

Company: Crestone Peak Resources and Operating LLC

Well: Ruegge 3D-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 3D-4H-N165

Company: Crestone Peak Resources and Operating LLC

Isolation Scanner

Cement Evaluation

Gamma Ray - CCL Log

Location:			
SESW SEC:4 TWN: 1N RNG:65W		Elev.:	K.B.
			G.L.
			D.F.
Permanent Datum:	Ground Level	Elev.:	4918.00 f
Log Measured From:	Kelly Bushing	23.00 ft	above Perm.Datum
Drilling Measured From:	Kelly Bushing		
API Serial No.	Section:	Township:	Range:
05123465560000	4	1N	65W

Logging Date	27-Jun-2018
Run Number	ONE
Depth Driller	12140.00 ft
Schlumberger Depth	7350.00 ft
Bottom Log Interval	7350.00 ft
Top Log Interval	50.00 ft
Casing Fluid Type	Water
Salinity	
Density	8.8 lbm/gal
Fluid Level	8.00 ft
BIT/CASING/TUBING STRING	
Bit Size	8.50 in
From	2518.00 ft
To	12140.00 ft
Casing/Tubing Size	5.5 in
Weight	20 lbm/ft
Grade	P110
From	0.00 ft
To	12123.63 ft
Max Recorded Temperatures	220.86 degF
Logger on Bottom	27-Jun-2018
Unit Number	3108
Recorded By	Justin Ray
Witnessed By	Satch Bowe

Disclaimer

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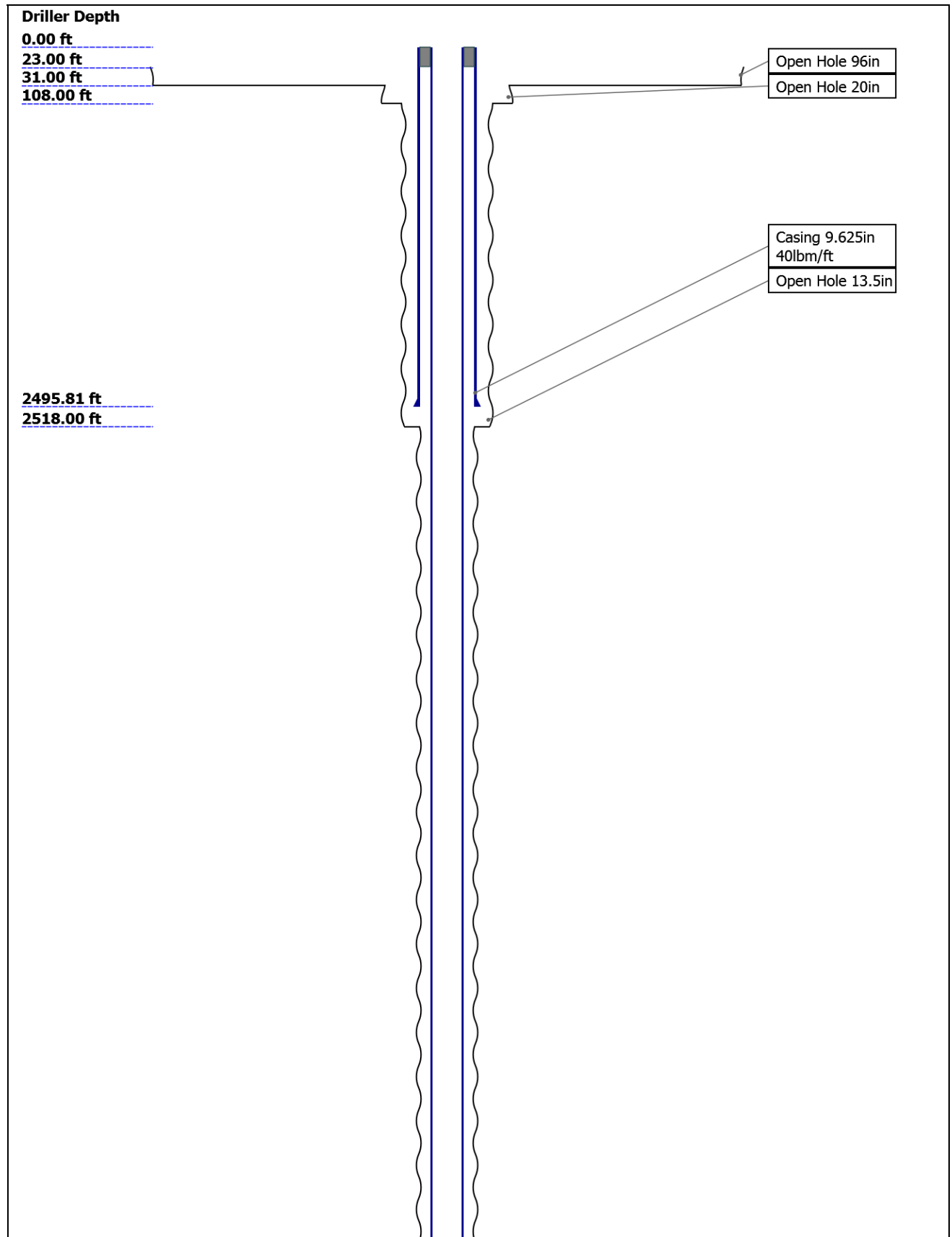
11.1 Integration Summary

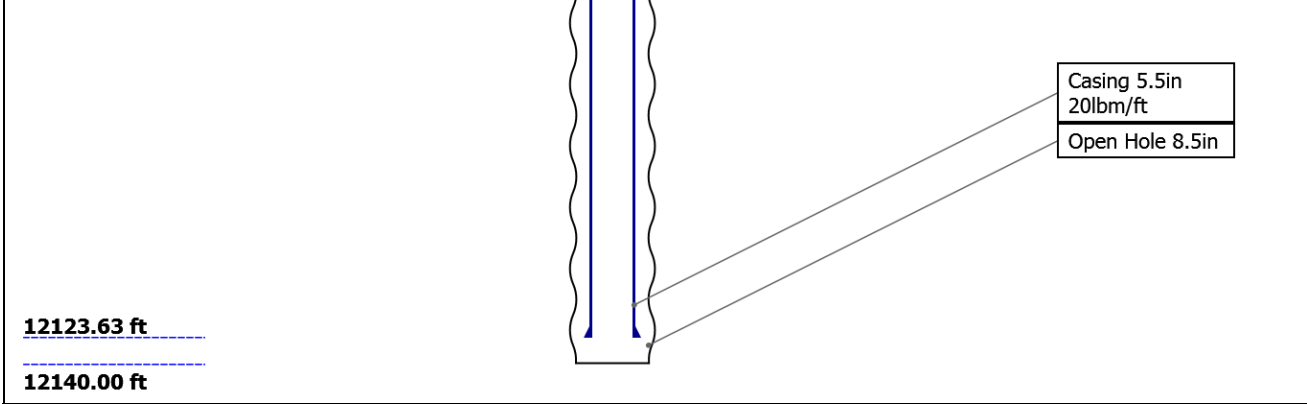
11.2 Composite Summary

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Well Sketch

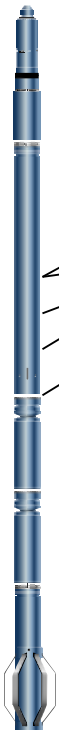


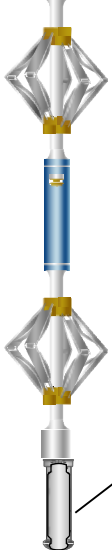


Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	96	20	13.5	8.5		
Top Driller (ft)	23	31	108	2518		
Top Logger (ft)	23	31	108	2518		
Bottom Driller (ft)	31	108	2518	12140		
Bottom Logger (ft)	31	108	2518	12140		
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)	2495.81	12123.63				
Bottom Logger (ft)	2495.81	12123.63				

Remarks and Equipment Summary

ONE: Toolstring				ONE: Remarks	
<div><div><div>Equip nameLengthMP nameOffset</div><div>LEH-QT:230.16353LEH-QT:2353</div><div>EDTC-B:927.24247EDTH-B:9309EDTG-A:79445EDTC-B:9247</div><div>AH-184[2]20.74</div><div>AH-184[1]18.74</div><div>USIT-E:9316.740ECH-MFA:1924USAC-A:930</div></div><div></div><div><div>CTEM23.74</div><div>ACCZ0.00</div><div>HV0.00</div><div>Gamma21.87</div><div>Ray</div><div>TelStatu20.74</div><div>s4880</div><div>5965</div></div></div>				Tool string ran as per tool sketch	
				Gemcos, boosters, and two knuckles ran for tool centralization	
				All passes run under 0 PSI	
				Thank you for choosing Schlumberger	

USSS-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 procedures followed	
Rig Up Length At Surface		IDW used as primary depth control	
Rig Up Length At Bottom		Z-Chart used as secondary depth control	
Rig Up Length Correction			

Stretch Correction	7.29 ft
Tool Zero Check At Surface	23.00 ft

USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 1	Log[4]:Up	7339.89	94.38

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=1.15
DFD=1.05g/cm3(8.80lbm/gal)

Start Depth(ft)	Stop Depth(ft)	Start Value(Mrayl)	End Value(Mrayl)
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Composite 1

IBC SLG Main Pass

Software Version

Acquisition System	Version
Maxwell 2018	8.0.95333.3100
Application Patch	Wireline_NPD-PNX-2018CMZ_8.0.100887

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	94.38 ft	7339.89 ft	27-Jun-2018 5:49:23 PM	27-Jun-2018 7:31:30 PM	ON	7.29 ft	Yes
ONE	Log[5]:Up	Up	49.65 ft	182.99 ft	27-Jun-2018 7:33:22 PM	27-Jun-2018 7:37:27 PM	ON	7.55 ft	Yes

All depths are referenced to toolstring zero

Log	Company:Crestone Peak Resources and Operating LLC Well:Ruegge 3D-4H-N165 Composite 1:S034
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Description: USI IBC SLG Format: Log (IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 11-Jul-2018 18:24:51

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

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

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

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

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

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

UTIM Error

Pulse Origin Not Detected

WINLEN Error

Casing Thickness Error

Loop Processing Error

TIME_1900 - Time Marked every 60.00 (s)

Casing Collar Locator Ultrasonic (CCLU) USIT-E[1]

Amplitude of Eccentering (ECCE) USIT-E[1]

Motor

Explicit Normalization

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

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

Explicit Normalization

Acoustic Impedance Minimum (AIMN) USIT-E[1]

-1 Mrayl 9

Acoustic Impedance Average (AIAV) USIT-E[1]

-1 Mrayl 9

Acoustic

Minimum Flexural Attenuation (U-USIT_UFAN) USIT-E[1]

0 dB/m 150

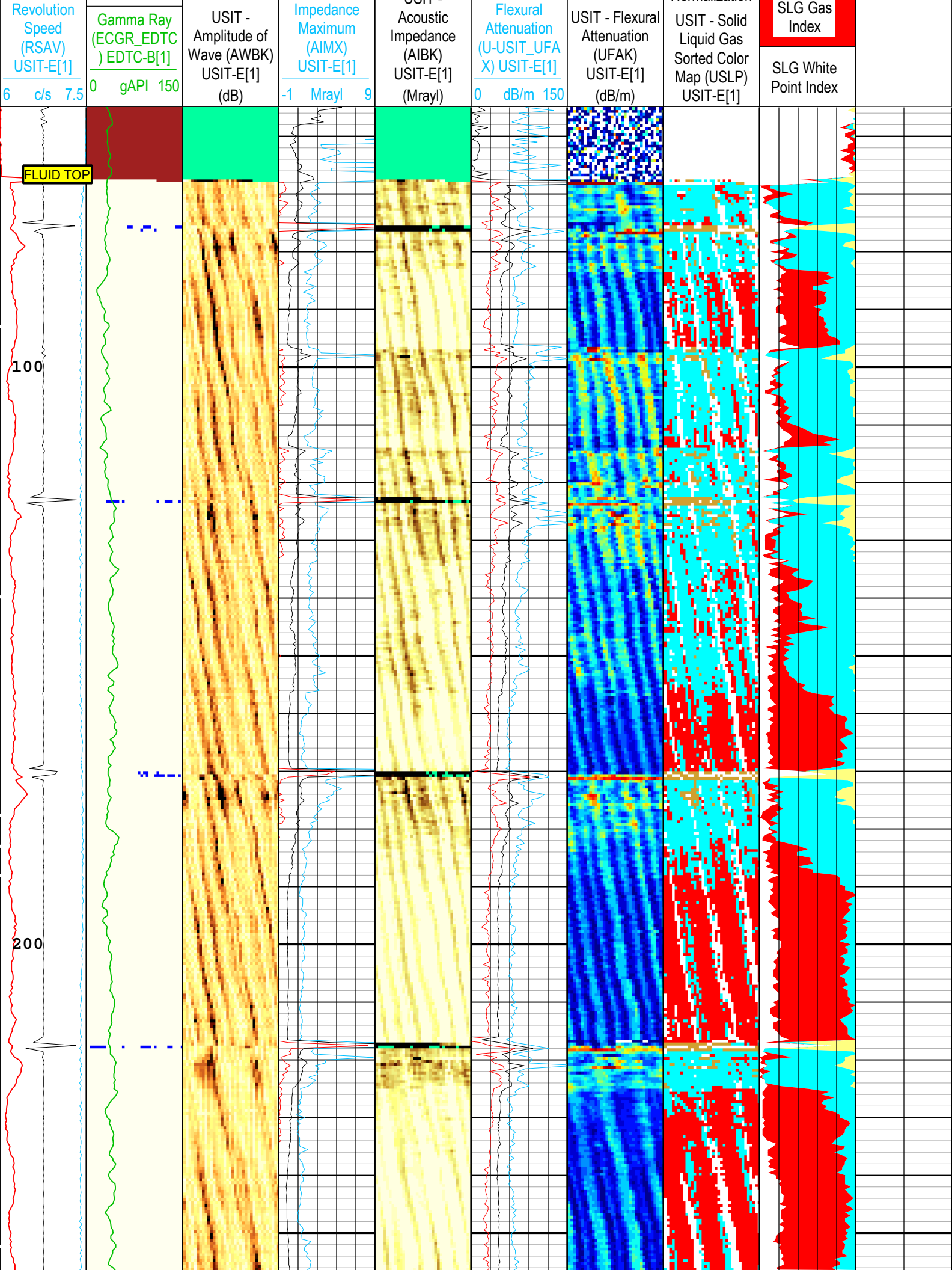
Average Flexural Attenuation (U-USIT_UFAV) USIT-E[1]

