Com
Well
Field
Coun

County: Rio Blanco

Field: Piceance Creek

Location: Latitude: 39.912053000

Logging
Run Nur
Depth D
Schlumb
Bottom L
Top Log
Casing F
Salinity
Density
Fluid Lev
BIT/CA
Bit Size
From
To
Casing/T
Weight
Grade
From
To
Maximur
Logger C
Unit Num
Recorde
Witness

Schlumberger

pany: **ExxonMobil Production Corp**

: **PCU 296−5A1**

l: **Piceance Creek**

nty: **Rio Blanco** State: **Colorado**

Well: PCU 296−5A1 Company: ExxonMobil Production Corp

IMAGING BEHIND CASING
ULTRASONIC TOOL
CCL / GAMMA RAY

LOCATION

Latitude: 39.912053000
Longitude: 108.198567000
690' FNL & 561' FWL

Elev.: K.B. 7325.50 ft
G.L. 7295.50 ft
D.F. 7324.50 ft

Permanent Datum: GROUND LEVEL Elev.: 7295.50 ft
Log Measured From: KELLY BUSHING 30.00 ft above Perm. Datum
Drilling Measured From: KELLY BUSHING

API Serial No.	Section	Township	Range
051031124800	5	2S	96W

Date		18−Sep−2010					
mber		1					
riller		14390 ft					
berger Depth		9866 ft					
Log Interval		9866 ft					
Interval		3950 ft					
Fluid Type		WBM					
		9.6 lbm/gal					
vel		40 ft					
ASING/TUBING STRING							
		9.875 in					
		30 ft					
		14390 ft					
Tubing Size		7.000 in					
		26 lbm/ft					
		30 ft					
		10105 ft					
m Recorded Temperatures		214 degF					
On Bottom	Time	18−Sep−2010		6:30			
mber	Location	2267	Rock Springs				
d By		Yating Wang					
ed By		Ken Holmes					

		Run 1	Run 2	Run 3
PVT DATA	Oil Density			
	Water Salinity			
	Gas Gravity			
	Bo			
	Bw			
	1/Bg			
	Bubble Point Pressure			
	Bubble Point Temperature			
	Solution GOR			
	Maximum Deviation	24.4 deg		
	CEMENTING DATA			
	Primary/Squeeze	Primary		
	Casing String No			
	Lead Cement Type	TUNE LIGHT		
	Volume			
	Density	11 lbm/gal		
	Water Loss			
	Additives			
	Tail Cement Type	TUNE LIGHT		
	Volume			
	Density	11 lbm/gal		
	Water Loss			
	Additives			
	Expected Cement Top	4150 ft		

Logging Date				
Run Number				
Depth Driller				
Schlumberger Depth				
Bottom Log Interval				
Top Log Interval				
Casing Fluid Type				
Salinity				
Density				
Fluid Level				
BIT/CASING/TUBING STRING				
Bit Size				
From				
To				
Casing/Tubing Size				
Weight				
Grade				
From				
To				
Maximum Recorded Temperatures				
Logger On Bottom	Time			
Unit Number	Location			
Recorded By				
Witnessed By				

Run 4

DEPTH SUMMARY LISTING

Date Created: 18−SEP−2010 8:58:11

Depth System Equipment

Depth Measuring Device		Tension Device		Logging Cable	
Type:	IDW−B	Type:	CMTD−B/A	Type:	7−46P XS
Serial Number:	6435	Serial Number:	2697	Serial Number:	709027
Calibration Date:	4−Aug−2010	Calibration Date:	19−Aug−2010	Length:	24000 FT
Calibrator Serial Number:	33	Calibrator Serial Number:	100518	Conveyance Method:	Wireline
Calibration Cable Type:	7−46P XS	Number of Calibration Points:	10	Rig Type:	LAND
Wheel Correction 1:	−3	Calibration RMS:	5		
Wheel Correction 2:	−3	Calibration Peak Error:	10		

Depth Control Parameters

Log Sequence:	First Log In the Well
Rig Up Length At Surface:	213.00 FT
Rig Up Length At Bottom:	212.60 FT
Rig Up Length Correction:	0.40 FT
Stretch Correction:	6.00 FT
Tool Zero Check At Surface:	2.10 FT

Depth Control Remarks

1. All Schlumberger depth control policies followed
2. IDW used as primary depth reference, Z−chart used as secondary depth reference
3. Uplog correlated to downlog from 9800 ft to 8000 ft
4.
5.
6.

DISCLAIMER
THE USE OF AND RELIANCE UPON THIS RECORDED−DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED−DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE OF AND RELIANCE UPON THE RECORDED−DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED−DATA.

OTHER SERVICES1	OTHER SERVICES2
OS1: NONE	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:
REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2
Tool ran as per tool sketch	
Tool centralized using 2 x In−Line−Centralizers and 1 x Gemco	
Neutron ran for GR only	
UFAO = −22	
Logged at 1800 ft/hr	
Expected casing Thickness: 0.362"	
Expected Casing ID = 6.276"	
IBC resolution set to 5 deg 6 inch	
IBC transducer angles set at 33 deg	
Eccentering high above 5000 ft due to high deviation of the well	
.	

Crew: Marvin Smith & Edward Jones

RUN 1		RUN 2	
SERVICE ORDER #:	BAK1−00022	SERVICE ORDER #:	
PROGRAM VERSION:	18C0−147	PROGRAM VERSION:	
FLUID LEVEL:	40 ft	FLUID LEVEL:	

LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

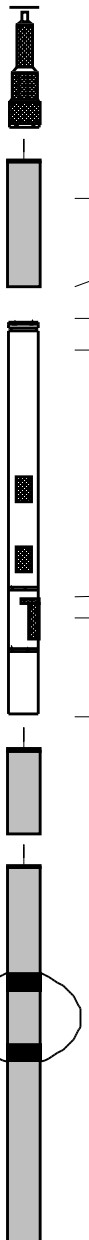
EQUIPMENT DESCRIPTION

RUN 1 | RUN 2

SURFACE EQUIPMENT

GSR−U/Y
NCT−B
CNB−AB
WITM (DTS)−A

DOWNHOLE EQUIPMENT



LEH−QT Blue Wk Pt — 39.0
LEH−QT 2379

DTC−H — 36.1
ECH−KC
DTCH0−A 8907
DTCH1−A

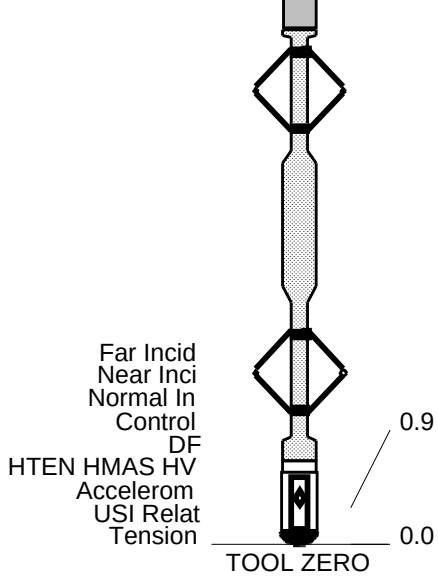
CTEM — 35.2
TelStatus
ToolStatu — 33.1
HGNS HTEM
HMCA — 33.1

HILTH−FTB — 33.1
HGNSD−H 3920
HMCA−H
HGNH
HACCZ−H 2594
HCNT−H
HGR

HGNS Gamm — 32.4
HGNS Neut — 26.5
HGNS Neut — 26.0
HGNS sens — 23.7

AH−107 — 23.7
AH−107

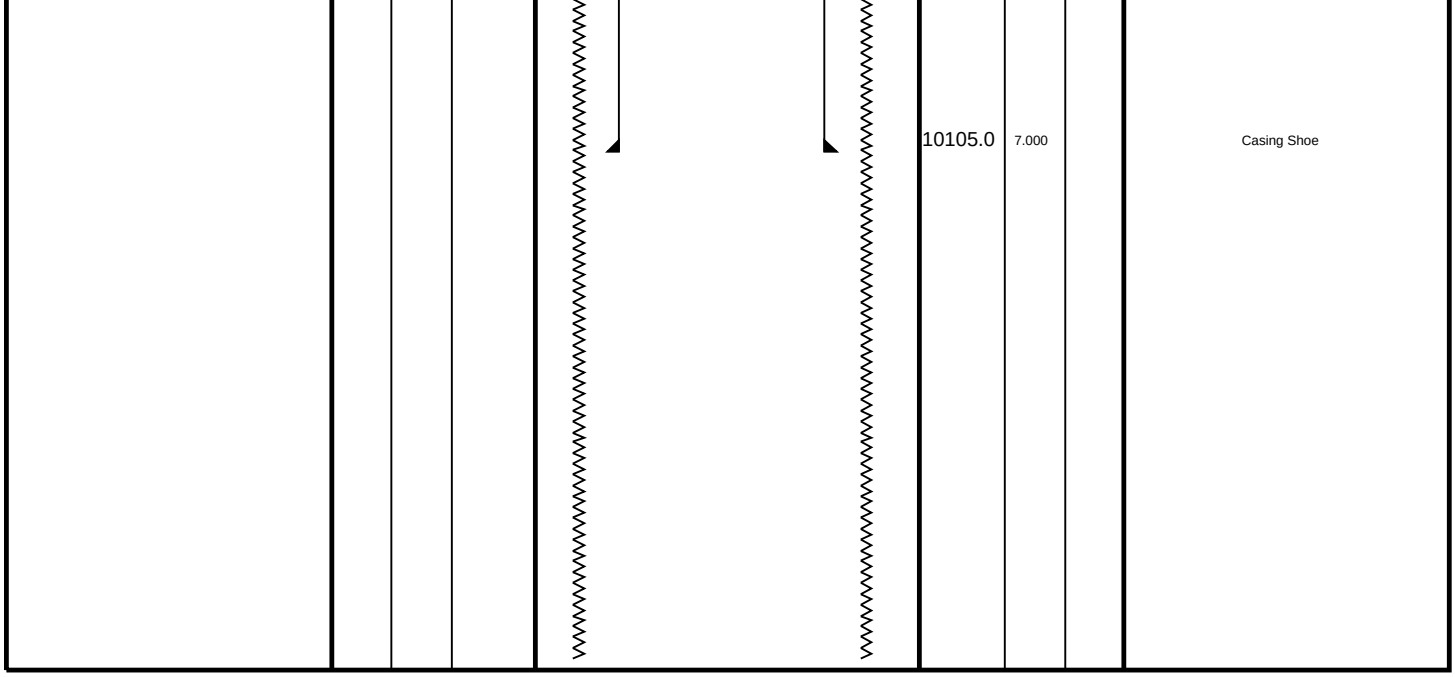
USIT−D — 21.7
ECH−MRA
USIC−D 1846
USIS−A 704
USSC−B
IBCS_B−100158202 826
Top Transducer
Middle Top Transducer
Middle Bottom Transducer
Bottom Transducer



MAXIMUM STRING DIAMETER 7.50 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN FEET

Client:	ExxonMobil Production Corp		Drawing Date: 9/18/2010
Well:	PCU 296−5A1		API #: 51031124800
Field:	Piceance Creek	Rig Name:	H&P 321
State:	Colorado	Reference Datum:	Kelly Bushing
Country:	USA	Elevation:	7325.5 ft

Production String	(in) OD	(in) ID	(ft) MD	Well Schematic	(ft) MD	(in) OD	(in) ID	Casing String
					30.2	7.000		Casing String
					30.2	9.875		Borehole Segment



All depths are driller's depth

Schlumberger

IBC SLG COMPOSITE

MAXIS Field Log

Company: ExxonMobil Production Corp **Well: PCU 296−5A1**

Input DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_023LUP	FN:22	PRODUCER	18−Sep−2010 07:07	9866.0 FT	1727.5 FT

Output DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_025PUP	FN:24	PRODUCER	18−Sep−2010 11:12	9872.0 FT	3949.5 FT

OP System Version: 18C0−147

USIT−D	18C0−147	HILTH−FTB	18C0−147
DTC−H	18C0−147		

Image rotation (UCAZ) (DEG)

0 360

Tool/Tot.

Drag From D4T to STIA

Cable Drag From D4T to STIT

Stuck Stretch (STIT)

0 (F) 50

Gamma Ray (GR) (GAPI)

0 150

RSAV (RSAV) (RPS)

6 7.5

CCL (CCLU) (----

−20 20

Min of Internal radius (IRMN) (IN)

3.7 2.7

Min of Internal radius (IRMN) (IN)

2.7 3.7

Internal radius Maximum (IRMX) (IN)

3.7 2.7

Internal radius Maximum (IRMX) (IN)

2.7 3.7

Internal radius Average (IRAV) (IN)

3.7 2.7

Internal radius Average (IRAV) (IN)

2.7 3.7

Maximum of Thickness (THMX) (IN)

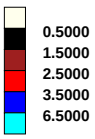
0.1 0.6

Average of Thickness (THAV) (IN)

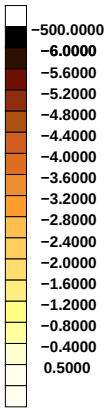
0.1 0.6

Eccent. (ECCE)

0 (IN) 0.5



Process. flags (UFLG) (----



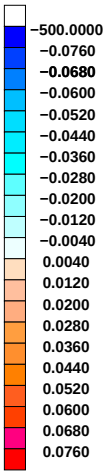
Amplitude of echo minus Max (AWBK) (DB)

External radius Average (ERAV) (IN)

3.7 2.7

External radius Average (ERAV) (IN)

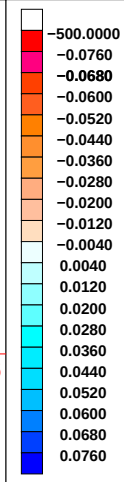
2.7 3.7



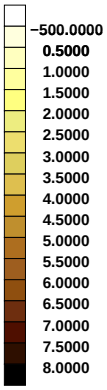
Internal radii minus Ave (IRBK) (IN)

Min of Thickness (THMN) (IN)

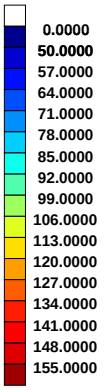
0.1 0.6



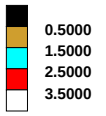
Thickness minus Ave (THBK) (IN)



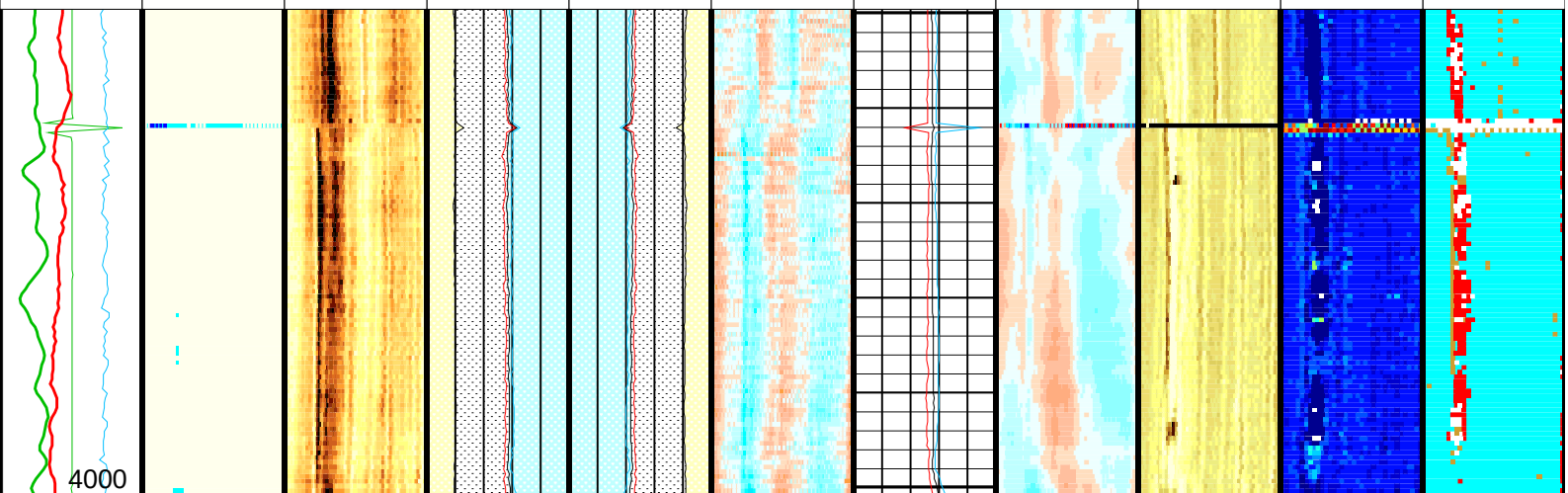
Raw Acoustic Imped. (AIBK) (MRAY)

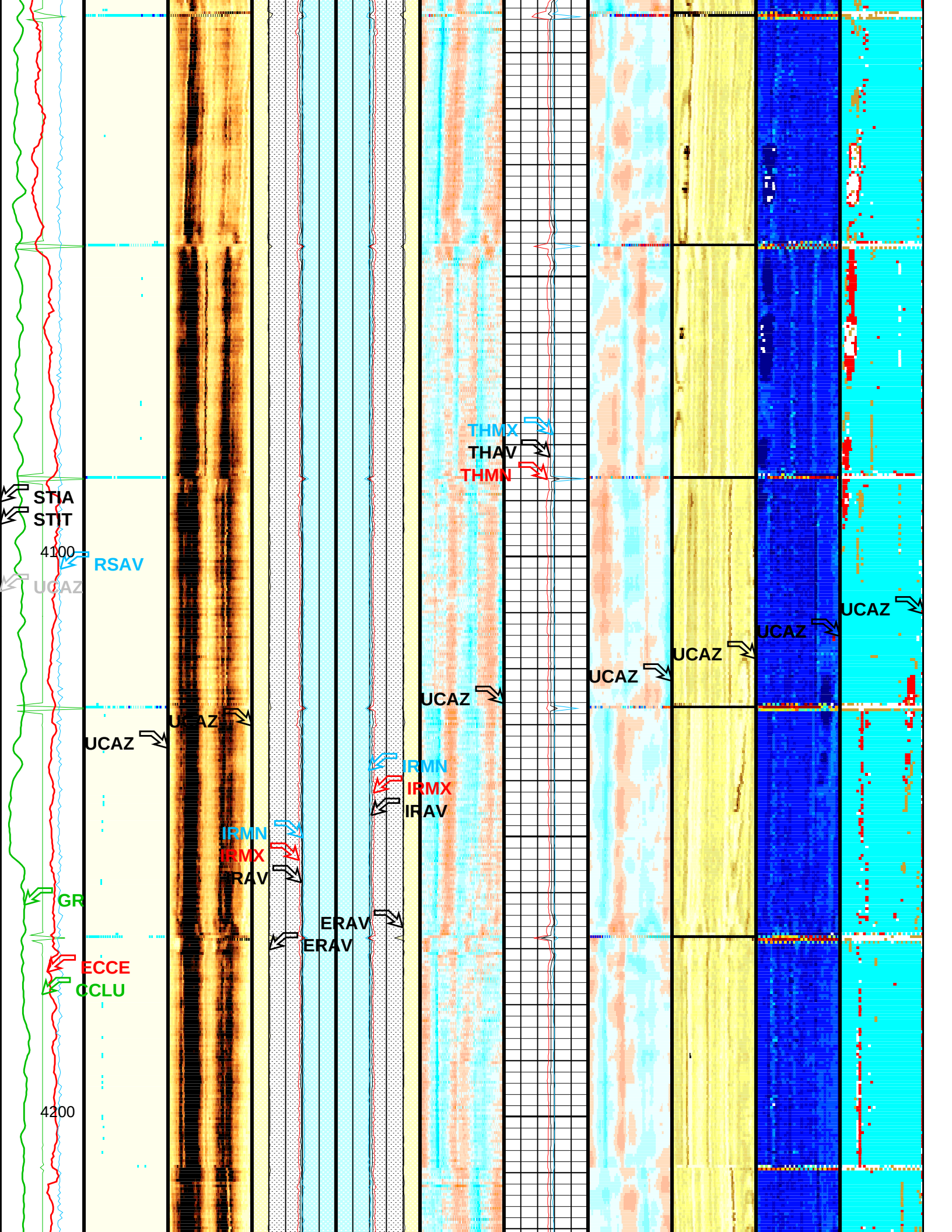


Flexural Attenuation (U−USIT_ UFAK) (DB/M)



