Schlumberger

Company: Crestone Peak Resources Operating, LLC

Well: Kugel 1I-18H-H267

Field: Wattenberg

County: Weld State: Colorado

ISOLATION SCANNER

VDL-IBC COMBINED PRINT

GAMMA RAY - COLLAR LOCTOR LOG

County: Weld
Field: Wattenberg
Location: 2198' FNL & 680' FEL
Well: Kugel 1I-18H-H267
Company: Crestone Peak Resources Operating, LLC

Location:				
2198' FNL & 680' FEL			Elev.: K.B.	4976.00 ft
			G.L.	4953.00 ft
			D.F.	
Permanent Datum:	Ground Level	Elev.:	4953.00 f	
Log Measured From:	Kelly Bushing	23.00 ft	above Perm.Datum	
Drilling Measured From:	Kelly Bushing			

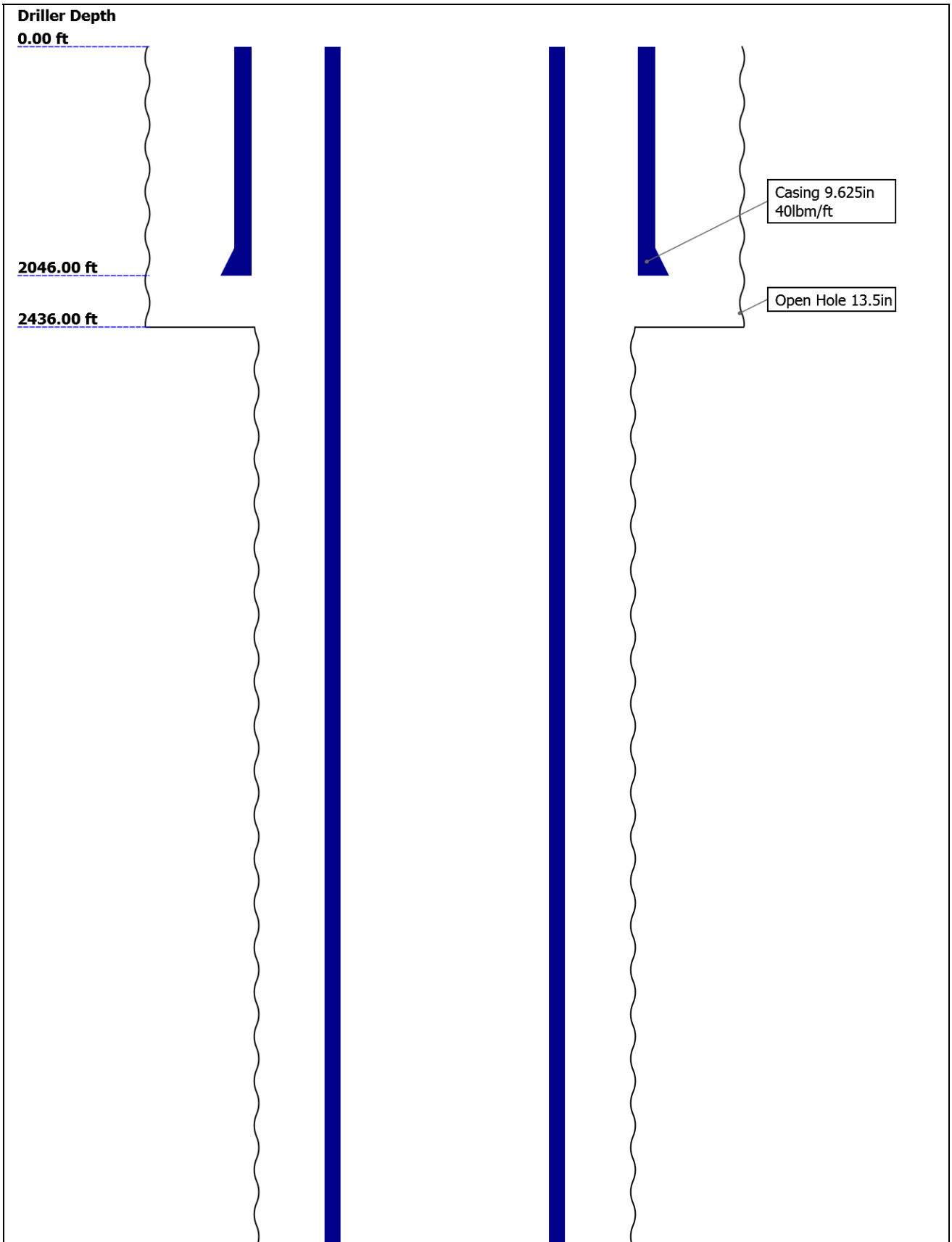
API Serial No.	Section:	Township:	Range:
05-123-49482	18	2 N	67 W

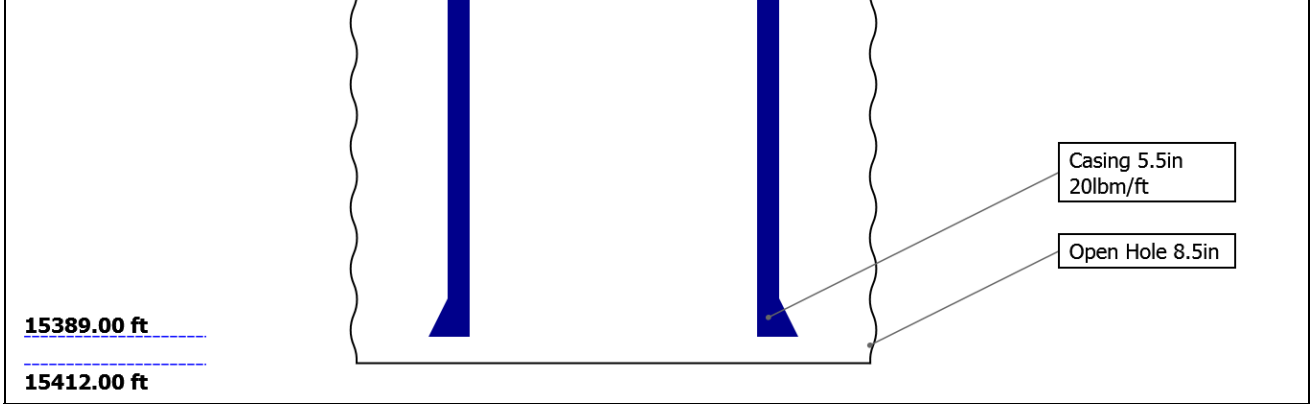
Logging Date	30-Sep-2019		
Run Number	1A		
Depth Driller	15412.00 ft		
Schlumberger Depth	15412.00 ft		
Bottom Log Interval	7300.00 ft		
Top Log Interval	30.00 ft		
Casing Fluid Type	Water		
Salinity			
Density	9.5 lbm/gal		
Fluid Level	8.00 ft		
BIT/CASING/TUBING STRING			
Bit Size	8.50 in		
From	2436.00 ft		
To	15412.00 ft		
Casing/Tubing Size	5.5 in		
Weight	20 lbm/ft		
Grade	N/A		
From	0.00 ft		
To	15389.00 ft		
Max Recorded Temperatures			
Logger on Bottom Time			
Unit Number Location:	2157	Fort Morgan	
Recorded By	C. Stiles/ C. Ibrahim		
Witnessed By	K. Kershisnik		

Disclaimer

Contents

Well Sketch





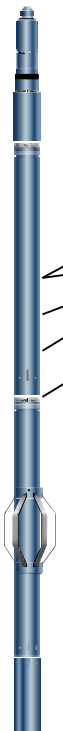
Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	13.5	8.5				
Top Driller (ft)	0	2436				
Top Logger (ft)	0	2436				
Bottom Driller (ft)	2436	15412				
Bottom Logger (ft)	2436	15412				
Casing						
Size (in)	9.625	5.5				
Weight (lbm/ft)	40	20				
Inner Diameter (in)	8.835	4.778				
Grade	N/A	N/A				
Top Driller (ft)	0	0				
Top Logger (ft)	0	0				
Bottom Driller (ft)	2046	15389				
Bottom Logger (ft)	2046	15389				

Remarks and Equipment Summary

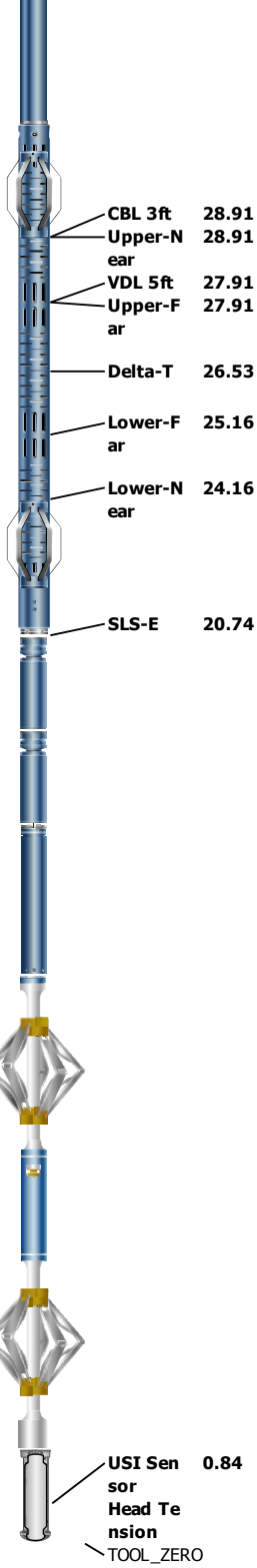
1A: Toolstring

Equip name	Length
LEH-QT	**51.36**
LEH-QT	
EDTC-B:8324	**47.88**
EDTH-B:8101	
EDTG-A:77301	
EDTC-B:8324	
DSLT-H	**41.38**
ECH-KH:8401	
DSLC-H	
SLS-E:1229	



MP name	Offset
CTEM	44.38
ACCZ	0.00
HV	0.00
Gamma Ray	42.51
TelStatus	41.38

1A: Remarks



Lengths are in ft
Maximum Outer Diameter = 6.250 in
Line: Sensor Location, Value: Gating Offset
All measurements are relative to TOOL_ZERO

Depth Summary

	1A		
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

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

Logging Cable

Type	7-39PI-XS		
Serial Number			
Length	24000.00 ft		
Conveyance Type	Wireline		
Rig Type			

1A:Depth Control Parameters		Depth Control Remarks
Log Sequence	First Log In the Well	
Rig Up Length At Surface		
Rig Up Length At Bottom		
Rig Up Length Correction		
Stretch Correction		
Tool Zero Check At Surface		

USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 1	Log[4]:Up	7107.09	92.59

Fluid Velocity = "Automatic".
CFVL equals DFSL channel

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

Mud Impedance = "Theoretical".
CZMD uses theoretical results.
MUD_N_THE=1.10
DFD=1.14g/cm3(9.50lbm/gal)

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

1A

IBC SLG VDL-IBC PRINT MAIN PASS @10DEG X 6IN @0PSI [5:100]

Software Version

Acquisition System	Version
Maxwell 2018 SP1	8.1.99839.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1A	Log[4]:Up	Up	92.59 ft	7107.09 ft	30-Sep-2019 12:02:00 PM	30-Sep-2019 1:48:44 PM	ON	6.45 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Crestone Peak Resources Operating, LLC Well:Kugel 1I-18H-H267

1A: Log[4]:Up:S007

Description: USI IBC SLG Format: Log (IBC SLG DSLT VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 09-Oct-2019 16:16:39

TIME_1900 - Time Marked every 60.00 (s)

USIT Processing Flags (HELG[0]) USIT F

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

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

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

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

Amplitude of Eccenterin g (ECCE) USIT-E
0 in 0.5

Motor Revolution Speed (RSAV) USIT-E
6 c/s 7.5

U L B R U
Orientation: Top of Hole
Absent 1.500 3.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E

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

Gamma Ray (ECGR_EDTC) EDTC-B
0 gAPI 150

U L B R U
Orientation: Top of Hole
Absent -5.200 -3.600 -2.000 -0.400
Explicit Normalization
USIT - Amplitude of Wave (AWBK) USIT-E (dB)

Acoustic Impedance Minimum (AIMN) USIT-E
-1 Mrayl 9

Acoustic Impedance Average (AIAV) USIT-E
-1 Mrayl 9

Acoustic Impedance Maximum (AIMX) USIT-E
-1 Mrayl 9

U L B R U
Orientation: Top of Hole
Absent 1.500 3.500 5.500 7.500
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)

Minimum Flexural Attenuation (U-USIT_UFA N) USIT-E
0 dB/m 150

Average Flexural Attenuation (U-USIT_UFA V) USIT-E
0 dB/m 150

Maximum Flexural Attenuation (U-USIT_UFA X) USIT-E
0 dB/m 150

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

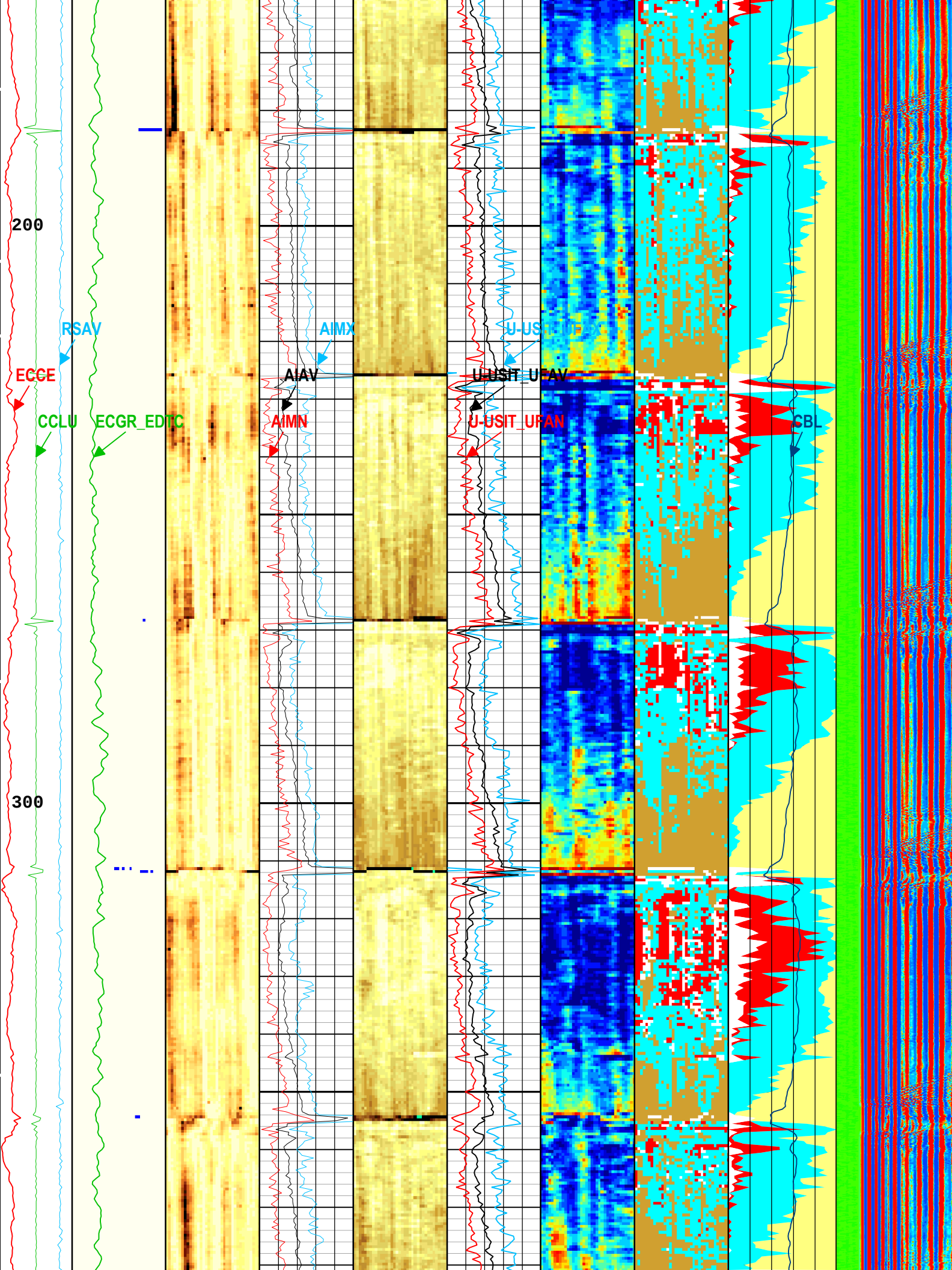
U L B R U
Orientation: Top of Hole
Absent 1.500 3.500
Explicit Normalization
USIT - Solid Liquid Gas Sorted Color Map (USLP) USIT-E

