Schlumberger

Company: Occidental Petroleum INC

Well: Frank 6-8

Field: Wattenberg

County: Weld State: Colorado

Isolation Scanner

Casing Integrity

Gamma Ray - CCL

County: Weld
Field: Wattenberg
Location: SENW Sec 8, T5N, R67W
Well: Frank 6-8
Company: Occidental Petroleum INC

Location:
SENW Sec 8, T5N, R67W
SHL: 2624' FNL X 1599' FWL

Elev.: K.B. 4924.00 ft
G.L. 4912.00 ft
D.F.

Permanent Datum:	Ground Level	Elev.:	4912.00 f
Log Measured From:	Kelly Bushing	12.00 ft	above Perm.Datum
Drilling Measured From:	Kelly Bushing		

API Serial No.	Section:	Township:	Range:
05-123-26582-00	8	5N	67W

Logging Date		15-Mar-2022			
Run Number		One			
Depth Driller		7954.00 ft			
Schlumberger Depth		7954.00 ft			
Bottom Log Interval		6600.00 ft			
Top Log Interval		50.00 ft			
Casing Fluid Type		Water			
Salinity					
Density		8.5 lbm/gal			
Fluid Level		8.00 ft			
BIT/CASING/TUBING STRING					
Bit Size		7.88 in			
From		805.00 ft			
To		7954.00 ft			
Casing/Tubing Size		4.5 in			
Weight		11.6 lbm/ft			
Grade		N80			
From		0.00 ft			
To		7940.00 ft			
Max Recorded Temperatures		185 degF			
Logger on Bottom	Time	15-Mar-2022	09:00:00		
Unit Number	Location:	9108	Ft. Morgan		
Recorded By		Ruobing Wu			
Witnessed By		Victor Ildefonso			

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 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.

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9.5 Parameter Listing
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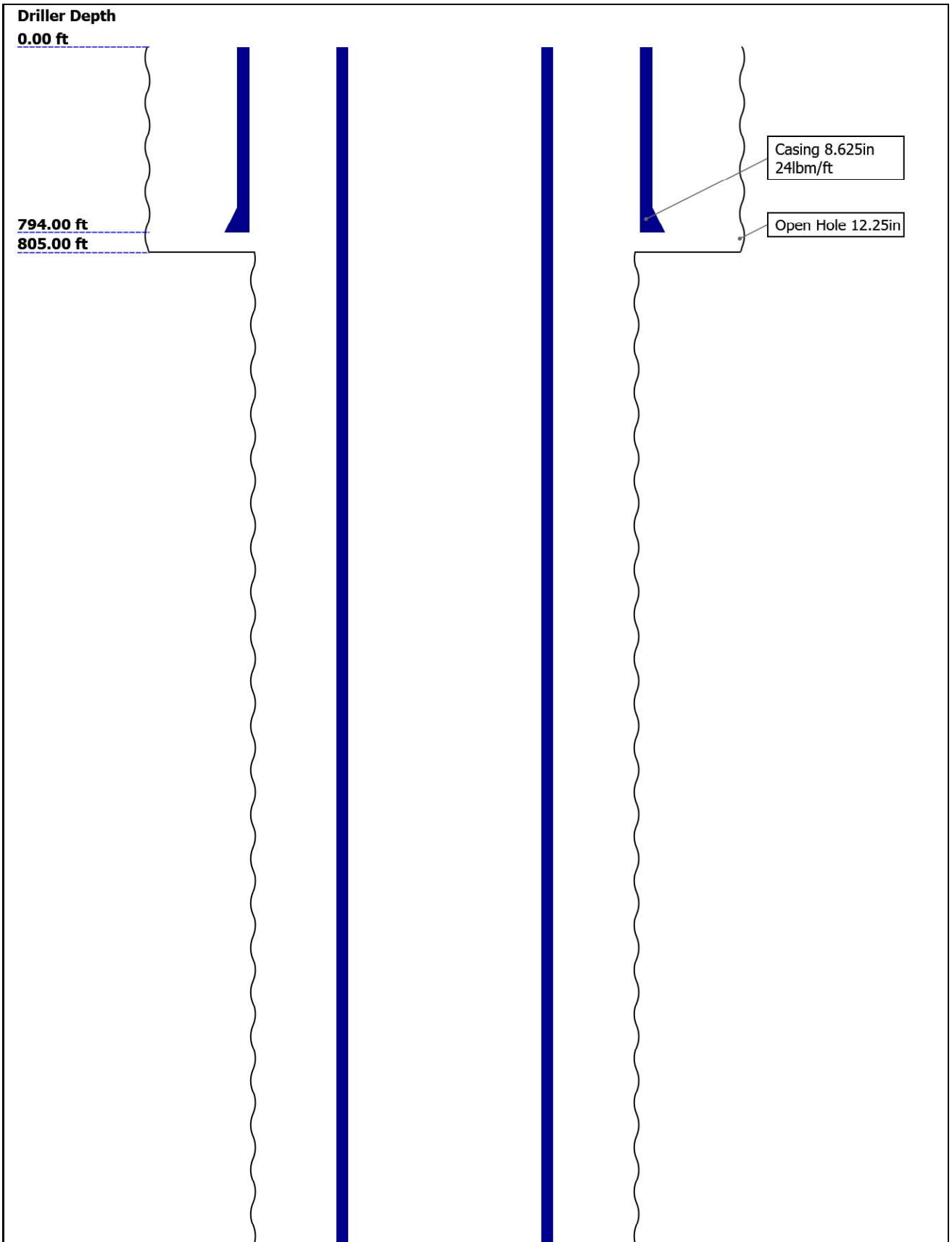
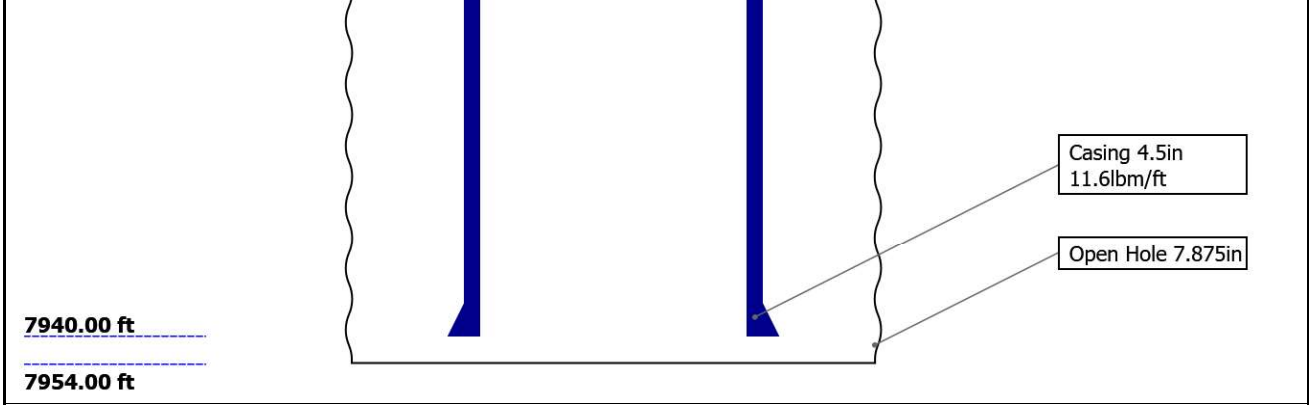
11. XYZ (IBC Acoustic Impedance of Mud vs Depth 6.0 in)
12. Tail

Well Sketch



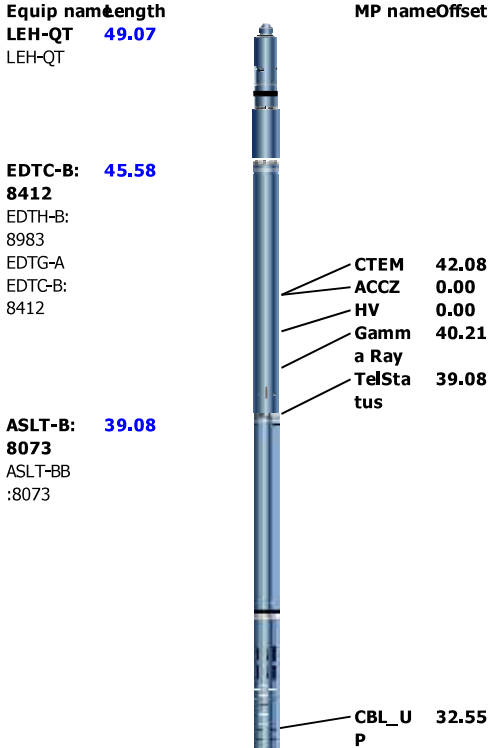


Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	12.25	7.875				
Top Driller (ft)	0	805				
Top Logger (ft)	0	805				
Bottom Driller (ft)	805	7954				
Bottom Logger (ft)	805	7954				
Casing						
Size (in)	8.625	4.5				
Weight (lbm/ft)	24	11.6				
Inner Diameter (in)	8.097	4				
Grade	K55	N80				
Top Driller (ft)	0	0				
Top Logger (ft)	0	0				
Bottom Driller (ft)	794	7940				
Bottom Logger (ft)	794	7940				

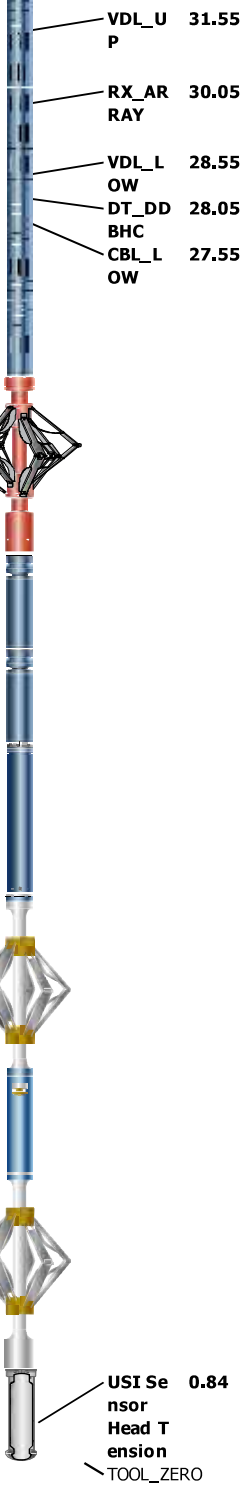
Remarks and Equipment Summary

One: Toolstring



One: Remarks

Log recorded in 10Deg, 6in Resolution; ASLT ran in Attenuation Mode
Log recorded without surface induced pressure from TD to 500ft, 500PSI 500ft to surf
Log correlated to CCL log dated 14-Mar-2022 Provided by client
Tool was run as per tool sketch
All logging intervals as per client request



Lengths are in ft
Maximum Outer Diameter = 3.800 in
Line: Sensor Location, Value: Gating Offset
All measurements are relative to TOOL_ZERO

Depth Summary

	One		
Depth Measuring Device			
Type	IDW-B		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Calibration Cable Type			
Wheel Correction 1	0		
Wheel Correction 2	0		
Tension Device			

Tension Device			
Type	CMTD-B/A		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Number of Calibration Points	0		

Logging Cable			
Type	7-39PI-XXS		
Serial Number	Shop		
Length	28000.00 ft		
Conveyance Type	Wireline		
Rig Type	Workover		

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

One

Software Version

Acquisition System	Version
Maxwell 2022.0	12.0.215014.3100
Application Patch	Wireline_Hotfix-Mandatory-2022.0_12.0.216515

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[5]:Up	Up	60.71 ft	6637.28 ft	15-Mar-2022 7:38:40 AM	15-Mar-2022 9:15:02 AM	ON	0.88 ft	Yes

All depths are referenced to toolstring zero

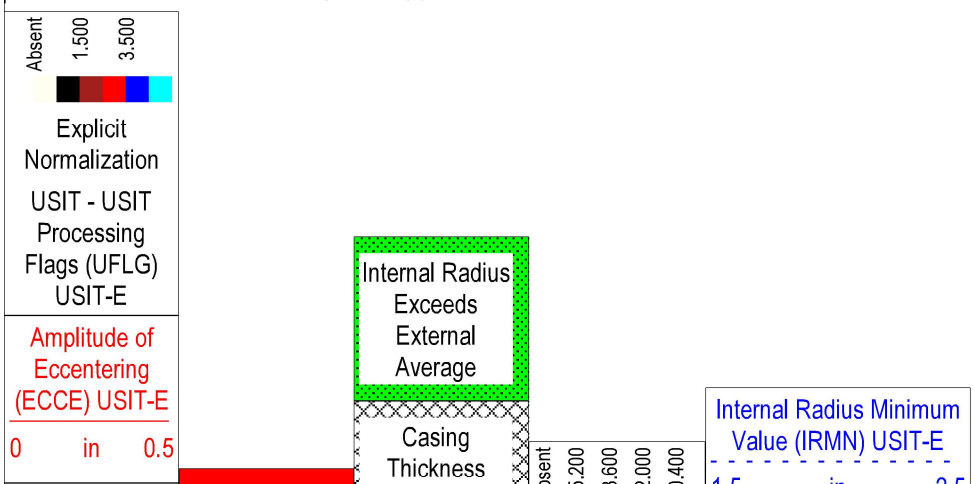
Log

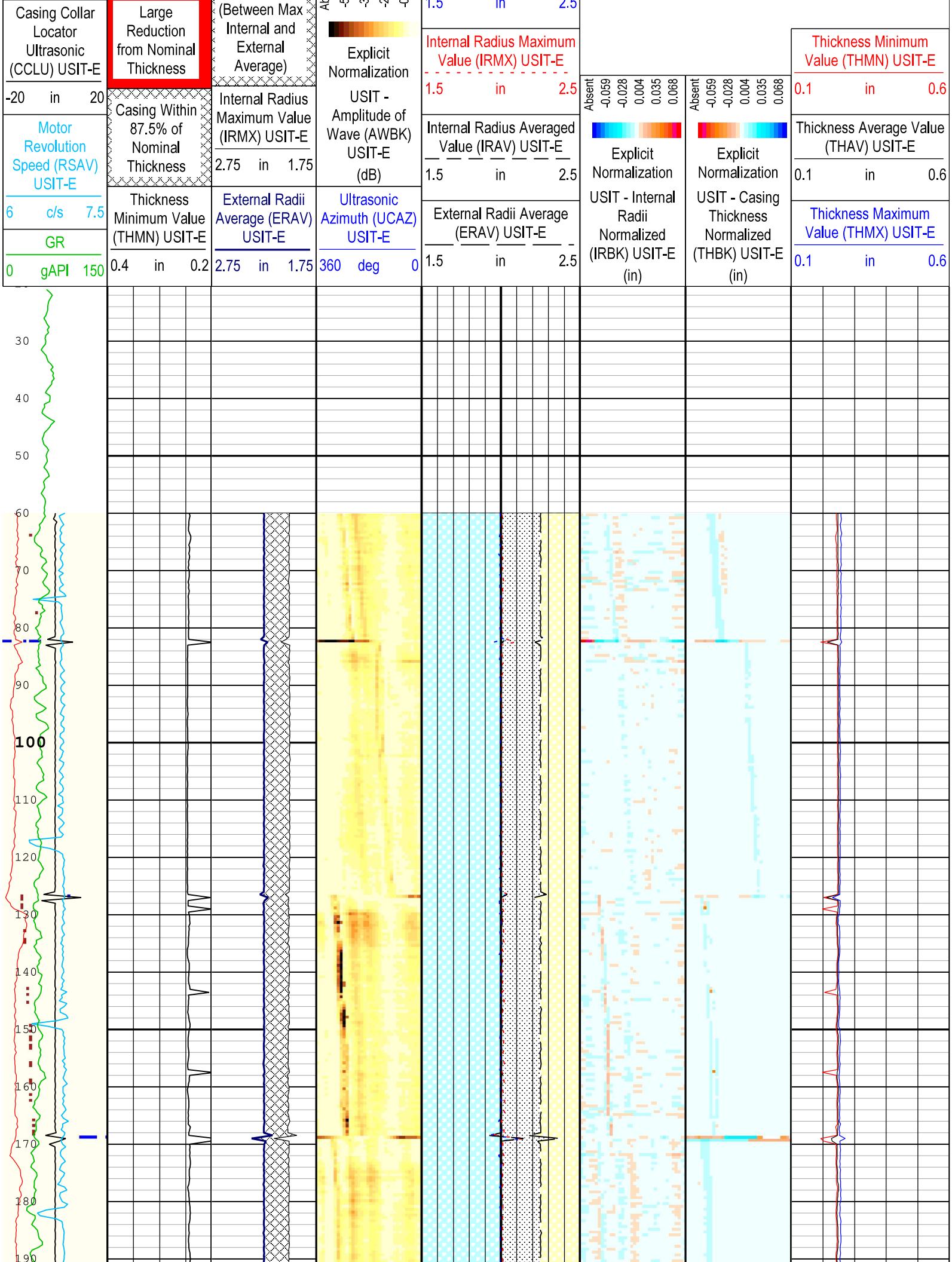
Company:Occidental Petroleum INC Well:Frank 6-8

One: Log[5]:Up:S005

Description: USI Corrosion Format: Log (IBC Casing Integrity 5.5IN) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 15-Mar-2022 12:10:40

TIME_1900 - Time Marked every 60.00 (s)




