Schlumberger

Company: Southern California Gas Company

Well: Fernando Fee 32-A

Field: Aliso Canyon

County: Los Angeles State: California

County: Los Angeles
Field: Aliso Canyon
Location:
Well: Fernando Fee 32-A
Company: Southern California Gas Company

Ultrasonic Imager

Gamma Ray - CCL

8-5/8" and 7" casing

Location:				
			Elev.: K.B.	2013.90 ft
			G.L.	1995.00 ft
			D.F.	
Permanent Datum:	Ground Level	Elev.:	1995.00 f	
Log Measured From:	Kelly Bushing	18.90 ft	above Perm.Datum	
Drilling Measured From:	Kelly Bushing			

API Serial No.	Section:	Township:	Range:
04-037-21872-01	27	3N	16W

Logging Date		30-Mar-2016	
Run Number		One	
Depth Driller		7098.00 ft	
Schlumberger Depth		7085.00 ft	
Bottom Log Interval		7085.00 ft	
Top Log Interval		35.00 ft	
Casing Fluid Type		Brine	
Salinity			
Density		9 lbm/gal	
Fluid Level		8.00 ft	
BIT/CASING/TUBING STRING			
Bit Size		7.50 in	
From		7022.00 ft	
To		7252.00 ft	
Casing/Tubing Size		7 in	
Weight		26 lbm/ft	
Grade		N/A	
From		6566.00 ft	
To		7250.00 ft	
Max Recorded Temperatures			
Logger on Bottom	Time	30-Mar-2016 12:15:00	
Unit Number	Location:	3189 Ventura	
Recorded By		I. Kartawidjaja	
Witnessed By		Mr. Mike McGinniss	

Disclaimer

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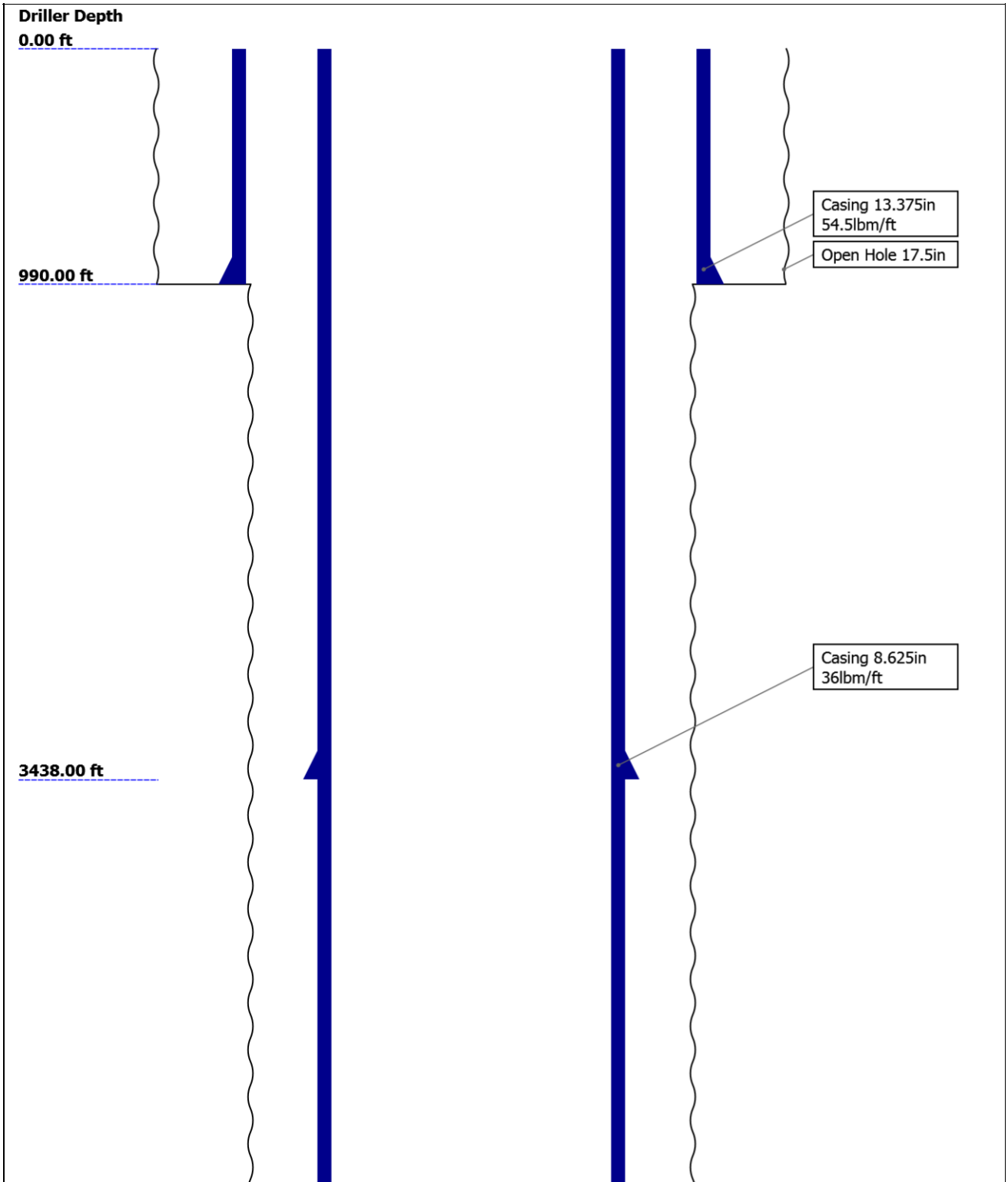
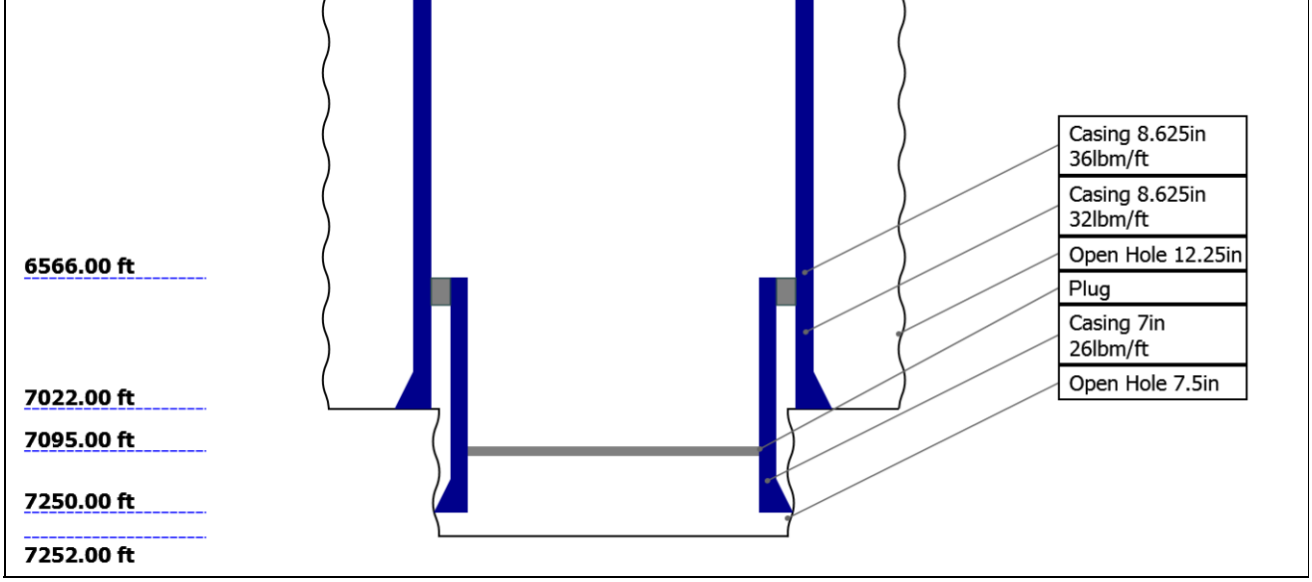
Well Sketch





Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	17.5	12.25	7.5			
Top Driller (ft)	0	990	7022			
Top Logger (ft)	0	990	7022			
Bottom Driller (ft)	990	7022	7252			
Bottom Logger (ft)	990	7022	7252			
Casing						
Size (in)	13.375	8.625	8.625	8.625	7	
Weight (lbm/ft)	54.5	36	36	32	26	
Inner Diameter (in)	12.615	7.825	7.825	7.921	6.276	
Grade	K55	K55	N80	N80	N/A	
Top Driller (ft)	0	0	3438	3438	6566	
Top Logger (ft)	0	0	3438	6555	6566	
Bottom Driller (ft)	990	3438	7022	7022	7250	
Bottom Logger (ft)	990	3438	6555	7022	7250	

Remarks and Equipment Summary

One: Toolstring

Equip name	Length	MP name	Offset
LEH-QT:2867	**59.51**	Red	
LEH-QT:2867			
DTC-H	**56.59**		
ECH-KC			
DTC-H			
HGNS-H:3923	**53.59**		
HGNH:4819			
NPV-N			
NSR-F:5002			
HACCZ-H:3923			
HMCA-H			
HGNS-H:3923			

CTEM	**55.69**
HV	**0.00**
TelStatus	**53.59**
ToolStatus	**53.59**
Temperature	**53.57**
GR	**52.85**

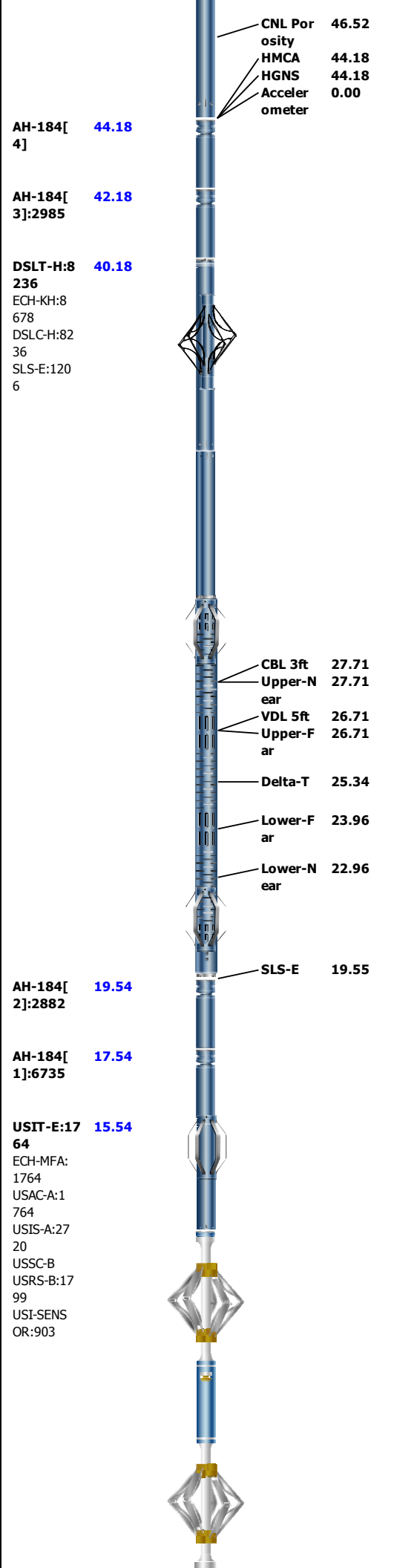
One: Remarks

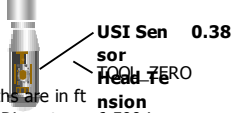
- Logging objective is cement and corrosion evaluation.
- USIT Logged at 10 deg/1.6 inch resolution, logging speed 2800-3000 fph. Hi-resolution repeats at 10 deg/0.6 inch, speed 1200 fph
- USIT run in combination with CBL, Neutron and Gamma Ray tools.
- Log recorded with 0 psi surface pressure
- Recorded data inside 7" liner and 8-5/8" casing
- No cement data available
- Defects or anomalies were repeated at very hi-res mode
- Rig: Ensign 335
- Toolstring ran as per toolsketch.
- Two centralizers on USIS and two CME-Y

used to centralize ultrasonic tool.

Thank you for choosing Schlumberger!

Ran in to 7090 ft, after depth correction, pickup is 7072 ft. Logged to surface.





Lengths are in ft
Maximum Outer Diameter = 6.500 in
Line: Sensor Location, Value: Gating Offset
All measurements are relative to TOOL_ZERO

Job Event Summary

Event	Time	Duration	Interval	Remark
Log[1]:Down	Mar-30-2016 11:06	01:51:07	129.85 - 7079.92 ft	FPM
Log[2]:Up	Mar-30-2016 11:59	00:10:51	7078.5 - 6545.76 ft	Repeat Pass
Log[3]:Up	Mar-30-2016 12:15	00:13:01	7084.95 - 6537.39 ft	Main Pass in 7 inch Liner
Log[5]:Up	Mar-30-2016 12:33	00:08:05	7040.16 - 6958.61 ft	Very Hi-Res
Log[6]:Up	Mar-30-2016 12:44	00:05:41	6593.51 - 6320.39 ft	Repeat Pass
Log[7]:Up	Mar-30-2016 12:52	02:49:04	6590.51 - 1028.13 ft	Main Pass in 8-5/8 inch Casing #1
Log[8]:Up	Mar-30-2016 14:41	00:12:09	1097.22 - 481.66 ft	Main Pass in 8-5/8 inch Casing #2
Log[10]:Up	Mar-30-2016 14:56	00:11:03	548.02 - 47.87 ft	Main Pass in 8-5/8 inch Casing #3
Log[12]:Up	Mar-30-2016 15:46	00:06:11	5918.56 - 5794.26 ft	Very Hi-Res
Log[13]:Up	Mar-30-2016 15:54	00:05:11	5572.17 - 5467.83 ft	Very Hi-Res
Log[15]:Up	Mar-30-2016 16:14	00:07:31	4348.17 - 4198.19 ft	Very Hi-Res
Log[16]:Up	Mar-30-2016 16:29	00:06:17	2803.98 - 2682.15 ft	Very Hi-Res
Log[17]:Up	Mar-30-2016 16:38	00:05:43	2310.72 - 2188.41 ft	Very Hi-Res
Log[18]:Up	Mar-30-2016 16:46	00:03:15	1657.98 - 1593.36 ft	Very Hi-Res
Log[19]:Up	Mar-30-2016 16:51	00:04:41	1441.49 - 1347.88 ft	Very Hi-Res
Log[21]:Up	Mar-30-2016 16:59	00:06:36	1105.86 - 968.96 ft	Very Hi-Res
Log[22]:Up	Mar-30-2016 17:09	00:03:15	584.42 - 516.75 ft	Very Hi-Res
Log[24]:Up	Mar-30-2016 17:26	00:04:16	104.64 - 4.33 ft	Surface Pass 0 Psi

USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 1	Log[7]:Up	6590.51	1028.12

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=1.00
DFD=1.08g/cm3(9.00lbm/gal)

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

Composite 1

Main Pass 8-5/8" Casing 5 in = 100 ft

Software Version

Acquisition System	Version
Maxwell 2016 SP1	6.1.58882.3100

Computation	Description	Version
CEVAL	Sonic Cement Evaluation Computation Ensemble provides common Parameters and Channels	6.1.58882.3100
Cementation	Cementation Computation Application	6.1.58882.3100

SoftwareVersion_Tool	SoftwareVersion_Run Version	SoftwareVersion_Build Version
WAFE-SEC	Synergy SV451EC version 9.10	Synergy SV451EC version 9.10
WAFE-FEC	Synergy SV451EC version 9.10	Synergy SV451EC version 9.10
WAFE-TMDI	Synergy SV451EC version 46.19	Synergy SV451EC version 46.19

Tool Elements	Description	Software Version	Firmware Version
HGNS-H	HILT Gamma-Ray and Neutron Sonde, 150 degC	6.1.58882.3100	2.0

SLS-E	Sonic Logging Sonde E supports 3'-5'BHC DT and CBL/VDL	6.1.58882.3100	143.0
USI-SENSOR	USIT Transducer Element	6.1.58882.3100	DSP: v1.82

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[7]:Up	Up	1028.13 ft	6590.51 ft	30-Mar-2016 12:52:21 PM	30-Mar-2016 2:41:26 PM	ON	-5.08 ft	Yes
One	Log[8]:Up	Up	481.66 ft	1097.23 ft	30-Mar-2016 2:41:59 PM	30-Mar-2016 2:54:08 PM	ON	-5.14 ft	Yes
One	Log[10]:Up	Up	47.88 ft	548.03 ft	30-Mar-2016 2:56:22 PM	30-Mar-2016 3:07:25 PM	ON	-4.95 ft	Yes
One	Log[24]:Up	Up	4.33 ft	104.64 ft	30-Mar-2016 5:26:46 PM	30-Mar-2016 5:31:02 PM	ON	0.26 ft	No

All depths are referenced to toolstring zero

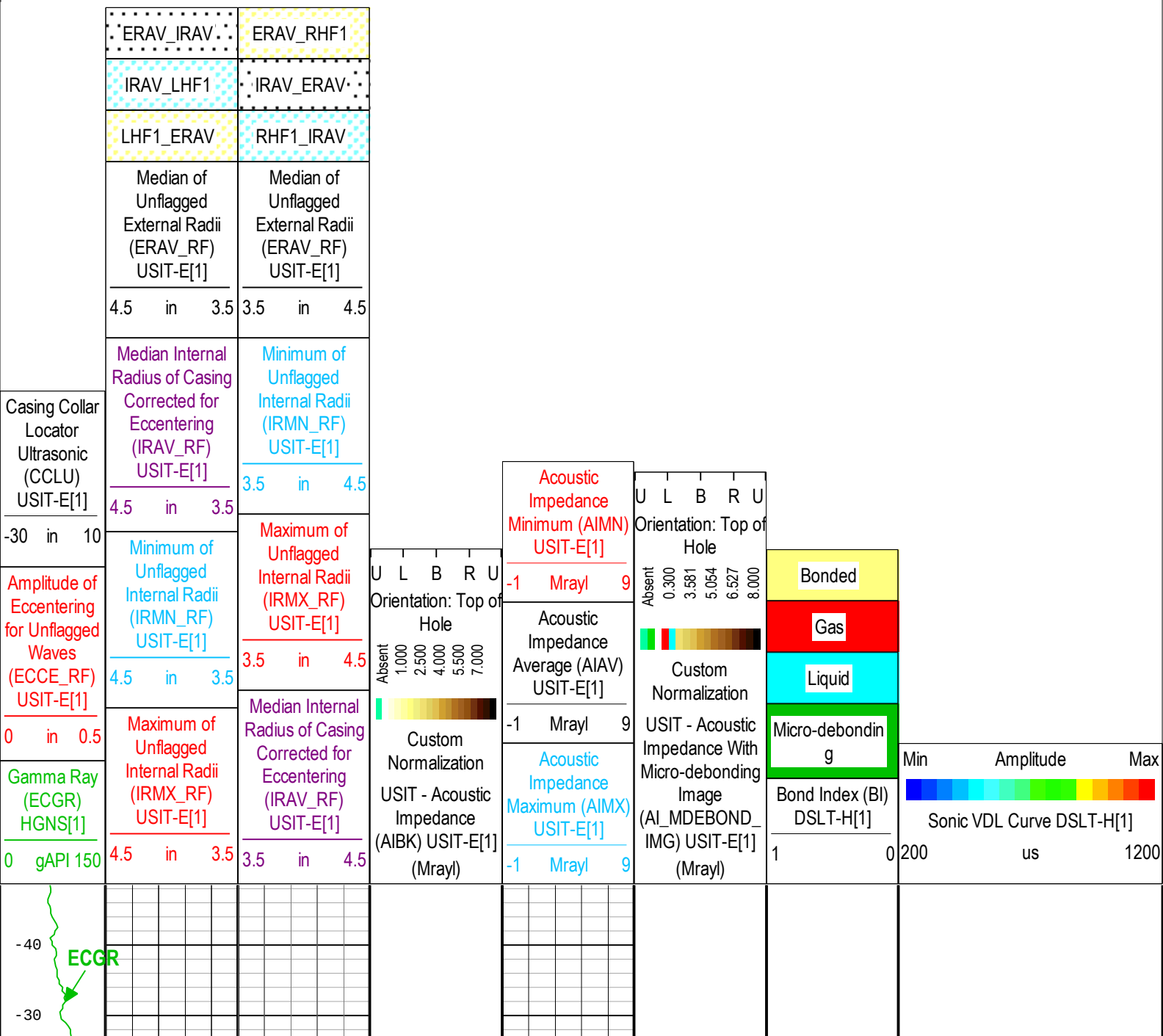
Log

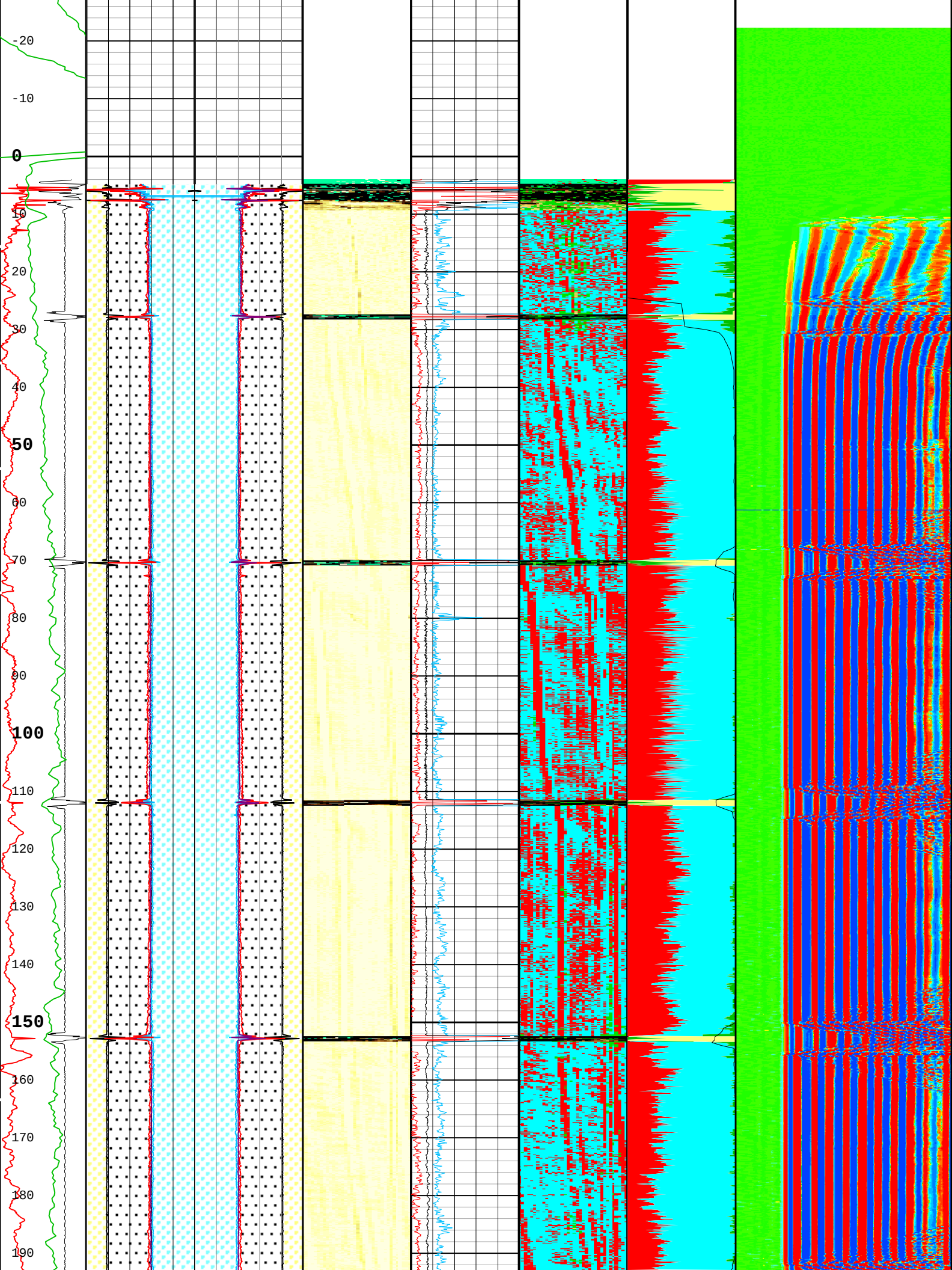
Company:Southern California Gas Company Well:Fernando Fee 32-A

Composite 1:S005

Description: USI VDL Cement Format: Log (LBV1_USI-VDL (DSLT) Cement 9.625inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 31-Mar-2016 13:14:37

TIME_1900 - Time Marked every 60.00 (s)

