Schlumberger

Company: Occidental Petroleum Inc

Well: Warner 11-18

Field: Wattenberg

County: Weld State: Colorado

Isolation Scanner

Casing Integrity

Gamma Ray - CCL

County: Weld
Field: Wattenberg
Location: NESW Sec 9, T2N, R65W
Well: Warner 11-18
Company: Occidental Petroleum Inc

Location: NESW Sec 9, T2N, R65W
SHL: 2180' FSL X 1800' FWL

Elev.:	K.B.	5018.00	ft
	G.L.	5002.00	ft
	D.F.	5017.00	ft

Permanent Datum:	Ground Level	Elev.:	5002.00 f
Log Measured From:	Kelly Bushing	16.00 ft	above Perm.Datum
Drilling Measured From:	Kelly Bushing		

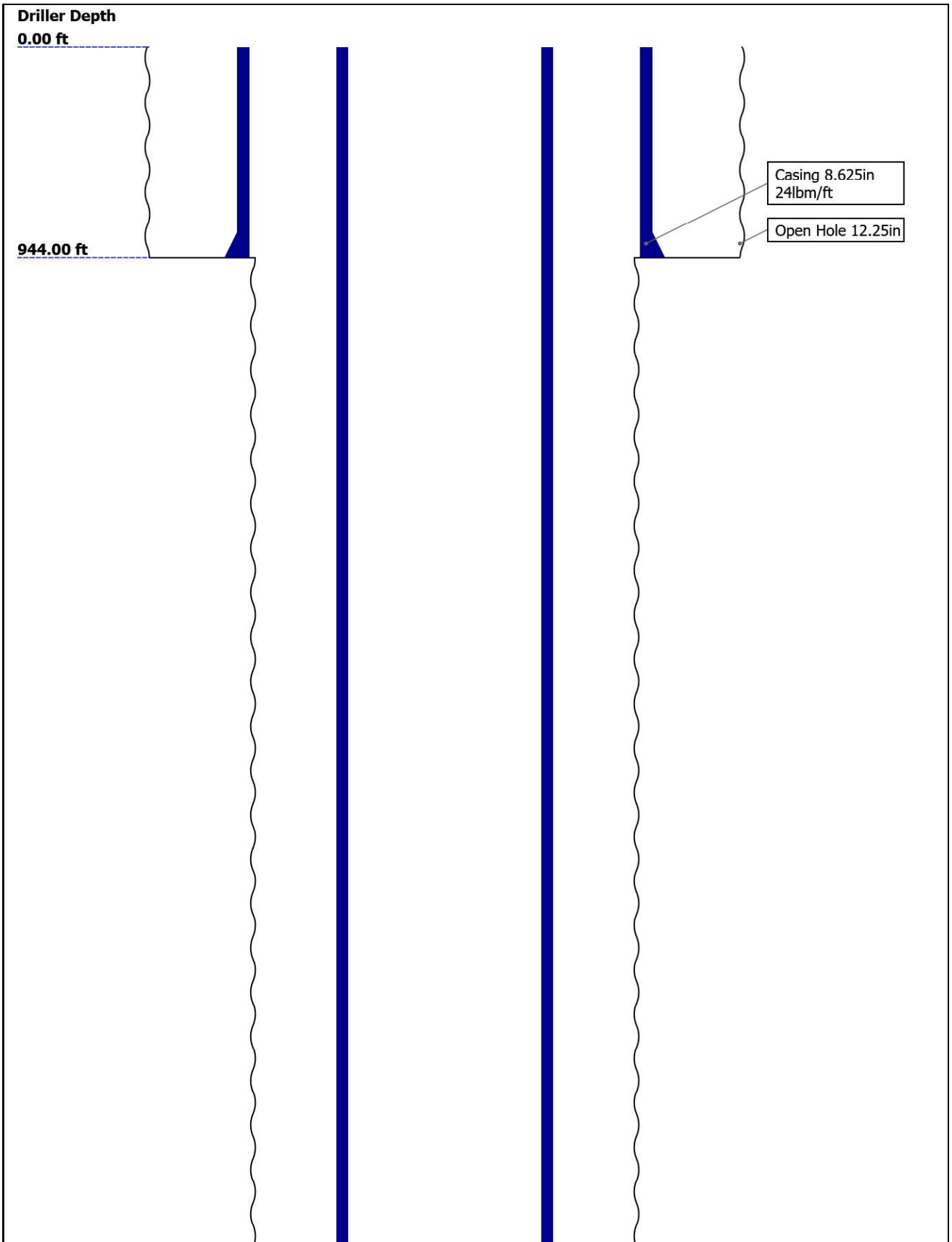
API Serial No.	Section:	Township:	Range:
05-123-21995-00	18	2N	65W

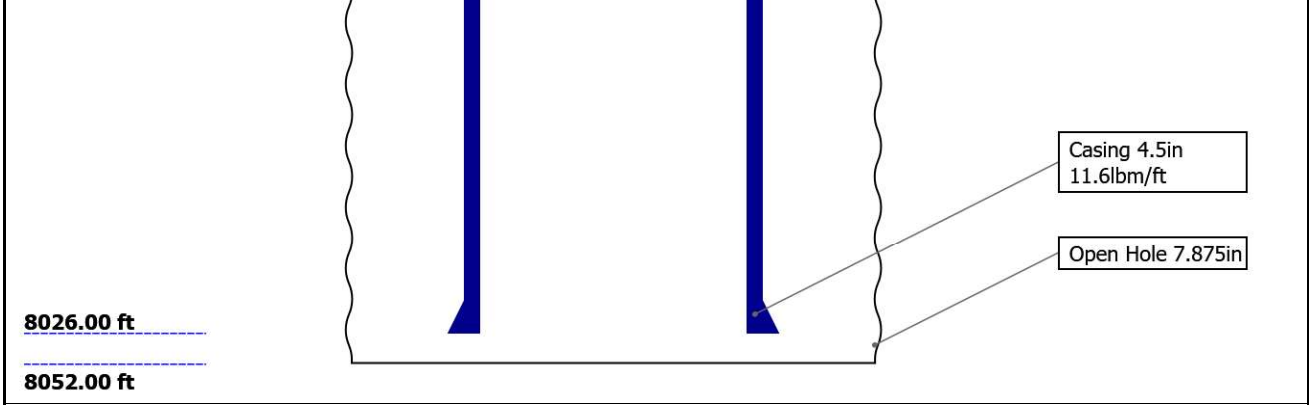
Logging Date		25-Feb-2022			
Run Number		One			
Depth Driller		8052.00 ft			
Schlumberger Depth		8052.00 ft			
Bottom Log Interval		7000.00 ft			
Top Log Interval		50.00 ft			
Casing Fluid Type		Water			
Salinity					
Density		9 lbm/gal			
Fluid Level		8.00 ft			
BIT/CASING/TUBING STRING					
Bit Size		7.88 in			
From		944.00 ft			
To		8052.00 ft			
Casing/Tubing Size		4.5 in			
Weight		11.6 lbm/ft			
Grade		N80			
From		0.00 ft			
To		8026.00 ft			
Max Recorded Temperatures		160 degF			
Logger on Bottom	Time	25-Feb-2022	11:52:00		
Unit Number	Location:	9115	Ft. Morgan		
Recorded By		Ruobing Wu			
Witnessed By		Ray Bishop			

Disclaimer

Contents

Well Sketch



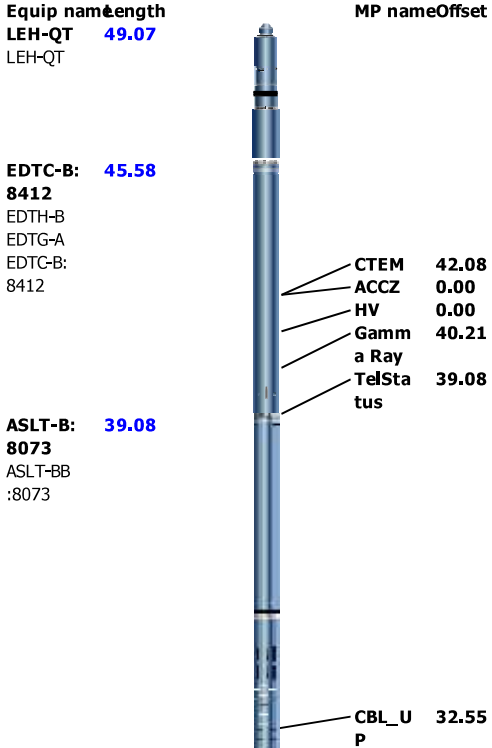


Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	12.25	7.875				
Top Driller (ft)	0	944				
Top Logger (ft)	0	944				
Bottom Driller (ft)	944	8052				
Bottom Logger (ft)	944	8052				
Casing						
Size (in)	8.625	4.5				
Weight (lbm/ft)	24	11.6				
Inner Diameter (in)	8.097	4				
Grade	N/A	N80				
Top Driller (ft)	0	0				
Top Logger (ft)	0	0				
Bottom Driller (ft)	944	8026				
Bottom Logger (ft)	944	8026				

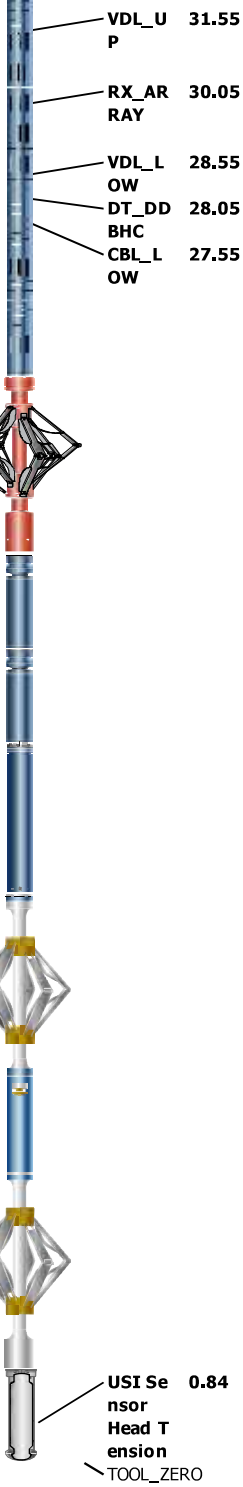
Remarks and Equipment Summary

One: Toolstring



One: Remarks

Log recorded in 10 Deg, 6 in Resolution; ASLT ran in attenuation mode
Log recorded without surface induced pressure from TD to 500ft, 500 psi from 500ft
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-JA		
Serial Number	6611		
Calibration Date	07-Jun-2021		
Calibrator Serial Number	57		
Calibration Cable Type	7-39PIXXS		
Wheel Correction 1	-8		
Wheel Correction 2	-8		
Tension Device			

Tension Device

Type	CMTD-B/A		
Serial Number			
Calibration Date	07-Feb-2022		
Calibrator Serial Number			
Number of Calibration Points	0		

Logging Cable

Type	7-39PI-XXS		
Serial Number	1234		
Length	28000.00 ft		
Conveyance Type	Wireline		
Rig Type			

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		

Survey Record

Survey Calculation

Method :	Minimum Radius of Curvature	DLS Method :	Lubinski
North Reference :	True North	Total Correction Formula :	Magnetic Dec

Rig Location

Latitude :	40° 8' 13.848" N	Longitude :	104° 42' 34.2" W

Tie In Point

Measured Depth:	0.00 ft	Inclination:	0.00 deg	Azimuth:	0.00 deg
True Vertical Depth:	0.00 ft	North Displacement:	0.00 ft	East Displacement:	0.00 ft

Survey Quality Index

28 : Tie-In Point

Survey Correction Index

0 : No correction

Survey Description Index

0 : Not Flagged Survey

Seq	MD (ft)	Incl (deg)	Azim (deg)	Course (ft)	TVD (ft)	V Sec (ft)	N/ -S (ft)	E/ -W (ft)	Closure (ft)	at Azim (deg)	DLS deg/100ft	Tool Type	QI	CI	DI
1	0.00	0.00	0.00	- - - -	0.00	0.00	0.00	0.00	0.00	90.00	0.00	TIP	28	0	0

Main Pass

Software Version

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

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[6]:Up	Up	217.58 ft	7009.18 ft	25-Feb-2022 11:52:44 AM	25-Feb-2022 1:59:09 PM	ON	6.34 ft	Yes

One	Log[10]:Up	Up	54.88 ft	907.28 ft	25-Feb-2022 3:10:33 PM	25-Feb-2022 3:27:16 PM	ON	1.53 ft	Yes

All depths are referenced to toolstring zero

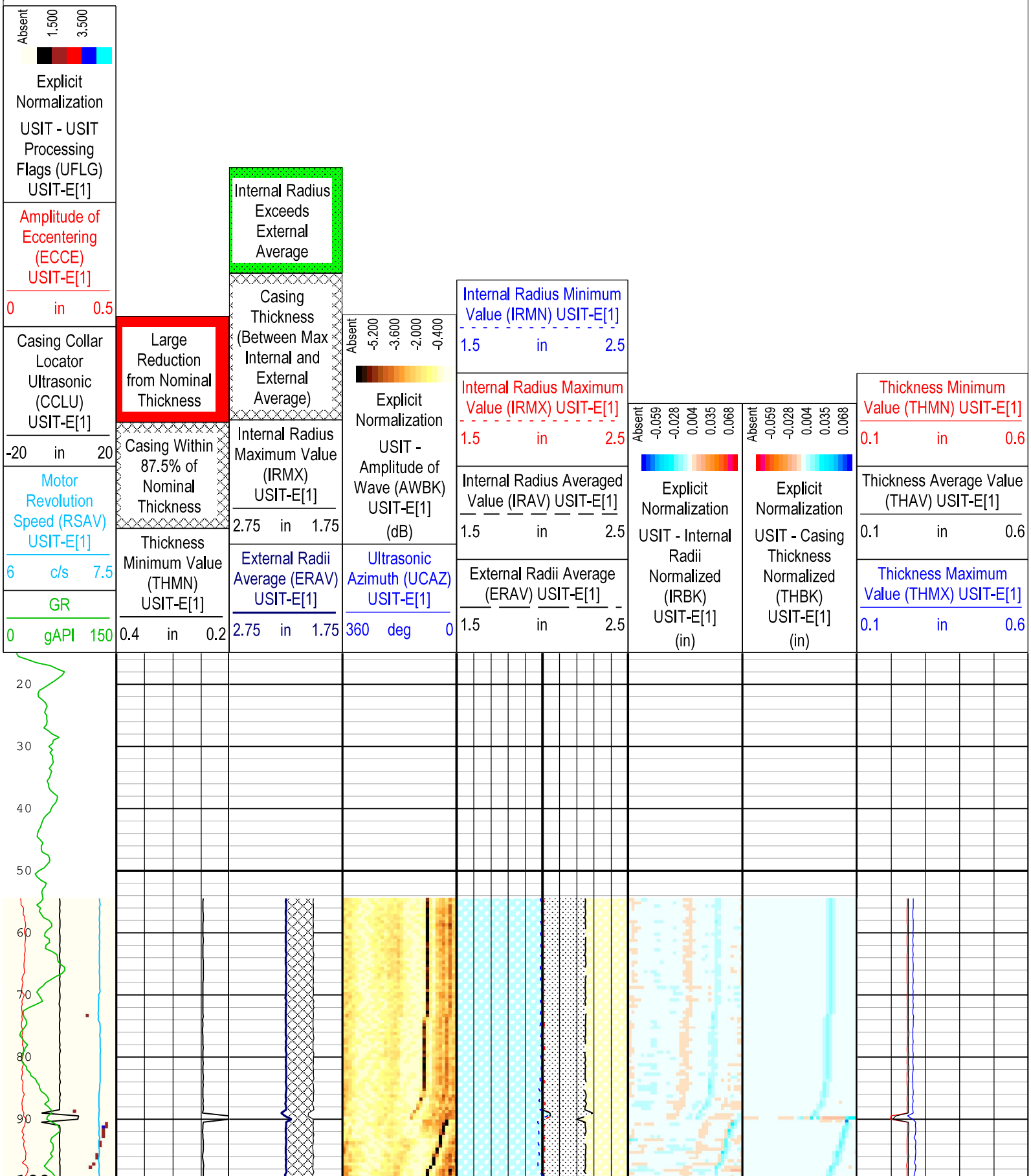
Log

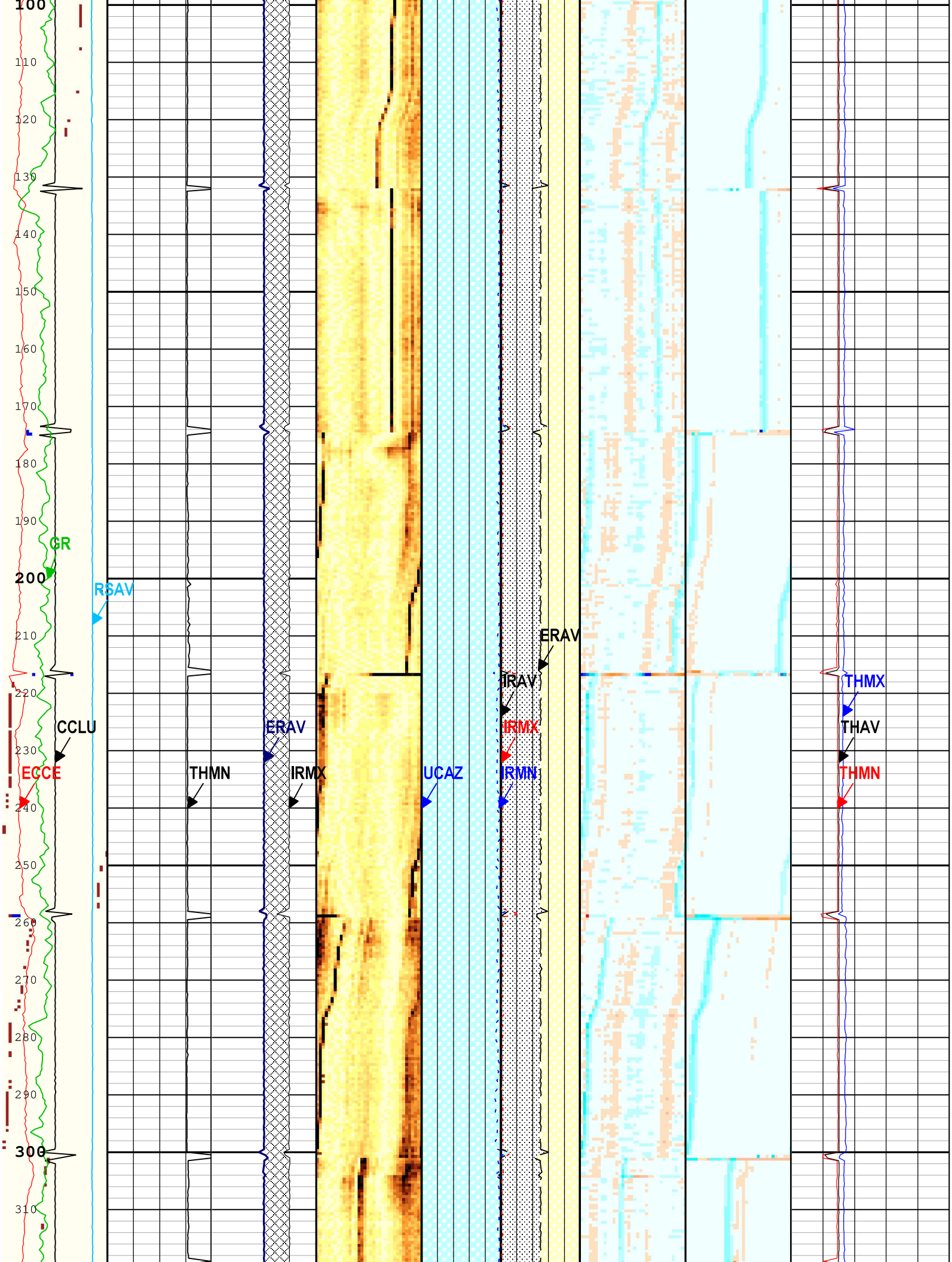
Company:Occidental Petroleum Inc Well:Warner 11-18

