

Company: Crestone Peak Resources Operating LLC

Well: Herren #1J-33H-H367

Field: Wattenberg

County: Weld State: Colorado

Isolation Scanner
Cement Evaluation
Gamma Ray - CCL Log

Cement Evaluation				
Gamma Ray - CCL Log				
Location:				
SENE 33-3N-67W		Elev.:		
2314 FNL 426 FEL		K.B. 4872.00 ft		
		G.L. 4849.00 ft		
		D.F. 4872.00 ft		
Permanent Datum:		Ground Level		
Log Measured From:		Kelly Bushing		
Drilling Measured From:		Kelly Bushing		
API Serial No.		Section:		Range:
05-123-47734		33		67W
		Township:		
		3N		
		above Perm.Datum		

Logging Date	22-Jan-2019			
Run Number	Isolation scanner			
Depth Driller	11863.00 ft			
Schlumberger Depth	6336.00 ft			
Bottom Log Interval	6336.00 ft			
Top Log Interval	74.00 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	1992.00 ft			
To	11863.00 ft			
Casing/Tubing Size	5.5 in			
Weight	20 lbm/ft			
Grade	N/A			
From	0.00 ft			
To	11863.00 ft			
Max Recorded Temperatures				
Logger on Bottom	Time		180 degF	
Unit Number	Location:		22-Jan-2019	10:47:00
Recorded By			2143	Fort Morgan, CO
Witnessed By	A. Voyage / L. Awalt			
	Keith Miller			

Disclaimer

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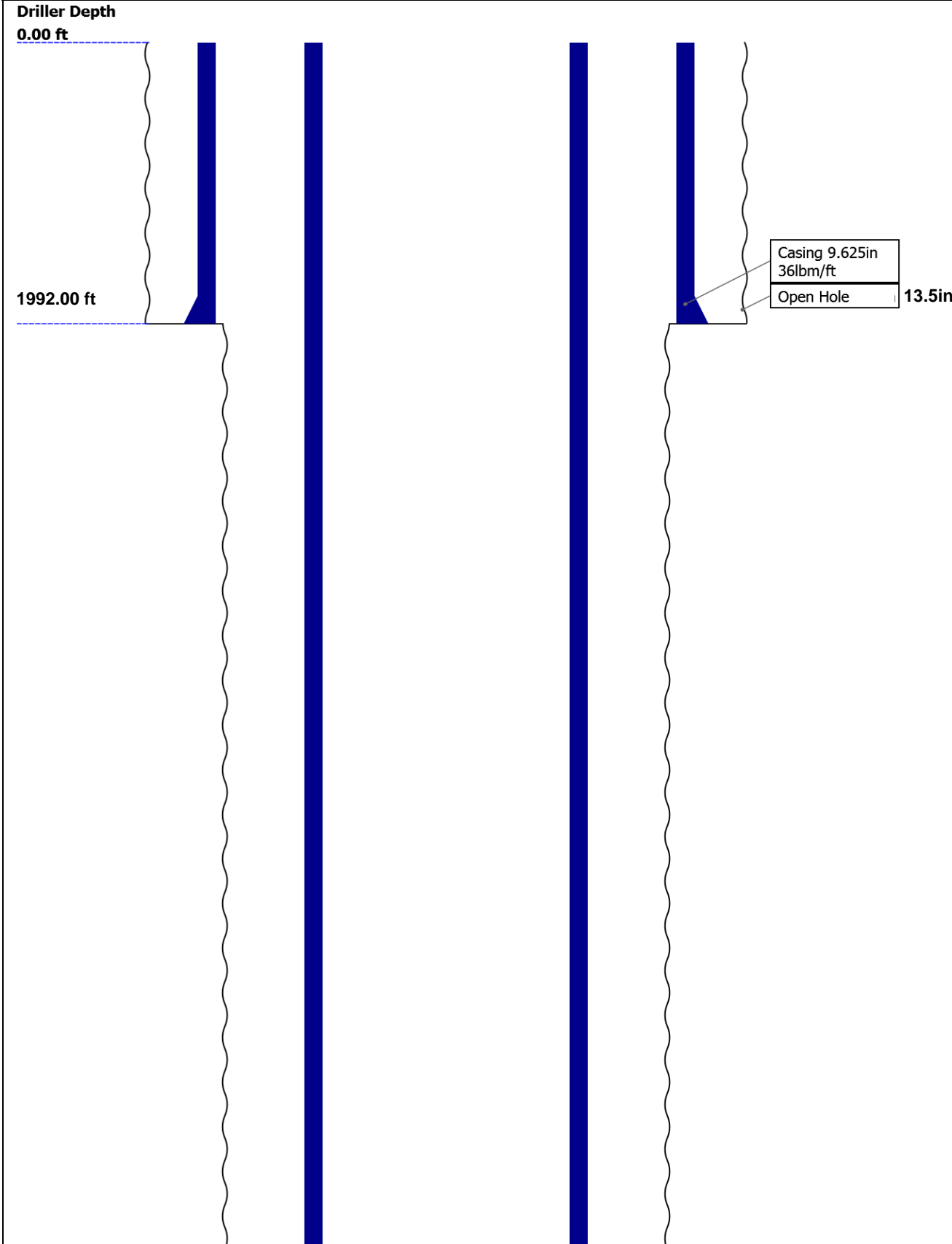
14. XYZ (IBC Fluid Acoustic Slowness vs Depth 6.0 in)

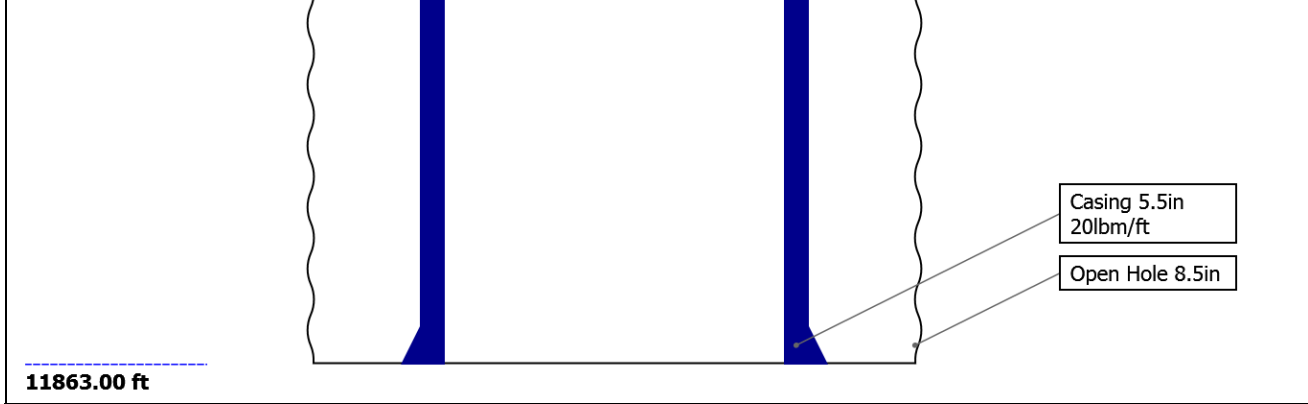
15. XYZ (IBC Acoustic Impedance of Mud vs Depth 6.0 in)

16. Tail

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 - 11.3 Log (IBC Goodwin)
- 12. Isolation scanner IBC SLG Repeat

Well Sketch





Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	11.5	8.5				
Top Driller (ft)	0	1977				
Top Logger (ft)	0	1977				
Bottom Driller (ft)	1977	11863				
Bottom Logger (ft)	1977	11863				
Casing						
Size (in)	9.625	5.5				
Weight (lbm/ft)	36	20				
Inner Diameter (in)	8.921	4.778				
Grade	N/A	N/A				
Top Driller (ft)	0	0				
Top Logger (ft)	0	0				
Bottom Driller (ft)	1977	11863				
Bottom Logger (ft)	1977	11863				

Remarks and Equipment Summary

Isolation scanner: Toolstring			Isolation scanner: 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>				

AH-184[

2]:2765

20.74

AH-184[

1]:2826

18.74

USIT-E:90

0

16.74

ECH-MFA:

1818

USAC-A:9

00

USIT-A:00

Thank you for choosing Schlumberger Wireline!

Log objective: cement evaluation

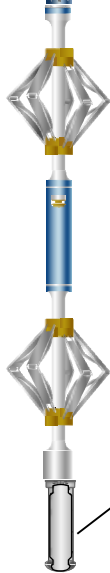
Toolstring ran as per tool sketch.

Tool centralized using GEMCOs on USAC and EDTC and booster kit on in-line centralizers.

Spacer: 12.0 ppg
Lead: 13.0 ppg
Tail: 13.5 ppg

Crew: K. Howington, F. Maldonado

USIS-A:98
8
USSC-B:77
7
IBCS-A:75
3
FAR-SENS
OR:3636
IBC-TX
NEAR-SEN
SOR:4784
IBC-TX
USI-SENS
OR:4615
IBC-TX
EMITTER-
SENSOR:4
495
IBC-TX



USI Sen 0.84
sor
Head Te
nsion
TOOL_ZERO

Lengths are in ft

Maximum Outer Diameter = 6.250 in

Line: Sensor Location, Value: Gating Offset

All measurements are relative to TOOL_ZERO

Depth Summary

	Isolation scanner		
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Depth Measuring Device

Type	IDW-B		
Serial Number	225		
Calibration Date	24-OCT-2017		
Calibrator Serial Number	57		
Calibration Cable Type	IDWC-C		
Wheel Correction 1	-4		
Wheel Correction 2	-4		

Tension Device

Type	CMTD-B/A		
Serial Number	151		
Calibration Date	13-aug-2018		
Calibrator Serial Number	1018		
Number of Calibration Points	10		
Calibration Root Mean Square Error	11		
Calibration Peak Error	21		

Logging Cable

Type	7-46P-XS		
Serial Number	7072		
Length	24000.00 ft		
Conveyance Type	Wireline		
Rig Type			

Isolation scanner:Depth Control Parameters

Log Sequence	First Log In the Well	Depth Control Remarks
Log Sequence	First Log In the Well	All standard Schlumberger depth controls and 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		All logs correlated to down pass.

Stretch Correction3.18 ft

Tool Zero Check At Surface

USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 1	Log[3]:Up	6335.62	73.66

Fluid Velocity = "Automatic".
CFVL equals DFSL channel

Start Depth(ft)	Stop Depth(ft)	Start Value(us/ft)	End Value(us/ft)
-----------------	----------------	--------------------	------------------

Mud Impedance = "FreePipe Norm."
Free Pipe normalization zone is : 739.99m(2427.79ft) to 749.33m(2458.42ft)
MUD_N_FRP = 1.40
DFD = 1.01g/cm3(8.40lbm/gal)
CZMD median computed in free pipe normalization interval = 2.10 MRayl

Start Depth(ft)	Stop Depth(ft)	Start Value(Mrayl)	End Value(Mrayl)
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Isolation scanner

IBC SLG

Software Version

Acquisition System	Version
Maxwell 2018 SP2	8.2.104493.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Isolation scanner	Log[3]:Up	Up	73.66 ft	6335.62 ft	22-Jan-2019 10:48:20 AM	22-Jan-2019 12:14:43 PM	ON	3.18 ft	Yes

All depths are referenced to toolstring zero

Log	Company:Crestone Peak Resources Operating LLCWell:Herren #1J-33H-H367 Isolation scanner: Log[3]:Up:S005
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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: 22-Jan-2019 12:36:25

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

Casing Collar Locator Ultrasonic (CCLU) USIT-E

-20 in 20

Amplitude of Eccentering (ECCE) USIT-E

0 in 0.5

Motor Revolution Speed (RSAV) USIT-E

Absent 1.500 3.500

Explicit Normalization

USIT - USIT

Processing Flags (UFLG) USIT-E

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

15

Gamma Ray (ECGR_EDTC) EDTC-B

0 to 150

Absent 0.750 1.750 2.750 3.750

Custom Normalization

USIT - Amplitude of Wave (AWBK) USIT-E

USIT - Acoustic Impedance (AIBK) USIT-E

Acoustic Impedance Minimum (AIMN) USIT-E

-1 Mrayl 9

Acoustic Impedance Average (AIAV) USIT-E

-1 Mrayl 9

Acoustic Impedance Maximum (AIMX) USIT-E

Minimum Flexural Attenuation (U-USIT_UFAN) USIT-E

0 dB/m 150

Average Flexural Attenuation (U-USIT_UFAV) USIT-E

0 dB/m 150

Maximum Flexural Attenuation (U-USIT_UFAX) USIT-E

Absent 42.000 66.000 90.000 114.000

Custom Normalization

USIT - Flexural Attenuation (UFAK) USIT-E

Absent 0.500 1.500 2.500 3.500

Explicit Normalization

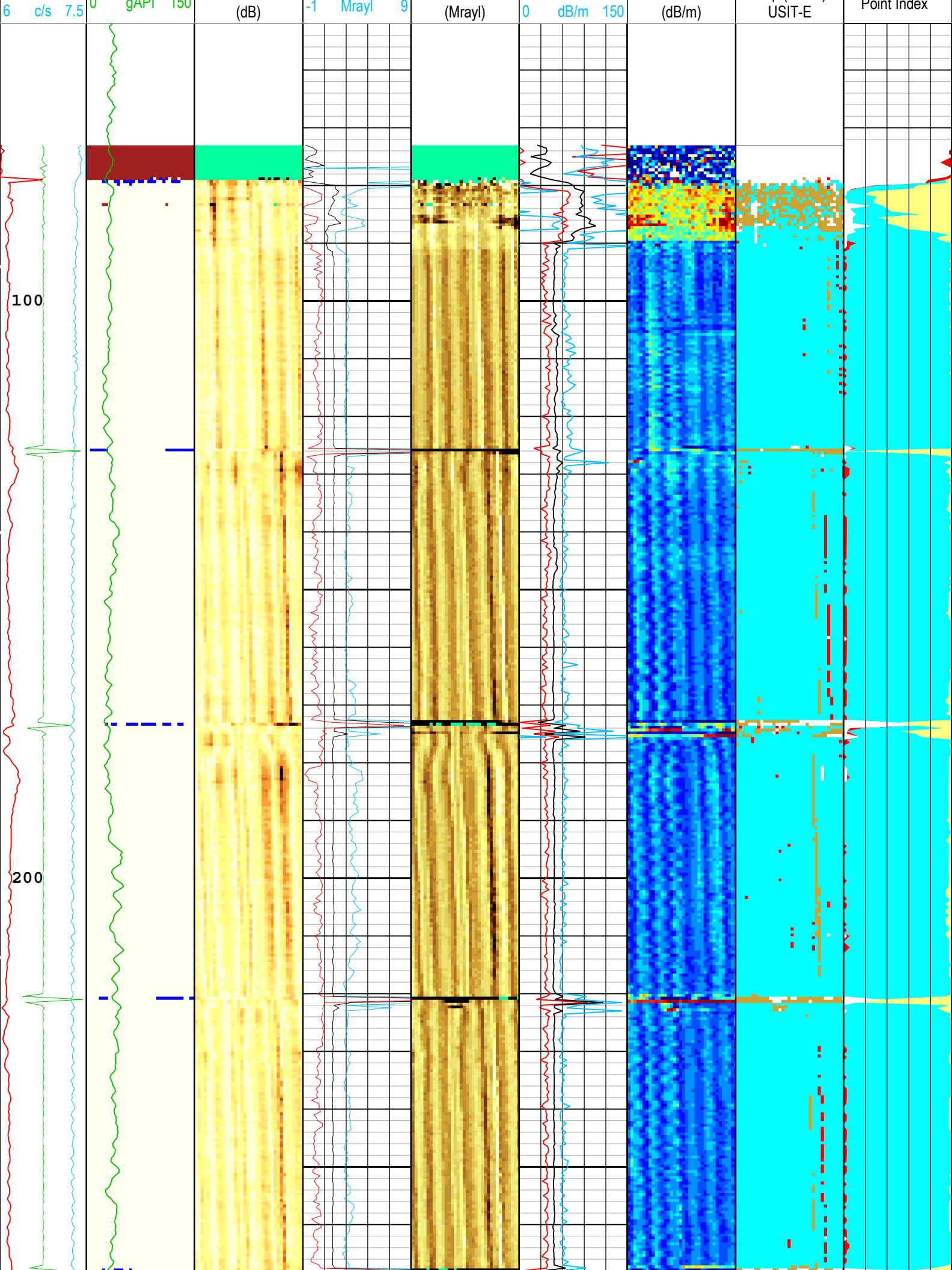
USIT - Solid Liquid Gas Sorted Color Map (USLP)

