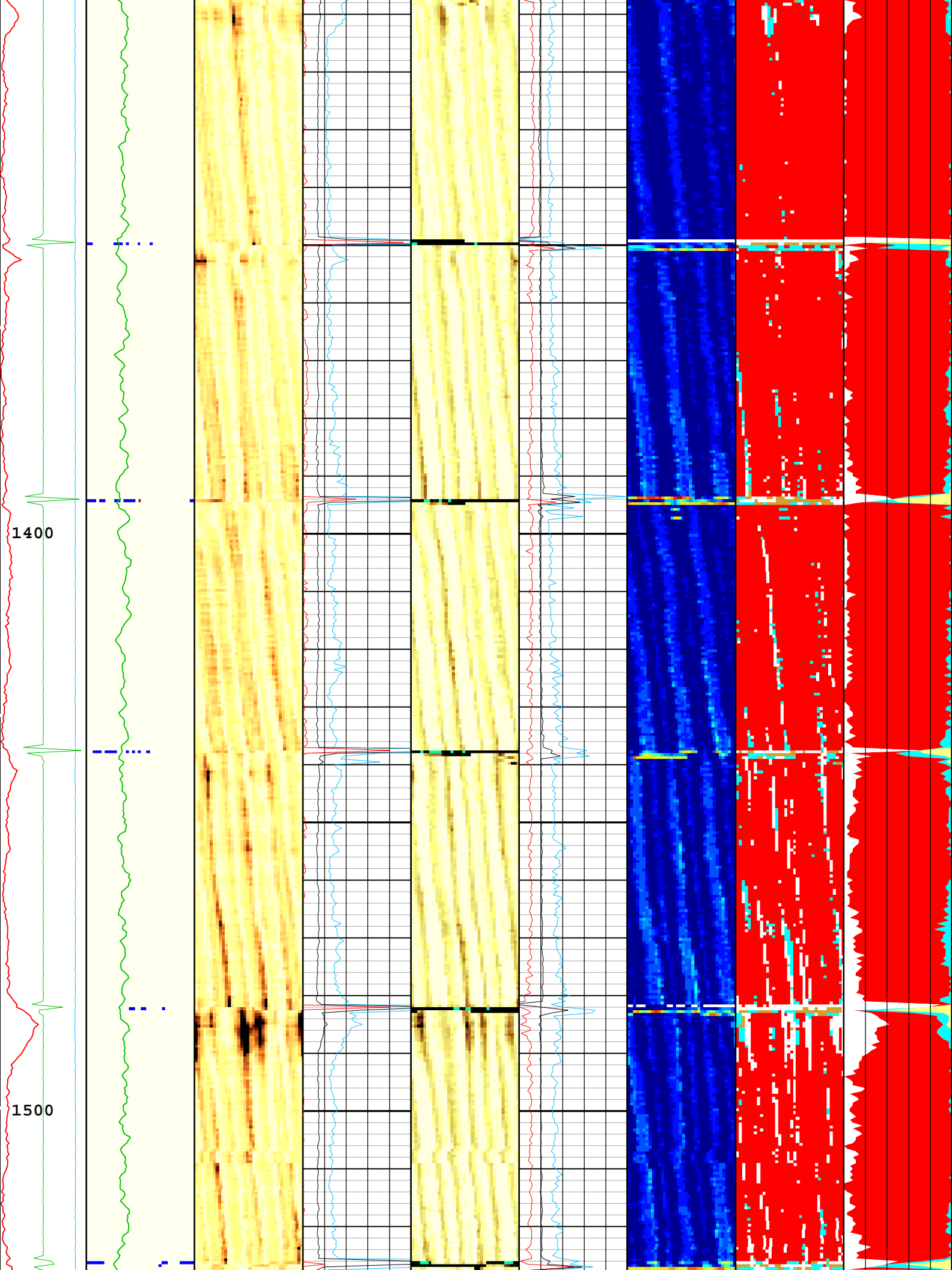


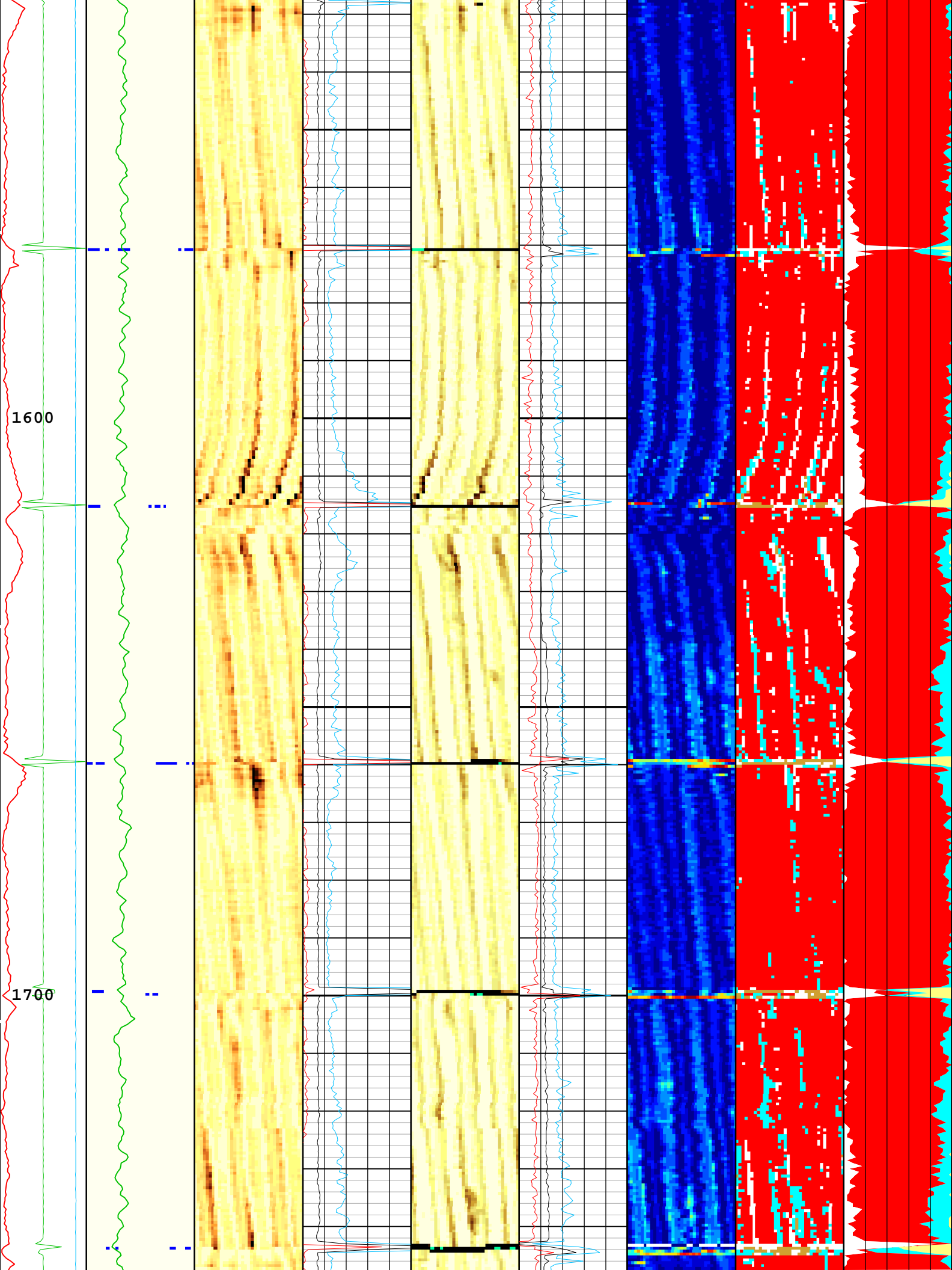


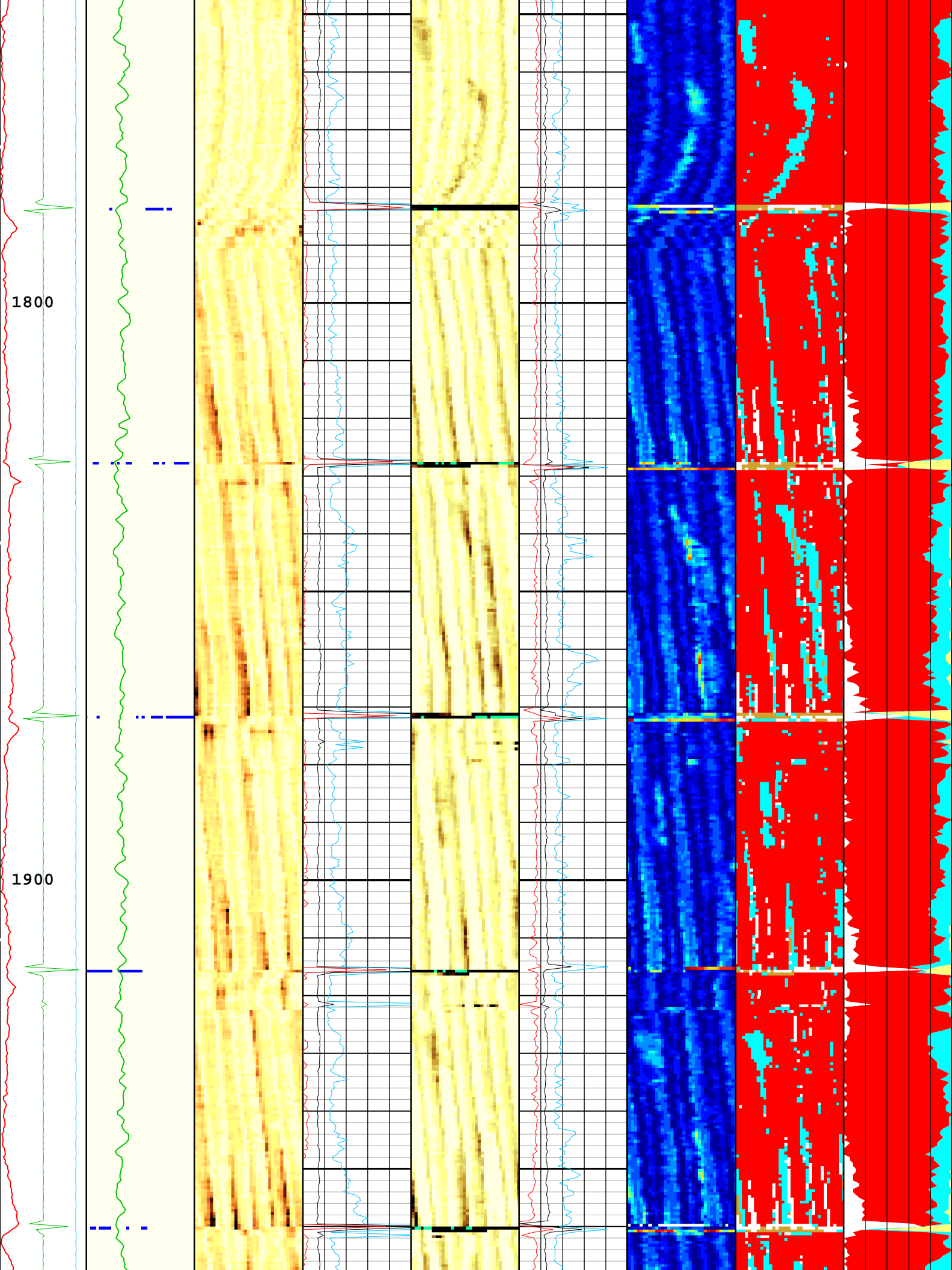


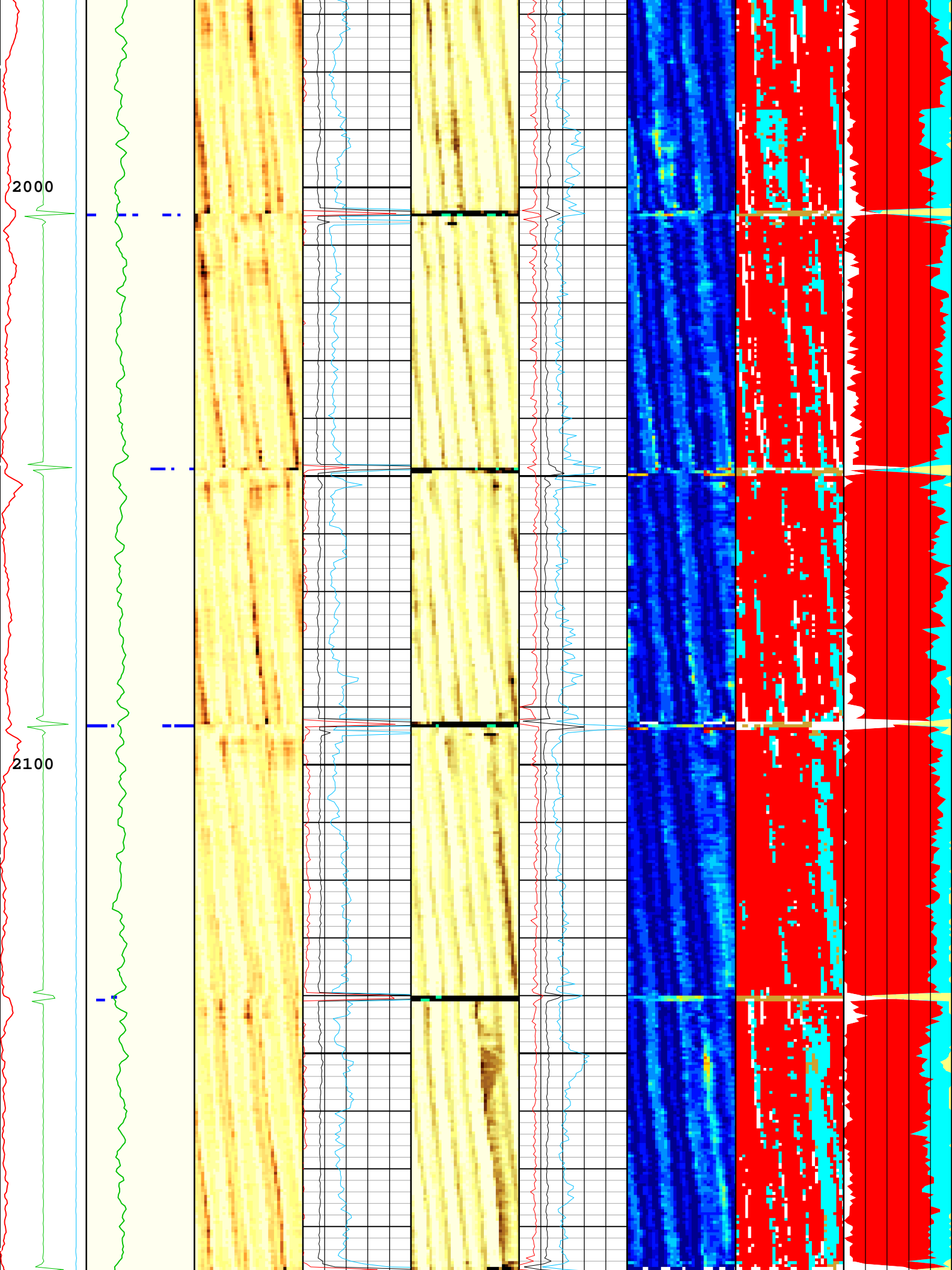


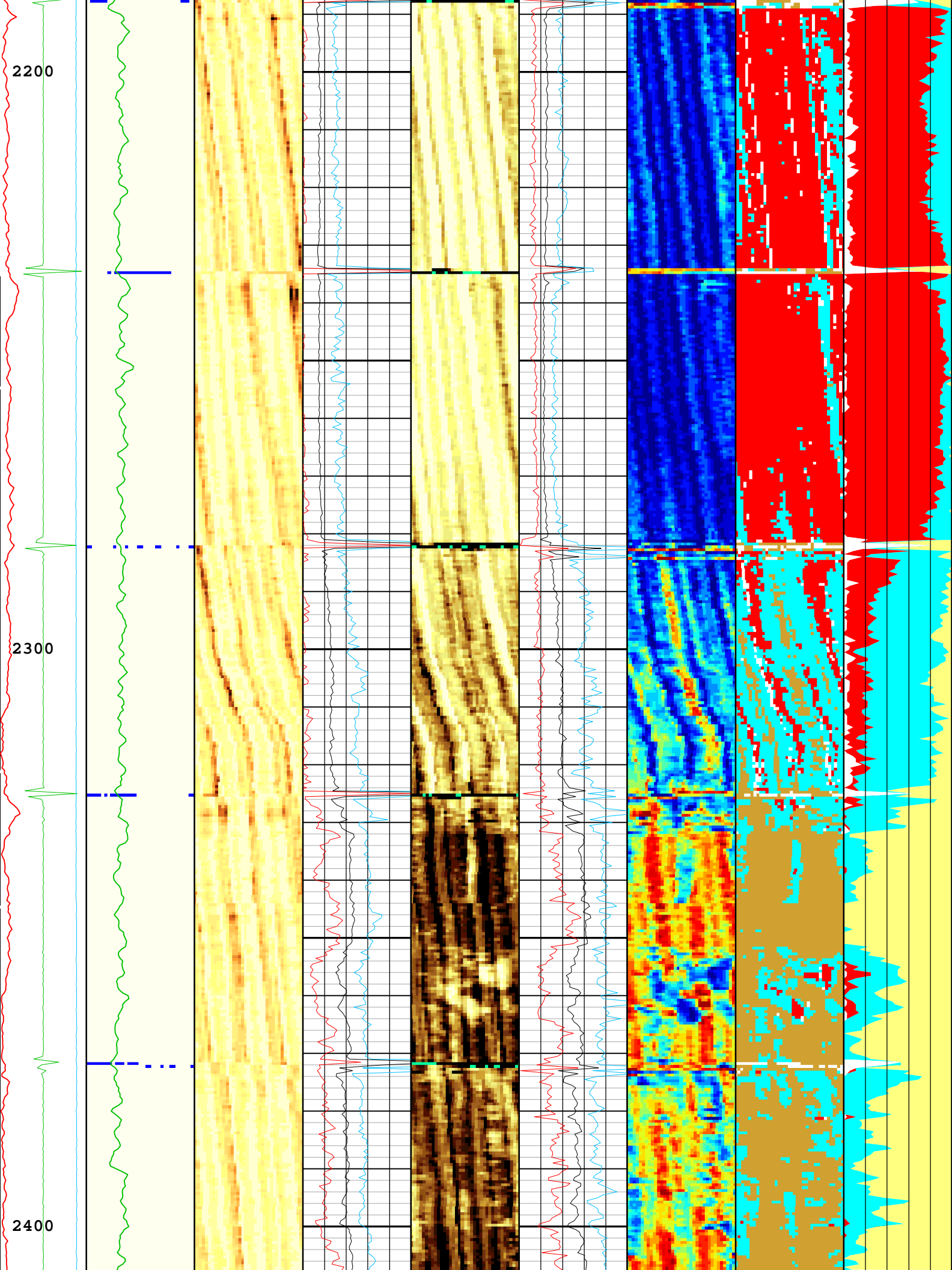


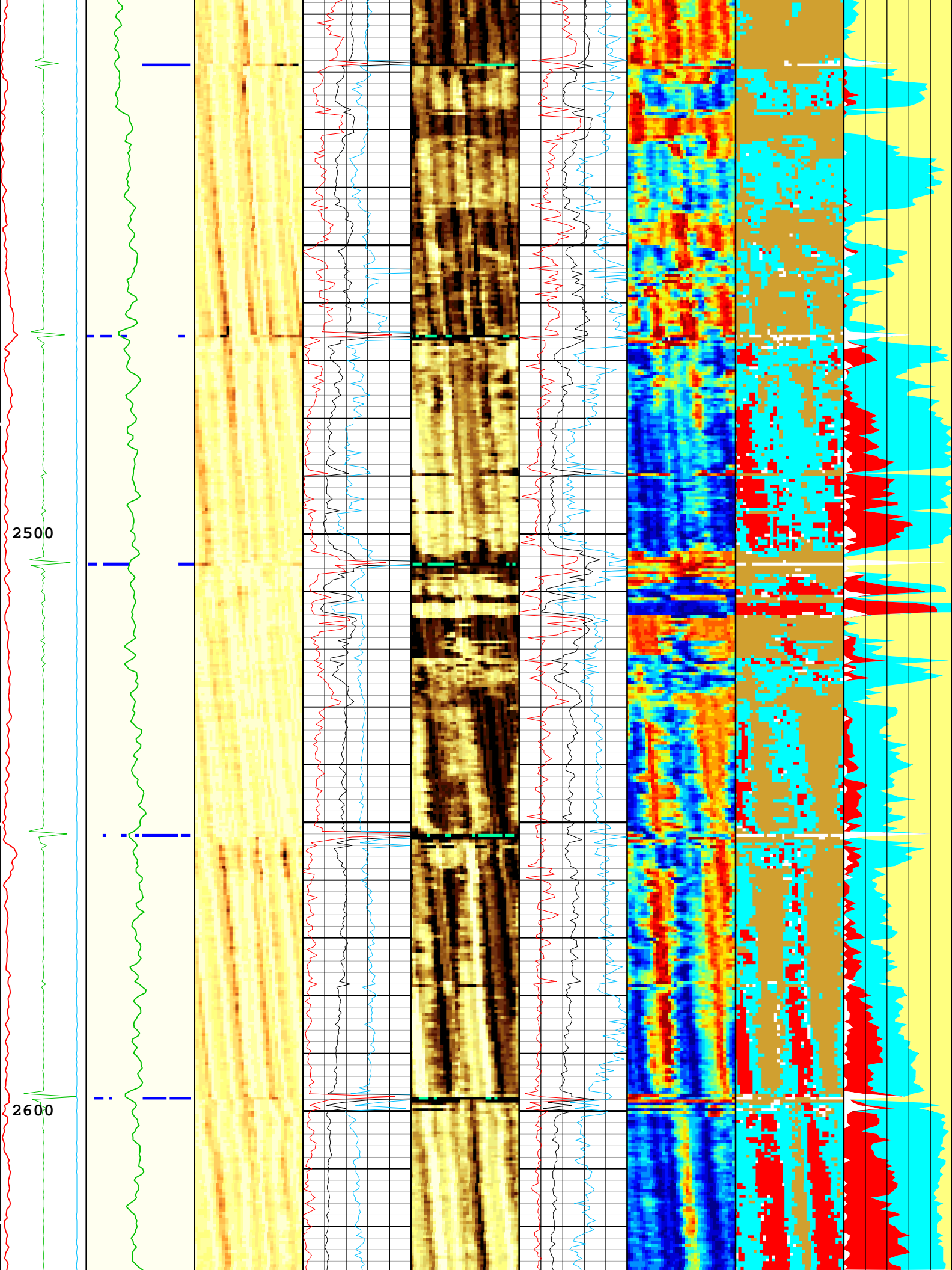


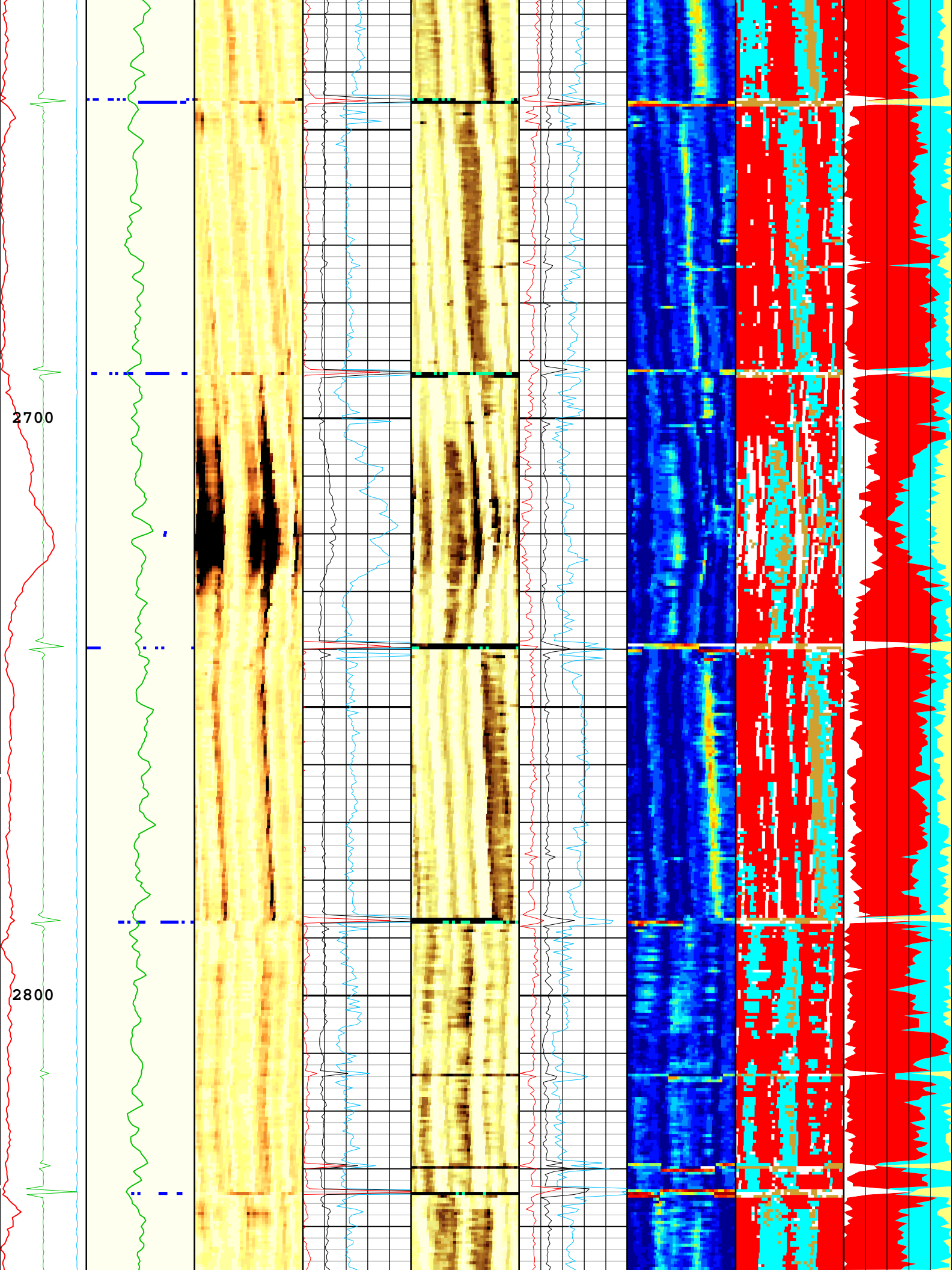


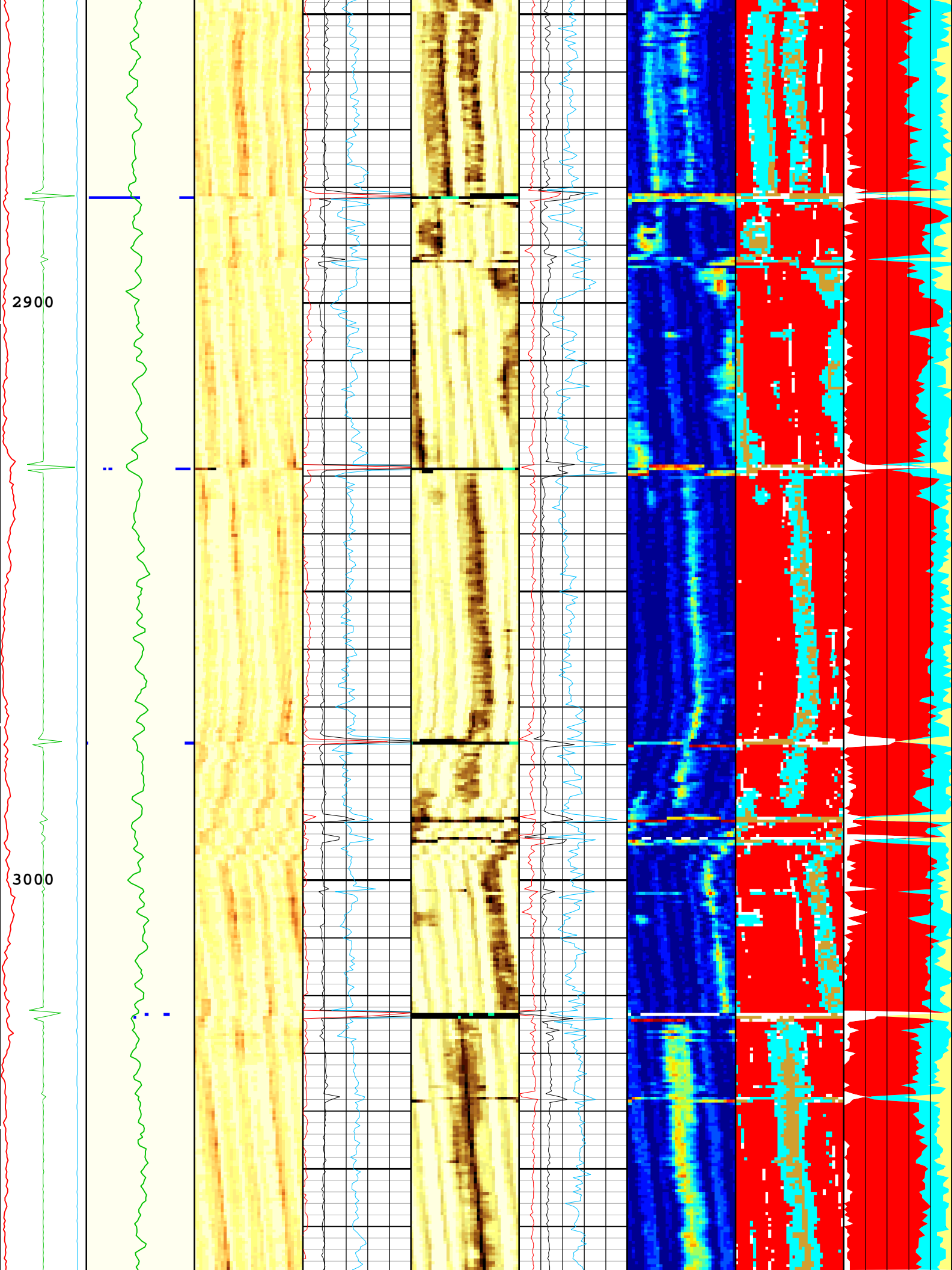


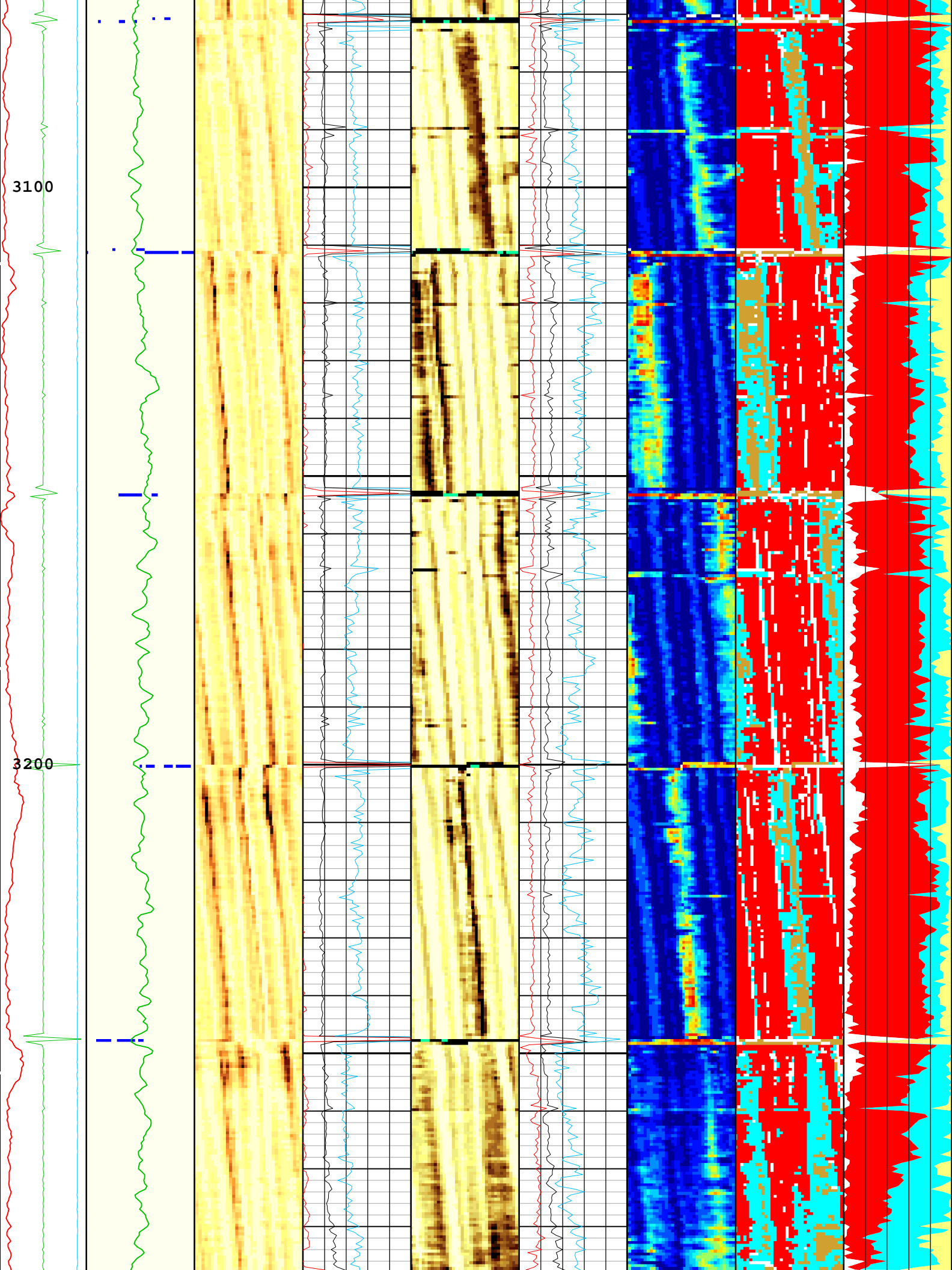


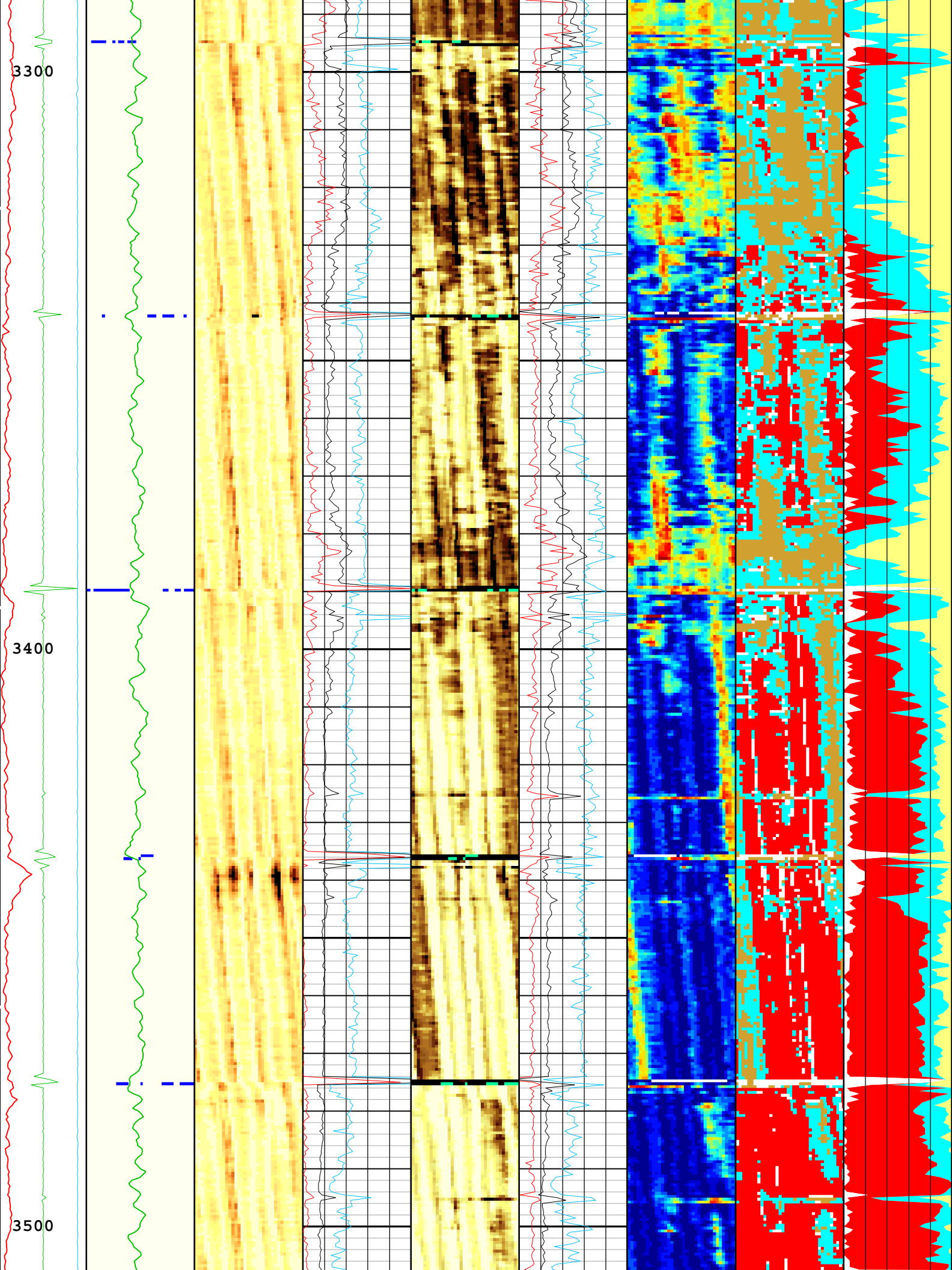


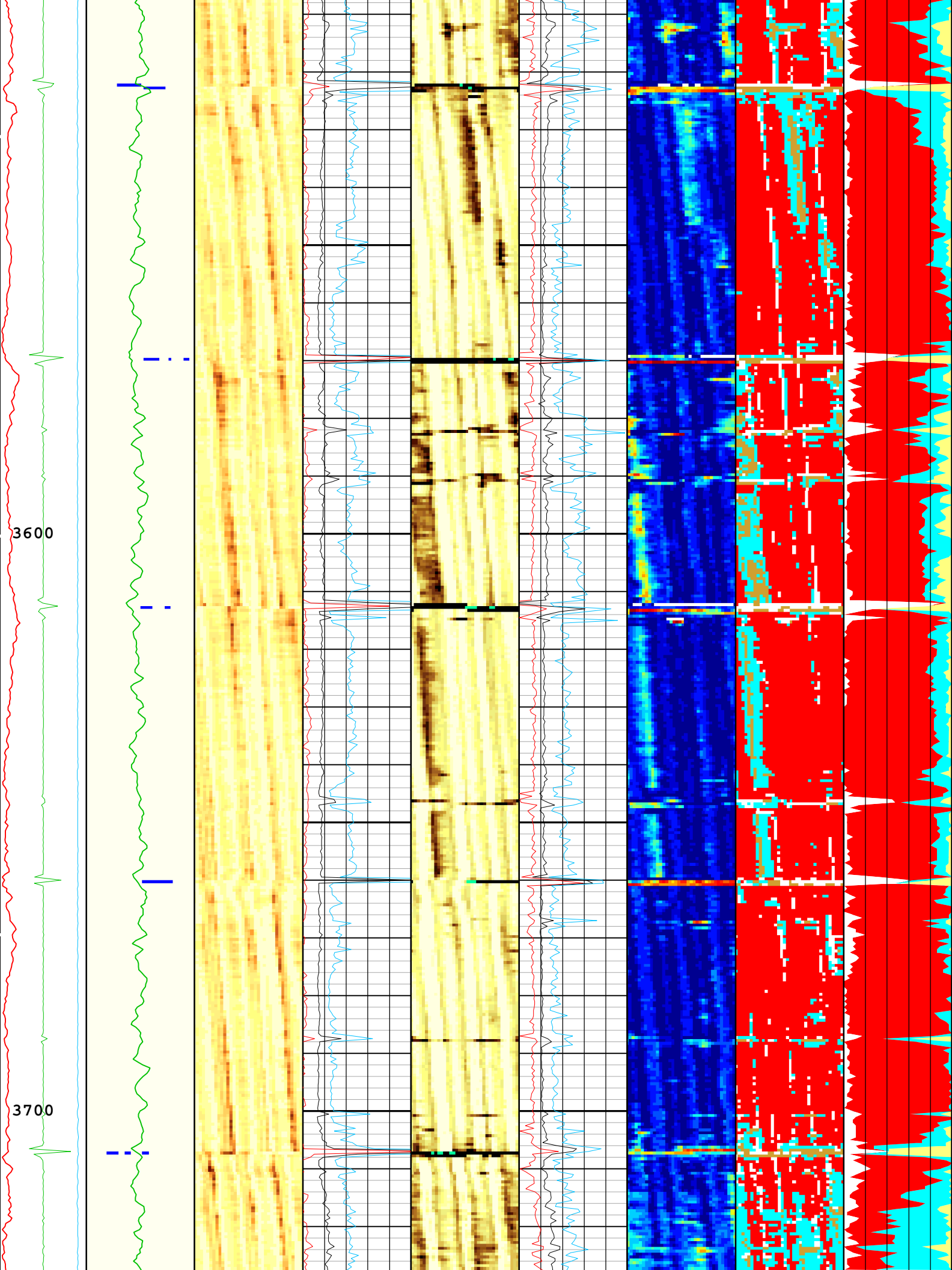


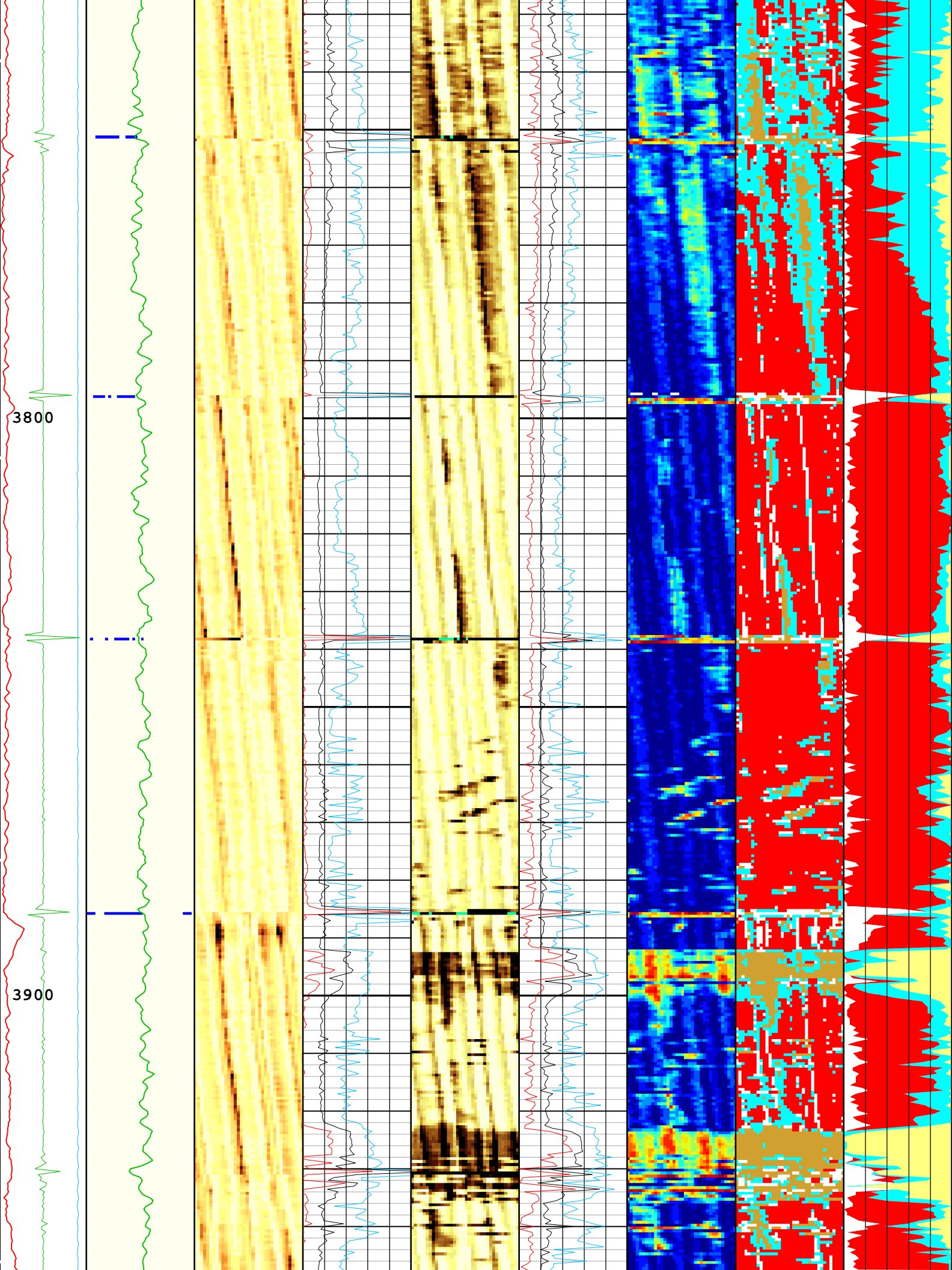


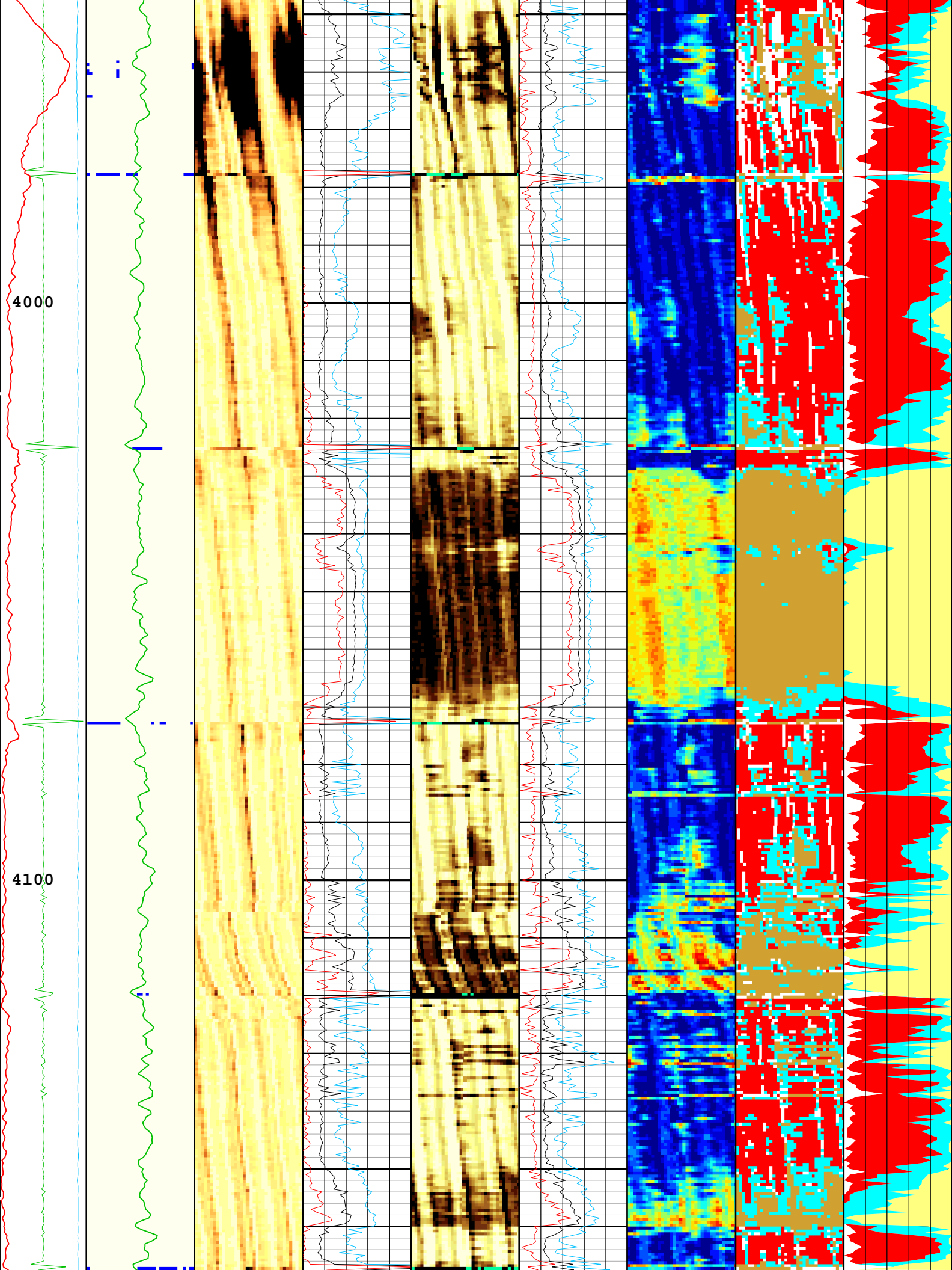


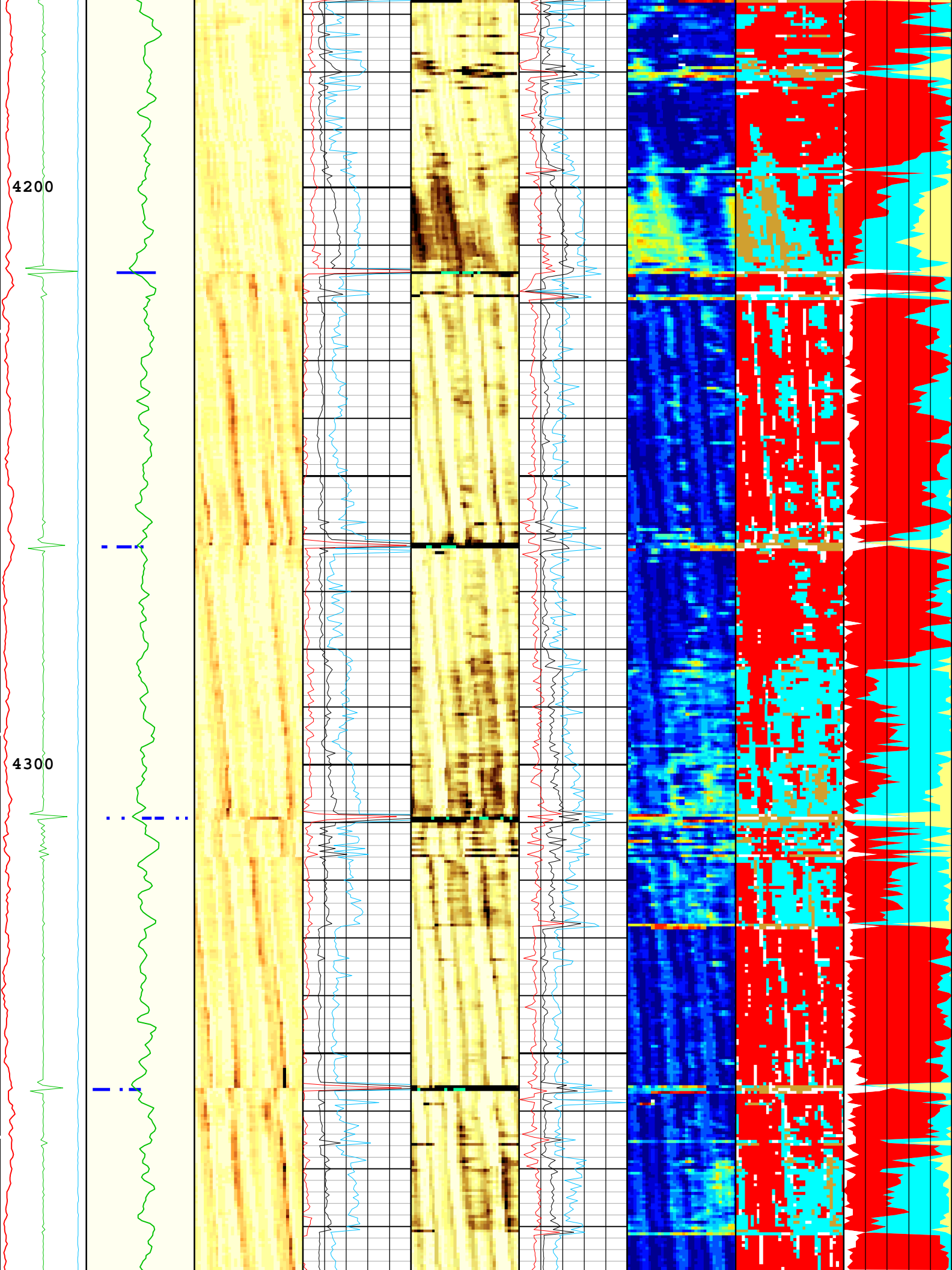


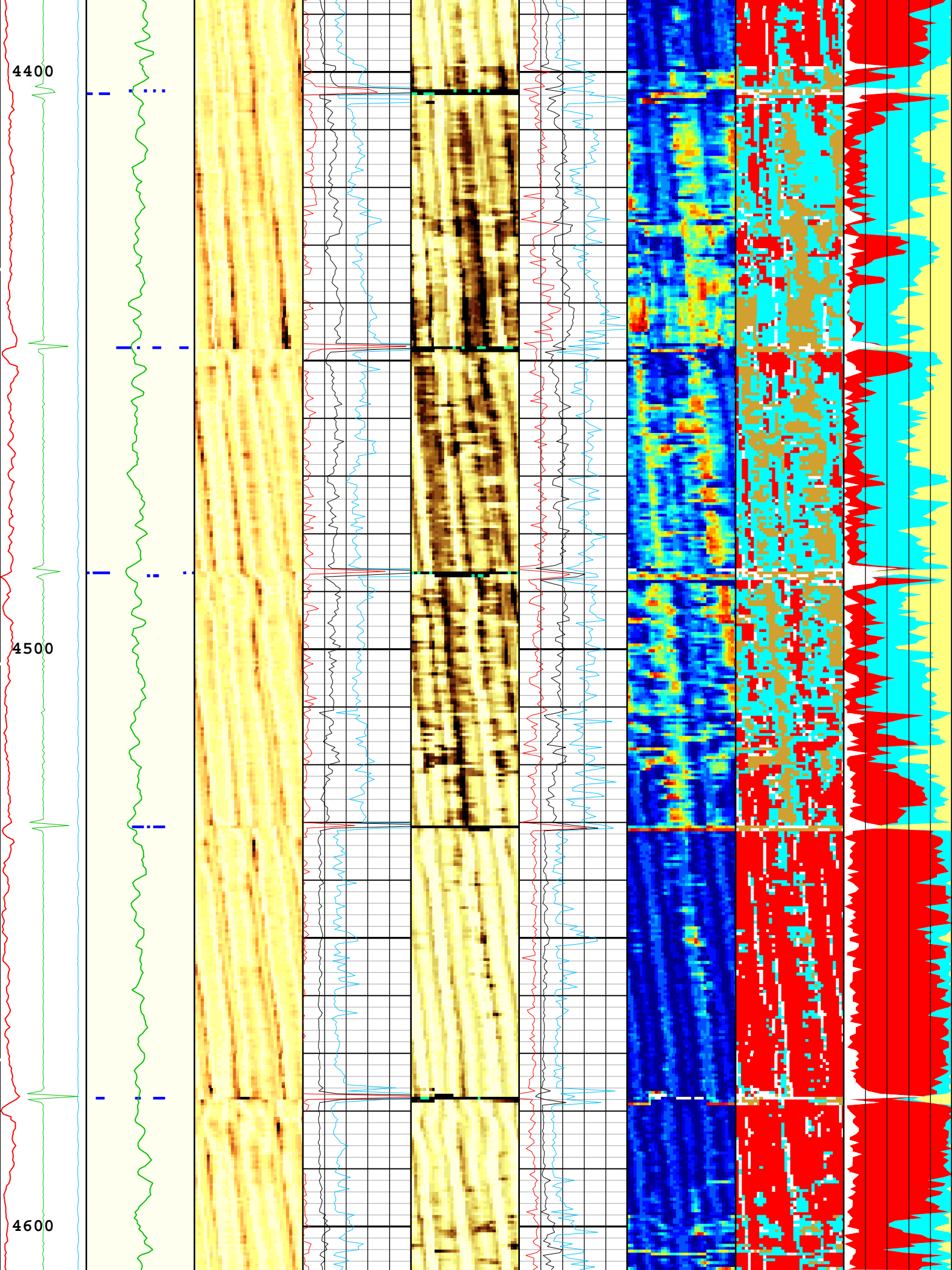


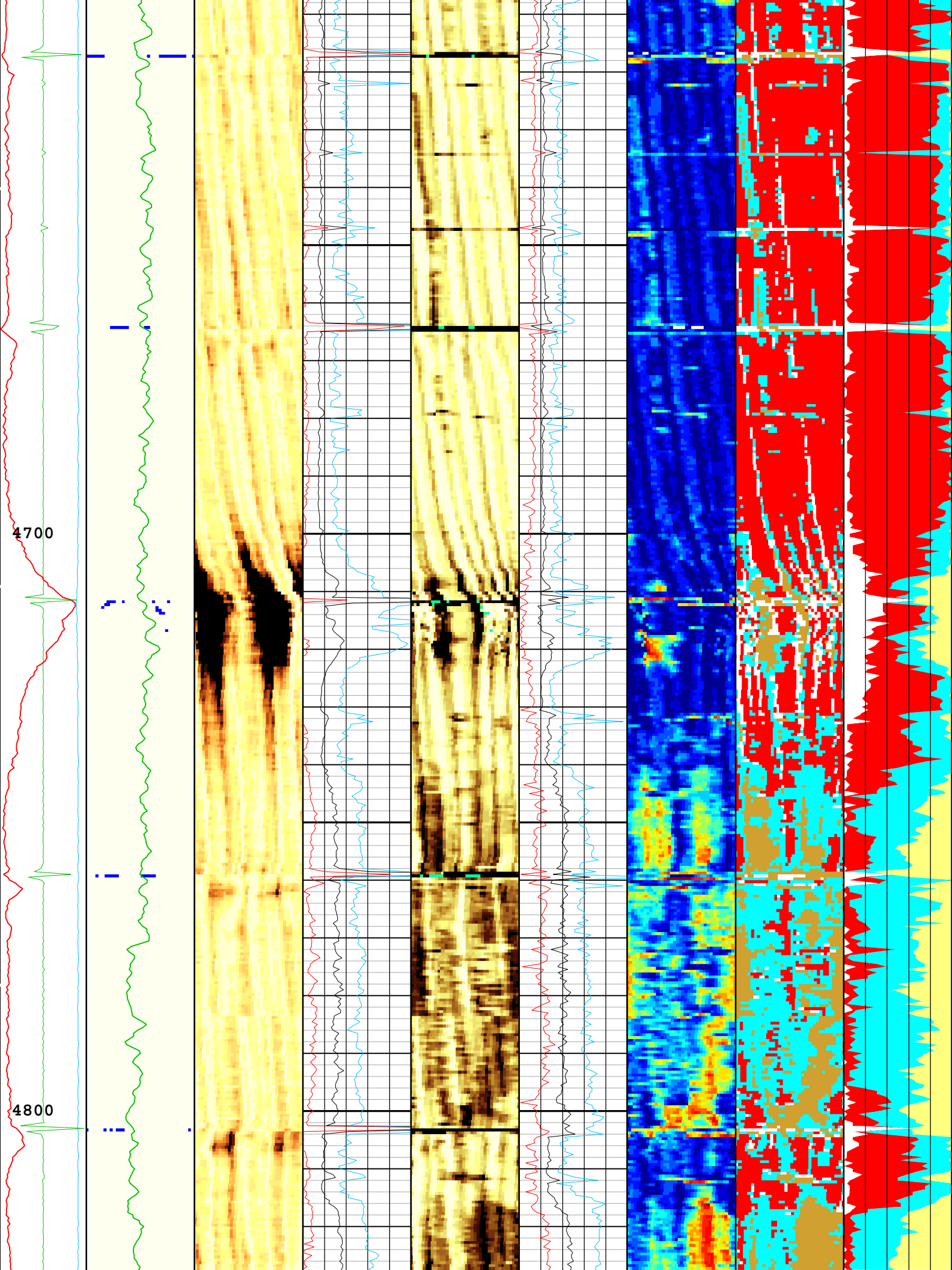


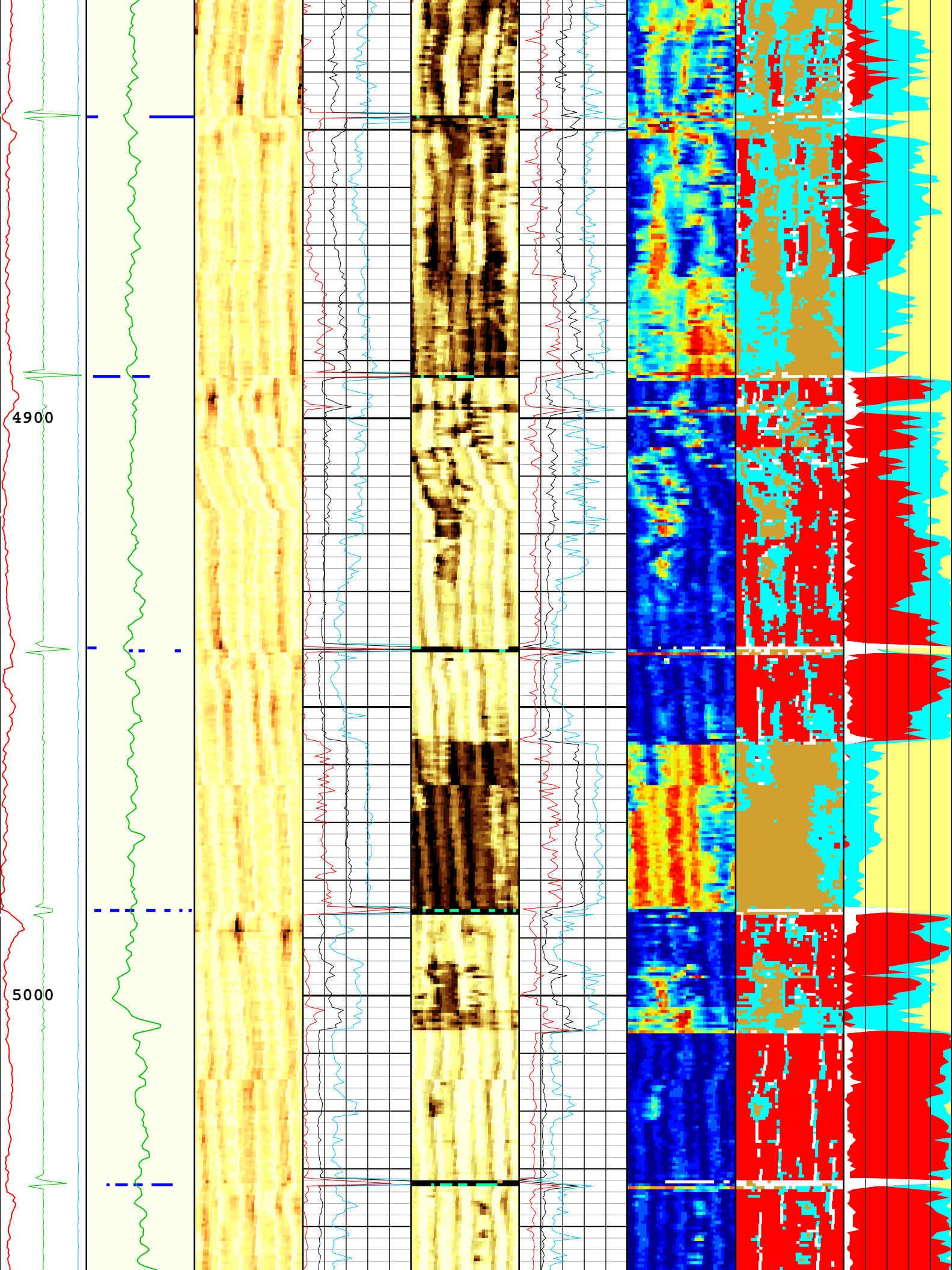


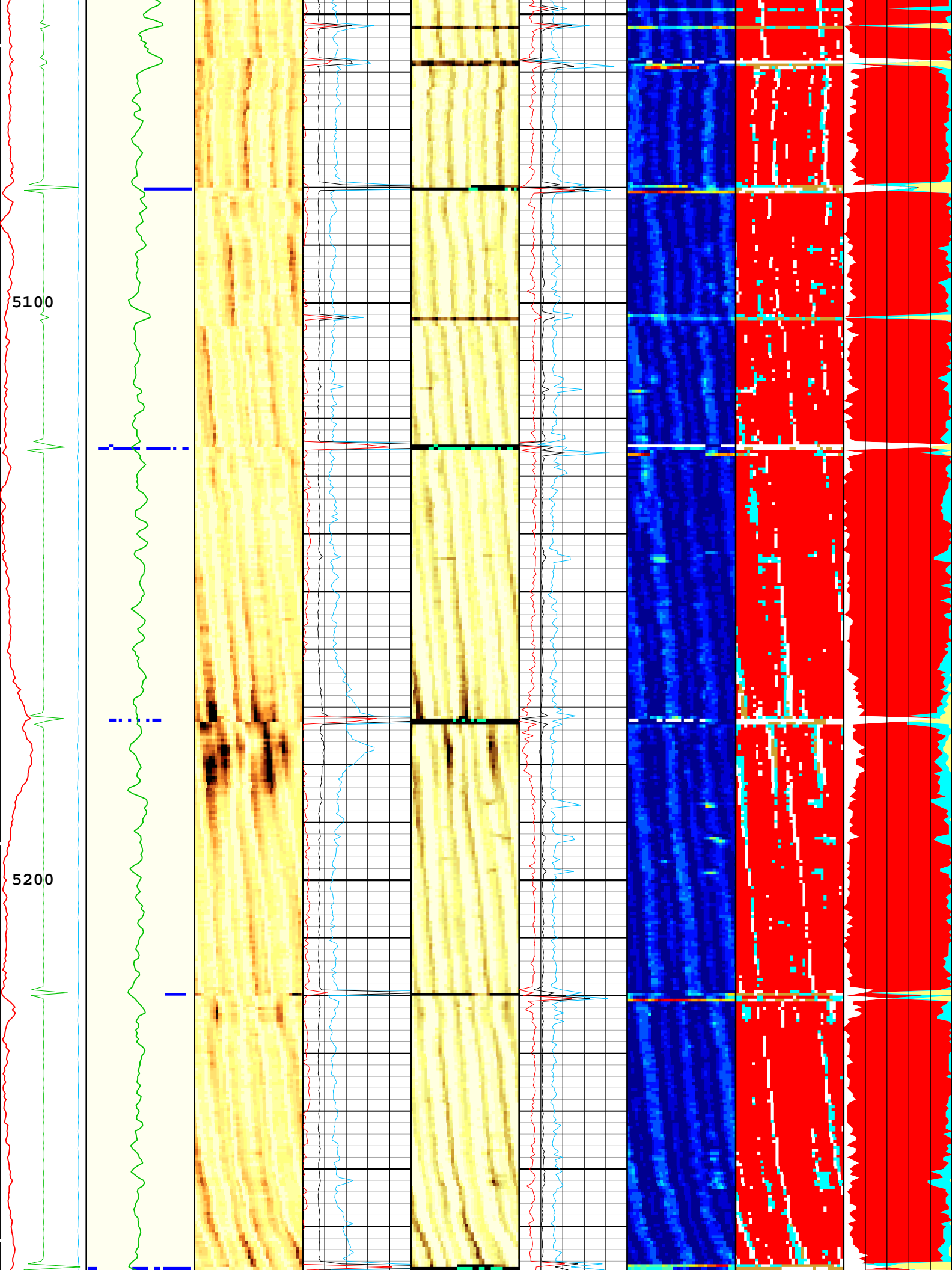


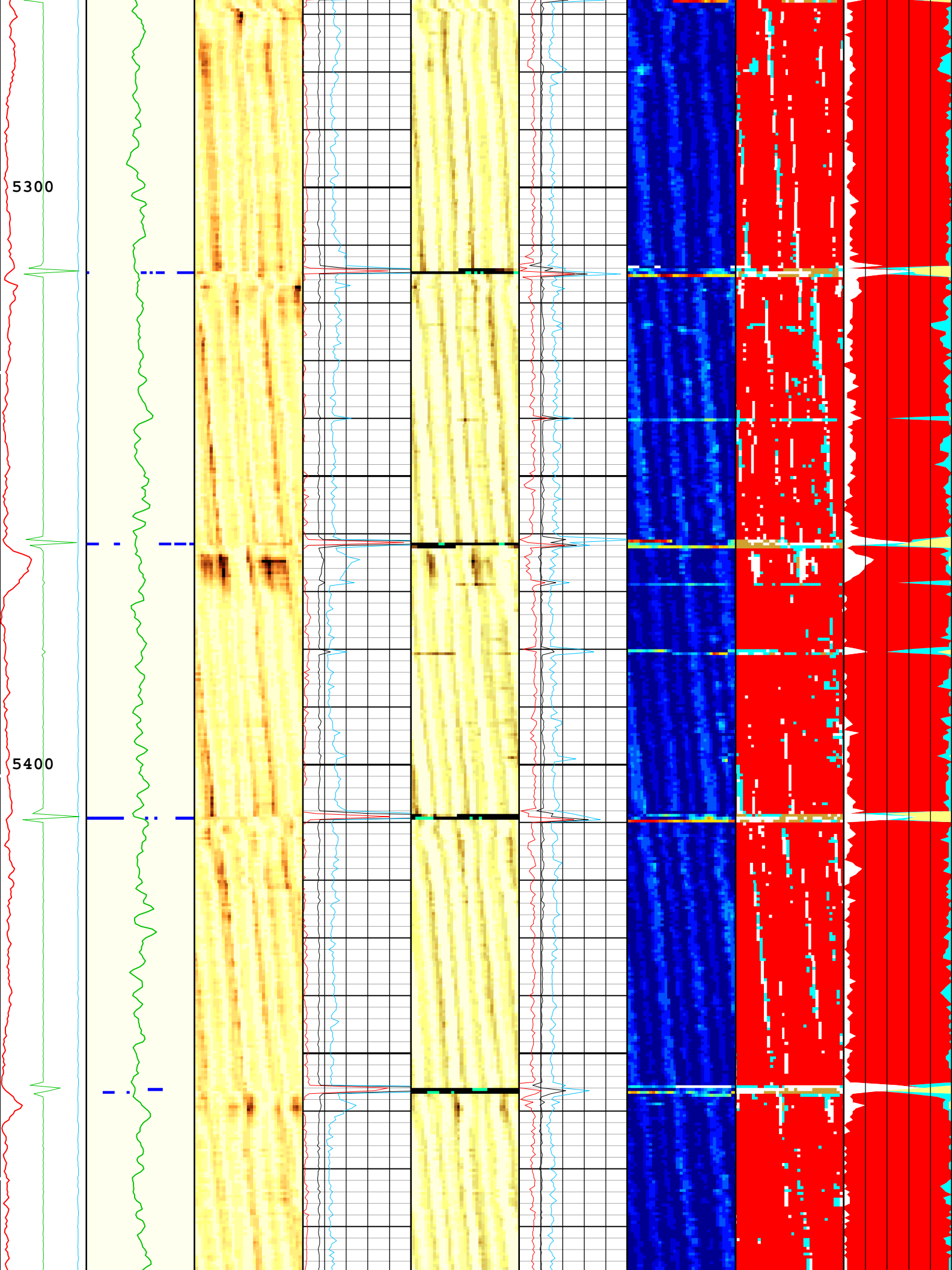


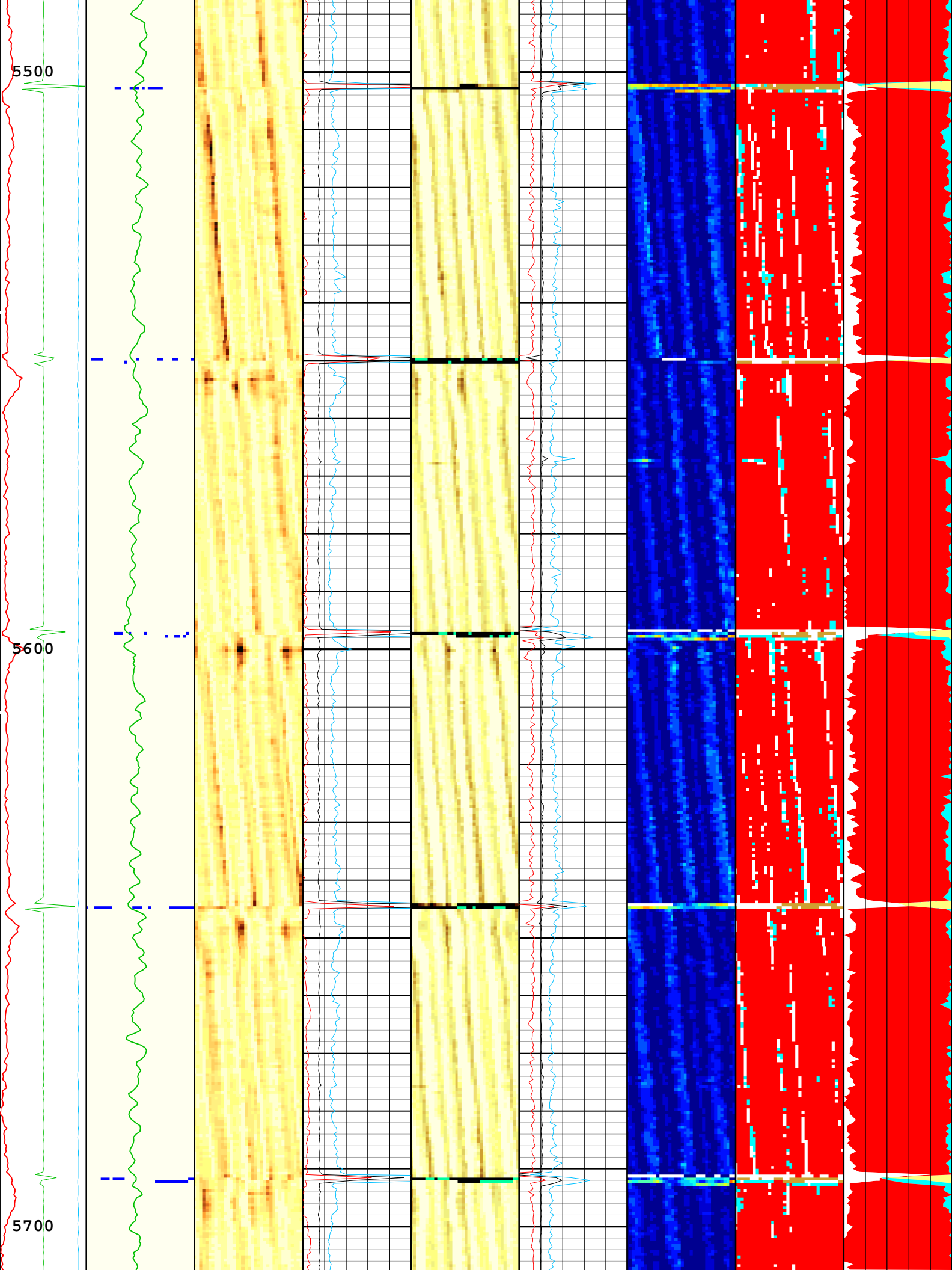


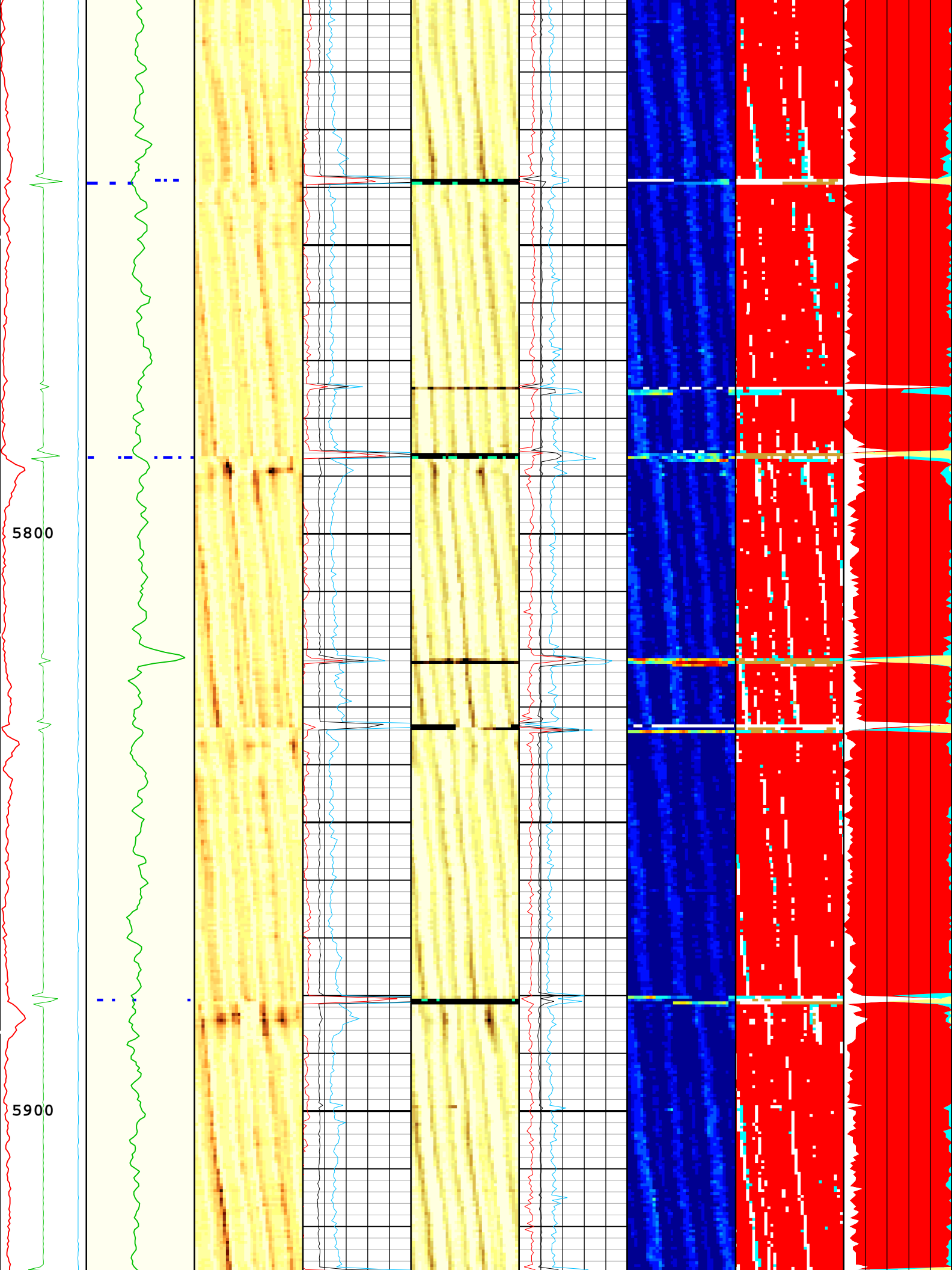


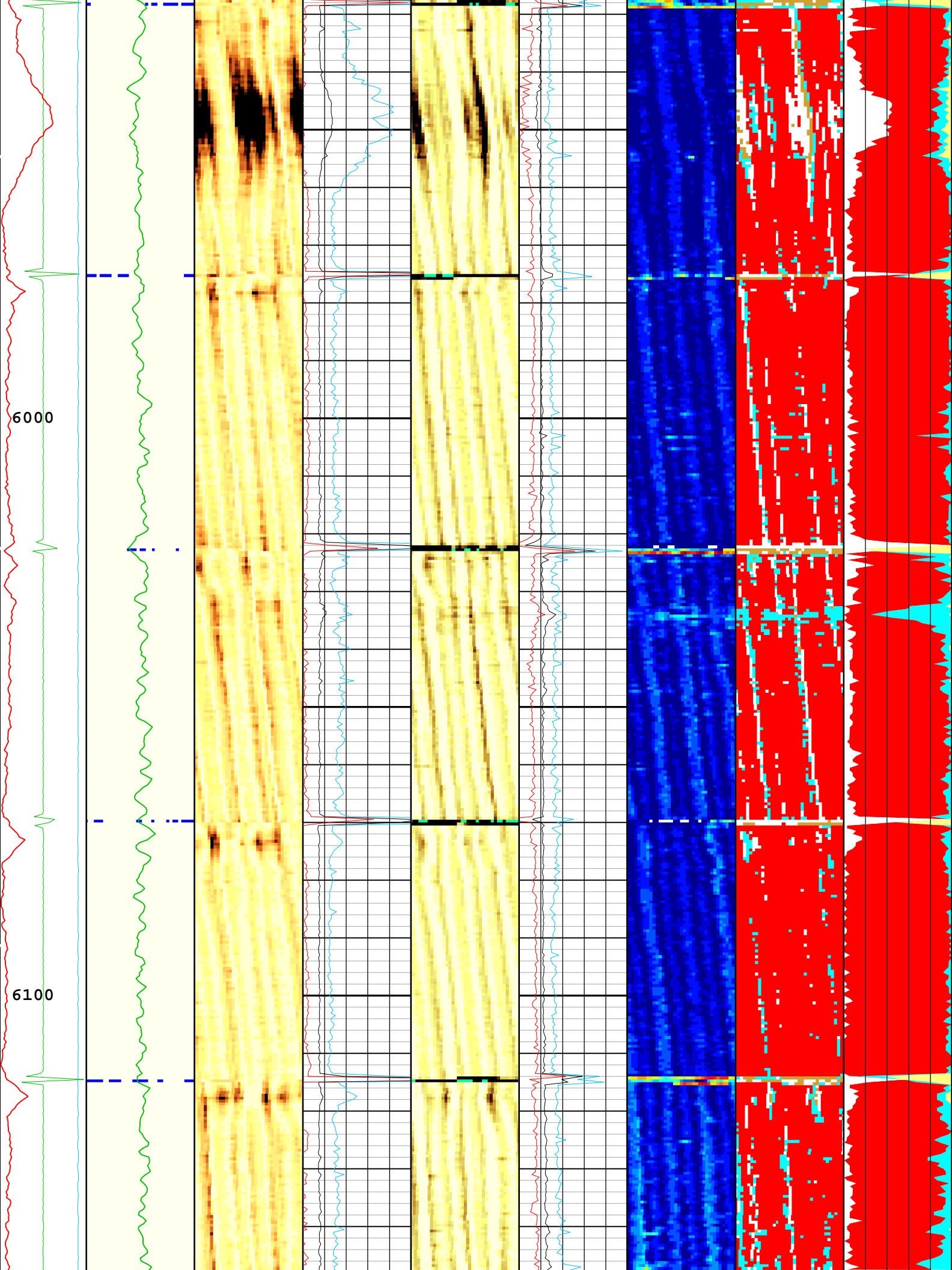


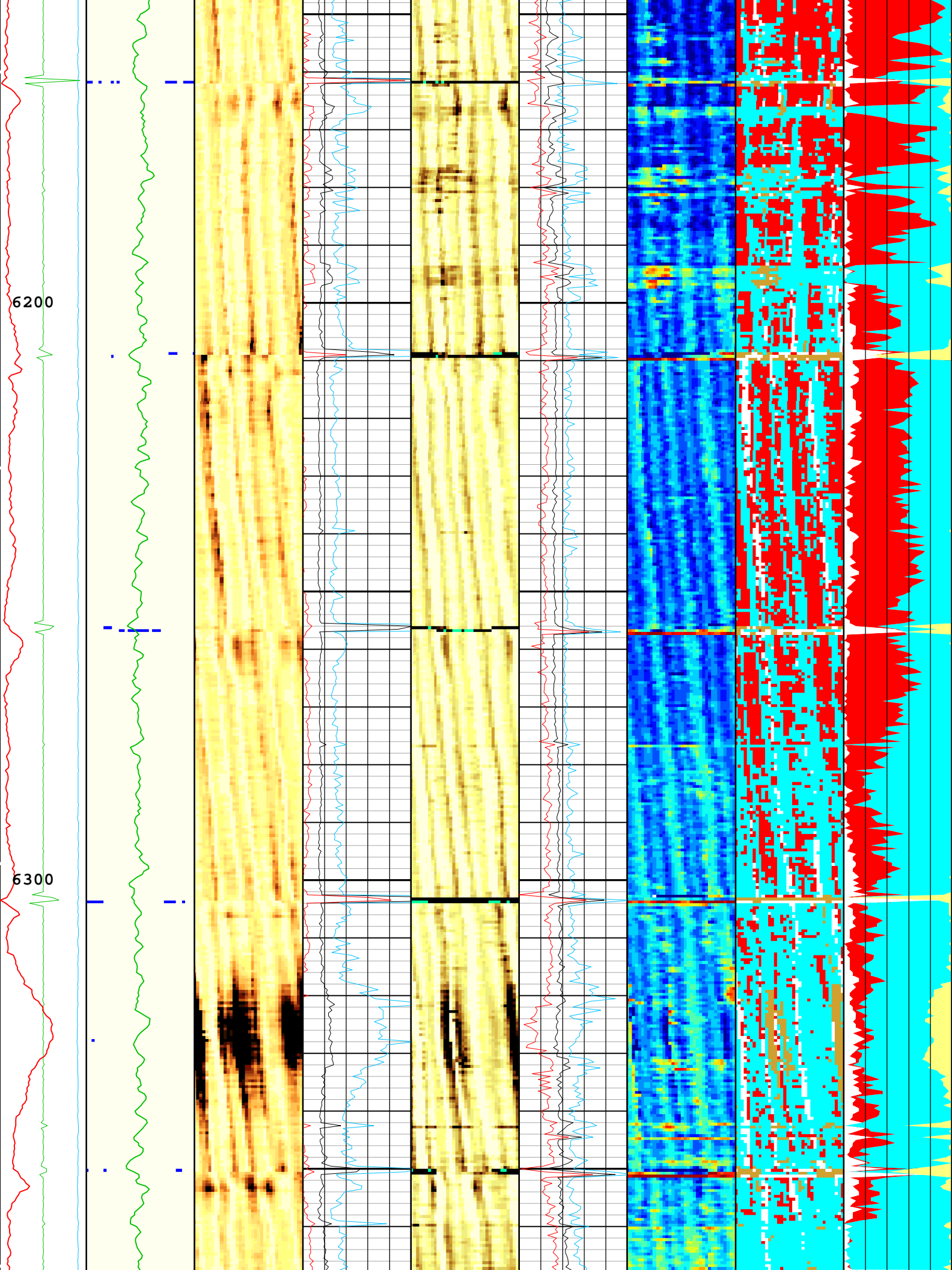


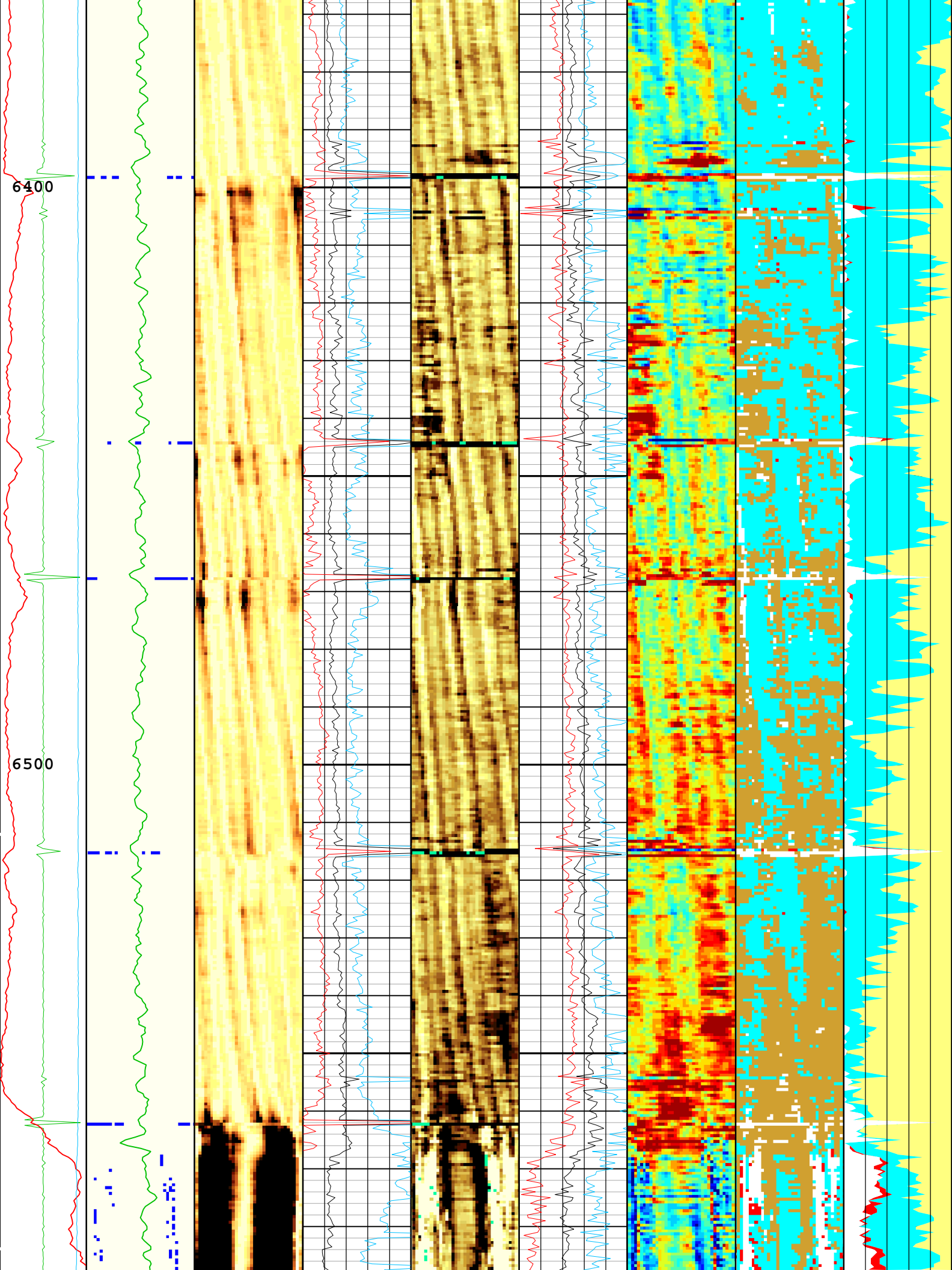


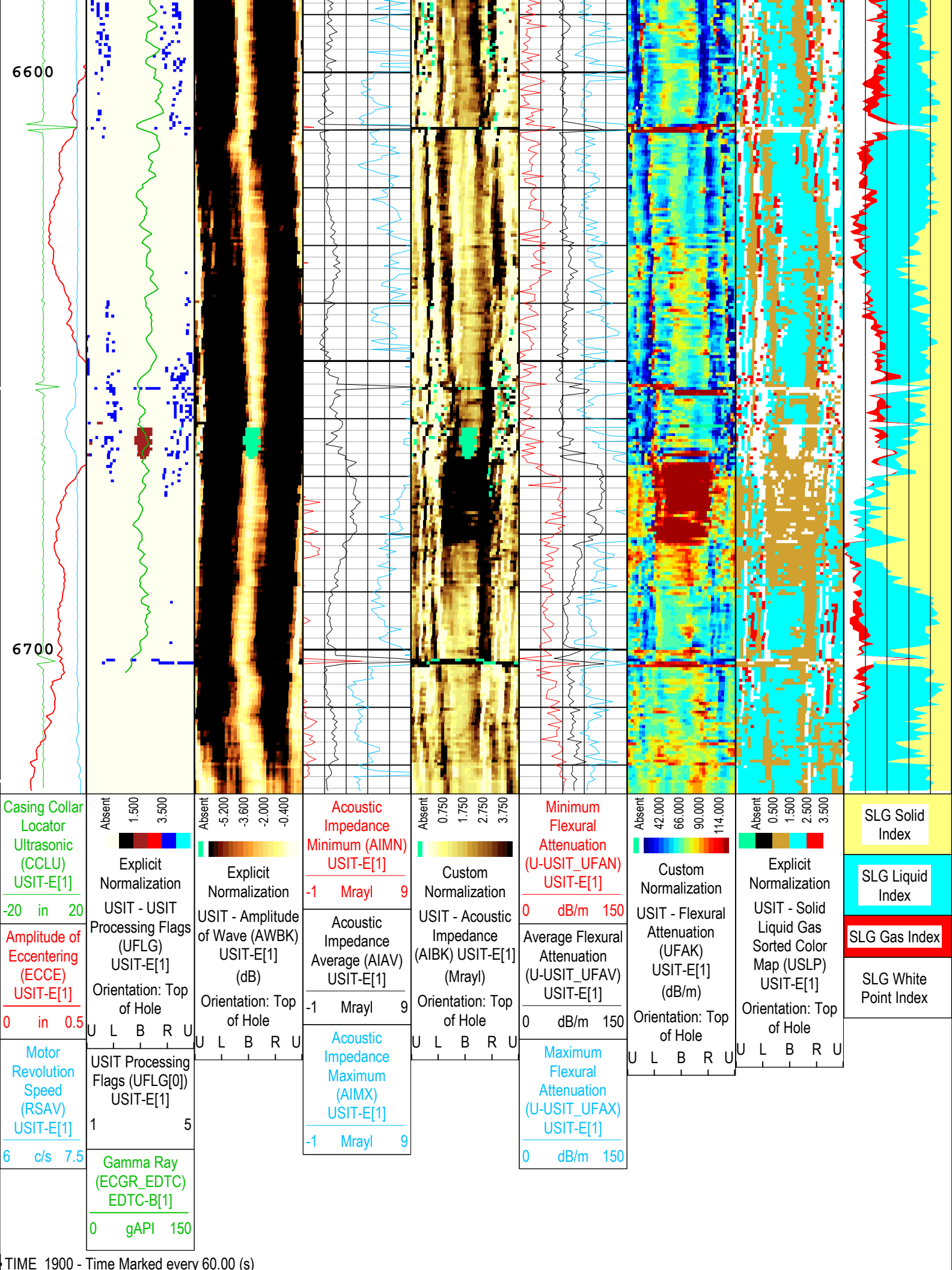












USIT Processing Flags (UFLG[0]) USIT-E[1]				
1 - UFLG 1 Value within [0.0 - 1.5] - :	<div></div>	UTIM Error		
