

Company: Crestone Peak Resources Operating LLC

Well: Ruegge #3O-4H-N165

Field: Wattenberg

County: Weld State: Colorado

Isolation Scanner
Cement Evaluation
Gamma Ray - CCL Log

County: Weld
Field: Wattenberg
Location: SESW Sec. 4, T1N, R65W
Well: Ruegge #3O-4H-N165
Company: Crestone Peak Resources Operating LLC

Location:		SESW Sec. 4, T1N, R65W 712' FSL & 2176' FWL Lat/Long: 40.075273 / -104.670632	Elev.: K.B. 4938.00 ft G.L. 4915.00 ft D.F. 4938.00 ft
Permanent Datum:	Ground Level	Kelly Bushing	Elev.: 23.00 ft
Log Measured From:	Kelly Bushing		
Drilling Measured From:	Kelly Bushing		
API Serial No. 05-123-46564	Section: 4	Township: 1N	Range: 65W

Logging Date 12-Aug-2018

Run Number One

Depth Driller 12480.00 ft

Schlumberger Depth 6832.00 ft

Bottom Log Interval 6832.00 ft

Top Log Interval 100.00 ft

Casing Fluid Type Water

Salinity

Density 8.4 lbm/gal

Fluid Level 8.00 ft

BIT/CASING/TUBING STRING

Bit Size 8.50 in

From 2483.00 ft

To 12480.00 ft

Casing/Tubing Size 5.5 in

Weight 20 lbm/ft

Grade P110

From 0.00 ft

To 12480.00 ft

Max Recorded Temperatures 195 degF

Logger on Bottom 12-Aug-2018 13:30:00

Unit Number 9102

Recorded By Alan Moreno

Witnessed By Keith Kershnik

Disclaimer

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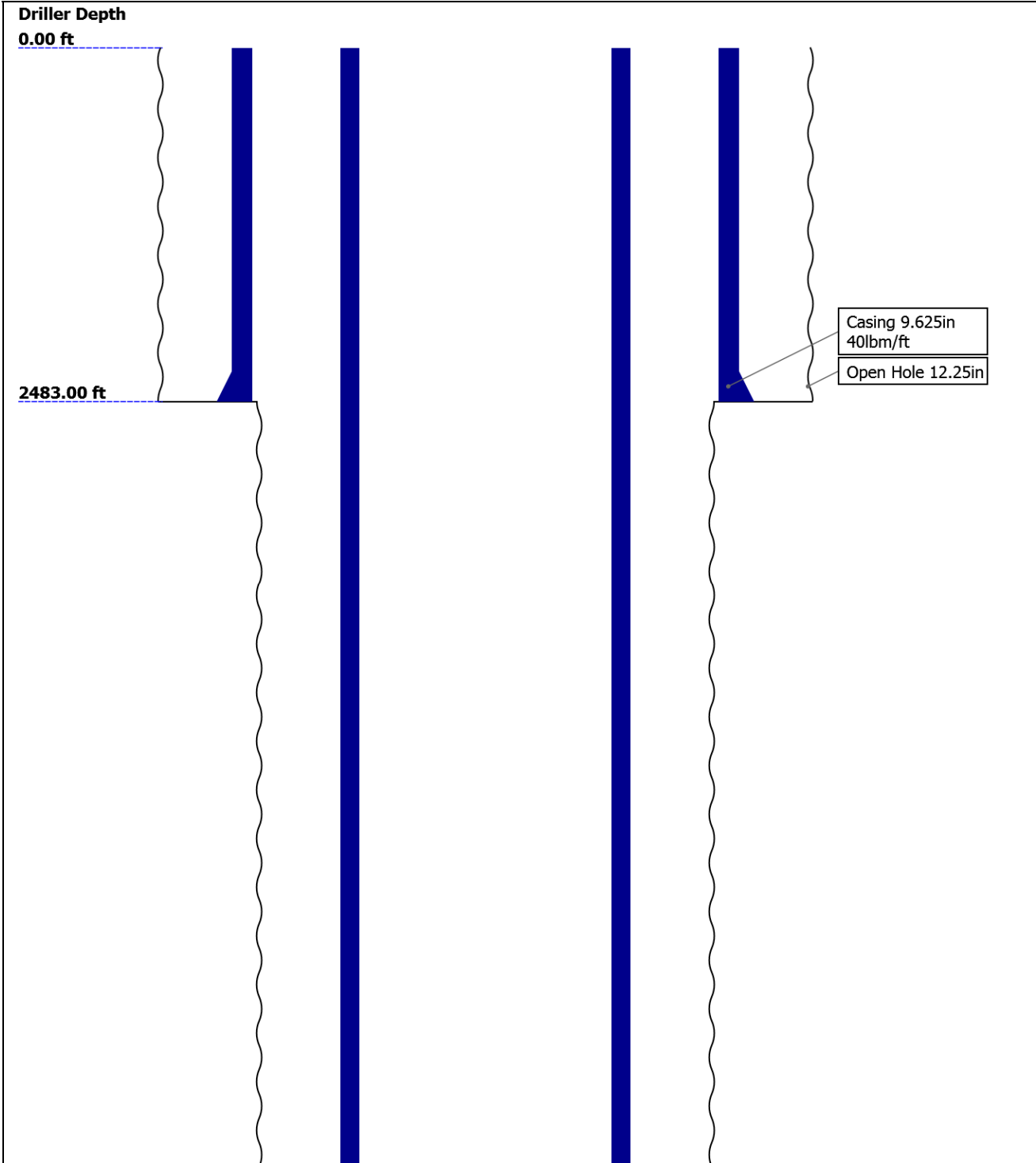
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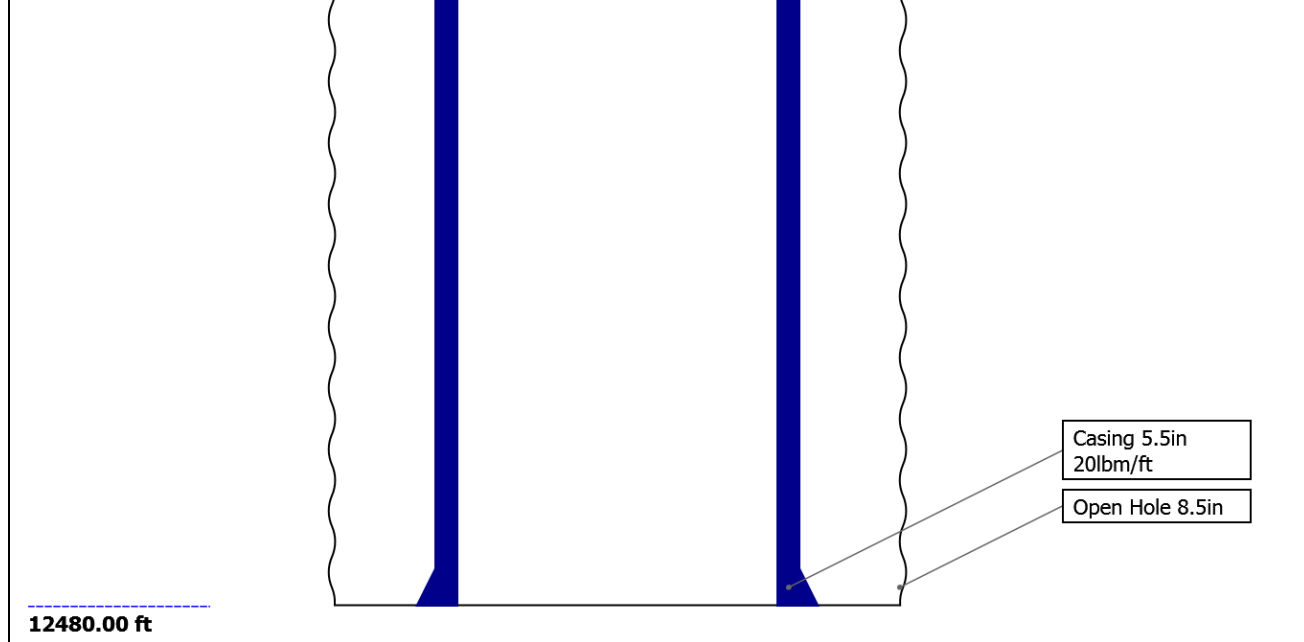
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Well Sketch





Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	12.25	8.5				
Top Driller (ft)	0	2483				
Top Logger (ft)	0	2483				
Bottom Driller (ft)	2483	12480				
Bottom Logger (ft)	2483	12480				
Casing						
Size (in)	9.625	5.5				
Weight (lbm/ft)	40	20				
Inner Diameter (in)	8.835	4.778				
Grade	J55	P110				
Top Driller (ft)	0	0				
Top Logger (ft)	0	0				
Bottom Driller (ft)	2483	12480				
Bottom Logger (ft)	2483	12480				

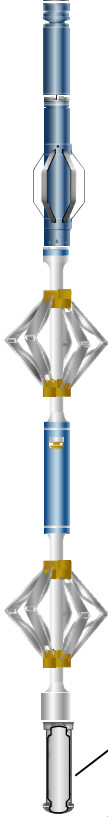
Remarks and Equipment Summary

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

AH-184[18.74
1]:2826

USIT-E:90 16.74
0

ECH-MFA:
1818
USAC-A:9
00
USIS-A:19
94
USSC-B:92
5
IBCS-A:78
3
FAR-SENS
OR:4626
IBC-TX
NEAR-SEN
SOR:4624
IBC-TX
USI-SENS
OR:2005
IBC-TX
EMITTER-
SENSOR:4
625
IBC-TX



USI Sensor
Head Tension
TOOL_ZERO

Lengths are in ft

Maximum Outer Diameter = 5.000 in

Line: Sensor Location, Value: Gating Offset

All measurements are relative to TOOL_ZERO

Depth Summary

One

Depth Measuring Device

Type	IDW-B
Serial Number	
Calibration Date	
Calibrator Serial Number	
Calibration Cable Type	
Wheel Correction 1	0
Wheel Correction 2	0

Tension Device

Type	CMTD-B/A
Serial Number	
Calibration Date	14-Jul-2018
Calibrator Serial Number	
Number of Calibration Points	10
Calibration Root Mean Square Error	
Calibration Peak Error	

Logging Cable

Type	7-46A-XS
Serial Number	
Length	22770.00 ft
Conveyance Type	Wireline
Rig Type	Crane USA

One:Depth Control Parameters		Depth Control Remarks	
Log Sequence	First Log In the Well	All Schlumberger depth control procedures followed	
Rig Up Length At Surface		IDW used as primary depth control, Z-chart used as secondary	
Rig Up Length At Bottom			
Rig Up Length Correction			
Stretch Correction	7.30 ft		
Tool Zero Check At Surface			

USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 1	Log[4]:Up	6838.48	76.53

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 : 123.09m(403.85ft) to 126.08m(413.64ft)
MUD_N_FRP = 1.24
DFD = 1.01g/cm3(8.40lbm/gal)
CZMD median computed in free pipe normalization interval = 1.70 MRayl

Start Depth(ft)	Stop Depth(ft)	Start Value(Mrayl)	End Value(Mrayl)
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One

IBC SLG

Software Version

Acquisition System	Version
Maxwell 2018 SP2	8.2.104493.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[4]:Up	Up	76.53 ft	6838.48 ft	12-Aug-2018 2:33:10 PM	12-Aug-2018 4:10:07 PM	ON	6.25 ft	No

All depths are referenced to toolstring zero

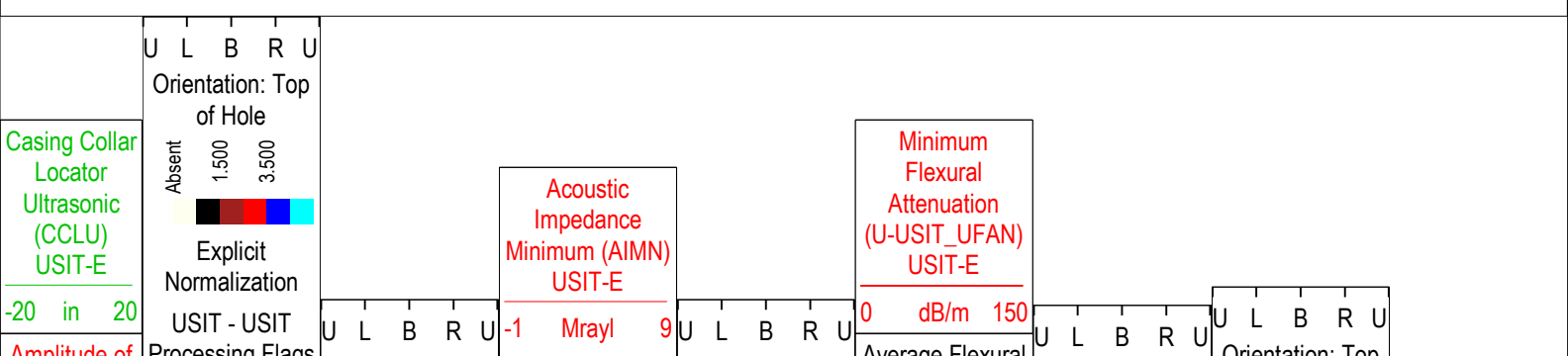
Log	Company:Crestone Peak Resources Operating LLC Well:Ruegge #3O-4H-N165 One: Log[4]:Up:S004
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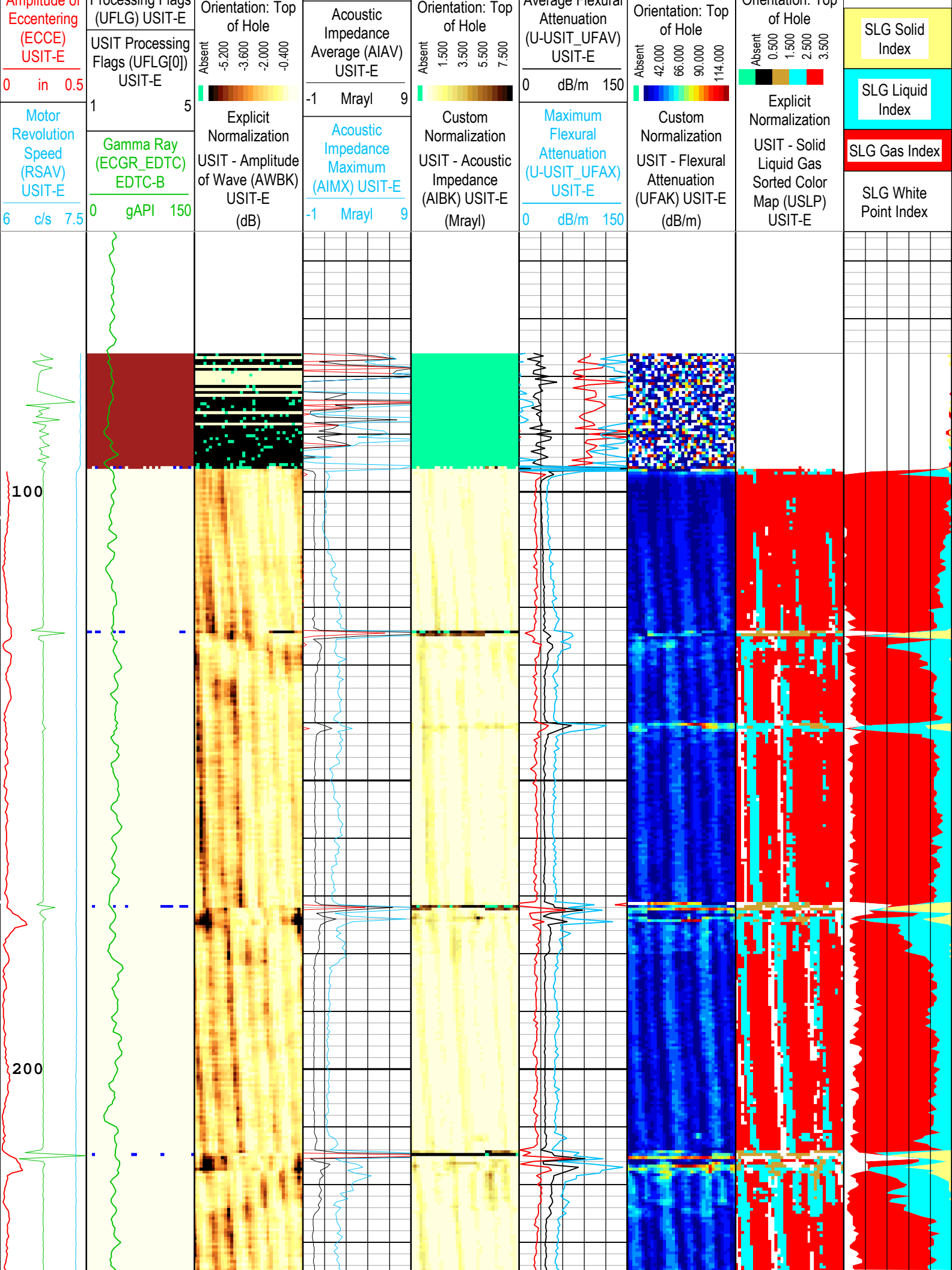
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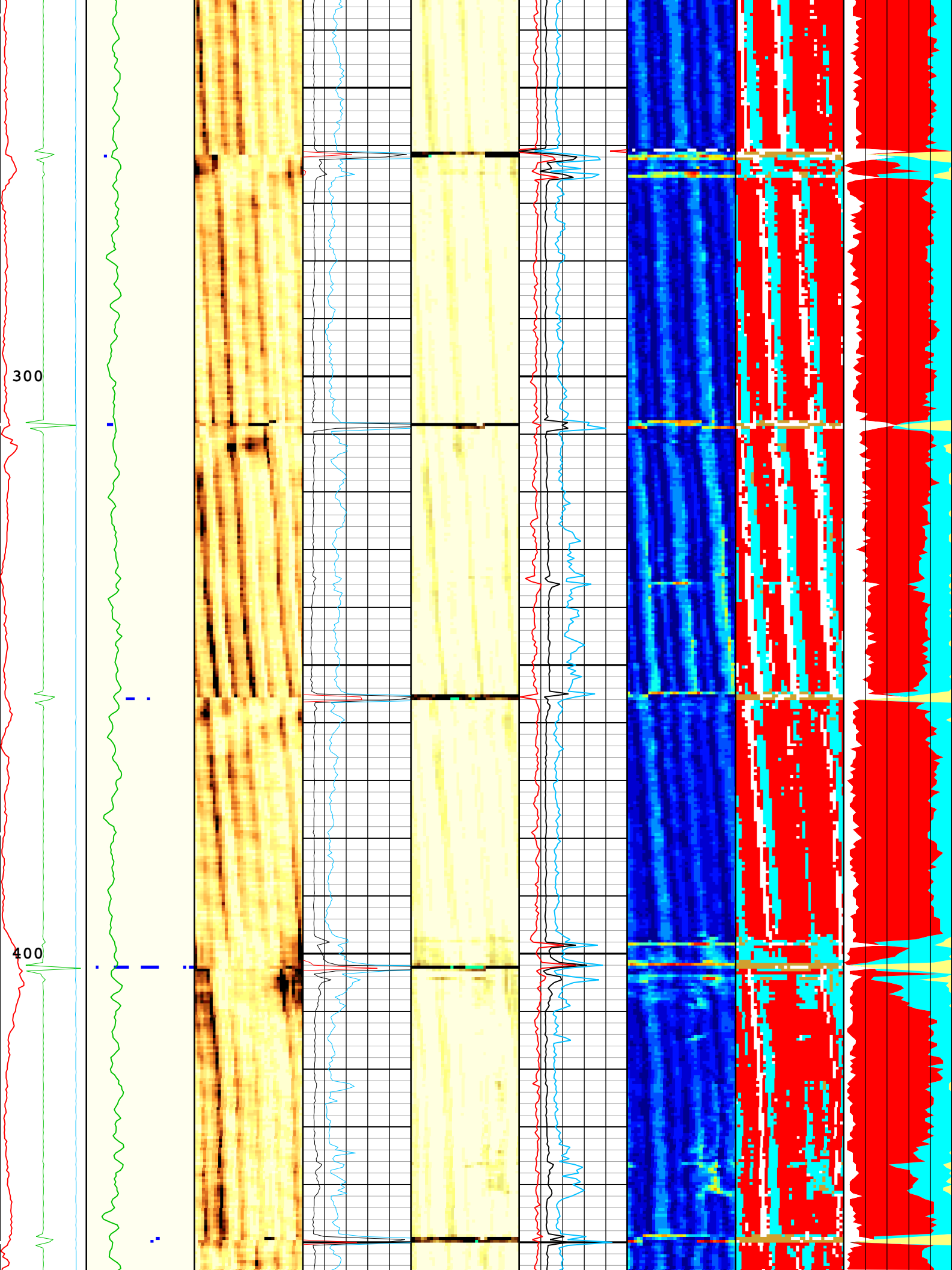
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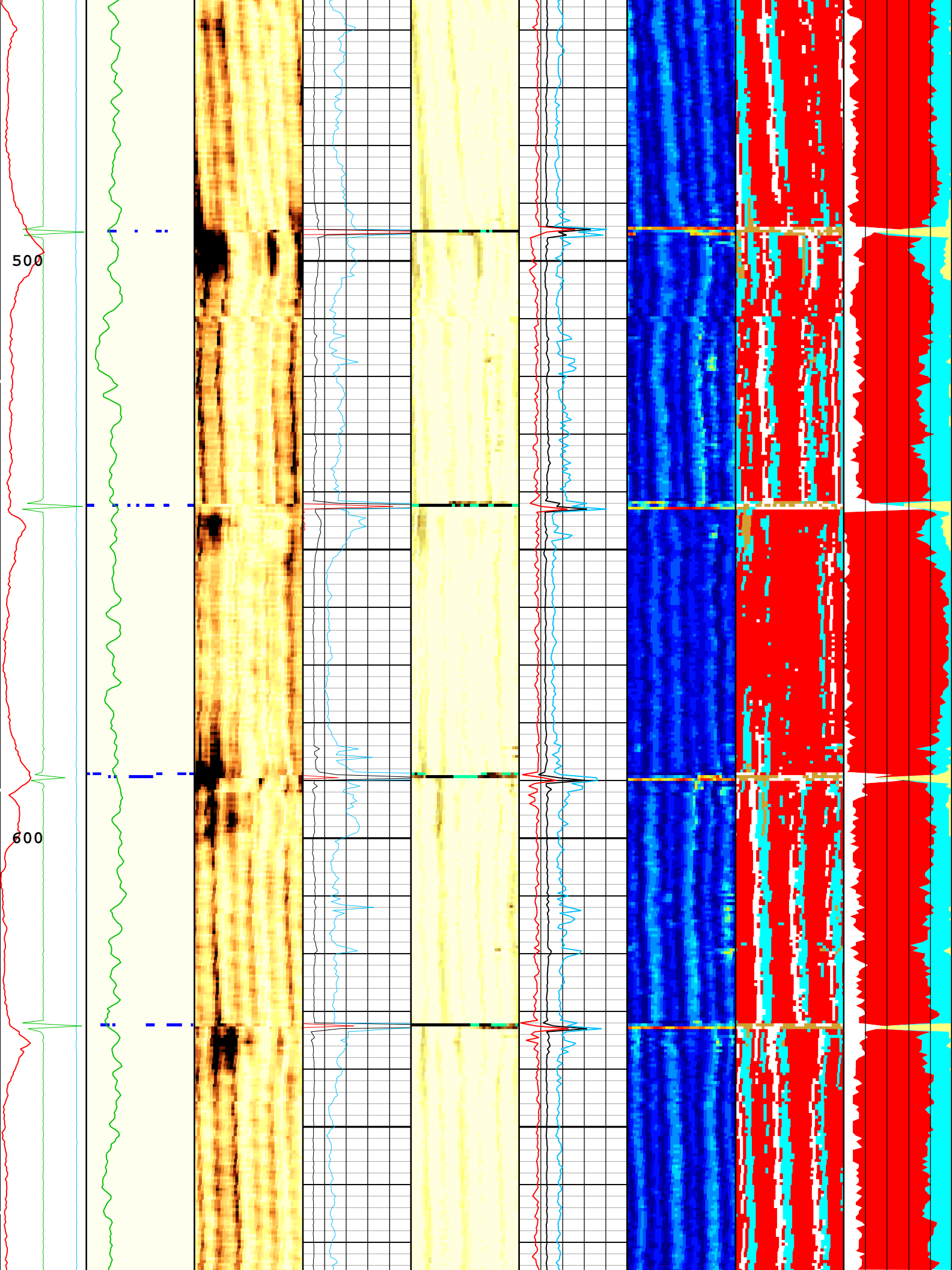
USIT Processing Flags (UFLG[0]) USIT-E

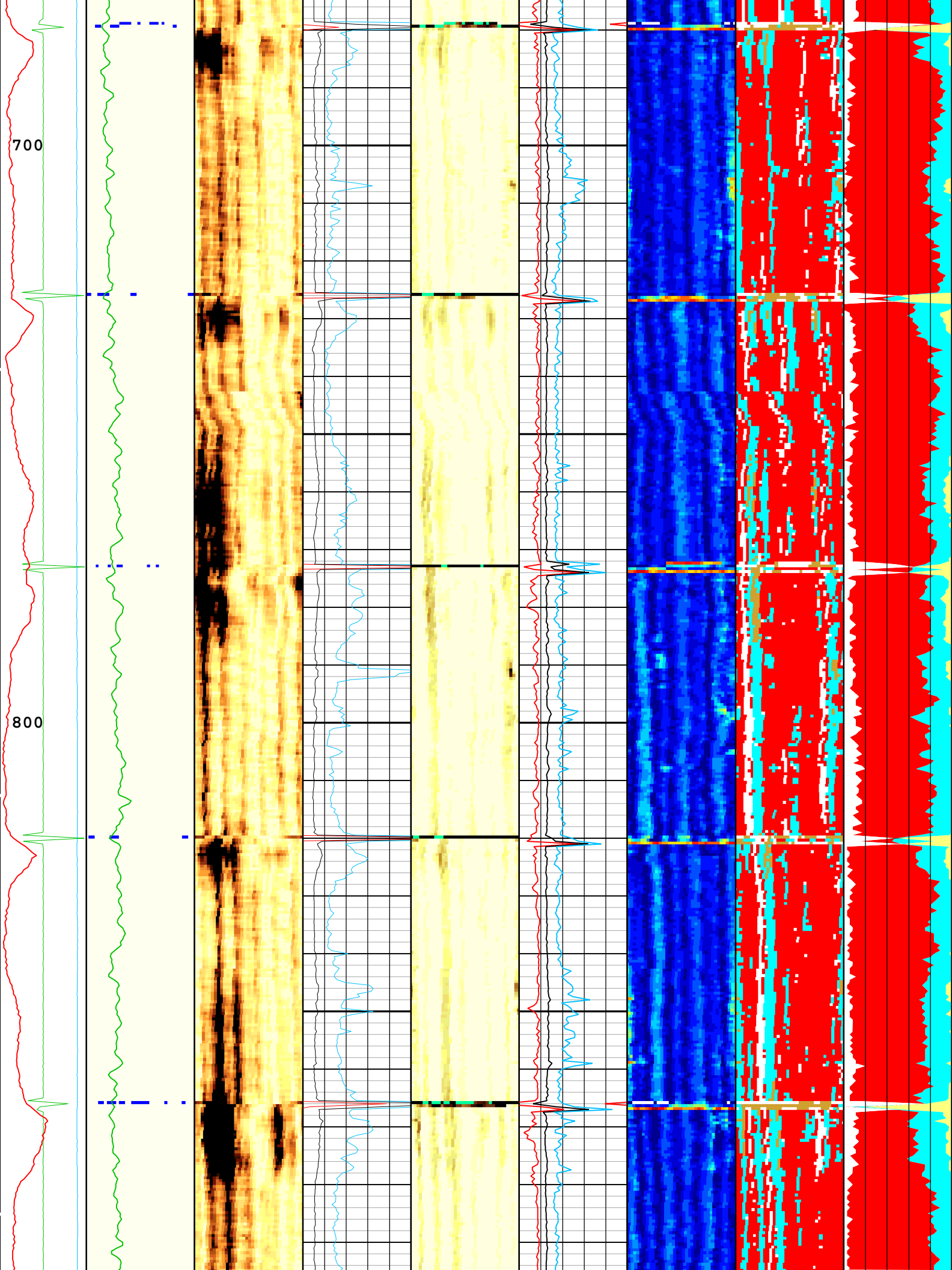
1 - UFLG 1 Value within [0.0 - 1.5] - :	■ UTIM Error
2 - UFLG 2 Value within [1.5 - 2.5] - :	■ Pulse Origin Not Detected
3 - UFLG 3 Value within [2.5 - 3.5] - :	■ WINLEN Error
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :	■ Casing Thickness Error
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10]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

