Schlumberger

Company: Southern California Gas Company

Well: Porter 50C

Field: Aliso Canyon

County: Los Angeles State: CALIFORNIA

Ultrasonic Imager- Cement Bond Log

Neutron - Gamma Ray - CCL

9-5/8" 47# casing

County: Los Angeles
Field: Aliso Canyon
Location: LAT: 34.31505 LONG: -118.54728
Well: Porter 50C
Company: Southern California Gas Company

Location: LAT: 34.31505 LONG: -118.54728

Elev.: K.B. 1976.50 ft
G.L. 1953.00 ft
D.F.

Permanent Datum:	Ground Level	Elev.:	1953.00 f
Log Measured From:	Kelly Bushing	23.50 ft	above Perm.Datum
Drilling Measured From:	Kelly Bushing		

API Serial No.	Section:	Township:	Range:
037-24337	27	3N	16W

Logging Date		15-Mar-2016		16-Mar-2016	
Run Number		One		One	
Depth Driller		5994.00 ft		5994.00 ft	
Schlumberger Depth		5992.00 ft		5992.00 ft	
Bottom Log Interval		5992.00 ft		5992.00 ft	
Top Log Interval		35.00 ft		35.00 ft	
Casing Fluid Type		Water		Water	
Salinity					
Density		8.4 lbm/gal		8.4 lbm/gal	
Fluid Level		0.00 ft		8.00 ft	
BIT/CASING/TUBING STRING					
Bit Size		12.25 in		12.25 in	
From		7305.00 ft		7305.00 ft	
To		7317.00 ft		7317.00 ft	
Casing/Tubing Size		9.625 in		9.625 in	
Weight		47 lbm/ft		47 lbm/ft	
Grade		L80		L80	
From		0.00 ft		0.00 ft	
To		7305.00 ft		7305.00 ft	
Max Recorded Temperatures					
Logger on Bottom	Time	16-Mar-2016	12:10:00	16-Mar-2016	17:10:00
Unit Number	Location:	3189	Ventura Ca	3189	Ventura Ca
Recorded By		John Lopez		John Lopez	
Witnessed By		Mr Tom McMahon		Mr Tom McMahon	

Disclaimer

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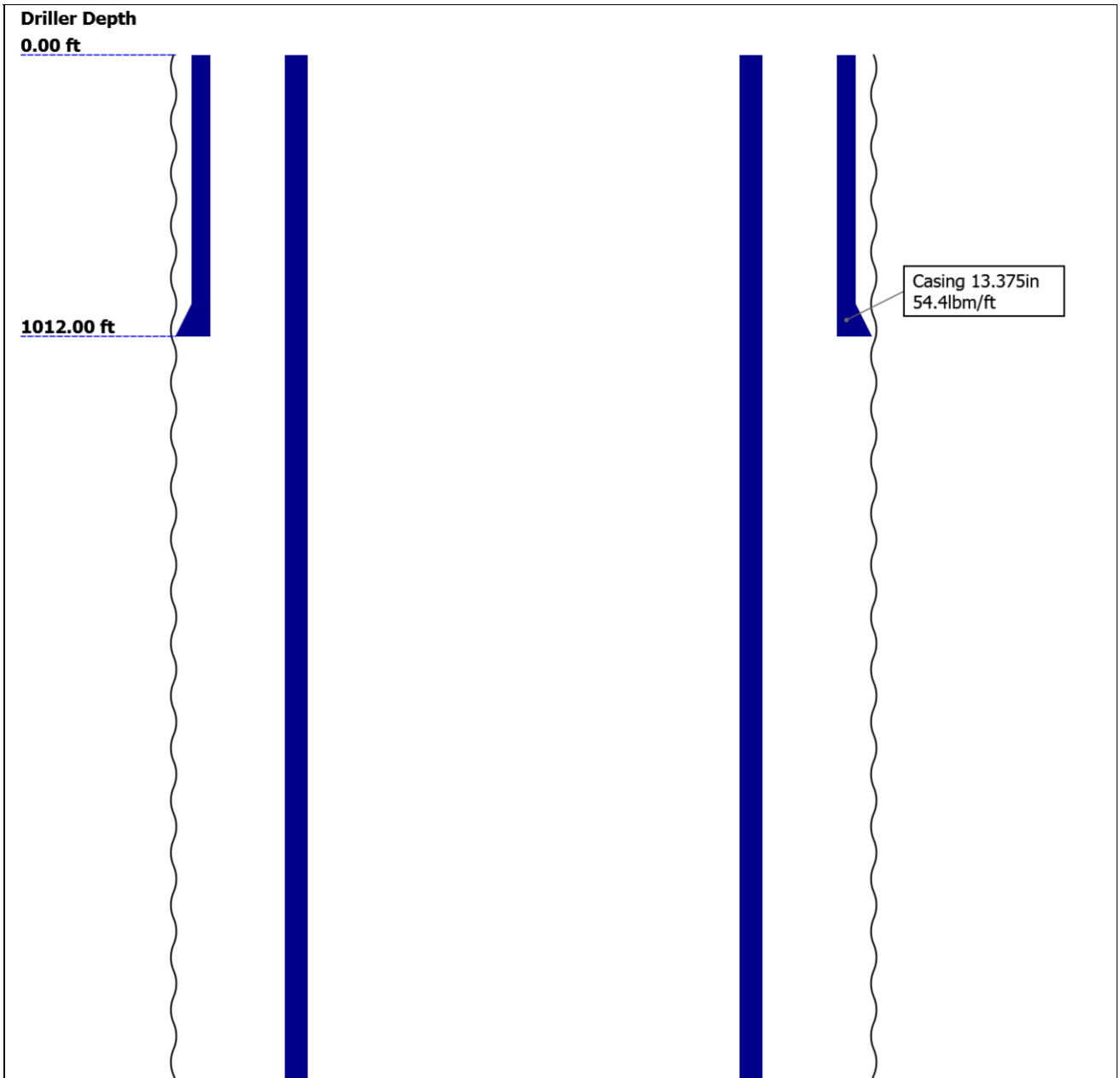
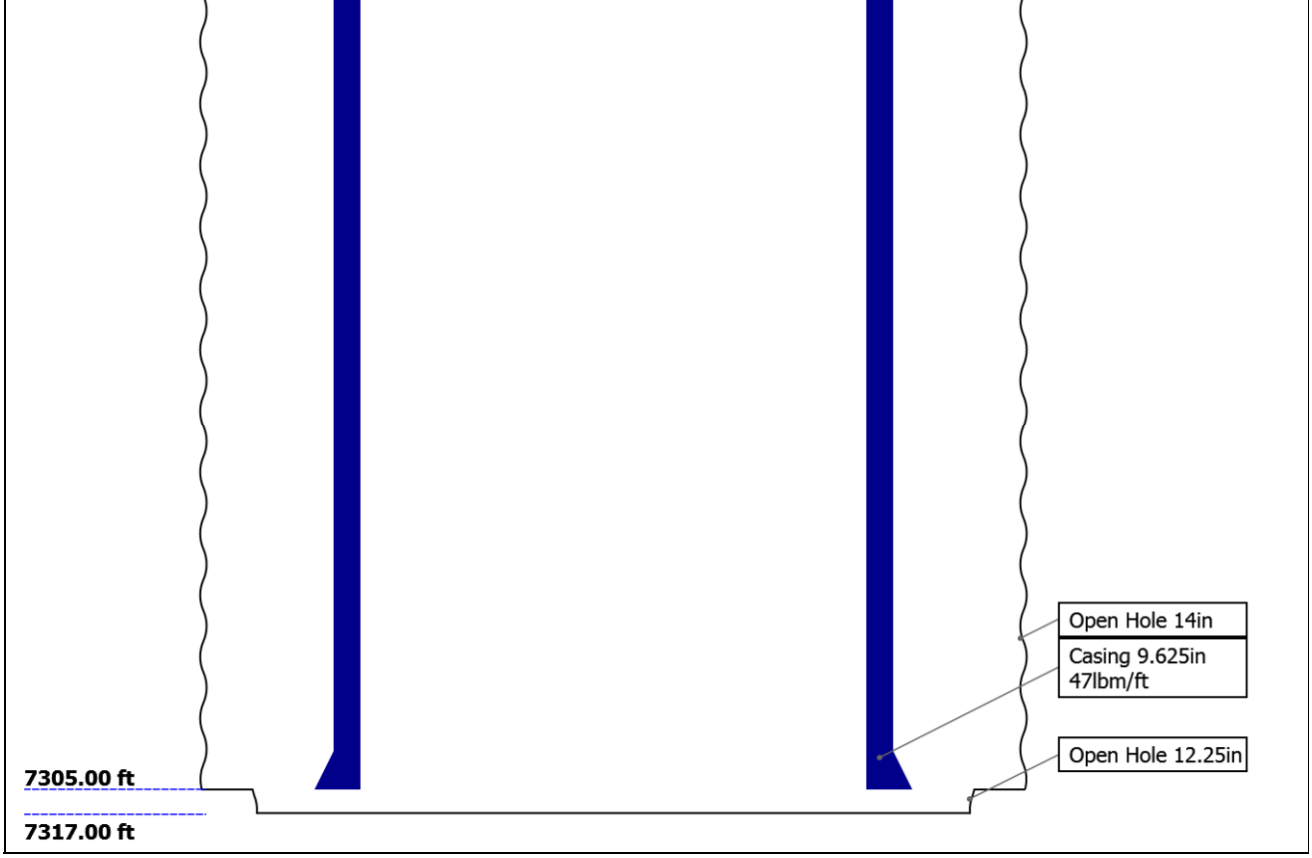
Contents

1. Header
2. Disclaimer
3. Contents
4. Well Sketch
5. Borehole Size/Casing/Tubing Record
6. Remarks and Equipment Summary
7. Composite 1 GR-CCL Correlation 5 IN = 100 FT
   7.1 Integration Summary
   7.2 Composite Summary
   7.3 Log (GR-CCLU Correlation)
8. USI Fluid Properties Measurement
9. Composite 1 Main Pass 5 in = 100 ft
   9.1 Integration Summary
   9.2 Software Version
   9.3 Composite Summary
   9.4 Log (LBV1_USI-VDL (DSLT) Cement 9.625inch)
   9.5 Parameter Listing
15. 200 ft
   15.1 Integration Summary
   15.2 Software Version
   15.3 Composite Summary
   15.4 Log (LBV1_USI Corrosion 9.625inch)
   15.5 Parameter Listing
16. 200 ft Corrosion 5 in = 100 ft
   16.1 Integration Summary
   16.2 Software Version
   16.3 Composite Summary
   16.4 Log (LBV1_USI Corrosion 9.625inch)
   16.5 Parameter Listing
17. 16Mar2016 REPEAT Pass 5 in = 100 ft
   17.1 Integration Summary
   17.2 Software Version
   17.3 Composite Summary
   17.4 Log (LBV1_USI-VDL (DSLT) Cement 9.625inch)

10. Composite 1 Main Pass 5 IN = 100 FT
10.1 Integration Summary
10.2 Composite Summary
10.3 Log (LBV1_USI Composite 9.625inch)
11. Composite 1 Cement Log 2 IN = 100 FT
11.1 Integration Summary
11.2 Composite Summary
11.3 Log (LBV1_USI Cement 9.625inch)
12. Composite 1 USIT Goodwin Compressed
12.1 Integration Summary
12.2 Composite Summary
12.3 Log (LBV1_Long Beach Custom Goodwin)
13. 200 ft Very Hi-Res Repeat 10 IN=100 FT
13.1 Integration Summary
13.2 Composite Summary
13.3 Log (LBV1_USI Composite 9.625inch)
14. 200 ft Very Hi-Res Repeat 10 IN=100 FT
14.1 Integration Summary
14.2 Composite Summary
14.3 Log (LBV1_USI Composite 9.625inch)
17.5 Parameter Listing
18. 16Mar2016 Corrosion 5 in = 100 ft REPEAT
18.1 Integration Summary
18.2 Software Version
18.3 Composite Summary
18.4 Log (LBV1_USI Corrosion 9.625inch)
18.5 Parameter Listing
19. 16Mar2016 Very Hi-Res Repeat 10 IN=100 FT
19.1 Integration Summary
19.2 Composite Summary
19.3 Log (LBV1_USI Composite 9.625inch)
20. 16Mar2016 Very Hi-Res Repeat 10 IN=100 FT
20.1 Integration Summary
20.2 Composite Summary
20.3 Log (LBV1_USI Composite 9.625inch)
21. XYZ (USI Fluid Acoustic Slowness vs Depth)
22. XYZ (USI Theoretical Acoustic impedance of mud vs Depth)
23. Tail

Well Sketch





Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	14	12.25				
Top Driller (ft)	0	7305				
Top Logger (ft)	0	7305				
Bottom Driller (ft)	7305	7317				
Bottom Logger (ft)	7305	7317				
Casing						
Size (in)	13.375	9.625				
Weight (lbm/ft)	54.4	47				
Inner Diameter (in)	12.608	8.681				
Grade	N/A	L80				
Top Driller (ft)	0	0				
Top Logger (ft)	0	0				
Bottom Driller (ft)	1012	7305				
Bottom Logger (ft)	1012	7305				

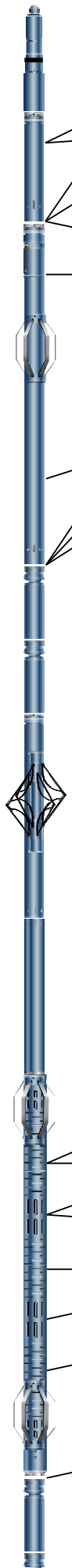
Remarks and Equipment Summary

Ensign rig 331
Toolstring ran as per toolsketch.
Two centralizers on USIS and two CME-Y used to centralize ultrasonic tool.
Thank you for choosing Schlumberger!

16Mar2016: Remarks	200 ft: Remarks
Correlated to Schlumberger USIT dated 13-Jul -2014	Rigged down CBL and neutron tool to log USIT to surface
no pressure applied during log	Thank you for choosing schlumberger
Crew: Coupart, Hernandez, Allen	
Anomalies repeated in Very Hi RES	

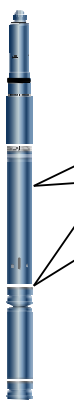
Anomolies repeated in Very-Hi-RES

16Mar2016: Toolstring

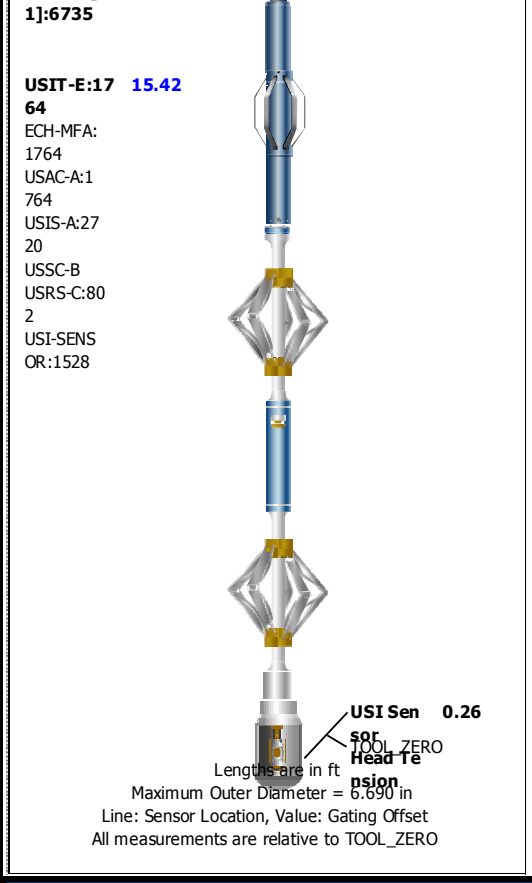


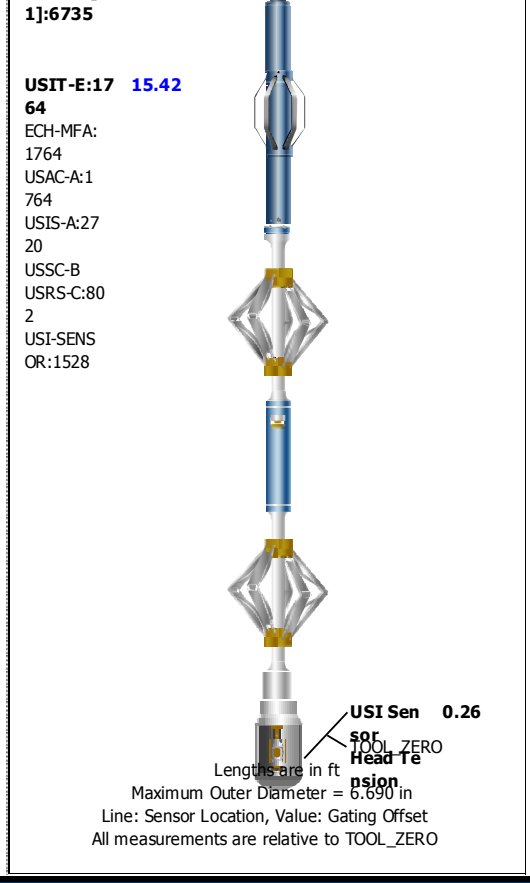
Equip name	Length	MP name	Offset
		Red	
LEH-QT:2867 LEH-QT:2867	59.39		
DTC-H ECH-KC DTC-H	56.47	**CTEM**	55.57
		HV	0.00
		TelStatus	53.47
		ToolStatus	53.47
HGNS-H:3923 HGNH:4819 NSR-F:5002 NPV-N HMCA-H HGNS-H:3923 HACCZ-H:3923	53.47	**Temperature**	53.44
		GR	52.73
		CNL Porosity	46.4
		HGNS	44.06
		HMCA	44.06
		Accelerometer	0.00
AH-184[4]:3877	44.06		
AH-184[3]:2985	42.06		
DSLT-H:8236 ECH-KH:8678 DSLC-H:8236 SLS-E:1206	40.06		
		CBL 3ft	27.59
		Upper-Near	27.59
		VDL 5ft	26.59
		Upper-Far	26.59
		Delta-T	25.22
		Lower-Far	23.84
		Lower-Near	22.84
		SLS-E	19.42
AH-184[2]:2882	19.42		
AH-184[	17.42		

200 ft: Toolstring



Equip name	Length	MP name	Offset
		Red	
LEH-QT:2867 LEH-QT:2867	25.34		
DTC-H ECH-KC DTC-H	22.42	**CTEM**	21.52
		HV	0.00
		TelStatus	19.42
		ToolStatus	19.42
AH-184[2]:2882	19.42		
AH-184[	17.42		





Composite 1

GR-CCL Correlation 5 IN = 100 FT

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
16Mar2016	Log[4]:Up	Up	2075.53 ft	7100.62 ft	16-Mar-2016 11:36:33 AM	16-Mar-2016 1:27:21 PM	ON	-10.00 ft	Yes
16Mar2016	Log[5]:Up	Up	194.84 ft	2291.90 ft	16-Mar-2016 1:31:17 PM	16-Mar-2016 2:31:41 PM	ON	-10.00 ft	Yes
16Mar2016	Log[6]:Up	Up	28.19 ft	401.83 ft	16-Mar-2016 2:34:30 PM	16-Mar-2016 2:51:45 PM	ON	-10.00 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Porter 50C

Composite 1:S005

Description: Format: Log (GR-CCLU Correlation) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 16-Mar-2016 22:45:18

TIME_1900 - Time Marked every 60.00 (s)

Corrected Far Thermal Count Rate (CFTC) HGNS[1]

0 1/s 1500

Gamma Ray (GR)

0 gAPI 100

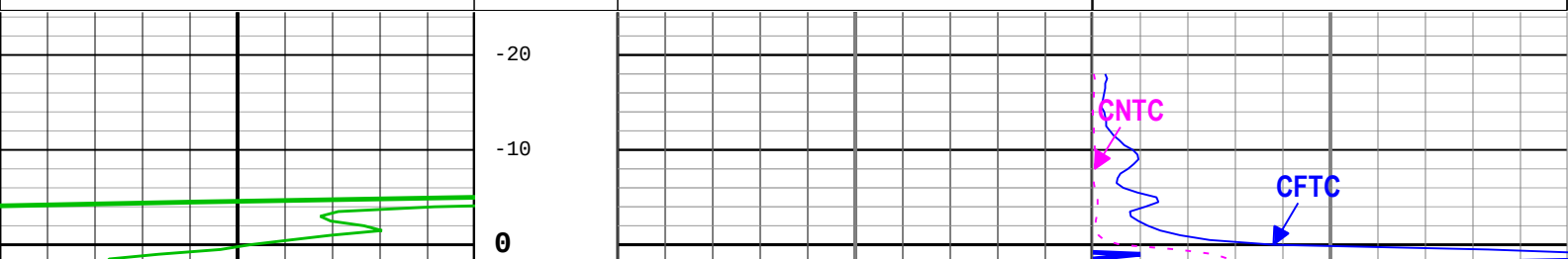
Instance - 1 (6" HGNS[1] RT) (ECGR)