2 - UFLG 2 Value within [1.5 - 2.5] - :	<div></div>	Pulse Origin Not Detected		
3 - UFLG 3 Value within [2.5 - 3.5] - :	<div></div>	WINLEN Error		
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :	<div></div>	Casing Thickness Error		
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :	<div></div>	Loop Processing Error		
Description: USI IBC SLG Format: Log (IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 14-Oct-2018 22:19:21				

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	11760	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	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	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	10.74	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	IBC_FRP_OFFSET	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	Inversion 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	1.23	
MUD_N_INV	IBC Inversion Mud Normalization Factor	USIT-E	1.27	
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	1.75	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-10.05	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	2.2	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

OneDepth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	13.5	19	2357
BS	8.5	2357	6725

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	Time Zoned	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	
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	Time Zoned	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	177	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	Time Zoned	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

OneTime Zoned Parameters

Pass Log[5]:Up

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
AGMX	18	14-Oct-2018 15:34:14	14-Oct-2018 15:36:00	6725.87	6654.16
AGMX	48	14-Oct-2018 15:36:00	14-Oct-2018 16:39:34	6654.16	2344.64
EMXV	40	14-Oct-2018 15:34:14	14-Oct-2018 15:36:05	6725.87	6648.69
EMXV	60	14-Oct-2018 15:36:05	14-Oct-2018 15:36:21	6648.69	6630.06

MXV	90	14-Oct-2018 15:36:21	14-Oct-2018 15:37:47	6630.06	6526.98
EMXV	50	14-Oct-2018 15:37:47	14-Oct-2018 15:37:56	6526.98	6516.9
EMXV	40	14-Oct-2018 15:37:56	14-Oct-2018 16:39:34	6516.9	2344.64
U-USIT_UFWB	137	14-Oct-2018 15:34:14	14-Oct-2018 16:04:10	6725.87	4697.38
U-USIT_UFWB	126.27	14-Oct-2018 16:04:10	14-Oct-2018 16:39:34	4697.38	2344.64
U-USIT_UNWB	106	14-Oct-2018 15:34:14	14-Oct-2018 16:04:13	6725.87	4694