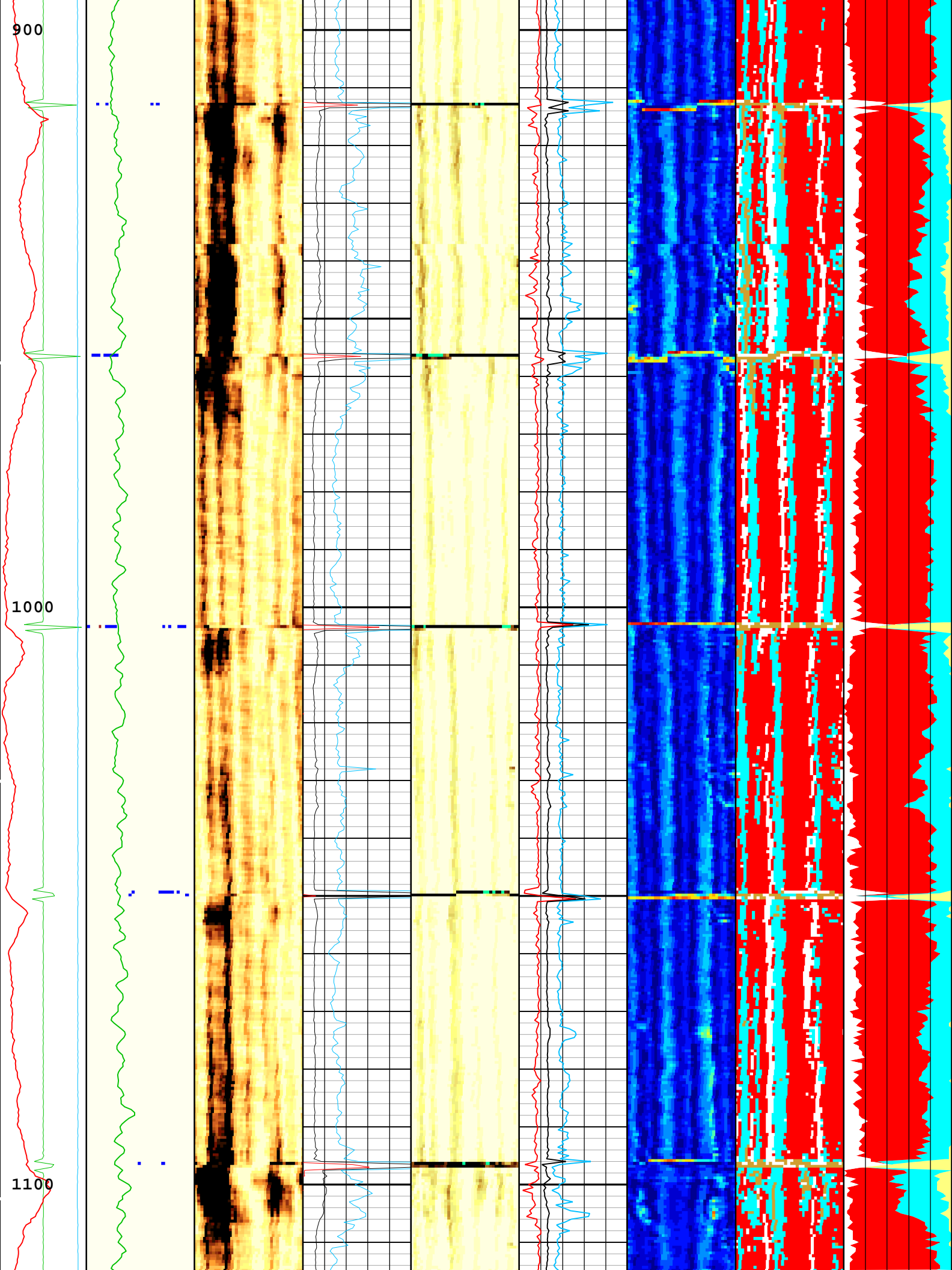


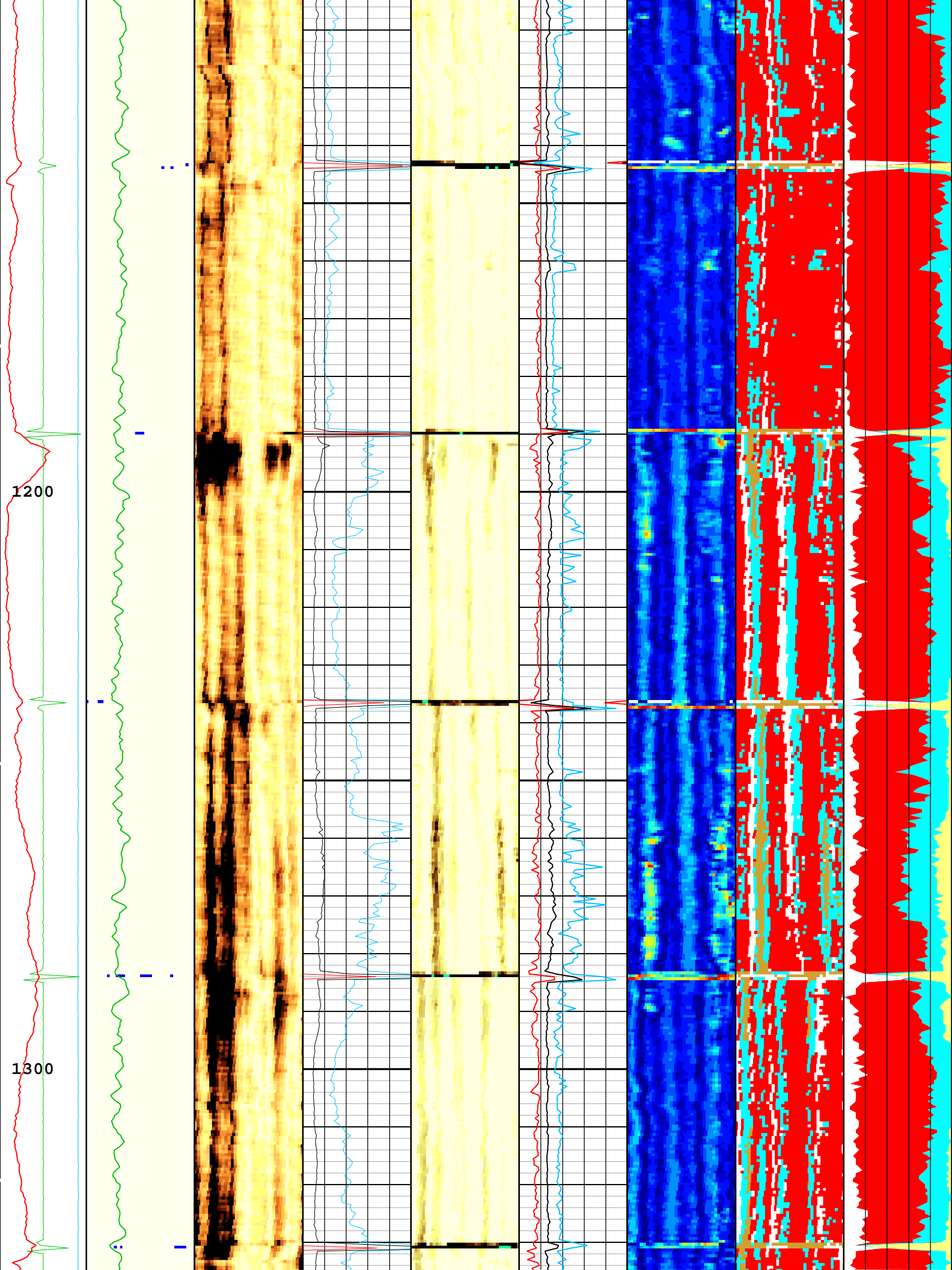


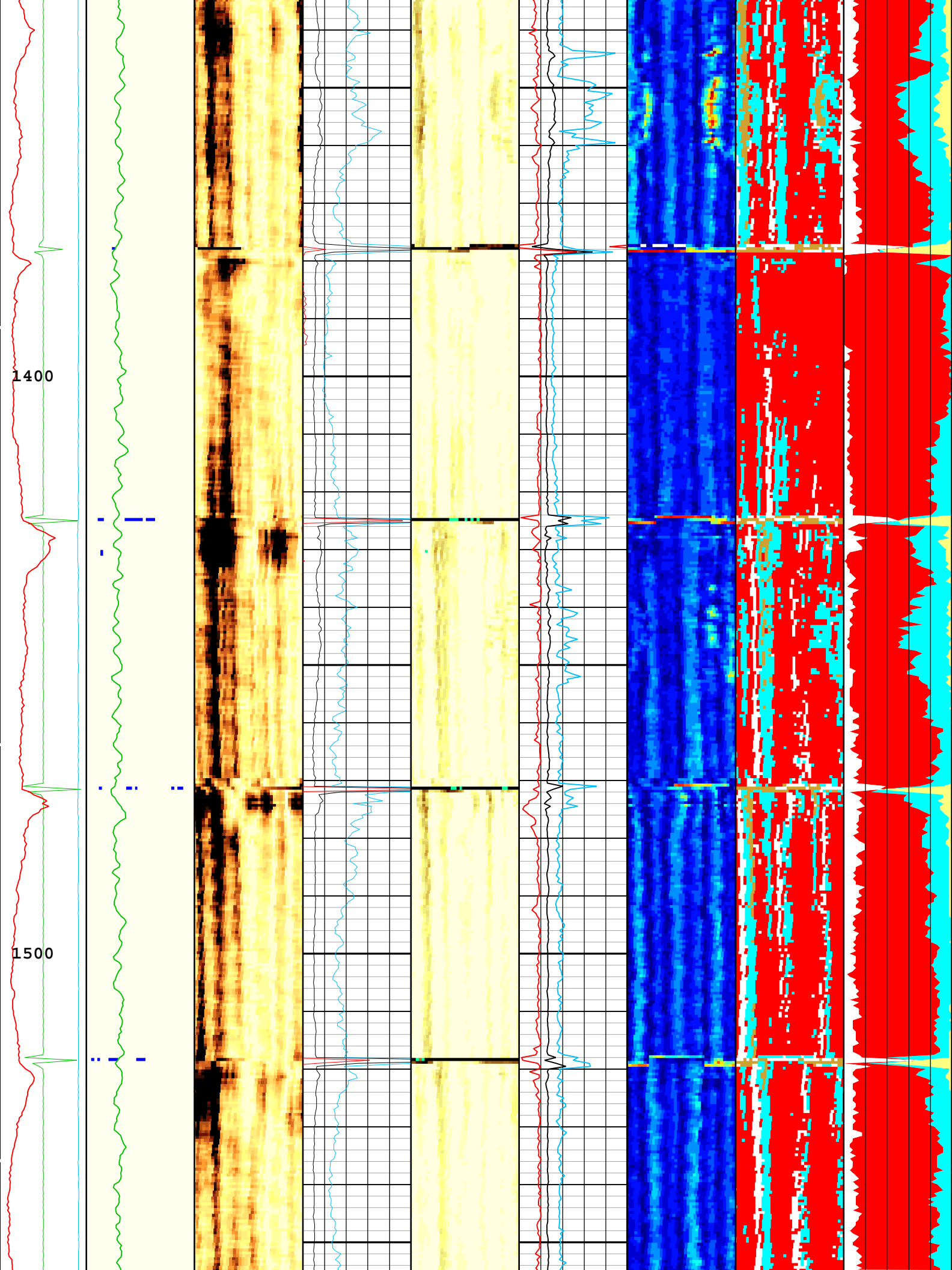


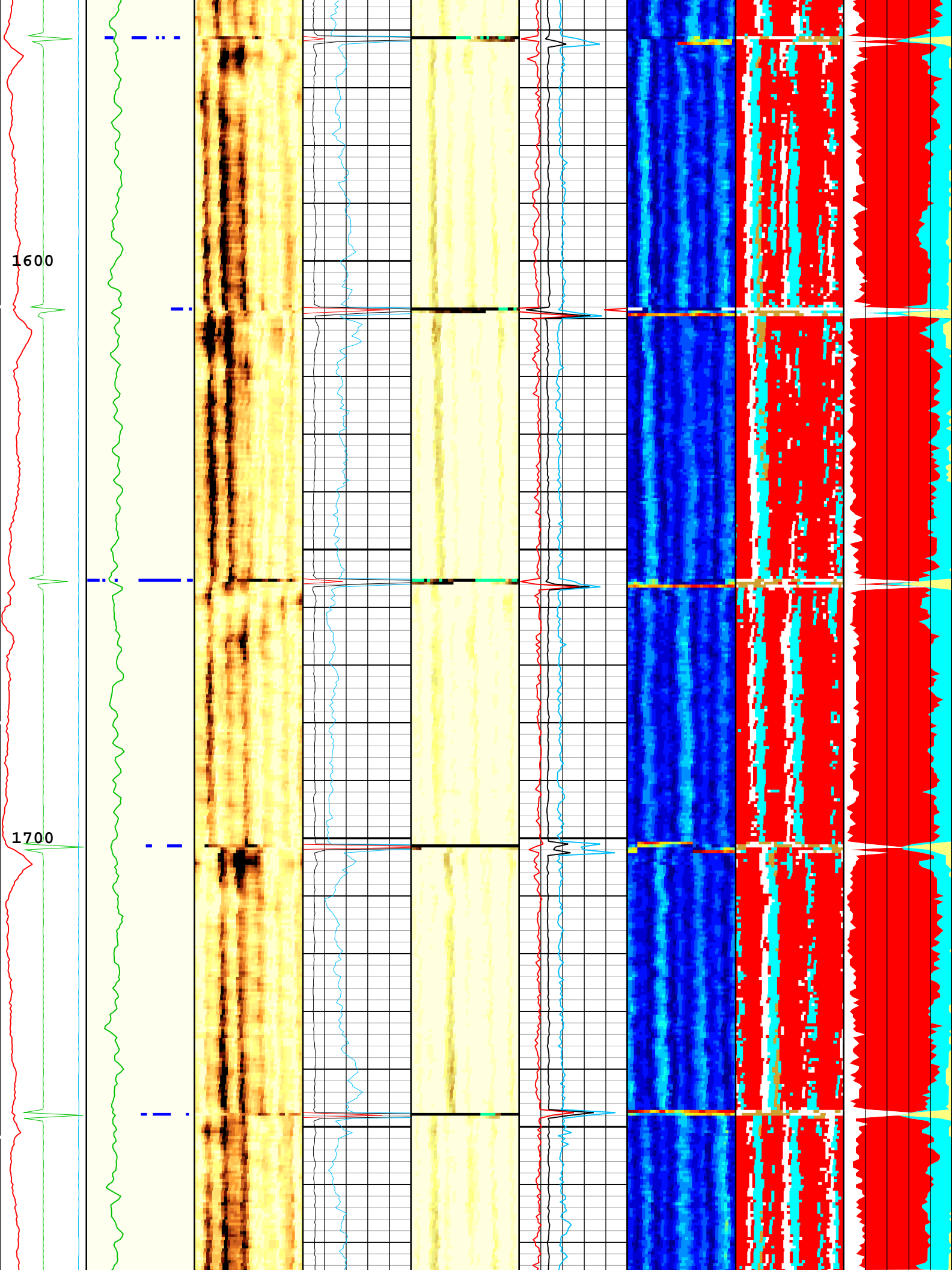


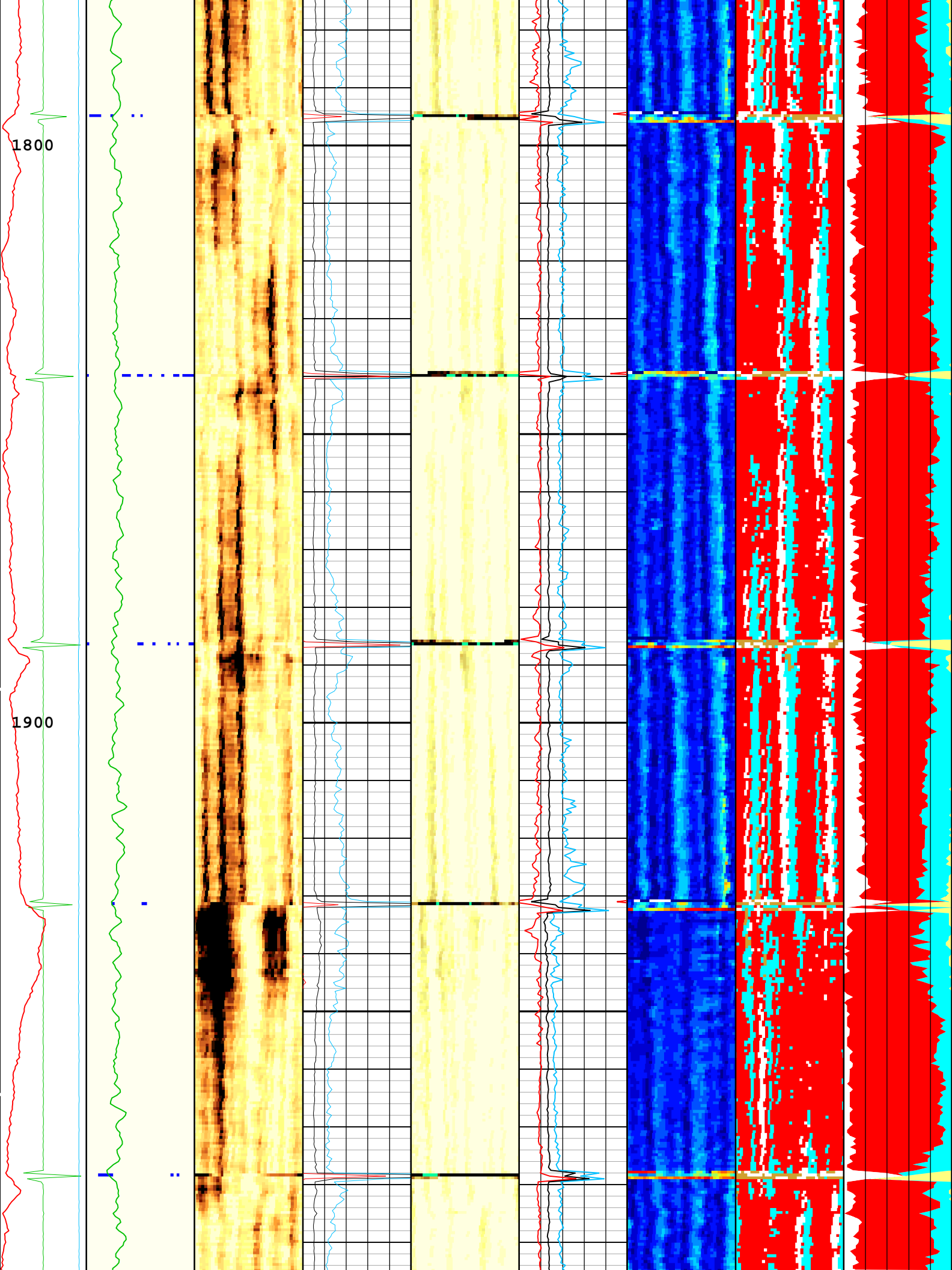


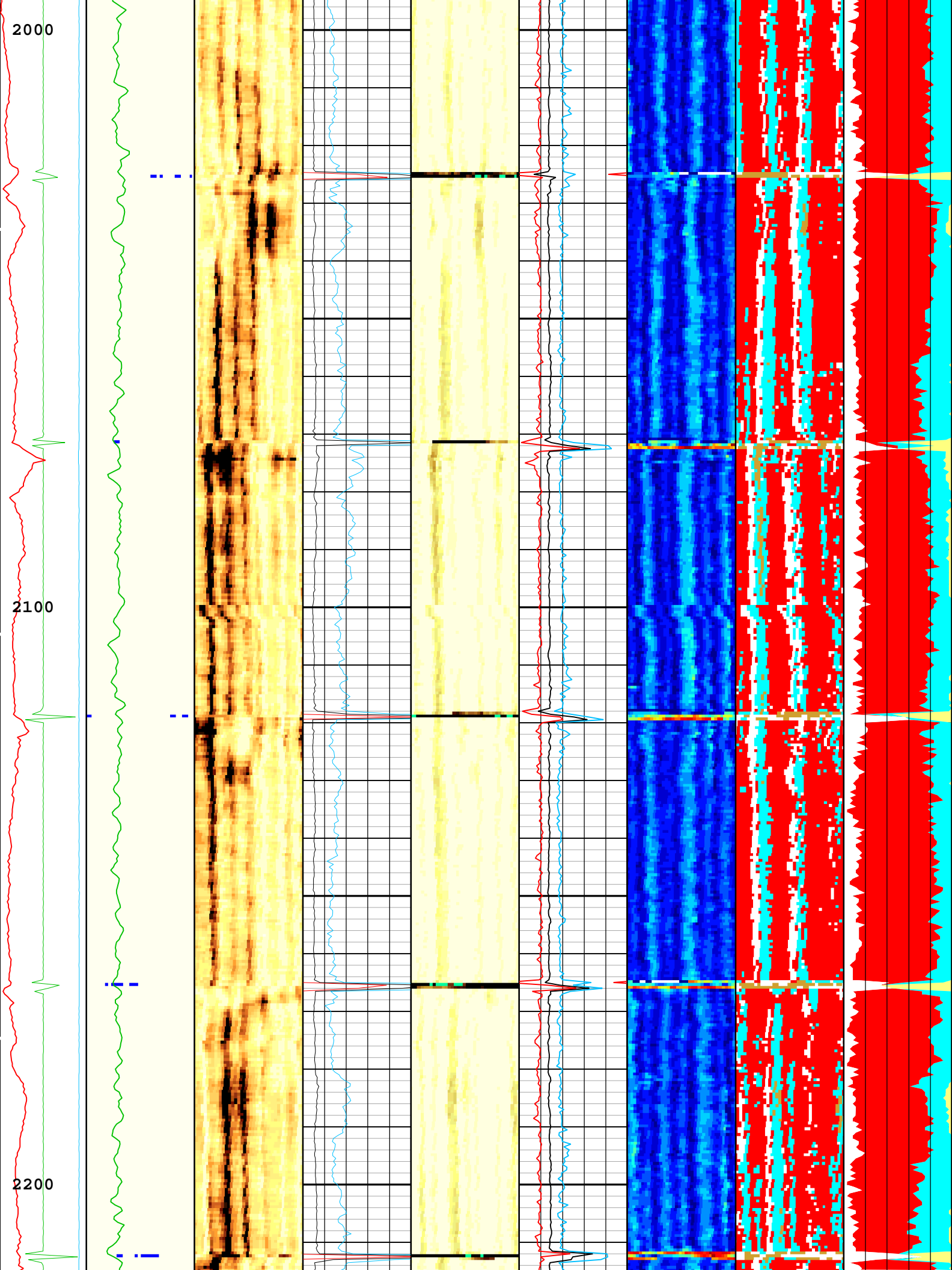


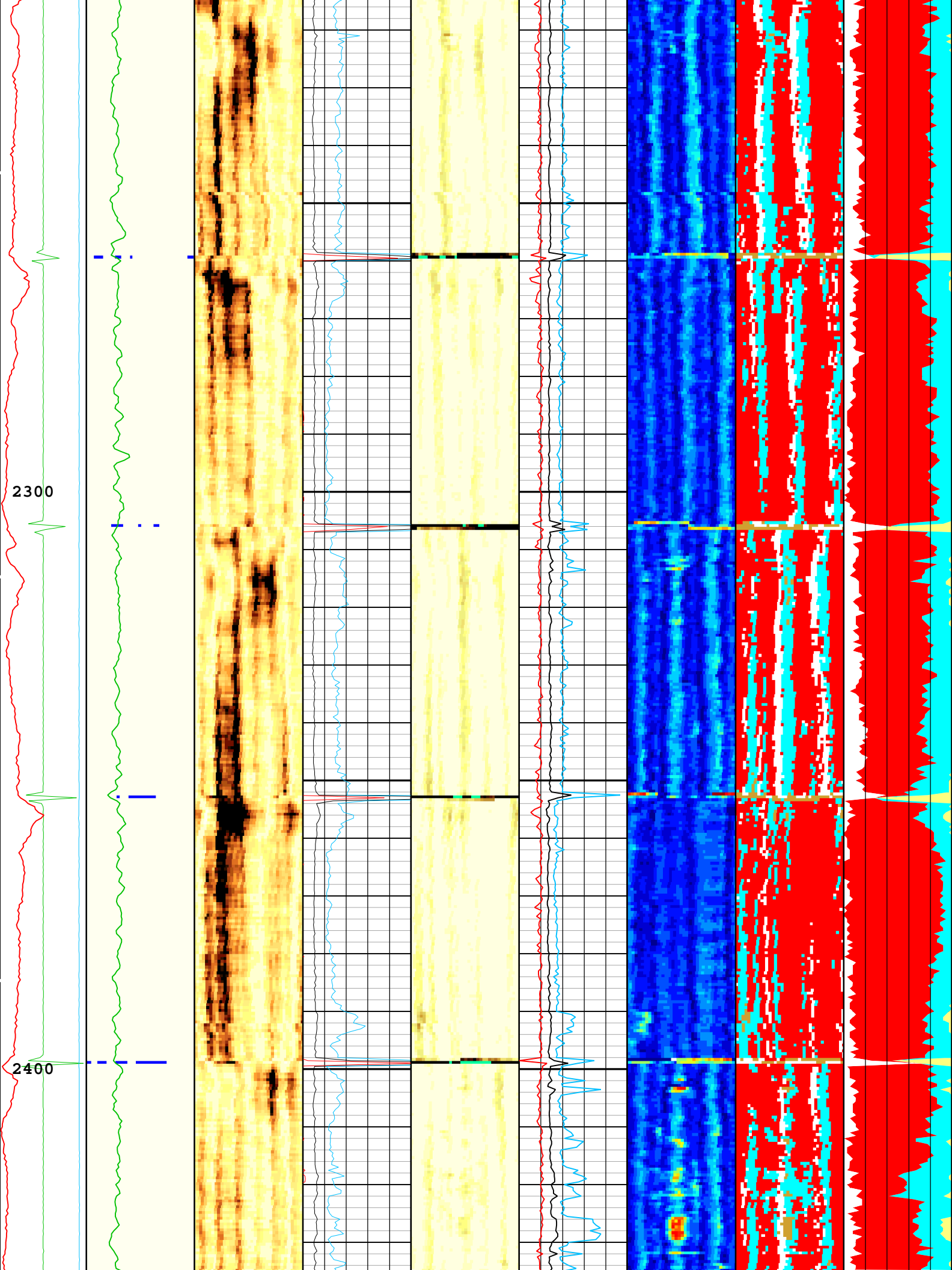


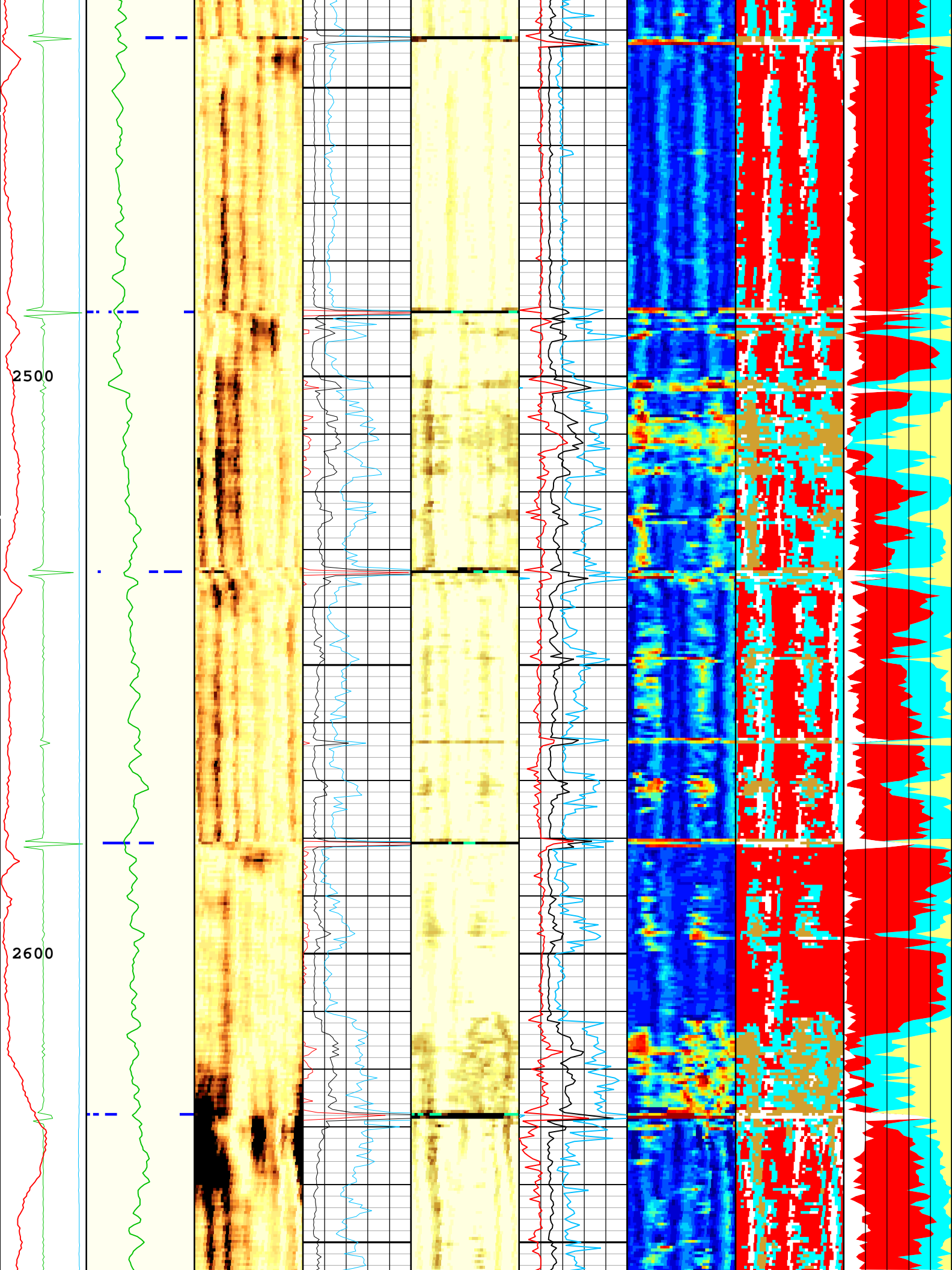


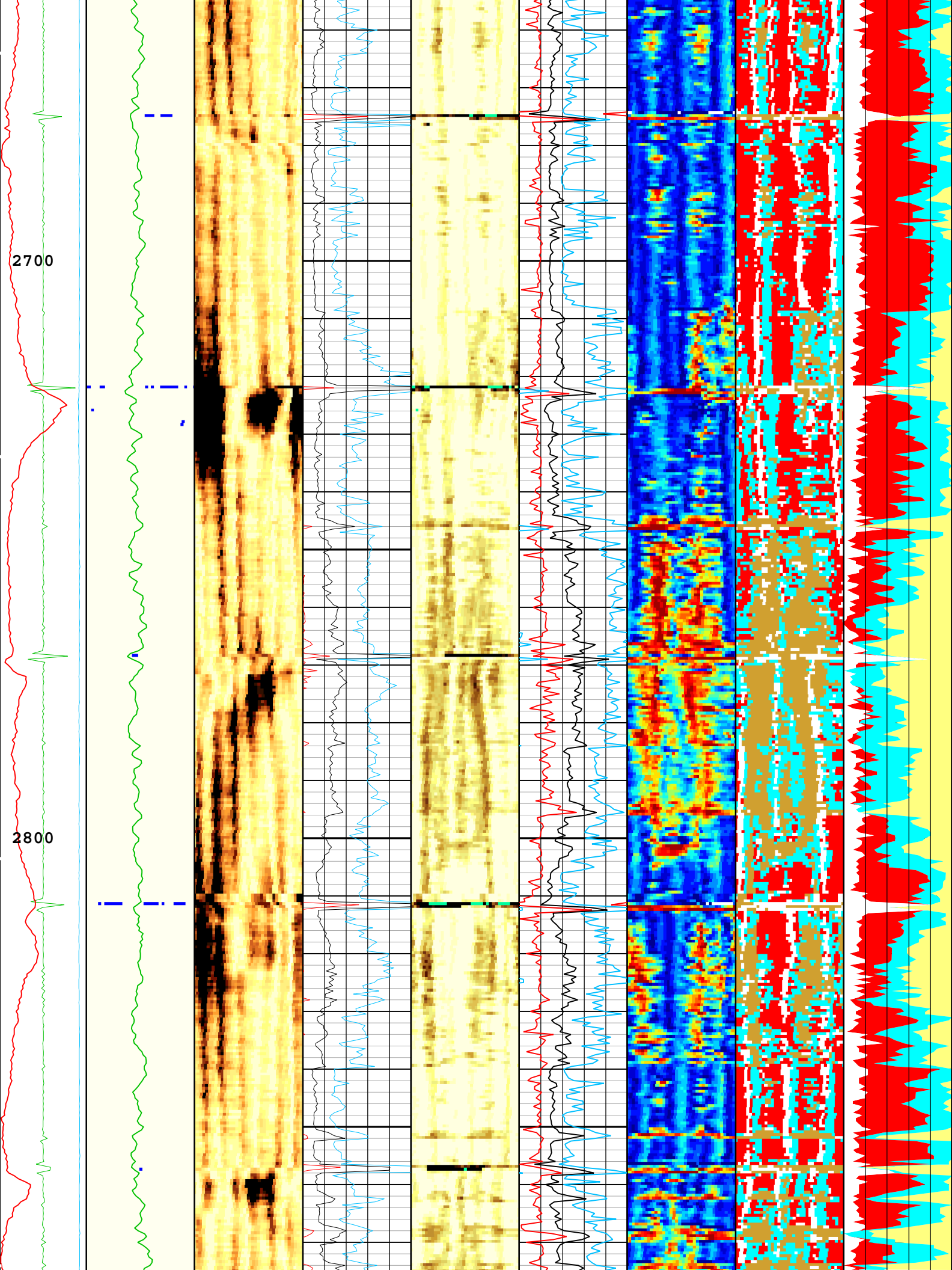


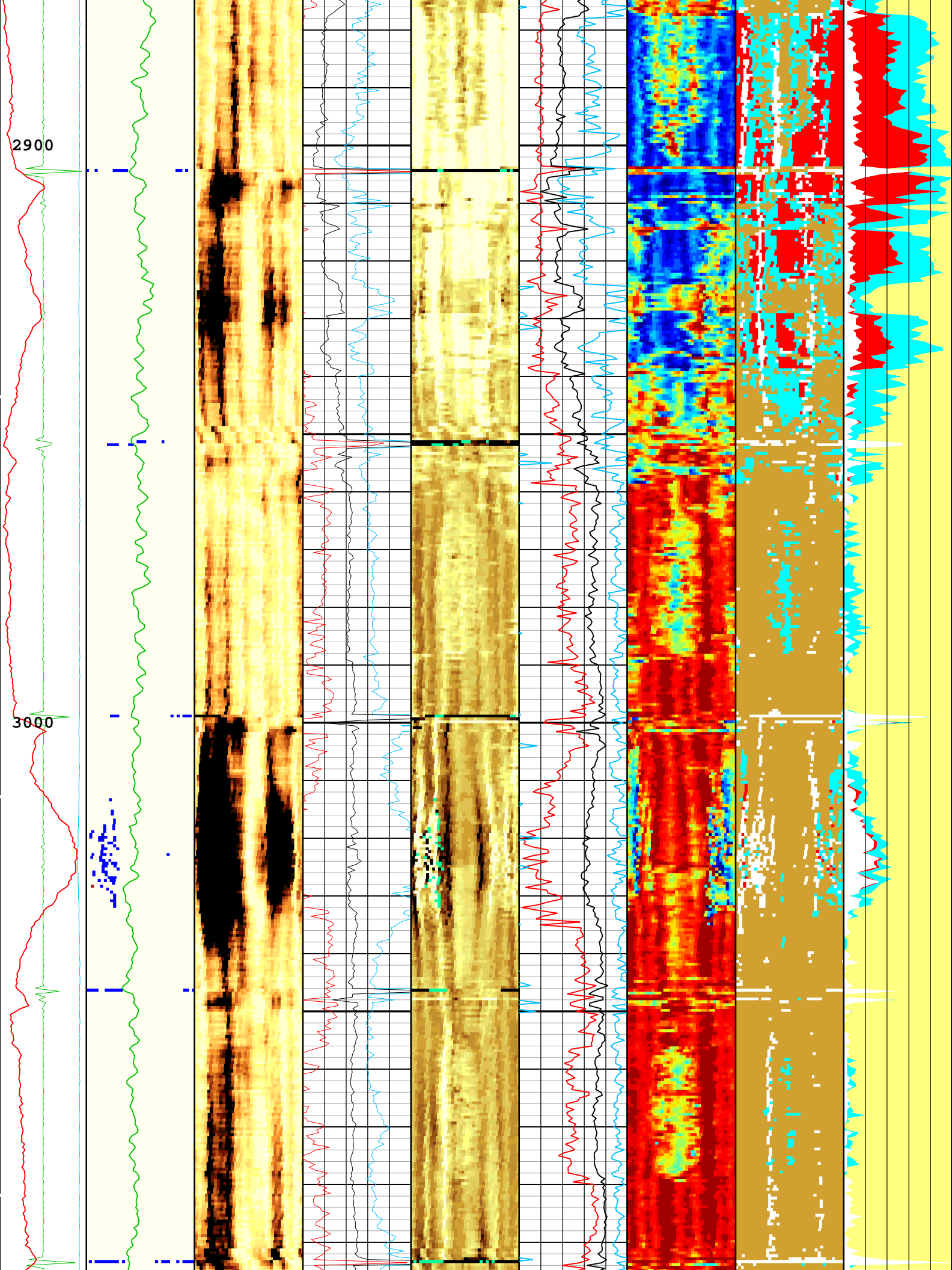


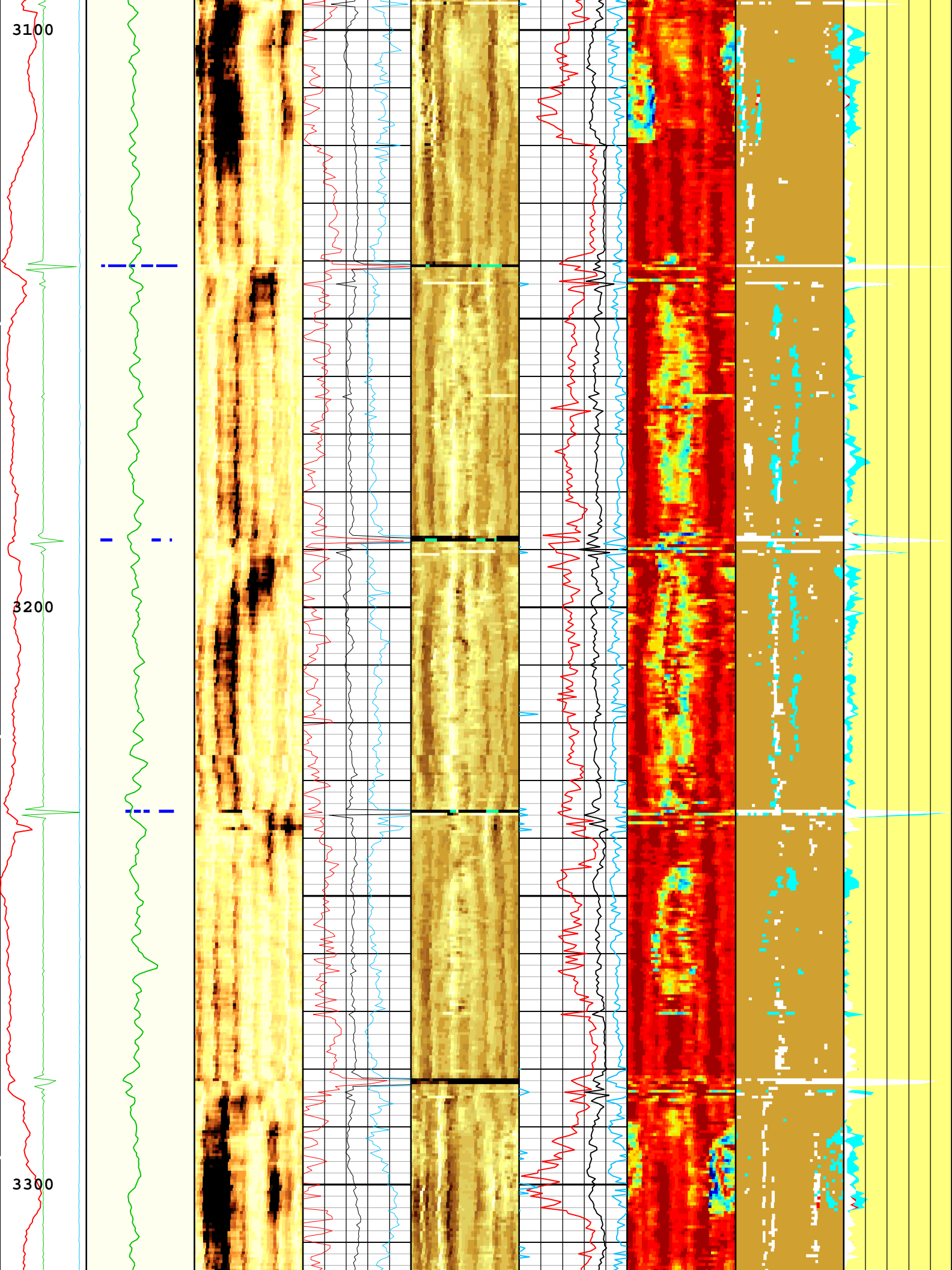


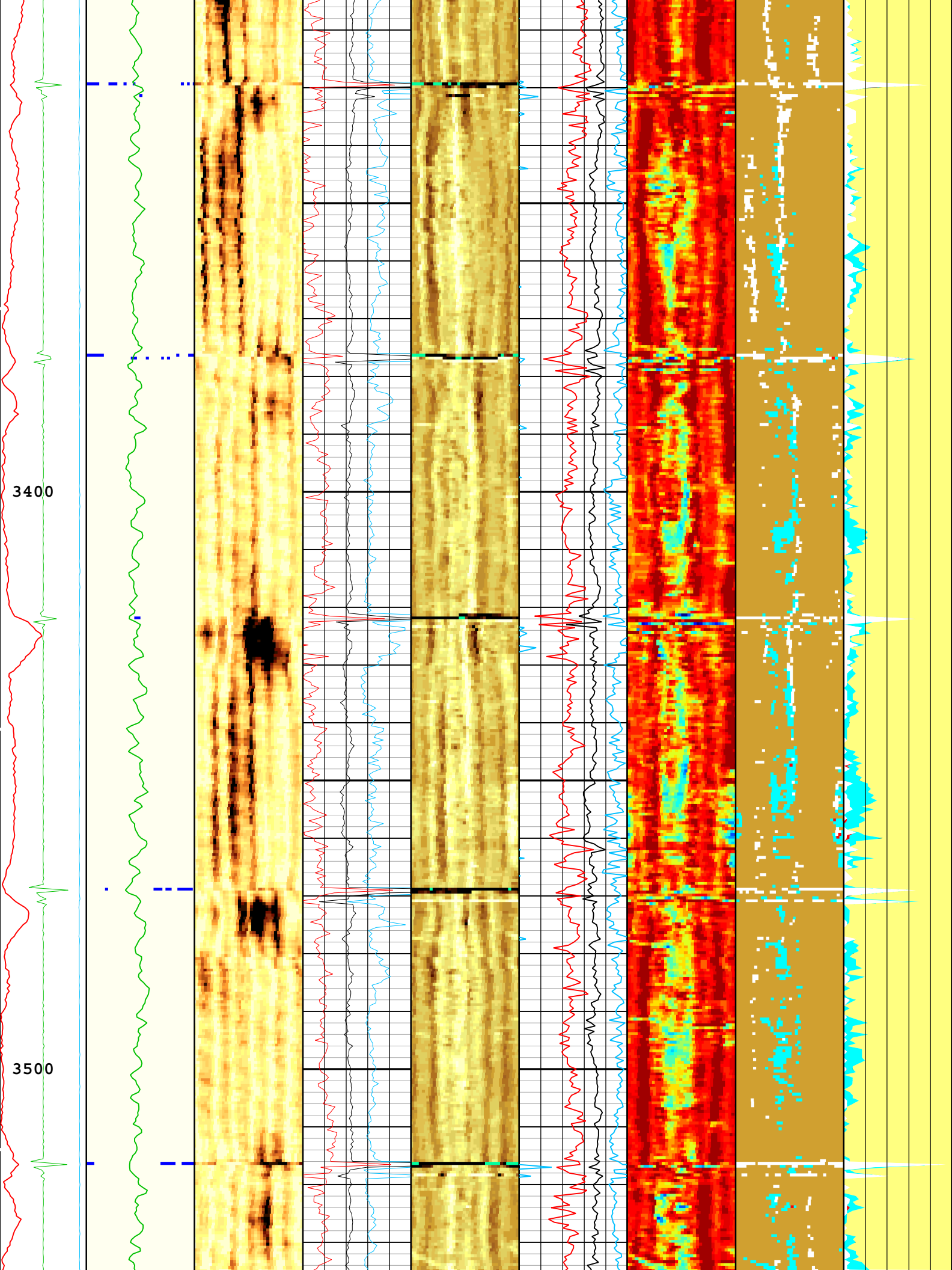


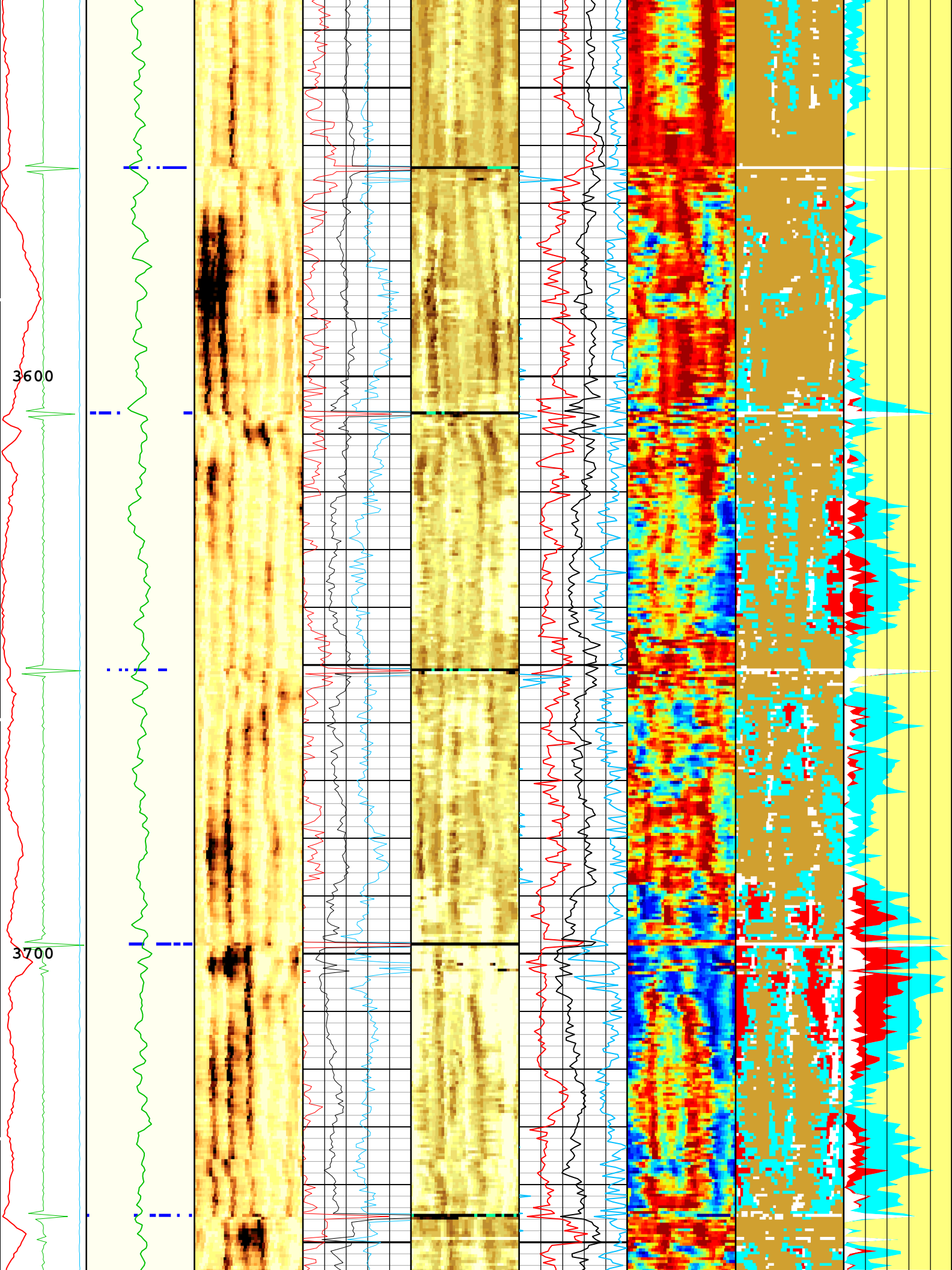


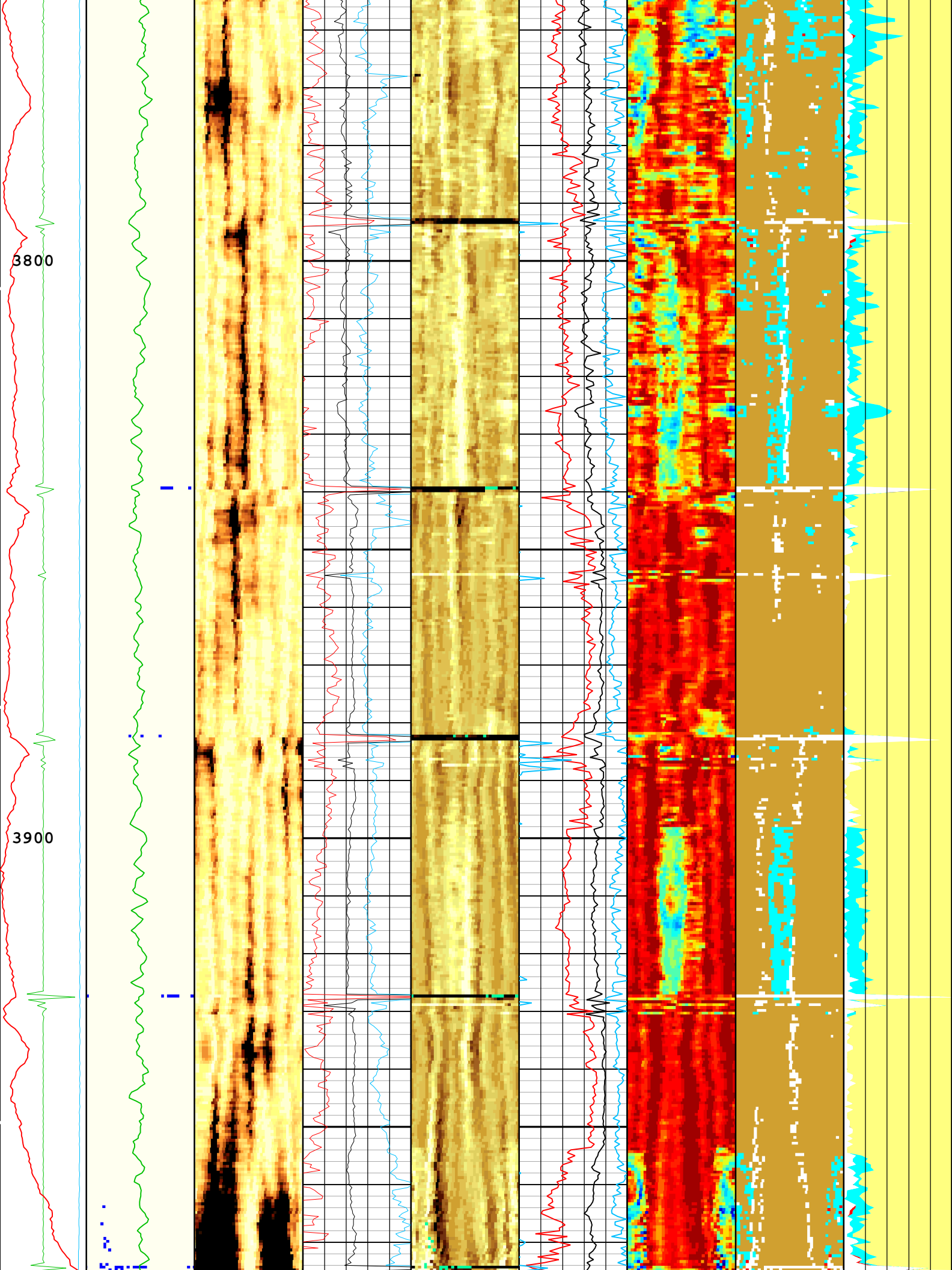


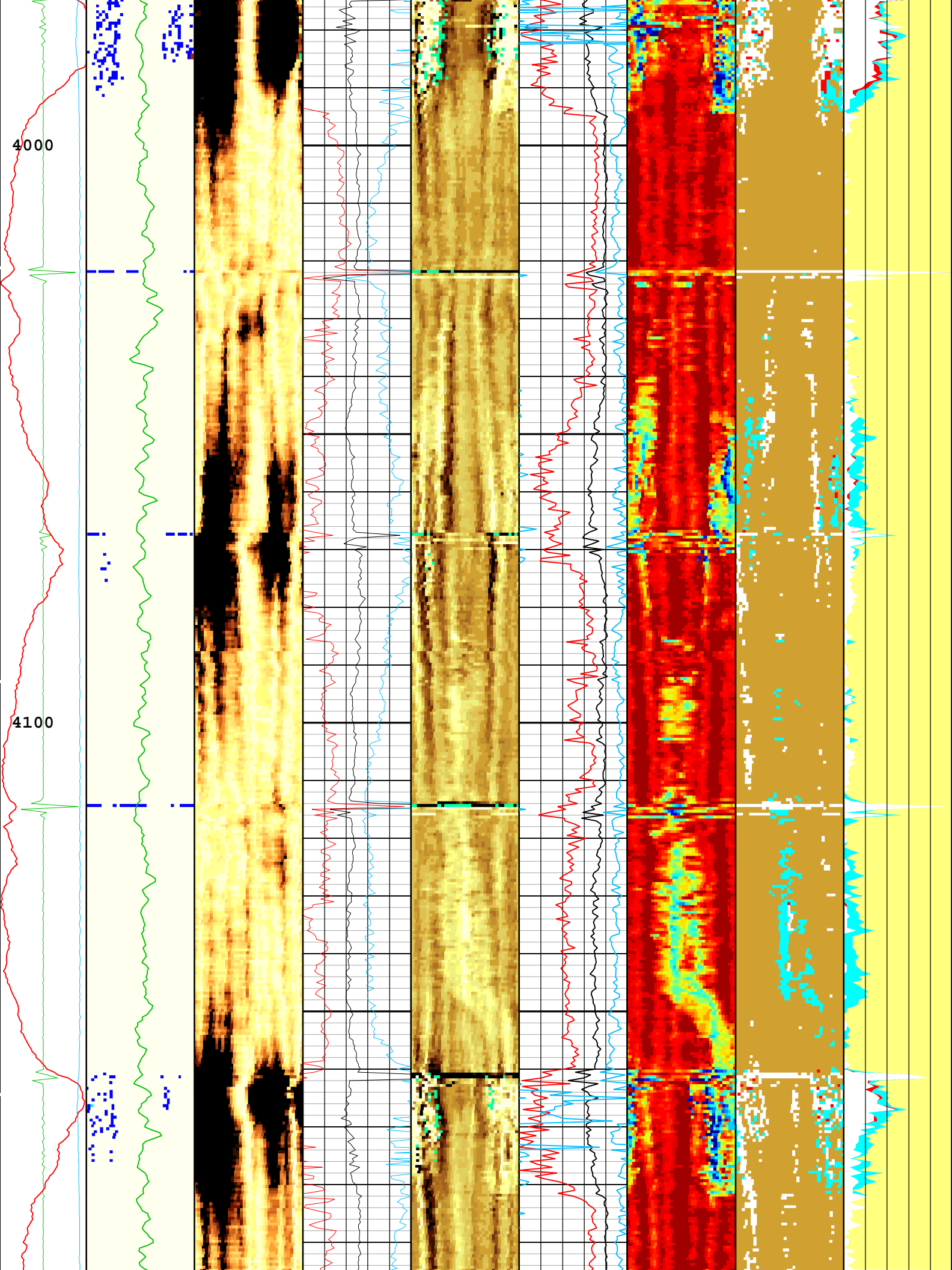


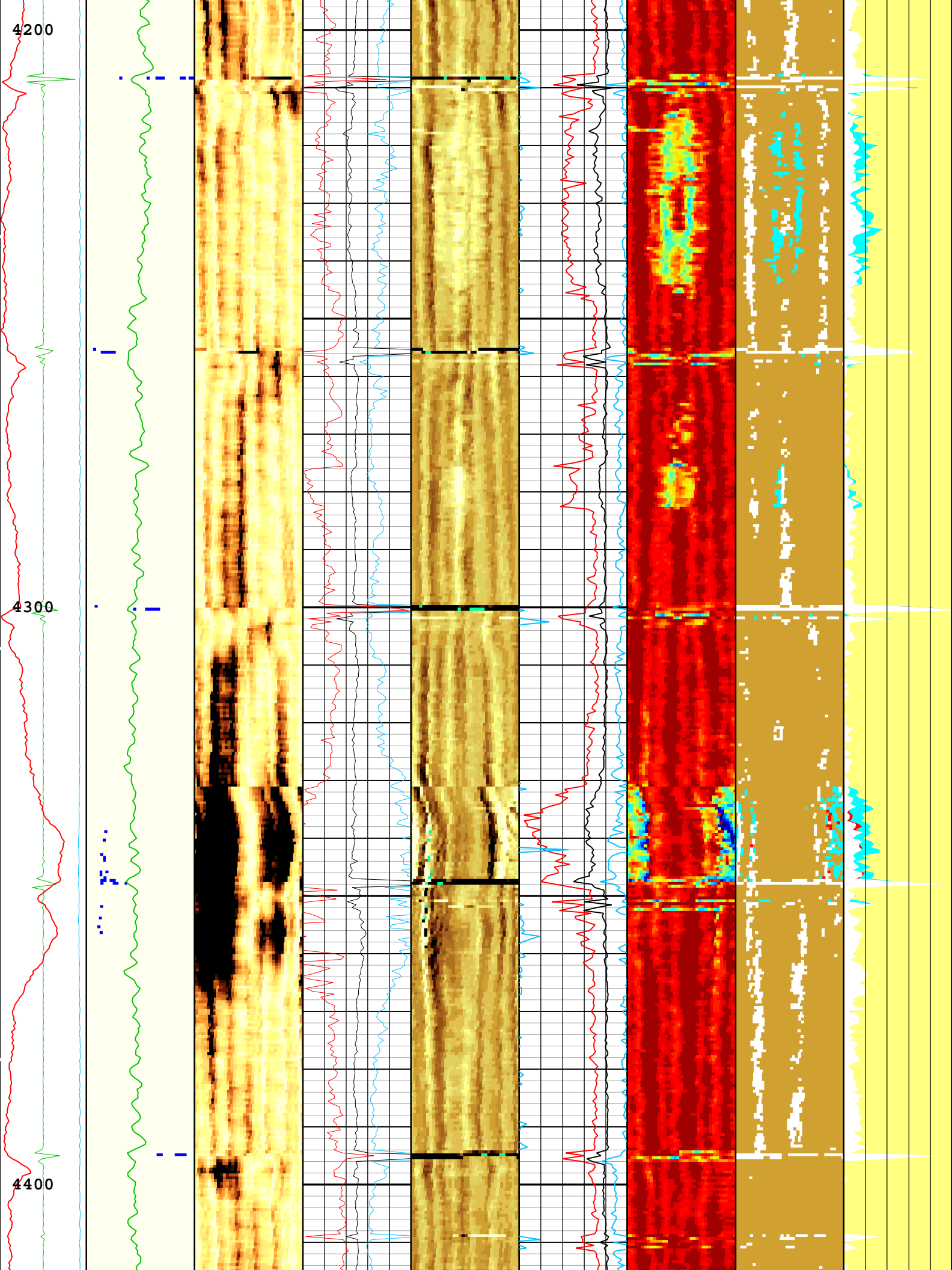


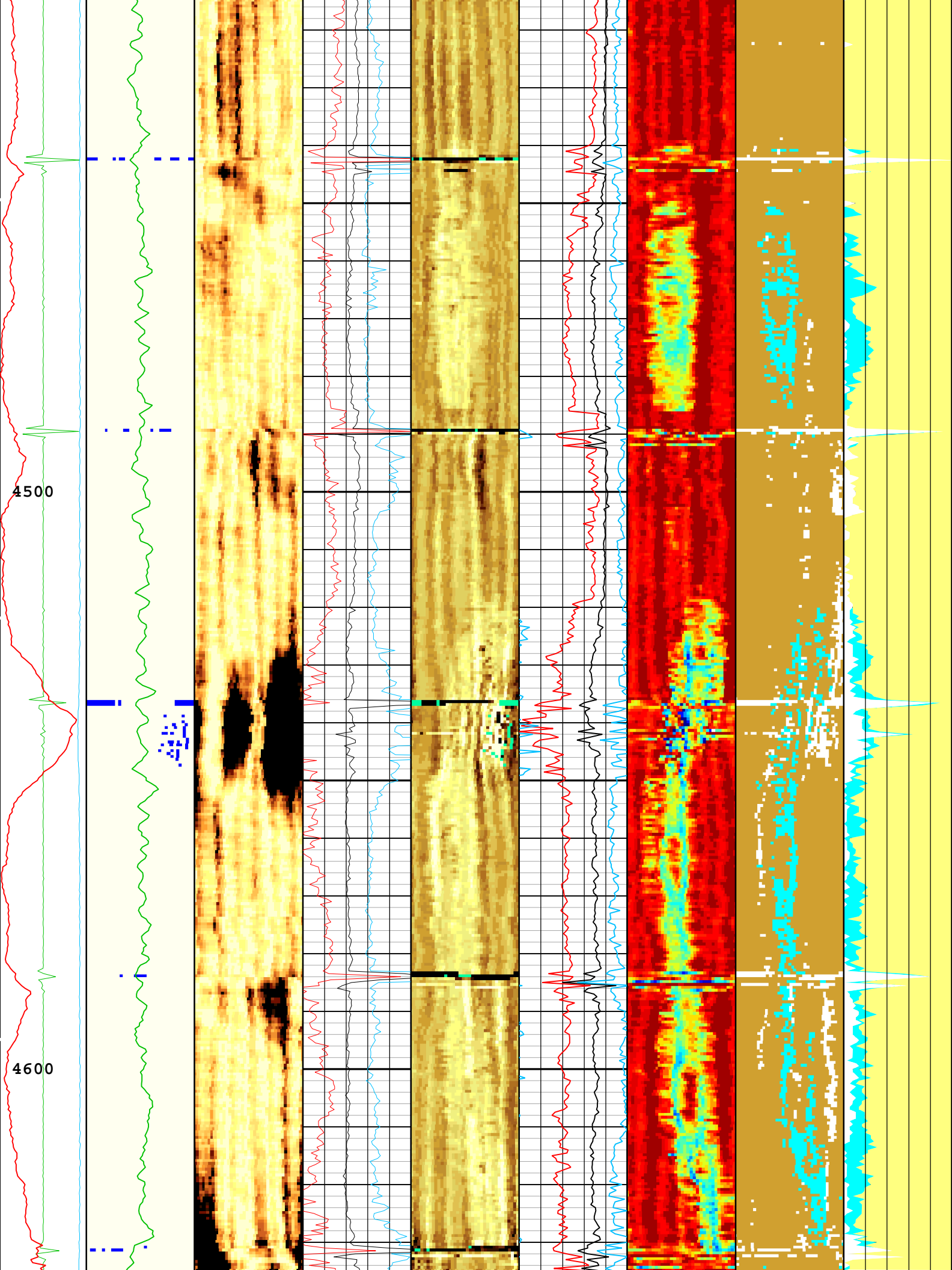


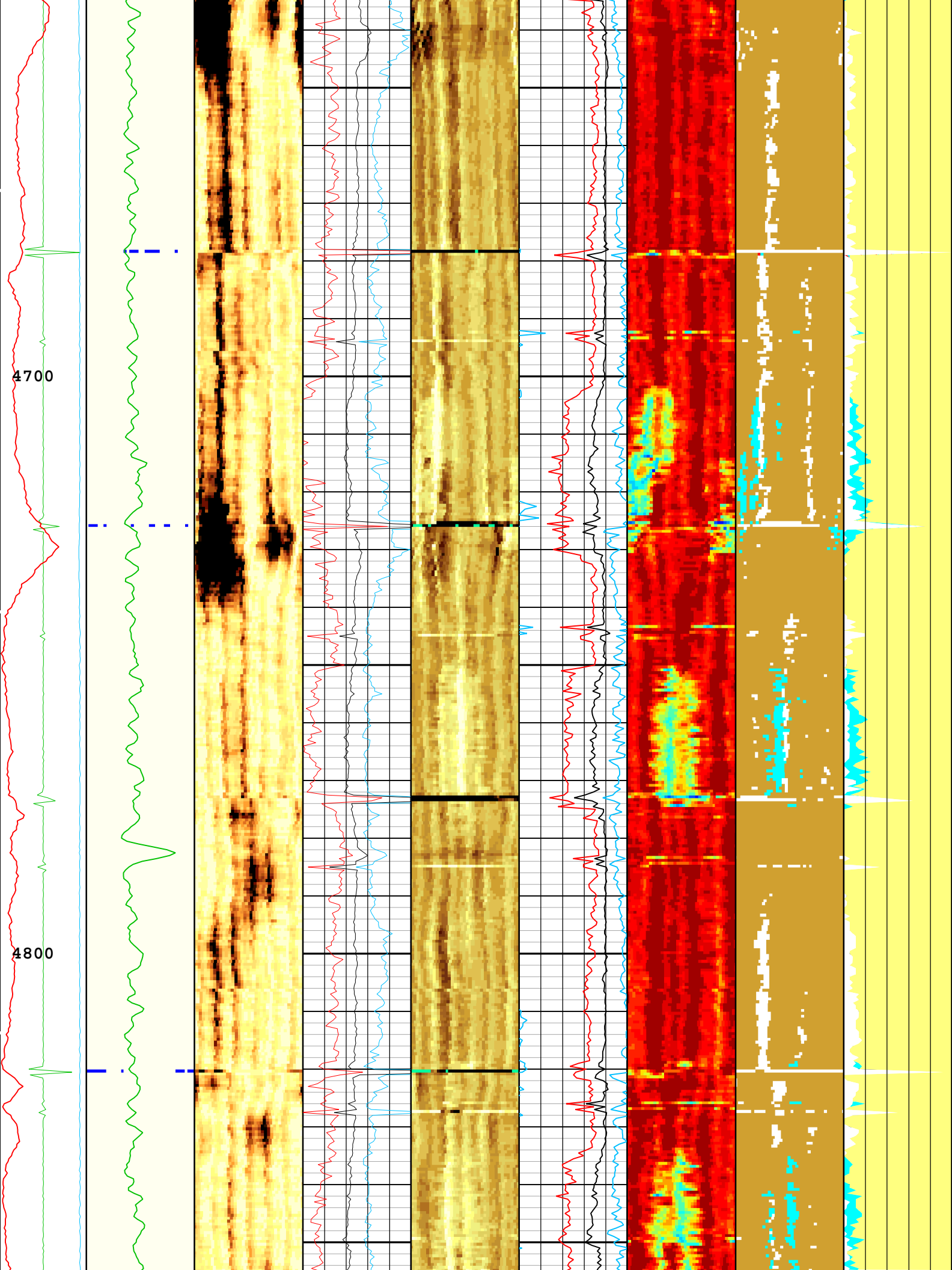


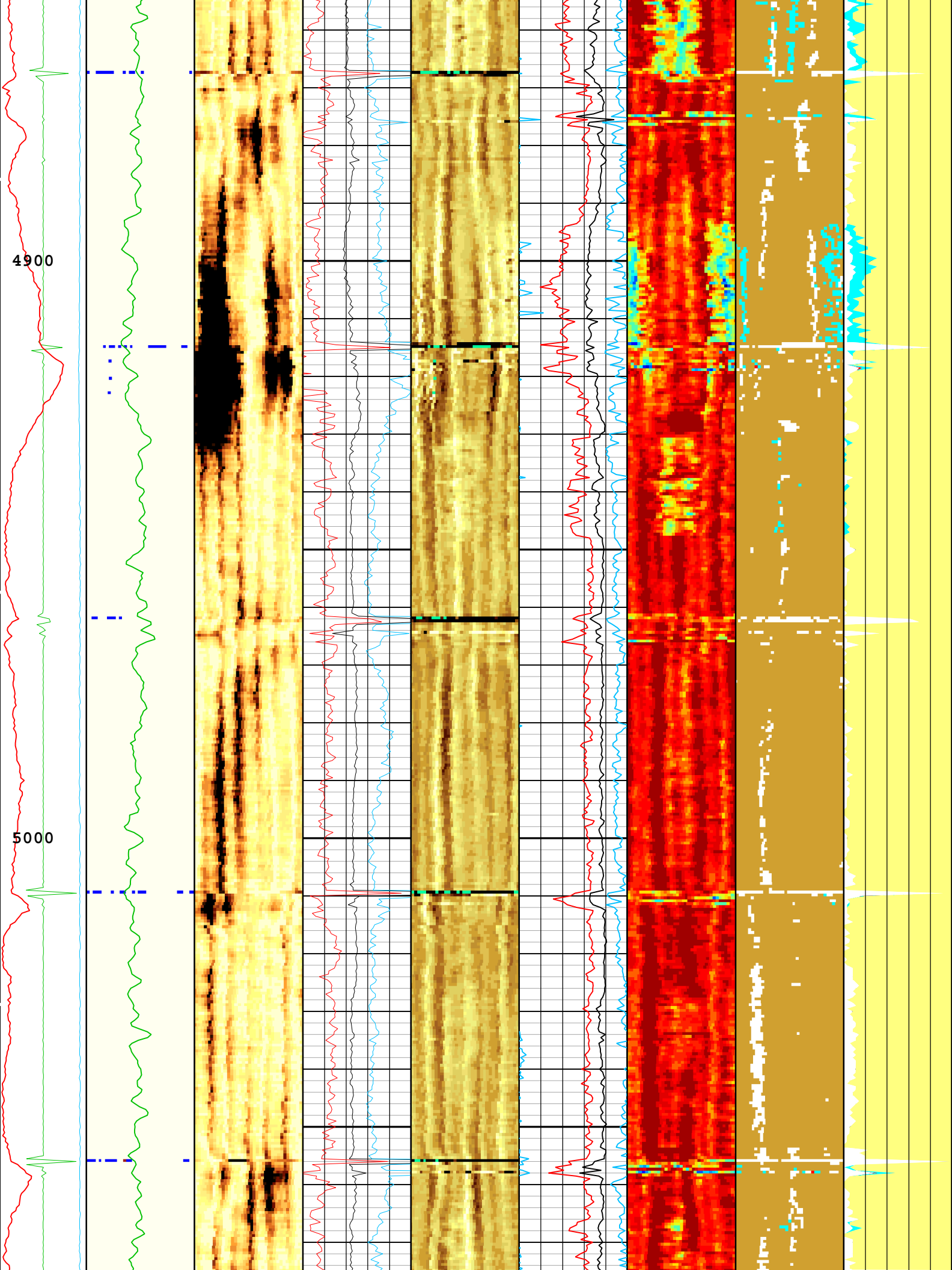


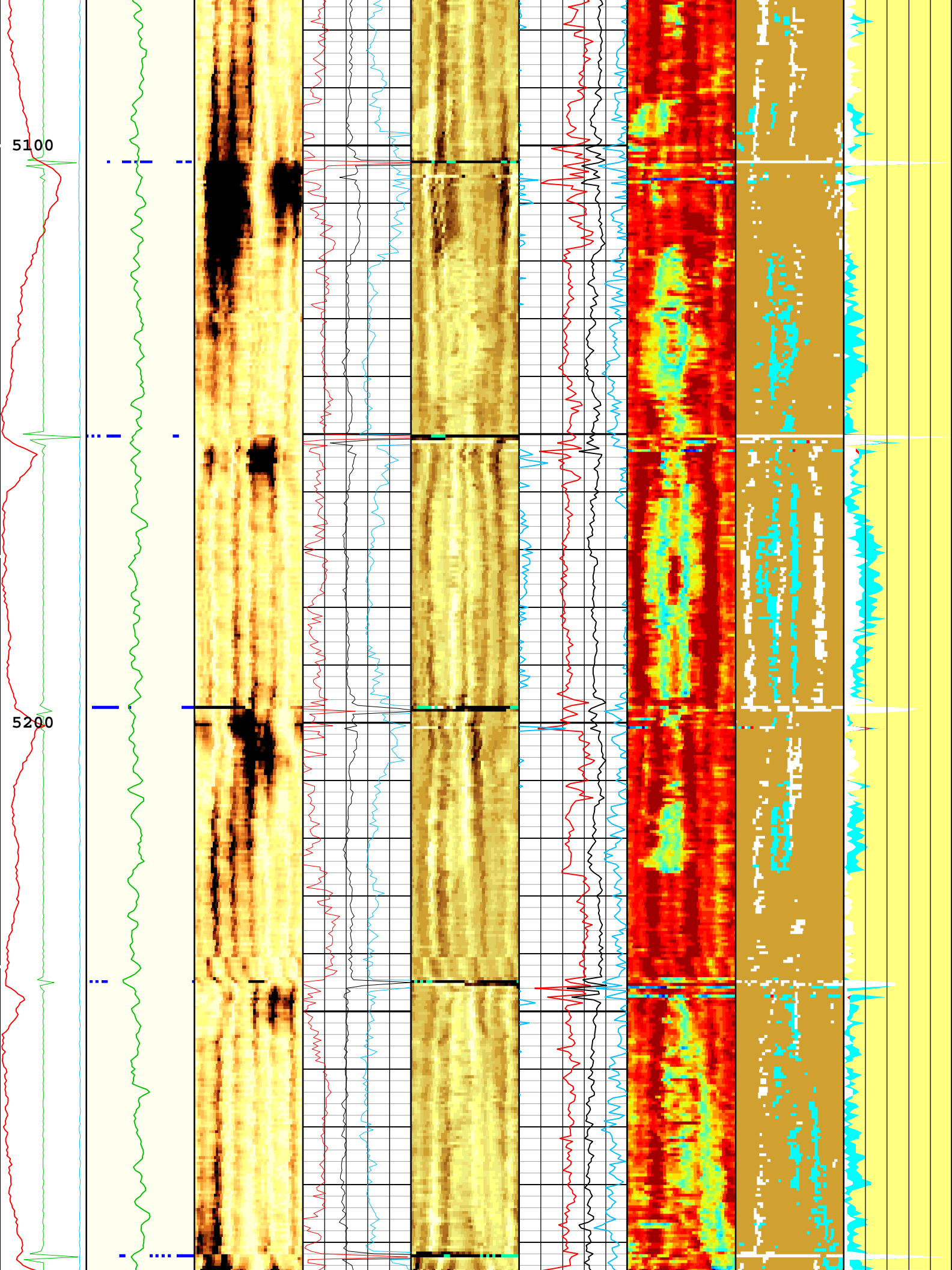


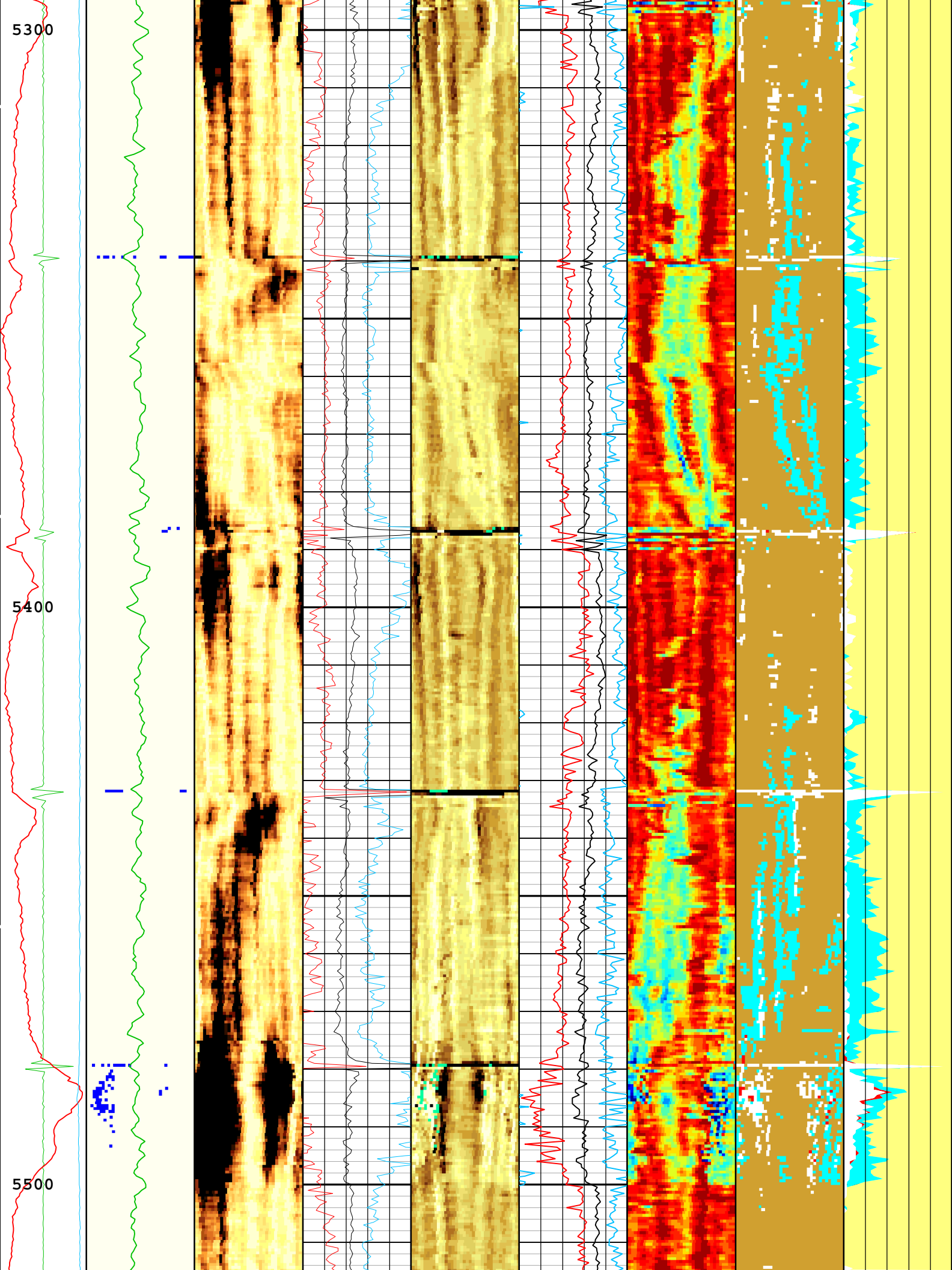


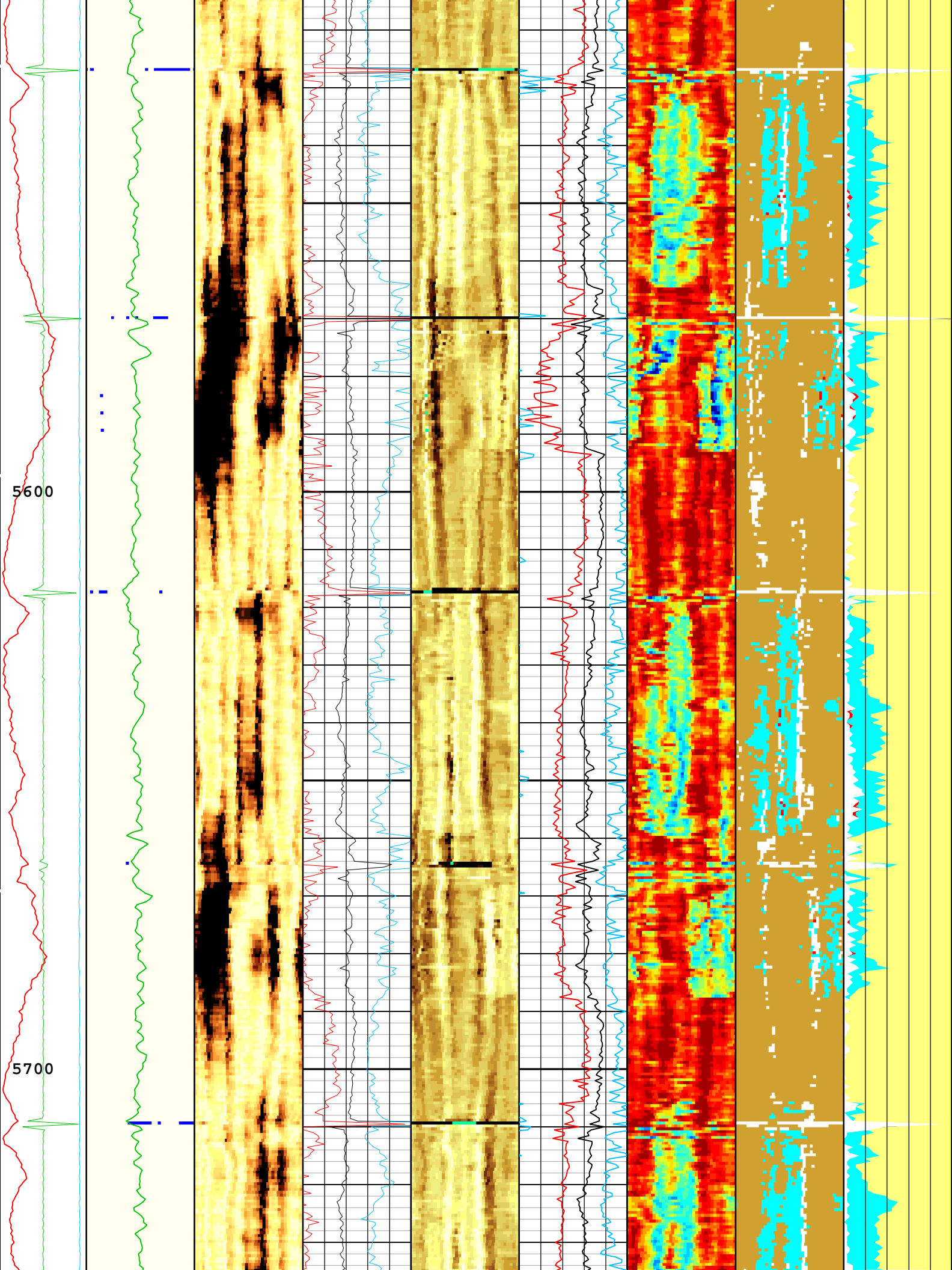


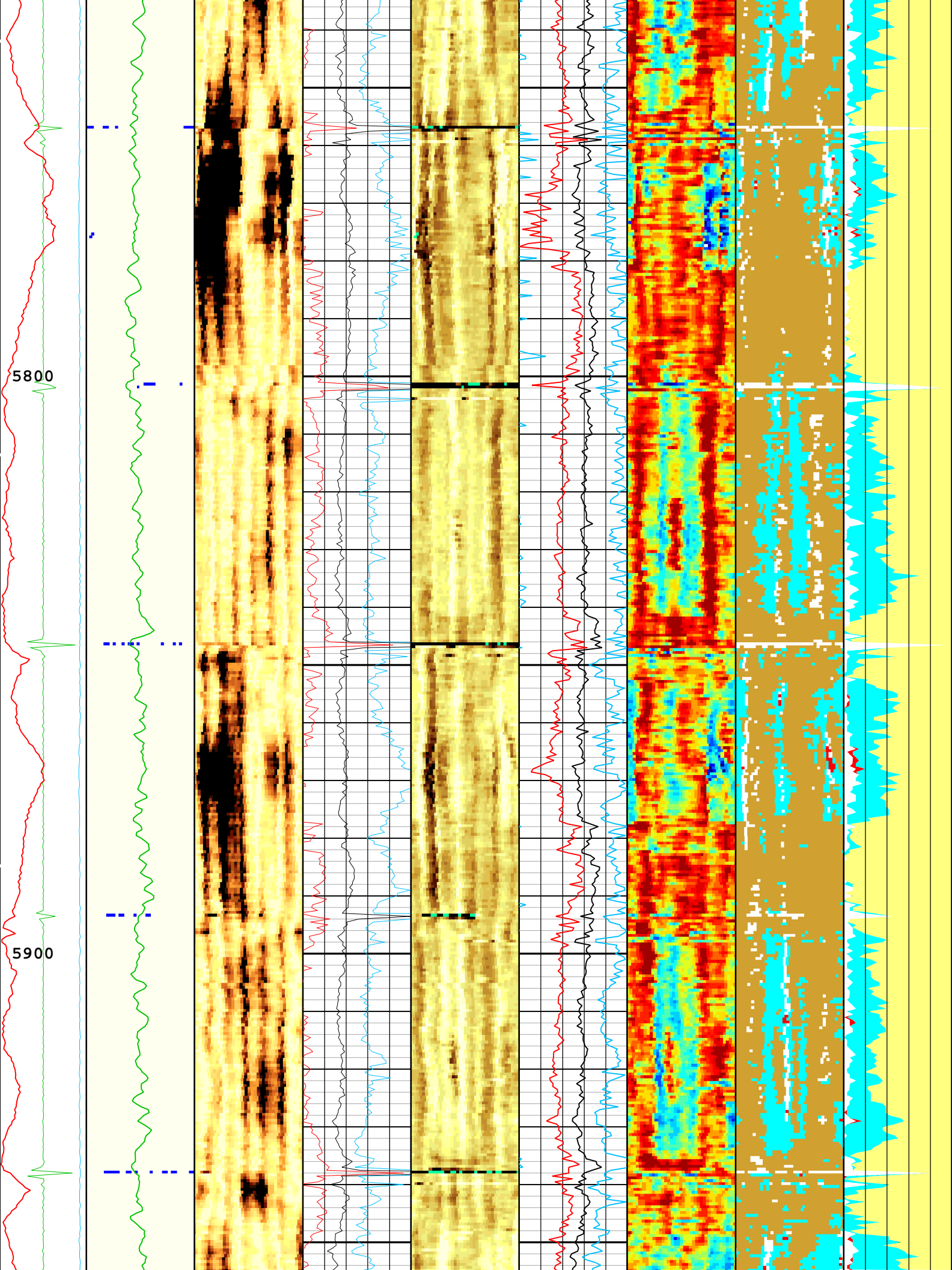


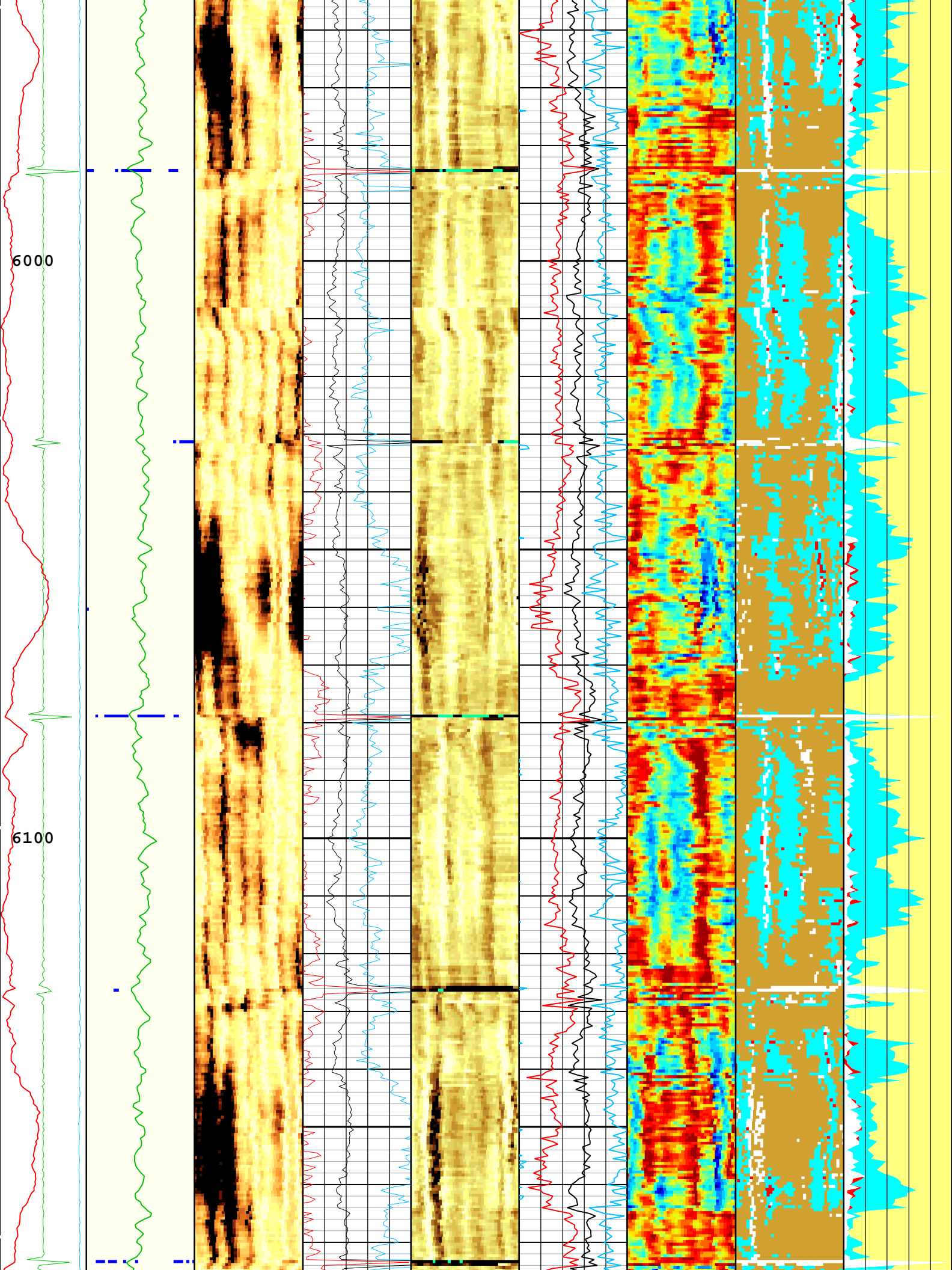


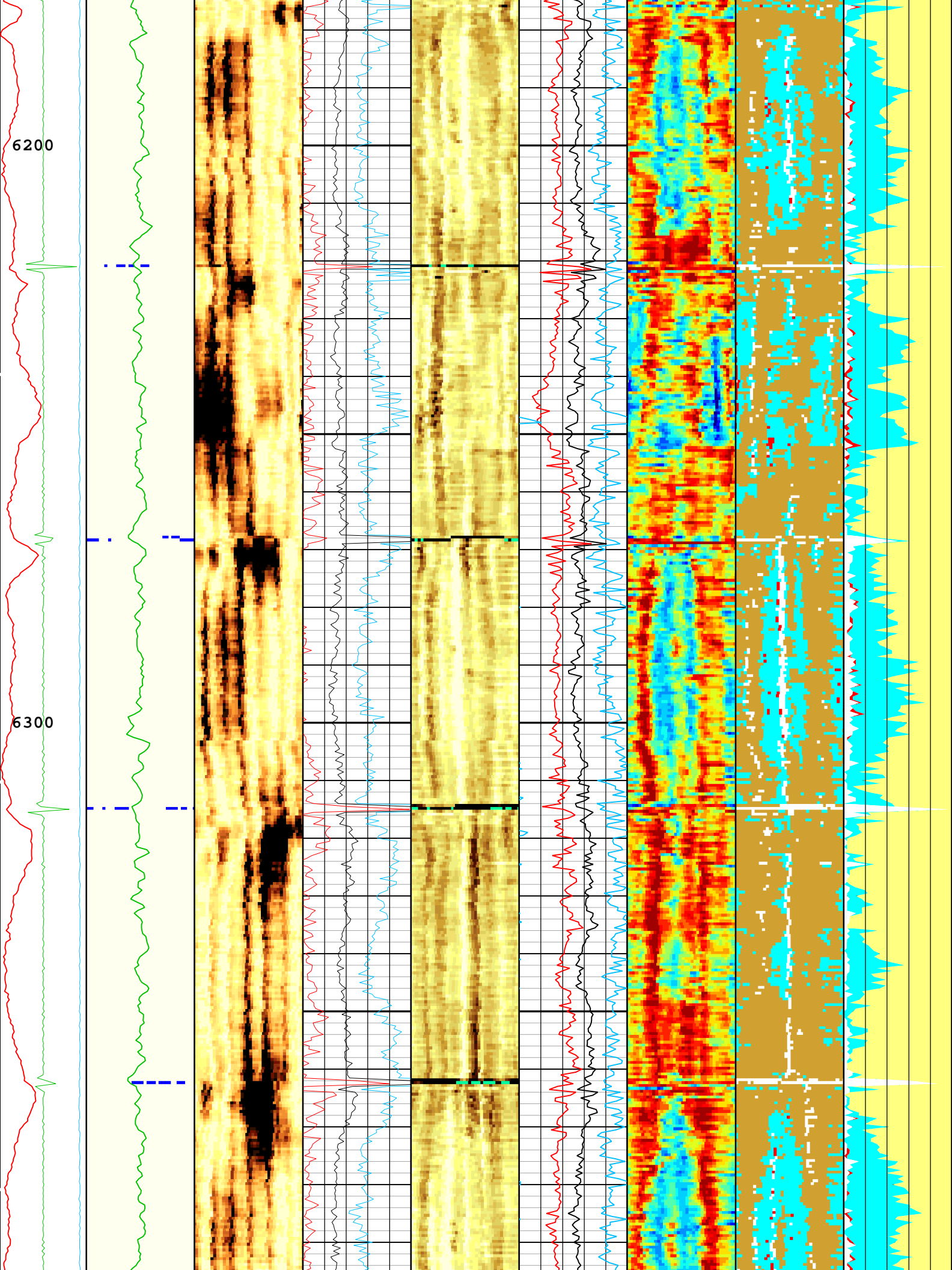


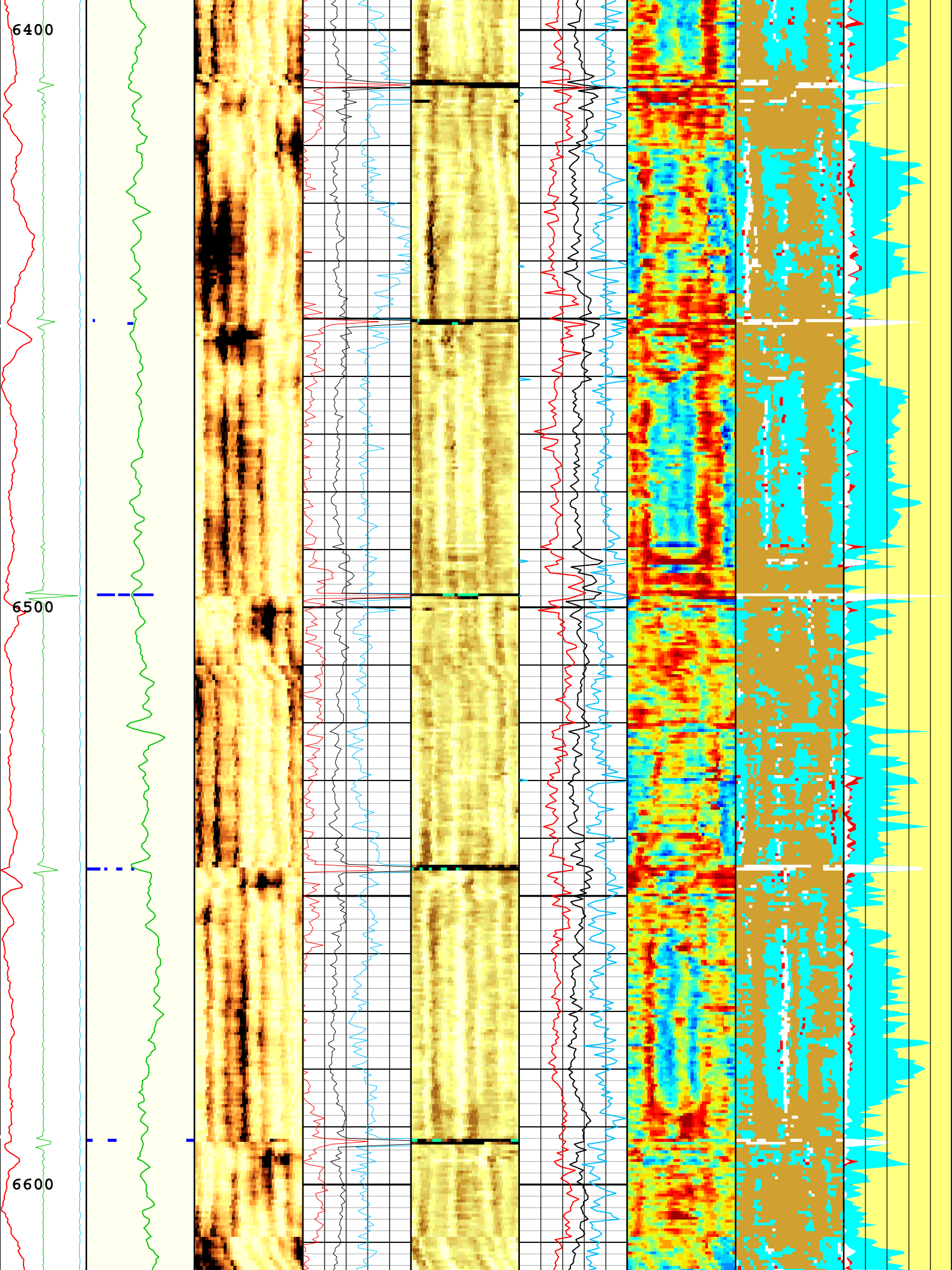


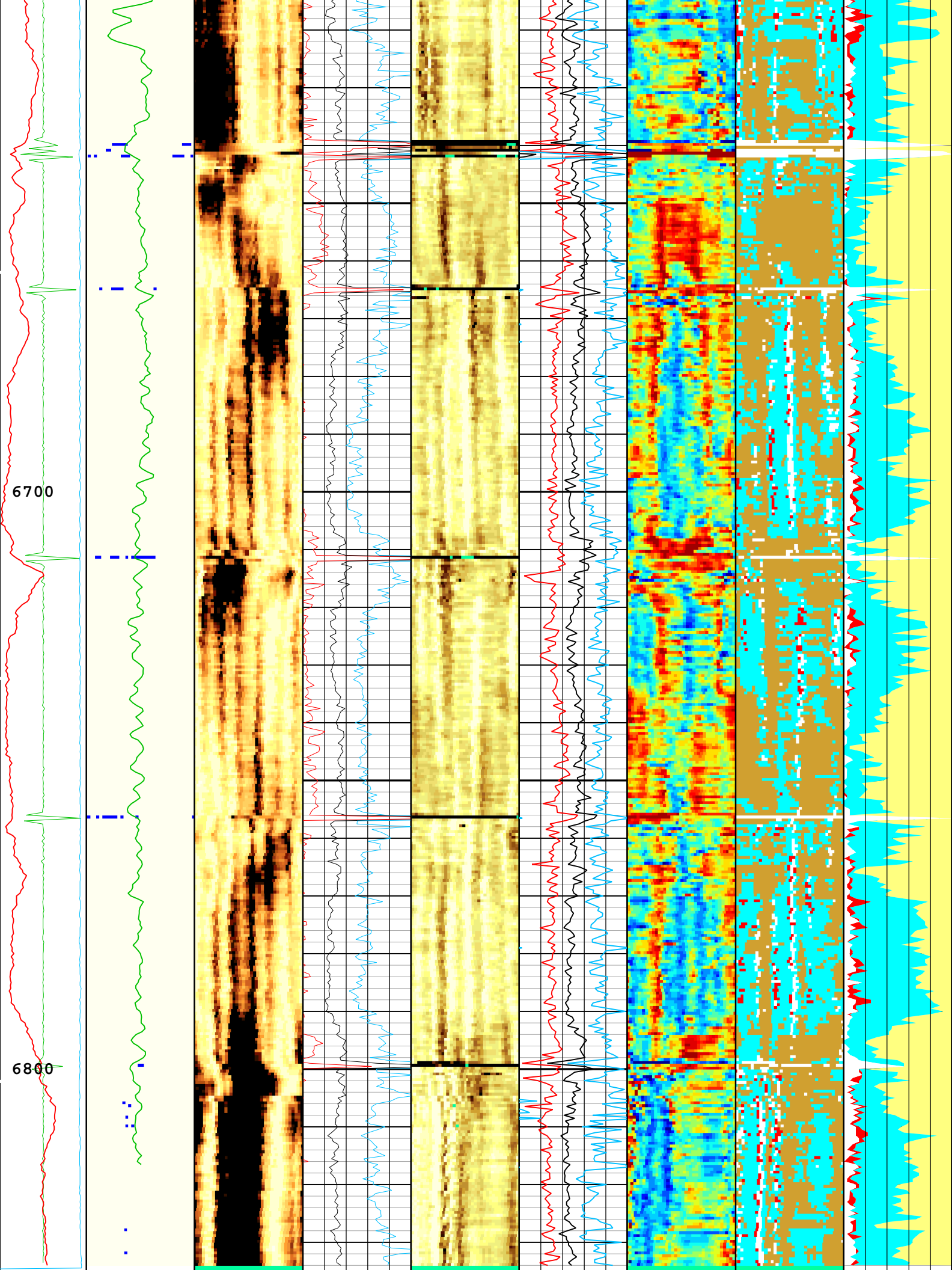

















Casing Collar Locator Ultrasonic (CCLU) USIT-E	Absent 1.500 3.500	Absent -5.200 -3.600 -2.000 -0.400	Acoustic Impedance Minimum (AIMN) USIT-E	Absent 1.500 3.500 5.500 7.500	Minimum Flexural Attenuation (U-USIT_UFAN) USIT-E	Absent 42.000 66.000 90.000 114.000	Absent 0.500 1.500 2.500 3.500	SLG Solid Index
-20 in 20	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
U L B R U	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	
Motor Revolution Speed (RSAV) USIT-E	1 5		-1 Mrayl 9		0 dB/m 150			
6 c/s 7.5	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 |
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| 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: 12-Aug-2018 19:42:25