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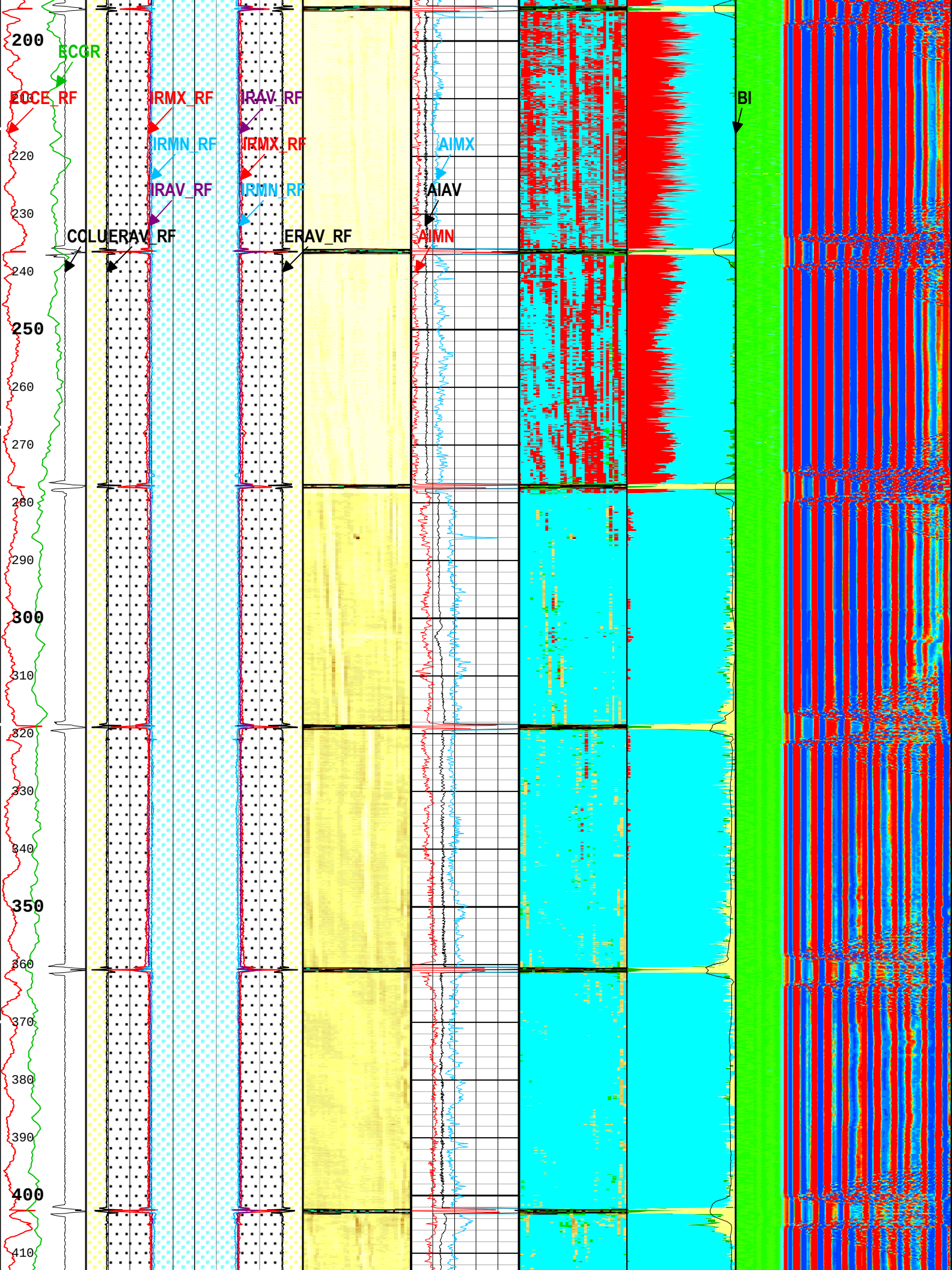
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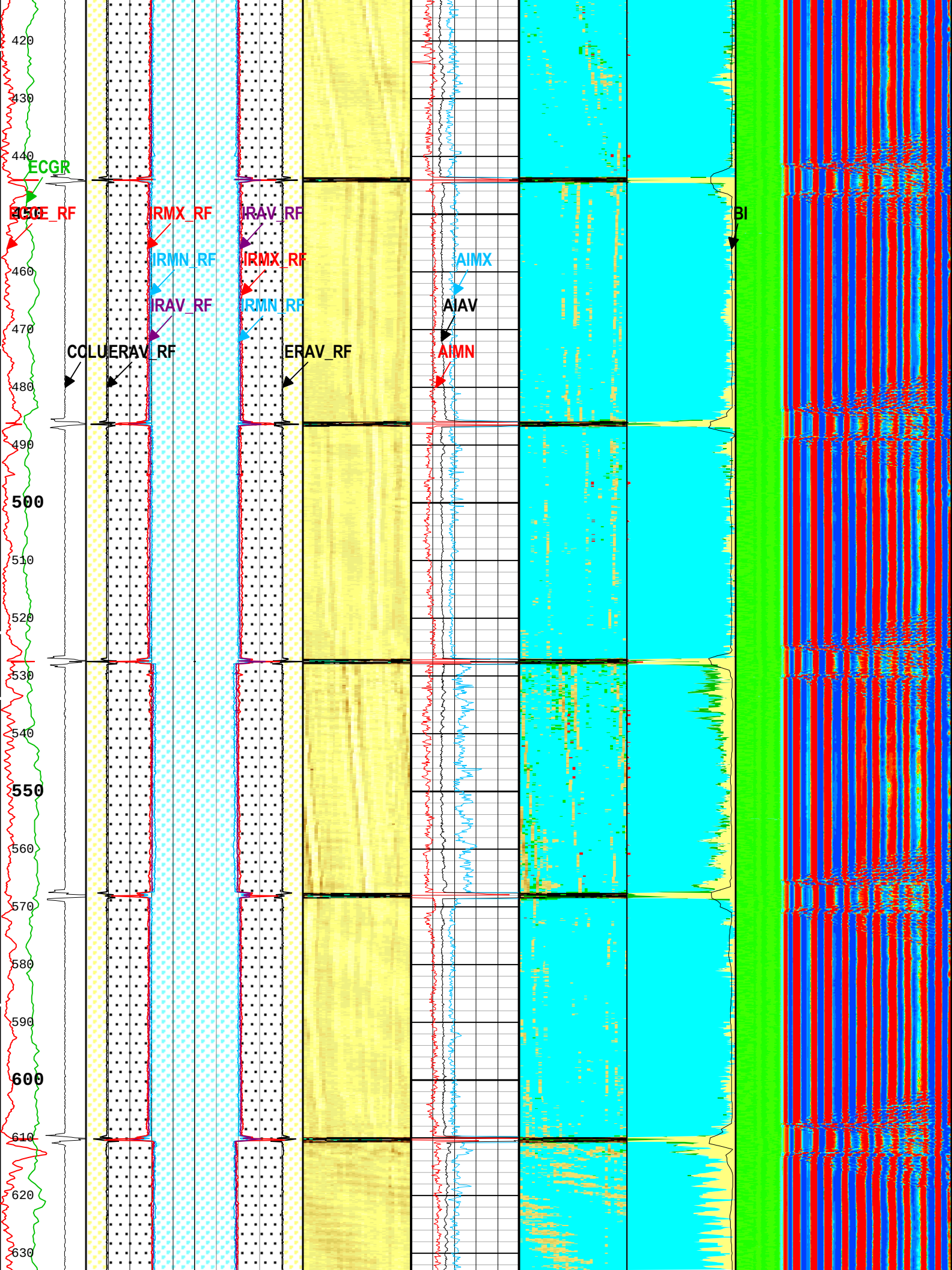
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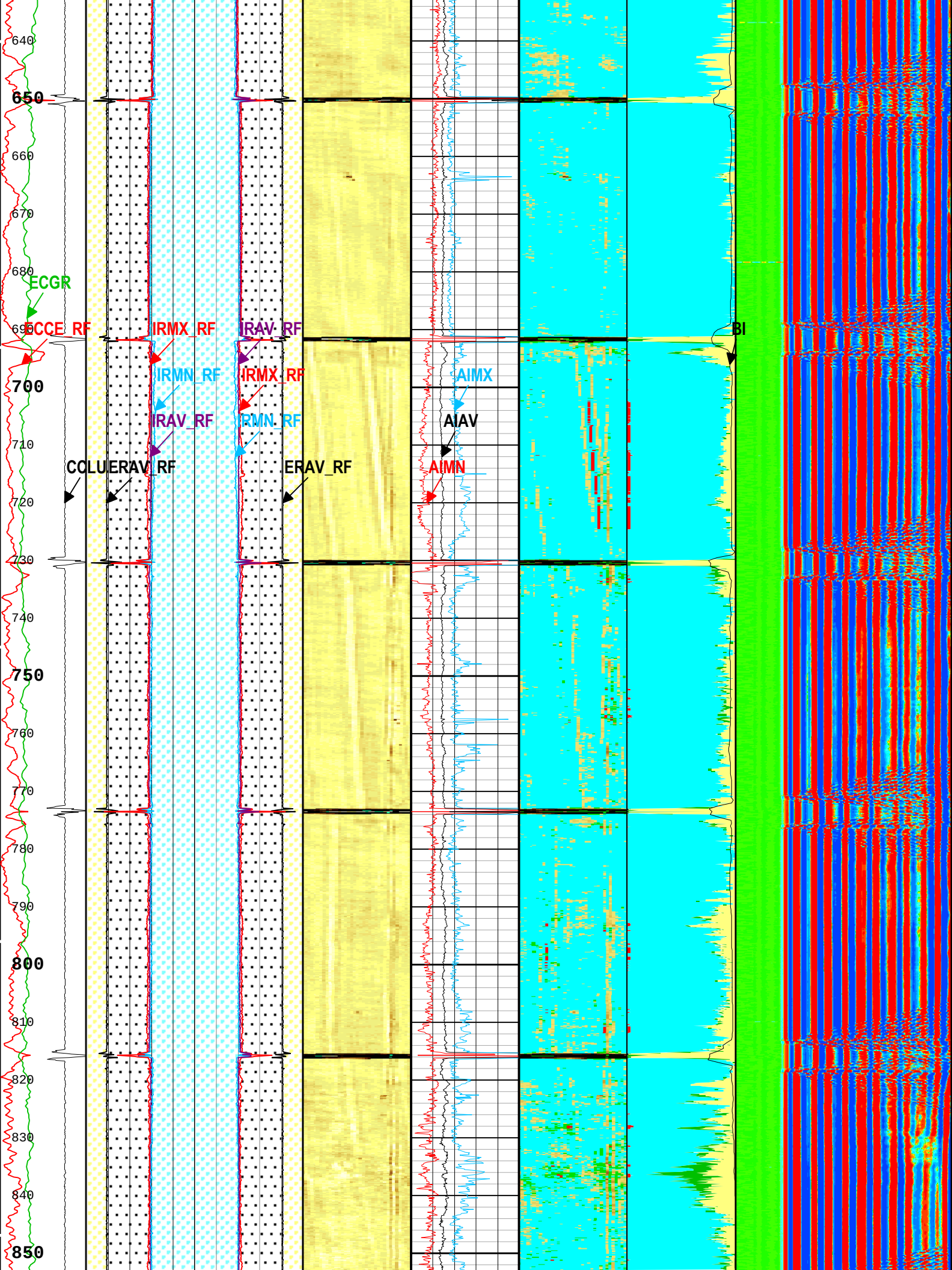
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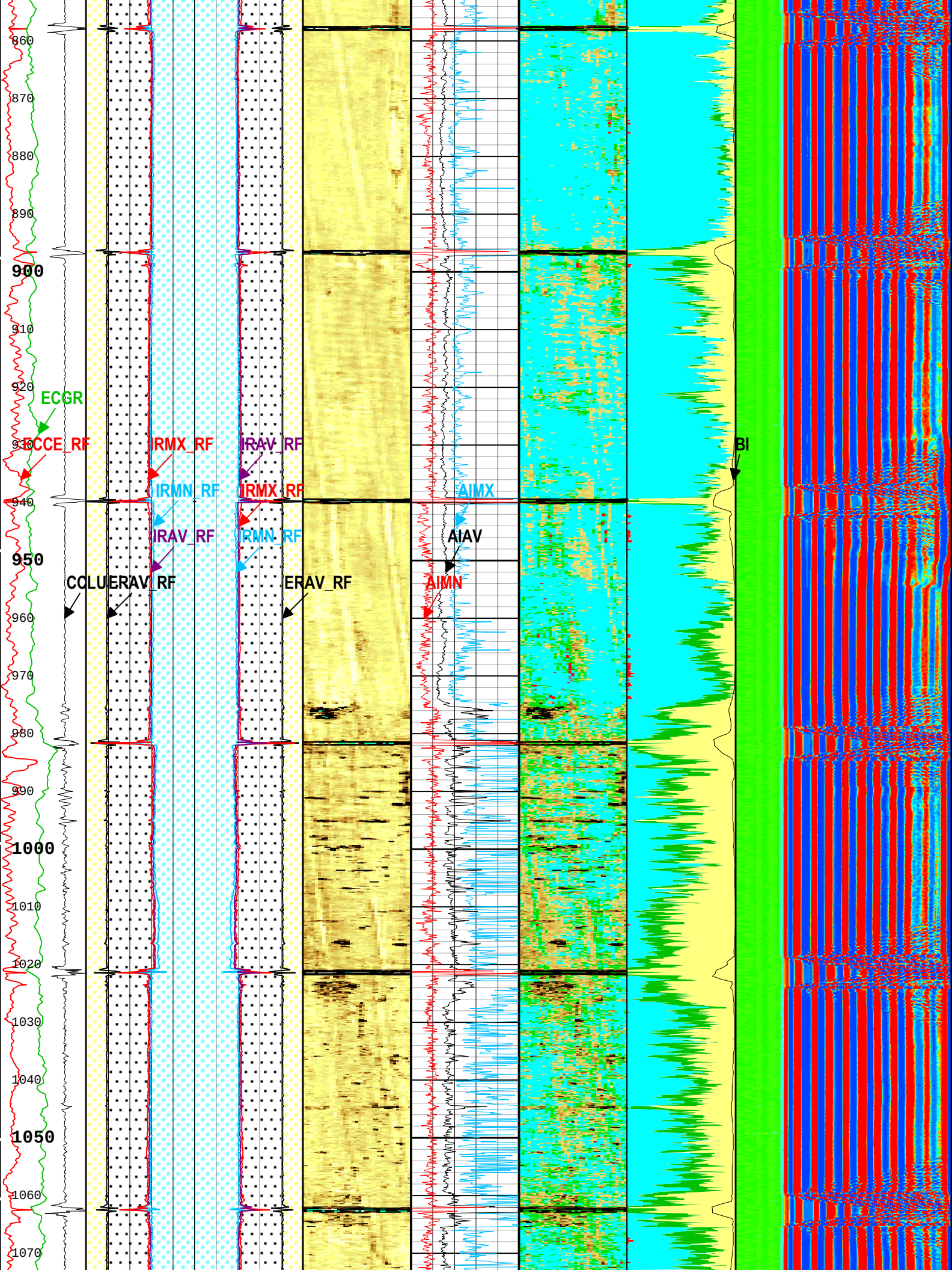
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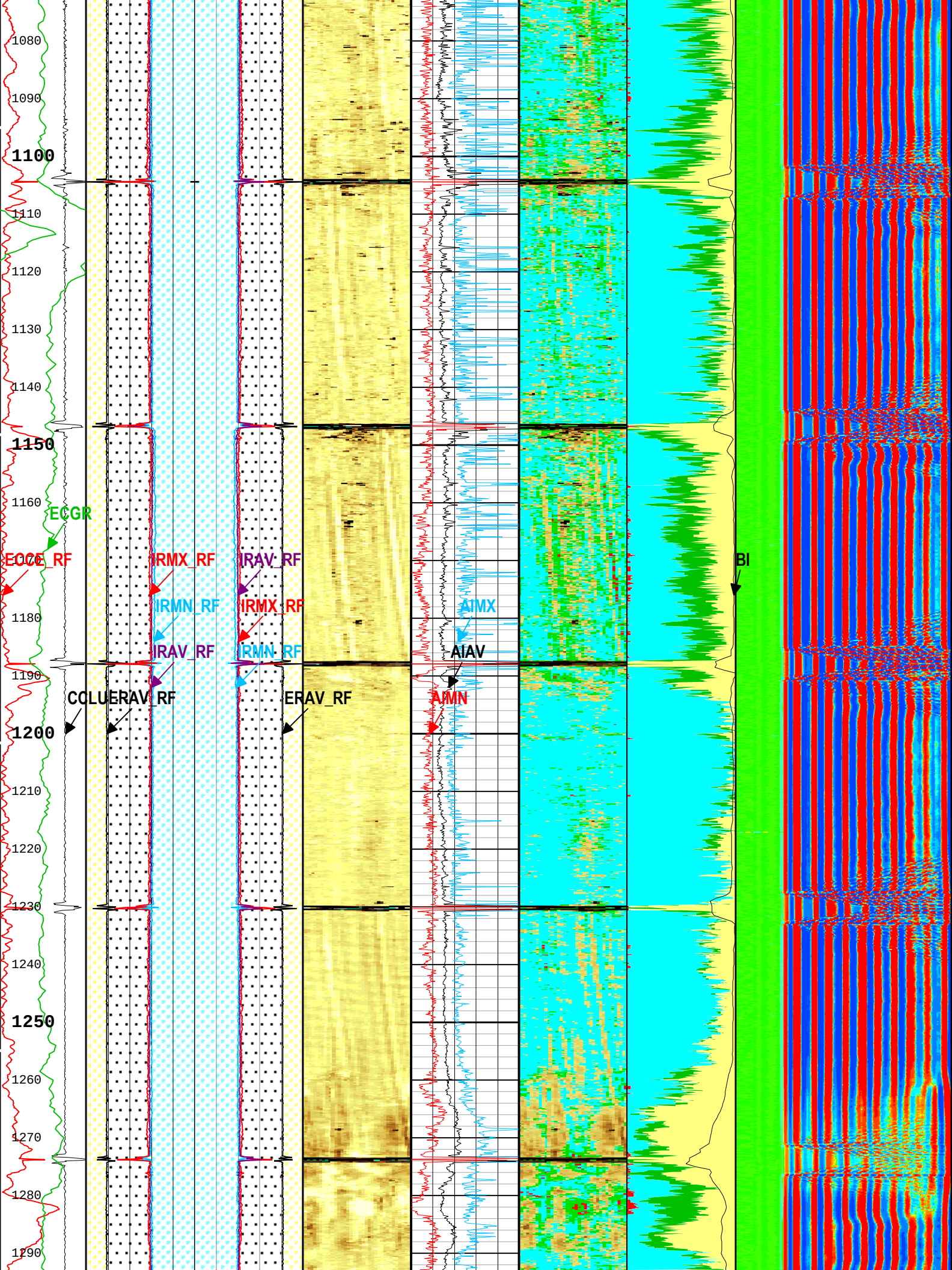
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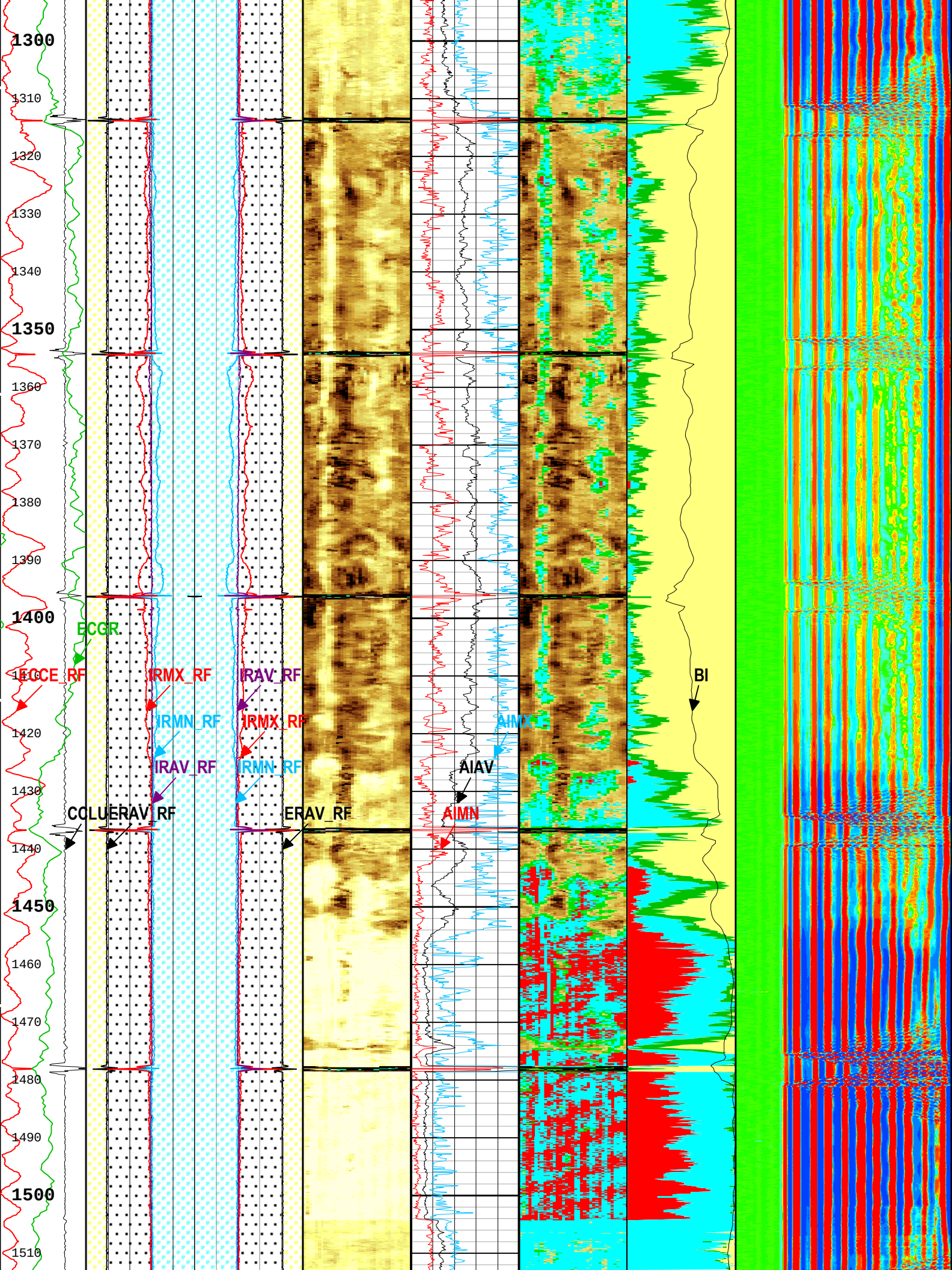
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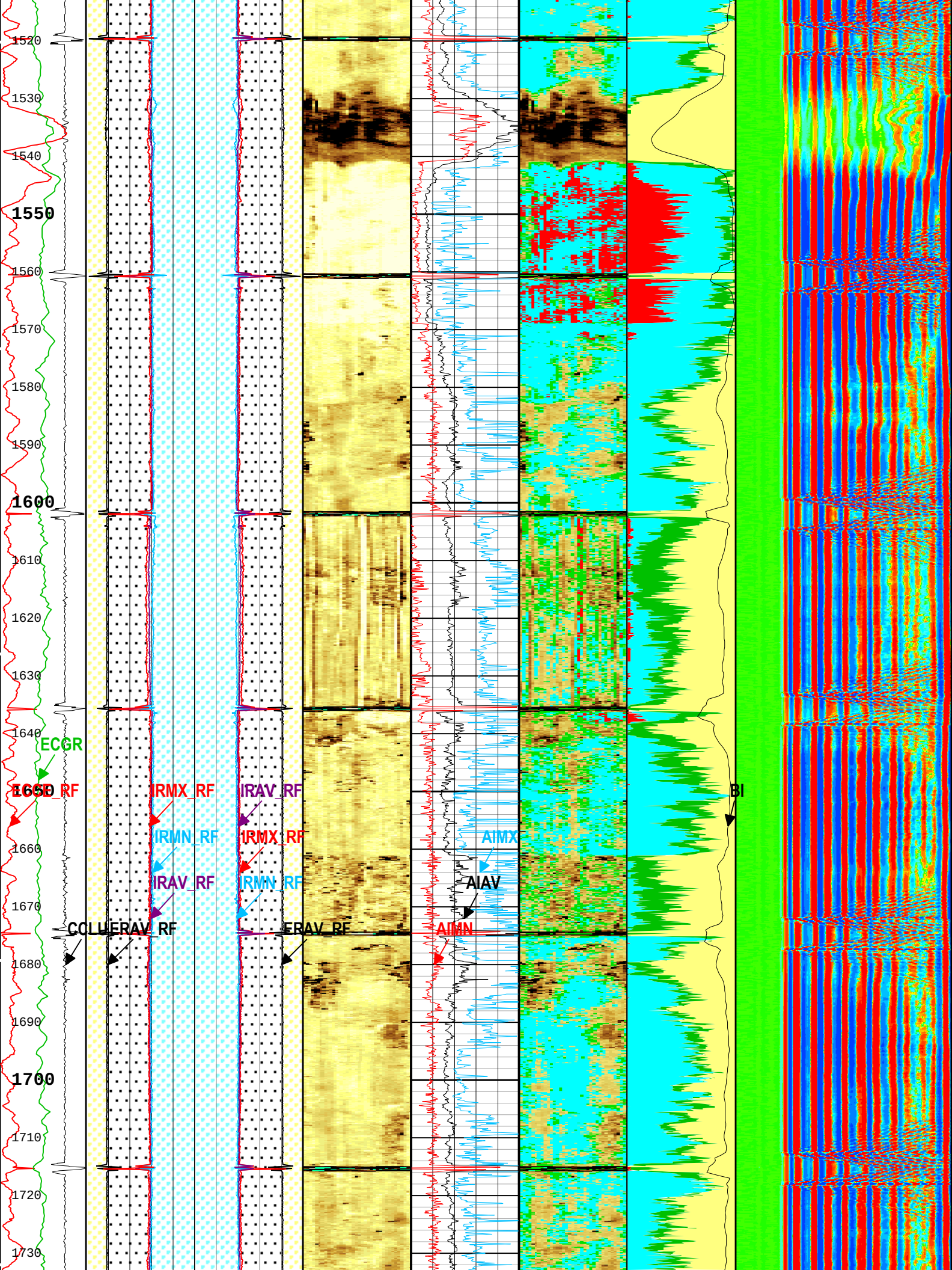
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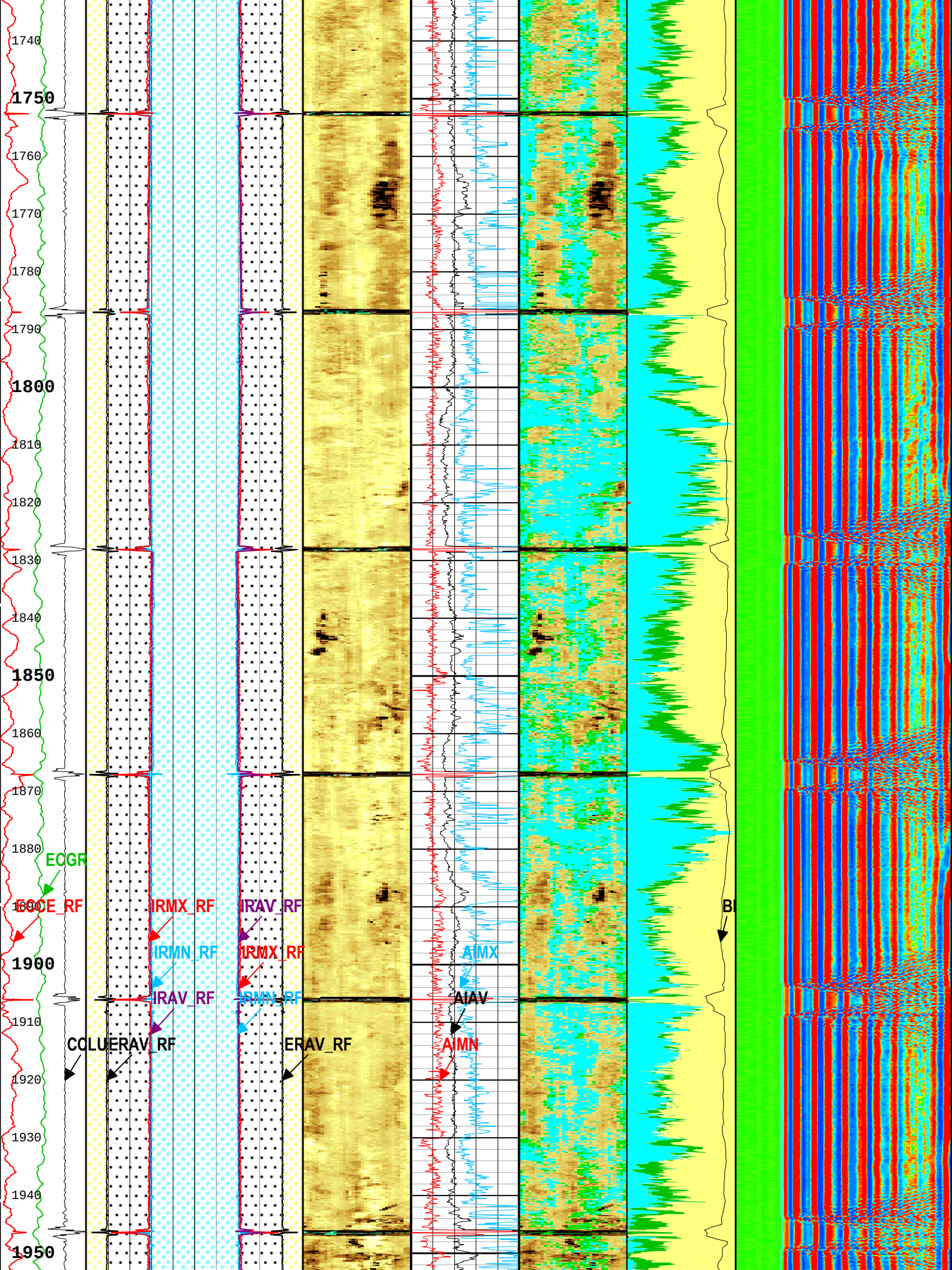
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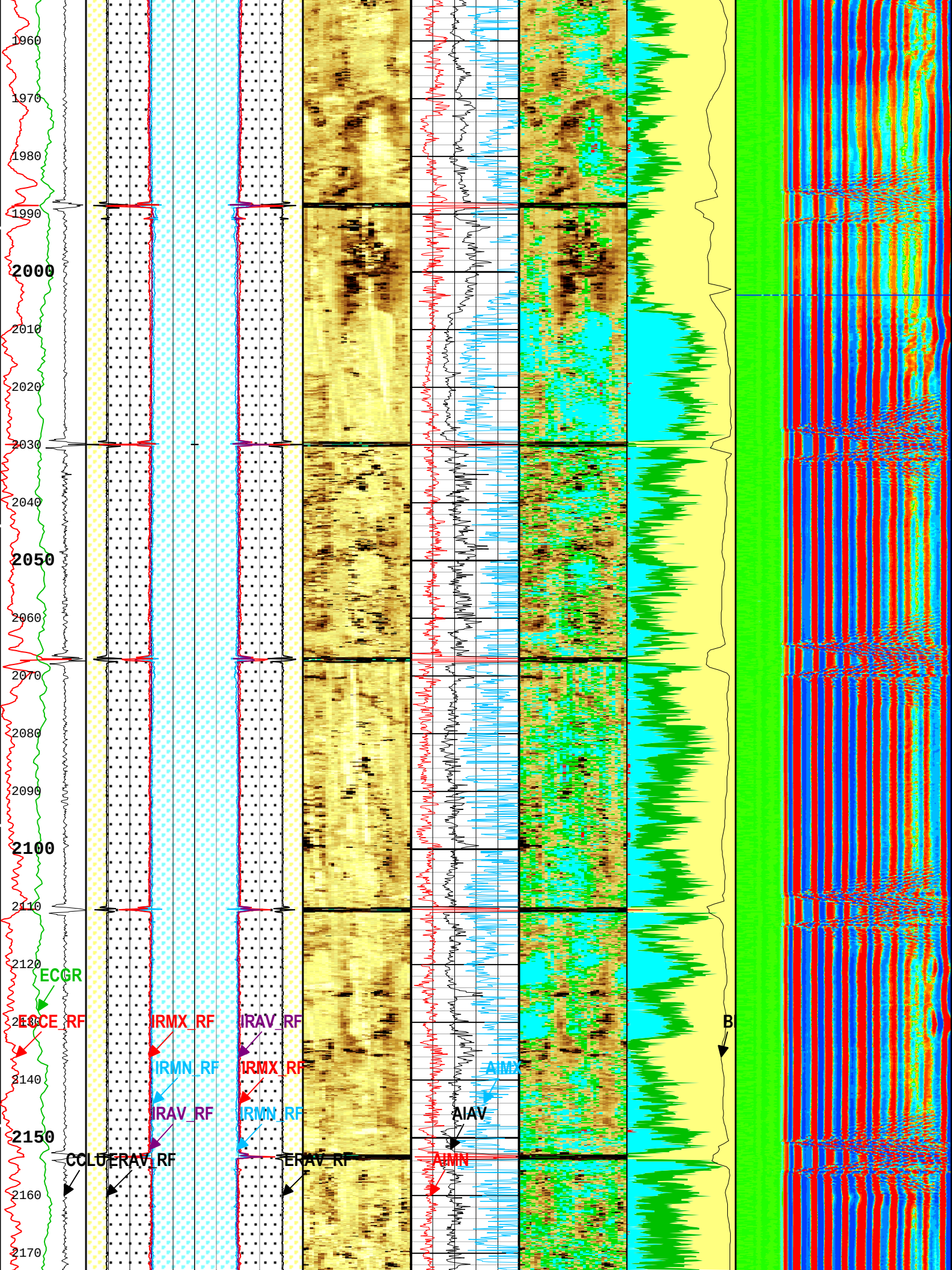
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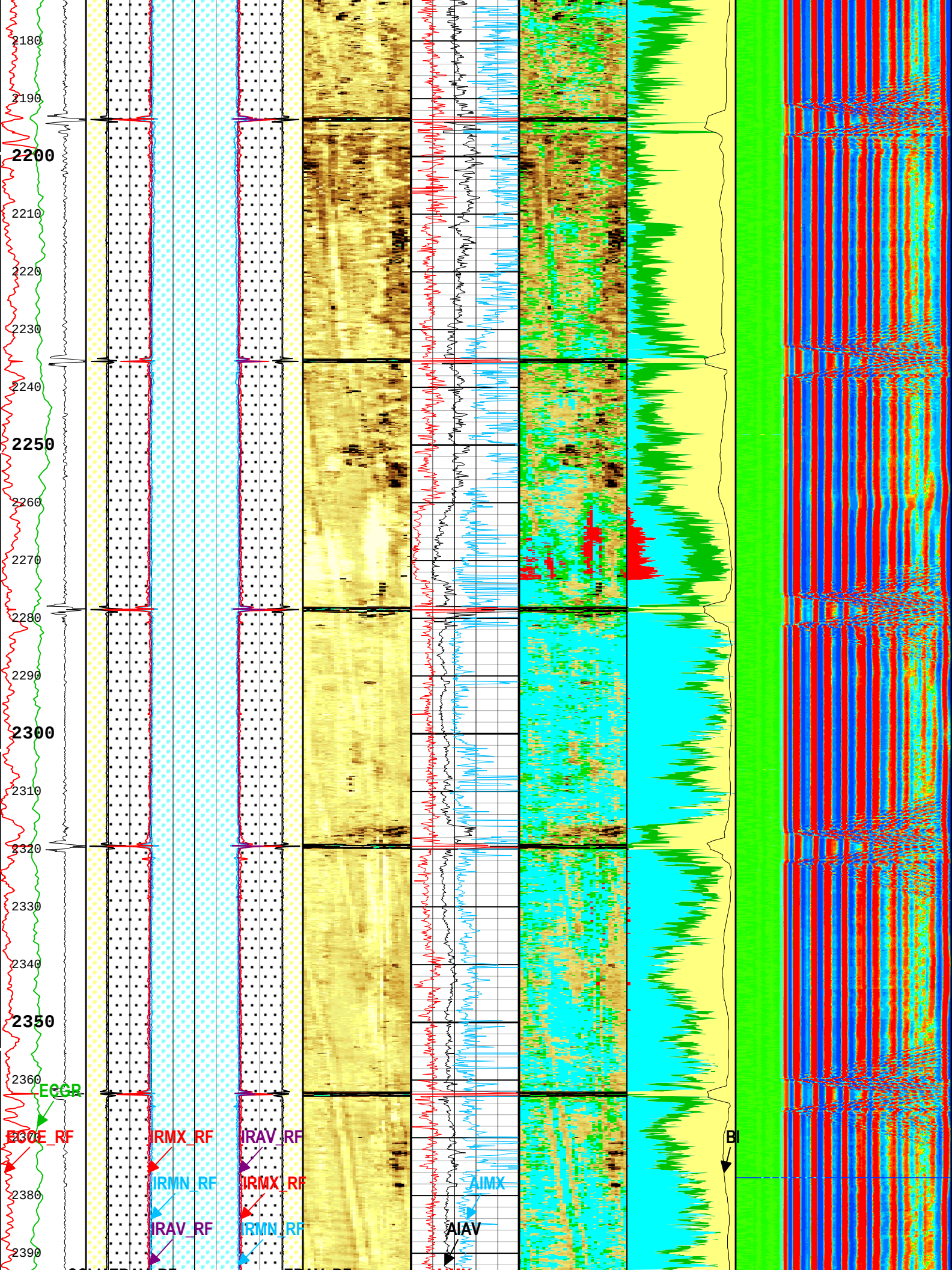
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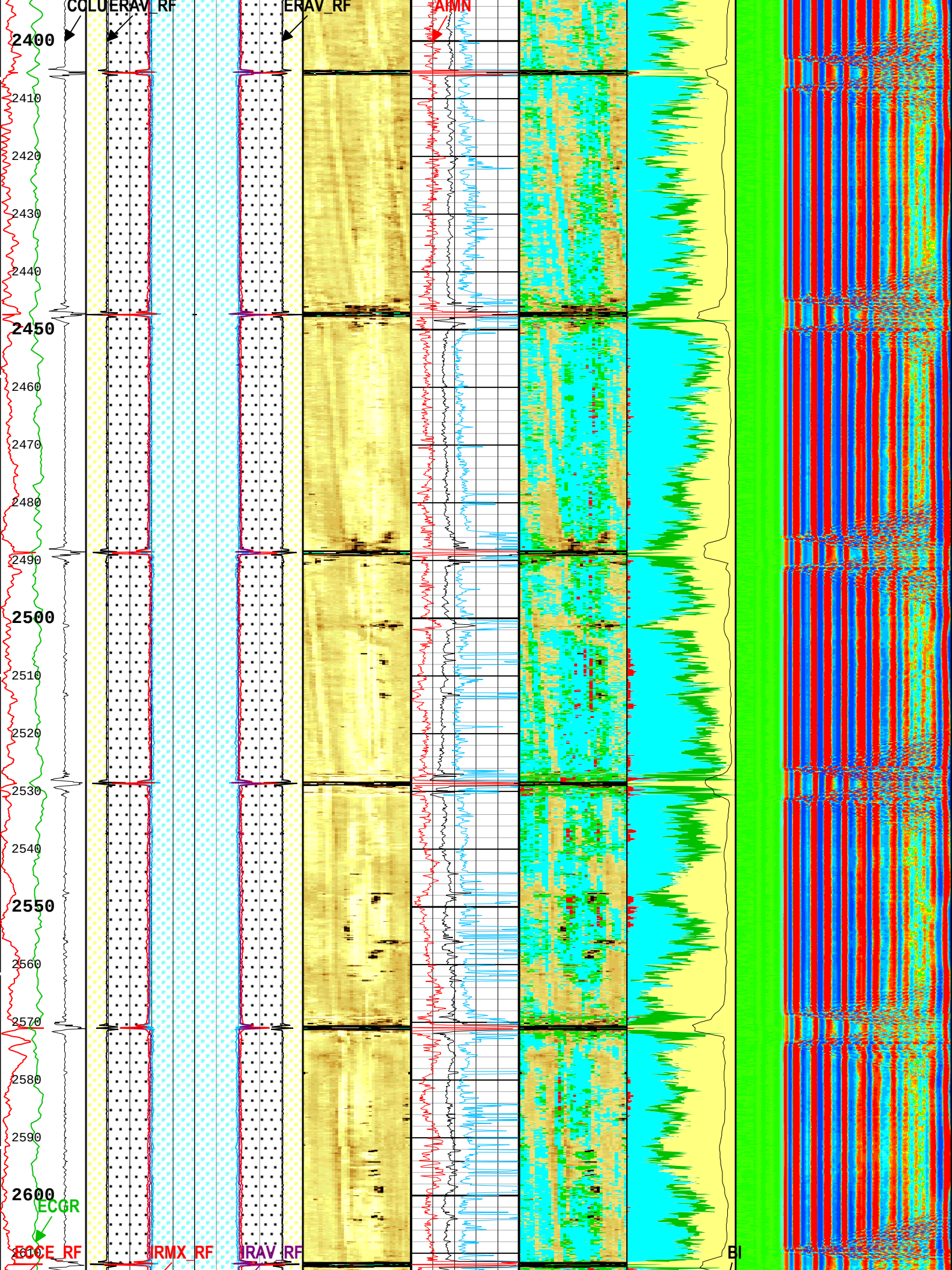
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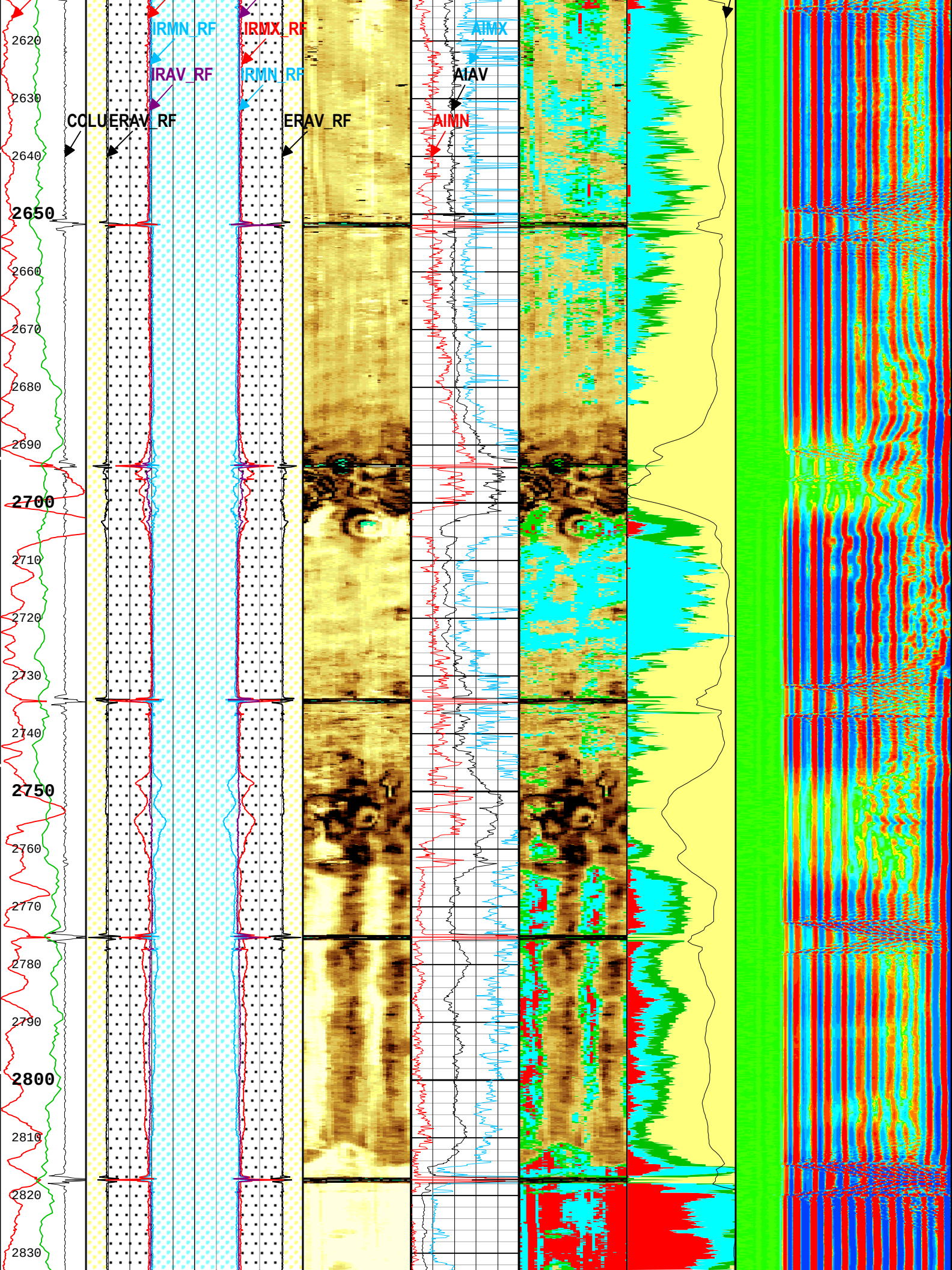
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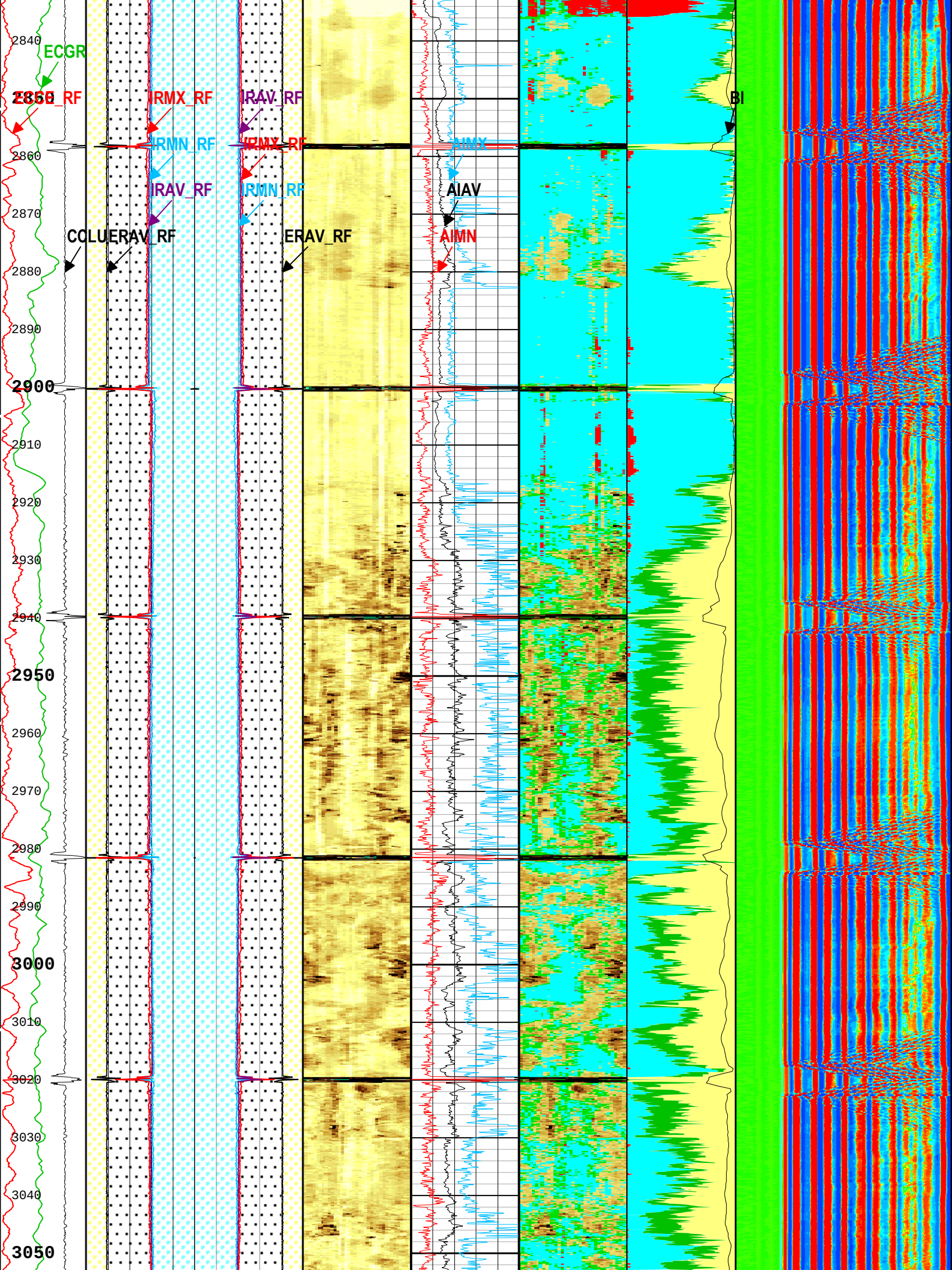
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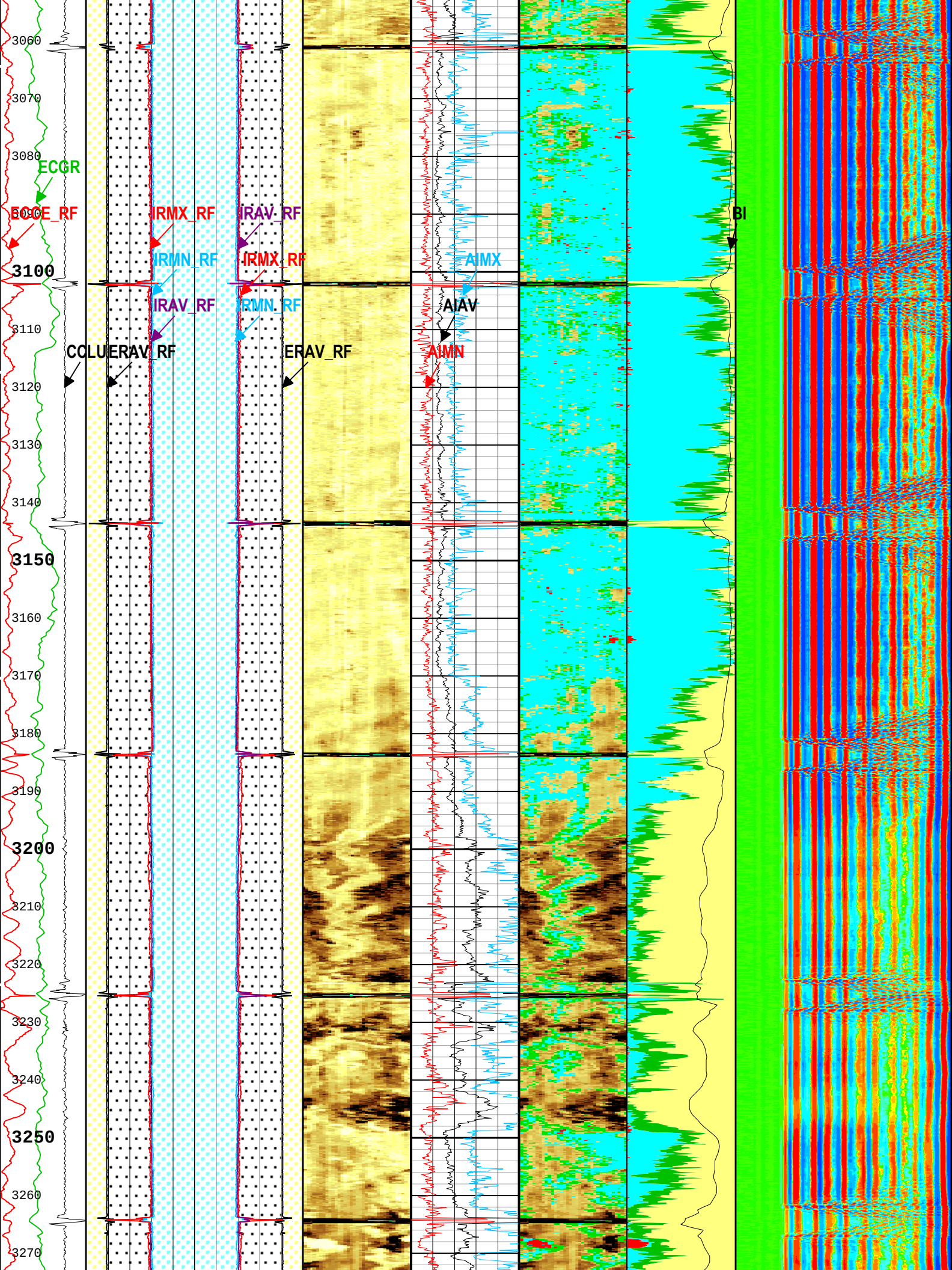
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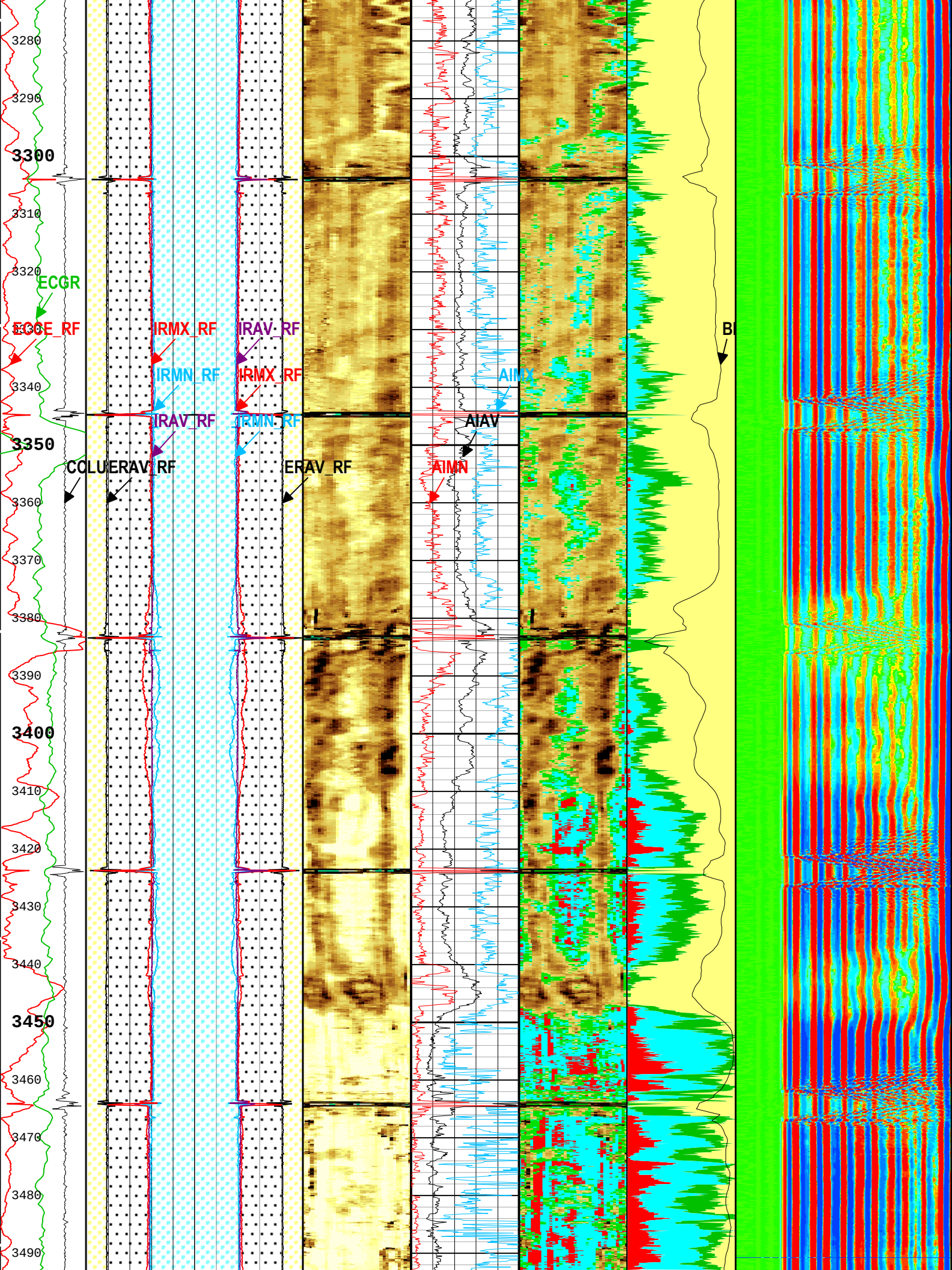
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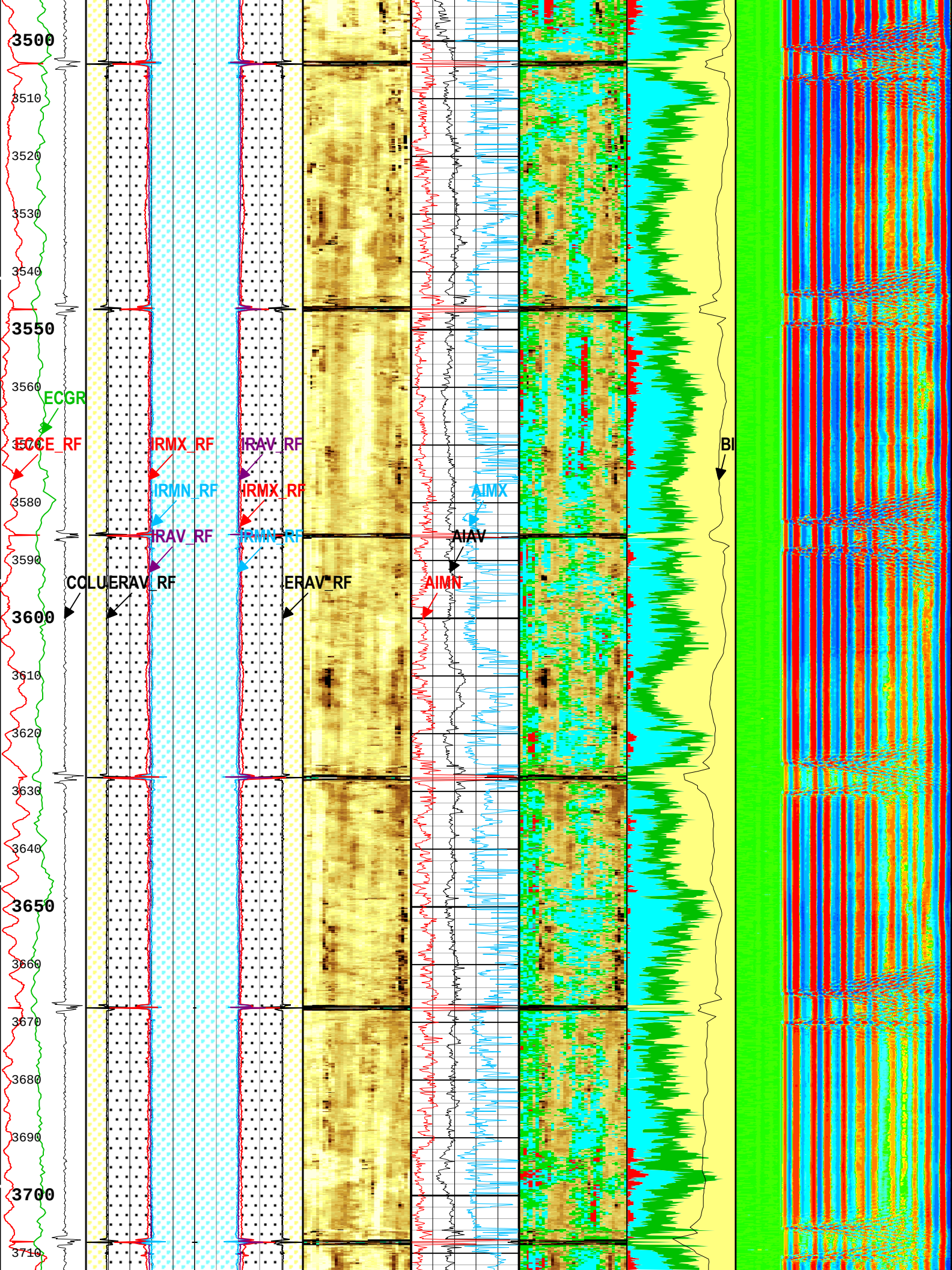
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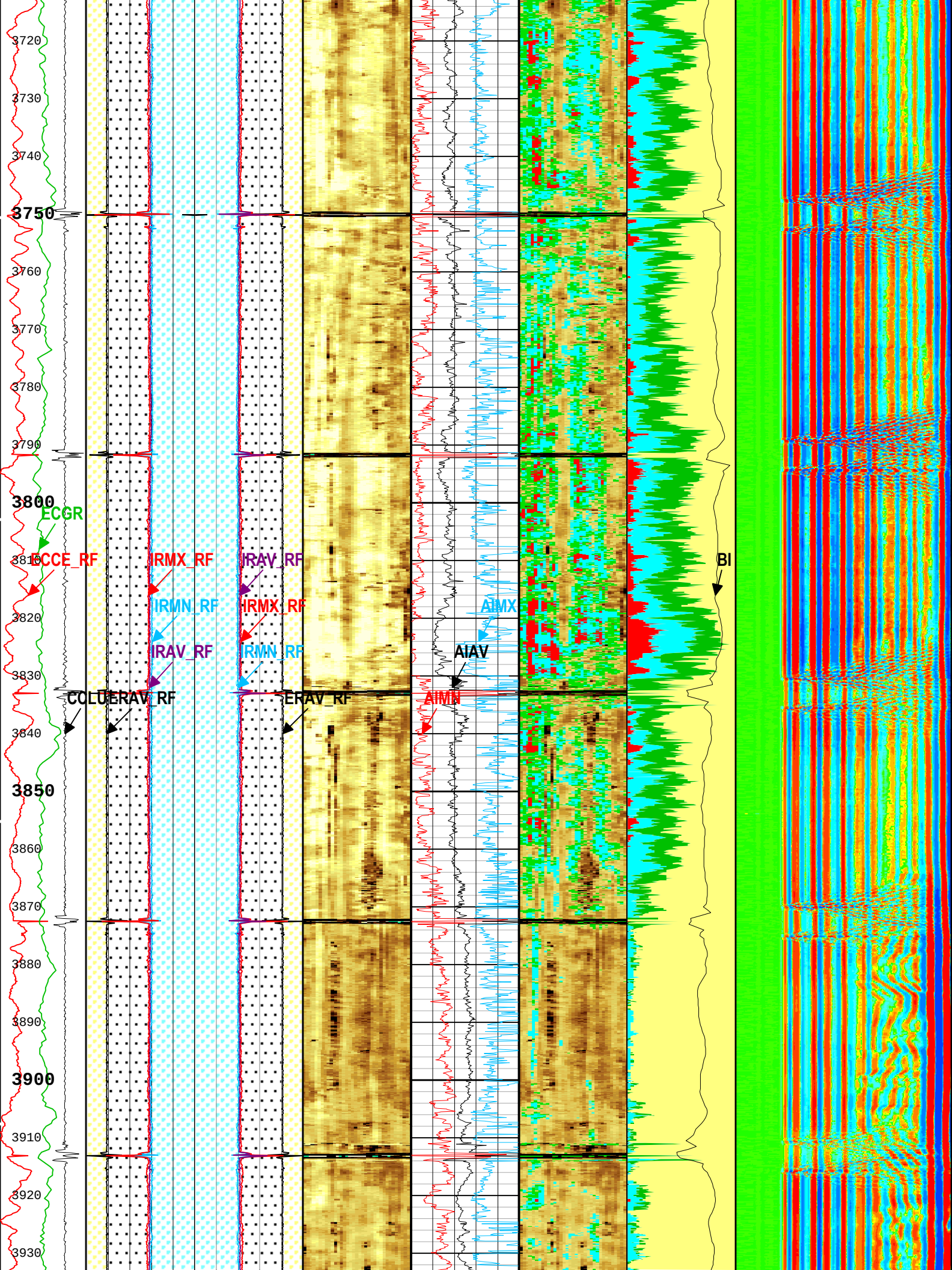
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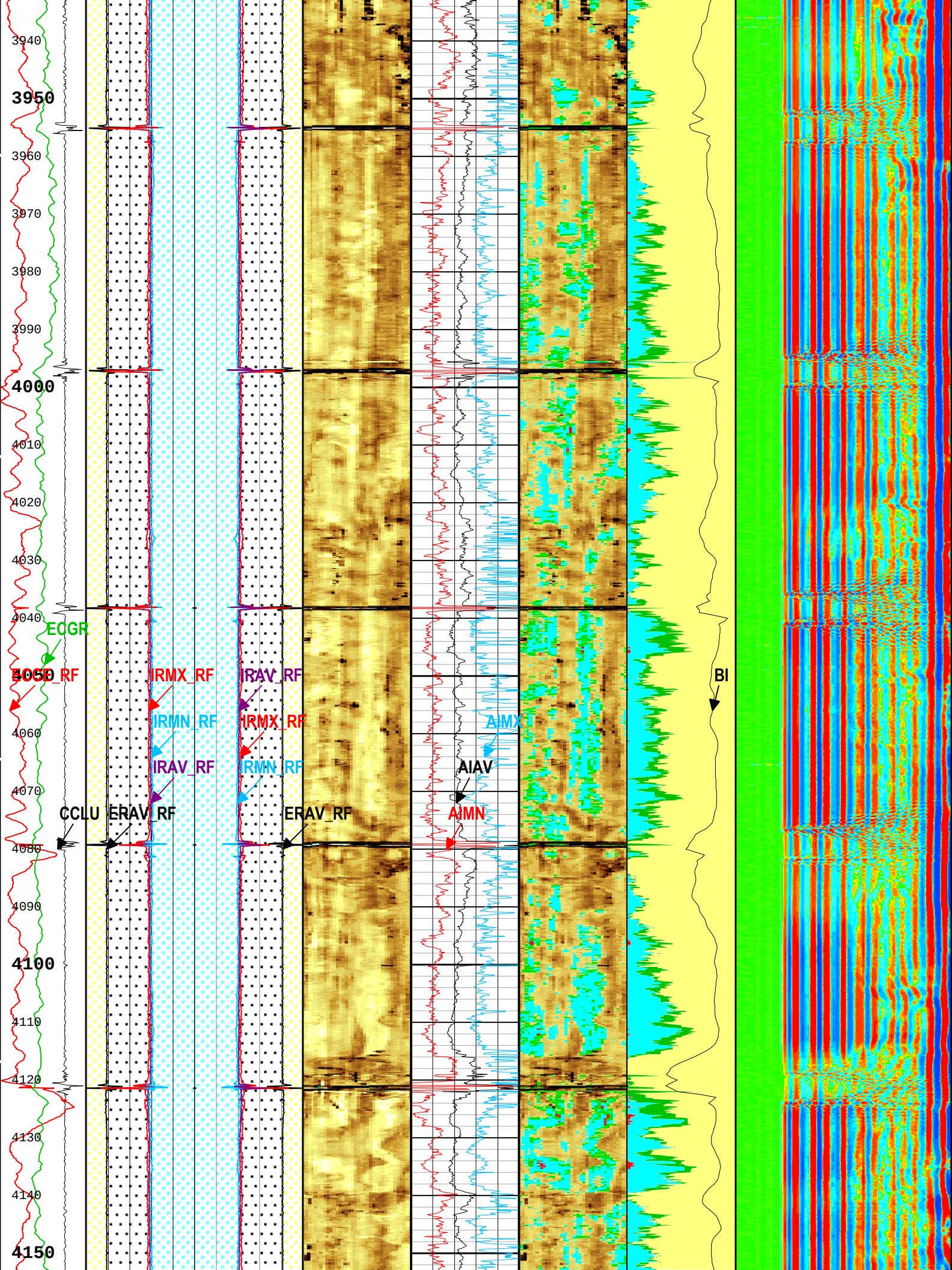
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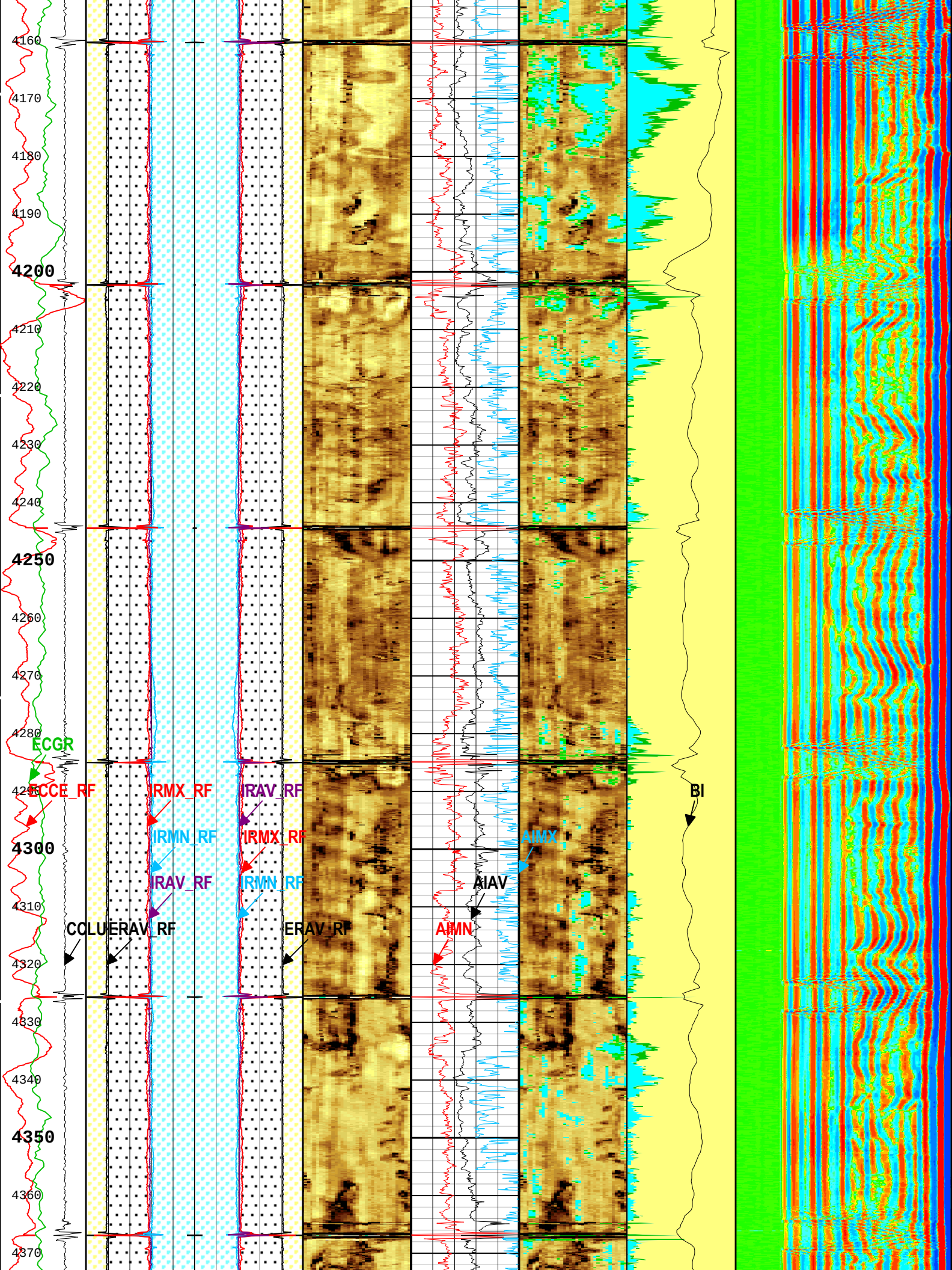
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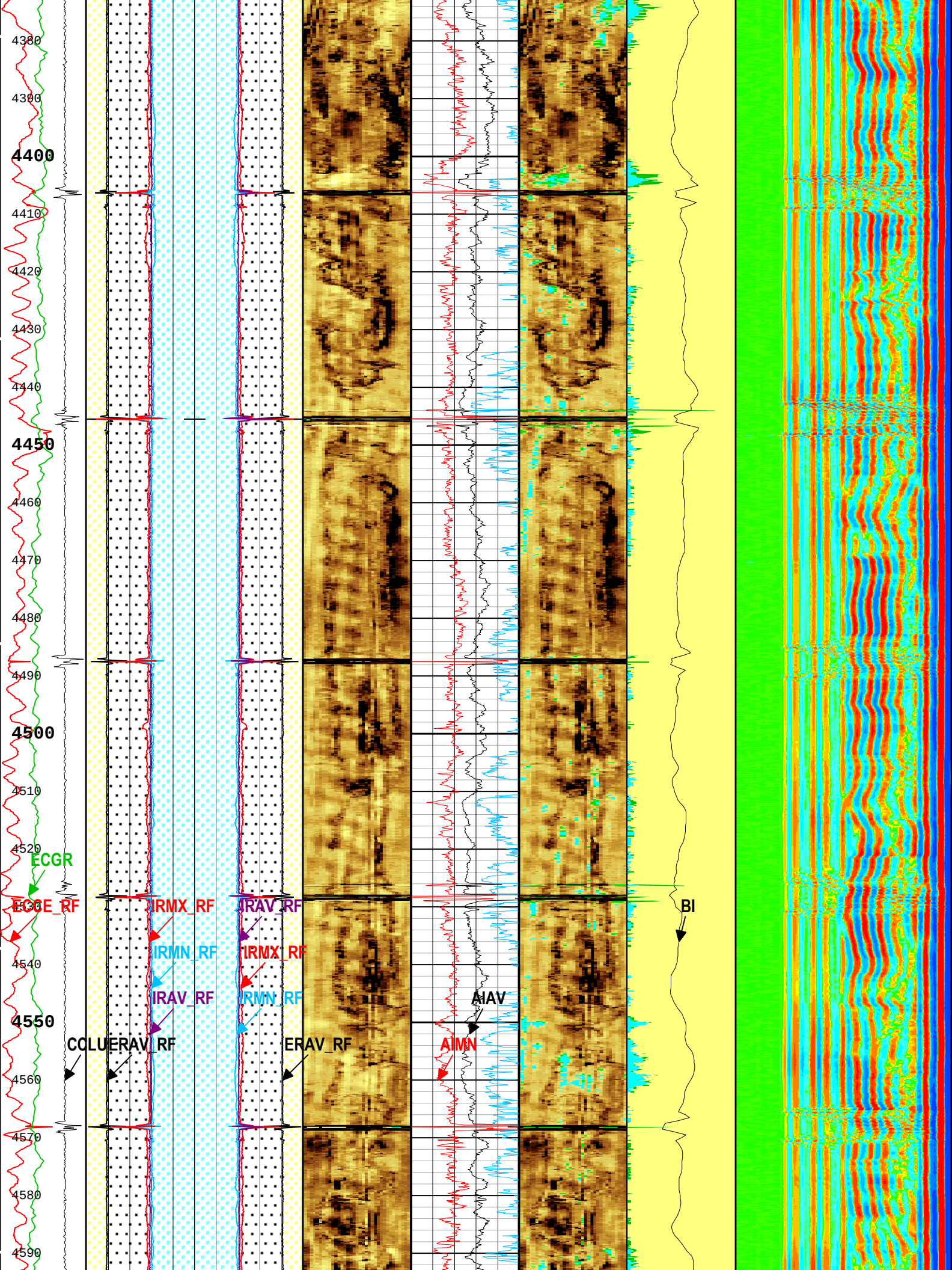
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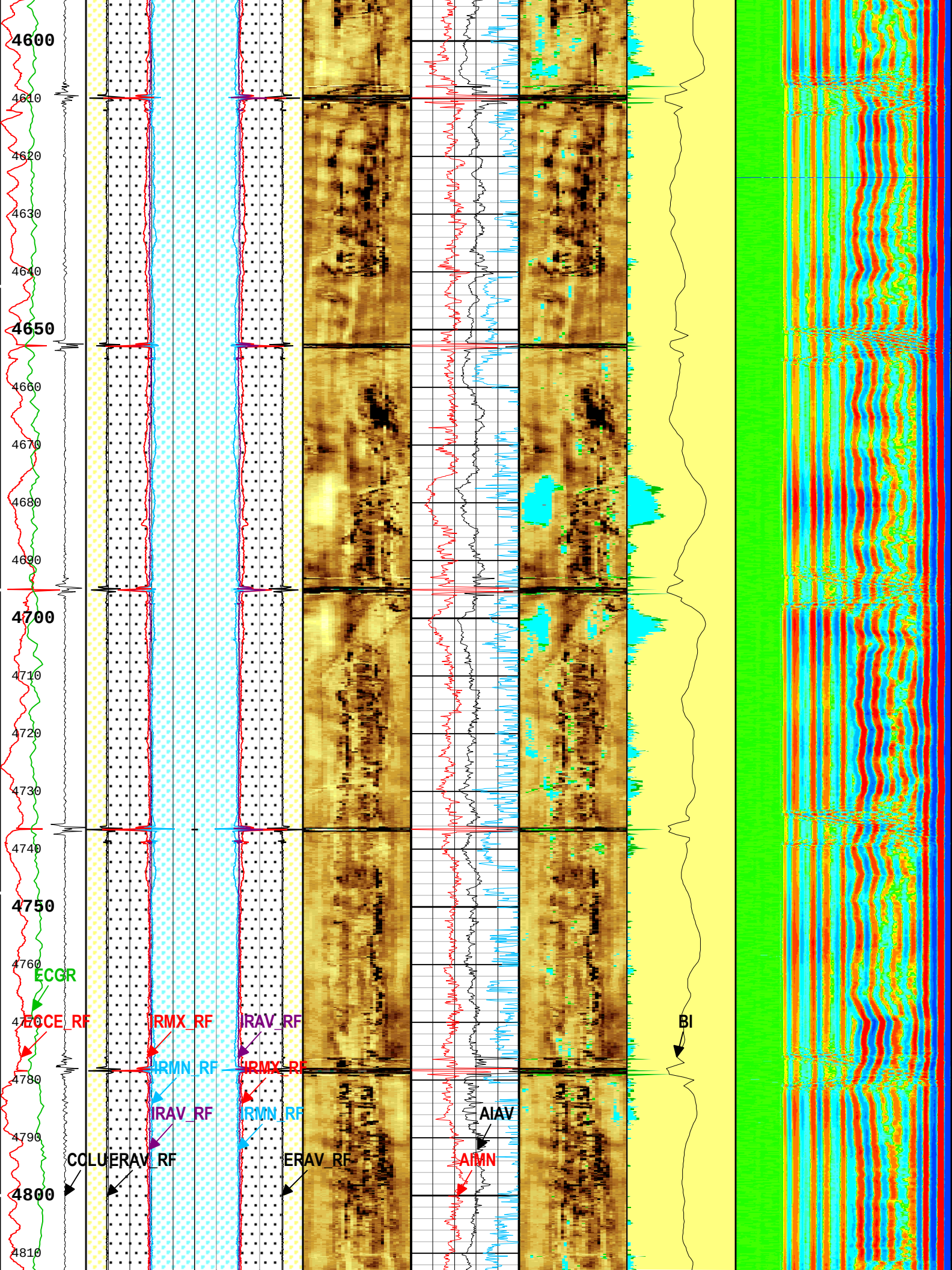
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IRMX_RF
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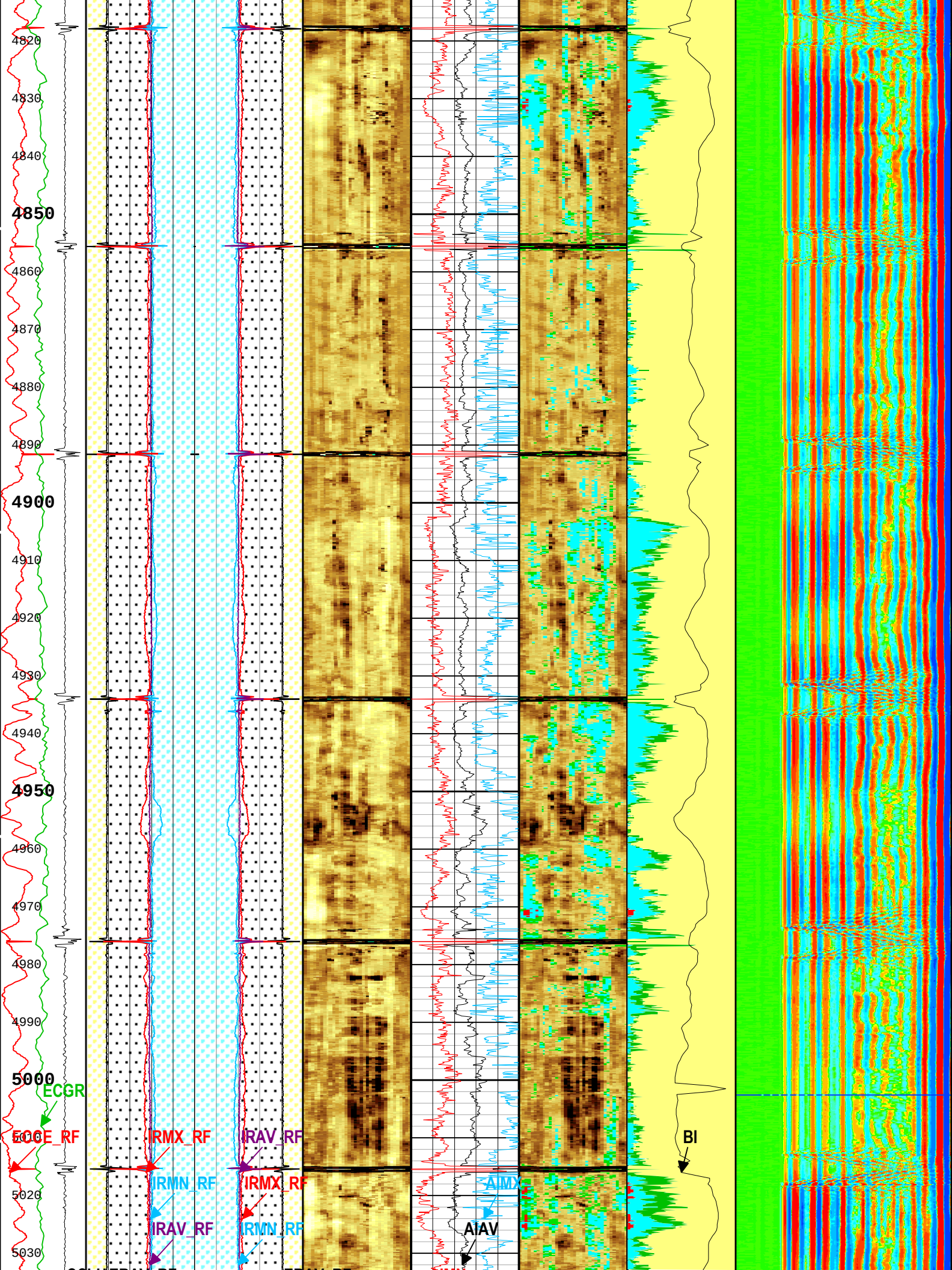
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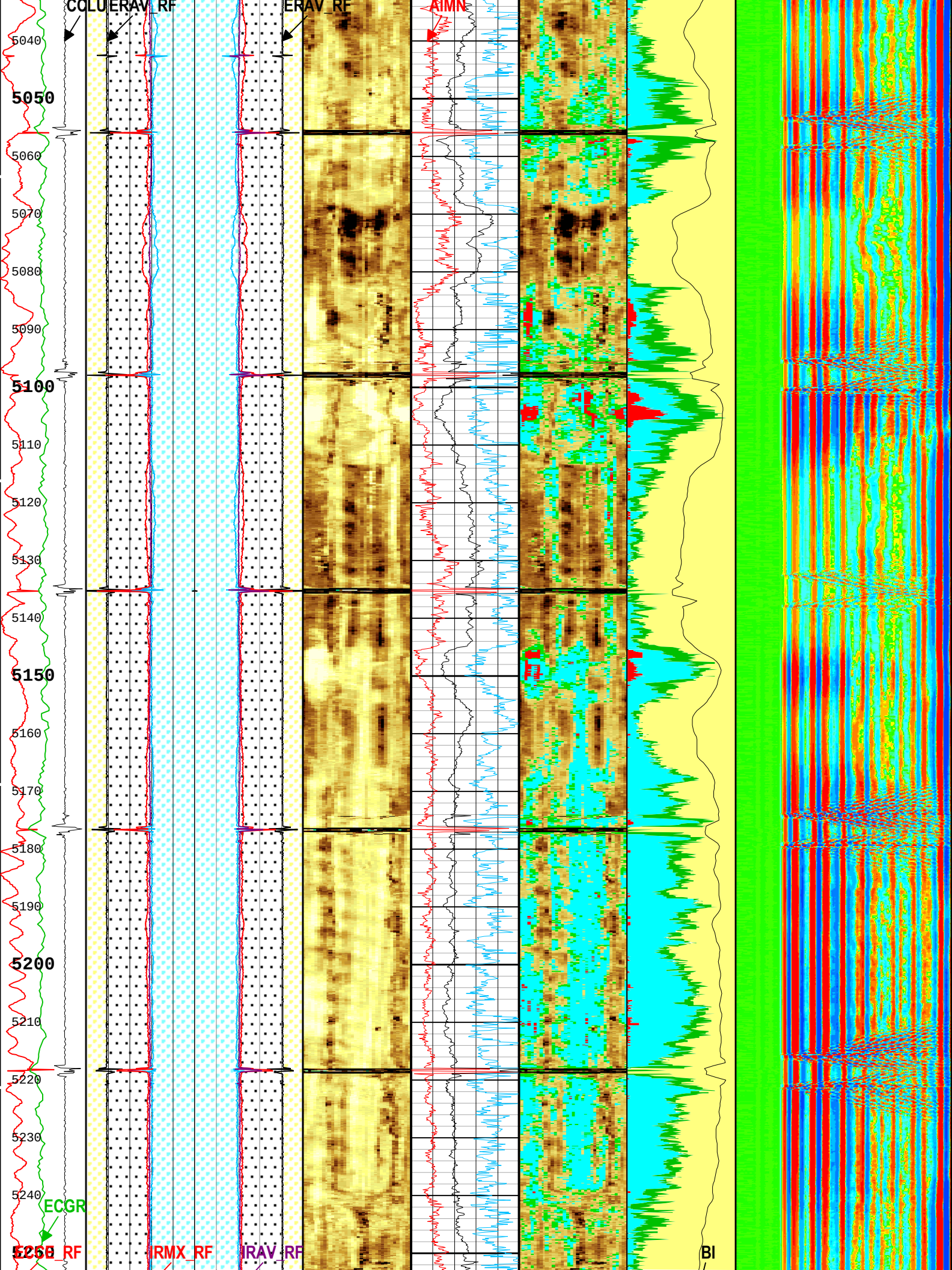
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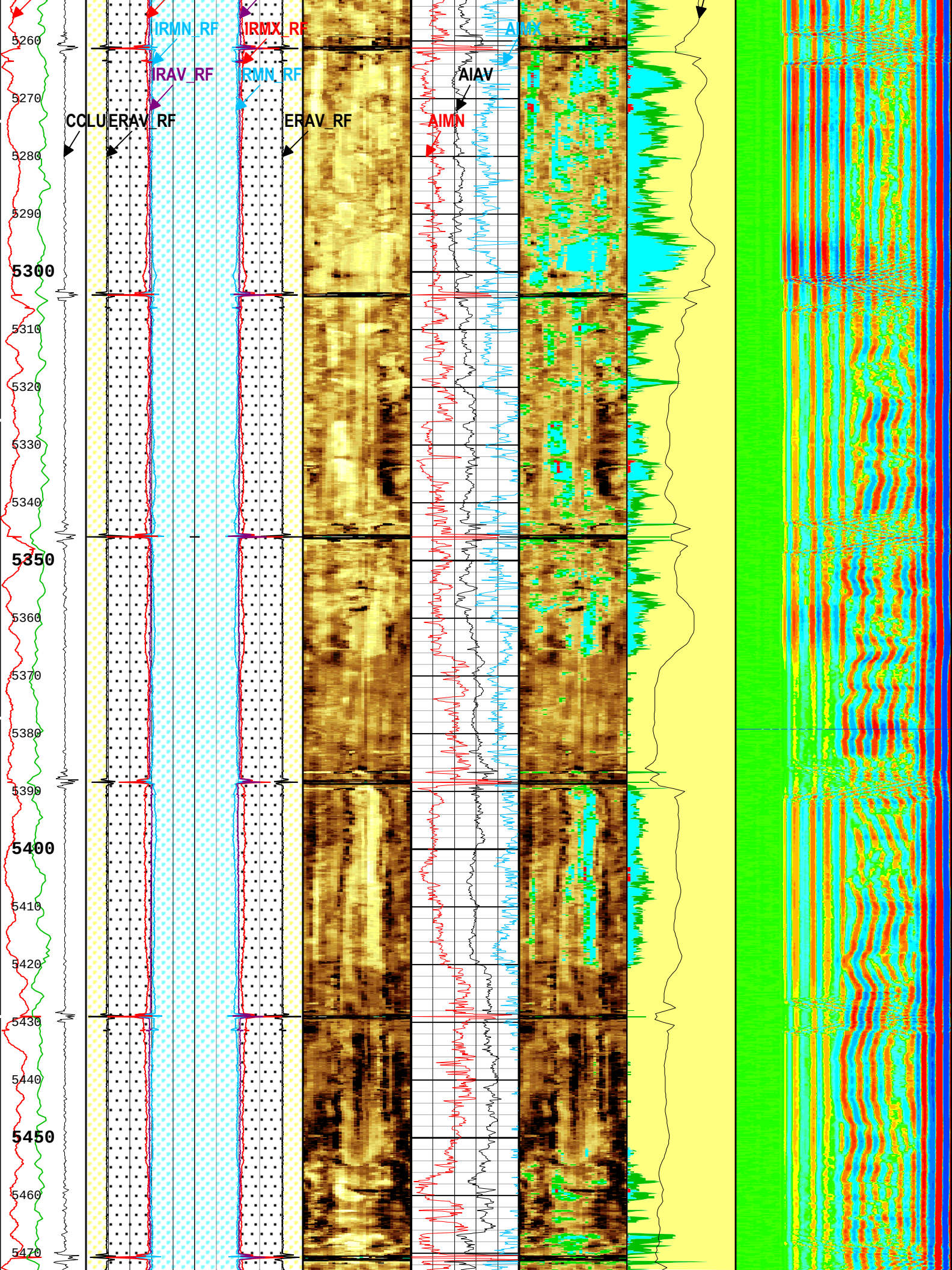
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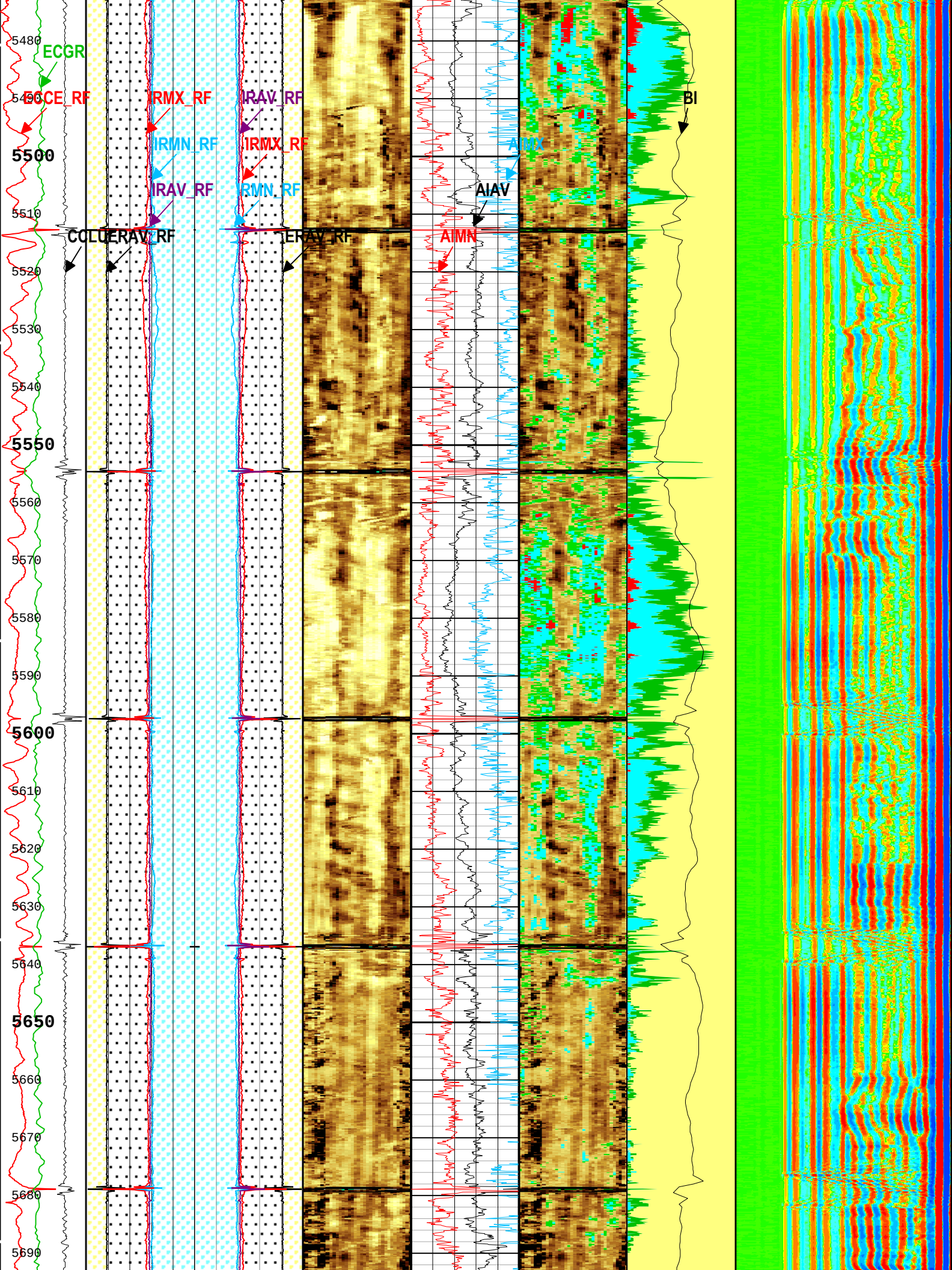
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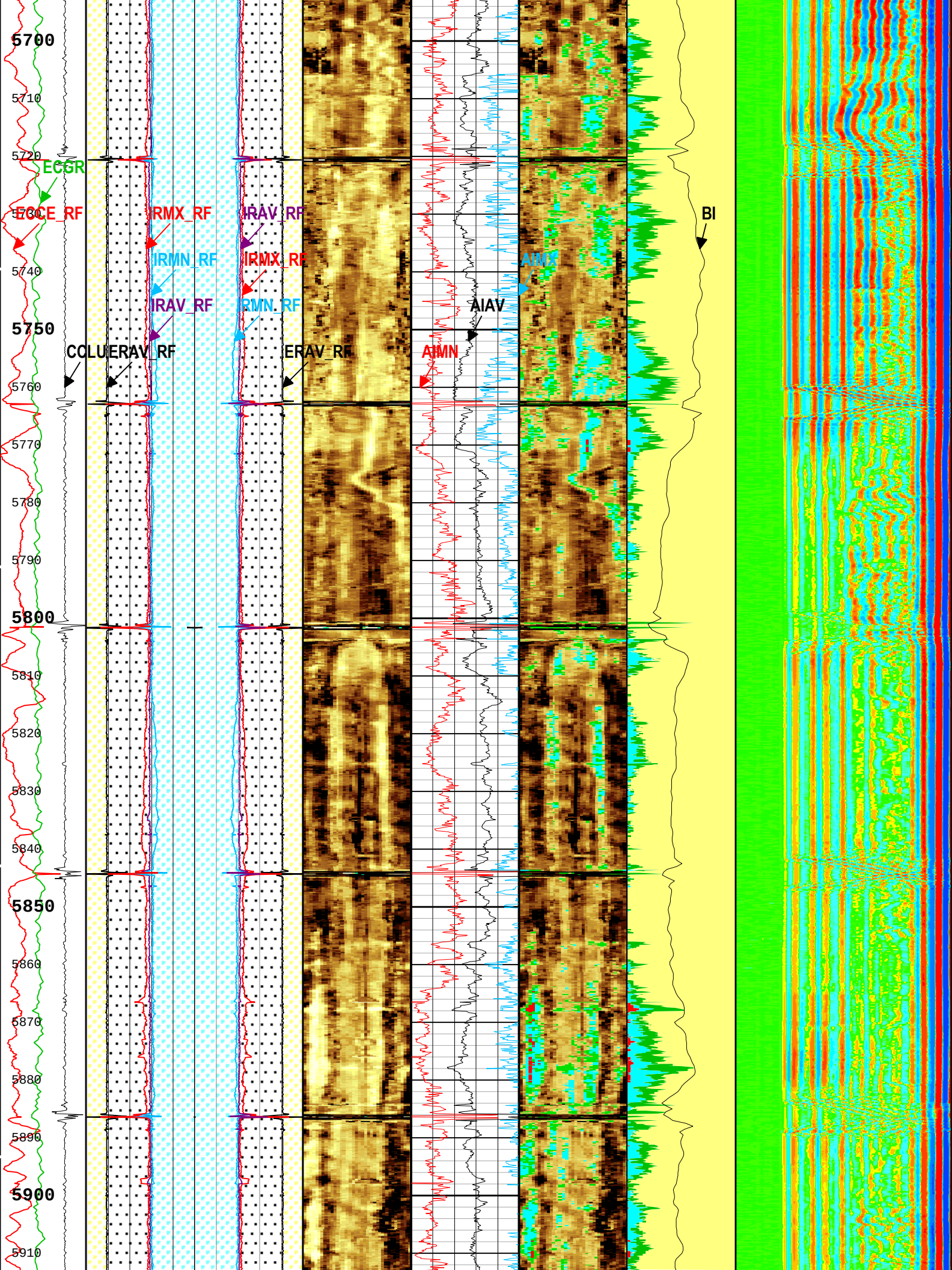
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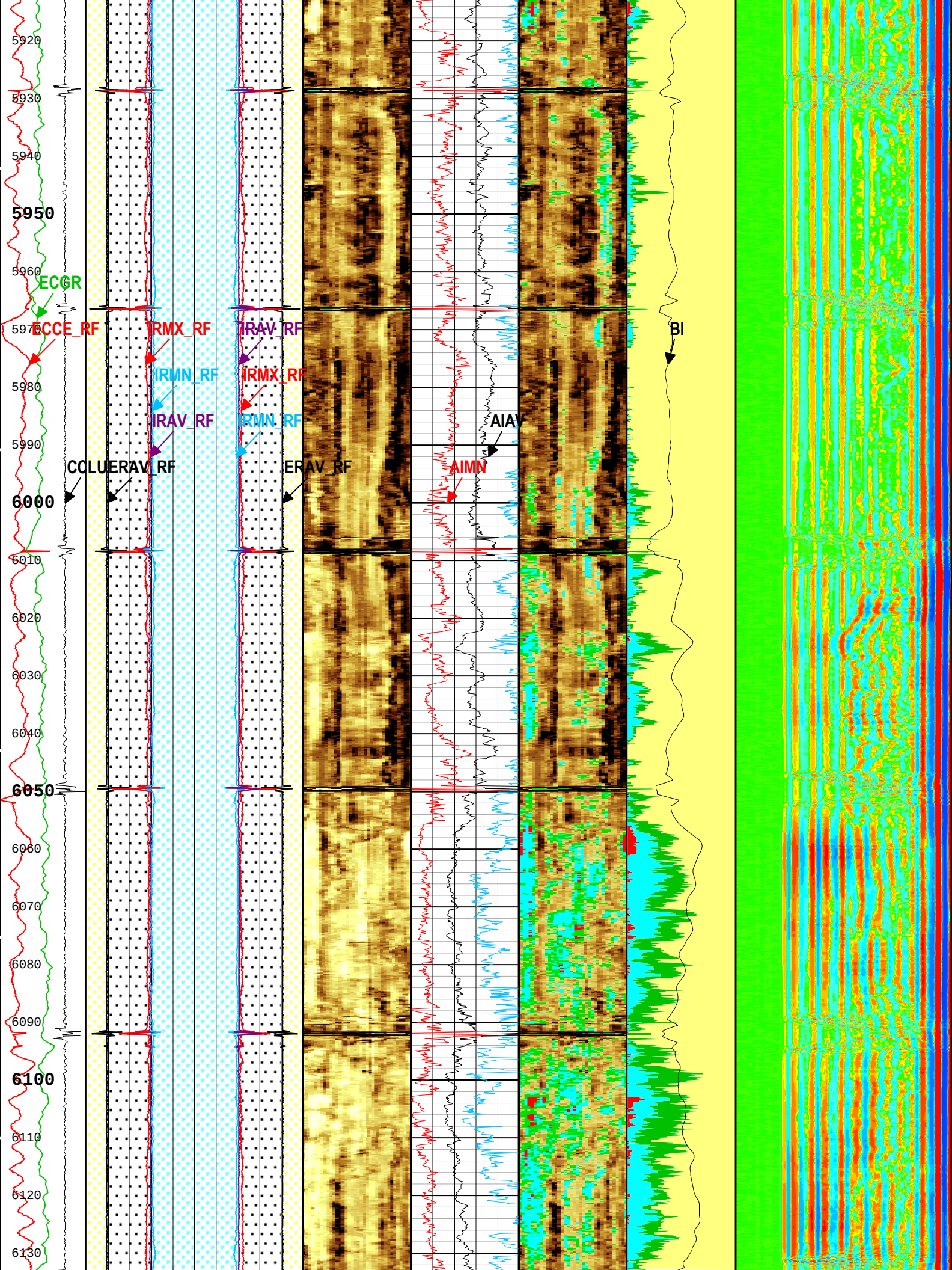
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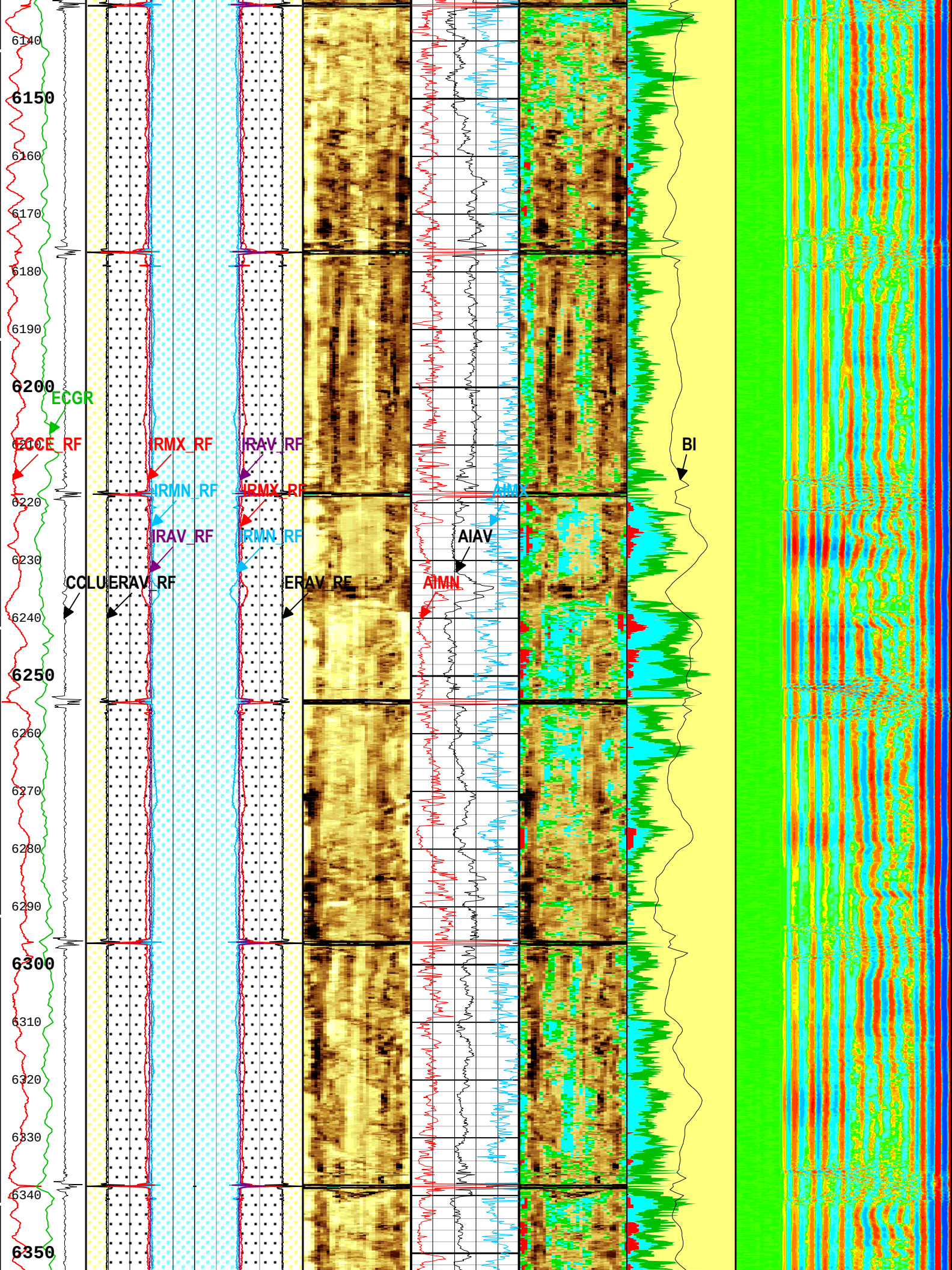
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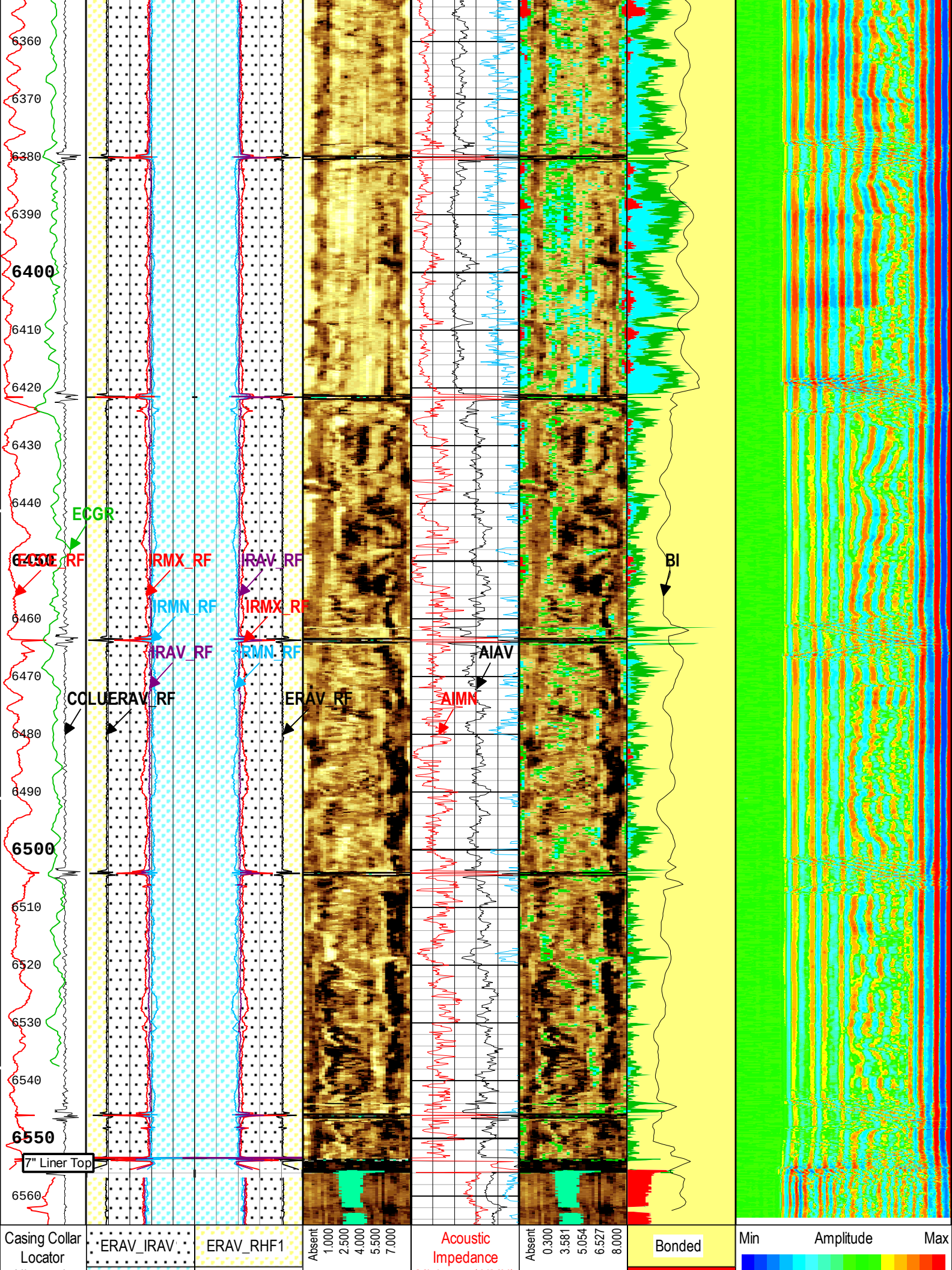
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BI
7" Liner Top
Casing Collar Locator
ERAV_IRAV
ERAV_RHF1
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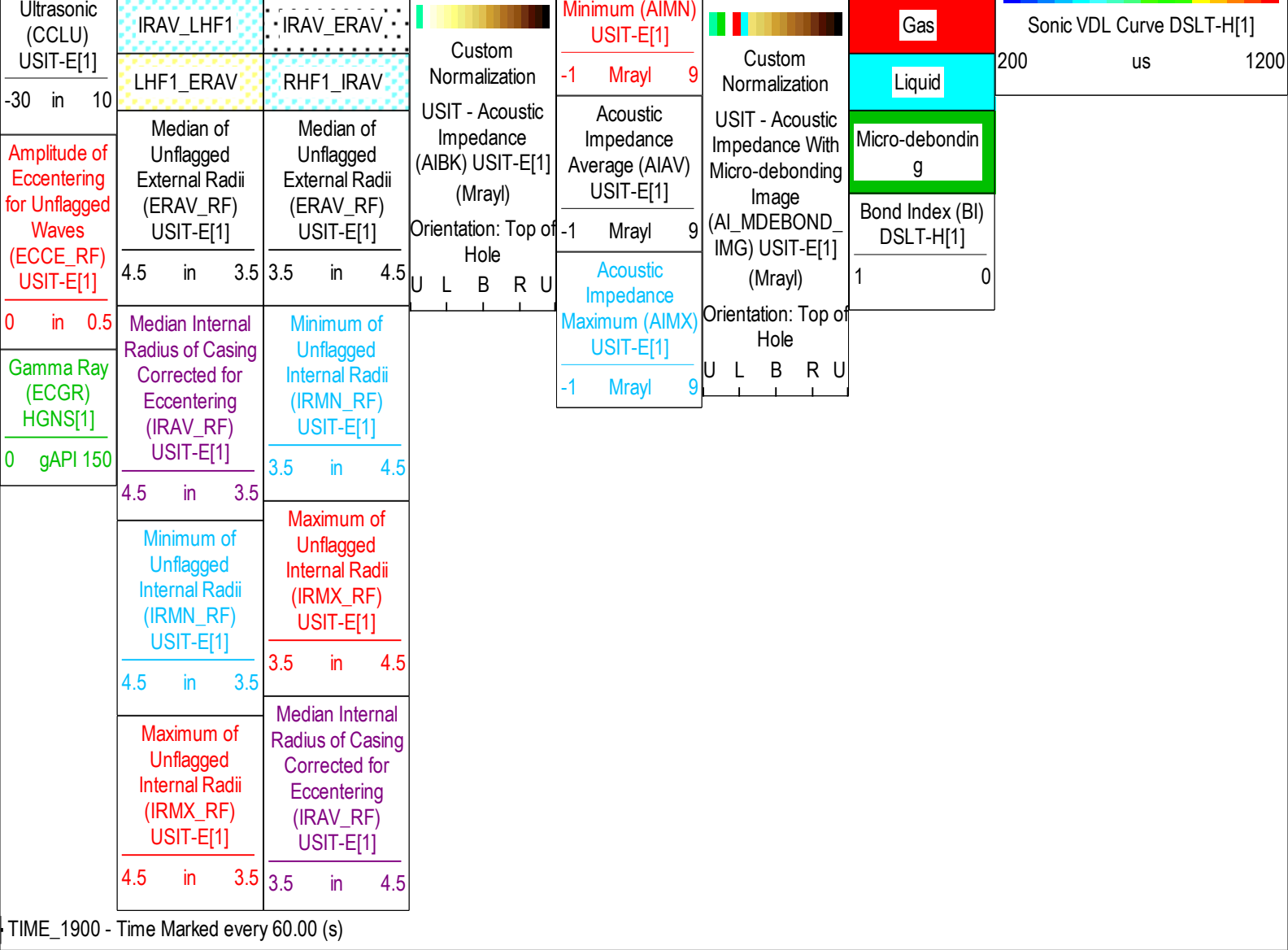
Acoustic Impedance
Absent 0.300 3.581 5.054 6.527 8.000
Bonded
Min Amplitude Max



Description: USI VDL Cement Format: Log (LBV1_USI-VDL (DSLT) Cement 9.625inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 31-Mar-2016 13:14:37

Channel Processing Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
AMSG	Auxiliary Minimum Sliding Gate	DSLT-H	140	us
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BERJ	Bad Echo Rejection	USIT-E	On	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BILI	Bond Index Level for Zone Isolation	DSLT-H	0.8	
BS	Bit Size	WLSESSION	Depth Zoned	in
CASING_PRATIO	Casing Poisson Ratio	USIT-E	Standard Poisson Ratio	
CBLG	CBL Gate Width	DSLT-H	45	us
CBLO	Casing Bottom (Logger)	WLSESSION	7250	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLT-H	55	mV
CDEN	Cement Density	HGNS-H	2	g/cm3
CMCF	CBL Cement Type Compensation Factor	DSLT-H	1	
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	Depth Zoned	in
DETE	Delta-T Detection	DSLT-H	E1	
DFD	Drilling Fluid Density	Borehole	9	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	

DTMD	Borehole Fluid Slowness	Borehole	195	us/ft
FCF	CBL Fluid Compensation Factor	DSLT-H	0.89	
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS	
GOBO_CURR	Good Bond in Arbitrary Cement	DSLT-H	Depth Zoned	mV
GR_MULTIPLIER	Gamma Ray Multiplier	HGNS-H	1	
HEMA	Hematite Presence Flag	Borehole	No	
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	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	DSLT-H	Depth Zoned	dB/ft
MCI	Minimum Cemented Interval for Isolation	DSLT-H	Depth Zoned	ft
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	Depth Zoned	us
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLT-H	100	
MSA	Minimum Sonic Amplitude	DSLT-H	Depth Zoned	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	DSLT-H	Depth Zoned	mV
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1	
NMSG	Near Minimum Sliding Gate	DSLT-H	304	us
NMXG	Near Maximum Sliding Gate	DSLT-H	950	us
NUMP	Number of Detection Passes	DSLT-H	2	
OPLEV	USIT Remove Flagged Data Level	USIT-E	OPT2	
RCOD	Reference Calibrator Outer Diameter	USIT-E	7	in
RCSO	Reference Calibrator Standoff	USIT-E	1.181	in
RCTH	Reference Calibrator Thickness	USIT-E	0.295	in
SDNV	Number of Vertical Samples used for Micro-debonding Computation	USIT-E	5	
SDTHOR	Acoustic Impedance STD Horizontal Threshold for Micro-debonding	USIT-E	0.5	Mrayl
SDTVER	Acoustic Impedance STD Vertical Threshold for Micro-debonding	USIT-E	0.3	Mrayl
SFAF	Sonic Formation Attenuation Factor	DSLT-H	3.25	dB/ft
SGAD	Sliding Gate Status	DSLT-H	Off	
SGCL	Sliding Gate Closing Delta-T	DSLT-H	130	us/ft
SGCW	Sliding Gate Closing Width	DSLT-H	25	us
SGDT	Sliding Gate Delta-T	DSLT-H	57	us/ft
SGW	Sliding Gate Width	DSLT-H	110	us
SLEV	Signal Level for AGC	DSLT-H	5000	mV
SOCN	Standoff Distance	HGNS-H	0.125	in
SOCO	Standoff Correction Option	HGNS-H	No	
TCUB	T^3 Processing Level	USIT-E	Loop	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	Time Zoned	%
HISC	Tool Position: Centered or Eccentered	HGNS-H	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0	Mrayl
UFGDE	Fiberglass Density	USIT-E	1.95	g/cm3
UFGPS	Fiberglass Processing Selection	USIT-E	No	
UFGVL	Fiberglass Velocity	USIT-E	9678.48	ft/s
USI_FSOD	USIT USI Fluid Slowness Fits Casing Outer Diameter	USIT-E	0_OFF	
USI_FVEL_SEL	USI Fluid Velocity Selection	USIT-E	Automatic	
USI_ZMUD_SEL	USI Mud Impedance Selection	USIT-E	Theoretical	
THDP	Thickness Detection Policy	USIT-E	Fundamental	

VCAS	Ultrasonic Transversal Velocity in Casing	USIT-E	51.4	us/ft
VDLG	VDL Manual Gain	DSLT-H	5	
ZCAS	Acoustic Impedance of Casing	USIT-E	46.25	Mrayl
ZCMT	Acoustic Impedance of Cement	DSLT-H	6.8	Mrayl
ZCMT_NEAT	Acoustic Impedance of Cement in Neat Cement	DSLT-H	6.8	Mrayl
ZINI	Initial Estimate of Cement Impedance	USIT-E	-1	Mrayl
ZMUD	Acoustic Impedance of Mud	Borehole	1.6	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	17.5	0	990
BS	12.25	990	6565
THNO	0.4	0	6555
THNO	0.352	6555	6565
GOBO_CURR	3.38	0	6555
GOBO_CURR	2.36	6555	6565
MATT_CURR	10.78	0	6555
MATT_CURR	12.13	6555	6565
MCI	21.68	0	990
MCI	12.98	990	6565
MEAS_WLEN	24.96	0	6555
MEAS_WLEN	21.86	6555	6565
MSA	1.69	0	6555
MSA	1.07	6555	6565
MSA_CURR	1.69	0	6555
MSA_CURR	1.07	6555	6565

All depth are actual.

OneTime Zoned Parameters

Pass Log[7]:Up

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
THDL	65	30-Mar-2016 12:52:22	30-Mar-2016 14:41:26	6590.38	1060.56

Pass Log[8]:Up

THDL	65	30-Mar-2016 14:42:35	30-Mar-2016 14:54:08	1070.97	522.49

Pass Log[10]:Up

THDL	65	30-Mar-2016 14:56:51	30-Mar-2016 15:07:25	531.87	66.25

Pass Log[24]:Up

THDL	70	30-Mar-2016 17:27:30	30-Mar-2016 17:31:02	75.63	4.38

All depth are at tool zero.