Main Pass:S010

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: 25-Feb-2022 16:55:29

TIME_1900 - Time Marked every 60.00 (s)

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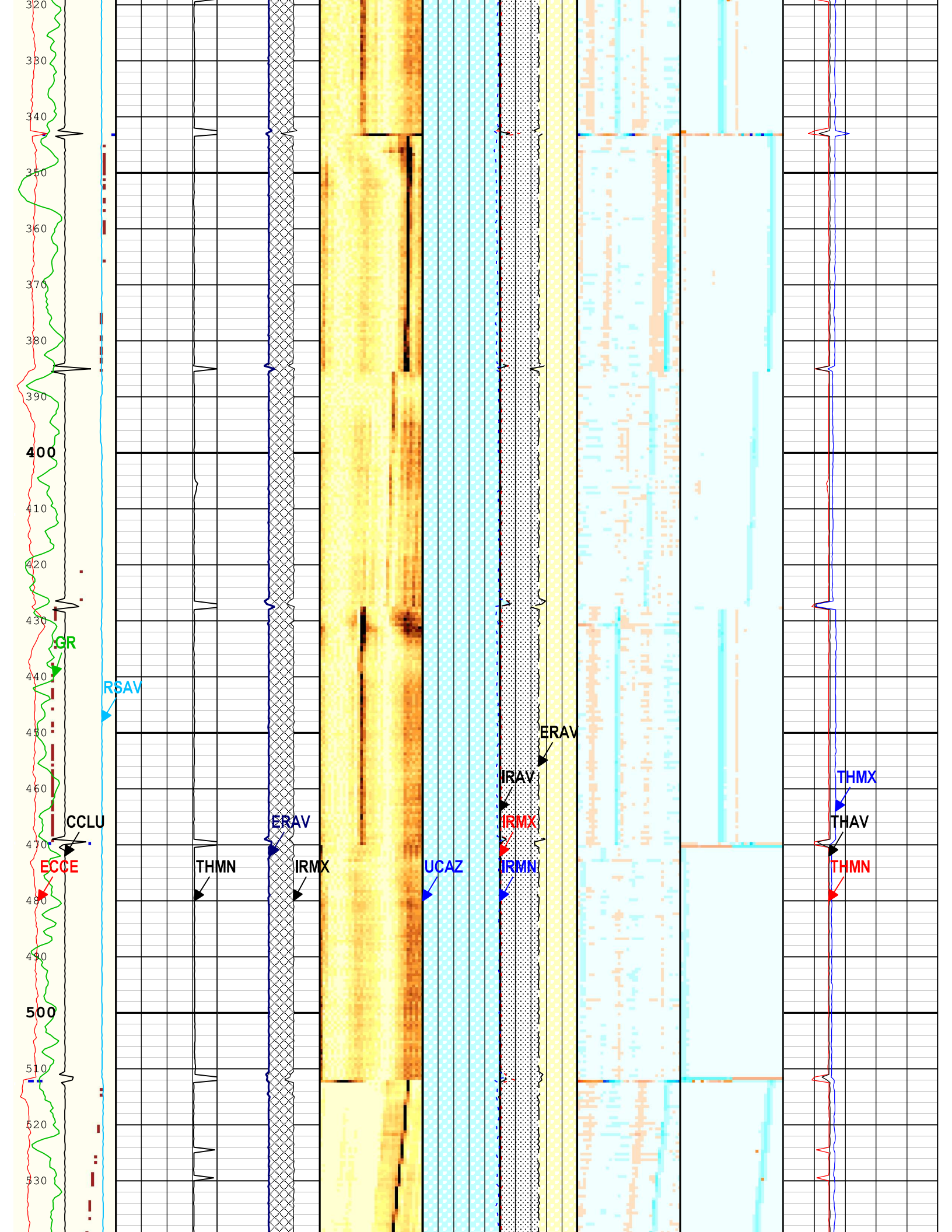
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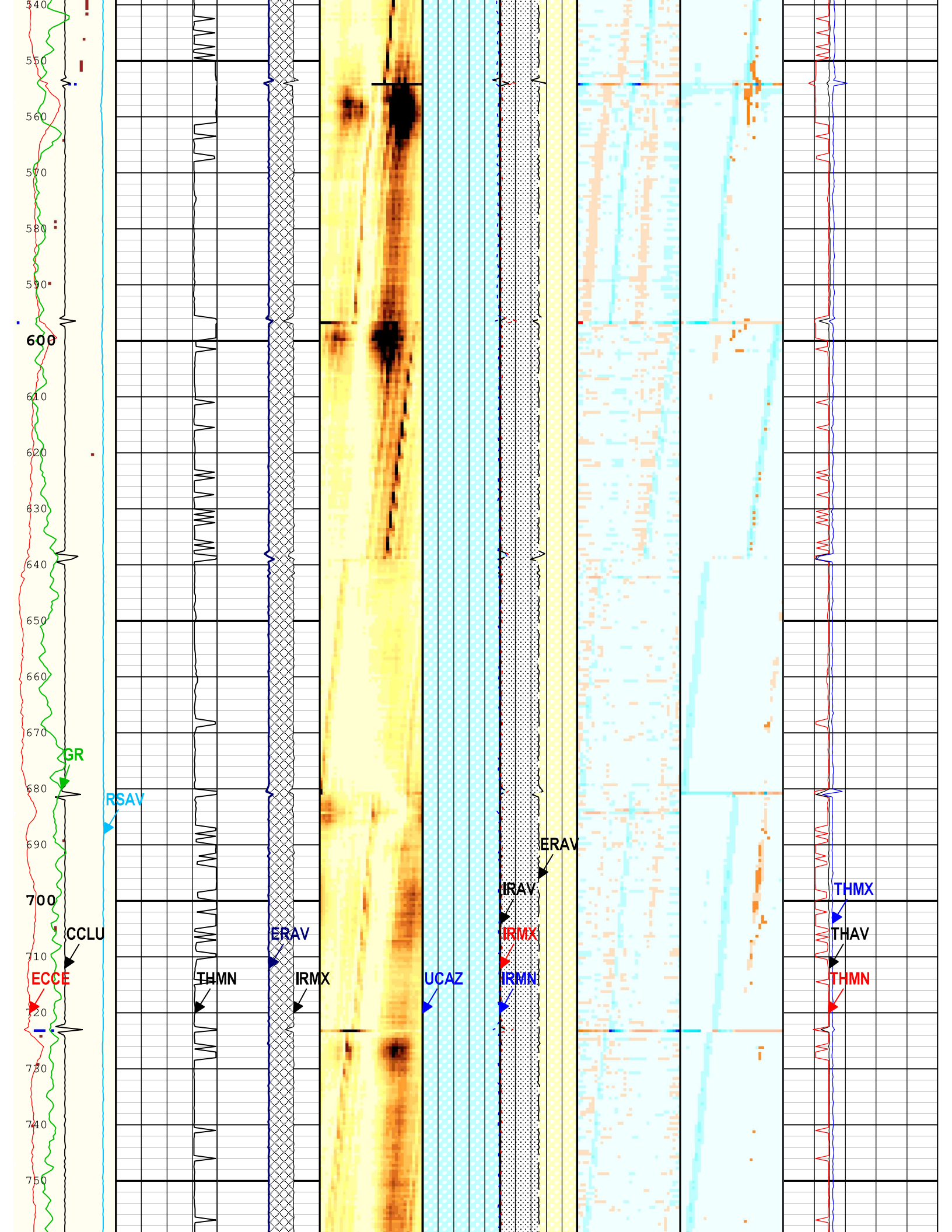
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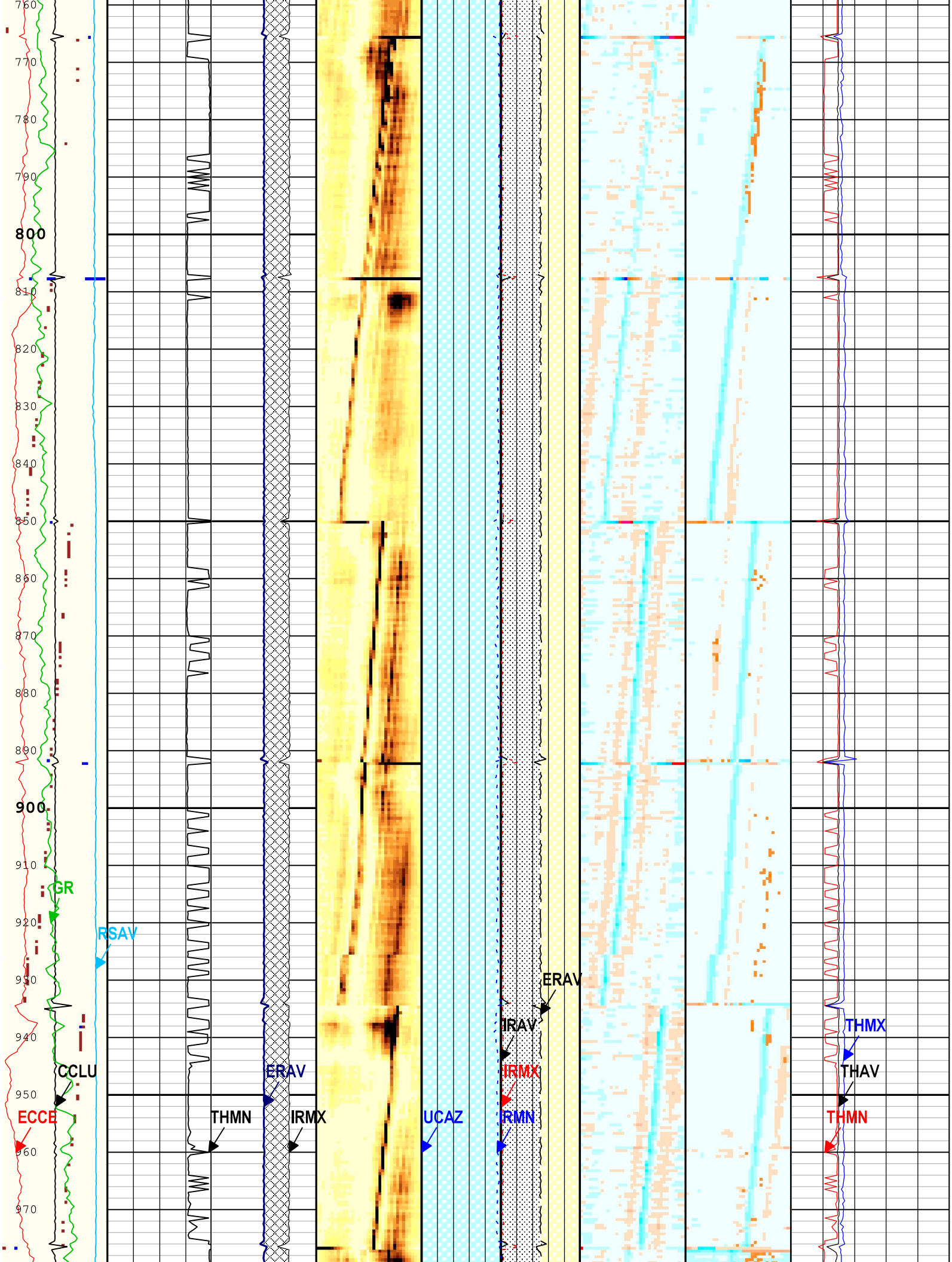
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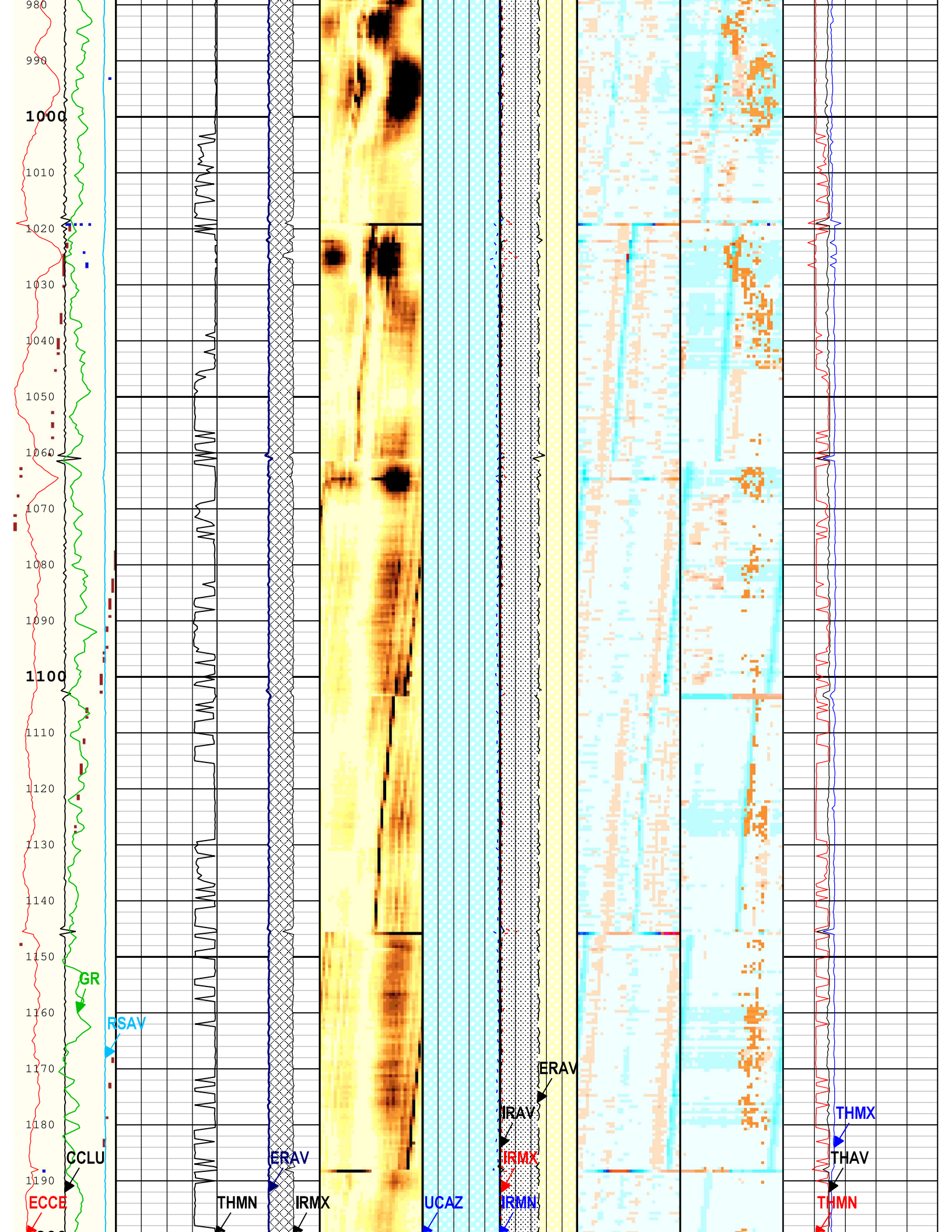
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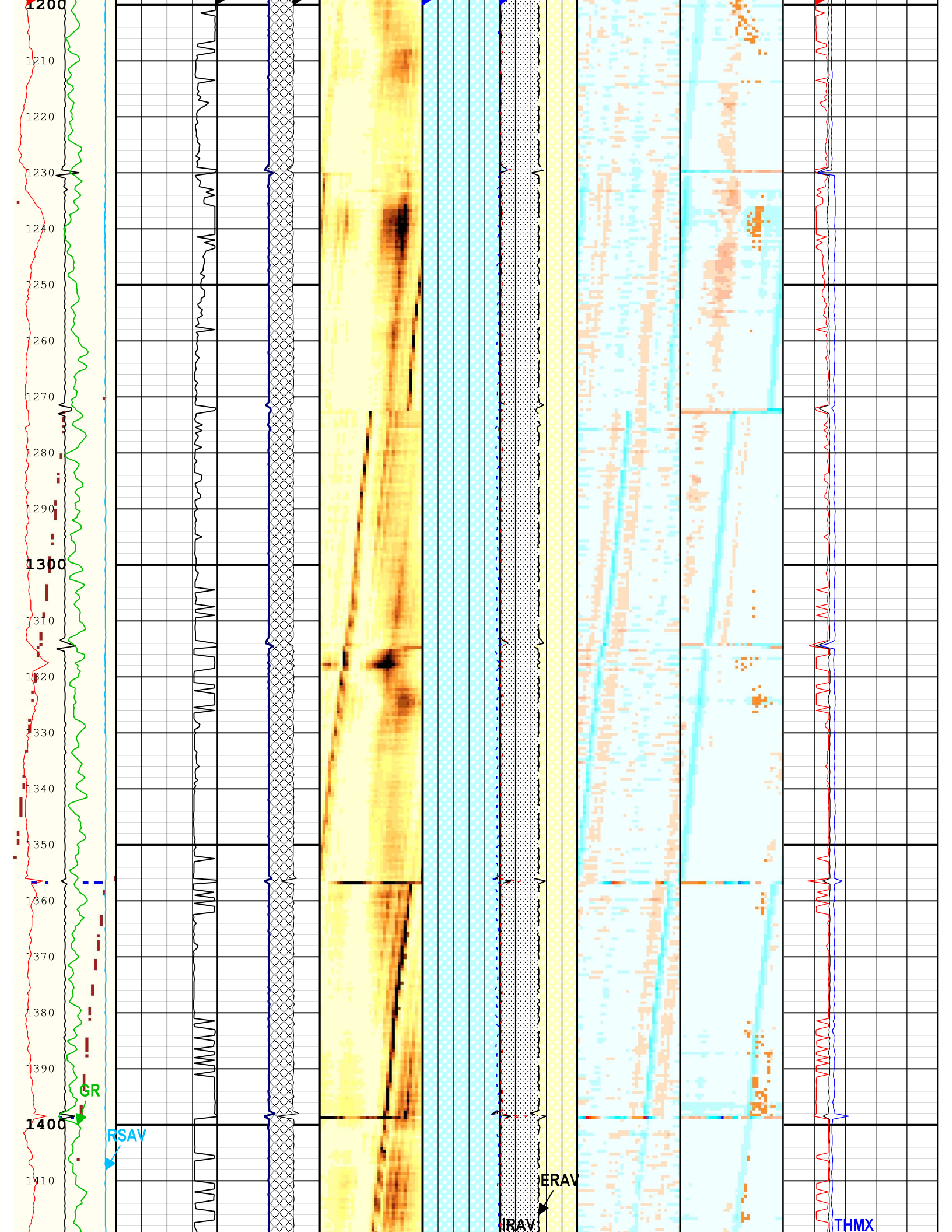