U-USIT_UNWB	99.06	14-Oct-2018 16:04:13	14-Oct-2018 16:39:34	4694	2344.64
WINB	31.88	14-Oct-2018 15:34:14	14-Oct-2018 15:35:53	6725.87	6662.03
WINB	25.06	14-Oct-2018 15:35:53	14-Oct-2018 16:39:34	6662.03	2344.64
WINE	71.88	14-Oct-2018 15:34:14	14-Oct-2018 15:36:13	6725.87	6639.13
WINE	77.25	14-Oct-2018 15:36:13	14-Oct-2018 16:39:34	6639.13	2344.64

Pass Log[6]:Up					
AGMX	48	14-Oct-2018 16:44:58	14-Oct-2018 17:19:36	2433.87	182.54
EMXV	40	14-Oct-2018 16:44:58	14-Oct-2018 17:19:36	2433.87	182.54
U-USIT_UFWB	137	14-Oct-2018 16:44:58	14-Oct-2018 17:19:36	2433.87	182.54
U-USIT_UNWB	106	14-Oct-2018 16:44:58	14-Oct-2018 17:19:36	2433.87	182.54
WINB	31.88	14-Oct-2018 16:44:58	14-Oct-2018 17:19:36	2433.87	182.54
WINE	71.88	14-Oct-2018 16:44:58	14-Oct-2018 17:19:36	2433.87	182.54

Pass Log[7]:Up					
AGMX	48	14-Oct-2018 17:27:14	14-Oct-2018 17:31:06	206.39	40.65
EMXV	40	14-Oct-2018 17:27:14	14-Oct-2018 17:31:06	206.39	40.65
U-USIT_UFWB	137	14-Oct-2018 17:27:14	14-Oct-2018 17:31:06	206.39	40.65
U-USIT_UNWB	106	14-Oct-2018 17:27:14	14-Oct-2018 17:31:06	206.39	40.65
WINB	31.88	14-Oct-2018 17:27:14	14-Oct-2018 17:31:06	206.39	40.65
WINE	71.88	14-Oct-2018 17:27:14	14-Oct-2018 17:31:06	206.39	40.65




All depth are at tool zero.