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	18	dB
DDEL	Digitizing Delay	DSLT-H	0	us
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	

DOT(DOS)	Distance between Opposite Transducer Faces	USIT-E	2.874	in
MODE	DSLT Acquisition Mode	DSLT-H	CBL	
RATE	DSLT Firing Rate	DSLT-H	15 Hz	
DTFS	DSLT Telemetry Frame Size	DSLT-H	536	
DWCO	Digitizer Word Count	DSLT-H	250	
EMXV	EMEX Voltage	USIT-E	Time Zoned	V
HRES	Horizontal Resolution	USIT-E	10 deg	
MOTOR_PROTECT	Motor Protection	USIT-E	On	
SDTH	Switch Down Threshold	DSLT-H	20000	
SGAI	Selectable Acquisition Gain	DSLT-H	x1	
SUTH	Switch Up Threshold	DSLT-H	1000	
TMUC	Type of Mud	USIT-E	BRI	
UACLV_PERM	Ultrasonic ACLV Permanent	USIT-E	No	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
UMFR	Modulation Frequency	USIT-E	333333	Hz
USFR	Ultrasonic Sampling Frequency	USIT-E	500000	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 500 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 1.5 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	6550	ft
USSP	Ultrasonic Service	USIT-E	USI	
VRES	Vertical Resolution	USIT-E	1.5 in	
WINB	Window Begin Time	USIT-E	Time Zoned	us
WINE	Window End Time	USIT-E	Time Zoned	us
WMOD	Waveform Firing Mode	DSLT-H	Full	

OneTime Zoned Parameters

Pass Log[7]:Up

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
EMXV	40	30-Mar-2016 12:52:22	30-Mar-2016 14:41:26	6590.38	1060.56
WINB	45	30-Mar-2016 12:52:21	30-Mar-2016 13:24:22	6590.38	5043.29
WINB	40	30-Mar-2016 13:24:22	30-Mar-2016 13:24:32	5043.29	5034.45
WINB	35.8	30-Mar-2016 13:24:32	30-Mar-2016 14:41:26	5034.45	1060.56
WINE	120	30-Mar-2016 12:52:22	30-Mar-2016 14:41:26	6590.38	1060.56

Pass Log[8]:Up

EMXV	40	30-Mar-2016 14:42:35	30-Mar-2016 14:54:08	1070.97	522.49
WINB	35.8	30-Mar-2016 14:42:35	30-Mar-2016 14:54:08	1070.97	522.49
WINE	120	30-Mar-2016 14:42:35	30-Mar-2016 14:54:08	1070.97	522.49

Pass Log[10]:Up

EMXV	40	30-Mar-2016 14:56:51	30-Mar-2016 15:07:25	531.87	66.25
WINB	35.8	30-Mar-2016 14:56:51	30-Mar-2016 15:07:25	531.87	66.25
WINE	120	30-Mar-2016 14:56:51	30-Mar-2016 15:07:25	531.87	66.25

Pass Log[24]:Up

EMXV	60	30-Mar-2016 17:26:46	30-Mar-2016 17:29:42	75.63	21.58
EMXV	80	30-Mar-2016 17:29:42	30-Mar-2016 17:31:02	21.58	4.38
WINB	30	30-Mar-2016 17:27:30	30-Mar-2016 17:31:02	75.63	4.38
WINE	125	30-Mar-2016 17:27:30	30-Mar-2016 17:31:02	75.63	4.38

All depth are at tool zero.

One

Main Pass 7" Casing 5 in = 100 ft

Software Version

Acquisition System	Version
Maxwell 2016 SP1	6.1.58882.3100

Computation	Description	Version
CEVAL	Sonic Cement Evaluation Computation Ensemble provides common Parameters and Channels	6.1.58882.3100
Cementation	Cementation Computation Application	6.1.58882.3100

SoftwareVersion_Tool	SoftwareVersion_Run Version	SoftwareVersion_Build Version
WAFE-SEC	Synergy SV451EC version 9.10	Synergy SV451EC version 9.10
WAFE-FEC	Synergy SV451EC version 9.10	Synergy SV451EC version 9.10
WAFE-TMDI	Synergy SV451EC version 46.19	Synergy SV451EC version 46.19

Tool Elements	Description	Software Version	Firmware Version
HGNS-H	HILT Gamma-Ray and Neutron Sonde, 150 degC	6.1.58882.3100	2.0
SLS-E	Sonic Logging Sonde E supports 3'-5'BHC DT and CBL/VDL	6.1.58882.3100	143.0
USI-SENSOR	USIT Transducer Element	6.1.58882.3100	DSP: v1.82

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[3]:Up	Up	6537.39 ft	7084.95 ft	30-Mar-2016 12:15:32 PM	30-Mar-2016 12:28:34 PM	ON	-6.00 ft	No

All depths are referenced to toolstring zero

Log

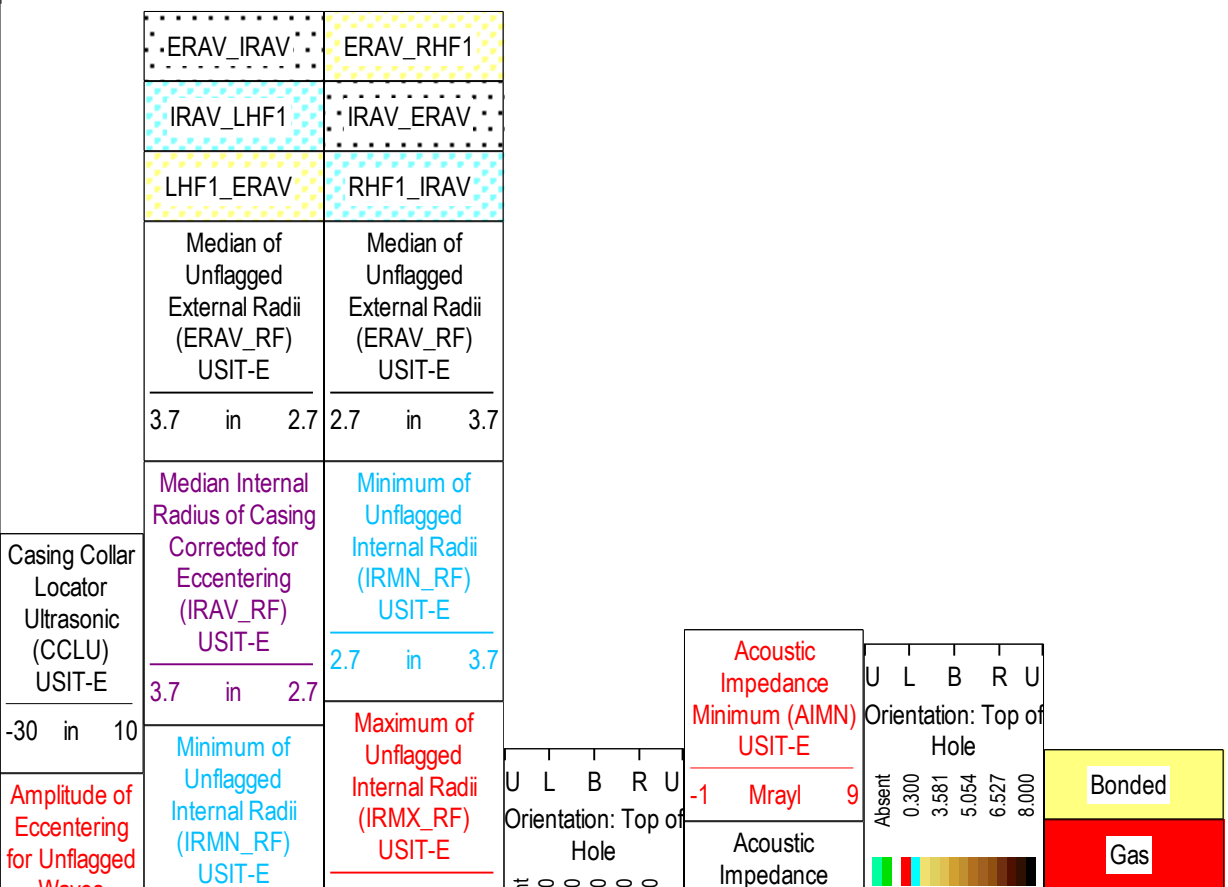
Company:Southern California Gas Company Well:Fernando Fee 32-A

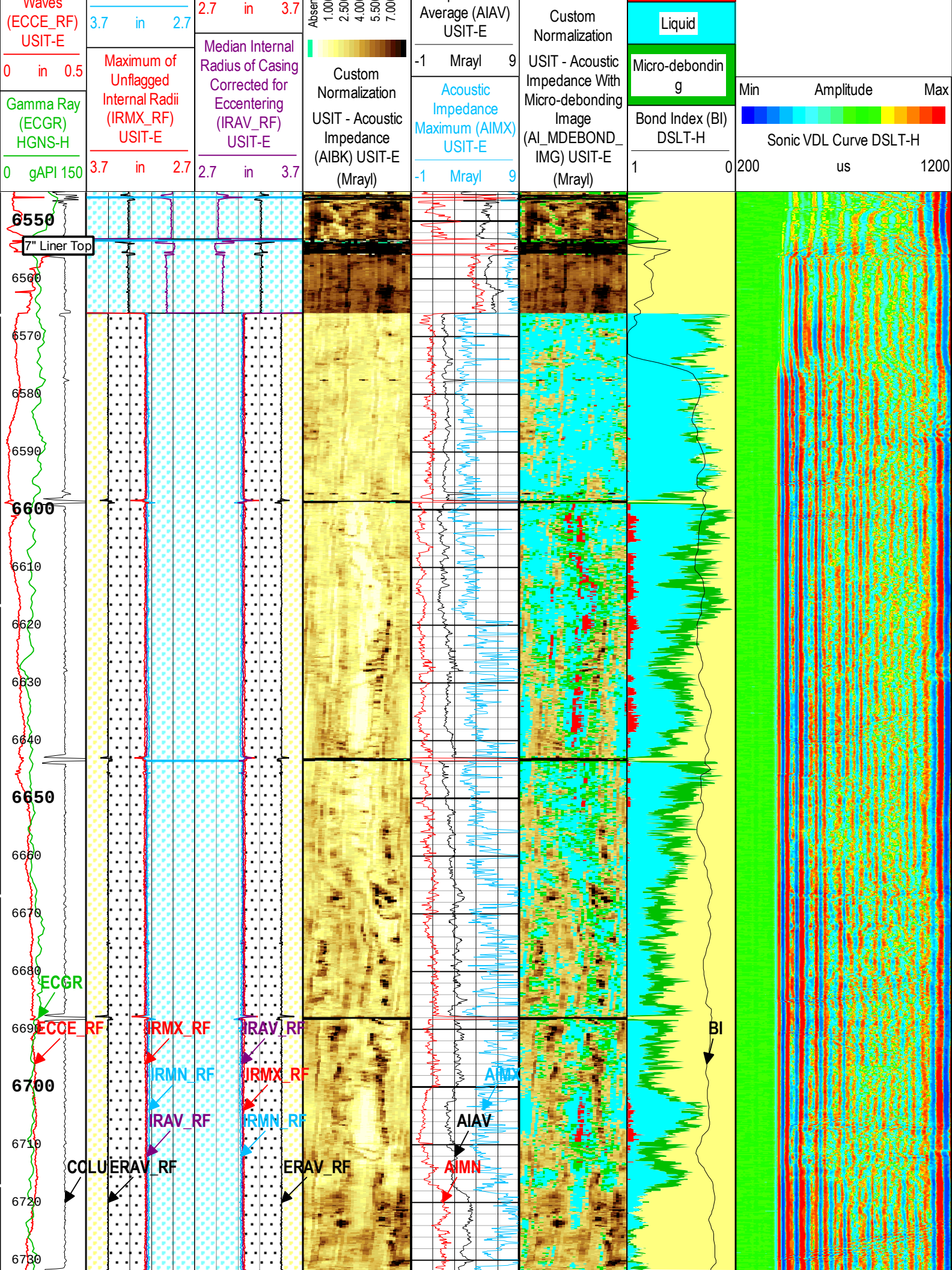
One: Log[3]:Up:S005

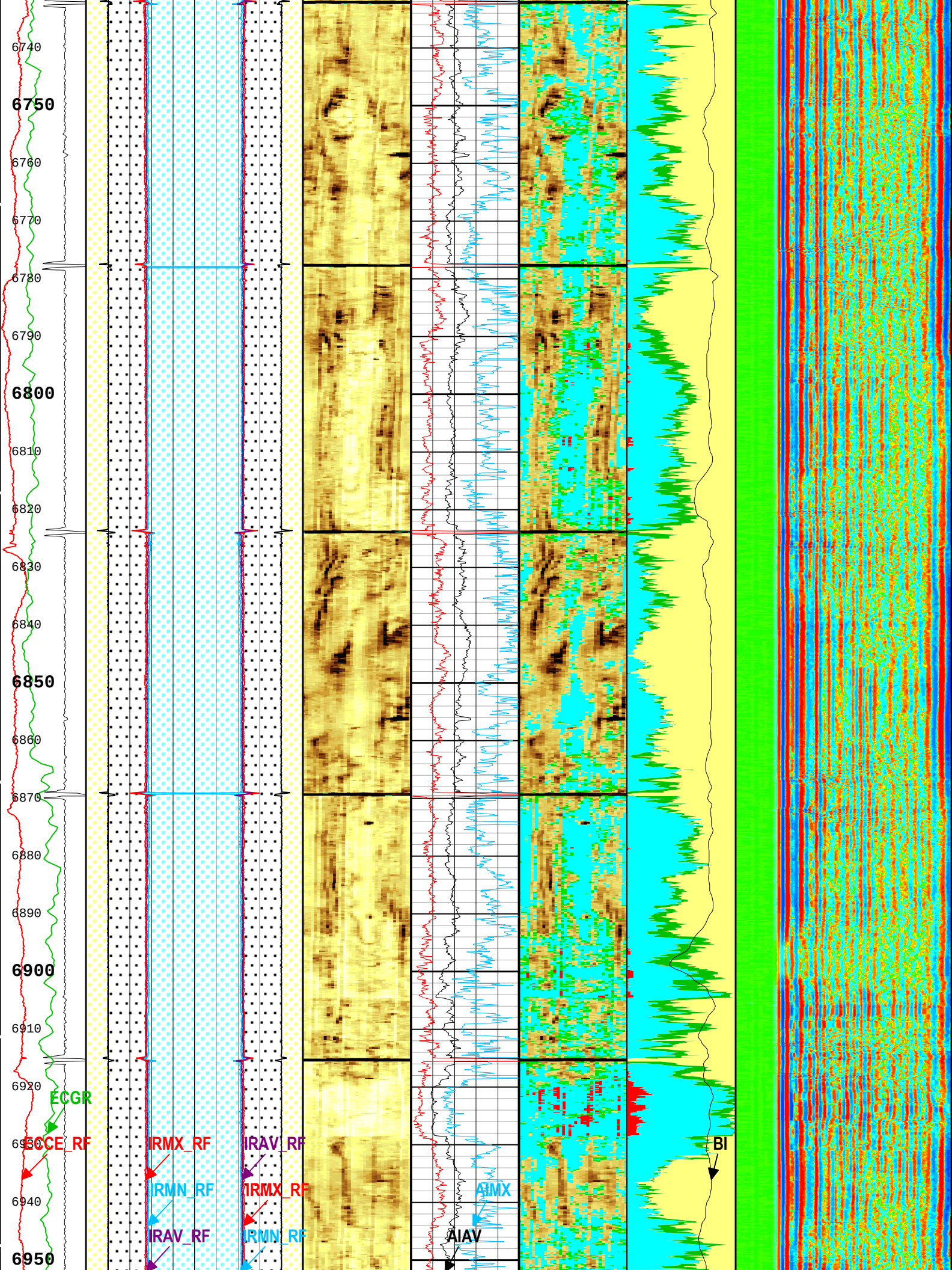
Description: USI VDL Cement Format: Log (LBV1_USI-VDL (DSLT) Cement 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth

Creation Date: 31-Mar-2016 13:15:20

TIME_1900 - Time Marked every 60.00 (s)




Waves (ECCE_RF) USIT-E
0 in 0.5
Gamma Ray (ECGR) HGNS-H
0 gAPI 150
3.7 in 2.7
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.7 in 2.7
2.7 in 3.7
Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
2.7 in 3.7
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)
Average (AIAV) USIT-E
-1 Mrayl 9
Acoustic Impedance Maximum (AIMX) USIT-E
-1 Mrayl 9
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E (Mrayl)
Liquid
Micro-debonding
Bond Index (BI) DSLT-H
1 0
Min Amplitude Max
Sonic VDL Curve DSLT-H
200 us 1200
6550
7" Liner Top
6560
6570
6580
6590
6600
6610
6620
6630
6640
6650
6660
6670
6680
6690
6700
6710
6720
6730
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
COLU
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI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6930
6940
6950
ECGR
CCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
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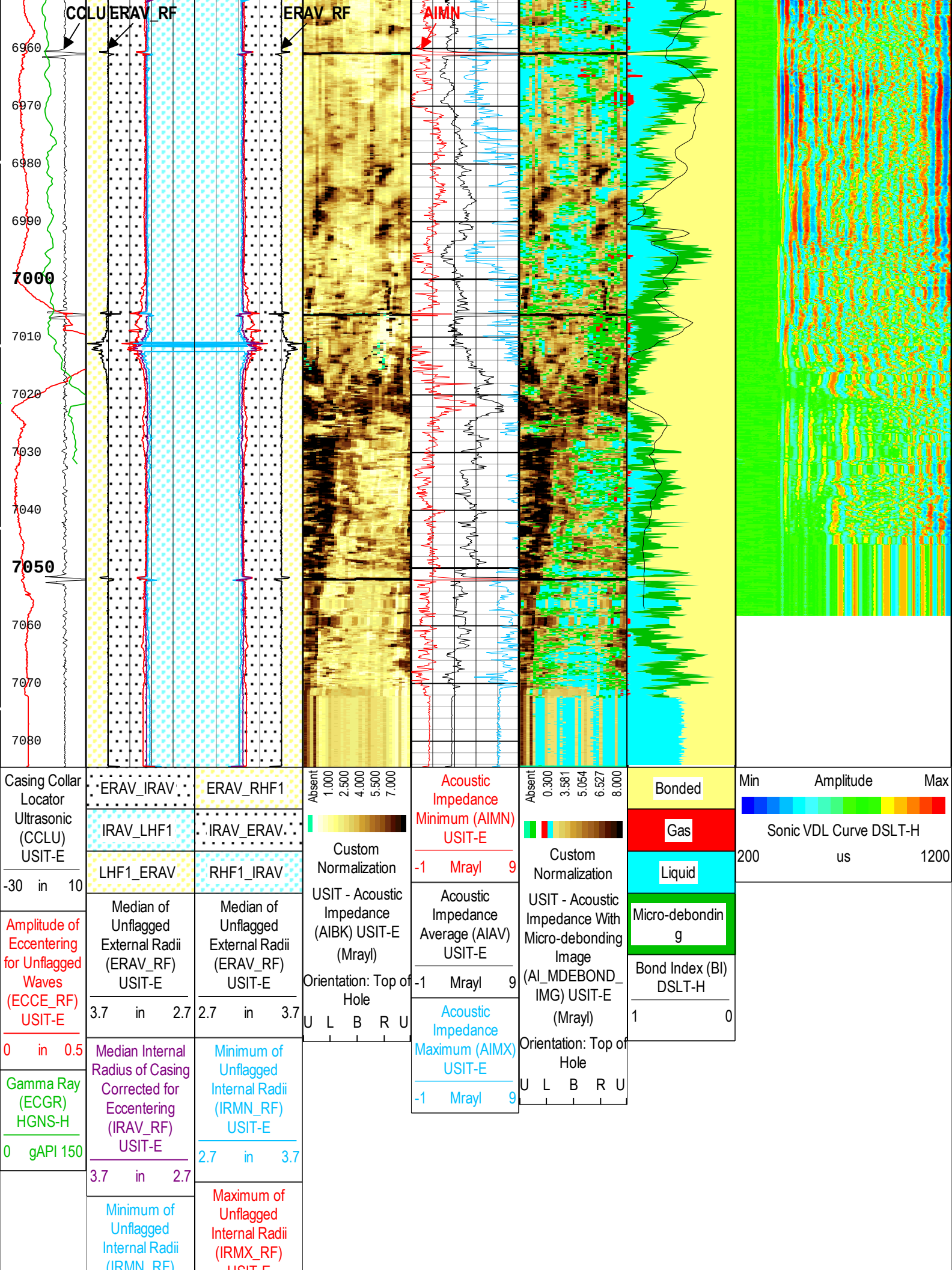
IRAV_RF
IRMN_RF
AIMX
AIAV
BI


CCLU
ERAV_RF
ERAV_RF
AIMN
6960
6970
6980
6990
7000
7010
7020
7030
7040
7050
7060
7070
7080
Casing Collar Locator Ultrasonic (CCLU) USIT-E
-30 in 10
Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E
0 in 0.5
Gamma Ray (ECGR) HGNS-H
0 gAPI 150
ERAV_IRAV
IRAV_LHF1
LHF1_ERAV
Median of Unflagged External Radii (ERAV_RF) USIT-E
3.7 in 2.7
Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
3.7 in 2.7
Minimum of Unflagged Internal Radii (IRMN_RF)
ERAV_RHF1
IRAV_ERAV
RHF1_IRAV
Median of Unflagged External Radii (ERAV_RF) USIT-E
2.7 in 3.7
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
2.7 in 3.7
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
Absent 1.000 2.500 4.000 5.500 7.000
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)
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 0.300 3.581 5.054 6.527 8.000
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E (Mrayl)
Orientation: Top of Hole
U L B R U
Bonded
Gas
Liquid
Micro-debonding
Bond Index (BI) DSLT-H
1 0
Min Amplitude Max
Sonic VDL Curve DSLT-H
200 us 1200

(IRMN_RF) USIT-E	USIT-E
3.7 in 2.7	2.7 in 3.7
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E	Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
3.7 in 2.7	2.7 in 3.7

TIME_1900 - Time Marked every 60.00 (s)

Description: USI VDL Cement Format: Log (LBV1_USI-VDL (DSLT) Cement 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 31-Mar-2016 13:15:20

Channel Processing Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
AMSG	Auxiliary Minimum Sliding Gate	DSLT-H	140	us
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BERJ	Bad Echo Rejection	USIT-E	On	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BILI	Bond Index Level for Zone Isolation	DSLT-H	0.8	
BS	Bit Size	WLSESSION	Depth Zoned	in
CASING_PRATIO	Casing Poisson Ratio	USIT-E	Standard Poisson Ratio	
CBLG	CBL Gate Width	DSLT-H	45	us
CBLO	Casing Bottom (Logger)	WLSESSION	7250	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLT-H	Depth Zoned	mV
CDEN	Cement Density	HGNS-H	2	g/cm3
CMCF	CBL Cement Type Compensation Factor	DSLT-H	1	
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	Depth Zoned	in
DETE	Delta-T Detection	DSLT-H	E1	
DFD	Drilling Fluid Density	Borehole	9	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	195	us/ft
FCF	CBL Fluid Compensation Factor	DSLT-H	0.89	
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS	
GOBO_CURR	Good Bond in Arbitrary Cement	DSLT-H	Depth Zoned	mV
GR_MULTIPLIER	Gamma Ray Multiplier	HGNS-H	1	
HEMA	Hematite Presence Flag	Borehole	No	
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	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	DSLT-H	Depth Zoned	dB/ft
MCI	Minimum Cemented Interval for Isolation	DSLT-H	Depth Zoned	ft
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	Depth Zoned	us
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLT-H	100	
MSA	Minimum Sonic Amplitude	DSLT-H	Depth Zoned	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	DSLT-H	Depth Zoned	mV
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1	

NMSG	Near Minimum Sliding Gate	DSLT-H	278	us
NMXG	Near Maximum Sliding Gate	DSLT-H	950	us
NUMP	Number of Detection Passes	DSLT-H	2	
OPLEV	USIT Remove Flagged Data Level	USIT-E	OPT2	
RCOD	Reference Calibrator Outer Diameter	USIT-E	7	in
RCSO	Reference Calibrator Standoff	USIT-E	1.181	in
RCTH	Reference Calibrator Thickness	USIT-E	0.295	in
SDNV	Number of Vertical Samples used for Micro-debonding Computation	USIT-E	5	
SDTHOR	Acoustic Impedance STD Horizontal Threshold for Micro-debonding	USIT-E	0.5	Mrayl
SDTVER	Acoustic Impedance STD Vertical Threshold for Micro-debonding	USIT-E	0.3	Mrayl
SFAF	Sonic Formation Attenuation Factor	DSLT-H	3.25	dB/ft
SGAD	Sliding Gate Status	DSLT-H	Off	
SGCL	Sliding Gate Closing Delta-T	DSLT-H	130	us/ft
SGCW	Sliding Gate Closing Width	DSLT-H	25	us
SGDT	Sliding Gate Delta-T	DSLT-H	57	us/ft
SGW	Sliding Gate Width	DSLT-H	110	us
SLEV	Signal Level for AGC	DSLT-H	5000	mV
SOCN	Standoff Distance	HGNS-H	0.125	in
SOCO	Standoff Correction Option	HGNS-H	No	
TCUB	T^3 Processing Level	USIT-E	Loop	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	130	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	65	%
HISC	Tool Position: Centered or Eccentered	HGNS-H	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0	Mrayl
UFGDE	Fiberglass Density	USIT-E	1.95	g/cm3
UFGPS	Fiberglass Processing Selection	USIT-E	No	
UFGVL	Fiberglass Velocity	USIT-E	9678.48	ft/s
USI_FSOD	USIT USI Fluid Slowness Fits Casing Outer Diameter	USIT-E	0_OFF	
USI_FVEL_SEL	USI Fluid Velocity Selection	USIT-E	Automatic	
USI_ZMUD_SEL	USI Mud Impedance Selection	USIT-E	Theoretical	
THDP	Thickness Detection Policy	USIT-E	Fundamental	
VCAS	Ultrasonic Transversal Velocity in Casing	USIT-E	51.4	us/ft
VDLG	VDL Manual Gain	DSLT-H	5	
ZCAS	Acoustic Impedance of Casing	USIT-E	46.25	Mrayl
ZCMT	Acoustic Impedance of Cement	DSLT-H	6.8	Mrayl
ZCMT_NEAT	Acoustic Impedance of Cement in Neat Cement	DSLT-H	6.8	Mrayl
ZINI	Initial Estimate of Cement Impedance	USIT-E	-1	Mrayl
ZMUD	Acoustic Impedance of Mud	Borehole	1.6	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	6545	7022
BS	7.5	7022	7084.5
CBRA	55	6545	6566
CBRA	62	6566	7084.5
THNO	0.4	6545	6555
THNO	0.352	6555	6566
THNO	0.362	6566	7084.5

GOBO_CURR	3.38	6545	6555
GOBO_CURR	2.36	6555	6566
GOBO_CURR	2.89	6566	7084.5
MATT_CURR	10.78	6545	6555
MATT_CURR	12.13	6555	6566
MATT_CURR	11.82	6566	7084.5
MCI	12.98	6545	7022
MCI	10	7022	7084.5
MEAS_WLEN	24.96	6545	6555
MEAS_WLEN	21.86	6555	6566
MEAS_WLEN	22.5	6566	7084.5
MSA	1.69	6545	6555
MSA	1.07	6555	6566
MSA	1.34	6566	7084.5
MSA_CURR	1.69	6545	6555
MSA_CURR	1.07	6555	6566
MSA_CURR	1.34	6566	7084.5

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	18	dB
DDEL	Digitizing Delay	DSLT-H	0	us
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
DOT(DOS)	Distance between Opposite Transducer Faces	USIT-E	2.874	in
MODE	DSLT Acquisition Mode	DSLT-H	CBL	
RATE	DSLT Firing Rate	DSLT-H	15 Hz	
DTFS	DSLT Telemetry Frame Size	DSLT-H	536	
DWCO	Digitizer Word Count	DSLT-H	250	
EMXV	EMEX Voltage	USIT-E	40	V
HRES	Horizontal Resolution	USIT-E	10 deg	
MOTOR_PROTECT	Motor Protection	USIT-E	On	
SDTH	Switch Down Threshold	DSLT-H	20000	
SGAI	Selectable Acquisition Gain	DSLT-H	x1	
SUTH	Switch Up Threshold	DSLT-H	1000	
TMUC	Type of Mud	USIT-E	BRI	
UACLV_PERM	Ultrasonic ACLV Permanent	USIT-E	No	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
UMFR	Modulation Frequency	USIT-E	333333	Hz
USFR	Ultrasonic Sampling Frequency	USIT-E	500000	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 500 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 1.5 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	7080	ft
USSP	Ultrasonic Service	USIT-E	USI	
VRES	Vertical Resolution	USIT-E	1.5 in	
WINB	Window Begin Time	USIT-E	14.33	us
WINE	Window End Time	USIT-E	90	us
WMOD	Waveform Firing Mode	DSLT-H	Full	

Composite 1

Composite 8-5/8" Casing 5 IN = 100 FT

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[7]:Up	Up	1028.13 ft	6590.51 ft	30-Mar-2016 12:52:21 PM	30-Mar-2016 2:41:26 PM	ON	-5.08 ft	Yes
One	Log[8]:Up	Up	481.66 ft	1097.23 ft	30-Mar-2016 2:41:59 PM	30-Mar-2016 2:54:08 PM	ON	-5.14 ft	Yes
One	Log[10]:Up	Up	47.88 ft	548.03 ft	30-Mar-2016 2:56:22 PM	30-Mar-2016 3:07:25 PM	ON	-4.95 ft	Yes
One	Log[24]:Up	Up	4.33 ft	104.64 ft	30-Mar-2016 5:26:46 PM	30-Mar-2016 5:31:02 PM	ON	0.26 ft	No

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Fernando Fee 32-A

Composite 1:S005

Description: USI Composite Format: Log (LBV1_USI Composite 9.625inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth

Creation Date: 31-Mar-2016 13:15:28

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

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

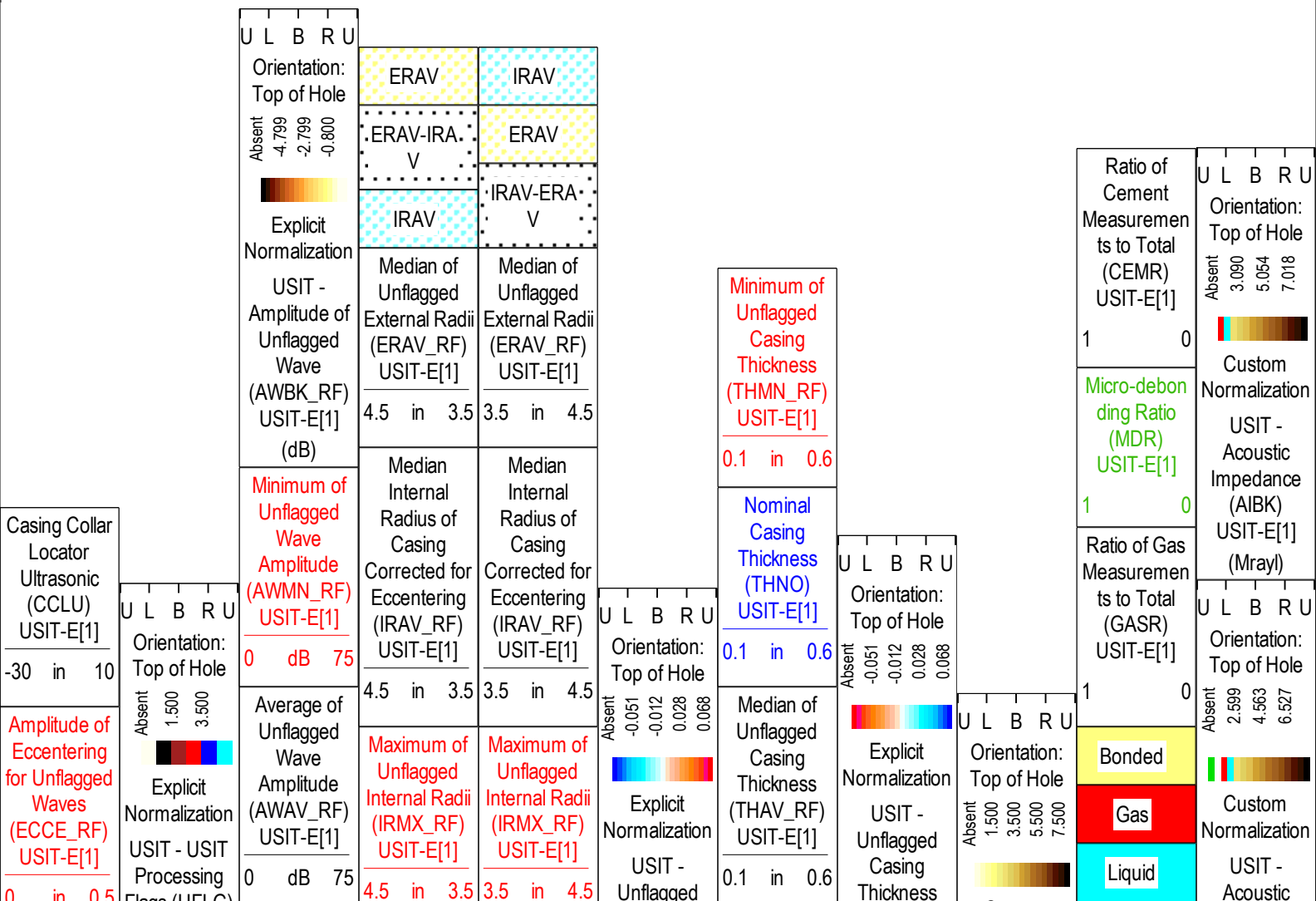
Pulse Origin Not Detected

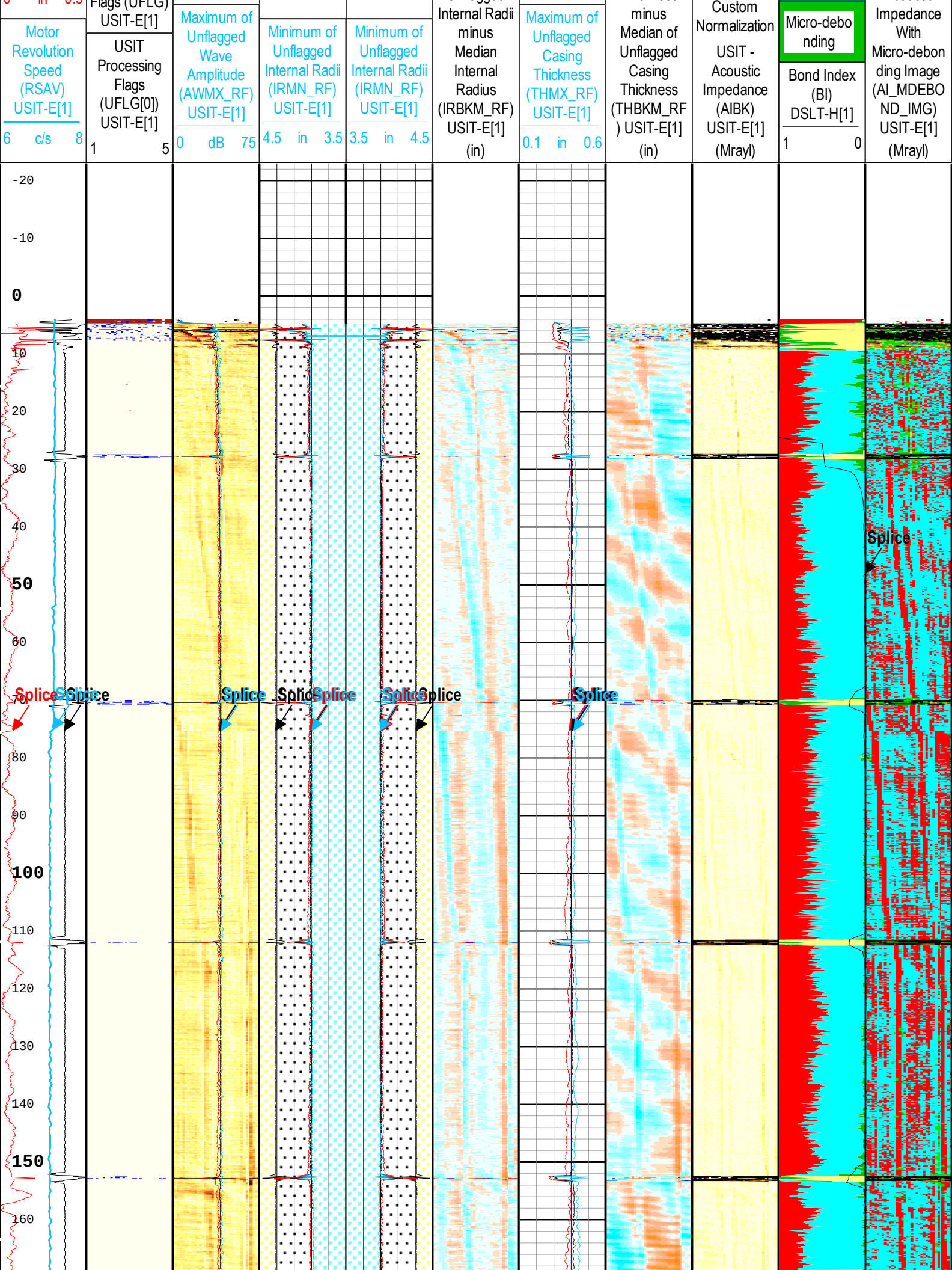
WINLEN Error

Casing Thickness Error

Loop Processing Error

TIME_1900 - Time Marked every 60.00 (s)