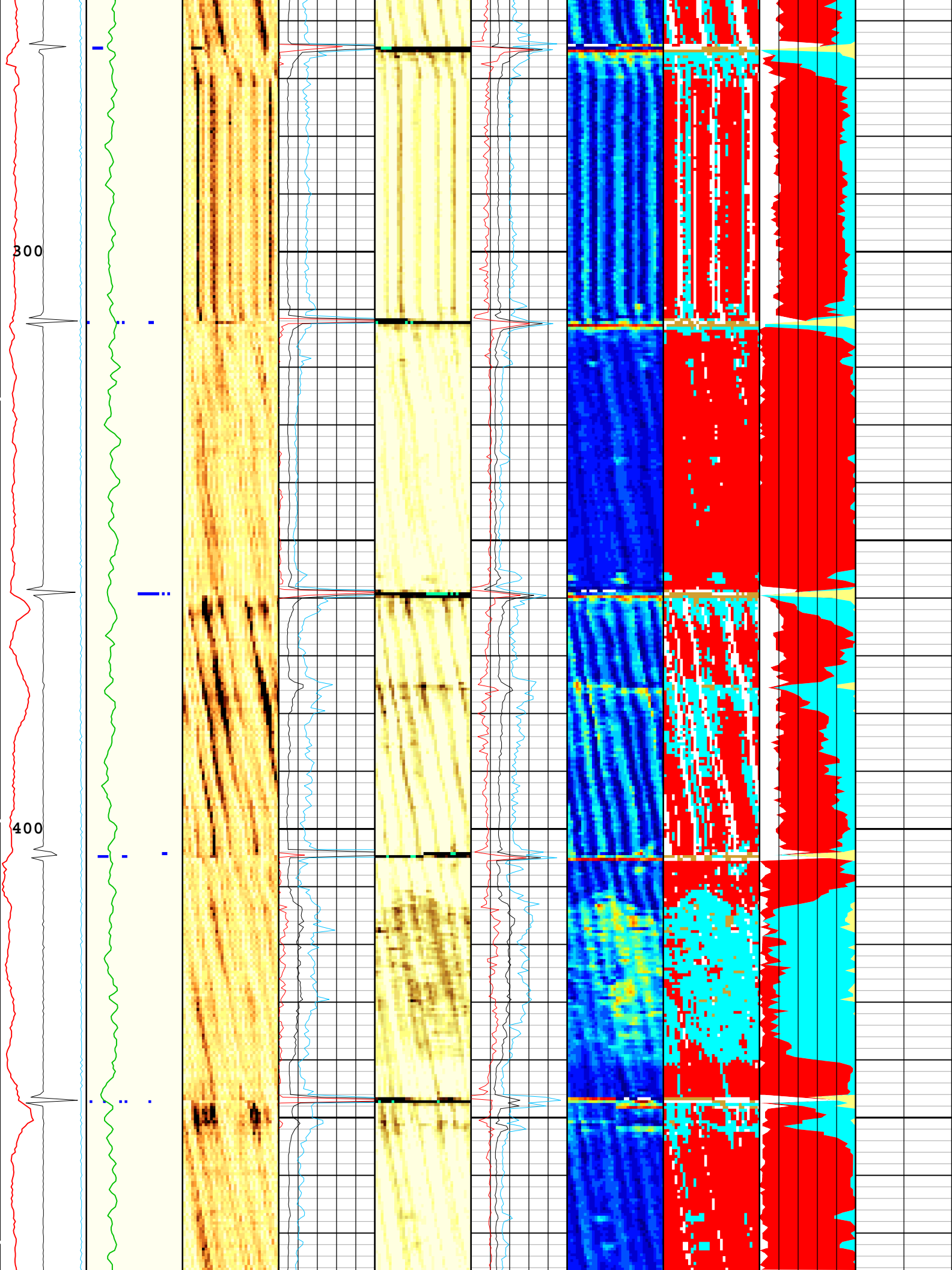
0 dB/m 150

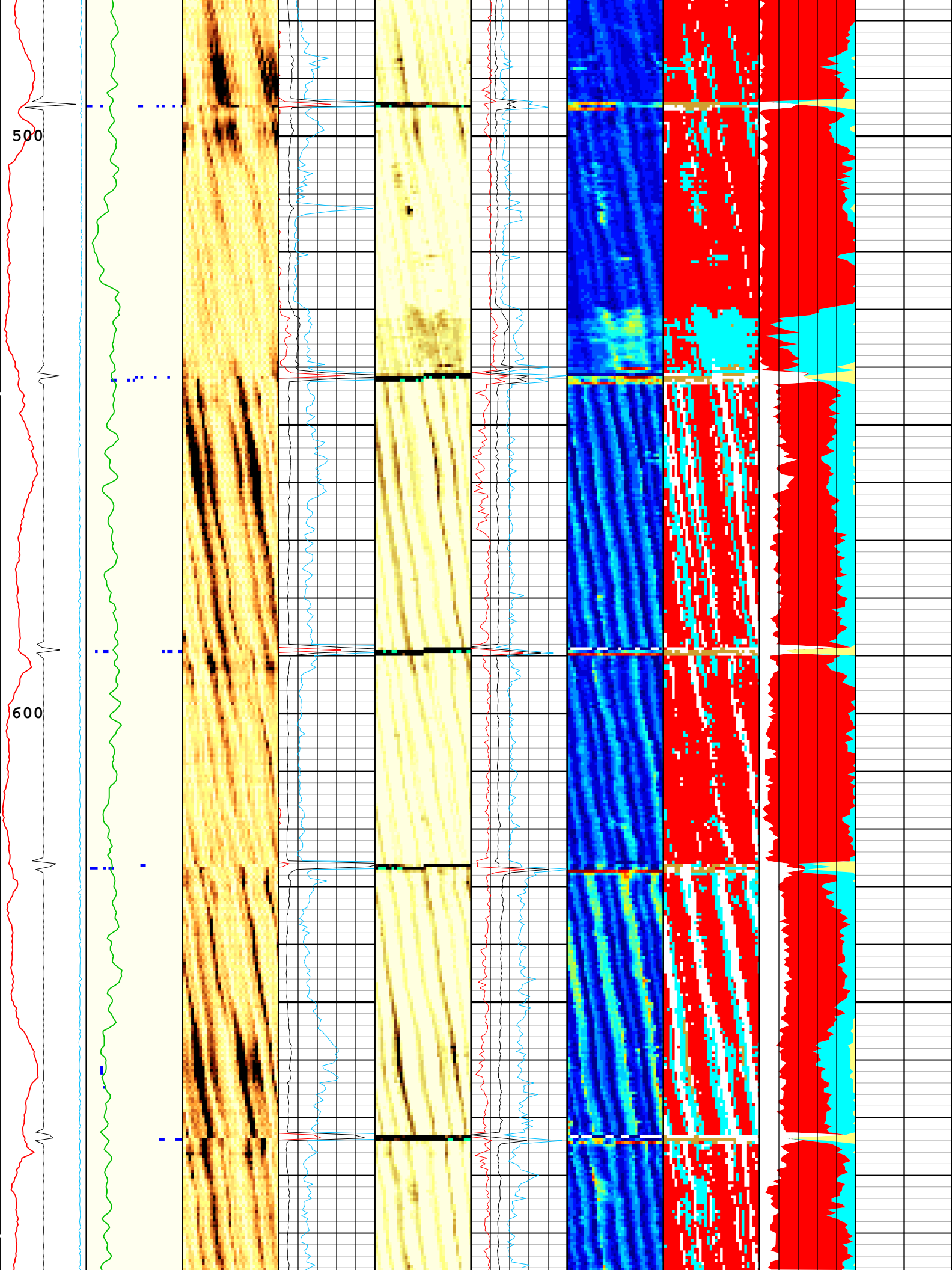
Maximum

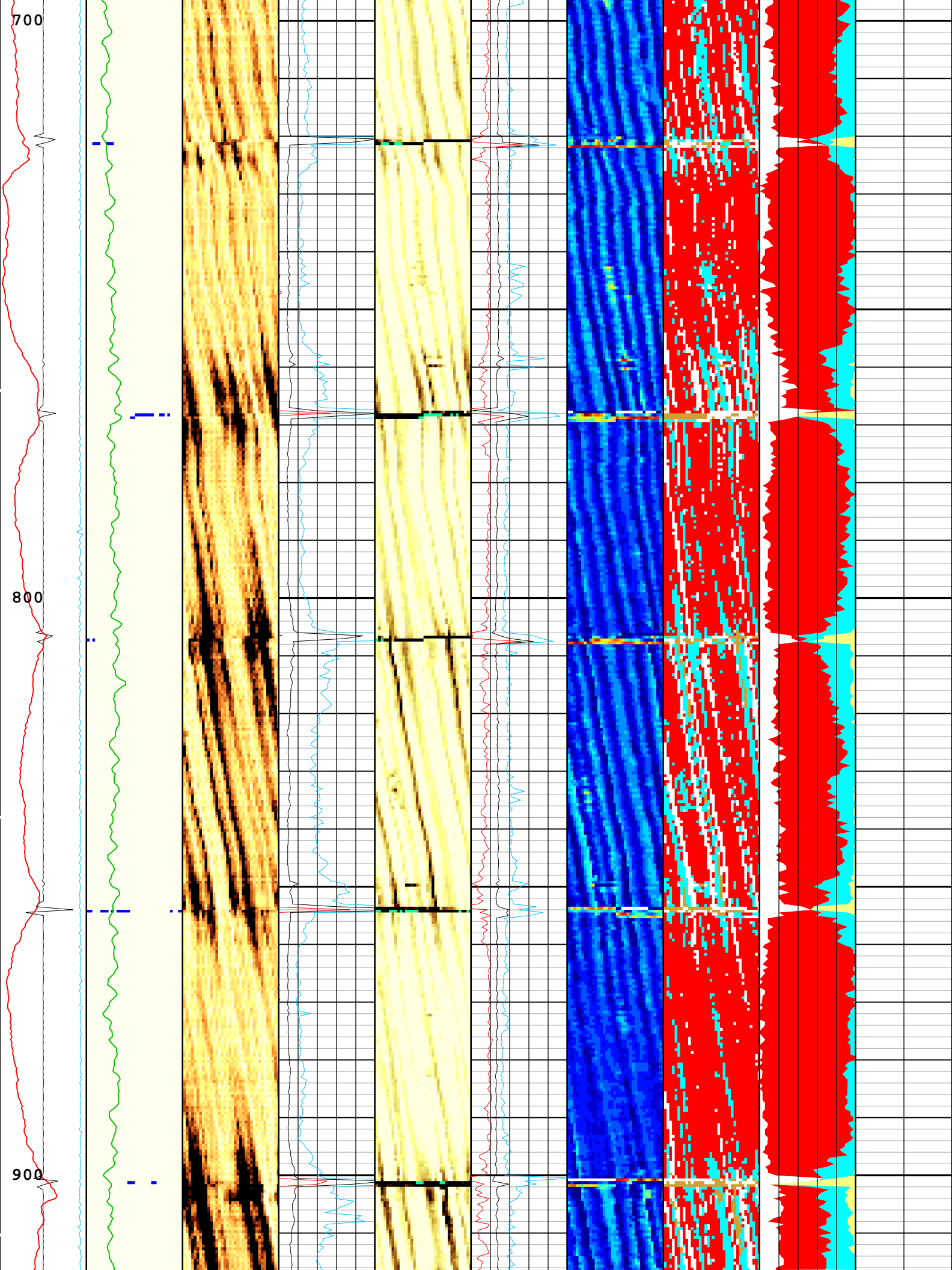
SLG Solid Index

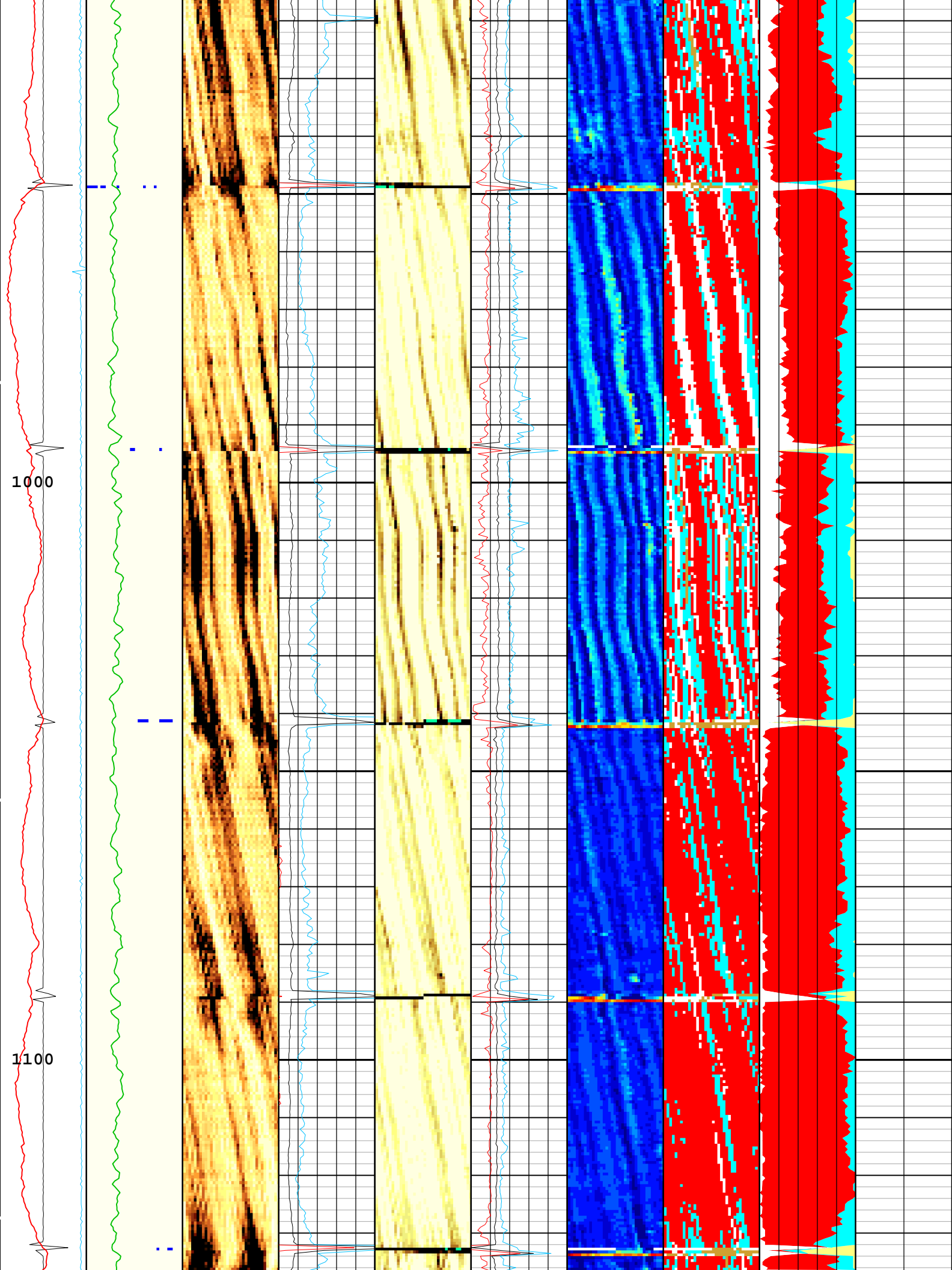
SLG Liquid Index

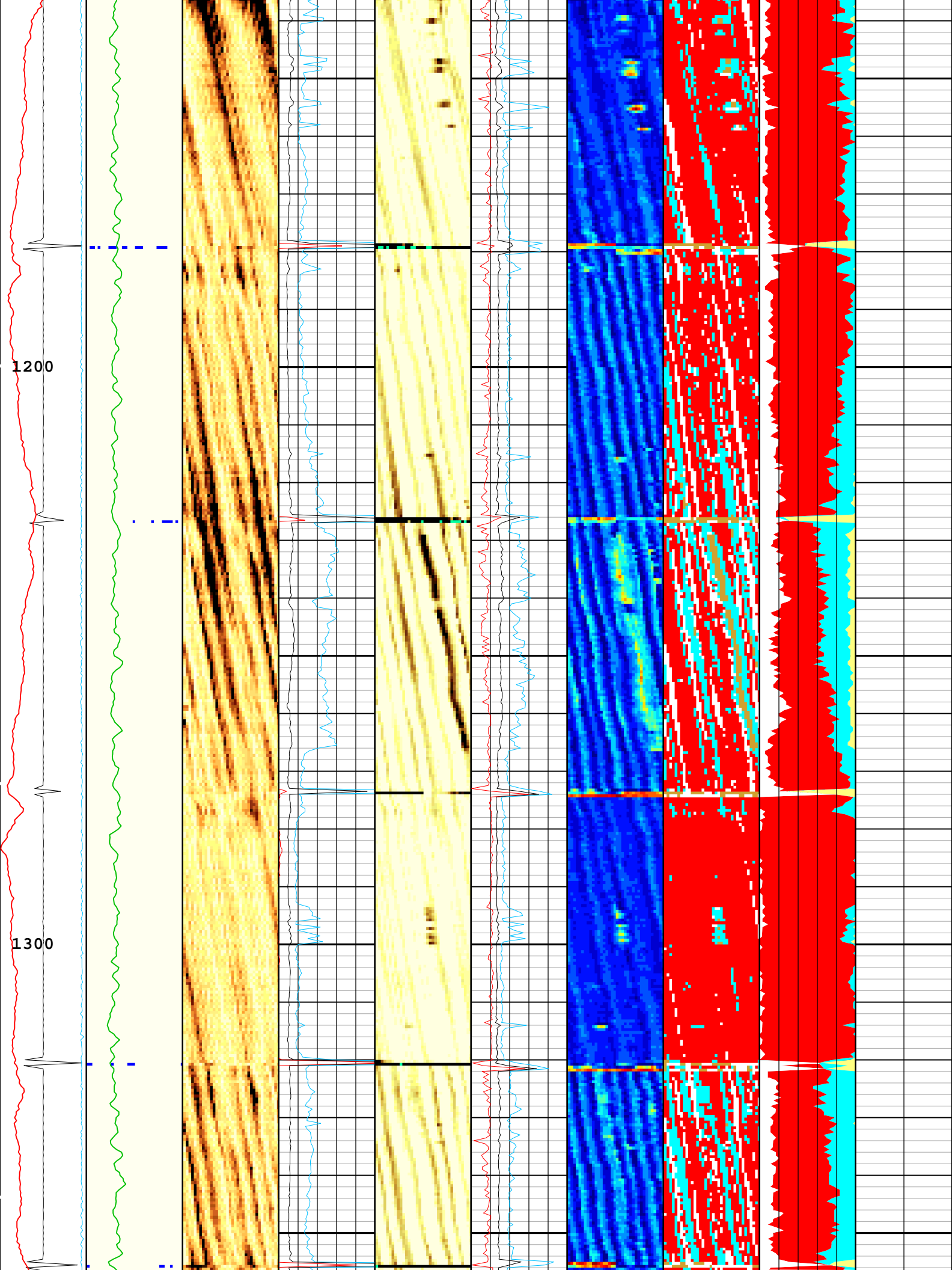


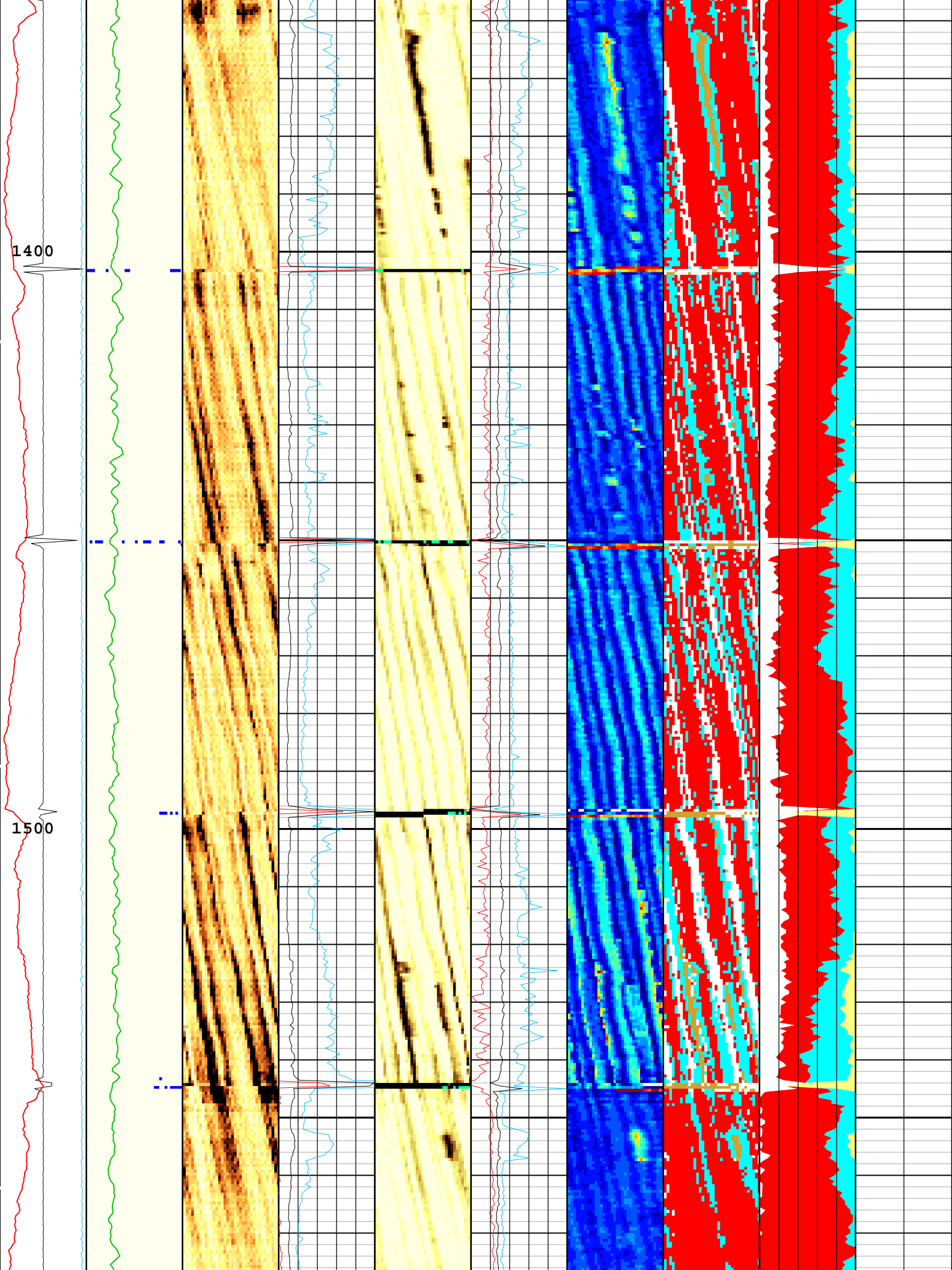


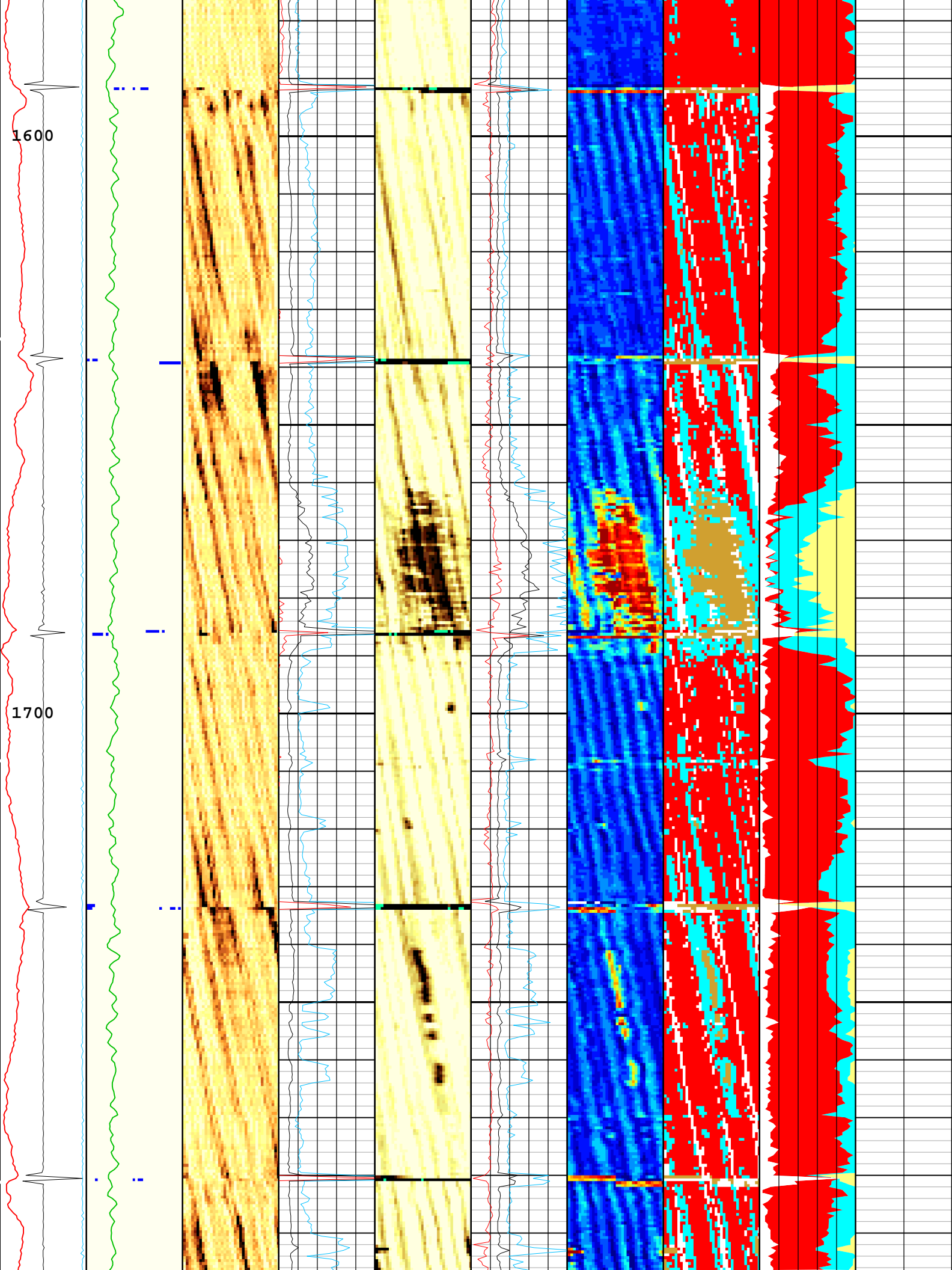


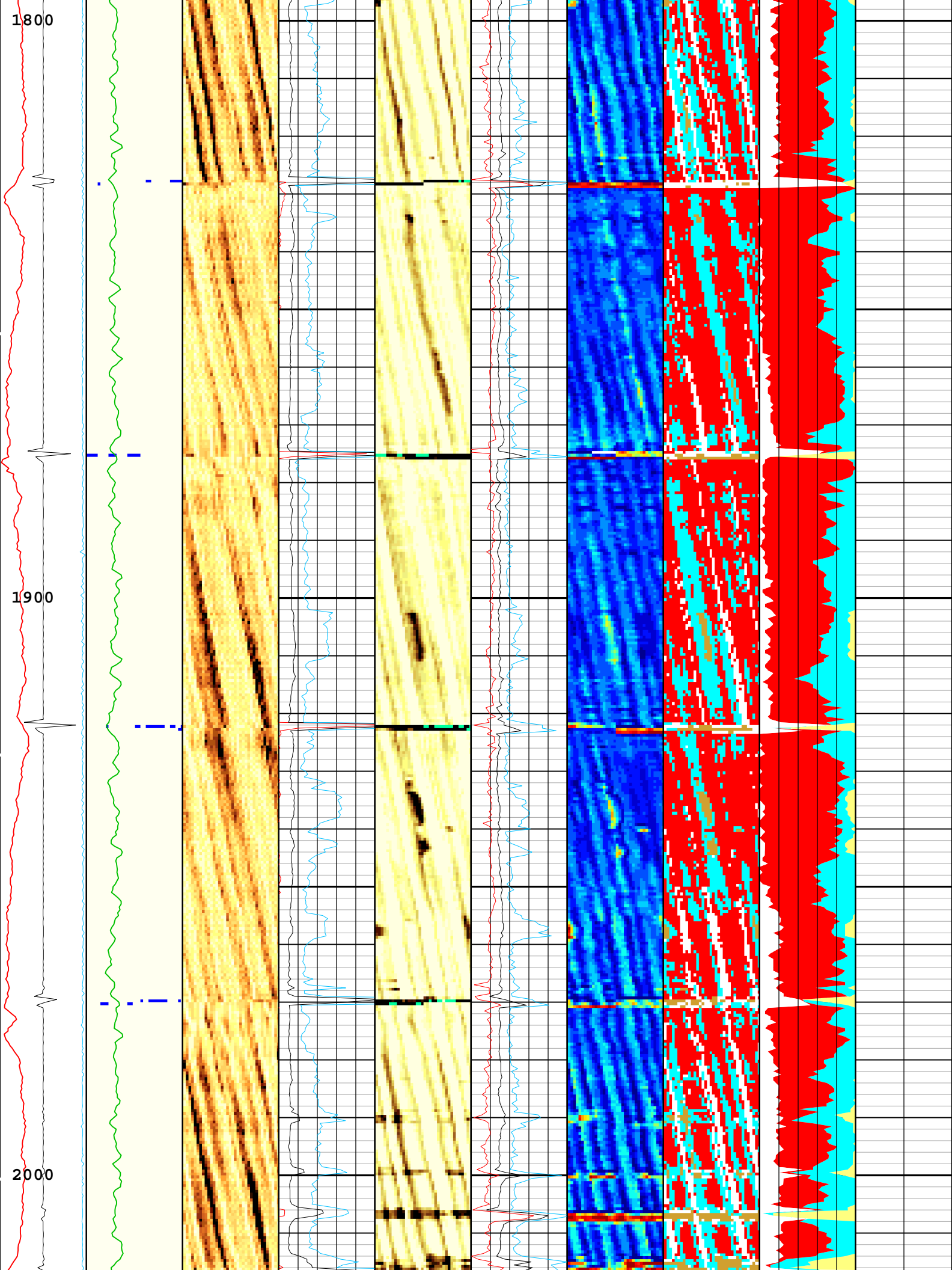


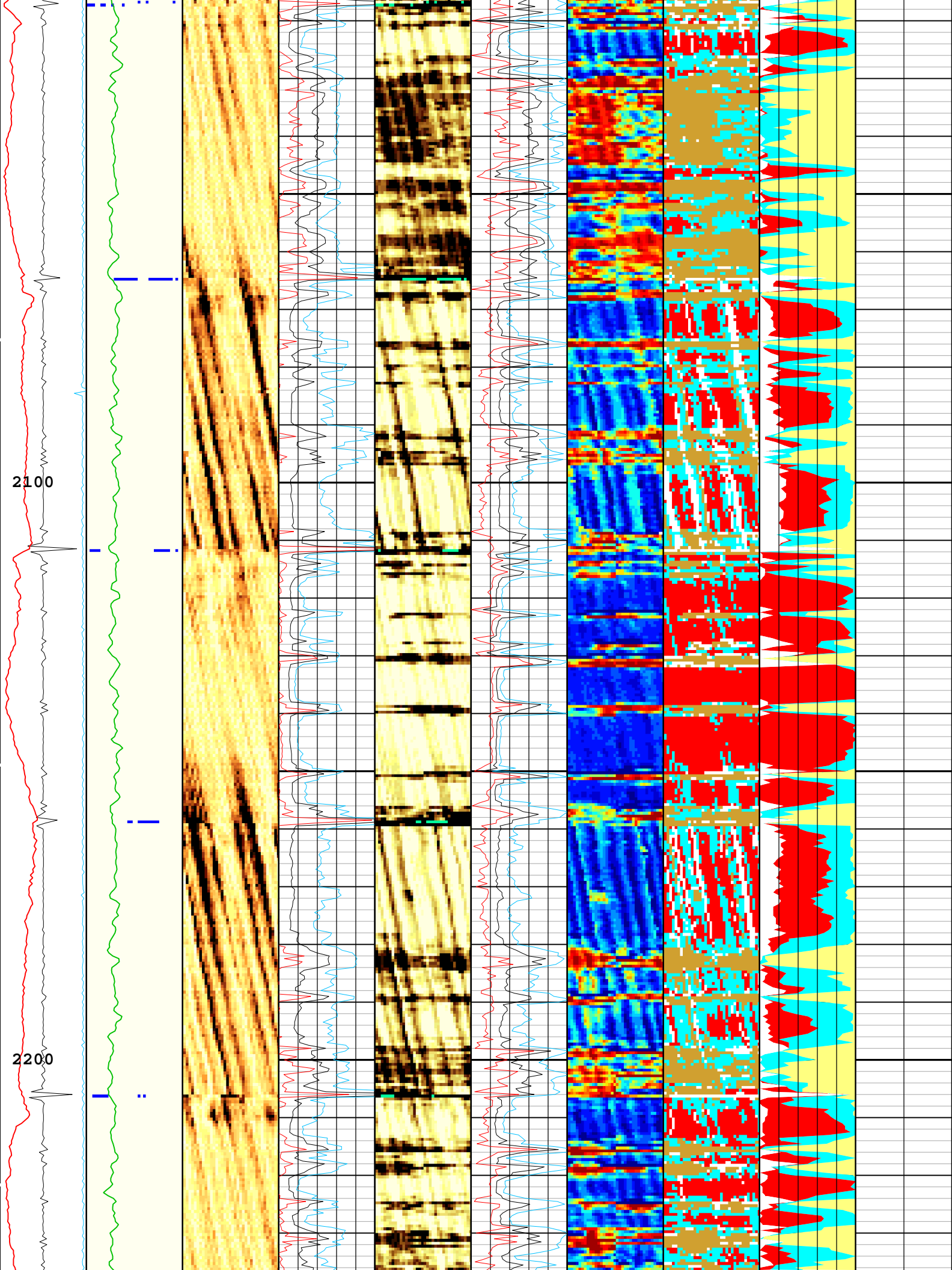


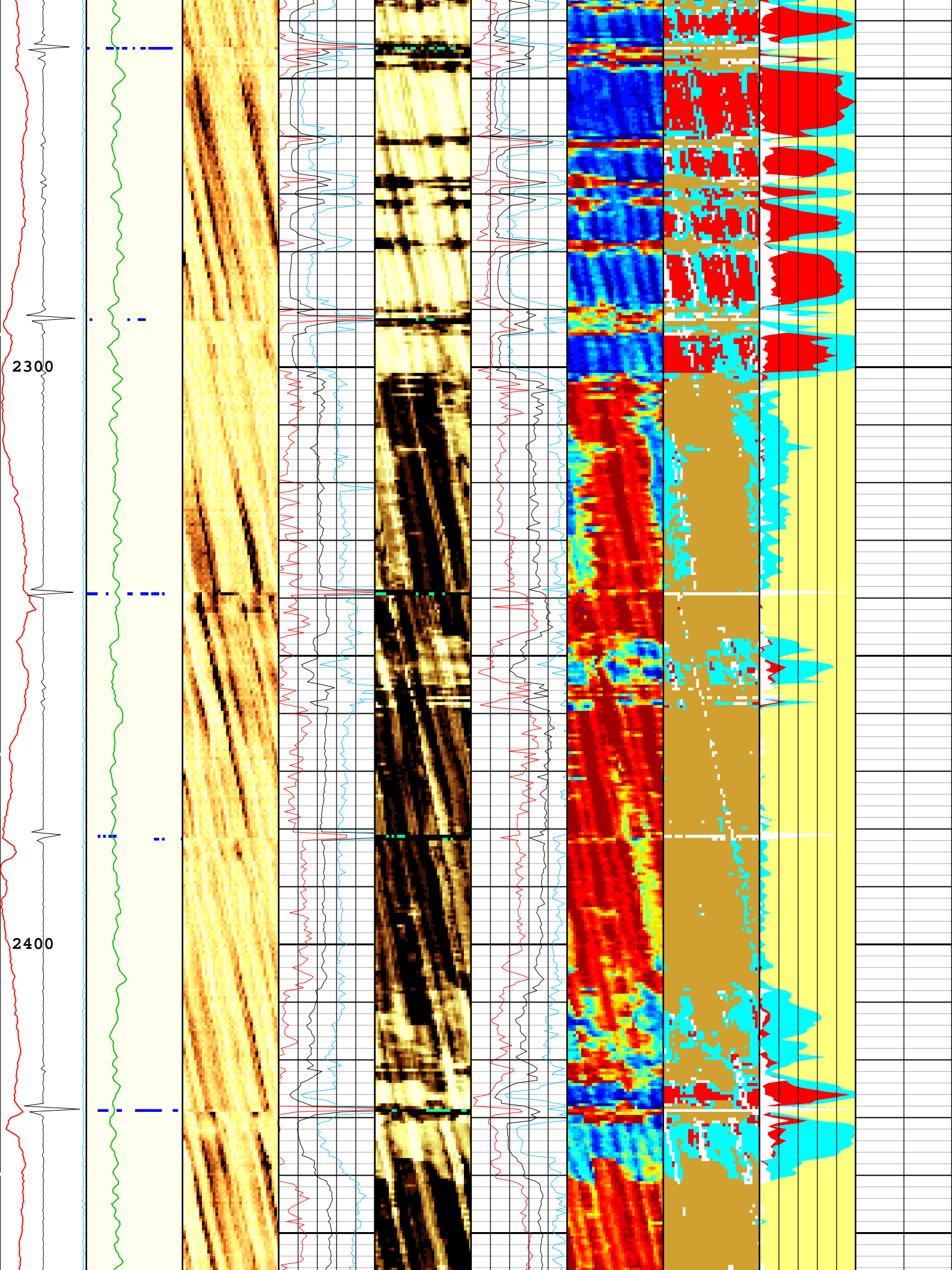


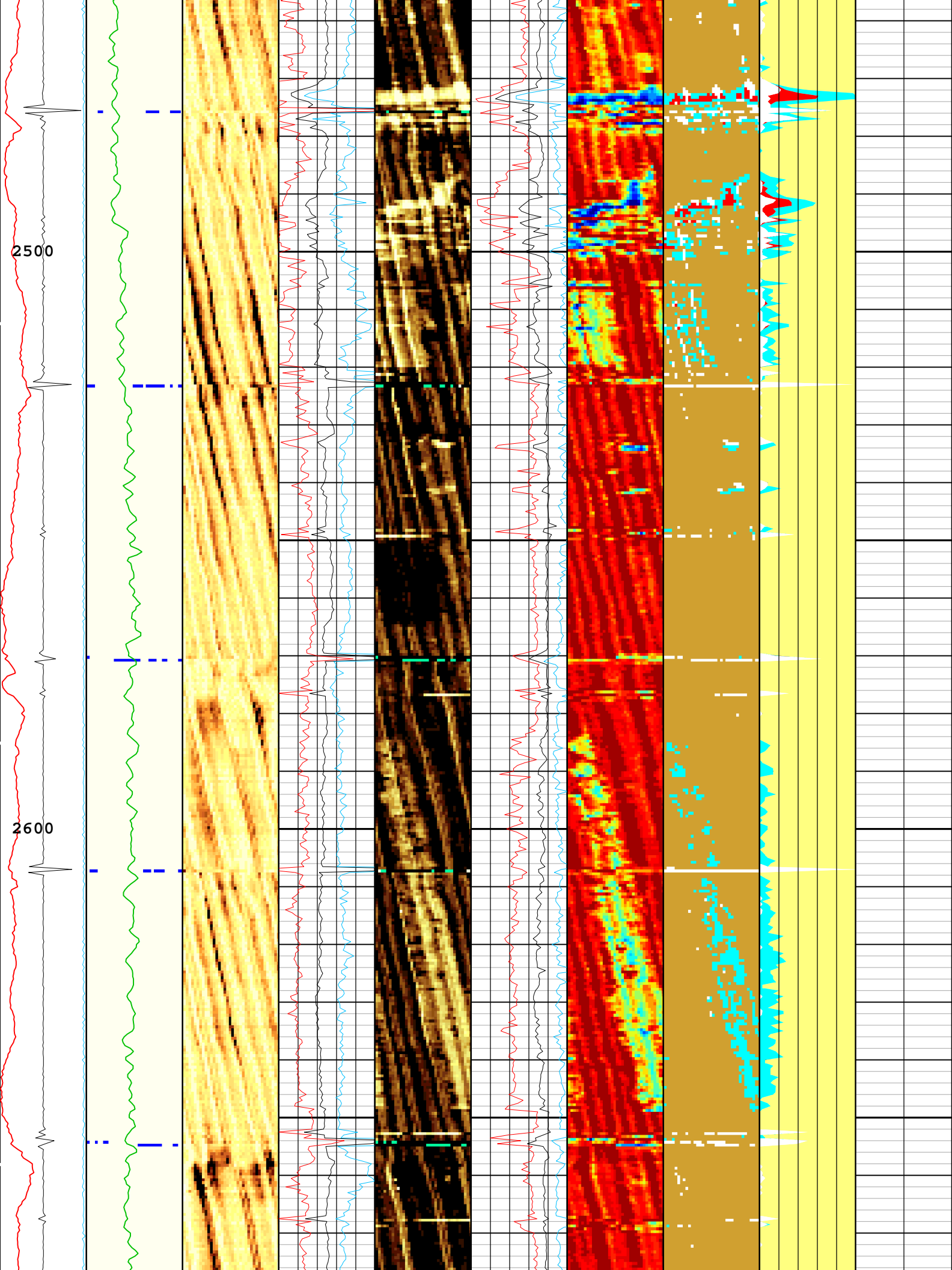


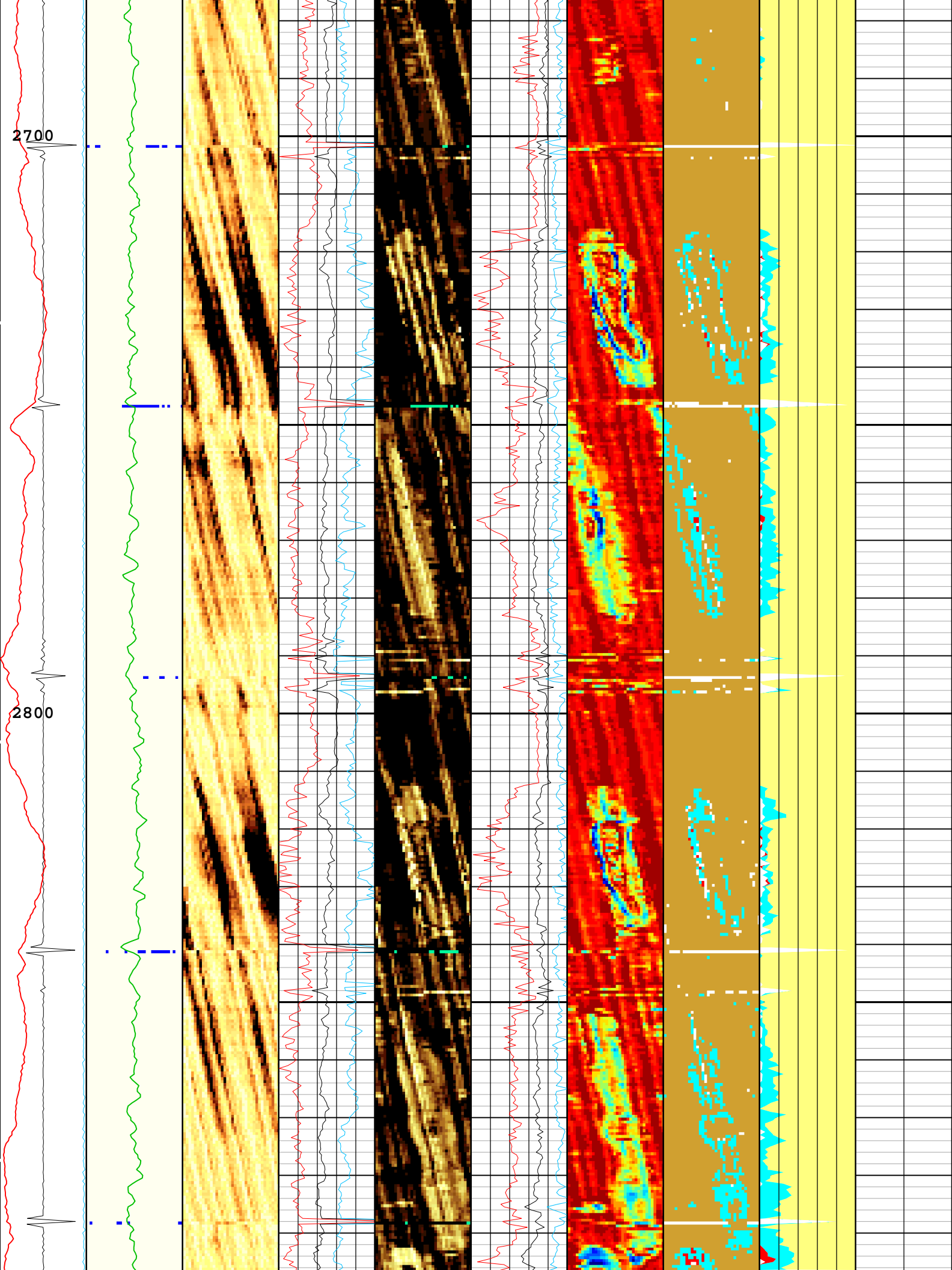


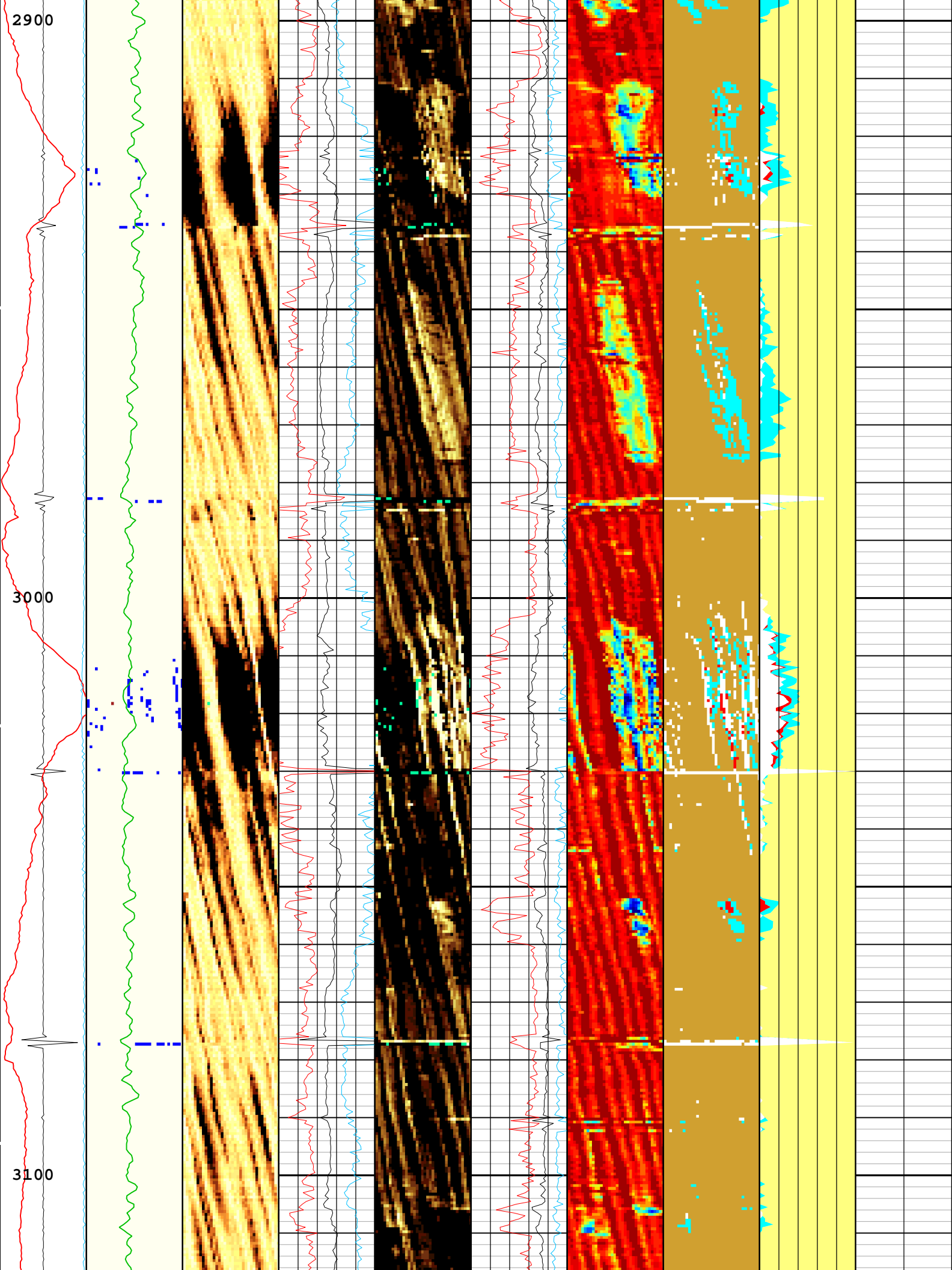


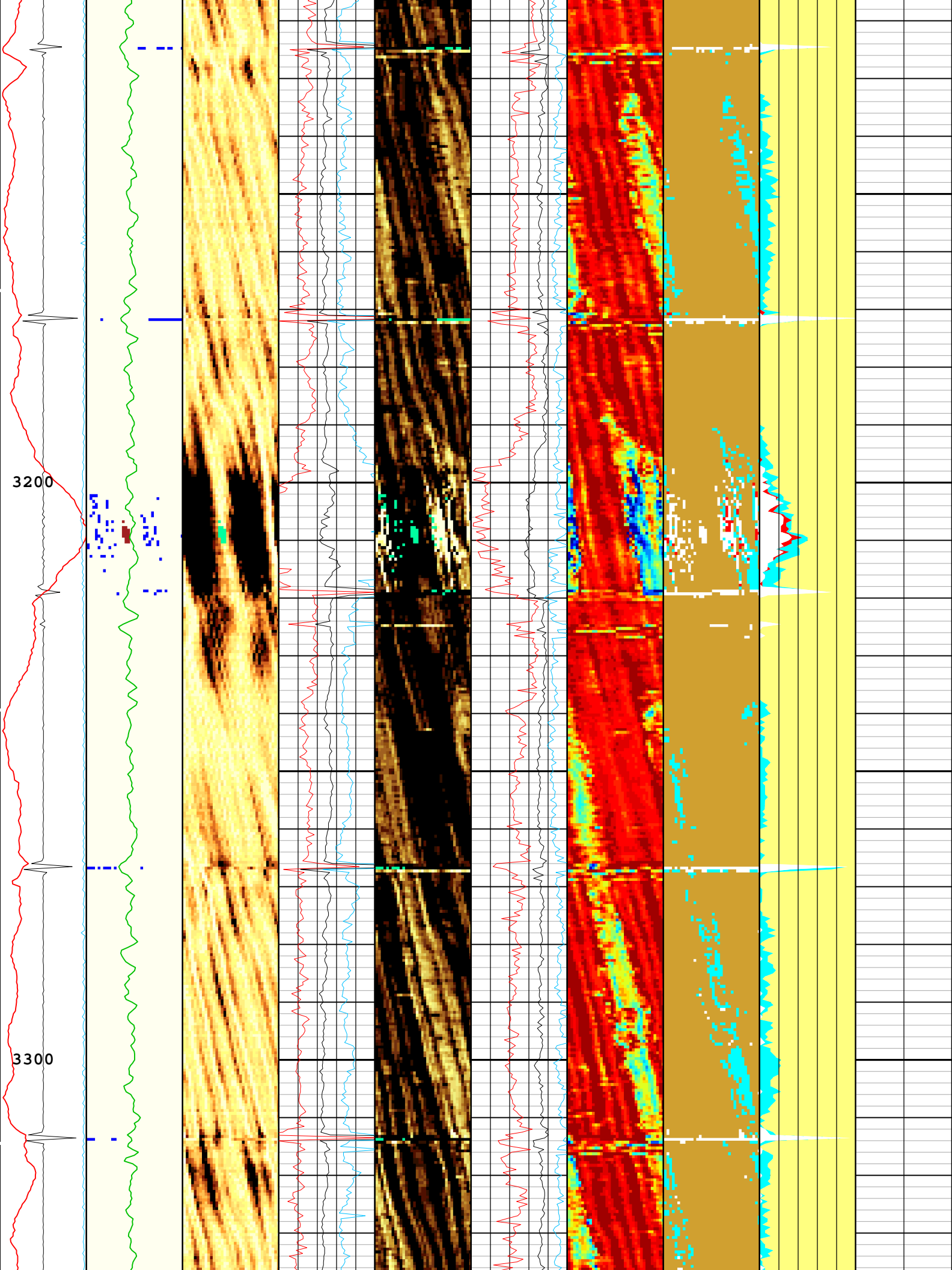


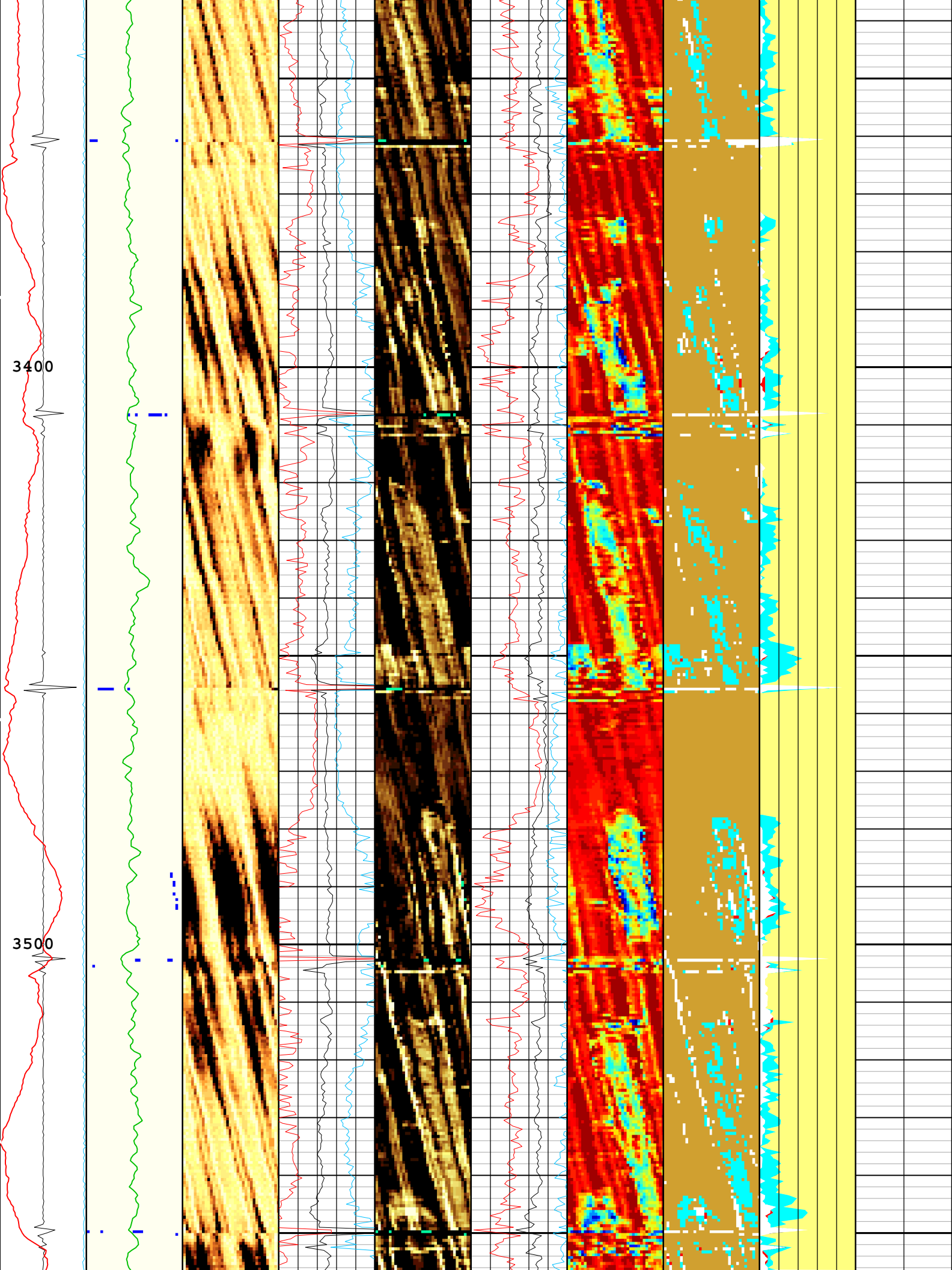


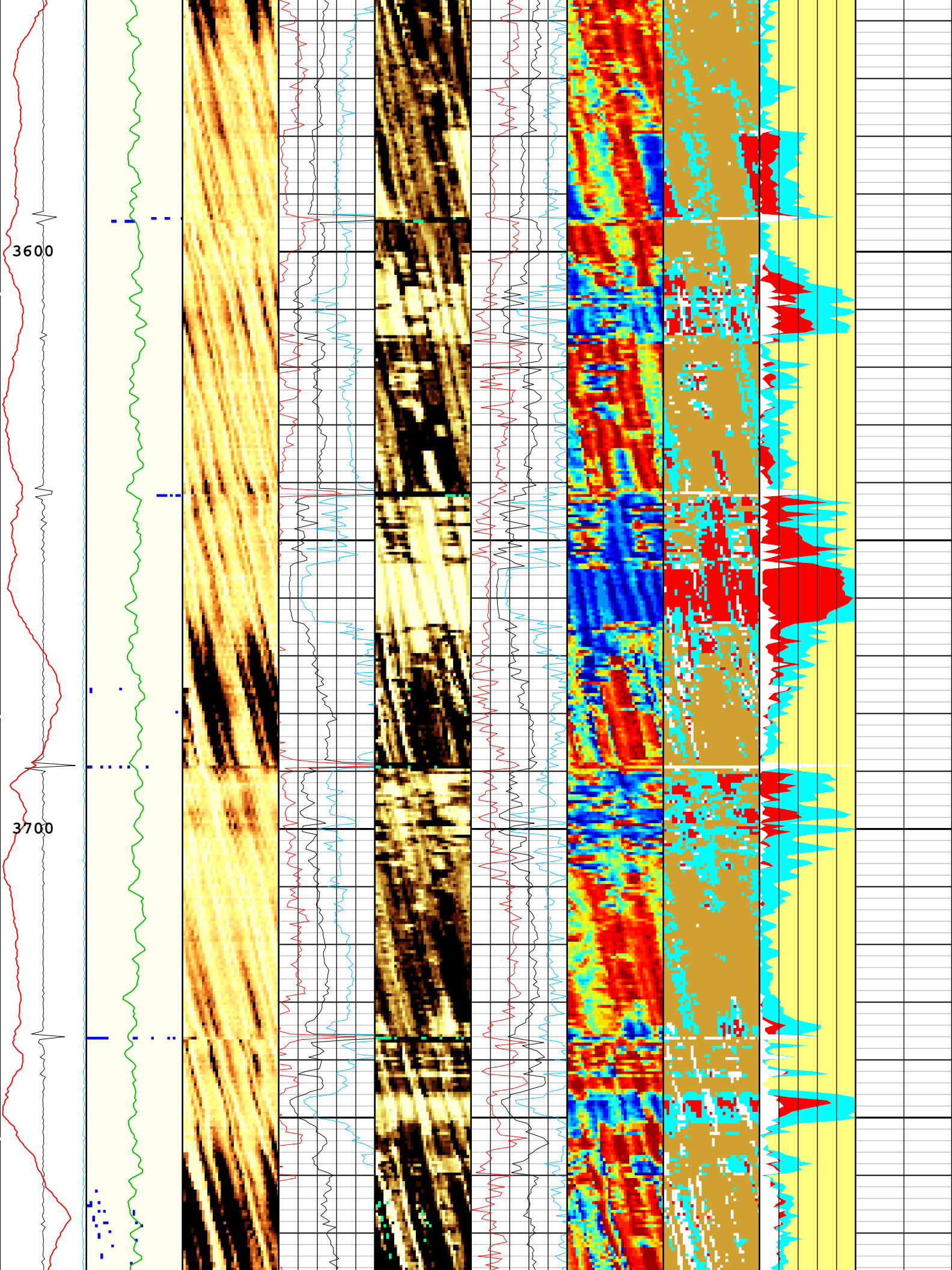


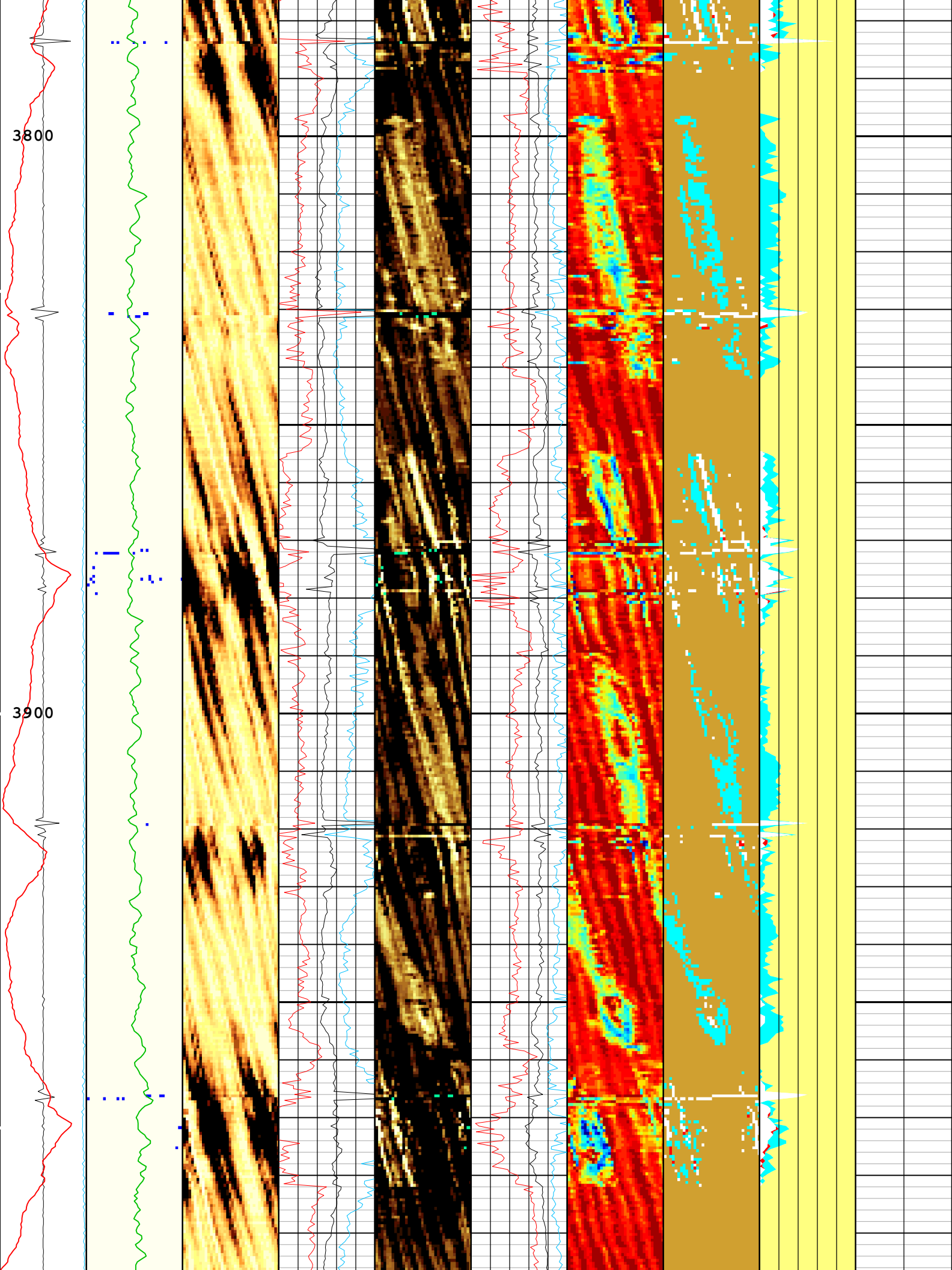


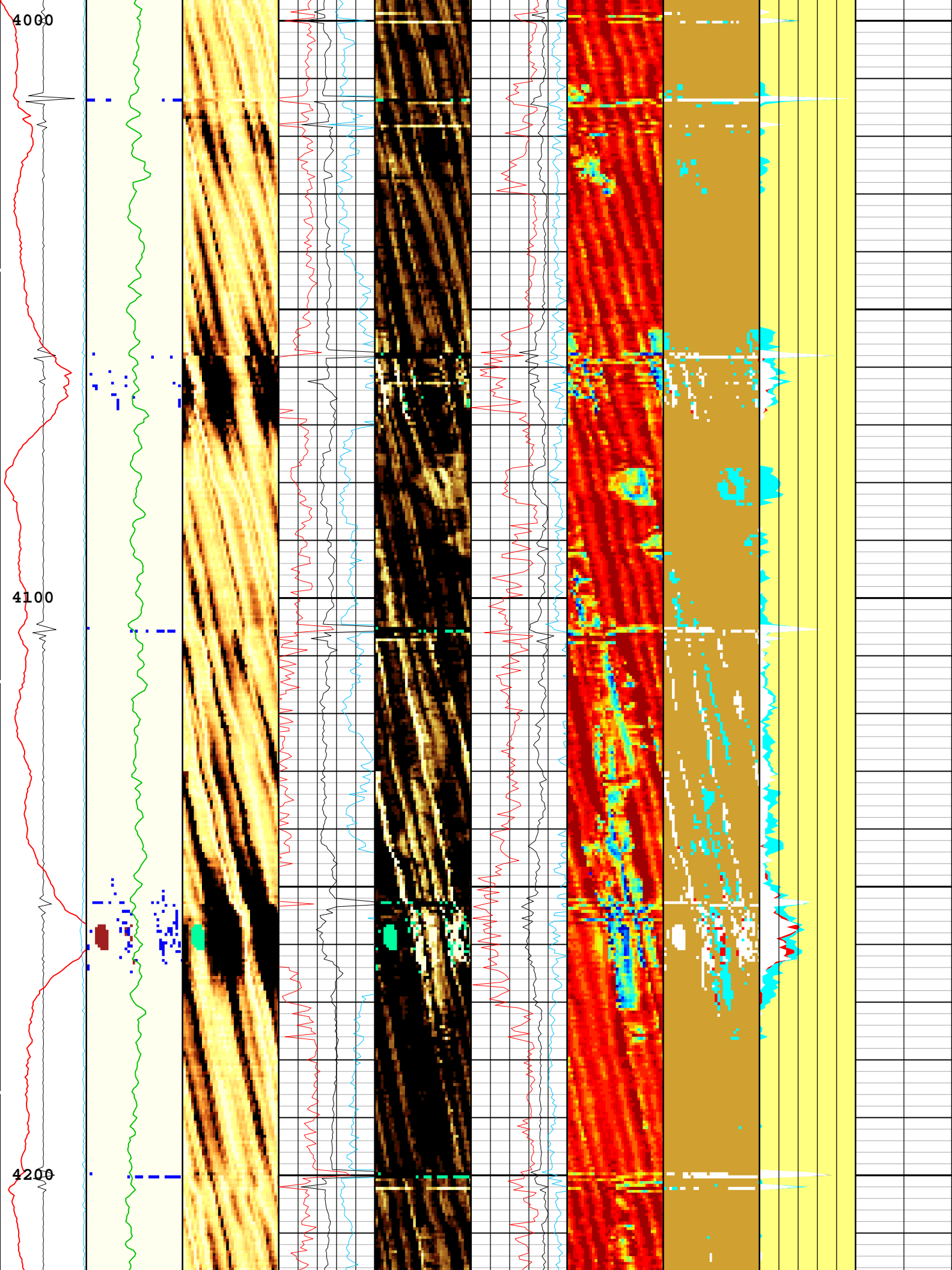


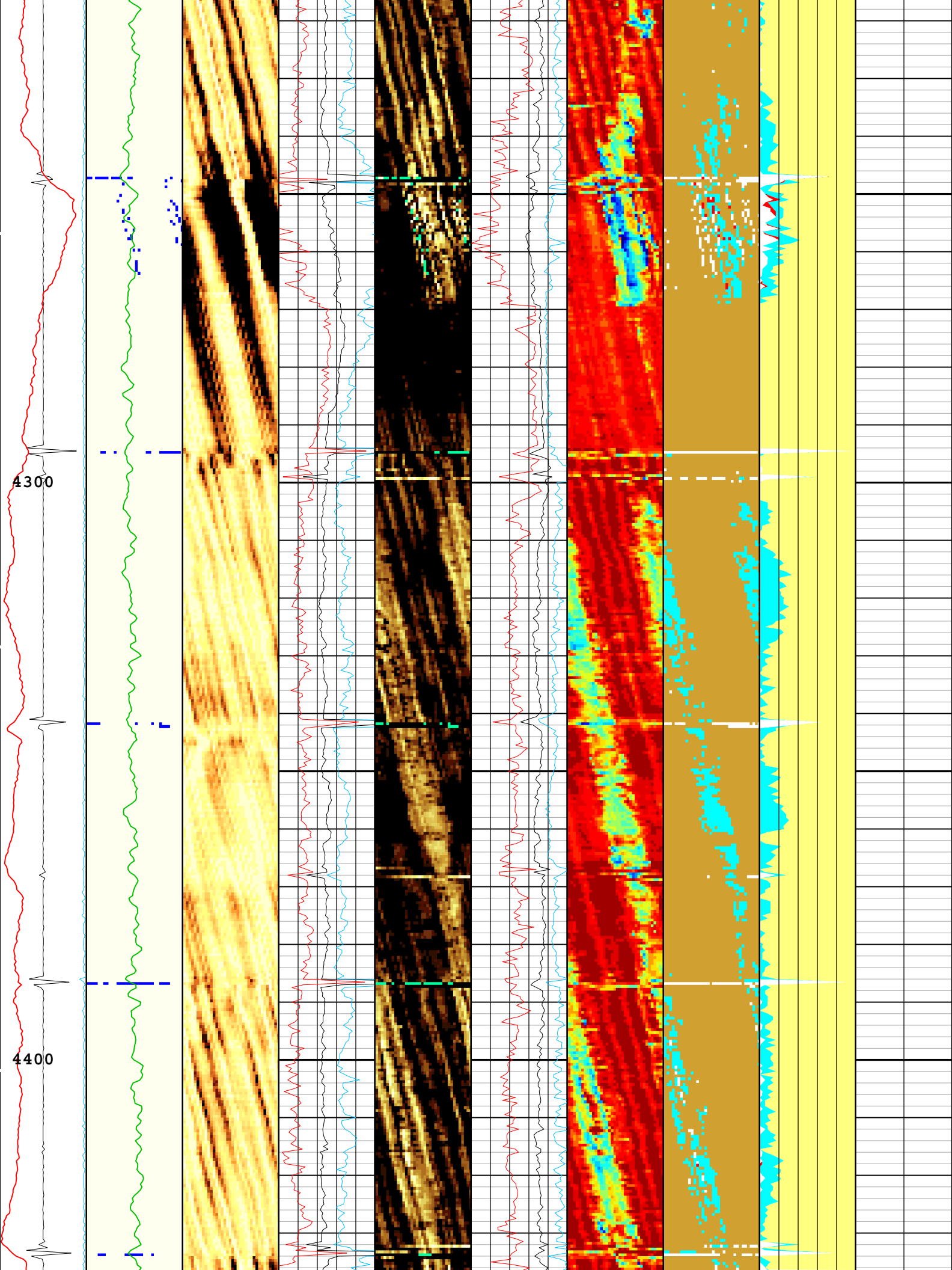


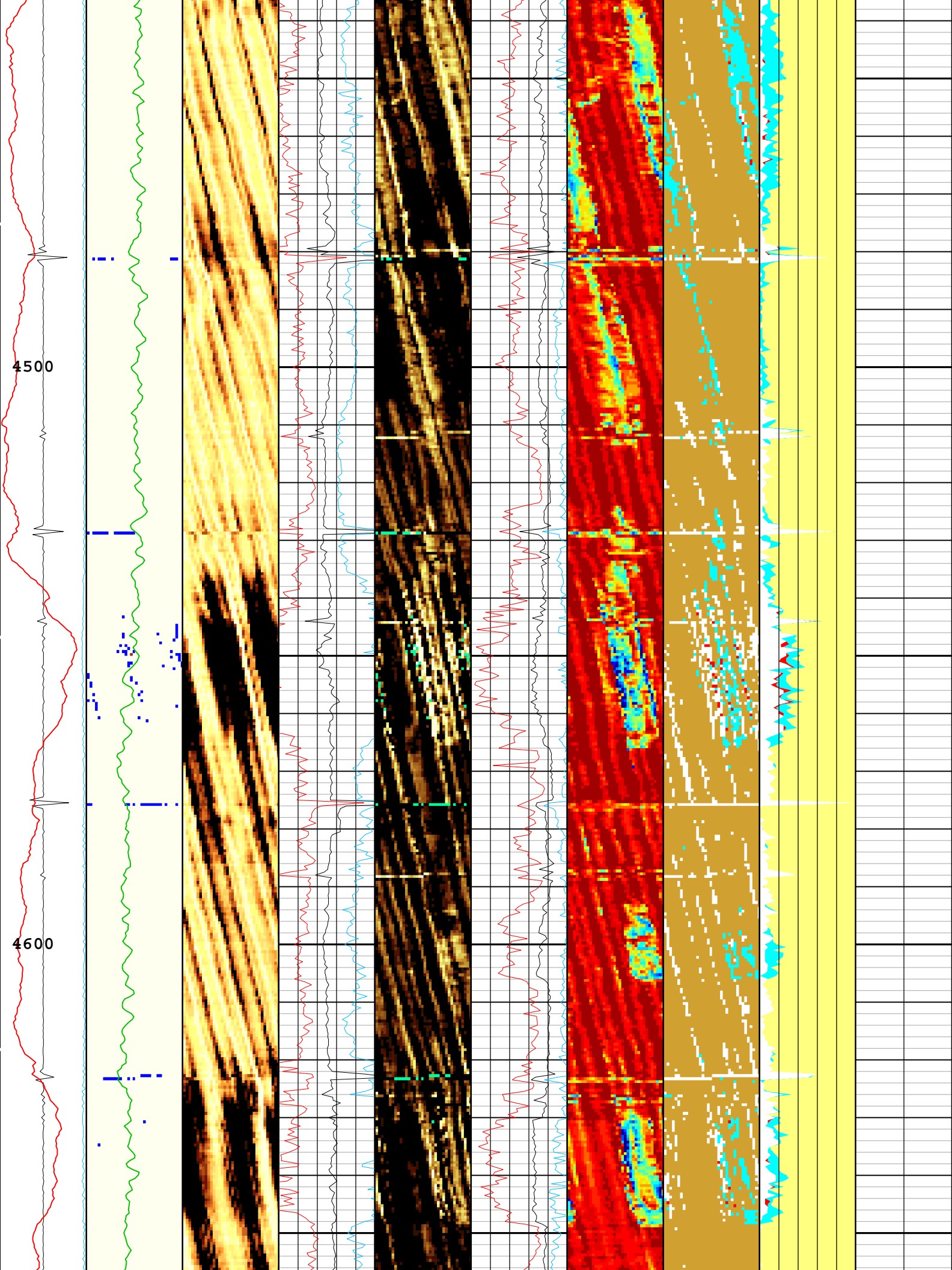


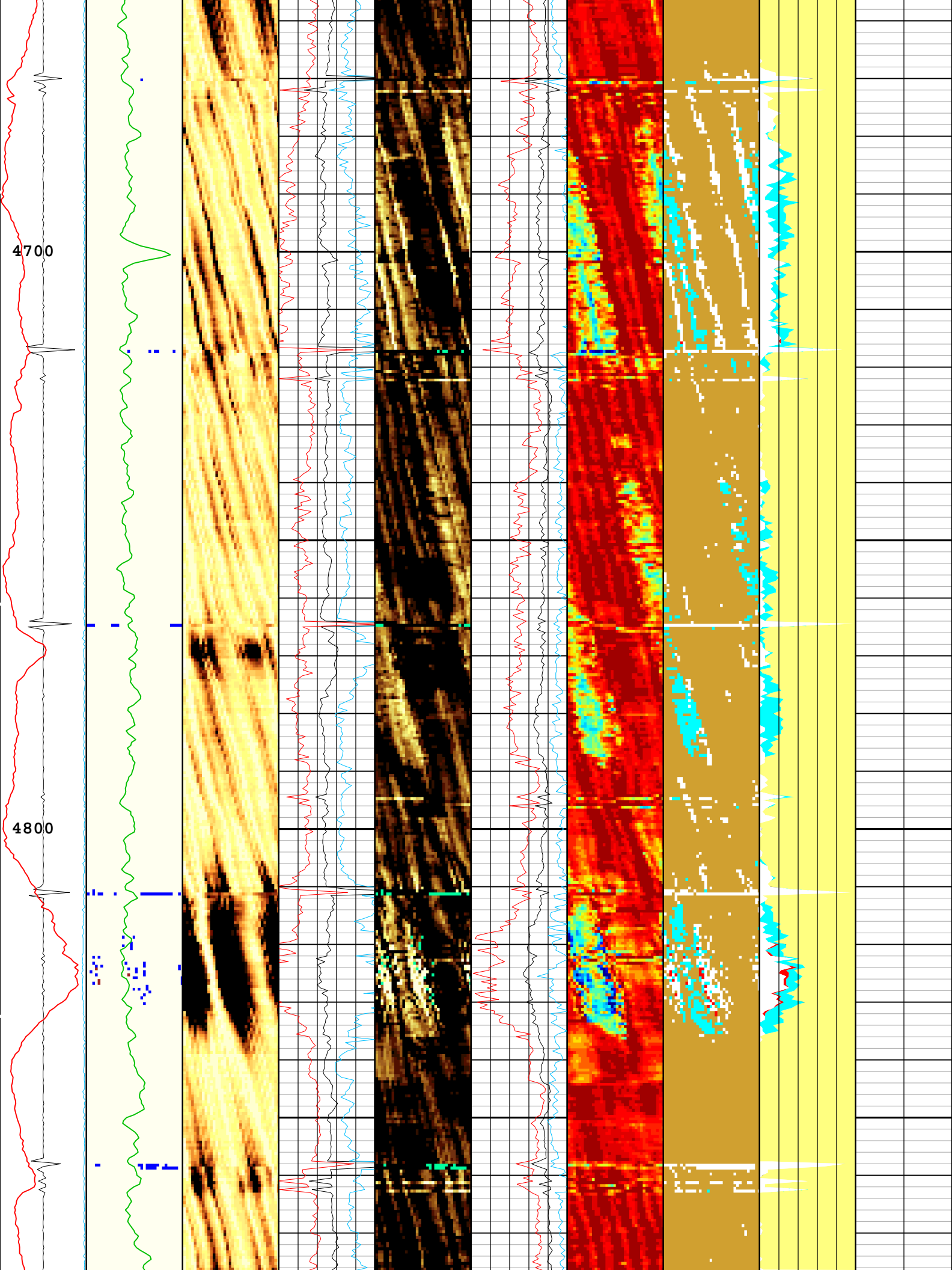


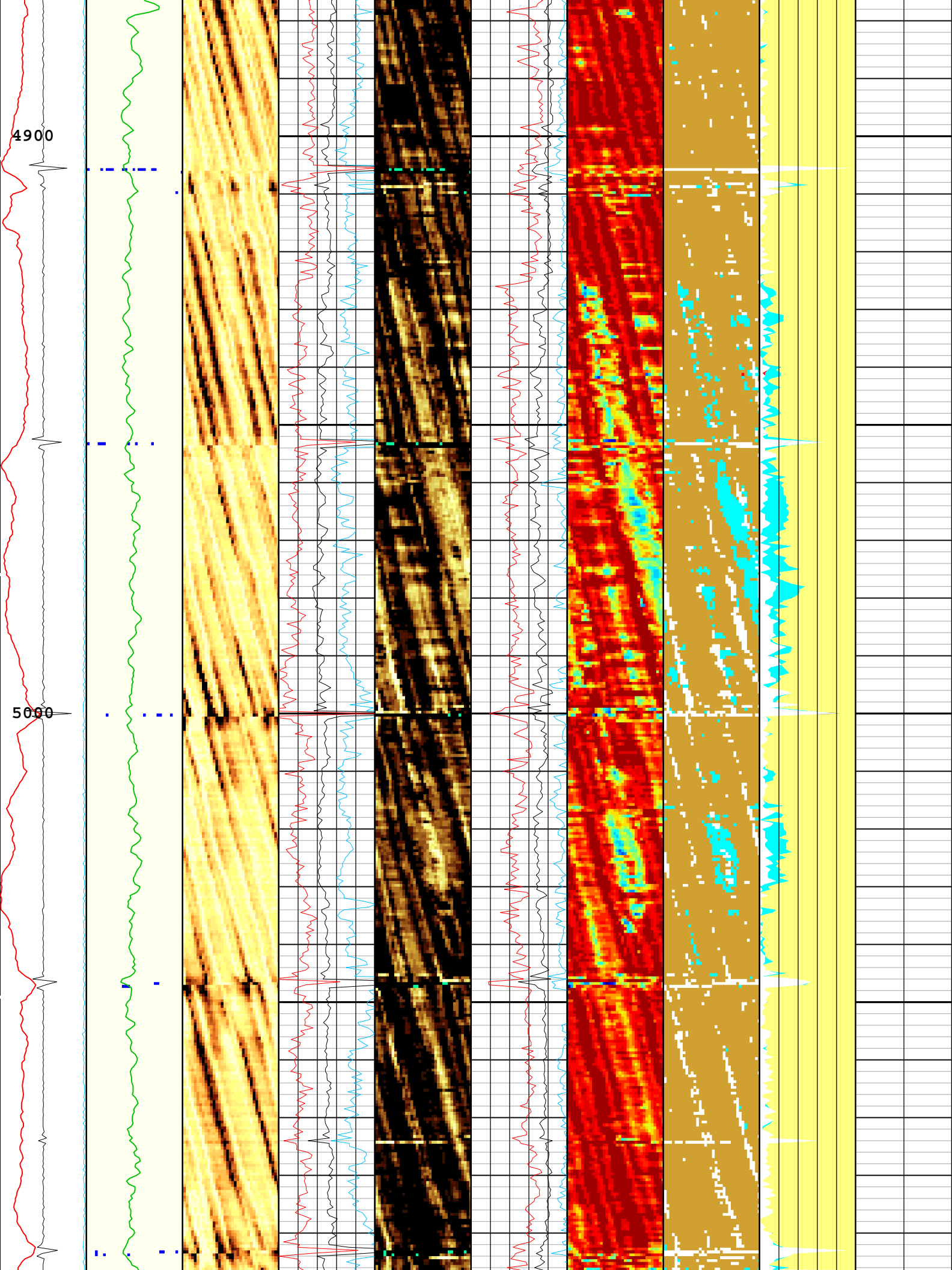


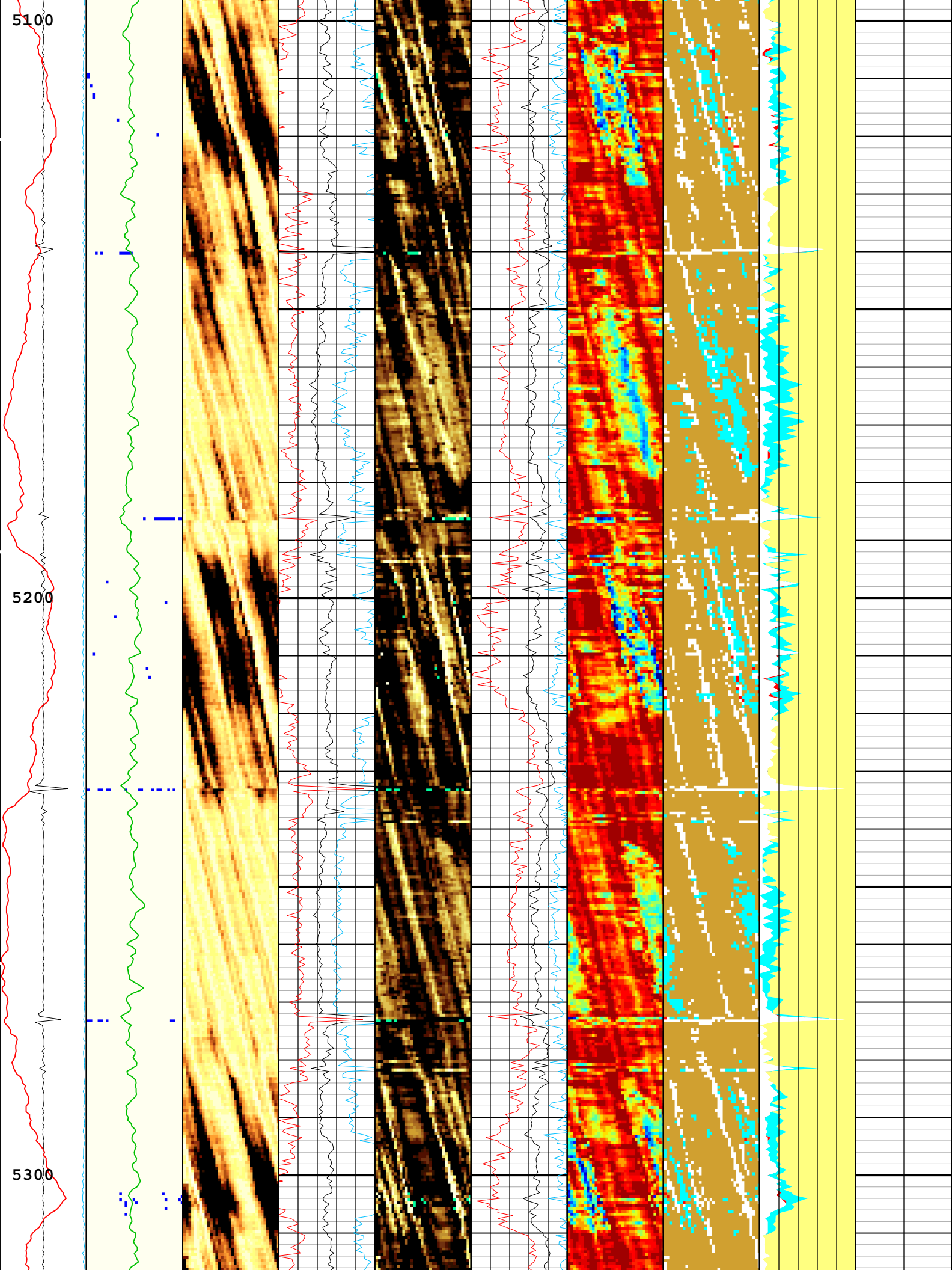


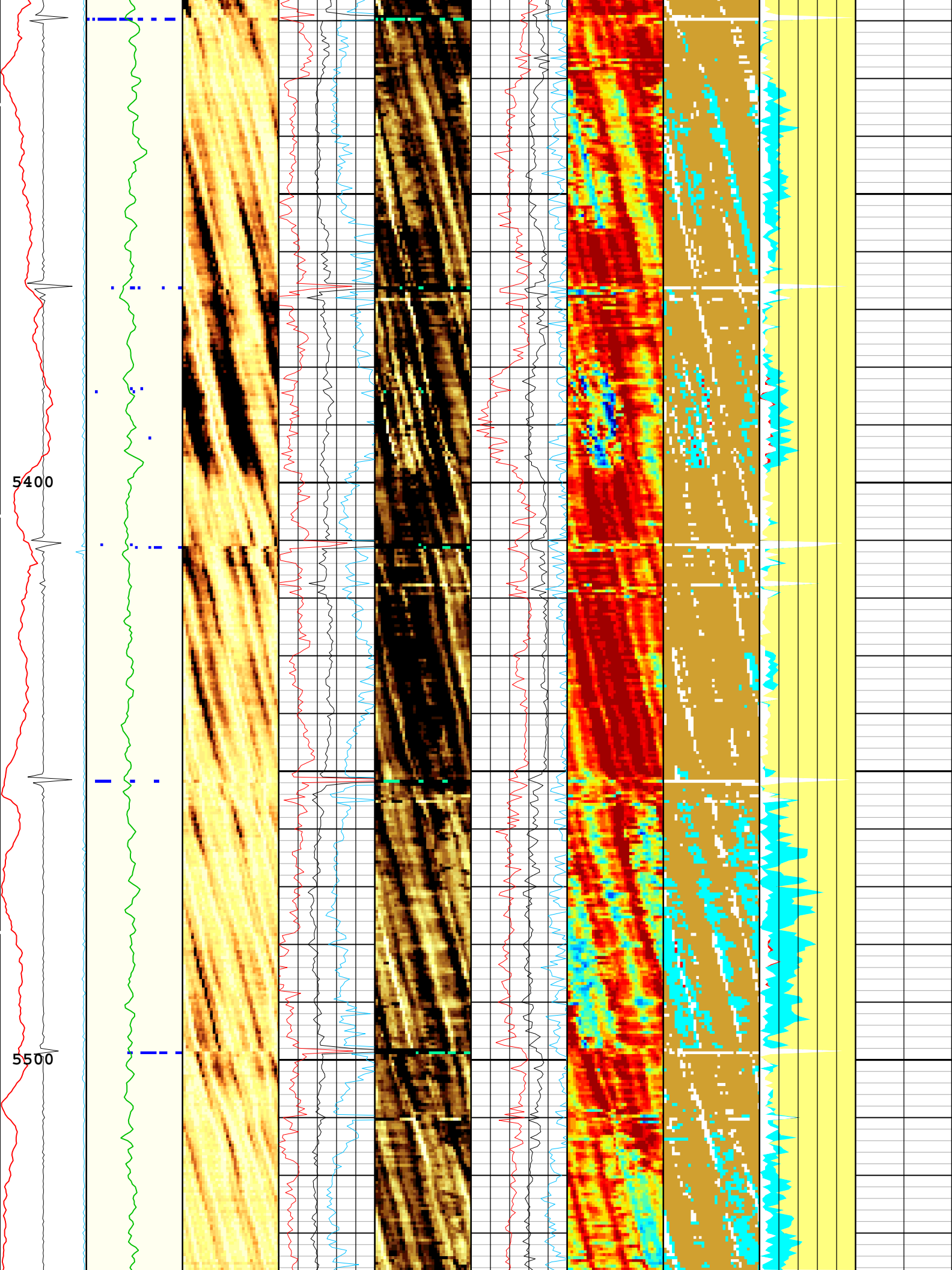


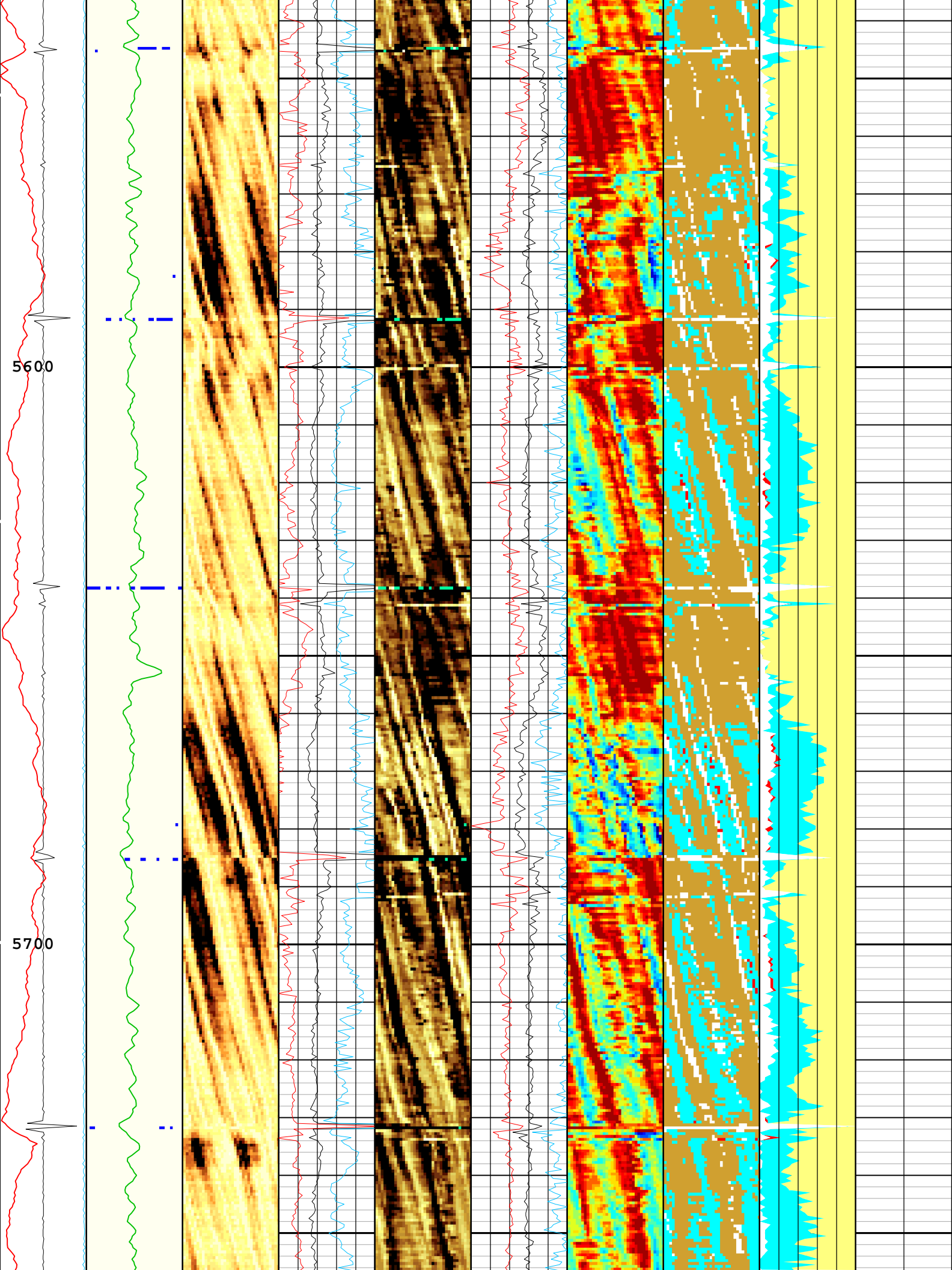


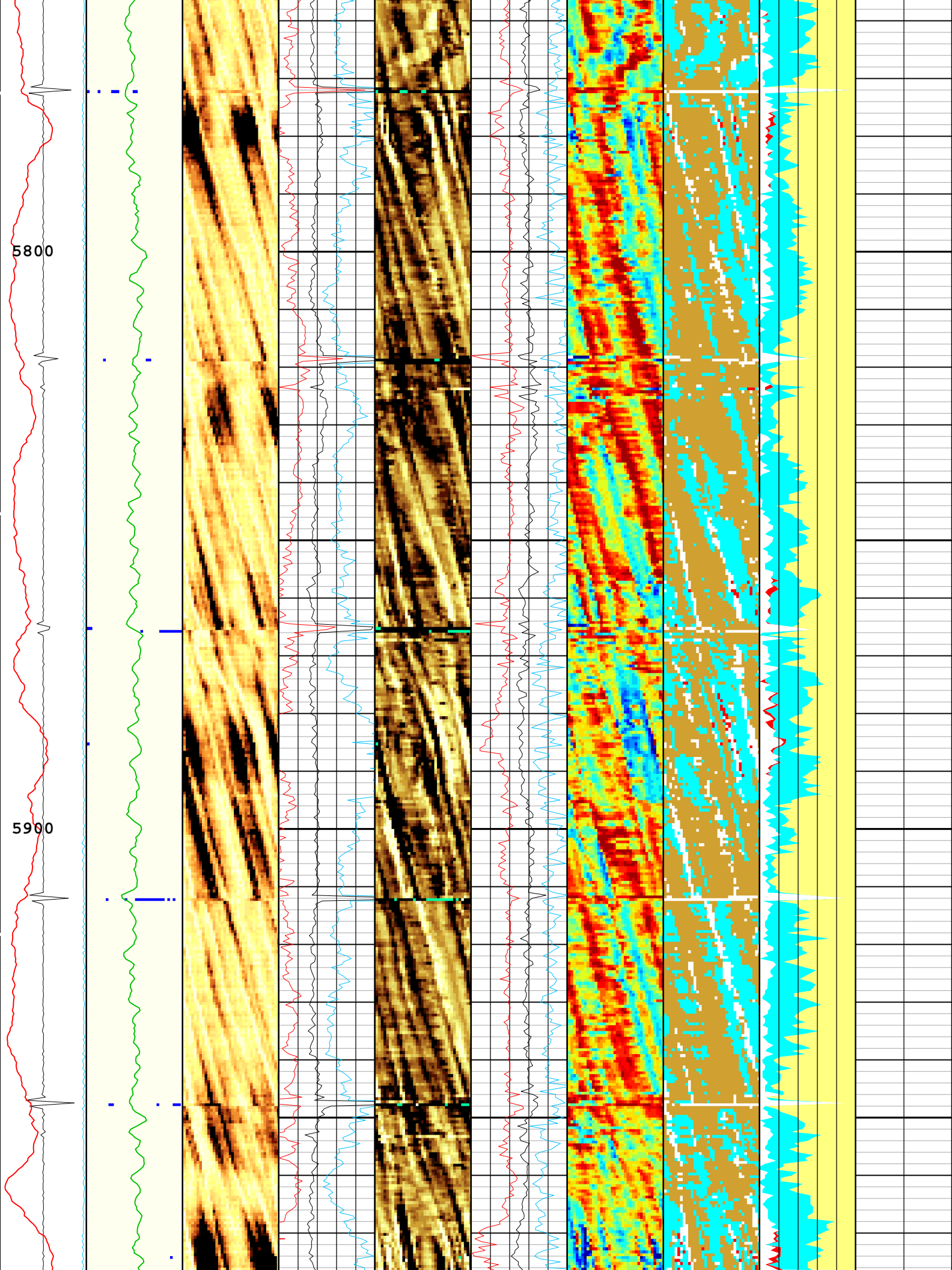


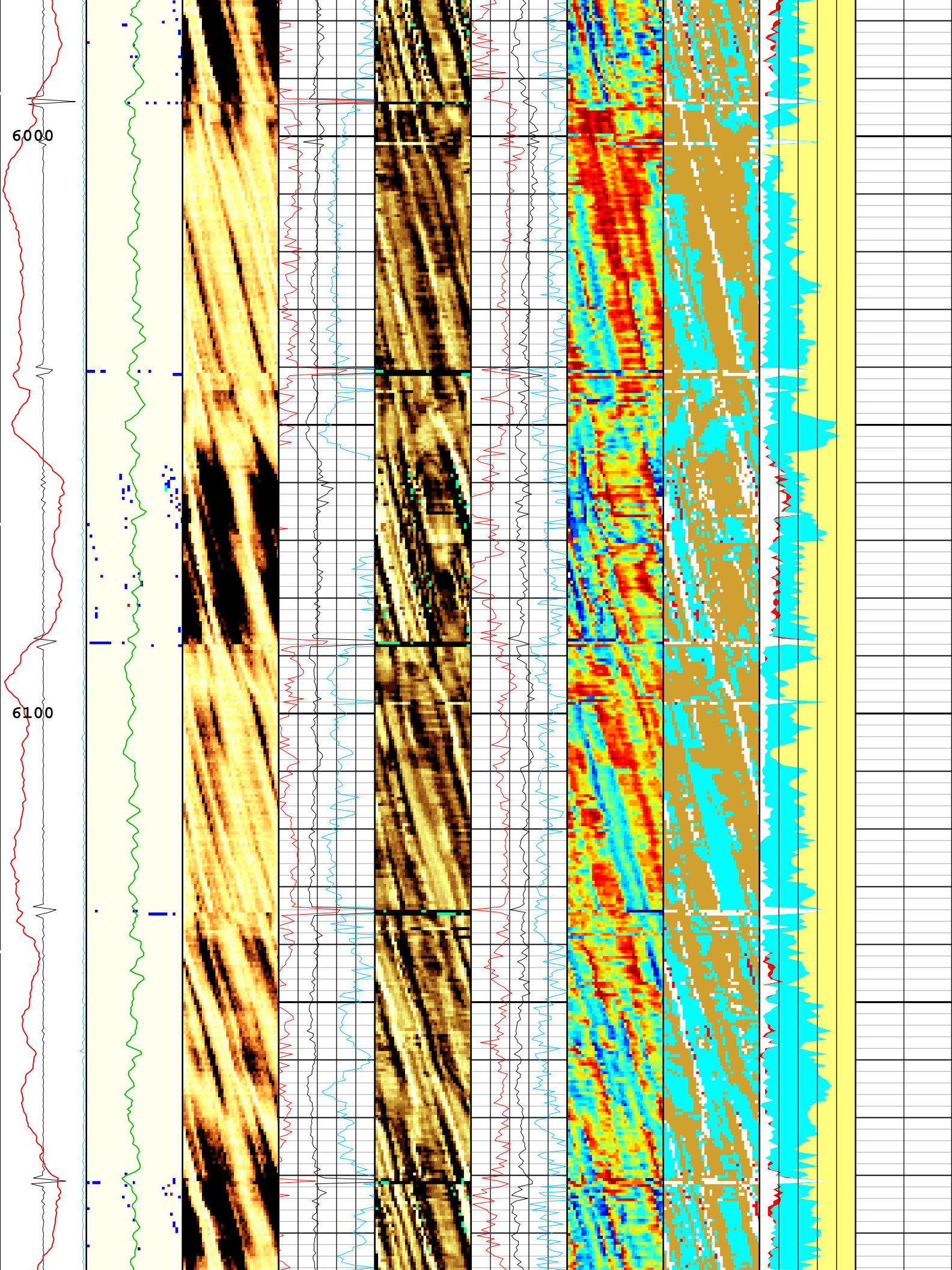


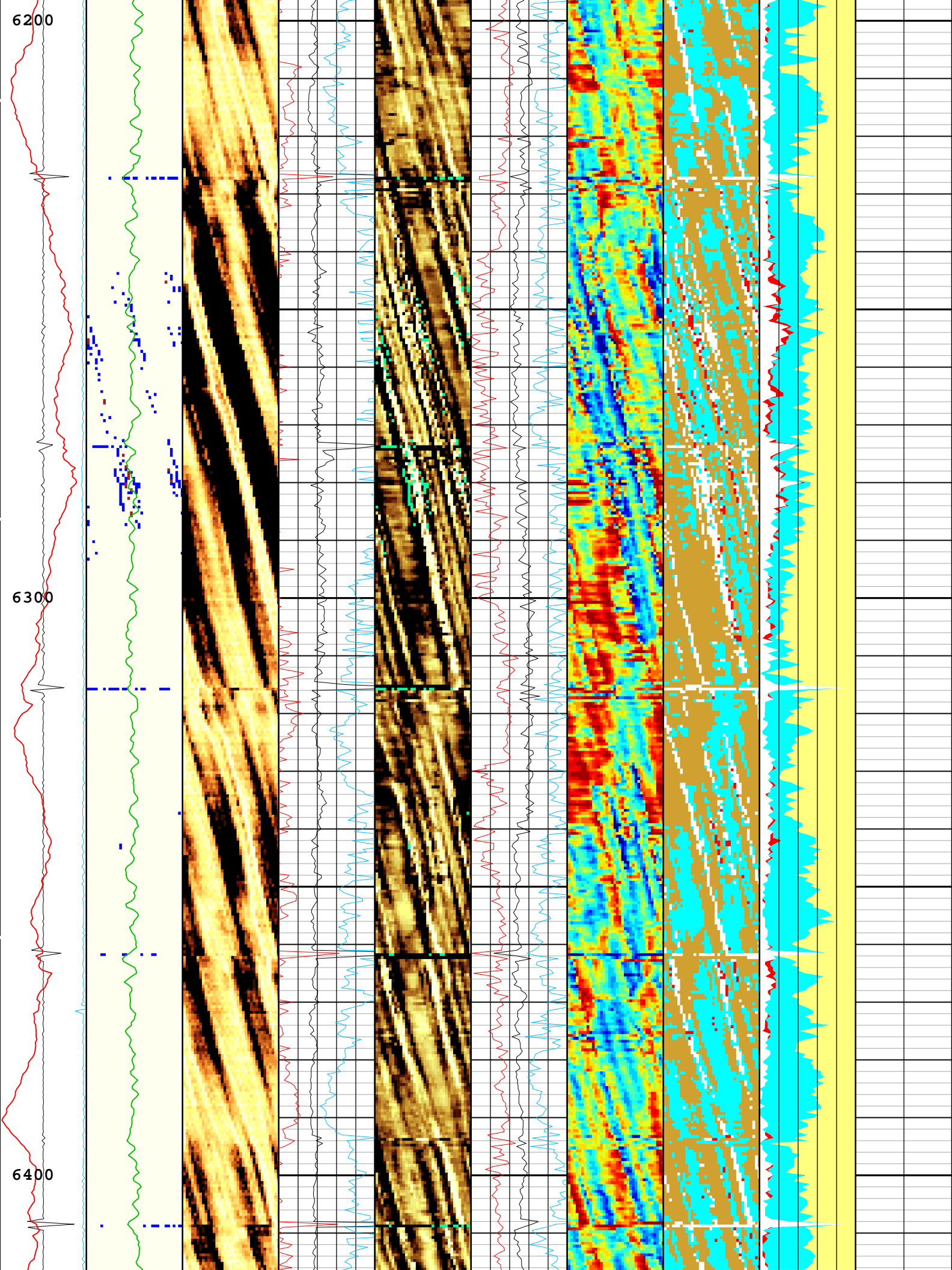