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	12480	ft
CDEN	Cement Density	USIT-E	12.5	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	8.4	lbm/gal
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
GR_MULTIPLIER	Gamma Ray Multiplier	EDTC-B	1	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	-9.03	dB/m
IBC_FLEX_OFFSET	IBC Flexural Offset from Casing	USIT-E	1.000000	

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	1.24	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1	
RCOD	Reference Calibrator Outer Diameter	USIT-E	4.5	in
RCSO	Reference Calibrator Standoff	USIT-E	0.842	in
RCTH	Reference Calibrator Thickness	USIT-E	0.216	in
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	70	%
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.61	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-4.85	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
USI_RPLUS	Ultrasonic R+ Processing	USIT-E	No	
THDP	Thickness Detection Policy	USIT-E	Fundamental	
VCAS	Ultrasonic Transversal Velocity in Casing	USIT-E	51.4	us/ft
ZCAS	Acoustic Impedance of Casing	USIT-E	46.25	Mrayl
ZINI	Initial Estimate of Cement Impedance	USIT-E	-1	Mrayl
ZMUD	Acoustic Impedance of Mud	Borehole	1.75	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.3	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters			
Parameter	Value	Start (ft)	Stop (ft)
BS	12.25	55	2483
BS	8.5	2483	6837.5
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	60	V
HRES	Horizontal Resolution	USIT-E	10 deg	
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
MOTOR_PROTECT	Motor Protection	USIT-E	On	
UACLV_PERM	Ultrasonic ACLV Permanent	USIT-E	Yes	
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	137	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	177	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	106	us

U-USIT_UNWE	Near Receiver Window End Time	USIT-E	146	us
USFR	Ultrasonic Sampling Frequency	USIT-E	666667	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 375 KHz	