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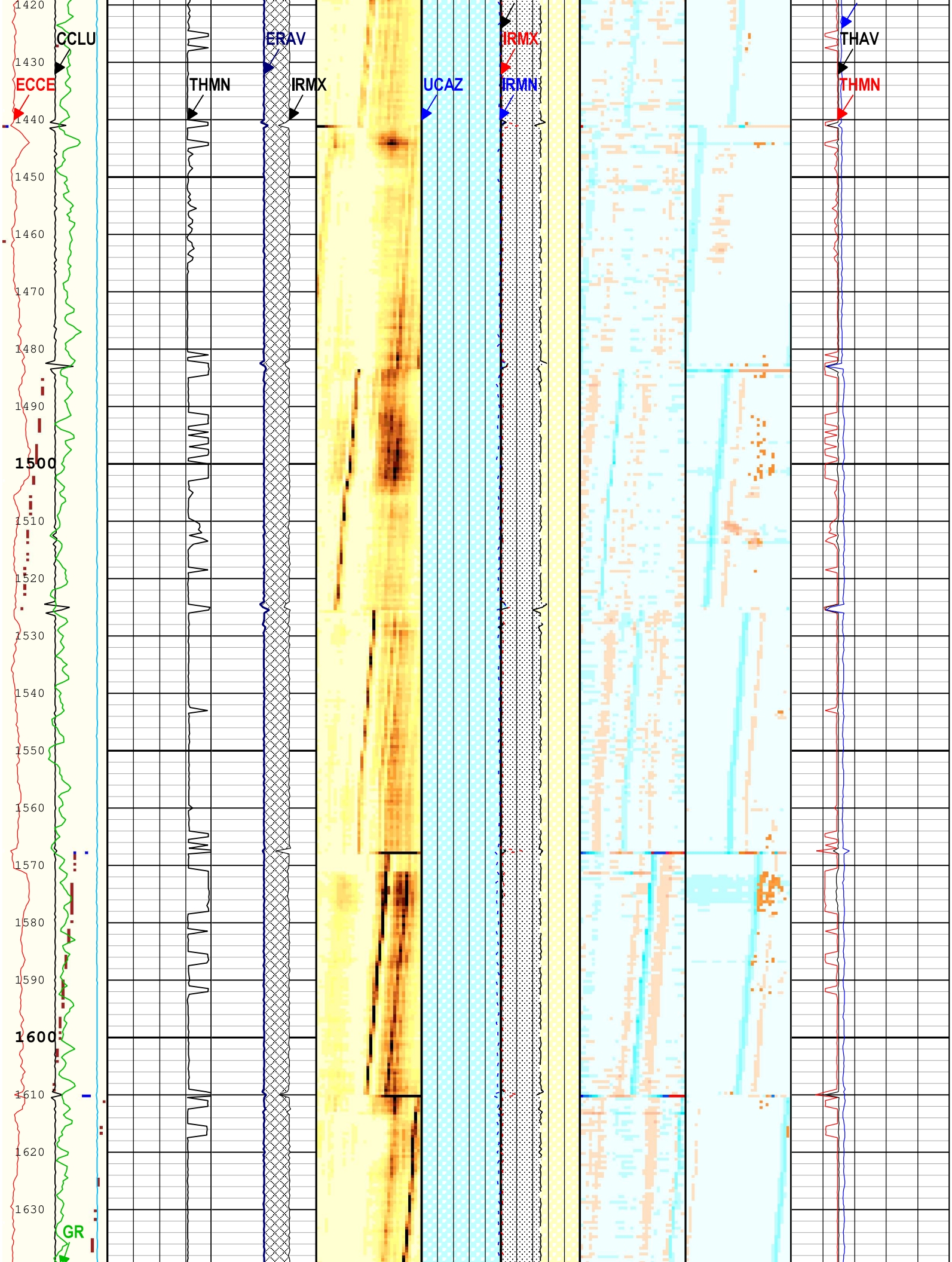
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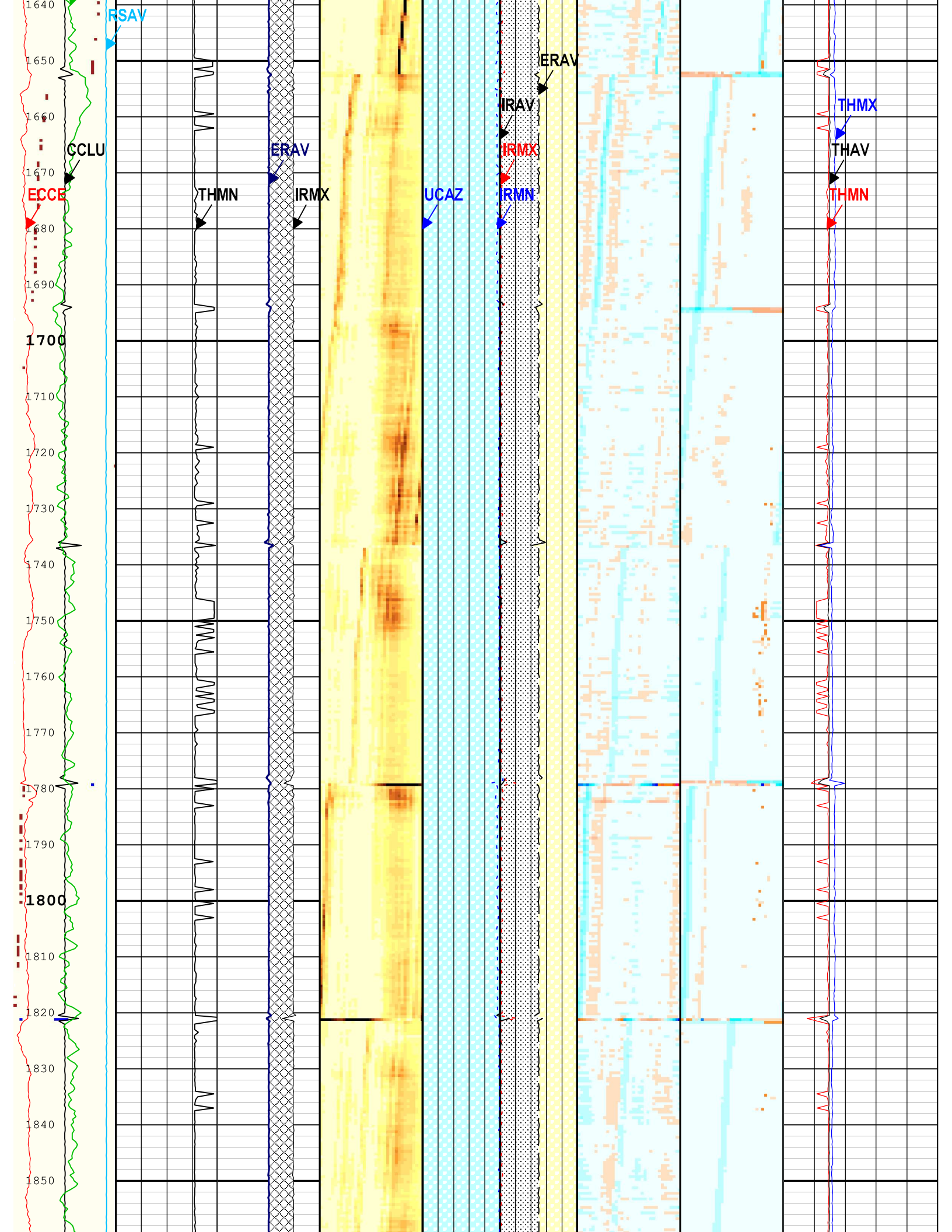
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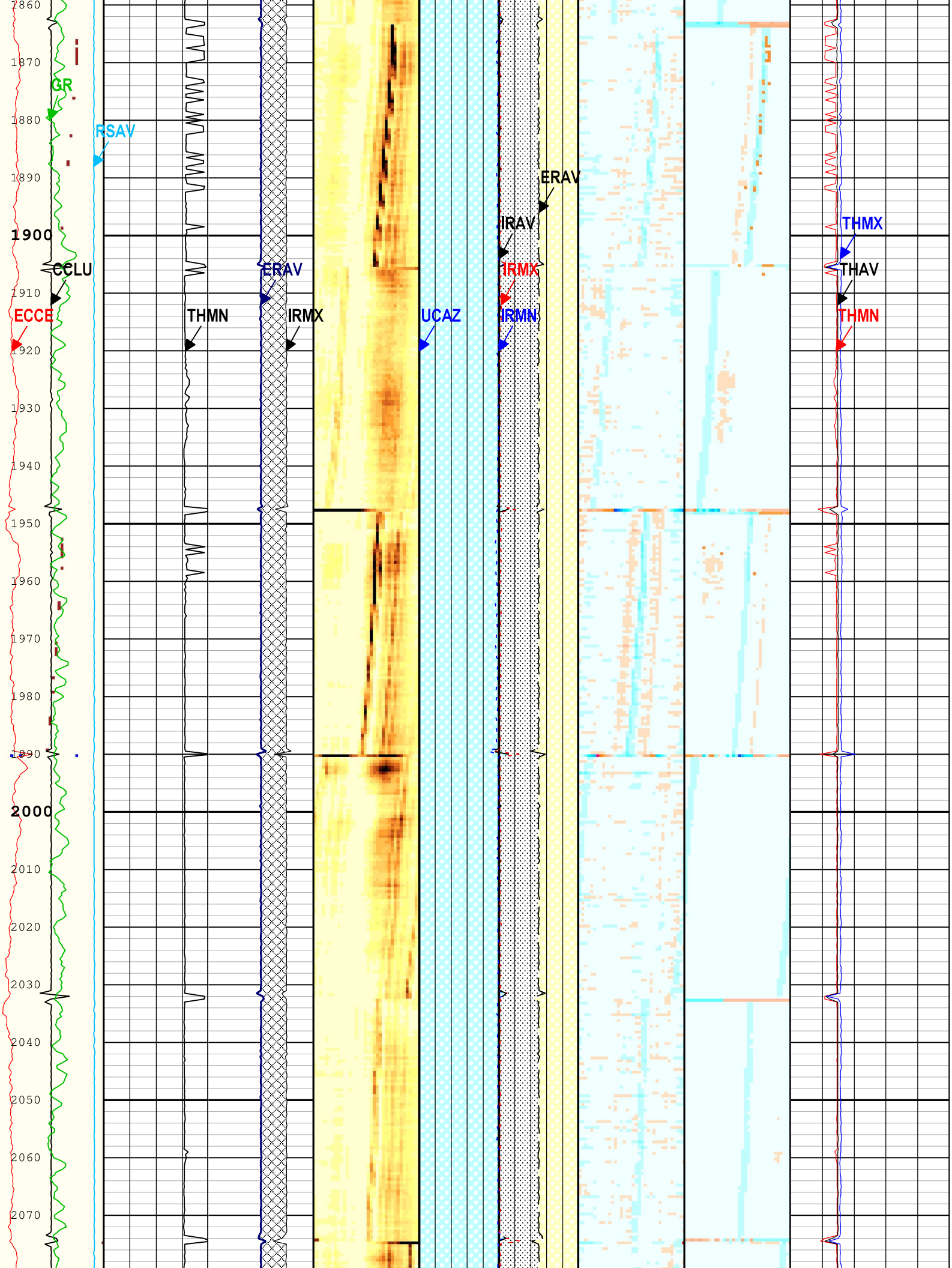
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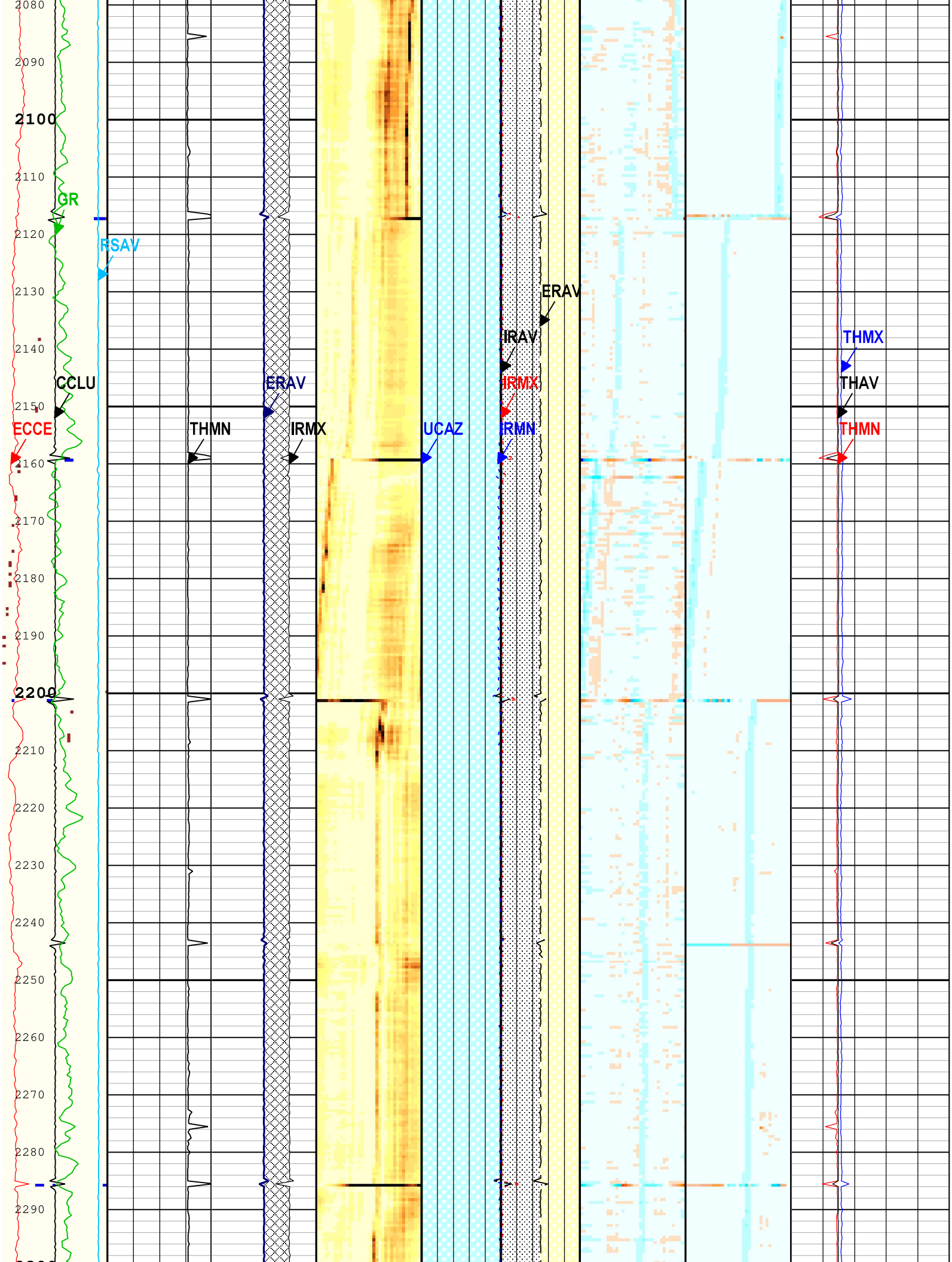
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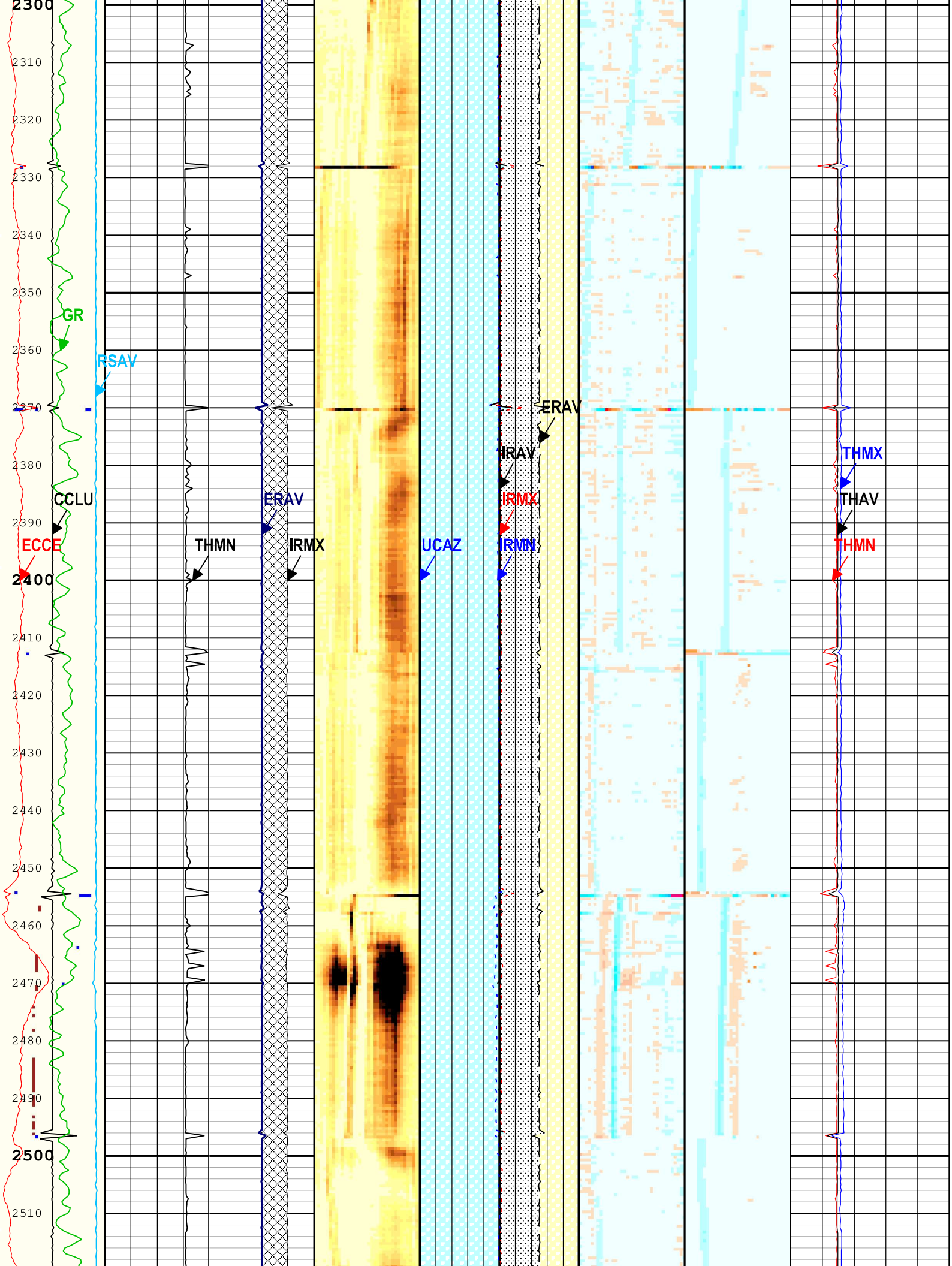
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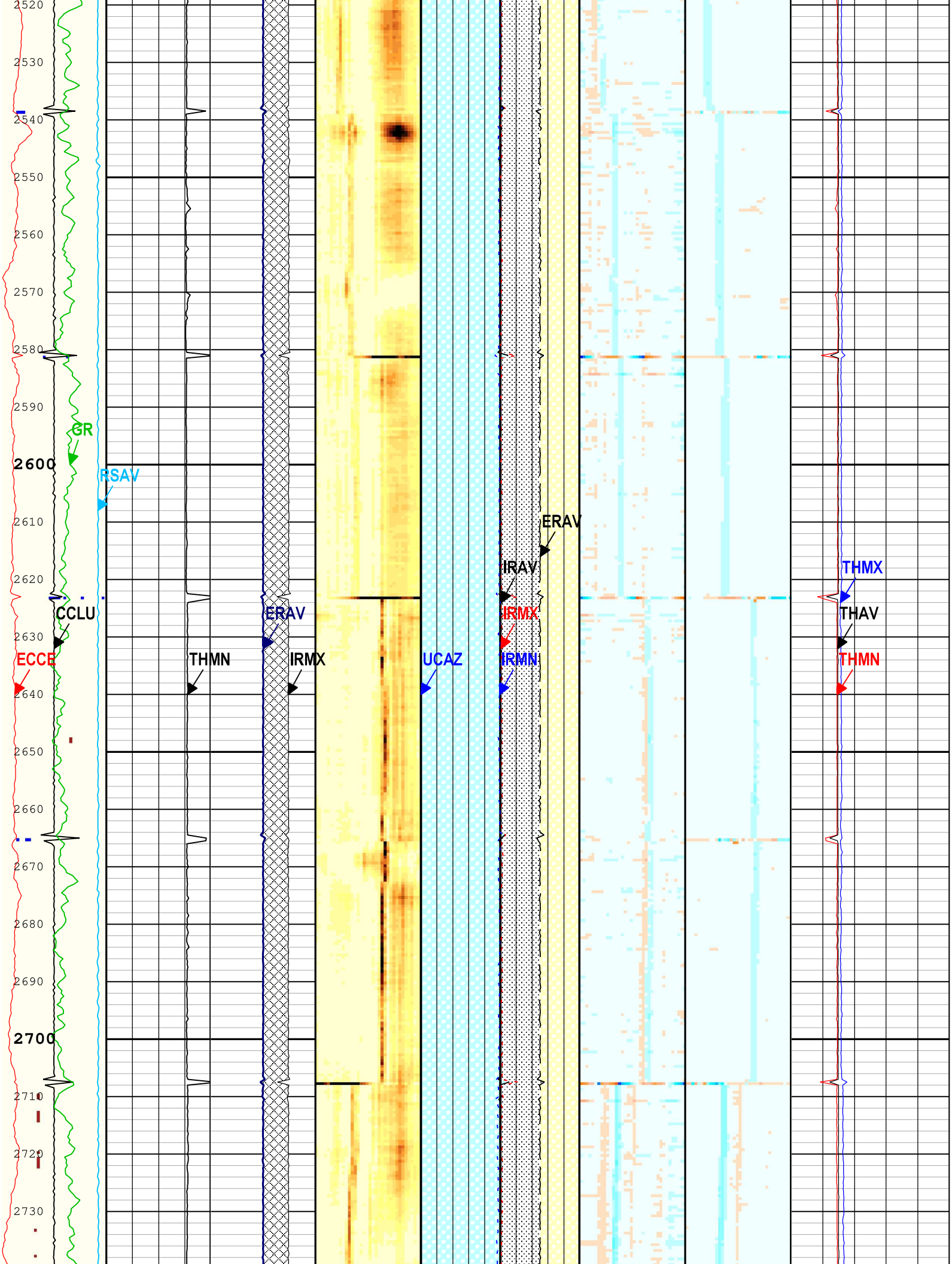
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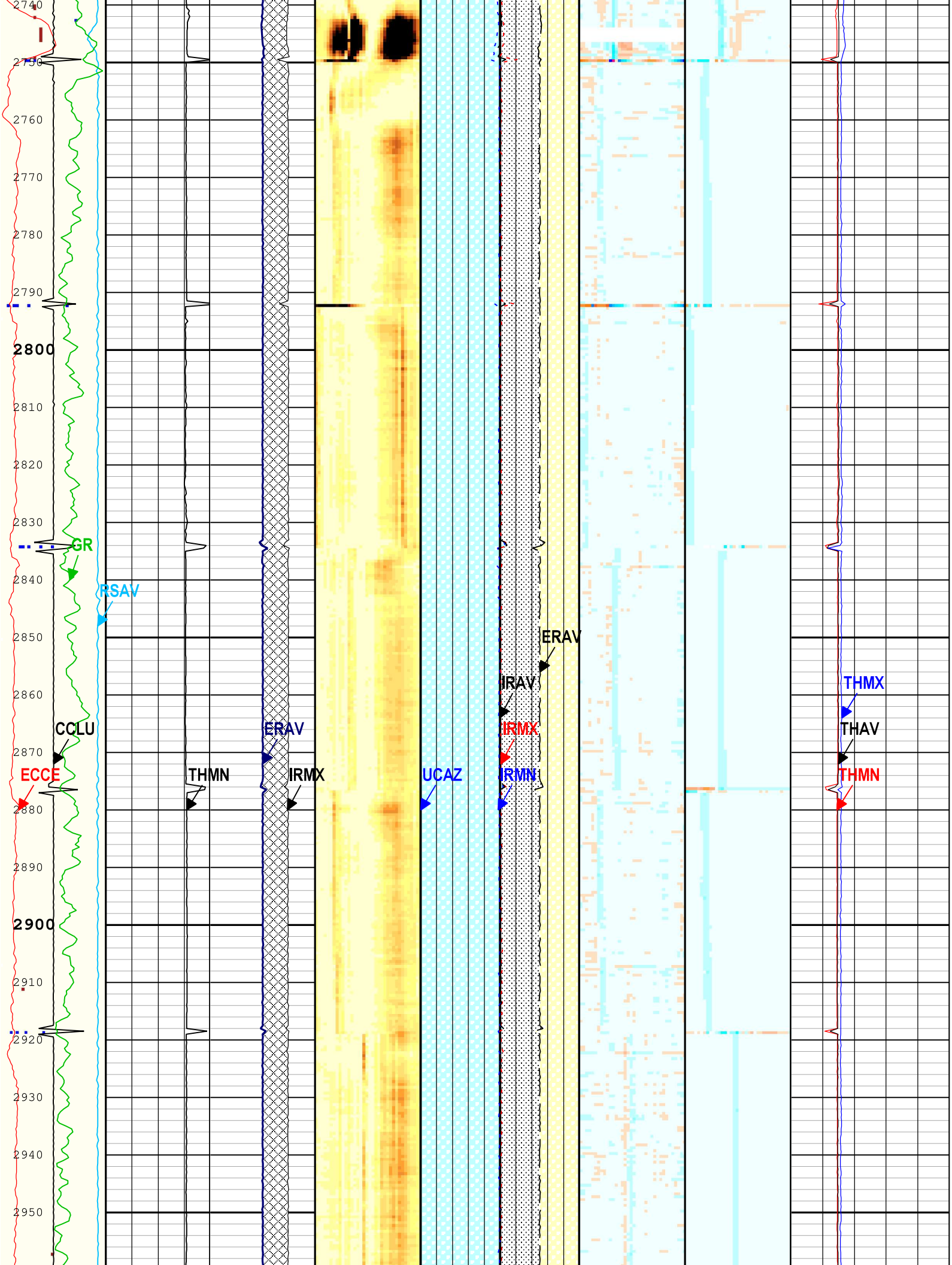
