

Company: Crestone Peak Resources Operating LLC

Well: Sam #3H-25H-M166

Field: Wattenberg

County: Weld State: Colorado

Isolation Scanner  
Cement Evaluation

County:	Weld
Field:	Wattenberg
Location:	1343' FSL & 310' FWL
Well:	Sam #3H-25H-M166
Company:	Crestone Peak Resources Operating LLC
Location:	
1343' FSL & 310' FWL	Elev.: K.B. 5105.00 ft
NWSW 25 1N 66W	G.L. 5082.00 ft
Lat/Long: 40.018702,-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
05-123-46127	Township: 1N
	Range: 66W

Logging Date	14-Oct-2018
Run Number	One
Depth Driller	12014.00 ft
Schlumberger Depth	7100.00 ft
Bottom Log Interval	7100.00 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	2353.00 ft
To	12014.00 ft
Casing/Tubing Size	5.5 in
Weight	20 lbm/ft
Grade	N/A
From	0.00 ft
To	12014.00 ft
Max Recorded Temperatures	193 degF
Logger on Bottom	14-Oct-2018 09:15:00
Unit Number	9108
Recorded By	Alan Moreno
Witnessed By	Keith Kershnik

Disclaimer

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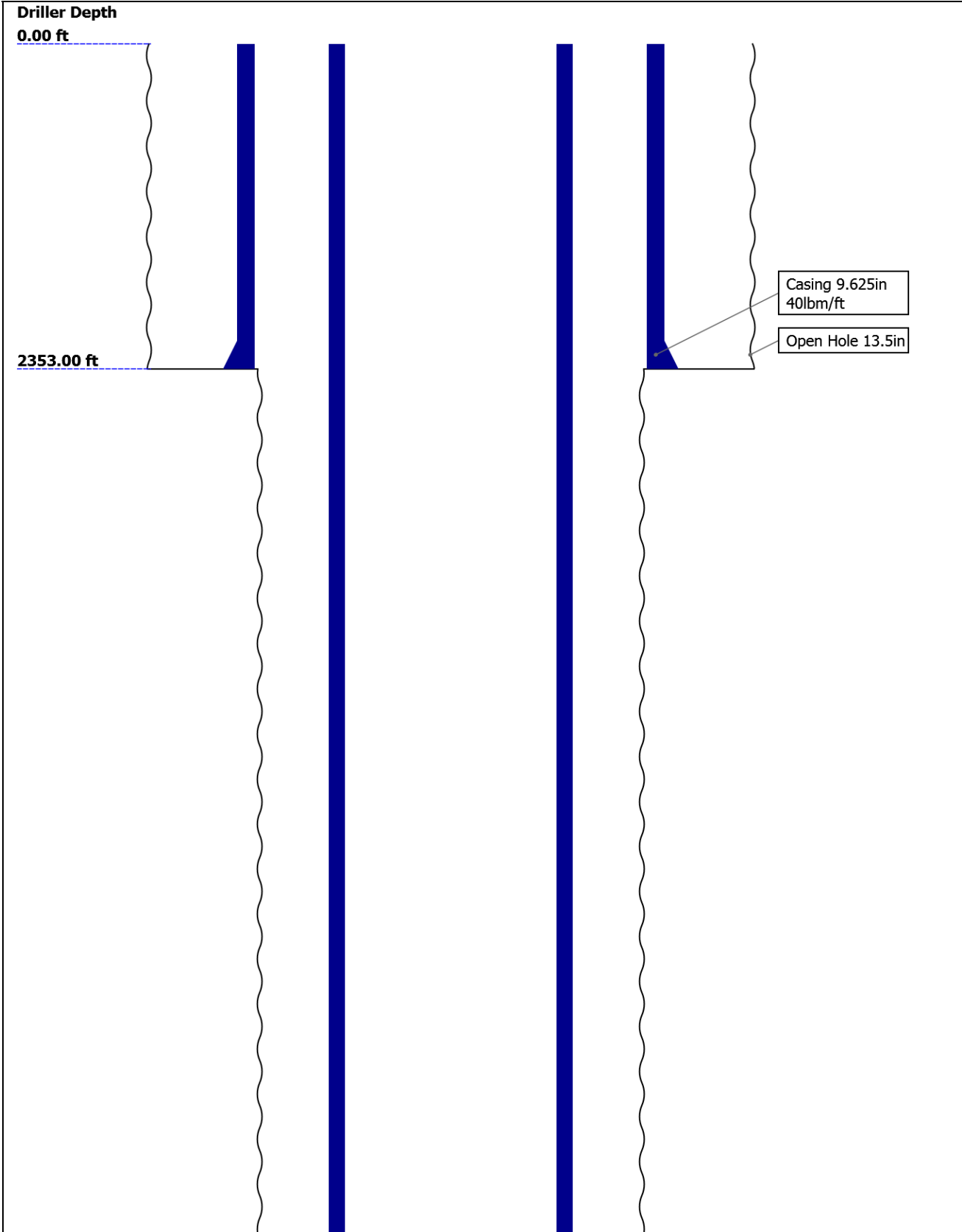
15. One IBC SLG Composite - HiRes Pass

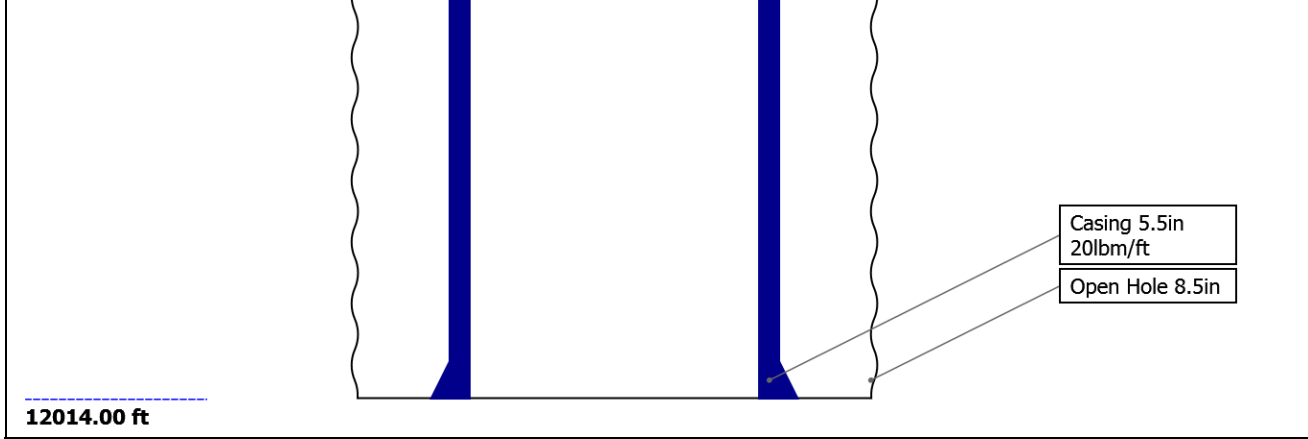
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Well Sketch






## Borehole Size/Casing/Tubing Record

Bit						
Bit Size ( in )	13.5	8.5				
Top Driller ( ft )	0	2353				
Top Logger ( ft )	0	2353				
Bottom Driller ( ft )	2353	12014				
Bottom Logger ( ft )	2353	12014				
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 )	2353	12014				
Bottom Logger ( ft )	2353	12014				

## Remarks and Equipment Summary

One: Toolstring			One: Remarks	
<div><div><div>Equip name</div><div>Length</div></div><div>LEH-QT</div><div>30.73</div><div>LEH-QT</div></div> <div><div><div>MP name</div><div>Offset</div></div><div>CTEM</div><div>23.74</div><div>ACCZ</div><div>0.00</div><div>HV</div><div>0.00</div><div>Gamma</div><div>21.87</div><div>Ray</div><div>TelStatu</div><div>20.74</div><div>s</div></div>		Thank you for choosing Schlumberger		
		Toolstring ran as per tool sketch		
		5" gemcos and Houma kit used for centralization		
		All passes ran under 0 PSI		
		10deg 6" resolution used for Main and repeat passes		
		10deg 1.5" resolution used for HiRes pass		
		Lead: 12.5ppg		
		Tail: 13.5ppg		
		Data affected at bottom due to deviation		
<div><div><div>AH-184[</div><div>2]</div></div><div>20.74</div></div>				
<div><div><div>AH-184[</div><div>1]</div></div><div>18.74</div></div>				
<div><div><div>USIT-E</div><div>ECH-MFA</div><div>USAC-A</div><div>USIS-A</div><div>USSC-B</div></div><div>16.74</div></div>				

AH-184[

2]

20.74

AH-184[

1]

18.74

USIT-E

ECH-MFA

USAC-A

USIS-A

USSC-B

16.74

IBCS-A  
FAR-SENS  
OR  
IBC-TX  
NEAR-SEN  
SOR  
IBC-TX  
USI-SENS  
OR  
IBC-TX  
EMITTER-  
SENSOR  
IBC-TX



Lengths are in ft  
Maximum Outer Diameter = 3.625 in  
Line: Sensor Location, Value: Gating Offset  
All measurements are relative to TOOL\_ZERO

Depth Summary			
---------------	--	--	--

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

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  
Tool Zero Check At Surface

USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 2	Log[2]:Up	2507.26	1999.5

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 : 668.41m(2192.94ft) to 670.06m(2198.35ft)  
MUD\_N\_FRP = 1.21  
DFD = 1.01g/cm3(8.40lbm/gal)  
CZMD median computed in free pipe normalization interval = 1.75 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[4]:Up	Up	6495.28 ft	7112.71 ft	14-Oct-2018 9:17:33 AM	14-Oct-2018 9:27:56 AM	ON	5.12 ft	Yes
One	Log[7]:Up	Up	46.39 ft	6604.30 ft	14-Oct-2018 9:54:54 AM	14-Oct-2018 11:33:11 AM	ON	5.12 ft	Yes

All depths are referenced to toolstring zero

Log	Company:Crestone Peak Resources Operating LLC      Well:Sam #3H-25H-M166 Composite 1:S011
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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 20:22:54

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

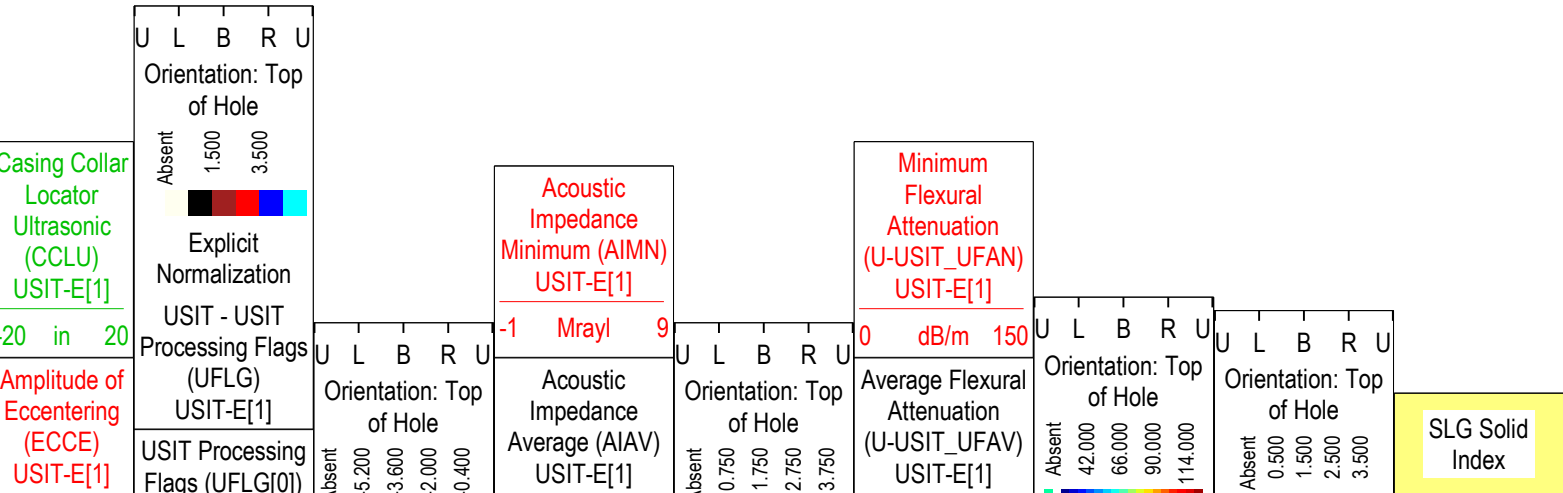
Pulse Origin Not Detected

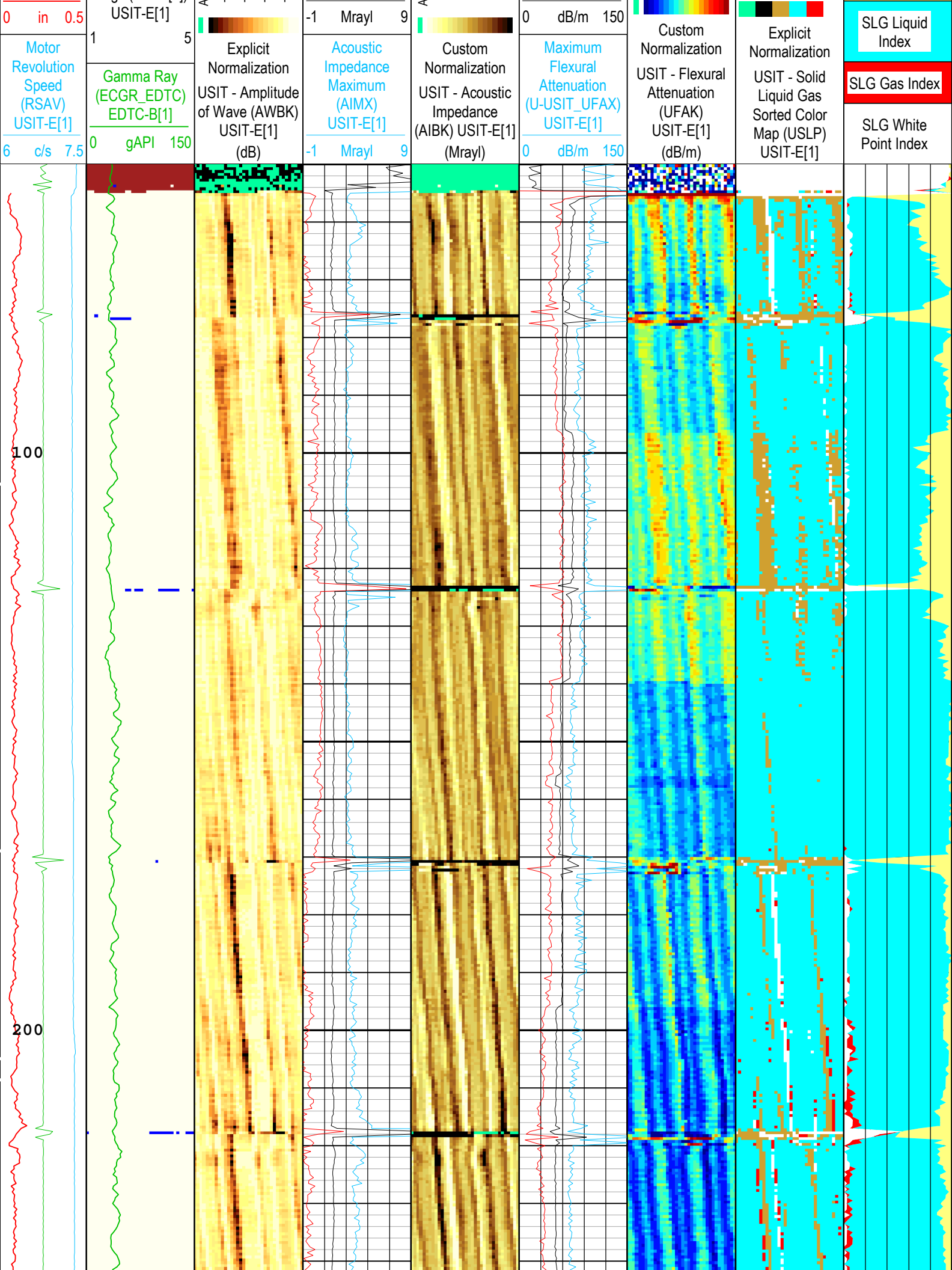
WINLEN Error

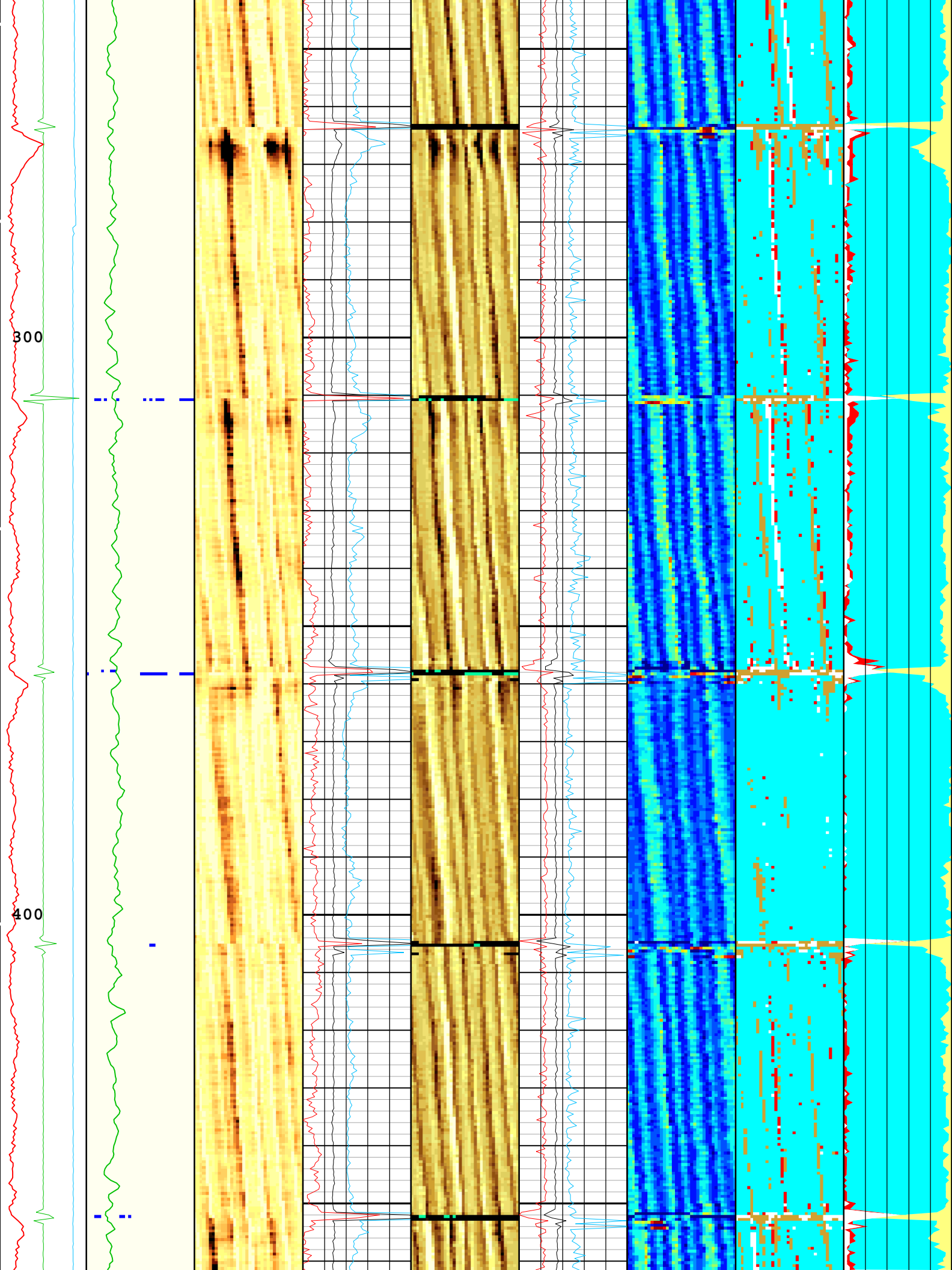
Casing Thickness Error

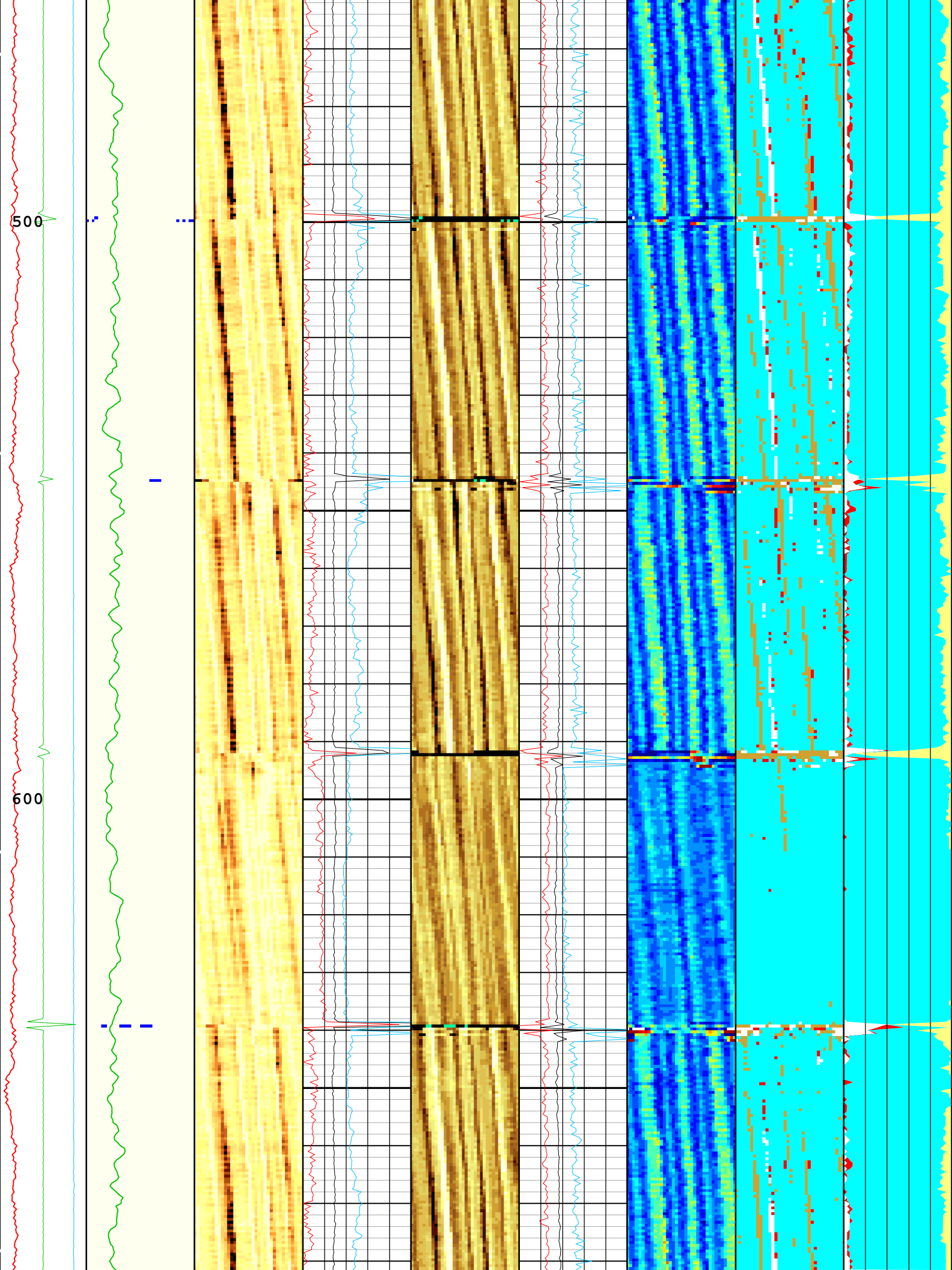
Loop Processing Error

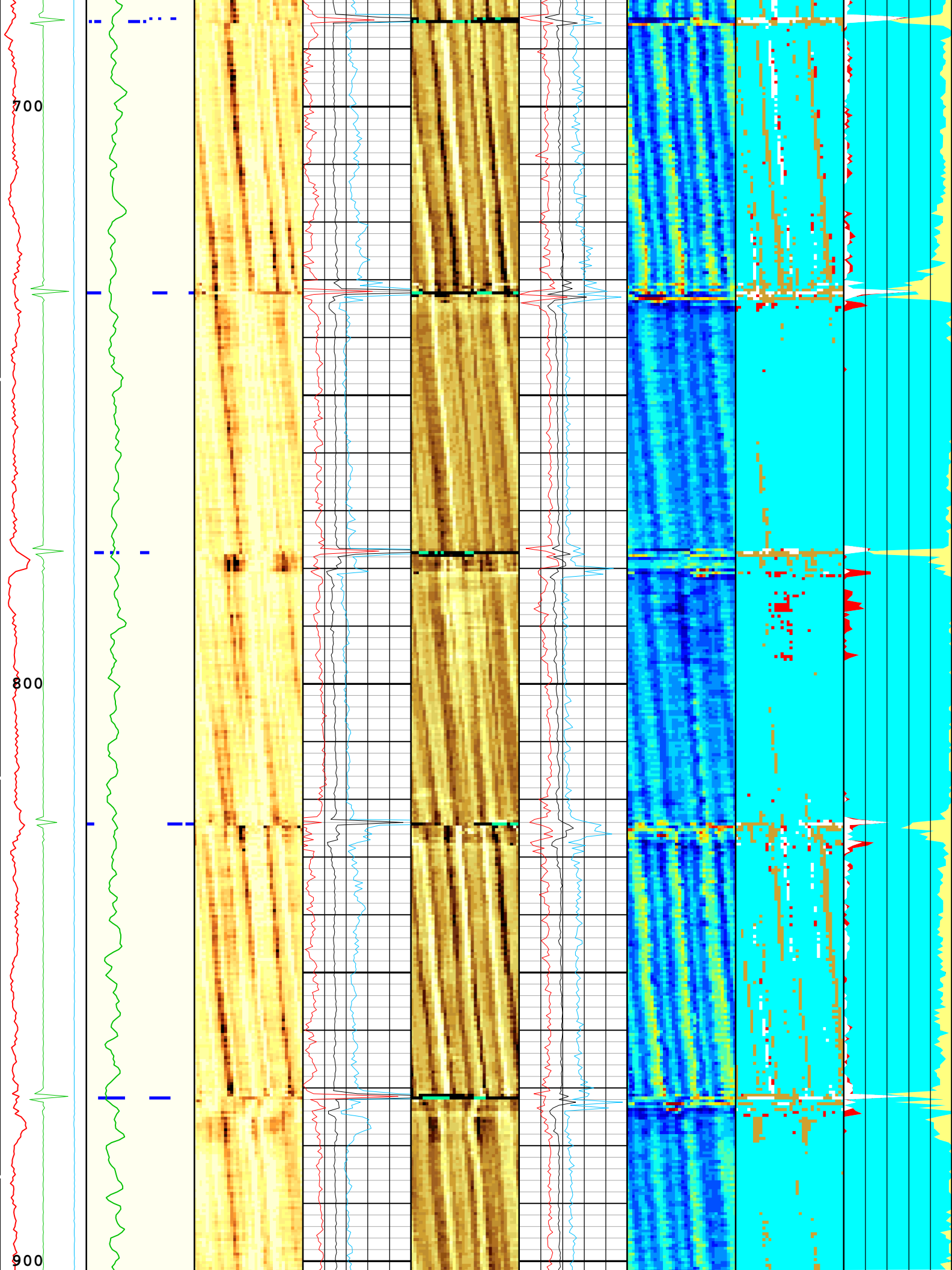
TIME\_1900 - Time Marked every 60.00 (s)