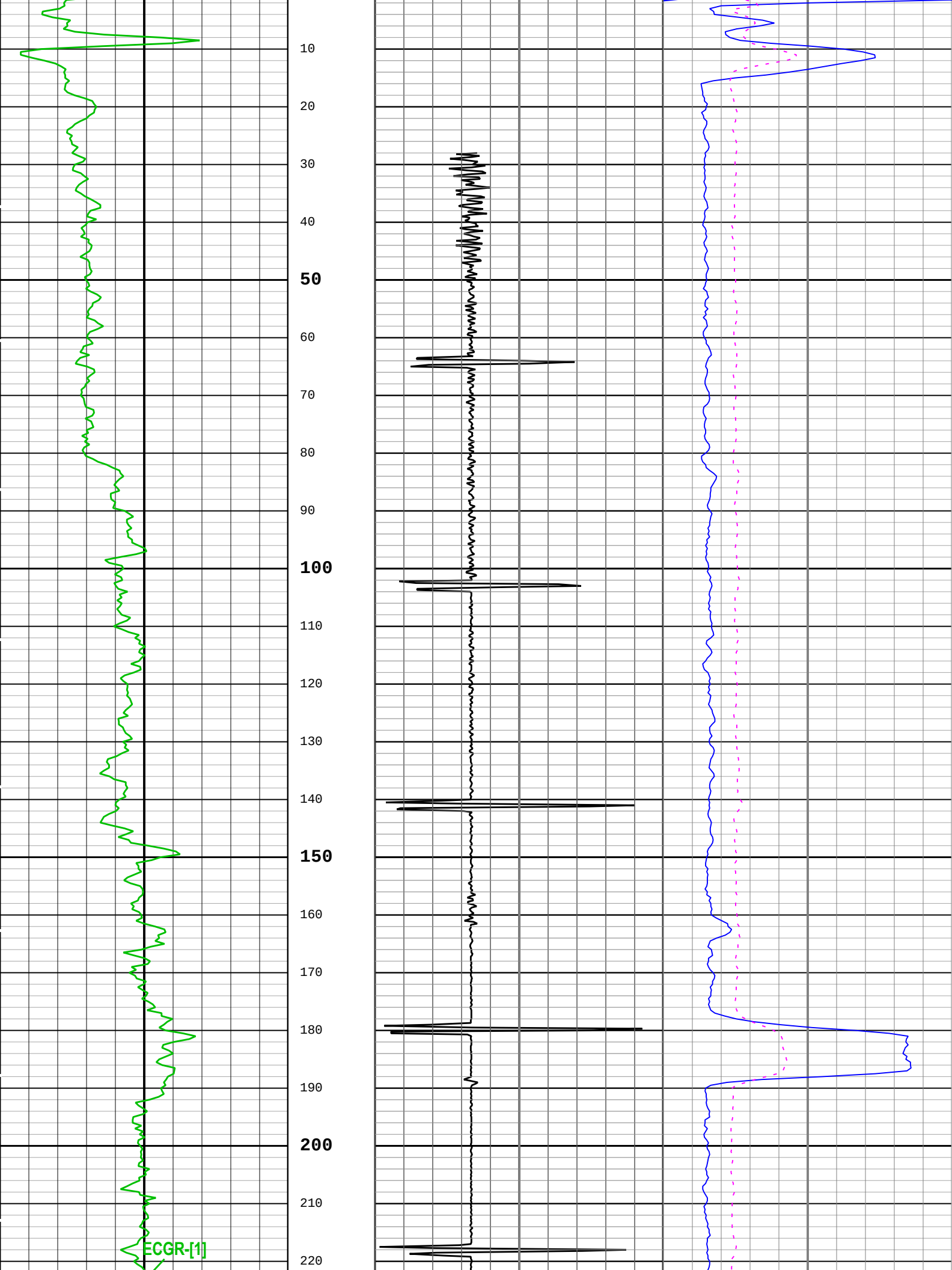
Casing Collar Locator Ultrasonic (CCLU) USIT-E[1]

-10 in 20

Corrected Near Thermal Count Rate (CNTC) HGNS[1]

