Schlumberger

Company: Crestone Peak Resources and Operating LLC

Well: File #3T-32H-K268

Field: Wattenberg

County: Weld State: Colorado

Isolation Scanner

Cement Evaluation

Gamma Ray - CCL Log

County: Weld
Field: Wattenberg
Location: NESW SEC: 32 T2n R68w
Well: File #3T-32H-K268
Company: Crestone Peak Resources and Operating LLC

Location:				
NESW SEC: 32 T2n R68w		Elev.:	K.B.	4813.00 ft
SHL: 1760' FFSLL & 2500' FFWLL			G.L.	4790.00 ft
Lat/Long: 40.092573/-105.030539			D.F.	4813.00 ft
Permanent Datum:	Ground Level	Elev.:		4790.00 f
Log Measured From:	Kelly Bushing	23.00 ft		above Perm.Datum
Drilling Measured From:	Kelly Bushing			

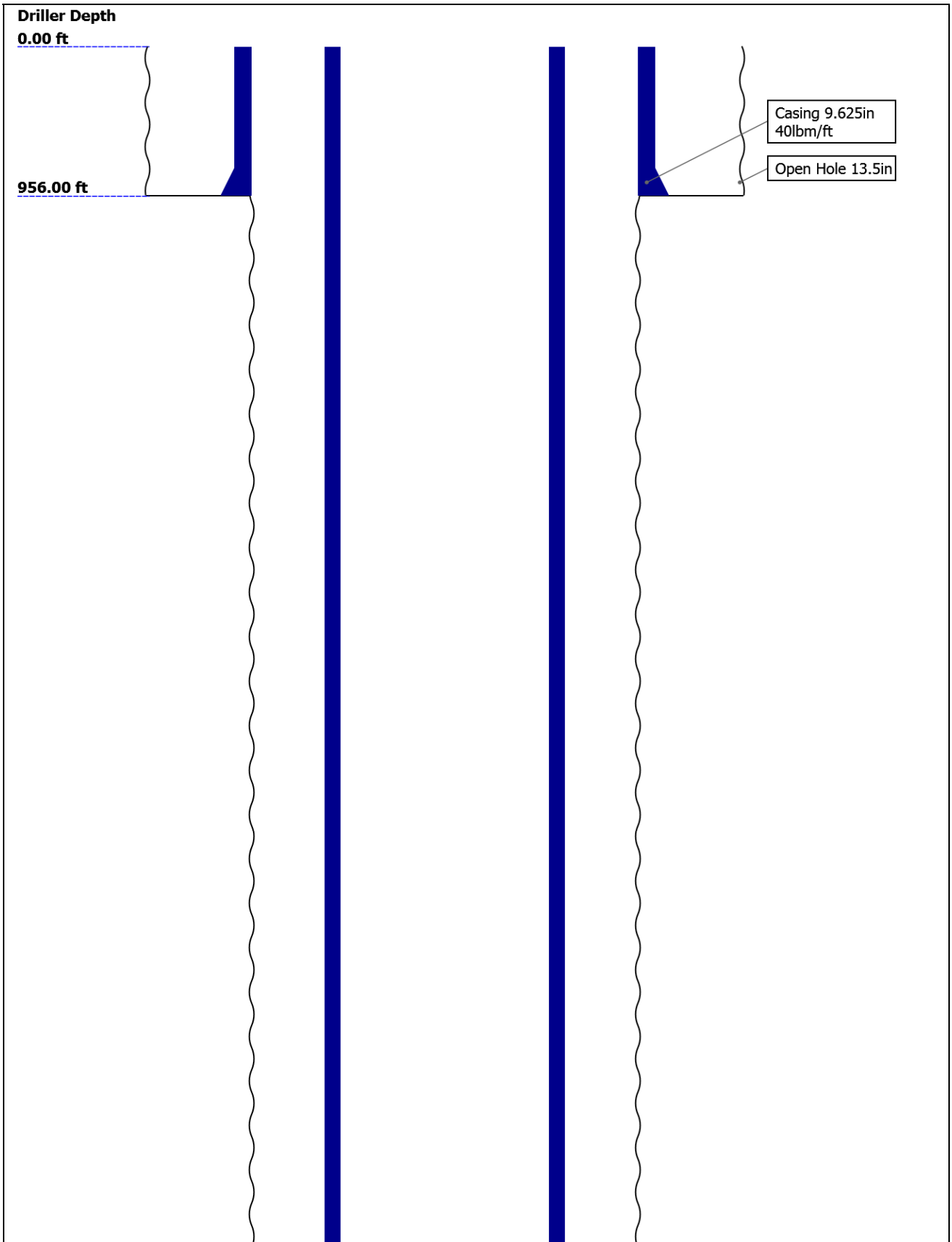
API Serial No.	Section:	Township:	Range:
05-123-45831	32	2N	68W

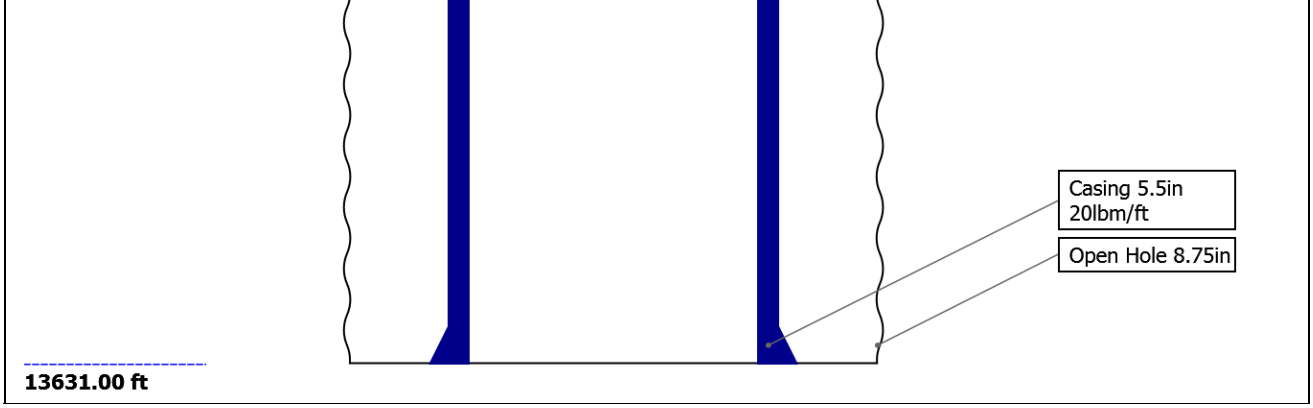
Logging Date	03-Mar-2018		
Run Number	1A		
Depth Driller	13631.00 ft		
Schlumberger Depth	13631.00 ft		
Bottom Log Interval	6839.00 ft		
Top Log Interval	88.00 ft		
Casing Fluid Type	Water		
Salinity			
Density	8.4 lbm/gal		
Fluid Level	8.00 ft		
BIT/CASING/TUBING STRING			
Bit Size	8.75 in		
From	956.00 ft		
To	13631.00 ft		
Casing/Tubing Size	5.5 in		
Weight	20 lbm/ft		
Grade	P110		
From	0.00 ft		
To	13631.00 ft		
Max Recorded Temperatures	180 degF		
Logger on Bottom Time	03-Mar-2018	16:10:00	
Unit Number Location:	9115	Fort Morgan CO	
Recorded By	Richard Woods		
Witnessed By	Keith Kershisnik		

Disclaimer

Contents

Well Sketch





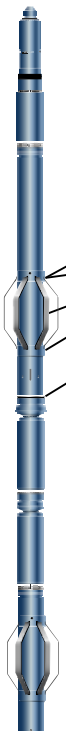
Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	13.5	8.75				
Top Driller (ft)	0	956				
Top Logger (ft)	0	956				
Bottom Driller (ft)	956	13631				
Bottom Logger (ft)	956	13631				
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)	956	13631				
Bottom Logger (ft)	956	13631				

Remarks and Equipment Summary

1A: Toolstring

Equip name	Length
LEH-QT	**30.16**
LEH-QT	
EDTC-B:8478	**27.24**
EDTH-B:8470	
EDTG-A:77347	
EDTC-B:8478	
AH-107:866	**20.74**
AH-184:3709	**18.74**
USIT-E:930	**16.74**
ECH-MFA:1924	
USAC-A:930	



MP name	Offset
CTEM	**23.74**
ACCZ	**0.00**
HV	**0.00**
Gamma Ray	**21.87**
TelStatus	**20.74**

1A: Remarks

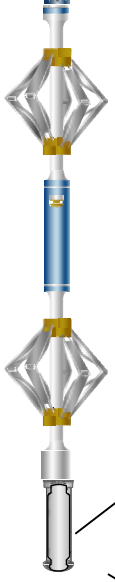
Thank you for choosing Schlumberger!

Tool string run as per tool sketch and client logging program

Gemcos and in-line centralizers used for centralization.

All passes run under 0 PSI.

Lead: 11 ppg
Tail: 13.5 ppg
Spacer: 10.5 ppg



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

	1A		
Depth Measuring Device			
Type	IDW-JA		
Serial Number	6527		
Calibration Date	28-Sep-2017		
Calibrator Serial Number	IDWC-C-57		
Calibration Cable Type	7-46AXS		
Wheel Correction 1	-2		
Wheel Correction 2	-2		
Tension Device			
Type	CMTD-B/A		
Serial Number	147		
Calibration Date	24-Feb-2018		
Calibrator Serial Number	107		
Number of Calibration Points	10		
Calibration Root Mean Square Error	15		
Calibration Peak Error	28		
Logging Cable			
Type	7-46PI-XS		
Serial Number	F715040		
Length	22000.00 ft		
Conveyance Type	Wireline		
Rig Type	MAST		

1A:Depth Control Parameters		Depth Control Remarks
Log Sequence	First Log In the Well	All Schlumberger depth control policies followed.
Rig Up Length At Surface		IDW used for primary depth control.
Rig Up Length At Bottom		Zchart used for secondary depth control.
Rig Up Length Correction		

Stretch Correction

Tool Zero Check At Surface

USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 1	Log[3]:Up	6841.12	59.79

Fluid Velocity = "Automatic".
CFVL equals DFSL channel

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

Mud Impedance = "Inversion Norm.".
IBC Inversion normalization zone is : 272.13m(892.80ft) to 275.87m(905.09ft)
MUD_N_INV = 1.23
DFD = 1.01g/cm3(8.40lbm/gal)
CZMD median computed in inversion normalization interval = 1.70 MRayl

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

1A

IBC SLG

Software Version

Acquisition System	Version
Maxwell 2017 SP3	7.3.92069.3100
Application Patch	Wireline_NPD-ICE2-2017SP3_7.3.93033

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1A	Log[3]:Up	Up	59.79 ft	6841.12 ft	03-Mar-2018 4:11:06 PM	03-Mar-2018 5:49:05 PM	ON	5.50 ft	No

All depths are referenced to toolstring zero

Log

Company:Crestone Peak Resources and Operating LLC Well:File #3T-32H-K268

1A: Log[3]:Up:S002

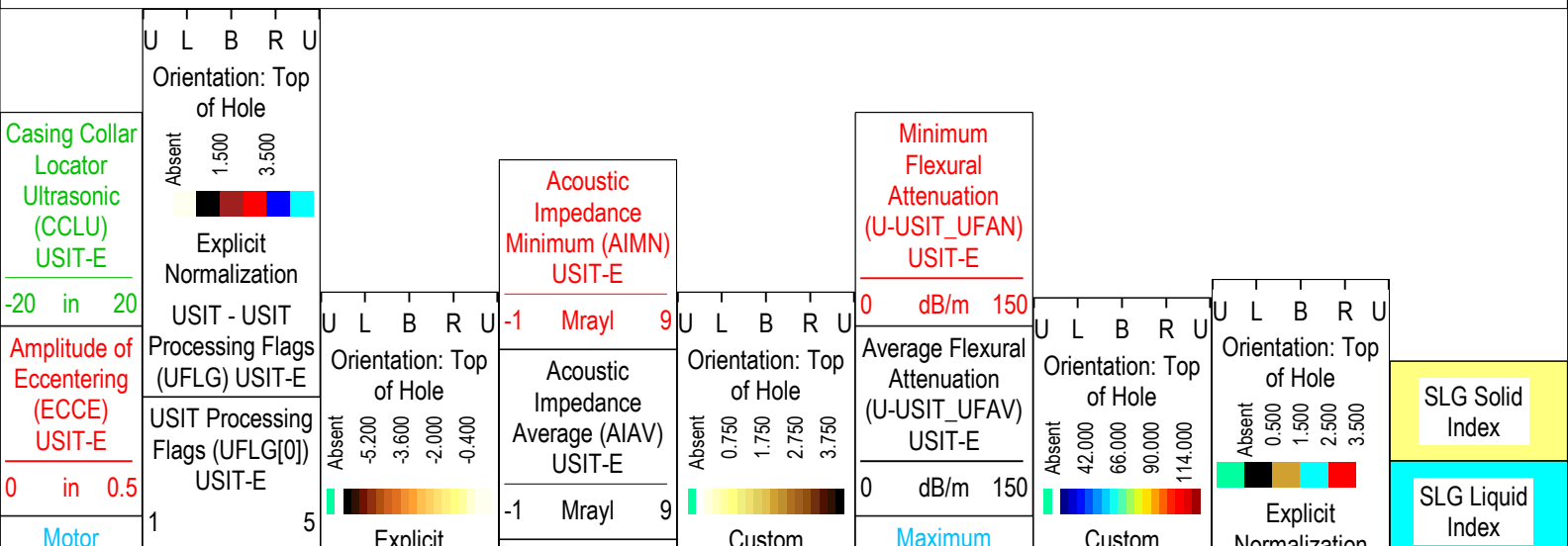
Description: USI IBC SLG Format: Log (IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 03-Mar-2018 18:28:16

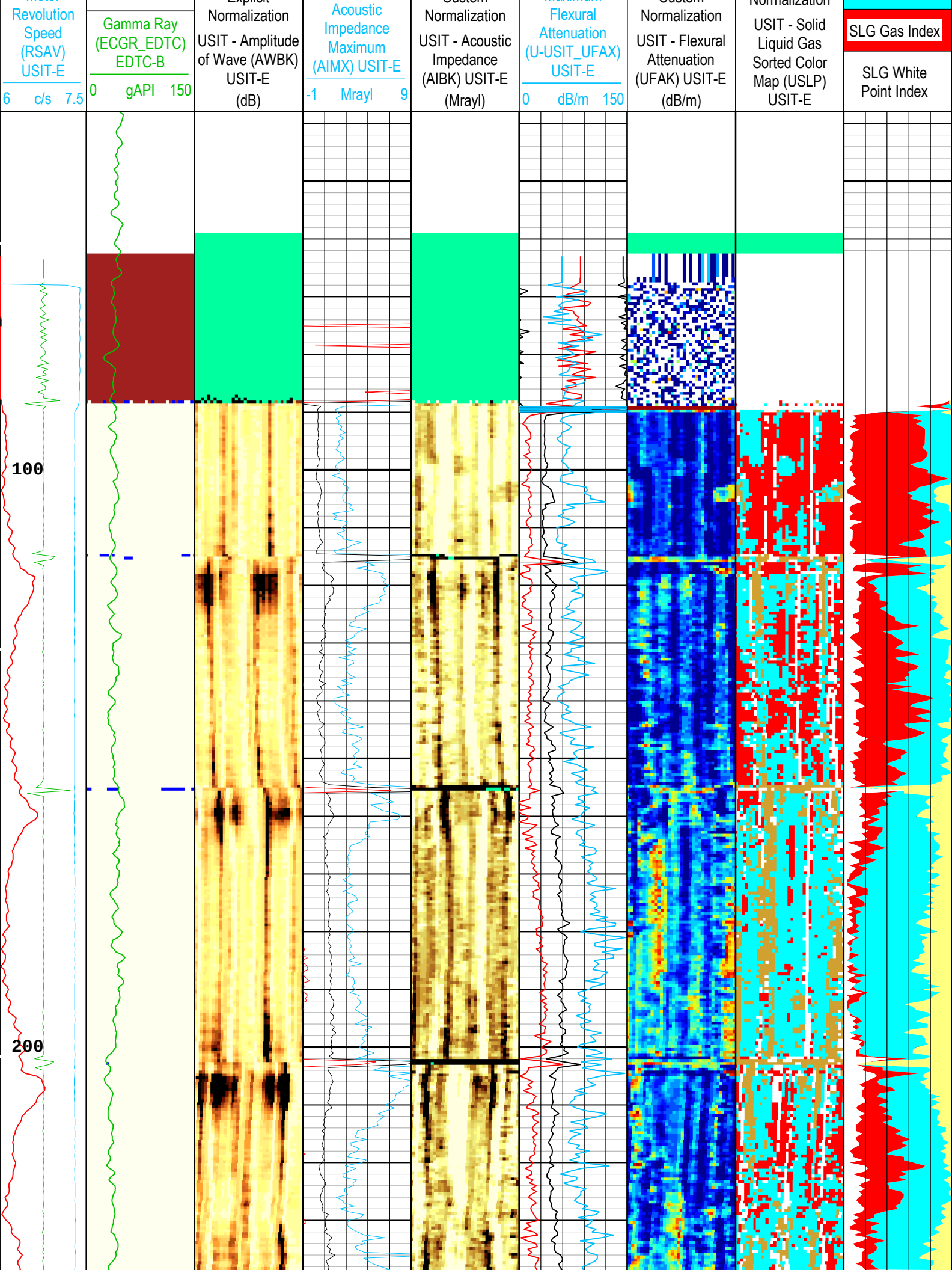
TIME_1900 - Time Marked every 60.00 (s)