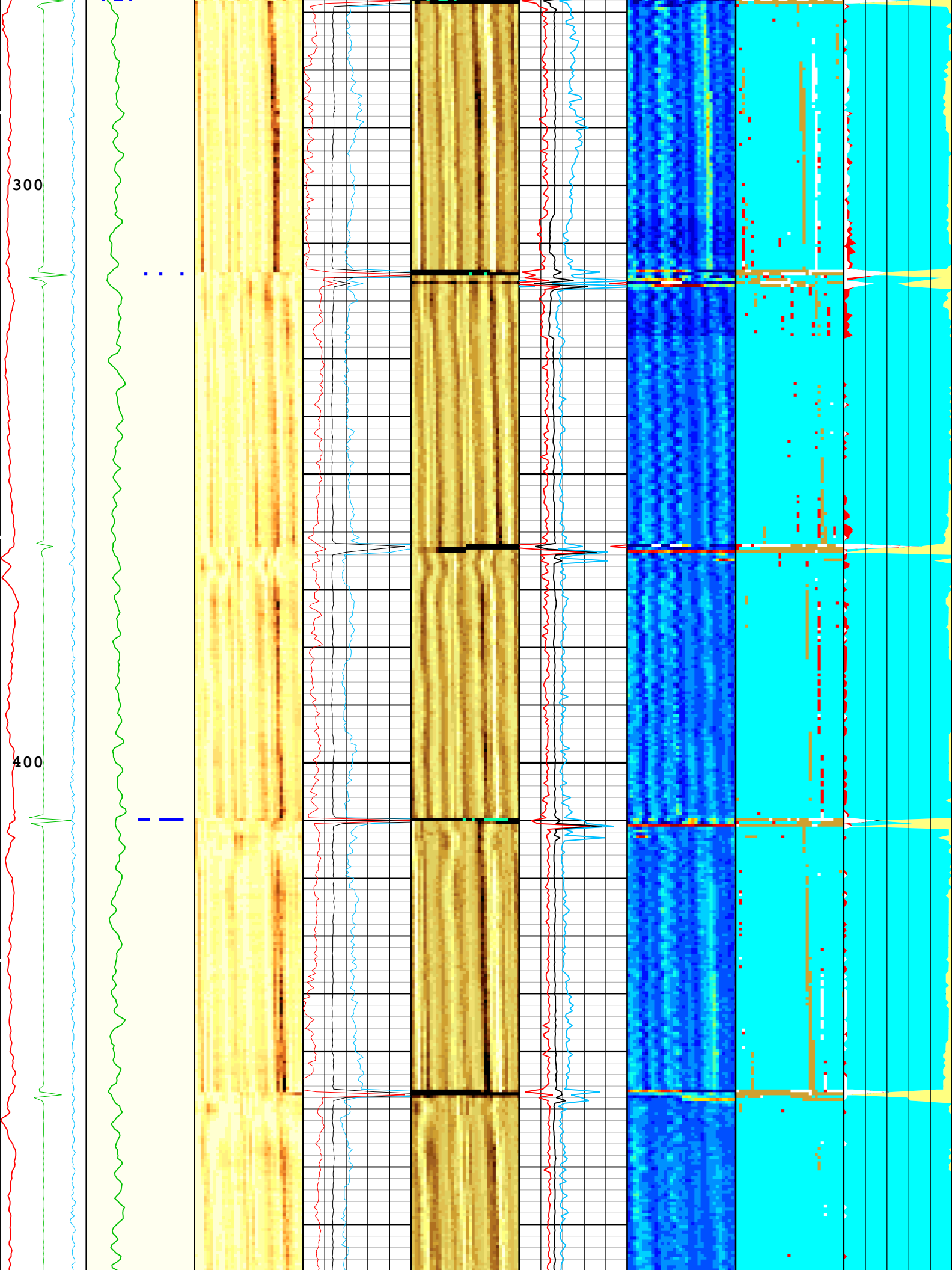
SLG Solid Index

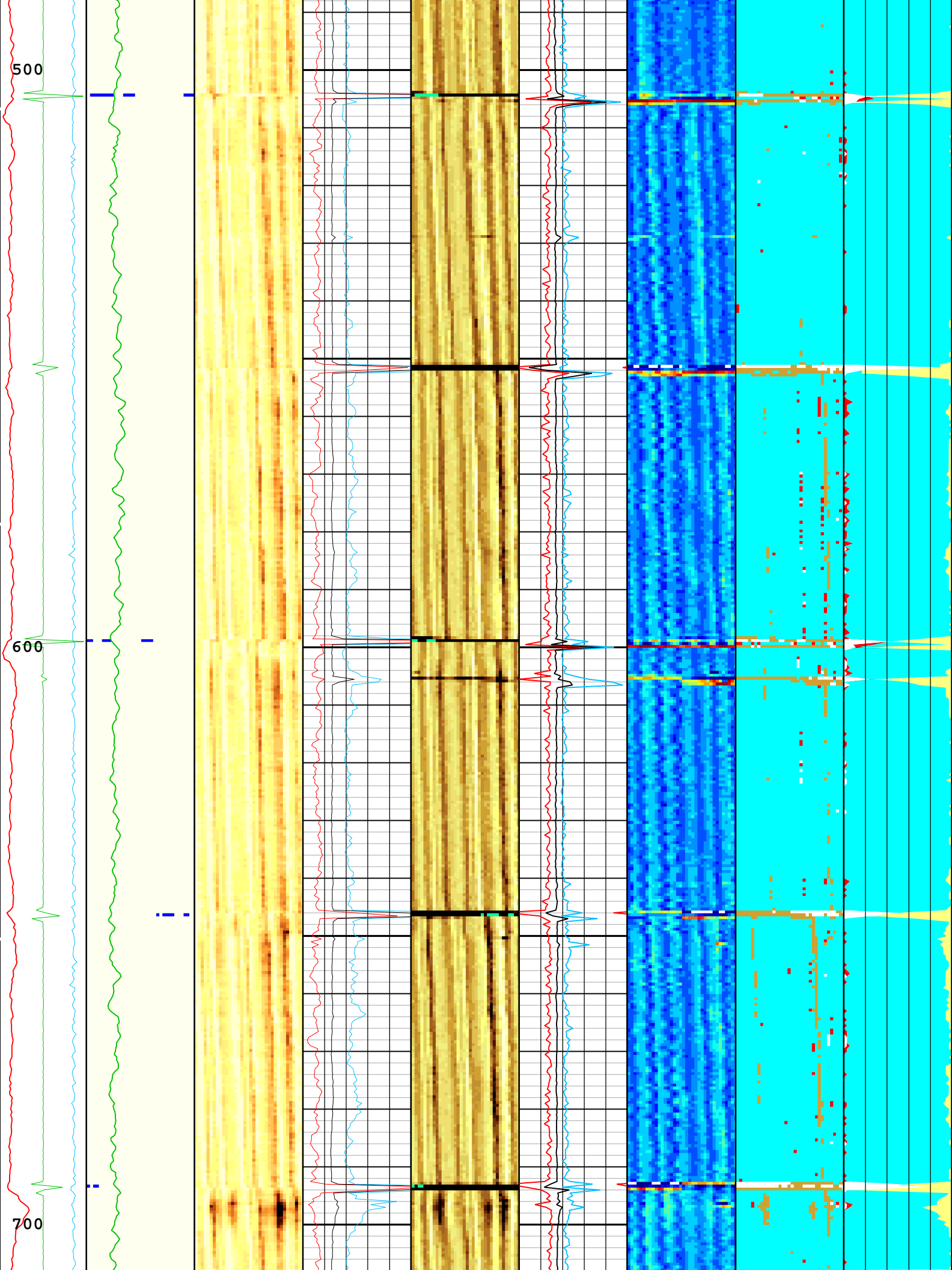
SLG Liquid Index

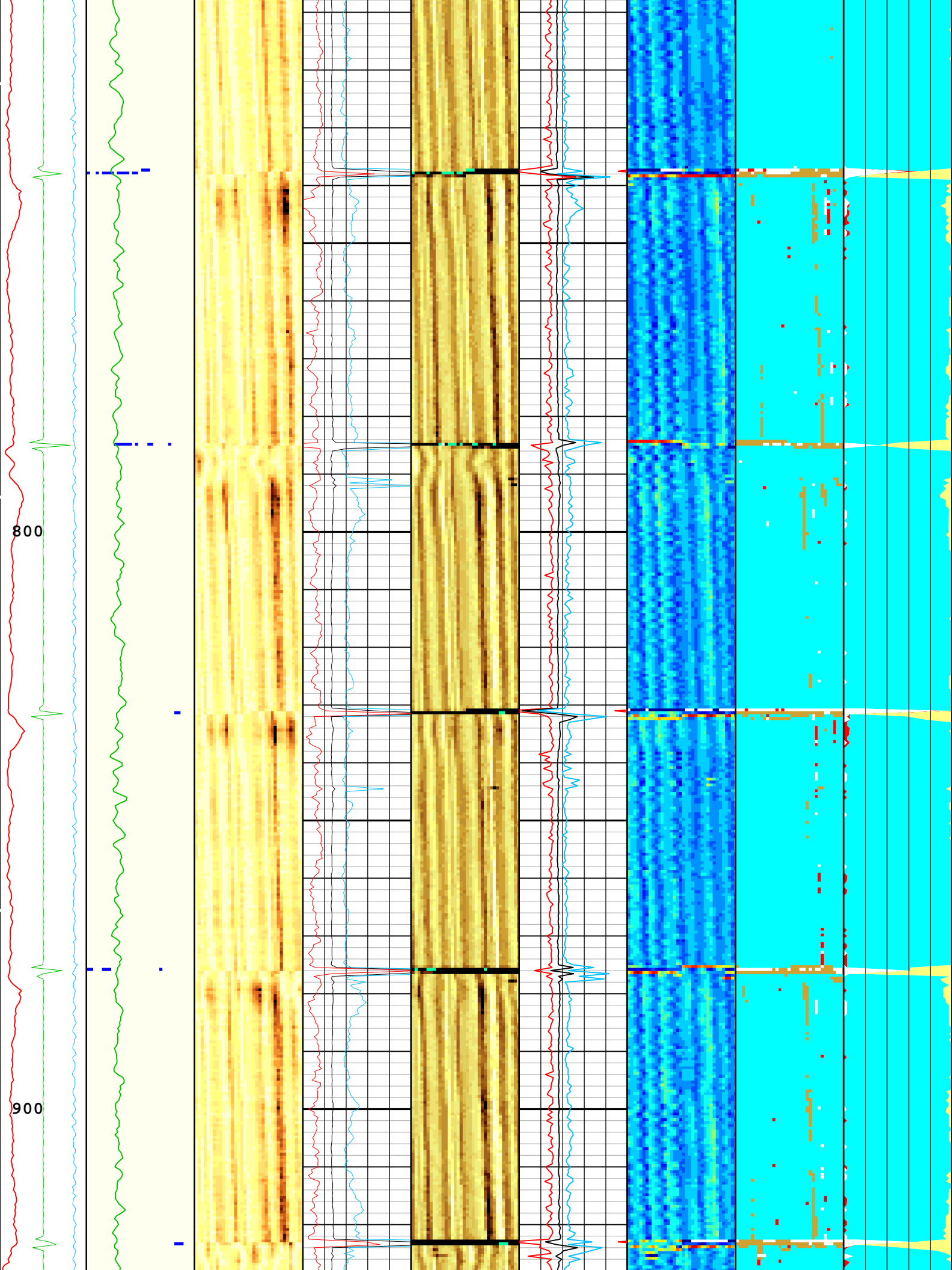
SLG Gas Index

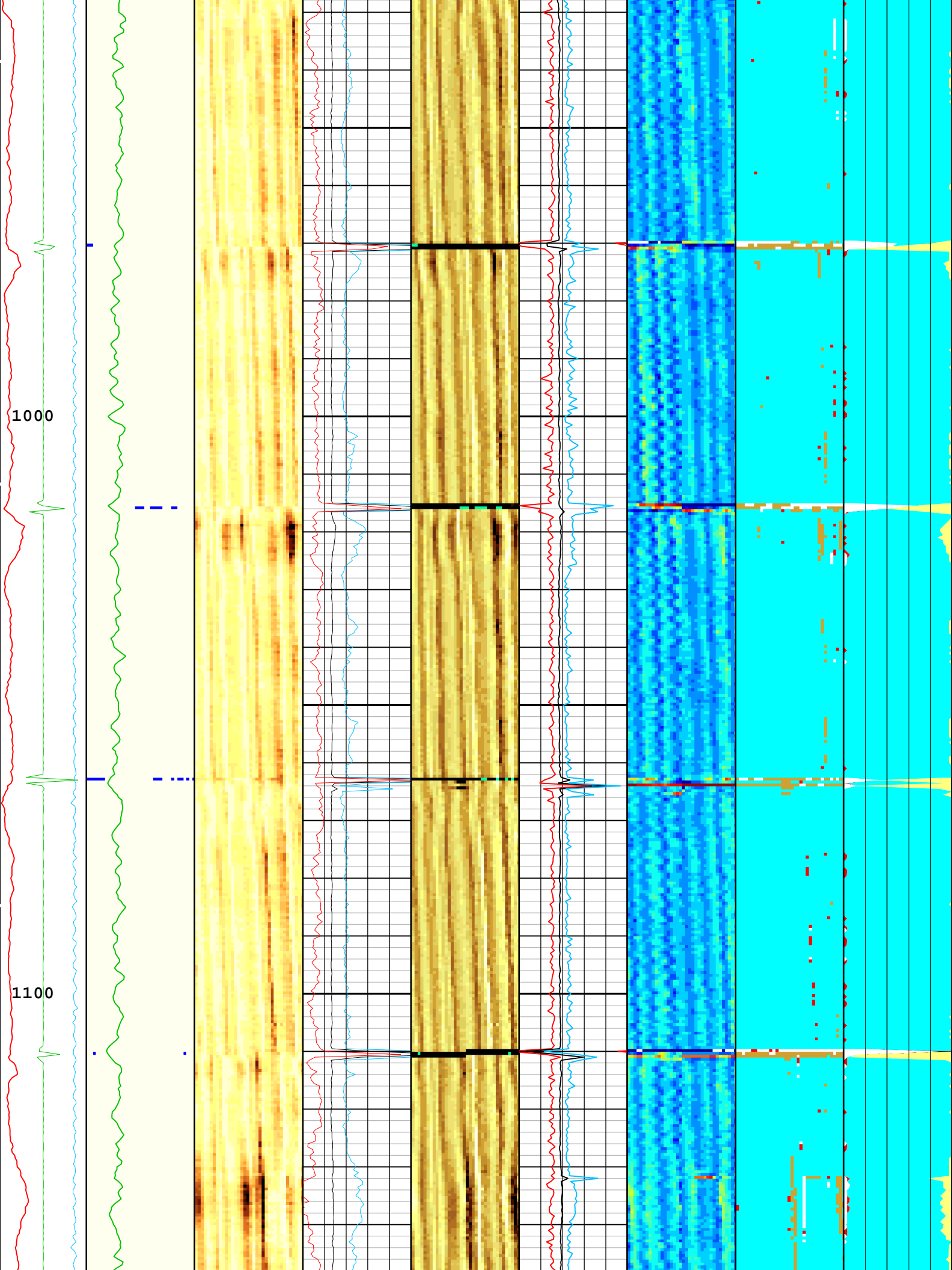
SLG White

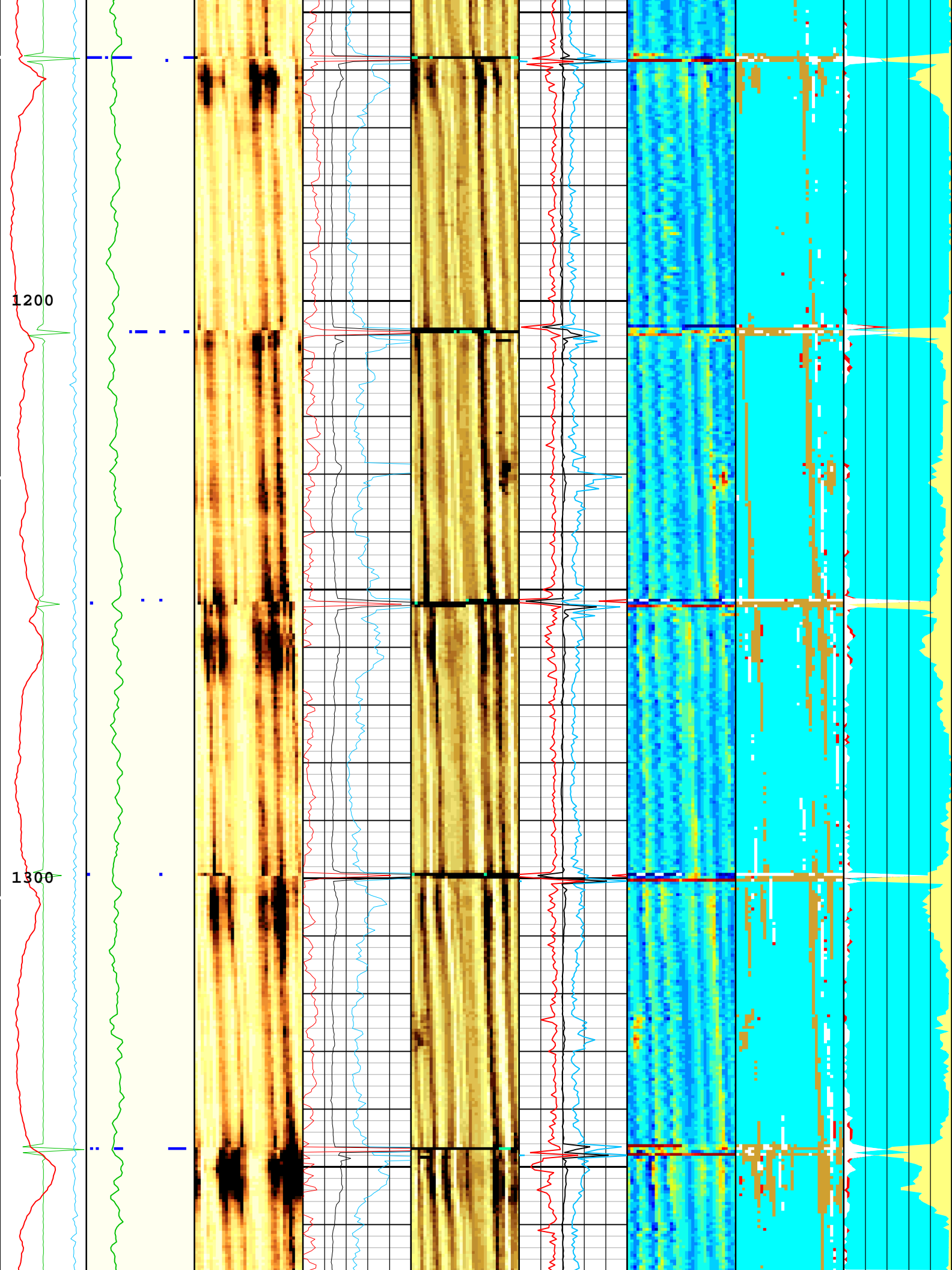


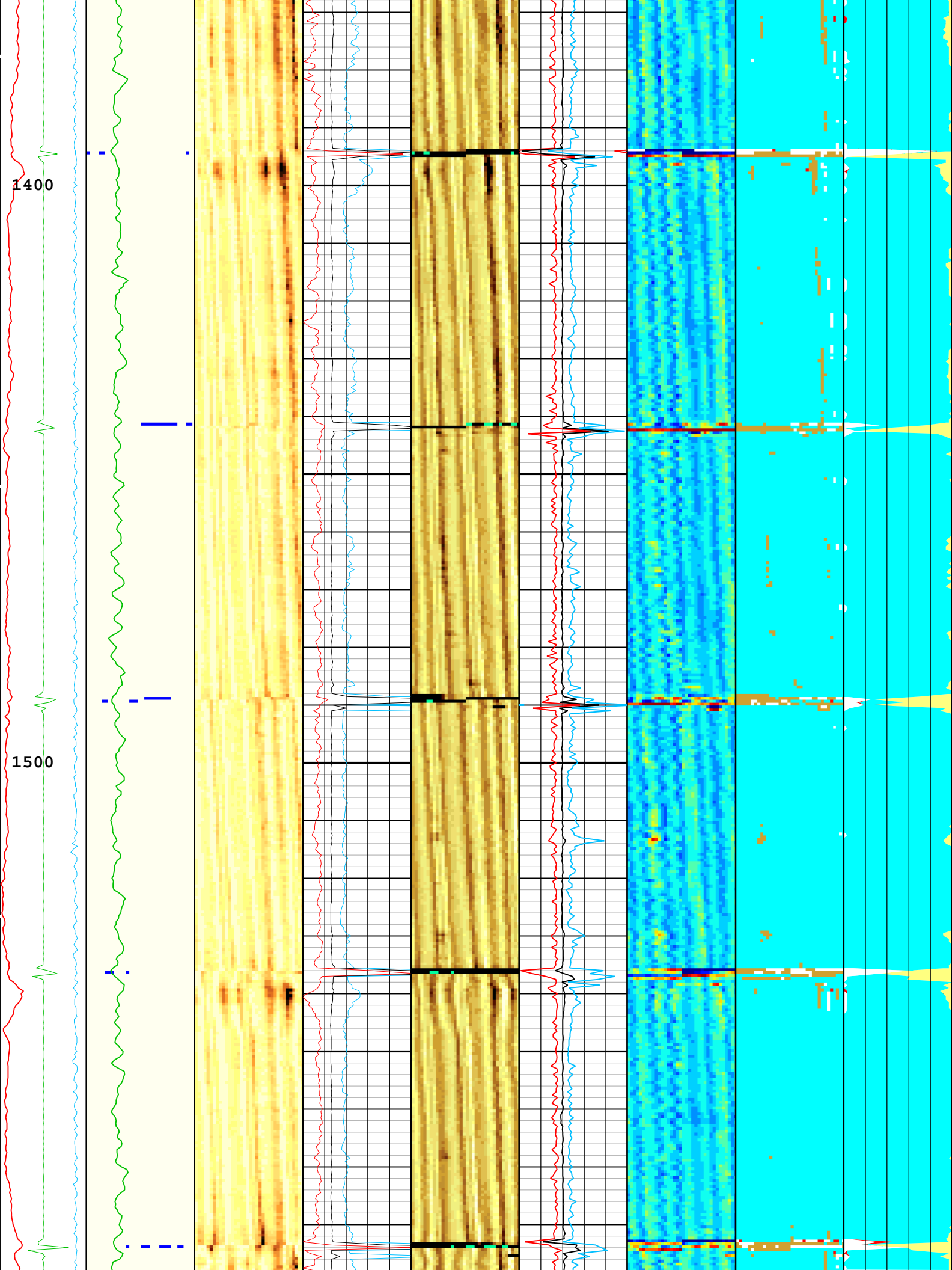


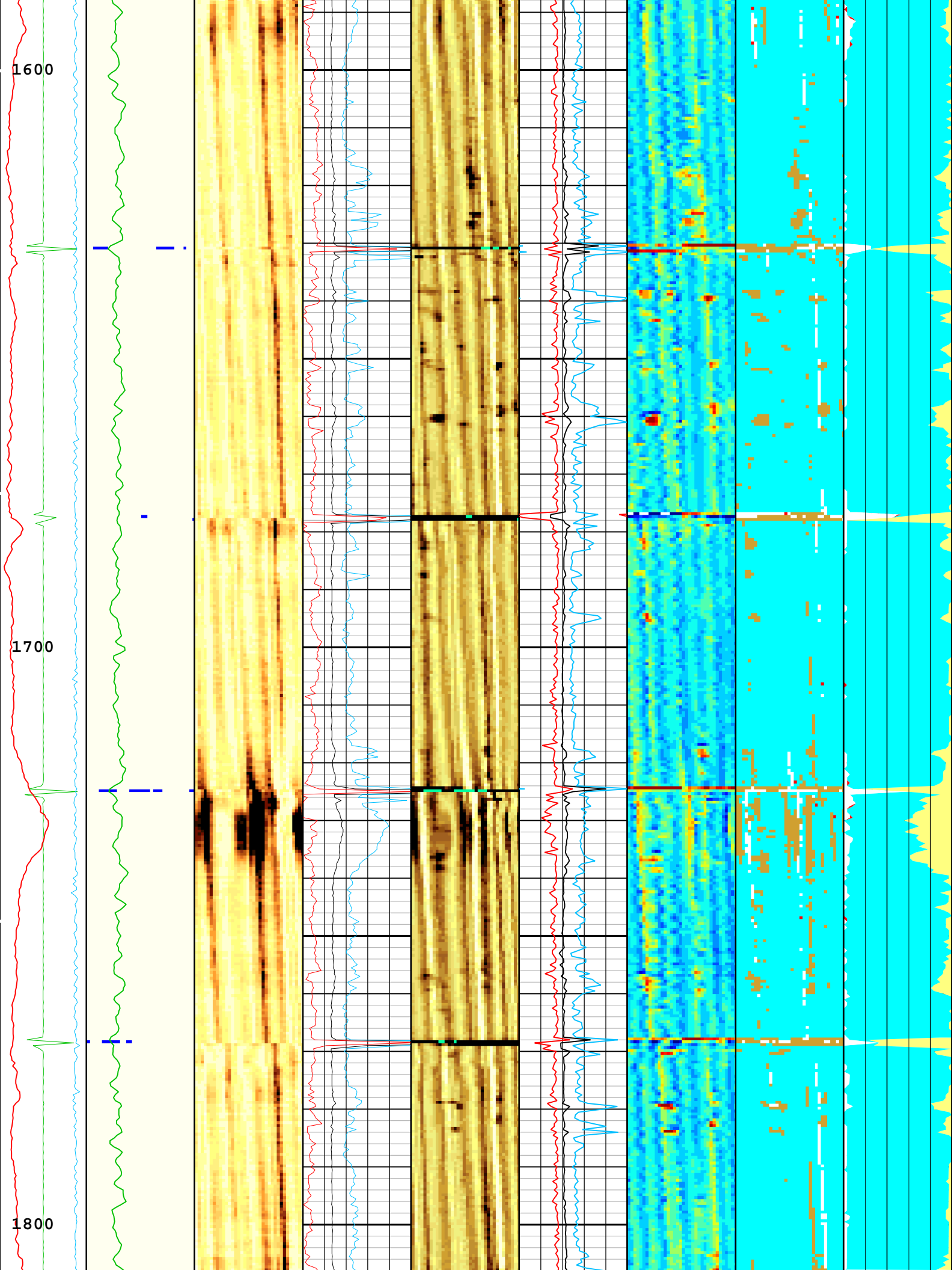


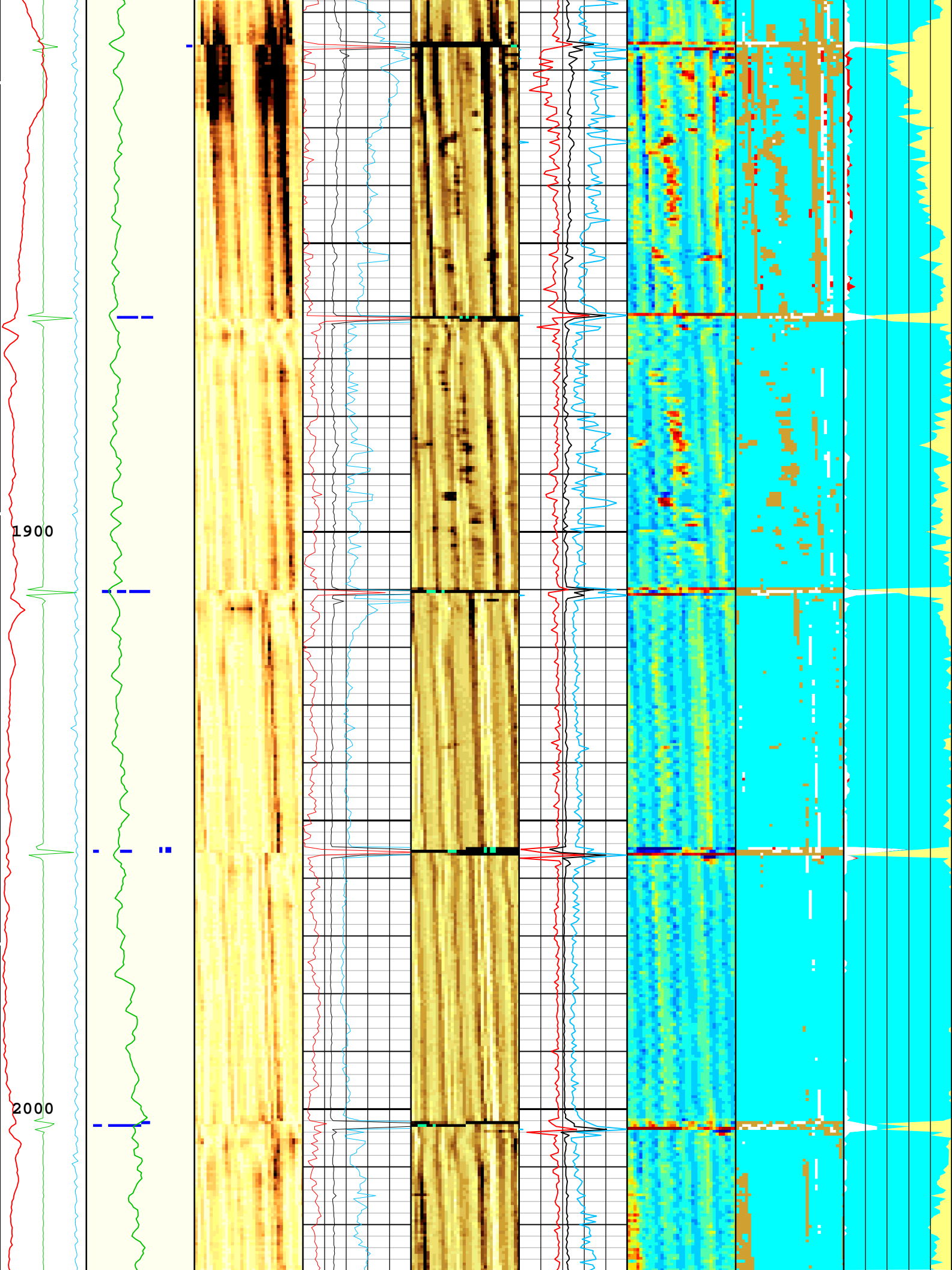


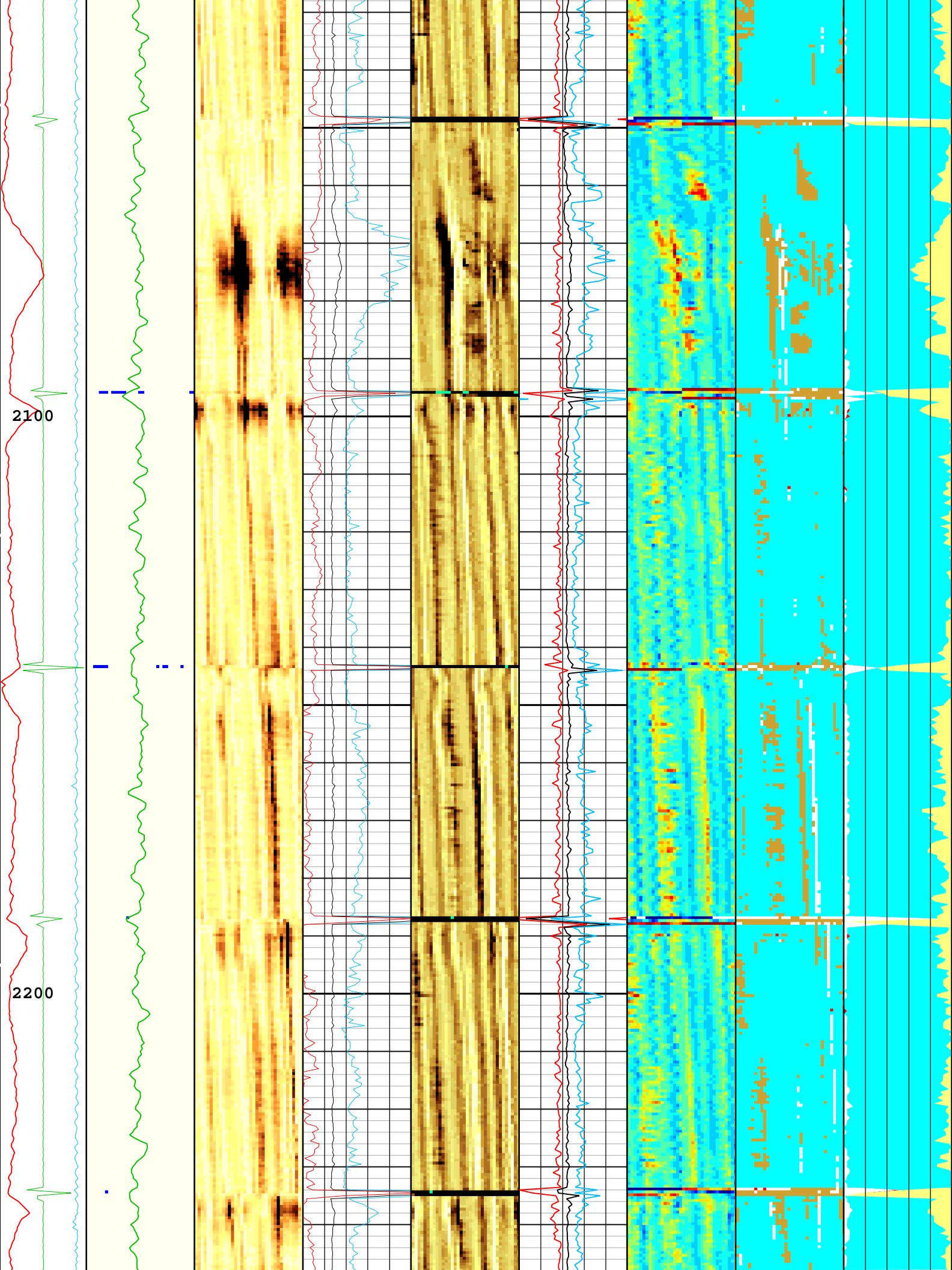


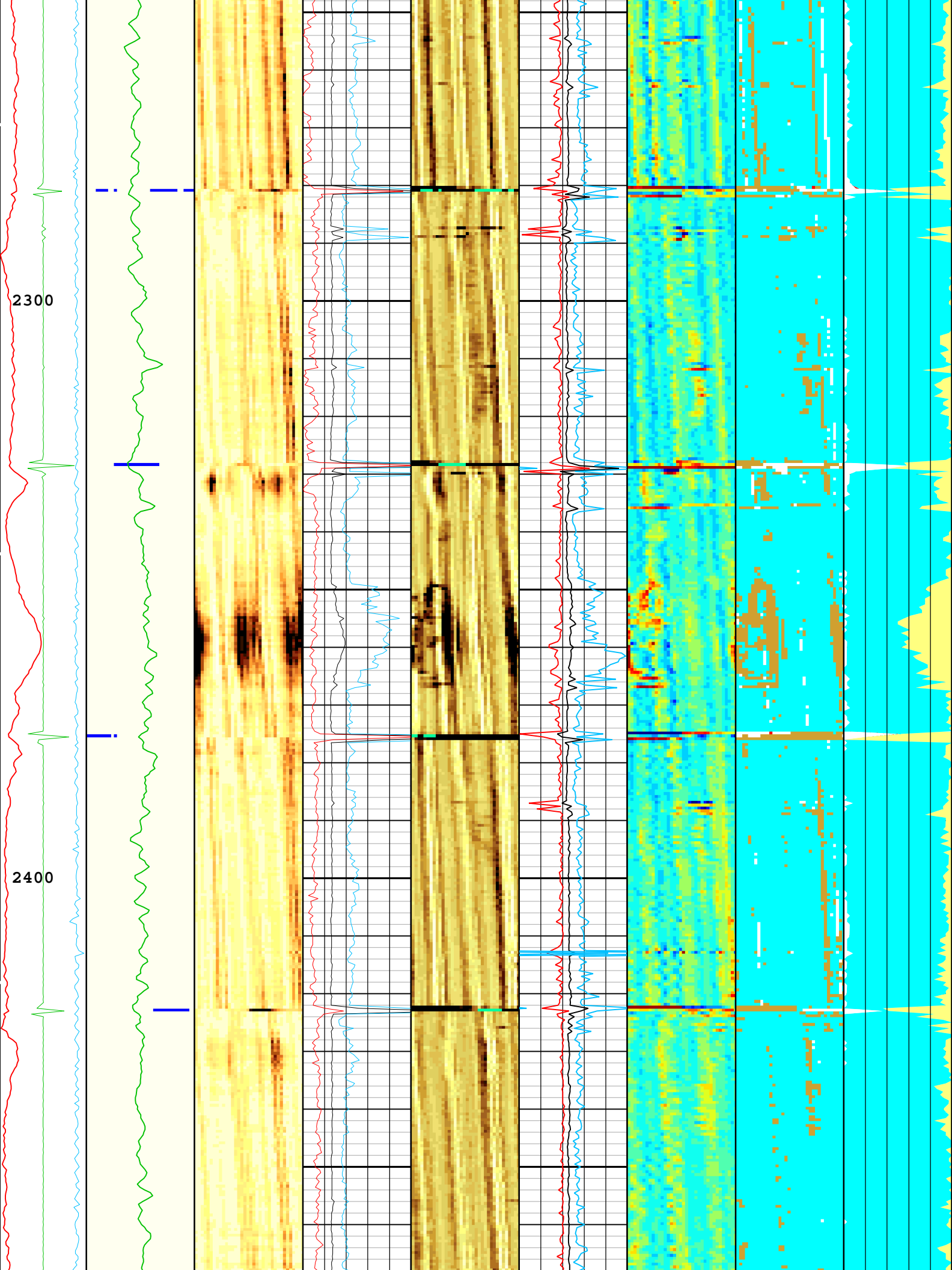


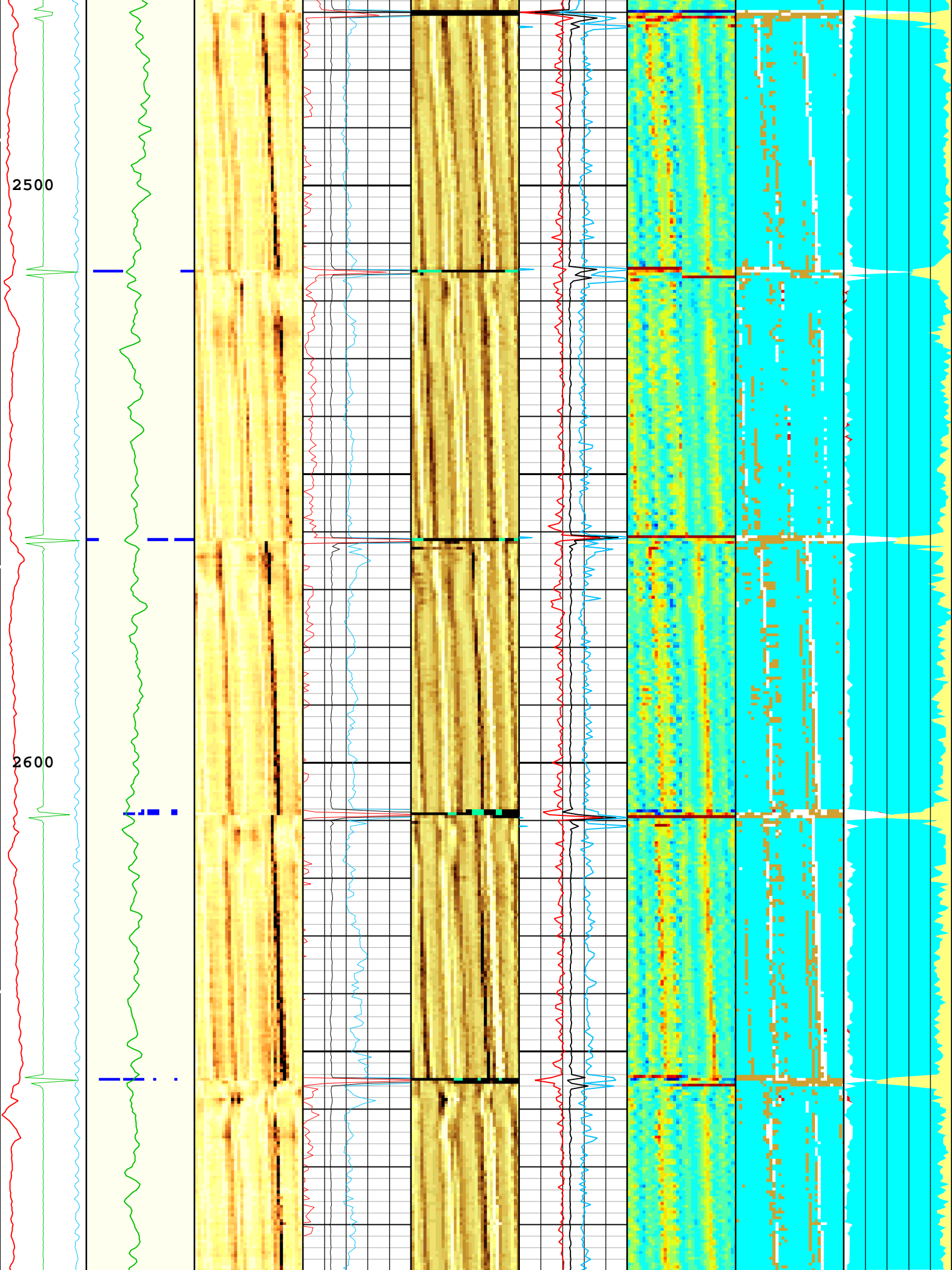


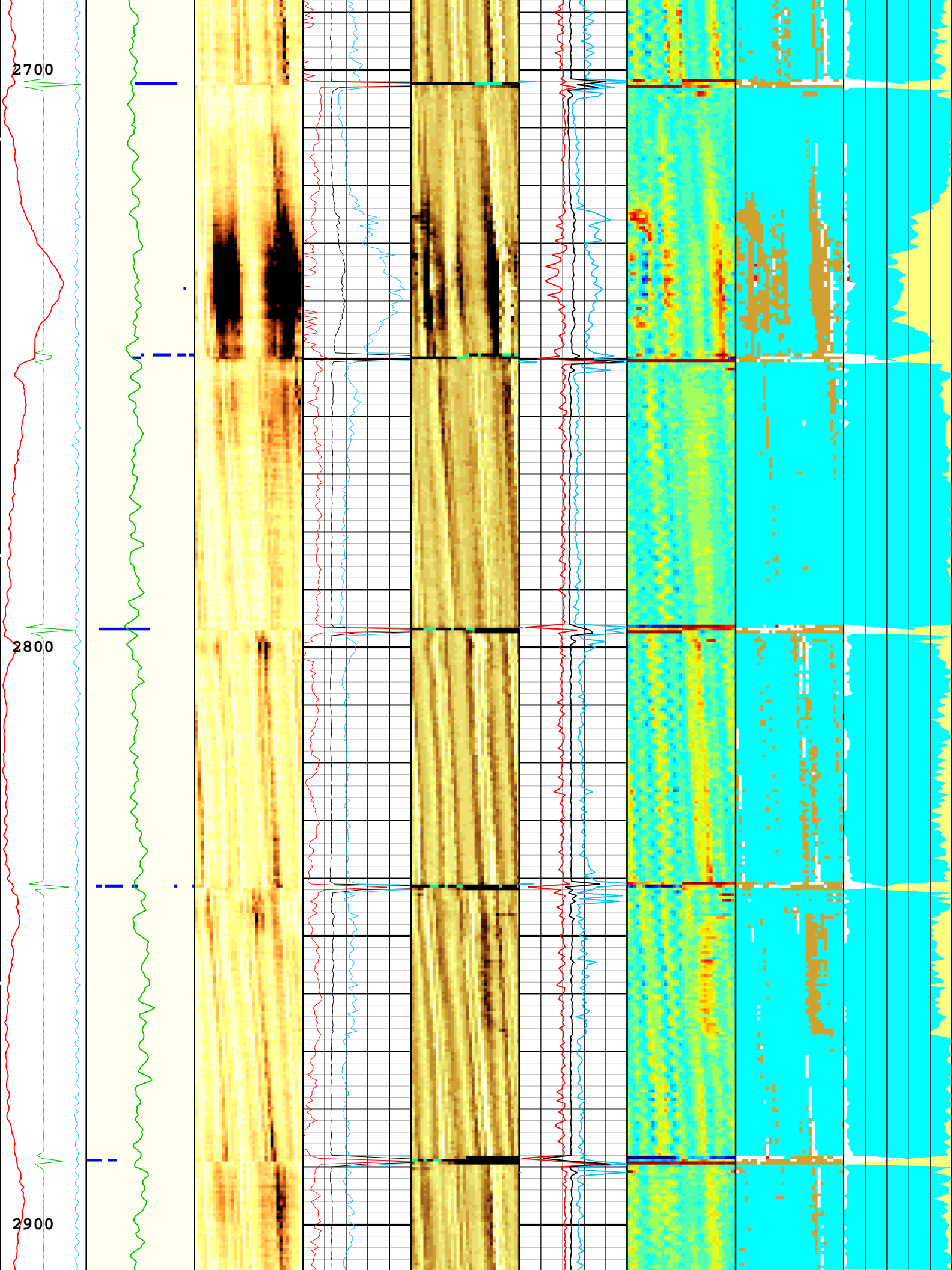


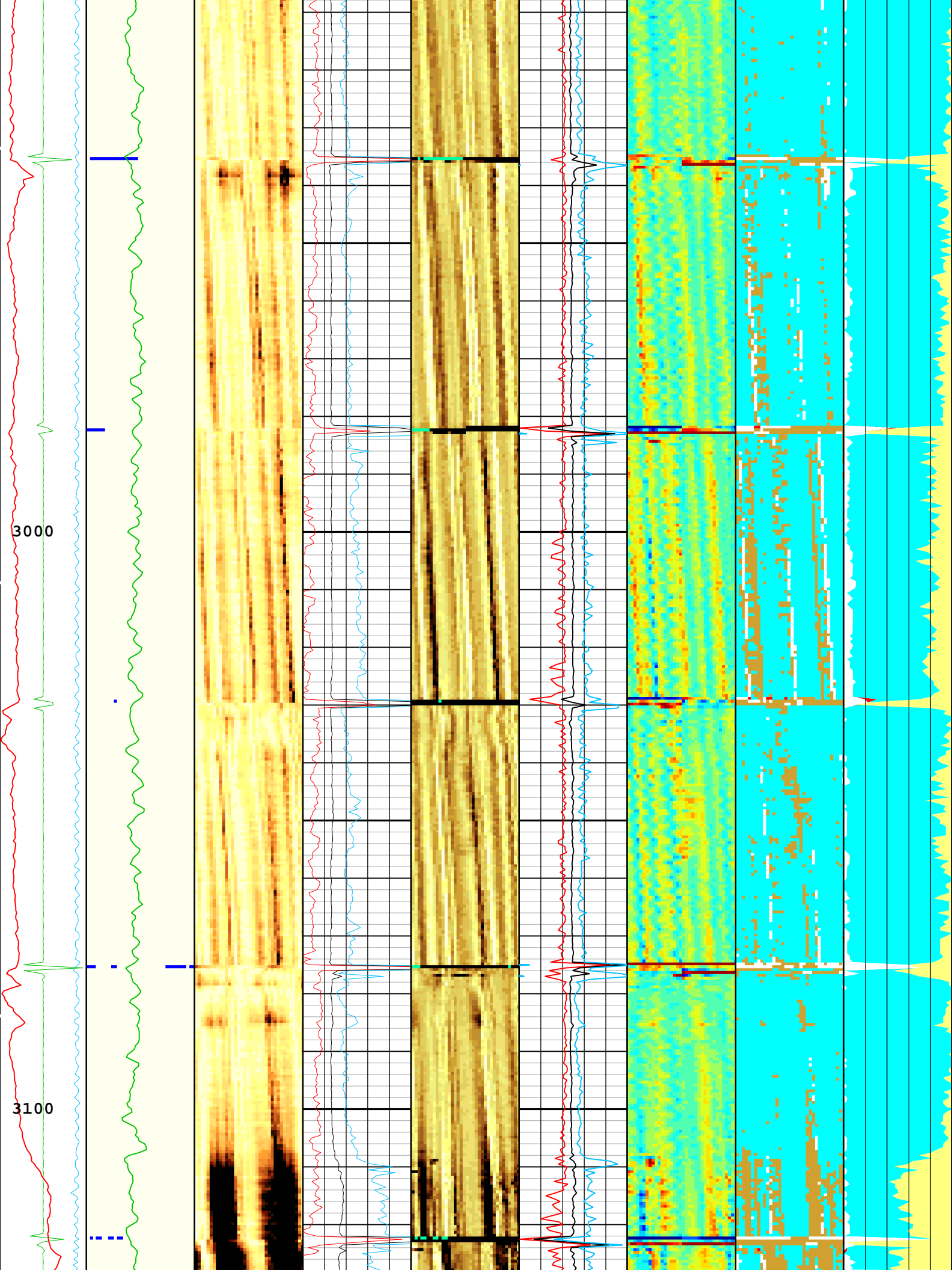


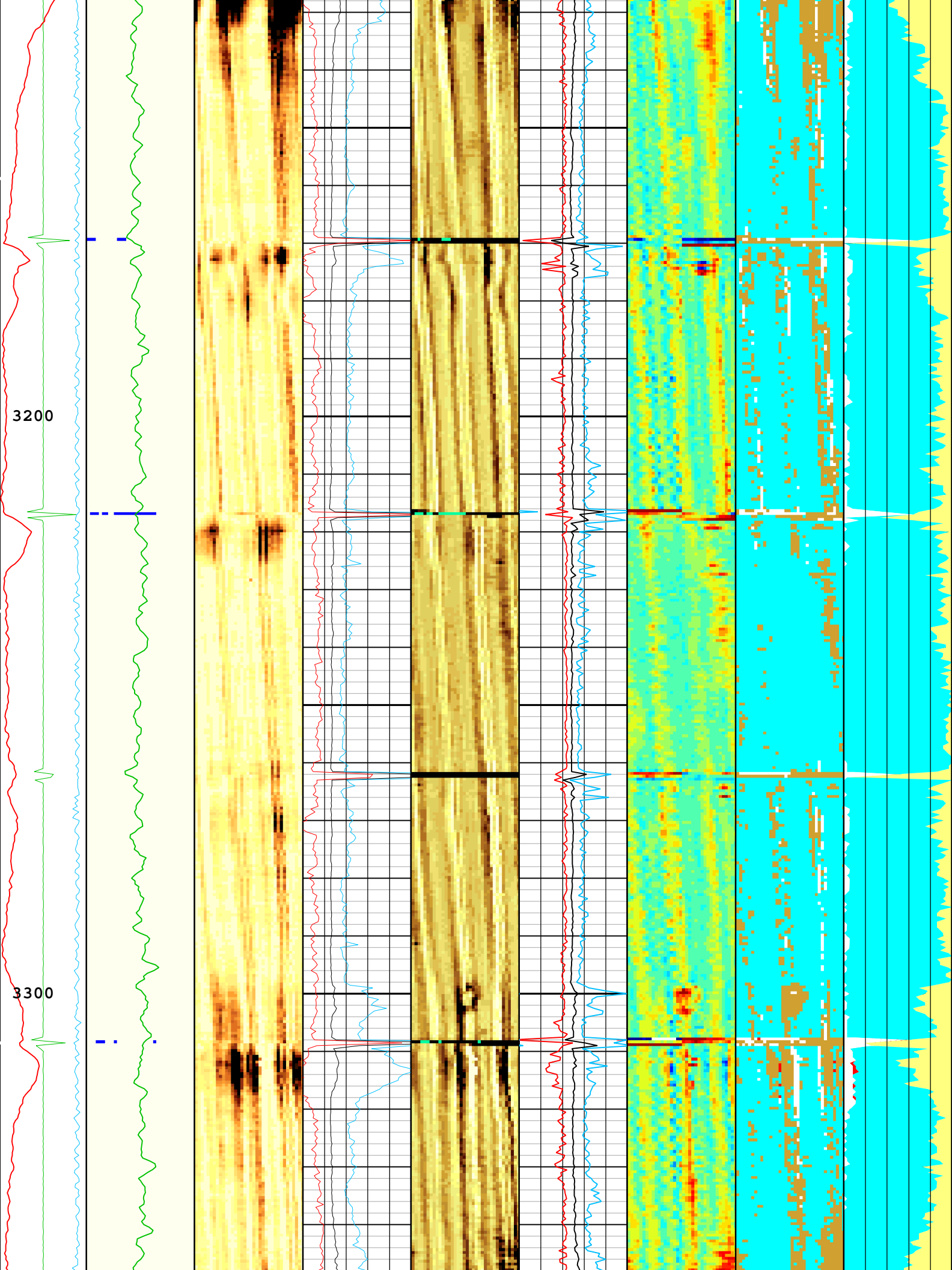