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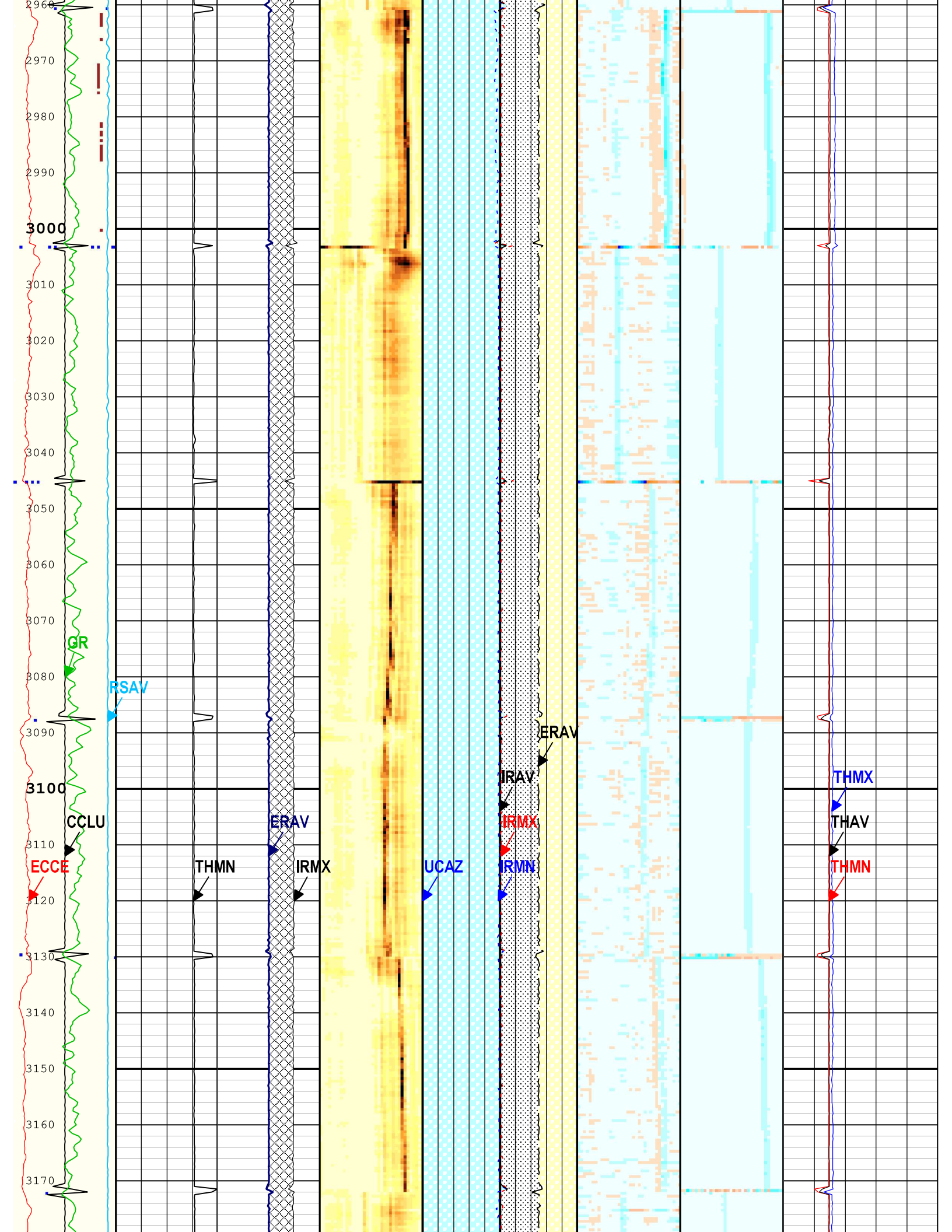
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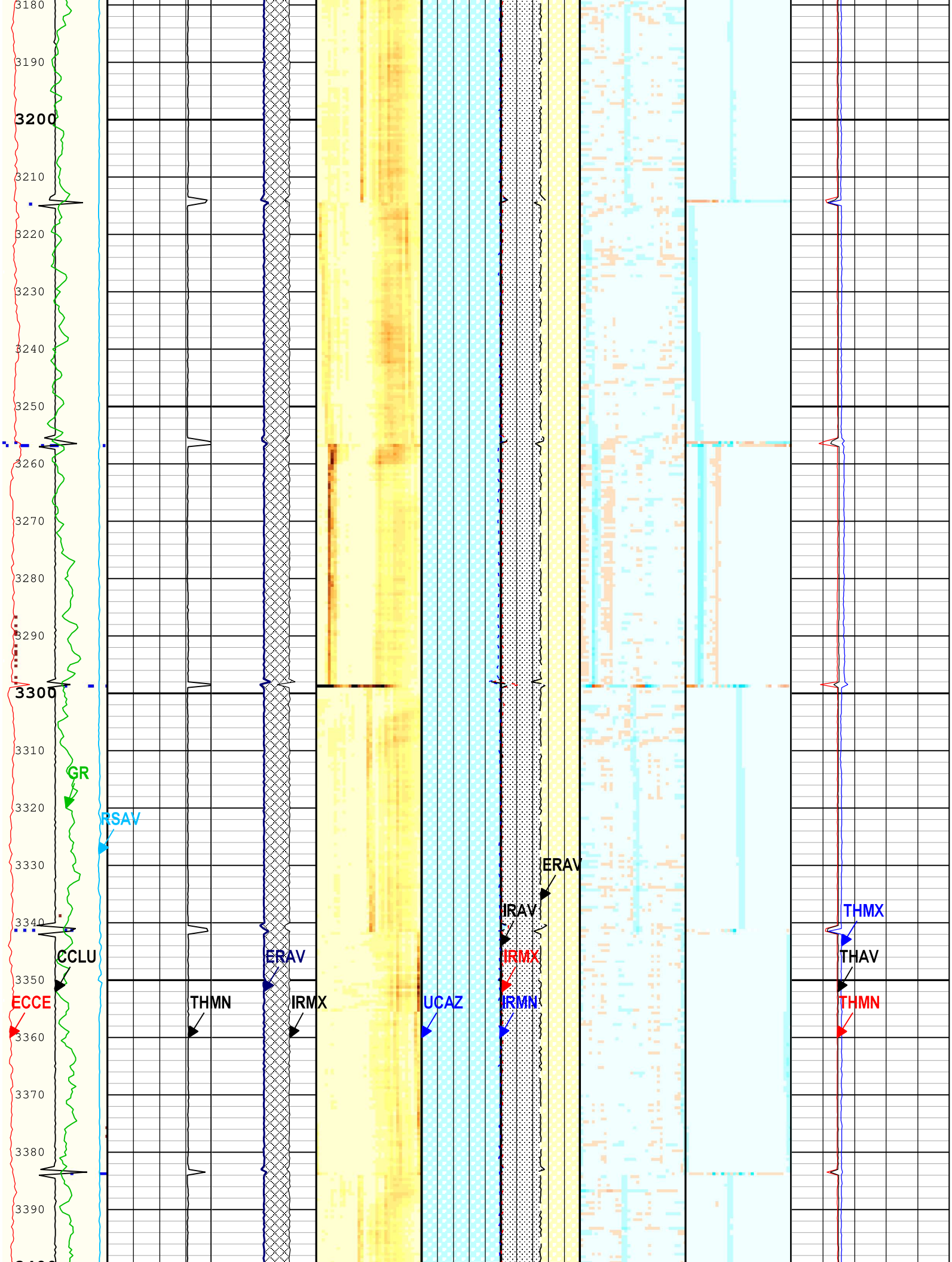
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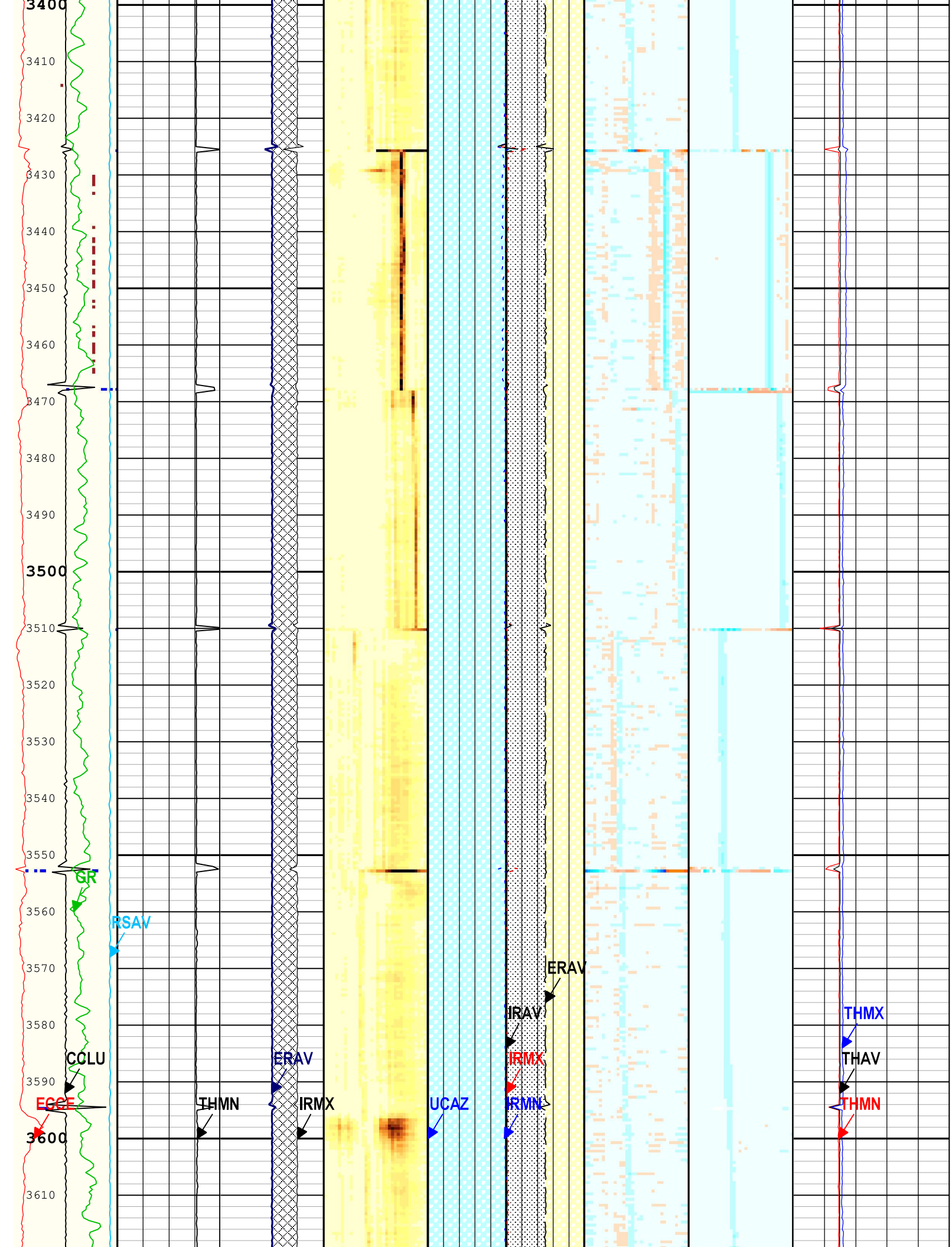
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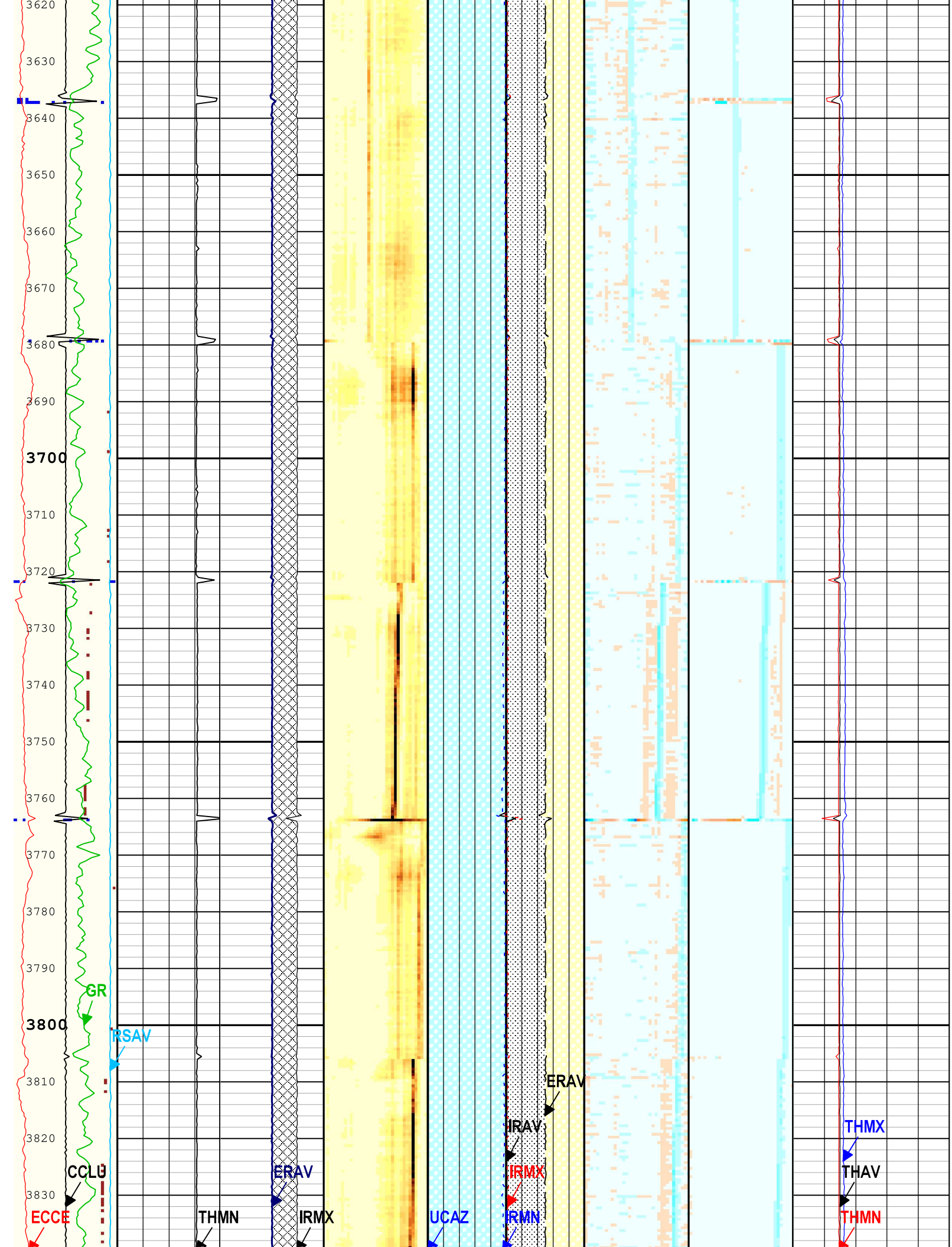
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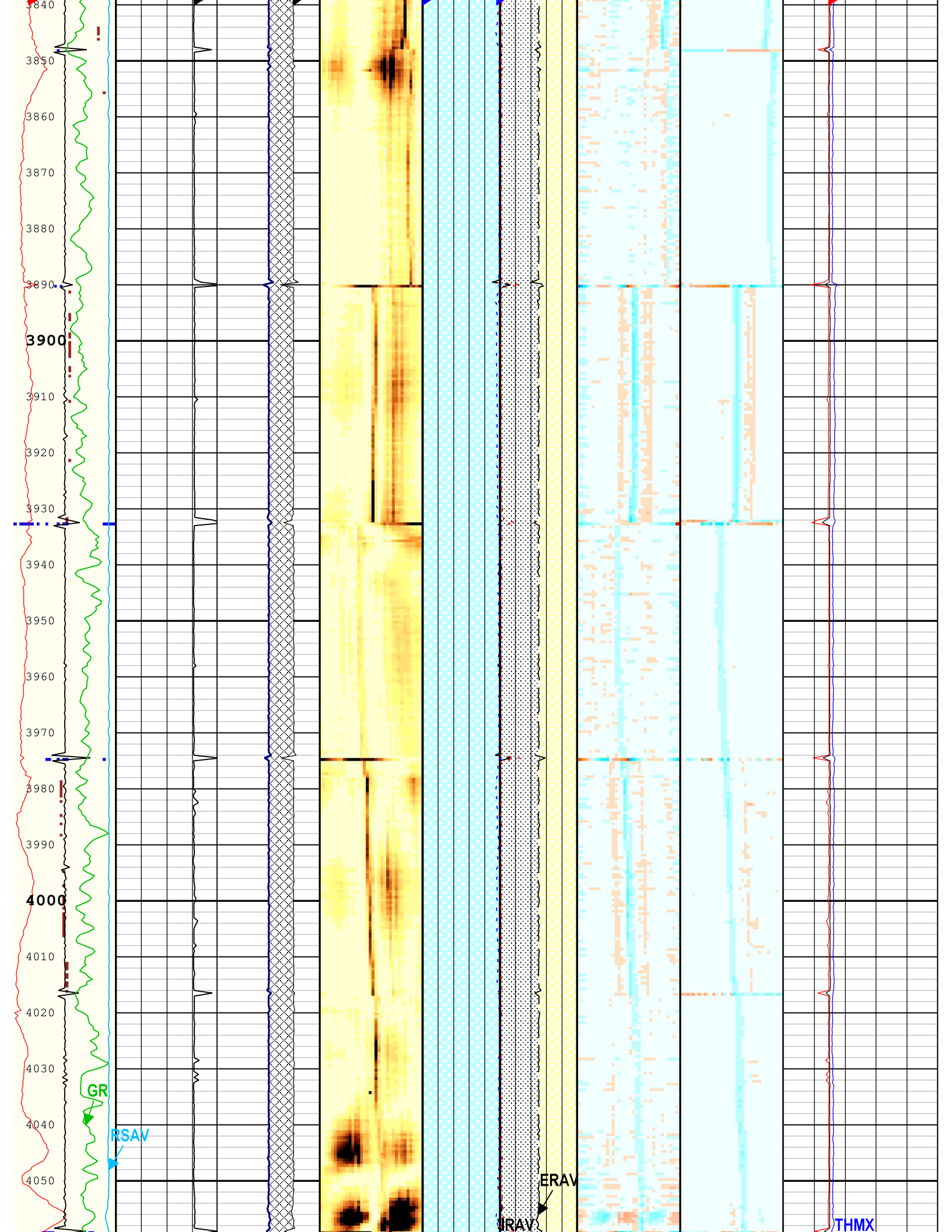
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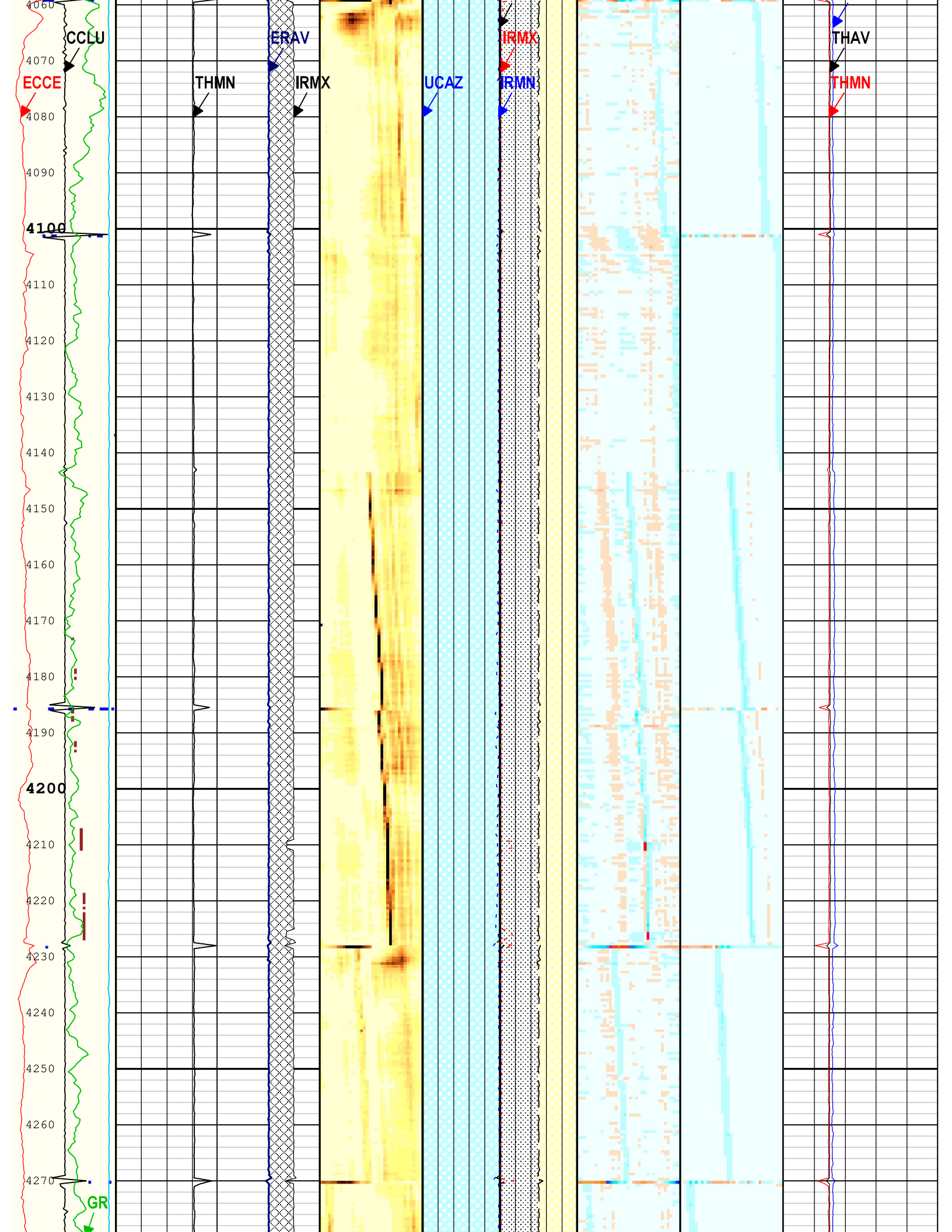