Solid Liquid Gas Map (U−USIT_ USLP) (----

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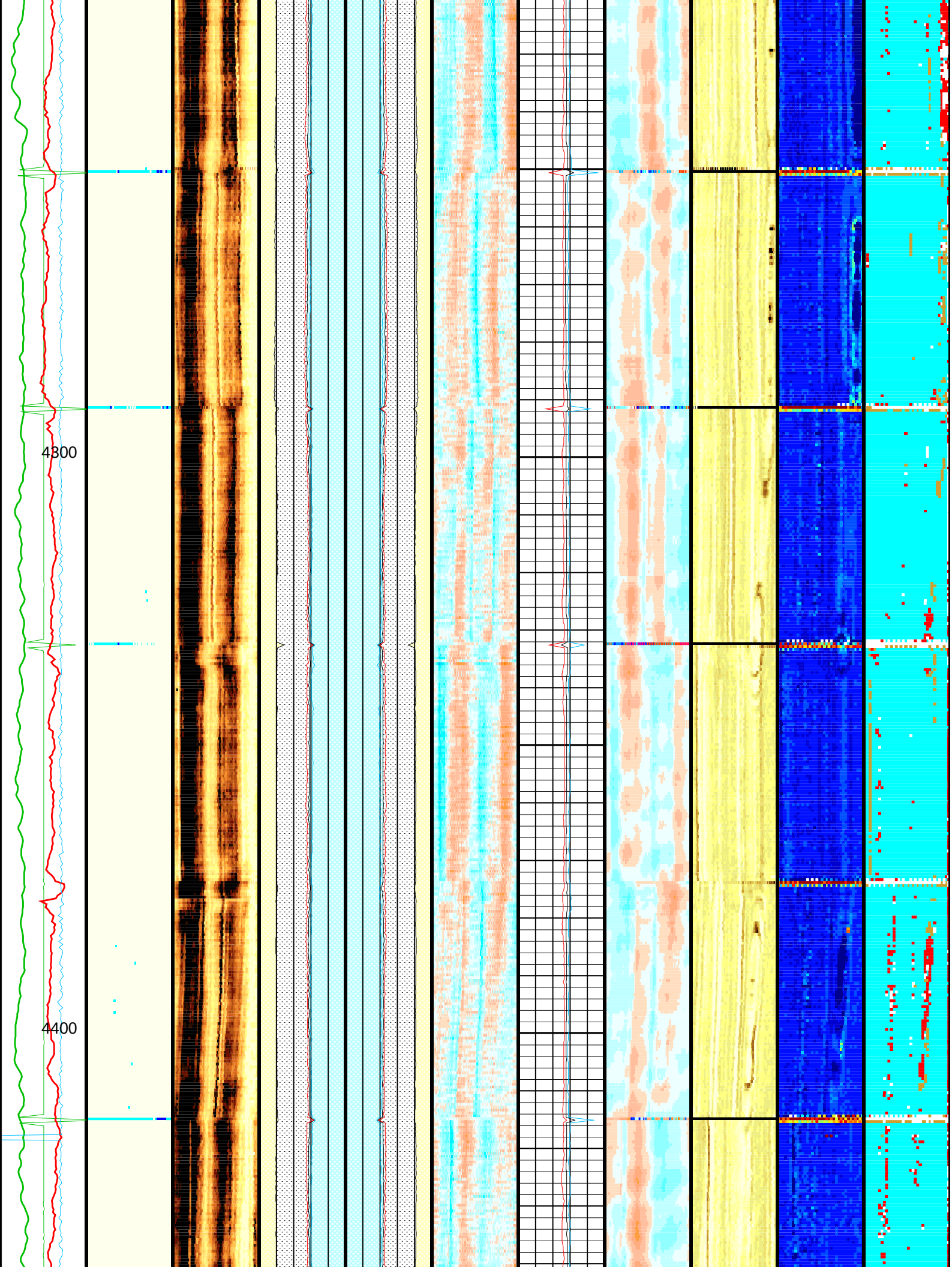
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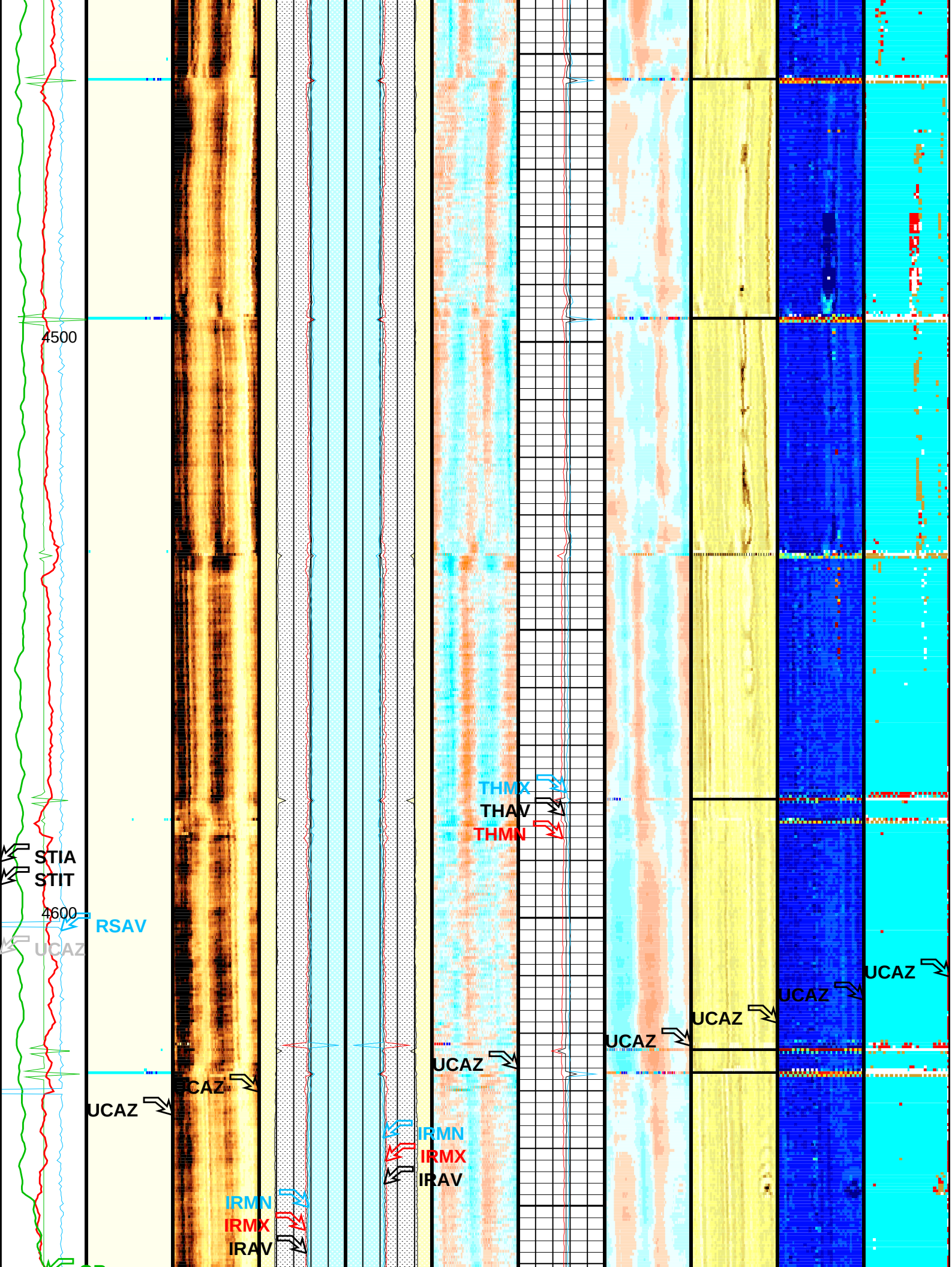
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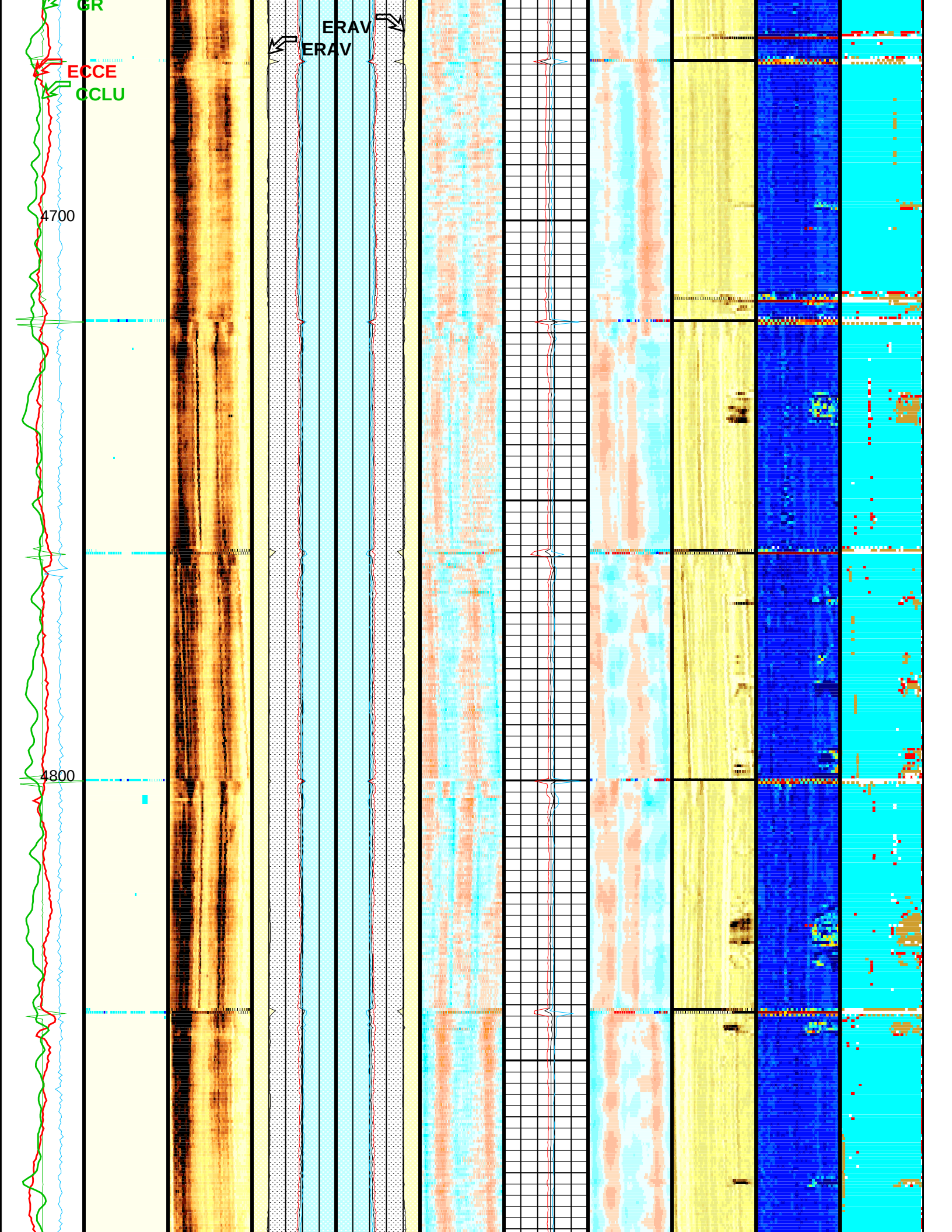
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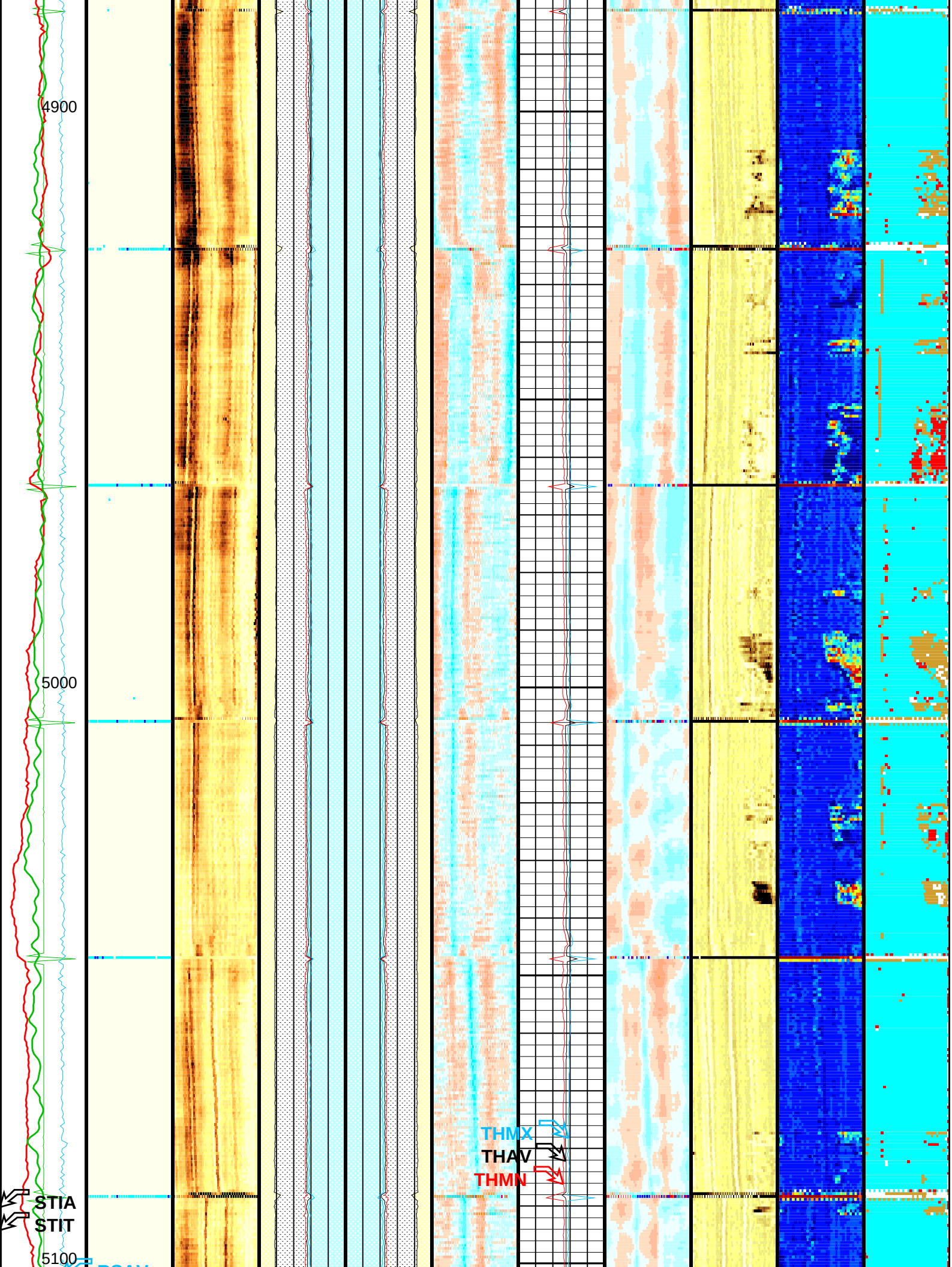
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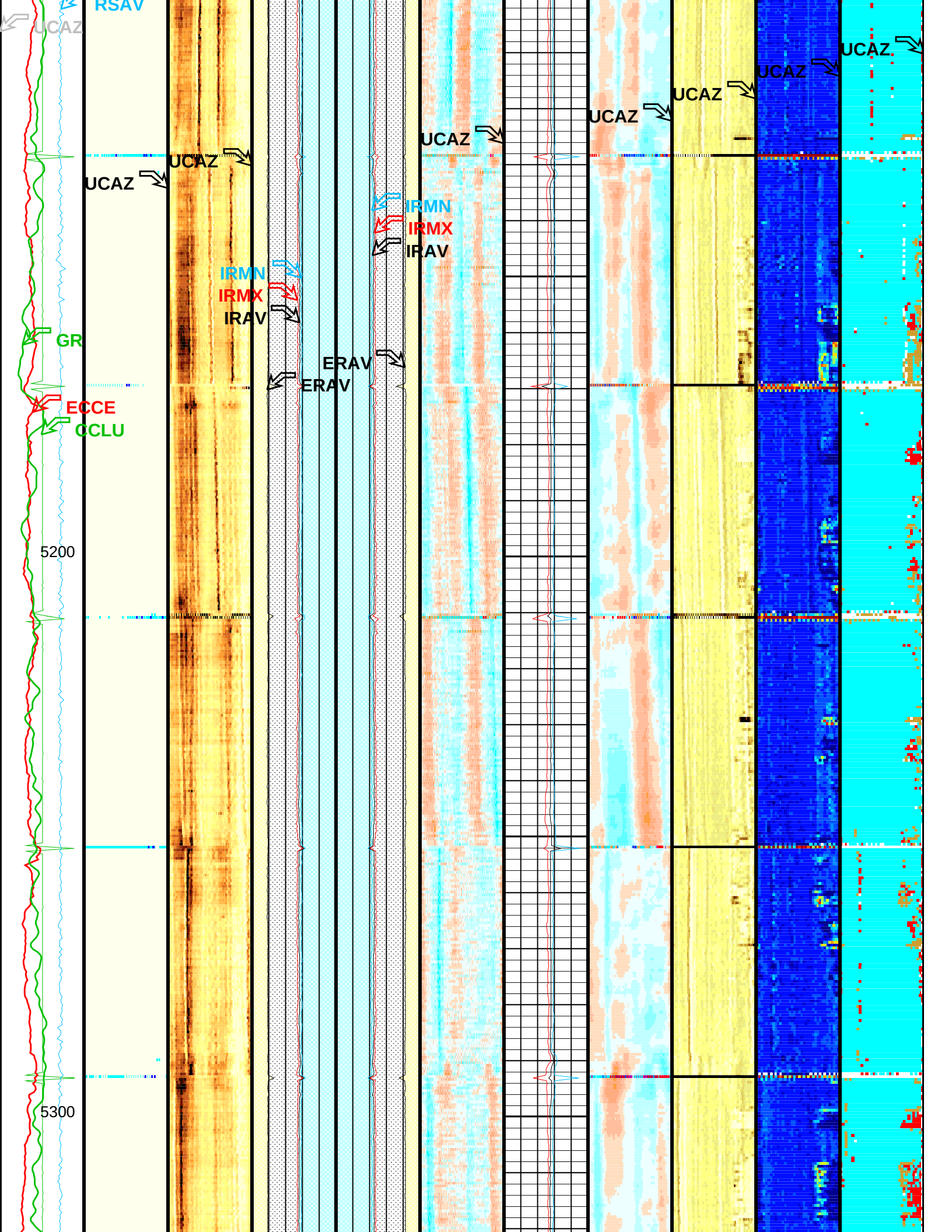
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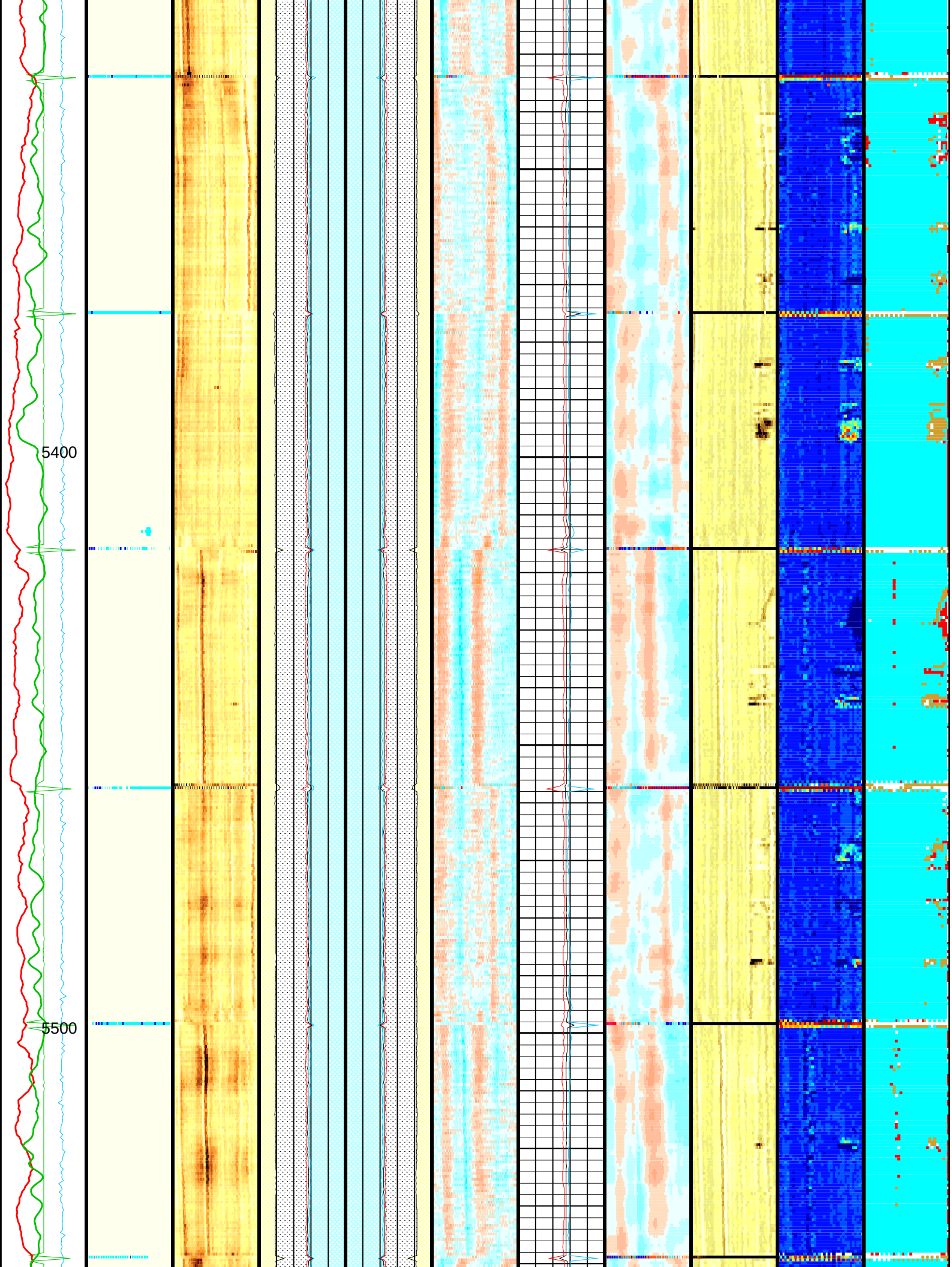
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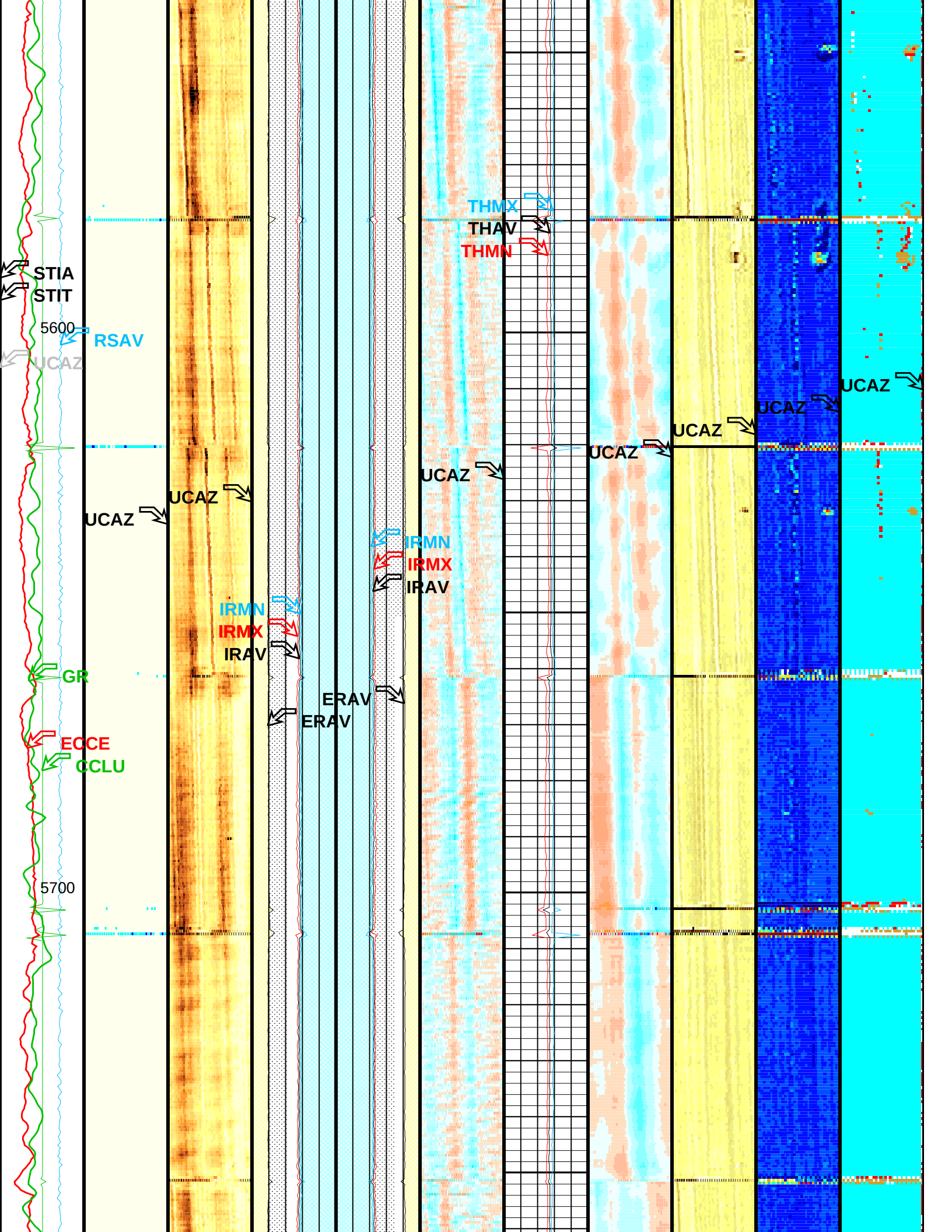
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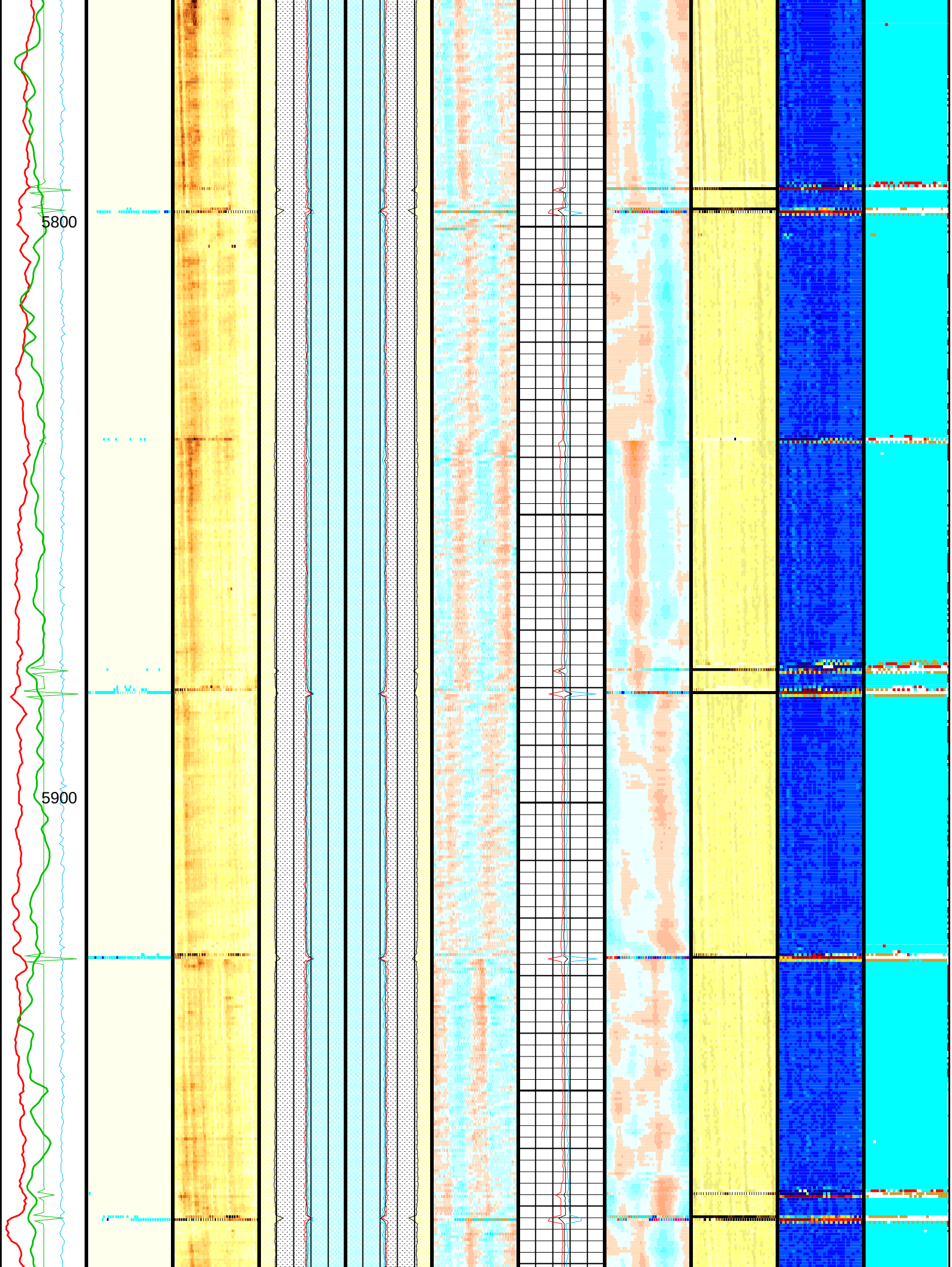
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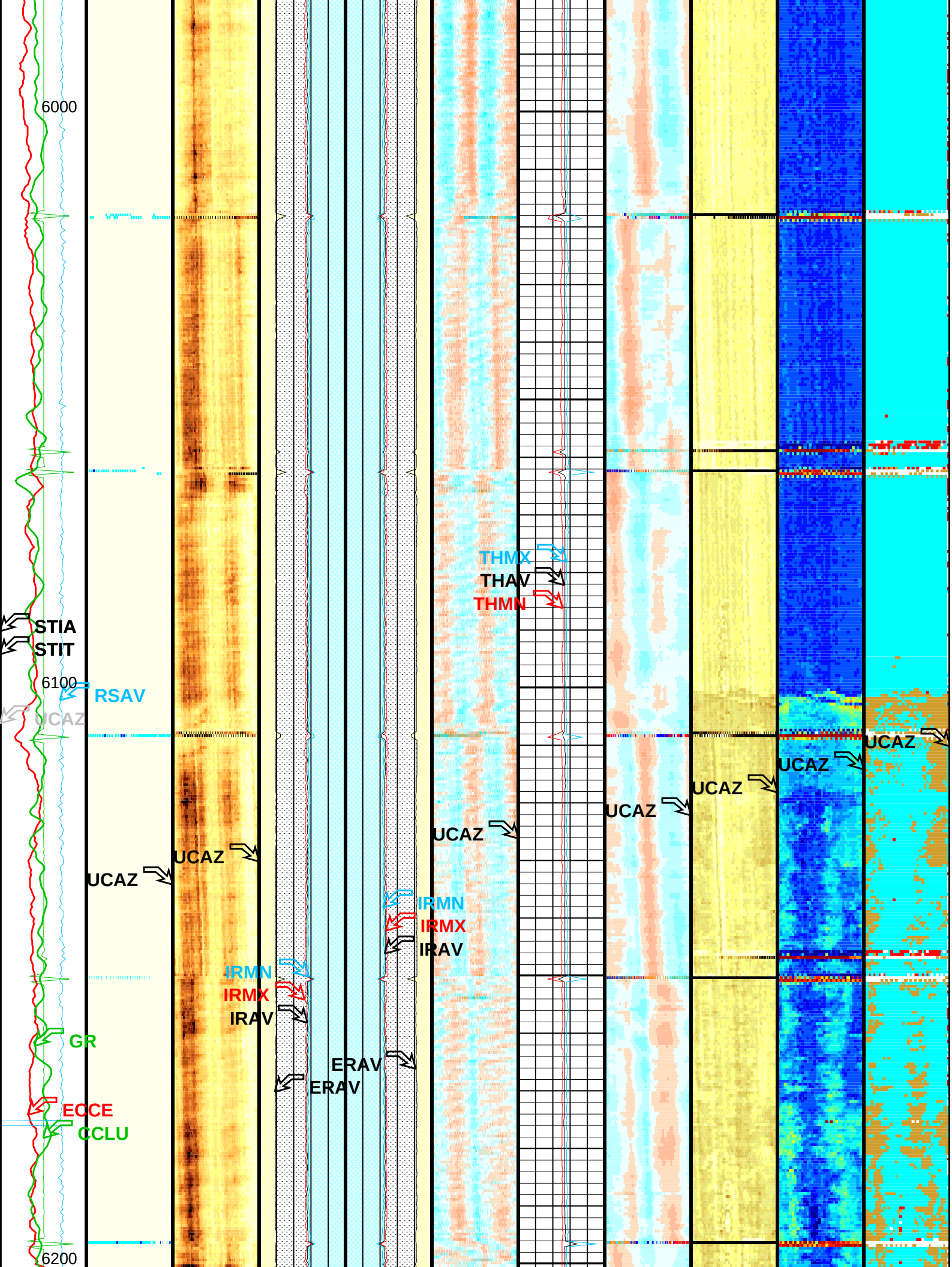
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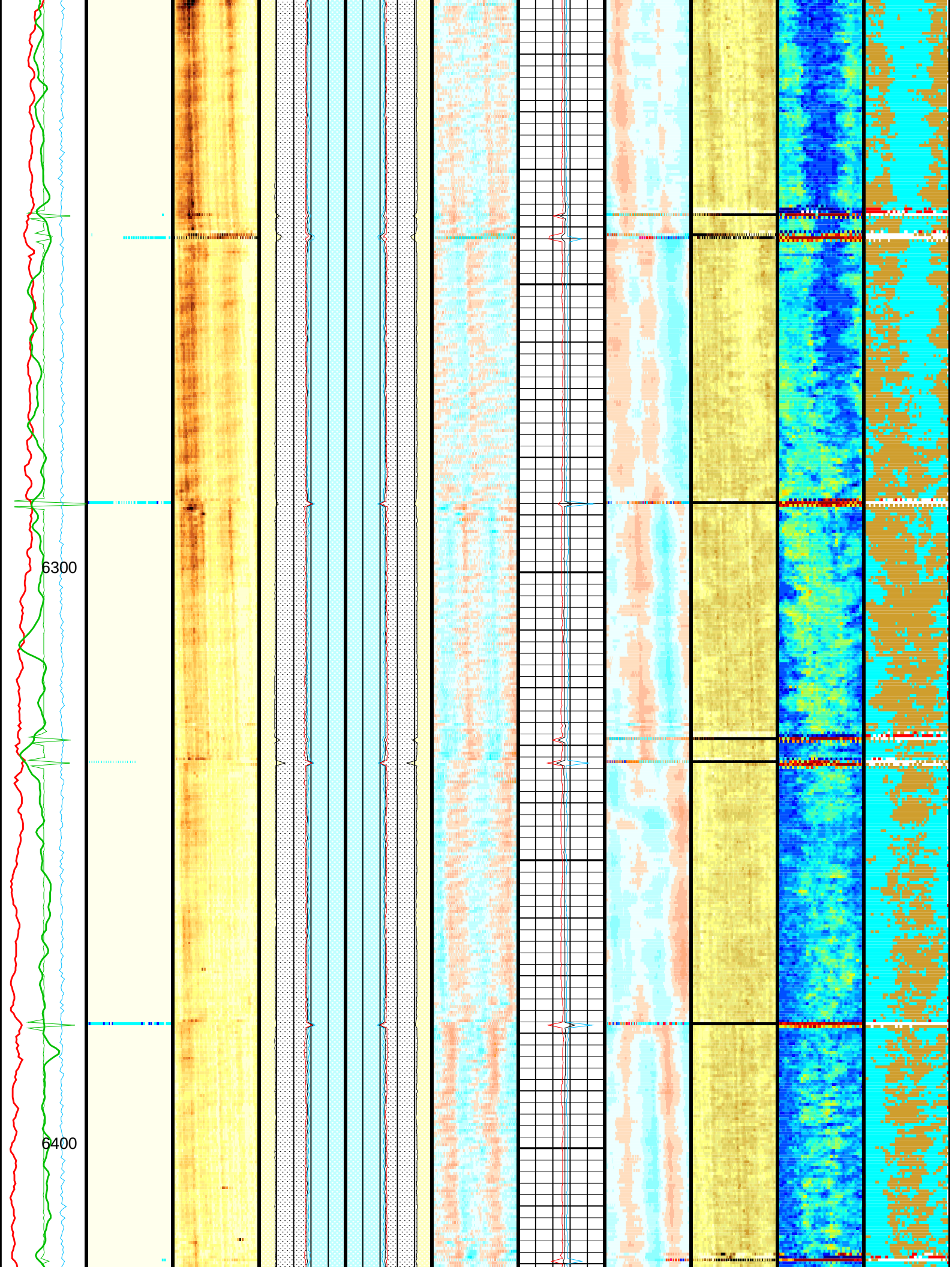
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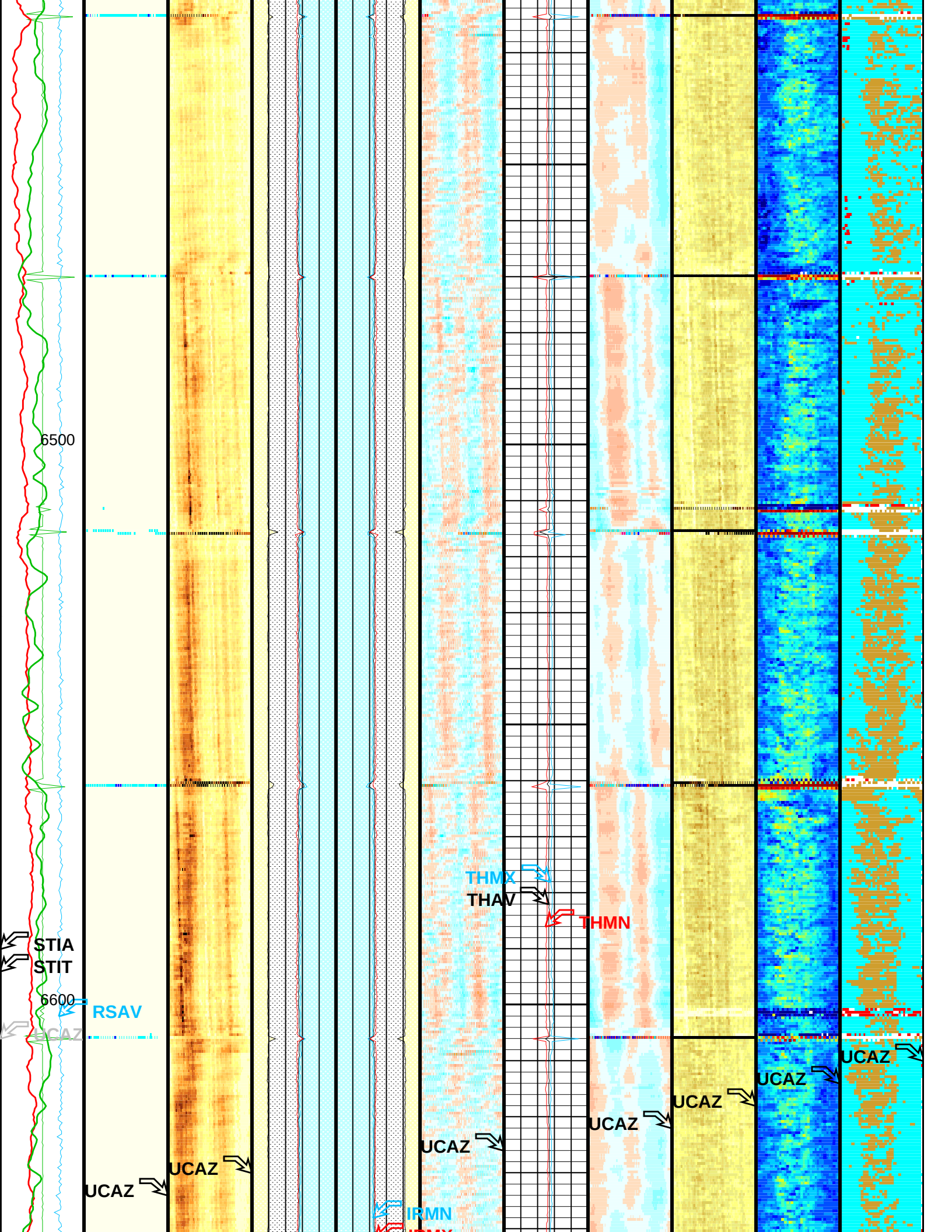
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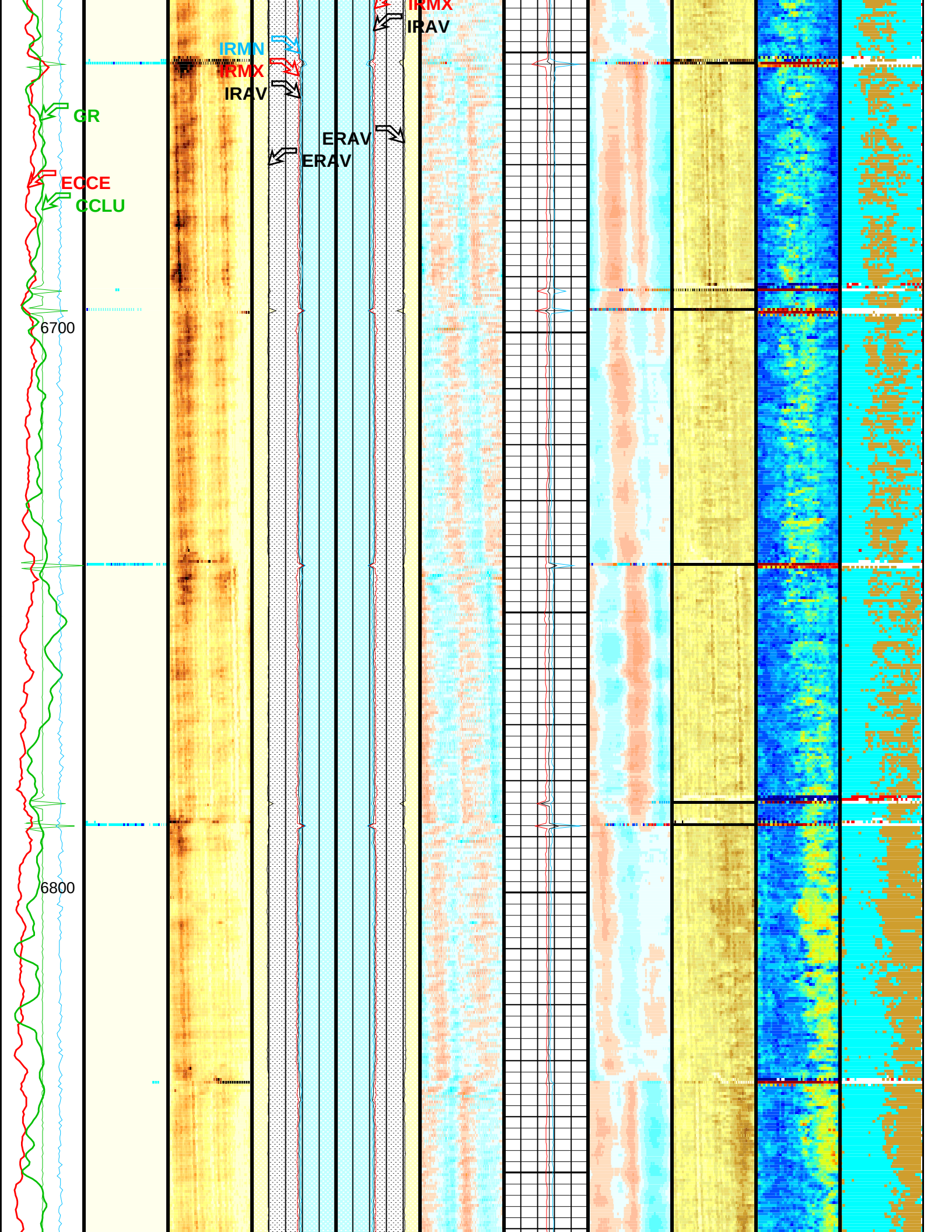
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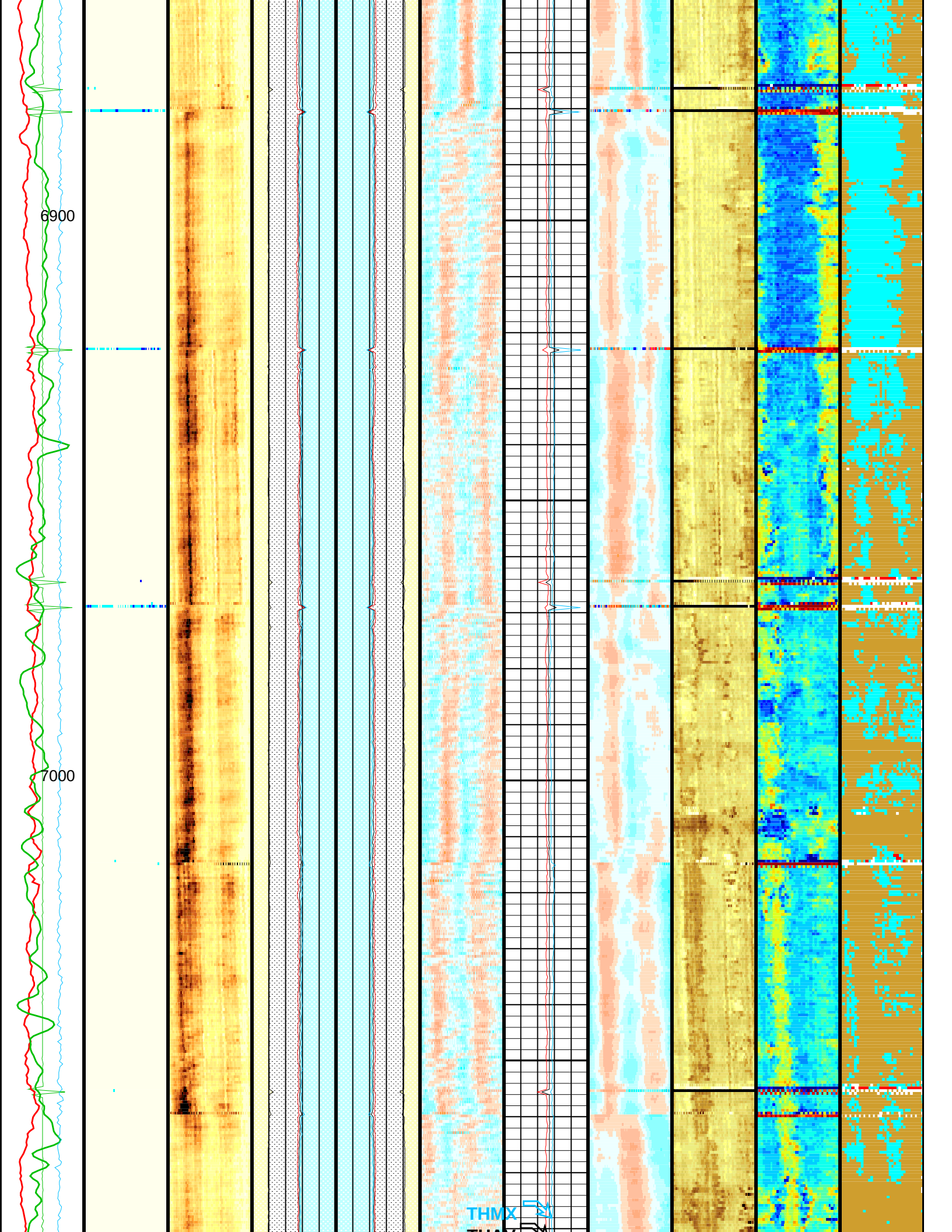
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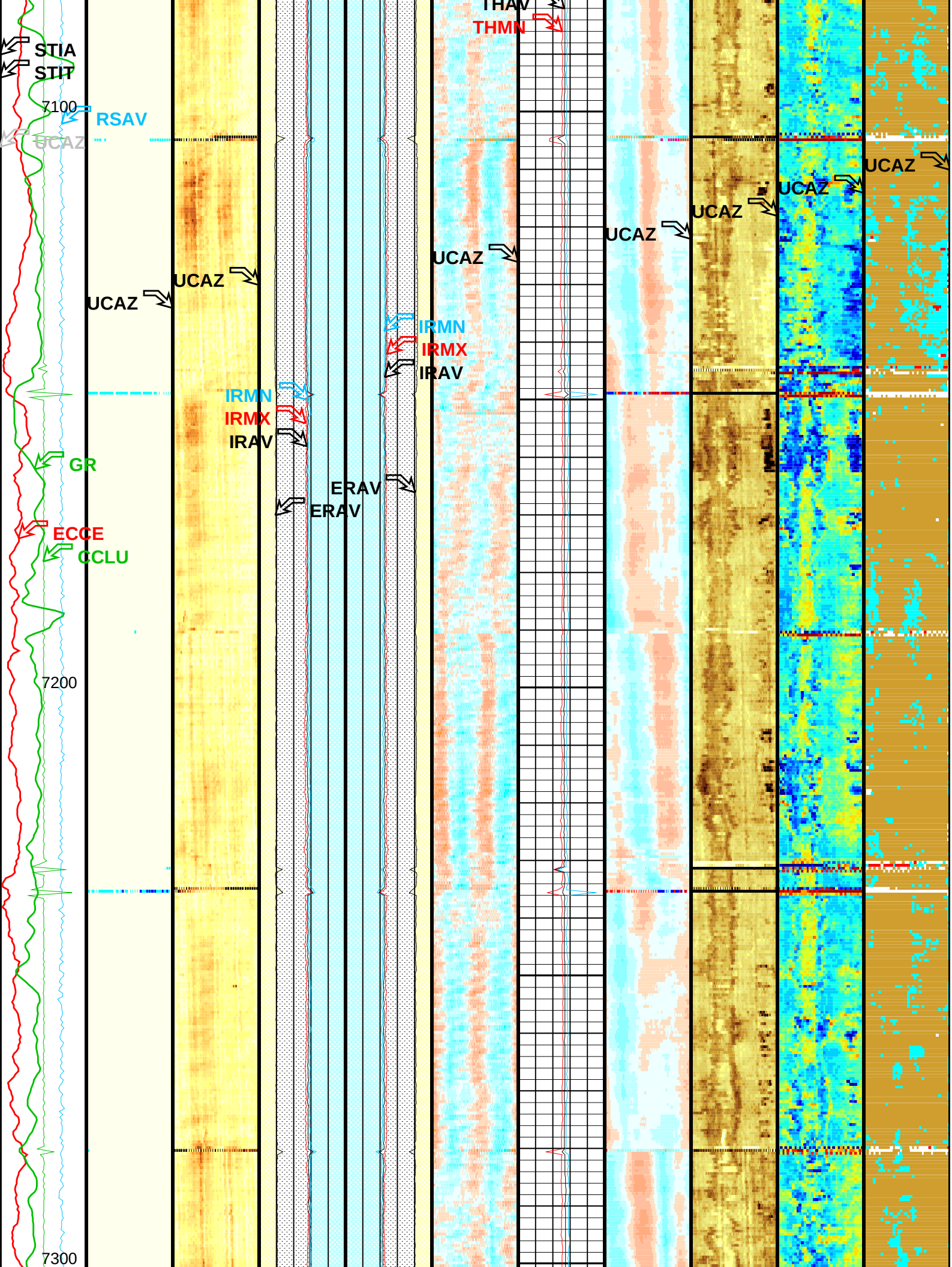
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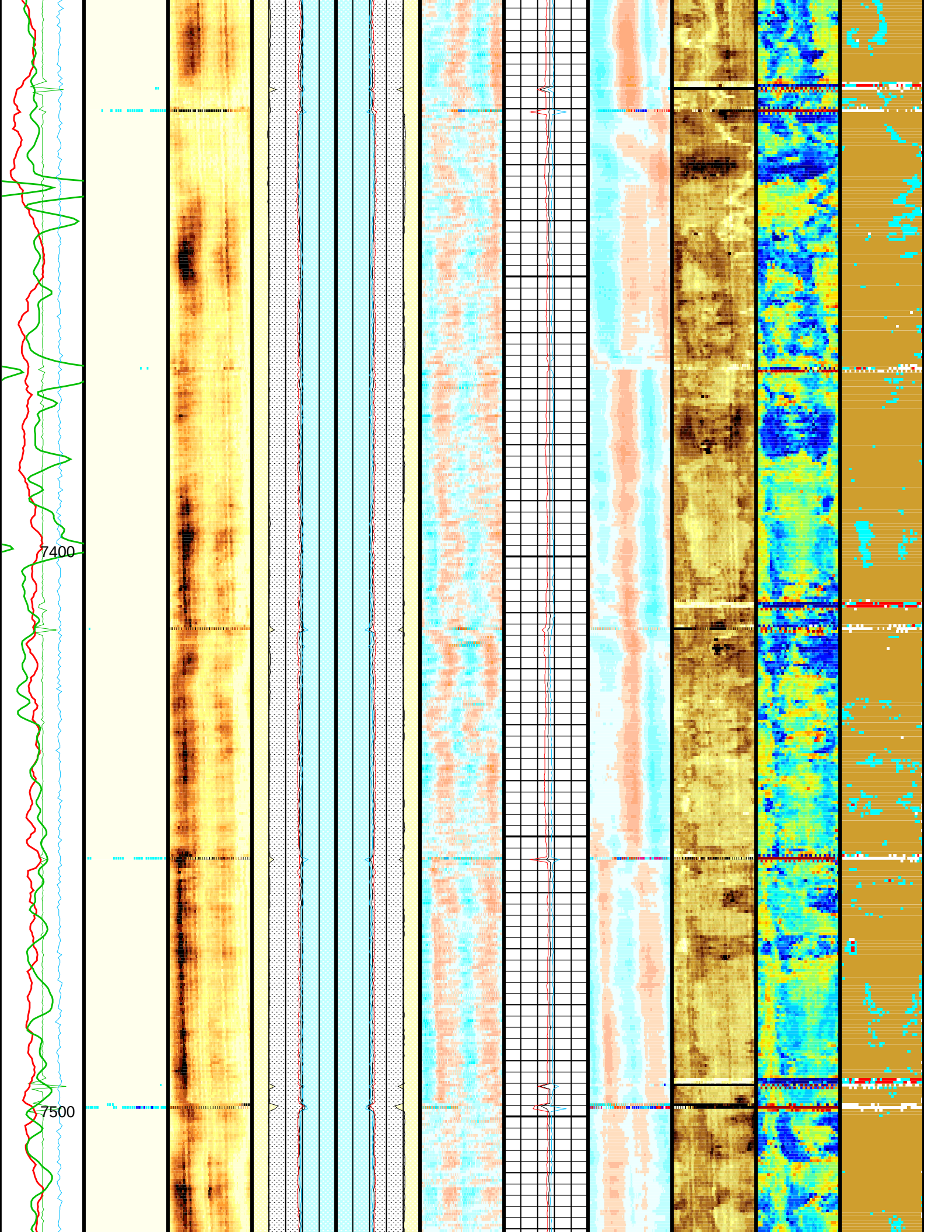
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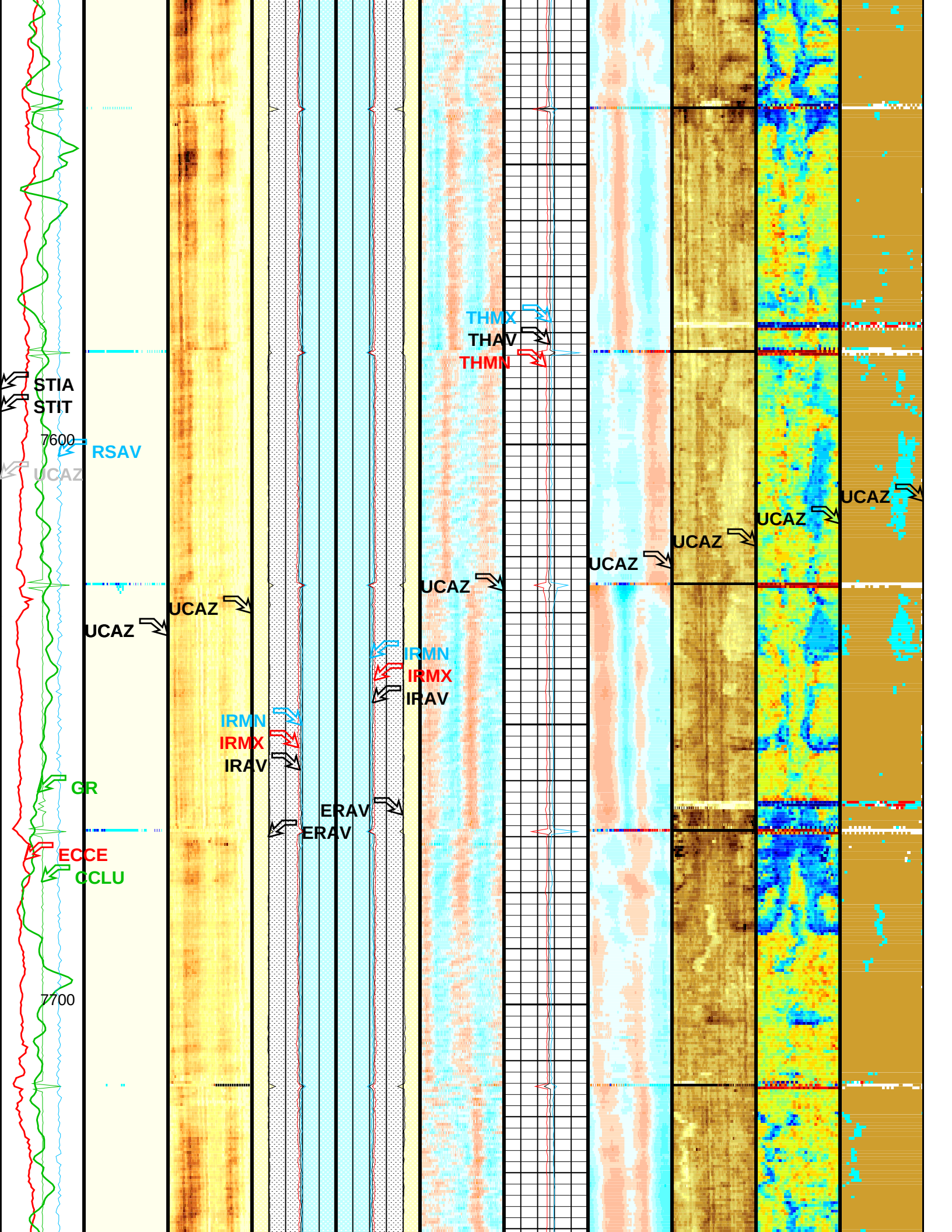
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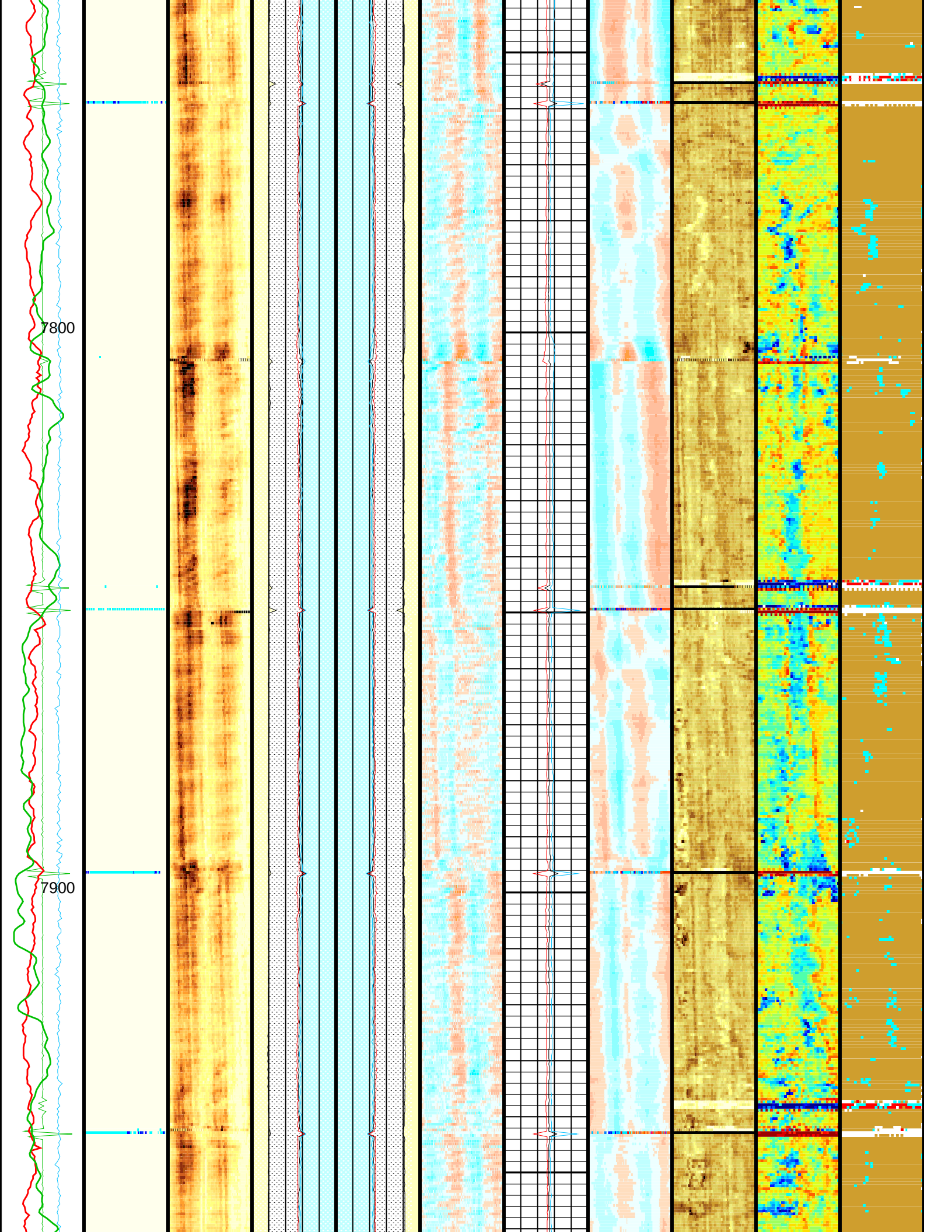
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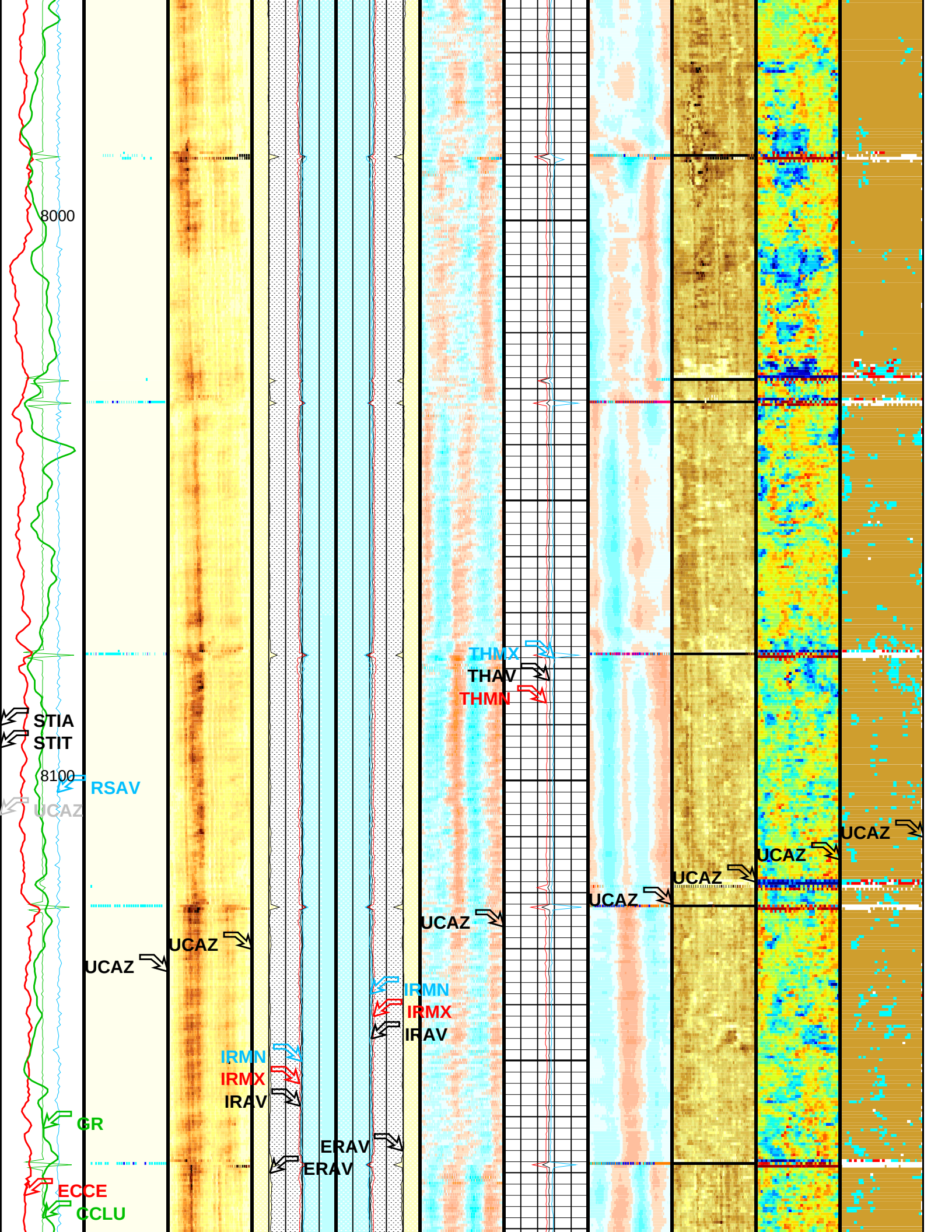
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CCLU
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IRMX
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ERAV
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UCAZ
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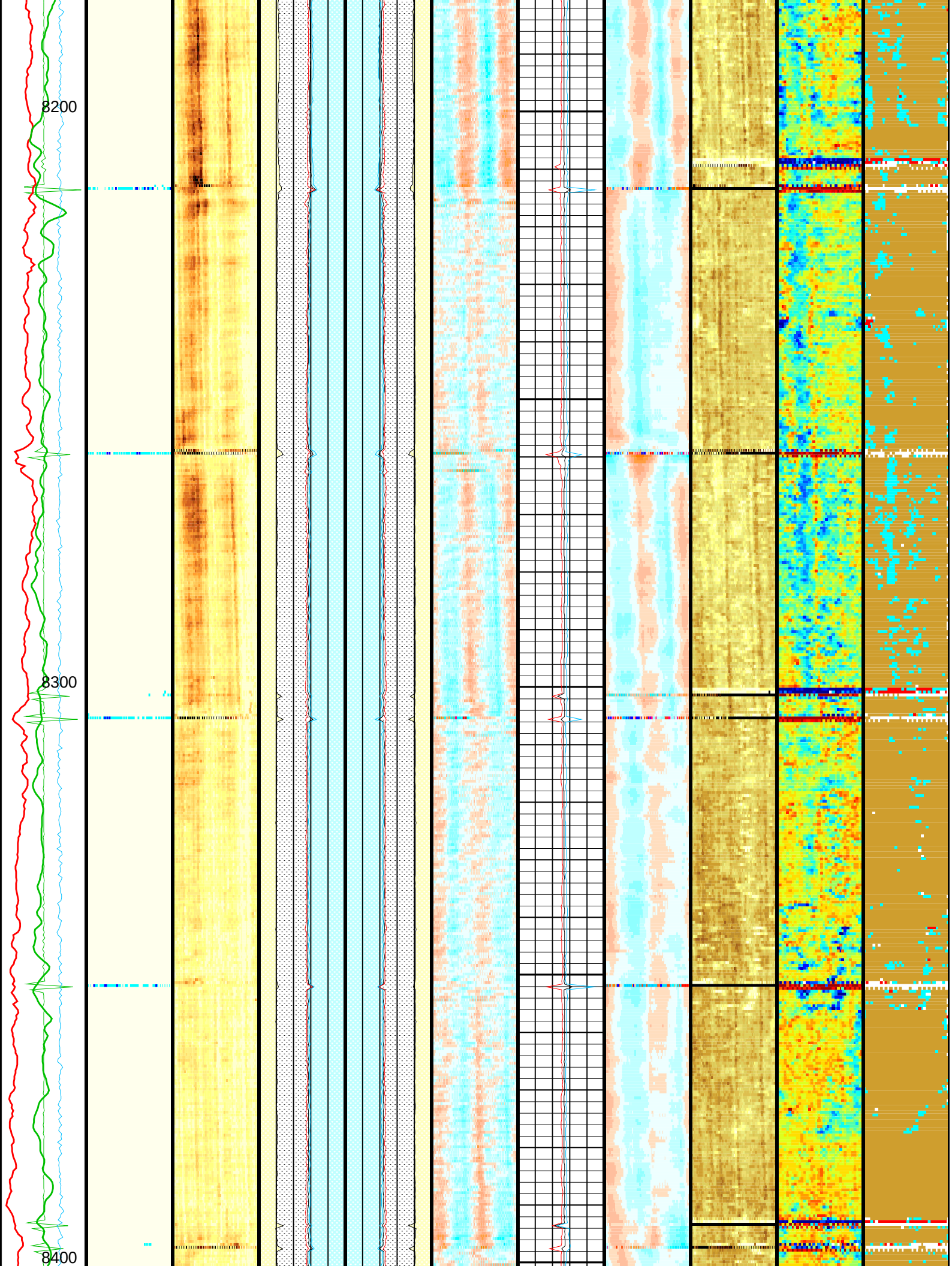
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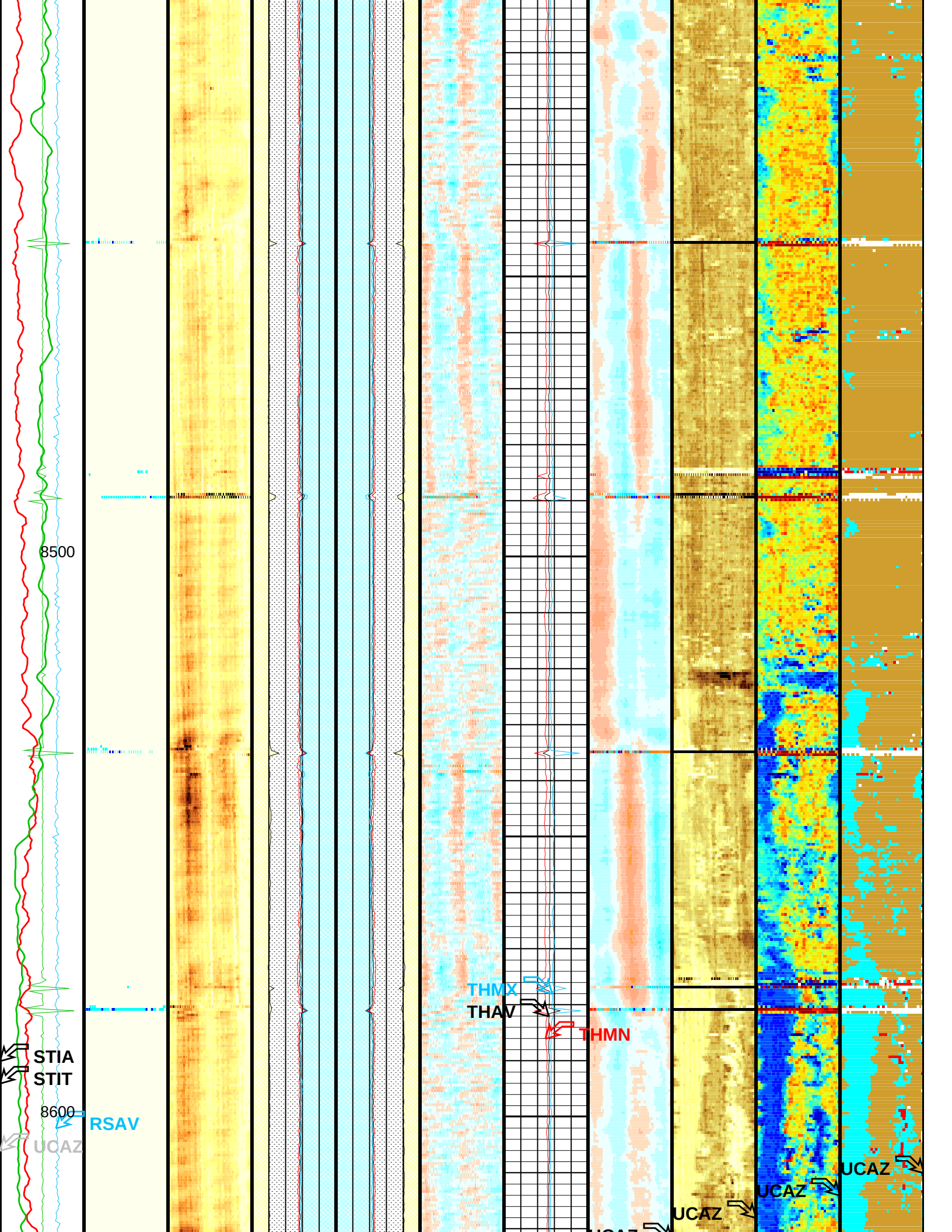
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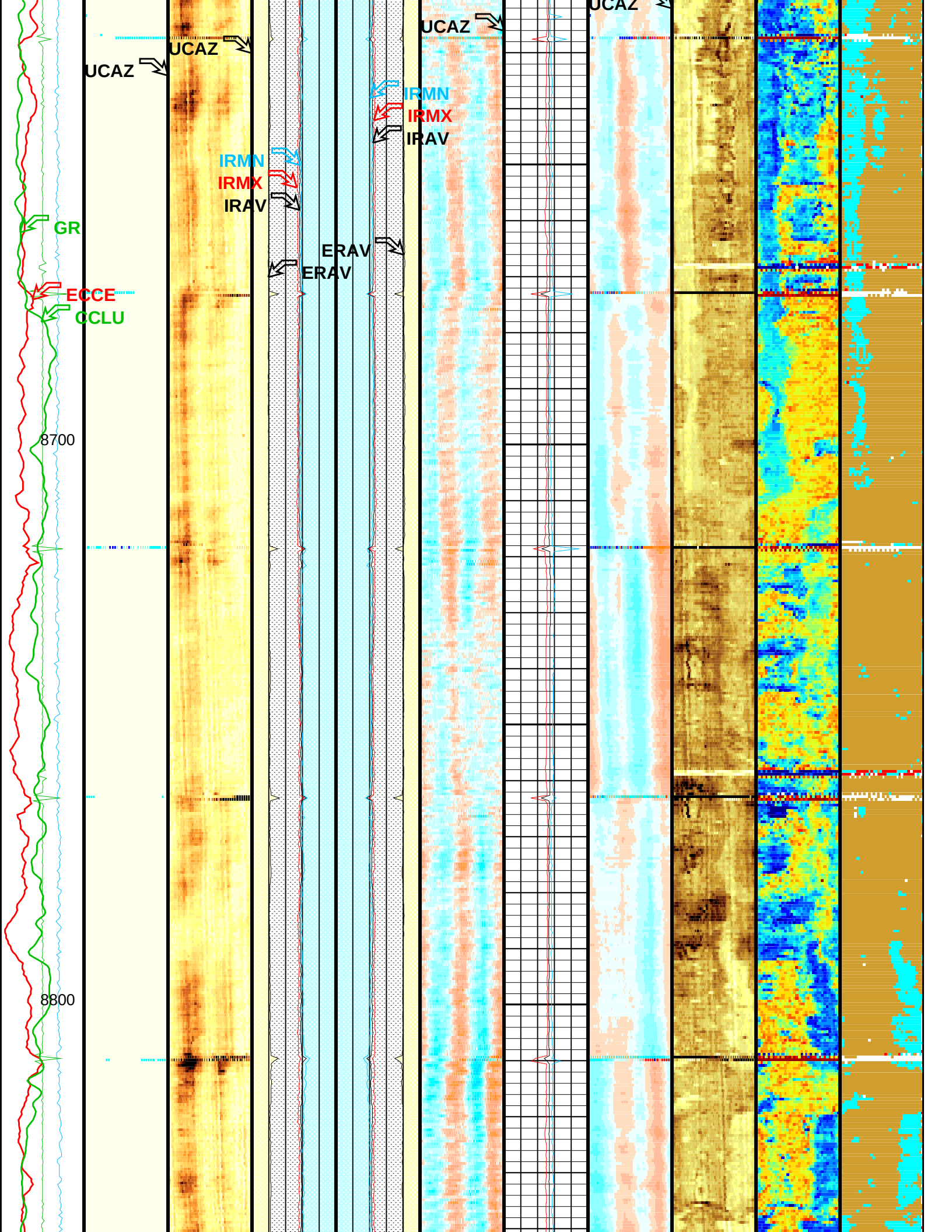
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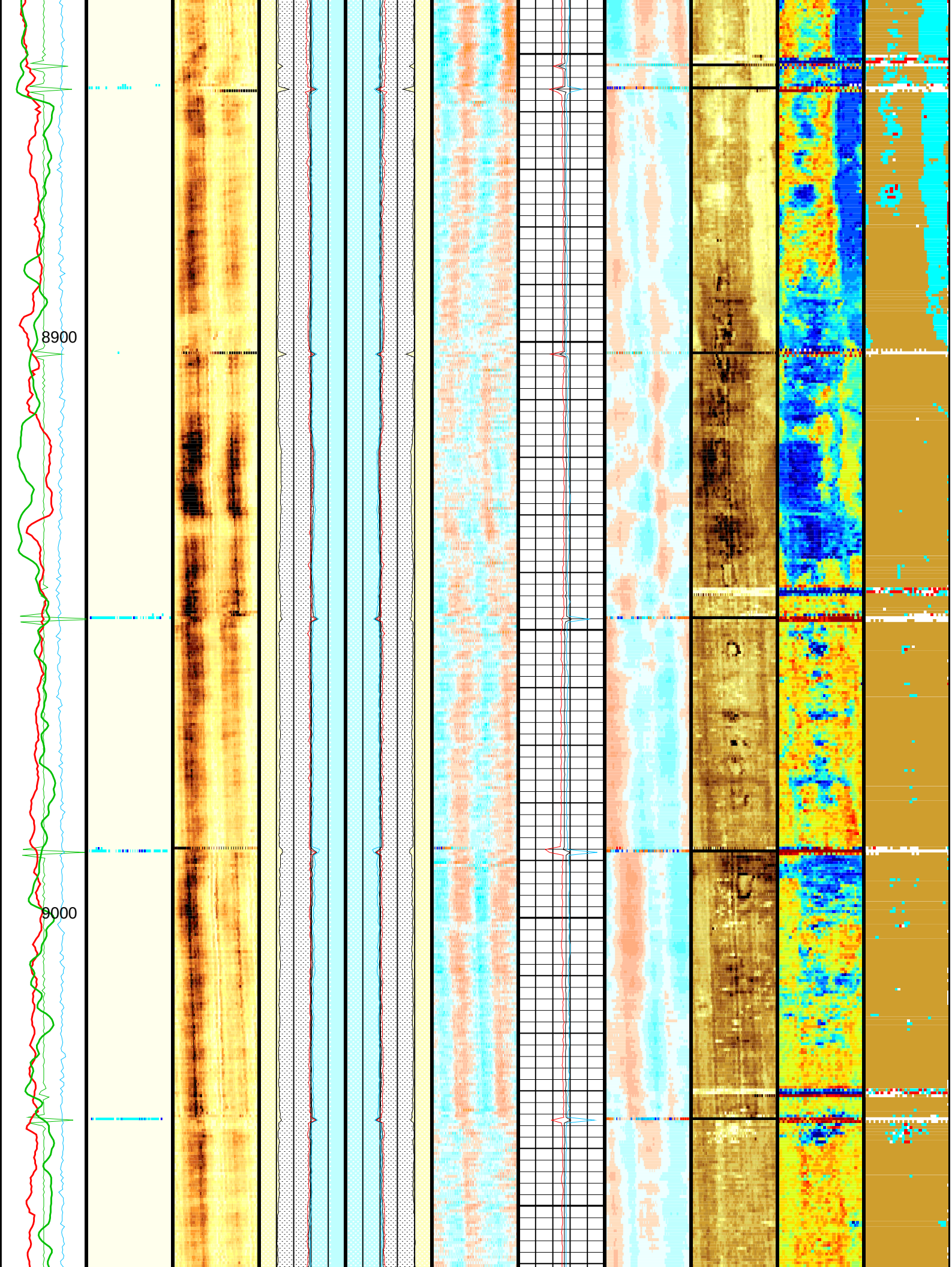
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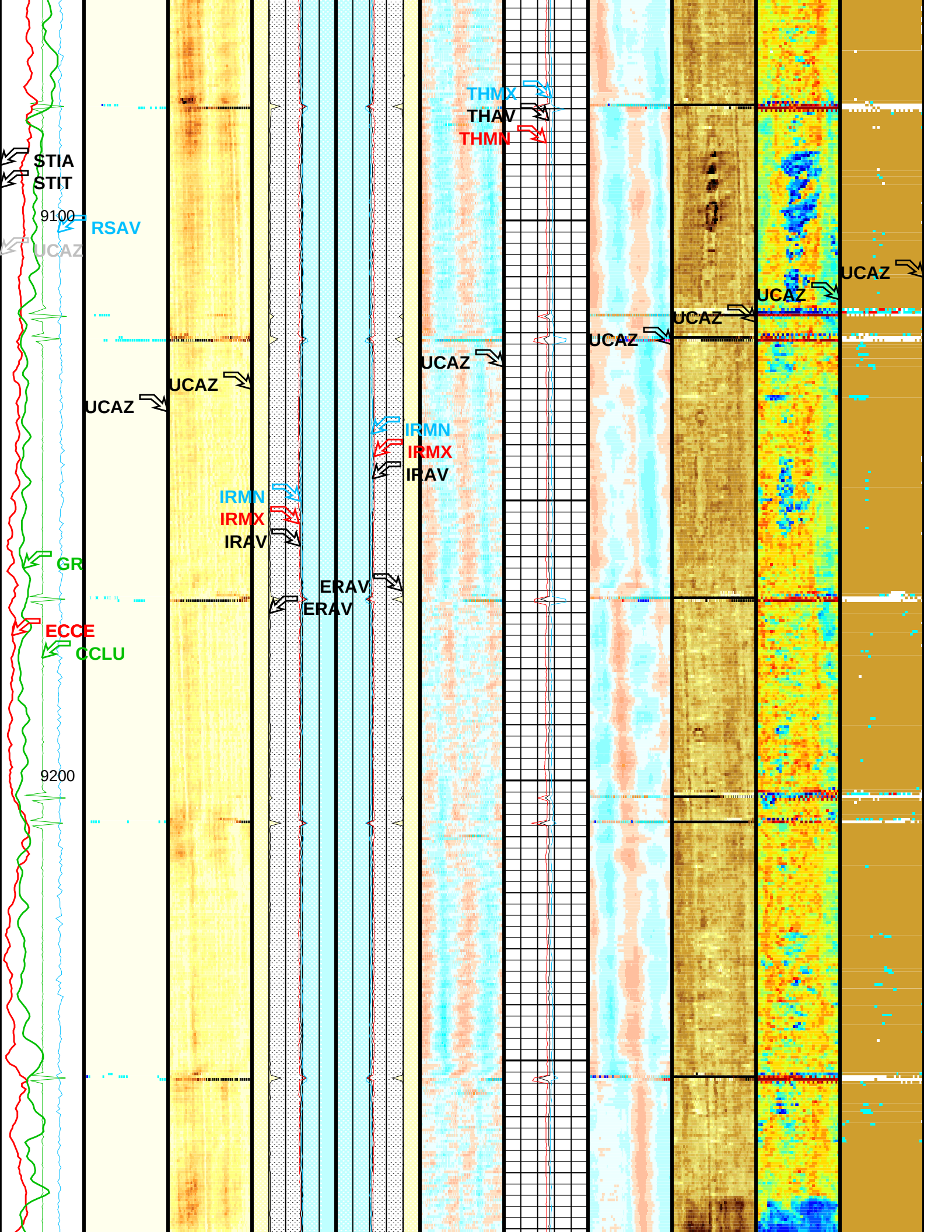
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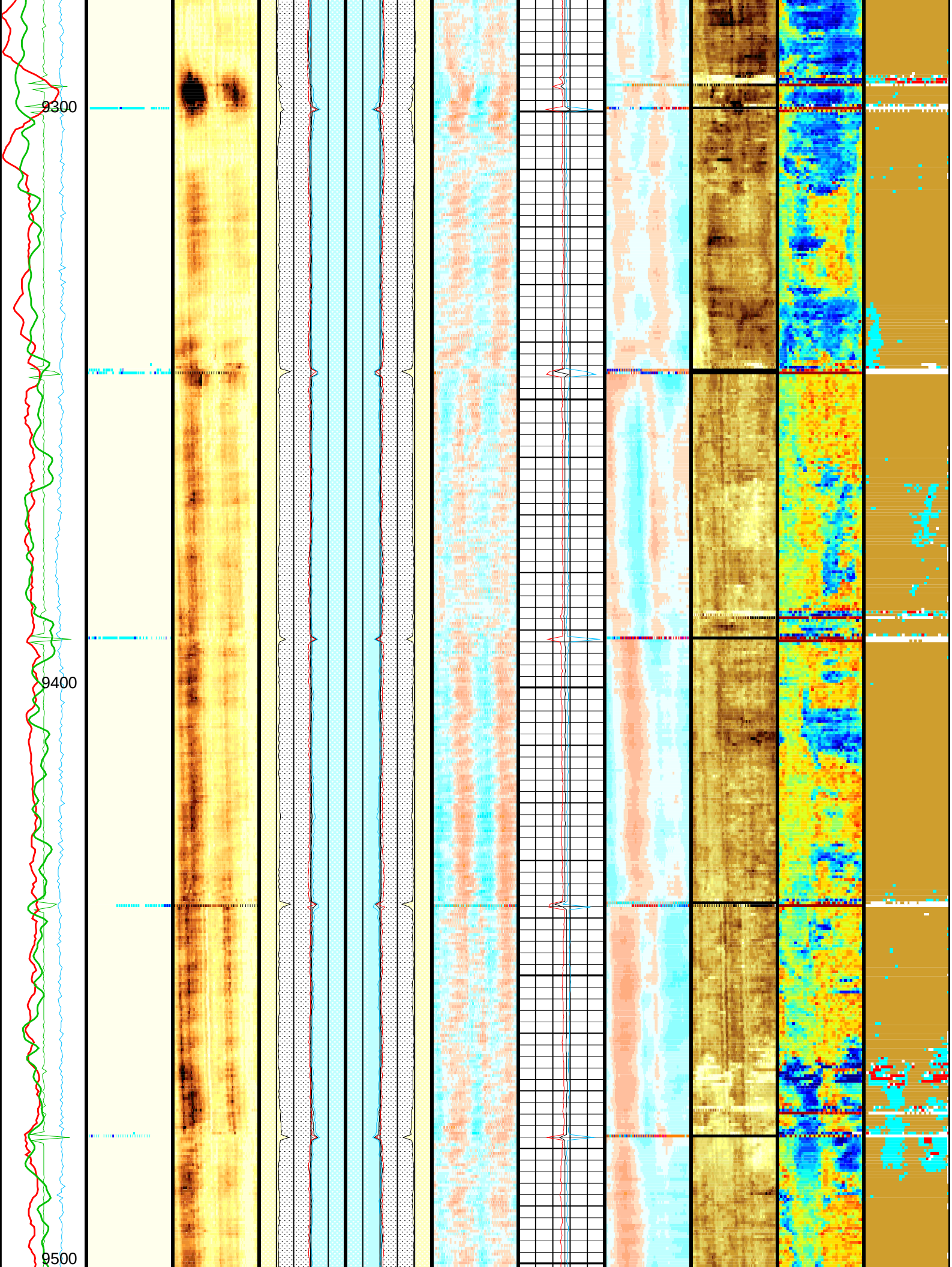
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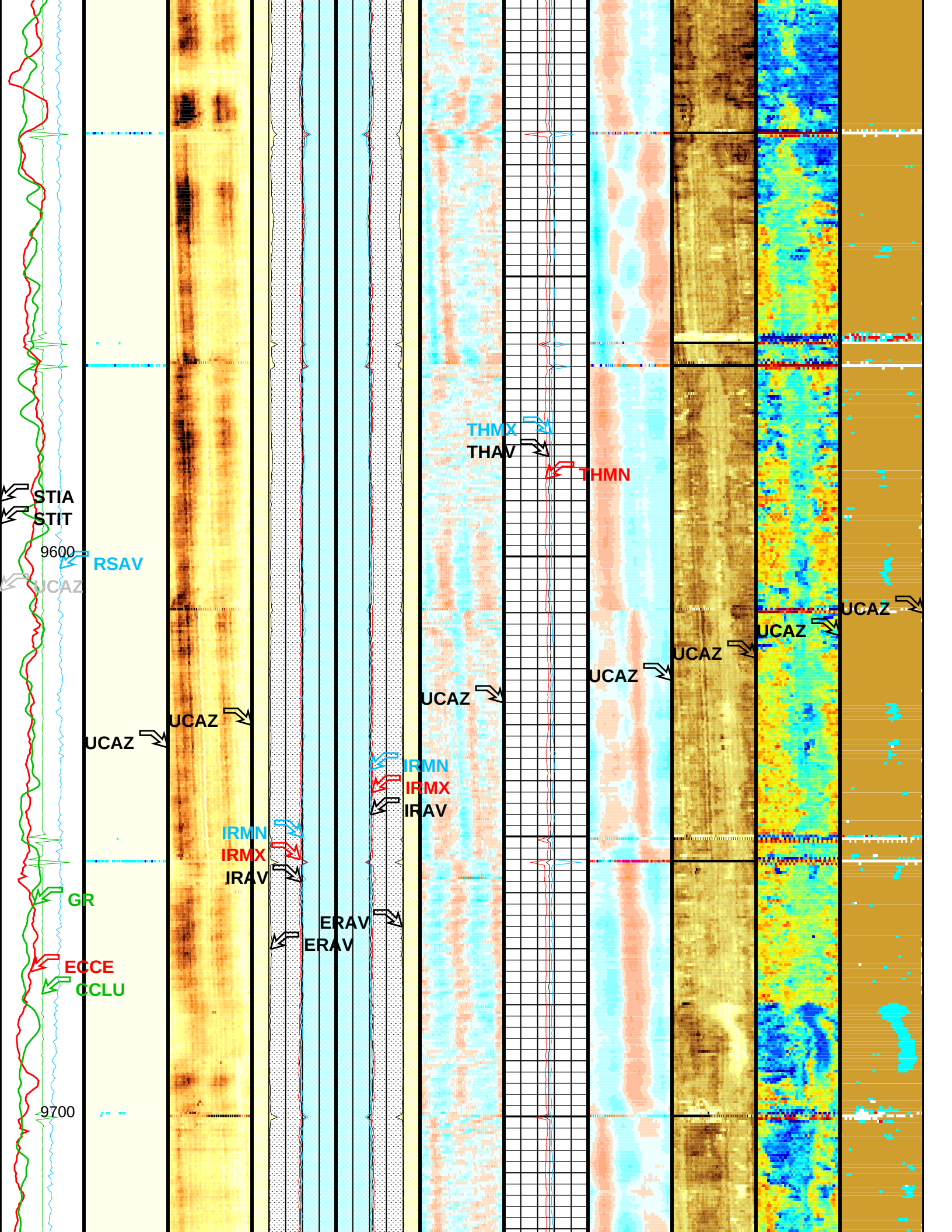
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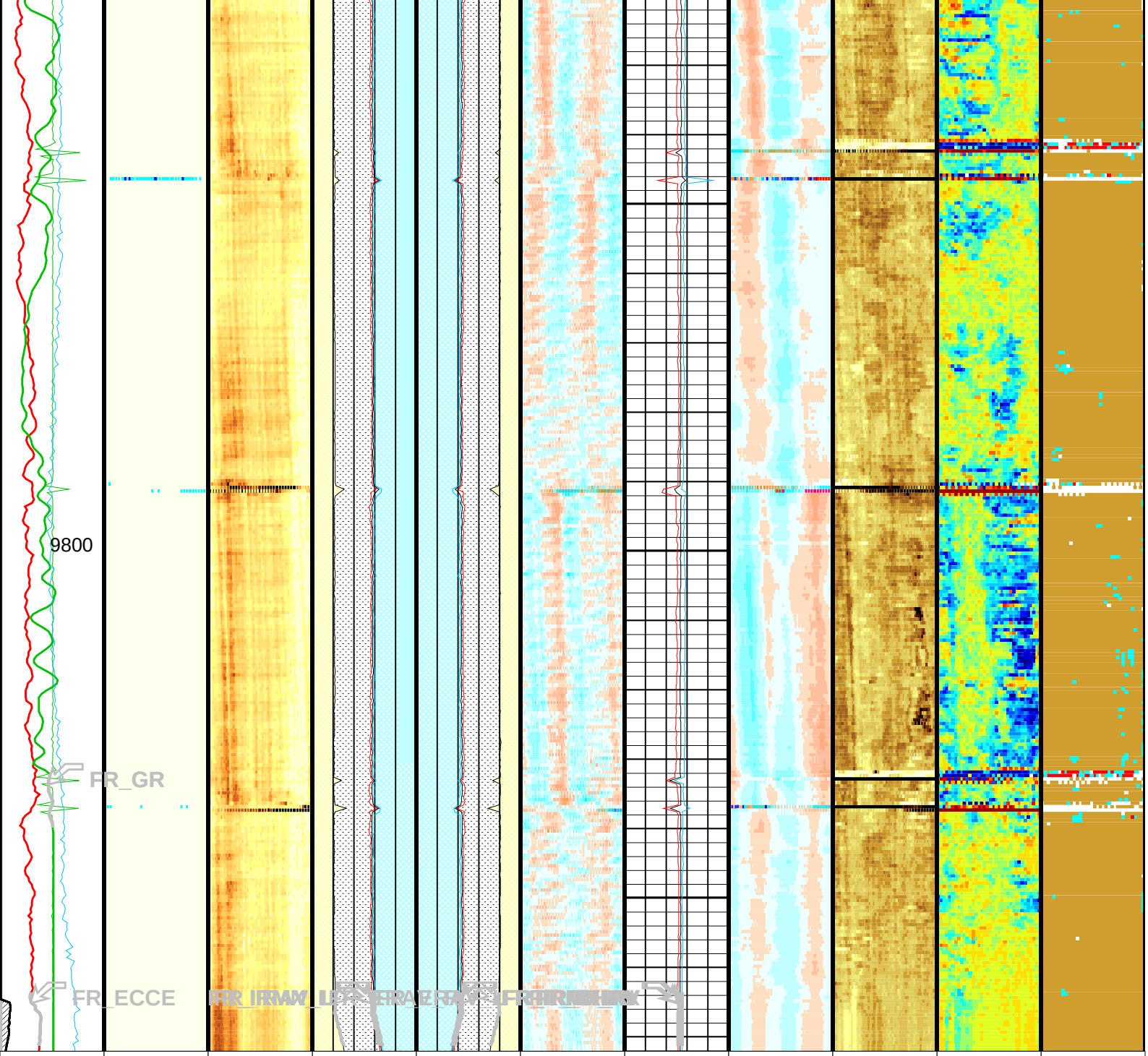