UWKMM	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

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[4]:Up	Up	76.53 ft	6838.48 ft	12-Aug-2018 2:33:10 PM	12-Aug-2018 4:10:07 PM	ON	6.25 ft	No

All depths are referenced to toolstring zero

Log

Company:Crestone Peak Resources Operating LLC

Well:Ruegge #3O-4H-N165

One: Log[4]:Up:S004

Description: USI IBC SLG Composite
 Format: Log (IBC SLG Composite)
 Index Scale: 2 in per 100 ft
 Index Unit: ft
 Index Type: Measured Depth
 Creation Date: 12-Aug-2018 19:42:35

TIME_1900 - Time Marked every 60.00 (s)

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

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

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

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

1 5

Gamma Ray (ECGR_EDT C) EDTC-B

0 gAPI 150

U L B R U

Orientation: Top of Hole

Absent -5.200 -3.600 -2.000 -0.400

Explicit Normalization

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

External Radii Average (ERAV) USIT-E

3 in 2

Internal Radius Averaged Value (IRAV) USIT-E

3 in 2

Internal Radius Maximum Value (IRMX) USIT-E

3 in 2

Internal Radius Minimum Value (IRMN) USIT-E

3 in 2

External Radii Average (ERAV) USIT-E

2 in 3

Internal Radius Averaged Value (IRAV) USIT-E

2 in 3

Internal Radius Maximum Value (IRMX) USIT-E

2 in 3

Internal Radius Minimum Value (IRMN) USIT-E

2 in 3

U L B R U

Orientation: Top of Hole

Absent -0.051 -0.012 0.028 0.068

Explicit Normalization

USIT - Internal Radii Normalized (IRBK) USIT-E (in)

Thickness Minimum Value (THMN) USIT-E

0.1 in 0.6

Thickness Average Value (THAV) USIT-E

0.1 in 0.6

Thickness Maximum Value (THMX) USIT-E

0.1 in 0.6

U L B R U

Orientation: Top of Hole

Absent -0.051 -0.012 0.028 0.068

Explicit Normalization

USIT - Casing Thickness Normalized (THBK) USIT-E (in)