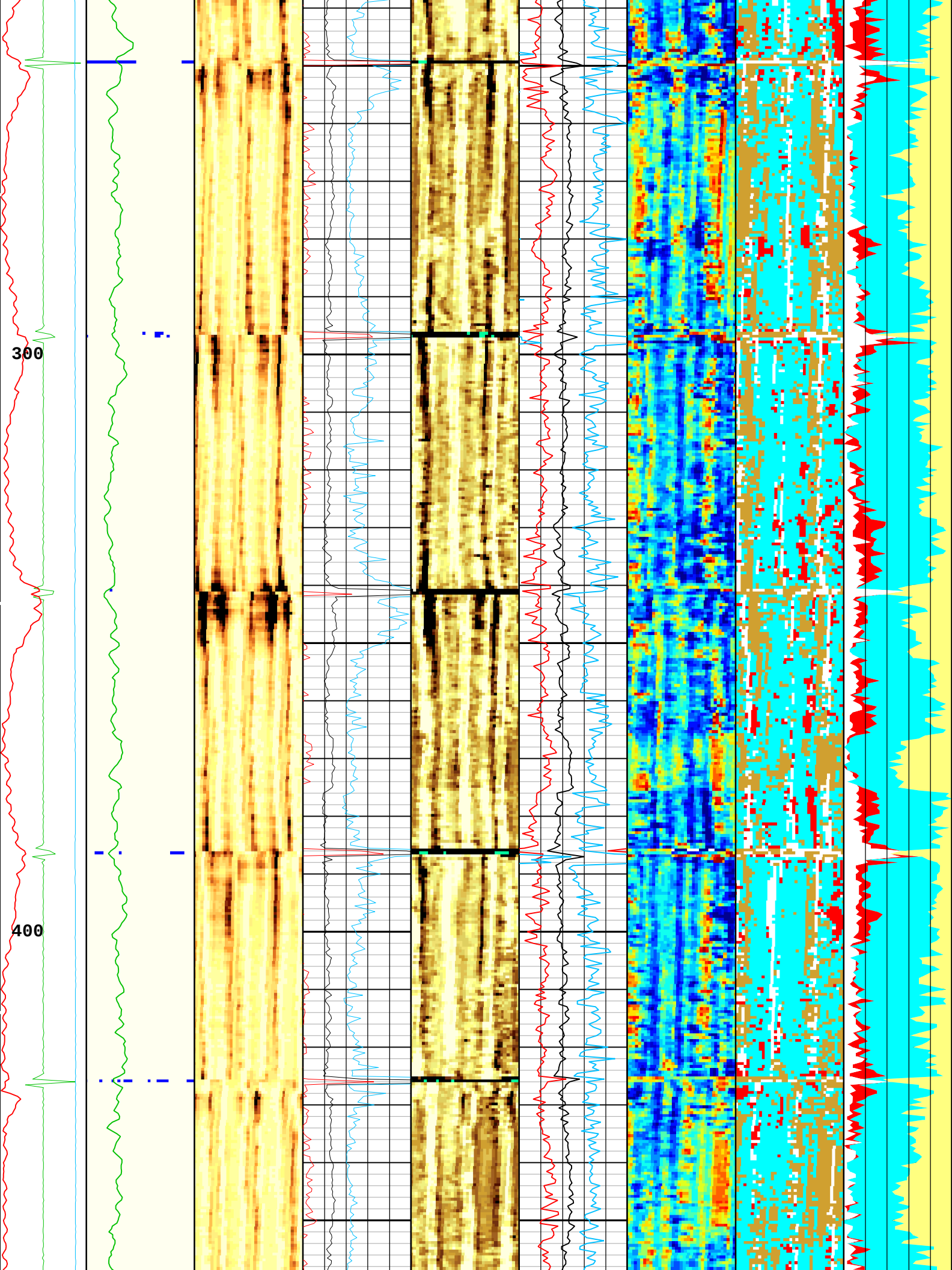
USIT Processing Flags (UFLG[0]) USIT-E

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




Revolution Speed (RSAV) USIT-E
6 c/s 7.5
Gamma Ray (ECGR_EDTC) EDTC-B
0 gAPI 150
Explicit Normalization
USIT - Amplitude of Wave (AWBK) USIT-E (dB)
Acoustic Impedance Maximum (AIMX) USIT-E
-1 Mrayl 9
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)
Flexural Attenuation (U-USIT_UFAX) USIT-E
0 dB/m 150
Custom Normalization
USIT - Flexural Attenuation (UFAK) USIT-E (dB/m)
Normalization
USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E
SLG Gas Index
SLG White Point Index
100
200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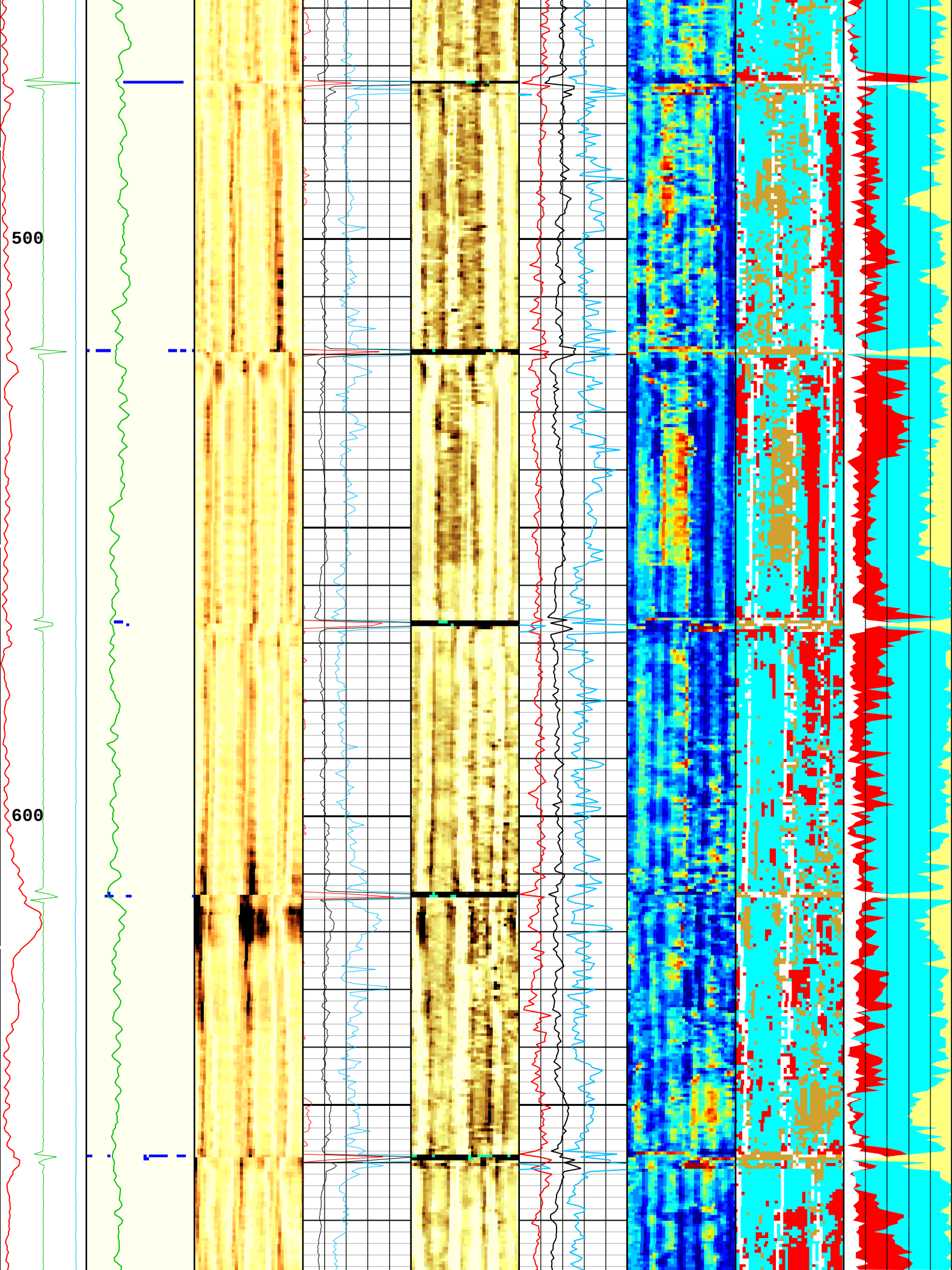
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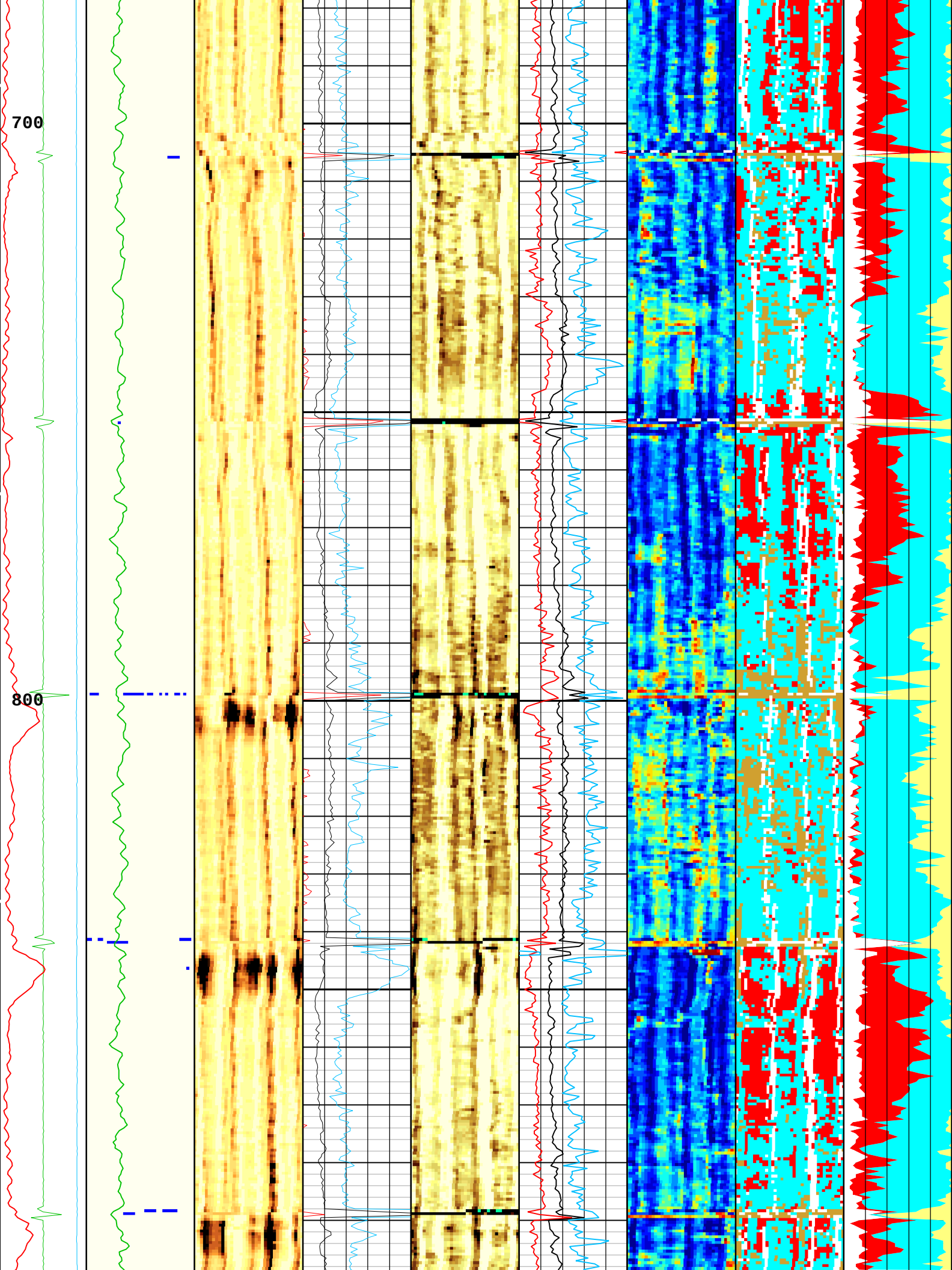
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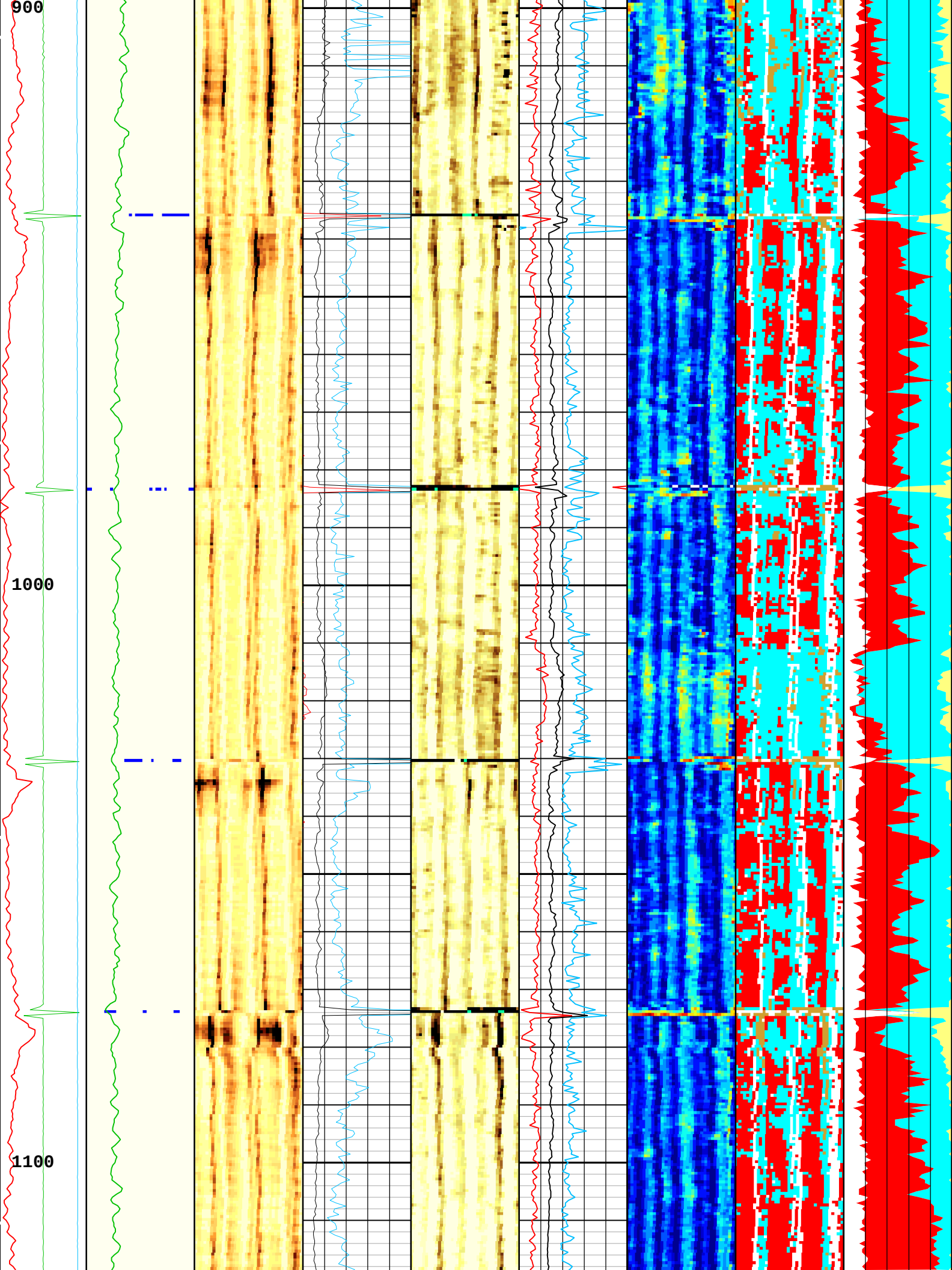
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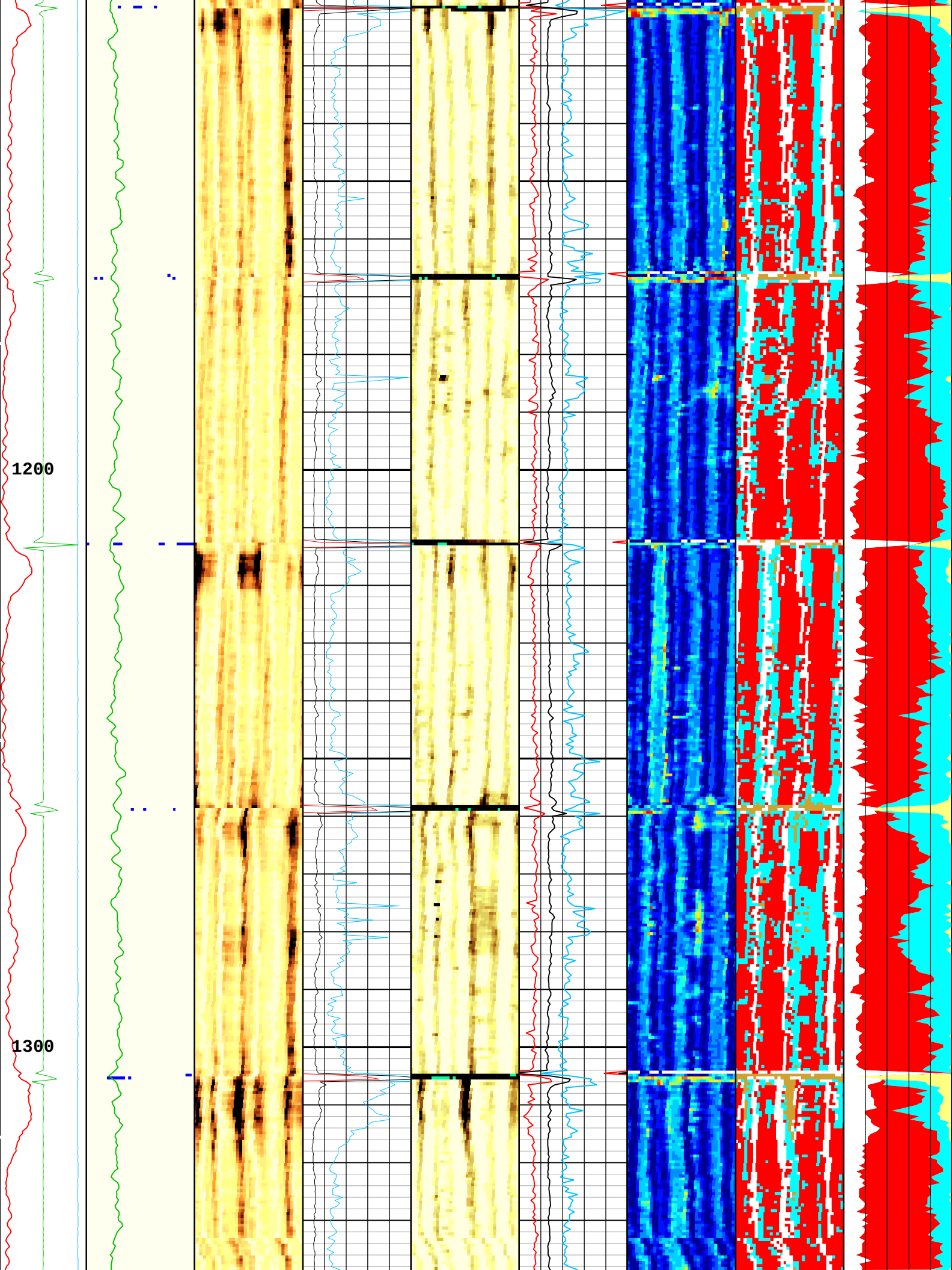
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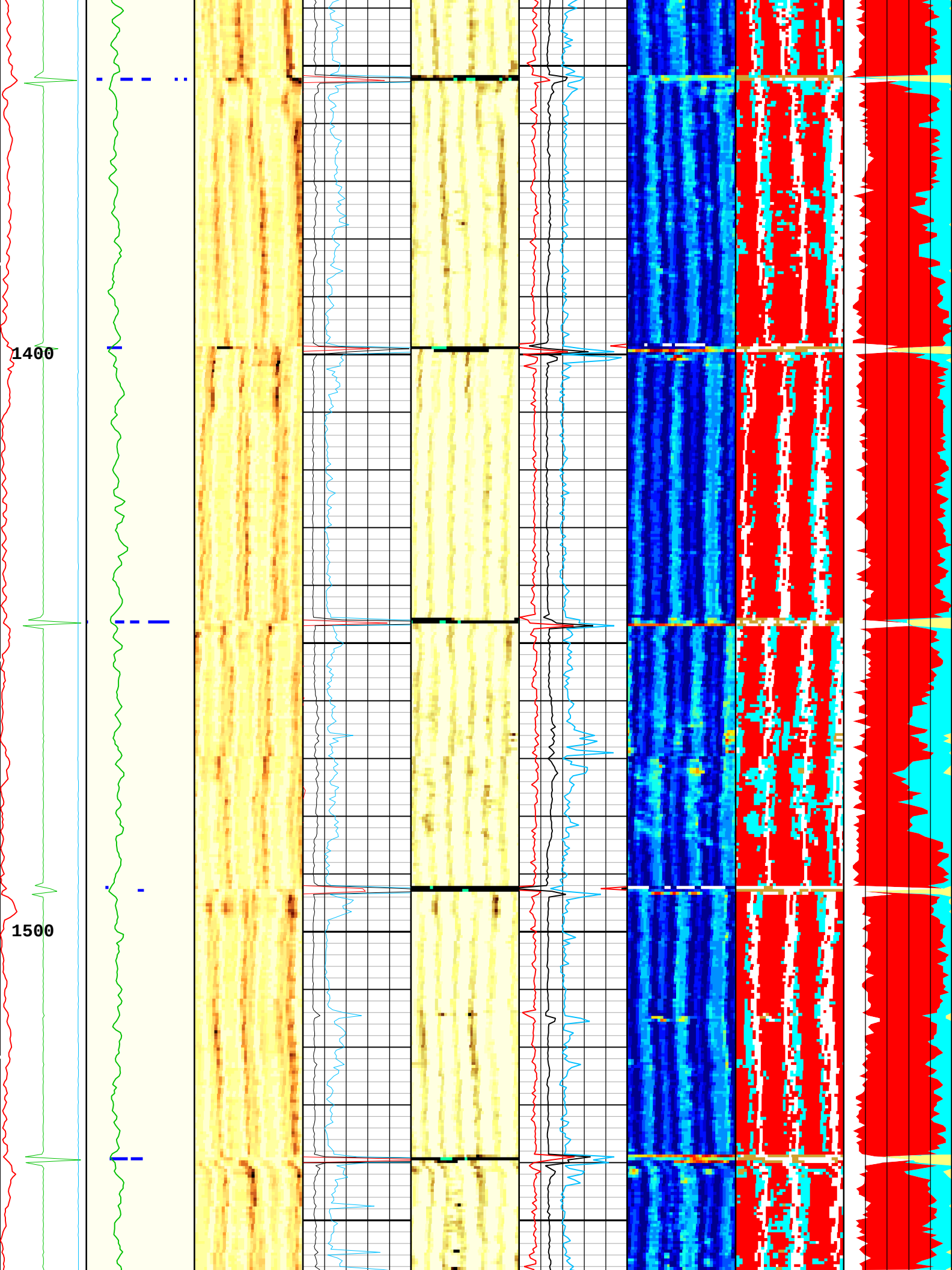
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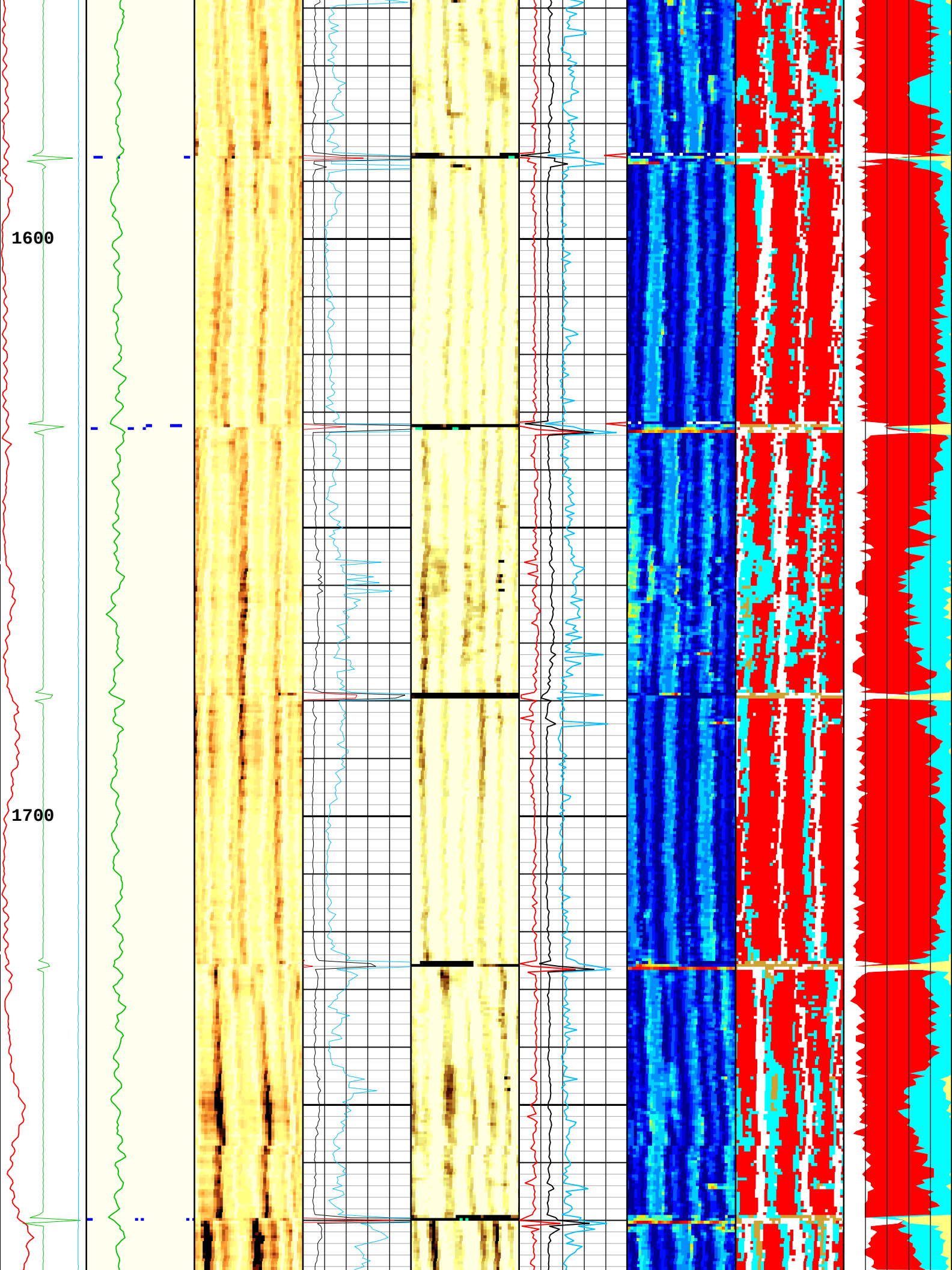