Eccent. (ECCE)
0 (IN) 0.5

Process. flags (UFLG) (----
0.5000
1.5000
2.5000
3.5000
6.5000

Amplitude of echo minus Max (AWBK) (DB)
−500.0000
−6.0000
−5.6000
−5.2000
−4.8000
−4.4000
−4.0000
−3.6000
−3.2000
−2.8000
−2.4000
−2.0000
−1.6000
−1.2000
−0.8000
−0.4000
0.5000

External radius Average (ERAV) (IN)
3.7 2.7

External radius Average (ERAV) (IN)
2.7 3.7

Internal radii minus Ave (IRBK) (IN)
−500.0000
−0.0760
−0.0680
−0.0600
−0.0520
−0.0440
−0.0360
−0.0280
−0.0200
−0.0120
−0.0040
0.0040
0.0120
0.0200
0.0280
0.0360
0.0440
0.0520
0.0600
0.0680
0.0760

Min of Thickness (THMN) (IN)
0.1 0.6

Thickness minus Ave (THBK) (IN)
−500.0000
−0.0760
−0.0680
−0.0600
−0.0520
−0.0440
−0.0360
−0.0280
−0.0200
−0.0120
−0.0040
0.0040
0.0120
0.0200
0.0280
0.0360
0.0440
0.0520
0.0600
0.0680
0.0760

Raw Acoustic Imped. (AIBK) (MRAY)
−500.0000
0.5000
1.0000
1.5000
2.0000
2.5000
3.0000
3.5000
4.0000
4.5000
5.0000
5.5000
6.0000
6.5000
7.0000
7.5000
8.0000

Flexural Attenuation (U−USIT_ UFAK) (DB/M)
0.0000
50.0000
57.0000
64.0000
71.0000
78.0000
85.0000
92.0000
99.0000
106.0000
113.0000
120.0000
127.0000
134.0000
141.0000
148.0000
155.0000

Solid Liquid Gas Map (U−USIT_ USLP) (----
0.5000
1.5000
2.5000
3.5000

CCL (CCLU) (----	Internal radius Average (IRAV) (IN)	Internal radius Average (IRAV) (IN)	Average of Thickness (THAV) (IN)	
−20 20	3.7 2.7	2.7 3.7	0.1 0.6	
RSAV (RSAV) (RPS)	Internal radius Maximum (IRMX) (IN)	Internal radius Maximum (IRMX) (IN)	Maximum of Thickness (THMX) (IN)	
6 7.5	3.7 2.7	2.7 3.7	0.1 0.6	
Gamma Ray (GR) (GAPI)	Min of Internal radius (IRMN) (IN)	Min of Internal radius (IRMN) (IN)		
0 150	3.7 2.7	2.7 3.7		
Stuck Stretch (STIT)				
0 (F) 50				
Cable Drag From D4T to STIT				
Tool/Tot. Drag From D4T to STIA				
Image rotation (UCAZ) (DEG)				
0 360				

Format: USI_IBC_SLG_Composite Vertical Scale: 5" per 100' Graphics File Created: 18−Sep−2010 11:12

OP System Version: 18C0−147

USIT−D	18C0−147	HILTH−FTB	18C0−147
DTC−H	18C0−147		

All USI Images are outside views

USI : LOW Frequency Compression Mode Used For Logging.

Recommended casing thickness range for optimum cement impedance measurement : 0.27 to 0.6 IN.

Parameters

DLIS Name	Description	Value	
USIT−D: Ultrasonic Imaging − D			
AGMN	Minimum Gain of Cartridge	−4	DB
AGMX	Maximum Gain of Cartridge	20	DB
BERJ	Bad Echo Rejection	ON	
CDIA	Casing Outer Diameter	7	IN
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	6.276	IN
DFVL	Default Fluid Velocity	206	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	110	V

EMXV	EMEX Voltage	110	V
FSOD	Fluid Slowness Fits Casing Outer Diameter	5_UFSL_N_ZMUD	
IMAR	Image Rotation	OFF	
MW	Mud Weight	9.6	LB/G
RCOD	Reference Calibrator Outer Diameter	7	IN
RCSO	Reference Calibrator Standoff	1.1811	IN
RCTH	Reference Calibrator Thickness	0.2952	IN
TCUB	T^3 Processing Level	Vax_Loop	
THDH	Maximum Search Thickness (percentage of nominal)	130	
THDL	Minimum Search Thickness (percentage of nominal)	70	
THDP	Thickness Detection Policy	Fundamental	
THNO	Nominal Thickness of Casing	0.362	IN
U−USIT_CEMT	USIT Cement Type	ULTRA_LIGHT	
U−USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	0	MRAY
U−USIT_IISR	USIT IBC Inverted Fluid Slowness Resolution	1.0_US_P_FT	
U−USIT_IIZR	USIT IBC Inverted ZMUD Resolution	0.050_MRAY	
U−USIT_OCDI	USIT Outer Casing Diameter	0	IN
U−USIT_OCSH	USIT Outer Casing Shoe	0	FT
U−USIT_OCWE	USIT Outer Casing Weight	0	LB/F
U−USIT_TIEB	IBC Third Interface Echo Bin Processing	YES	
U−USIT_TIEC	IBC Third Interface Echo Cleaning	NONE	
U−USIT_TIEM	IBC Third Interface Echo Multi Tracking	NO	
U−USIT_TIEP	IBC Third Interface Echo Policy	BFEP	
U−USIT_TIER	IBC Third Interface Echo Receivers	BOTH	
U−USIT_U3WE	Third Interface Echo Window End	110	US
U−USIT_UBTP	USIT Bottom Transducer Position	UNKNOWN	
U−USIT_UFAO	USIT Flexural Attenuation Offset	−22	DB/M
U−USIT_UIAP	USIT IBC Answer Product Enabled	SolidLiquidGasMap	
U−USIT_UIST	Ultrasonic IBC Sonde Type	Sub_Ibcs_B	
U−USIT_UTAN	USIT Transducer Angles	33_DEG	
UMAO	USIT Measurement Angular Offset	−10	DEG
USTO	Ultrasonic Time Offset	−2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	5DEG_6IN_136UNF_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.7078	US
ZCAS	Acoustic Impedance of Casing	46.2537	MRAY
ZINI	Initial Estimate of Cement Impedance	−1	MRAY
ZMUD	Acoustic Impedance of Mud	1.9	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	14390.00	FT
TDL	Total Depth − Logger	9866.00	FT
System and Miscellaneous			
BS	Bit Size	9.875	IN
CWEI	Casing Weight	26.00	LB/F
DO	Depth Offset for Playback	6.0	FT
DORL	Depth Offset for Repeat Analysis	0.0	FT
PP	Playback Processing	RECOMPUTE	

Input DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_023LUP	FN:22	PRODUCER	18−Sep−2010 07:07	9866.0 FT	1727.5 FT

Output DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_025PUP	FN:24	PRODUCER	18−Sep−2010 11:12

Schlumberger

VDL WIDE

MAXIS Field Log

Company: ExxonMobil Production Corp

Well: PCU 296−5A1

Input DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_023LUP	FN:22	PRODUCER	18−Sep−2010 07:07	9866.0 FT	1727.5 FT

Output DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_025PUP	FN:24	PRODUCER	18−Sep−2010 11:12	9872.0 FT	3949.5 FT

OP System Version: 18C0−147

USIT−D	18C0−147	HILTH−FTB	18C0−147
DTC−H	18C0−147		

Tool/Tot. Drag From D4T to STIA

Cable Drag From D4T to STIT

Stuck Stretch (STIT)

0 (F) 50

Gamma Ray (GR) (GAPI)

0 150

−500.0000
0.5000
1.0000
1.5000
2.0000
2.5000
3.0000
3.5000
4.0000
4.5000
5.0000
5.5000
6.0000
6.5000
7.0000
7.5000
8.0000

Raw Acoustic Imped. (AIBK) (MRAY)

0.5000
1.5000
2.5000
3.5000

Solid Liquid Gas Map (U−USIT_USLP) (−−−−

Min Amplitude Max

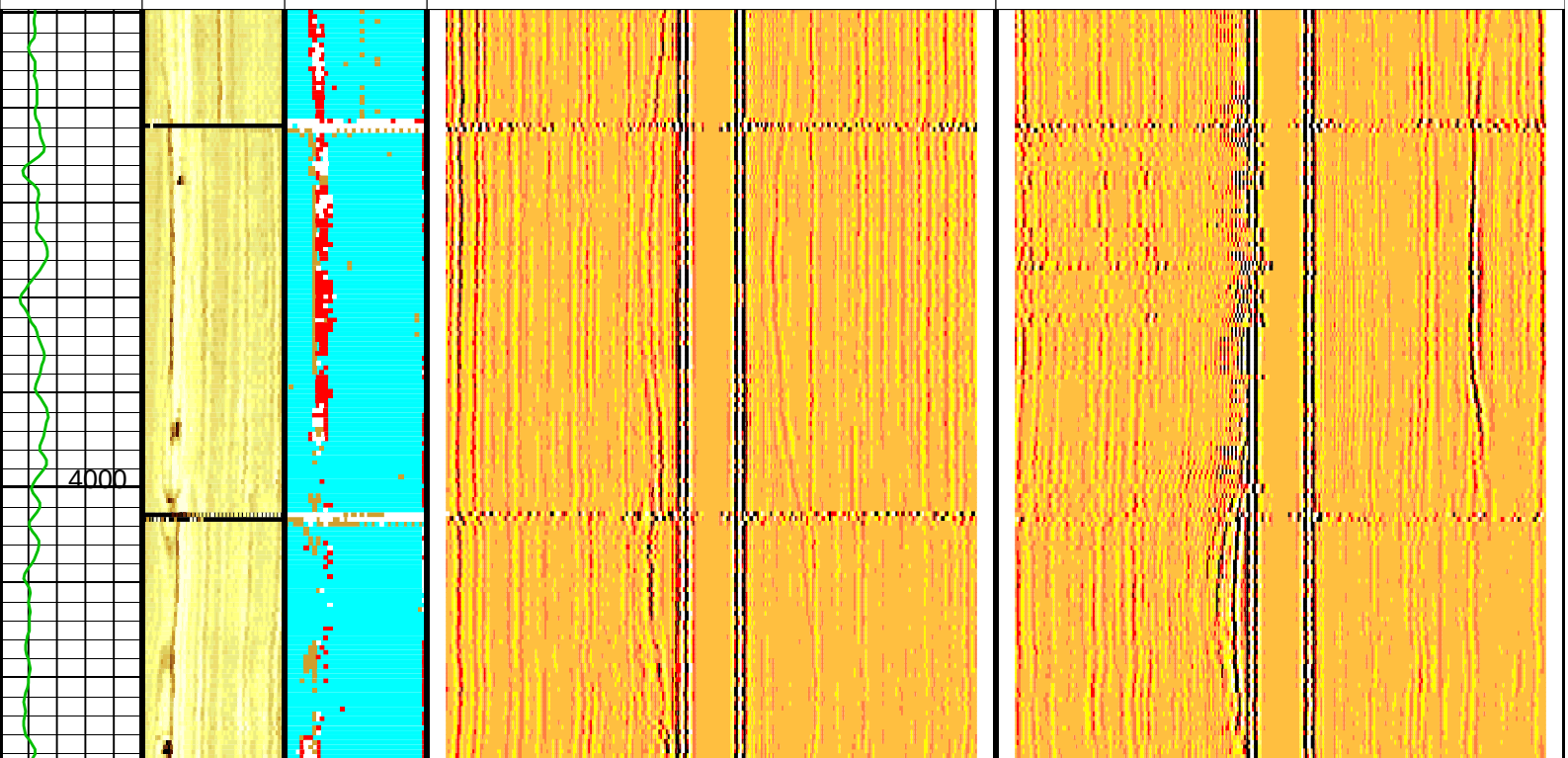
Far at 0 and 180 deg (U−USIT_VDWFF000)

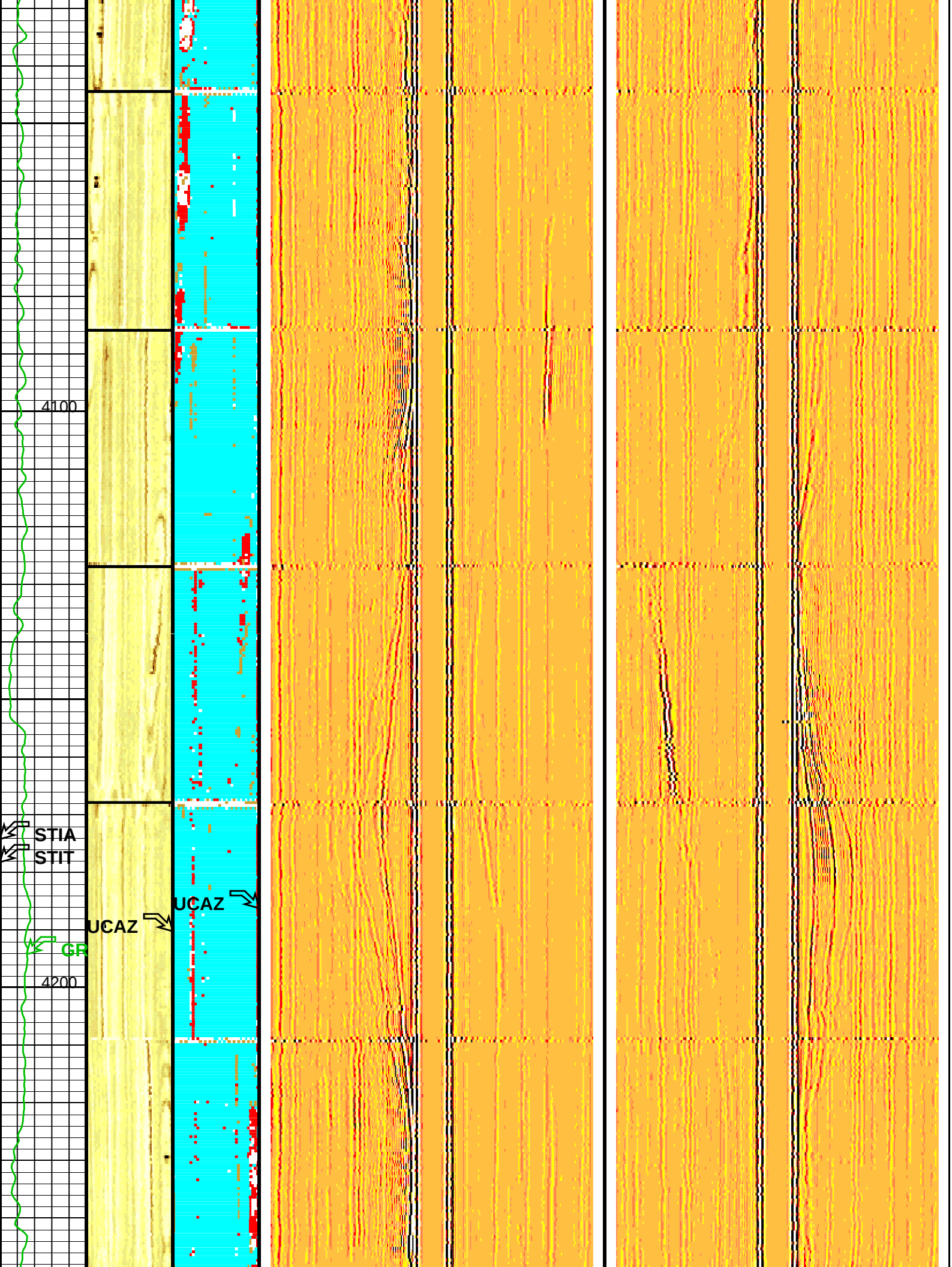
−150 (US) 150

Min Amplitude Max

Far at 90 and 270 deg (U−USIT_VDWFF090)