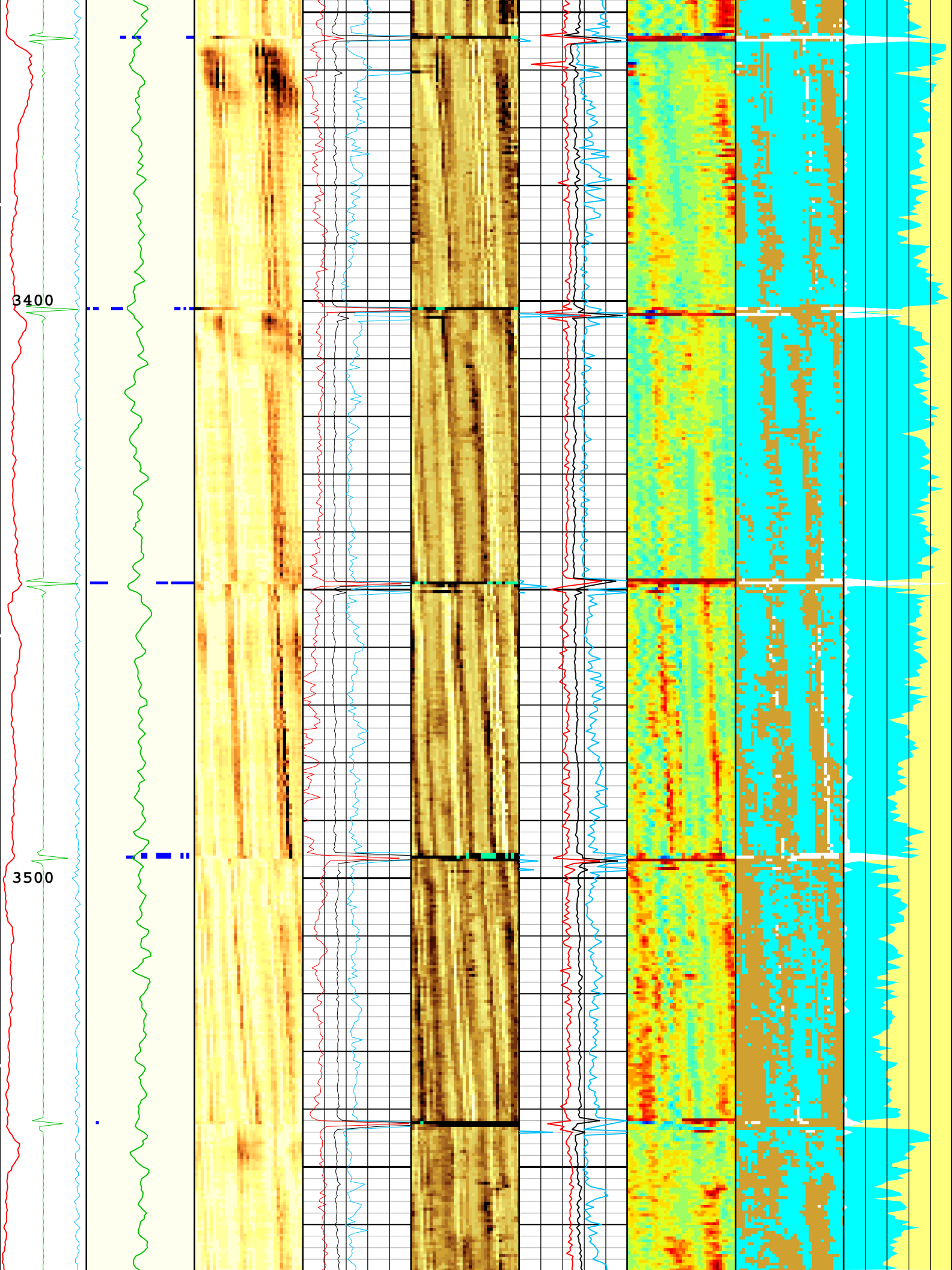


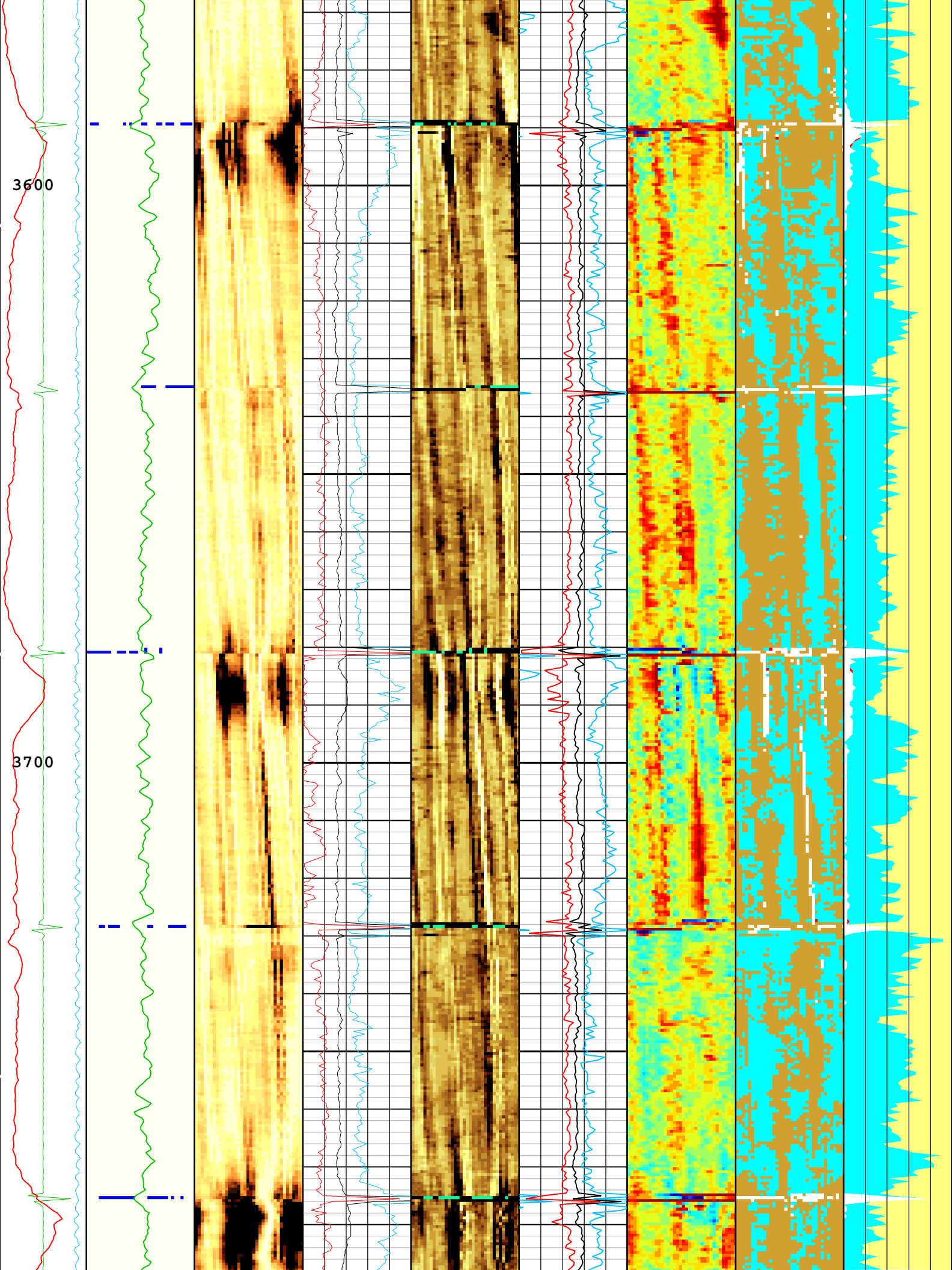


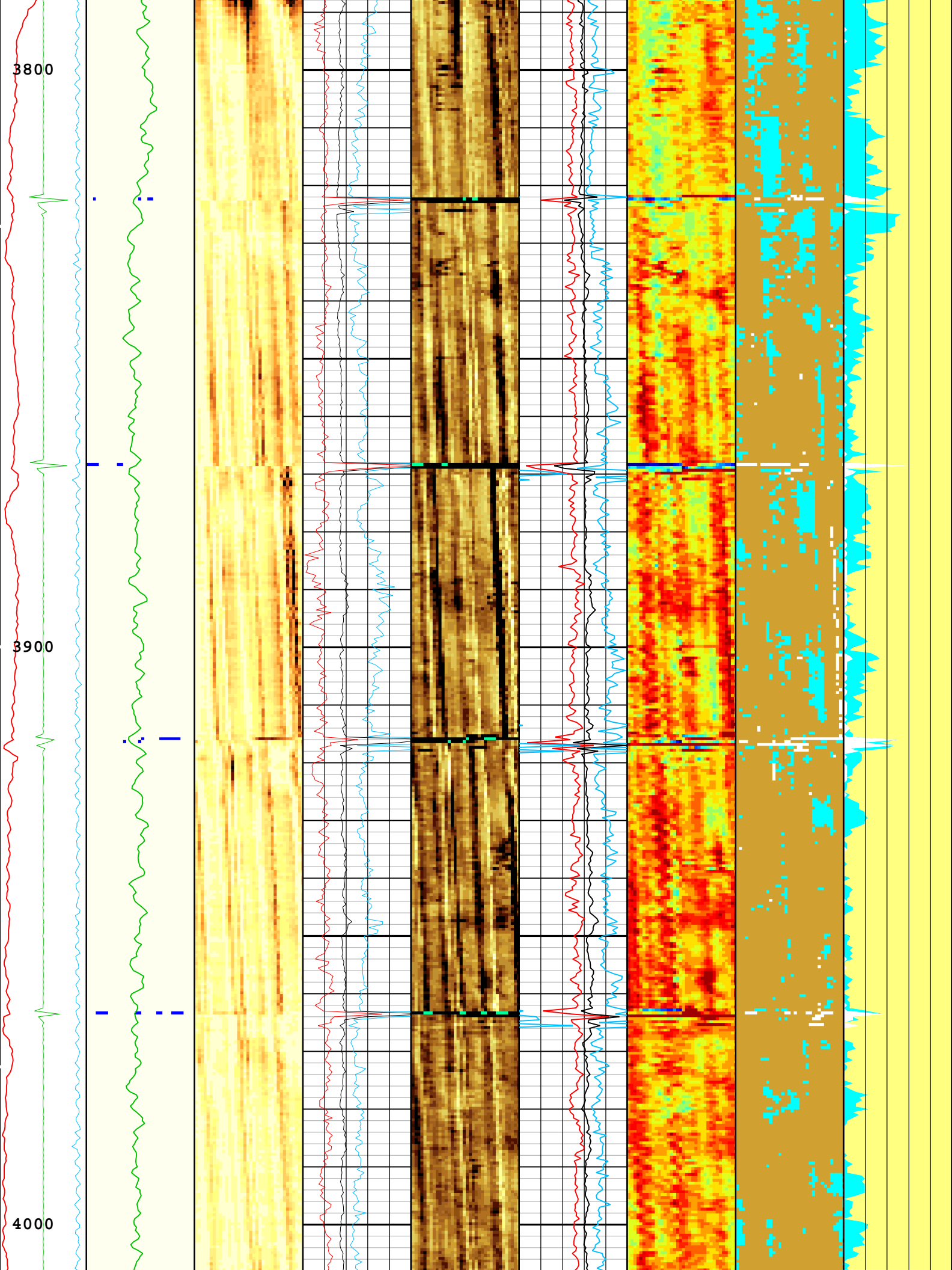


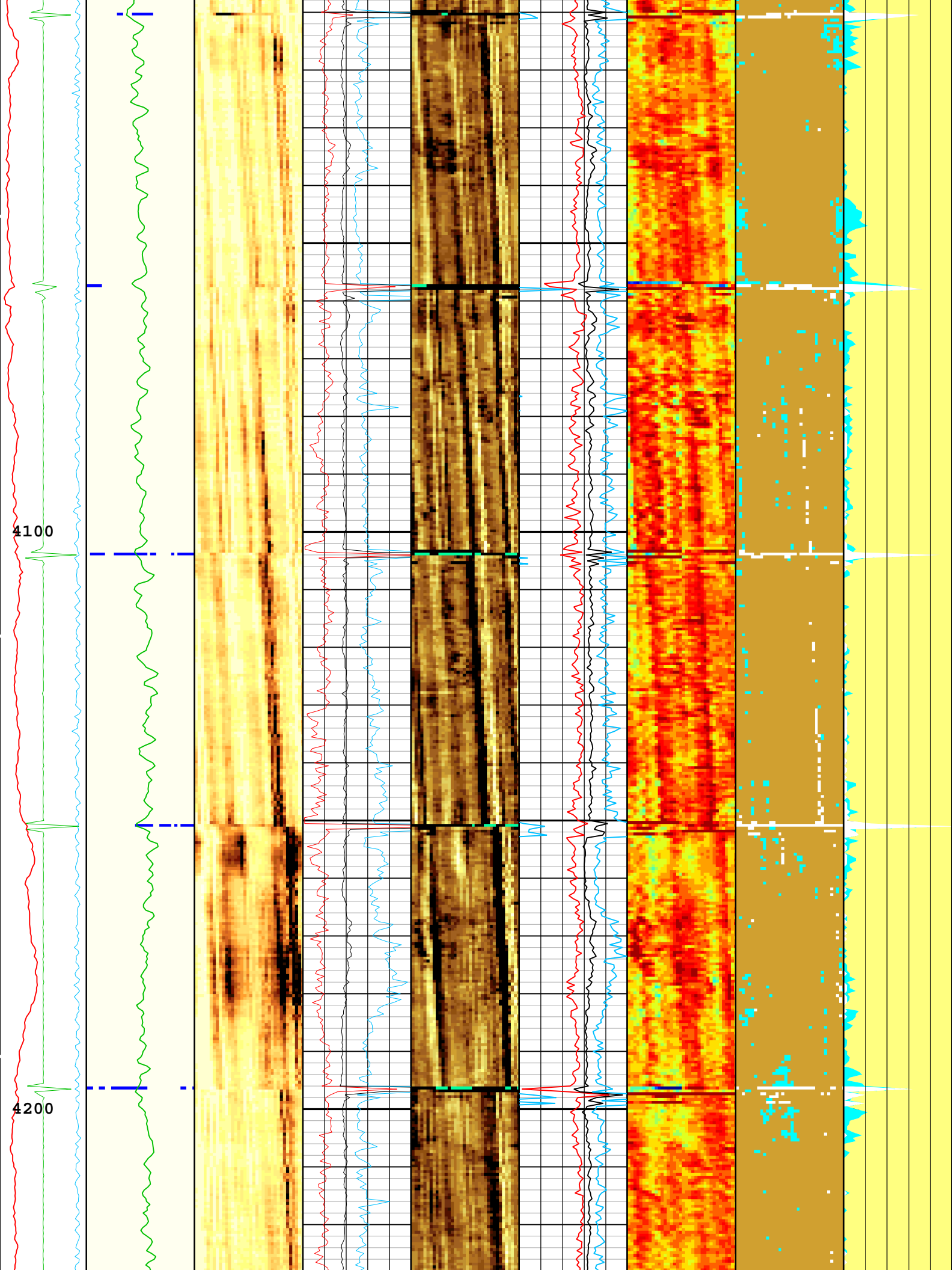


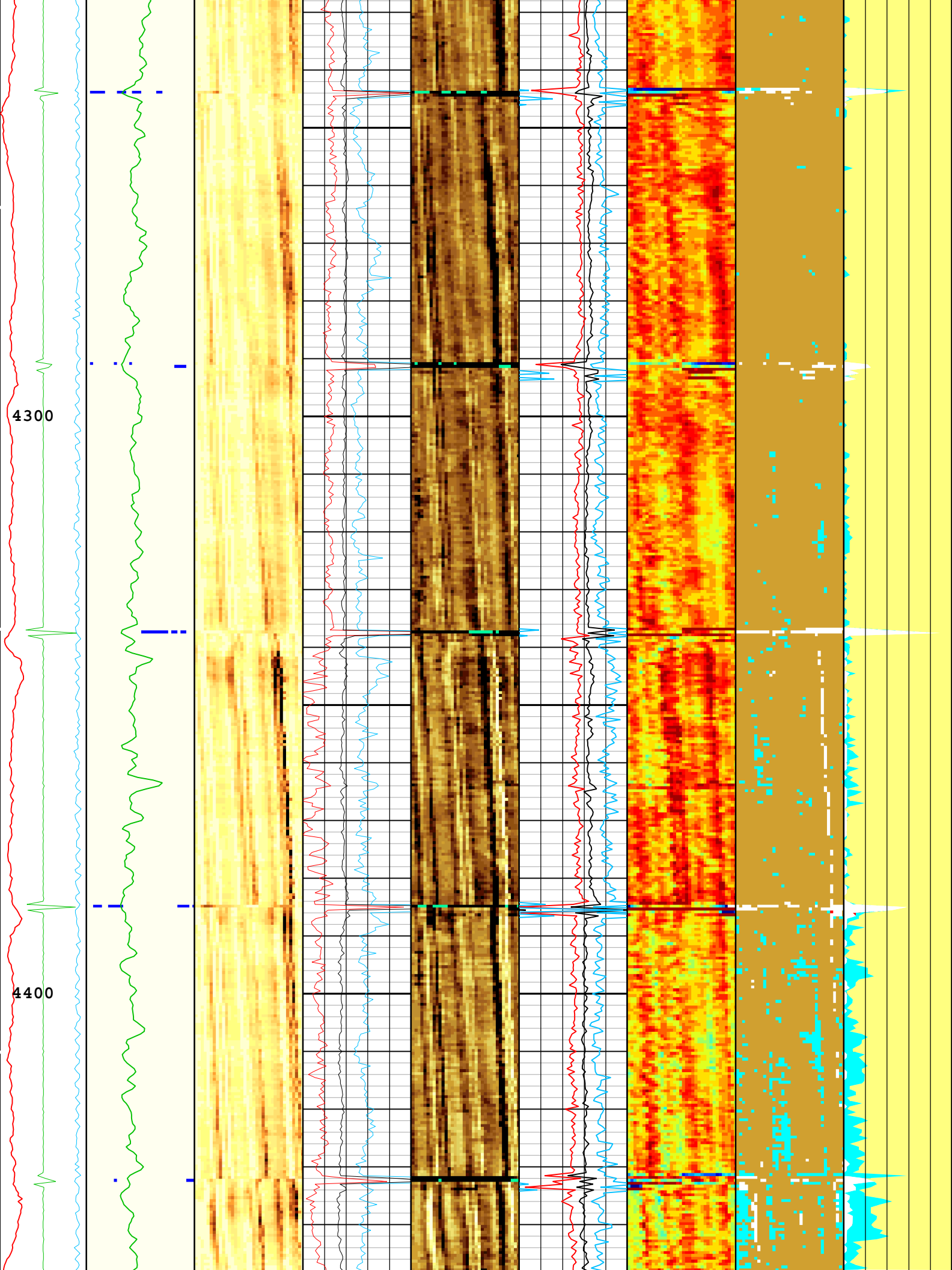


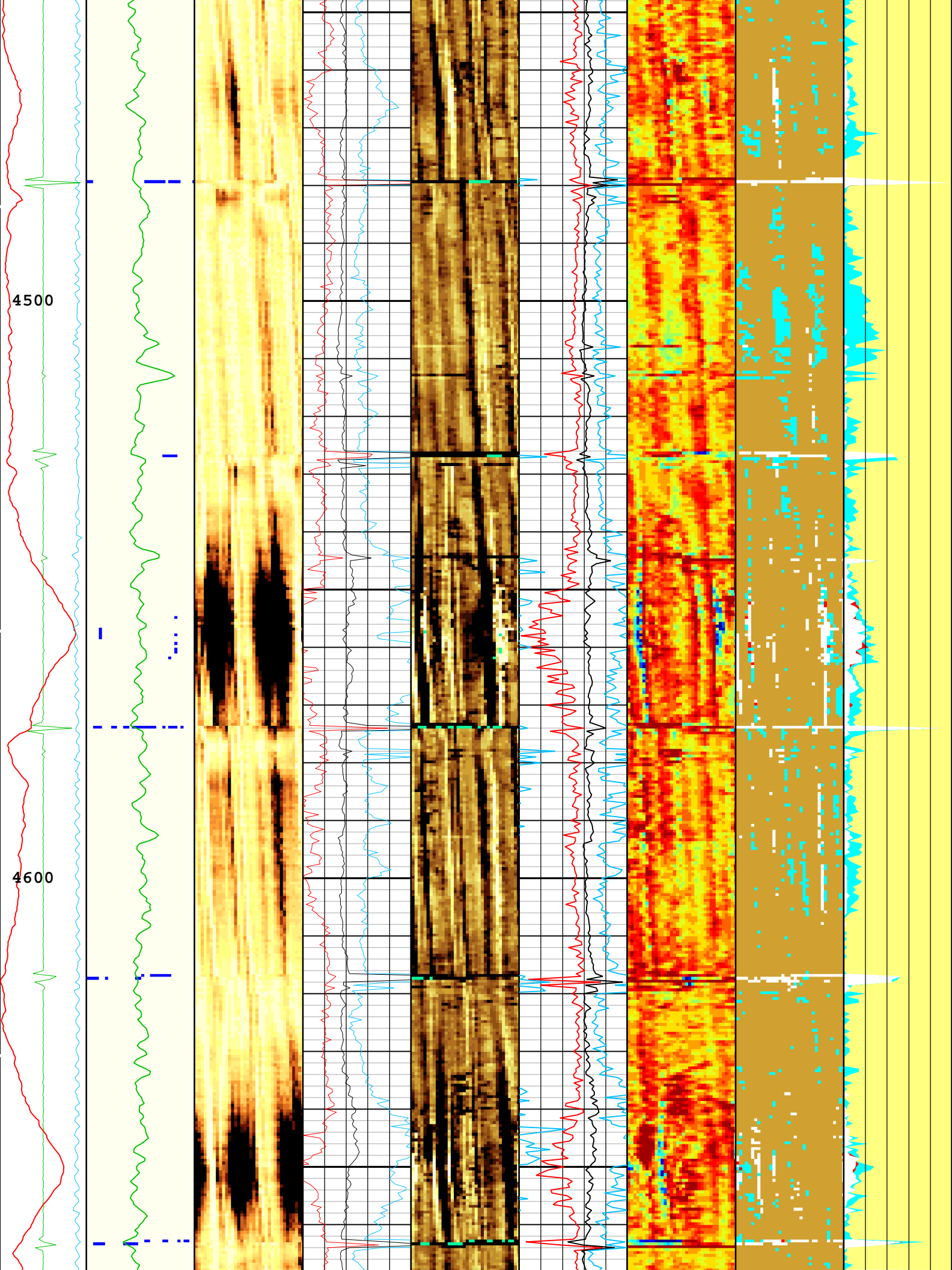


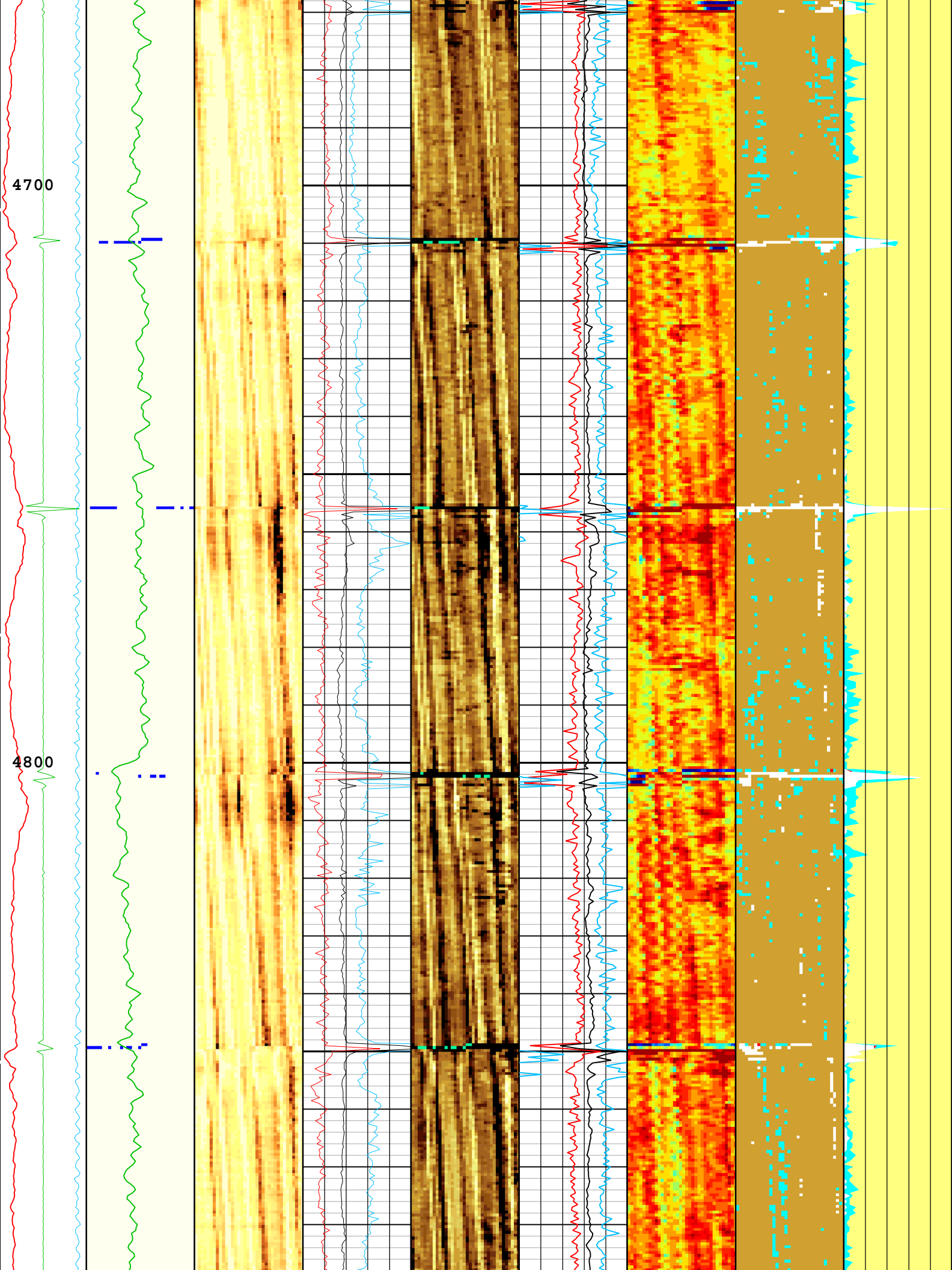


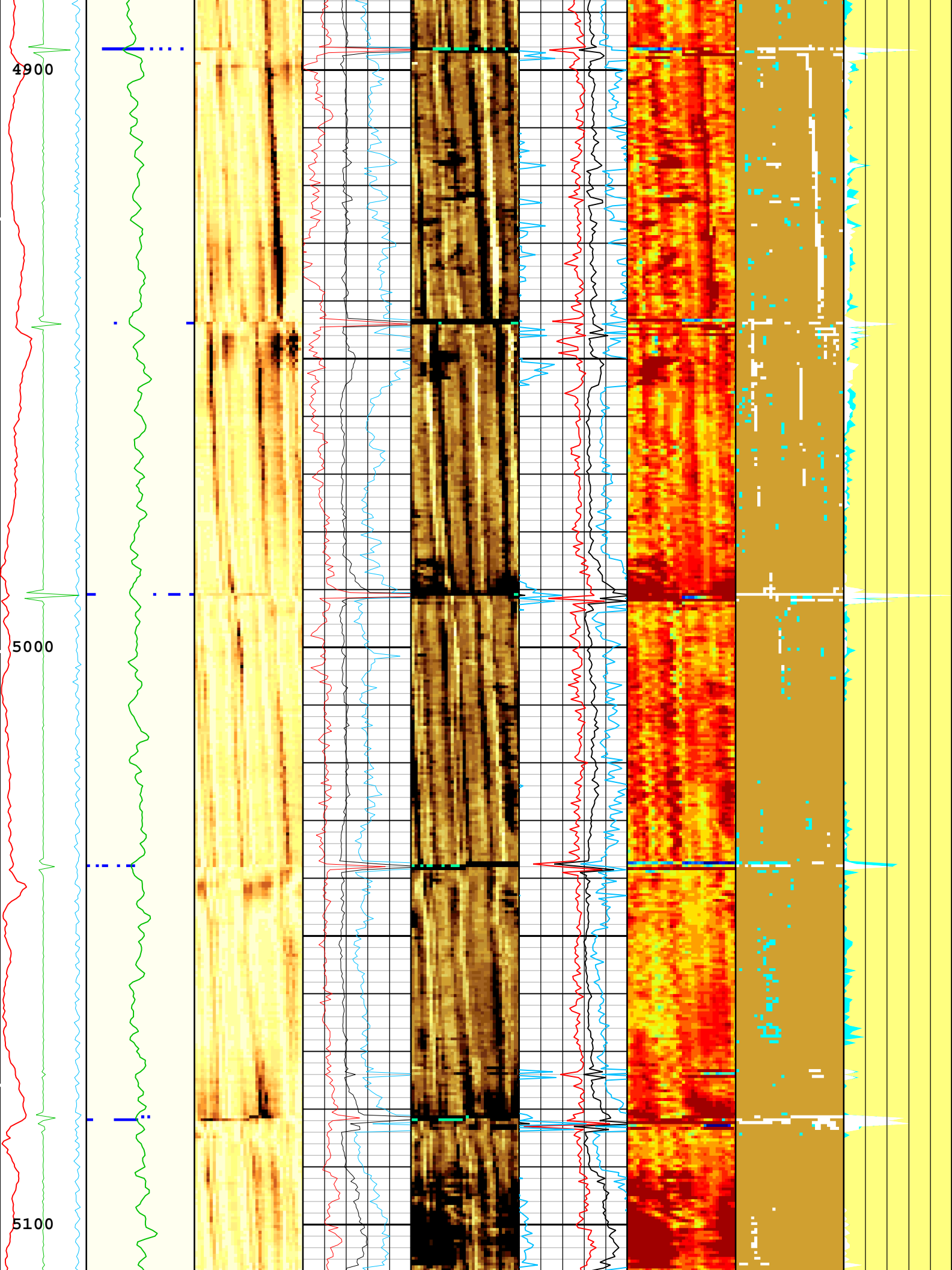


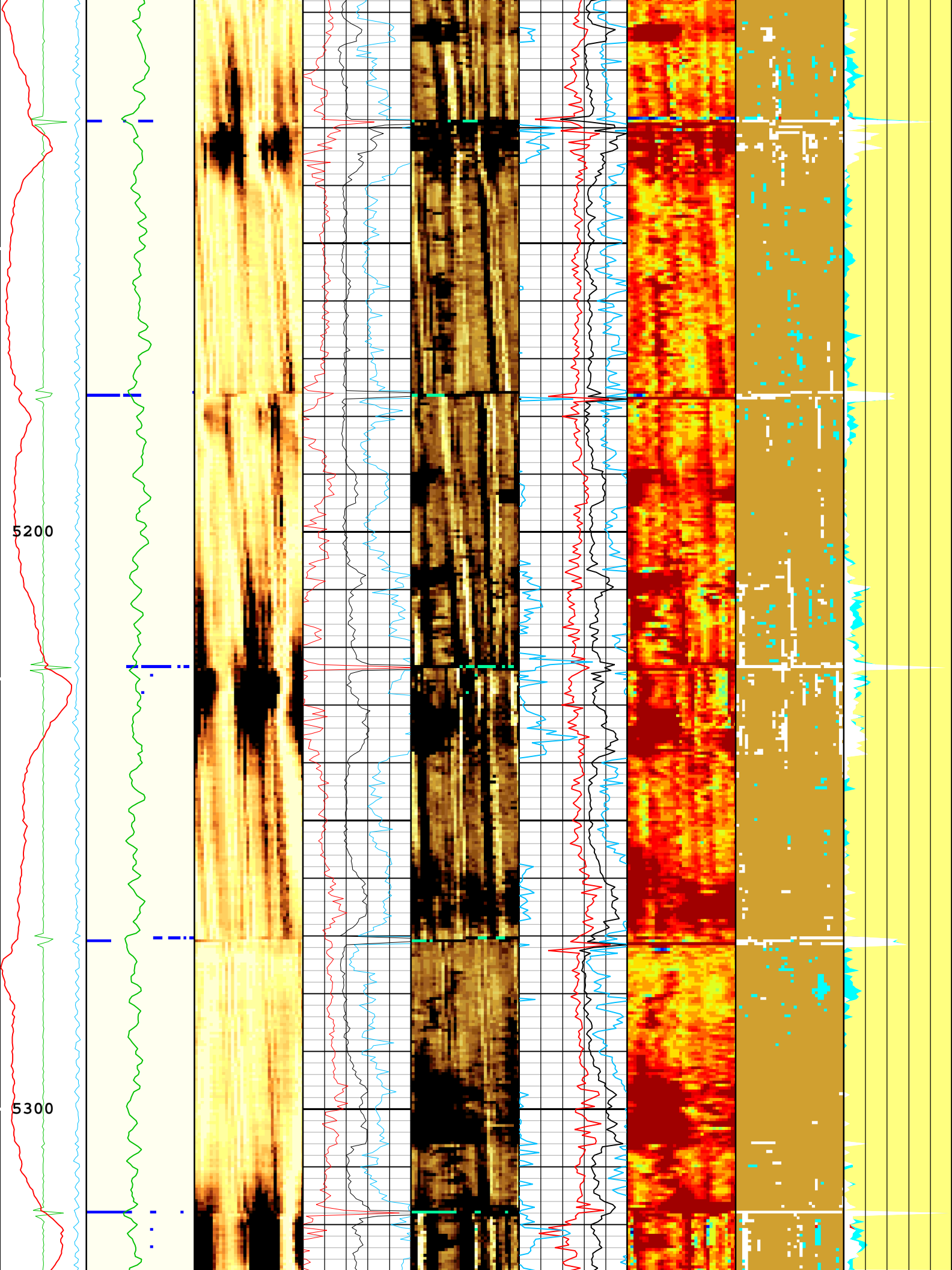


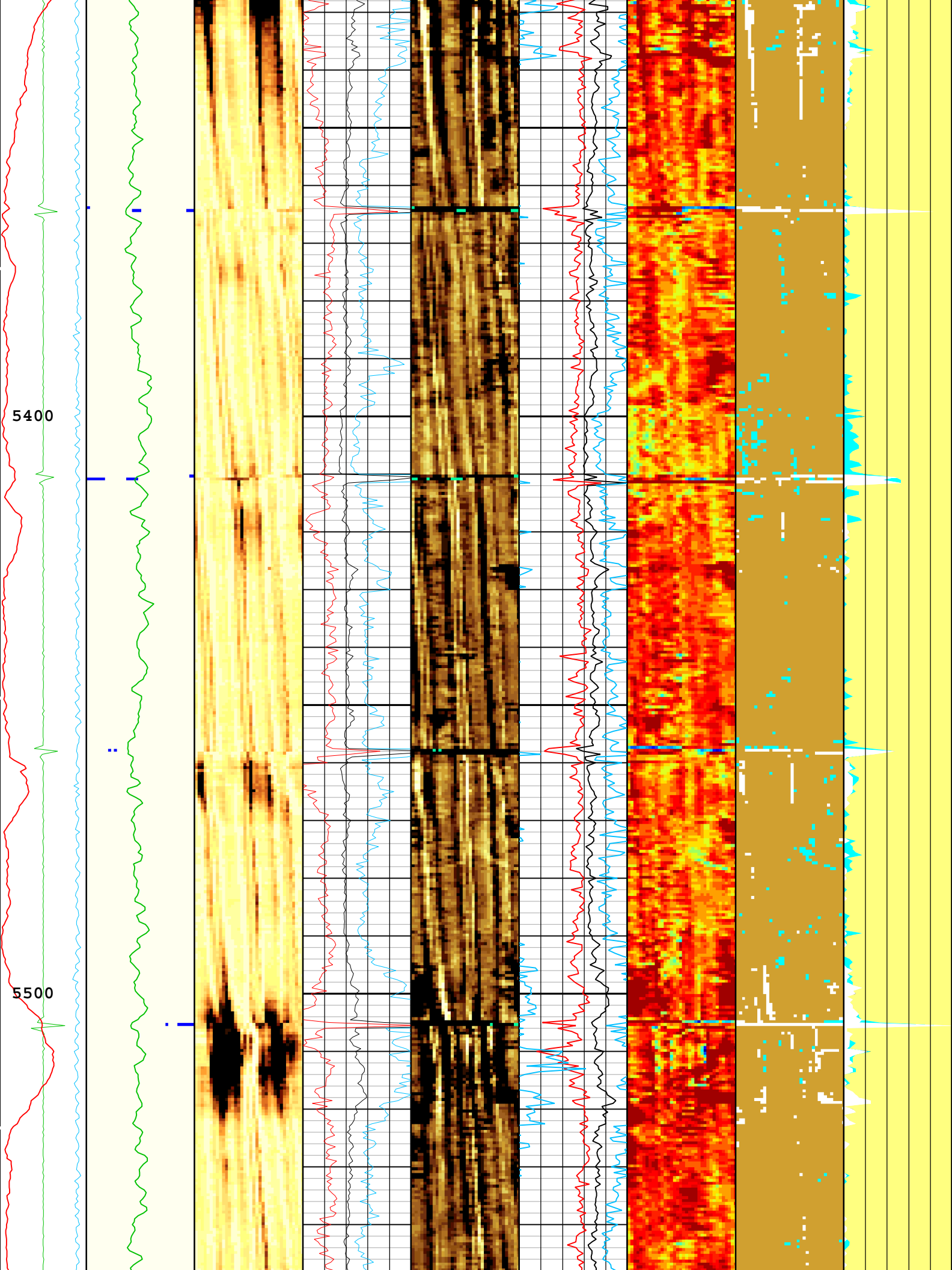


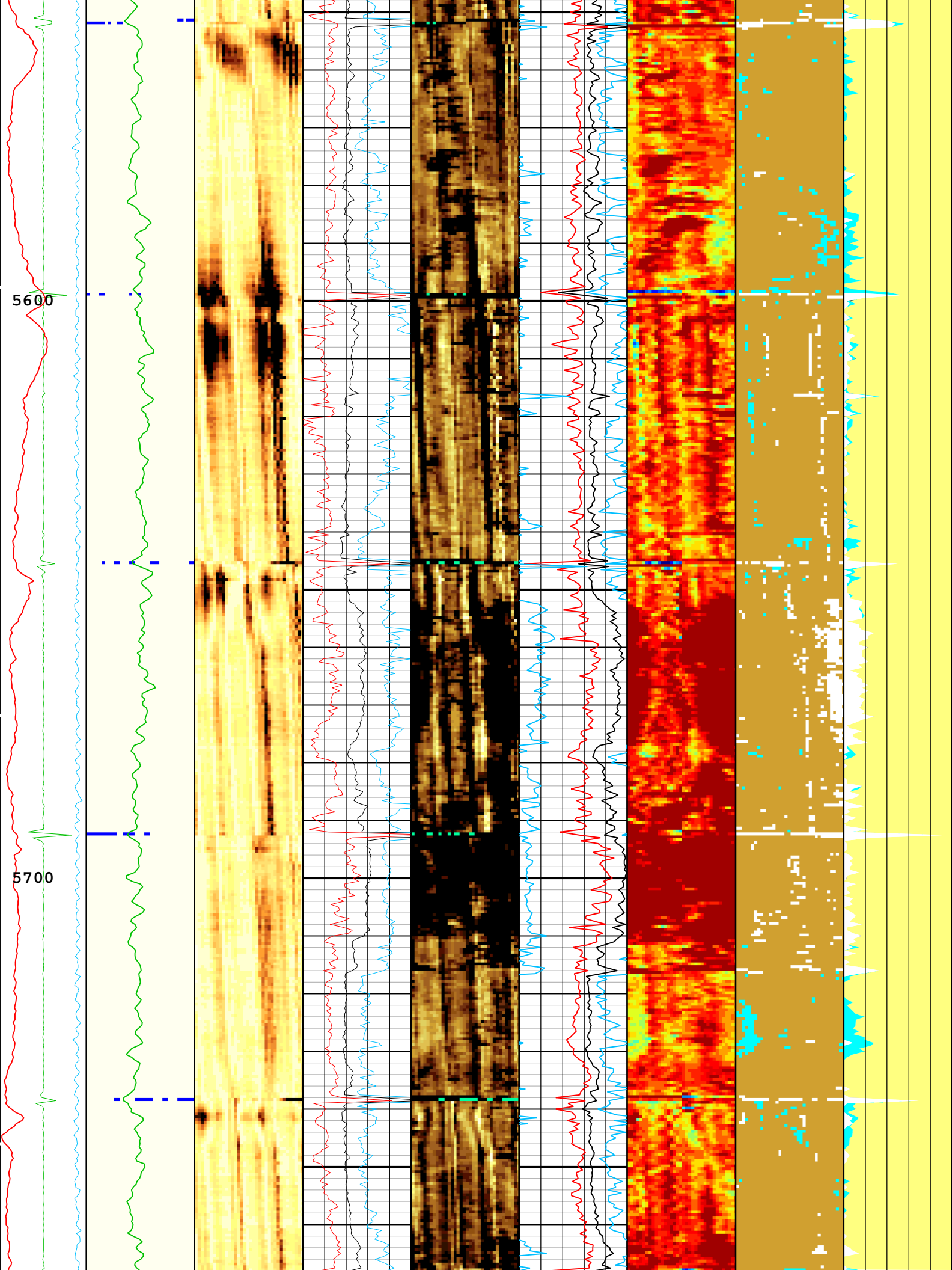


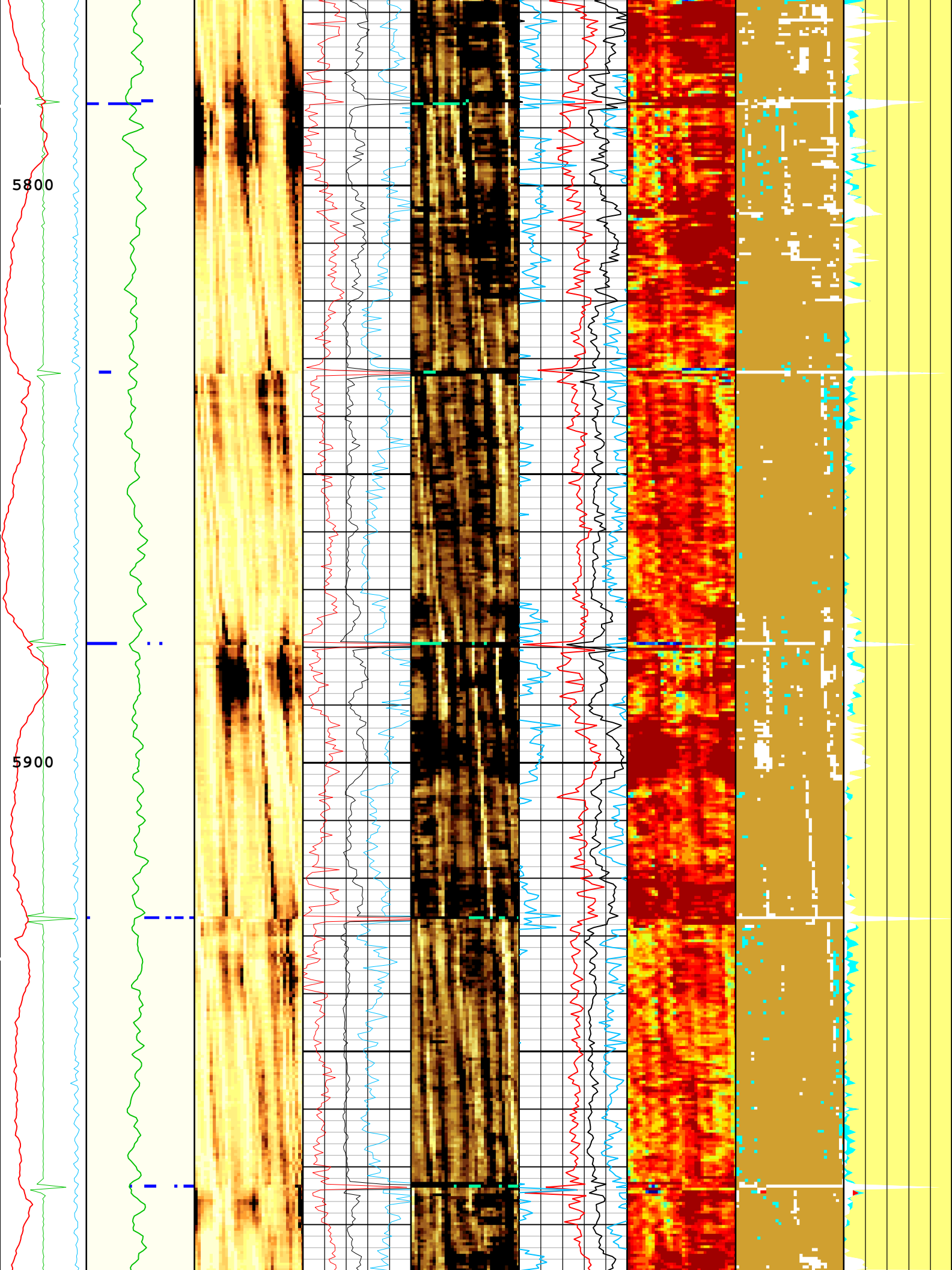


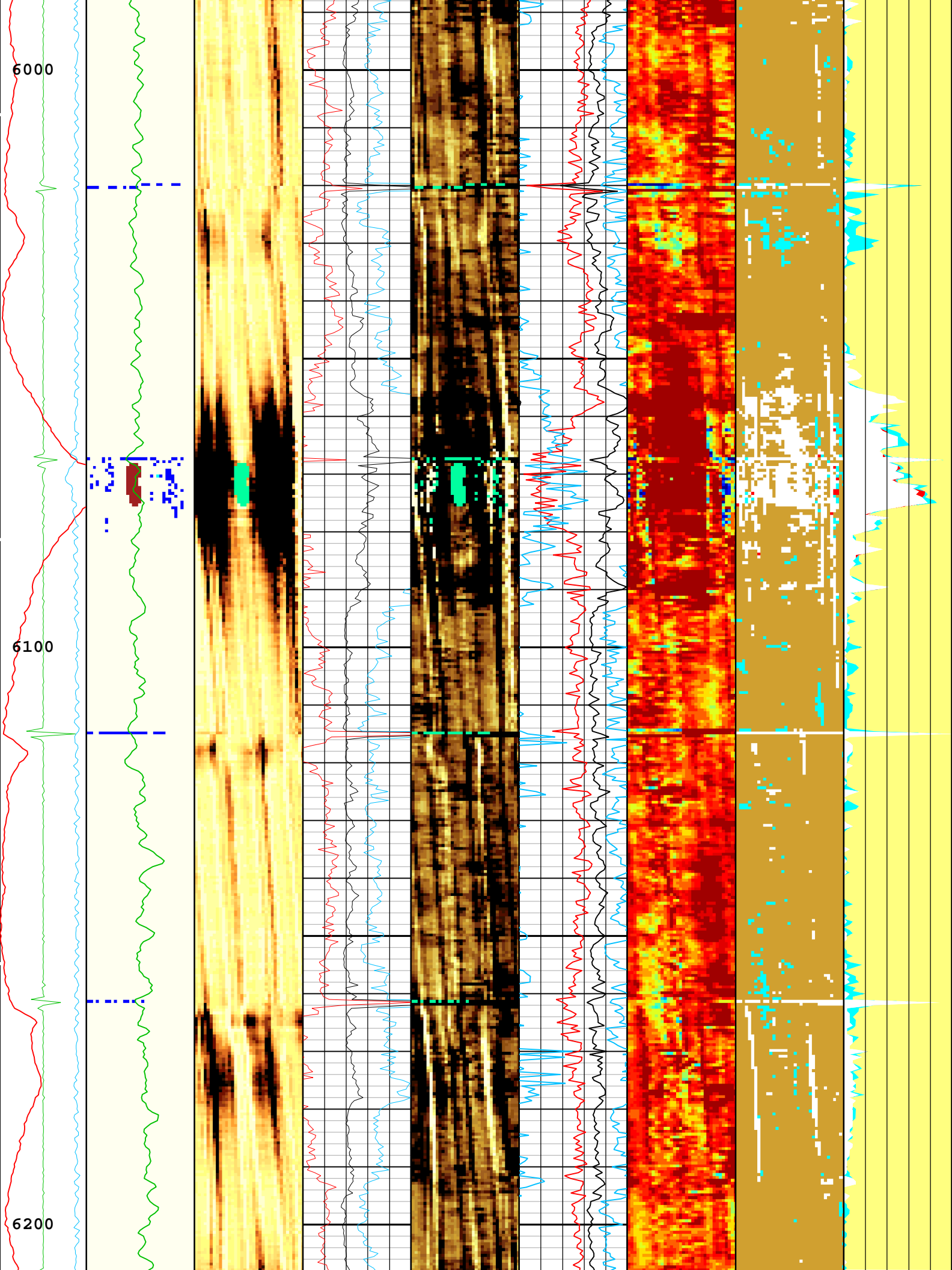


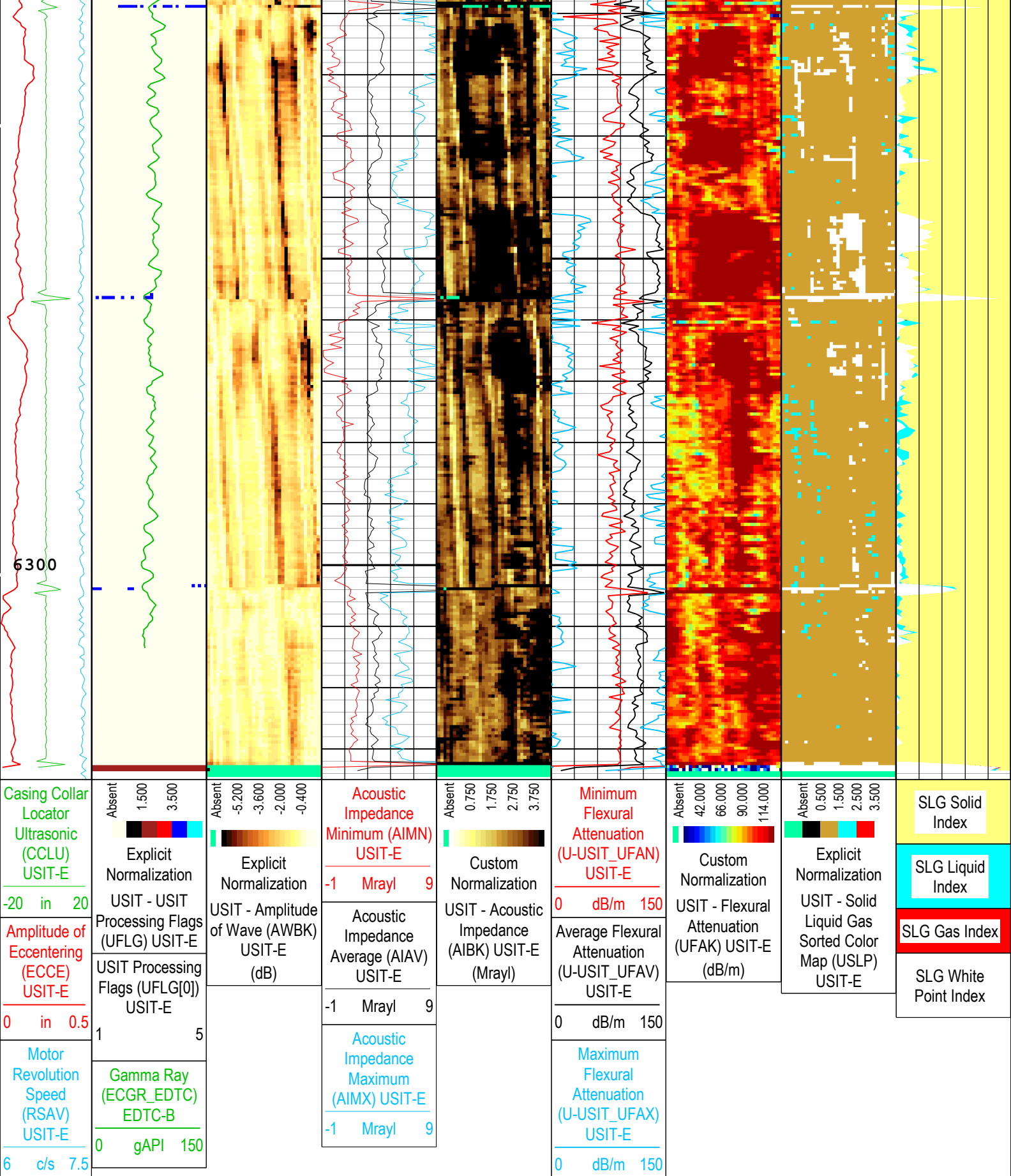












USIT Processing Flags (UFLG[0]) USIT-E

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

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

TIME_1900 - Time Marked every 60.00 (s)

Description: USI IBC SLG Format: Log (IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 22-Jan-2019 12:36:25

Channel Processing Parameters				
Isolation scanner: Parameters				
Parameter	Description	Tool	Value	Unit
BAR(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	11863	ft
CDEN	Cement Density	USIT-E	13	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	10	lbm/gal
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
GR_MULTIPLIER	Gamma Ray Multiplier	EDTC-B	1	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	10.94	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	IBC_FRP_OFFSET	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	FreePipe Norm.	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	Off	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	22.44	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.4	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1.15	
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	1.8	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-33.4	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	1.8	Mrayl