Motor Revolution Speed (RSAV) USIT-E[1]
6 c/s 8
Flags (UFLG) USIT-E[1]
USIT Processing Flags (UFLG[0]) USIT-E[1]
1 5
Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E[1]
0 dB 75
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
4.5 in 3.5
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
3.5 in 4.5
Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E[1] (in)
Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E[1]
0.1 in 0.6
minus Median of Unflagged Casing Thickness (THBKM_RF) USIT-E[1] (in)
Custom Normalization USIT - Acoustic Impedance (AIBK) USIT-E[1] (Mrayl)
Micro-debonding
Bond Index (BI) DSLT-H[1]
1 0
Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E[1] (Mrayl)
-20
-10
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
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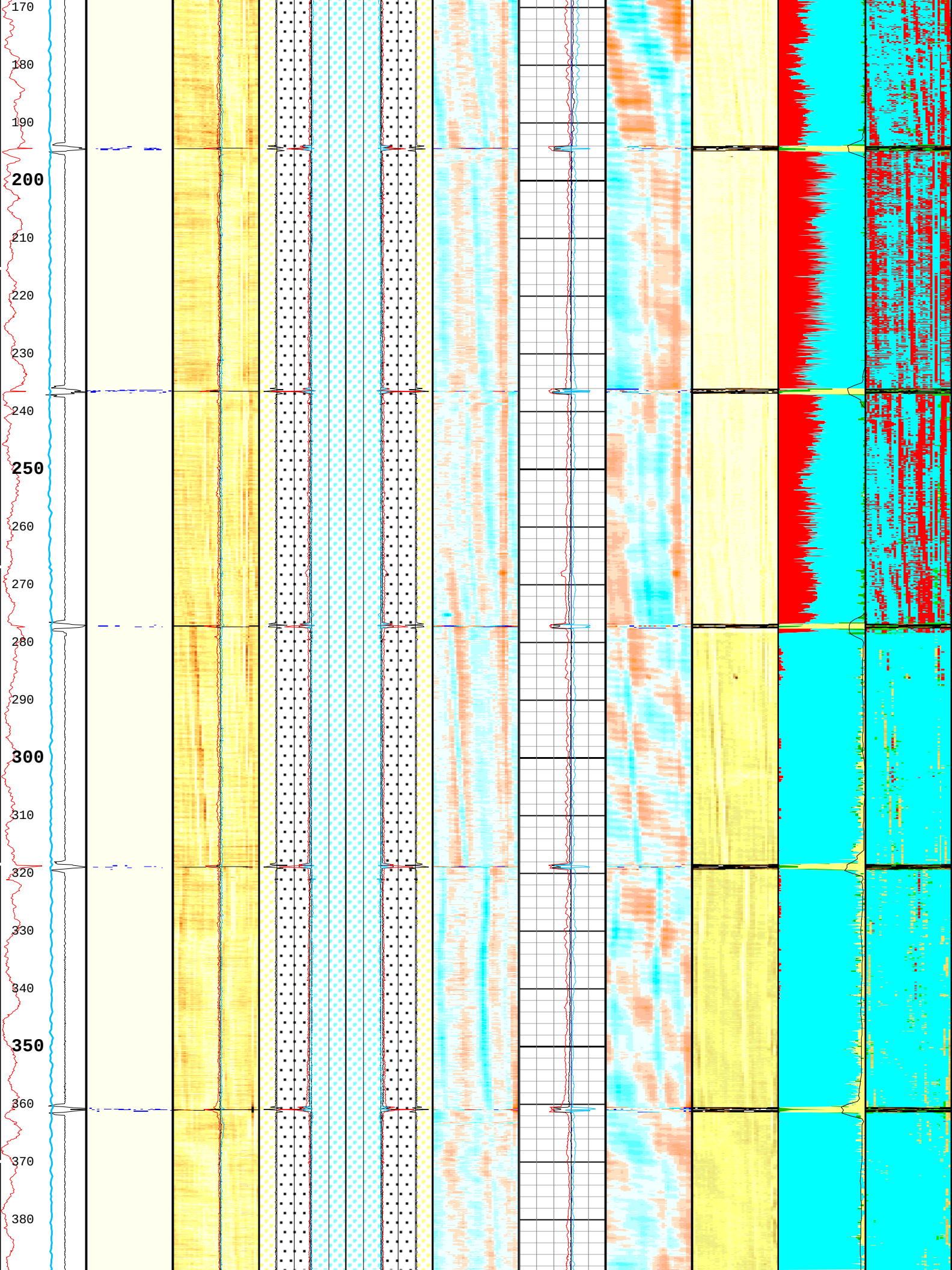
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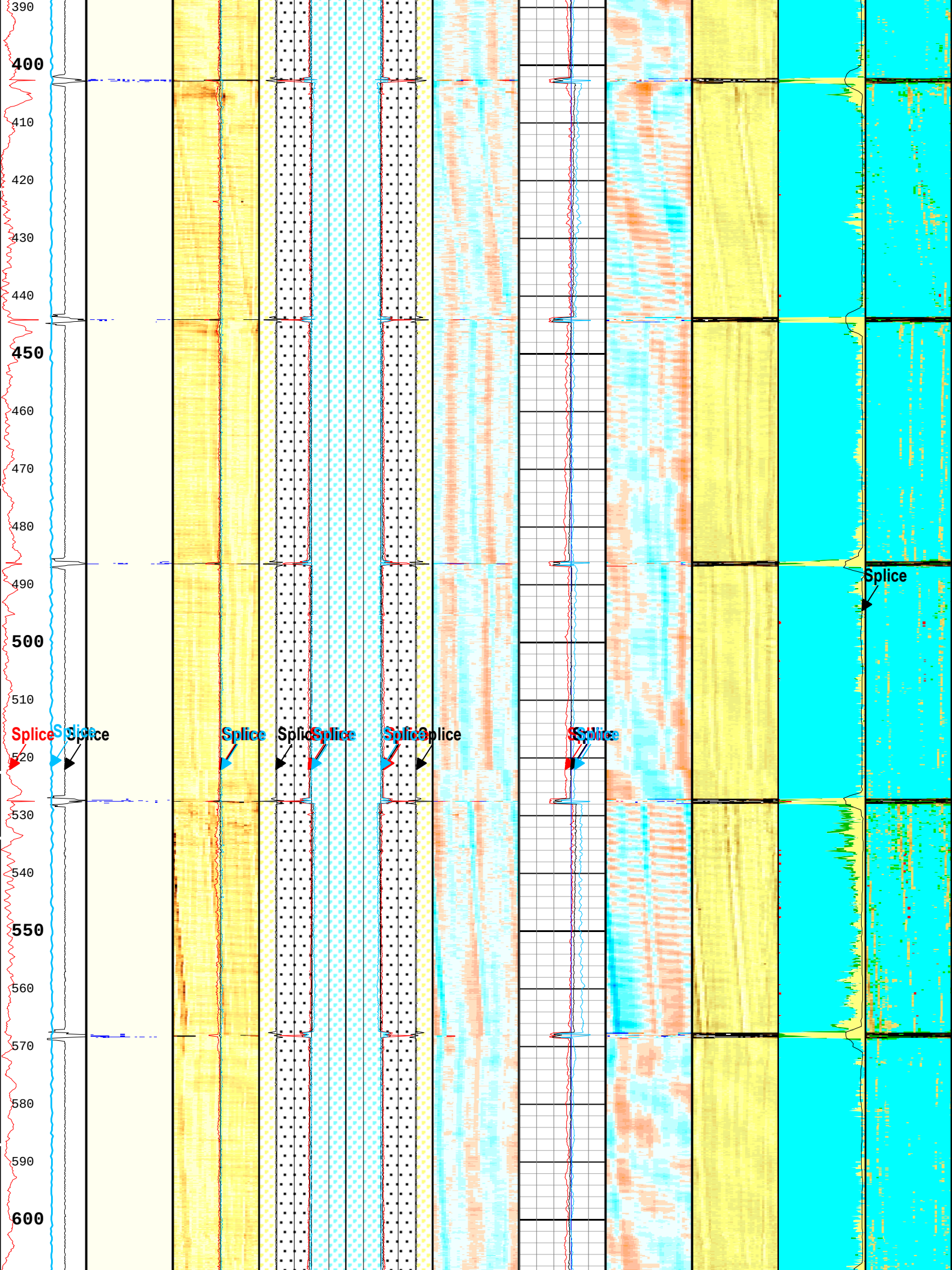
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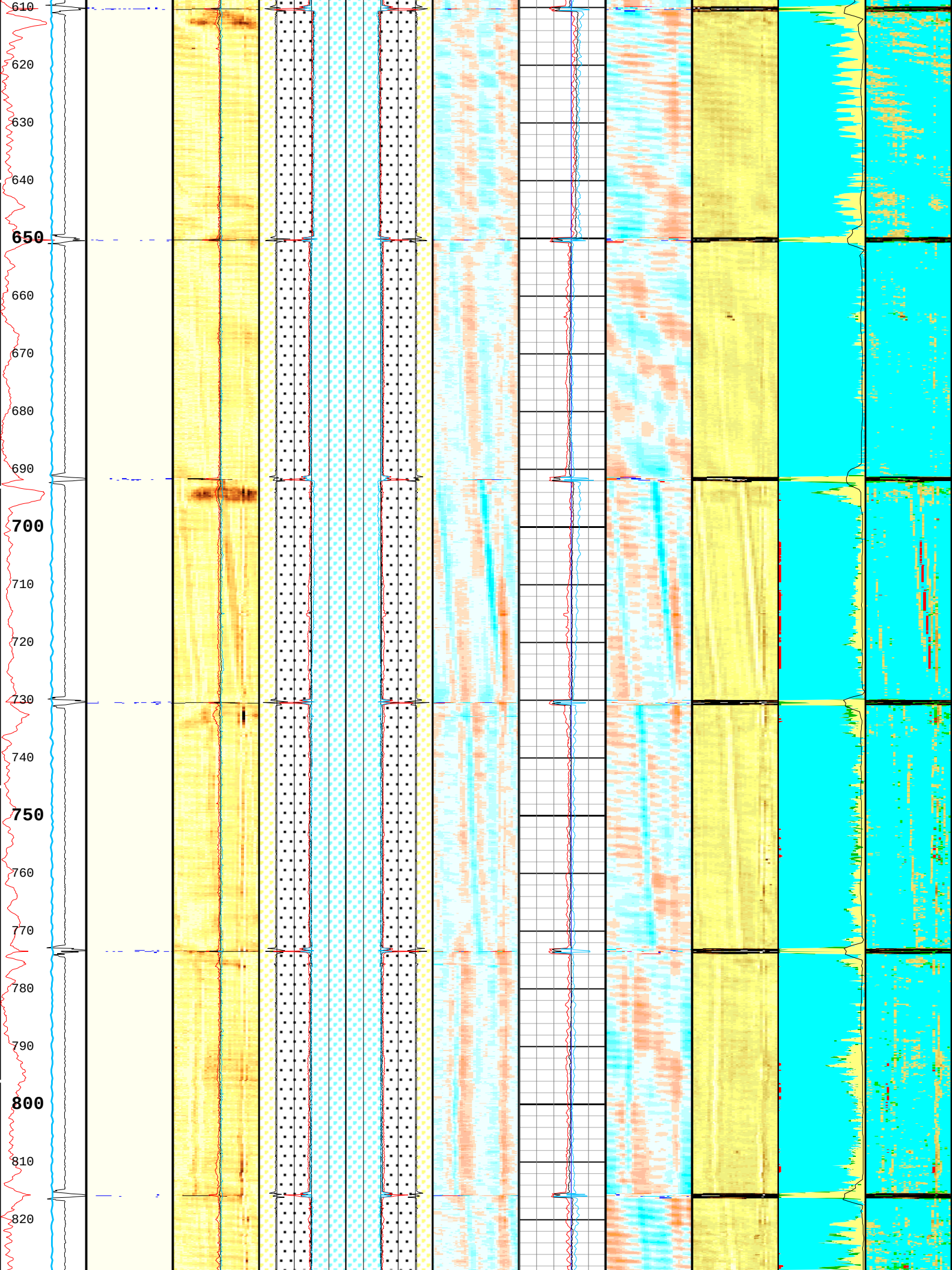
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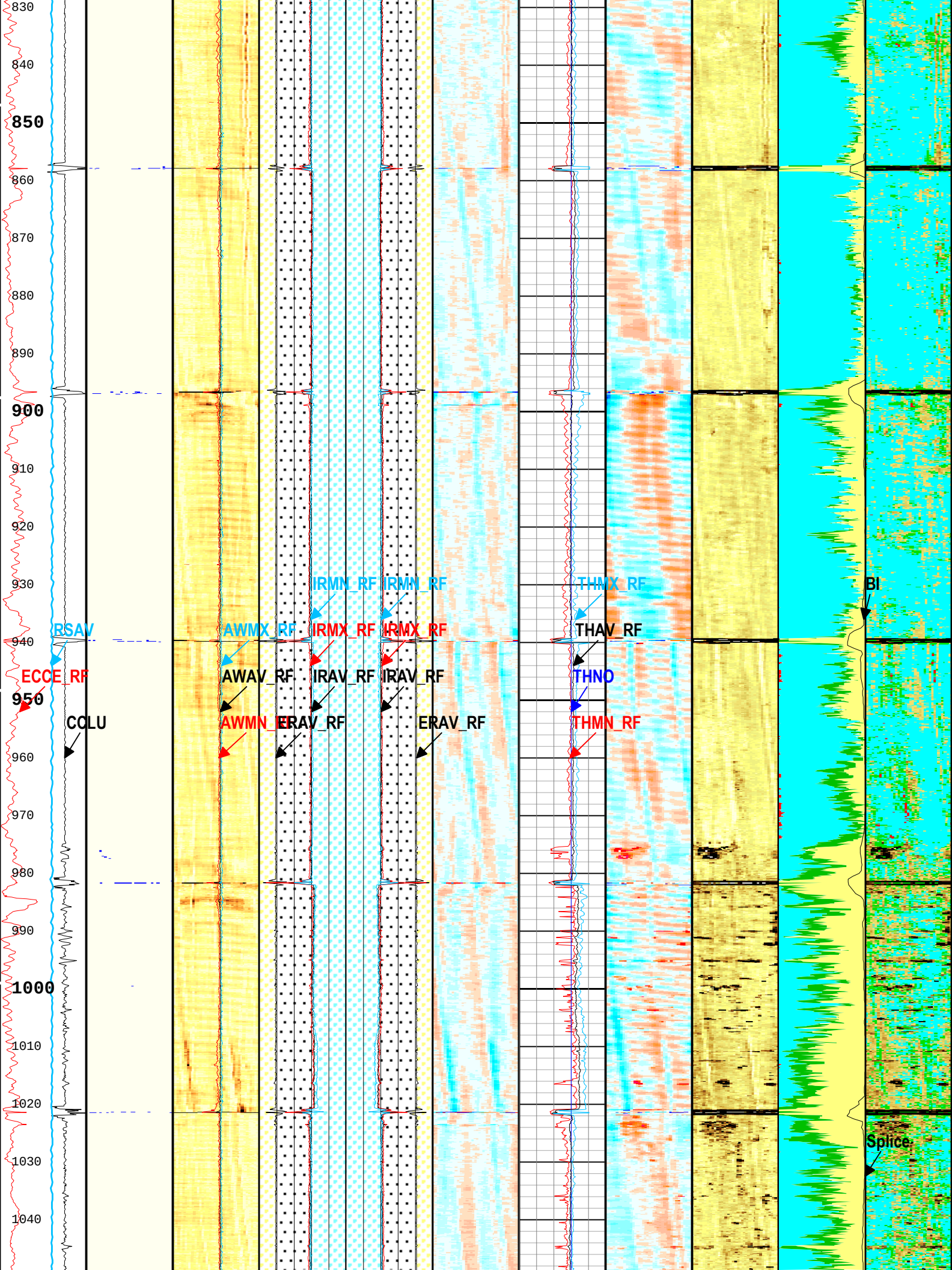
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950
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980
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1010
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1030
1040
RSAV
ECCE_RF
COLU
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
IRAV_RF
ERAV_RF
IRMN_RF
IRMX_RF
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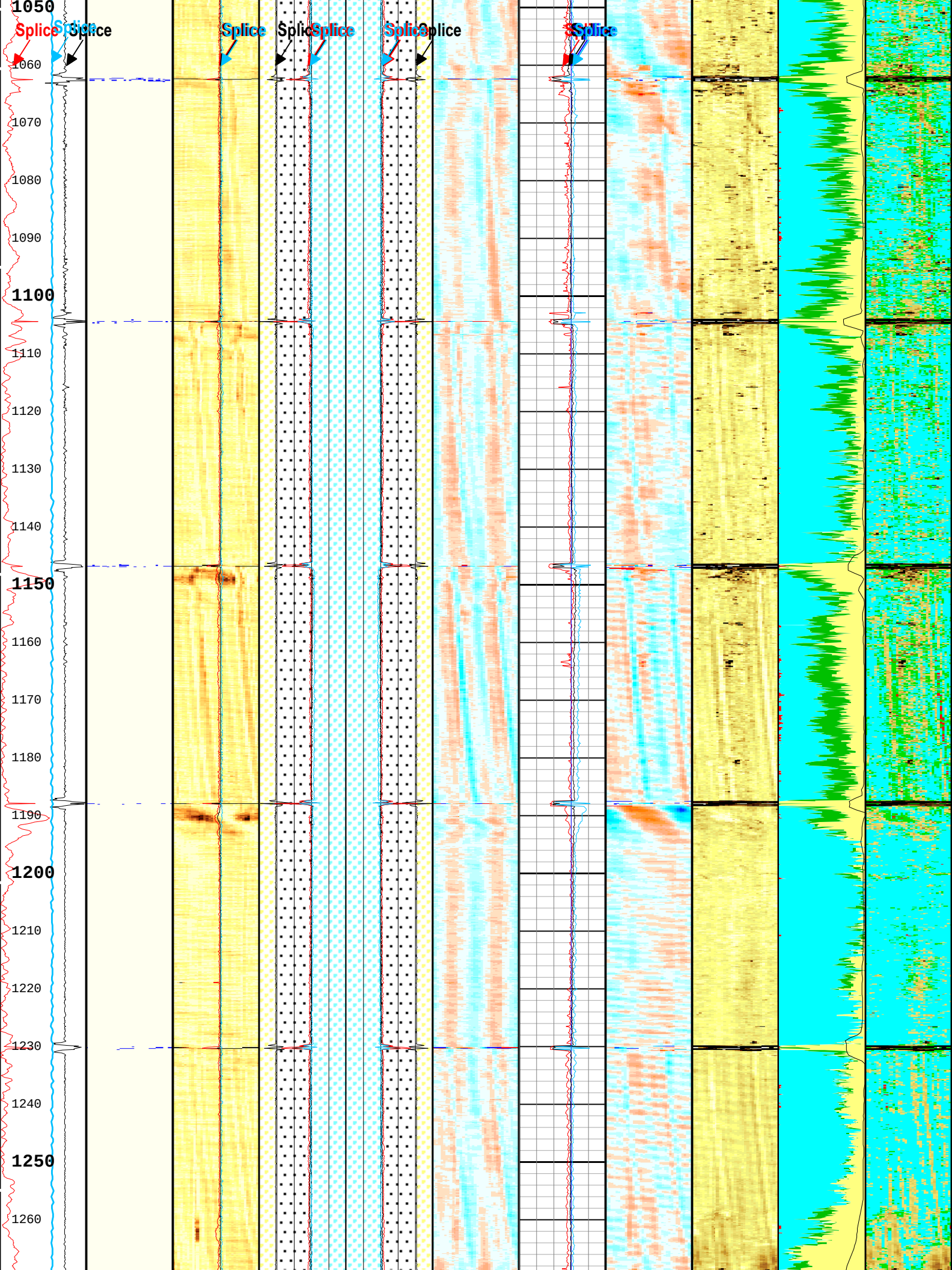
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF
BI
Splice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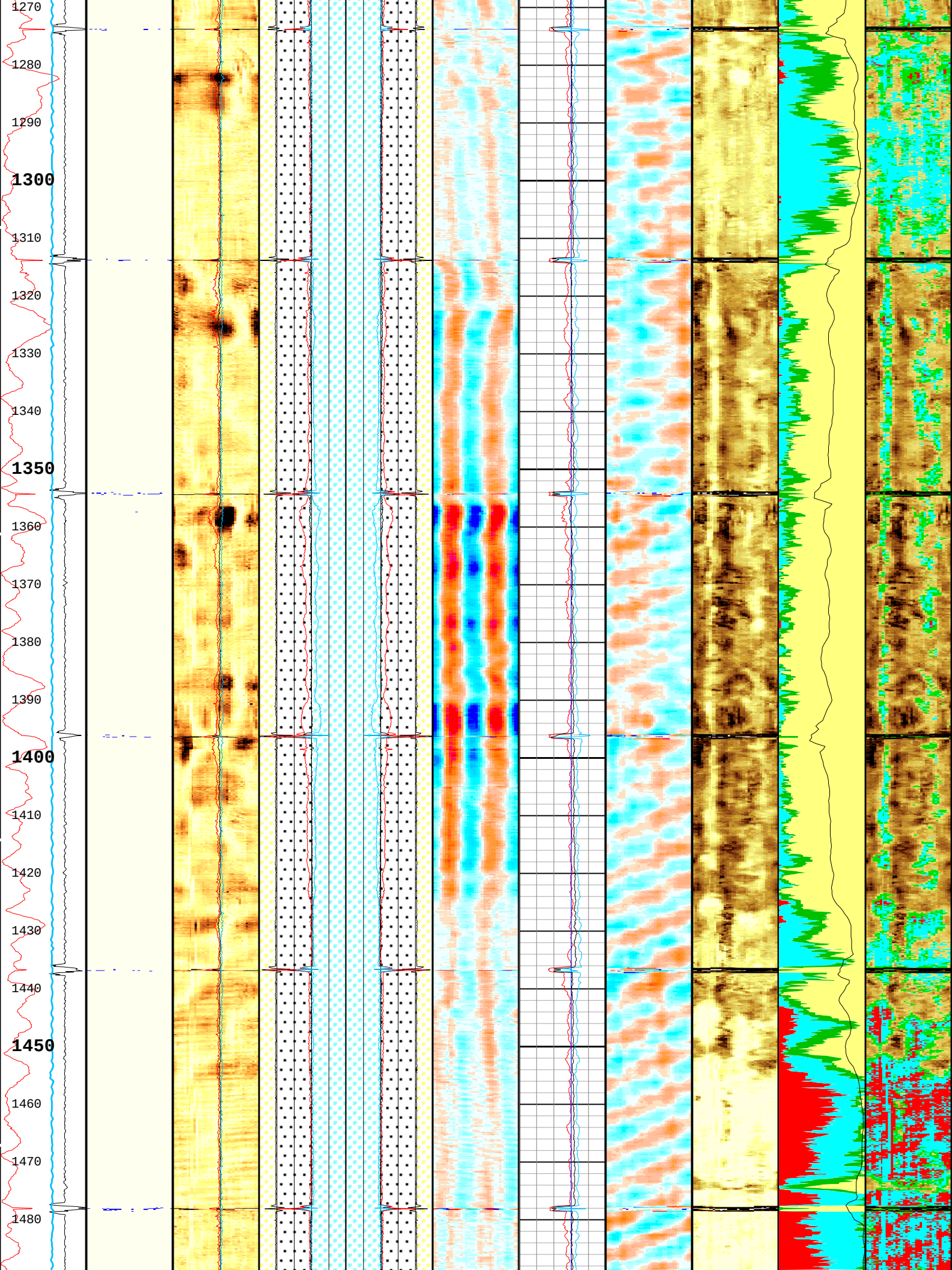
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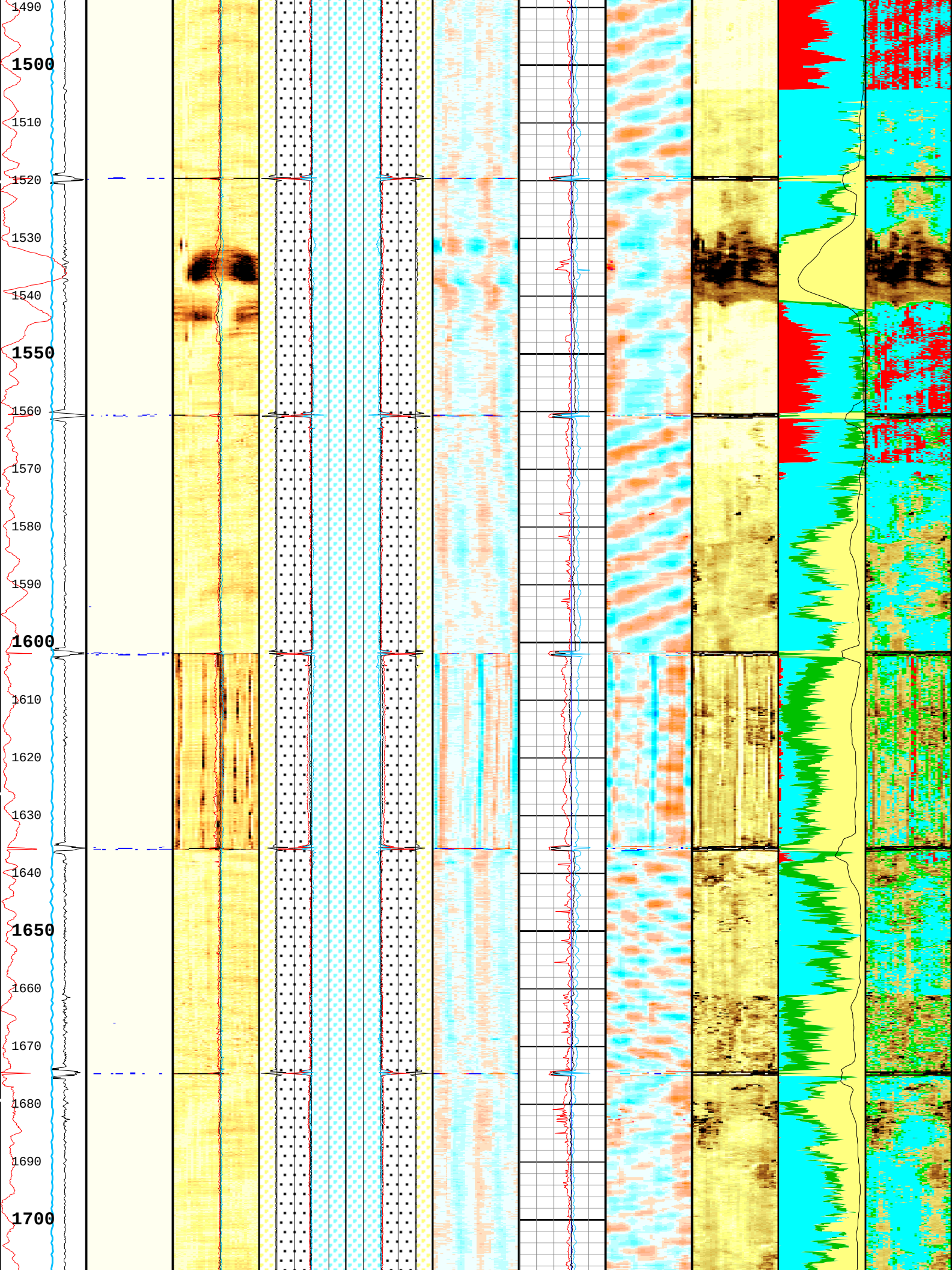
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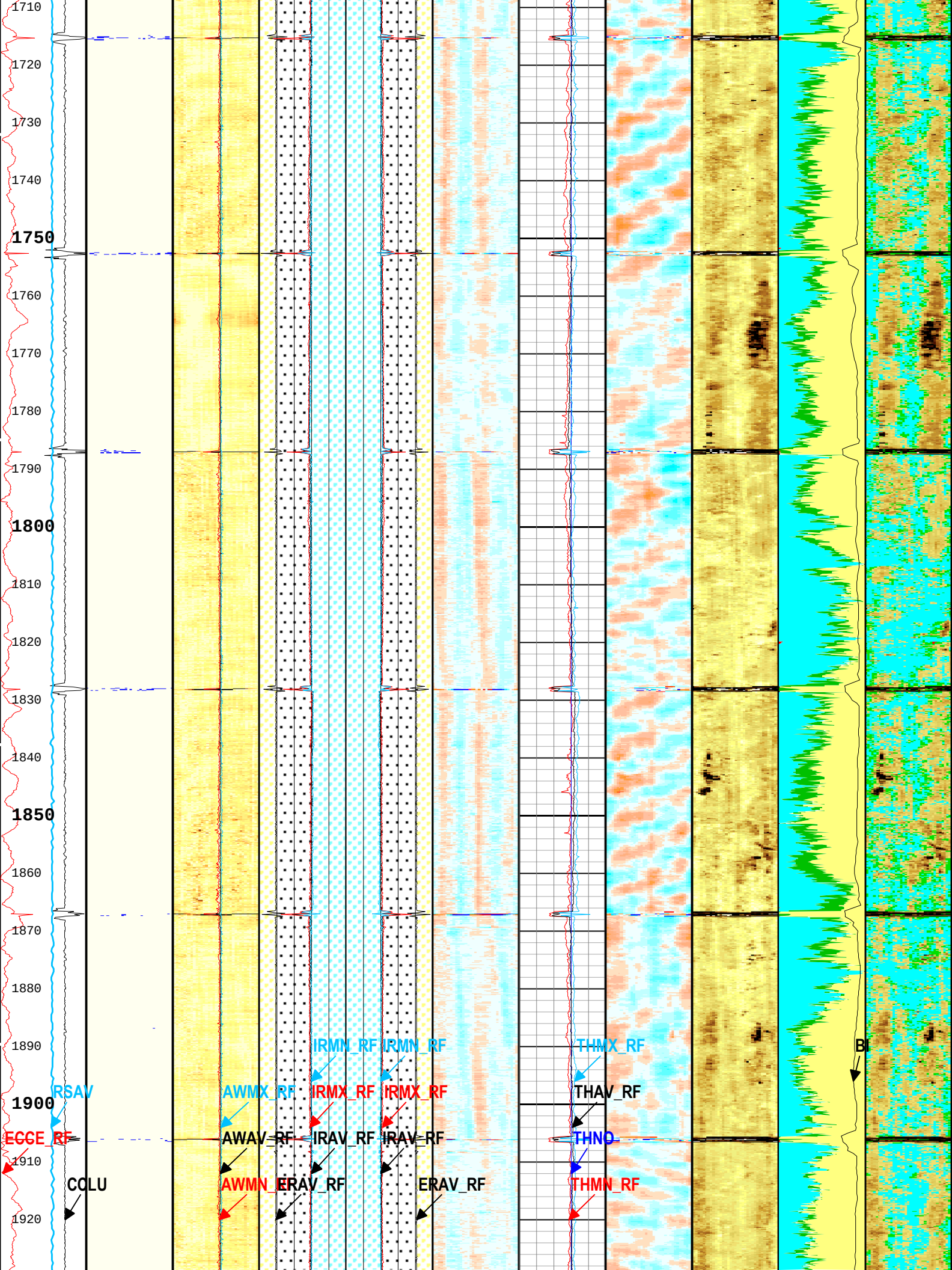
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1900
1910
1920
RSAV
ECCE_RF
COLU
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
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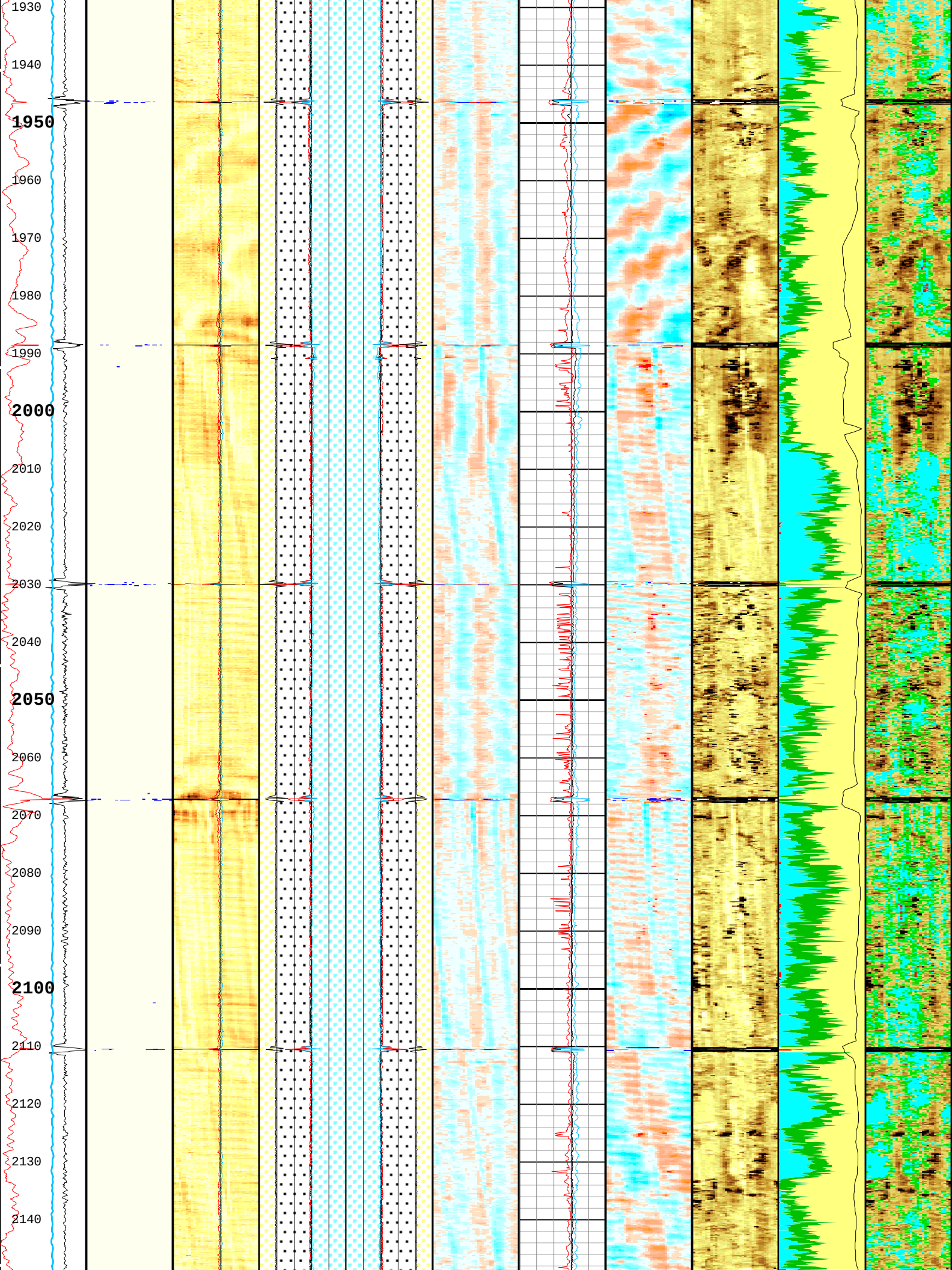
THND
THMN_RF
BI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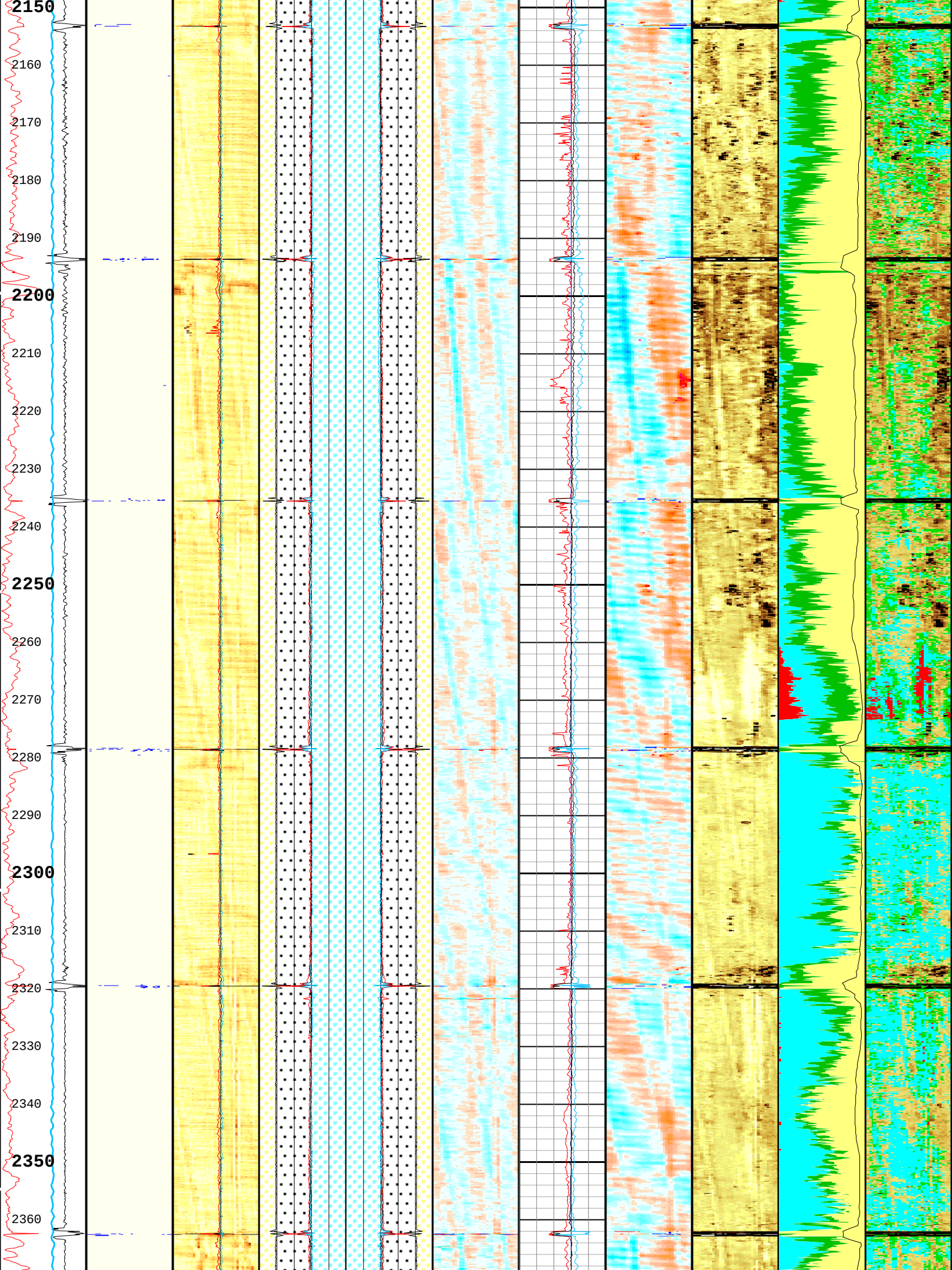
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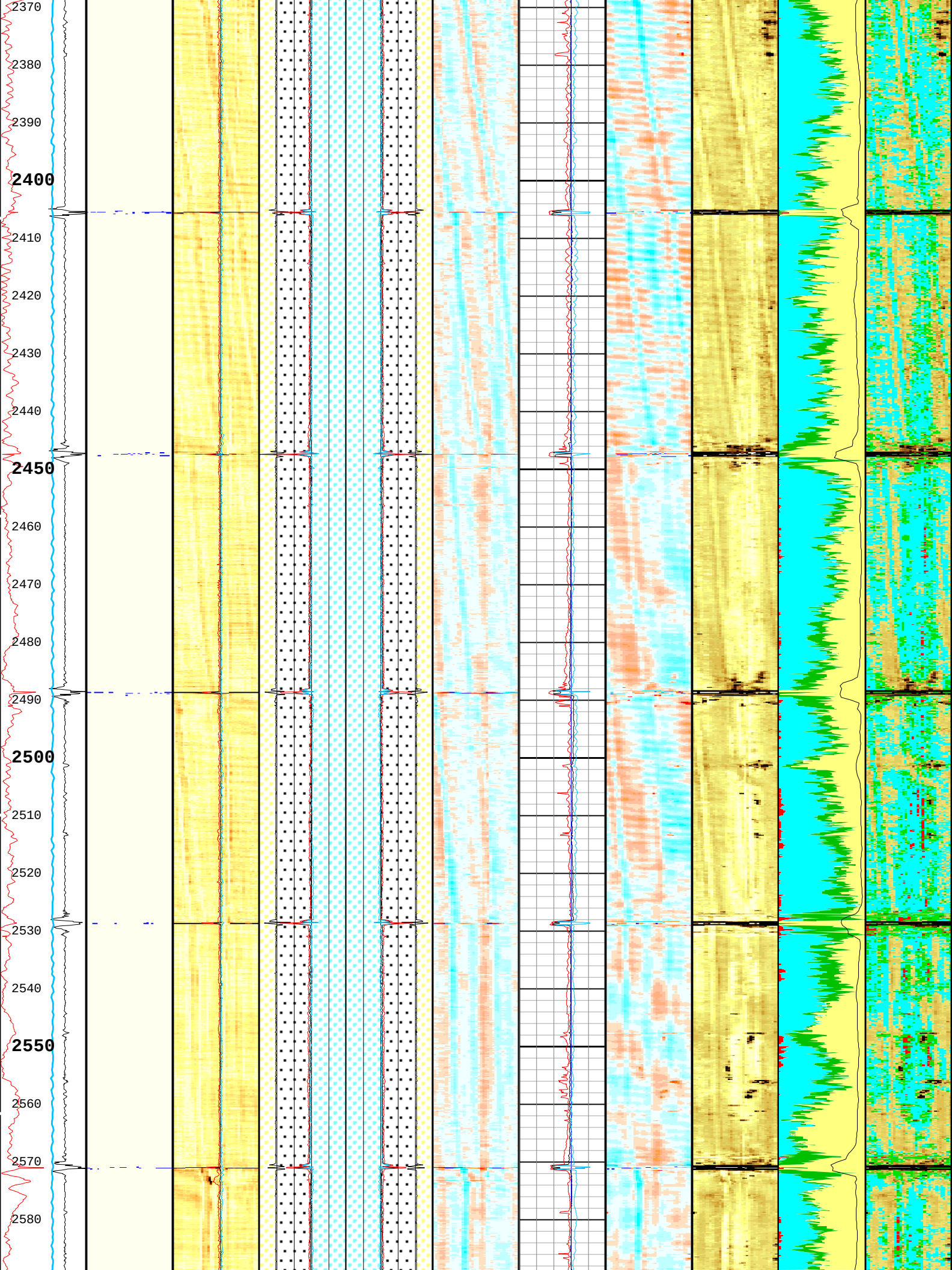
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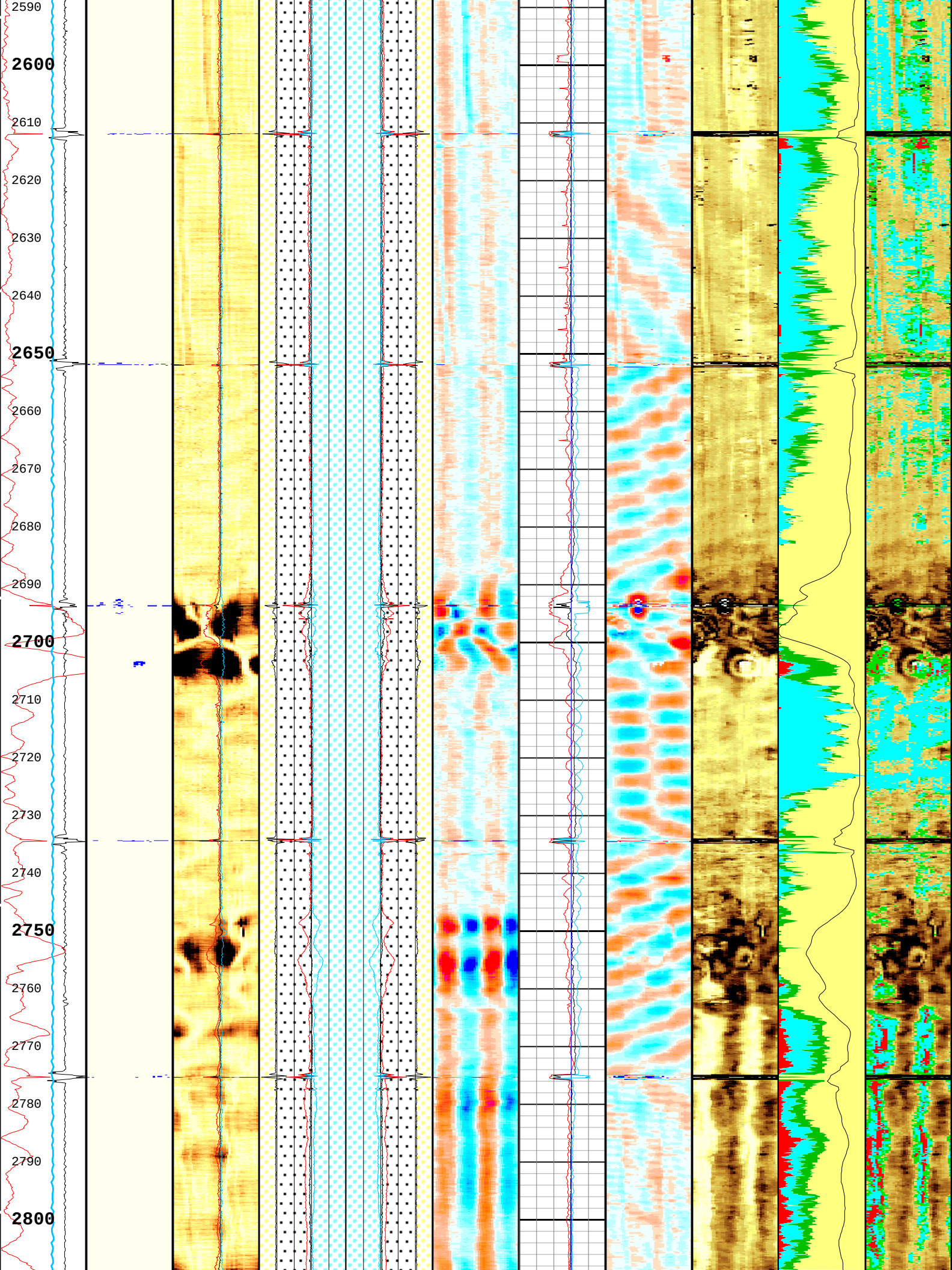
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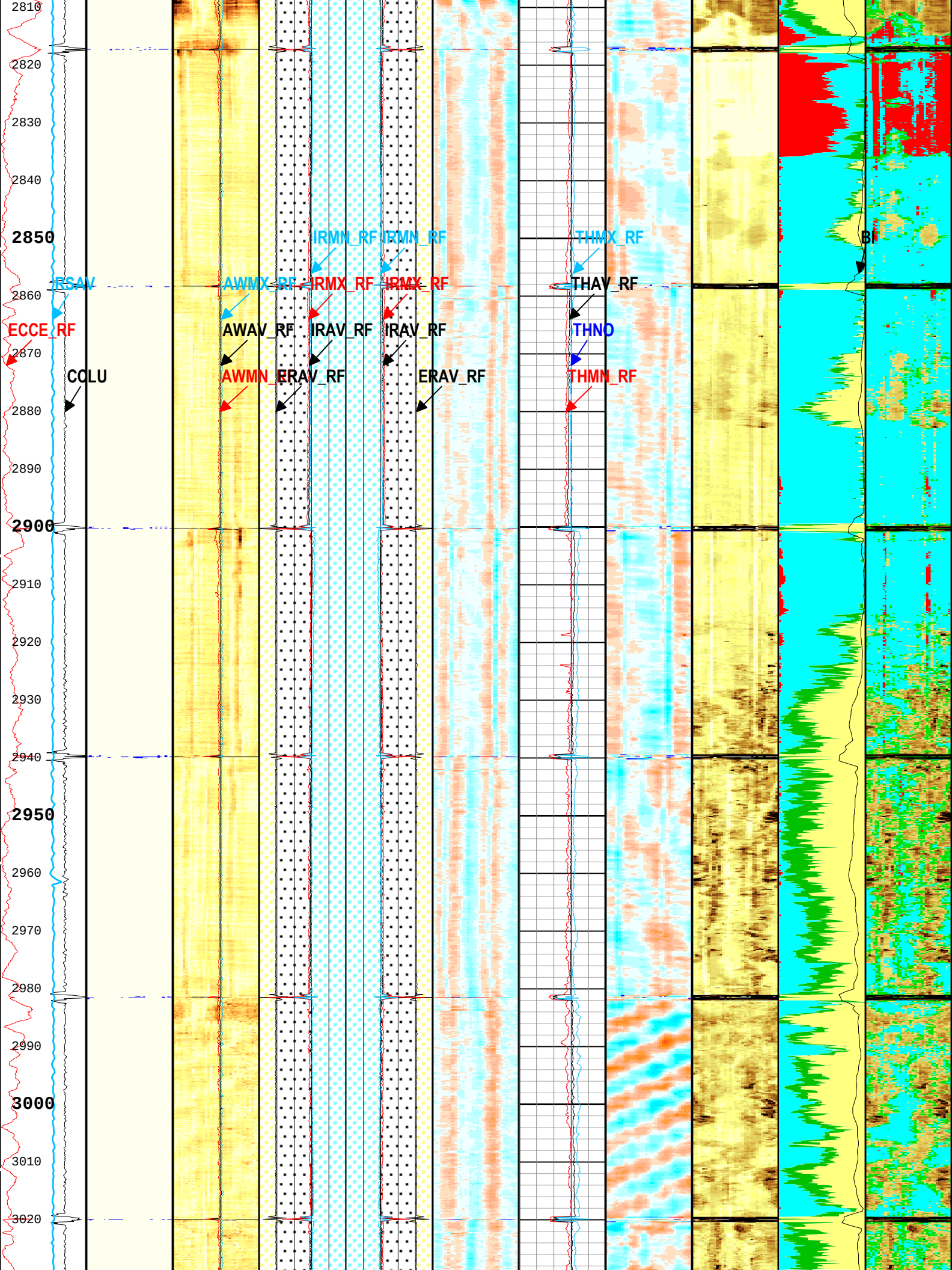
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2980
2990
3000
3010
3020
IRMN_RF
IRMN_RF
THMX_RF
BI
IRSAV
AWMX_RF
IRMX_RF
IRMX_RF
THAV_RF
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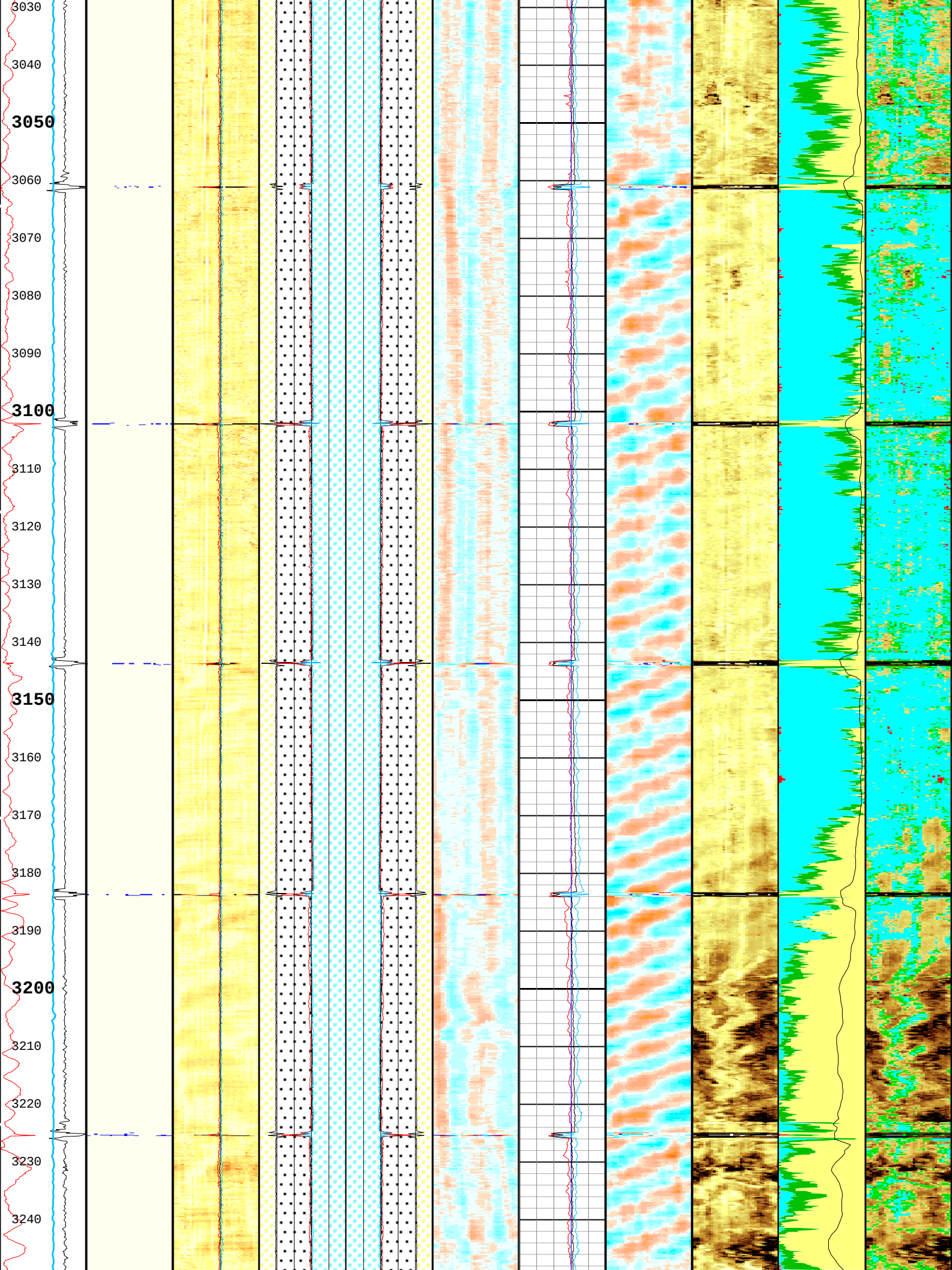
THMN_RF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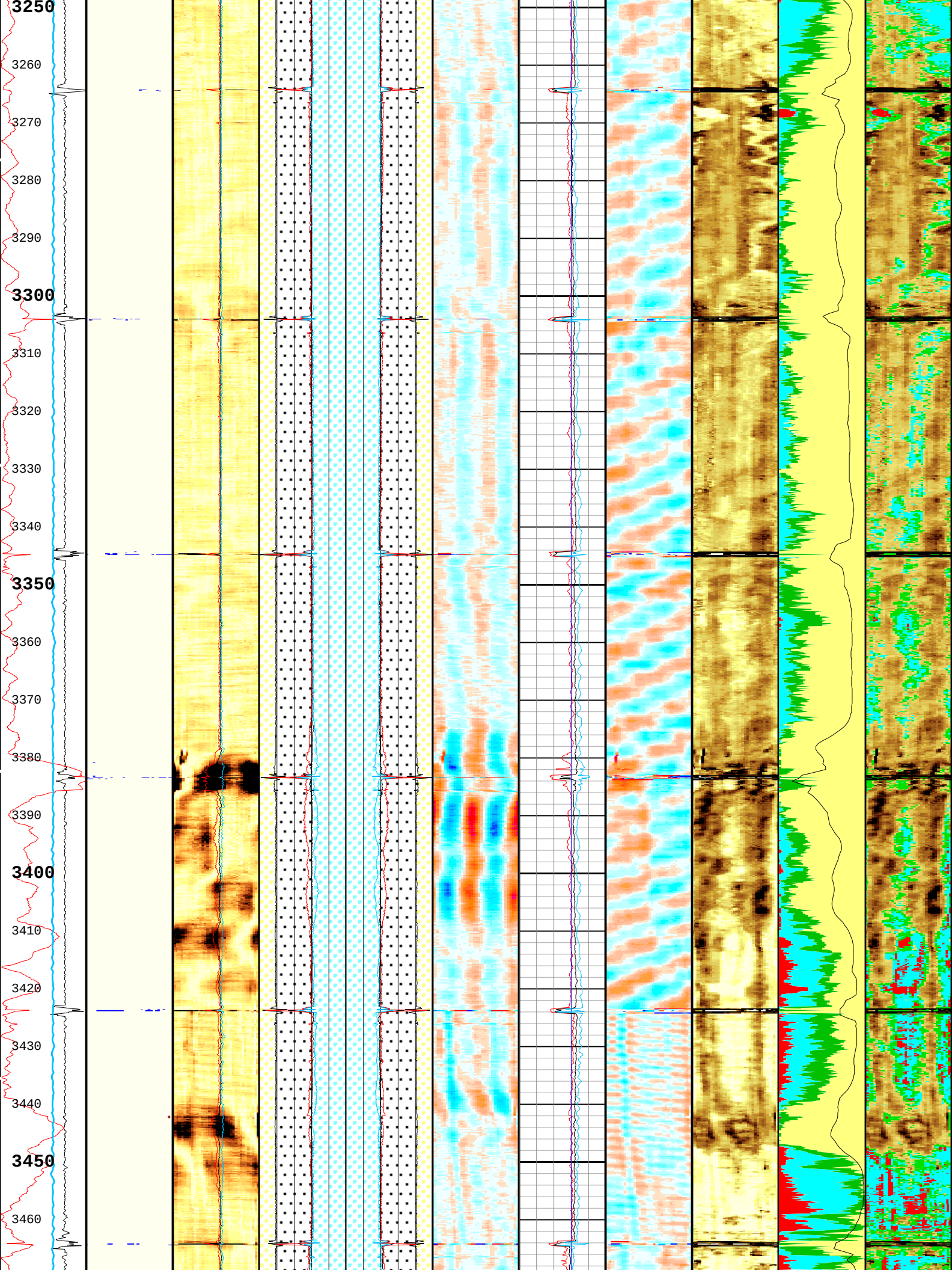
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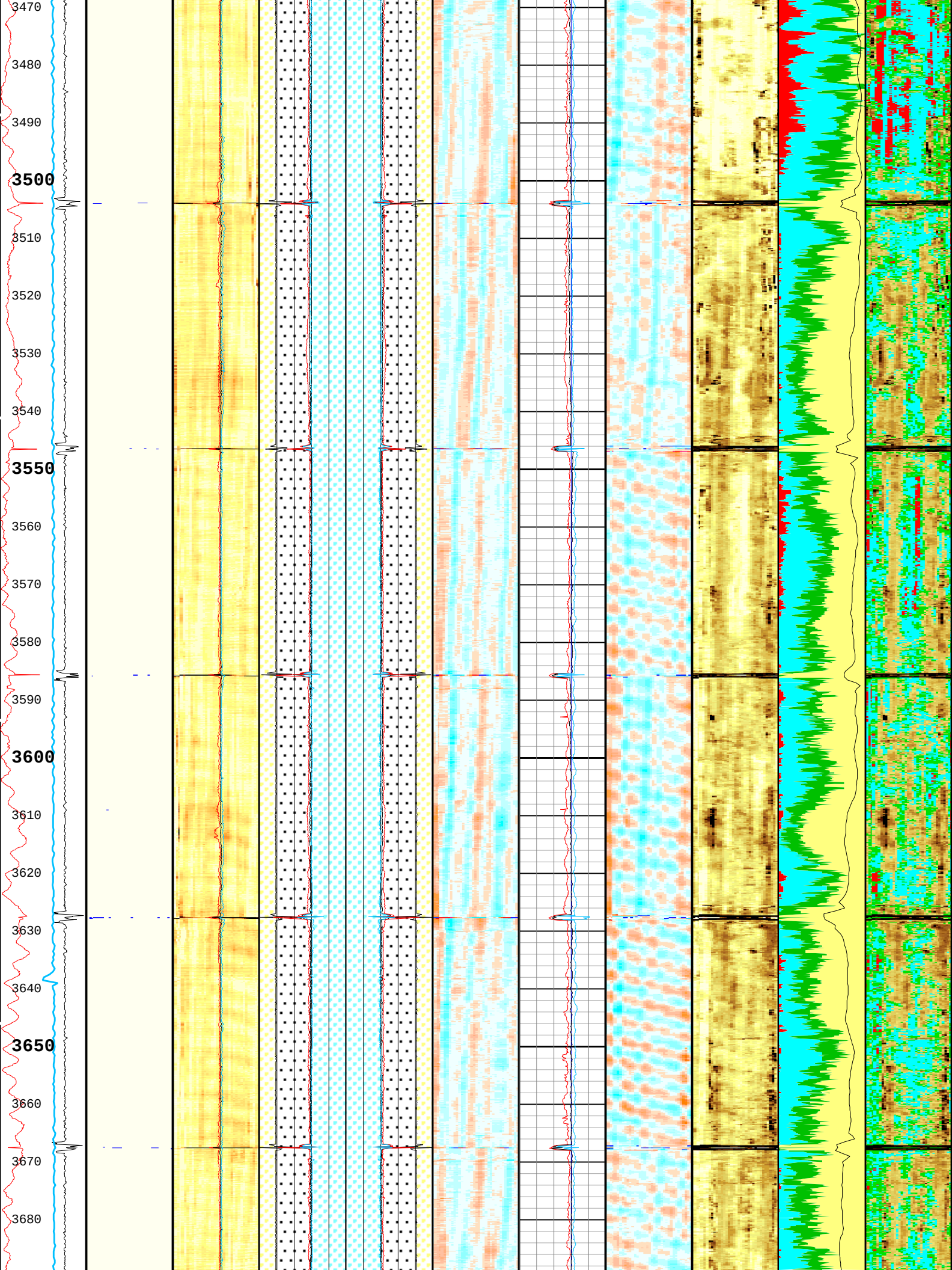
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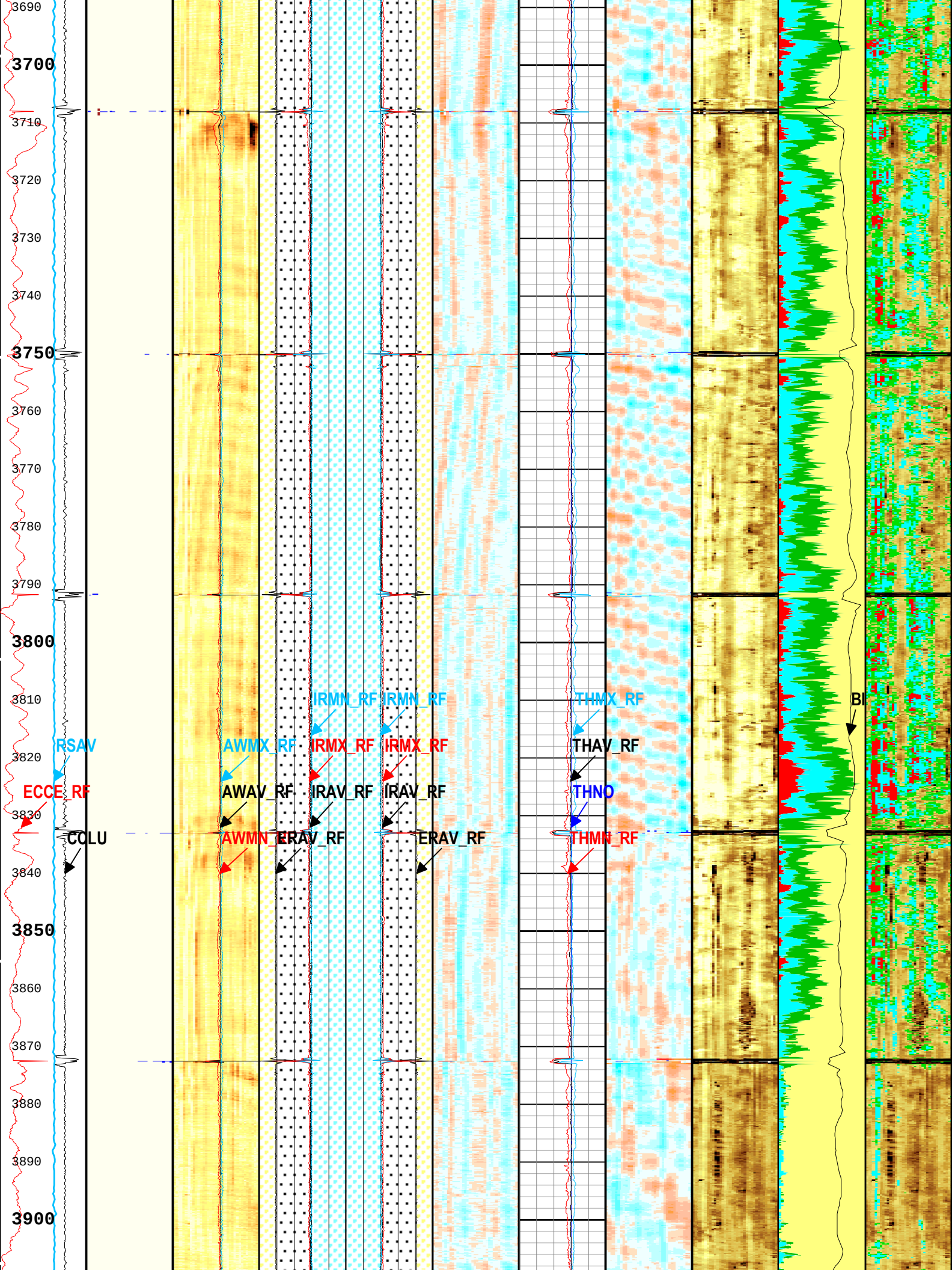
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ECCE_RF
COLU
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
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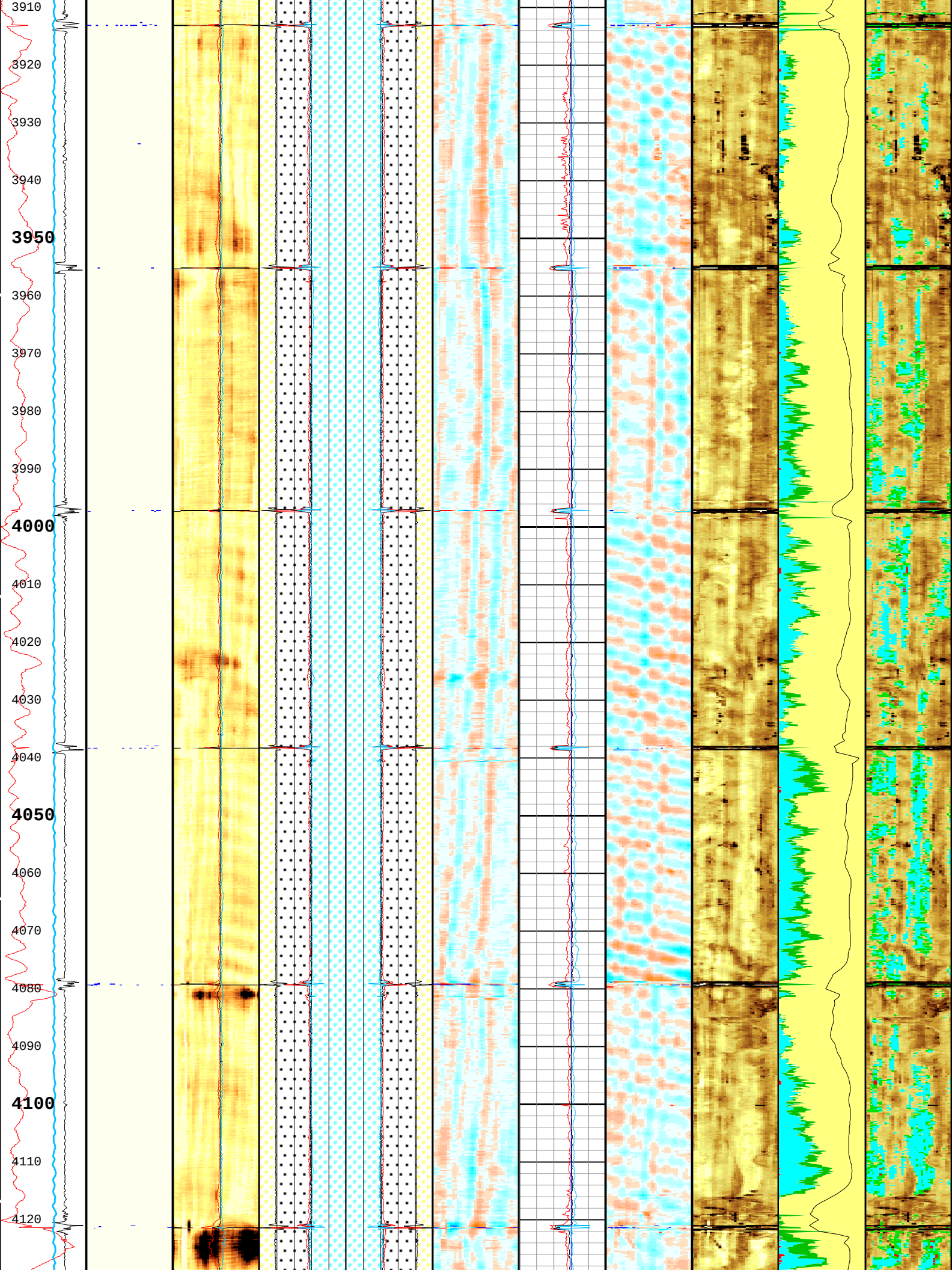
THNO
THMN_RF
BI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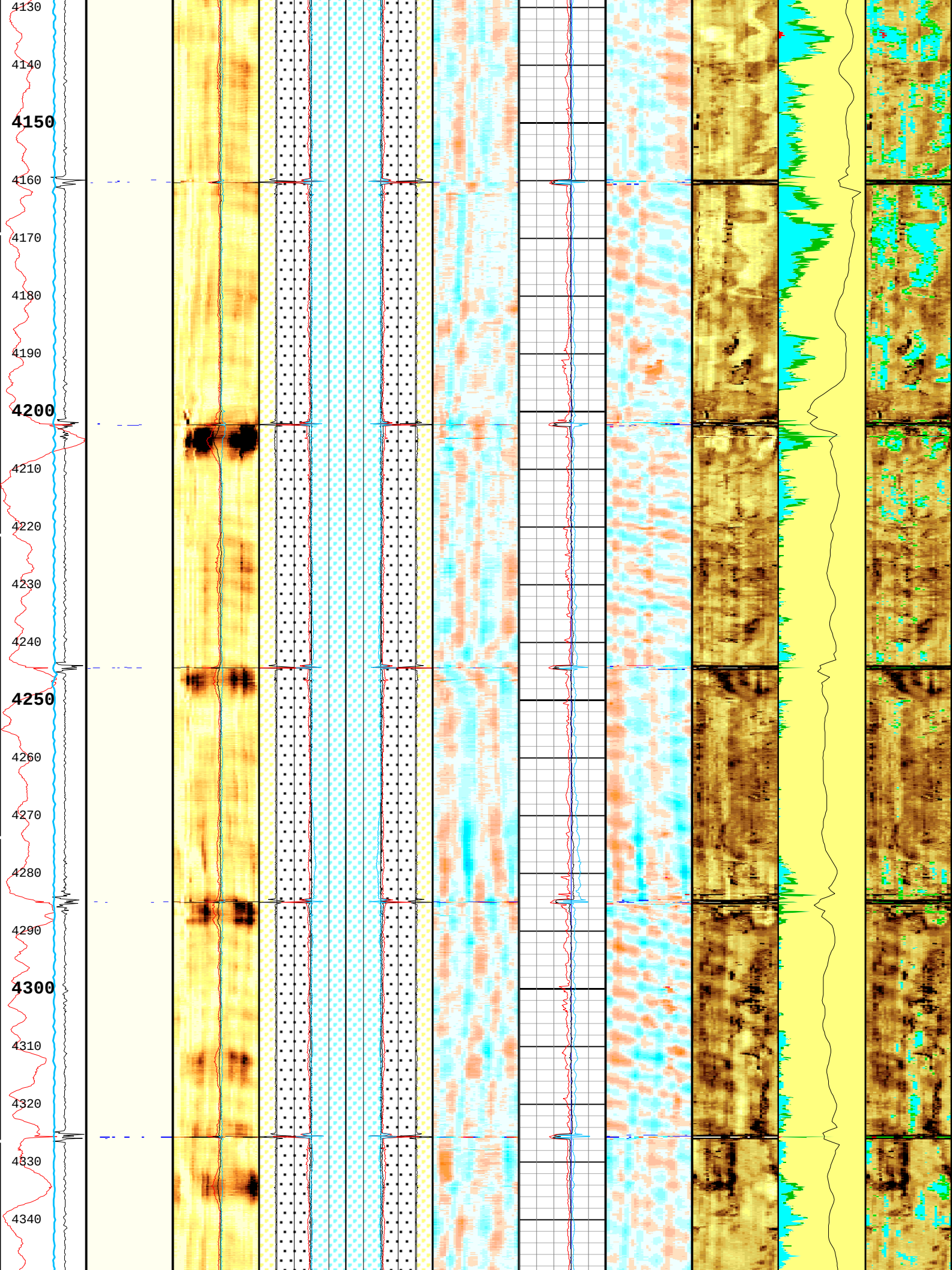
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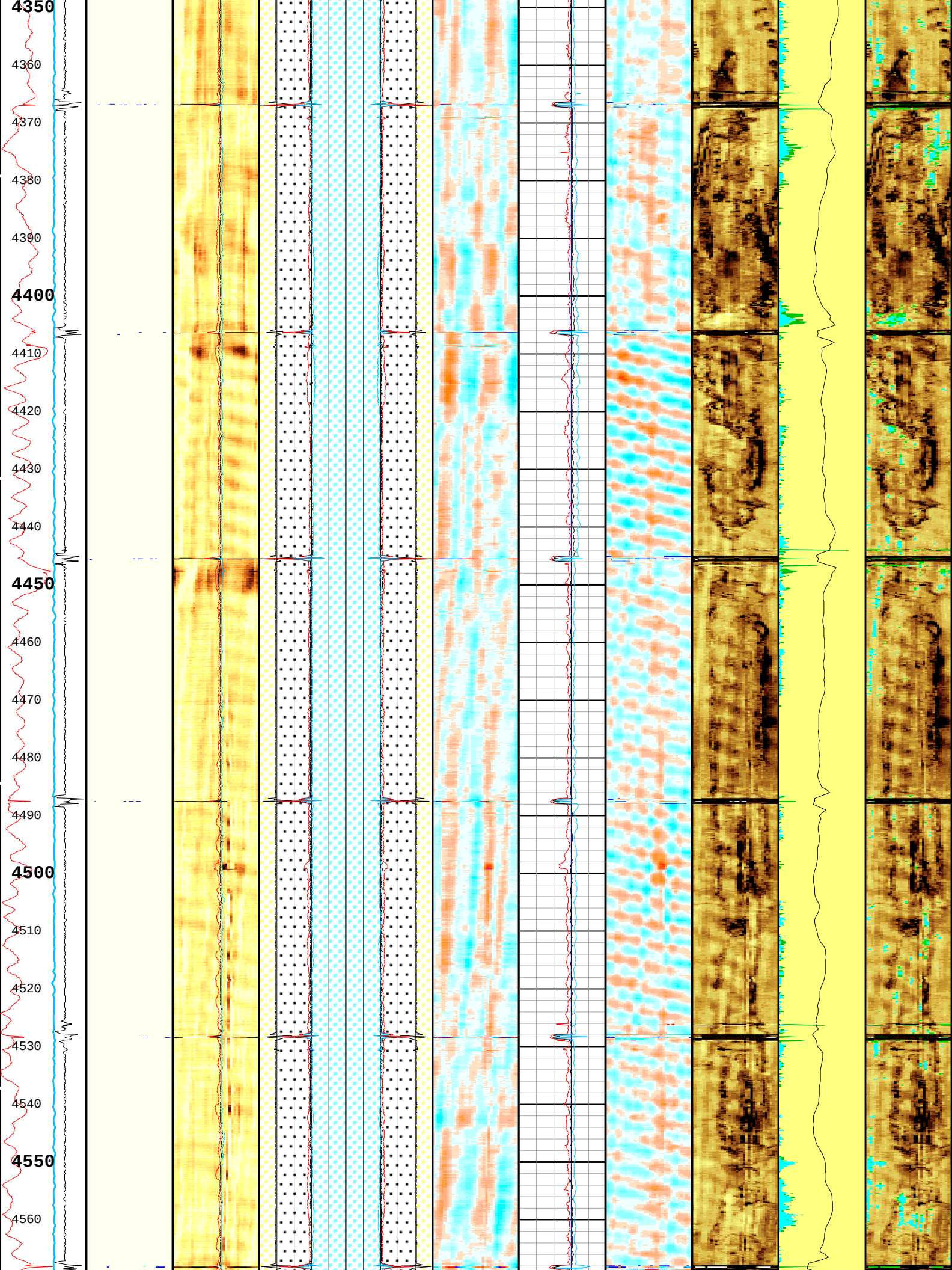
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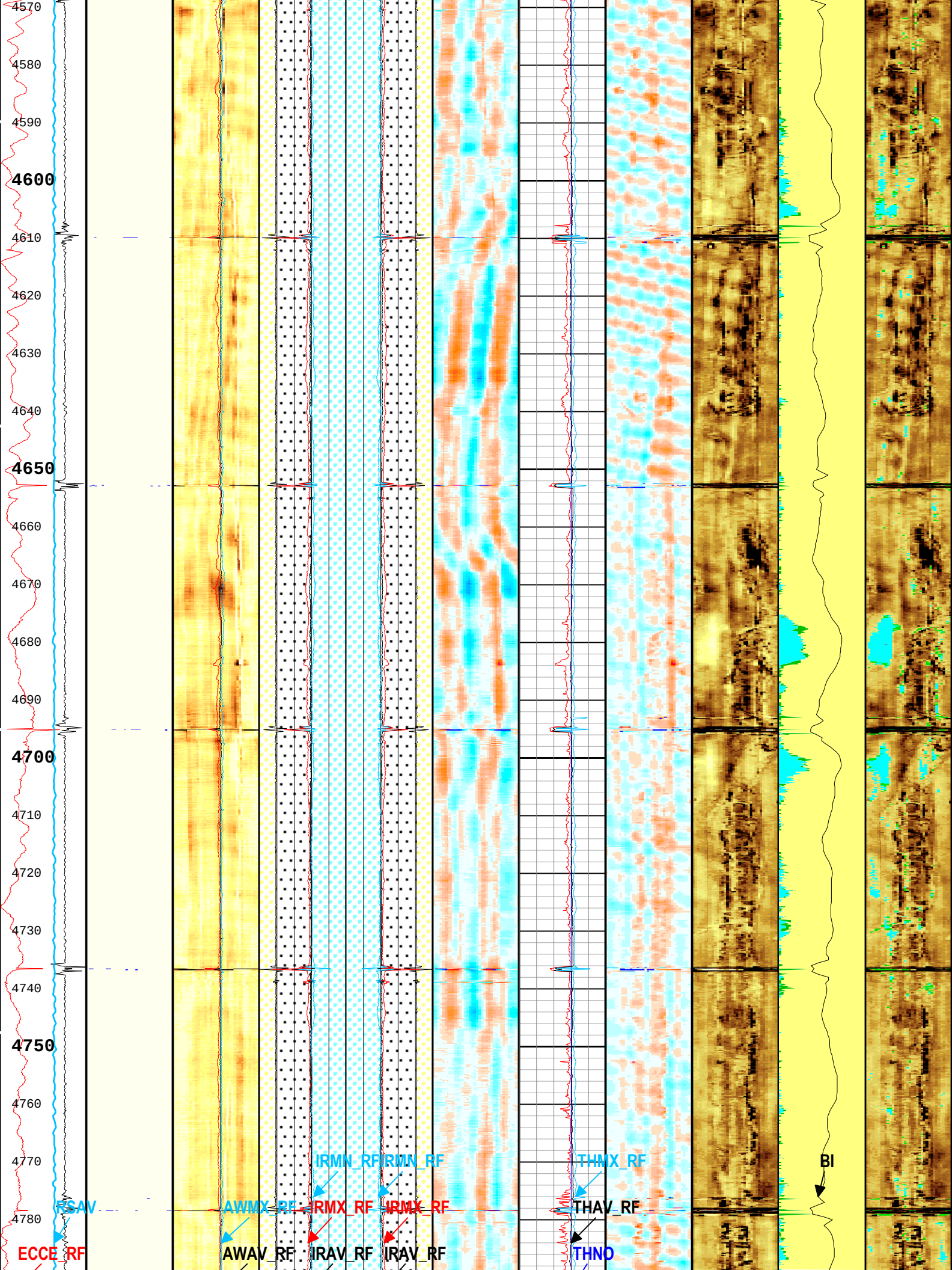
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RSAV
ECCE_RF
AWMX_RF
AWAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
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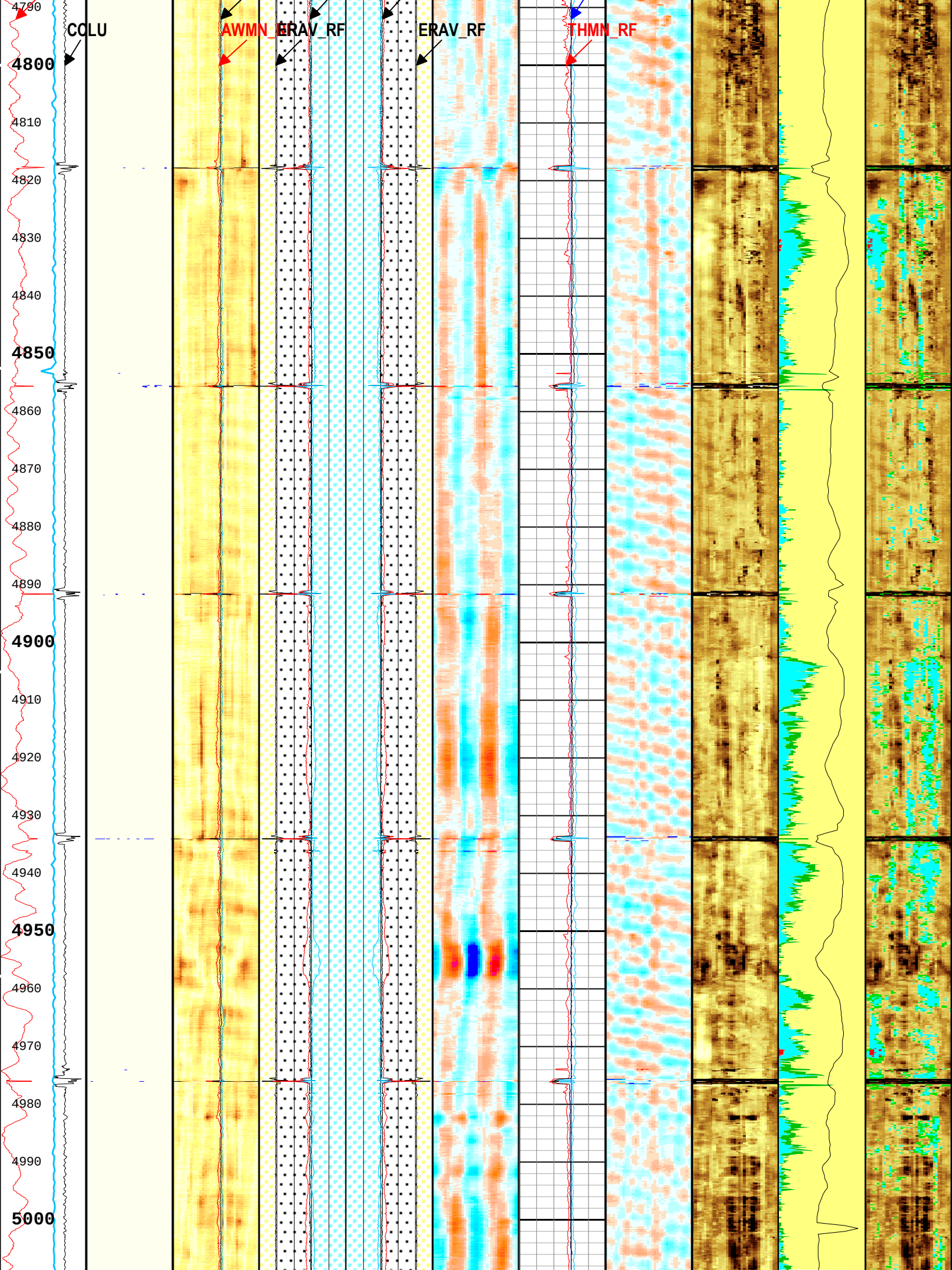
THMX_RF
THAV_RF
THNO
BI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ERAV_RF
ERAV_RF
THMN_RF
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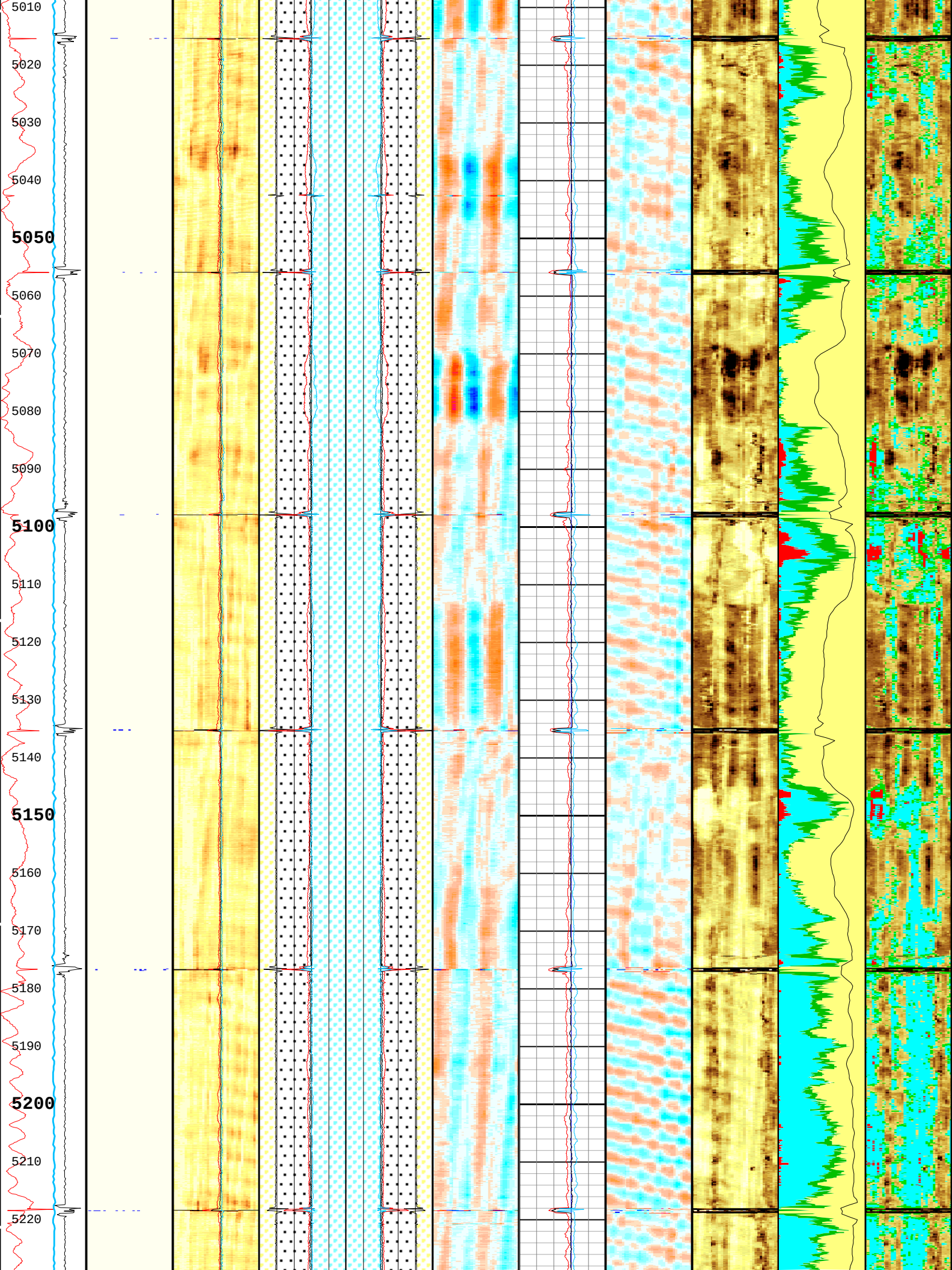
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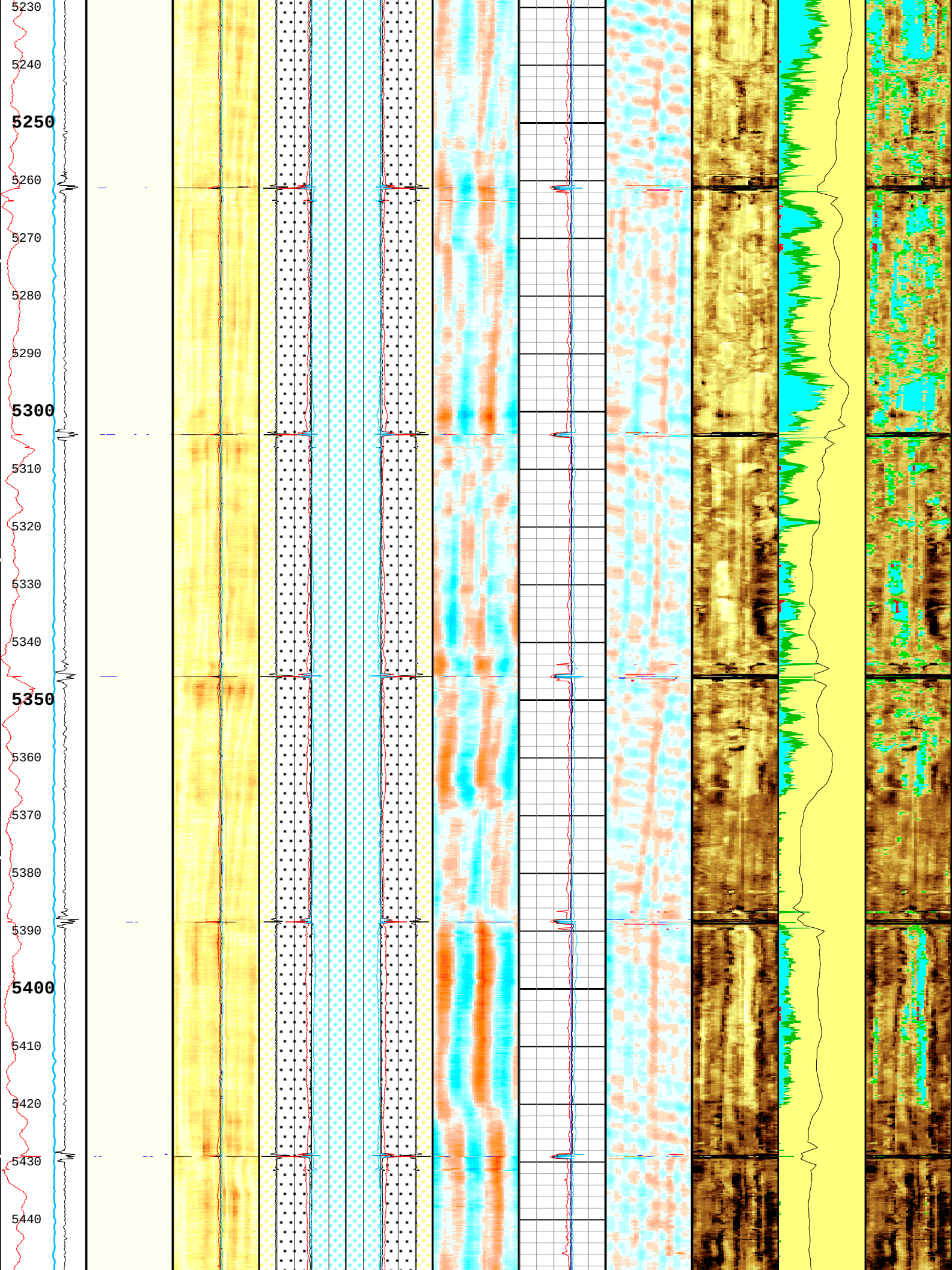
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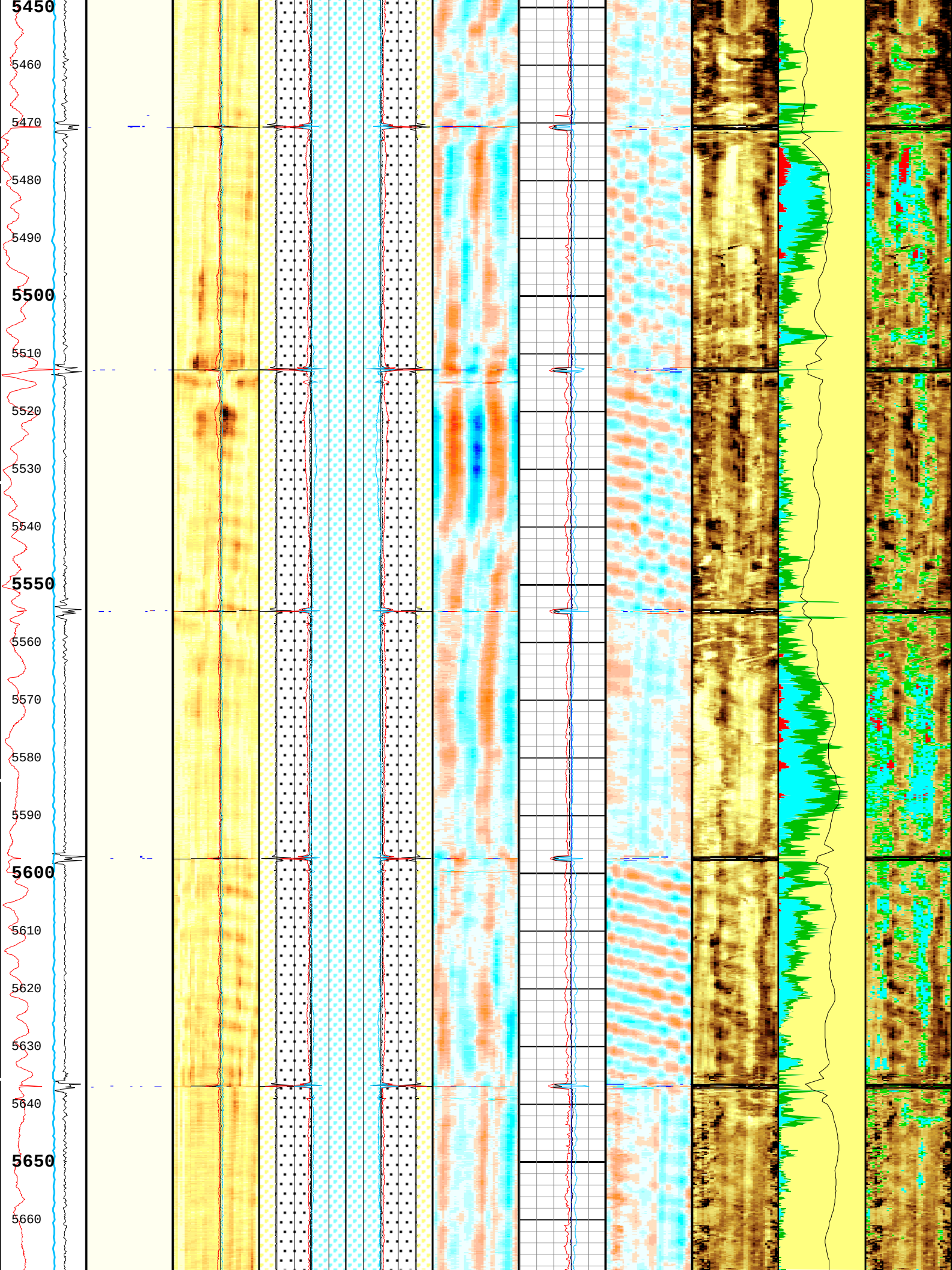
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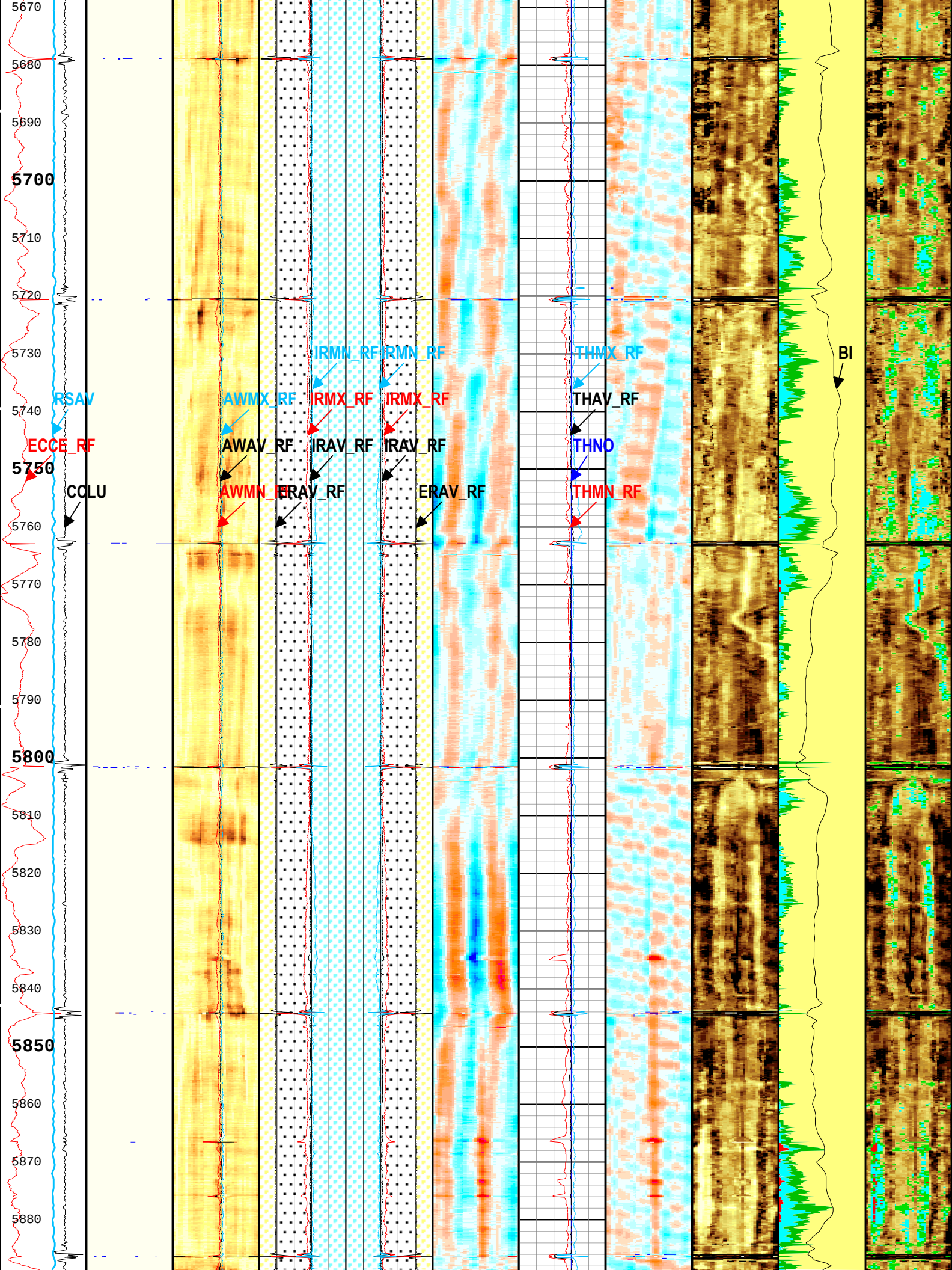
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RSAV
ECCE_RF
COLU
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
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THMX_RF
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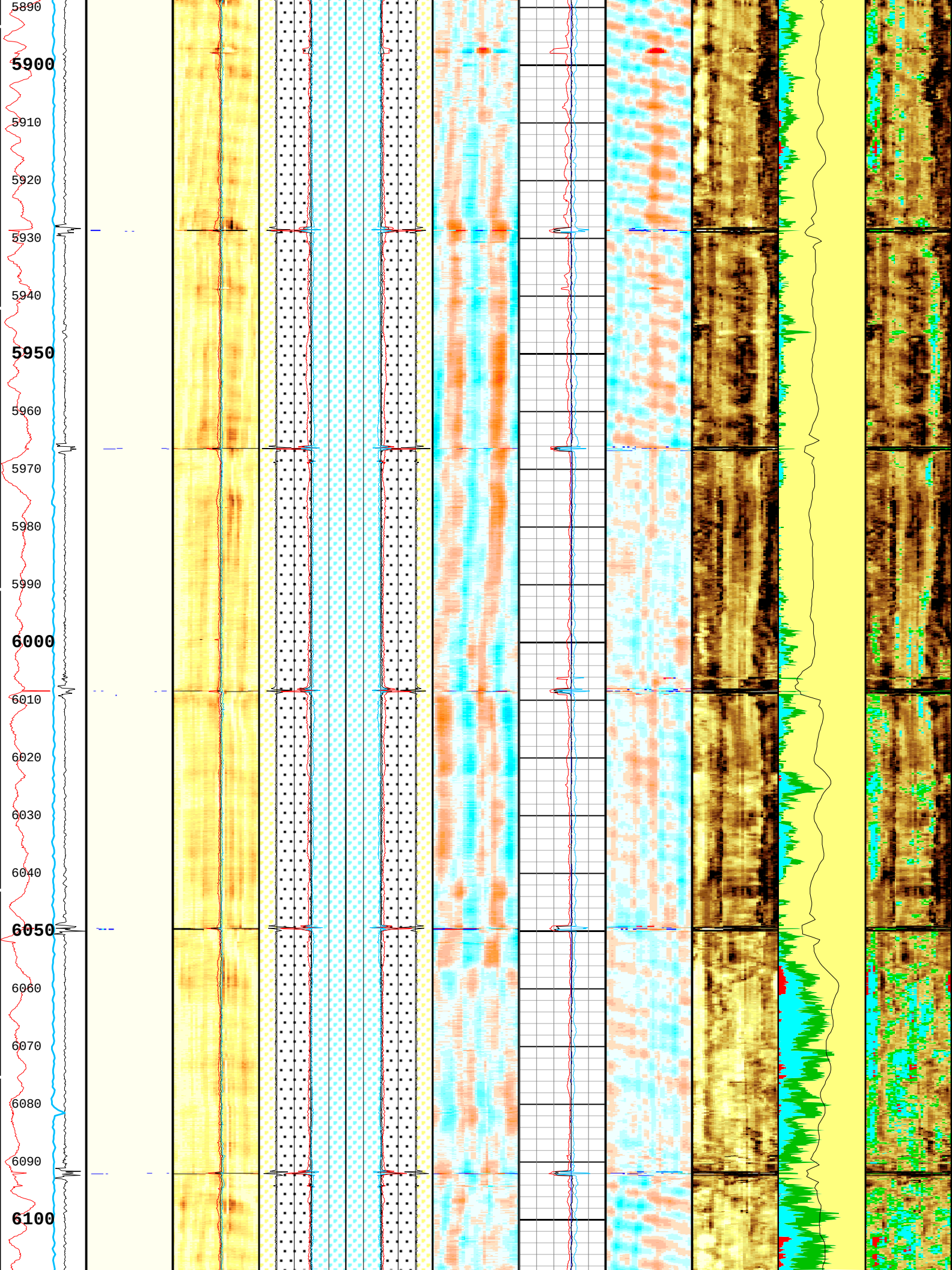
THNO
THMN_RF
BI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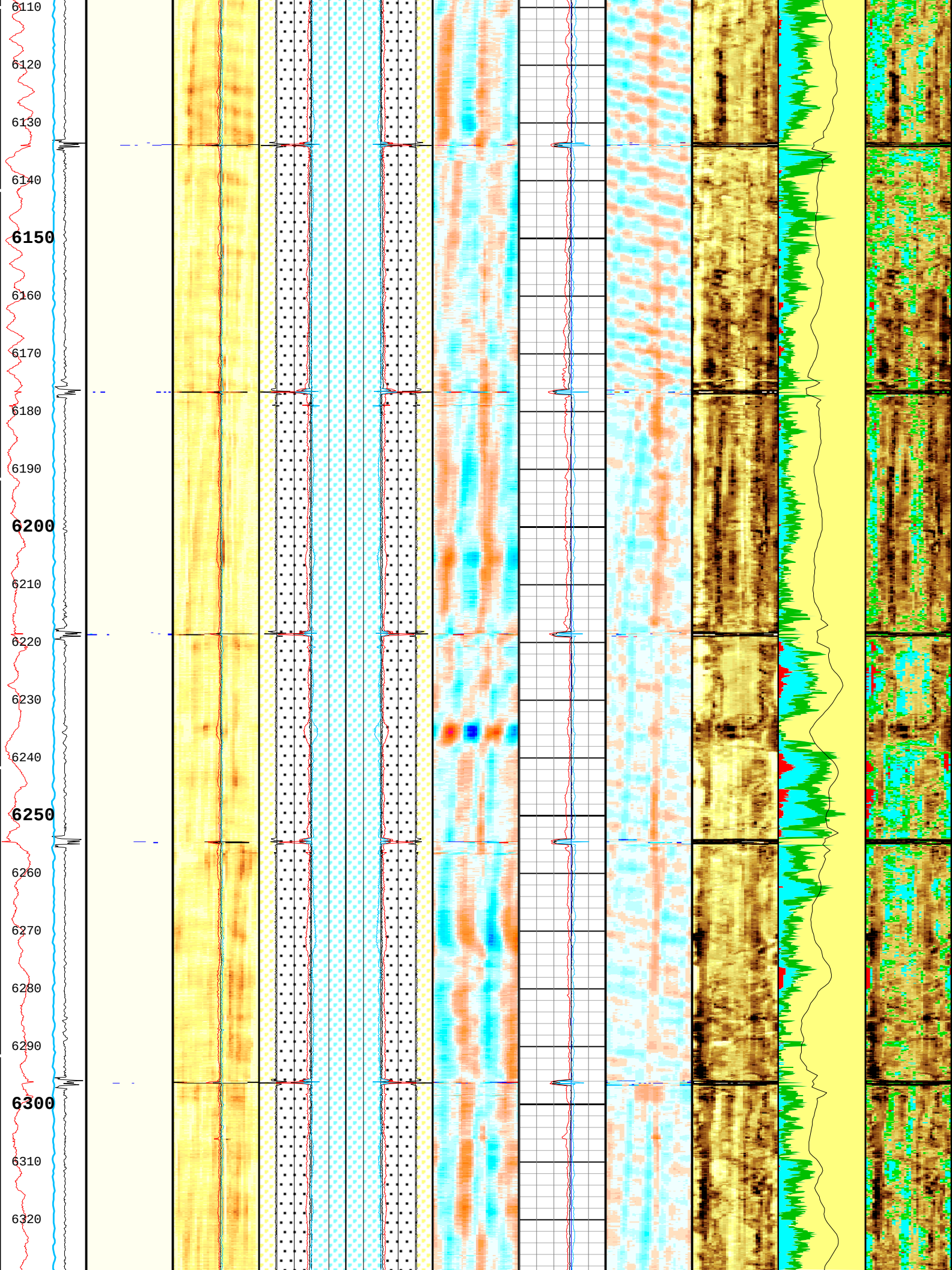
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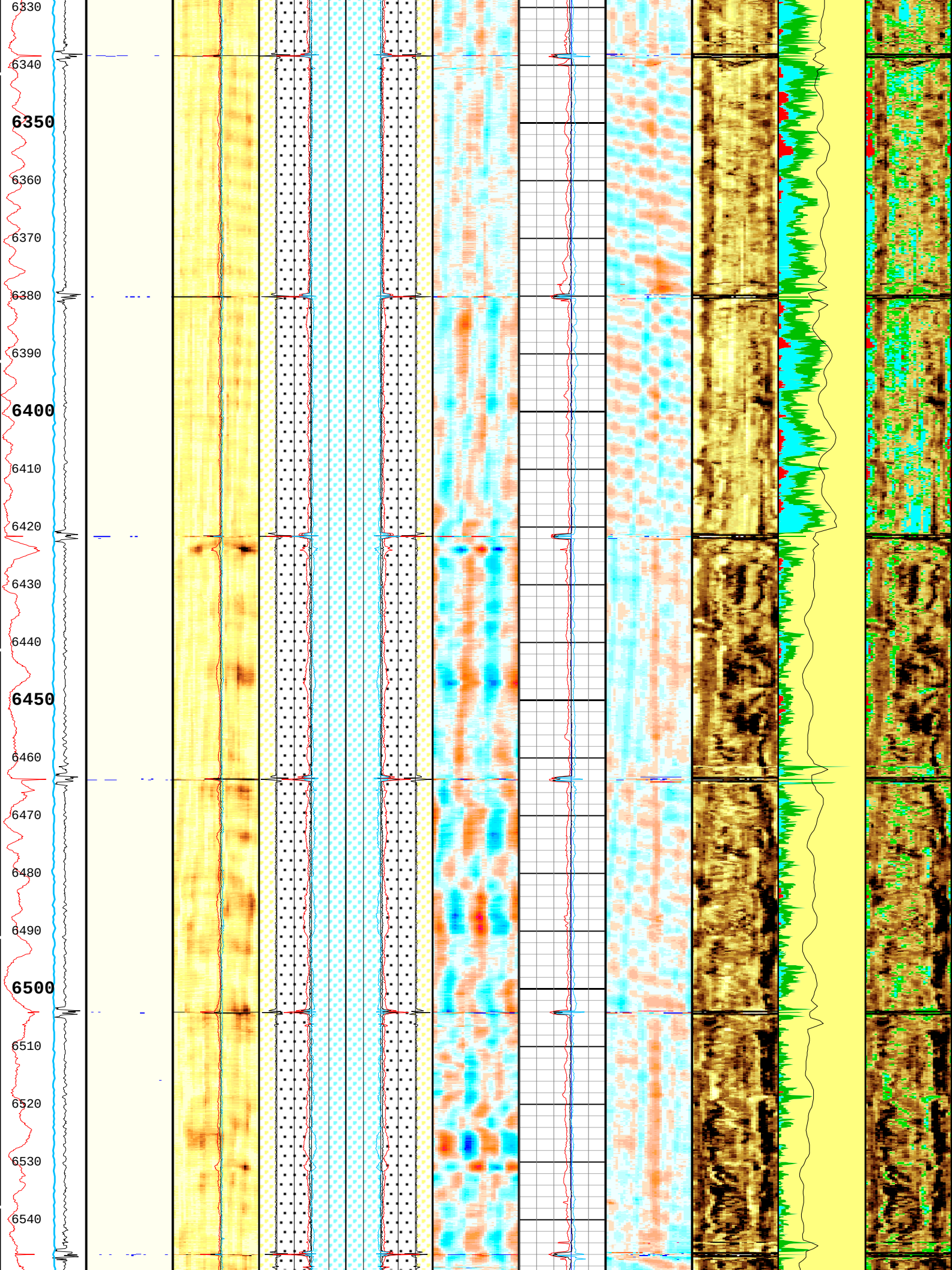
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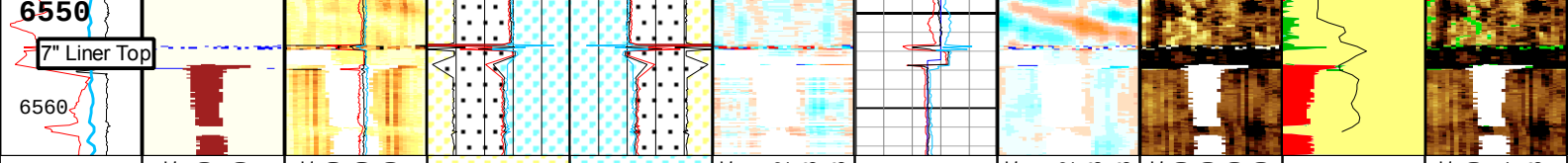