0 1/s 4000

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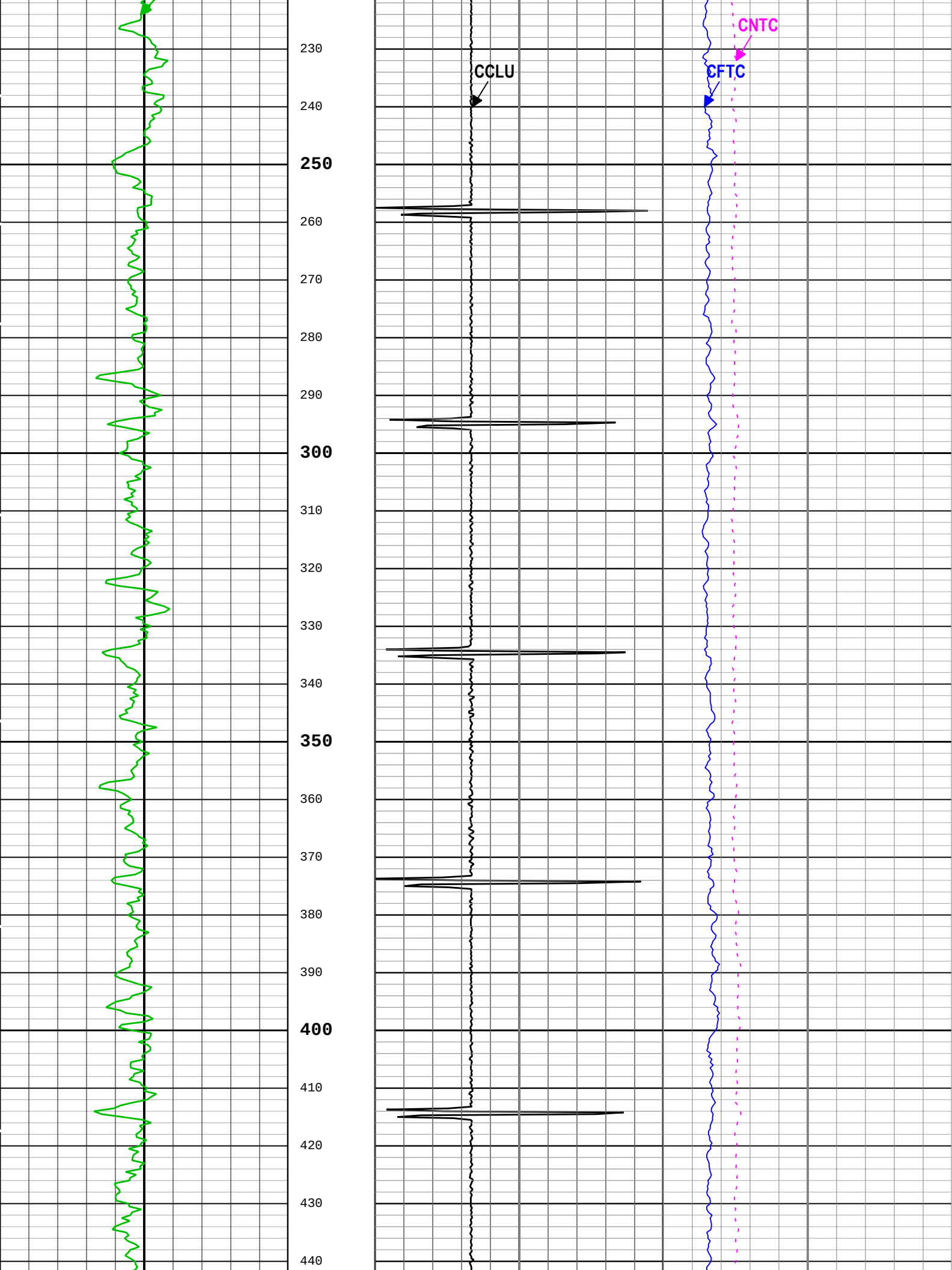
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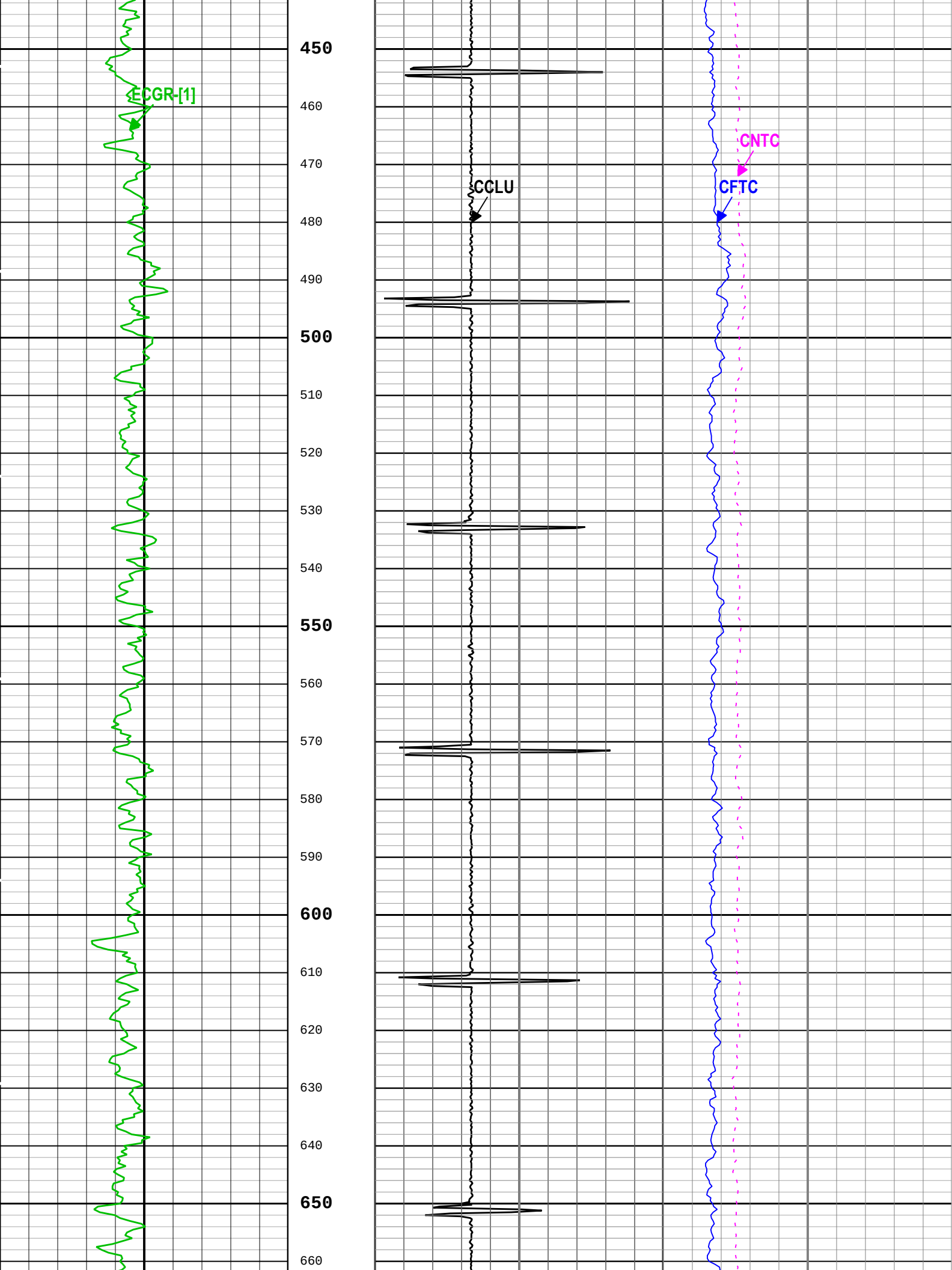
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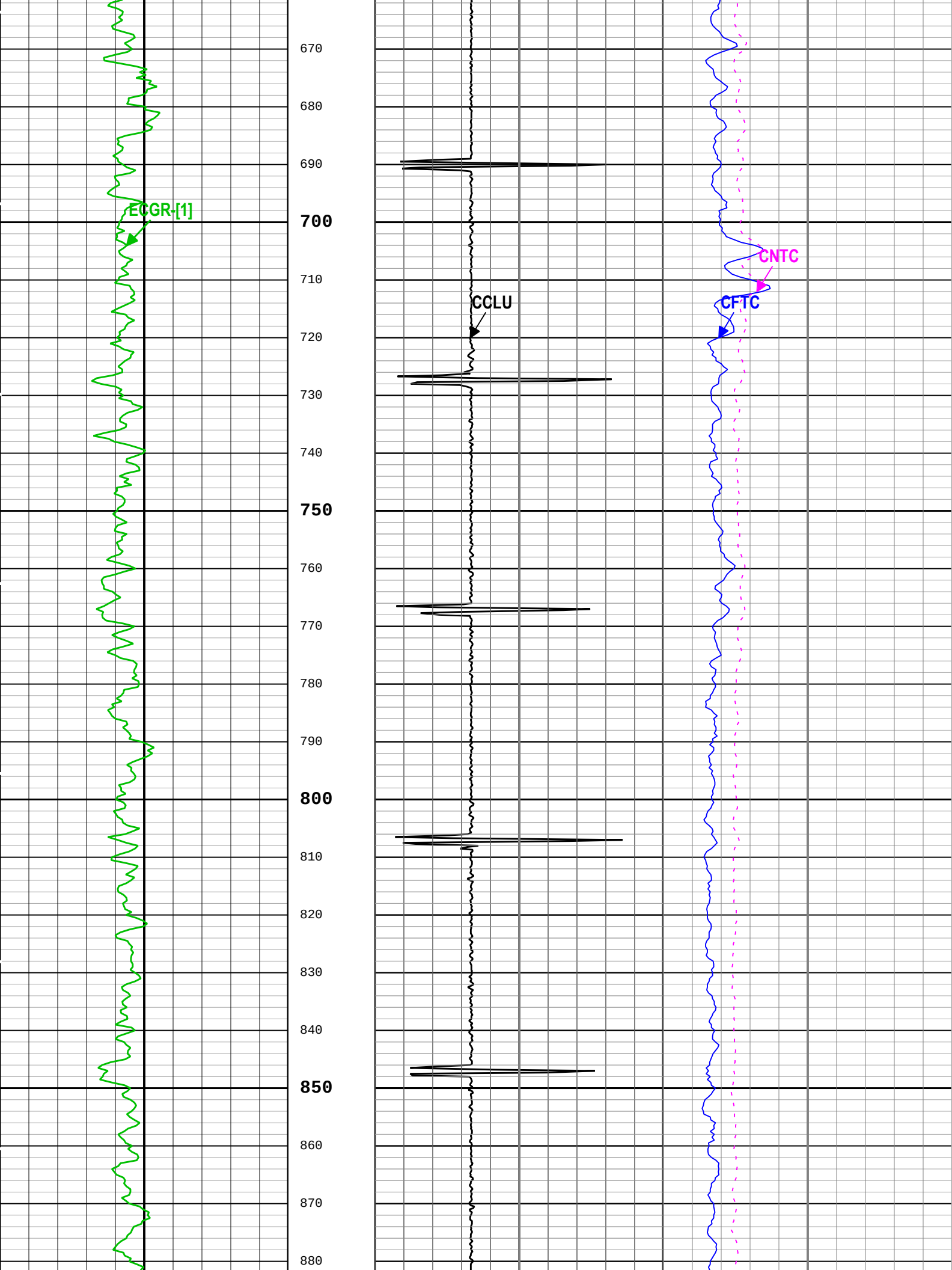
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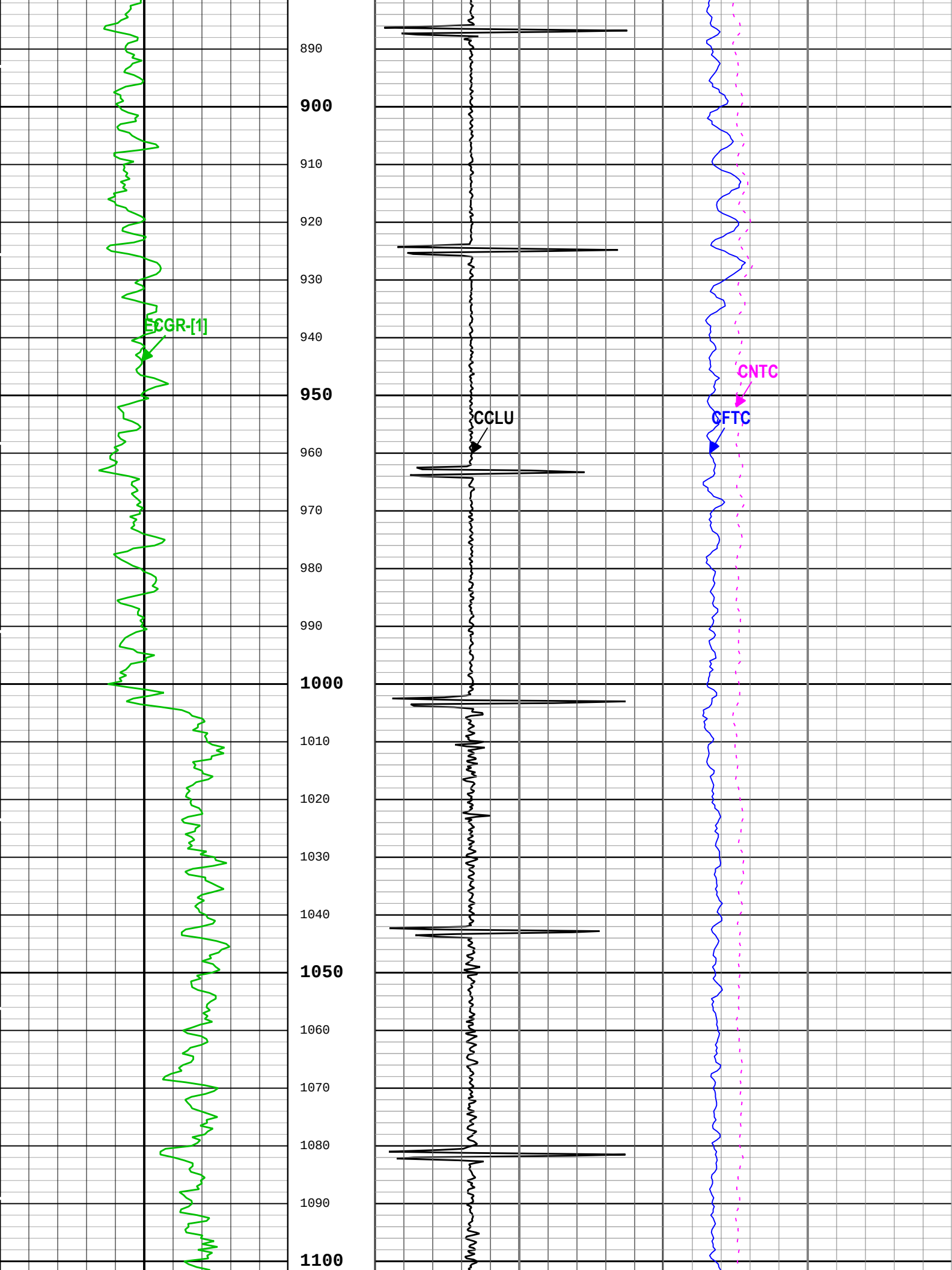
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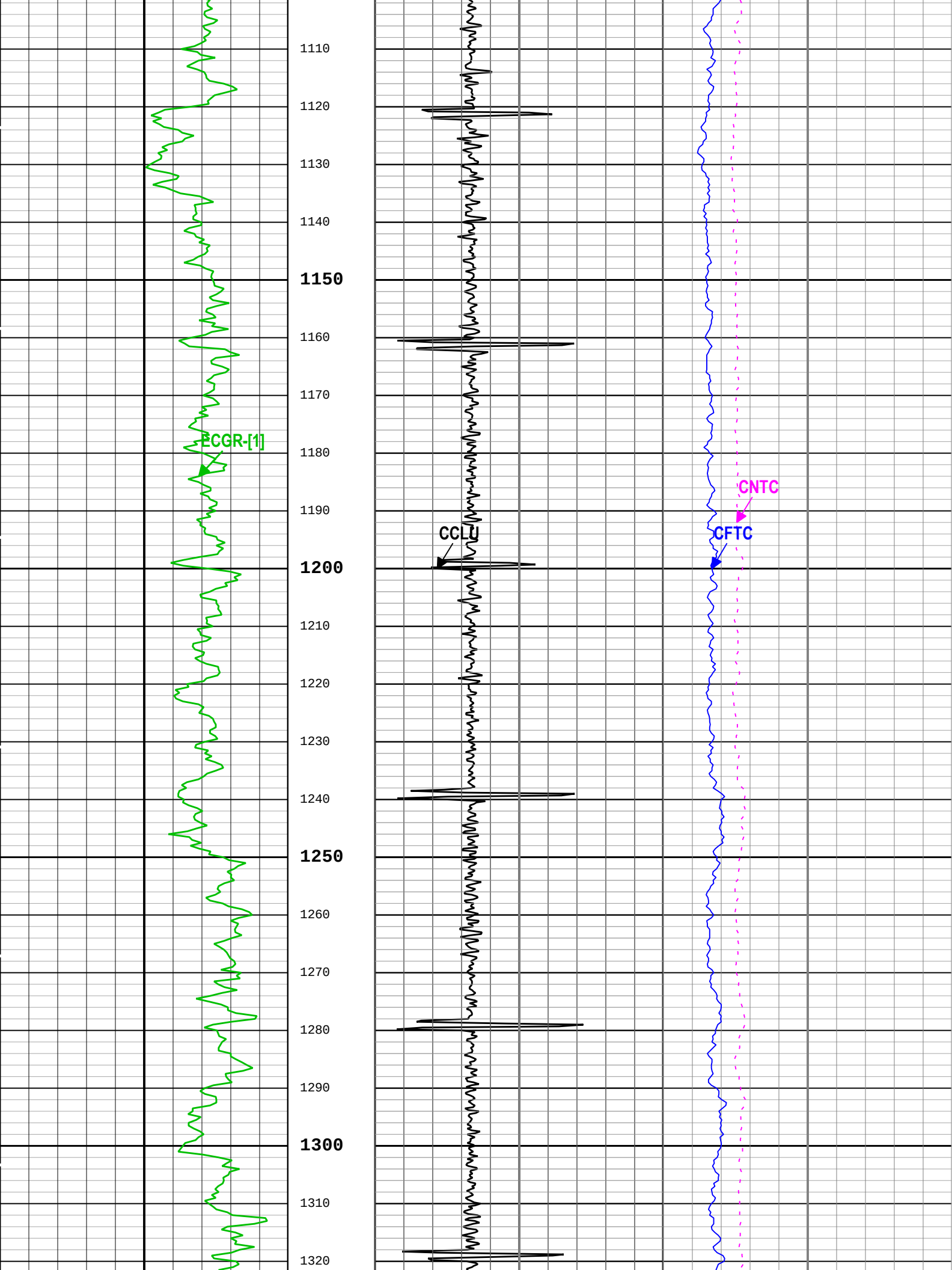
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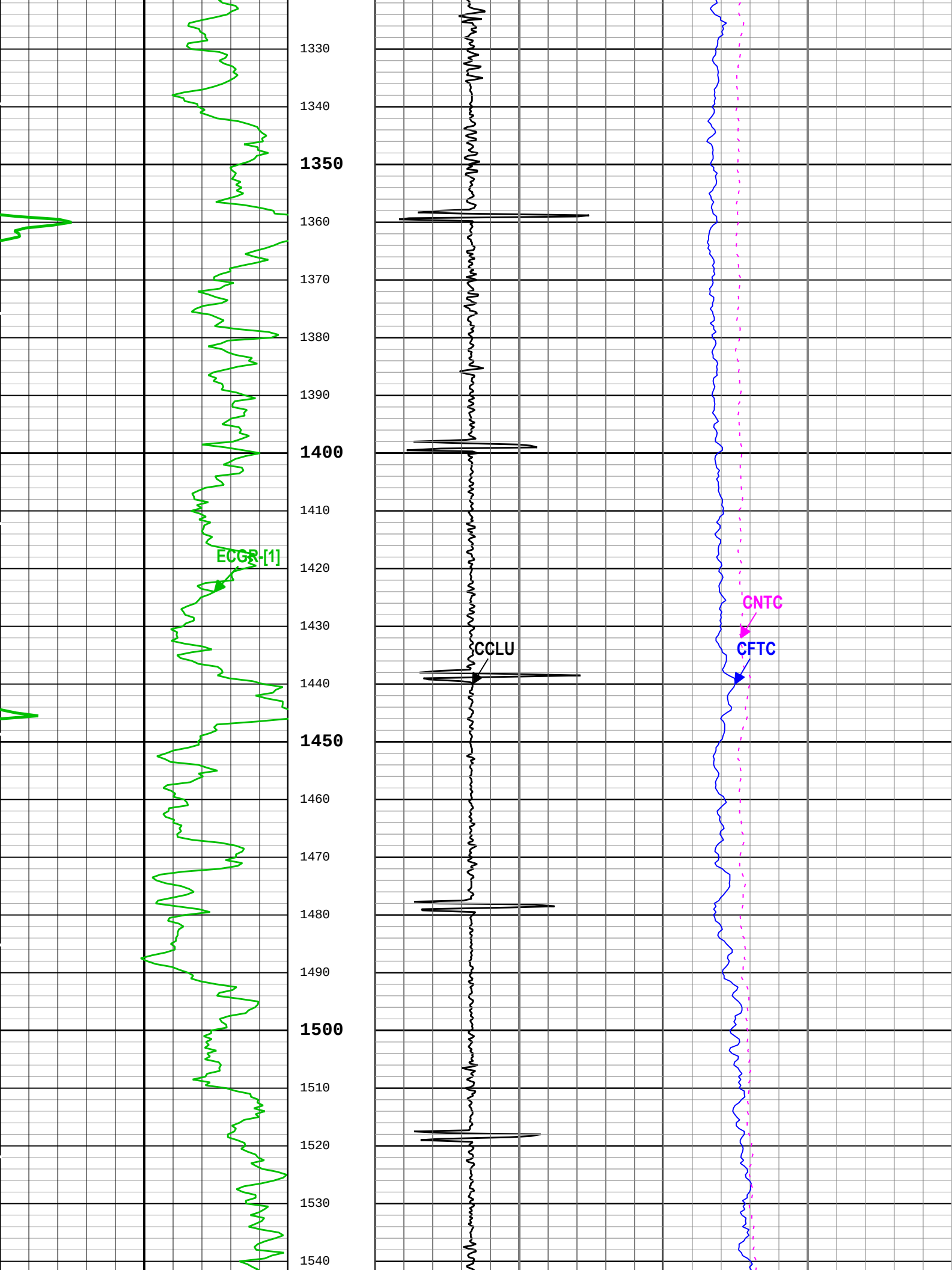
