

Company: CRESTONE PEAK RESOURCES OPERATING LLC

Well: HINGLEY 11-18H-A167

Field: WATTENBERG

County: WELD State: COLORADO

ISOLATION SCANNER
CEMENT EVALUATION
GAMMA RAY - COLLAR LOCATOR LOG

ISOLATION SCANNER

CEMENT EVALUATION

GAMMA RAY - COLLAR LOCATOR LOG

County:	WELD
Field:	WATTENBERG
Location:	SEC. 18. T1N R67W
Well:	HINGLEY 11-18H-A167
Company:	CRESTONE PEAK RESOURCES OPERATING LLC

Location:			
SEC. 18. T1N R67W NENE 514 FNL 537 FEL Latitude: 40.057006 / Longitude: -104.925886	Elev.: K.B. 5080.00 ft G.L. 5057.00 ft D.F. 5080.00 ft		
Permanent Datum:	Ground Level 5057.00 f		
Log Measured From:	Kelly Bushing 23.00 ft		
Drilling Measured From:	Kelly Bushing above Perm.Datum		
API Serial No.	Section: 18	Township: 1N	Range: 67W
05-123-47164-0000			

Logging Date	16-Nov-2019
Run Number	ONE
Depth Driller	12432.00 ft
Schlumberger Depth	7302.00 ft
Bottom Log Interval	7302.00 ft
Top Log Interval	77.00 ft
Casing Fluid Type	Water
Salinity	
Density	9.5 lbm/gal
Fluid Level	8.00 ft
BIT/CASING/TUBING STRING	
Bit Size	8.75 in
From	2595.00 ft
To	12432.00 ft
Casing/Tubing Size	5.5 in
Weight	20 lbm/ft
Grade	P110
From	0.00 ft
To	12415.00 ft
Max Recorded Temperatures	197.18 degF
Logger on Bottom	16-Nov-2019
Unit Number	2216
Recorded By	Beatriz Guaita
Witnessed By	Garet Wood

Disclaimer

THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

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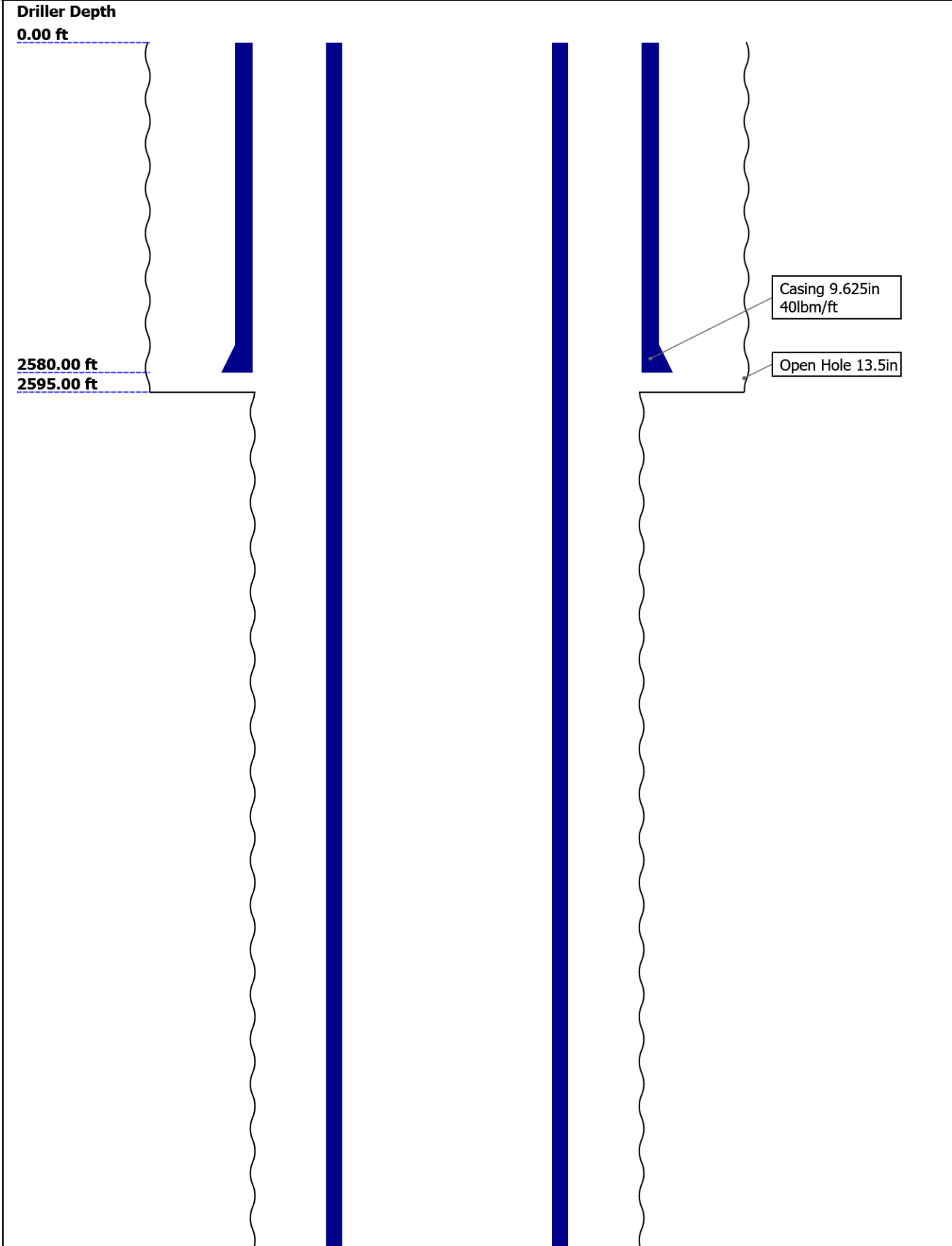
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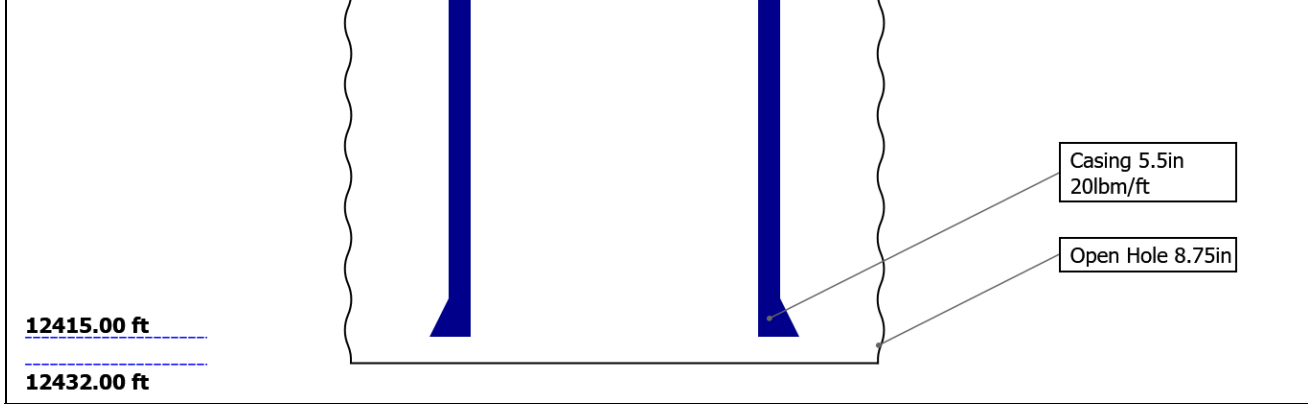
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Well Sketch



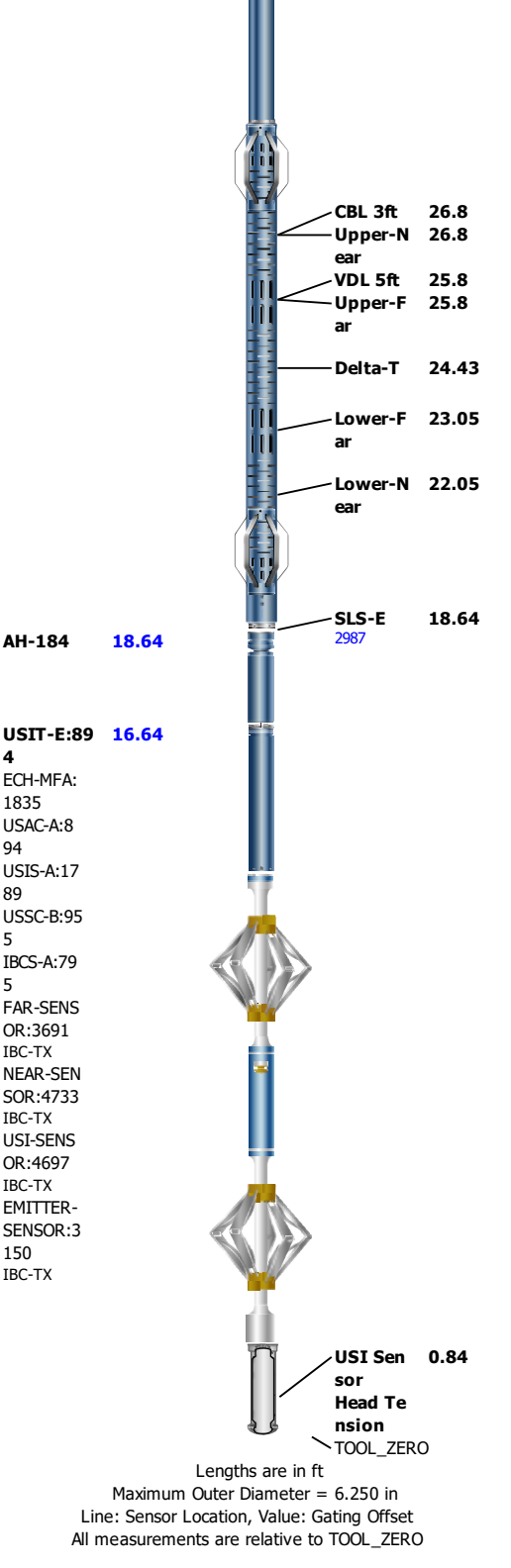


Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	13.5	8.75				
Top Driller (ft)	0	2595				
Top Logger (ft)	0	2595				
Bottom Driller (ft)	2595	12432				
Bottom Logger (ft)	2595	12432				
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)	2580	12415				
Bottom Logger (ft)	2580	12415				

Remarks and Equipment Summary

ONE: Toolstring			ONE: Remarks		
Equip name Length LEH-QT 49.27 LEH-QT EDTC-B:8 45.78 324 EDTH-B:81 01 EDTG-A:7 7301 EDTC-B:83 24 DSLT-H:8 39.28 154 ECH-KH:8 401 DSLC-H:81 54 SLS-E:122 9		MP name Offset CTEM 42.28 ACCZ 0.00 HV 0.00 Gamma 40.41 Ray TelStatu 39.28 s	Thank you for choosing Schlumberger!		
			Tool string run as per tool sketch and client logging program.		
			All passes run under 0 PSI.		
			Toolstring run with 4 5" gemcos, in-lines with small hole kit and booster kit for centralization.		
			Logging Resolution: 10 deg 6 in.		
			Annular Fluid: 10.5 ppg OBM Lead Cement: 12.5 ppg		




Depth Summary

ONE			
Depth Measuring Device			
Type	IDW-B		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Calibration Cable Type			
Wheel Correction 1	0		
Wheel Correction 2	0		

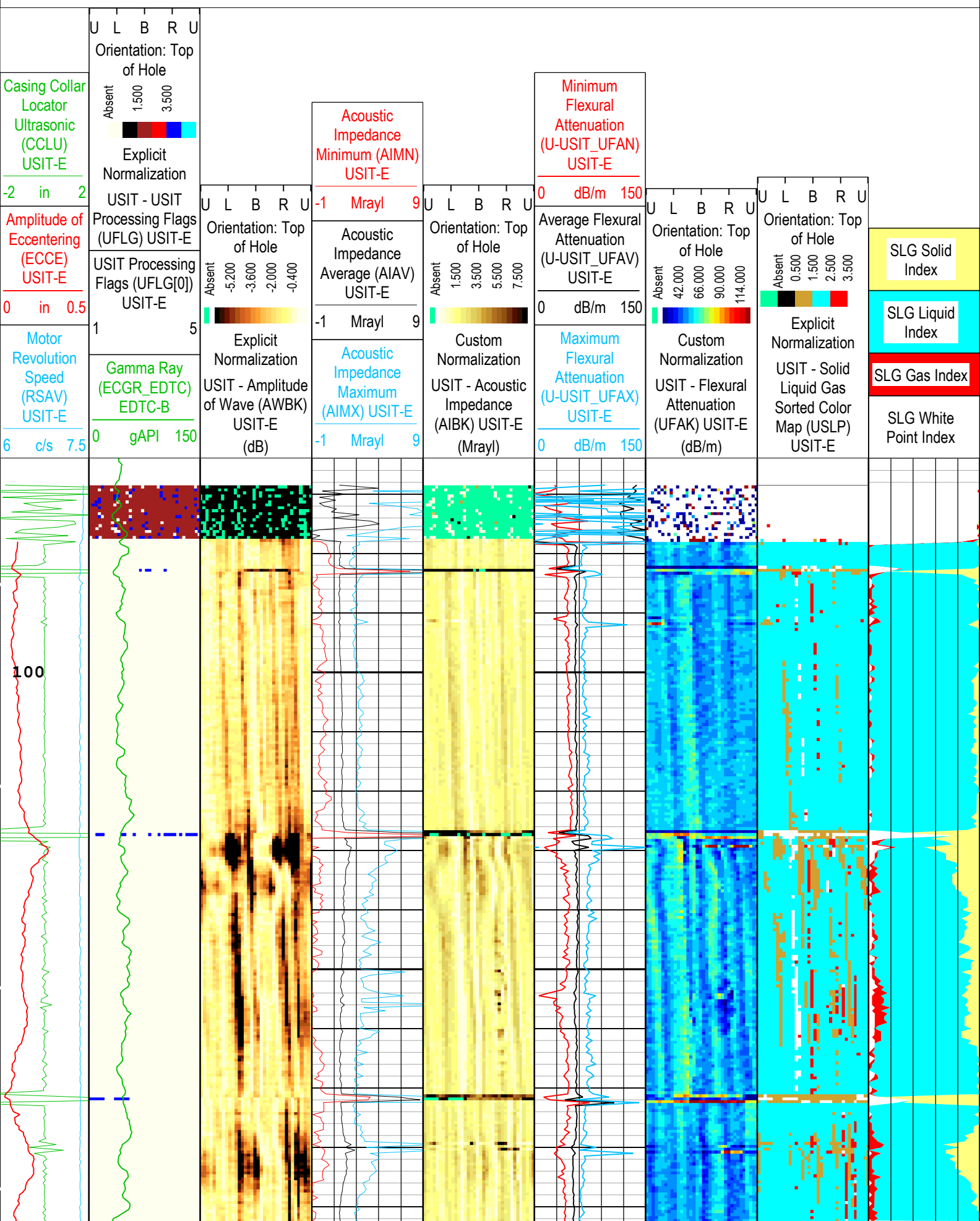
Tension Device

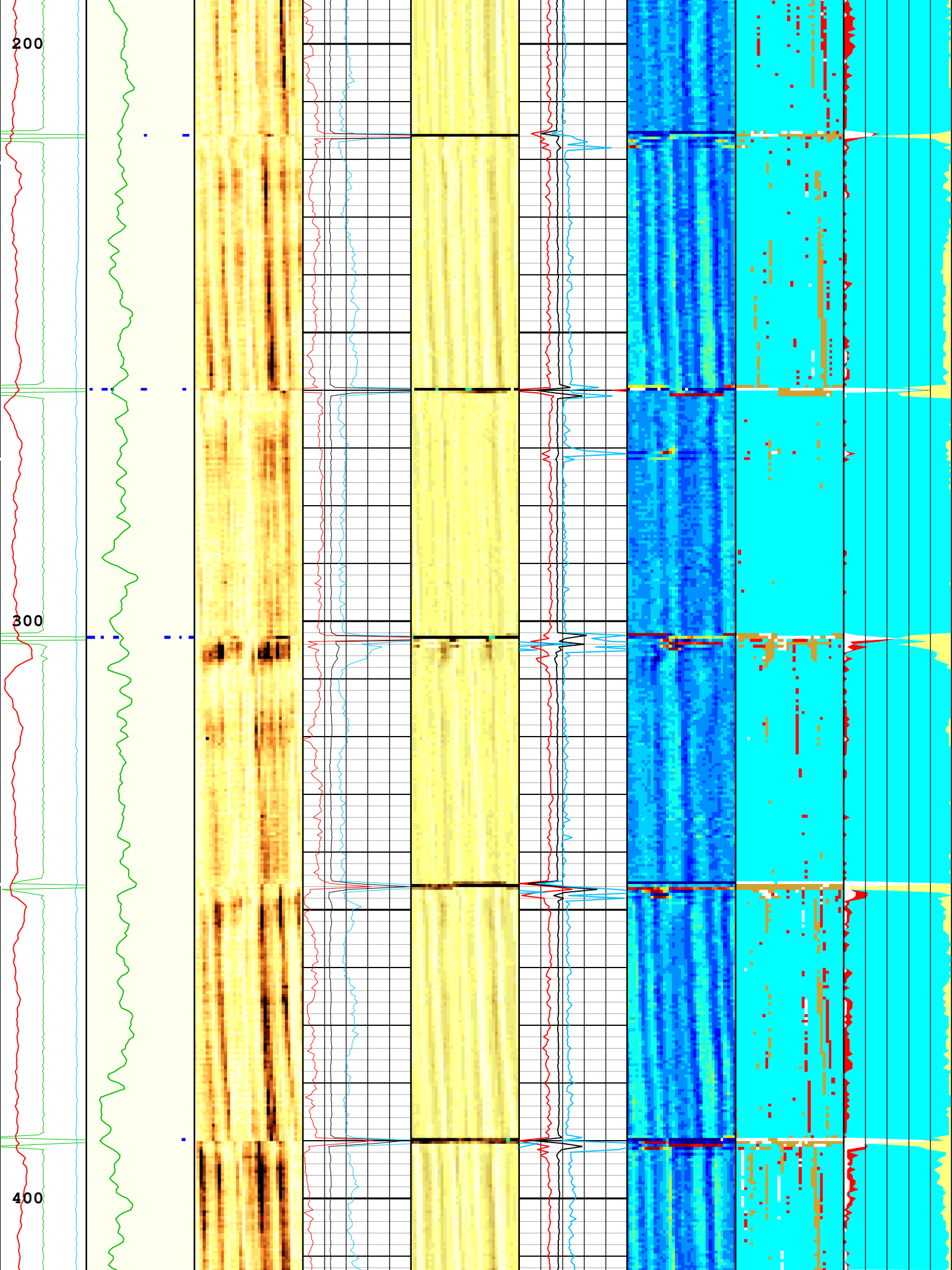
Type	CMTD-B/A								
Serial Number									
Calibration Date									
Calibrator Serial Number									
Number of Calibration Points	0								
Logging Cable									
Type	7-39AI-XXS								
Serial Number									
Length	18400.00 ft								
Conveyance Type	Wireline								
Rig Type	Crane USA								
ONE:Depth Control Parameters		Depth Control Remarks							
Log Sequence	First Log In the Well	All Schlumberger depth control procedures followed.							
Rig Up Length At Surface		IDW used as primary depth control device.							
Rig Up Length At Bottom		Z chart used as secondary depth control device.							
Rig Up Length Correction		Z chart used as secondary depth control device.							
Stretch Correction									
Tool Zero Check At Surface									
USIT - Fluid Properties Measurement									
Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)						
Run 1	Log[4]:Up	7304.06	68.9						
Fluid Velocity = "Automatic". CFVL equals DFSL channel									
Start Depth(ft)	Stop Depth(ft)	Start Value(us/ft)	End Value(us/ft)						
Mud Impedance = "Theoretical". CZMD uses theoretical results. MUD_N_THE=1.08 DFD=1.14g/cm3(9.50lbm/gal)									
Start Depth(ft)	Stop Depth(ft)	Start Value(Mrayl)	End Value(Mrayl)						
ONE									
IBC SLG MAIN PASS @10DEG X 6IN @0PSI [5:100]									
Software Version									
Acquisition System		Version							
Maxwell 2019.2		9.2.113335.3100							
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	68.90 ft	7304.06 ft	16-Nov-2019 2:57:44 PM	16-Nov-2019 4:40:06 PM	ON	3.78 ft	No
All depths are referenced to toolstring zero									
Log	Company:CRESTONE PEAK RESOURCES OPERATING LLC Well:HINGLEY 1I-18H-A167 ONE: Log[4]:Up:S005								
Description: USI IBC SLG Format: Log (Import (2) of IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 16-Nov-2019 17:47:03									
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 Origain Not Detected					

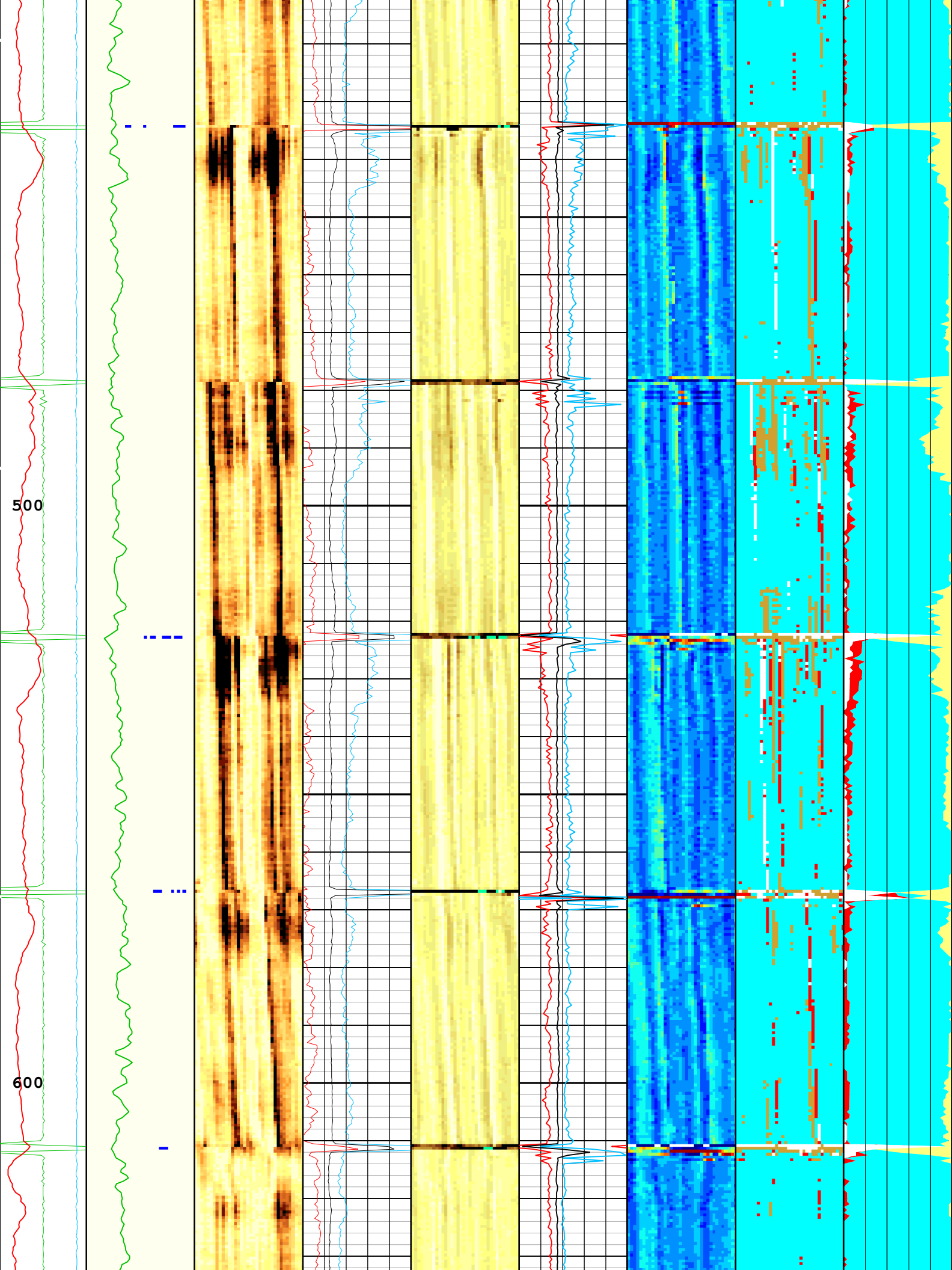
 Police Only (Not = elected)