SLG Solid Index
SLG Liquid Index
SLG Gas Index
SLG White Point Index

CBL Amplitude (CBL) DSLT-H
0 mV 100

Min Amplitude
Variable Density L (VDL) DSLT-H
200 us

100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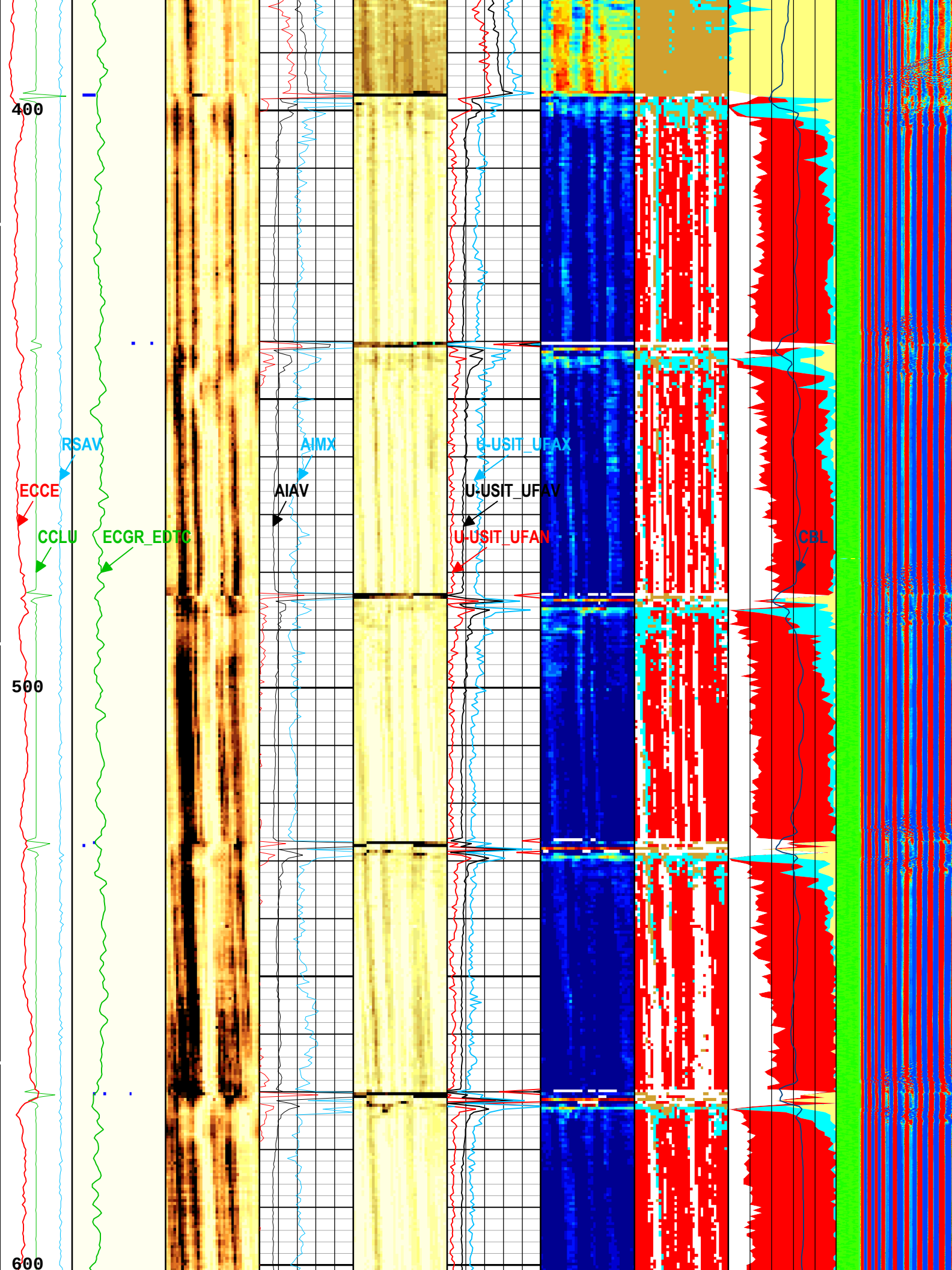
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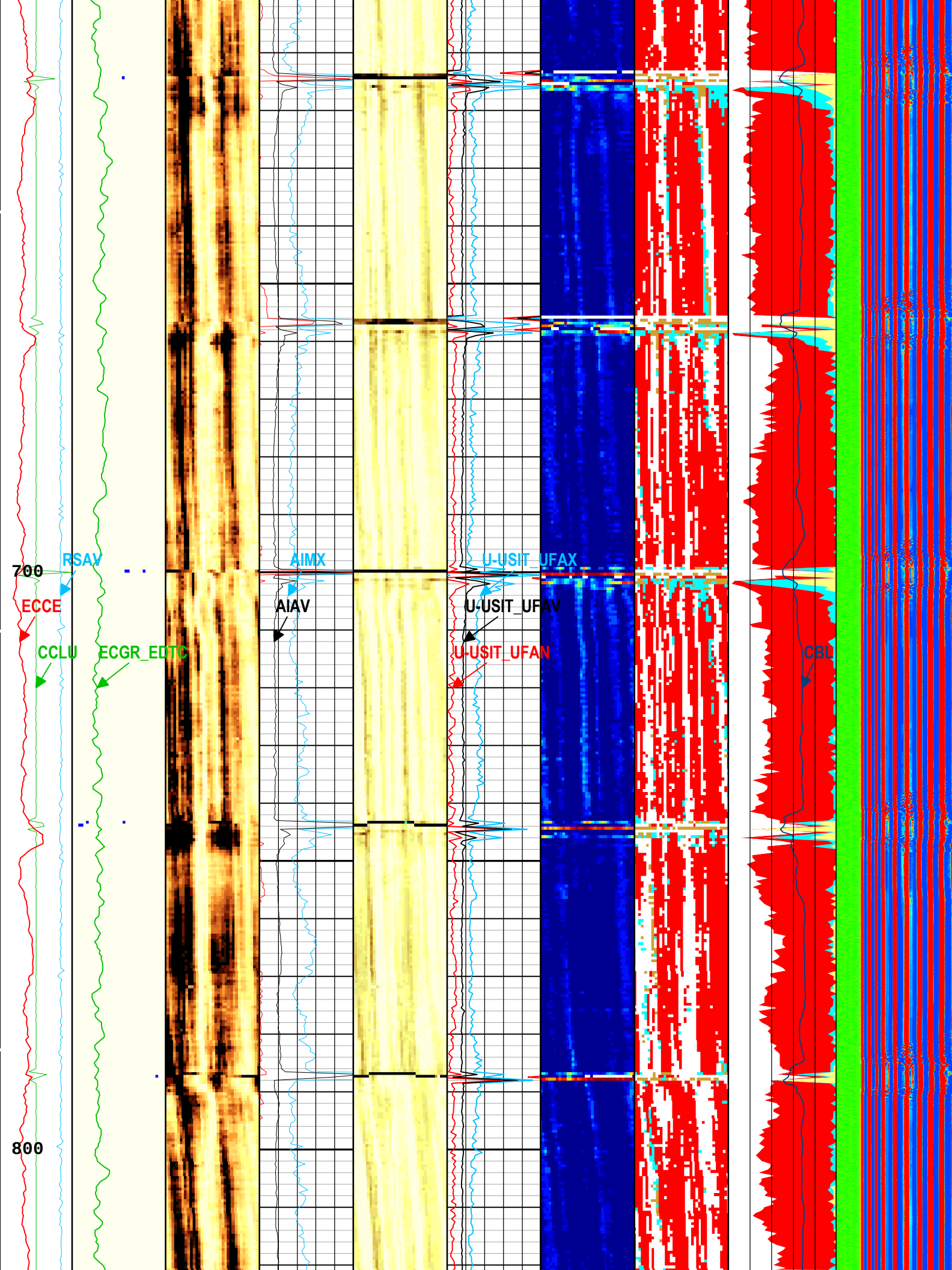
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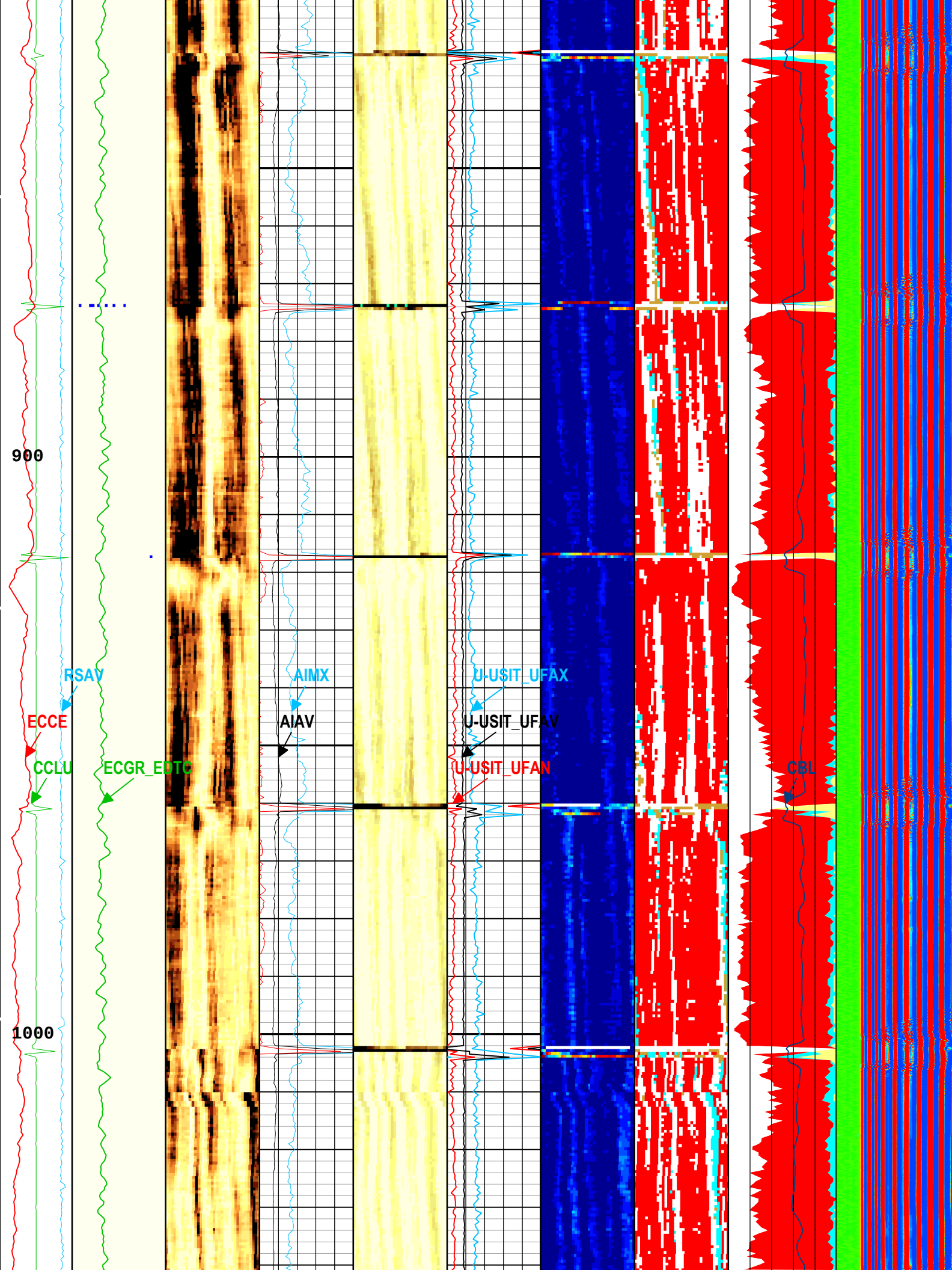
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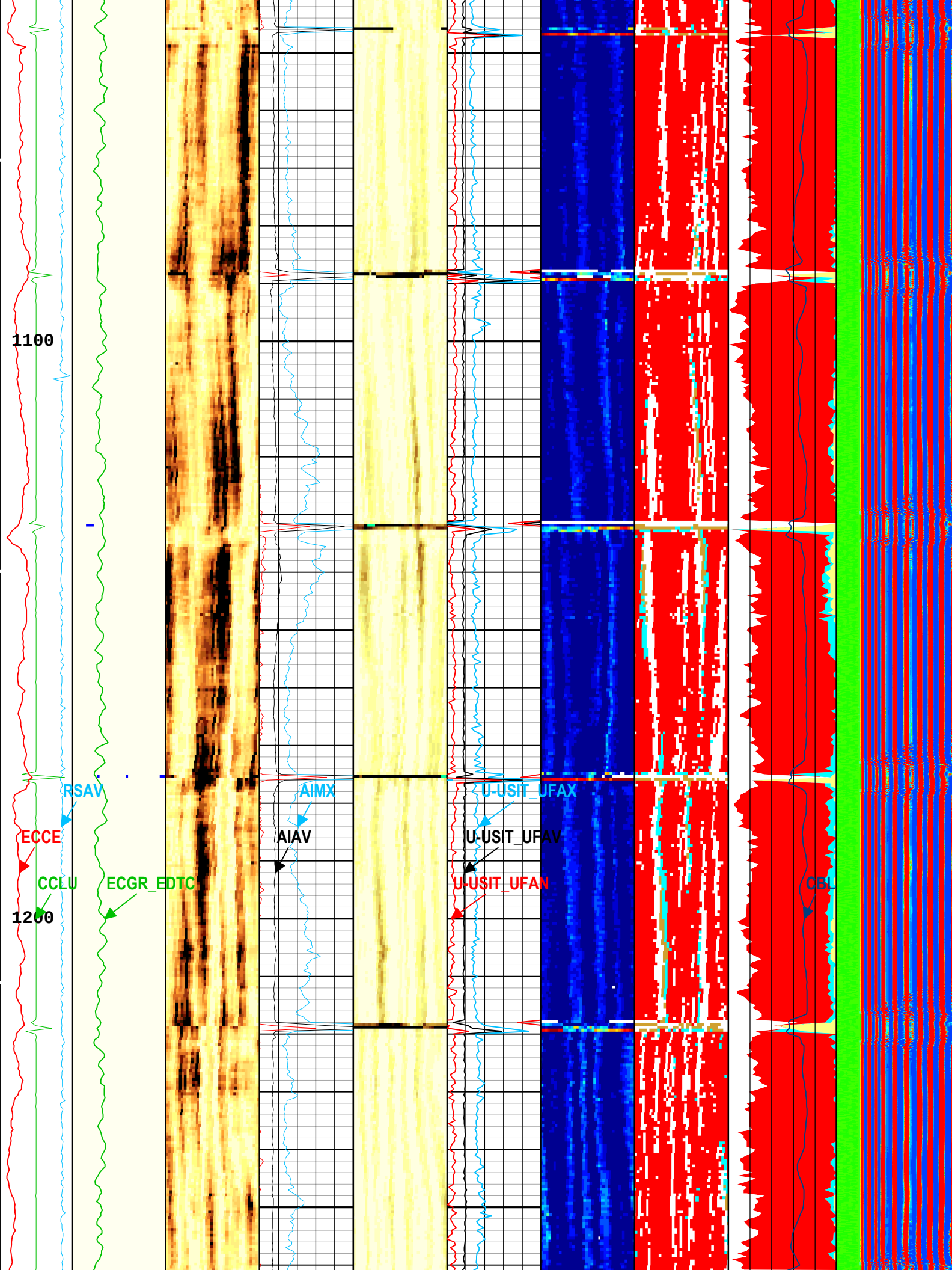
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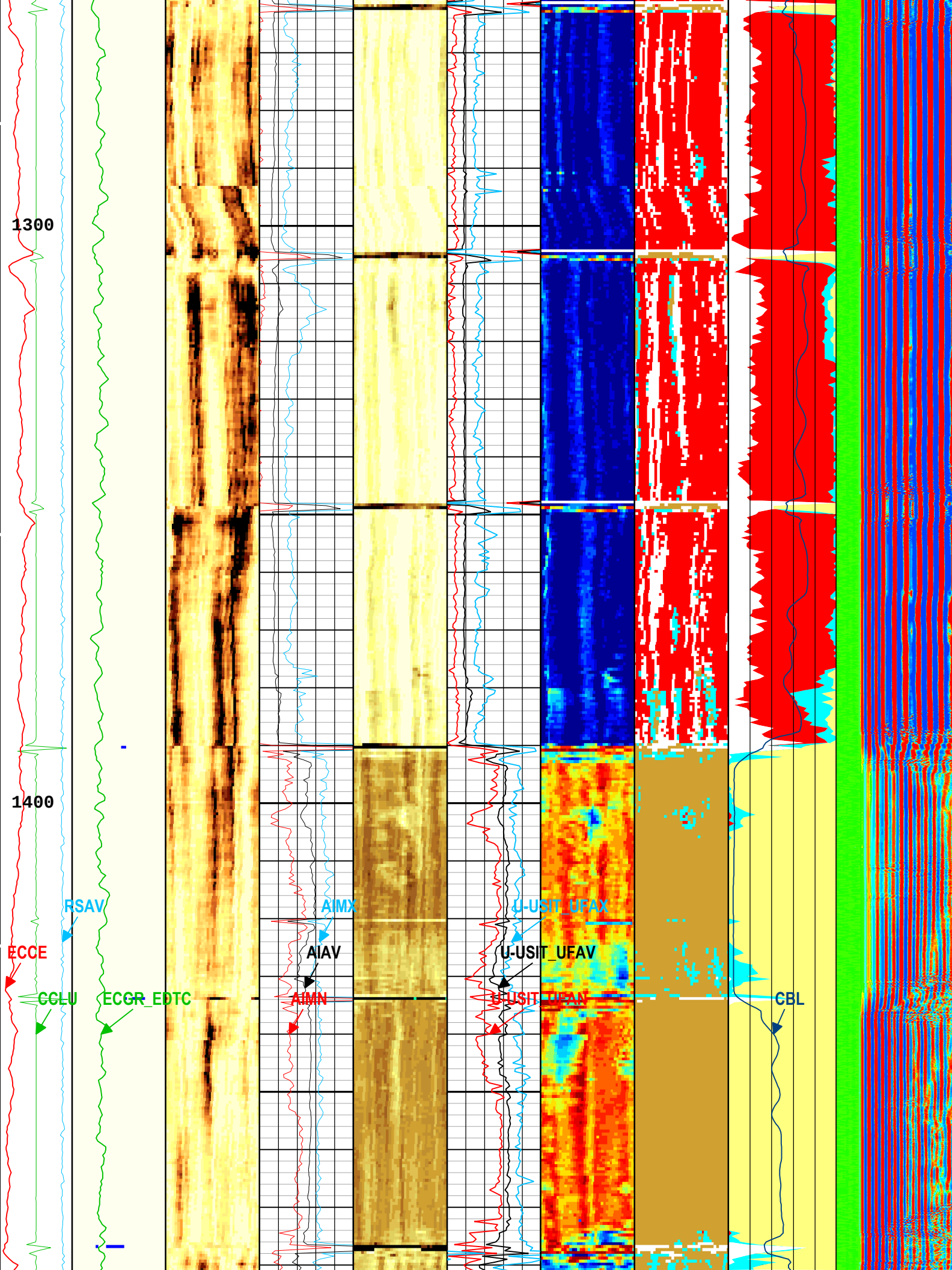
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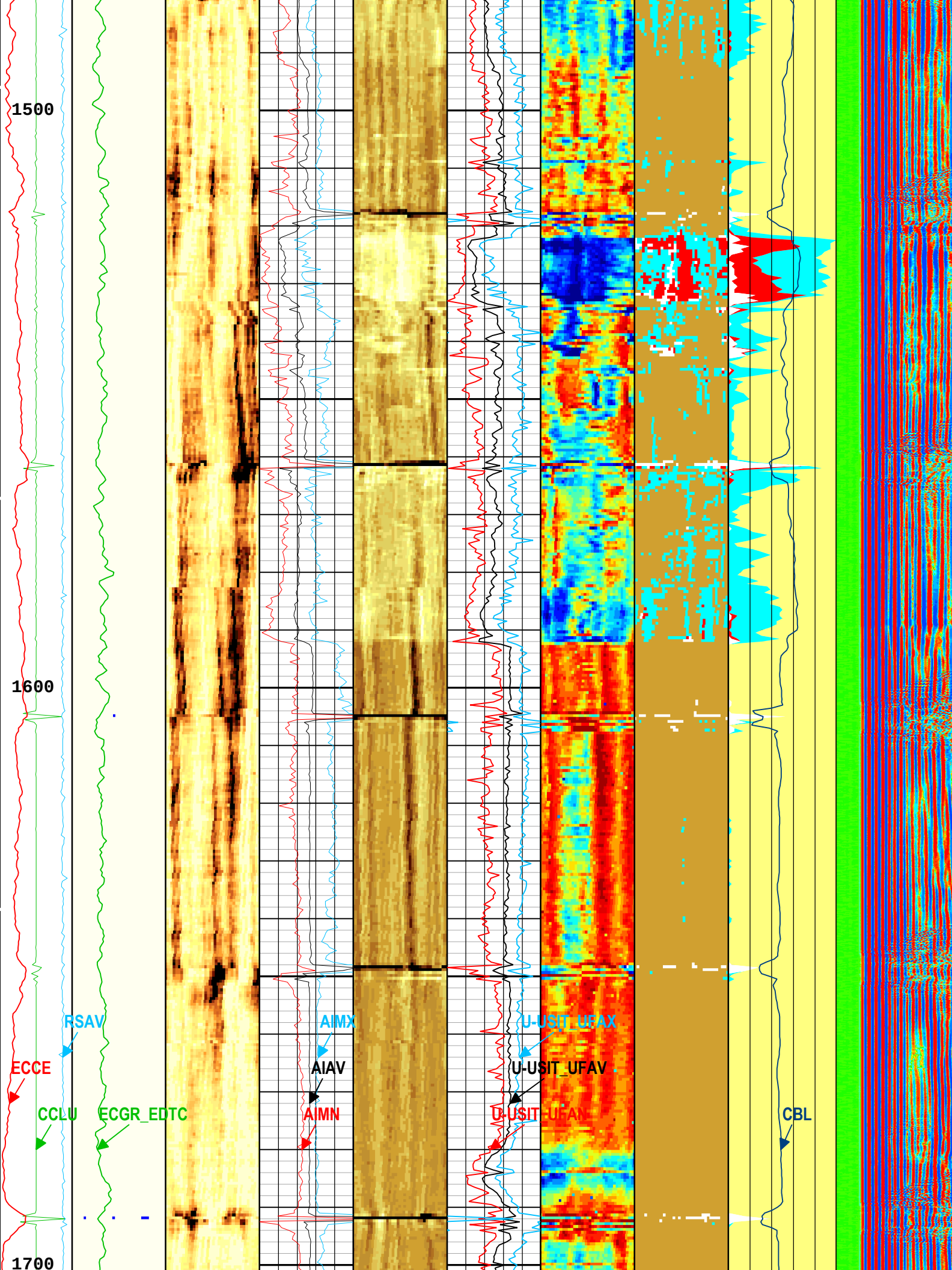