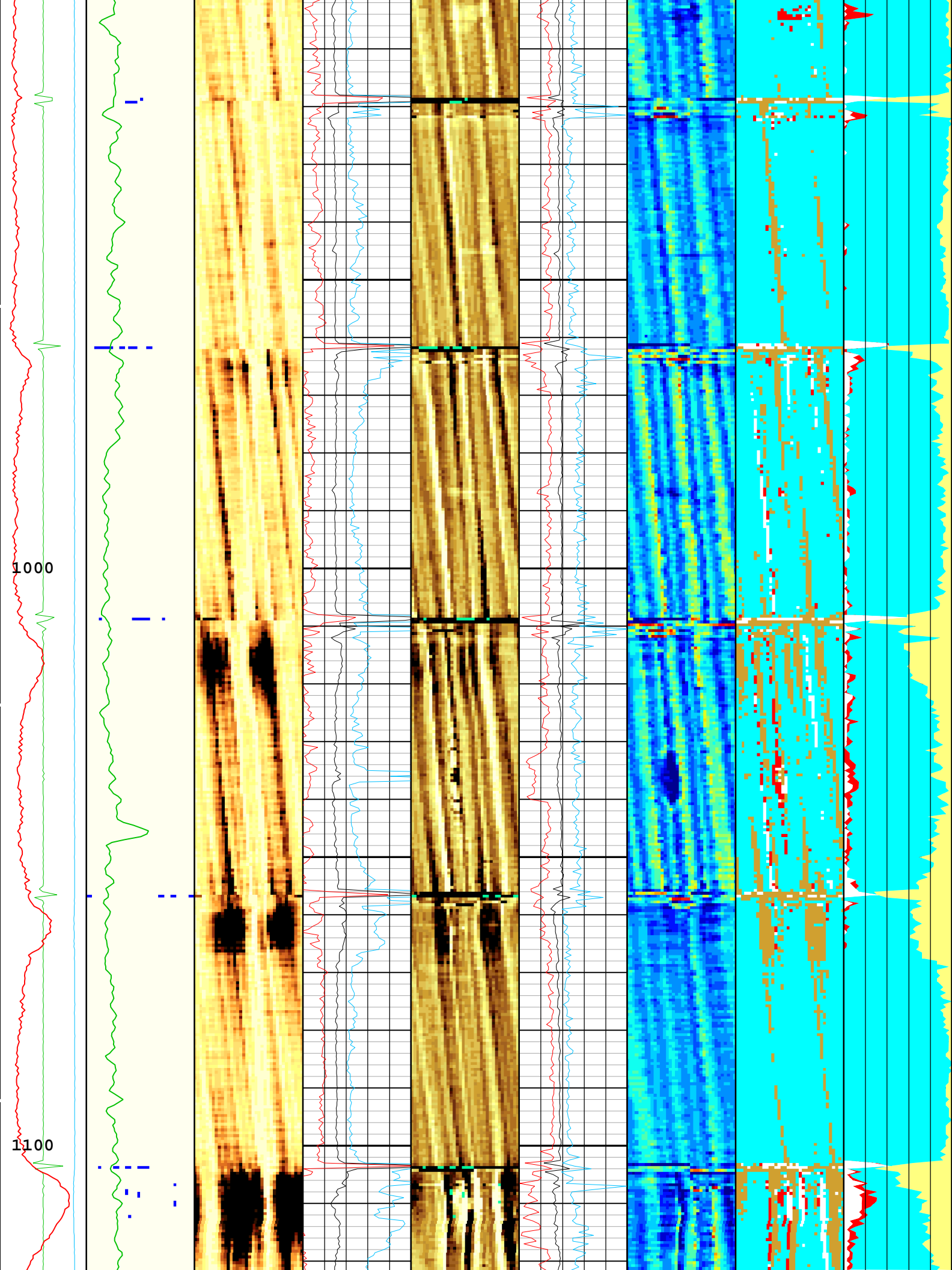




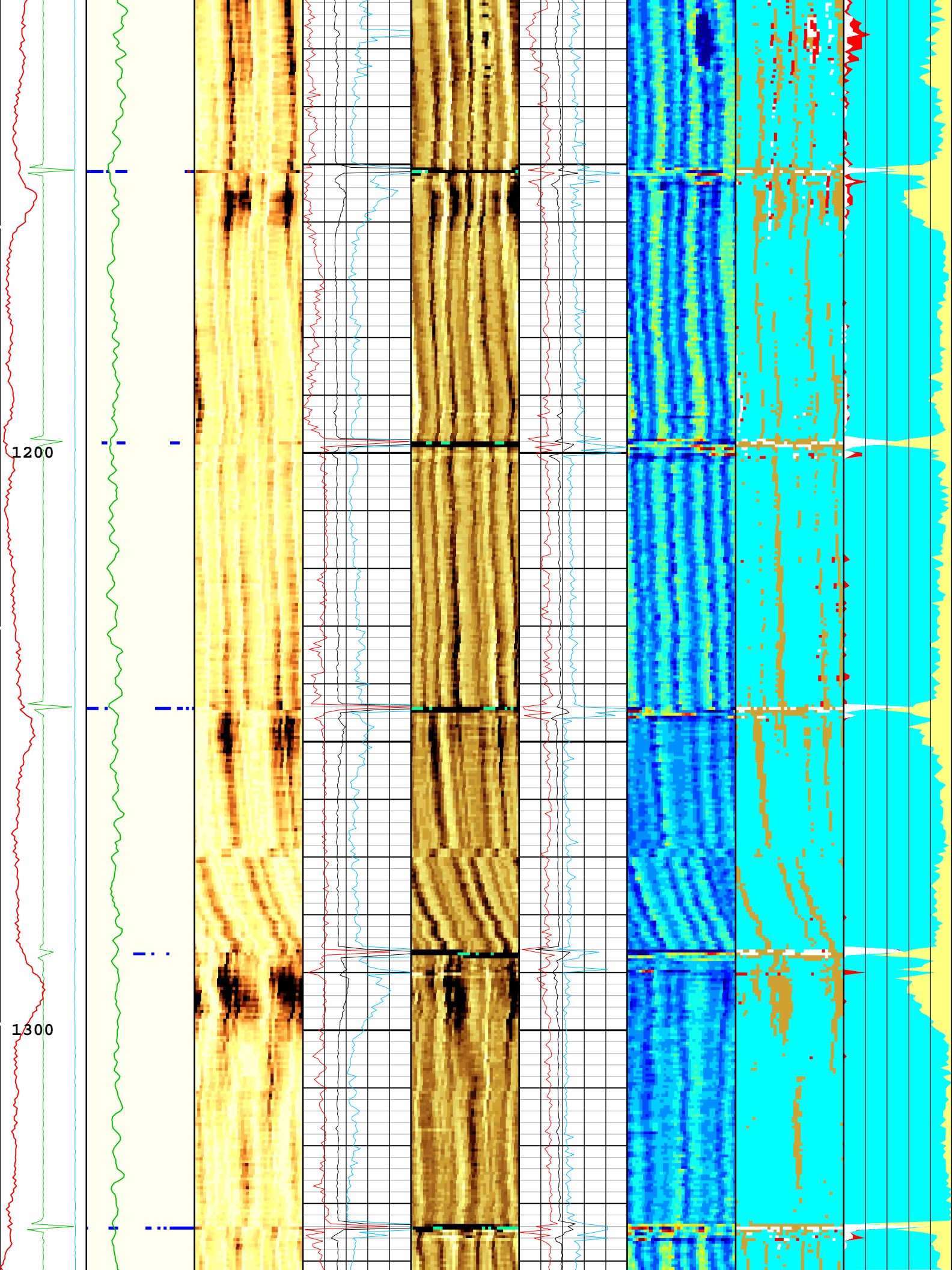


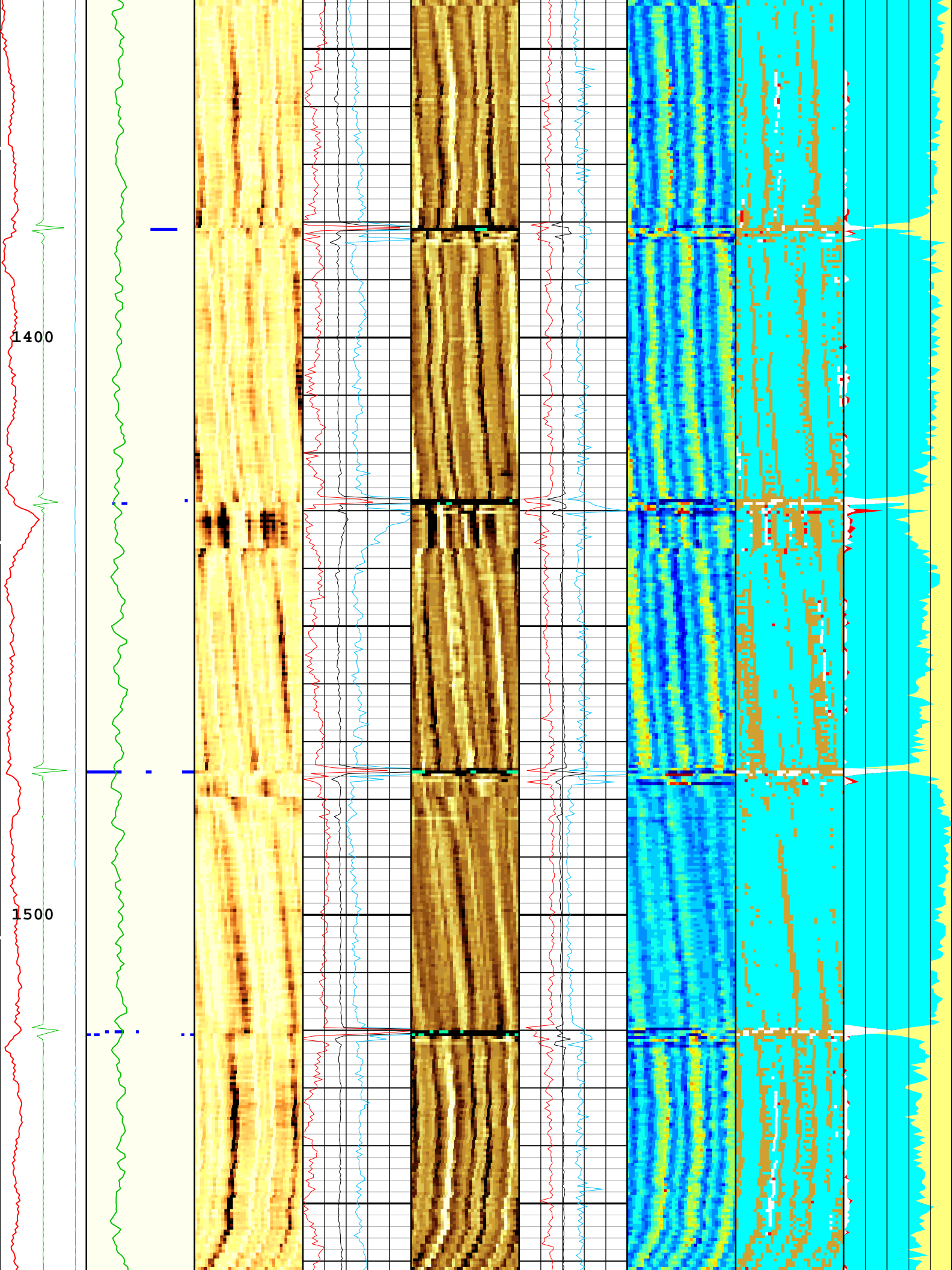




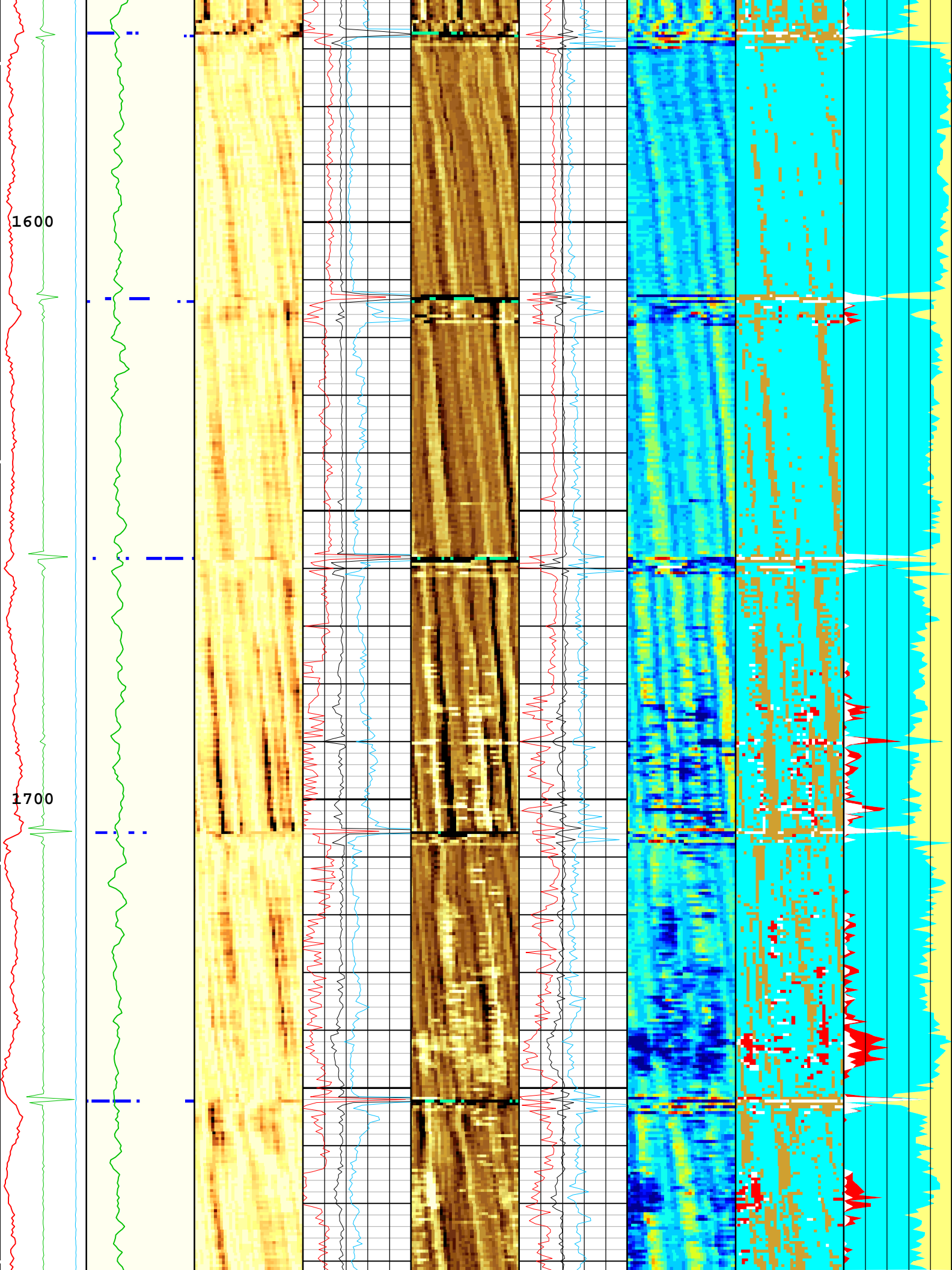


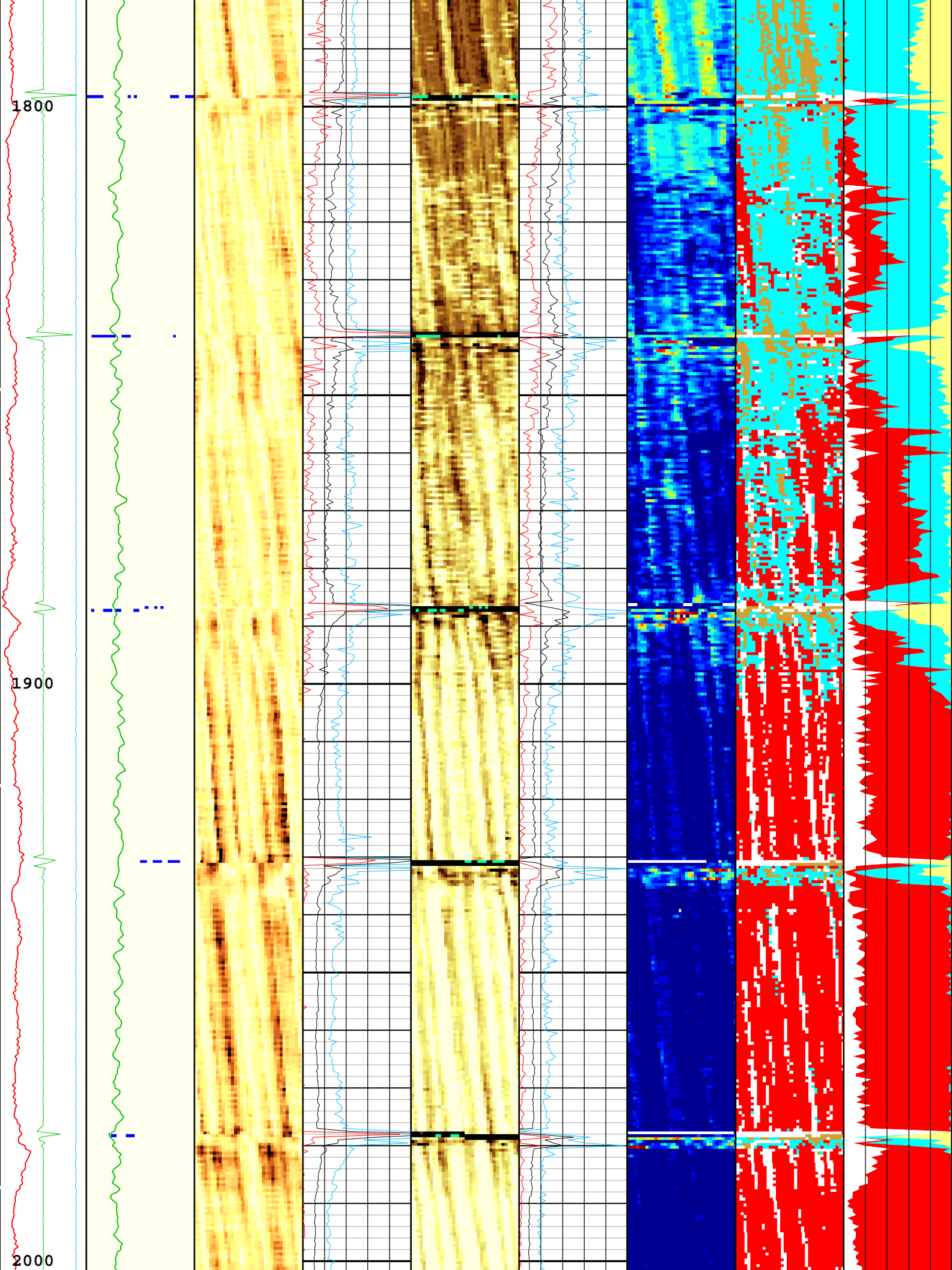


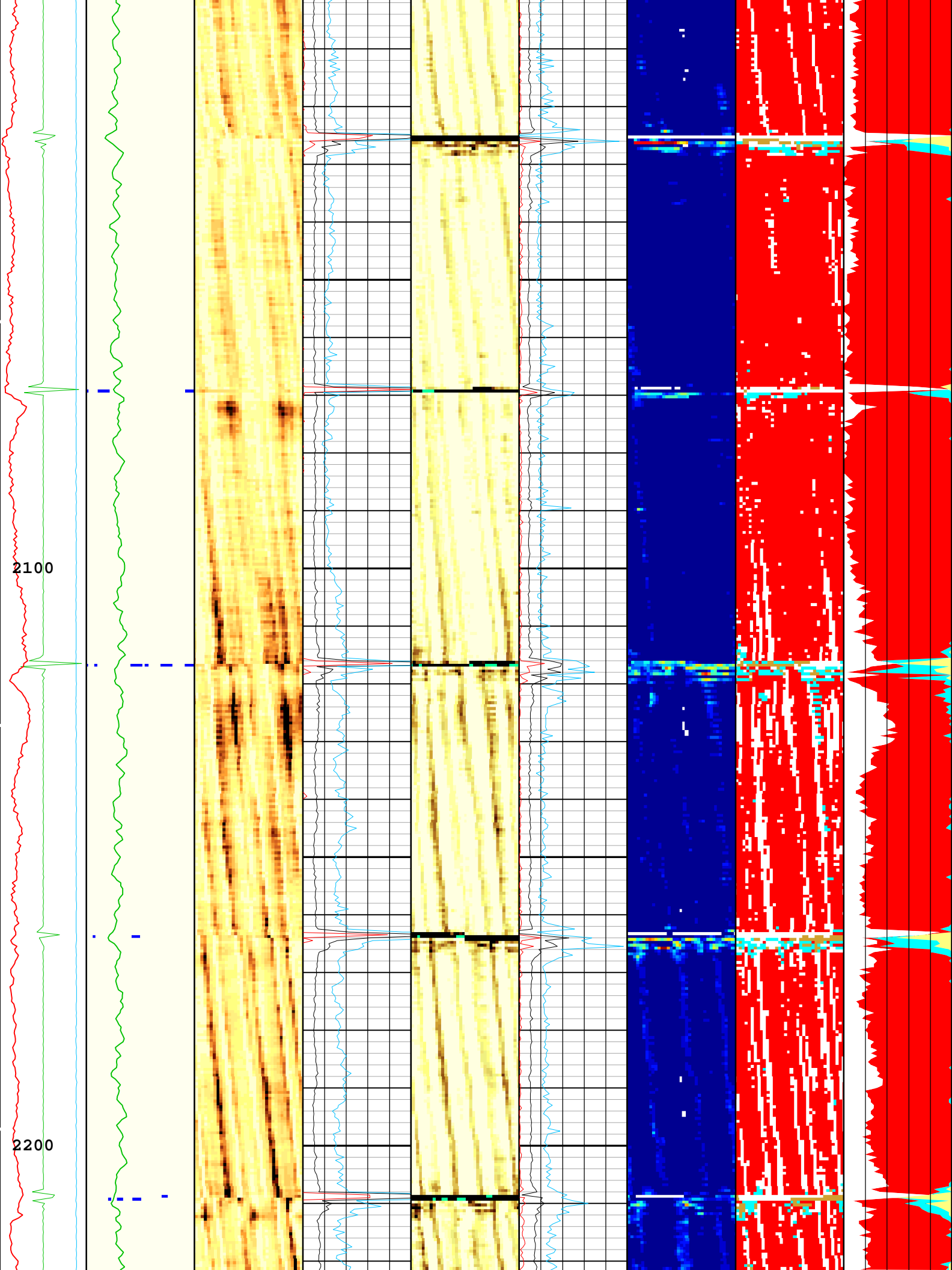


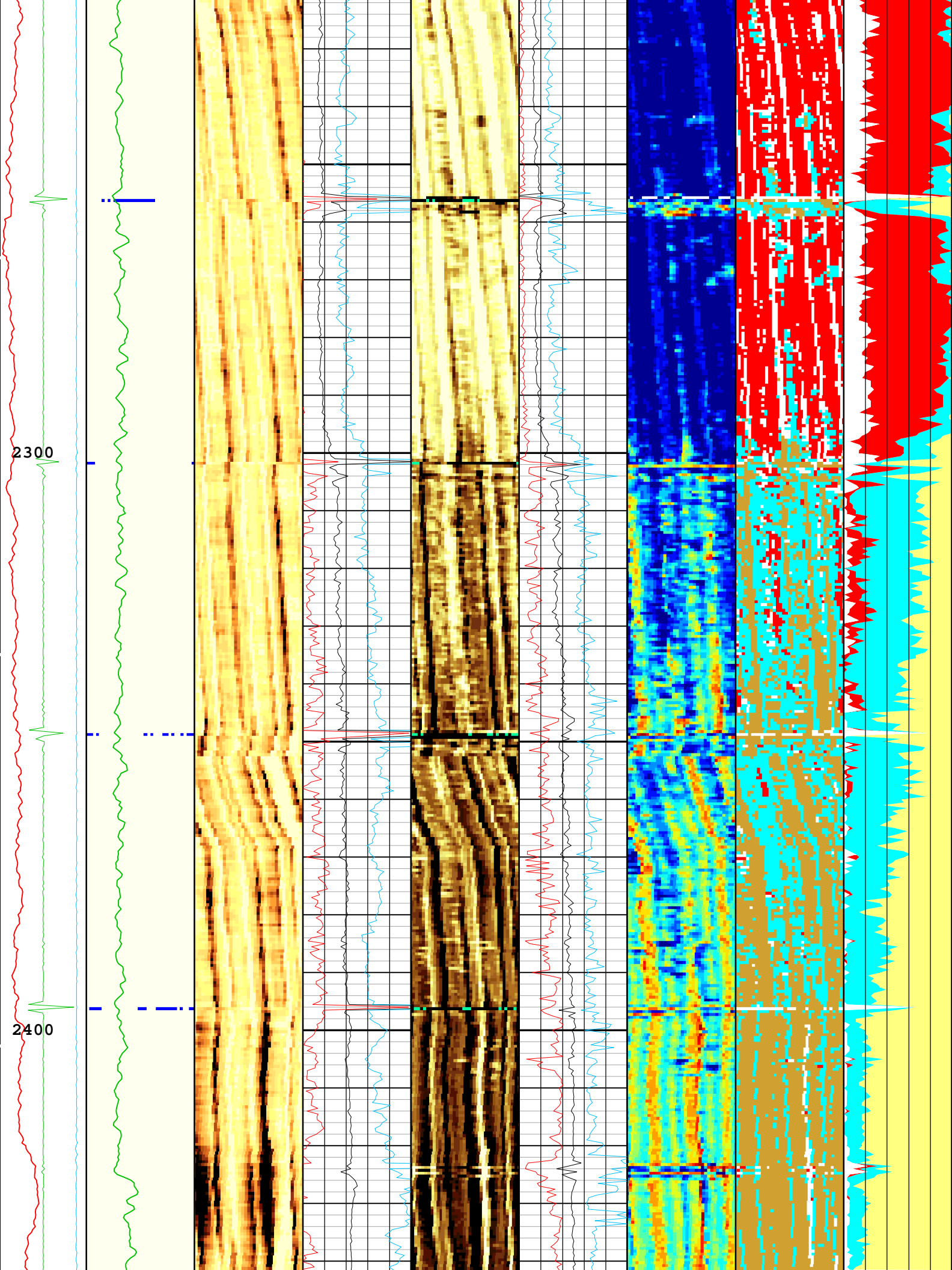


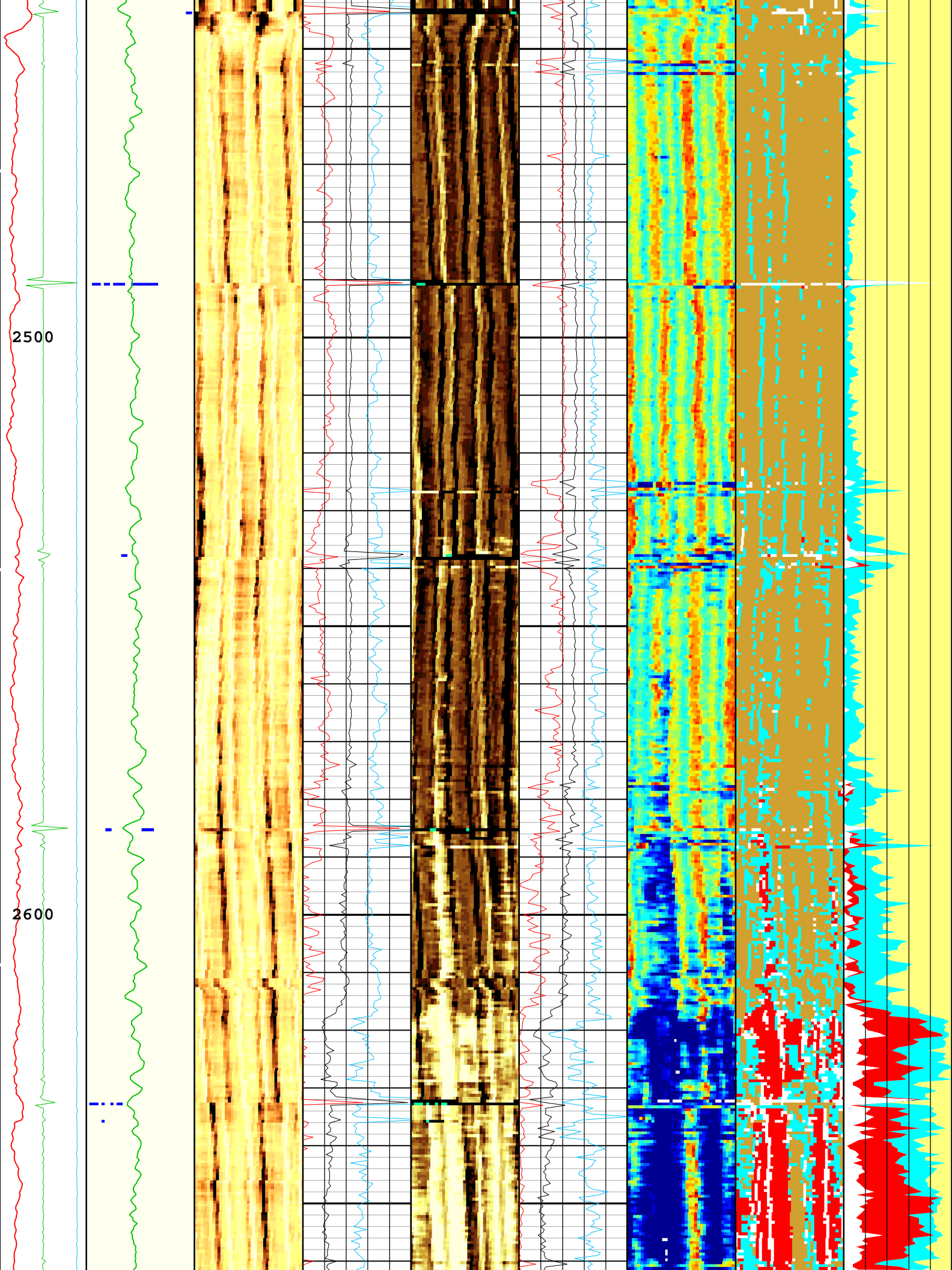




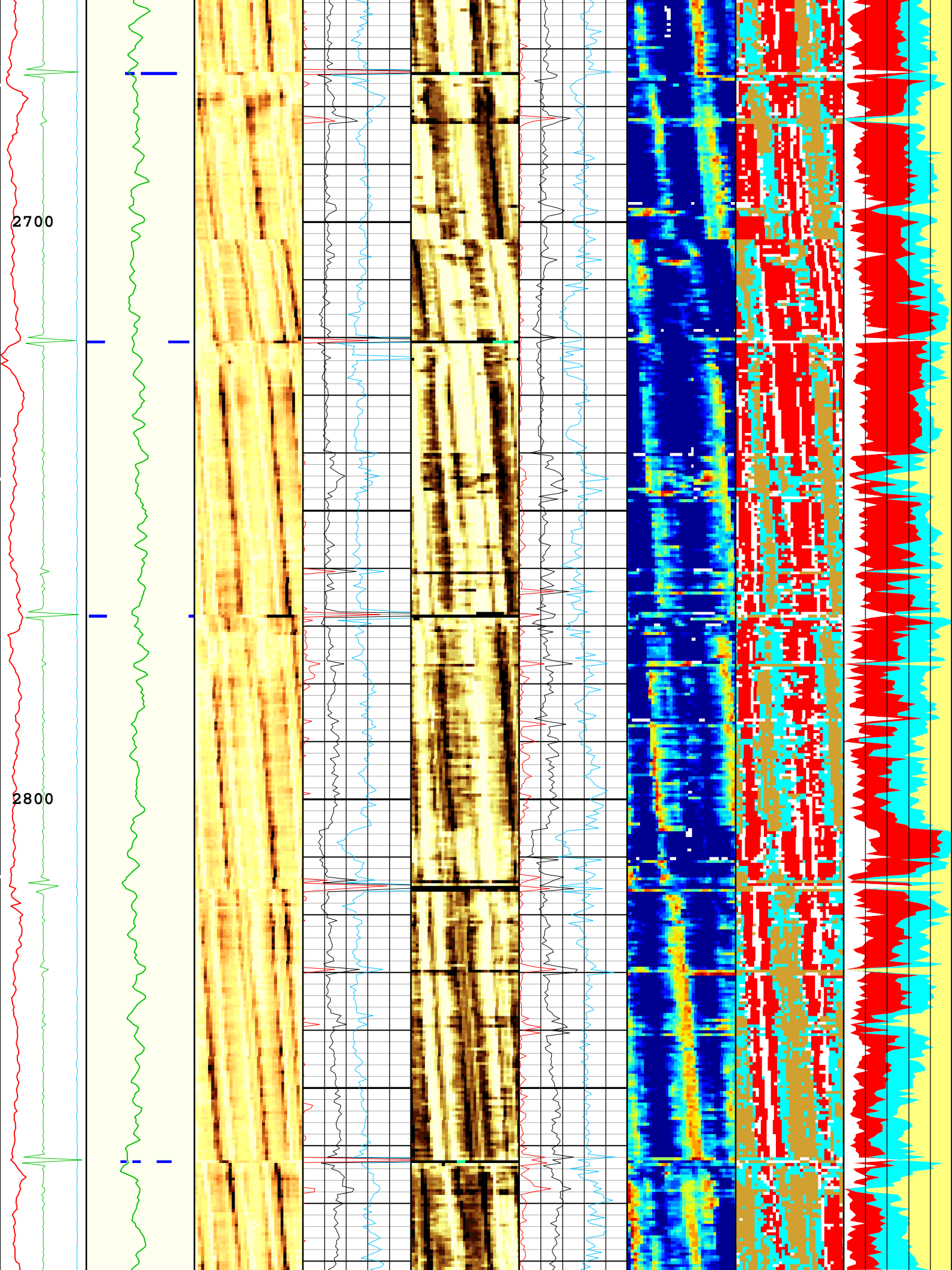


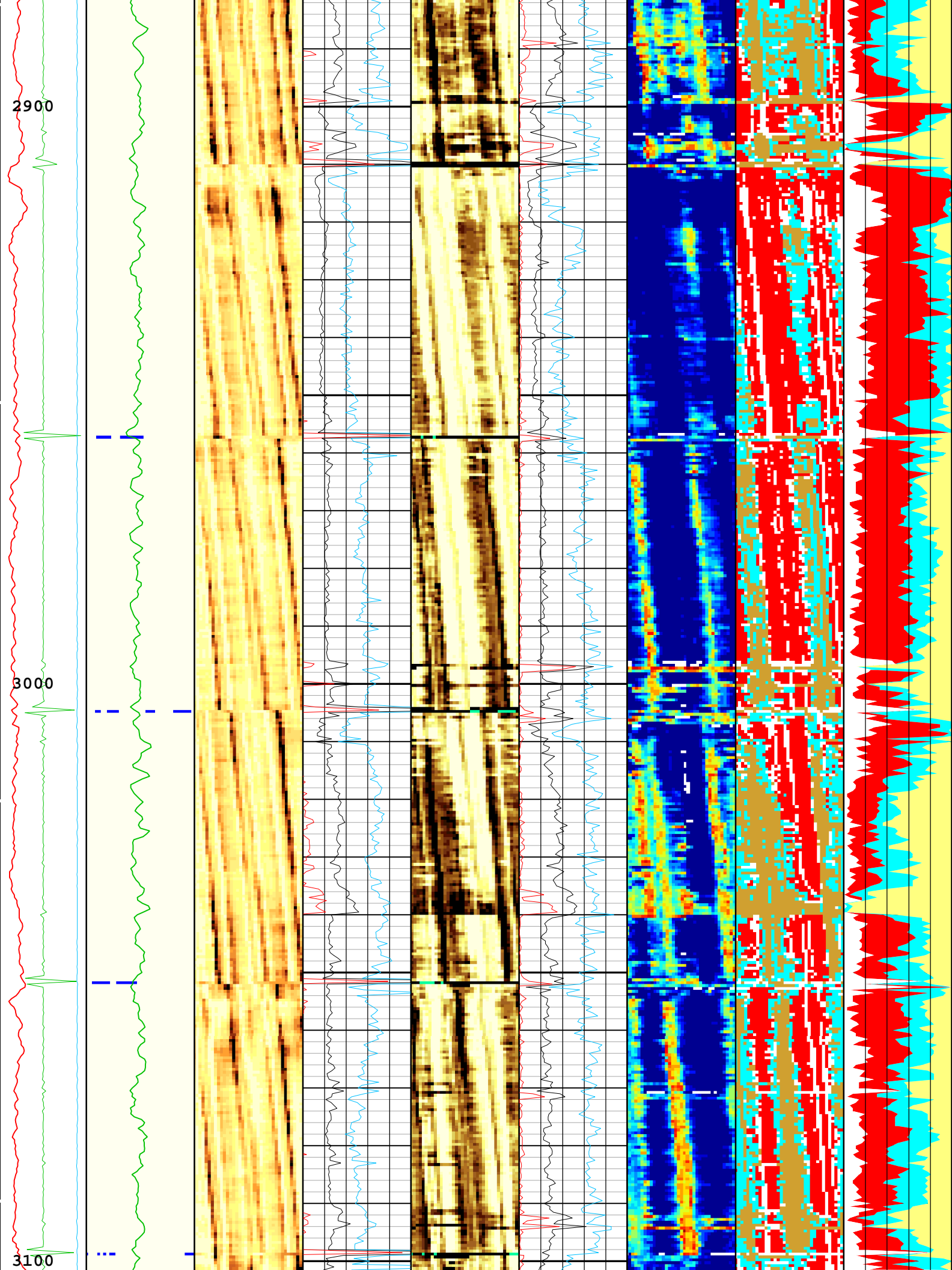


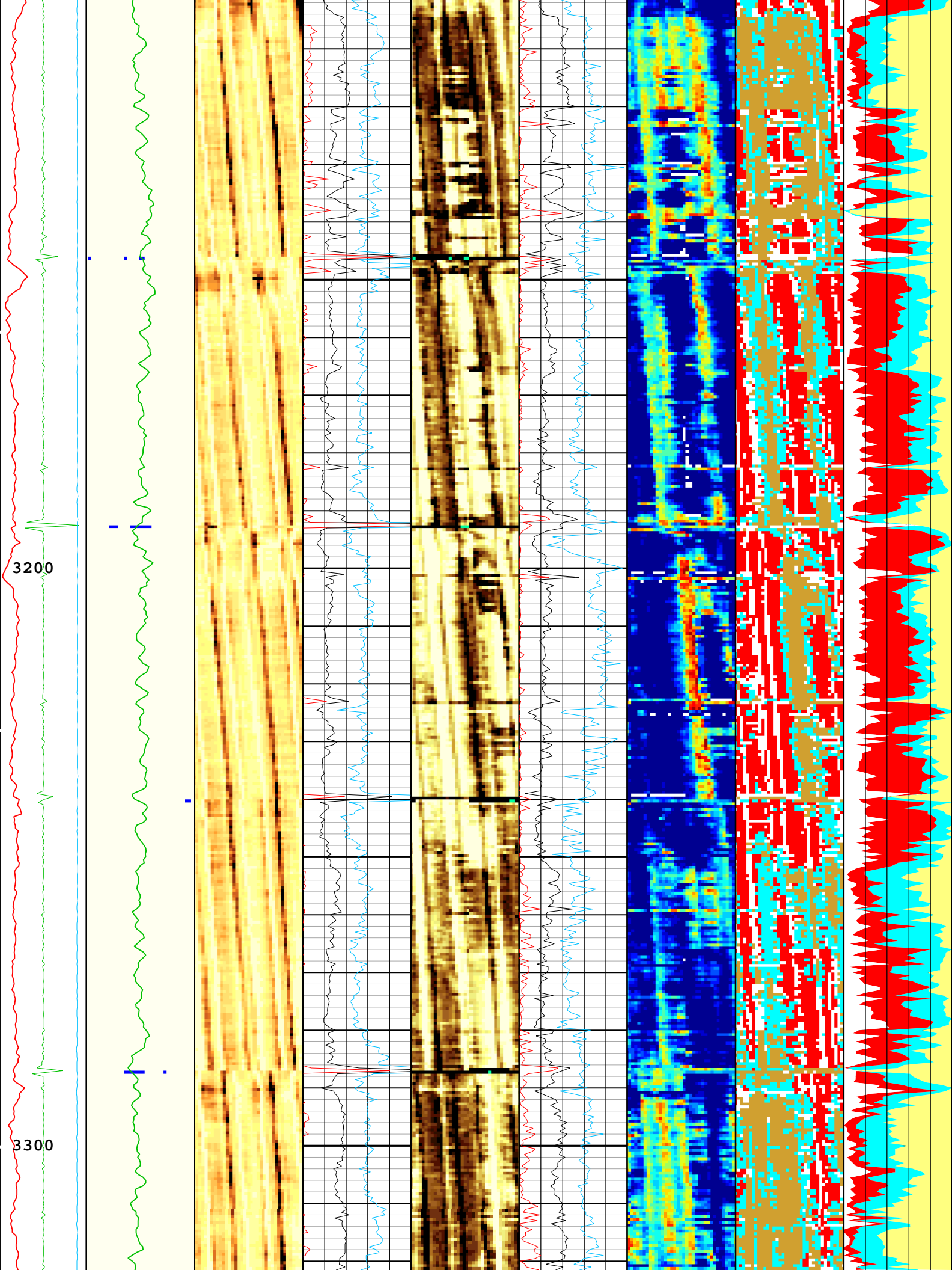




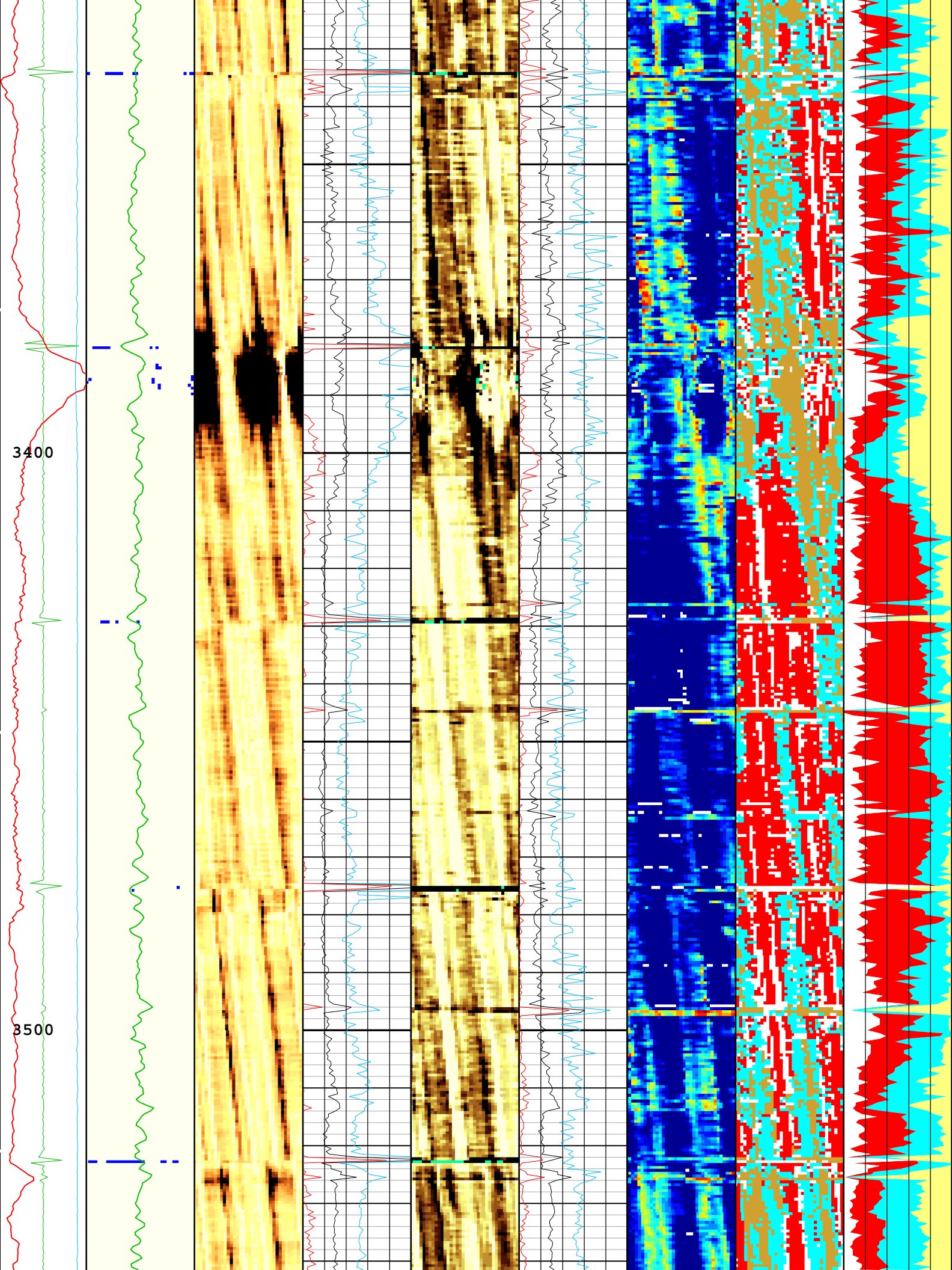


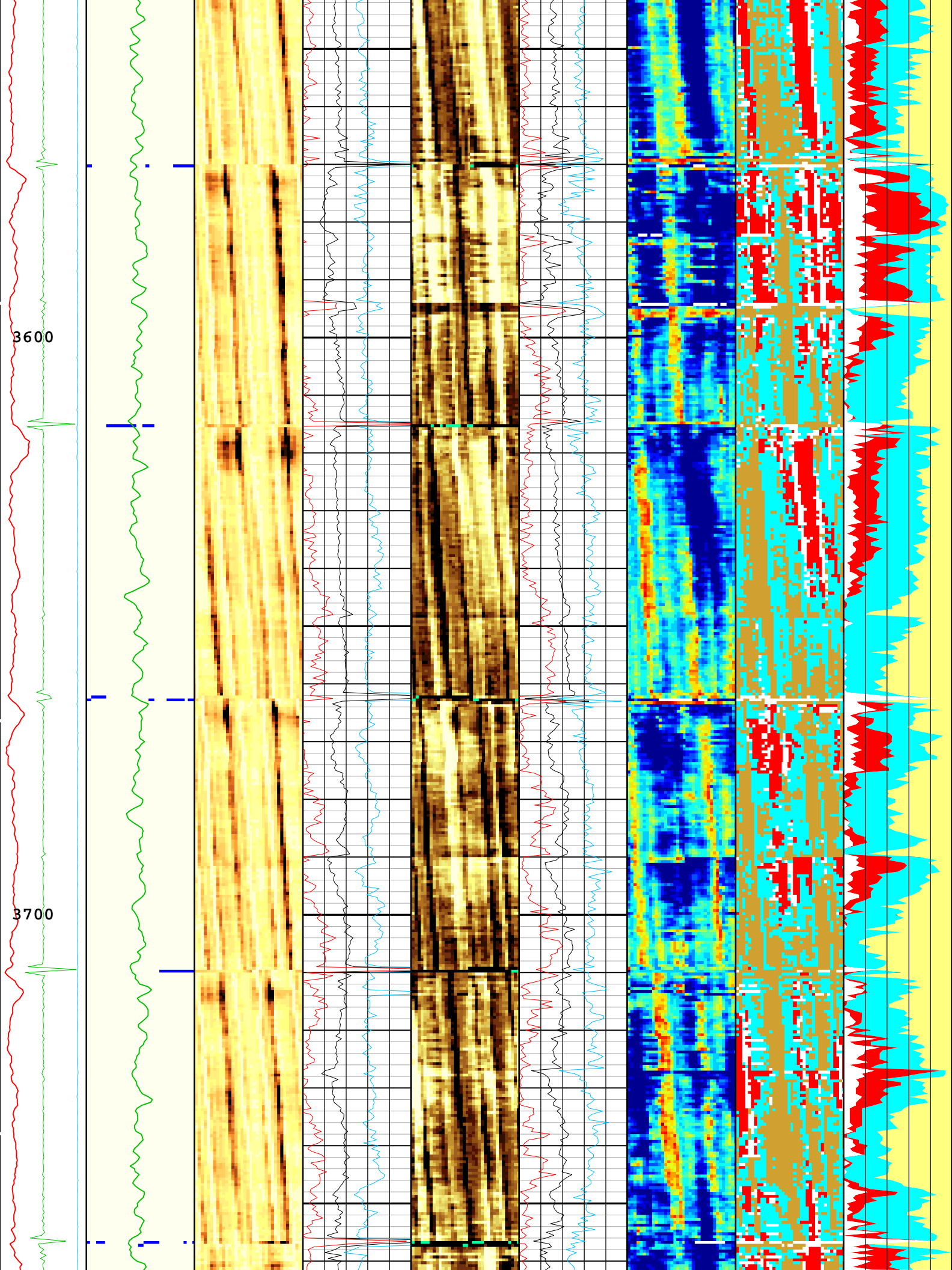


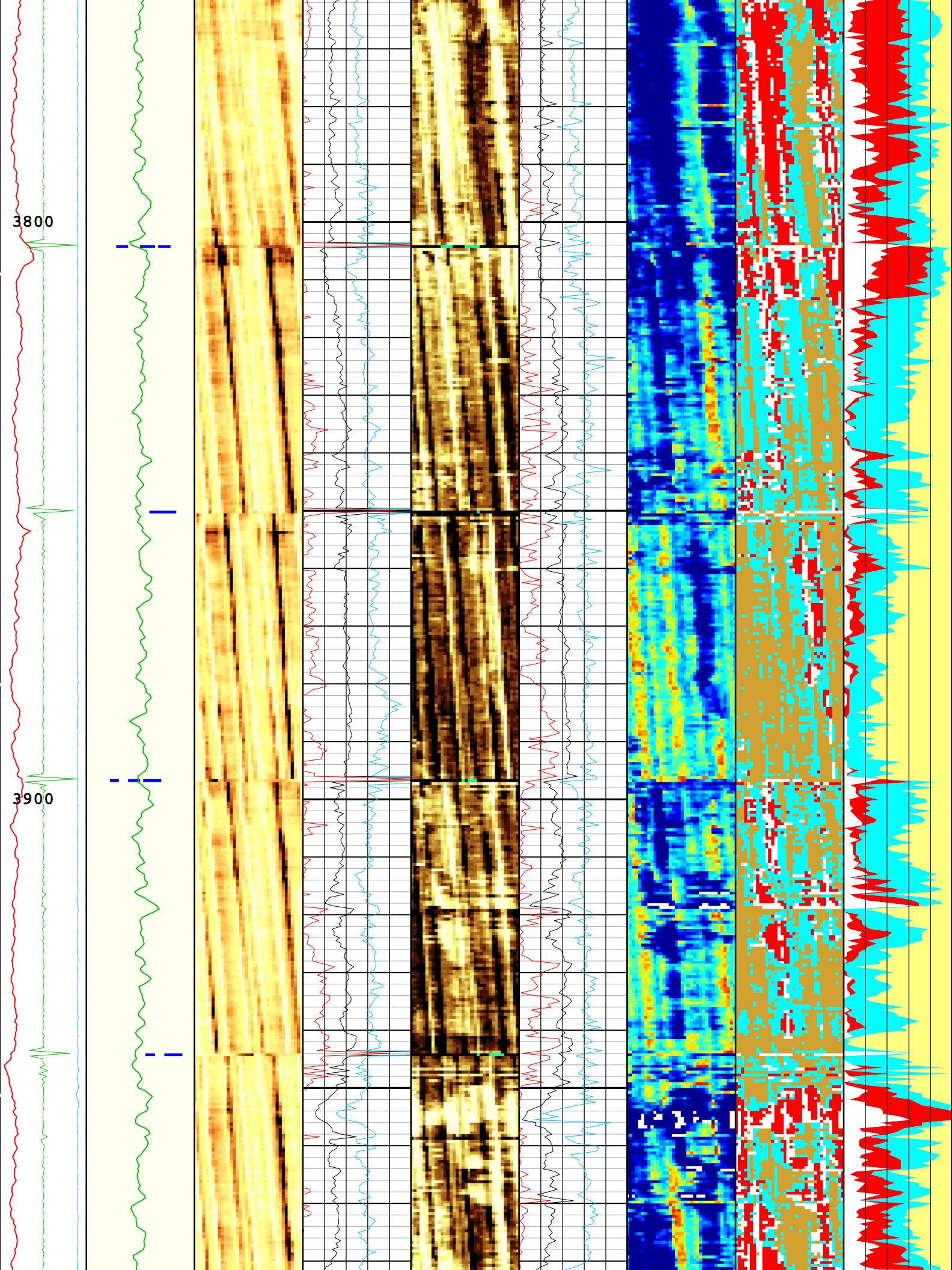


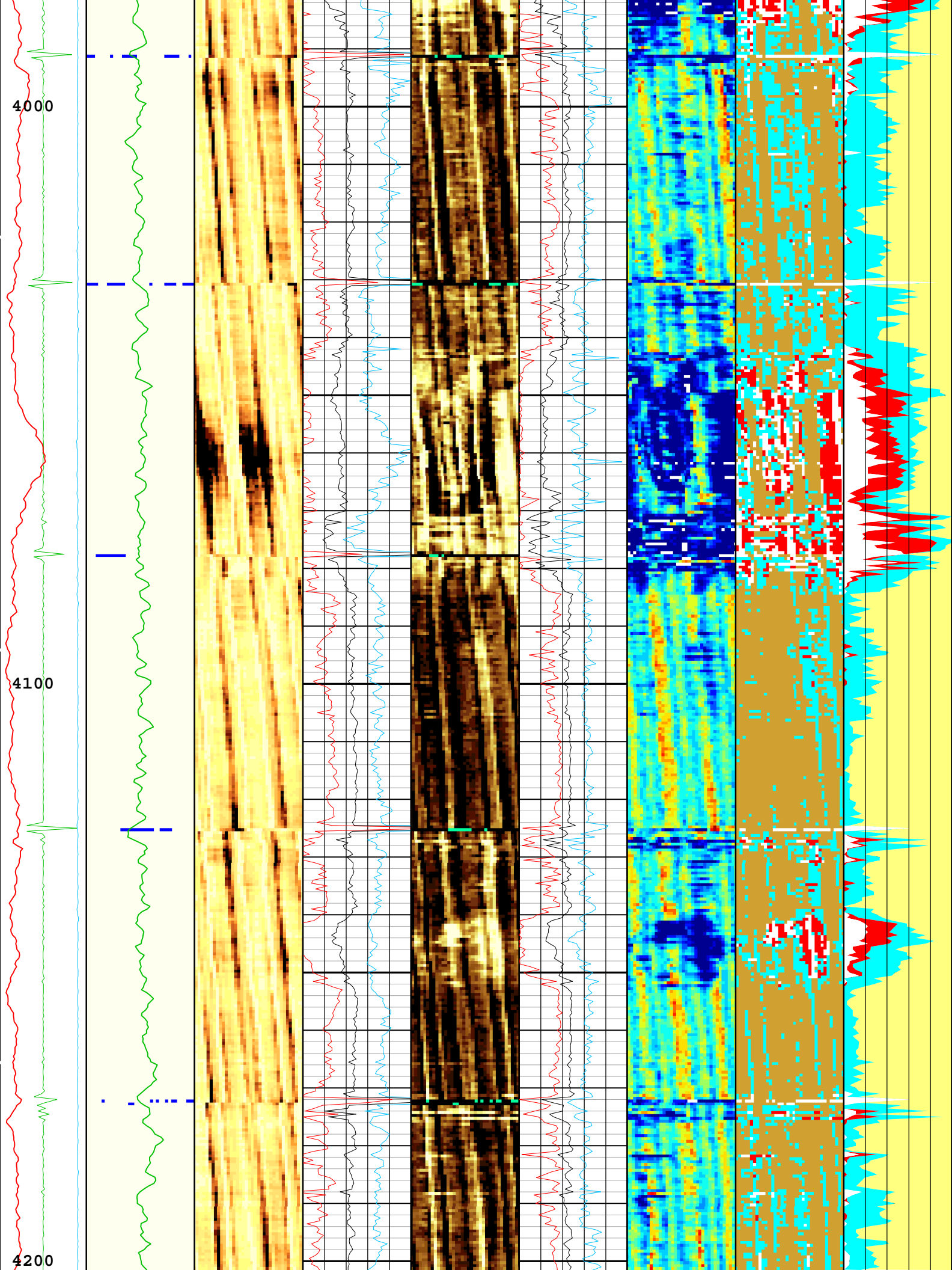




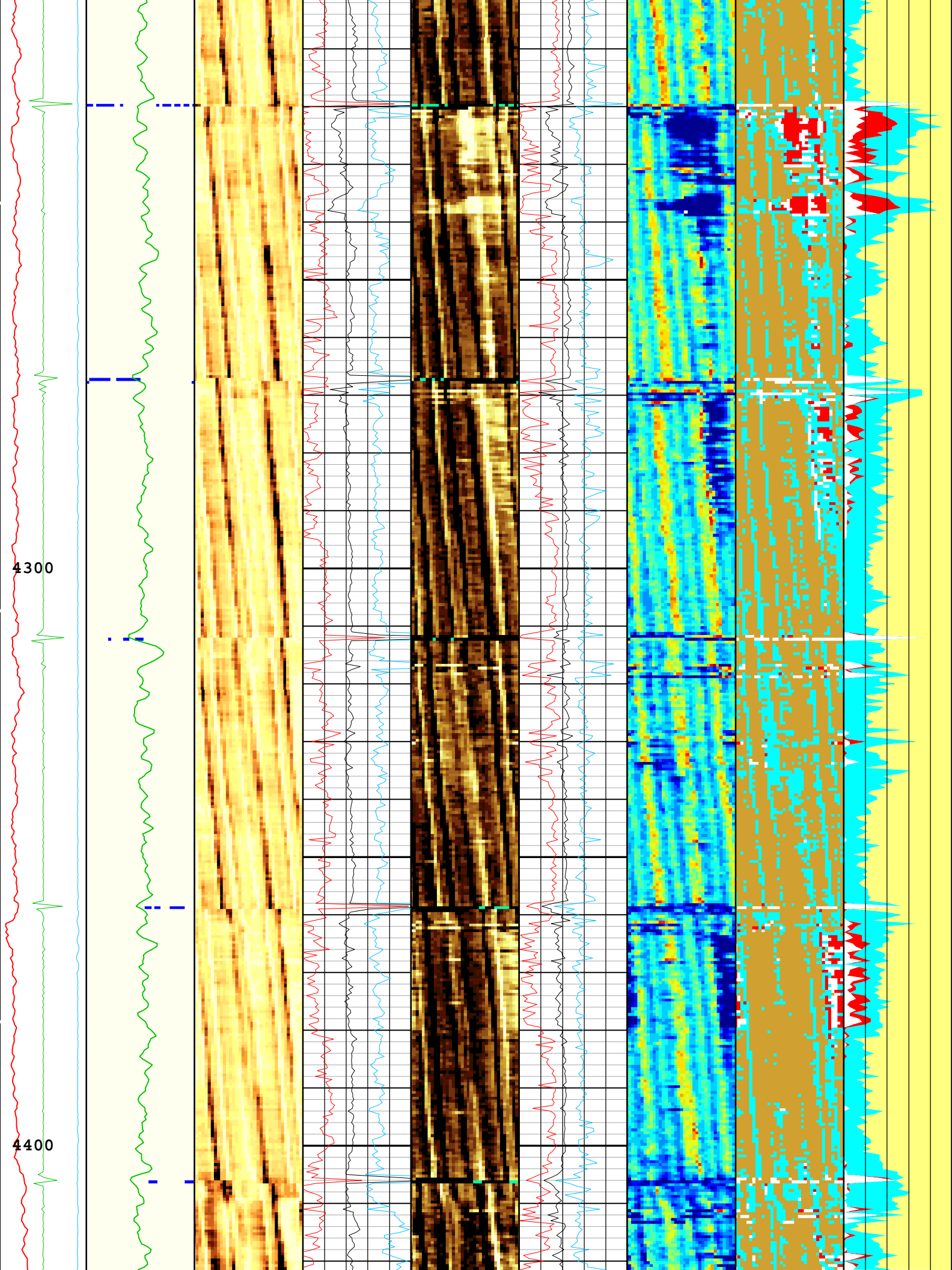


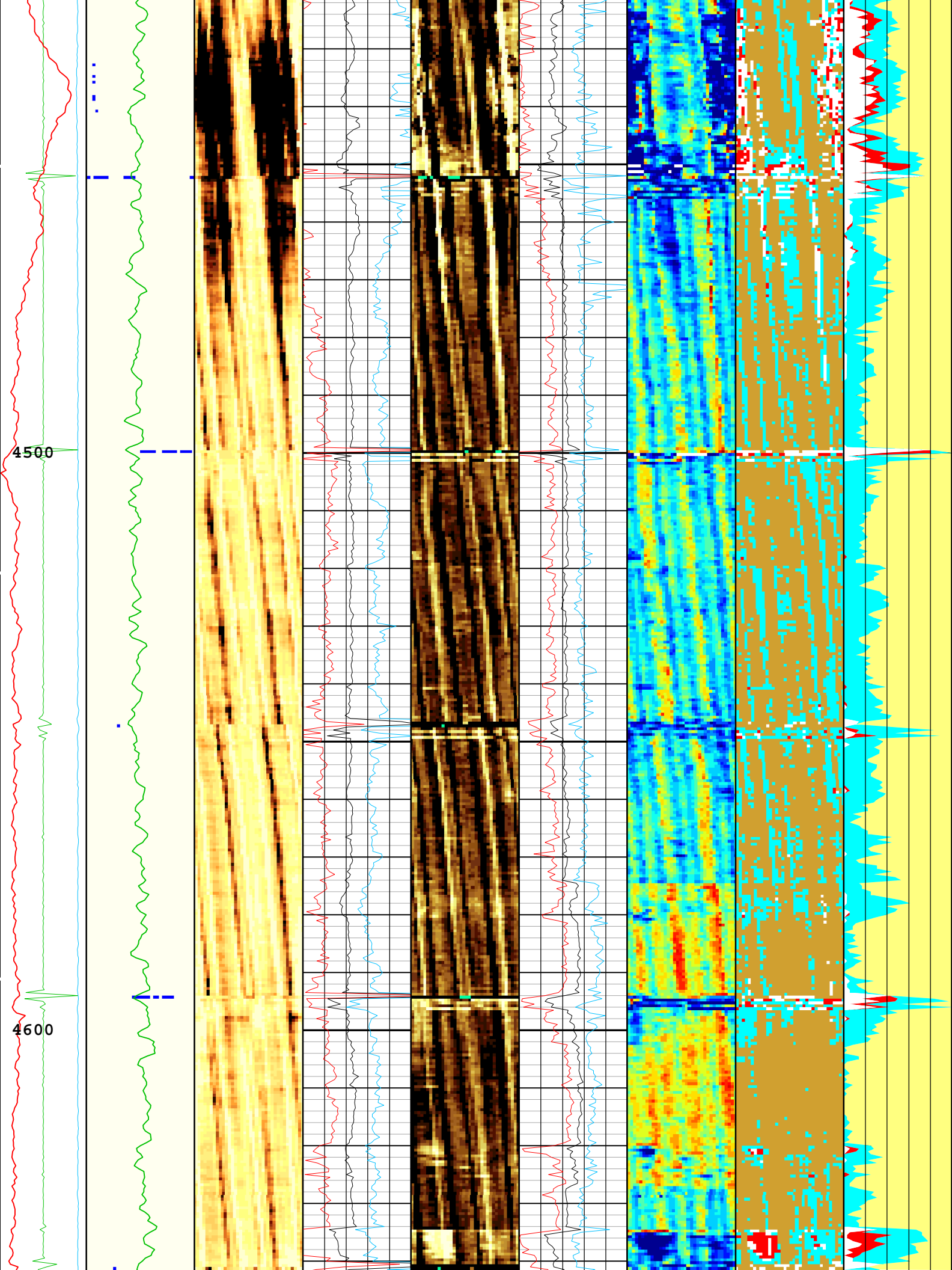


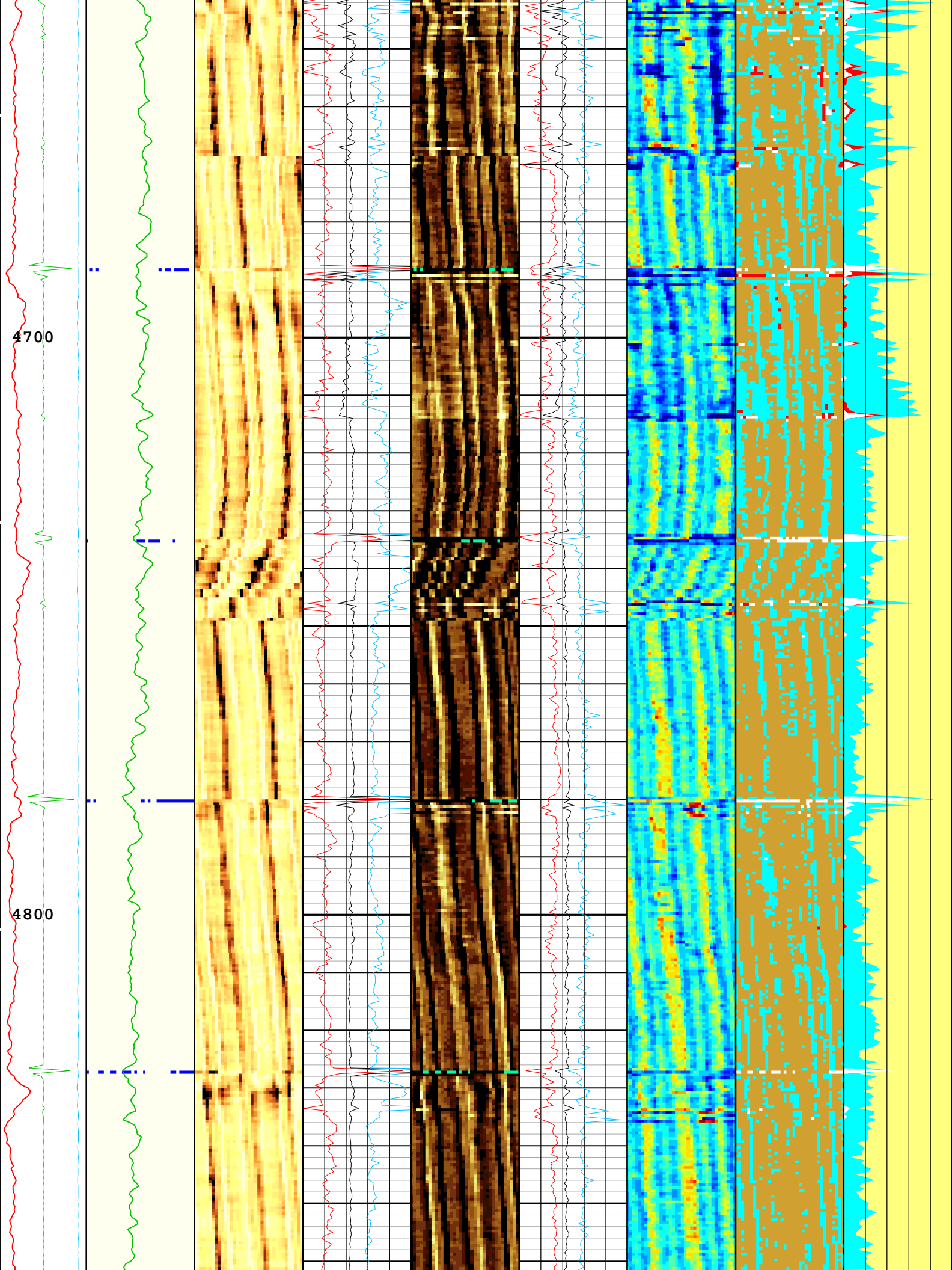


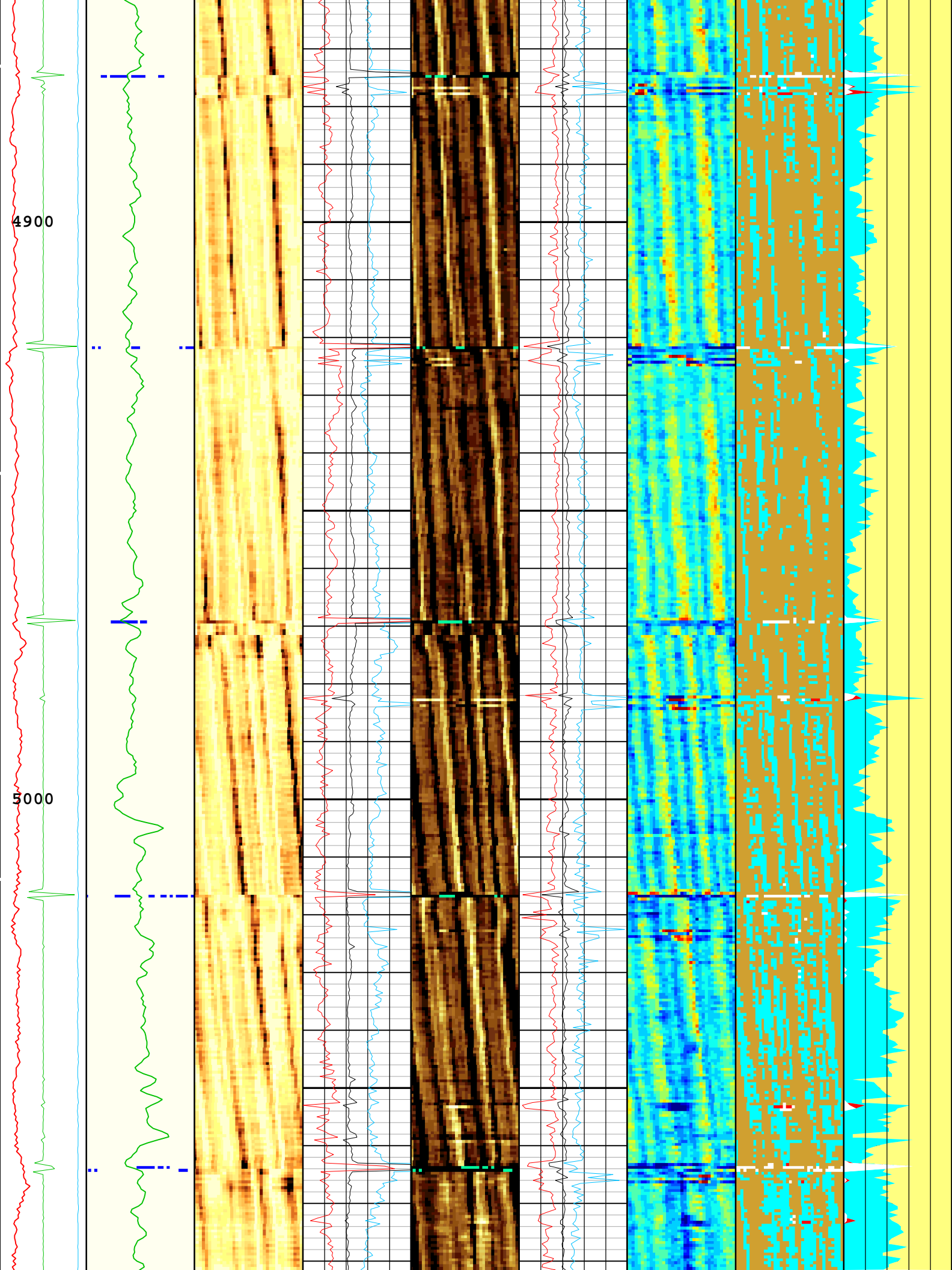




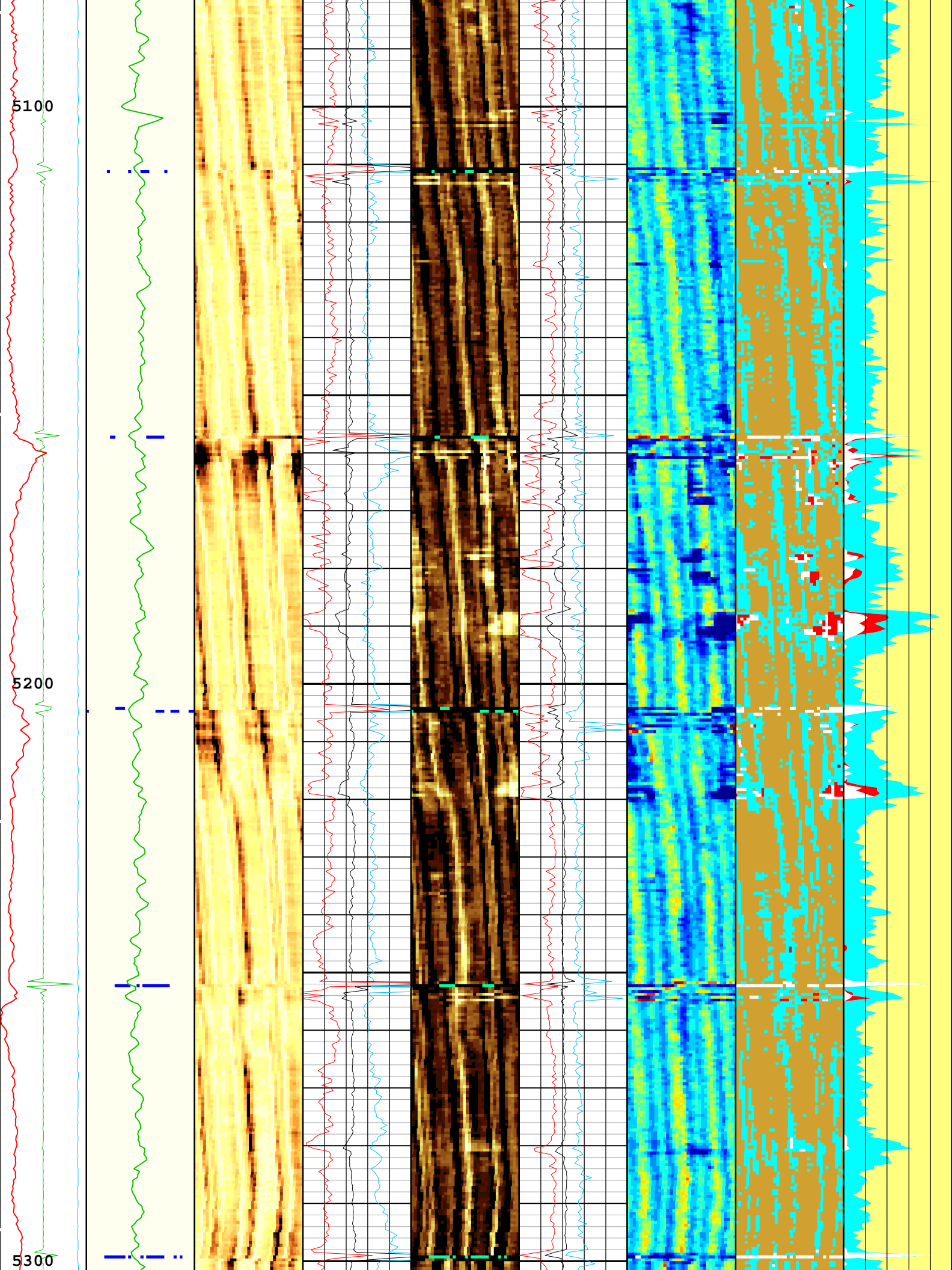


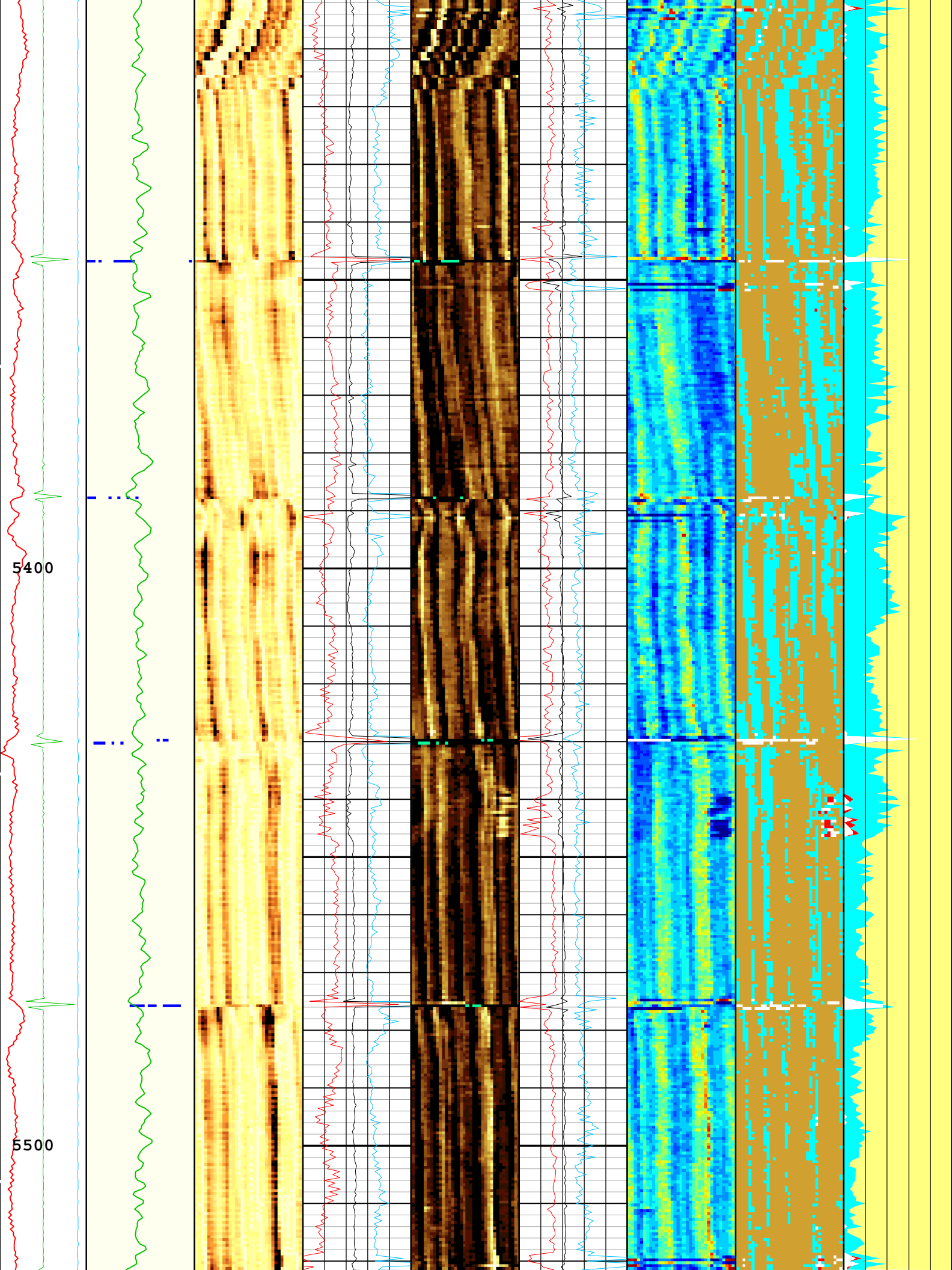


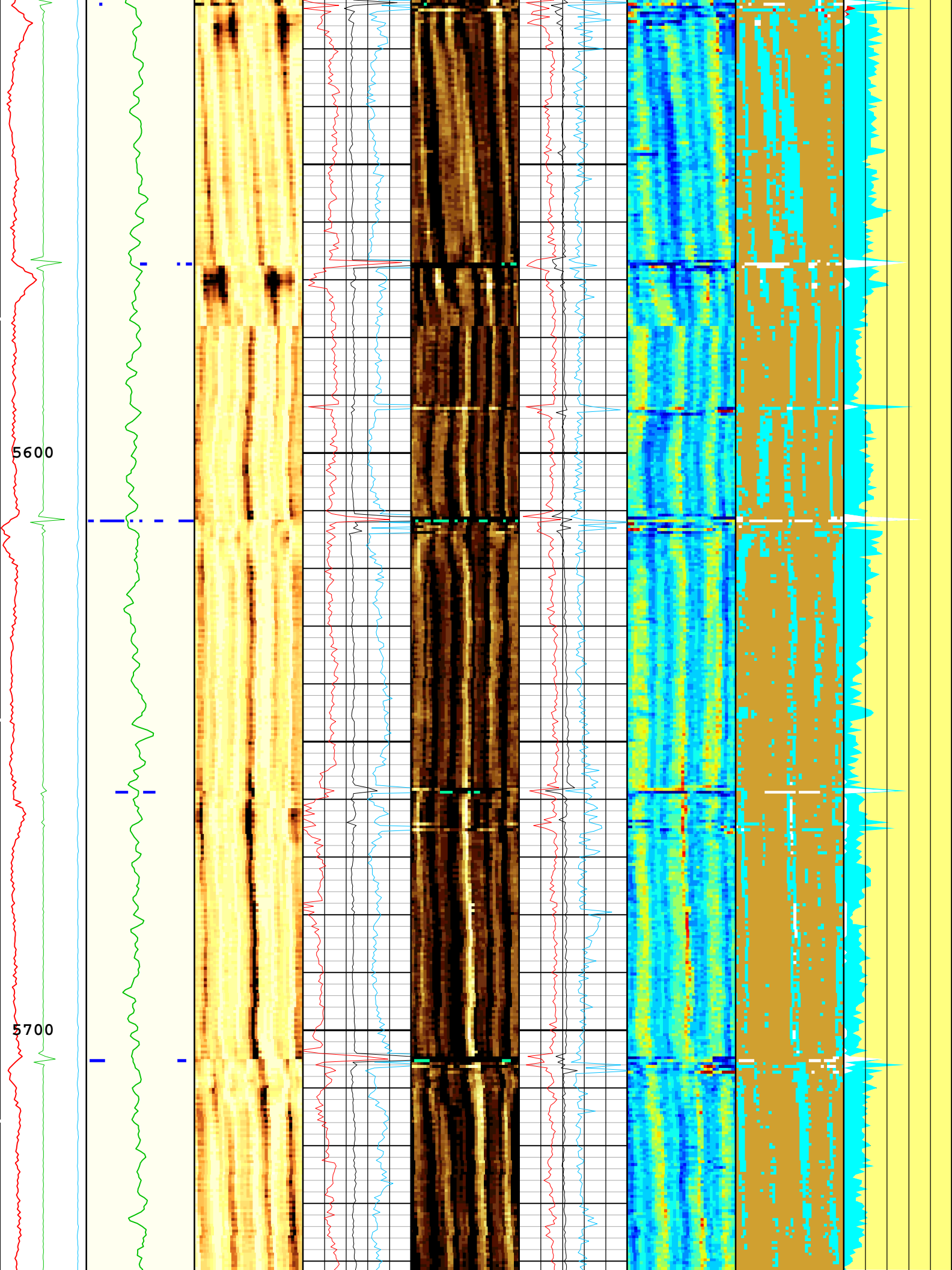


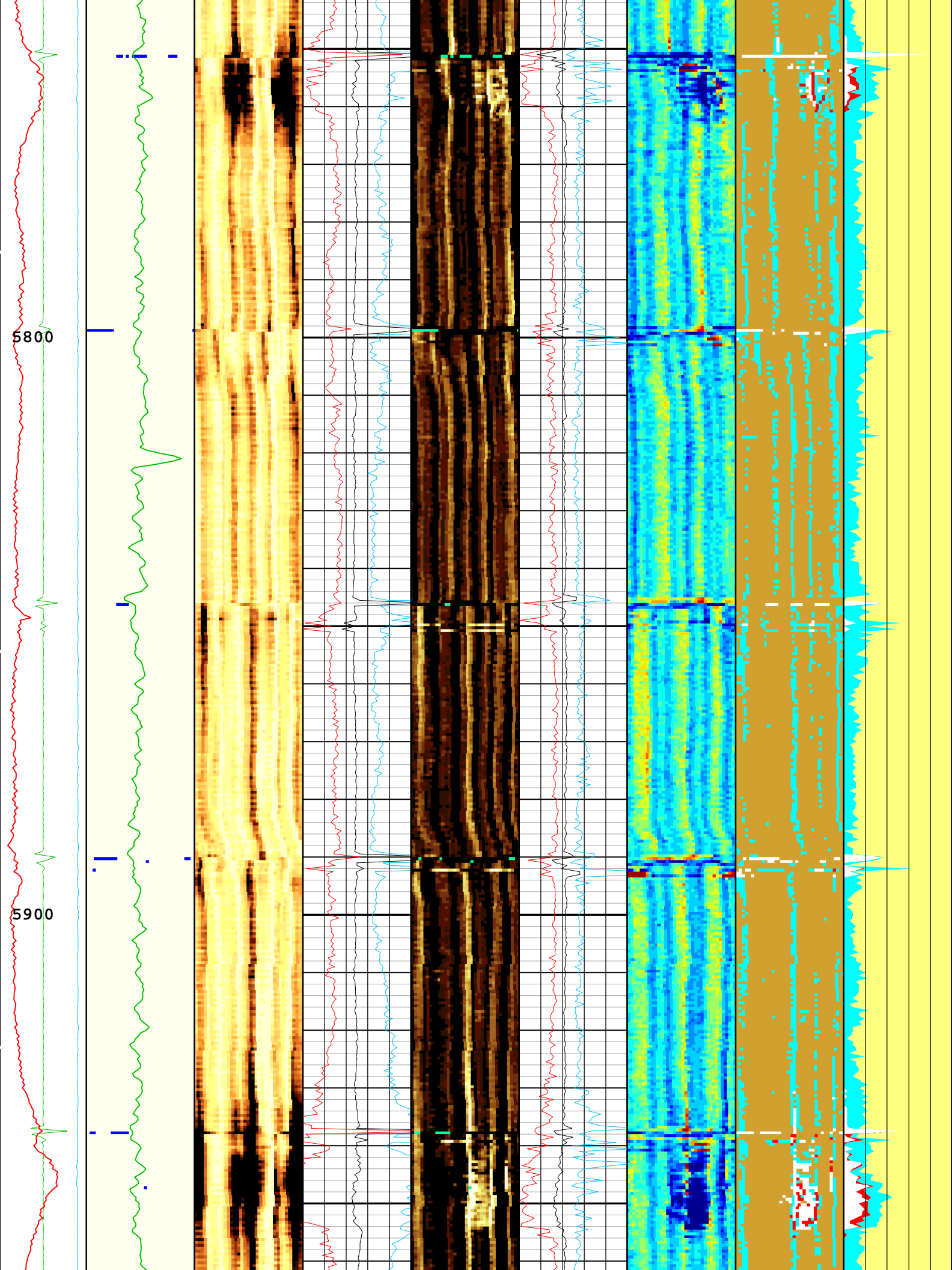


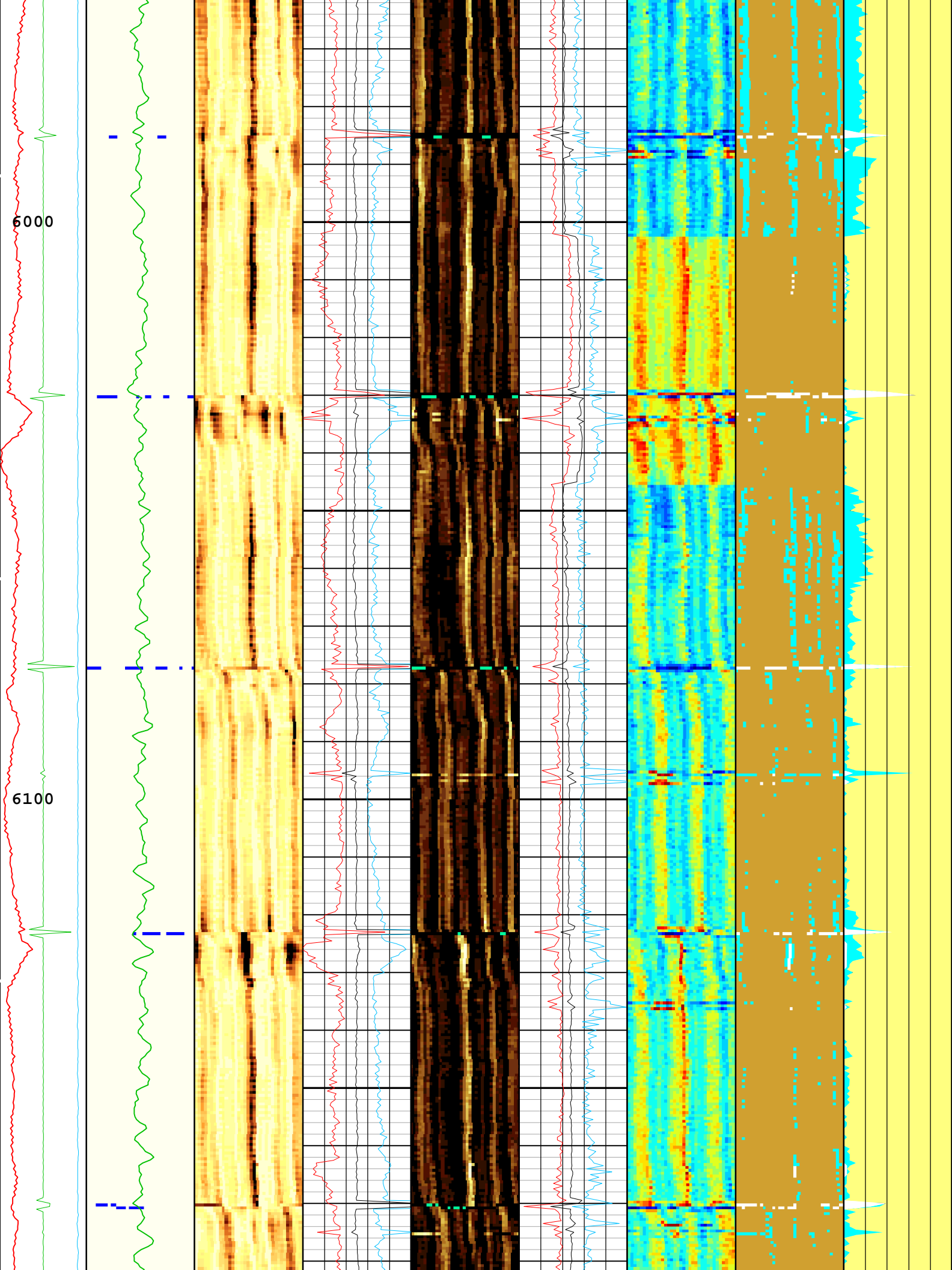




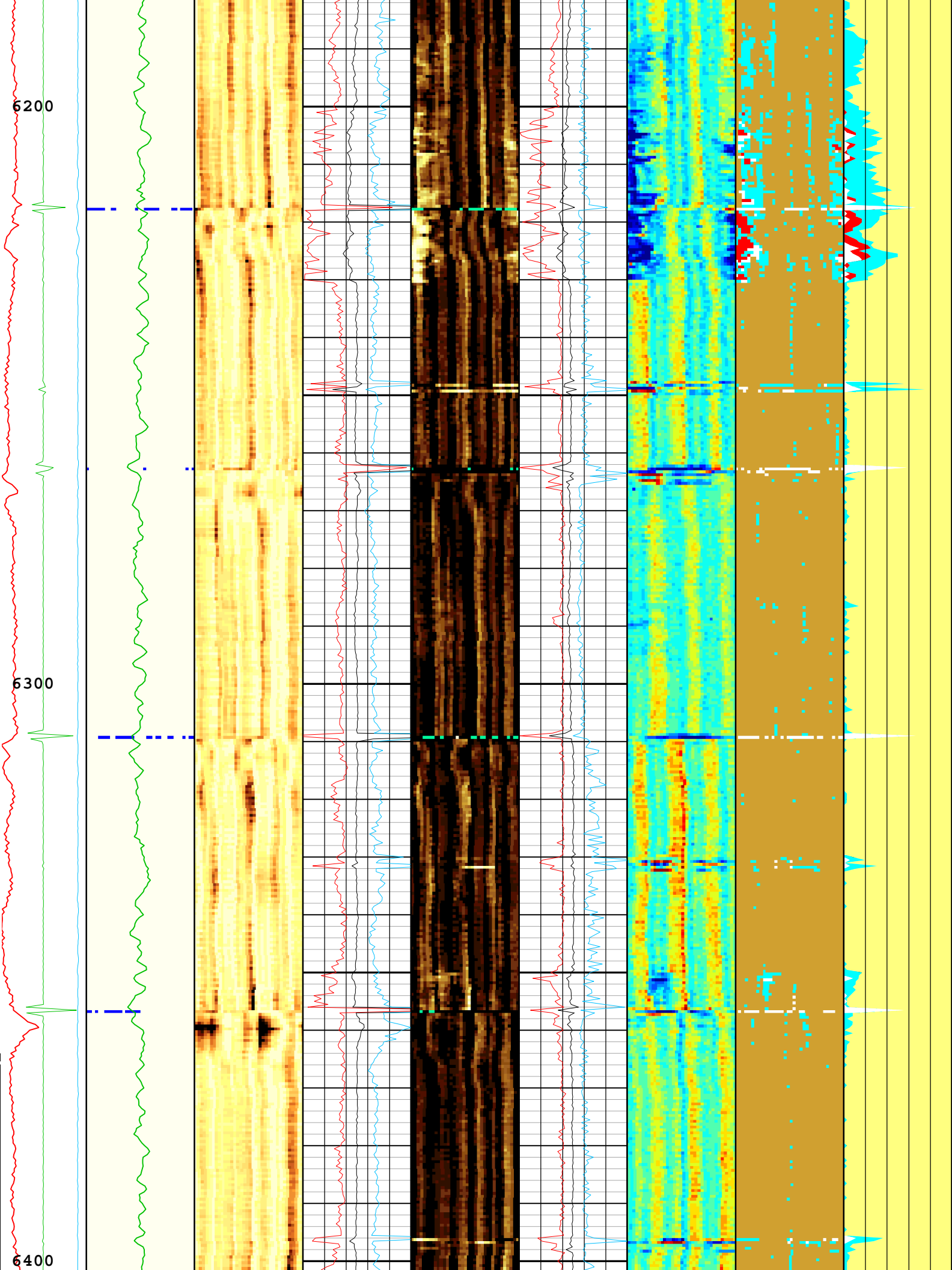


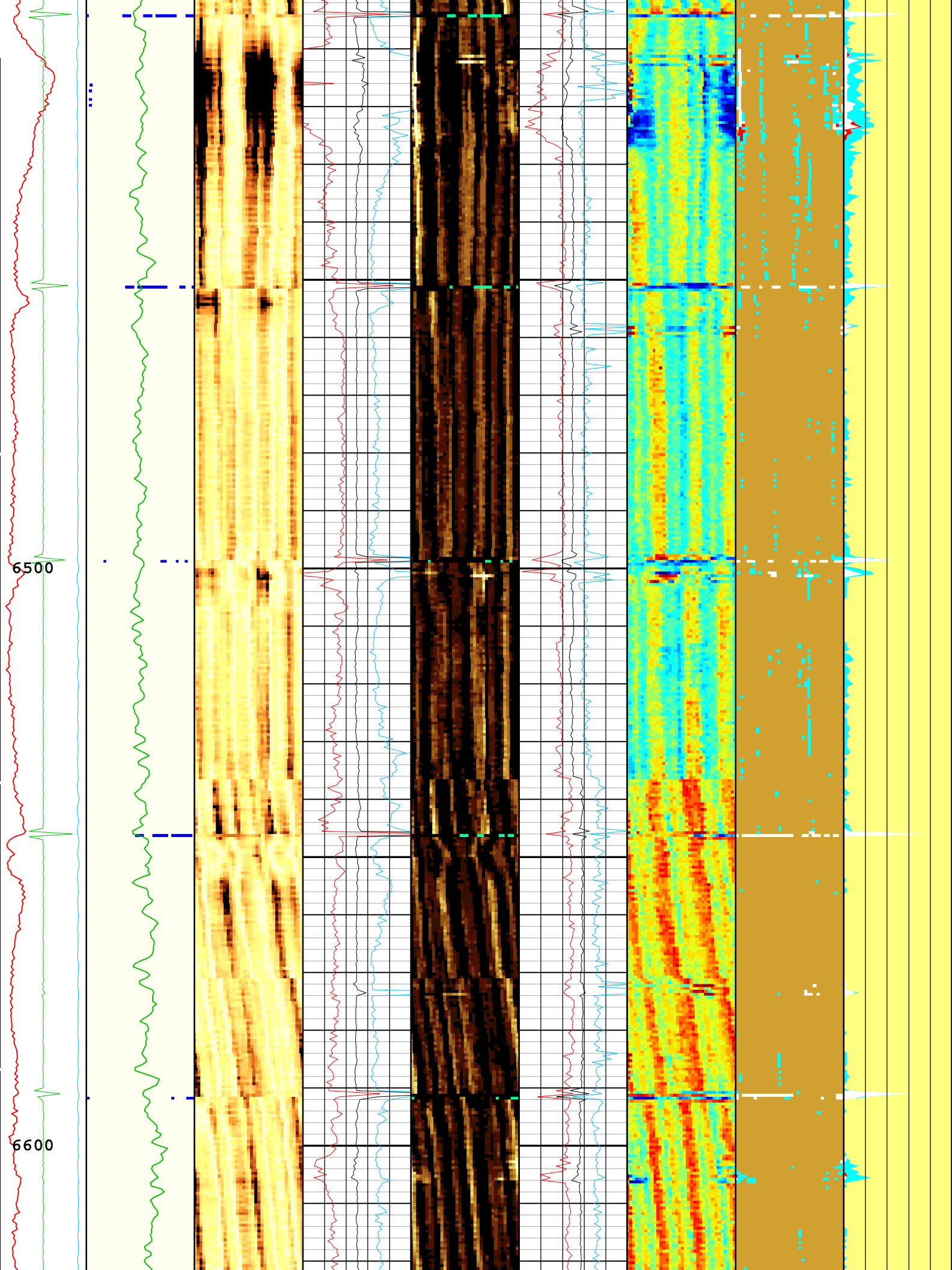


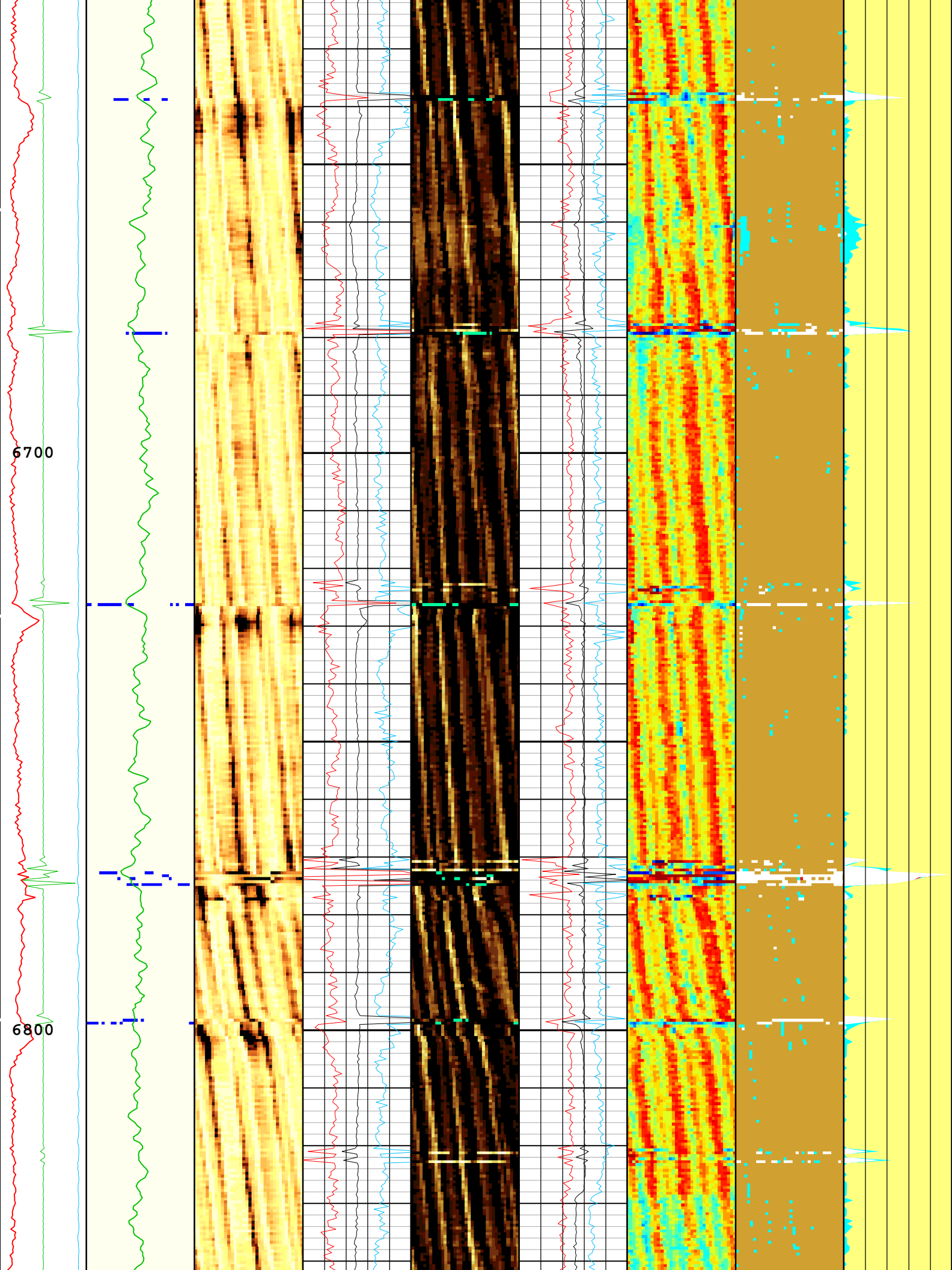




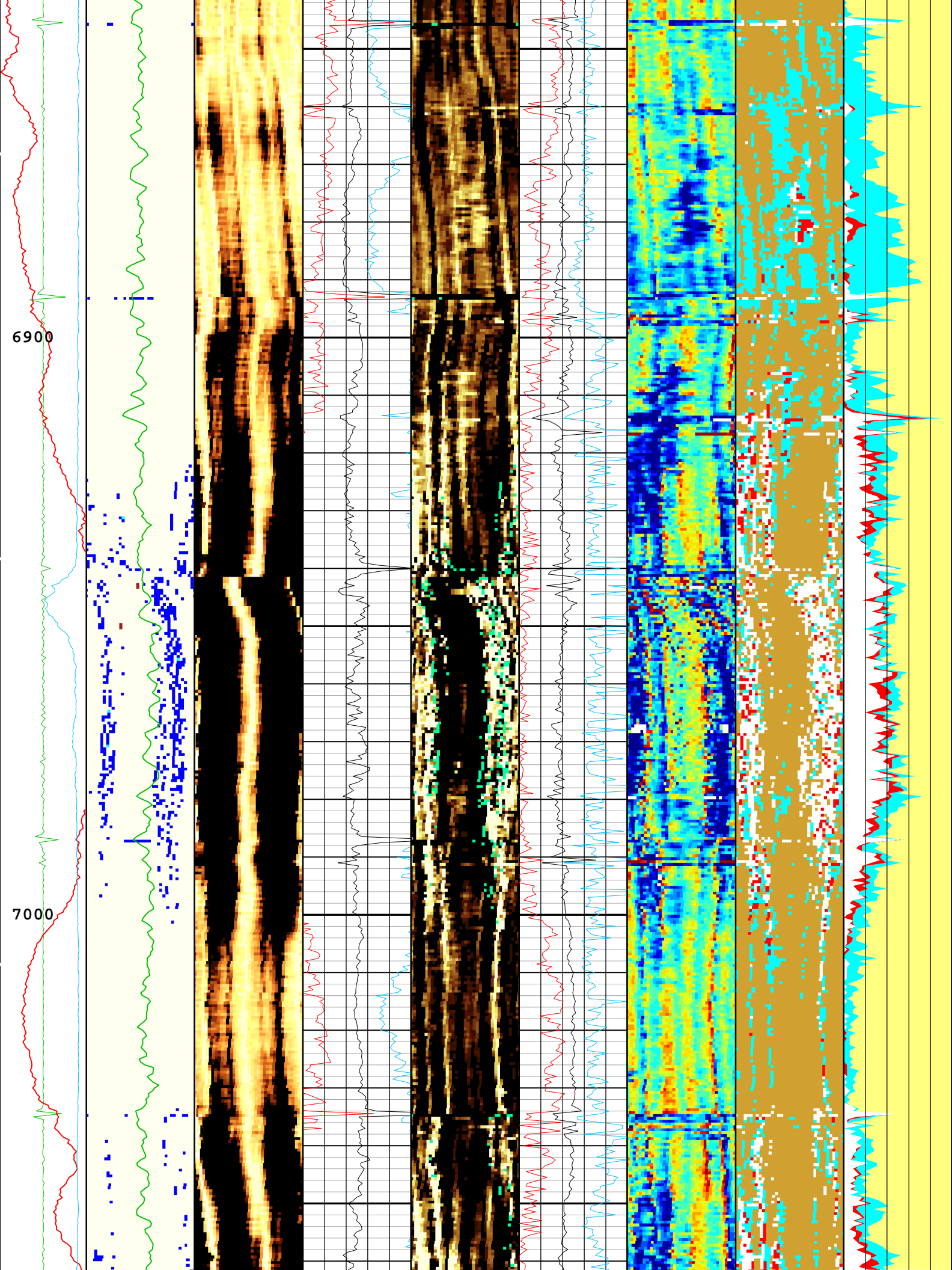