U L B R U

Orientation: Top of Hole

Absent 1.500 3.500 5.500 7.500

Custom Normalization

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

U L B R U

Orientation: Top of Hole

Absent 42.000 66.000 90.000 114.000

Custom Normalization

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

U L B R U

Orientation: Top of Hole

Absent 1.500 3.500

Explicit Normalization

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

Casing Collar Locator Ultrasonic (CCLU) USIT-E

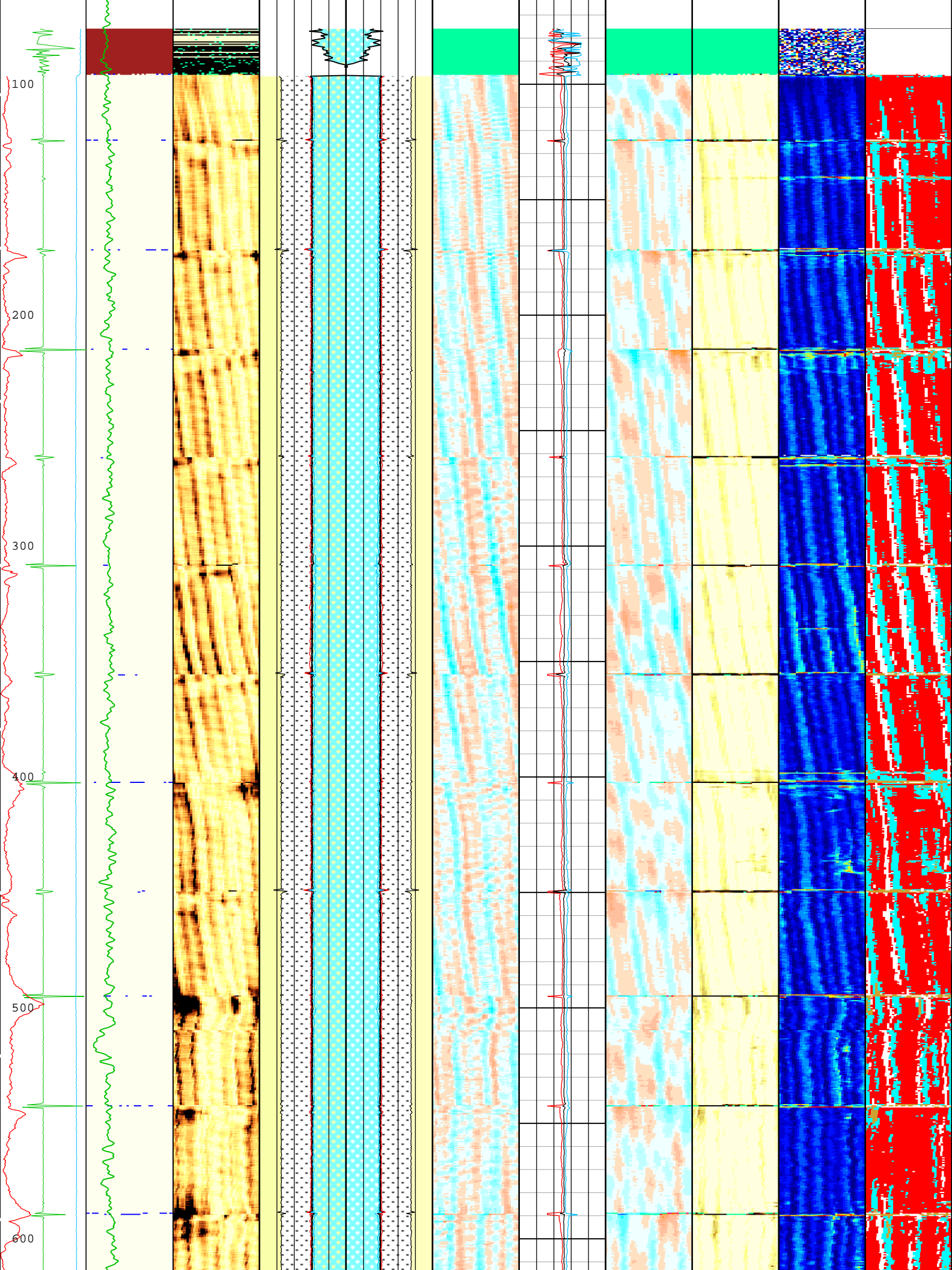
-20 in 20

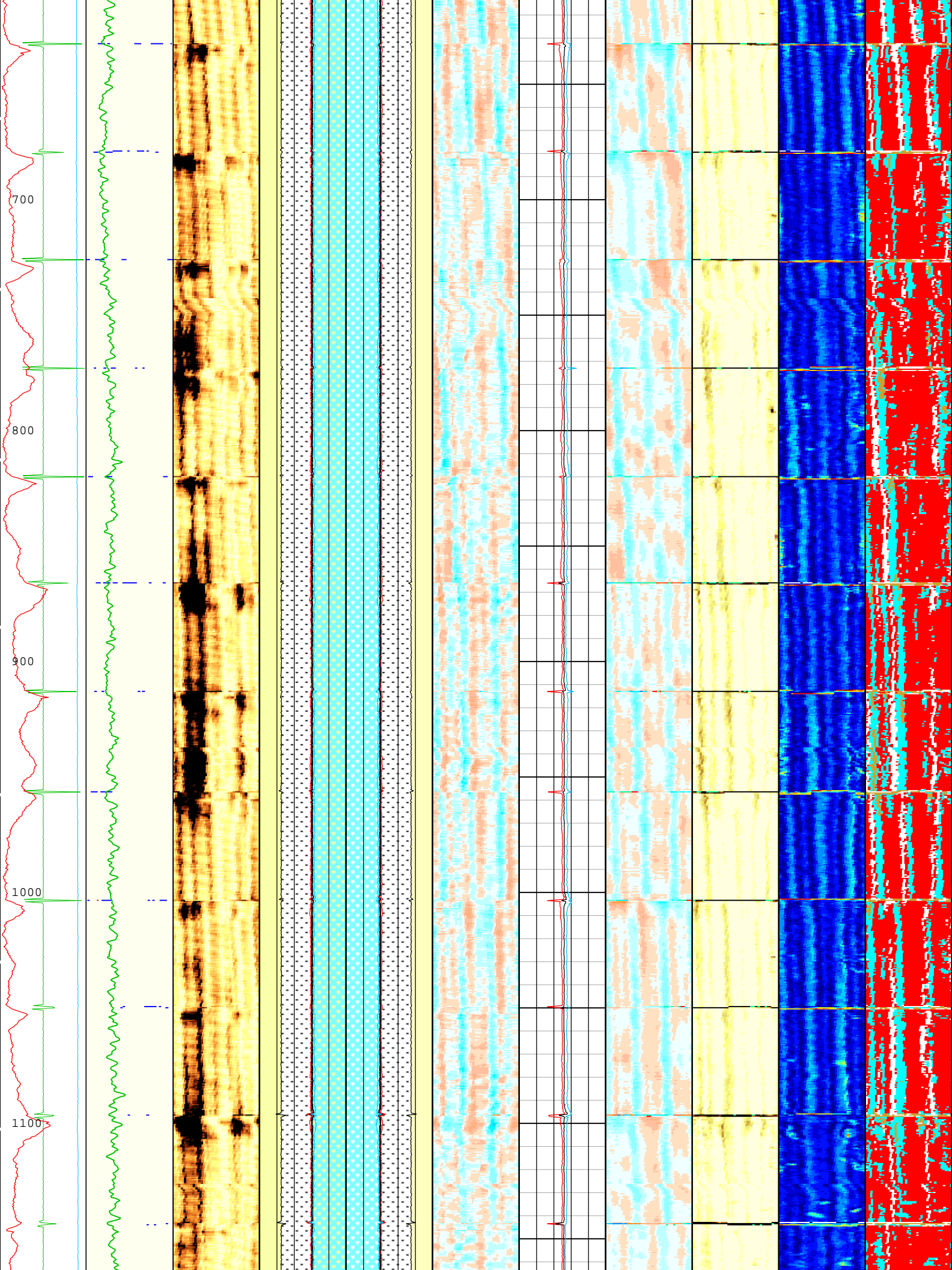
Amplitude of Eccentering (ECCE) USIT-E

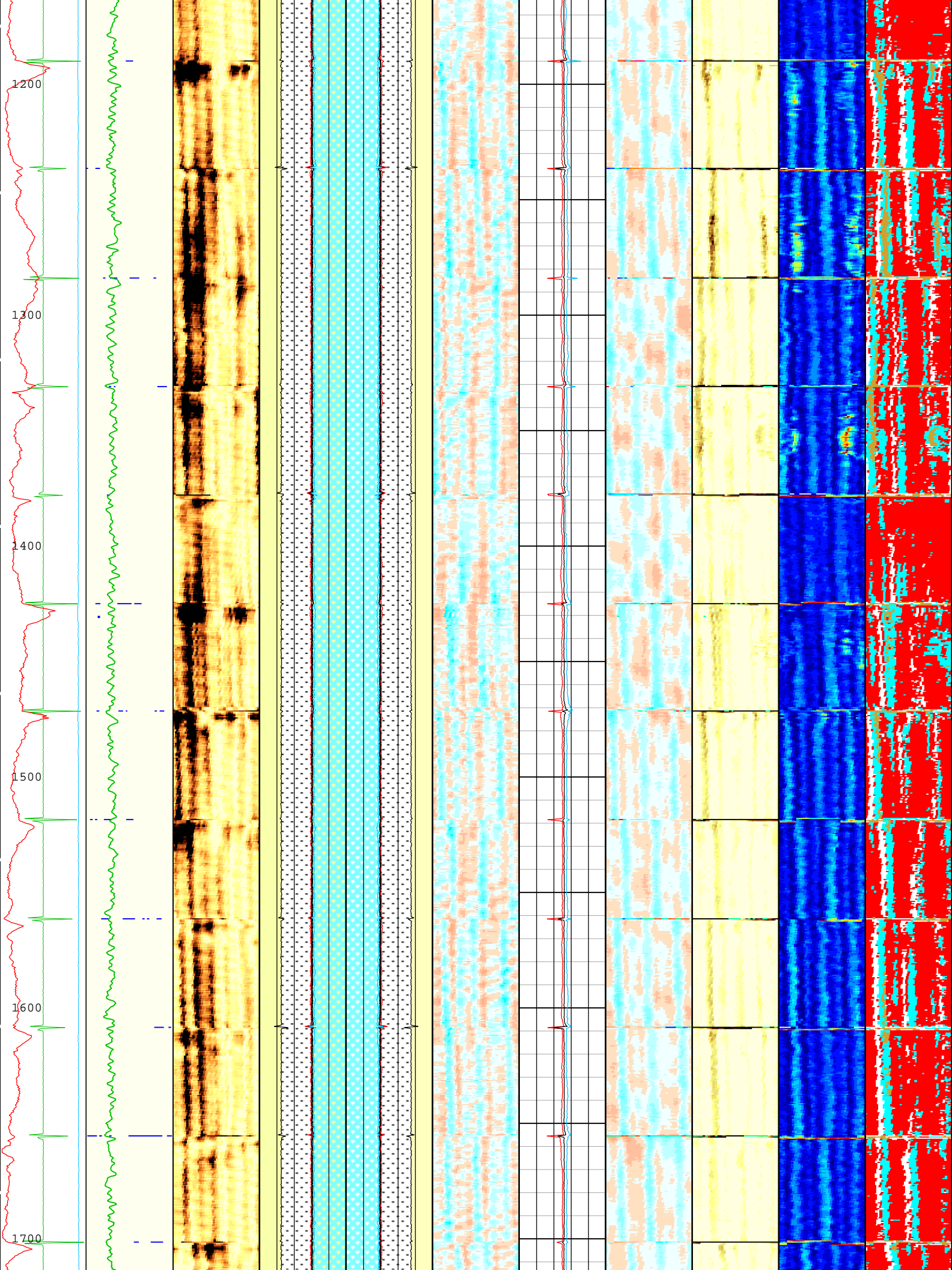
0 in 0.5

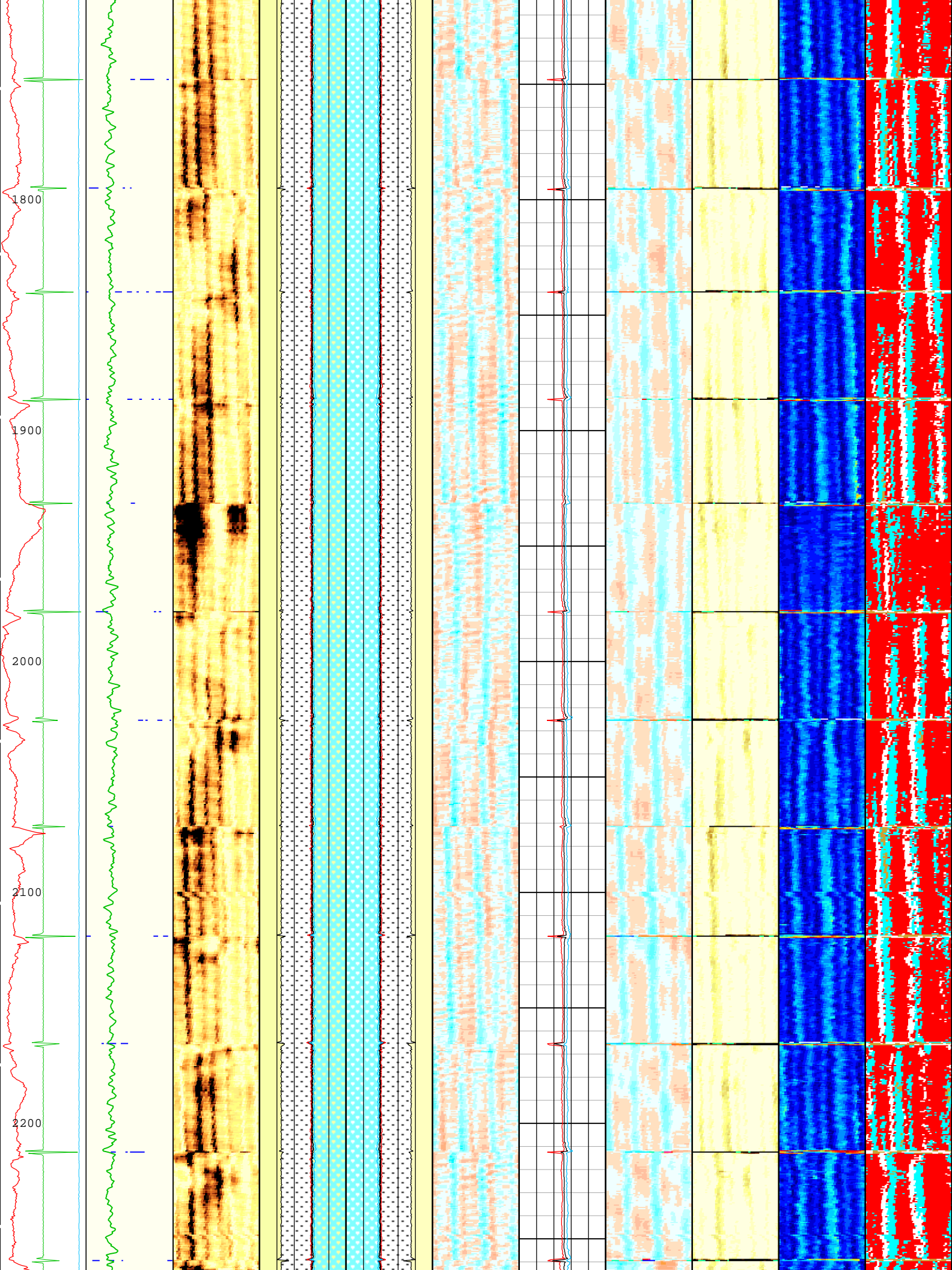
Motor Revolution Speed (RSAV) USIT-E

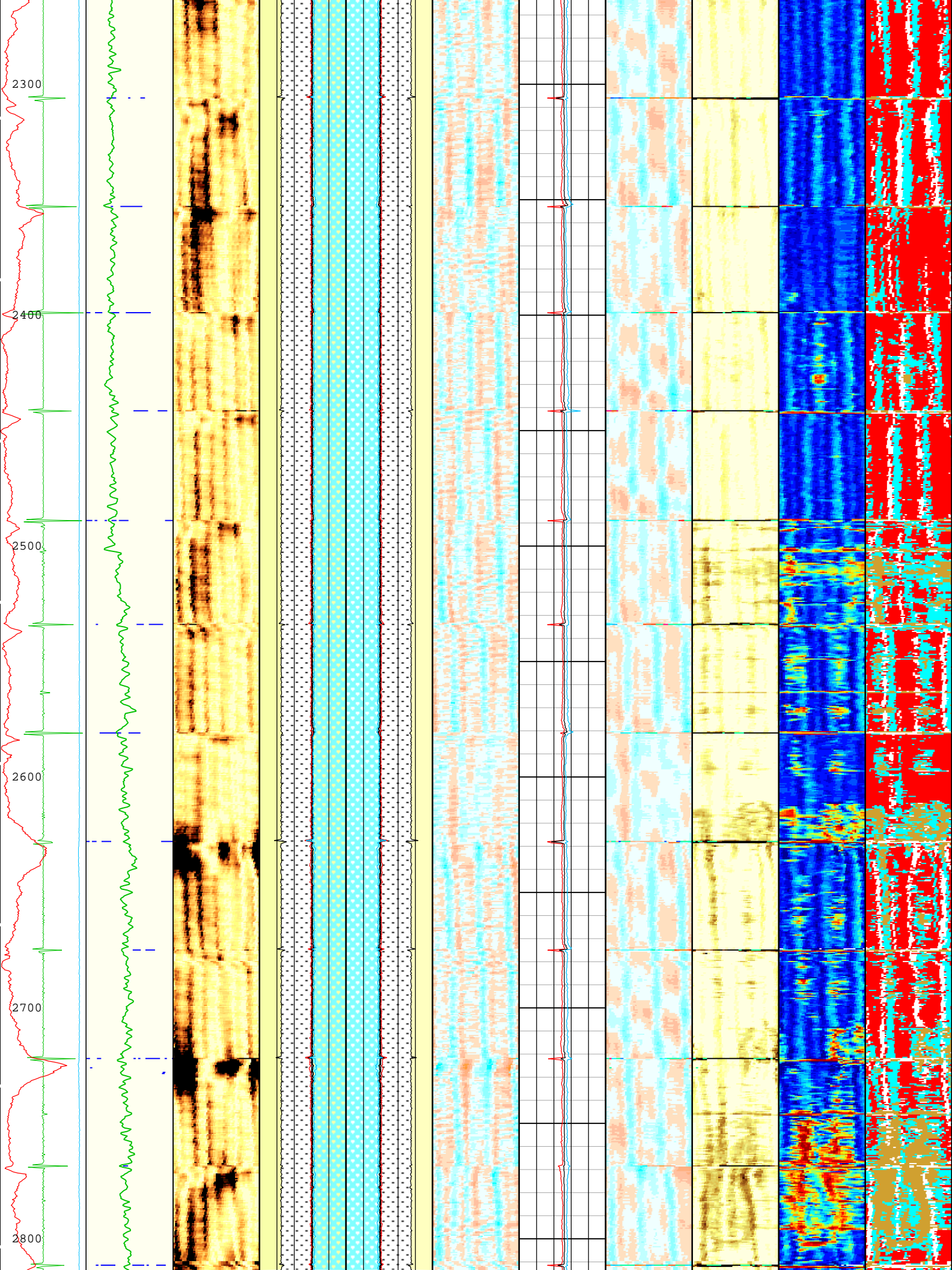
6 c/s 7.5

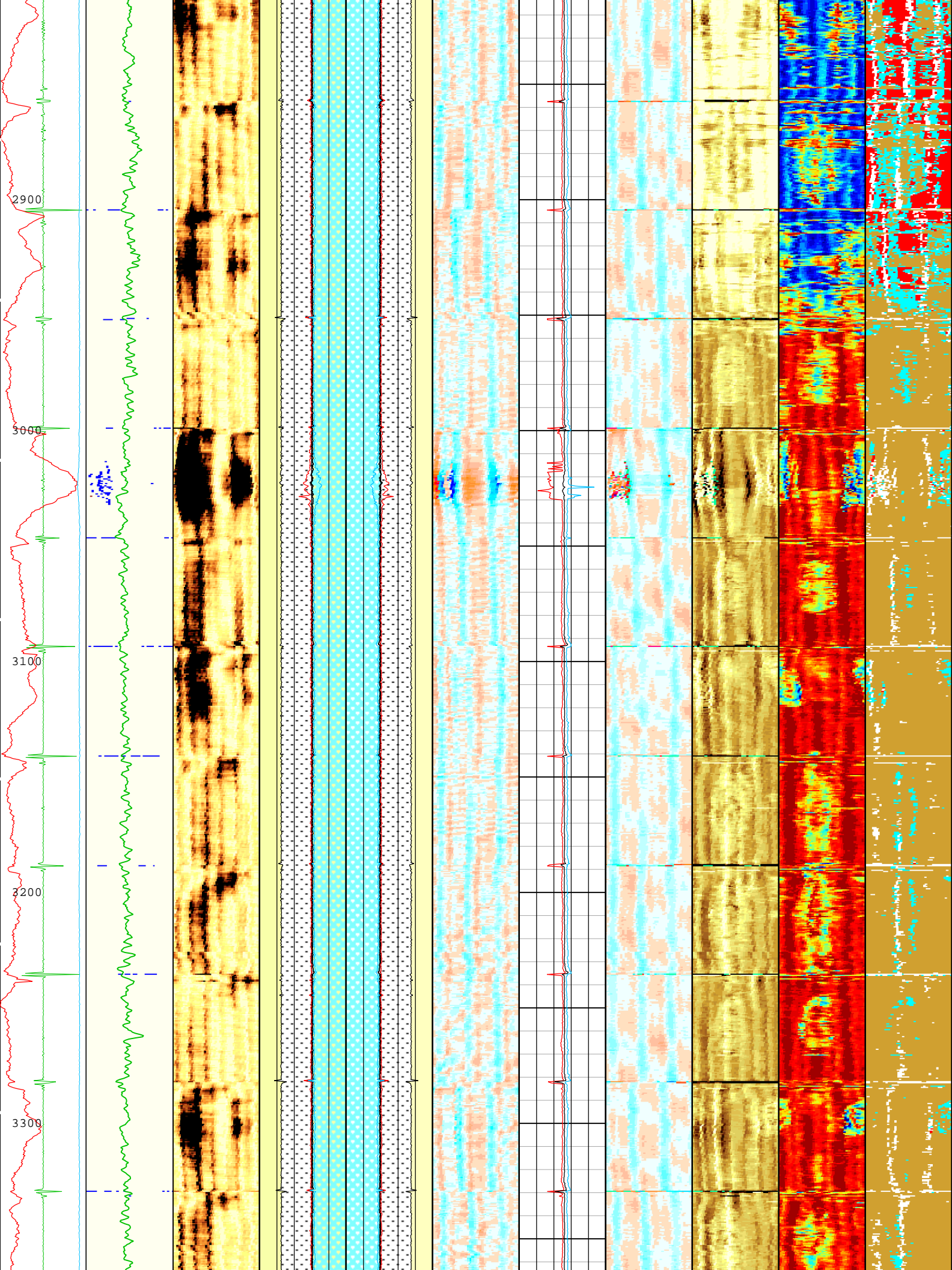


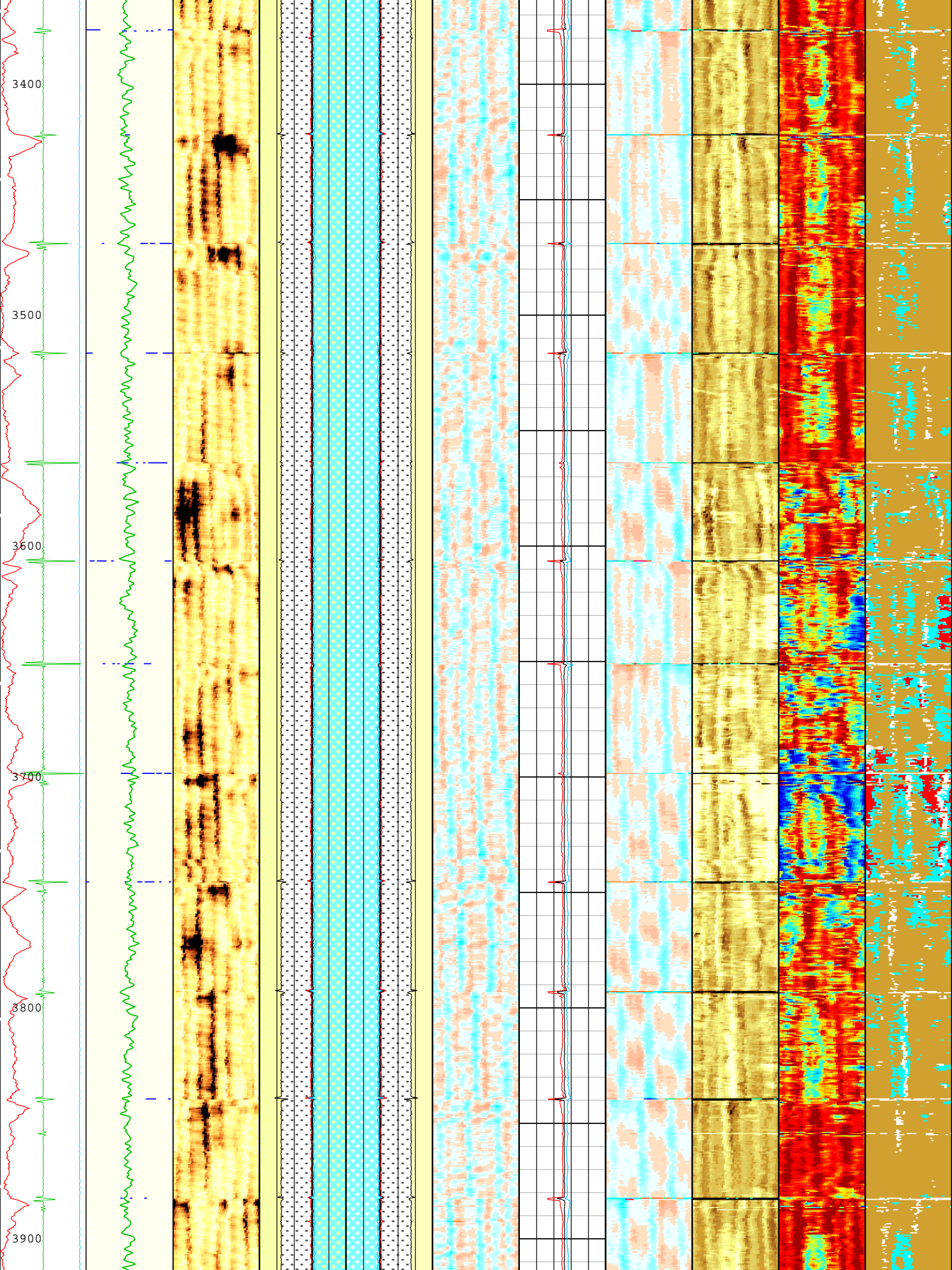


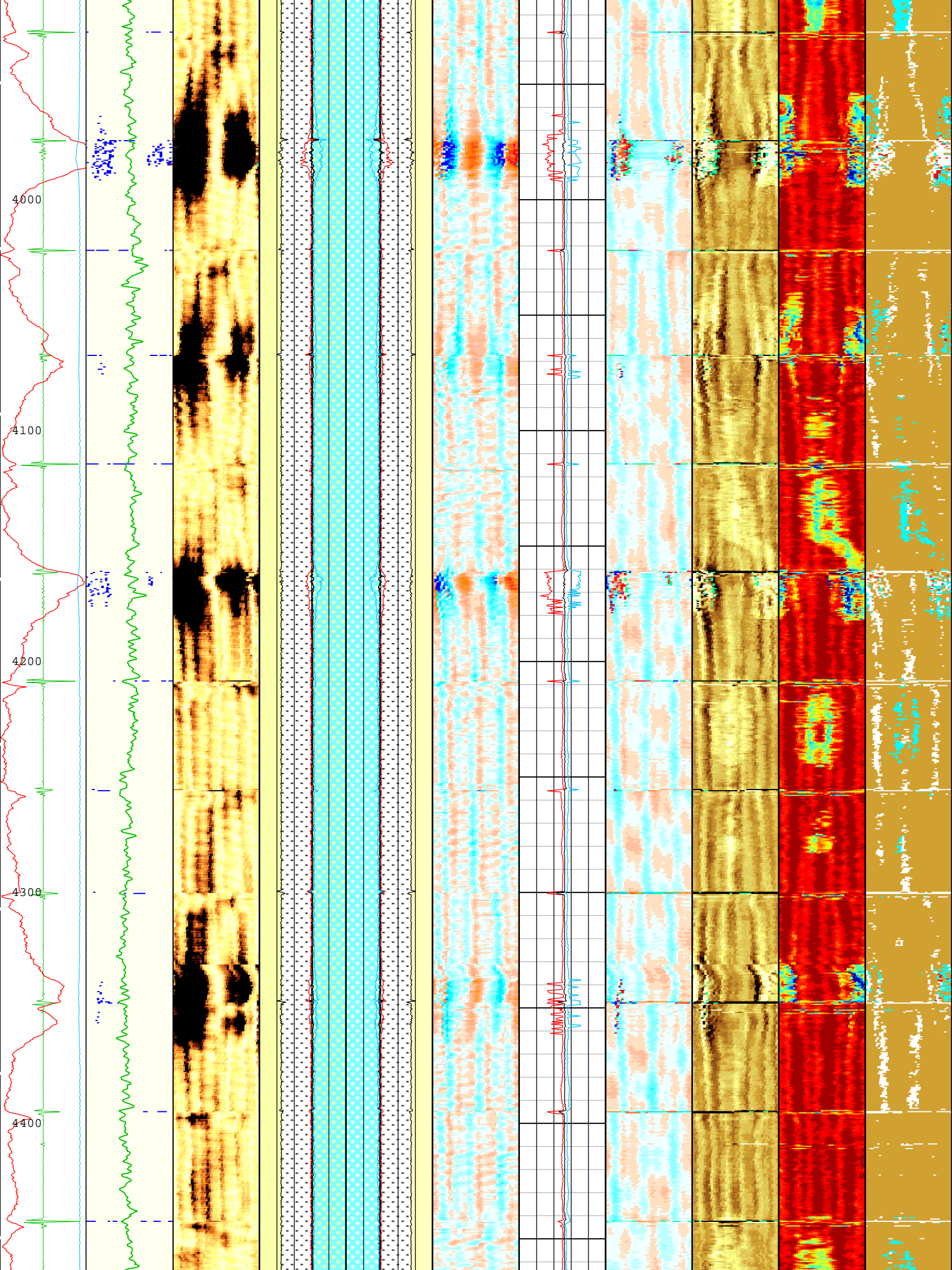


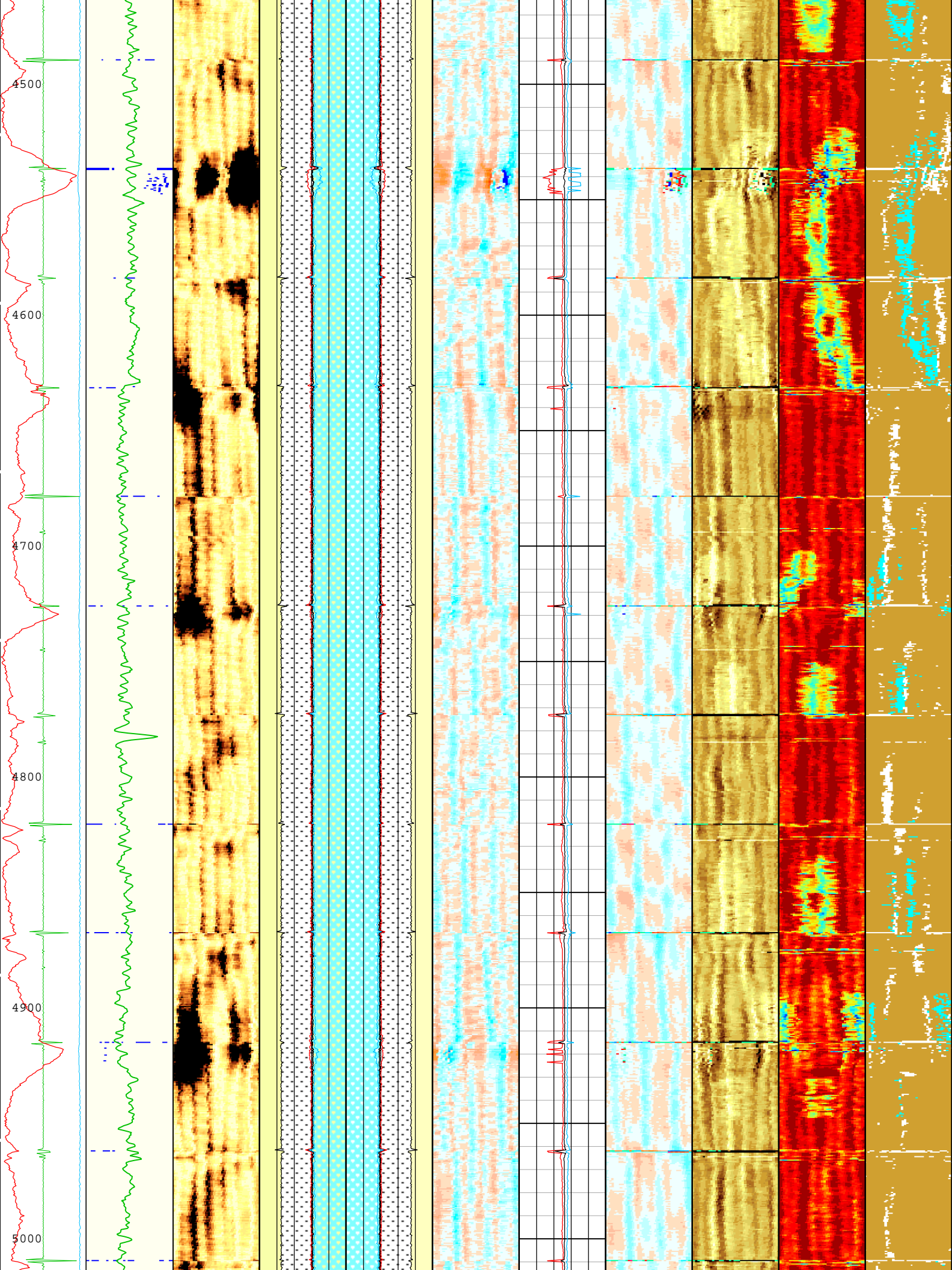


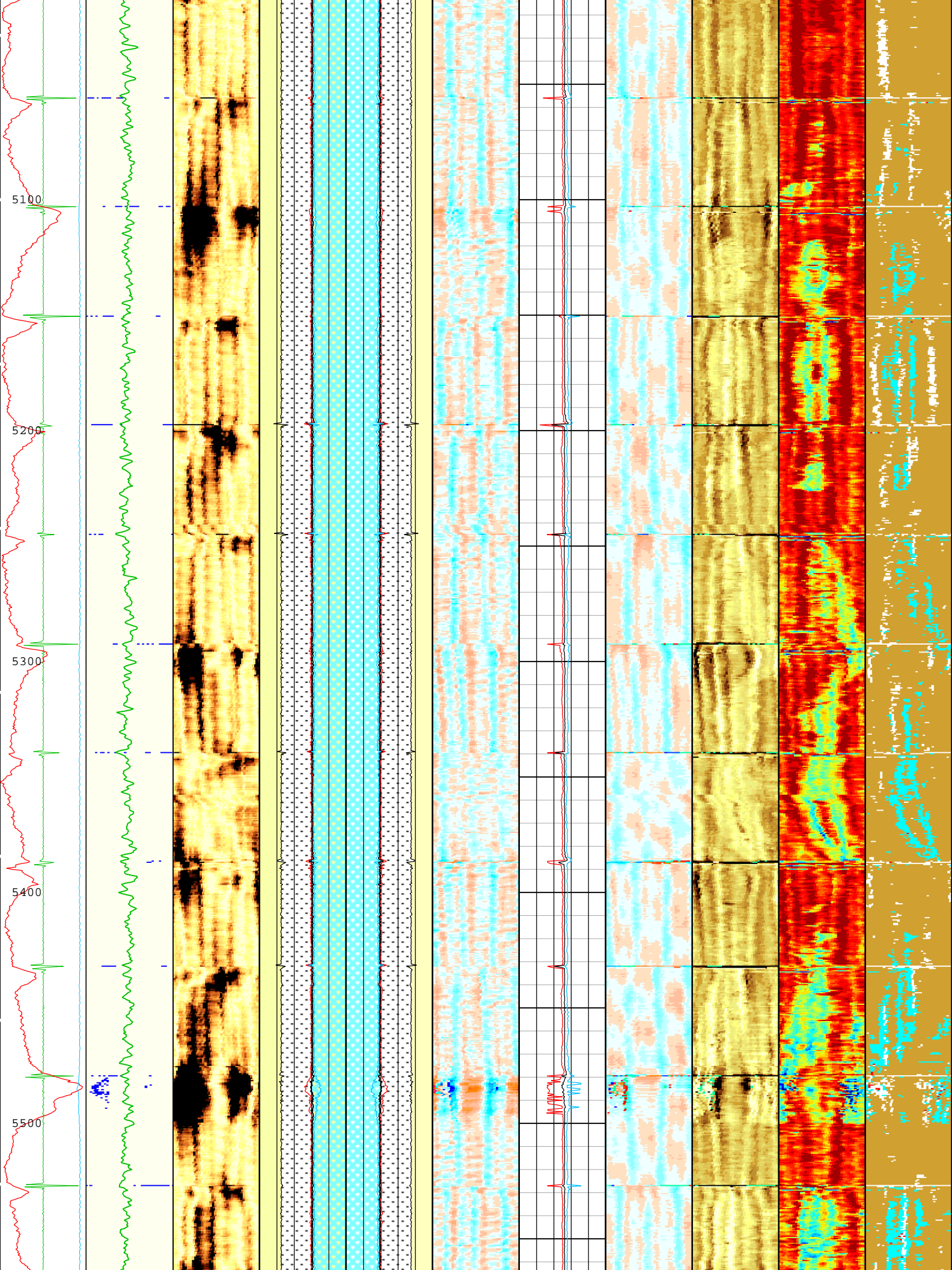


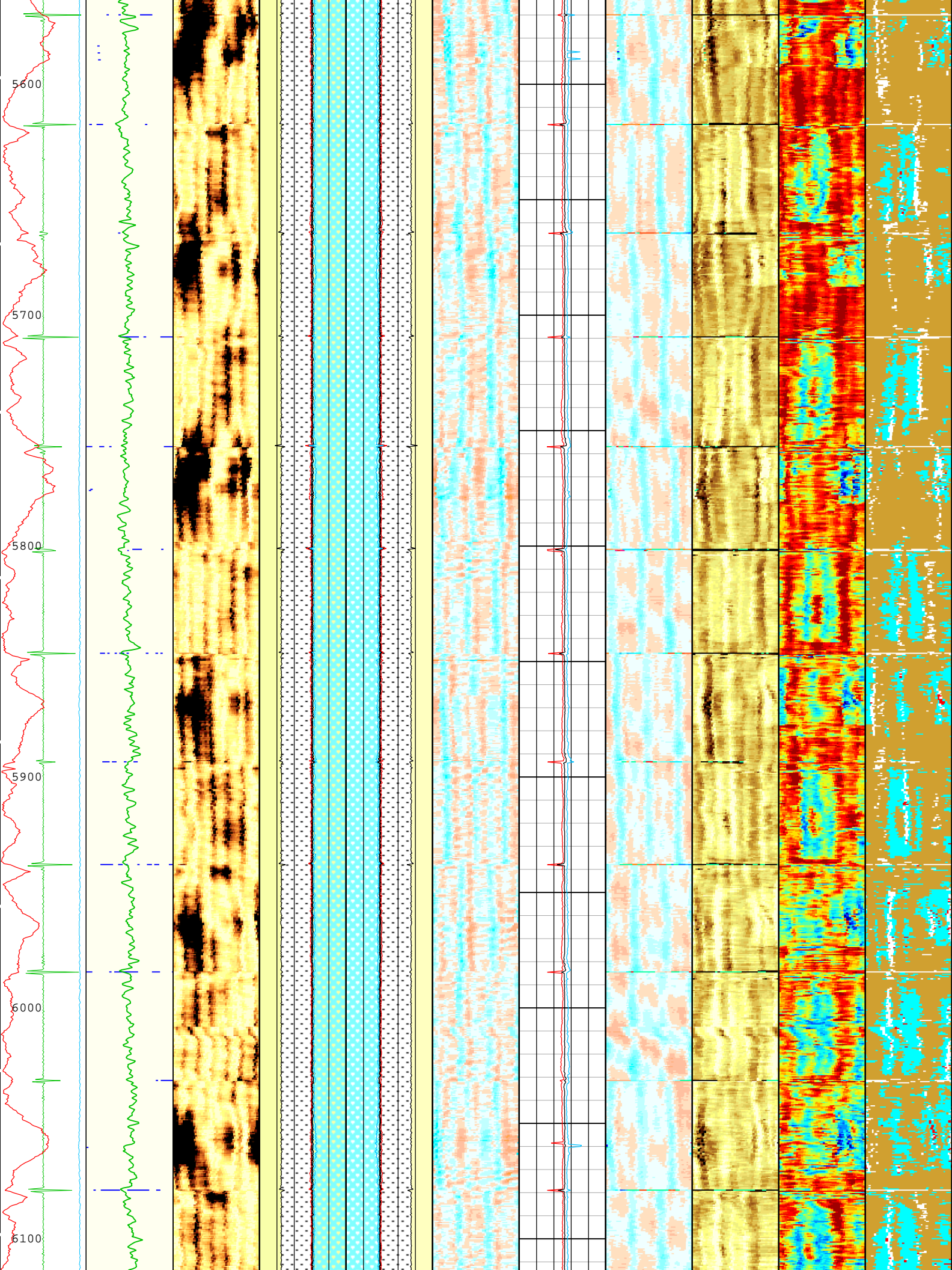


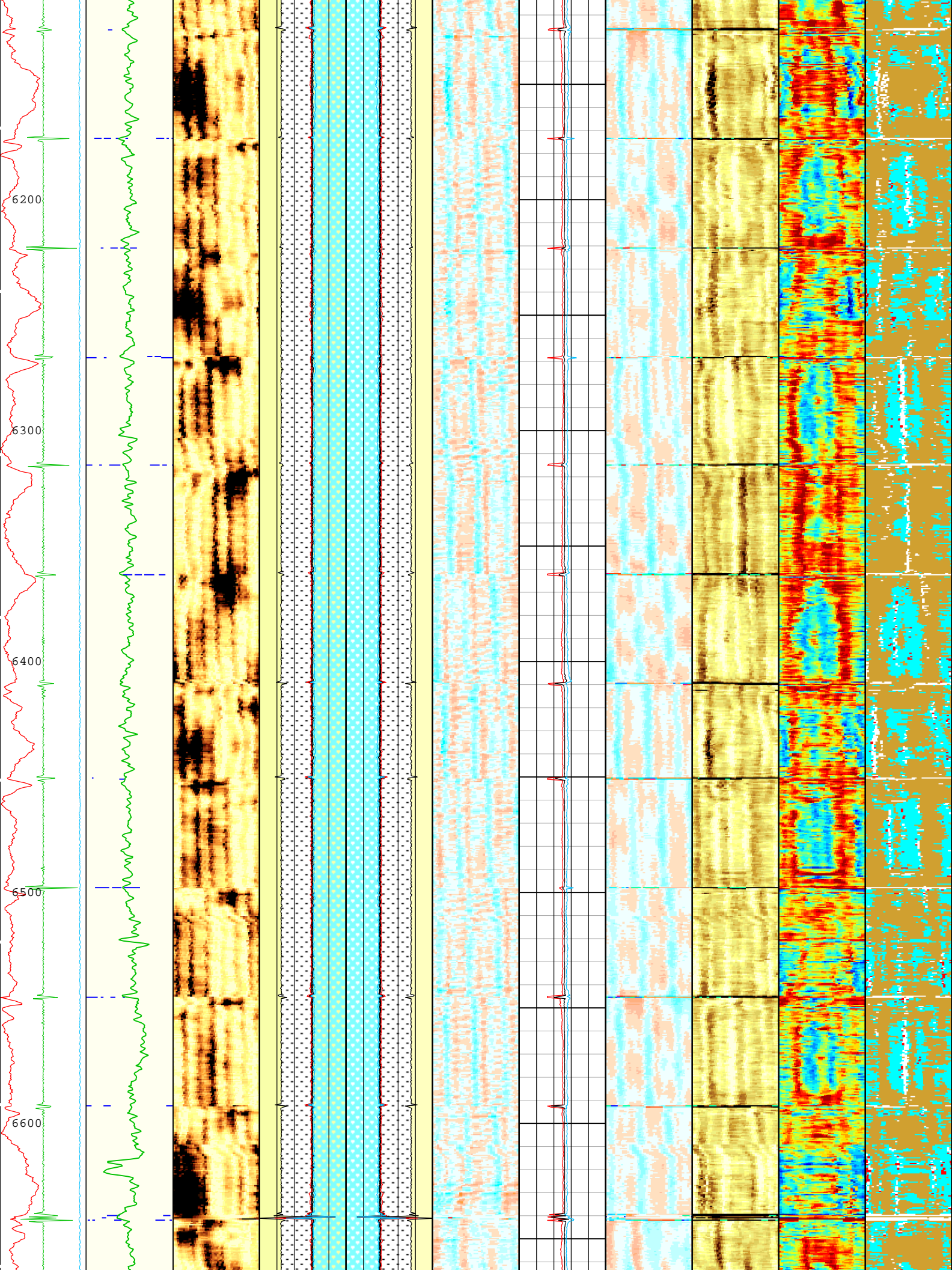


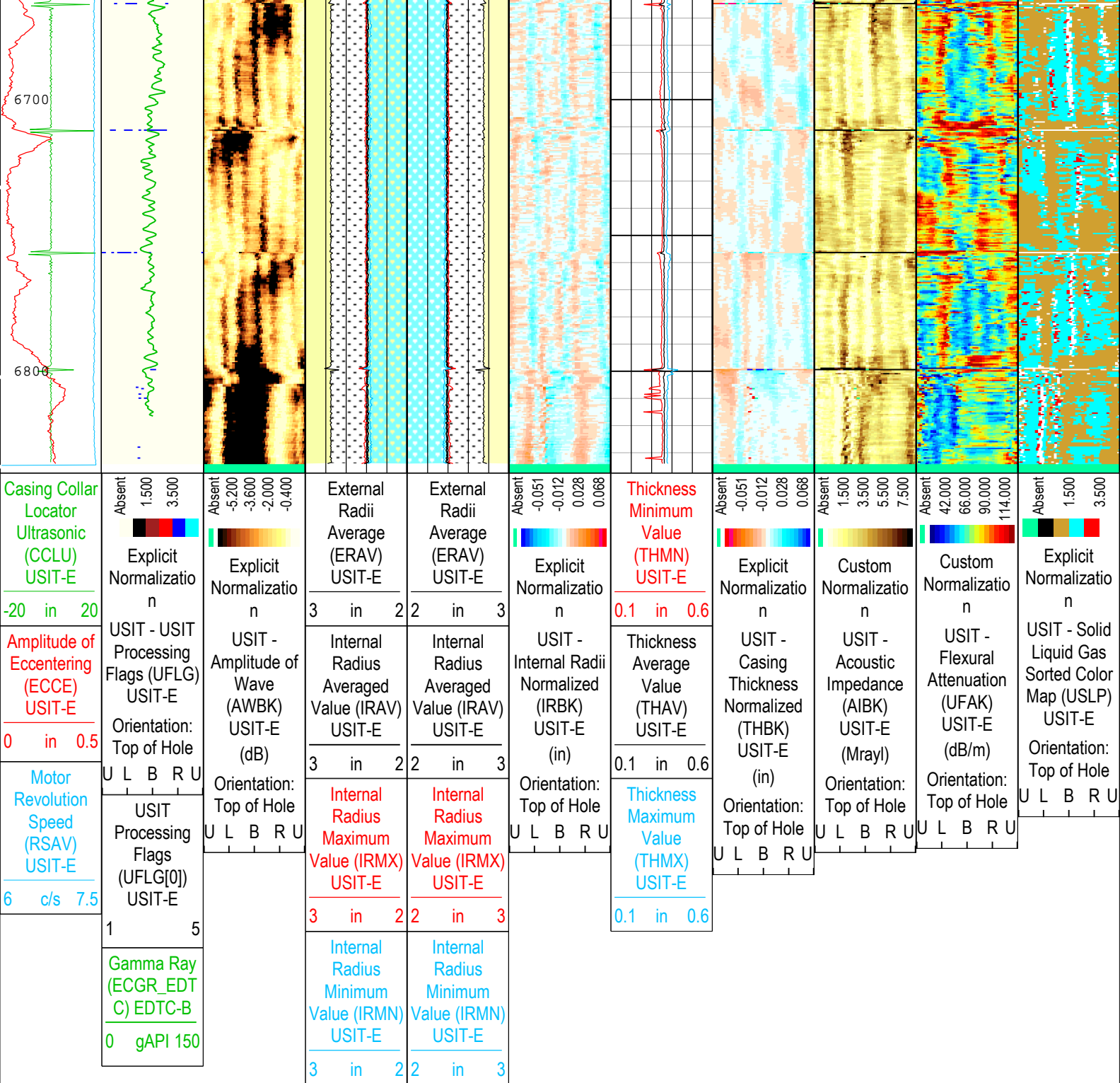












USIT Processing Flags (UFLG[0]) USIT-E

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: 12-Aug-2018 19:42:35

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	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	12480	ft
CDEN	Cement Density	USIT-E	12.5	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	8.4	lbm/gal
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	-9.03	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	1.24	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.61	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-4.85	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
ZMUD	Acoustic Impedance of Mud	Borehole	1.75	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.3	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters			
Parameter	Value	Start (ft)	Stop (ft)
BS	12.25	55	2483
BS	8.5	2483	6837.5
All depth are actual.			

Tool Control Parameters	
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One: Parameters				
Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB
EMXV	EMEX Voltage	USIT-E	60	V
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	137	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	177	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	106	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	146	us
UPAT	USIT Emission Pattern	USIT-E	Pattern 375 KHz	
UWKM	USIT Working Mode	USIT-E	10 deg at 6.0 in	
U-USIT_UTAN	Transducer Angles	USIT-E	33_DEG	
VRES	Vertical Resolution	USIT-E	6.0 in	

WINB	Window Begin Time	USIT-E	31.88	us
WINE	Window End Time	USIT-E	71.88	us

One

IBC Goodwin Compressed

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[4]:Up	Up	76.53 ft	6838.48 ft	12-Aug-2018 2:33:10 PM	12-Aug-2018 4:10:07 PM	ON	6.25 ft	No

All depths are referenced to toolstring zero

Log

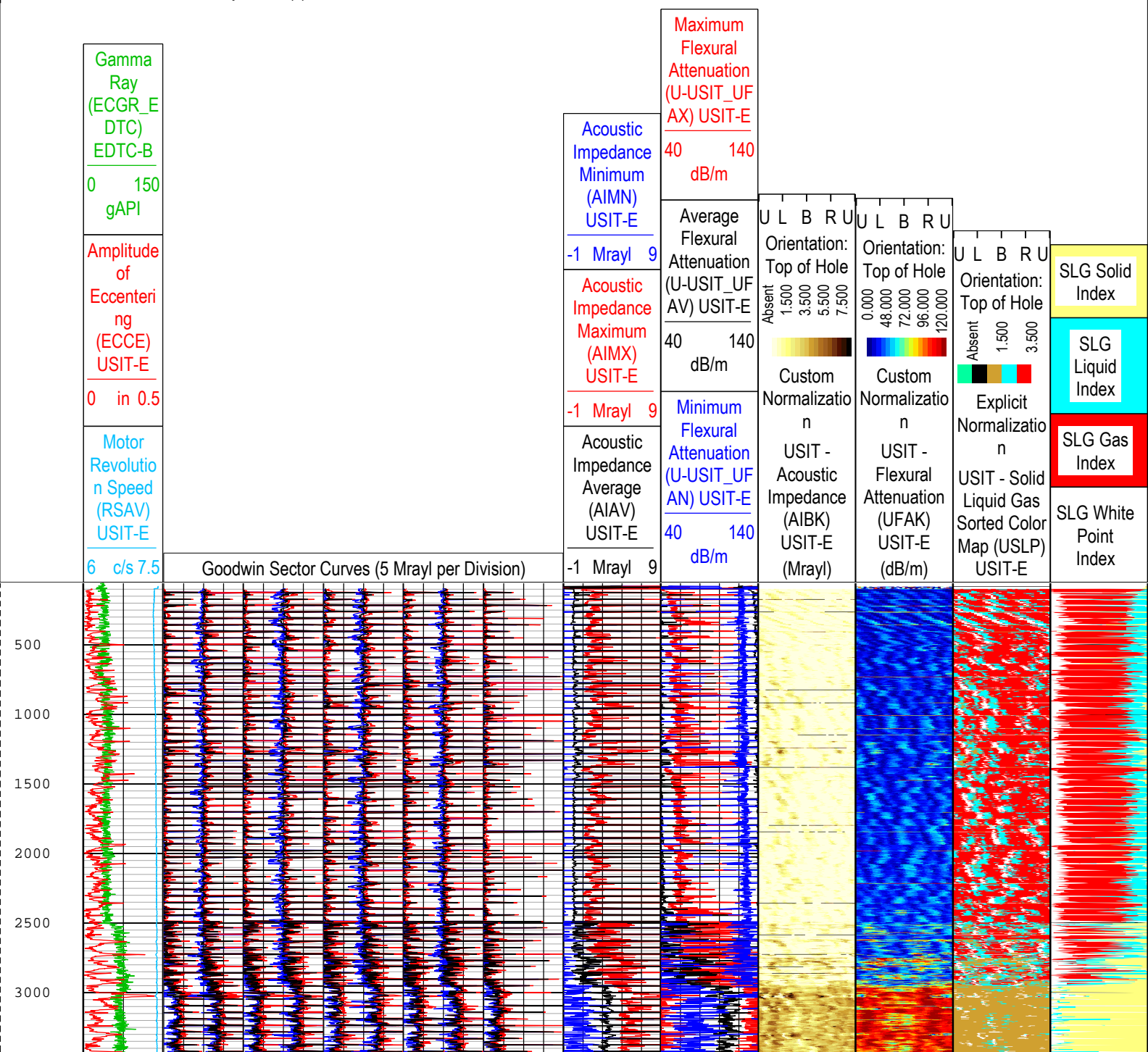
Company:Crestone Peak Resources Operating LLC

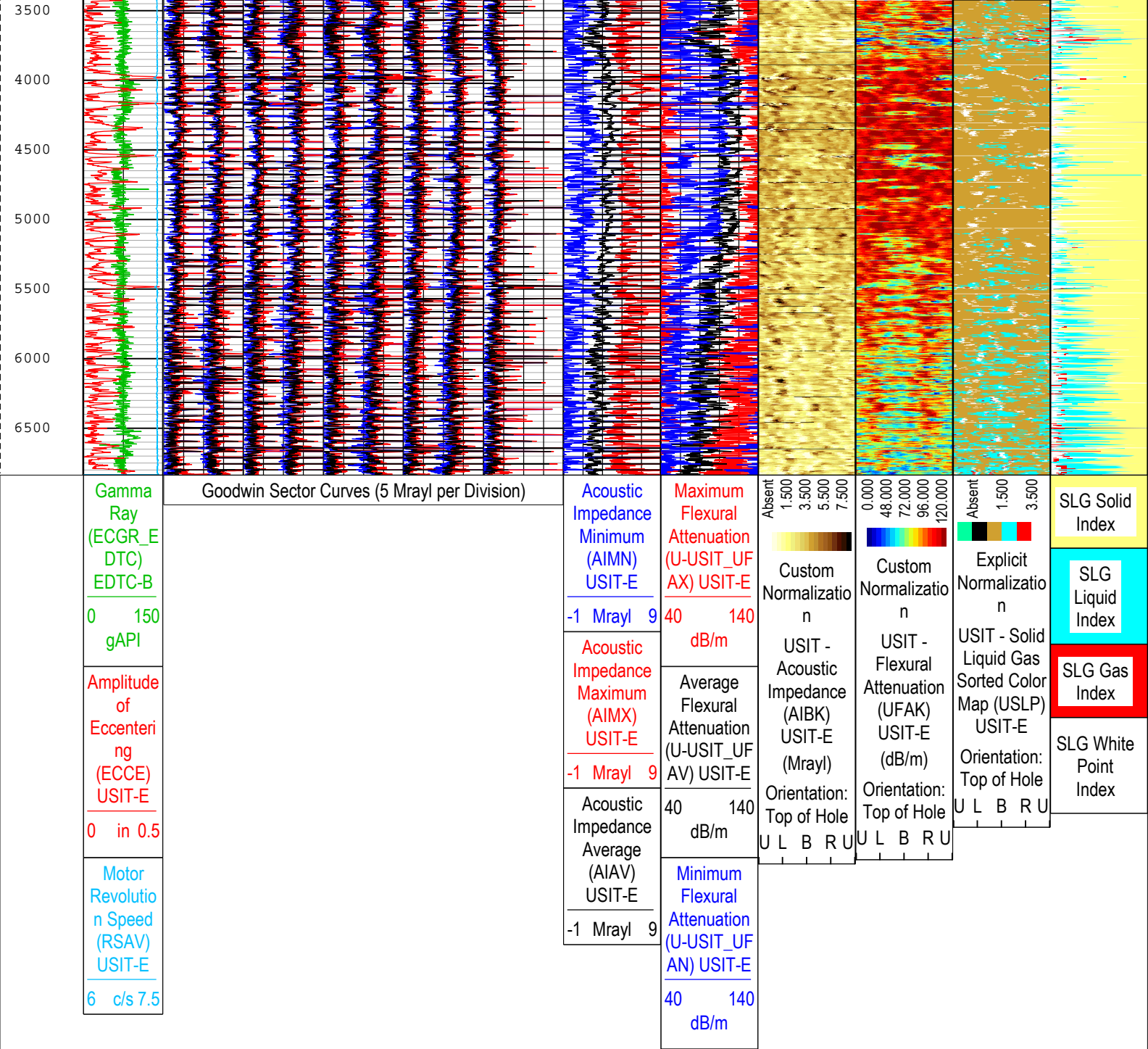
Well:Ruegge #3O-4H-N165

One: Log[4]:Up:S004

Description: USI Goodwin Format: Log (IBC Goodwin) Index Scale: 0.1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 12-Aug-2018 19:42:43

TIME_1900 - Time Marked every 60.00 (s)










One									
IBC SLG									
Software Version									
Acquisition System						Version			
Maxwell 2018 SP2						8.2.104493.3100			
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[2]:Up	Up	2248.58 ft	2602.53 ft	12-Aug-2018 2:09:32 PM	12-Aug-2018 2:15:01 PM	ON	2.00 ft	No