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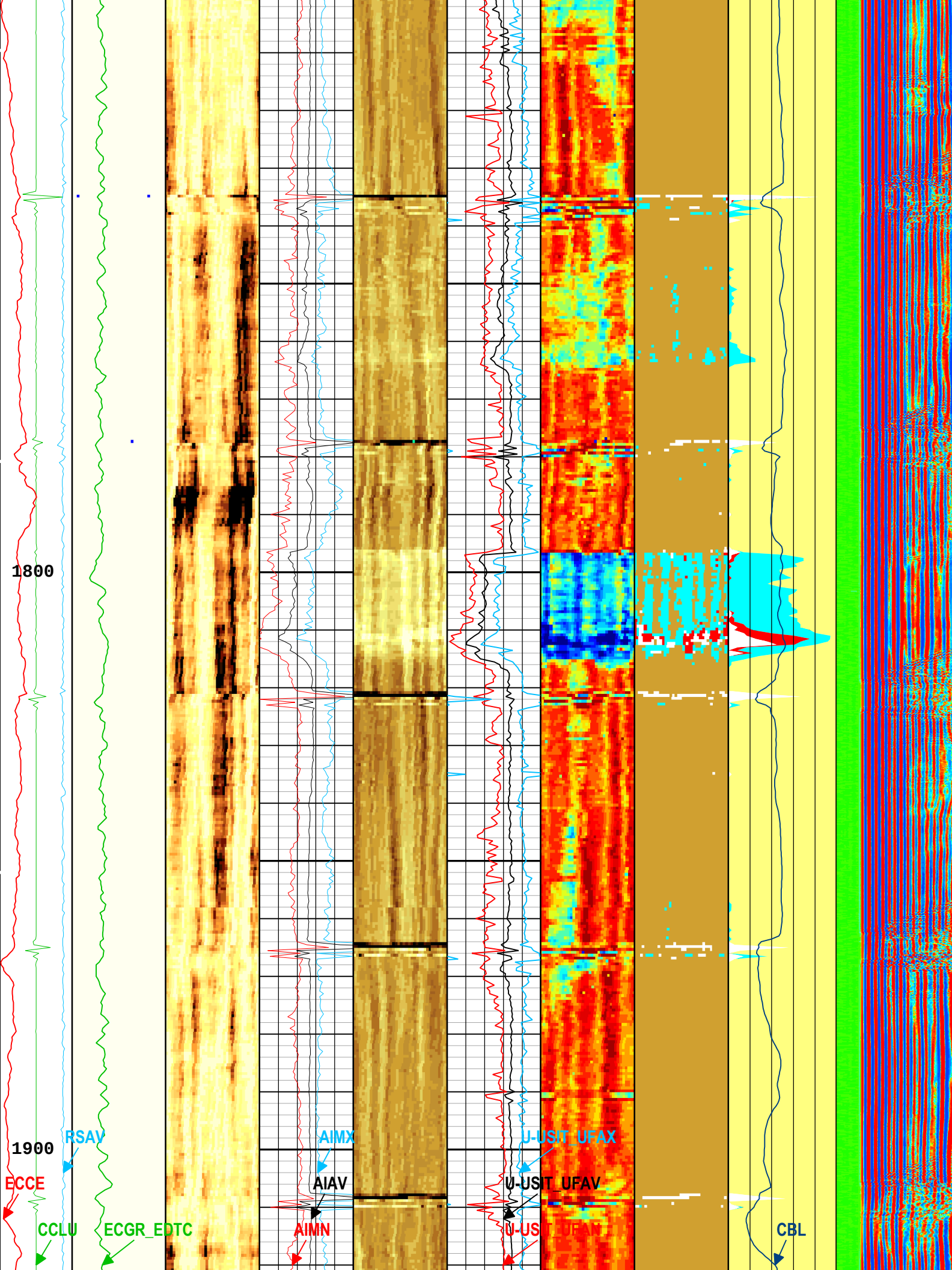
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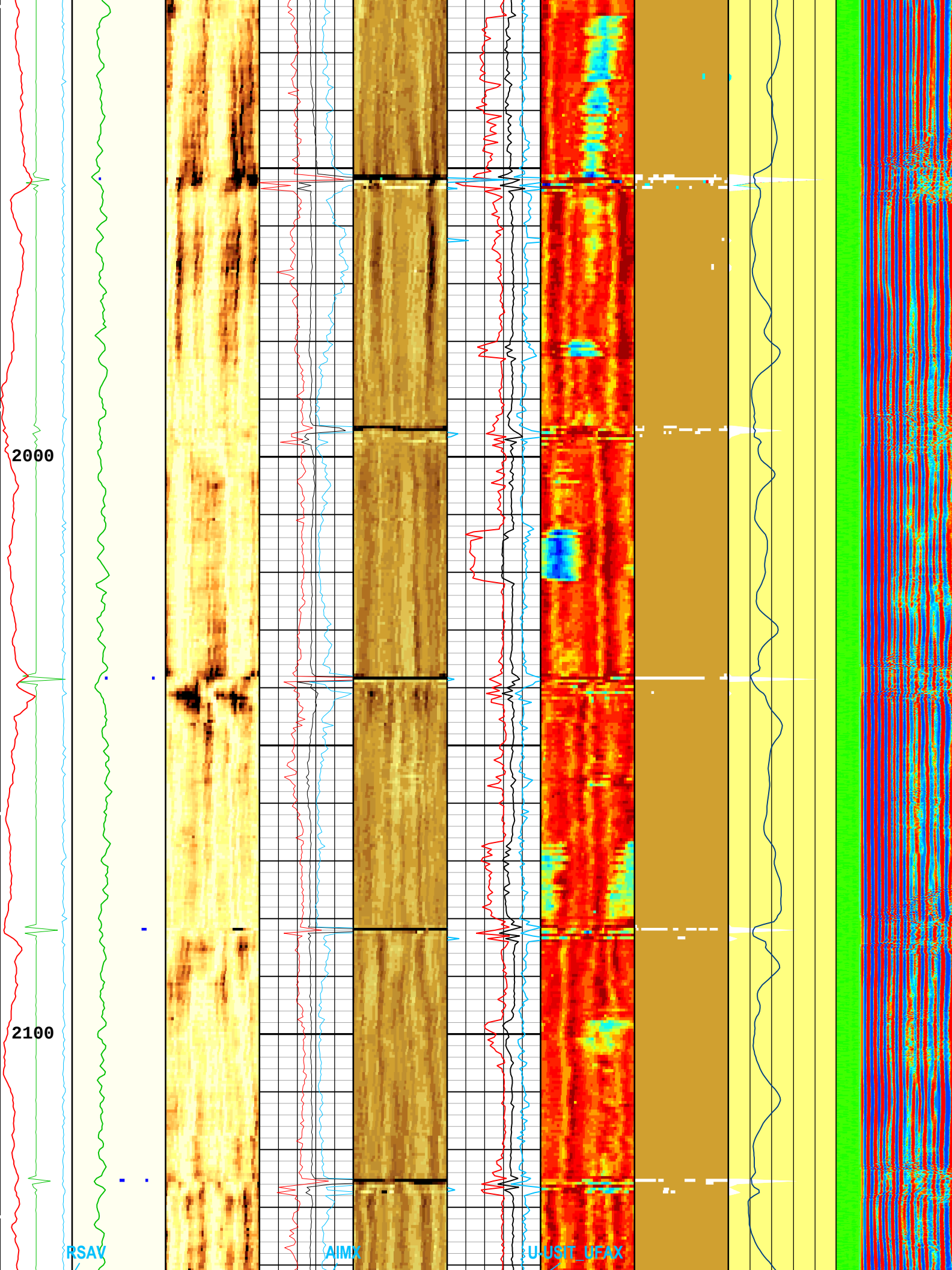
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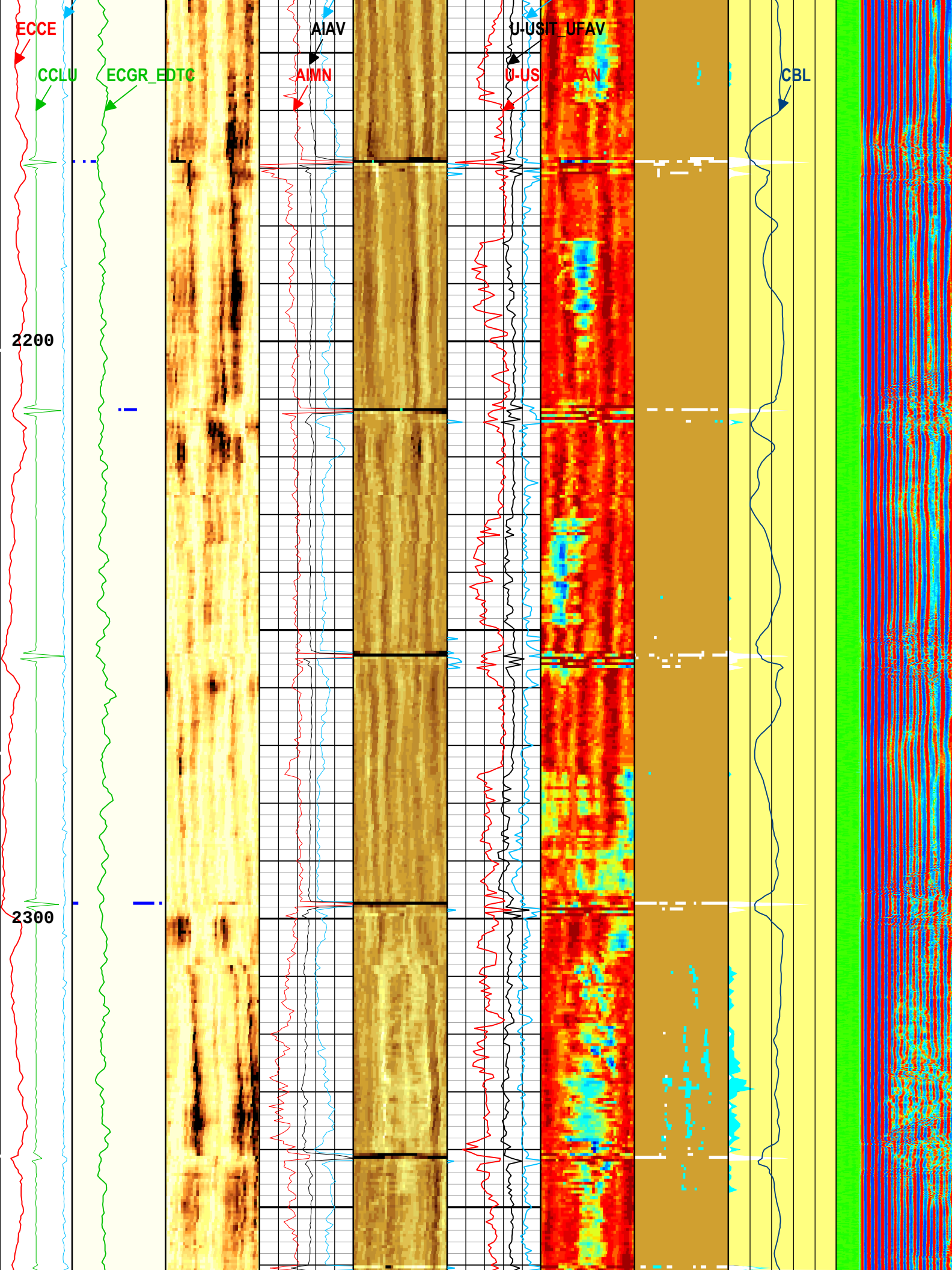
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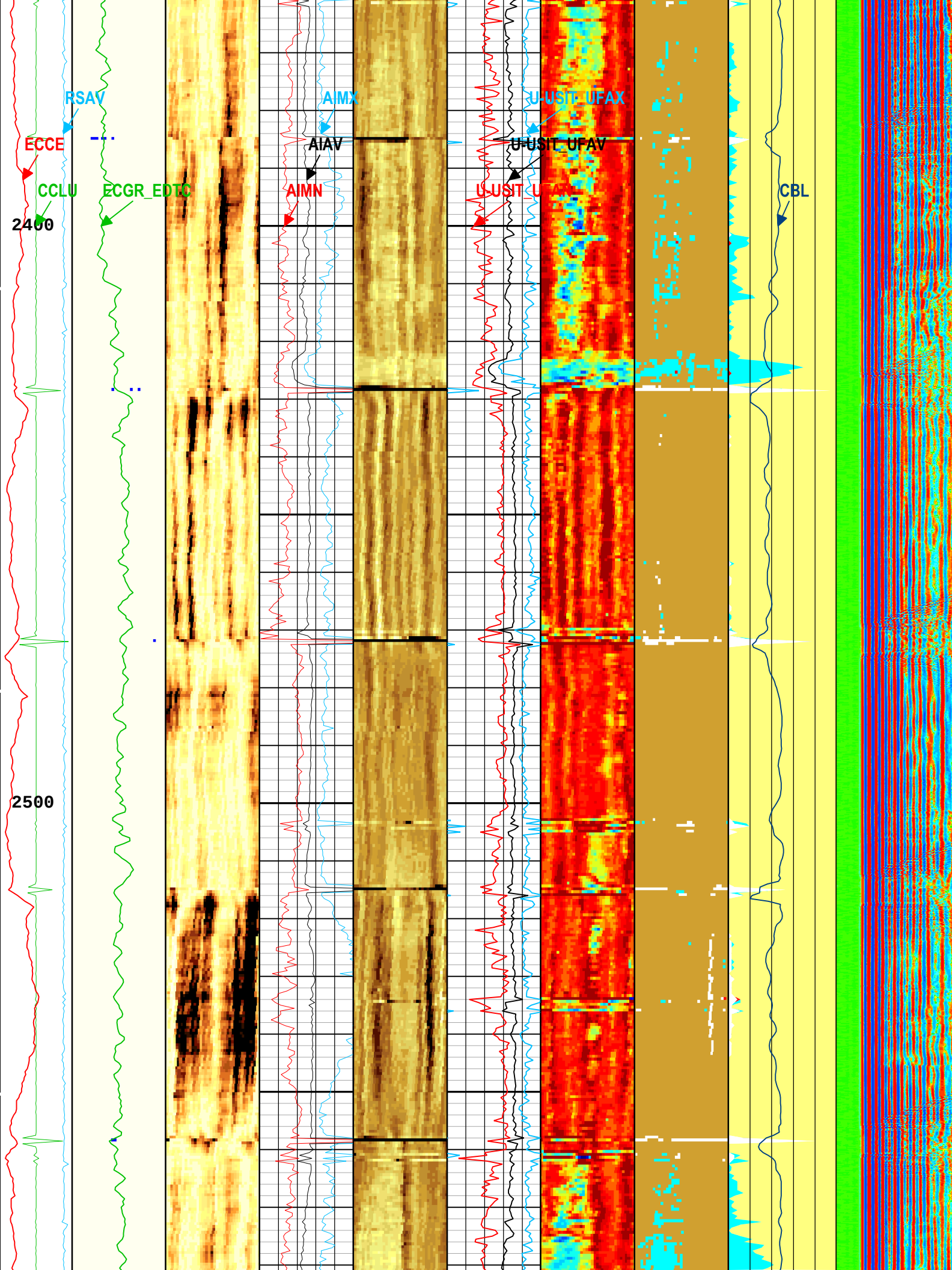
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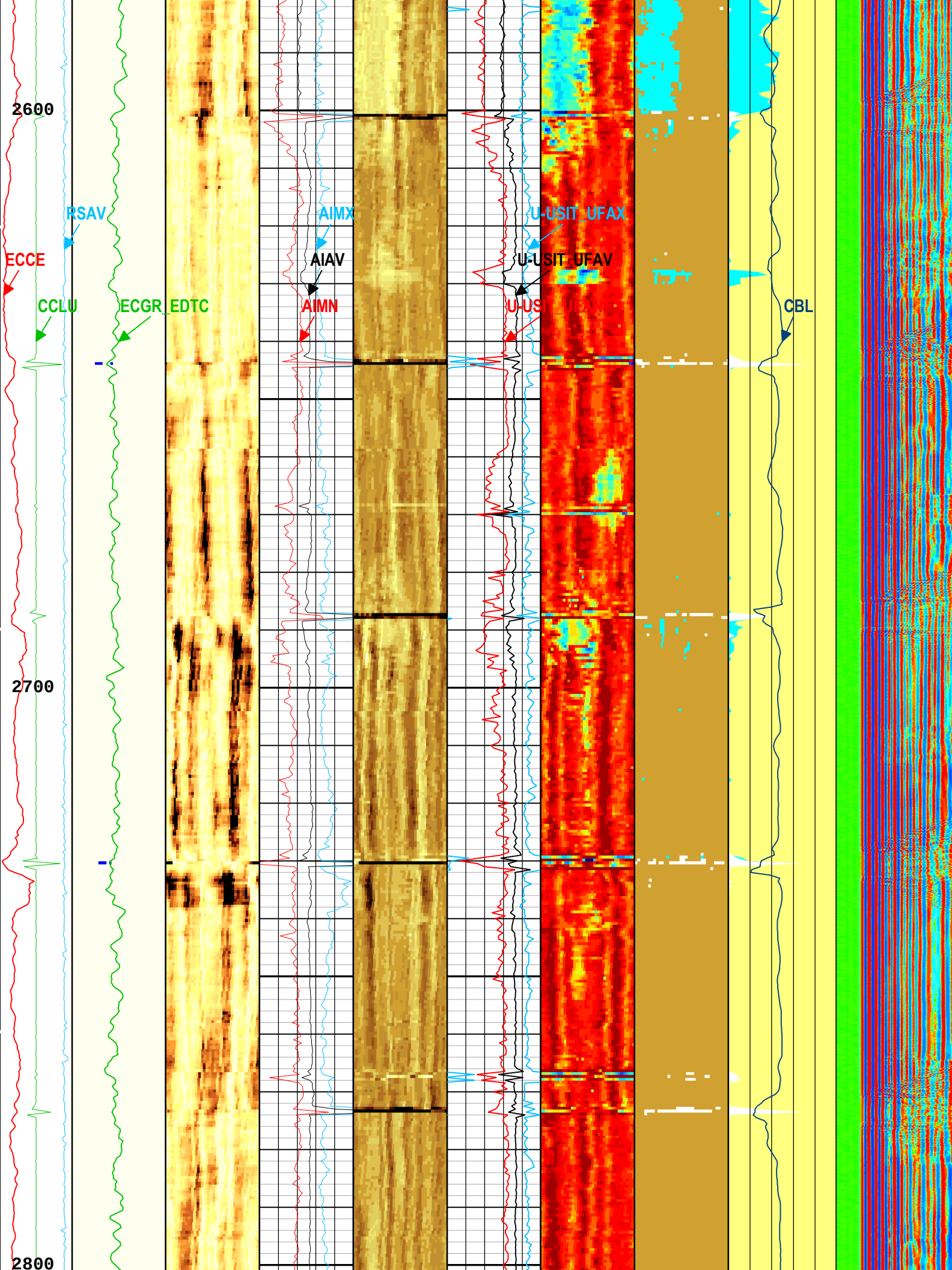
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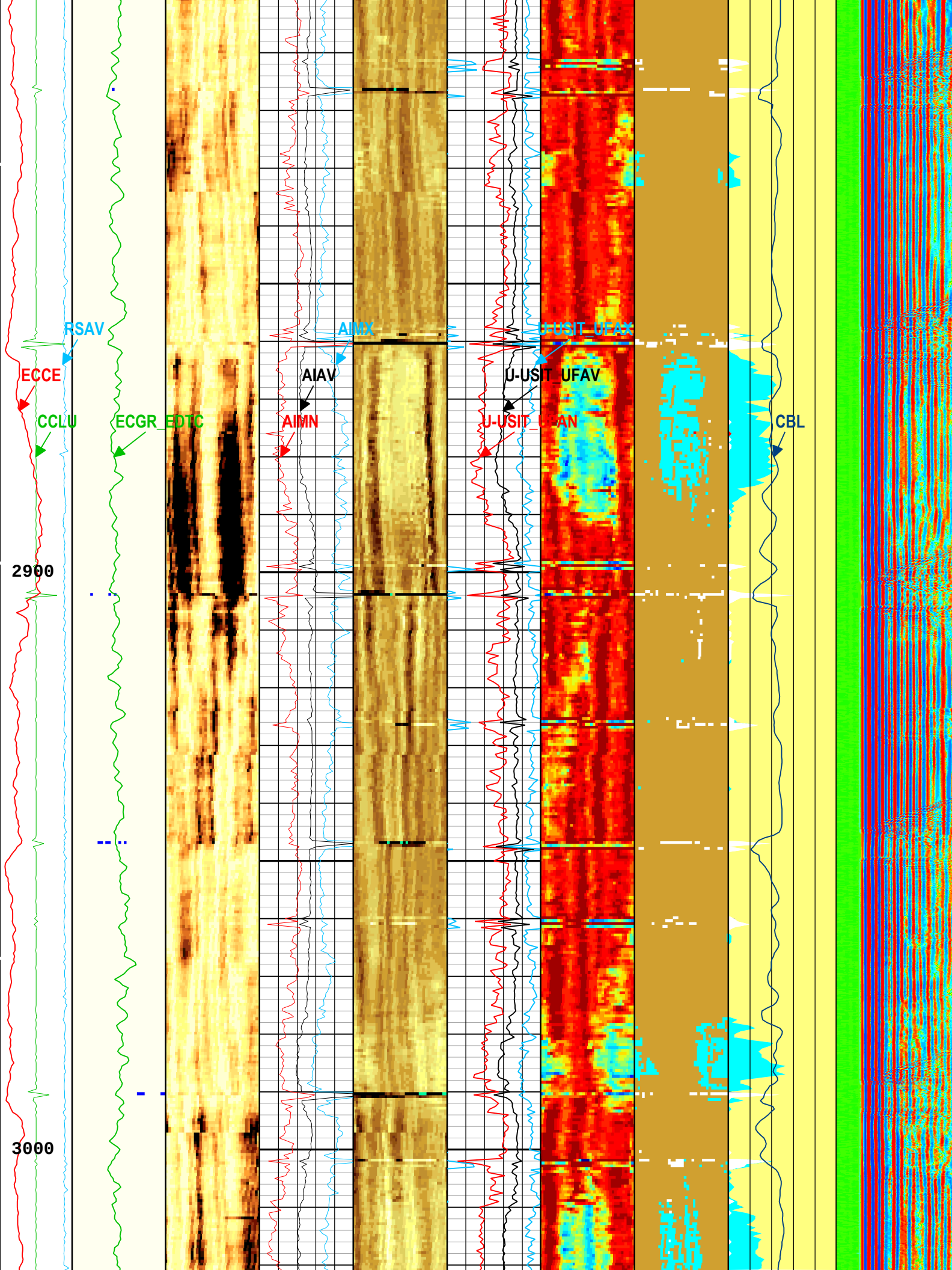
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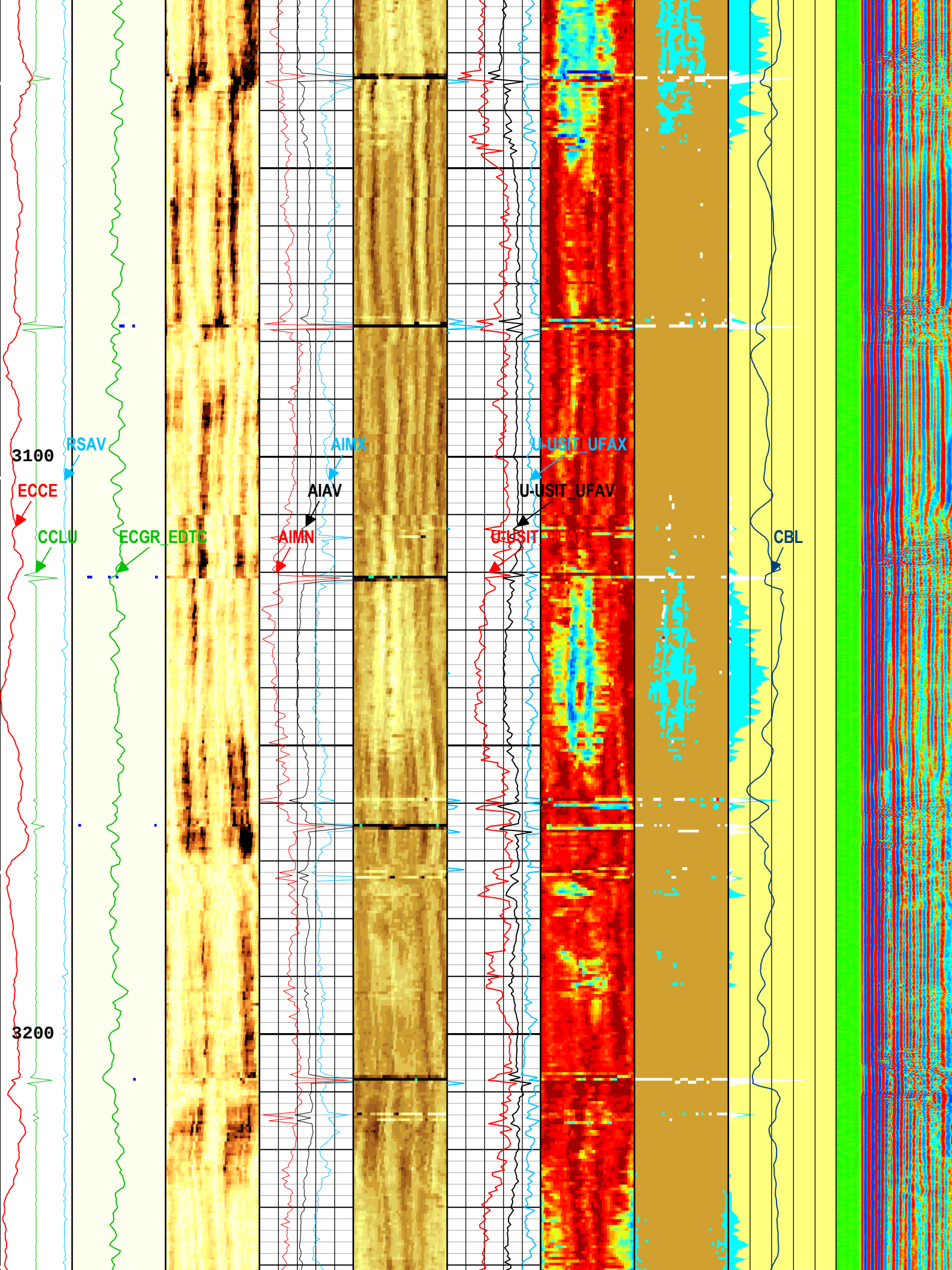