All depths are referenced to toolstring zero

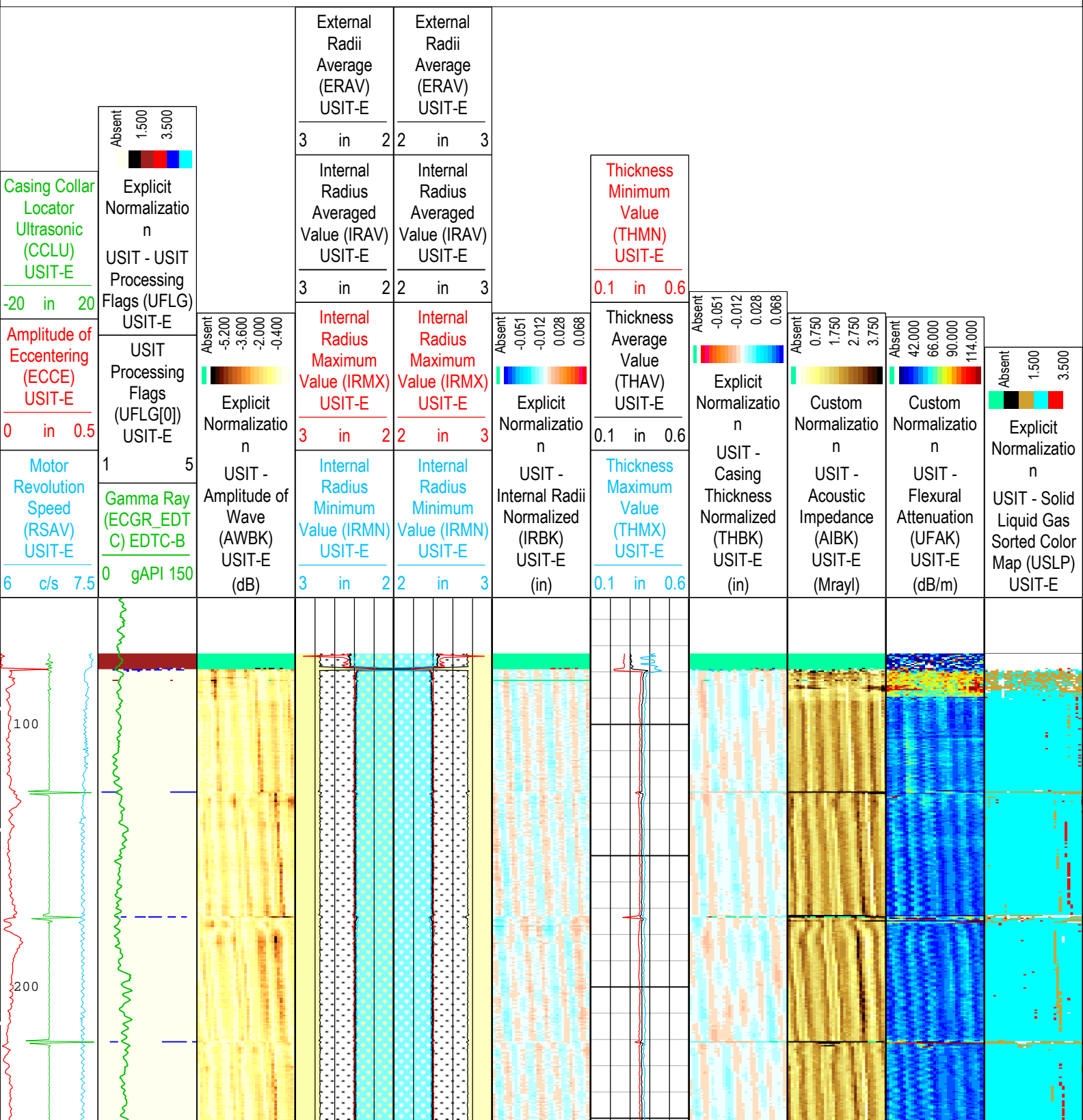
Description: USI IBC SLG Composite Format: Log (IBC SLG Composite) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth

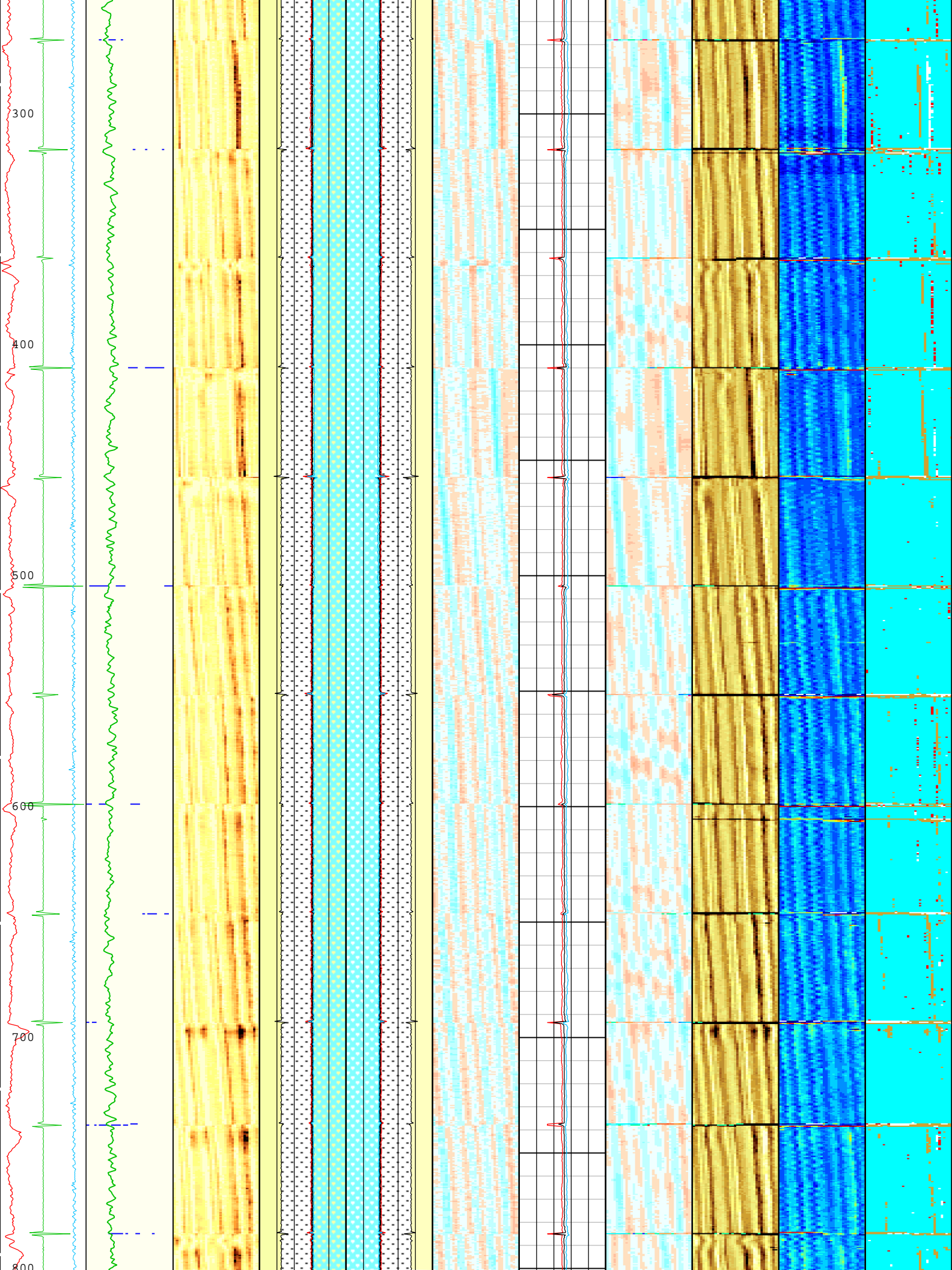
Creation Date: 22-Jan-2019 12:36:56

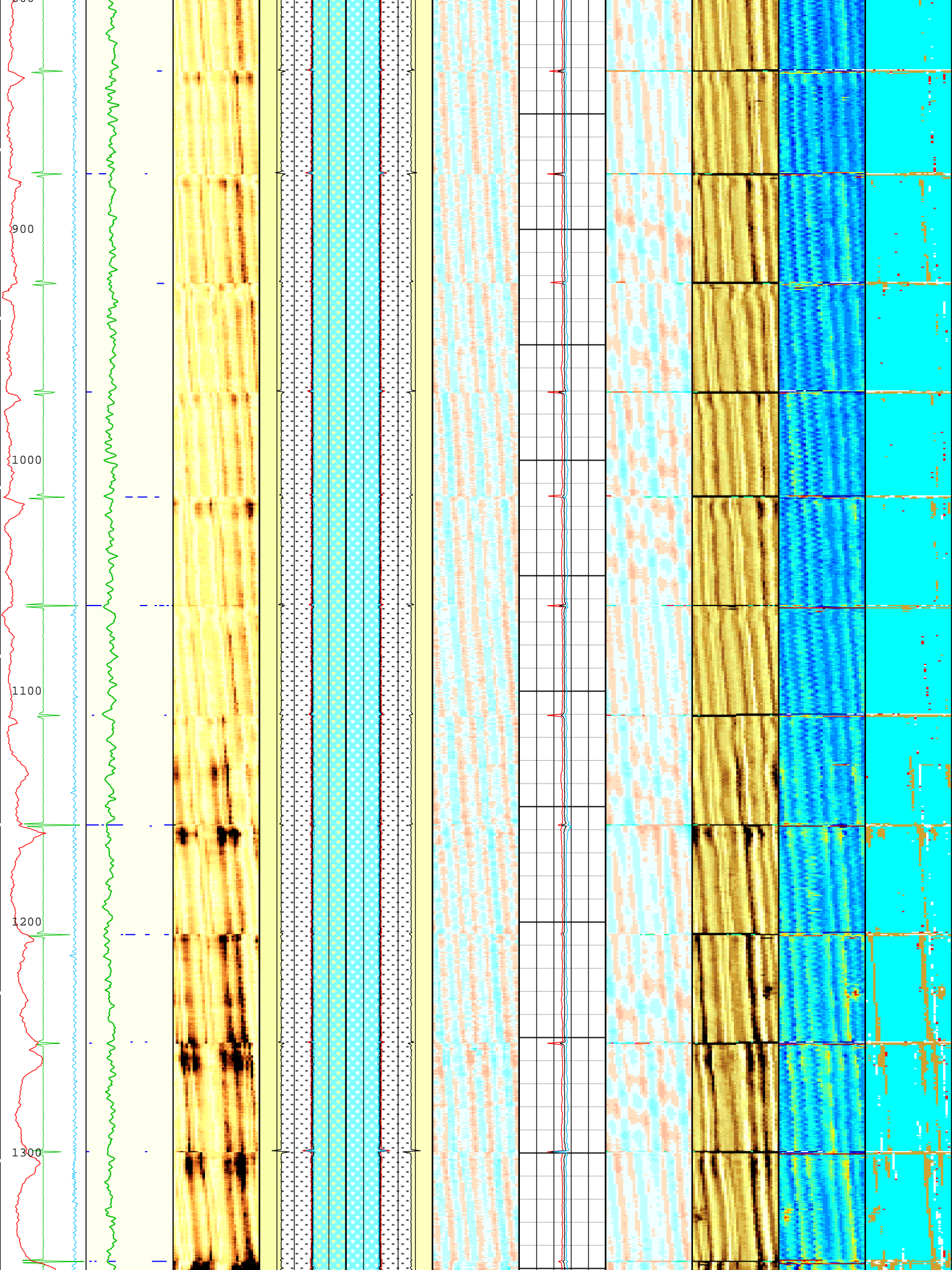
TIME_1900 - Time Marked every 60.00 (s)

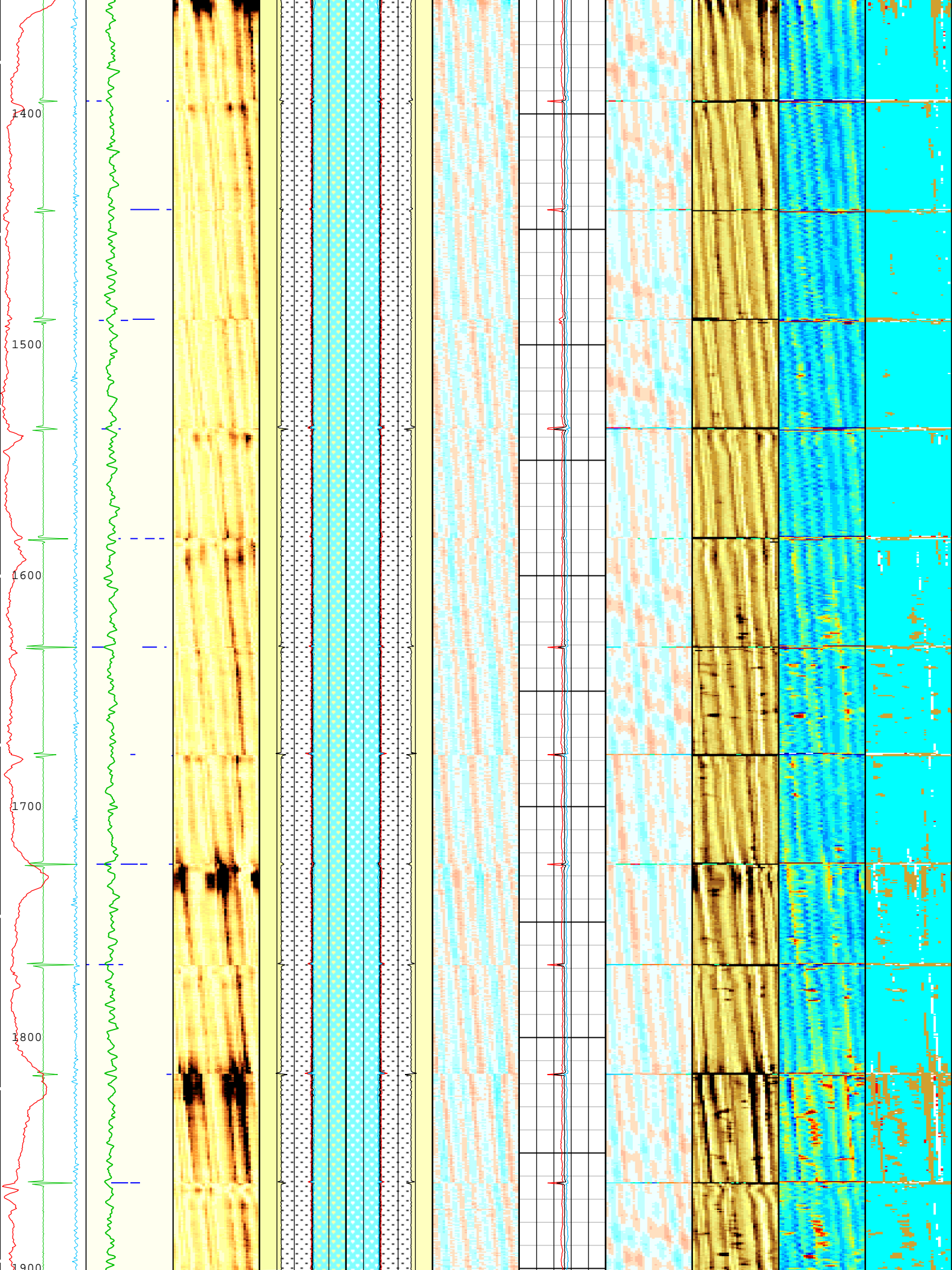
USIT Processing Flags (UFLG[0]) USIT-E

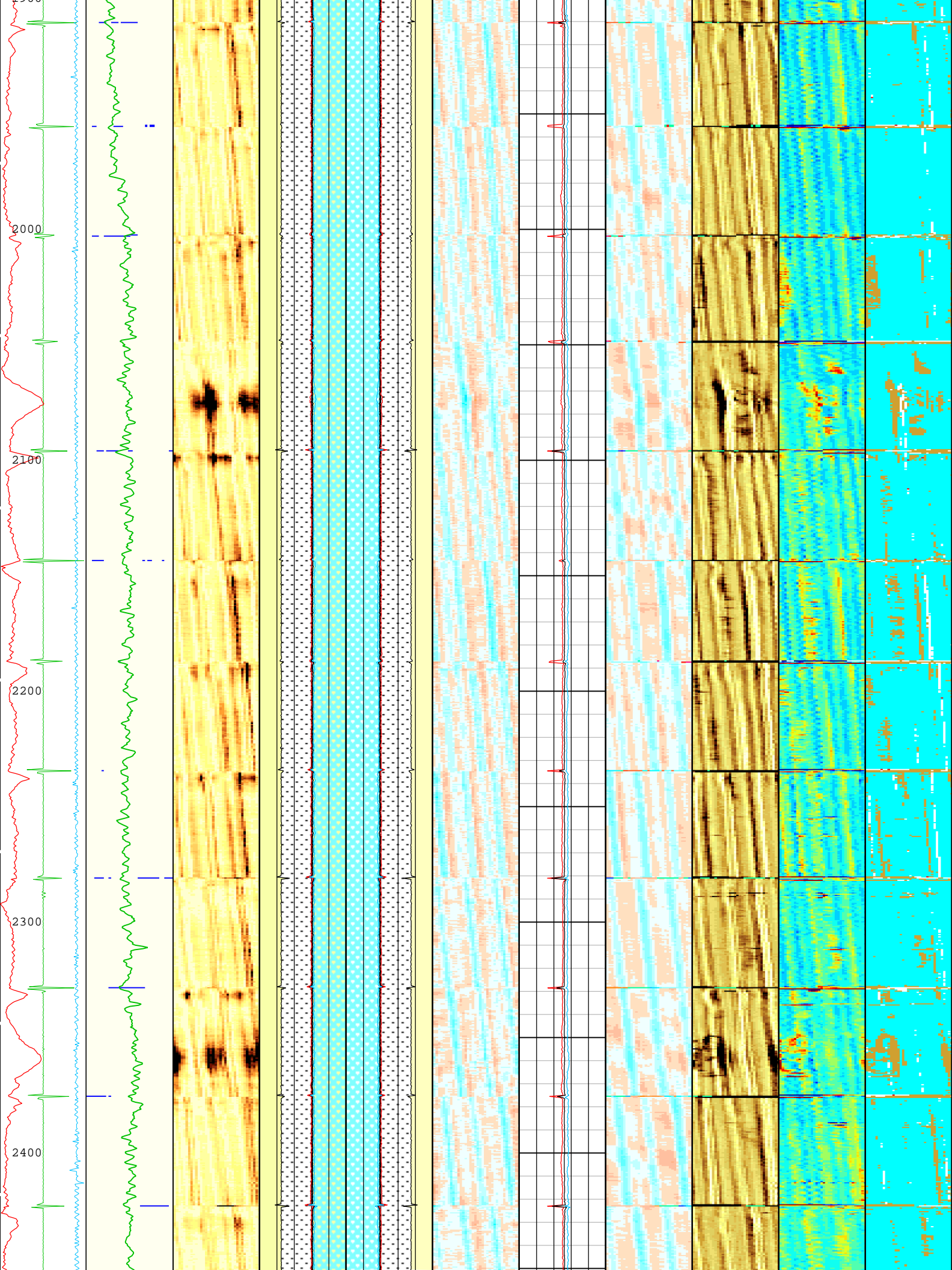
- | | |
|---|-----------------------------|
| 1 - UFLG 1 Value within [0.0 - 1.5] - : | ■ UTIM Error |
| 2 - UFLG 2 Value within [1.5 - 2.5] - : | ■ Pulse Origin Not Detected |
| 3 - UFLG 3 Value within [2.5 - 3.5] - : | ■ WINLEN Error |
| 4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - : | ■ Casing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