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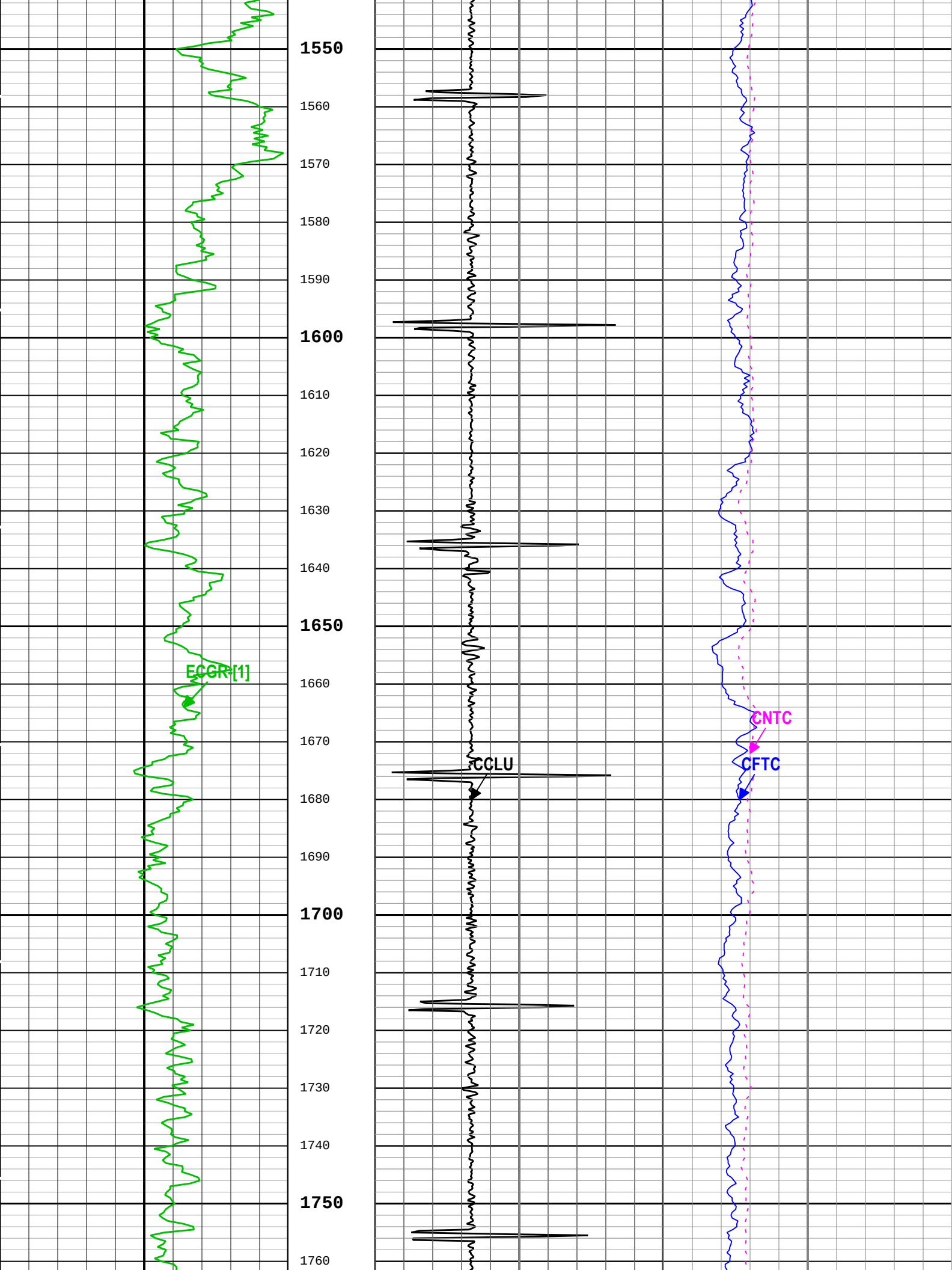
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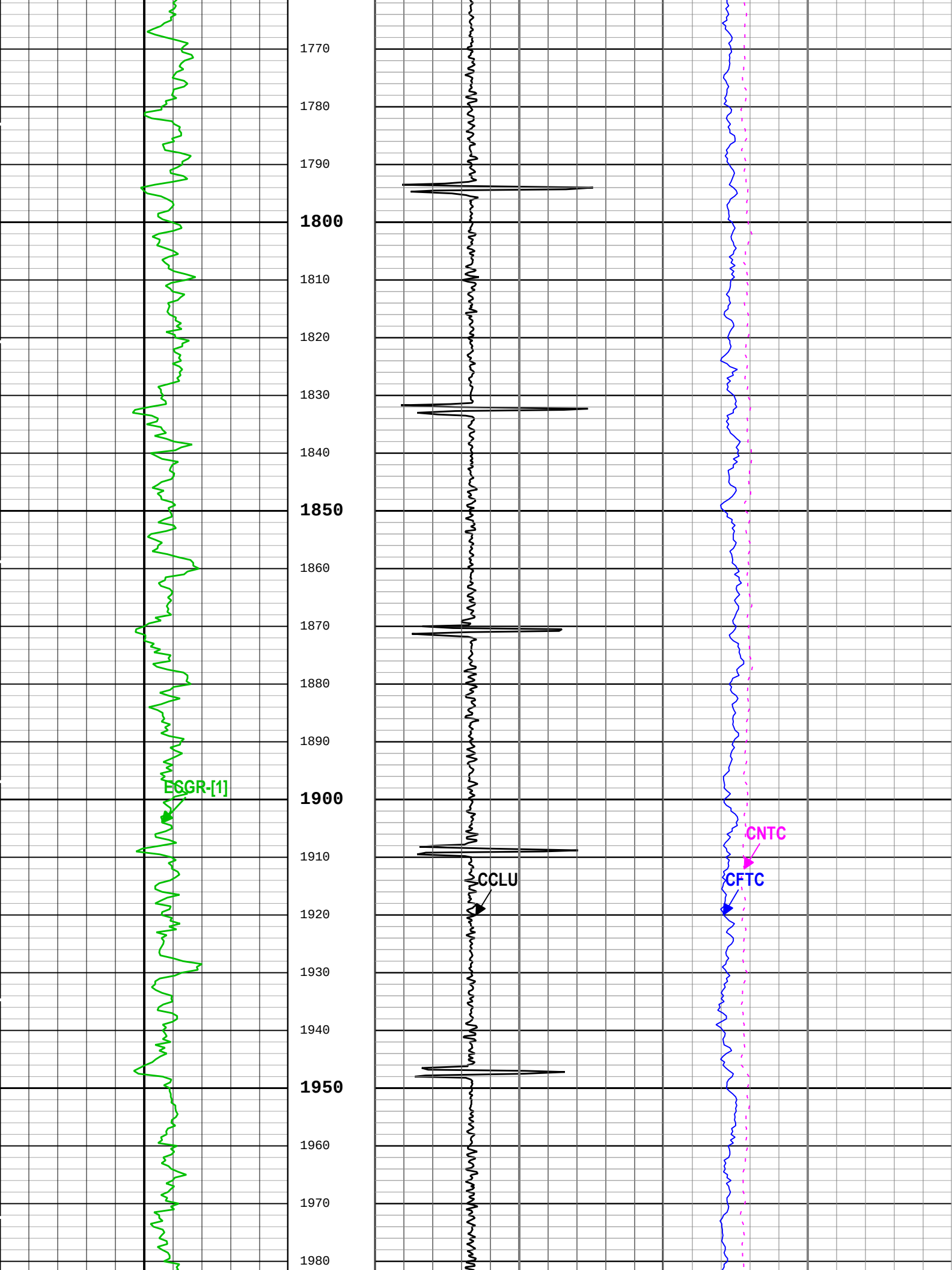
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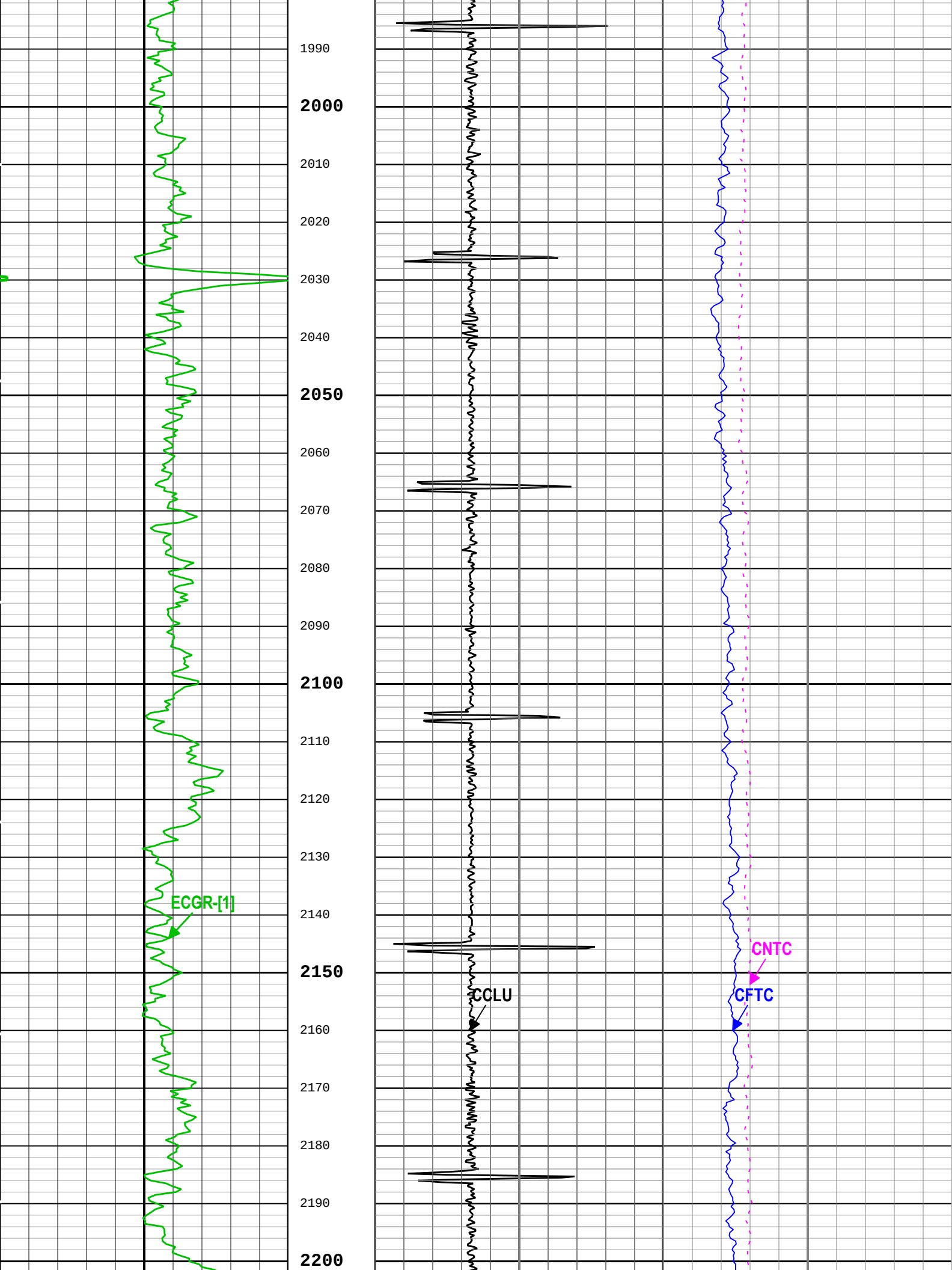
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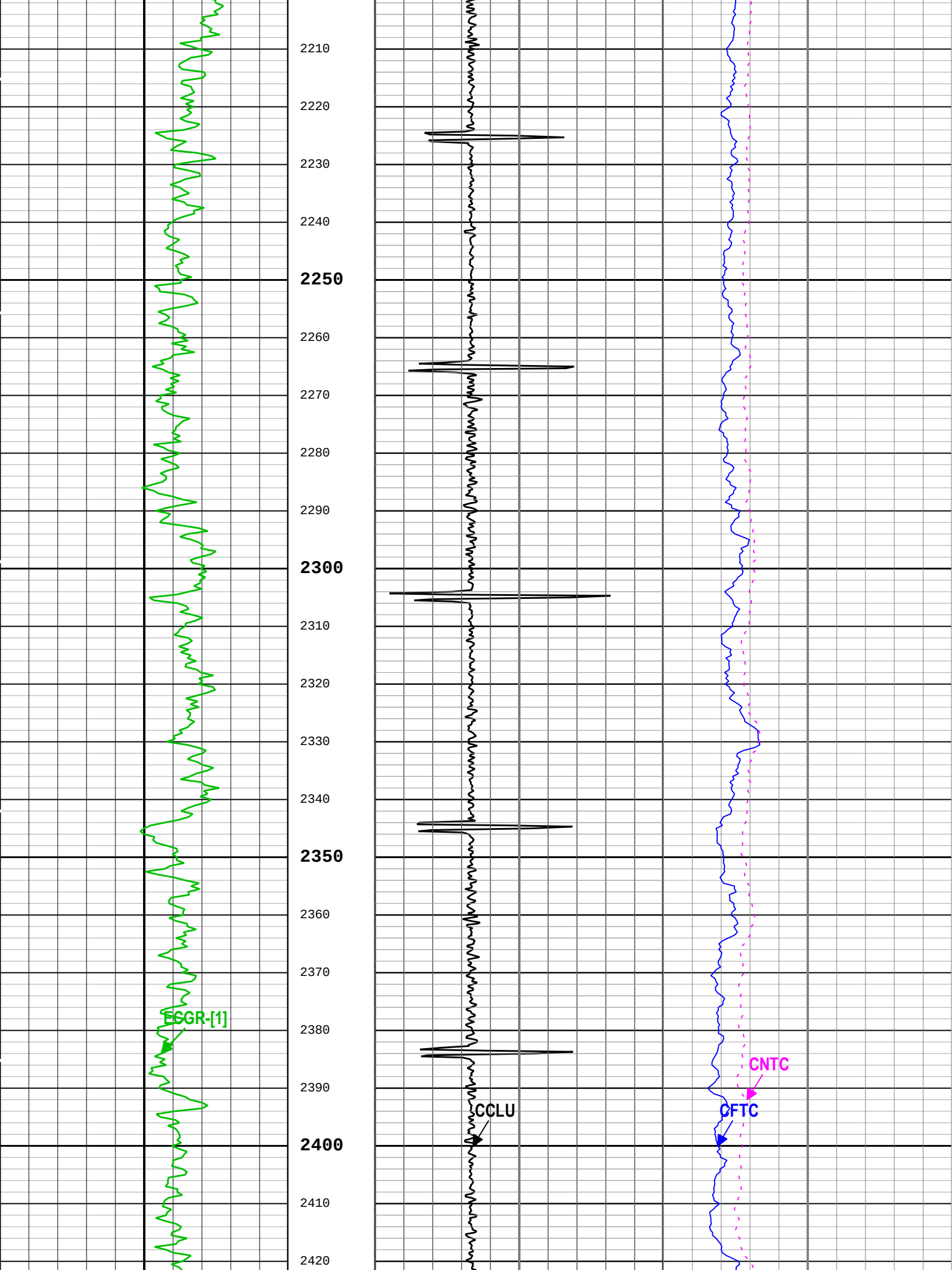
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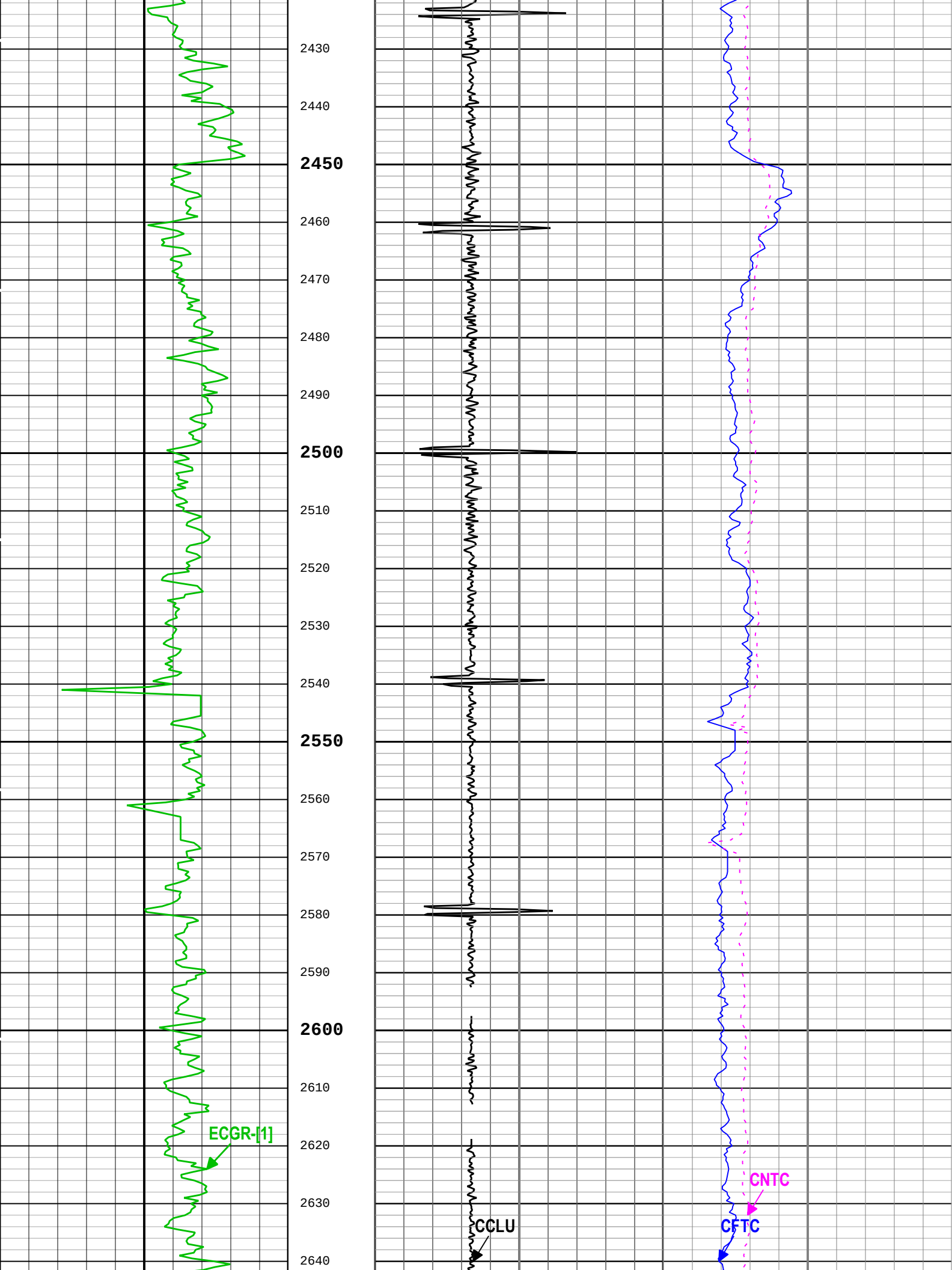
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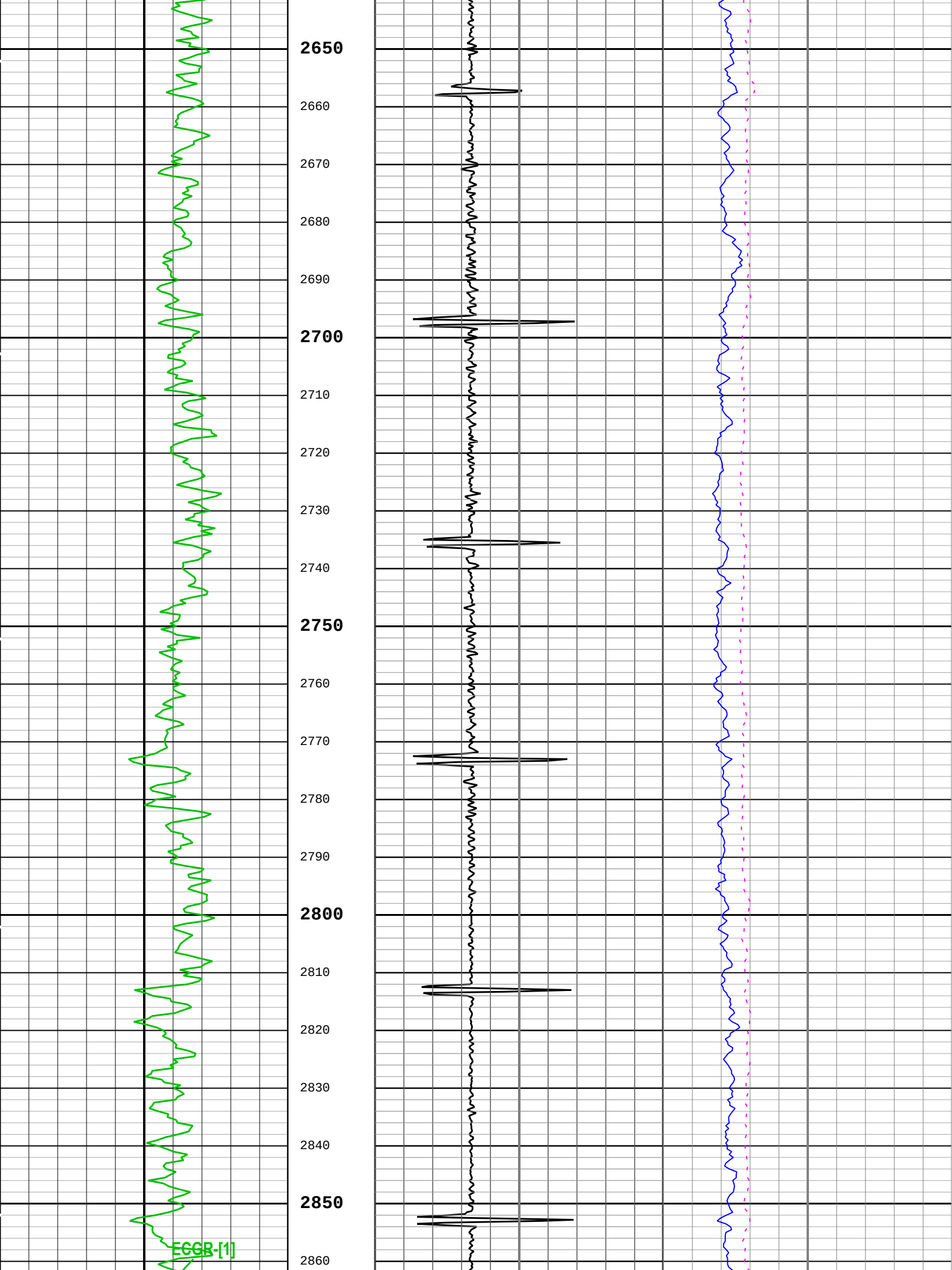
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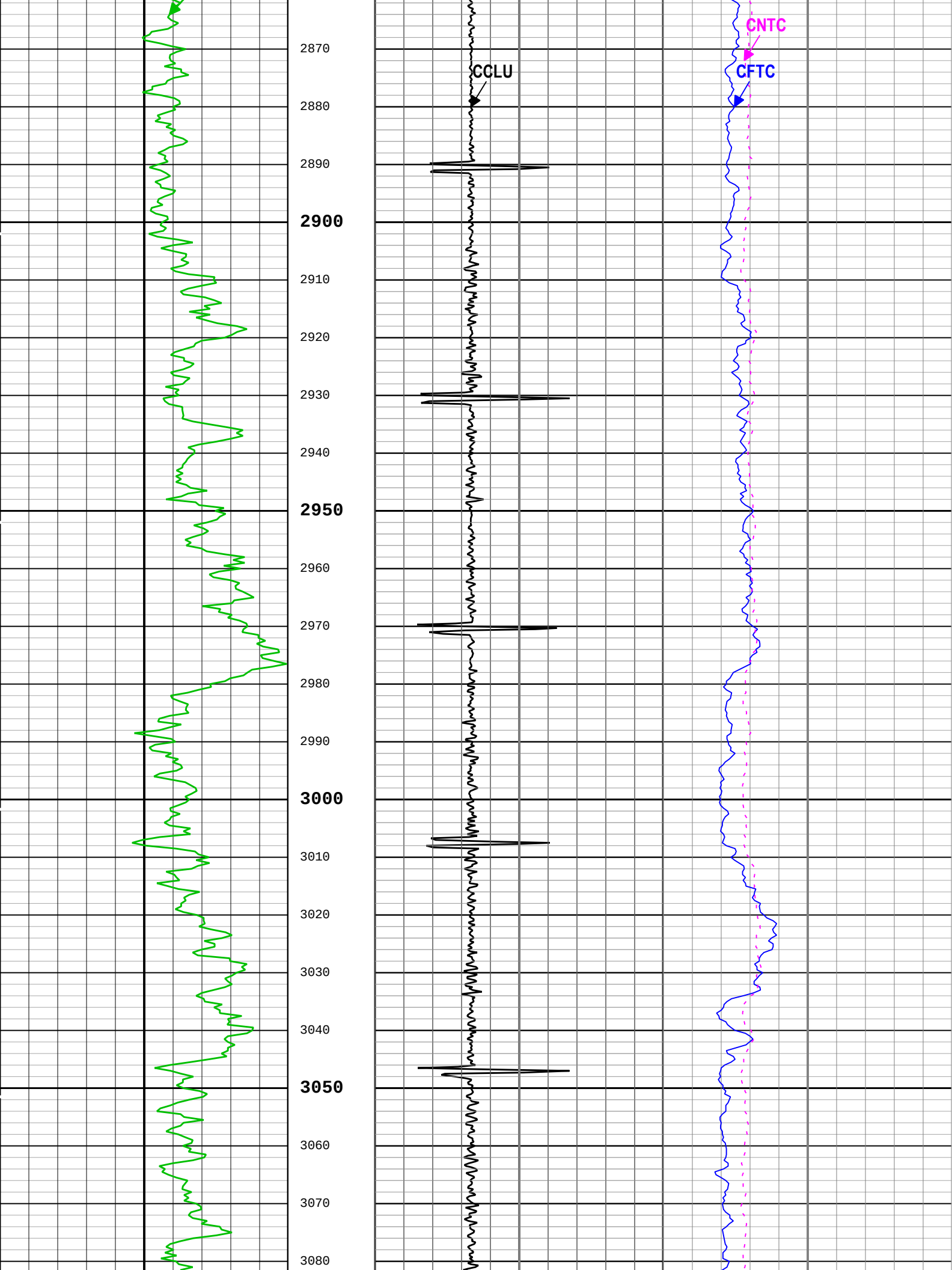