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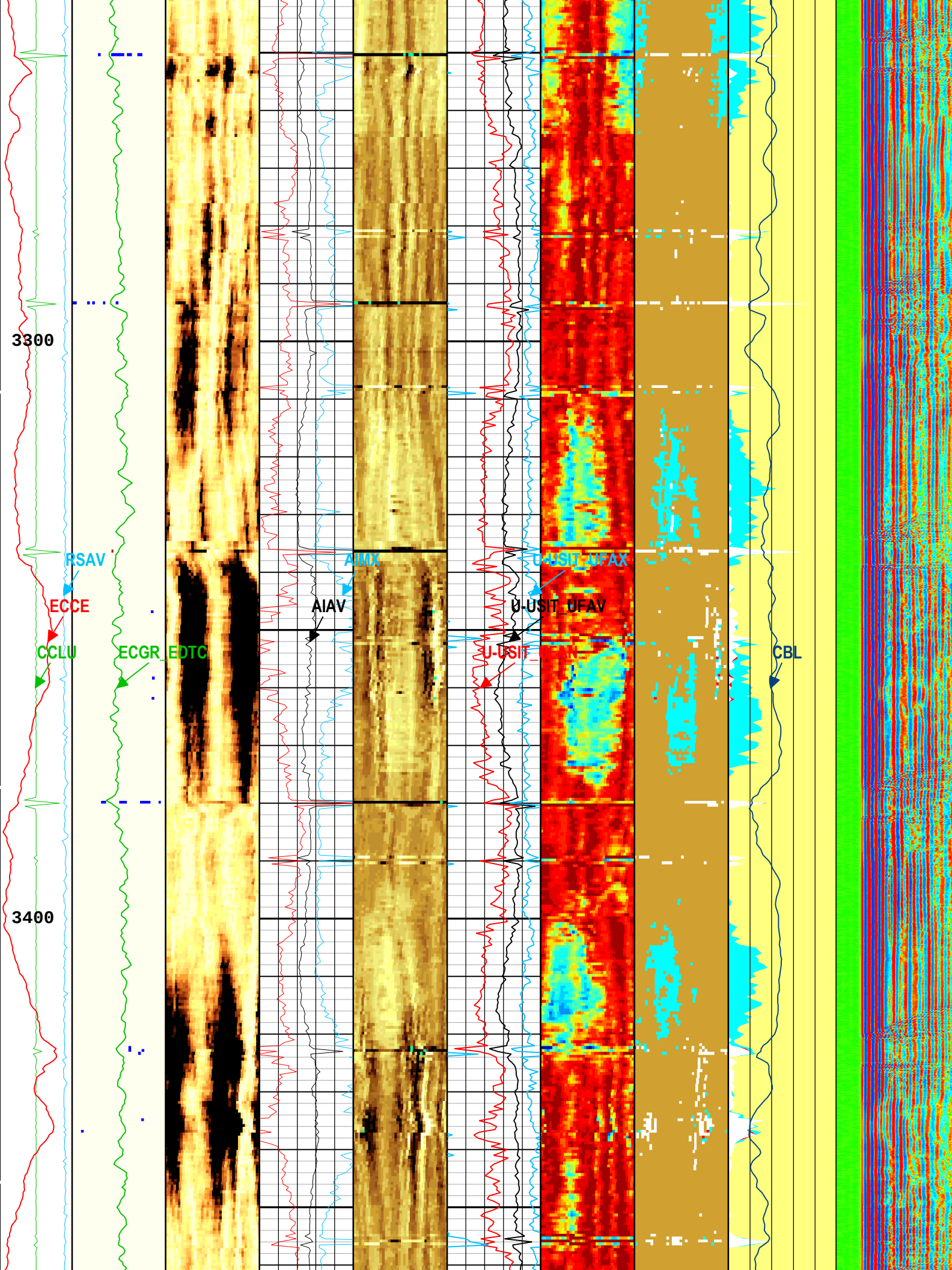
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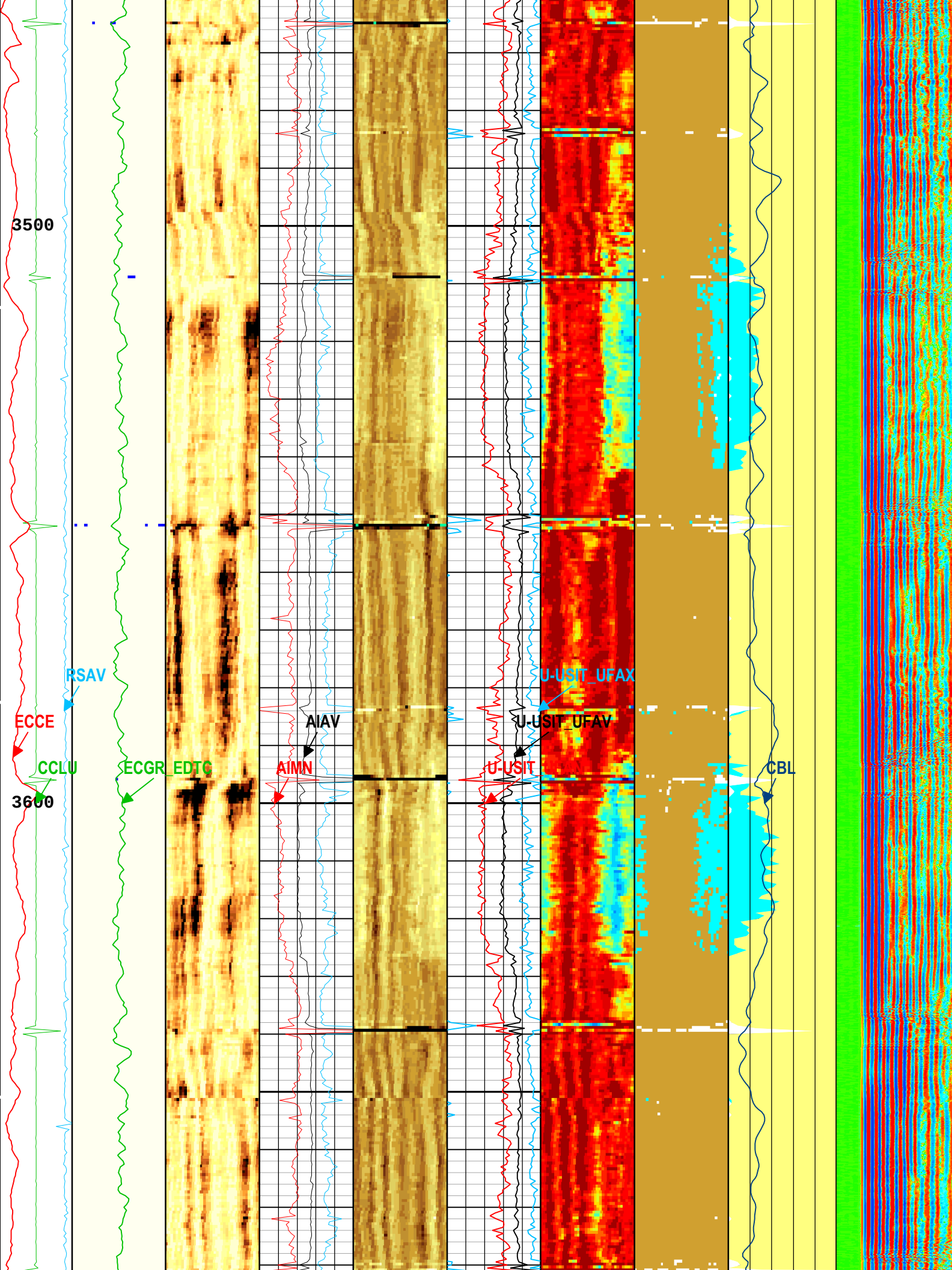
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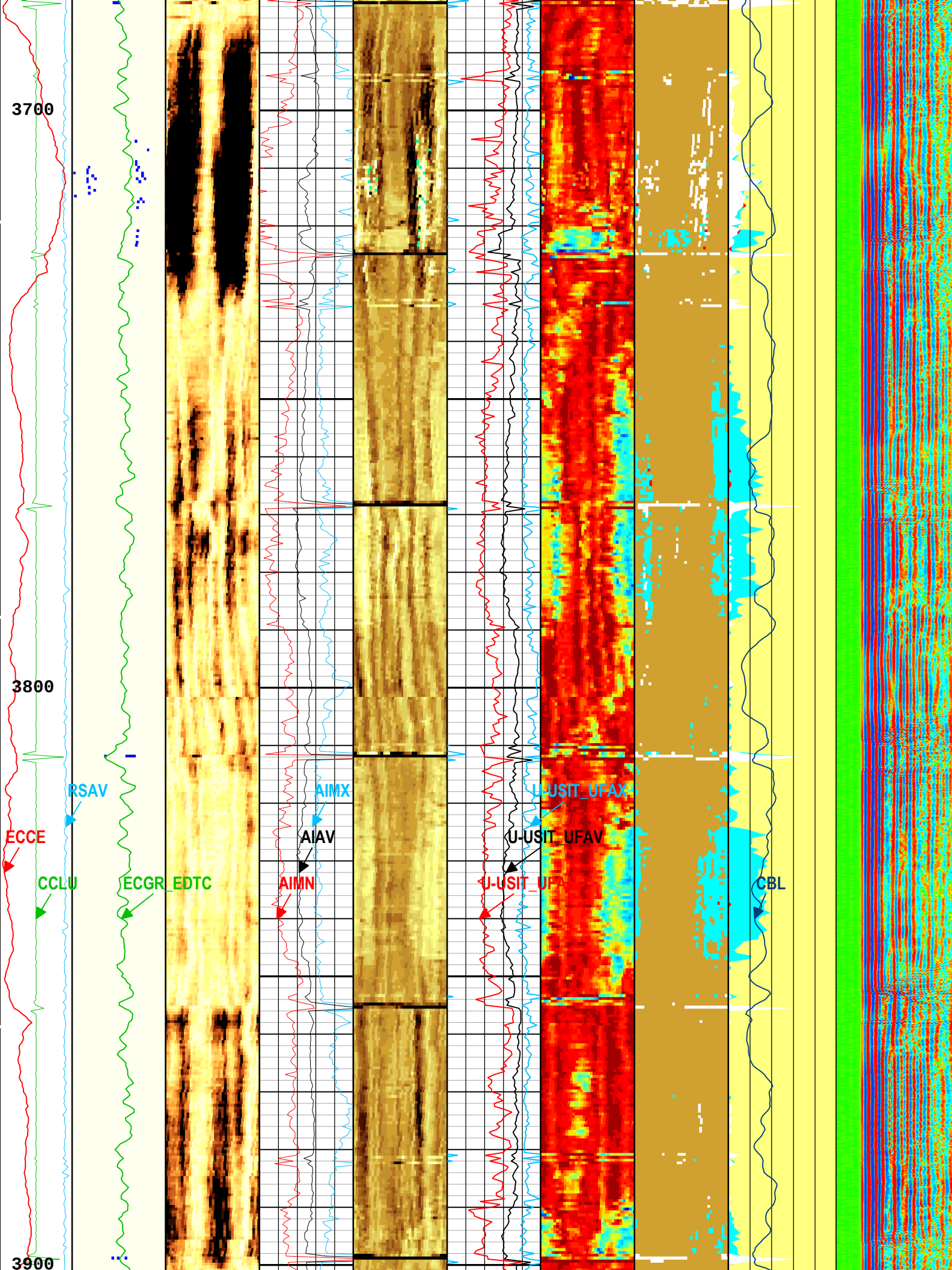
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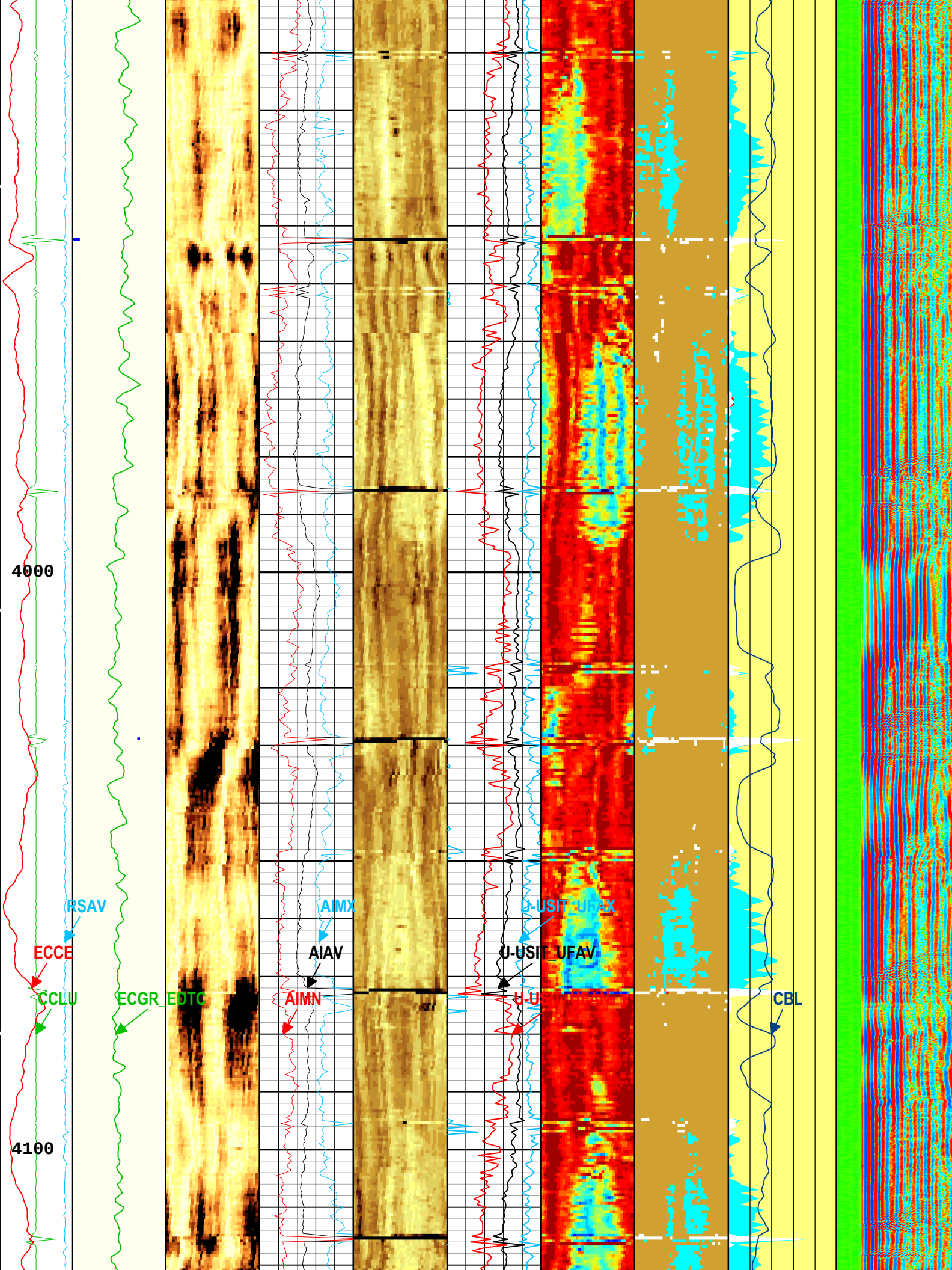
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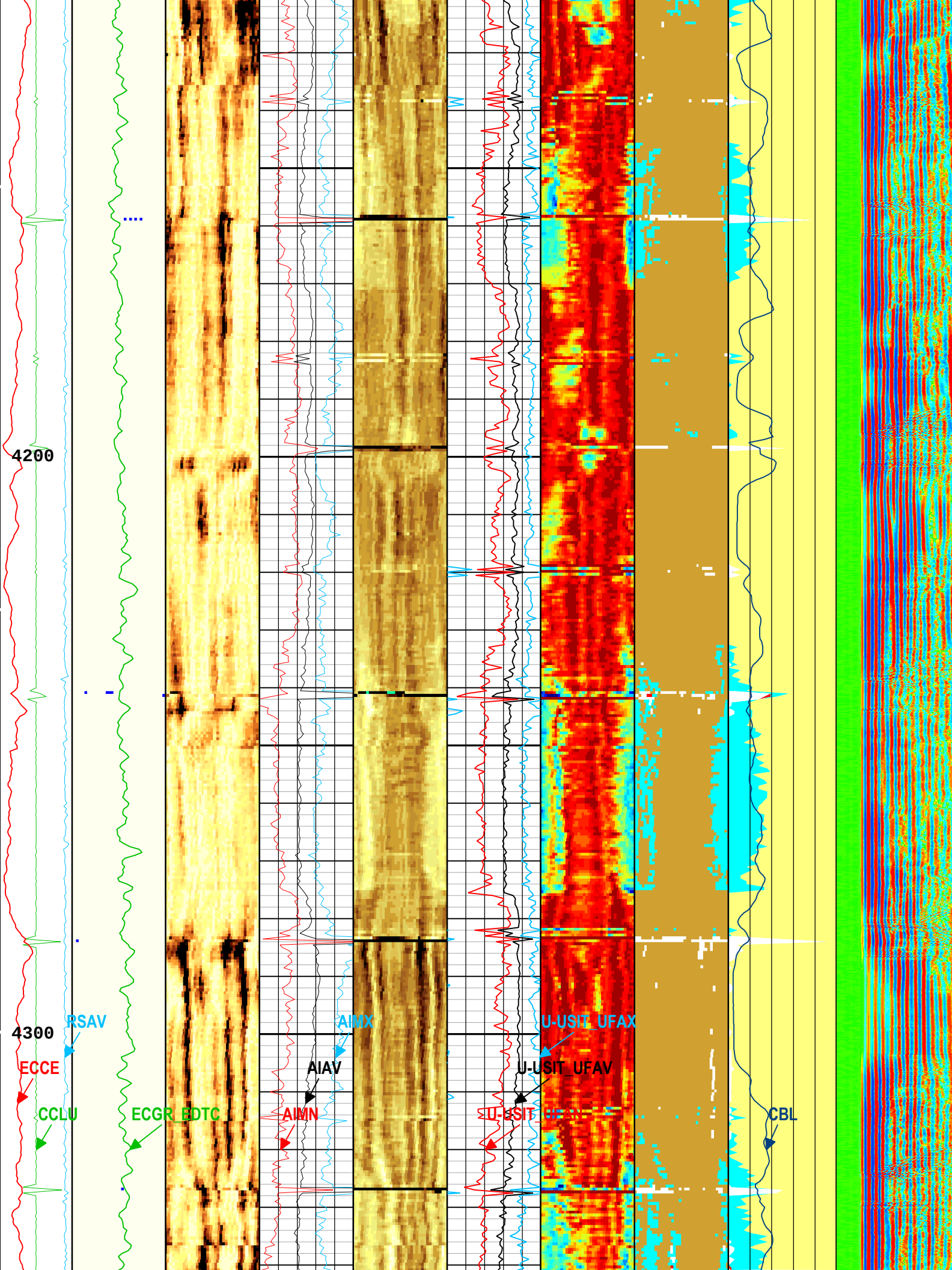
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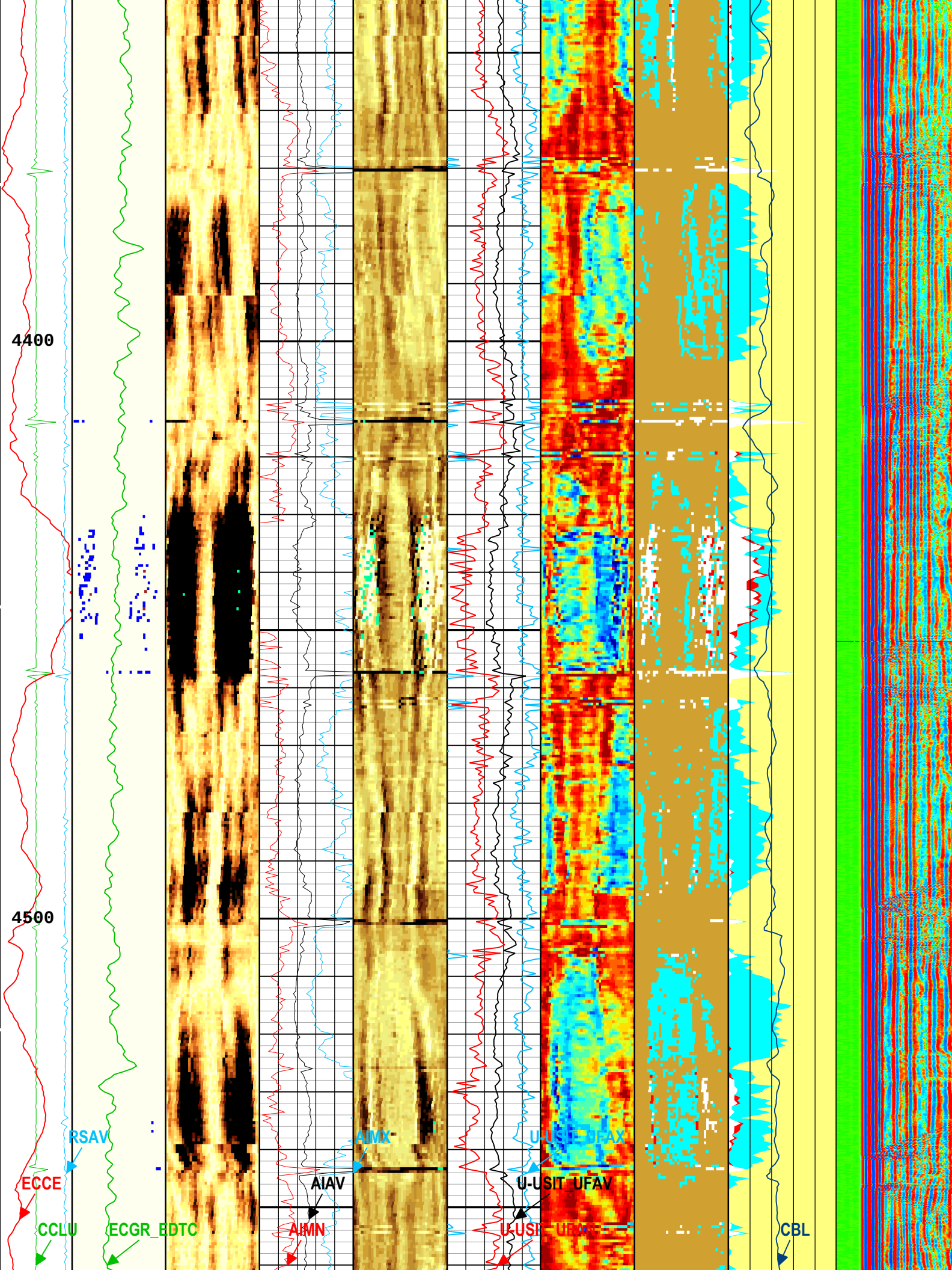
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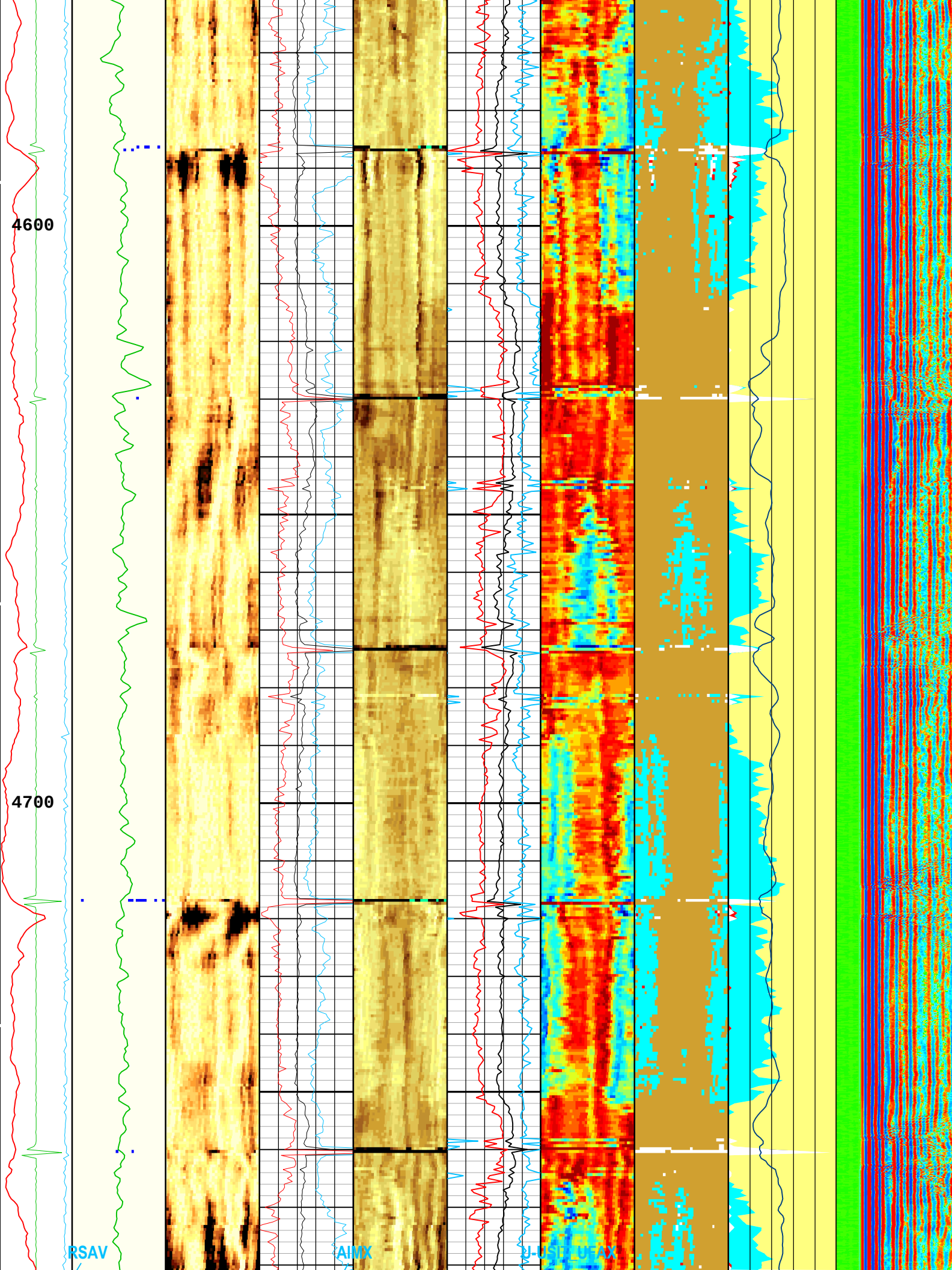