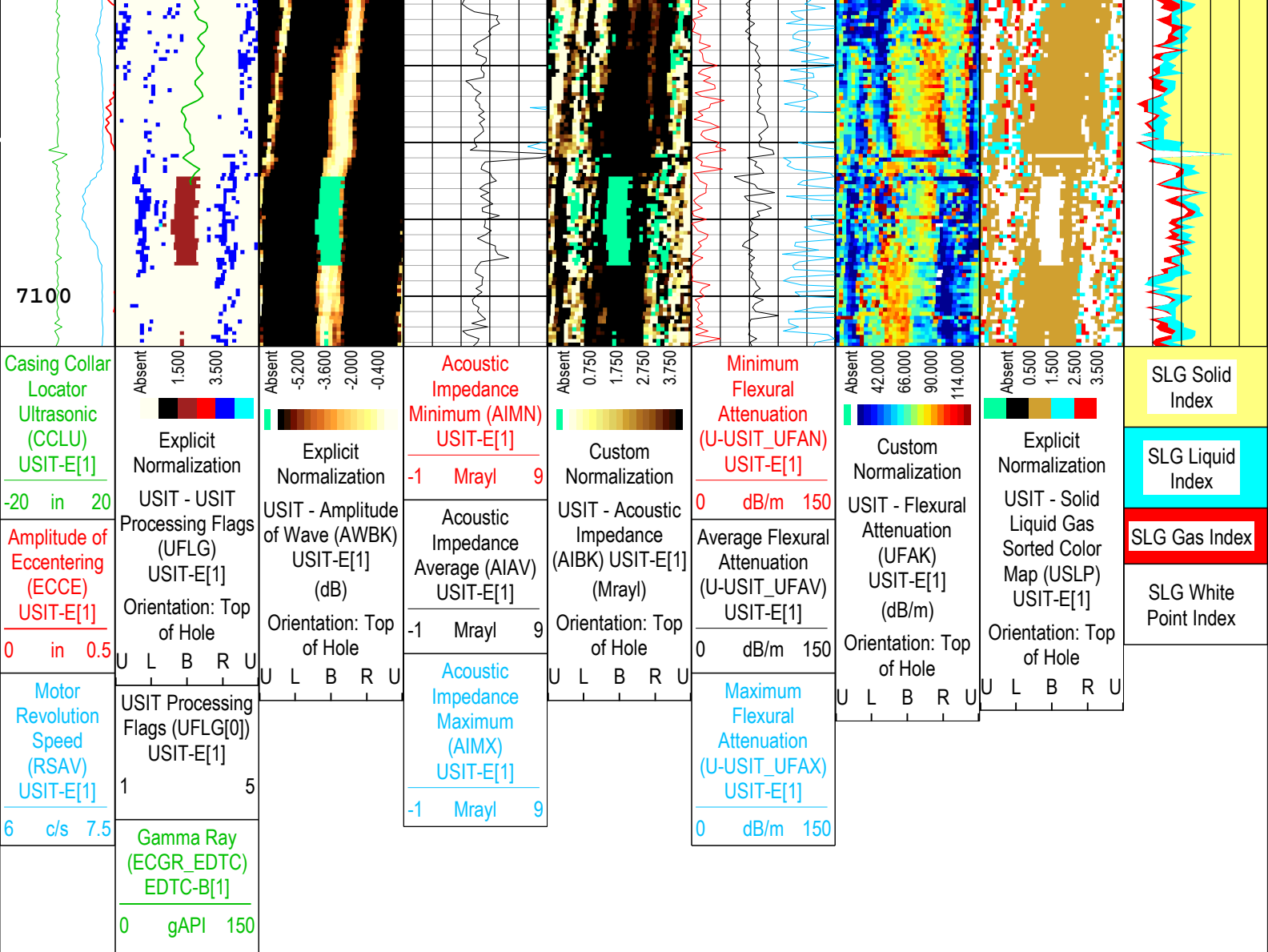

















TIME\_1900 - Time Marked every 60.00 (s)

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

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 20:22:54

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	12014	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	-16.02	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	1.21	
MUD_N_INV	IBC Inversion Mud Normalization Factor	USIT-E	1.2	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1	
RCOD	Reference Calibrator Outer Diameter	USIT-E	4.5	in
RCSO	Reference Calibrator Standoff	USIT-E	0.842	in
RCTH	Reference Calibrator Thickness	USIT-E	0.216	in
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	70	%
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.75	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	50	2353	
BS	8.5	2353	7106.5	
All depth are actual.				

Tool Control Parameters				
One: Parameters				
Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB
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	40	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	Time Zoned	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[4]:Up

Parameter	Value	Start Time	Stop Time	Start Depth ( ft )	Stop Depth ( ft )