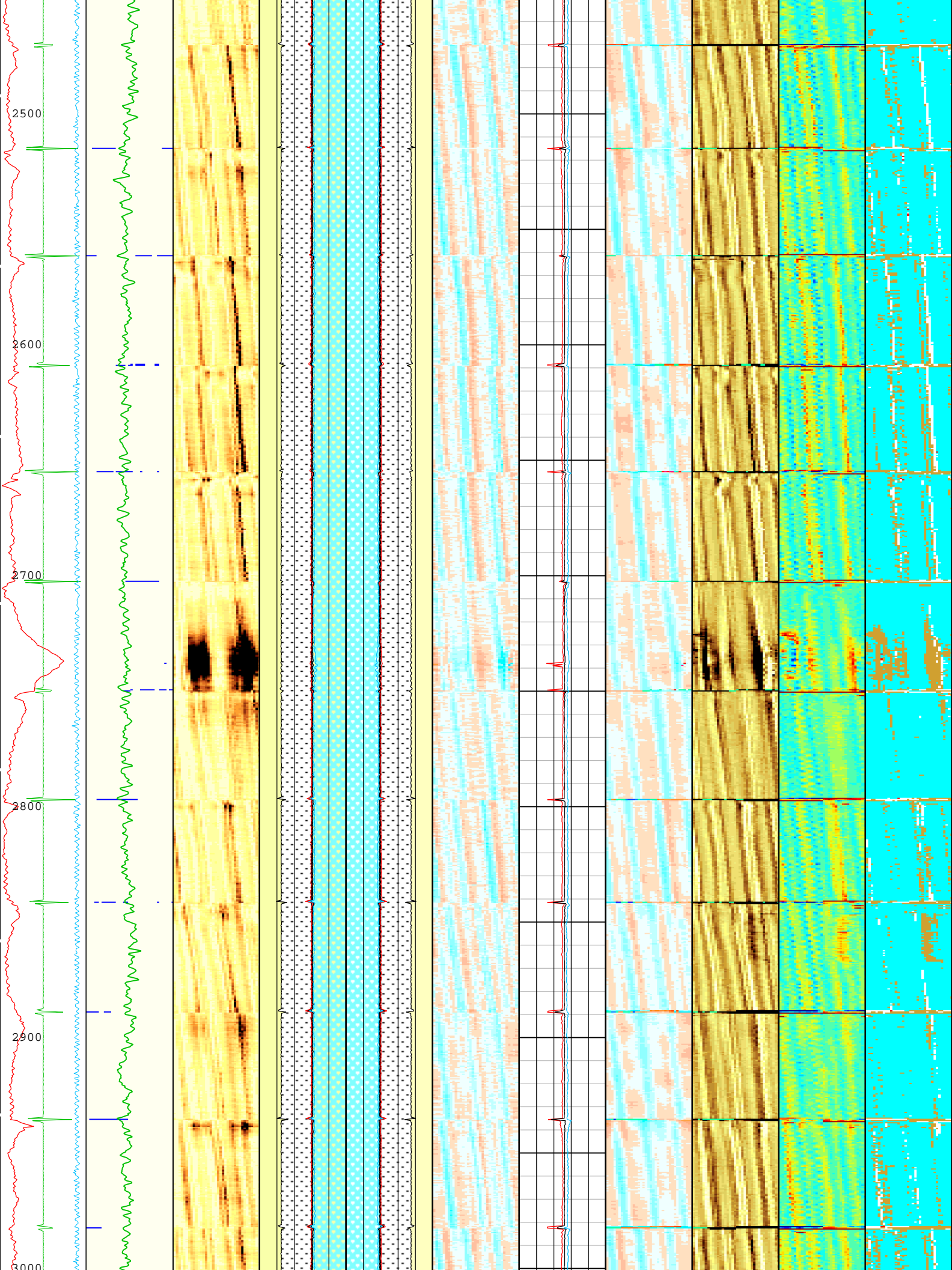


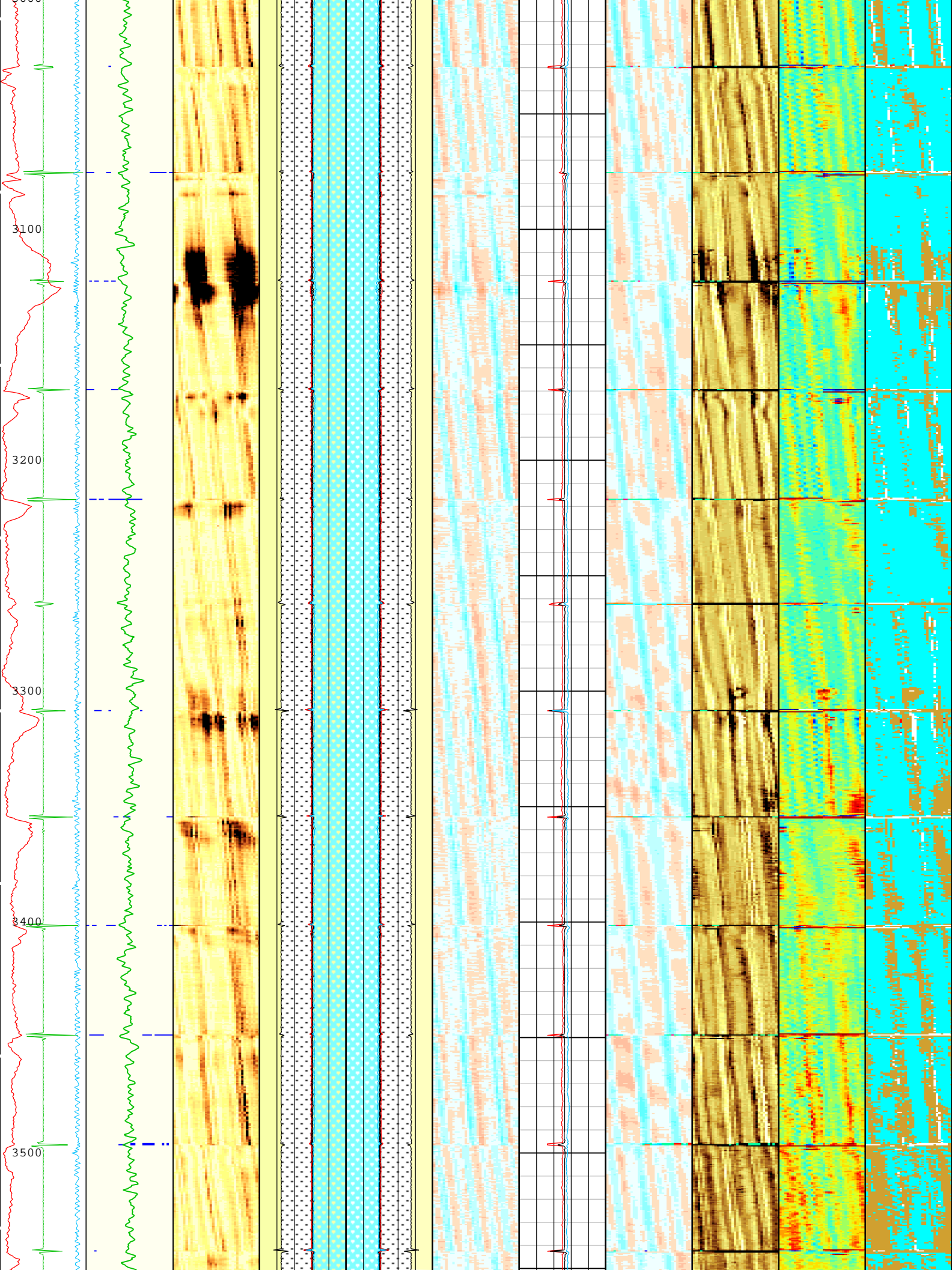


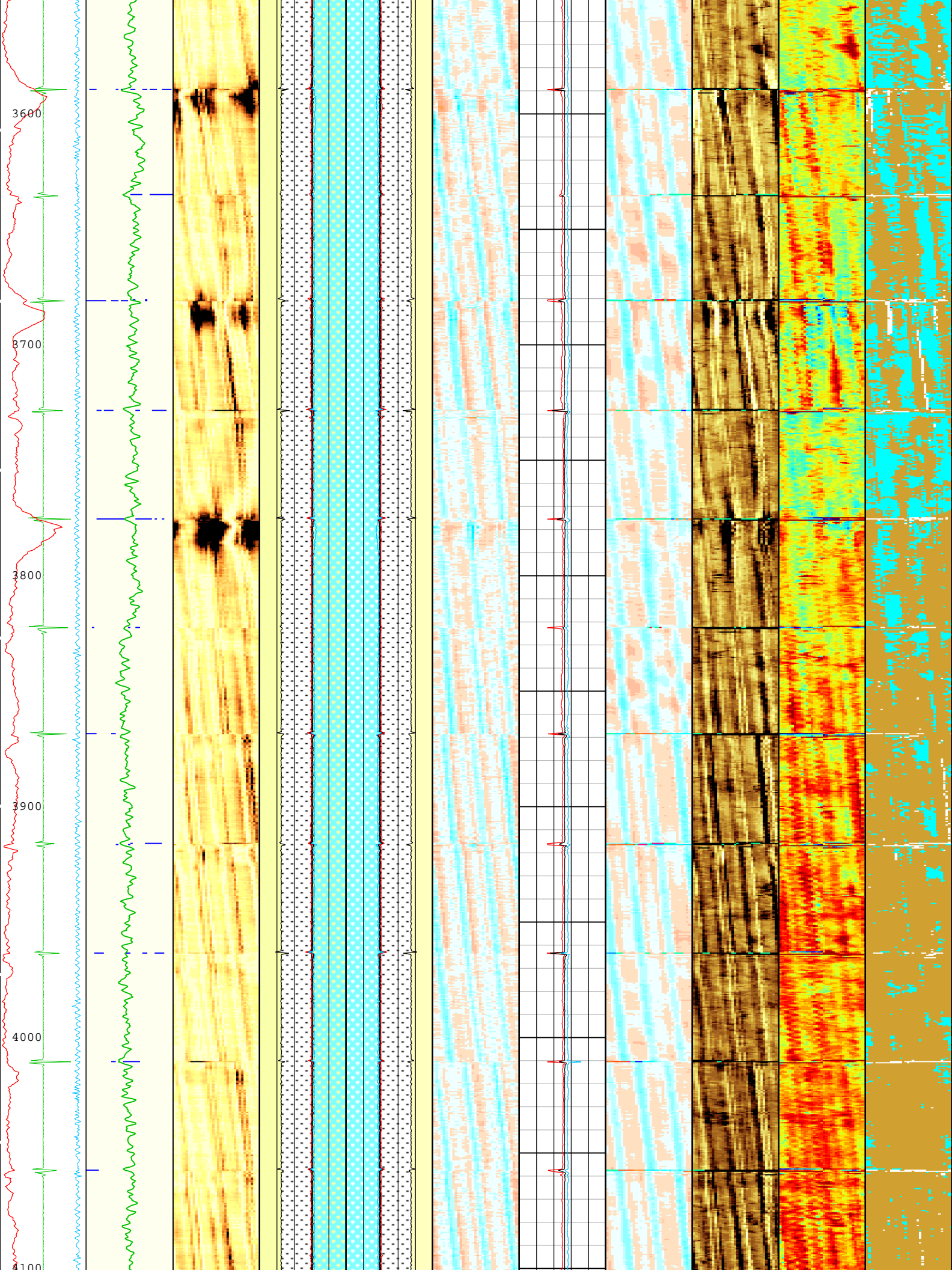


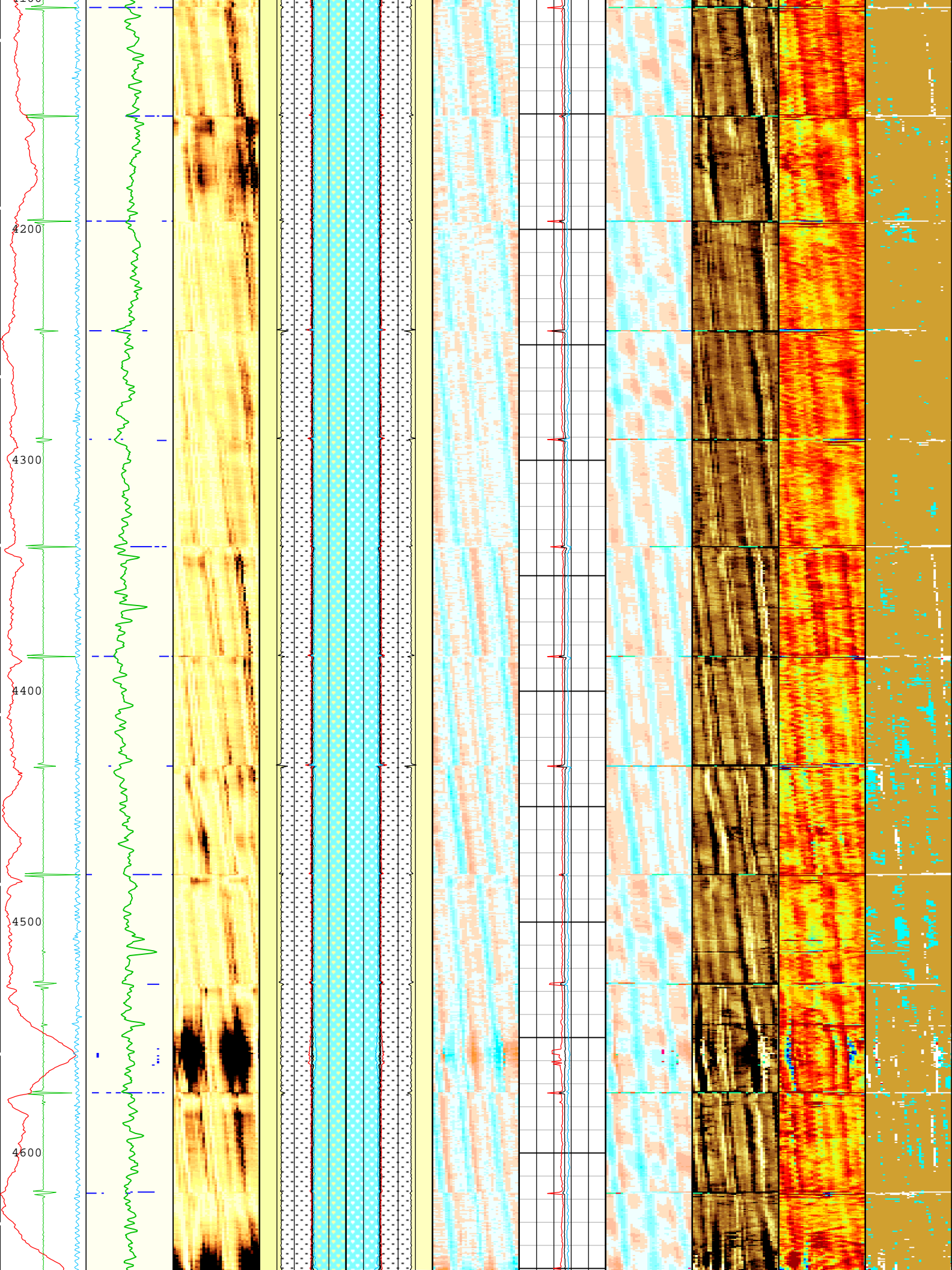


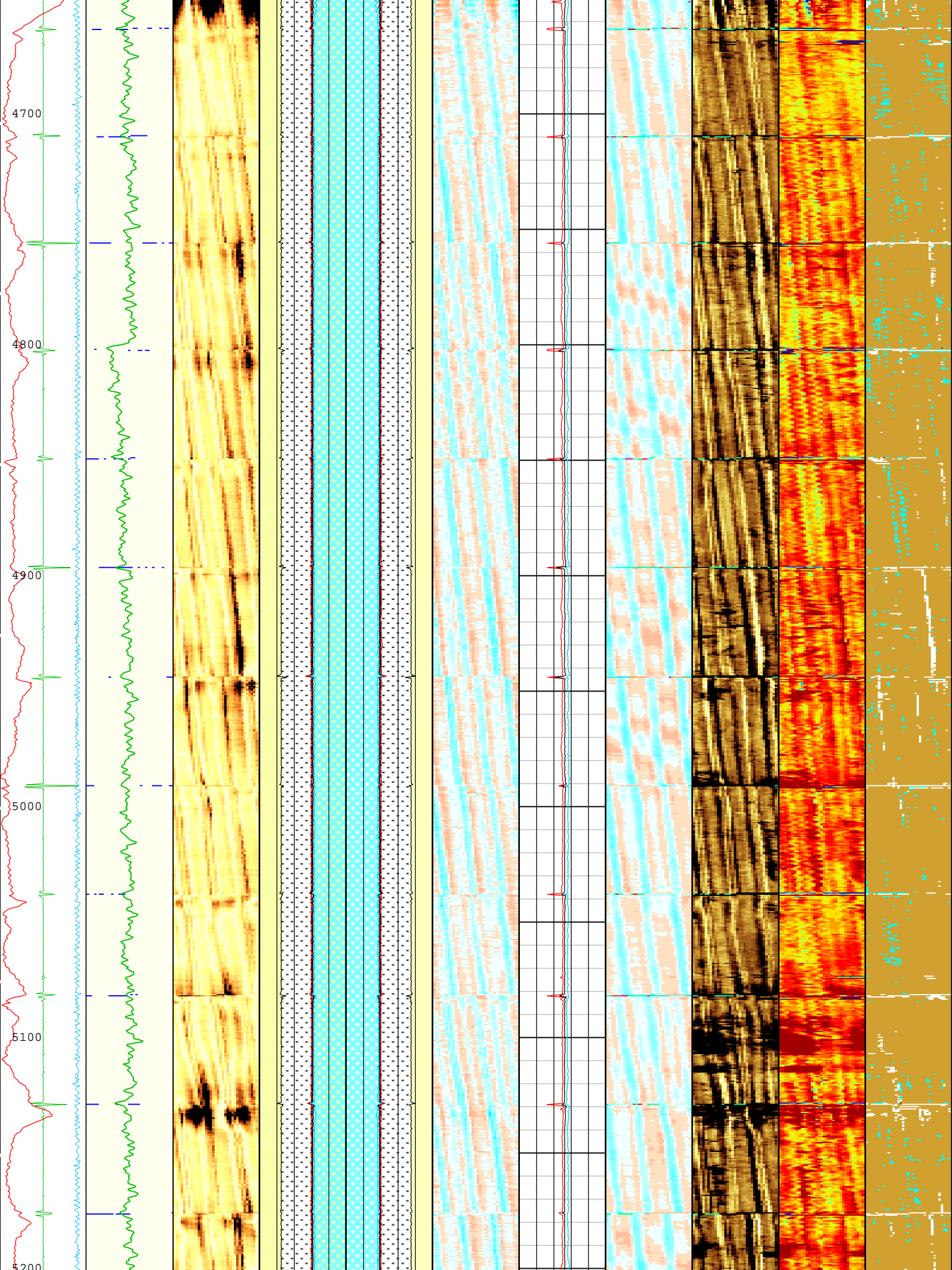


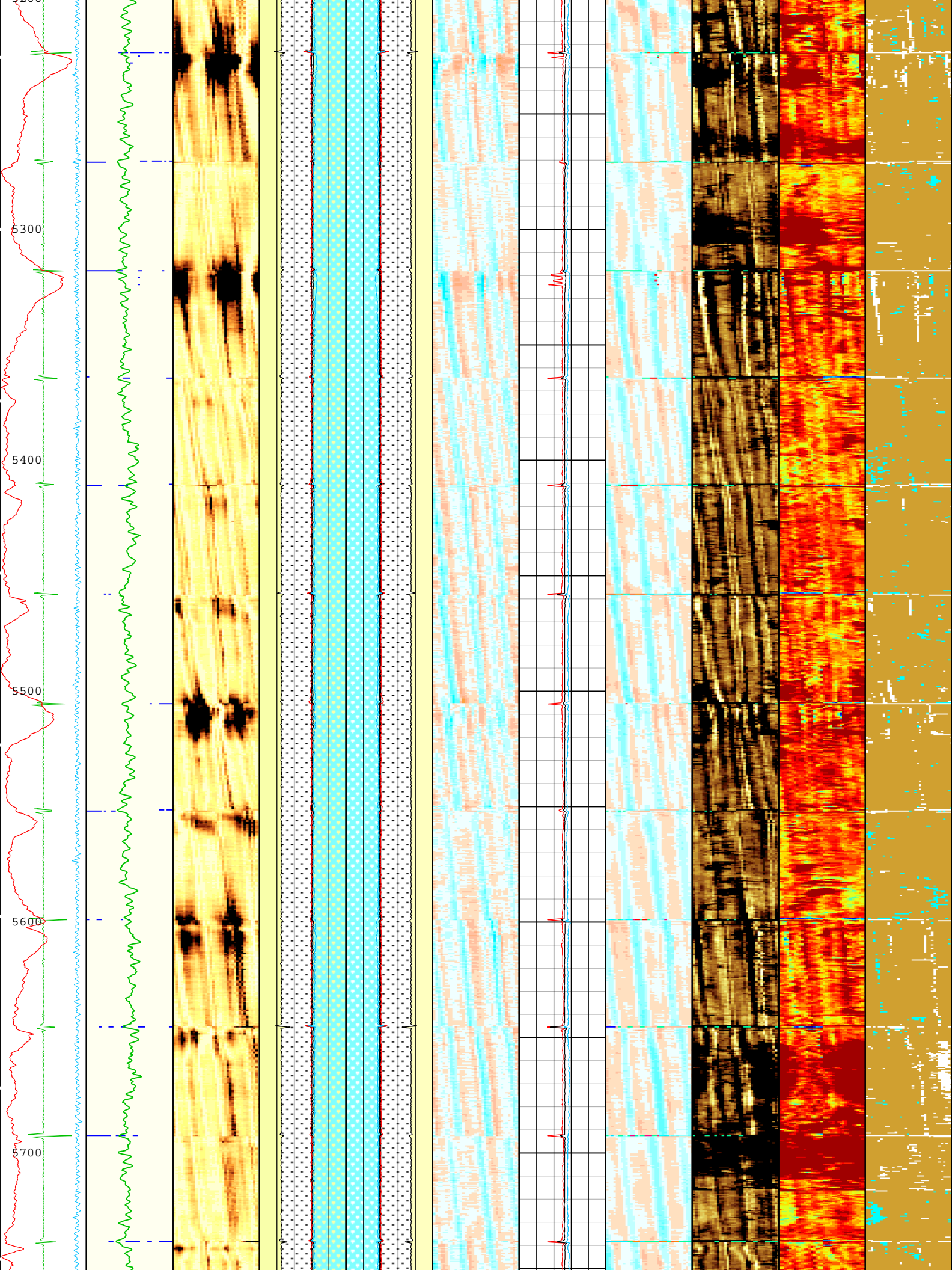


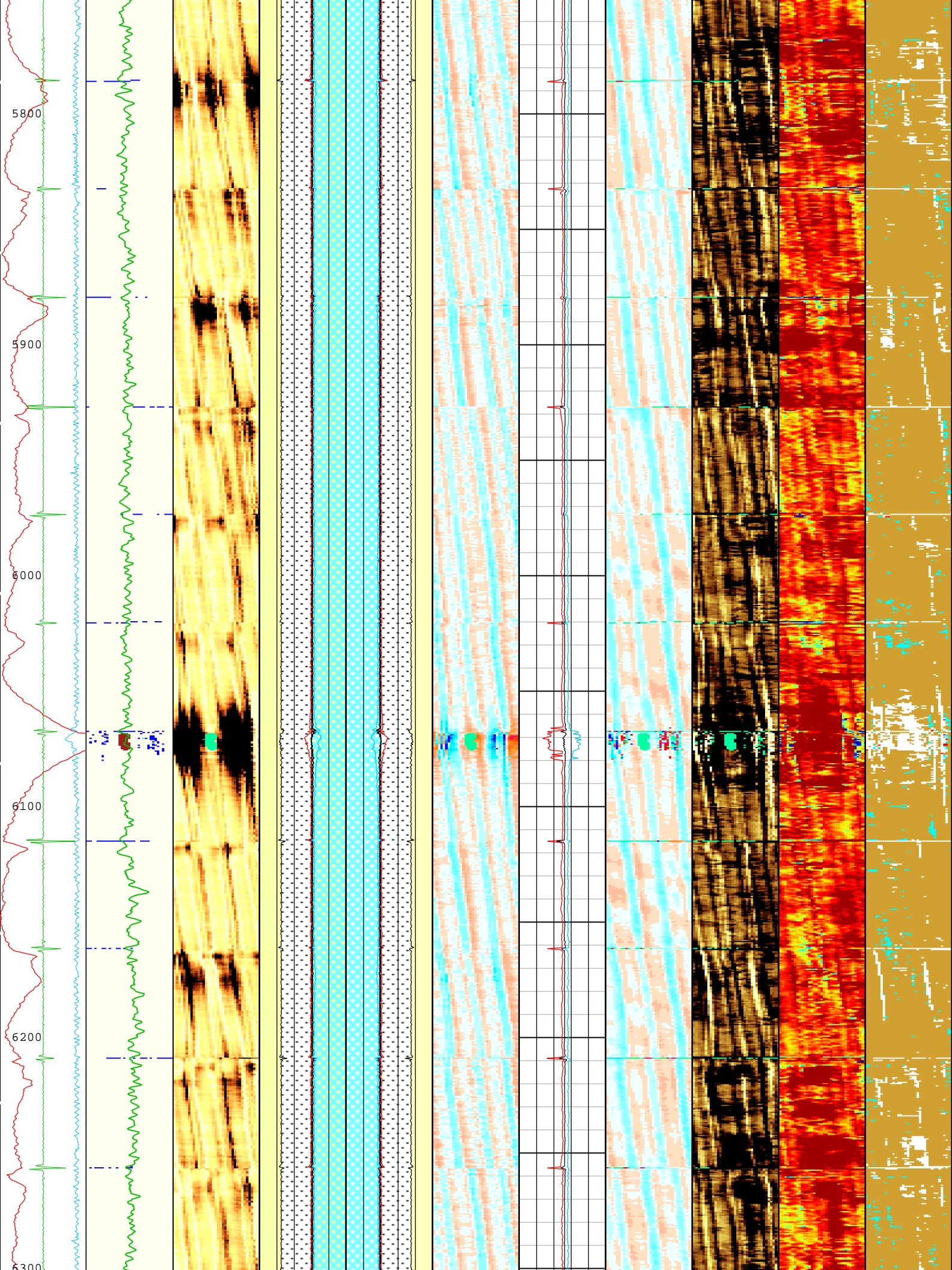












Channel Processing Parameters				
Isolation scanner: Parameters				
Parameter	Description	Tool	Value	Unit
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	11863	ft
CDEN	Cement Density	USIT-E	13	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	10	lbm/gal
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
HEMA	Hematite Presence Flag	Borehole	No	

IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	10.94	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	IBC_FRP_OFFSET	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	FreePipe Norm.	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	Off	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	22.44	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.4	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1.15	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.8	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-33.4	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	11.5	52	1977
BS	8.5	1977	6335

All depth are actual.

Tool Control Parameters

Isolation scanner: 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	Time Zoned	V
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	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

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
EMXV	45	22-Jan-2019 10:48:20	22-Jan-2019 11:25:23	6335.62	3652.65
EMXV	40	22-Jan-2019 11:25:23	22-Jan-2019 12:01:24	3652.65	982.4
EMXV	35	22-Jan-2019 12:01:24	22-Jan-2019 12:14:43	982.4	73.66

All depth are at tool zero.