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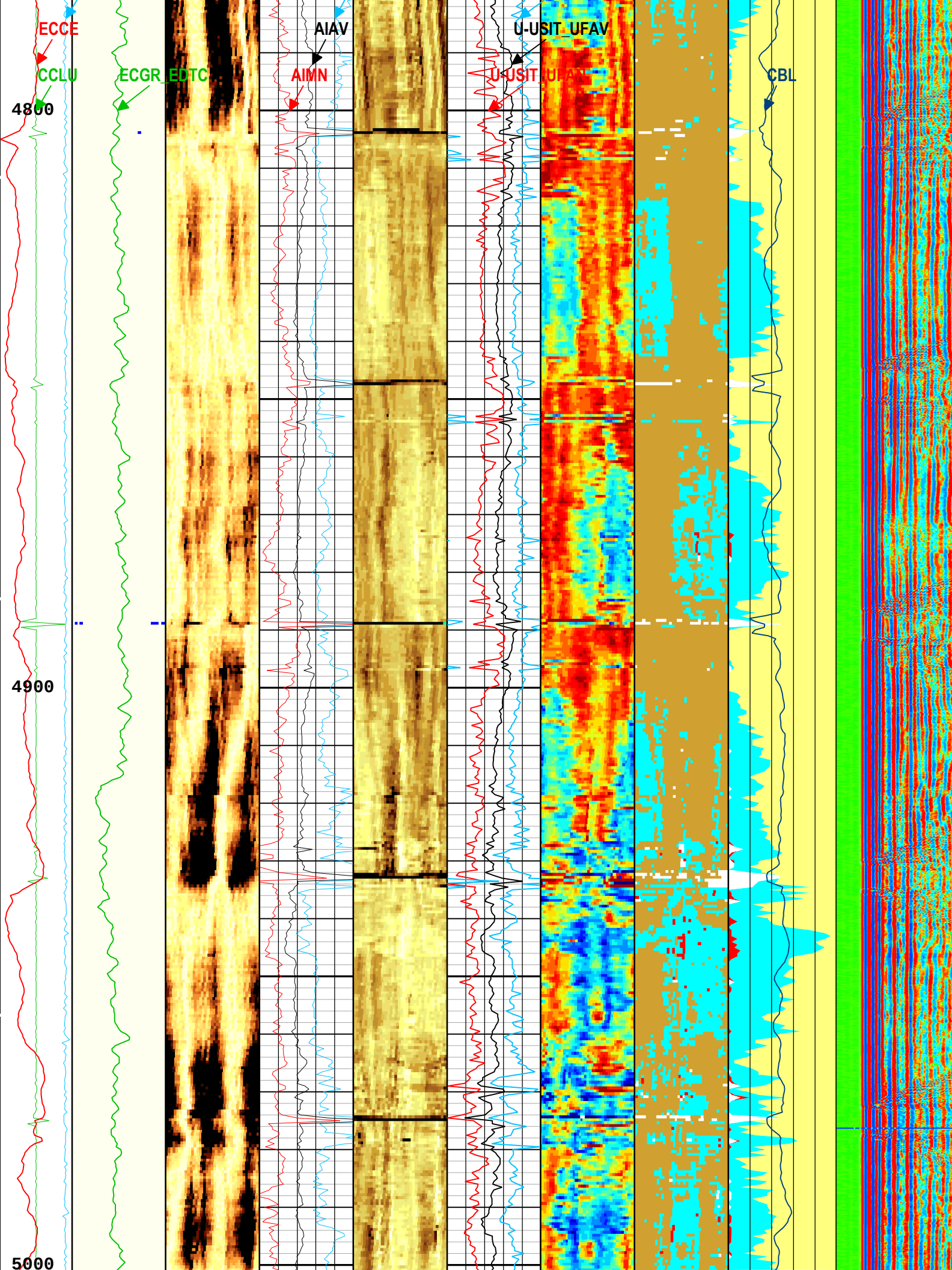
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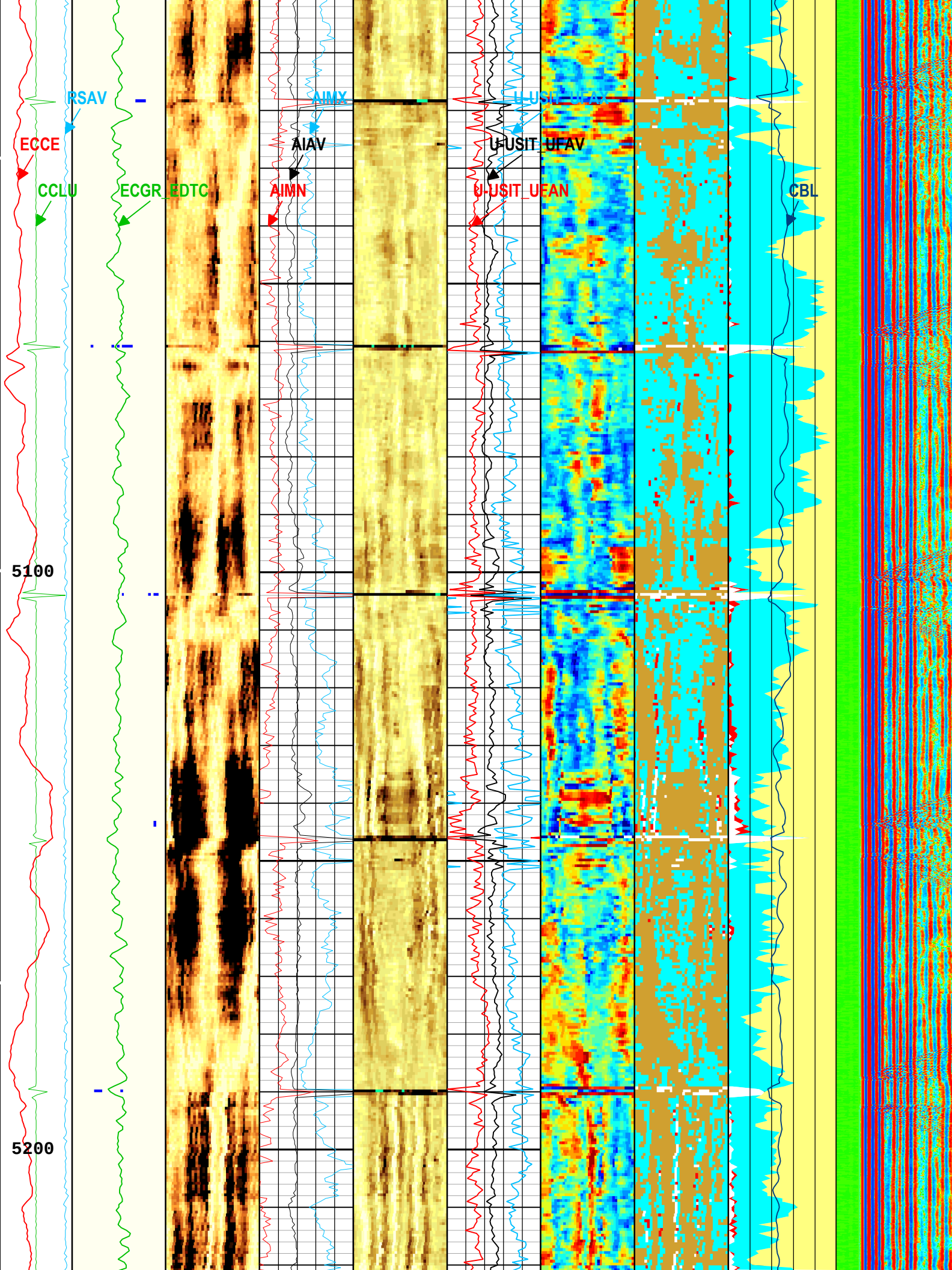
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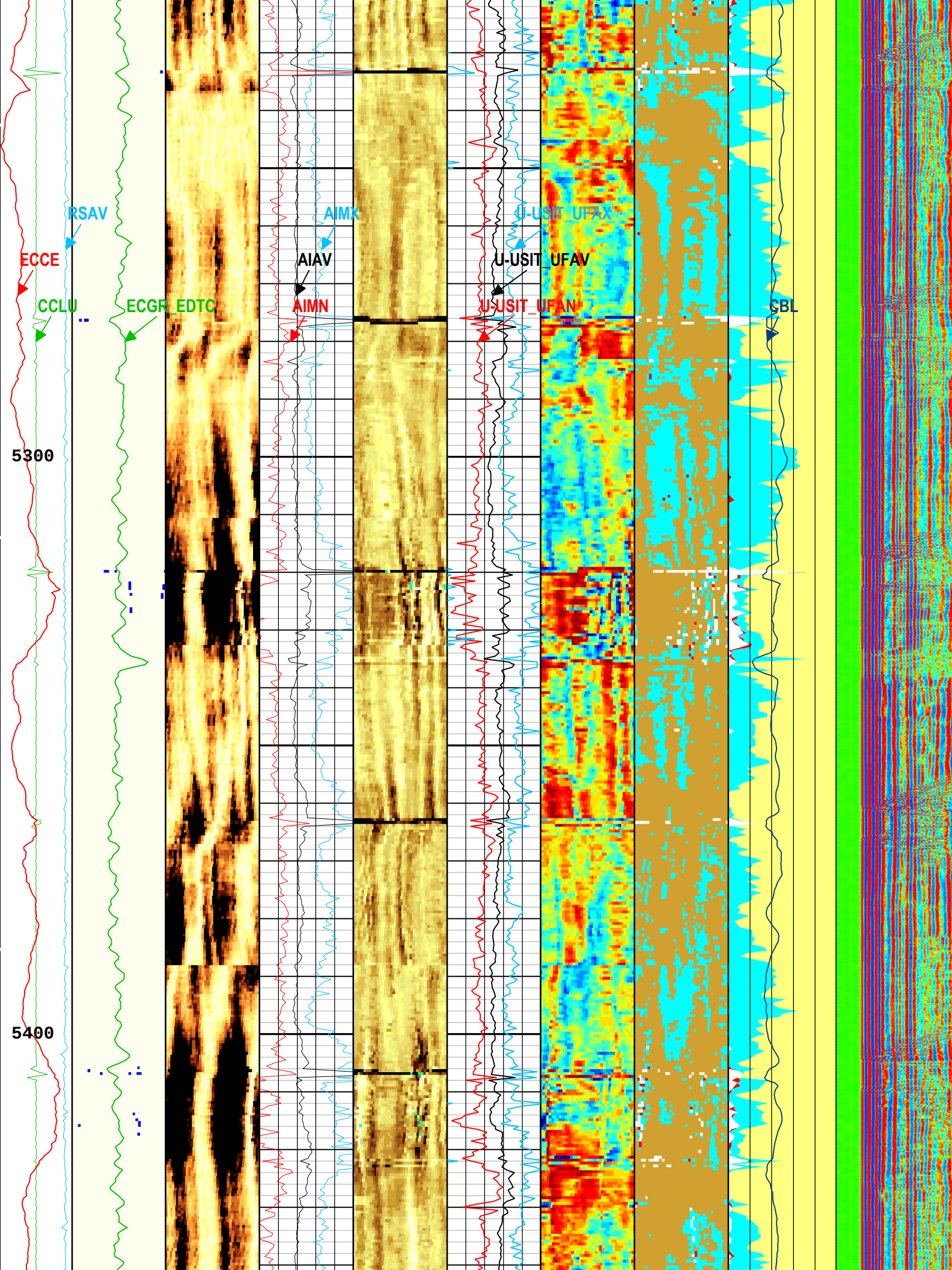
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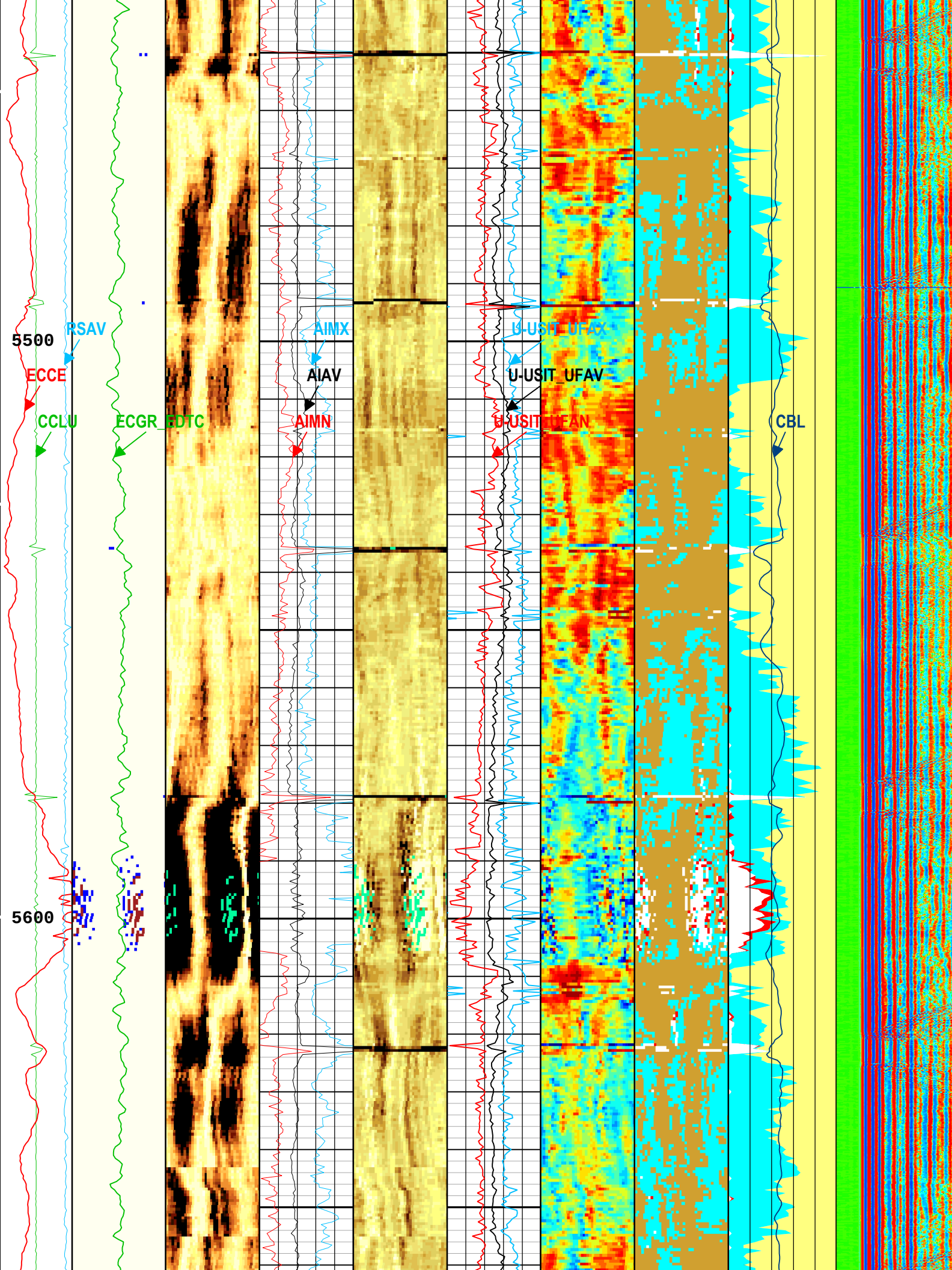
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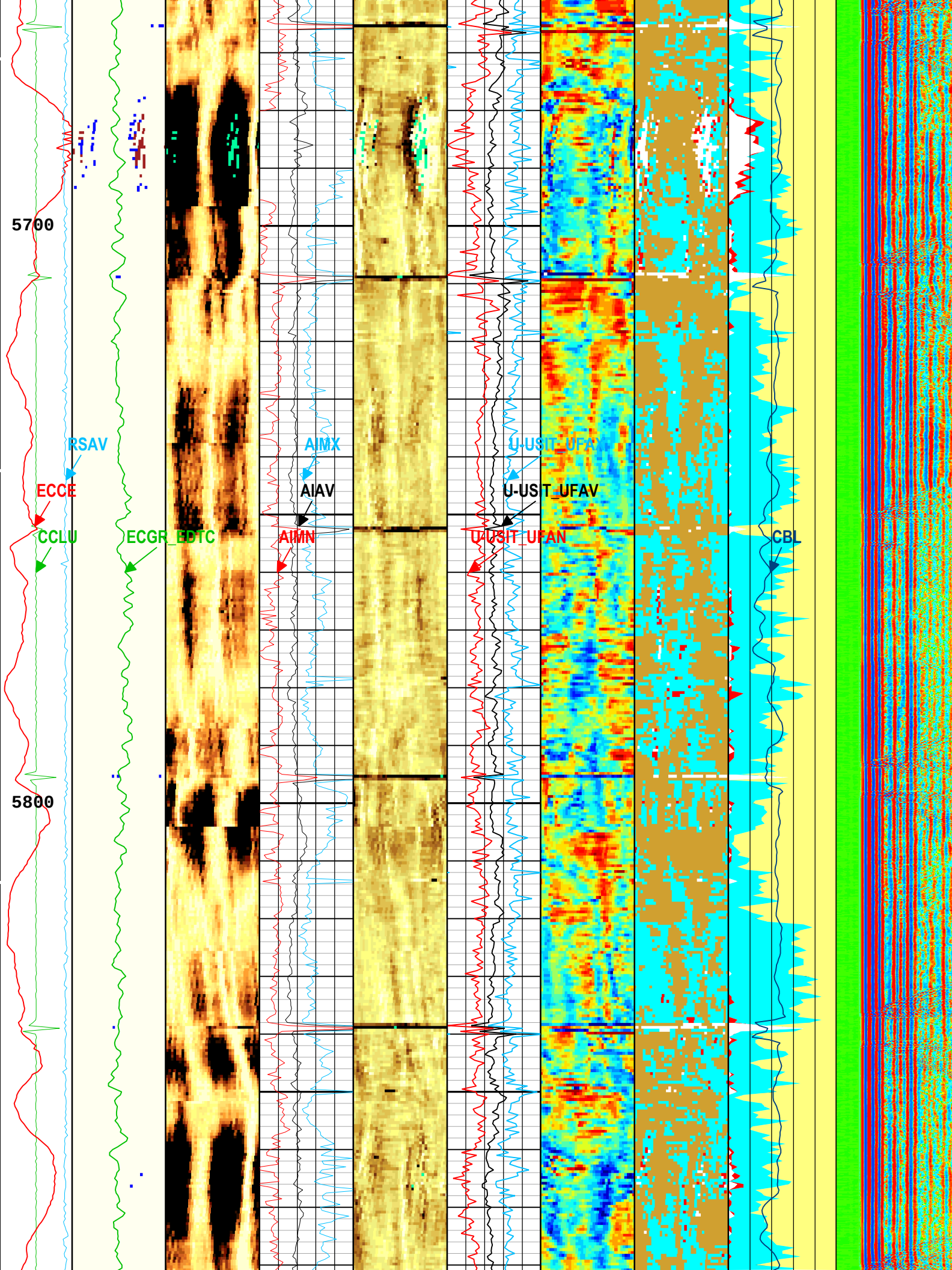
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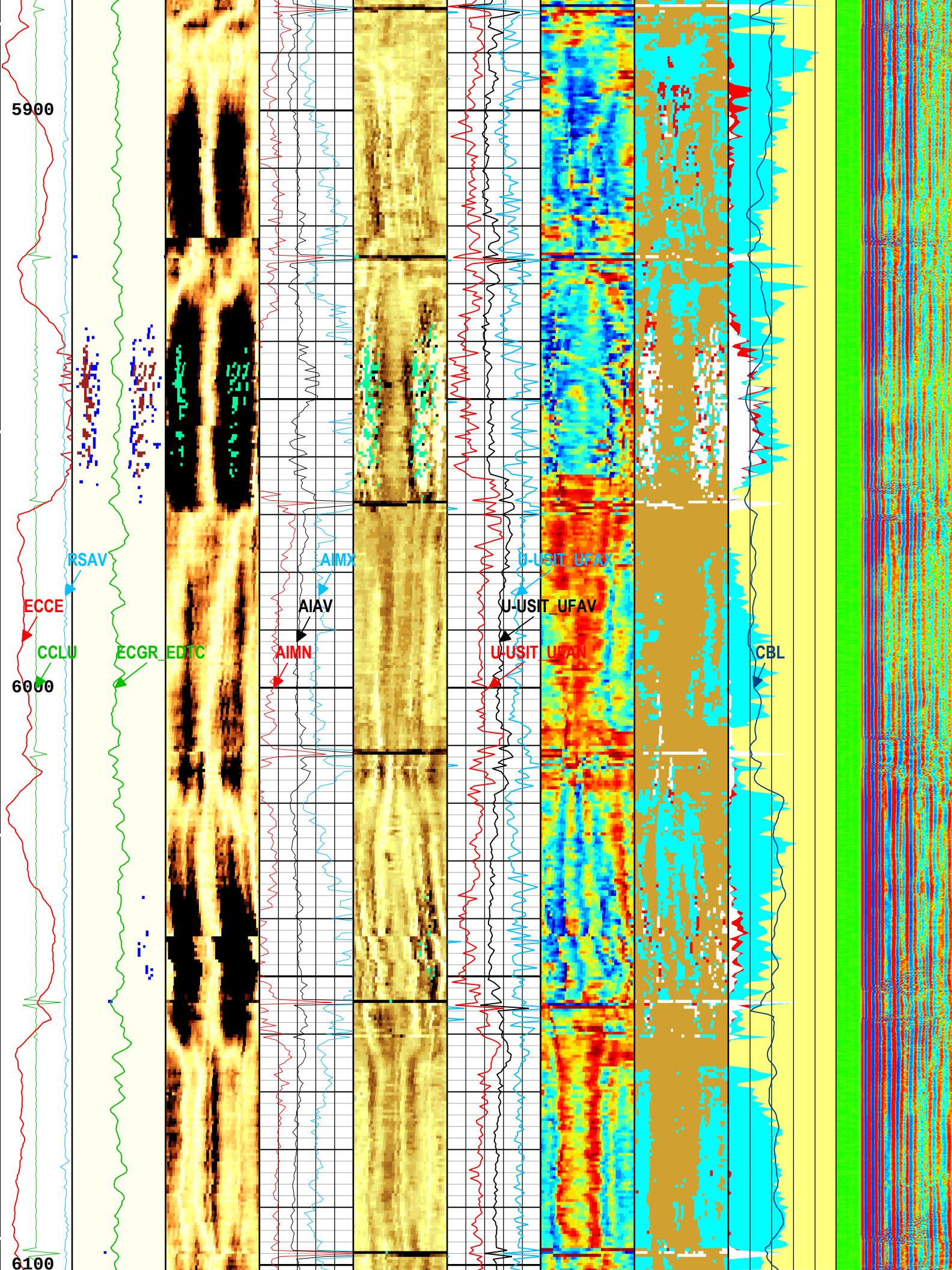
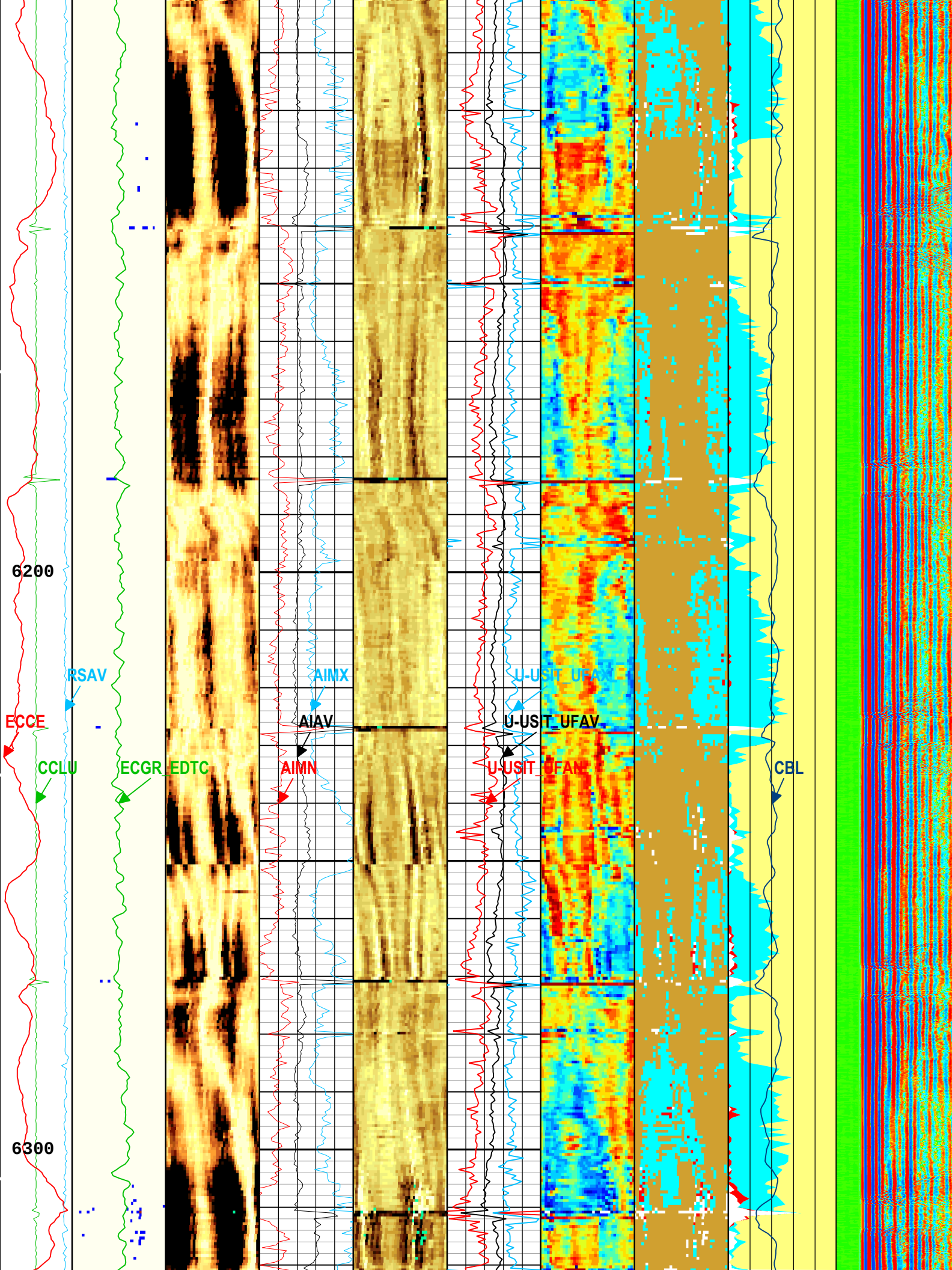
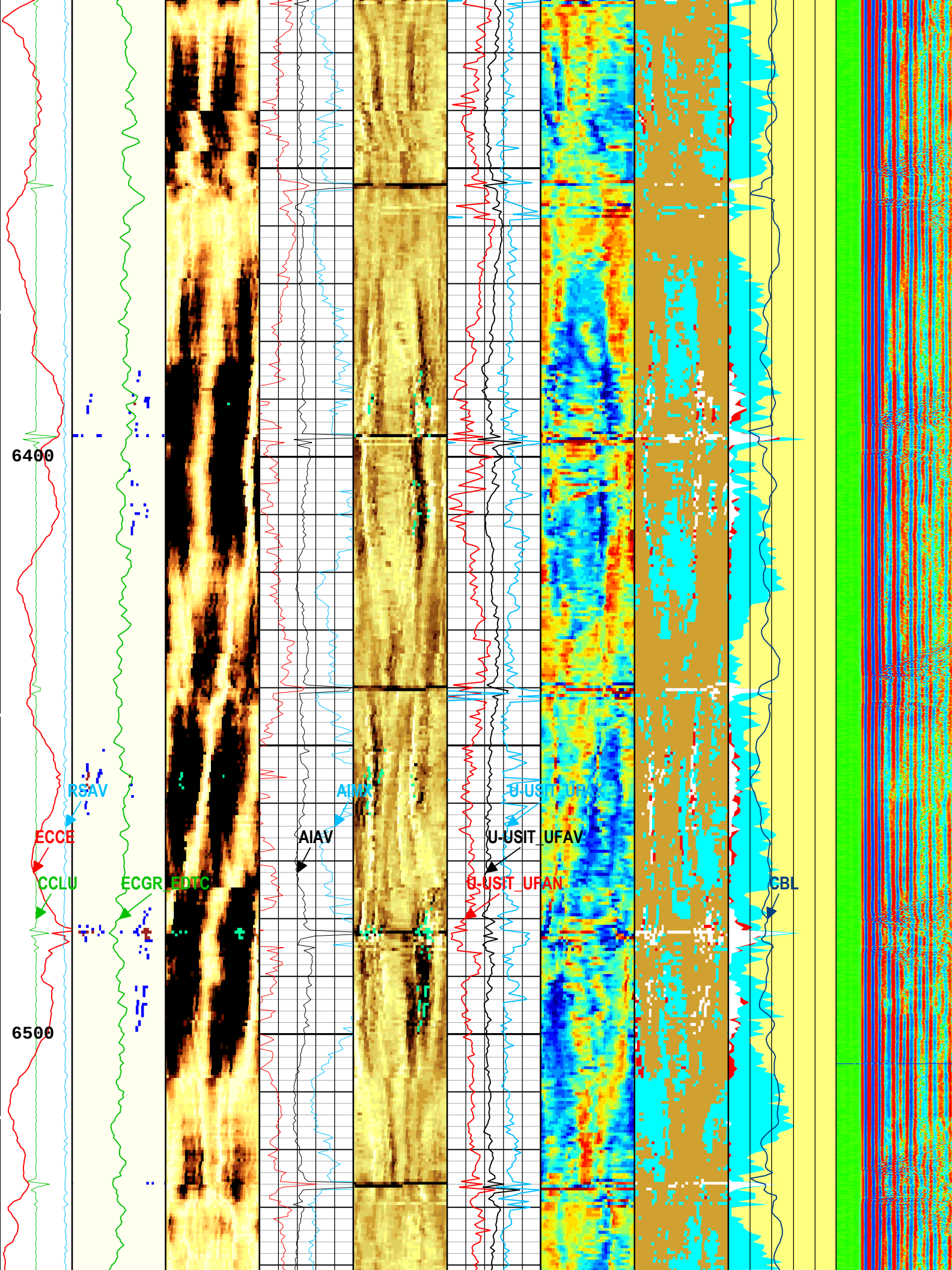
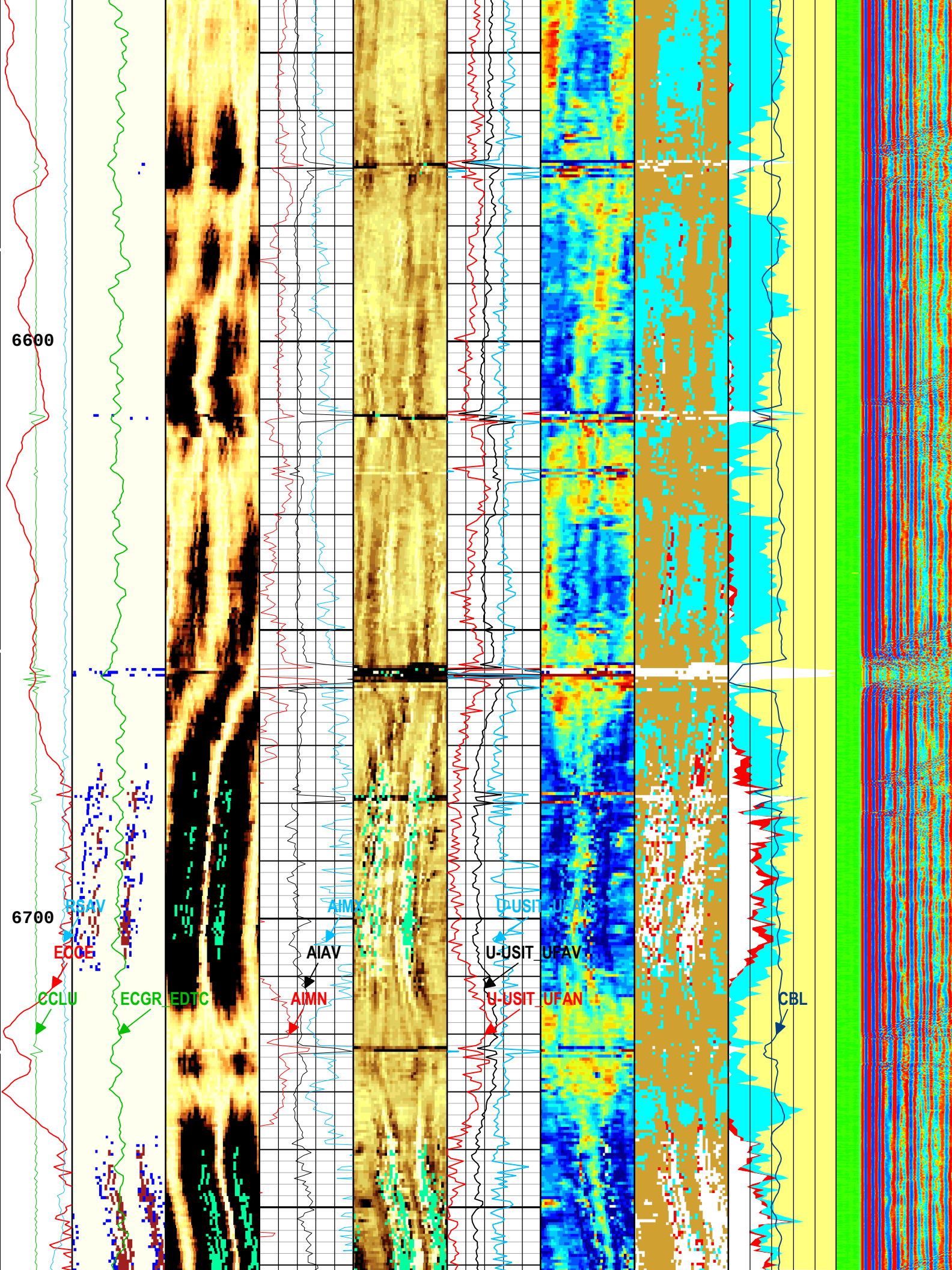