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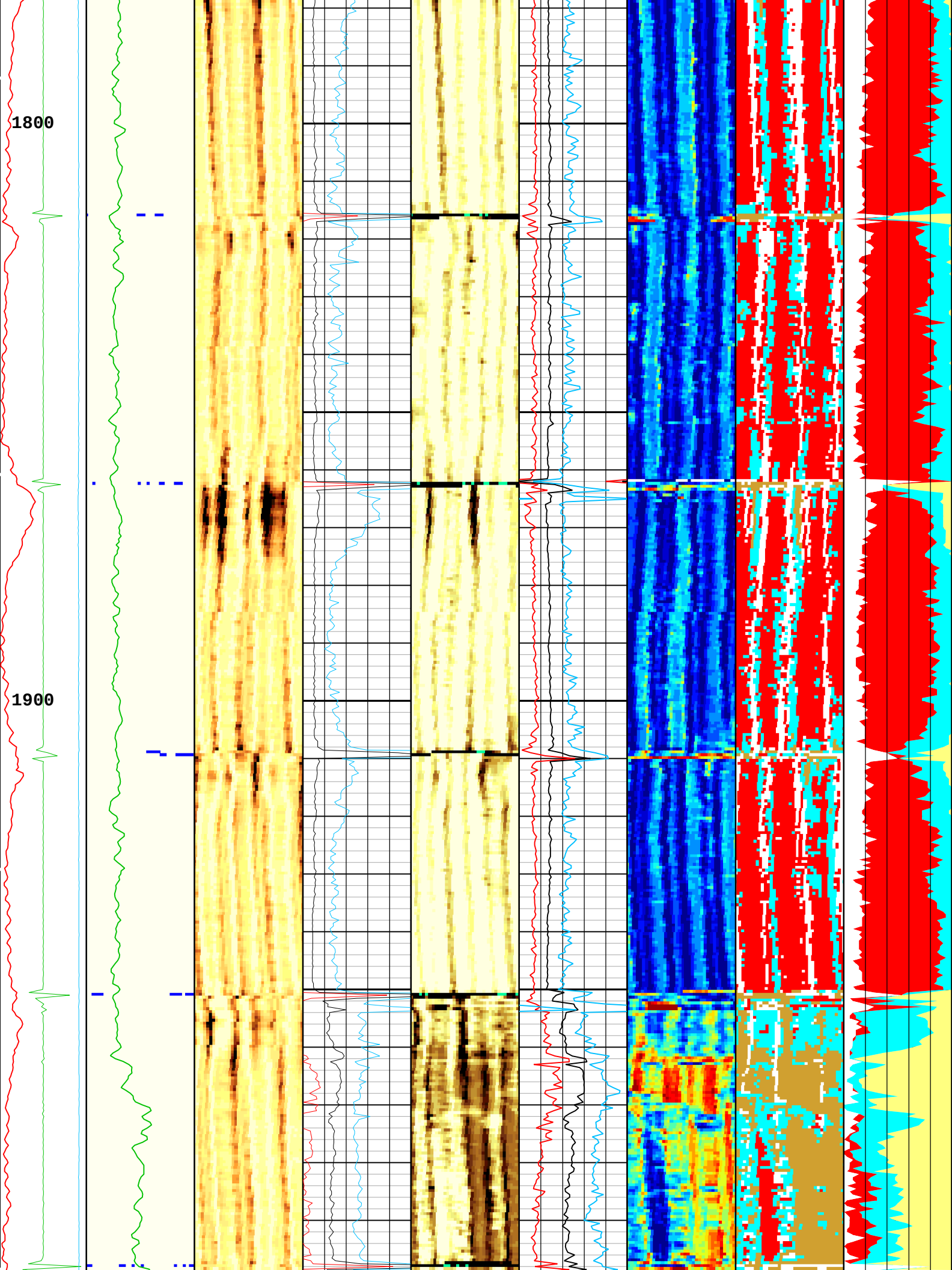
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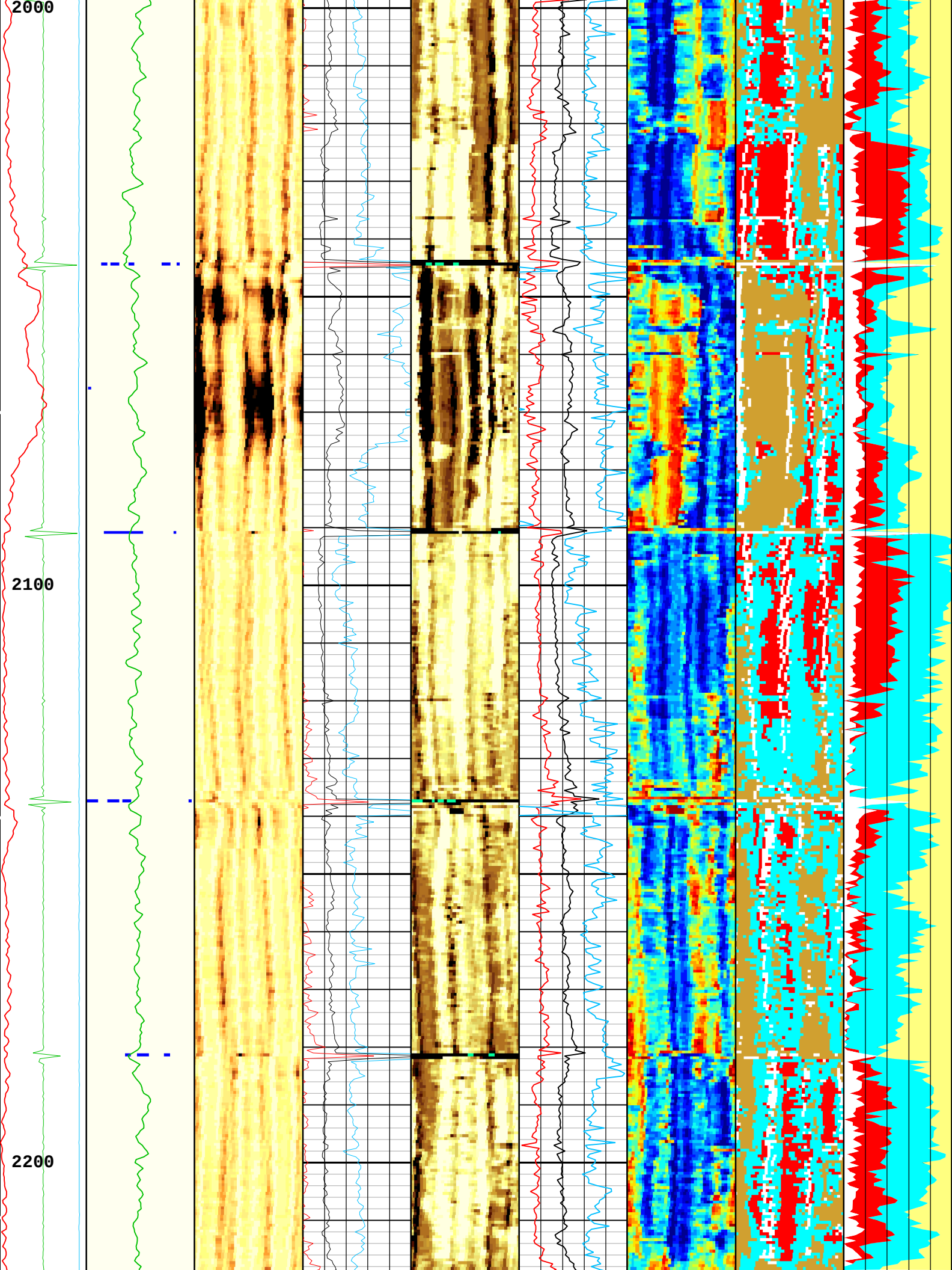
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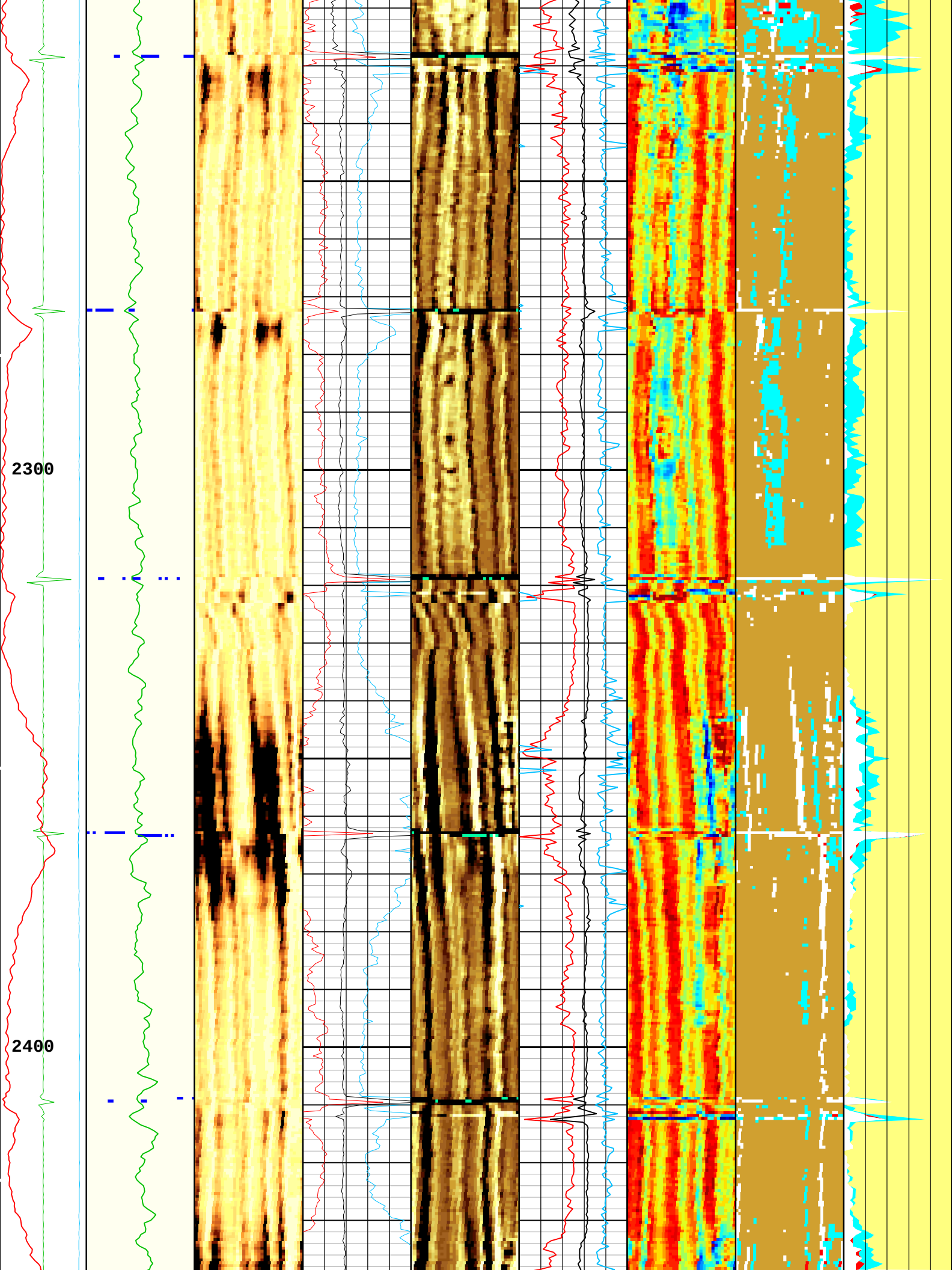
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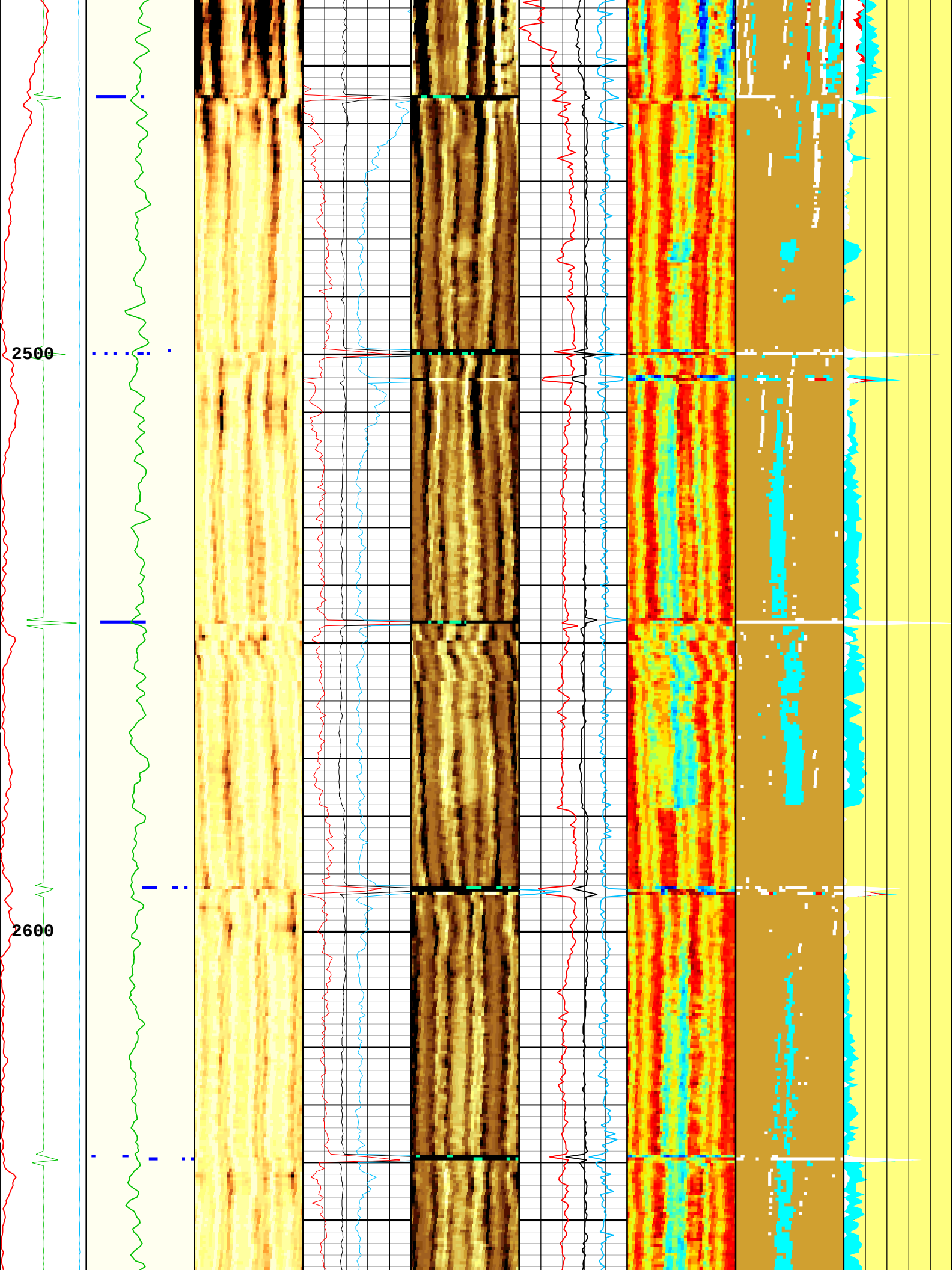
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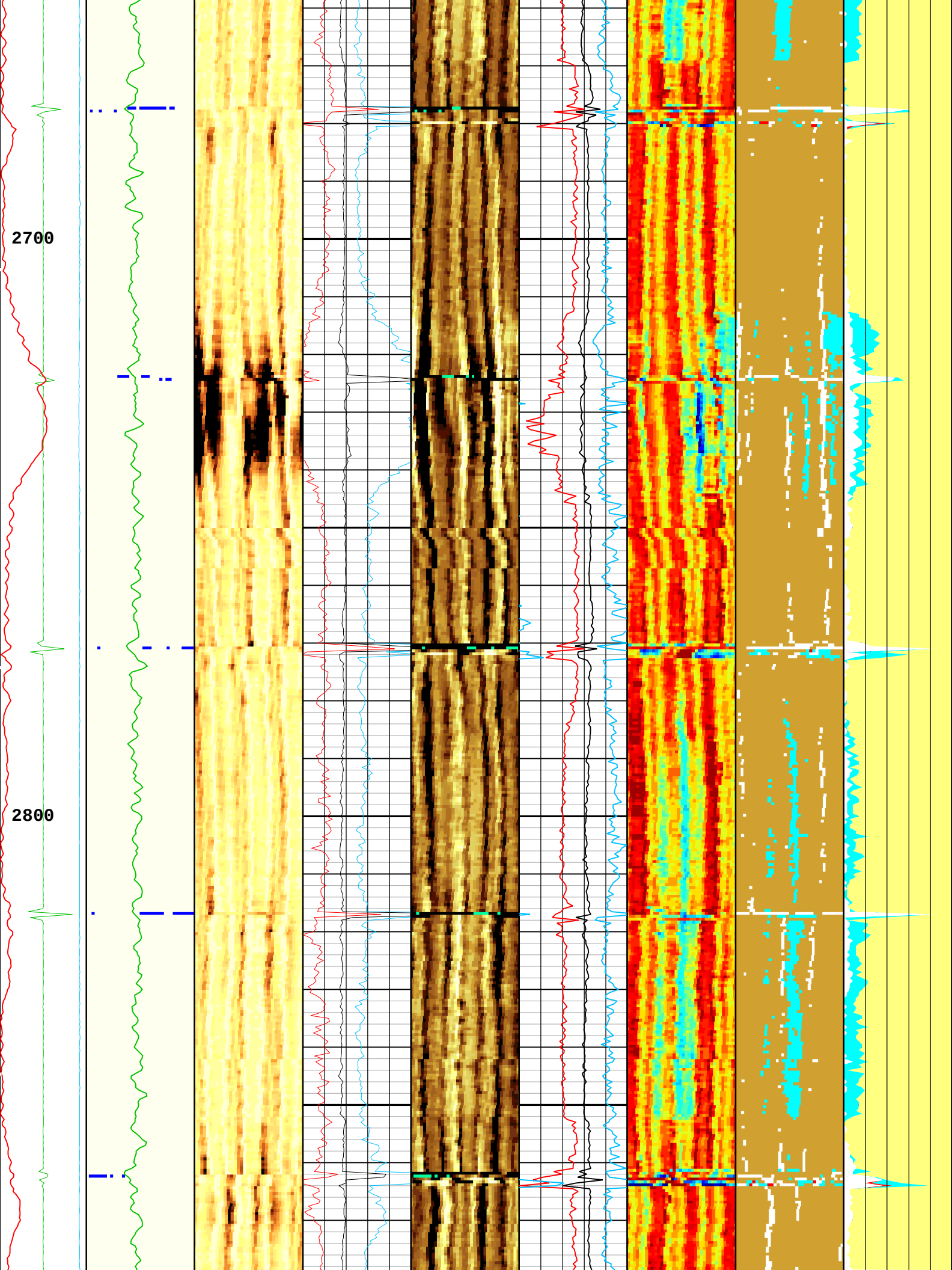
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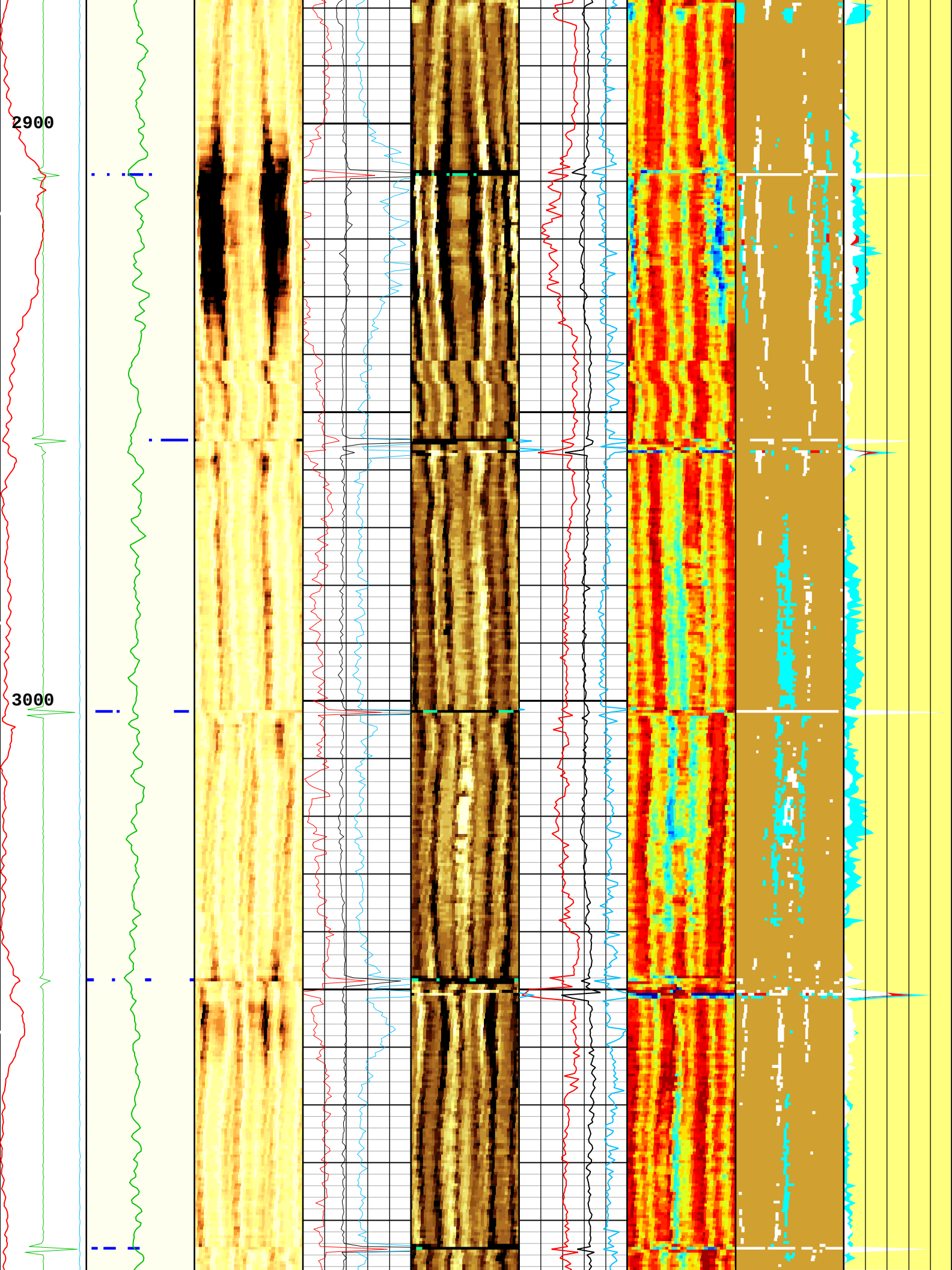
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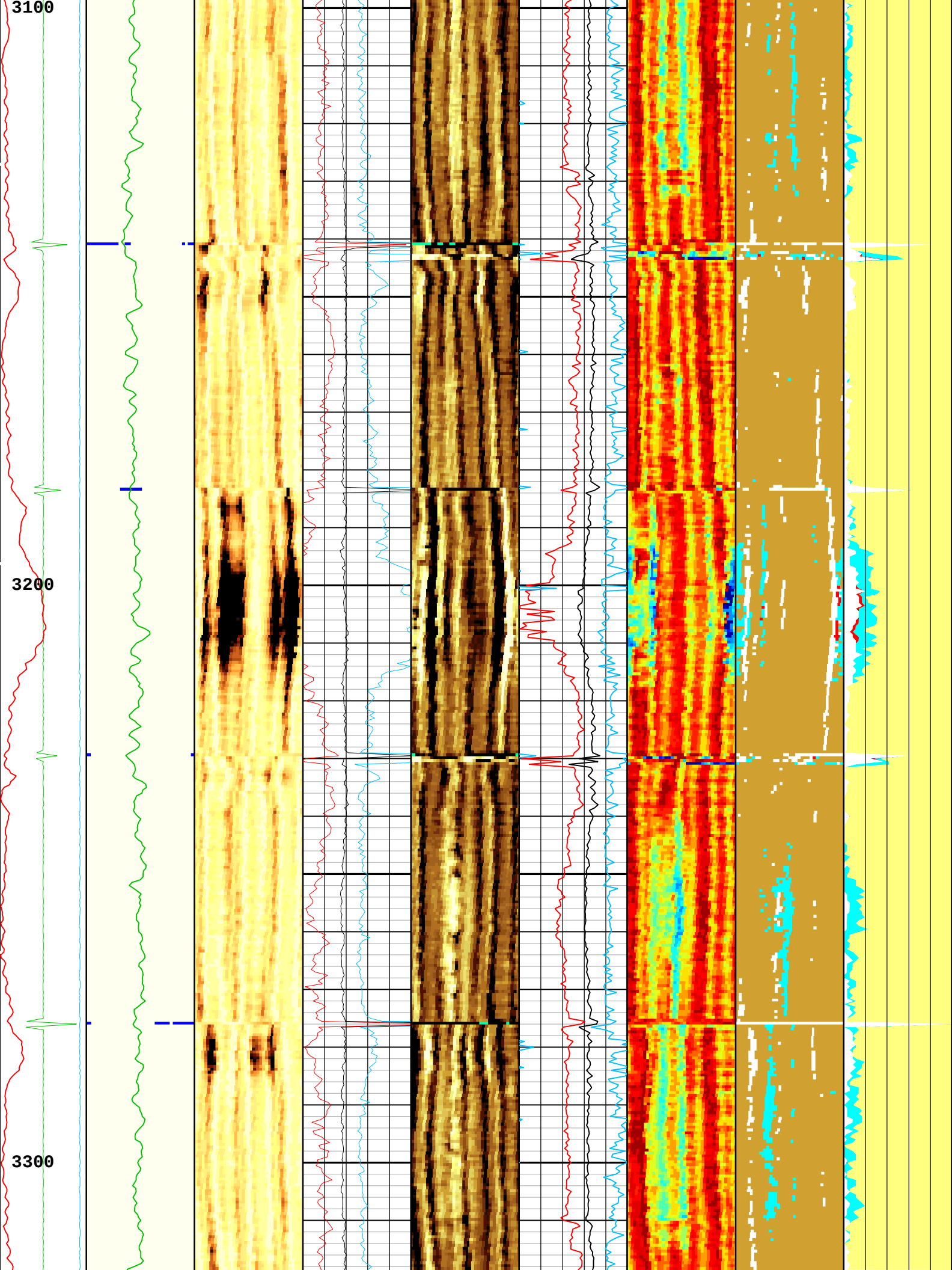
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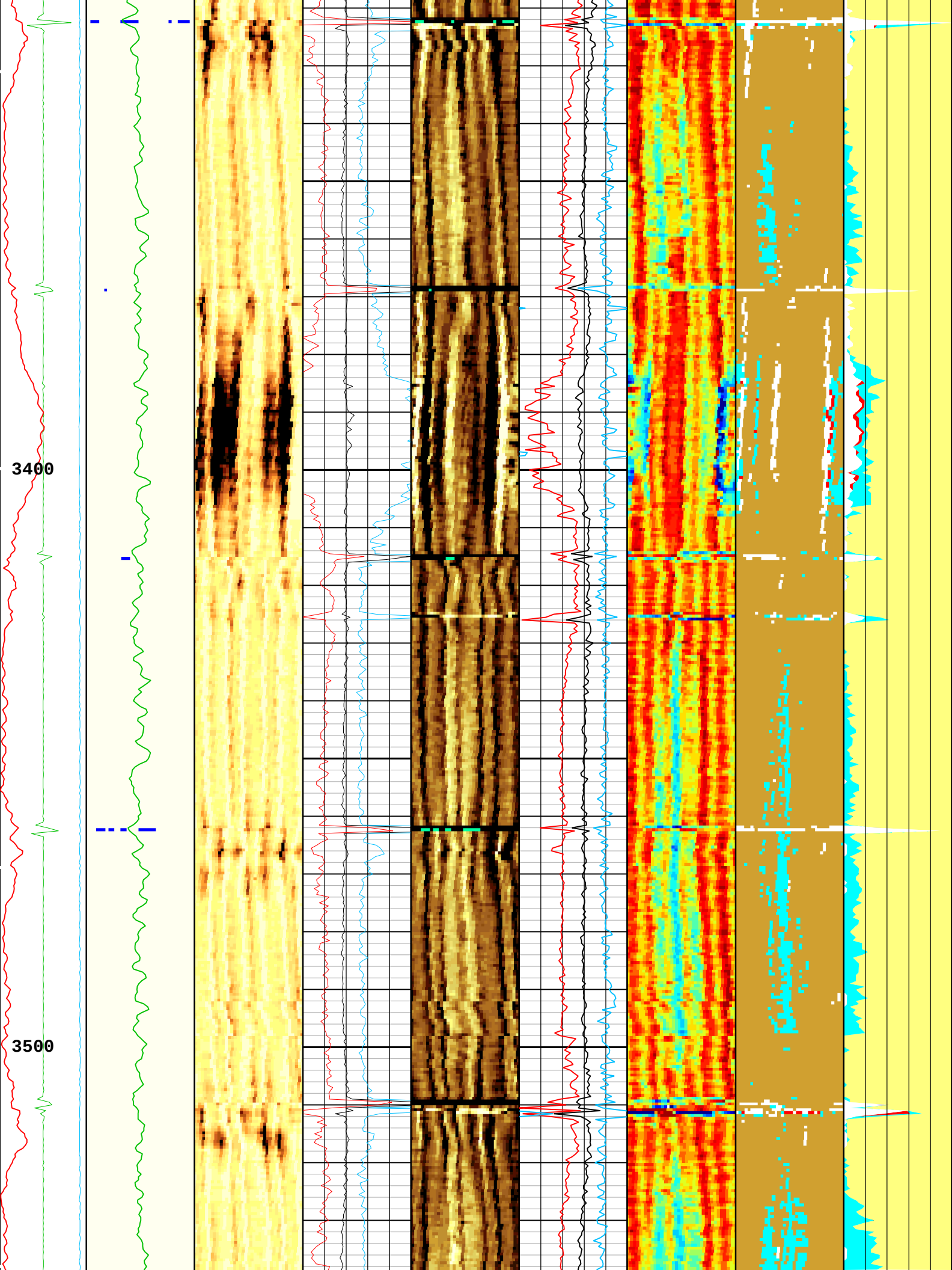
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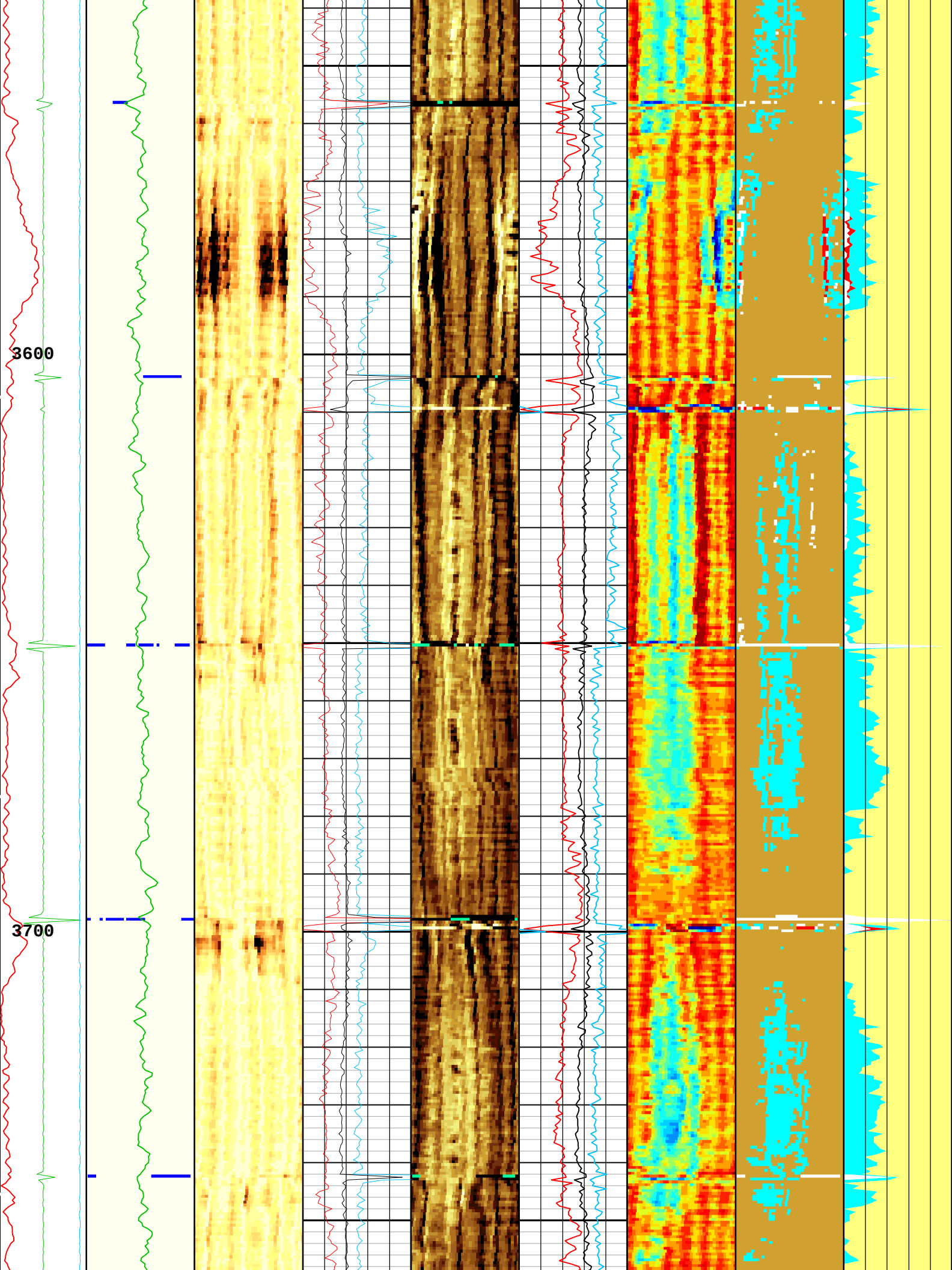
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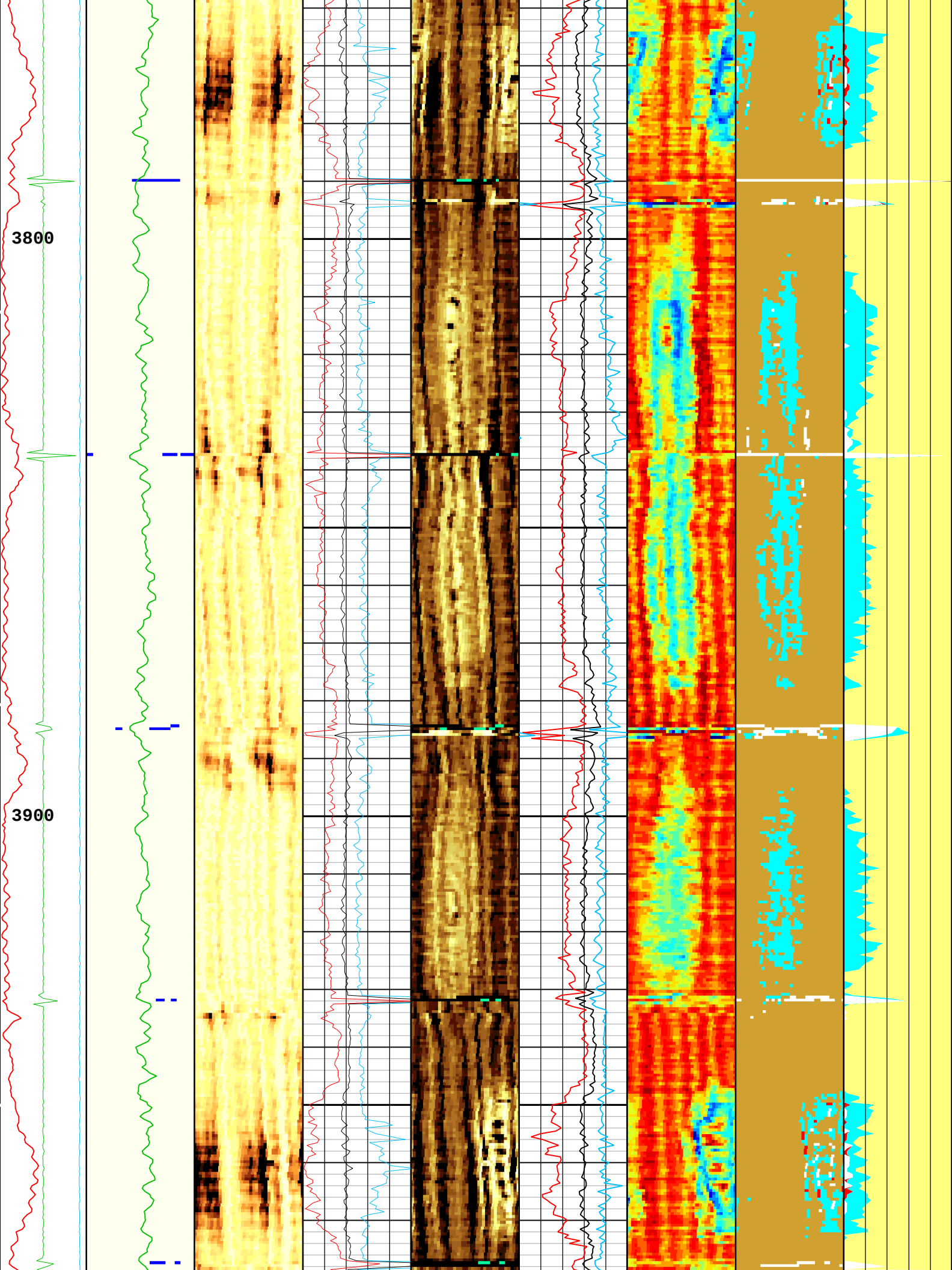
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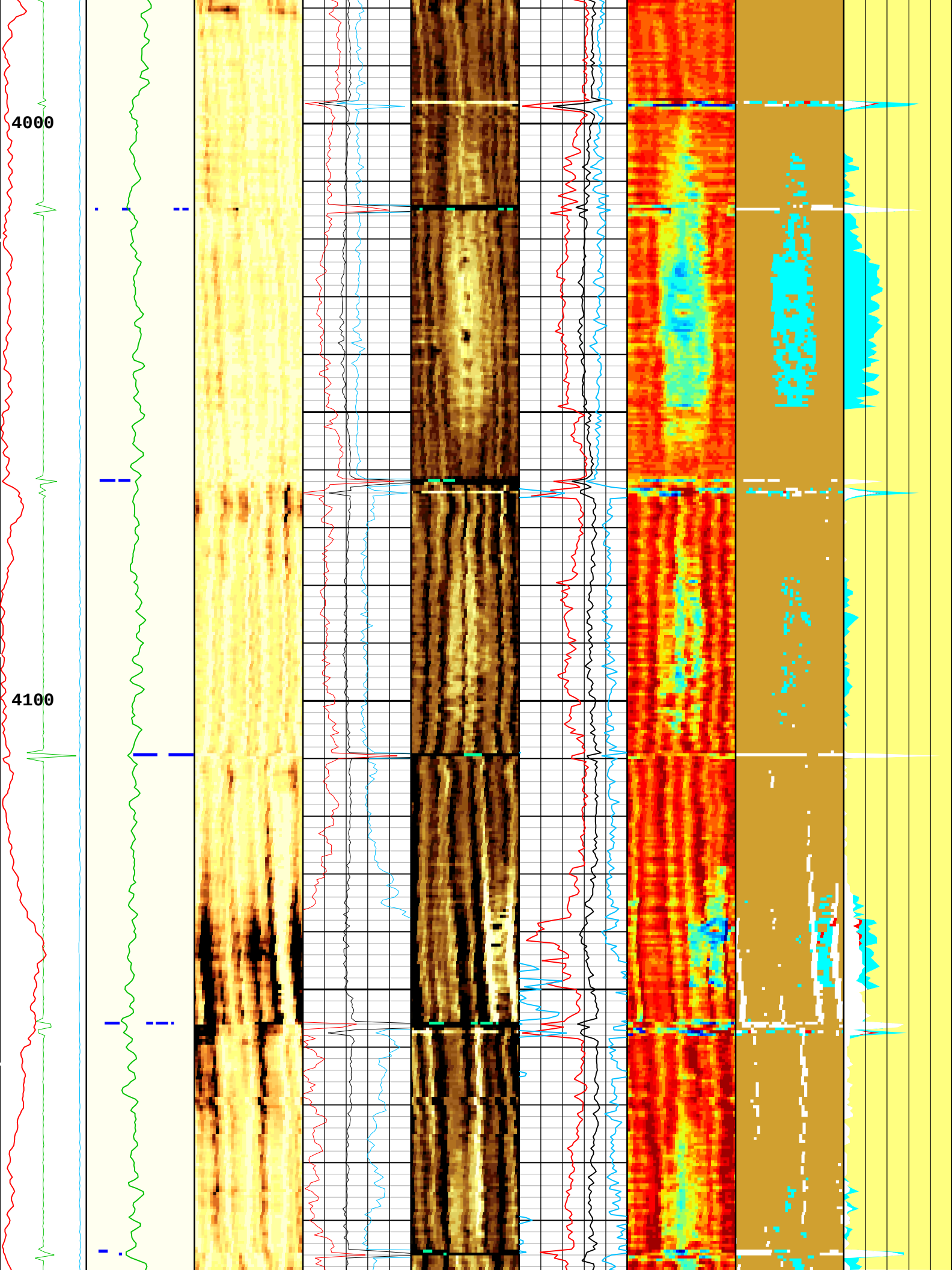
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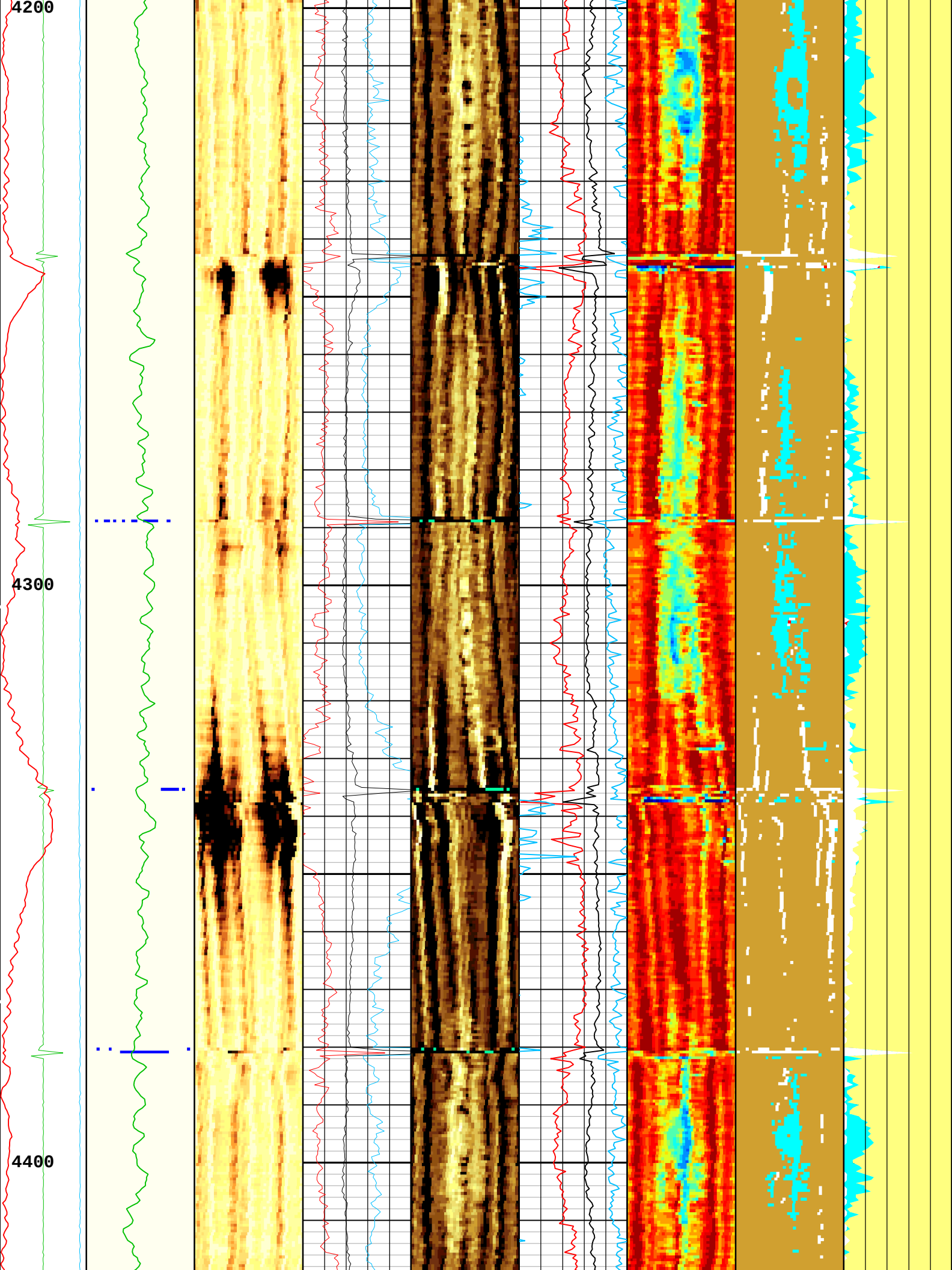