Casing Collar Locator Ultrasonic (CCLU) USIT-E[1]
-30 in 10

Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E[1]
0 in 0.5

Motor Revolution Speed (RSAV) USIT-E[1]
6 c/s 8

Absent 1.500 3.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E[1]
Orientation: Top of Hole
U L B R U

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

Absent -4.799 -2.799 -0.800
Explicit Normalization
USIT - Amplitude of Unflagged Wave (AWBK_RF) USIT-E[1]
(dB)
Orientation: Top of Hole
U L B R U

Minimum of Unflagged Wave Amplitude (AWMN_RF) USIT-E[1]
0 dB 75

Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E[1]
0 dB 75

Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E[1]
0 dB 75

ERAV
ERAV-IRAV
IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
4.5 in 3.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
4.5 in 3.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
4.5 in 3.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
4.5 in 3.5

IRAV
ERAV
IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
3.5 in 4.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
3.5 in 4.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
3.5 in 4.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
3.5 in 4.5

Absent -0.051 -0.012 0.028 0.068
Explicit Normalization
USIT - Unflagged Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E[1]
(in)
Orientation: Top of Hole
U L B R U

Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E[1]
0.1 in 0.6

Nominal Casing Thickness (THNO) USIT-E[1]
0.1 in 0.6

Median of Unflagged Casing Thickness (THAV_RF) USIT-E[1]
0.1 in 0.6

Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E[1]
0.1 in 0.6

Absent -0.051 -0.012 0.028 0.068
Explicit Normalization
USIT - Unflagged Casing Thickness minus Median of Unflagged Casing Thickness (THBKM_RF) USIT-E[1]
(in)
Orientation: Top of Hole
U L B R U

Absent 1.500 3.500 5.500 7.500
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E[1]
(Mrayl)
Orientation: Top of Hole
U L B R U

Ratio of Cement Measurements to Total (CEMR) USIT-E[1]
1 0

Micro-debonding Ratio (MDR) USIT-E[1]
1 0

Ratio of Gas Measurements to Total (GASR) USIT-E[1]
1 0

Bonded
Gas
Liquid
Micro-debonding

Bond Index (BI) DSLT-H[1]
1 0

Absent 3.090 5.054 7.018
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E[1]
(Mrayl)
Orientation: Top of Hole
U L B R U

Absent 2.599 4.563 6.527
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E[1]
(Mrayl)
Orientation: Top of Hole
U L B R U

TIME_1900 - Time Marked every 60.00 (s)

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

1 - UFLG 1 Value within [0.0 - 1.5] - :	UTIM Error
2 - UFLG 2 Value within [1.5 - 2.5] - :	Pulse Origin Not Detected
3 - UFLG 3 Value within [2.5 - 3.5] - :	WINLEN Error
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :	Casing Thickness Error
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :	Loop Processing Error

Description: USI Composite Format: Log (LBV1_USI Composite 9.625inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 31-Mar-2016 13:15:28

One

Composite 7" Casing 5 IN = 100 FT

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include

									Parallel Data
One	Log[3]:Up	Up	6537.39 ft	7084.95 ft	30-Mar-2016 12:15:32 PM	30-Mar-2016 12:28:34 PM	ON	-6.00 ft	No

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Fernando Fee 32-A

One: Log[3]:Up:S005

Description: USI Composite Format: Log (LBV1_USI Composite 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 31-Mar-2016 13:16:25

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

Casing Collar Locator Ultrasonic (CCLU) USIT-E
-30 in 10

Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E
0 in 0.5

Motor Revolution Speed (RSAV) USIT-E
6 c/s 8

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

U L B R U
Orientation: Top of Hole
Absent -4.799 -2.799 -0.800
Explicit Normalization
USIT - Amplitude of Unflagged Wave (AWBK_RF) USIT-E (dB)

Minimum of Unflagged Wave Amplitude (AWMN_RF) USIT-E
0 dB 75

Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E
0 dB 75

Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E
0 dB 75

ERAV
ERAV-IRAV
IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
3.7 in 2.7

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
3.7 in 2.7

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.7 in 2.7

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.7 in 2.7

IRAV
ERAV
IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
2.7 in 3.7

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
2.7 in 3.7

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
2.7 in 3.7

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
2.7 in 3.7

U L B R U
Orientation: Top of Hole
Absent -0.051 -0.012 0.028 0.068
Explicit Normalization
USIT - Unflagged Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E (in)

Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E
0.1 in 0.6

Nominal Casing Thickness (THNO) USIT-E
0.1 in 0.6

Median of Unflagged Casing Thickness (THAV_RF) USIT-E
0.1 in 0.6

Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E
0.1 in 0.6

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

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)

Ratio of Cement Measurements to Total (CEMR) USIT-E
1 0

Micro-debonding Ratio (MDR) USIT-E
1 0

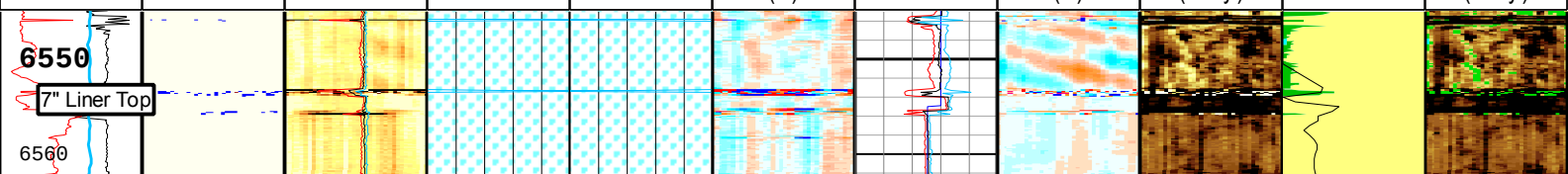
Ratio of Gas Measurements to Total (GASR) USIT-E
1 0

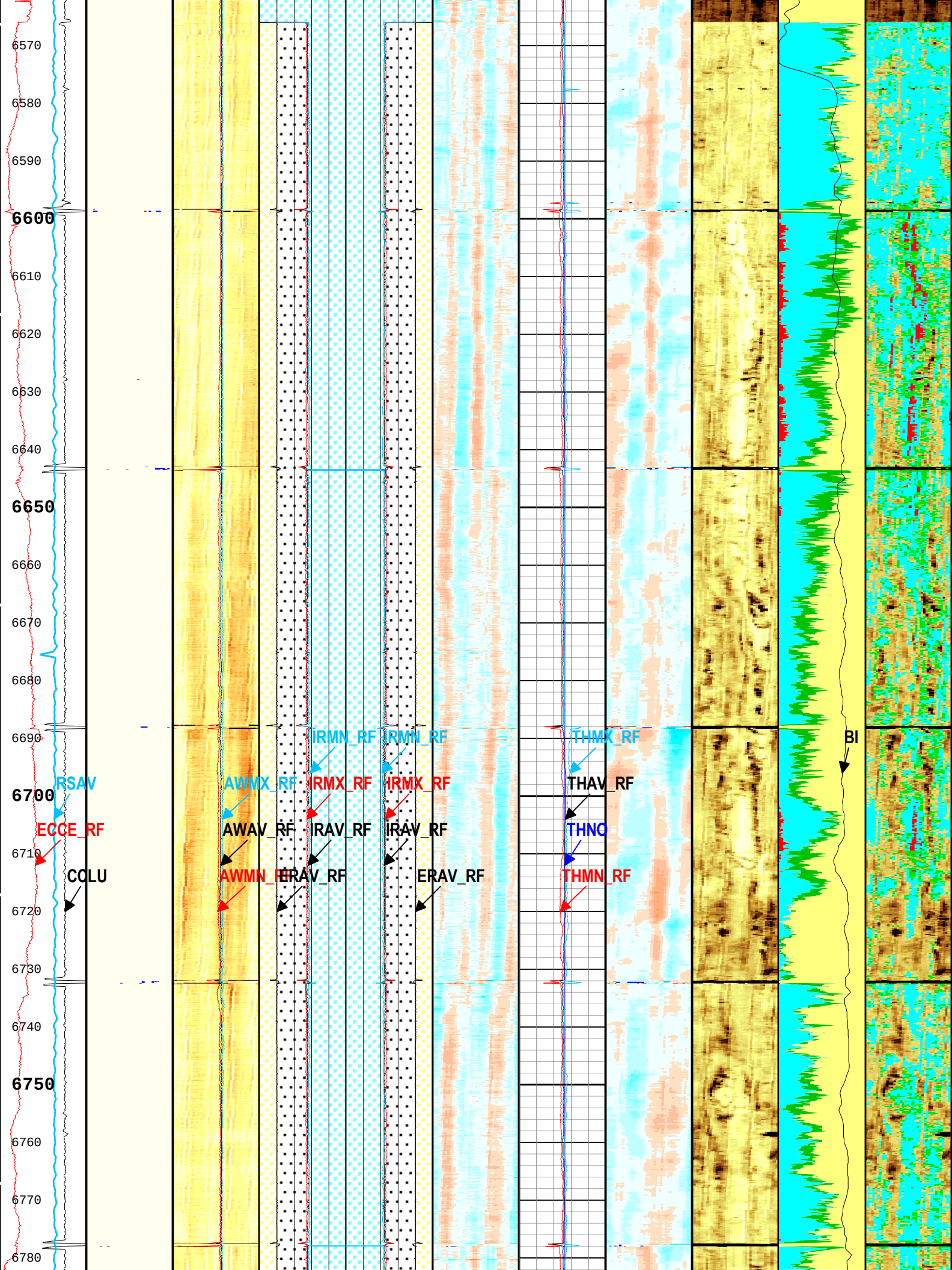
Bonded
Gas
Liquid
Micro-debonding

Bond Index (BI) DSLT-H
1 0

U L B R U
Orientation: Top of Hole
Absent 3.090 5.054 7.018
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)

U L B R U
Orientation: Top of Hole
Absent 2.599 4.563 6.527
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E (Mrayl)

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6730
6740
6750
6760
6770
6780
RSAV
ECCE_RF
COLU
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
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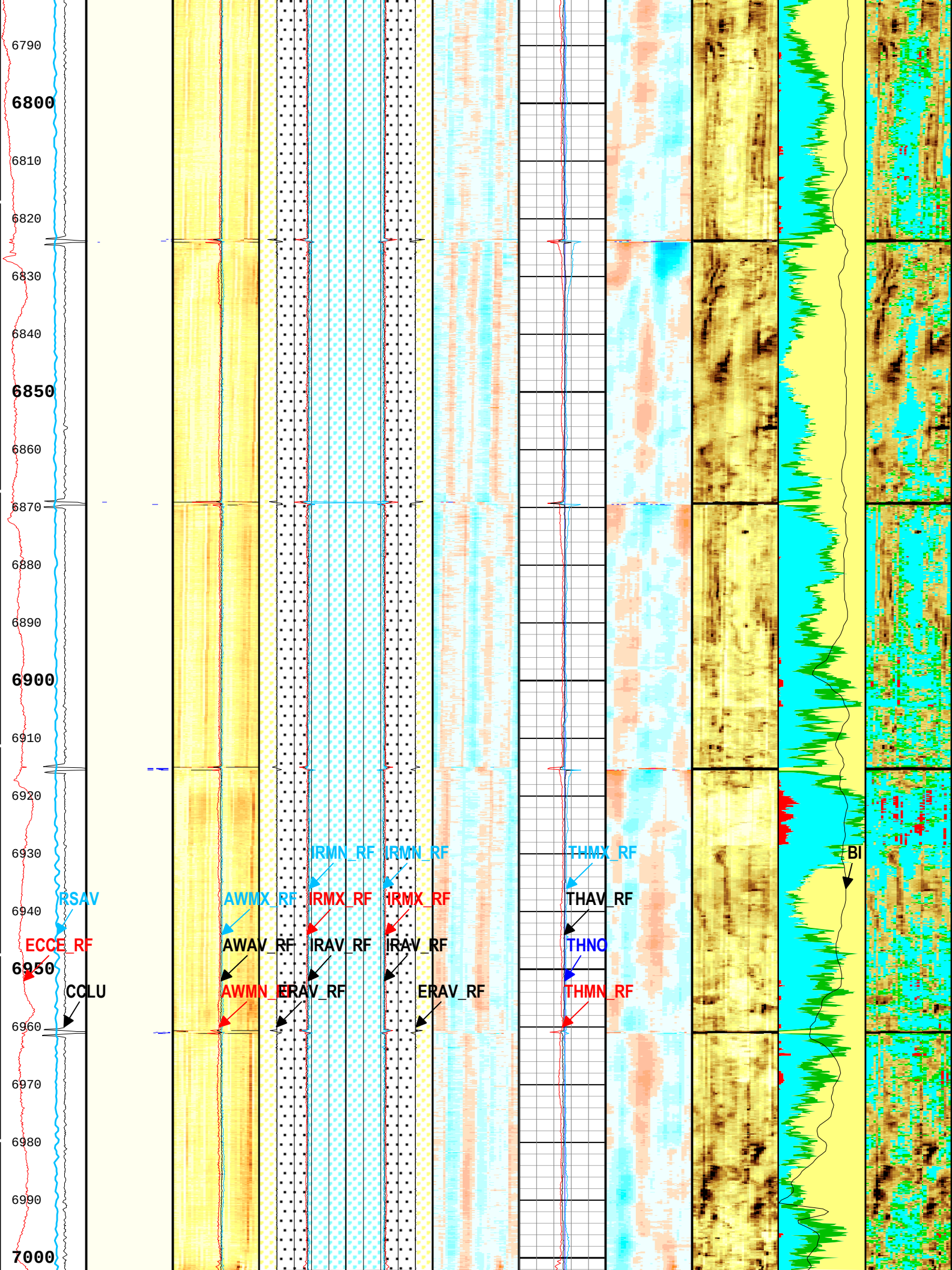
THAV_RF
THNO
THMN_RF
BI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6970
6980
6990
7000
RSAV
ECCE_RF
CCLU
AWMX_RF
AWAV_RF
AWMN_RF
IRMN_RF
IRMX_RF
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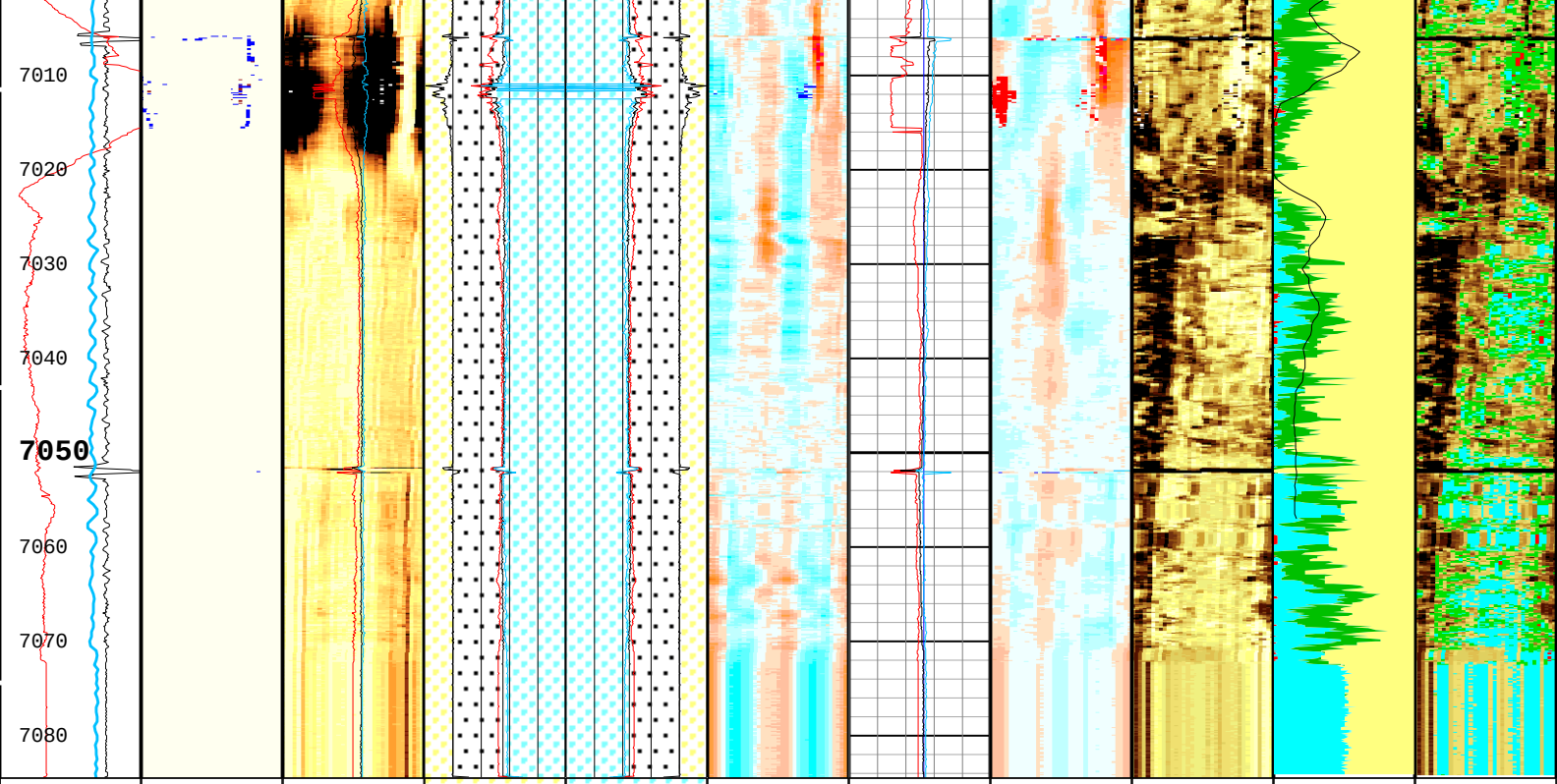
THAV_RF
THNO
THMN_RF
BI



Casing Collar Locator Ultrasonic (CCLU) USIT-E
-30 in 10

Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E
0 in 0.5

Motor Revolution Speed (RSAV) USIT-E
6 c/s 8

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

Absent -4.799 -2.799 -0.800
Explicit Normalization
USIT - Amplitude of Unflagged Wave (AWBK_RF) USIT-E
(dB)
Orientation: Top of Hole
U L B R U

Minimum of Unflagged Wave Amplitude (AWMN_RF) USIT-E
0 dB 75

Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E
0 dB 75

Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E
0 dB 75

ERAV
ERAV-IRAV
IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
3.7 in 2.7

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
3.7 in 2.7

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.7 in 2.7

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.7 in 2.7

IRAV
ERAV
IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
2.7 in 3.7

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
2.7 in 3.7

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
2.7 in 3.7

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
2.7 in 3.7

Absent -0.051 -0.012 0.028 0.068
Explicit Normalization
USIT - Unflagged Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E
(in)
Orientation: Top of Hole
U L B R U

Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E
0.1 in 0.6

Nominal Casing Thickness (THNO) USIT-E
0.1 in 0.6

Median of Unflagged Casing Thickness (THAV_RF) USIT-E
0.1 in 0.6

Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E
0.1 in 0.6

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

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

Ratio of Cement Measurements to Total (CEMR) USIT-E
1 0

Micro-debonding Ratio (MDR) USIT-E
1 0

Ratio of Gas Measurements to Total (GASR) USIT-E
1 0

Bonded
Gas
Liquid
Micro-debonding

Bond Index (BI) DSLT-H
1 0

Absent 3.090 5.054 7.018
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E
(Mrayl)
Orientation: Top of Hole
U L B R U

Absent 2.599 4.563 6.527
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E
(Mrayl)
Orientation: Top of Hole
U L B R U

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

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

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

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Composite Format: Log (LBV1_USI Composite 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 31-Mar-2016 13:16:25

Composite 1

Cement Log 8-5/8" Casing 2 IN = 100 FT

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[7]:Up	Up	1028.13 ft	6590.51 ft	30-Mar-2016 12:52:21 PM	30-Mar-2016 2:41:26 PM	ON	-5.08 ft	Yes
One	Log[8]:Up	Up	481.66 ft	1097.23 ft	30-Mar-2016 2:41:59 PM	30-Mar-2016 2:54:08 PM	ON	-5.14 ft	Yes
One	Log[10]:Up	Up	47.88 ft	548.03 ft	30-Mar-2016 2:56:22 PM	30-Mar-2016 3:07:25 PM	ON	-4.95 ft	Yes
One	Log[24]:Up	Up	4.33 ft	104.64 ft	30-Mar-2016 5:26:46 PM	30-Mar-2016 5:31:02 PM	ON	0.26 ft	No

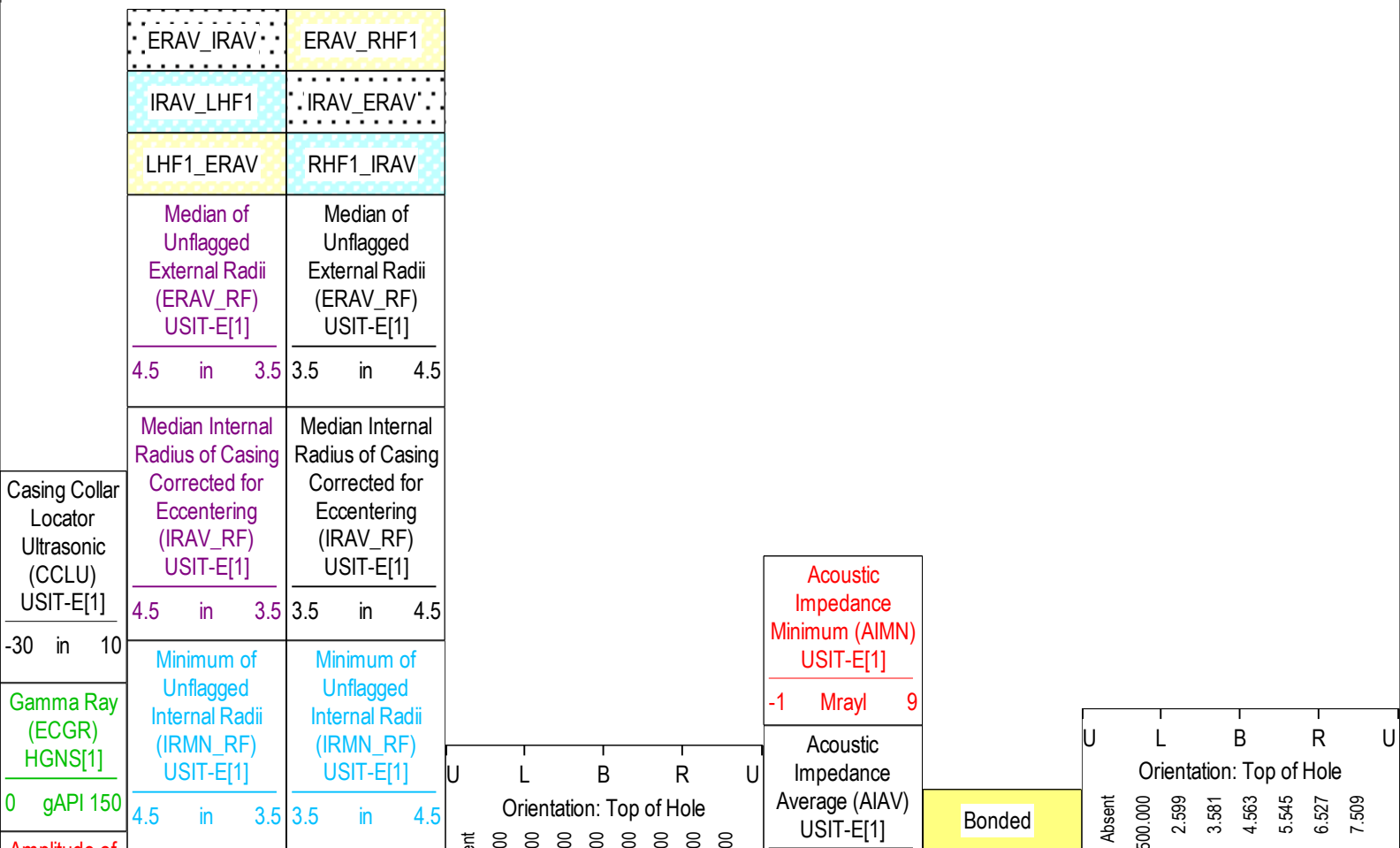
All depths are referenced to toolstring zero

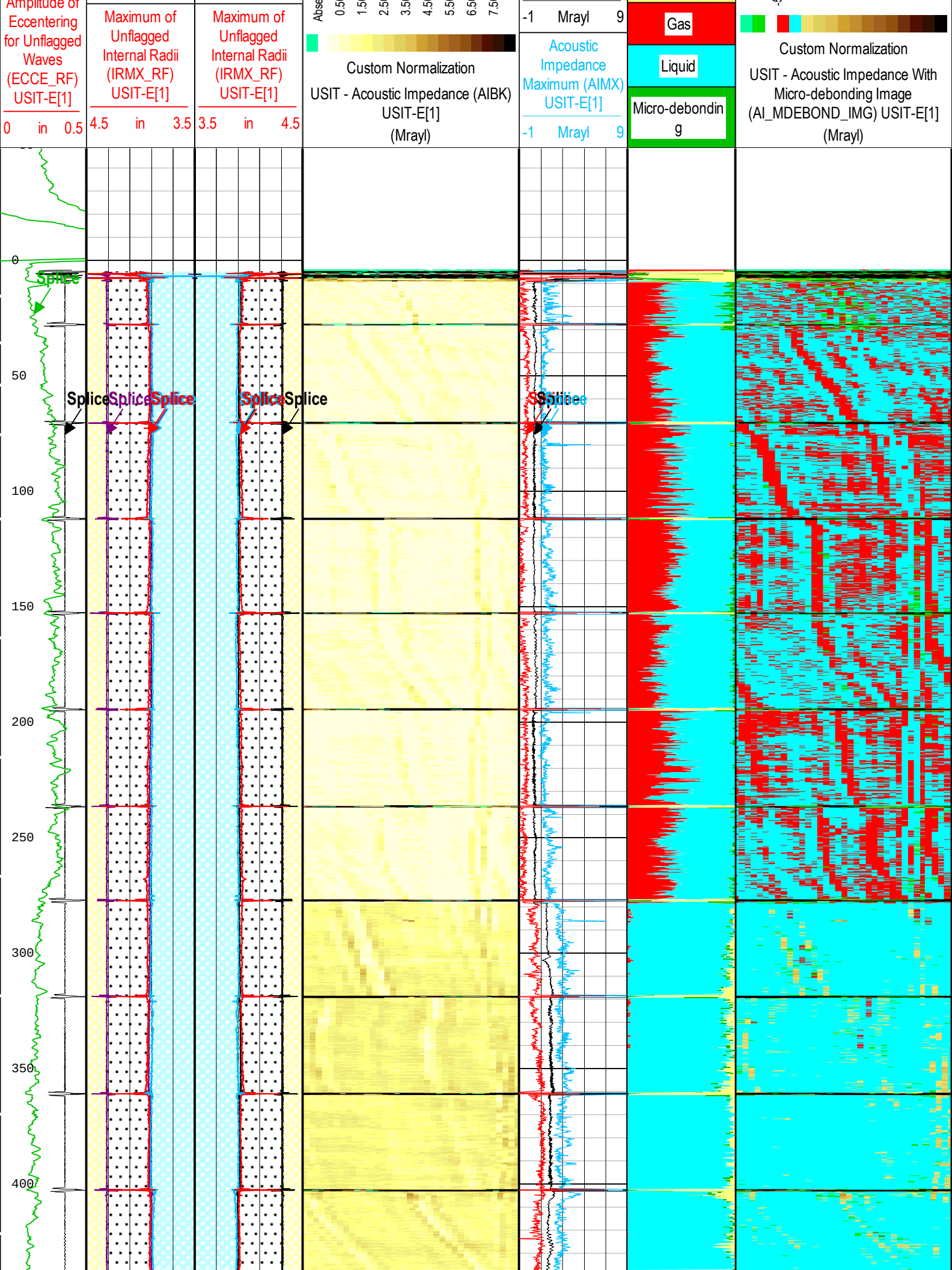
Log

Company:Southern California Gas Company Well:Fernando Fee 32-A Composite 1:S005

Description: USI Cement Format: Log (LBV1_USI Cement 9.625inch) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 31-Mar-2016 13:16:32

TIME_1900 - Time Marked every 60.00 (s)




Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E[1]
0 in 0.5
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
4.5 in 3.5
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
3.5 in 4.5
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E[1] (Mrayl)
-1 Mrayl 9
Acoustic Impedance Maximum (AIMX) USIT-E[1]
-1 Mrayl 9
Gas
Liquid
Micro-debonding
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E[1] (Mrayl)
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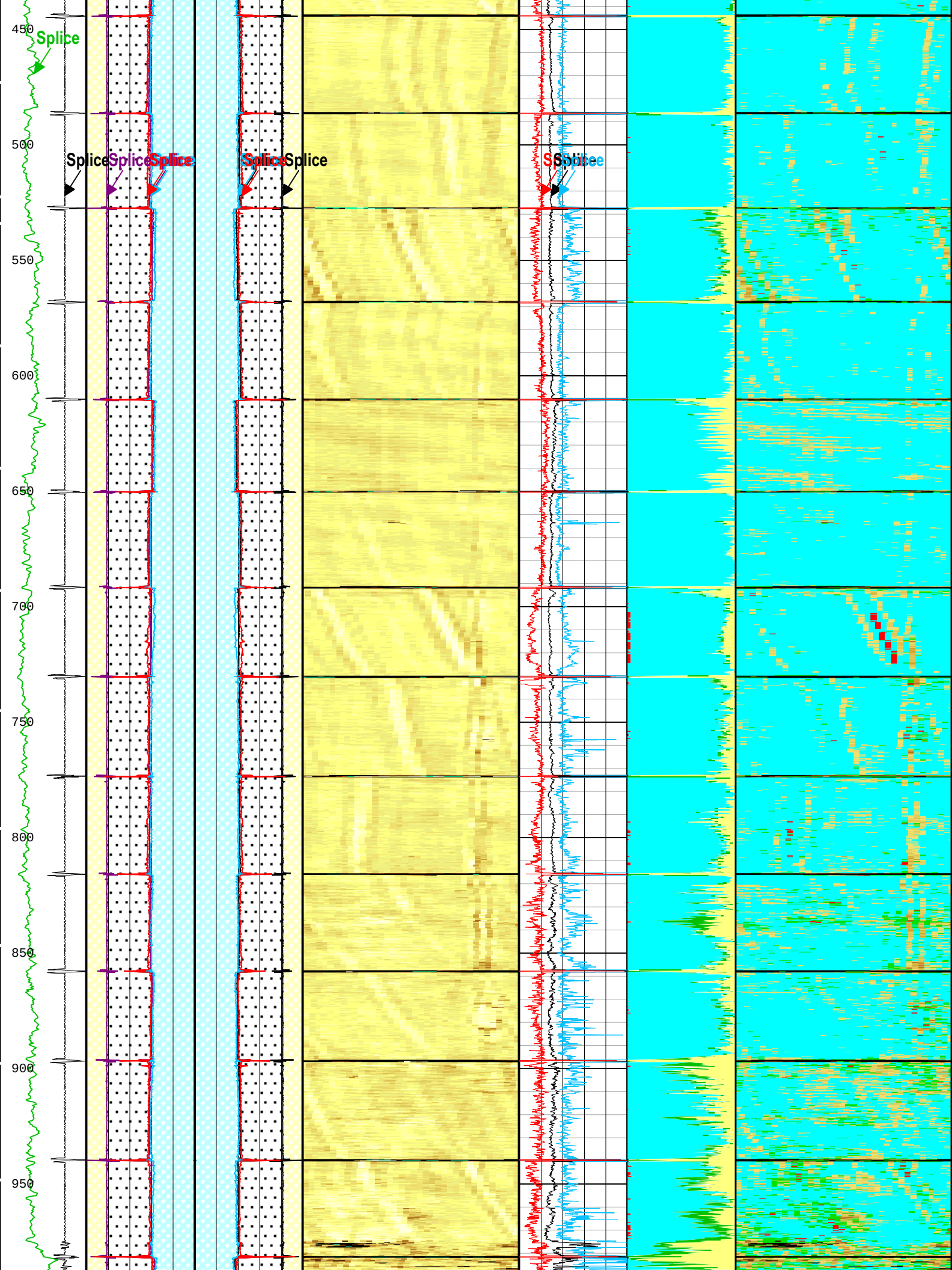
50
100
150
200
250
300
350
400
Splice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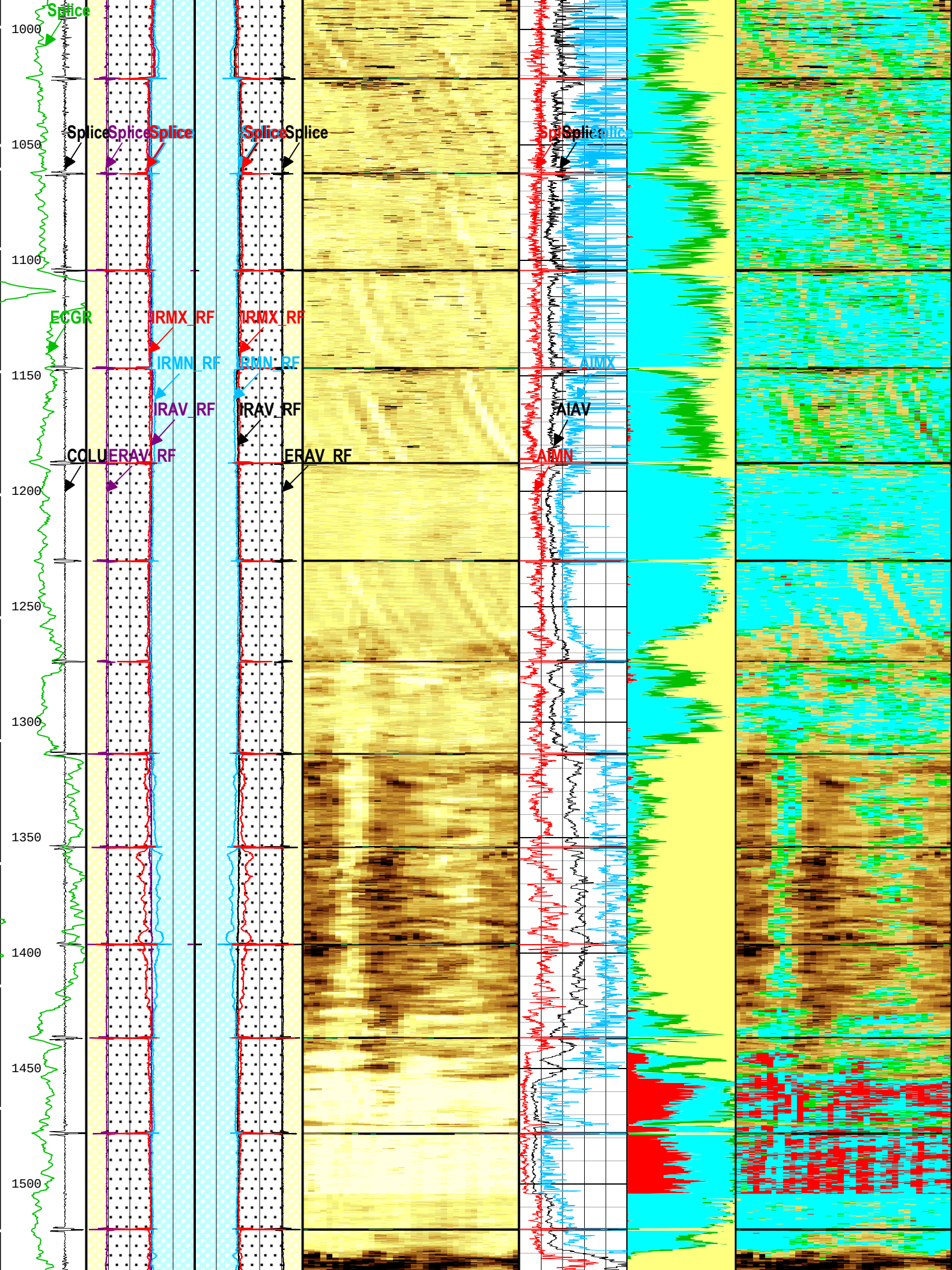
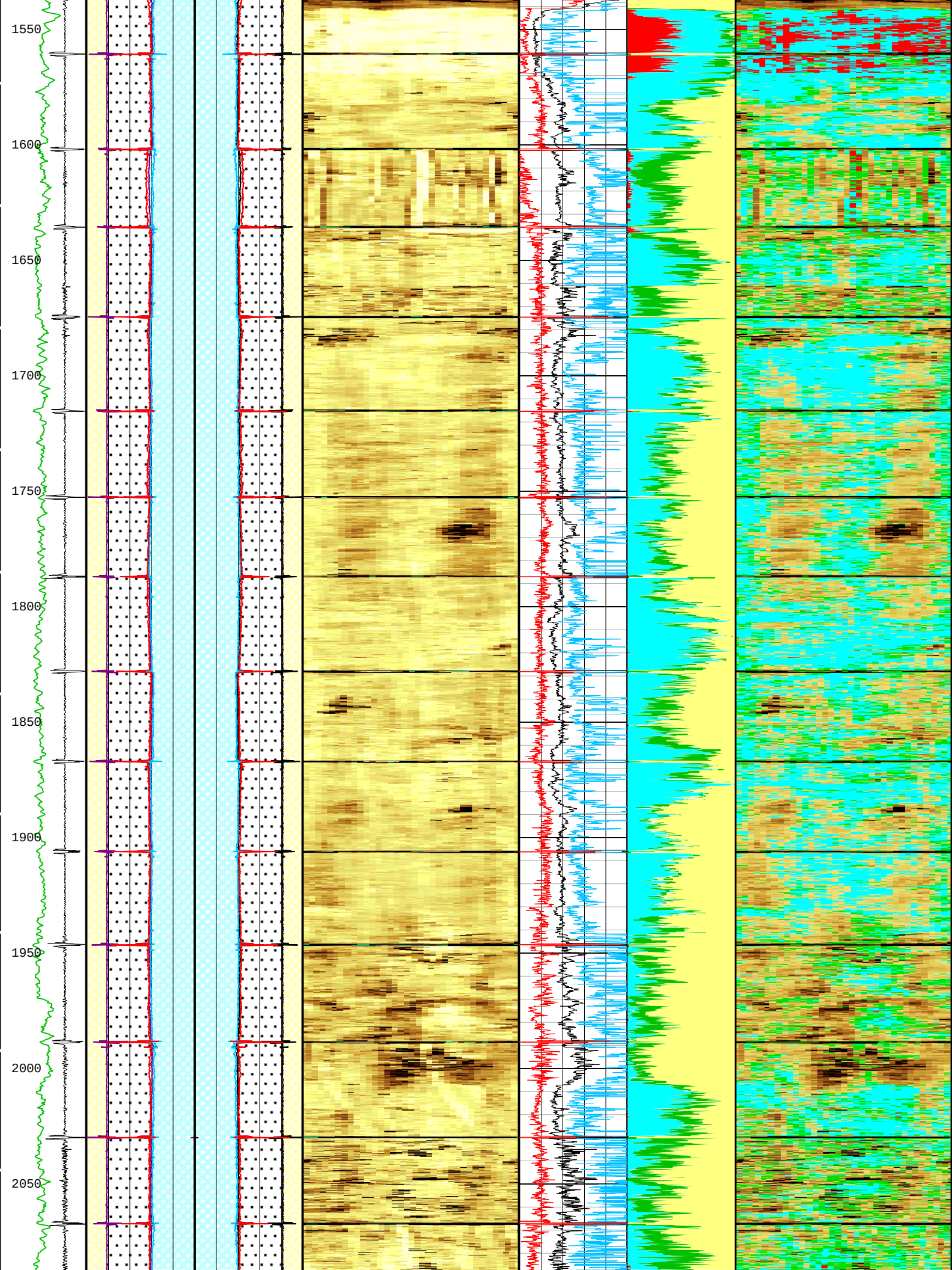
Splice
500
Splice
Splice
Splice
Splice
Splice
Splice
550
600
650
700
750
800
850
900
950


Splice
1000
Splice
Splice
Splice
Splice
Splice
Splice
1050
1100
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
1150
IRAV_RF
IRAV_RF
COLU
ERAV_RF
ERAV_RF
1200
1250
1300
1350
1400
1450
1500
AIMX
AIAV
AIMN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1750
1800
1850
1900
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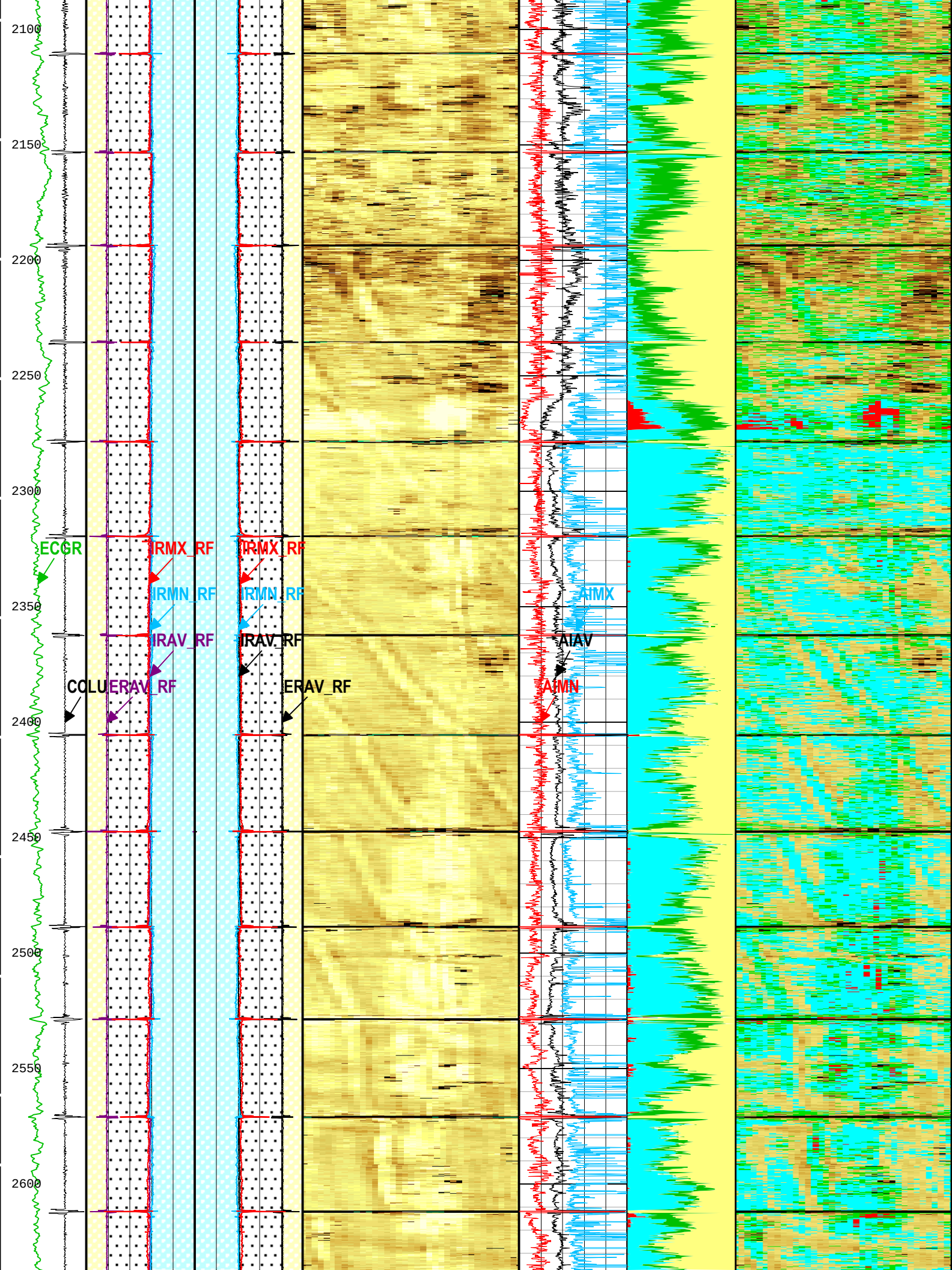
2000
2050


2100
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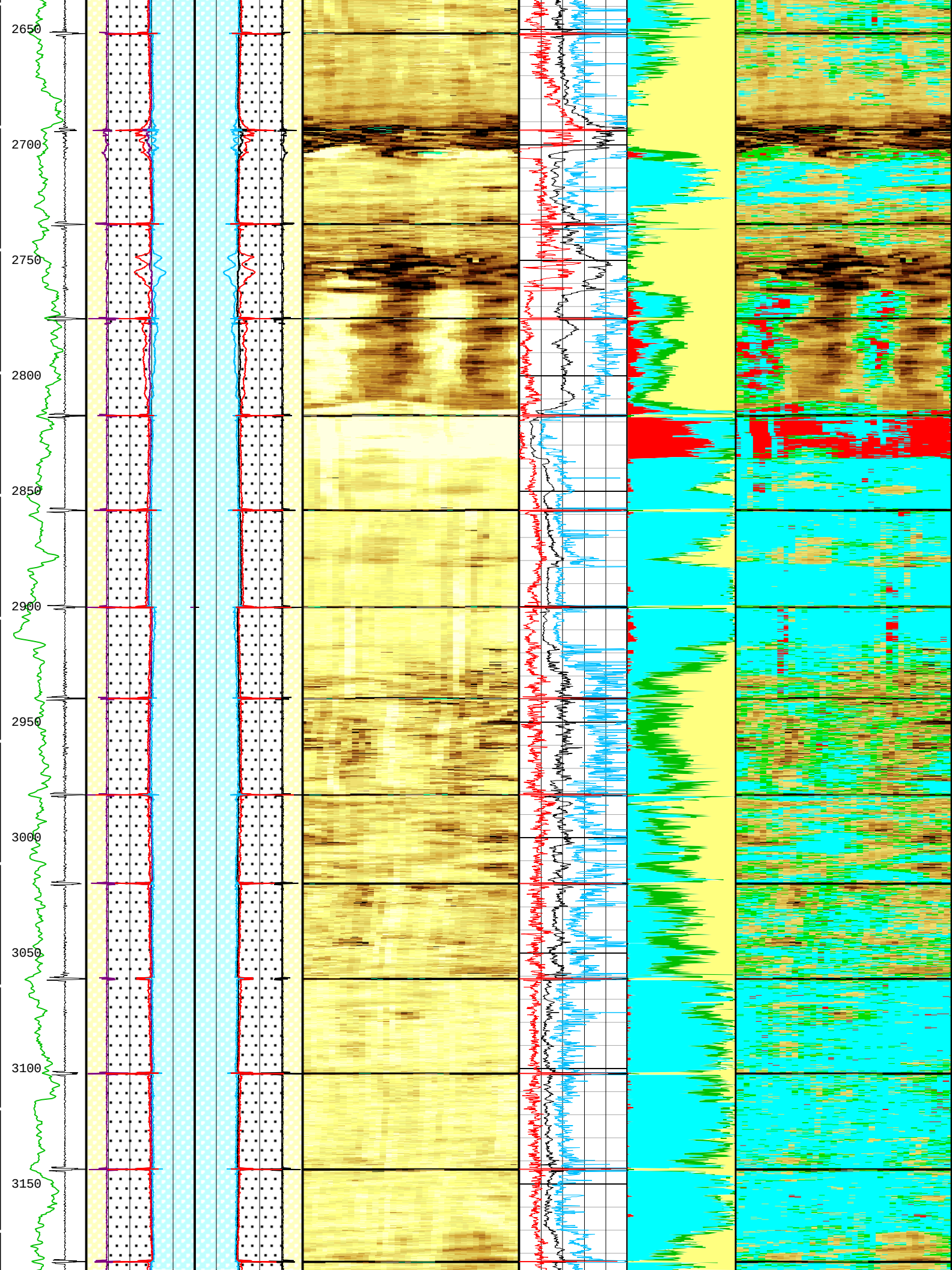
2200
2250
2300
2350
2400
2450
2500
2550
2600
ECGR
IRMX_RF
IRMN_RF
IRAV_RF
COLU
ERAV_RF
IRMX_RF
IRMN_RF
IRAV_RF
ERAV_RF
AIMX
AIAV
AIMN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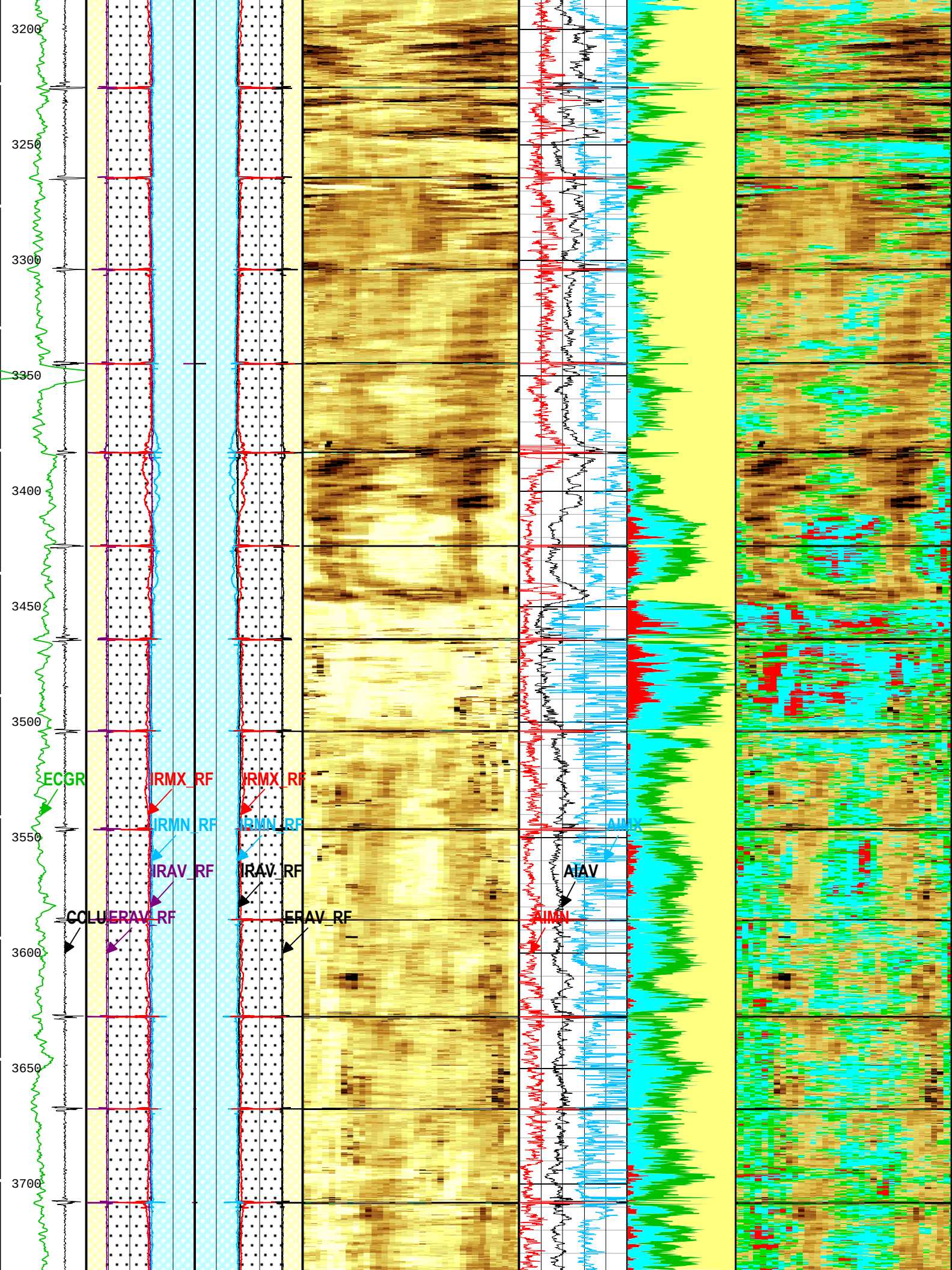
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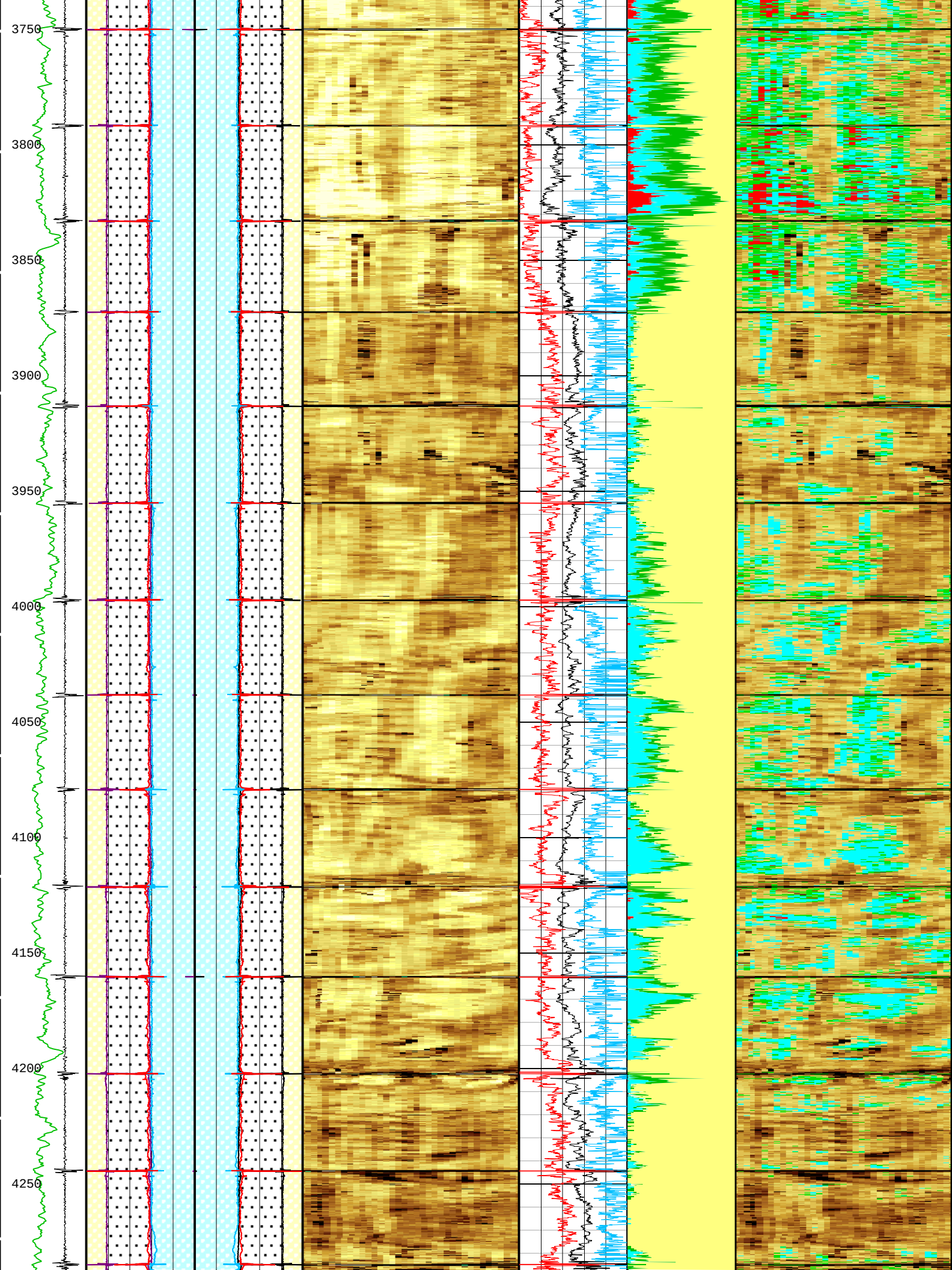
AIMX
AIAV
AIMN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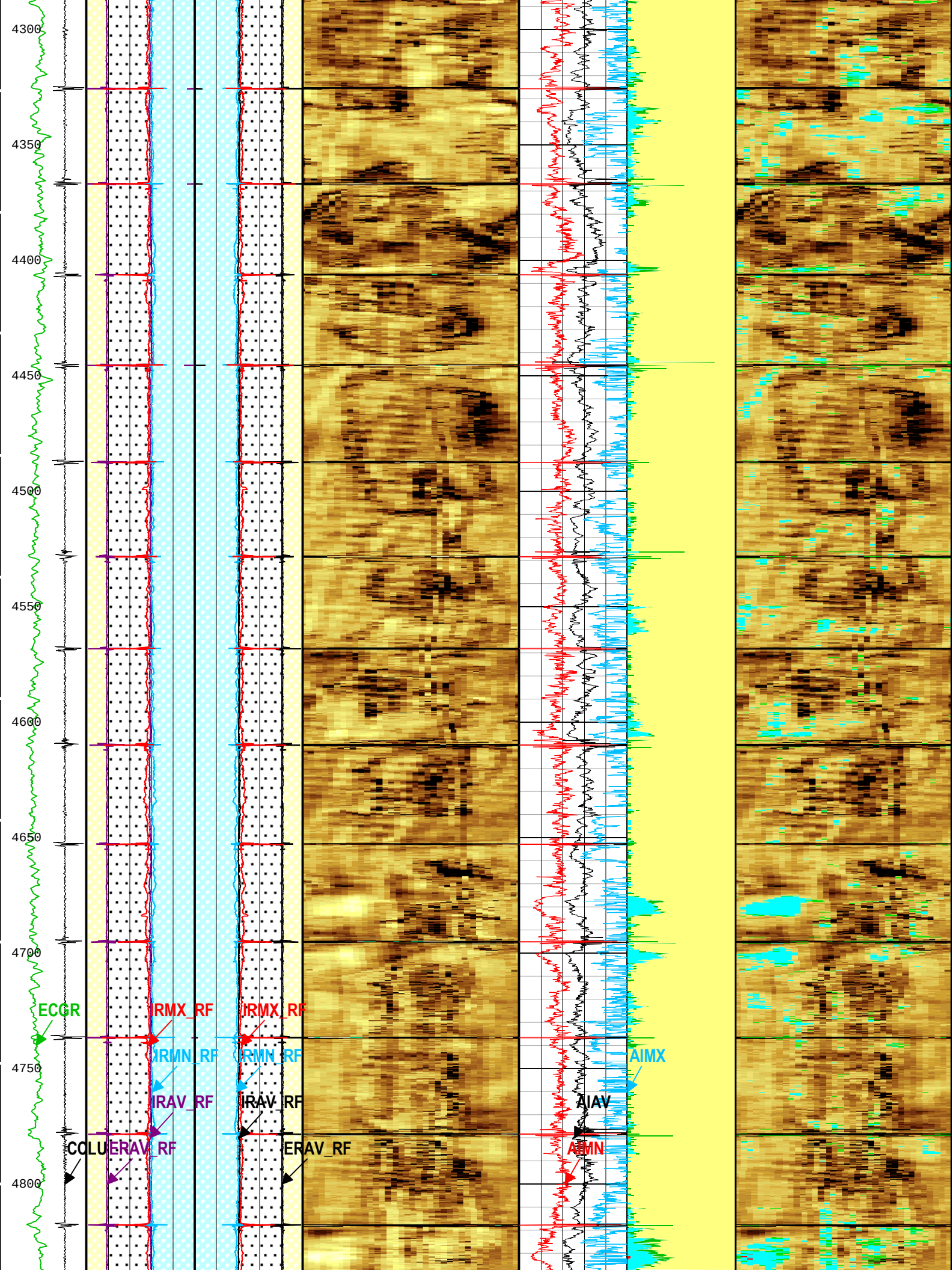
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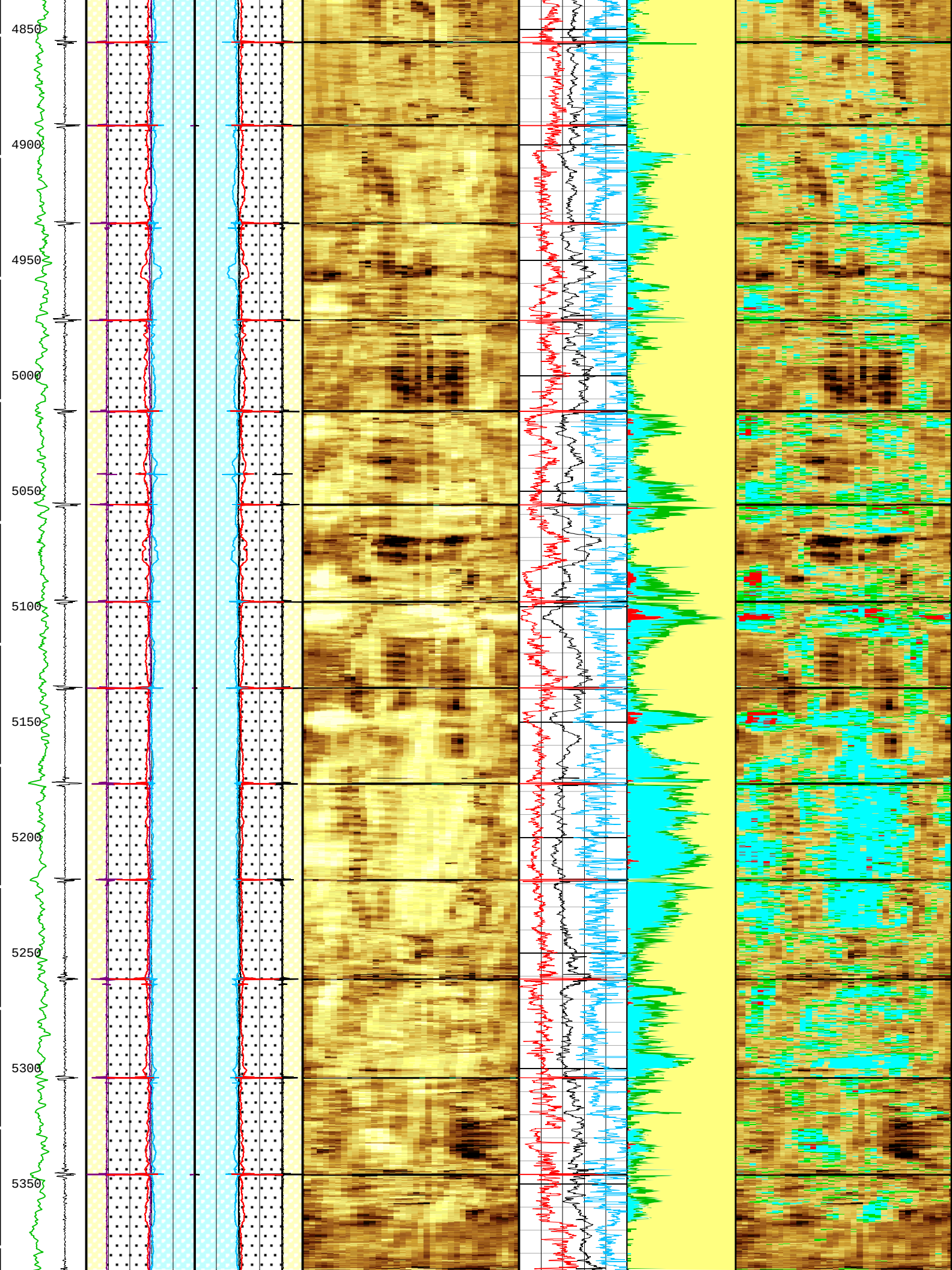
IRMN_RF
IRAV_RF
ERAV_RF
AIMX
AIAV
AIMN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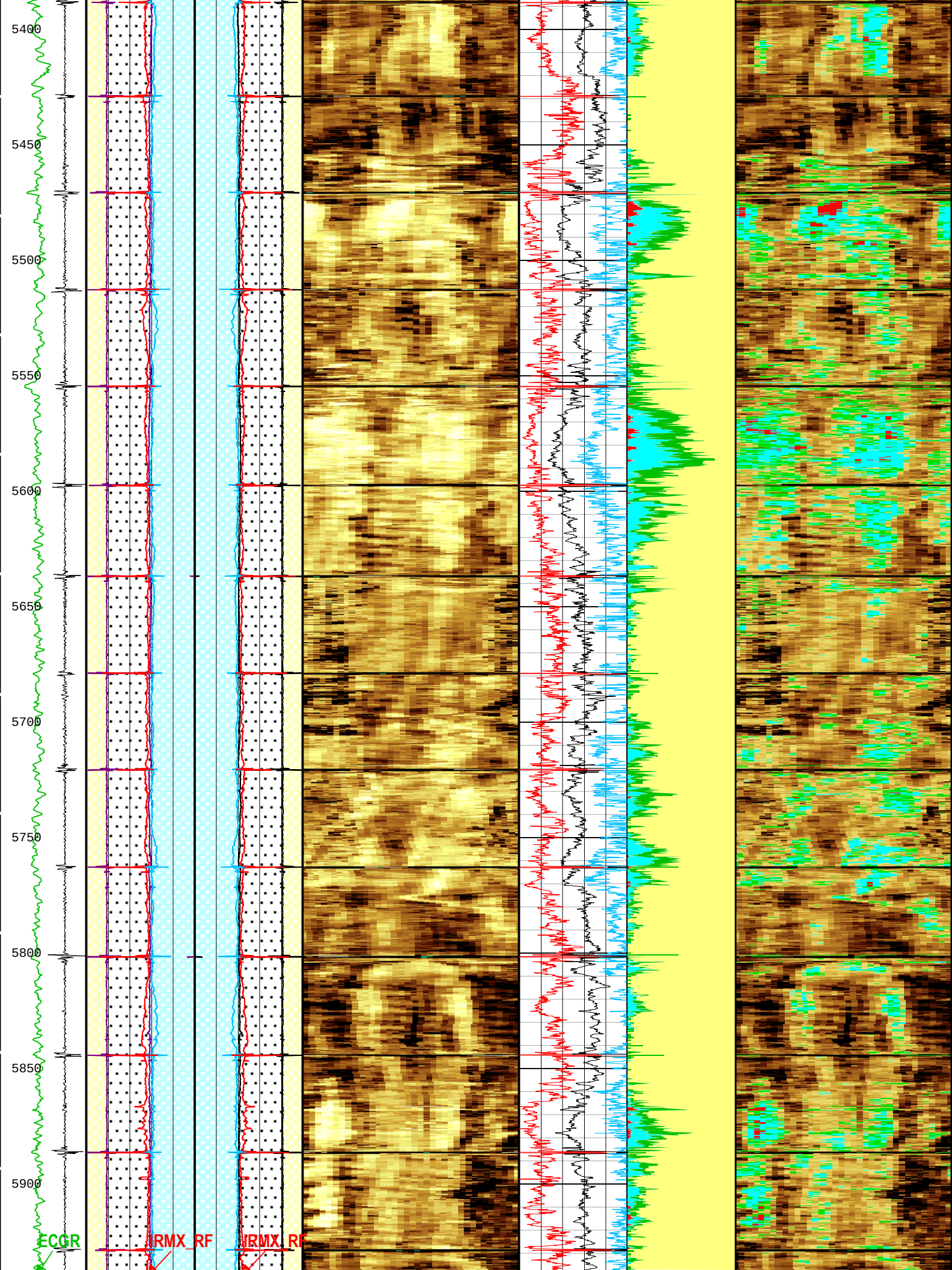
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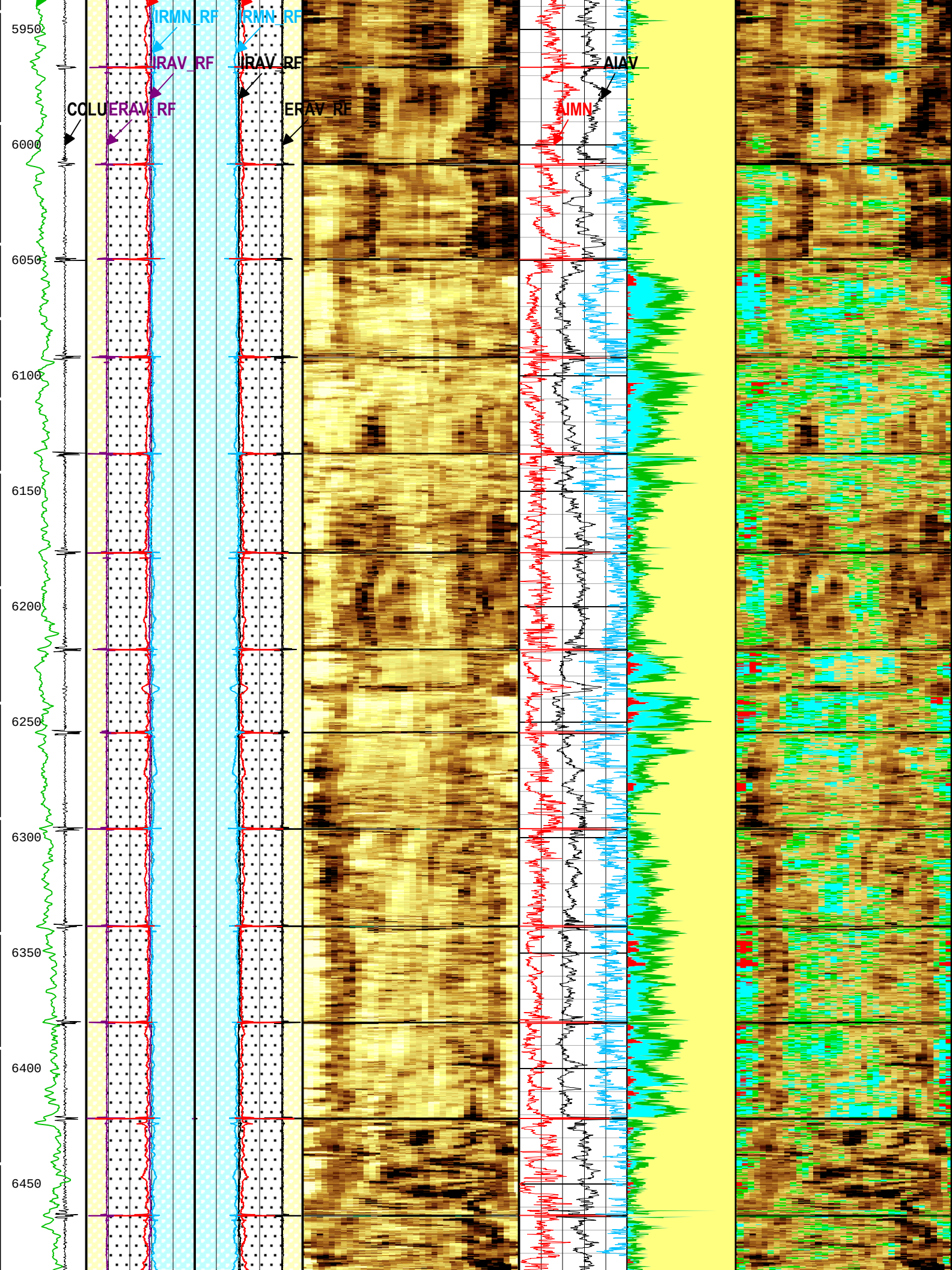
RMX_RF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IRMN_RF
IRAV_RF
IRAV_RF
AIAV
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AIMN
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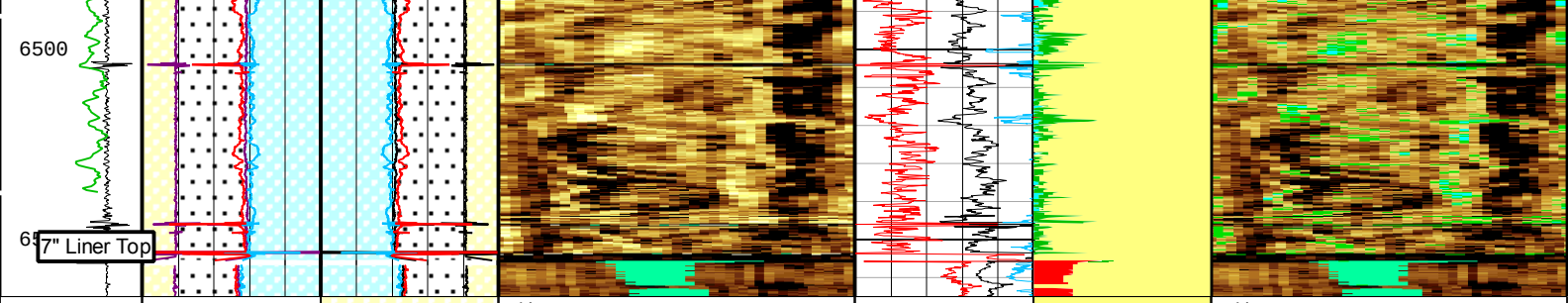
6450