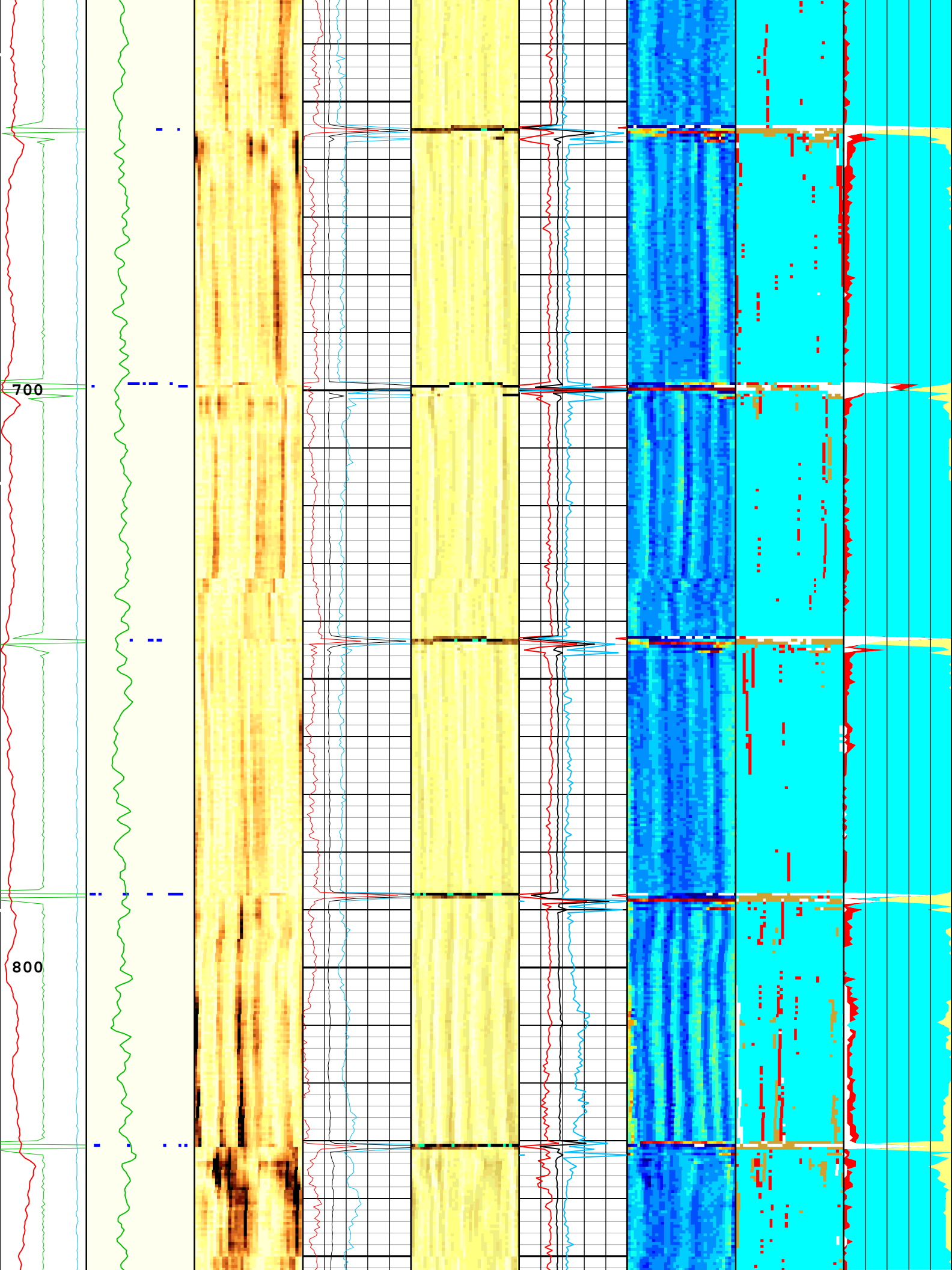
■ Casing Thickness Error

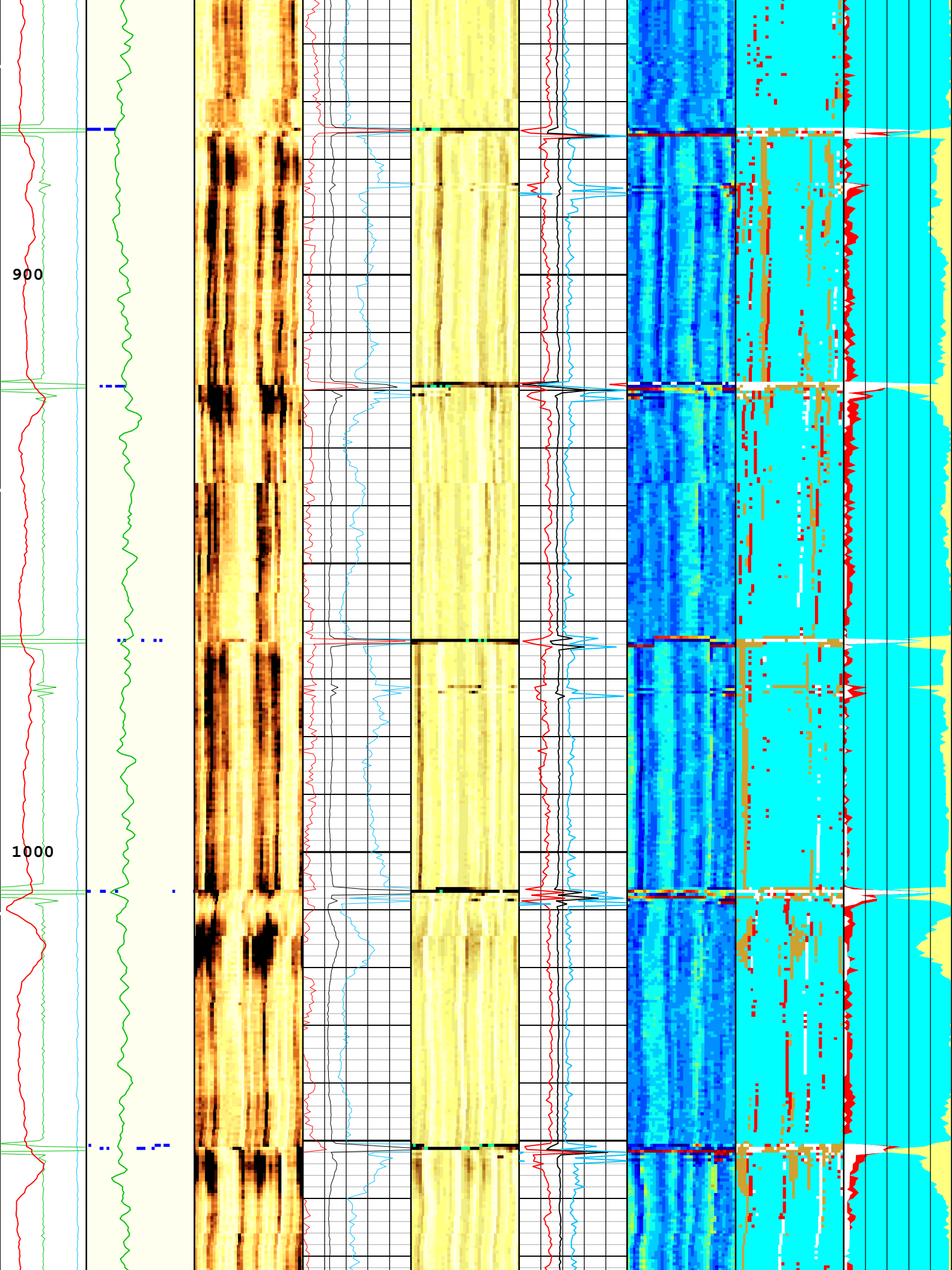
 Loop Processing Error

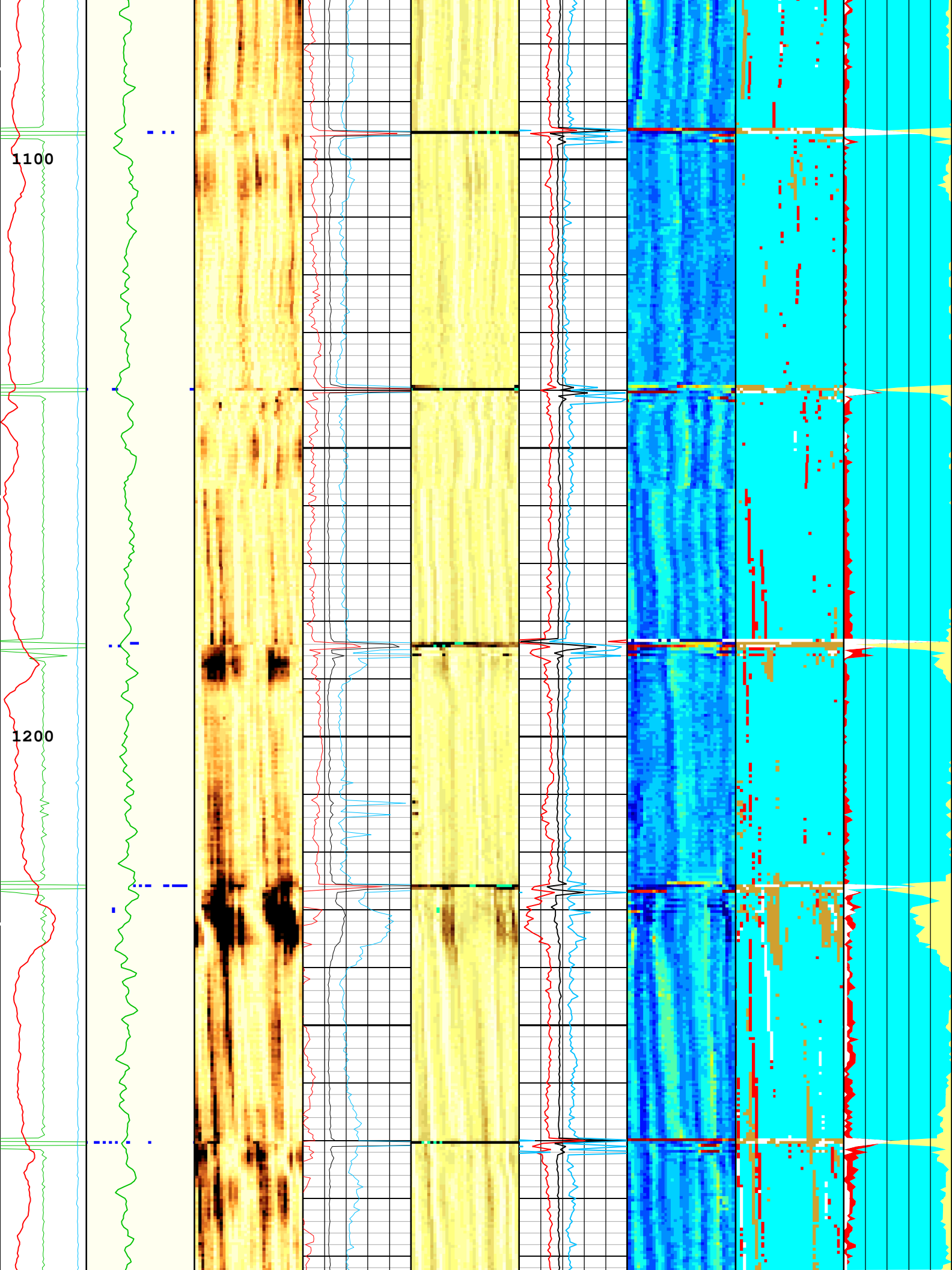


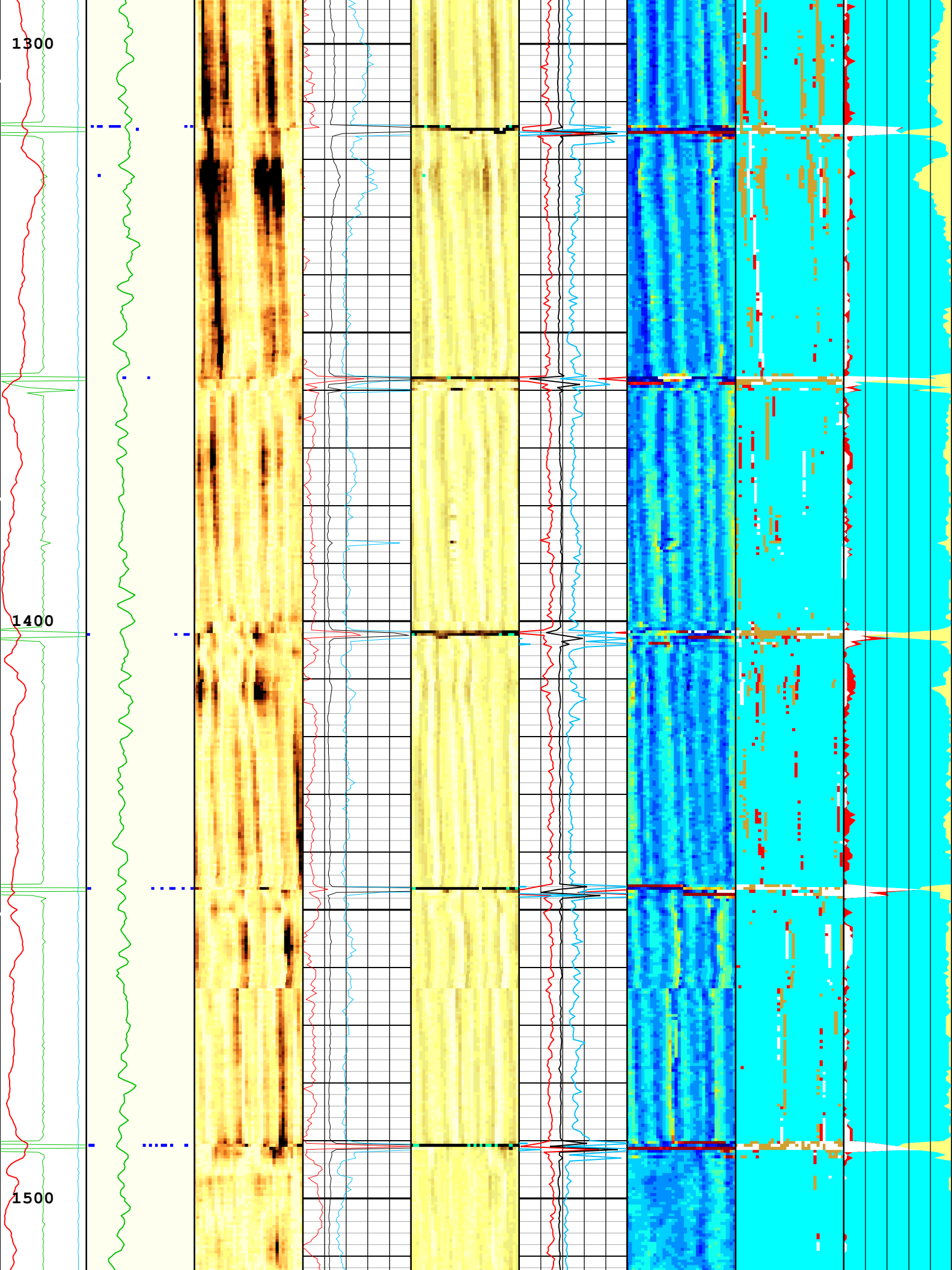


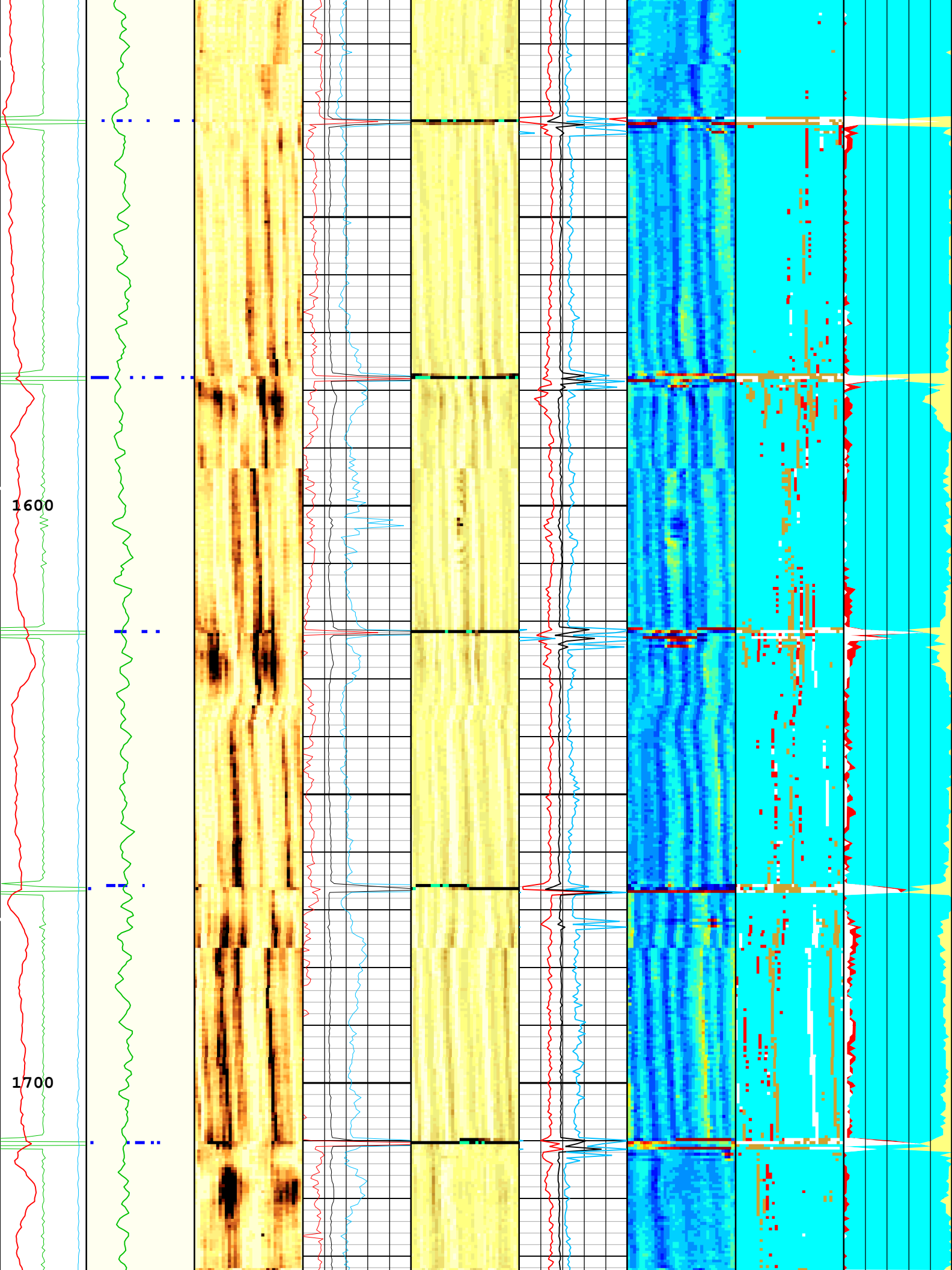


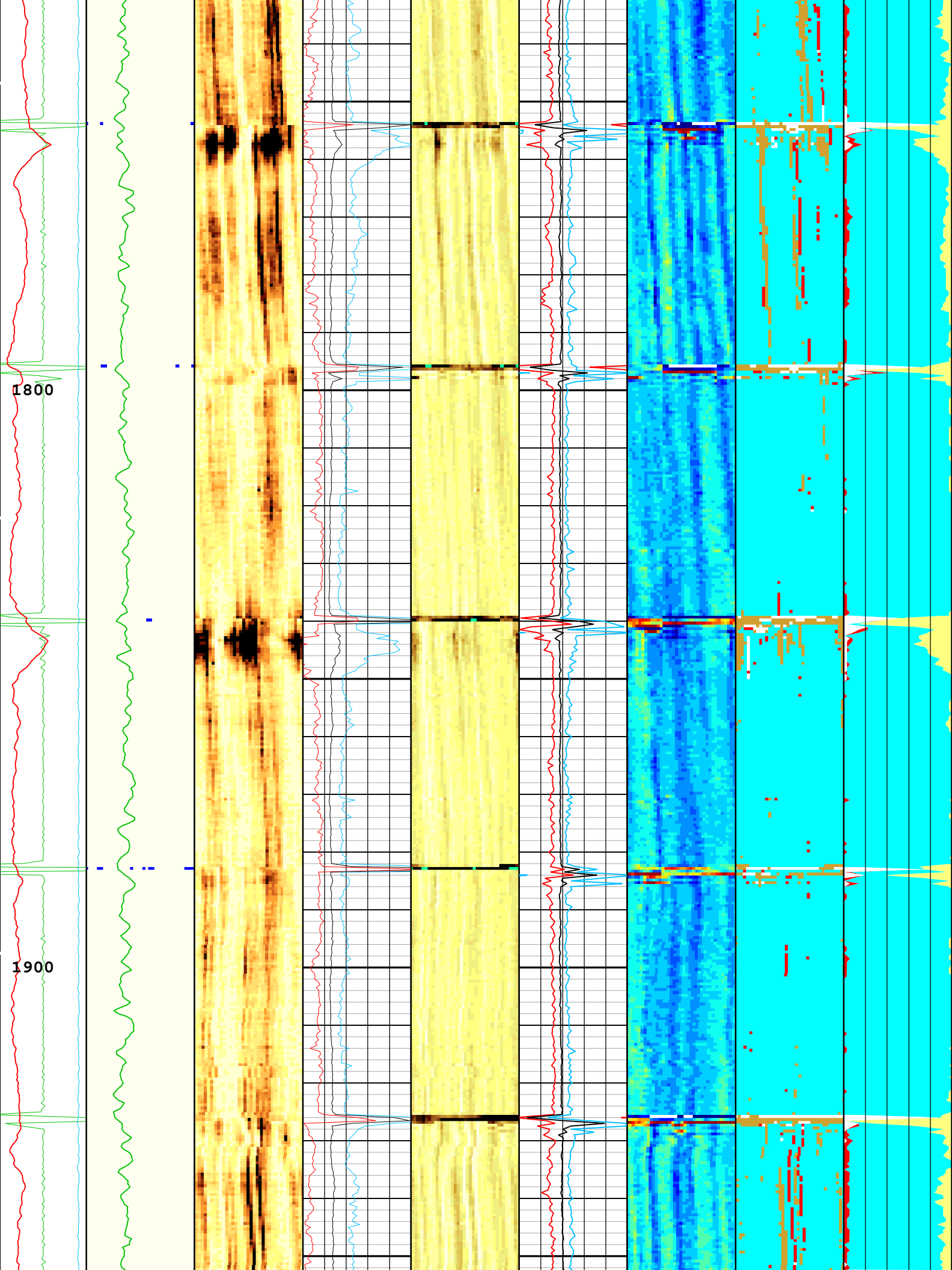


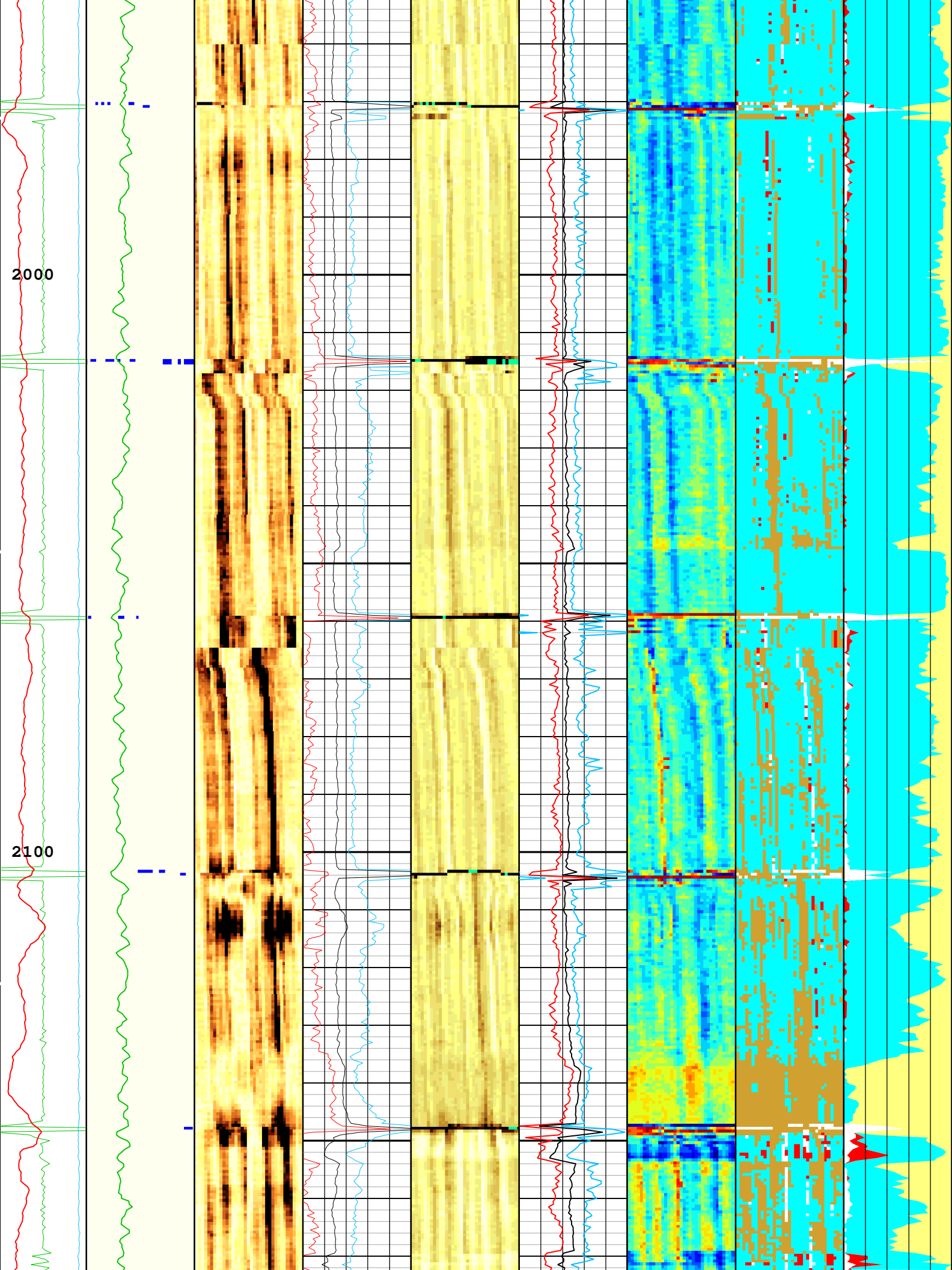


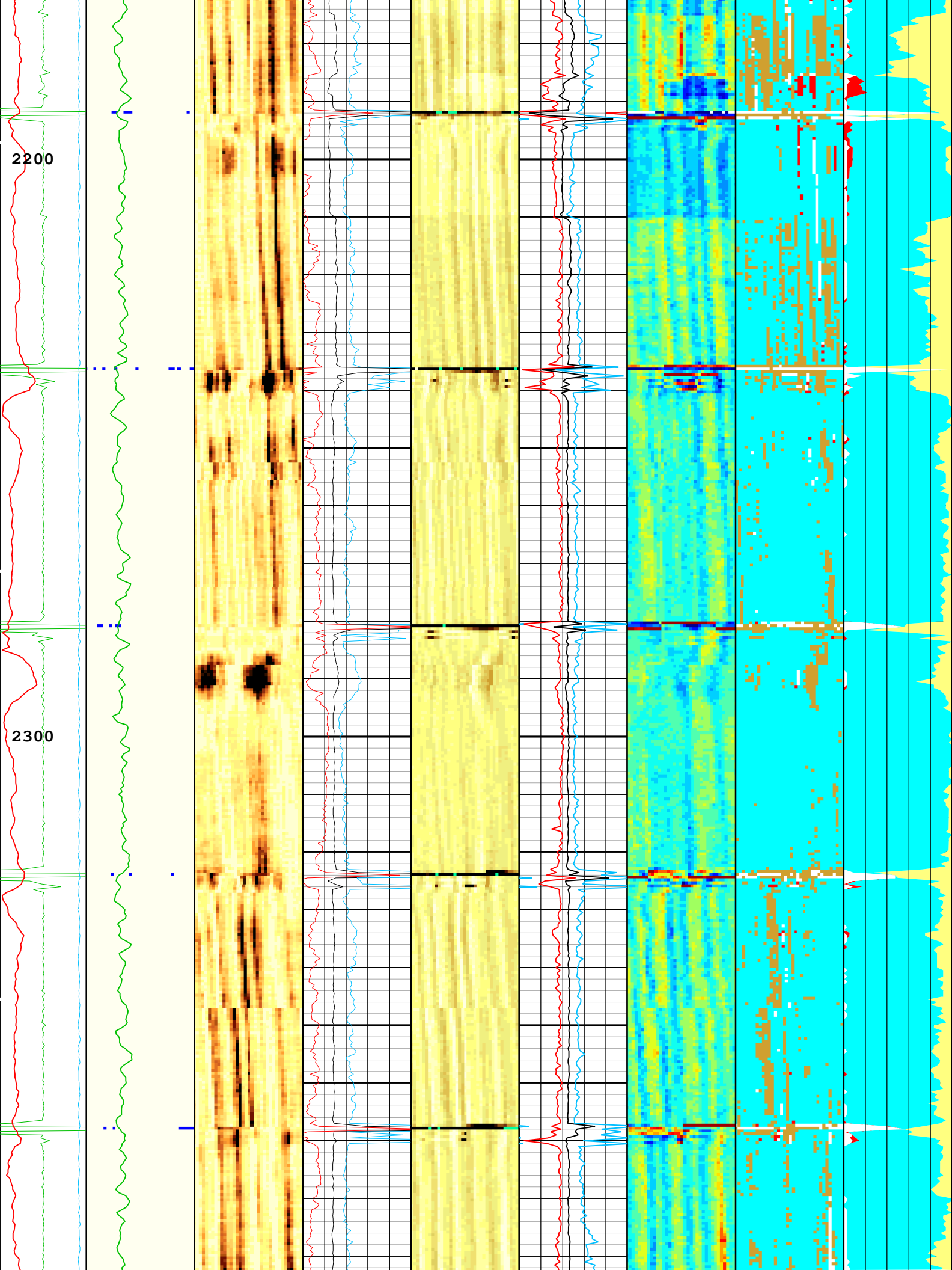


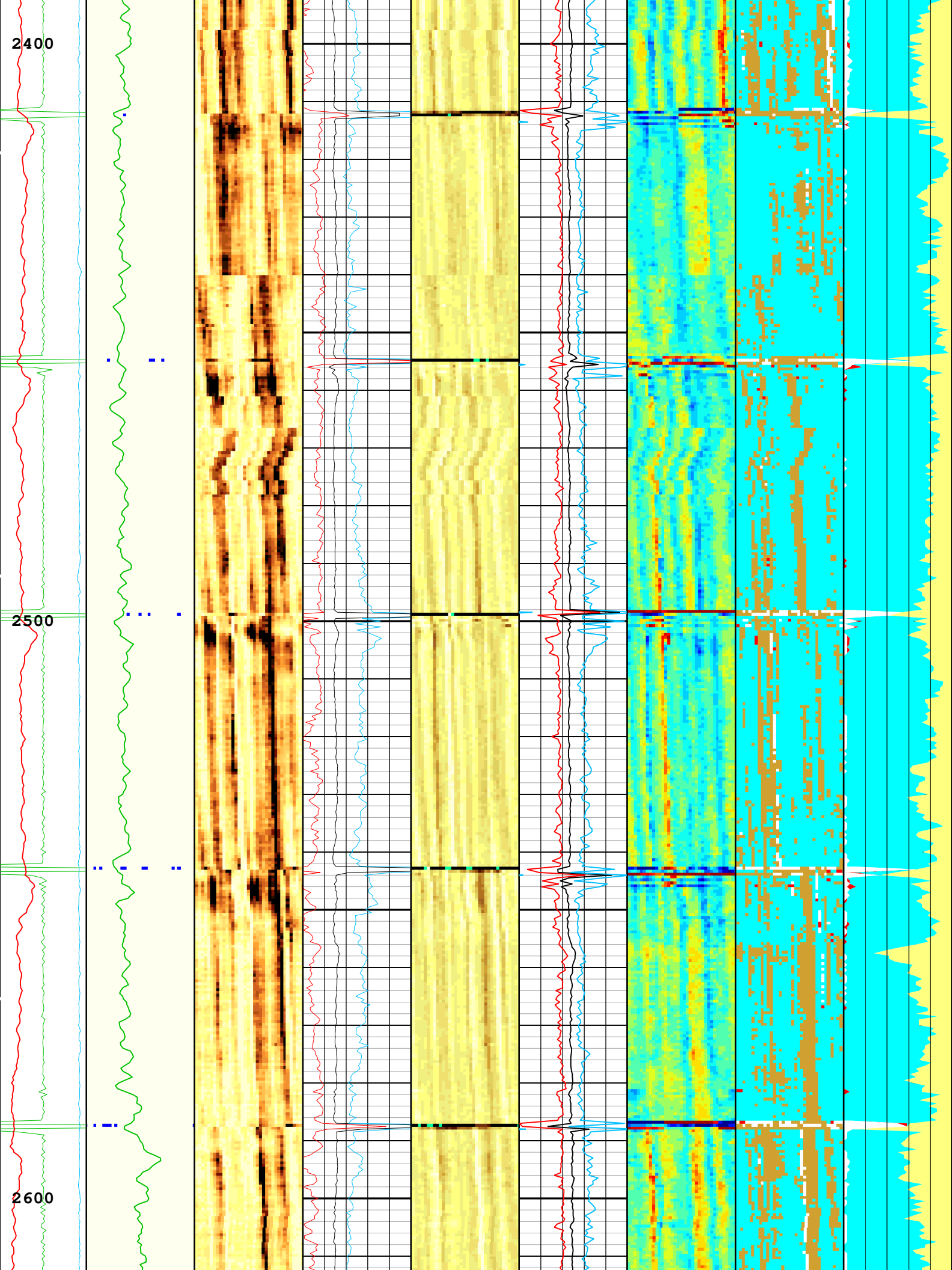


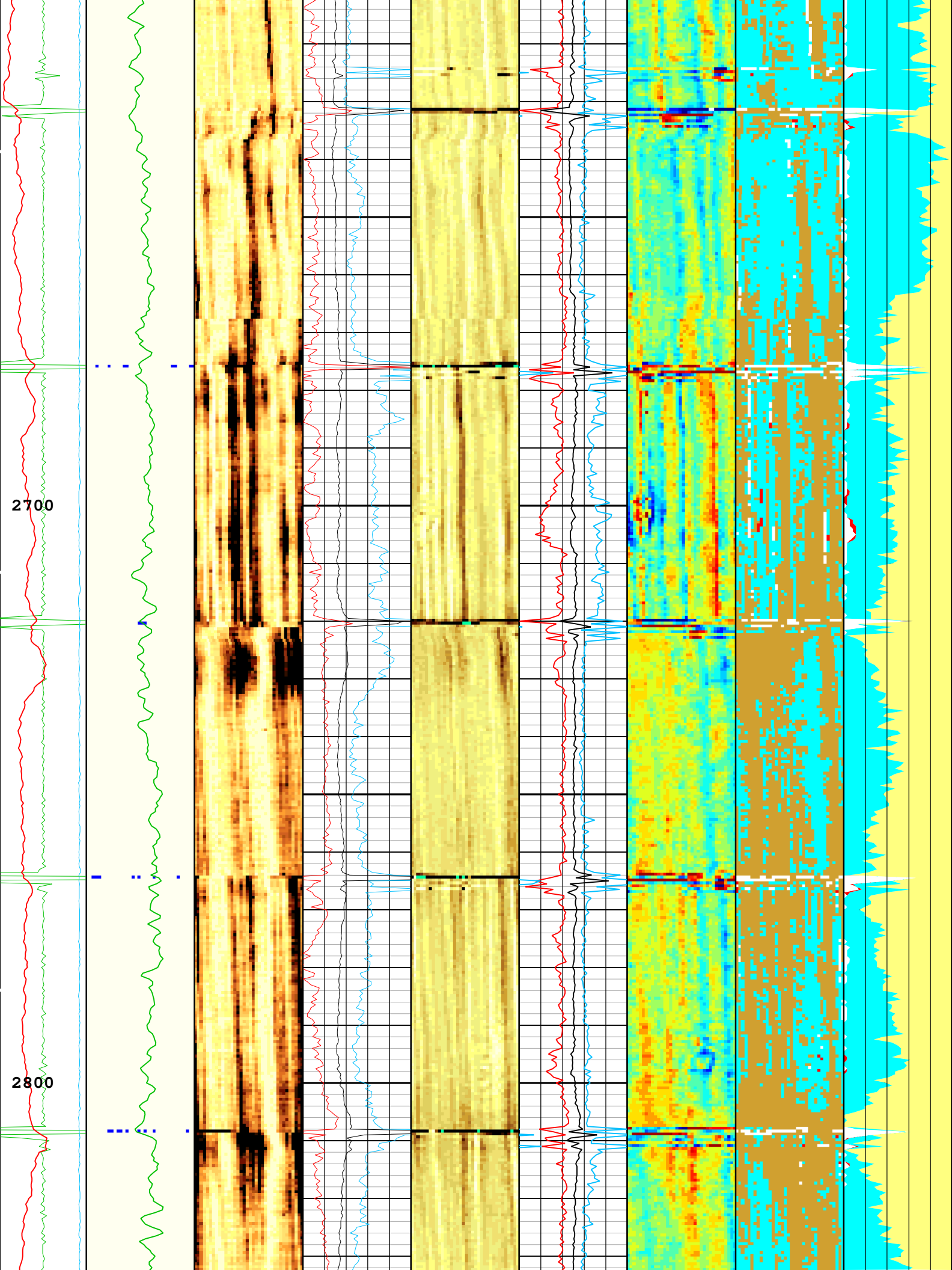


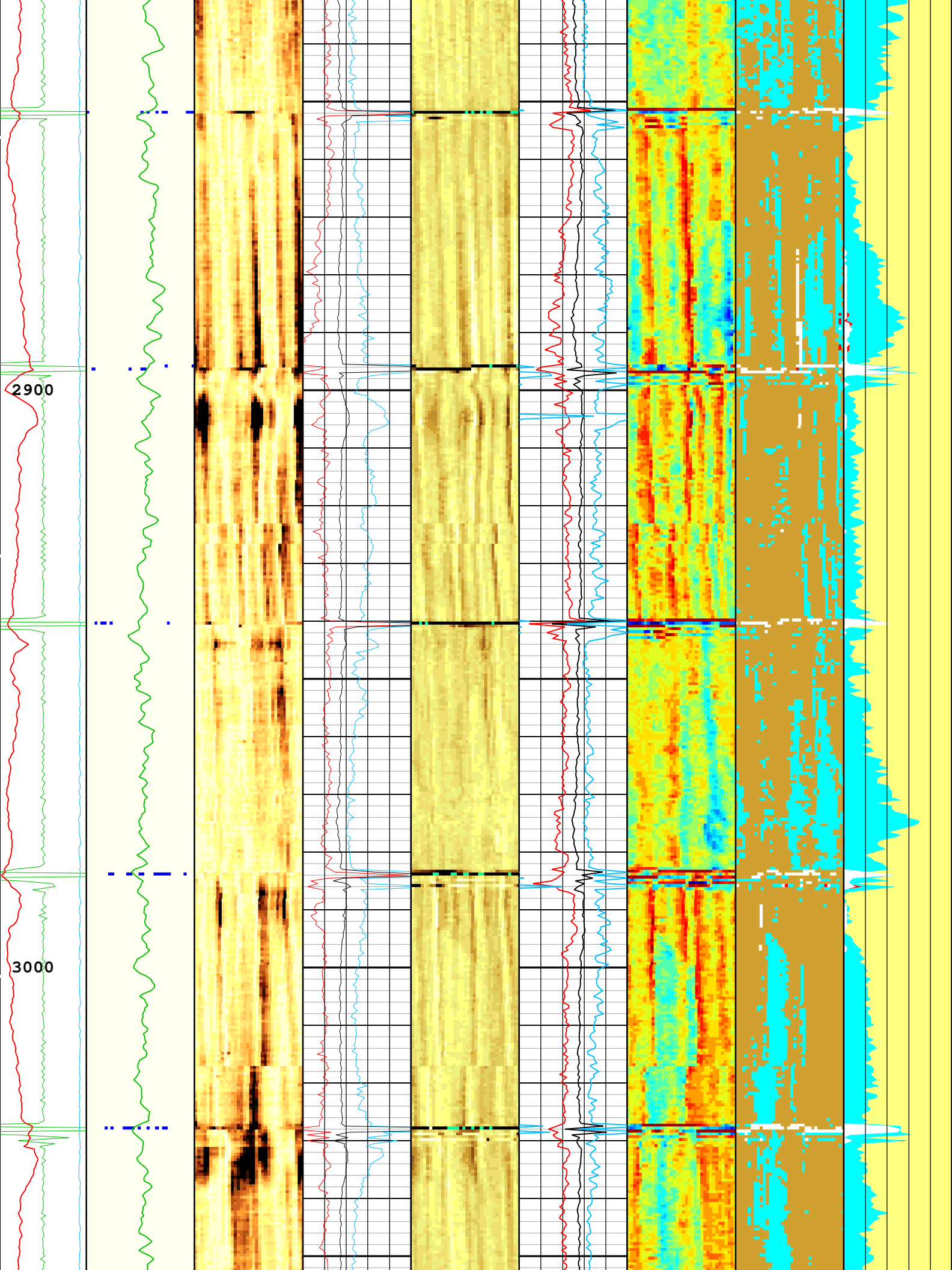


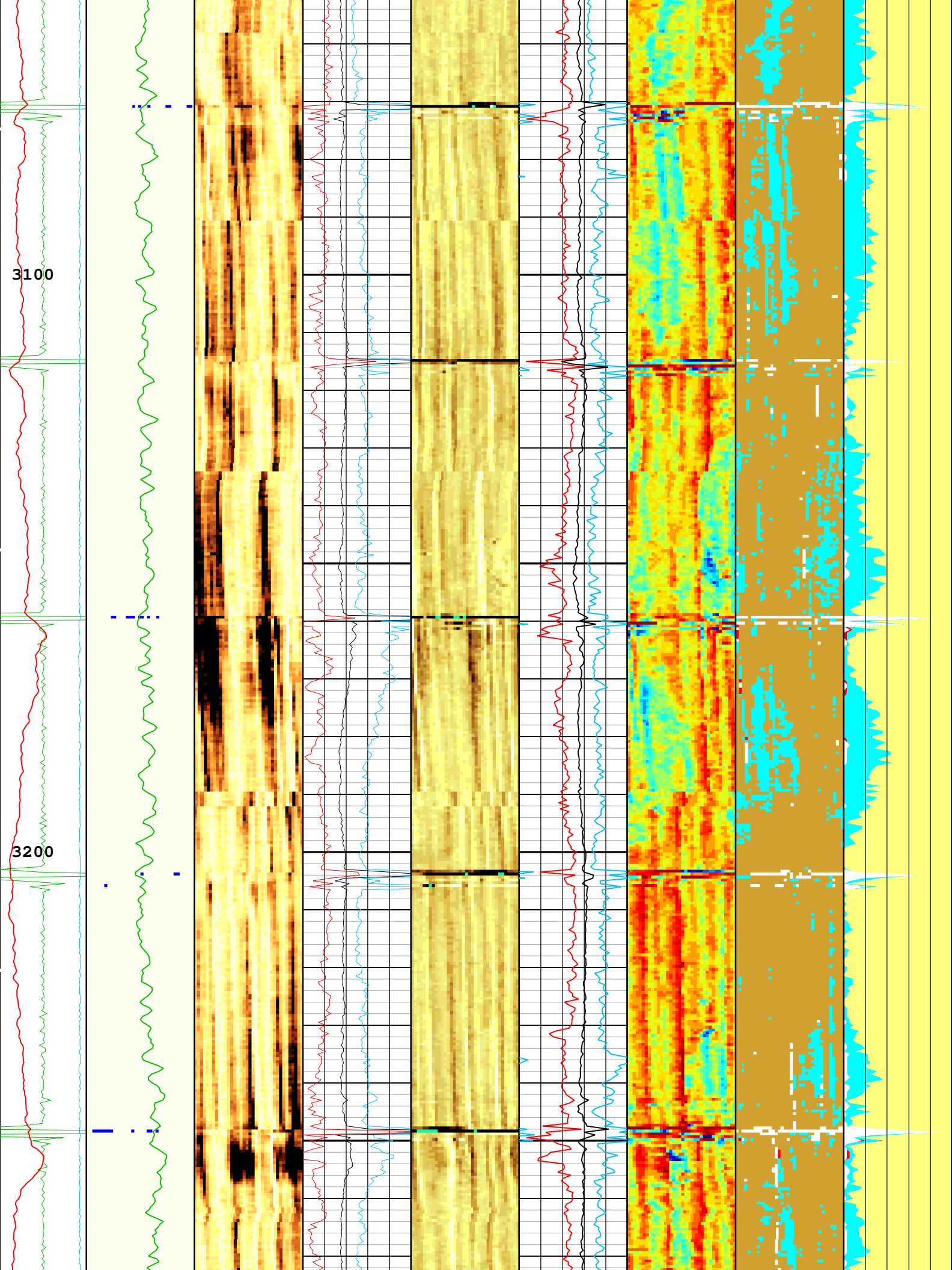


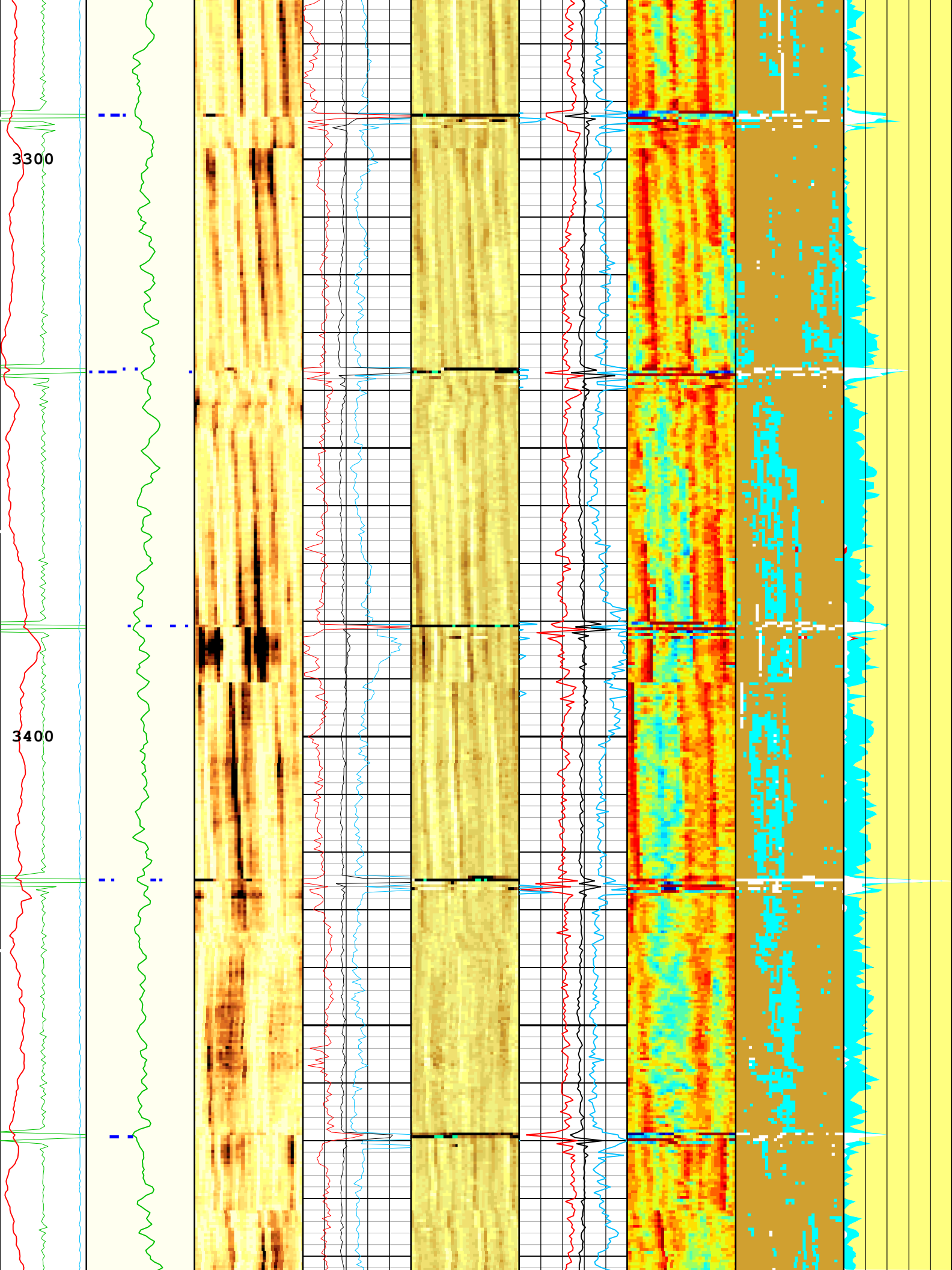


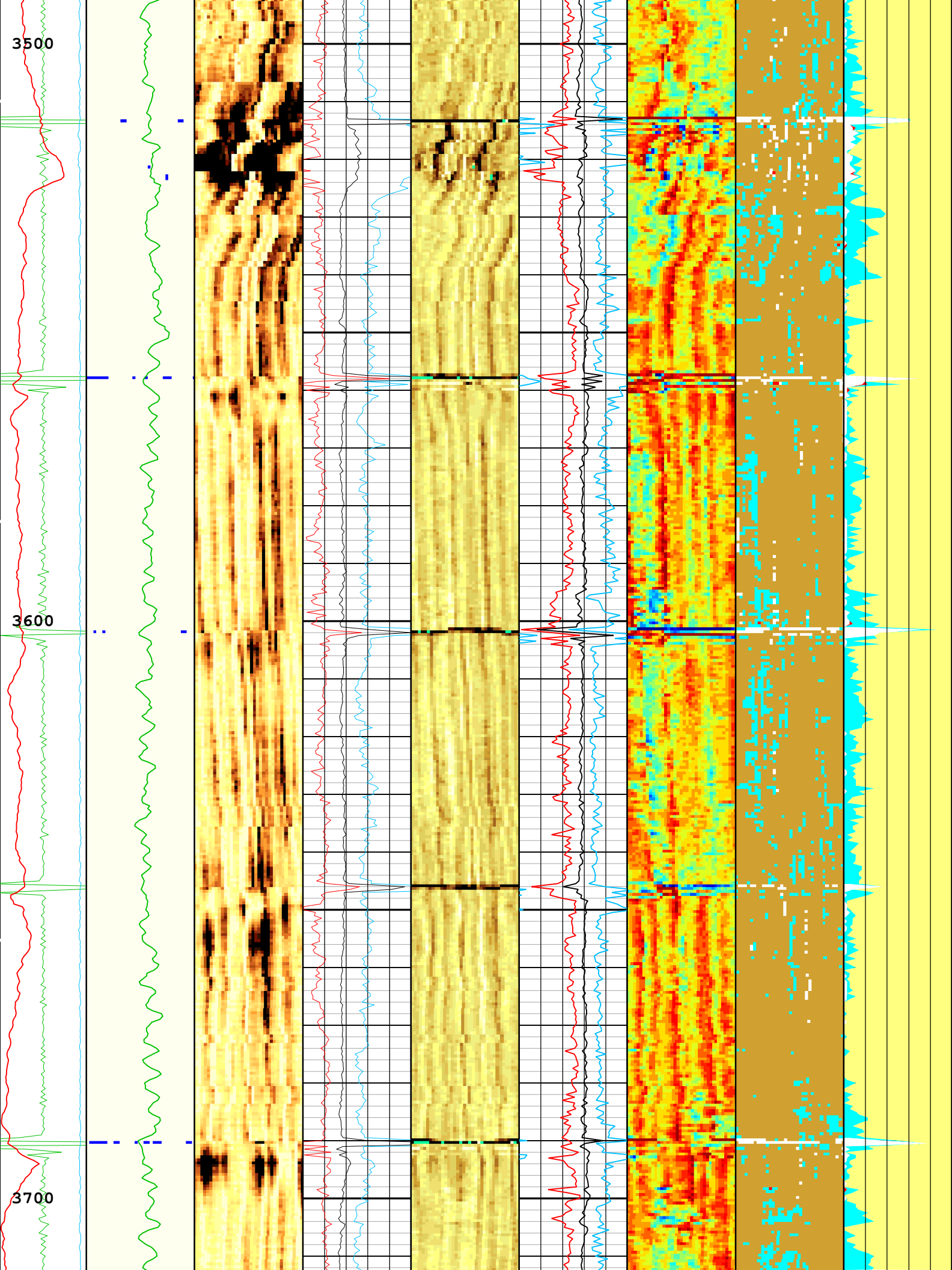


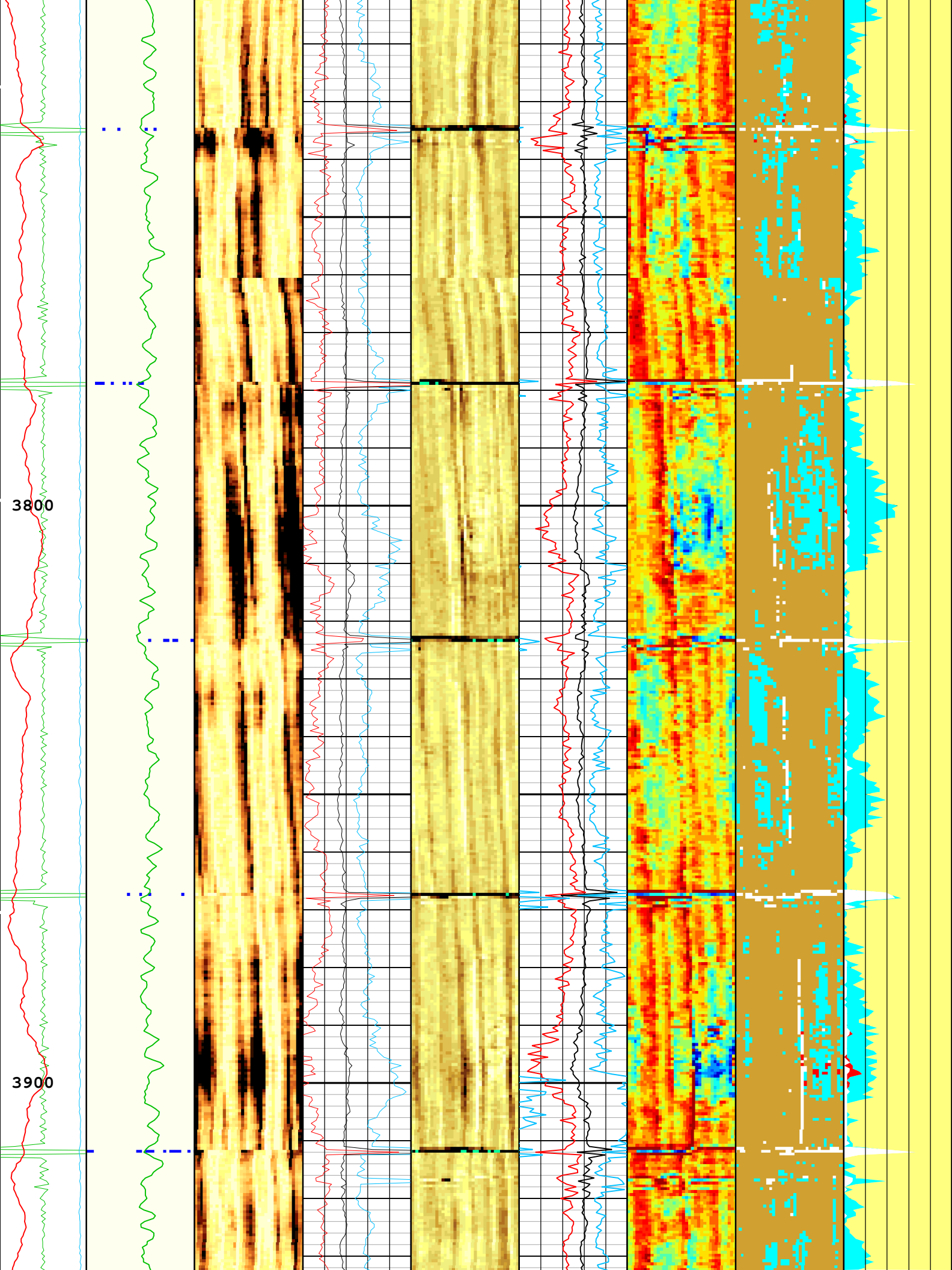


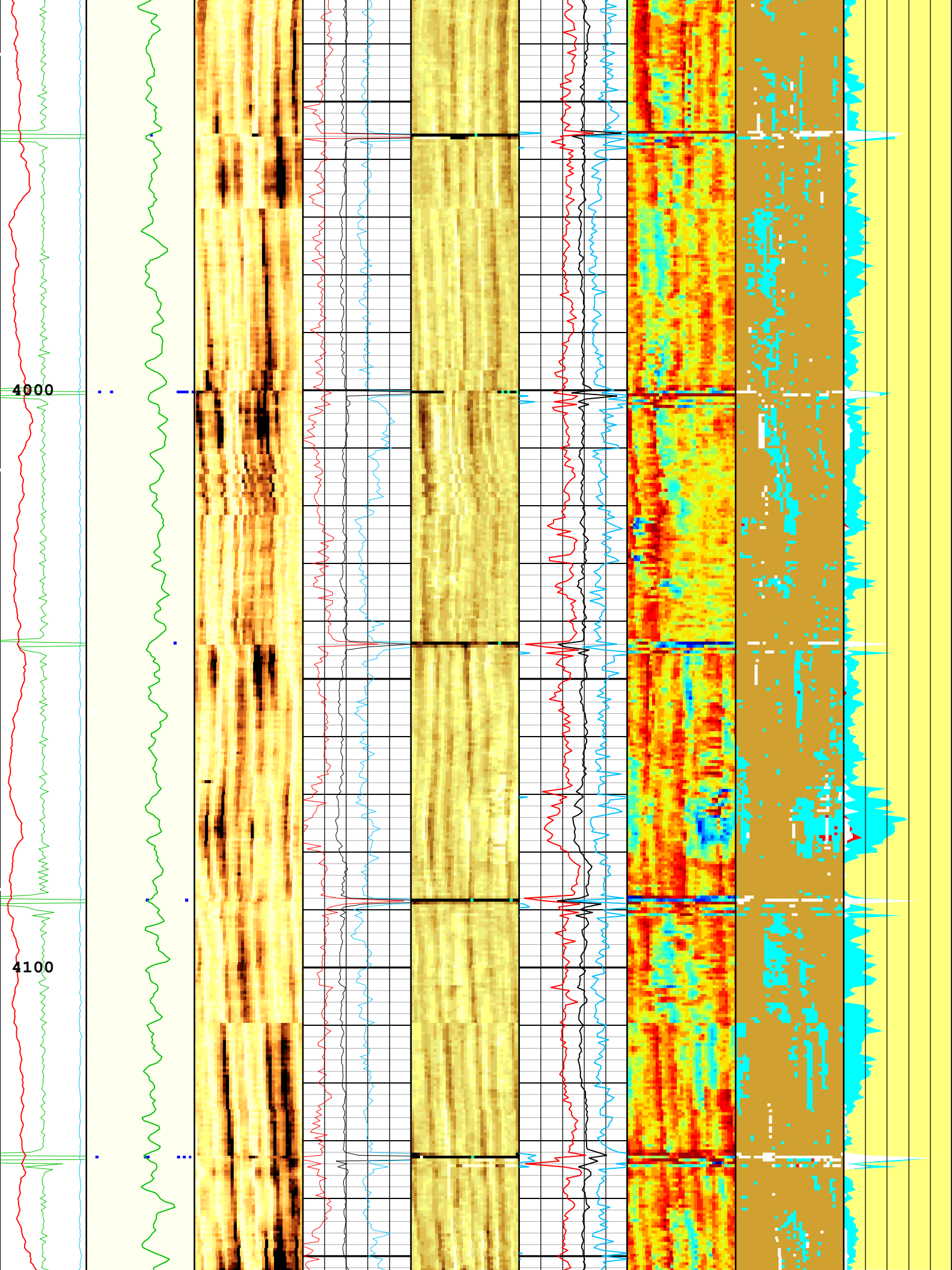


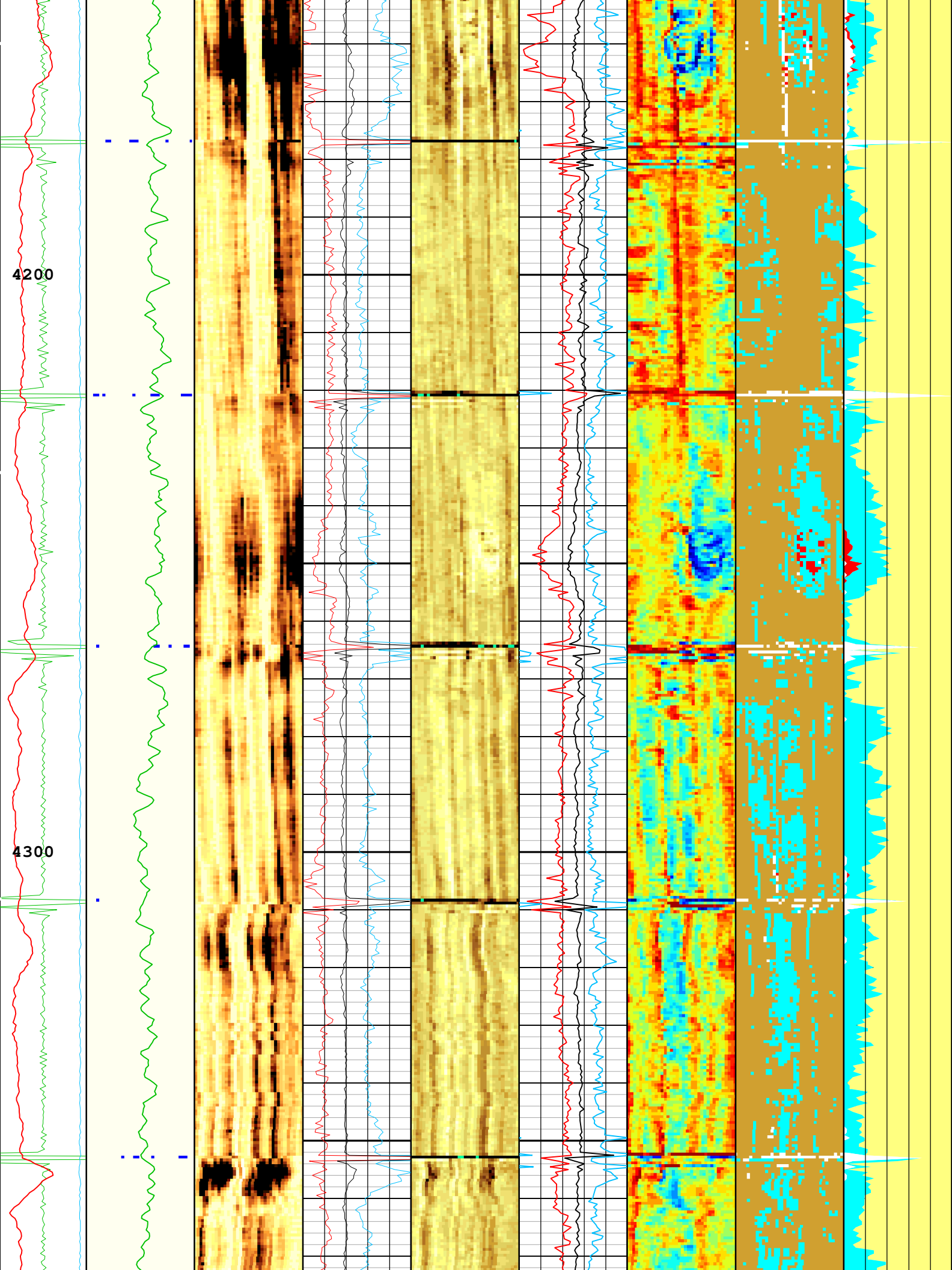


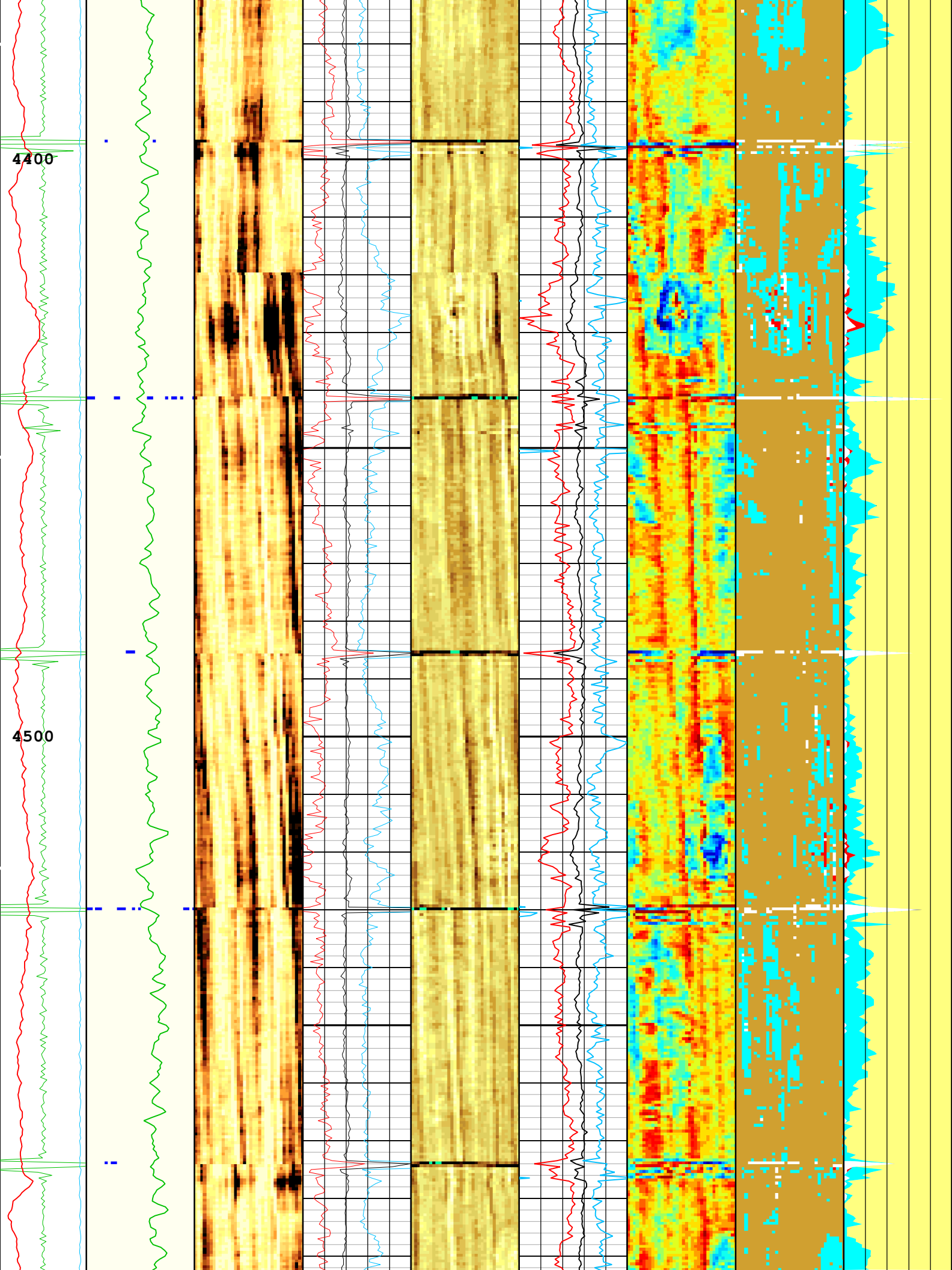


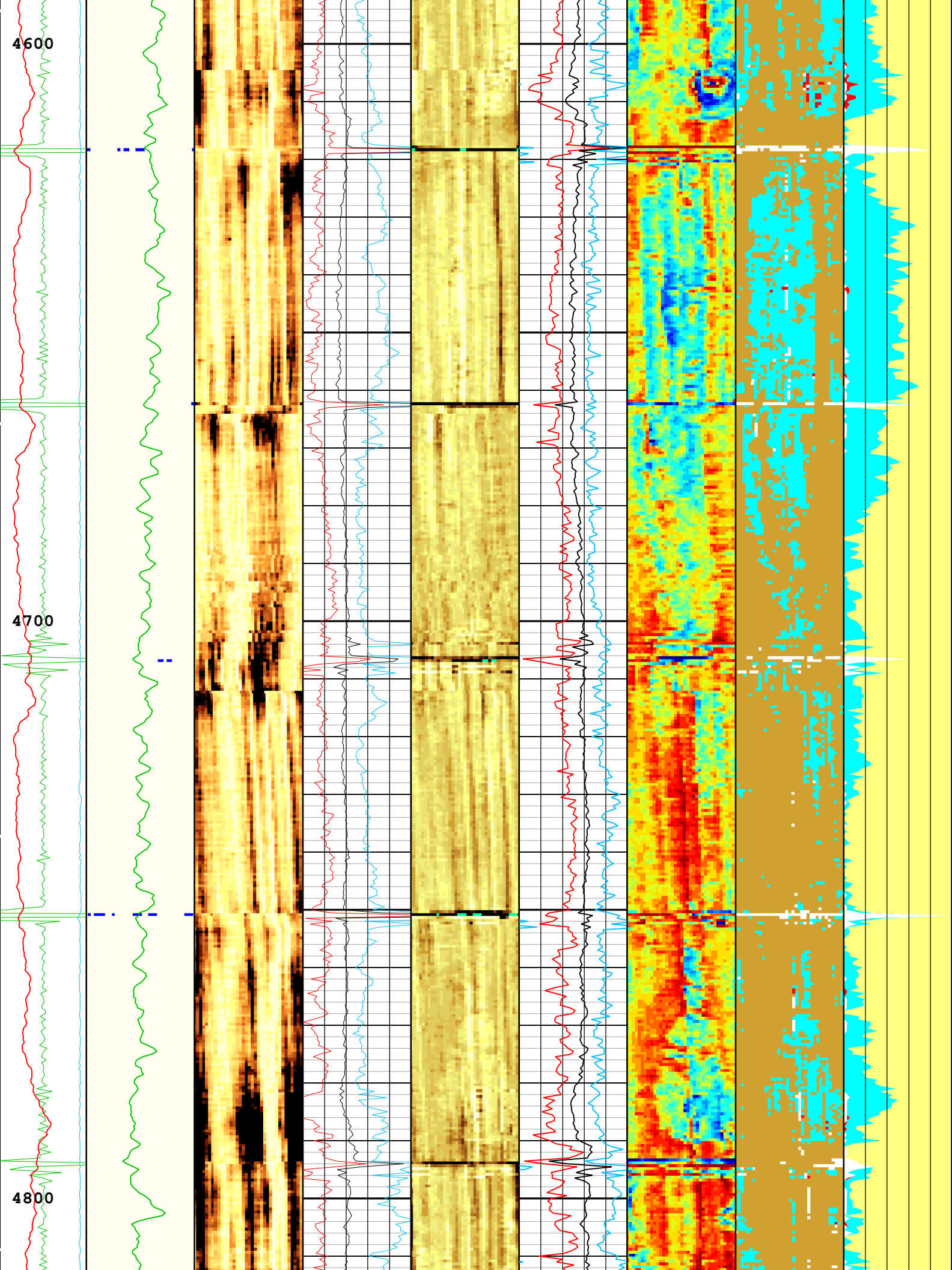


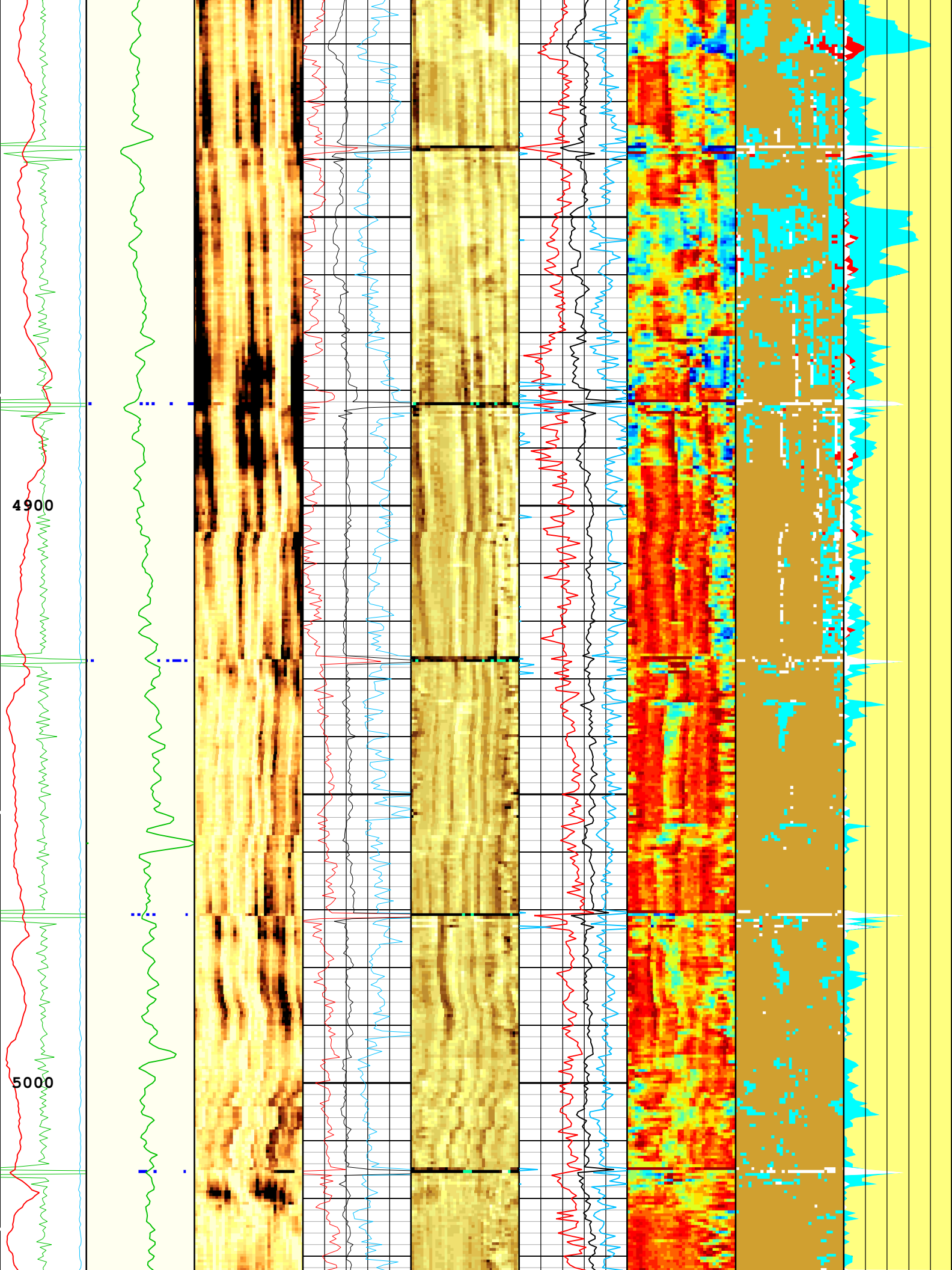


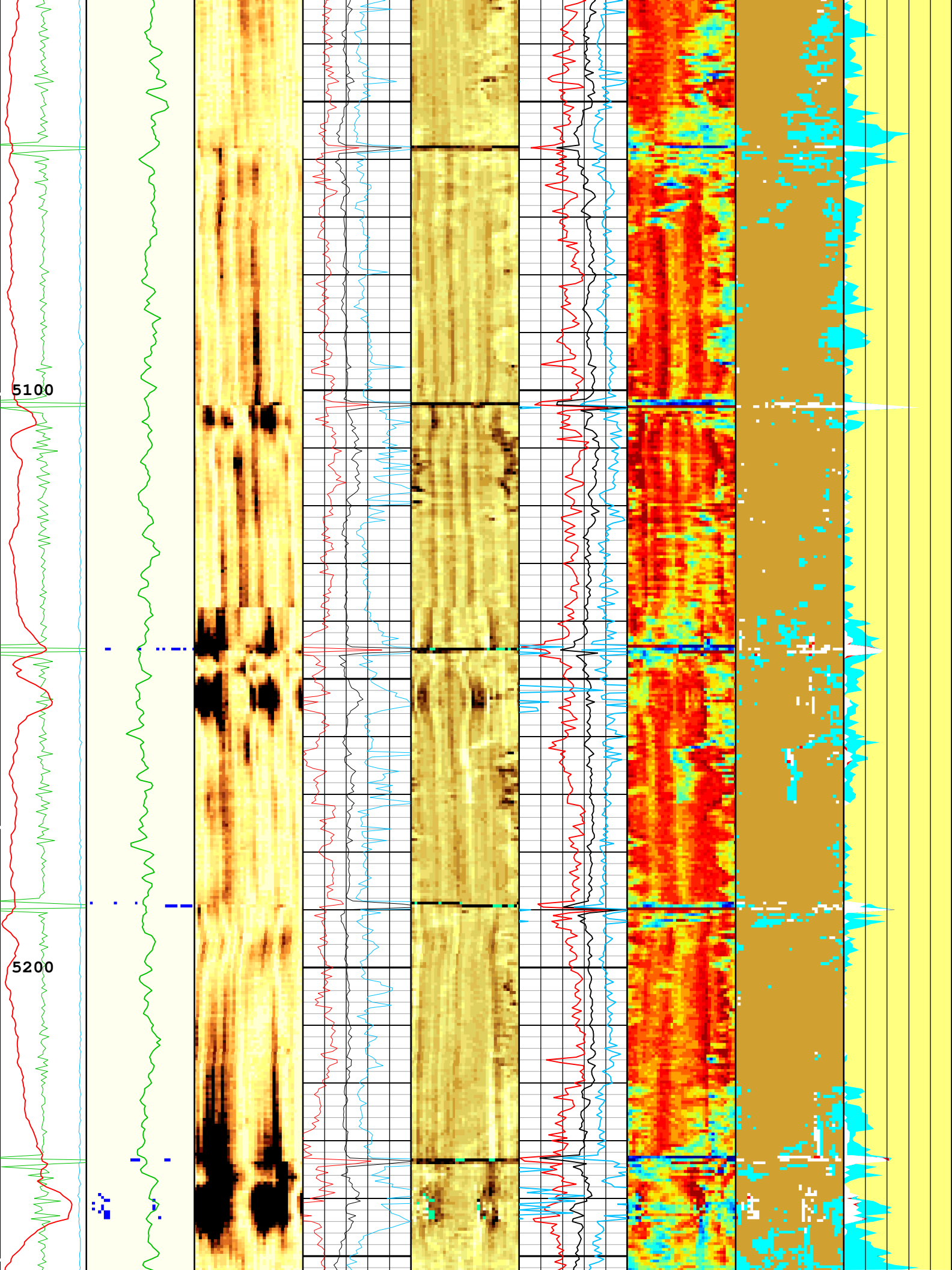


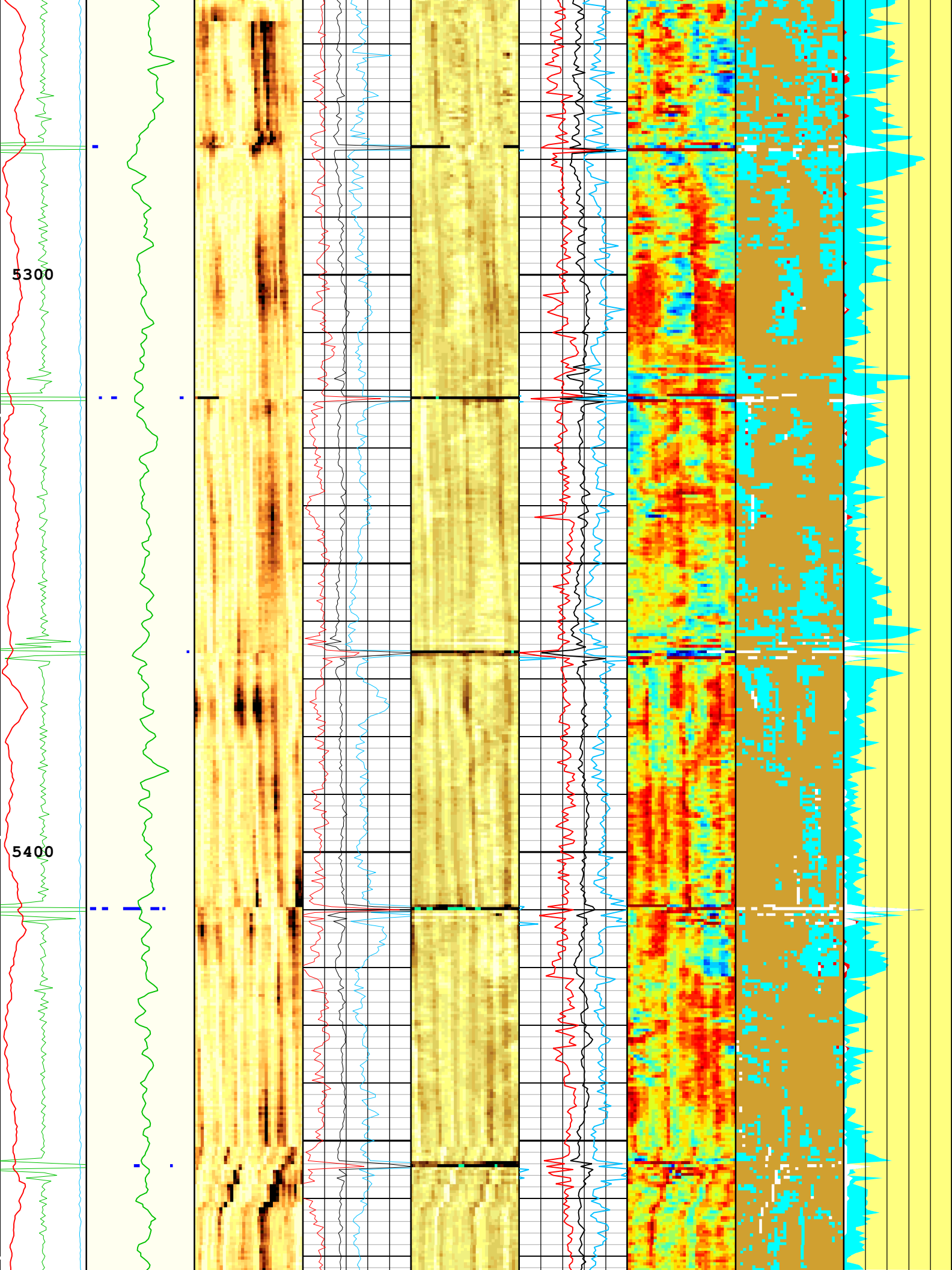


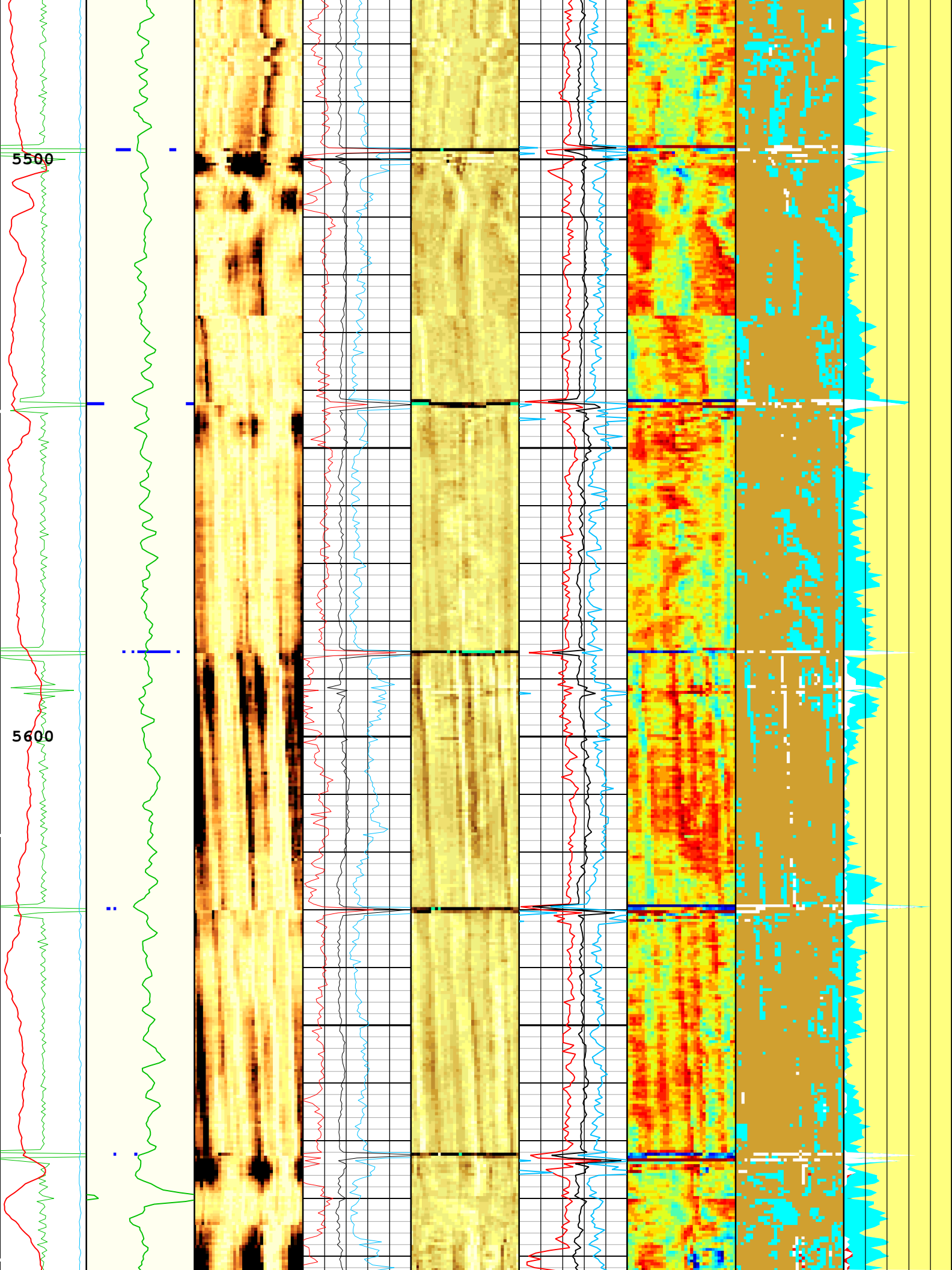


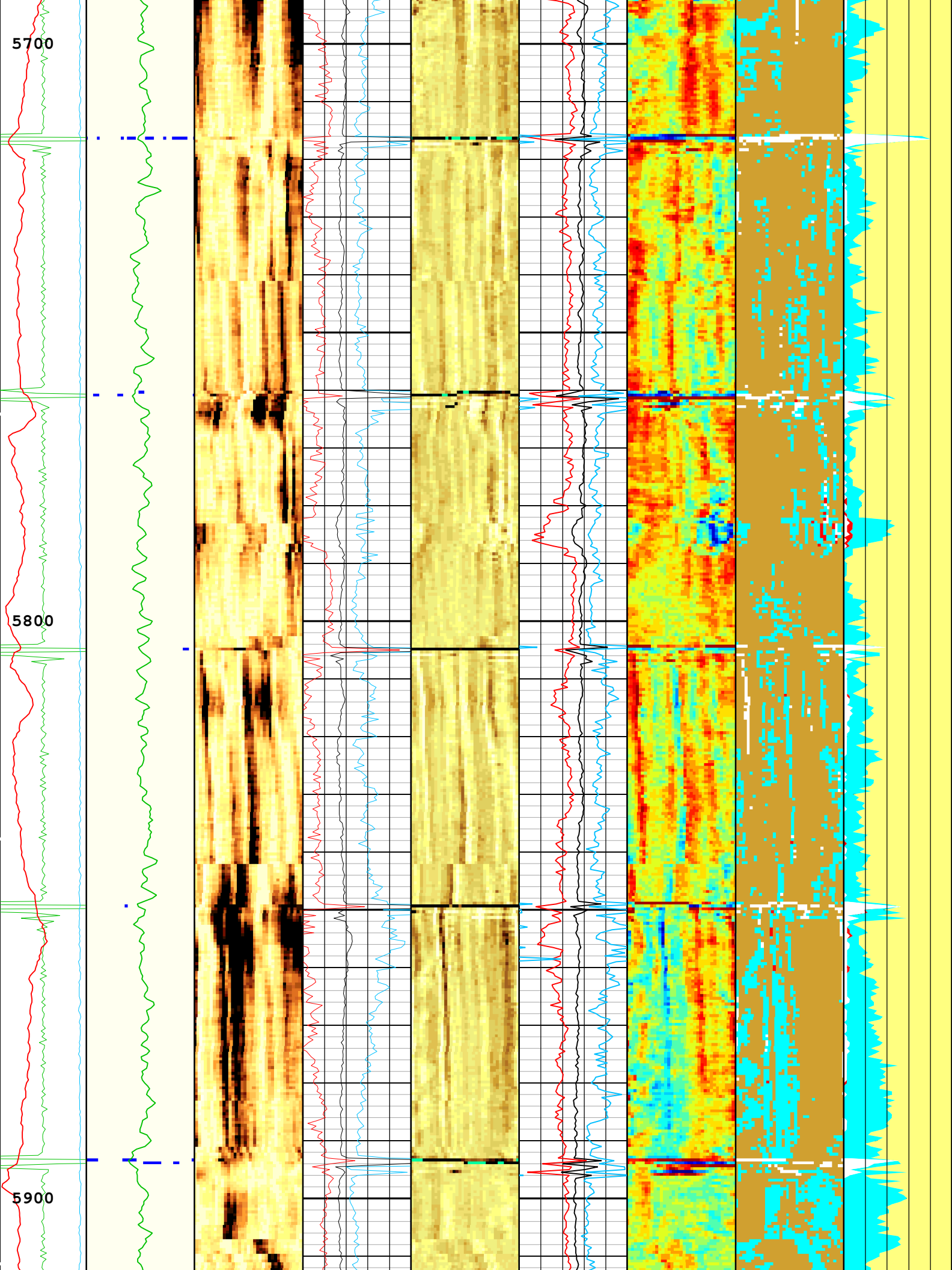


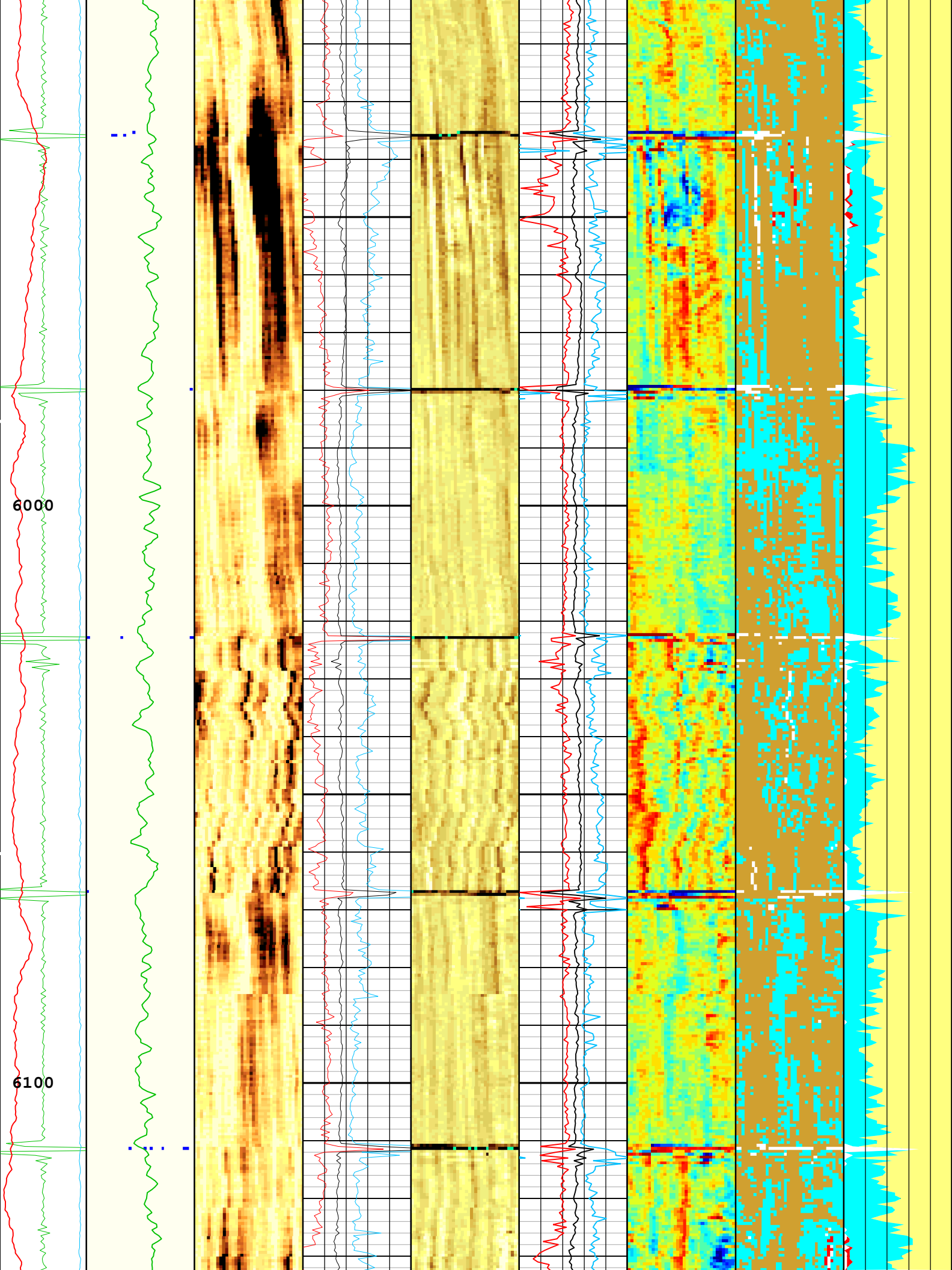