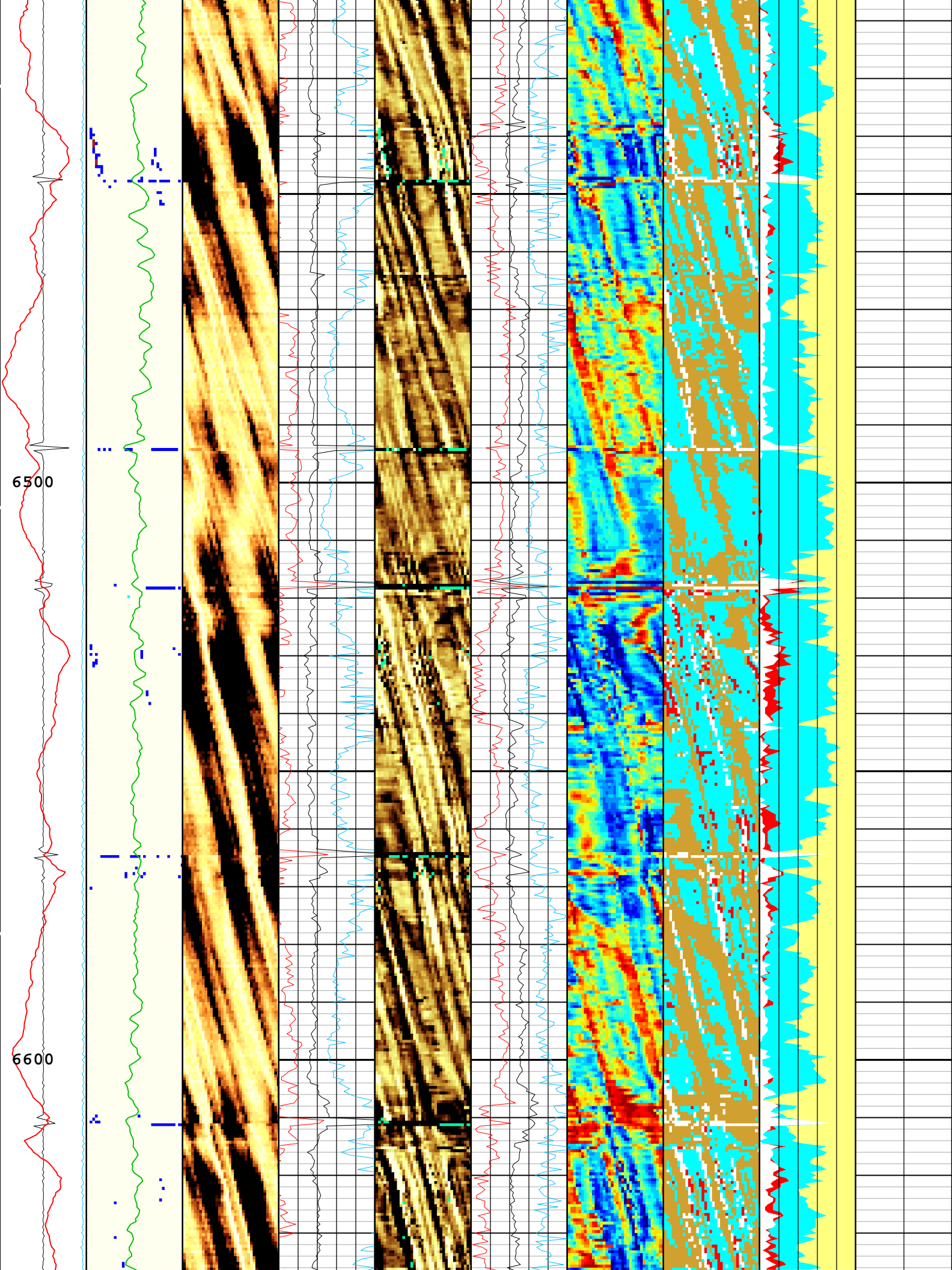


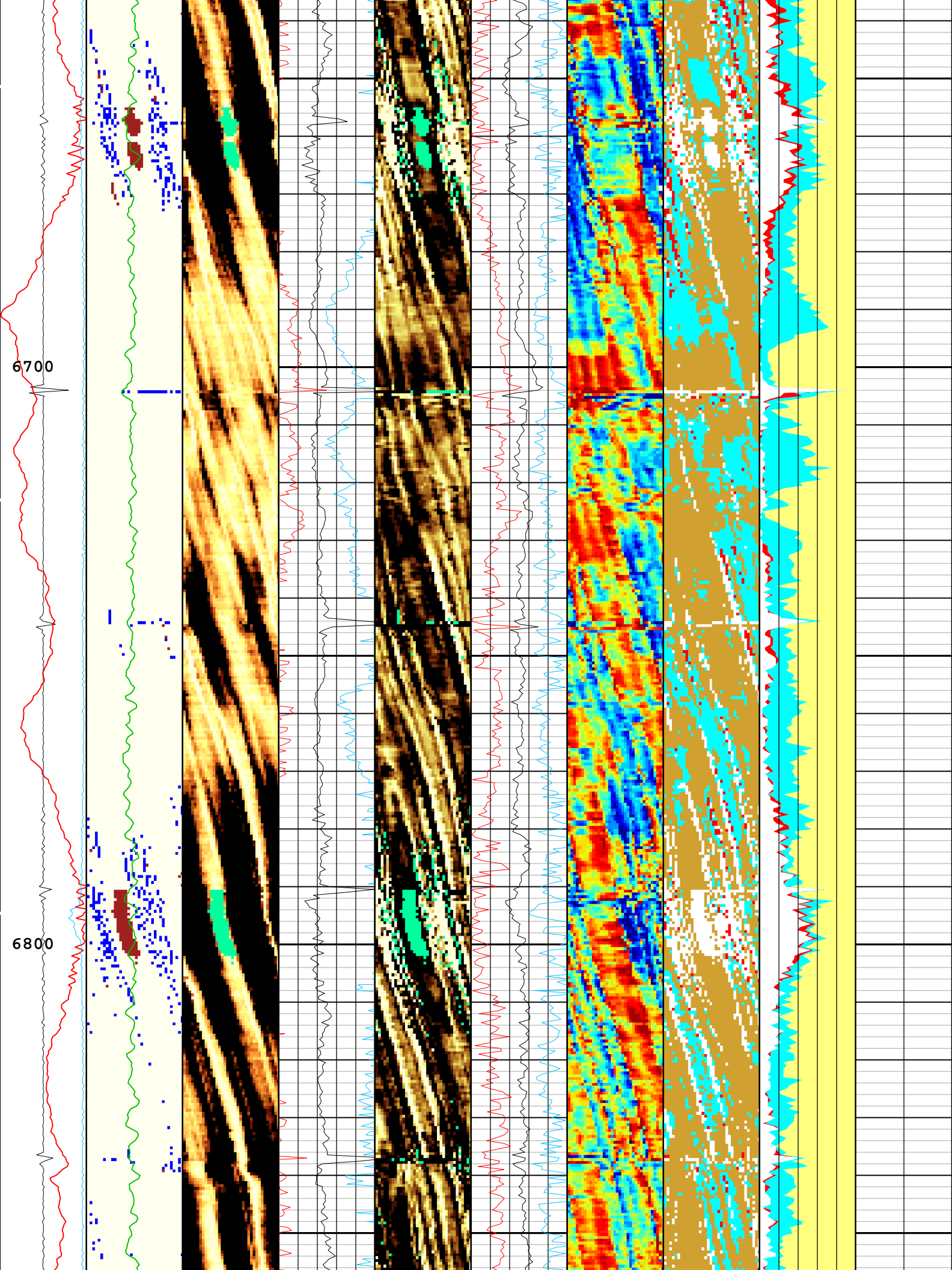


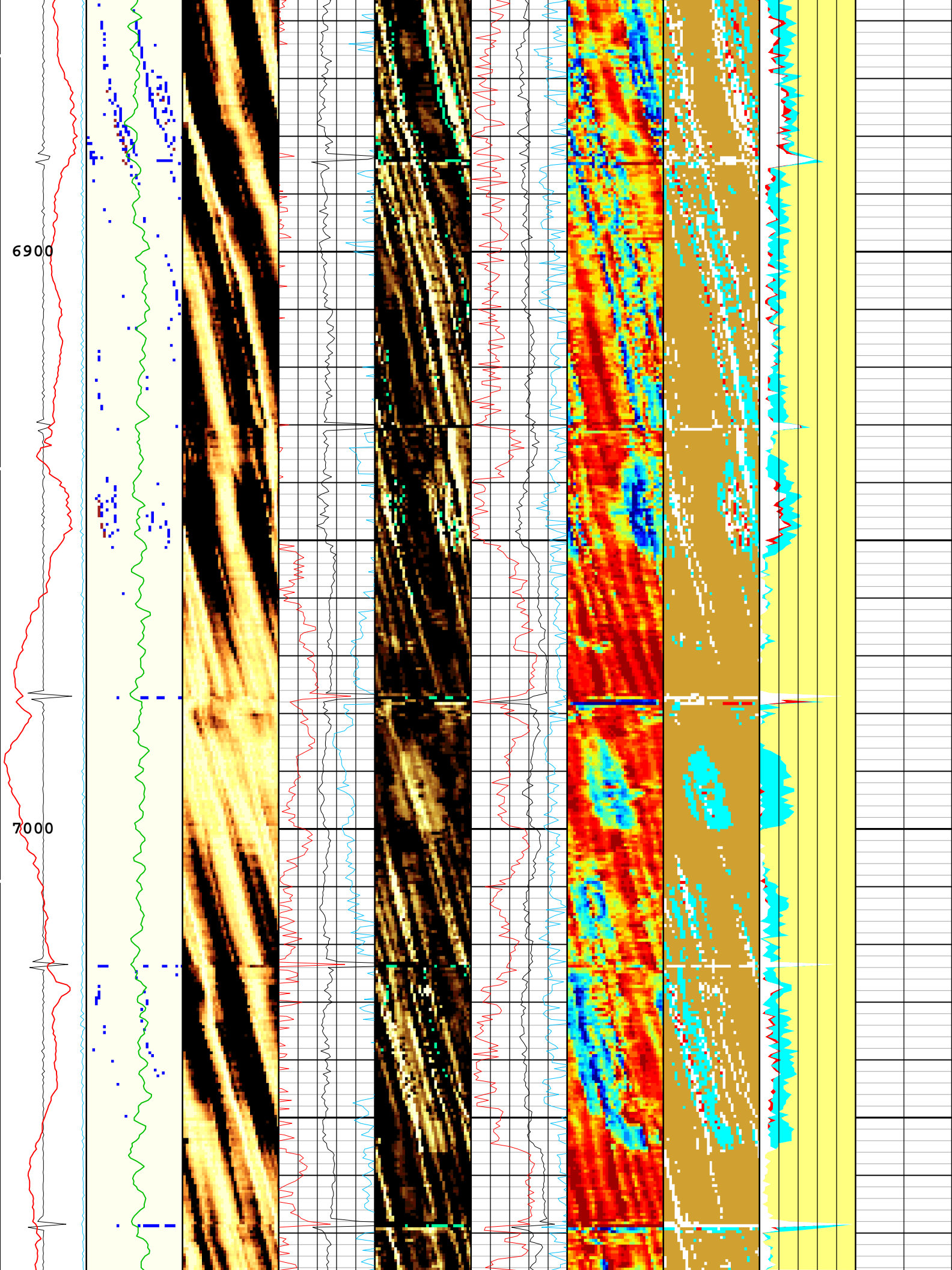


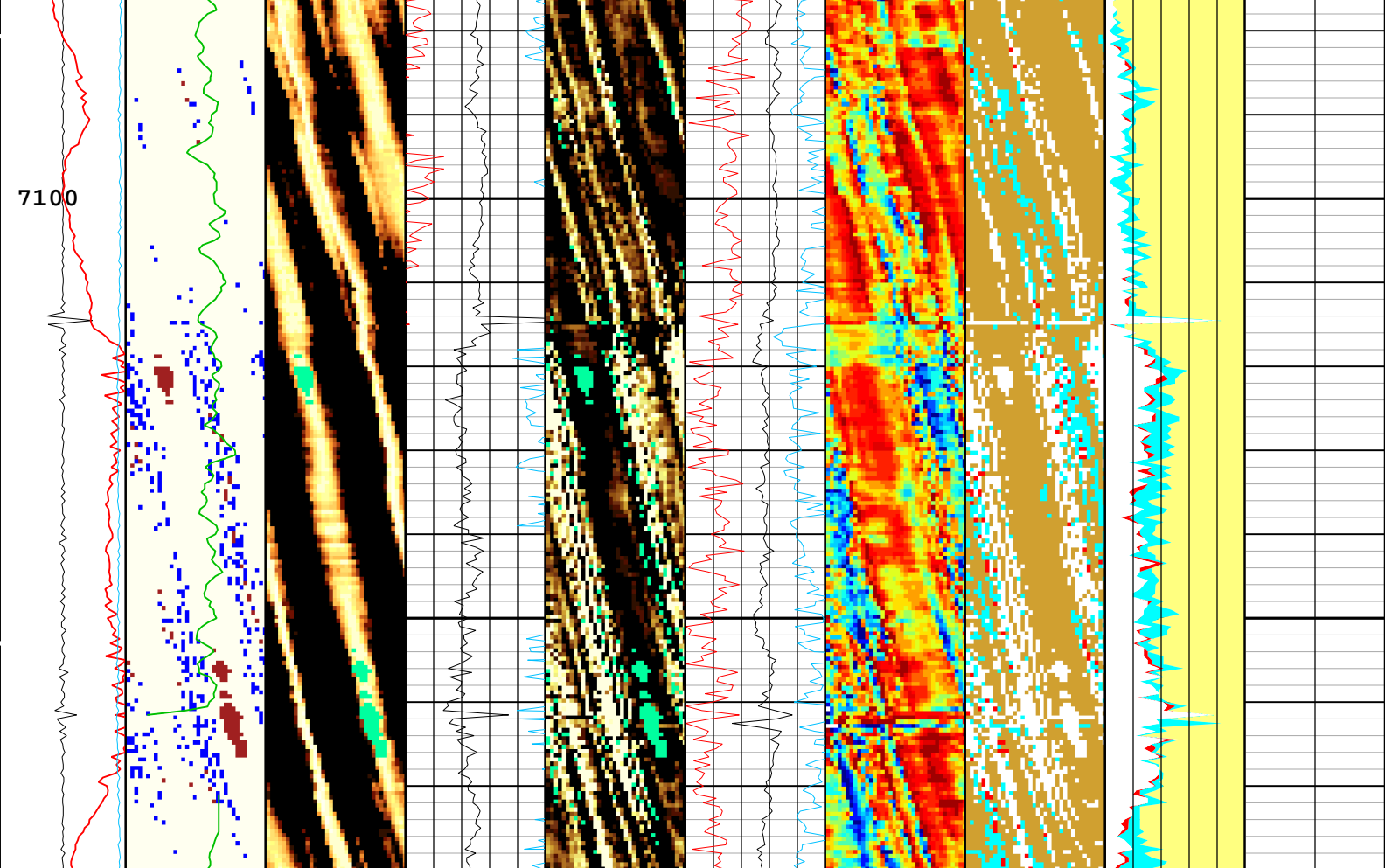












Casing Collar Locator Ultrasonic (CCLU) USIT-E[1]	Absent 1,500 3,500	Absent -5,200 -3,600 -2,000 -0,400	Acoustic Impedance Minimum (AIMN) USIT-E[1]	Absent 0,750 1,750 2,750 3,750	Minimum Flexural Attenuation (U-USIT_UFA N) USIT-E[1]	Absent 42,000 66,000 90,000 114,000	Absent 1,500 3,500	SLG Solid Index
Amplitude of Eccentering (ECCE) USIT-E[1]	Explicit Normalization USIT - USIT Processing Flags (UFLG) USIT-E[1]	Explicit Normalization USIT - Amplitude of Wave (AWBK) USIT-E[1] (dB)	-1 Mrayl 9	Custom Normalization USIT - Acoustic Impedance (AIBK) USIT-E[1] (Mrayl)	0 dB/m 150	Custom Normalization USIT - Flexural Attenuation (UFAK) USIT-E[1] (dB/m)	Explicit Normalization USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E[1]	SLG Liquid Index
0 in 0.5	USIT Processing Flags (UFLG[0]) USIT-E[1]		Acoustic Impedance Average (AIAV) USIT-E[1]		Average Flexural Attenuation (U-USIT_UFA V) USIT-E[1]			SLG Gas Index
Motor Revolution Speed (RSAV) USIT-E[1]	1 5		-1 Mrayl 9		0 dB/m 150			SLG White Point Index
6 c/s 7.5	Gamma Ray (ECGR_EDTC) EDTC-B[1]		Acoustic Impedance Maximum (AIMX) USIT-E[1]		Maximum Flexural Attenuation (U-USIT_UFA X) USIT-E[1]			