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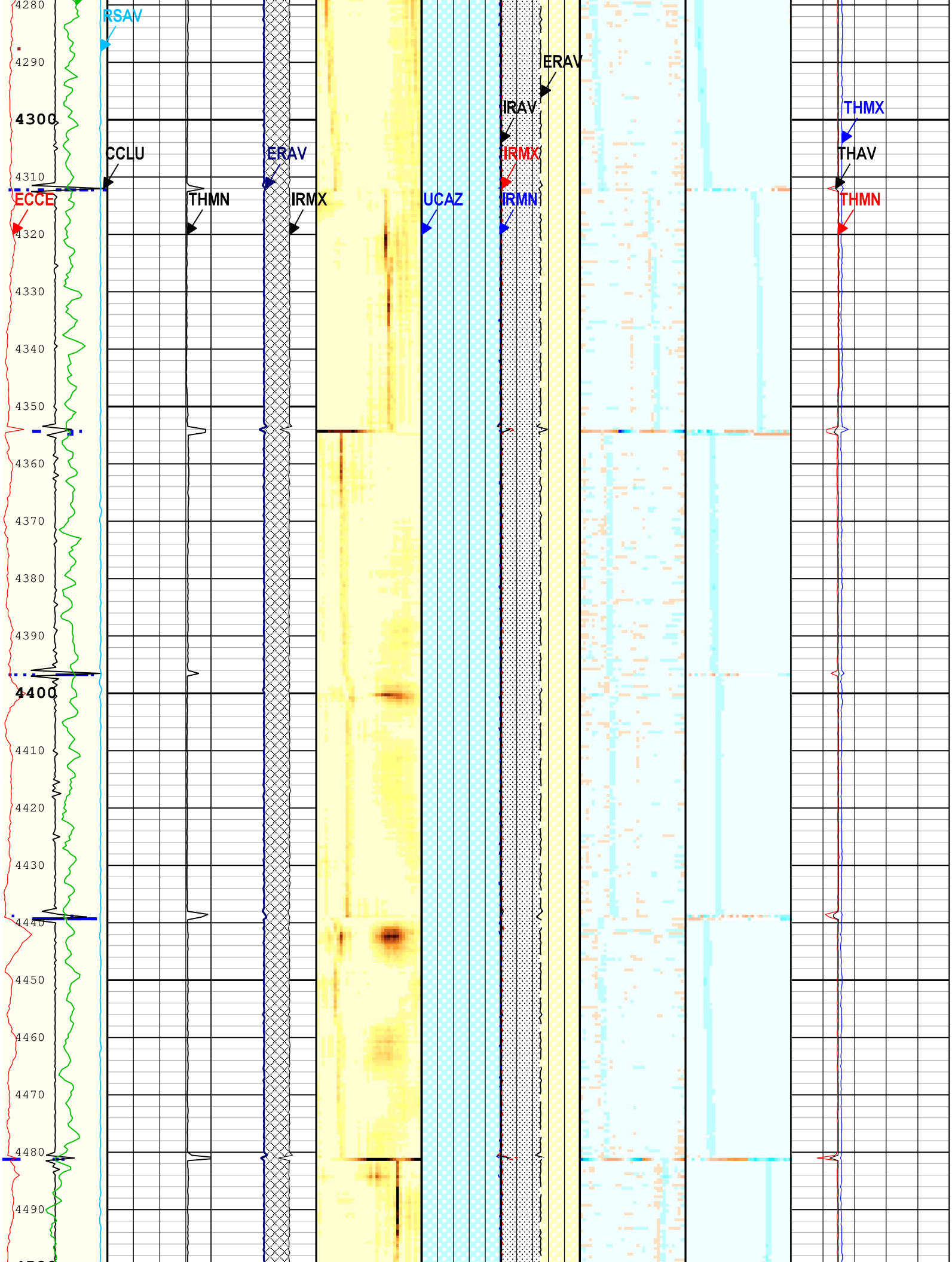
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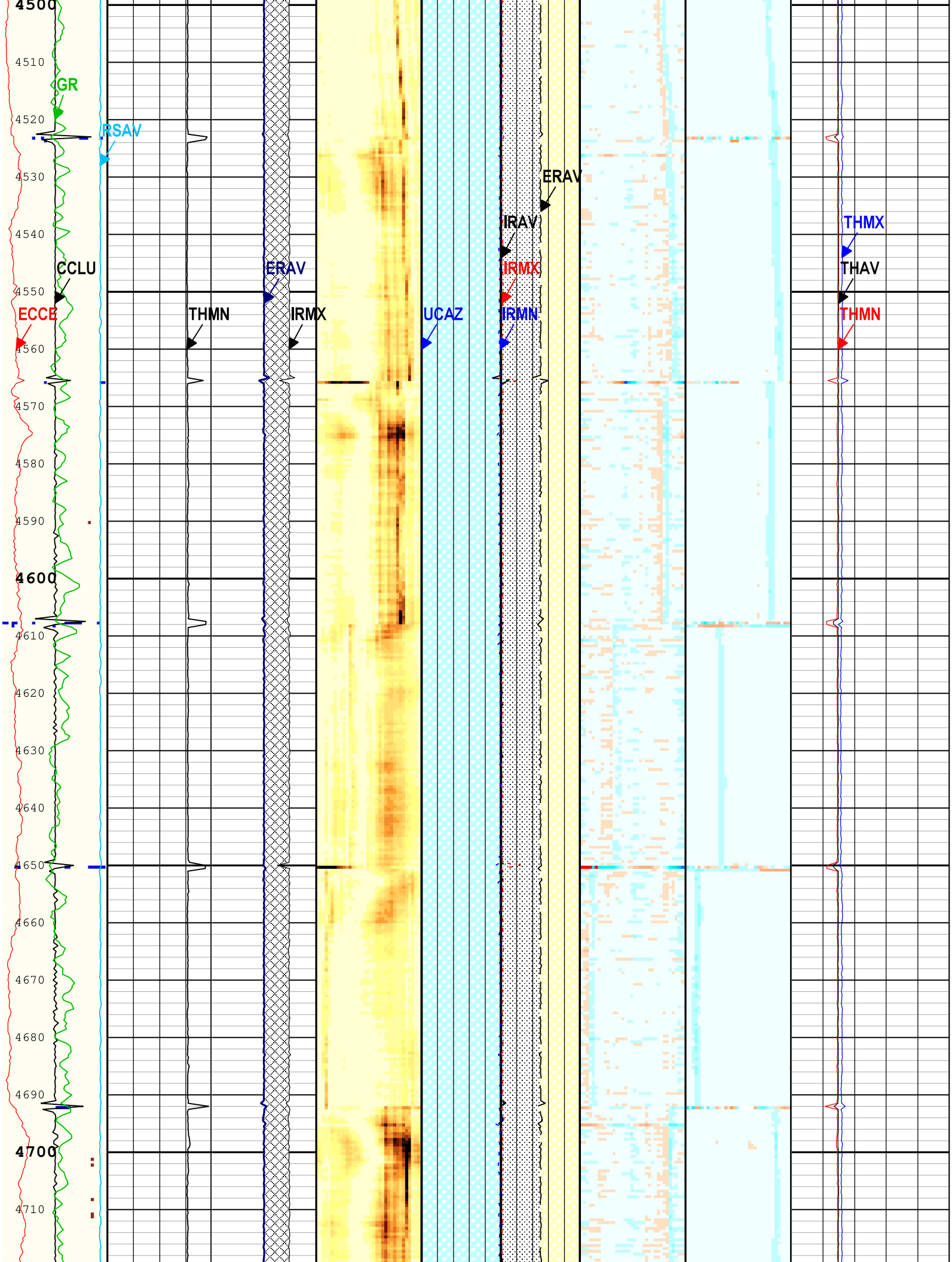
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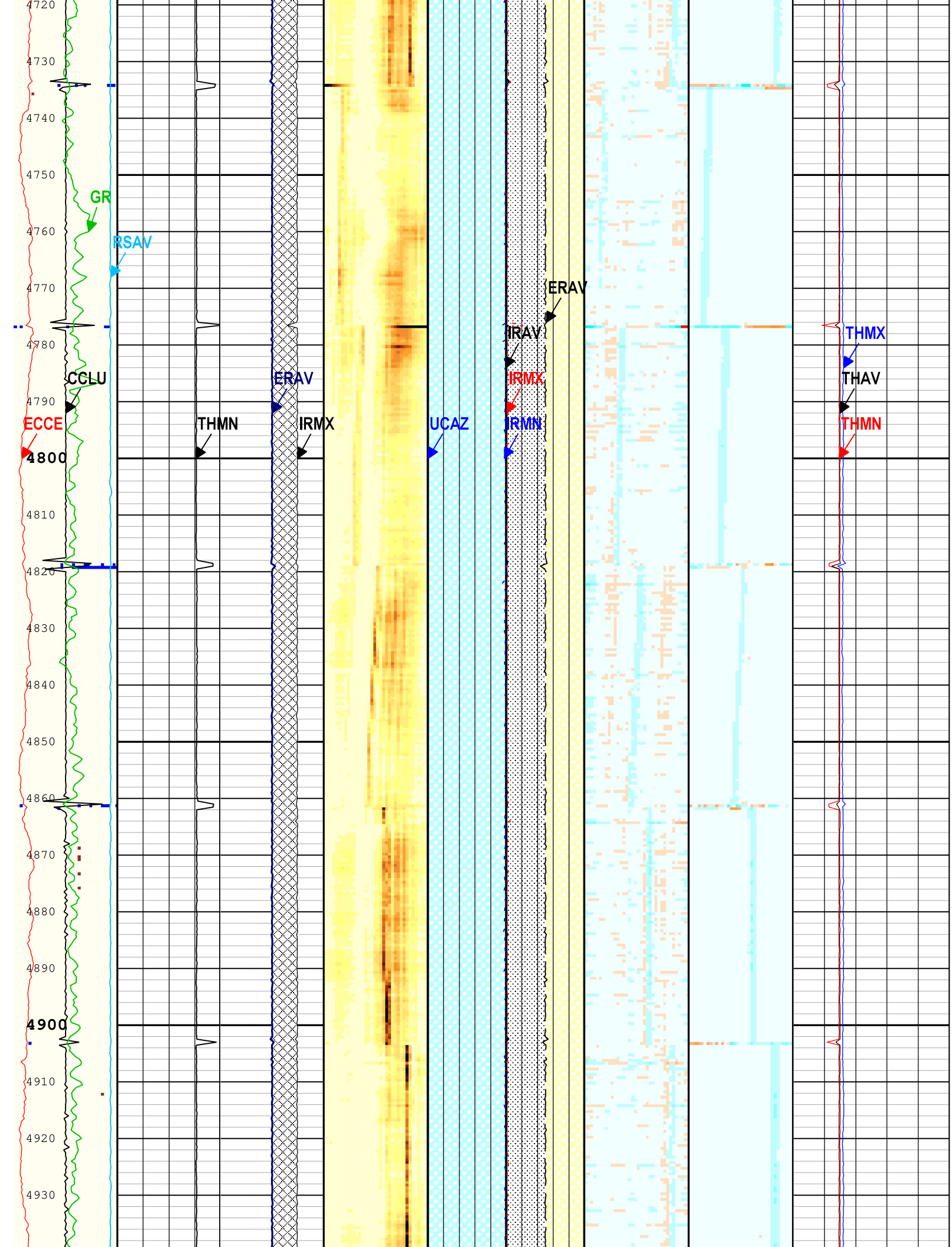
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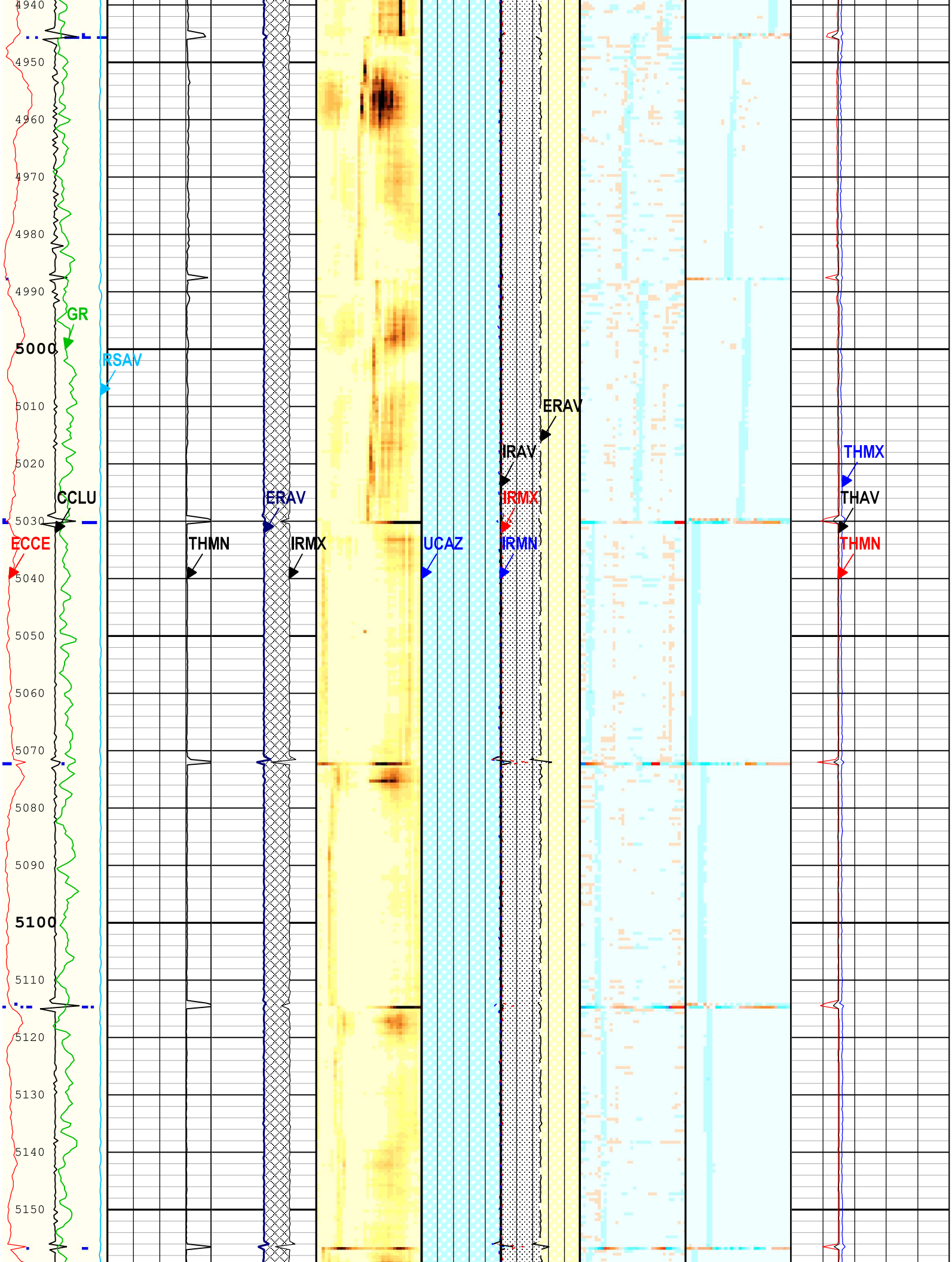
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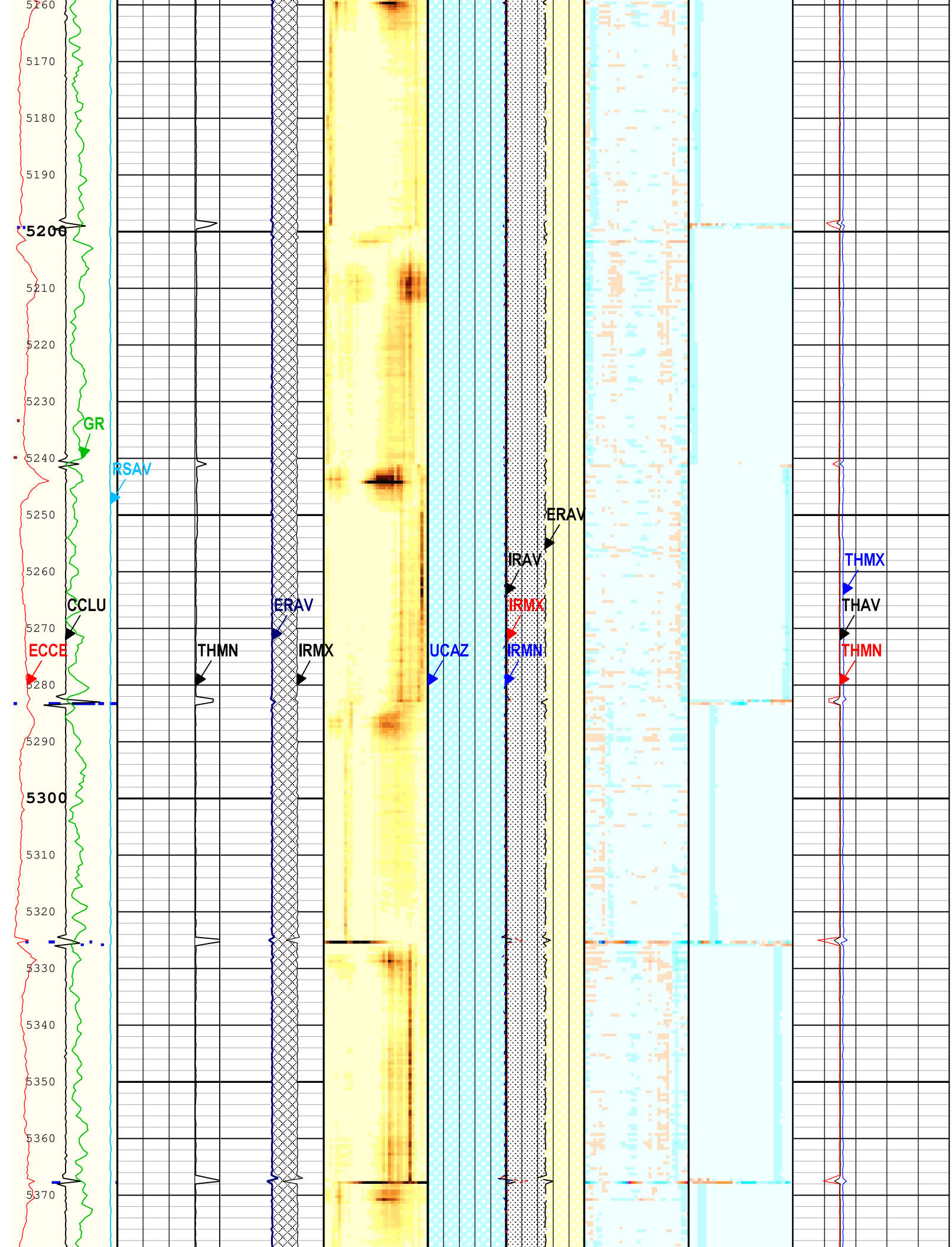
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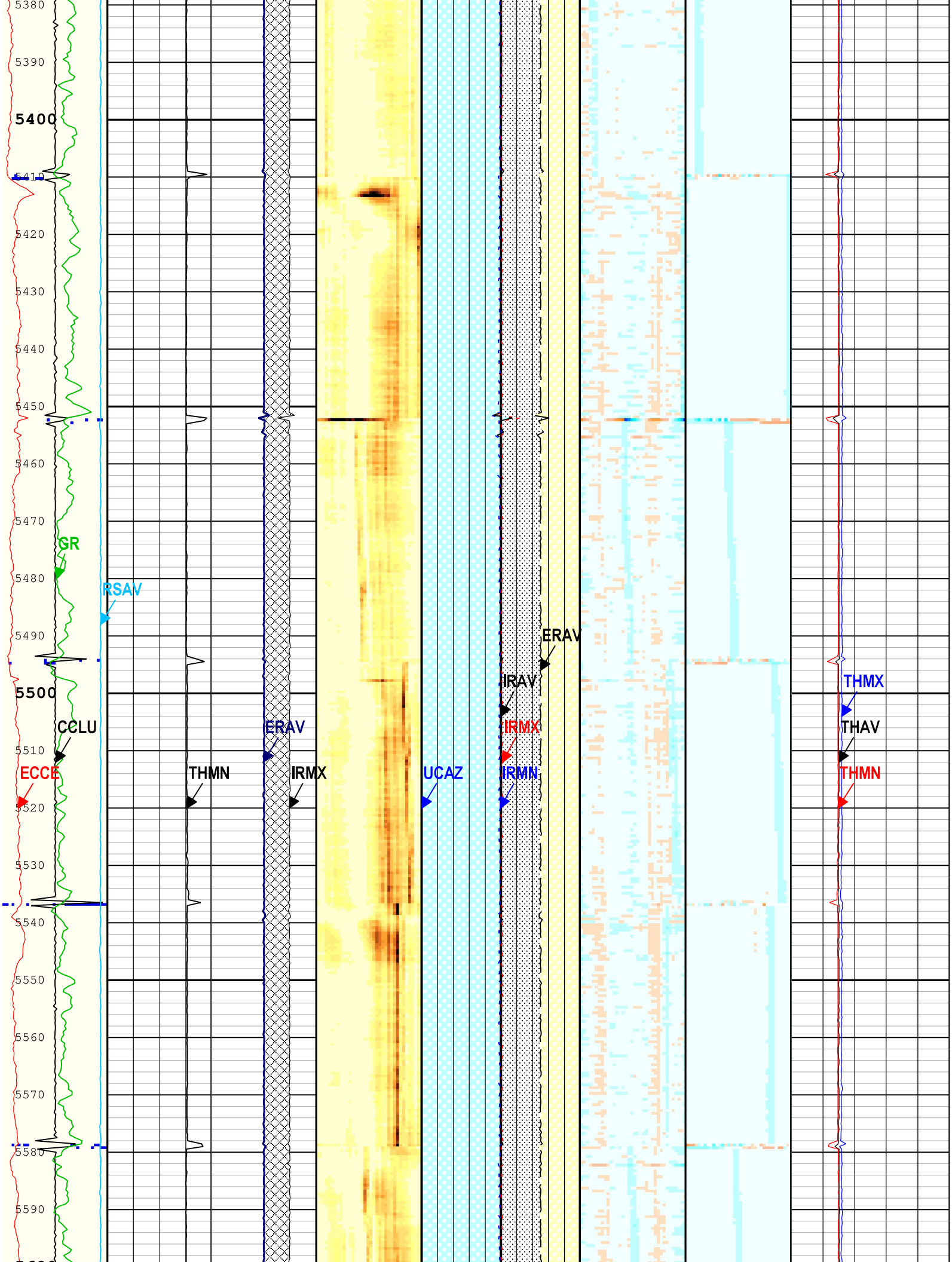
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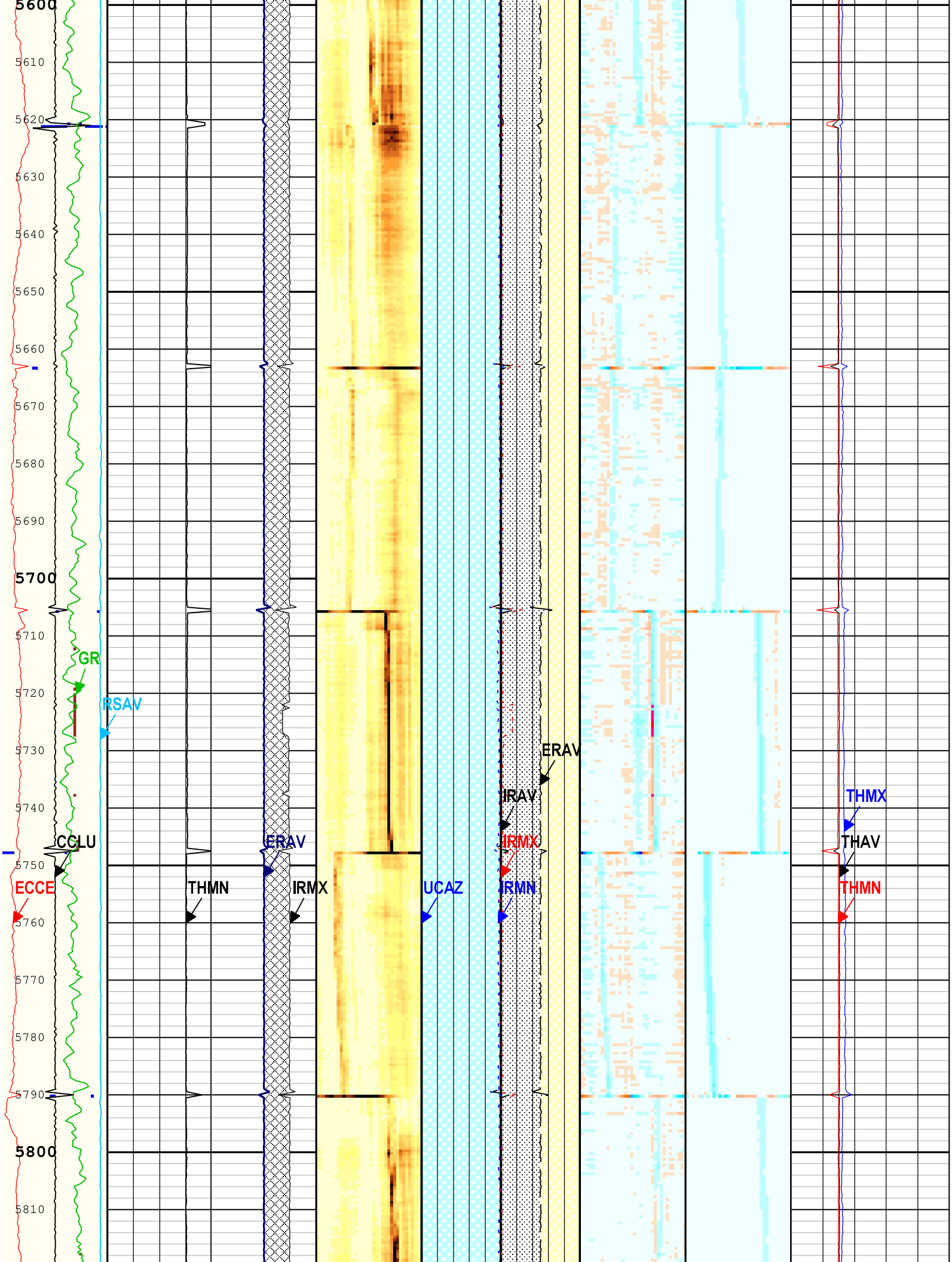