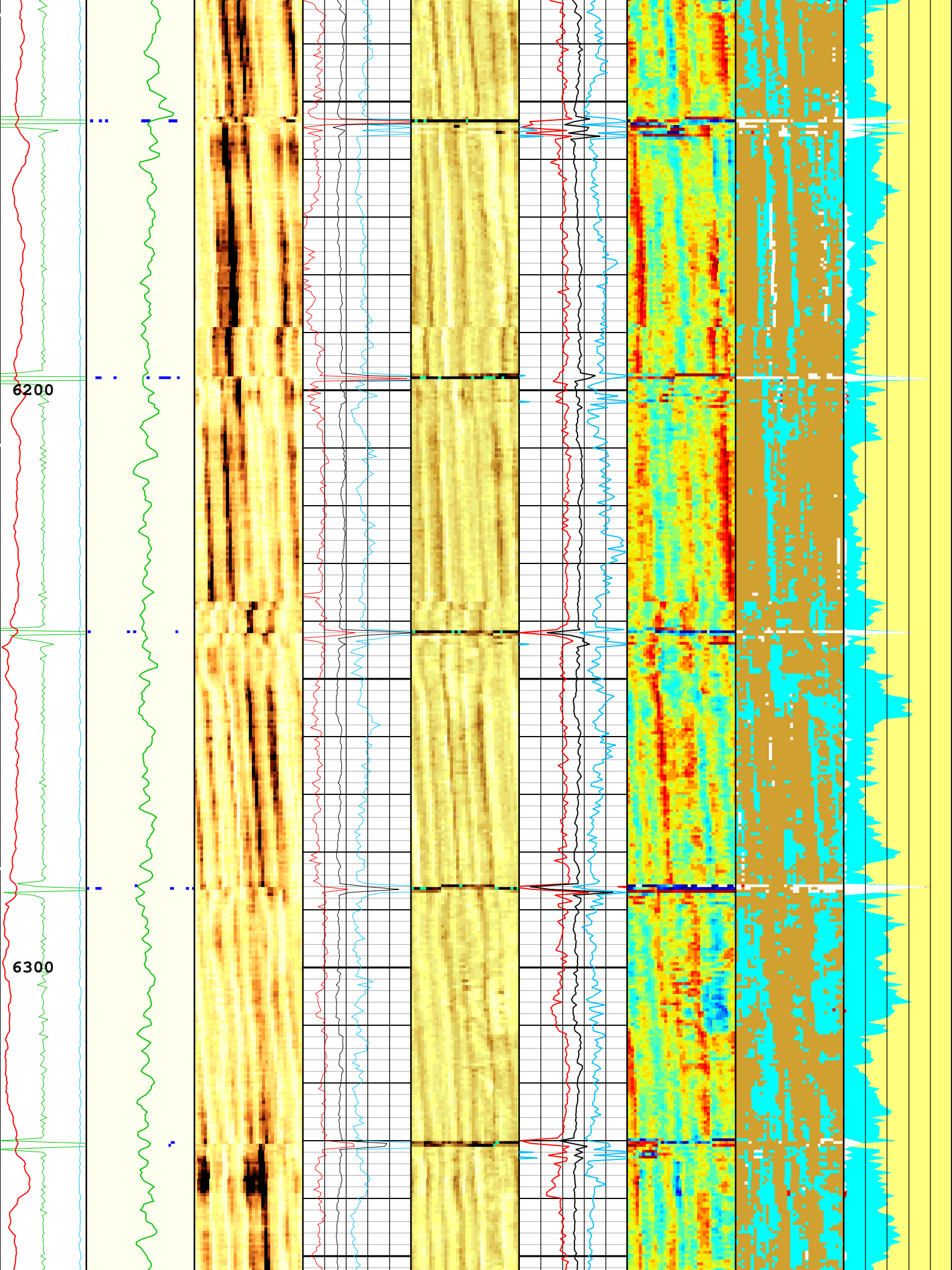


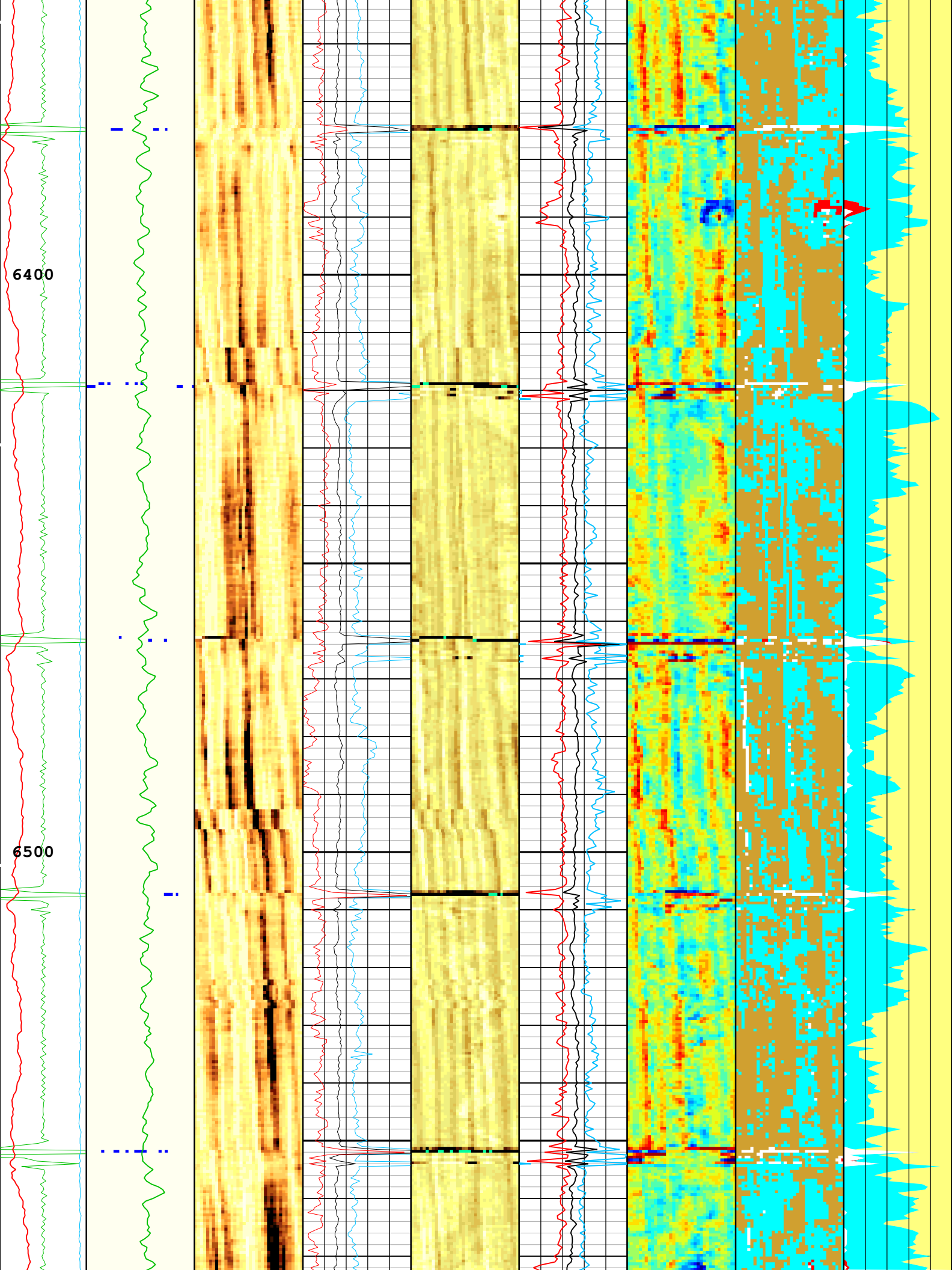


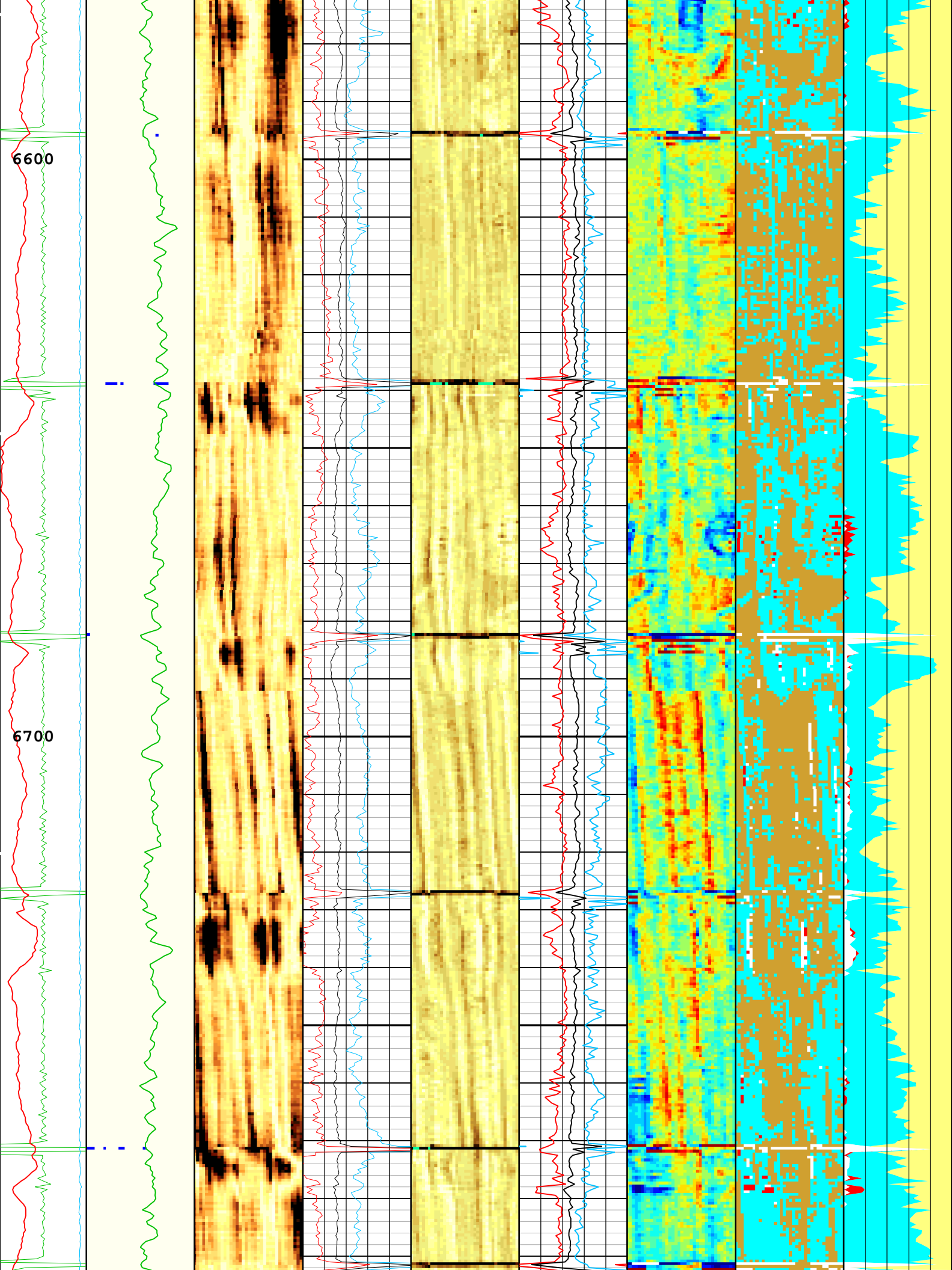


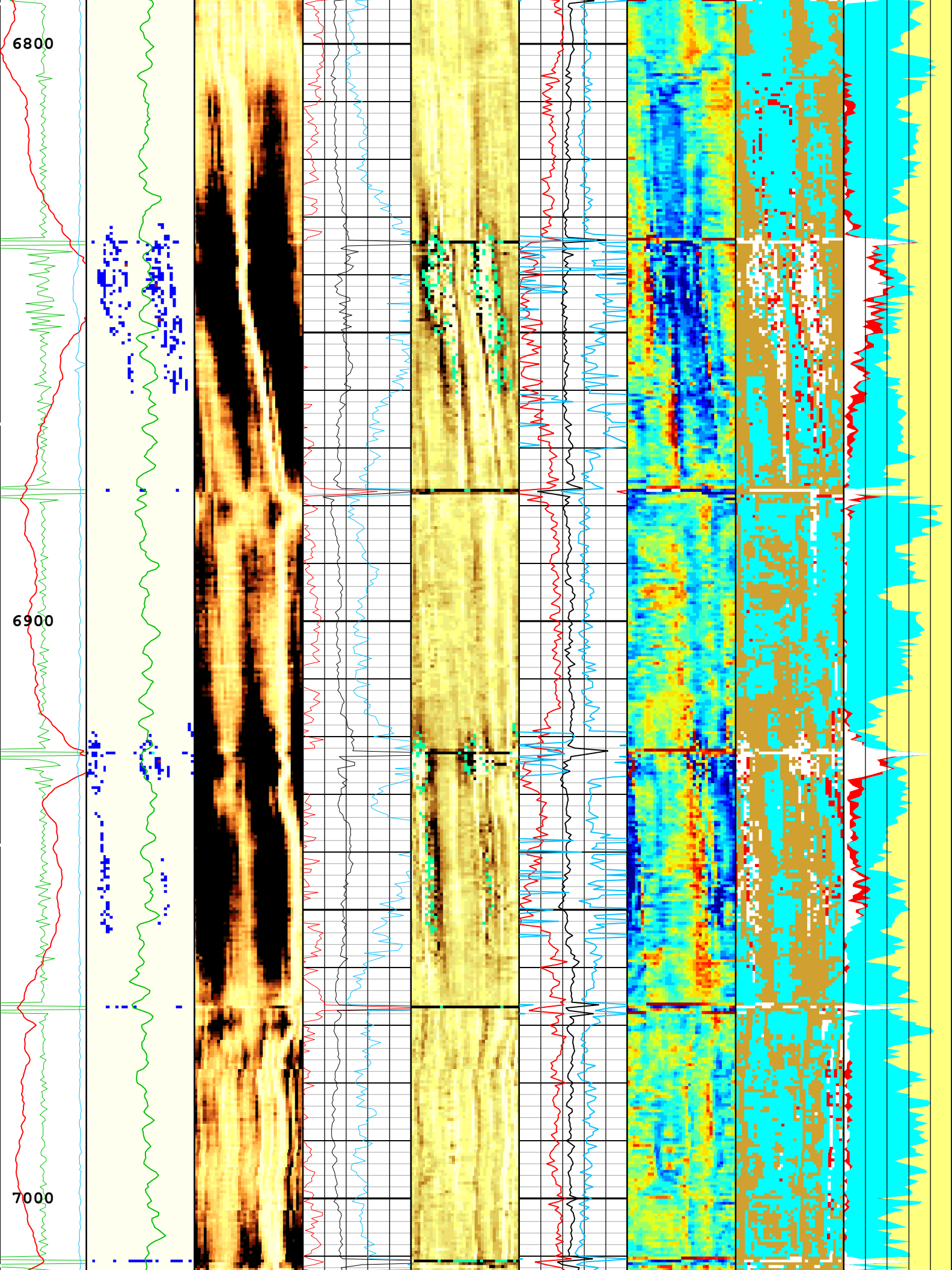


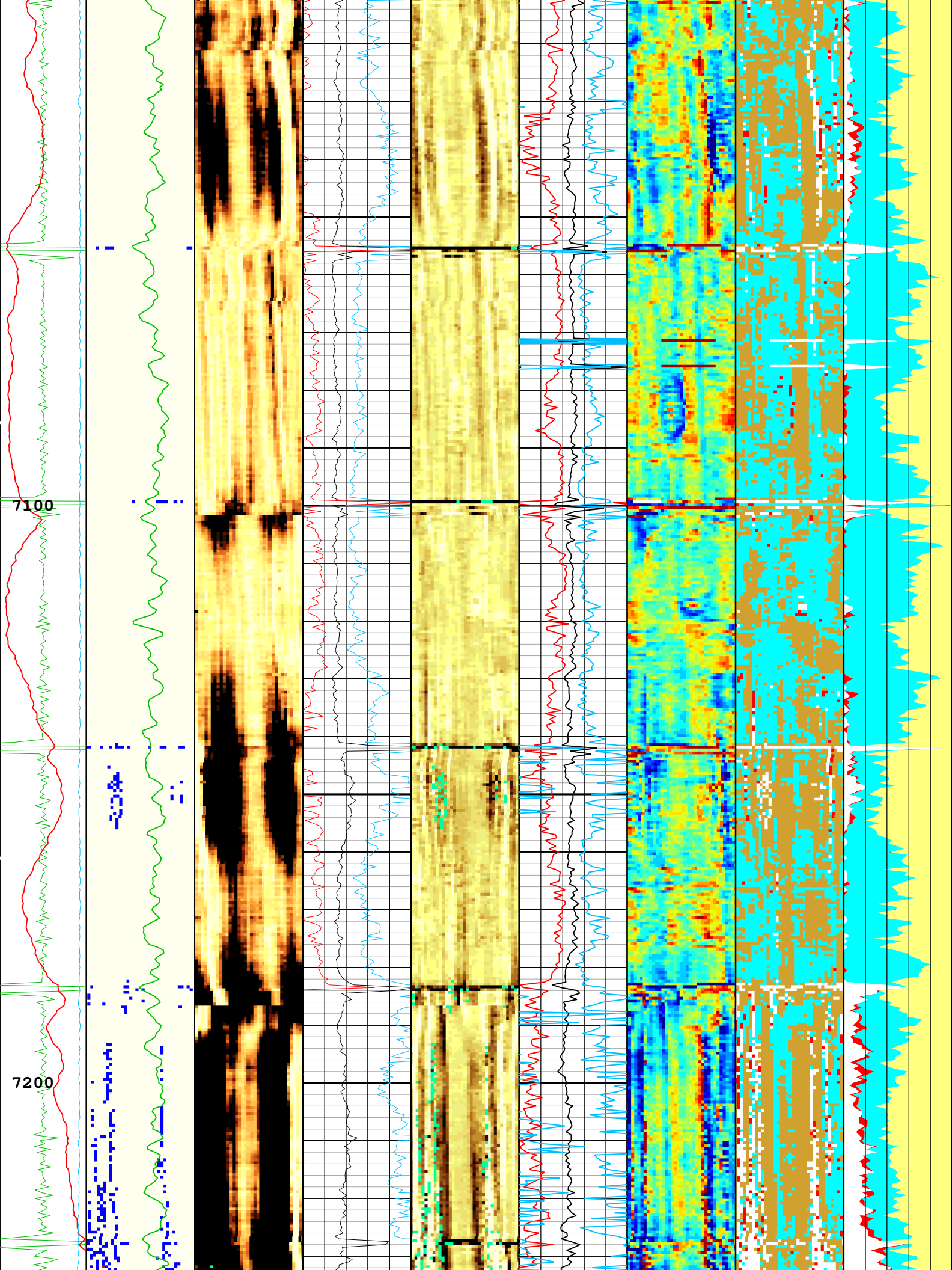


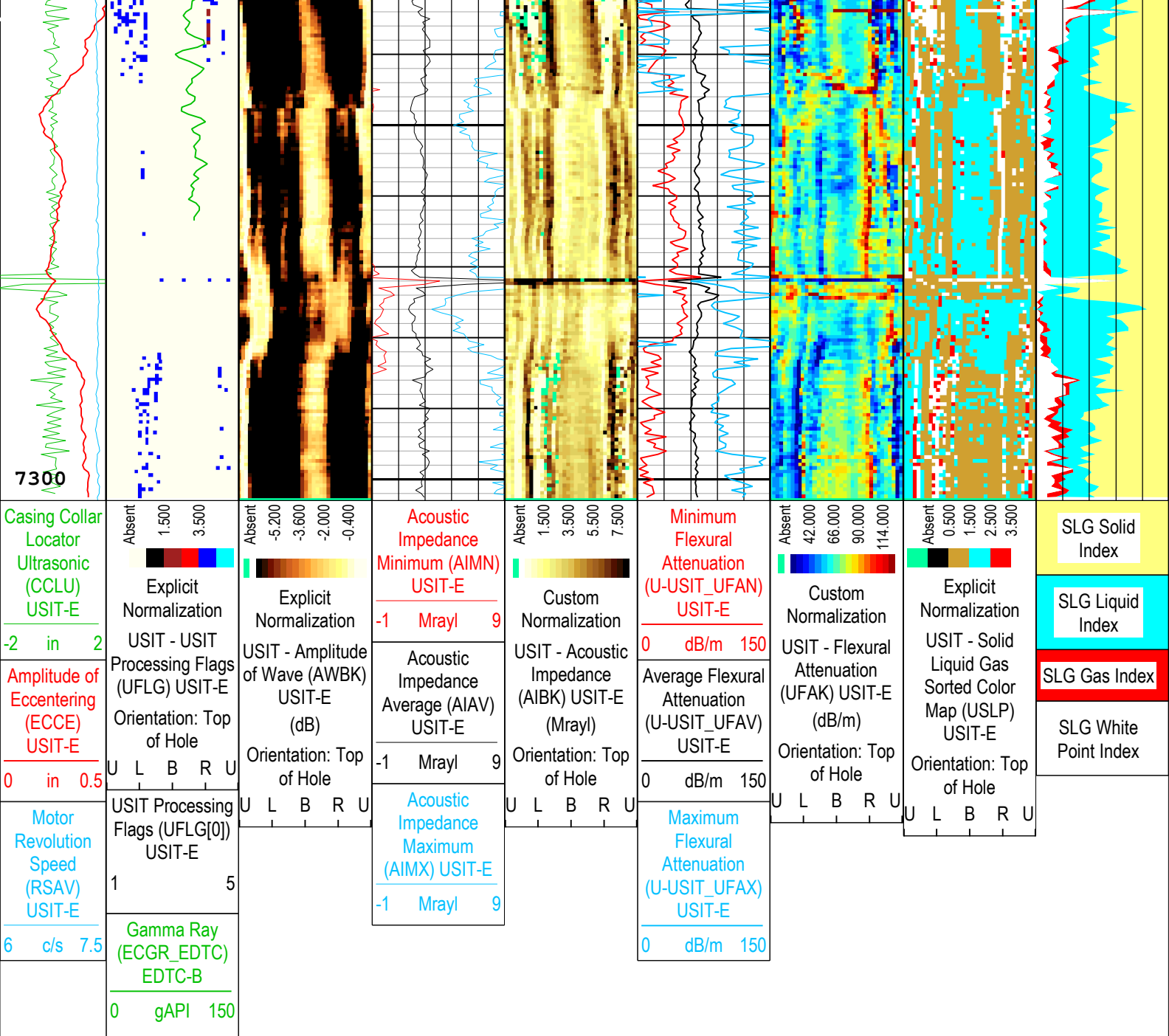












USIT Processing Flags (UFLG[0]) USIT-E

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 (Import (2) of IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 16-Nov-2019 17:47:03

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	12415	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	9.5	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	203	us/ft
FD	Fluid Density	USIT-E	10.5	lbm/gal
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
GR_MULTIPLIER	Gamma Ray Multiplier	EDTC-B	1	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	0	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	Theoretical	
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_THE	Theoretical Mud Normalization Factor	USIT-E	1.08	
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
RPLUS_PROCESS	Ultrasonic R+ Processing	USIT-E	No	