0 gAPI 150			-1 Mrayl 9		0 dB/m 150			

TIME_1900 - Time Marked every 60.00 (s)

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

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

Description: USI IBC SLG Format: Log (IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 11-Jul-2018 18:24:51

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	12123.63	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	8.8	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	10	lbm/gal
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
GR_MULTIPLIER	Gamma Ray Multiplier	EDTC-B	1	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	18.61	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	1.37	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1.15	
RCOD	Reference Calibrator Outer Diameter	USIT-E	4.5	in
RCSO	Reference Calibrator Standoff	USIT-E	0.842	in
RCTH	Reference Calibrator Thickness	USIT-E	0.216	in
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	70	%
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.6	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	2.25	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

ONEDepth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	20	55	108
BS	13.5	108	2518
BS	8.5	2518	7180
CDEN	15.52	55	4500
CDEN	16.19	4500	7180

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
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

ONETime Zoned Parameters

Pass Log[4]:Up

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
EMXV	100	27-Jun-2018 17:49:23	27-Jun-2018 18:10:37	7339.87	5800.41
EMXV	90	27-Jun-2018 18:10:37	27-Jun-2018 18:38:01	5800.41	3824.58
EMXV	80	27-Jun-2018 18:38:01	27-Jun-2018 18:53:00	3824.58	2731.92
EMXV	90	27-Jun-2018 18:53:00	27-Jun-2018 18:57:13	2731.92	2423.75
EMXV	80	27-Jun-2018 18:57:13	27-Jun-2018 19:20:05	2423.75	757.46
EMXV	90	27-Jun-2018 19:20:05	27-Jun-2018 19:31:30	757.46	130.08

Pass Log[5]:Up

EMXV	90	27-Jun-2018 19:34:11	27-Jun-2018 19:37:27	171.75	49.87
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All depth are at tool zero.

Composite 1

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IBC SLG Composite Main Pass

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	94.38 ft	7339.89 ft	27-Jun-2018 5:49:23 PM	27-Jun-2018 7:31:30 PM	ON	7.29 ft	Yes
ONE	Log[5]:Up	Up	49.65 ft	182.99 ft	27-Jun-2018 7:33:22 PM	27-Jun-2018 7:37:27 PM	ON	7.55 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Crestone Peak Resources and Operating LLC