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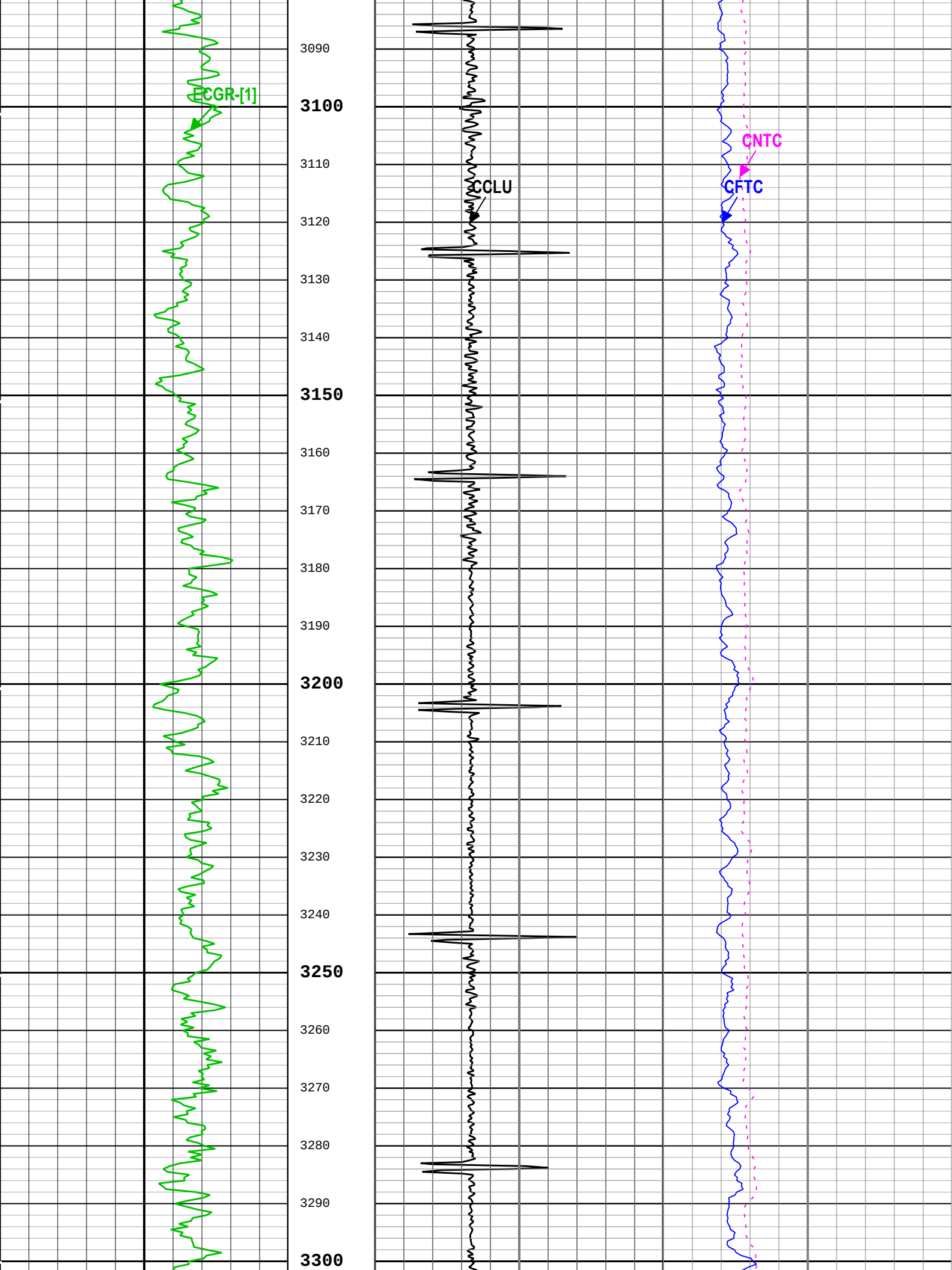
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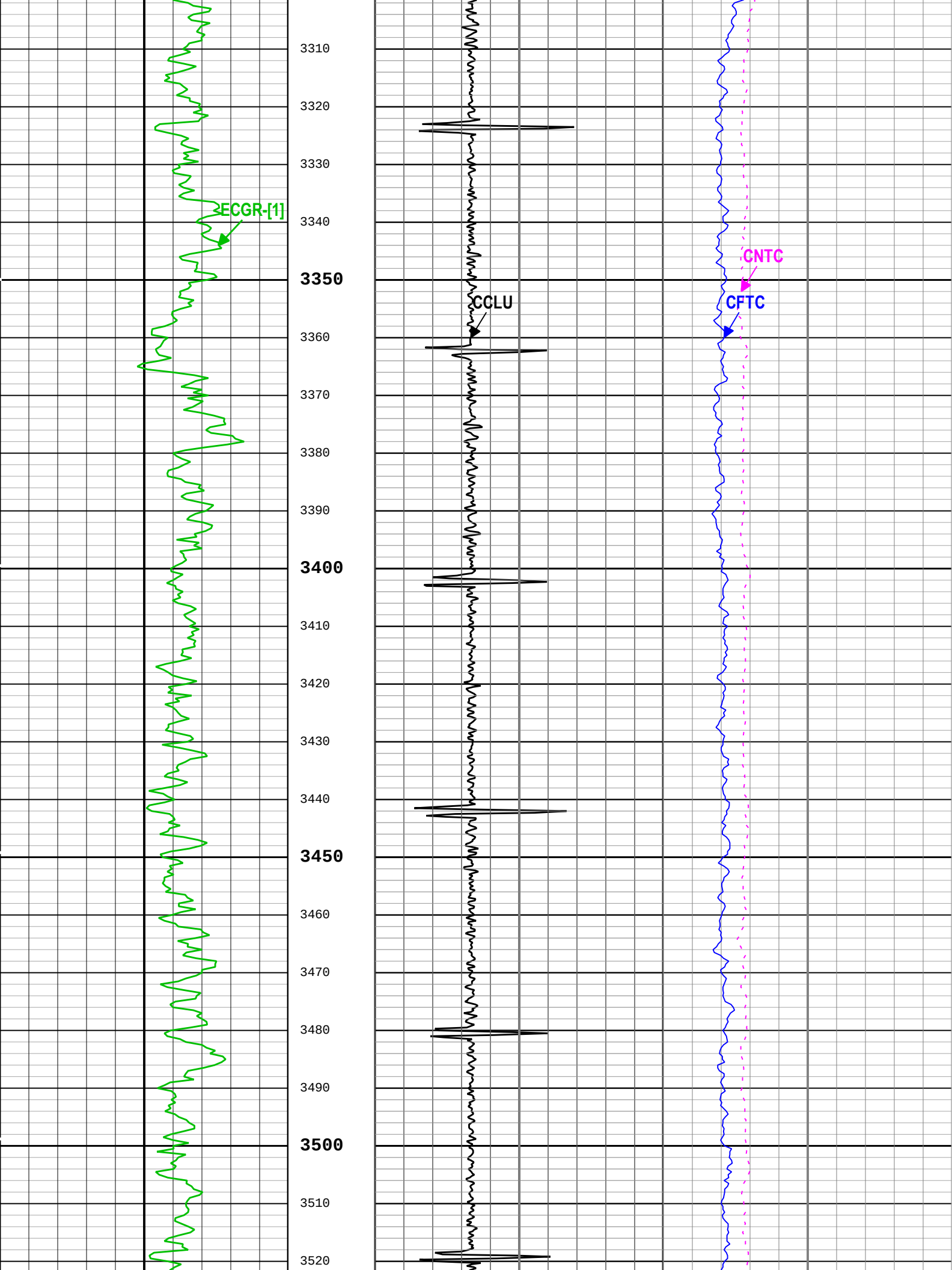
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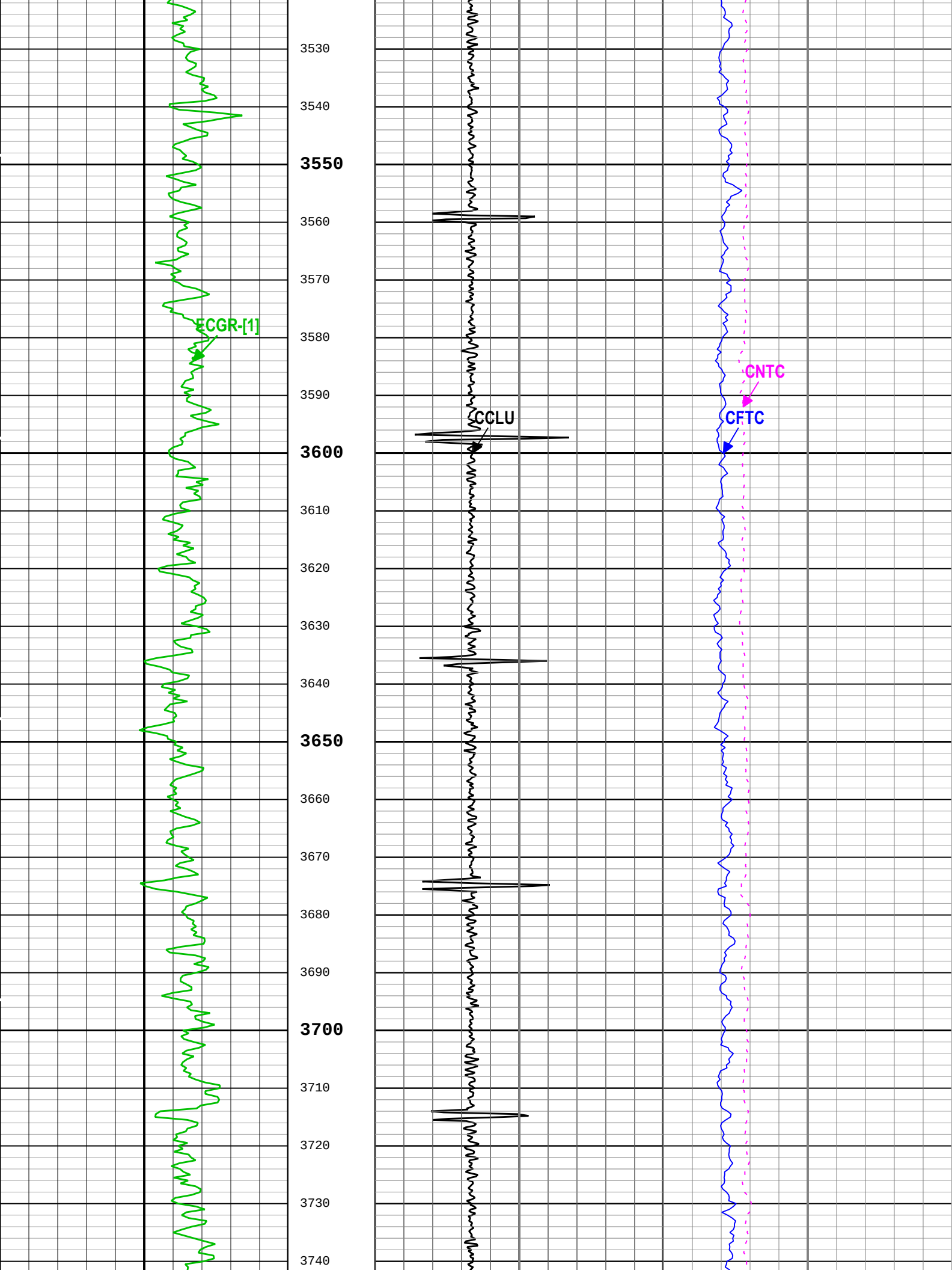
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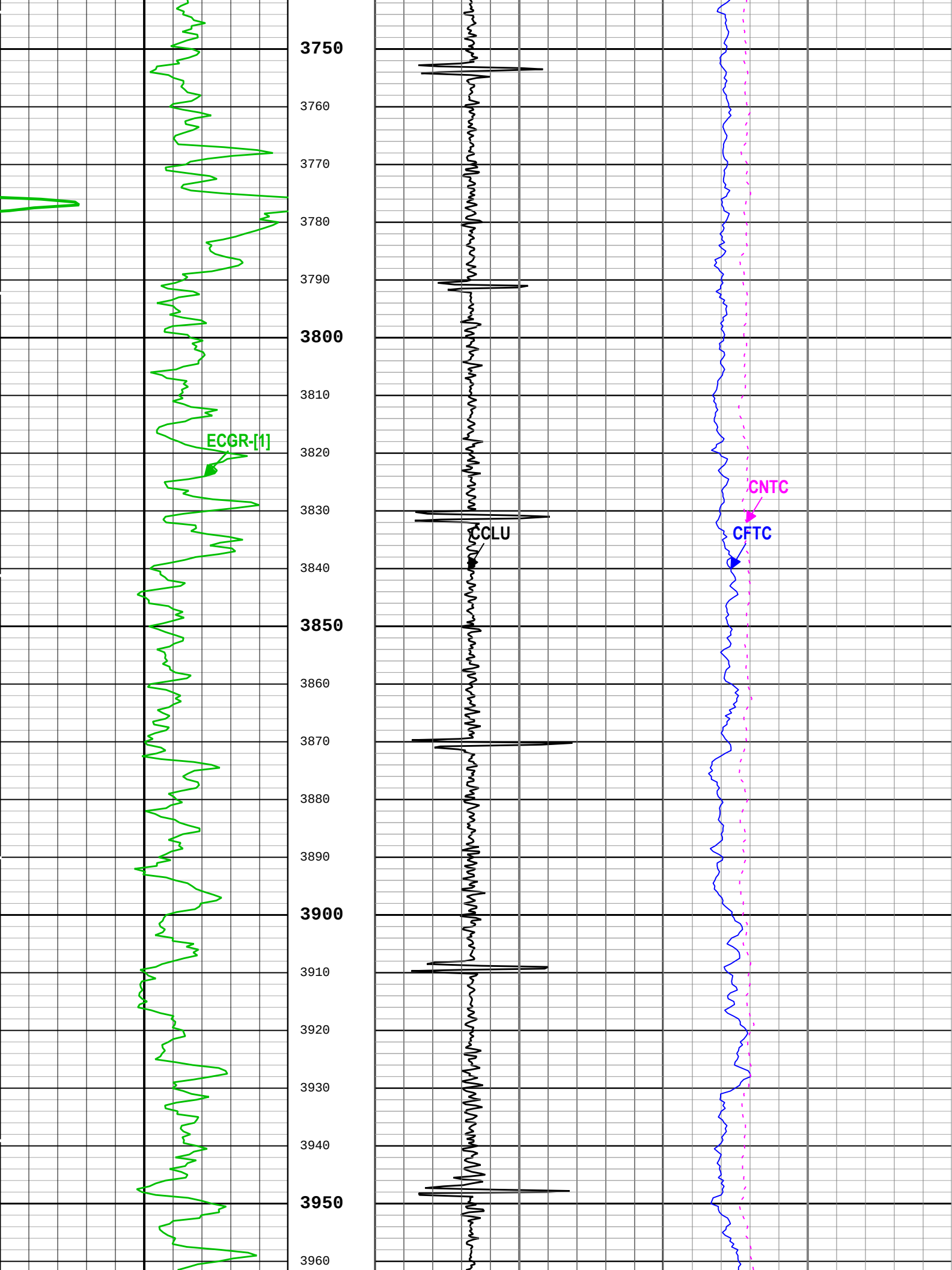
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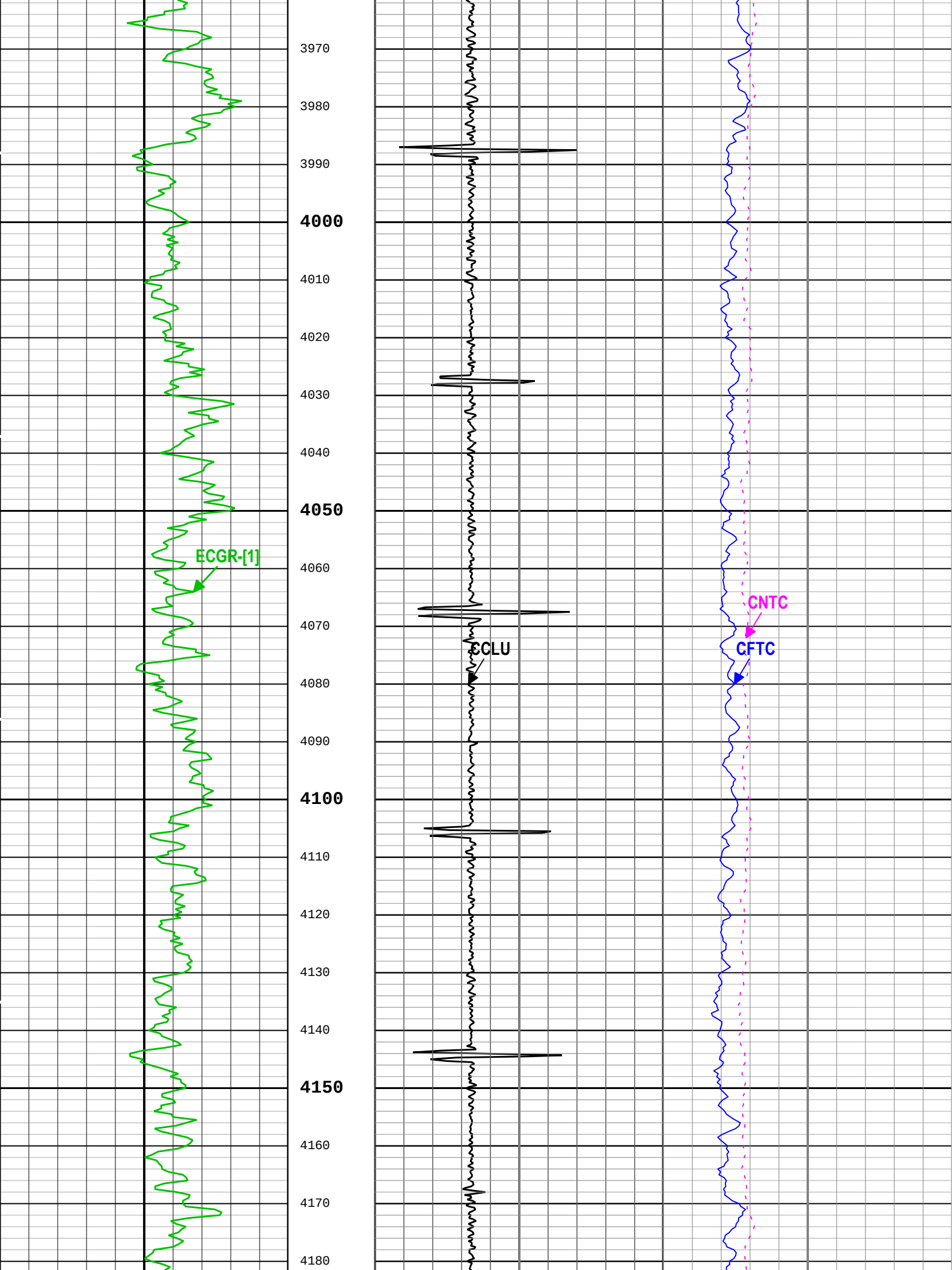
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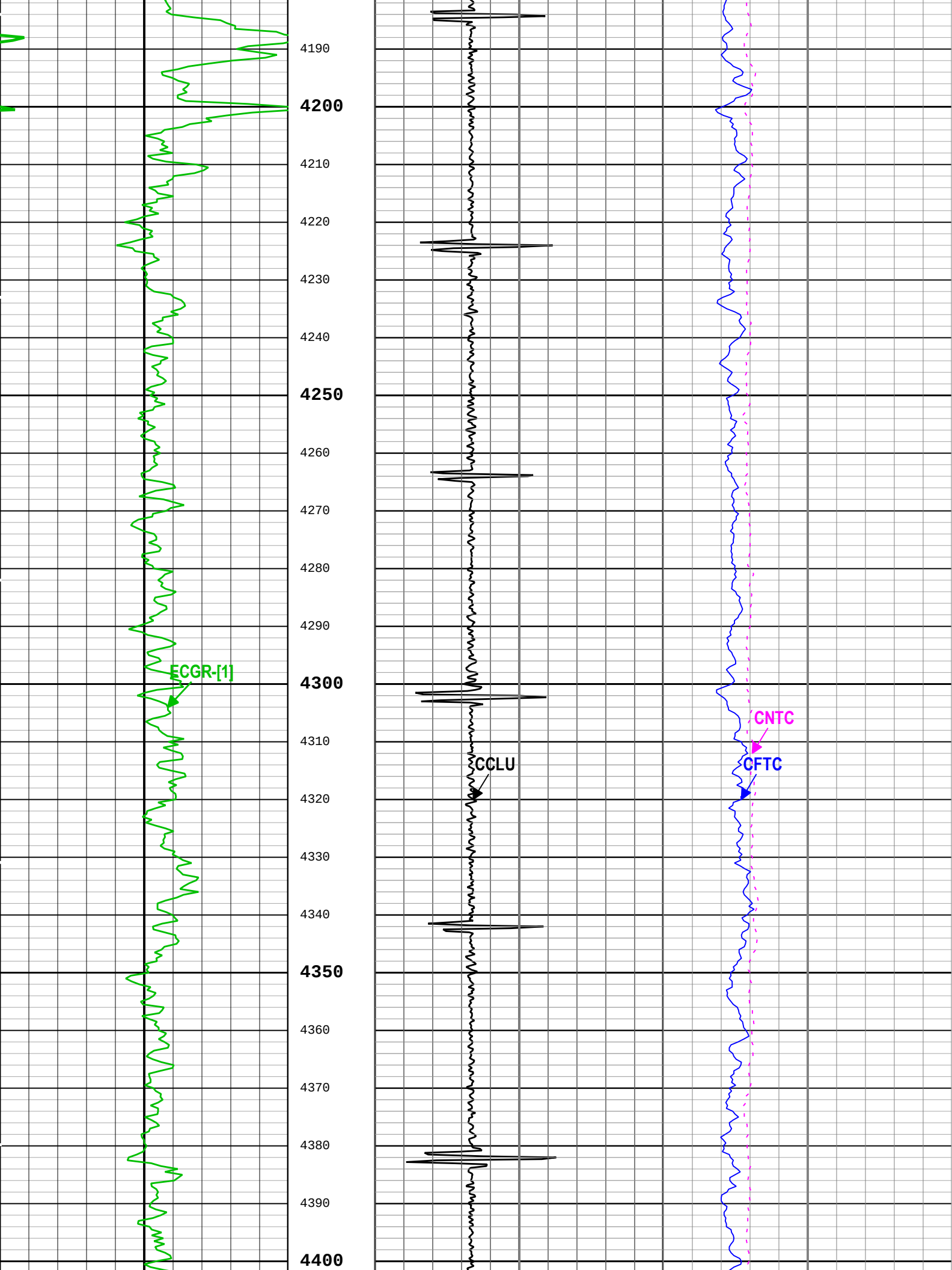