Casing Collar Locator Ultrasonic (CCLU) USIT-E[1]
-30 in 10

Gamma Ray (ECGR) HGNS[1]
0 gAPI 150

Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E[1]
0 in 0.5

ERAV_IRAV | ERAV_RHF1
IRAV_LHF1 | IRAV_ERAV
LHF1_ERAV | RHF1_IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
4.5 in 3.5

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
3.5 in 4.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
4.5 in 3.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
3.5 in 4.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
4.5 in 3.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
3.5 in 4.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
4.5 in 3.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
3.5 in 4.5

Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E[1]
(Mrayl)
Orientation: Top of Hole
U L B R U

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

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

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

Bonded
Gas
Liquid
Micro-debonding

Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E[1]
(Mrayl)
Orientation: Top of Hole
U L B R U

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Cement Format: Log (LBV1_USI Cement 9.625inch) Index Scale: 2 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 31-Mar-2016 13:16:32

One

Cement Log 7" Casing 2 IN = 100 FT

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[3]:Up	Up	6537.39 ft	7084.95 ft	30-Mar-2016 12:15:32 PM	30-Mar-2016 12:28:34 PM	ON	-6.00 ft	No

All depths are referenced to toolstring zero

Log

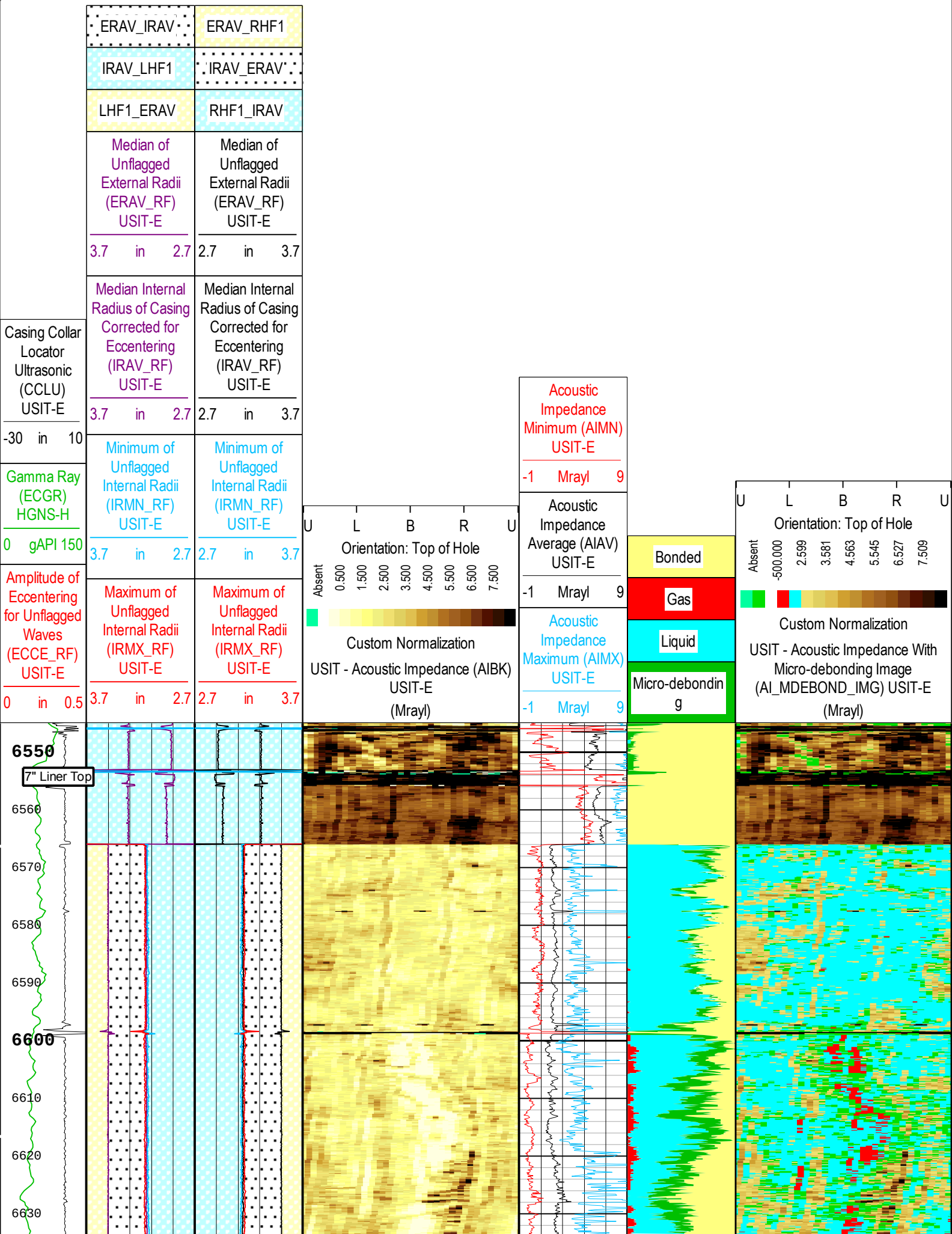
Company:Southern California Gas Company Well:Fernando Fee 32-A

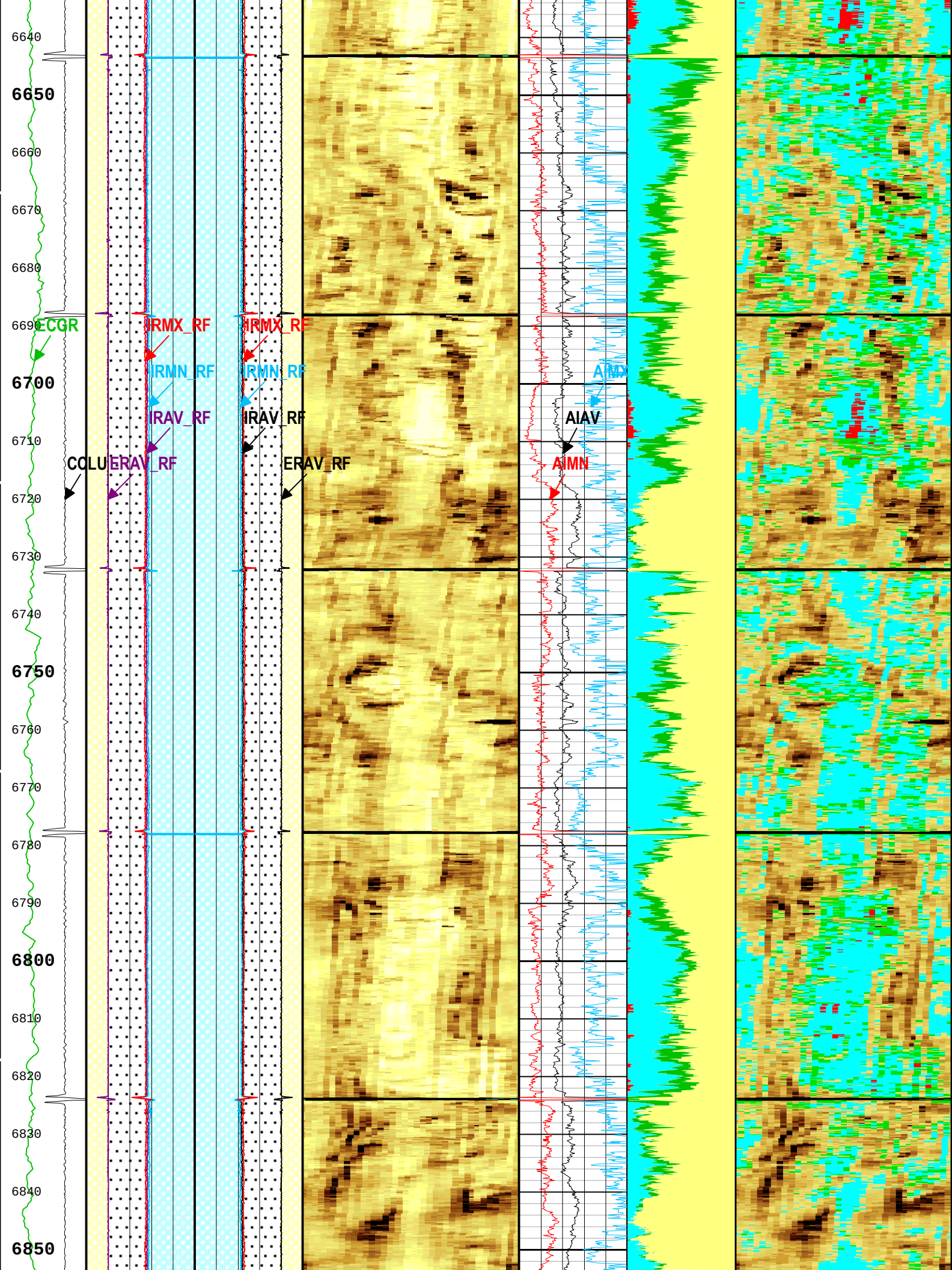
One: Log[3]:Up:S005

Description: USI Cement Format: Log (LBV1_USI Cement 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 31-Mar-2016 13:17:08

31-Mar-2016 13:17:08

TIME_1900 - Time Marked every 60.00 (s)

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6820
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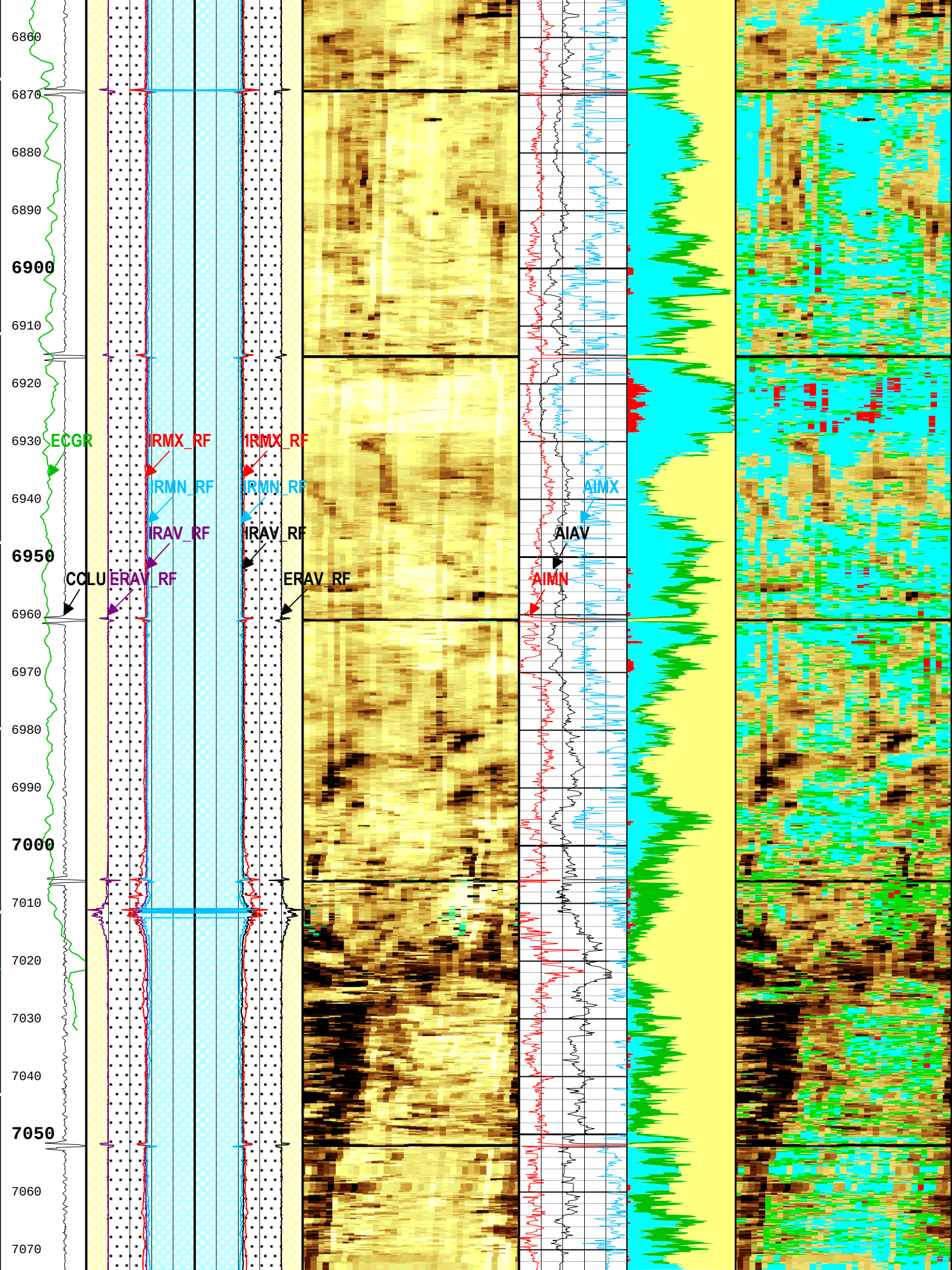
6840
6850
ECGR
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV_RF
IRAV_RF
COLU
ERAV_RF
ERAV_RF
AIAV
AIMN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7070
ECGR
IRMX_RF
IRMN_RF
IRAV_RF
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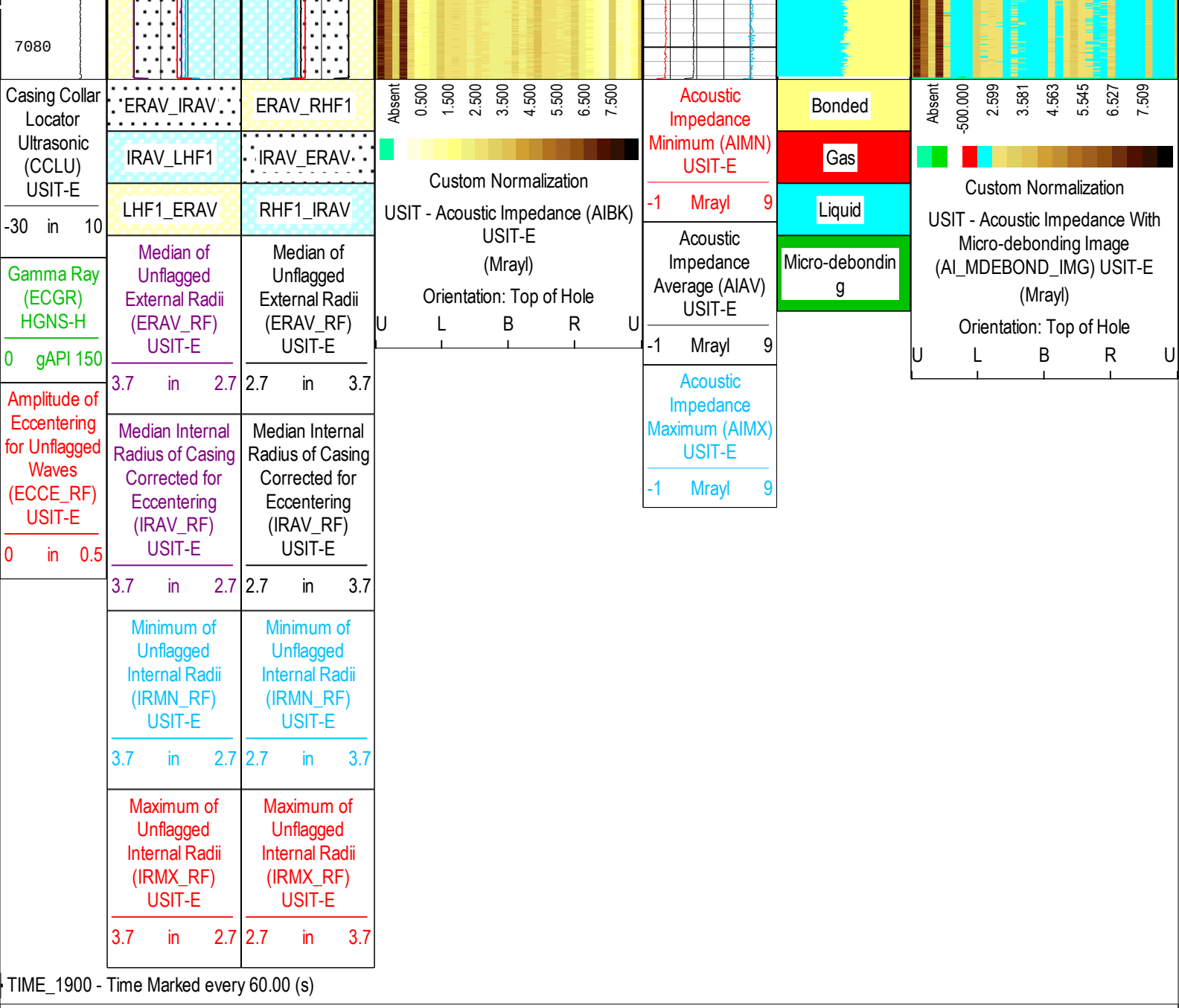
IRAV_RF
ERAV_RF
AIMX
AIAV
AIMN



Description: USI Cement Format: Log (LBV1_USI Cement 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 31-Mar-2016 13:17:08

Composite 1

Corrosion 8-5/8" Casing 5 in = 100 ft

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[7]:Up	Up	1028.13 ft	6590.51 ft	30-Mar-2016 12:52:21 PM	30-Mar-2016 2:41:26 PM	ON	-5.08 ft	Yes
One	Log[8]:Up	Up	481.66 ft	1097.23 ft	30-Mar-2016 2:41:59 PM	30-Mar-2016 2:54:08 PM	ON	-5.14 ft	Yes
One	Log[10]:Up	Up	47.88 ft	548.03 ft	30-Mar-2016 2:56:22 PM	30-Mar-2016 3:07:25 PM	ON	-4.95 ft	Yes
One	Log[24]:Up	Up	4.33 ft	104.64 ft	30-Mar-2016 5:26:46 PM	30-Mar-2016 5:31:02 PM	ON	0.26 ft	No

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Fernando Fee 32-A

Composite 1:S005

Description: USI Composite Format: Log (LBV1_USI Corrosion 9.625inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 31-Mar-2016 13:17:15

Creation Date: 31-Mar-2016 15:17:15

TIME_1900 - Time Marked every 60.00 (s)

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

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[1]
-30 in 10

Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E[1]
0 in 0.5

Motor Revolution Speed (RSAV) USIT-E[1]
6 c/s 8

U L B R U
Orientation: Top of Hole
Absent 1.500 3.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E[1]

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

U L B R U
Orientation: Top of Hole
Absent -5.200 -3.600 -2.000 -0.400
Explicit Normalization
USIT - Amplitude of Unflagged Wave (AWBK_RF) USIT-E[1] (dB)

Minimum of Unflagged Wave Amplitude (AWMN_RF) USIT-E[1]
0 dB 75

Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E[1]
0 dB 75

Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E[1]
0 dB 75

U L B R U
Orientation: Top of Hole
Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E[1] (in)

Internal Radius Averaged Value (IRAV) USIT-E[1]
3.5 in 4.5

Internal Radius Maximum Value (IRMX) USIT-E[1]
3.5 in 4.5

Internal Radius Minimum Value (IRMN) USIT-E[1]
3.5 in 4.5

ERAV | IRAV
ERAV-IRAV | ERAV
IRAV | IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
4.5 in 3.5

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
3.5 in 4.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
4.5 in 3.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
3.5 in 4.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
4.5 in 3.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
3.5 in 4.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
4.5 in 3.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
3.5 in 4.5

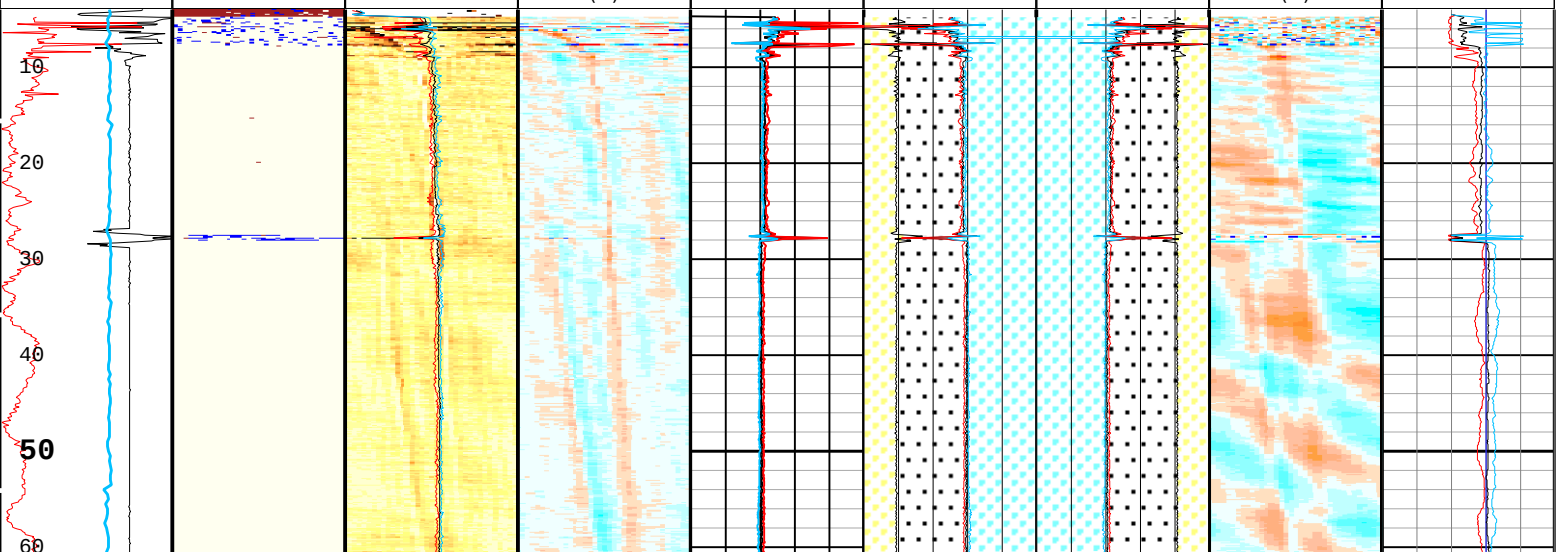
U L B R U
Orientation: Top of Hole
Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Casing Thickness minus Median of Unflagged Casing Thickness (THBKM_RF) USIT-E[1] (in)

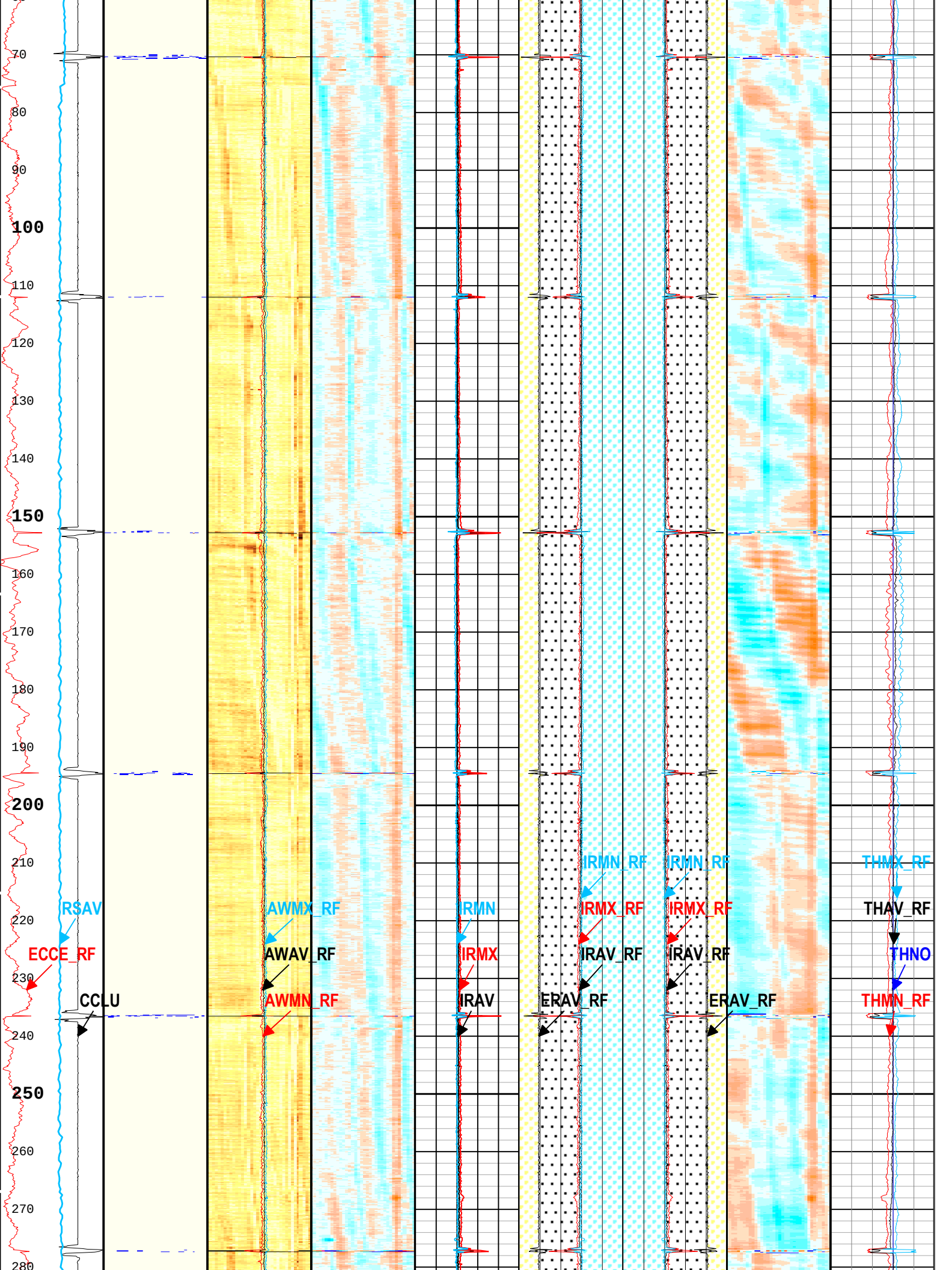
Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E[1]
0.1 in 0.6