5900
RSAV
ECCE
CCLU
ECGR_EDTC
6000
AIMX
AIAV
AIMN
U-USIT_UFAX
U-USIT_UFAV
U-USIT_UFAN
CBL
6100


6200
6300
RSAV
ECCE
CCLU
ECGR_EDTC
AIMX
AIAV
AIMN
U-USIT_UFAV
U-USIT_UFAV
U-USIT_UFAV
CBL


6400
6500
RSAV
ECCE
CCLU
ECGR_EDTC
AIMX
AIAV
U-USIT_UFAX
U-USIT_UFAV
U-USIT_UFAN
CBL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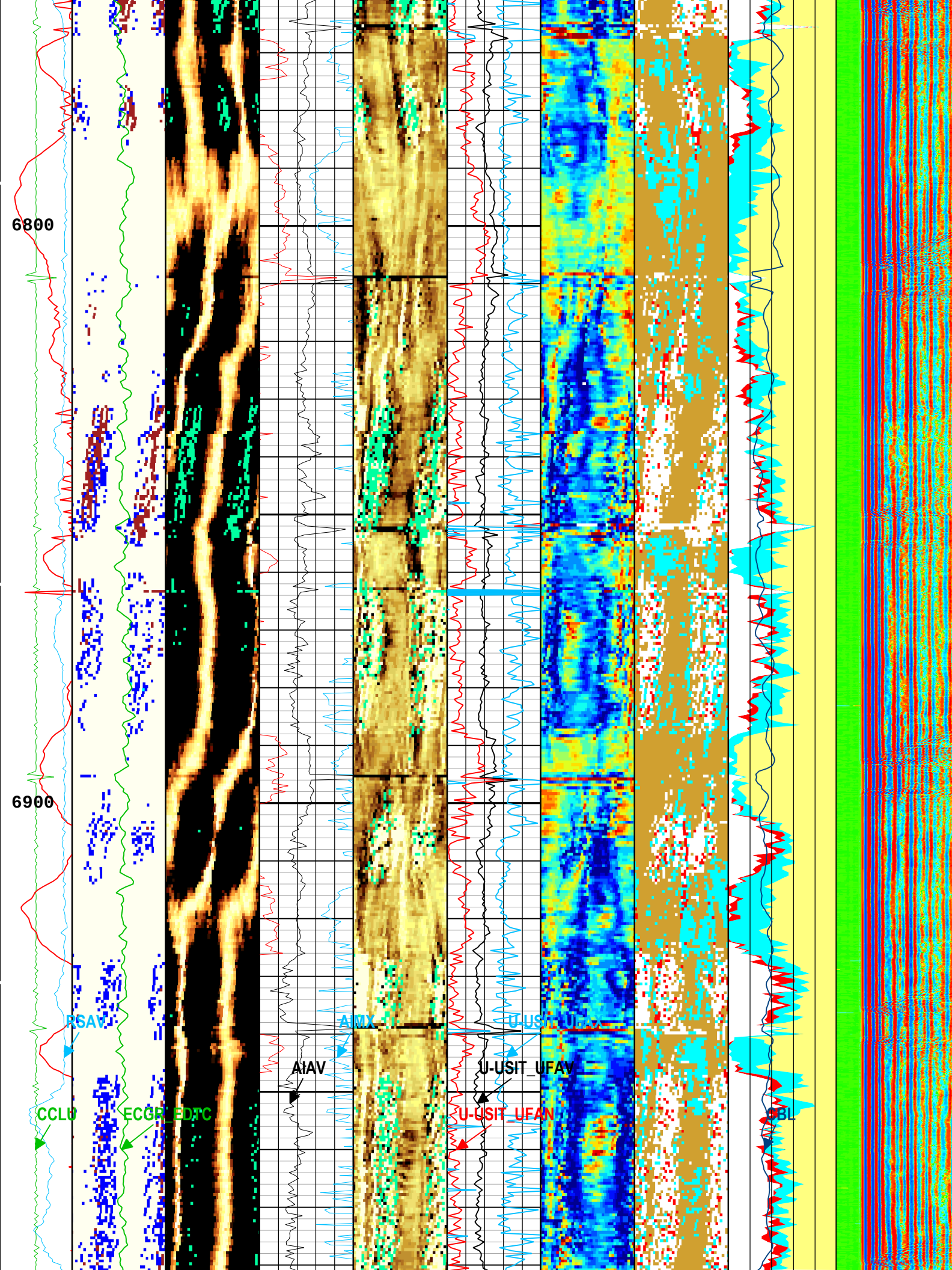
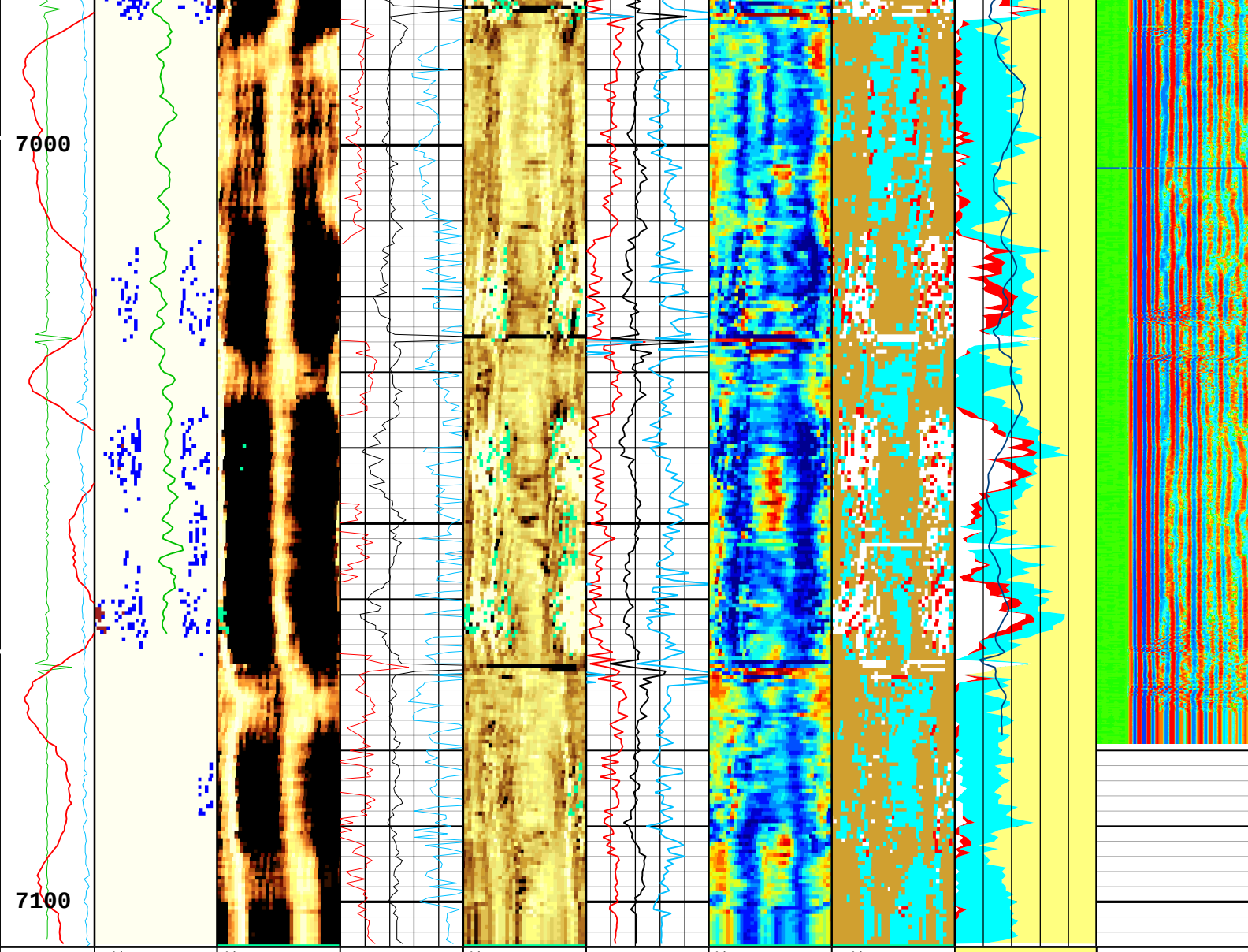
6700
RSAV
ECCE
CCLU
ECGR_EDTC
AIMX
AIAV
AIMN
U-USIT_UFAV
U-USIT_UFAN
CBL


6800
6900
RSAV
CCLU
ECGR_EDTC
AIAV
AIMX
U-USIT_UFAV
U-USIT_UFAN
CBL



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

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

Motor Revolution Speed (RSAV) USIT-E
6 c/s 7.5

Absent 1.500 3.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E
Orientation: Top of Hole
U L B R U

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

Gamma Ray (ECGR_EDTC) EDTC-B
0 gAPI 150

Absent -5.200 -3.600 -2.000 -0.400
Explicit Normalization
USIT - Amplitude of Wave (AWBK) USIT-E
(dB)
Orientation: Top of Hole
U L B R U

Acoustic Impedance Minimum (AIMN) USIT-E
-1 Mrayl 9

Acoustic Impedance Average (AIAV) USIT-E
-1 Mrayl 9

Acoustic Impedance Maximum (AIMX) USIT-E
-1 Mrayl 9

Absent 1.500 3.500 5.500 7.500
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E
(Mrayl)
Orientation: Top of Hole
U L B R U

Minimum Flexural Attenuation (U-USIT_UFAN) USIT-E
0 dB/m 150

Average Flexural Attenuation (U-USIT_UFAV) USIT-E
0 dB/m 150

Maximum Flexural Attenuation (U-USIT_UFAX) USIT-E
0 dB/m 150

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

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

SLG Solid Index

SLG Liquid Index

SLG Gas Index

SLG White Point Index

CBL Amplitude (CBL) DSLT-H
0 mV 100

Min Amplitude
Variable Density L (VDL) DSLT-H
200 us

USIT Processing Flags (UFLG[0]) USIT-E
1 - UFLG 1 Value within [0.0 - 1.5] - :
UTIM Error

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

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

TIME_1900 - Time Marked every 60.00 (s)

Description: USI IBC SLG Format: Log (IBC SLG DSLT VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 09-Oct-2019 16:16:39

Channel Processing Parameters

1A: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLG	CBL Gate Width	DSLT-H	56	us
CBLO	Casing Bottom (Logger)	WLSESSION	15389	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLT-H	72	mV
CDEN	Cement Density	USIT-E	12.5	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DETE	Delta-T Detection	DSLT-H	E1	
DFD	Drilling Fluid Density	Borehole	9.5	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	192	us/ft
FCF	CBL Fluid Compensation Factor	DSLT-H	0.83	
FD	Fluid Density	USIT-E	10.5	lbm/gal
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	-33.74	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	Theoretical	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	RB	
MAHTR	Manual High Threshold Reference for first arrival detection	DSLT-H	120	
MCI	Minimum Cemented Interval for Isolation	DSLT-H	Depth Zoned	ft
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	22.44	us
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLT-H	100	
MSA	Minimum Sonic Amplitude	DSLT-H	1.61	mV
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	0	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1.1	
NMSG	Near Minimum Sliding Gate	DSLT-H	235	us
NMXG	Near Maximum Sliding Gate	DSLT-H	940	us
SGAD	Sliding Gate Status	DSLT-H	Off	
SGDT	Sliding Gate Delta-T	DSLT-H	66	us/ft
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.6	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-46.82	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
ZMUD	Acoustic Impedance of Mud	Borehole	1.71	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl

ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	13.5	50.5	2436
BS	8.5	2436	7106
MCI	14.81	50.5	2046
MCI	4.75	2046	7106

All depth are actual.