U-USIT_UFWB	137	14-Oct-2018 09:17:33	14-Oct-2018 09:18:38	7107.37	7103.95
U-USIT_UFWB	128.04	14-Oct-2018 09:18:38	14-Oct-2018 09:21:04	7103.95	6933.11
U-USIT_UFWB	123.51	14-Oct-2018 09:21:04	14-Oct-2018 09:21:17	6933.11	6917.59
U-USIT_UFWB	118.99	14-Oct-2018 09:21:17	14-Oct-2018 09:27:56	6917.59	6537.16
U-USIT_UFWE	177	14-Oct-2018 09:17:33	14-Oct-2018 09:19:41	7107.37	7029.98
U-USIT_UFWE	182.34	14-Oct-2018 09:19:41	14-Oct-2018 09:27:56	7029.98	6537.16
U-USIT_UNWB	106	14-Oct-2018 09:17:33	14-Oct-2018 09:18:33	7107.37	7107.28
U-USIT_UNWB	96.87	14-Oct-2018 09:18:33	14-Oct-2018 09:20:59	7107.28	6938.95
U-USIT_UNWB	90.33	14-Oct-2018 09:20:59	14-Oct-2018 09:27:56	6938.95	6537.16
U-USIT_UNWE	148.65	14-Oct-2018 09:17:33	14-Oct-2018 09:19:36	7107.37	7035.68
U-USIT_UNWE	156.2	14-Oct-2018 09:19:36	14-Oct-2018 09:27:56	7035.68	6537.16
WINB	31.88	14-Oct-2018 09:17:33	14-Oct-2018 09:18:54	7107.37	7085.32
WINB	27.16	14-Oct-2018 09:18:54	14-Oct-2018 09:27:56	7085.32	6537.16
WINE	77.3	14-Oct-2018 09:17:33	14-Oct-2018 09:20:13	7107.37	6992.35
WINE	80.25	14-Oct-2018 09:20:13	14-Oct-2018 09:27:56	6992.35	6537.16

### Pass Log[7]:Up

U-USIT_UFWB	137	14-Oct-2018 09:54:54	14-Oct-2018 10:06:48	6604.3	5798.85
