

Company: Crestone Peak Resources and Operating LLC

Well: Ruegge 3C-4H-N165

Field: Wattenberg

County: Weld State: Colorado

Isolation Scanner
Cement Evaluation
Gamma Ray - CCL Log

County:	Weld
Field:	Wattenberg
Location:	SESW SEC:4 TWN:1N RNG:65W
Well:	Ruegge 3C-4H-N165
Company:	Crestone Peak Resources and Operating LLC
Location:	
Permanent Datum:	SESW SEC:4 TWN:1N RNG:65W
Log Measured From:	Elev.: K.B. 4941.00 ft
Drilling Measured From:	G.L. 4918.00 ft
API Serial No.	D.F. 4941.00 ft
05123465690000	Ground Level
4	Kelly Bushing
23.00 ft	Kelly Bushing
4918.00 f	above Perm.Datum
1N	Range:
65W	

Logging Date	27-Jun-2018
Run Number	ONE
Depth Driller	12080.00 ft
Schlumberger Depth	7125.00 ft
Bottom Log Interval	7125.00 ft
Top Log Interval	50.00 ft
Casing Fluid Type	Water
Salinity	
Density	9.2 lbm/gal
Fluid Level	8.00 ft
BIT/CASING/TUBING STRING	
Bit Size	8.50 in
From	2488.20 ft
To	12080.00 ft
Casing/Tubing Size	5.5 in
Weight	20 lbm/ft
Grade	P110
From	0.00 ft
To	12077.18 ft
Max Recorded Temperatures	220.8 degF
Logger on Bottom	27-Jun-2018
Unit Number	3108
Location:	Time 13:05:00
Recorded By	Justin Ray
Witnessed By	Satch Bowe

Disclaimer

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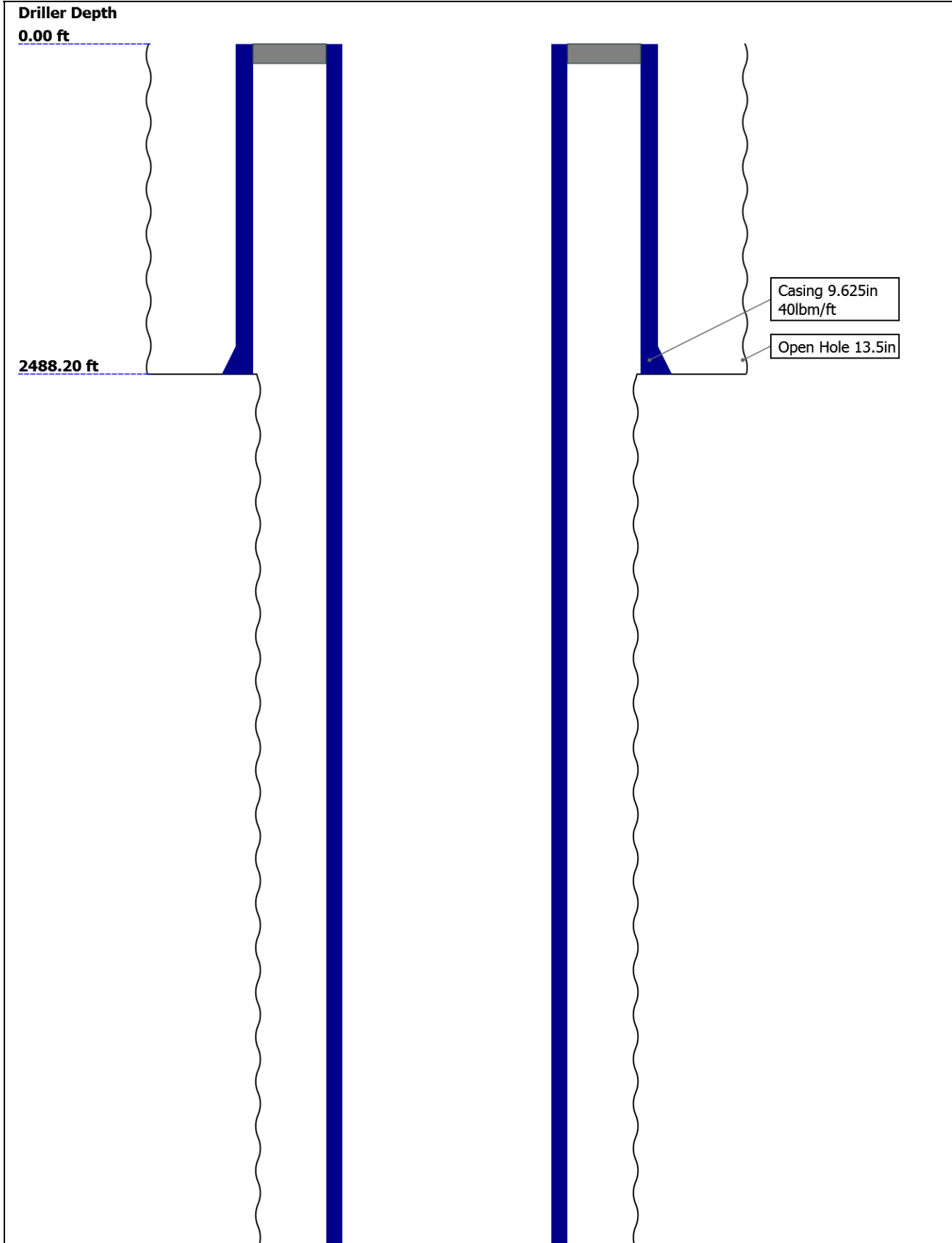
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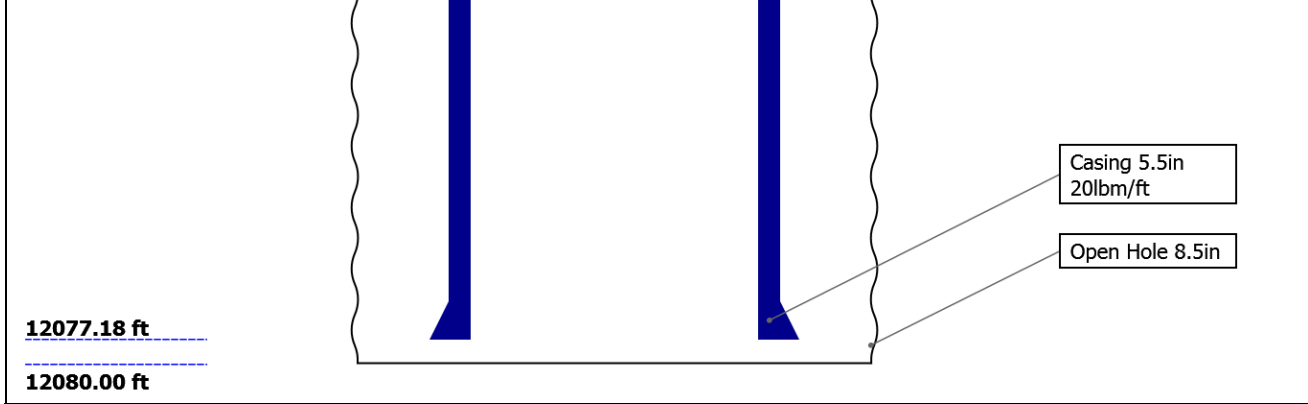
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Well Sketch



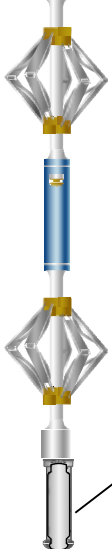


Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	13.5	8.5				
Top Driller (ft)	0	2488.2				
Top Logger (ft)	0	2488.2				
Bottom Driller (ft)	2488.2	12080				
Bottom Logger (ft)	2488.2	12080				
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)	2488.2	12077.18				
Bottom Logger (ft)	2488.2	12077.18				

Remarks and Equipment Summary

ONE: Toolstring				ONE: Remarks	
Equip name	Length	MP name	Offset	Tool string ran as per tool sketch	
LEH-QT:2	30.16			Gemcos, in- line centralizers and two knuckles ran for tool centralization.	
353				All passes run under 0 psi.	
LEH-QT:23				Lead: 11 ppg	
53				Tail: 13.5 ppg	
				Spacer: 11 ppg	
EDTC-B:9	27.24			Thank you for choosing Schlumberger	
247					
EDTH-B:93					
09					
EDTG-A:7					
9445					
EDTC-B:92					
47					
AH-184[20.74				
2]					
AH-184[18.74				
1]					
USIT-E:93	16.74				
0					
ECH-MFA:					
1924					
USAC-A:9					
30					
USIT-A:10					

USIS-A:18 20 USSC-B:79 9 IBCS-A:77 4 FAR-SENS OR:4670 IBC-TX NEAR-SEN SOR:4642 IBC-TX USI-SENS OR:1358 IBC-TX EMITTER- SENSOR:4 561 IBC-TX	 <p>USI Sen 0.84 sor Head Te nsion</p> <p>TOOL_ZERO</p> <p>Lengths are in ft Maximum Outer Diameter = 6.250 in Line: Sensor Location, Value: Gating Offset All measurements are relative to TOOL_ZERO</p>	
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Depth Summary			
	ONE		
Depth Measuring Device			
Type	IDW-JA		
Serial Number	5979		
Calibration Date	06-oct-2017		
Calibrator Serial Number	IDWC-C-57		
Calibration Cable Type	7-39-AIXXS		
Wheel Correction 1	-3		
Wheel Correction 2	-3		
Tension Device			
Type	CMTD-B/A		
Serial Number	1398		
Calibration Date	22-jun-2018		
Calibrator Serial Number	78796A		
Number of Calibration Points	10		
Calibration Root Mean Square Error	16		
Calibration Peak Error	25		
Logging Cable			
Type	7-39P-LXS		
Serial Number	F713178		
Length	10000.00 ft		
Conveyance Type	Wireline		
Rig Type	Mast		
ONE:Depth Control Parameters		Depth Control Remarks	
Log Sequence	First Log In the Well	All Schlumberger depth control procedures followed IDW used as primary depth device Z-Chart used as secondary depth device.	
Rig Up Length At Surface			
Rig Up Length At Bottom			
Rig Up Length Correction			

Stretch Correction5.99 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	7140.47	61.43

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 = "Theoretical".
CZMD uses theoretical results.
MUD_N_THE=1.00
DFD=1.10g/cm3(9.20lbm/gal)

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

IBC SLG Main Pass

Software Version

Acquisition System	Version
Maxwell 2018	8.0.95333.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	61.43 ft	7140.47 ft	27-Jun-2018 12:57:03	27-Jun-2018 14:46:51	ON	5.99 ft	Yes

All depths are referenced to toolstring zero

Log	Company:Crestone Peak Resources and Operating LLC	Well:Ruegge 3C-4H-N165
		ONE: Log[4]:Up:S022

Description: USI IBC SLG Format: Log (IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 19-Jul-2018 19:46:11

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

6 c/s 7.5

Absent 1.500 3.500

Explicit Normalization

USIT - USIT

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

15

Gamma Ray (ECGR_EDTC) EDTC-B

0 gAPI 150

Absent -5.200 -3.600 -2.000 -0.400

Explicit Normalization

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

Absent 0.750 1.750 2.750 3.750

Custom Normalization

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

Absent 42.000 66.000 90.000 114.000

Custom Normalization

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

Acoustic Impedance Minimum (AIMN) USIT-E

-1 Mrayl 9

Acoustic Impedance Average (AIAV) USIT-E

-1 Mrayl 9

Acoustic Impedance Maximum (AIMX) USIT-E

-1 Mrayl 9

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

0 dB/m 150

Absent 0.500 1.500 2.500 3.500

Explicit Normalization

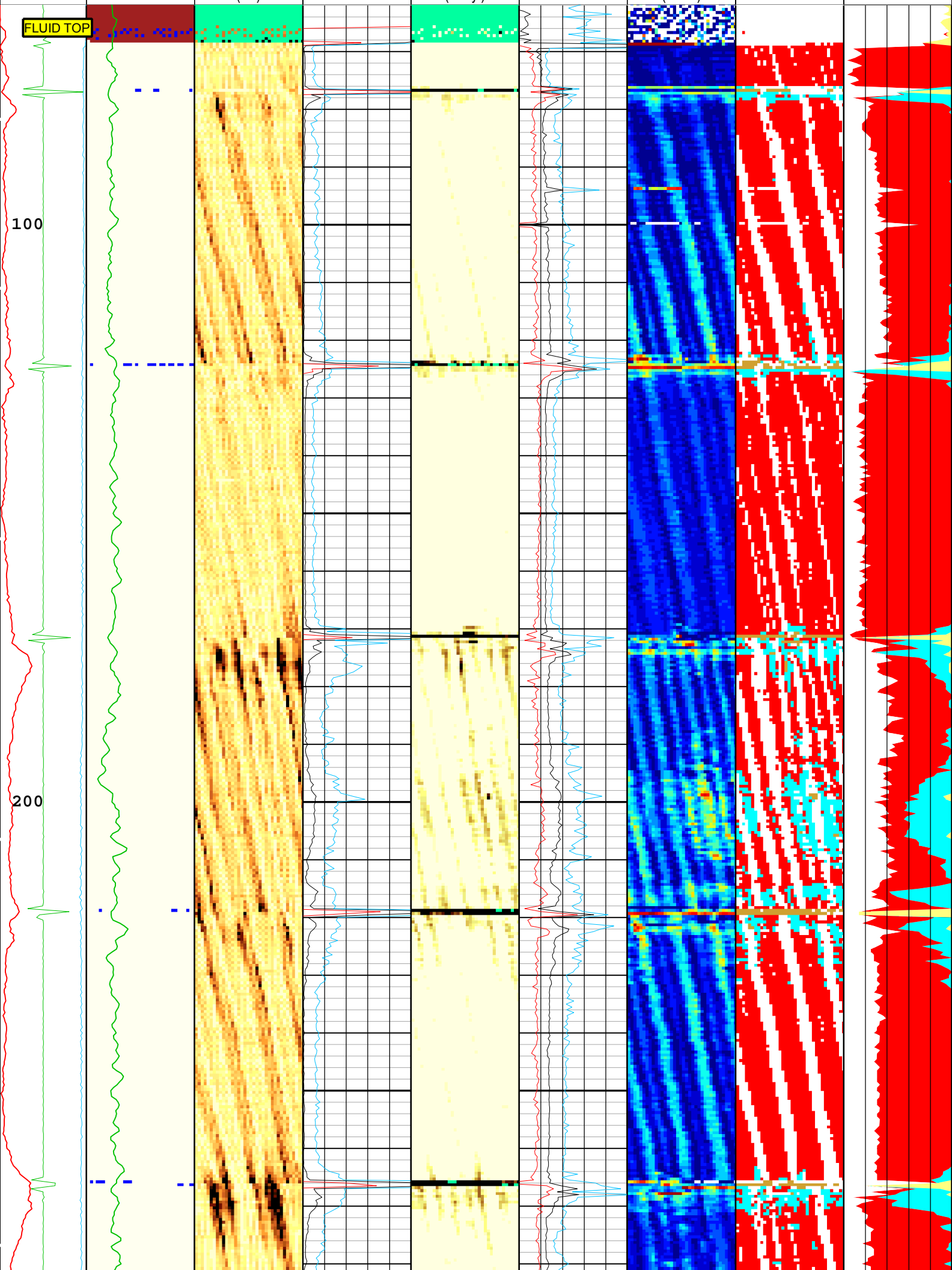
USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E