Isolation scanner

IBC Goodwin Compressed

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Isolation scanner	Log[3]:Up	Up	73.66 ft	6335.62 ft	22-Jan-2019 10:48:20 AM	22-Jan-2019 12:14:43 PM	ON	3.18 ft	Yes

All depths are referenced to toolstring zero

Log

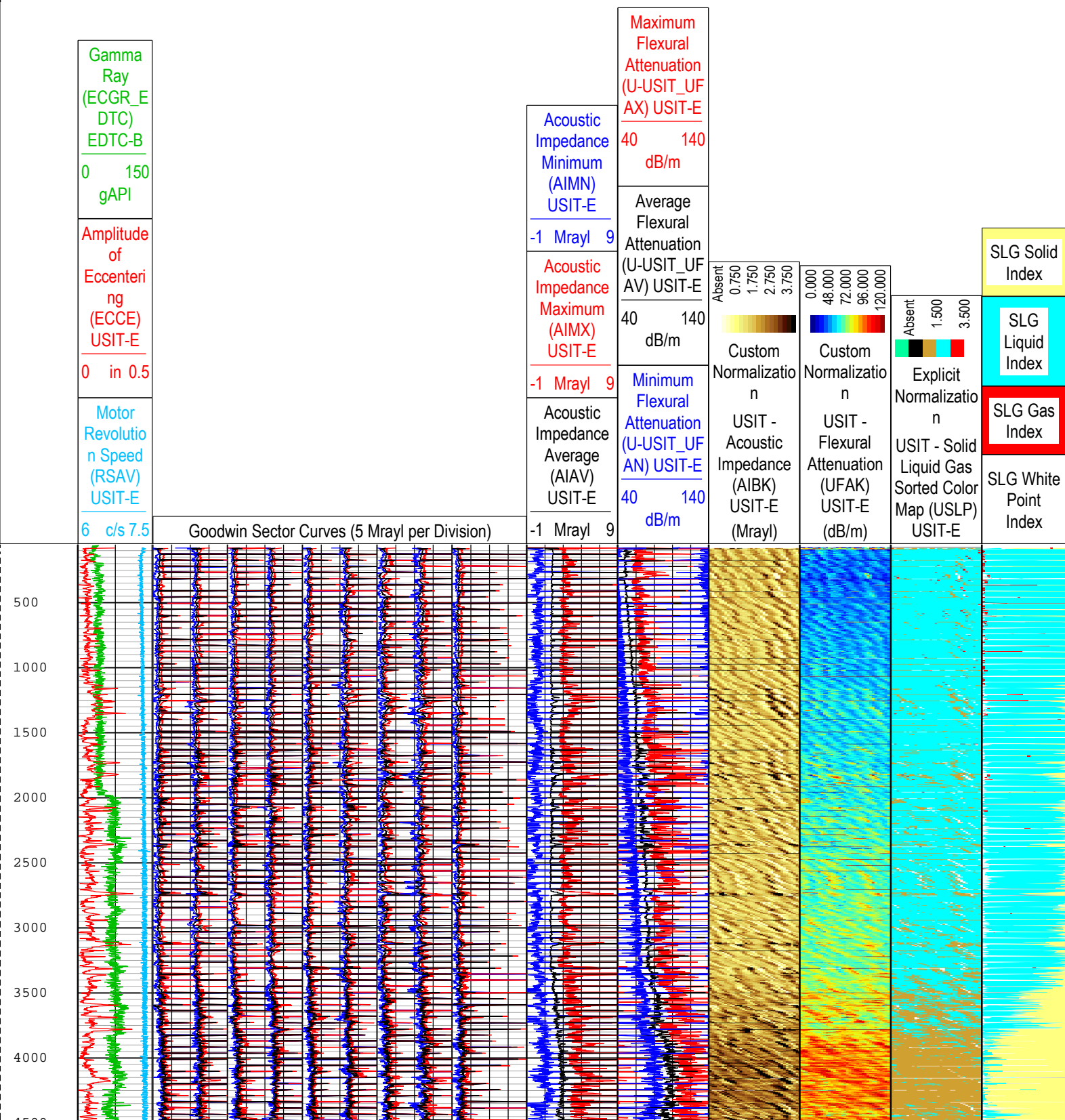
Company:Crestone Peak Resources Operating LLC

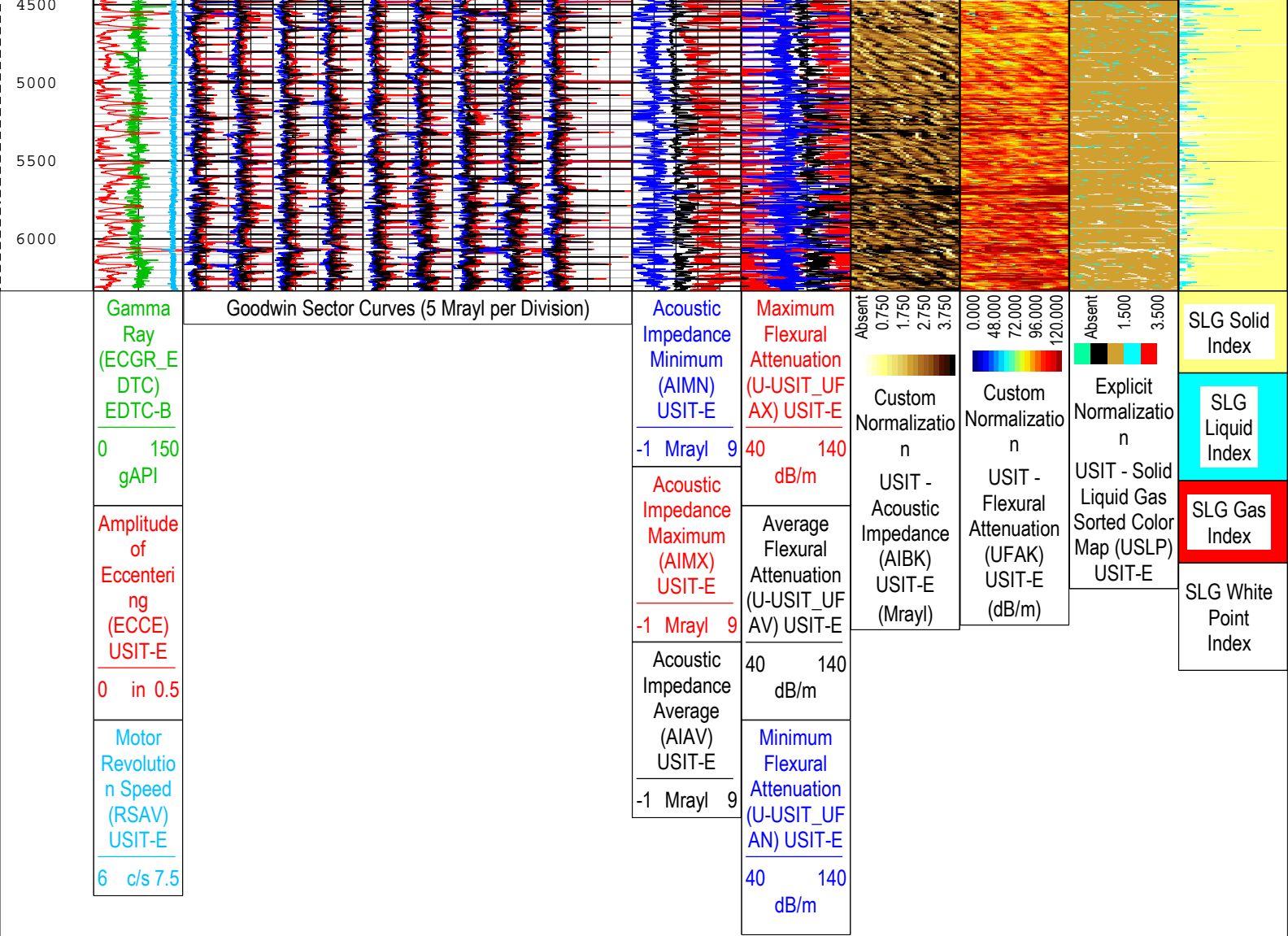
Well:Herren #1J-33H-H367

Isolation scanner: Log[3]:Up:S005

Description: USI Goodwin Format: Log (IBC Goodwin) Index Scale: 0.1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 22-Jan-2019 12:37:21

TIME_1900 - Time Marked every 60.00 (s)





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: 22-Jan-2019 12:37:21

Isolation scanner									
IBC SLG Repeat									
Software Version									
Acquisition System						Version			
Maxwell 2018 SP2						8.2.104493.3100			
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Isolation scanner	Log[1]:Up	Up	2189.58 ft	2497.88 ft	22-Jan-2019 10:28:03 AM	22-Jan-2019 10:32:15 AM	ON	1.62 ft	Yes
All depths are referenced to toolstring zero									
Log	Company:Crestone Peak Resources Operating LLC Well:Herren #1J-33H-H367 Isolation scanner: Log[1]:Up:S005								

Description: USI IBC SLG Format: Log (IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 22-Jan-2019 12:37:31

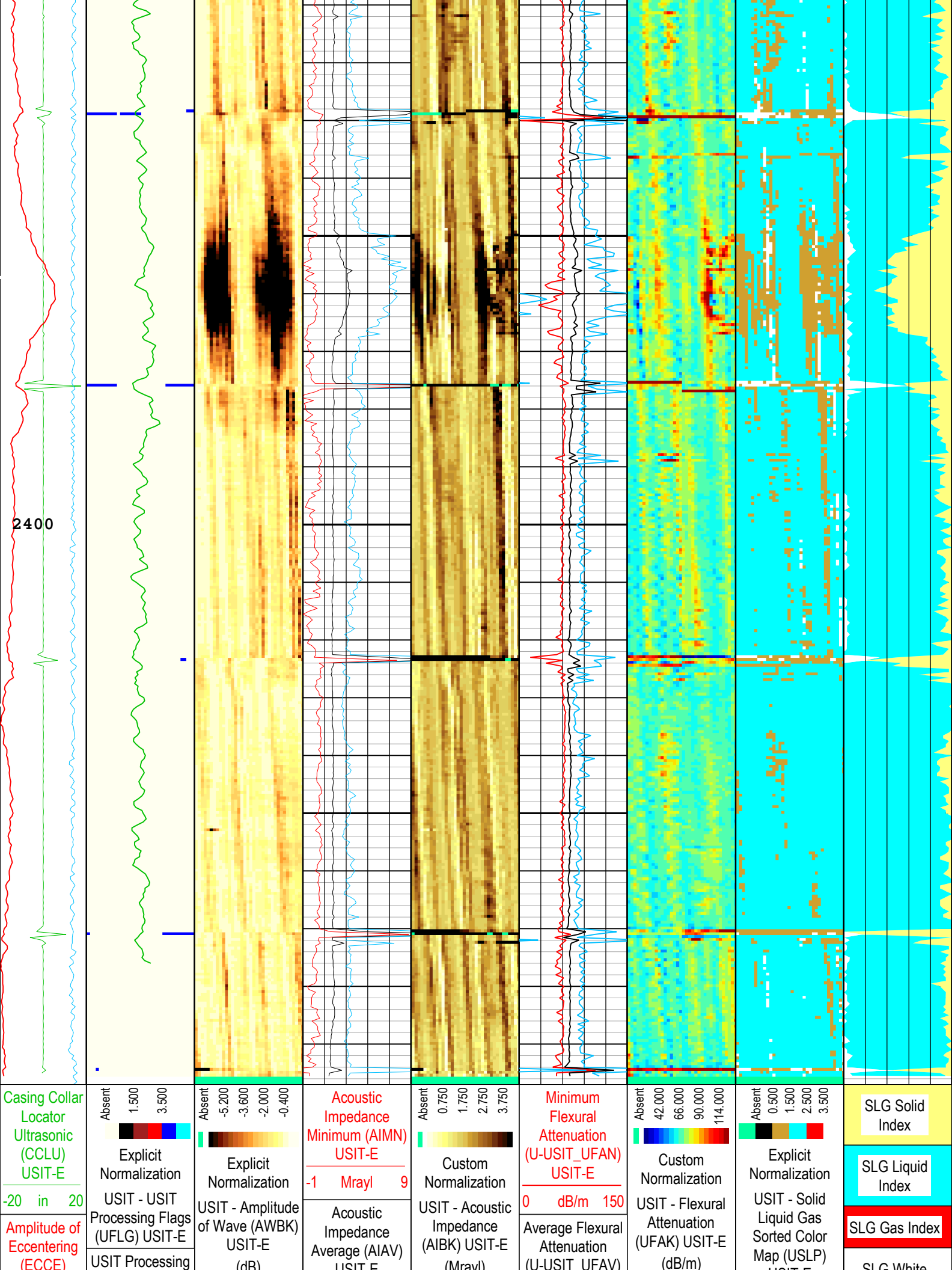
TIME_1900 - Time Marked every 60.00 (s)

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

<div>Casing Collar Locator Ultrasonic (CCLU) USIT-E</div> <div>Amplitude of Eccentering (ECCE) USIT-E</div> <div>Motor Revolution Speed (RSAV) USIT-E</div>	<div>USIT - USIT Processing Flags (UFLG) USIT-E</div> <div>USIT Processing Flags (UFLG[0]) USIT-E</div> <div>Gamma Ray (ECGR_EDTC) EDTC-B</div>	<div>Explicit Normalization</div> <div>USIT - Amplitude of Wave (AWBK) USIT-E (dB)</div>	<div>Acoustic Impedance Minimum (AIMN) USIT-E</div> <div>Acoustic Impedance Average (AIAV) USIT-E</div> <div>Acoustic Impedance Maximum (AIMX) USIT-E</div>	<div>Custom Normalization</div> <div>USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)</div>	<div>Minimum Flexural Attenuation (U-USIT_UFAN) USIT-E</div> <div>Average Flexural Attenuation (U-USIT_UFAV) USIT-E</div> <div>Maximum Flexural Attenuation (U-USIT_UFAX) USIT-E</div>	<div>Custom Normalization</div> <div>USIT - Flexural Attenuation (UFAK) USIT-E (dB/m)</div>	<div>Explicit Normalization</div> <div>USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E</div>	<div>SLG Solid Index</div> <div>SLG Liquid Index</div> <div>SLG Gas Index</div> <div>SLG White Point Index</div>
<div>2200</div> <div>2300</div>	<div>0</div> <div>150</div>	<div>Absent</div> <div>1.500</div> <div>3.500</div>	<div>Absent</div> <div>-1</div> <div>9</div>	<div>Absent</div> <div>0.750</div> <div>1.750</div> <div>2.750</div> <div>3.750</div>	<div>Absent</div> <div>0</div> <div>150</div>	<div>Absent</div> <div>42.000</div> <div>66.000</div> <div>90.000</div> <div>114.000</div>	<div>Absent</div> <div>0.500</div> <div>1.500</div> <div>2.500</div> <div>3.500</div>	<div>SLG Solid Index</div> <div>SLG Liquid Index</div> <div>SLG Gas Index</div> <div>SLG White Point Index</div>



2400

Casing Collar
Locator
Ultrasonic
(CCLU)
USIT-E

-20 in 20

Amplitude of
Eccentering
(ECCE)

Absent 1.500 3.500

Explicit
Normalization

USIT - USIT
Processing Flags
(UFLG) USIT-E

USIT Processing

Absent -5.200 -3.600 -2.000 -0.400

Explicit
Normalization

USIT - Amplitude
of Wave (AWBK)
USIT-E
(dB)

Acoustic
Impedance
Minimum (AIMN)
USIT-E

-1 Mrayl 9

Acoustic
Impedance
Average (AIAV)
USIT-E

Absent 0.750 1.750 2.750 3.750

Custom
Normalization

USIT - Acoustic
Impedance
(AIBK) USIT-E
(Mrayl)

Minimum
Flexural
Attenuation
(U-USIT_UFAN)
USIT-E

0 dB/m 150

Average Flexural
Attenuation
(U-USIT_UFAV)

Absent 42.000 66.000 90.000 114.000

Custom
Normalization

USIT - Flexural
Attenuation
(UFAK) USIT-E
(dB/m)

Absent 0.500 1.500 2.500 3.500

Explicit
Normalization

USIT - Solid
Liquid Gas
Sorted Color
Map (USLP)
USIT-E

SLG Solid
Index

SLG Liquid
Index

SLG Gas Index

SLG White

USIT-E	Flags (UFLG[0]) USIT-E	(dB)	USIT-E	(mrayl)	USIT-E	USIT-E	SLG White Point Index
0 in 0.5	1 5	-1 Mrayl 9	0 dB/m 150				
Motor Revolution Speed (RSAV) USIT-E	Gamma Ray (ECGR_EDTC) EDTC-B	Acoustic Impedance Maximum (AIMX) USIT-E	Maximum Flexural Attenuation (U-USIT_UFAX) USIT-E				
6 c/s 7.5	0 gAPI 150	-1 Mrayl 9	0 dB/m 150				

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

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

2 - UFLG 2 Value within [1.5 - 2.5] - :

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

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

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

Pulse Origin Not Detected

WINLEN Error

Casing Thickness Error

Loop Processing Error

TIME_1900 - Time Marked every 60.00 (s)

Description: USI IBC SLG Format: Log (IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 22-Jan-2019 12:37:31

Channel Processing Parameters				
Isolation scanner: 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	11863	ft
CDEN	Cement Density	USIT-E	13	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	10	lbm/gal
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
GR_MULTIPLIER	Gamma Ray Multiplier	EDTC-B	1	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	10.94	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	IBC_FRP_OFFSET	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	FreePipe Norm.	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	Off	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	22.44	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.4	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1.15	
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	1.8	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-33.4	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	1.8	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

Isolation scanner: 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	Time Zoned	V	
HRES	Horizontal Resolution	USIT-E	10 deg		
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz		
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us	
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes		
MOTOR_PROTECT	Motor Protection	USIT-E	On		
UACLV_PERM	Ultrasonic ACLV Permanent	USIT-E	Yes		
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	Time Zoned	us	
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	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	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)
EMXV	50	22-Jan-2019 10:28:03	22-Jan-2019 10:28:38	2497.88	2457.13
EMXV	45	22-Jan-2019 10:28:38	22-Jan-2019 10:32:15	2457.13	2189.58
U-USIT_UFWB	137	22-Jan-2019 10:28:03	22-Jan-2019 10:29:08	2497.88	2421.29
U-USIT_UFWB	135.05	22-Jan-2019 10:29:08	22-Jan-2019 10:32:15	2421.29	2189.58

U-USIT_UFWE	177	22-Jan-2019 10:28:03	22-Jan-2019 10:29:02	2497.88	2428.32
U-USIT_UFWE	174.98	22-Jan-2019 10:29:02	22-Jan-2019 10:32:15	2428.32	2189.58
U-USIT_UNWB	106	22-Jan-2019 10:28:03	22-Jan-2019 10:29:06	2497.88	2423.43
U-USIT_UNWB	102.98	22-Jan-2019 10:29:06	22-Jan-2019 10:32:15	2423.43	2189.58
U-USIT_UNWE	146	22-Jan-2019 10:28:03	22-Jan-2019 10:28:59	2497.88	2432.18
U-USIT_UNWE	143.89	22-Jan-2019 10:28:59	22-Jan-2019 10:32:15	2432.18	2189.58

All depth are at tool zero.

No Data Assignment

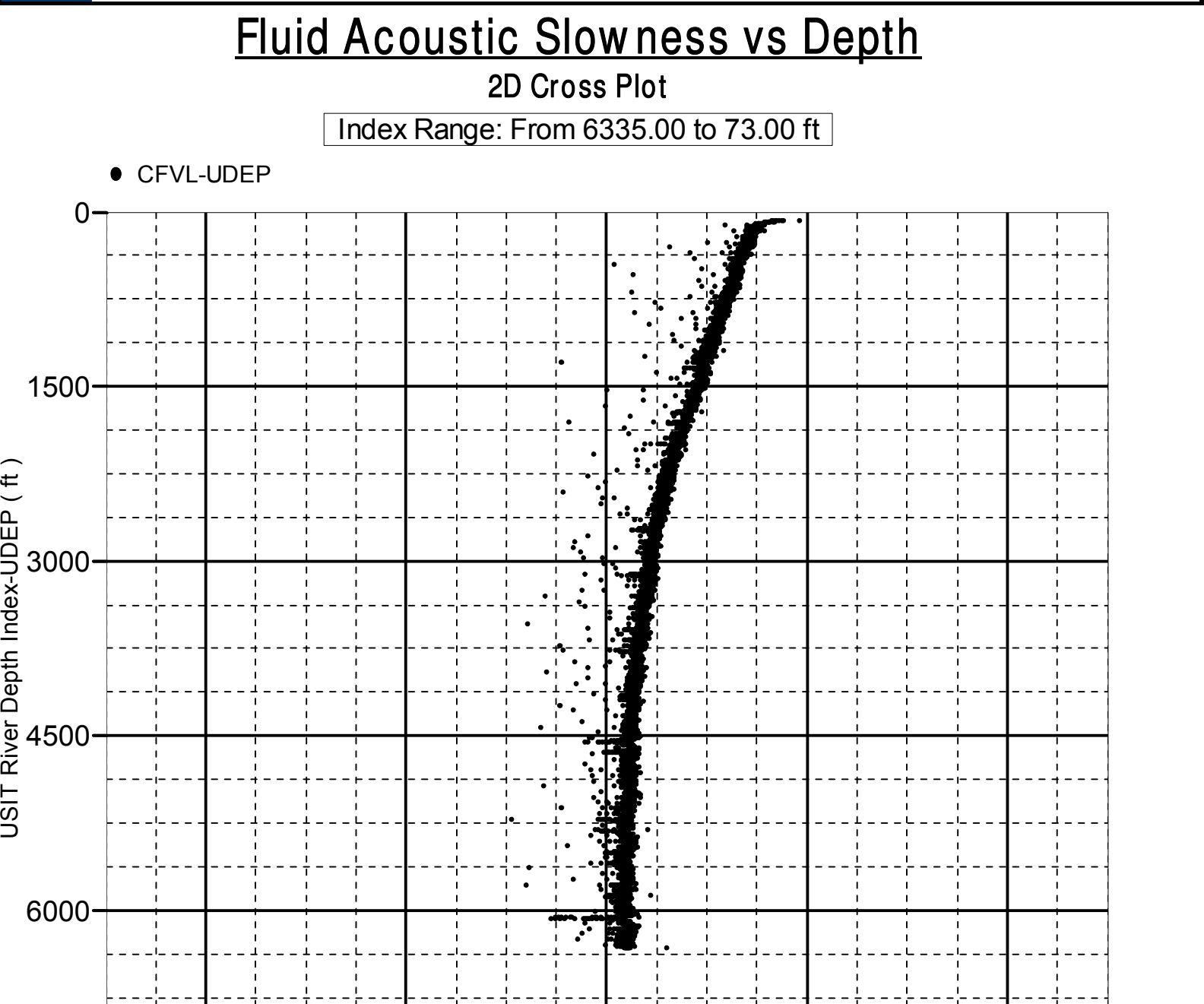
IBC SLG Composite Repeat

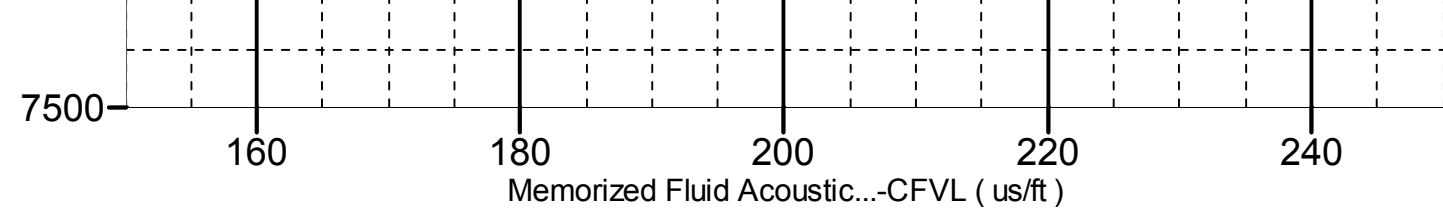
Log

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: 22-Jan-2019 12:37:35

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: 22-Jan-2019 12:37:35

XYZ
 Company:Crestone Peak Resources Operating LLC Well:Herren #1J-33H-H367
 Isolation scanner: Log[3]:Up:S005

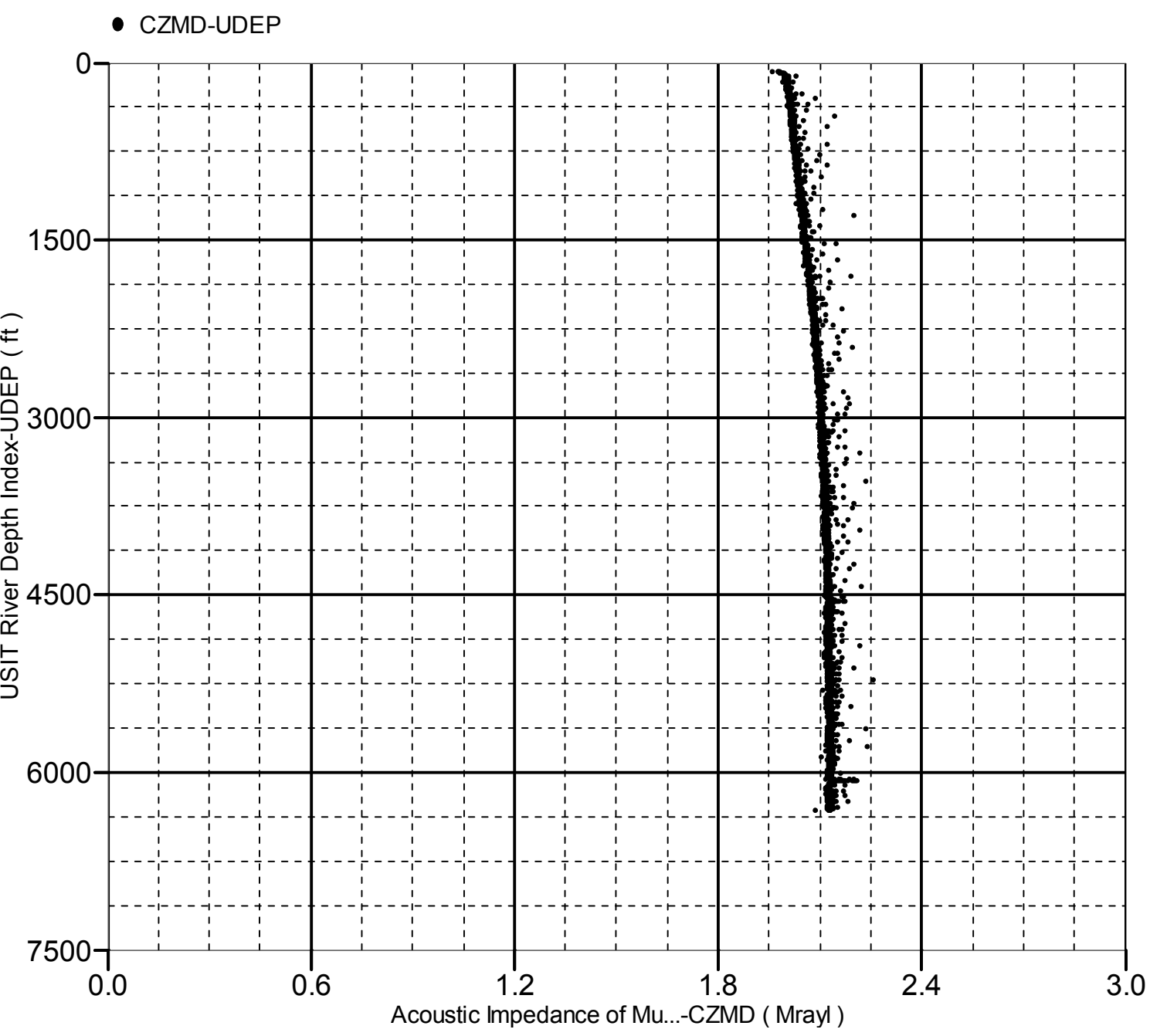




Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 6335.00 to 73.00 ft



Company:	Crestone Peak Resources Operating LLC	Schlumberger
Well:	Herren #1J-33H-H367	
Field:	Wattenberg	
County:	Weld	
State:	Colorado	

Isolation Scanner

Resolution Scanner

Cement Evaluation

Gamma Ray - CCL Log