Tool Control Parameters

1A: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	24	dB
MODE	DSLT Acquisition Mode	DSLT-H	CBL	
RATE	DSLT Firing Rate	DSLT-H	15 Hz	
DTFS	DSLT Telemetry Frame Size	DSLT-H	536	
EMXV	EMEX Voltage	USIT-E	Time Zoned	V
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	Time Zoned	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	Time Zoned	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	Time Zoned	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	Time Zoned	us
UPAT	USIT Emission Pattern	USIT-E	Pattern 375 KHz	
UWKM	USIT Working Mode	USIT-E	10 deg at 6.0 in	
U-USIT_UTAN	Transducer Angles	USIT-E	38_DEG	
VRES	Vertical Resolution	USIT-E	6.0 in	
WINB	Window Begin Time	USIT-E	Time Zoned	us
WINE	Window End Time	USIT-E	Time Zoned	us

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
EMXV	120	30-Sep-2019 12:02:00	30-Sep-2019 12:04:25	7107.09	6970.56
EMXV	125	30-Sep-2019 12:04:25	30-Sep-2019 12:40:57	6970.56	4375.63
EMXV	111	30-Sep-2019 12:40:57	30-Sep-2019 13:08:26	4375.63	2450.26
EMXV	100	30-Sep-2019 13:08:26	30-Sep-2019 13:10:58	2450.26	2273.11
EMXV	90	30-Sep-2019 13:10:58	30-Sep-2019 13:15:06	2273.11	1984.42
EMXV	80	30-Sep-2019 13:15:06	30-Sep-2019 13:48:44	1984.42	92.59
U-USIT_UFWB	133	30-Sep-2019 12:02:00	30-Sep-2019 12:08:41	7107.09	6675.41
U-USIT_UFWB	129.85	30-Sep-2019 12:08:41	30-Sep-2019 13:48:44	6675.41	92.59
U-USIT_UFWE	173	30-Sep-2019 12:02:00	30-Sep-2019 12:03:56	7107.09	7003.19
U-USIT_UFWE	174.5	30-Sep-2019 12:03:56	30-Sep-2019 13:48:44	7003.19	92.59
U-USIT_UNWB	102	30-Sep-2019 12:02:00	30-Sep-2019 12:08:45	7107.09	6670.96
U-USIT_UNWB	98.28	30-Sep-2019 12:08:45	30-Sep-2019 13:48:44	6670.96	92.59
U-USIT_UNWE	142	30-Sep-2019 12:02:00	30-Sep-2019 12:03:51	7107.09	7008.99
U-USIT_UNWE	144.47	30-Sep-2019 12:03:51	30-Sep-2019 13:48:44	7008.99	92.59

WINB	28.35	30-Sep-2019 12:02:00	30-Sep-2019 12:05:57	7107.09	6865.37
WINB	24.09	30-Sep-2019 12:05:57	30-Sep-2019 13:48:44	6865.37	92.59
WINE	68.35	30-Sep-2019 12:02:00	30-Sep-2019 12:03:11	7107.09	7054.18
WINE	70.94	30-Sep-2019 12:03:11	30-Sep-2019 12:06:07	7054.18	6853.5
WINE	70.38	30-Sep-2019 12:06:07	30-Sep-2019 12:06:11	6853.5	6848.92
WINE	72.64	30-Sep-2019 12:06:11	30-Sep-2019 12:06:21	6848.92	6837.16
WINE	73.27	30-Sep-2019 12:06:21	30-Sep-2019 13:48:44	6837.16	92.59

All depth are at tool zero.

1A

IBC SLG VDL-IBC REPEAT PASS 1 @10DEG X 6IN @0PSI [5:100]

Software Version

Acquisition System	Version
Maxwell 2018 SP1	8.1.99839.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1A	Log[3]:Up	Up	6388.48 ft	7100.33 ft	30-Sep-2019 11:42:55 AM	30-Sep-2019 11:53:23 AM	ON	5.86 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Crestone Peak Resources Operating, LLC Well:Kugel 1I-18H-H267

1A: Log[3]:Up:S007

Description: USI IBC SLG Format: Log (IBC SLG DSLT VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 09-Oct-2019 16:17:28

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

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

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

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

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

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

UTIM Error

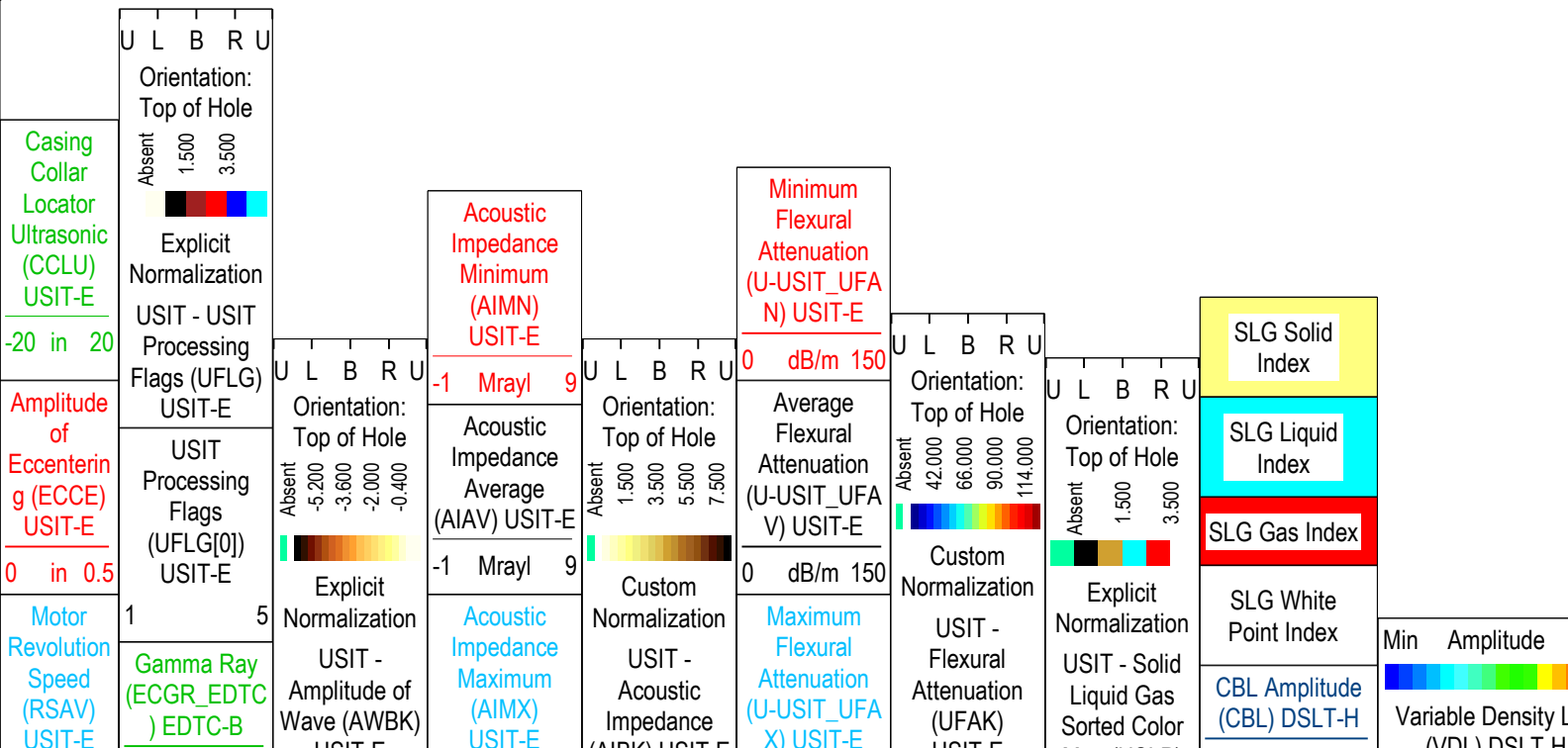
Pulse Origin Not Detected

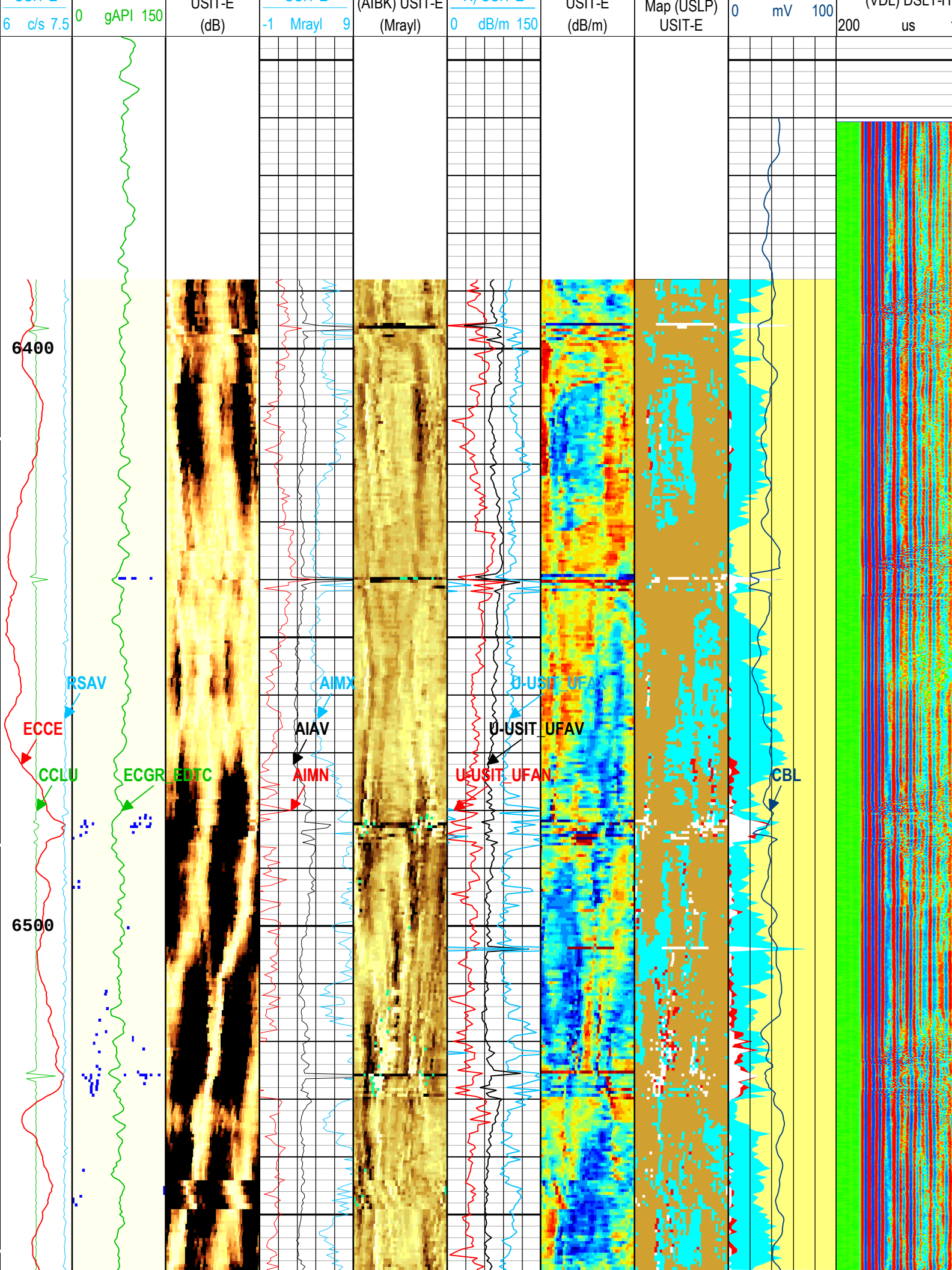
WINLEN Error

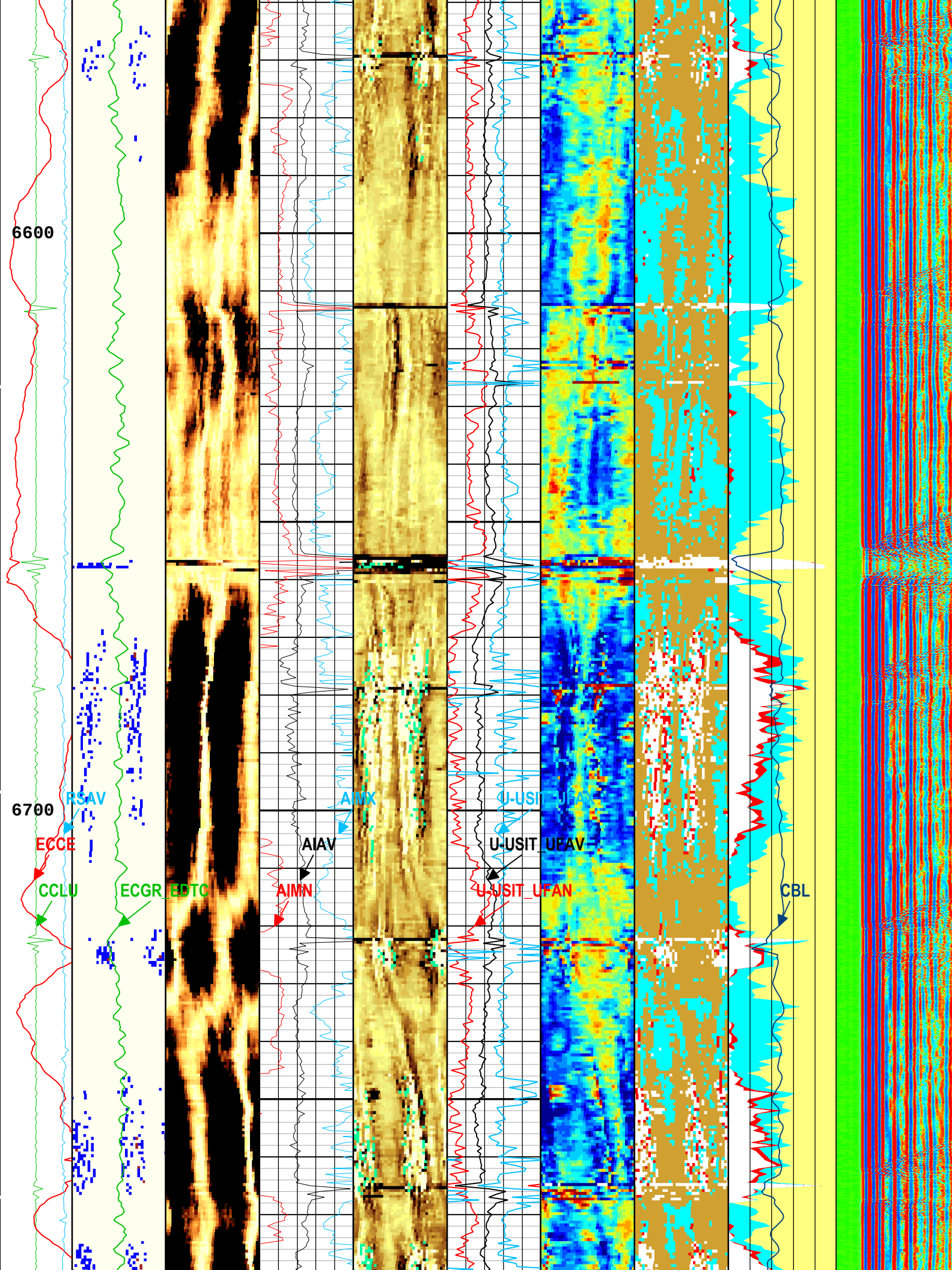
Casing Thickness Error

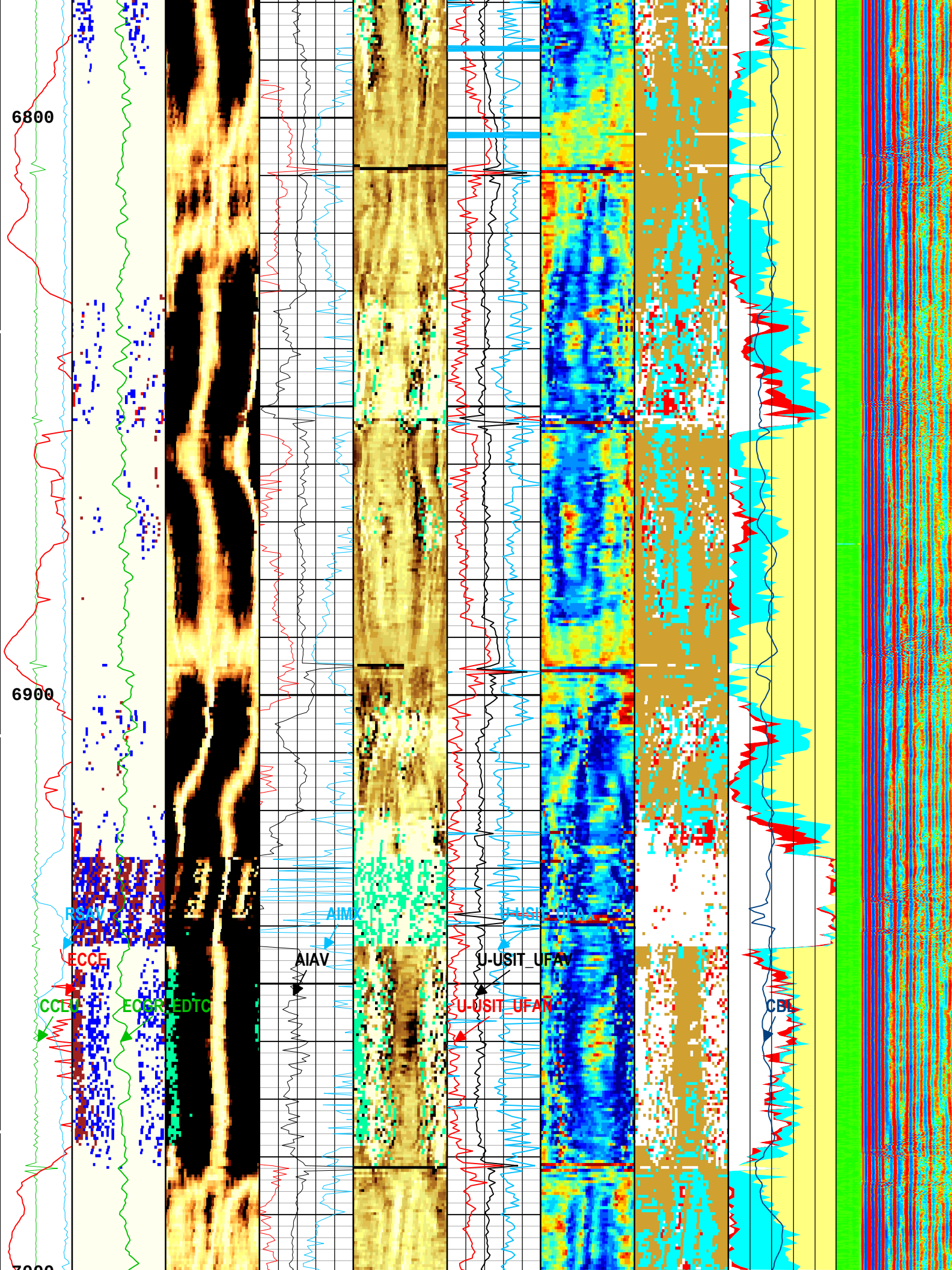
Loop Processing Error

TIME_1900 - Time Marked every 60.00 (s)




6 c/s 7.5
0 gAPI 150
USIT-E (dB)
-1 Mrayl 9
(AIBK) USIT-E (Mrayl)
0 dB/m 150
USIT-E (dB/m)
Map (USLP) USIT-E
0 mV 100
200 us
6400
6500
RSAV
ECCE
CCLU
ECGR_EDTC
AIMX
AIAV
AIMN
U-USIT_UFAV
U-USIT_UFAN
CBL


6600
6700
RSAV
ECCE
CCLU
ECGR_EDTC
AIAV
AIMN
AIMX
U-USIT_UFAV
U-USIT_UFAN
CBL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CCL
ECGR_EDTC
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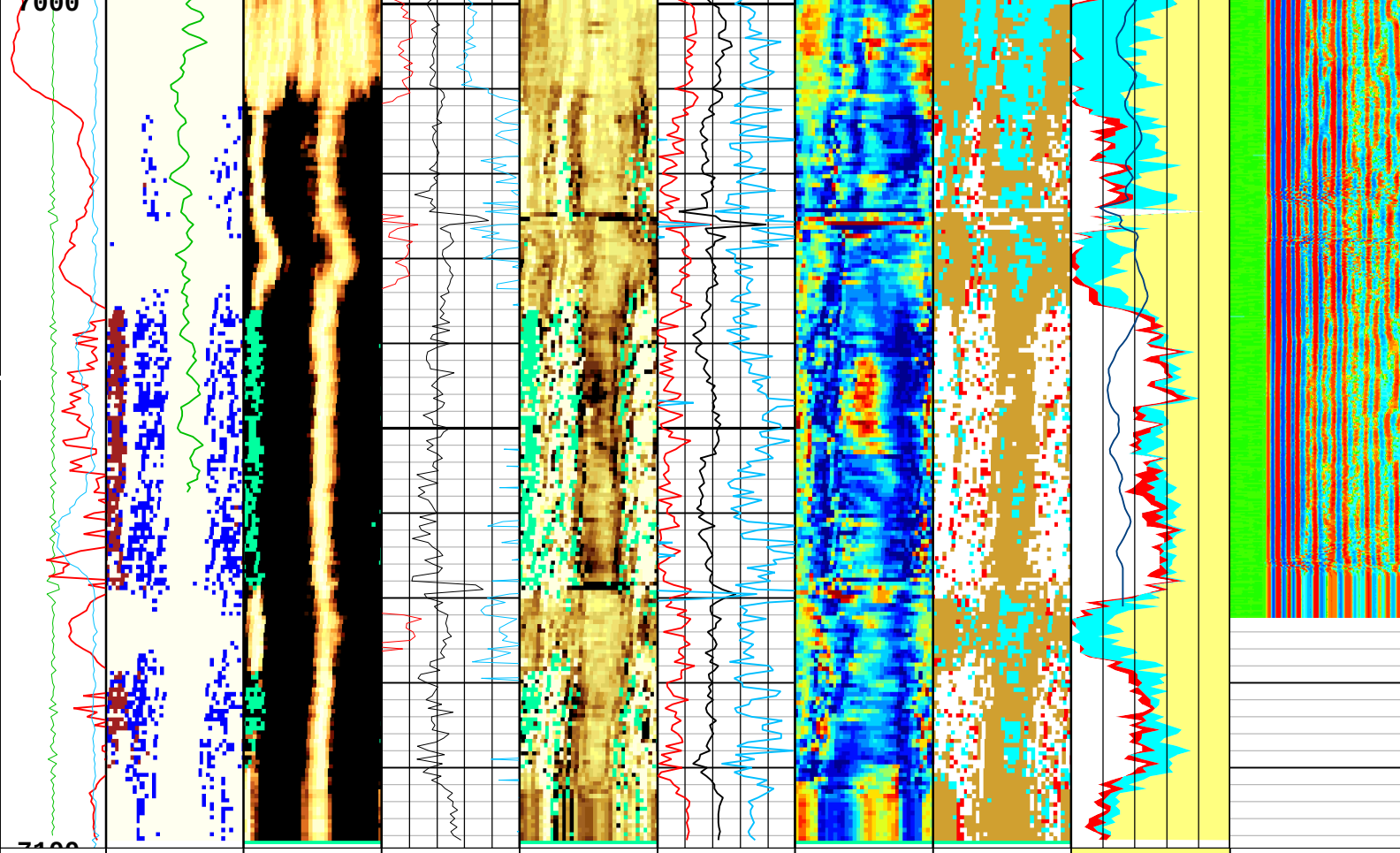
U-USIT_UFAV
U-USIT_UFAN
CBL