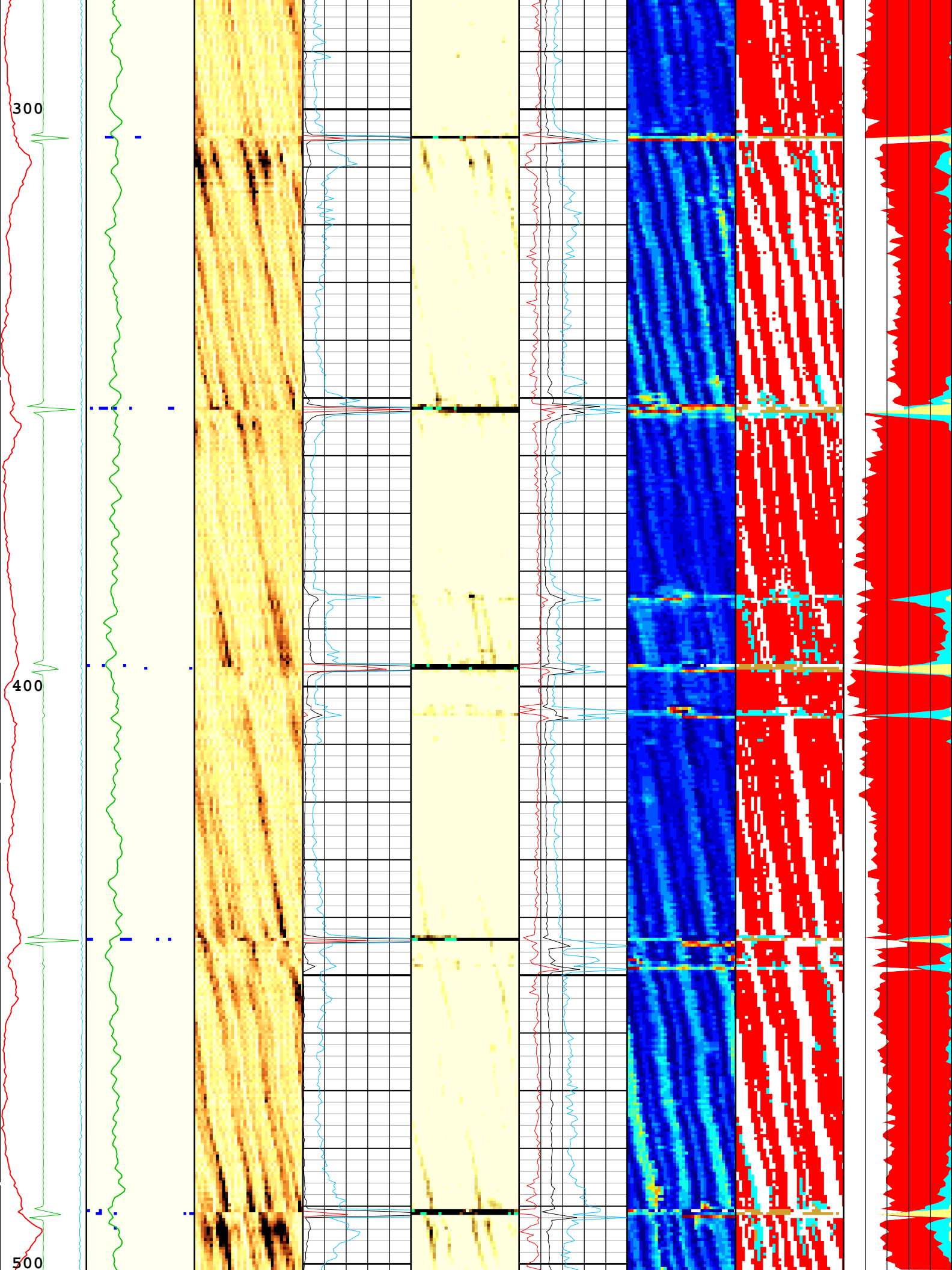
SLG Solid Index

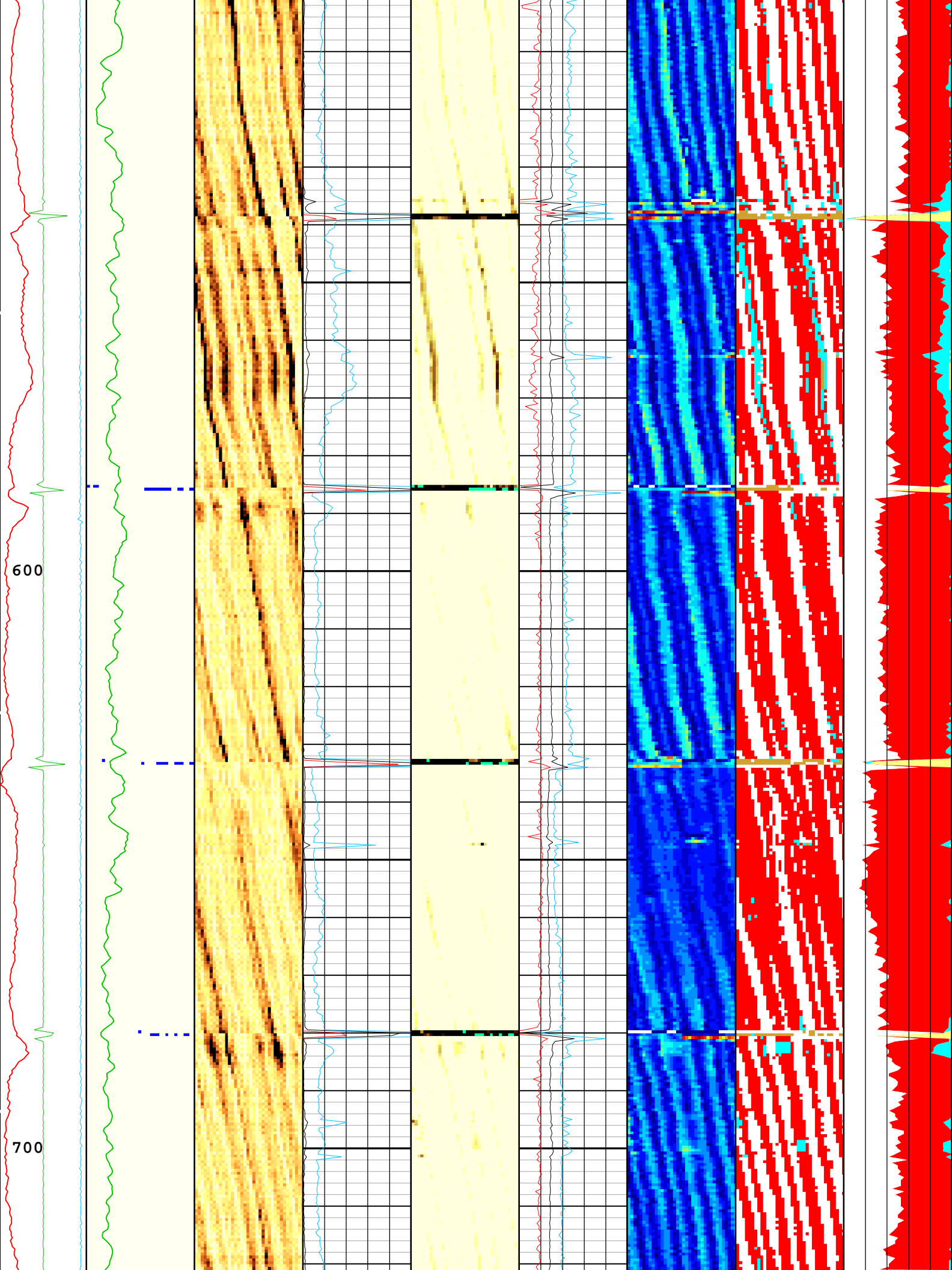
SLG Liquid Index

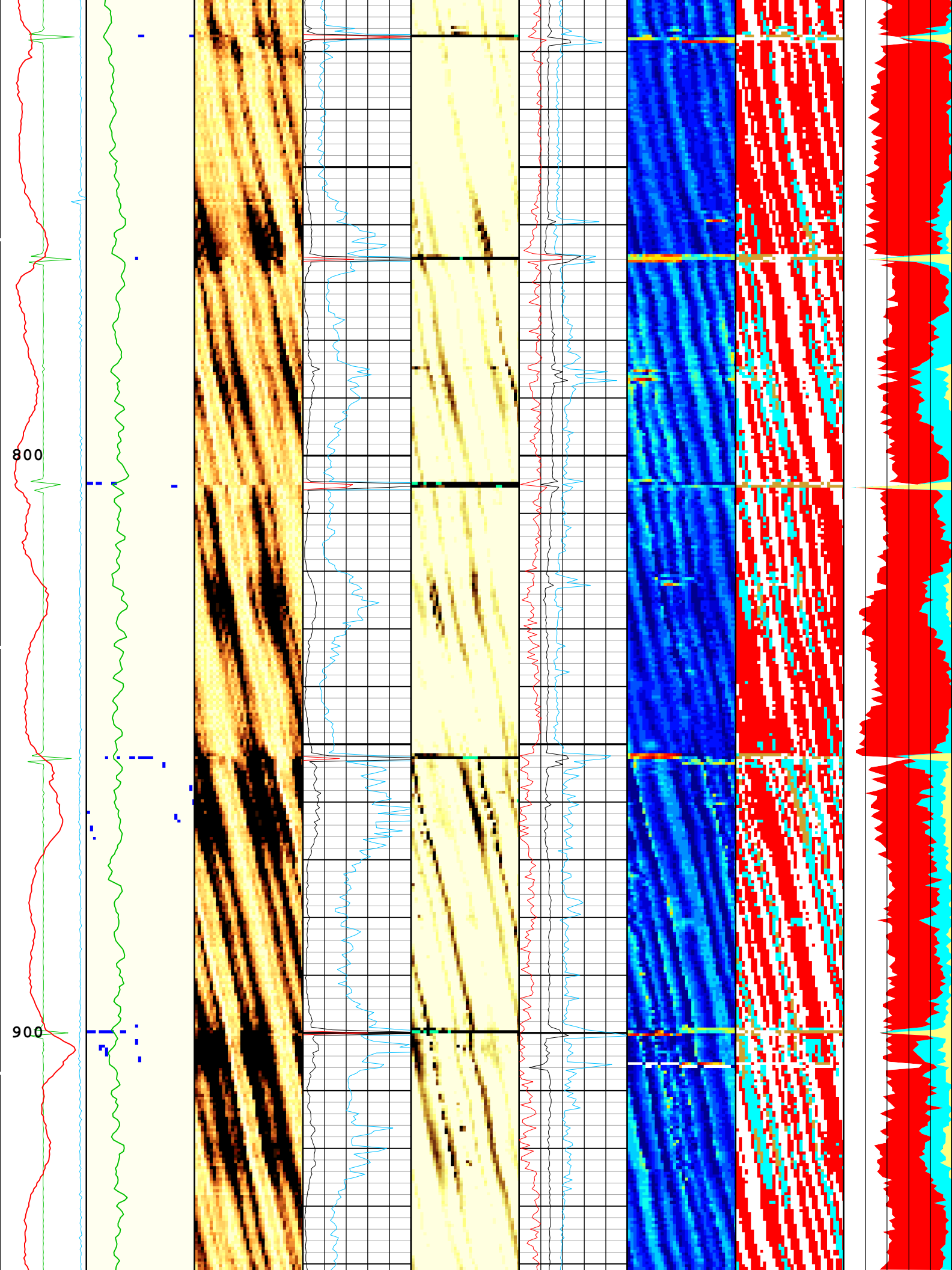
SLG Gas Index

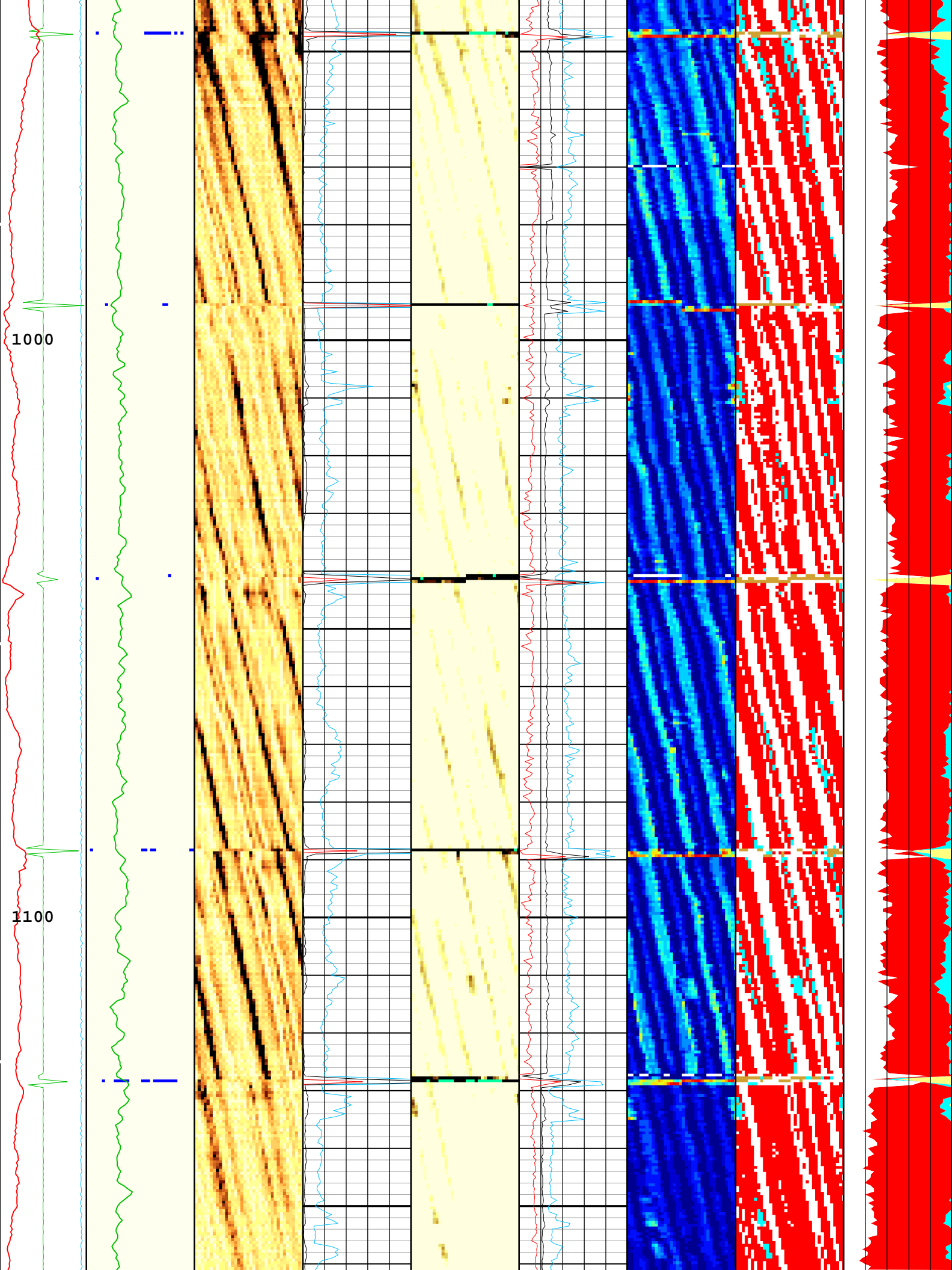
SLG White Point Index

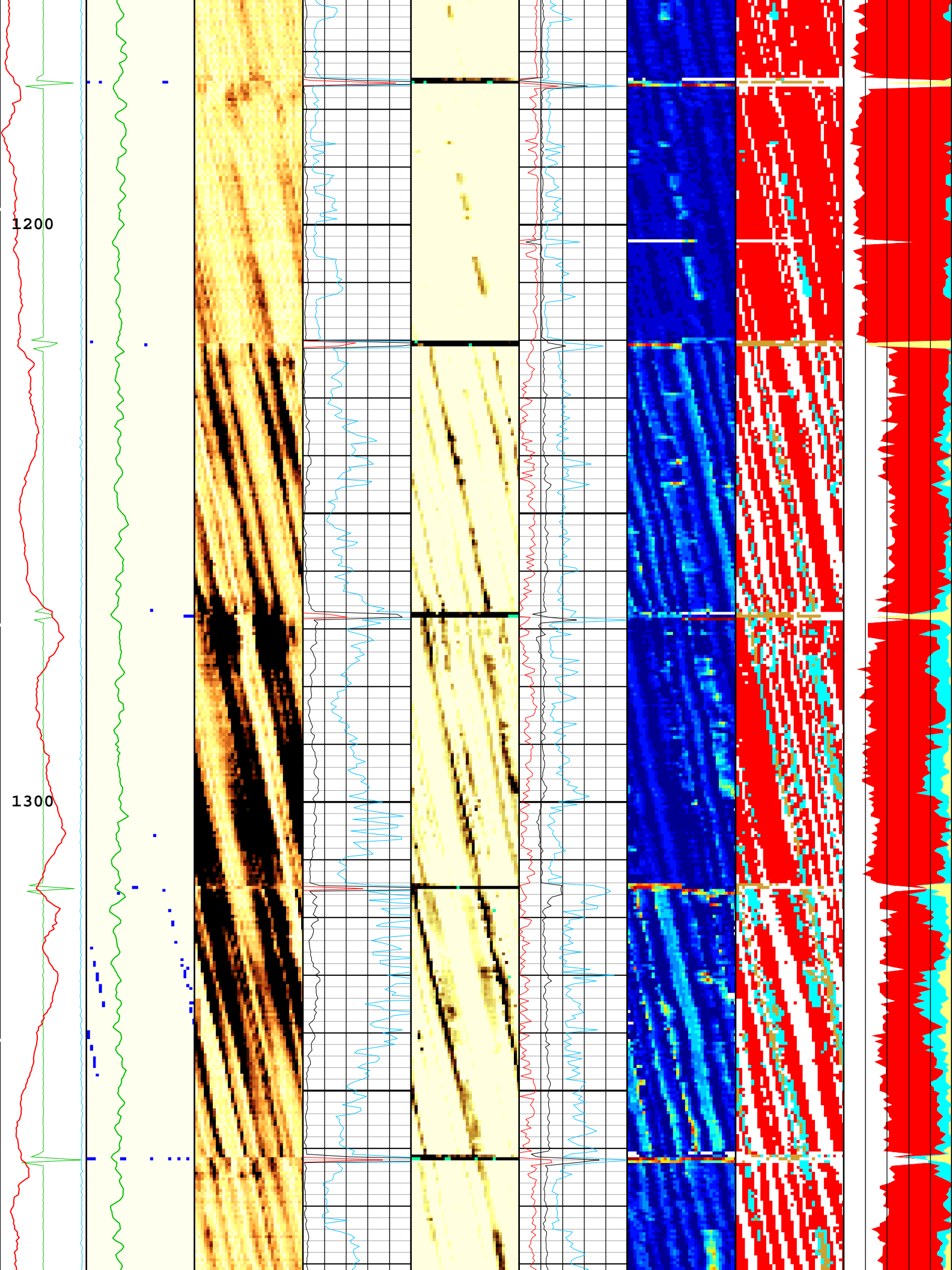


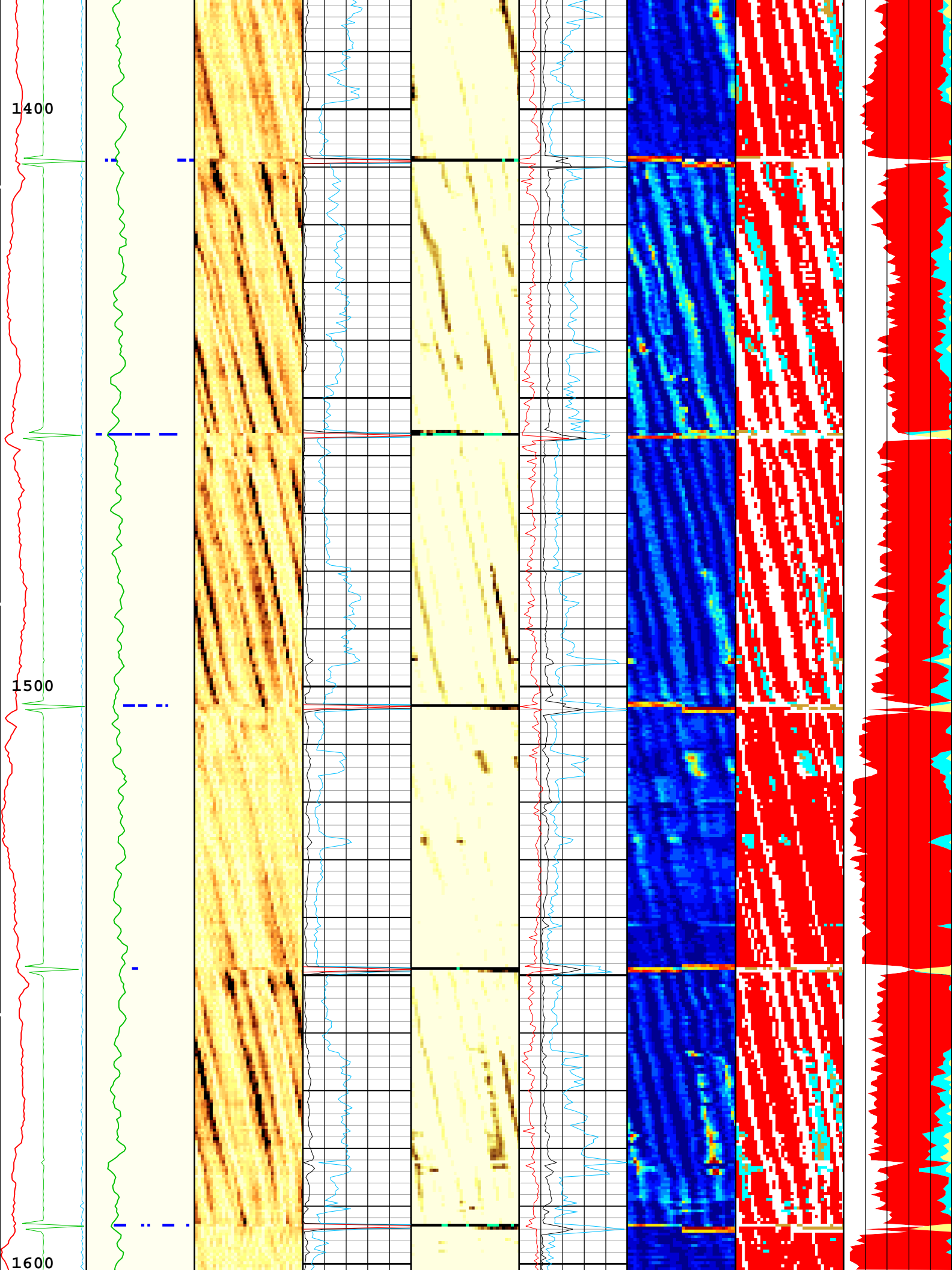


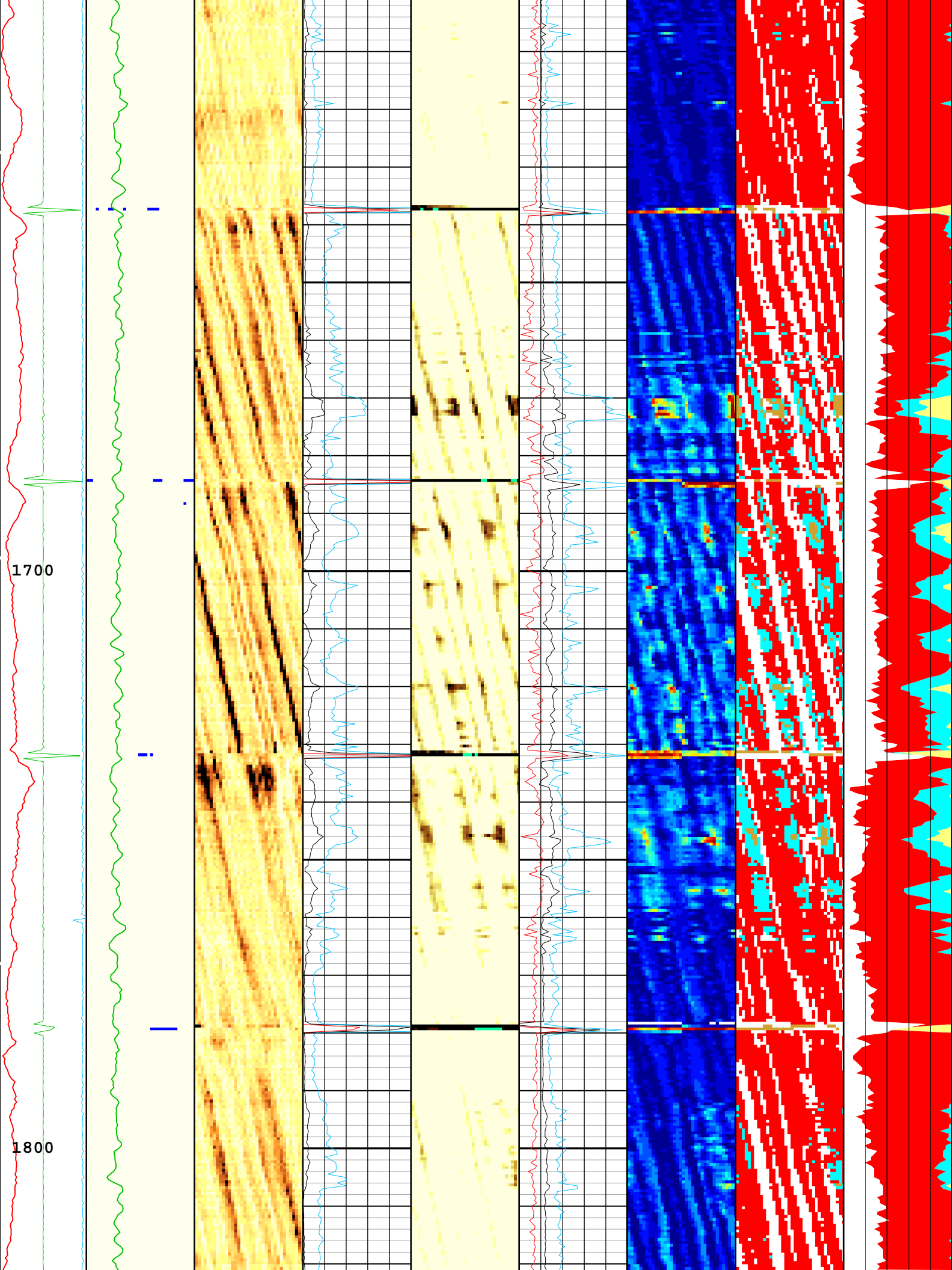


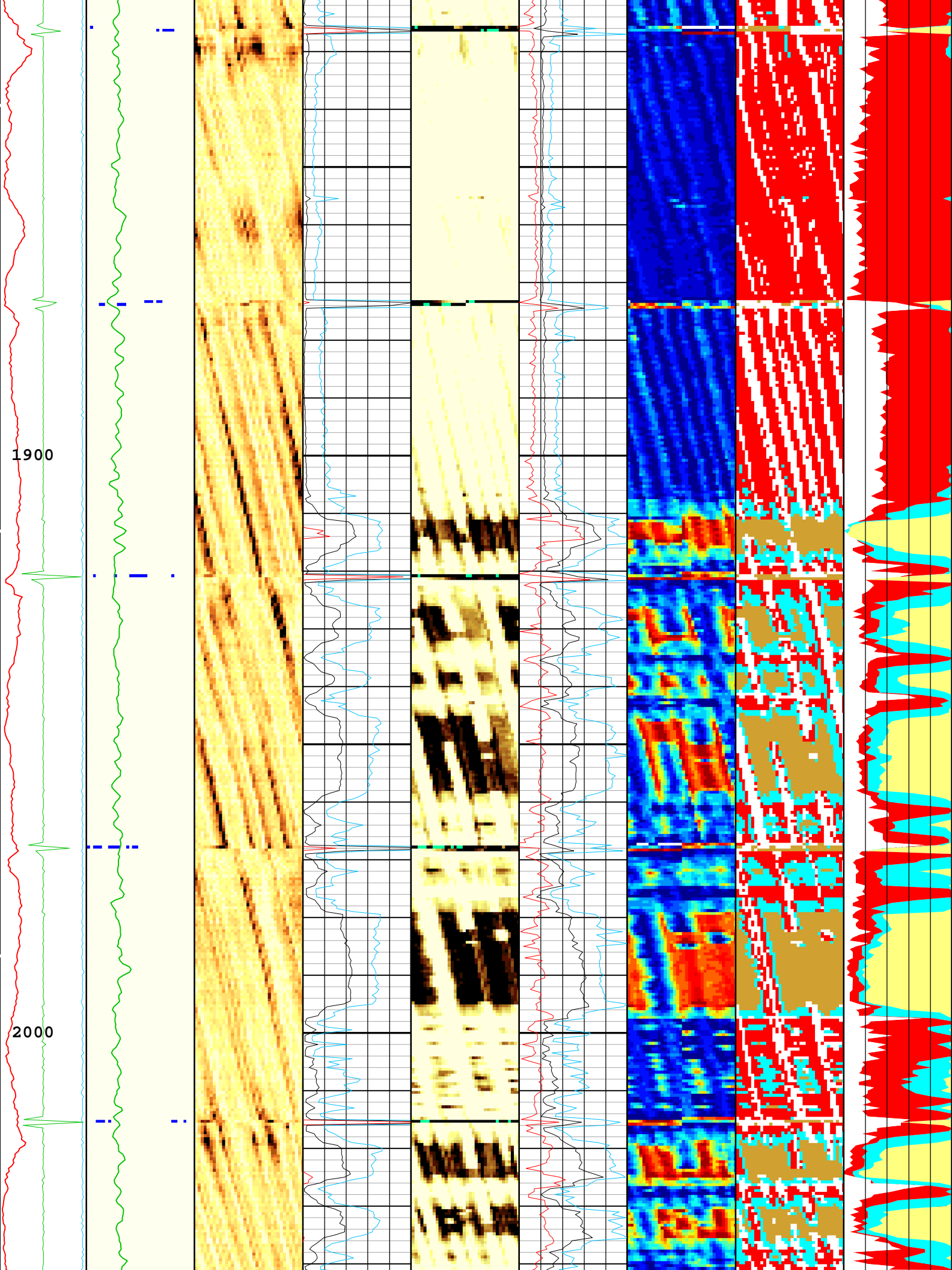


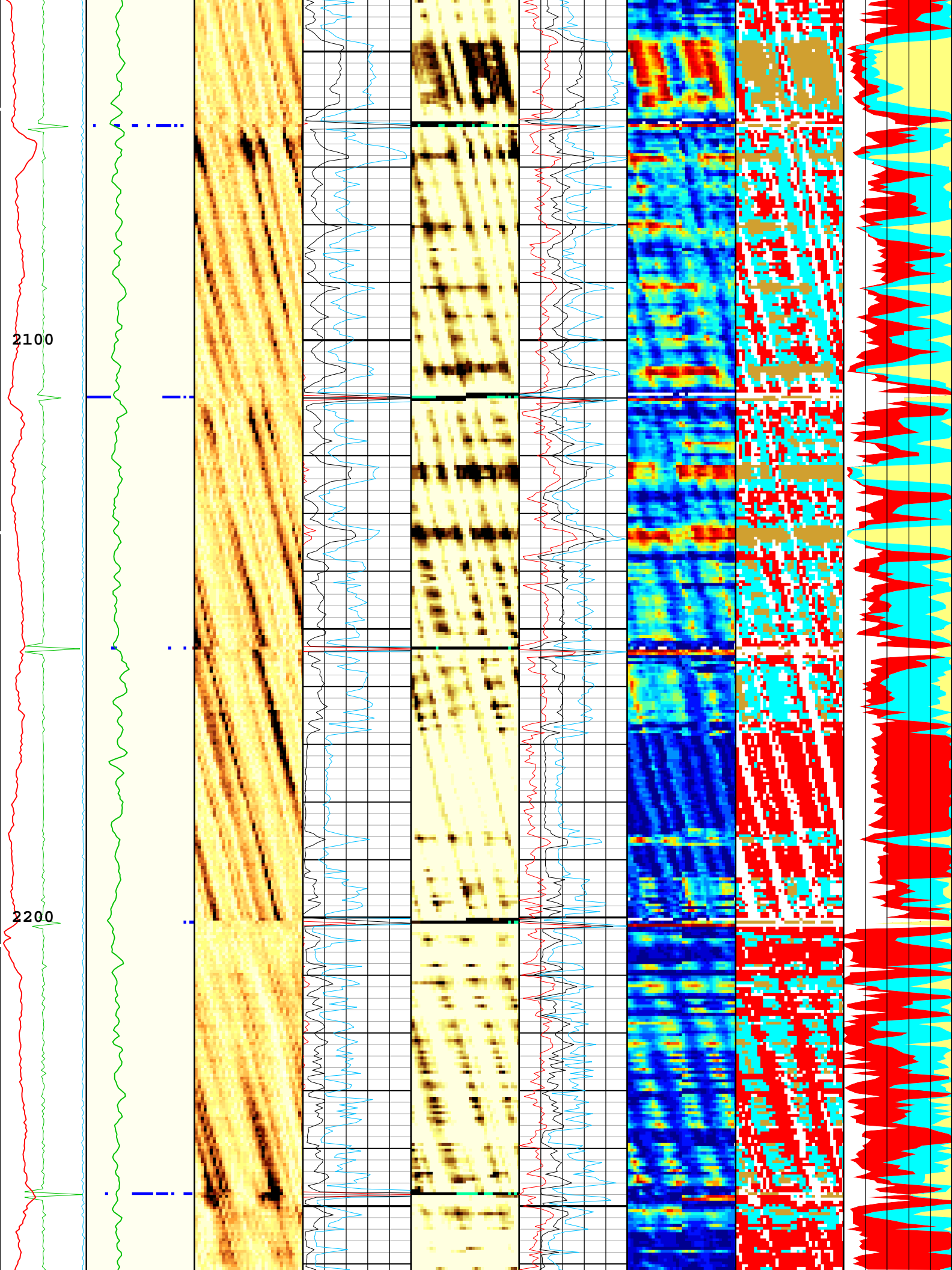


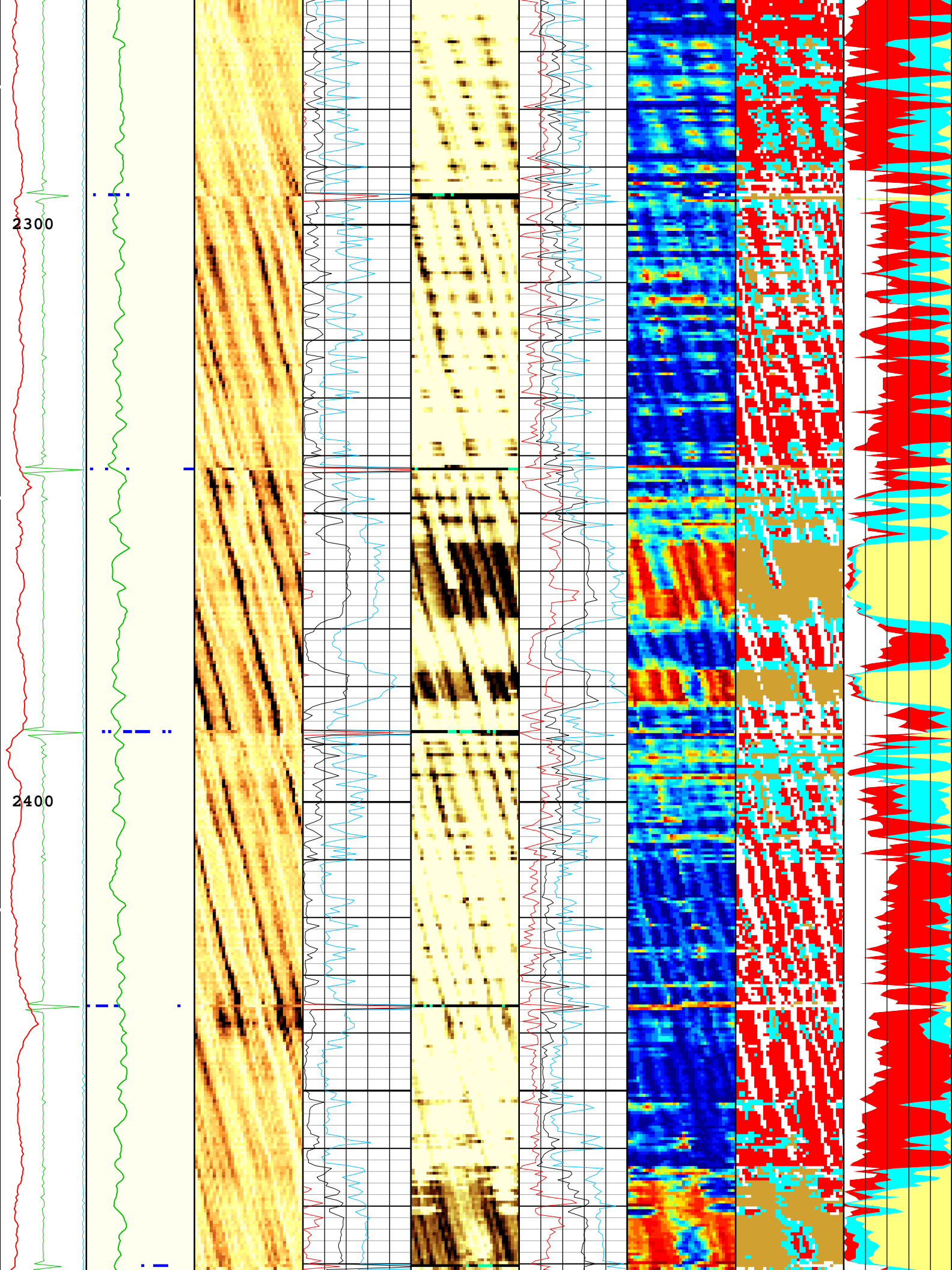


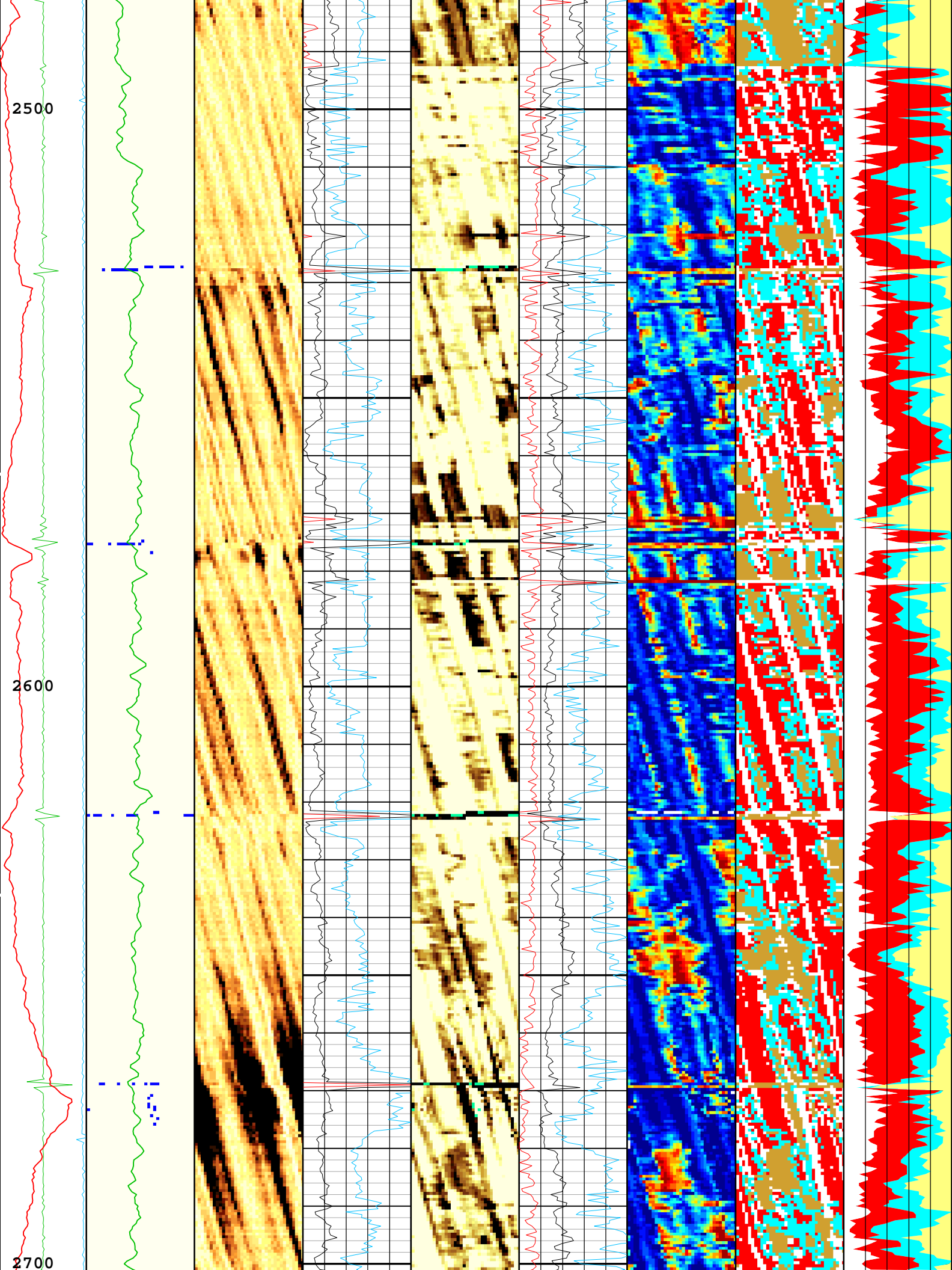


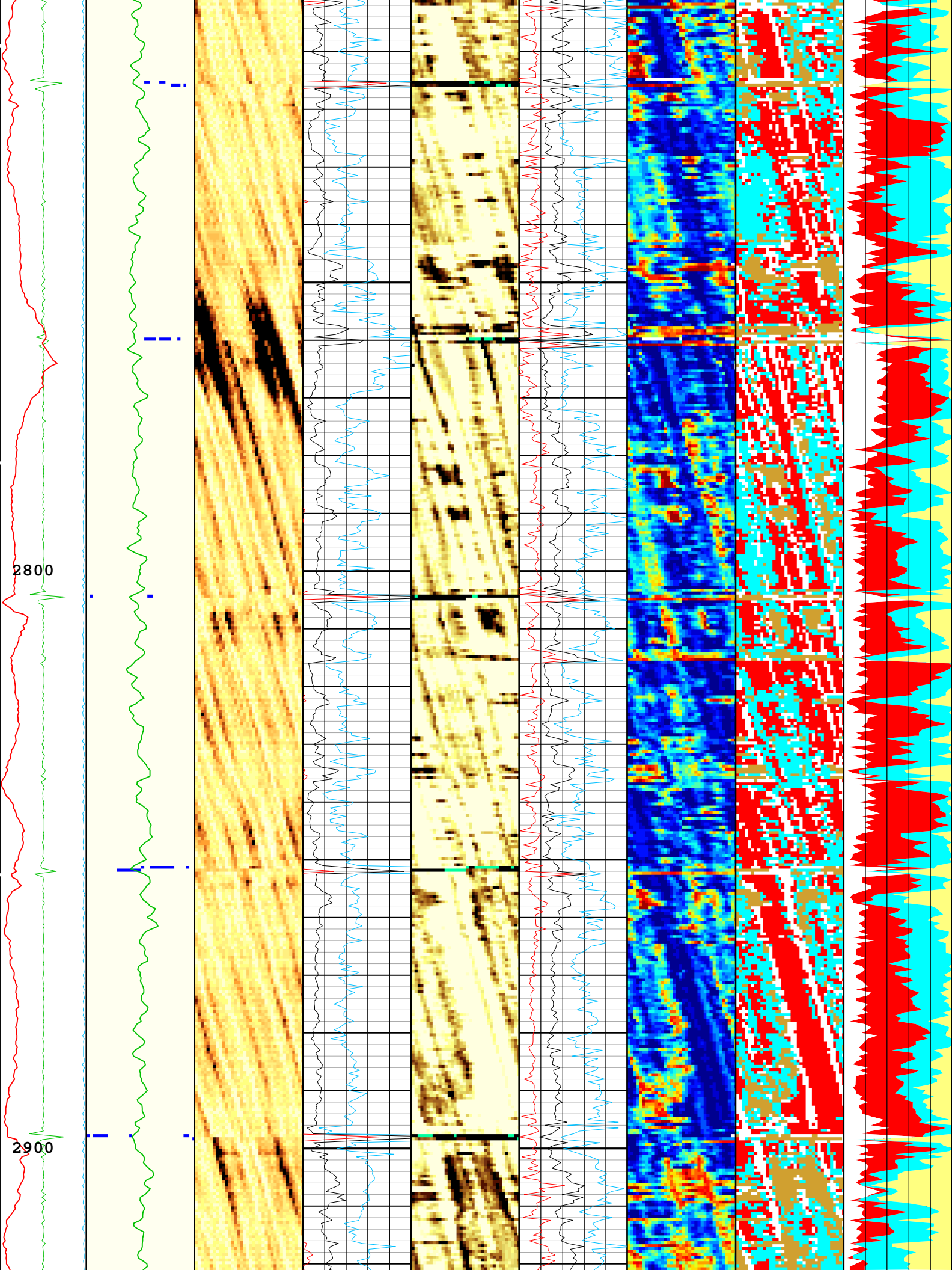


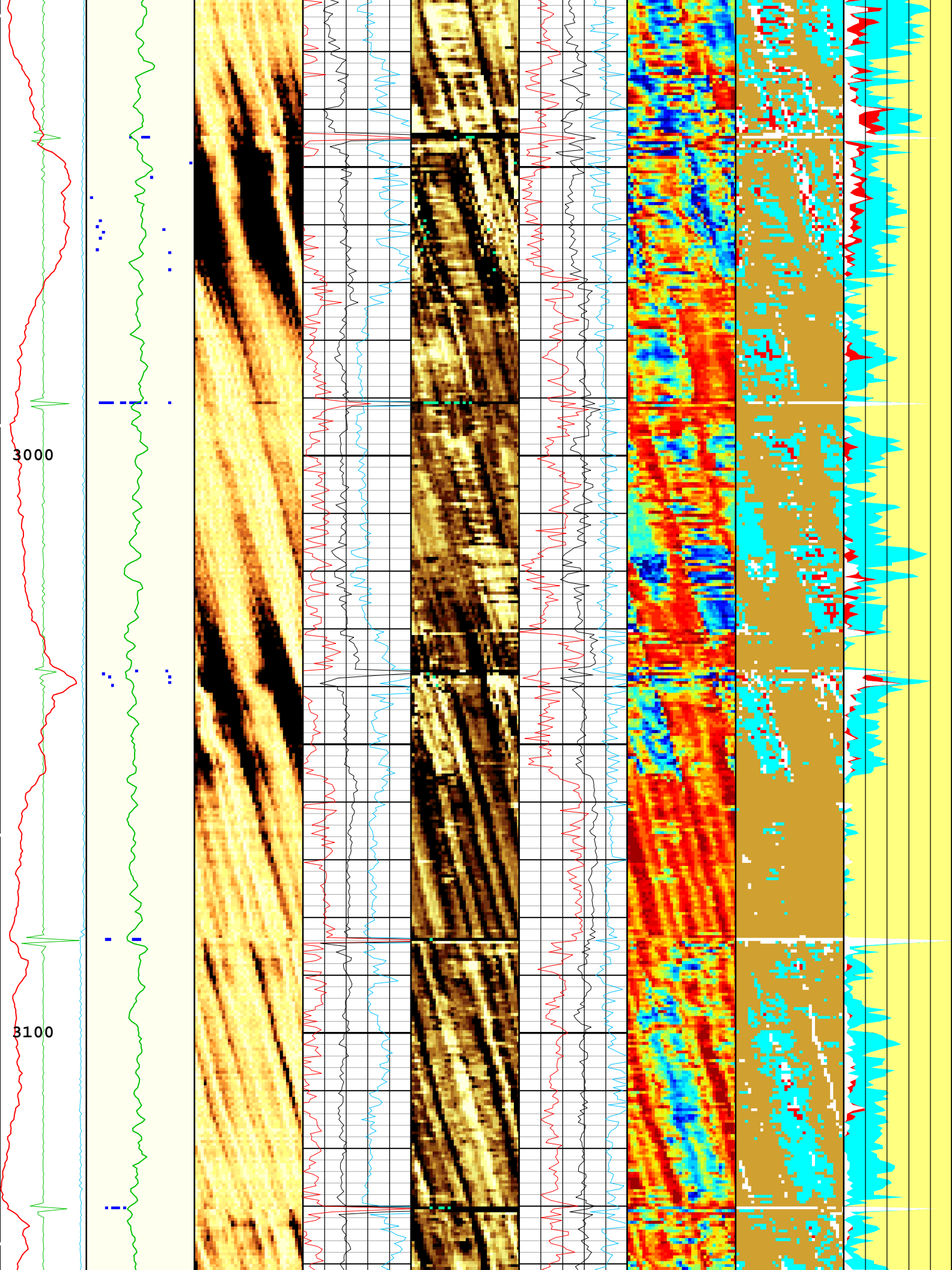


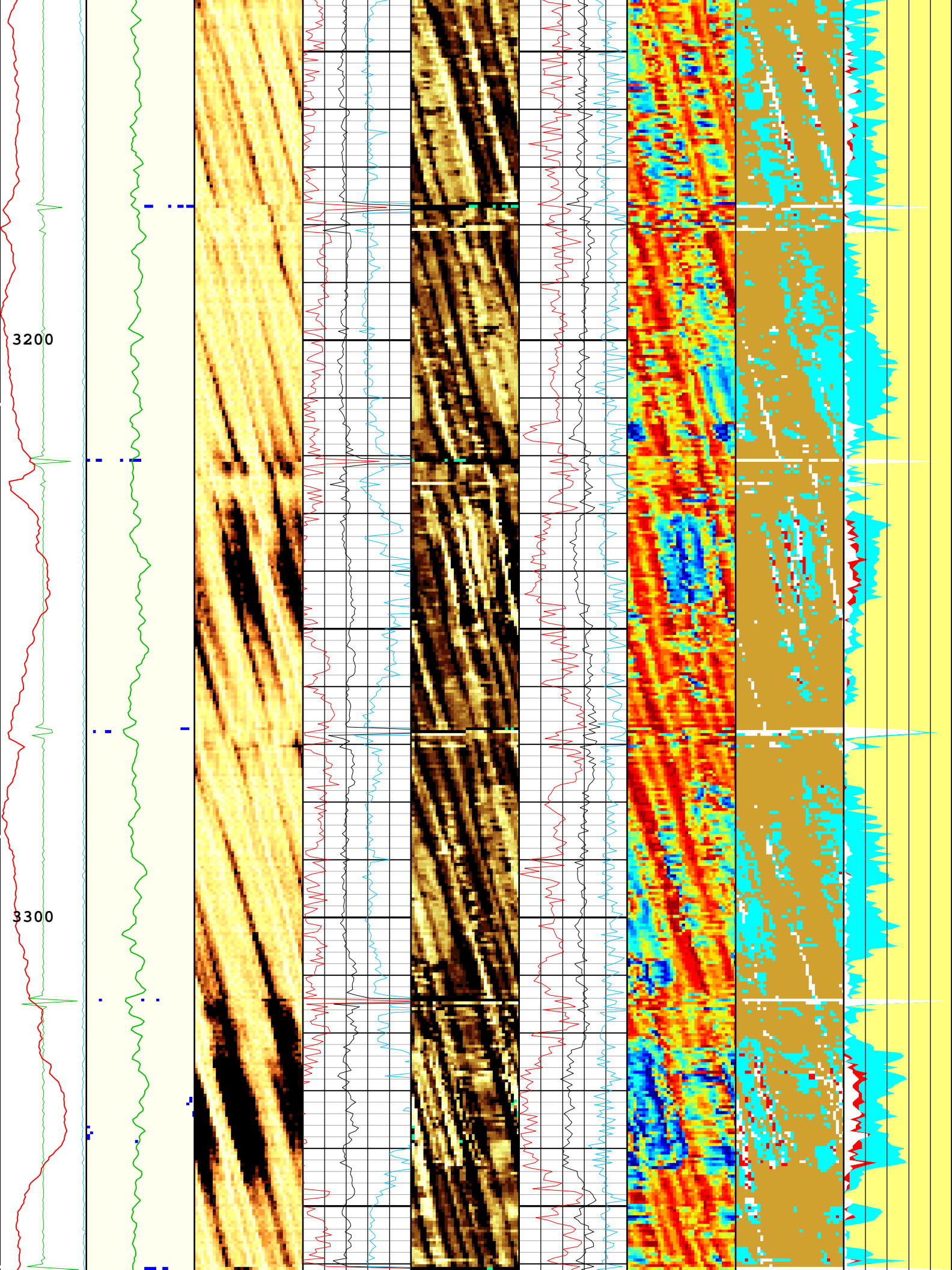


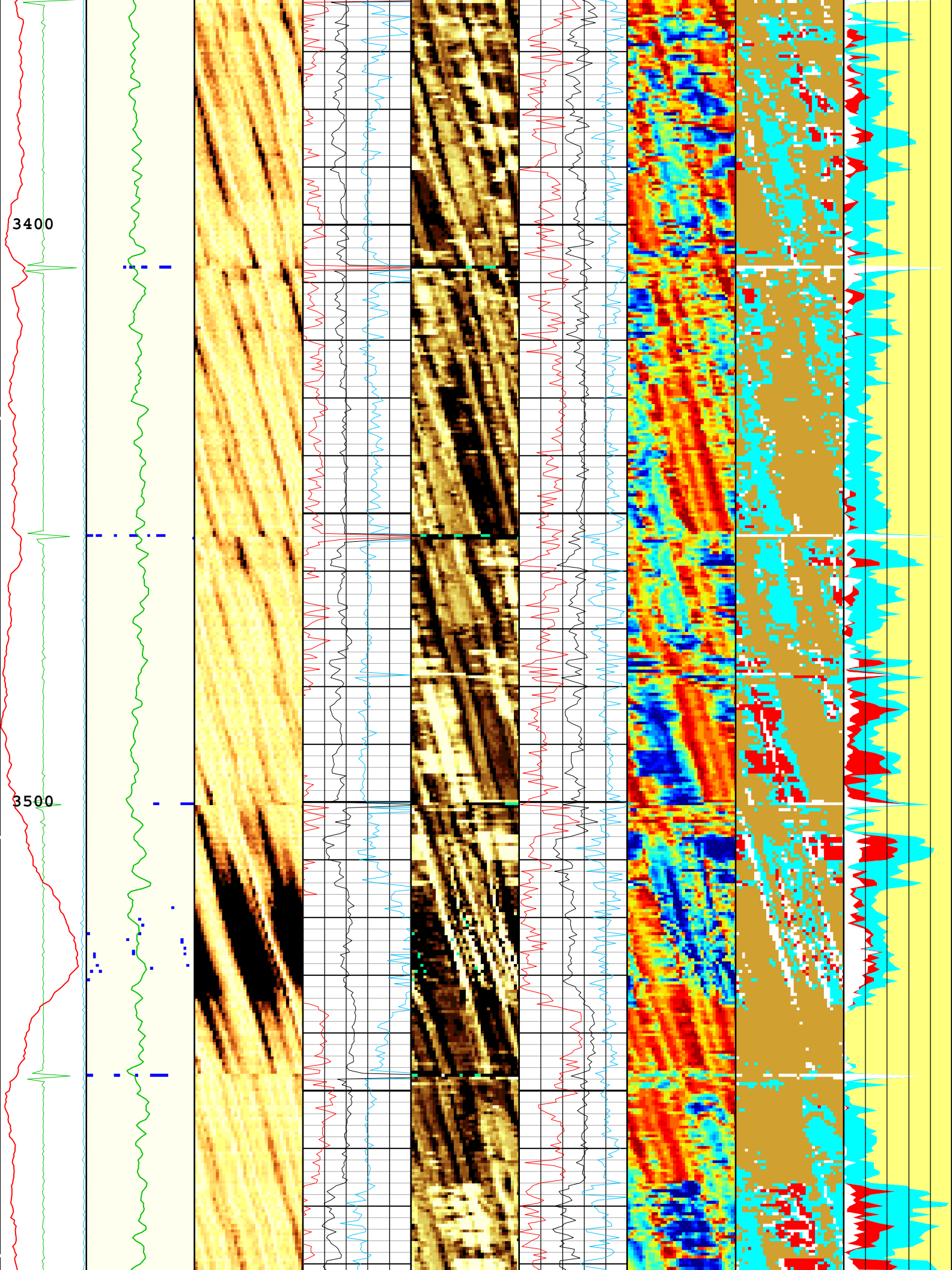


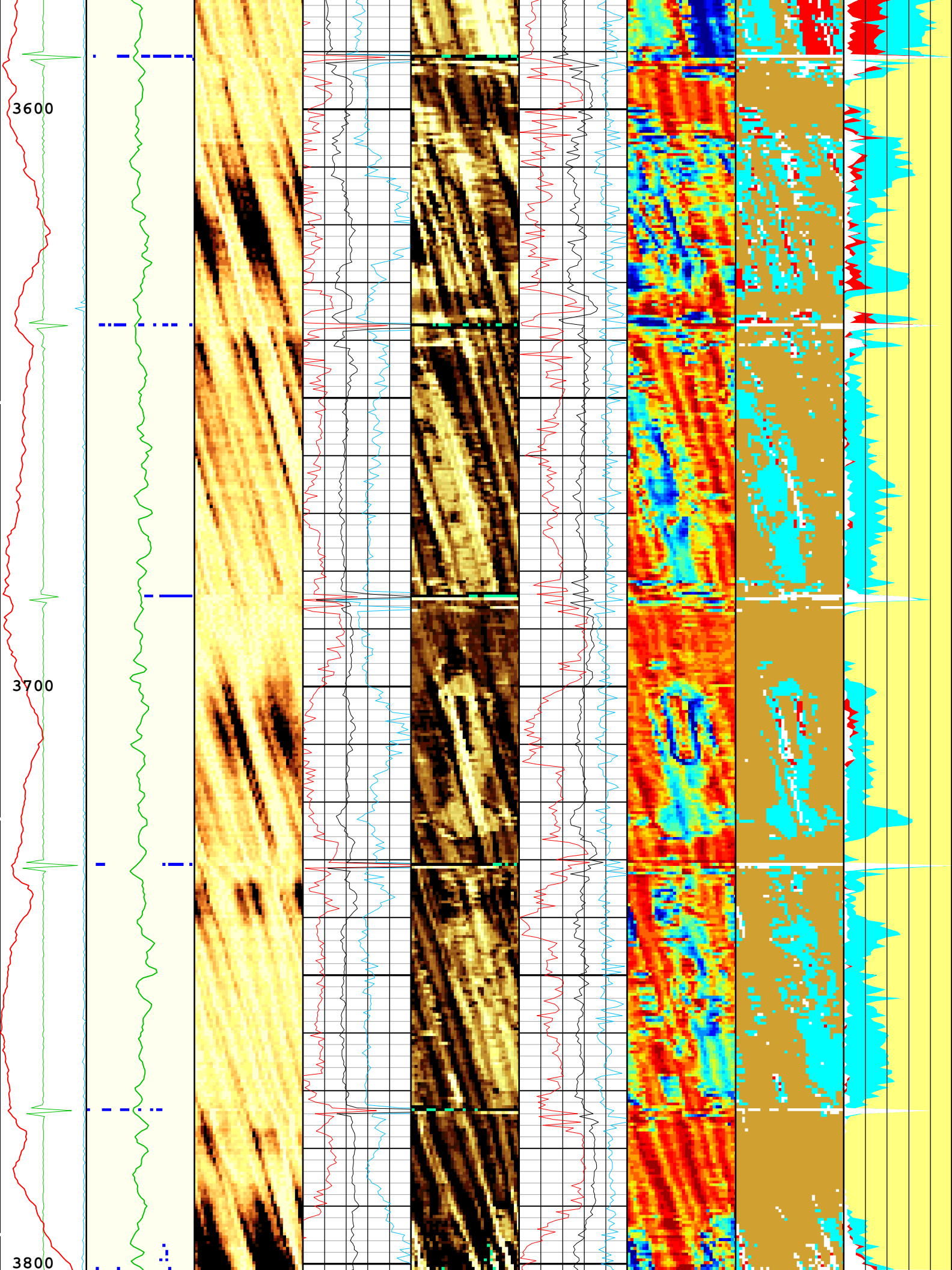


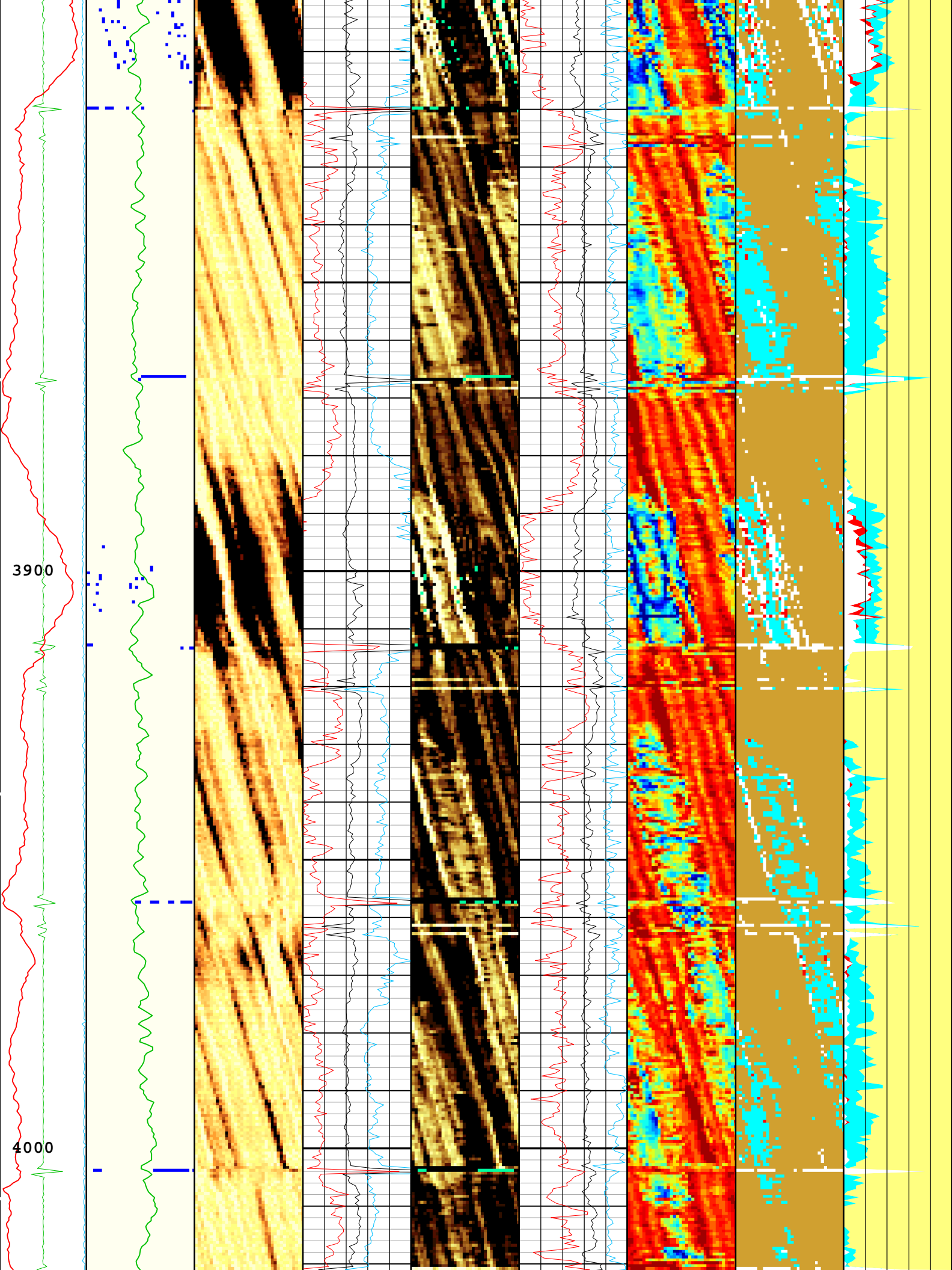


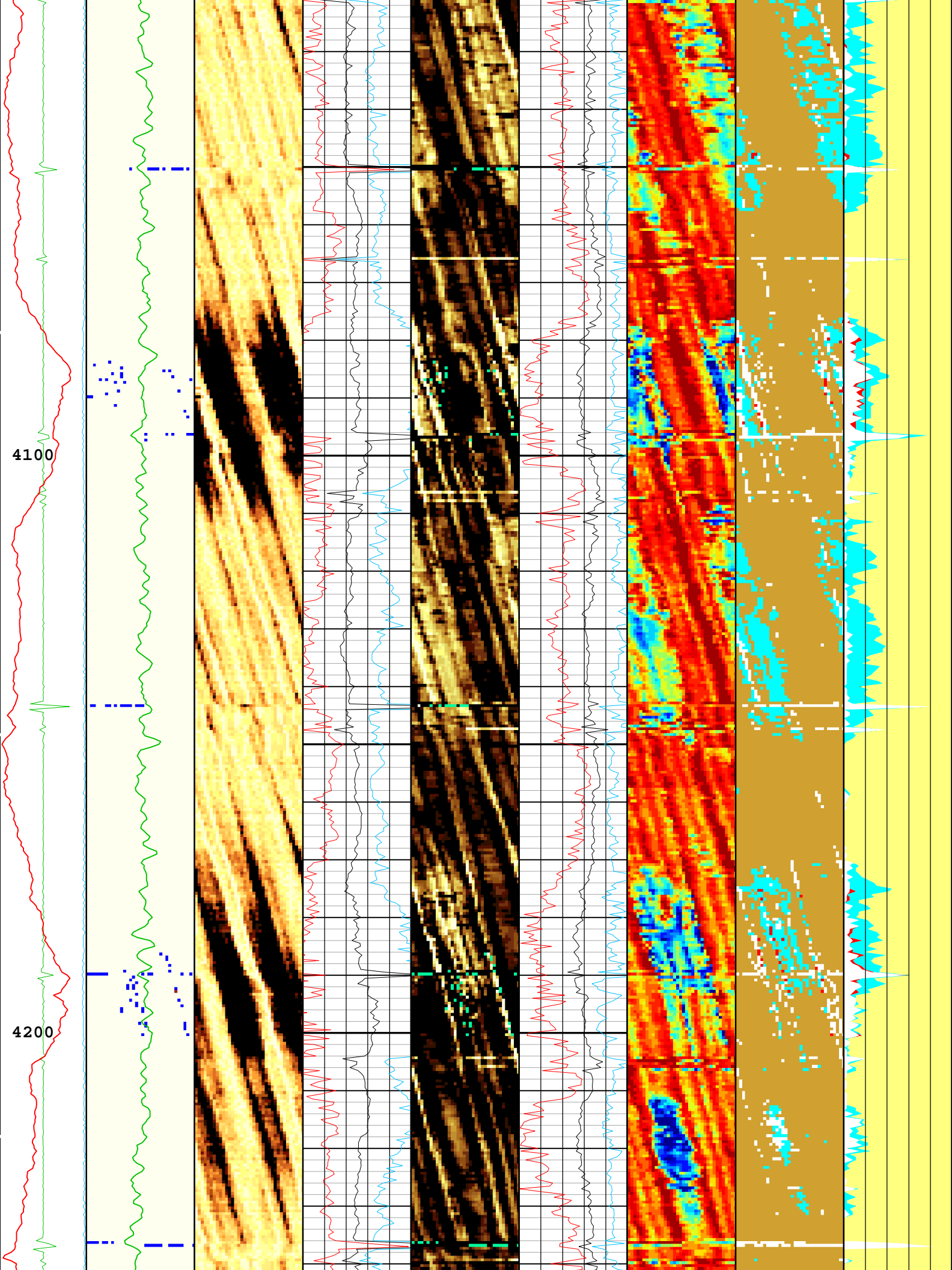


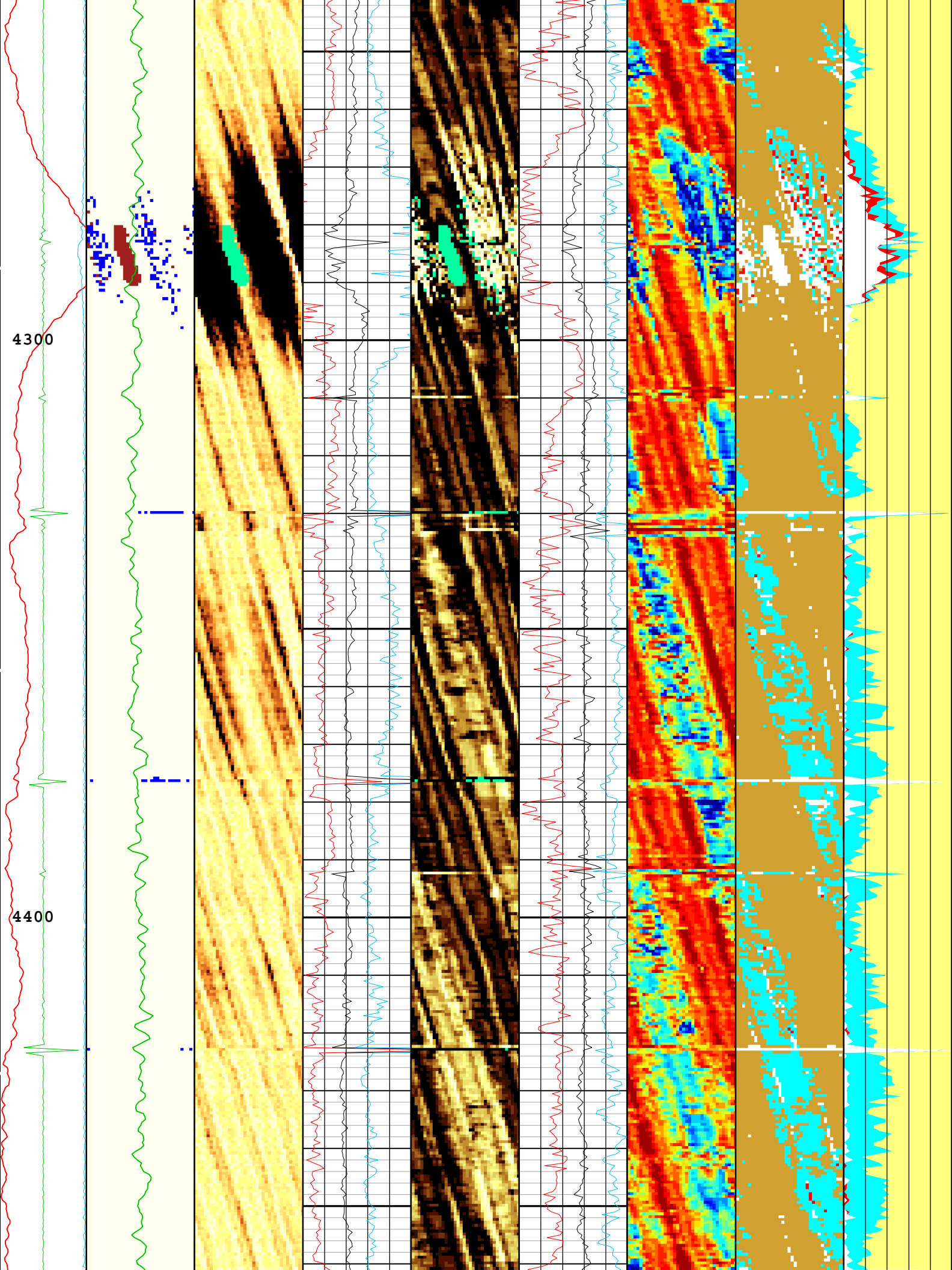


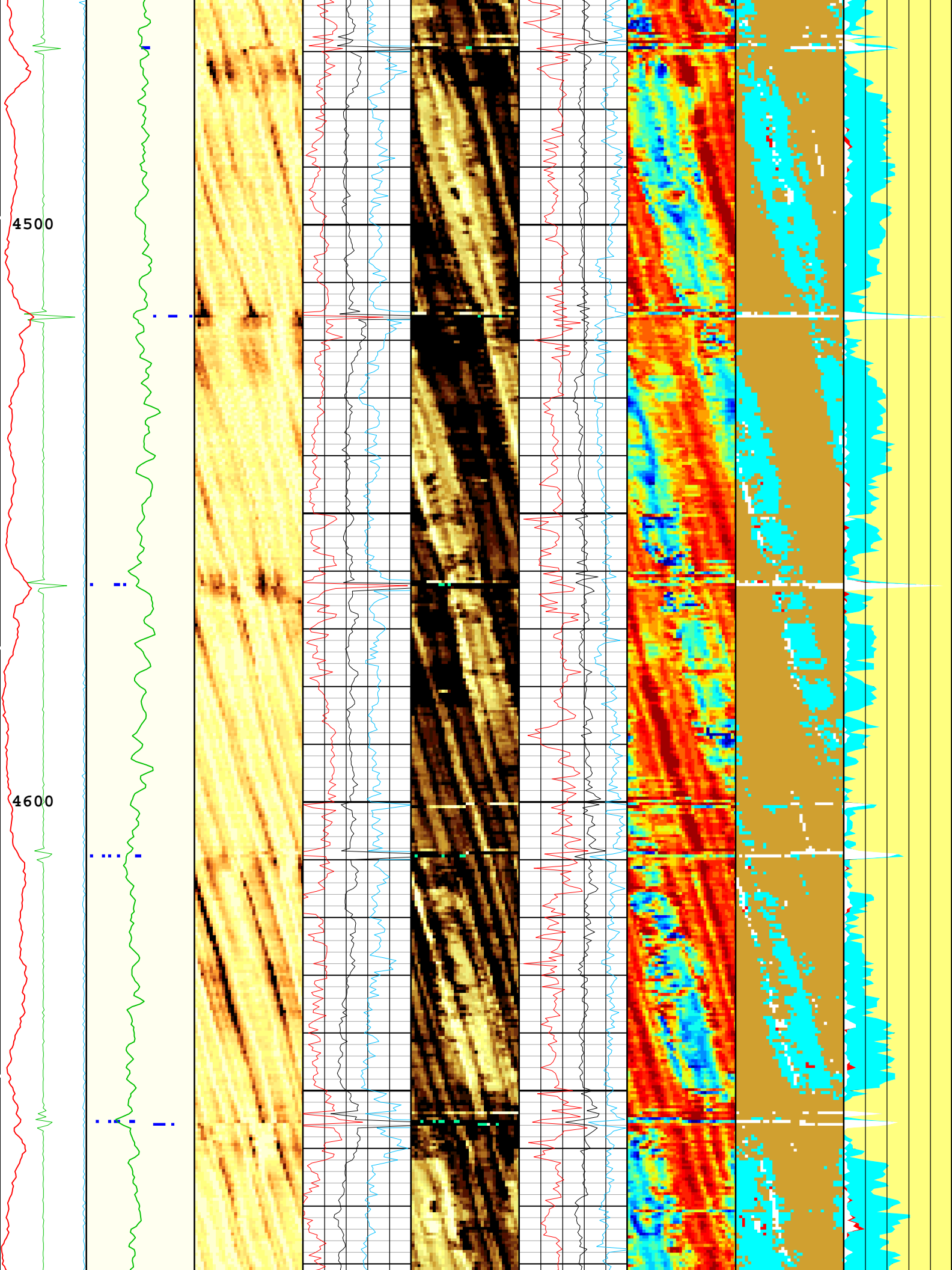


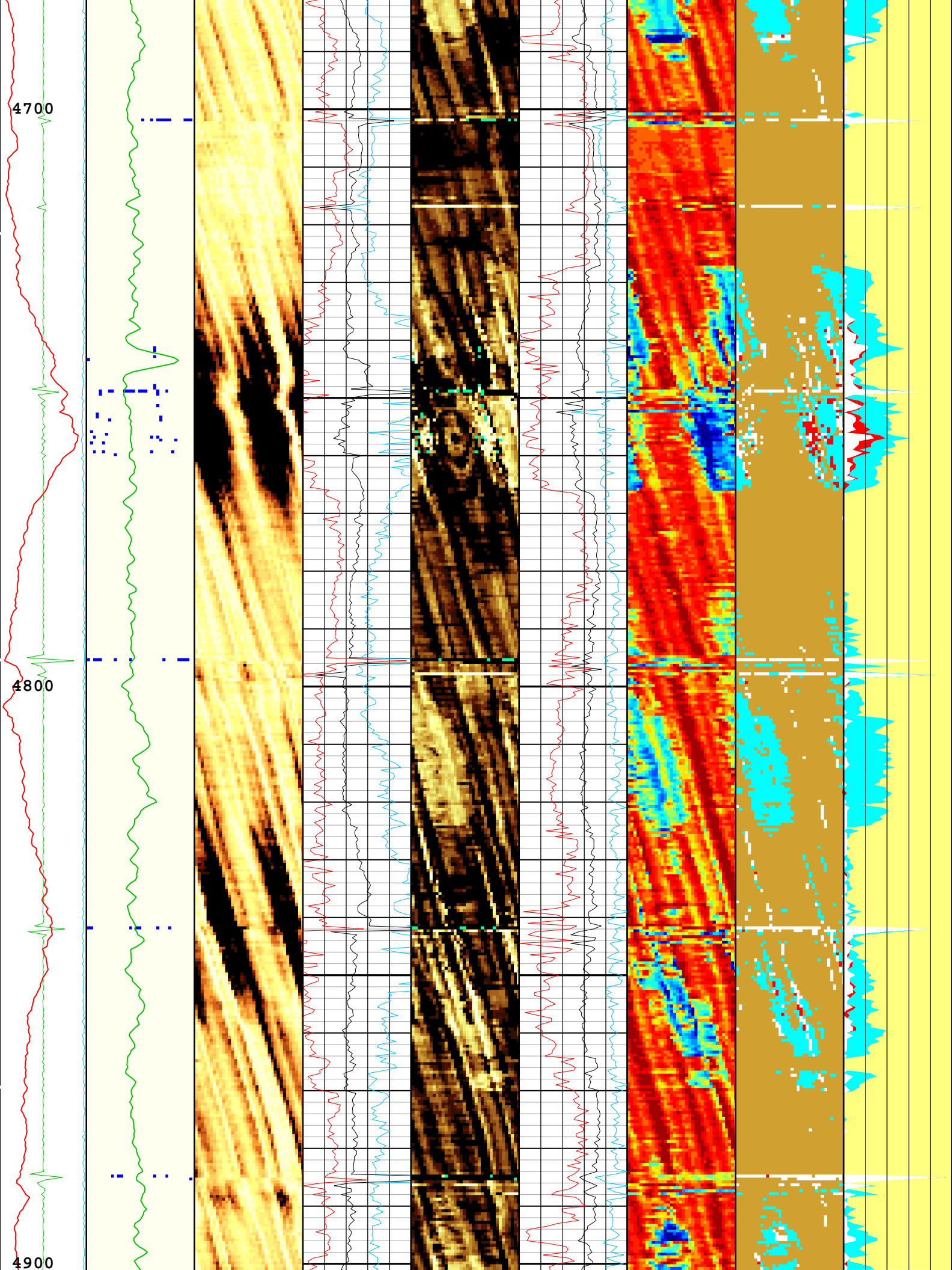


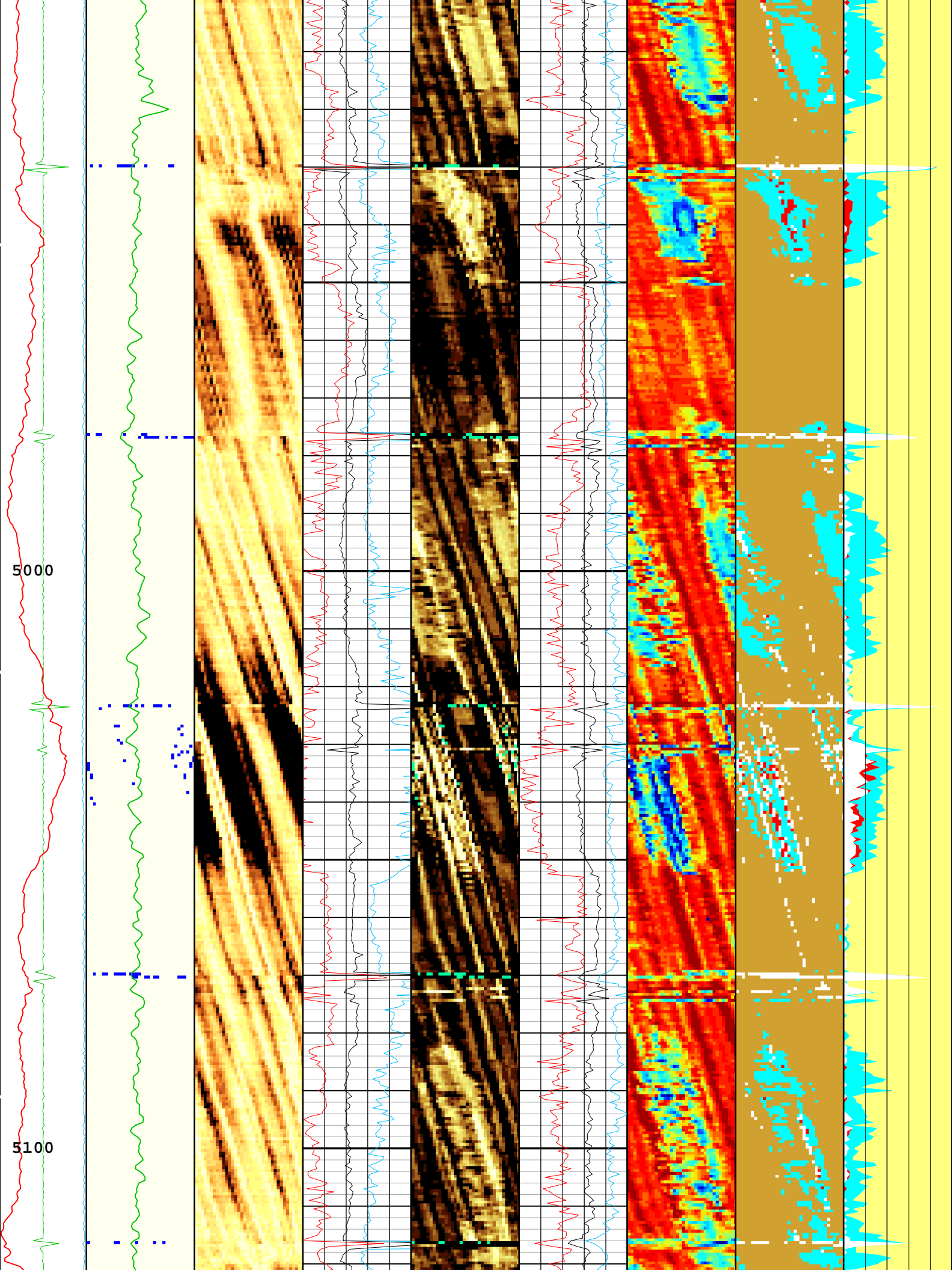


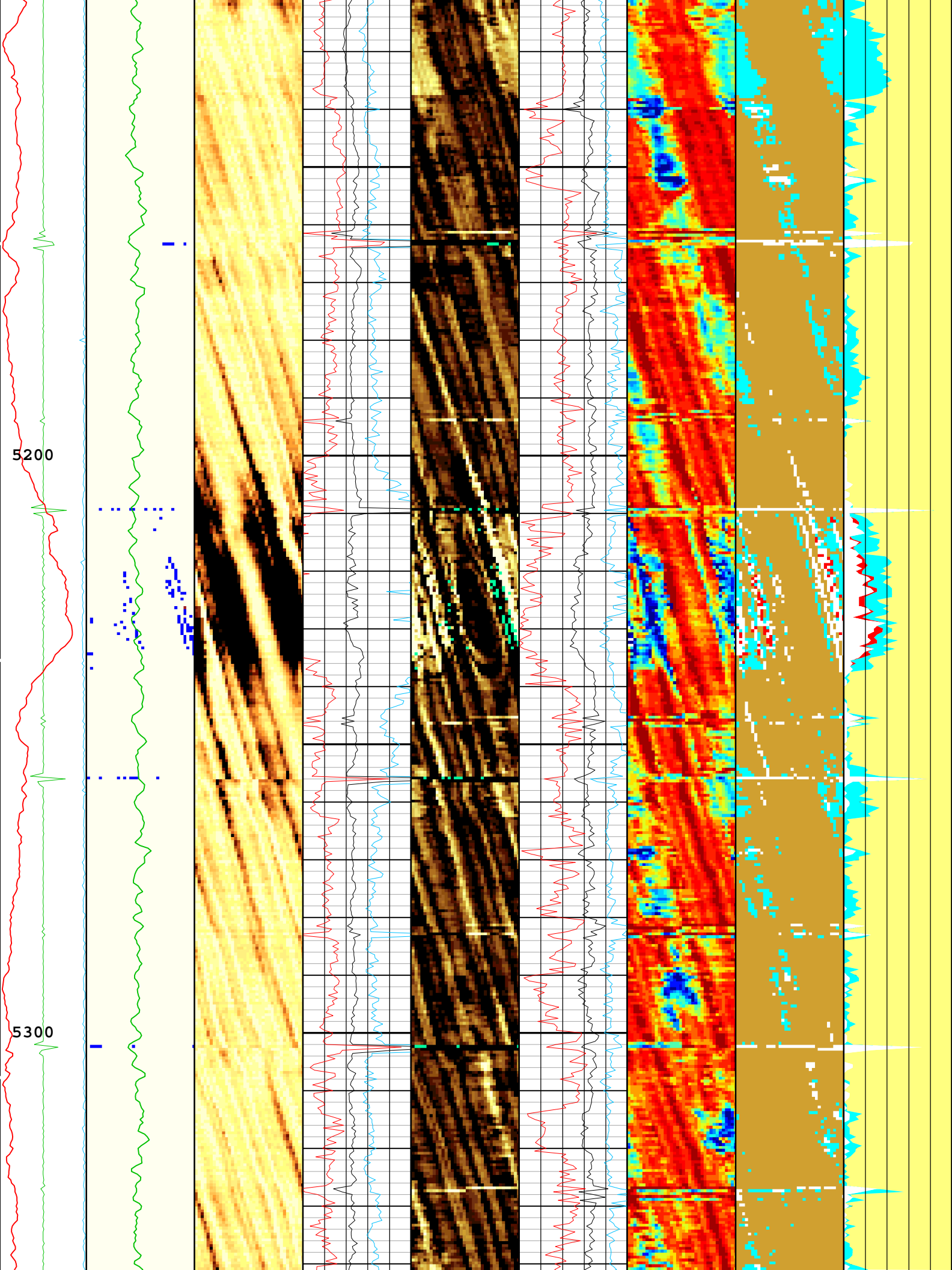


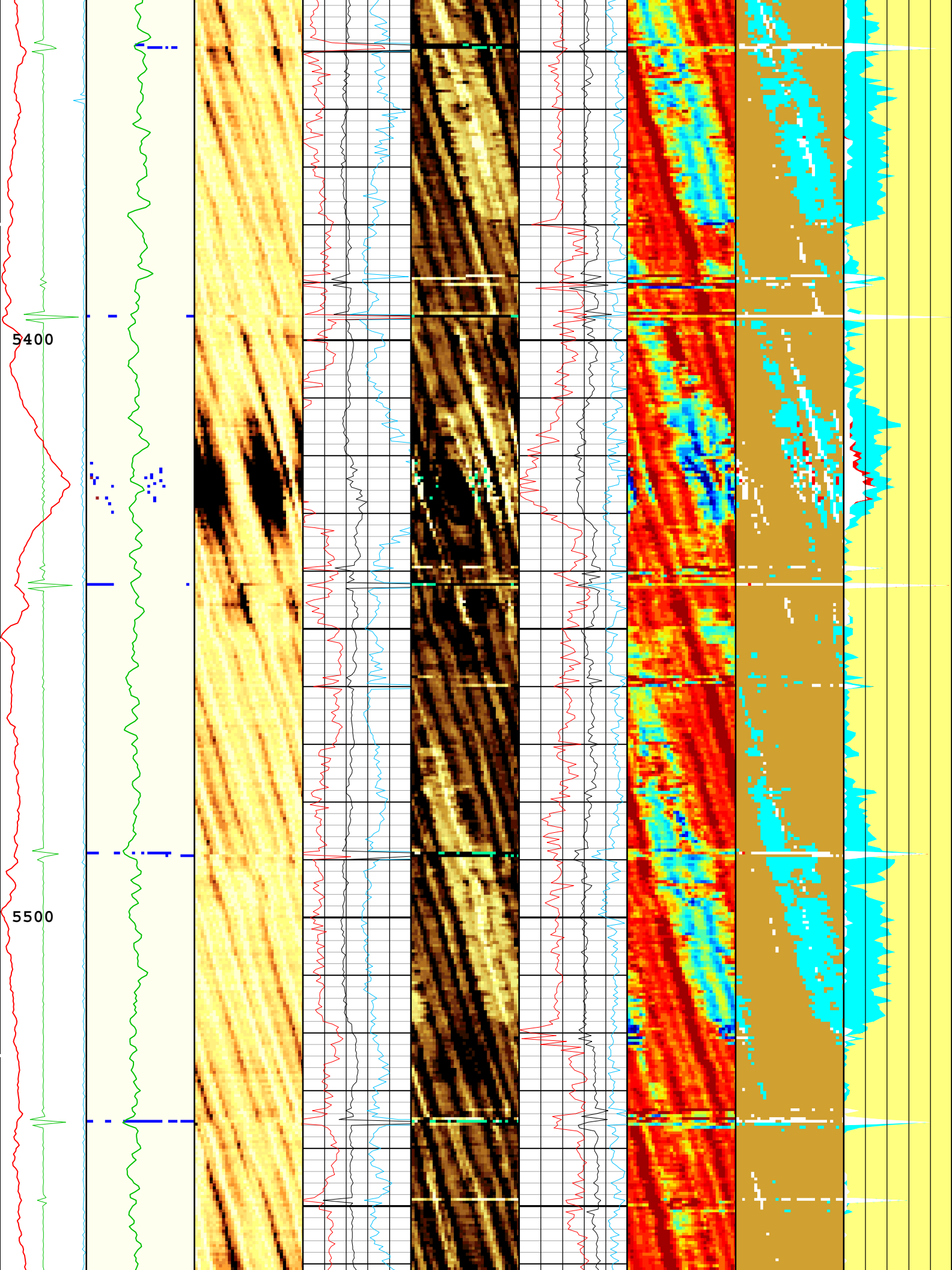