U-USIT_UFWB	129.41	14-Oct-2018 10:06:48	14-Oct-2018 11:33:11	5798.85	46.39
U-USIT_UFWE	177	14-Oct-2018 09:55:13	14-Oct-2018 11:33:11	6604.3	46.39
U-USIT_UNWB	106	14-Oct-2018 09:54:54	14-Oct-2018 10:27:06	6604.3	4370.62
U-USIT_UNWB	104.29	14-Oct-2018 10:27:06	14-Oct-2018 11:33:11	4370.62	46.39
U-USIT_UNWE	146	14-Oct-2018 09:55:13	14-Oct-2018 11:33:11	6604.3	46.39
WINB	31.88	14-Oct-2018 09:55:13	14-Oct-2018 11:33:11	6604.3	46.39

WINE	71.88	14-Oct-2018 09:55:13	14-Oct-2018 11:33:11	6604.3	46.39
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All depths 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[4]:Up	Up	6495.28 ft	7112.71 ft	14-Oct-2018 9:17:33 AM	14-Oct-2018 9:27:56 AM	ON	5.12 ft	Yes
One	Log[7]:Up	Up	46.39 ft	6604.30 ft	14-Oct-2018 9:54:54 AM	14-Oct-2018 11:33:11 AM	ON	5.12 ft	Yes

All depths are referenced to toolstring zero

### Log

Company:Crestone Peak Resources Operating LLC

Well:Sam #3H-25H-M166






Composite 1:S011

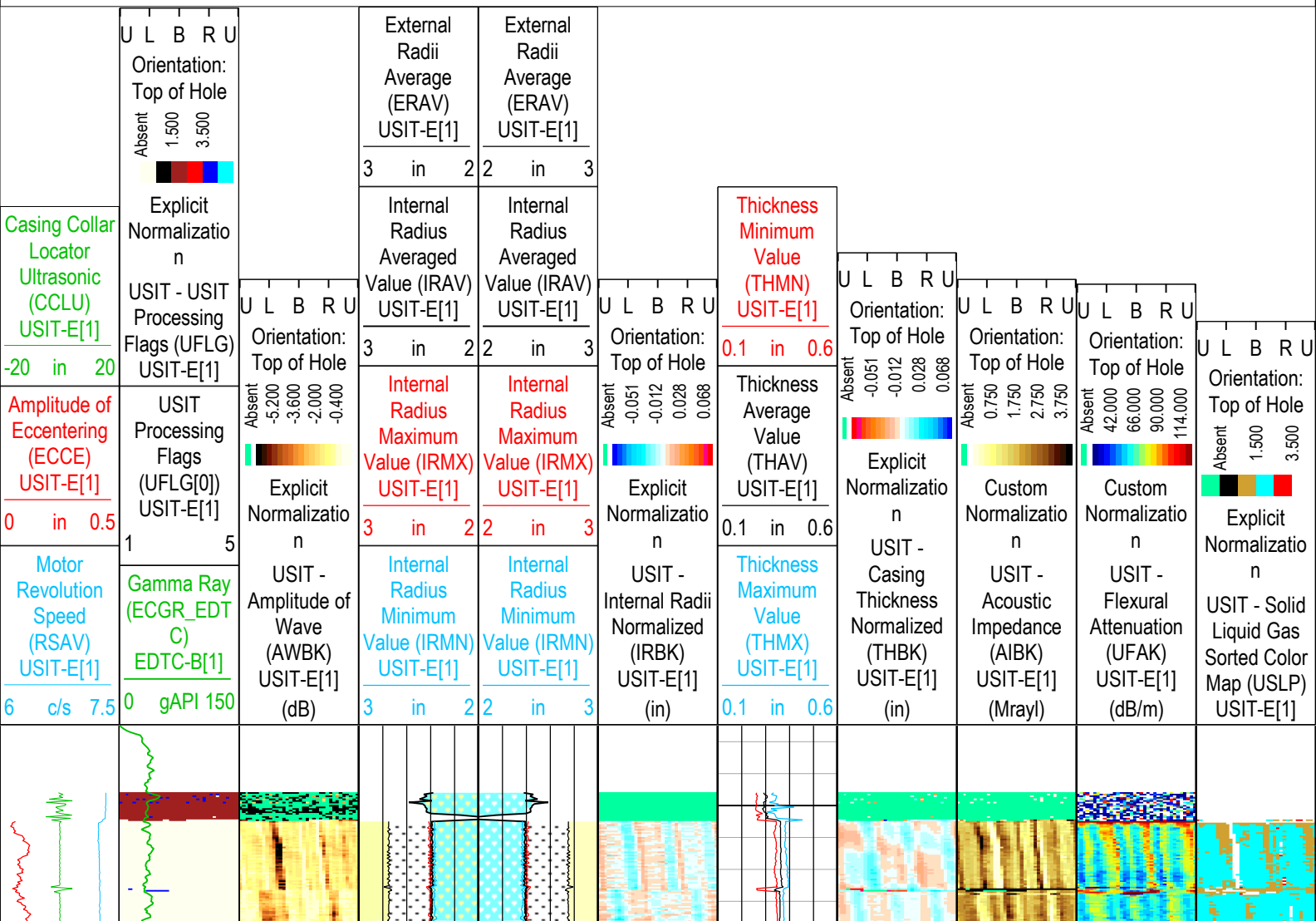
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Creation Date: 14-Oct-2018 20:23:11

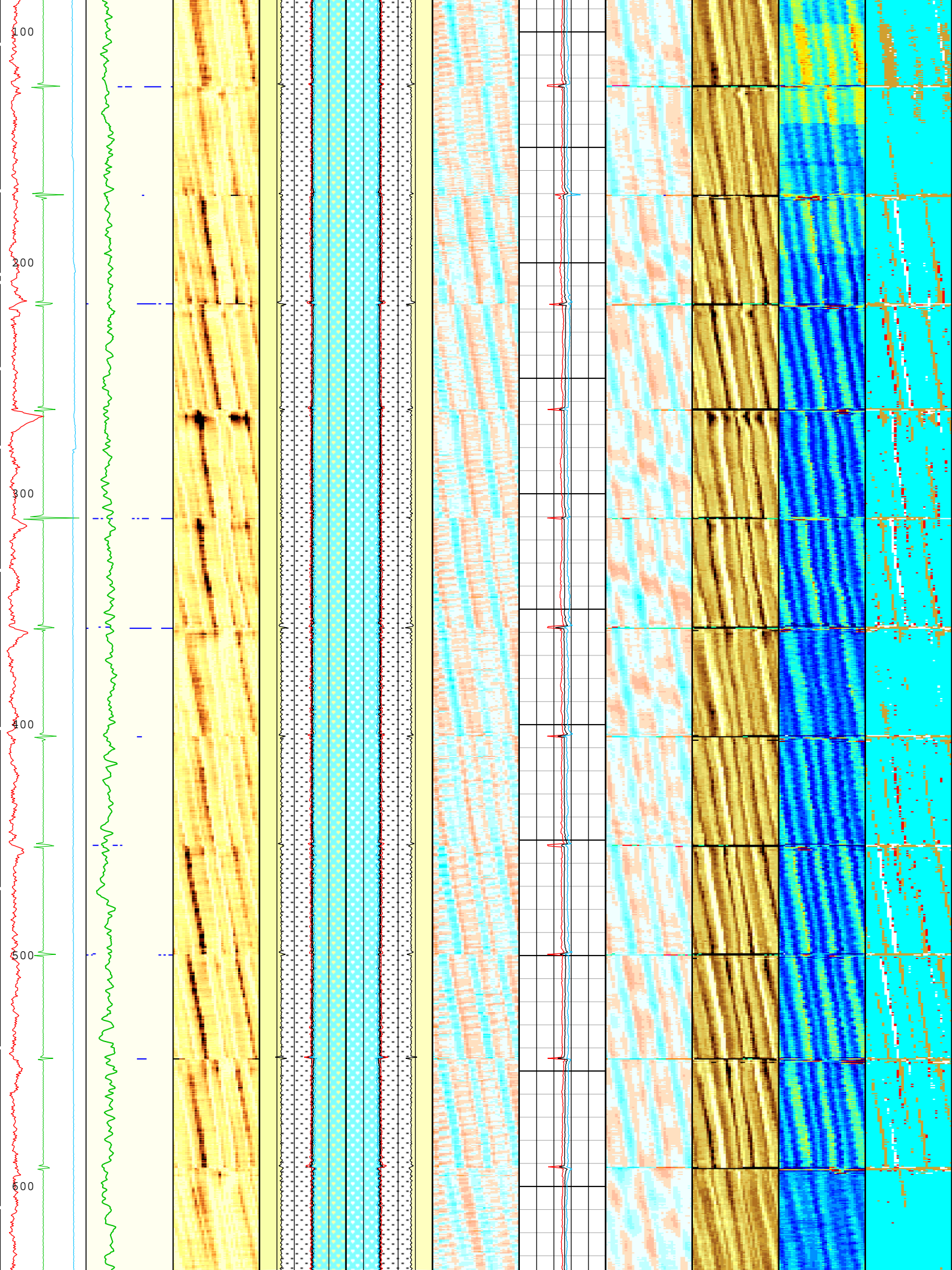
TIME\_1900 - Time Marked every 60.00 (s)

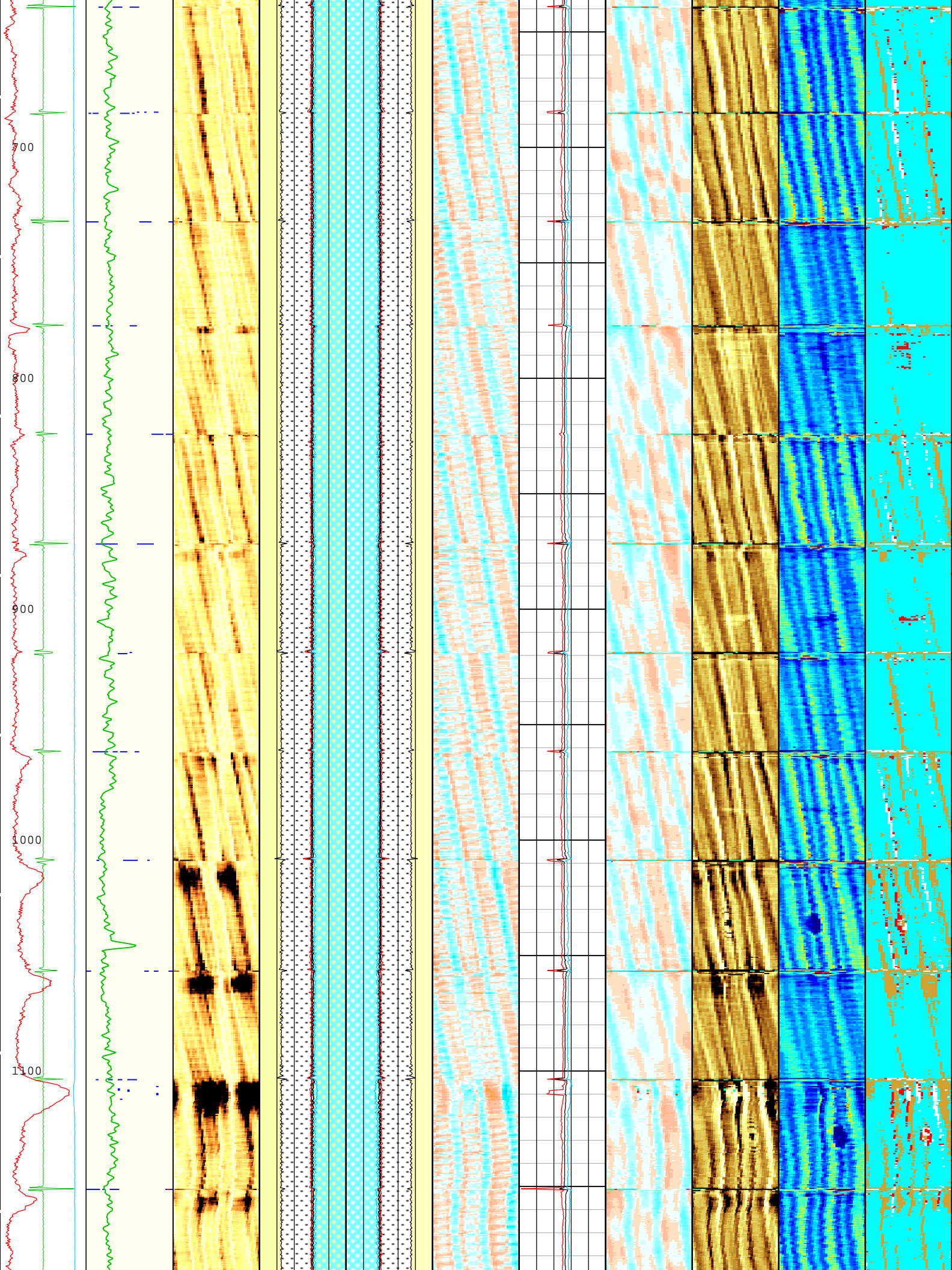
USIT Processing Flags (UFLG[0]) USIT-E[1]