Composite 1									
IBC SLG Composite									

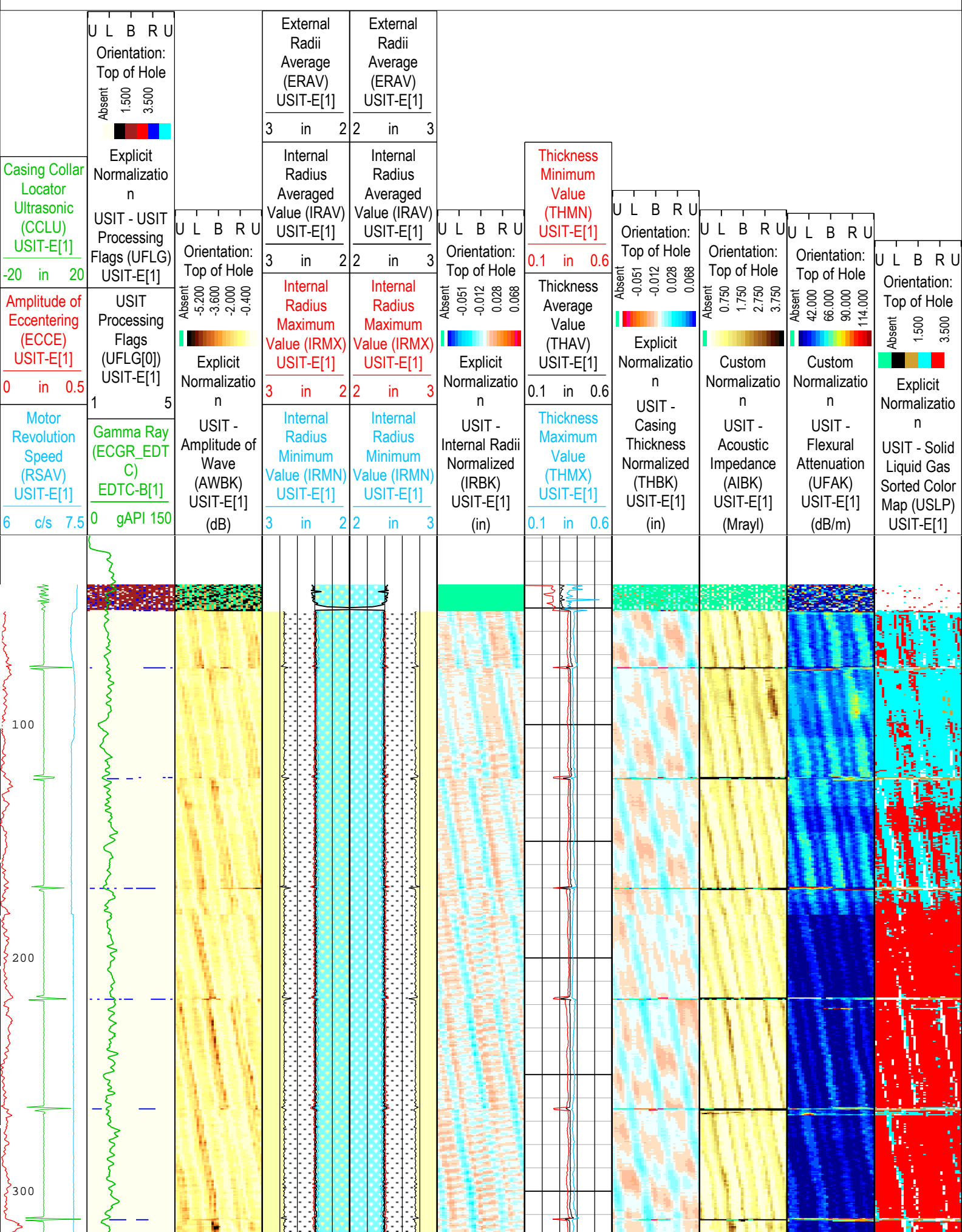
Composite Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[5]:Up	Up	2234.28 ft	6725.93 ft	14-Oct-2018 3:34:14 PM	14-Oct-2018 4:39:34 PM	ON	5.94 ft	Yes
One	Log[6]:Up	Up	94.88 ft	2434.17 ft	14-Oct-2018 4:44:06 PM	14-Oct-2018 5:19:36 PM	ON	6.44 ft	Yes
One	Log[7]:Up	Up	40.65 ft	206.39 ft	14-Oct-2018 5:27:09 PM	14-Oct-2018 5:31:06 PM	ON	6.44 ft	Yes
All depths are referenced to toolstring zero									
Log	Company:Crestone Peak Resources Operating LLC						Well:Sam #3G-25H-M166		
Composite 1:S012									

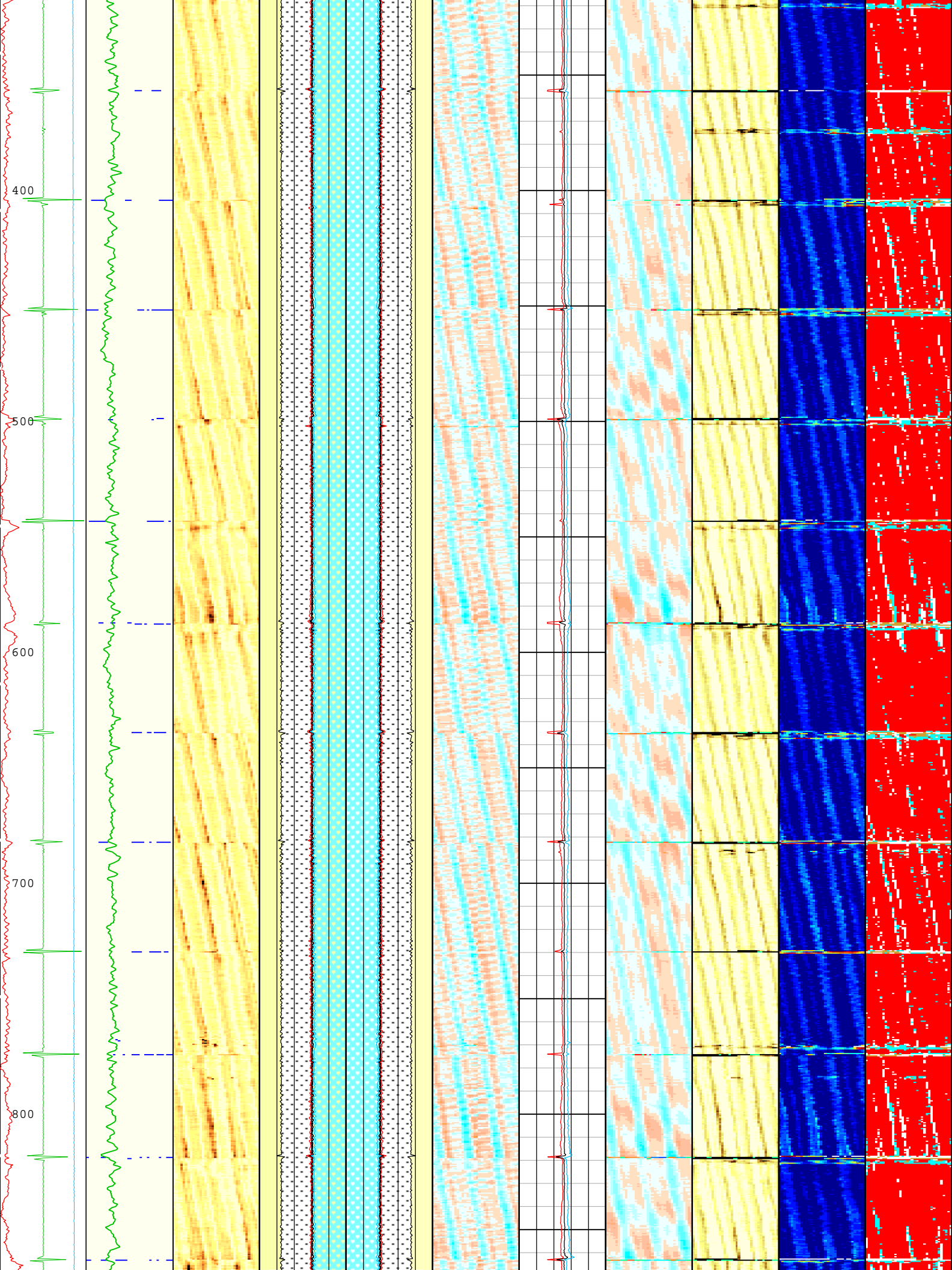
Description: USI IBC SLG Composite Format: Log (IBC SLG Composite) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 14-Oct-2018 22:19:42

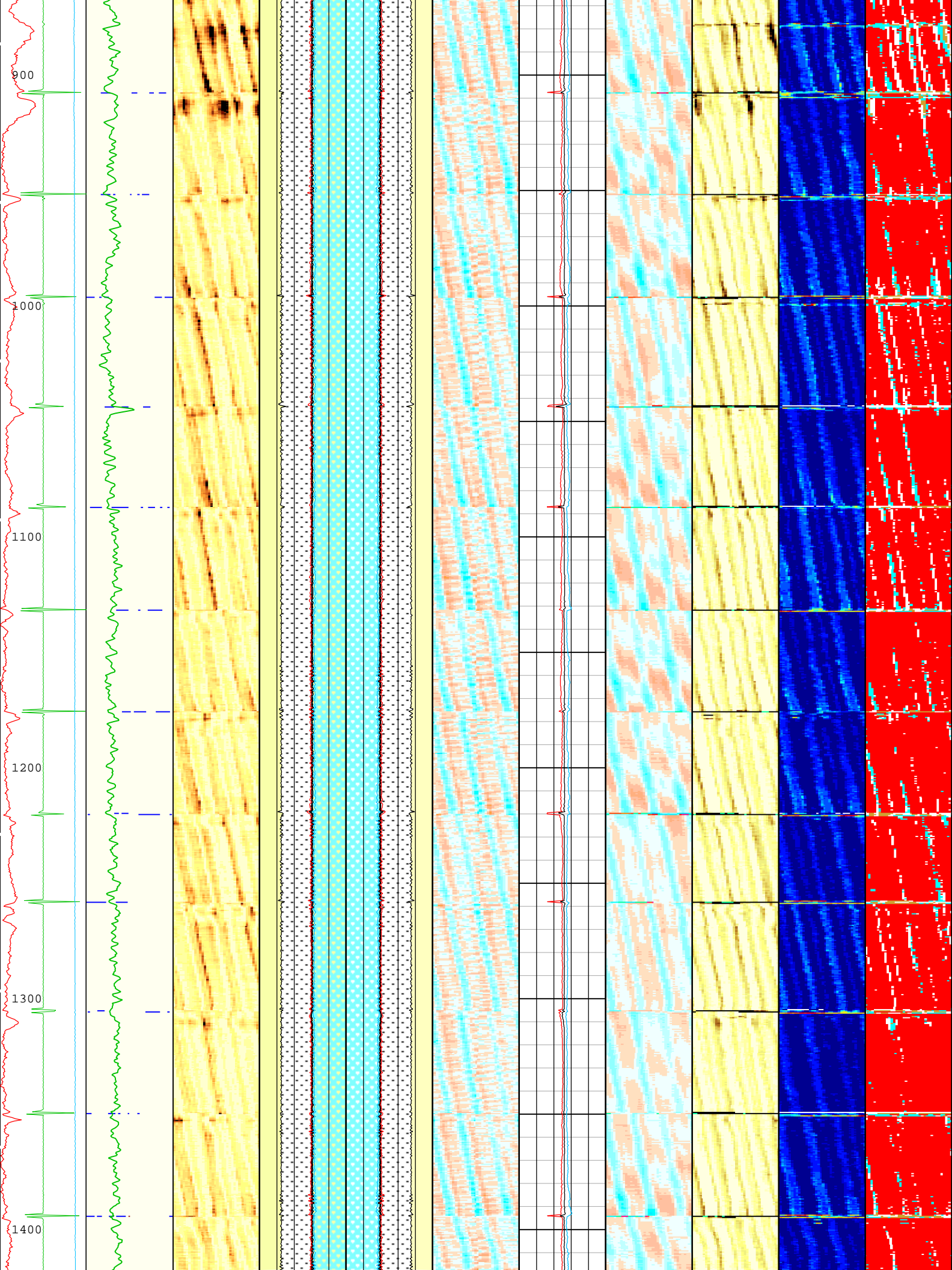
TIME_1900 - Time Marked every 60.00 (s)

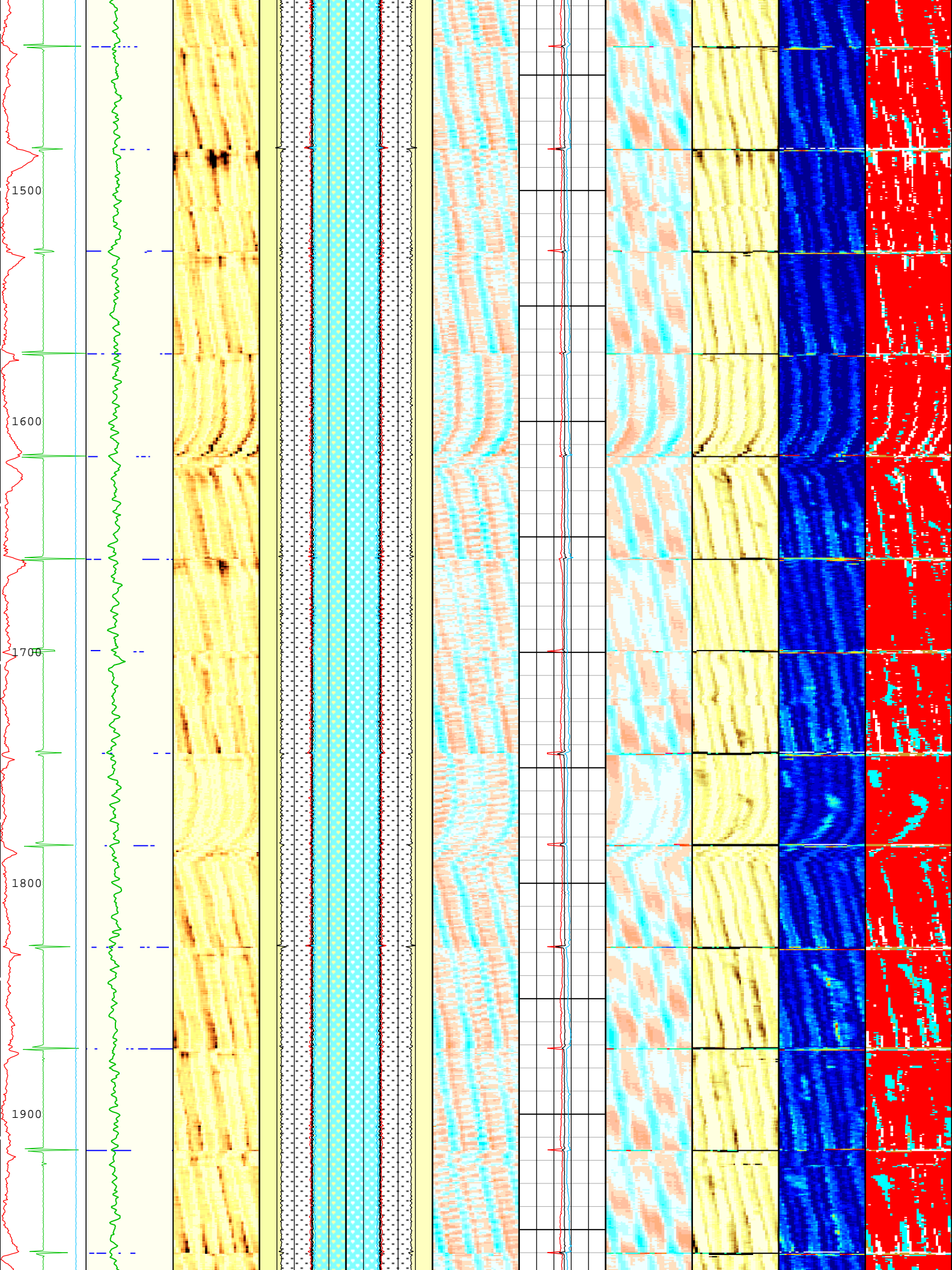
USIT Processing Flags (UFLG[0]) USIT-E[1]									
1 - UFLG 1 Value within [0.0 - 1.5] - :				 UTIM Error					
2 - UFLG 2 Value within [1.5 - 2.5] - :				 Pulse Origin Not Detected					
3 - UFLG 3 Value within [2.5 - 3.5] - :				 WINLEN Error					

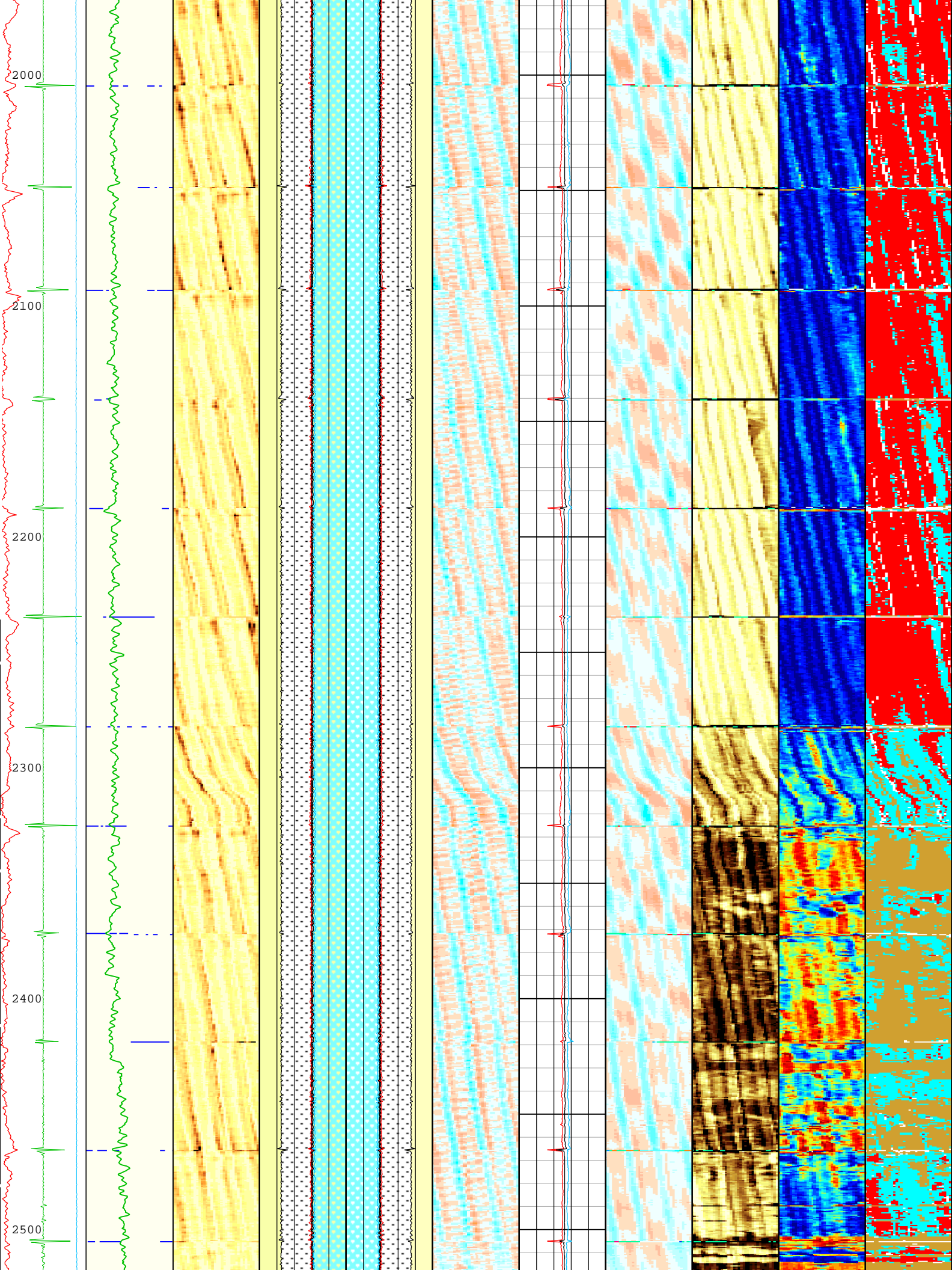
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - : Casing Thickness Error
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - : Loop Processing Error