−150 (US) 150

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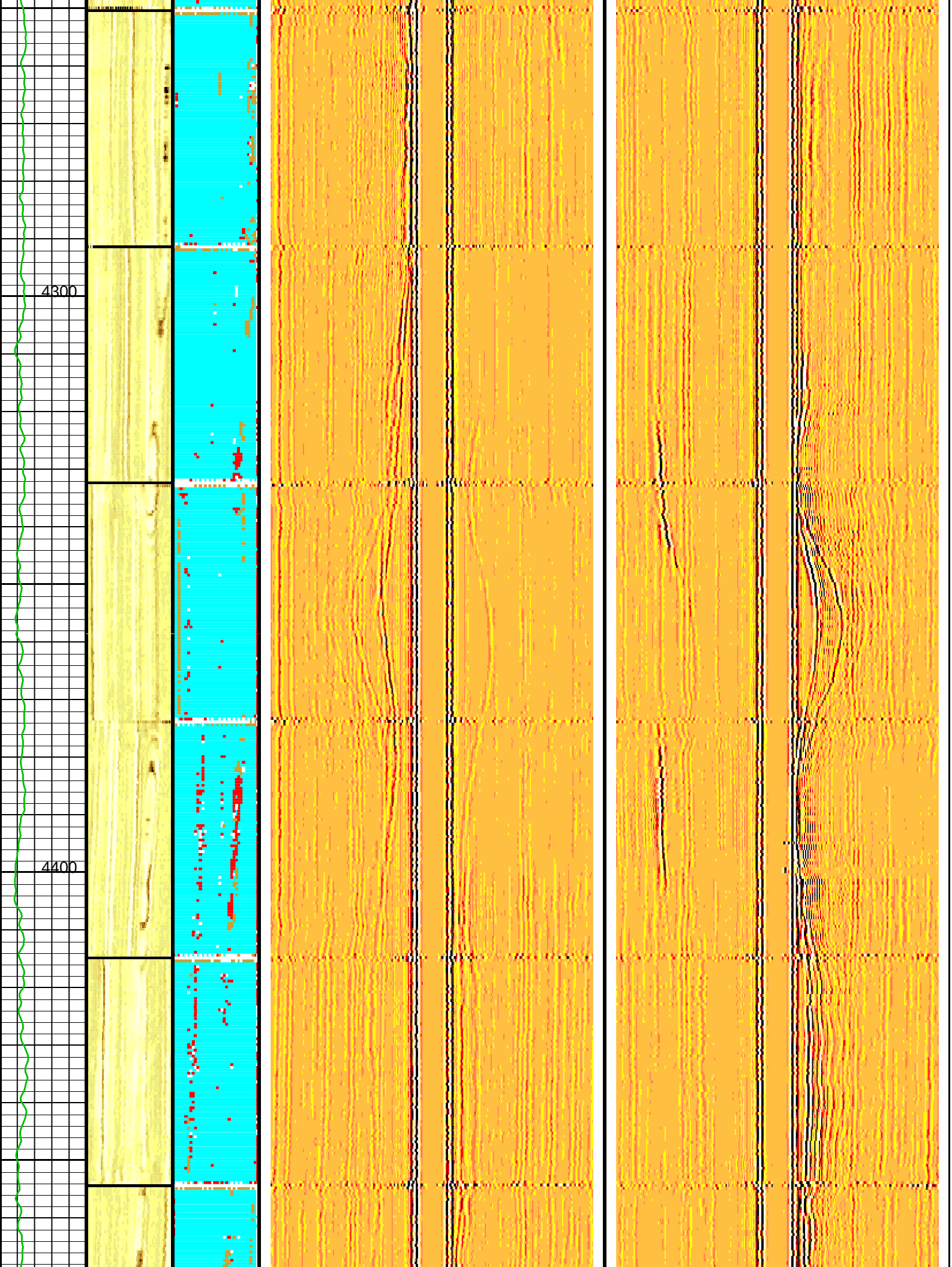
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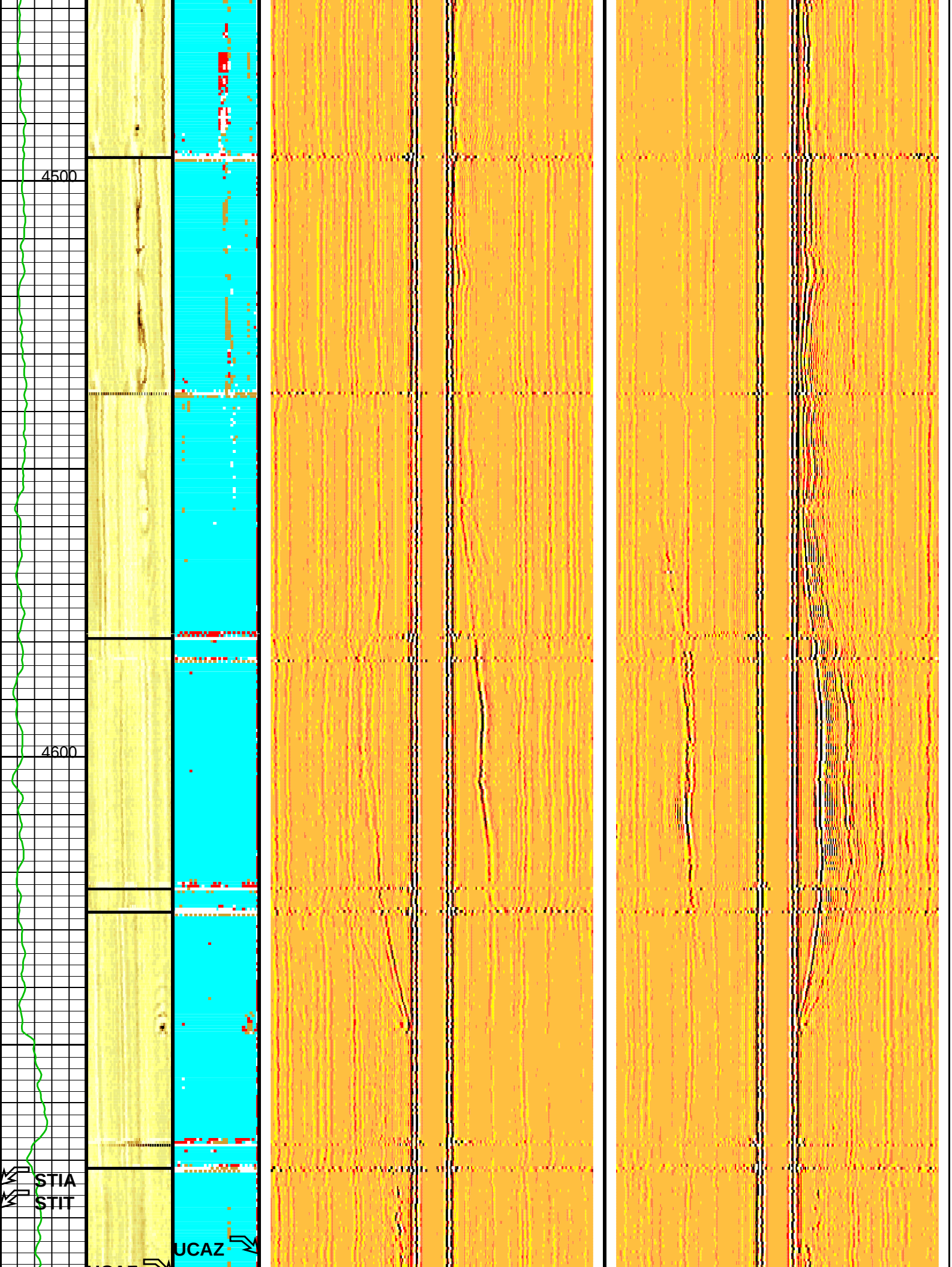
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STIT
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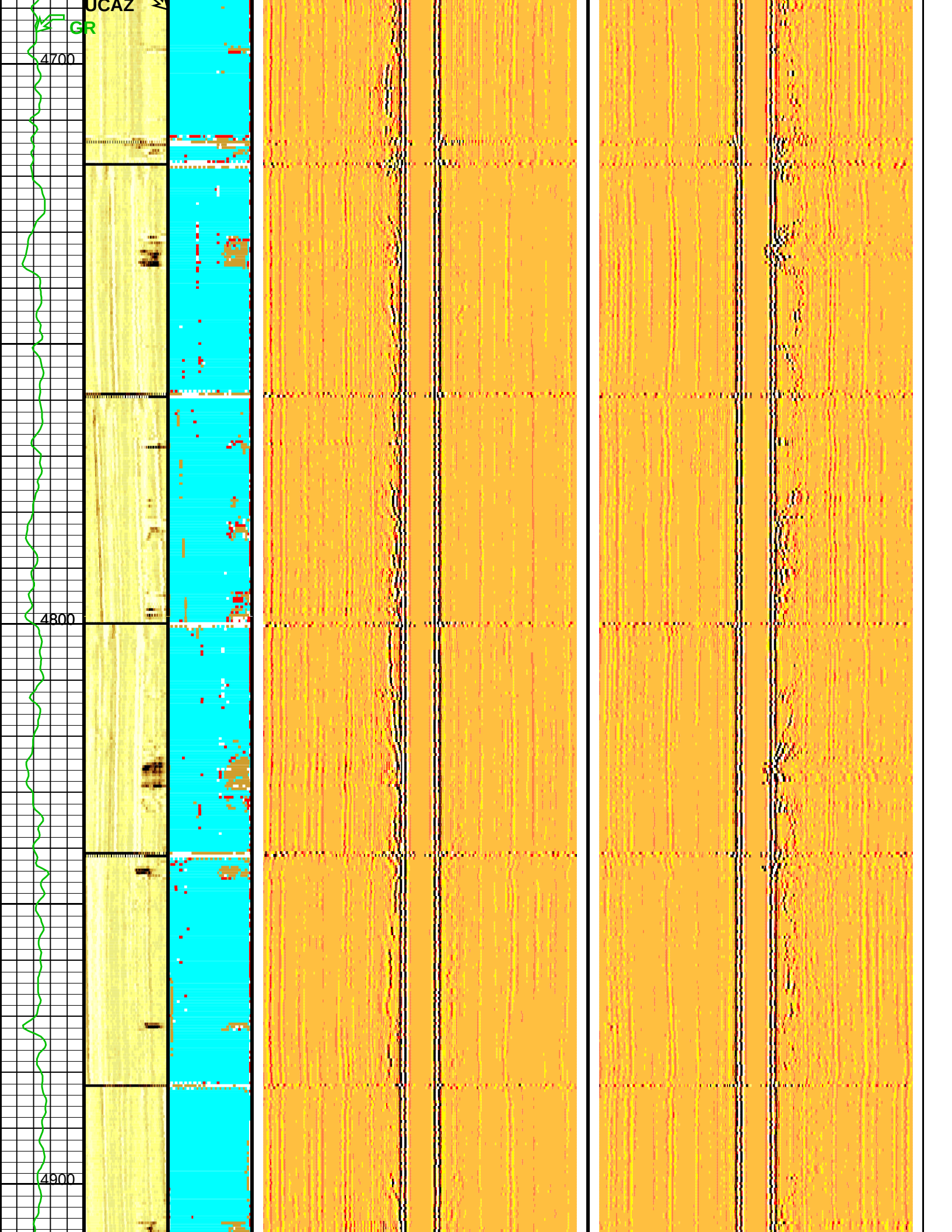
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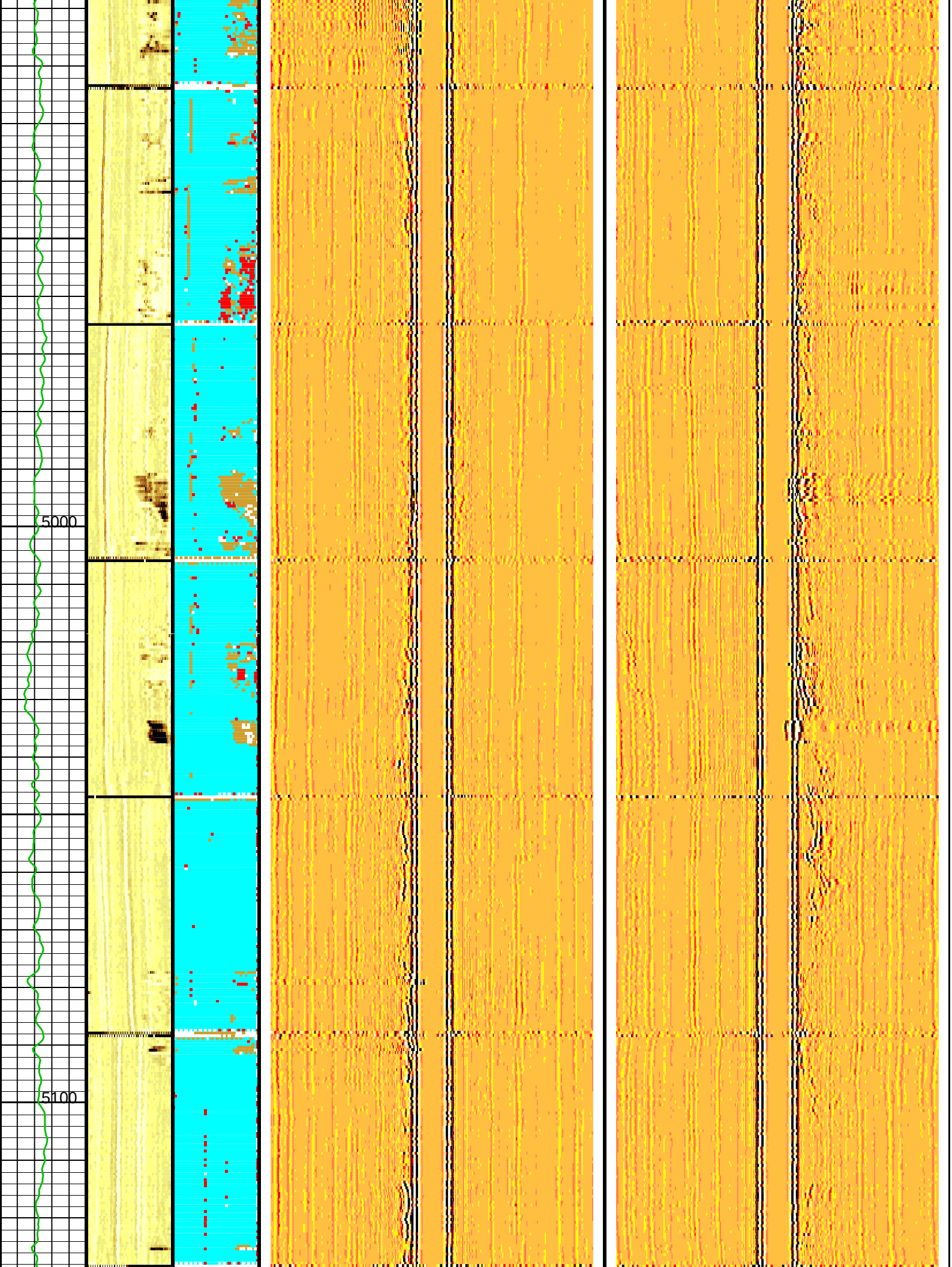
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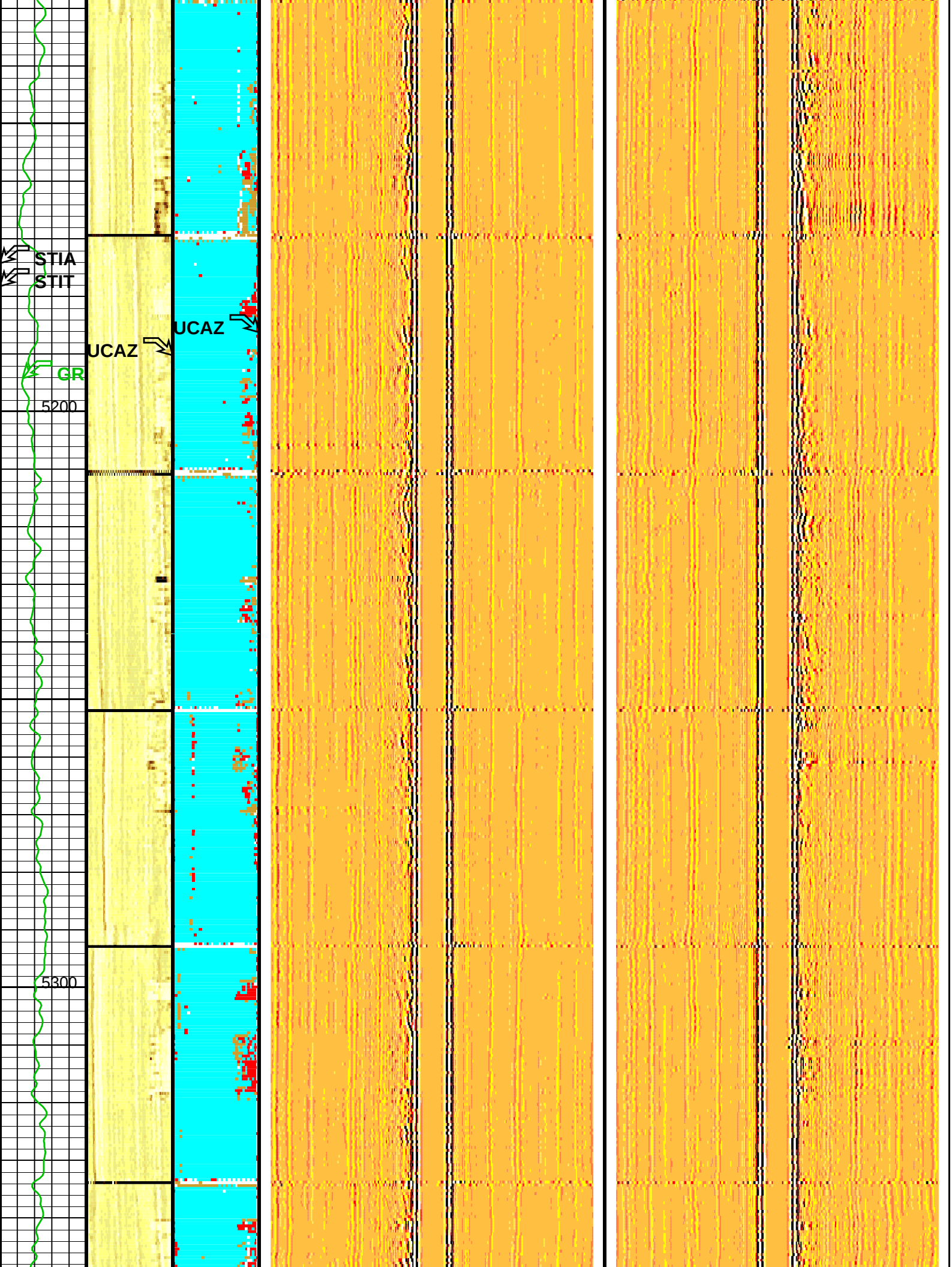
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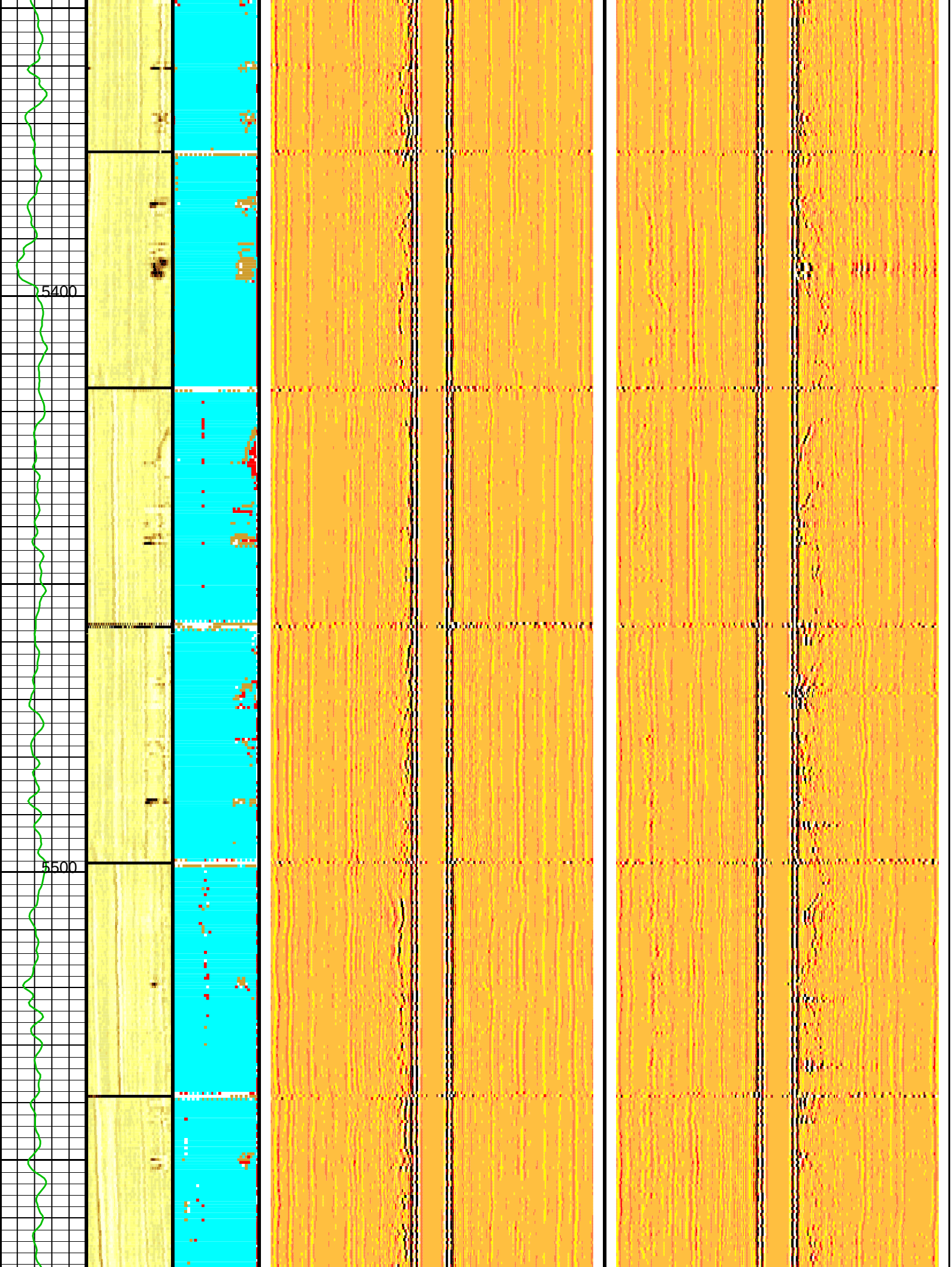
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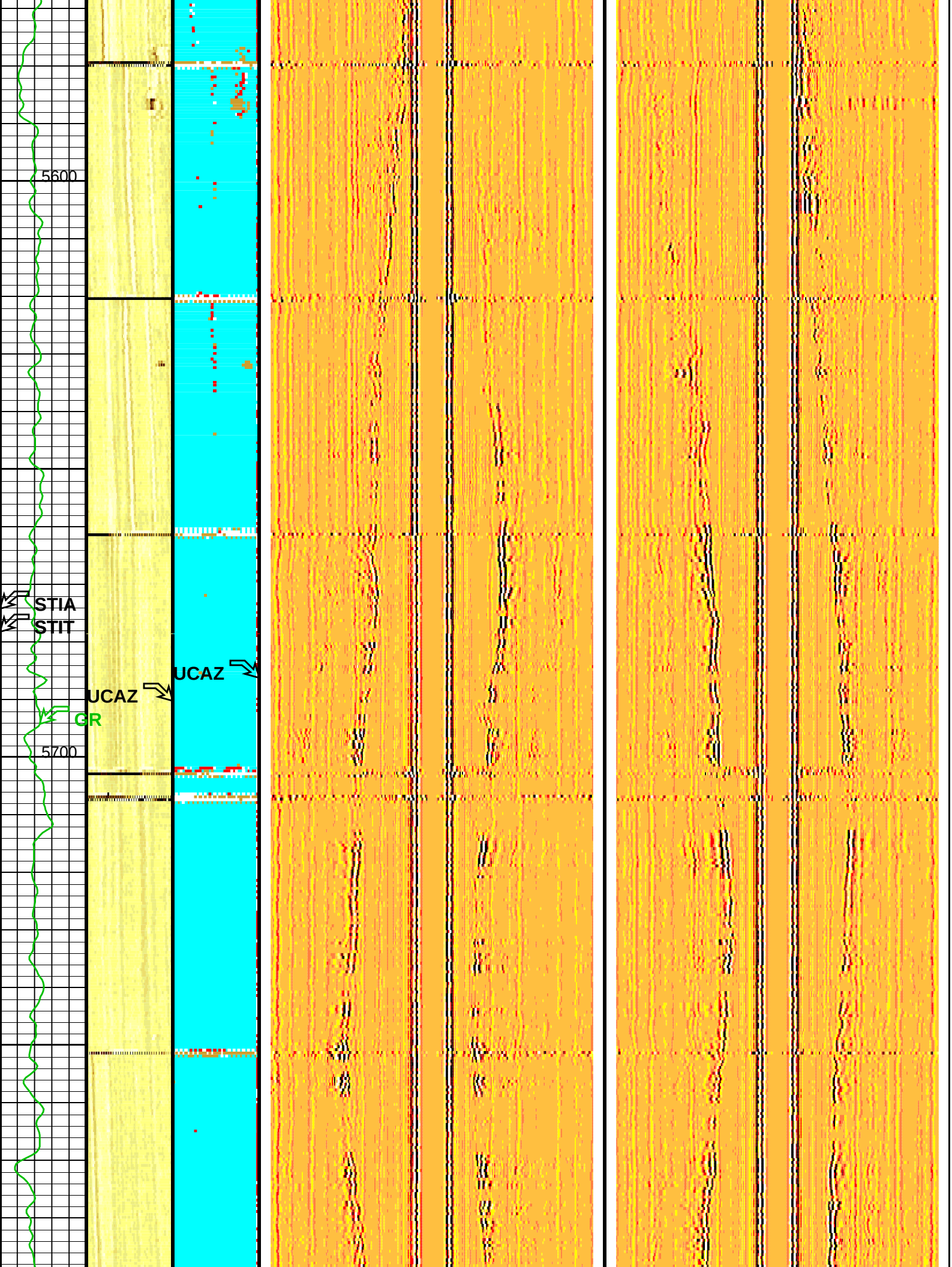
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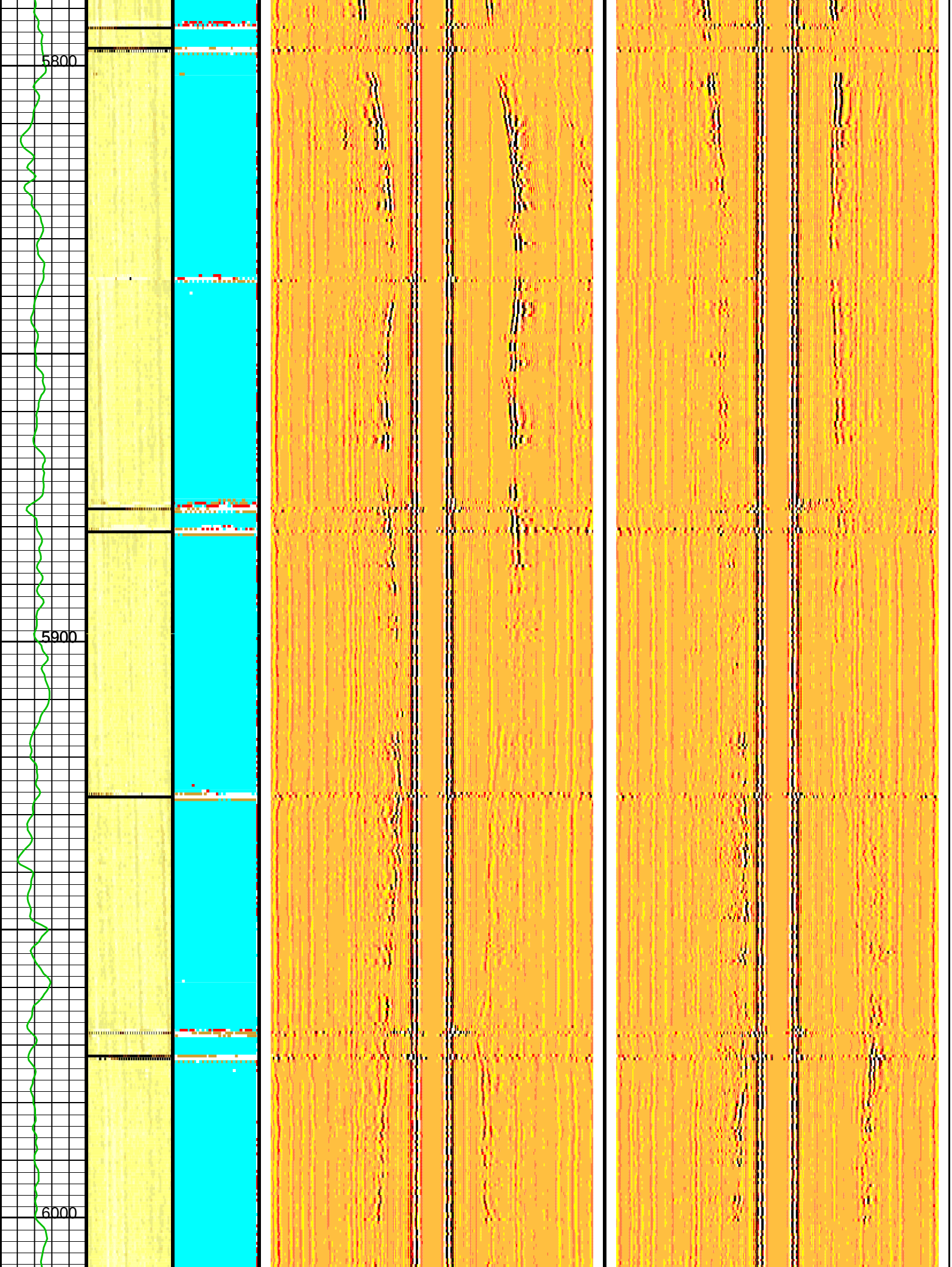
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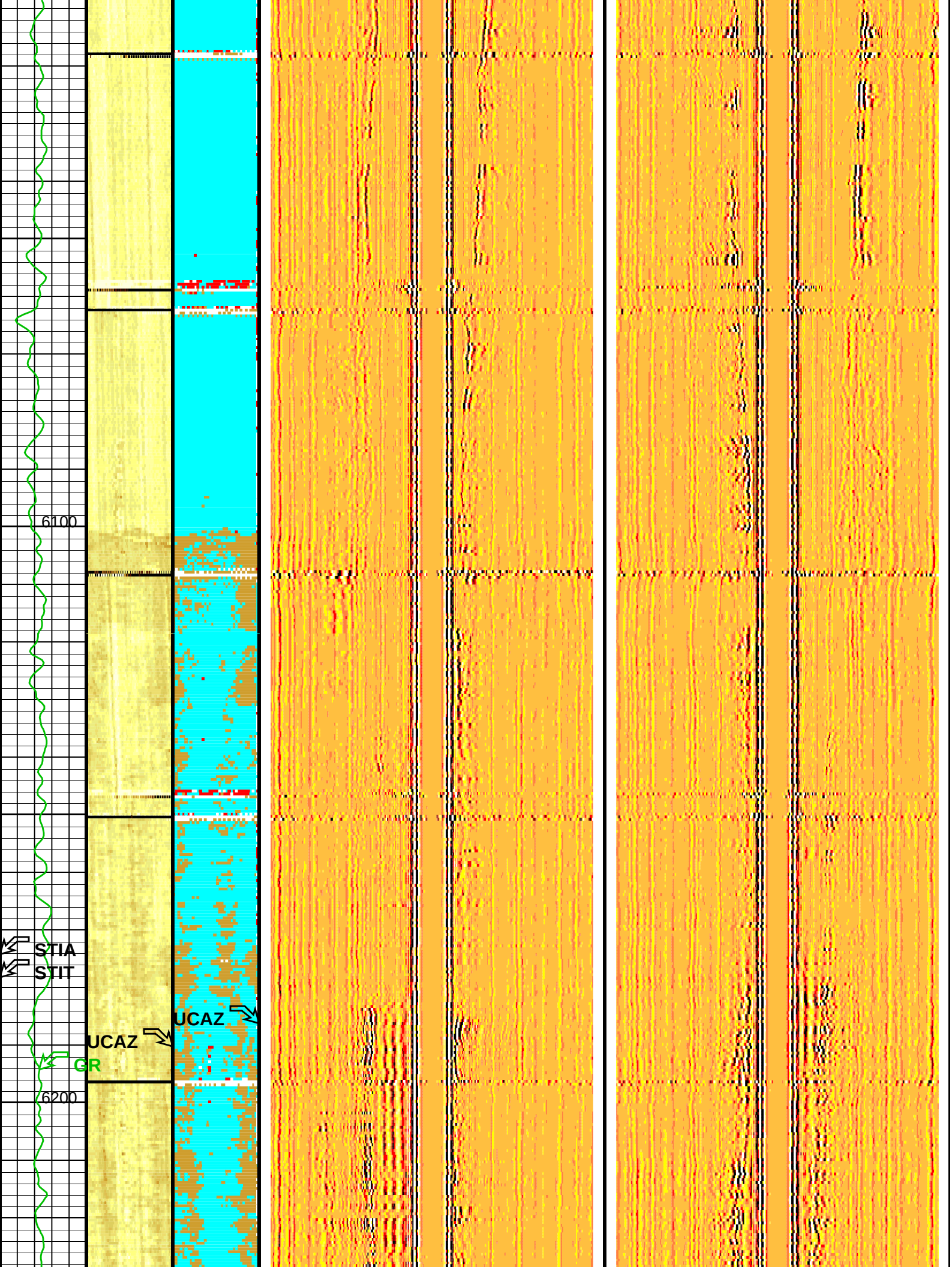
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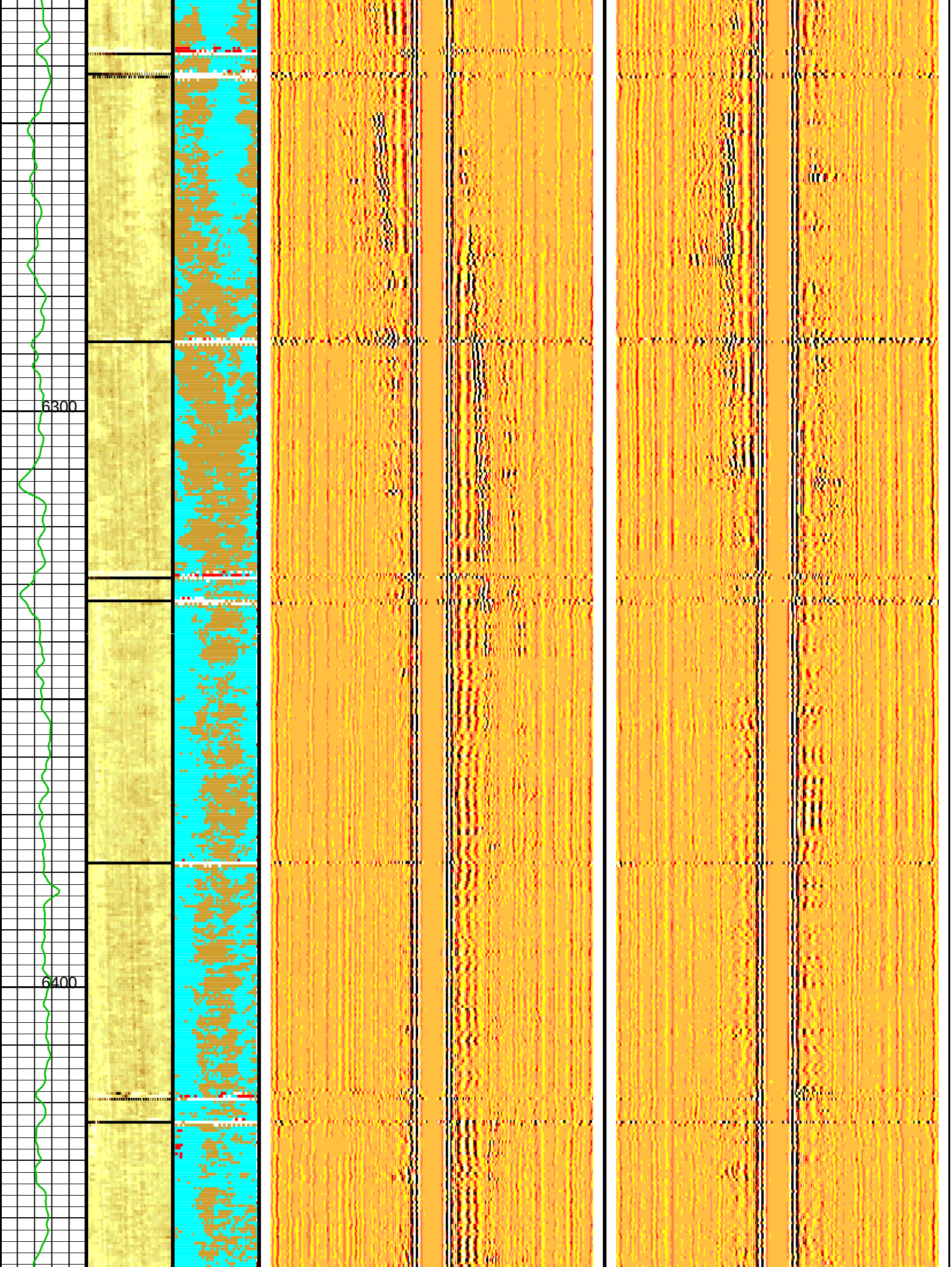
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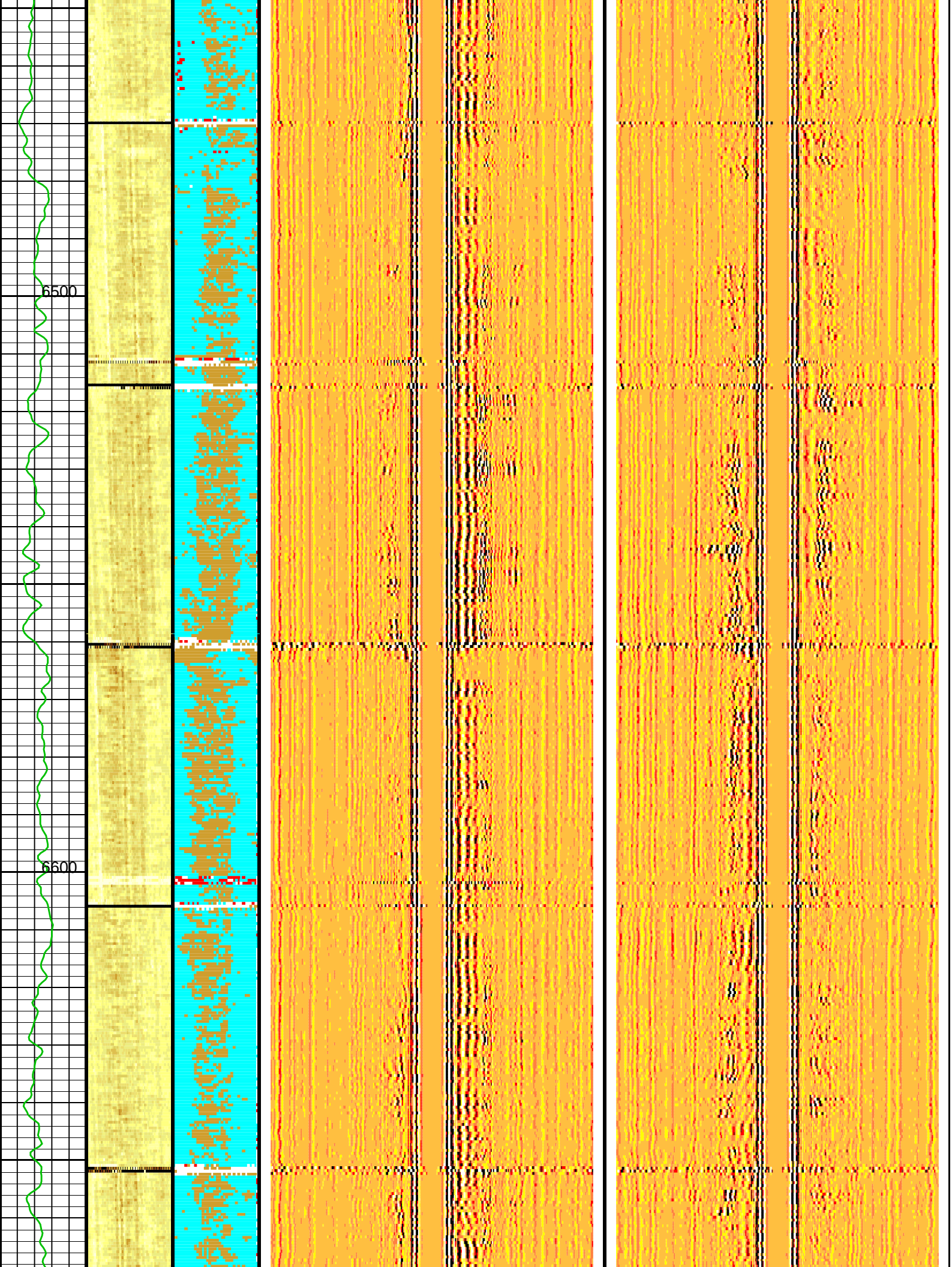
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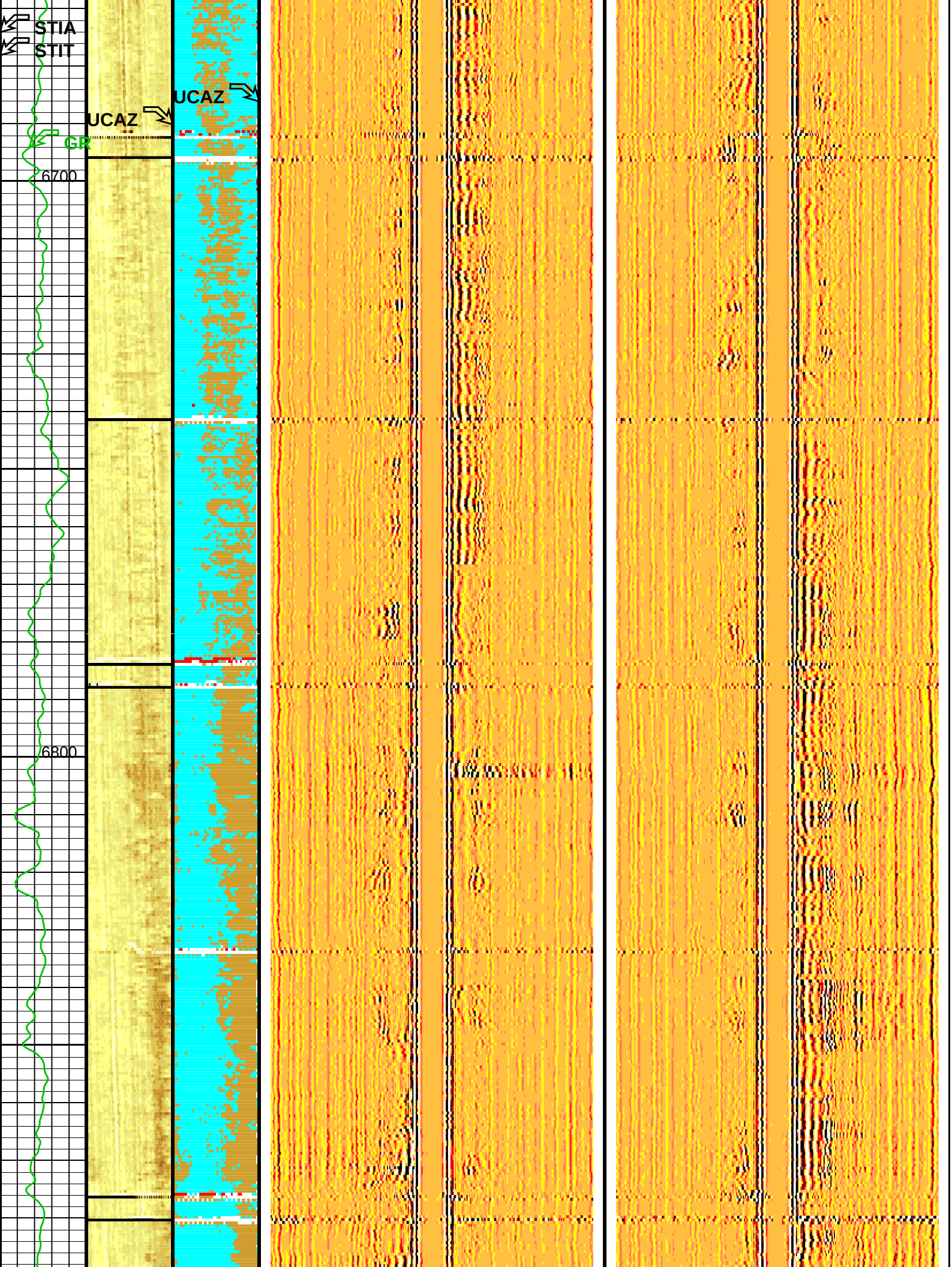
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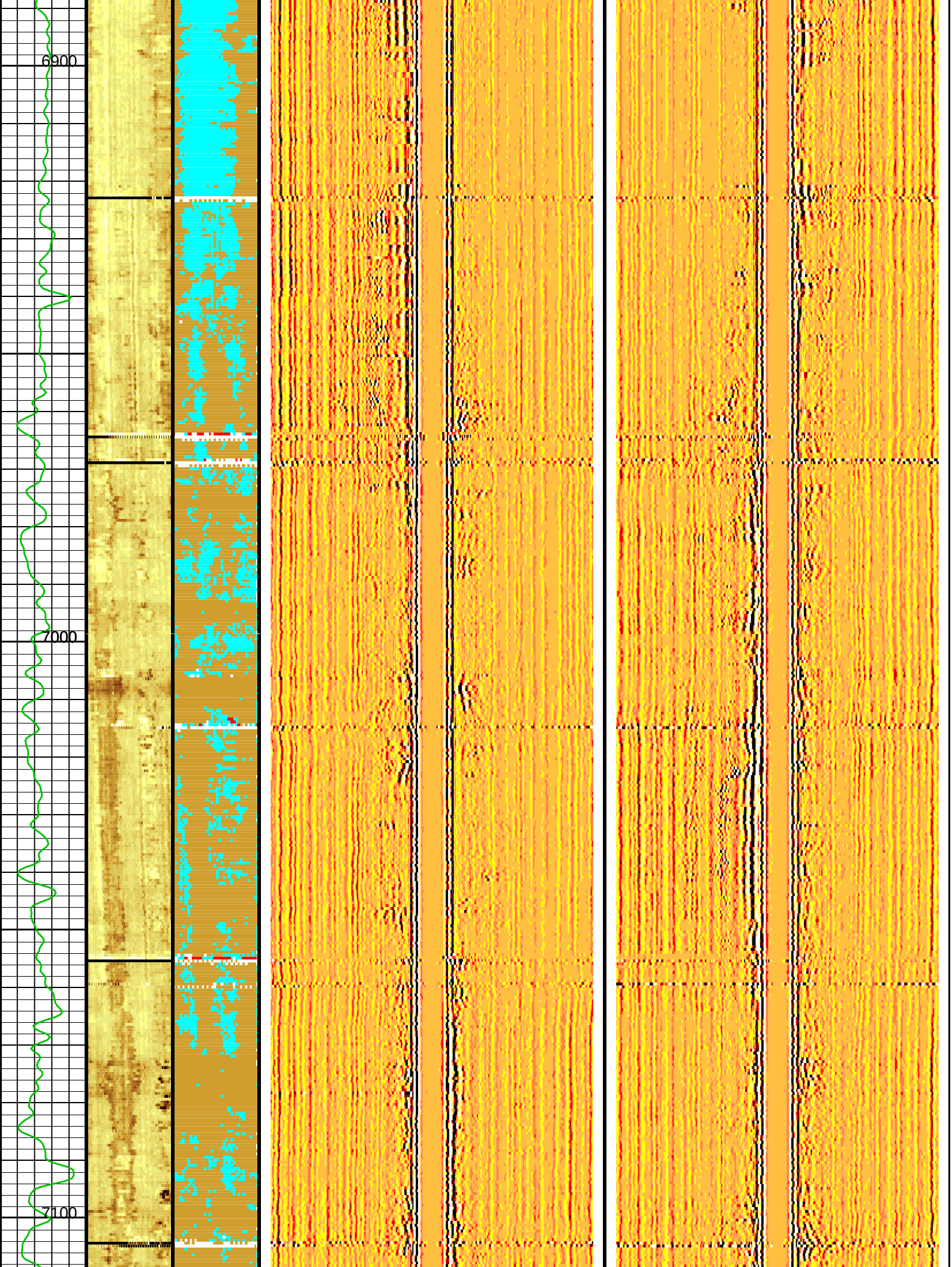
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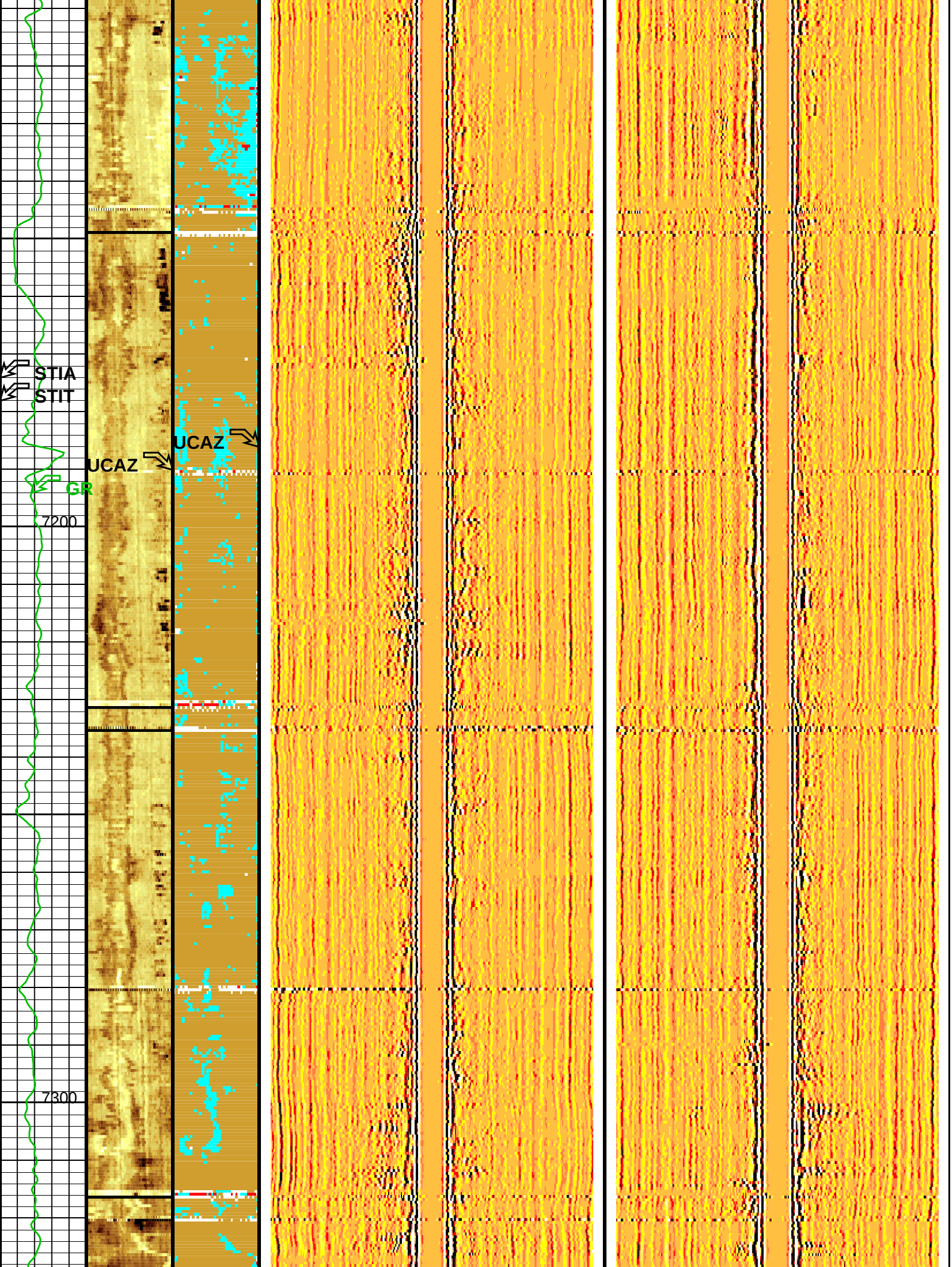
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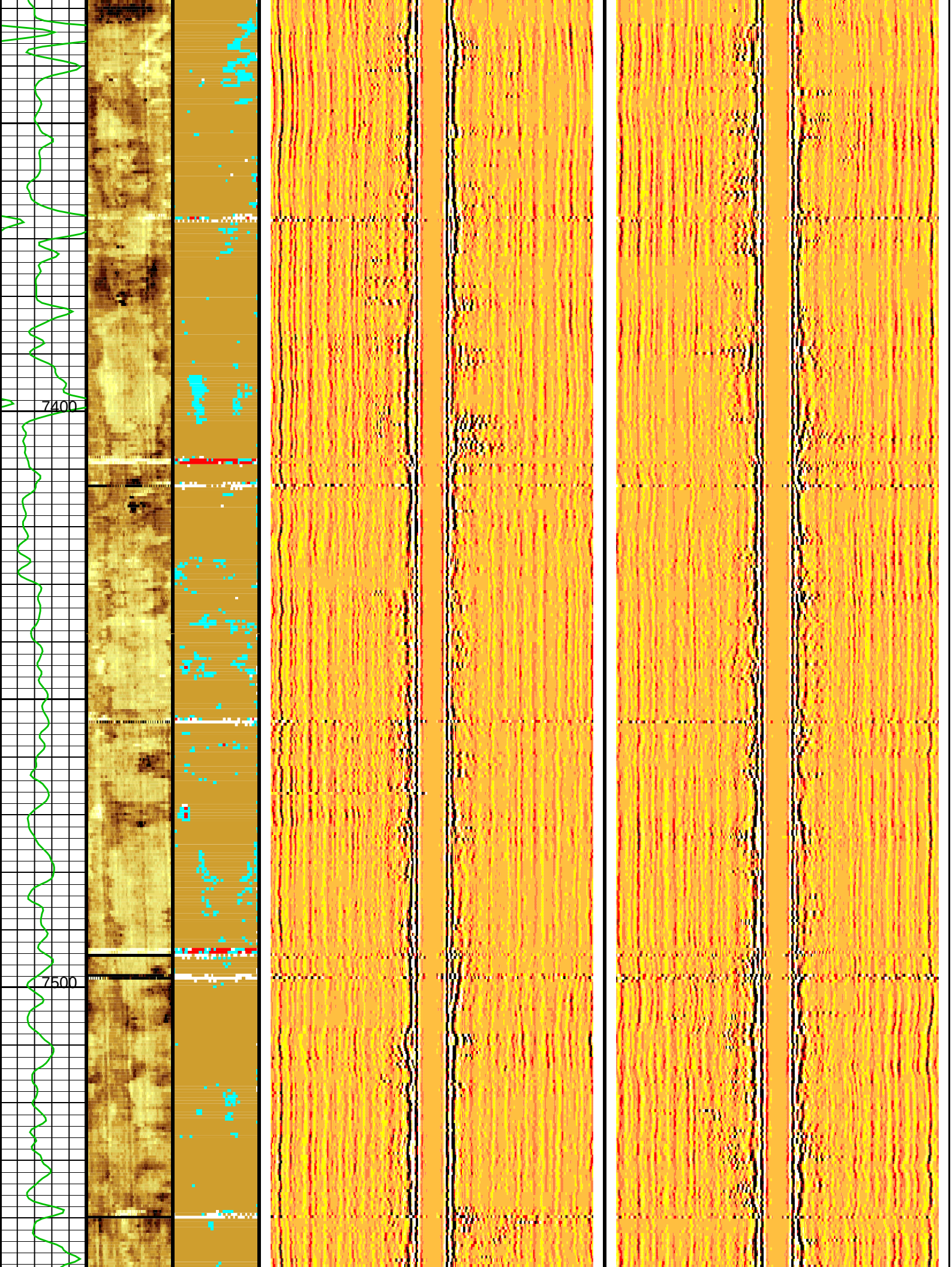
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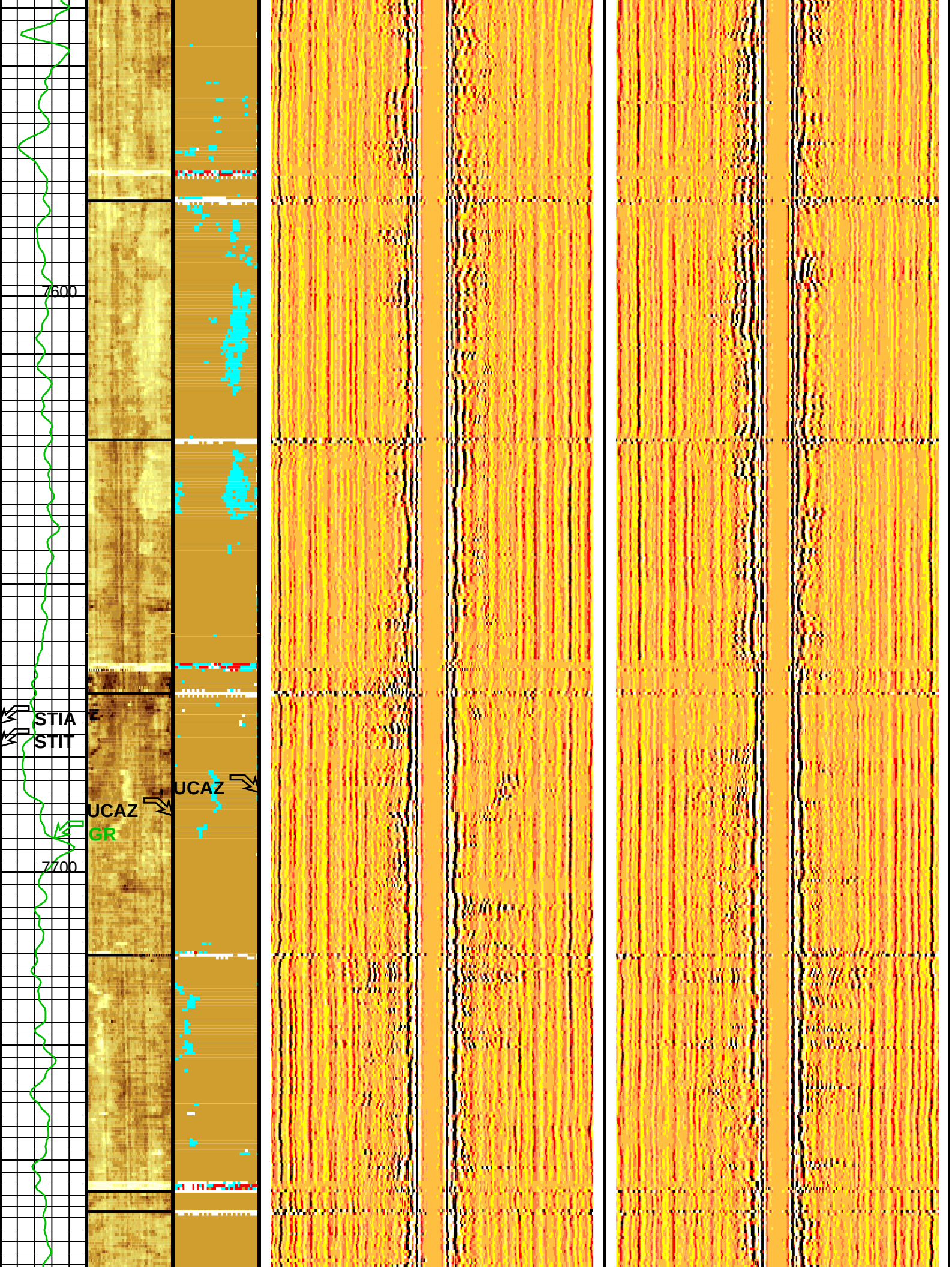
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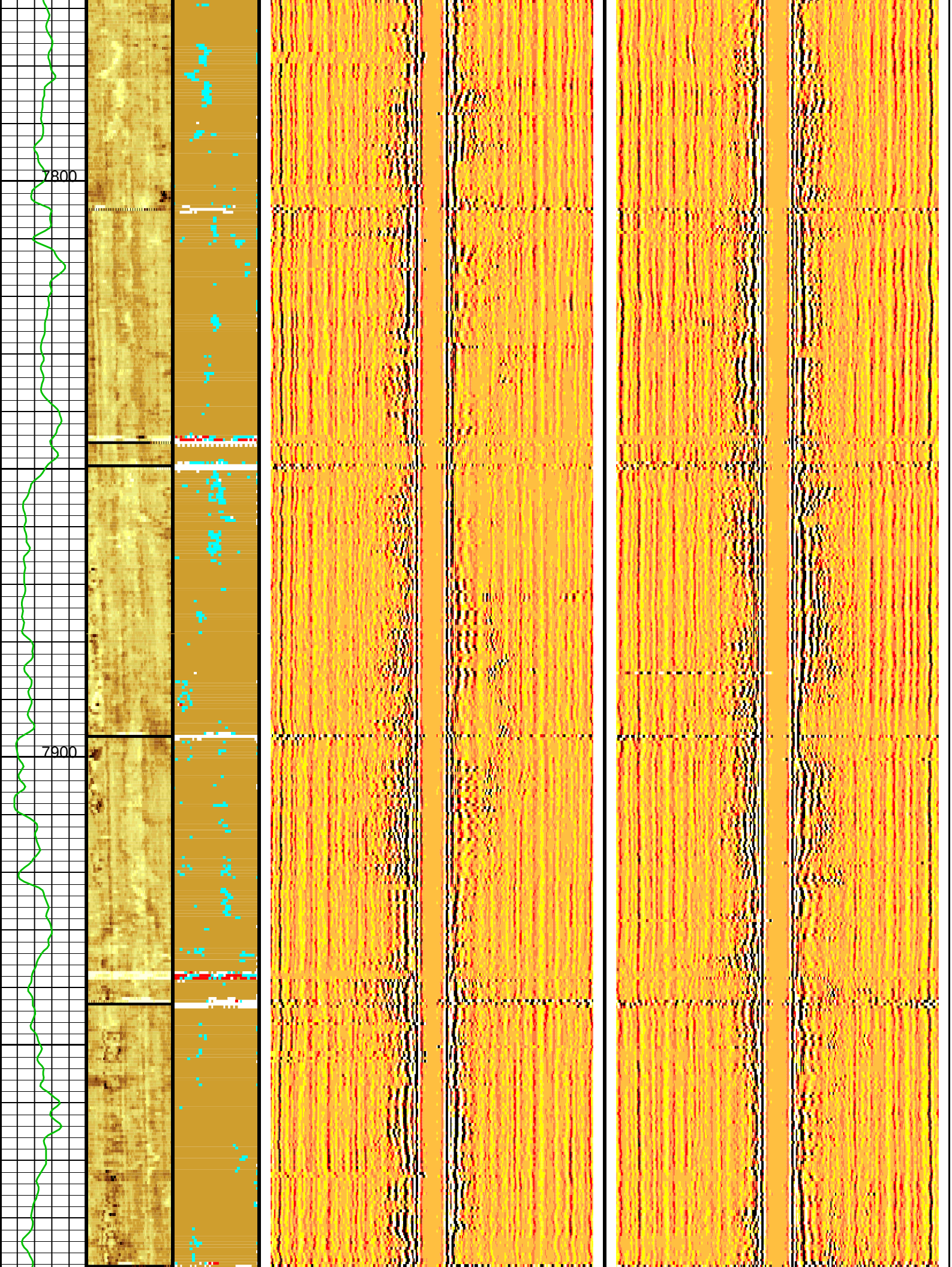
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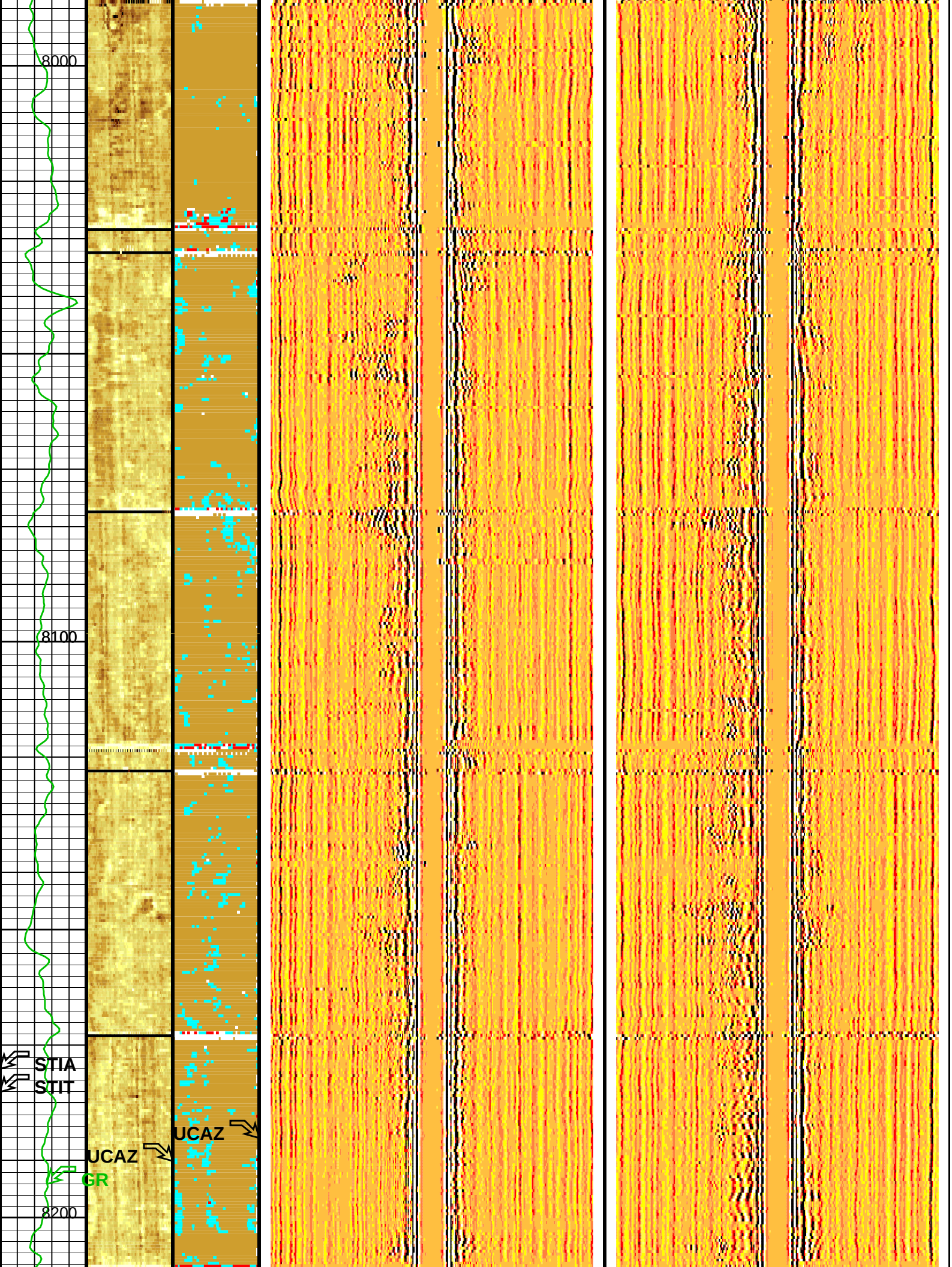
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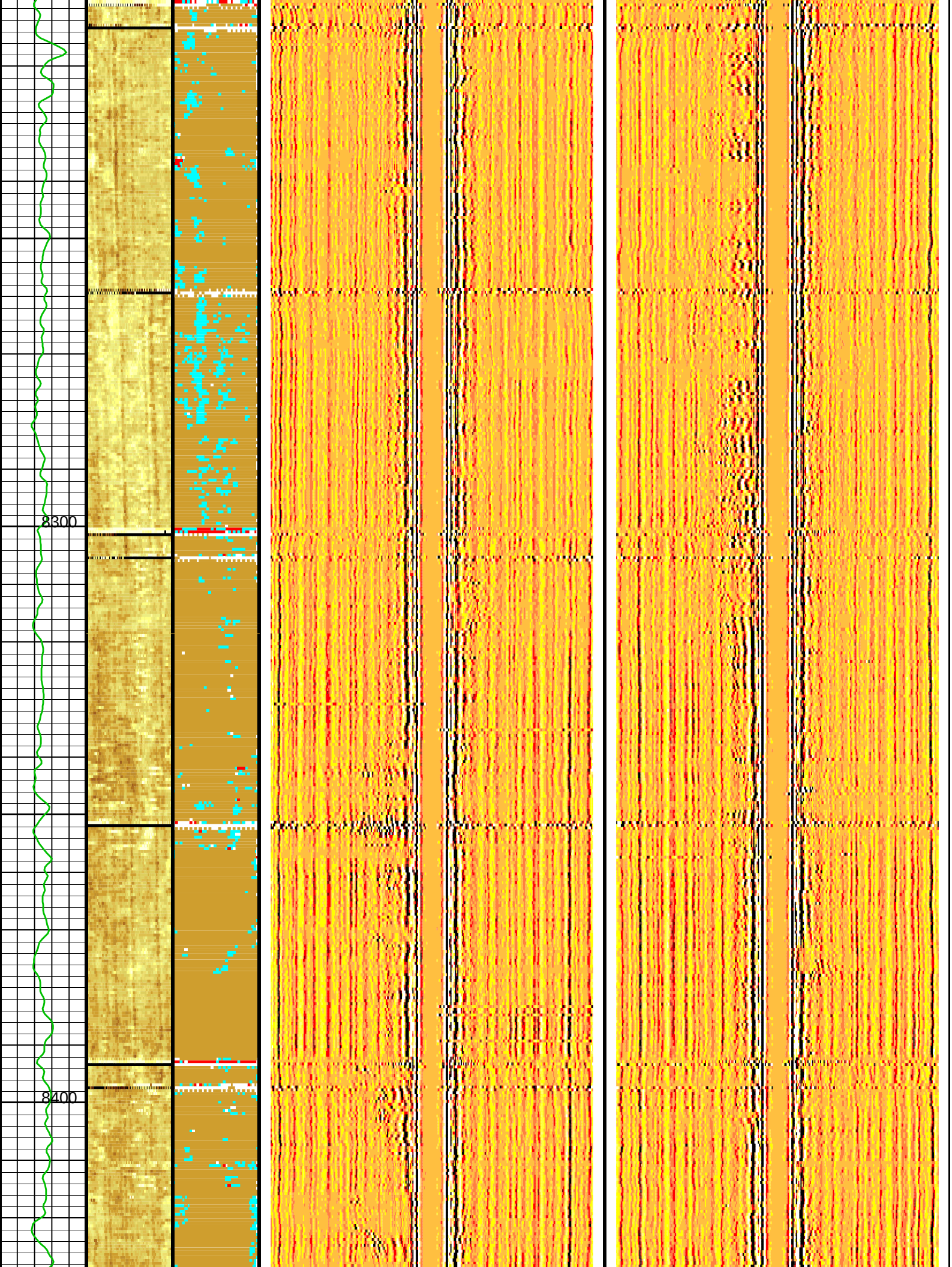
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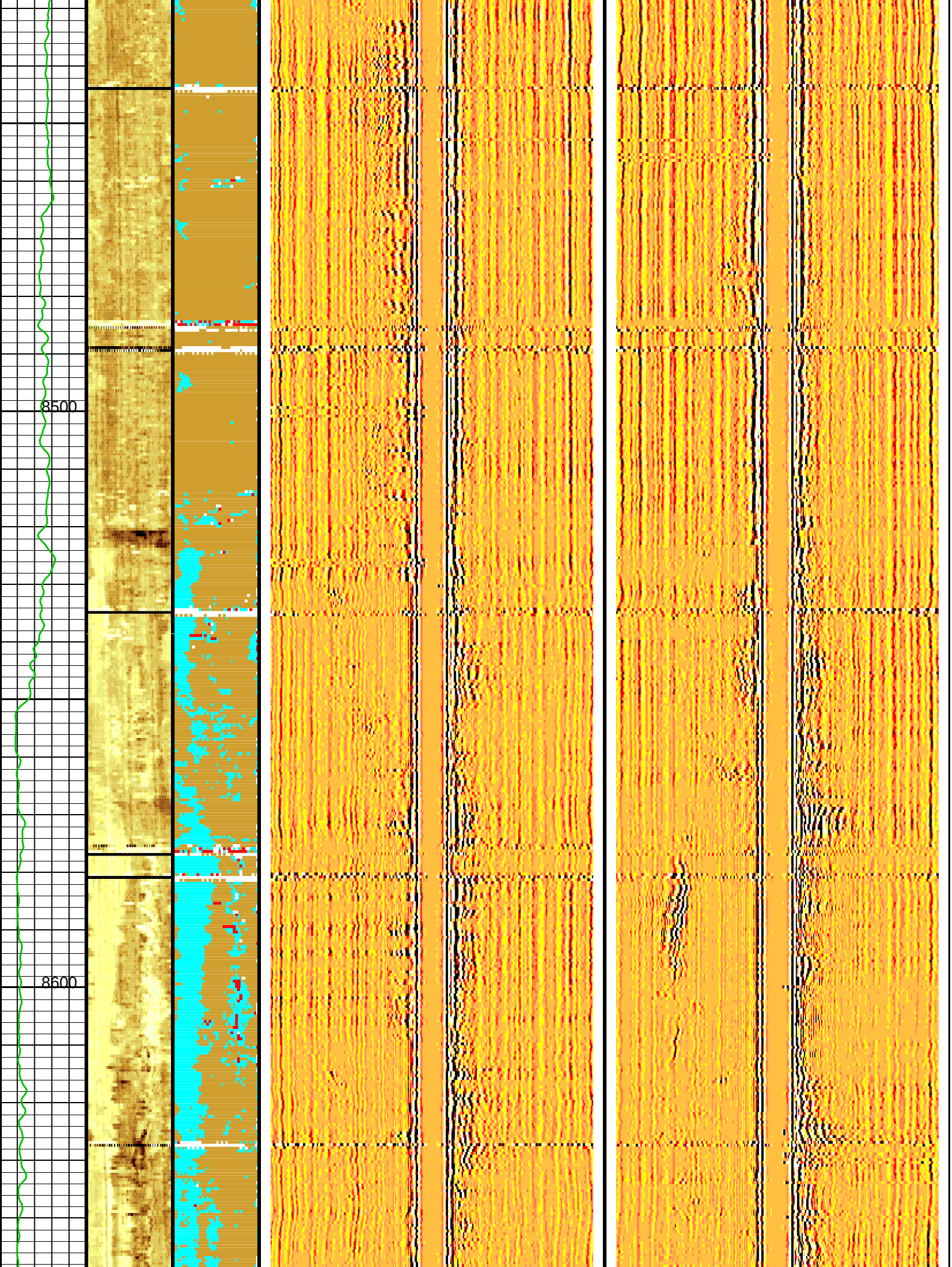
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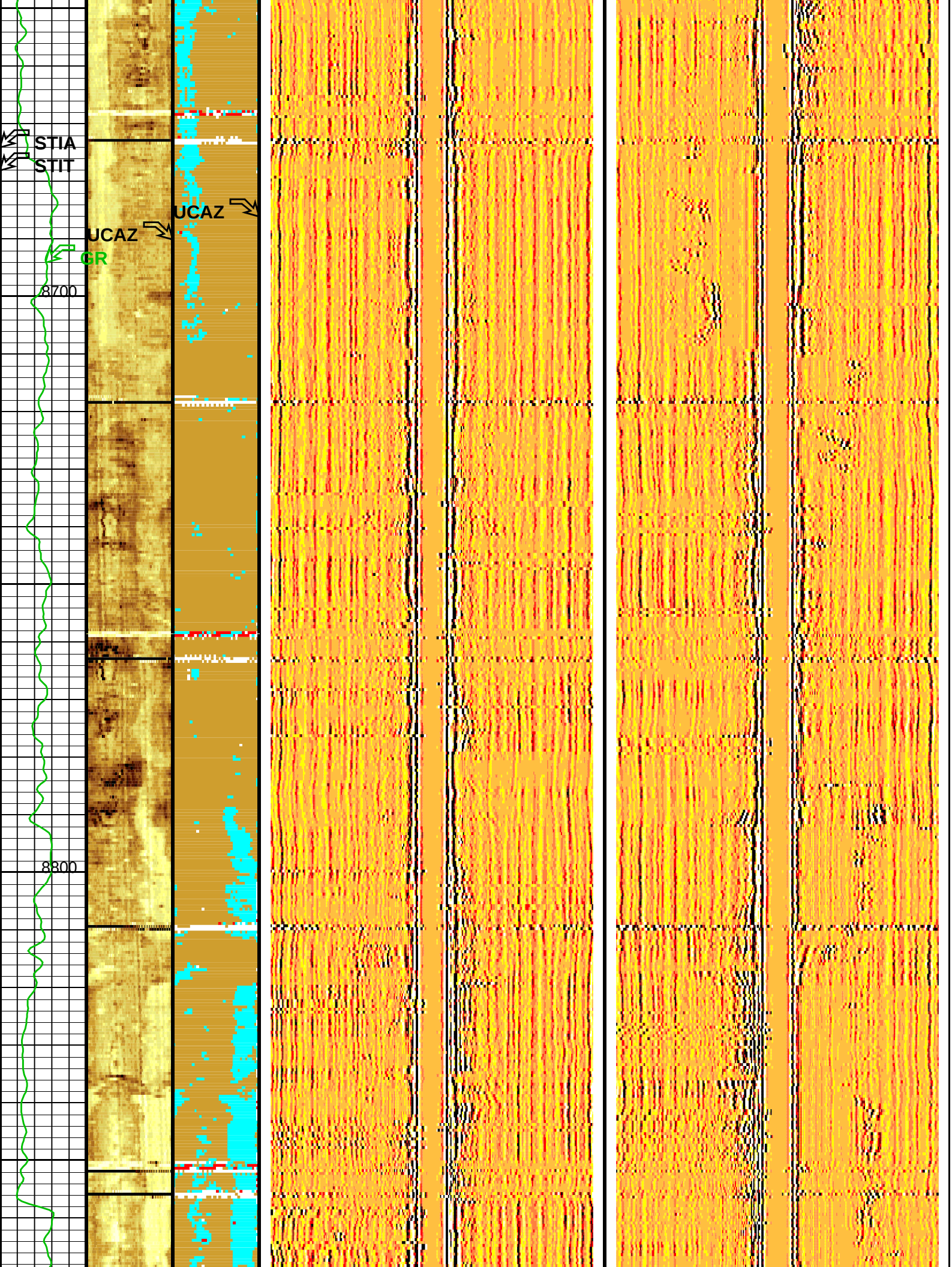
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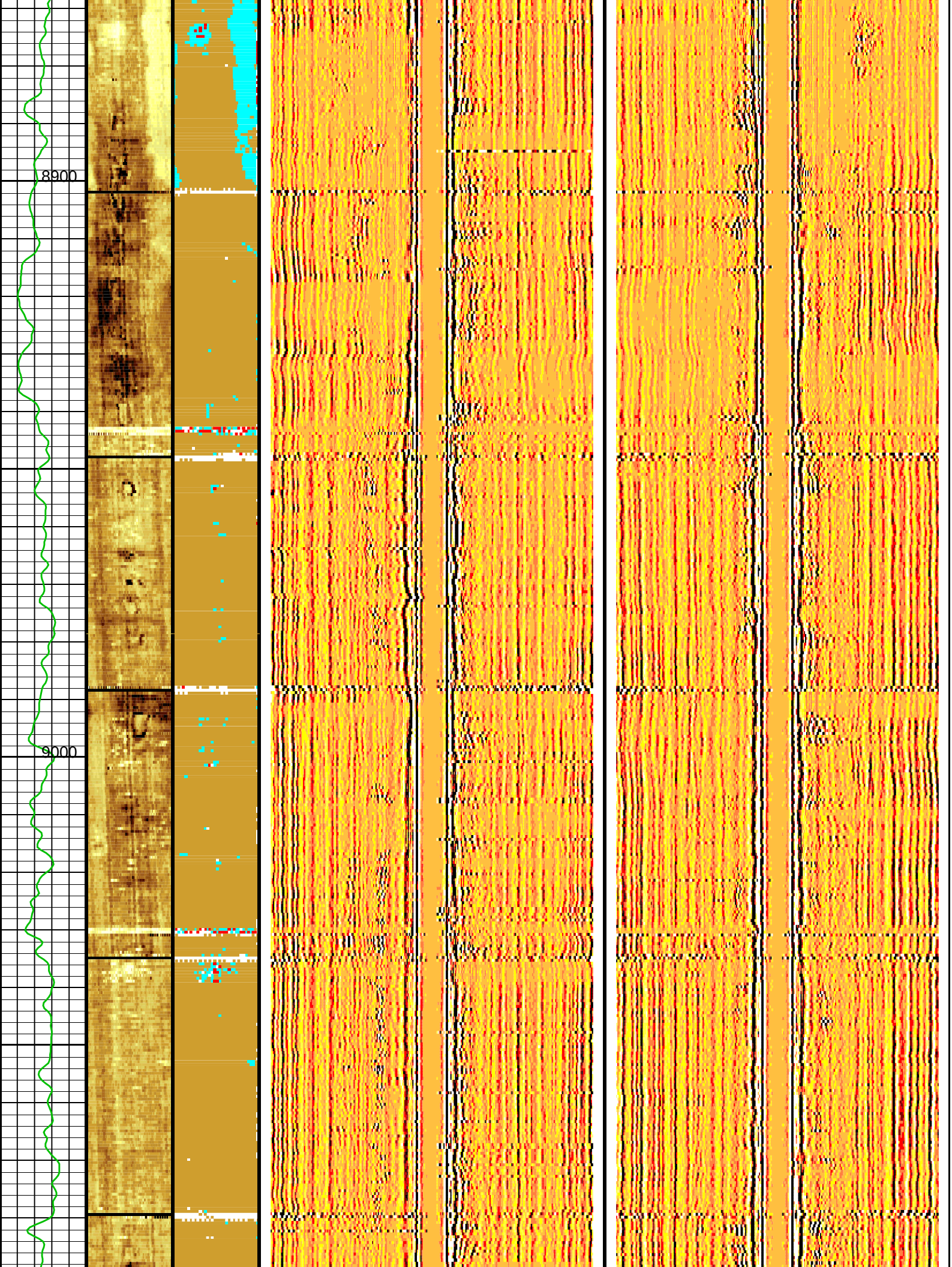
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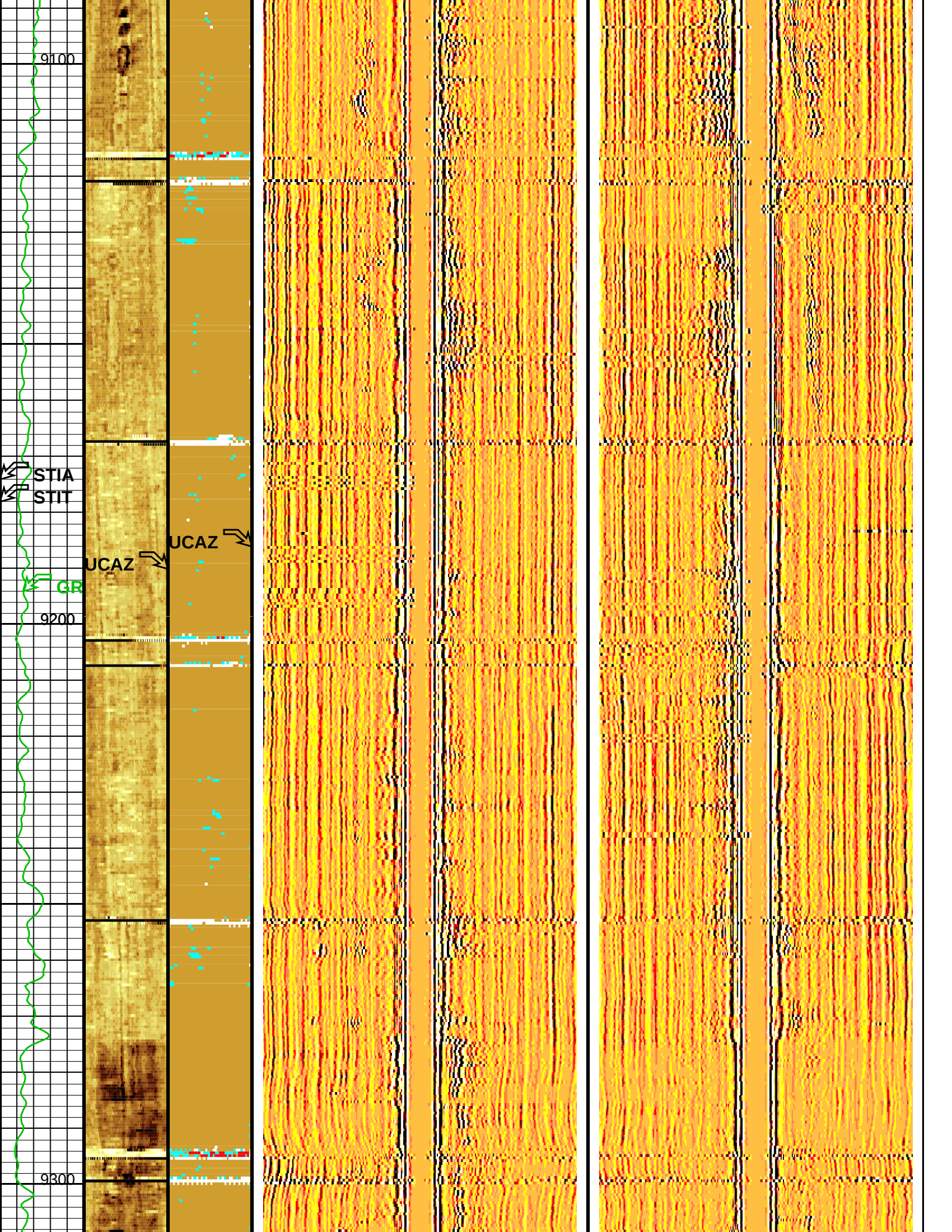
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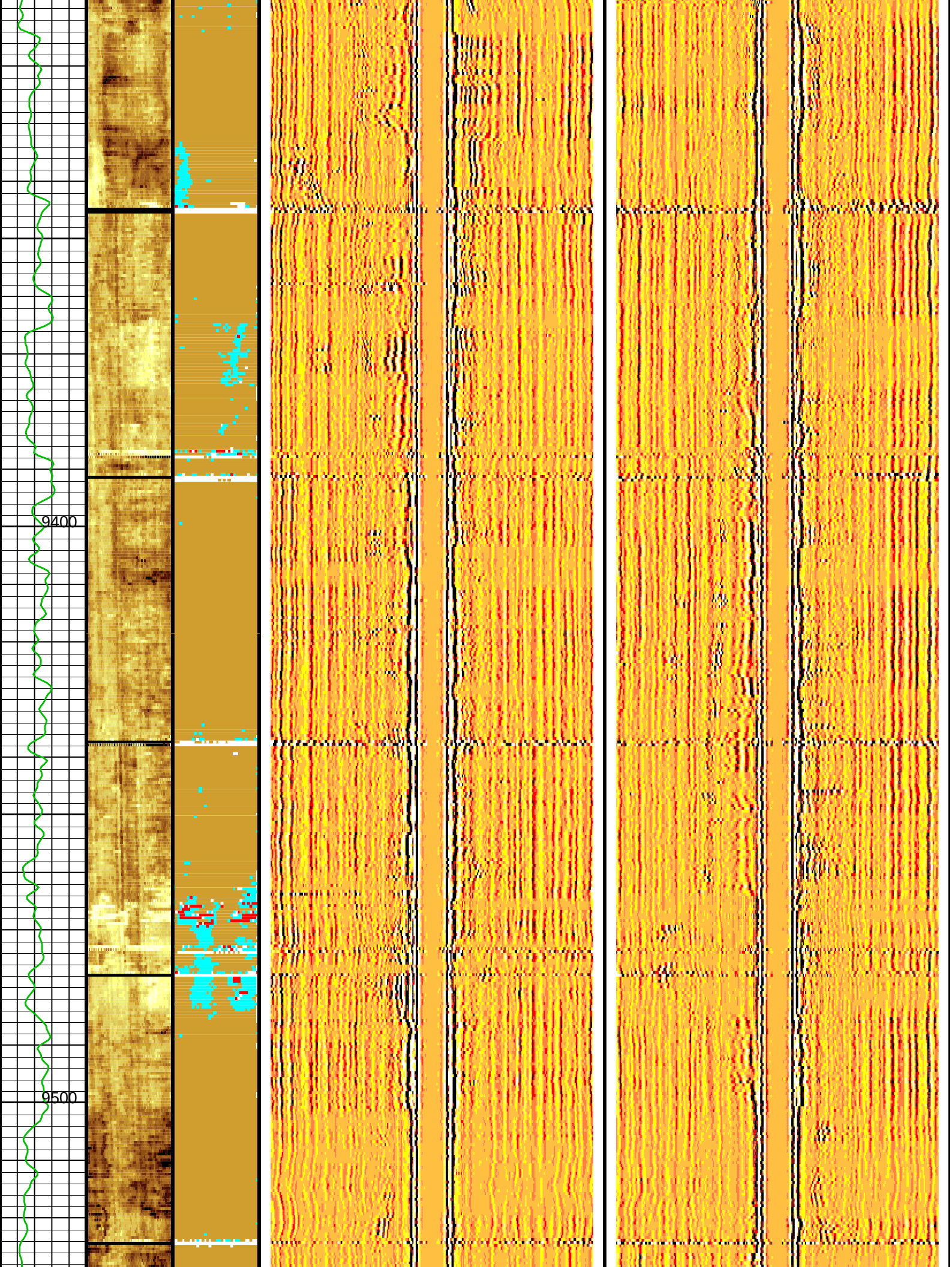
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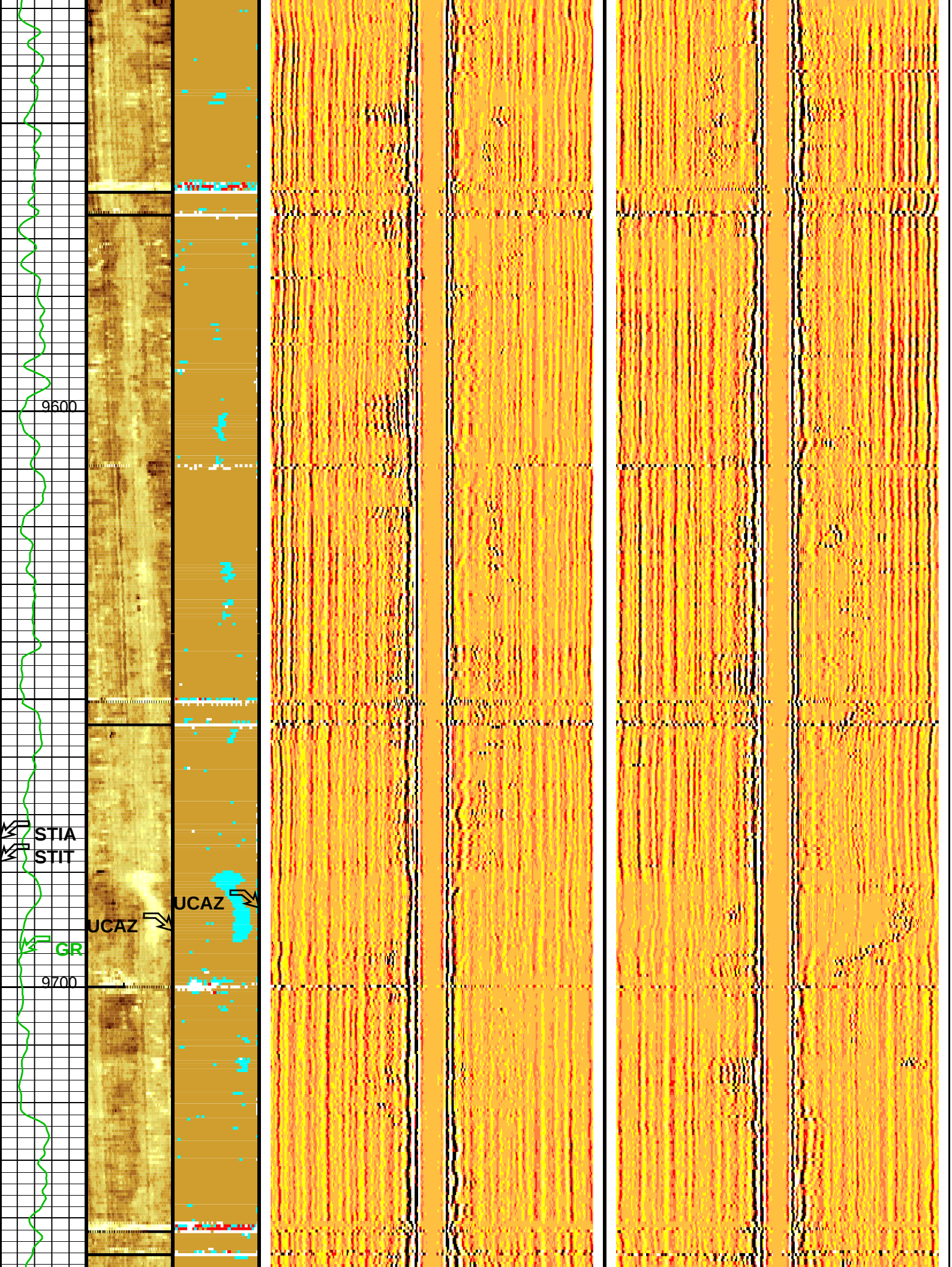
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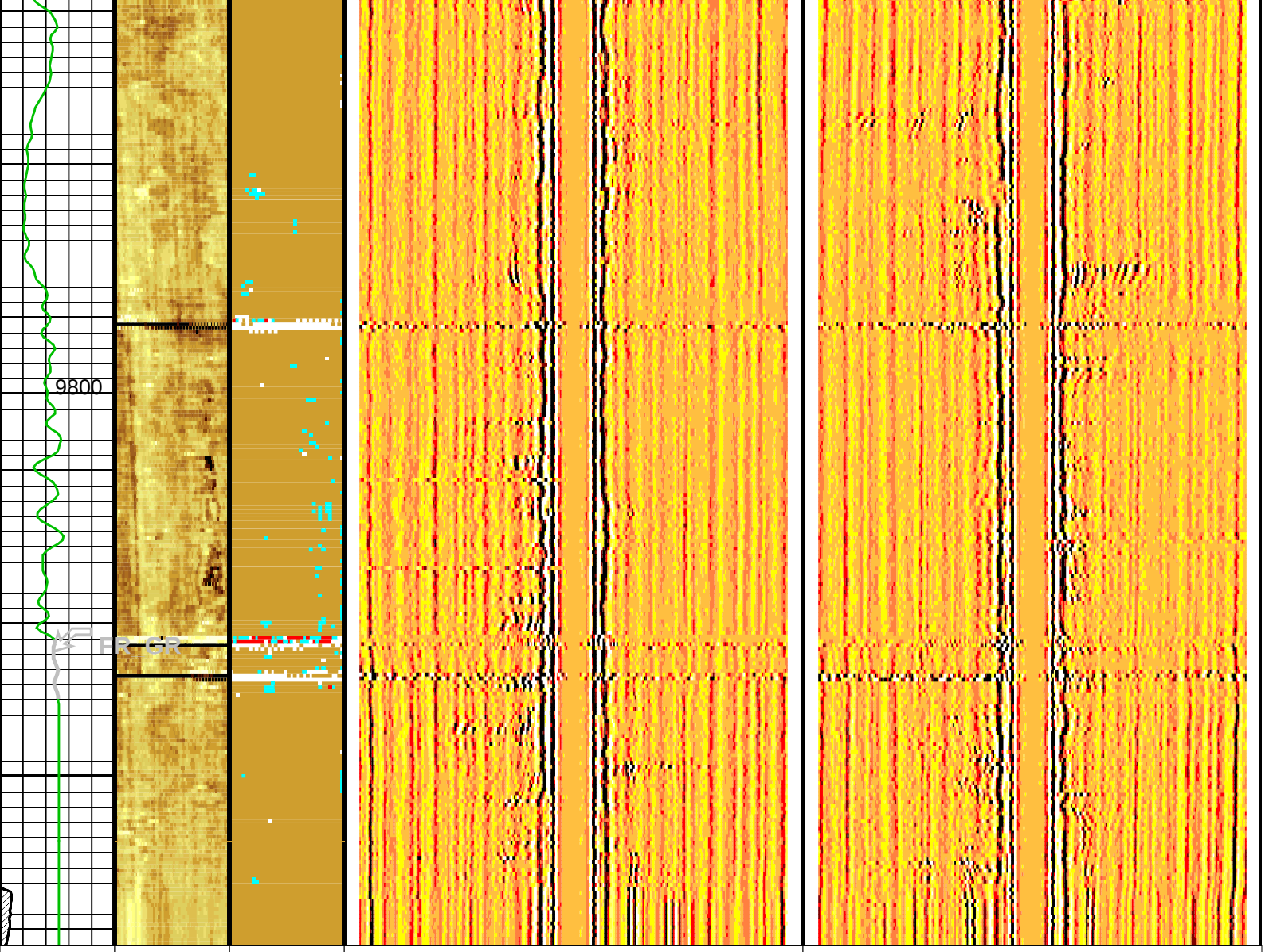