- 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

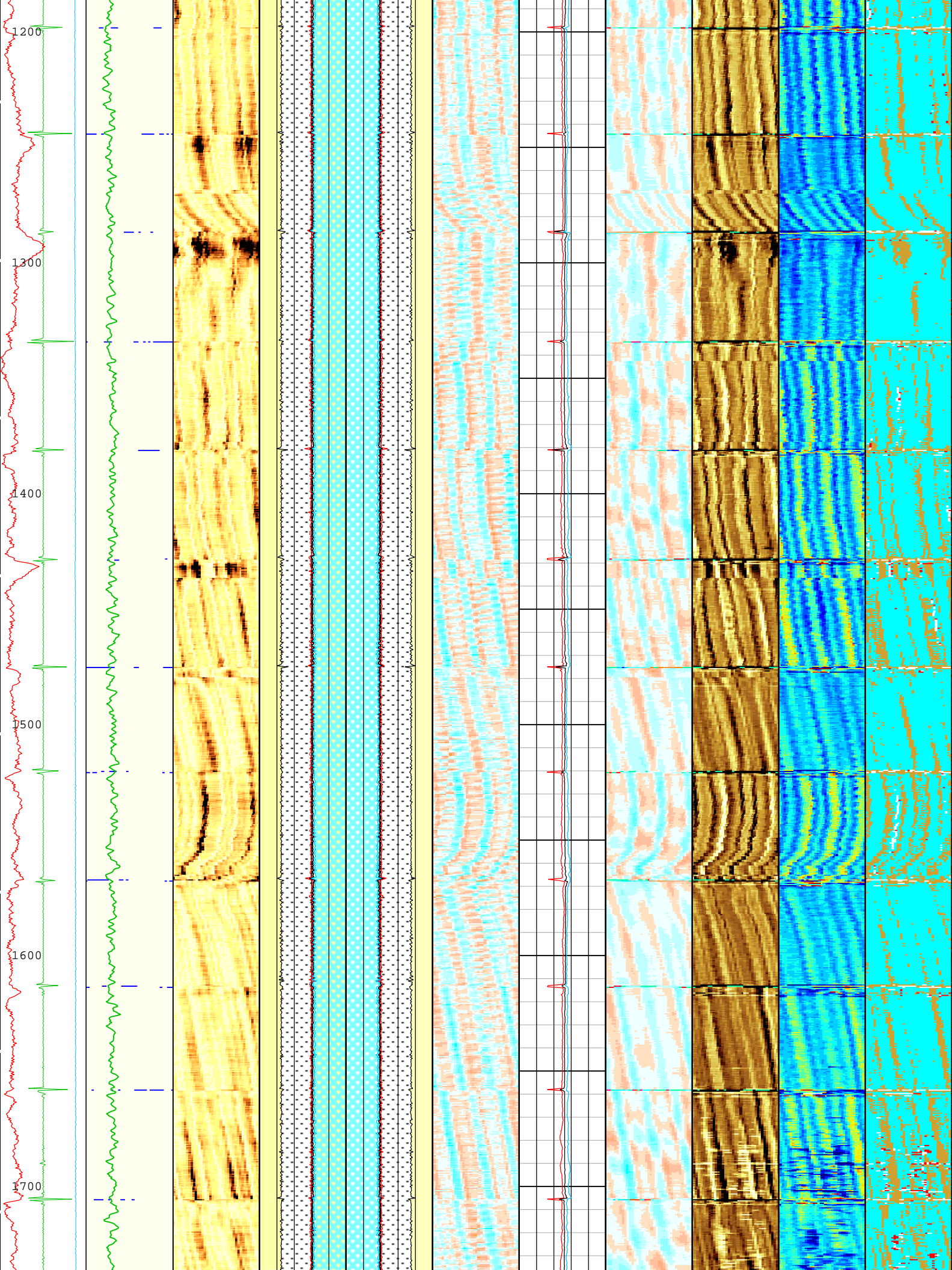


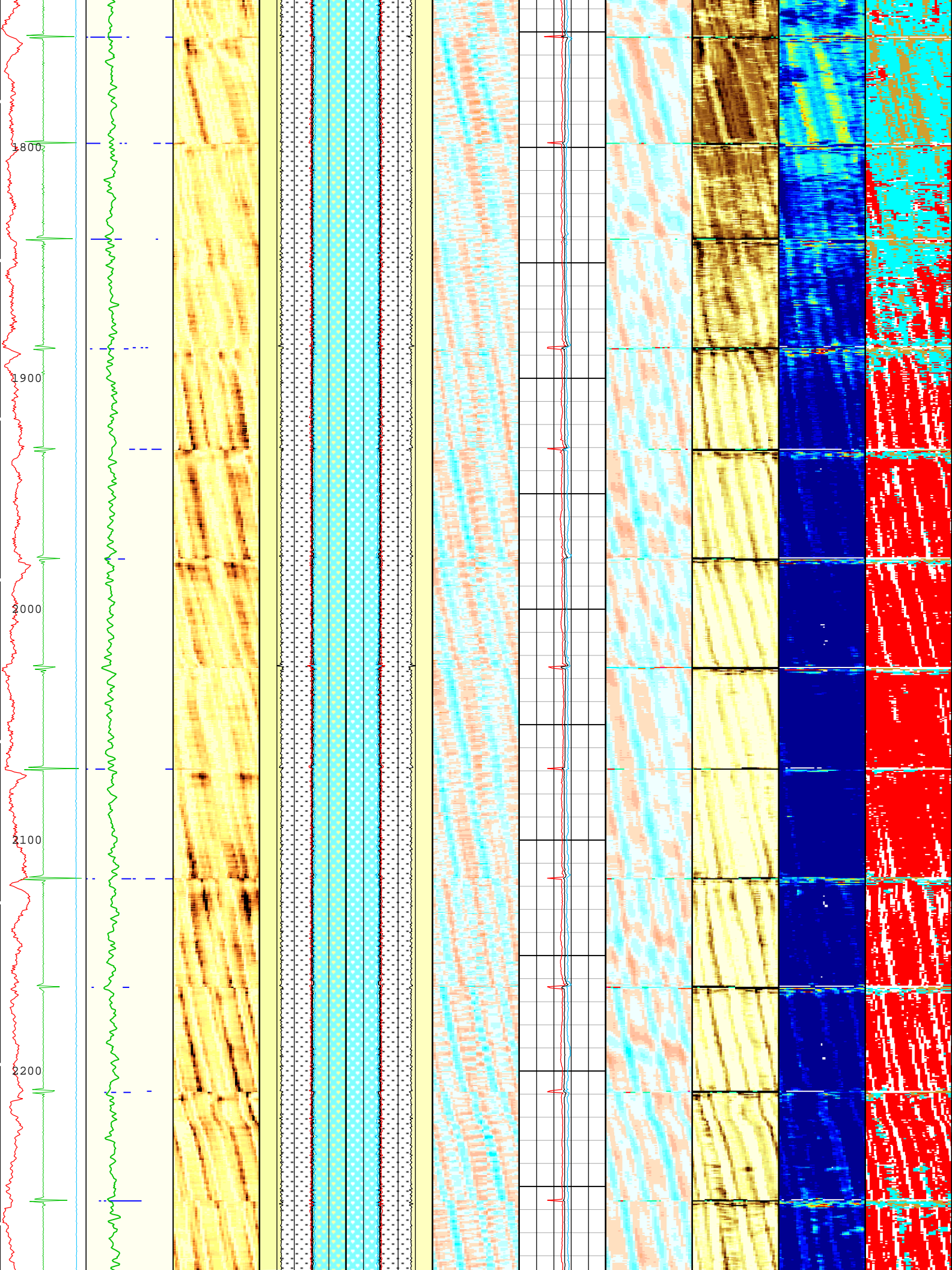




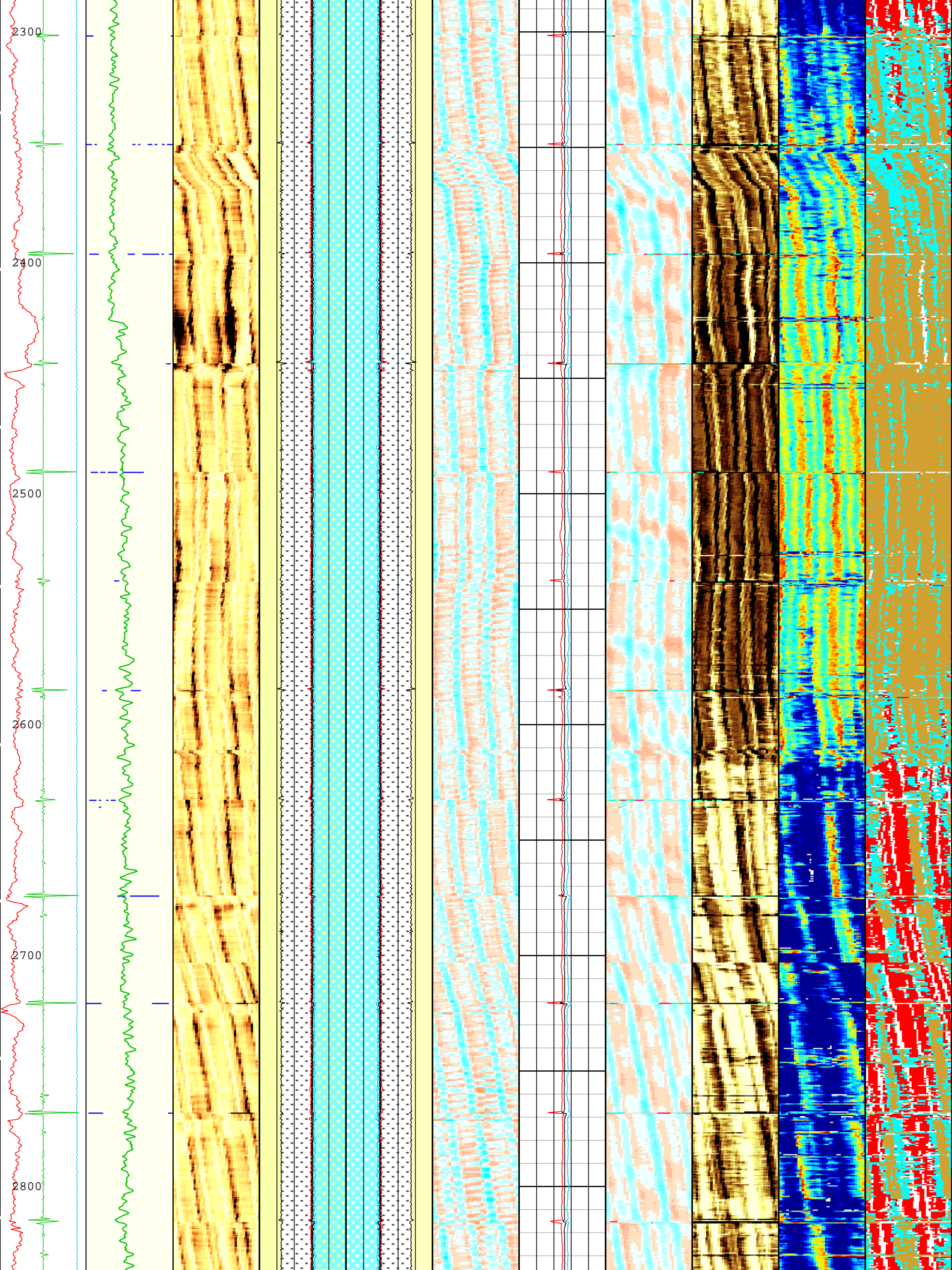




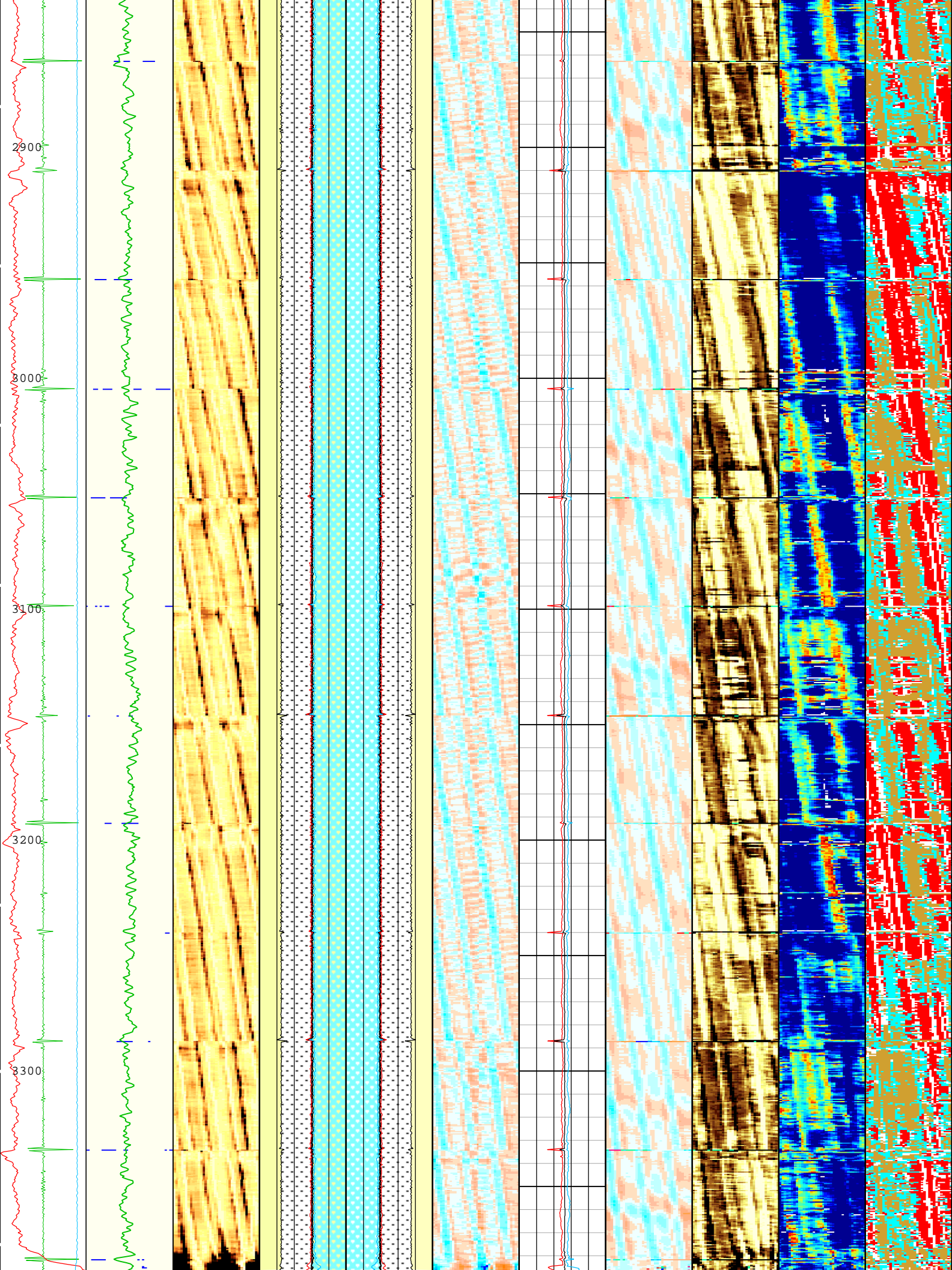


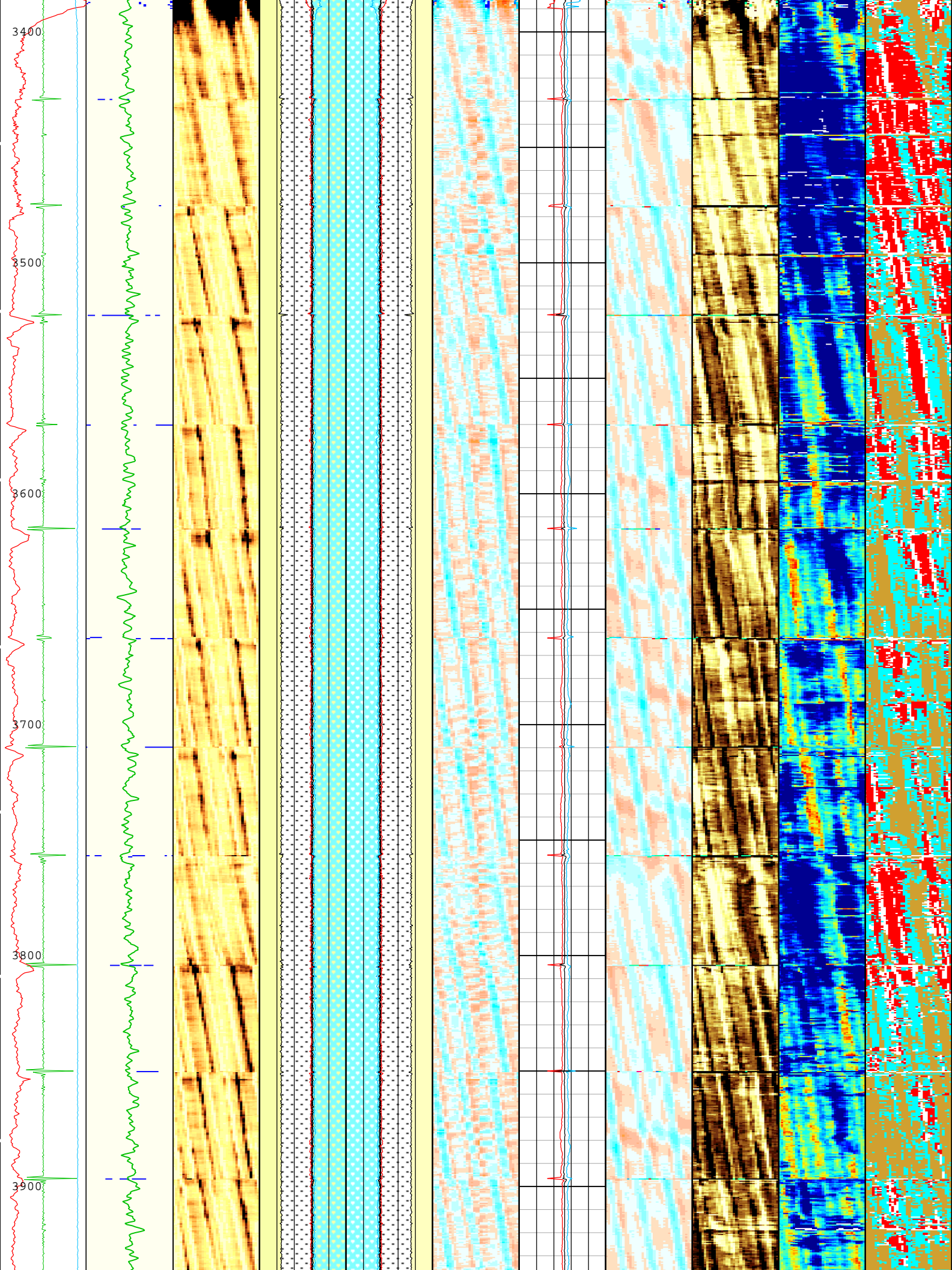




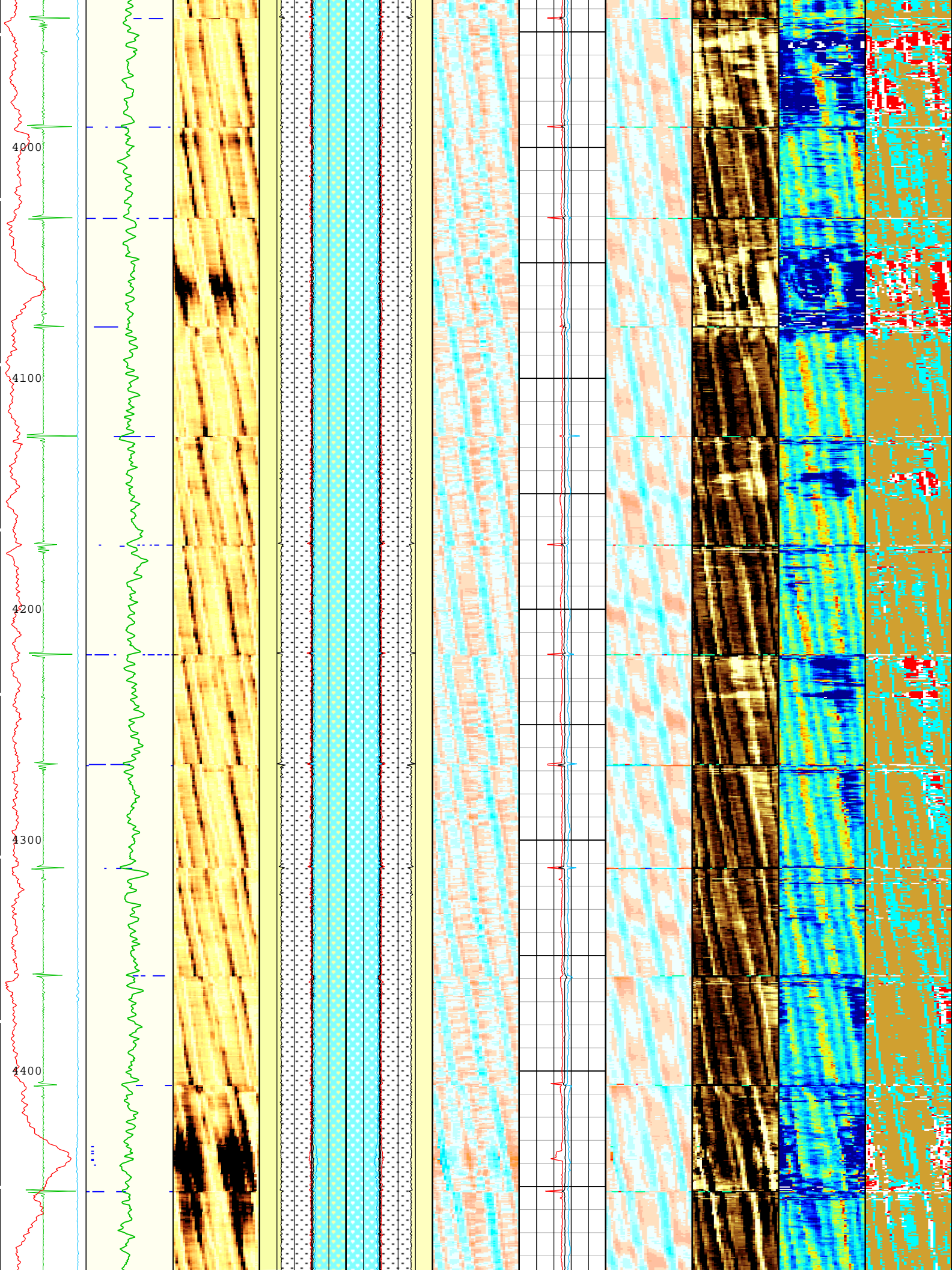


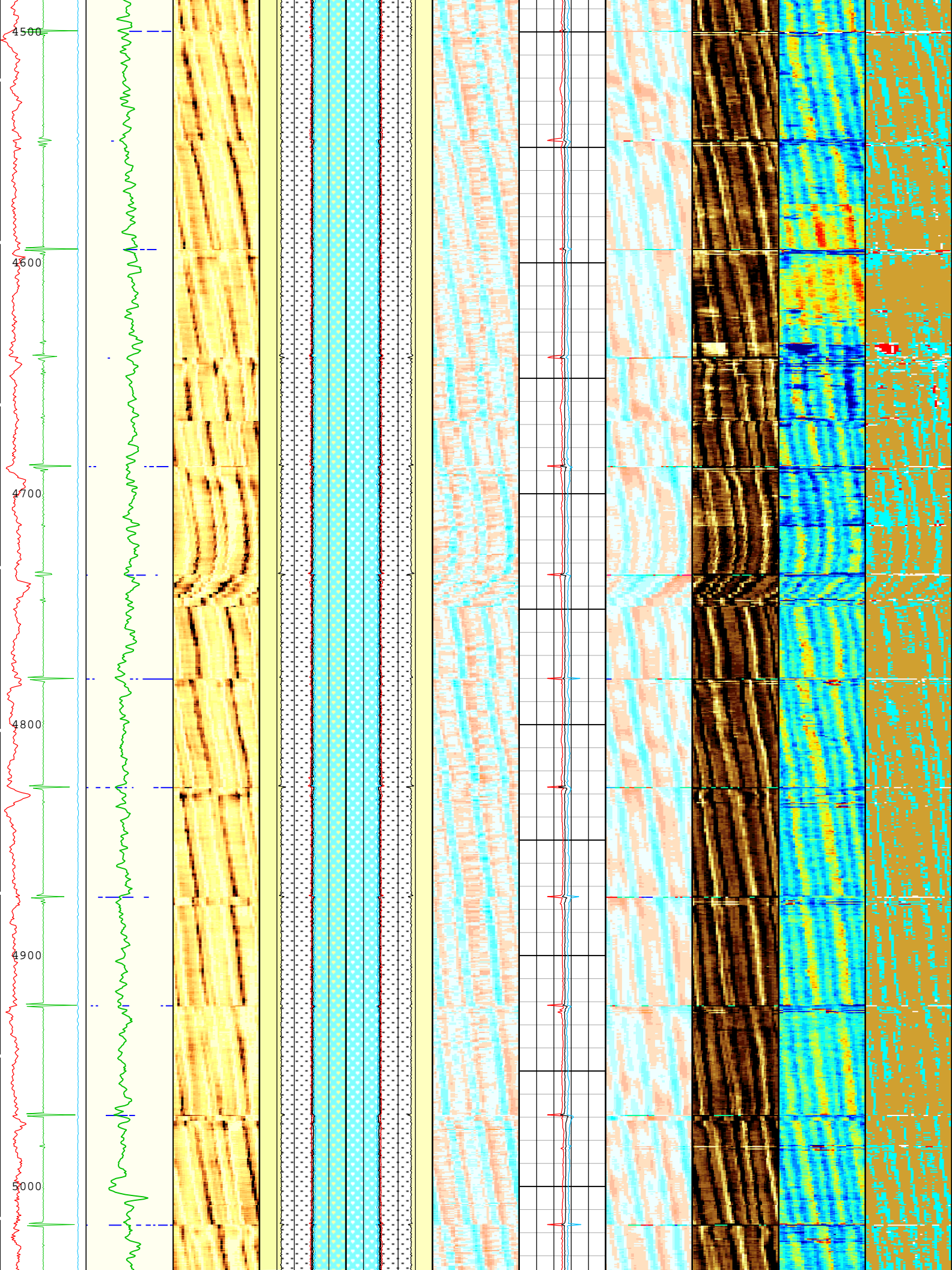




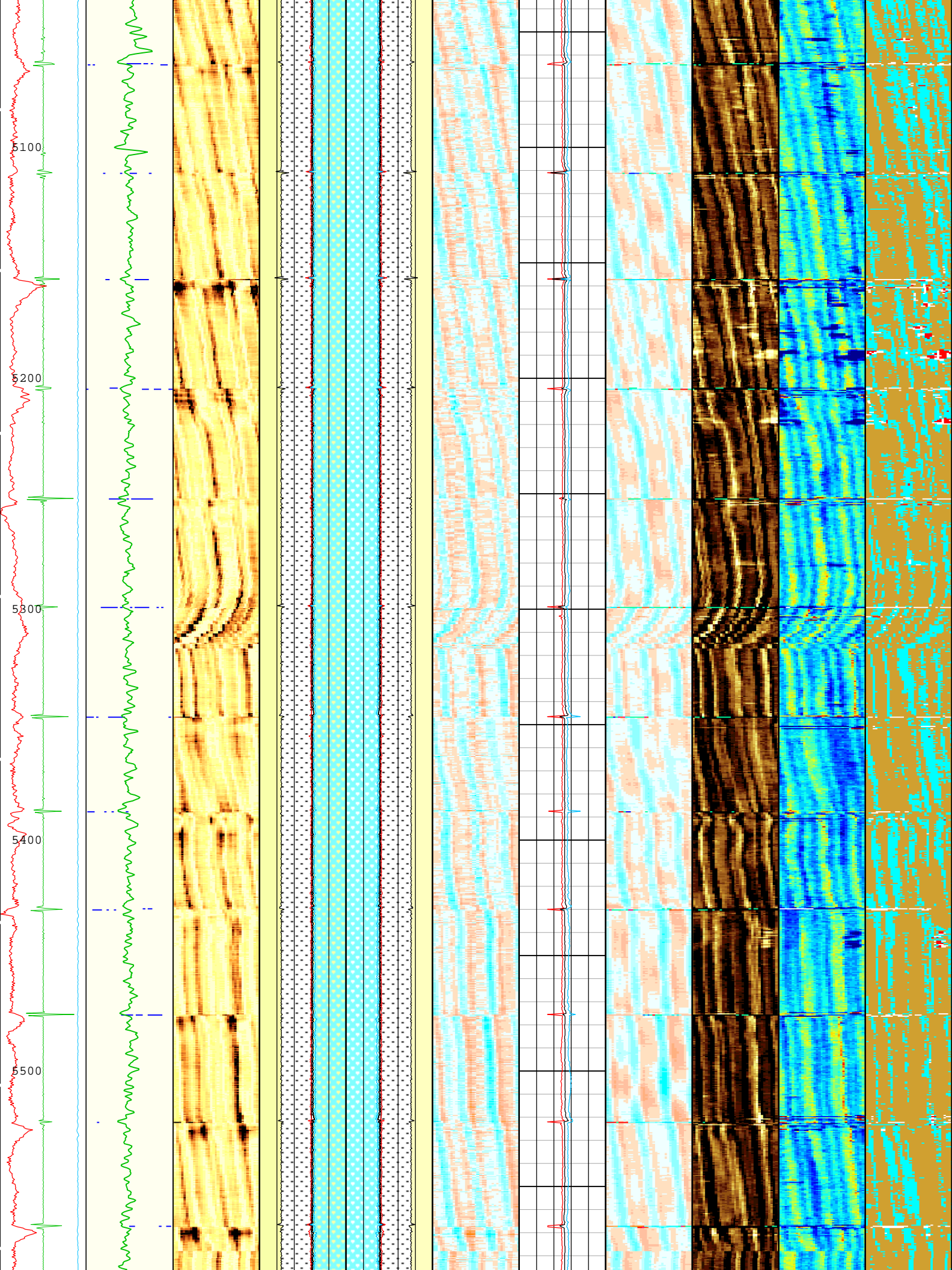




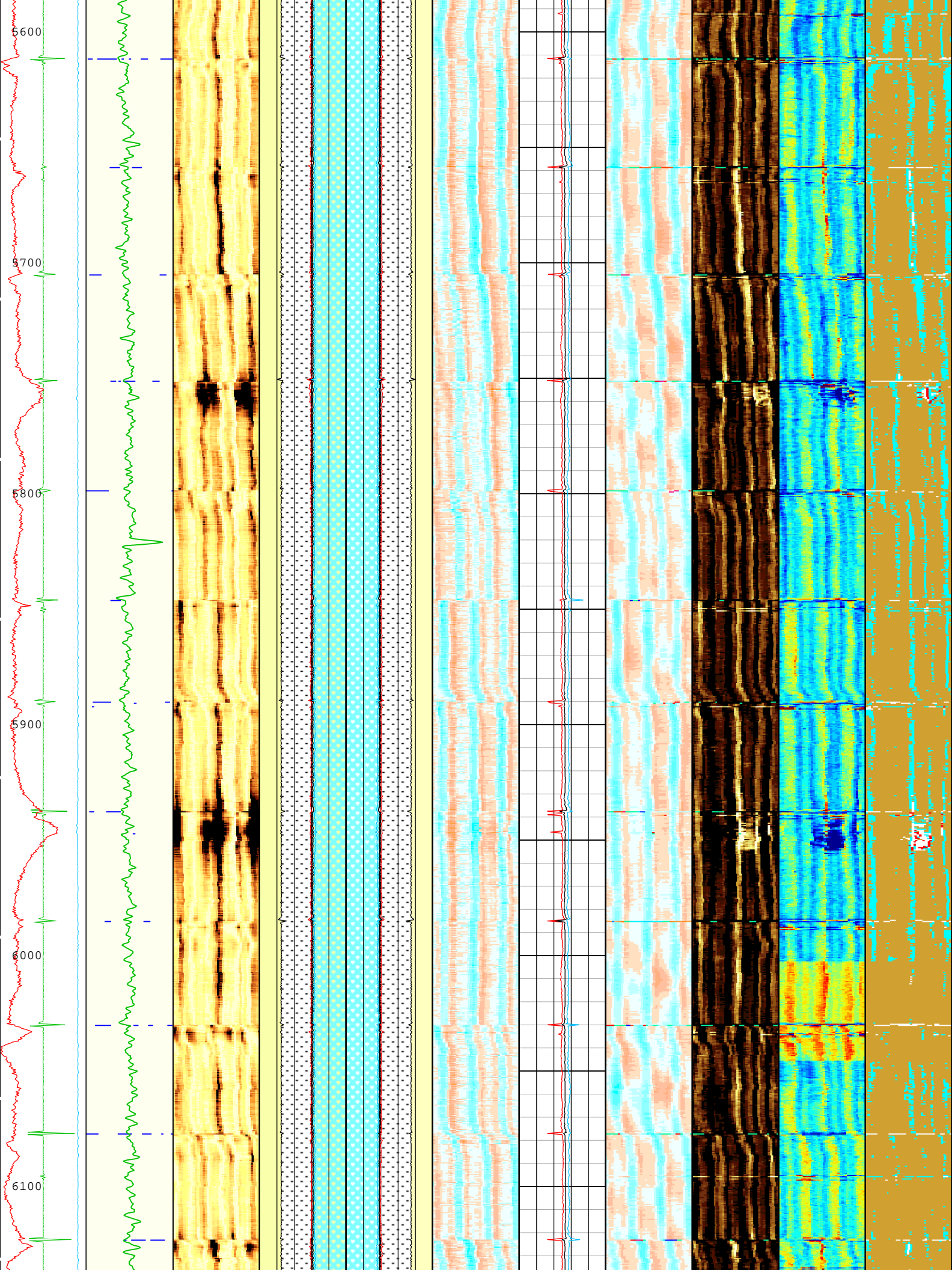


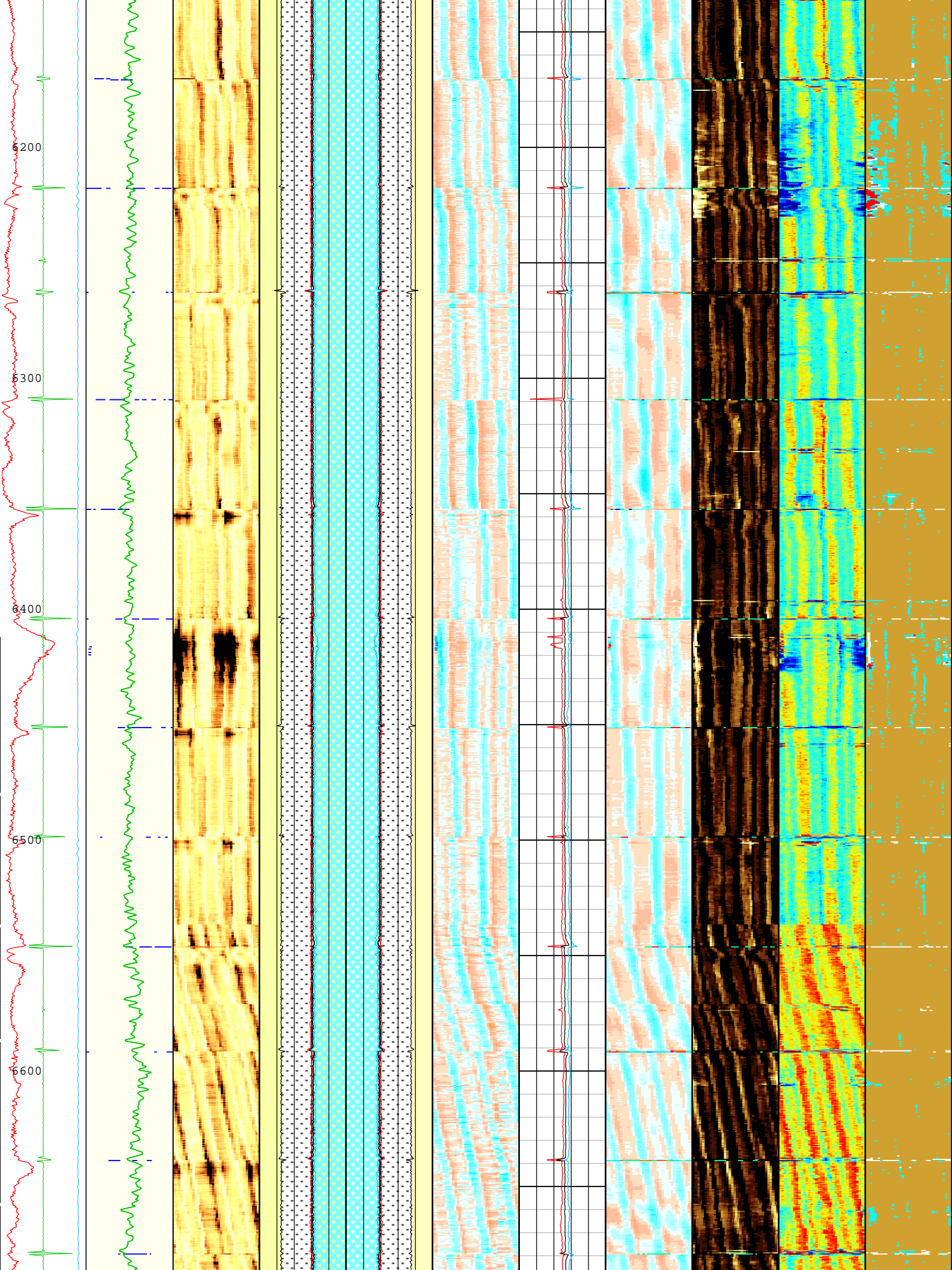




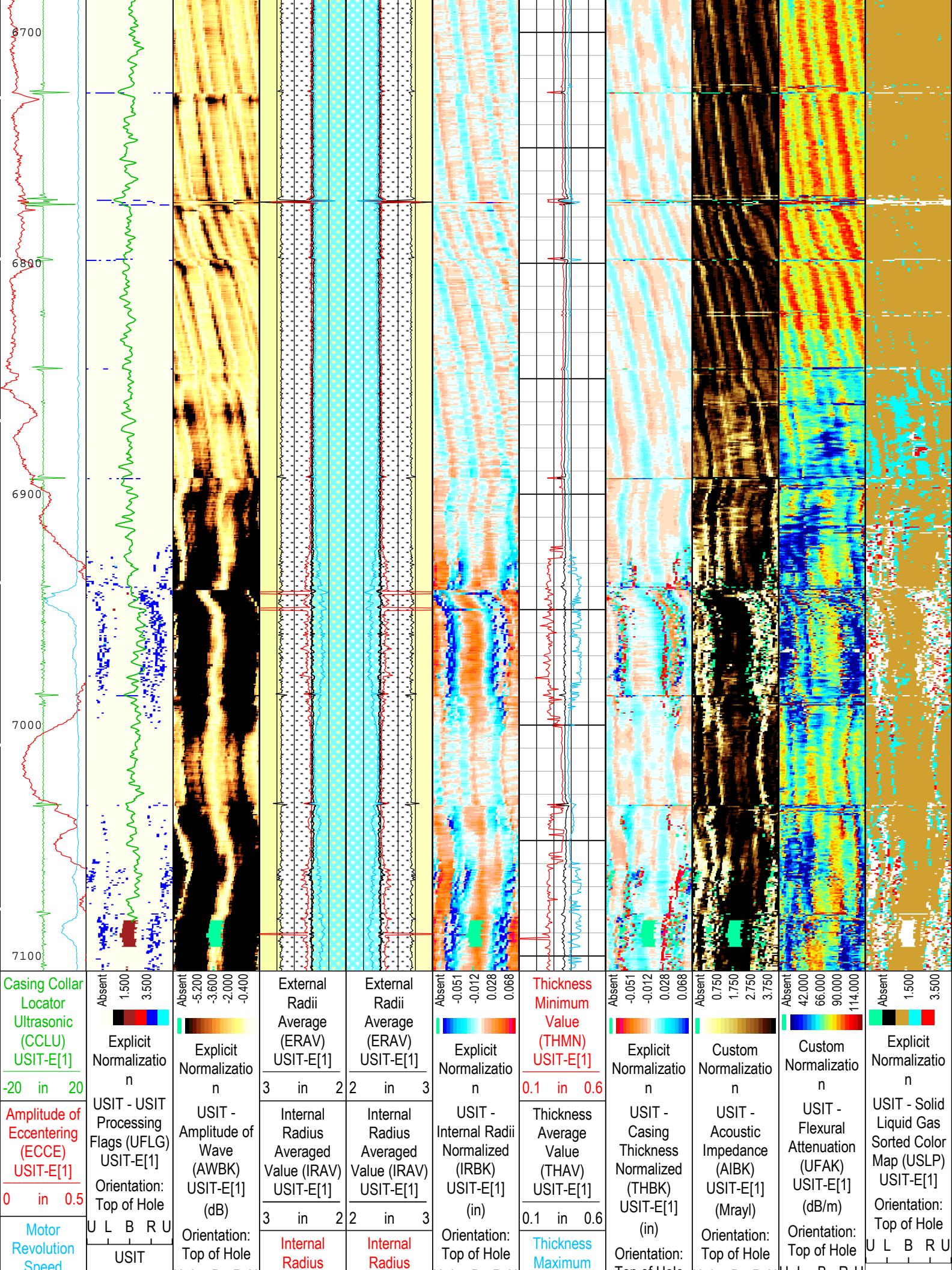












Speed (RSAV) USIT-E[1]	Processing Flags (UFLG[0]) USIT-E[1]	U L B R U	Maximum Value (IRMX) USIT-E[1]	Maximum Value (IRMX) USIT-E[1]	U L B R U	Value (THMX) USIT-E[1]	Top of Hole U L B R U	U L B R U	U L B R U
6 c/s 7.5	1 5		3 in 2	2 in 3		0.1 in 0.6			
	Gamma Ray (ECGR_EDT C) EDTC-B[1]		Internal Radius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

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: 14-Oct-2018 20:23:11

## Channel Processing Parameters

### One: Parameters

Parameter	Description	Tool	Value	Unit
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	12014	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	-16.02	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	1.21	
MUD_N_INV	IBC Inversion Mud Normalization Factor	USIT-E	1.2	
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





U-USIT_UFWE	177	14-Oct-2018 09:55:13	14-Oct-2018 11:33:11	6604.3	46.39
U-USIT_UNWB	106	14-Oct-2018 09:54:54	14-Oct-2018 10:27:06	6604.3	4370.62
U-USIT_UNWB	104.29	14-Oct-2018 10:27:06	14-Oct-2018 11:33:11	4370.62	46.39
U-USIT_UNWE	146	14-Oct-2018 09:55:13	14-Oct-2018 11:33:11	6604.3	46.39
WINB	31.88	14-Oct-2018 09:55:13	14-Oct-2018 11:33:11	6604.3	46.39
WINE	71.88	14-Oct-2018 09:55:13	14-Oct-2018 11:33:11	6604.3	46.39

All depth are at tool zero.