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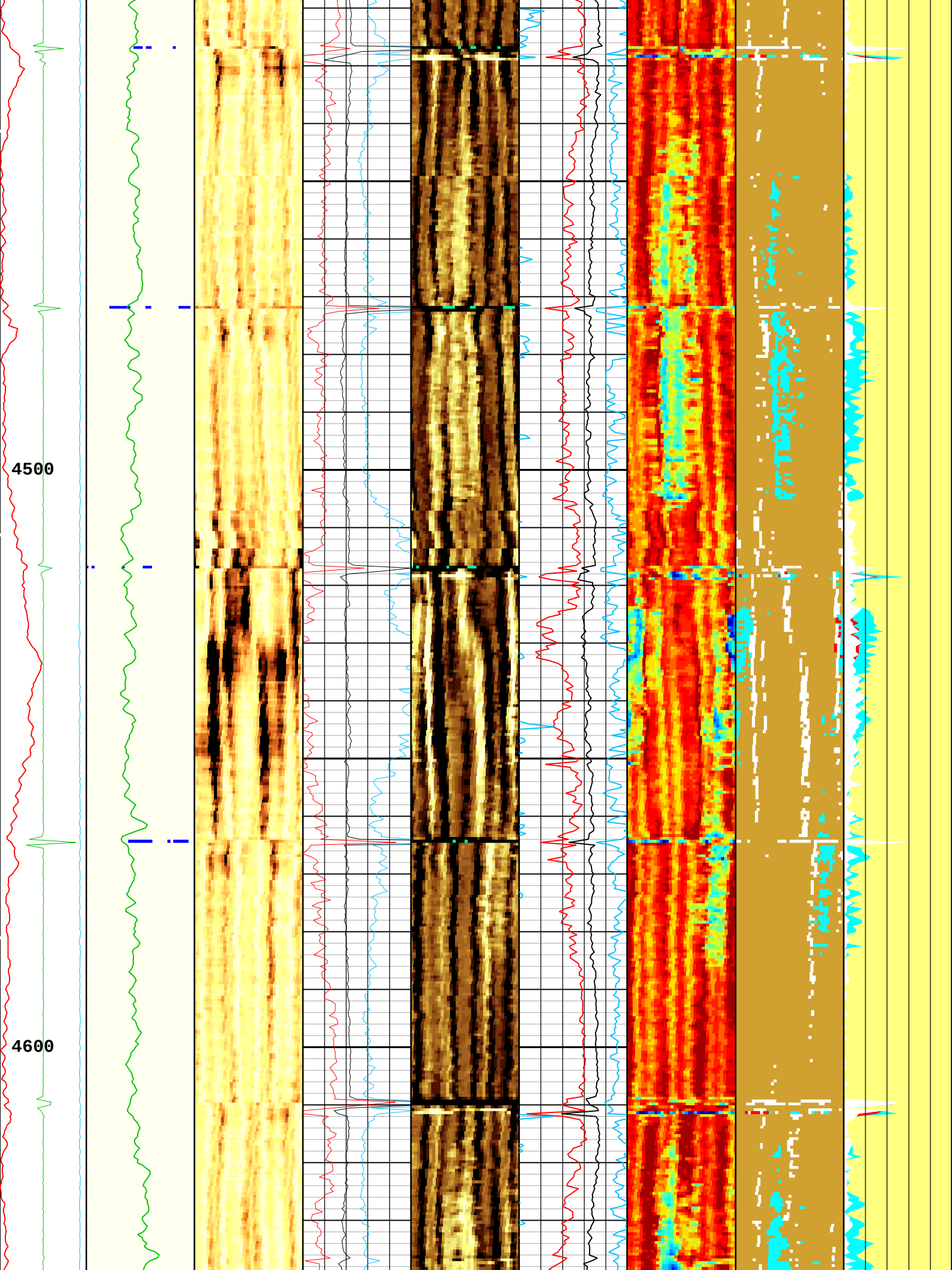
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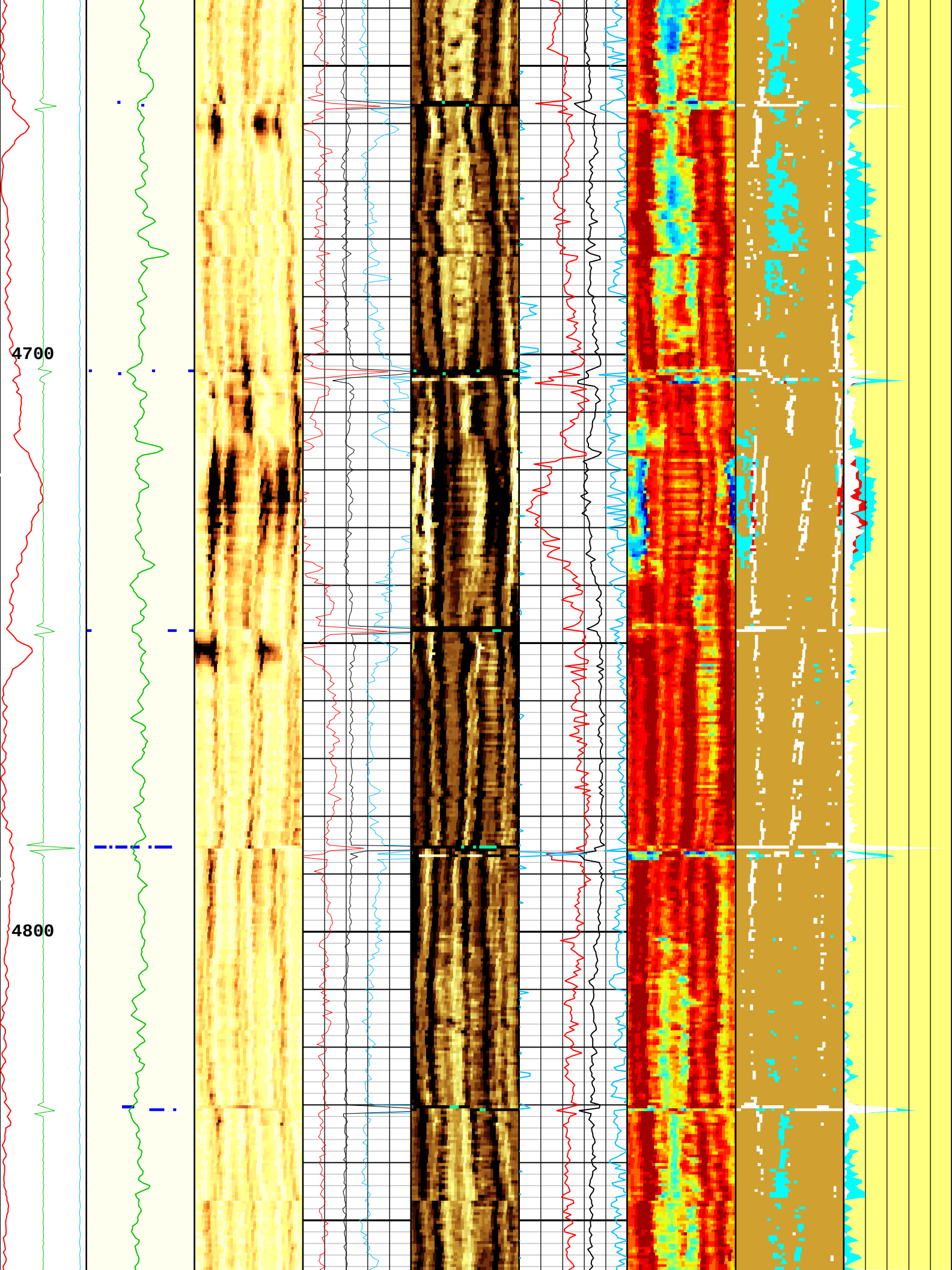
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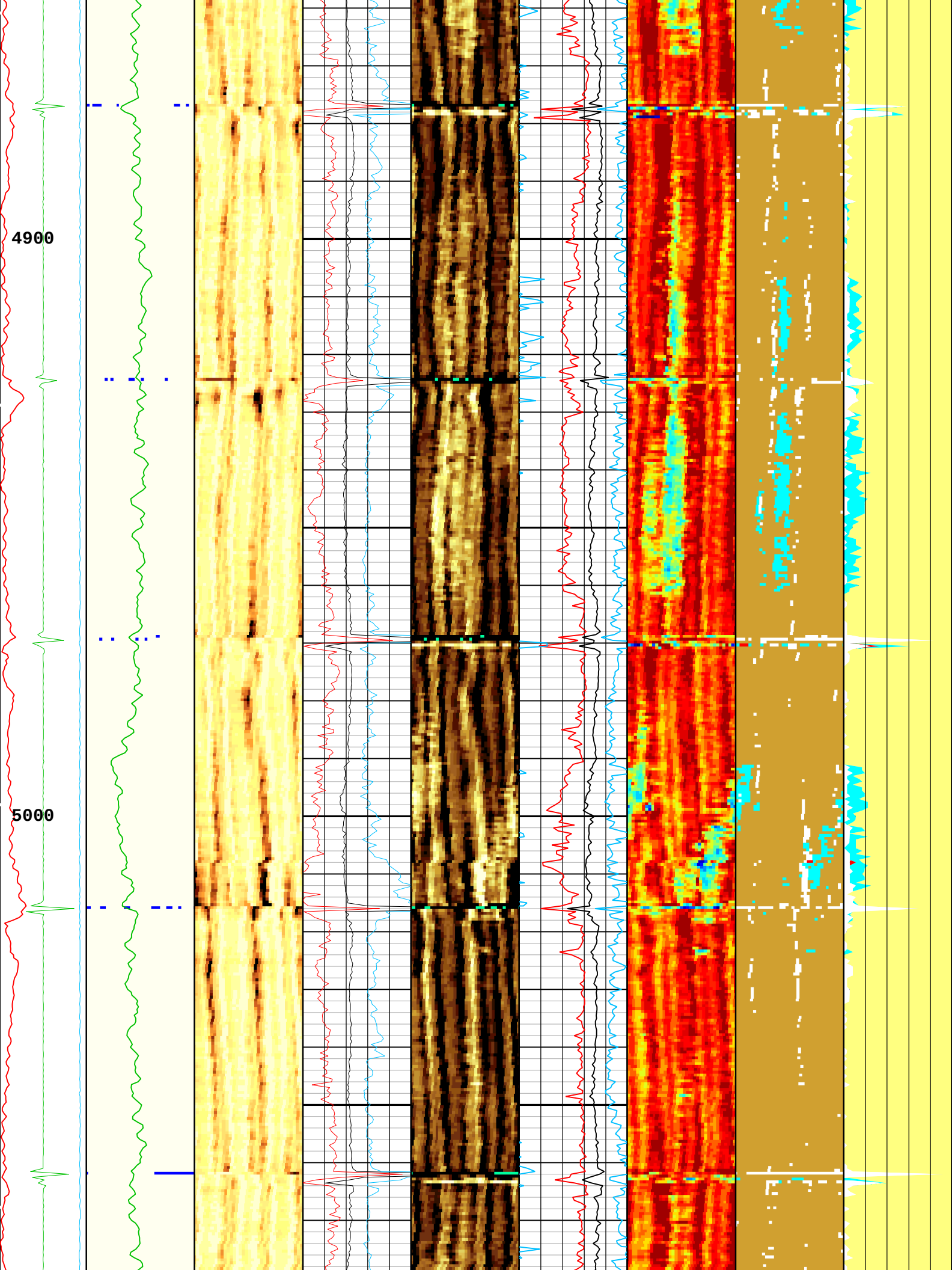
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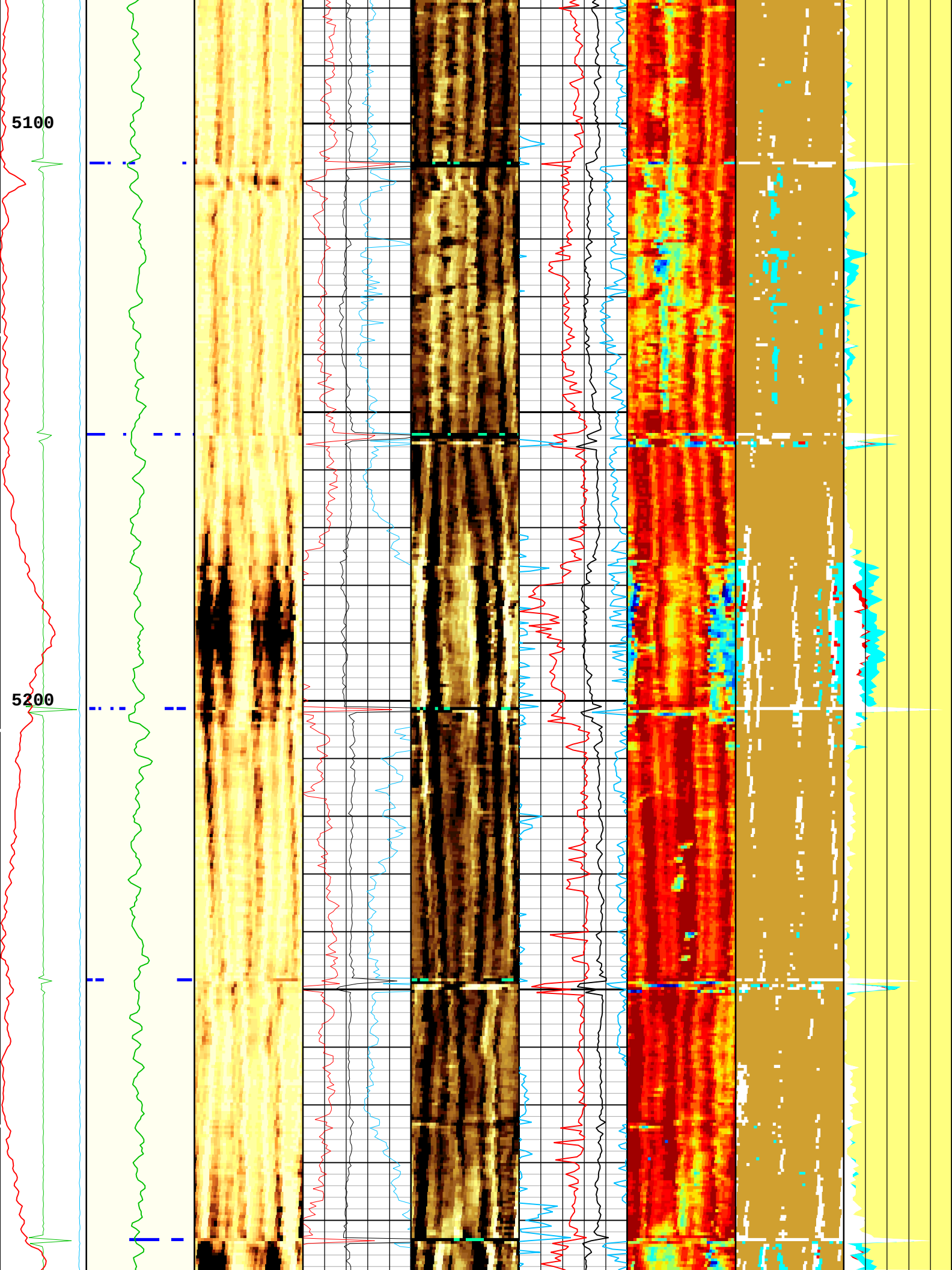
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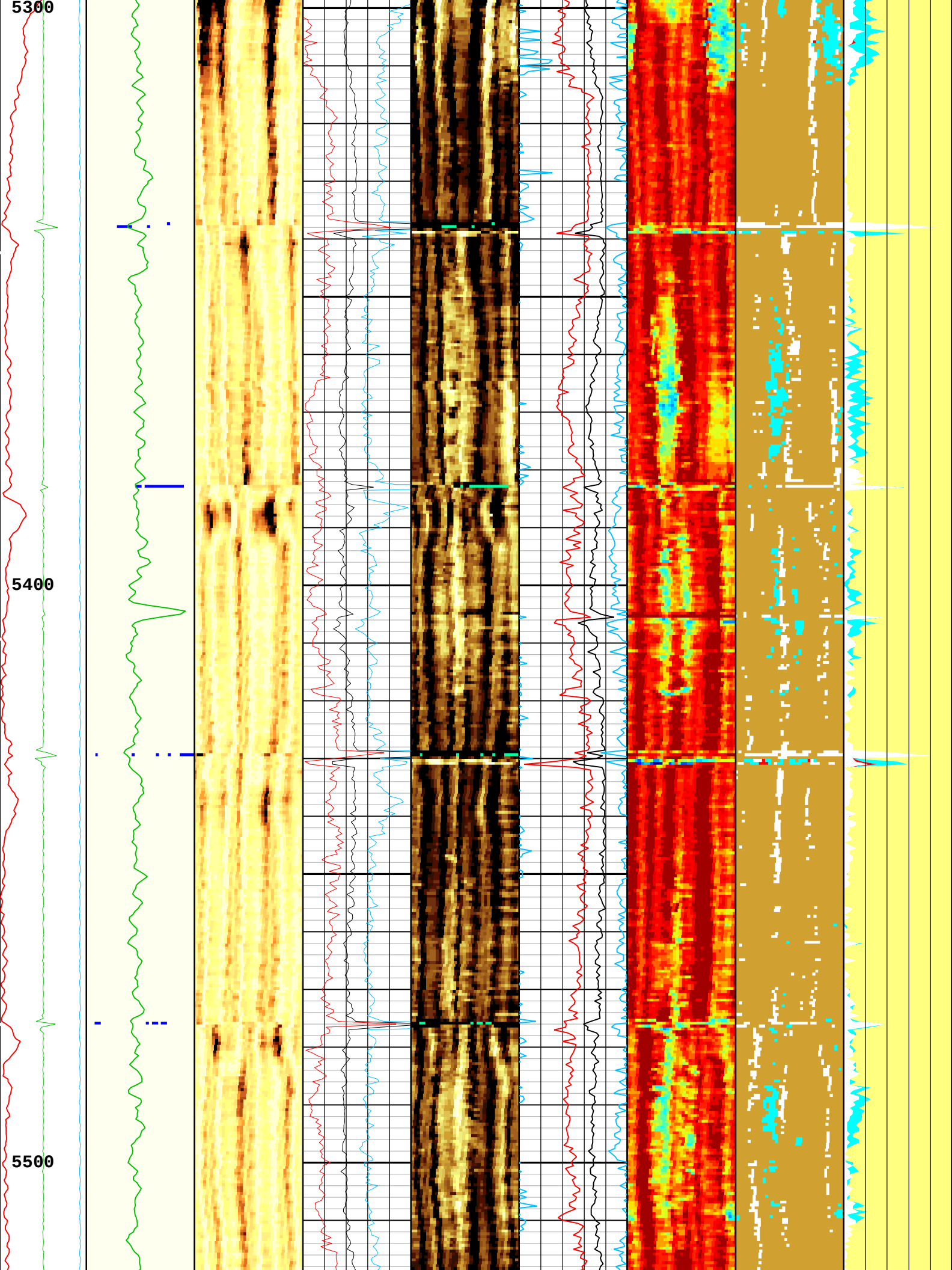
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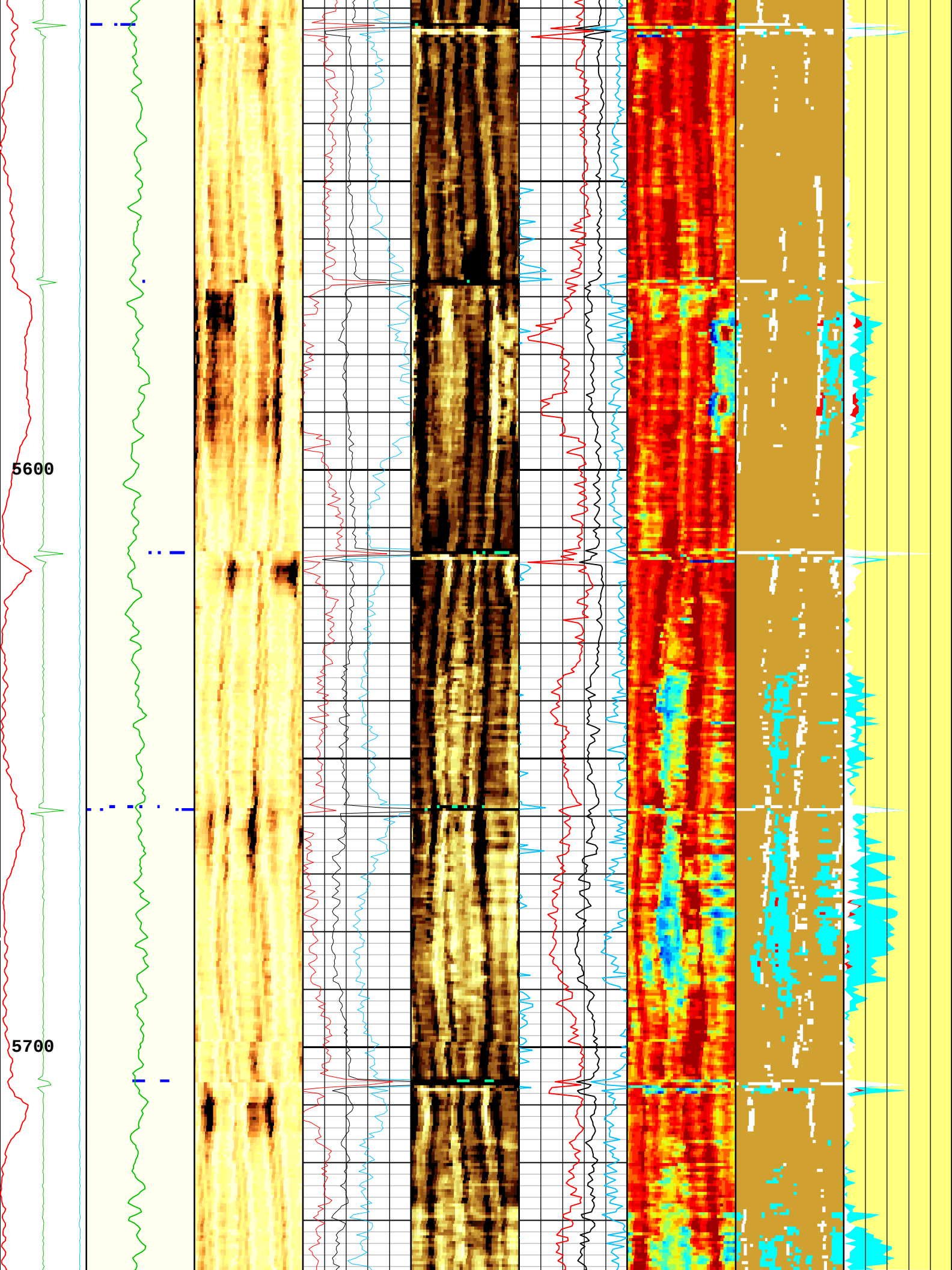
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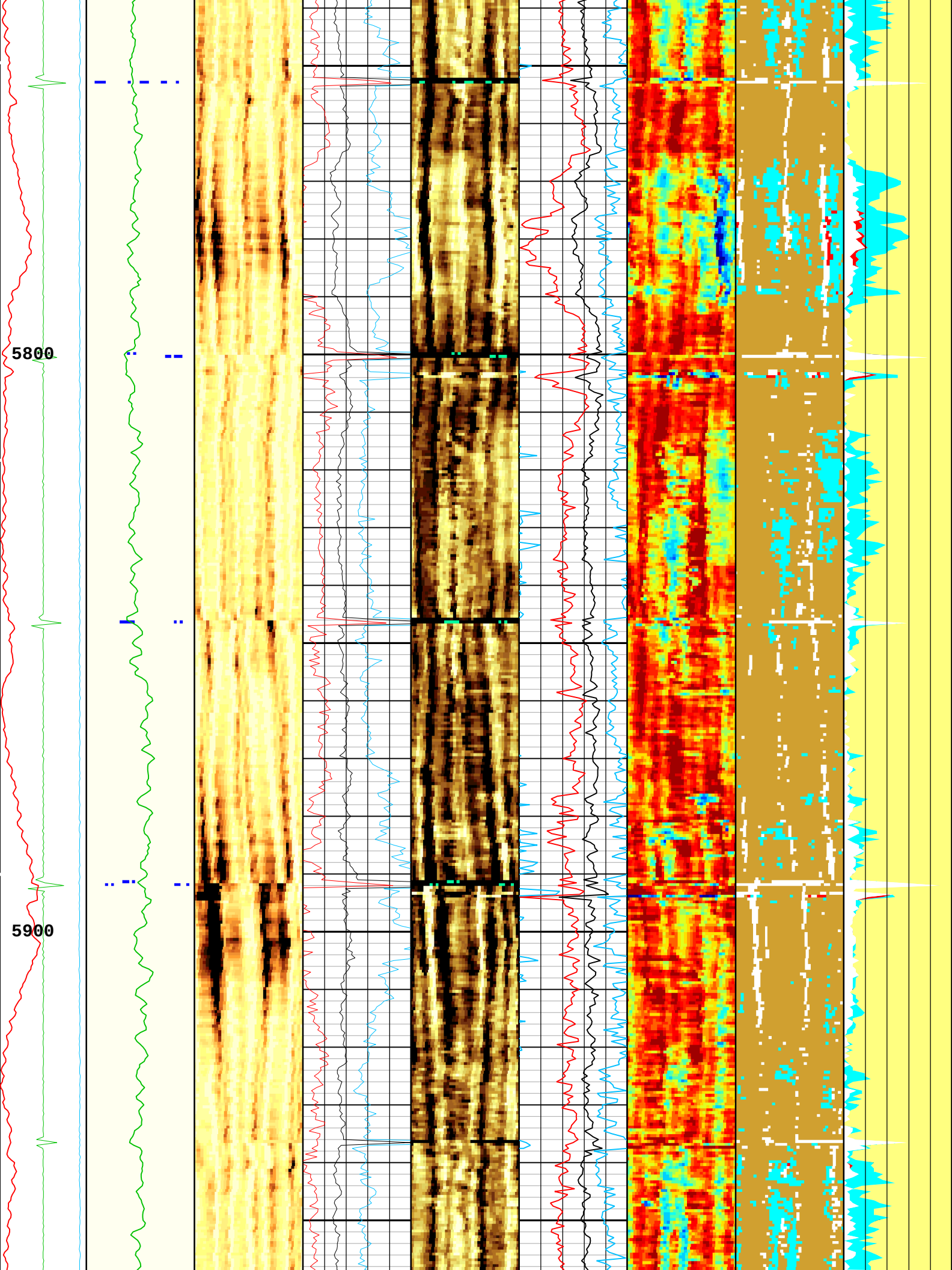
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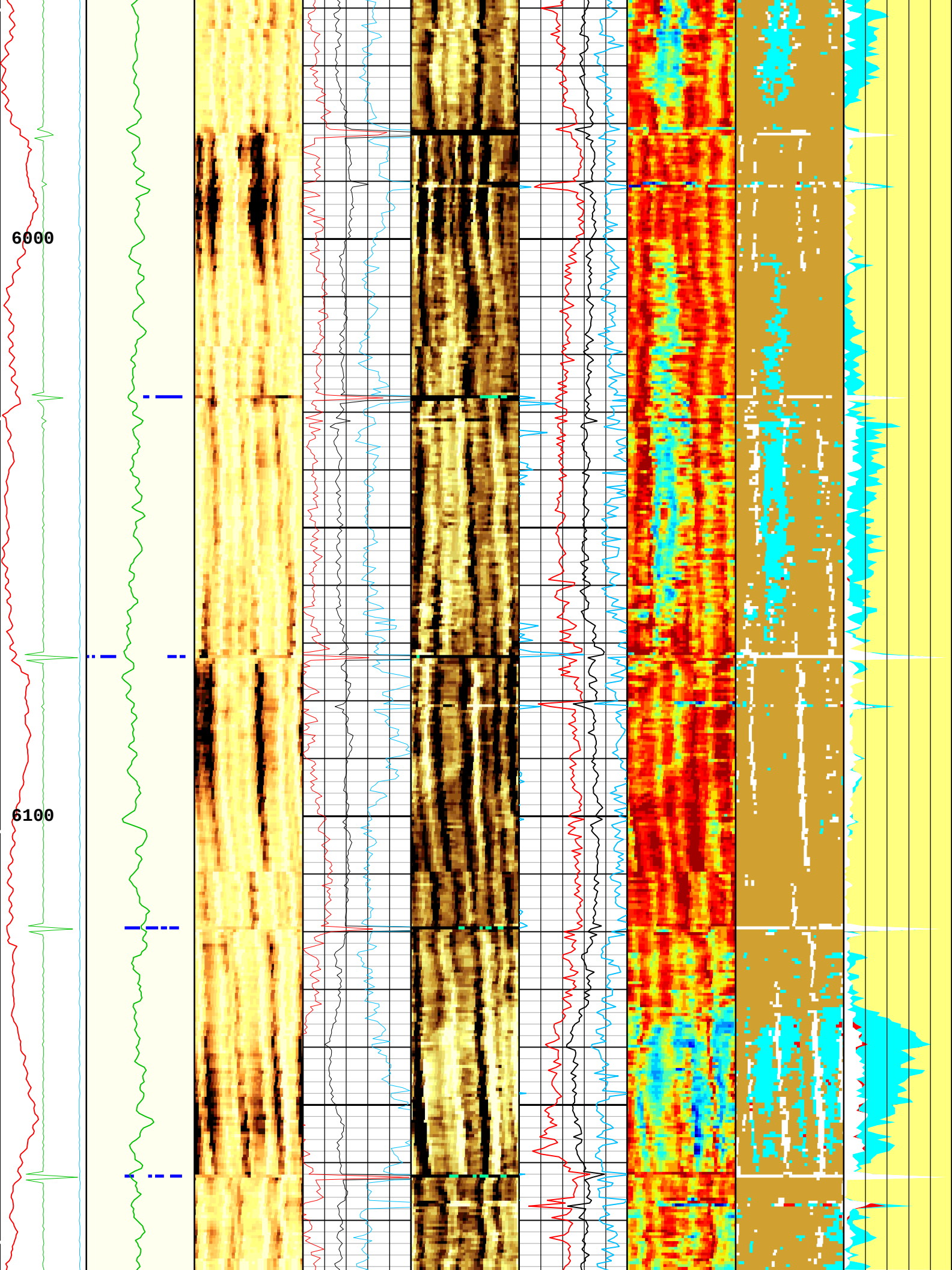
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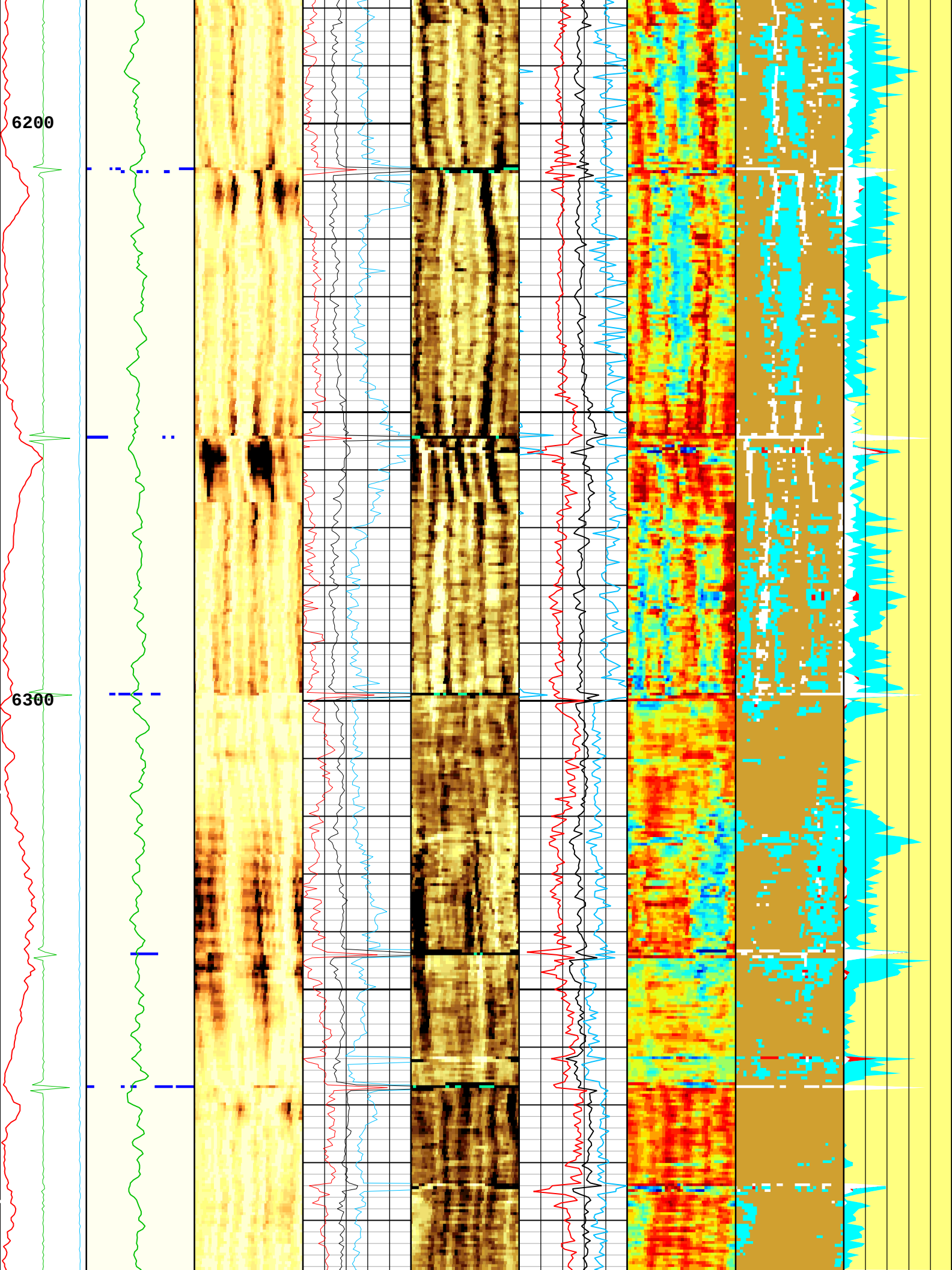
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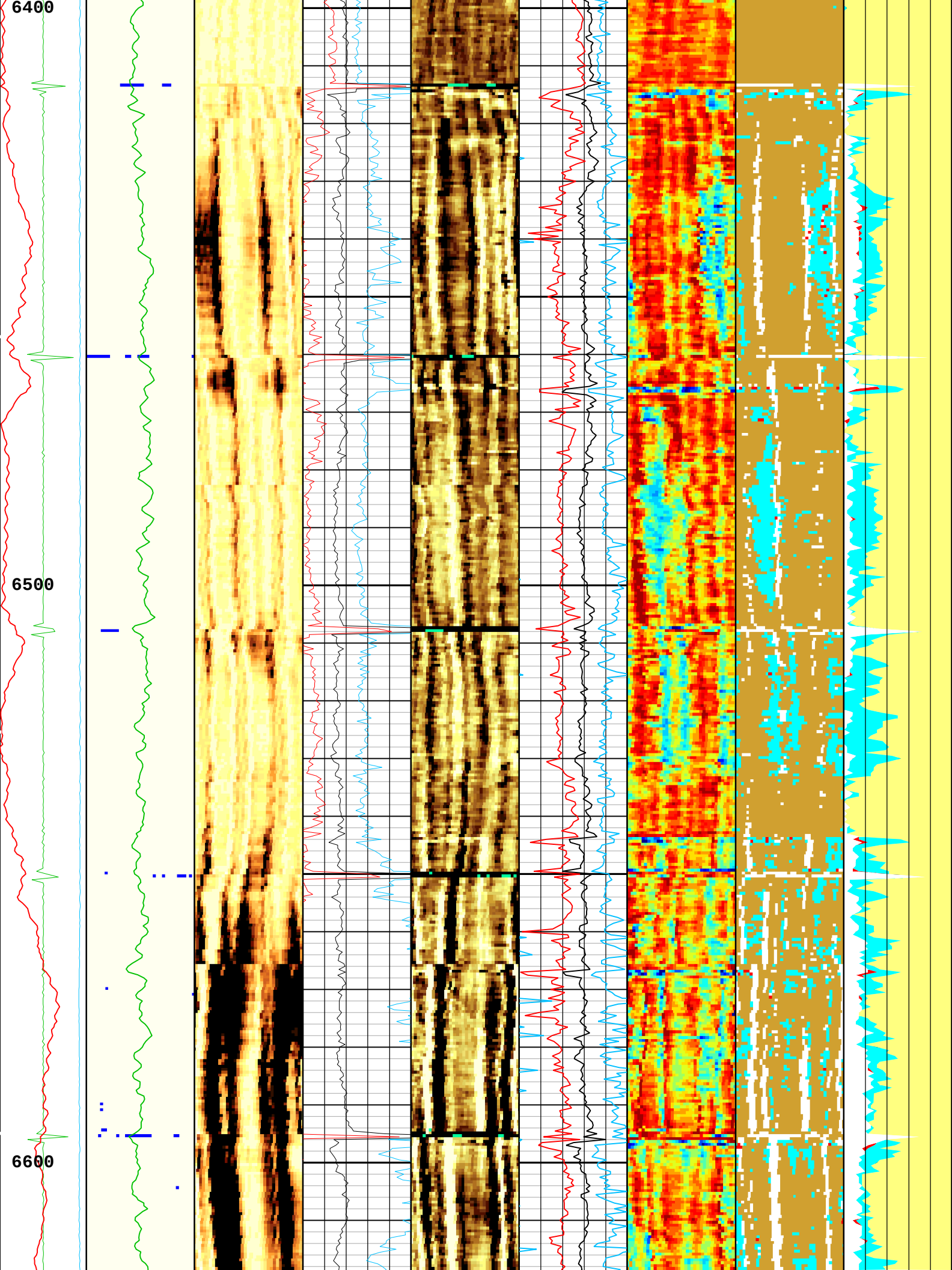
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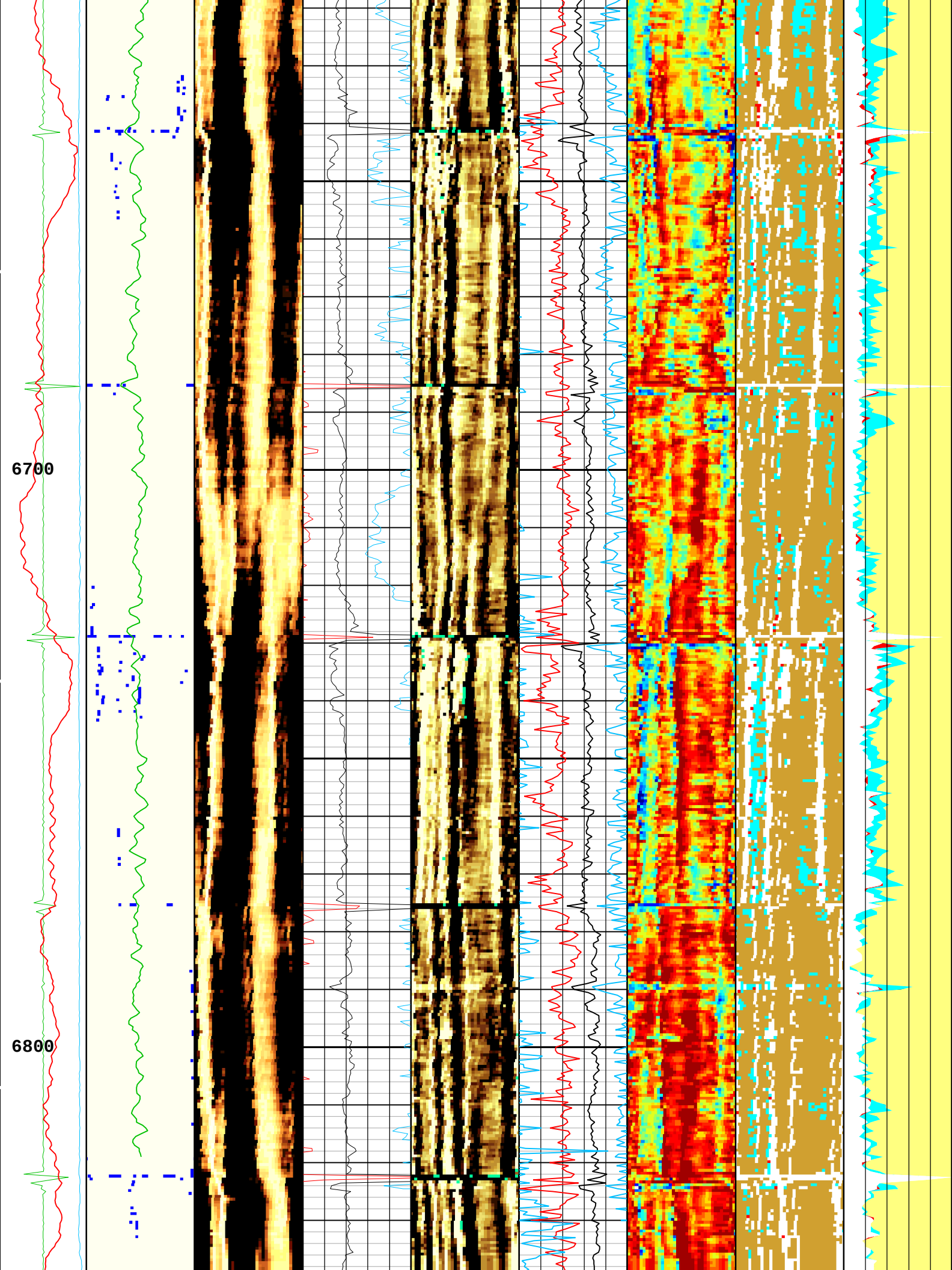
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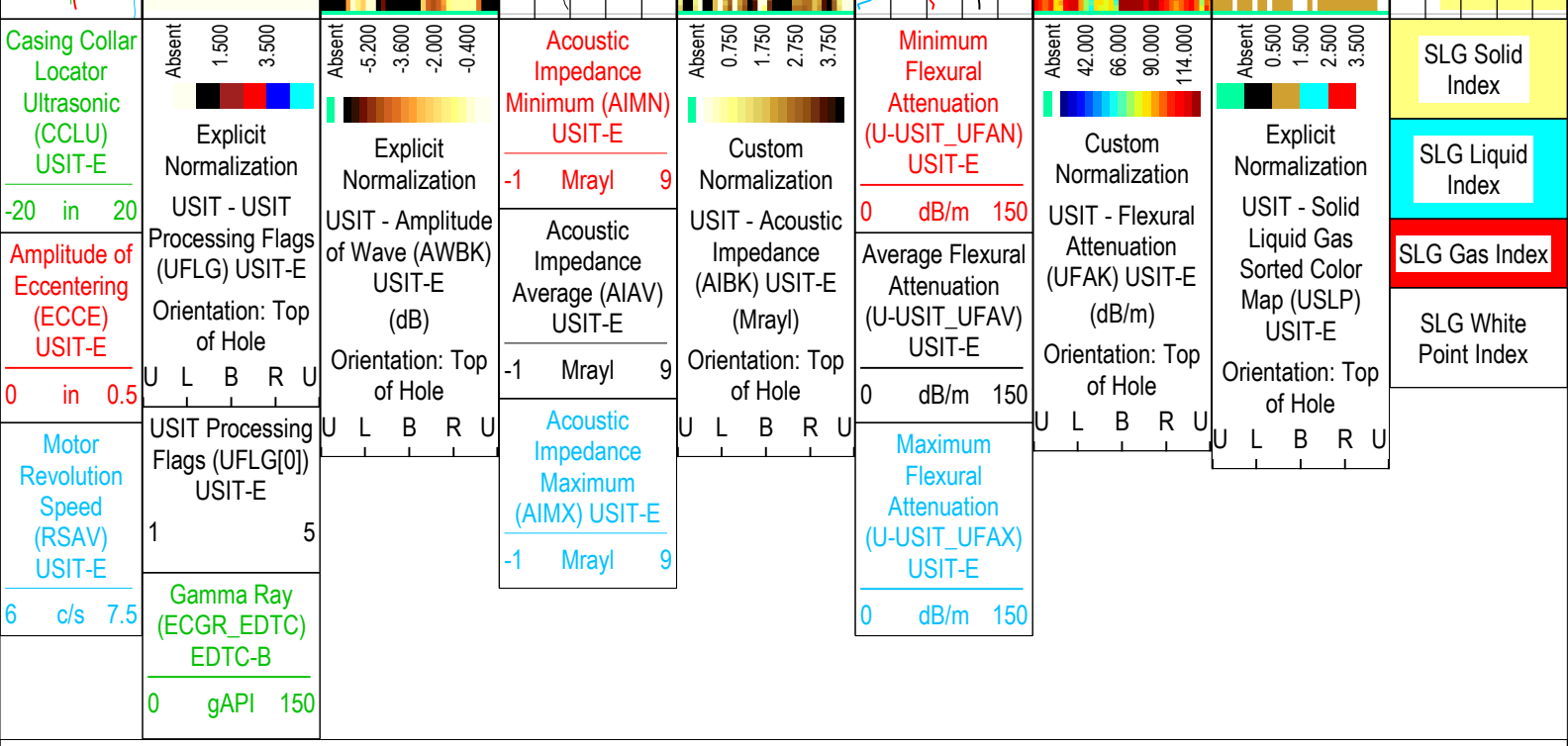