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	70	%
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.68	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-28.91	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
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	1.8	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters			
Parameter	Value	Start (ft)	Stop (ft)
BS	13.5	64	2595
BS	8.75	2595	7303

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	20	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	120	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	121.63	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	183.8	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	Time Zoned	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	145	us
USFR	Ultrasonic Sampling Frequency	USIT-E	666667	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 375 KHz	
UWKM	USIT Working Mode	USIT-E	10 deg at 6.0 in	
USSP	Ultrasonic Service	USIT-E	IBC	
U-USIT_UTAN	Transducer Angles	USIT-E	33_DEG	
VRES	Vertical Resolution	USIT-E	6.0 in	
WINB	Window Begin Time	USIT-E	Time Zoned	us
WINE	Window End Time	USIT-E	Time Zoned	us

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
U-USIT_UNWB	90.86	16-Nov-2019 14:57:44	16-Nov-2019 14:58:59	7304.06	7235.37
U-USIT_UNWB	84.6	16-Nov-2019 14:58:59	16-Nov-2019 16:40:06	7235.37	68.9
WINB	31.12	16-Nov-2019 14:57:44	16-Nov-2019 14:59:31	7304.06	7196.2
WINB	25.99	16-Nov-2019 14:59:31	16-Nov-2019 16:40:06	7196.2	68.9
WINE	71.87	16-Nov-2019 14:57:44	16-Nov-2019 15:01:06	7304.06	7077.38
WINE	72.53	16-Nov-2019 15:01:06	16-Nov-2019 15:01:09	7077.38	7072.9
WINE	76.46	16-Nov-2019 15:01:09	16-Nov-2019 16:40:06	7072.9	68.9

All depths are at tool zero.

ONE

IBC SLG COMPOSITE MAIN PASS @10DEG X 6IN @0PSI [2:100]

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	68.90 ft	7304.06 ft	16-Nov-2019 2:57:44 PM	16-Nov-2019 4:40:06 PM	ON	3.78 ft	No

All depths are referenced to toolstring zero






Log	Company:CRESTONE PEAK RESOURCES OPERATING LLC	Well:HINGLEY 1I-18H-A167
		ONE: Log[4]:Up:S005

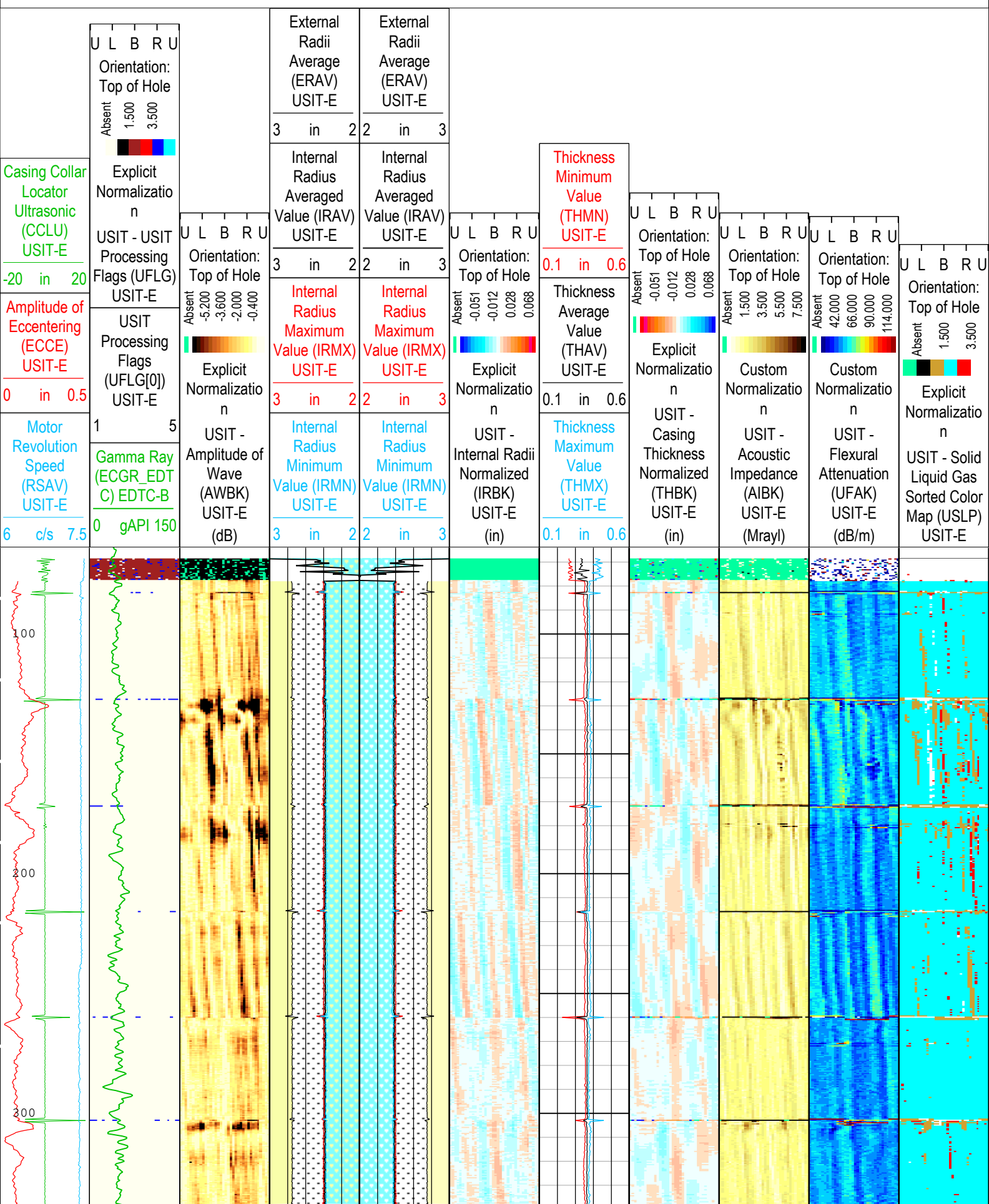
Description: USI IBC SLG Composite Format: Log (Import (2) of IBC SLG Composite) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 16-Nov-2019 17:47:40