Composite 1

IBC Goodwin Compressed

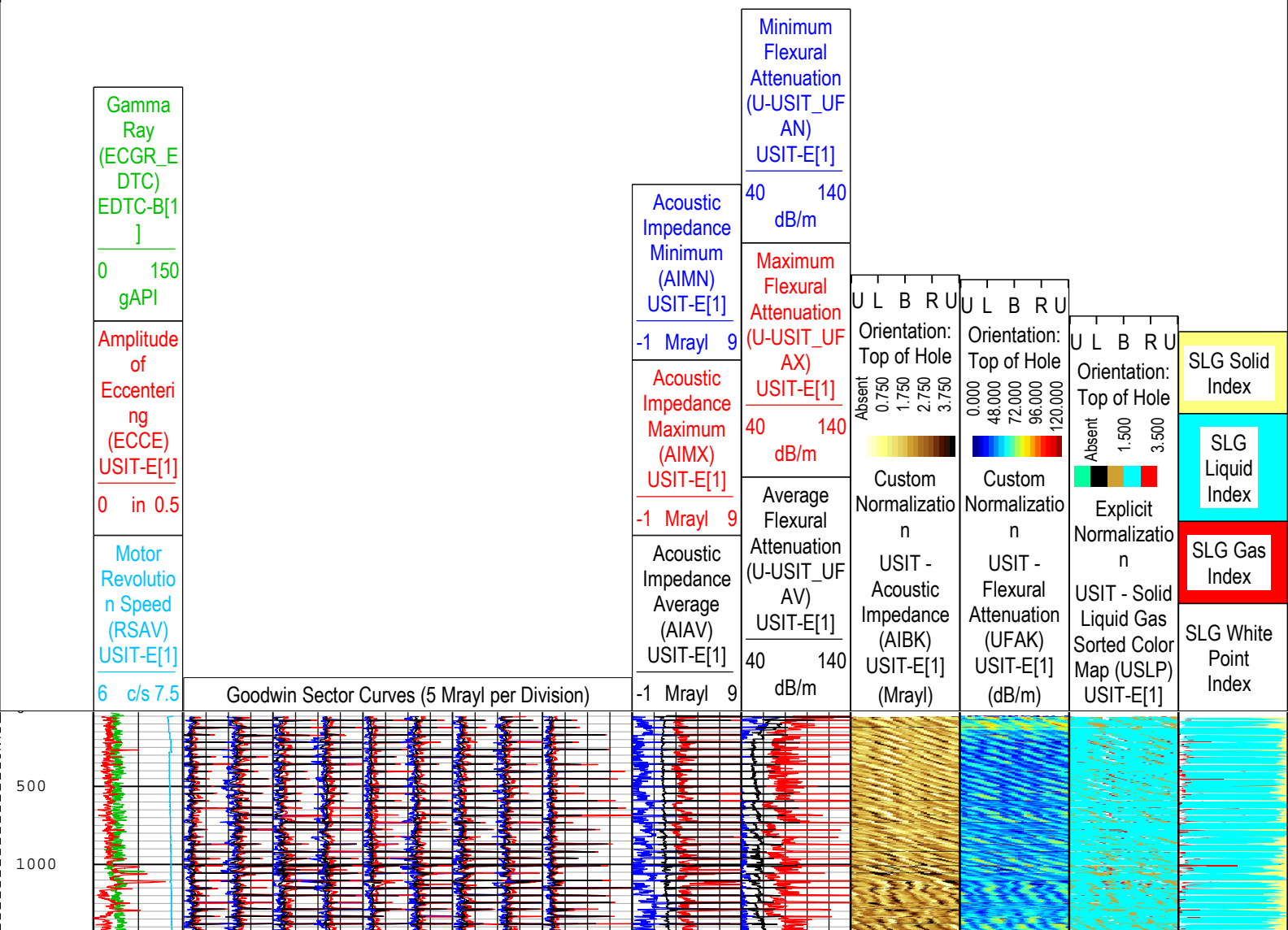
Composite Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[4]:Up	Up	6495.28 ft	7112.71 ft	14-Oct-2018 9:17:33 AM	14-Oct-2018 9:27:56 AM	ON	5.12 ft	Yes
One	Log[7]:Up	Up	46.39 ft	6604.30 ft	14-Oct-2018 9:54:54 AM	14-Oct-2018 11:33:11 AM	ON	5.12 ft	Yes

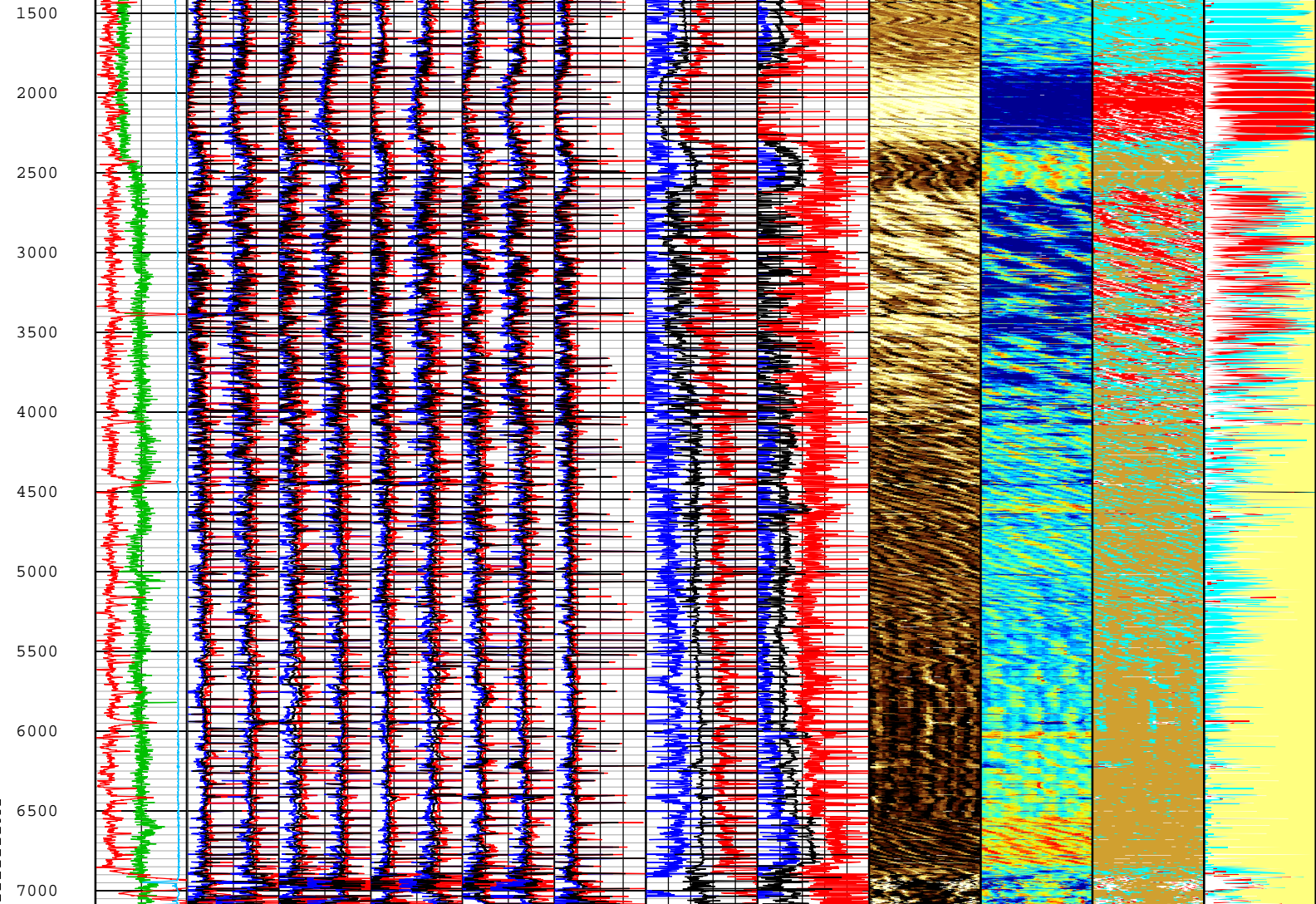
All depths are referenced to toolstring zero

Log	Company:Crestone Peak Resources Operating LLC	Well:Sam #3H-25H-M166	Composite 1:S011
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Description: USI Goodwin    Format: Log ( IBC Goodwin )    Index Scale: 0.1 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 14-Oct-2018 20:23:25

TIME\_1900 - Time Marked every 60.00 (s)





<div>Gamma Ray (ECGR_E DTC) EDTC-B[1 ]</div> <div>0150 gAPI</div> <div>Amplitude of Eccenteri ng (ECCE) USIT-E[1]</div> <div>0in 0.5</div> <div>Motor Revolutio n Speed (RSAV) USIT-E[1]</div> <div>6c/s 7.5</div>	Goodwin Sector Curves (5 Mrayl per Division)		<div>Acoustic Impedance Minimum (AIMN) USIT-E[1]</div> <div>-1 Mrayl9</div>	<div>Minimum Flexural Attenuation (U-USIT_UF AN) USIT-E[1]</div> <div>40140 dB/m</div>	<div>Absent 0.750 1.750 2.750 3.750</div> <div>Custom Normalizatio n</div> <div>USIT - Acoustic Impedance (AIBK) USIT-E[1] (Mrayl) Orientation: Top of Hole U L B R U</div>	<div>0.000 48.000 72.000 96.000 120.000</div> <div>Custom Normalizatio n</div> <div>USIT - Flexural Attenuation (UFAK) USIT-E[1] (dB/m) Orientation: Top of Hole U L B R U</div>	<div>Absent 1.500 3.500</div> <div>Explicit Normalizatio n</div> <div>USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E[1] Orientation: Top of Hole U L B R U</div>	<div>SLG Solid Index</div>
			<div>Acoustic Impedance Maximum (AIMX) USIT-E[1]</div> <div>-1 Mrayl9</div>	<div>Maximum Flexural Attenuation (U-USIT_UF AX) USIT-E[1]</div> <div>40140 dB/m</div>				<div>SLG Liquid Index</div>
			<div>Acoustic Impedance Average (AIAV) USIT-E[1]</div> <div>-1 Mrayl9</div>	<div>Average Flexural Attenuation (U-USIT_UF AV) USIT-E[1]</div> <div>40140 dB/m</div>				<div>SLG Gas Index</div>
								<div>SLG White Point Index</div>

TIME\_1900 - Time Marked every 60.00 (s)

Description: USI Goodwin    Format: Log ( IBC Goodwin )    Index Scale: 0.1 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 14-Oct-2018 20:23:25

IBC SLG - Repeat Pass

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[2]:Up	Up	1999.50 ft	2507.26 ft	14-Oct-2018 8:43:58 AM	14-Oct-2018 8:52:05 AM	ON	0.00 ft	Yes

All depths are referenced to toolstring zero






Log

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

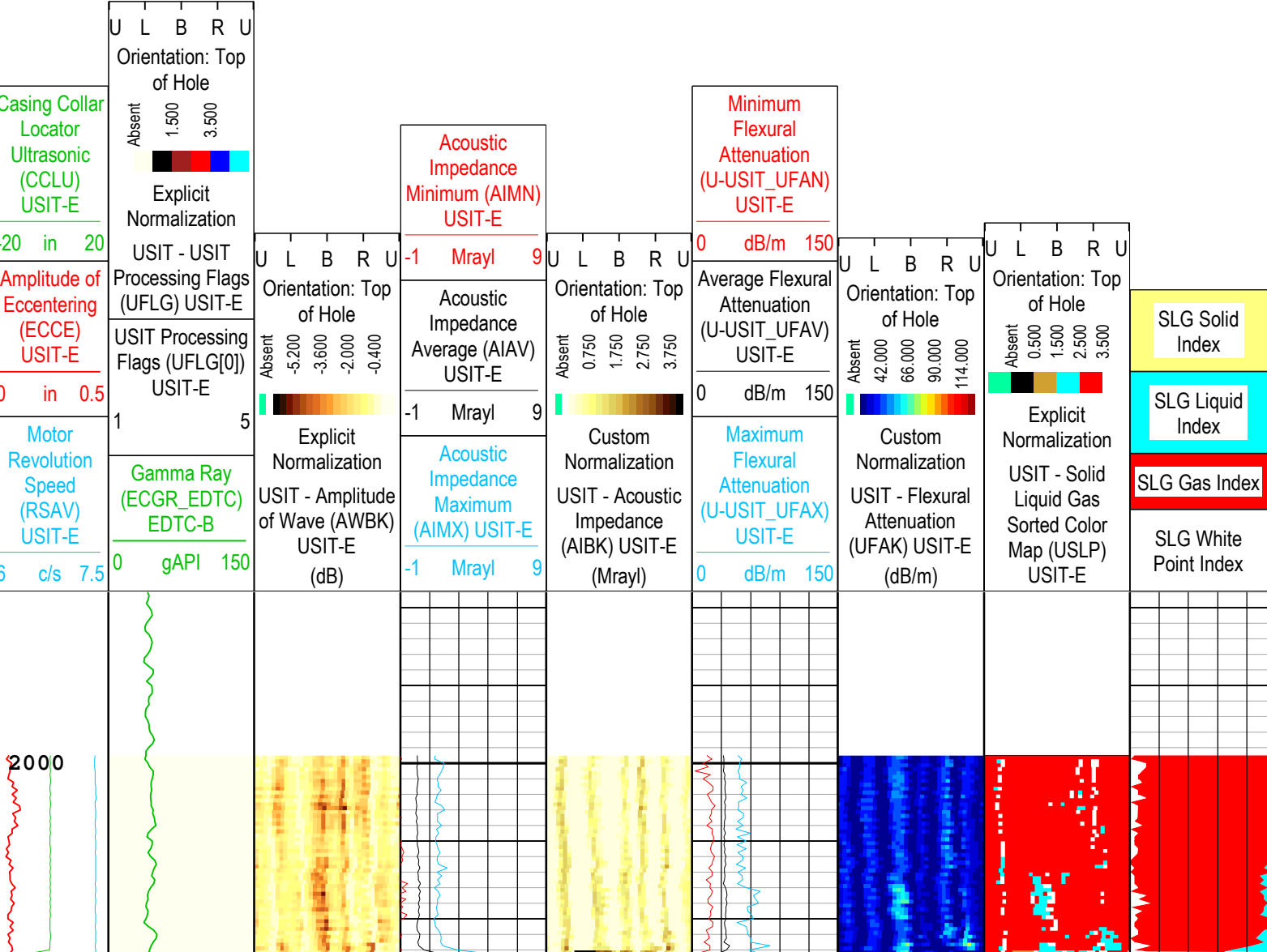
One: Log[2]:Up:S011

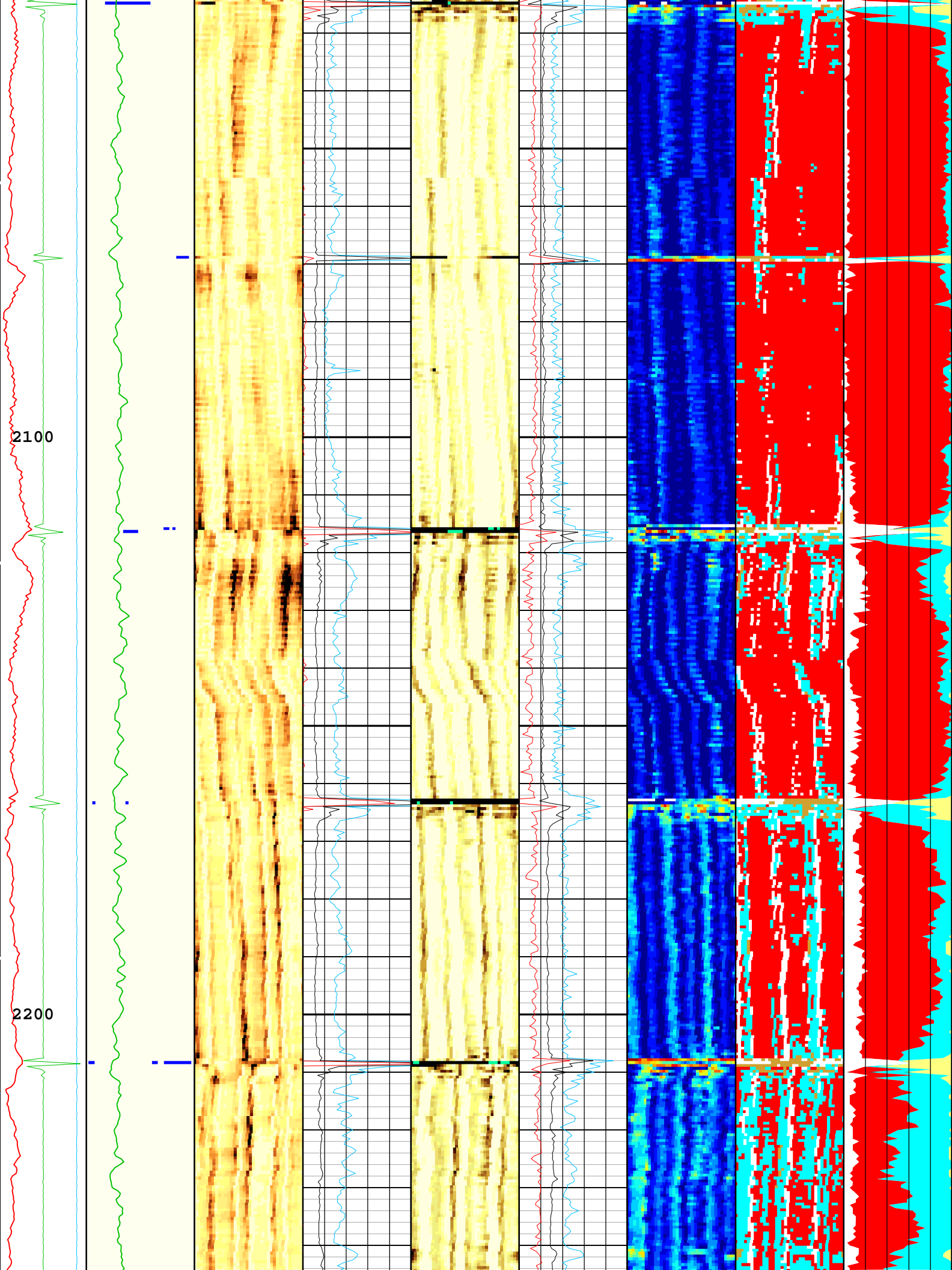
Description: USI IBC SLG Format: Log ( IBC SLG ) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 14-Oct-2018 20:23:38

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

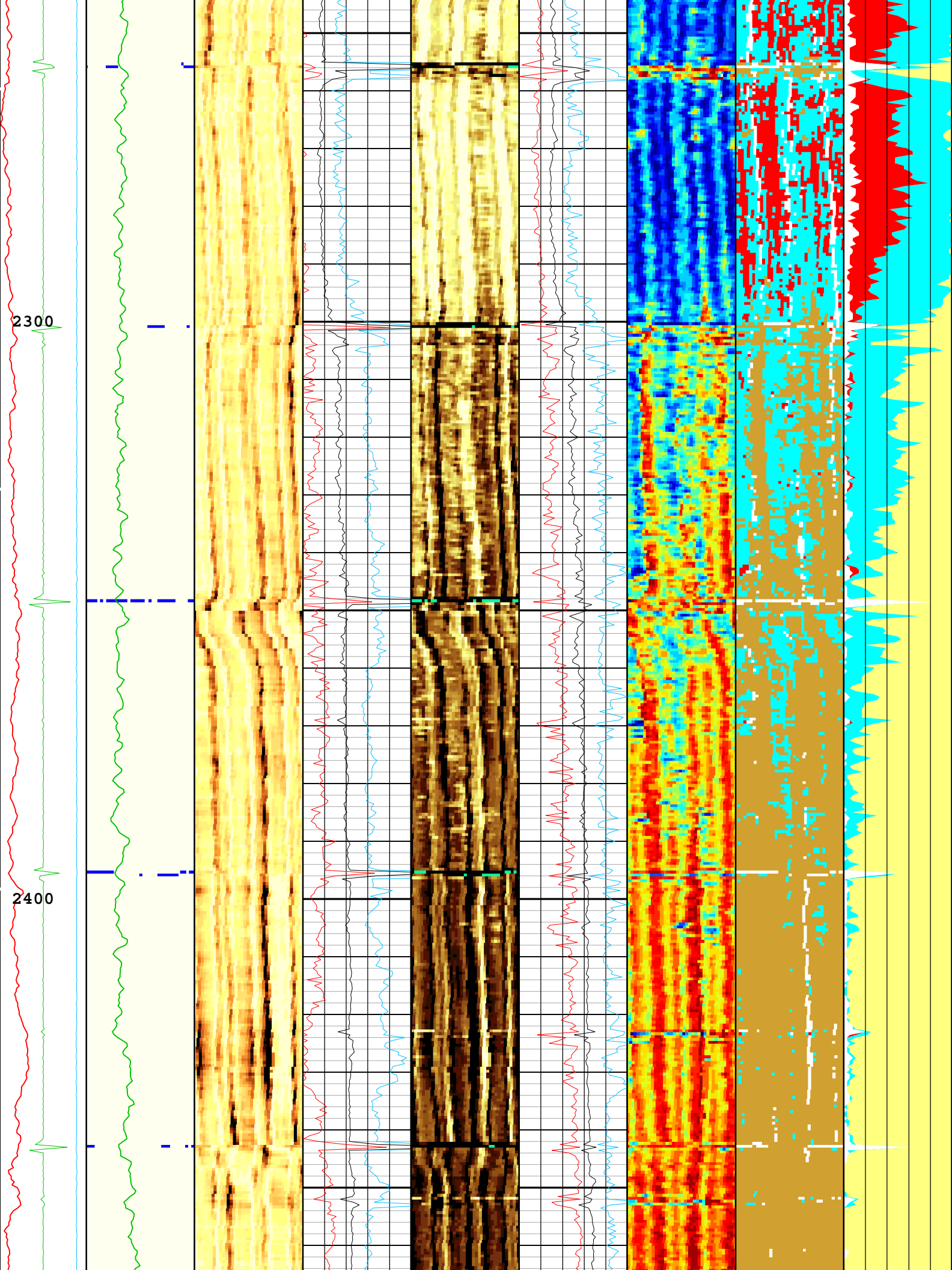
- 1 - UFLG 1 Value within [0.0 - 1.5] - :  UTIM Error
- 2 - UFLG 2 Value within [1.5 - 2.5] - :  Pulse Origin Not Detected
- 3 - UFLG 3 Value within [2.5 - 3.5] - :  WINLEN Error
- 4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :  Casing Thickness Error
- 5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5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

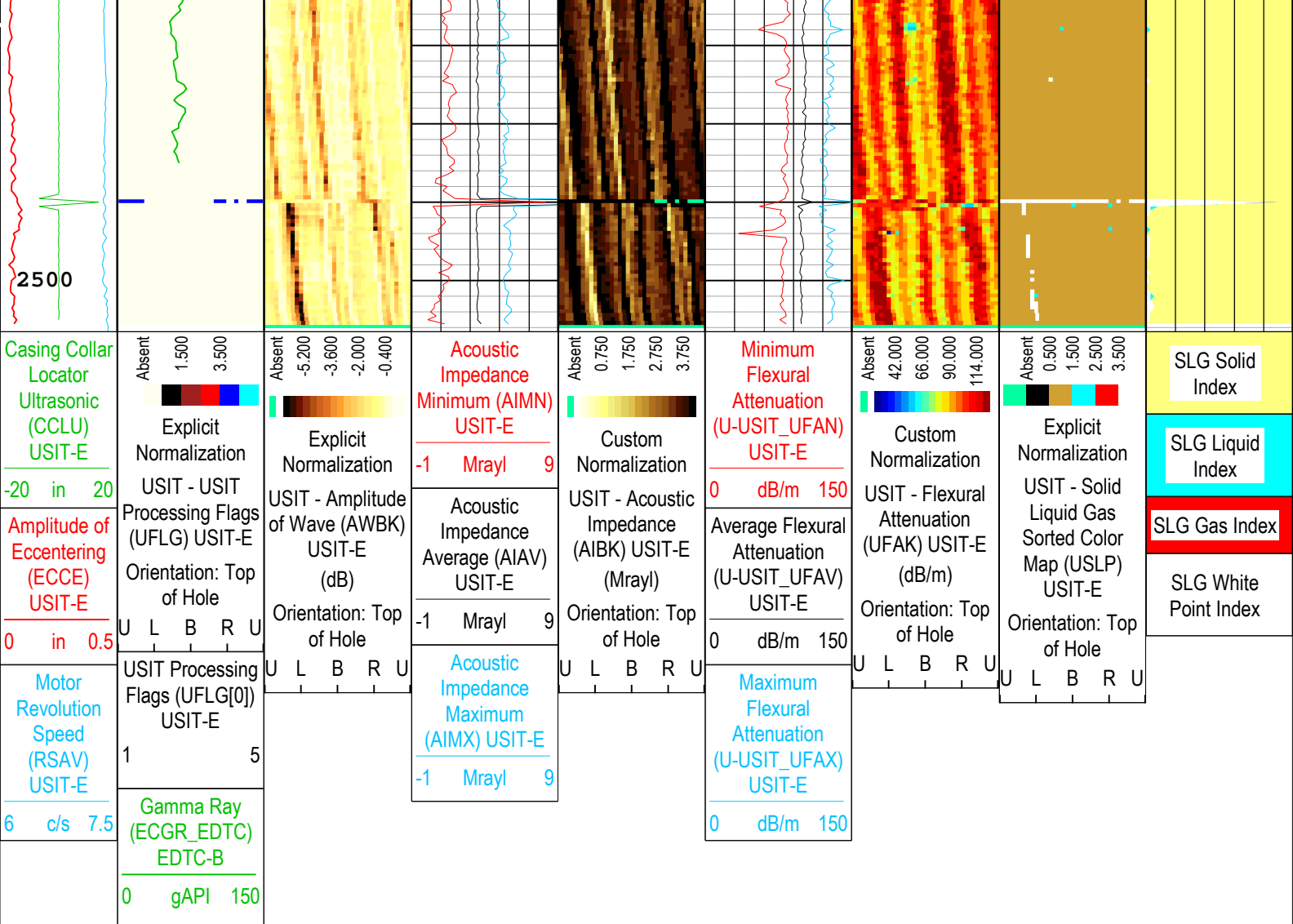
TIME\_1900 - Time Marked every 60.00 (s)











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    Format: Log ( IBC SLG )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 14-Oct-2018 20:23:38

## 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	12014	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
DET_CATEGORY	Drilling Fluid Type	Borehole	Water	



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	-16.02	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	1.21	
MUD_N_INV	IBC Inversion Mud Normalization Factor	USIT-E	1.2	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1	
RCOD	Reference Calibrator Outer Diameter	USIT-E	4.5	in
RCSO	Reference Calibrator Standoff	USIT-E	0.842	in
RCTH	Reference Calibrator Thickness	USIT-E	0.216	in
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	70	%
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.75	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	1978	2353
BS	8.5	2353	2506.5
All depth are actual.			