Casing Collar Locator Ultrasonic (CCLU) USIT-E
-20 in 20
Motor Revolution Speed (RSAV) USIT-E
6 c/s 7.5
GR
0 gAPI 150
Large Reduction from Nominal Thickness
Casing Within 87.5% of Nominal Thickness
Thickness Minimum Value (THMN) USIT-E
0.4 in 0.2
(Between Max Internal and External Average)
Internal Radius Maximum Value (IRMX) USIT-E
2.75 in 1.75
External Radii Average (ERAV) USIT-E
2.75 in 1.75
Explicit Normalization
USIT - Amplitude of Wave (AWBK) USIT-E
(dB)
Ultrasonic Azimuth (UCAZ) USIT-E
360 deg 0
Internal Radius Maximum Value (IRMX) USIT-E
1.5 in 2.5
Internal Radius Averaged Value (IRAV) USIT-E
1.5 in 2.5
External Radii Average (ERAV) USIT-E
1.5 in 2.5
Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Internal Radii Normalized (IRBK) USIT-E
(in)
Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Casing Thickness Normalized (THBK) USIT-E
(in)
Thickness Minimum Value (THMN) USIT-E
0.1 in 0.6
Thickness Average Value (THAV) USIT-E
0.1 in 0.6
Thickness Maximum Value (THMX) USIT-E
0.1 in 0.6
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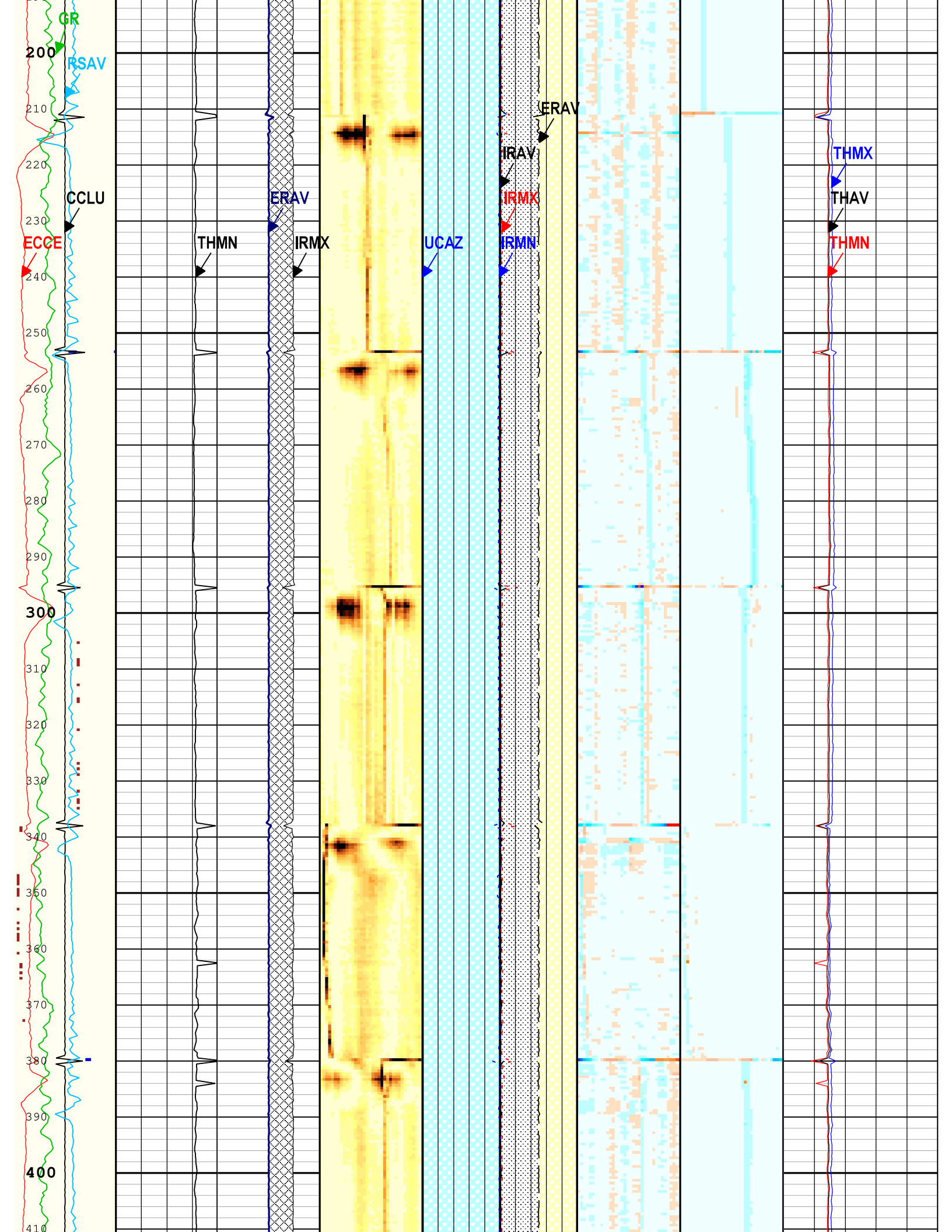
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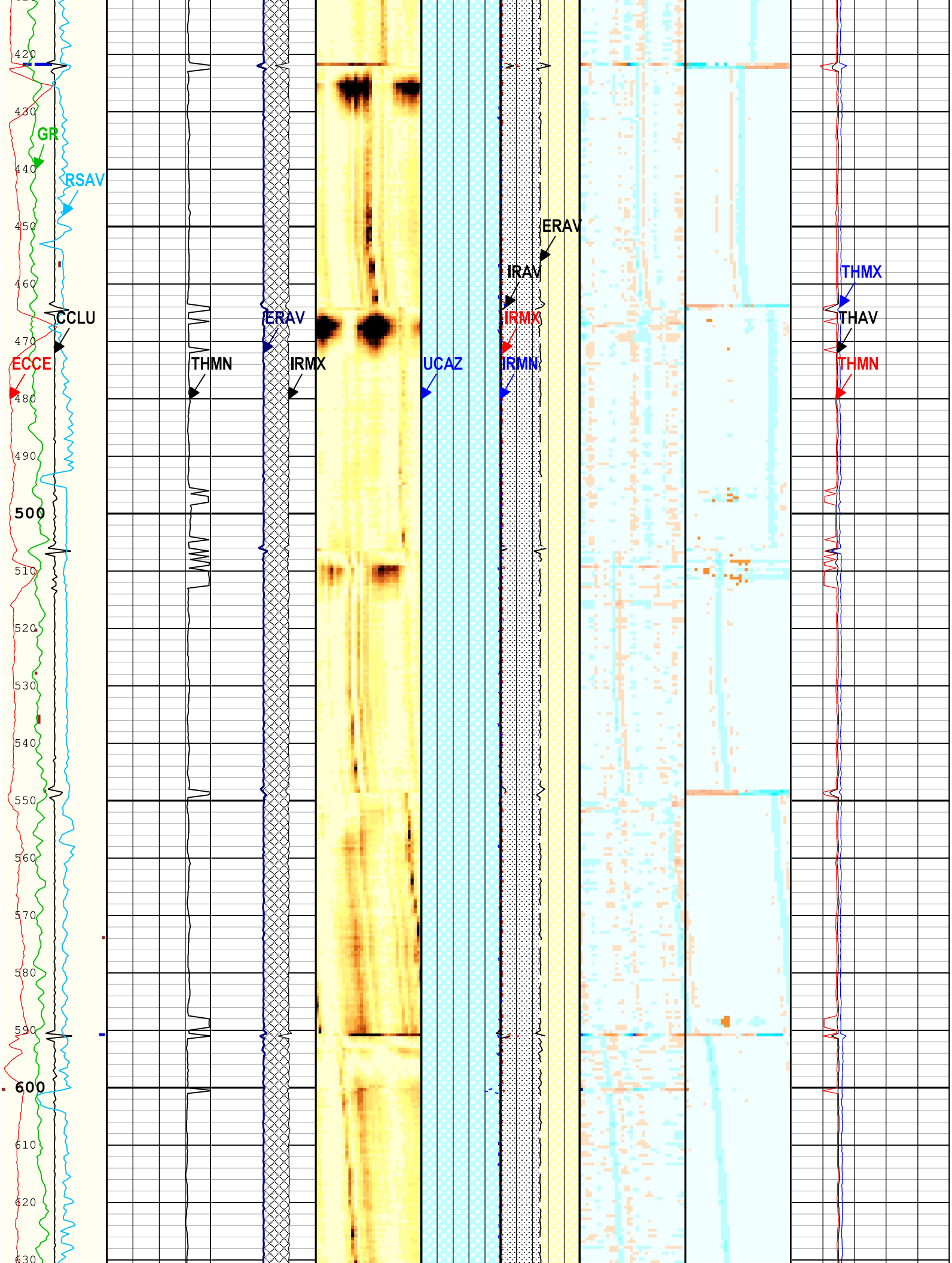
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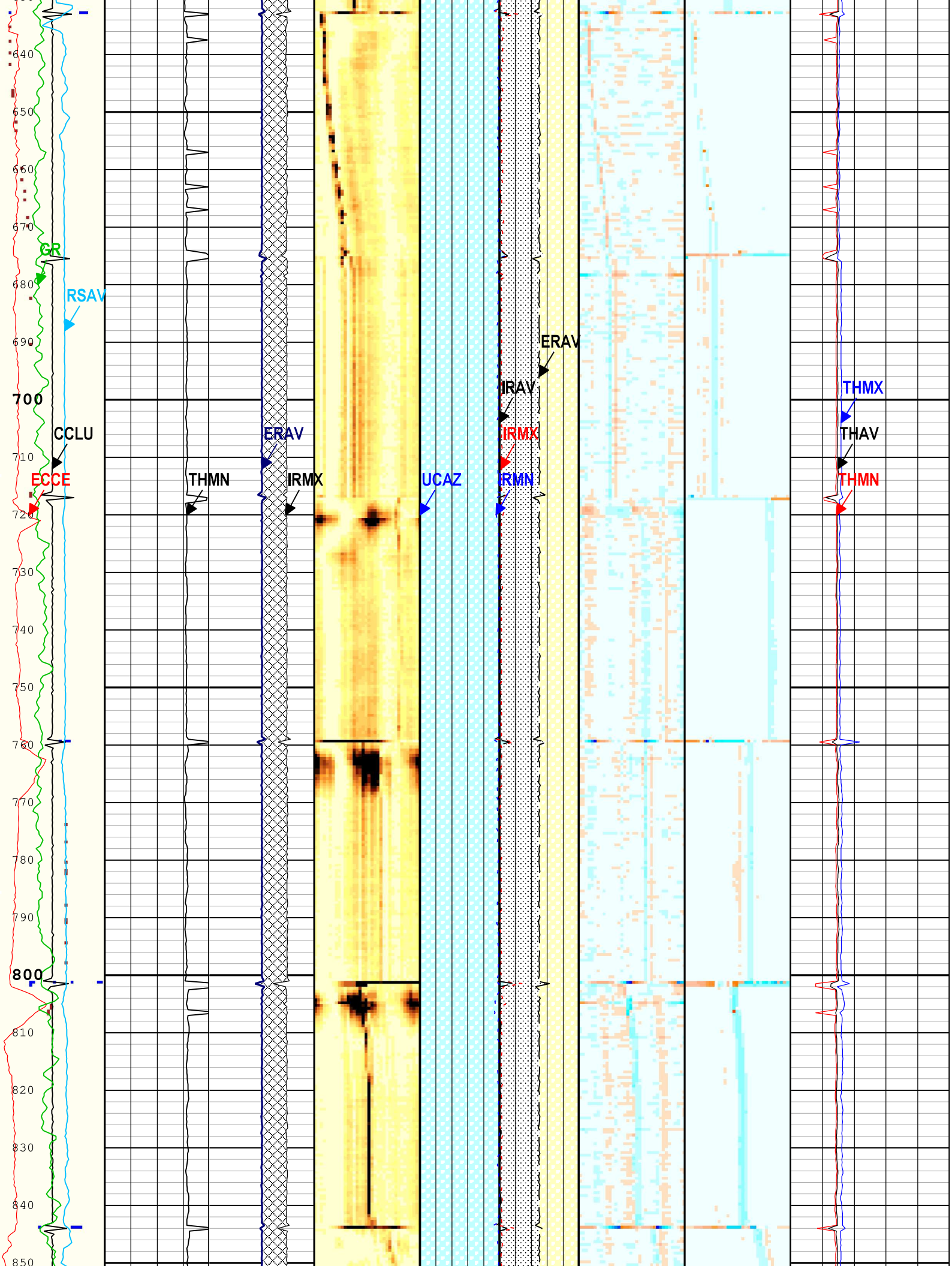
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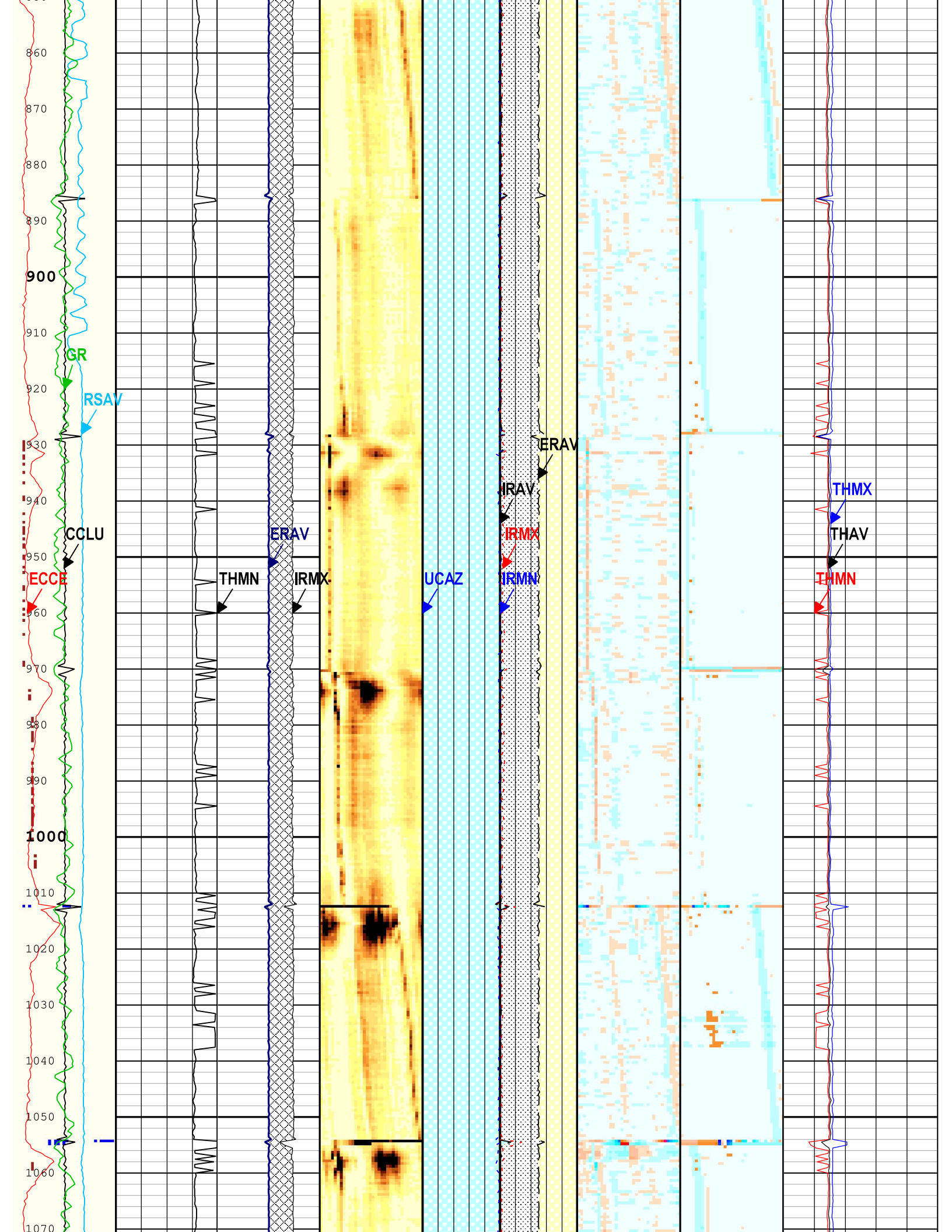
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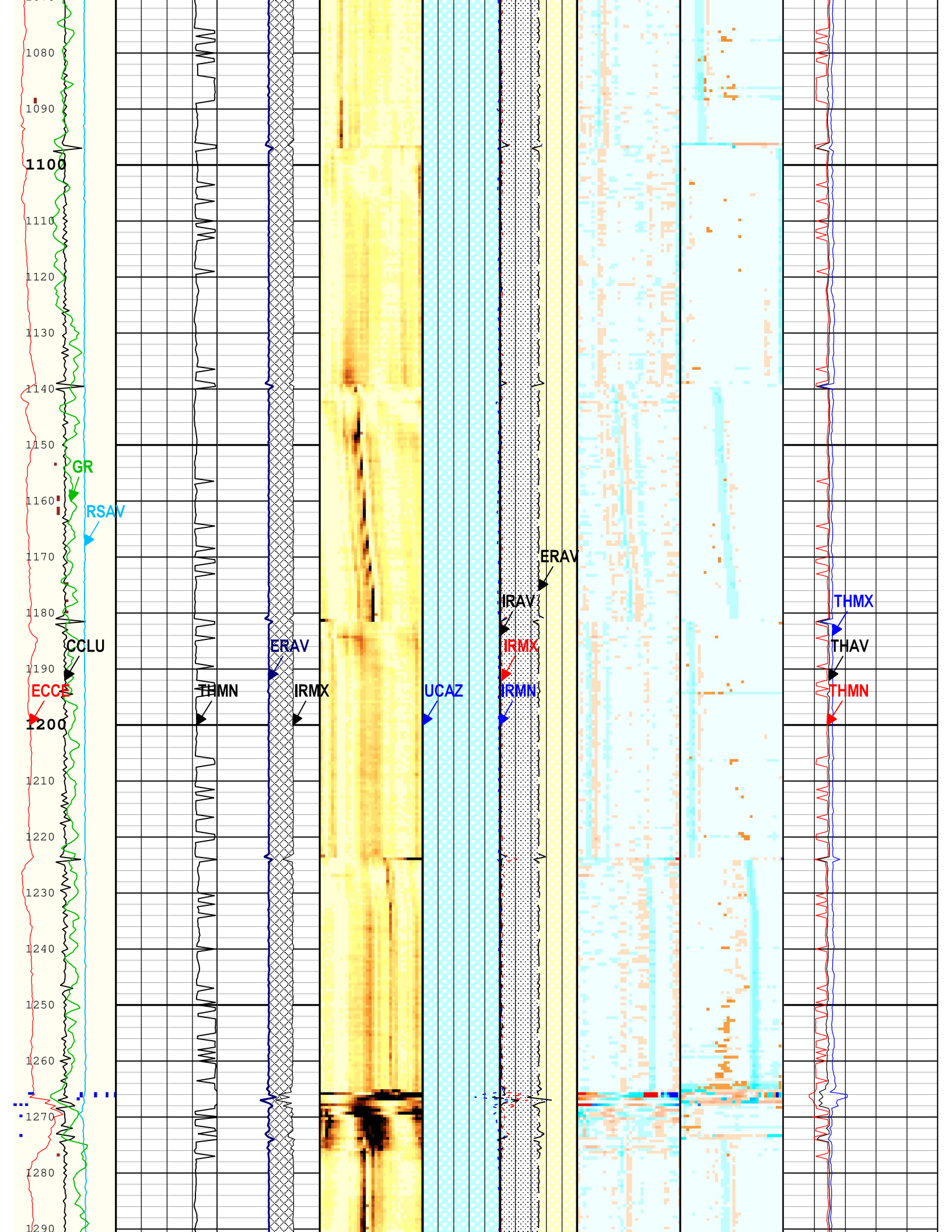
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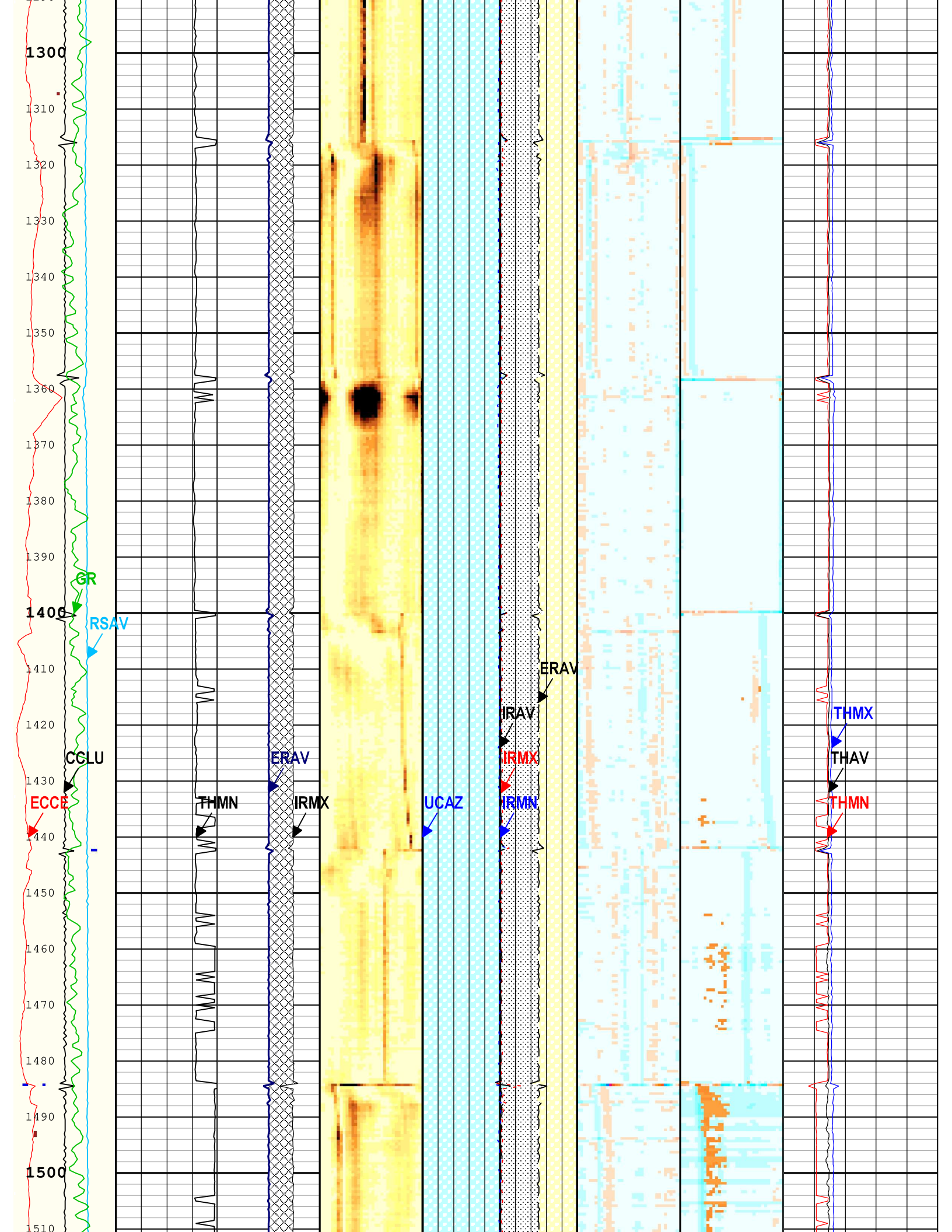