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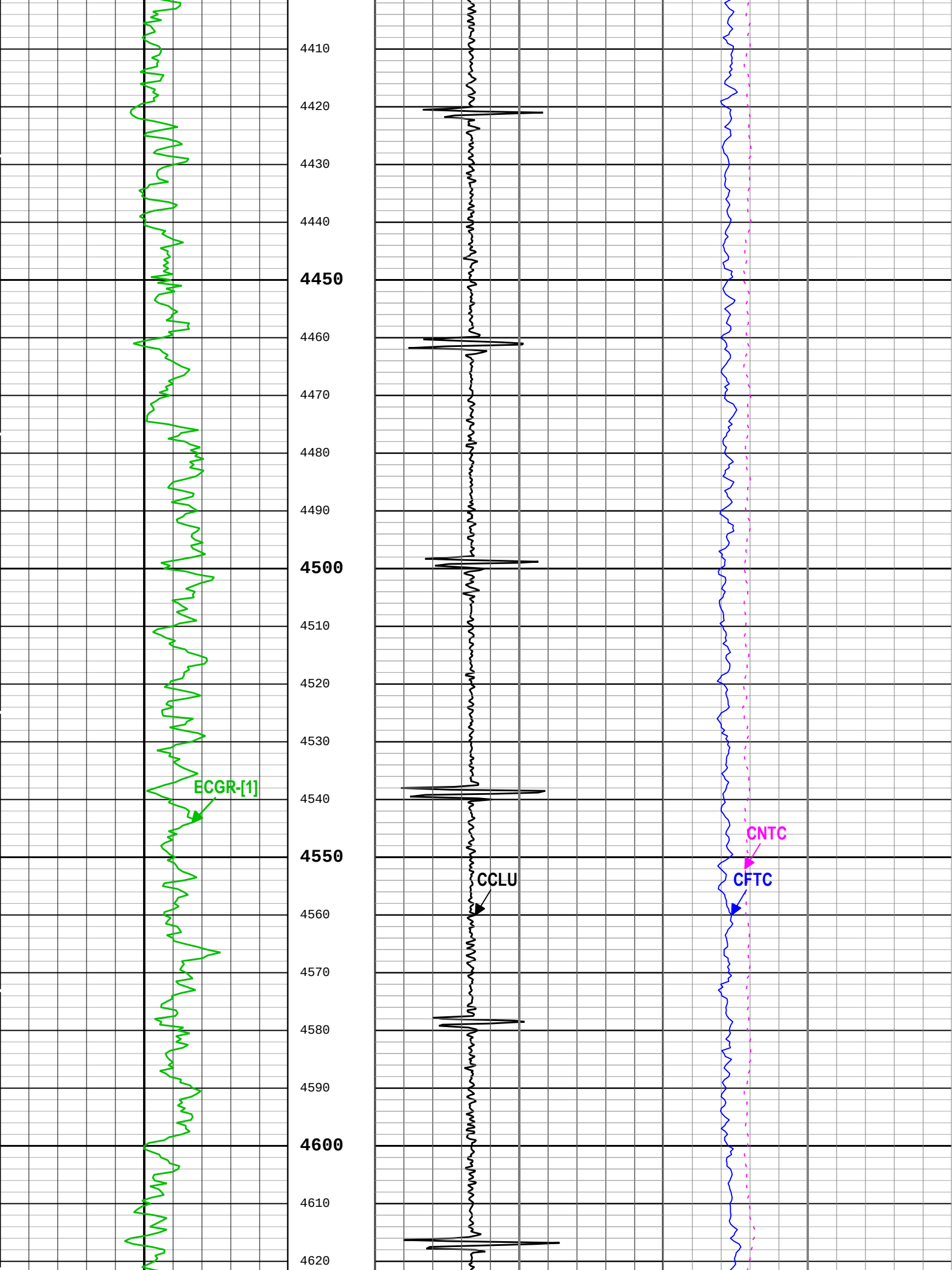
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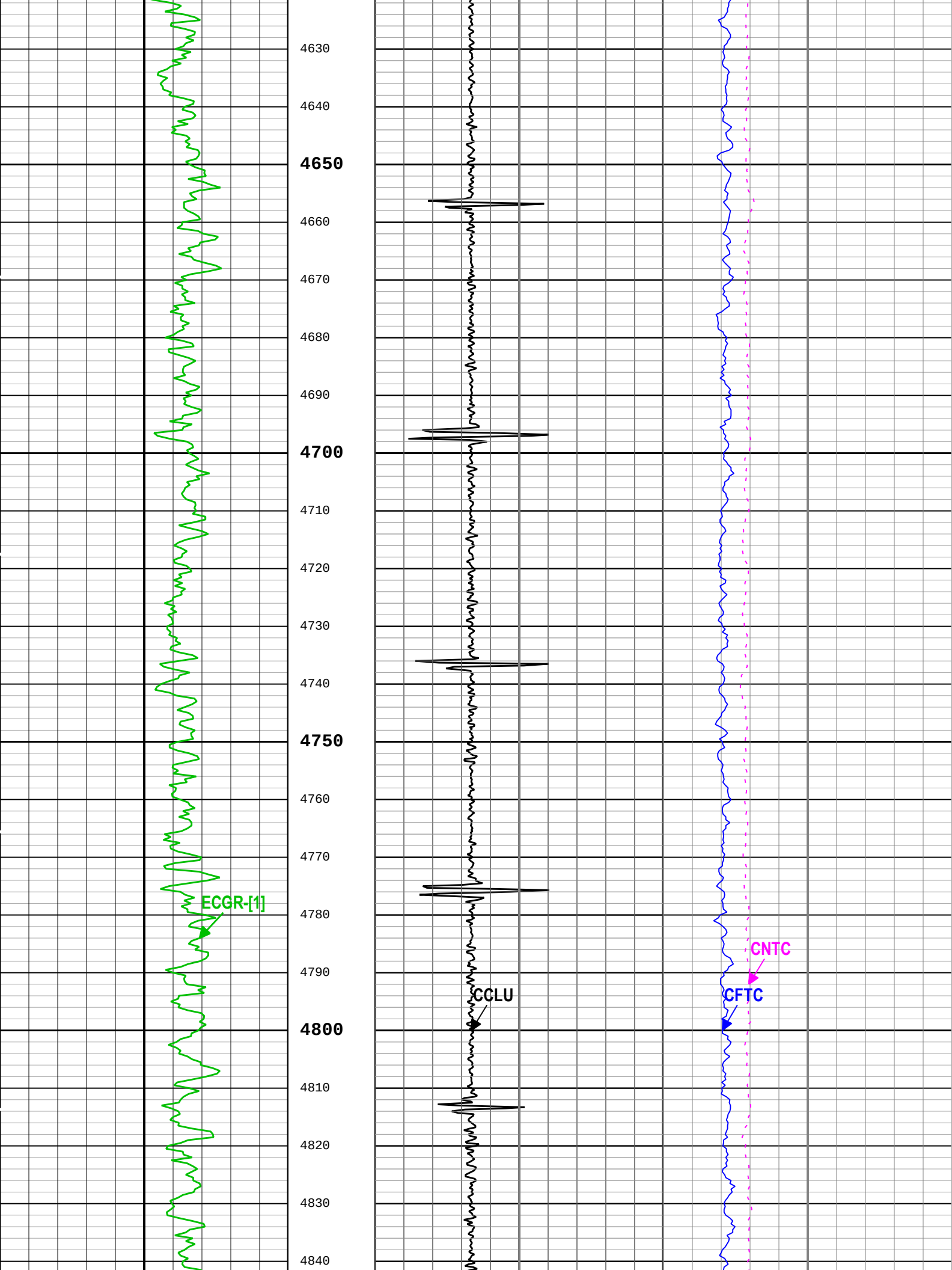
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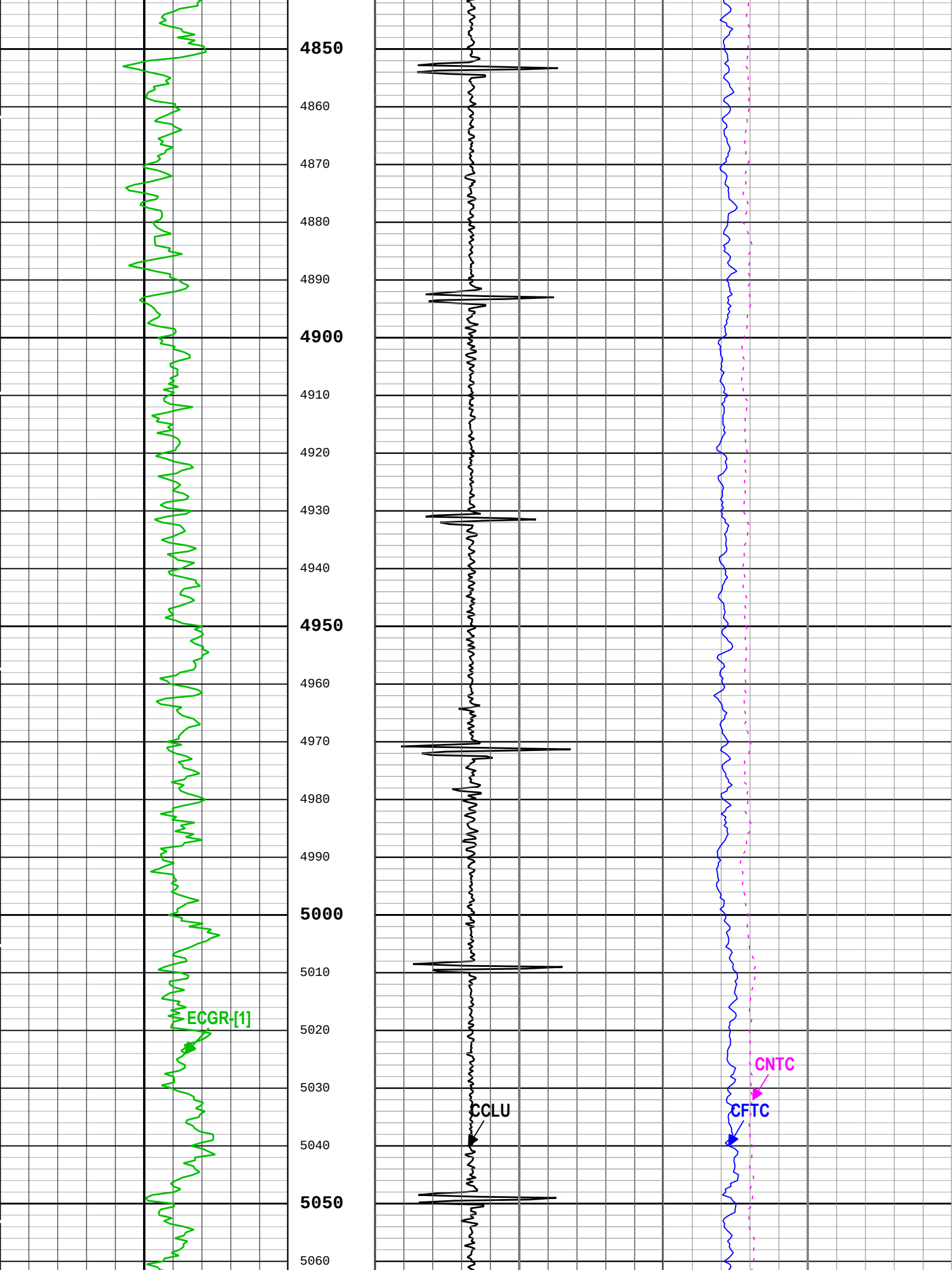
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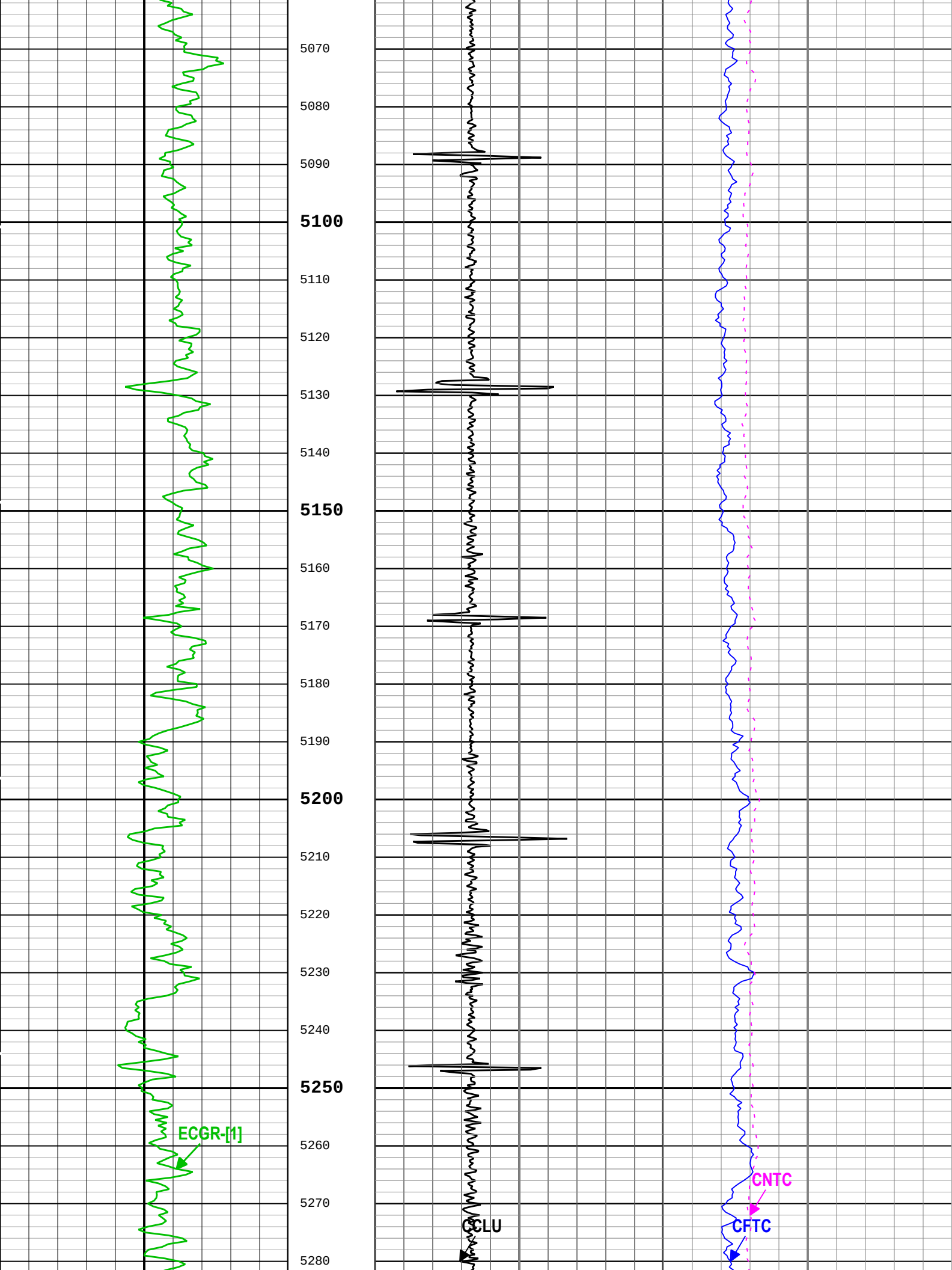
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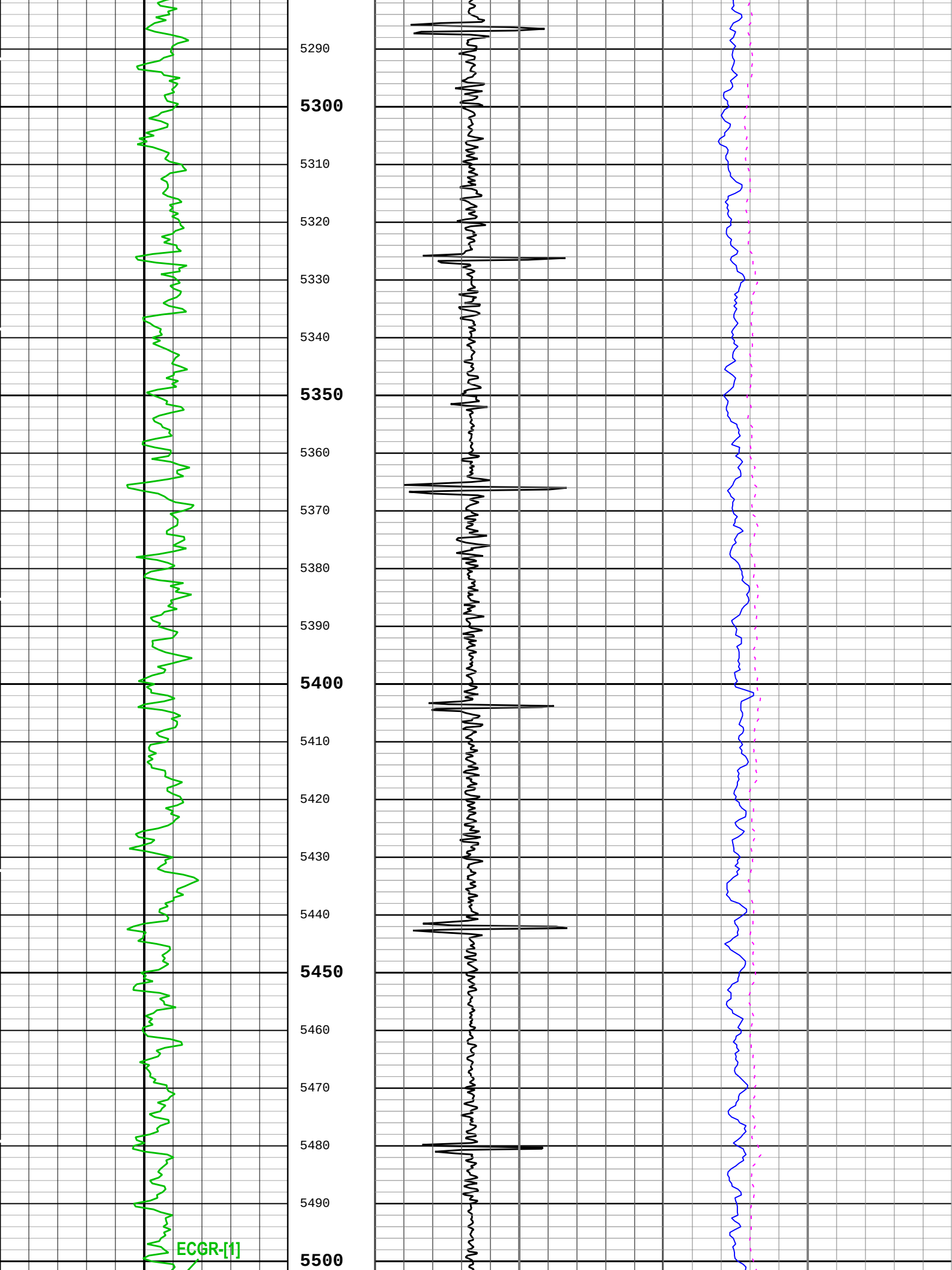
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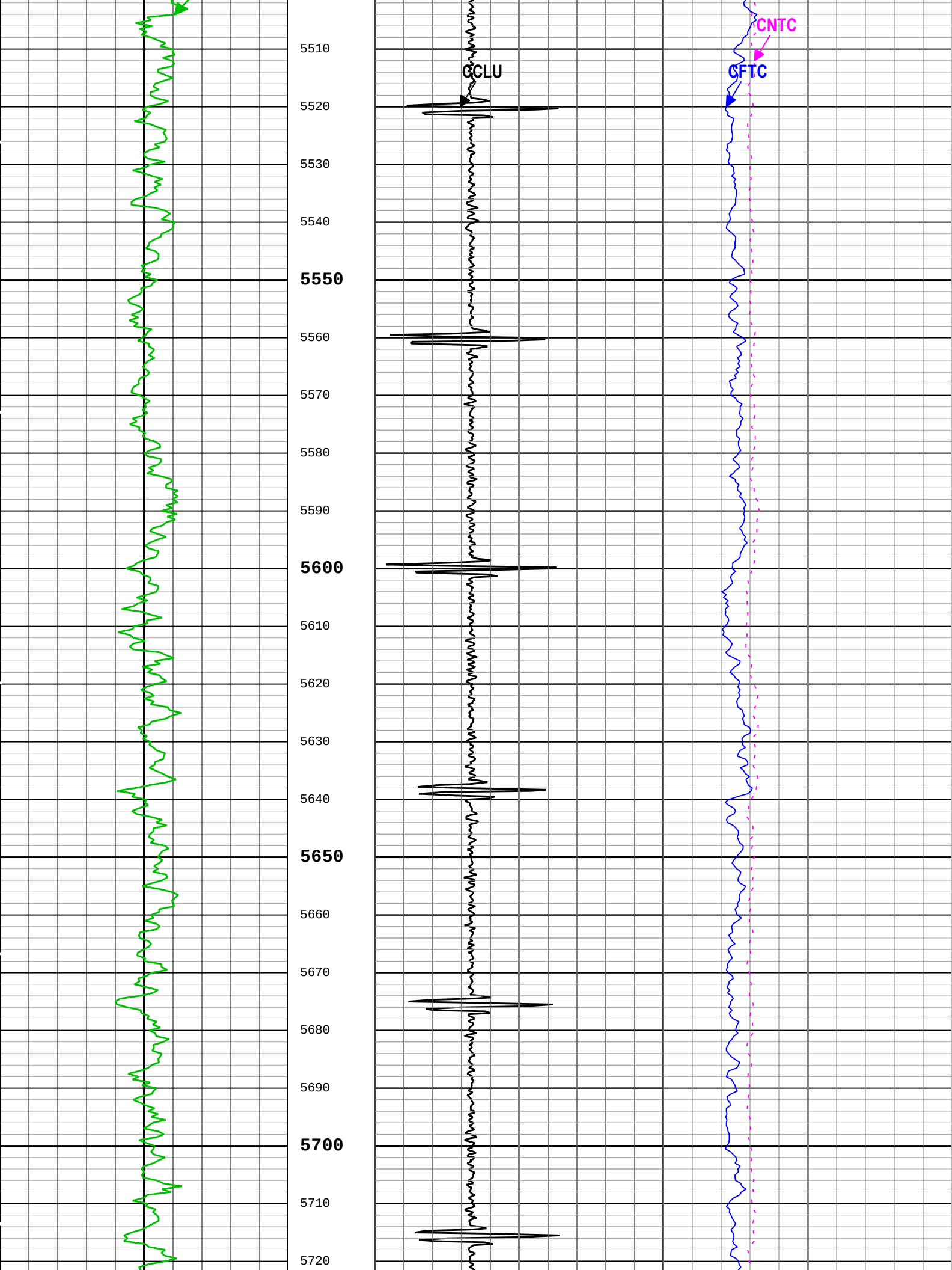
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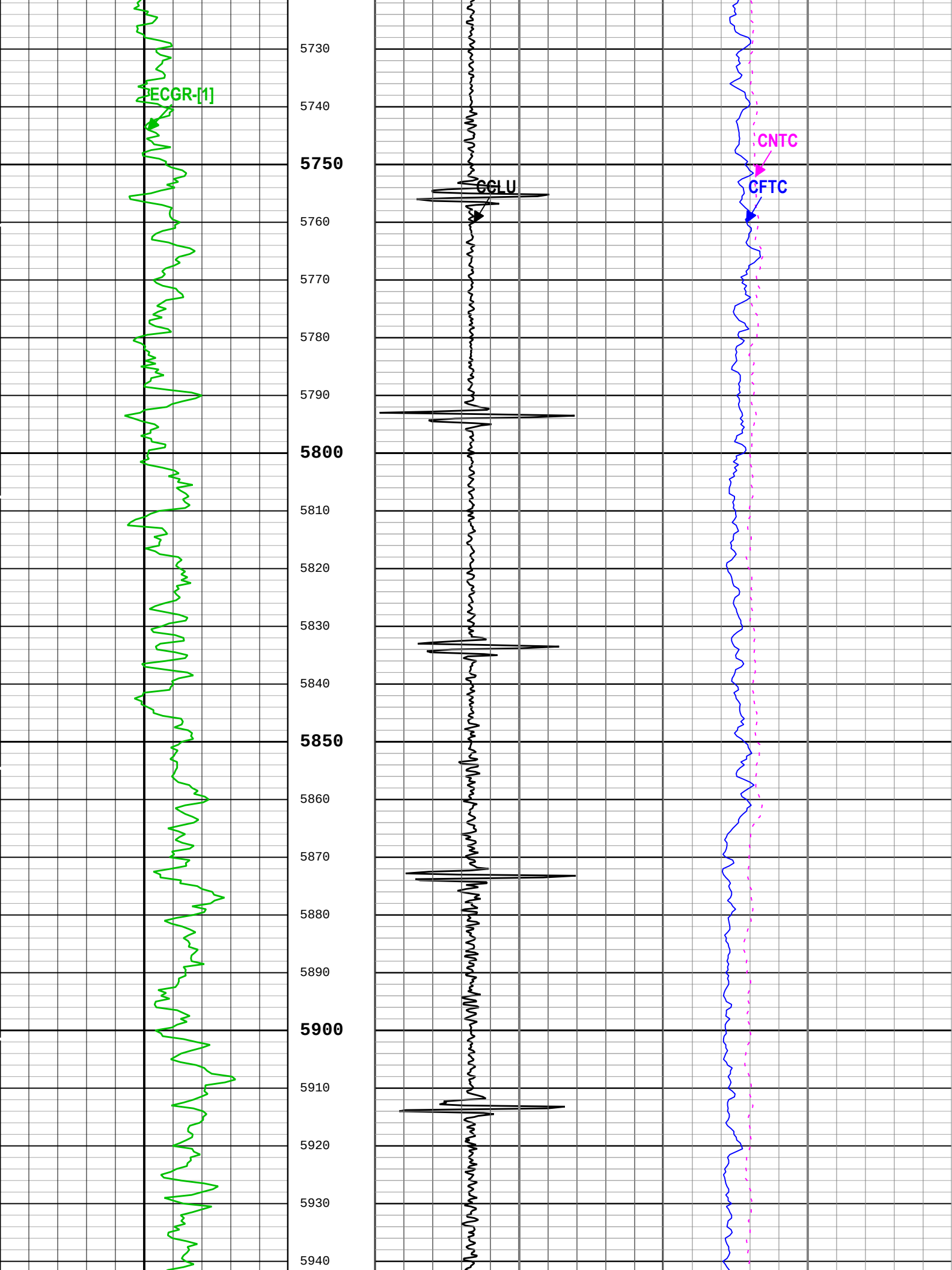