Gamma Ray (GR) (GAPI)

0 150

−500.0000
0.5000
1.0000
1.5000
2.0000
2.5000
3.0000
3.5000
4.0000
4.5000
5.0000
5.5000
6.0000
6.5000
7.0000
7.5000
8.0000

Raw Acoustic Imped. (AIBK) (MRAY)

0.5000
1.5000
2.5000
3.5000

Solid Liquid Gas Map (U−USIT_USLP) (−−−−

Min Amplitude Max

Far at 0 and 180 deg (U−USIT_VDWFF000)

−150 (US) 150

Min Amplitude Max

Far at 90 and 270 deg (U−USIT_VDWFF090)

−150 (US) 150

Stuck Stretch (STIT)

0 (F) 50

Cable Drag From D4T to STIT

Tool/Tot.

Drag From D4T to STIA

Parameters

DLIS Name	Description	Value	
USIT−D: Ultrasonic Imaging − D			
AGMN	Minimum Gain of Cartridge	−4	DB
AGMX	Maximum Gain of Cartridge	20	DB
BERJ	Bad Echo Rejection	ON	
CDIA	Casing Outer Diameter	7	IN
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	6.276	IN
DFVL	Default Fluid Velocity	206	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	110	V
FSOD	Fluid Slowness Fits Casing Outer Diameter	5_UFSL_N_ZMUD	
IMAR	Image Rotation	OFF	
MW	Mud Weight	9.6	LB/G
RCOD	Reference Calibrator Outer Diameter	7	IN
RCSO	Reference Calibrator Standoff	1.1811	IN
RCTH	Reference Calibrator Thickness	0.2952	IN
TCUB	T^3 Processing Level	Vax_Loop	
THDH	Maximum Search Thickness (percentage of nominal)	130	
THDL	Minimum Search Thickness (percentage of nominal)	70	
THDP	Thickness Detection Policy	Fundamental	
THNO	Nominal Thickness of Casing	0.362	IN
U−USIT_CEMT	USIT Cement Type	ULTRA_LIGHT	
U−USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	0	MRAY
U−USIT_IISR	USIT IBC Inverted Fluid Slowness Resolution	1.0_US_P_FT	
U−USIT_IIZR	USIT IBC Inverted ZMUD Resolution	0.050_MRAY	
U−USIT_OCDI	USIT Outer Casing Diameter	0	IN
U−USIT_OCSH	USIT Outer Casing Shoe	0	FT
U−USIT_OCWE	USIT Outer Casing Weight	0	LB/F
U−USIT_TIEB	IBC Third Interface Echo Bin Processing	YES	
U−USIT_TIEC	IBC Third Interface Echo Cleaning	NONE	
U−USIT_TIEM	IBC Third Interface Echo Multi Tracking	NO	
U−USIT_TIEP	IBC Third Interface Echo Policy	BFEP	
U−USIT_TIER	IBC Third Interface Echo Receivers	BOTH	
U−USIT_U3WE	Third Interface Echo Window End	110	US
U−USIT_UBTP	USIT Bottom Transducer Position	UNKNOWN	
U−USIT_UFAO	USIT Flexural Attenuation Offset	−22	DB/M
U−USIT_UIAP	USIT IBC Answer Product Enabled	SolidLiquidGasMap	
U−USIT_UIST	Ultrasonic IBC Sonde Type	Sub_Ibcs_B	
U−USIT_UTAN	USIT Transducer Angles	33_DEG	
UMAO	USIT Measurement Angular Offset	−10	DEG
USTO	Ultrasonic Time Offset	−2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	5DEG_6IN_136UNF_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.7078	US
ZCAS	Acoustic Impedance of Casing	46.2537	MRAY
ZINI	Initial Estimate of Cement Impedance	−1	MRAY
ZMUD	Acoustic Impedance of Mud	1.9	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	14390.00	FT
TDL	Total Depth − Logger	9866.00	FT
System and Miscellaneous			
BS	Bit Size	9.875	IN
CWEI	Casing Weight	26.00	LB/F
DO	Depth Offset for Playback	6.0	FT
DORL	Depth Offset for Repeat Analysis	0.0	FT
PP	Playback Processing	RECOMPUTE	

Format: USI_IBC_VDL_WIDE Vertical Scale: 5" per 100' Graphics File Created: 18−Sep−2010 11:12

OP System Version: 18C0−147

USIT−D	18C0−147	HILTH−FTB	18C0−147
DTC−H	18C0−147		

Input DLIS Files

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Output DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_025PUP	FN:24	PRODUCER	18−Sep−2010 11:12	

Schlumberger

GOODWIN 5 INCH

MAXIS Field Log

Company: ExxonMobil Production Corp **Well: PCU 296−5A1**

Input DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_023LUP	FN:22	PRODUCER	18−Sep−2010 07:07	9866.0 FT	1727.5 FT

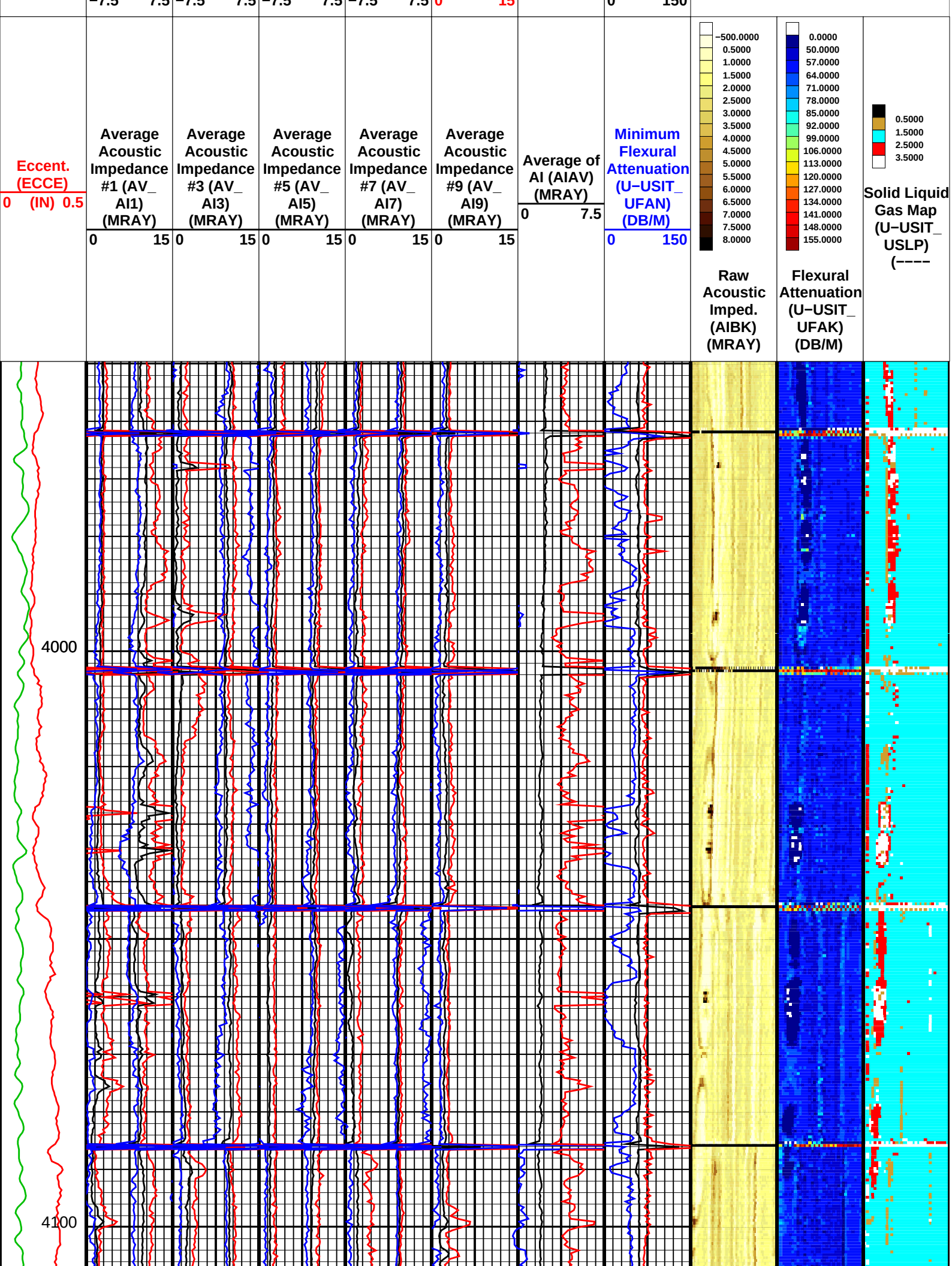
Output DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_025PUP	FN:24	PRODUCER	18−Sep−2010 11:12	9872.0 FT	3949.5 FT