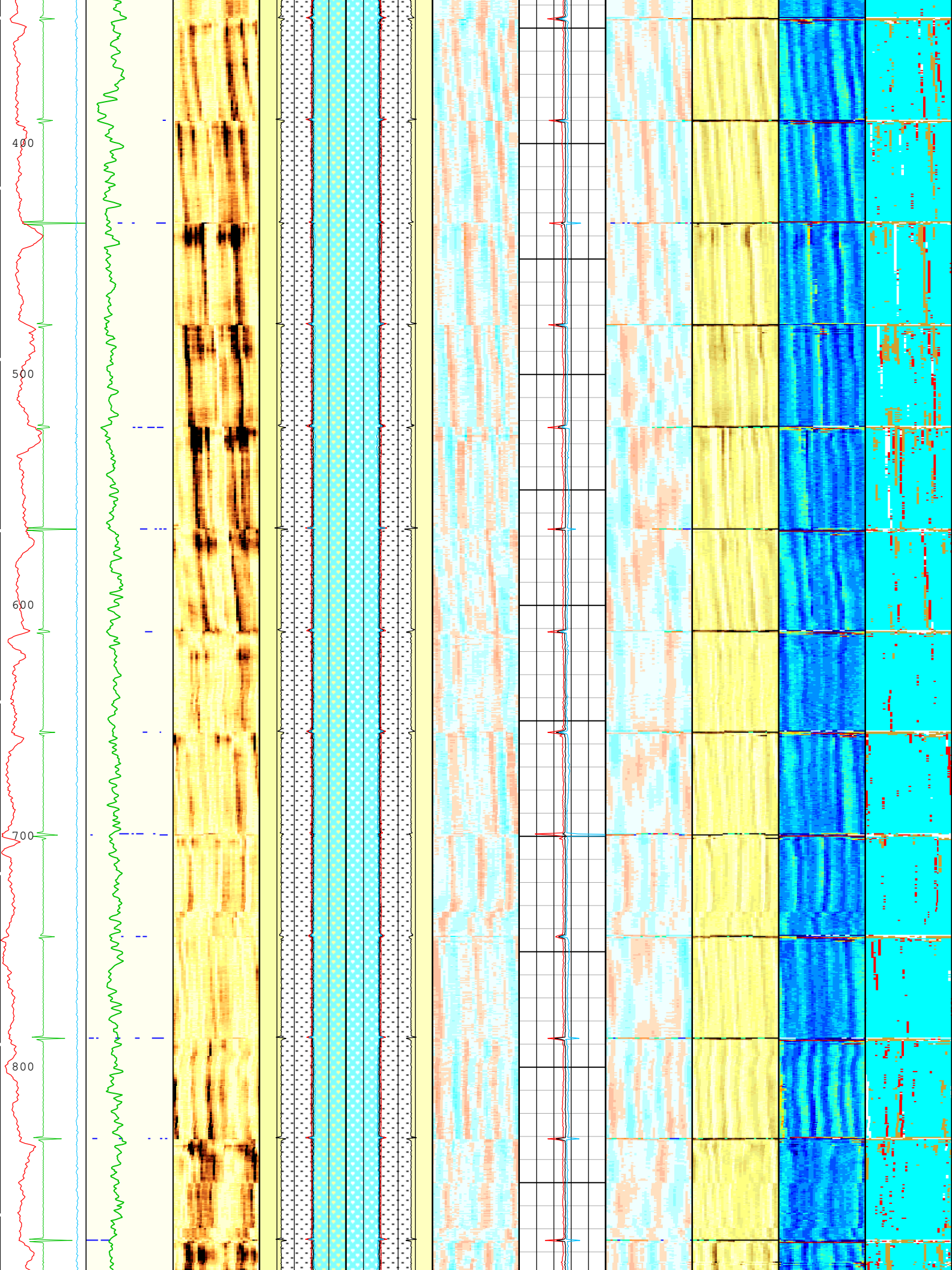
TIME_1900 - Time Marked every 60.00 (s)

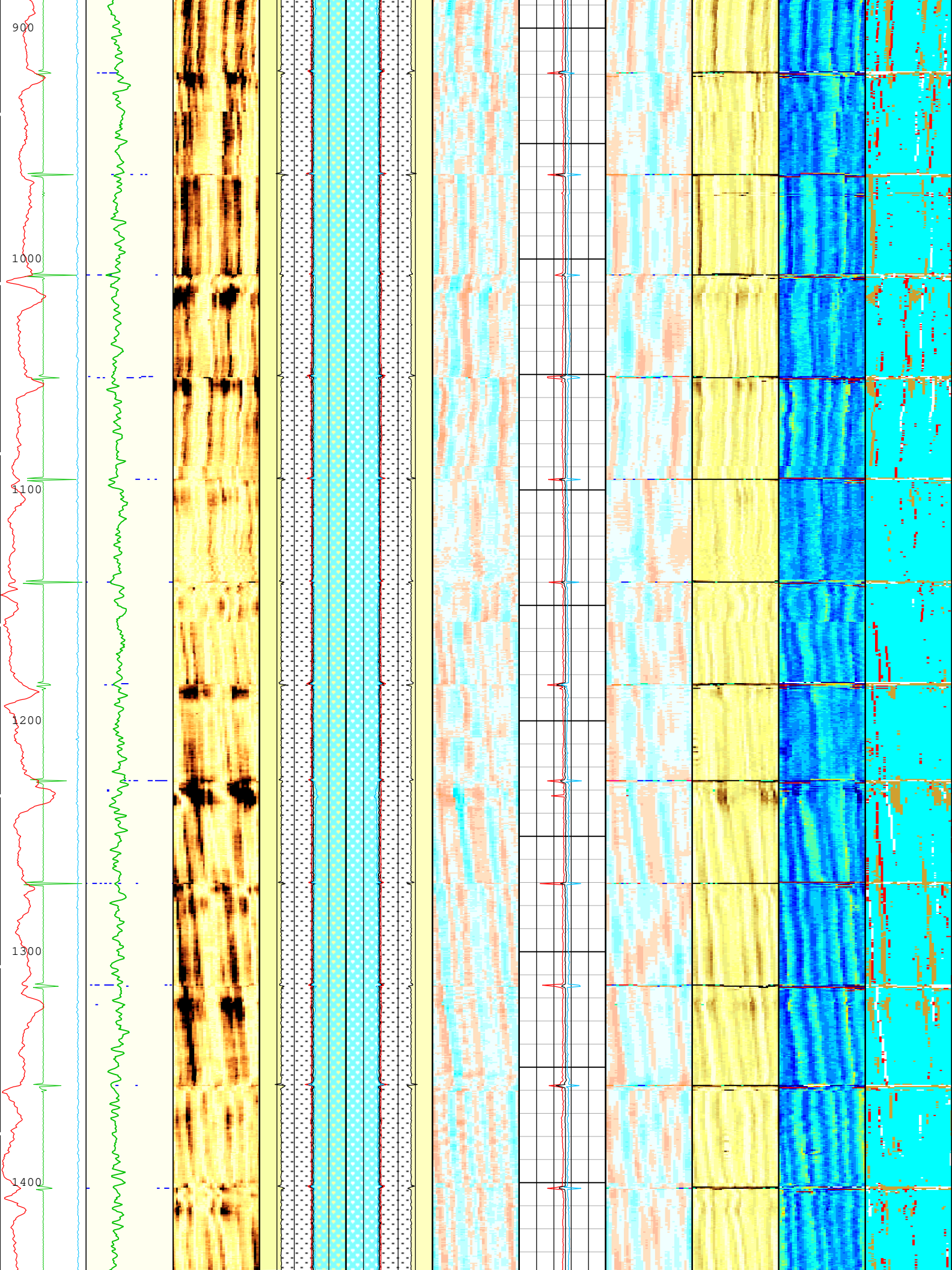
USIT Processing Flags (UFLG[0]) USIT-E

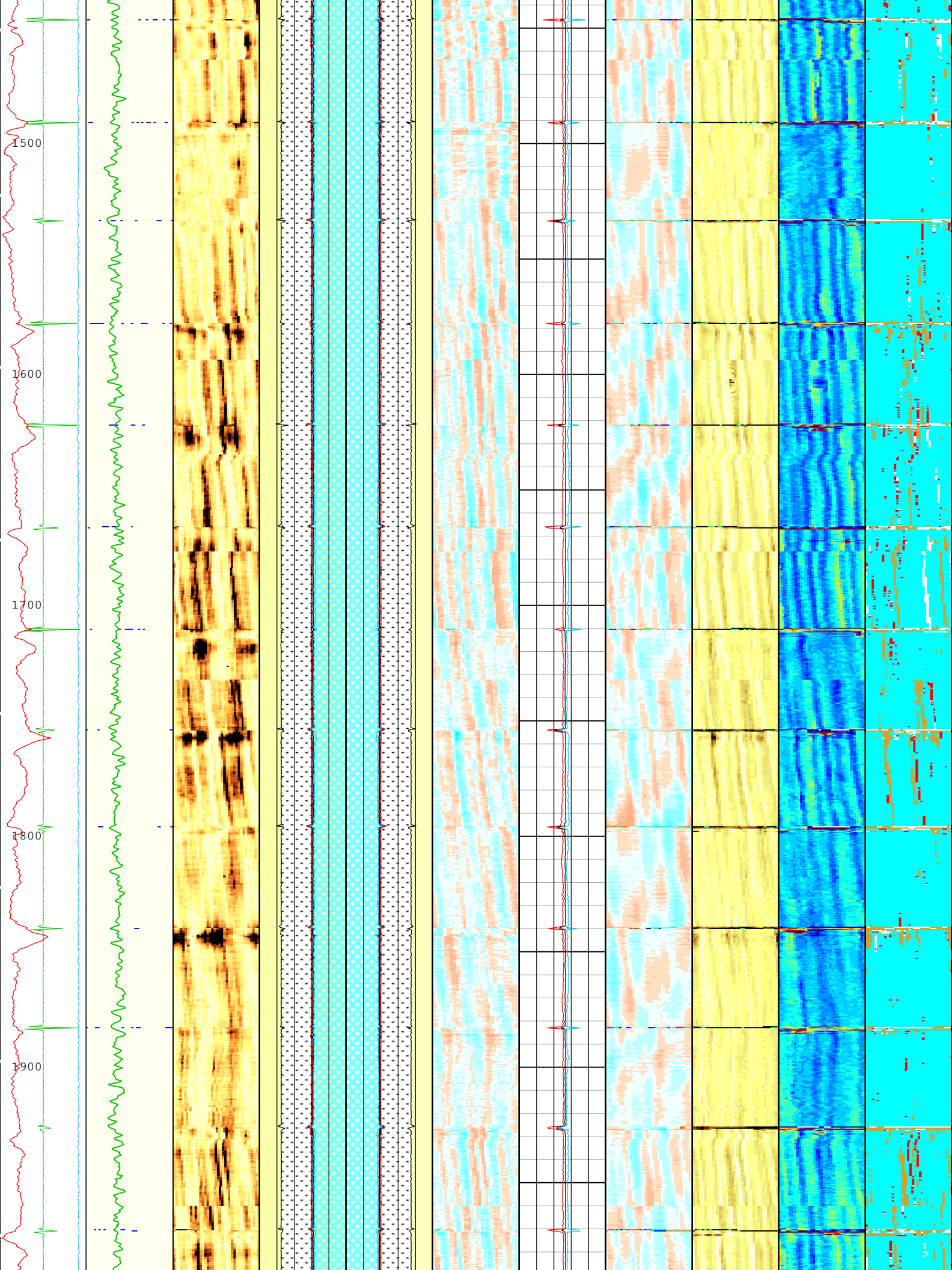
1 - UFLG 1 Value within [0.0 - 1.5] - -  USIT Error

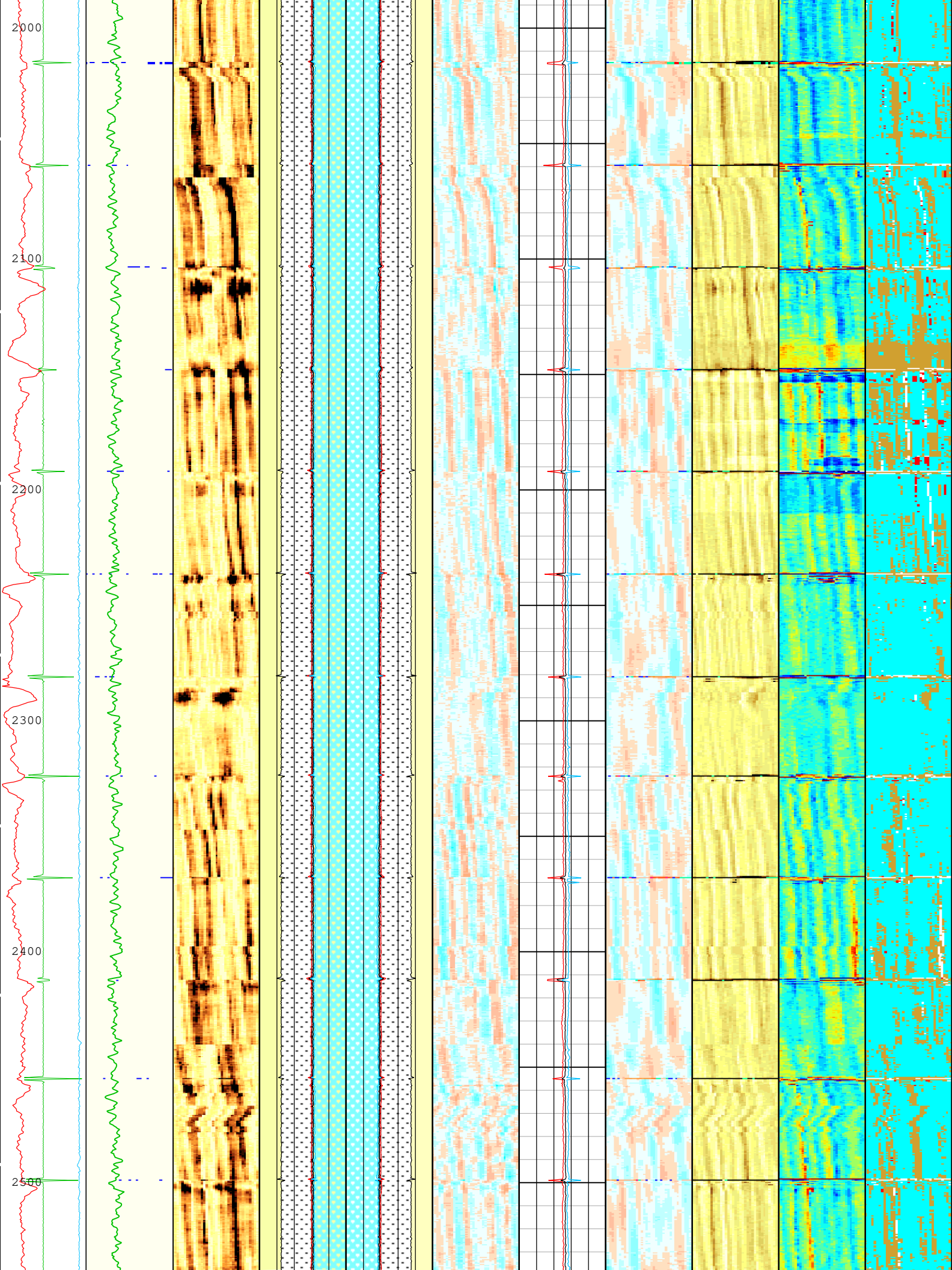
-  CTM Error
-  Pulse Origin Not Detected
-  WINLEN Error
-  Casing Thickness Error
-  Loop Processing Error