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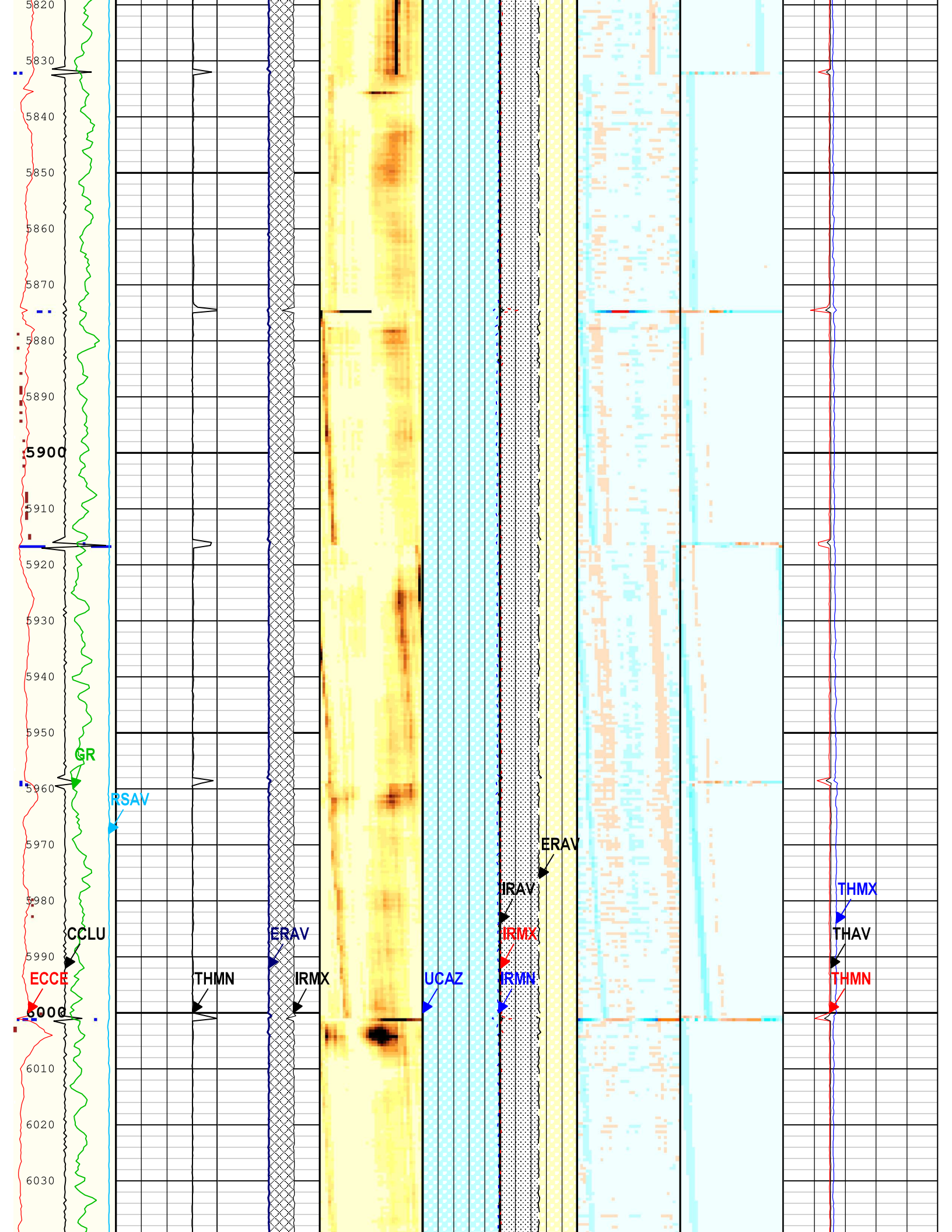
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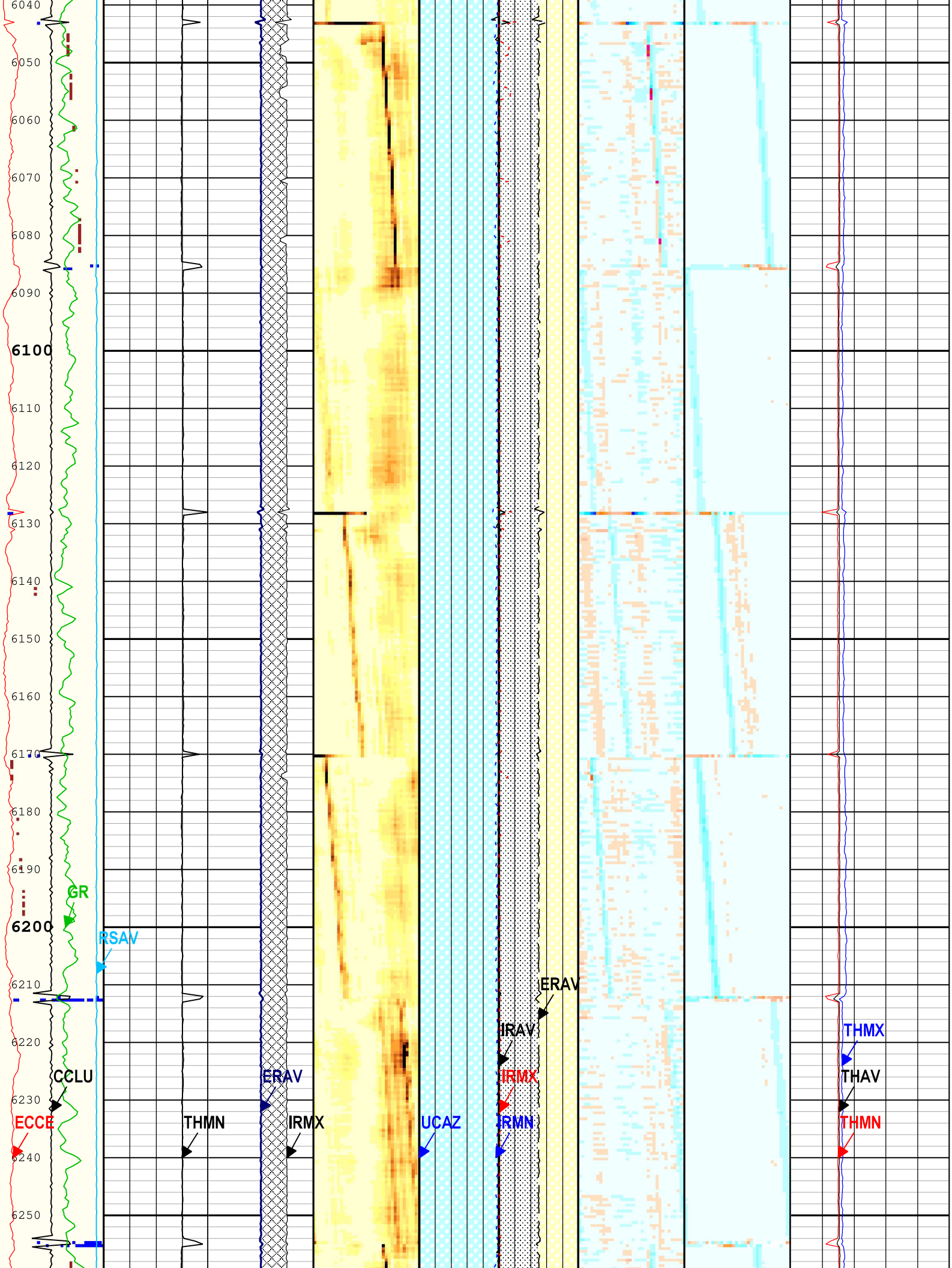
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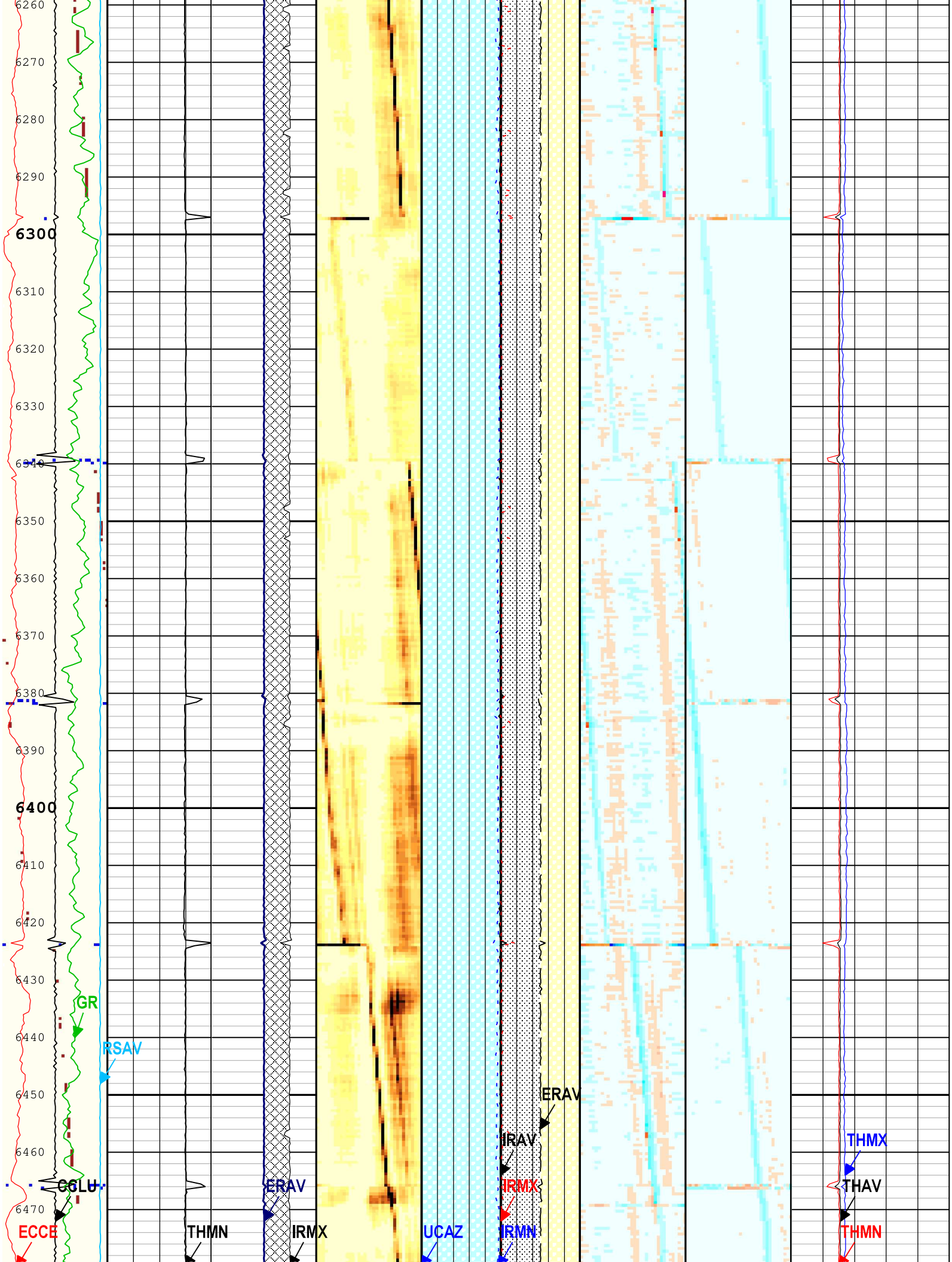
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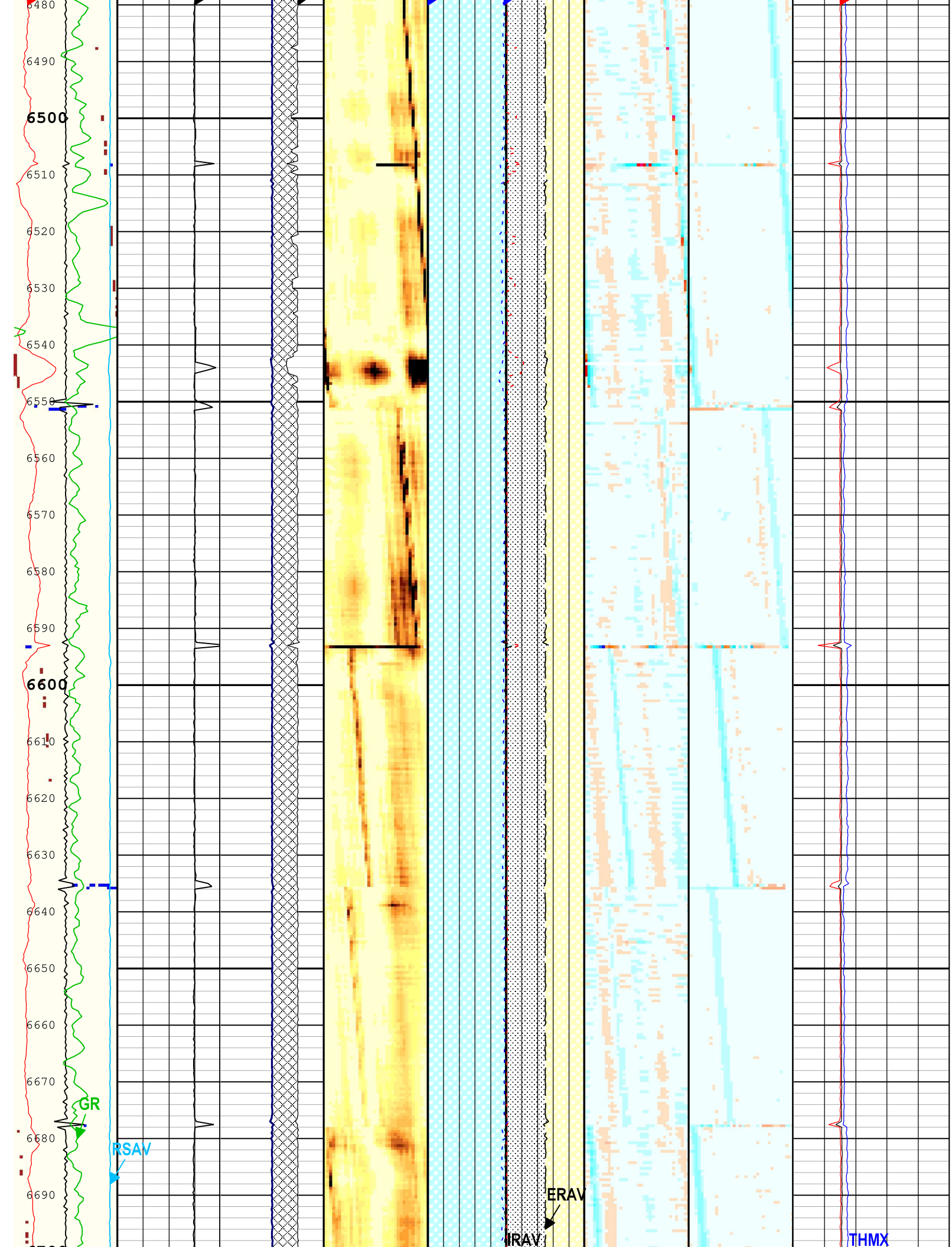
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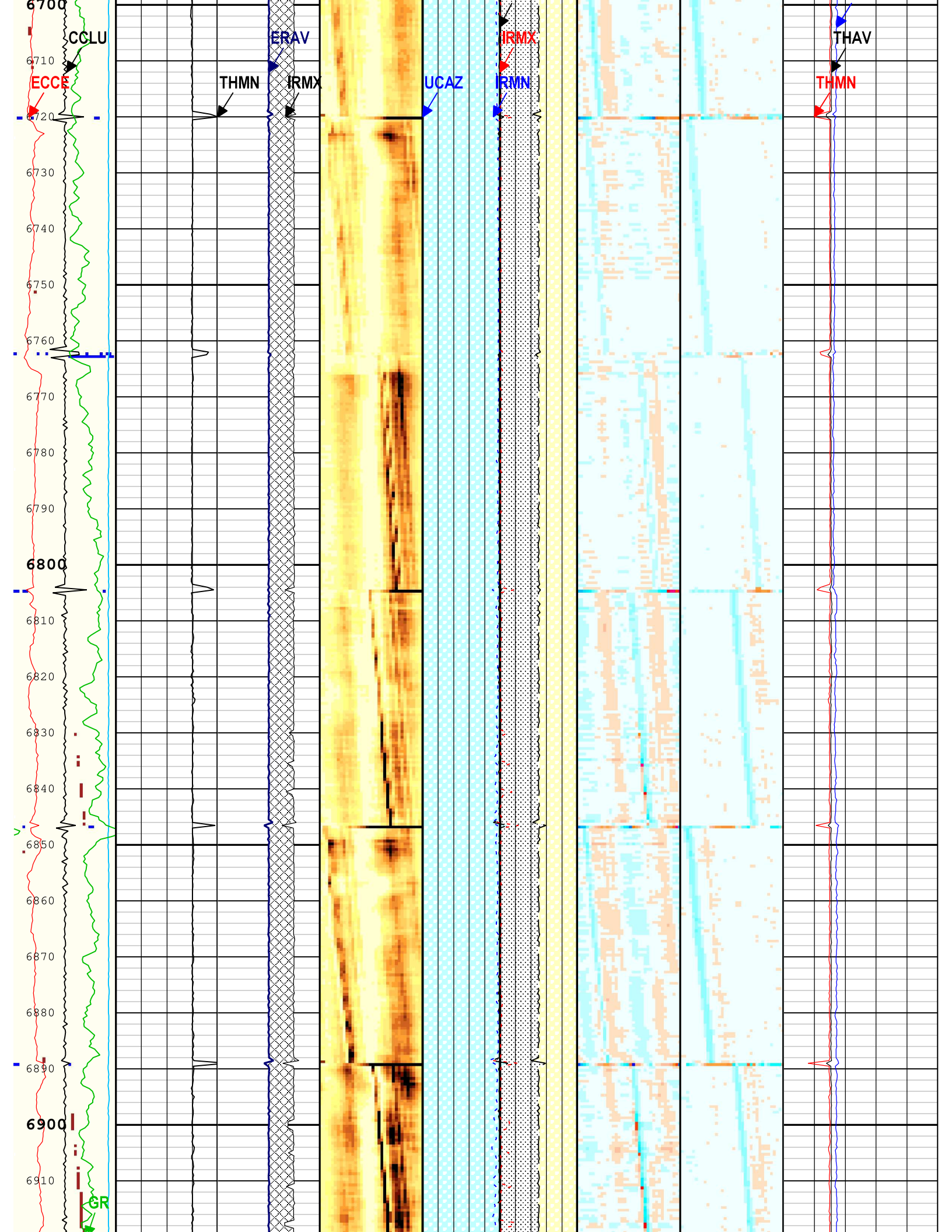
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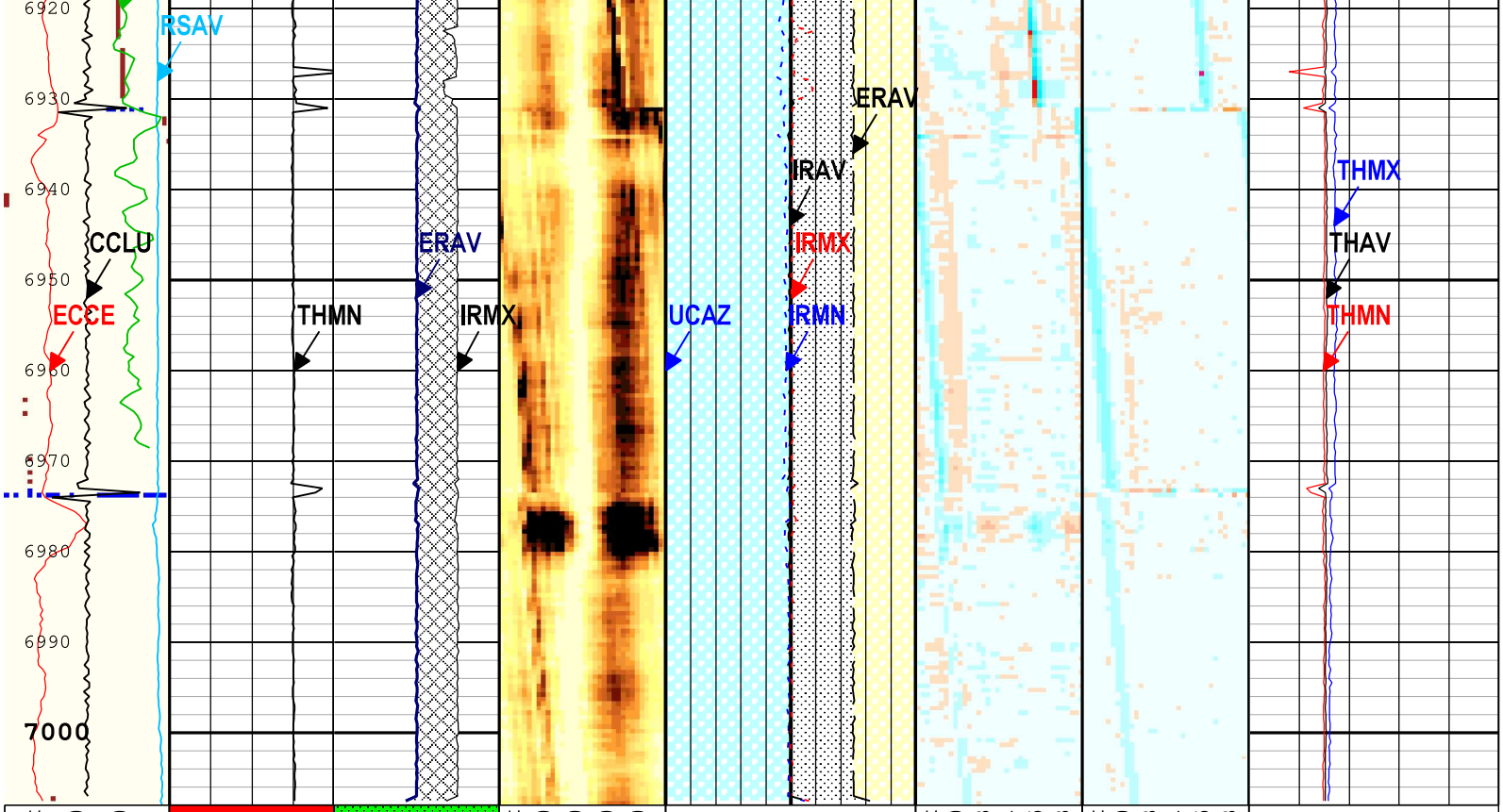