OP System Version: 18C0−147

USIT−D	18C0−147	HILTH−FTB	18C0−147
DTC−H	18C0−147		

	Minimum Acoustic Impedance #2 (MIN_AI2) (MRAY) −7.5 7.5	Minimum Acoustic Impedance #4 (MIN_AI4) (MRAY) −7.5 7.5	Minimum Acoustic Impedance #6 (MIN_AI6) (MRAY) −7.5 7.5	Minimum Acoustic Impedance #8 (MIN_AI8) (MRAY) −7.5 7.5			
	Minimum Acoustic Impedance #1 (MIN_AI1) (MRAY) 0 15	Minimum Acoustic Impedance #3 (MIN_AI3) (MRAY) 0 15	Minimum Acoustic Impedance #5 (MIN_AI5) (MRAY) 0 15	Minimum Acoustic Impedance #7 (MIN_AI7) (MRAY) 0 15			
	Maximum Acoustic Impedance #2 (MAX_AI2) (MRAY) −7.5 7.5	Maximum Acoustic Impedance #4 (MAX_AI4) (MRAY) −7.5 7.5	Maximum Acoustic Impedance #6 (MAX_AI6) (MRAY) −7.5 7.5	Maximum Acoustic Impedance #8 (MAX_AI8) (MRAY) −7.5 7.5			
	Maximum Acoustic Impedance #1 (MAX_AI1) (MRAY) 0 15	Maximum Acoustic Impedance #3 (MAX_AI3) (MRAY) 0 15	Maximum Acoustic Impedance #5 (MAX_AI5) (MRAY) 0 15	Maximum Acoustic Impedance #7 (MAX_AI7) (MRAY) 0 15	Minimum Acoustic Impedance #9 (MIN_AI9) (MRAY) 0 15	Maximum of AI (AIMX) (MRAY) 0 7.5	Maximum Flexural Attenuation (U−USIT_UFAX) (DB/M) 0 150
Gamma Ray (GR) (GAPI) 0 150	Average Acoustic Impedance #2 (AV_AI2) (MRAY) −7.5 7.5	Average Acoustic Impedance #4 (AV_AI4) (MRAY) −7.5 7.5	Average Acoustic Impedance #6 (AV_AI6) (MRAY) −7.5 7.5	Average Acoustic Impedance #8 (AV_AI8) (MRAY) −7.5 7.5	Maximum Acoustic Impedance #9 (MAX_AI9) (MRAY) 0 15	Minimum of AI (AIMN) (MRAY) 0 7.5	Average Flexural Attenuation (U−USIT_UFAV) (DB/M) 0 150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Average Acoustic Impedance #1 (AV_AI1) (MRAY)
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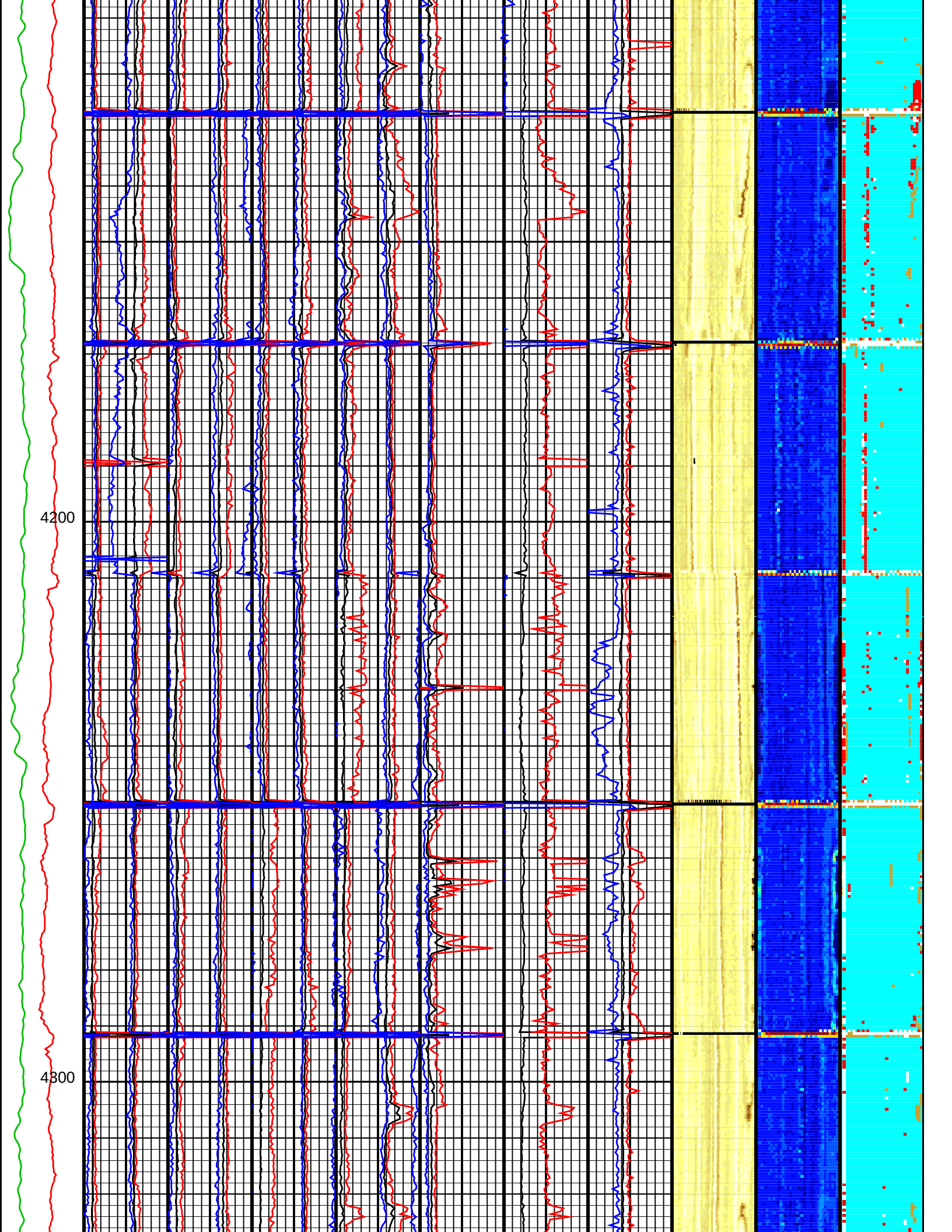
Average Acoustic Impedance #3 (AV_AI3) (MRAY)
0 15
Average Acoustic Impedance #5 (AV_AI5) (MRAY)
0 15
Average Acoustic Impedance #7 (AV_AI7) (MRAY)
0 15
Average Acoustic Impedance #9 (AV_AI9) (MRAY)
0 15
Average of AI (AIAV) (MRAY)
0 7.5
Minimum Flexural Attenuation (U−USIT_UFAN) (DB/M)
0 150
−500.0000
0.5000
1.0000
1.5000
2.0000
2.5000
3.0000
3.5000
4.0000
4.5000
5.0000
5.5000
6.0000
6.5000
7.0000
7.5000
8.0000
Raw Acoustic Imped. (AIBK) (MRAY)
0.0000
50.0000
57.0000
64.0000
71.0000
78.0000
85.0000
92.0000
99.0000
106.0000
113.0000
120.0000
127.0000
134.0000
141.0000
148.0000
155.0000
Flexural Attenuation (U−USIT_UFAK) (DB/M)
0.5000
1.5000
2.5000
3.5000
Solid Liquid Gas Map (U−USIT_USLP) (−−−−
4000
4100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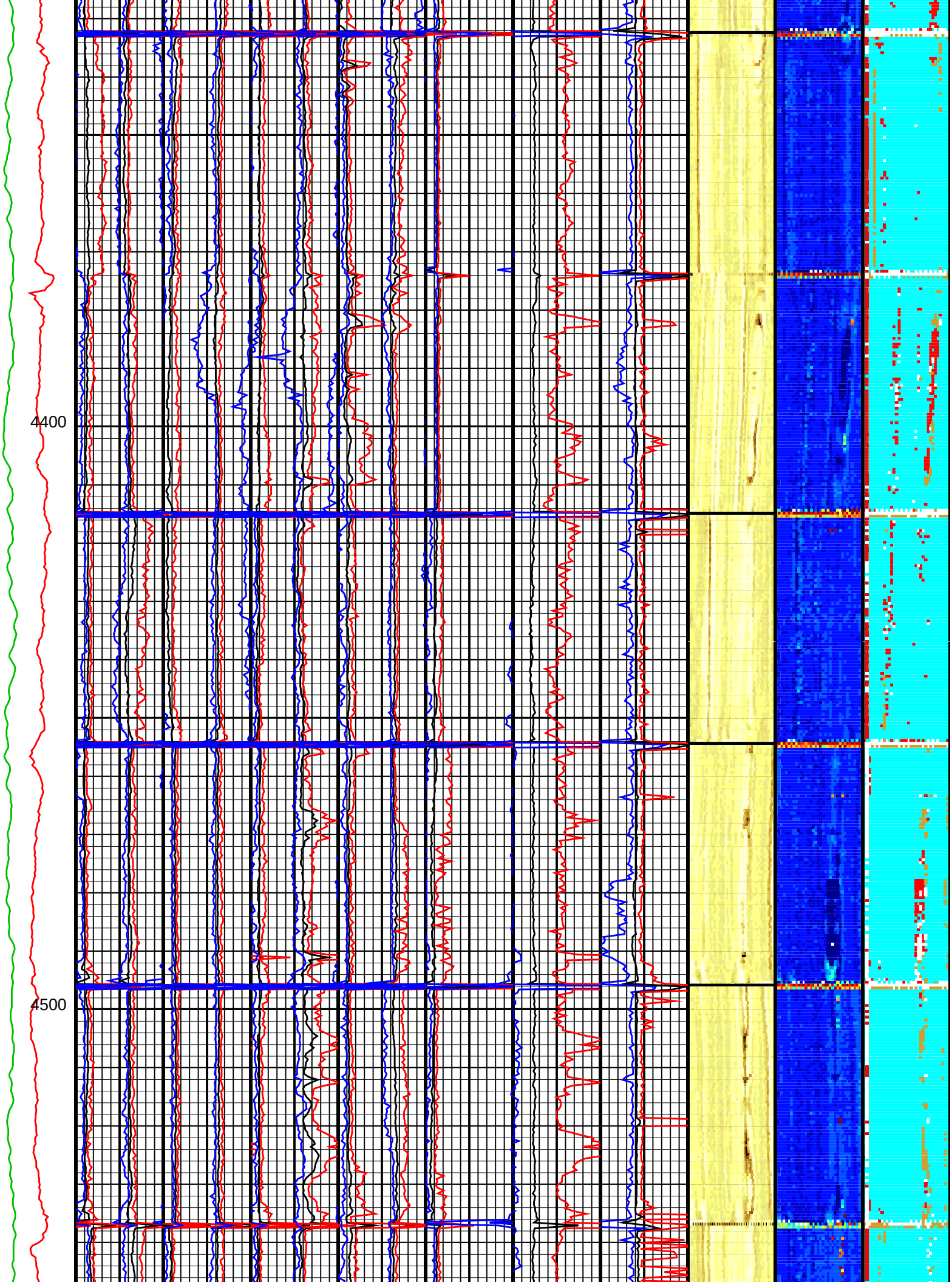
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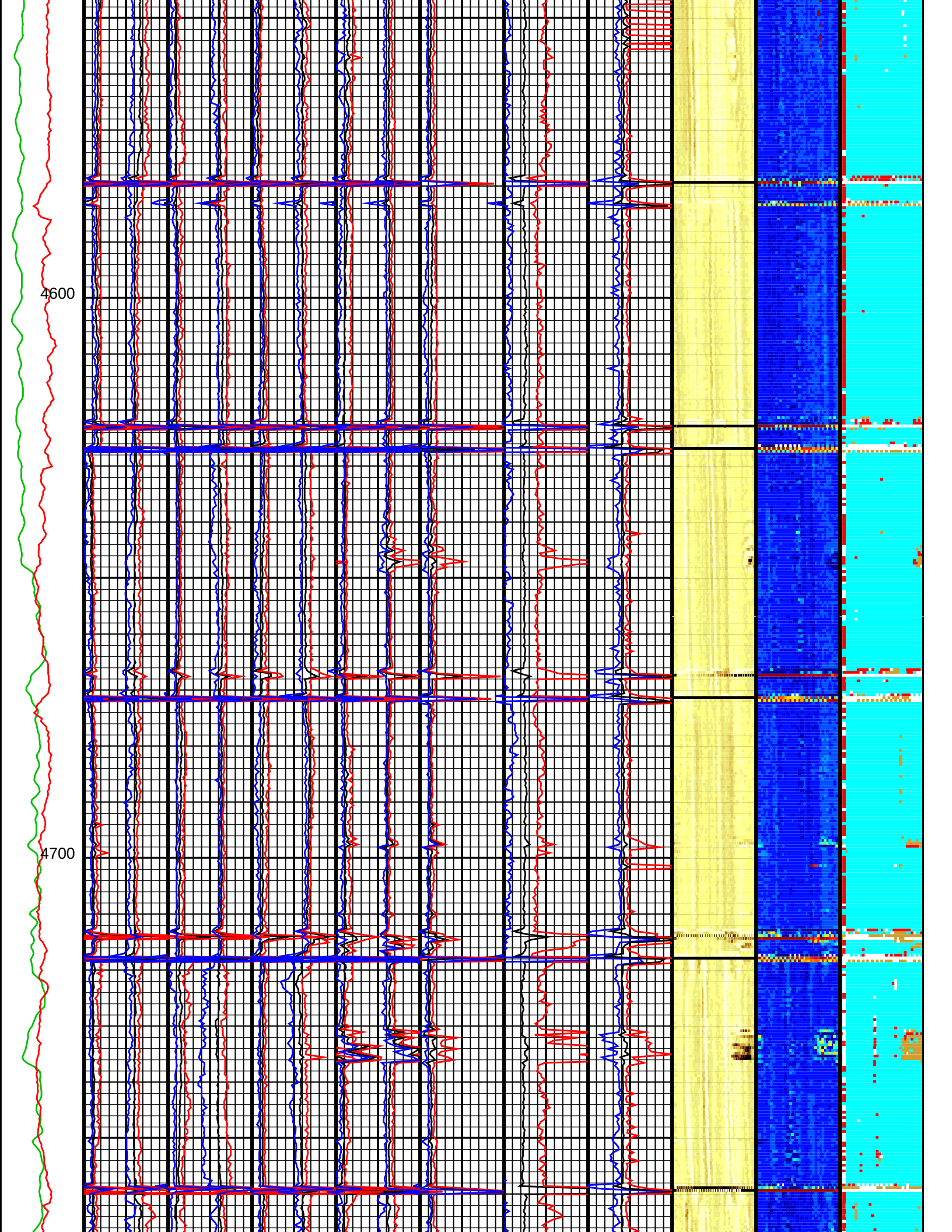
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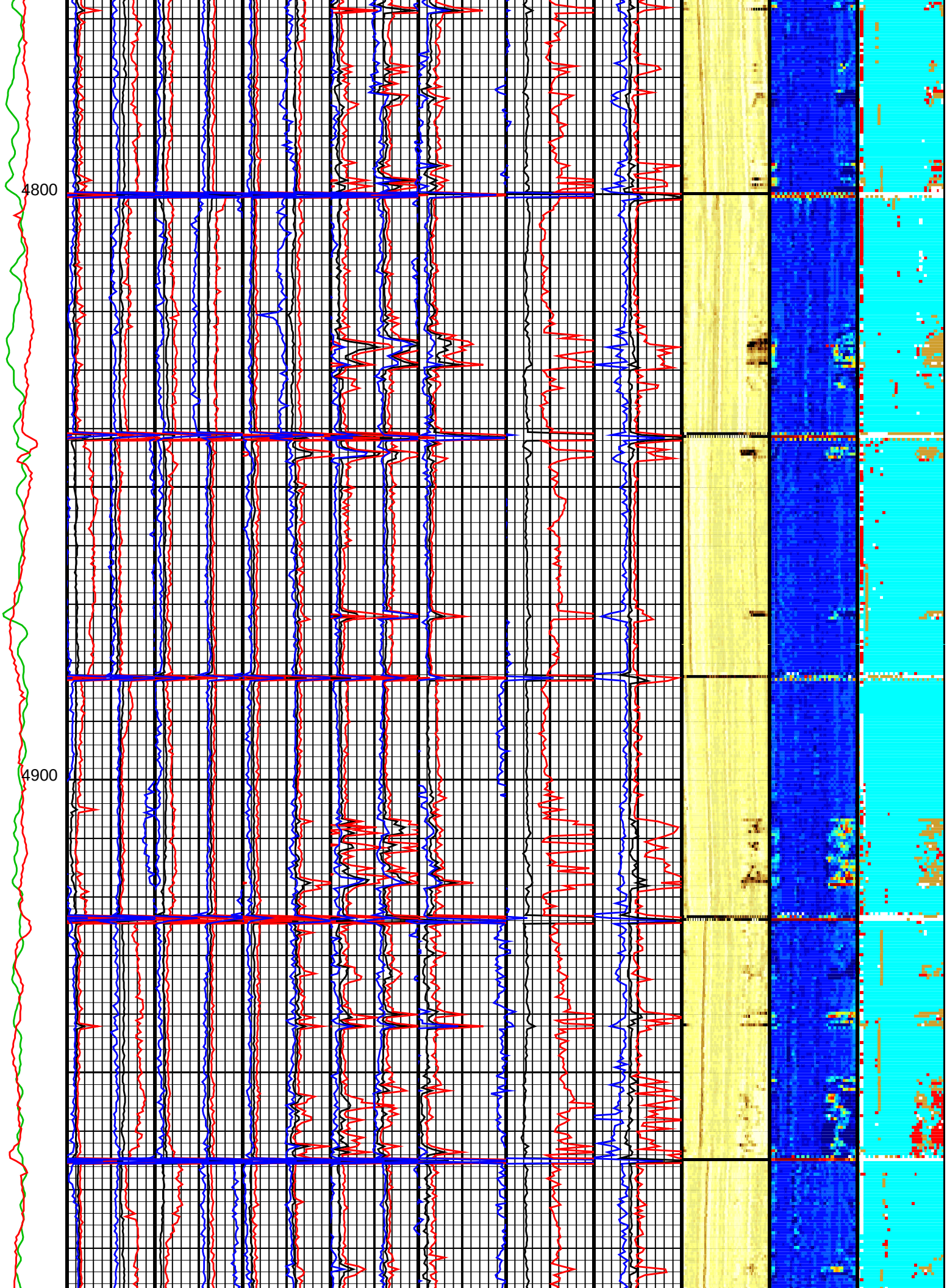
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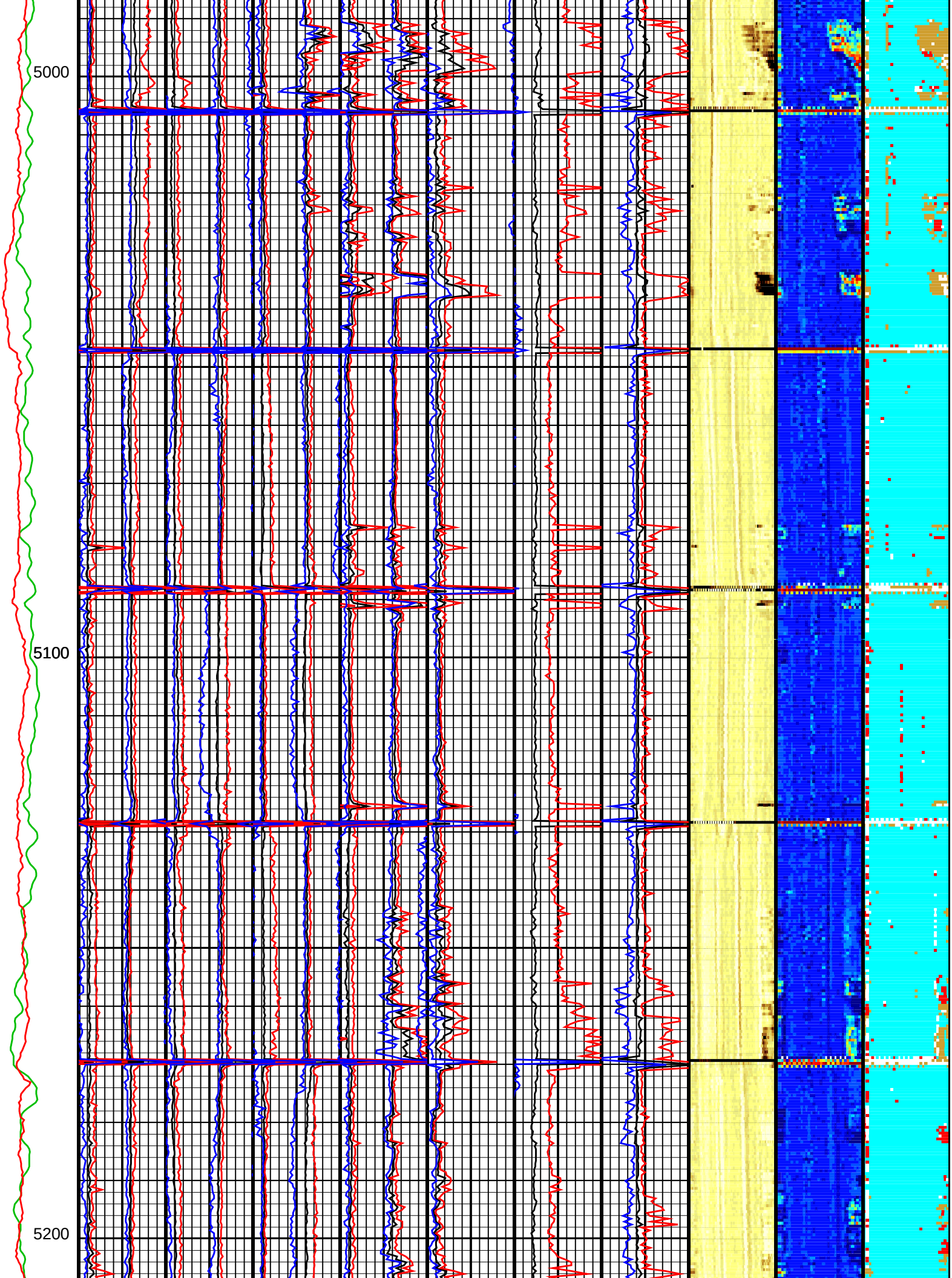
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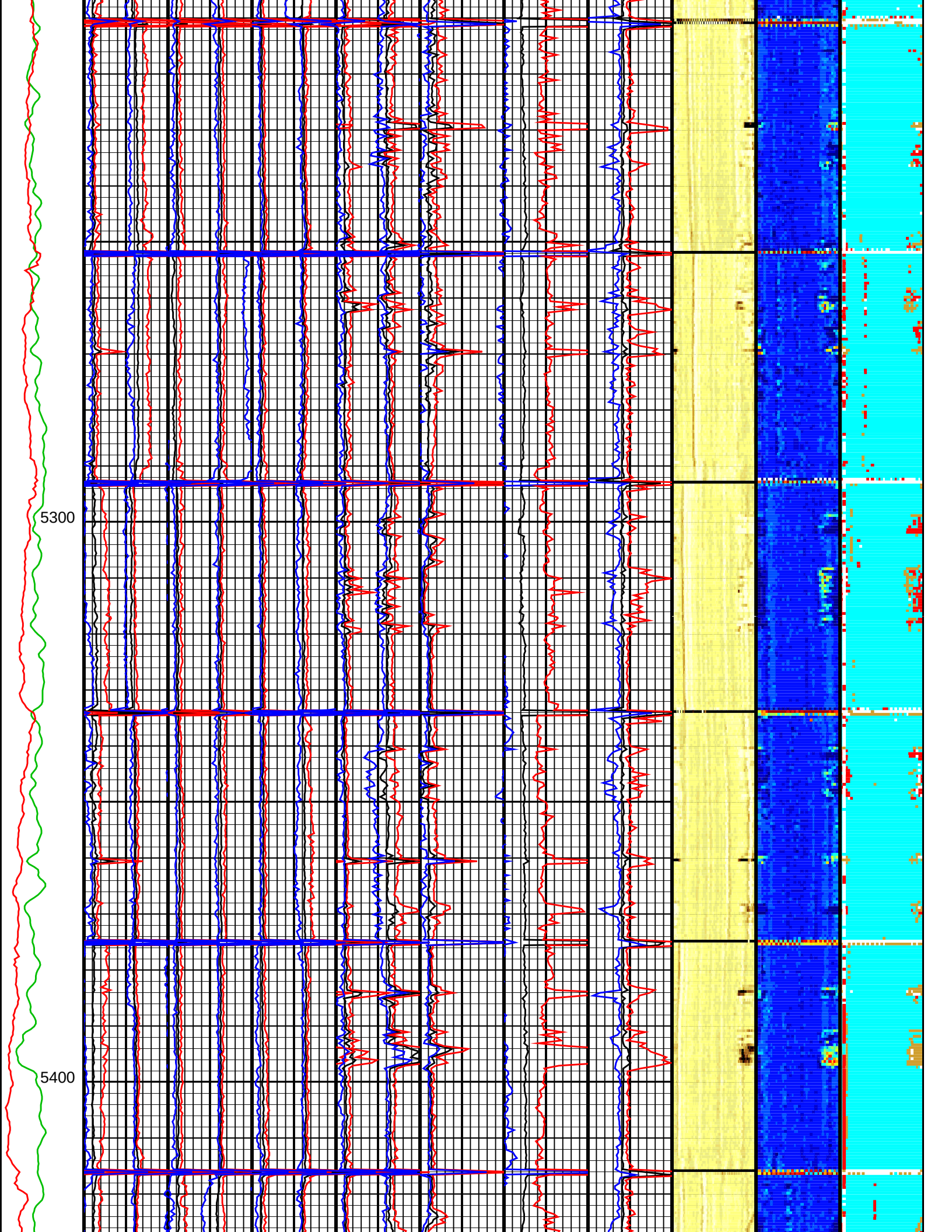
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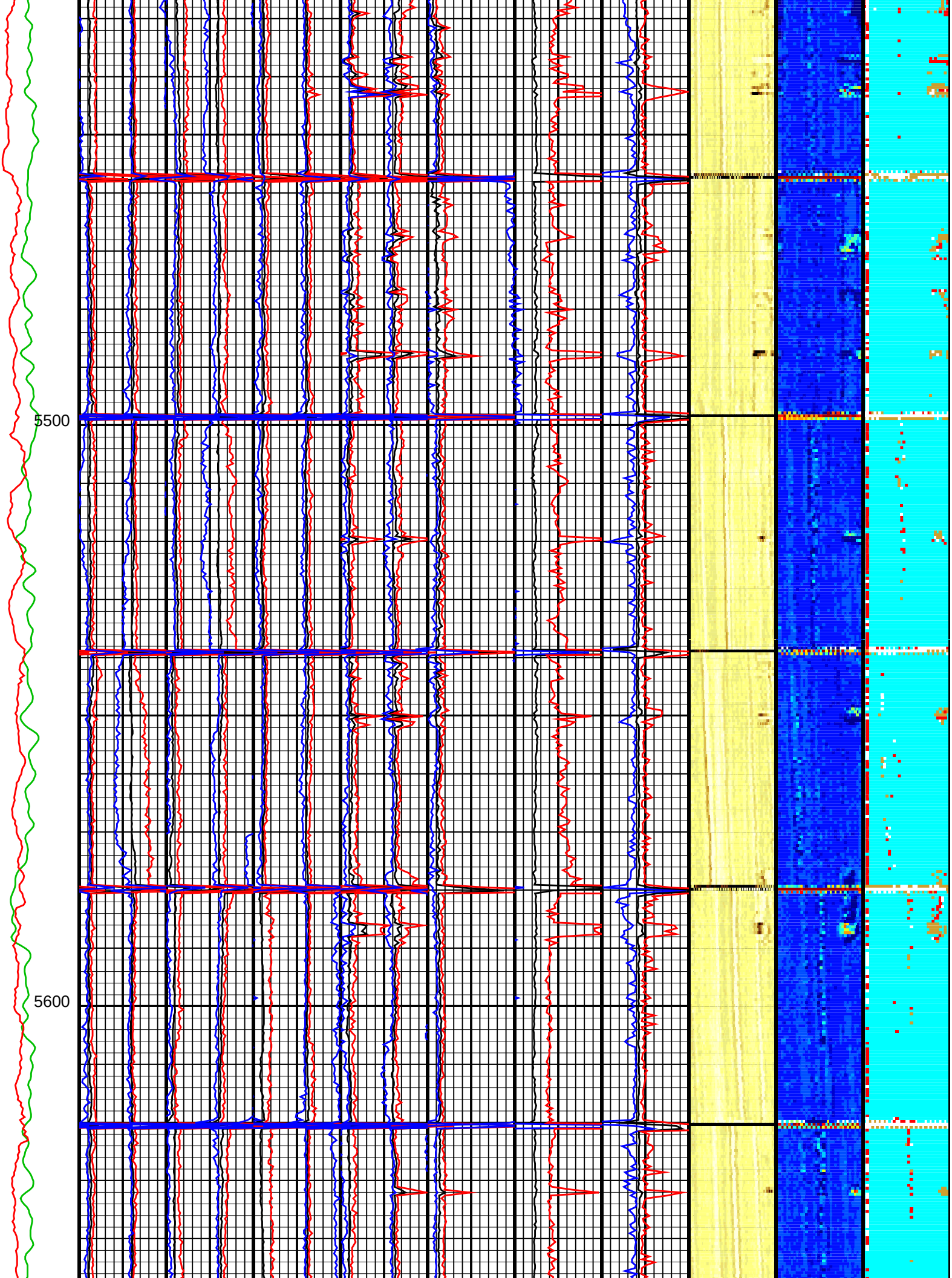
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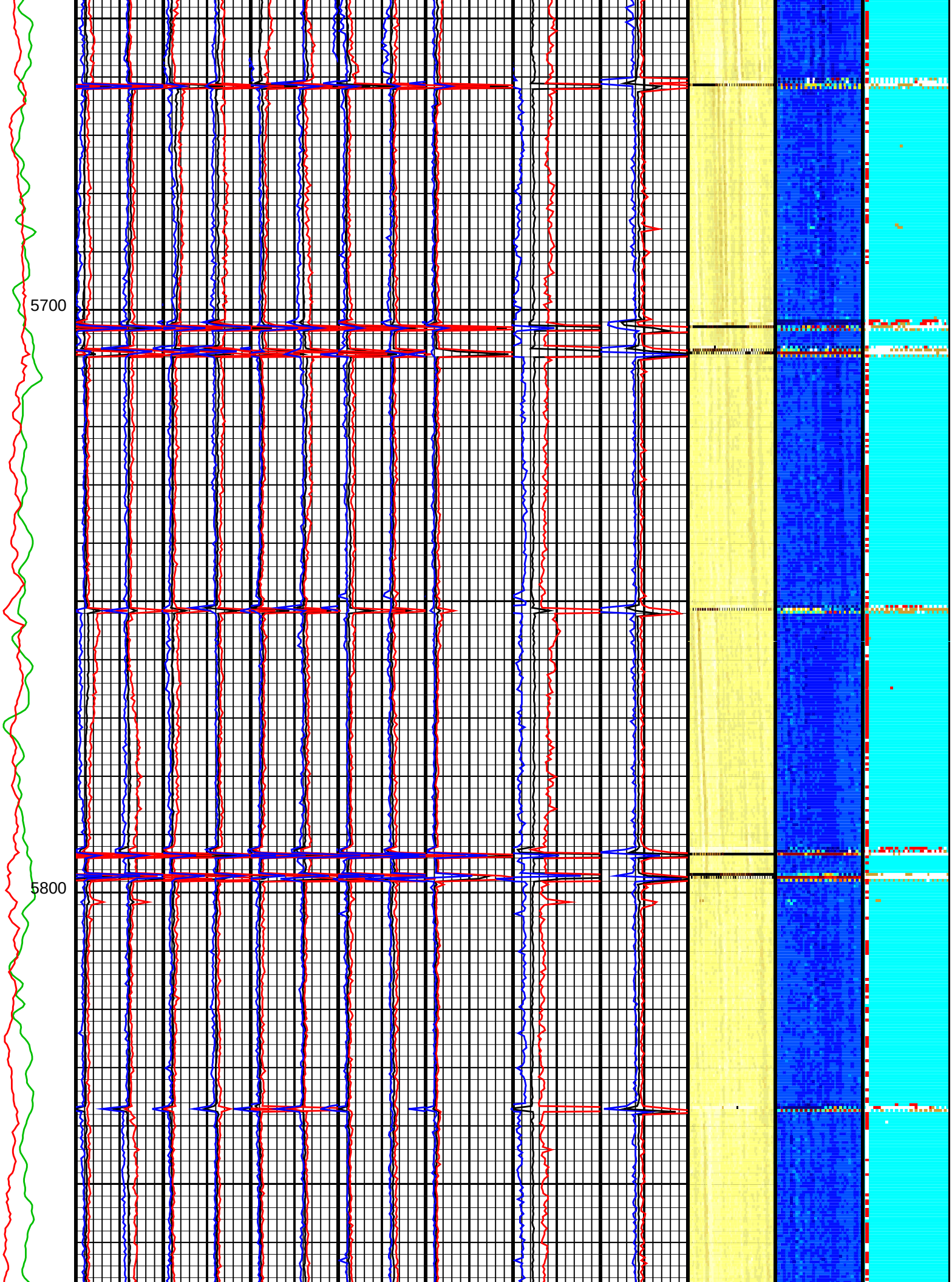
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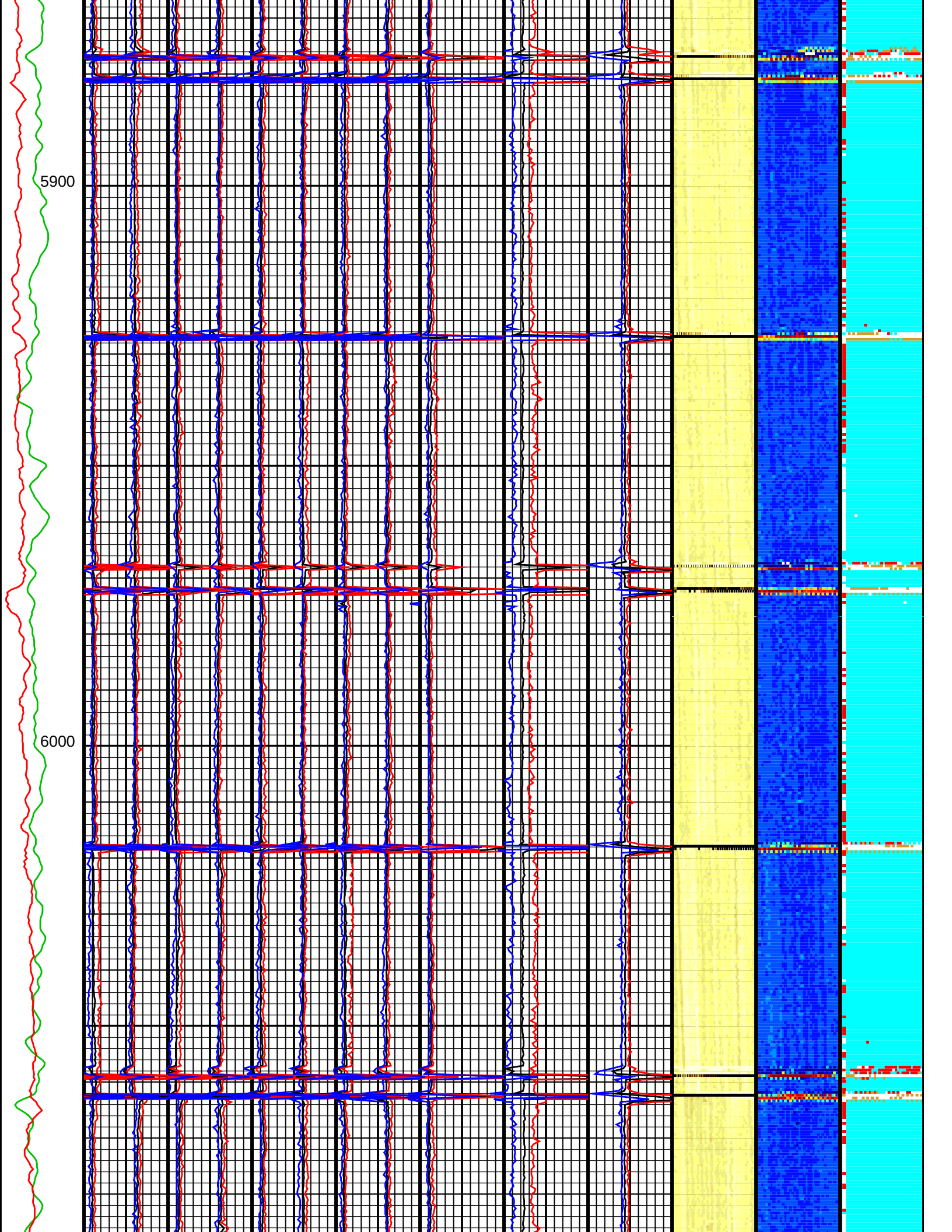
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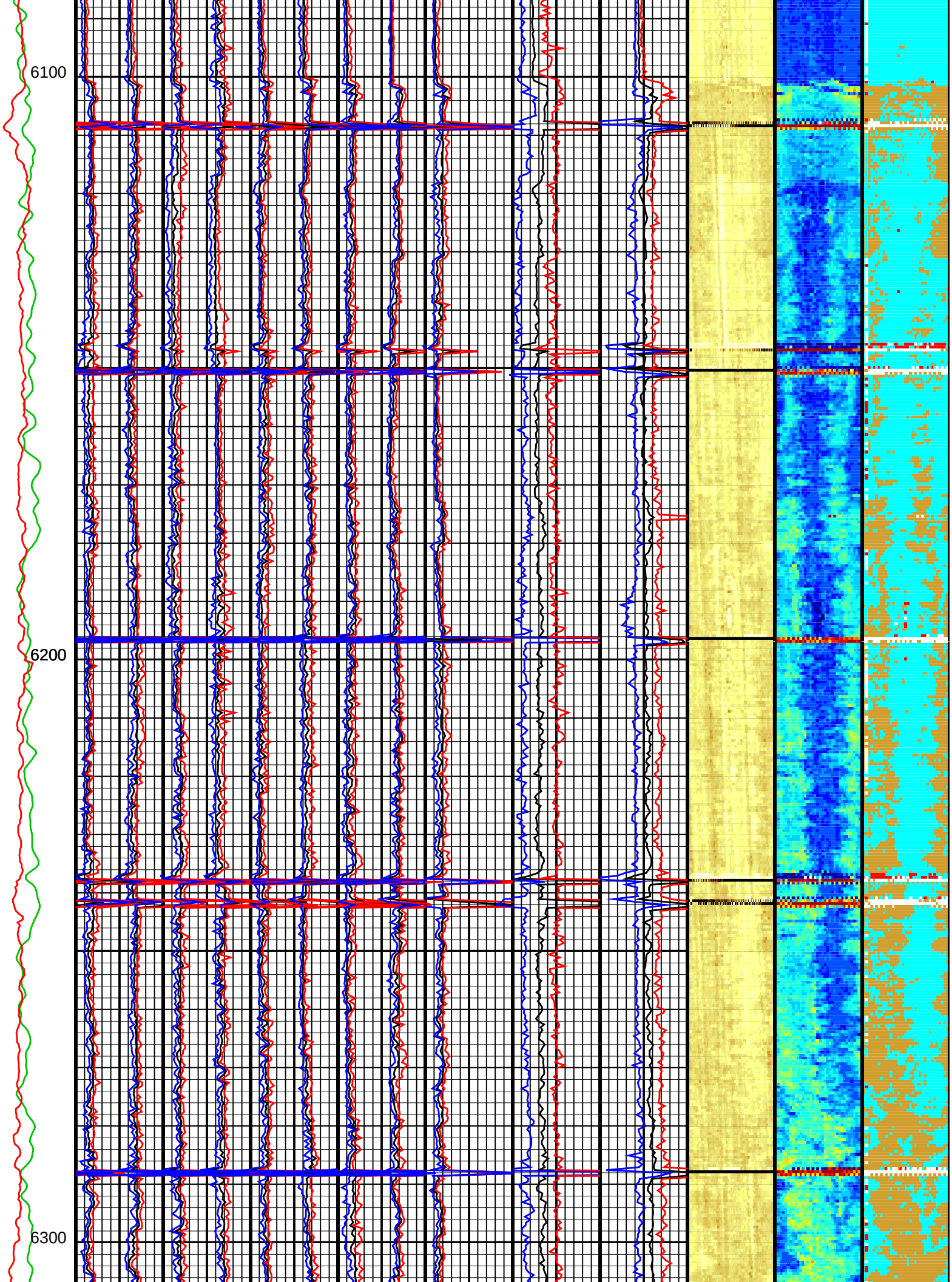
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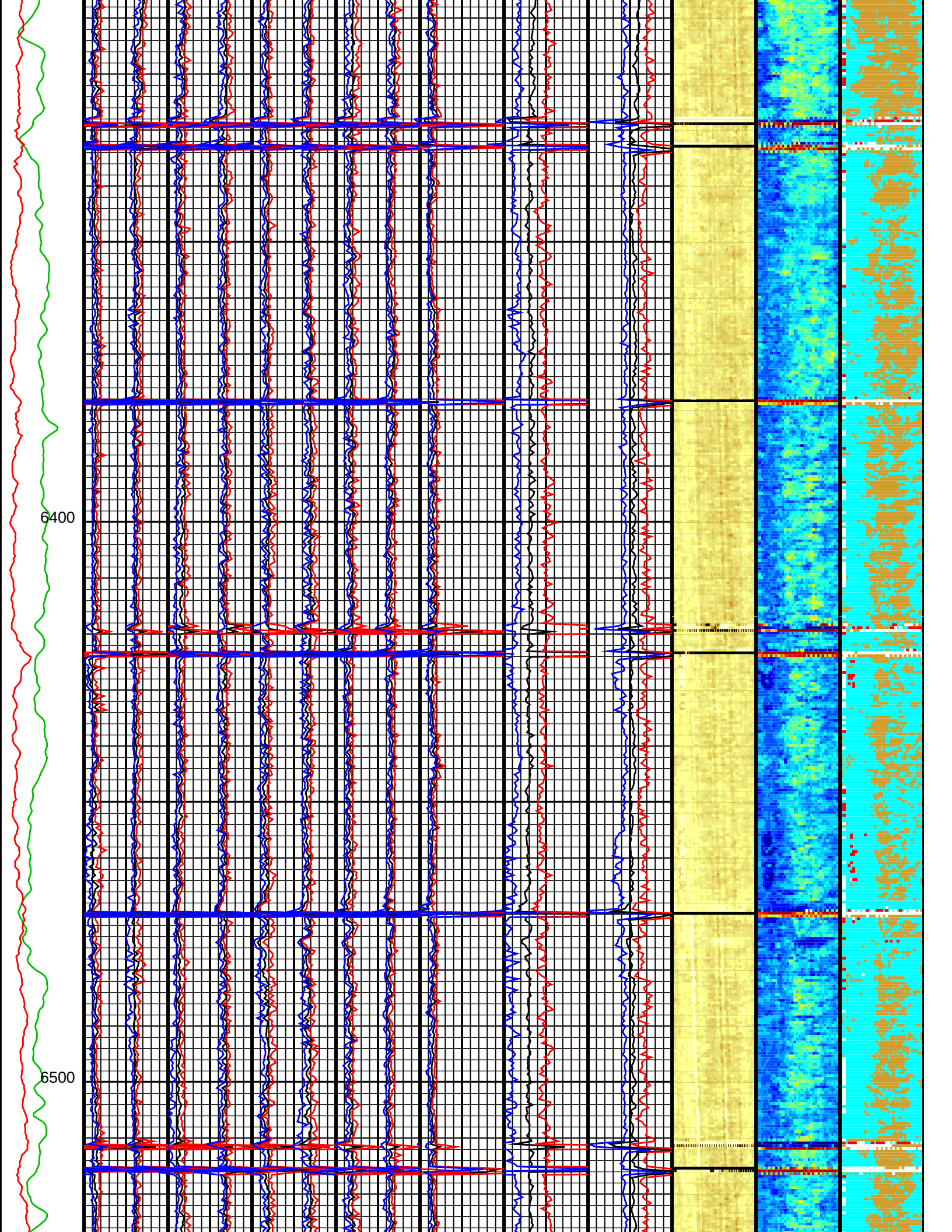
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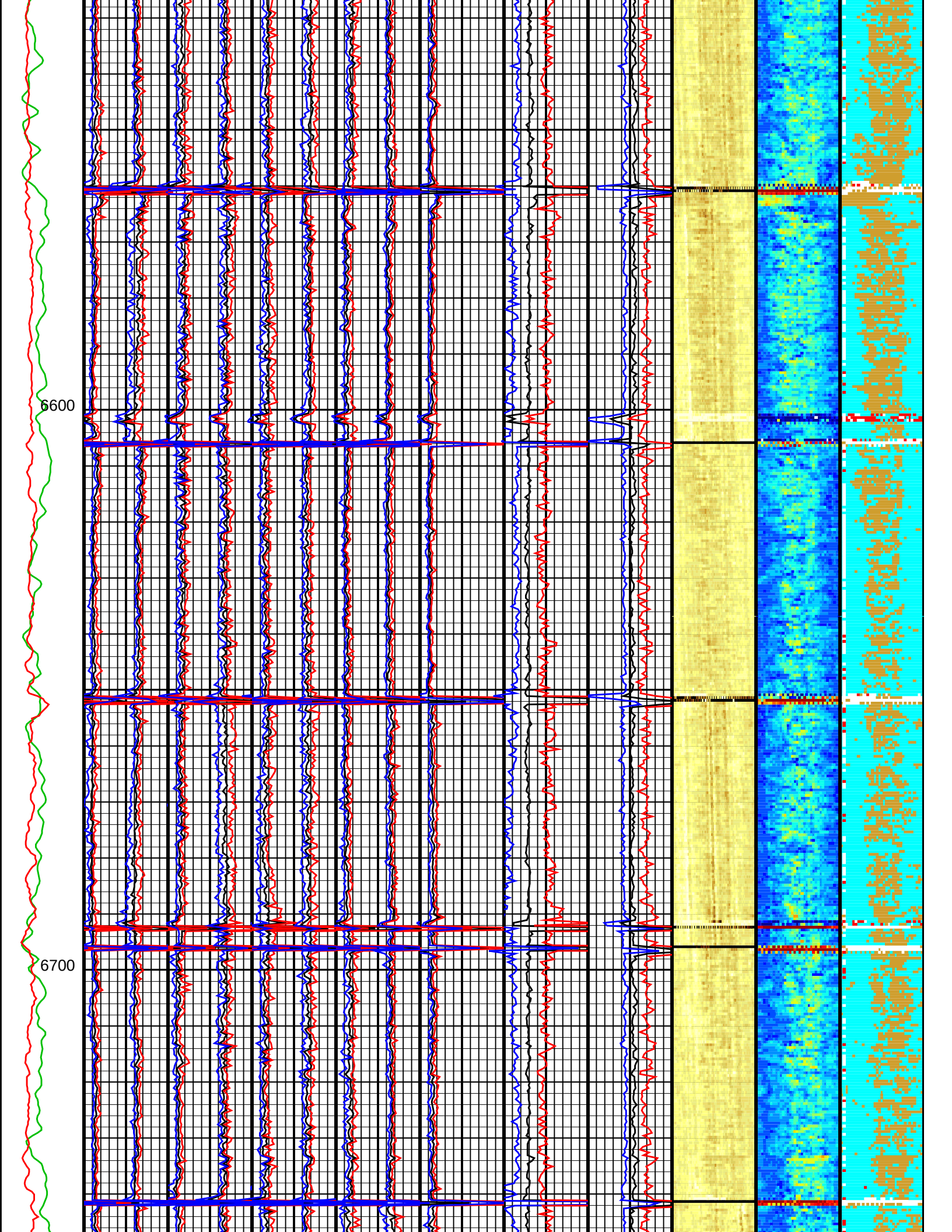
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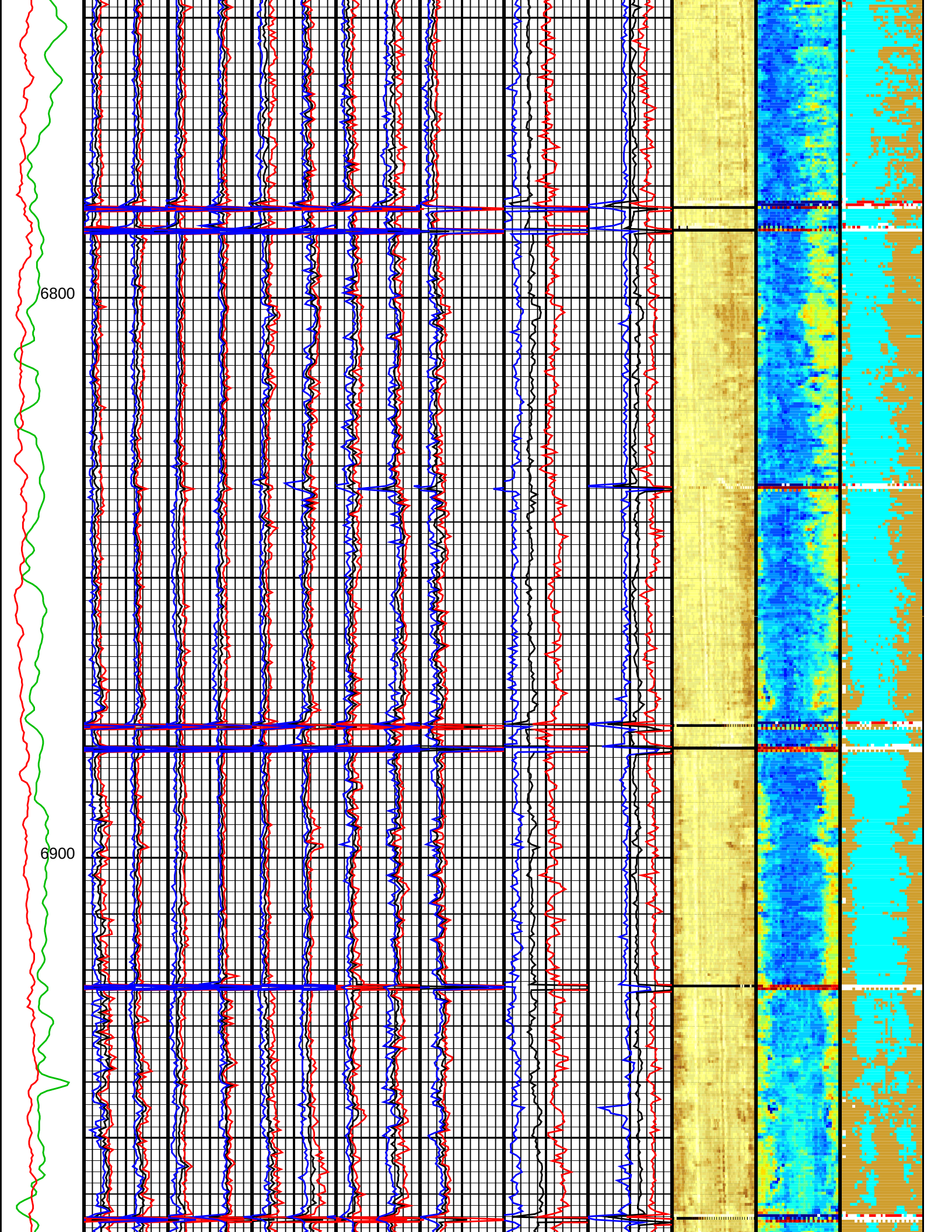
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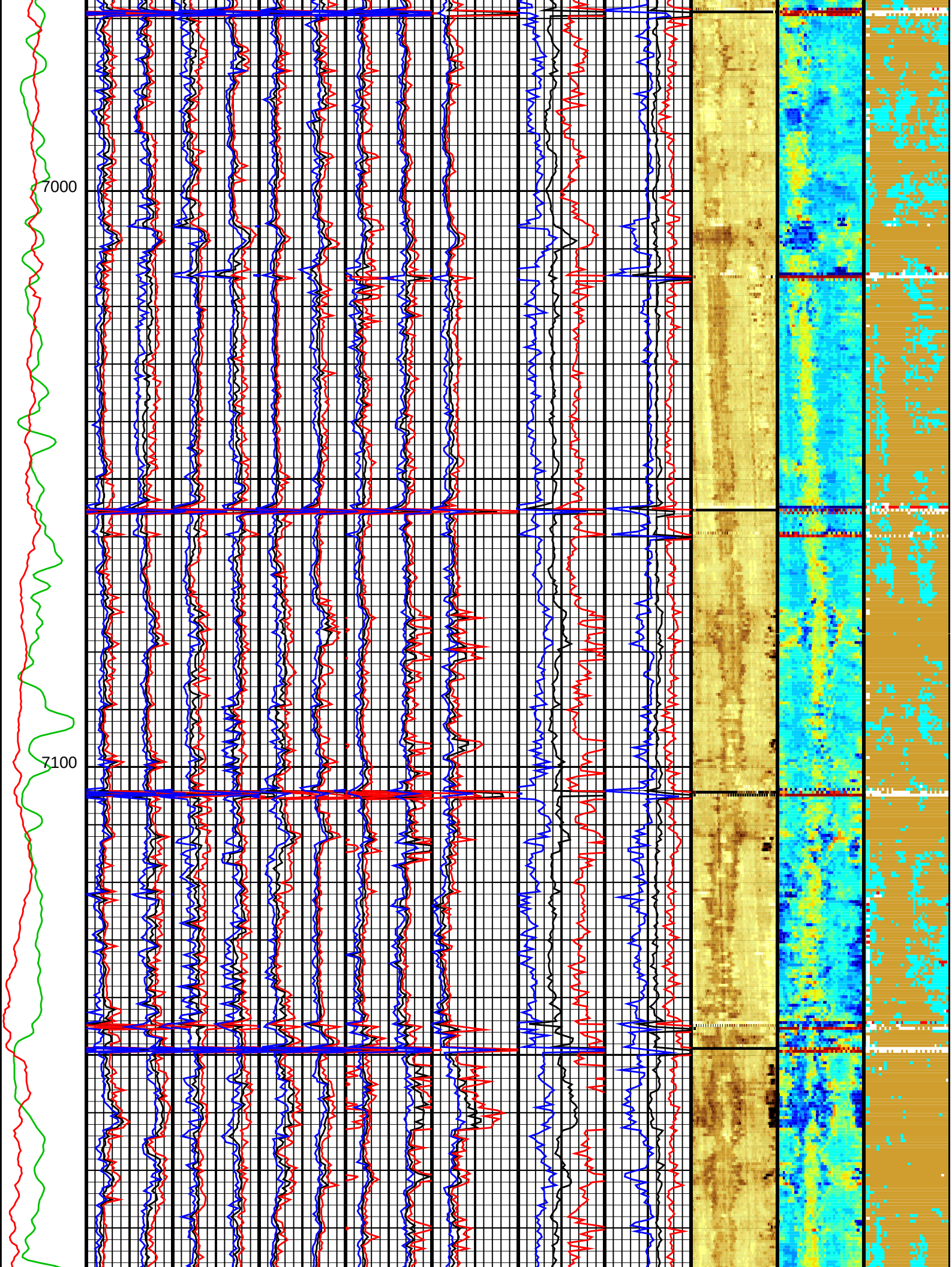
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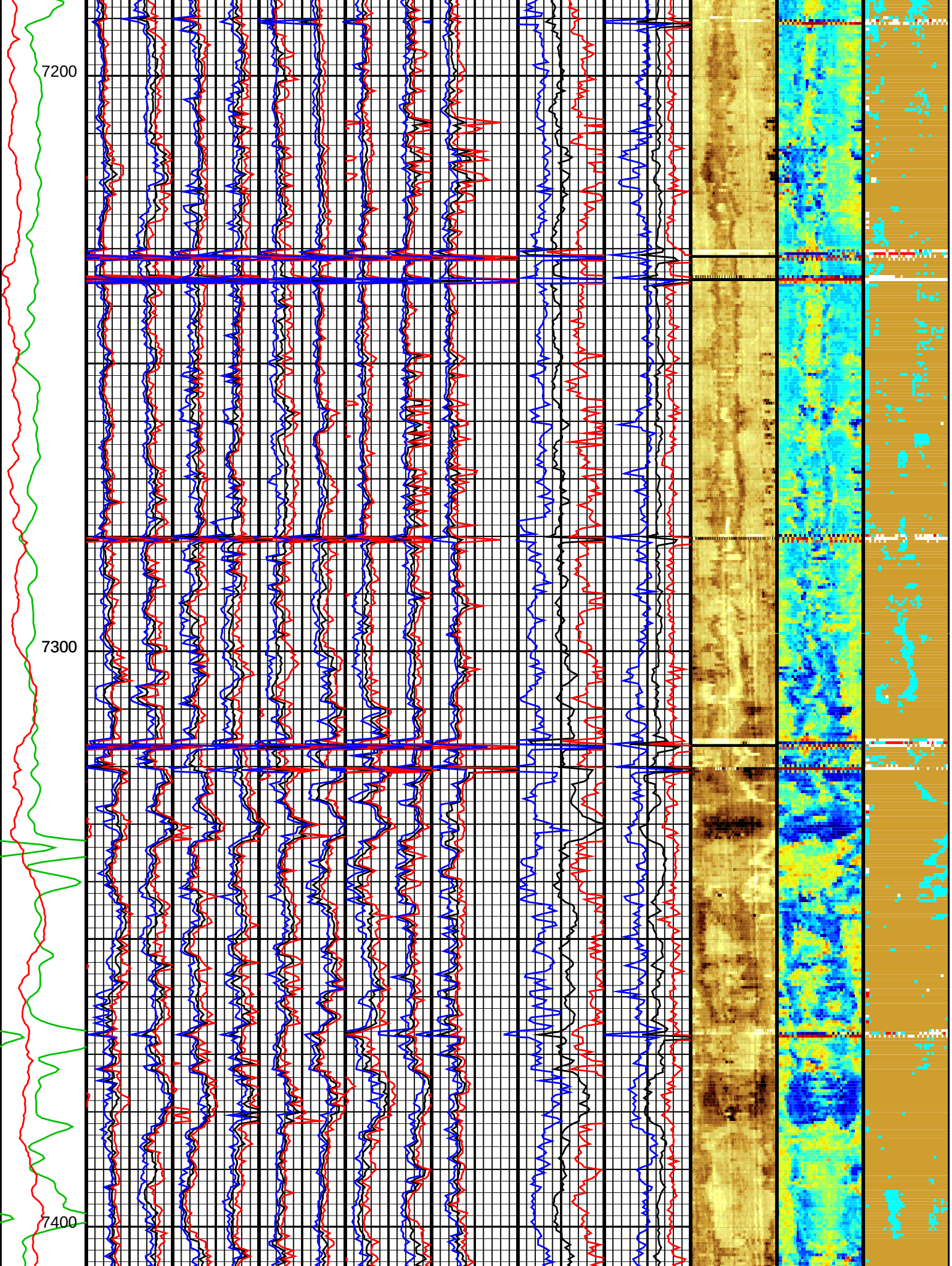
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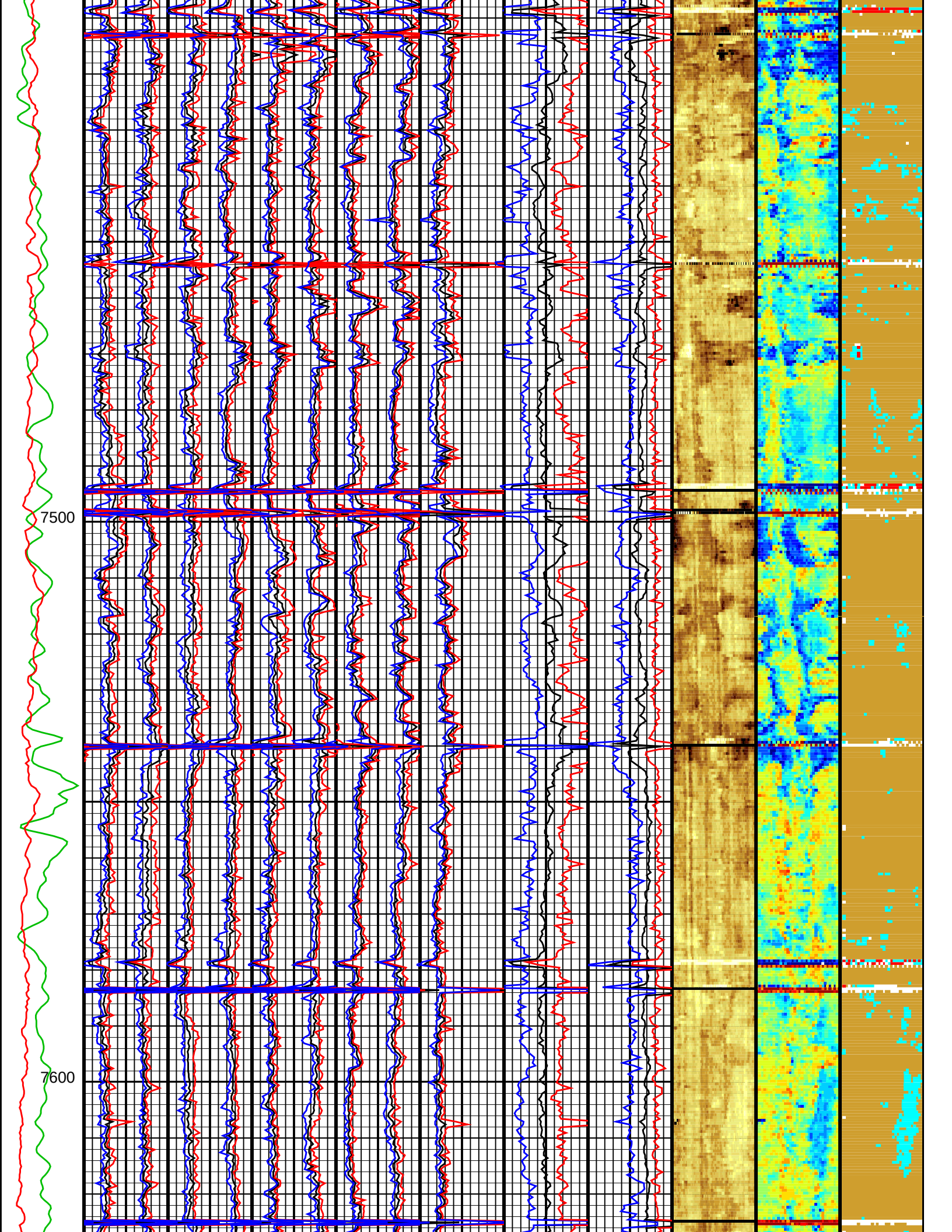
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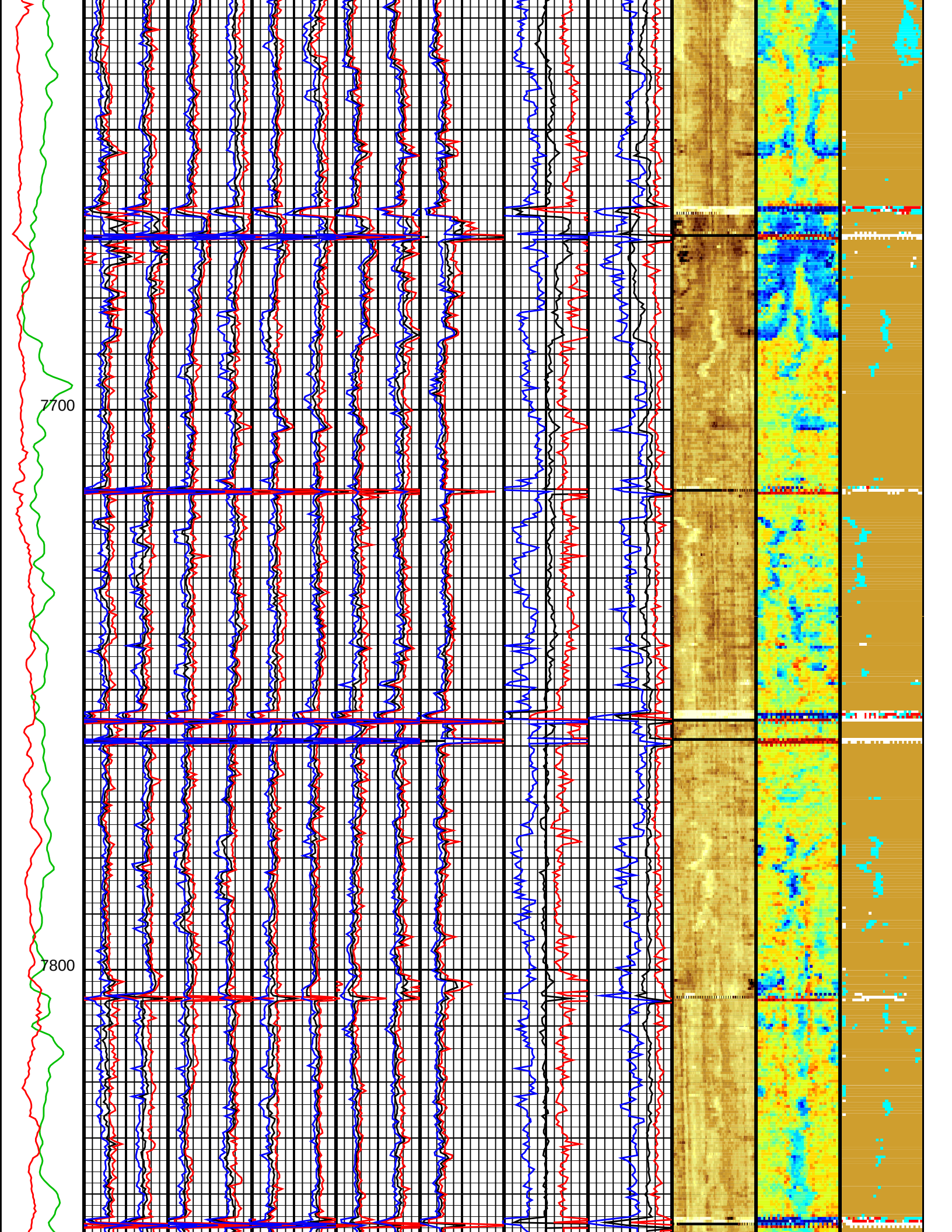
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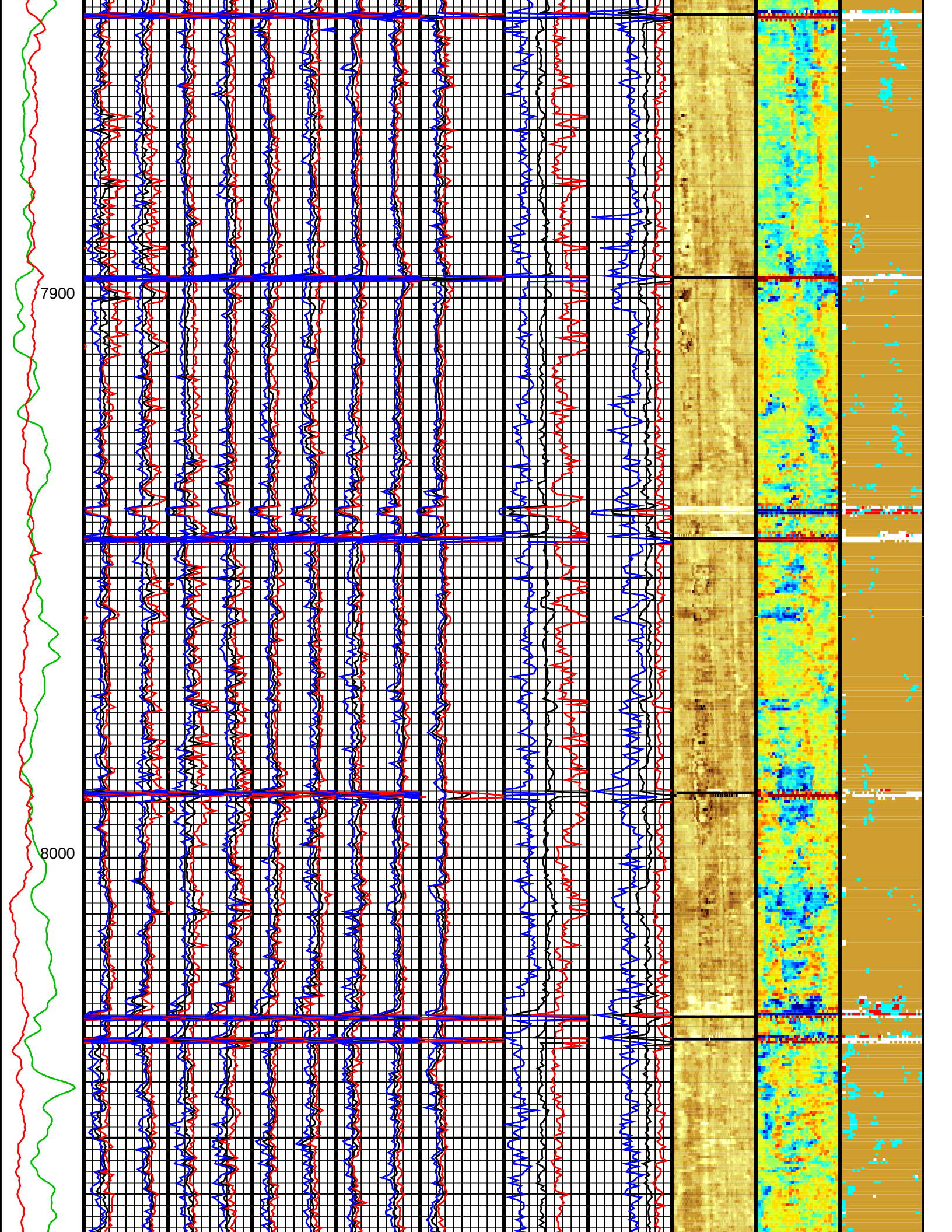
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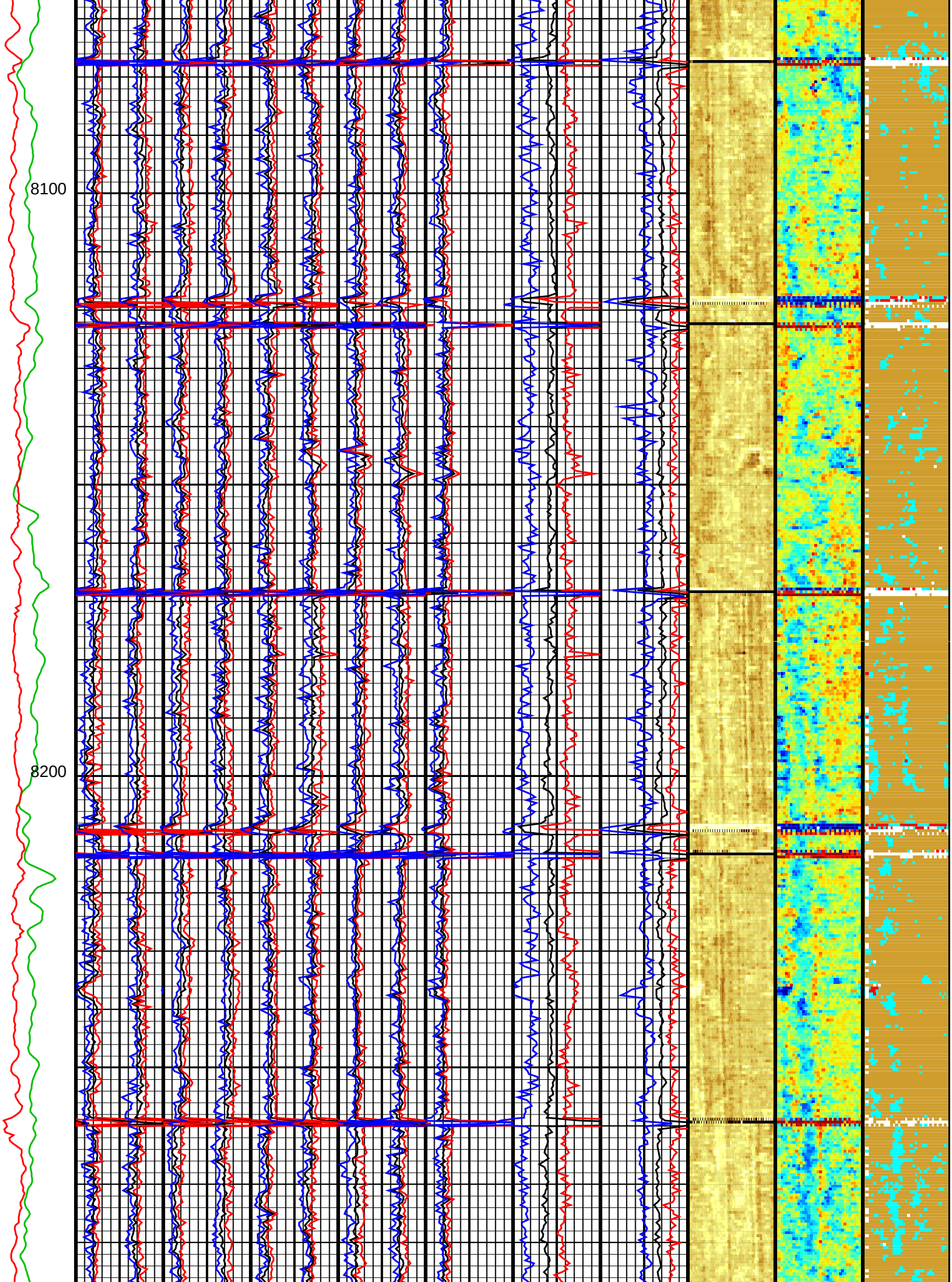
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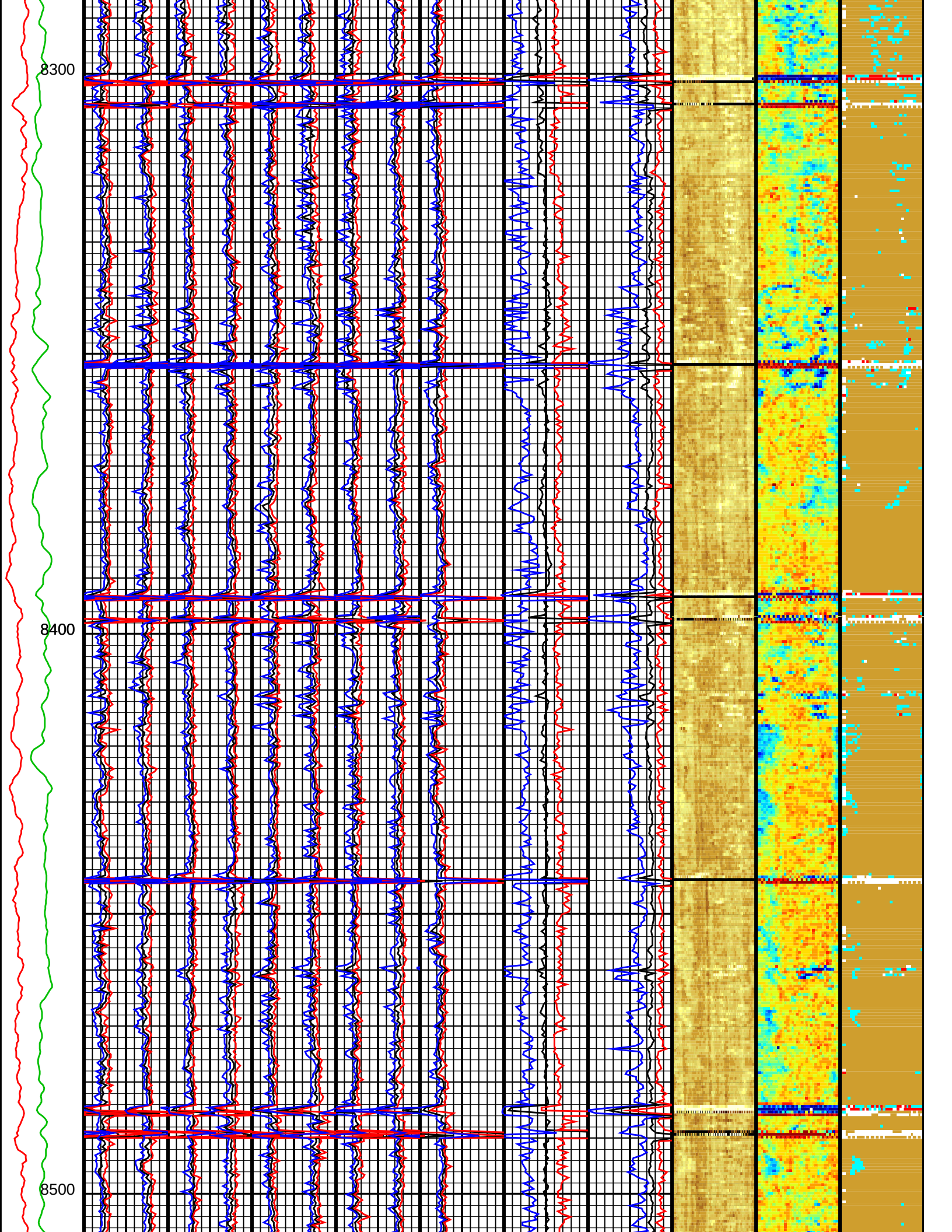
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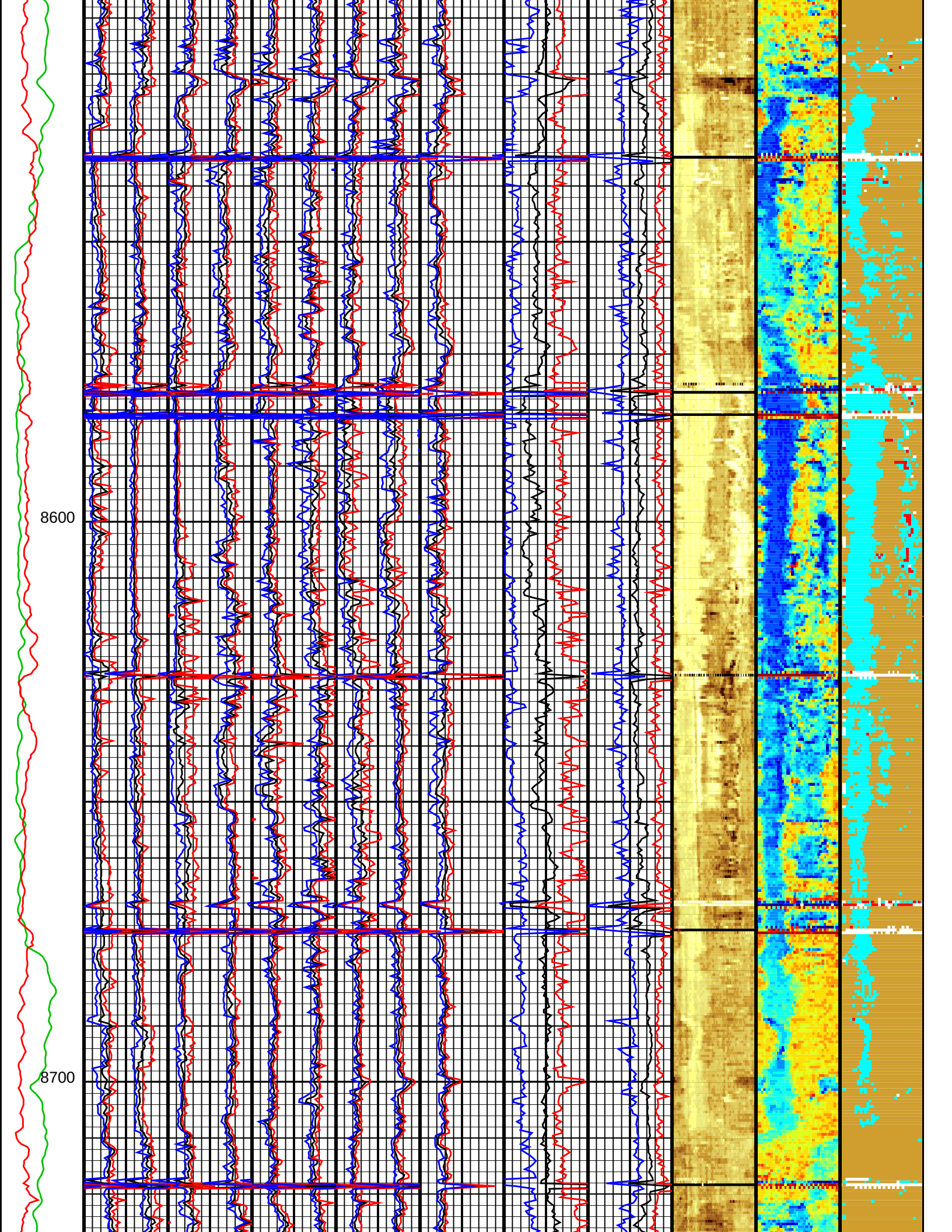
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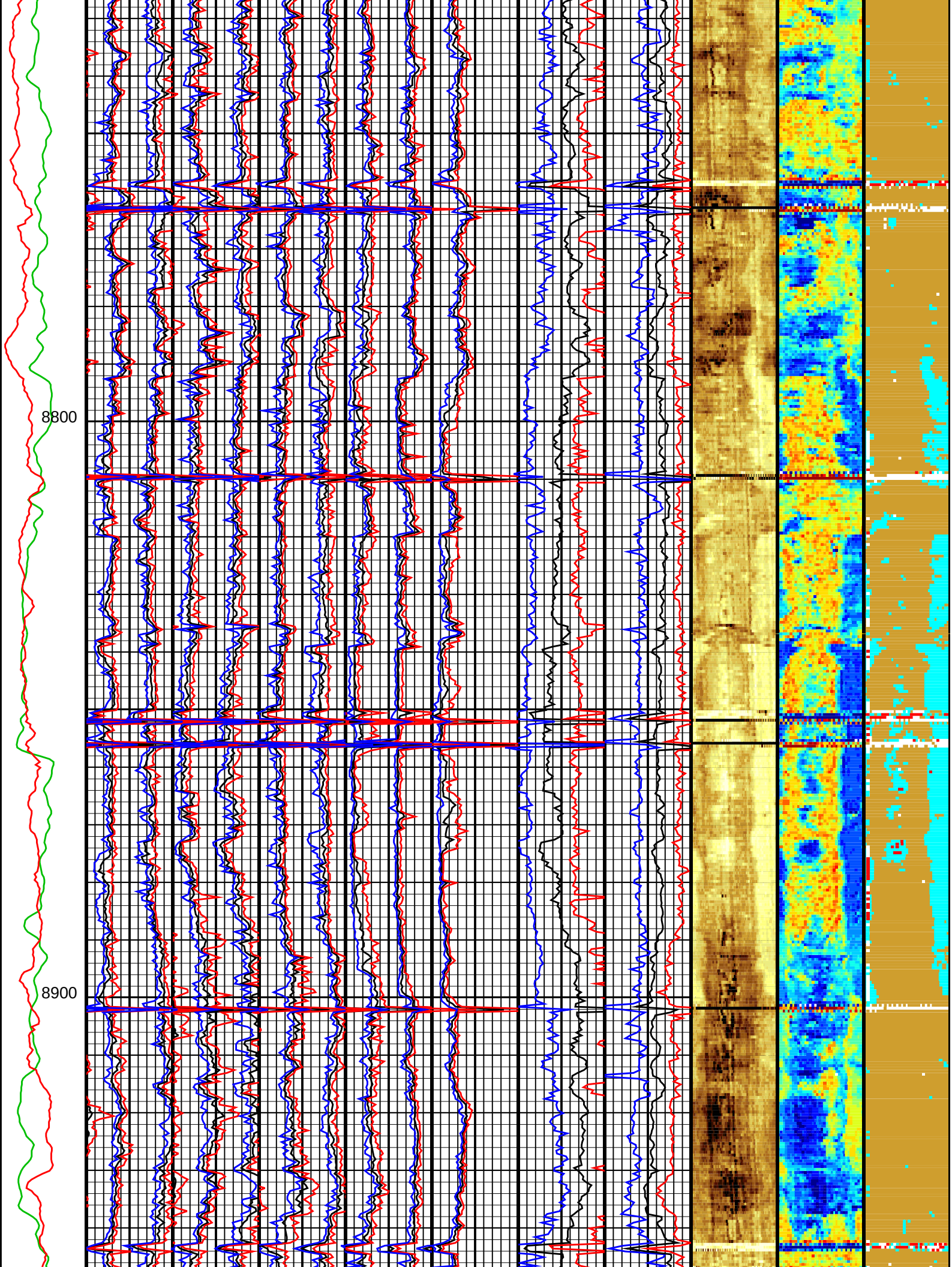
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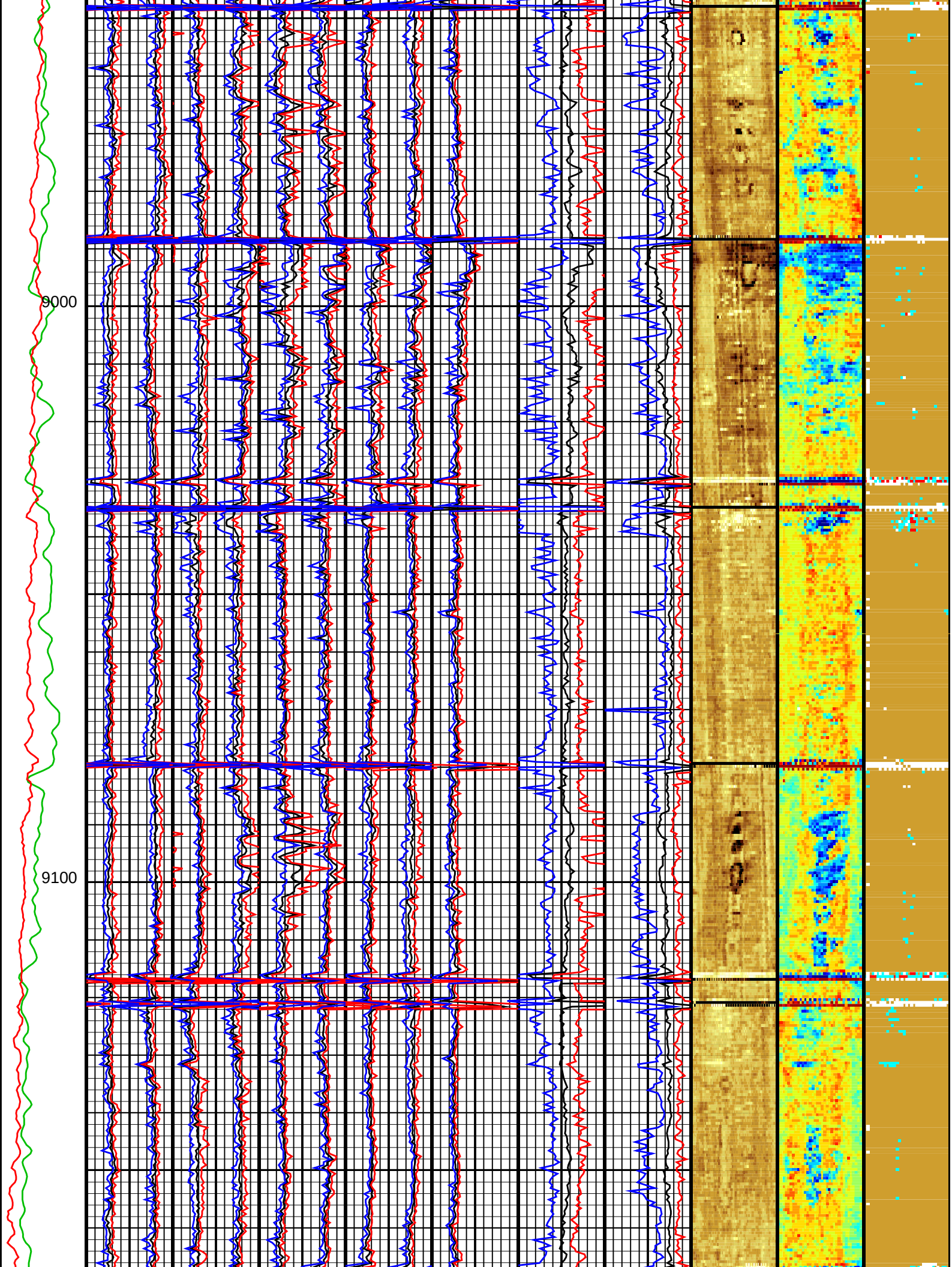
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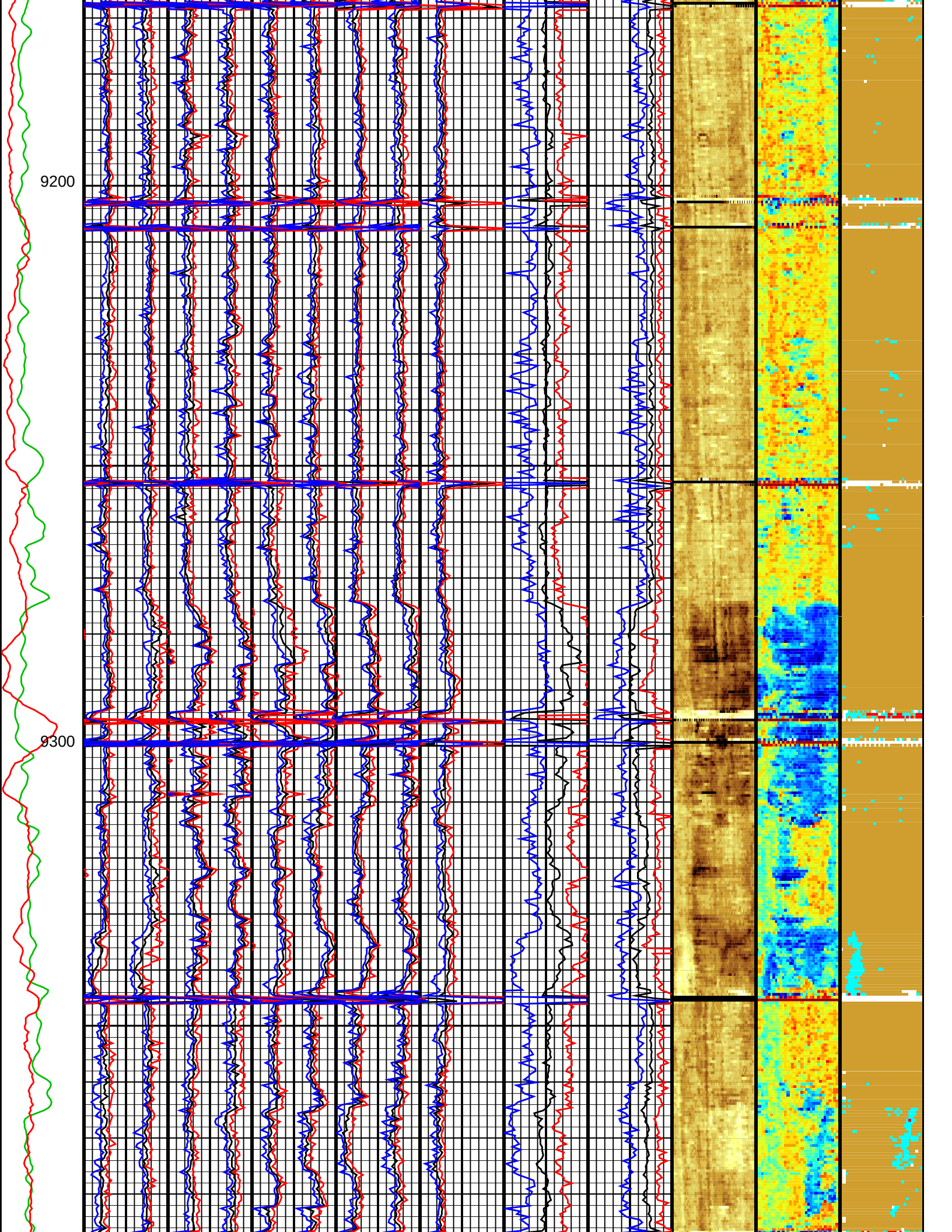
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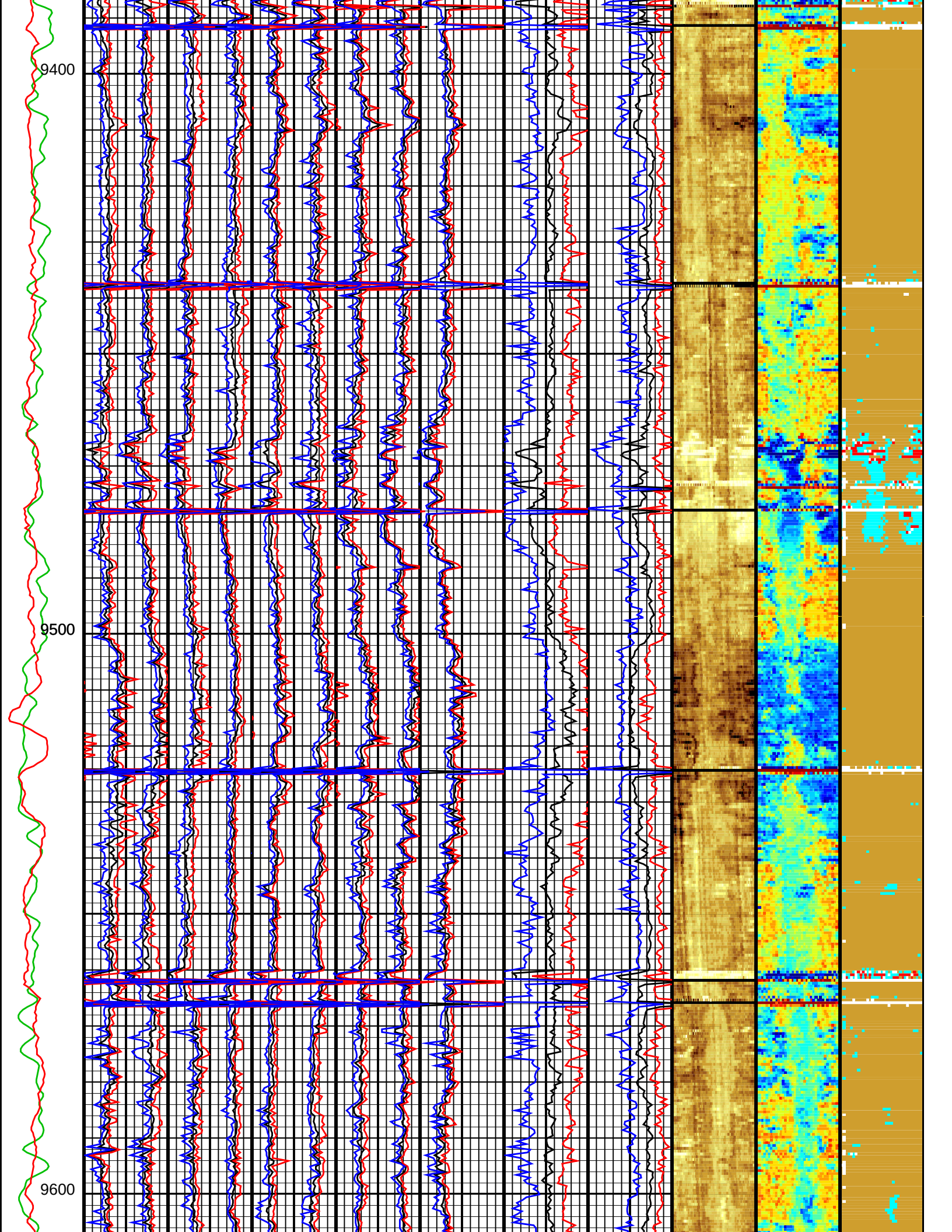
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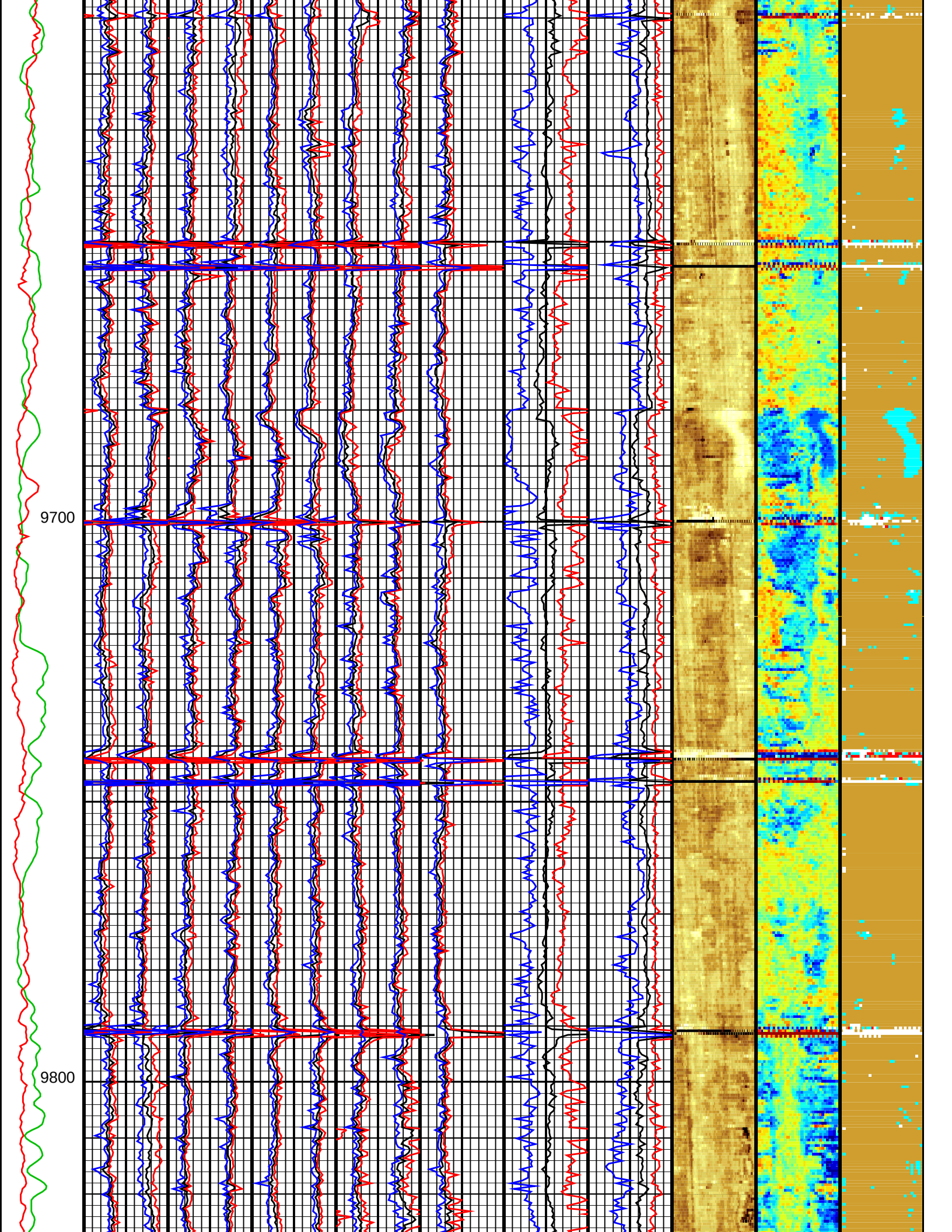
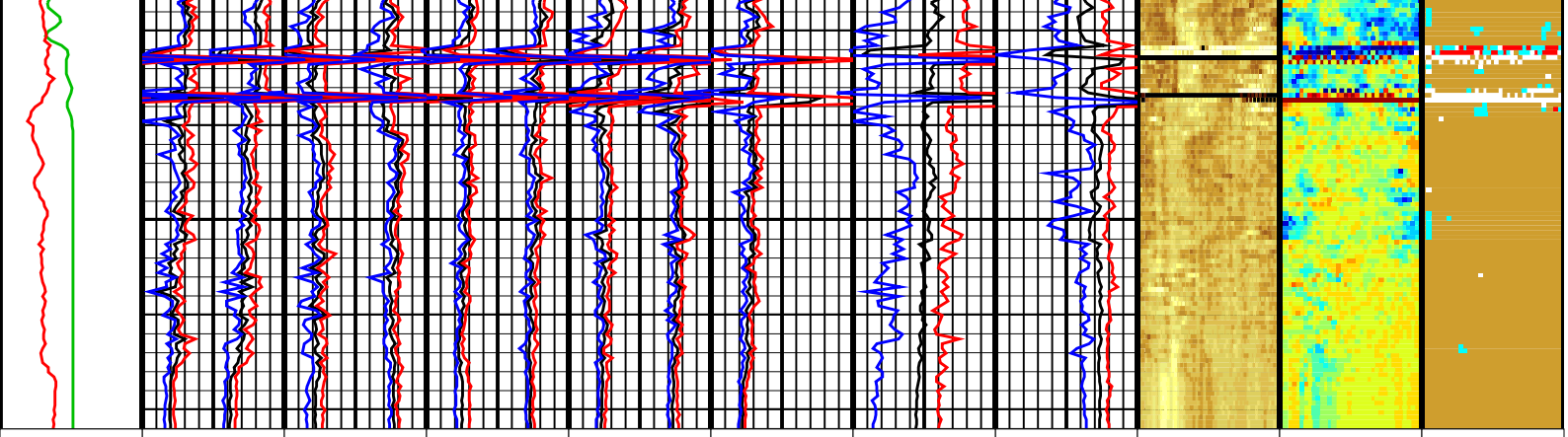