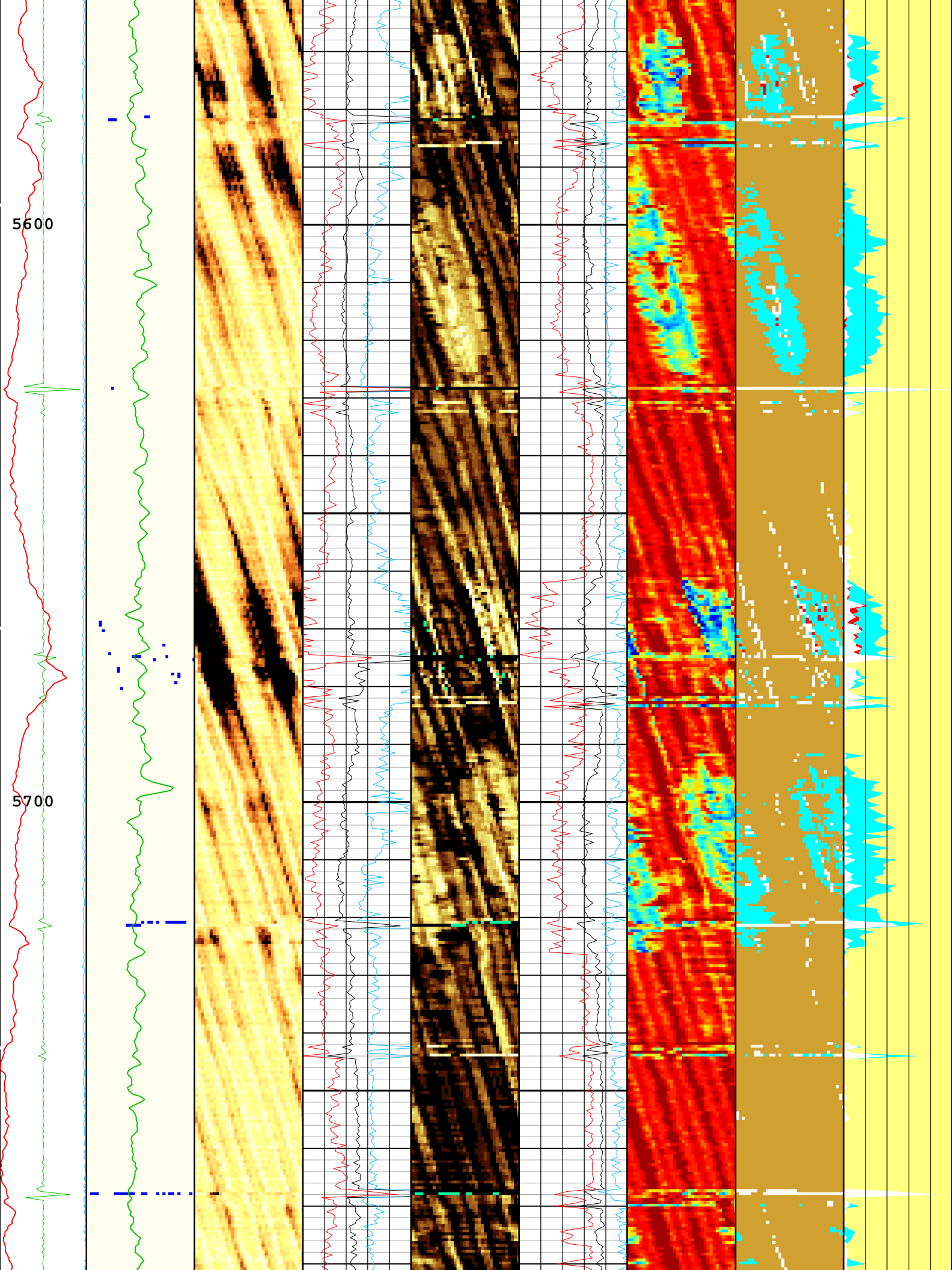


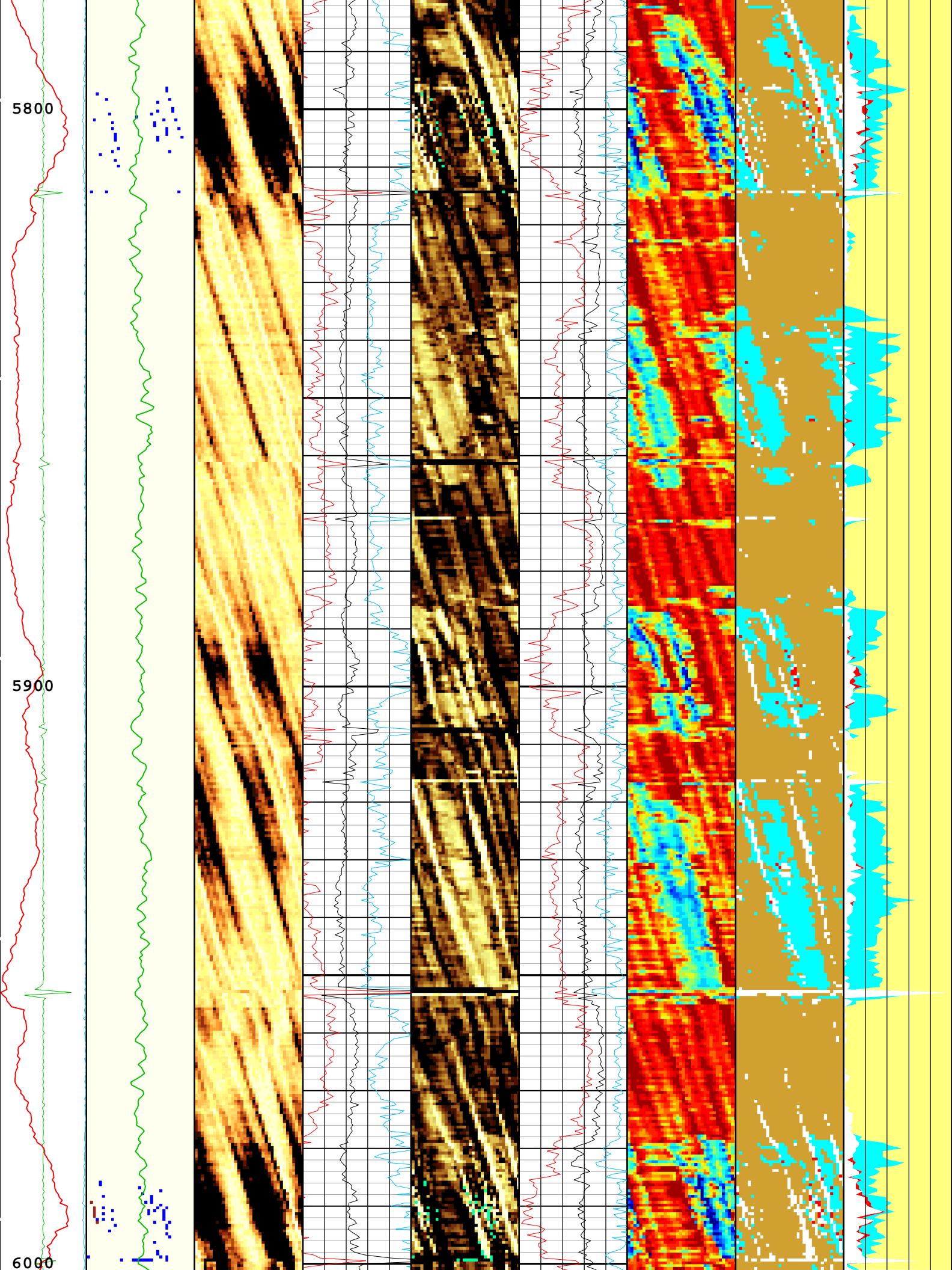


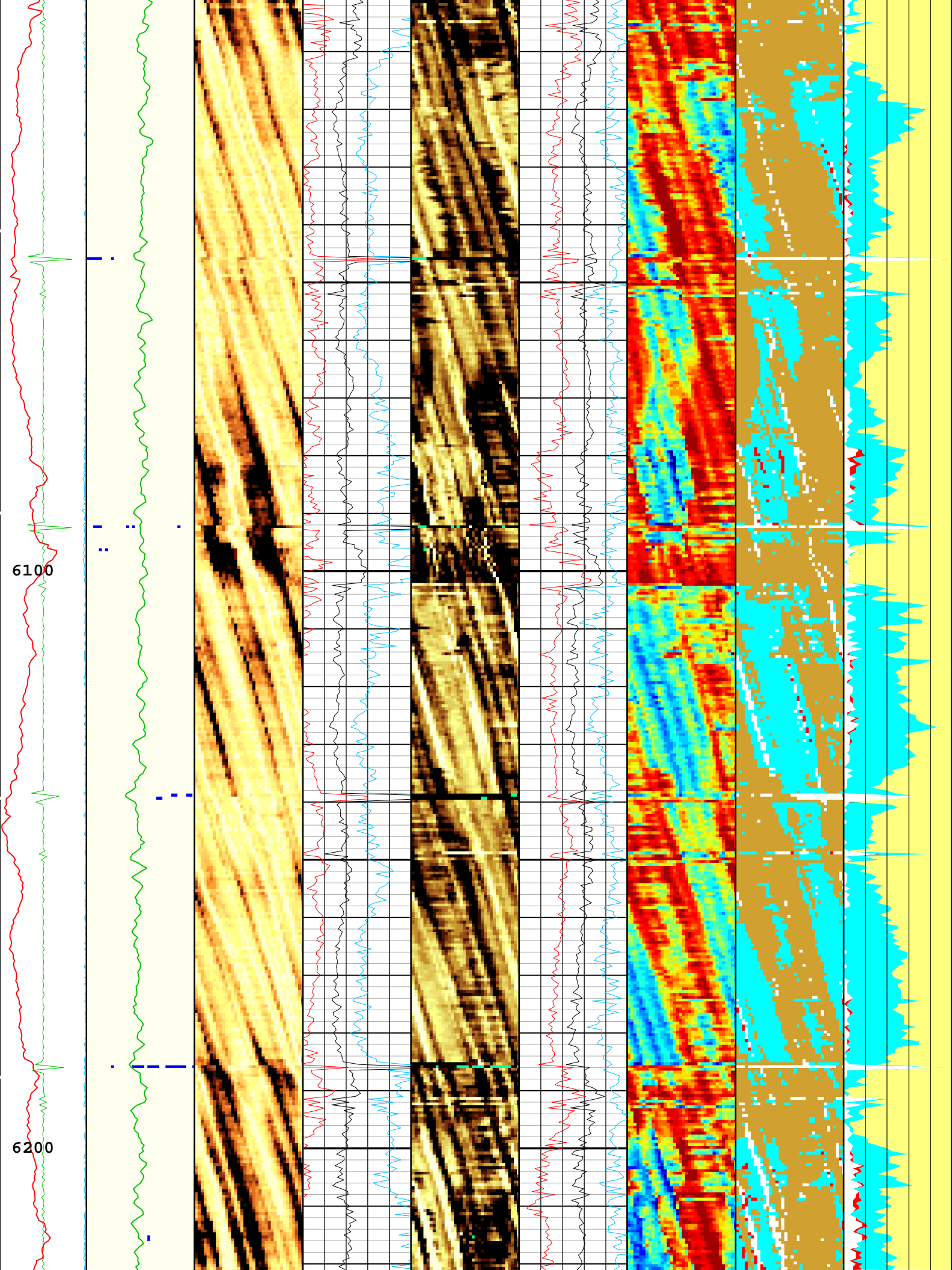


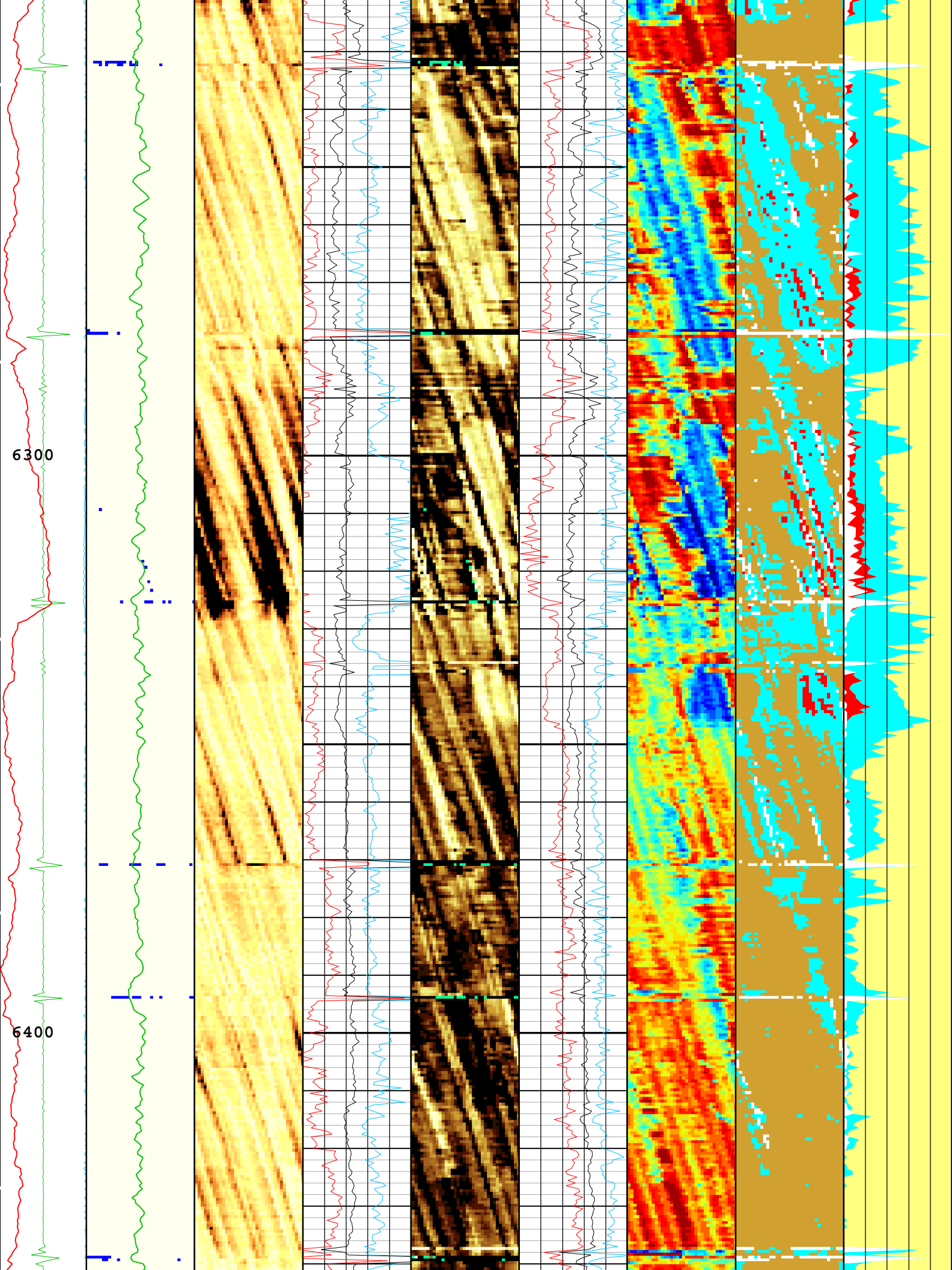


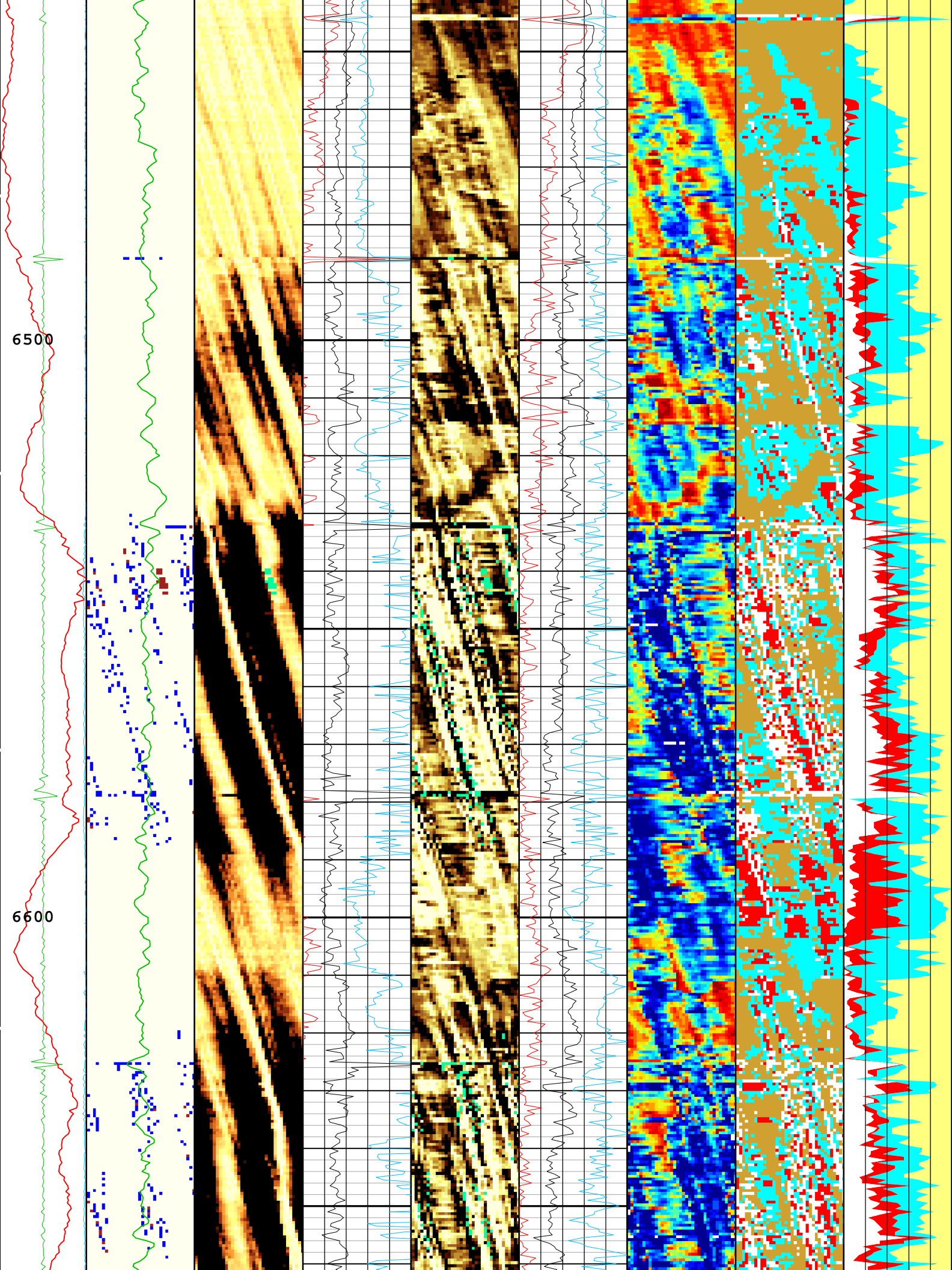


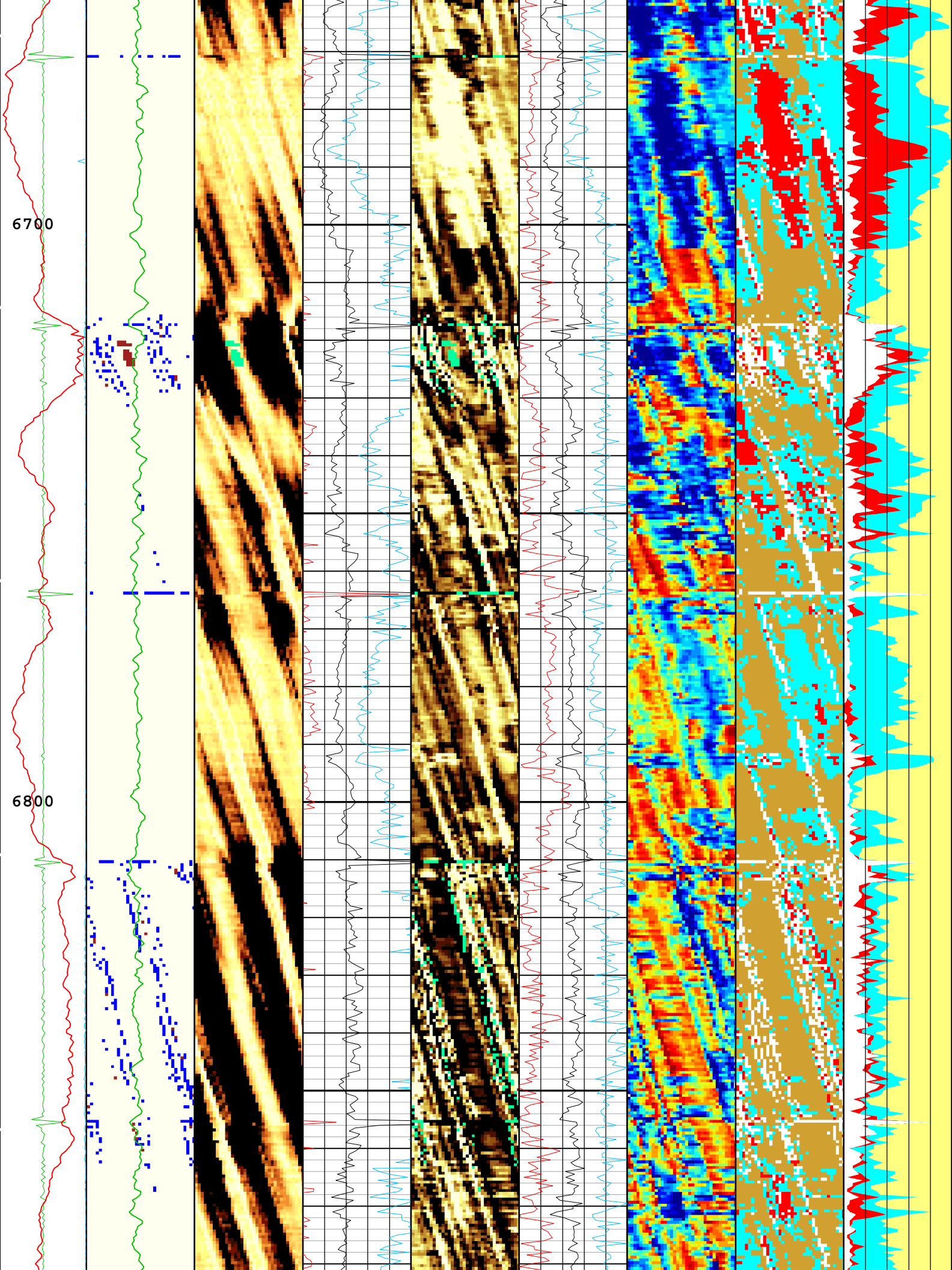


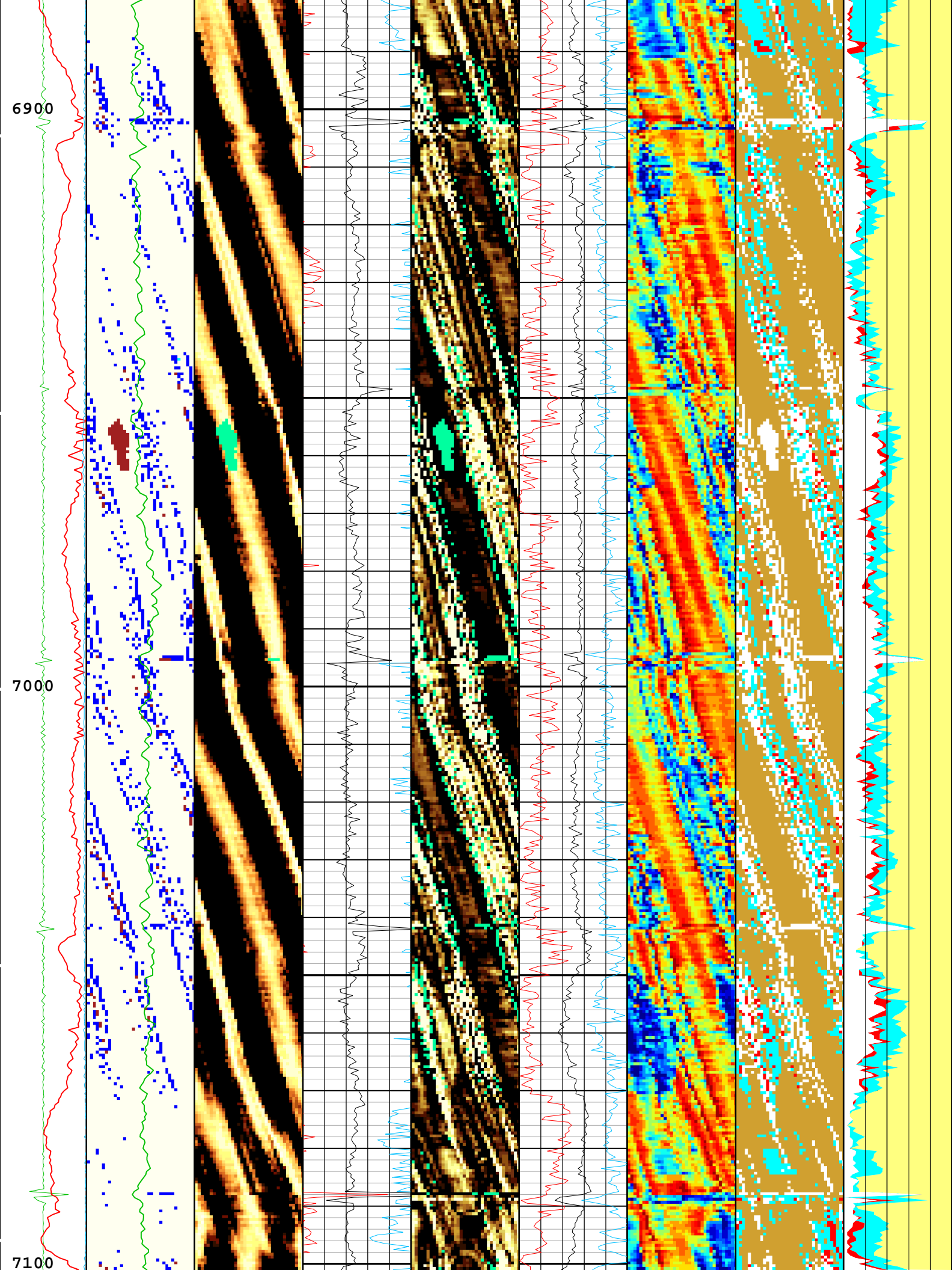


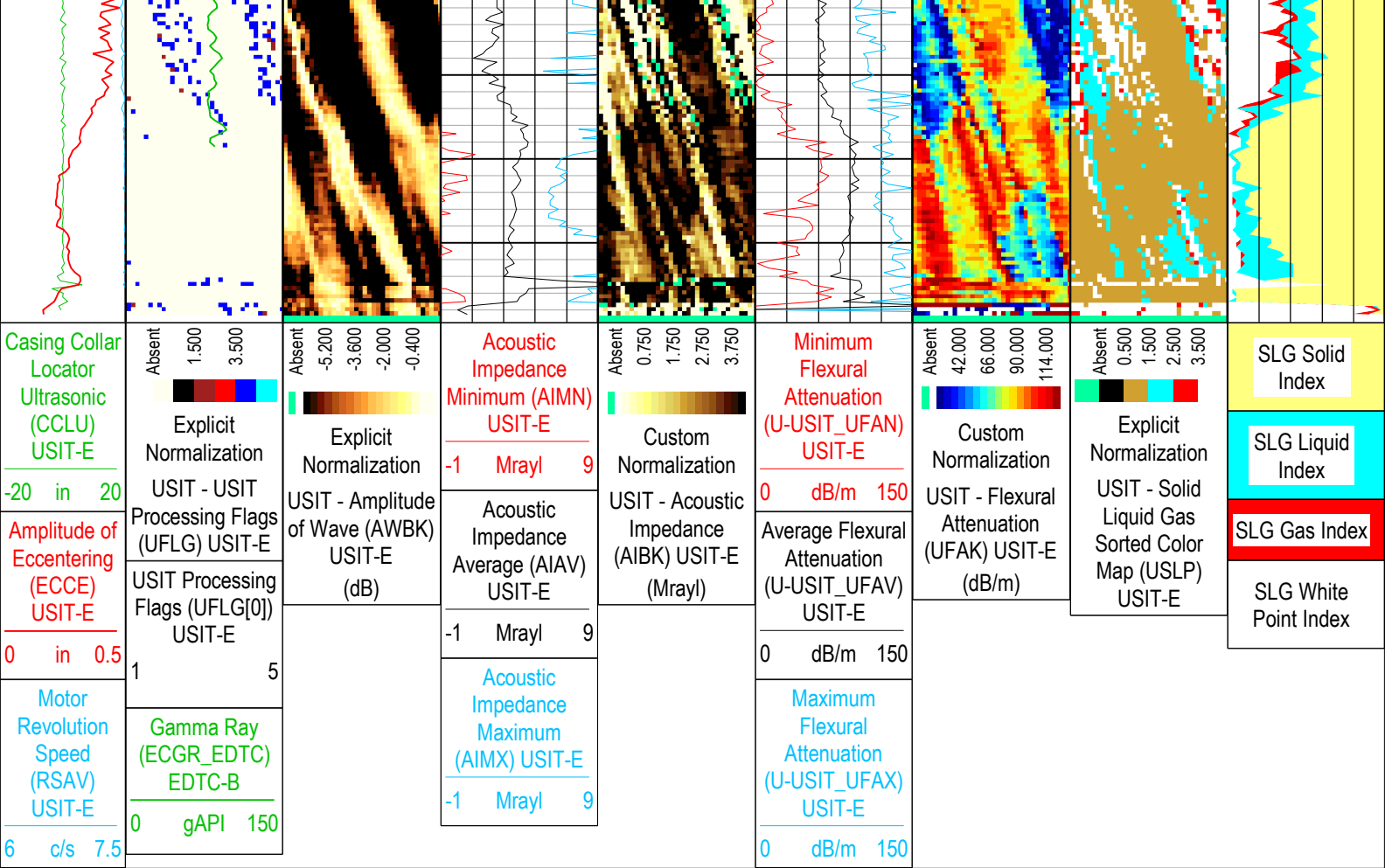












USIT Processing Flags (UFLG[0]) USIT-E

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

TIME_1900 - Time Marked every 60.00 (s)

Description: USI IBC SLG Format: Log (IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 19-Jul-2018 19:46:12

Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
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	12077.18	ft
CDEN	Cement Density	USIT-E	Depth Zoned	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	9.2	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	10.01	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	12.61	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	UFAO	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	Theoretical	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	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	1.33	