USIT Processing Flags (UFLG[0]) USIT-E

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

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

TIME_1900 - Time Marked every 60.00 (s)

Description: USI IBC SLG Format: Log (IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 03-Mar-2018 18:28:16

Channel Processing Parameters

1A: 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	13631	ft
CDEN	Cement Density	USIT-E	11	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Light Cement	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	9.8	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	0	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	Inversion 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_INV	IBC Inversion Mud Normalization Factor	USIT-E	1.23	
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
RPLUS_PROCESS	Ultrasonic R+ Processing	USIT-E	No	
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	1.59	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-10.05	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
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	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	13.5	38	956
BS	8.75	956	6840.5

All depth are actual.

Tool Control Parameters

1A: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
DOT(DOS)	Distance between Opposite Transducer Faces	USIT-E	1.756	in
EMXV	EMEX Voltage	USIT-E	Time Zoned	V
HRES	Horizontal Resolution	USIT-E	10 deg	
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
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	136	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	176	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	105	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	145	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	31.17	us
WINE	Window End Time	USIT-E	71.17	us

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
EMXV	50	03-Mar-2018 16:11:06	03-Mar-2018 16:14:49	6841.12	6607.67
EMXV	55	03-Mar-2018 16:14:49	03-Mar-2018 16:22:37	6607.67	6057.66
EMXV	50	03-Mar-2018 16:22:37	03-Mar-2018 16:44:09	6057.66	4570.4
EMXV	45	03-Mar-2018 16:44:09	03-Mar-2018 17:49:05	4570.4	59.79

All depth are at tool zero.

1A

IBC SLG Composite

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1A	Log[3]:Up	Up	59.79 ft	6841.12 ft	03-Mar-2018 4:11:06 PM	03-Mar-2018 5:49:05 PM	ON	5.50 ft	No

All depths are referenced to toolstring zero

Log

Company:Crestone Peak Resources and Operating LLC Well:File #3T-32H-K268

1A: Log[3]:Up:S002

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: 03-Mar-2018 18:28:26

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] - :