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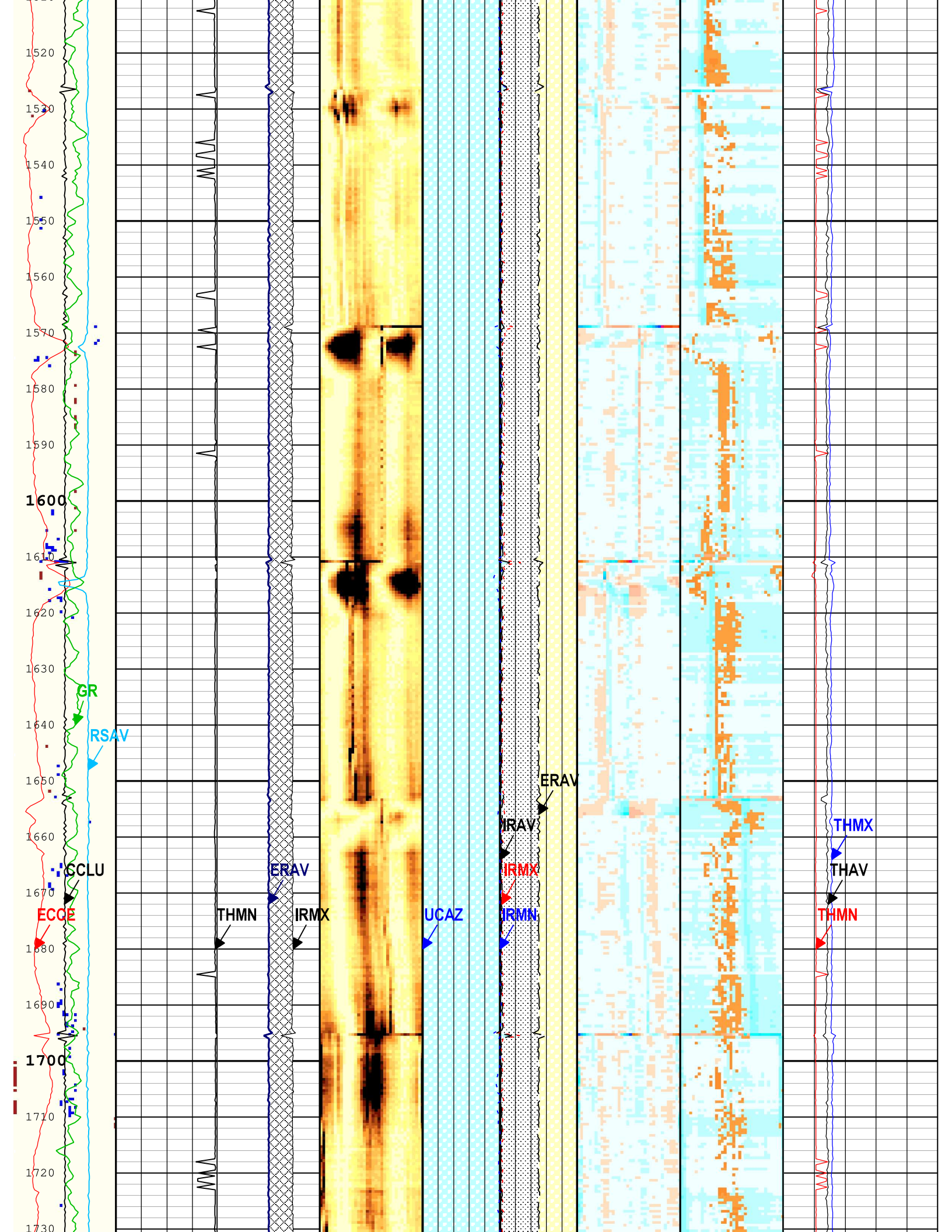
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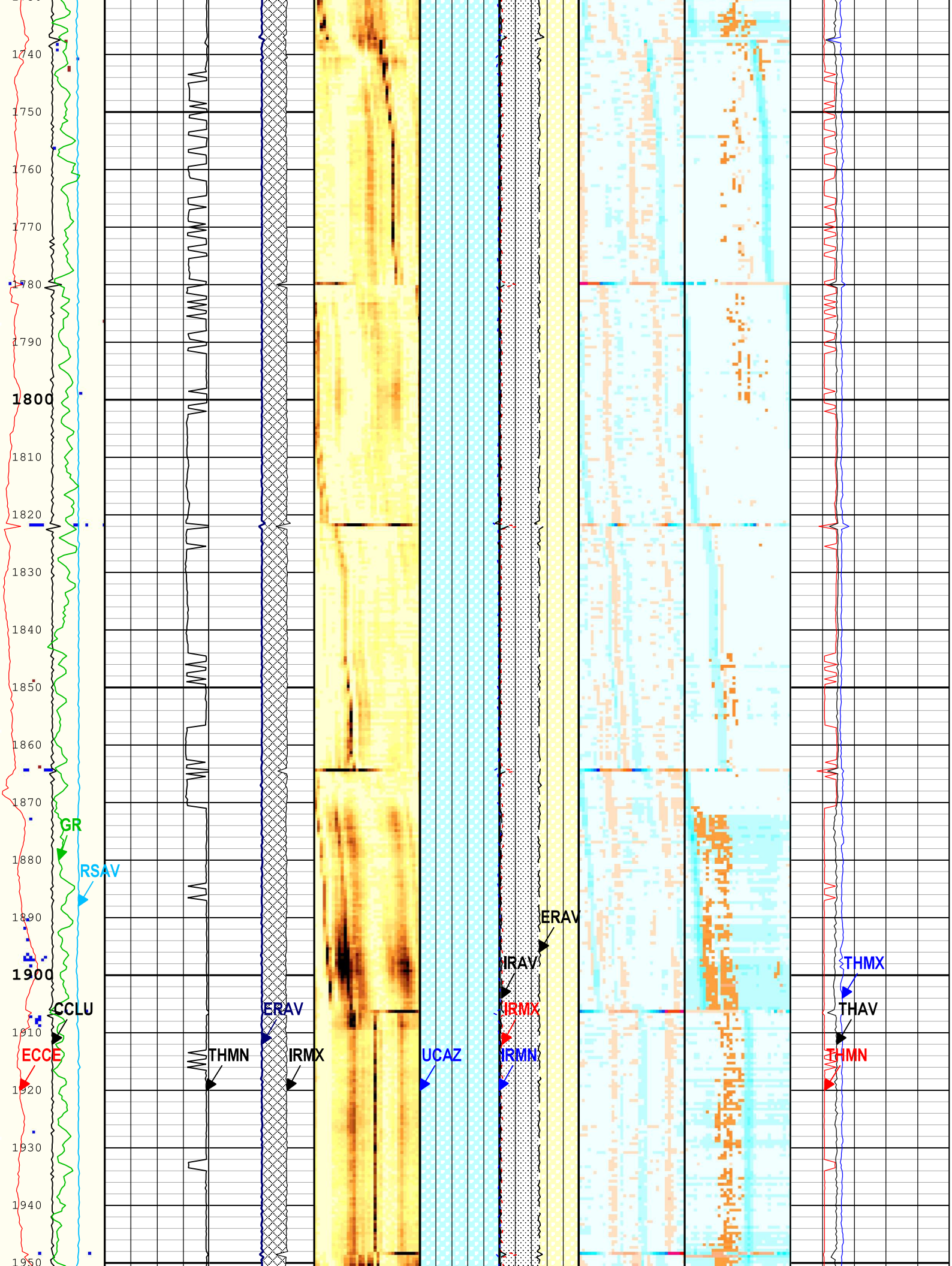
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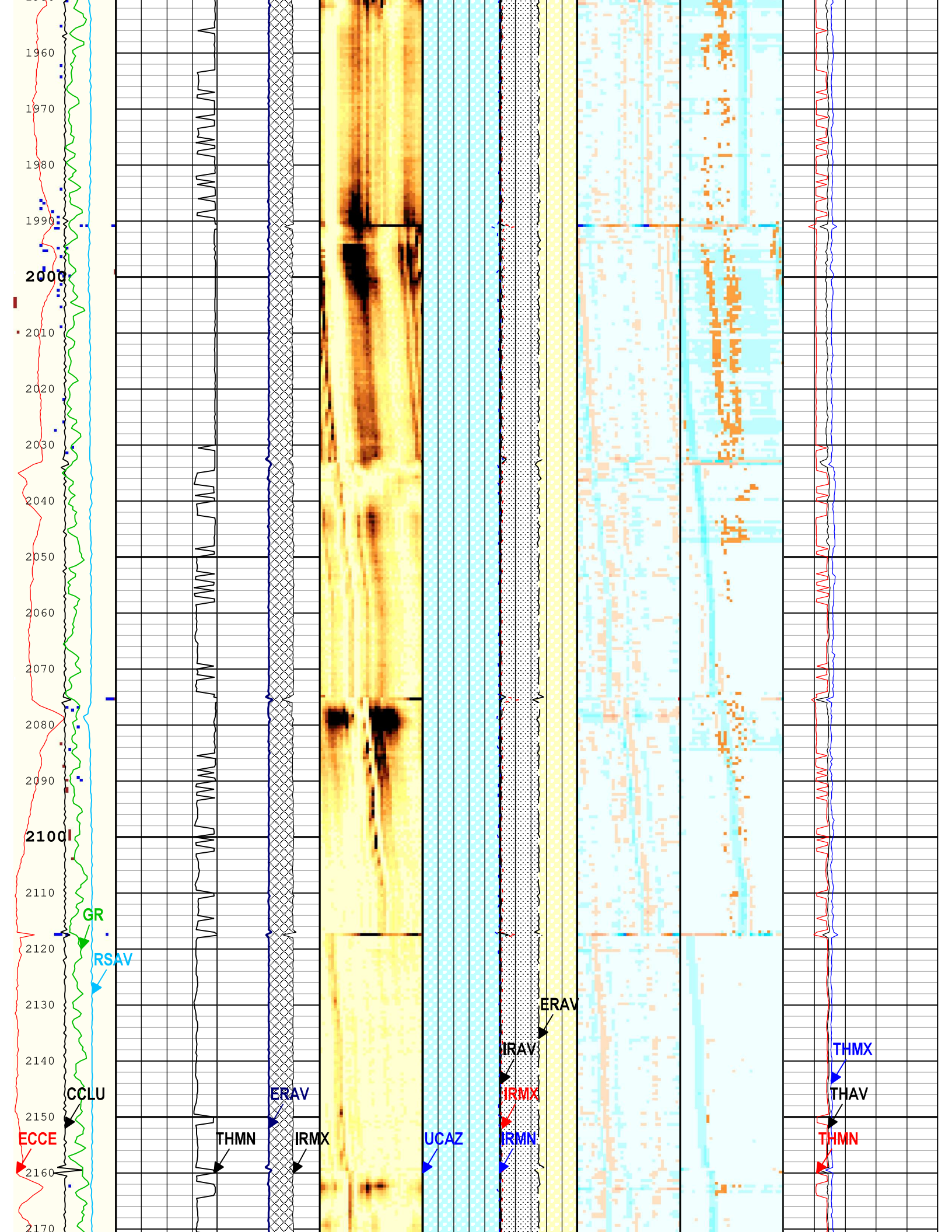
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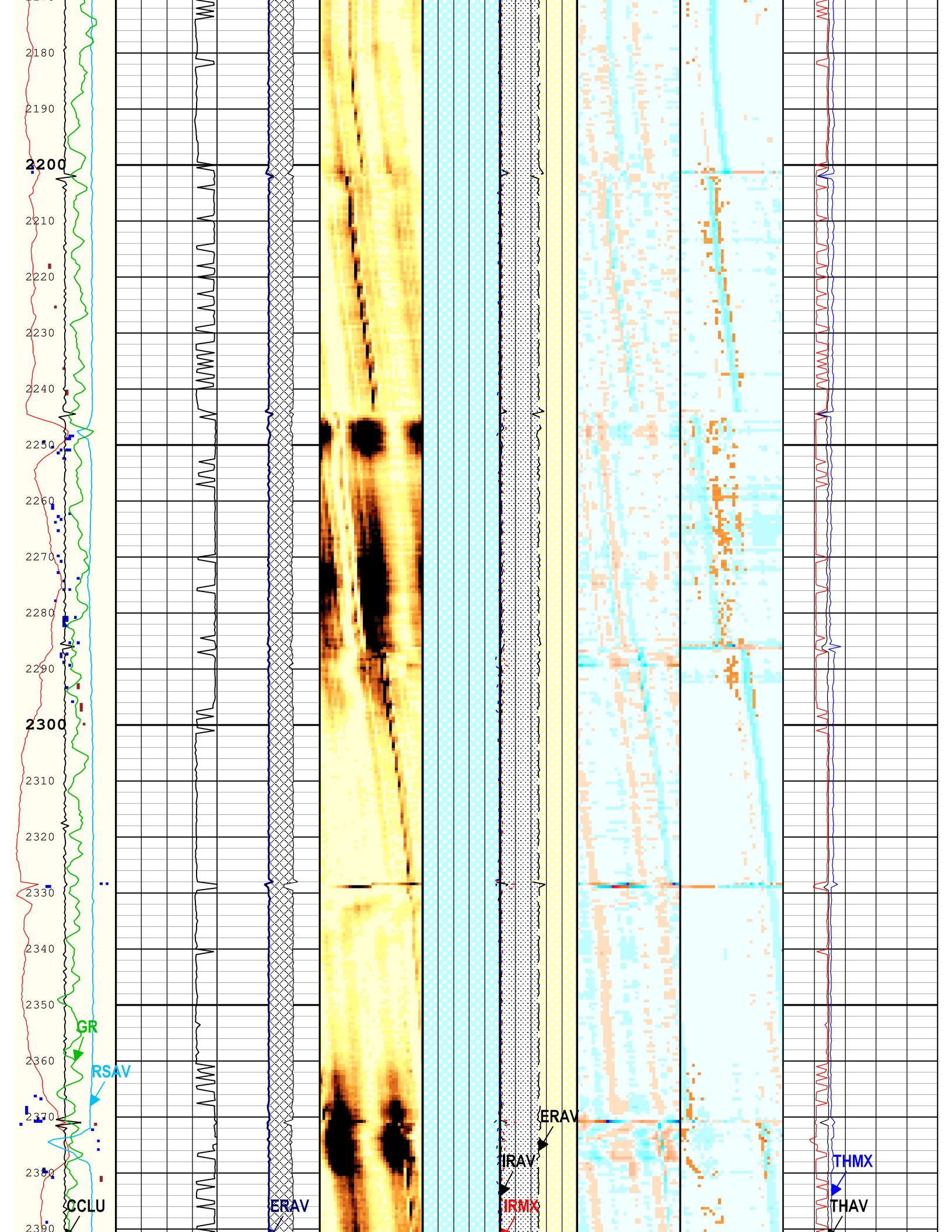
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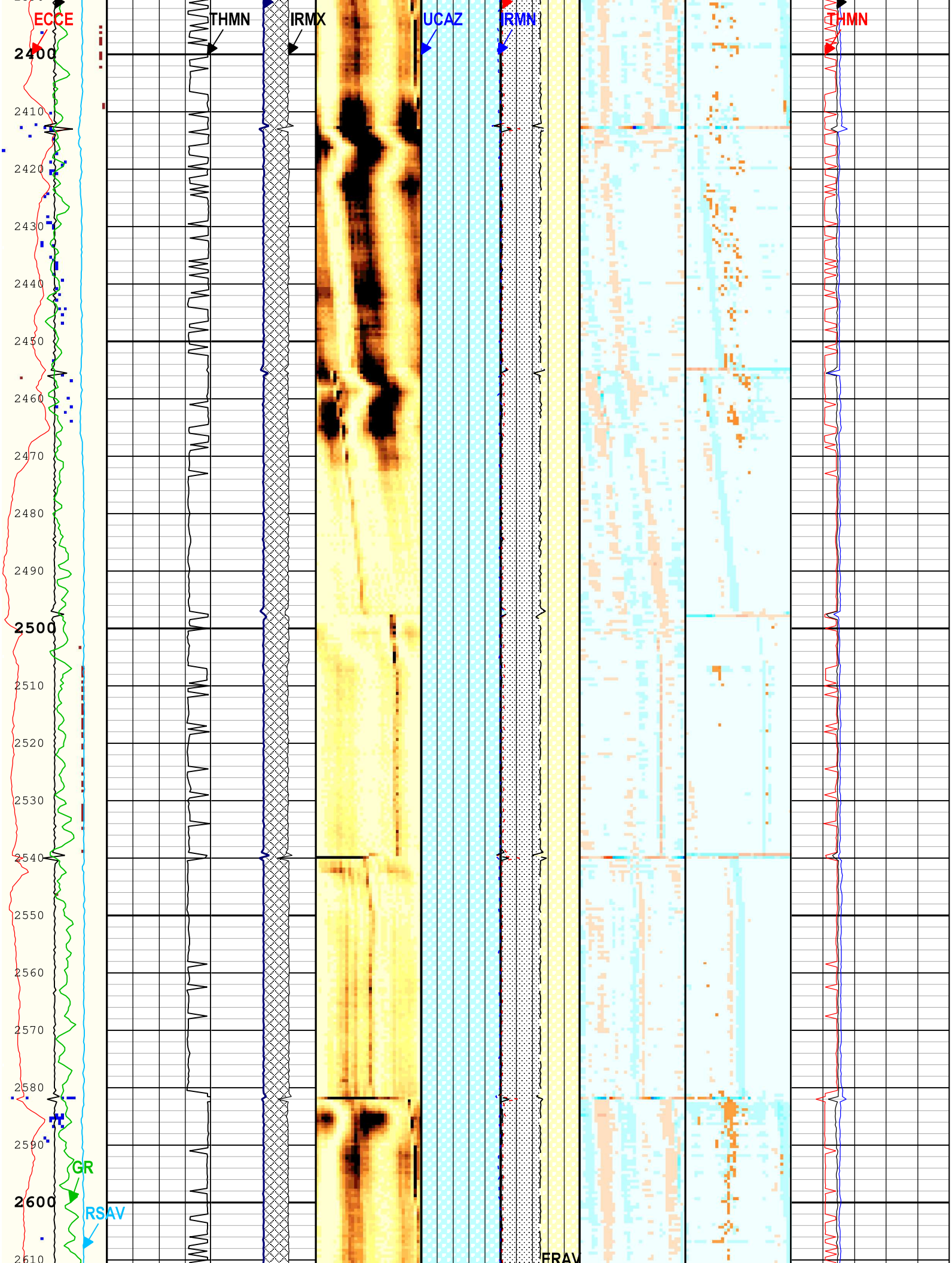
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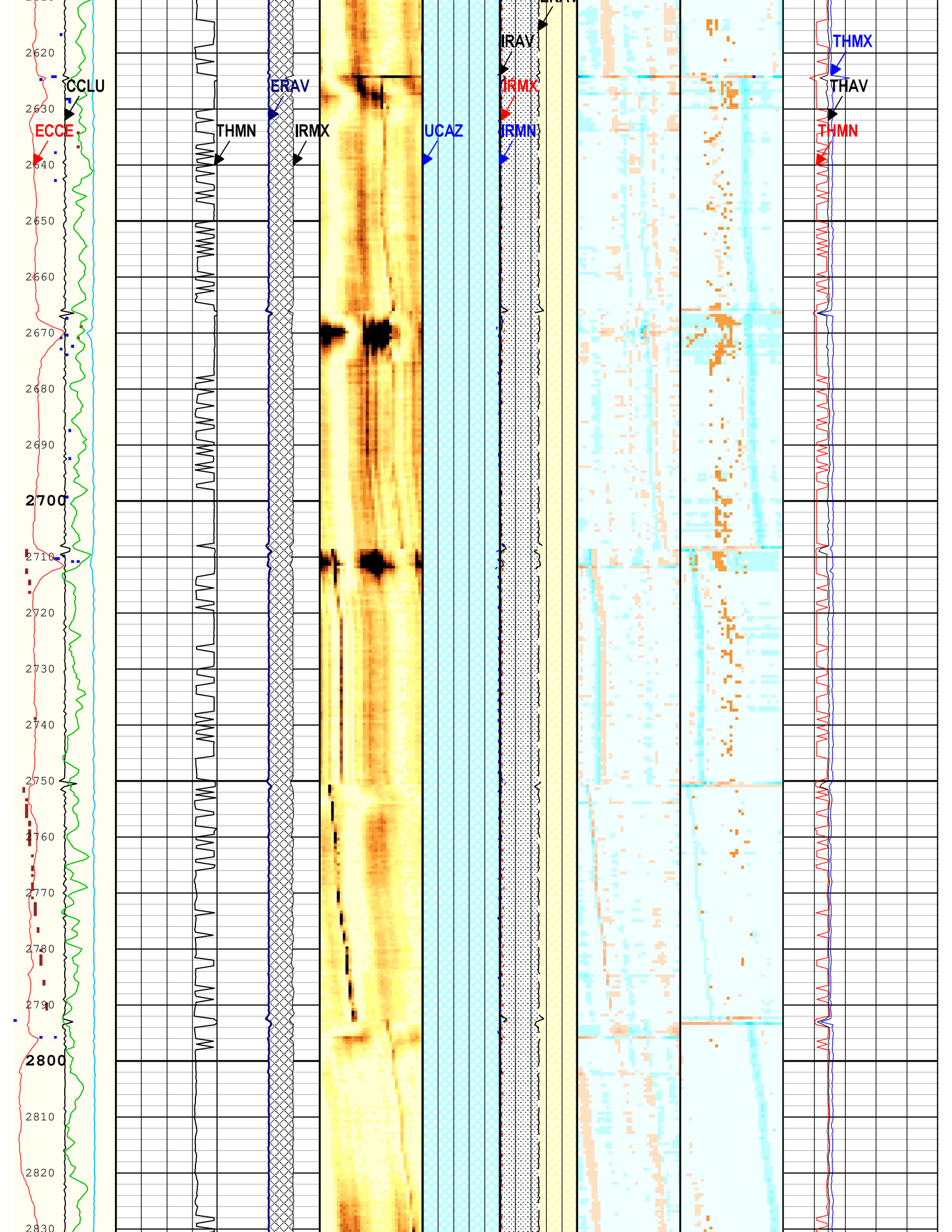
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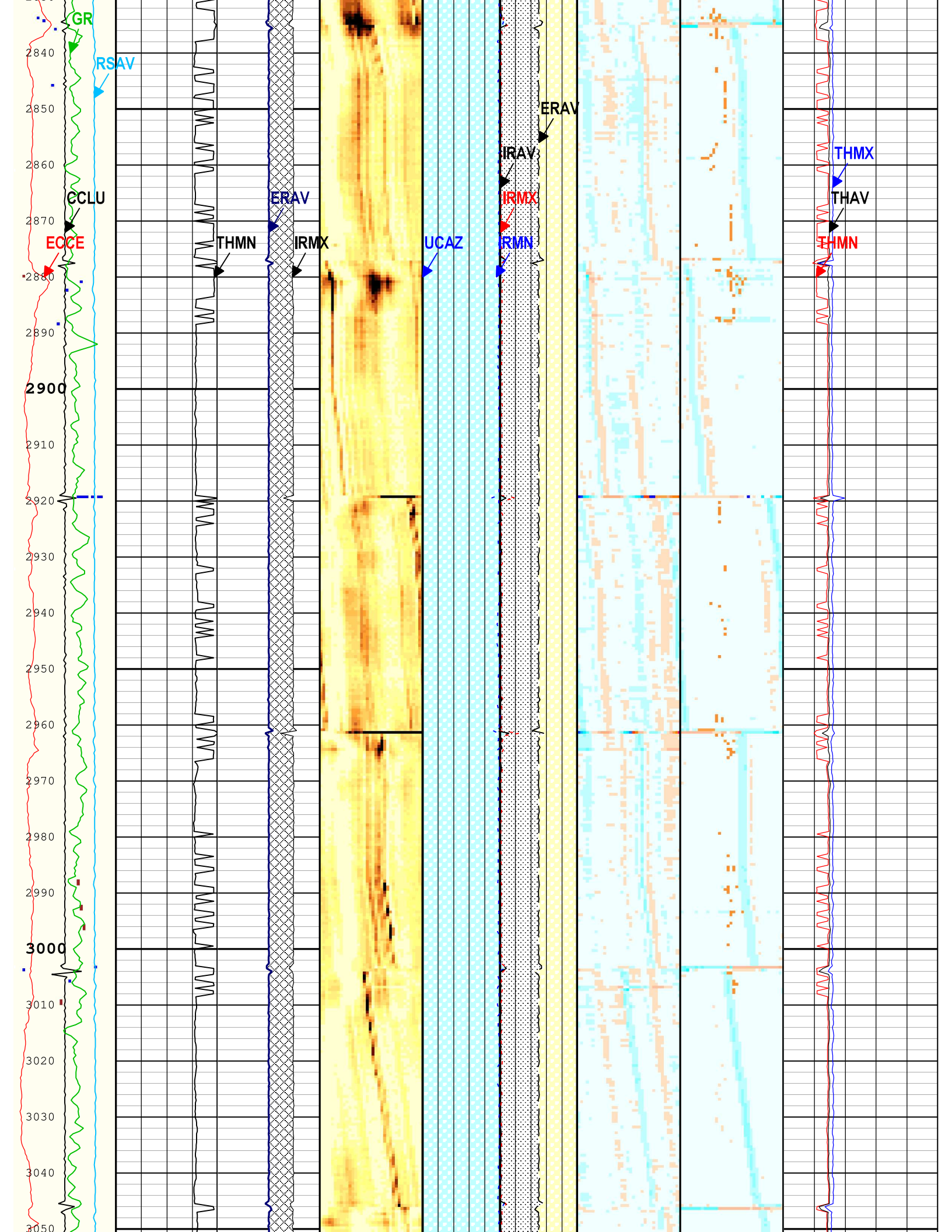
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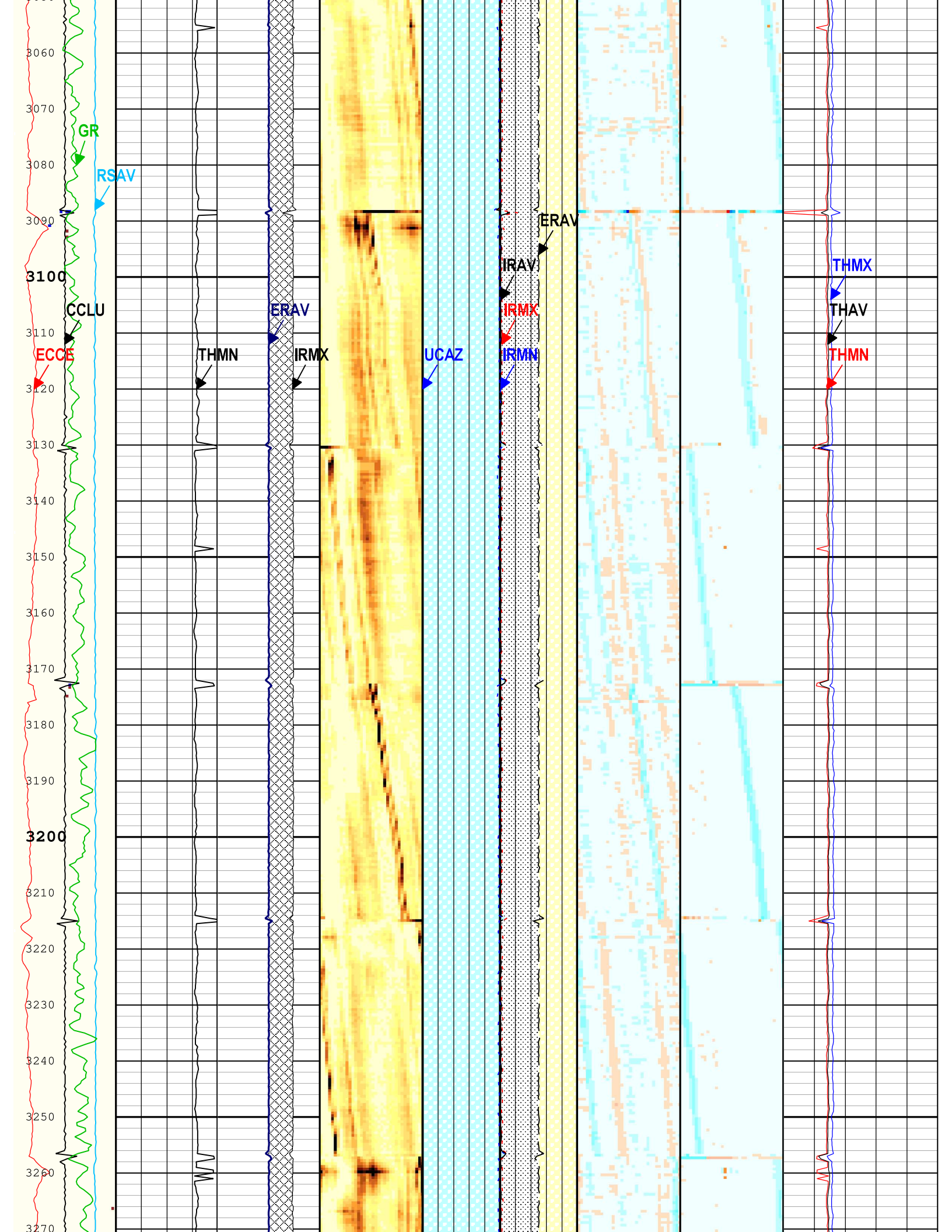