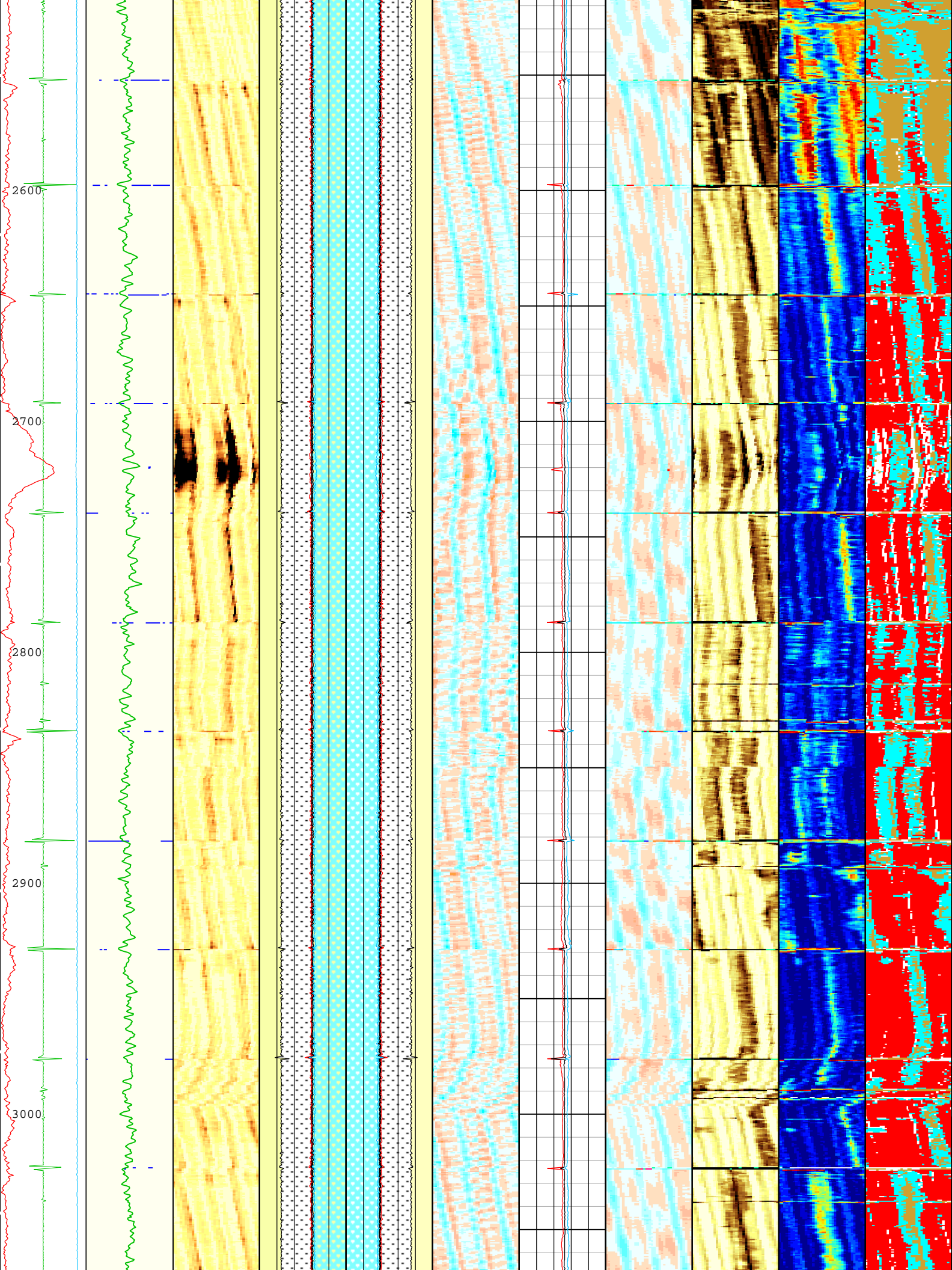


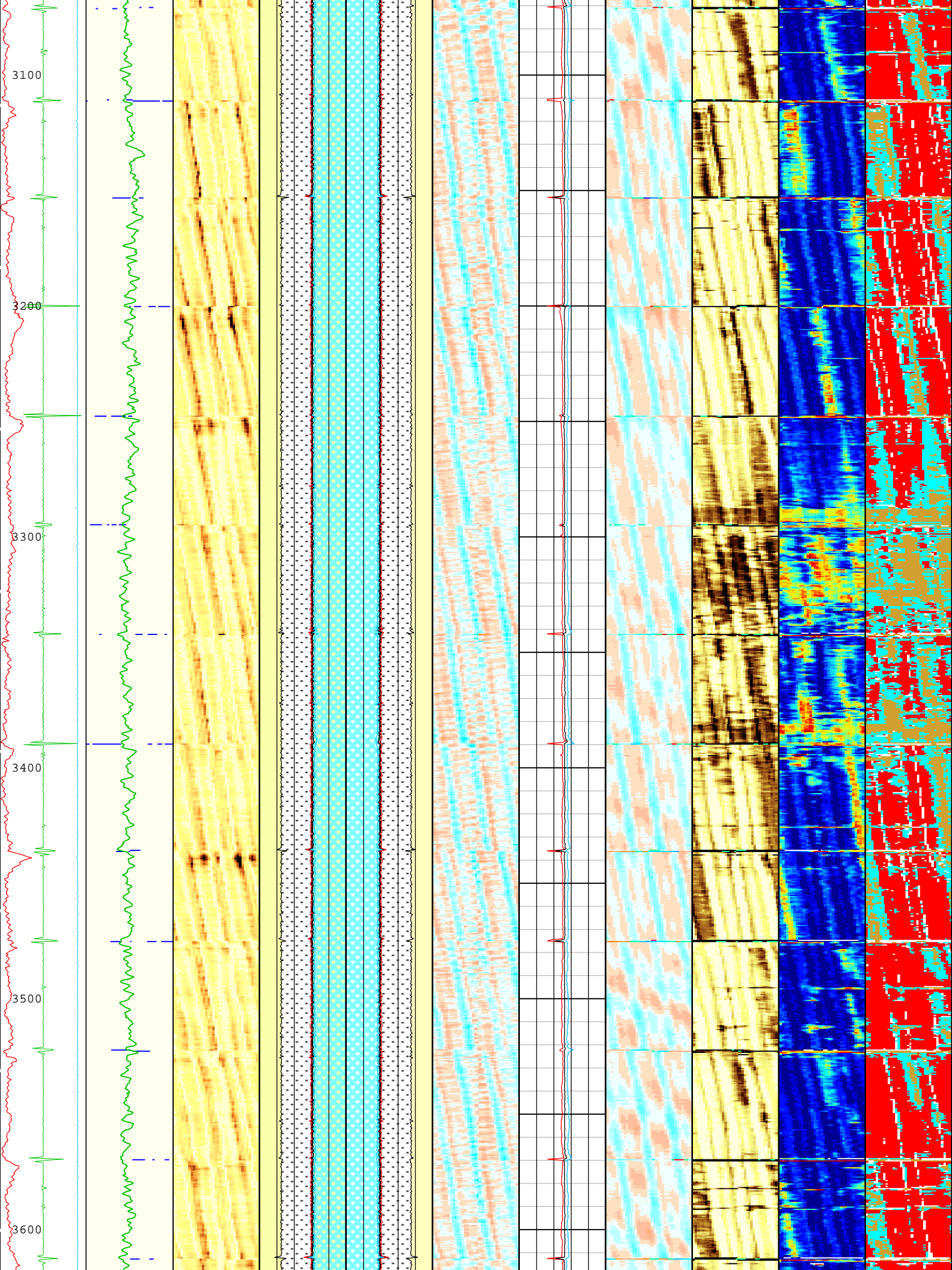


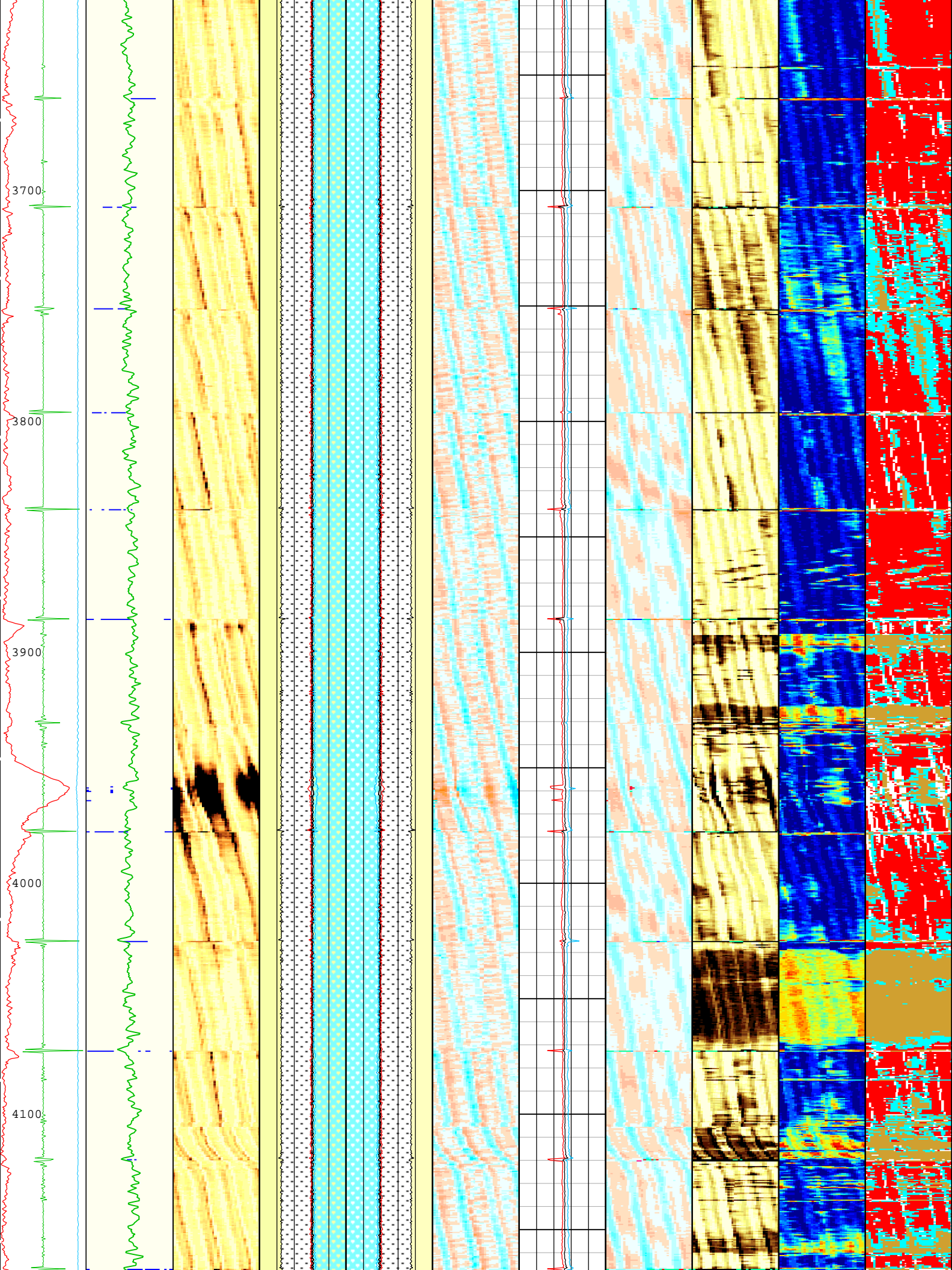


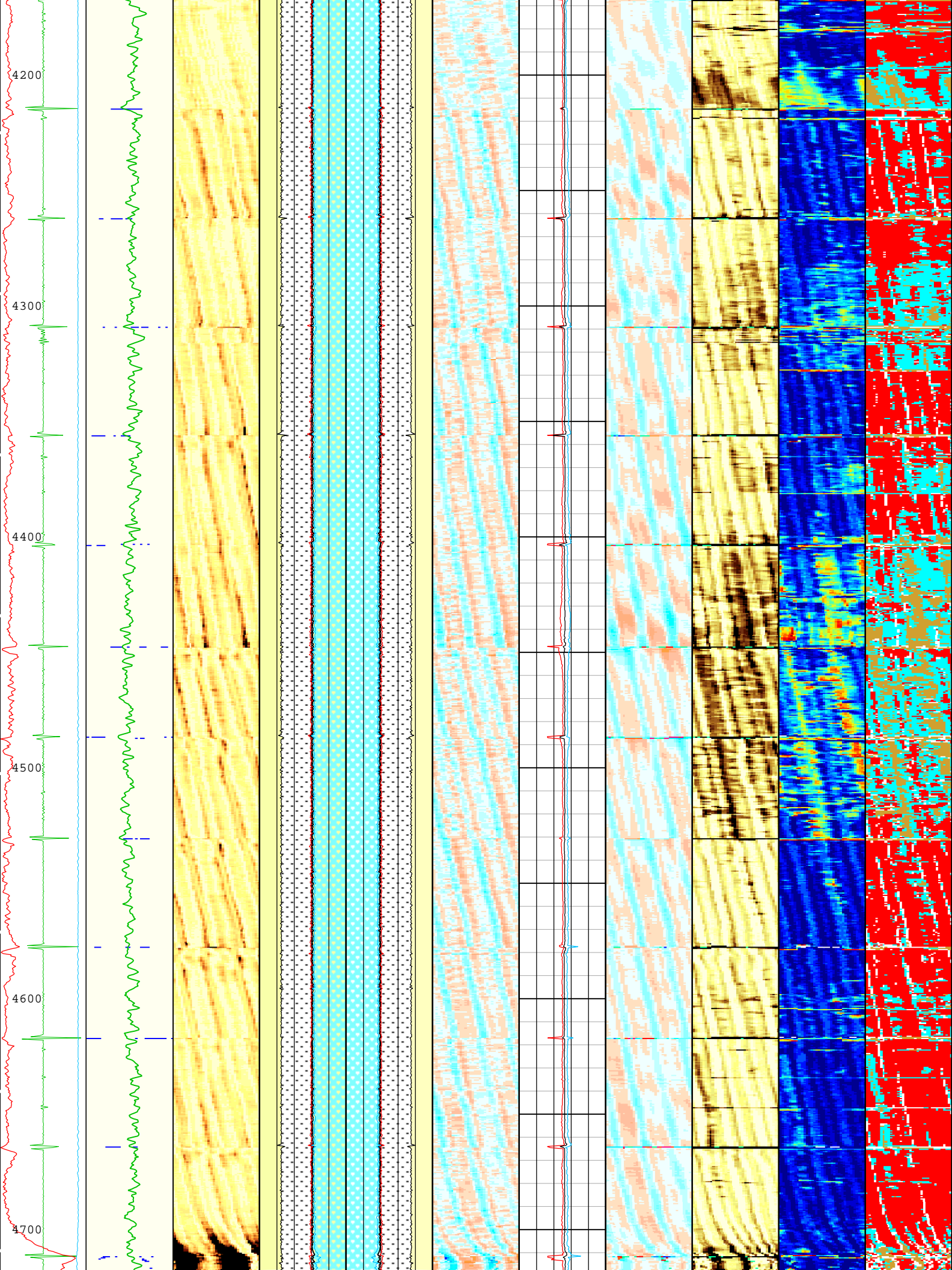


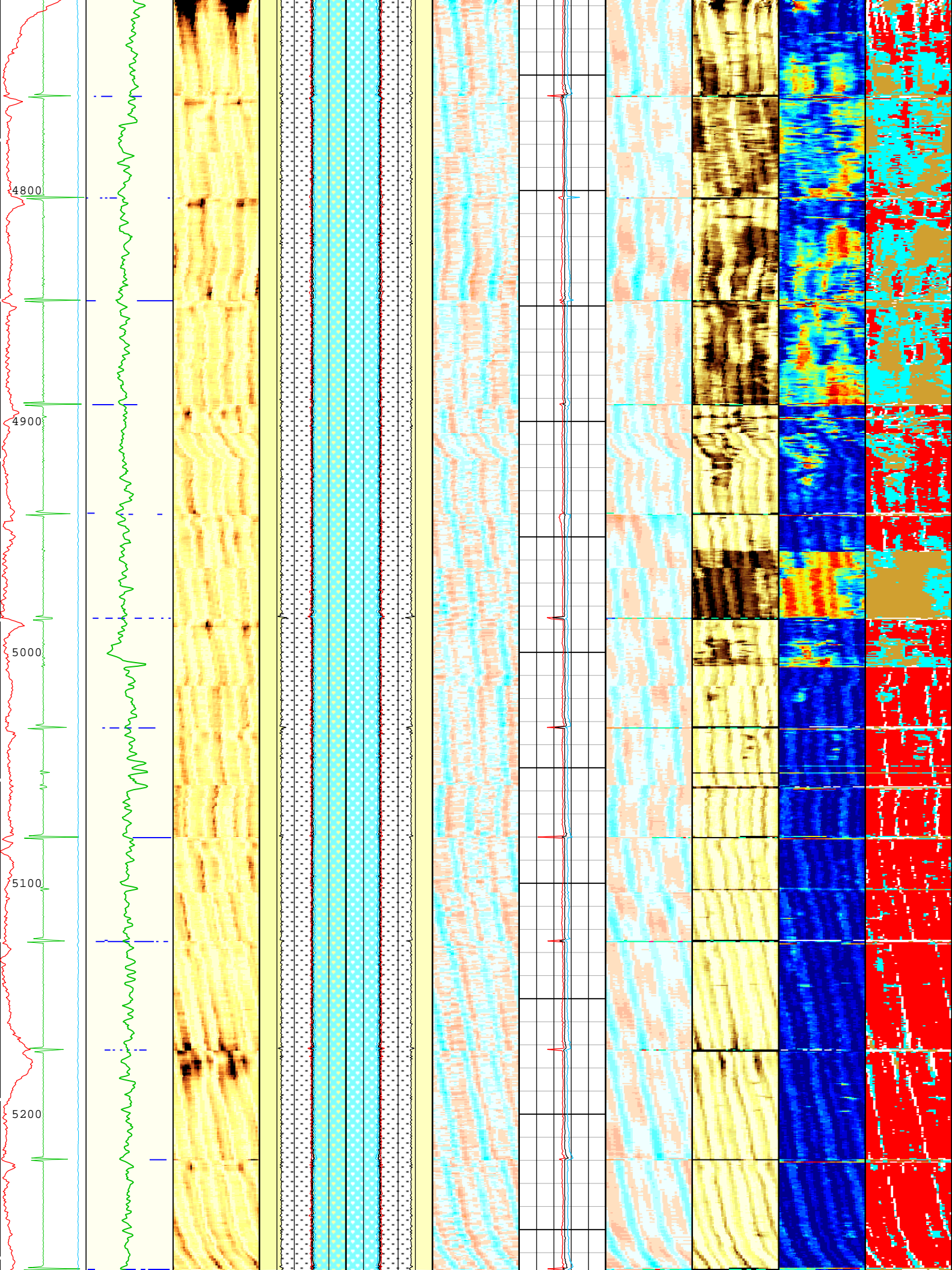


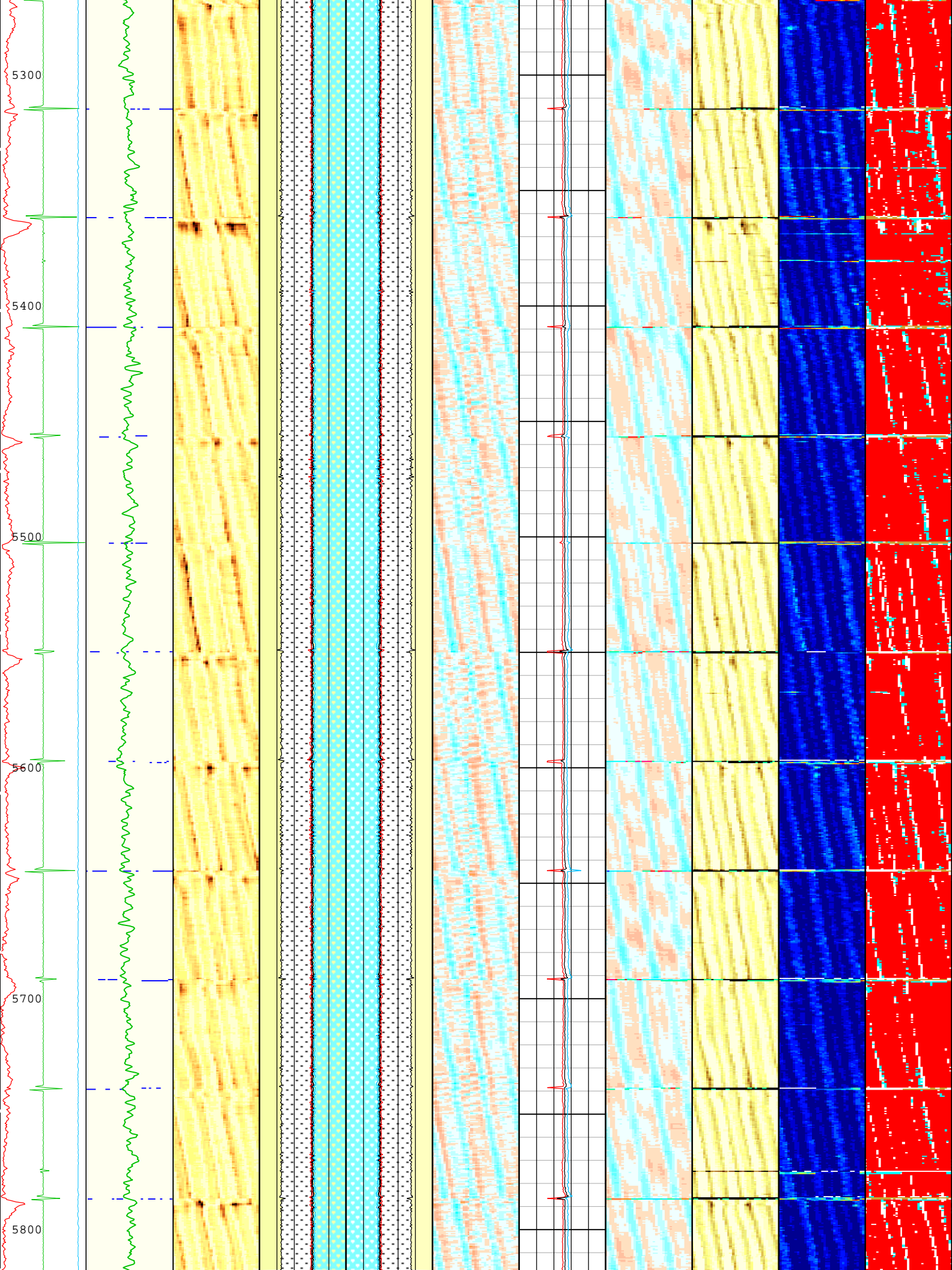


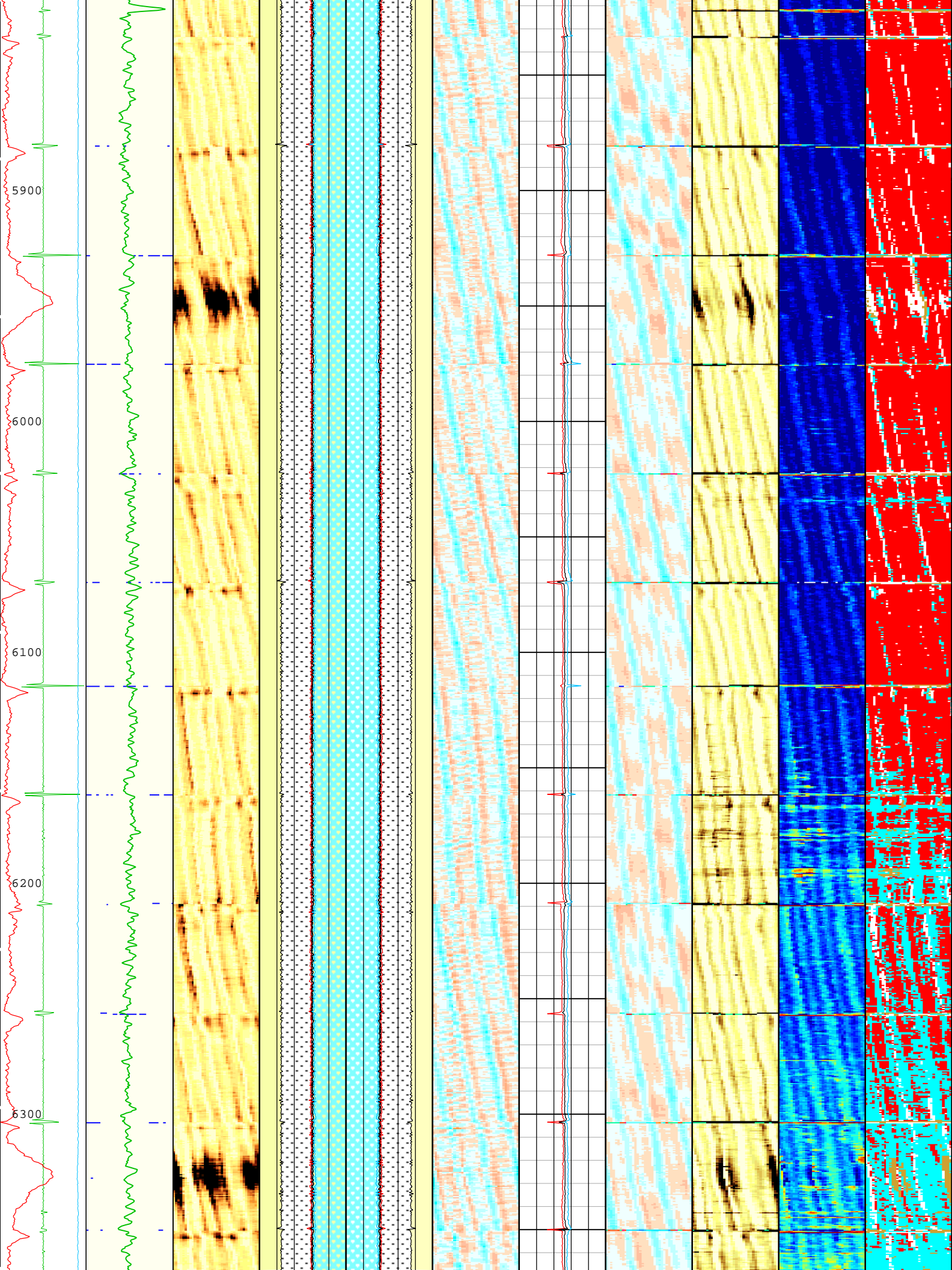


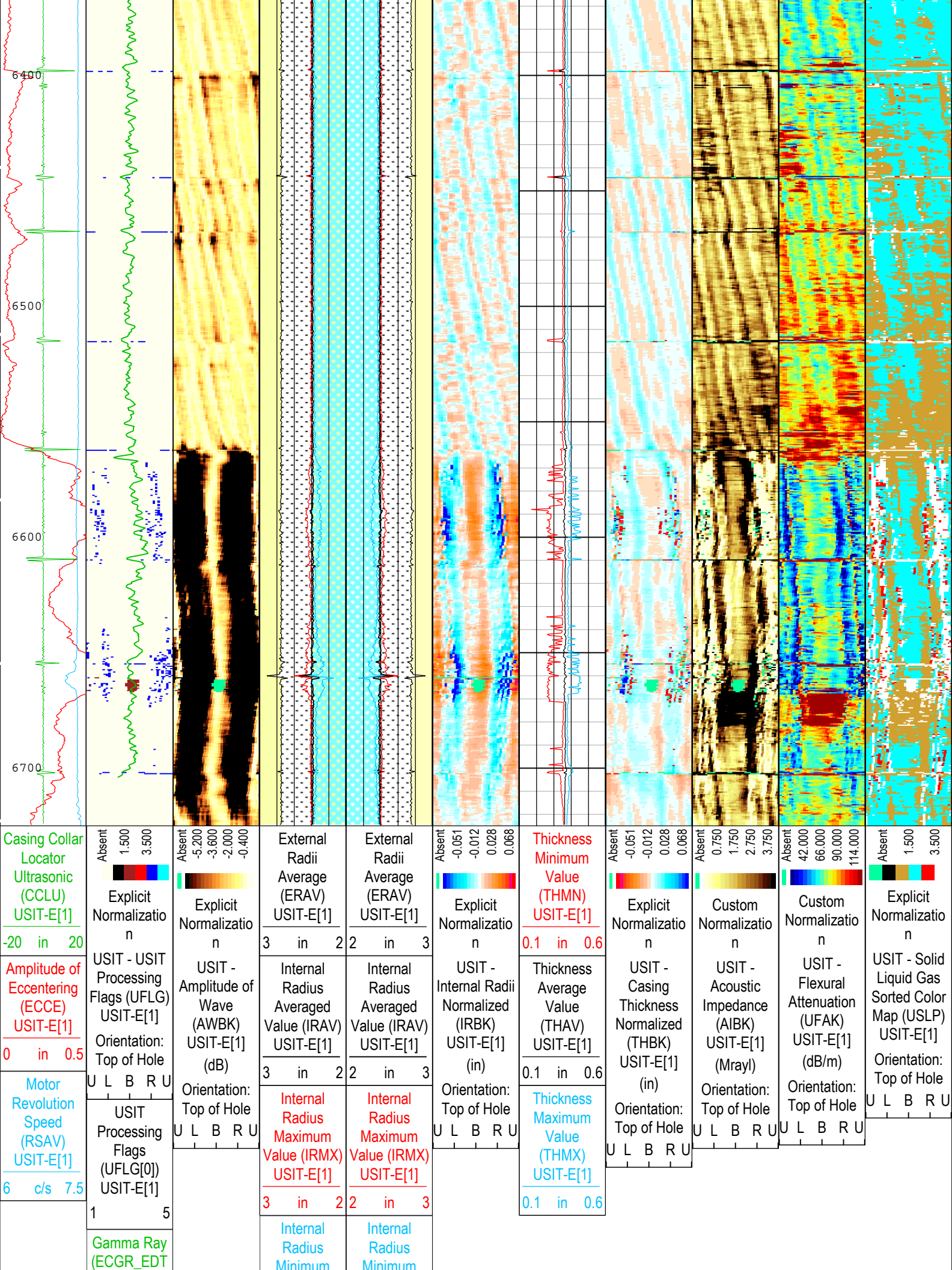

















C) EDTC-B[1]		Minimum Value (IRMN) USIT-E[1]	Minimum Value (IRMN) USIT-E[1]
0	gAPI 150	3 in 2	2 in 3
USIT Processing Flags (UFLG[0]) USIT-E[1]			
1 - UFLG 1 Value within [0.0 - 1.5] - :			UTIM Error
2 - UFLG 2 Value within [1.5 - 2.5] - :			Pulse Origin Not Detected
3 - UFLG 3 Value within [2.5 - 3.5] - :			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: 14-Oct-2018 22:19:42