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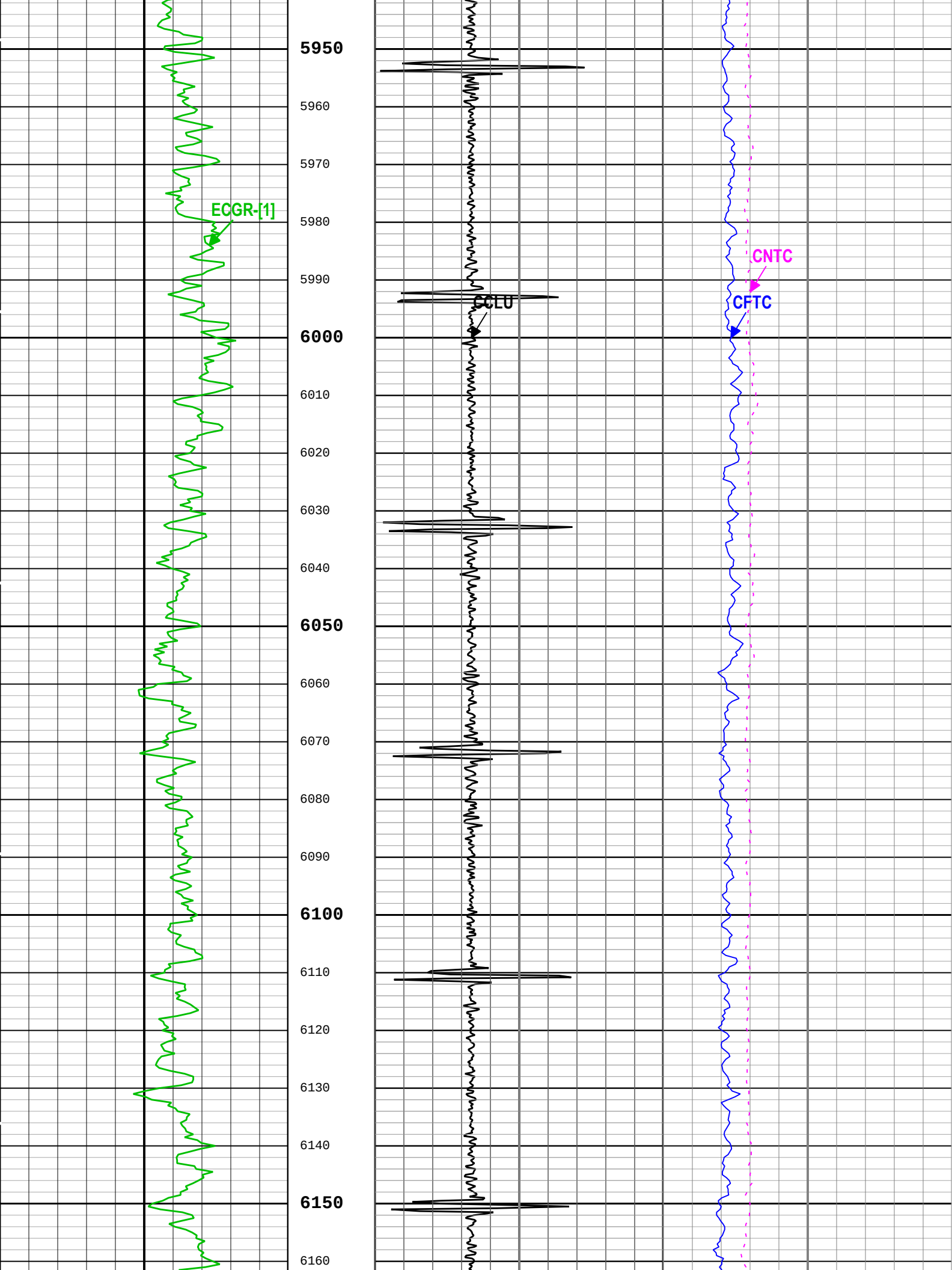
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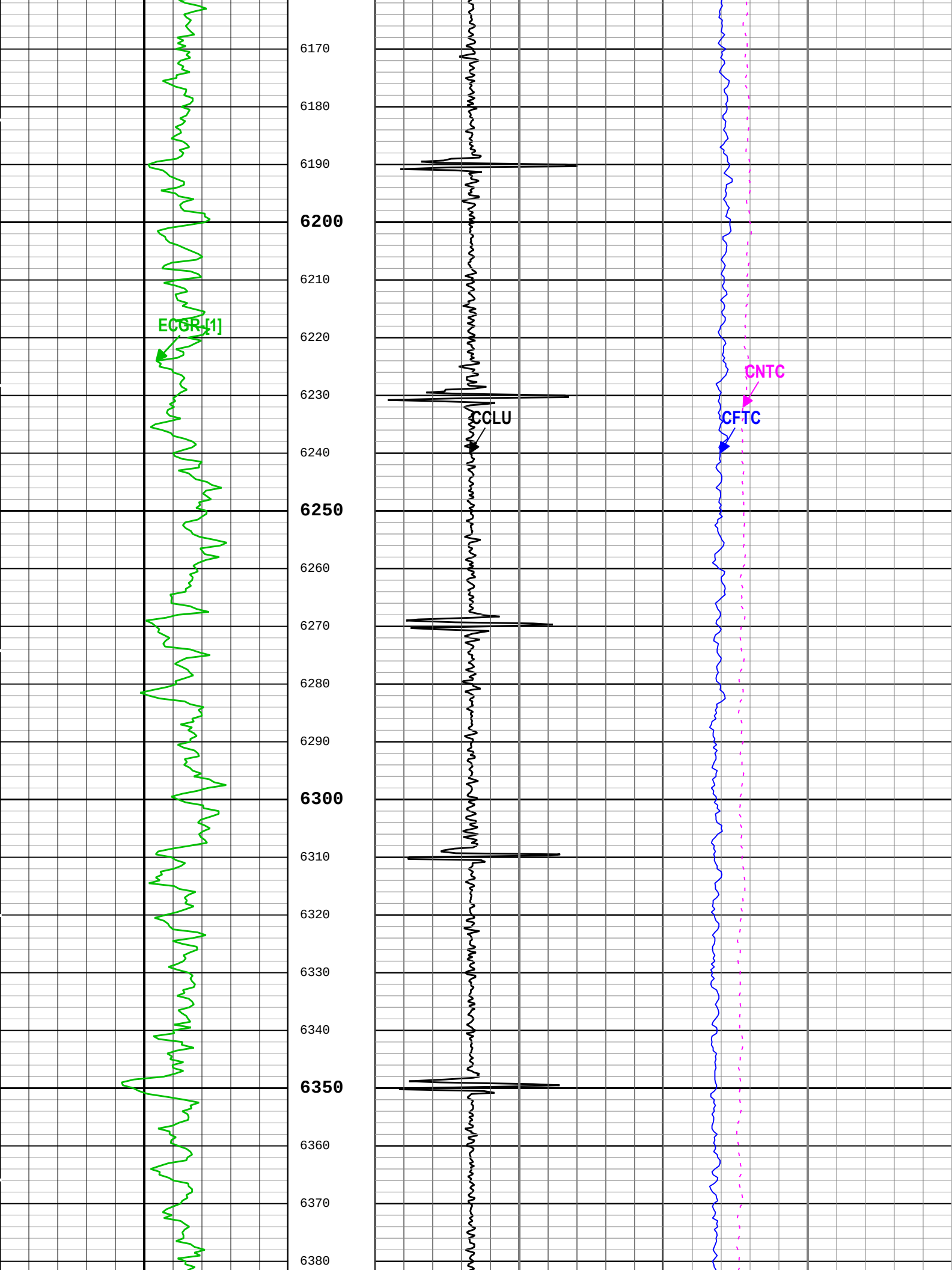
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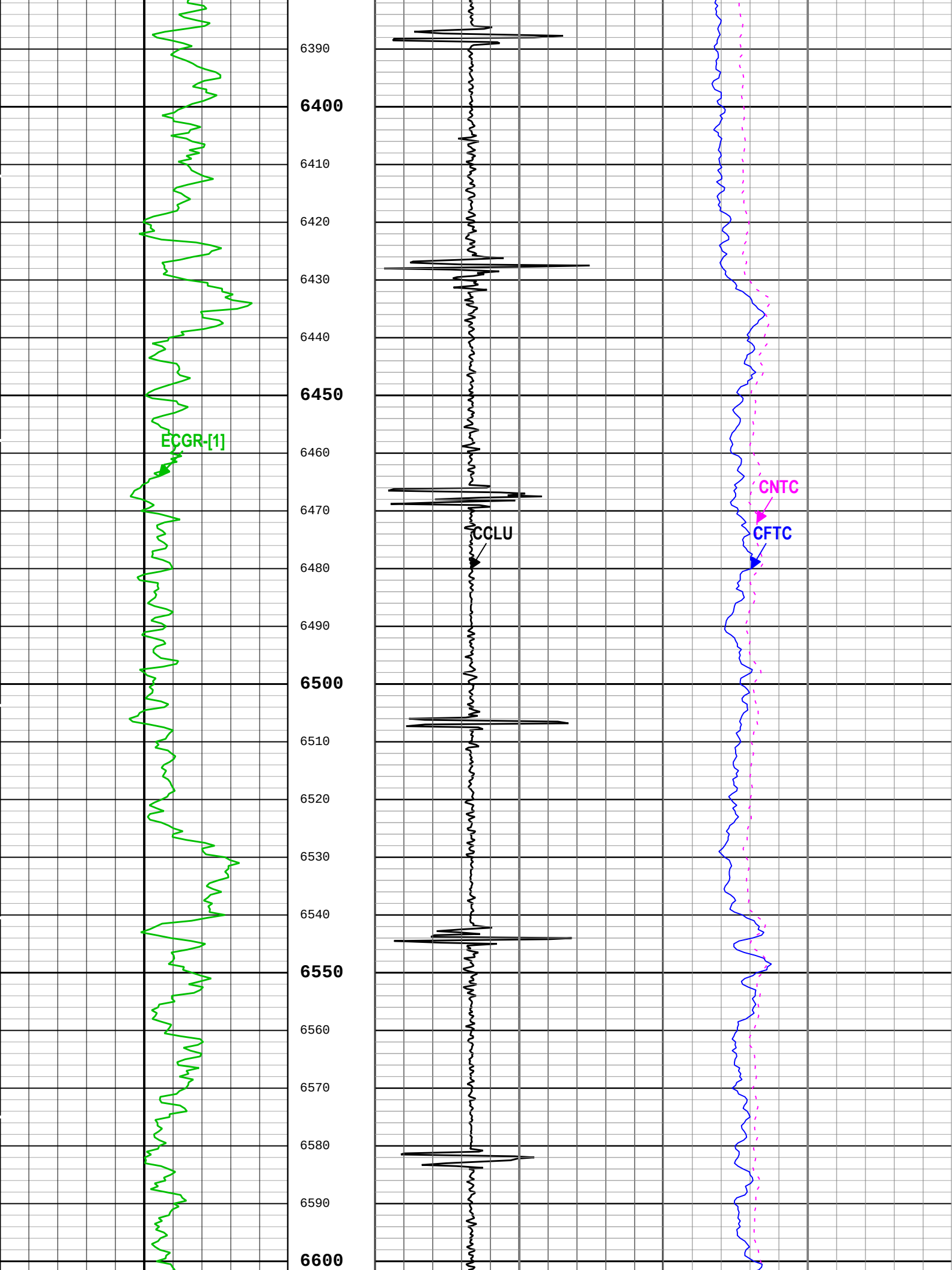
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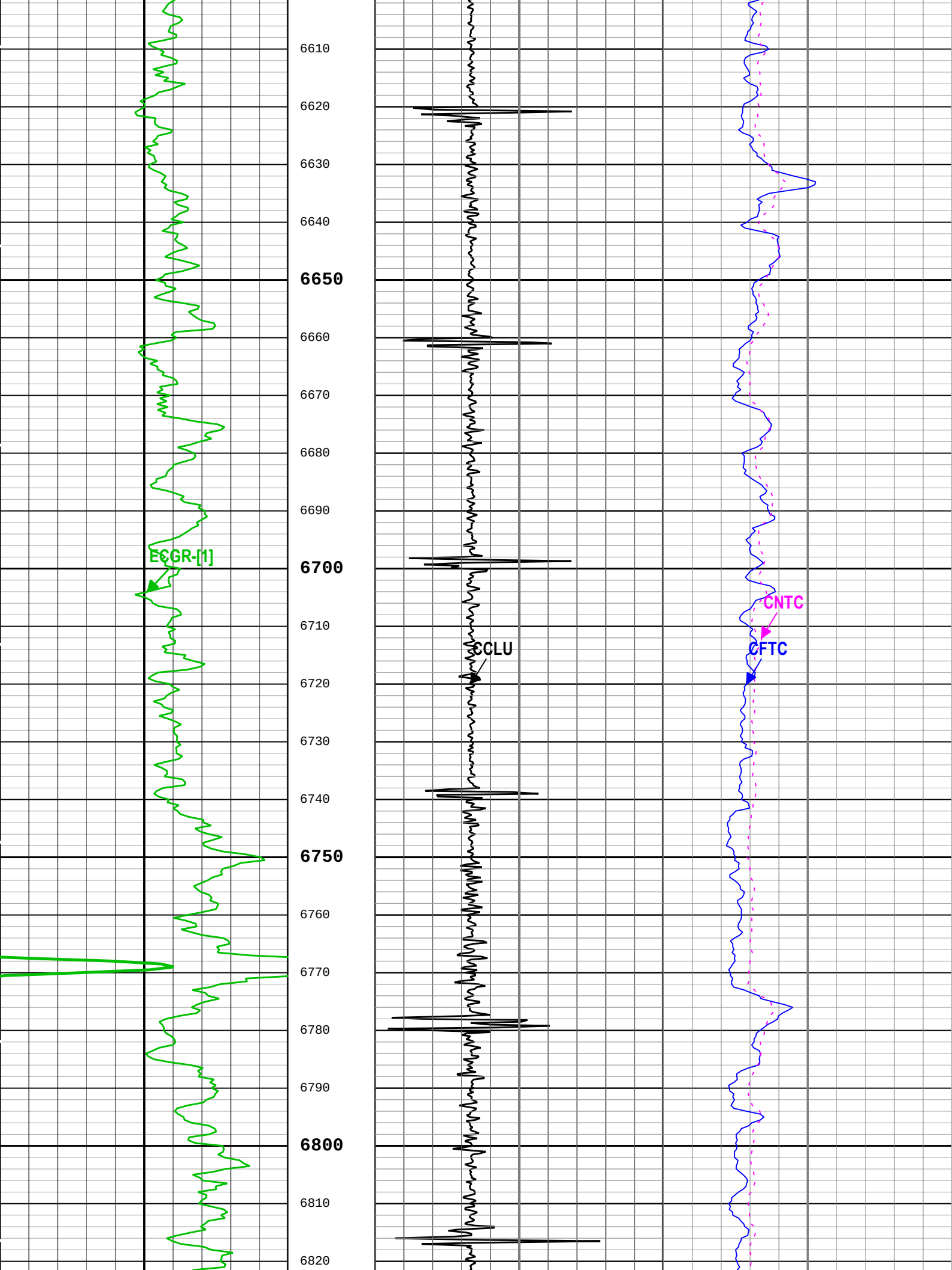
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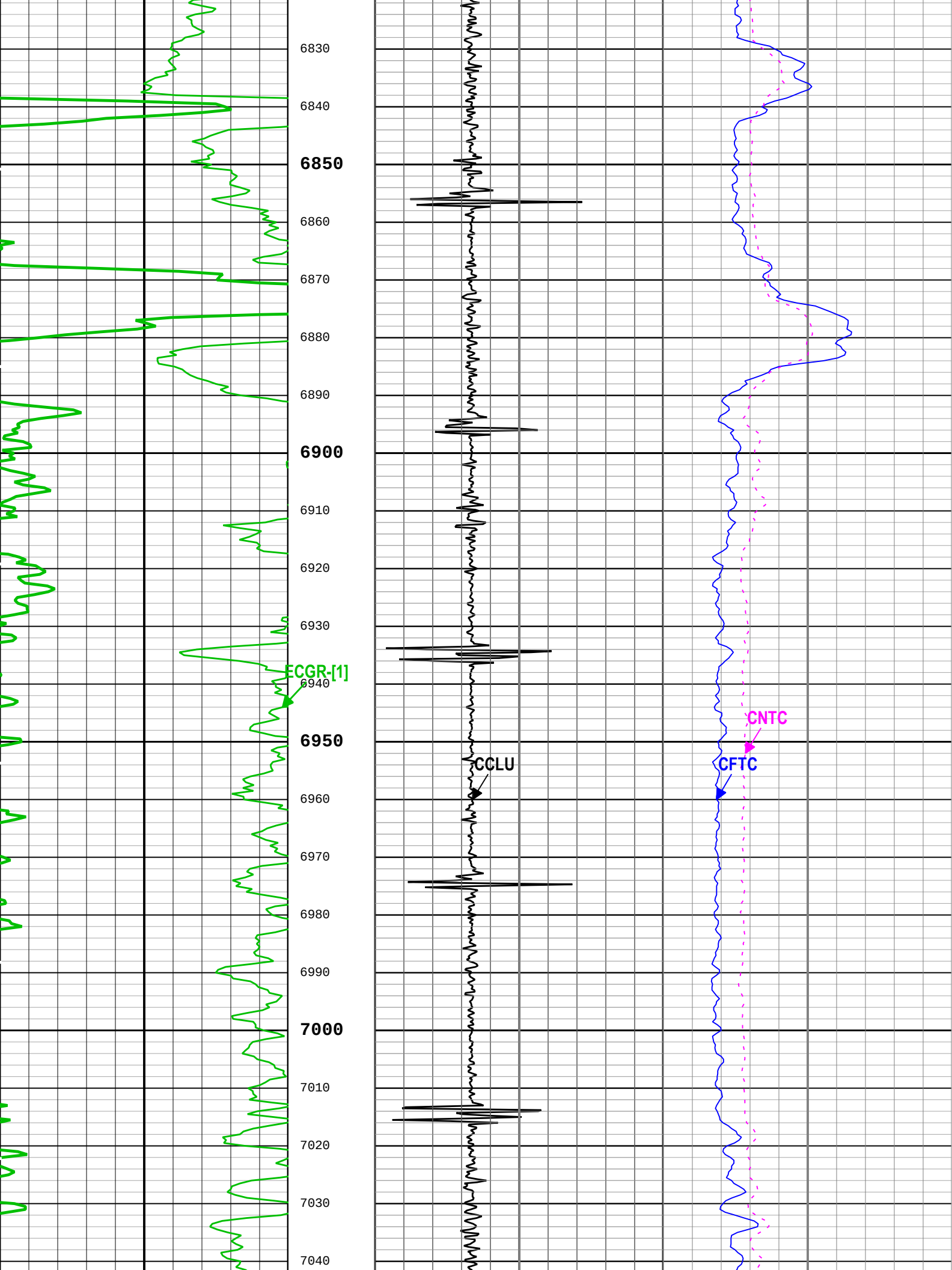
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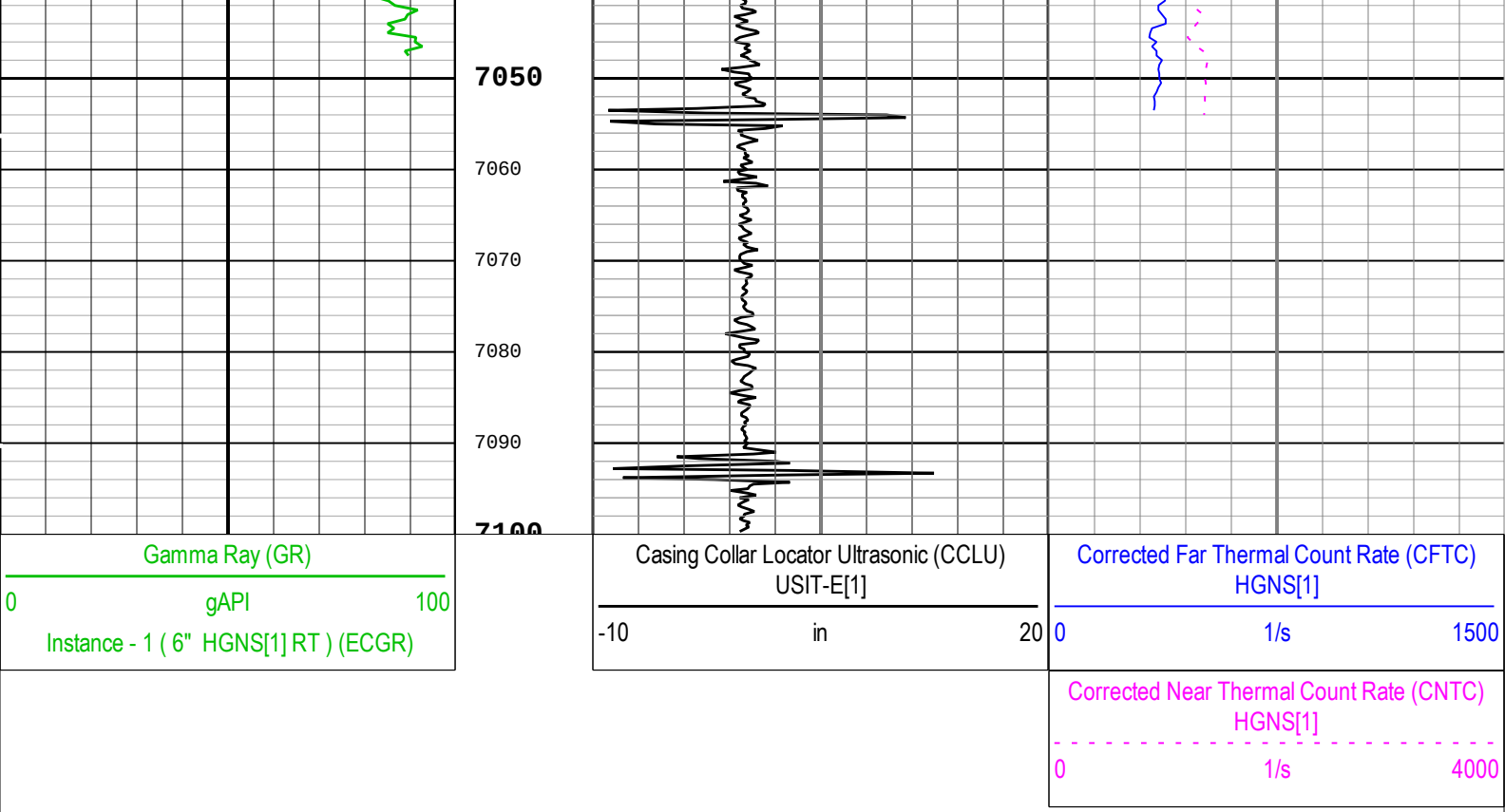