Well:Ruegge 3D-4H-N165






Composite 1:S034

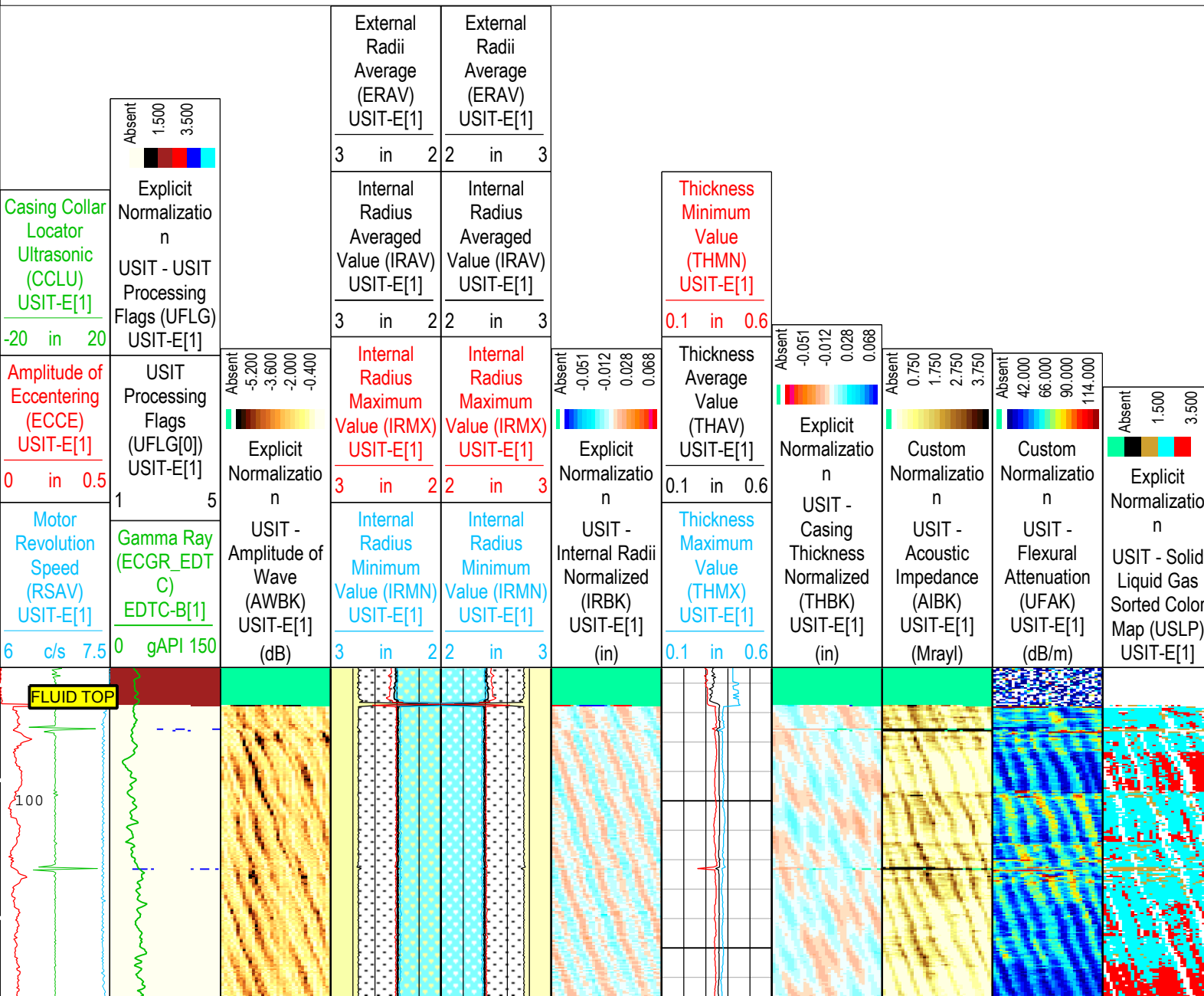
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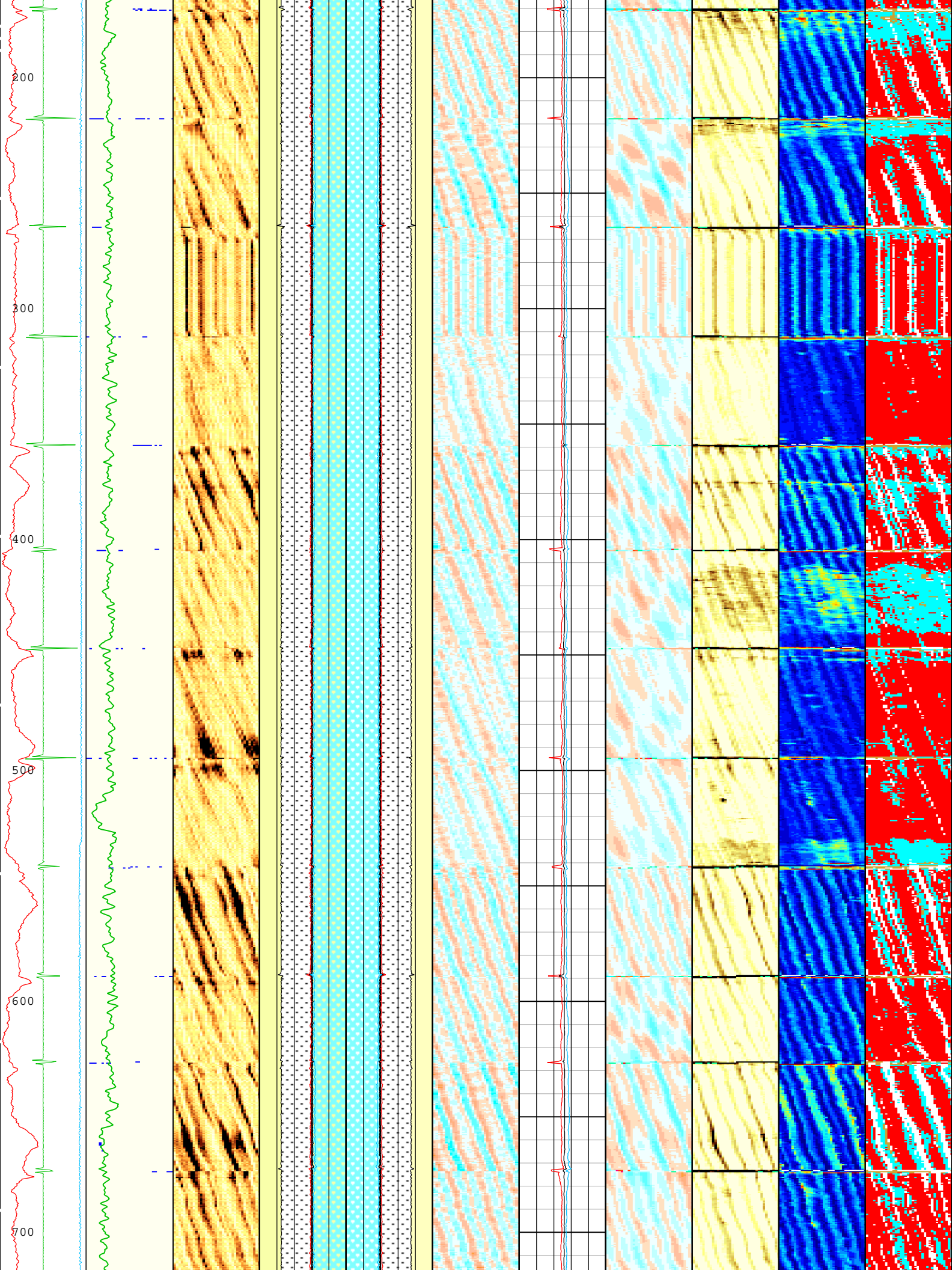
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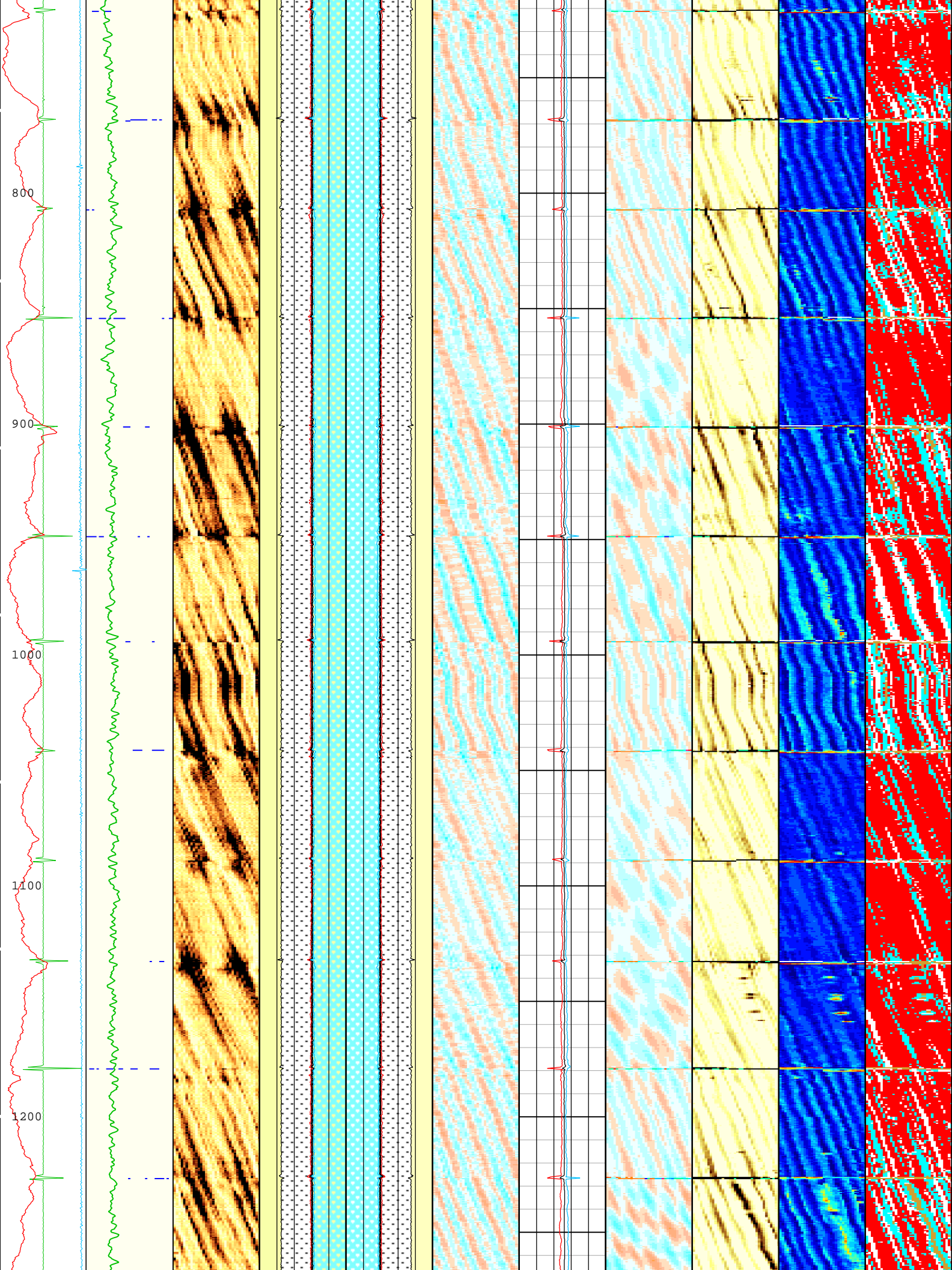
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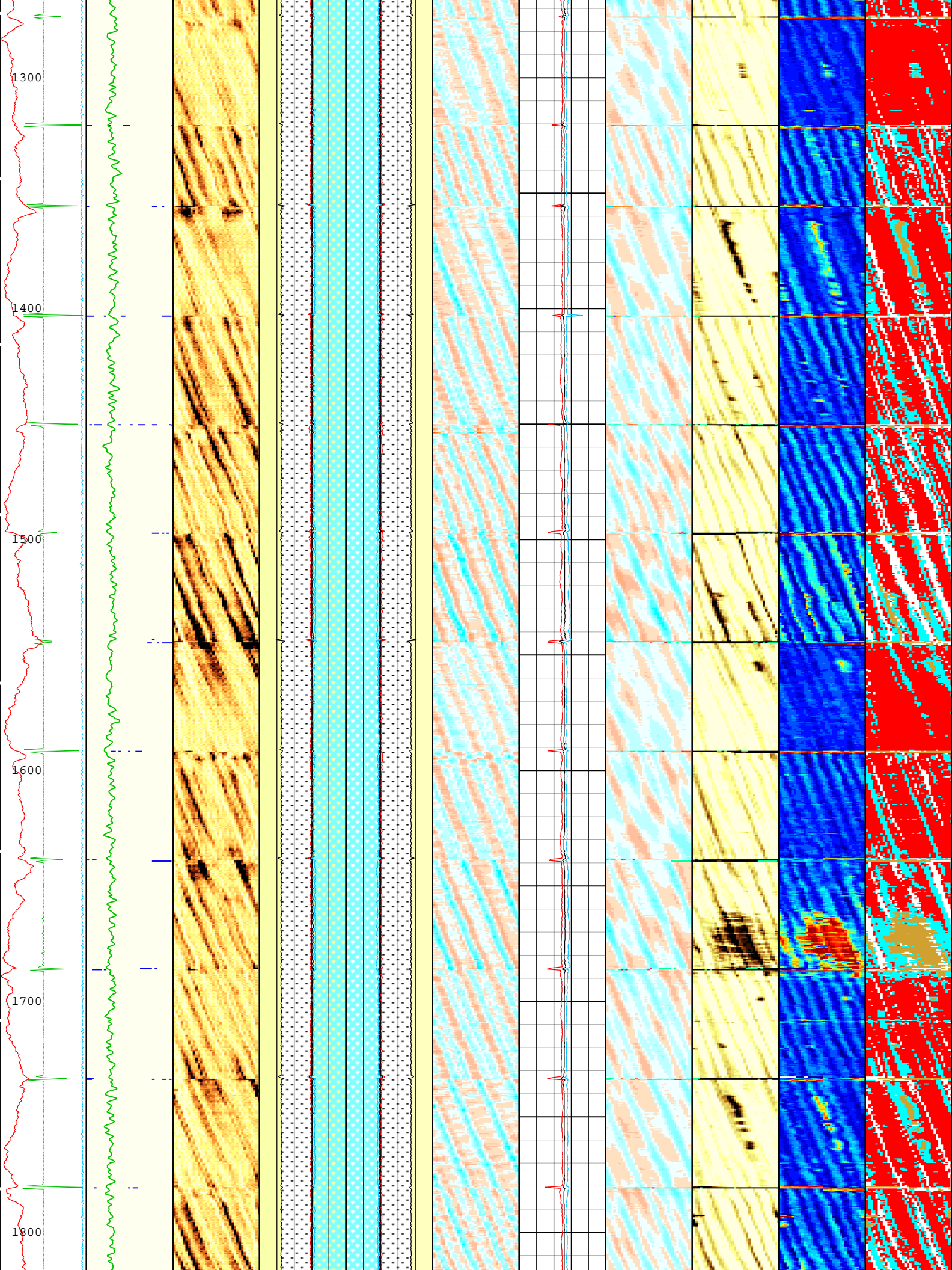
USIT Processing Flags (UFLG[0]) USIT-E[1]

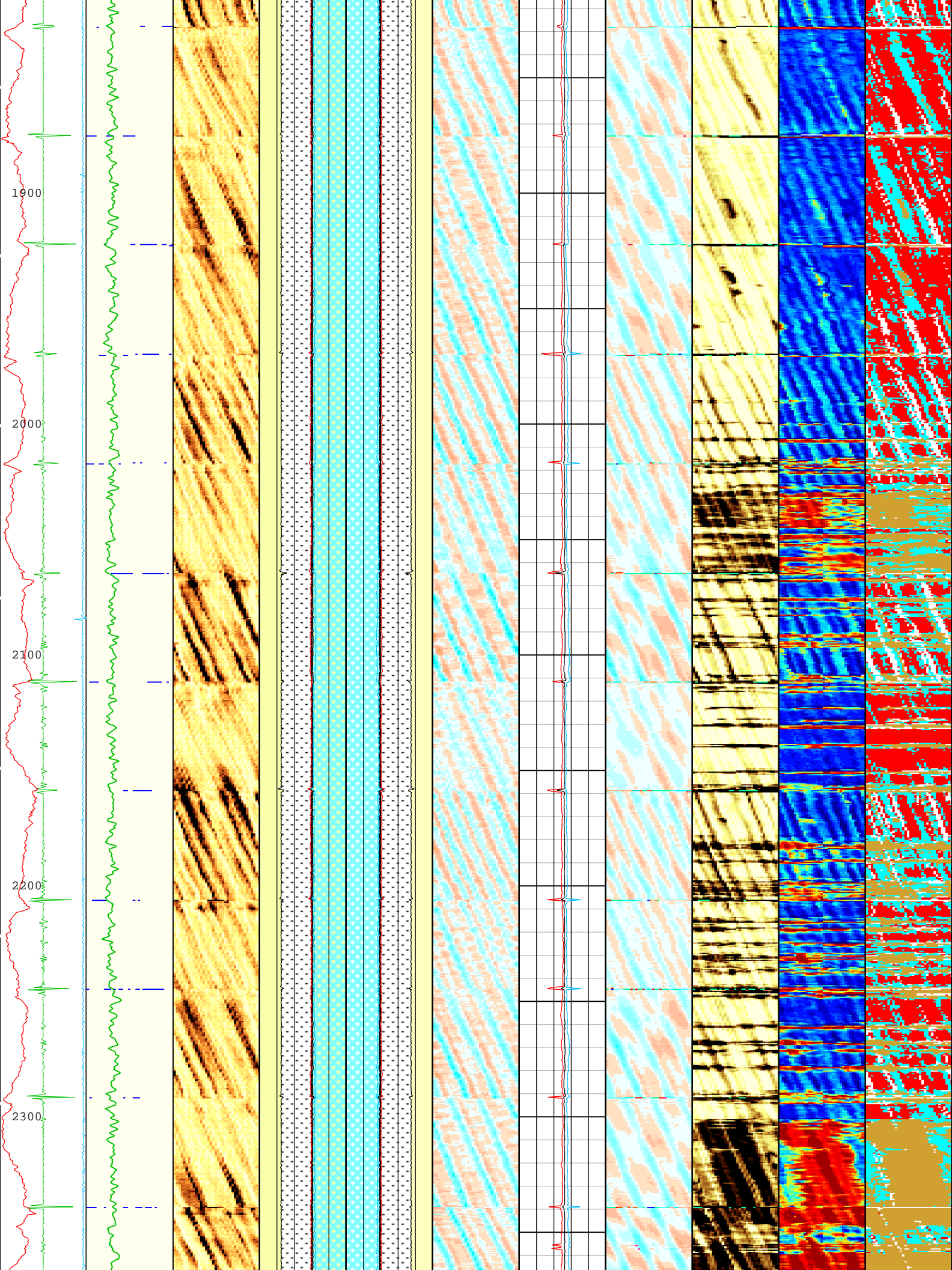
- 1 - UFLG 1 Value within [0.0 - 1.5] - :  UTIM Error
- 2 - UFLG 2 Value within [1.5 - 2.5] - :  Pulse Origin Not Detected
- 3 - UFLG 3 Value within [2.5 - 3.5] - :  WINLEN Error
- 4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :  Casing Thickness Error
- 5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5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