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	1.6	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-10.51	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	1.87	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.1	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	13.5	62	2488.2
BS	8.5	2488.2	7139.5
CDEN	13.35	62	2950
CDEN	15.02	2950	6550
CDEN	15.86	6550	7139.5

All depth are actual.

Tool Control Parameters

ONE: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	18	dB
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
UPDS	Upstream Decimation	USIT-E	10_1	

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

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
EMXV	95	27-Jun-2018 12:57:03	27-Jun-2018 12:59:38	7140.47	7017.47
EMXV	110	27-Jun-2018 12:59:38	27-Jun-2018 13:06:40	7017.47	6682.88
EMXV	90	27-Jun-2018 13:06:40	27-Jun-2018 13:06:46	6682.88	6677.5
EMXV	70	27-Jun-2018 13:06:46	27-Jun-2018 13:07:10	6677.5	6658.68
EMXV	90	27-Jun-2018 13:07:10	27-Jun-2018 13:07:14	6658.68	6655.62
EMXV	110	27-Jun-2018 13:07:14	27-Jun-2018 13:07:41	6655.62	6634.08
EMXV	120	27-Jun-2018 13:07:41	27-Jun-2018 13:08:05	6634.08	6614.38
EMXV	90	27-Jun-2018 13:08:05	27-Jun-2018 13:08:45	6614.38	6582.78
EMXV	110	27-Jun-2018 13:08:45	27-Jun-2018 13:12:16	6582.78	6414.08
EMXV	80	27-Jun-2018 13:12:16	27-Jun-2018 13:12:24	6414.08	6407.48
EMXV	60	27-Jun-2018 13:12:24	27-Jun-2018 13:13:25	6407.48	6358.76
EMXV	80	27-Jun-2018 13:13:25	27-Jun-2018 13:24:50	6358.76	5805.78
EMXV	90	27-Jun-2018 13:24:50	27-Jun-2018 13:41:59	5805.78	4573.91
EMXV	80	27-Jun-2018 13:41:59	27-Jun-2018 14:13:10	4573.91	2335.2
EMXV	90	27-Jun-2018 14:13:10	27-Jun-2018 14:19:42	2335.2	1861.32
EMXV	80	27-Jun-2018 14:19:42	27-Jun-2018 14:21:35	1861.32	1726.22
EMXV	90	27-Jun-2018 14:21:35	27-Jun-2018 14:42:27	1726.22	245.19
EMXV	70	27-Jun-2018 14:42:27	27-Jun-2018 14:46:51	245.19	61.43

All depth are at tool zero.

ONE






IBC SLG Composite Main Pass

Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	61.43 ft	7140.47 ft	27-Jun-2018 12:57:03	27-Jun-2018 14:46:51	ON	5.99 ft	Yes

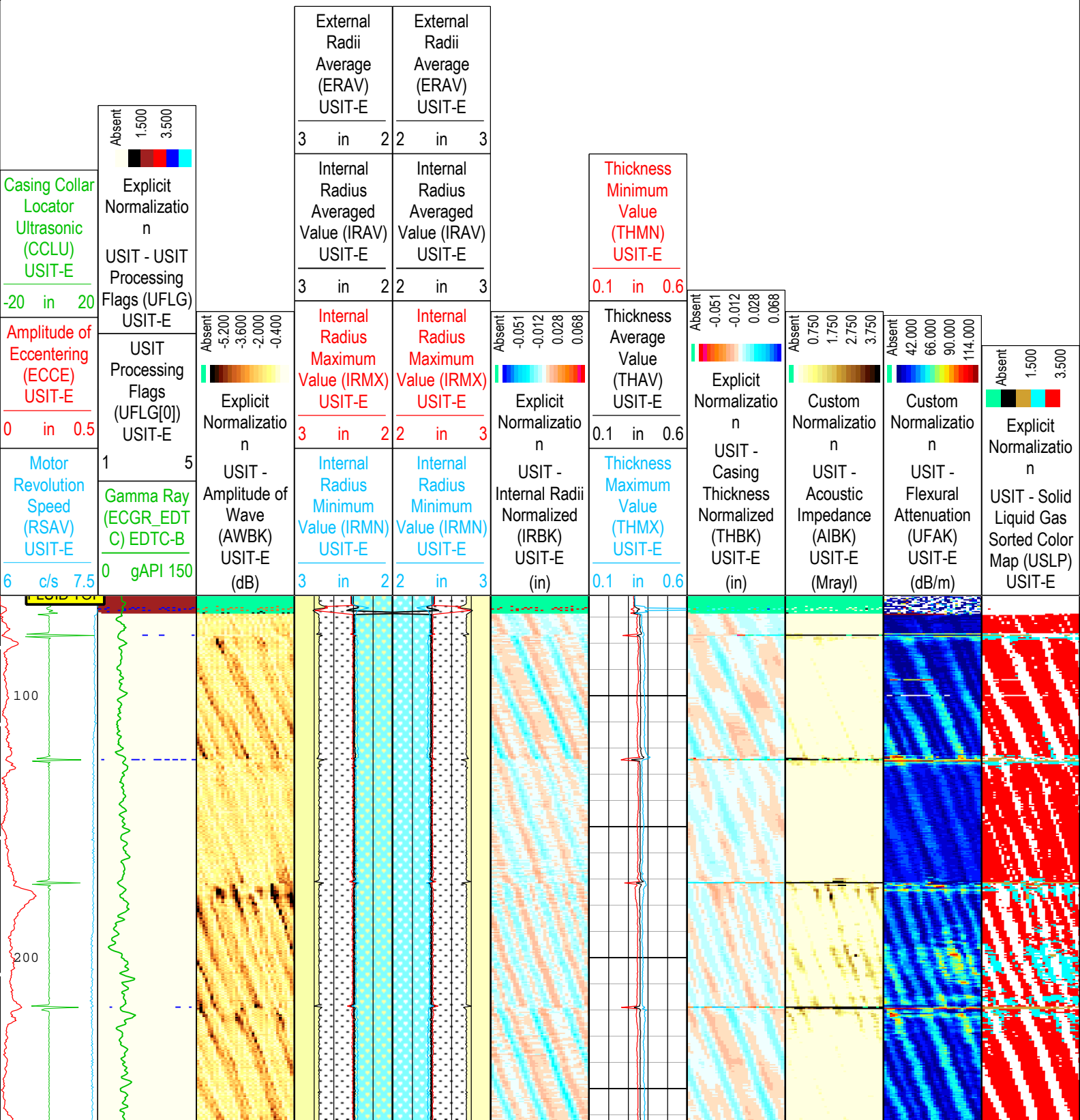
All depths are referenced to toolstring zero