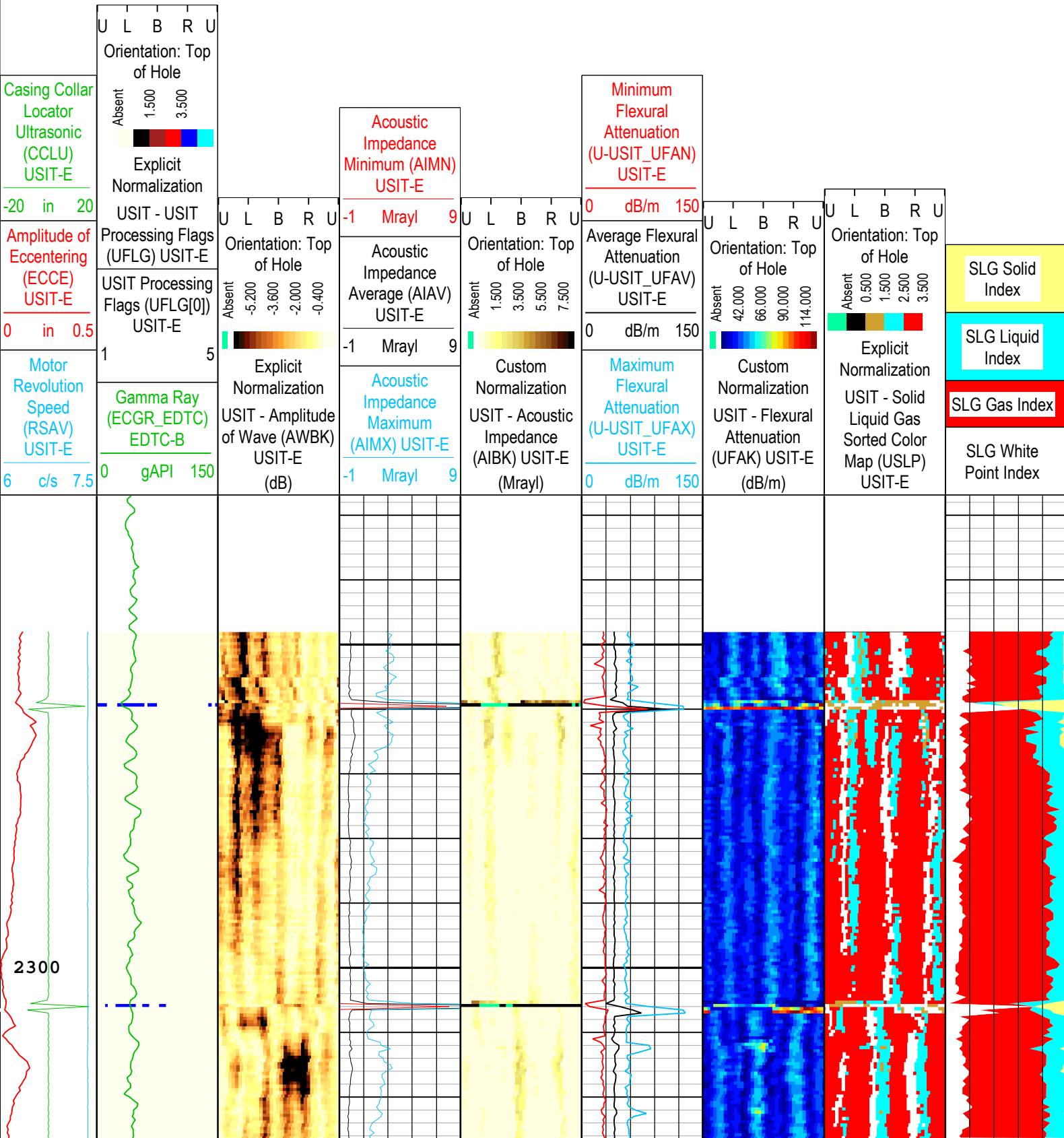
All depths are referenced to toolstring zero

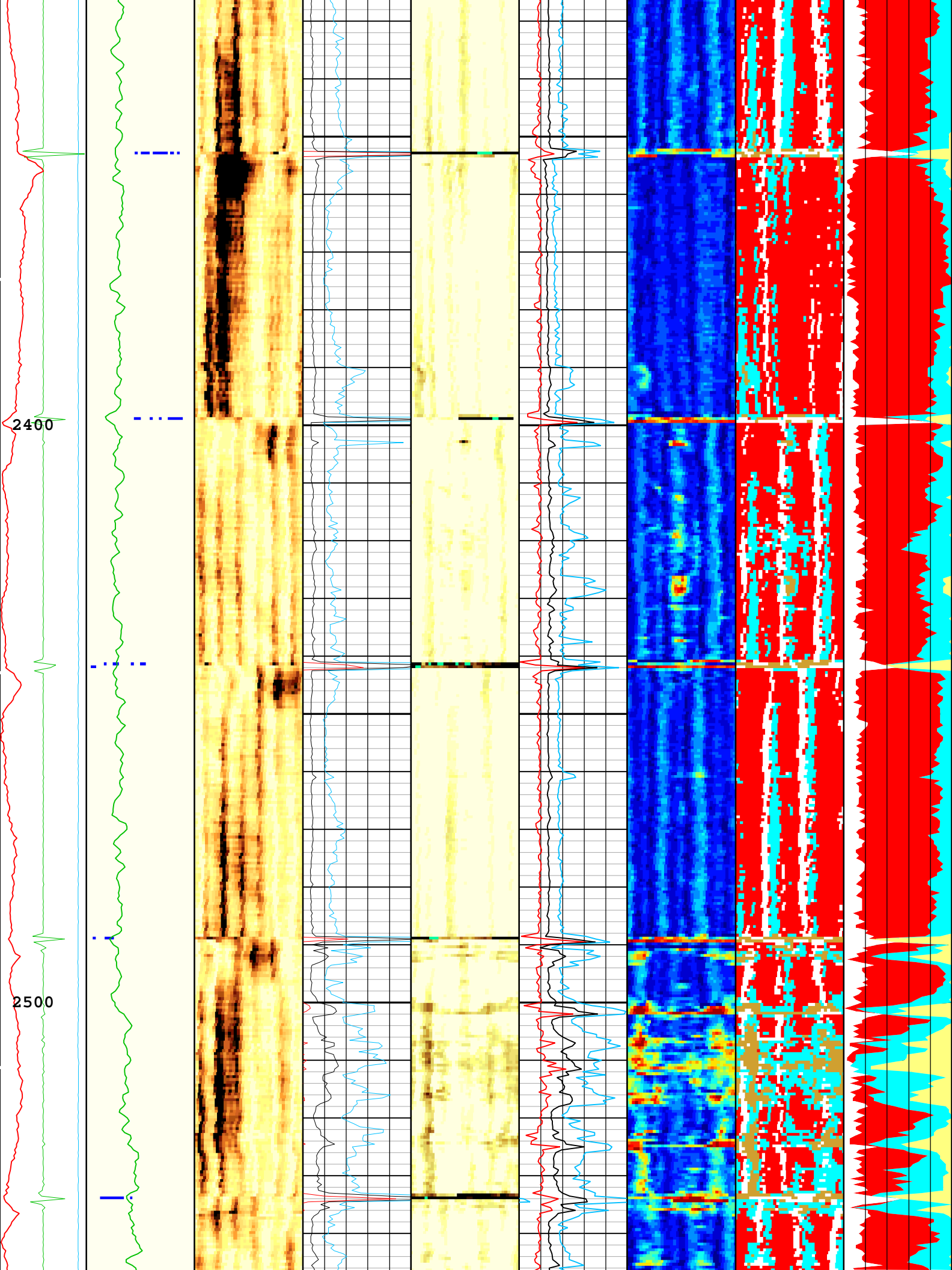
Description: USI IBC SLG Format: Log (IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 12-Aug-2018 19:42:48

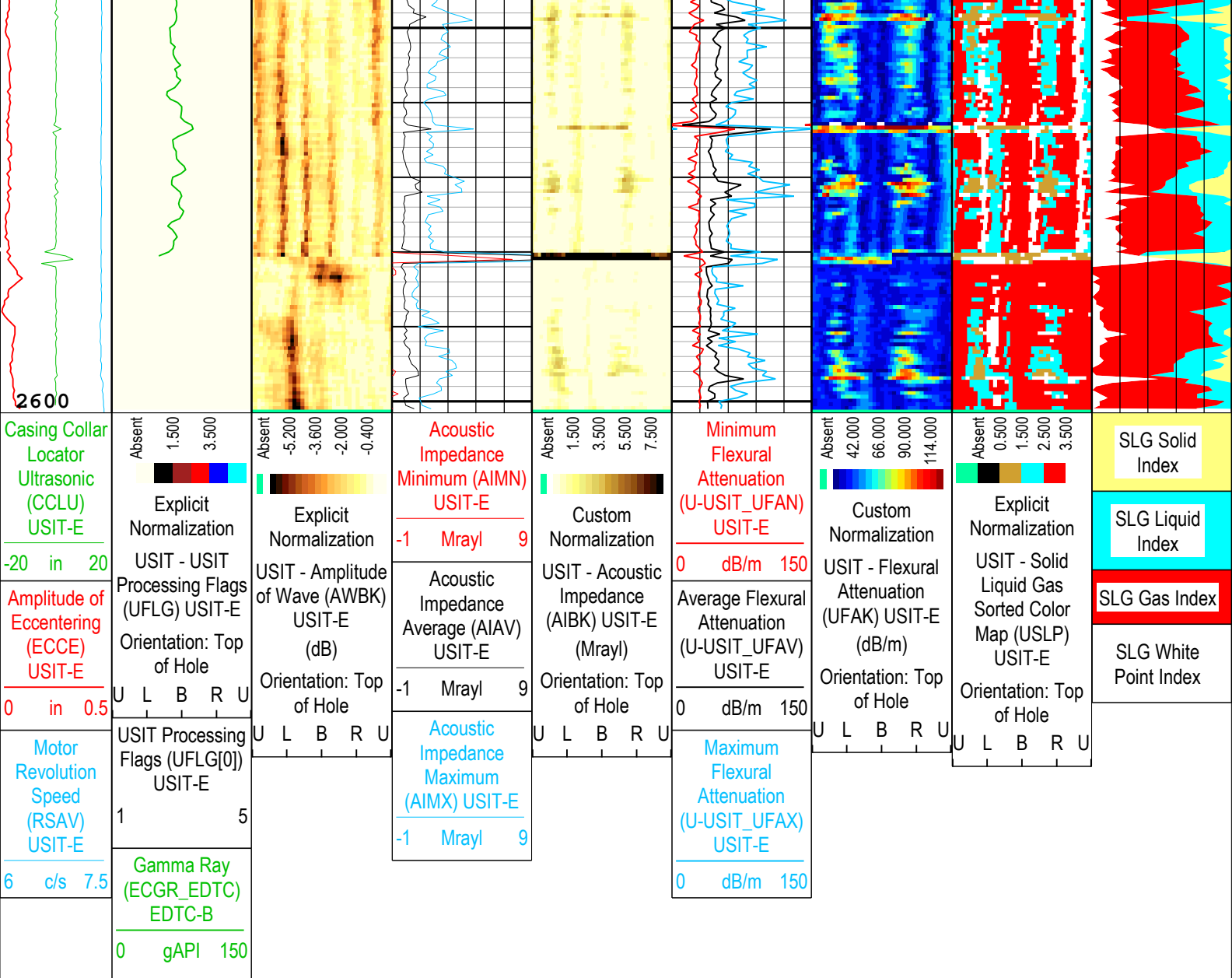
USIT Processing Flags (UFLG[0]) USIT-E

- | | | |
|---|---|---------------------------|
| 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: 12-Aug-2018 19:42:48

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	Depth Zoned	in
CASING_PRATIO	Casing Poisson Ratio	USIT-E	Standard Poisson Ratio	
CBLO	Casing Bottom (Logger)	WLSESSION	12480	ft
CDEN	Cement Density	USIT-E	12.5	lbm/gal
CDEN	Cement Density	EDTC-B	16.60	lbm/gal

CEN	Cement Density	EDTC-B	10.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	8.4	lbm/gal
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
GR_MULTIPLIER	Gamma Ray Multiplier	EDTC-B	1	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	-9.03	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	1.24	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1	
RCOD	Reference Calibrator Outer Diameter	USIT-E	4.5	in
RCSO	Reference Calibrator Standoff	USIT-E	0.842	in
RCTH	Reference Calibrator Thickness	USIT-E	0.216	in
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	70	%
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.61	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-4.85	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
USI_RPLUS	Ultrasonic R+ Processing	USIT-E	No	
THDP	Thickness Detection Policy	USIT-E	Fundamental	
VCAS	Ultrasonic Transversal Velocity in Casing	USIT-E	51.4	us/ft
ZCAS	Acoustic Impedance of Casing	USIT-E	46.25	Mrayl
ZINI	Initial Estimate of Cement Impedance	USIT-E	-1	Mrayl
ZMUD	Acoustic Impedance of Mud	Borehole	1.75	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.3	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters			
Parameter	Value	Start (ft)	Stop (ft)
BS	12.25	2227	2483
BS	8.5	2483	2601.5

Tool Control Parameters

One: Parameters				
Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB

U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
DOT(DOS)	Distance between Opposite Transducer Faces	USIT-E	1.756	in
EMXV	EMEX Voltage	USIT-E	60	V
HRES	Horizontal Resolution	USIT-E	10 deg	
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
MOTOR_PROTECT	Motor Protection	USIT-E	On	
UACLV_PERM	Ultrasonic ACLV Permanent	USIT-E	Yes	
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	137	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	177	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	106	us
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

Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[2]:Up	Up	2248.58 ft	2602.53 ft	12-Aug-2018 2:09:32 PM	12-Aug-2018 2:15:01 PM	ON	2.00 ft	No

All depths are referenced to toolstring zero

Log	Company:Crestone Peak Resources Operating LLC	Well:Ruegge #3O-4H-N165
	One: Log[2]:Up:S004	

Description: USI IBC SLG Composite Format: Log (IBC SLG Composite) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 12-Aug-2018 19:42:53

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

U L B R U

Orientation:
Top of Hole

Absent
1.500
3.500

Explicit
Normaliza
tion

USIT - USIT

Processing

Orientation:

U L B R U

Orientation:

External
Radii
Average
(ERAV)
USIT-E

3 in 2

Internal
Radius
Averaged
Value (IRAV)
USIT-E

External
Radii
Average
(ERAV)
USIT-E

2 in 3

Internal
Radius
Averaged
Value (IRAV)
USIT-E

Thickness
Minimum
Value
(THMN)
USIT-E

U L B R U

Orientation:

Top of Hole

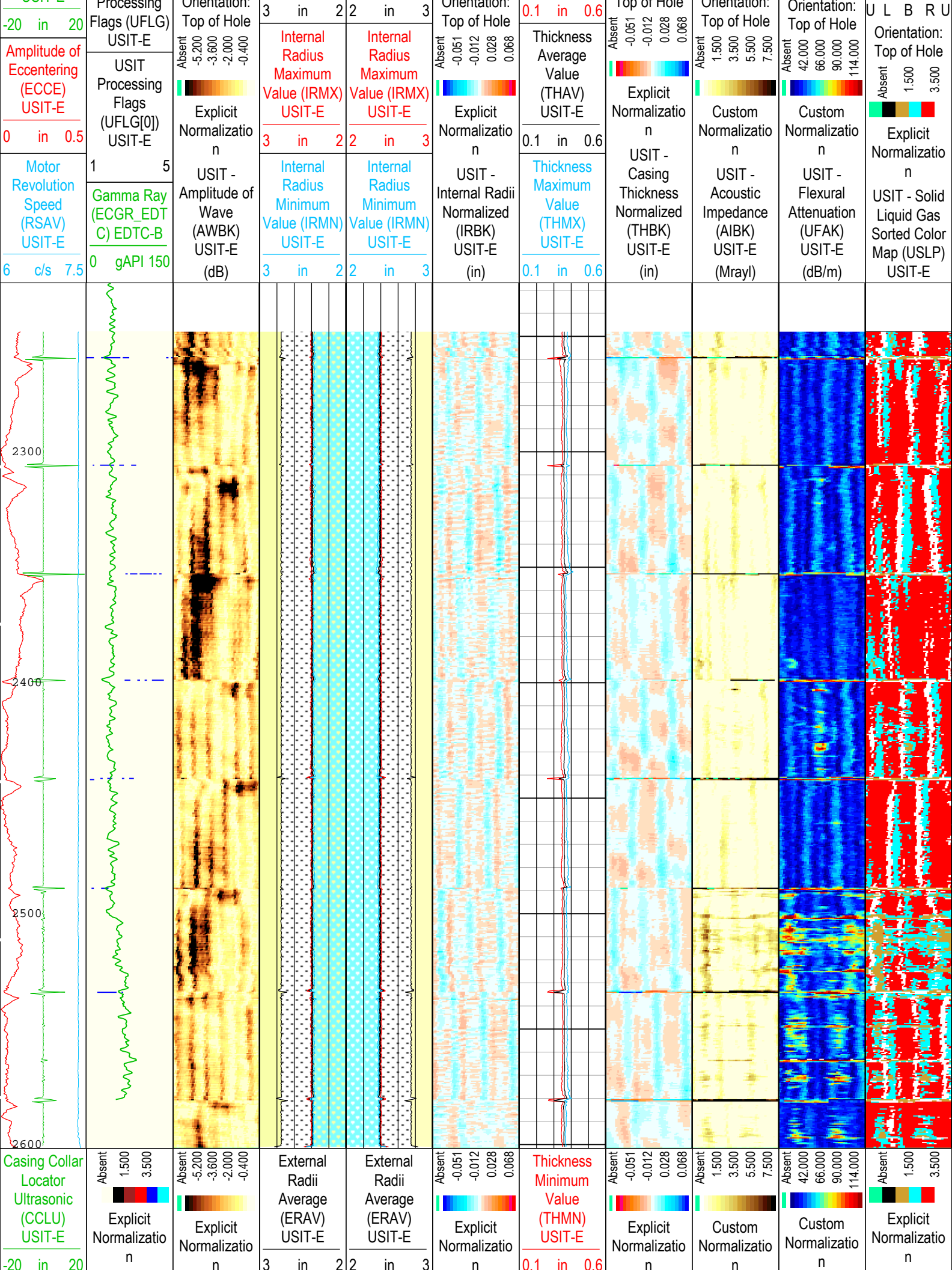
U L B R U

Orientation:






U L B R U

Orientation:

Casing Collar
Locator
Ultrasonic
(CCLU)
USIT-E



Amplitude of Eccentering (ECCE) USIT-E	USIT - USIT Processing Flags (UFLG) USIT-E	USIT - Amplitude of Wave (AWBK) USIT-E (dB)	Internal Radius Averaged Value (IRAV) USIT-E	Internal Radius Averaged Value (IRAV) USIT-E	USIT - Internal Radii Normalized (IRBK) USIT-E (in)	Thickness Average Value (THAV) USIT-E	USIT - Casing Thickness Normalized (THBK) USIT-E (in)	USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)	USIT - Flexural Attenuation (UFAK) USIT-E (dB/m)	USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E
0 in 0.5	Orientation: Top of Hole	Orientation: Top of Hole	3 in 2	2 in 3	Orientation: Top of Hole	0.1 in 0.6	Orientation: Top of Hole	Orientation: Top of Hole	Orientation: Top of Hole	Orientation: Top of Hole
Motor Revolution Speed (RSAV) USIT-E	USIT Processing Flags (UFLG[0]) USIT-E		Internal Radius Maximum Value (IRMX) USIT-E	Internal Radius Maximum Value (IRMX) USIT-E		Thickness Maximum Value (THMX) USIT-E				
6 c/s 7.5	1 5		3 in 2	2 in 3		0.1 in 0.6				
	Gamma Ray (ECGR_EDT C) EDTC-B		Internal Radius Minimum Value (IRMN) USIT-E	Internal Radius Minimum Value (IRMN) USIT-E						
	0 gAPI 150		3 in 2	2 in 3						

USIT Processing Flags (UFLG[0]) USIT-E				
1 - UFLG 1 Value within [0.0 - 1.5] - :		UTIM Error		
2 - UFLG 2 Value within [1.5 - 2.5] - :		Pulse Origin Not Detected		
3 - UFLG 3 Value within [2.5 - 3.5] - :		WINLEN Error		
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :		Casing Thickness Error		
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :		Loop Processing Error		
TIME_1900 - Time Marked every 60.00 (s)				
Description: USI IBC SLG Composite Format: Log (IBC SLG Composite) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth				
Creation Date: 12-Aug-2018 19:42:53				

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	12480	ft
CDEN	Cement Density	USIT-E	12.5	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	8.4	lbm/gal
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	-9.03	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	1.24	

U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.61	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-4.85	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
ZMUD	Acoustic Impedance of Mud	Borehole	1.75	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.3	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters			
Parameter	Value	Start (ft)	Stop (ft)
BS	12.25	2227	2483
BS	8.5	2483	2601.5
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	60	V
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	137	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	177	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	106	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	146	us
UPAT	USIT Emission Pattern	USIT-E	Pattern 375 KHz	
UWKM	USIT Working Mode	USIT-E	10 deg at 6.0 in	
U-USIT_UTAN	Transducer Angles	USIT-E	33_DEG	
VRES	Vertical Resolution	USIT-E	6.0 in	
WINB	Window Begin Time	USIT-E	31.88	us
WINE	Window End Time	USIT-E	71.88	us

One	
IBC SLG	

Software Version	
Acquisition System	Version
Maxwell 2018 SP2	8.2.104493.3100

Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[6]:Up	Up	2690.35 ft	3153.63 ft	12-Aug-2018 4:40:35 PM	12-Aug-2018 4:49:52 PM	ON	7.75 ft	No

All depths are referenced to toolstring zero									
Log		Company:Crestone Peak Resources Operating LLC				Well:Ruegge #3O-4H-N165			
One: Log[6]:Up:S004									
Description: USI IBC SLG Format: Log (IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 12-Aug-2018 19:42:56									

USIT Processing Flags (UFLG[0]) USIT-E									
1 - UFLG 1 Value within [0.0 - 1.5] - :				<div> <div></div> <div>UTIM Error</div> </div>					
2 - UFLG 2 Value within [1.5 - 2.5] - :				<div> <div></div> <div>Depth Gain Not Detected</div> </div>					

- 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] - :

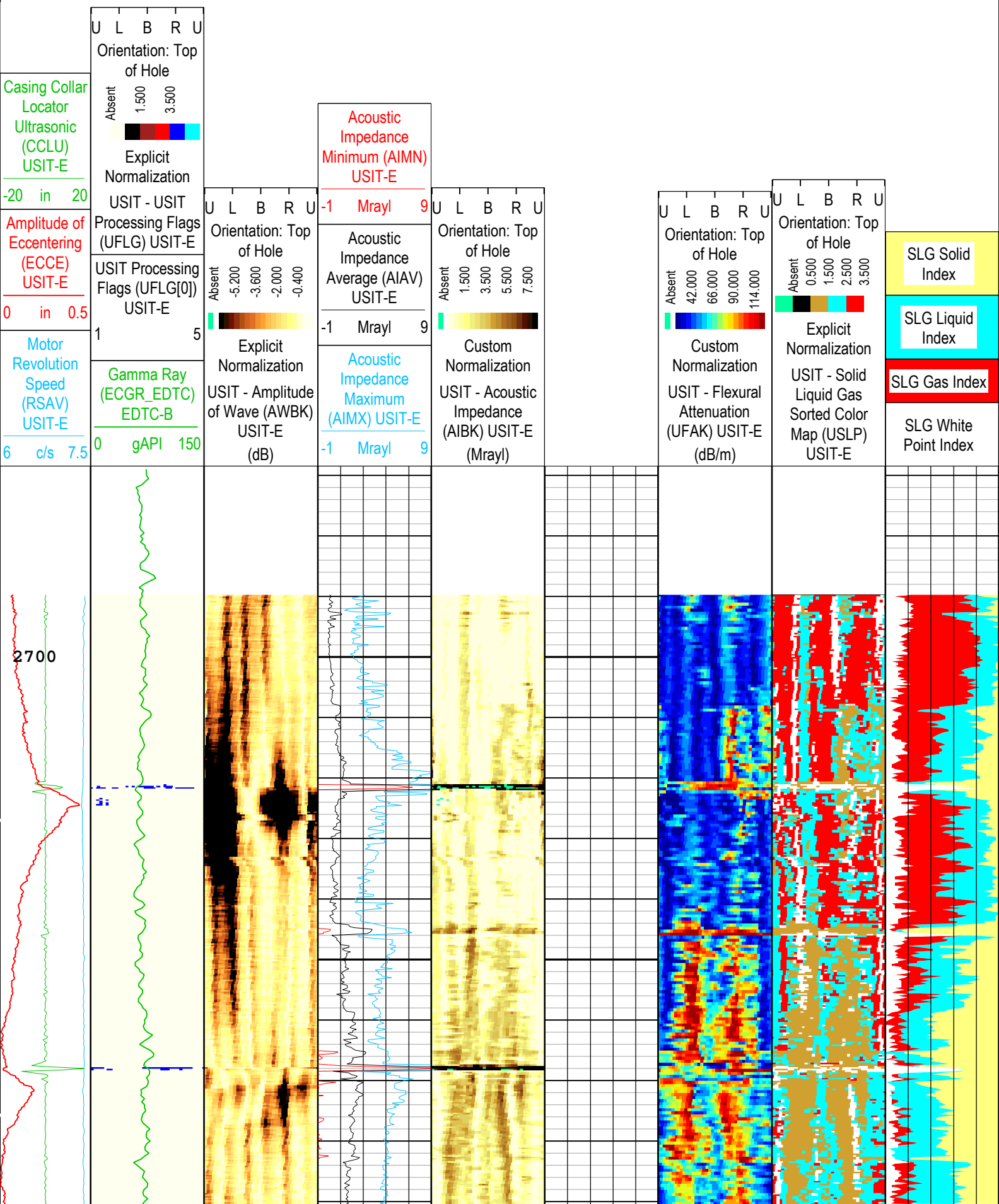
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :
- Pulse Origin Not Detected

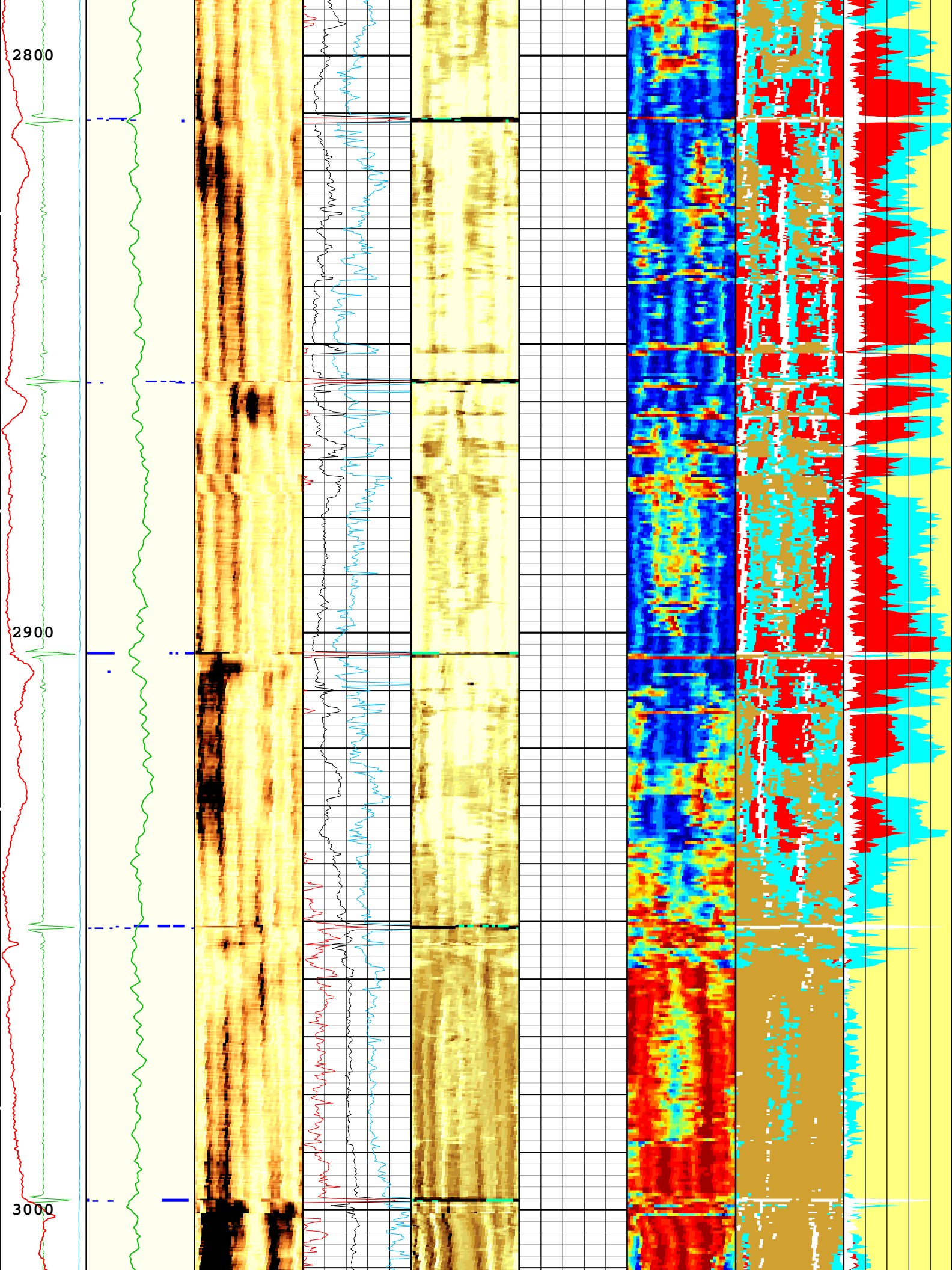
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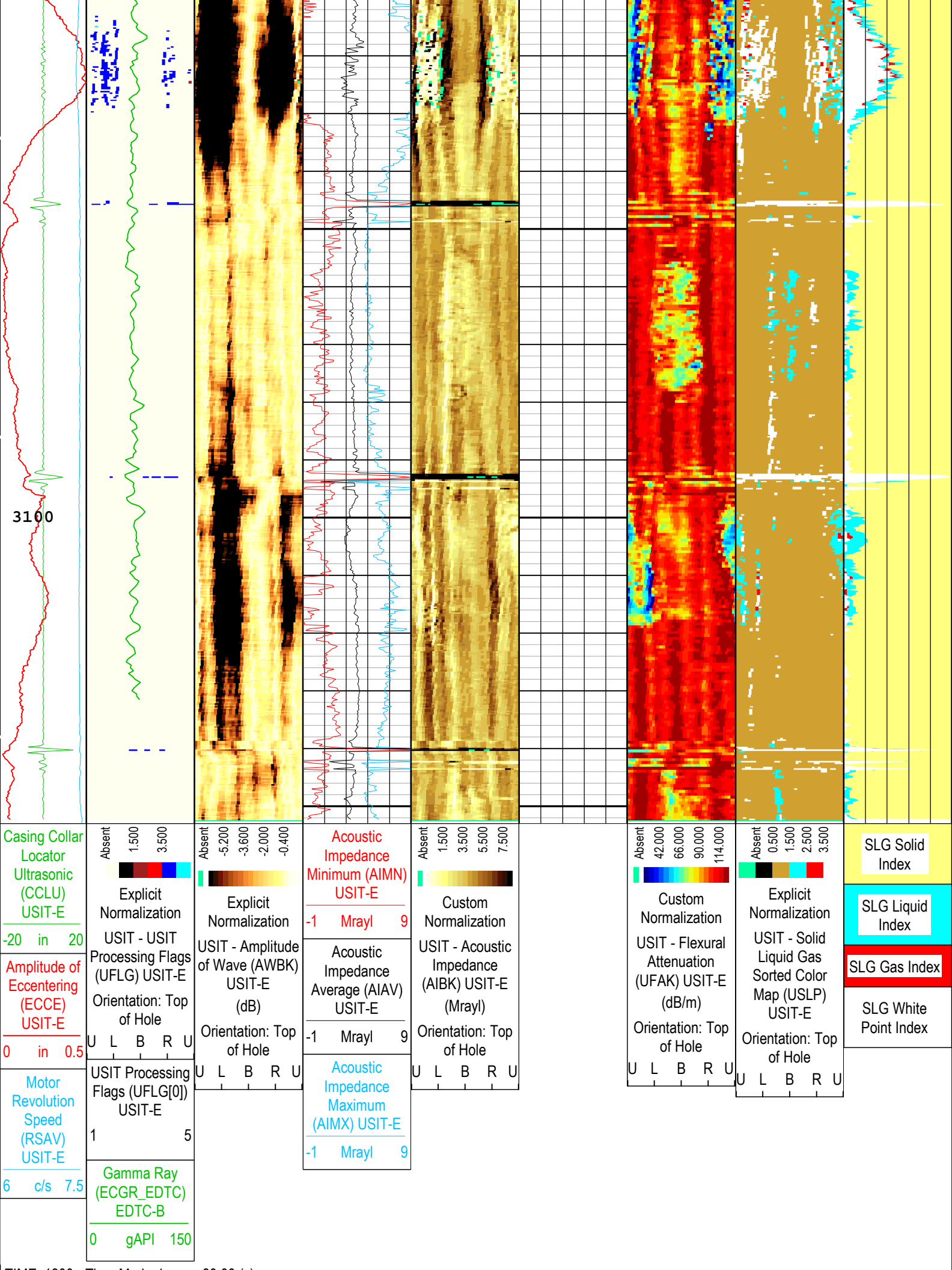
Casing Thickness Error

Loop Processing Error






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: 12-Aug-2018 19:42:56

Channel Processing Parameters				
One: 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	8.5	in
CASING_PRATIO	Casing Poisson Ratio	USIT-E	Standard Poisson Ratio	
CBLO	Casing Bottom (Logger)	WLSESSION	12480	ft
CDEN	Cement Density	USIT-E	12.5	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	8.4	lbm/gal
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
GR_MULTIPLIER	Gamma Ray Multiplier	EDTC-B	1	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	-9.03	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	1.24	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1	
RCOD	Reference Calibrator Outer Diameter	USIT-E	4.5	in
RCSO	Reference Calibrator Standoff	USIT-E	0.842	in
RCTH	Reference Calibrator Thickness	USIT-E	0.216	in
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	70	%
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.61	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-4.85	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	

USI_RPLUS	Ultrasonic R+ Processing	USIT-E	No	
THDP	Thickness Detection Policy	USIT-E	Fundamental	
VCAS	Ultrasonic Transversal Velocity in Casing	USIT-E	51.4	us/ft
ZCAS	Acoustic Impedance of Casing	USIT-E	46.25	Mrayl
ZINI	Initial Estimate of Cement Impedance	USIT-E	-1	Mrayl
ZMUD	Acoustic Impedance of Mud	Borehole	1.75	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.3	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Tool Control Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
DOT(DOS)	Distance between Opposite Transducer Faces	USIT-E	1.756	in
EMXV	EMEX Voltage	USIT-E	60	V
HRES	Horizontal Resolution	USIT-E	10 deg	
IBC_ACQTYPE	IBC Acquisition type	USIT-E	DVR 1/2 and 1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
MOTOR_PROTECT	Motor Protection	USIT-E	On	
UACLV_PERM	Ultrasonic ACLV Permanent	USIT-E	Yes	
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	137	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	177	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	106	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	146	us
USFR	Ultrasonic Sampling Frequency	USIT-E	666667	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 375 KHz	
UWKM	USIT Working Mode	USIT-E	10 deg at 3.0 in	
USSP	Ultrasonic Service	USIT-E	IBC	
U-USIT_UTAN	Transducer Angles	USIT-E	33_DEG	
VRES	Vertical Resolution	USIT-E	3.0 in	
WINB	Window Begin Time	USIT-E	31.88	us
WINE	Window End Time	USIT-E	71.88	us

One

IBC SLG Composite

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[6]:Up	Up	2690.35 ft	3153.63 ft	12-Aug-2018 4:40:35 PM	12-Aug-2018 4:49:52 PM	ON	7.75 ft	No

All depths are referenced to toolstring zero

Log	Company:Crestone Peak Resources Operating LLC	Well:Ruegge #3O-4H-N165
		One: Log[6]:Up:S004

Description: USI IBC SLG Composite Format: Log (IBC SLG Composite) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 12-Aug-2018 19:43:01

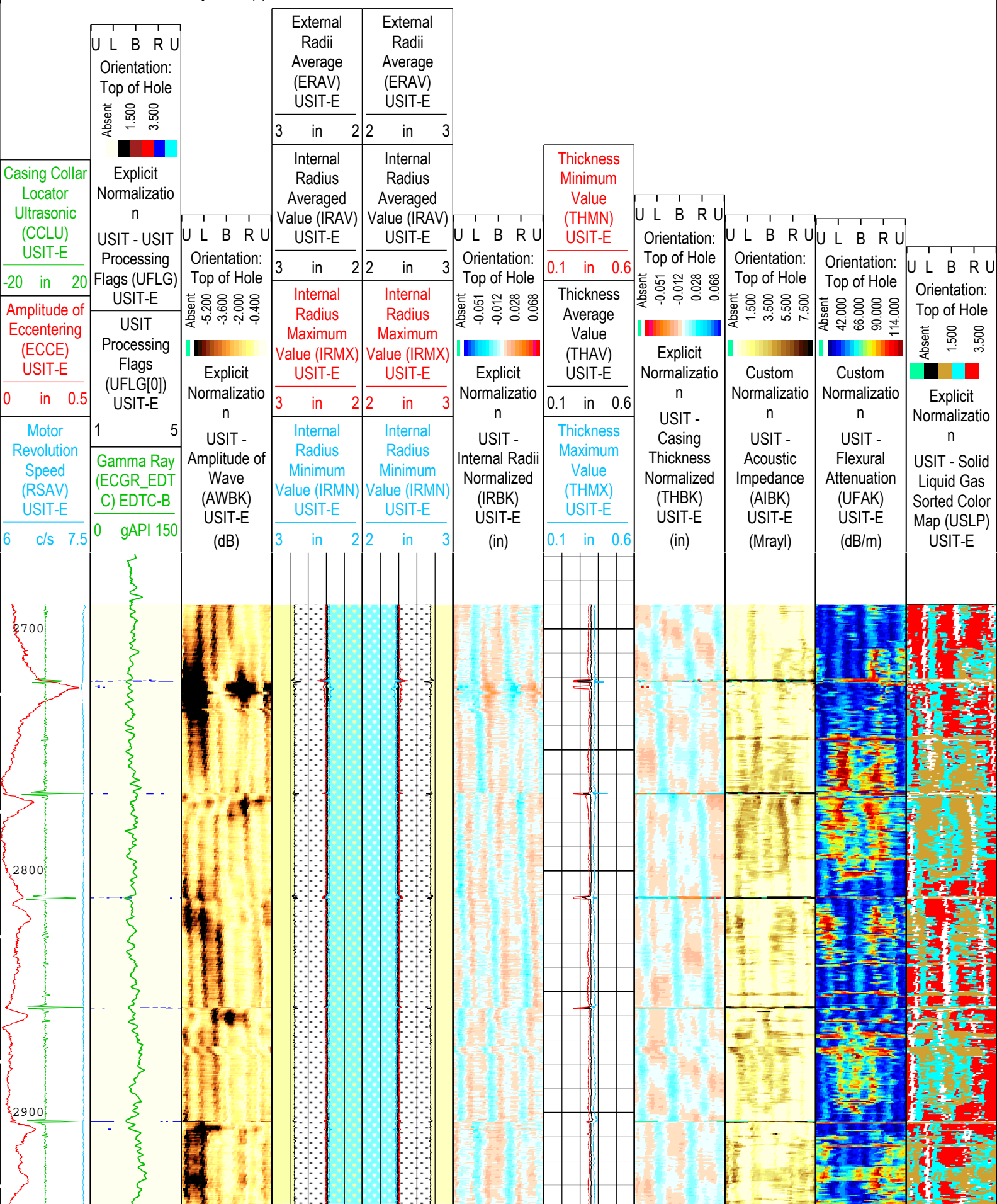
USIT Processing Flags (UFLG[0]) USIT-E

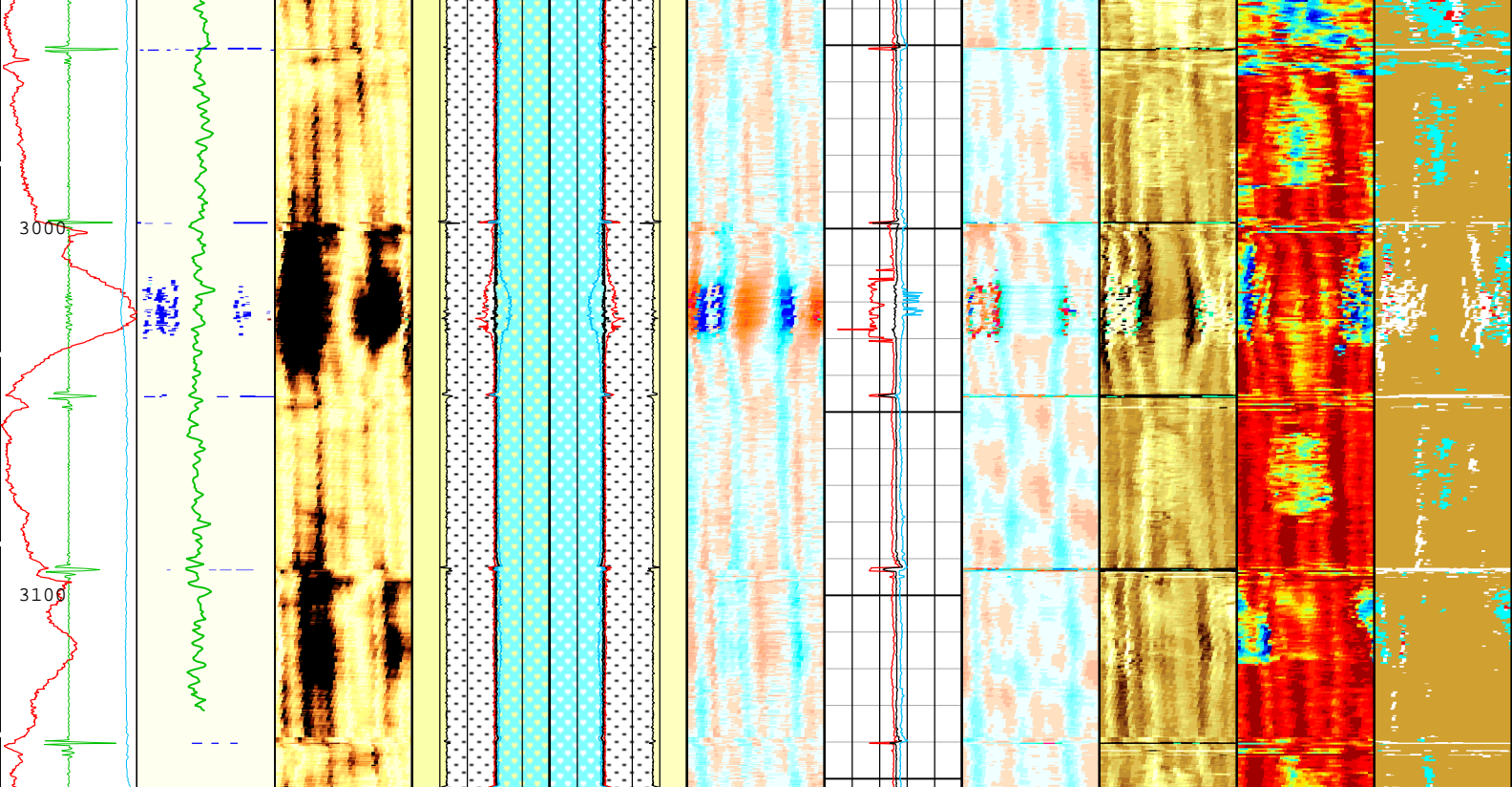
1 - UFLG 1 Value within [0.0 - 1.5] - :

UTIM Error

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

TIME_1900 - Time Marked every 60.00 (s)





Casing Collar Locator Ultrasonic (CCLU) USIT-E	Absent 1.500 3.500 Explicit Normalization n	Absent -5.200 -3.600 -2.000 -0.400 Explicit Normalization n	External Radii Average (ERAV) USIT-E	External Radii Average (ERAV) USIT-E	Absent -0.051 -0.012 0.028 0.068 Explicit Normalization n	Thickness Minimum Value (THMN) USIT-E	Absent -0.051 -0.012 0.028 0.068 Explicit Normalization n	Absent 1.500 3.500 5.500 7.500 Custom Normalization n	Absent 42.000 66.000 90.000 114.000 Custom Normalization n	Absent 1.500 3.500 Explicit Normalization n
-20 in 20	USIT - USIT Processing Flags (UFLG) USIT-E	USIT - Amplitude of Wave (AWBK) USIT-E (dB)	3 in 2	2 in 3	USIT - Internal Radii Normalized (IRBK) USIT-E (in)	0.1 in 0.6	USIT - Casing Thickness Normalized (THBK) USIT-E (in)	USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)	USIT - Flexural Attenuation (UFAK) USIT-E (dB/m)	USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E
Amplitude of Eccentering (ECCE) USIT-E	Orientation: Top of Hole	Orientation: Top of Hole			Orientation: Top of Hole		Orientation: Top of Hole	Orientation: Top of Hole	Orientation: Top of Hole	Orientation: Top of Hole
0 in 0.5	U L B R U	U L B R U			U L B R U		U L B R U	U L B R U	U L B R U	U L B R U
Motor Revolution Speed (RSAV) USIT-E	USIT Processing Flags (UFLG[0]) USIT-E		Internal Radius Maximum Value (IRMX) USIT-E	Internal Radius Maximum Value (IRMX) USIT-E		Thickness Maximum Value (THMX) USIT-E				
6 c/s 7.5	1 5		3 in 2	2 in 3		0.1 in 0.6				
			Internal Radius Minimum Value (IRMN) USIT-E	Internal Radius Minimum Value (IRMN) USIT-E						
			3 in 2	2 in 3						
Gamma Ray (ECGR_EDT C) EDTC-B										
0 gAPI 150										

TIME_1900 - Time Marked every 60.00 (s)

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

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

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

Creation Date: 12-Aug-2018 19:43:01

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	12480	ft
CDEN	Cement Density	USIT-E	12.5	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	8.4	lbm/gal
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	-9.03	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	1.24	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.61	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-4.85	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
ZMUD	Acoustic Impedance of Mud	Borehole	1.75	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.3	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Tool Control Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB
EMXV	EMEX Voltage	USIT-E	60	V
IBC_ACQTYPE	IBC Acquisition type	USIT-E	DVR 1/2 and 1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	137	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	177	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	106	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	146	us
UPAT	USIT Emission Pattern	USIT-E	Pattern 375 KHz	
UWKM	USIT Working Mode	USIT-E	10 deg at 3.0 in	
U-USIT_UTAN	Transducer Angles	USIT-E	33_DEG	
VRES	Vertical Resolution	USIT-E	3.0 in	
WINB	Window Begin Time	USIT-E	31.88	us
WINE	Window End Time	USIT-E	71.88	us

One

IBC SLG

Software Version	
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Acquisition System	Version
Maxwell 2018 SP2	8.2.104493.3100

Pass Summary	
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Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[5]:Up	Up	3791.08 ft	4264.23 ft	12-Aug-2018 4:26:38 PM	12-Aug-2018 4:36:01 PM	ON	7.75 ft	No