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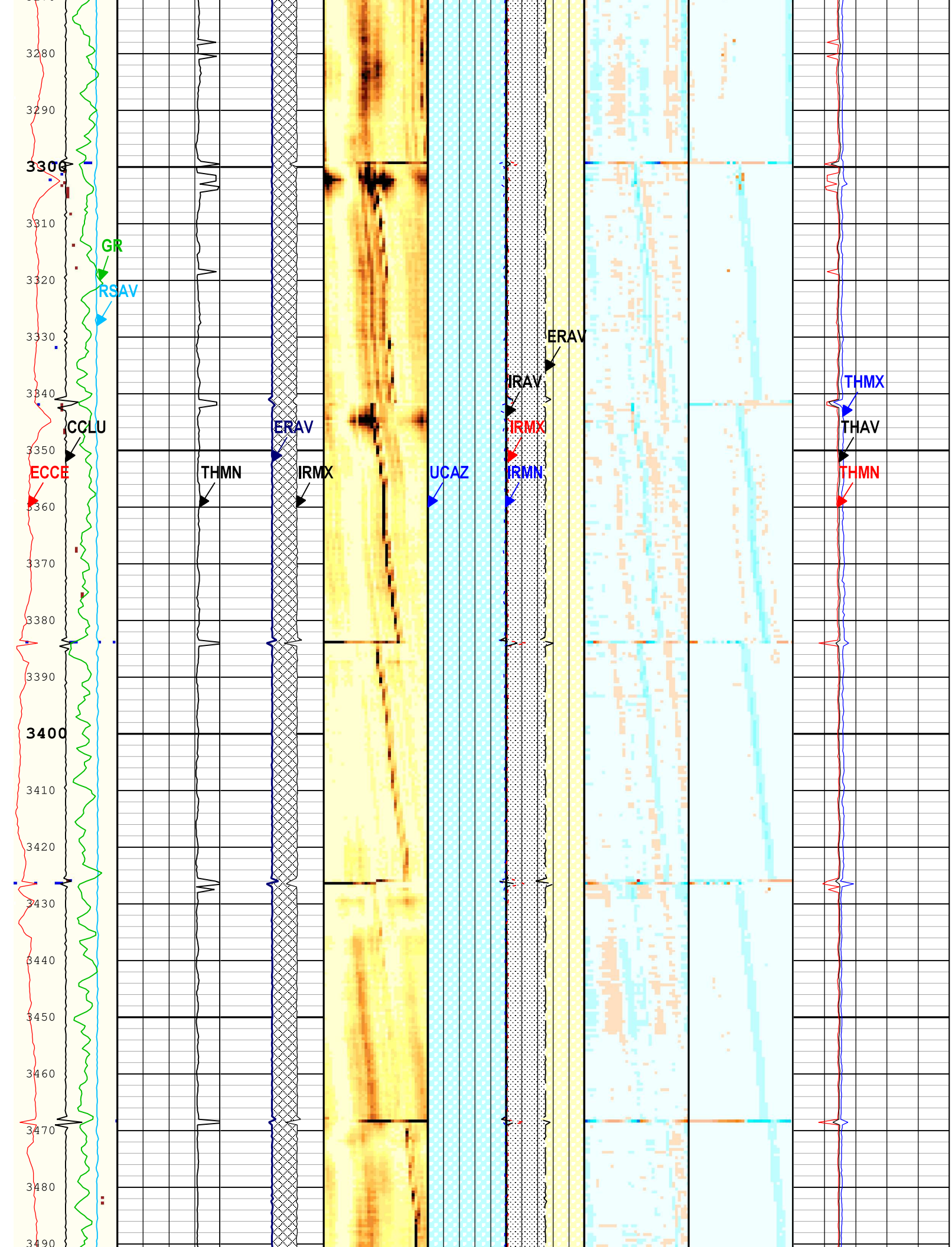
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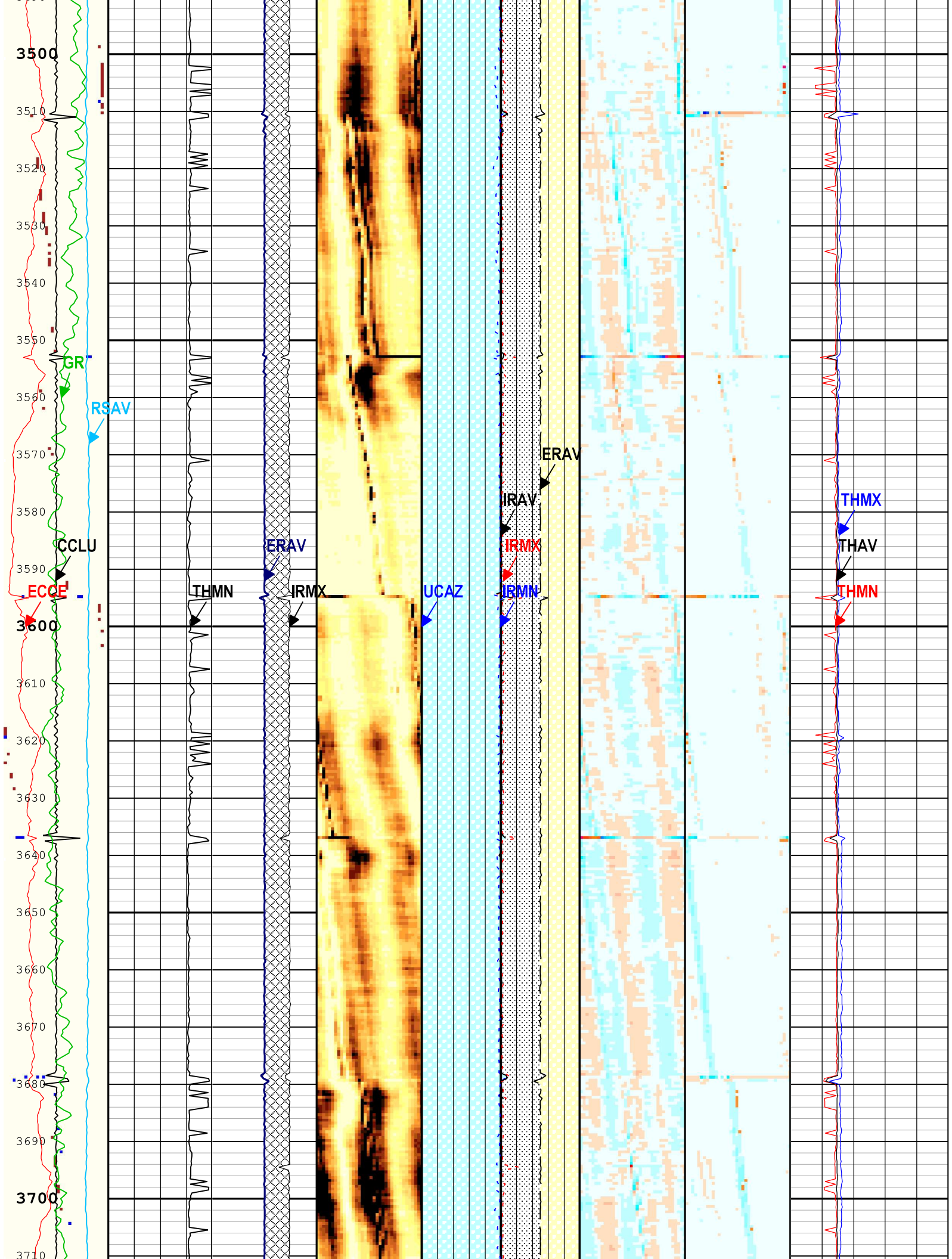
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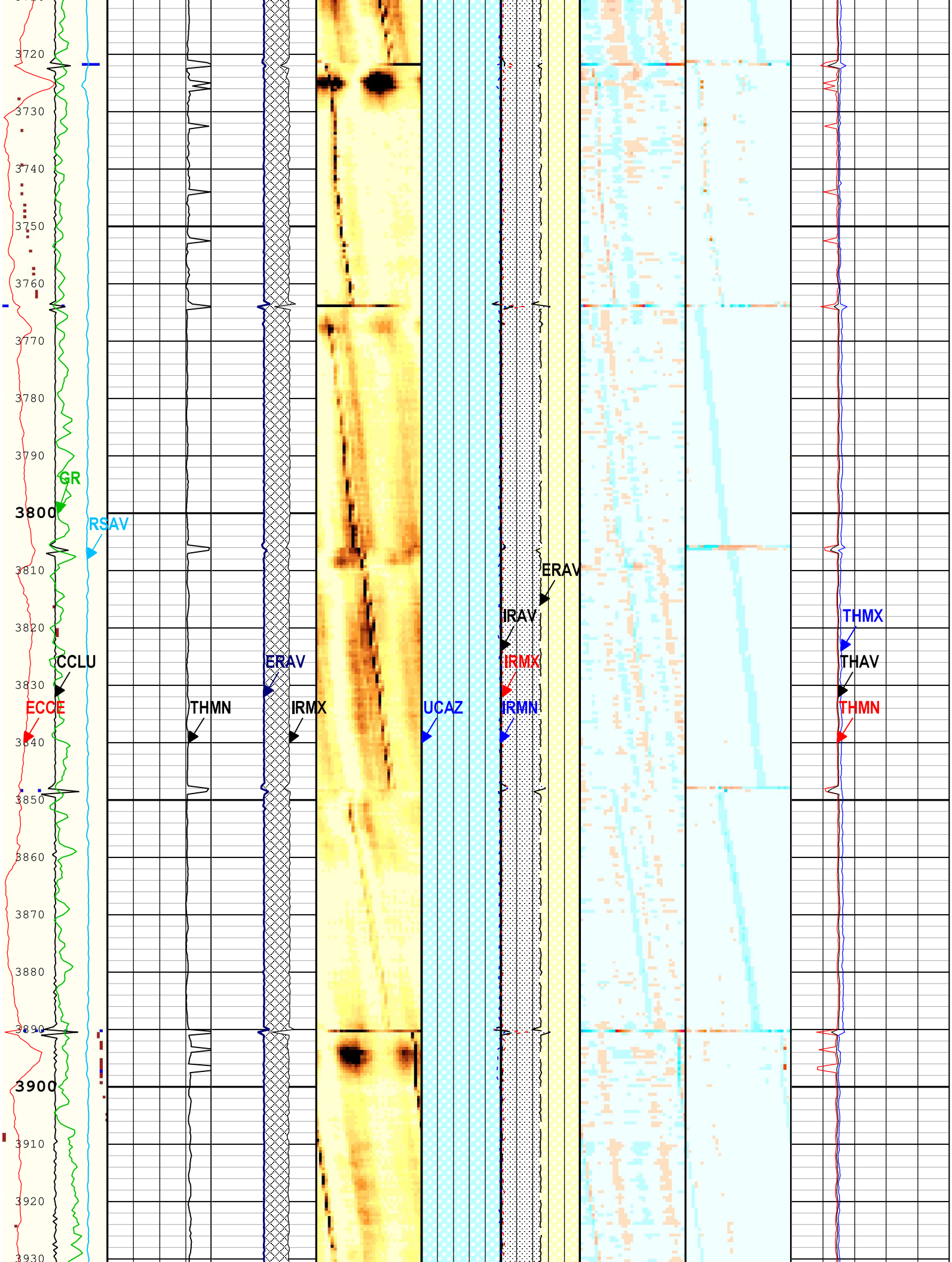
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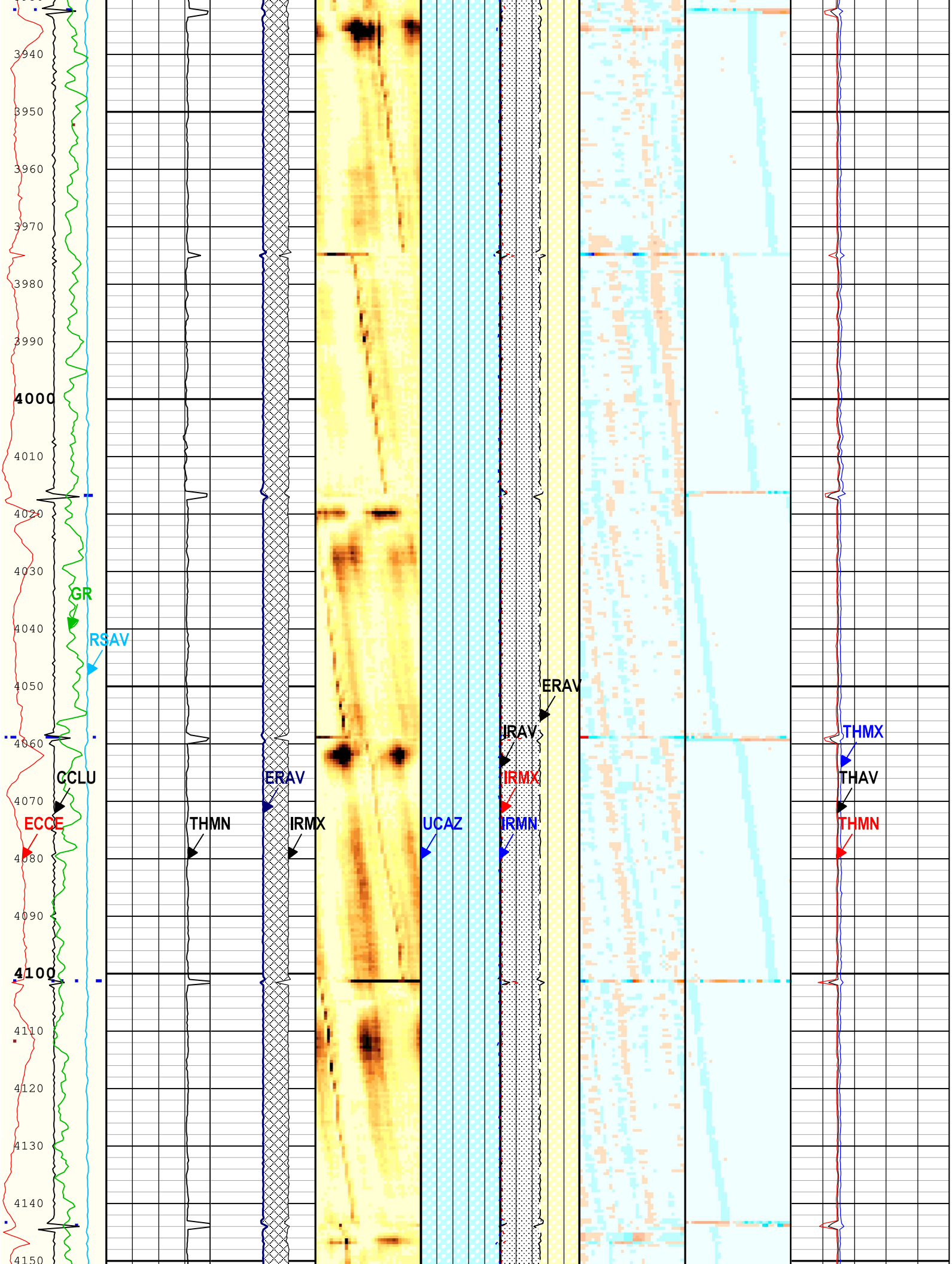
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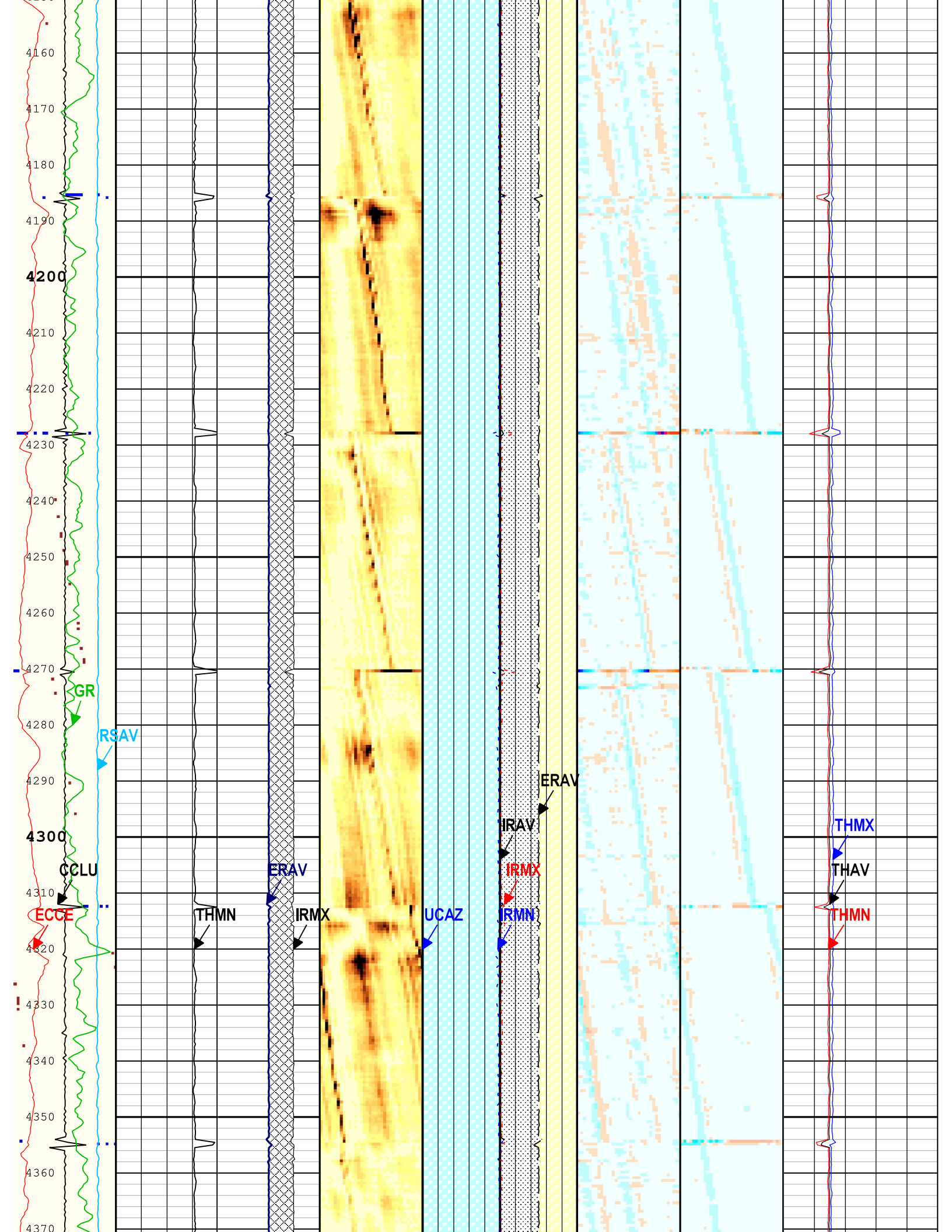
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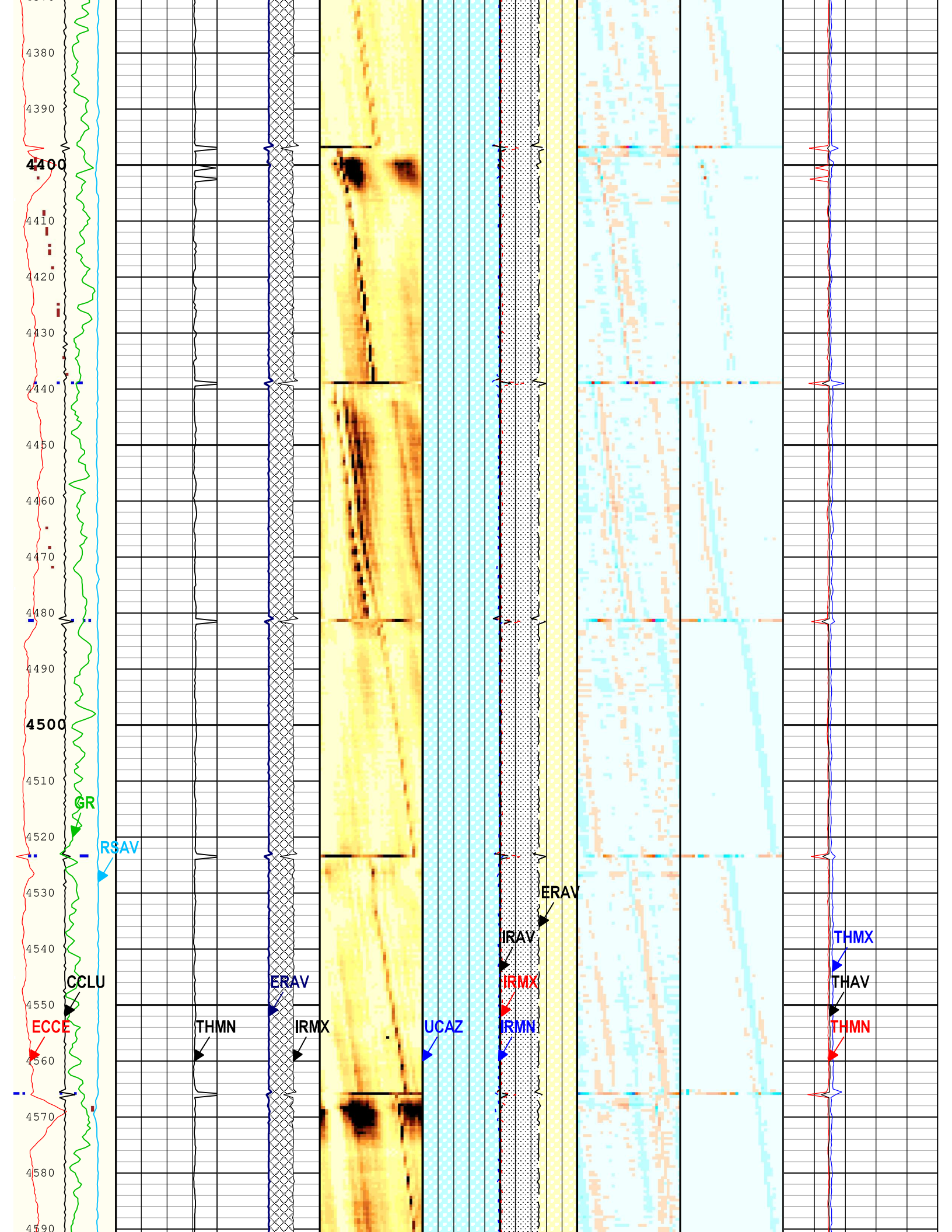
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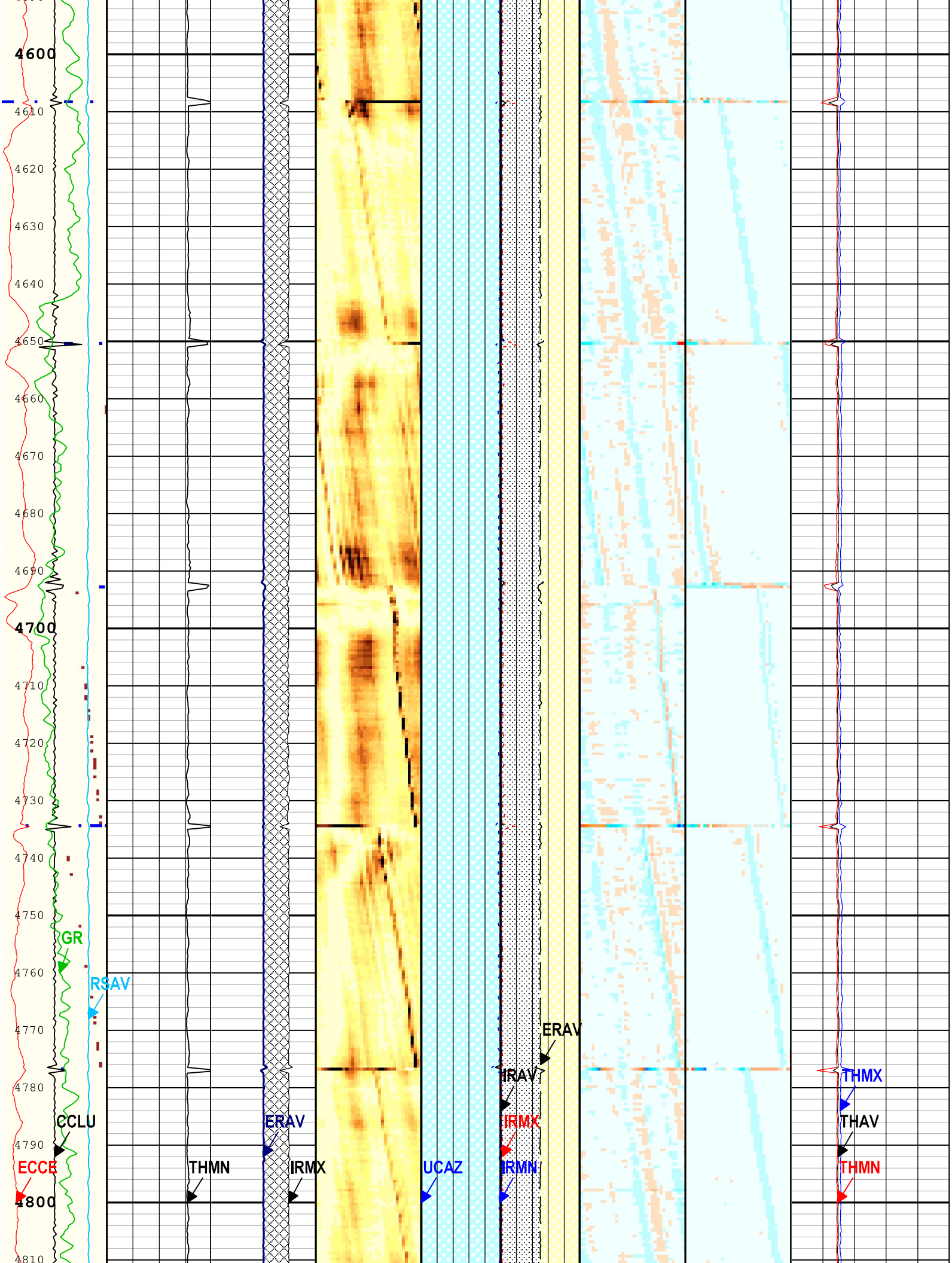
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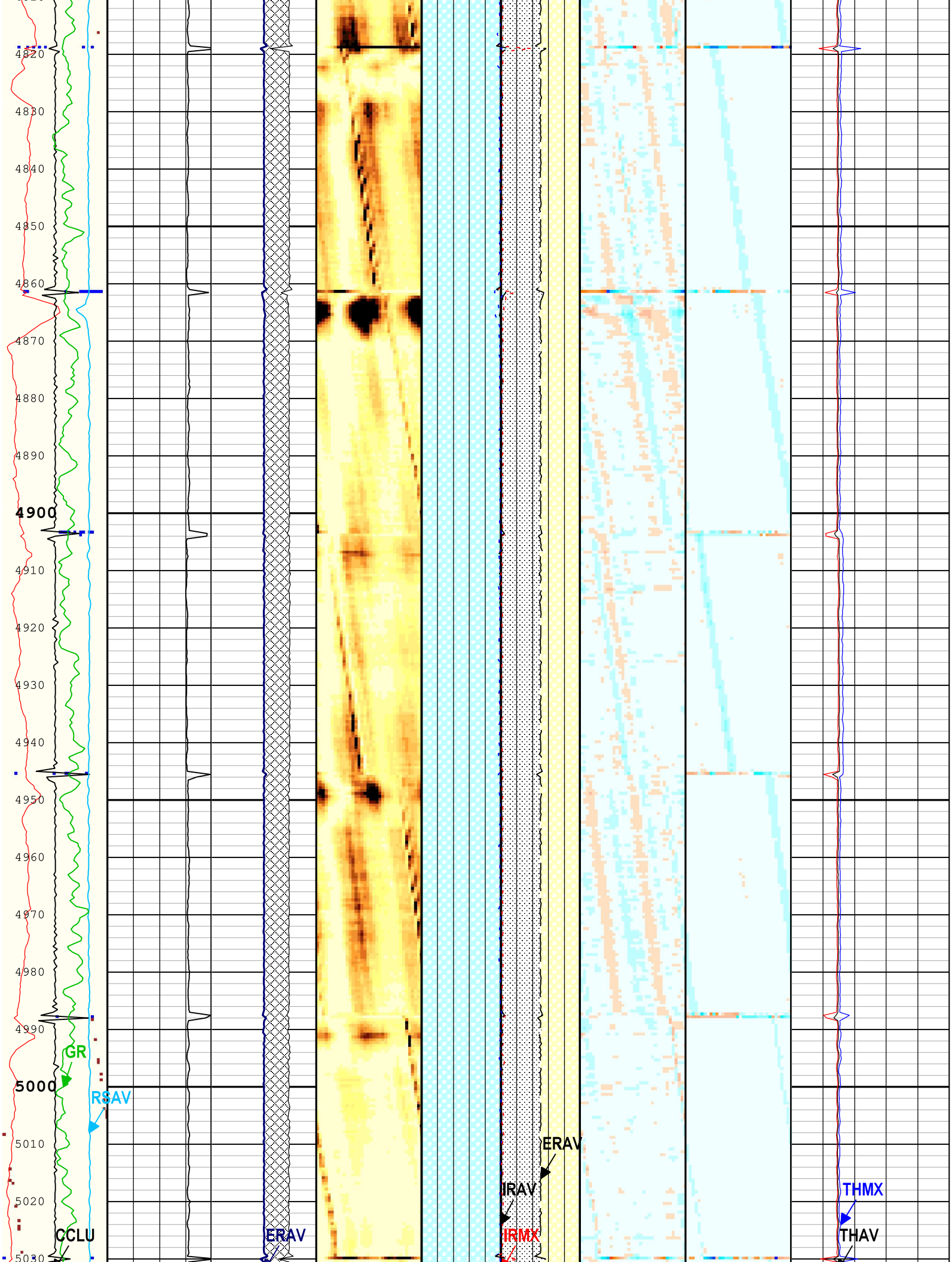