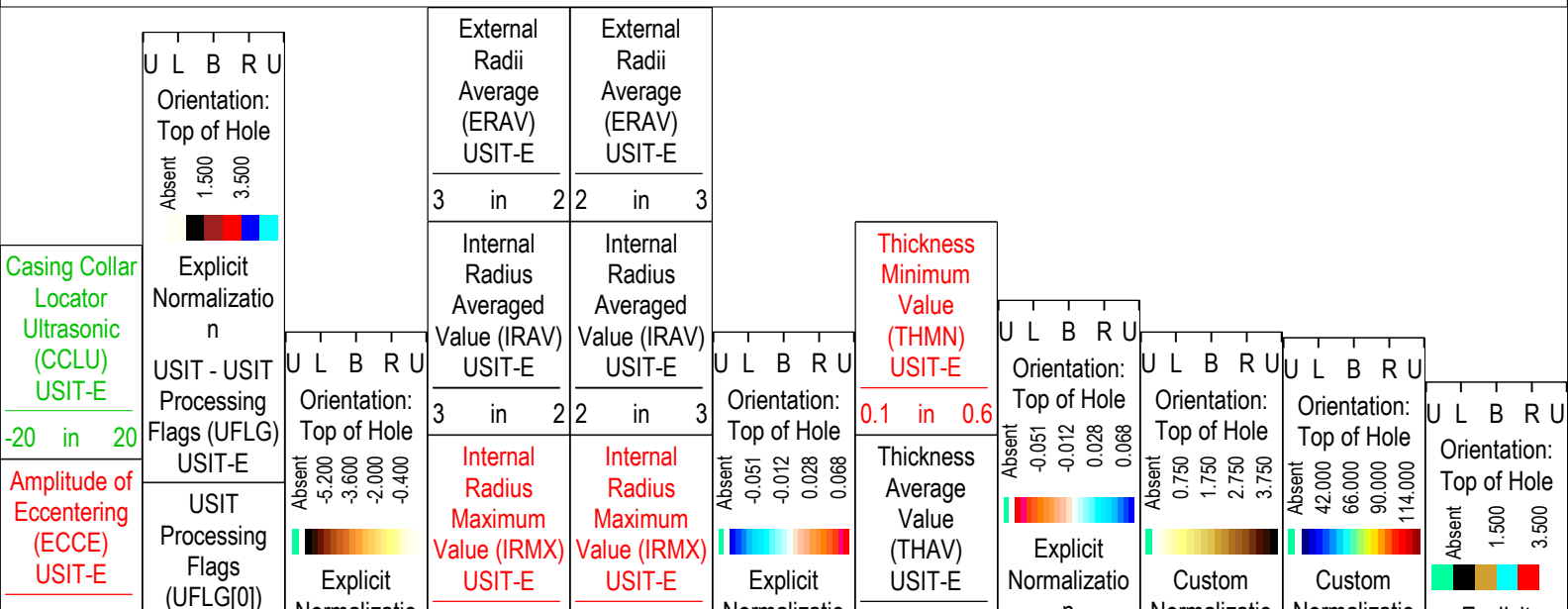
UTIM Error

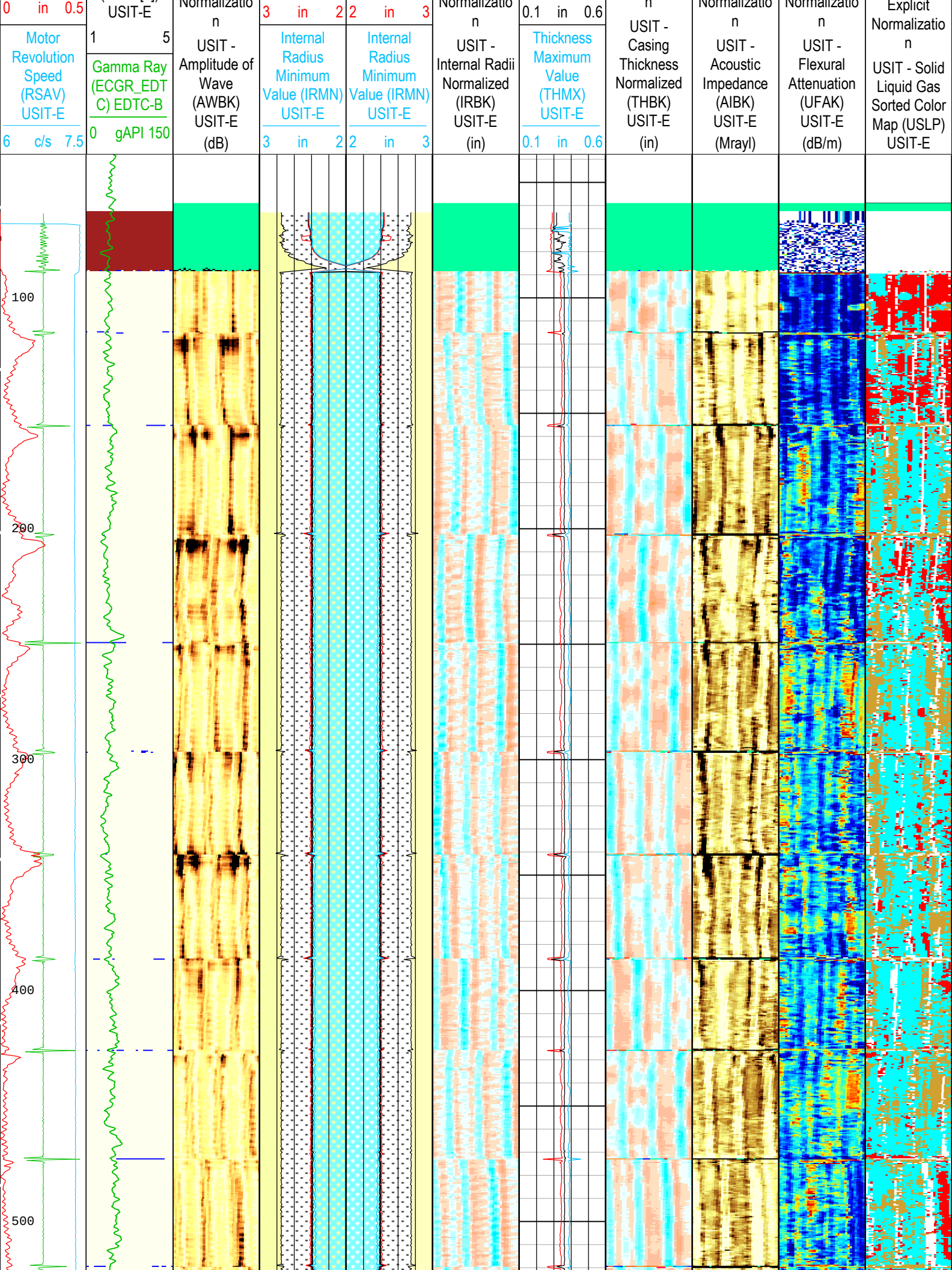
Pulse Origin Not Detected

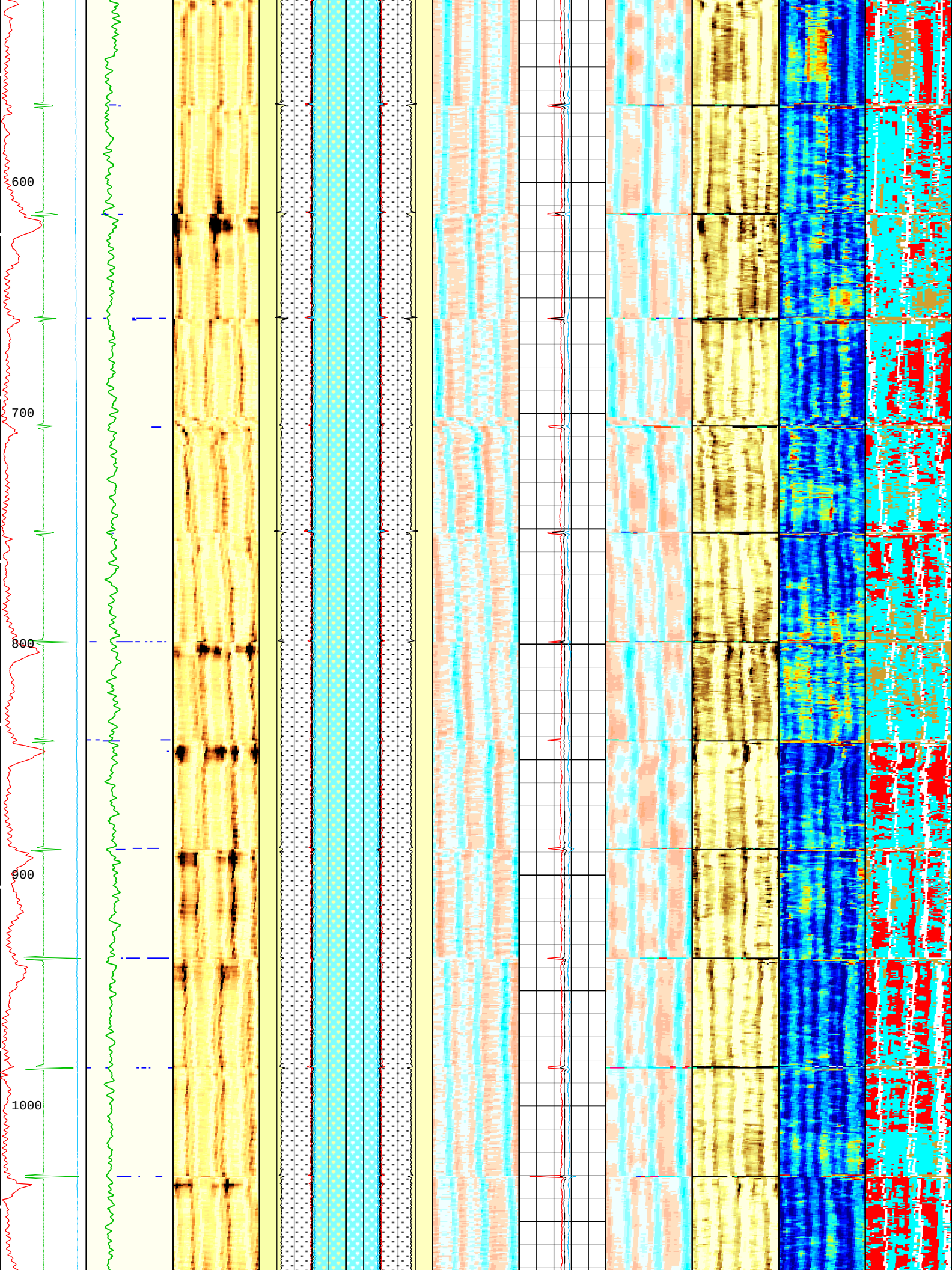
WINLEN Error

Casing Thickness Error

Loop Processing Error




0 in 0.5
Motor Revolution Speed (RSAV) USIT-E
6 c/s 7.5
1 5
Gamma Ray (ECGR_EDTC) EDTC-B
0 gAPI 150
Normalization
USIT - Amplitude of Wave (AWBK) USIT-E
(dB)
3 in 2
Internal Radius Minimum Value (IRMN) USIT-E
3 in 2
2 in 3
Internal Radius Minimum Value (IRMN) USIT-E
2 in 3
Normalization
USIT - Internal Radii Normalized (IRBK) USIT-E
(in)
0.1 in 0.6
Thickness Maximum Value (THMX) USIT-E
0.1 in 0.6
n
USIT - Casing Thickness Normalized (THBK) USIT-E
(in)
Normalization
USIT - Acoustic Impedance (AIBK) USIT-E
(Mrayl)
Normalization
USIT - Flexural Attenuation (UFAK) USIT-E
(dB/m)
Explicit Normalization
USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E
100
200
300
400
500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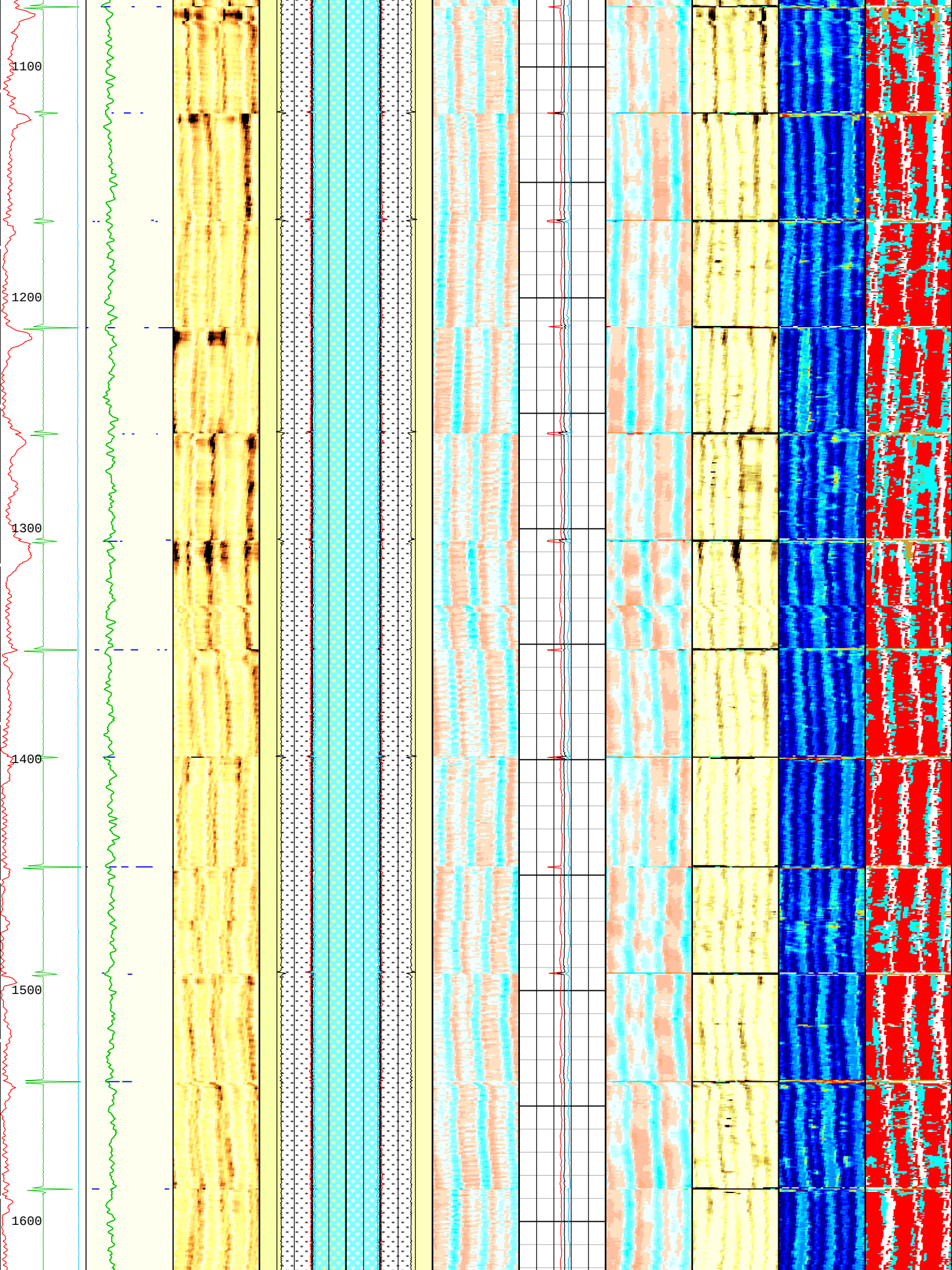
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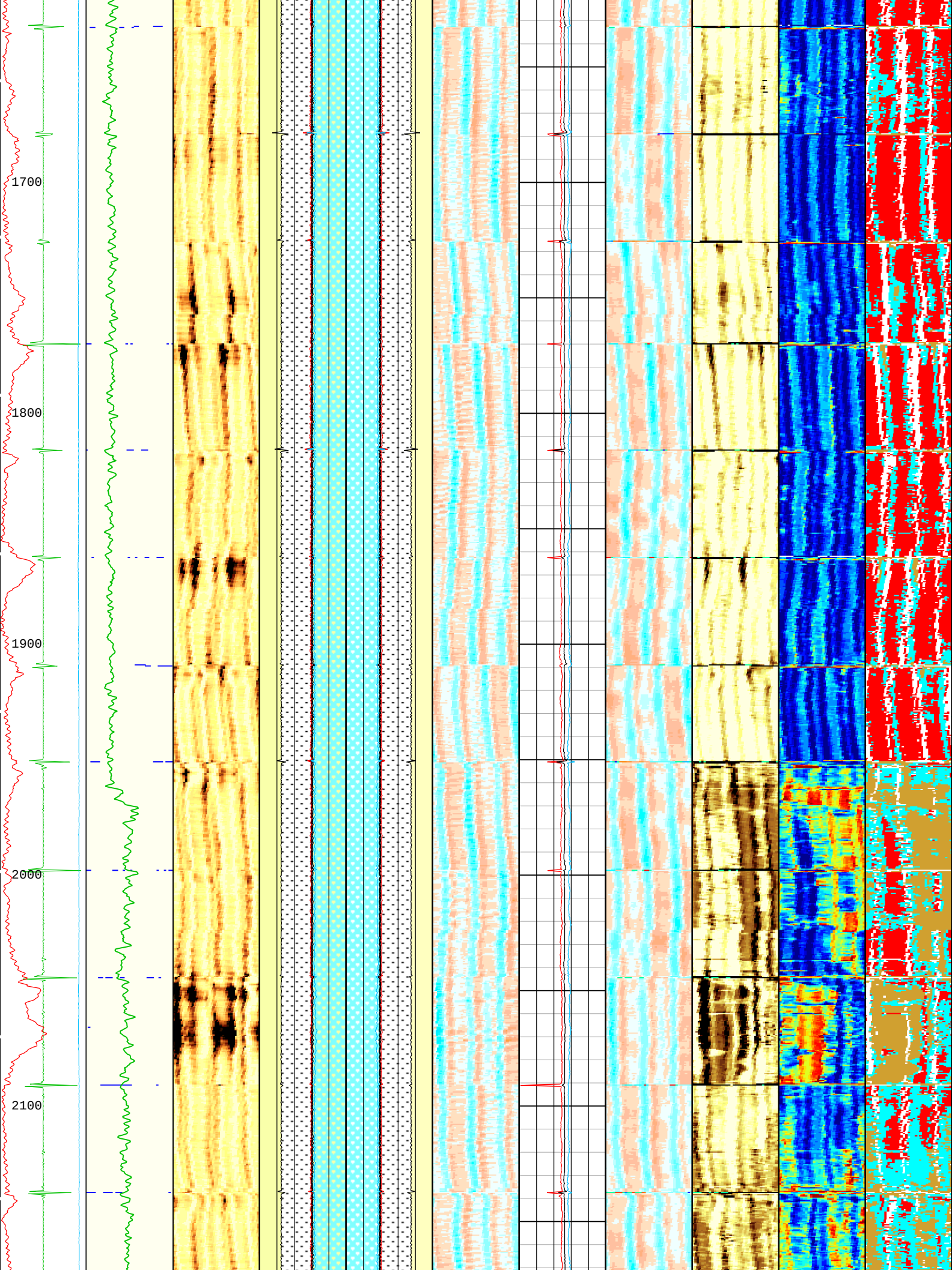
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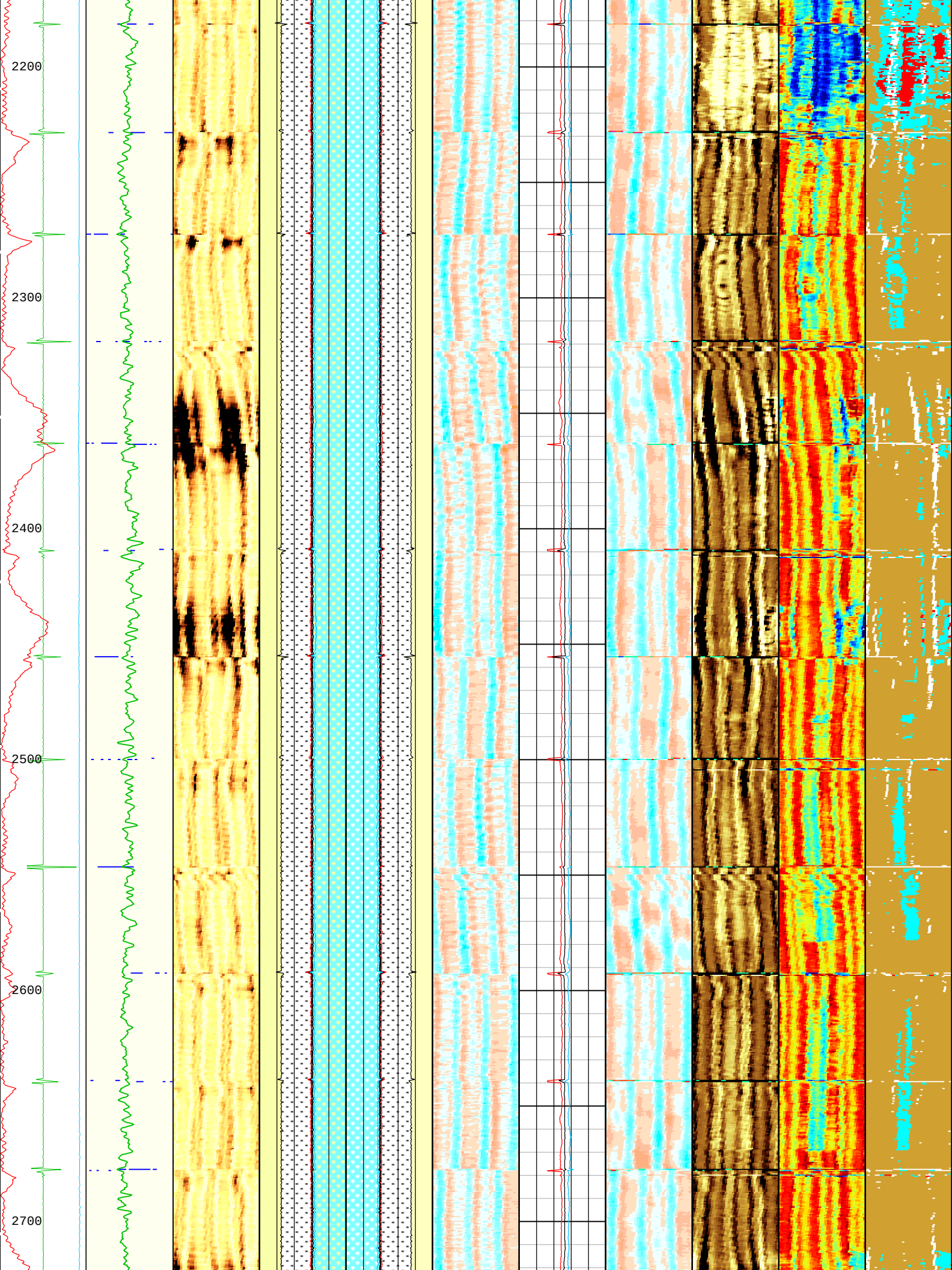
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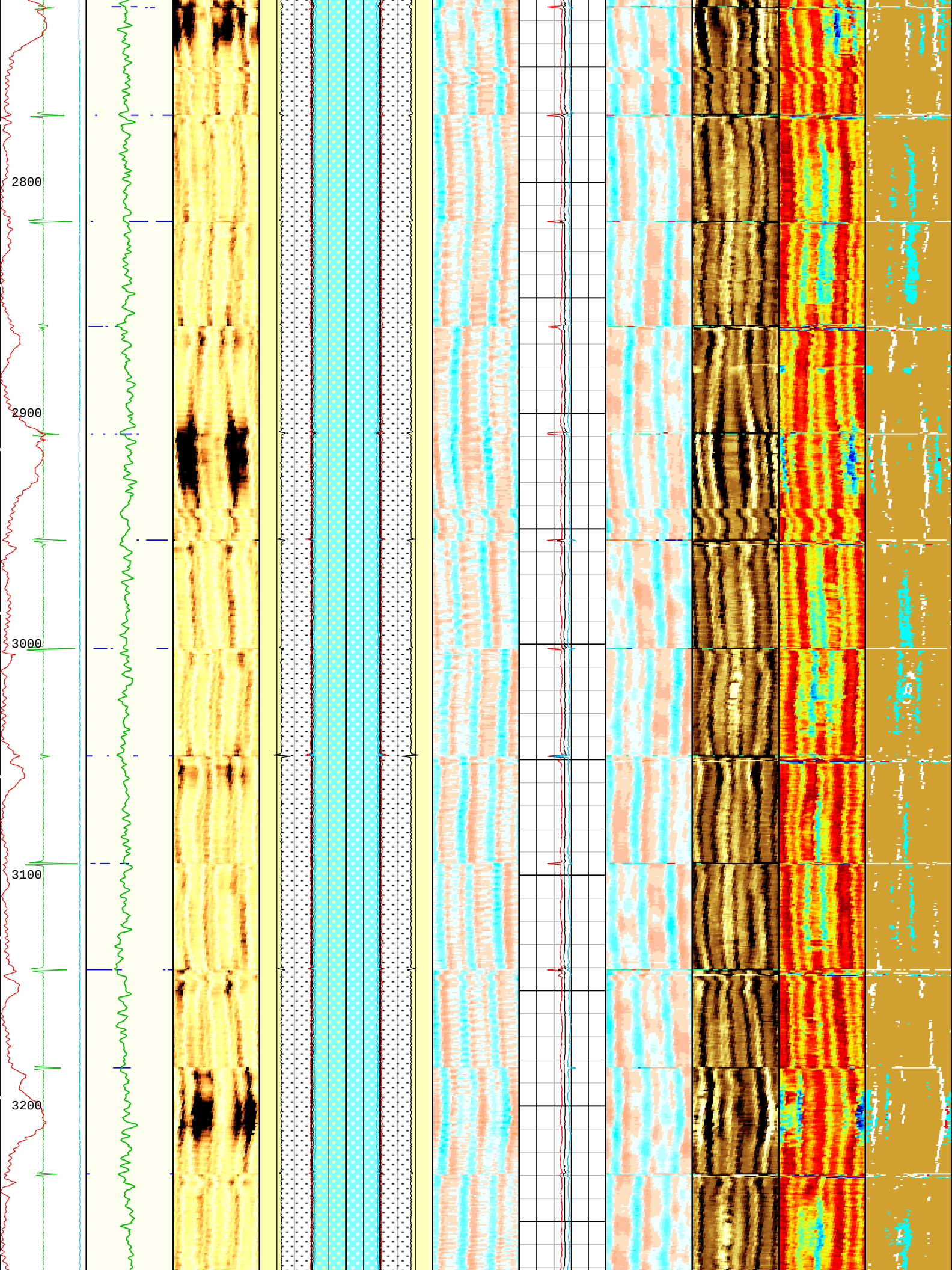
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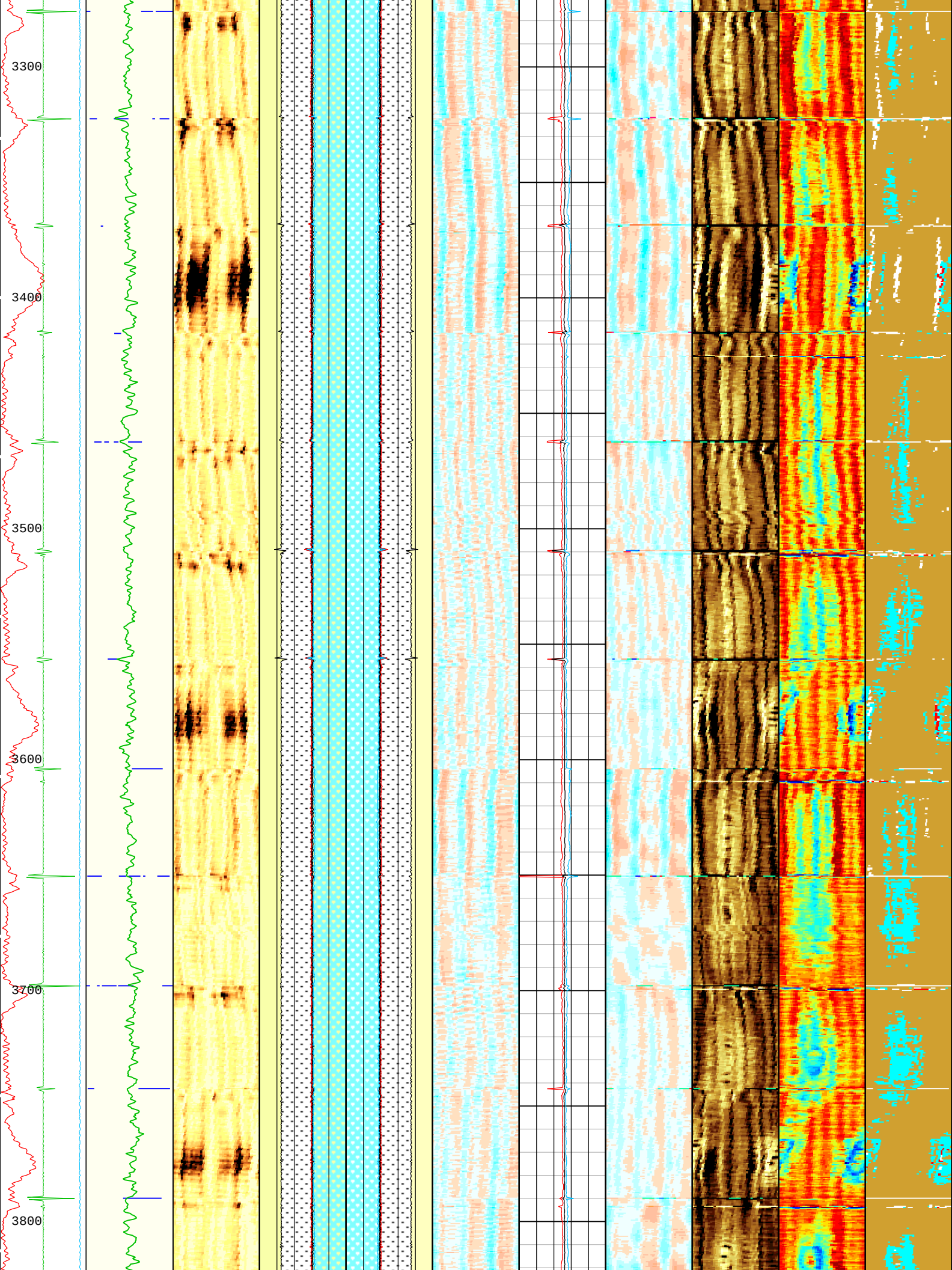
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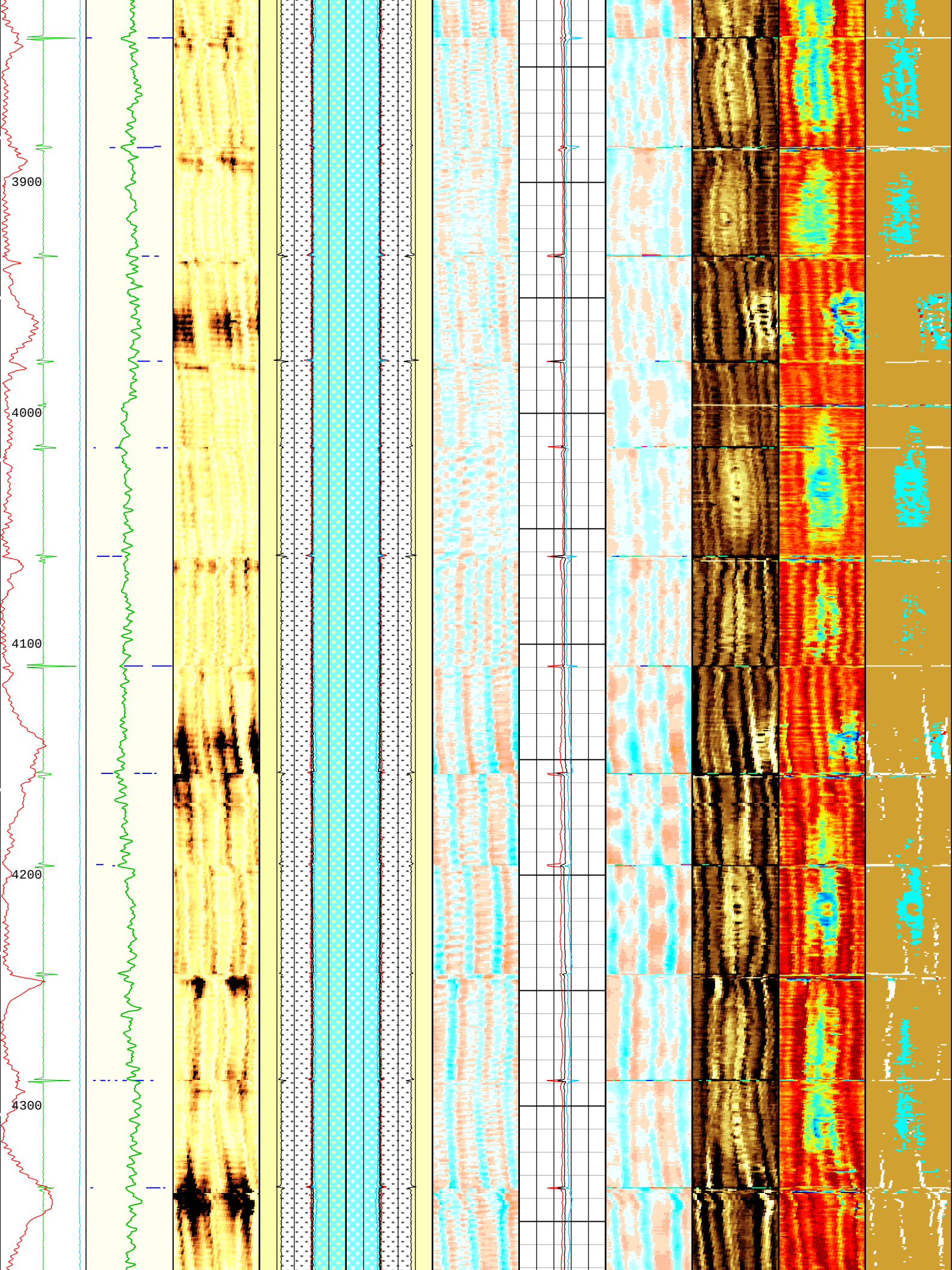
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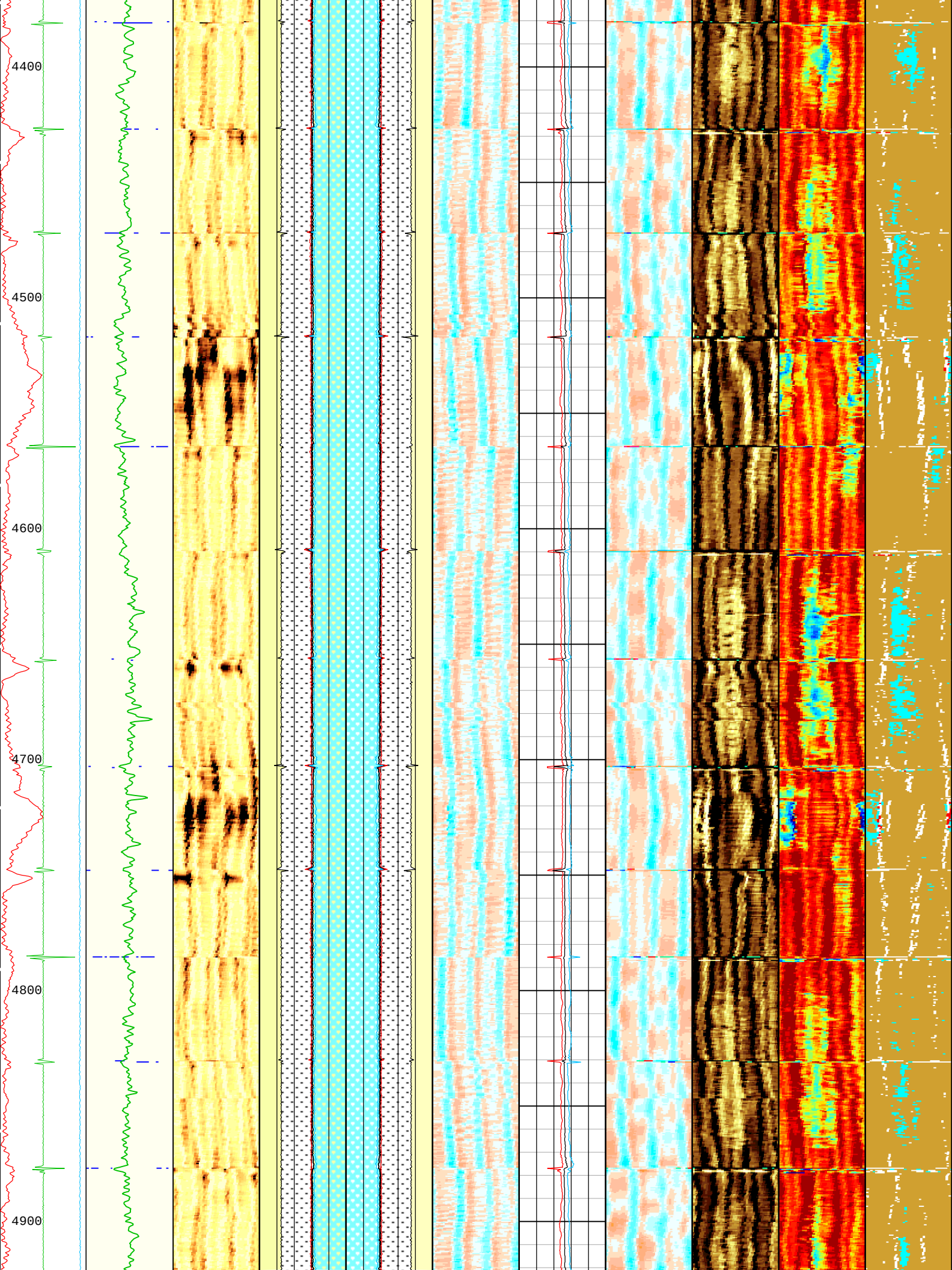
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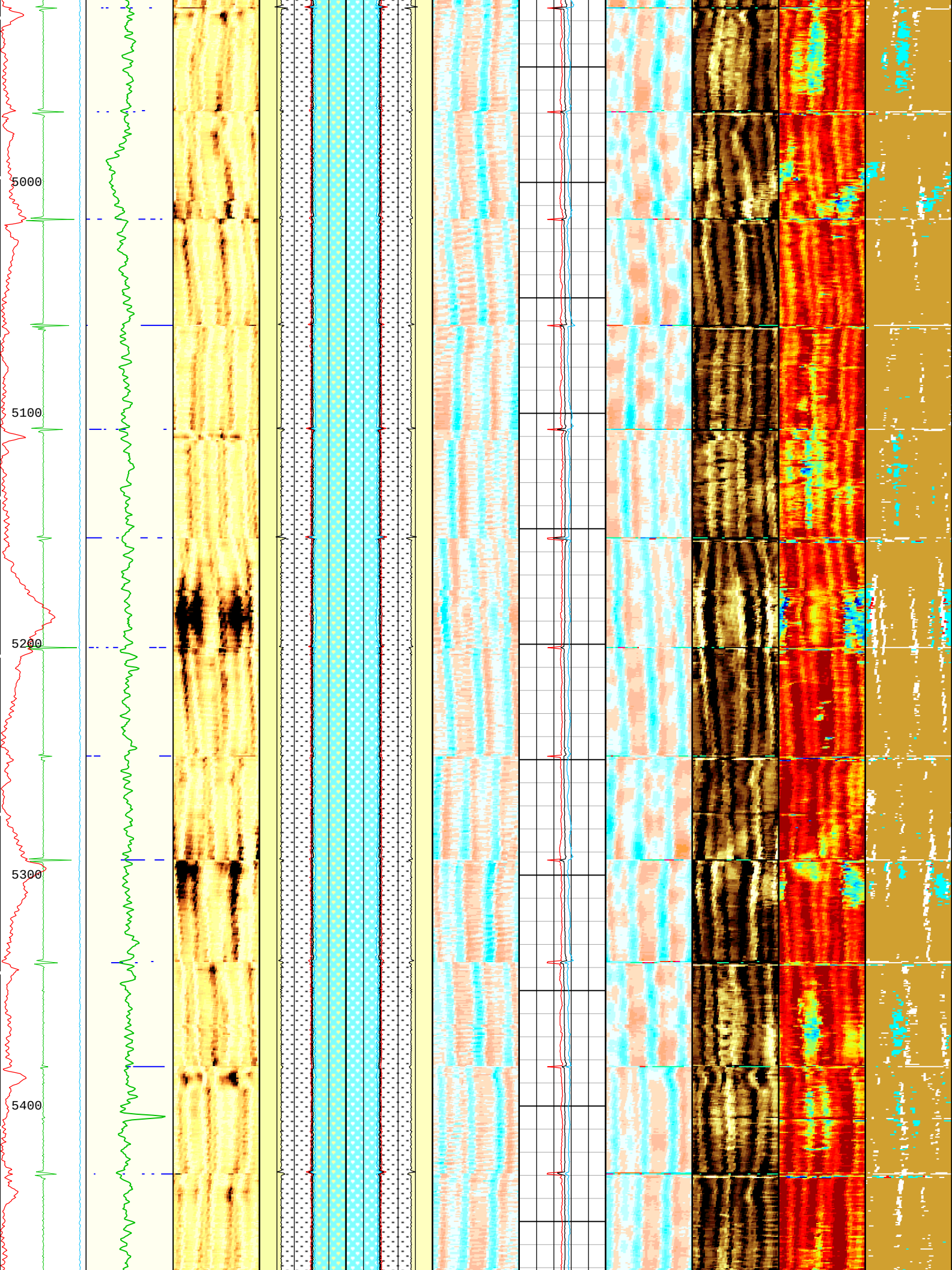
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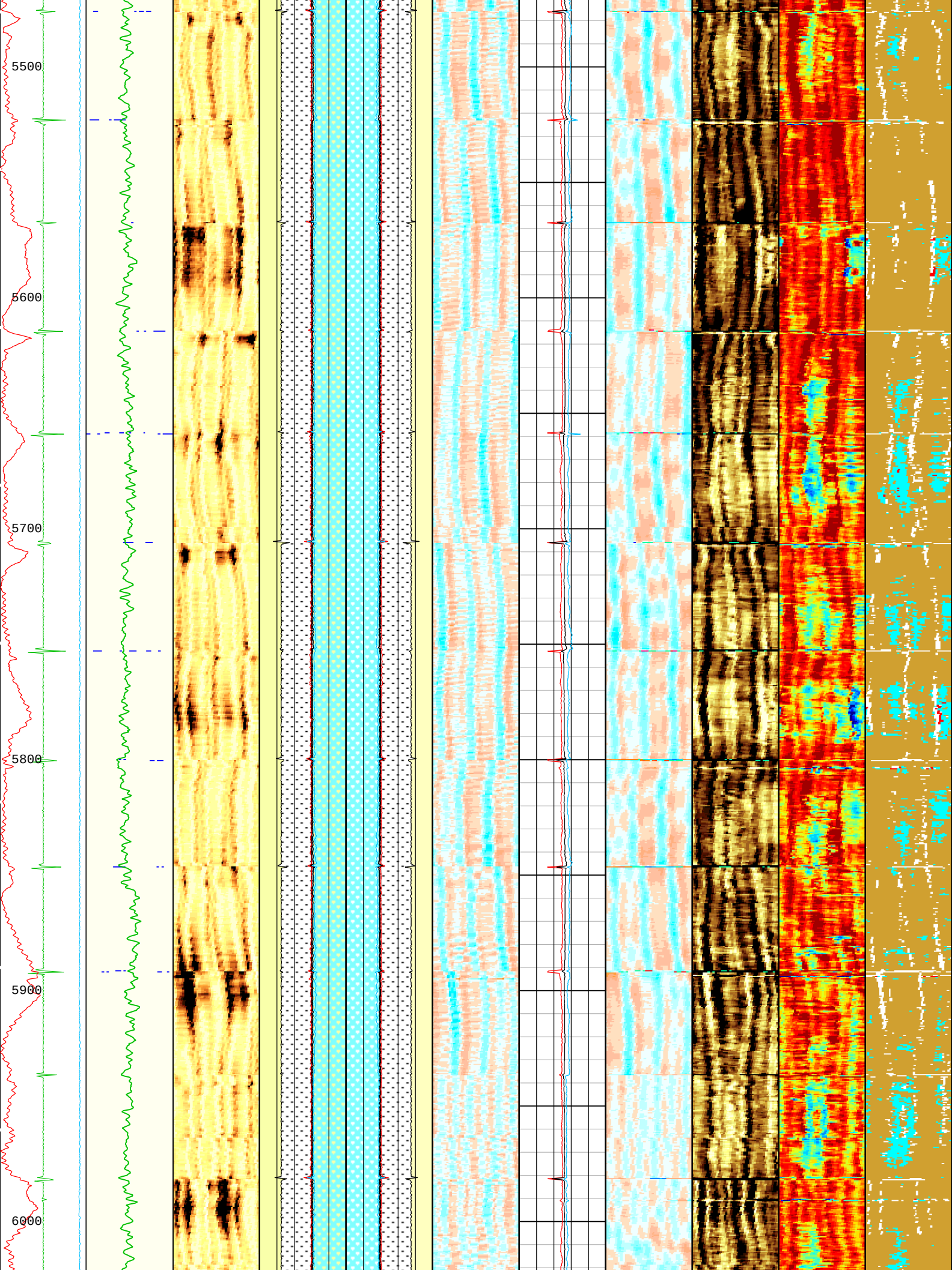
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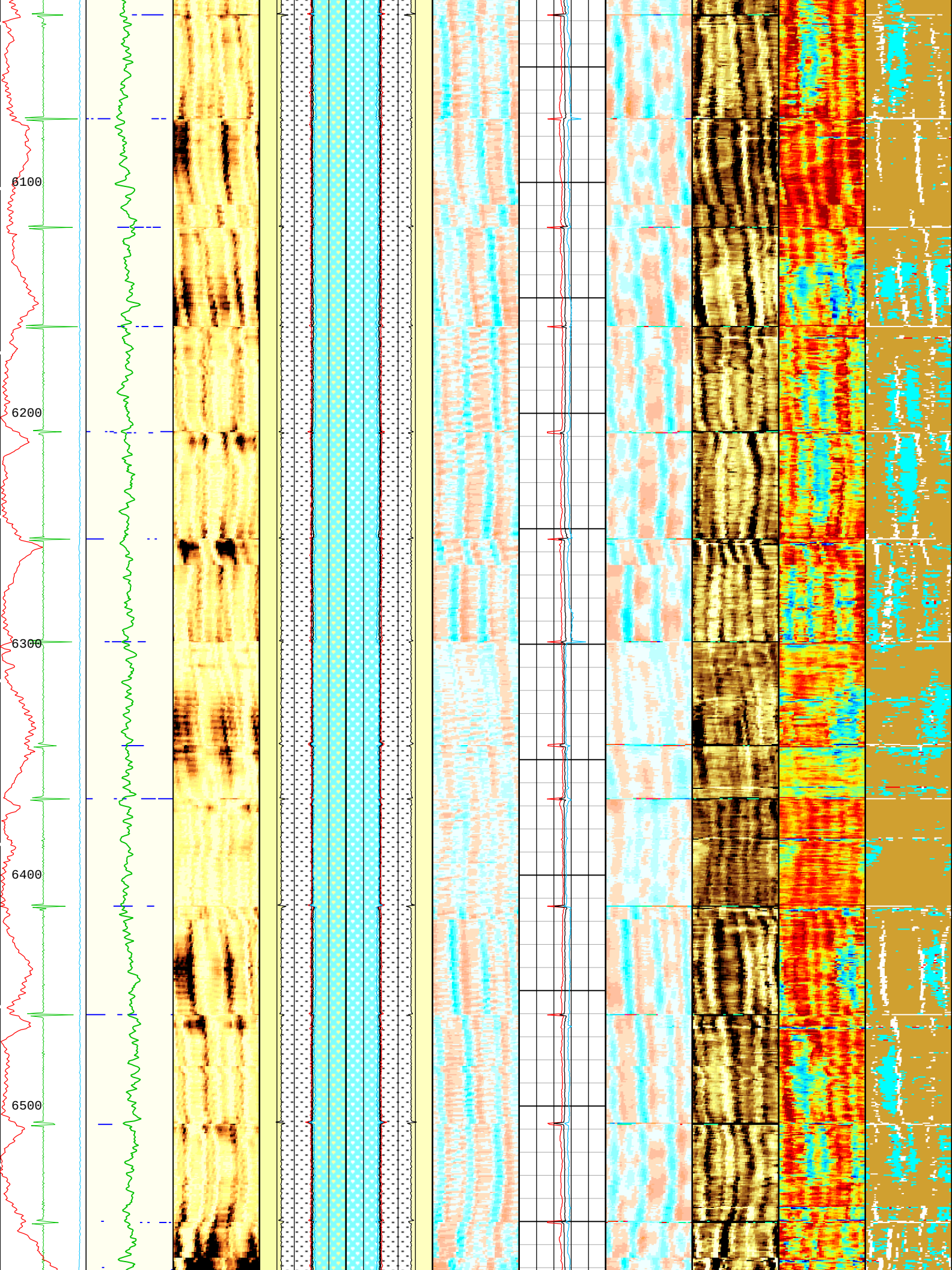
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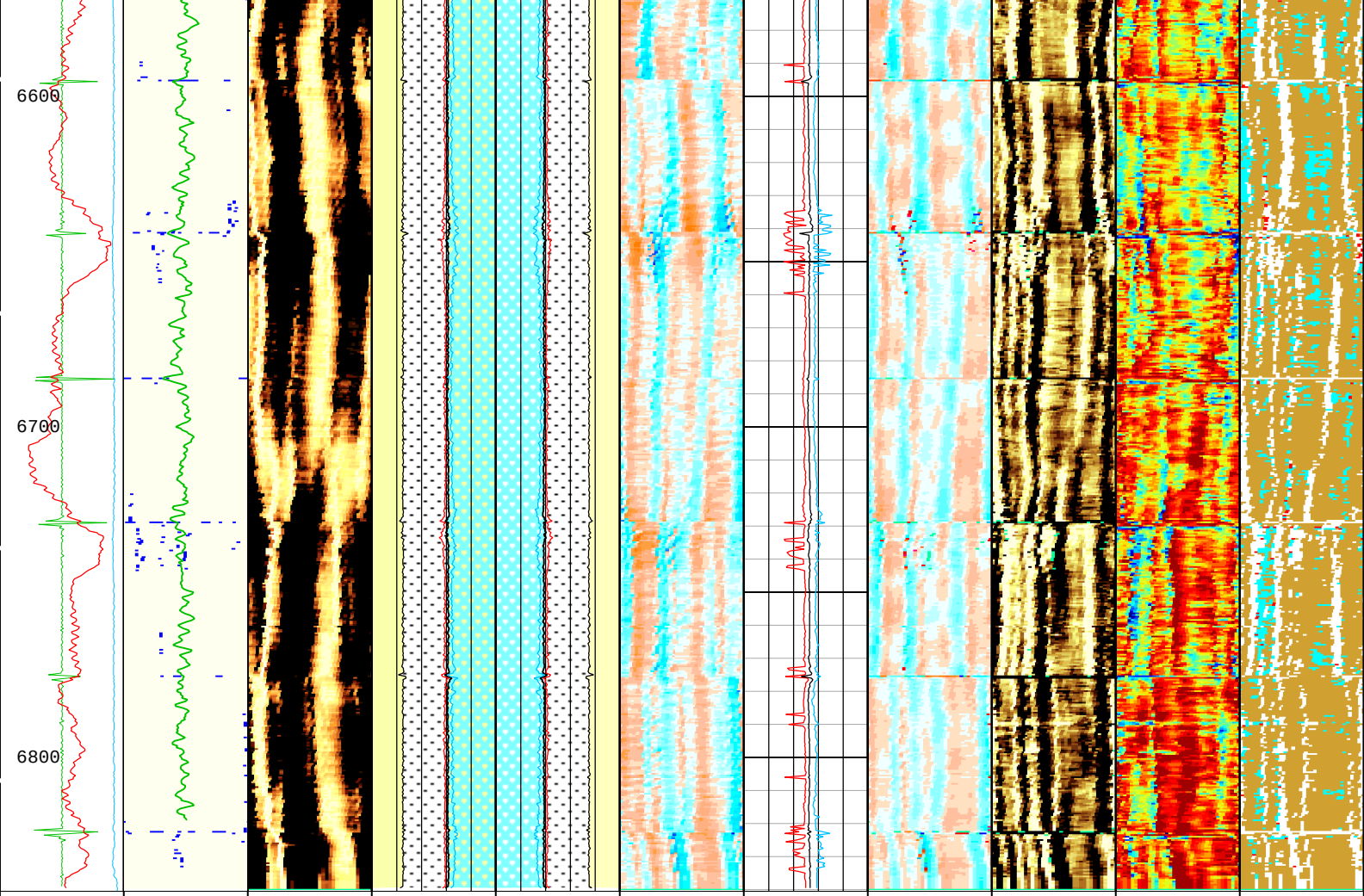