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

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

Motor Revolution Speed (RSAV) USIT-E
6 c/s 7.5

Absent 1.500 3.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E
Orientation: Top of Hole
U L B R U

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

Gamma Ray (ECGR_EDTC) EDTC-B
0 gAPI 150

Absent -5.200 -3.600 -2.000 -0.400
Explicit Normalization
USIT - Amplitude of Wave (AWBK) USIT-E (dB)
Orientation: Top of Hole
U L B R U

Acoustic Impedance Minimum (AIMN) USIT-E
-1 Mrayl 9

Acoustic Impedance Average (AIAV) USIT-E
-1 Mrayl 9

Acoustic Impedance Maximum (AIMX) USIT-E
-1 Mrayl 9

Absent 1.500 3.500 5.500 7.500
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)
Orientation: Top of Hole
U L B R U

Minimum Flexural Attenuation (U-USIT_UFAN) USIT-E
0 dB/m 150

Average Flexural Attenuation (U-USIT_UFAV) USIT-E
0 dB/m 150

Maximum Flexural Attenuation (U-USIT_UFAX) USIT-E
0 dB/m 150

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

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

SLG Solid Index

SLG Liquid Index

SLG Gas Index

SLG White Point Index

CBL Amplitude (CBL) DSLT-H
0 mV 100

Min Amplitude
Variable Density L (VDL) DSLT-H
200 us

TIME_1900 - Time Marked every 60.00 (s)

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

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

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

Description: USI IBC SLG Format: Log (IBC SLG DSLT VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date:

Channel Processing Parameters

1A: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	8.5	in
CBLG	CBL Gate Width	DSLT-H	56	us
CBLO	Casing Bottom (Logger)	WLSESSION	15389	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLT-H	72	mV
CDEN	Cement Density	USIT-E	12.5	lbm/gal
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DETE	Delta-T Detection	DSLT-H	E1	
DFD	Drilling Fluid Density	Borehole	9.5	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	192	us/ft
FCF	CBL Fluid Compensation Factor	DSLT-H	0.83	
FD	Fluid Density	USIT-E	10.5	lbm/gal
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
HEMA	Hematite Presence Flag	Borehole	No	
IBC_FRP_OFFSET	IBC Flexural Offset from Free Pipe	USIT-E	-33.74	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	Theoretical	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	RB	
MAHTR	Manual High Threshold Reference for first arrival detection	DSLT-H	120	
MCI	Minimum Cemented Interval for Isolation	DSLT-H	4.75	ft
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	22.44	us
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLT-H	100	
MSA	Minimum Sonic Amplitude	DSLT-H	1.61	mV
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	0	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1.1	
NMSG	Near Minimum Sliding Gate	DSLT-H	235	us
NMXG	Near Maximum Sliding Gate	DSLT-H	940	us
SGAD	Sliding Gate Status	DSLT-H	Off	
SGDT	Sliding Gate Delta-T	DSLT-H	66	us/ft
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.6	Mrayl
U-USIT_UFAO	SIT Flexural Attenuation Offset	USIT-E	-46.82	dB/m
U-USIT_UIAP	IBC Answer Product Enabled	USIT-E	SolidLiquidGasMap	
ZMUD	Acoustic Impedance of Mud	Borehole	1.71	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

1A: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB

AGMN	Minimum Gain of Cartridge	USIT-E	12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	24	dB
MODE	DSLT Acquisition Mode	DSLT-H	CBL	
RATE	DSLT Firing Rate	DSLT-H	15 Hz	
DTFS	DSLT Telemetry Frame Size	DSLT-H	536	
EMXV	EMEX Voltage	USIT-E	Time Zoned	V
IBC_ACQTYPE	IBC Acquisition type	USIT-E	1 MHz	
IBC_FLEXDBP	IBC Flex Duration Before Peak	USIT-E	30	us
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
U-USIT_UFWB	Far Receiver Window Begin Time	USIT-E	133	us
U-USIT_UFWE	Far Receiver Window End Time	USIT-E	Time Zoned	us
U-USIT_UNWB	Near Receiver Window Begin Time	USIT-E	102	us
U-USIT_UNWE	Near Receiver Window End Time	USIT-E	Time Zoned	us
UPAT	USIT Emission Pattern	USIT-E	Pattern 375 KHz	
UWKM	USIT Working Mode	USIT-E	10 deg at 6.0 in	
U-USIT_UTAN	Transducer Angles	USIT-E	38_DEG	
VRES	Vertical Resolution	USIT-E	6.0 in	
WINB	Window Begin Time	USIT-E	Time Zoned	us
WINE	Window End Time	USIT-E	Time Zoned	us

Time Zone Parameters

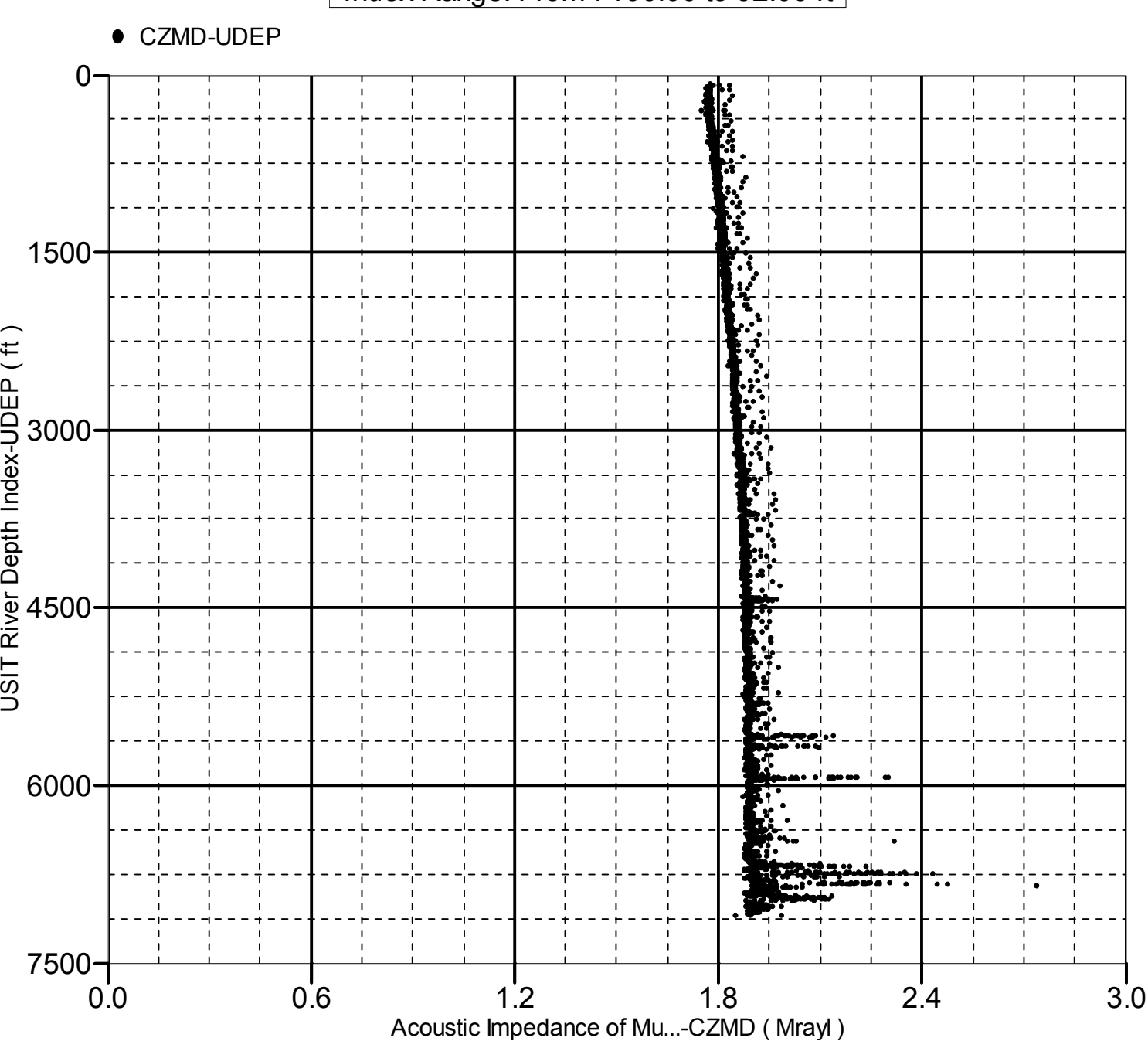
Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
EMXV	70	30-Sep-2019 11:42:55	30-Sep-2019 11:50:43	7100.33	6575.82
EMXV	85	30-Sep-2019 11:50:43	30-Sep-2019 11:50:51	6575.82	6566.57
EMXV	95	30-Sep-2019 11:50:51	30-Sep-2019 11:51:00	6566.57	6556.17
EMXV	110	30-Sep-2019 11:51:00	30-Sep-2019 11:51:14	6556.17	6539.43
EMXV	120	30-Sep-2019 11:51:14	30-Sep-2019 11:53:23	6539.43	6388.48
U-USIT_UFWE	173	30-Sep-2019 11:42:55	30-Sep-2019 11:48:59	7100.33	6697.47
U-USIT_UFWE	188.72	30-Sep-2019 11:48:59	30-Sep-2019 11:53:23	6697.47	6388.48
U-USIT_UNWE	142	30-Sep-2019 11:42:55	30-Sep-2019 11:49:08	7100.33	6686.71
U-USIT_UNWE	184.63	30-Sep-2019 11:49:08	30-Sep-2019 11:53:23	6686.71	6388.48
WINB	28.35	30-Sep-2019 11:42:55	30-Sep-2019 11:45:43	7100.33	6925.44
WINB	25.67	30-Sep-2019 11:45:43	30-Sep-2019 11:53:23	6925.44	6388.48
WINE	68.35	30-Sep-2019 11:42:55	30-Sep-2019 11:45:26	7100.33	6945.67
WINE	220	30-Sep-2019 11:45:26	30-Sep-2019 11:45:39	6945.67	6930.18
WINE	135.81	30-Sep-2019 11:45:39	30-Sep-2019 11:47:28	6930.18	6804.14
WINE	82.83	30-Sep-2019 11:47:28	30-Sep-2019 11:47:40	6804.14	6789.41
WINE	78.41	30-Sep-2019 11:47:40	30-Sep-2019 11:49:59	6789.41	6627.2
WINE	82.83	30-Sep-2019 11:49:59	30-Sep-2019 11:51:43	6627.2	6505.41
WINE	82.48	30-Sep-2019 11:51:43	30-Sep-2019 11:51:50	6505.41	6496.83
WINE	81.16	30-Sep-2019 11:51:50	30-Sep-2019 11:53:23	6496.83	6388.48

All depth are at tool zero.

Acoustic Impedance of Mud vs Depth

2D Cross Plot

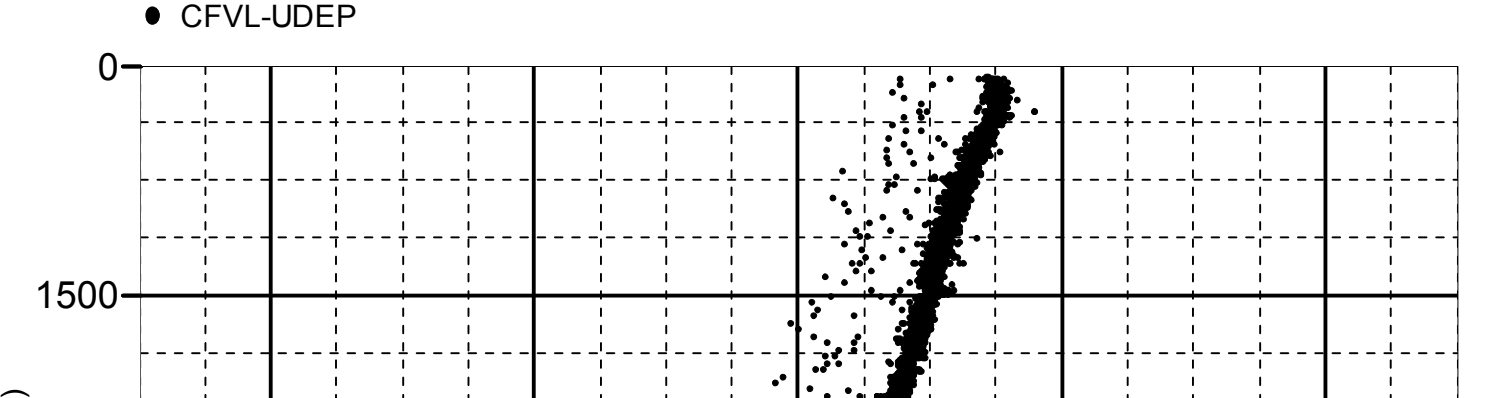
Index Range: From 7106.00 to 92.00 ft

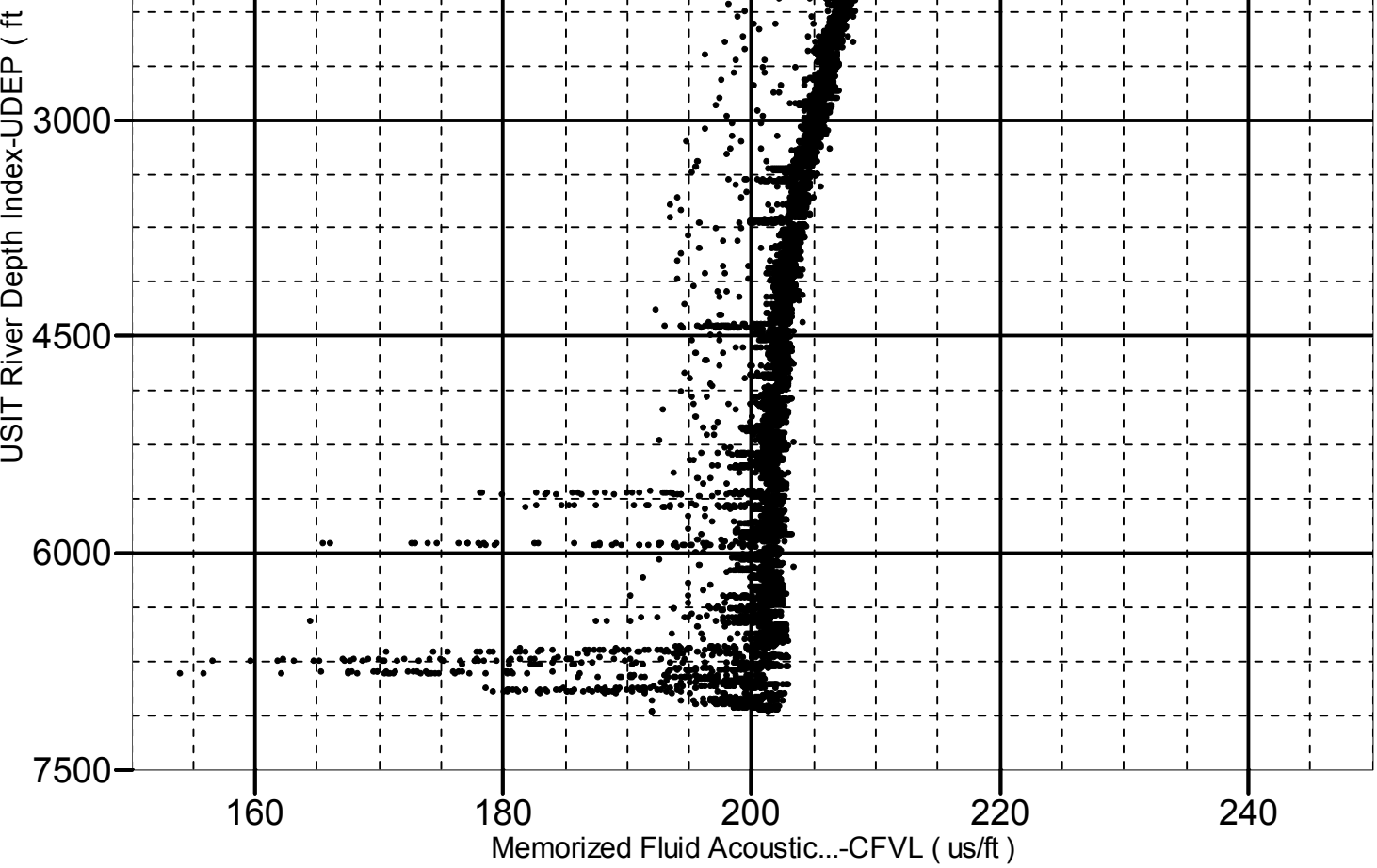


Fluid Acoustic Slowness vs Depth

2D Cross Plot

Index Range: From 7106.00 to 92.00 ft





Calibration Report

DSLT-H (Digitizing Sonic Logging Tool - H) Calibration - Run 1A

Primary Equipment :

Sonic Logging Sonde E supports 3'-5'BHC DT and CBL/VDL SLS-E 1229

CBL Normalization - CBL Accumulations

Master (Measured): 06:37:25 21-Jan-2019

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Upper Far Amplitude		Master	4200.0	3200.0	3281.4	
Upper Near Raw Amplitude	mV	Master	33.000	27.000	27.878	43.000
Lower Far Amplitude		Master	4200.0	3200.0	3618.5	
Lower Near Raw Amplitude	mV	Master	46.000	27.000	35.332	68.000

CBL Normalization - CBL/VDL Coefficients

Master (Measured): 06:37:25 21-Jan-2019

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
CBL Correction Factor for UT		Master	3.500	2.700	4.161	4.300
CBL Correction Factor for LT		Master	2.500	1.700	3.283	4.300
VDL Ratio between UT and LT for CBLB Mode		Master	1.000		1.103	

CBL Free Pipe Adjustment - Free Pipe Measurement

Before (Manual Entry): 01:12:10 30-Sep-2019

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
CBL Amplitude - 0	mV	Before	-----	-----	-----	-----
CBL Reference Amplitude (CBRA) - 0	mV	Before	-----	-----	-----	-----
Measurement Depth - 0	ft	Before	-----	-----	-----	-----

CBL Free Pipe Adjustment - CBL Amplitude Coefficient

Before (Manual Entry): 01:12:10 30-Sep-2019

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
CBL Adjustment Factor		Before	1.000	0.200	0.800	5.000
Depth of Before Calibration	ft	Before			4970.44	

EDTC-B (Enhanced Digital Telemetry Cartridge - Version B) Calibration - Run 1A

Primary Equipment :

EDTC-B	EDTC-B	8324

Calibration Parameter :

Plus Reference (Jig minus background reference)	150

EDTC-B Accelerometer Calibration - EDTC-B Accelerometer Calibration

Before (Measured): 10:49:54 30-Sep-2019

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
AZ Vertical Measurement	ft/s2	Before	32.19	31.53	32.04	32.84

EDTC-B Memory Data - EDTC-B Memory Data

Master (EEPROM): 10:48:31 30-Sep-2019

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Initial PMT HV	V	Master			1596.000	
Accelerometer Serial Number		Master			387	
Accelerometer Coefficients - 0		Master	-----	-----	2.907E+000	-----
Accelerometer Coefficients - 1		Master	-----	-----	2.788E-004	-----
Accelerometer Coefficients - 2		Master	-----	-----	-1.992E-007	-----
Accelerometer Coefficients - 3		Master	-----	-----	-7.767E-008	-----
Accelerometer Coefficients - 4		Master	-----	-----	1.895E-009	-----
Accelerometer Coefficients - 5		Master	-----	-----	-1.446E-011	-----
Accelerometer Coefficients - 6		Master	-----	-----	3.720E-014	-----
Accelerometer Coefficients - 7		Master	-----	-----	-9.651E-003	-----
Accelerometer Coefficients - 8		Master	-----	-----	7.185E-005	-----
Accelerometer Coefficients - 9		Master	-----	-----	1.783E-008	-----
Accelerometer Coefficients - 10		Master	-----	-----	-8.140E-010	-----
Accelerometer Coefficients - 11		Master	-----	-----	5.627E-013	-----
Gamma-Ray Detector Serial Number		Master			77301	

EDTC-B Gamma-Ray Calibration - Gamma Ray Coefficients

Before (Measured): 19:54:07 28-Sep-2019 After:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
Gamma Ray Gain		Before	1.000	0.900	1.061	1.100
		After	-----	-----	-----	-----
		After-Before	-----	-----	-----	-----

EDTC-B Gamma-Ray Calibration - Gamma Ray Accumulations

Before (Measured): 19:54:07 28-Sep-2019 After:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit
RGR Zero Measurement	gAPI	Before		0	78.144	120.000
		After	-----	-----	-----	-----
		After-Before	-----	-----	-----	-----
RGR Plus Measurement	gAPI	Before	150.000	135.000	141.312	165.000
		After			NOT DONE	
		After-Before	-----	-----	-----	-----

Company:	Crestone Peak Resources Operating, LLC
Well:	Kugel 1I-18H-H267
Field:	Wattenberg
County:	Weld

Schlumberger

State:	Colorado

ISOLATION SCANNER

VDL-IBC COMBINED PRINT

GAMMA RAY - COLLAR LOCTOR LOG