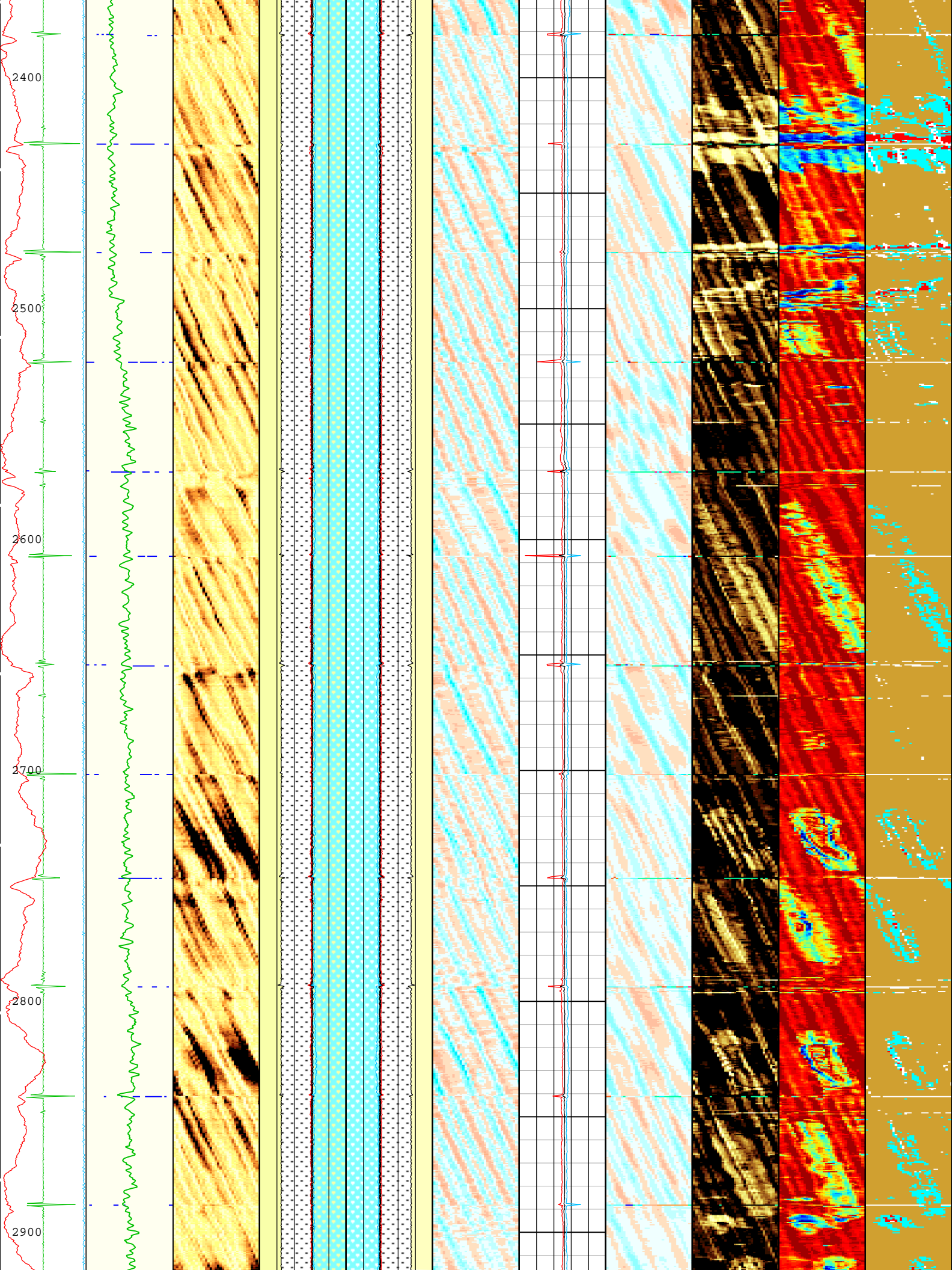


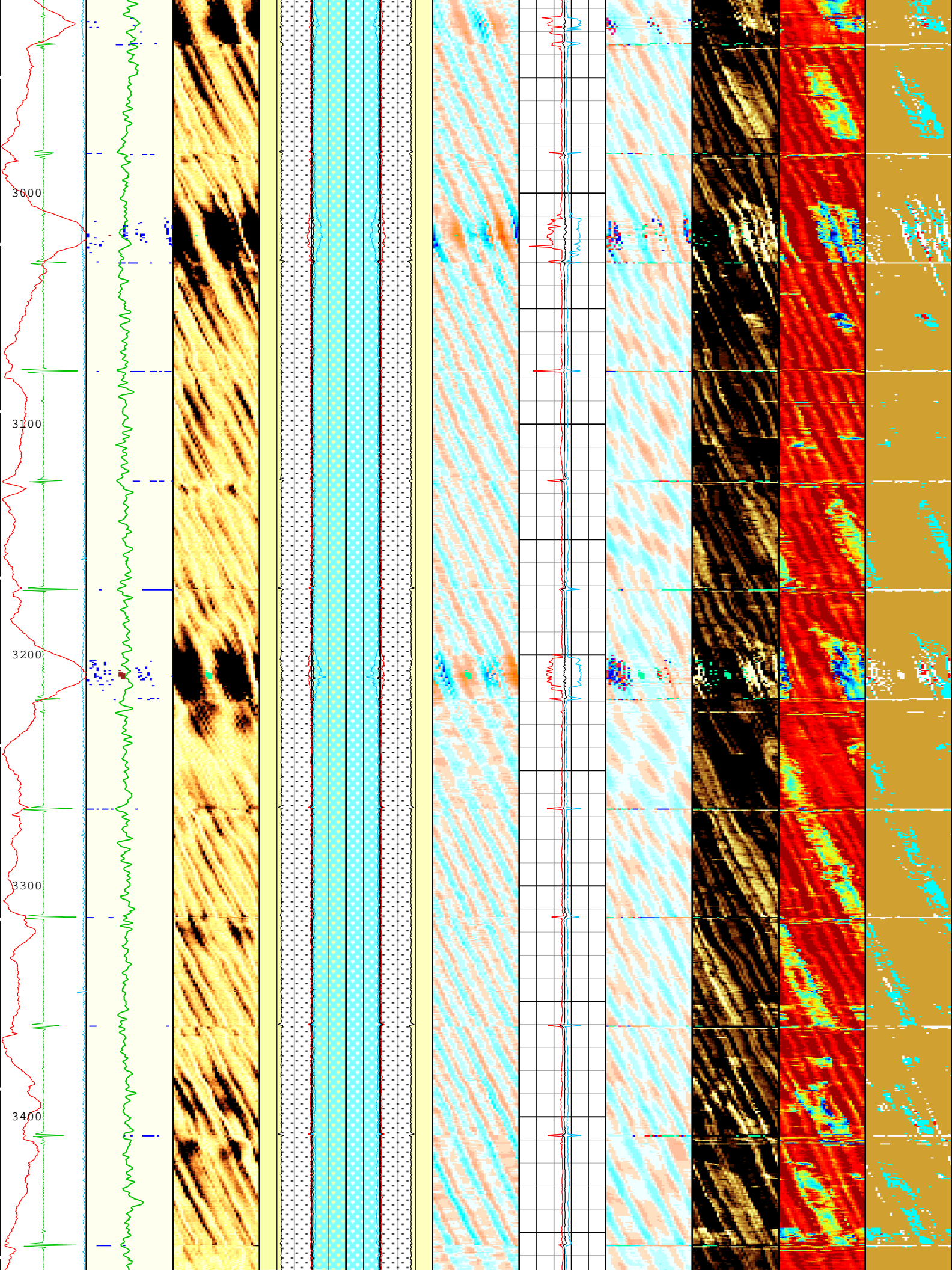


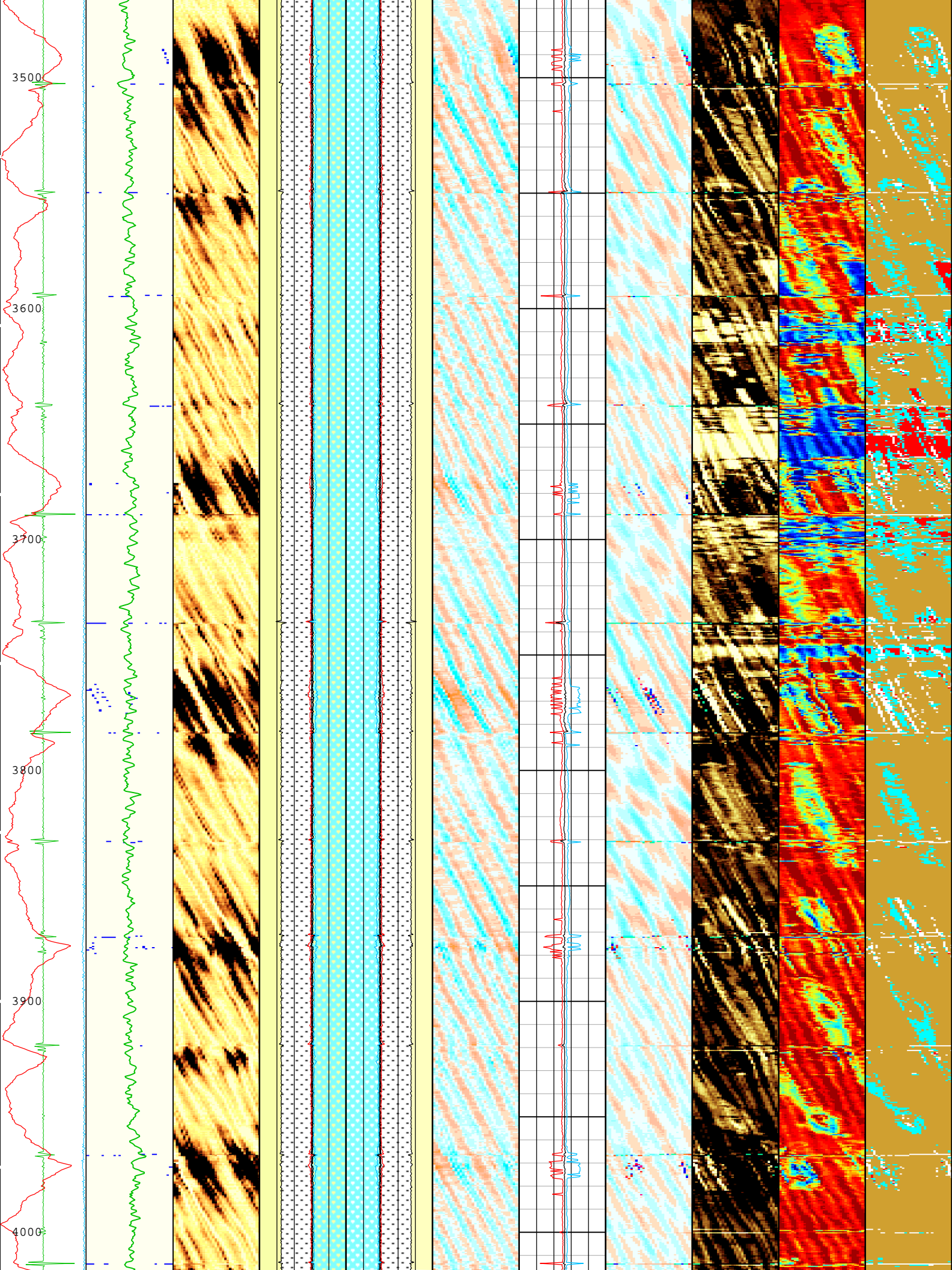


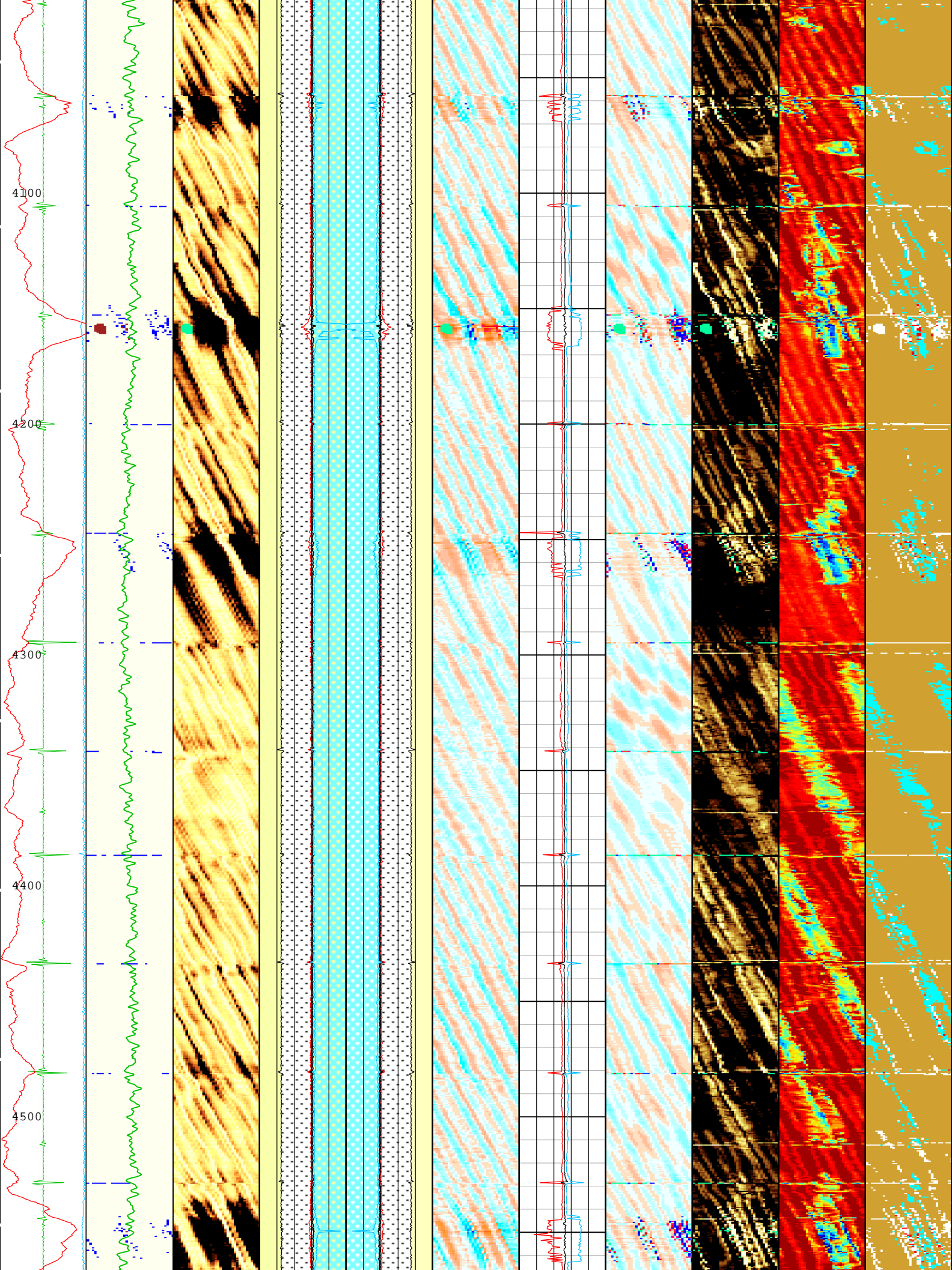


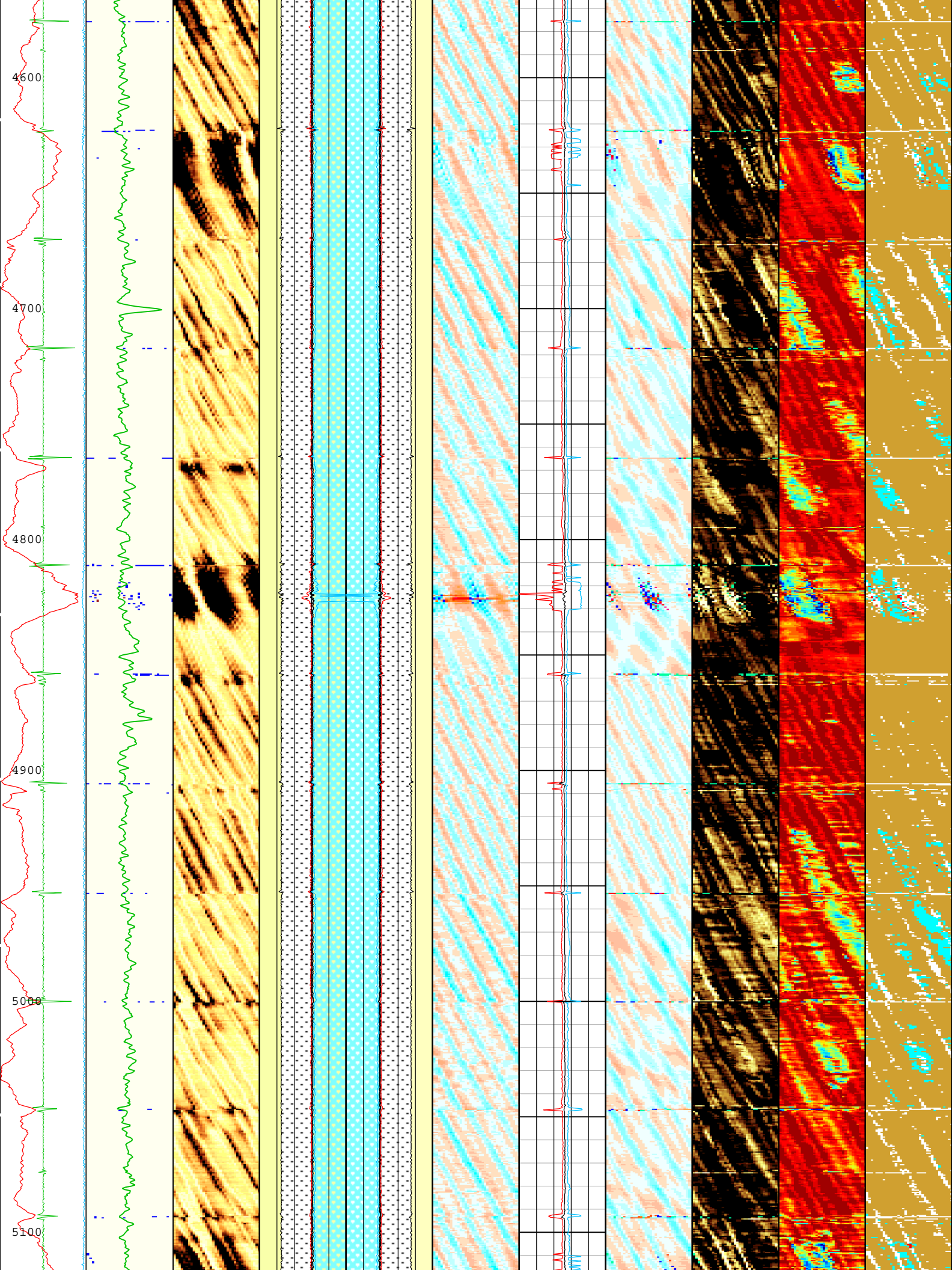


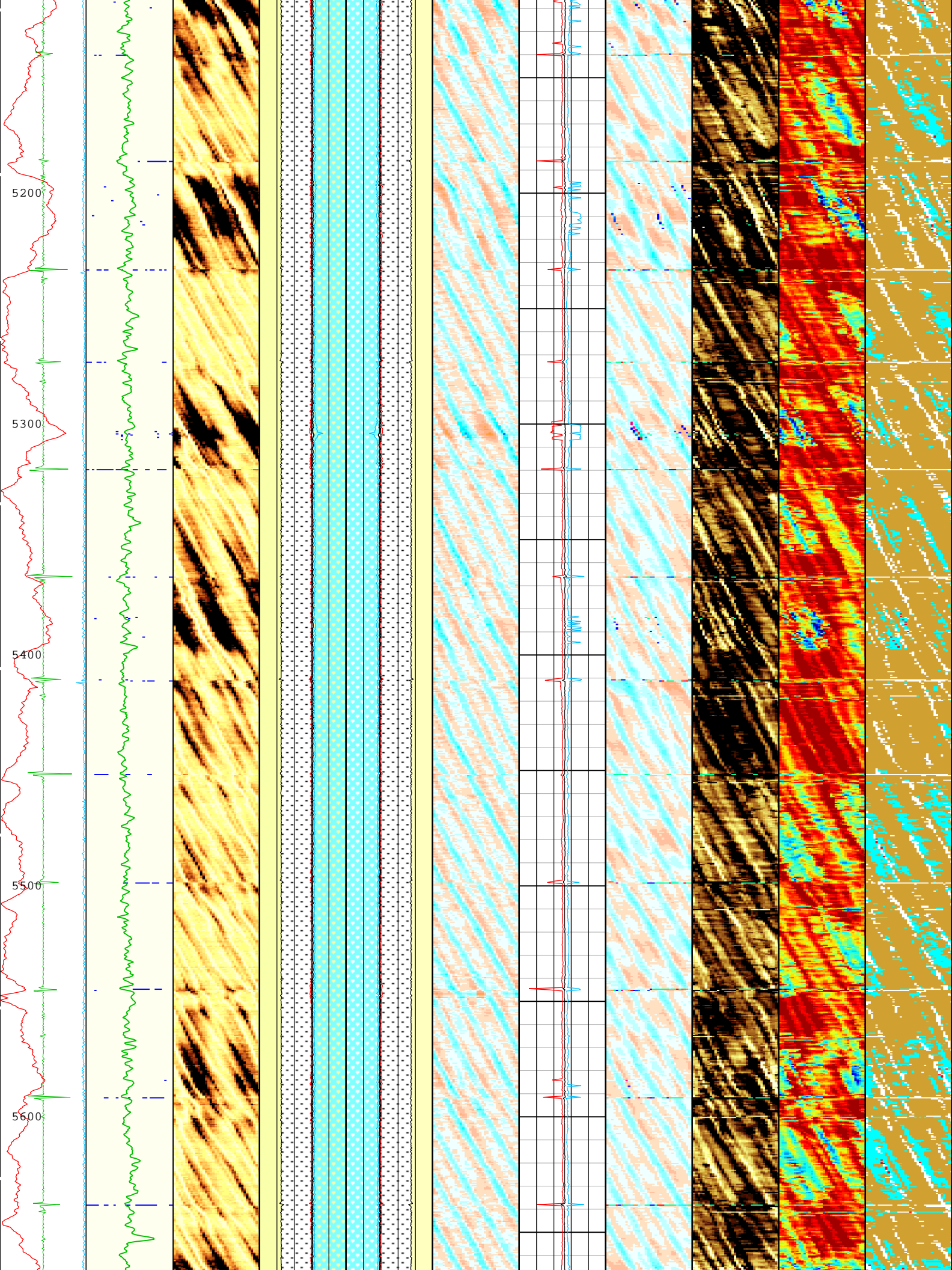


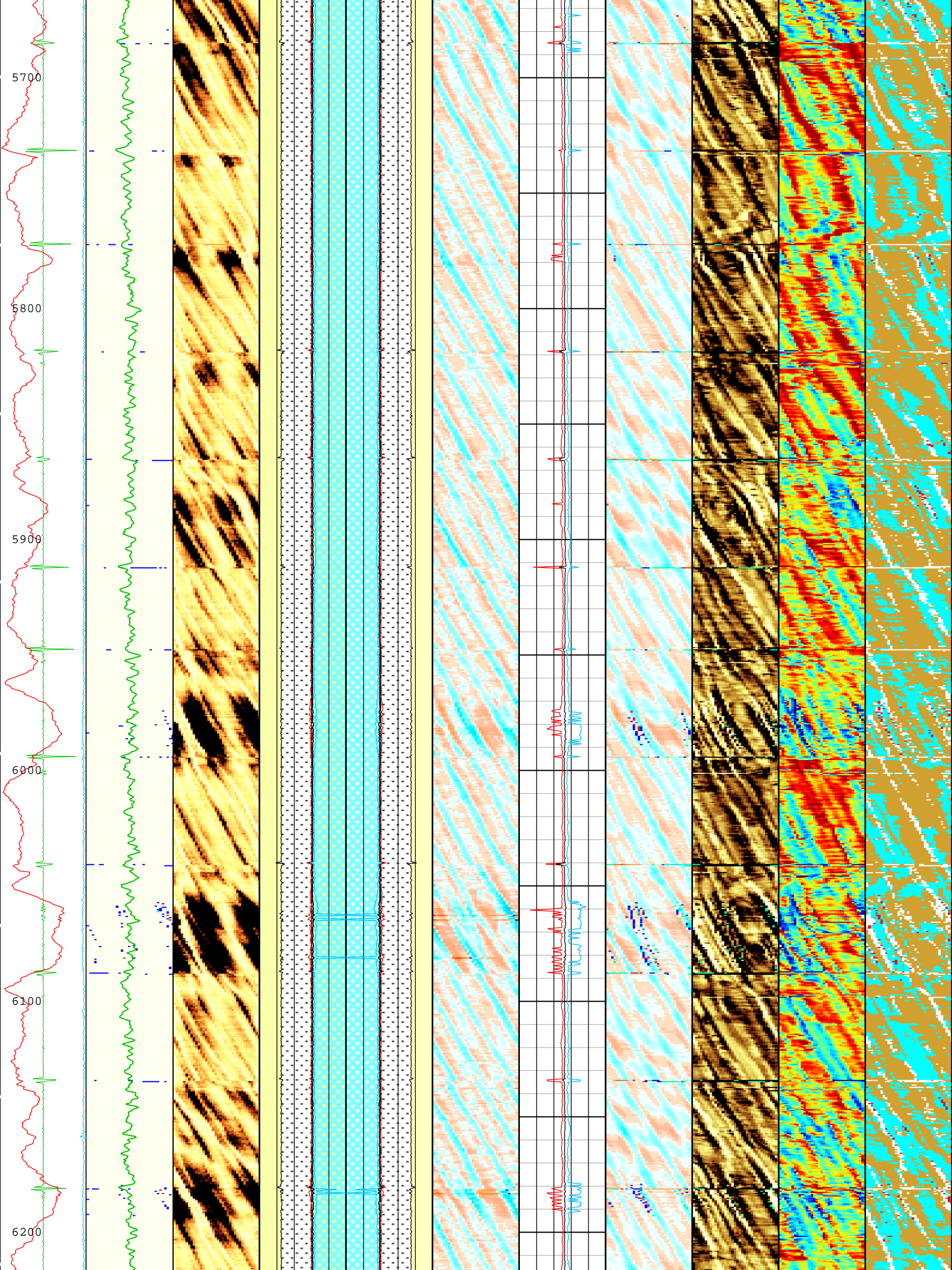


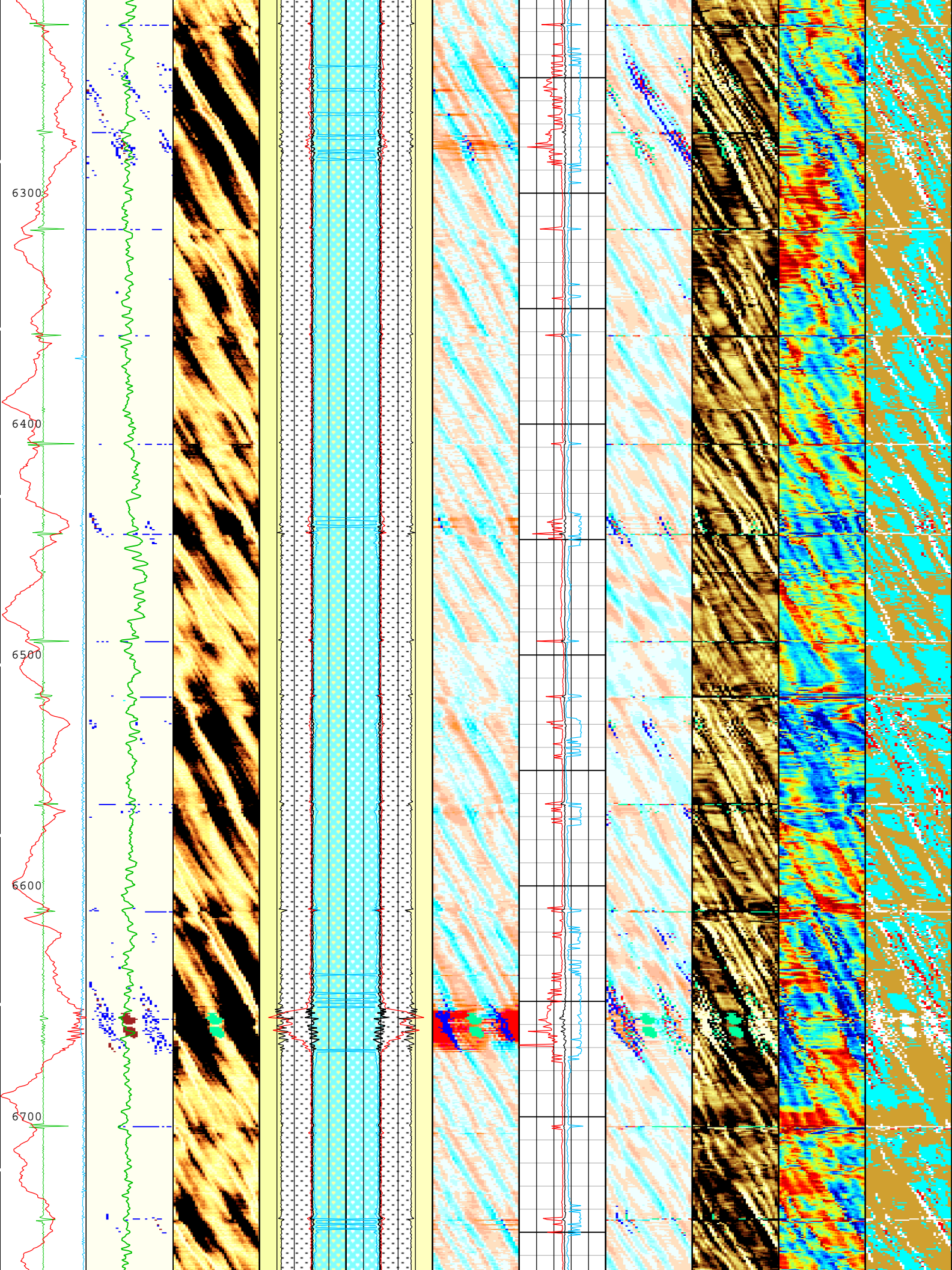


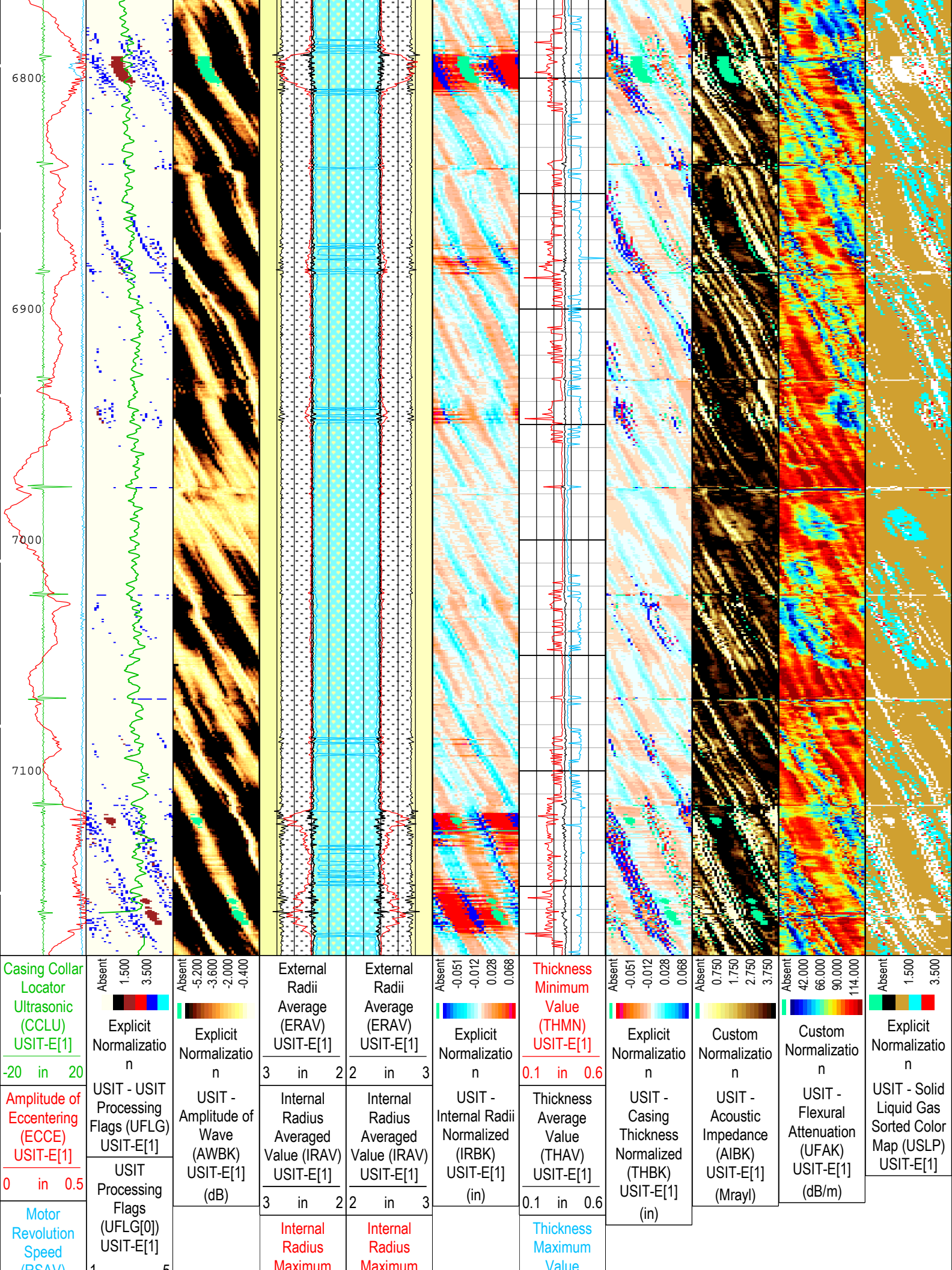

















(RSAV) USIT-E[1]	1	3	Maximum Value (IRMX) USIT-E[1]	Maximum Value (IRMX) USIT-E[1]	Value (THMX) USIT-E[1]
6 c/s 7.5			3 in 2	2 in 3	0.1 in 0.6
	Gamma Ray (ECGR_EDT C) EDTC-B[1]		Internal Radius Minimum Value (IRMN) USIT-E[1]	Internal Radius Minimum Value (IRMN) USIT-E[1]	
	0 gAPI 150		3 in 2	2 in 3	

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

- 1 - UFLG 1 Value within [0.0 - 1.5] - :  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: 11-Jul-2018 18:25:56

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	12123.63	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	8.8	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	10	lbm/gal
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	18.61	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	1.37	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1.15	
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	2.25	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

ONEDepth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	20	55	108
BS	13.5	108	2518
BS	8.5	2518	7180
CDEN	15.52	55	4500
CDEN	16.19	4500	7180

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

ONETime Zoned Parameters

Pass Log[4]:Up

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
EMXV	100	27-Jun-2018 17:49:23	27-Jun-2018 18:10:37	7339.87	5800.41
EMXV	90	27-Jun-2018 18:10:37	27-Jun-2018 18:38:01	5800.41	3824.58
EMXV	80	27-Jun-2018 18:38:01	27-Jun-2018 18:53:00	3824.58	2731.92
EMXV	90	27-Jun-2018 18:53:00	27-Jun-2018 18:57:13	2731.92	2423.75
EMXV	80	27-Jun-2018 18:57:13	27-Jun-2018 19:20:05	2423.75	757.46
EMXV	90	27-Jun-2018 19:20:05	27-Jun-2018 19:31:30	757.46	130.08

Pass Log[5]:Up

EMXV	90	27-Jun-2018 19:34:11	27-Jun-2018 19:37:27	171.75	49.87
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All depth are at tool zero.

Composite 1

IBC Goodwin Compressed Main Pass

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	94.38 ft	7339.89 ft	27-Jun-2018 5:49:23 PM	27-Jun-2018 7:31:30 PM	ON	7.29 ft	Yes

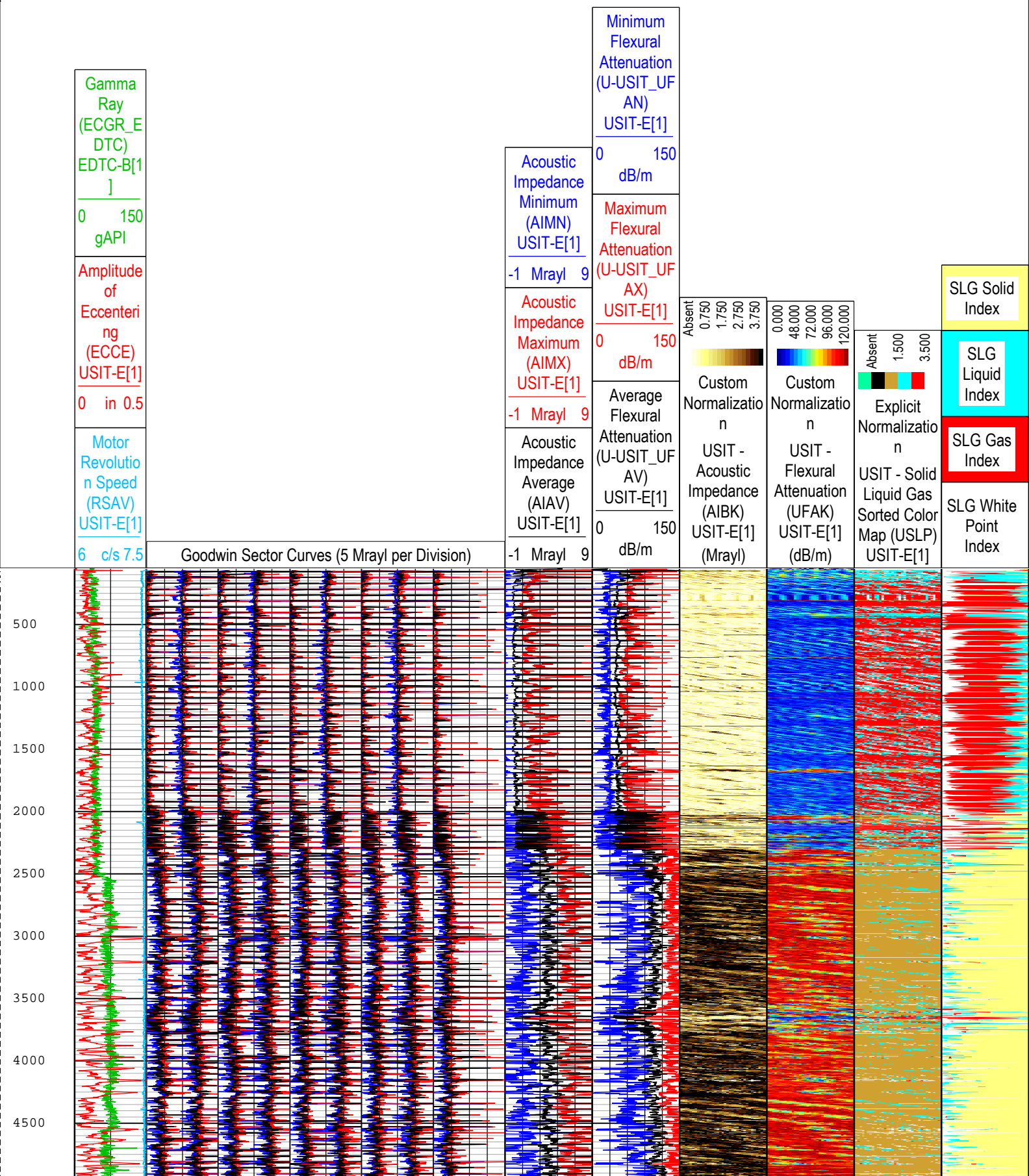
ONE	Log[5]:Up	Up	49.65 ft	182.99 ft	27-Jun-2018 7:33:22 PM	27-Jun-2018 7:37:27 PM	ON	7.55 ft	Yes
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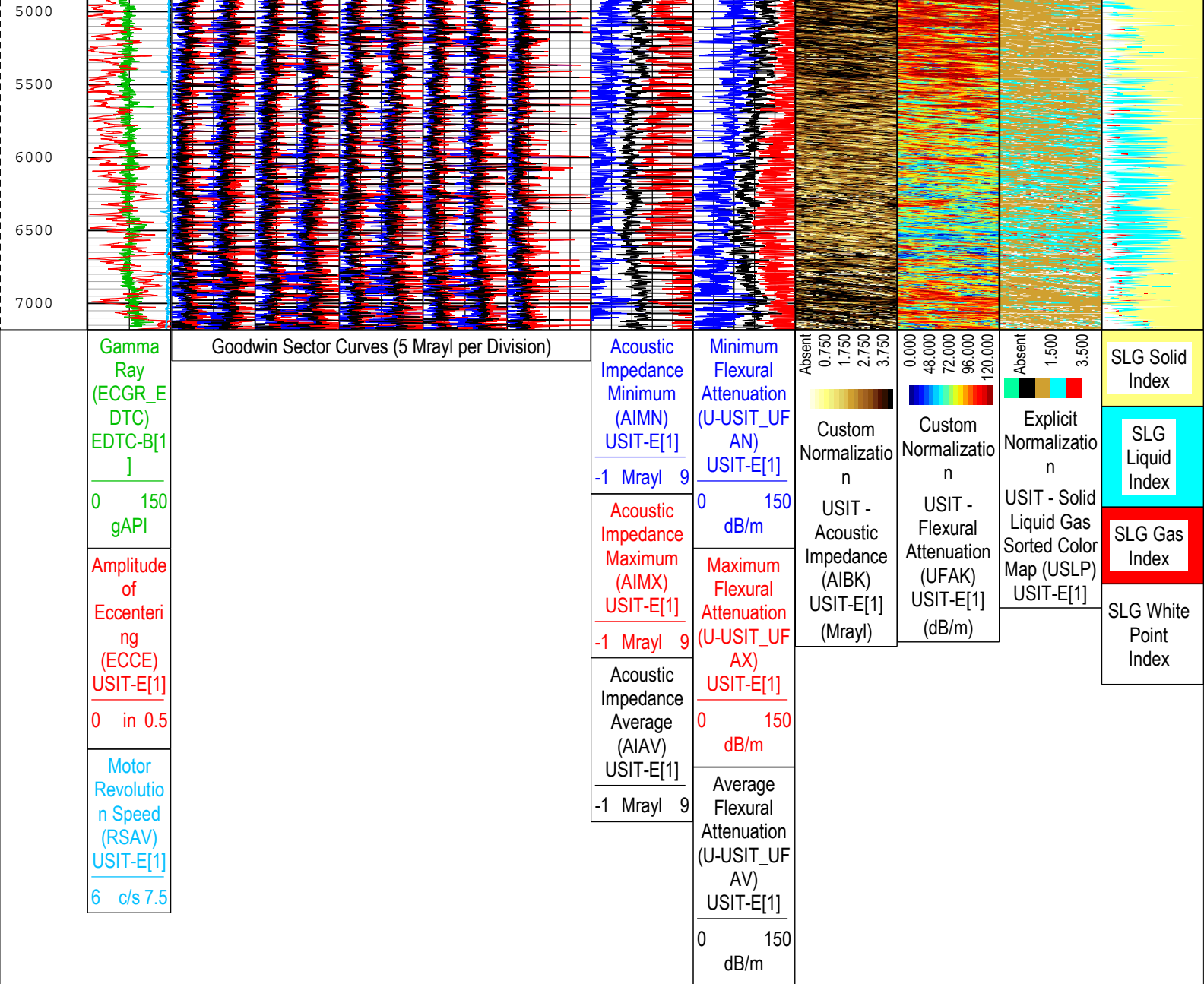
All depths are referenced to toolstring zero