Nominal Casing Thickness (THNO) USIT-E[1]
0.1 in 0.6

Median of Unflagged Casing Thickness (THAV_RF) USIT-E[1]
0.1 in 0.6

Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E[1]
0.1 in 0.6

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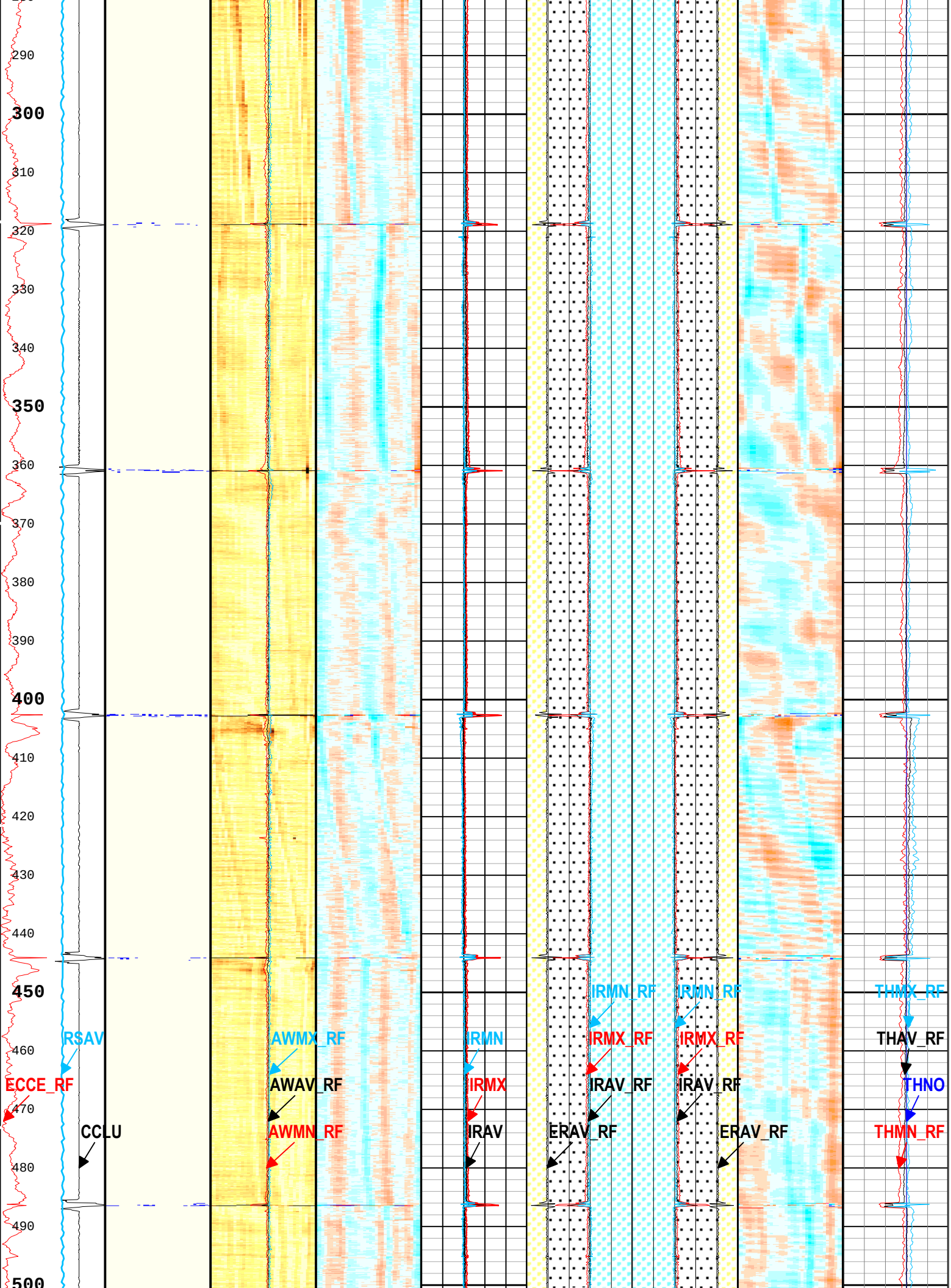
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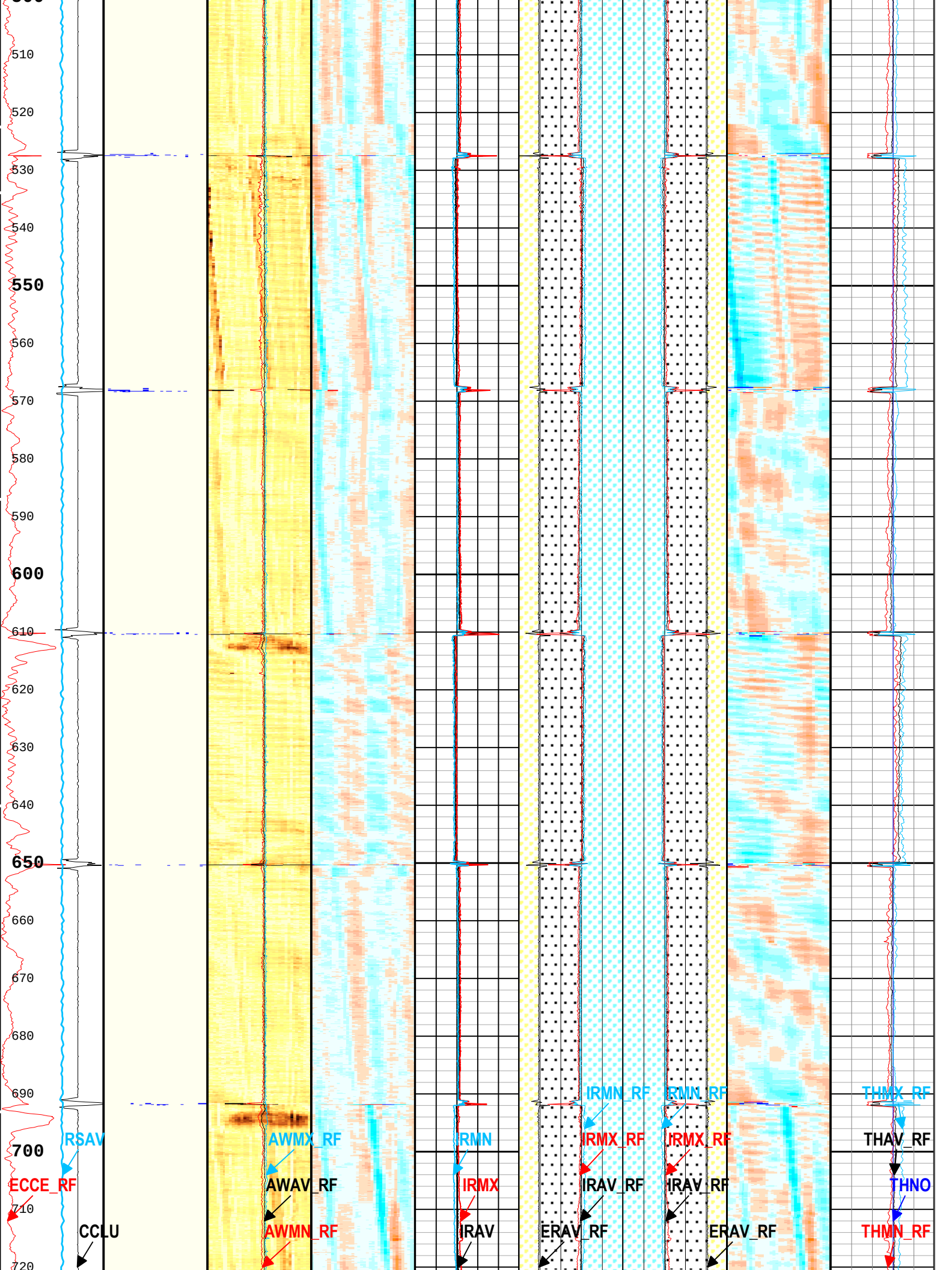
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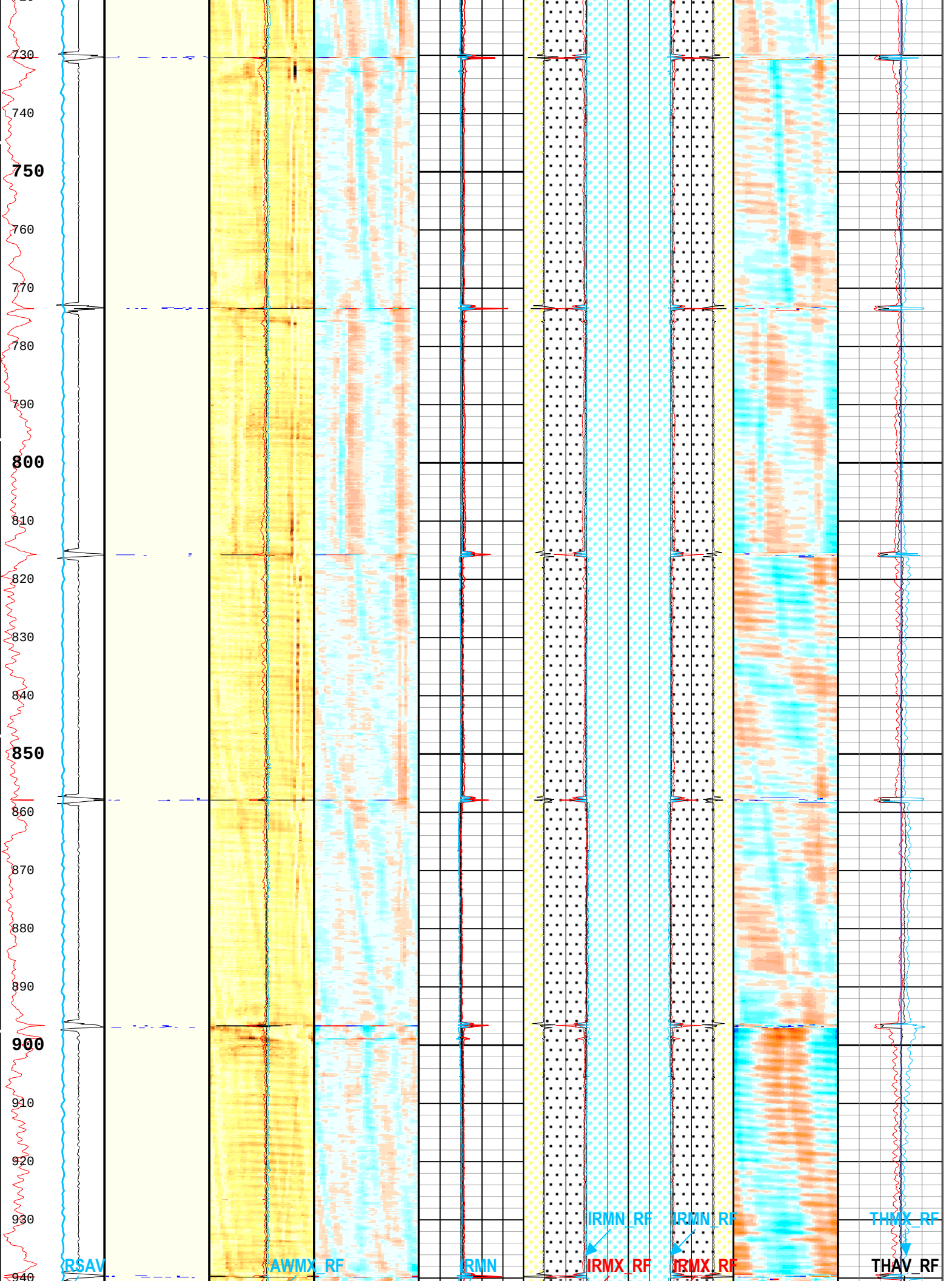
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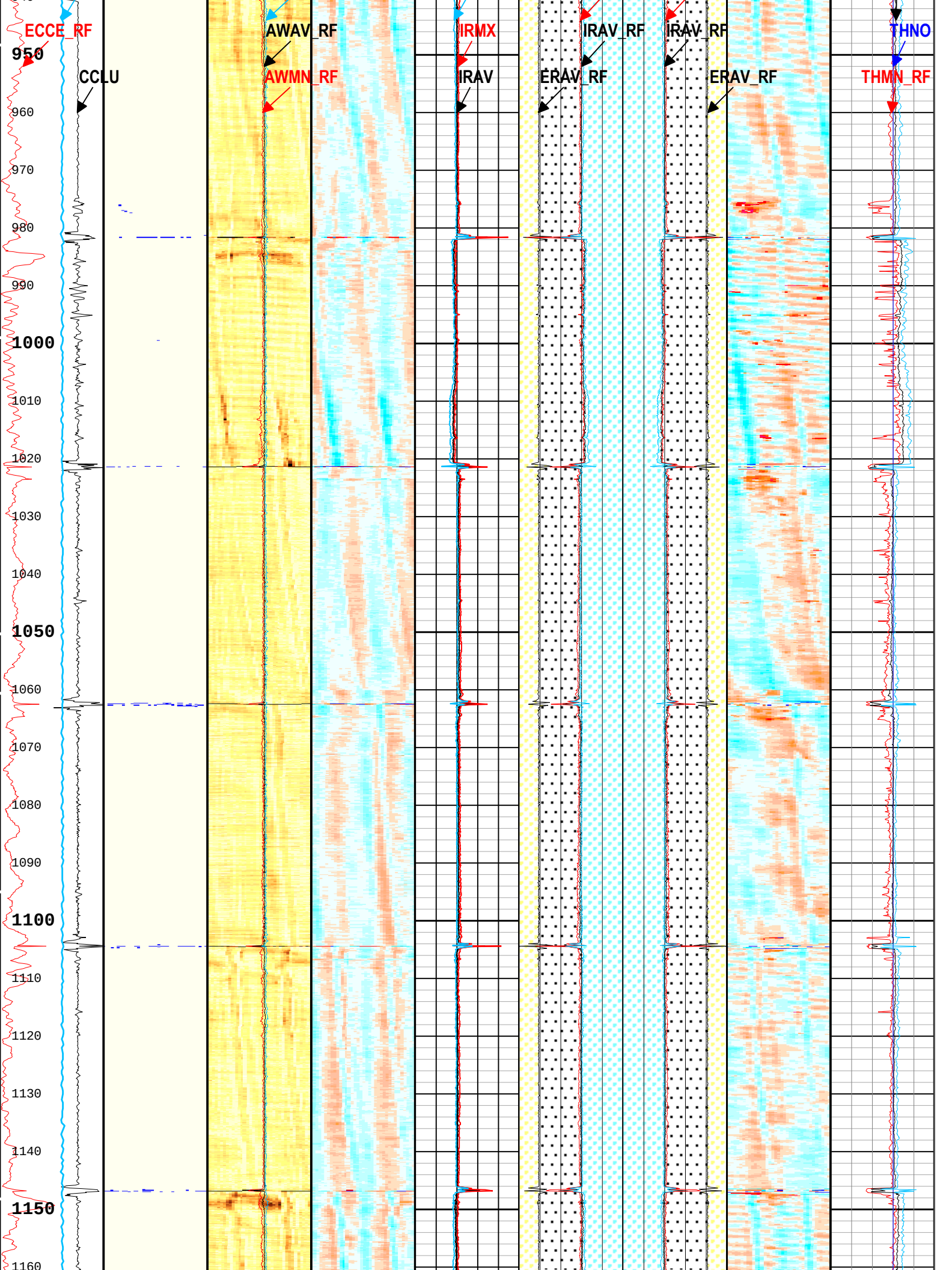
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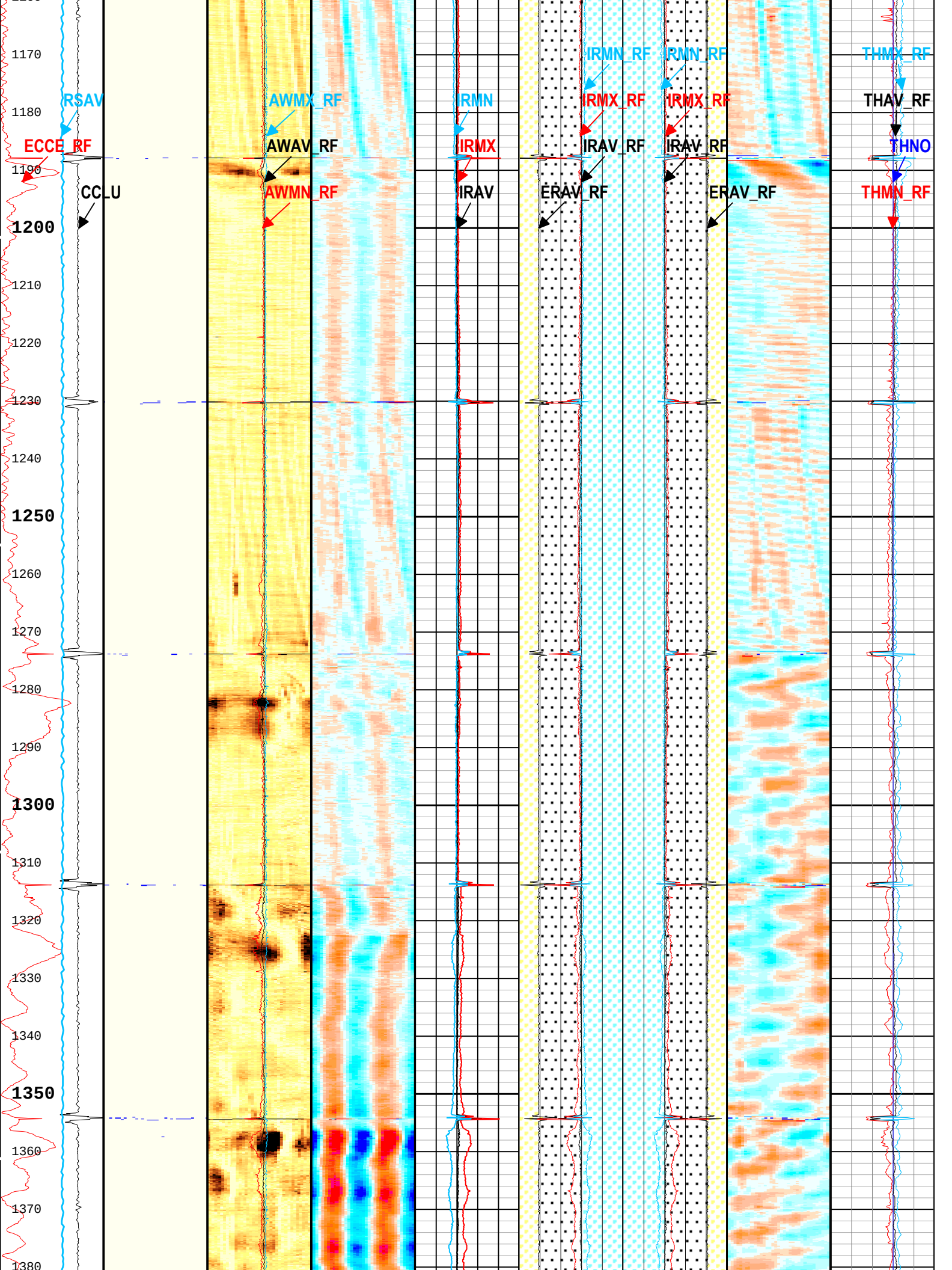
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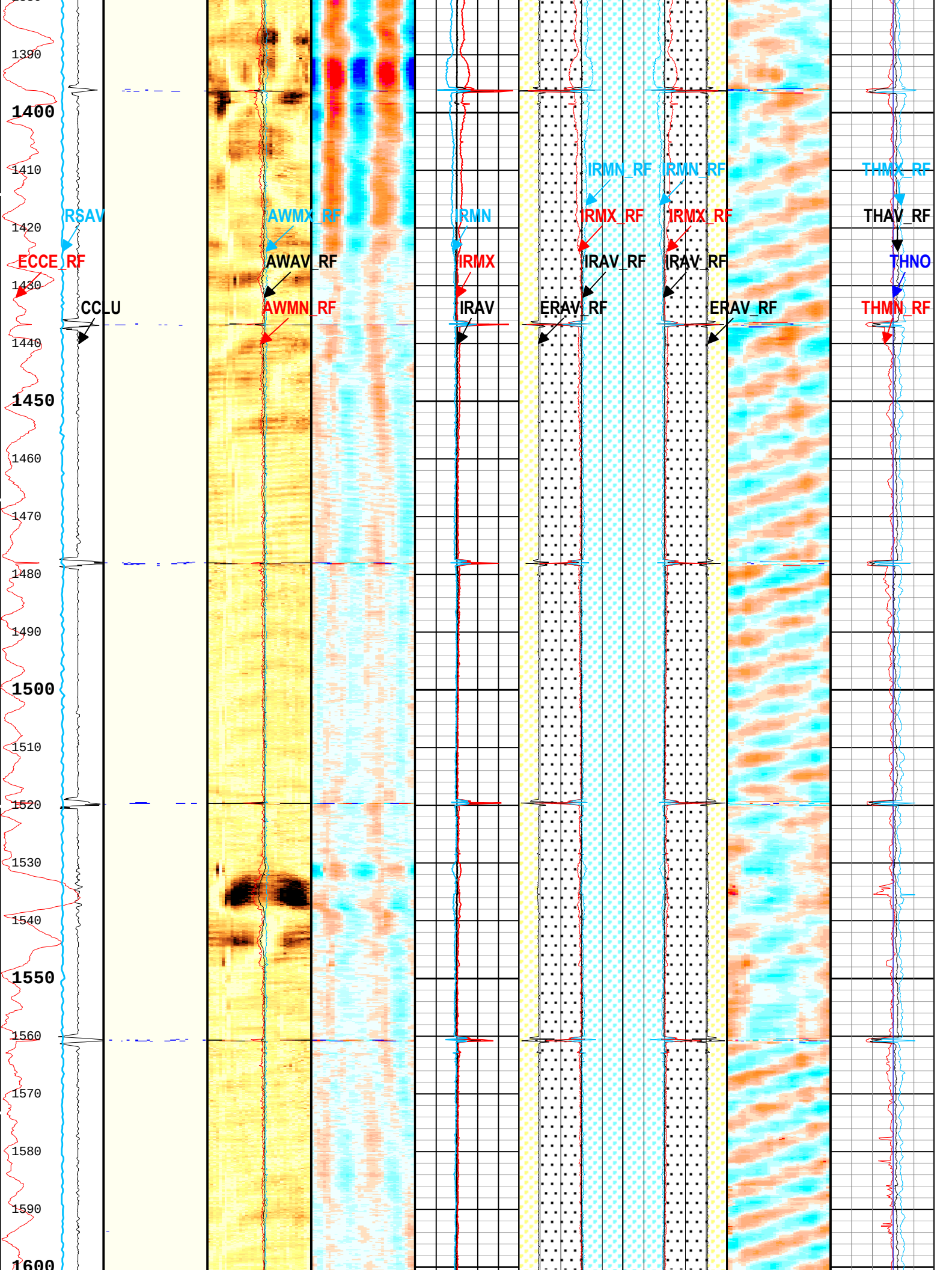
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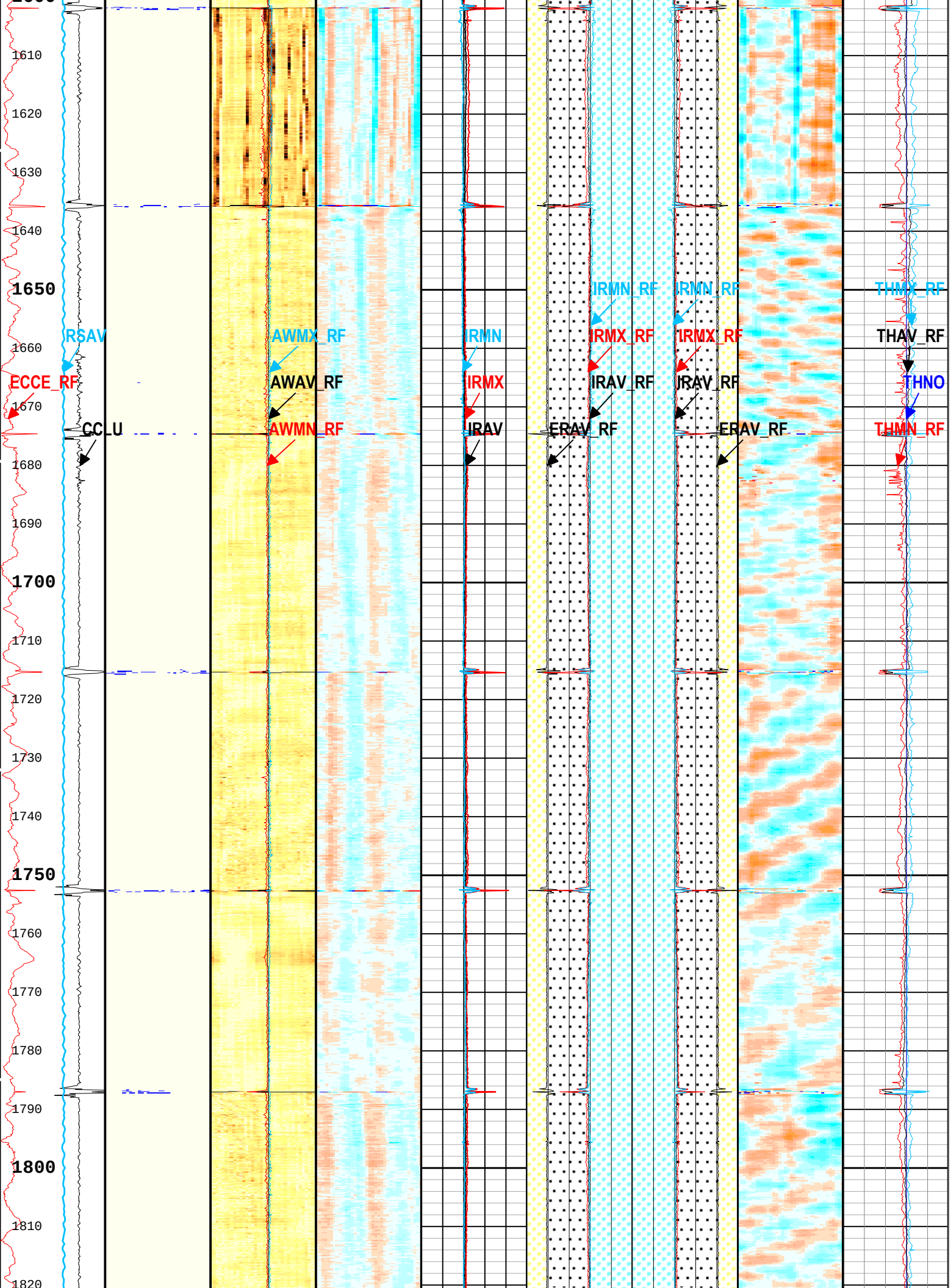
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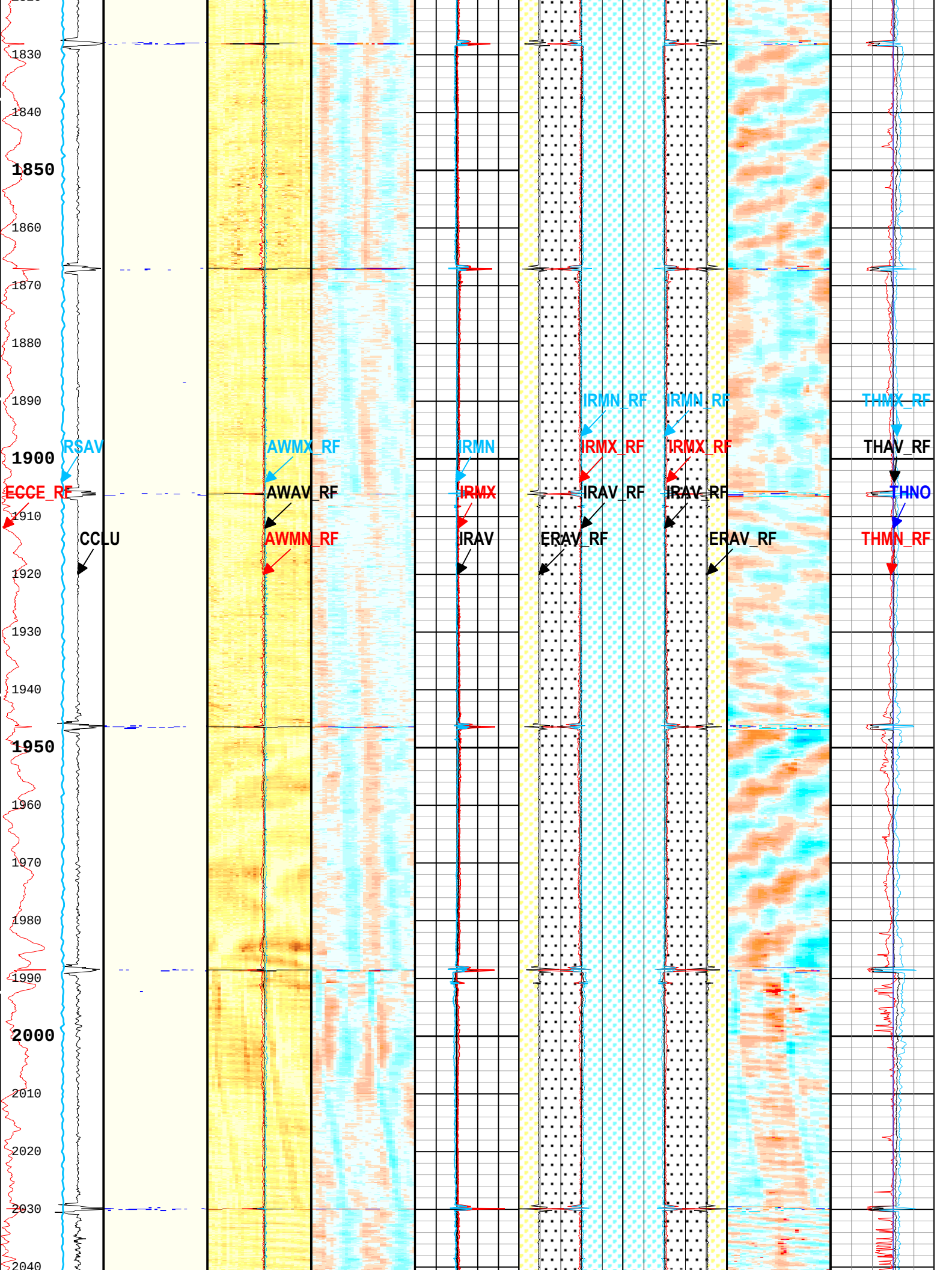
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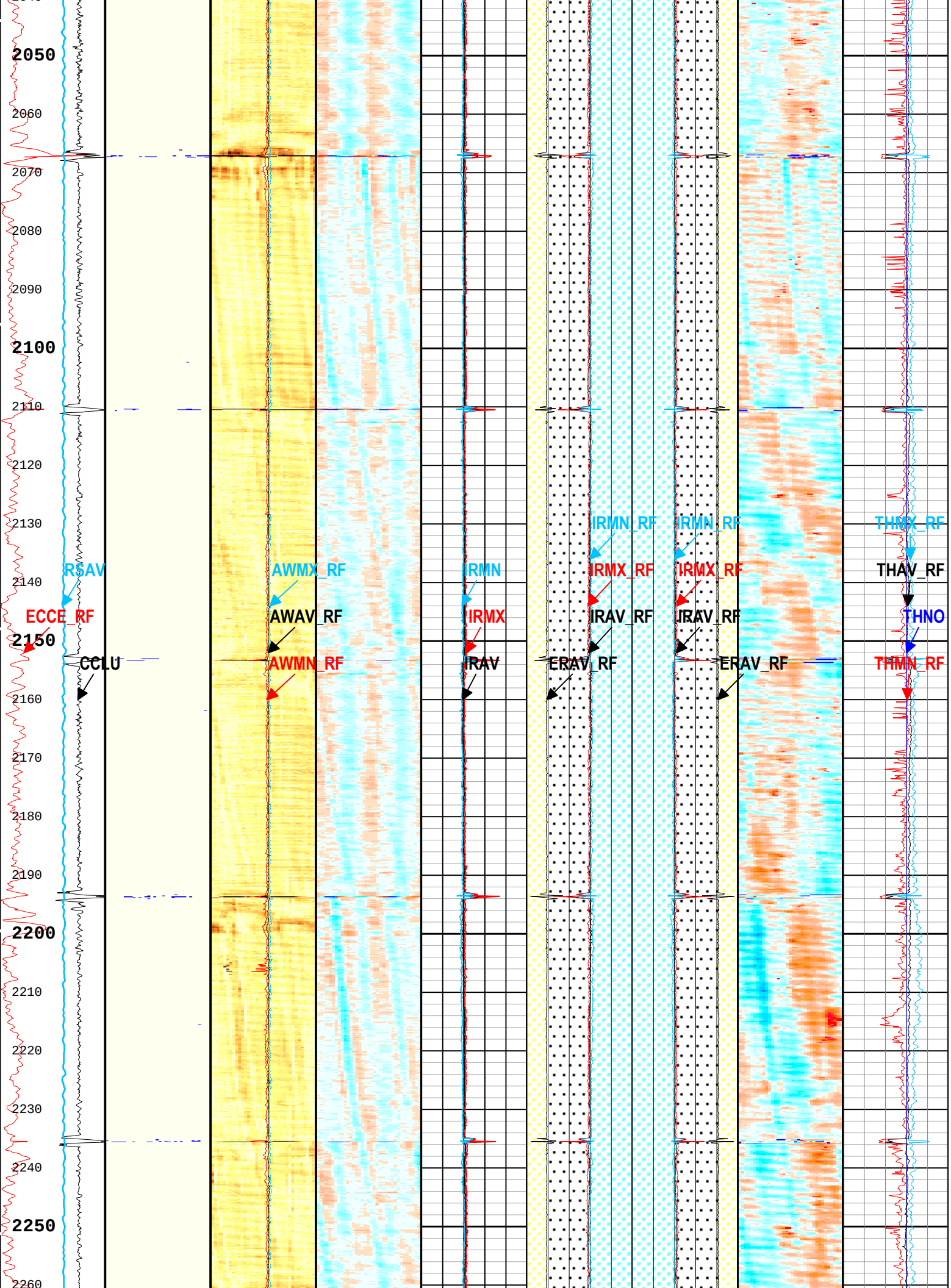
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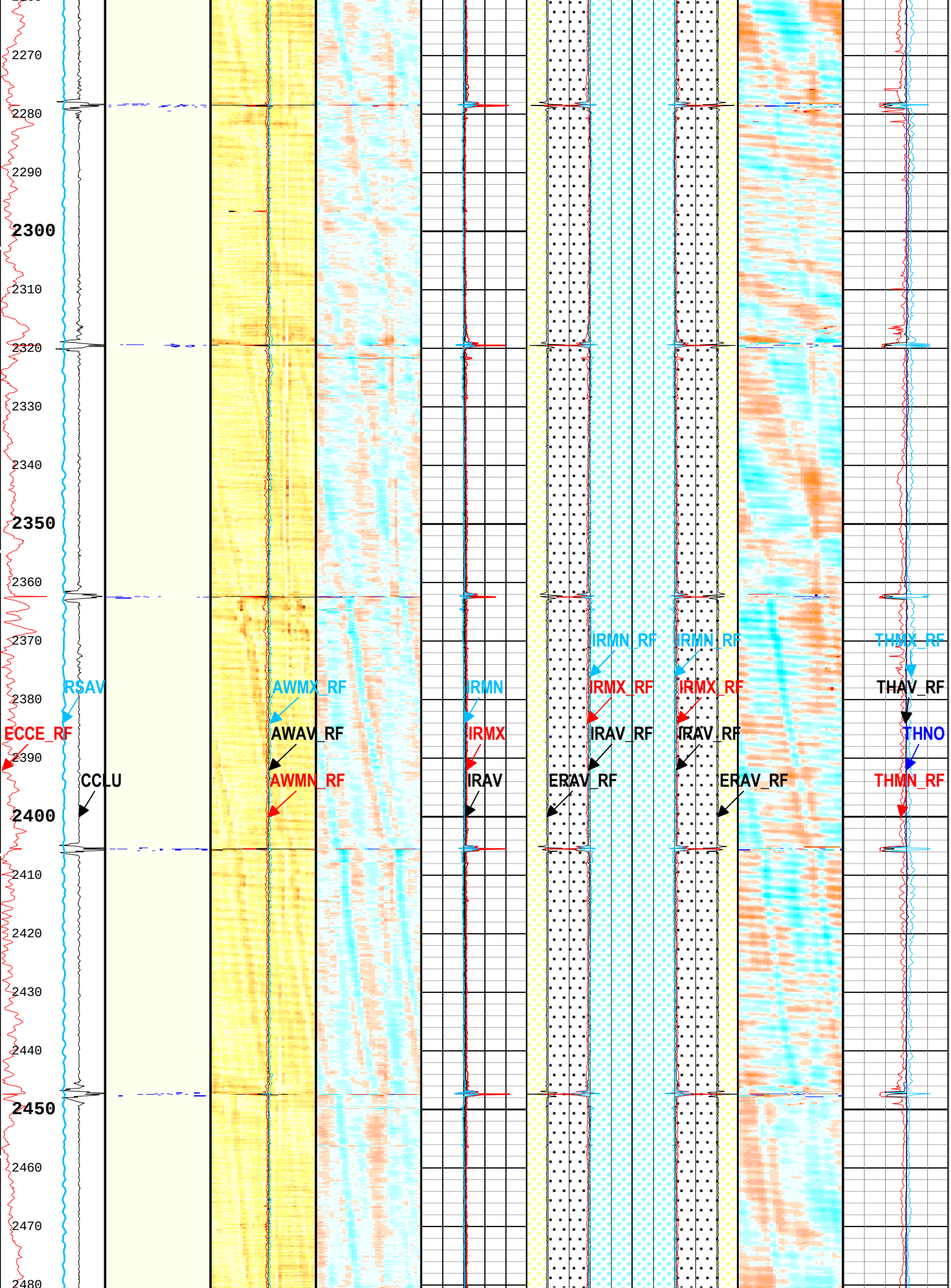
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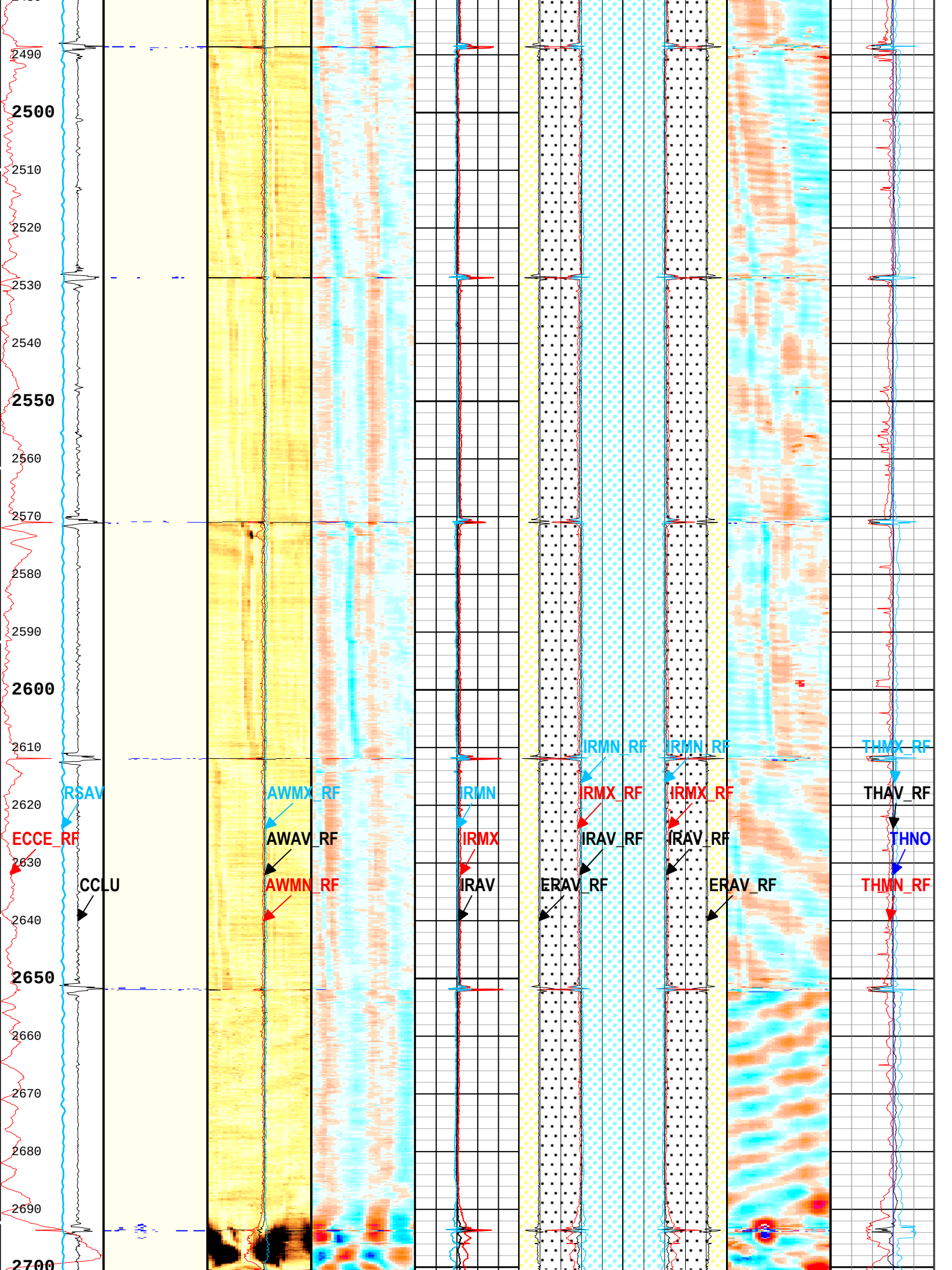
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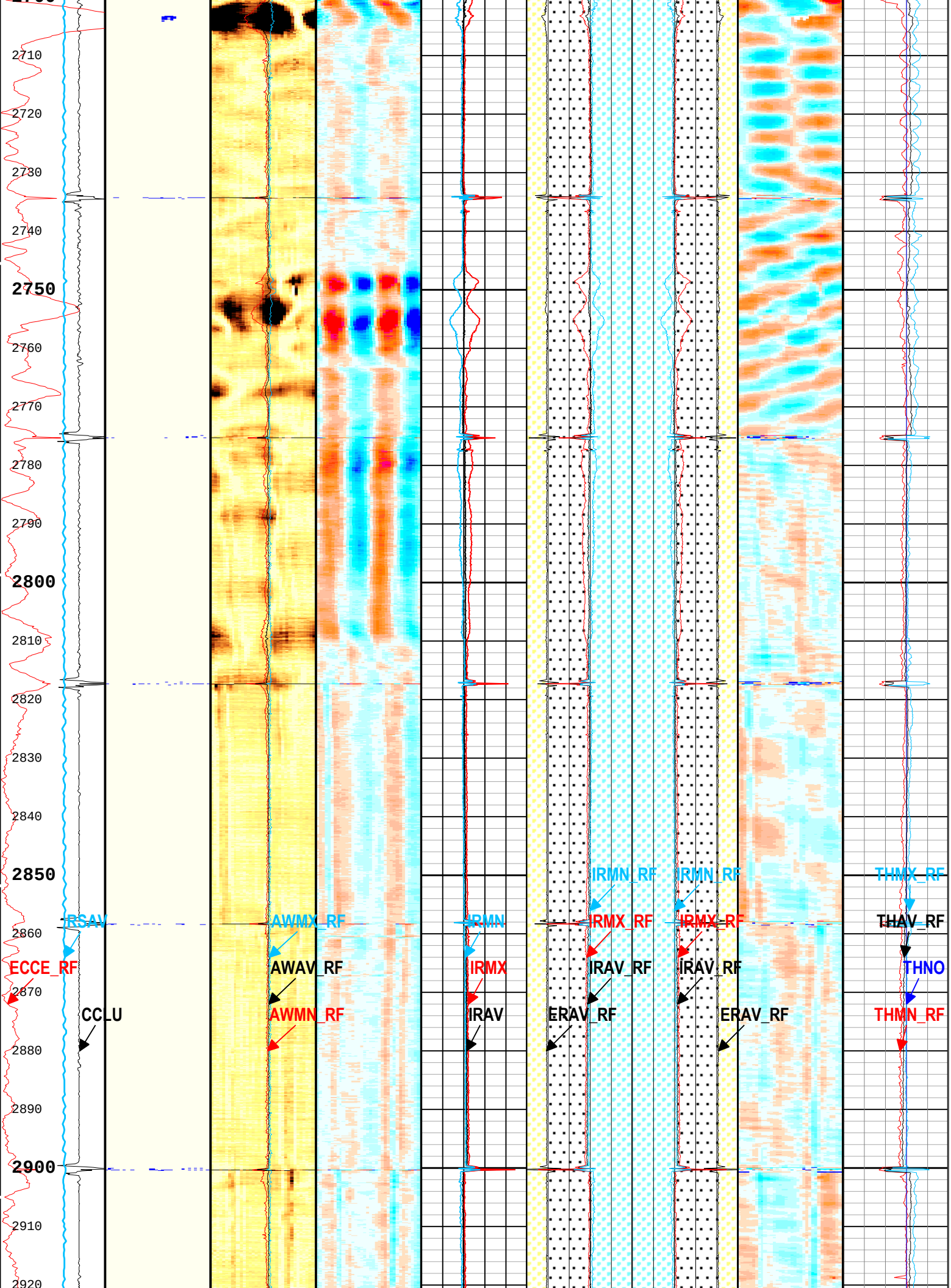
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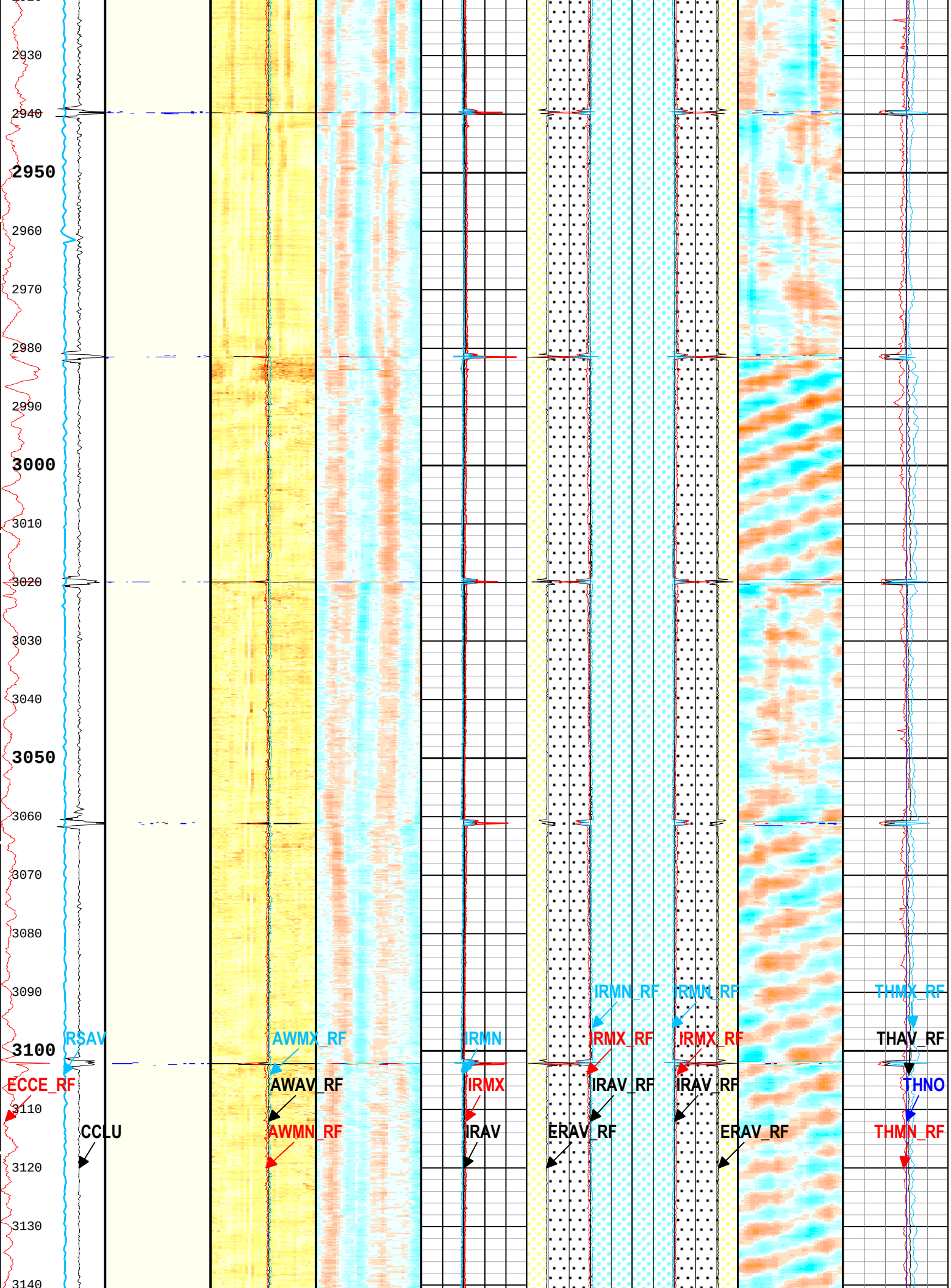
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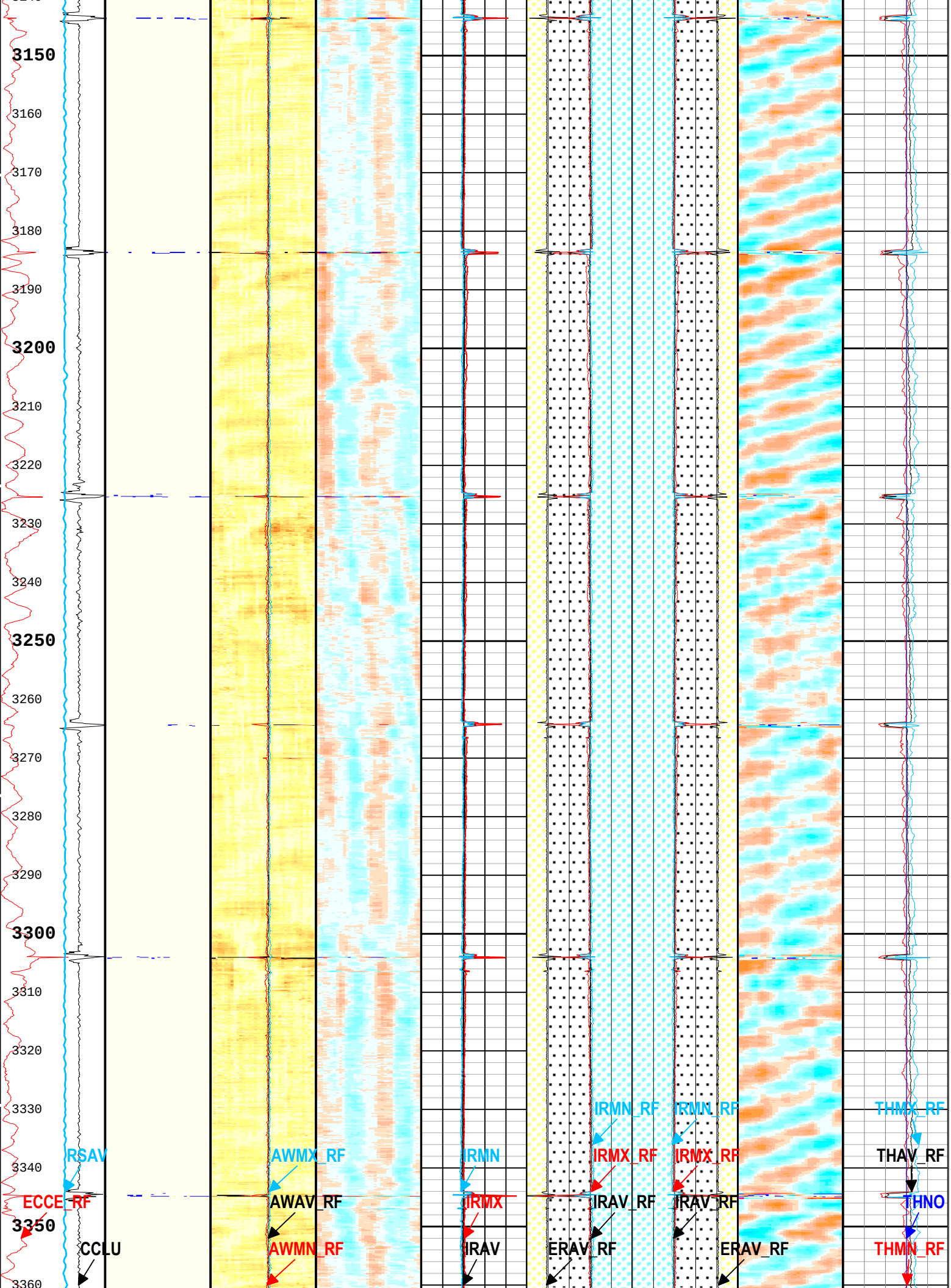
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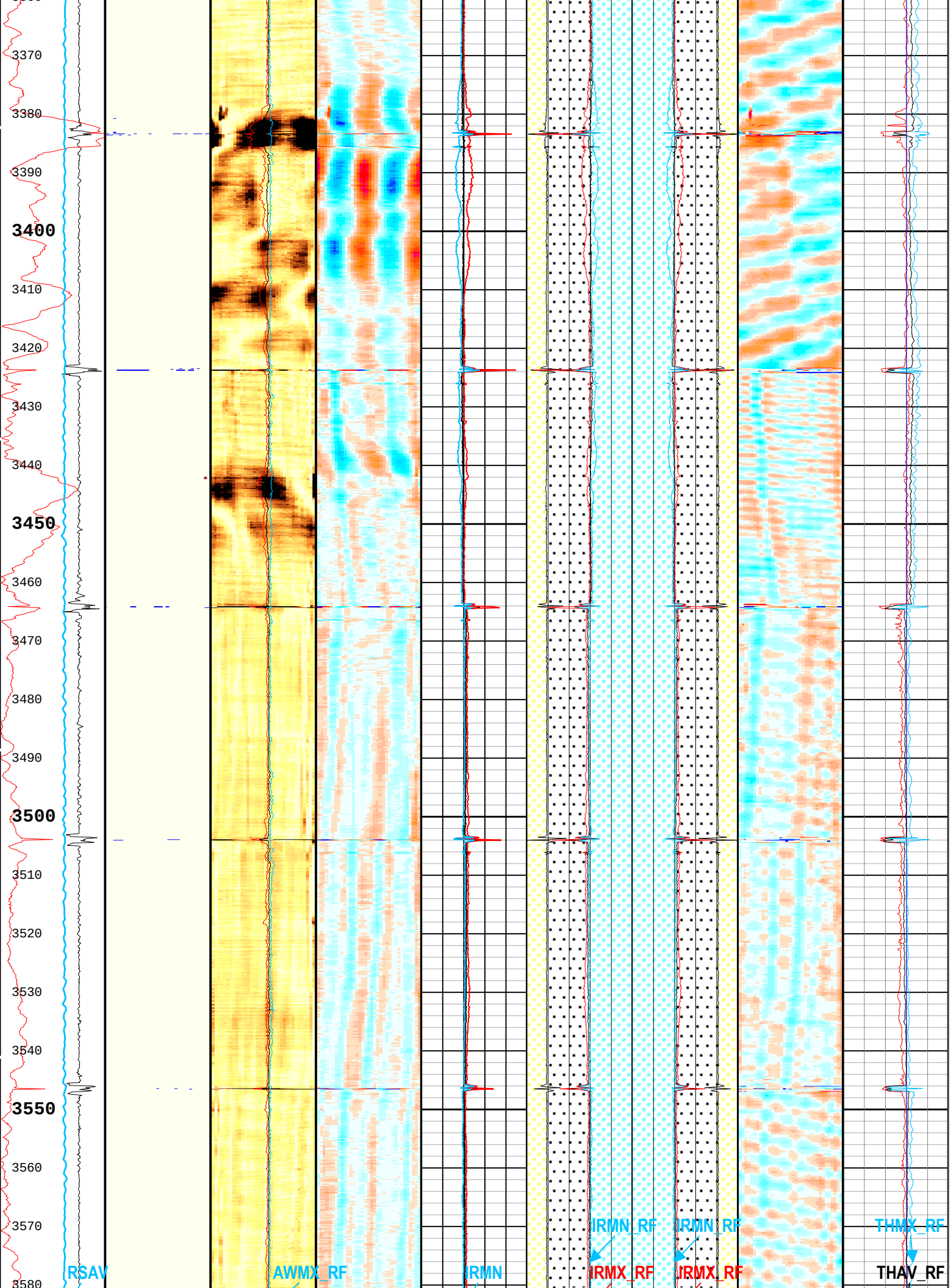
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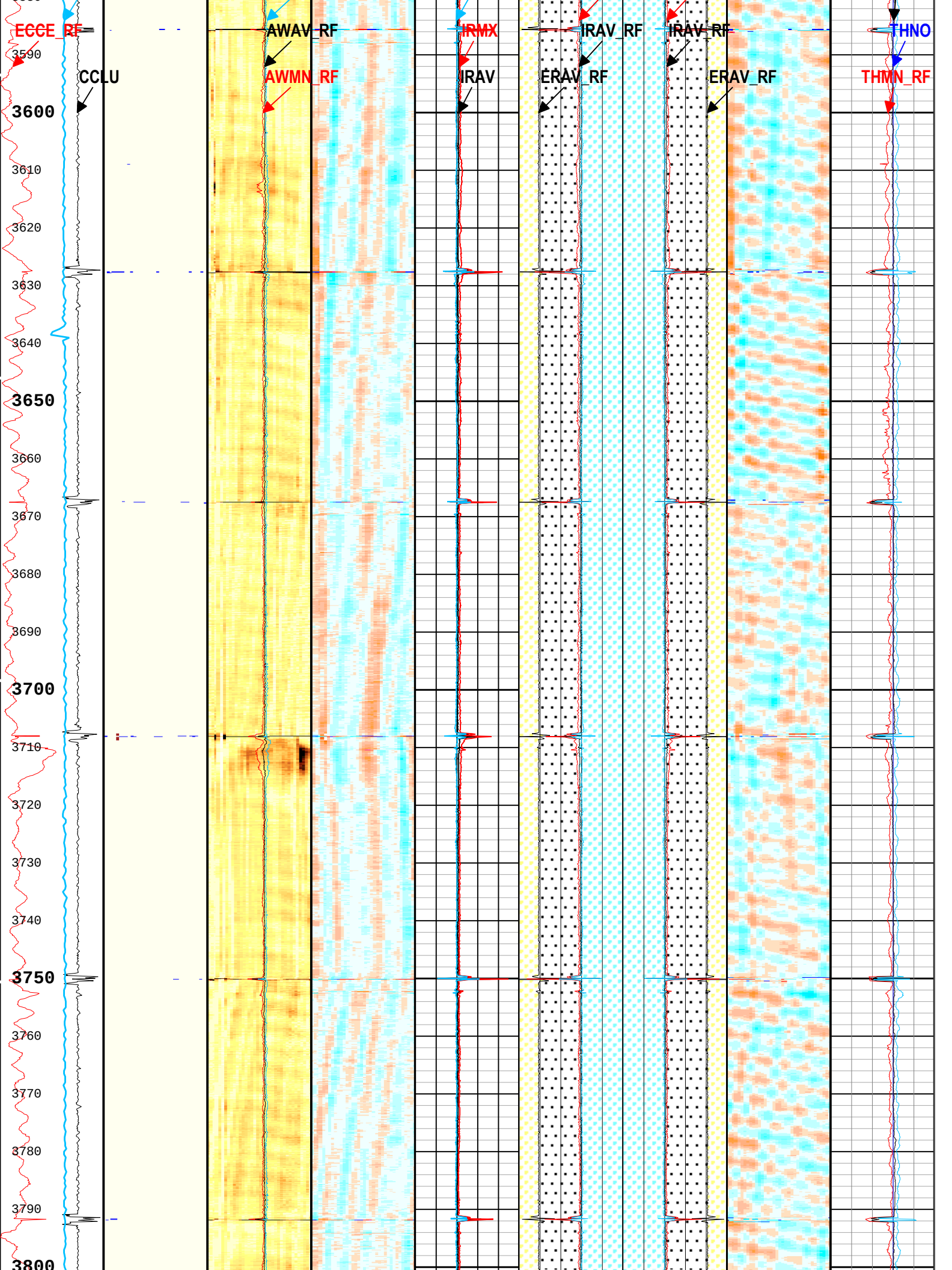
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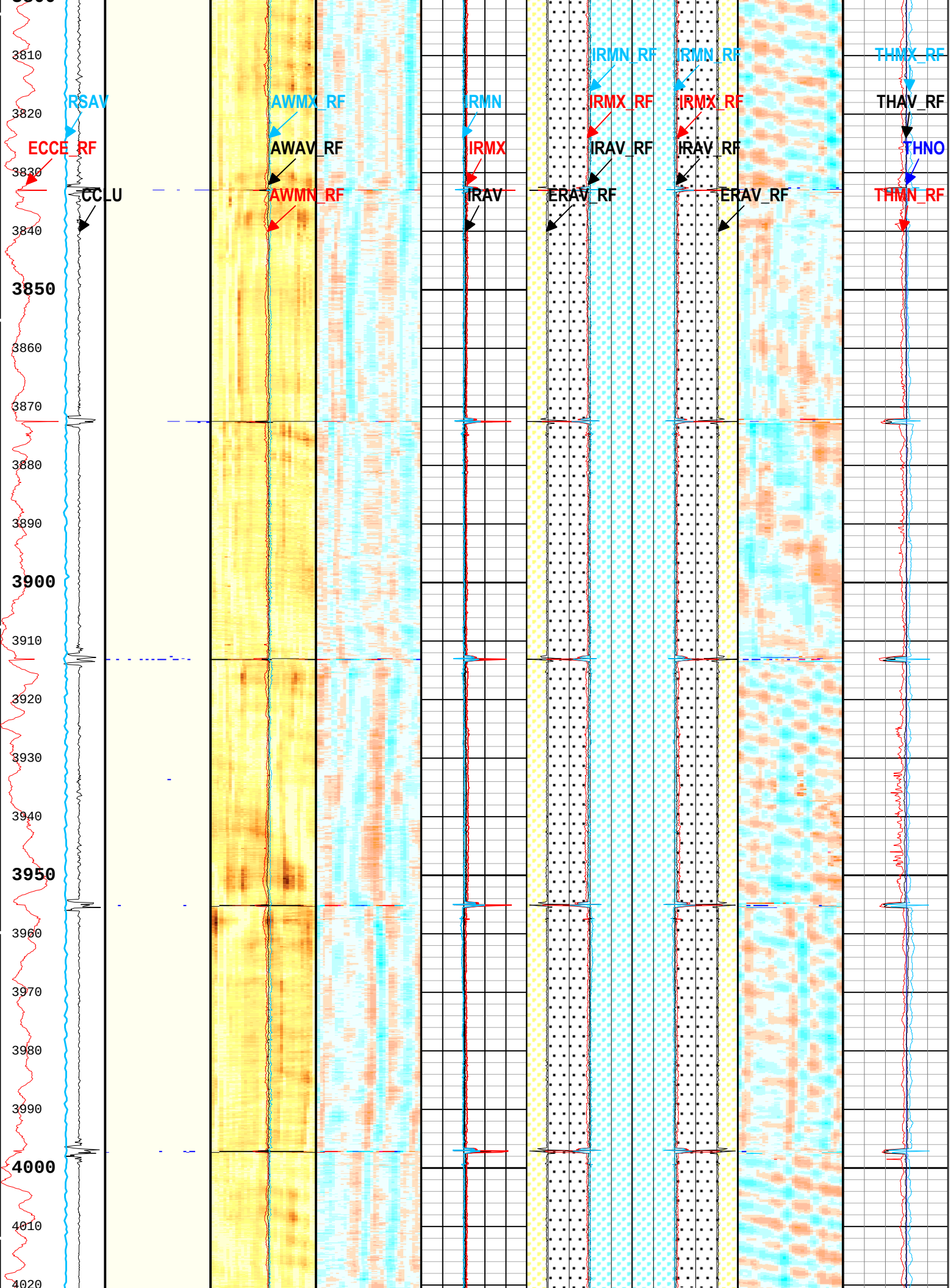
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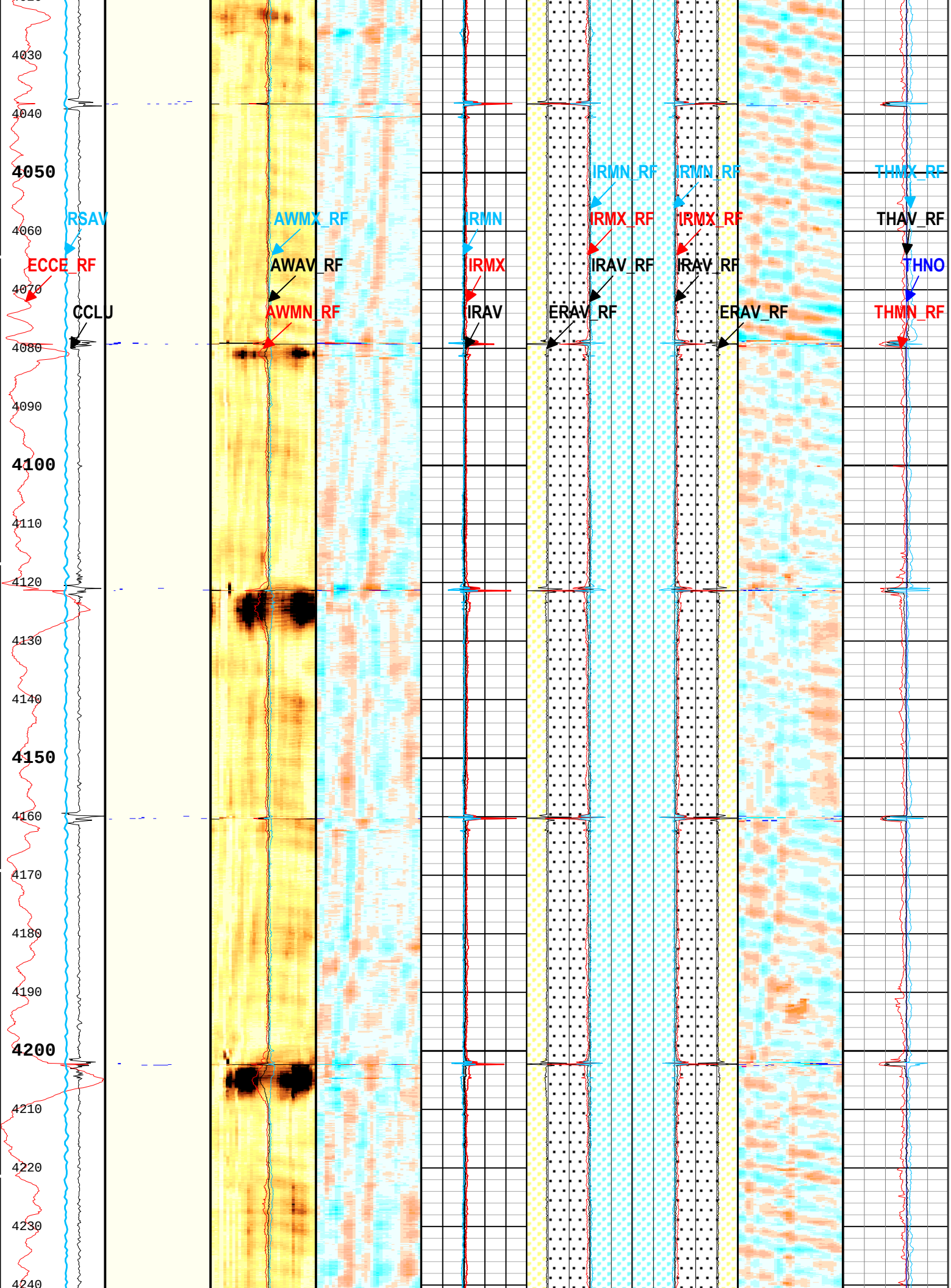
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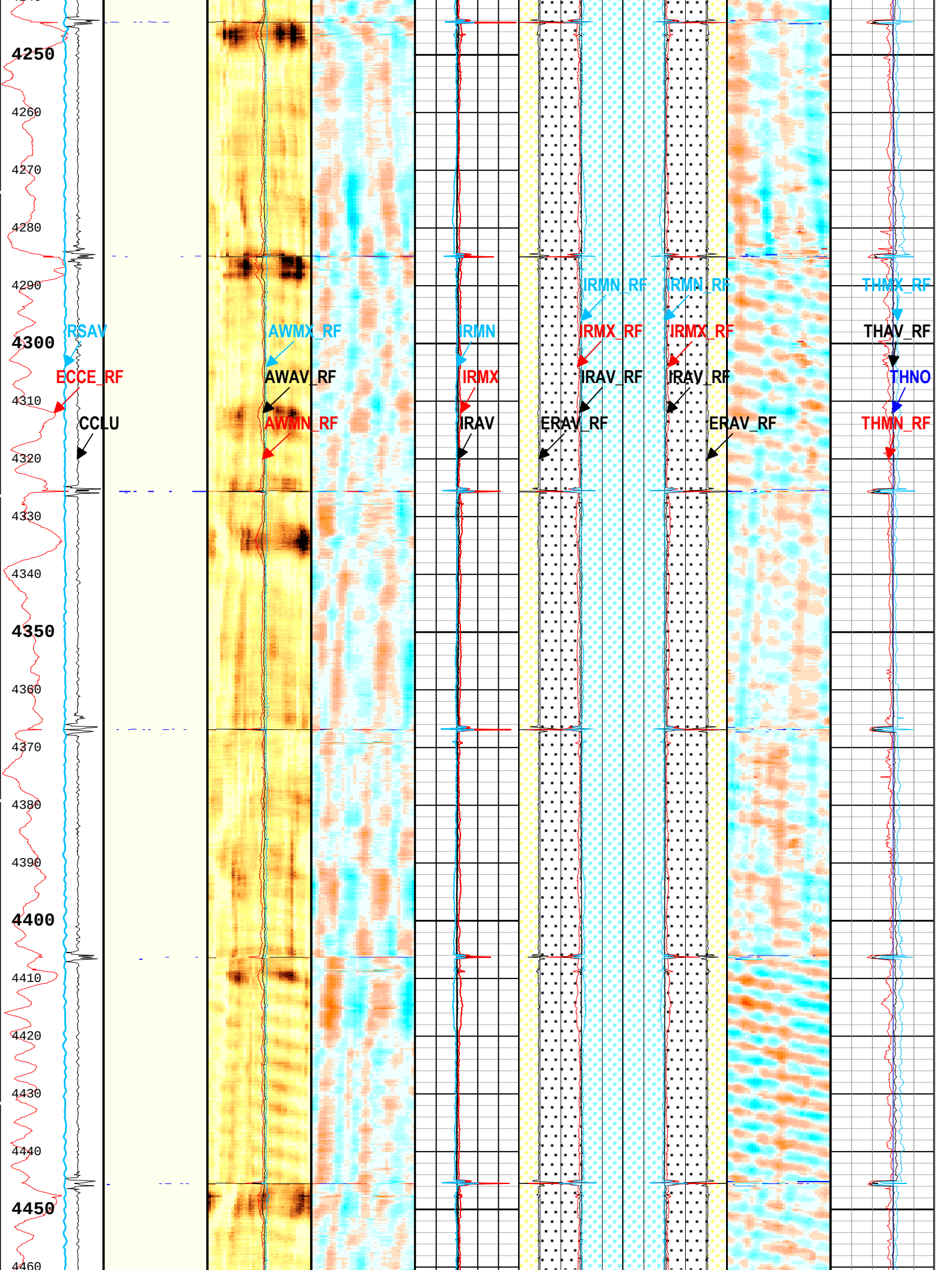
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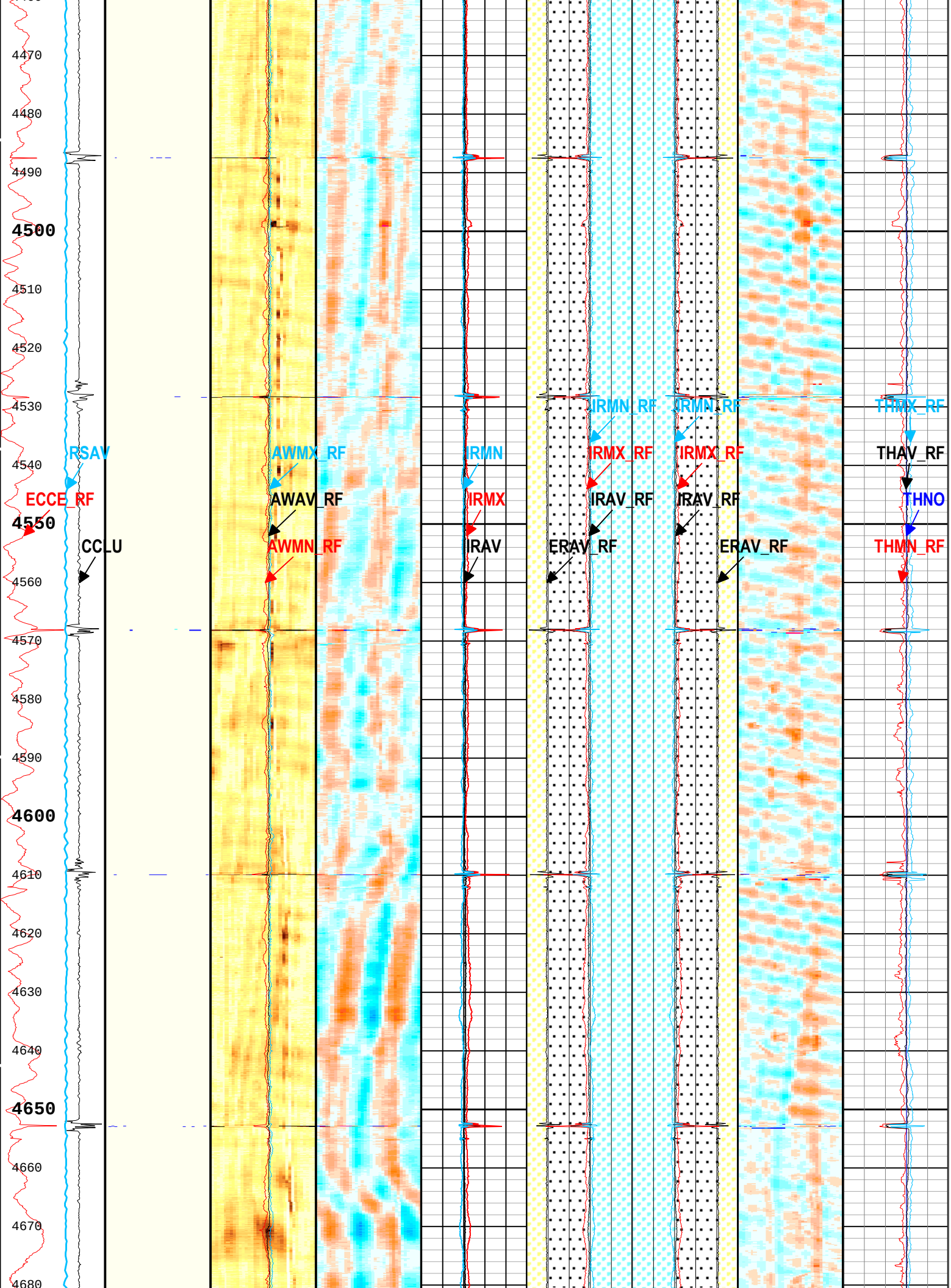
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RSAV
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CCLU
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
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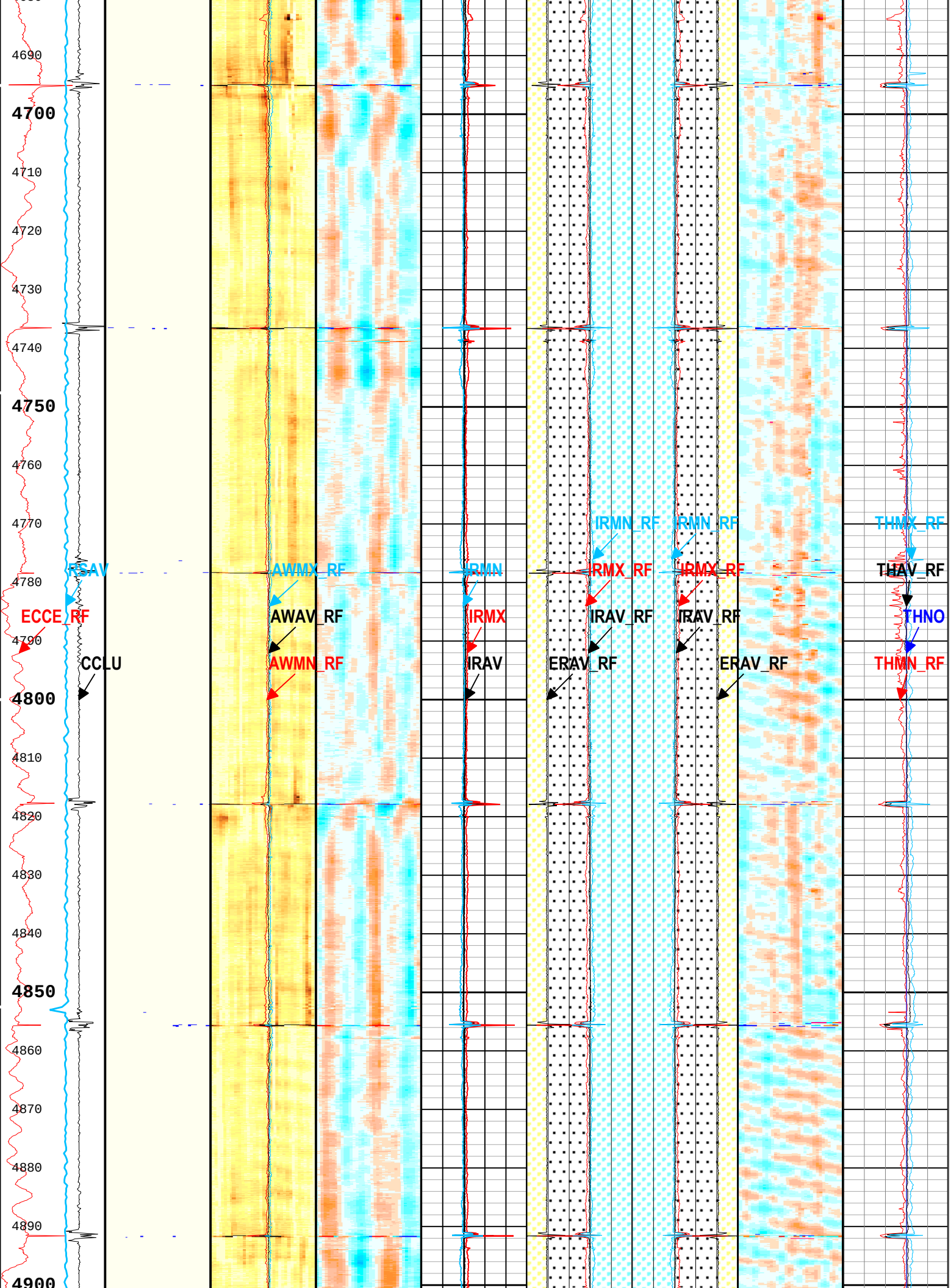
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RMX_RF
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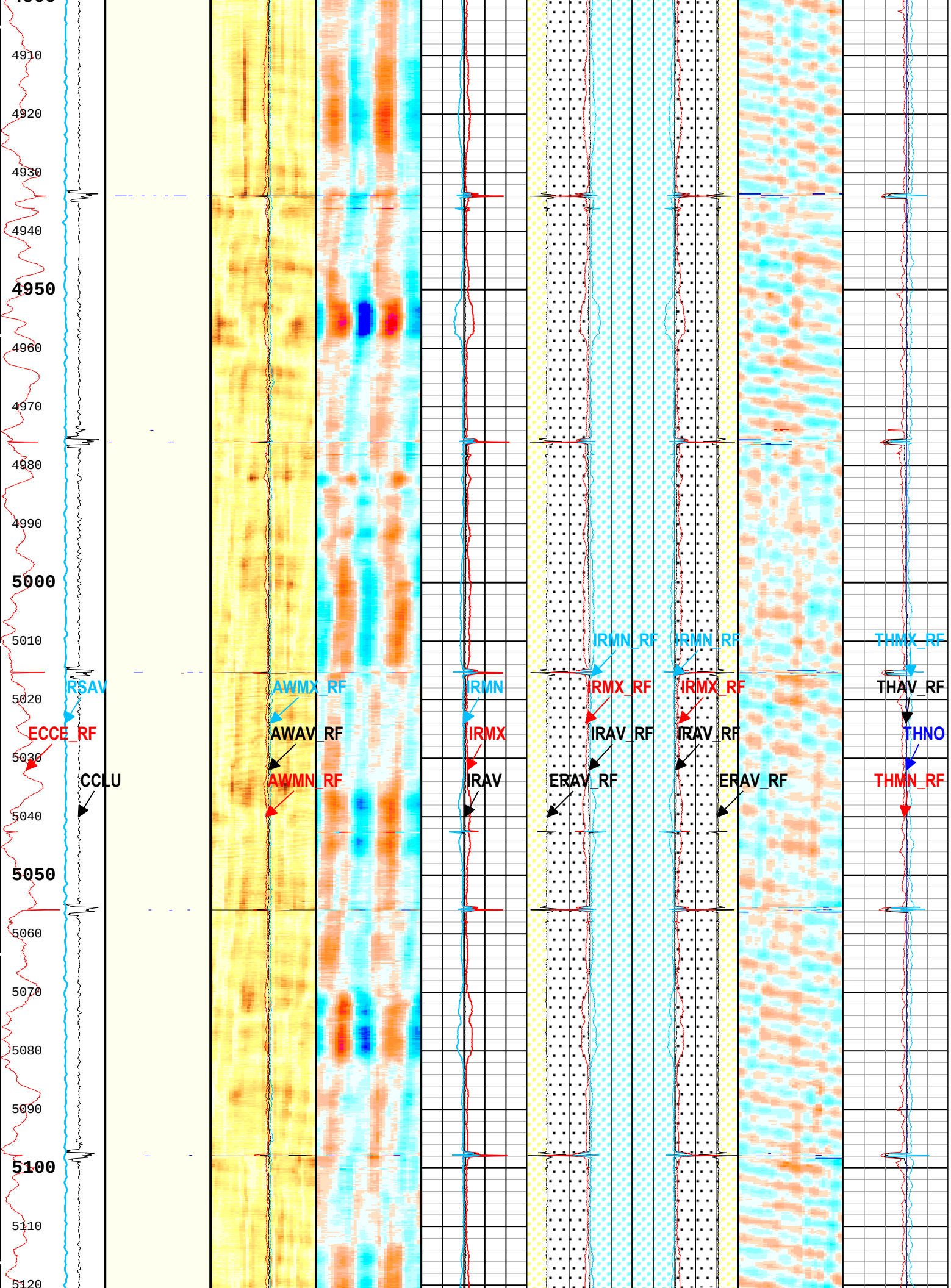
THMN_RF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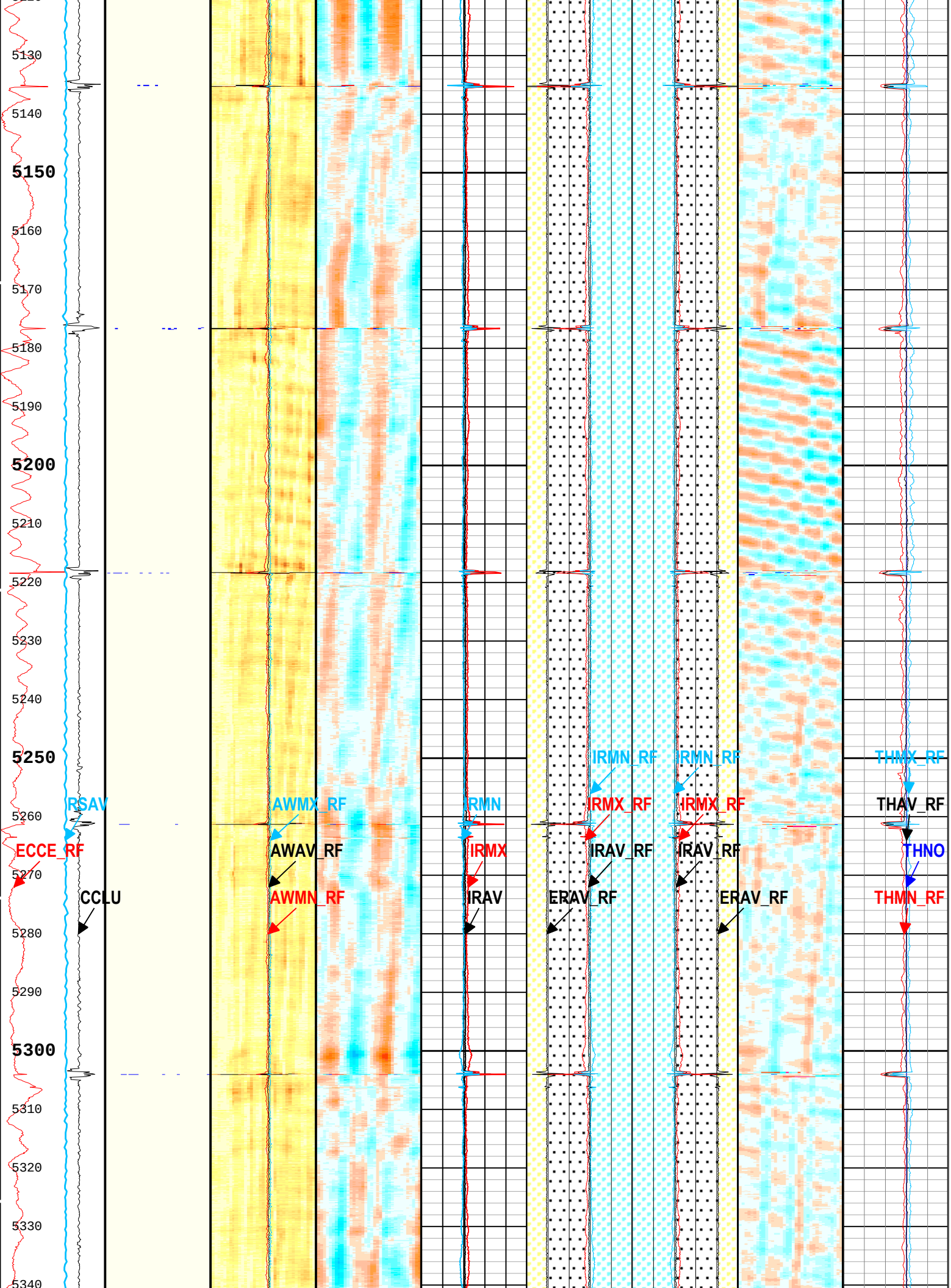
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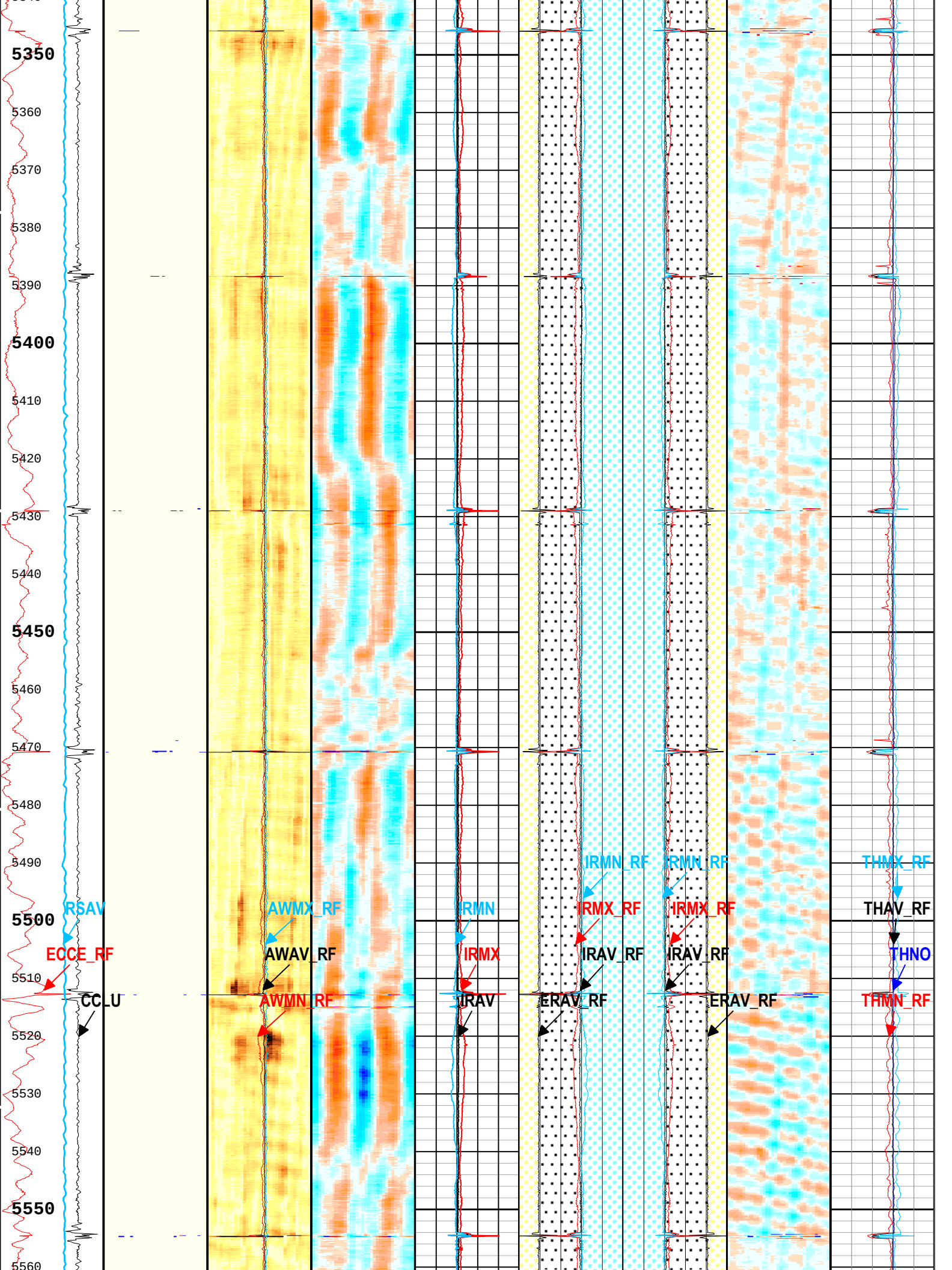
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AWAV_RF
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THNO
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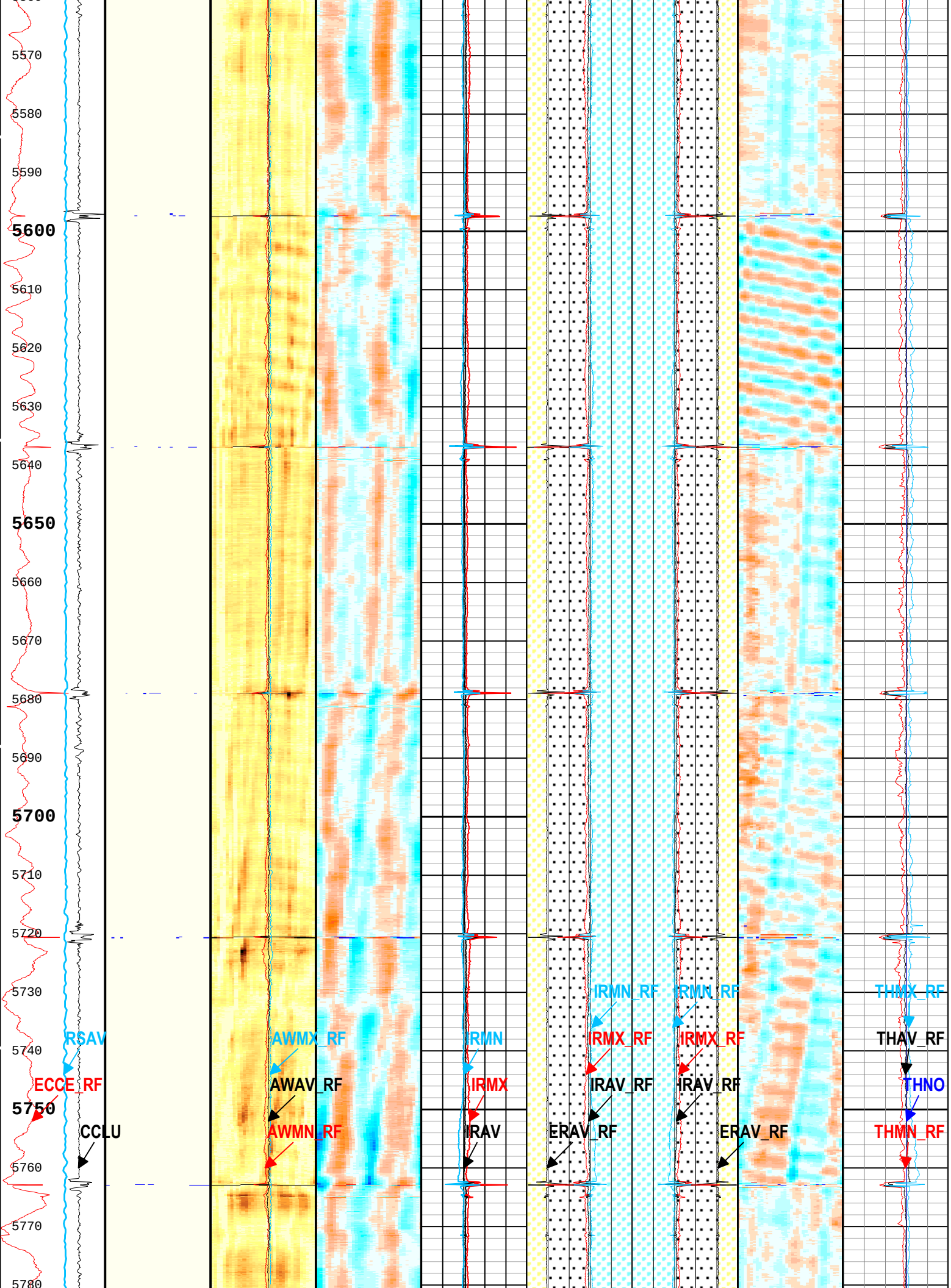
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CCLU
AWMX_RF
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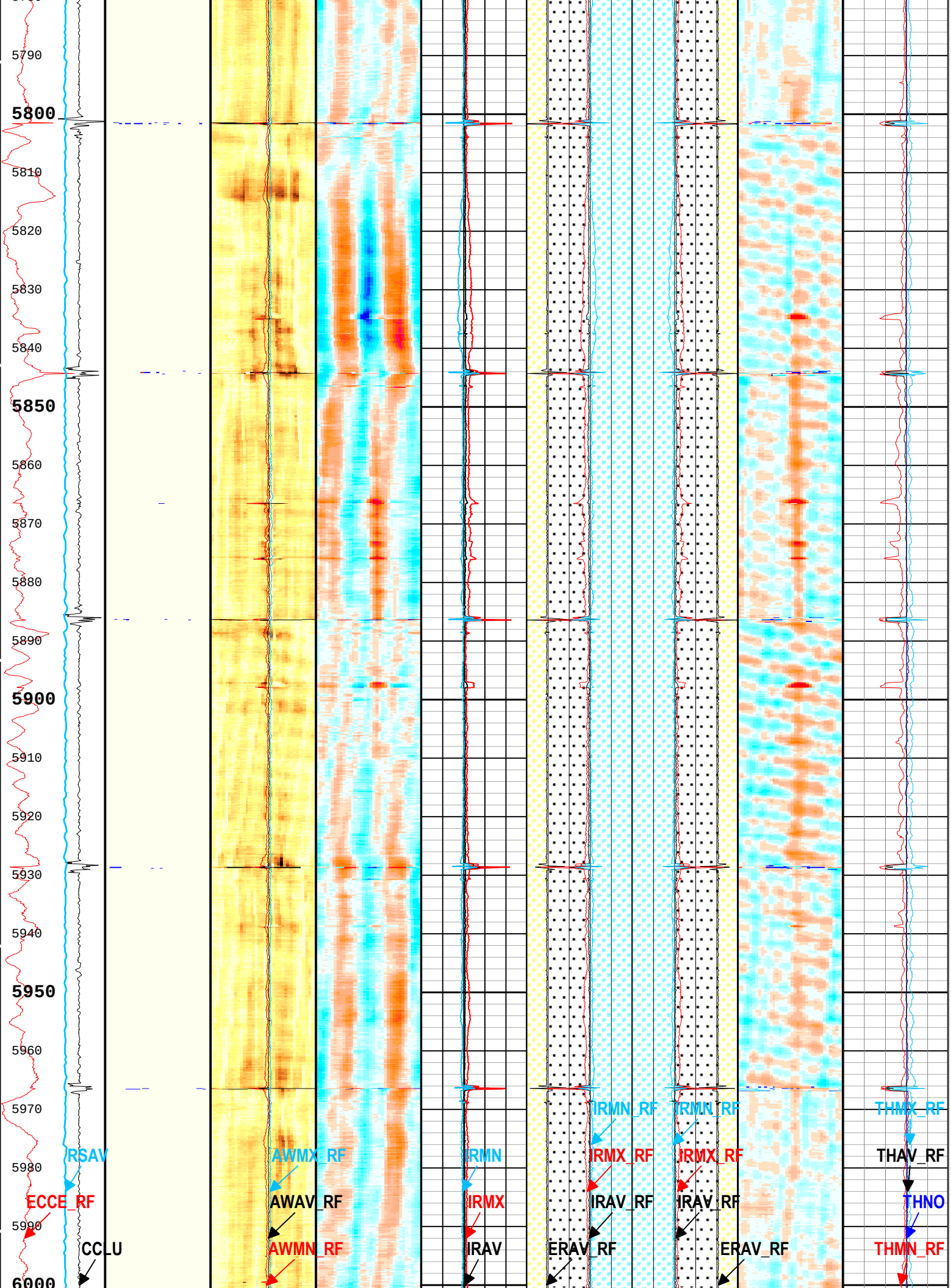
ERAV_RF
THMX_RF
THAV_RF
THNO
THMN_RF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ECCE_RF
CCLU
AWMX_RF
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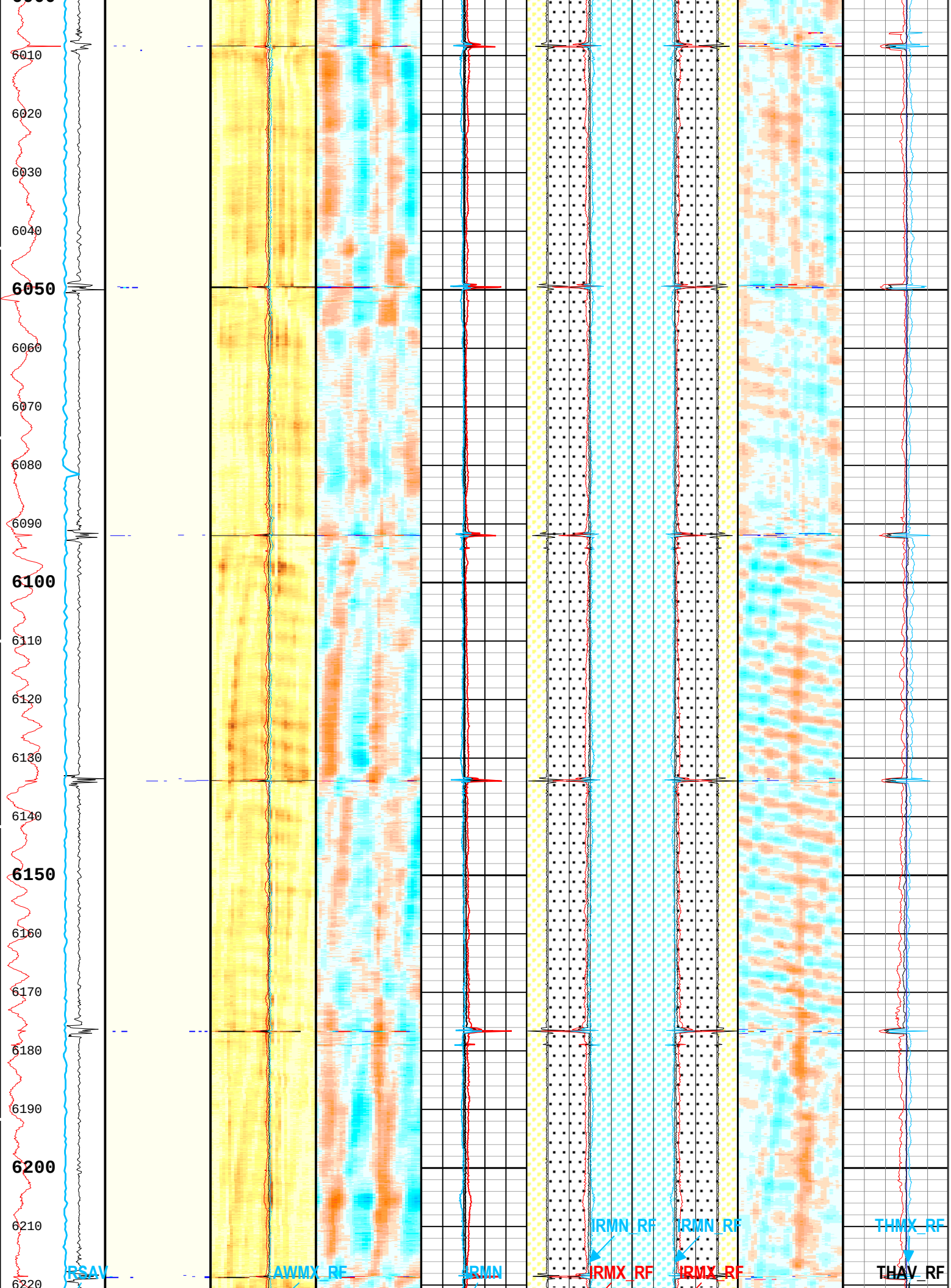
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RSAV
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IRMN
IRMN_RF
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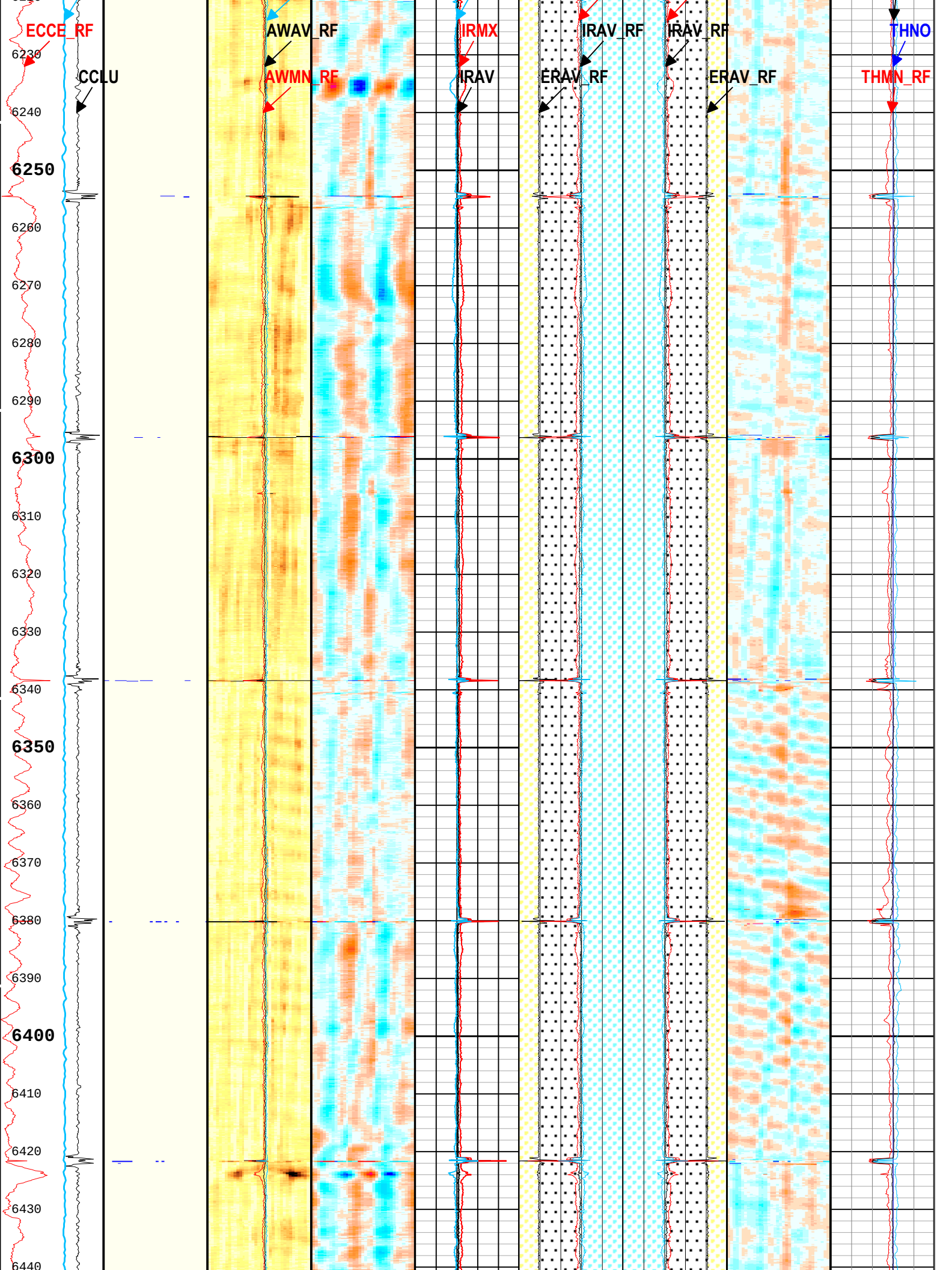
THMX_RF
THAV_RF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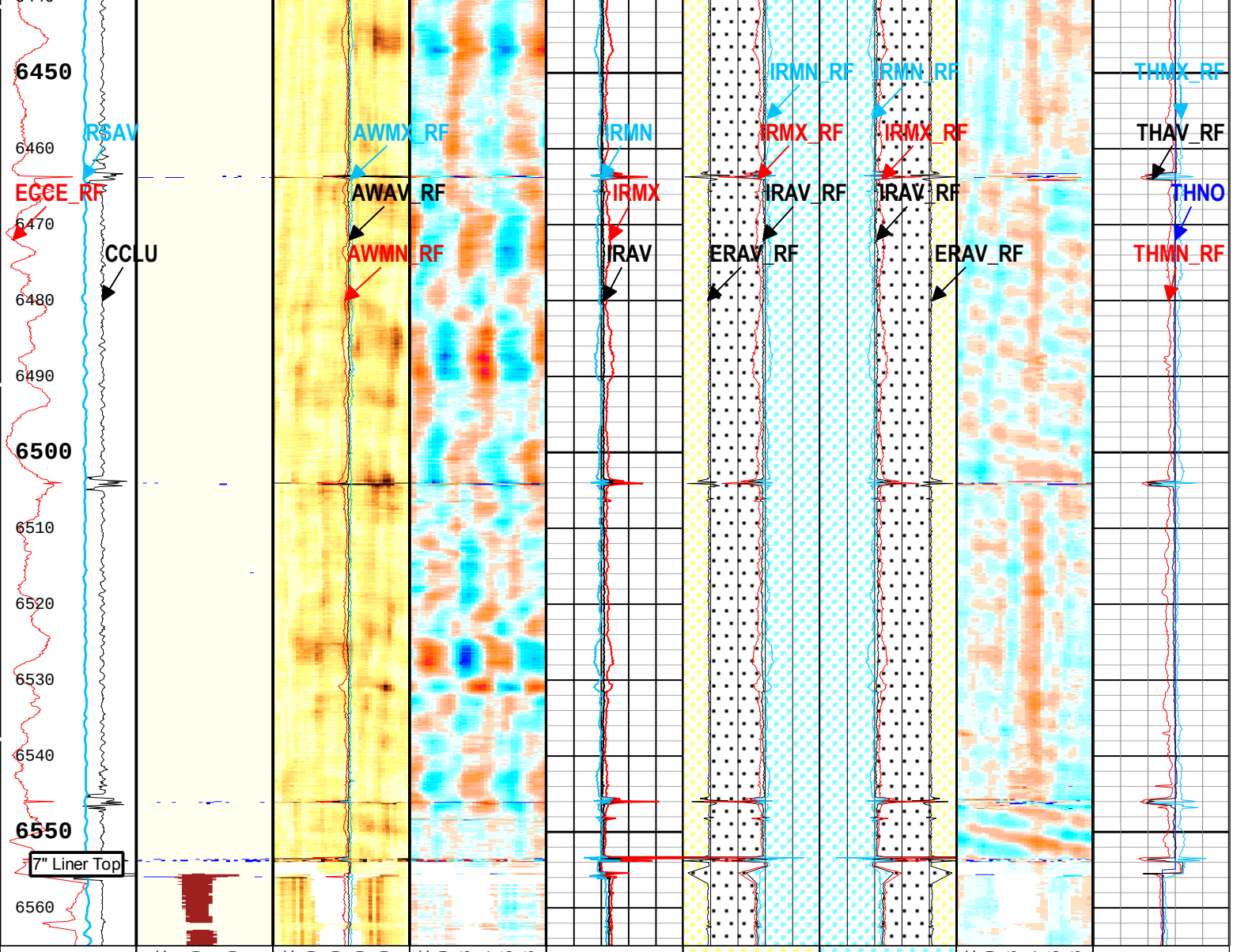


Casing Collar Locator Ultrasonic (CCLU) USIT-E[1]
-30 in 10

Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E[1]
0 in 0.5

Motor Revolution Speed (RSAV) USIT-E[1]
6 c/s 8

Absent 1.500 3.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E[1]
Orientation: Top of Hole
U L B R U

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

Absent -5.200 -3.600 -2.000 -0.400
Explicit Normalization
USIT - Amplitude of Unflagged Wave (AWBK_RF) USIT-E[1]
(dB)
Orientation: Top of Hole
U L B R U

Minimum of Unflagged Wave Amplitude (AWMN_RF) USIT-E[1]
0 dB 75

Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E[1]

Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E[1]
(in)
Orientation: Top of Hole
U L B R U

Internal Radius Averaged Value (IRAV) USIT-E[1]
3.5 in 4.5

Internal Radius Maximum Value (IRMX) USIT-E[1]
3.5 in 4.5

Internal Radius Minimum Value (IRMN) USIT-E[1]
3.5 in 4.5

ERAV
ERAV-IRAV
IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
4.5 in 3.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
4.5 in 3.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]

IRAV
ERAV
IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
3.5 in 4.5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
3.5 in 4.5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]

Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Casing Thickness minus Median of Unflagged Casing Thickness (THBKM_RF) USIT-E[1]
(in)
Orientation: Top of Hole
U L B R U

Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E[1]
0.1 in 0.6

Nominal Casing Thickness (THNO) USIT-E[1]
0.1 in 0.6

Median of Unflagged Casing Thickness (THAV_RF) USIT-E[1]
0.1 in 0.6

Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E[1]

0 dB 75

Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E[1]

0 dB 75

4.5 in 3.5

3.5 in 4.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]

4.5 in 3.5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]

3.5 in 4.5

0.1 in 0.6

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

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

2 - UFLG 2 Value within [1.5 - 2.5] - : Pulse Origin Not Detected

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

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

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

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Composite Format: Log (LBV1_USI Corrosion 9.625inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 31-Mar-2016 13:17:15

One

Corrosion 7" Casing 5 in = 100 ft

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[3]:Up	Up	6537.39 ft	7084.95 ft	30-Mar-2016 12:15:32 PM	30-Mar-2016 12:28:34 PM	ON	-6.00 ft	No

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Fernando Fee 32-A

One: Log[3]:Up:S005

Description: USI Composite Format: Log (LBV1_USI Corrosion 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 31-Mar-2016 13:17:55

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] - : Pulse Origin Not Detected

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

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

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

TIME_1900 - Time Marked every 60.00 (s)

U L B R U

Orientation: Top of Hole

Absent -5.200 -3.600 -2.000 -0.400

Explicit Normalization

USIT - Amplitude of Unflagged Wave (AWBK_RF) USIT-E (dB)

Minimum of Unflagged Wave

ERAV | IRAV

ERAV-IRAV | ERAV

IRAV | IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E

3.7 in 2.7

Median of Unflagged External Radii (ERAV_RF) USIT-E

2.7 in 3.7

Median Internal Radius of Casing

Median Internal Radius of Casing

Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E

0.1 in 0.6

Nominal Casing

Casing Collar Locator Ultrasonic (CCLU) USIT-E
-30 in 10

Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E
0 in 0.5

Motor Revolution Speed (RSAV) USIT-E
6 c/s 8

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

Unflagged Wave Amplitude (AWMN_RF) USIT-E
0 dB 75

Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E
0 dB 75

Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E
0 dB 75

U L B R U
Orientation: Top of Hole
Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E
(in)

Internal Radius Averaged Value (IRAV) USIT-E
2.7 in 3.7

Internal Radius Maximum Value (IRMX) USIT-E
2.7 in 3.7

Internal Radius Minimum Value (IRMN) USIT-E
2.7 in 3.7

Corrected for Eccentering (IRAV_RF) USIT-E
3.7 in 2.7

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.7 in 2.7

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.7 in 2.7

Corrected for Eccentering (IRAV_RF) USIT-E
2.7 in 3.7

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
2.7 in 3.7

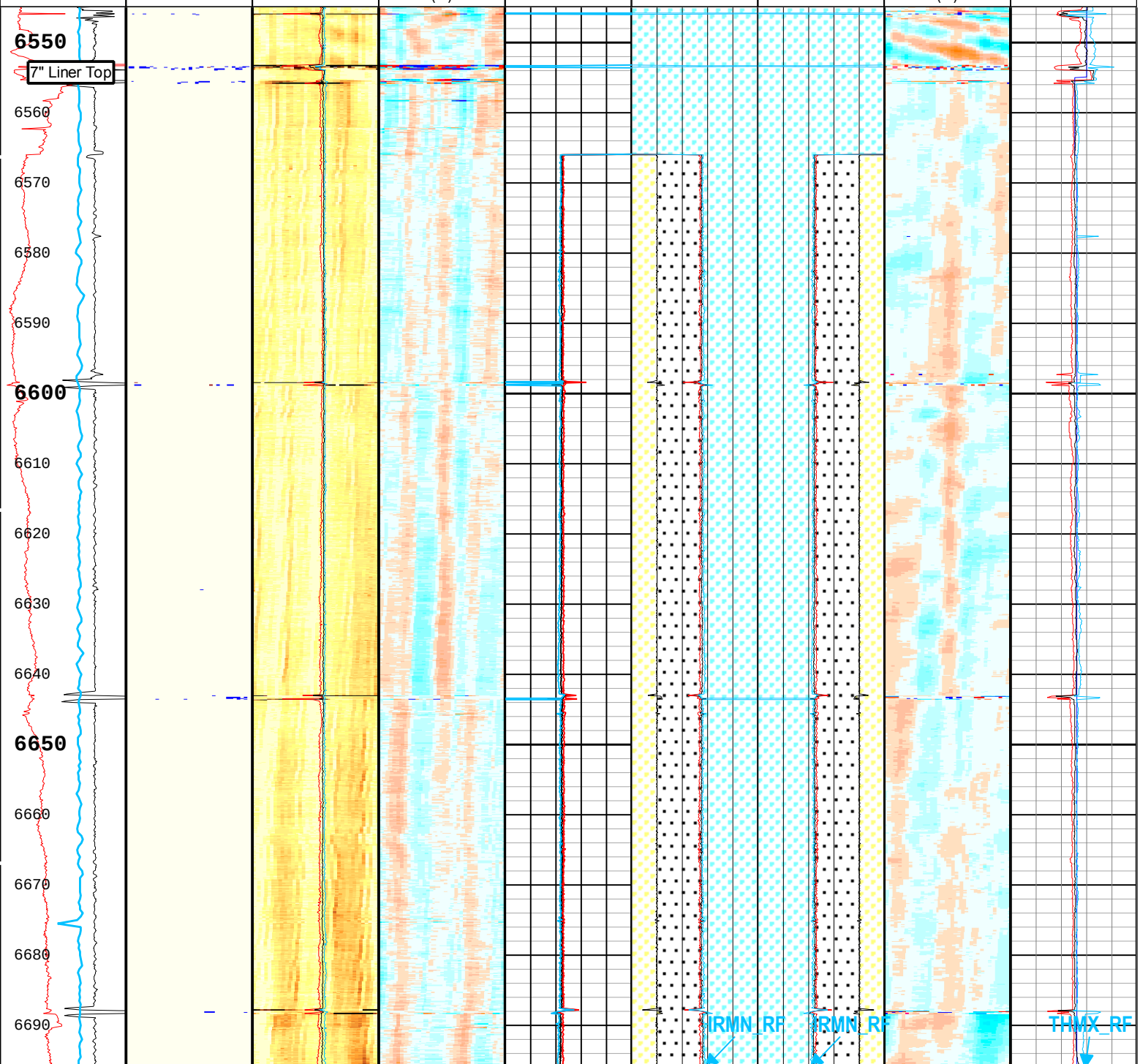
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
2.7 in 3.7