9700
9800



Eccent. (ECCE) 0 (IN) 0.5	Average Acoustic Impedance #1 (AV_AI1) (MRAY) 0 15	Average Acoustic Impedance #3 (AV_AI3) (MRAY) 0 15	Average Acoustic Impedance #5 (AV_AI5) (MRAY) 0 15	Average Acoustic Impedance #7 (AV_AI7) (MRAY) 0 15	Average Acoustic Impedance #9 (AV_AI9) (MRAY) 0 15	Average of AI (AIAV) (MRAY) 0 7.5	Minimum Flexural Attenuation (U−USIT_UFAN) (DB/M) 0 150	−500.0000, 0.5000, 1.0000, 1.5000, 2.0000, 2.5000, 3.0000, 3.5000, 4.0000, 4.5000, 5.0000, 5.5000, 6.0000, 6.5000, 7.0000, 7.5000, 8.0000 Raw Acoustic Imped. (AIBK) (MRAY)	0.0000, 50.0000, 57.0000, 64.0000, 71.0000, 78.0000, 85.0000, 92.0000, 99.0000, 106.0000, 113.0000, 120.0000, 127.0000, 134.0000, 141.0000, 148.0000, 155.0000 Flexural Attenuation (U−USIT_UFAK) (DB/M)	0.5000, 1.5000, 2.5000, 3.5000 Solid Liquid Gas Map (U−USIT_USLP) (−−−−
Gamma Ray (GR) (GAPI) 0 150	Average Acoustic Impedance #2 (AV_AI2) (MRAY) −7.5 7.5	Average Acoustic Impedance #4 (AV_AI4) (MRAY) −7.5 7.5	Average Acoustic Impedance #6 (AV_AI6) (MRAY) −7.5 7.5	Average Acoustic Impedance #8 (AV_AI8) (MRAY) −7.5 7.5	Maximum Acoustic Impedance #9 (MAX_AI9) (MRAY) 0 15	Minimum of AI (AIMN) (MRAY) 0 7.5	Average Flexural Attenuation (U−USIT_UFAV) (DB/M) 0 150			
	Maximum Acoustic Impedance #1 (MAX_AI1) (MRAY) 0 15	Maximum Acoustic Impedance #3 (MAX_AI3) (MRAY) 0 15	Maximum Acoustic Impedance #5 (MAX_AI5) (MRAY) 0 15	Maximum Acoustic Impedance #7 (MAX_AI7) (MRAY) 0 15	Minimum Acoustic Impedance #9 (MIN_AI9) (MRAY) 0 15	Maximum of AI (AIMX) (MRAY) 0 7.5	Maximum Flexural Attenuation (U−USIT_UFAX) (DB/M) 0 150			
	Maximum Acoustic Impedance #2 (MAX_AI2) (MRAY) −7.5 7.5	Maximum Acoustic Impedance #4 (MAX_AI4) (MRAY) −7.5 7.5	Maximum Acoustic Impedance #6 (MAX_AI6) (MRAY) −7.5 7.5	Maximum Acoustic Impedance #8 (MAX_AI8) (MRAY) −7.5 7.5						
	Minimum Acoustic Impedance #1 (MIN_AI1) (MRAY) 0 15	Minimum Acoustic Impedance #3 (MIN_AI3) (MRAY) 0 15	Minimum Acoustic Impedance #5 (MIN_AI5) (MRAY) 0 15	Minimum Acoustic Impedance #7 (MIN_AI7) (MRAY) 0 15						
	Minimum Acoustic Impedance #2 (MIN_AI2) (MRAY) −7.5 7.5	Minimum Acoustic Impedance #4 (MIN_AI4) (MRAY) −7.5 7.5	Minimum Acoustic Impedance #6 (MIN_AI6) (MRAY) −7.5 7.5	Minimum Acoustic Impedance #8 (MIN_AI8) (MRAY) −7.5 7.5						

Format: M_Goodwin Vertical Scale: 5" per 100' Graphics File Created: 18−Sep−2010 11:12

OP System Version: 18C0−147

USIT−D	18C0−147	HILTH−FTB	18C0−147
DTC−H	18C0−147		

All USI Images are outside views

USI : LOW Frequency Compression Mode Used For Logging.

Recommended casing thickness range for optimum cement impedance measurement : 0.27 to 0.6 IN.