Absent 1.500 3.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E[1]

Amplitude of Eccentering (ECCE) USIT-E[1]
0 in 0.5

Casing Collar Locator Ultrasonic (CCLU) USIT-E[1]
-20 in 20

Motor Revolution Speed (RSAV) USIT-E[1]
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[1]
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[1]
2.75 in 1.75

External Radii Average (ERAV) USIT-E[1]
2.75 in 1.75

Absent -5.200 -3.600 -2.000 -0.400
Explicit Normalization
USIT - Amplitude of Wave (AWBK) USIT-E[1] (dB)

Ultrasonic Azimuth (UCAZ) USIT-E[1]
360 deg 0

Internal Radius Minimum Value (IRMN) USIT-E[1]
1.5 in 2.5

Internal Radius Maximum Value (IRMX) USIT-E[1]
1.5 in 2.5

Internal Radius Averaged Value (IRAV) USIT-E[1]
1.5 in 2.5

External Radii Average (ERAV) USIT-E[1]
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[1] (in)

Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Casing Thickness Normalized (THBK) USIT-E[1] (in)

Thickness Minimum Value (THMN) USIT-E[1]
0.1 in 0.6

Thickness Average Value (THAV) USIT-E[1]
0.1 in 0.6

Thickness Maximum Value (THMX) USIT-E[1]
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: 25-Feb-2022 16:55:29

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	13.5	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DFD	Drilling Fluid Density	Borehole	9	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	203	us/ft
FD	Fluid Density	USIT-E	9	lbm/gal
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	-12.61	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	UFAO	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	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	1.08	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1.25	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.62	Mrayl
U-USIT_UFAO	USIT Flexural Attenuation Offset	USIT-E	-5.7	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	1.61	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

OneDepth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	12.25	15	944
BS	7.875	944	7008

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	48	dB
EMXV	EMEX Voltage	USIT-E	Time Zoned	V
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
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	

OneTime Zoned Parameters

Pass Log[6]:Up

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
EMXV	40	25-Feb-2022 11:52:44	25-Feb-2022 11:59:39	7008.84	6625.59
EMXV	50	25-Feb-2022 11:59:39	25-Feb-2022 11:59:48	6625.59	6615.96

EMXV	60	25-Feb-2022 11:59:48	25-Feb-2022 12:00:03	6615.96	6601.65
EMXV	65	25-Feb-2022 12:00:03	25-Feb-2022 13:59:09	6601.65	512.69

Pass Log[10]:Up

EMXV	95	25-Feb-2022 15:11:31	25-Feb-2022 15:27:16	907.28	54.87

All depth are at tool zero.