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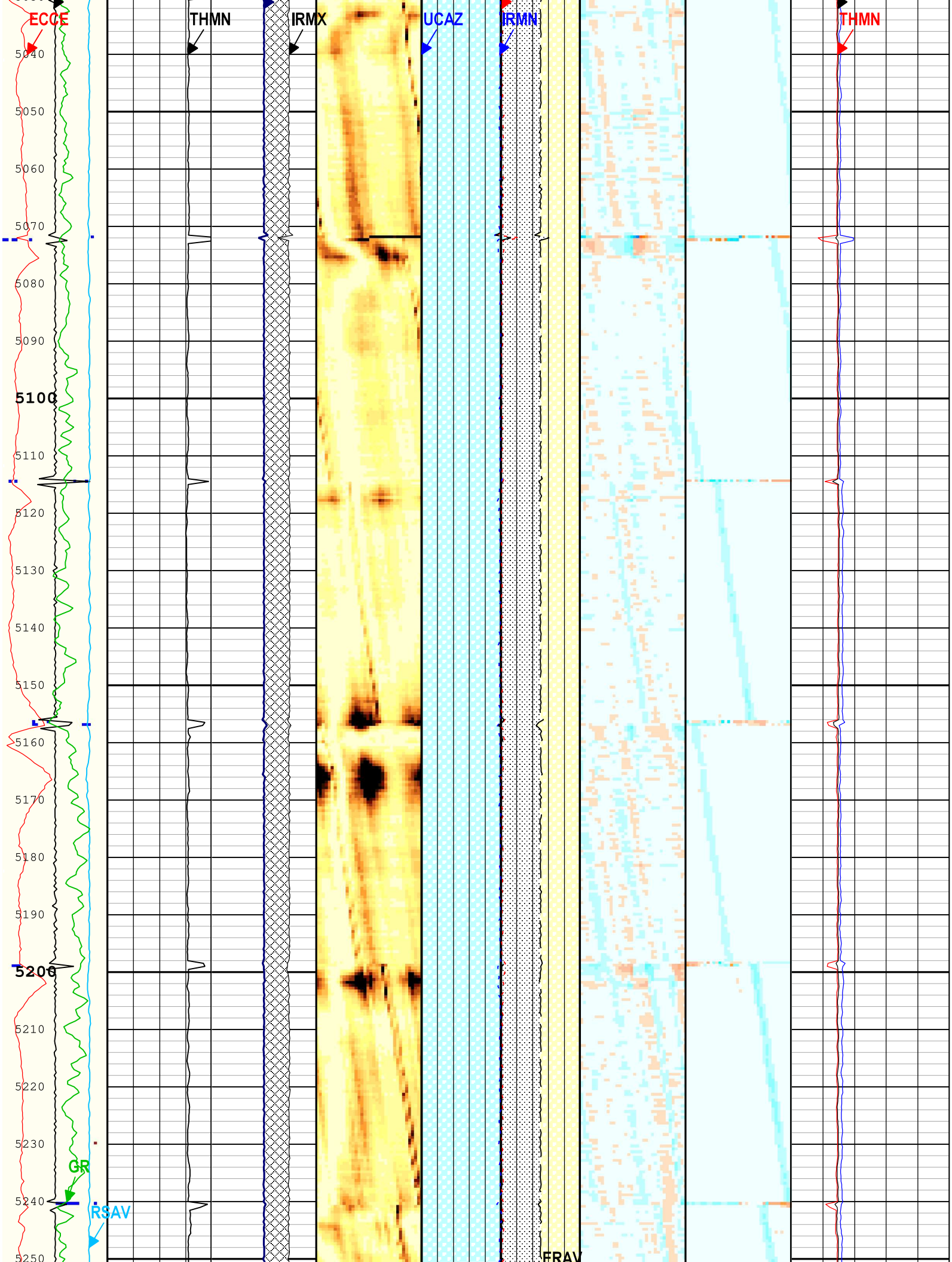
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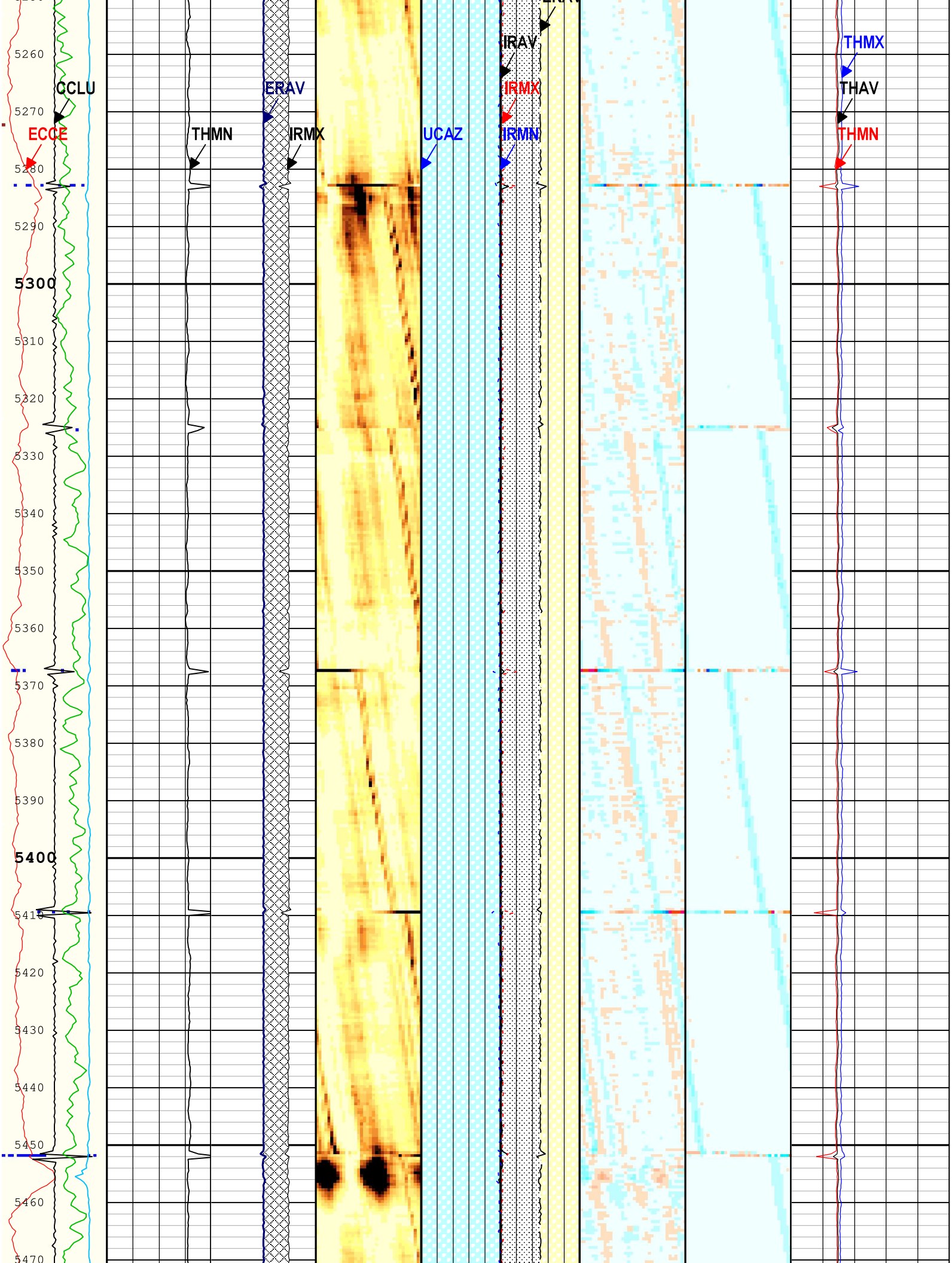
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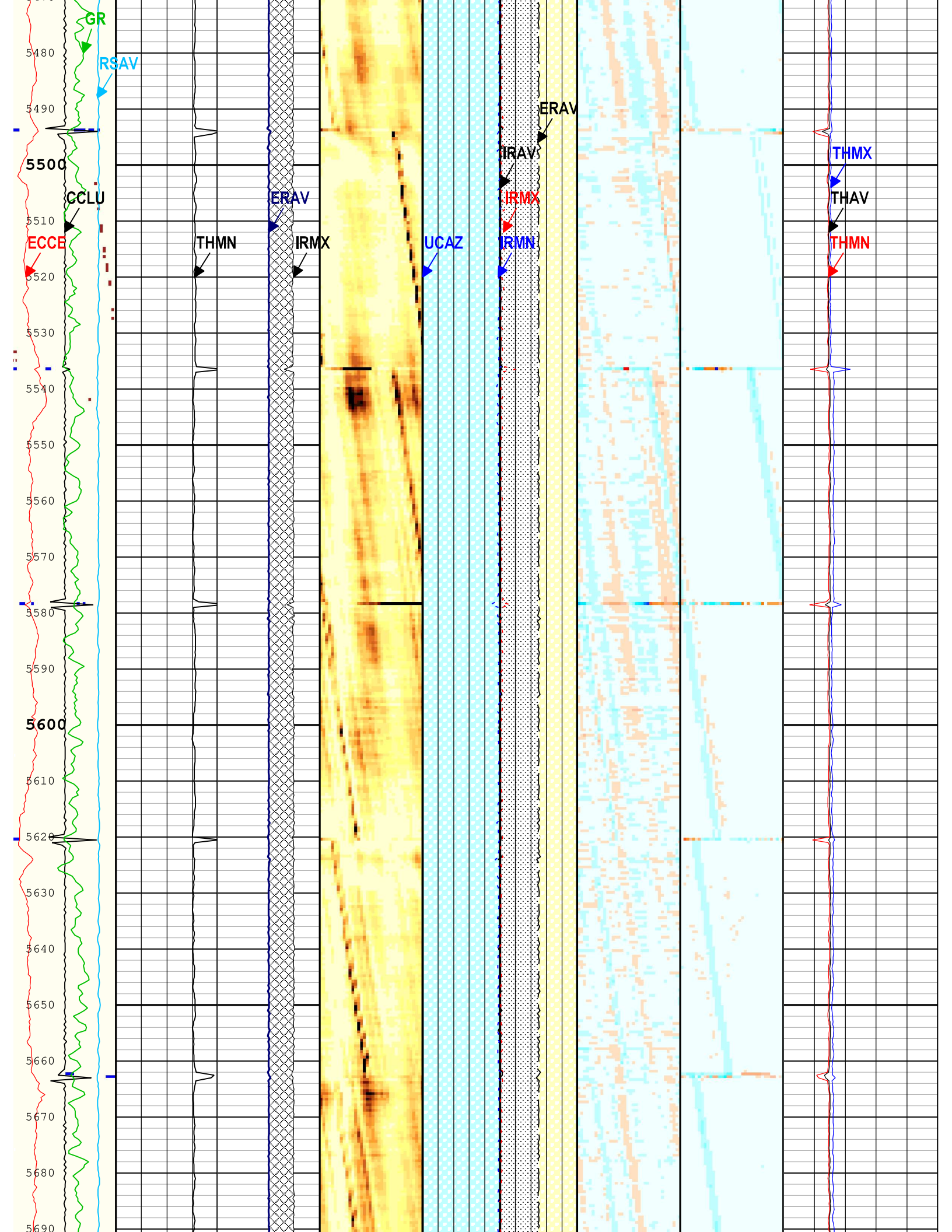
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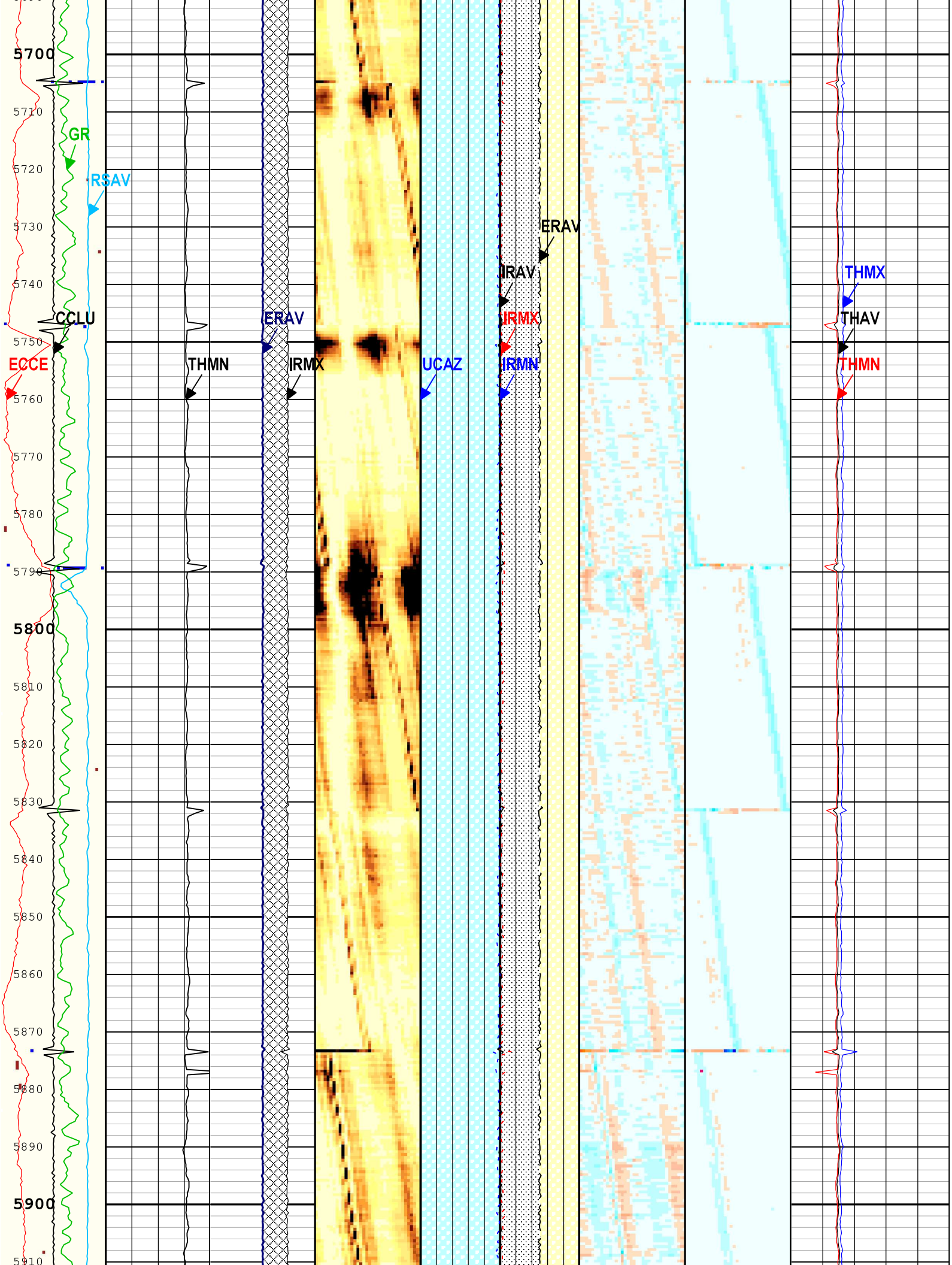
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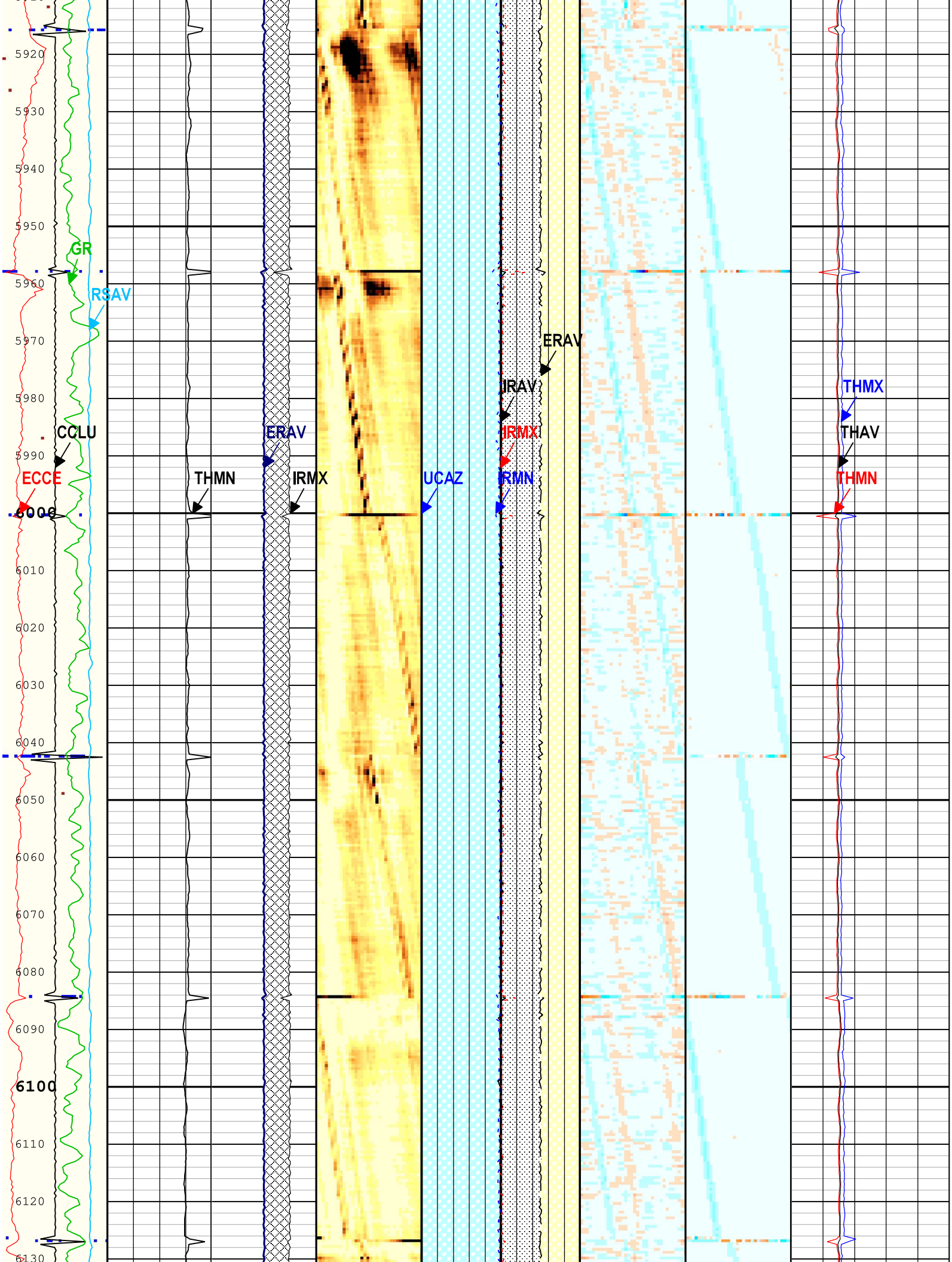
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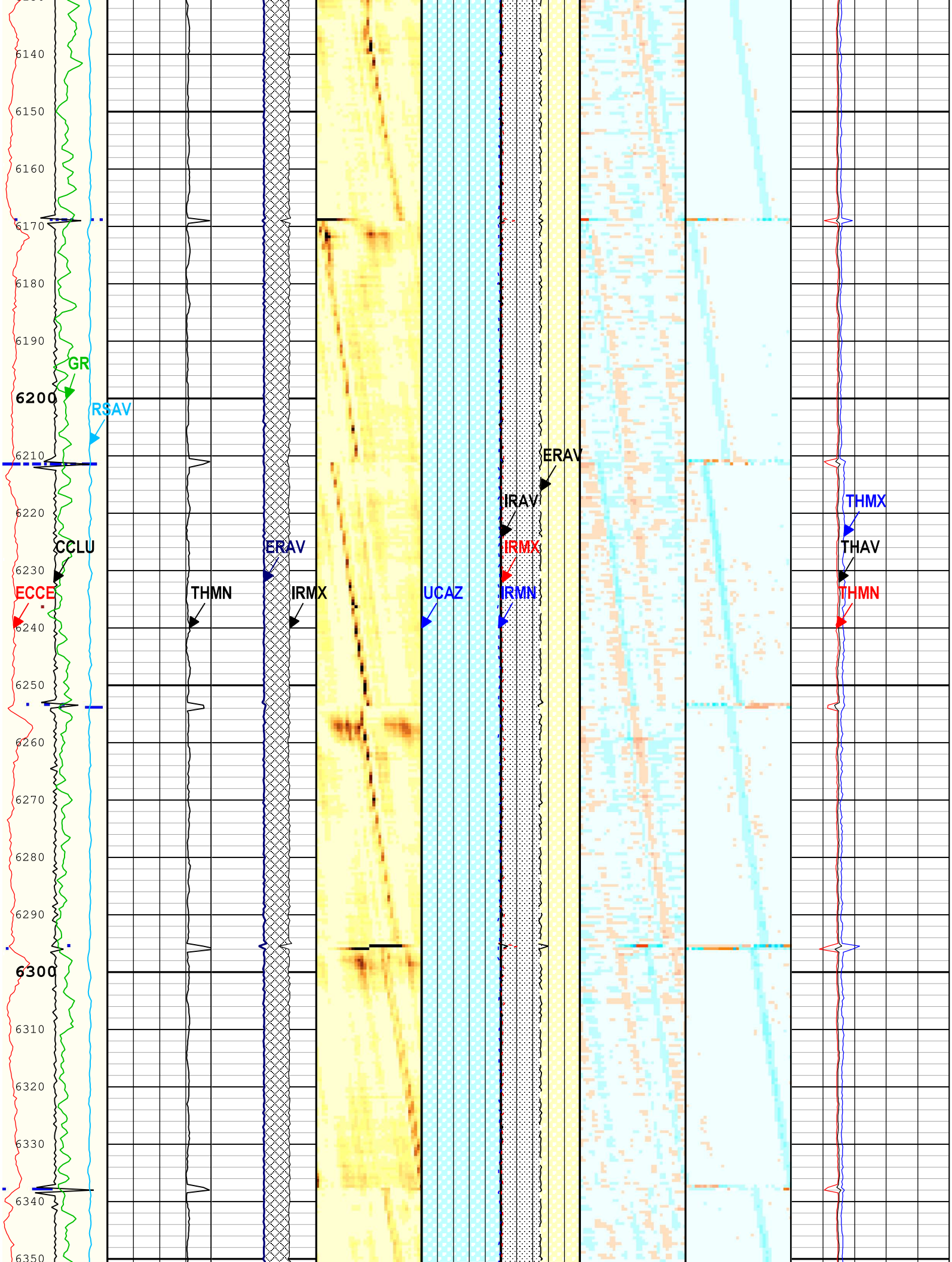
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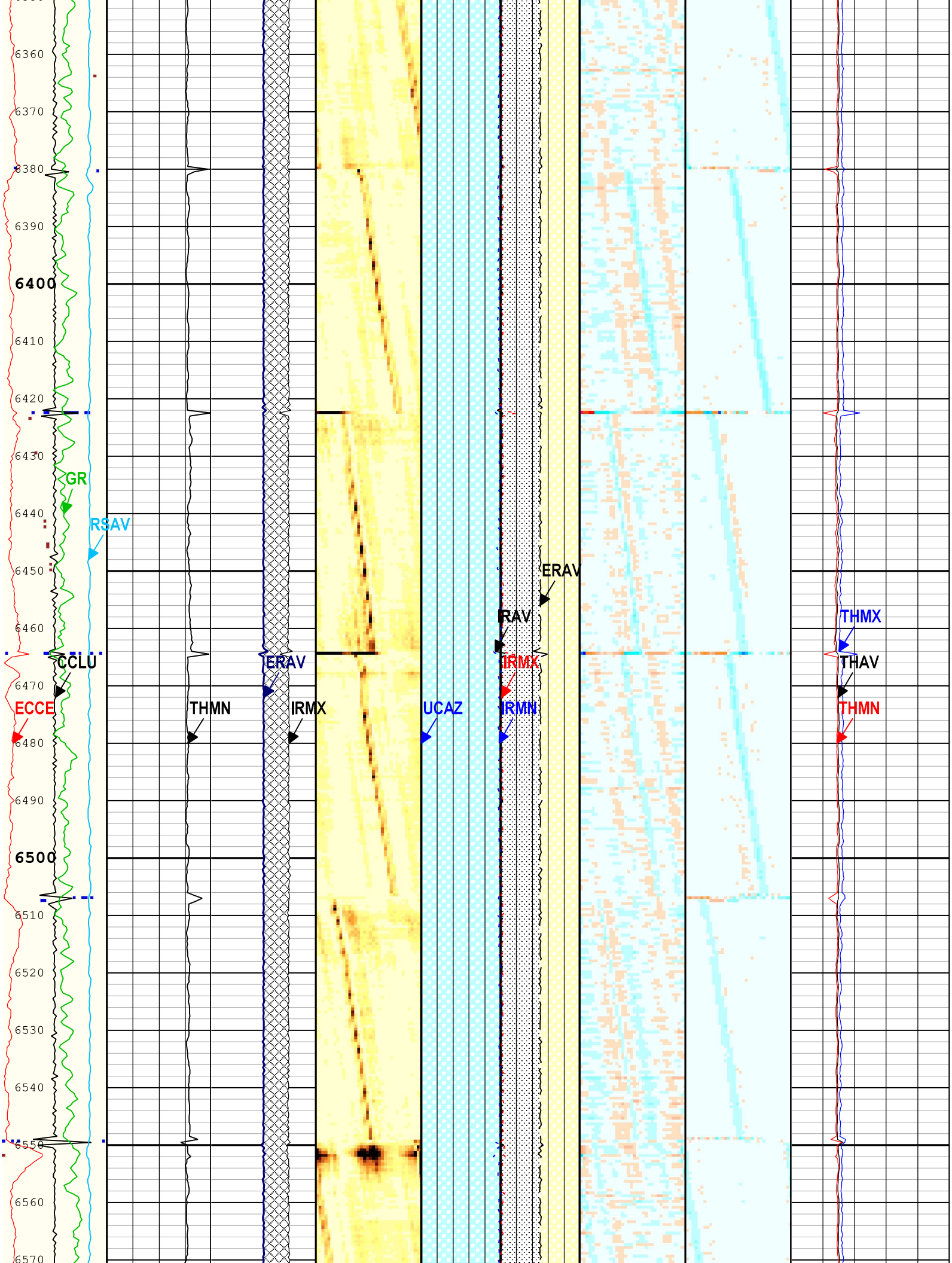
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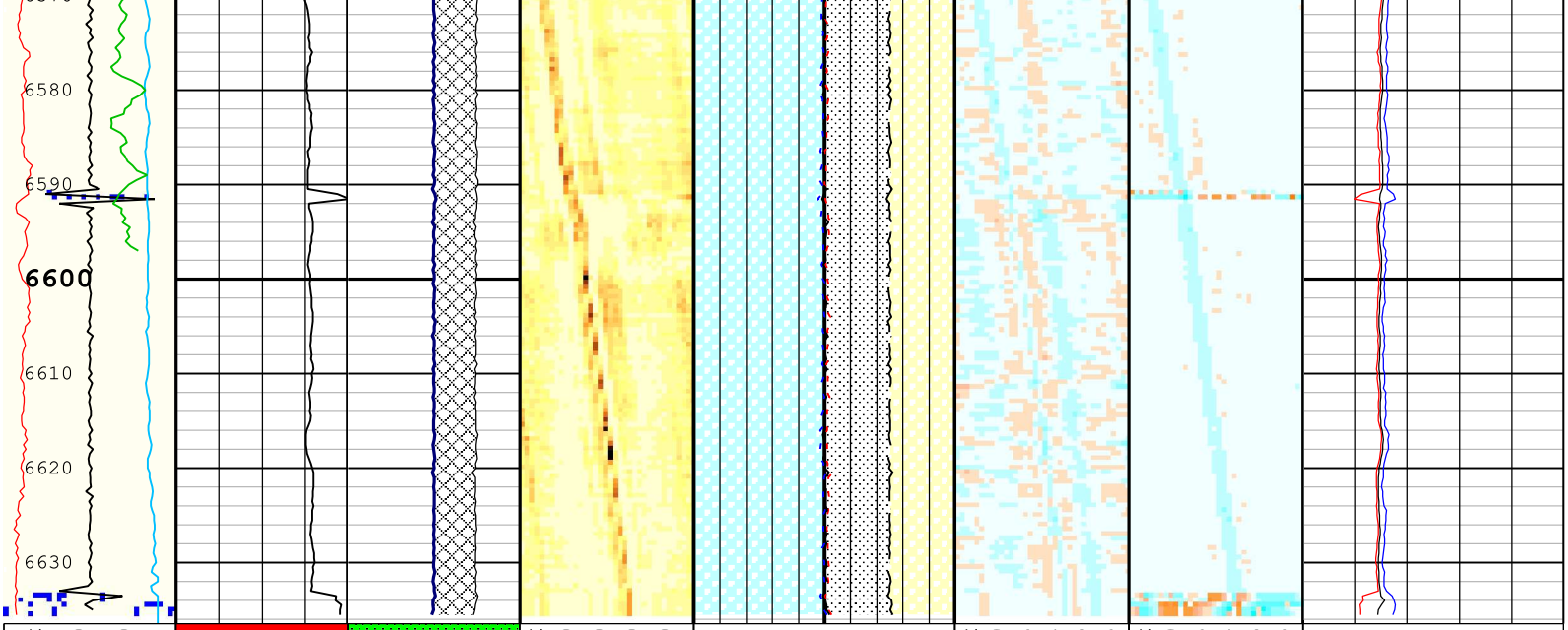