Tool Control Parameters				
One: Parameters				
Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB
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	40	V
HRES	Horizontal Resolution	USIT-E	10 deg	
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
MOTOR_PROTECT	Motor Protection	USIT-E	On	
UACLV_PERM	Ultrasonic ACLV Permanent	USIT-E	Yes	
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	137	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	177	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	106	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	146	us
USFR	Ultrasonic Sampling Frequency	USIT-E	666667	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 375 KHz	
UWKM	USIT Working Mode	USIT-E	10 deg at 6.0 in	
USSP	Ultrasonic Service	USIT-E	IBC	
U-USIT_UTAN	Transducer Angles	USIT-E	33_DEG	
VRES	Vertical Resolution	USIT-E	6.0 in	
WINB	Window Begin Time	USIT-E	31.88	us
WINE	Window End Time	USIT-E	71.88	us

One

IBC SLG Composite Repeat Pass

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[2]:Up	Up	1999.50 ft	2507.26 ft	14-Oct-2018 8:43:58 AM	14-Oct-2018 8:52:05 AM	ON	0.00 ft	Yes

All depths are referenced to toolstring zero

Log	Company:Crestone Peak Resources Operating LLC	Well:Sam #3H-25H-M166
		One: Log[2]:Up:S011

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 20:23:43

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

U L B R U

Orientation: Top of Hole

Absent 1.500 3.500

Explicit Normalization

USIT - USIT Processing Flags (UFLG) USIT-E

U L B R U

Orientation: Top of Hole

ent 000 000 000 000

External Radii Average (ERAV) USIT-E

3 in 2

Internal Radius Averaged Value (IRAV) USIT-E

3 in 2

Internal

External Radii Average (ERAV) USIT-E

2 in 3

Internal Radius Averaged Value (IRAV) USIT-E

2 in 3

Internal

Thickness Minimum Value (THMN) USIT-E

0.1 in 0.6

Thickness

U L B R U

Orientation: Top of Hole

Absent -0.051 -0.012 0.028 0.068

U L B R U

Orientation: Top of Hole

ent 50 50 50 50

U L B R U

Orientation: Top of Hole

ent 000 000 000 000

U L B R U

Orientation: Top of Hole

ent 000 000 000 000

U L B R U

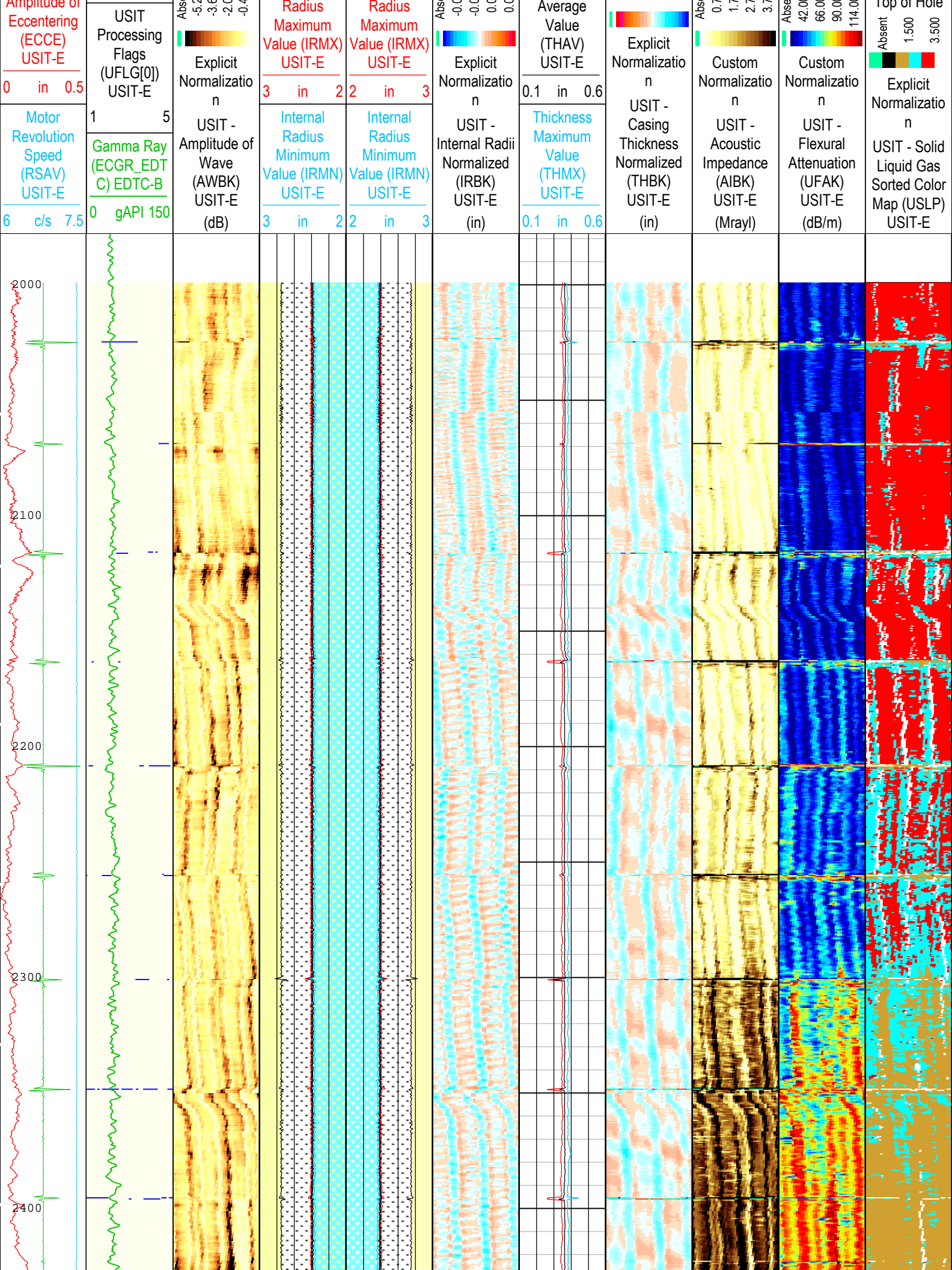
Orientation: Top of Hole

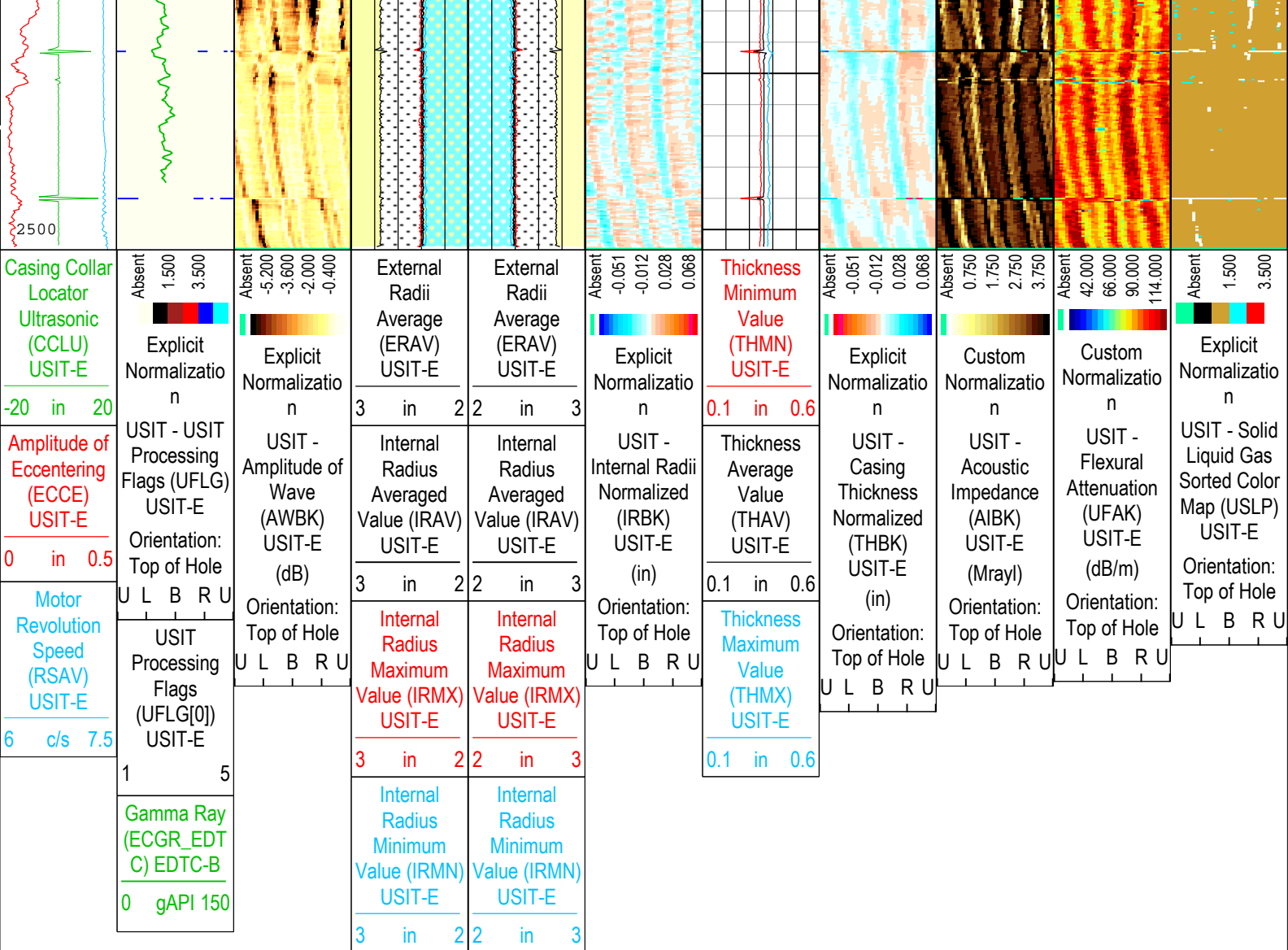
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Casing Collar Locator Ultrasonic (CCLU) USIT-E






-20 in 20

Amplitude of





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: 14-Oct-2018 20:23:44

## 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	12014	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



DTMD	Borehole Mud Slowness	Borehole	200	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	-16.02	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	1.21	
MUD_N_INV	IBC Inversion Mud Normalization Factor	USIT-E	1.2	
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	1978	2353
BS	8.5	2353	2506.5

All depth are actual.

## Tool Control Parameters

### One: Parameters

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

## One

## IBC SLG - HiRes Pass

## Software Version

Acquisition Date	Version
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## Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[5]:Up	Up	6718.17 ft	6858.88 ft	14-Oct-2018 9:31:56 AM	14-Oct-2018 9:35:42 AM	ON	5.12 ft	Yes

All depths are referenced to toolstring zero

## Log

Company:Crestone Peak Resources Operating LLC






Well: Sam #3H-25H-M166

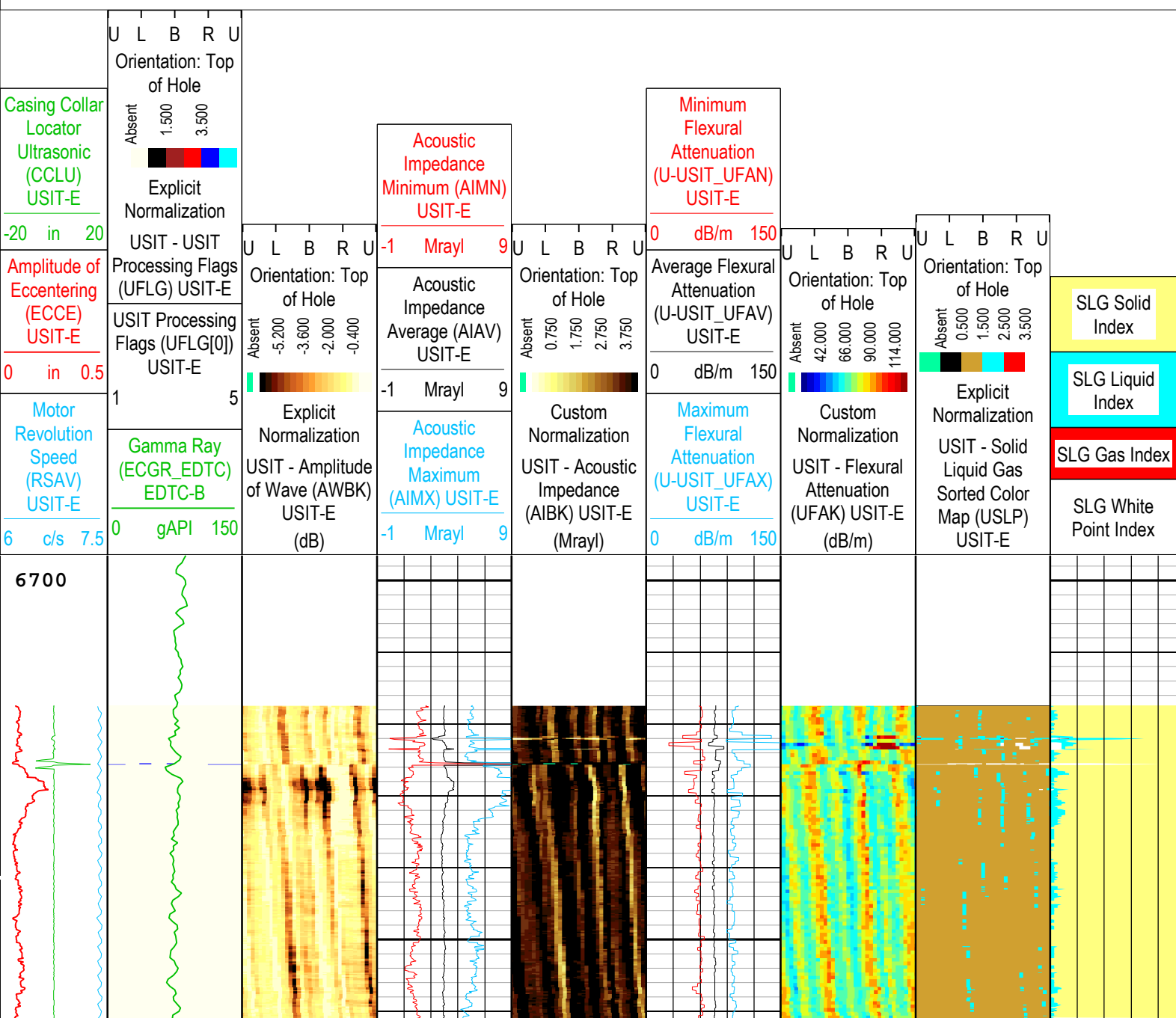
One: Log[5]:Up:S011

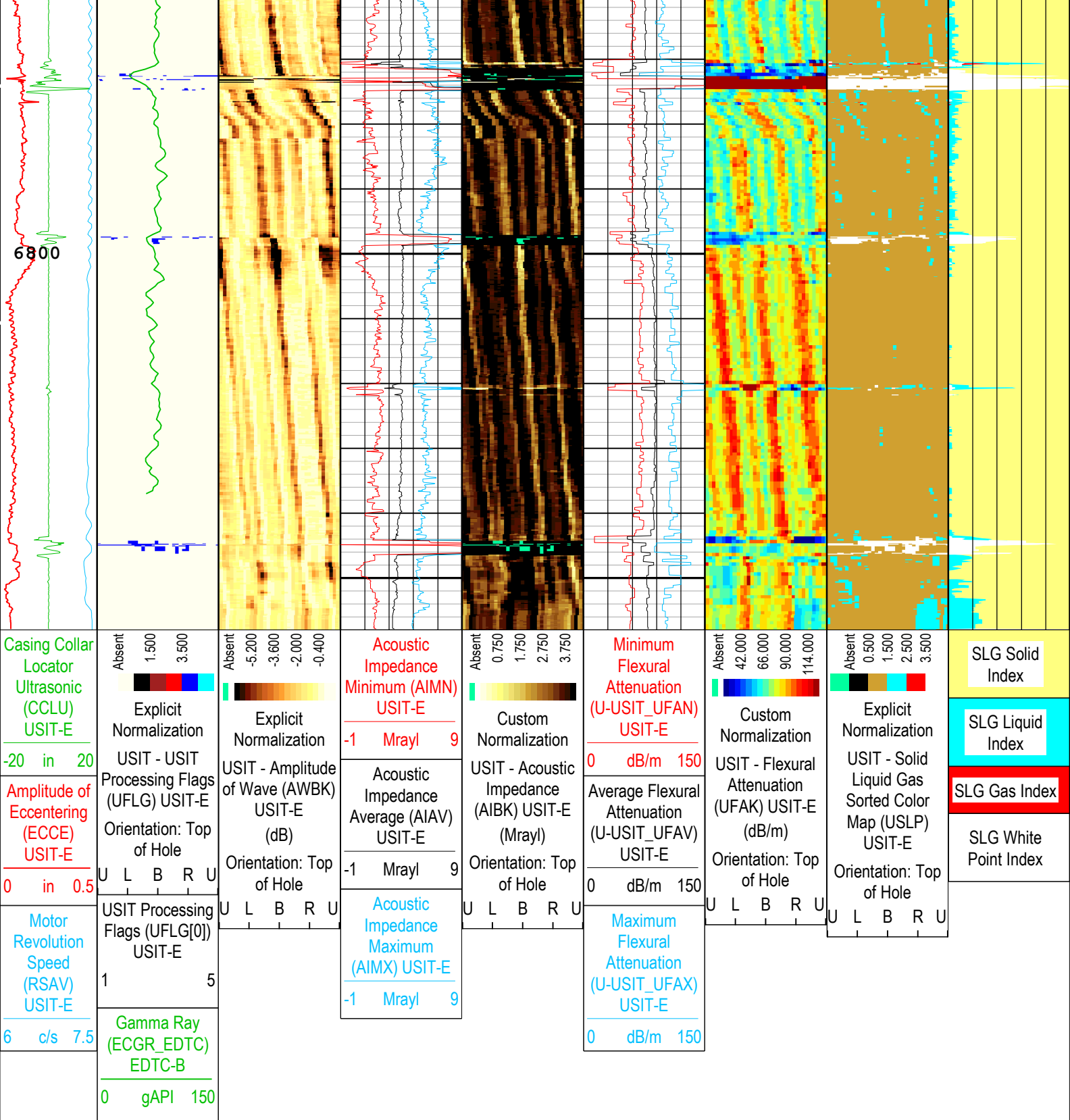
Description: USI IBC SLG   Format: Log ( IBC SLG )   Index Scale: 5 in per 100 ft   Index Unit: ft   Index Type: Measured Depth   Creation Date: 14-Oct-2018 20:23:48

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    Format: Log ( IBC SLG )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth    Creation Date: 14-Oct-2018 20:23:48

## 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	12014	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	-16.02	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	1.21	
MUD_N_INV	IBC Inversion Mud Normalization Factor	USIT-E	1.2	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1	
RCOD	Reference Calibrator Outer Diameter	USIT-E	4.5	in
RCSO	Reference Calibrator Standoff	USIT-E	0.842	in
RCTH	Reference Calibrator Thickness	USIT-E	0.216	in
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	70	%
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.75	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
Tool Control Parameters				



## 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	40	V
HRES	Horizontal Resolution	USIT-E	10 deg	
IBC_ACQTYPE	IBC Acquisition type	USIT-E	DVR 1/4 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	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	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 1.5 in	
USSP	Ultrasonic Service	USIT-E	IBC	
U-USIT_UTAN	Transducer Angles	USIT-E	33_DEG	
VRES	Vertical Resolution	USIT-E	1.5 in	
WINB	Window Begin Time	USIT-E	31.88	us
WINE	Window End Time	USIT-E	71.88	us

## Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth ( ft )	Stop Depth ( ft )
U-USIT_UFWB	137	14-Oct-2018 09:31:56	14-Oct-2018 09:33:35	6858.88	6787.46
U-USIT_UFWB	133.59	14-Oct-2018 09:33:35	14-Oct-2018 09:33:38	6787.46	6786.01
U-USIT_UFWB	130.45	14-Oct-2018 09:33:38	14-Oct-2018 09:35:42	6786.01	6718.17

All depth are at tool zero.

## One

## IBC SLG Composite - HiRes Pass

## Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[5]:Up	Up	6718.17 ft	6858.88 ft	14-Oct-2018 9:31:56 AM	14-Oct-2018 9:35:42 AM	ON	5.12 ft	Yes

All depths are referenced to toolstring zero

## Log

Company:Crestone Peak Resources Operating LLC

Well:Sam #3H-25H-M166

One: Log[5]:Up:S011

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 20:23:52

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

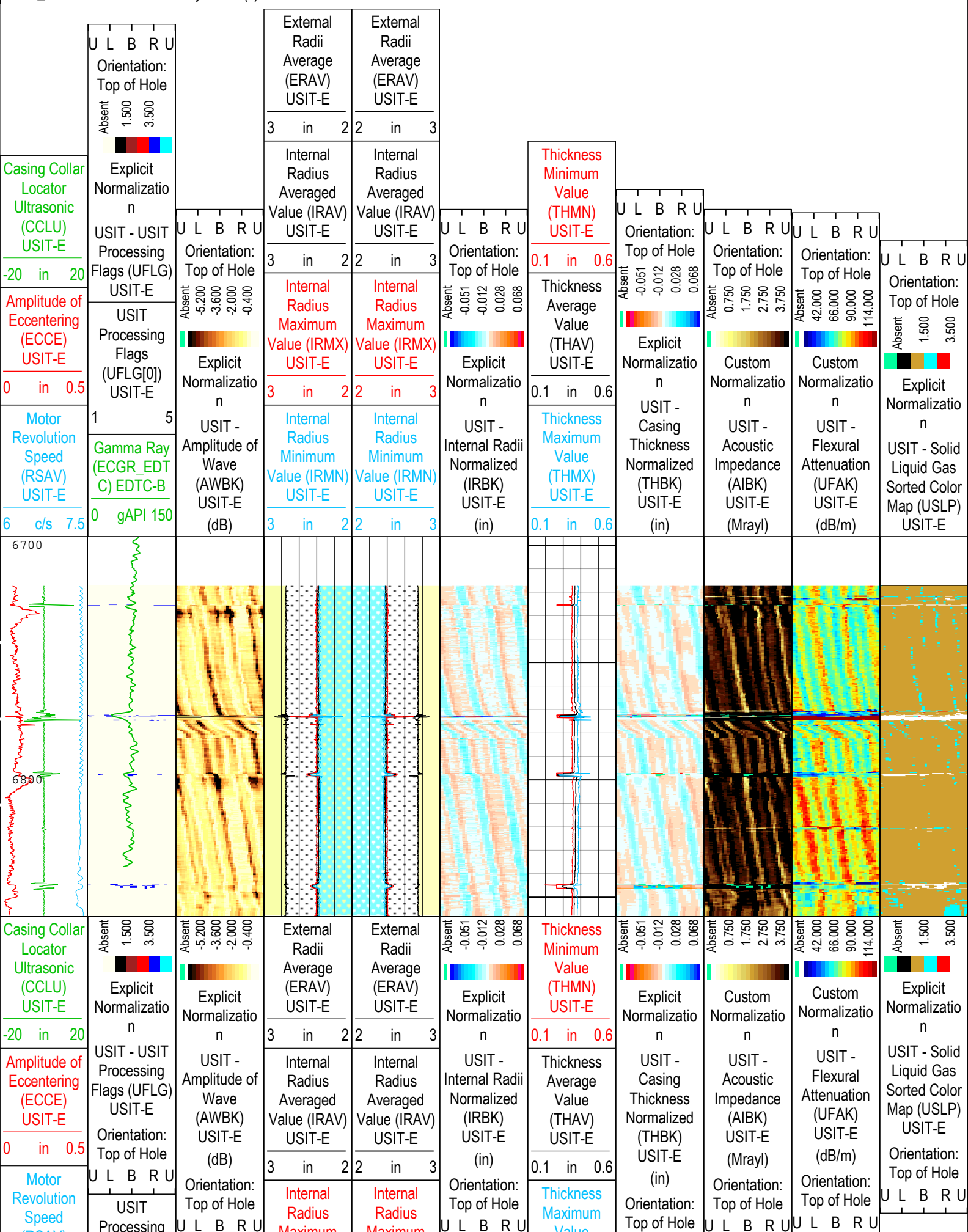
3 - UFLG 3 Value within [2.5 - 3.5] - :

 WINLEN Error

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

 Casing Thickness Error

TIME\_1900 - Time Marked every 60.00 (s)



(RSAV) USIT-E	Flags (UFLG[0]) USIT-E	Maximum Value (IRMX) USIT-E	Maximum Value (IRMX) USIT-E	Value (THMX) USIT-E	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		

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

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 20:23:52

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	12014	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	-16.02	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	1.21	
MUD_N_INV	IBC Inversion Mud Normalization Factor	USIT-E	1.2	
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

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	40	V
IBC_ACQTYPE	IBC Acquisition type	USIT-E	DVR 1/4 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	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	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 1.5 in	
U-USIT_UTAN	Transducer Angles	USIT-E	33_DEG	
VRES	Vertical Resolution	USIT-E	1.5 in	
WINB	Window Begin Time	USIT-E	31.88	us
WINE	Window End Time	USIT-E	71.88	us

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth ( ft )	Stop Depth ( ft )
U-USIT_UFWB	137	14-Oct-2018 09:31:56	14-Oct-2018 09:33:35	6858.88	6787.46
U-USIT_UFWB	133.59	14-Oct-2018 09:33:35	14-Oct-2018 09:33:38	6787.46	6786.01
U-USIT_UFWB	130.45	14-Oct-2018 09:33:38	14-Oct-2018 09:35:42	6786.01	6718.17

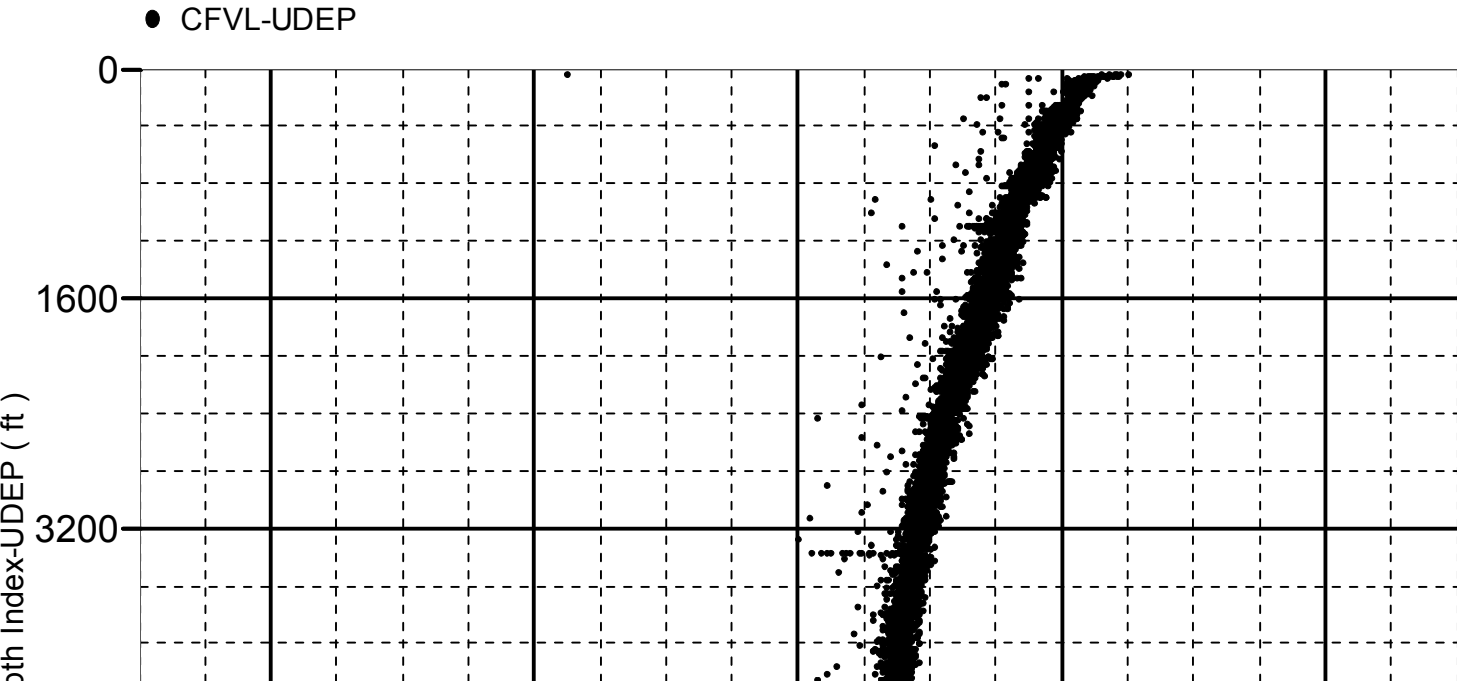
All depth are at tool zero.

XYZ

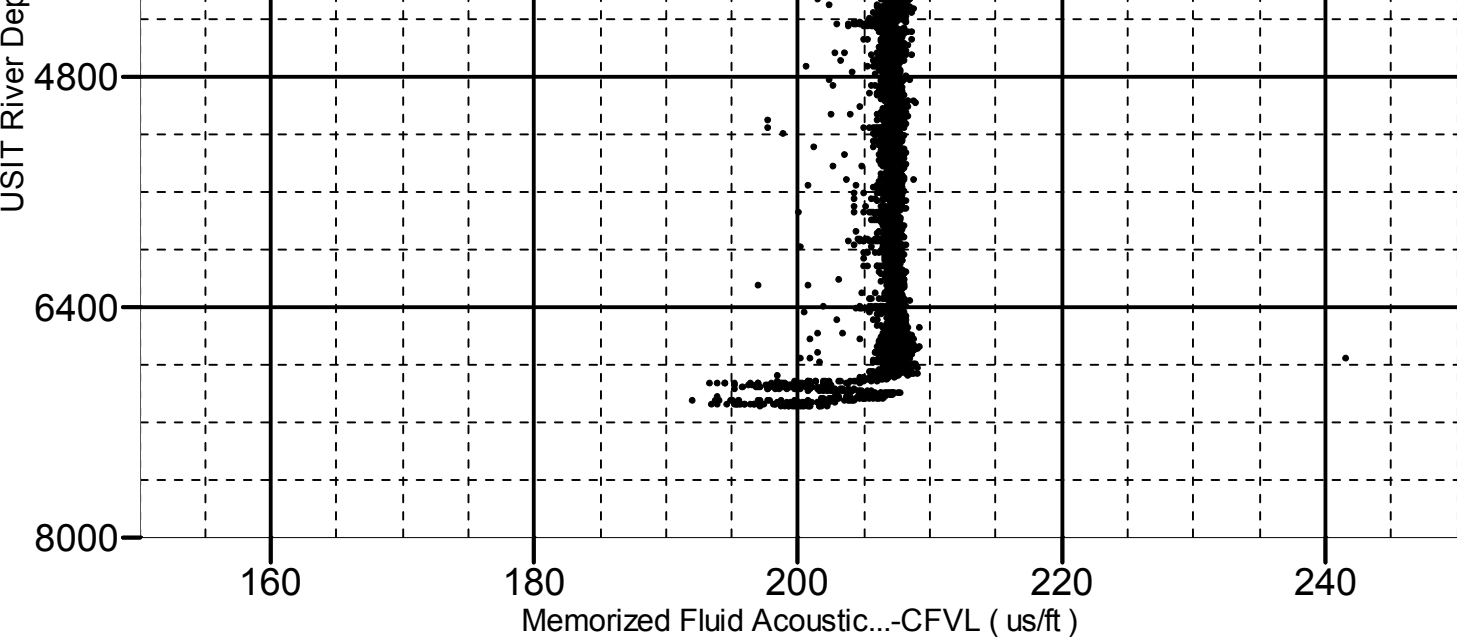
Company:Crestone Peak Resources Operating LLC Well:Sam #3H-25H-M166  
Composite 1:S011

Fluid Acoustic Slowness vs Depth  
2D Cross Plot

Index Range: From 46.00 to 7106.50 ft







XYZ

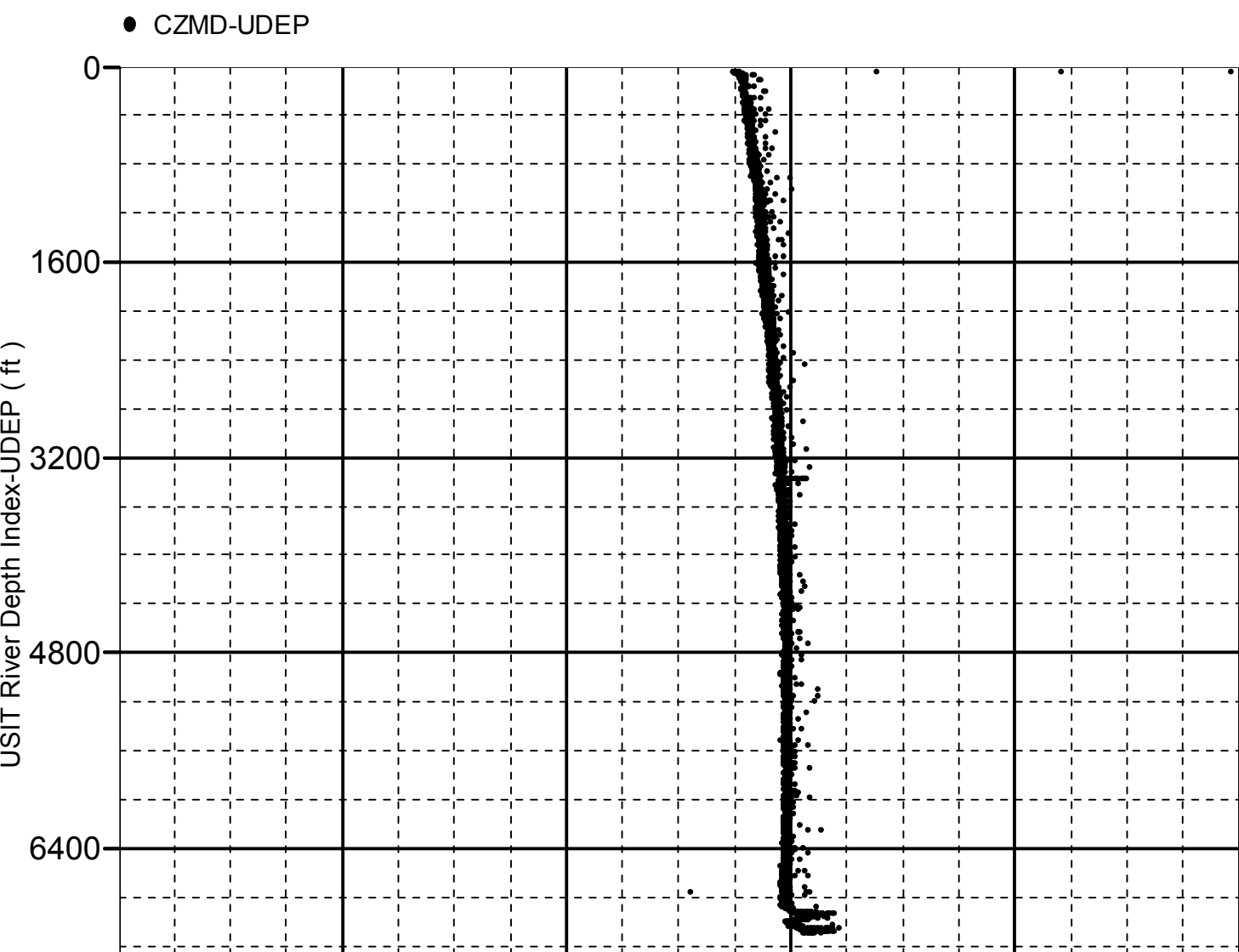
Company:Crestone Peak Resources Operating LLC Well:Sam #3H-25H-M166

Composite 1:S011


# Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 46.00 to 7106.50 ft





Company:	Crestone Peak Resources Operating LLC	
Well:	Sam #3H-25H-M166	
Field:	Wattenberg	
County:	Weld	

Isolation Scanner  
Cement Evaluation