Casing Collar Locator Ultrasonic (CCLU) USIT-E
-20 in 20

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 Processing Flags (UFLG) USIT-E
Orientation: Top of Hole
U L B R U

USIT Processing Flags (UFLG[0]) USIT-E
1 5

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)
Orientation: Top of Hole
U L B R U

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

Absent -0.051 -0.012 0.028 0.068
Explicit Normalization
USIT - Internal Radii Normalized (IRBK) USIT-E
(in)
Orientation: Top of Hole
U L B R U

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

Absent -0.051 -0.012 0.028 0.068
Explicit Normalization
USIT - Casing Thickness Normalized (THBK) USIT-E
(in)
Orientation: Top of Hole
U L B R U

Absent 0.750 1.750 2.750 3.750
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E
(Mrayl)
Orientation: Top of Hole
U L B R U

Absent 42.000 66.000 90.000 114.000
Custom Normalization
USIT - Flexural Attenuation (UFAK) USIT-E
(dB/m)
Orientation: Top of Hole
U L B R U

Absent 1.500 3.500
Explicit Normalization
USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E
Orientation: Top of Hole
U L B R U

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] - :

UTIM Error
Pulse Origin Not Detected
WINLEN Error
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: 03-Mar-2018 18:28:26

Channel Processing Parameters

1A: 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	13631	ft
CDEN	Cement Density	USIT-E	11	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Light Cement	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	9.8	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)	
HEMA	Hematite Presence Flag	Borehole	No	
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	Inversion Norm.	
IMAR	Image Rotation	USIT-E	RB	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	22.44	us
MUD_N_INV	IBC Inversion Mud Normalization Factor	USIT-E	1.23	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1.15	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.59	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-10.05	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
ZMUD	Acoustic Impedance of Mud	Borehole	1.75	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	13.5	38	956
BS	8.75	956	6840.5

All depth are actual.

Tool Control Parameters

1A: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB
EMXV	EMEX Voltage	USIT-E	Time Zoned	V
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us

U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	136	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	176	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	105	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	145	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	31.17	us
WINE	Window End Time	USIT-E	71.17	us

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
EMXV	50	03-Mar-2018 16:11:06	03-Mar-2018 16:14:49	6841.12	6607.67
EMXV	55	03-Mar-2018 16:14:49	03-Mar-2018 16:22:37	6607.67	6057.66
EMXV	50	03-Mar-2018 16:22:37	03-Mar-2018 16:44:09	6057.66	4570.4
EMXV	45	03-Mar-2018 16:44:09	03-Mar-2018 17:49:05	4570.4	59.79

All depth are at tool zero.

1A

IBC Goodwin Compressed

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1A	Log[3]:Up	Up	59.79 ft	6841.12 ft	03-Mar-2018 4:11:06 PM	03-Mar-2018 5:49:05 PM	ON	5.50 ft	No

All depths are referenced to toolstring zero

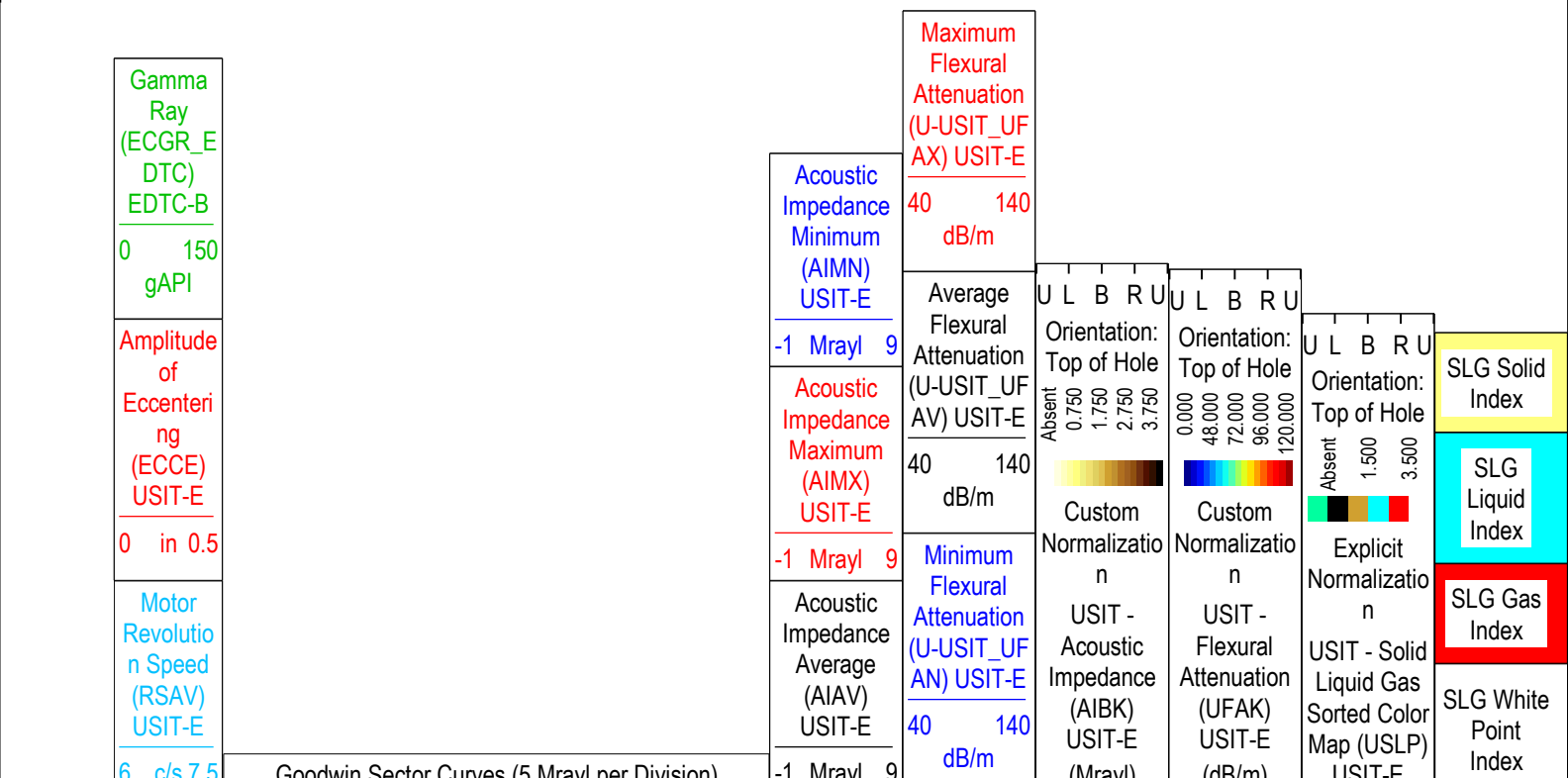
Log

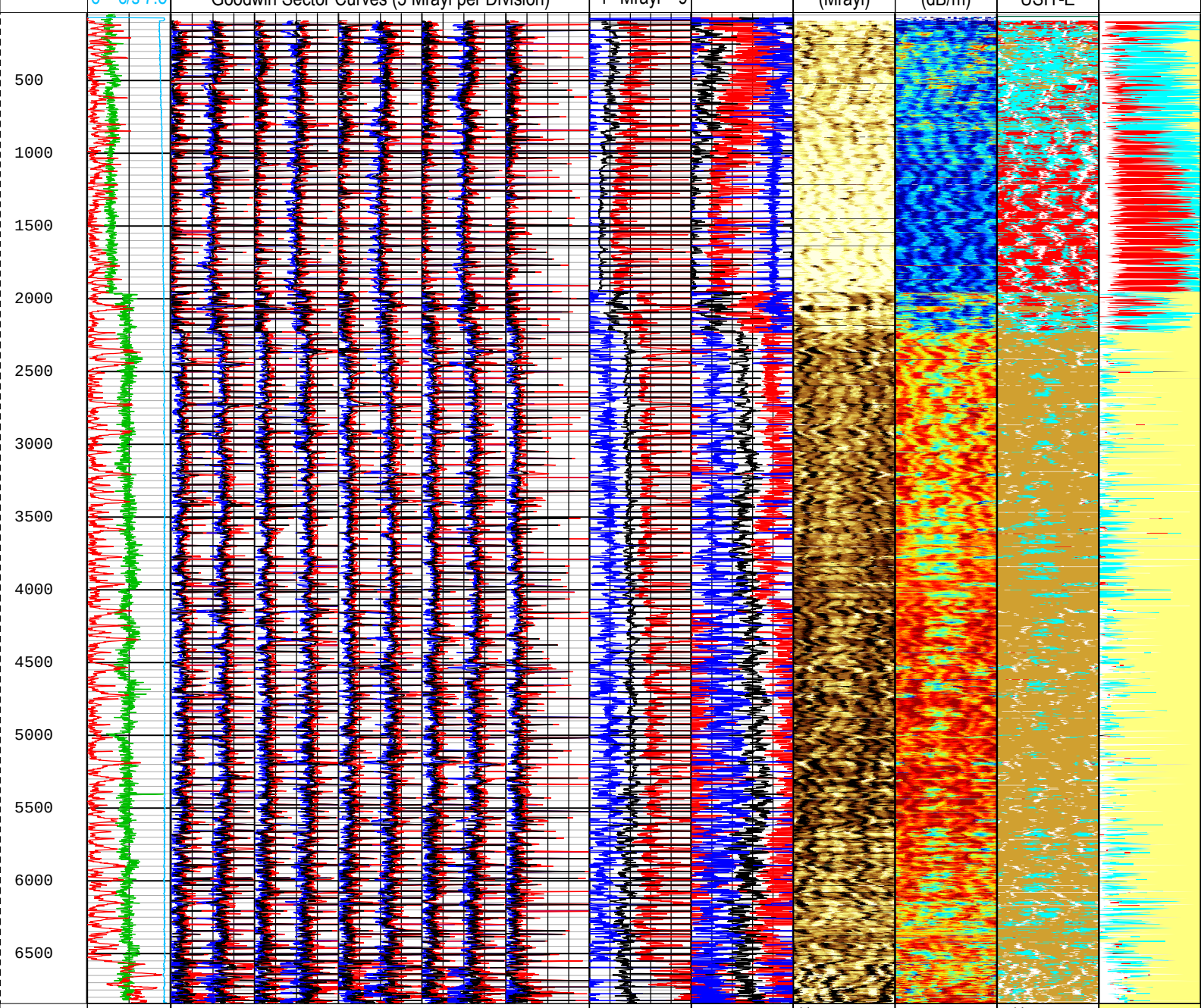
Company:Crestone Peak Resources and Operating LLC Well:File #3T-32H-K268

1A: Log[3]:Up:S002

Description: USI Goodwin Format: Log (IBC Goodwin) Index Scale: 0.1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 03-Mar-2018 18:28:34

TIME_1900 - Time Marked every 60.00 (s)





Gamma Ray (ECGR_EDTC) EDTC-B

0 150 gAPI

Amplitude of Eccentering (ECCE) USIT-E

0 in 0.5

Motor Revolution Speed (RSAV) USIT-E

6 c/s 7.5

Goodwin Sector Curves (5 Mrayl per Division)

Acoustic Impedance Minimum (AIMN) USIT-E

-1 Mrayl 9

Acoustic Impedance Maximum (AIMX) USIT-E

-1 Mrayl 9

Acoustic Impedance Average (AIAV) USIT-E

-1 Mrayl 9

Maximum Flexural Attenuation (U-USIT_UFAX) USIT-E

40 140 dB/m

Average Flexural Attenuation (U-USIT_UFAV) USIT-E

40 140 dB/m

Minimum Flexural Attenuation (U-USIT_UFAN) USIT-E

40 140 dB/m

Absent 0.750 1.750 2.750 3.750

Custom Normalization

USIT - Acoustic Impedance (AIBK) USIT-E

(Mrayl)

Orientation: Top of Hole

U L B R U

0.000 48.000 72.000 96.000 120.000

Custom Normalization

USIT - Flexural Attenuation (UFAK) USIT-E

(dB/m)

Orientation: Top of Hole

U L B R U

Absent 1.500 3.500

Explicit Normalization

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

Orientation: Top of Hole

U L B R U

SLG Solid Index

SLG Liquid Index

SLG Gas Index

SLG White Point Index

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: 03-Mar-2018 18:28:34

1A

IBC SLG

Software Version

Acquisition System	Version
Maxwell 2017 SP3	7.3.92069.3100
Application Patch	Wireline_NPD-ICE2-2017SP3_7.3.93033

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1A	Log[1]:Up	Up	598.83 ft	1009.74 ft	03-Mar-2018 3:40:37 PM	03-Mar-2018 3:47:57 PM	ON	1.57 ft	No

All depths are referenced to toolstring zero

Log

Company:Crestone Peak Resources and Operating LLC Well:File #3T-32H-K268 1A: Log[1]:Up:S002

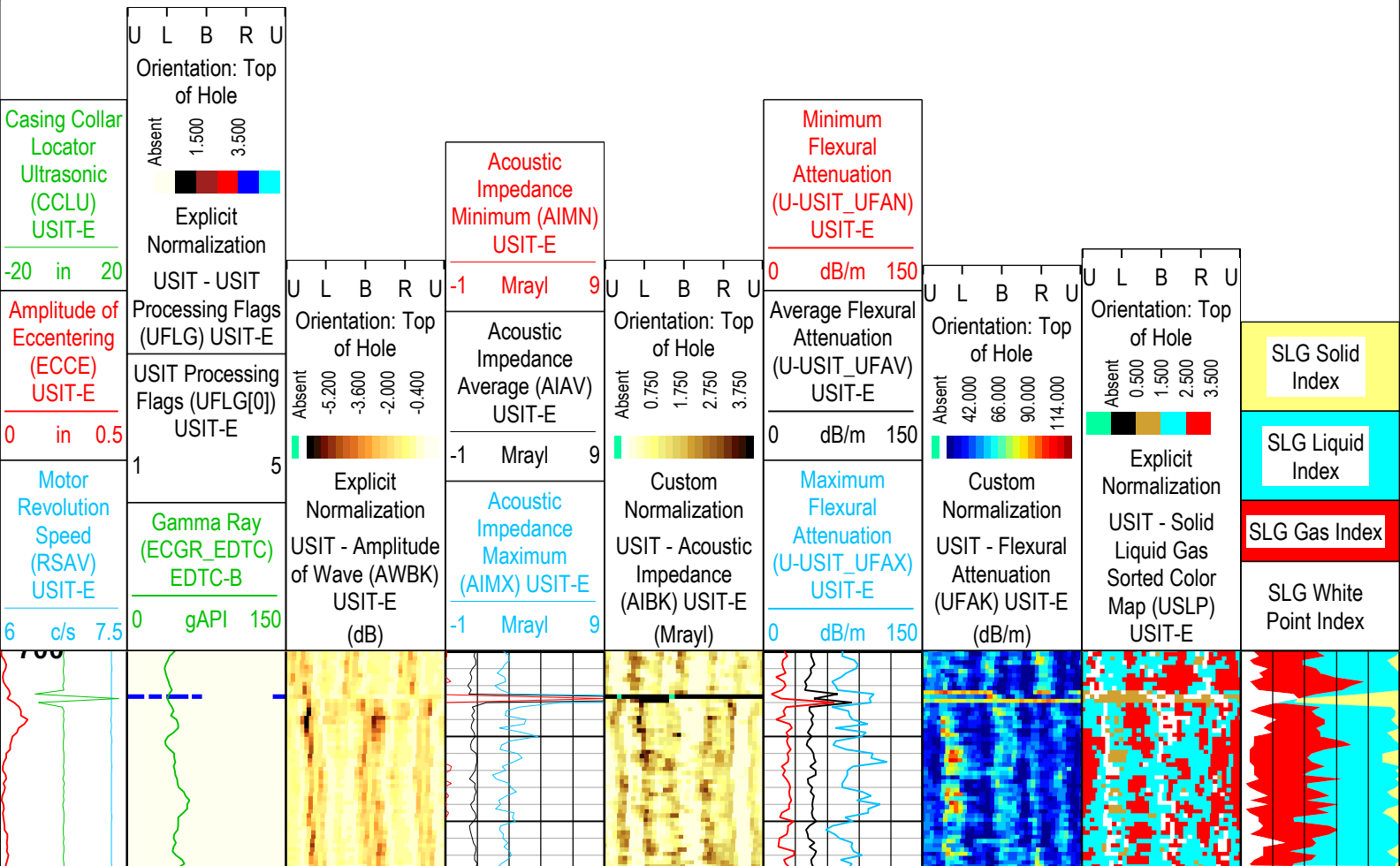
Description: USI IBC SLG Format: Log (IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 03-Mar-2018 18:28:39