Absent 1.500 3.500

Explicit Normalization

USIT - USIT Processing Flags (UFLG) USIT-E

Amplitude of Eccentering (ECCE) USIT-E

0 in 0.5

Casing Collar Locator Ultrasonic (CCLU) USIT-E

-20 in 20

Motor Revolution Speed (RSAV) USIT-E

6 c/s 7.5

GR

0 gAPI 150

Large Reduction from Nominal Thickness

Casing Within 87.5% of Nominal Thickness

Thickness Minimum Value (THMN) USIT-E

0.4 in 0.2

Internal Radius Exceeds External Average

Casing Thickness (Between Max Internal and External Average)

Internal Radius Maximum Value (IRMX) USIT-E

2.75 in 1.75

External Radii Average (ERAV) USIT-E

2.75 in 1.75

Absent -5.200 -3.600 -2.000 -0.400

Explicit Normalization

USIT - Amplitude of Wave (AWBK) USIT-E

(dB)

Ultrasonic Azimuth (UCAZ) USIT-E

360 deg 0

Internal Radius Minimum Value (IRMN) USIT-E

1.5 in 2.5

Internal Radius Maximum Value (IRMX) USIT-E

1.5 in 2.5

Internal Radius Averaged Value (IRAV) USIT-E

1.5 in 2.5

External Radii Average (ERAV) USIT-E

1.5 in 2.5

Absent -0.059 -0.028 0.004 0.035 0.068

Explicit Normalization

USIT - Internal Radii Normalized (IRBK) USIT-E

(in)

Absent -0.059 -0.028 0.004 0.035 0.068

Explicit Normalization

USIT - Casing Thickness Normalized (THBK) USIT-E

(in)

Thickness Minimum Value (THMN) USIT-E

0.1 in 0.6

Thickness Average Value (THAV) USIT-E

0.1 in 0.6

Thickness Maximum Value (THMX) USIT-E

0.1 in 0.6

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Corrosion Format: Log (IBC Casing Integrity 5.5IN) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 15-Mar-2022 12:10:40

Channel Processing Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BS	Bit Size	WLSESSION	Depth Zoned	in
CDEN	Cement Density	USIT-E	0	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DFD	Drilling Fluid Density	Borehole	8.5	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	

DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	10	lbm/gal
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	15.96	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	IBC_FRP_OFFSET	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	FreePipe Norm.	
IMAR	Image Rotation	USIT-E	Off	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	15.37	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.29	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0	Mrayl
U-USIT_UFAO	USIT Flexural Attenuation Offset	USIT-E	0	dB/m
UFSFILT	Ultrasonic Flexural Surface Filter	USIT-E	LPF 250k	
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	ThirdInterfaceEcho	
ZMUD	Acoustic Impedance of Mud	Borehole	1.54	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	12.25	20.5	805
BS	7.875	805	6636.5

All depth are actual.