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	11760	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	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	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	10.74	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	IBC_FRP_OFFSET	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	Inversion 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	1.23	
MUD_N_INV	IBC Inversion Mud Normalization Factor	USIT-E	1.27	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.75	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-10.05	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	2.2	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

OneDepth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	13.5	19	2357
BS	8.5	2357	6725

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	Time Zoned	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	
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	Time Zoned	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	177	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	Time Zoned	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

OneTime Zoned Parameters

Pass Log[5]:Up

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
AGMX	18	14-Oct-2018 15:34:14	14-Oct-2018 15:36:00	6725.87	6654.16
AGMX	48	14-Oct-2018 15:36:00	14-Oct-2018 16:39:34	6654.16	2344.64
EMXV	40	14-Oct-2018 15:34:14	14-Oct-2018 15:36:05	6725.87	6648.69
EMXV	60	14-Oct-2018 15:36:05	14-Oct-2018 15:36:21	6648.69	6630.06
EMXV	90	14-Oct-2018 15:36:21	14-Oct-2018 15:37:47	6630.06	6526.98
EMXV	50	14-Oct-2018 15:37:47	14-Oct-2018 15:37:56	6526.98	6516.9
EMXV	40	14-Oct-2018 15:37:56	14-Oct-2018 16:39:34	6516.9	2344.64
U-USIT_UFWB	137	14-Oct-2018 15:34:14	14-Oct-2018 16:04:10	6725.87	4697.38
U-USIT_UFWB	126.27	14-Oct-2018 16:04:10	14-Oct-2018 16:39:34	4697.38	2344.64
U-USIT_UNWB	106	14-Oct-2018 15:34:14	14-Oct-2018 16:04:13	6725.87	4694
U-USIT_UNWB	99.06	14-Oct-2018 16:04:13	14-Oct-2018 16:39:34	4694	2344.64
WINB	31.88	14-Oct-2018 15:34:14	14-Oct-2018 15:35:53	6725.87	6662.03
WINB	25.06	14-Oct-2018 15:35:53	14-Oct-2018 16:39:34	6662.03	2344.64
WINE	71.88	14-Oct-2018 15:34:14	14-Oct-2018 15:36:13	6725.87	6639.13
WINE	77.25	14-Oct-2018 15:36:13	14-Oct-2018 16:39:34	6639.13	2344.64

Pass Log[6]:Up

AGMX	48	14-Oct-2018 16:44:58	14-Oct-2018 17:19:36	2433.87	182.54
EMXV	40	14-Oct-2018 16:44:58	14-Oct-2018 17:19:36	2433.87	182.54
U-USIT_UFWB	137	14-Oct-2018 16:44:58	14-Oct-2018 17:19:36	2433.87	182.54
U-USIT_UNWB	106	14-Oct-2018 16:44:58	14-Oct-2018 17:19:36	2433.87	182.54
WINB	31.88	14-Oct-2018 16:44:58	14-Oct-2018 17:19:36	2433.87	182.54
WINE	71.88	14-Oct-2018 16:44:58	14-Oct-2018 17:19:36	2433.87	182.54

Pass Log[7]:Up

Pass Log[7]:Up					
AGMX	48	14-Oct-2018 17:27:14	14-Oct-2018 17:31:06	206.39	40.65
EMXV	40	14-Oct-2018 17:27:14	14-Oct-2018 17:31:06	206.39	40.65
U-USIT_UFWB	137	14-Oct-2018 17:27:14	14-Oct-2018 17:31:06	206.39	40.65
U-USIT_UNWB	106	14-Oct-2018 17:27:14	14-Oct-2018 17:31:06	206.39	40.65
WINB	31.88	14-Oct-2018 17:27:14	14-Oct-2018 17:31:06	206.39	40.65
WINE	71.88	14-Oct-2018 17:27:14	14-Oct-2018 17:31:06	206.39	40.65
All depth are at tool zero.					

Composite 1

IBC Goodwin Compressed

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[5]:Up	Up	2234.28 ft	6725.93 ft	14-Oct-2018 3:34:14 PM	14-Oct-2018 4:39:34 PM	ON	5.94 ft	Yes
One	Log[6]:Up	Up	94.88 ft	2434.17 ft	14-Oct-2018 4:44:06 PM	14-Oct-2018 5:19:36 PM	ON	6.44 ft	Yes
One	Log[7]:Up	Up	40.65 ft	206.39 ft	14-Oct-2018 5:27:09 PM	14-Oct-2018 5:31:06 PM	ON	6.44 ft	Yes

All depths are referenced to toolstring zero

Log

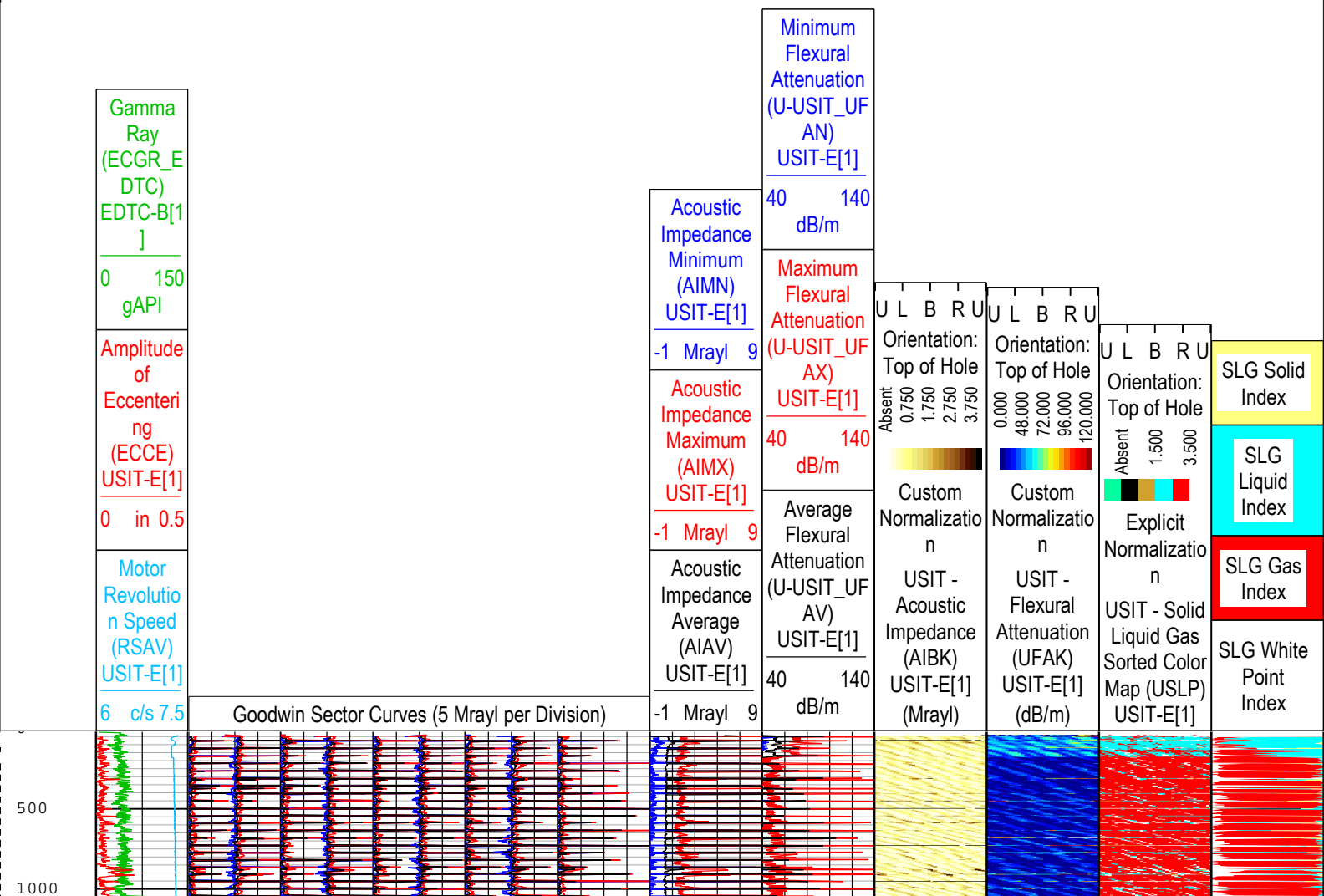
Company:Crestone Peak Resources Operating LLC

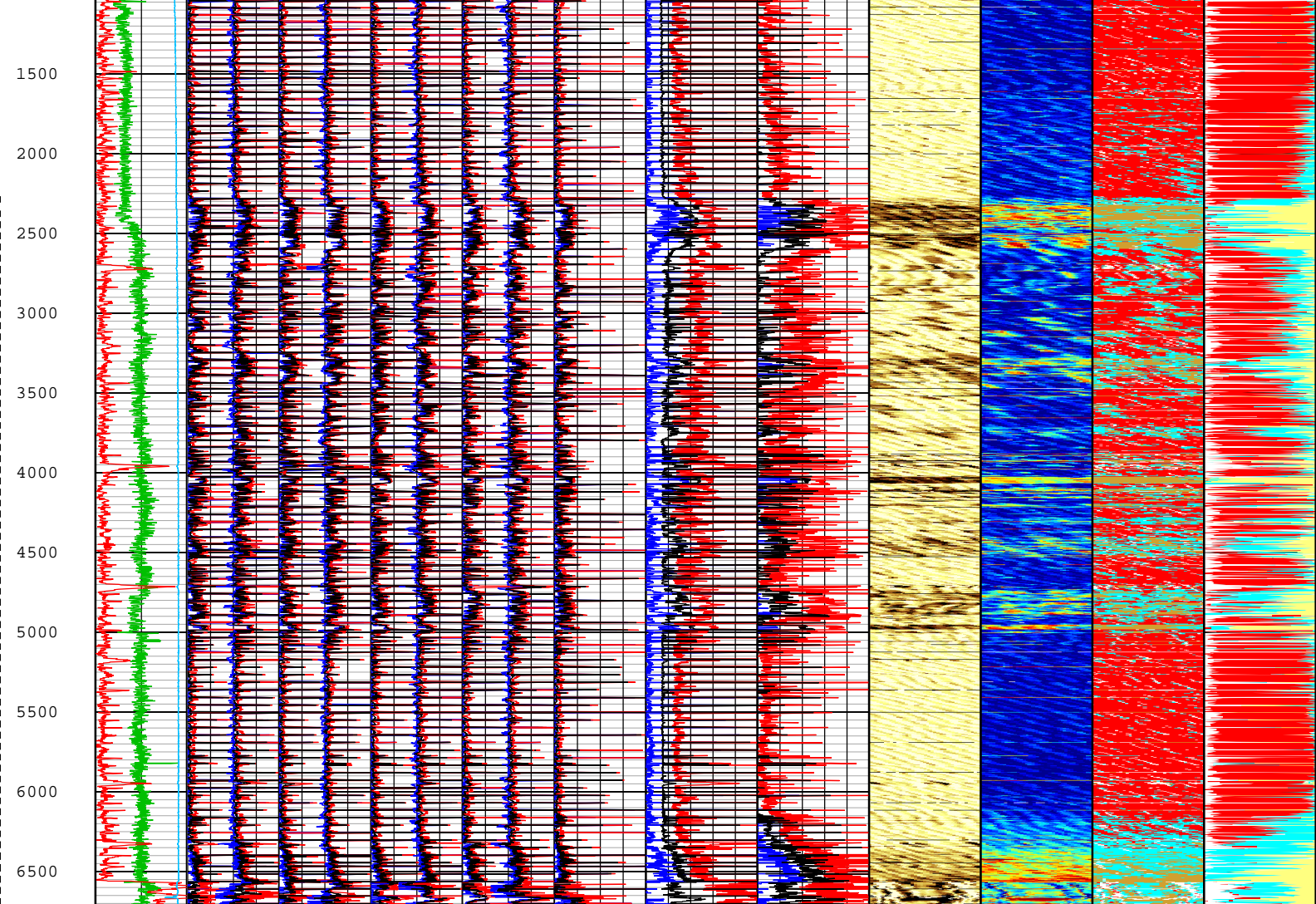
Well:Sam #3G-25H-M166

Composite 1:S012

Description: USI Goodwin Format: Log (IBC Goodwin) Index Scale: 0.1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 14-Oct-2018 22:19:59

TIME_1900 - Time Marked every 60.00 (s)





Gamma Ray (ECGR_E DTC) EDTC-B[1]
0 150 gAPI

Amplitude of Eccentering (ECCE) USIT-E[1]
0 in 0.5

Motor Revolution Speed (RSAV) USIT-E[1]
6 c/s 7.5

Goodwin Sector Curves (5 Mrayl per Division)

Acoustic Impedance Minimum (AIMN) USIT-E[1]
-1 Mrayl 9

Acoustic Impedance Maximum (AIMX) USIT-E[1]
-1 Mrayl 9

Acoustic Impedance Average (AIAV) USIT-E[1]
-1 Mrayl 9

Minimum Flexural Attenuation (U-USIT_UF AN) USIT-E[1]
40 140 dB/m

Maximum Flexural Attenuation (U-USIT_UF AX) USIT-E[1]
40 140 dB/m

Average Flexural Attenuation (U-USIT_UF AV) USIT-E[1]
40 140 dB/m

Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E[1] (Mrayl)
Orientation: Top of Hole
U L B R U

Custom Normalization
USIT - Flexural Attenuation (UFAK) USIT-E[1] (dB/m)
Orientation: Top of Hole
U L B R U

Explicit Normalization
USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E[1]
Orientation: Top of Hole
U L B R U

SLG Solid Index

SLG Liquid Index

SLG Gas Index

SLG White Point Index

TIME_1900 - Time Marked every 60.00 (s)

IBC SLG

Software Version

Acquisition System

Maxwell 2018 SP2

Version

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	1983.17 ft	2500.20 ft	14-Oct-2018 3:10:43 PM	14-Oct-2018 3:18:41 PM	ON	0.00 ft	Yes

All depths are referenced to toolstring zero

Log

Company: Crestone Peak Resources Operating LLC Well: Sam #3G-25H-M166

One: Log[3]:Up:S012

Description: USI IBC SLG Format: Log (IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 14-Oct-2018 22:20:07

TIME_1900 - Time Marked every 60.00 (s)

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

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

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] - :

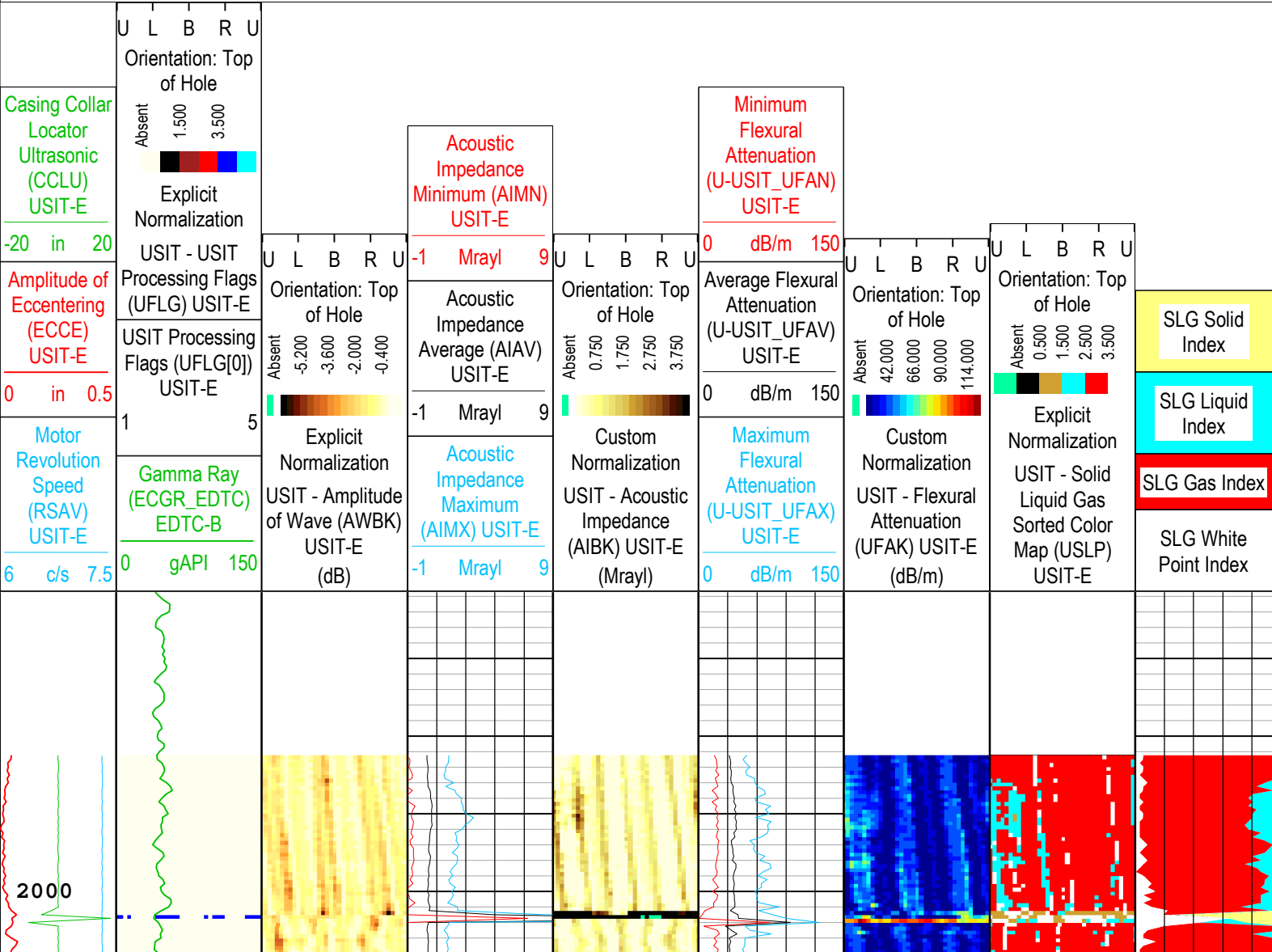
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :
- UTIM Error