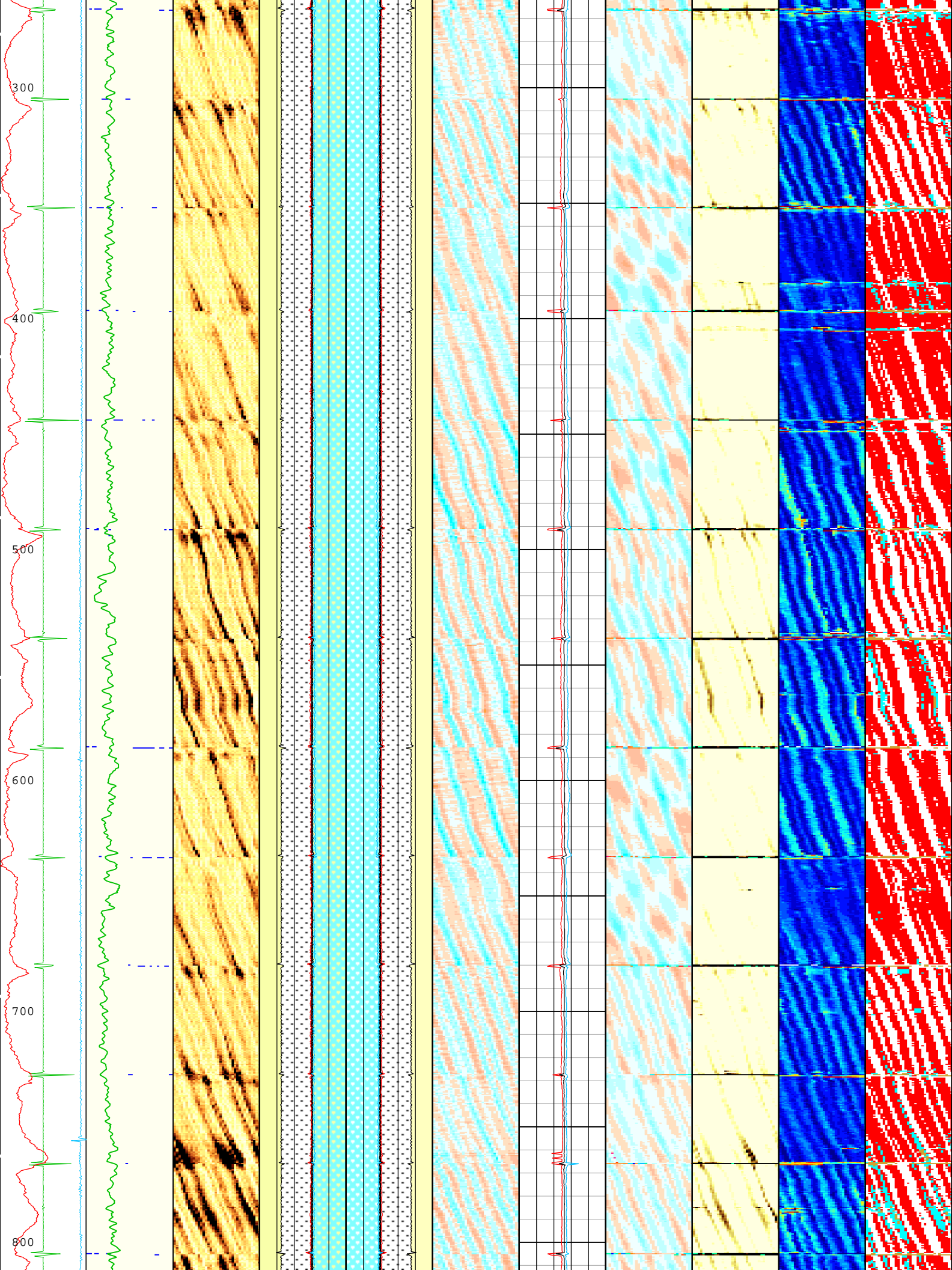
Description: USIT IBC SLG Composite Format: Log (IBC SLG Composite) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 19-Jul-2018 19:47:22

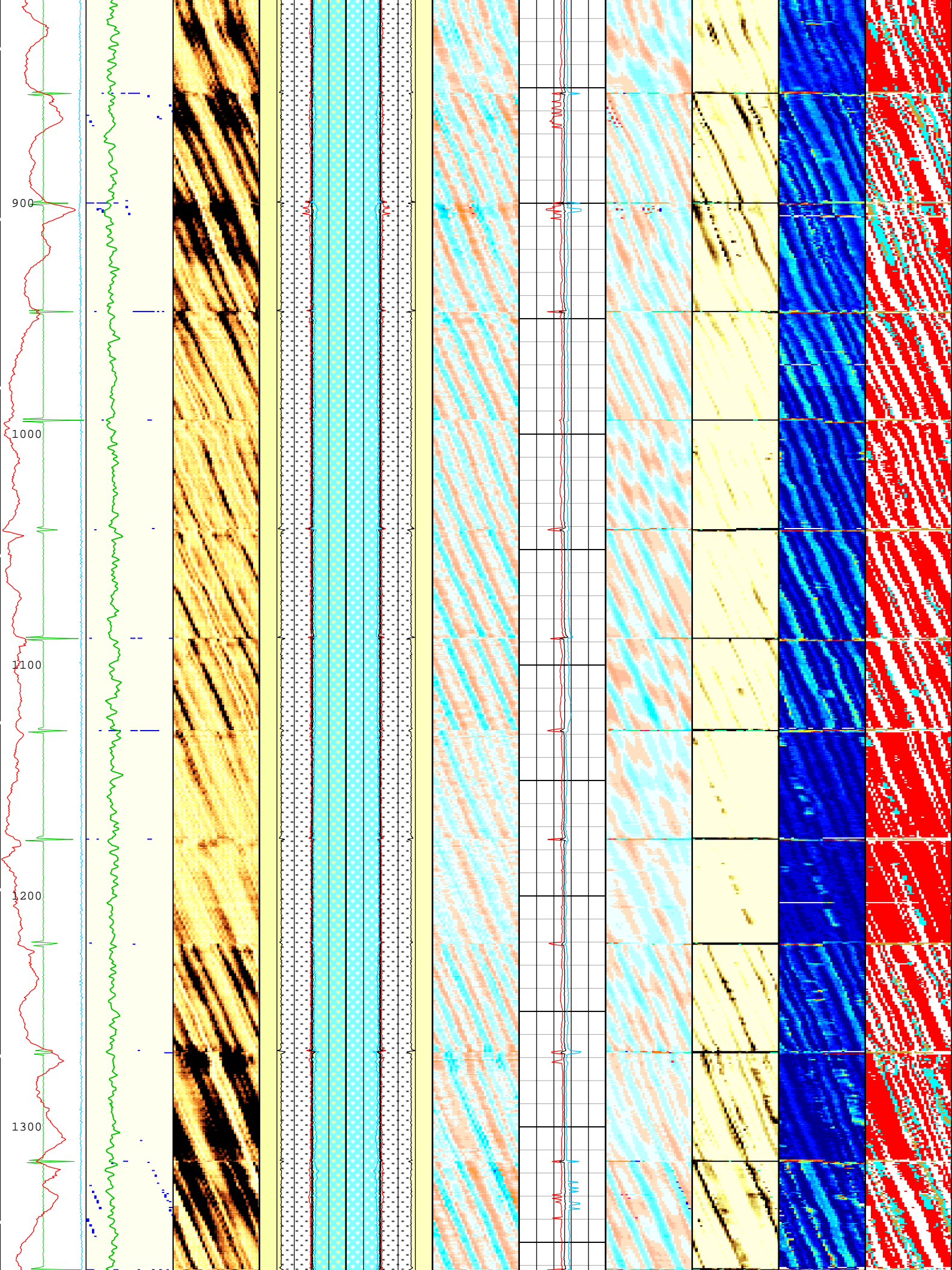
USIT Processing Flags (UFLG[0]) USIT-E

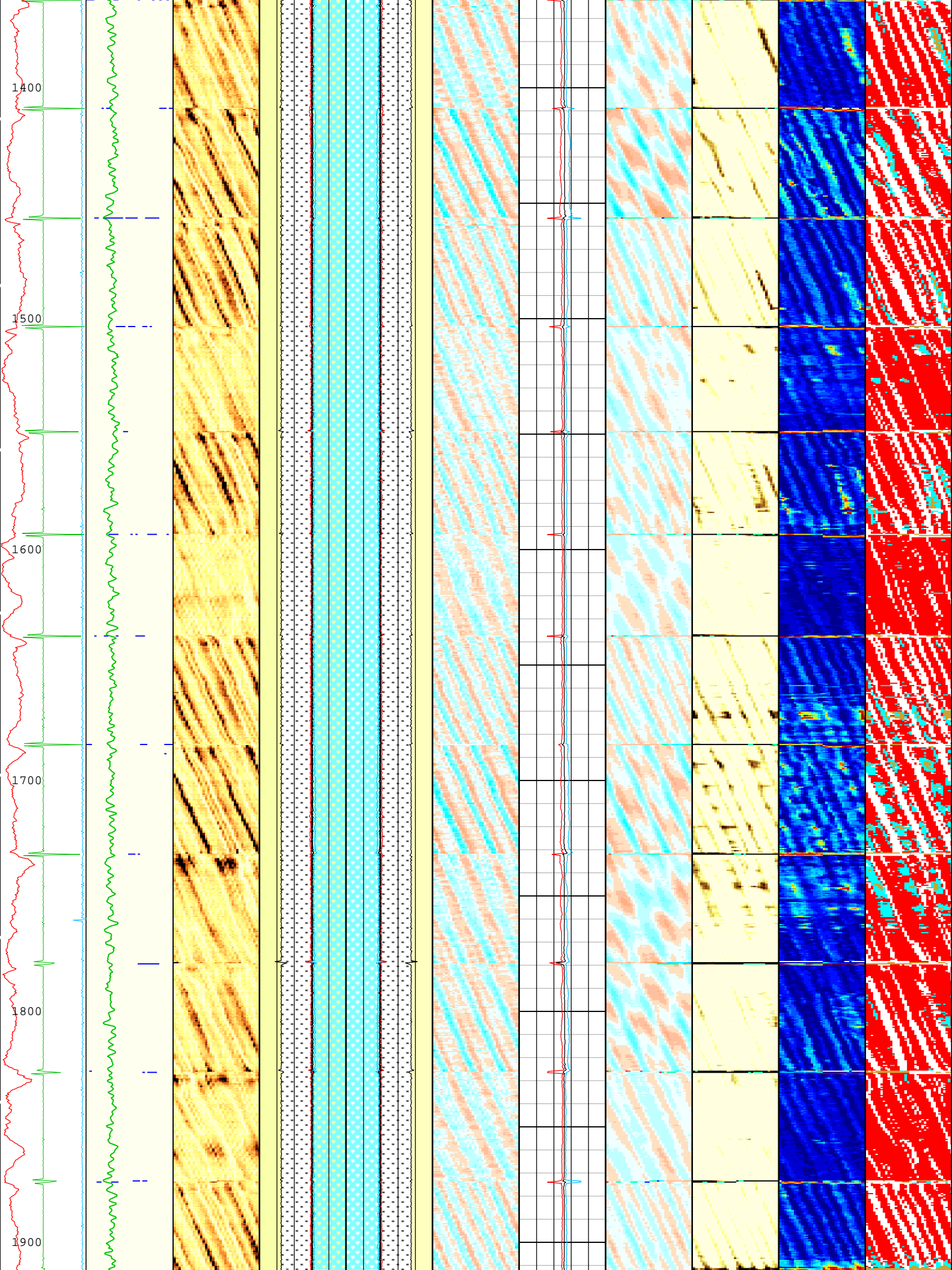
- 1 - UFLG 1 Value within [0.0 - 1.5] - :  UTIM Error
2 - UFLG 2 Value within [1.5 - 2.5] - :  Pulse Origin Not Detected
3 - UFLG 3 Value within [2.5 - 3.5] - :  WINLEN Error
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :  Casing Thickness Error
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10]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

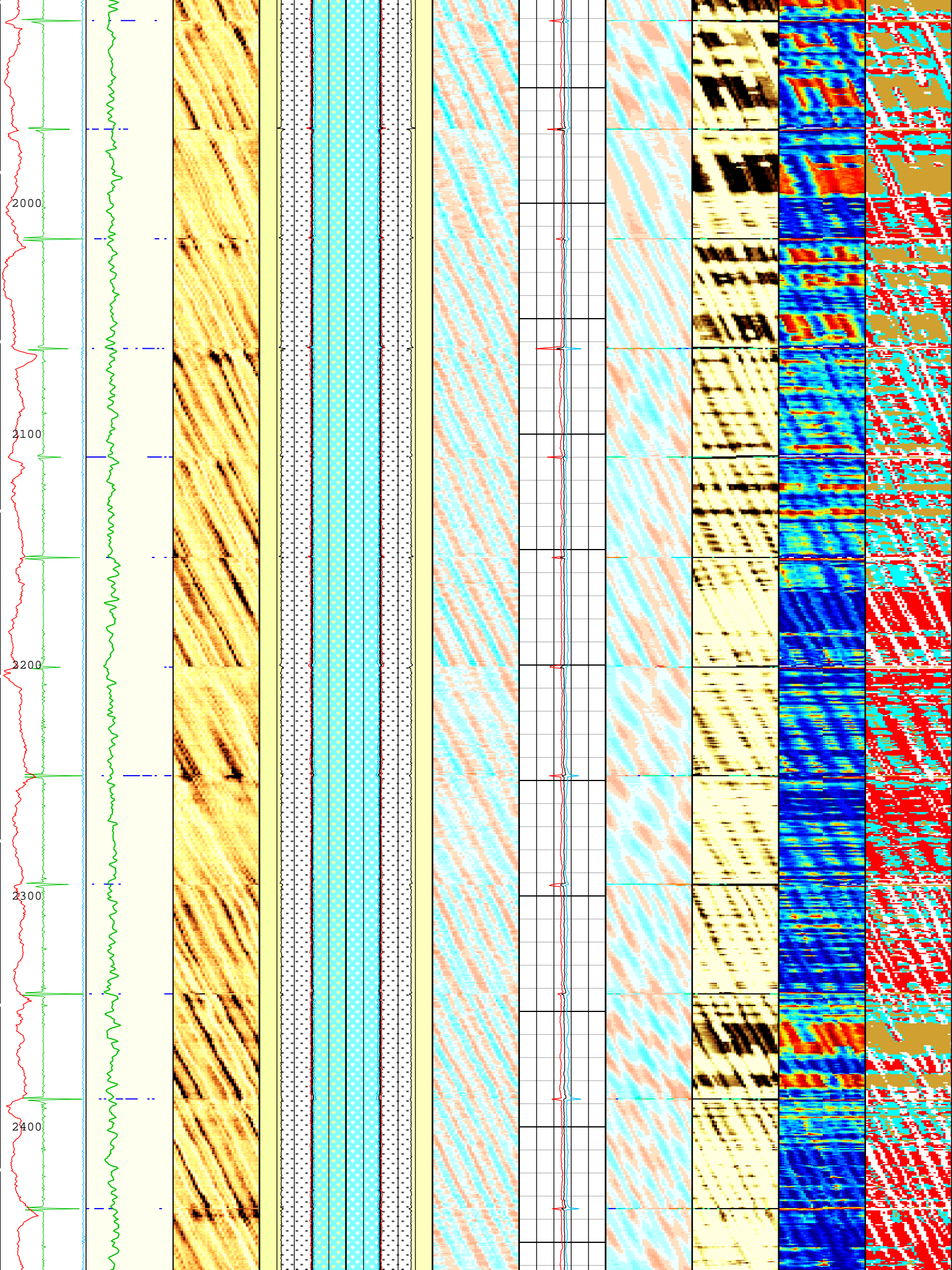
TIME_1900 - Time Marked every 60.00 (s)