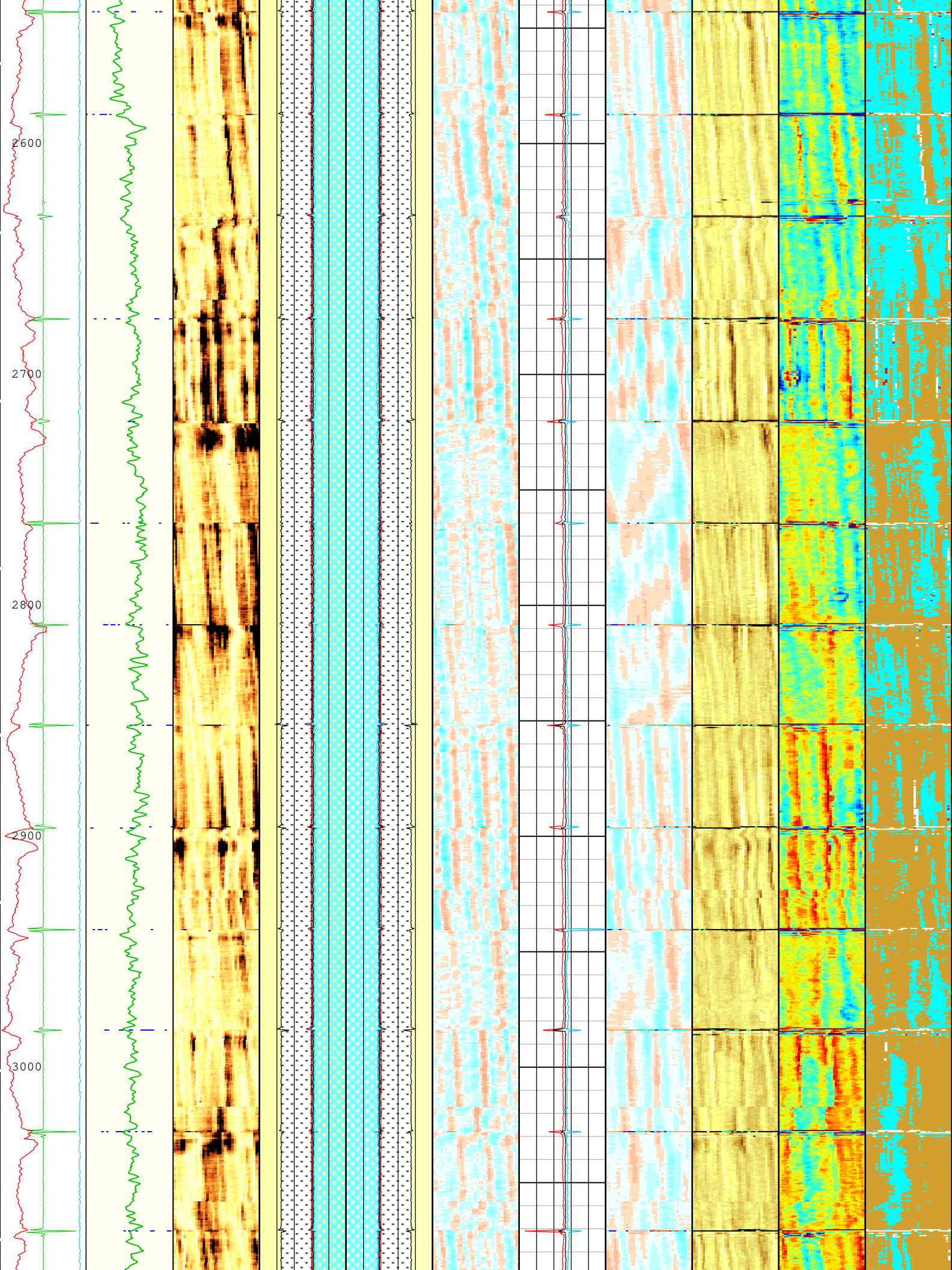


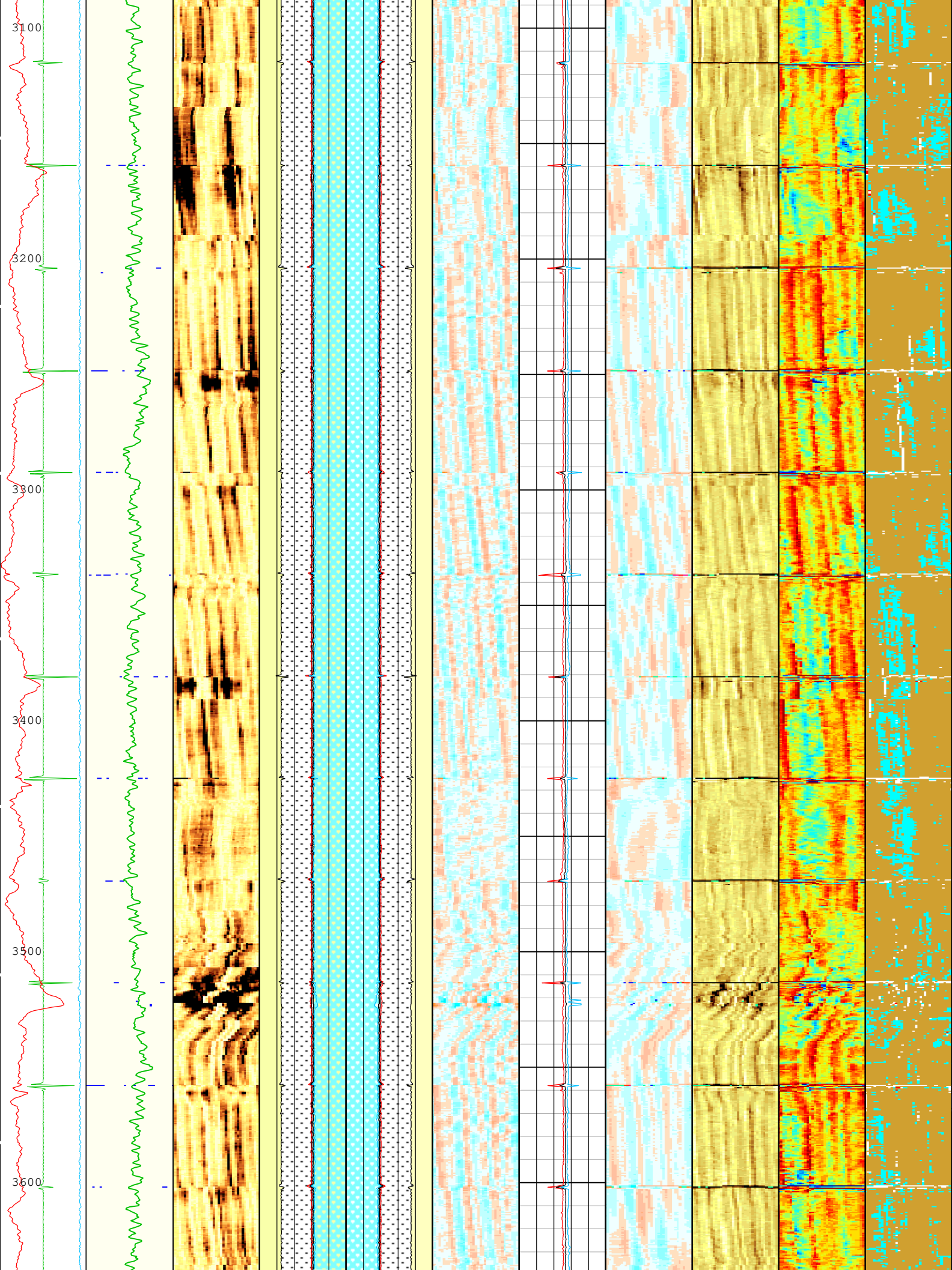


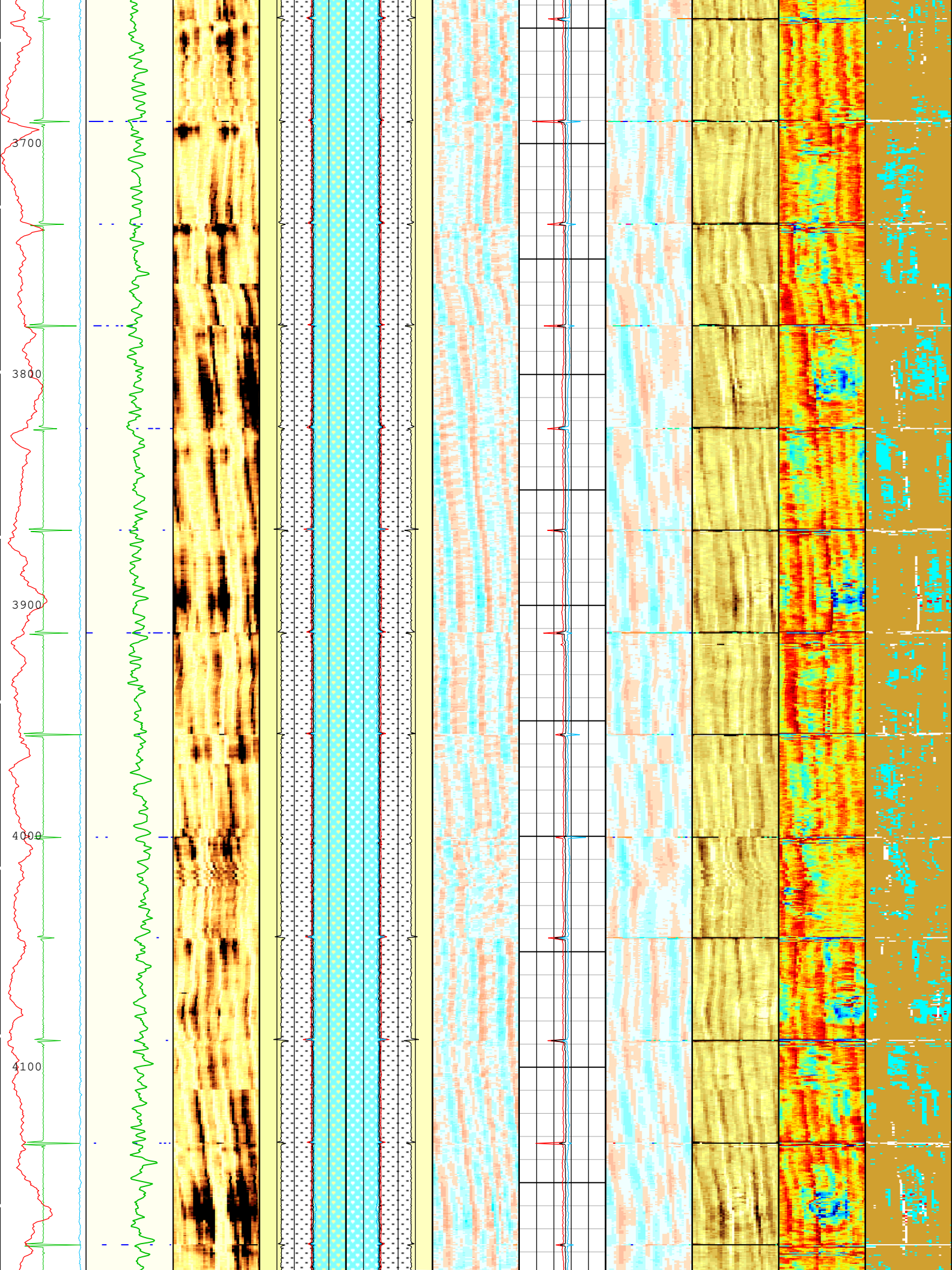


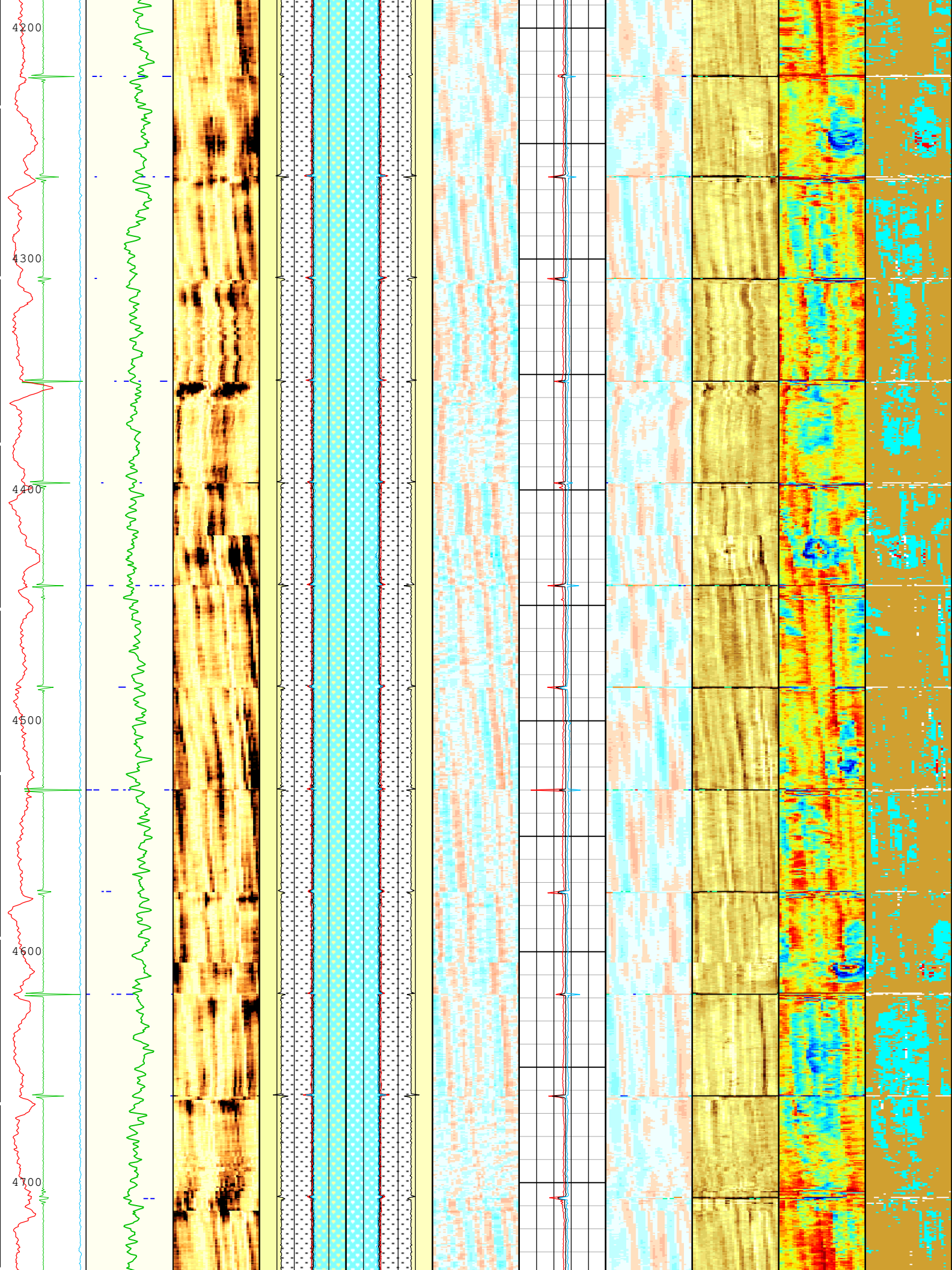


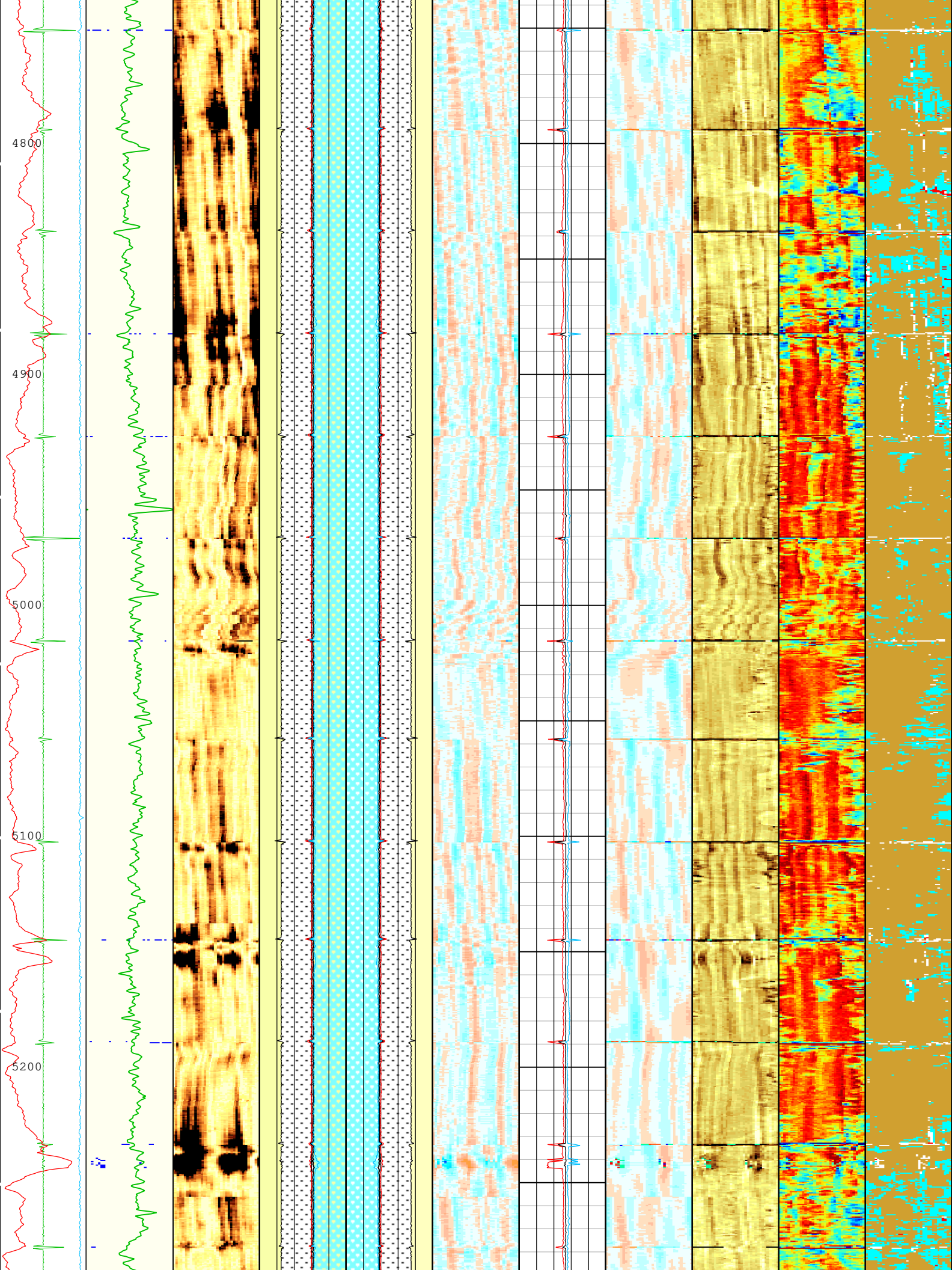


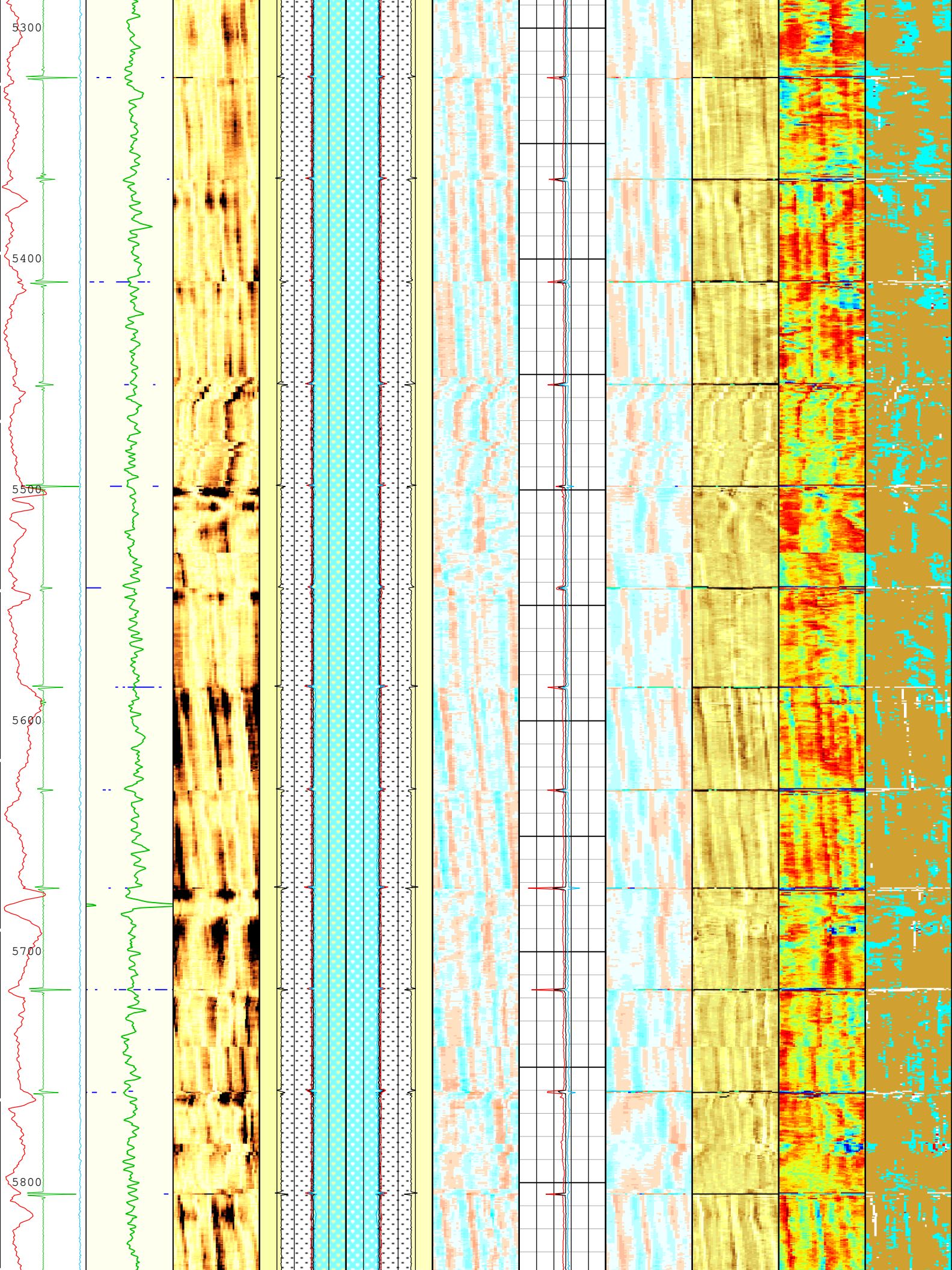


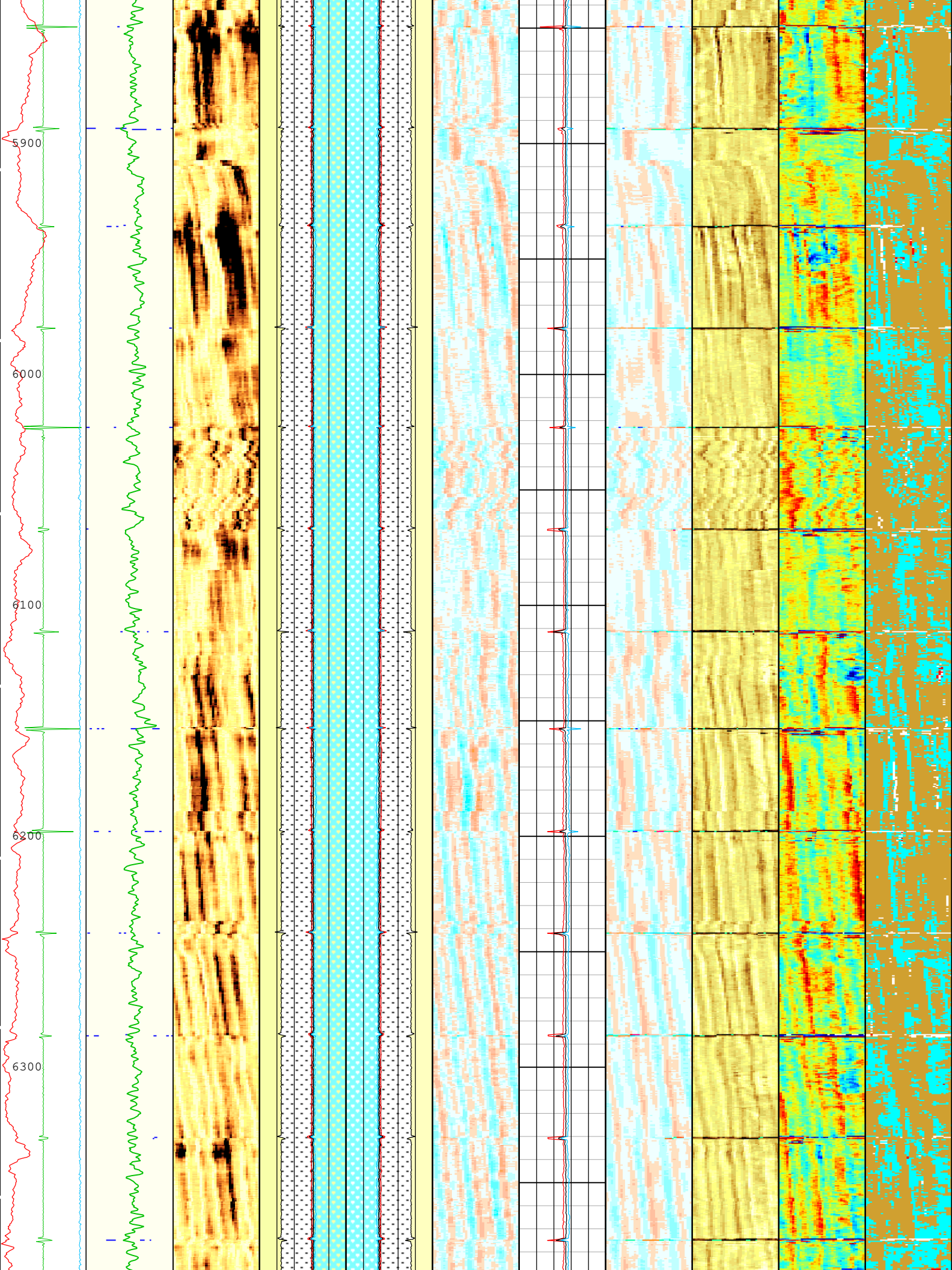


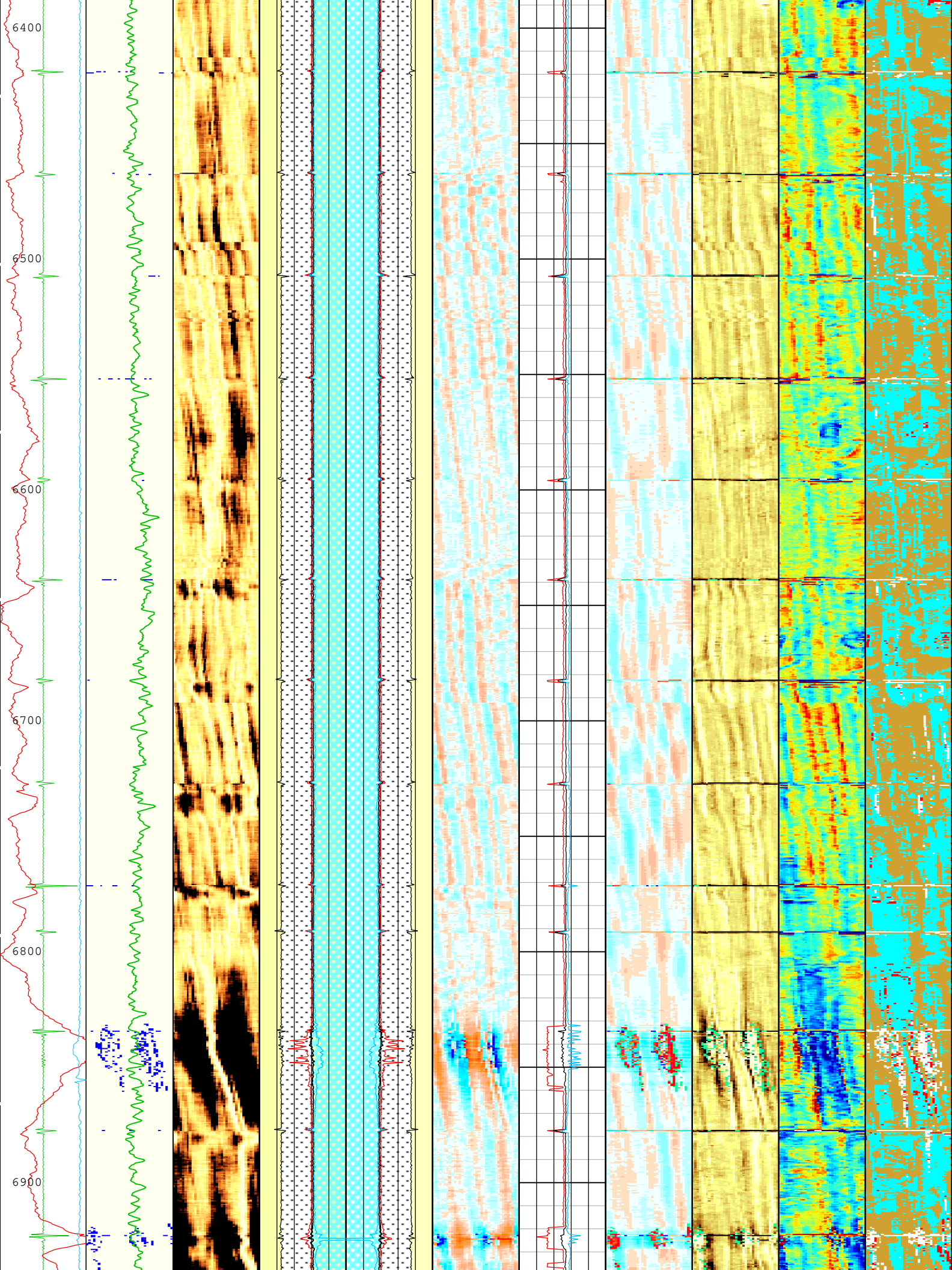


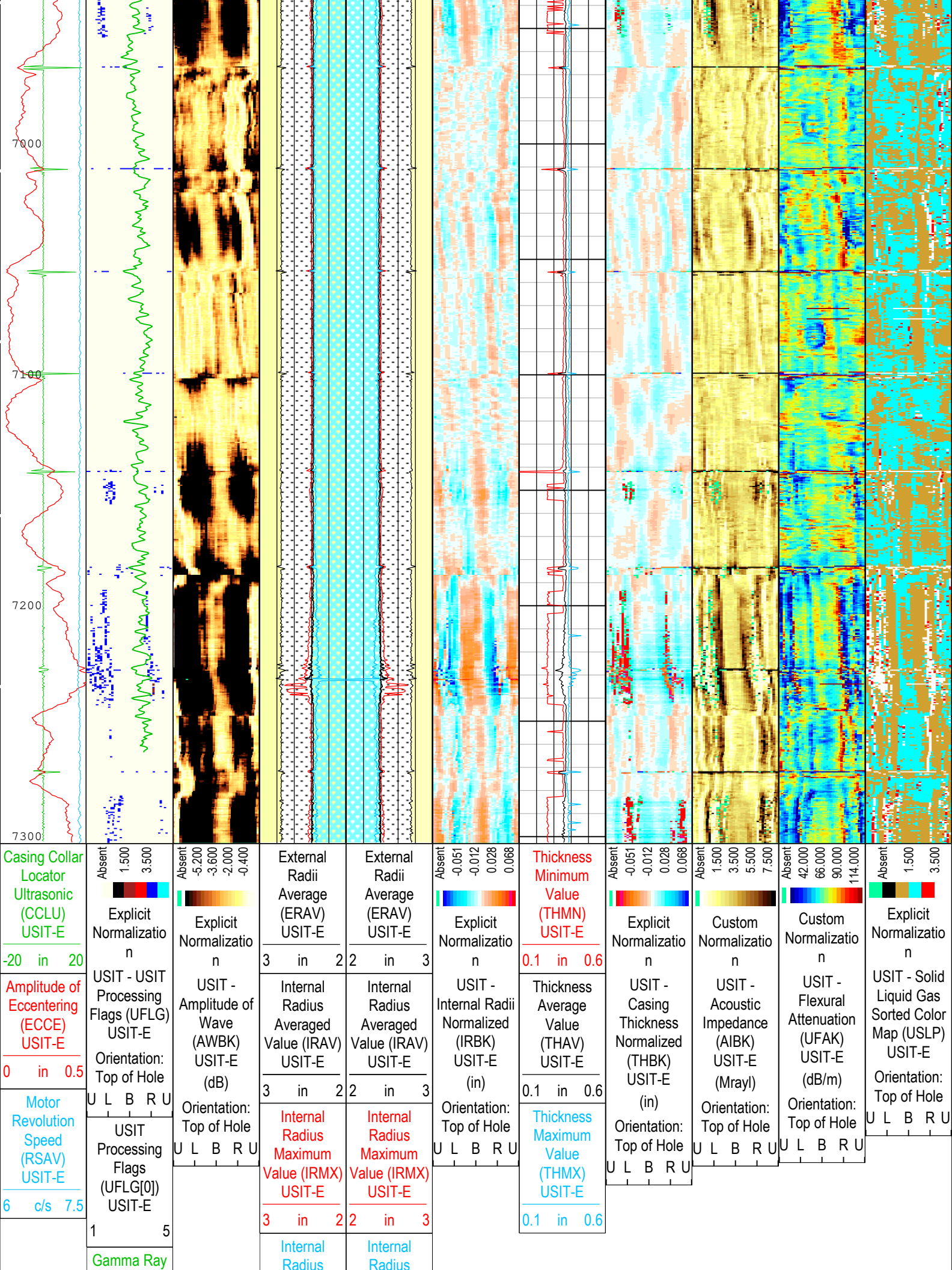












<div>(ECGR_EDT C) EDTC-B</div> <div>0 gAPI 150</div>		<div>Minimum Value (IRMN) USIT-E</div> <div>3 in 2</div>		<div>Minimum Value (IRMN) USIT-E</div> <div>2 in 3</div>	
USIT Processing Flags (UFLG[0]) USIT-E					
1 - UFLG 1 Value within [0.0 - 1.5] - :		<div><div></div>UTIM Error</div>			
2 - UFLG 2 Value within [1.5 - 2.5] - :		<div><div></div>Pulse Origin Not Detected</div>			
3 - UFLG 3 Value within [2.5 - 3.5] - :		<div><div></div>WINLEN Error</div>			
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :		<div><div></div>Casing Thickness Error</div>			
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :		<div><div></div>Loop Processing Error</div>			
TIME_1900 - Time Marked every 60.00 (s)					
Description: USI IBC SLG Composite Format: Log (Import (2) of IBC SLG Composite) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 16-Nov-2019 17:47:40					

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	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	12415	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	9.5	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	203	us/ft
FD	Fluid Density	USIT-E	10.5	lbm/gal
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_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	Theoretical	
IMAR	Image Rotation	USIT-E	RB	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	22.44	us
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1.08	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.68	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-28.91	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
ZMUD	Acoustic Impedance of Mud	Borehole	1.8	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl
Depth Zone Parameters				
Parameter	Value	Start (ft)	Stop (ft)	
BS	13.5	64	2595	
BS	8.75	2595	7303	
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	20	dB
EMXV	EMEX Voltage	USIT-E	120	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	121.63	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	183.8	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	Time Zoned	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	145	us
UPAT	USIT Emission Pattern	USIT-E	Pattern 375 KHz	
UWKM	USIT Working Mode	USIT-E	10 deg at 6.0 in	
U-USIT_UTAN	Transducer Angles	USIT-E	33_DEG	
VRES	Vertical Resolution	USIT-E	6.0 in	
WINB	Window Begin Time	USIT-E	Time Zoned	us
WINE	Window End Time	USIT-E	Time Zoned	us

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
U-USIT_UNWB	90.86	16-Nov-2019 14:57:44	16-Nov-2019 14:58:59	7304.06	7235.37
U-USIT_UNWB	84.6	16-Nov-2019 14:58:59	16-Nov-2019 16:40:06	7235.37	68.9
WINB	31.12	16-Nov-2019 14:57:44	16-Nov-2019 14:59:31	7304.06	7196.2
WINB	25.99	16-Nov-2019 14:59:31	16-Nov-2019 16:40:06	7196.2	68.9
WINE	71.87	16-Nov-2019 14:57:44	16-Nov-2019 15:01:06	7304.06	7077.38
WINE	72.53	16-Nov-2019 15:01:06	16-Nov-2019 15:01:09	7077.38	7072.9
WINE	76.46	16-Nov-2019 15:01:09	16-Nov-2019 16:40:06	7072.9	68.9

All depth are at tool zero.

ONE

IBC GOODWIN MAIN PASS @10DEG X 6IN @0PSI [0.1:100]

Pass Summary

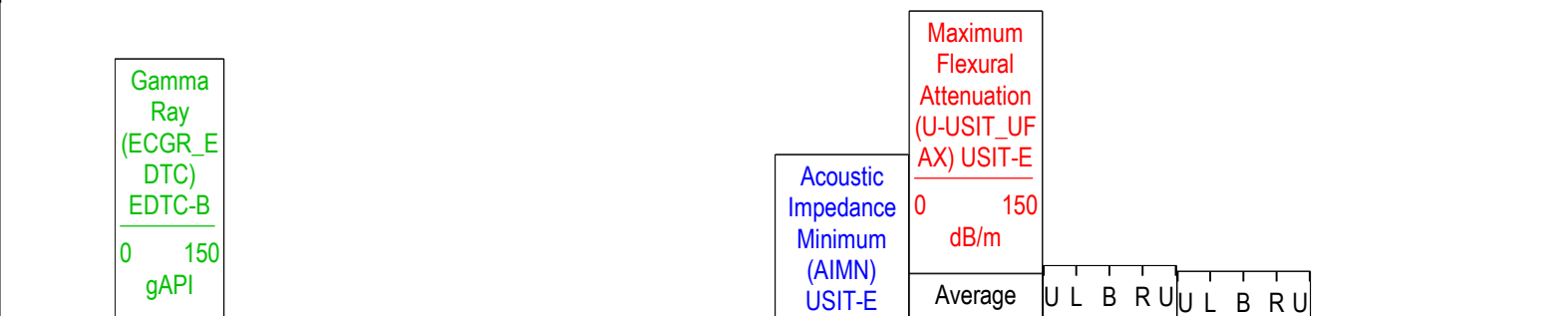
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	68.90 ft	7304.06 ft	16-Nov-2019 2:57:44 PM	16-Nov-2019 4:40:06 PM	ON	3.78 ft	No

All depths are referenced to toolstring zero

Log	Company:CRESTONE PEAK RESOURCES OPERATING LLC	Well:HINGLEY 11-18H-A167
		ONE: Log[4]:Up:S005

Description: USI Goodwin Format: Log (Import (2) of IBC Goodwin) Index Scale: 0.1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 16-Nov-2019 17:48:07

TIME_1900 - Time Marked every 60.00 (s)



	Amplitude of Eccentering (ECCE) USIT-E		-1 Mrayl	9	Flexural Attenuation (U-USIT_UF AV) USIT-E	Orientation: Top of Hole	Orientation: Top of Hole	U L B R U	SLG Solid Index
	0 in 0.5		Acoustic Impedance Maximum (AIMX) USIT-E		0 150 dB/m	Custom Normalization	Custom Normalization	Orientation: Top of Hole	SLG Liquid Index
	Motor Revolution Speed (RSAV) USIT-E		Acoustic Impedance Average (AIAV) USIT-E	-1 Mrayl	9	Minimum Flexural Attenuation (U-USIT_UF AN) USIT-E	USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)	Explicit Normalization	SLG Gas Index
	6 c/s 7.5	Goodwin Sector Curves (5 Mrayl per Division)		-1 Mrayl	9	0 150 dB/m	USIT - Flexural Attenuation (UFAK) USIT-E (dB/m)	USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E	SLG White Point Index
500									
1000									
1500									
2000									
2500									
3000									
3500									
4000									
4500									
5000									
5500									
6000									
6500									
7000									
	Gamma Ray (ECGR_E DTC) EDTC-B	Goodwin Sector Curves (5 Mrayl per Division)	Acoustic Impedance Minimum (AIMN) USIT-E	Maximum Flexural Attenuation (U-USIT_UF AX) USIT-E		Custom Normalization	Custom Normalization	Explicit Normalization	SLG Solid Index
	0 150 gAPI		-1 Mrayl 9	0 150 dB/m		USIT	USIT -	USIT - Solid	SLG Liquid Index

Amplitude of Eccentering (ECCE) USIT-E	Acoustic Impedance Maximum (AIMX) USIT-E	Average Flexural Attenuation (U-USIT_UF AV) USIT-E	Acoustic Impedance (AIBK) USIT-E (Mrayl)	Flexural Attenuation (UFAK) USIT-E (dB/m)	Liquid Gas Sorted Color Map (USLP) USIT-E	SLG Gas Index
0 in 0.5	-1 Mrayl 9	0 150 dB/m	Orientation: Top of Hole U L B R U	Orientation: Top of Hole U L B R U	Orientation: Top of Hole U L B R U	SLG White Point Index
Motor Revolution Speed (RSAV) USIT-E	Acoustic Impedance Average (AIAV) USIT-E	Minimum Flexural Attenuation (U-USIT_UF AN) USIT-E				
6 c/s 7.5	-1 Mrayl 9	0 150 dB/m				

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Goodwin Format: Log (Import (2) of IBC Goodwin) Index Scale: 0.1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 16-Nov-2019 17:48:07

ONE									
IBC SLG REPEAT PASS 1 @10DEG X 6IN @0PSI [5:100]									
Software Version									
Acquisition System						Version			
Maxwell 2019.2						9.2.113335.3100			
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[3]:Up	Up	6956.33 ft	7303.39 ft	16-Nov-2019 2:48:49 PM	16-Nov-2019 2:54:34 PM	ON	3.65 ft	No
All depths are referenced to toolstring zero									
Log	Company:CRESTONE PEAK RESOURCES OPERATING LLC						Well:HINGLEY 1I-18H-A167		
ONE: Log[3]:Up:S005									

Description: USI IBC SLG Format: Log (Import (2) of IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 16-Nov-2019 17:48:22

TIME_1900 - Time Marked every 60.00 (s)

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

1 - UFLG 1 Value within [0.0 - 1.5] - :
2 - UFLG 2 Value within [1.5 - 2.5] - :
3 - UFLG 3 Value within [2.5 - 3.5] - :
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :

■

 UTIM Error

■

 Pulse Origin Not Detected

■

 WINLEN Error

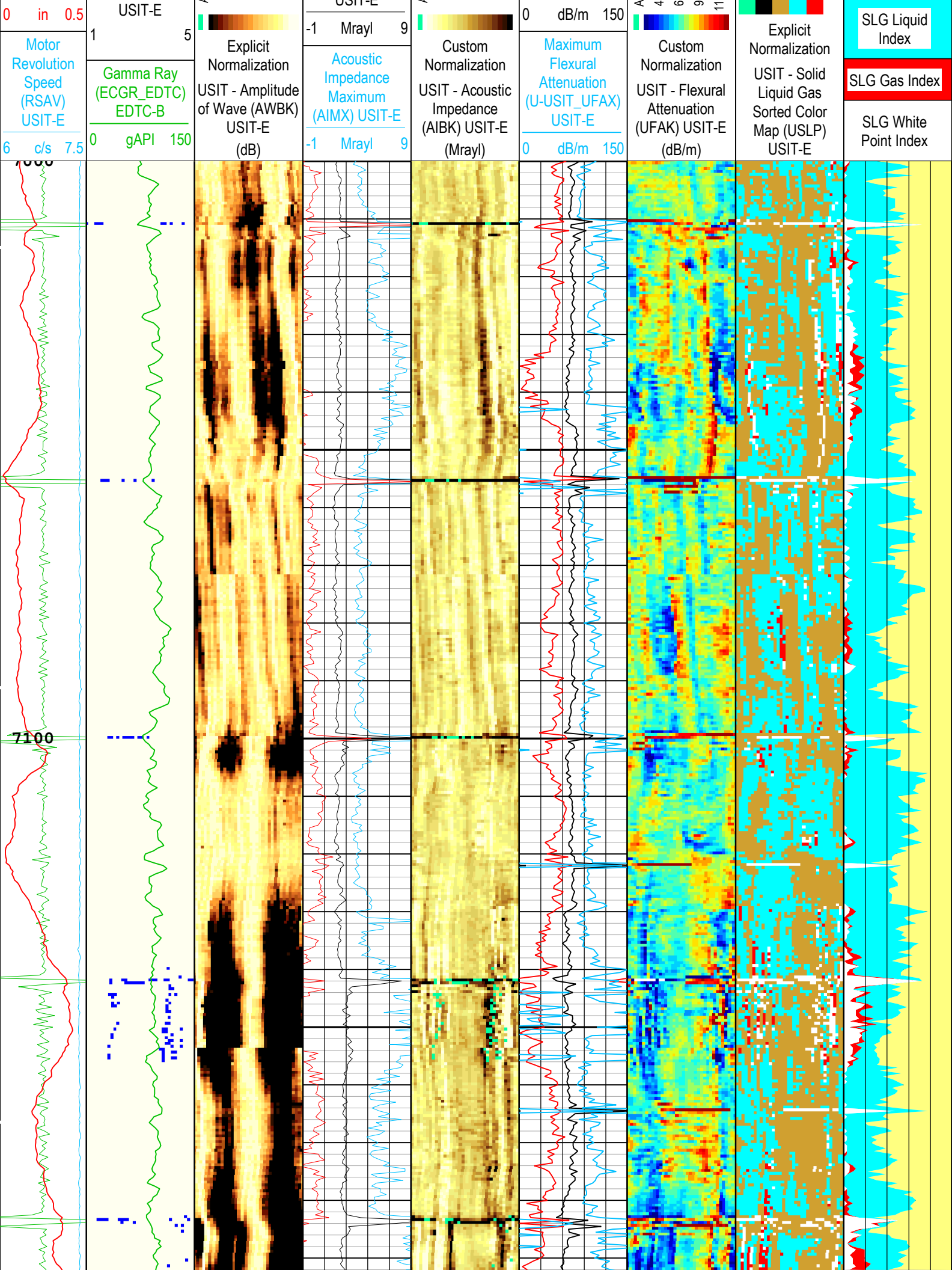
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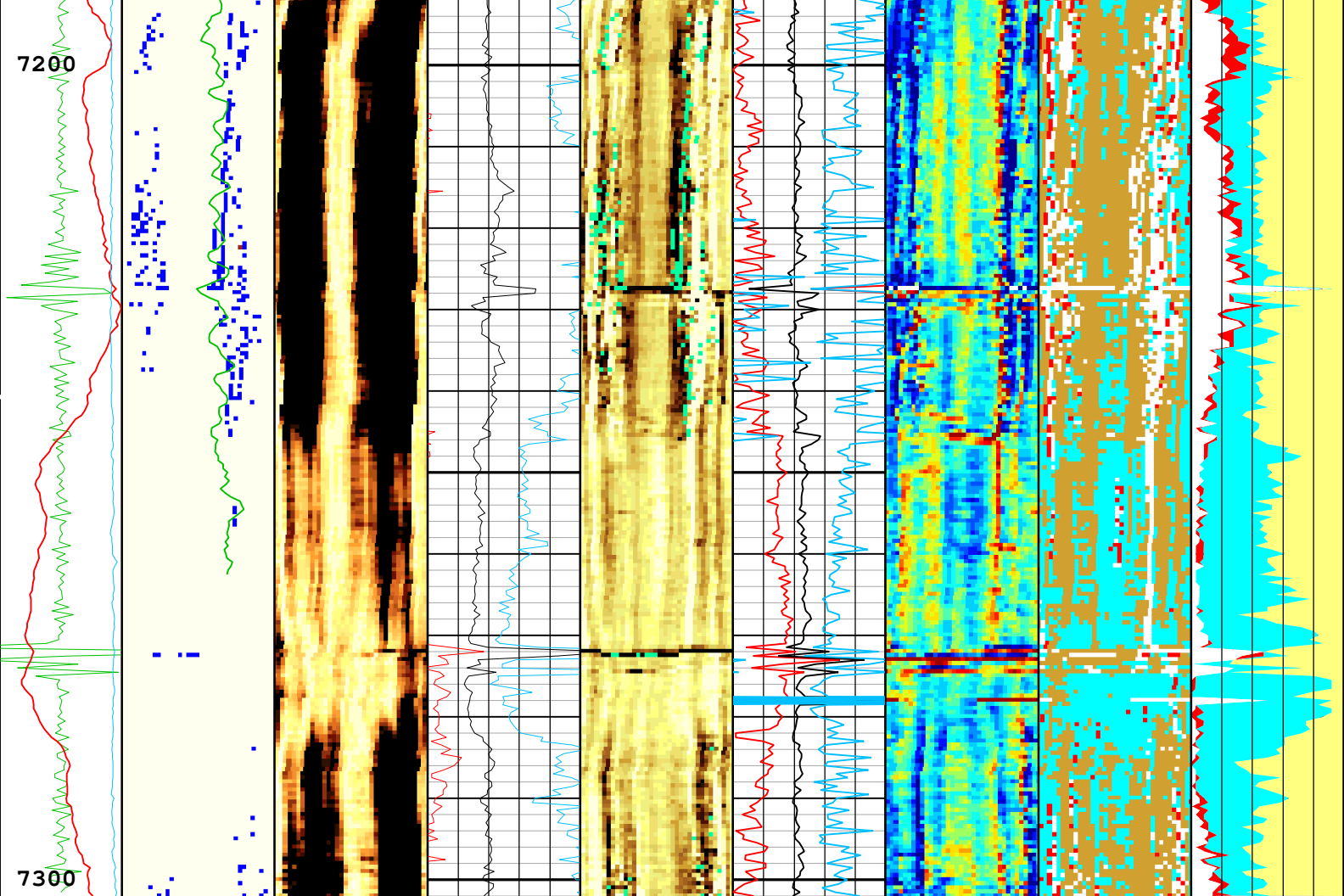
 Casing Thickness Error

■

 Loop Processing Error

Casing Collar Locator Ultrasonic (CCLU) USIT-E	U L B R U	Acoustic Impedance Minimum (AIMN) USIT-E	Minimum Flexural Attenuation (U-USIT_UFAN) USIT-E	U L B R U	U L B R U	U L B R U	SLG Solid Index
-2 in 2	Orientation: Top of Hole Absent 1.500 3.500 Explicit Normalization USIT - USIT	-1 Mrayl 9	0 dB/m 150	Orientation: Top of Hole Absent 1.500 3.500 5.500 7.500	Orientation: Top of Hole Absent 2.000 6.000 0.000 4.000	Orientation: Top of Hole Absent 0.500 1.500 2.500 3.500	
Amplitude of Eccentering (ECCE) USIT-E	Processing Flags (UFLG) USIT-E	Acoustic Impedance Average (AIAV) USIT-E	Average Flexural Attenuation (U-USIT_UFAV) USIT-E	Orientation: Top of Hole	Orientation: Top of Hole		
	USIT Processing Flags (UFLG[0])						





Casing Collar Locator (CCLU) USIT-E	Absent 1,500 3,500	Absent -5,200 -3,600 -2,000 -0,400	Acoustic Impedance Minimum (AIMN) USIT-E	Absent 1,500 3,500 5,500 7,500	Minimum Flexural Attenuation (U-USIT_UFAN) USIT-E	Absent 42,000 66,000 90,000 114,000	Absent 0,500 1,500 2,500 3,500	SLG Solid Index
-2 in 2	Explicit Normalization	Explicit Normalization	-1 Mrayl 9	Custom Normalization	0 dB/m 150	Custom Normalization	Explicit Normalization	SLG Liquid Index
Amplitude of Eccentering (ECCE) USIT-E	USIT - USIT Processing Flags (UFLG) USIT-E	USIT - Amplitude of Wave (AWBK) USIT-E (dB)	Acoustic Impedance Average (AIAV) USIT-E	USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)	Average Flexural Attenuation (U-USIT_UFAV) USIT-E	USIT - Flexural Attenuation (UFAK) USIT-E (dB/m)	USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E	SLG Gas Index
0 in 0.5	Orientation: Top of Hole	Orientation: Top of Hole	-1 Mrayl 9	Orientation: Top of Hole	0 dB/m 150	Orientation: Top of Hole	Orientation: Top of Hole	SLG White Point Index
Motor Revolution Speed (RSAV) USIT-E	USIT Processing Flags (UFLG[0]) USIT-E	U L B R U	Acoustic Impedance Maximum (AIMX) USIT-E	U L B R U	Maximum Flexural Attenuation (U-USIT_UFAX) USIT-E	U L B R U	U L B R U	
6 c/s 7.5	1 5		-1 Mrayl 9		0 dB/m 150			
Gamma Ray (ECGR_EDTC) EDTC-B								
0 gAPI 150								

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)

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	8.75	in
CASING_PRATIO	Casing Poisson Ratio	USIT-E	Standard Poisson Ratio	
CBLO	Casing Bottom (Logger)	WLSESSION	12415	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	9.5	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	203	us/ft
FD	Fluid Density	USIT-E	10.5	lbm/gal
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
GR_MULTIPLIER	Gamma Ray Multiplier	EDTC-B	1	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	0	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	Theoretical	
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_THE	Theoretical Mud Normalization Factor	USIT-E	1.08	
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
RPLUS_PROCESS	Ultrasonic R+ Processing	USIT-E	No	
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	70	%
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.68	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-28.91	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
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	1.8	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	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	20	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	120	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	Time Zoned	us					
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	Time Zoned	us					
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	145	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	31.12	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)				
U-USIT_UFWB	136	16-Nov-2019 14:48:49	16-Nov-2019 14:51:00	7303.39	7166.38				
U-USIT_UFWB	121.63	16-Nov-2019 14:51:00	16-Nov-2019 14:54:34	7166.38	6956.32				
U-USIT_UFWE	176	16-Nov-2019 14:48:49	16-Nov-2019 14:53:26	7303.39	6981.25				
U-USIT_UFWE	180.23	16-Nov-2019 14:53:26	16-Nov-2019 14:53:32	6981.25	6974.04				
U-USIT_UFWE	183.8	16-Nov-2019 14:53:32	16-Nov-2019 14:54:34	6974.04	6956.32				
U-USIT_UNWB	105	16-Nov-2019 14:48:49	16-Nov-2019 14:51:49	7303.39	7104.74				
U-USIT_UNWB	98.01	16-Nov-2019 14:51:49	16-Nov-2019 14:51:52	7104.74	7100.22				
U-USIT_UNWB	90.86	16-Nov-2019 14:51:52	16-Nov-2019 14:54:34	7100.22	6956.32				
WINE	71.12	16-Nov-2019 14:48:49	16-Nov-2019 14:49:28	7303.39	7279.49				
WINE	83.58	16-Nov-2019 14:49:28	16-Nov-2019 14:51:34	7279.49	7123.98				
WINE	71.87	16-Nov-2019 14:51:34	16-Nov-2019 14:54:34	7123.98	6956.32				
All depth are at tool zero.									
ONE									
IBC SLG COMPOSITE REPEAT PASS 1 @10DEG X 6IN @0PSI [2:100]									
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[3]:Up	Up	6956.33 ft	7303.39 ft	16-Nov-2019	16-Nov-2019	ON	3.65 ft	No

All depths are referenced to toolstring zero

Log

Company:CRESTONE PEAK RESOURCES OPERATING LLC






Well:HINGLEY 1I-18H-A167

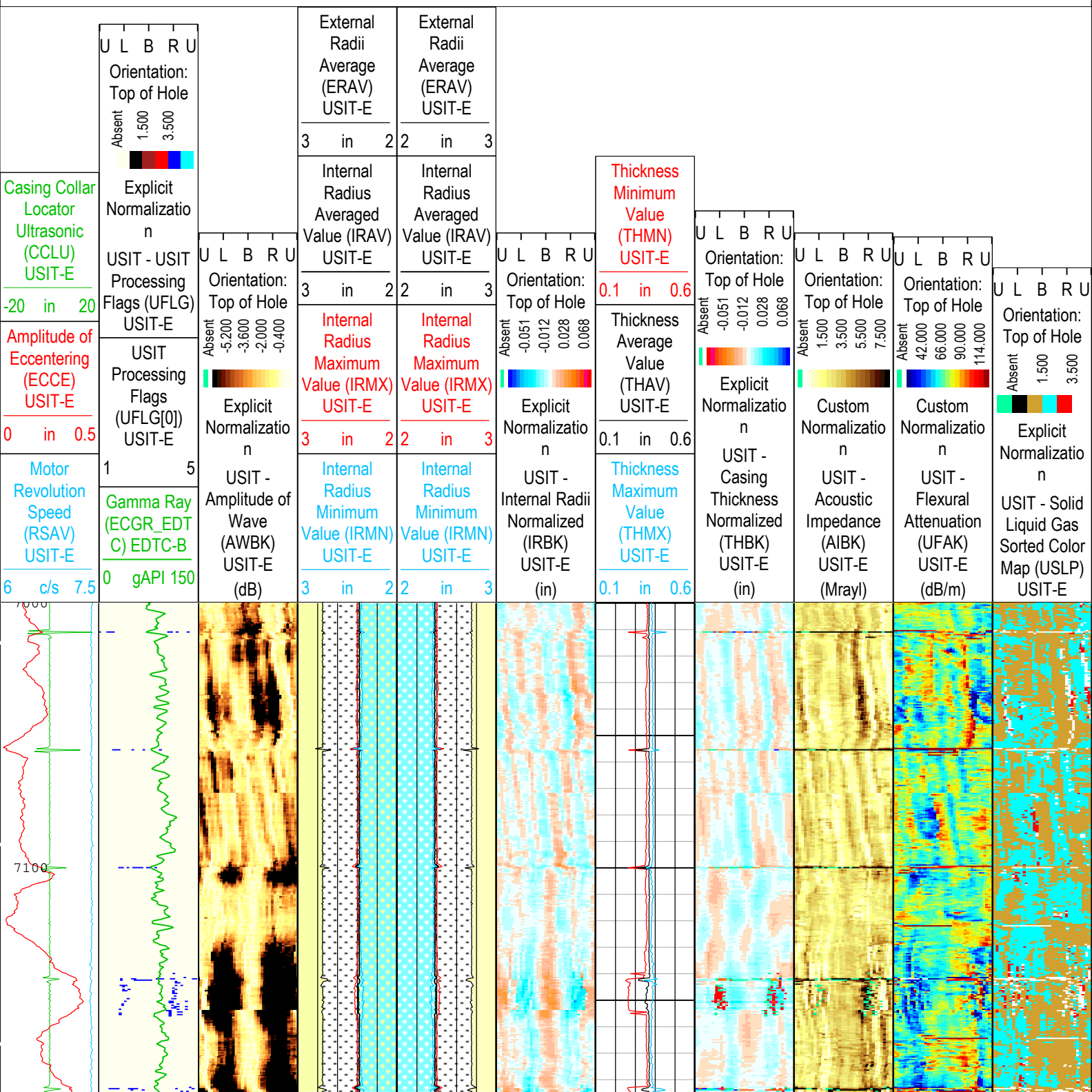
ONE: Log[31]:Up:S005

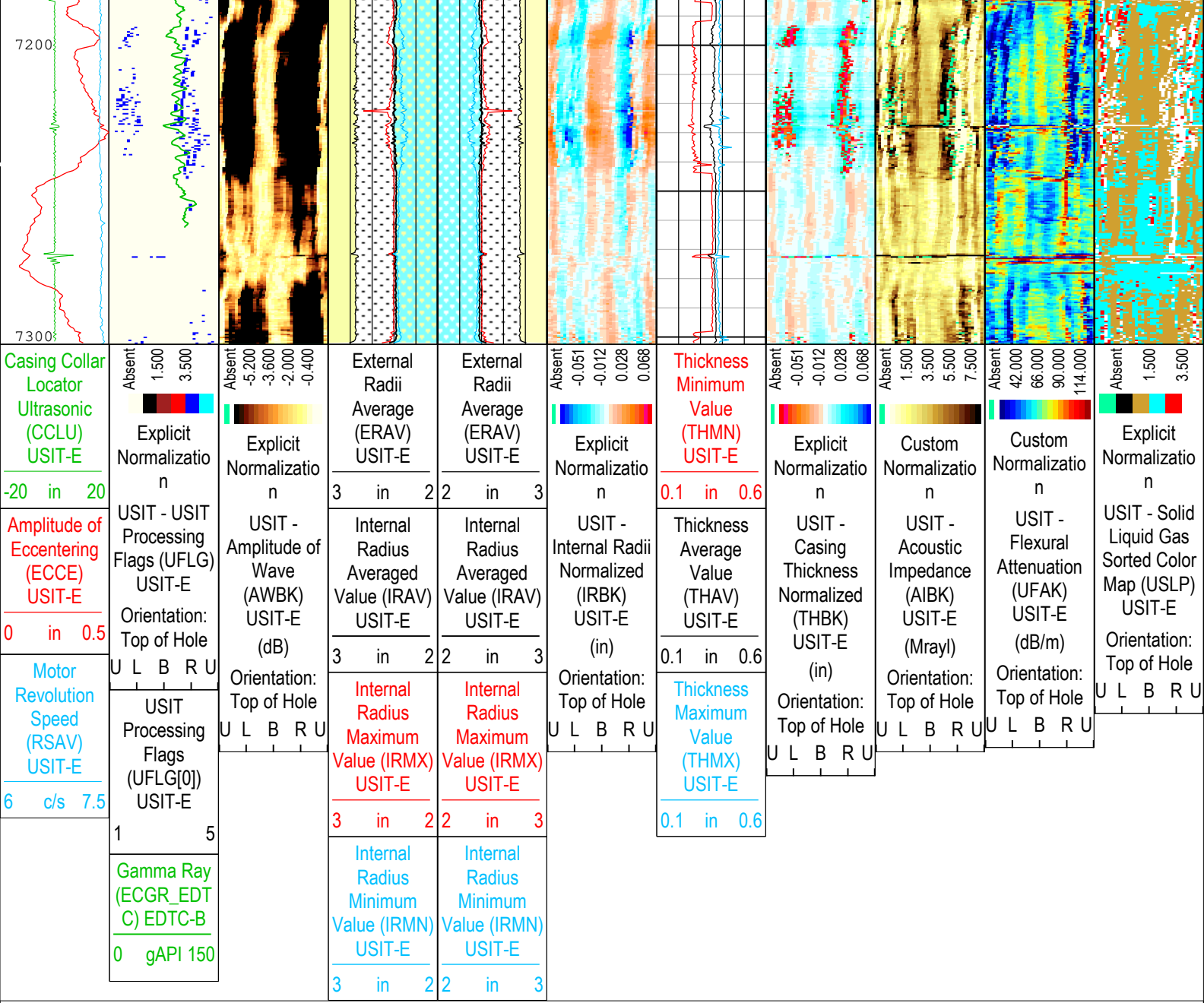
Description: USI IBC SLG Composite Format: Log (Import (2) of IBC SLG Composite) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured
 Depth Creation Date: 16-Nov-2019 17:48:35

TIME_1900 - Time Marked every 60.00 (s)

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

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





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

TIME_1900 - Time Marked every 60.00 (s)

Description: USI IBC SLG Composite Format: Log (Import (2) of IBC SLG Composite) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured
Depth Creation Date: 16-Nov-2019 17:48:35

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	8.75	in
CBLO	Casing Bottom (Logger)	WLSESSION	12415	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	9.5	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	203	us/ft
FD	Fluid Density	USIT-E	10.5	lbm/gal
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_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	Theoretical	
IMAR	Image Rotation	USIT-E	RB	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	22.44	us
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1.08	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.68	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-28.91	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
ZMUD	Acoustic Impedance of Mud	Borehole	1.8	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	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	20	dB
EMXV	EMEX Voltage	USIT-E	120	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	Time Zoned	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	Time Zoned	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	145	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	31.12	us
WINE	Window End Time	USIT-E	Time Zoned	us

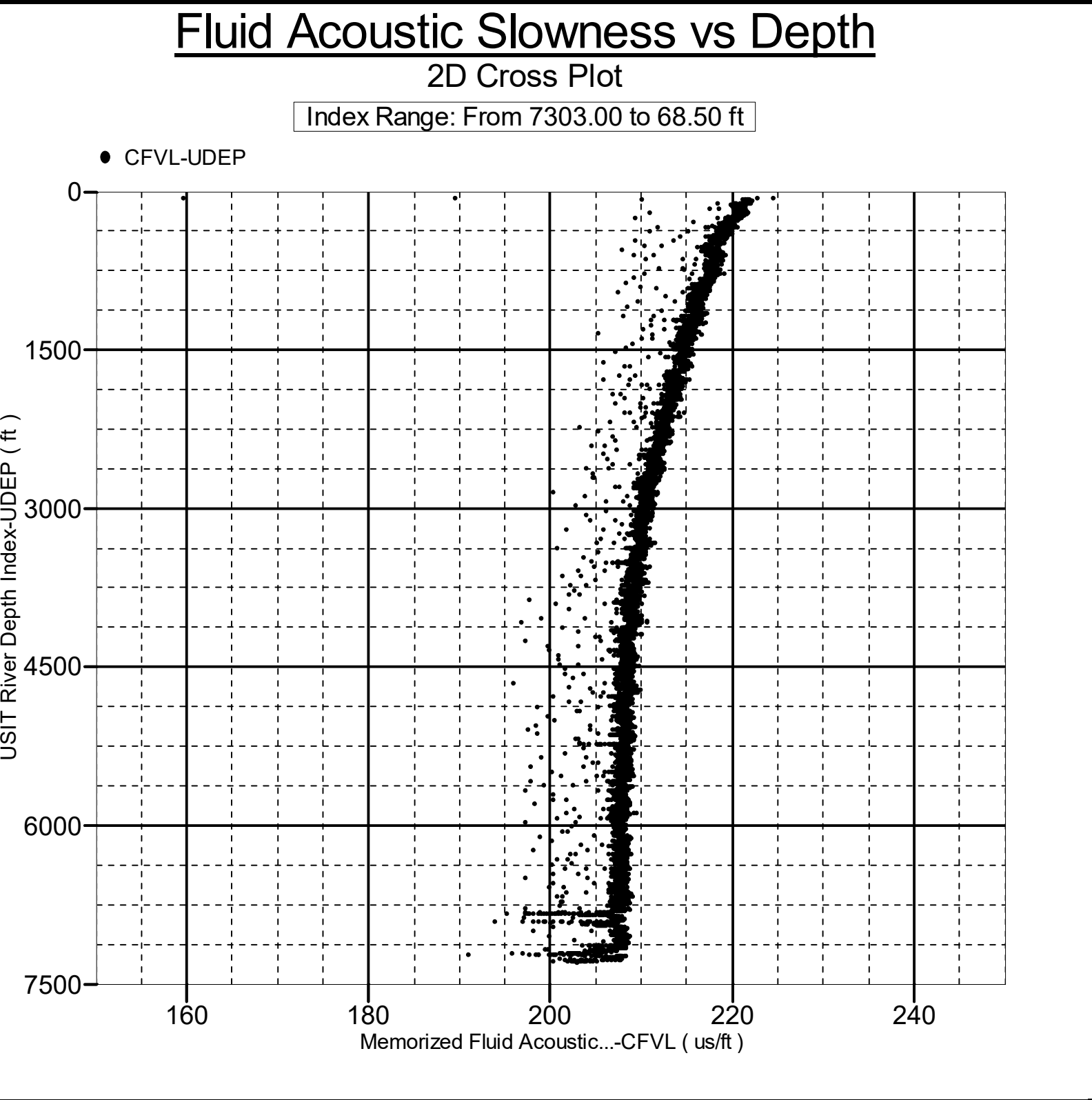
Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
U-USIT_UFWB	136	16-Nov-2019 14:48:49	16-Nov-2019 14:51:00	7303.39	7166.38
U-USIT_UFWB	121.63	16-Nov-2019 14:51:00	16-Nov-2019 14:54:34	7166.38	6956.32
U-USIT_UFWE	176	16-Nov-2019 14:48:49	16-Nov-2019 14:53:26	7303.39	6981.25
U-USIT_UFWE	180.23	16-Nov-2019 14:53:26	16-Nov-2019 14:53:32	6981.25	6974.04
U-USIT_UFWE	183.8	16-Nov-2019 14:53:32	16-Nov-2019 14:54:34	6974.04	6956.32
U-USIT_UNWB	105	16-Nov-2019 14:48:49	16-Nov-2019 14:51:49	7303.39	7104.74
U-USIT_UNWB	98.01	16-Nov-2019 14:51:49	16-Nov-2019 14:51:52	7104.74	7100.22

U-USIT_UNWB	90.86	16-Nov-2019 14:51:52	16-Nov-2019 14:54:34	7100.22	6956.32
WINE	71.12	16-Nov-2019 14:48:49	16-Nov-2019 14:49:28	7303.39	7279.49
WINE	83.58	16-Nov-2019 14:49:28	16-Nov-2019 14:51:34	7279.49	7123.98
WINE	71.87	16-Nov-2019 14:51:34	16-Nov-2019 14:54:34	7123.98	6956.32

All depth are at tool zero.

XYZ	Company:CRESTONE PEAK RESOURCES OPERATING LLC Well:HINGLEY 1I-18H-A167 ONE: Log[4]:Up:S005
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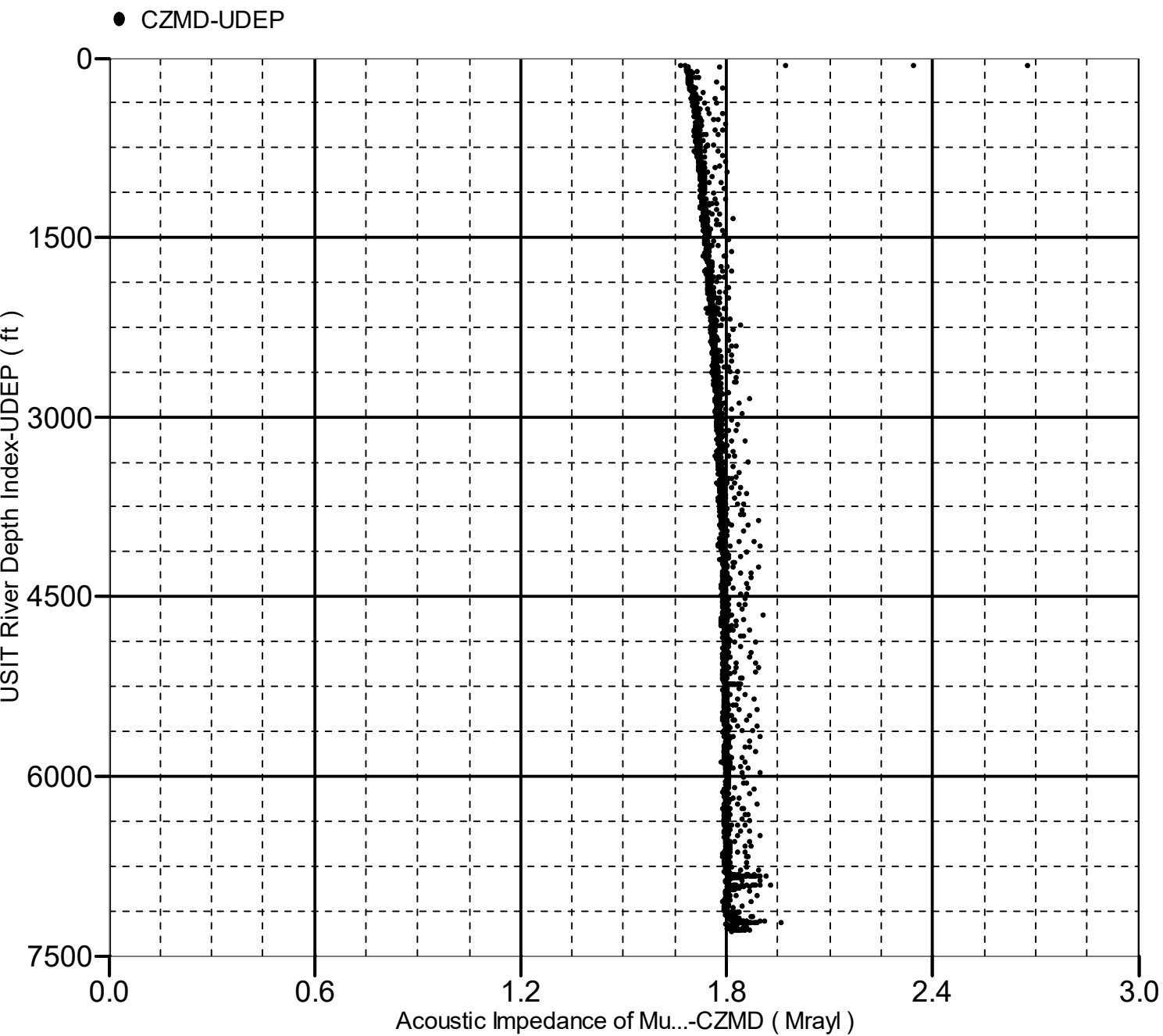


XYZ	Company:CRESTONE PEAK RESOURCES OPERATING LLC Well:HINGLEY 1I-18H-A167 ONE: Log[4]:Up:S005
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Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 7303.00 to 68.50 ft



Company: CRESTONE PEAK RESOURCES OPERATING LLC

Schlumberger

Well: HINGLEY 11-18H-A167

Field: WATTENBERG

County:	WELD
State:	COLORADO
ISOLATION SCANNER	
CEMENT EVALUATION	
GAMMA RAY - COLLAR LOCATOR LOG	