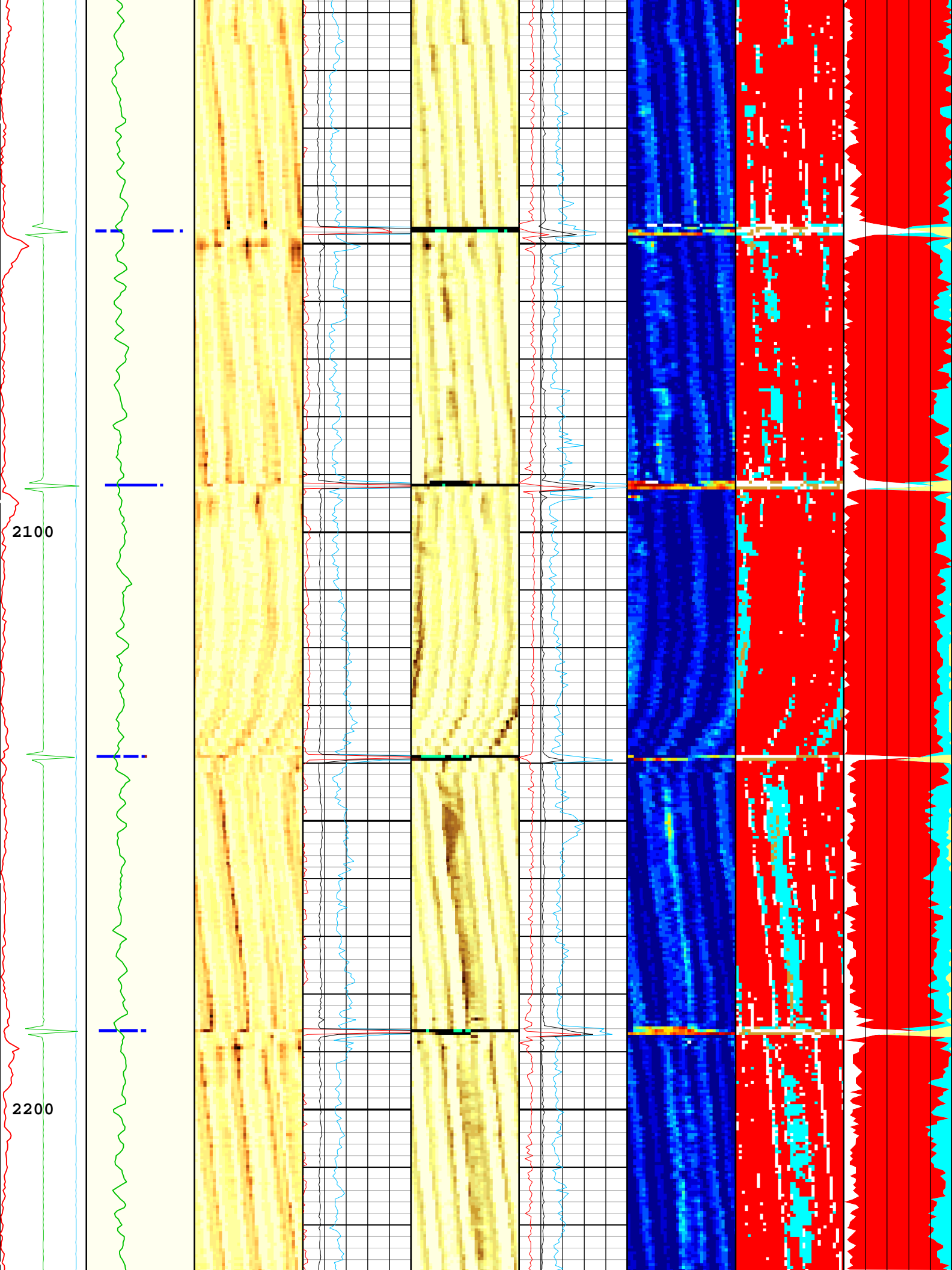
Pulse Origin Not Detected

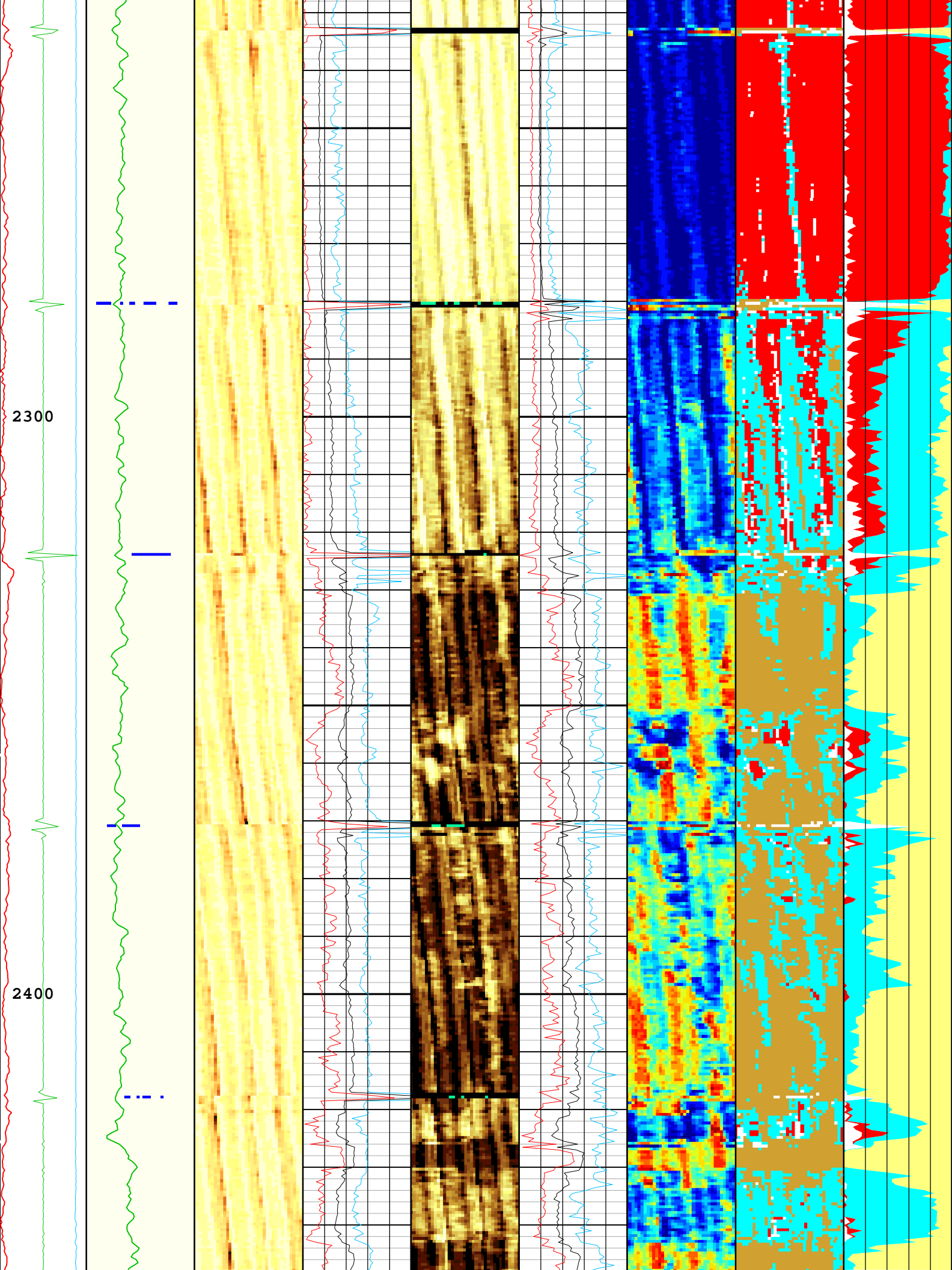
WINLEN Error

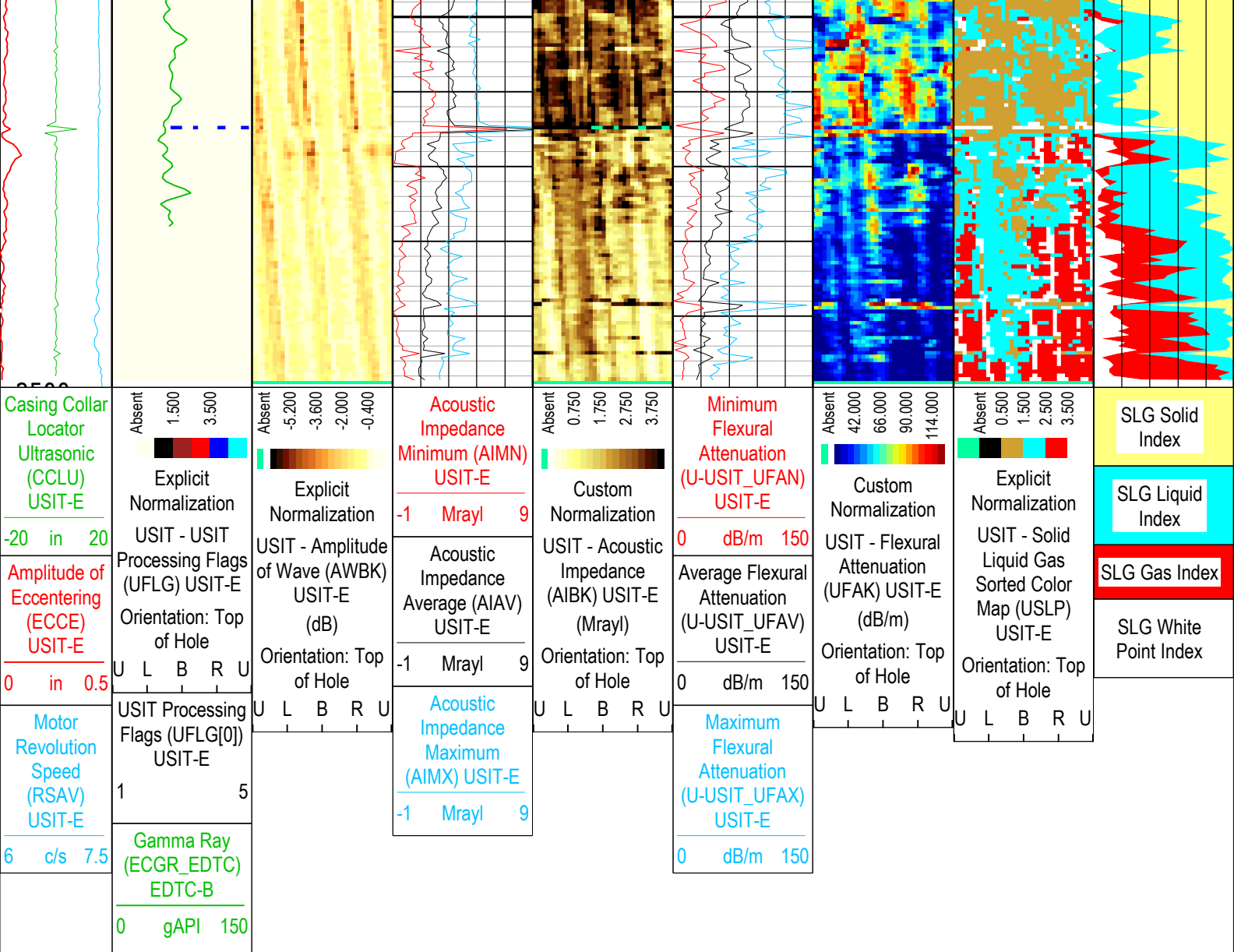
Casing Thickness Error

Loop Processing Error









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: 14-Oct-2018 22:20:07

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	11760	ft
CDEN	Cement Density	USIT-E	12.5	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal

DMTY(U-USIT_CENT)	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	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	10.74	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	IBC_FRP_OFFSET	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	Inversion 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	1.23	
MUD_N_INV	IBC Inversion Mud Normalization Factor	USIT-E	1.27	
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	1.75	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-10.05	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	2.2	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters

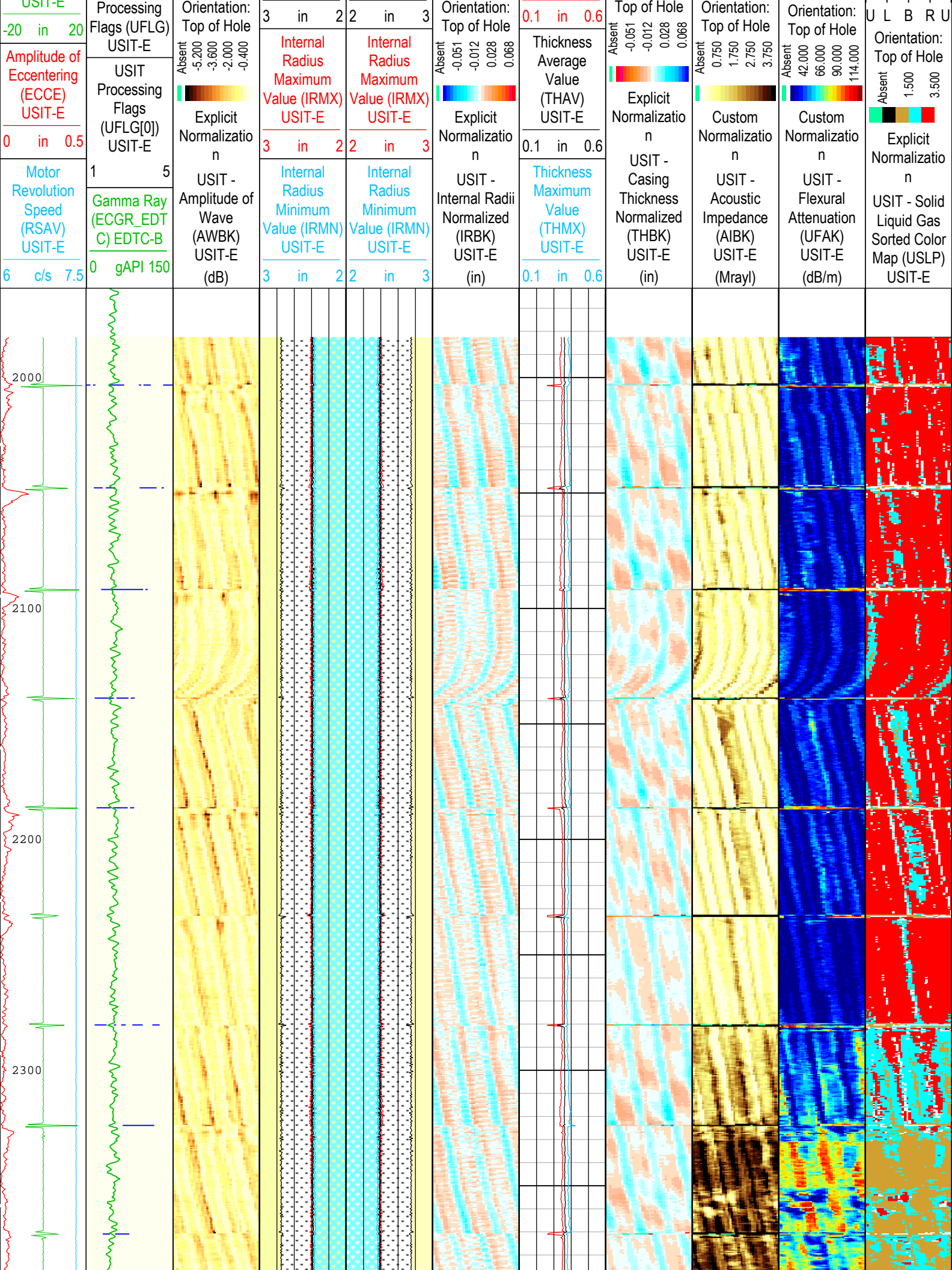
Parameter	Value	Start (ft)	Stop (ft)
BS	13.5	1961.5	2357
BS	8.5	2357	2499.5

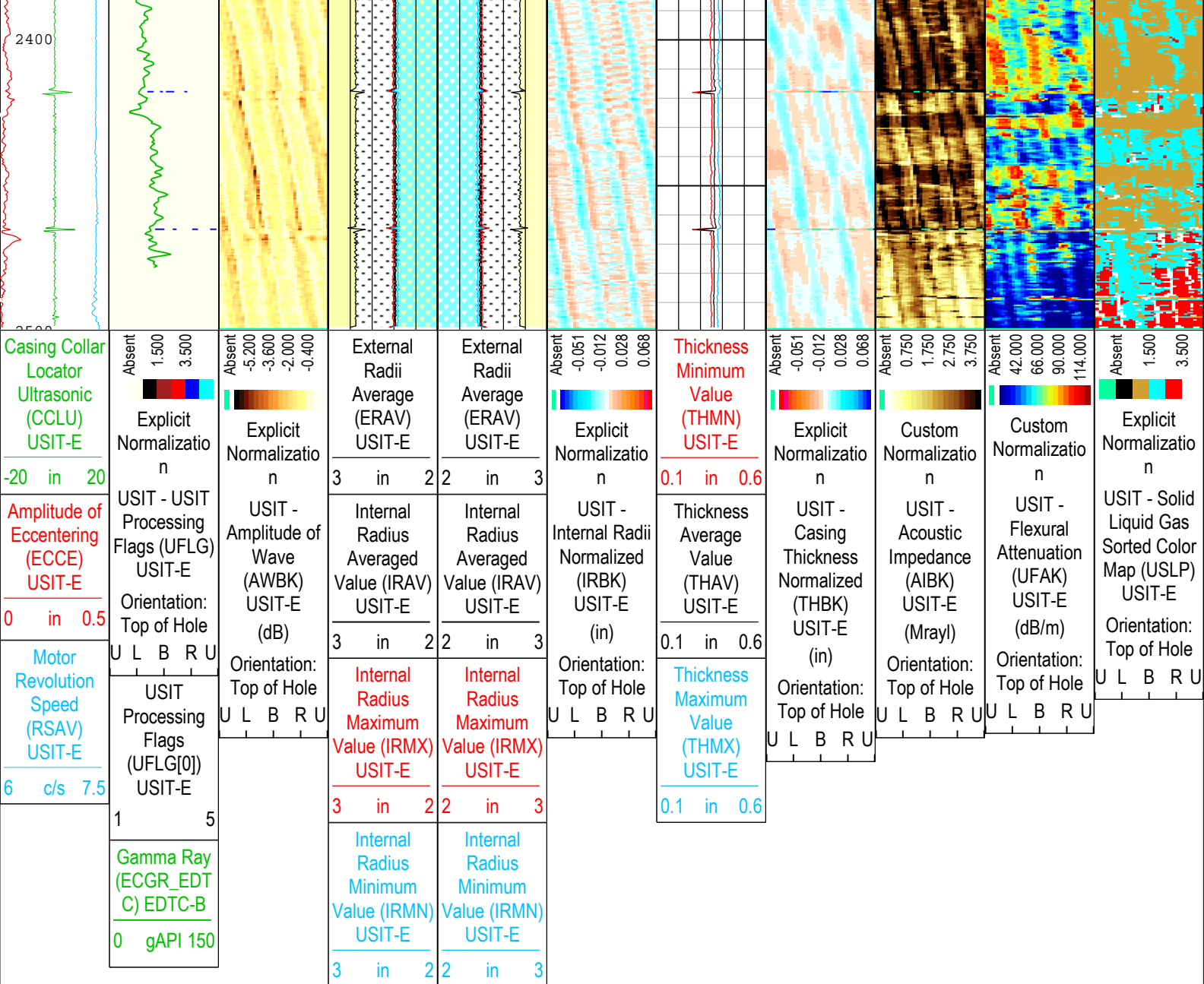
All depth are actual.

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	18	dB





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

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: 14-Oct-2018 22:20:13

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	11760	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	Light Cement	

USIT(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	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	10.74	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	IBC_FRP_OFFSET	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	Inversion 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	1.23	
MUD_N_INV	IBC Inversion Mud Normalization Factor	USIT-E	1.27	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.75	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-10.05	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	2.2	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters			
Parameter	Value	Start (ft)	Stop (ft)
BS	13.5	1961.5	2357
BS	8.5	2357	2499.5
All depth are actual.			

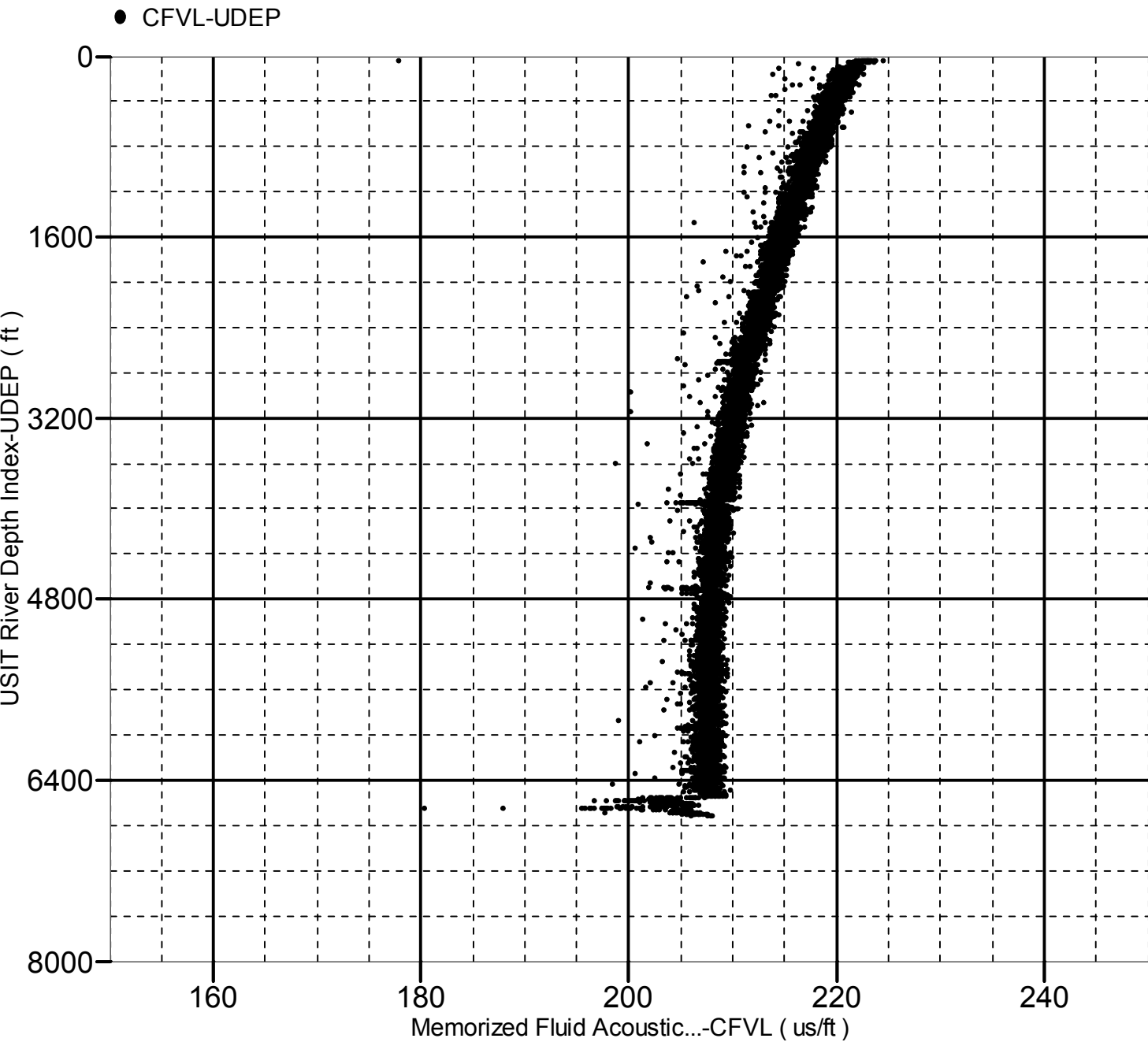
Tool Control Parameters	
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One: Parameters				
Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	18	dB
EMXV	EMEX Voltage	USIT-E	40	V
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
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

Fluid Acoustic Slowness vs Depth

2D Cross Plot

Index Range: From 40.00 to 6725.00 ft



XYZ

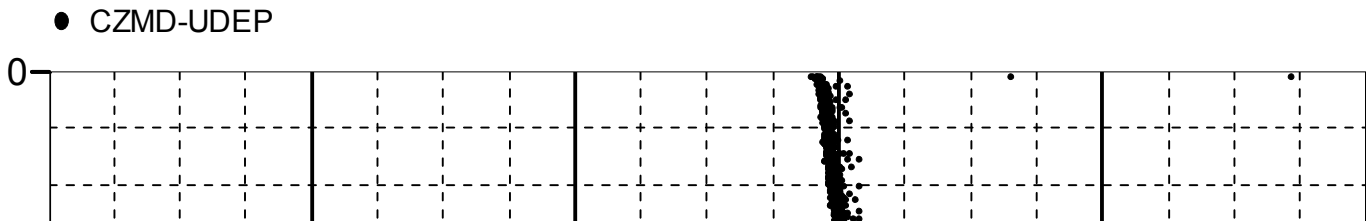
Company:Crestone Peak Resources Operating LLC Well:Sam #3G-25H-M166

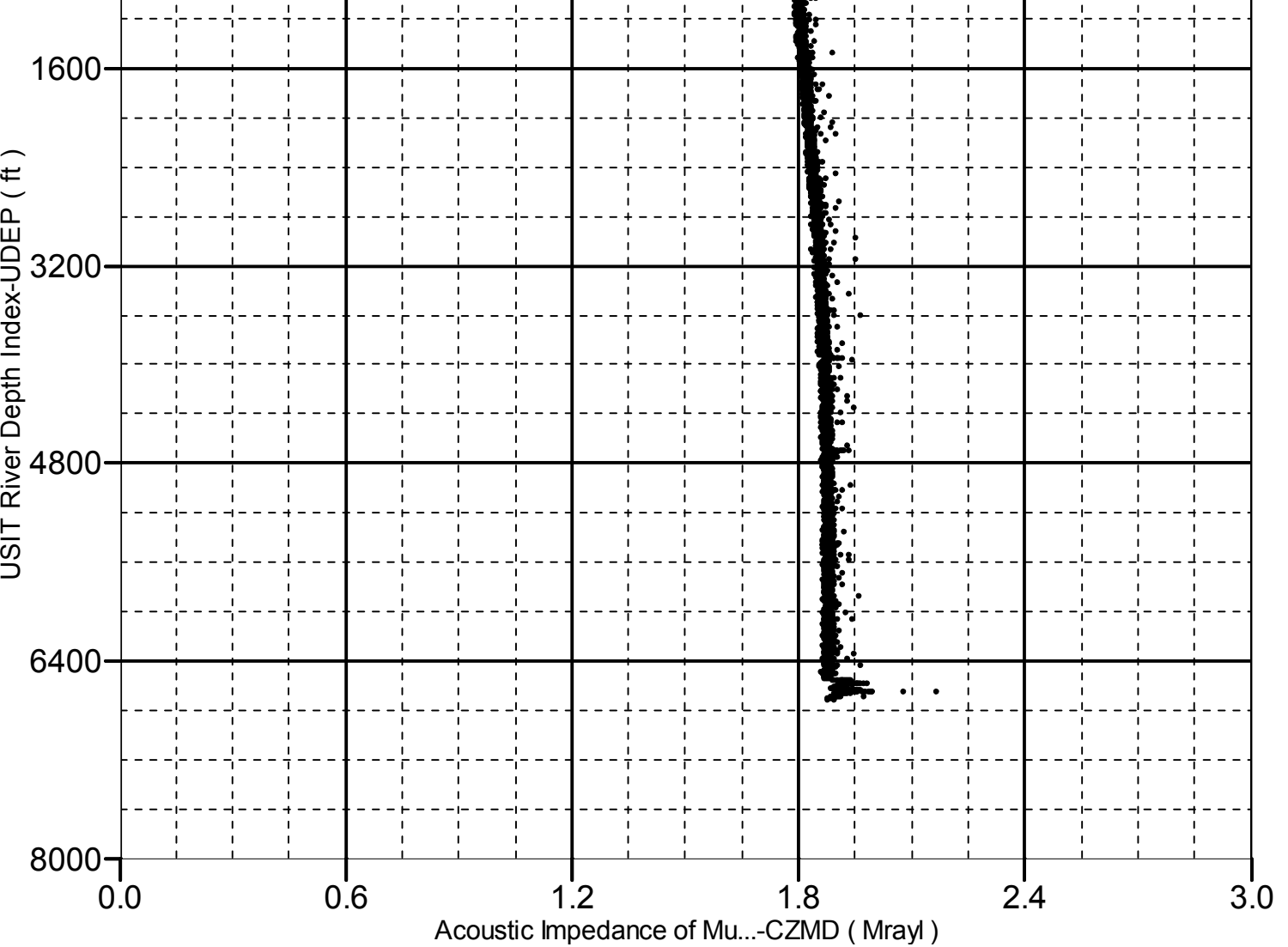
Composite 1:S012

Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 40.00 to 6725.00 ft





Company: Crestone Peak Resources Operating LLC

Schlumberger

Well: Sam #3G-25H-M166

Field: Wattenberg

County: Weld

State: Colorado

Isolation Scanner

Cement Evaluation