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[4]:Up	Up	721.15 ft	1000.48 ft	25-Feb-2022 10:52:51 AM	25-Feb-2022 11:01:12 AM	ON	0.88 ft	Yes

All depths are referenced to toolstring zero

Log

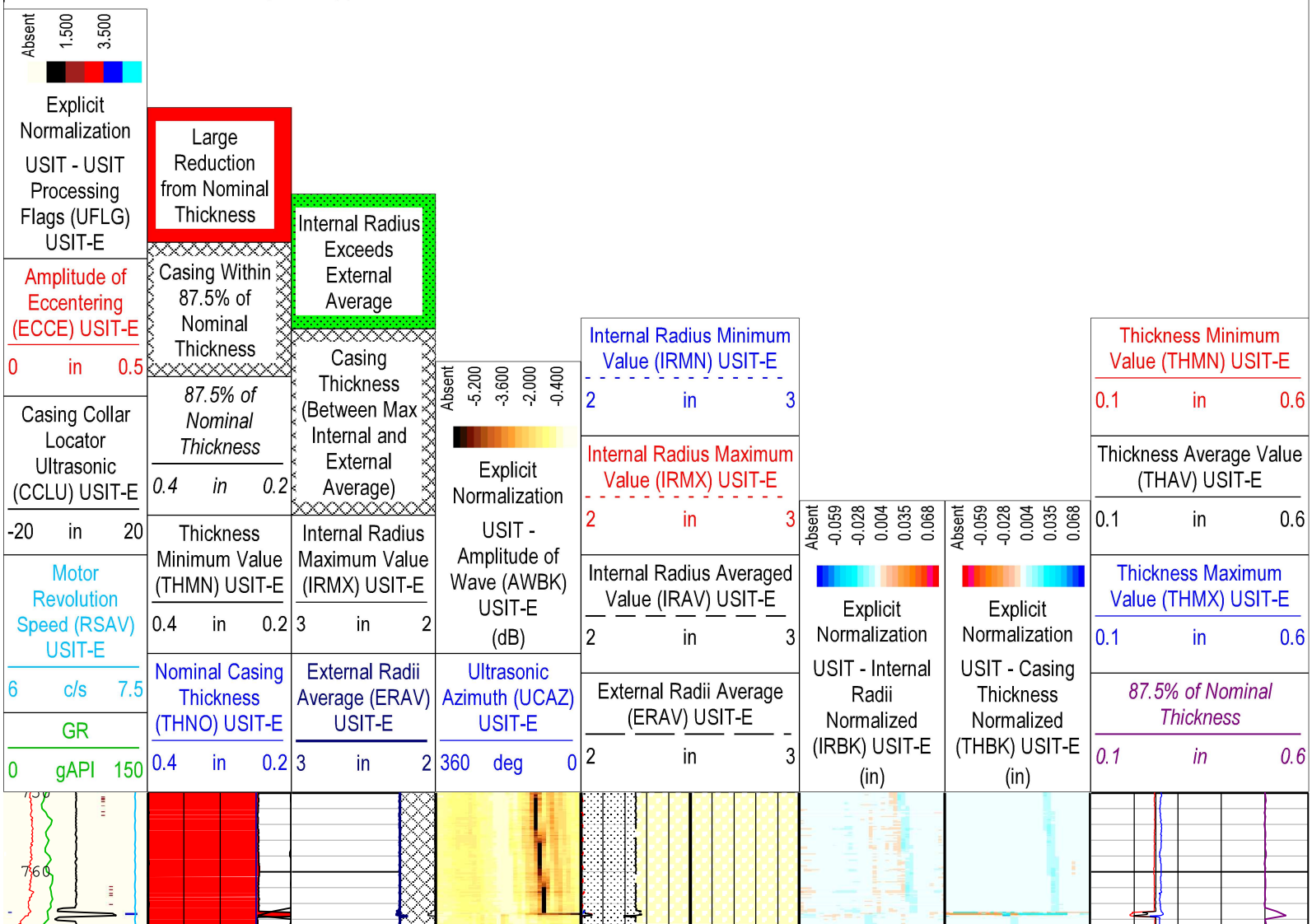
Company:Occidental Petroleum Inc Well:Warner 11-18

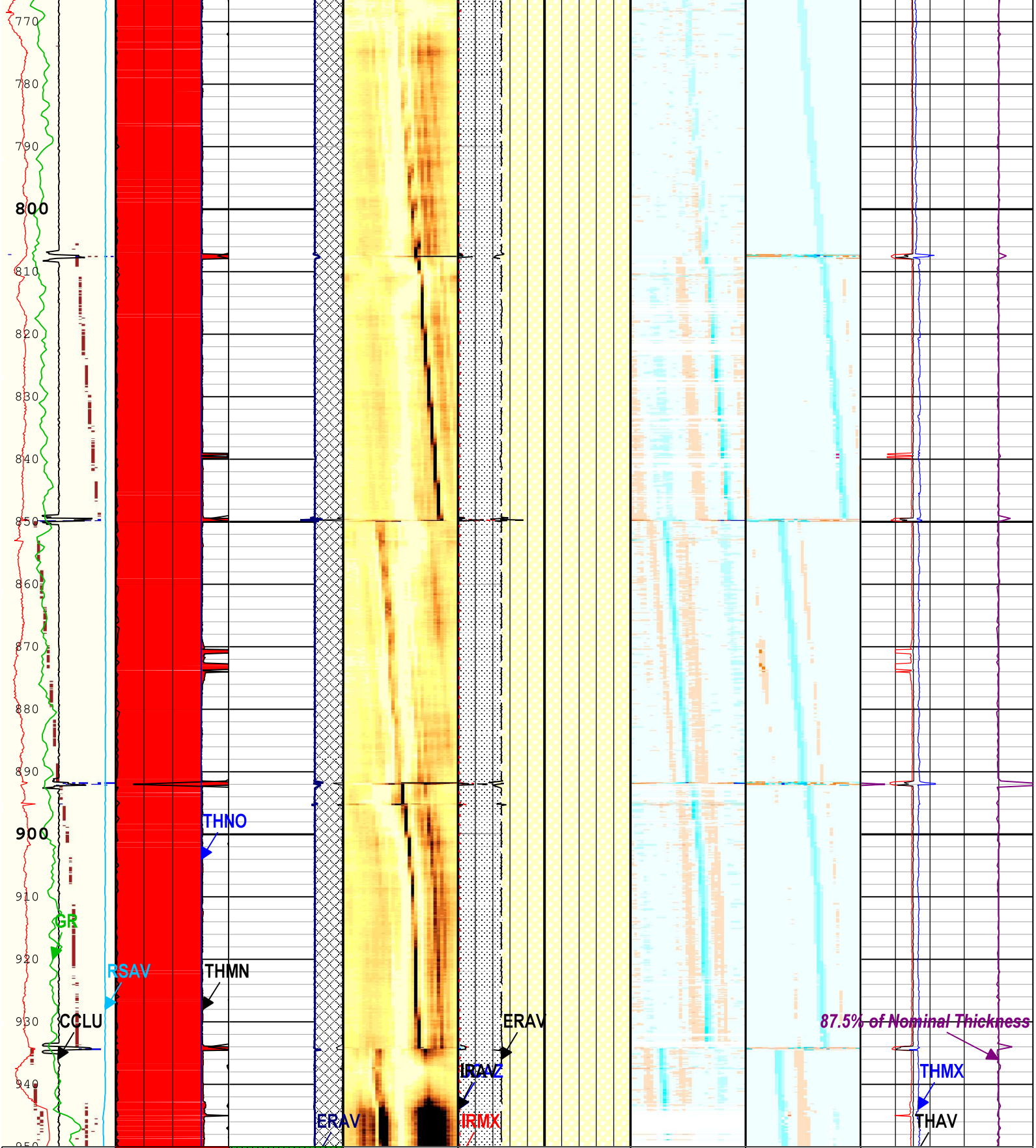
One: Log[4]:Up:S010

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: 25-Feb-2022 16:55:41

TIME_1900 - Time Marked every 60.00 (s)





Absent 1.500 3.500

Explicit Normalization

USIT - USIT Processing Flags (UFLG) USIT-E

Amplitude of

Large Reduction from Nominal Thickness

Casing Within 87.5% of Nominal Thickness

Internal Radius Exceeds External Average

Casing Thickness (Between Max Internal and External

Absent -5.200 -3.600 -2.000 -0.400

Explicit Normalization

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

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

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)

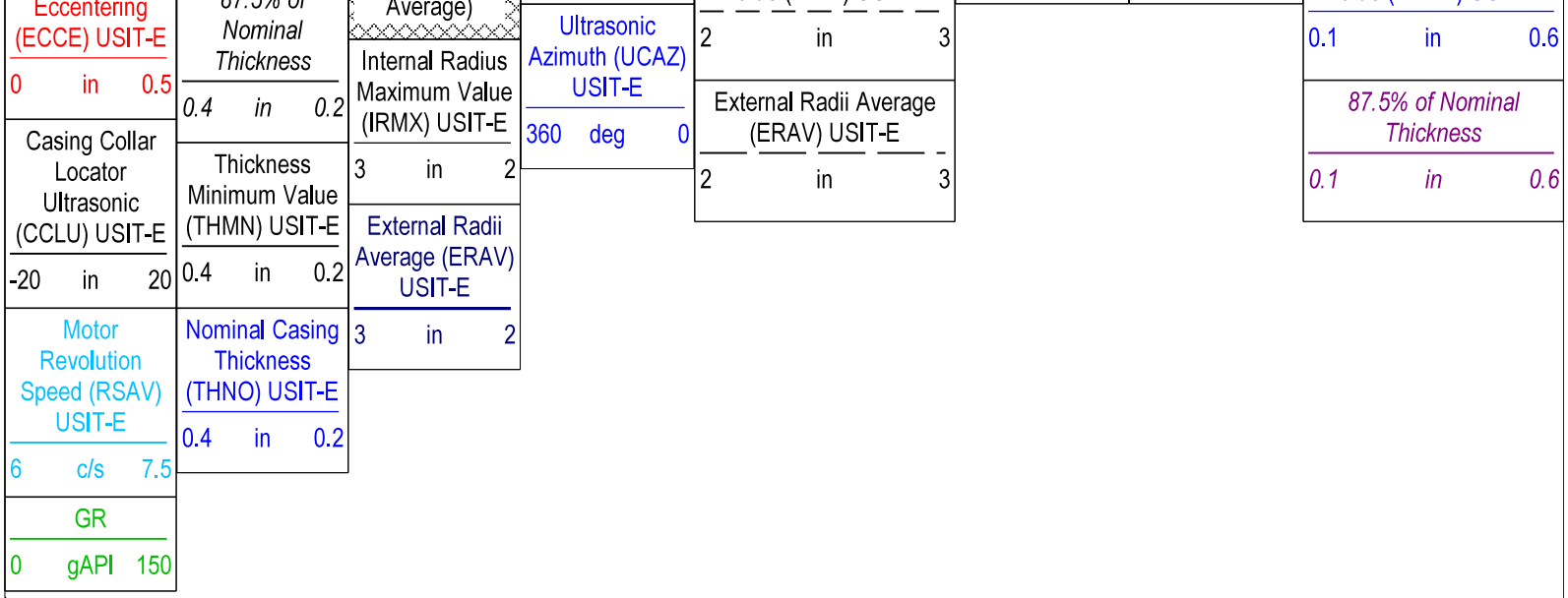
Thickness Minimum Value (THMN) USIT-E

0.1 in 0.6

Thickness Average Value (THAV) USIT-E

0.1 in 0.6

Thickness Maximum Value (THMX) USIT-E



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: 25-Feb-2022 16:55:41

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	13.5	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	9	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	203	us/ft
FD	Fluid Density	USIT-E	9	lbm/gal
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	-12.61	dB/m
IBC_FVEL_SEL	IBC Fluid Velocity Selection	USIT-E	Automatic	
IBC_OFFSET_SEL	IBC Flexural Offset Selector	USIT-E	UFAO	
IBC_ZMUD_SEL	IBC Mud Impedance Selection	USIT-E	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	1.08	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1.25	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.62	Mrayl
U-USIT_UFAO	USIT Flexural Attenuation Offset	USIT-E	-5.7	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	1.61	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	750	944

BS	7.875	944	950

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	48	dB
EMXV	EMEX Voltage	USIT-E	40	V
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

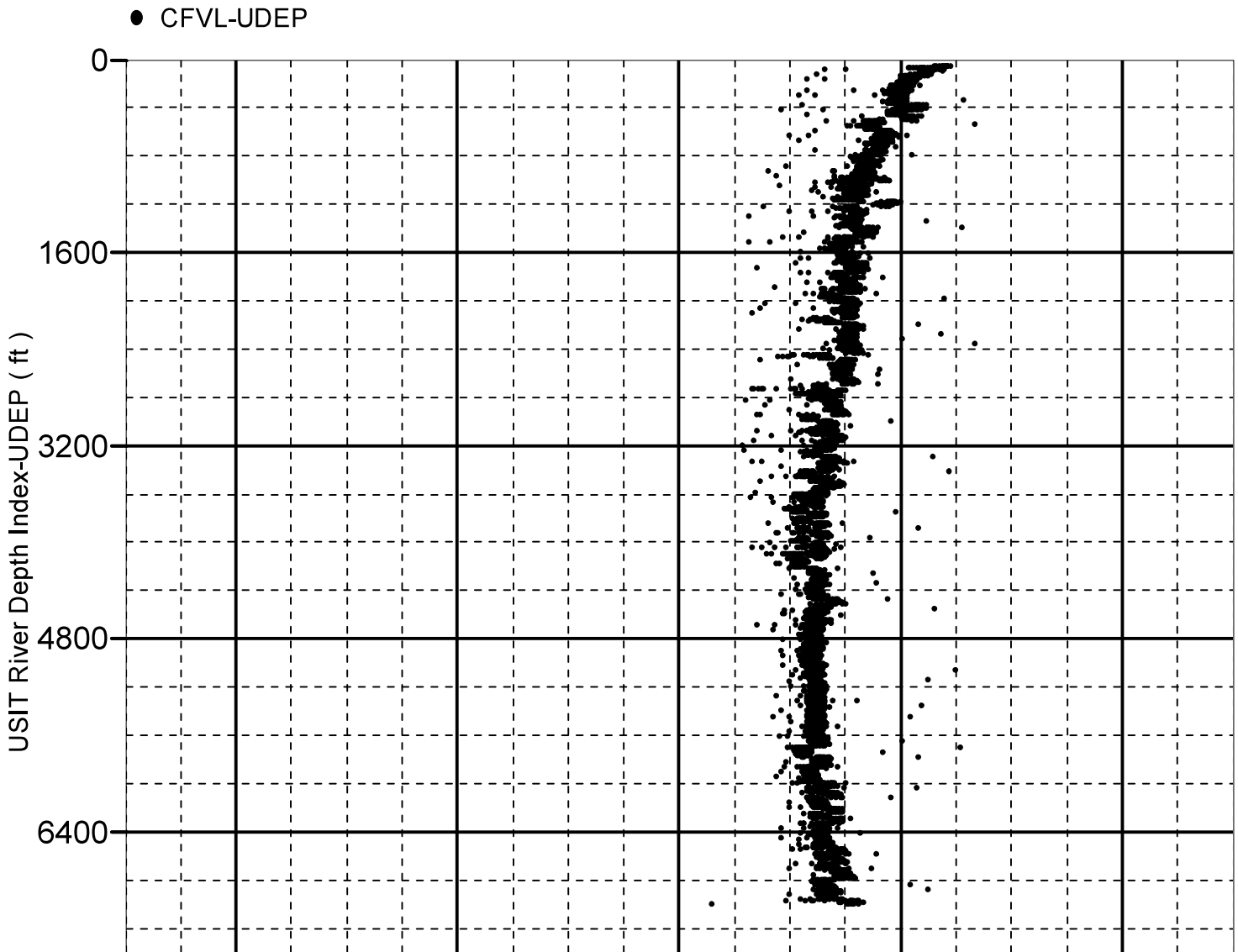
Company:Occidental Petroleum Inc Well:Warner 11-18

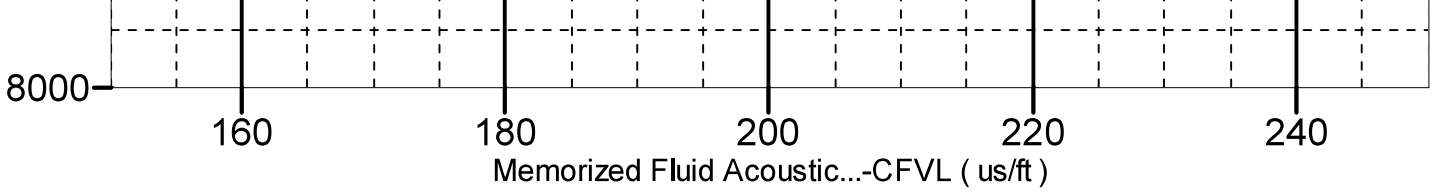
Main Pass:S010

Fluid Acoustic Slowness vs Depth

2D Cross Plot

Index Range: From 54.50 to 7008.00 ft





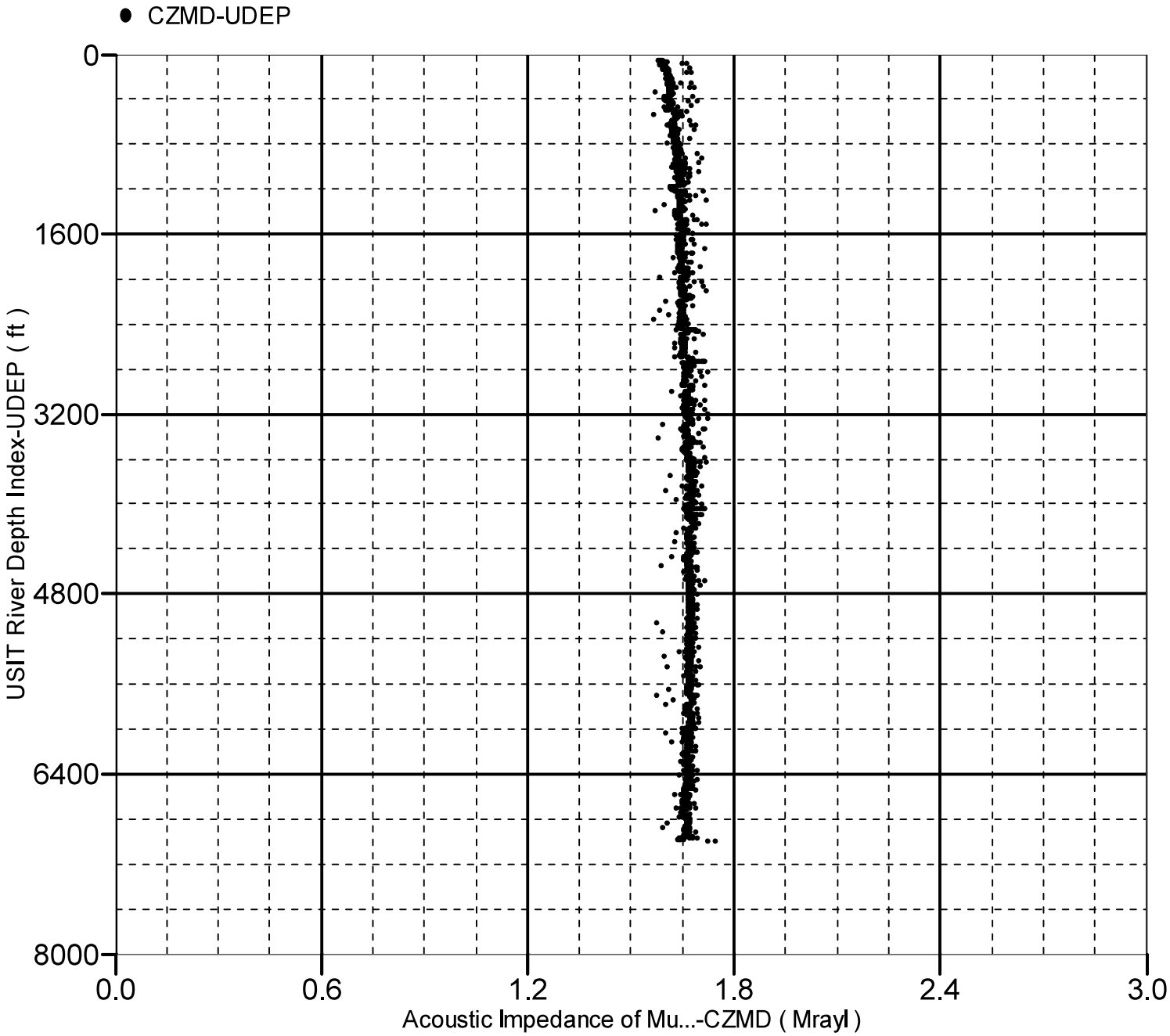
XYZ

Company:Occidental Petroleum Inc Well:Warner 11-18
Main Pass:S010

Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 54.50 to 7008.00 ft



Company:	Occidental Petroleum Inc
Well:	Warner 11-18
Field:	Wattenberg
County:	Weld
State:	Colorado

Schlumberger

Isolation Scanner

Casing Integrity

Gamma Ray - CCL