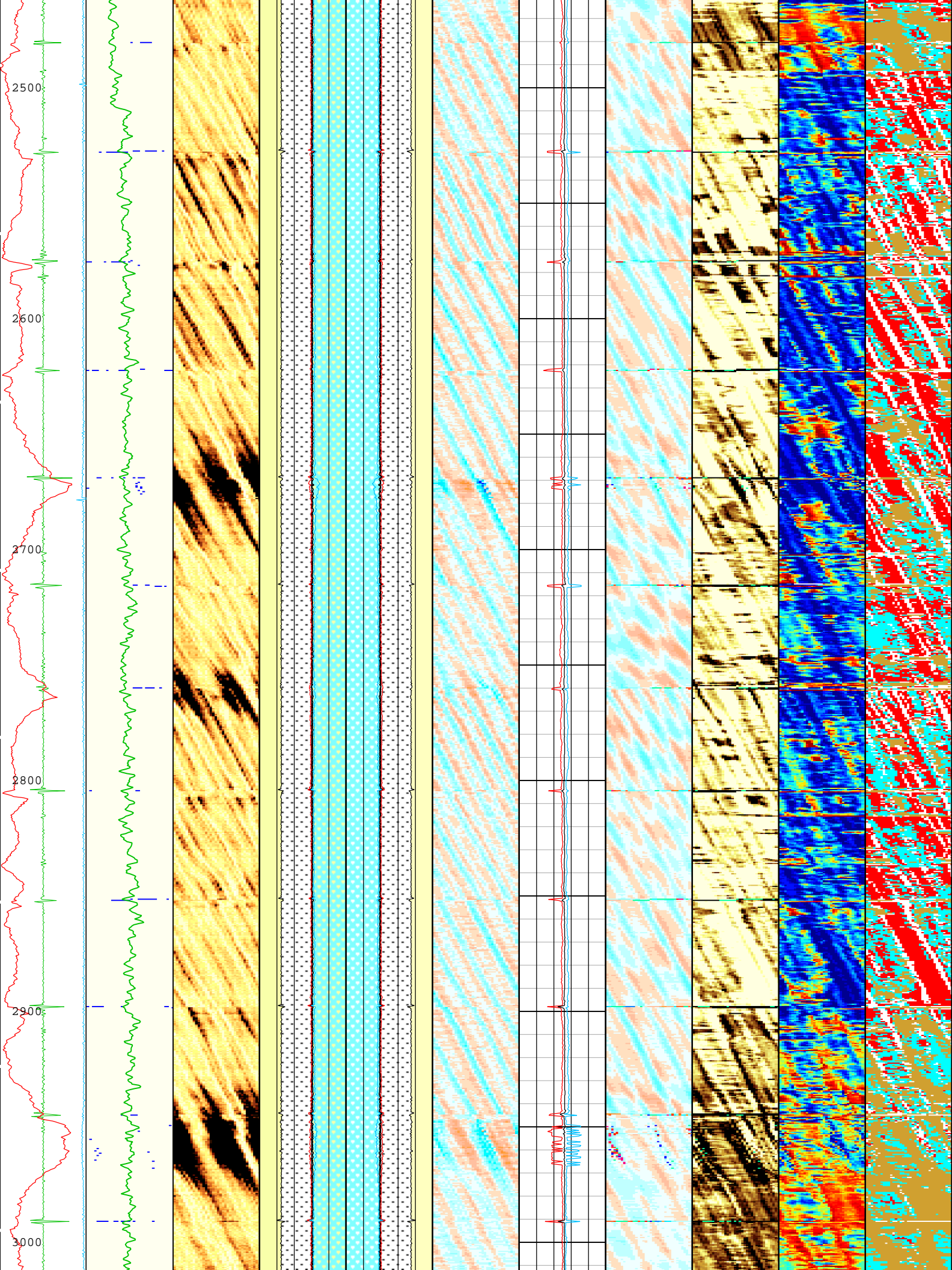


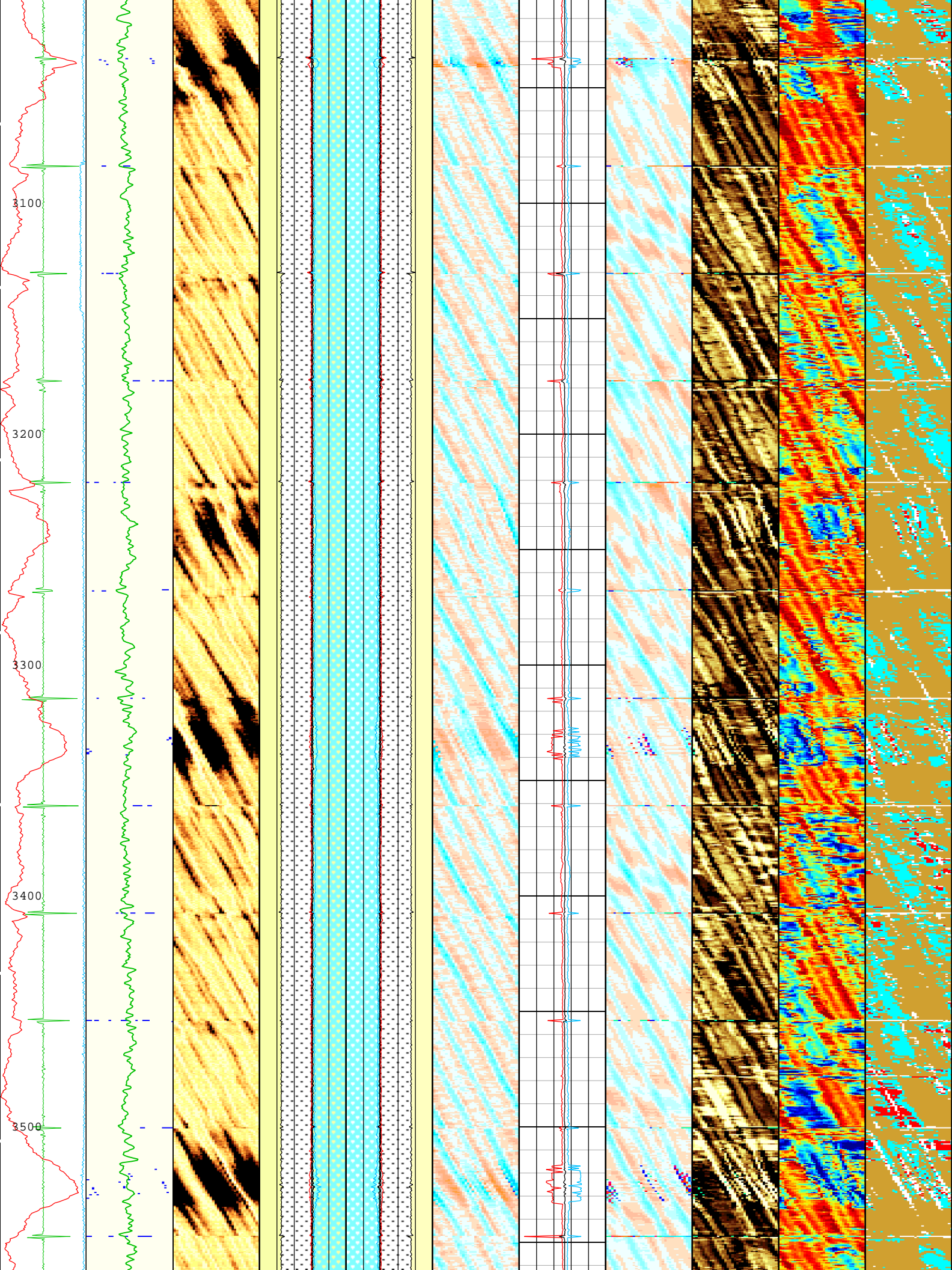


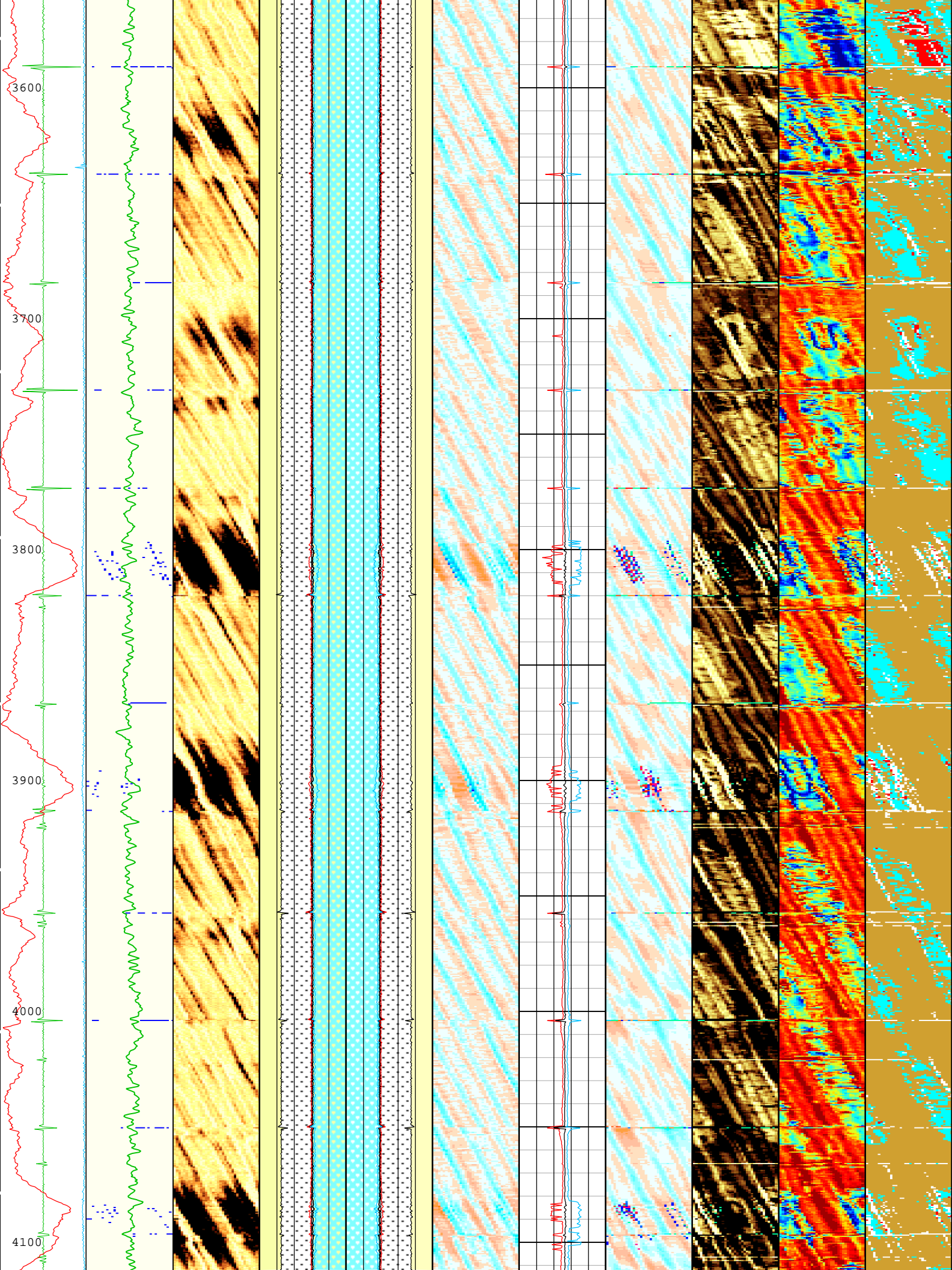


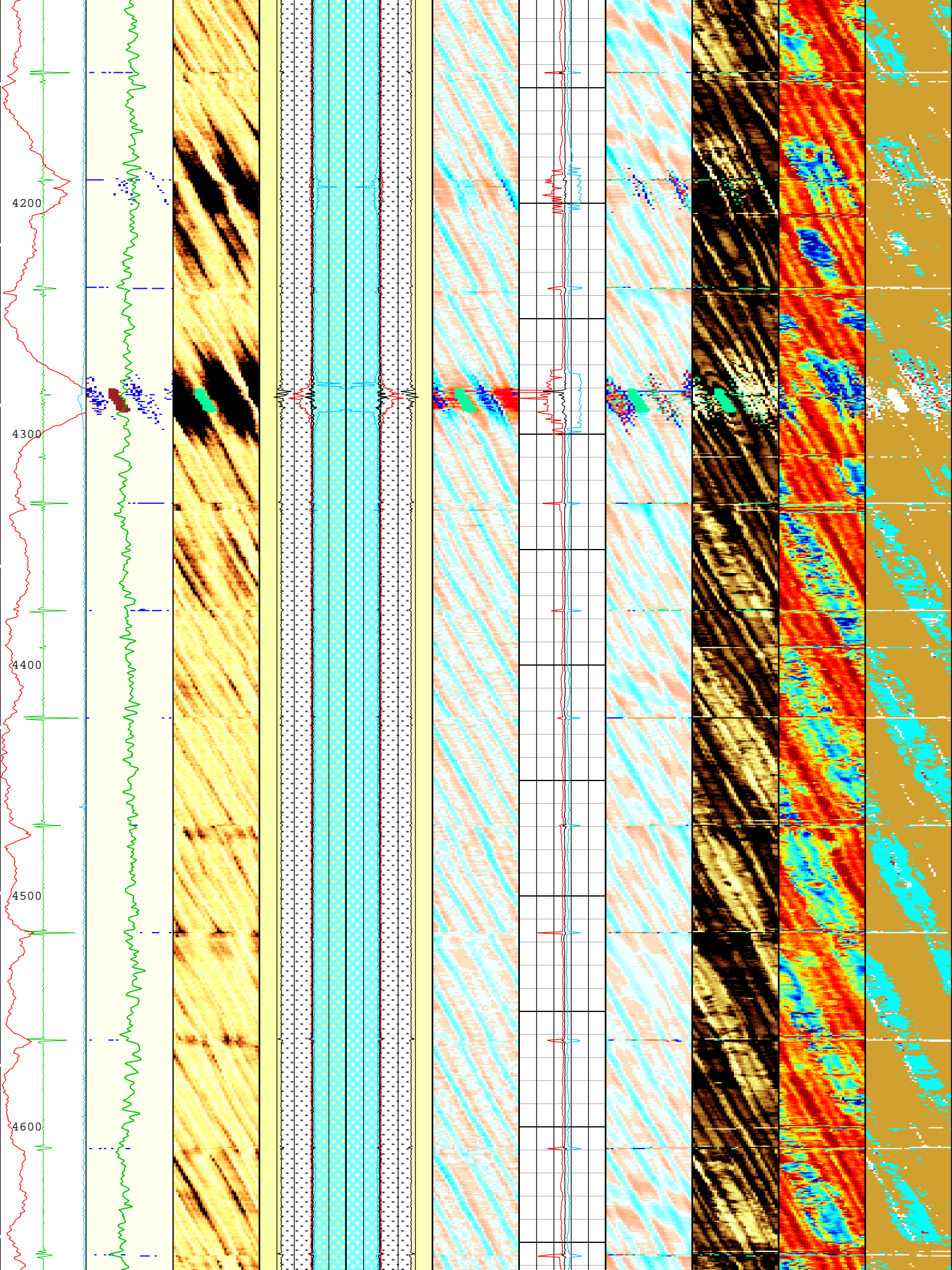


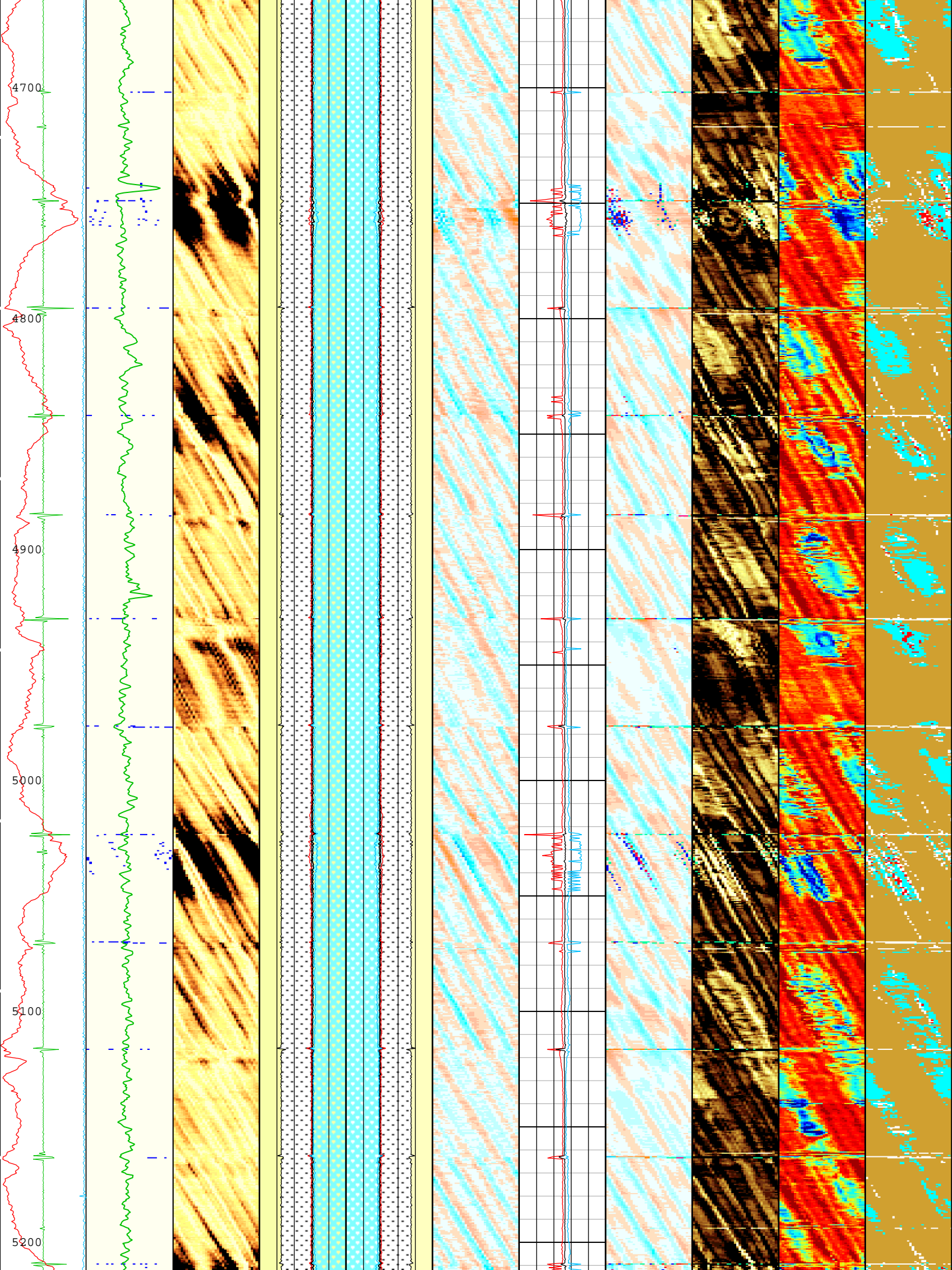


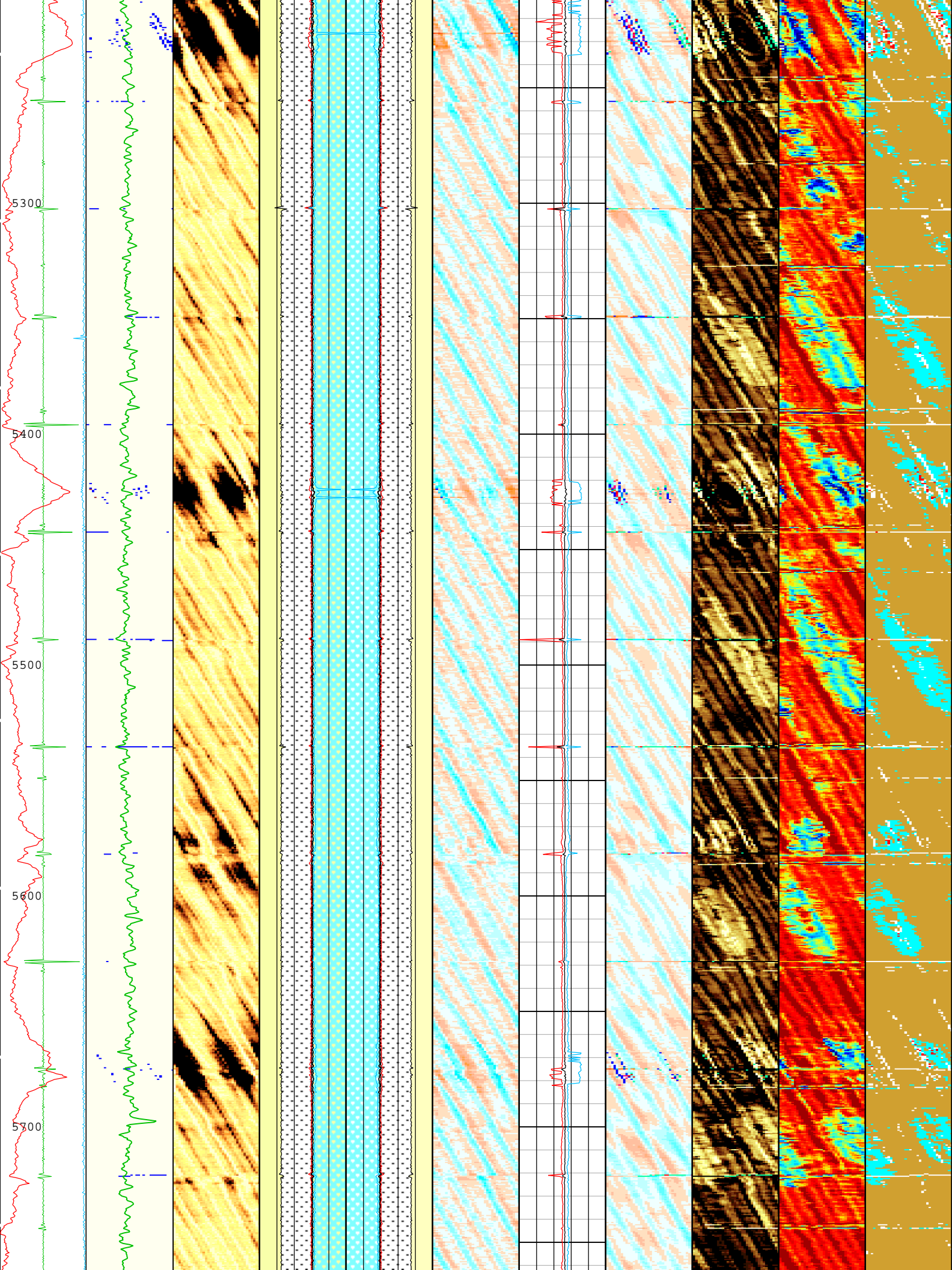


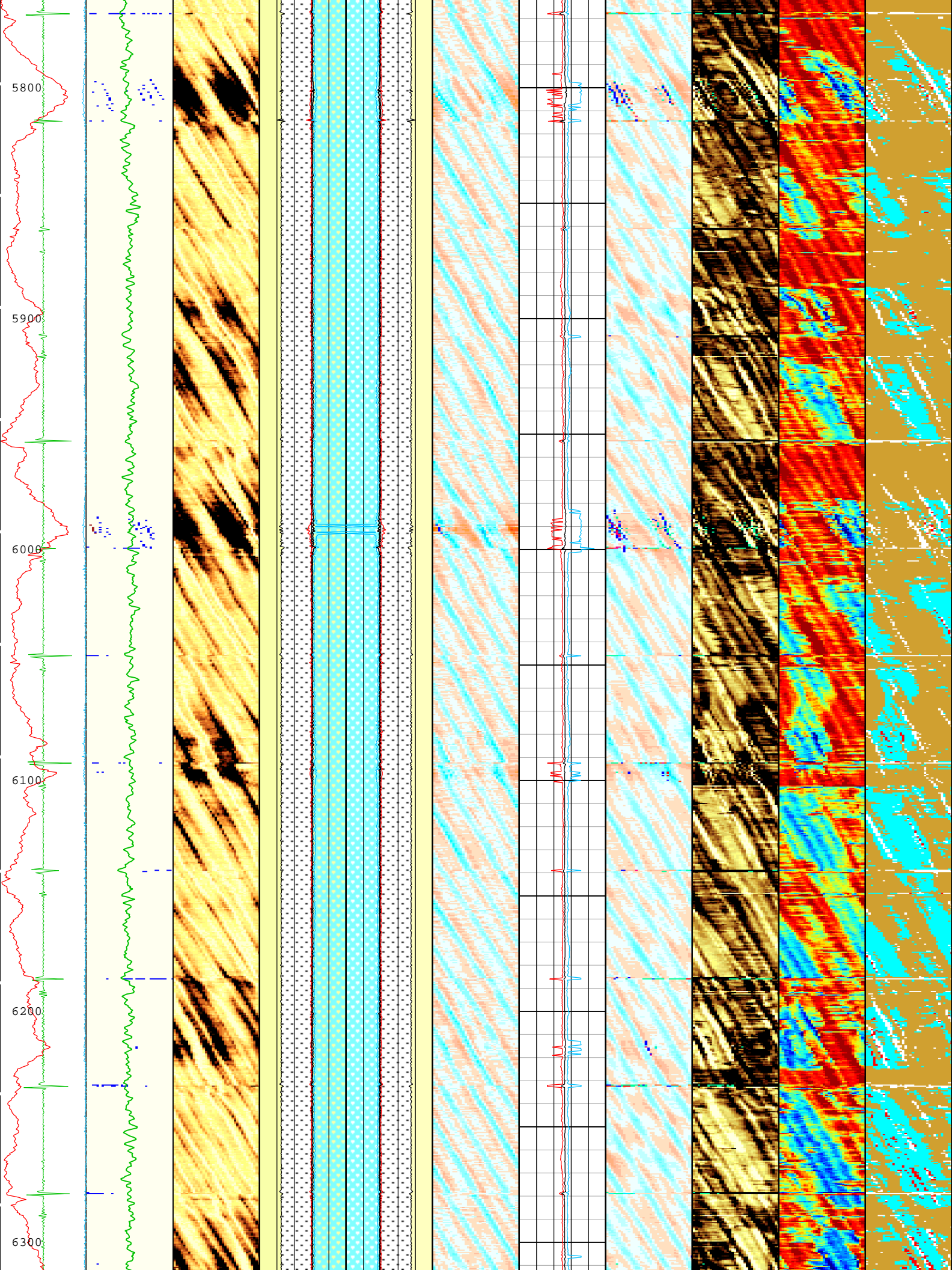


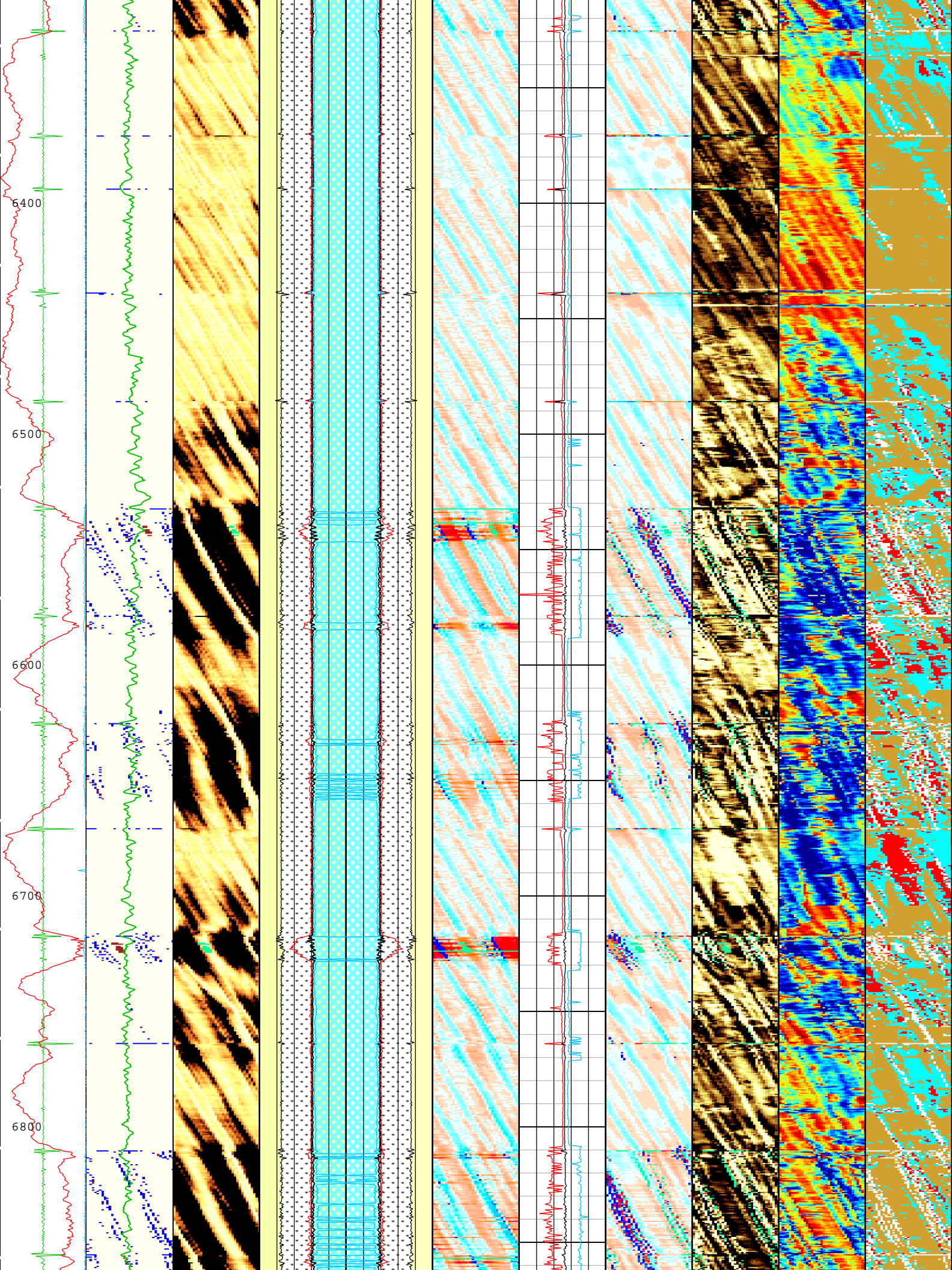












■ Pulse Origin Not Detected

3 - UFLG 3 Value within [2.5 - 3.5] - :	<div></div> WINLEN Error
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :	<div></div> Casing Thickness Error
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :	<div></div> Loop Processing Error

Description: USI IBC SLG Composite Format: Log (IBC SLG Composite) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 19-Jul-2018 19:47:22

Channel Processing Parameters

ONE: Parameters				
Parameter	Description	Tool	Value	Unit
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	12077.18	ft
CDEN	Cement Density	USIT-E	Depth Zoned	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	9.2	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	10.01	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	12.61	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	UFAO	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	Theoretical	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	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	1.33	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.6	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-10.51	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
ZMUD	Acoustic Impedance of Mud	Borehole	1.87	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.1	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	13.5	62	2488.2
BS	8.5	2488.2	7139.5
CDEN	13.35	62	2950
CDEN	15.02	2950	6550
CDEN	15.86	6550	7139.5

All depth are actual.

Tool Control Parameters

ONE: Parameters				
Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB

AGMX	Maximum Gain of Cartridge	USIT-E	18	dB
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	95	27-Jun-2018 12:57:03	27-Jun-2018 12:59:38	7140.47	7017.47
EMXV	110	27-Jun-2018 12:59:38	27-Jun-2018 13:06:40	7017.47	6682.88
EMXV	90	27-Jun-2018 13:06:40	27-Jun-2018 13:06:46	6682.88	6677.5
EMXV	70	27-Jun-2018 13:06:46	27-Jun-2018 13:07:10	6677.5	6658.68
EMXV	90	27-Jun-2018 13:07:10	27-Jun-2018 13:07:14	6658.68	6655.62
EMXV	110	27-Jun-2018 13:07:14	27-Jun-2018 13:07:41	6655.62	6634.08
EMXV	120	27-Jun-2018 13:07:41	27-Jun-2018 13:08:05	6634.08	6614.38
EMXV	90	27-Jun-2018 13:08:05	27-Jun-2018 13:08:45	6614.38	6582.78
EMXV	110	27-Jun-2018 13:08:45	27-Jun-2018 13:12:16	6582.78	6414.08
EMXV	80	27-Jun-2018 13:12:16	27-Jun-2018 13:12:24	6414.08	6407.48
EMXV	60	27-Jun-2018 13:12:24	27-Jun-2018 13:13:25	6407.48	6358.76
EMXV	80	27-Jun-2018 13:13:25	27-Jun-2018 13:24:50	6358.76	5805.78
EMXV	90	27-Jun-2018 13:24:50	27-Jun-2018 13:41:59	5805.78	4573.91
EMXV	80	27-Jun-2018 13:41:59	27-Jun-2018 14:13:10	4573.91	2335.2
EMXV	90	27-Jun-2018 14:13:10	27-Jun-2018 14:19:42	2335.2	1861.32
EMXV	80	27-Jun-2018 14:19:42	27-Jun-2018 14:21:35	1861.32	1726.22
EMXV	90	27-Jun-2018 14:21:35	27-Jun-2018 14:42:27	1726.22	245.19
EMXV	70	27-Jun-2018 14:42:27	27-Jun-2018 14:46:51	245.19	61.43

All depth are at tool zero.

ONE

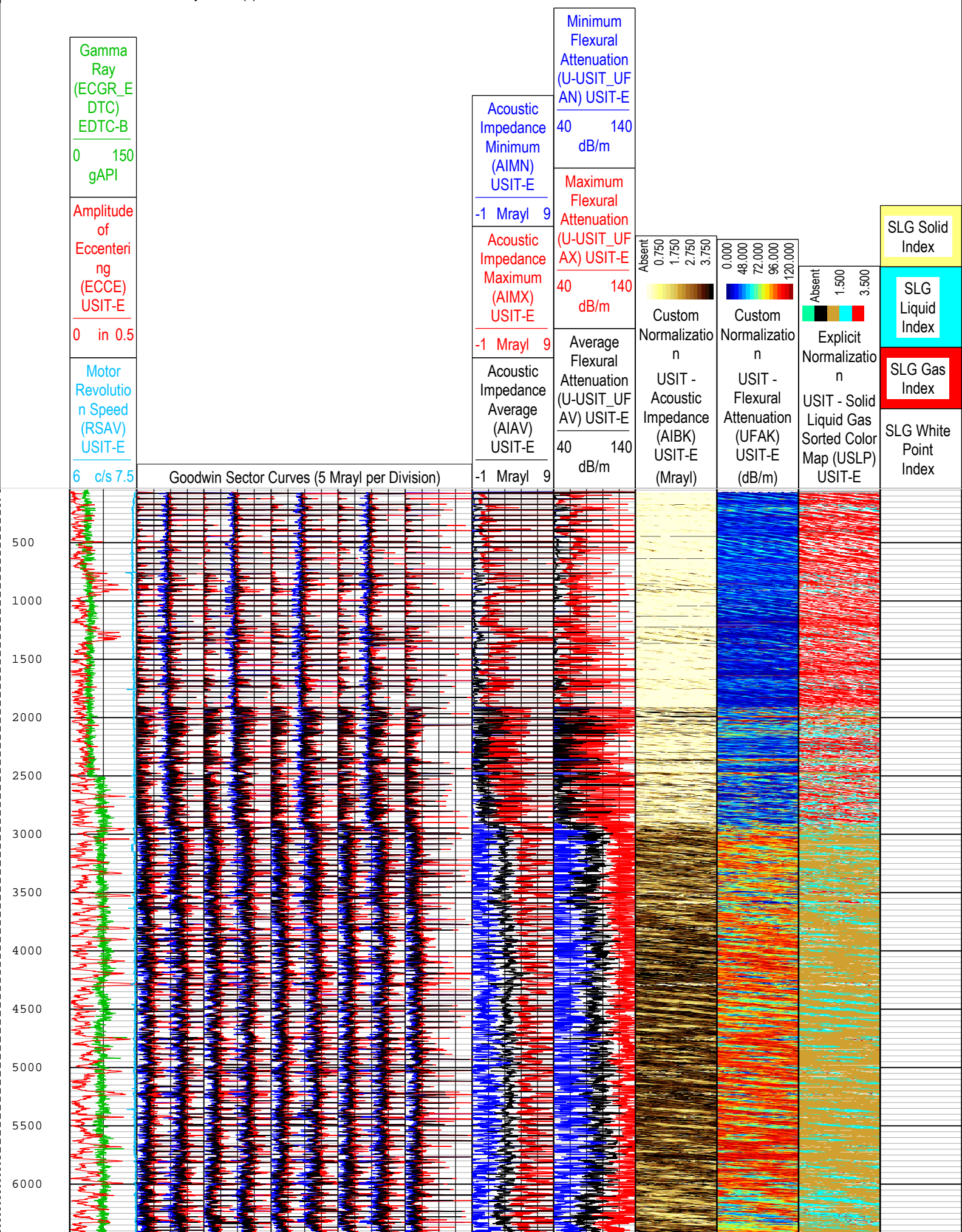
IBC Goodwin Compressed Main Pass

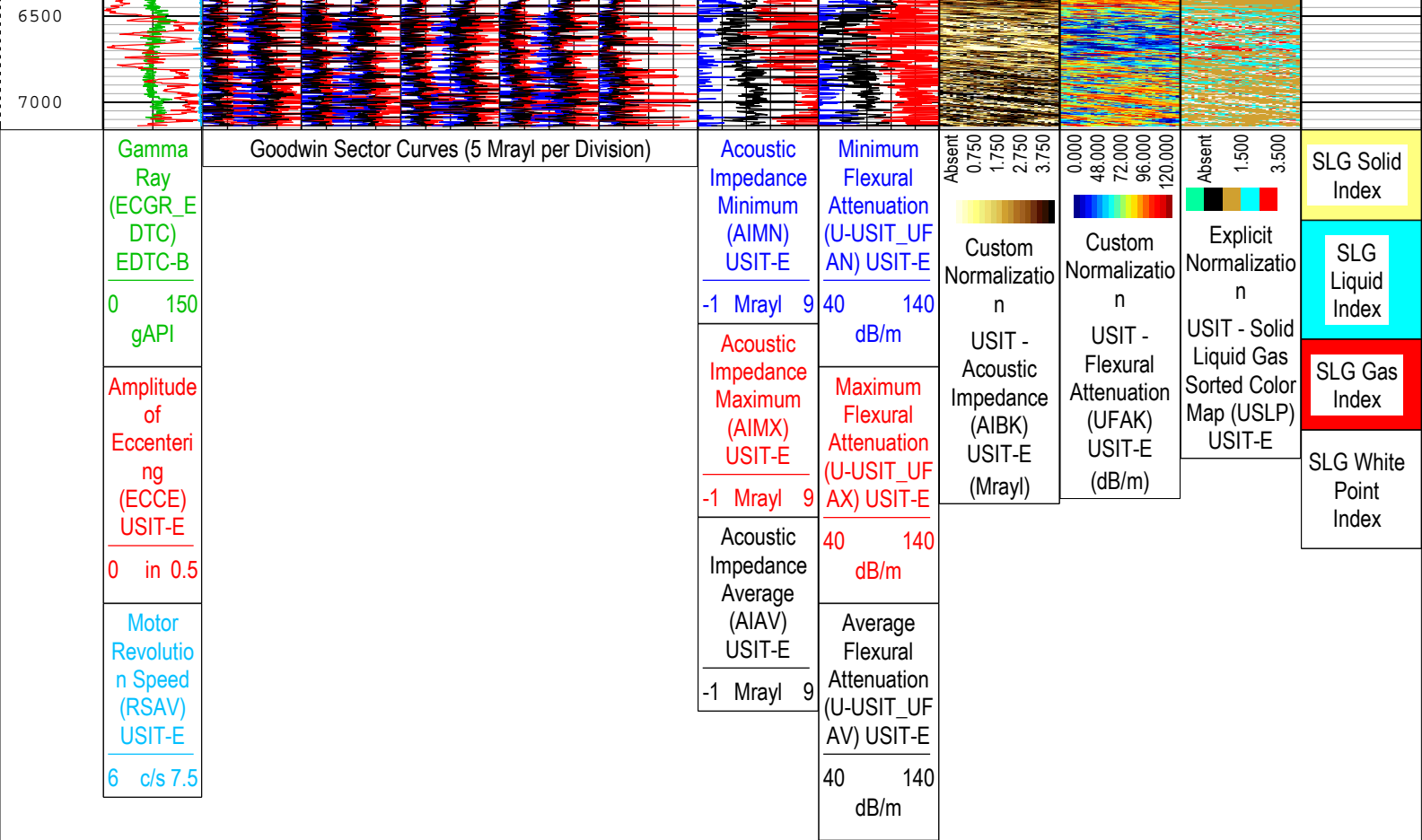
Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	61.43 ft	7140.47 ft	27-Jun-2018 12:57:03	27-Jun-2018 14:46:51	ON	5.99 ft	Yes

All depths are referenced to toolstring zero

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: 19-Jul-2018 19:47:31

ONE									
IBC SLG Repeat Pass									
Software Version									
Acquisition System						Version			
Maxwell 2018						8.0.95333.3100			
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[3]:Up	Up	6940.36 ft	7431.28 ft	27-Jun-2018 12:32:25	27-Jun-2018 12:44:33	ON	0.00 ft	Yes
All depths are referenced to toolstring zero									
Log	Company:Crestone Peak Resources and Operating LLC						Well:Ruegge 3C-4H-N165		
	ONE: Log[3]:Up:S022								