Log	Company:Crestone Peak Resources and Operating LLC	Well:Ruegge 3D-4H-N165
		Composite 1:S034

Description: USI Goodwin Format: Log (IBC Goodwin) Index Scale: 0.1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 11-Jul-2018 18:26:31

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: 11-Jul-2018 18:26:31

ONE									
IBC SLG Repeat Pass									
Software Version									
Acquisition System						Version			
Maxwell 2018						8.0.95333.3100			
Application Patch						Wireline_NPD-PNX-2018CMZ_8.0.100887			
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[3]:Up	Up	6860.44 ft	7350.43 ft	27-Jun-2018 5:38:54 PM	27-Jun-2018 5:45:53 PM	ON	7.29 ft	Yes
All depths are referenced to toolstring zero									
Log	Company:Crestone Peak Resources and Operating LLC						Well:Ruegge 3D-4H-N165		
	ONE: Log[3]:Up:S034								

Description: USI IBC SLG Format: Log (IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 11-Jul-2018 18:26:43

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

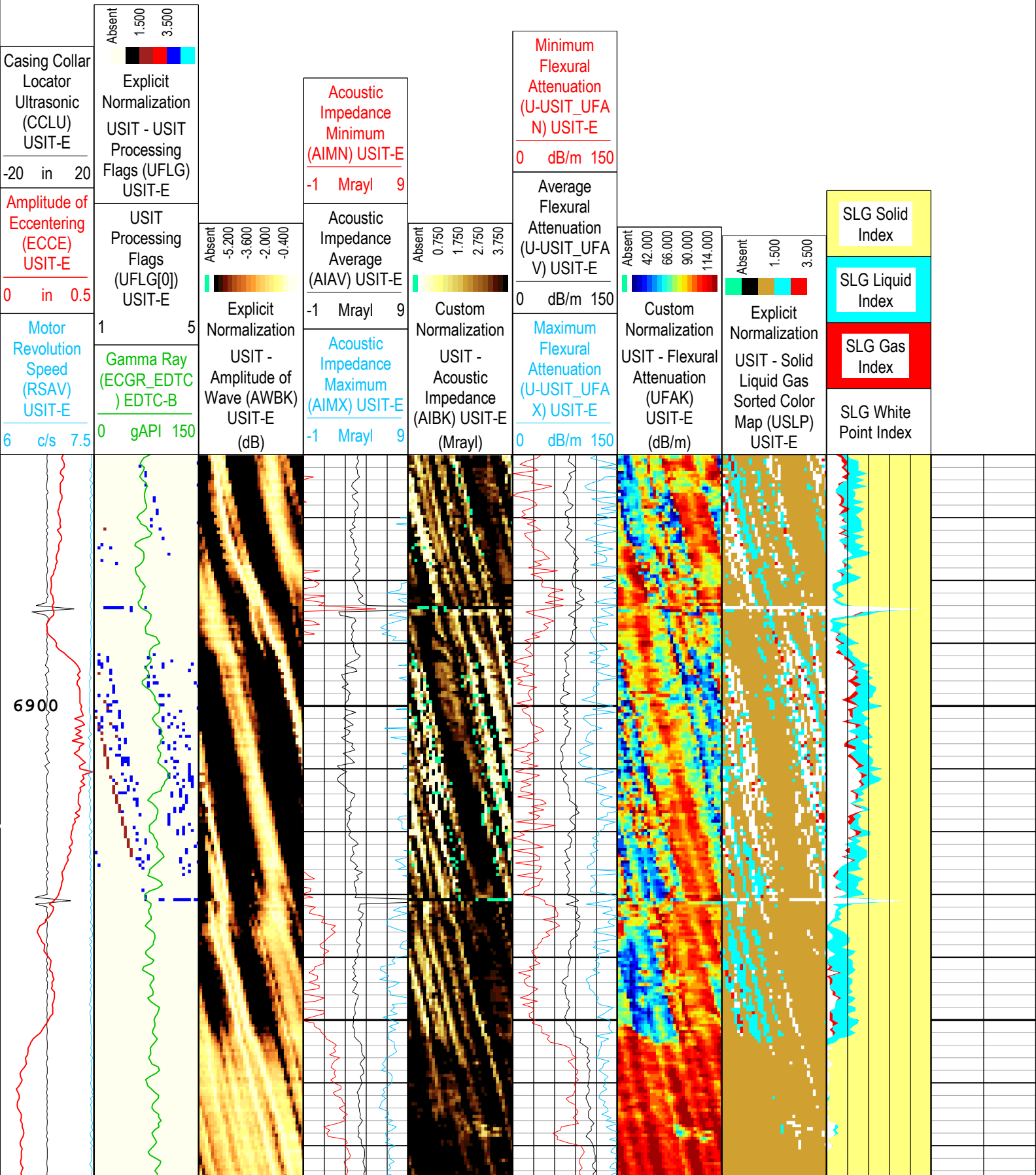
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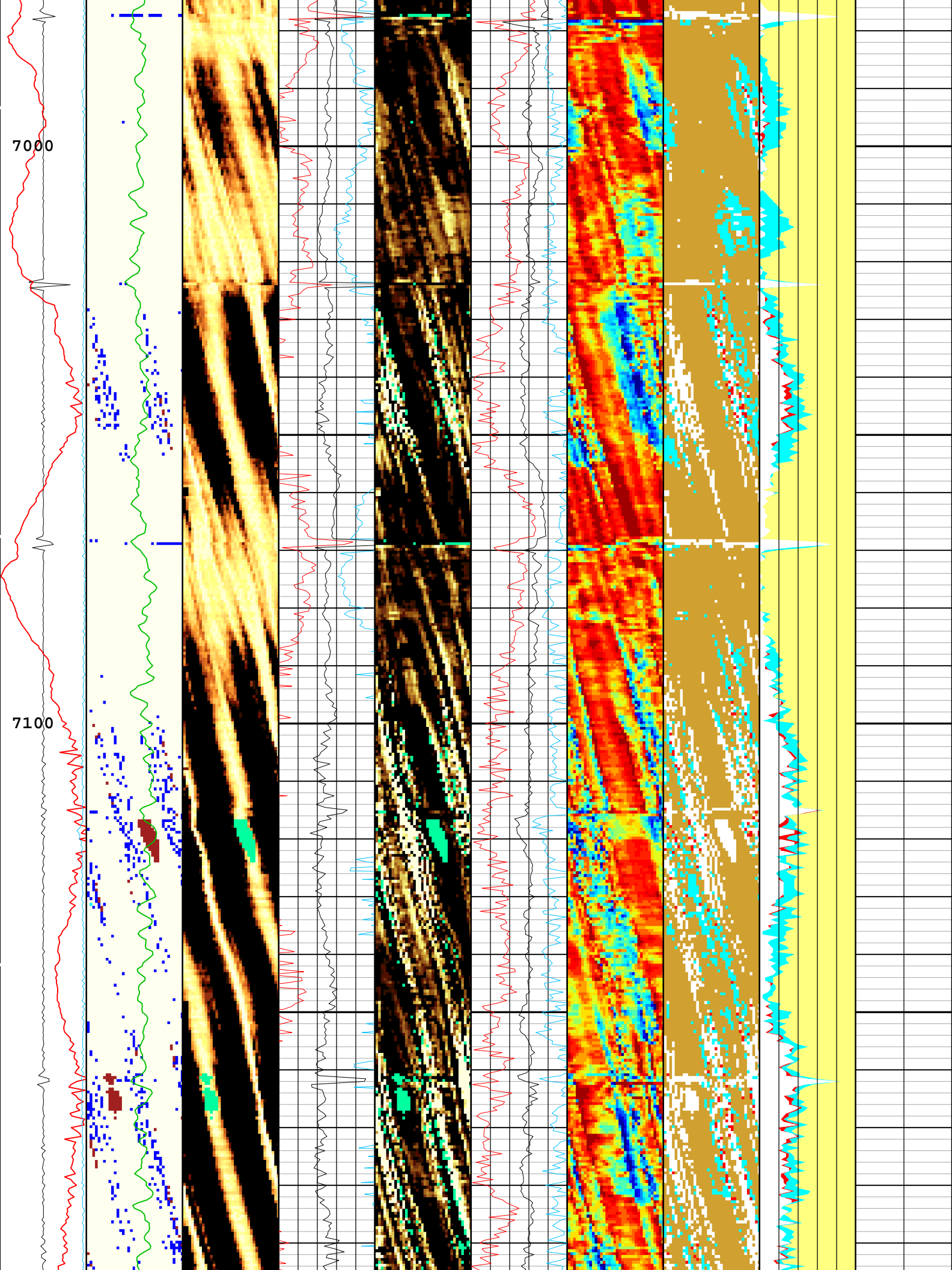
WINLEN Error

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: 11-Jul-2018 18:26:43

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	8.5	in
CASING_PRATIO	Casing Poisson Ratio	USIT-E	Standard Poisson Ratio	
CBLO	Casing Bottom (Logger)	WLSESSION	12123.63	ft
CDEN	Cement Density	USIT-E	16.19	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Light Cement	
DFD	Drilling Fluid Density	Borehole	8.8	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	10	lbm/gal
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
GR_MULTIPLIER	Gamma Ray Multiplier	EDTC-B	1	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	18.61	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	1.37	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1.15	
RCOD	Reference Calibrator Outer Diameter	USIT-E	4.5	in
RCSO	Reference Calibrator Standoff	USIT-E	0.842	in
RCTH	Reference Calibrator Thickness	USIT-E	0.216	in
SOCN	Standoff Distance	EDTC-B	0.125	in
SOCO	Standoff Correction Option	EDTC-B	No	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	70	%
TPOS_EDTC	Tool Position: Centered or Eccentered	EDTC-B	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.6	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	2.25	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		80		27-Jun-2018 17:38:54		27-Jun-2018 17:40:07		7350.42		7277.22	
EMXV		110		27-Jun-2018 17:40:07		27-Jun-2018 17:42:45		7277.22		7085.93	
EMXV		100		27-Jun-2018 17:42:45		27-Jun-2018 17:45:53		7085.93		6860.44	
All depth are at tool zero.											
ONE											
IBC SLG Composite											
Pass Summary											
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data		
ONE	Log[3]:Up	Up	6860.44 ft	7350.43 ft	27-Jun-2018 5:38:54 PM	27-Jun-2018 5:45:53 PM	ON	7.29 ft	Yes		

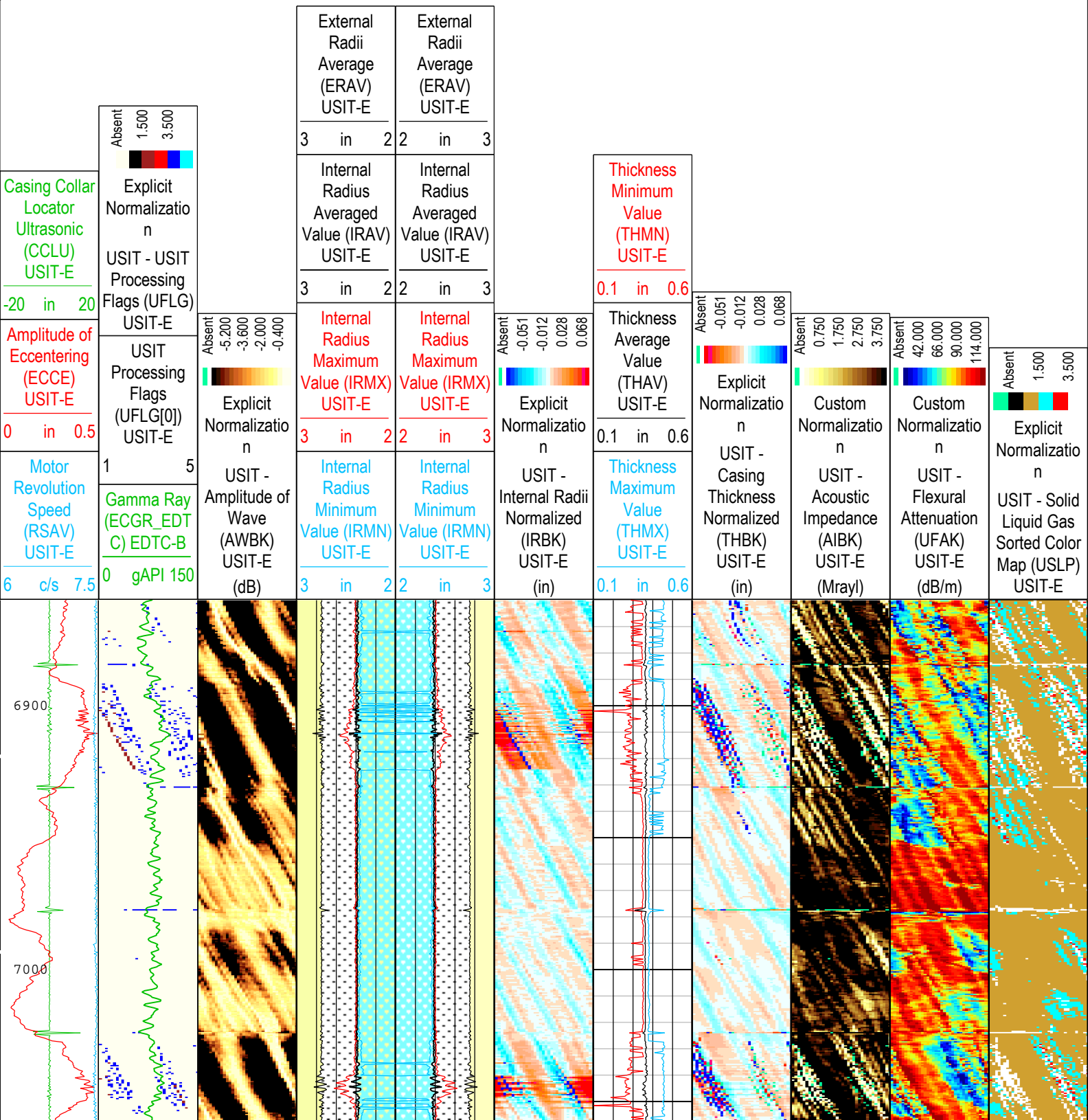
All depths are referenced to toolsetting zero.

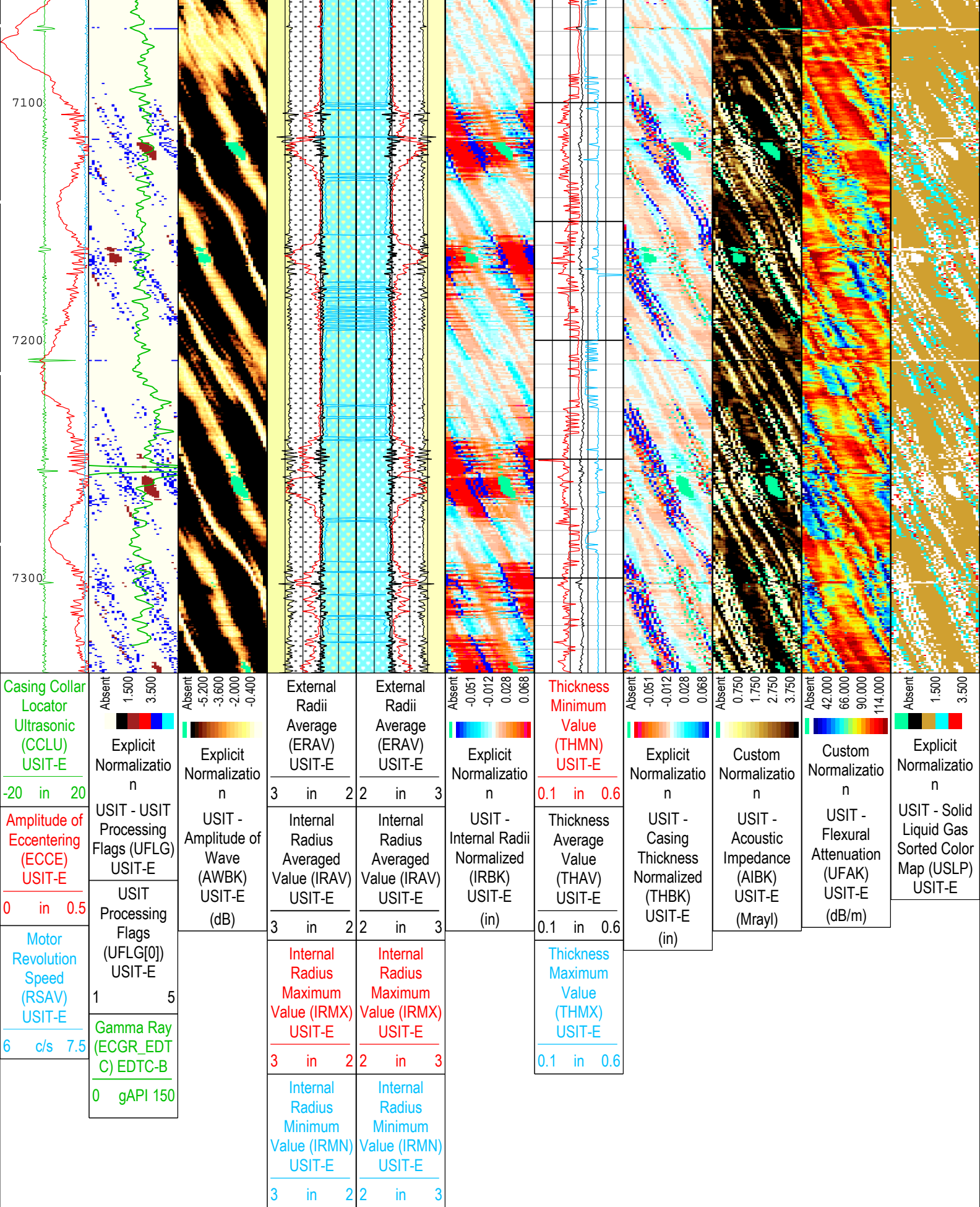
Description: USI IBC SLG Composite Format: Log (IBC SLG Composite) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth
 Creation Date: 11-Jul-2018 18:26:52

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

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

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

UTIM Error

Pulse Origin Not Detected

3 - UFLG 3 Value within [2.5 - 3.5] - :  Value Length Not Detected
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: 11-Jul-2018 18:26:52

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	12123.63	ft
CDEN	Cement Density	USIT-E	16.19	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Light Cement	
DFD	Drilling Fluid Density	Borehole	8.8	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	10	lbm/gal
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	18.61	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	1.37	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1.15	
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	2.25	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)
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EMXV	110	27-Jun-2018 17:40:07	27-Jun-2018 17:42:45	7277.22	7085.93
EMXV	100	27-Jun-2018 17:42:45	27-Jun-2018 17:45:53	7085.93	6860.44

All depth are at tool zero.

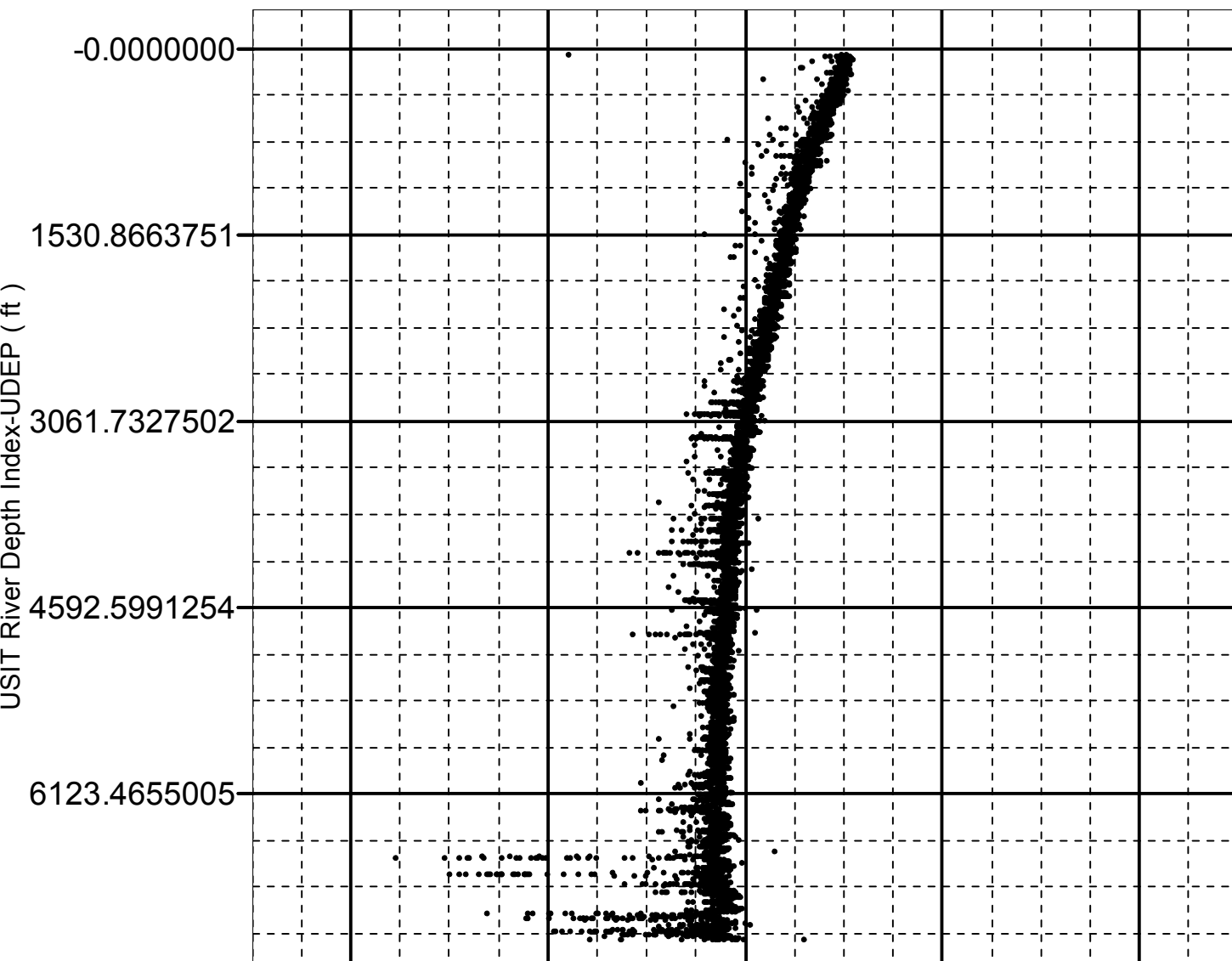
XYZ	Company:Crestone Peak Resources and Operating LLC Well:Ruegge 3D-4H-N165 Composite 1:S034
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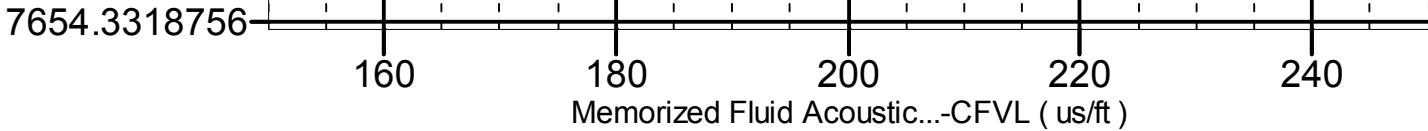
Fluid Acoustic Slowness vs Depth

2D Cross Plot

Index Range: From 49.00 to 7339.00 ft

- CFVL-UDEP





XYZ

Company:Crestone Peak Resources and Operating LLC Well:Ruegge 3D-4H-N165

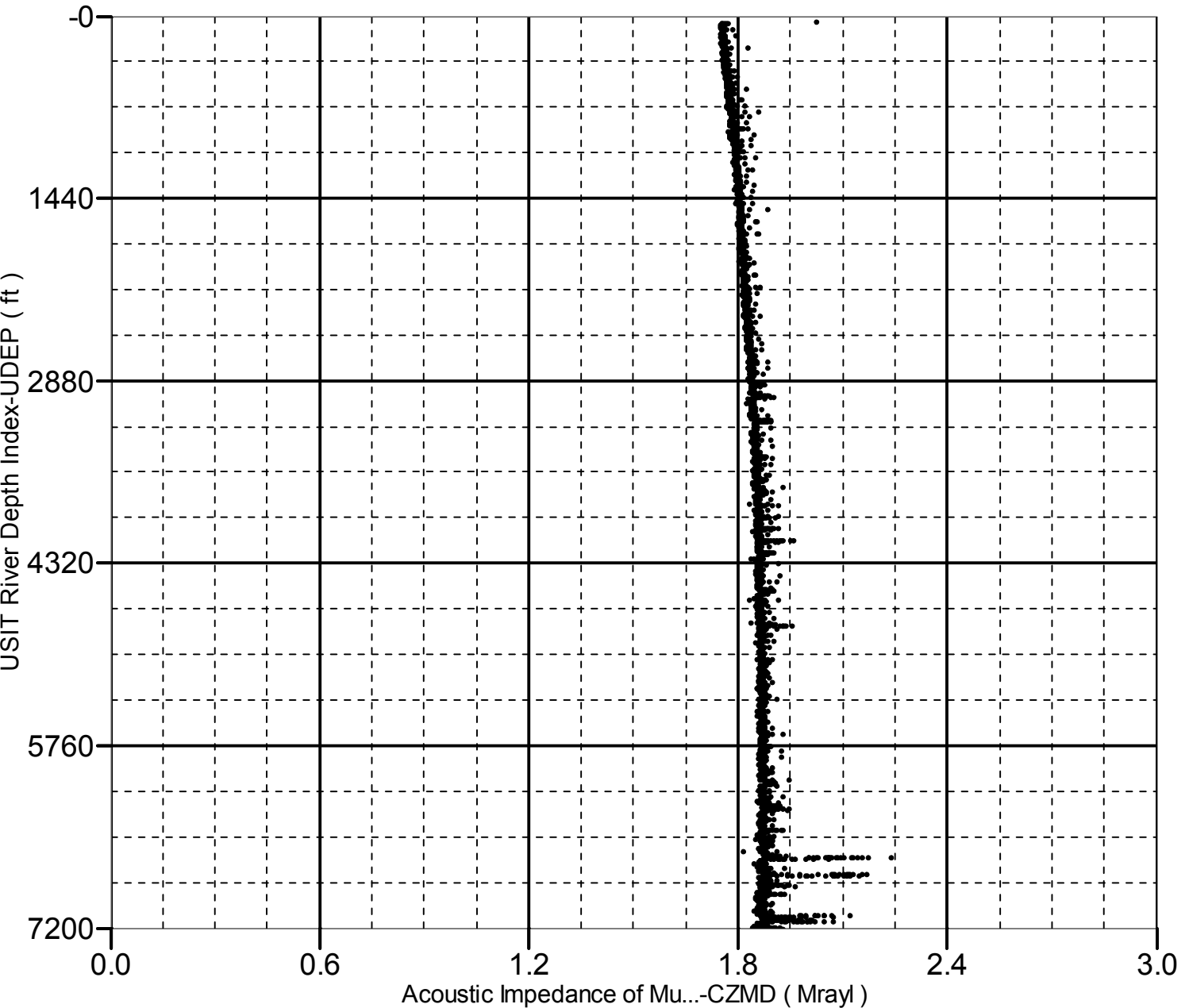
Composite 1:S034

Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 49.00 to 7339.00 ft

● CZMD-UDEP



Company:	Crestone Peak Resources and Operating LLC	Schlumberger
Well:	Ruegge 3D-4H-N165	
Field:	Wattenberg	
County:	Weld	
State:	Colorado	

Isolation Scanner
Cement Evaluation
Gamma Ray - CCL Log