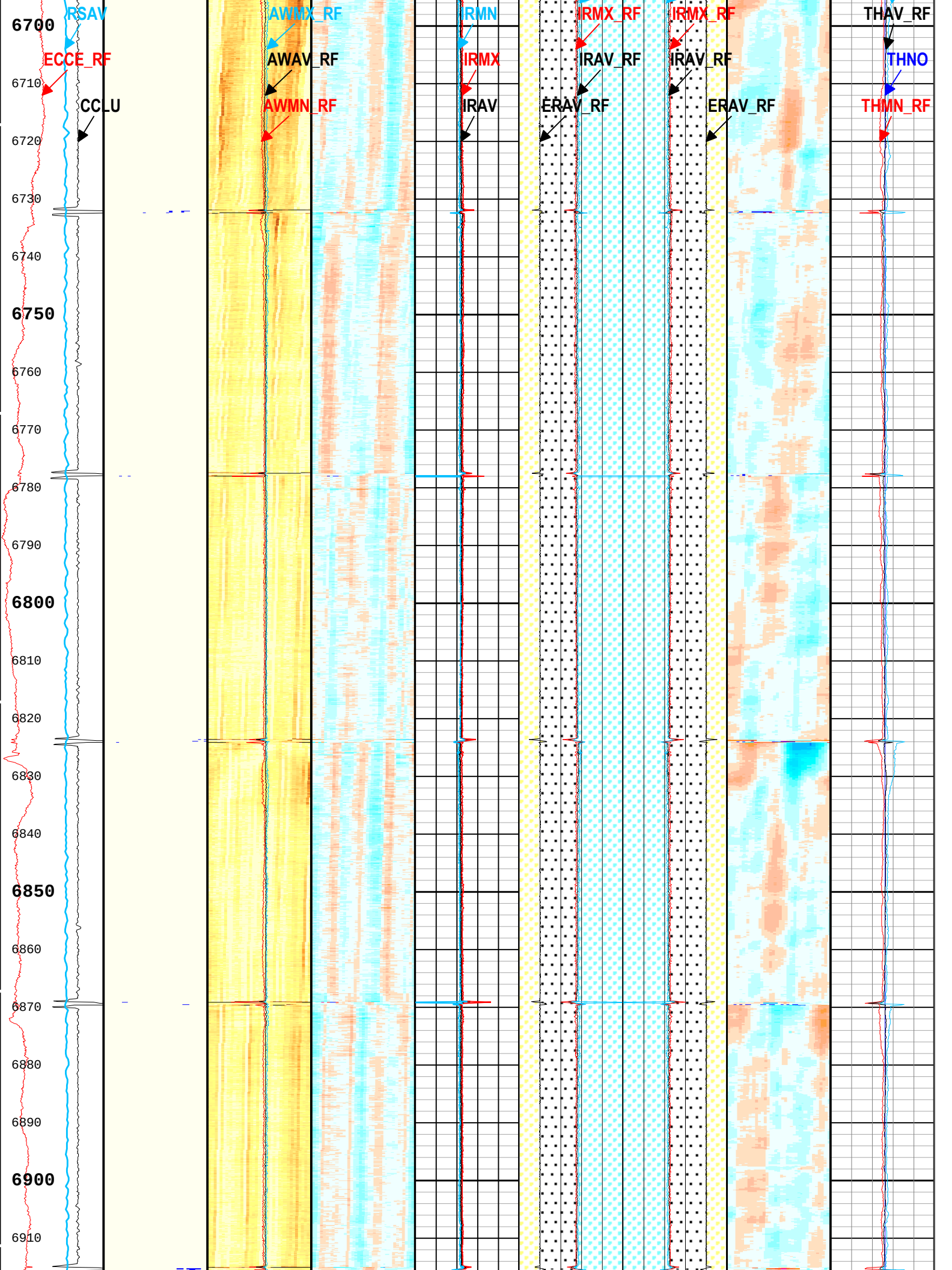
U L B R U
Orientation: Top of Hole
Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Casing Thickness minus Median of Unflagged Casing Thickness (THBKM_RF) USIT-E
(in)

Nominal Casing Thickness (THNO) USIT-E
0.1 in 0.6

Median of Unflagged Casing Thickness (THAV_RF) USIT-E
0.1 in 0.6

Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E
0.1 in 0.6




RSAV
ECCE_RF
CCLU
AWMX_RF
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IRMX_RF
IRAV_RF
ERAV_RF
THAV_RF
THNO
THMN_RF
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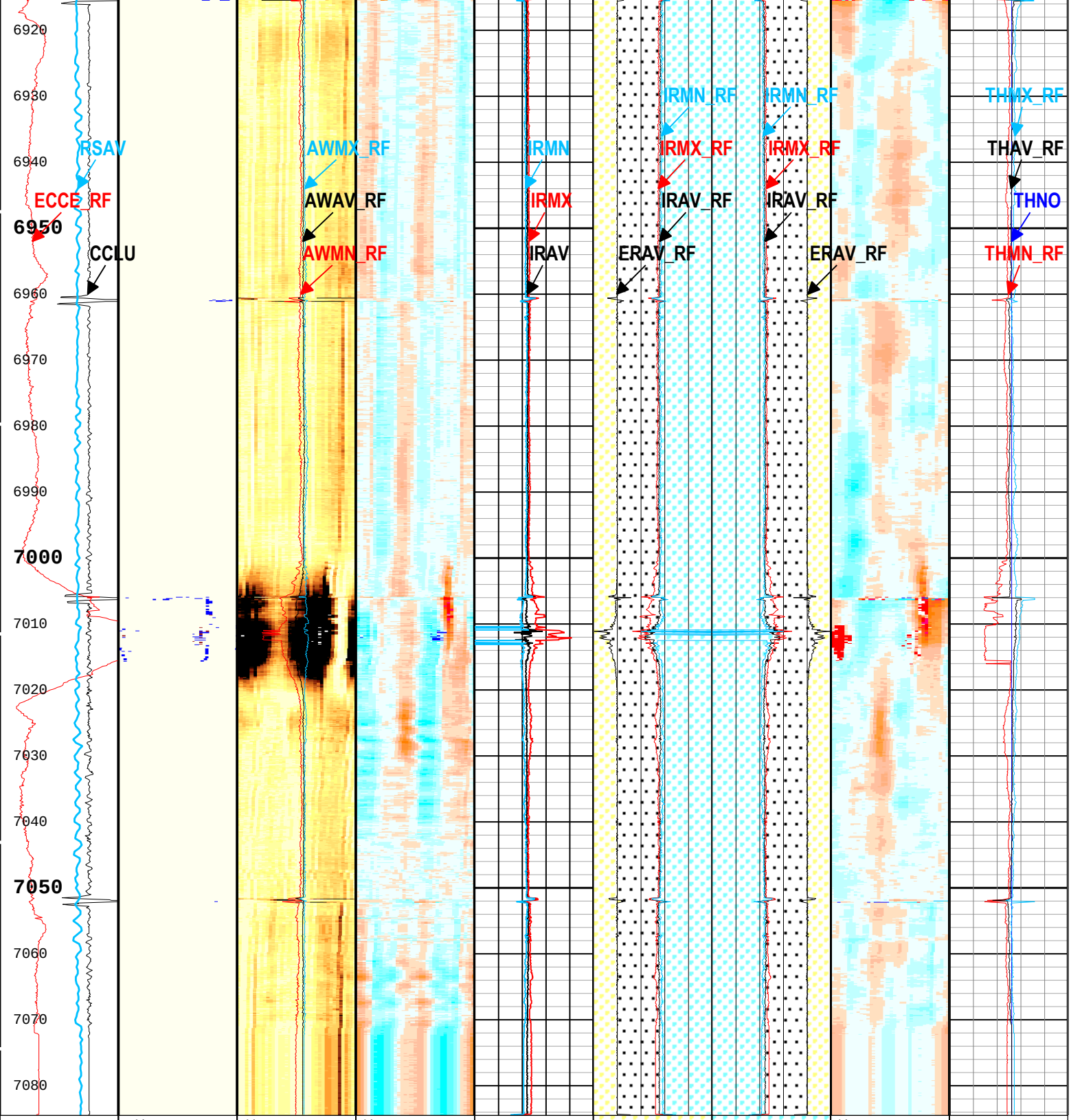


Casing Collar Locator Ultrasonic (CCLU) USIT-E
-30 in 10

Amplitude of Eccentering for Unflagged Waves (ECCE_RF) USIT-E
0 in 0.5

Motor

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

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

Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Internal Radii minus Median Internal Radius (IRBKM_RF) USIT-E
(in)
Orientation: Top

Internal Radius Averaged Value (IRAV) USIT-E
2.7 in 3.7

Internal Radius Maximum Value (IRMX) USIT-E
2.7 in 3.7

Internal Radius Minimum Value (IRMN) USIT-E
2.7 in 3.7

ERAV
ERAV-IRAV
IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
3.7 in 2.7

Median Internal

IRAV
ERAV
IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
2.7 in 3.7

Median Internal

Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
USIT - Unflagged Casing Thickness minus Median of Unflagged Casing Thickness (THBKM_RF) USIT-E

Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E
0.1 in 0.6

Nominal Casing Thickness (THNO) USIT-E
0.1 in 0.6

Median of Unflagged

Revolution Speed (RSAV) USIT-E
6 c/s 8

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

Minimum of Unflagged Wave Amplitude (AWMN_RF) USIT-E
0 dB 75

Average of Unflagged Wave Amplitude (AWAV_RF) USIT-E
0 dB 75

Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E
0 dB 75

Orientation: Top of Hole
U L B R U

Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
3.7 in 2.7

Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
2.7 in 3.7

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
3.7 in 2.7

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
2.7 in 3.7

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
3.7 in 2.7

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
2.7 in 3.7

USIT-E (in)
Orientation: Top of Hole
U L B R U

Unflagged Casing Thickness (THAV_RF) USIT-E
0.1 in 0.6

Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E
0.1 in 0.6

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 Composite Format: Log (LBV1_USI Corrosion 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 31-Mar-2016 13:17:55

Composite 1

USI Compressed Goodwin

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[7]:Up	Up	1028.13 ft	6590.51 ft	30-Mar-2016 12:52:21 PM	30-Mar-2016 2:41:26 PM	ON	-5.08 ft	Yes
One	Log[8]:Up	Up	481.66 ft	1097.23 ft	30-Mar-2016 2:41:59 PM	30-Mar-2016 2:54:08 PM	ON	-5.14 ft	Yes
One	Log[10]:Up	Up	47.88 ft	548.03 ft	30-Mar-2016 2:56:22 PM	30-Mar-2016 3:07:25 PM	ON	-4.95 ft	Yes
One	Log[24]:Up	Up	4.33 ft	104.64 ft	30-Mar-2016 5:26:46 PM	30-Mar-2016 5:31:02 PM	ON	0.26 ft	No

All depths are referenced to toolstring zero

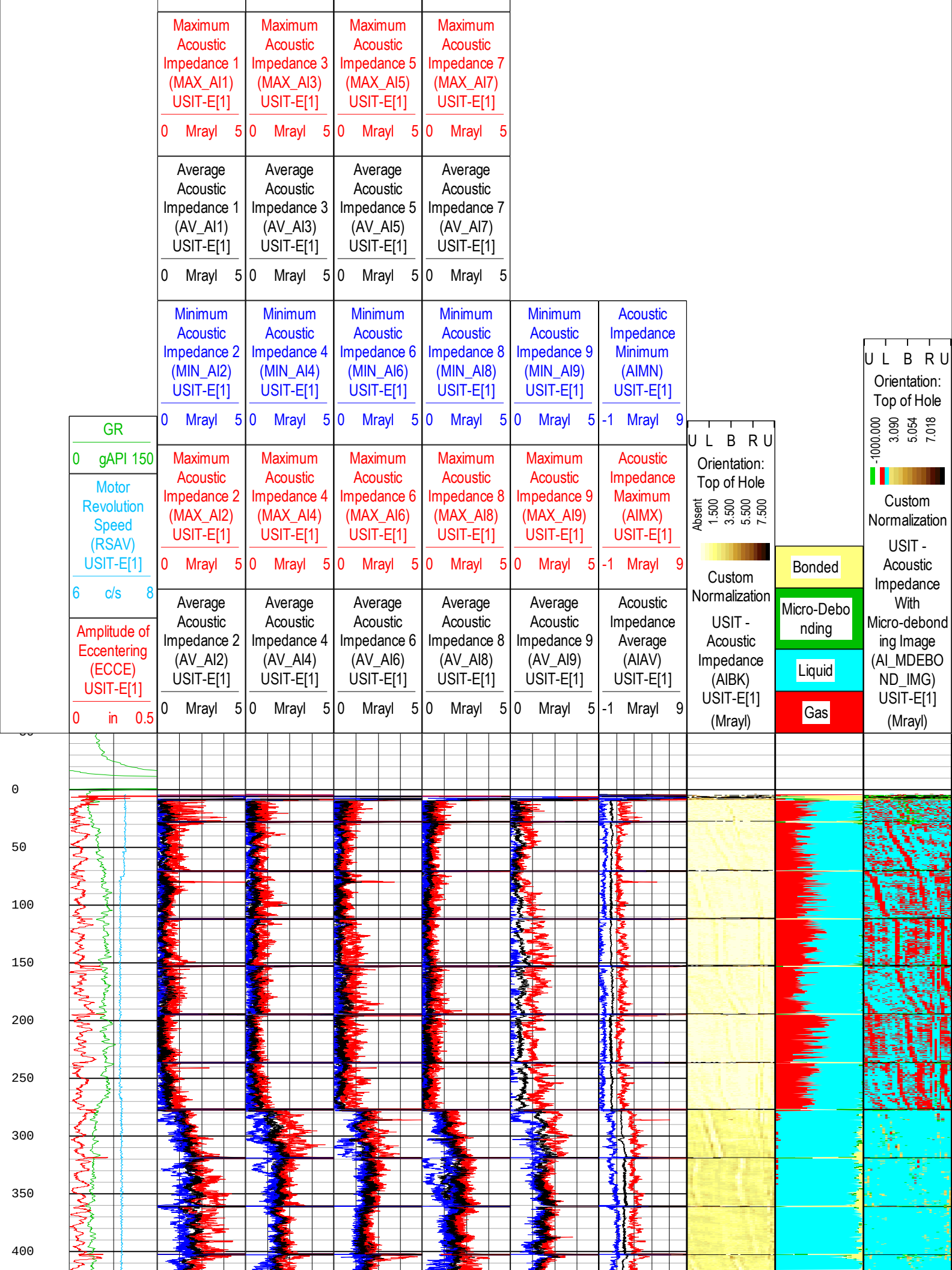
Log

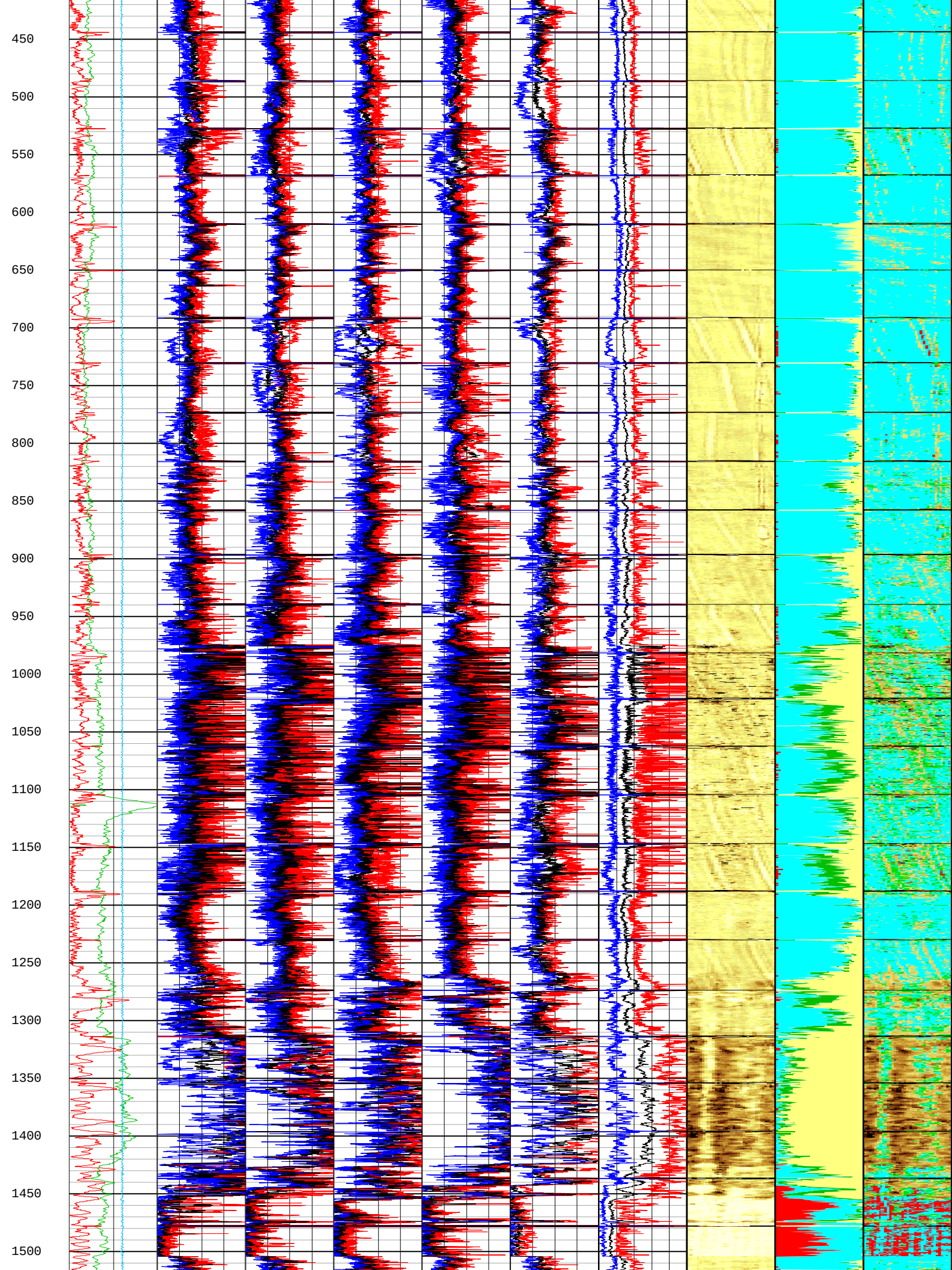
Company:Southern California Gas Company Well:Fernando Fee 32-A Composite 1:S005

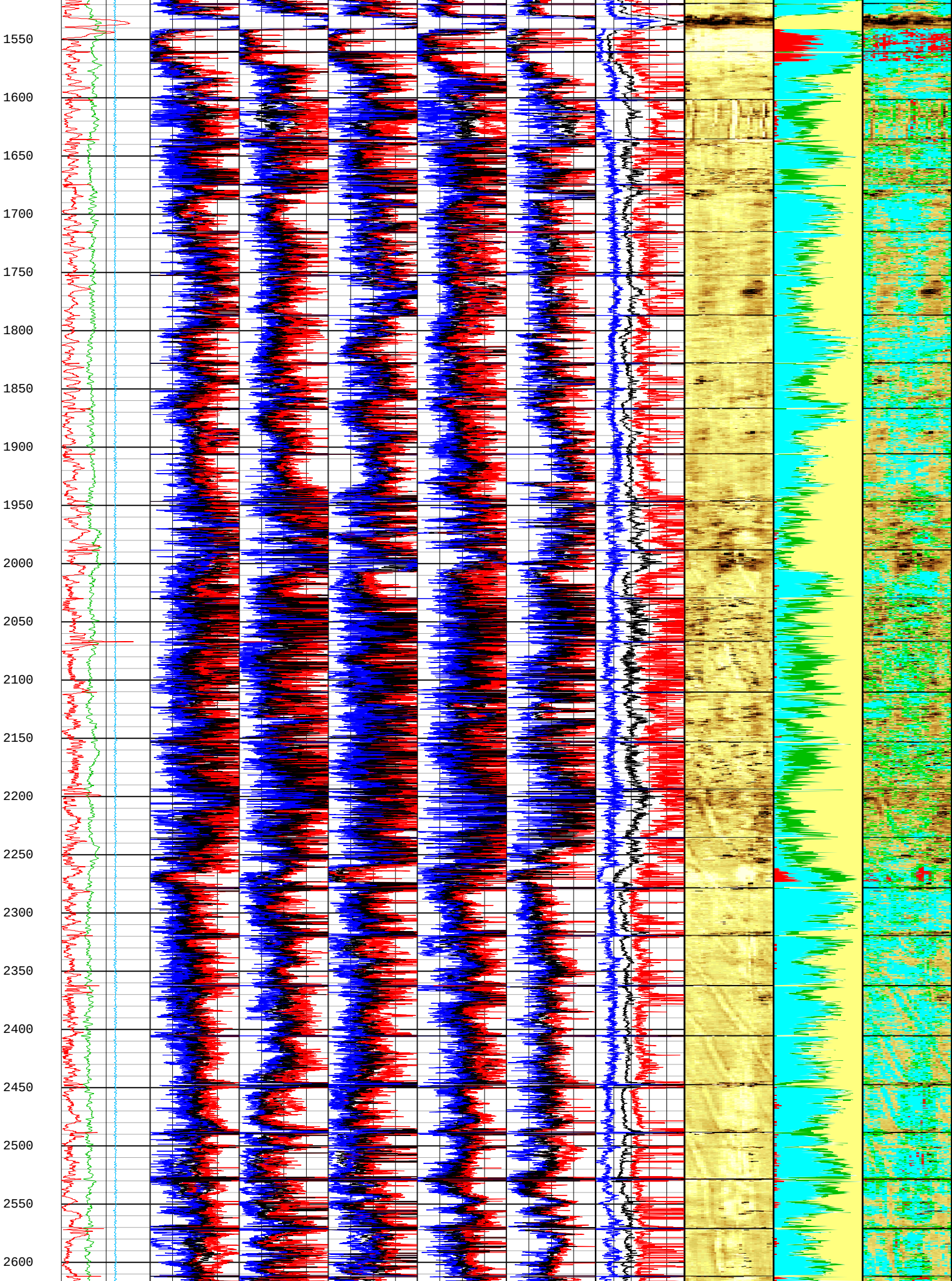
Description: USI Goodwin Format: Log (Import of USI Goodwin) Index Scale: 1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 31-Mar-2016 13:18:03

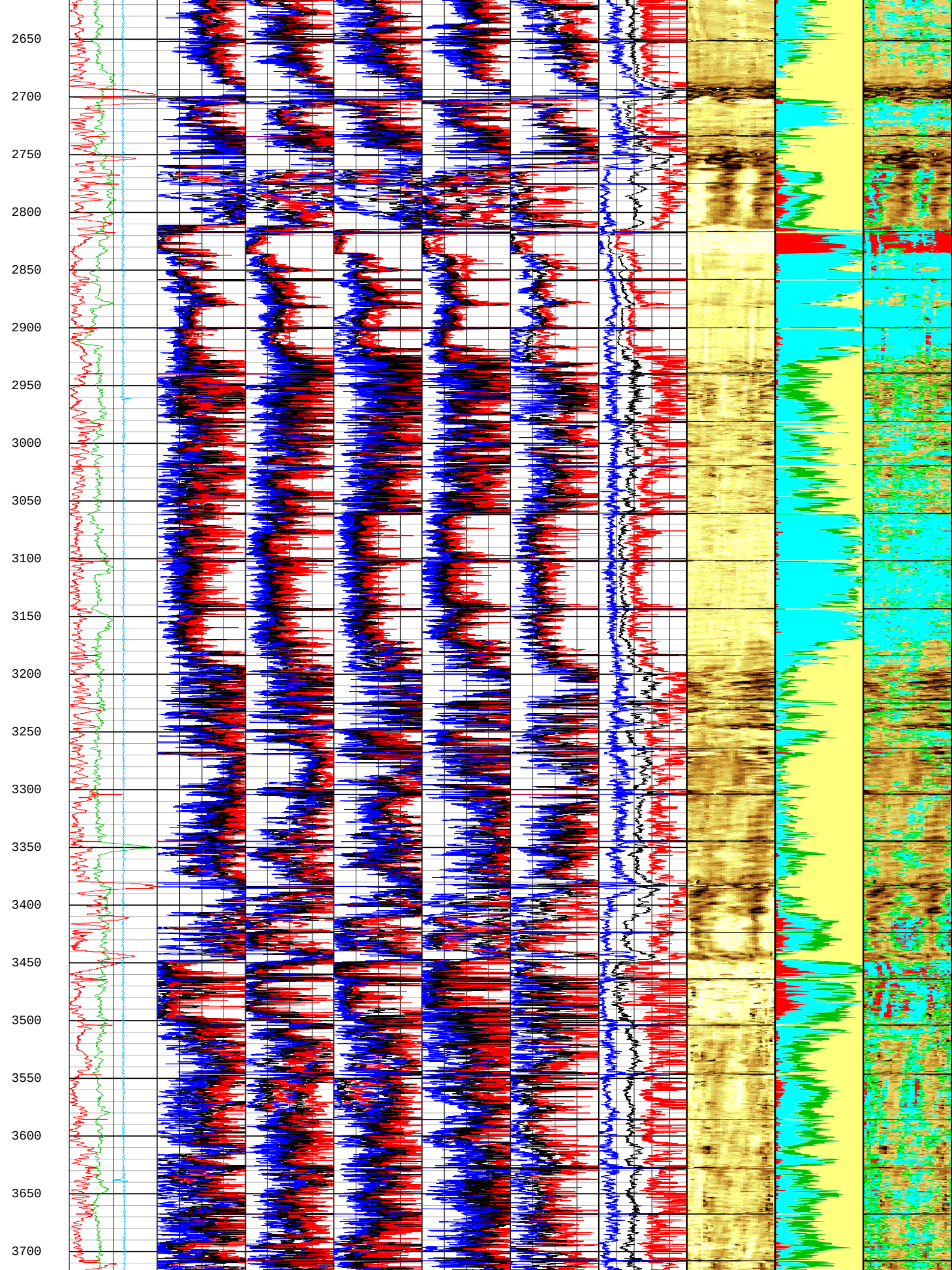
TIME_1900 - Time Marked every 60.00 (s)

Minimum Acoustic Impedance 1 (MIN_AI1) USIT-E[1]	Minimum Acoustic Impedance 3 (MIN_AI3) USIT-E[1]	Minimum Acoustic Impedance 5 (MIN_AI5) USIT-E[1]	Minimum Acoustic Impedance 7 (MIN_AI7) USIT-E[1]
0 Mrayl 5	0 Mrayl 5	0 Mrayl 5	0 Mrayl 5


Maximum Acoustic Impedance 1 (MAX_AI1) USIT-E[1]
0 Mrayl 5
Maximum Acoustic Impedance 3 (MAX_AI3) USIT-E[1]
0 Mrayl 5
Maximum Acoustic Impedance 5 (MAX_AI5) USIT-E[1]
0 Mrayl 5
Maximum Acoustic Impedance 7 (MAX_AI7) USIT-E[1]
0 Mrayl 5
Average Acoustic Impedance 1 (AV_AI1) USIT-E[1]
0 Mrayl 5
Average Acoustic Impedance 3 (AV_AI3) USIT-E[1]
0 Mrayl 5
Average Acoustic Impedance 5 (AV_AI5) USIT-E[1]
0 Mrayl 5
Average Acoustic Impedance 7 (AV_AI7) USIT-E[1]
0 Mrayl 5
Minimum Acoustic Impedance 2 (MIN_AI2) USIT-E[1]
0 Mrayl 5
Minimum Acoustic Impedance 4 (MIN_AI4) USIT-E[1]
0 Mrayl 5
Minimum Acoustic Impedance 6 (MIN_AI6) USIT-E[1]
0 Mrayl 5
Minimum Acoustic Impedance 8 (MIN_AI8) USIT-E[1]
0 Mrayl 5
Minimum Acoustic Impedance 9 (MIN_AI9) USIT-E[1]
0 Mrayl 5
Acoustic Impedance Minimum (AIMN) USIT-E[1]
-1 Mrayl 9
GR
0 gAPI 150
Maximum Acoustic Impedance 2 (MAX_AI2) USIT-E[1]
0 Mrayl 5
Maximum Acoustic Impedance 4 (MAX_AI4) USIT-E[1]
0 Mrayl 5
Maximum Acoustic Impedance 6 (MAX_AI6) USIT-E[1]
0 Mrayl 5
Maximum Acoustic Impedance 8 (MAX_AI8) USIT-E[1]
0 Mrayl 5
Maximum Acoustic Impedance 9 (MAX_AI9) USIT-E[1]
0 Mrayl 5
Acoustic Impedance Maximum (AIMX) USIT-E[1]
-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[1] (Mrayl)
Bonded
Micro-Debonding
Liquid
Gas
U L B R U
Orientation: Top of Hole
-1000.000 3.090 5.054 7.018
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E[1] (Mrayl)
Motor Revolution Speed (RSAV) USIT-E[1]
6 c/s 8
Amplitude of Eccentering (ECCE) USIT-E[1]
0 in 0.5
Average Acoustic Impedance 2 (AV_AI2) USIT-E[1]
0 Mrayl 5
Average Acoustic Impedance 4 (AV_AI4) USIT-E[1]
0 Mrayl 5
Average Acoustic Impedance 6 (AV_AI6) USIT-E[1]
0 Mrayl 5
Average Acoustic Impedance 8 (AV_AI8) USIT-E[1]
0 Mrayl 5
Average Acoustic Impedance 9 (AV_AI9) USIT-E[1]
0 Mrayl 5
Acoustic Impedance Average (AIAV) USIT-E[1]
-1 Mrayl 9
0
50
100
150
200
250
300
350
400


450
500
550
600
650
700
750
800
850
900
950
1000
1050
1100
1150
1200
1250
1300
1350
1400
1450
1500


1550
1600
1650
1700
1750
1800
1850
1900
1950
2000
2050
2100
2150
2200
2250
2300
2350
2400
2450
2500
2550
2600


2650
2700
2750
2800
2850
2900
2950
3000
3050
3100
3150
3200
3250
3300
3350
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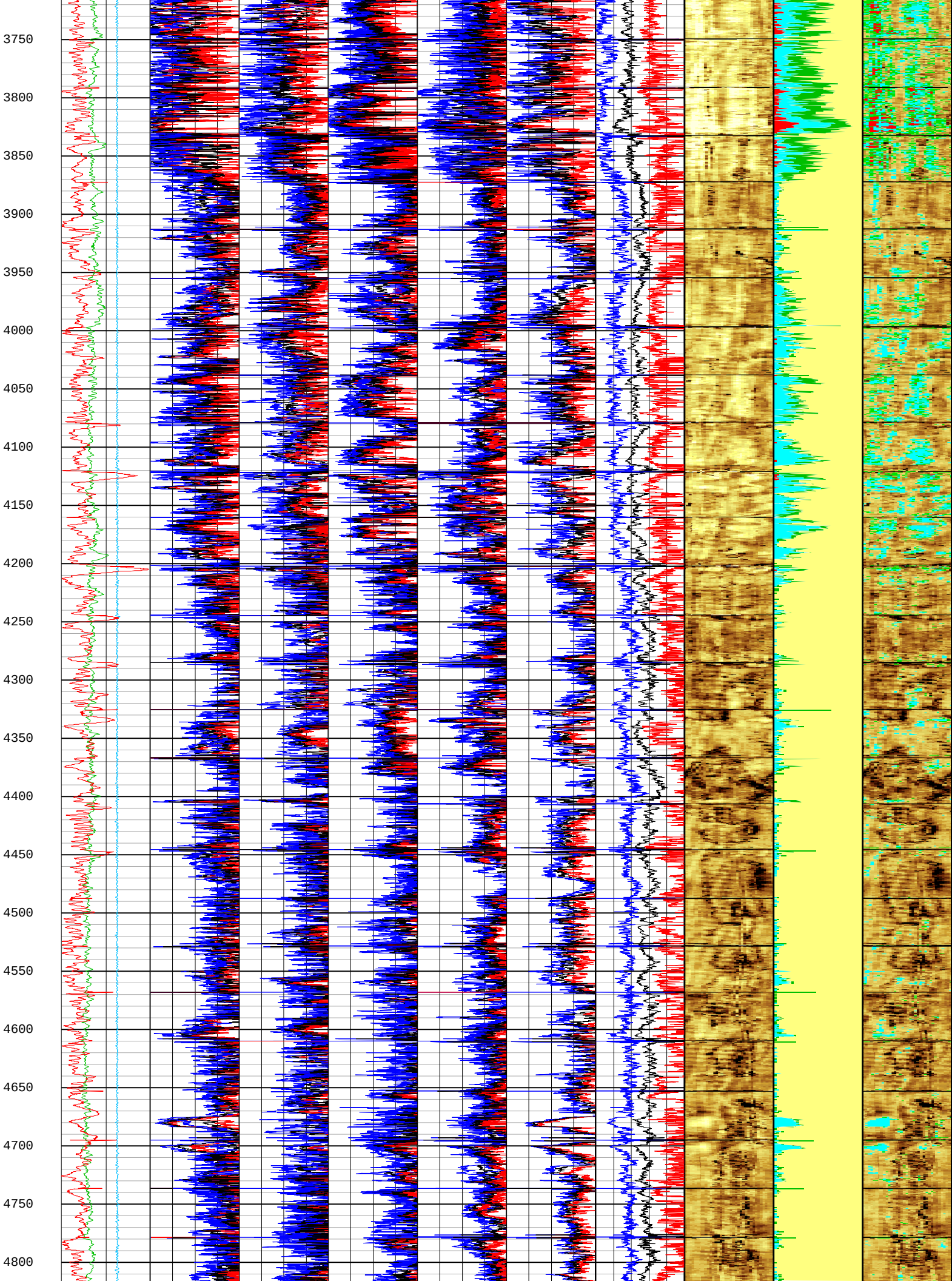
3500
3550
3600
3650
3700


3750
3800
3850
3900
3950
4000
4050
4100
4150
4200
4250
4300
4350
4400
4450
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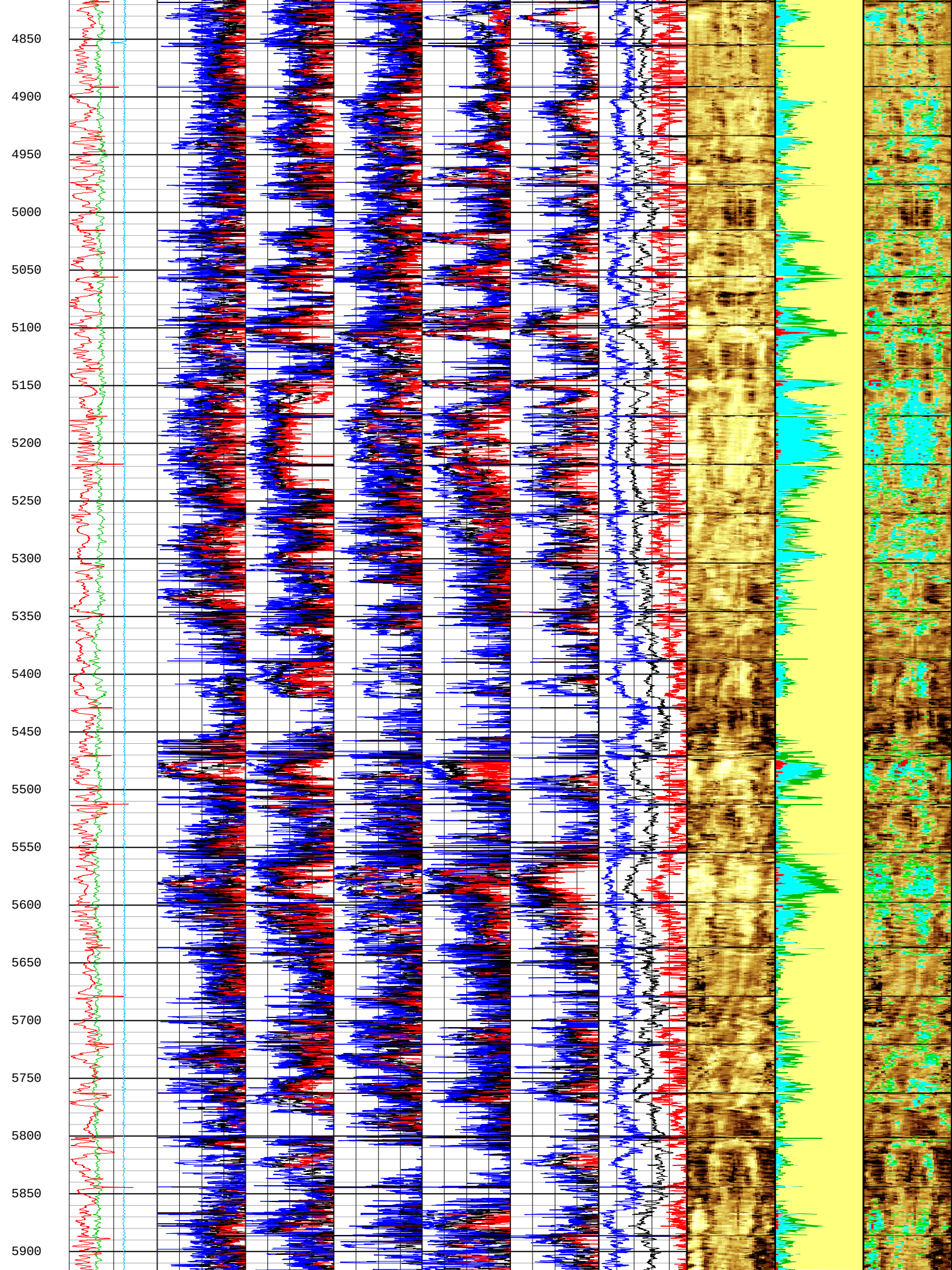
4600
4650
4700
4750
4800


4850
4900
4950
5000
5050
5100
5150
5200
5250
5300
5350
5400
5450
5500
5550
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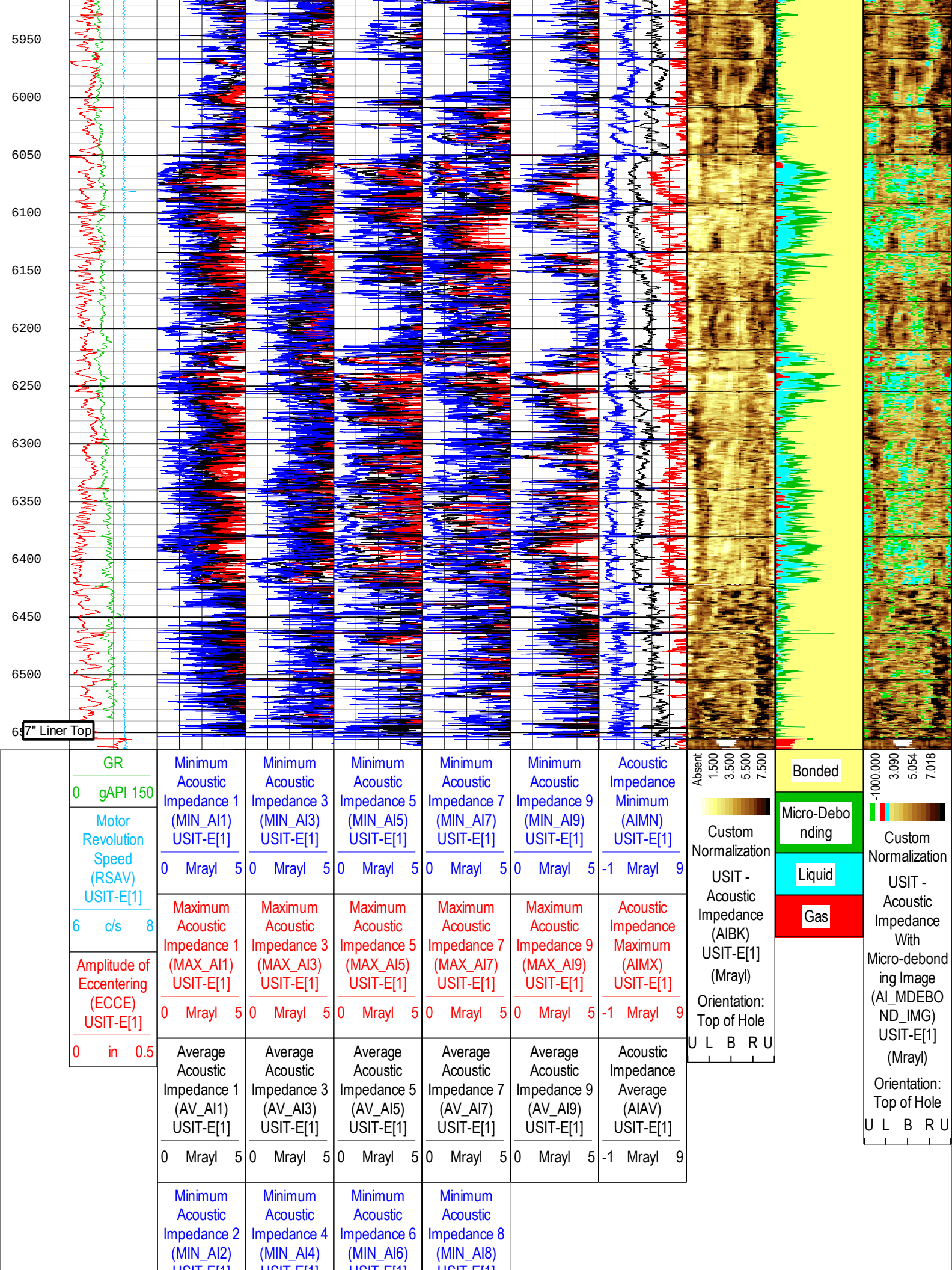
5700
5750
5800
5850
5900


5950
6000
6050
6100
6150
6200
6250
6300
6350
6400
6450
6500
7" Liner Top
GR
0 gAPI 150
Motor Revolution Speed (RSAV) USIT-E[1]
6 c/s 8
Amplitude of Eccentering (ECCE) USIT-E[1]
0 in 0.5
Minimum Acoustic Impedance 1 (MIN_AI1) USIT-E[1]
0 Mrayl 5
Minimum Acoustic Impedance 3 (MIN_AI3) USIT-E[1]
0 Mrayl 5
Minimum Acoustic Impedance 5 (MIN_AI5) USIT-E[1]
0 Mrayl 5
Minimum Acoustic Impedance 7 (MIN_AI7) USIT-E[1]
0 Mrayl 5
Minimum Acoustic Impedance 9 (MIN_AI9) USIT-E[1]
0 Mrayl 5
Acoustic Impedance Minimum (AIMN) USIT-E[1]
-1 Mrayl 9
Maximum Acoustic Impedance 1 (MAX_AI1) USIT-E[1]
0 Mrayl 5
Maximum Acoustic Impedance 3 (MAX_AI3) USIT-E[1]
0 Mrayl 5
Maximum Acoustic Impedance 5 (MAX_AI5) USIT-E[1]
0 Mrayl 5
Maximum Acoustic Impedance 7 (MAX_AI7) USIT-E[1]
0 Mrayl 5
Maximum Acoustic Impedance 9 (MAX_AI9) USIT-E[1]
0 Mrayl 5
Acoustic Impedance Maximum (AIMX) USIT-E[1]
-1 Mrayl 9
Average Acoustic Impedance 1 (AV_AI1) USIT-E[1]
0 Mrayl 5
Average Acoustic Impedance 3 (AV_AI3) USIT-E[1]
0 Mrayl 5
Average Acoustic Impedance 5 (AV_AI5) USIT-E[1]
0 Mrayl 5
Average Acoustic Impedance 7 (AV_AI7) USIT-E[1]
0 Mrayl 5
Average Acoustic Impedance 9 (AV_AI9) USIT-E[1]
0 Mrayl 5
Acoustic Impedance Average (AIAV) USIT-E[1]
-1 Mrayl 9
Minimum Acoustic Impedance 2 (MIN_AI2)
Minimum Acoustic Impedance 4 (MIN_AI4)
Minimum Acoustic Impedance 6 (MIN_AI6)
Minimum Acoustic Impedance 8 (MIN_AI8)
Absent 1.500 3.500 5.500 7.500
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E[1] (Mrayl)
Orientation: Top of Hole
U L B R U
Bonded
Micro-Debonding
Liquid
Gas
-1000.000 3.090 5.054 7.018
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E[1] (Mrayl)
Orientation: Top of Hole
U L B R U

USIT-E[1] 0 Mrayl 5	USIT-E[1] 0 Mrayl 5	USIT-E[1] 0 Mrayl 5	USIT-E[1] 0 Mrayl 5
Maximum Acoustic Impedance 2 (MAX_AI2) USIT-E[1] 0 Mrayl 5	Maximum Acoustic Impedance 4 (MAX_AI4) USIT-E[1] 0 Mrayl 5	Maximum Acoustic Impedance 6 (MAX_AI6) USIT-E[1] 0 Mrayl 5	Maximum Acoustic Impedance 8 (MAX_AI8) USIT-E[1] 0 Mrayl 5
Average Acoustic Impedance 2 (AV_AI2) USIT-E[1] 0 Mrayl 5	Average Acoustic Impedance 4 (AV_AI4) USIT-E[1] 0 Mrayl 5	Average Acoustic Impedance 6 (AV_AI6) USIT-E[1] 0 Mrayl 5	Average Acoustic Impedance 8 (AV_AI8) USIT-E[1] 0 Mrayl 5

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Goodwin Format: Log (Import of USI Goodwin) Index Scale: 1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 31-Mar-2016 13:18:03

One

USI Compressed Goodwin

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[3]:Up	Up	6537.39 ft	7084.95 ft	30-Mar-2016 12:15:32 PM	30-Mar-2016 12:28:34 PM	ON	-6.00 ft	No

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Fernando Fee 32-A

One: Log[3]:Up:S005

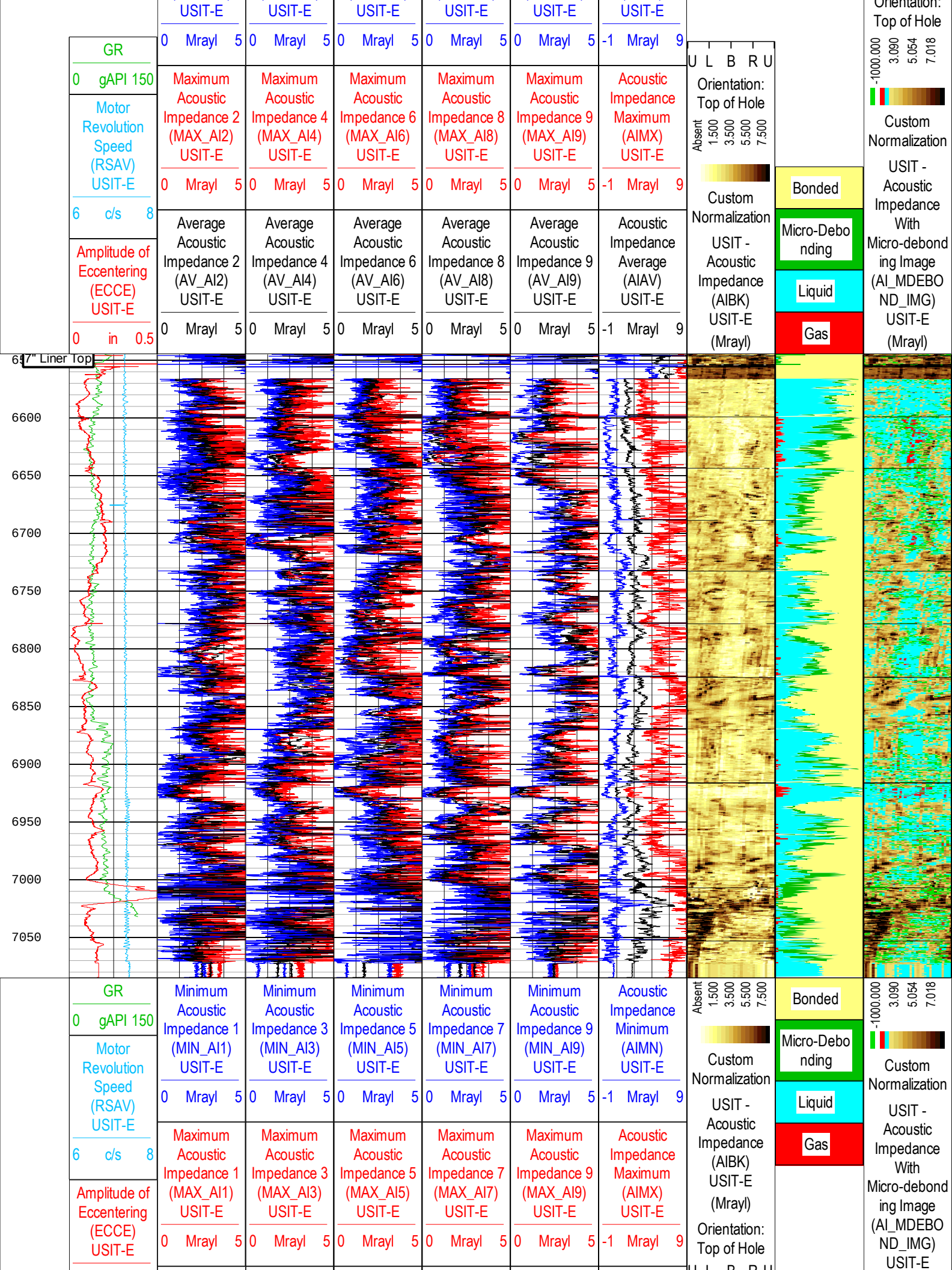
Description: USI Goodwin Format: Log (Import of USI Goodwin) Index Scale: 1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 31-Mar-2016 13:18:19

TIME_1900 - Time Marked every 60.00 (s)

Minimum Acoustic Impedance 1 (MIN_AI1) USIT-E 0 Mrayl 5	Minimum Acoustic Impedance 3 (MIN_AI3) USIT-E 0 Mrayl 5	Minimum Acoustic Impedance 5 (MIN_AI5) USIT-E 0 Mrayl 5	Minimum Acoustic Impedance 7 (MIN_AI7) USIT-E 0 Mrayl 5
Maximum Acoustic Impedance 1 (MAX_AI1) USIT-E 0 Mrayl 5	Maximum Acoustic Impedance 3 (MAX_AI3) USIT-E 0 Mrayl 5	Maximum Acoustic Impedance 5 (MAX_AI5) USIT-E 0 Mrayl 5	Maximum Acoustic Impedance 7 (MAX_AI7) USIT-E 0 Mrayl 5
Average Acoustic Impedance 1 (AV_AI1) USIT-E 0 Mrayl 5	Average Acoustic Impedance 3 (AV_AI3) USIT-E 0 Mrayl 5	Average Acoustic Impedance 5 (AV_AI5) USIT-E 0 Mrayl 5	Average Acoustic Impedance 7 (AV_AI7) USIT-E 0 Mrayl 5

Minimum Acoustic Impedance 2 (MIN_AI2)	Minimum Acoustic Impedance 4 (MIN_AI4)	Minimum Acoustic Impedance 6 (MIN_AI6)	Minimum Acoustic Impedance 8 (MIN_AI8)	Minimum Acoustic Impedance 9 (MIN_AI9)	Acoustic Impedance Minimum (AIMN)

U L B R U


USIT-E
0 Mrayl 5
-1 Mrayl 9
GR
0 gAPI 150
Motor Revolution Speed (RSAV) USIT-E
6 c/s 8
Amplitude of Eccentering (ECCE) USIT-E
0 in 0.5
Maximum Acoustic Impedance 2 (MAX_AI2) USIT-E
Maximum Acoustic Impedance 4 (MAX_AI4) USIT-E
Maximum Acoustic Impedance 6 (MAX_AI6) USIT-E
Maximum Acoustic Impedance 8 (MAX_AI8) USIT-E
Maximum Acoustic Impedance 9 (MAX_AI9) USIT-E
Acoustic Impedance Maximum (AIMX) USIT-E
Average Acoustic Impedance 2 (AV_AI2) USIT-E
Average Acoustic Impedance 4 (AV_AI4) USIT-E
Average Acoustic Impedance 6 (AV_AI6) USIT-E
Average Acoustic Impedance 8 (AV_AI8) USIT-E
Average Acoustic Impedance 9 (AV_AI9) USIT-E
Acoustic Impedance Average (AIAV) USIT-E
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)
Bonded
Micro-Debonding
Liquid
Gas
Orientation: Top of Hole
-1000.000 3.090 5.054 7.018
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E (Mrayl)
7" Liner Top
6600
6650
6700
6750
6800
6850
6900
6950
7000
7050
Minimum Acoustic Impedance 1 (MIN_AI1) USIT-E
Minimum Acoustic Impedance 3 (MIN_AI3) USIT-E
Minimum Acoustic Impedance 5 (MIN_AI5) USIT-E
Minimum Acoustic Impedance 7 (MIN_AI7) USIT-E
Minimum Acoustic Impedance 9 (MIN_AI9) USIT-E
Acoustic Impedance Minimum (AIMN) USIT-E
Maximum Acoustic Impedance 1 (MAX_AI1) USIT-E
Maximum Acoustic Impedance 3 (MAX_AI3) USIT-E
Maximum Acoustic Impedance 5 (MAX_AI5) USIT-E
Maximum Acoustic Impedance 7 (MAX_AI7) USIT-E
Maximum Acoustic Impedance 9 (MAX_AI9) USIT-E
Acoustic Impedance Maximum (AIMX) USIT-E

Average Acoustic Impedance 1 (AV_AI1) USIT-E 0 Mrayl 5	Average Acoustic Impedance 3 (AV_AI3) USIT-E 0 Mrayl 5	Average Acoustic Impedance 5 (AV_AI5) USIT-E 0 Mrayl 5	Average Acoustic Impedance 7 (AV_AI7) USIT-E 0 Mrayl 5	Average Acoustic Impedance 9 (AV_AI9) USIT-E 0 Mrayl 5	Acoustic Impedance Average (AIAV) USIT-E -1 Mrayl 9
Minimum Acoustic Impedance 2 (MIN_AI2) USIT-E 0 Mrayl 5	Minimum Acoustic Impedance 4 (MIN_AI4) USIT-E 0 Mrayl 5	Minimum Acoustic Impedance 6 (MIN_AI6) USIT-E 0 Mrayl 5	Minimum Acoustic Impedance 8 (MIN_AI8) USIT-E 0 Mrayl 5		
Maximum Acoustic Impedance 2 (MAX_AI2) USIT-E 0 Mrayl 5	Maximum Acoustic Impedance 4 (MAX_AI4) USIT-E 0 Mrayl 5	Maximum Acoustic Impedance 6 (MAX_AI6) USIT-E 0 Mrayl 5	Maximum Acoustic Impedance 8 (MAX_AI8) USIT-E 0 Mrayl 5		
Average Acoustic Impedance 2 (AV_AI2) USIT-E 0 Mrayl 5	Average Acoustic Impedance 4 (AV_AI4) USIT-E 0 Mrayl 5	Average Acoustic Impedance 6 (AV_AI6) USIT-E 0 Mrayl 5	Average Acoustic Impedance 8 (AV_AI8) USIT-E 0 Mrayl 5		

0 in 0.5

U L B R U

(Mrayl)

Orientation: Top of Hole

U L B R U

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Goodwin Format: Log (Import of USI Goodwin) Index Scale: 1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 31-Mar-2016 13:18:19

XYZ

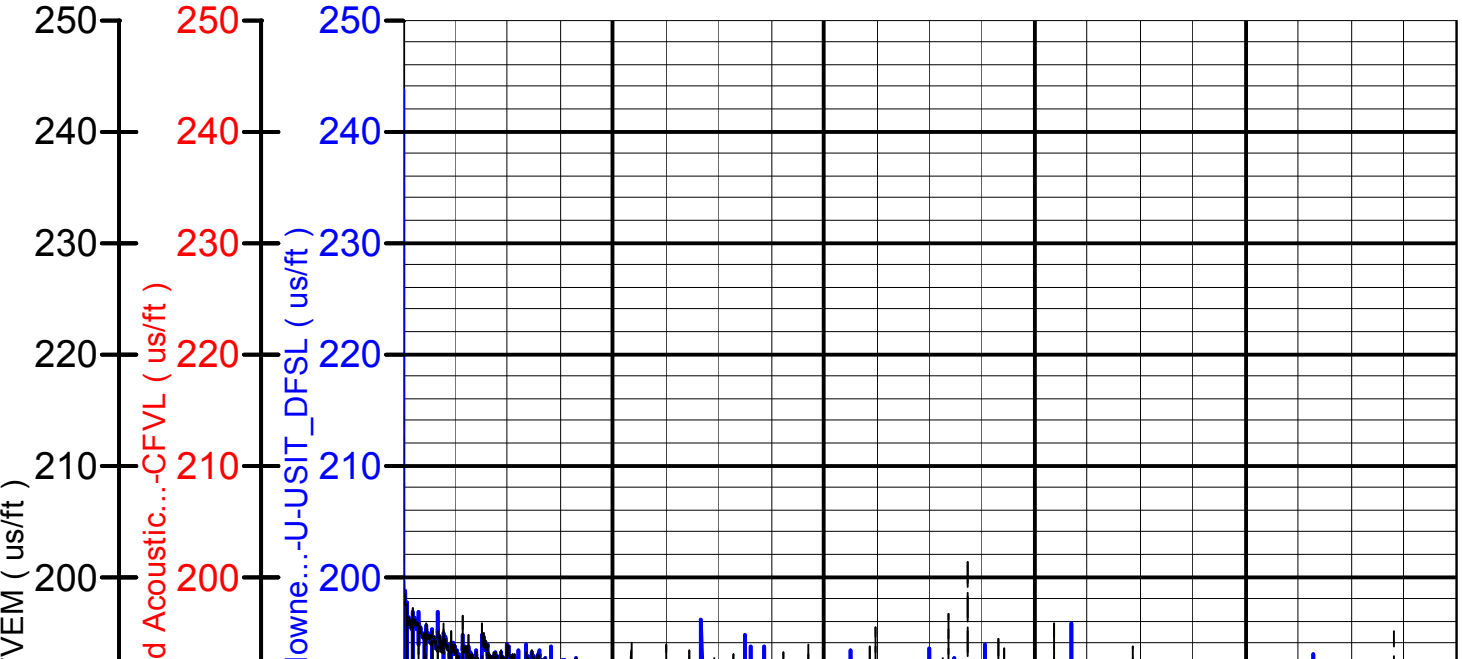
Company:Southern California Gas Company Well:Fernando Fee 32-A
Composite 1:S005

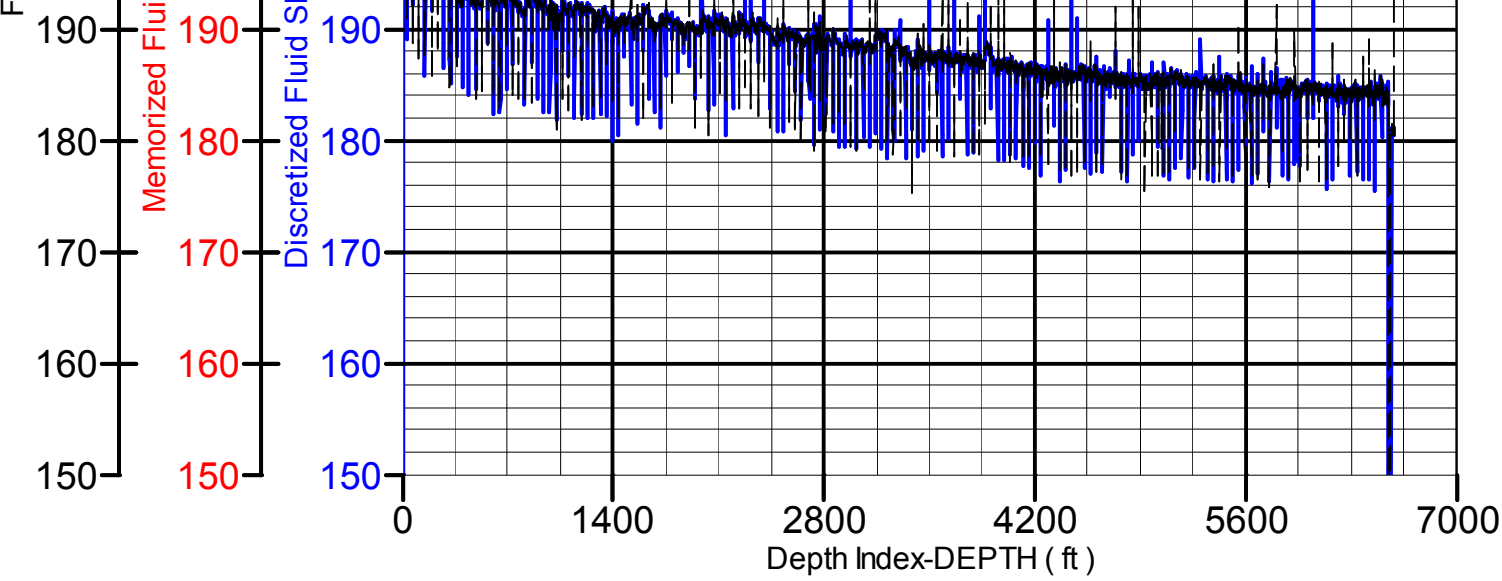
Fluid Acoustic Slowness vs Depth

2D Cross Plot

Index Range: From 4.00 to 6590.50 ft

DEPTH-U-USIT_DFSL — — — DEPTH-CFVL
— — — DEPTH-FVEM (FVEM : Data Not Found)





XYZ

Company:Southern California Gas Company Well:Fernando Fee 32-A

One: Log[3]:Up:S005

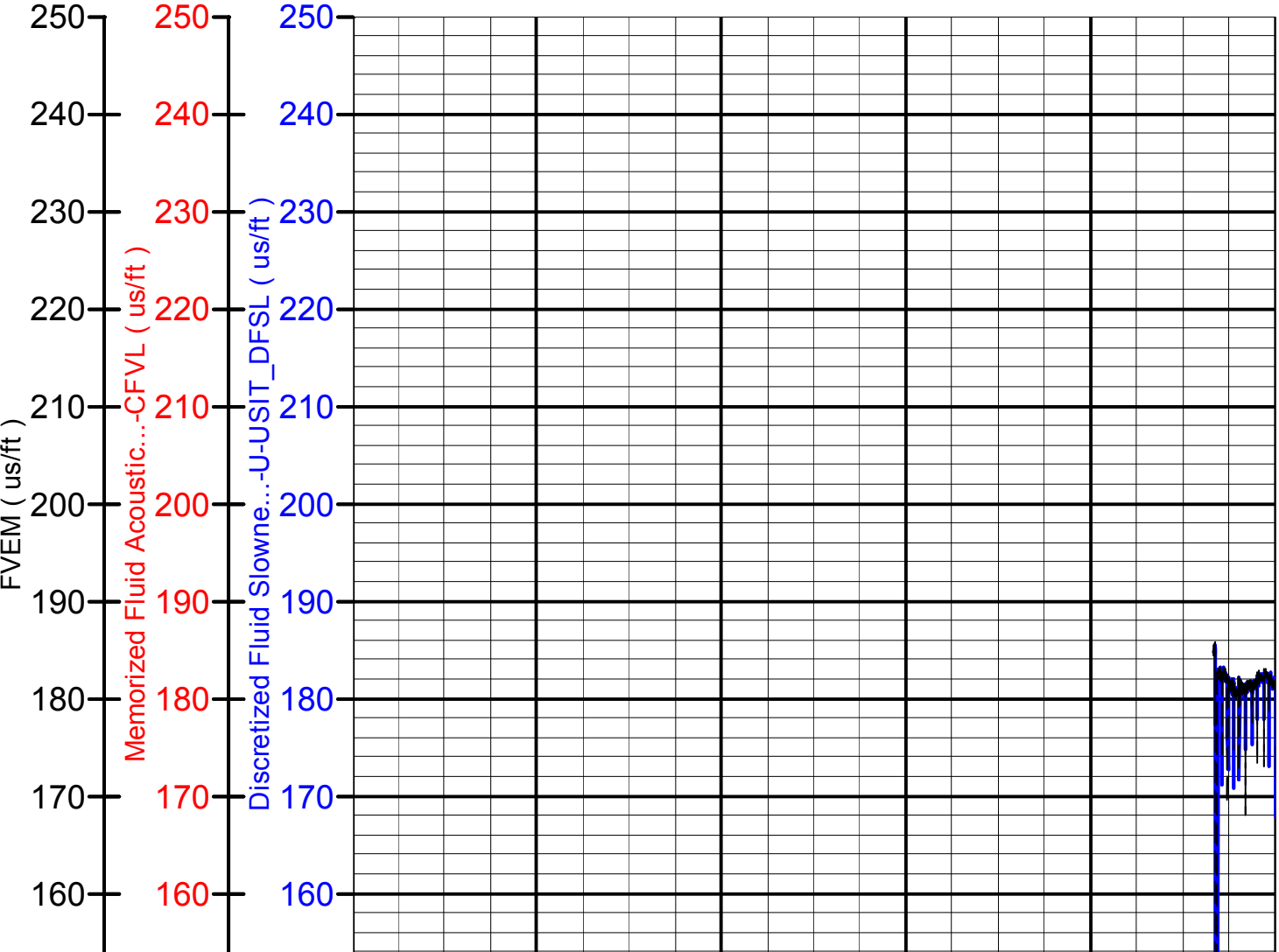
Fluid Acoustic Slowness vs Depth

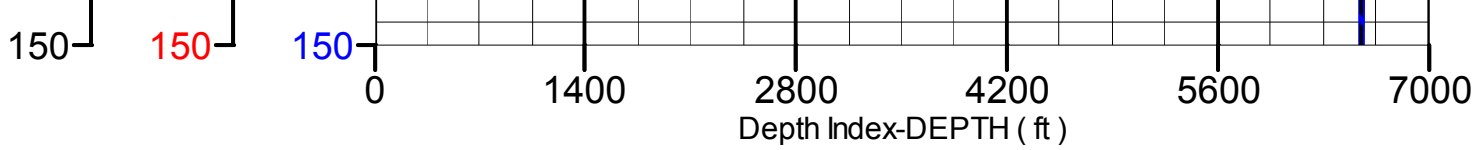
2D Cross Plot

Index Range: From 7085.00 to 6537.13 ft

DEPTH-U-USIT_DFSL — — - DEPTH-CFVL

— — - DEPTH-FVEM (FVEM : Data Not Found)





XYZ

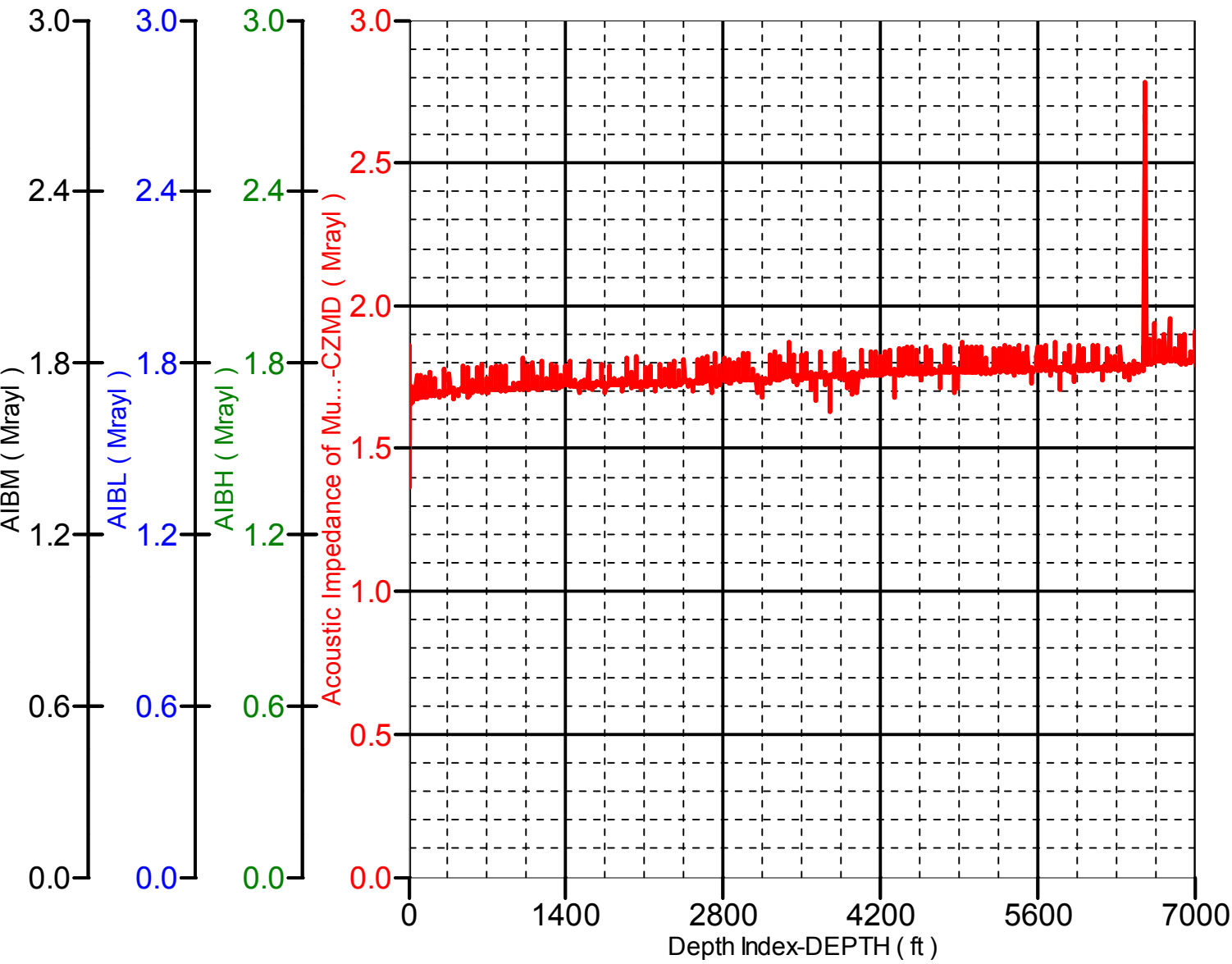
Company:Southern California Gas Company Well:Fernando Fee 32-A
Composite 2:S005

Theoretical Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 4.00 to 7085.00 ft

DEPTH-CZMD
DEPTH-AIBH (AIBH : Data Not Found)
DEPTH-AIBL (AIBL : Data Not Found)
DEPTH-AIBM (AIBM : Data Not Found)



Company:	Southern California Gas Company
Well:	Fernando Fee 32-A
Field:	Aliso Canyon
County:	Los Angeles
State:	California

Schlumberger

Ultrasonic Imager

Gamma Ray - CCL

8-5/8" and 7" casing