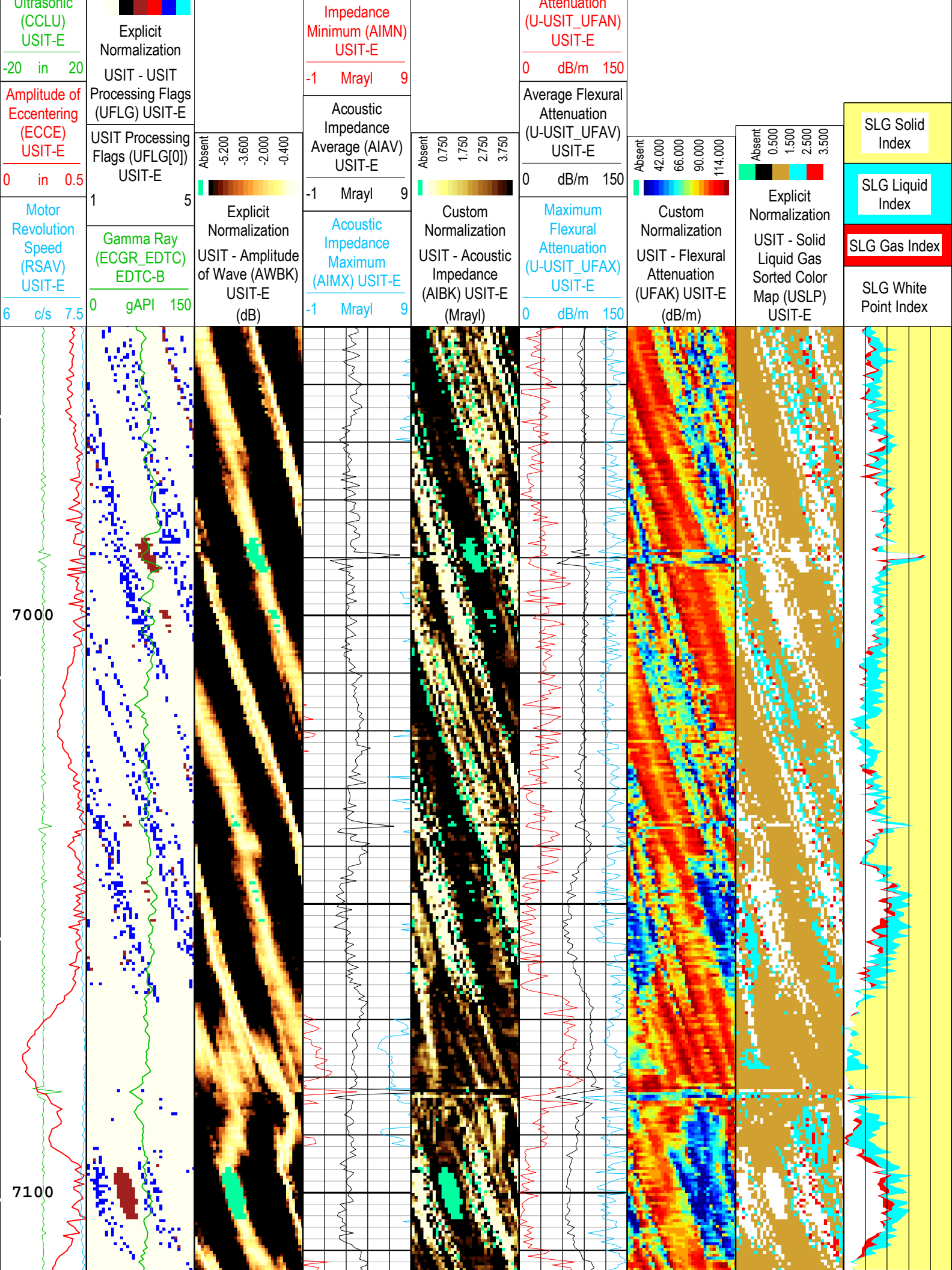
Description: USI IBC SLG Format: Log (IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 19-Jul-2018 19:47:39

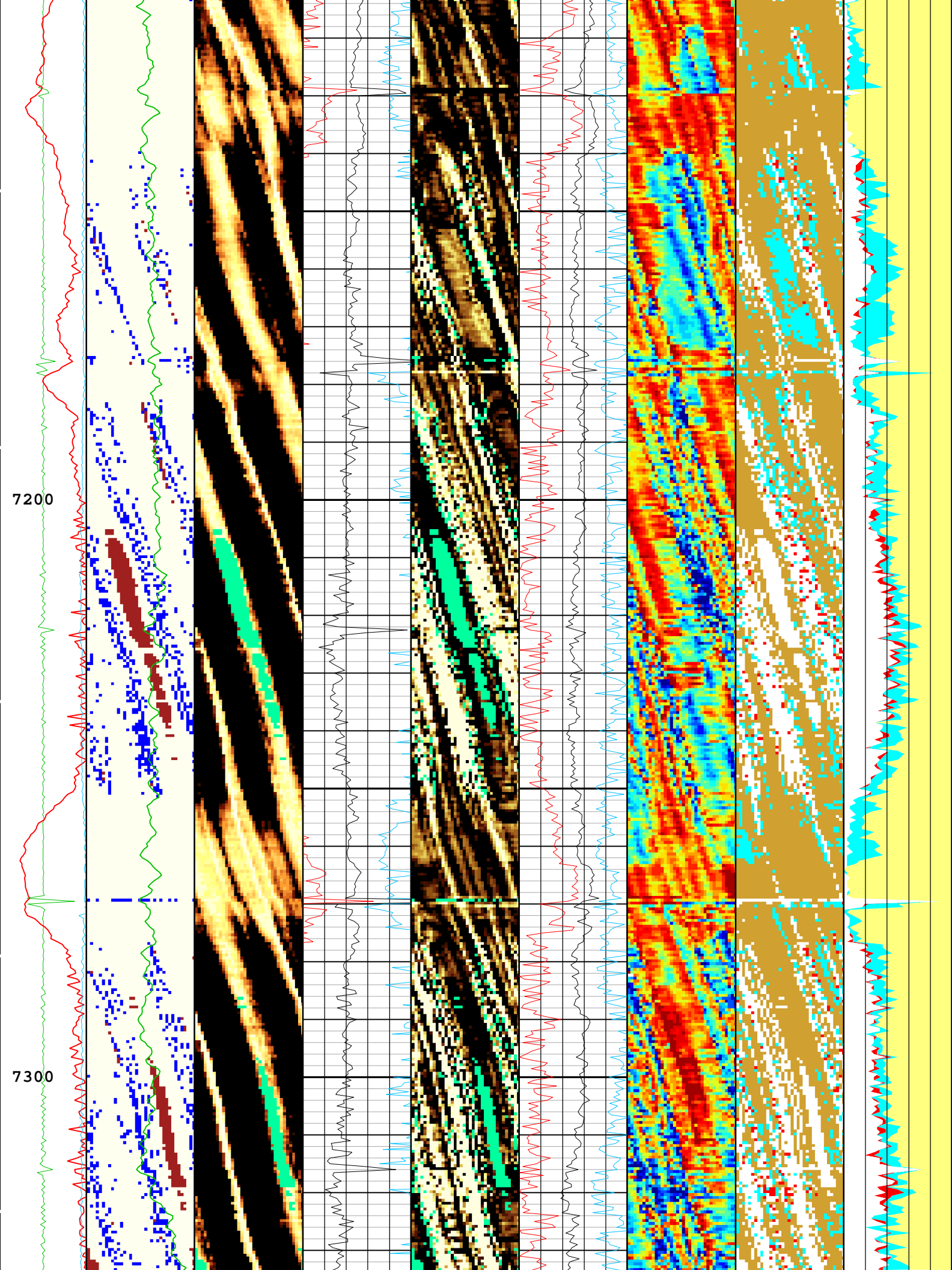
USIT Processing Flags (UFLG[0]) USIT-E

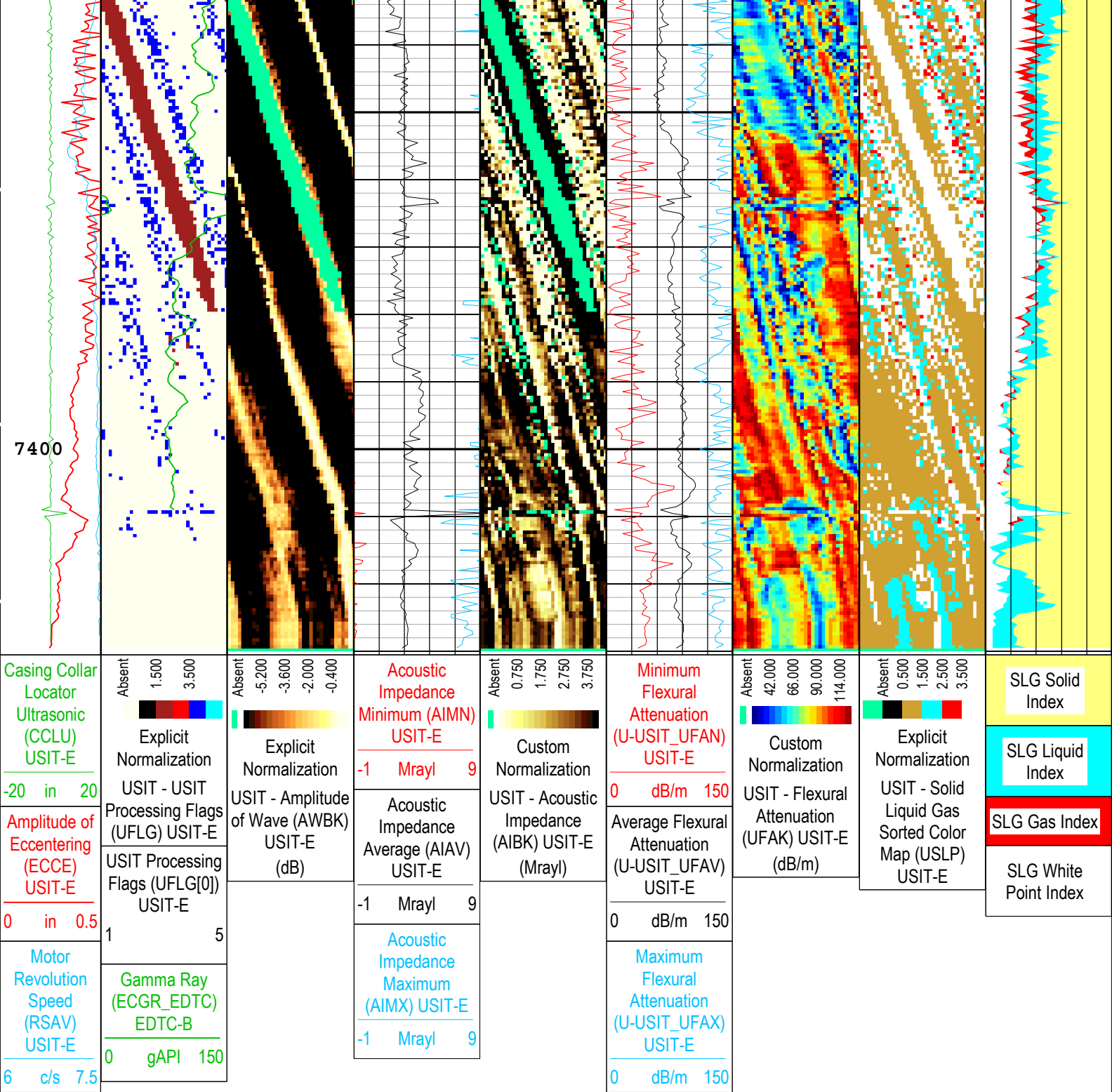
- 1 - UFLG 1 Value within [0.0 - 1.5] - :  UTIM Error
- 2 - UFLG 2 Value within [1.5 - 2.5] - :  Pulse Origin Not Detected
- 3 - UFLG 3 Value within [2.5 - 3.5] - :  WINLEN Error
- 4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :  Casing Thickness Error
- 5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 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: 19-Jul-2018 19:47:39

Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
CCDAP	Depth Marked every 60.00 (s)	USIT-E	1900	s

SSBAR	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	12077.18	ft
CDEN	Cement Density	USIT-E	15.86	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	9.2	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	10.01	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	12.61	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	UFAO	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	Theoretical	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	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	1.33	
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	1.6	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-10.51	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	1.87	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.1	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	18	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	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

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
EMXV	65	27-Jun-2018 12:32:25	27-Jun-2018 12:33:15	7431.28	7418.61
EMXV	80	27-Jun-2018 12:33:15	27-Jun-2018 12:33:22	7418.61	7416.88
EMXV	100	27-Jun-2018 12:33:22	27-Jun-2018 12:33:40	7416.88	7407.57
EMXV	120	27-Jun-2018 12:33:40	27-Jun-2018 12:36:08	7407.57	7317.1
EMXV	100	27-Jun-2018 12:36:08	27-Jun-2018 12:38:47	7317.1	7199.83
EMXV	110	27-Jun-2018 12:38:47	27-Jun-2018 12:38:55	7199.83	7194.24
EMXV	95	27-Jun-2018 12:38:55	27-Jun-2018 12:44:33	7194.24	6940.36

All depth are at tool zero.

ONE

IBC SLG Composite Repeat Pass

Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[3]:Up	Up	6940.36 ft	7431.28 ft	27-Jun-2018 12:32:25	27-Jun-2018 12:44:33	ON	0.00 ft	Yes


All depths are referenced to toolstring zero


Log	Company:Crestone Peak Resources and Operating LLC	Well:Ruegge 3C-4H-N165
		ONE: Log[3]:Up:S022

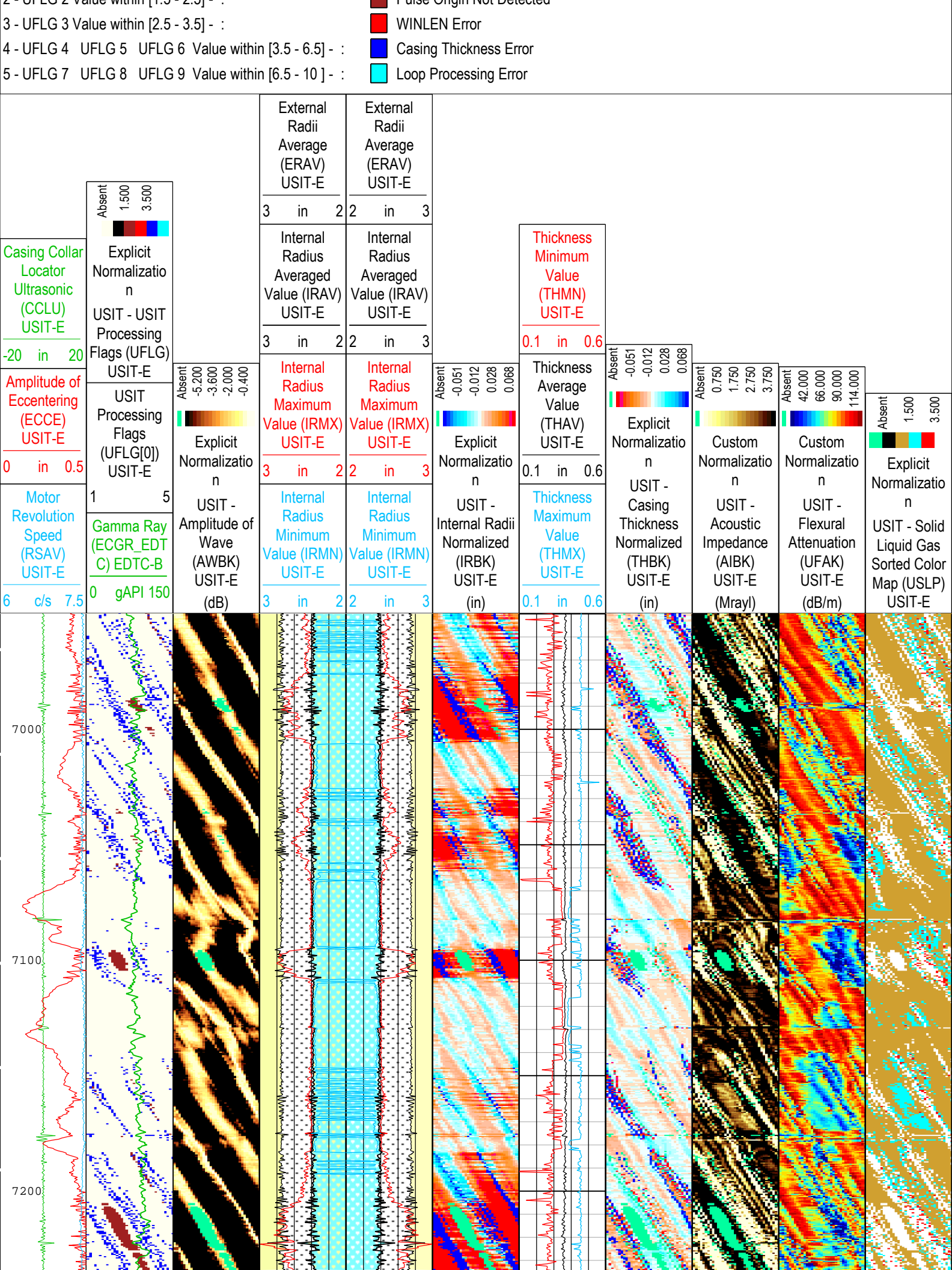
Description: USI IBC SLG Composite Format: Log (IBC SLG Composite) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 19-Jul-2018 19:47:49

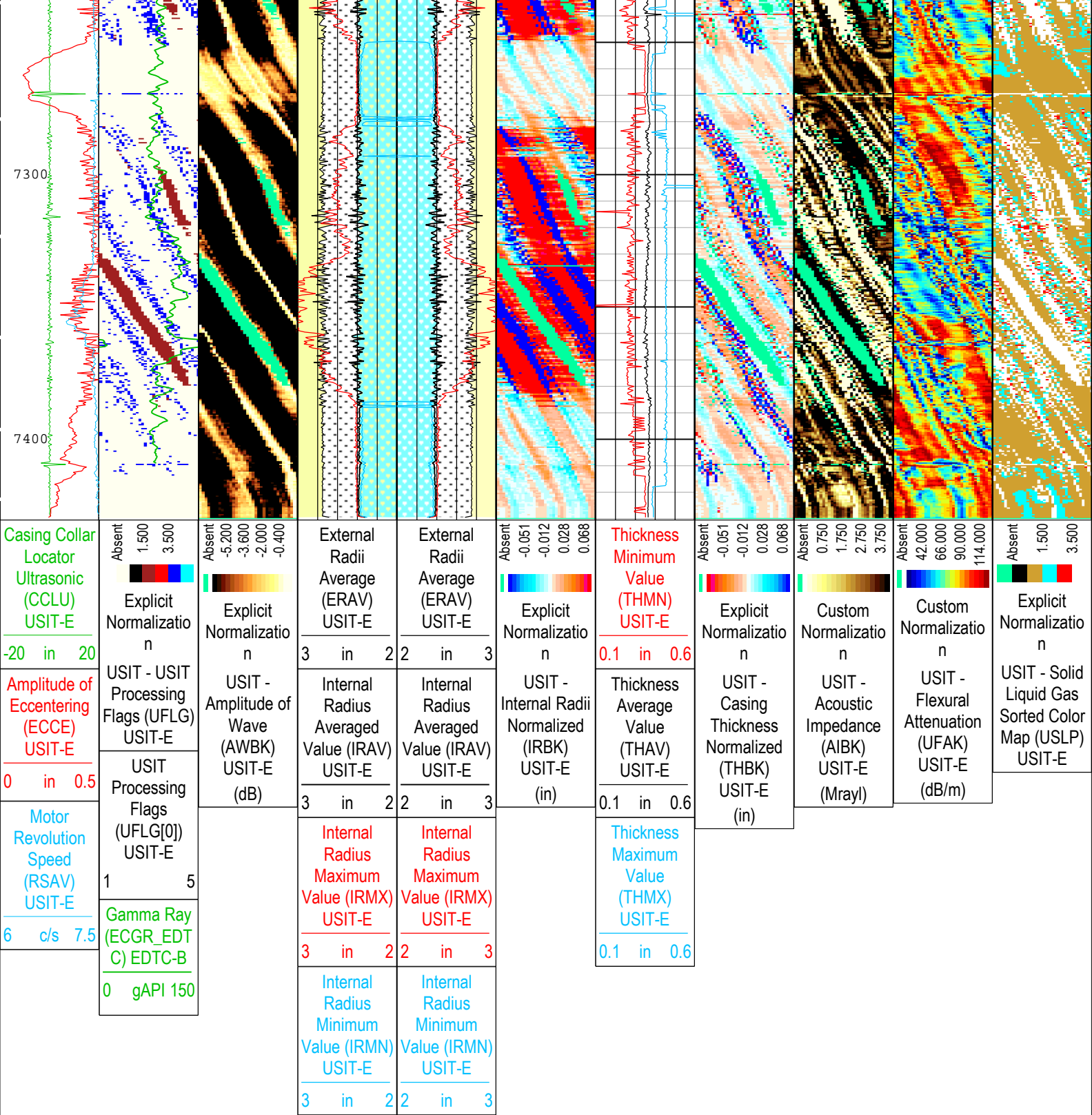
TIME_1900 - Time Marked every 60.00 (s)

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





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: 19-Jul-2018 19:47:49

Channel Processing Parameters

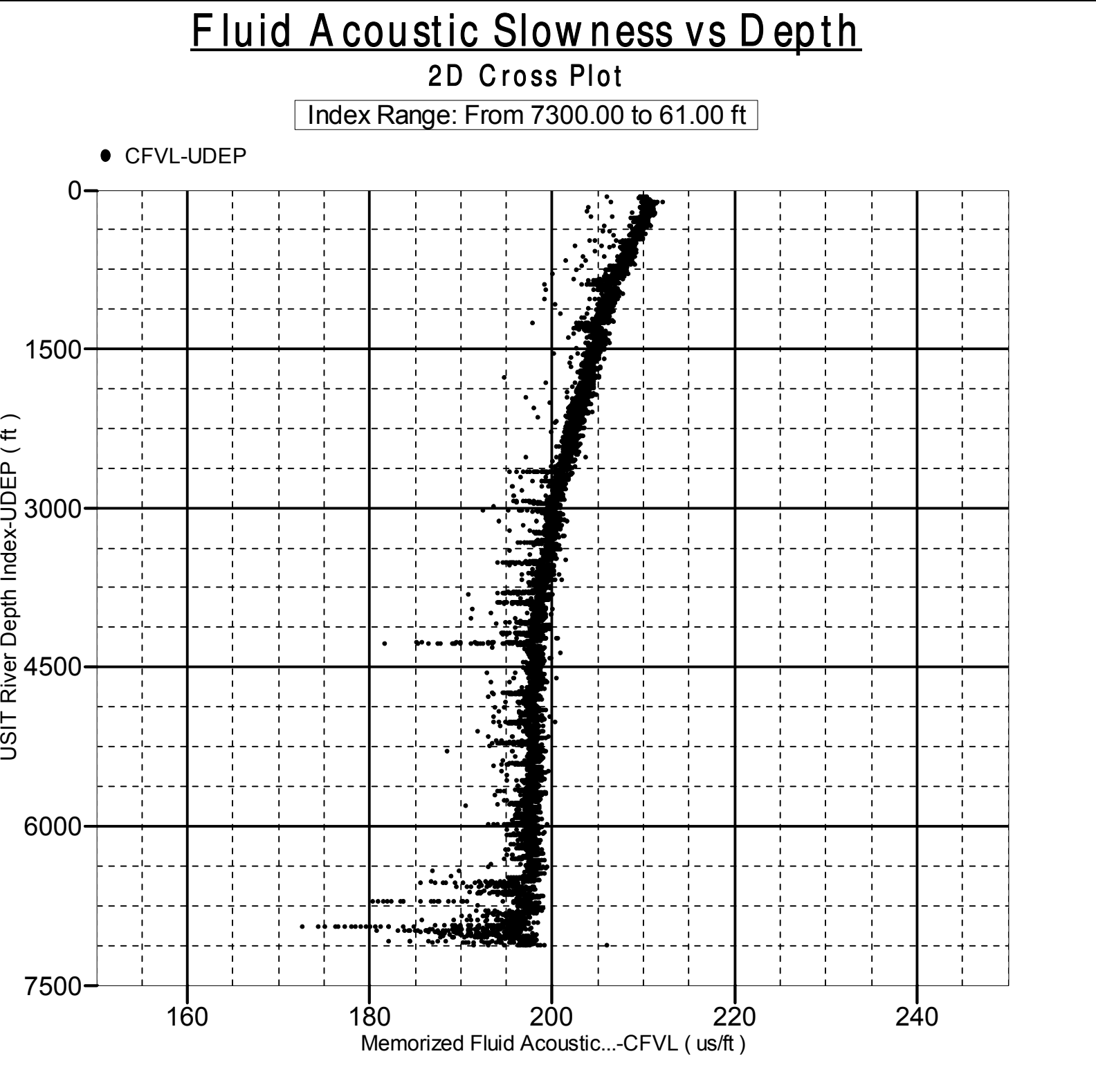
ONE: Parameters

Parameter	Description	Tool	Value	Unit
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	12077.18	ft
CDEN	Cement Density	USIT-E	15.86	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	9.2	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	10.01	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	12.61	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	UFAO	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	Theoretical	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	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	1.33	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.6	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-10.51	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
ZMUD	Acoustic Impedance of Mud	Borehole	1.87	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.1	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	18	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

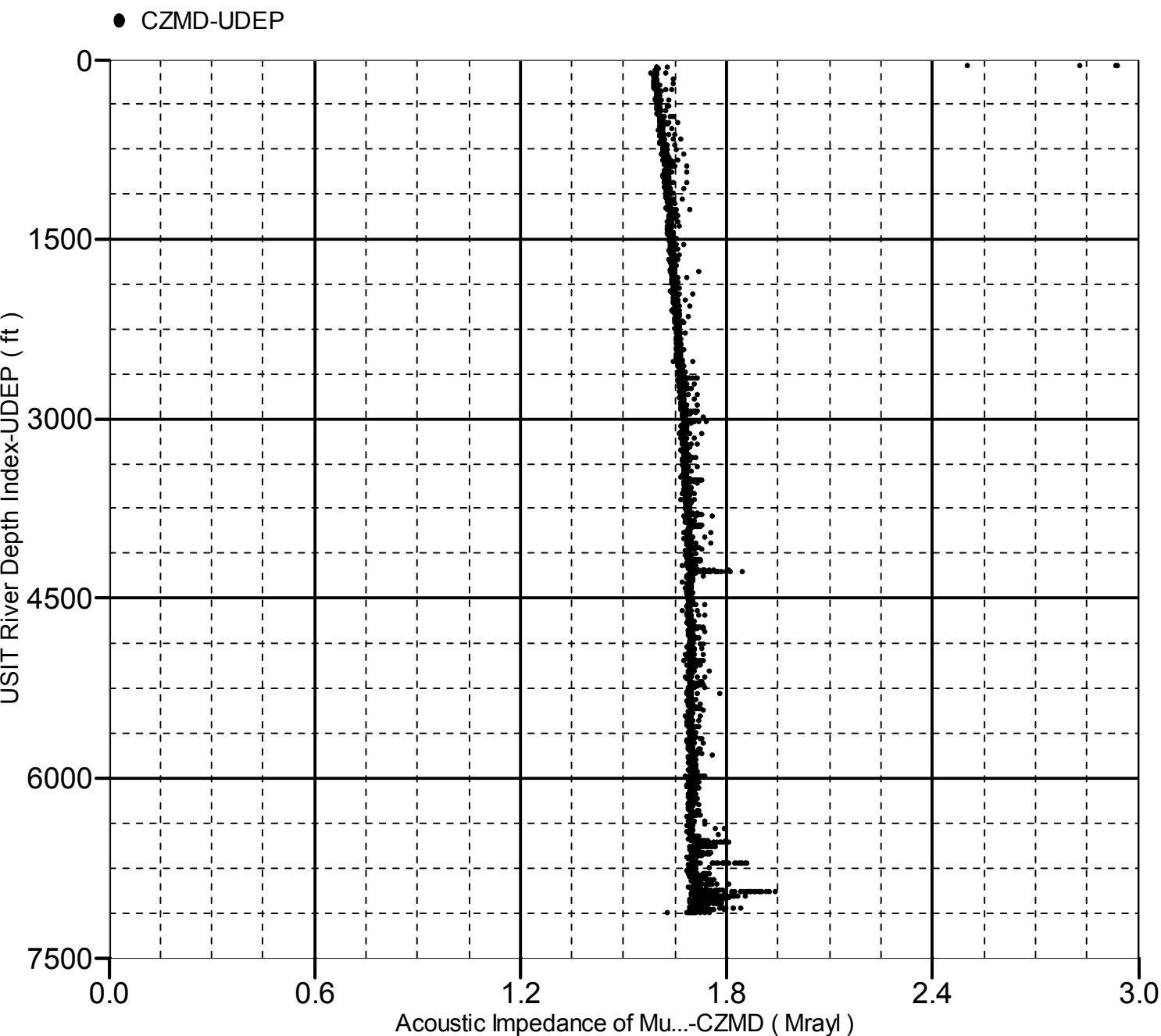
Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
EMXV	65	27-Jun-2018 12:32:25	27-Jun-2018 12:33:15	7431.28	7418.61
EMXV	80	27-Jun-2018 12:33:15	27-Jun-2018 12:33:22	7418.61	7416.88
EMXV	100	27-Jun-2018 12:33:22	27-Jun-2018 12:33:40	7416.88	7407.57
EMXV	120	27-Jun-2018 12:33:40	27-Jun-2018 12:36:08	7407.57	7317.1
EMXV	100	27-Jun-2018 12:36:08	27-Jun-2018 12:38:47	7317.1	7199.83
EMXV	110	27-Jun-2018 12:38:47	27-Jun-2018 12:38:55	7199.83	7194.24
EMXV	95	27-Jun-2018 12:38:55	27-Jun-2018 12:44:33	7194.24	6940.36
All depth are at tool zero.					
XYZ		Company:Crestone Peak Resources and Operating LLC Well:Ruegge 3C-4H-N165 ONE: Log[4]:Up:S022			



Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 7300.00 to 61.00 ft



Company: Crestone Peak Resources and Operating LLC

Schlumberger

Well: Ruegge 3C-4H-N165

Field: Wattenberg

County:	Weld
State:	Colorado
Isolation Scanner	
Cement Evaluation	
Gamma Ray - CCL Log	