Input DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_023LUP	FN:22	PRODUCER	18−Sep−2010 07:07	9866.0 FT	1727.5 FT

Output DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_025PUP	FN:24	PRODUCER	18−Sep−2010 11:12

Schlumberger

GOODWIN 0.1 INCH

MAXIS Field Log

Company: ExxonMobil Production Corp Well: PCU 296−5A1

Input DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_023LUP	FN:22	PRODUCER	18−Sep−2010 07:07	9866.0 FT	1727.5 FT

Output DLIS Files

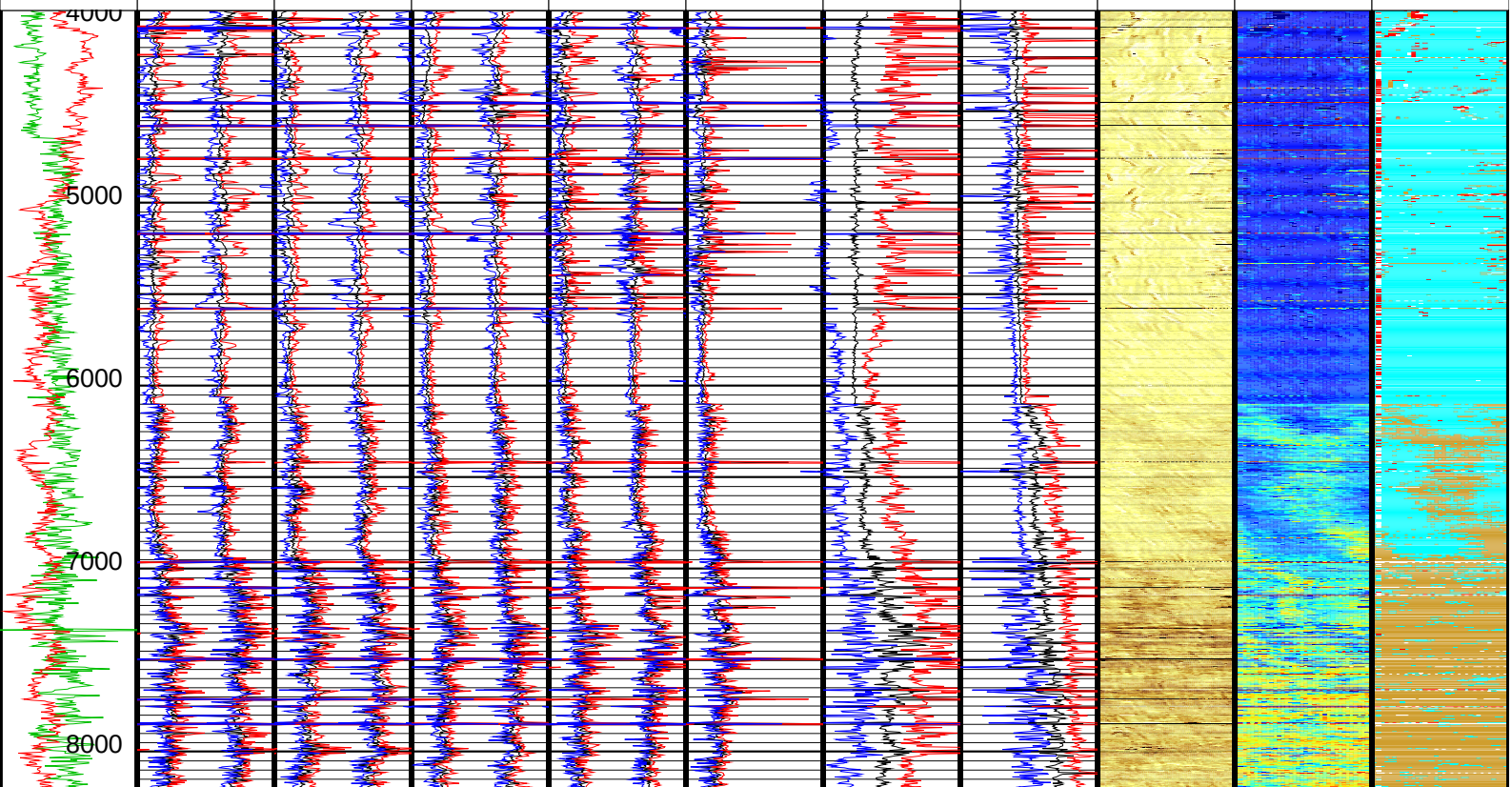
DEFAULT	USI_TLD_MCFL_CNL_025PUP	FN:24	PRODUCER	18−Sep−2010 11:12	9872.0 FT	3949.5 FT

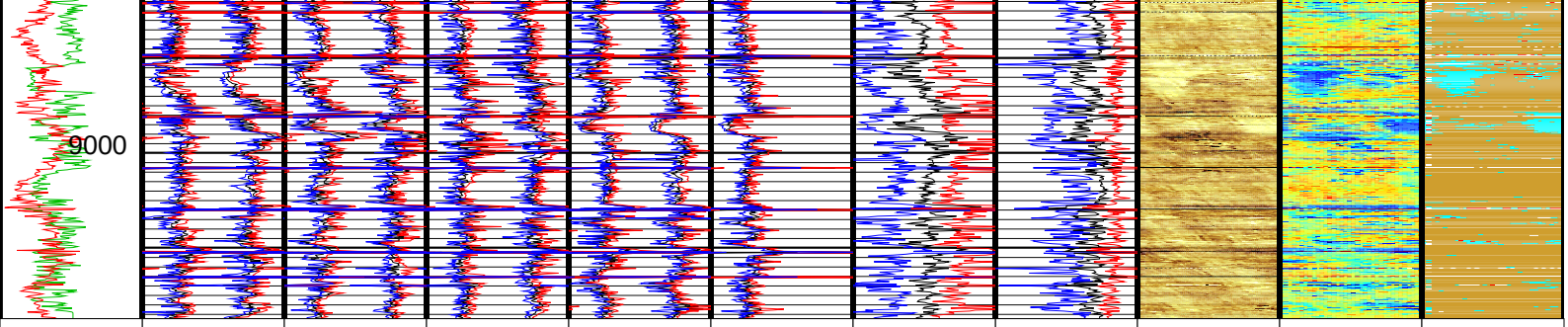
OP System Version: 18C0−147

USIT−D	18C0−147	HILTH−FTB	18C0−147
DTC−H	18C0−147		

Minimum Acoustic Impedance #2 (MIN_AI2) (MRAY)	Minimum Acoustic Impedance #4 (MIN_AI4) (MRAY)	Minimum Acoustic Impedance #6 (MIN_AI6) (MRAY)	Minimum Acoustic Impedance #8 (MIN_AI8) (MRAY)
−7.5 7.5	−7.5 7.5	−7.5 7.5	−7.5 7.5
Minimum Acoustic Impedance #1 (MIN_AI1) (MRAY)	Minimum Acoustic Impedance #3 (MIN_AI3) (MRAY)	Minimum Acoustic Impedance #5 (MIN_AI5) (MRAY)	Minimum Acoustic Impedance #7 (MIN_AI7) (MRAY)

	(MRAY) 0 15	(MRAY) 0 15	(MRAY) 0 15	(MRAY) 0 15					
	Maximum Acoustic Impedance #2 (MAX_ AI2) (MRAY) −7.5 7.5	Maximum Acoustic Impedance #4 (MAX_ AI4) (MRAY) −7.5 7.5	Maximum Acoustic Impedance #6 (MAX_ AI6) (MRAY) −7.5 7.5	Maximum Acoustic Impedance #8 (MAX_ AI8) (MRAY) −7.5 7.5					
	Maximum Acoustic Impedance #1 (MAX_ AI1) (MRAY) 0 15	Maximum Acoustic Impedance #3 (MAX_ AI3) (MRAY) 0 15	Maximum Acoustic Impedance #5 (MAX_ AI5) (MRAY) 0 15	Maximum Acoustic Impedance #7 (MAX_ AI7) (MRAY) 0 15	Minimum Acoustic Impedance #9 (MIN_ AI9) (MRAY) 0 15	Maximum of AI (AIMX) (MRAY) 0 7.5	Maximum Flexural Attenuation (U−USIT_ UFAX) (DB/M) 0 150		
Gamma Ray (GR) (GAPI) 0 150	Average Acoustic Impedance #2 (AV_ AI2) (MRAY) −7.5 7.5	Average Acoustic Impedance #4 (AV_ AI4) (MRAY) −7.5 7.5	Average Acoustic Impedance #6 (AV_ AI6) (MRAY) −7.5 7.5	Average Acoustic Impedance #8 (AV_ AI8) (MRAY) −7.5 7.5	Maximum Acoustic Impedance #9 (MAX_ AI9) (MRAY) 0 15	Minimum of AI (AIMN) (MRAY) 0 7.5	Average Flexural Attenuation (U−USIT_ UFAV) (DB/M) 0 150		
Eccent. (ECCE) 0 (IN) 0.5	Average Acoustic Impedance #1 (AV_ AI1) (MRAY) 0 15	Average Acoustic Impedance #3 (AV_ AI3) (MRAY) 0 15	Average Acoustic Impedance #5 (AV_ AI5) (MRAY) 0 15	Average Acoustic Impedance #7 (AV_ AI7) (MRAY) 0 15	Average Acoustic Impedance #9 (AV_ AI9) (MRAY) 0 15	Average of AI (AIAV) (MRAY) 0 7.5	Minimum Flexural Attenuation (U−USIT_ UFAN) (DB/M) 0 150	−500.0000, 0.5000, 1.0000, 1.5000, 2.0000, 2.5000, 3.0000, 3.5000, 4.0000, 4.5000, 5.0000, 5.5000, 6.0000, 6.5000, 7.0000, 7.5000, 8.0000 Raw Acoustic Imped. (AIBK) (MRAY)	0.0000, 50.0000, 57.0000, 64.0000, 71.0000, 78.0000, 85.0000, 92.0000, 99.0000, 106.0000, 113.0000, 120.0000, 127.0000, 134.0000, 141.0000, 148.0000, 155.0000 Flexural Attenuation (U−USIT_ UFAK) (DB/M)	0.5000, 1.5000, 2.5000, 3.5000 Solid Liquid Gas Map (U−USIT_ USLP) (−−−−





Eccent. (ECCE) 0 (IN) 0.5	Average Acoustic Impedance #1 (AV_AI1) (MRAY) 0 15	Average Acoustic Impedance #3 (AV_AI3) (MRAY) 0 15	Average Acoustic Impedance #5 (AV_AI5) (MRAY) 0 15	Average Acoustic Impedance #7 (AV_AI7) (MRAY) 0 15	Average Acoustic Impedance #9 (AV_AI9) (MRAY) 0 15	Average of AI (AIAV) (MRAY) 0 7.5	Minimum Flexural Attenuation (U−USIT_UFAN) (DB/M) 0 150	−500.0000, 0.5000, 1.0000, 1.5000, 2.0000, 2.5000, 3.0000, 3.5000, 4.0000, 4.5000, 5.0000, 5.5000, 6.0000, 6.5000, 7.0000, 7.5000, 8.0000 Raw Acoustic Imped. (AIBK) (MRAY)	0.0000, 50.0000, 57.0000, 64.0000, 71.0000, 78.0000, 85.0000, 92.0000, 99.0000, 106.0000, 113.0000, 120.0000, 127.0000, 134.0000, 141.0000, 148.0000, 155.0000 Flexural Attenuation (U−USIT_UFAK) (DB/M)	0.5000, 1.5000, 2.5000, 3.5000 Solid Liquid Gas Map (U−USIT_USLP) (−−−−
Gamma Ray (GR) (GAPI) 0 150	Average Acoustic Impedance #2 (AV_AI2) (MRAY) −7.5 7.5	Average Acoustic Impedance #4 (AV_AI4) (MRAY) −7.5 7.5	Average Acoustic Impedance #6 (AV_AI6) (MRAY) −7.5 7.5	Average Acoustic Impedance #8 (AV_AI8) (MRAY) −7.5 7.5	Maximum Acoustic Impedance #9 (MAX_AI9) (MRAY) 0 15	Minimum of AI (AIMN) (MRAY) 0 7.5	Average Flexural Attenuation (U−USIT_UFAV) (DB/M) 0 150			
	Maximum Acoustic Impedance #1 (MAX_AI1) (MRAY) 0 15	Maximum Acoustic Impedance #3 (MAX_AI3) (MRAY) 0 15	Maximum Acoustic Impedance #5 (MAX_AI5) (MRAY) 0 15	Maximum Acoustic Impedance #7 (MAX_AI7) (MRAY) 0 15	Minimum Acoustic Impedance #9 (MIN_AI9) (MRAY) 0 15	Maximum of AI (AIMX) (MRAY) 0 7.5	Maximum Flexural Attenuation (U−USIT_UFAX) (DB/M) 0 150			
	Maximum Acoustic Impedance #2 (MAX_AI2) (MRAY) −7.5 7.5	Maximum Acoustic Impedance #4 (MAX_AI4) (MRAY) −7.5 7.5	Maximum Acoustic Impedance #6 (MAX_AI6) (MRAY) −7.5 7.5	Maximum Acoustic Impedance #8 (MAX_AI8) (MRAY) −7.5 7.5						
	Minimum Acoustic Impedance #1 (MIN_AI1) (MRAY) 0 15	Minimum Acoustic Impedance #3 (MIN_AI3) (MRAY) 0 15	Minimum Acoustic Impedance #5 (MIN_AI5) (MRAY) 0 15	Minimum Acoustic Impedance #7 (MIN_AI7) (MRAY) 0 15						
	Minimum Acoustic Impedance #2 (MIN_AI2) (MRAY) −7.5 7.5	Minimum Acoustic Impedance #4 (MIN_AI4) (MRAY) −7.5 7.5	Minimum Acoustic Impedance #6 (MIN_AI6) (MRAY) −7.5 7.5	Minimum Acoustic Impedance #8 (MIN_AI8) (MRAY) −7.5 7.5						

Format: M_Goodwin_Compressed Vertical Scale: 0.1" per 100' Graphics File Created: 18−Sep−2010 11:12

OP System Version: 18C0−147

USIT−D	18C0−147	HILTH−FTB	18C0−147
DTC−H	18C0−147		

All USI Images are outside views

USI : LOW Frequency Compression Mode Used For Logging.

Recommended casing thickness range for optimum cement impedance measurement : 0.27 to 0.6 IN.

Input DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_023LUP	FN:22	PRODUCER	18−Sep−2010 07:07	9866.0 FT	1727.5 FT

Output DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_025PUP	FN:24	PRODUCER	18−Sep−2010 11:12

Schlumberger

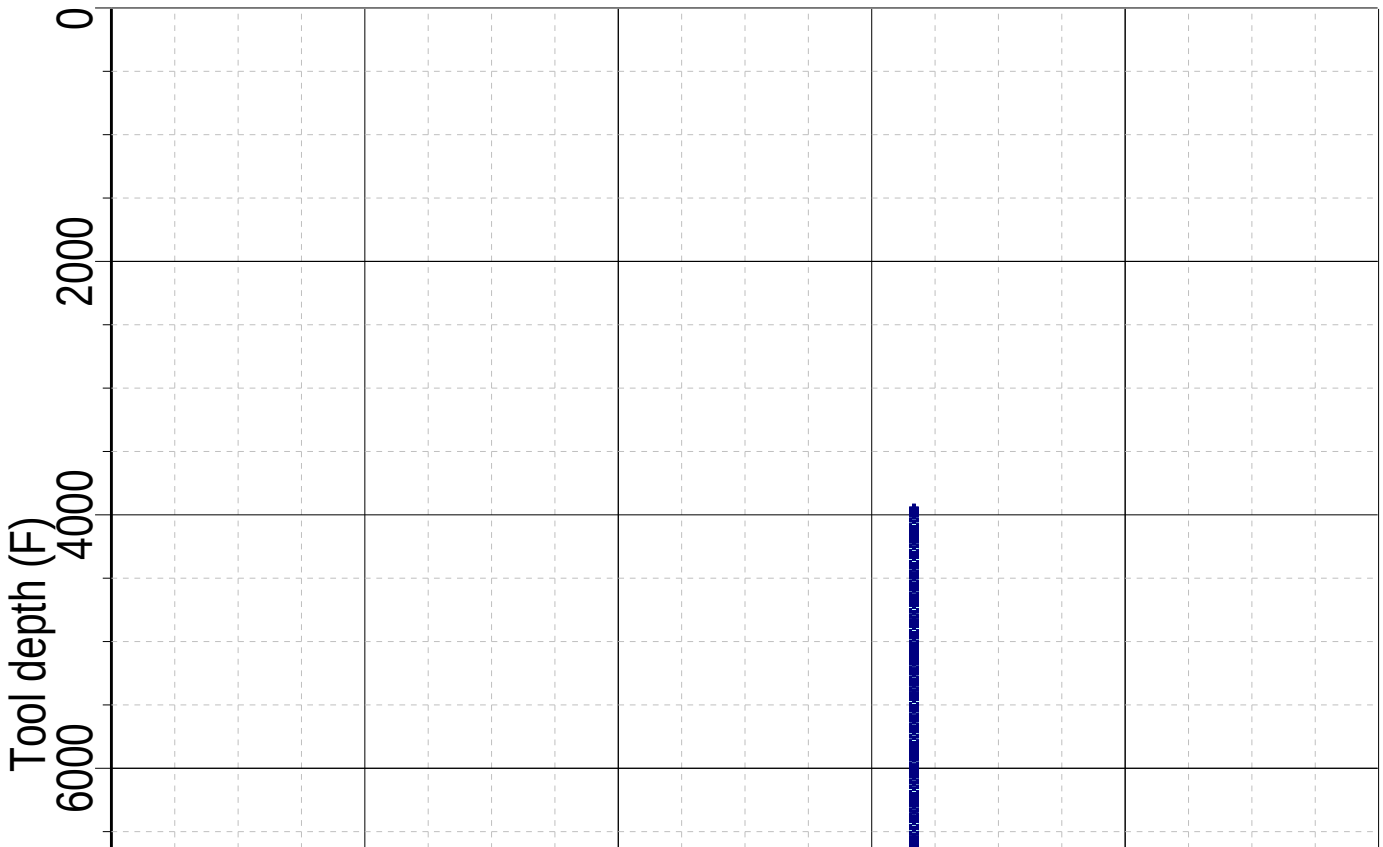
FLUID PROPERTIES

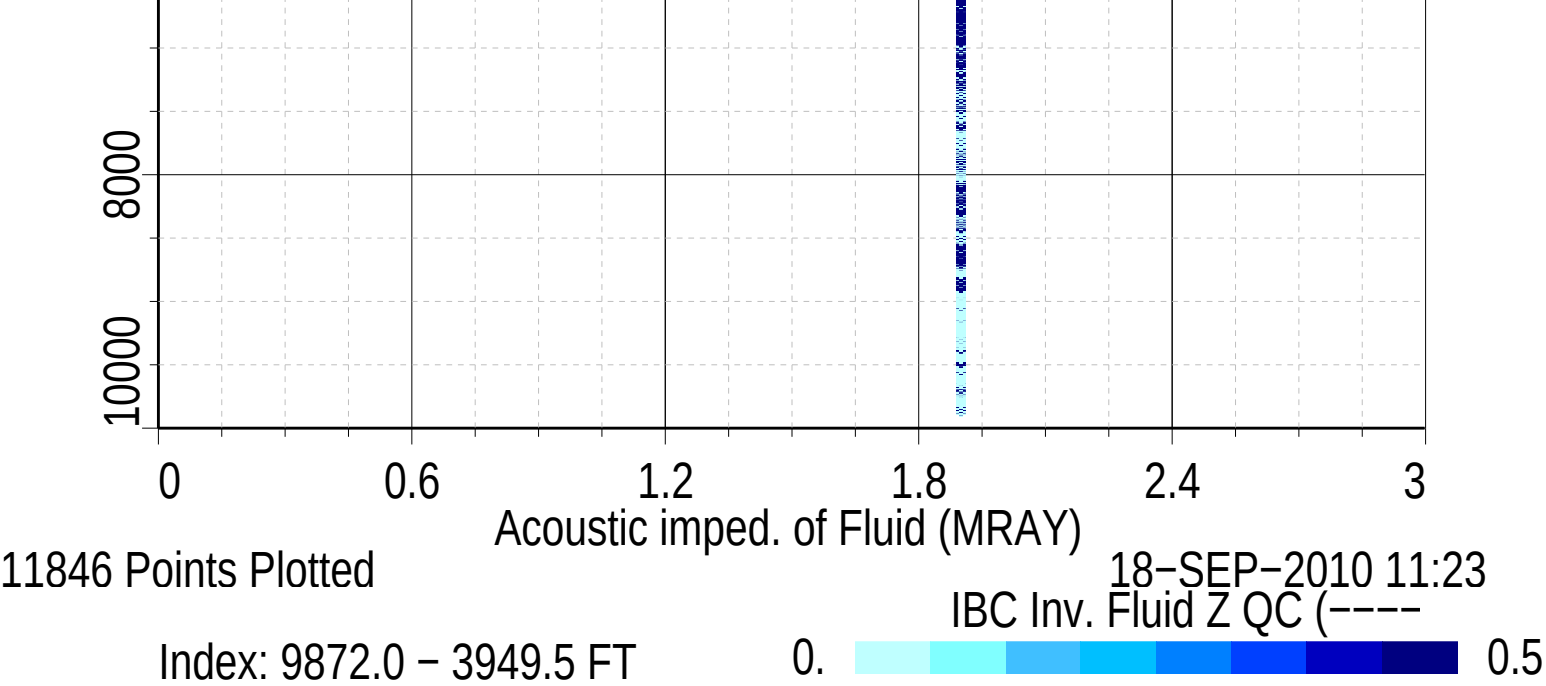
MAXIS Field Log

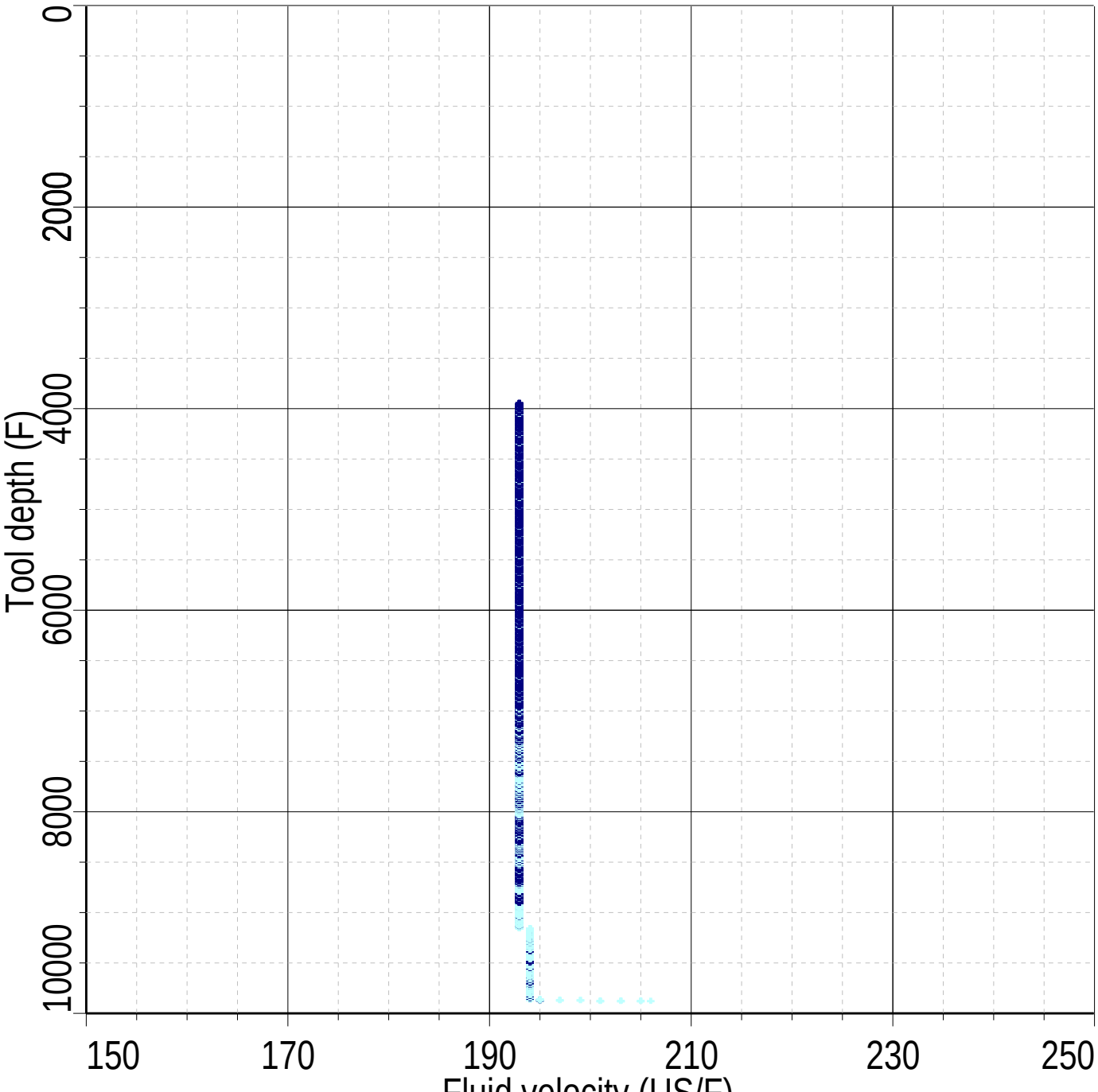
Index: 9872.0 − 3949.5 FT

IBC Inv. Fluid Z QC (−−−−

0. 0.5




8000
10000
0
0.6
1.2
1.8
2.4
3
Acoustic imped. of Fluid (MRAY)
11846 Points Plotted
18−SEP−2010 11:23
IBC Inv. Fluid Z QC (−−−−
Index: 9872.0 − 3949.5 FT
0.
0.5


0
2000
4000
6000
8000
10000
Tool depth (F)
150
170
190
210
230
250

Schlumberger

REPEAT PASS

MAXIS Field Log

Company: ExxonMobil Production Corp **Well: PCU 296−5A1**

Input DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_021LUP	FN:20	PRODUCER	18−Sep−2010 06:36	9866.5 FT	9606.0 FT

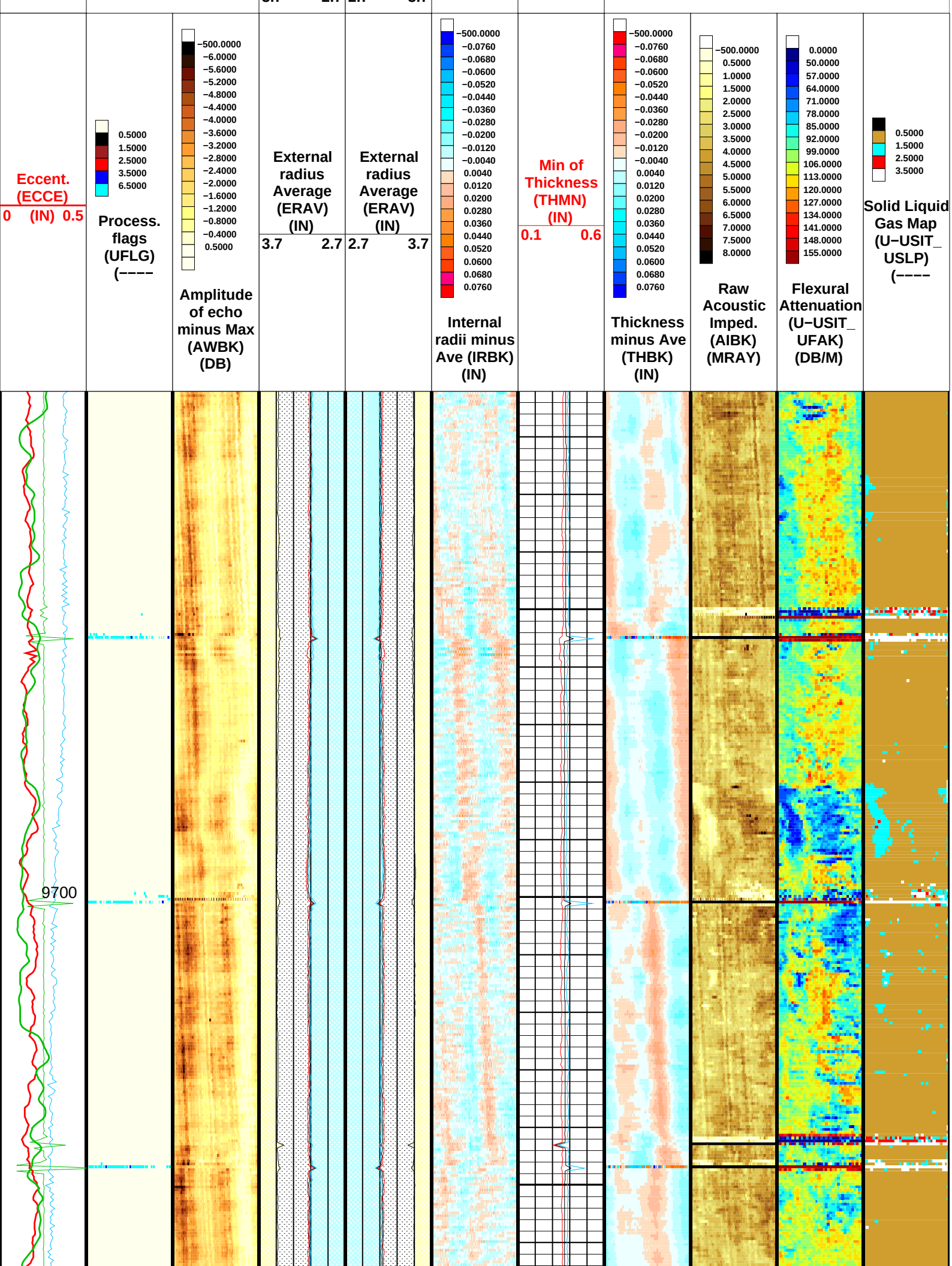
Output DLIS Files

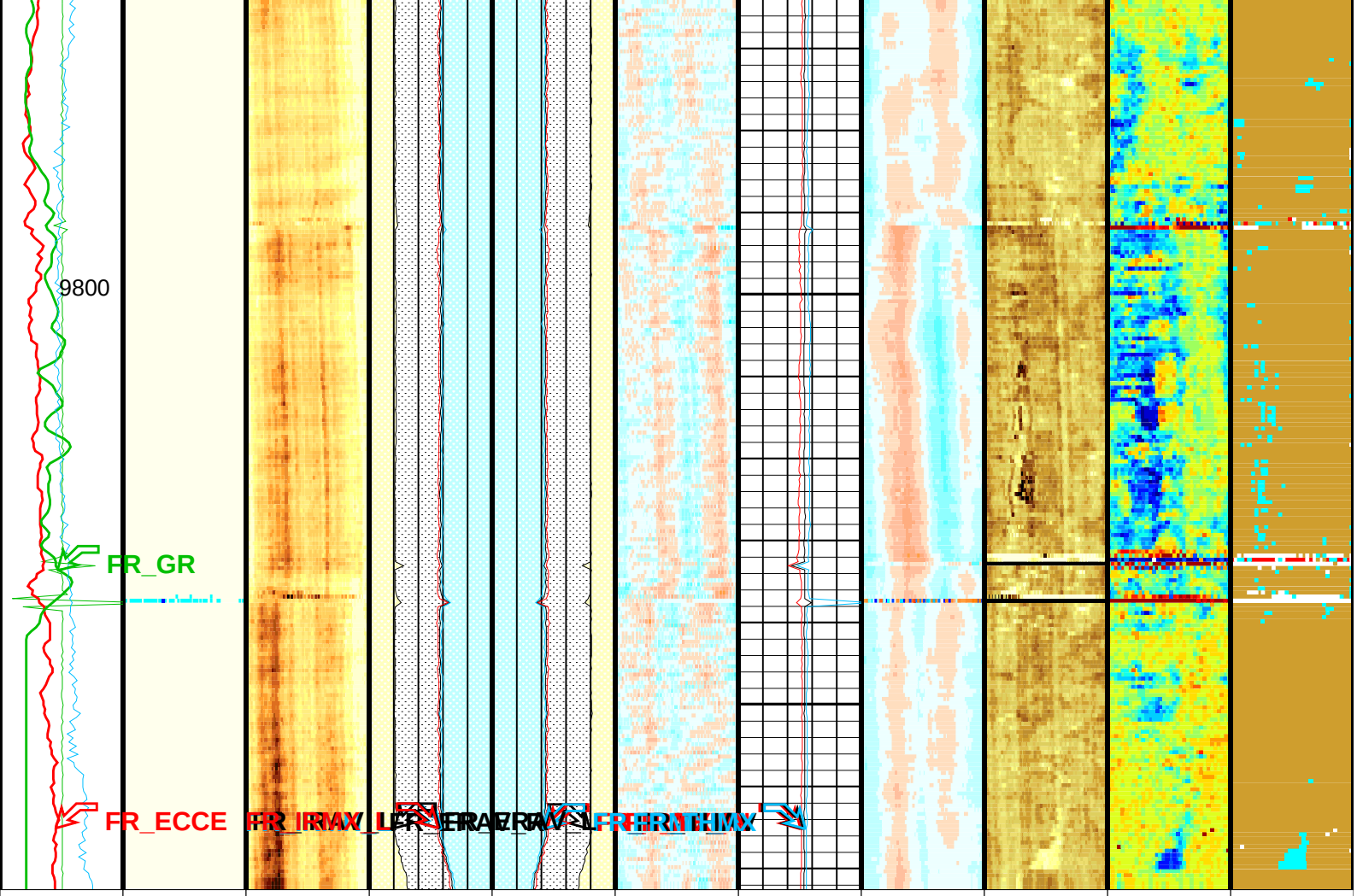
DEFAULT	USI_TLD_MCFL_CNL_024PUP	FN:23	PRODUCER	18−Sep−2010 11:08	9872.5 FT	9612.0 FT

OP System Version: 18C0−147

USIT−D	18C0−147	HILTH−FTB	18C0−147
DTC−H	18C0−147		

Image rotation (UCAZ) (DEG) 0 360				
Tool/Tot. Drag From D4T to STIA				
Cable Drag From D4T to STIT				
Stuck Stretch (STIT) 0 (F) 50				
Gamma Ray (GR) (GAPI) 0 150	Min of Internal radius (IRMN) (IN) 3.7 2.7	Min of Internal radius (IRMN) (IN) 2.7 3.7		
RSAV (RSAV) (RPS) 6 7.5	Internal radius Maximum (IRMX) (IN) 3.7 2.7	Internal radius Maximum (IRMX) (IN) 2.7 3.7	Maximum of Thickness (THMX) (IN) 0.1 0.6	
CCL (CCLU) (−−−− −20 20	Internal radius Average (IRAV) (IN) 3.7 2.7	Internal radius Average (IRAV) (IN) 2.7 3.7	Average of Thickness (THAV) (IN) 0.1 0.6	


Eccent. (ECCE)
0 (IN) 0.5
0.5000
1.5000
2.5000
3.5000
6.5000
Process. flags (UFLG) (----
−500.0000
−6.0000
−5.6000
−5.2000
−4.8000
−4.4000
−4.0000
−3.6000
−3.2000
−2.8000
−2.4000
−2.0000
−1.6000
−1.2000
−0.8000
−0.4000
0.5000
Amplitude of echo minus Max (AWBK) (DB)
External radius Average (ERAV) (IN)
3.7 2.7
External radius Average (ERAV) (IN)
2.7 3.7
−500.0000
−0.0760
−0.0680
−0.0600
−0.0520
−0.0440
−0.0360
−0.0280
−0.0200
−0.0120
−0.0040
0.0040
0.0120
0.0200
0.0280
0.0360
0.0440
0.0520
0.0600
0.0680
0.0760
Internal radii minus Ave (IRBK) (IN)
Min of Thickness (THMN) (IN)
0.1 0.6
−500.0000
−0.0760
−0.0680
−0.0600
−0.0520
−0.0440
−0.0360
−0.0280
−0.0200
−0.0120
−0.0040
0.0040
0.0120
0.0200
0.0280
0.0360
0.0440
0.0520
0.0600
0.0680
0.0760
Thickness minus Ave (THBK) (IN)
−500.0000
0.5000
1.0000
1.5000
2.0000
2.5000
3.0000
3.5000
4.0000
4.5000
5.0000
5.5000
6.0000
6.5000
7.0000
7.5000
8.0000
Raw Acoustic Imped. (AIBK) (MRAY)
0.0000
50.0000
57.0000
64.0000
71.0000
78.0000
85.0000
92.0000
99.0000
106.0000
113.0000
120.0000
127.0000
134.0000
141.0000
148.0000
155.0000
Flexural Attenuation (U−USIT_ UFAK) (DB/M)
0.5000
1.5000
2.5000
3.5000
Solid Liquid Gas Map (U−USIT_ USLP) (----
9700



Eccent. (ECCE)
0 (IN) 0.5

Process. flags (UFLG) (----
0.5000
1.5000
2.5000
3.5000
6.5000

Amplitude of echo minus Max (AWBK) (DB)
−500.0000
−6.0000
−5.6000
−5.2000
−4.8000
−4.4000
−4.0000
−3.6000
−3.2000
−2.8000
−2.4000
−2.0000
−1.6000
−1.2000
−0.8000
−0.4000
0.5000

External radius Average (ERAV) (IN)
3.7 2.7

External radius Average (ERAV) (IN)
2.7 3.7

Internal radii minus Ave (IRBK) (IN)
−500.0000
−0.0760
−0.0680
−0.0600
−0.0520
−0.0440
−0.0360
−0.0280
−0.0200
−0.0120
−0.0040
0.0040
0.0120
0.0200
0.0280
0.0360
0.0440
0.0520
0.0600
0.0680
0.0760

Min of Thickness (THMN) (IN)
0.1 0.6

Thickness minus Ave (THBK) (IN)
−500.0000
−0.0760
−0.0680
−0.0600
−0.0520
−0.0440
−0.0360
−0.0280
−0.0200
−0.0120
−0.0040
0.0040
0.0120
0.0200
0.0280
0.0360
0.0440
0.0520
0.0600
0.0680
0.0760

Raw Acoustic Imped. (AIBK) (MRAY)
−500.0000
0.5000
1.0000
1.5000
2.0000
2.5000
3.0000
3.5000
4.0000
4.5000
5.0000
5.5000
6.0000
6.5000
7.0000
7.5000
8.0000

Flexural Attenuation (U−USIT_ UFAK) (DB/M)
0.0000
50.0000
57.0000
64.0000
71.0000
78.0000
85.0000
92.0000
99.0000
106.0000
113.0000
120.0000
127.0000
134.0000
141.0000
148.0000
155.0000

Solid Liquid Gas Map (U−USIT_ USLP) (----
0.5000
1.5000
2.5000
3.5000

CCL (CCLU) (----
−20 20

Internal radius Average (IRAV) (IN)
3.7 2.7

Internal radius Average (IRAV) (IN)
2.7 3.7

Average of Thickness (THAV) (IN)
0.1 0.6

RSAV (RSAV) (RPS)
6 7.5

Internal radius Maximum (IRMX) (IN)
3.7 2.7

Internal radius Maximum (IRMX) (IN)
2.7 3.7

Maximum of Thickness (THMX) (IN)
0.1 0.6

Gamma

Min of Internal

Min of Internal

Gamma Ray (GR) (GAPI)	Internal radius (IRMN) (IN)	Internal radius (IRMN) (IN)
0 150	3.7 2.7	2.7 3.7

Stuck Stretch (STIT)
0 (F) 50

Cable Drag From D4T to STIT

Tool/Tot. Drag From D4T to STIA

Image rotation (UCAZ) (DEG)
0 360

Format: USI_IBC_SLG_Composite Vertical Scale: 5" per 100' Graphics File Created: 18−Sep−2010 11:09

OP System Version: 18C0−147

USIT−D	18C0−147	HILTH−FTB	18C0−147
DTC−H	18C0−147		

All USI Images are outside views

USI : LOW Frequency Compression Mode Used For Logging.

Recommended casing thickness range for optimum cement impedance measurement : 0.27 to 0.6 IN.

Parameters

DLIS Name	Description	Value	
USIT−D: Ultrasonic Imaging − D			
AGMN	Minimum Gain of Cartridge	−4	DB
AGMX	Maximum Gain of Cartridge	20	DB
BERJ	Bad Echo Rejection	ON	
CDIA	Casing Outer Diameter	7	IN
CSDE	Casing Density	486.94	LBCF
CSID	Casing Inner Diameter	6.276	IN
DFVL	Default Fluid Velocity	206	US/F
DOT	Diameter of Transducer Sensor	2.874	IN
EMXV	EMEX Voltage	110	V
FSOD	Fluid Slowness Fits Casing Outer Diameter	5_UFSL_N_ZMUD	
IMAR	Image Rotation	OFF	
MW	Mud Weight	9.6	LB/G
RCOD	Reference Calibrator Outer Diameter	7	IN
RCSO	Reference Calibrator Standoff	1.1811	IN
RCTH	Reference Calibrator Thickness	0.2952	IN
TCUB	T^3 Processing Level	Vax_Loop	
THDH	Maximum Search Thickness (percentage of nominal)	130	
THDL	Minimum Search Thickness (percentage of nominal)	70	
THDP	Thickness Detection Policy	Fundamental	
THNO	Nominal Thickness of Casing	0.362	IN
U−USIT_CEMT	USIT Cement Type	ULTRA_LIGHT	
U−USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	0	MRAY
U−USIT_IISR	USIT IBC Inverted Fluid Slowness Resolution	1.0_US_P_FT	
U−USIT_IIZR	USIT IBC Inverted ZMUD Resolution	0.050_MRAY	
U−USIT_OCDI	USIT Outer Casing Diameter	0	IN

U−USIT_OCSH	USIT Outer Casing Shoe	0	FT
U−USIT_OCWE	USIT Outer Casing Weight	0	LB/F
U−USIT_TIEB	IBC Third Interface Echo Bin Processing	YES	
U−USIT_TIEC	IBC Third Interface Echo Cleaning	NONE	
U−USIT_TIEM	IBC Third Interface Echo Multi Tracking	NO	
U−USIT_TIEP	IBC Third Interface Echo Policy	BFEP	
U−USIT_TIER	IBC Third Interface Echo Receivers	BOTH	
U−USIT_U3WE	Third Interface Echo Window End	110	US
U−USIT_UBTP	USIT Bottom Transducer Position	UNKNOWN	
U−USIT_UFAO	USIT Flexural Attenuation Offset	−22	DB/M
U−USIT_UIAP	USIT IBC Answer Product Enabled	SolidLiquidGasMap	
U−USIT_UIST	Ultrasonic IBC Sonde Type	Sub_Ibcs_B	
U−USIT_UTAN	USIT Transducer Angles	33_DEG	
UMAO	USIT Measurement Angular Offset	−10	DEG
USTO	Ultrasonic Time Offset	−2	US
USUB	Ultrasonic Subassembly Identifier	Sub_7_inch	
UWKM	Ultrasonic Working Mode	5DEG_6IN_136UNF_LF	
VCAS	Ultrasonic Transversal Velocity in Casing	51.4	US/F
WLEN	T^3 Processing Length	21.7078	US
ZCAS	Acoustic Impedance of Casing	46.2537	MRAY
ZINI	Initial Estimate of Cement Impedance	−1	MRAY
ZMUD	Acoustic Impedance of Mud	1.9	MRAY
ZTCM	Acoustic Impedance Threshold for Cement	2.6	MRAY
ZTGS	Acoustic Impedance Threshold for Gas	0.3	MRAY
STI: Stuck Tool Indicator			
LBFR	Trigger for MAXIS First Reading Label	TDL	
STKT	STI Stuck Threshold	2.5	FT
TDD	Total Depth − Driller	14390.00	FT
TDL	Total Depth − Logger	9866.00	FT
System and Miscellaneous			
BS	Bit Size	9.875	IN
CWEI	Casing Weight	26.00	LB/F
DO	Depth Offset for Playback	6.0	FT
PP	Playback Processing	RECOMPUTE	

Input DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_021LUP	FN:20	PRODUCER	18−Sep−2010 06:36	9866.5 FT	9606.0 FT

Output DLIS Files

DEFAULT	USI_TLD_MCFL_CNL_024PUP	FN:23	PRODUCER	18−Sep−2010 11:08

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CALIBRATIONS

MAXIS Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High resolution Integrated Logging Tool−DTS Wellsite Calibration − Detector Calibration							
Before: 17−Sep−2010 15:15							
Gamma Ray Background	30.00	N/A	27.41	N/A	N/A	N/A	GAPI
Gamma Ray (Jig − Bkgd)	165.0	N/A	174.9	N/A	N/A	15.00	GAPI
High resolution Integrated Logging Tool−DTS Wellsite Calibration − Zero Measurement							
Master: 7−Sep−2010 12:00 Before: 17−Sep−2010 15:26							
CNTC Background	27.14	27.14	26.98	N/A	N/A	4.071	CPS
CFTC Background	31.05	31.05	27.46	N/A	N/A	4.658	CPS
High resolution Integrated Logging Tool−DTS Wellsite Calibration − Ratio Measurement							
Master: 7−Sep−2010 12:00							
Thermal Near Corr. (Tank)	5800	5661	N/A	N/A	N/A	N/A	CPS
Thermal Far Corr. (Tank)	2400	2261	N/A	N/A	N/A	N/A	CPS
CNTC/CFTC (Tank)	2.150	2.504	N/A	N/A	N/A	N/A	

CNTC/CFTC (Tank)	2.159	2.504	N/A	N/A	N/A	N/A	

High resolution Integrated Logging Tool−DTS Wellsite Calibration − Accelerometer Calibration
Before: 18−Sep−2010 3:09

Z−Axis Acceleration	32.19	N/A	32.11	N/A	N/A	N/A	F/S2

The HGNS Neutron Master Calibration was done with the following parameters :

NCT−B Water Temperature	70.0	DEGF.
Thermal Housing Size	3.375	IN.
NSR−F serial number	0	

High resolution Integrated Logging Tool−DTS / Equipment Identification

Primary Equipment:		
HILT Gamma−Ray Neutron Sonde−DTS	HGNS − H	3920
HGNS Gamma−Ray Device	HGR −	
HGNS Neutron Detector with Alpha Source	HCNT − H	
Z−Axis Accelerometer	HACC − H	2594
Compensated Neutron Box	CNB − AB	
HTBC Communication Assembly DTS Mode	HMCA − H	
Auxiliary Equipment:		
Neutron Calibration Tank	NCT − B	
Gamma Source Radioactive	GSR − U/Y	
HGNS Housing	HGNH −	

High resolution Integrated Logging Tool−DTS Wellsite Calibration
Detector Calibration

Phase	Gamma Ray Background GAPI	Value	Phase	Gamma Ray (Jig − Bkgd) GAPI	Value
Before		27.41	Before		174.9
0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)	157.1 (Minimum)	165.0 (Nominal)	206.3 (Maximum)

Before: 17−Sep−2010 15:15

High resolution Integrated Logging Tool−DTS Wellsite Calibration
Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		27.14	Master		31.05
Before		26.98	Before		27.46
5.000 (Minimum)	27.14 (Nominal)	40.00 (Maximum)	5.000 (Minimum)	31.05 (Nominal)	40.00 (Maximum)

Master: 7−Sep−2010 12:00 Before: 17−Sep−2010 15:26

High resolution Integrated Logging Tool−DTS Wellsite Calibration
Ratio Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		5661	Master		2261	Master		2.504
4700 (Minimum)	5800 (Nominal)	6900 (Maximum)	1900 (Minimum)	2400 (Nominal)	2900 (Maximum)	2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)

Master: 7−Sep−2010 12:00

High resolution Integrated Logging Tool−DTS
Wellsite Calibration
Accelerometer Calibration

Phase	Z−Axis Acceleration F/S2	Value
Before		32.11
31.53 (Minimum)	32.19 (Nominal)	32.84 (Maximum)

Before: 18−Sep−2010 3:09

High resolution Integrated Logging Tool−DTS Master Calibration
Zero Measurement

Phase	CNTC Background CPS	Value	Phase	CFTC Background CPS	Value
Master		27.14	Master		31.05

5.000 (Minimum)	27.14 (Nominal)	40.00 (Maximum)	5.000 (Minimum)	31.05 (Nominal)	40.00 (Maximum)			

Master: 7−Sep−2010 12:00

High resolution Integrated Logging Tool−DTS Master Calibration

Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master		5661	Master		2261	Master		2.504
4700 (Minimum)	5800 (Nominal)	6900 (Maximum)	1900 (Minimum)	2400 (Nominal)	2900 (Maximum)	2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)

Master: 7−Sep−2010 12:00

DTS Telemetry Tool / Equipment Identification

Primary Equipment:		
DTC−H Auxiliary Cartridge	DTCH − A	
DTC−H Telemetry Cartridge	DTCH − A	8907
Auxiliary Equipment:		
DTCH Telemetry Cartridge Housing	ECH − KC	

Company: **ExxonMobil Production Corp**

Schlumberger

Well: **PCU 296−5A1**
Field: **Piceance Creek**
County: **Rio Blanco**
State: **Colorado**

IMAGING BEHIND CASING
ULTRASONIC TOOL
CCL / GAMMA RAY