Tool Control Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	36	dB
EMXV	EMEX Voltage	USIT-E	80	V
HRES	Horizontal Resolution	USIT-E	10 deg	
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
UPAT	USIT Emission Pattern	USIT-E	Pattern 750 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	

One

Software Version

Acquisition System	Version
Maxwell 2022.0	12.0.215014.3100
Application Patch	Wireline_Hotfix-Mandatory-2022.0_12.0.216515

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[2]:Up	Up	1168.43 ft	1444.98 ft	15-Mar-2022 7:00:59 AM	15-Mar-2022 7:09:20 AM	ON	-5.31 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Occidental Petroleum INC Well:Frank 6-8

One: Log[2]:Up:S005

Description: USI Corrosion Format: Log (IBC Casing Integrity HiRes 5.5IN) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth

Creation Date: 15-Mar-2022 12:10:53

TIME_1900 - Time Marked every 60.00 (s)

Absent 1.500 3.500

Explicit Normalization

USIT - USIT Processing Flags (UFLG) USIT-E

Amplitude of Eccentering (ECCE) USIT-E

0 in 0.5

Casing Collar Locator Ultrasonic (CCLU) USIT-E

-20 in 20

Motor Revolution Speed (RSAV) USIT-E

6 c/s 7.5

GR

0 gAPI 150

Large Reduction from Nominal Thickness

Casing Within 87.5% of Nominal Thickness

Thickness Minimum Value (THMN) USIT-E

0.4 in 0.2

Nominal Casing Thickness (THNO) USIT-E

0.4 in 0.2

Internal Radius Exceeds External Average

Casing Thickness (Between Max Internal and External Average)

Internal Radius Maximum Value (IRMX) USIT-E

3 in 2

External Radii Average (ERAV) USIT-E

3 in 2

Absent -5.200 -3.600 -2.000 -0.400

Explicit Normalization

USIT - Amplitude of Wave (AWBK) USIT-E

(dB)

Ultrasonic Azimuth (UCAZ) USIT-E

360 deg 0

Internal Radius Minimum Value (IRMN) USIT-E

2 in 3

Internal Radius Maximum Value (IRMX) USIT-E

2 in 3

Internal Radius Averaged Value (IRAV) USIT-E

2 in 3

External Radii Average (ERAV) USIT-E

2 in 3

Absent -0.059 -0.028 0.004 0.035 0.068

Explicit Normalization

USIT - Internal Radii Normalized (IRBK) USIT-E

(in)

Absent -0.059 -0.028 0.004 0.035 0.068

Explicit Normalization

USIT - Casing Thickness Normalized (THBK) USIT-E

(in)

Thickness Minimum Value (THMN) USIT-E

0.1 in 0.6

Thickness Average Value (THAV) USIT-E

0.1 in 0.6

Thickness Maximum Value (THMX) USIT-E

0.1 in 0.6

1130

1140

1150

1160

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1180

1190

1200

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RSAV

THMN

CCLU

ERAV

IRAVZ

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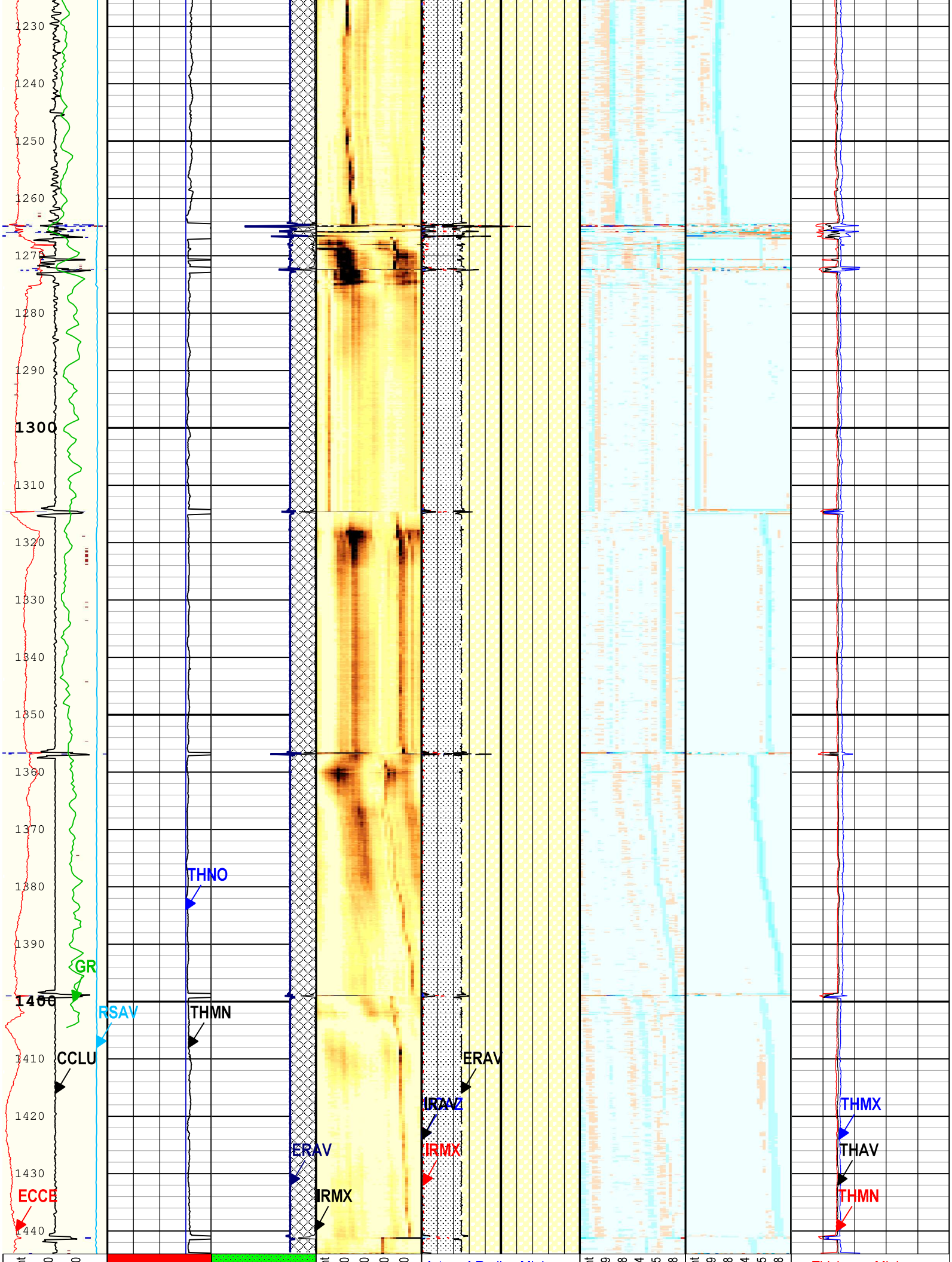
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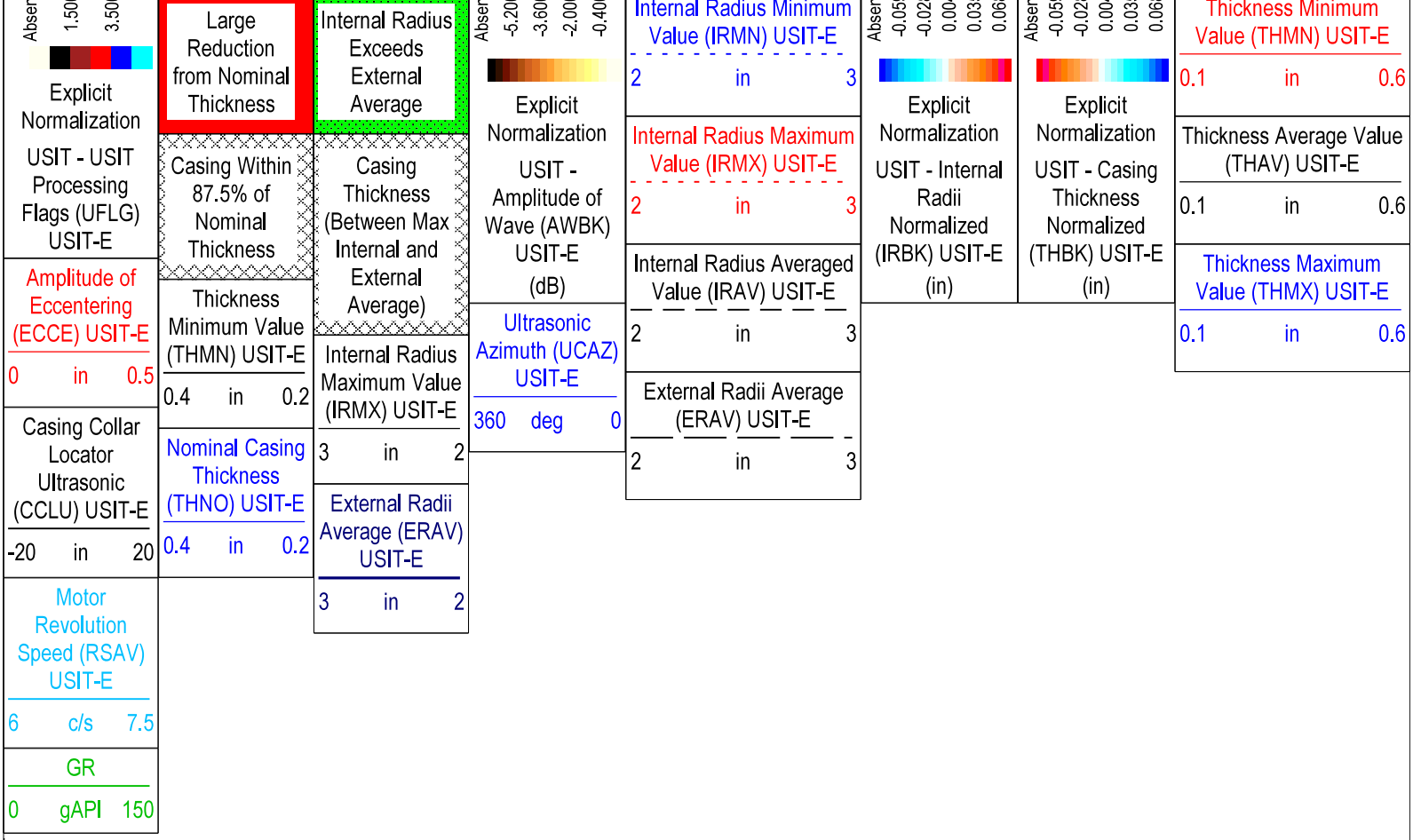


TIME_1900 - Time Marked every 60.00 (s)

Description: USI Corrosion Format: Log (IBC Casing Integrity HiRes 5.5IN) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 15-Mar-2022 12:10:53

Channel Processing Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
BARI(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BS	Bit Size	WLSESSION	7.875	in
CDEN	Cement Density	USIT-E	0	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.25	in
CYSTLGR	Casing Yield Strength - Zoned along logger depths	WLSESSION	80000	psi
DFD	Drilling Fluid Density	Borehole	8.5	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FD	Fluid Density	USIT-E	10	lbm/gal
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	15.96	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	IBC_FRP_OFFSET	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	FreePipe Norm.	
IMAR	Image Rotation	USIT-E	Off	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	15.37	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.29	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0	Mrayl
U-USIT_UFAO	USIT Flexural Attenuation Offset	USIT-E	0	dB/m
UFSFILT	Ultrasonic Flexural Surface Filter	USIT-E	LPF 250k	

U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	ThirdInterfaceEcho	
ZMUD	Acoustic Impedance of Mud	Borehole	1.54	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Tool Control Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	36	dB
EMXV	EMEX Voltage	USIT-E	80	V
HRES	Horizontal Resolution	USIT-E	10 deg	
IBC_ACQTYPE	IBC Acquisition type	USIT-E	DVR 1/4 and 1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
UPAT	USIT Emission Pattern	USIT-E	Pattern 750 KHz	
UWKM	USIT Working Mode	USIT-E	10 deg at 1.5 in	
U-USIT_UTAN	Transducer Angles	USIT-E	33_DEG	
VRES	Vertical Resolution	USIT-E	1.5 in	

XYZ

Company:Occidental Petroleum INC Well:Frank 6-8

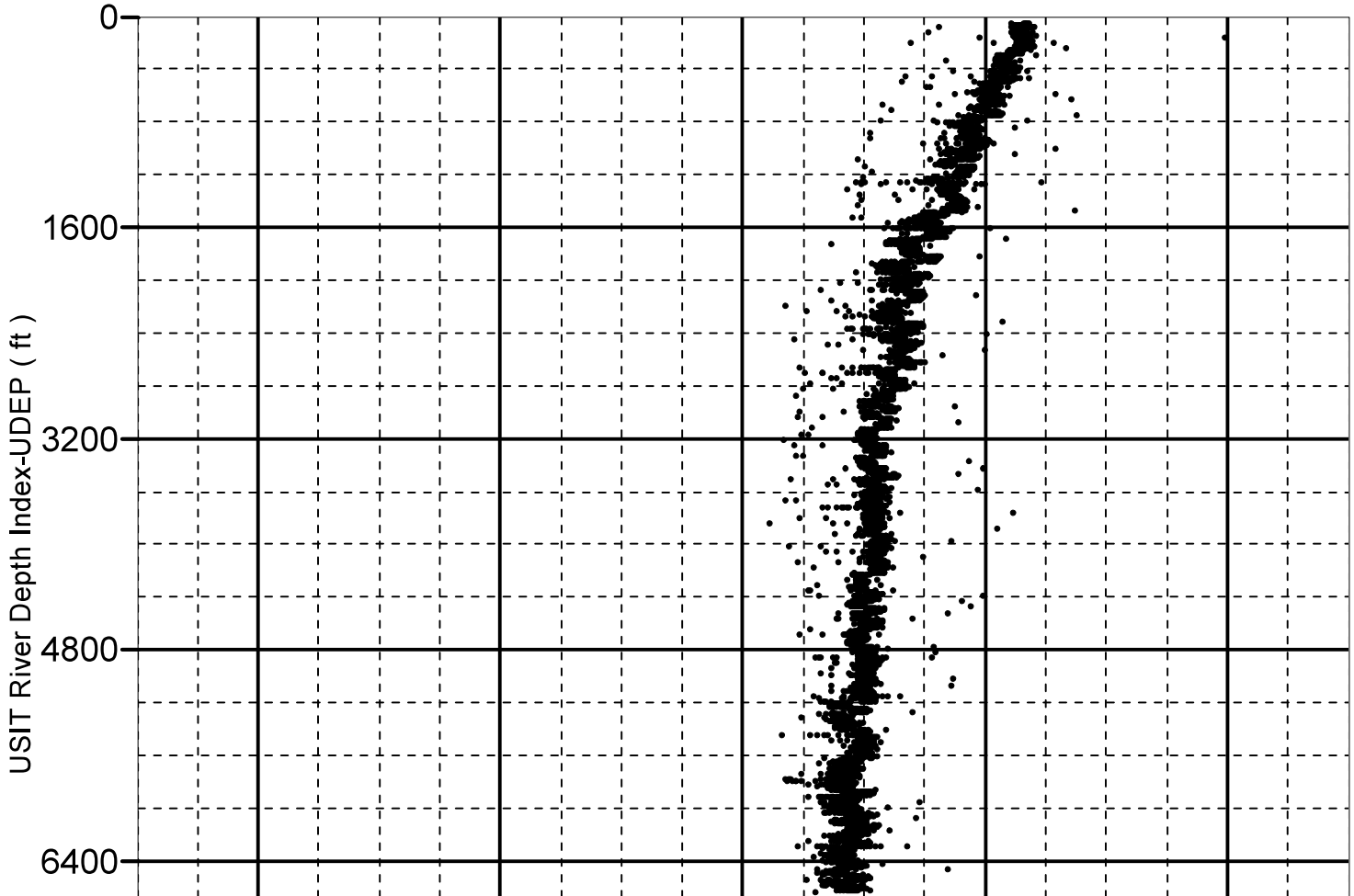
One: Log[5]:Up:S005

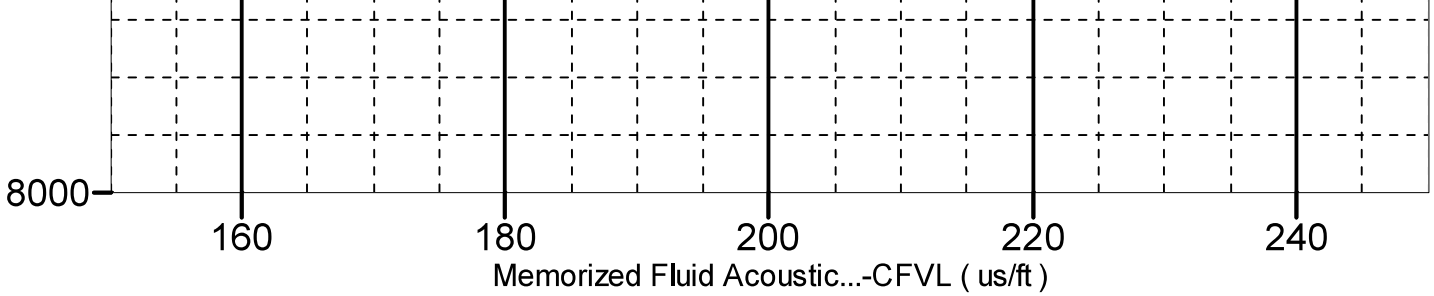
Fluid Acoustic Slowness vs Depth

2D Cross Plot

Index Range: From 6636.50 to 60.00 ft

● CFVL-UDEP





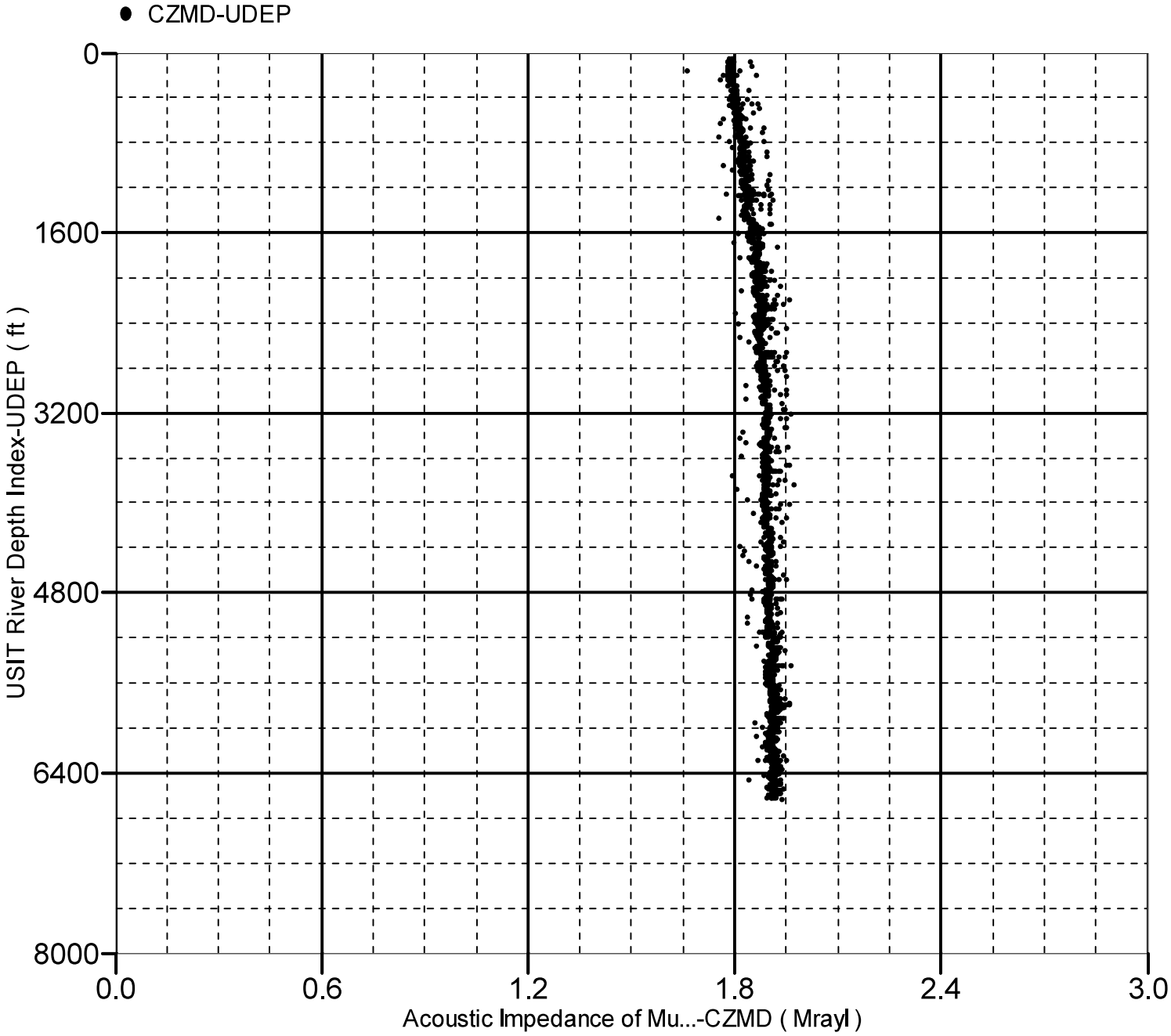
XYZ

Company:Occidental Petroleum INC Well:Frank 6-8
One: Log[5]:Up:S005

Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 6636.50 to 60.00 ft



Company:	Occidental Petroleum INC
Well:	Frank 6-8
Field:	Wattenberg

Schlumberger

County:	Weld
State:	Colorado

Isolation Scanner

Casing Integrity

Gamma Ray - CCL