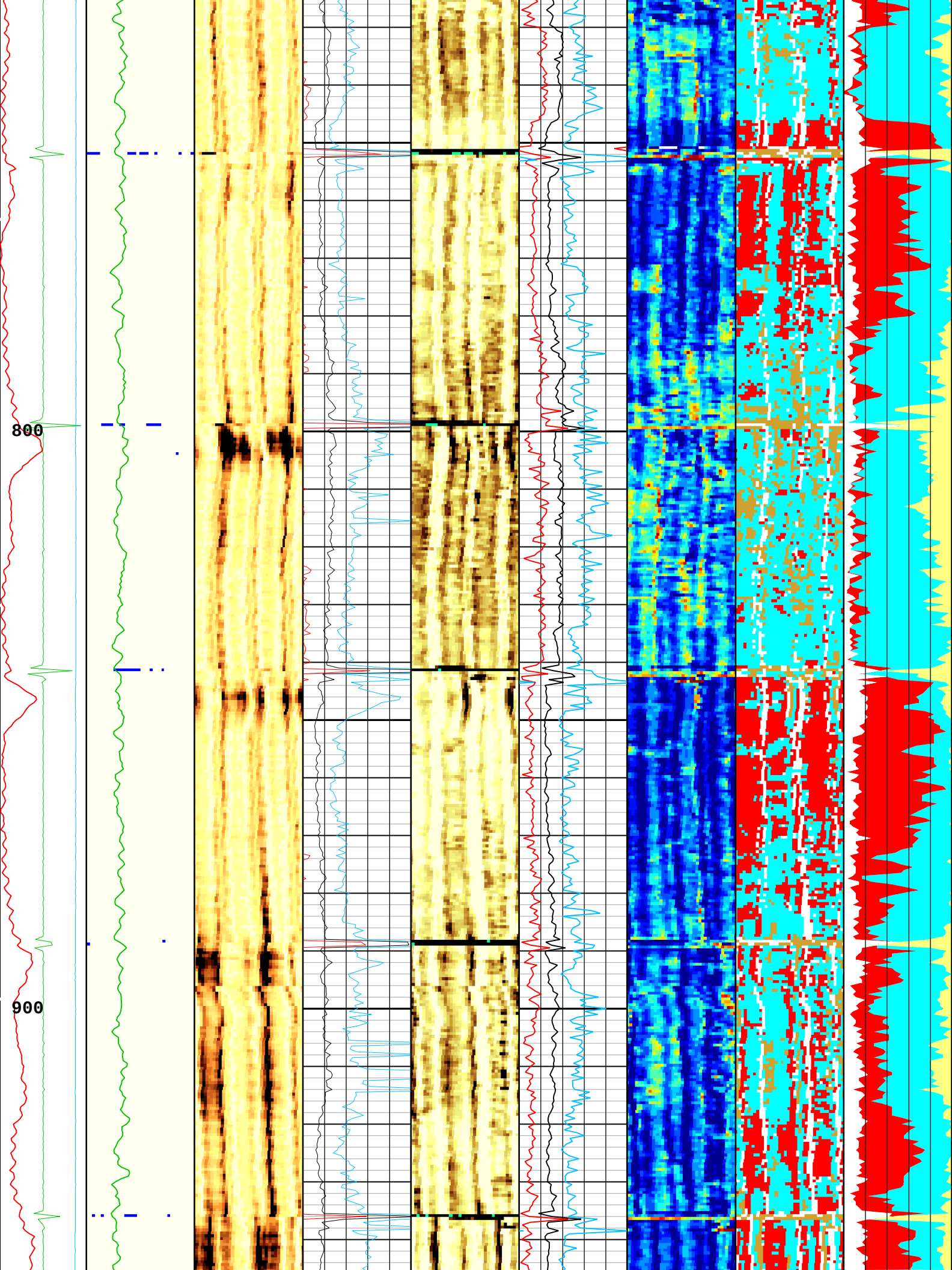
USIT Processing Flags (UFLG[0]) USIT-E

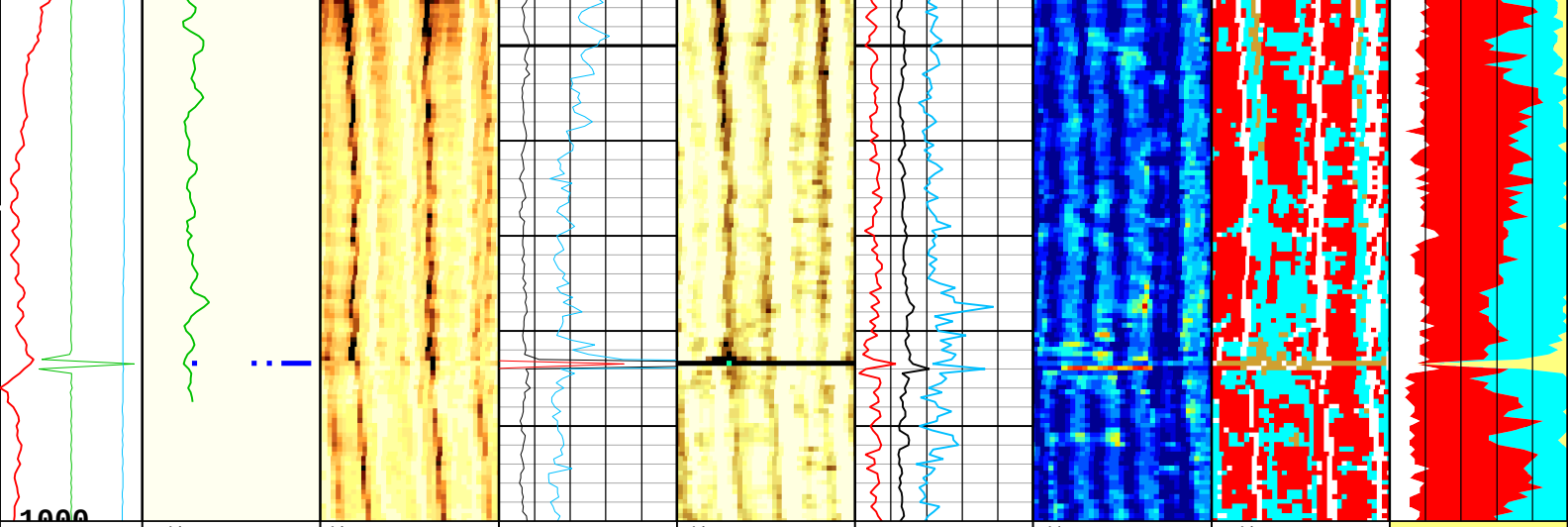
1 - UFLG 1 Value within [0.0 - 1.5] - :
2 - UFLG 2 Value within [1.5 - 2.5] - :
3 - UFLG 3 Value within [2.5 - 3.5] - :
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :

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

TIME_1900 - Time Marked every 60.00 (s)




800
900



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

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

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

Description: USI IBC SLG Format: Log (IBC SLG) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 03-Mar-2018 18:28:39

Channel Processing Parameters

1A: 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	13631	ft
CDEN	Cement Density	USIT-E	11	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal

CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Light Cement	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	9.8	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	0	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	Inversion 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_INV	IBC Inversion Mud Normalization Factor	USIT-E	1.23	
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
RPLUS_PROCESS	Ultrasonic R+ Processing	USIT-E	No	
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	1.59	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-10.05	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
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	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	13.5	700	956
BS	8.75	956	1000

All depth are actual.

Tool Control Parameters

1A: 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	50	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
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	136	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	176	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	105	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	145	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	31.17	us
WINE	Window End Time	USIT-E	71.17	us

1A

IBC SLG Composite

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1A	Log[1]:Up	Up	598.83 ft	1009.74 ft	03-Mar-2018 3:40:37 PM	03-Mar-2018 3:47:57 PM	ON	1.57 ft	No

All depths are referenced to toolstring zero

Log

Company:Crestone Peak Resources and Operating LLC Well:File #3T-32H-K268

1A: Log[1]:Up:S002

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: 03-Mar-2018 18:28:44

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 Collar Locator Ultrasonic (CCLU) USIT-E

-20 in 20

U L B R U

Orientation: Top of Hole

Absent 1.500 3.500

Explicit Normalization

USIT - USIT Processing Flags (UFLG)

U L B R U

Orientation: Top of Hole

External Radii Average (ERAV) USIT-E

3 in 2

Internal Radius Averaged Value (IRAV) USIT-E

3 in 2

External Radii Average (ERAV) USIT-E

2 in 3

Internal Radius Averaged Value (IRAV) USIT-E

2 in 3

U L B R U

Orientation: Top of Hole

Thickness Minimum Value (THMN) USIT-E

0.1 in 0.6

U L B R U

Orientation: Top of Hole

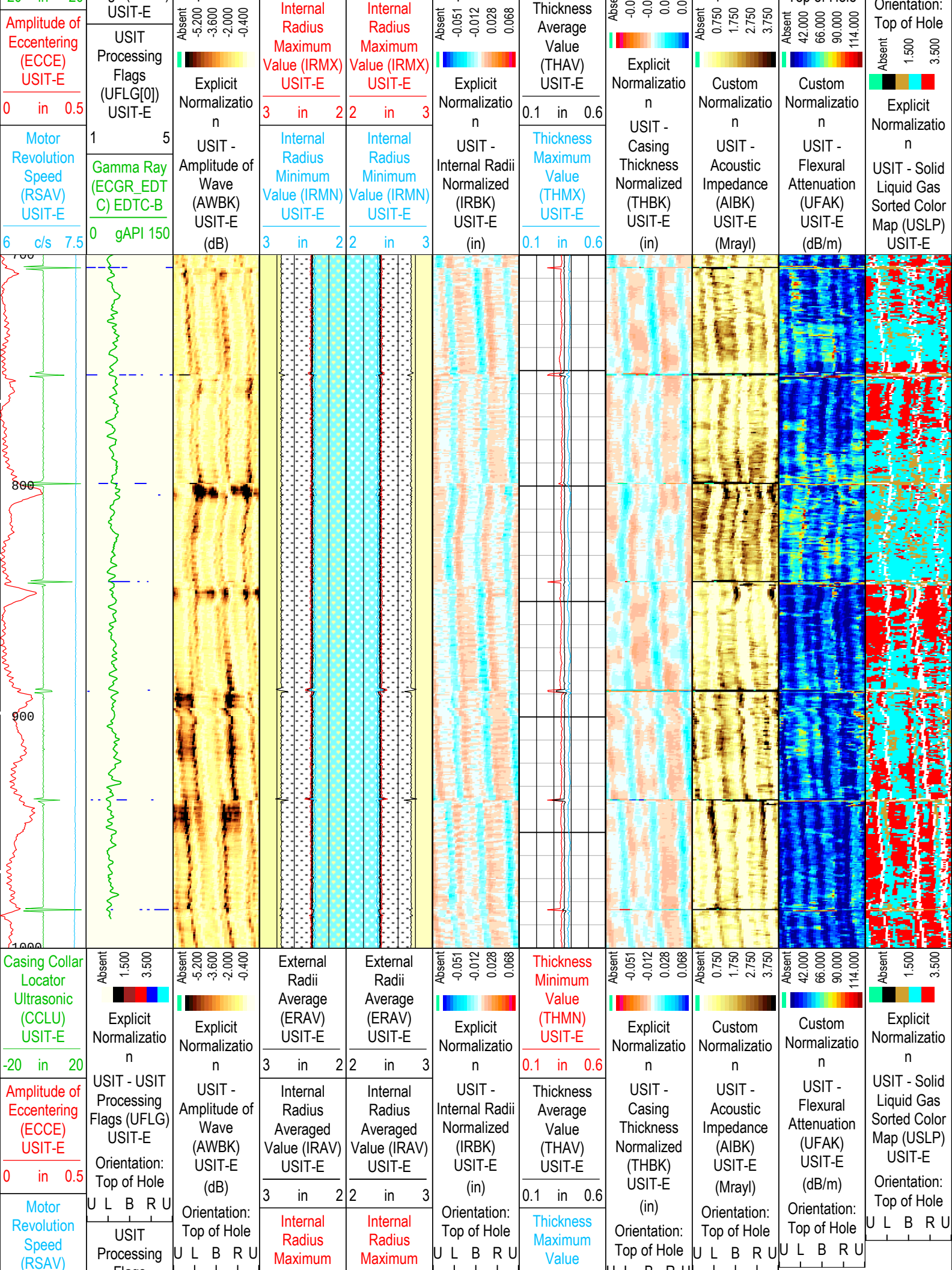
U L B R U

Orientation: Top of Hole

U L B R U

Orientation: Top of Hole

U L B R U


Amplitude of Eccentering (ECCE) USIT-E
0 in 0.5
Motor Revolution Speed (RSAV) USIT-E
6 c/s 7.5
USIT-E
USIT Processing Flags (UFLG[0]) USIT-E
1 5
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)
Internal Radius Maximum Value (IRMX) USIT-E
3 in 2
Internal Radius Minimum Value (IRMN) USIT-E
3 in 2
Internal Radius Maximum Value (IRMX) USIT-E
2 in 3
Internal Radius Minimum Value (IRMN) USIT-E
2 in 3
Absent -0.051 -0.012 0.028 0.068
Explicit Normalization
USIT - Internal Radii Normalized (IRBK) USIT-E
(in)
Thickness Average Value (THAV) USIT-E
0.1 in 0.6
Thickness Maximum Value (THMX) USIT-E
0.1 in 0.6
Absent -0.051 -0.012 0.028 0.068
Explicit Normalization
USIT - Casing Thickness Normalized (THBK) USIT-E
(in)
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)
Orientation: Top of Hole
Absent 1.500 3.500
Explicit Normalization
USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E
800
900
1000
Casing Collar Locator Ultrasonic (CCLU) USIT-E
-20 in 20
Amplitude of Eccentering (ECCE) USIT-E
0 in 0.5
Motor Revolution Speed (RSAV)
Absent 1.500 3.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E
Orientation: Top of Hole
U L B R U
USIT Processing Flags
Absent -5.200 -3.600 -2.000 -0.400
Explicit Normalization
USIT - Amplitude of Wave (AWBK) USIT-E
(dB)
Orientation: Top of Hole
U L B R U
External Radii Average (ERAV) USIT-E
3 in 2
Internal Radius Averaged Value (IRAV) USIT-E
3 in 2
Internal Radius Maximum
External Radii Average (ERAV) USIT-E
2 in 3
Internal Radius Averaged Value (IRAV) USIT-E
2 in 3
Internal Radius Maximum
Absent -0.051 -0.012 0.028 0.068
Explicit Normalization
USIT - Internal Radii Normalized (IRBK) USIT-E
(in)
Orientation: Top of Hole
U L B R U
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
Absent -0.051 -0.012 0.028 0.068
Explicit Normalization
USIT - Casing Thickness Normalized (THBK) USIT-E
(in)
Orientation: Top of Hole
U L B R U
Absent 0.750 1.750 2.750 3.750
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E
(Mrayl)
Orientation: Top of Hole
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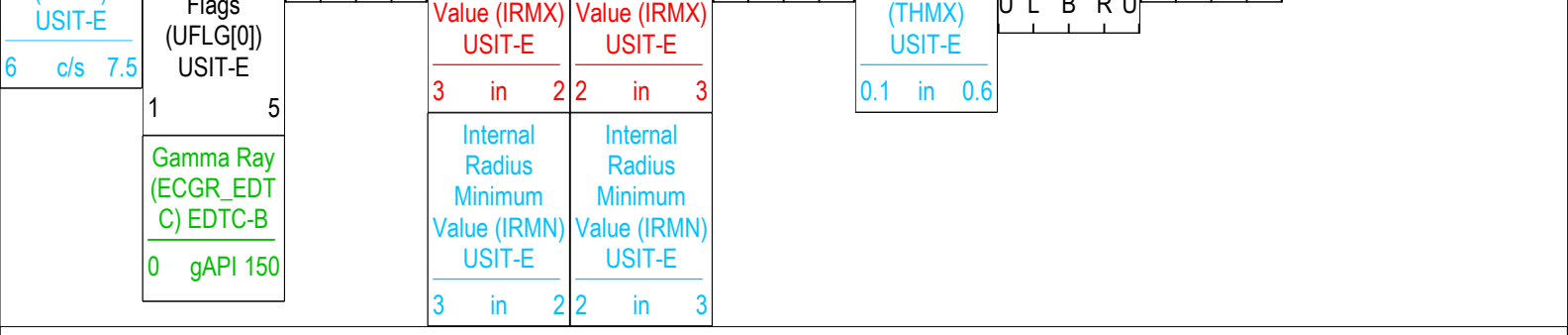
(dB/m)
Orientation: Top of Hole
U L B R U
Absent 1.500 3.500
Explicit Normalization
USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E
Orientation: Top of Hole
U L B R U



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

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

TIME_1900 - Time Marked every 60.00 (s)

Description: USI IBC SLG Composite Format: Log (IBC SLG Composite) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 03-Mar-2018 18:28:44

Channel Processing Parameters

1A: 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	13631	ft
CDEN	Cement Density	USIT-E	11	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Light Cement	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	9.8	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)	
HEMA	Hematite Presence Flag	Borehole	No	
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	Inversion Norm.	
IMAR	Image Rotation	USIT-E	RB	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	22.44	us
MUD_N_INV	IBC Inversion Mud Normalization Factor	USIT-E	1.23	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1.15	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.59	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-10.05	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
ZMUD	Acoustic Impedance of Mud	Borehole	1.75	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	13.5	700	956
BS	8.75	956	1000

All depth are actual.

Tool Control Parameters

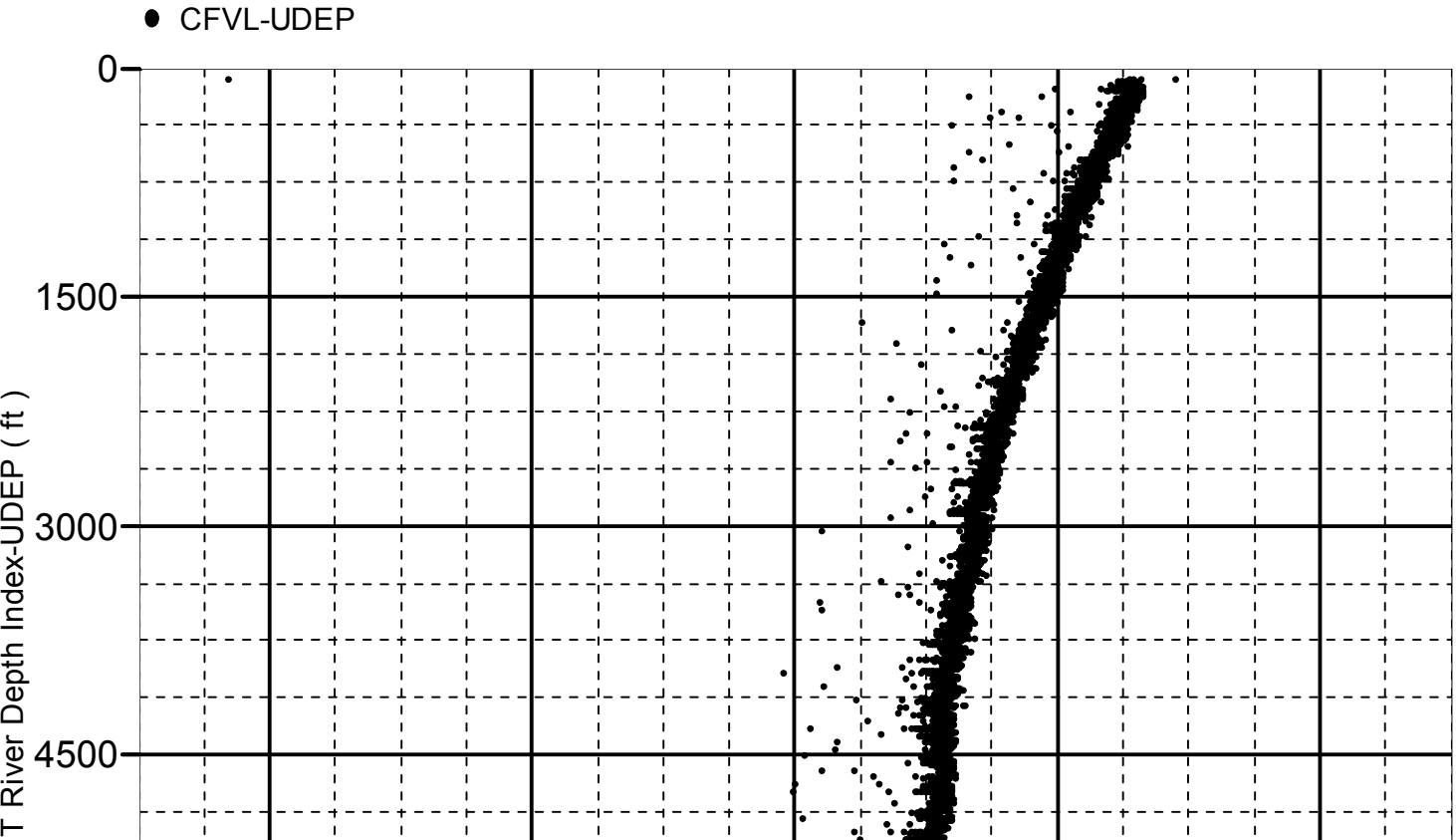
1A: Parameters

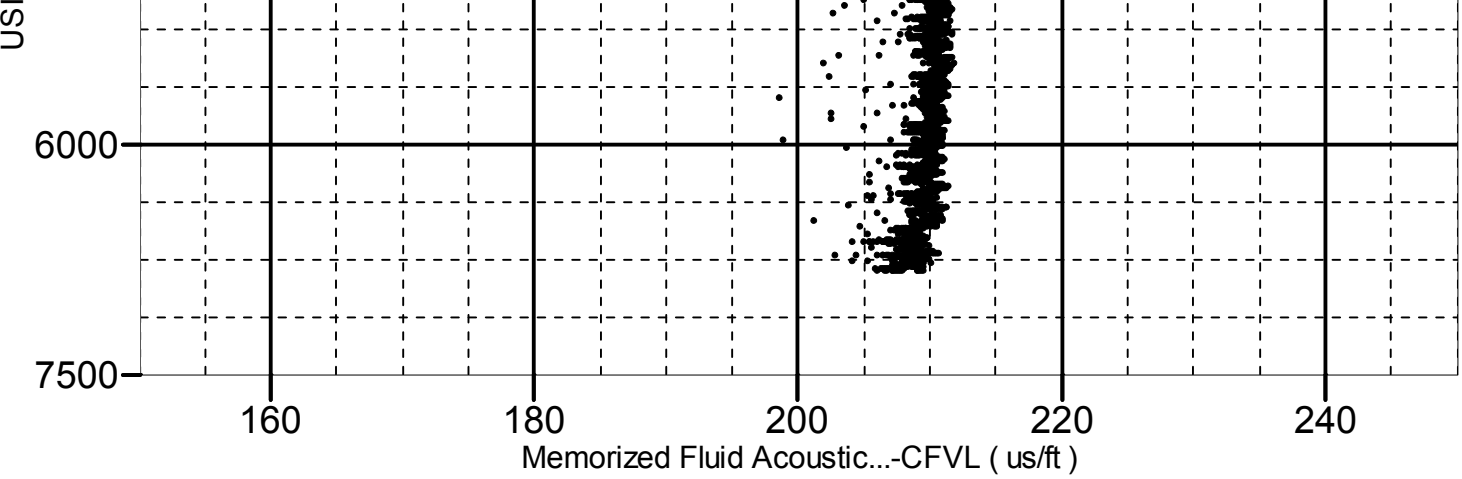
Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	48	dB
EMXV	EMEX Voltage	USIT-E	50	V
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	136	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	176	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	105	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	145	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	31.17	us
WINE	Window End Time	USIT-E	71.17	us

Fluid Acoustic Slowness vs Depth

2D Cross Plot

Index Range: From 6840.50 to 59.00 ft





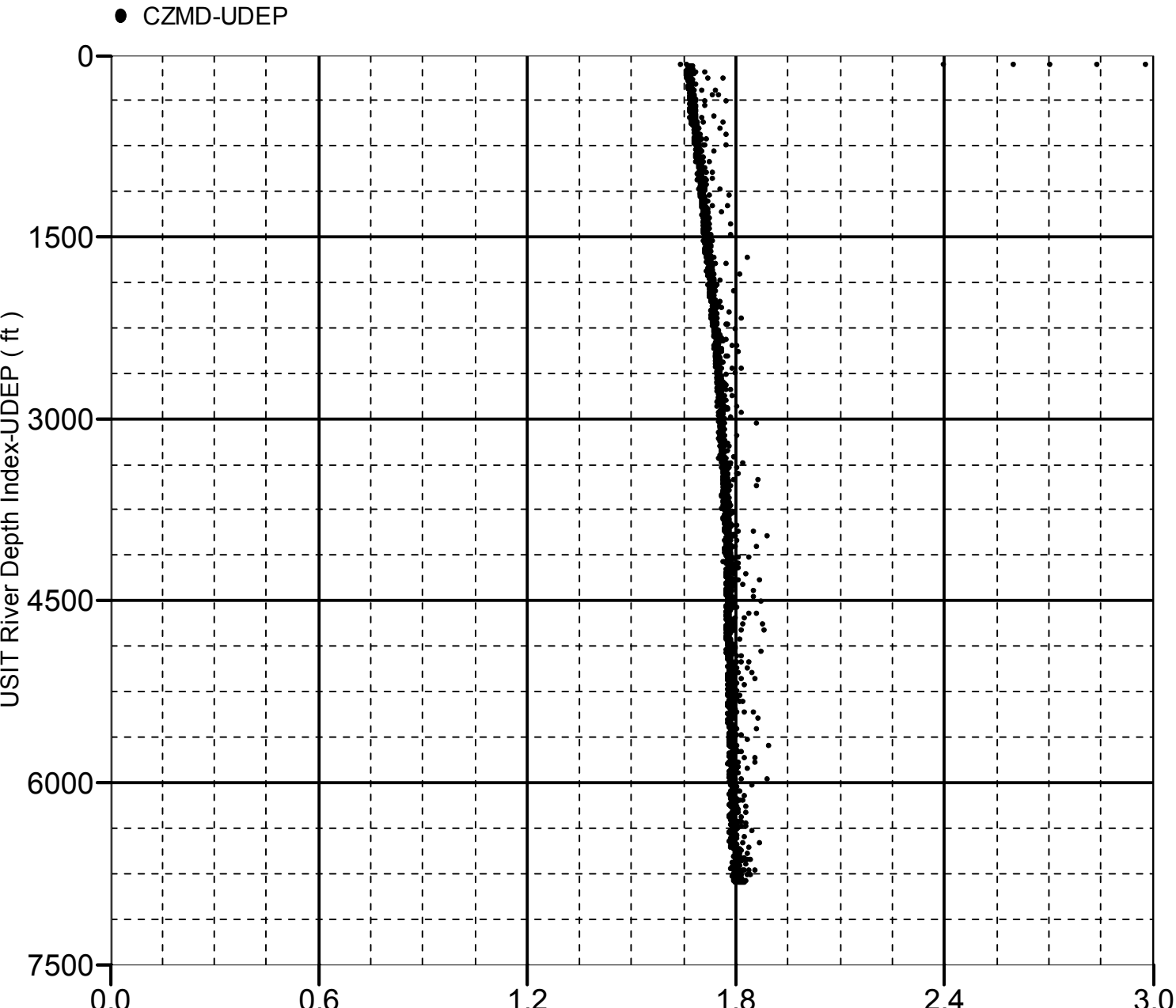
XYZ

Company:Crestone Peak Resources and Operating LLC Well:File #3T-32H-K268
1A: Log[3]:Up:S002

Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 6840.50 to 59.00 ft



Acoustic Impedance of Mu...-CZMD (Mrayl)

Company:	Crestone Peak Resources and Operating LLC
Well:	File #3T-32H-K268
Field:	Wattenberg
County:	Weld
State:	Colorado

Schlumberger

Isolation Scanner
Cement Evaluation
Gamma Ray - CCL Log