All depths are referenced to toolstring zero






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

Well:Ruegge #3O-4H-N165

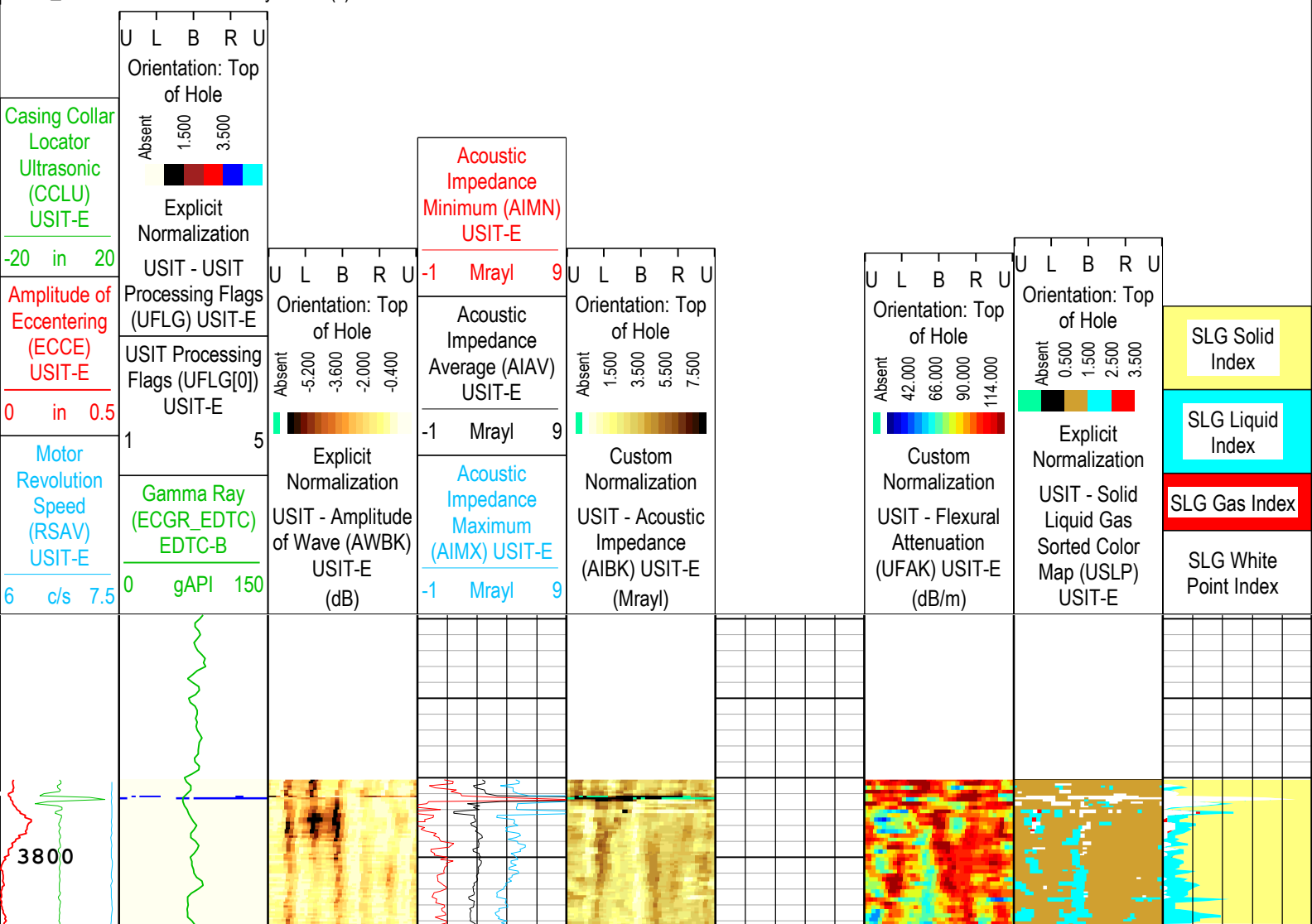
One: Log[5]:Up:S004

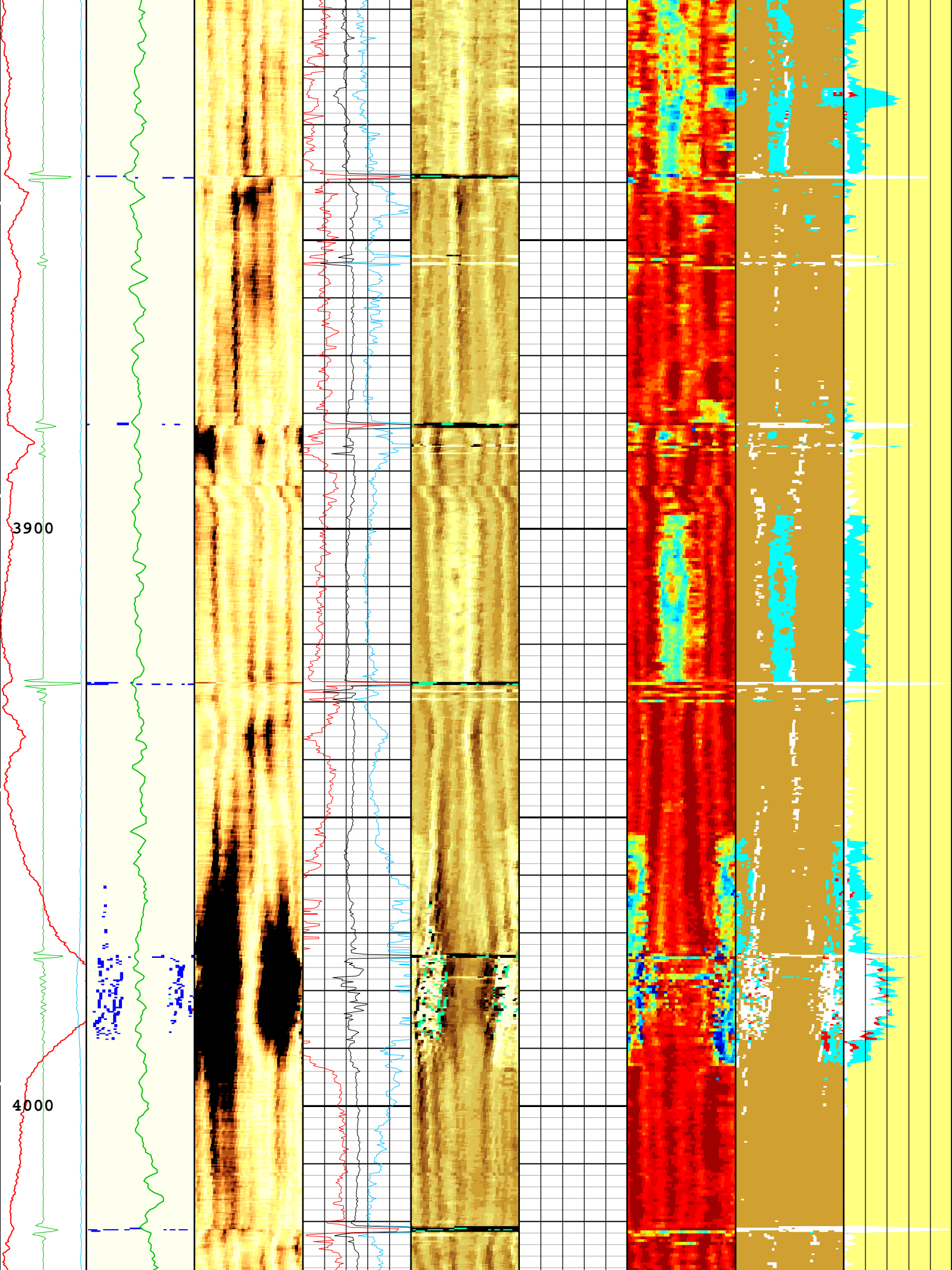
Description: USI IBC SLG Format: Log (IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 12-Aug-2018 19:43:05

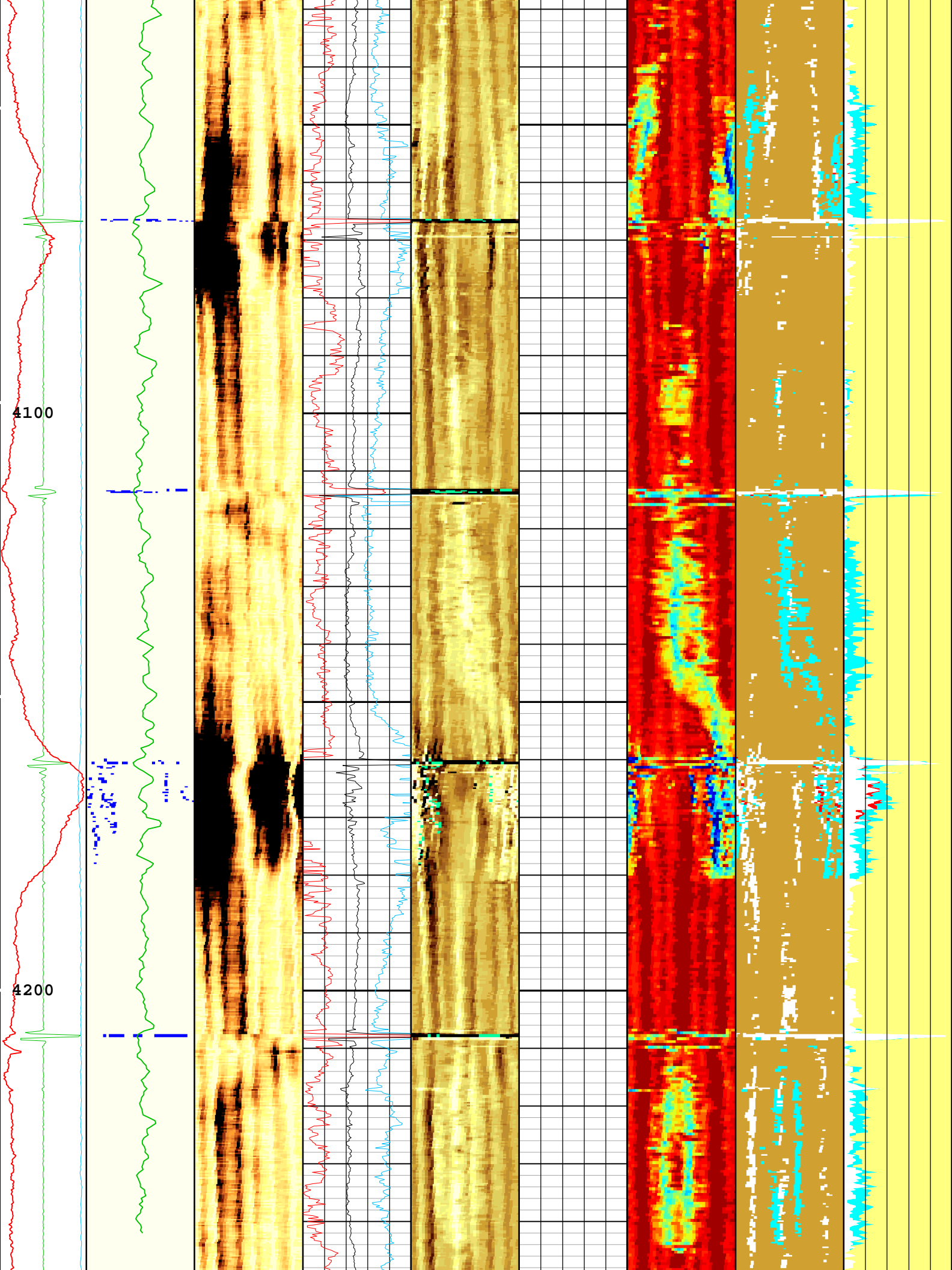
USIT Processing Flags (UFLG[0]) USIT-E

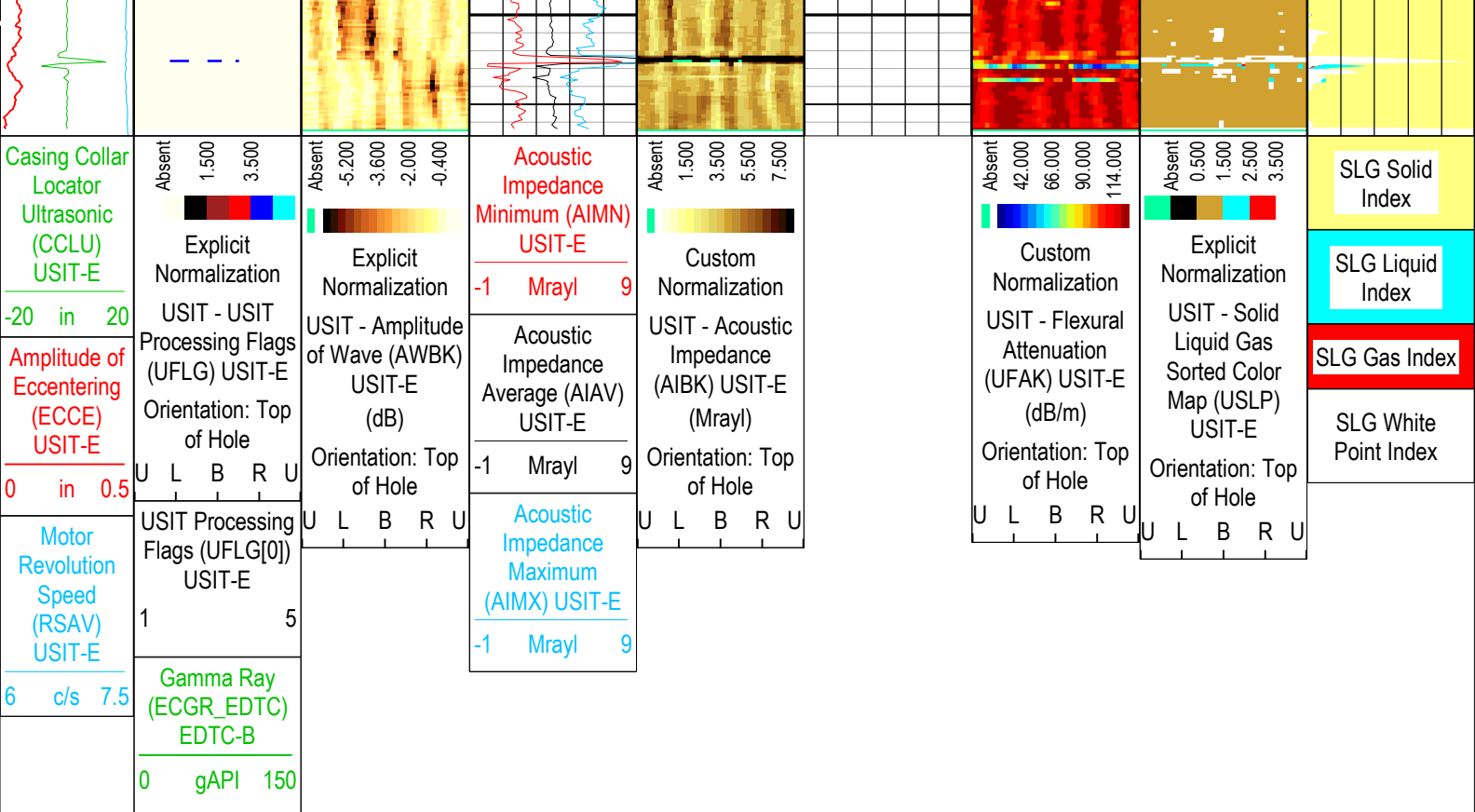
- | | | |
|---|---|---------------------------|
| 1 - UFLG 1 Value within [0.0 - 1.5] - : |  | UTIM Error |
| 2 - UFLG 2 Value within [1.5 - 2.5] - : |  | Pulse Origin Not Detected |
| 3 - UFLG 3 Value within [2.5 - 3.5] - : |  | WINLEN Error |
| 4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - : |  | 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: 12-Aug-2018 19:43:05

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	12480	ft
CDEN	Cement Density	USIT-E	12.5	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	8.4	lbm/gal
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
GR_MULTIPLIER	Gamma Ray Multiplier	EDTC-B	1	

IBCMODEL_ELEM	Cumulative Multipier	EDTC-B	1	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	-9.03	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	1.24	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1	
RCOD	Reference Calibrator Outer Diameter	USIT-E	4.5	in
RCSO	Reference Calibrator Standoff	USIT-E	0.842	in
RCTH	Reference Calibrator Thickness	USIT-E	0.216	in
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	70	%
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.61	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-4.85	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
USI_RPLUS	Ultrasonic R+ Processing	USIT-E	No	
THDP	Thickness Detection Policy	USIT-E	Fundamental	
VCAS	Ultrasonic Transversal Velocity in Casing	USIT-E	51.4	us/ft
ZCAS	Acoustic Impedance of Casing	USIT-E	46.25	Mrayl
ZINI	Initial Estimate of Cement Impedance	USIT-E	-1	Mrayl
ZMUD	Acoustic Impedance of Mud	Borehole	1.75	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.3	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Tool Control Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
DOT(DOS)	Distance between Opposite Transducer Faces	USIT-E	1.756	in
EMXV	EMEX Voltage	USIT-E	60	V
HRES	Horizontal Resolution	USIT-E	10 deg	
IBC_ACQTYPE	IBC Acquisition type	USIT-E	DVR 1/2 and 1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
MOTOR_PROTECT	Motor Protection	USIT-E	On	
UACLV_PERM	Ultrasonic ACLV Permanent	USIT-E	Yes	
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	137	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	177	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	106	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	146	us
USFR	Ultrasonic Sampling Frequency	USIT-E	666667	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 375 KHz	

UWKM	USIT Working Mode	USIT-E	10 deg at 3.0 in	
USSP	Ultrasonic Service	USIT-E	IBC	
U-USIT_UTAN	Transducer Angles	USIT-E	33_DEG	
VRES	Vertical Resolution	USIT-E	3.0 in	
WINB	Window Begin Time	USIT-E	31.88	us
WINE	Window End Time	USIT-E	71.88	us

One

IBC SLG Composite

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[5]:Up	Up	3791.08 ft	4264.23 ft	12-Aug-2018 4:26:38 PM	12-Aug-2018 4:36:01 PM	ON	7.75 ft	No

All depths are referenced to toolstring zero

Log

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

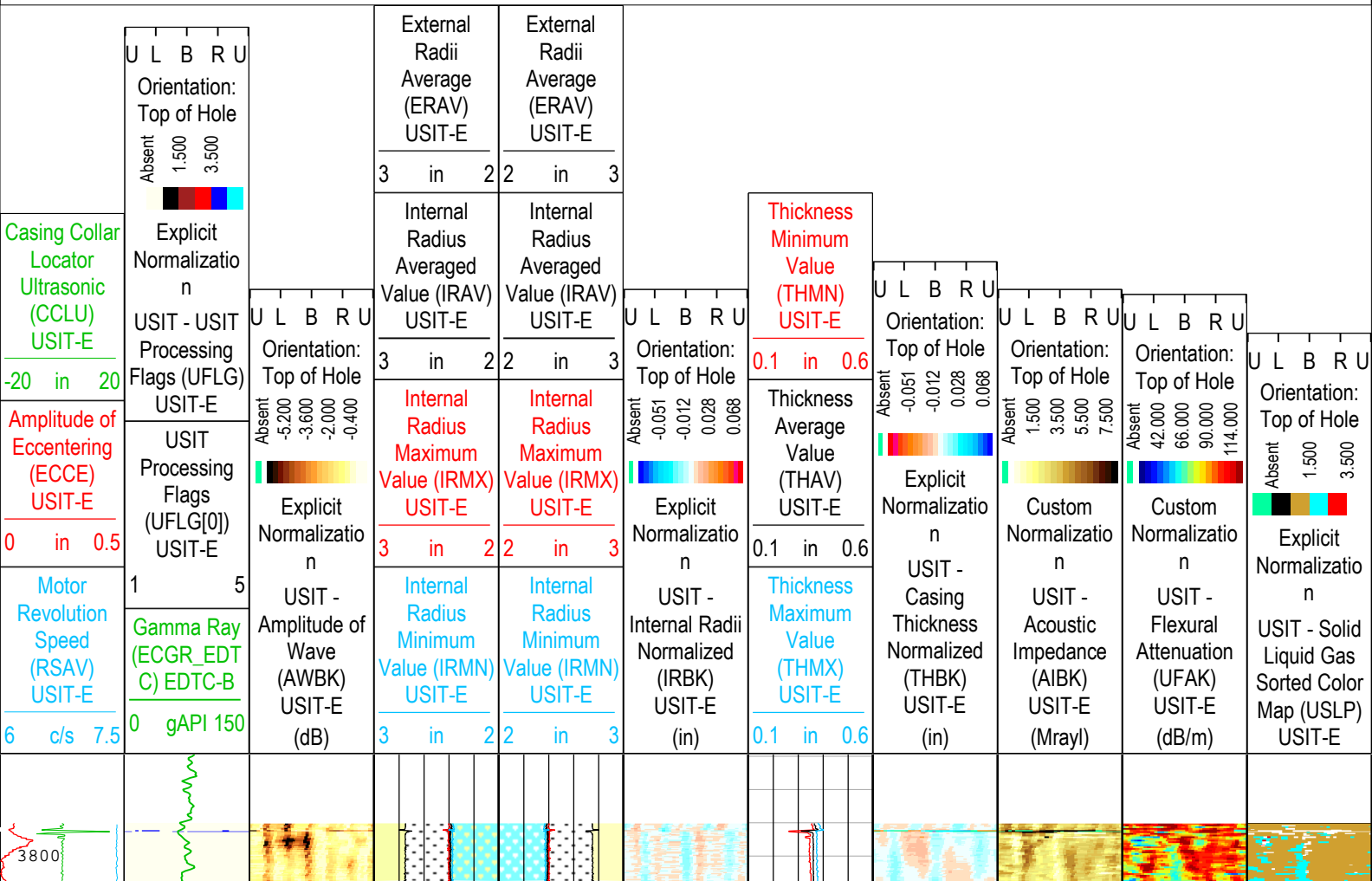
One: Log[5]:Up:S004

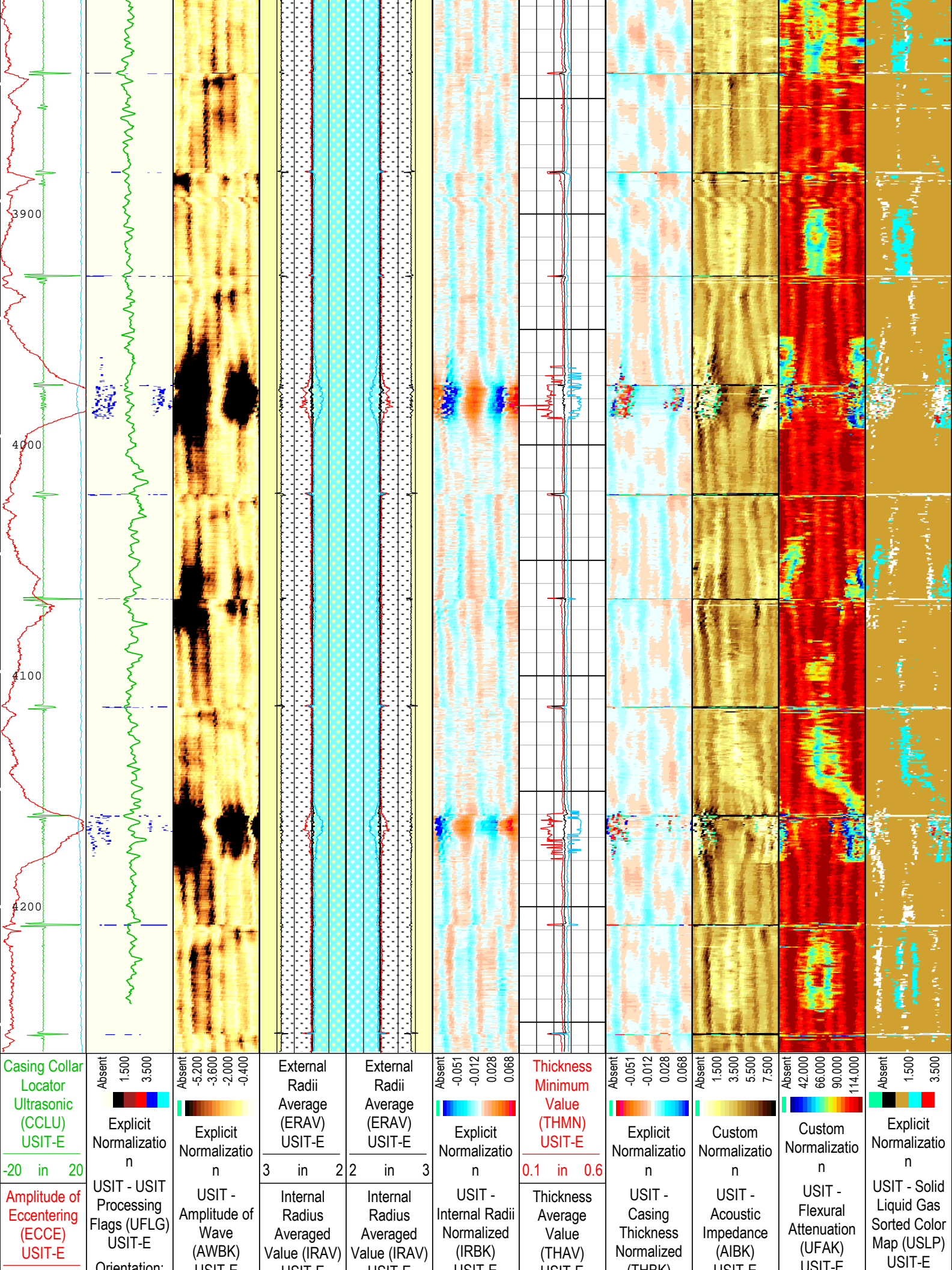
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Creation Date: 12-Aug-2018 19:43:10

TIME_1900 - Time Marked every 60.00 (s)

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

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





0	in	0.5	Orientation: Top of Hole	USIT-E (dB)	3	in	2	2	in	3	USIT-E (in)	0.1	in	0.6	(THBR) USIT-E (in)	USIT-E (Mrayl)	USIT-E (dB/m)	Orientation: Top of Hole	U	L	B	R	U
Motor Revolution Speed (RSAV) USIT-E			Orientation: Top of Hole	Orientation: Top of Hole	Internal Radius Maximum Value (IRMX) USIT-E			Internal Radius Maximum Value (IRMX) USIT-E			Orientation: Top of Hole	Thickness Maximum Value (THMX) USIT-E			Orientation: Top of Hole	Orientation: Top of Hole	Orientation: Top of Hole		U	L	B	R	U
6	c/s	7.5	USIT Processing Flags (UFLG[0]) USIT-E		3	in	2	2	in	3		0.1	in	0.6									
			1																				
			Gamma Ray (ECGR_EDT C) EDTC-B																				
			0	gAPI 150																			

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

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: 12-Aug-2018 19:43:10																							

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				12480				ft			
CDEN				Cement Density								USIT-E				12.5				lbm/gal			
CDEN				Cement Density								EDTC-B				16.69				lbm/gal			
CMTY(U-USIT_CEMT)				Cement Type								USIT-E				Regular Cement							
DFD				Drilling Fluid Density								Borehole				8.4				lbm/gal			
DFT_CATEGORY				Drilling Fluid Type								Borehole				Water							
DTMD				Borehole Fluid Slowness								Borehole				206				us/ft			
FD				Fluid Density								USIT-E				8.4				lbm/gal			
GCSE_DOWN_PASS				Generalized Caliper Selection for WL Log Down Passes								Borehole				BS(RT)							
GCSE_UP_PASS				Generalized Caliper Selection for WL Log Up Passes								Borehole				BS(RT)							
HEMA				Hematite Presence Flag								Borehole				No							
IBC_FRP_OFFSET				IBC Flexural Offset from Free Pipe								USIT-E				-9.03				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				1.24							
U-USIT_DFSZ				Drilling Fluid Specific Acoustic Impedance								USIT-E				1.61				Mrayl			
U-USIT_UFAO				SIT Flexural Attenuation Offset								USIT-E				-4.85				dB/m			
U-USIT_UIAP				IBC Answer Product Enabled								USIT-E				SolidLiquidGasMap							

ZMUD	Acoustic Impedance of Mud	Borehole	1.75	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.3	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

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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
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U-USIT_UNWE	Near Receiver Window End Time	USIT-E	146	us
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VRES	Vertical Resolution	USIT-E	3.0 in	
WINB	Window Begin Time	USIT-E	31.88	us
WINE	Window End Time	USIT-E	71.88	us

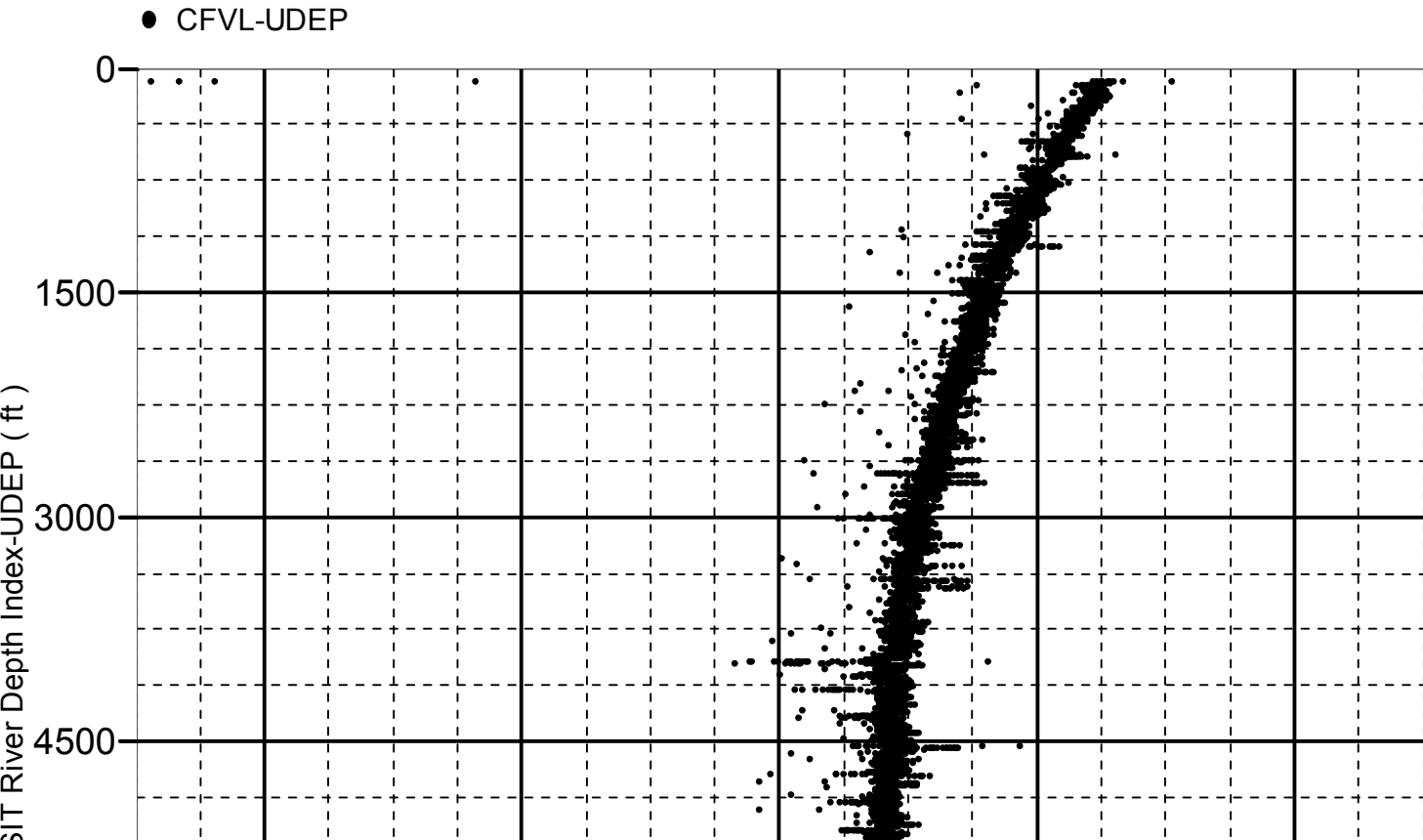
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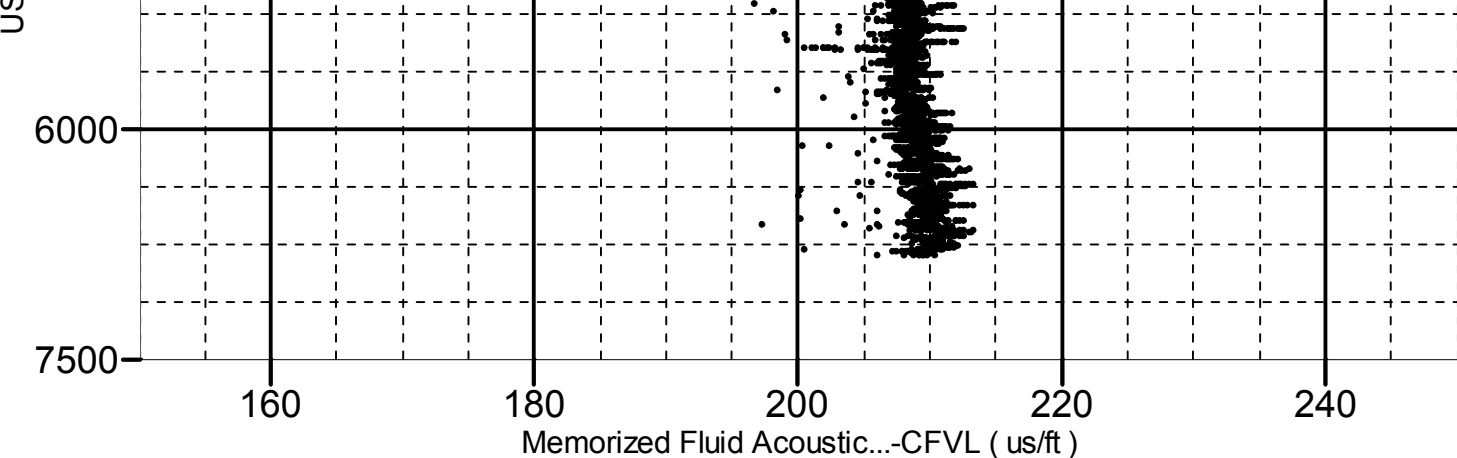
Company:Crestone Peak Resources Operating LLC Well:Ruegge #3O-4H-N165
One: Log[4]:Up:S004

Fluid Acoustic Slowness vs Depth

2D Cross Plot

Index Range: From 6837.50 to 76.00 ft



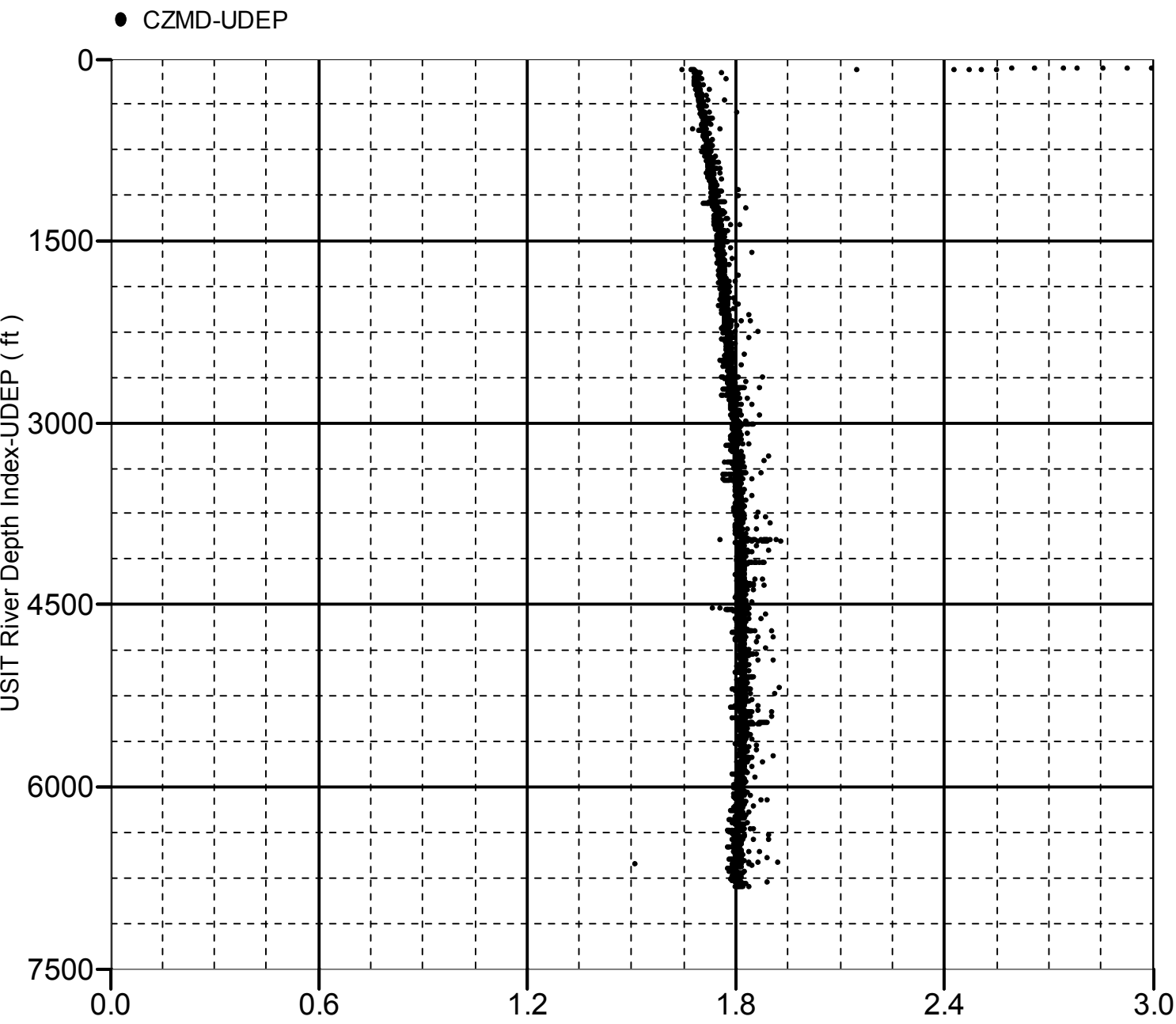


XYZ Company:Crestone Peak Resources Operating LLC Well:Ruegge #3O-4H-N165 One: Log[4]:Up:S004

Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 6837.50 to 76.00 ft



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