TIME_1900 - Time Marked every 60.00 (s)

Description: Format: Log (GR-CCLU Correlation) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 16-Mar-2016 22:45:18

USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 1	Log[2]:Down	177.3	7123.02

Fluid Velocity = "Automatic".
CFVL equals DFSL channel

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

Mud Impedance = "FreePipe Norm.".
Free Pipe normalization zone is : 36.08m(118.39ft) to 45.23m(148.39ft)
MUD_N_FRP = 1.11
DFD = 1.01g/cm3(8.40lbm/gal)
CZMD median computed in free pipe normalization interval = 1.69 MRayl

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

Composite 1

Main Pass 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
SLS-E	Sonic Logging Sonde E supports 3'-5'BHC DT and	6.1.58882.3100	4.0

	CBL/VDL		
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
16Mar2016	Log[4]:Up	Up	2075.53 ft	7100.62 ft	16-Mar-2016 11:36:33 AM	16-Mar-2016 1:27:21 PM	ON	-10.00 ft	Yes
16Mar2016	Log[5]:Up	Up	194.84 ft	2291.90 ft	16-Mar-2016 1:31:17 PM	16-Mar-2016 2:31:41 PM	ON	-10.00 ft	Yes
16Mar2016	Log[6]:Up	Up	28.19 ft	401.83 ft	16-Mar-2016 2:34:30 PM	16-Mar-2016 2:51:45 PM	ON	-10.00 ft	Yes

All depths are referenced to toolstring zero

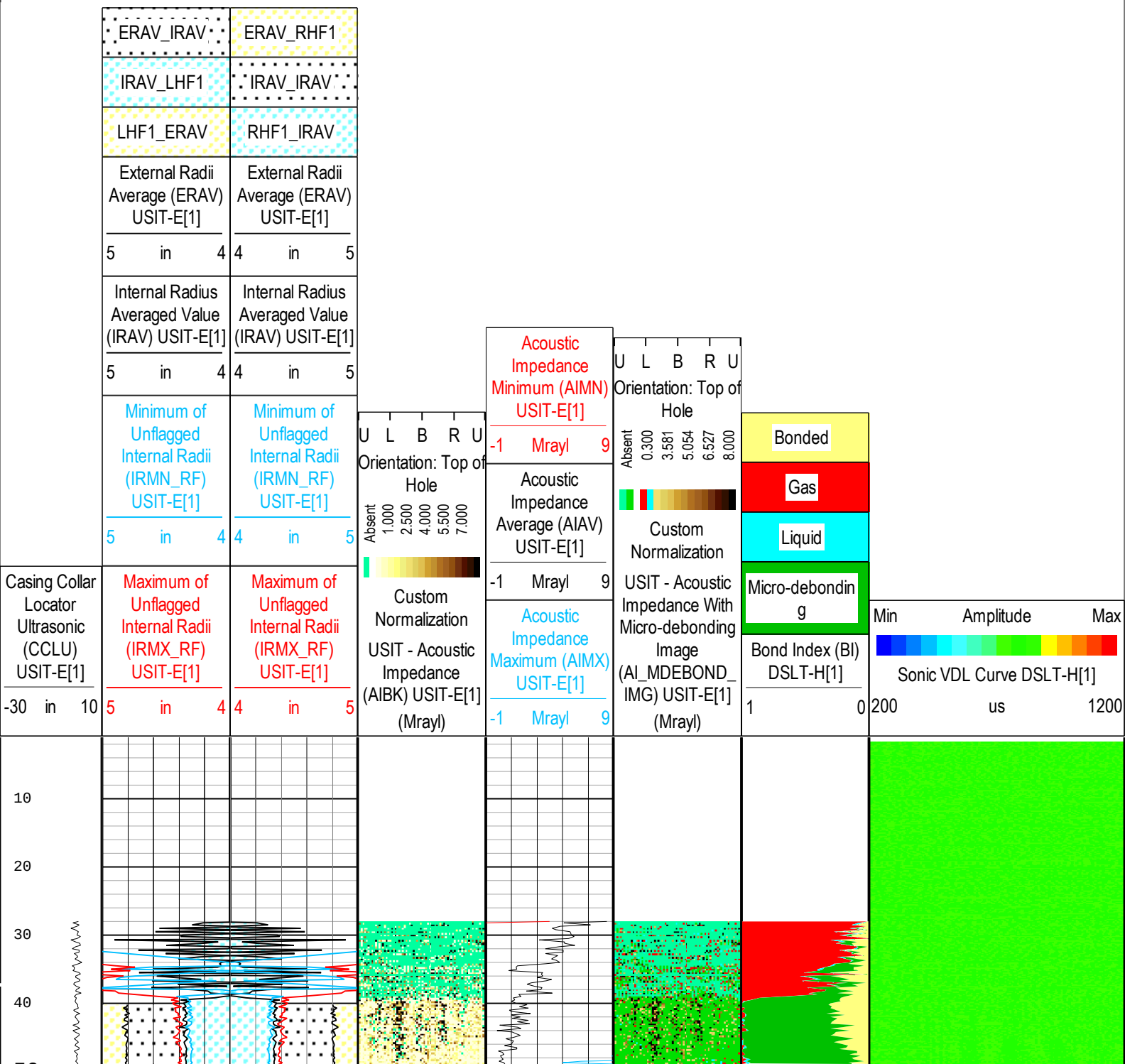
Log

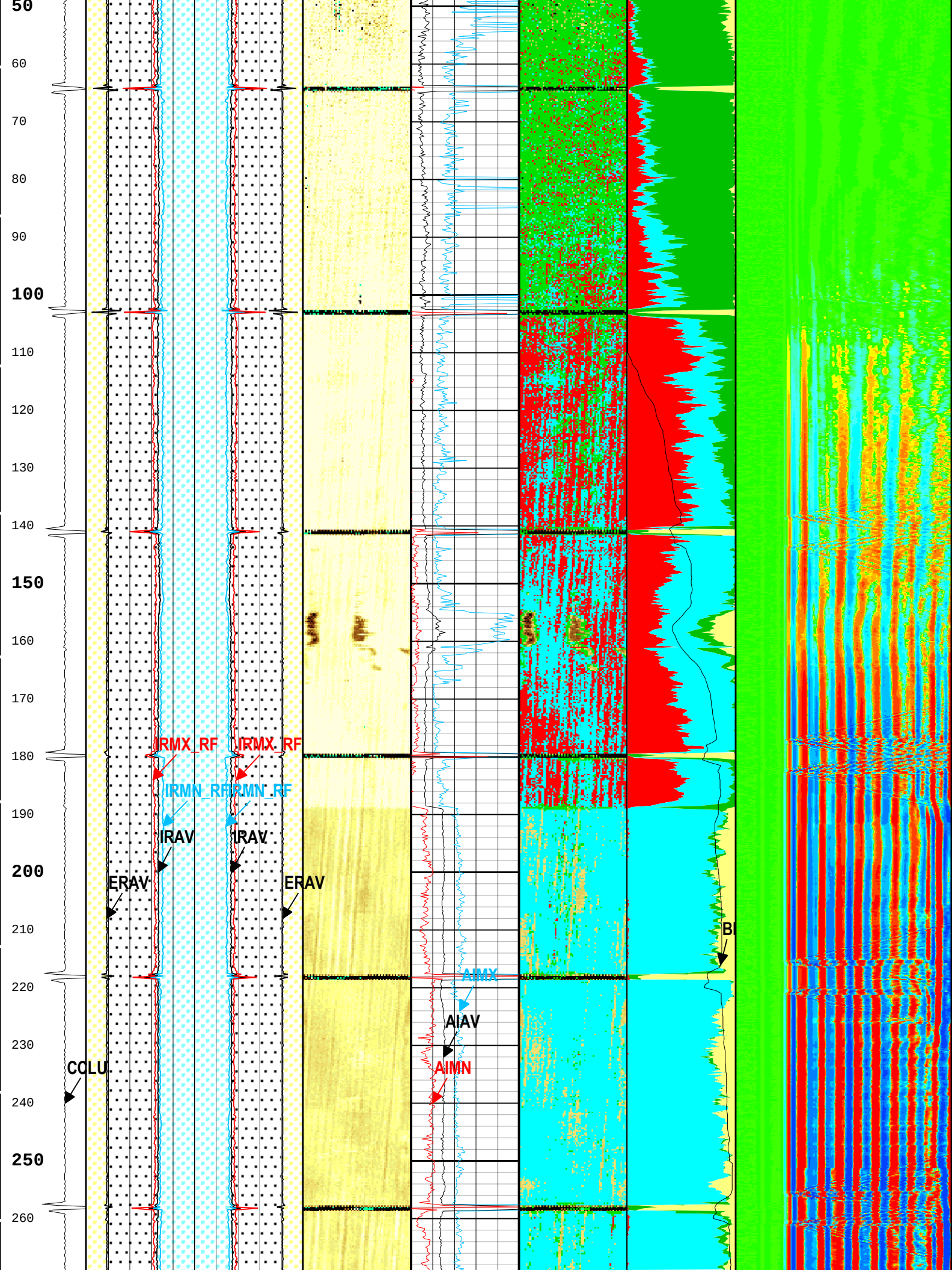
Company:Southern California Gas Company Well:Porter 50C

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: 16-Mar-2016 22:45:28

TIME_1900 - Time Marked every 60.00 (s)

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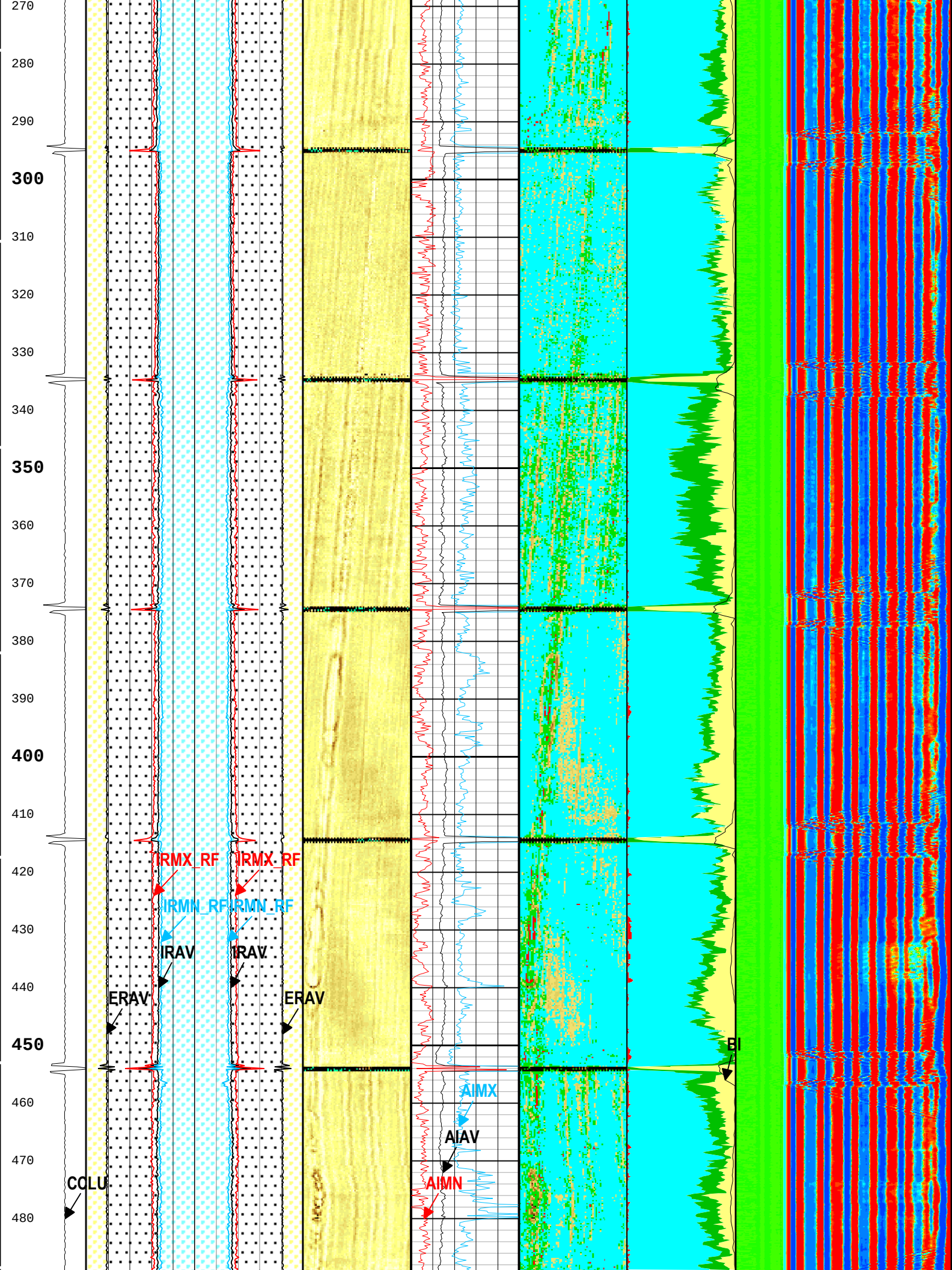
ERAV
AIMX
AIAV
AIMN
COLU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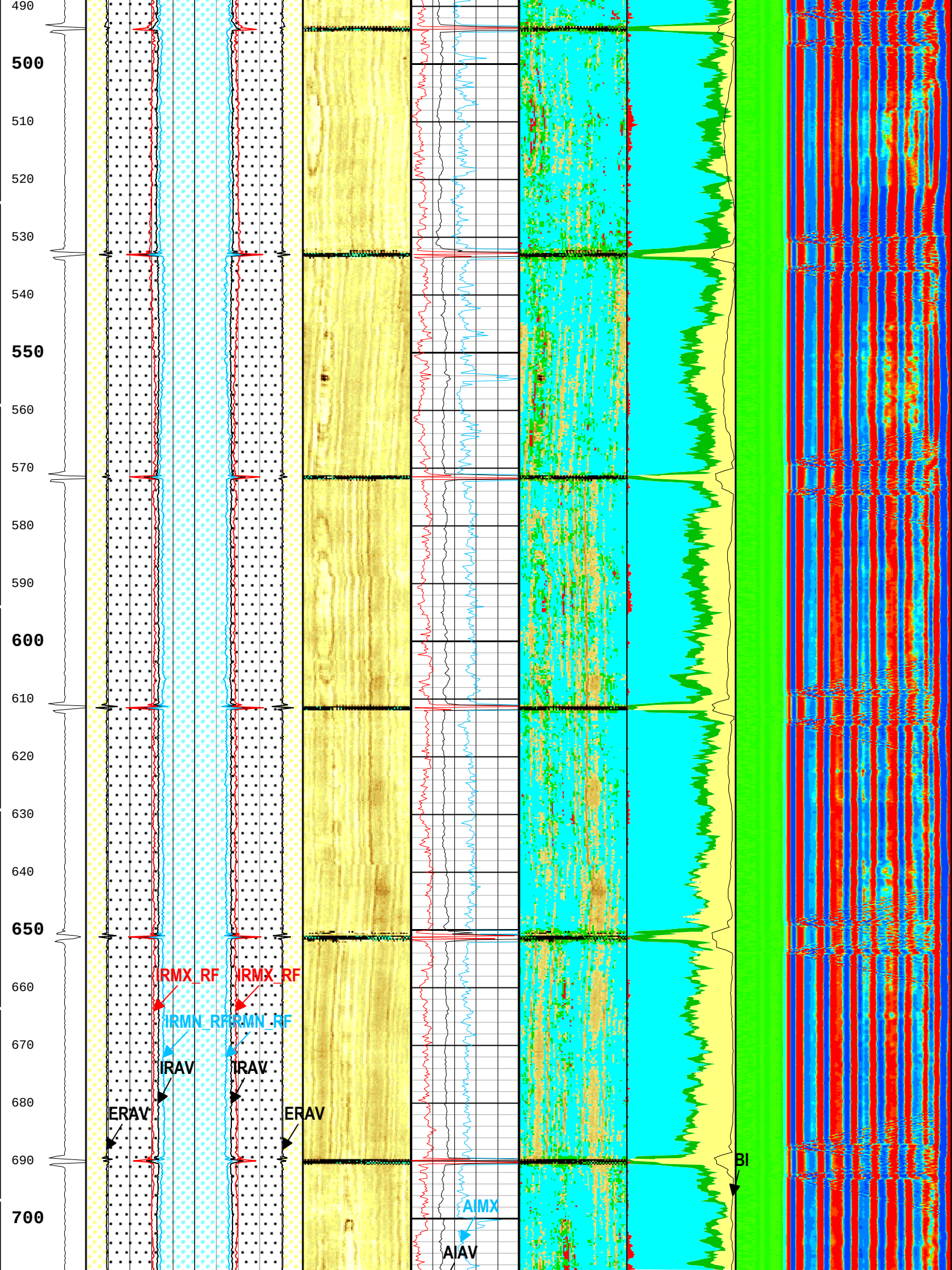
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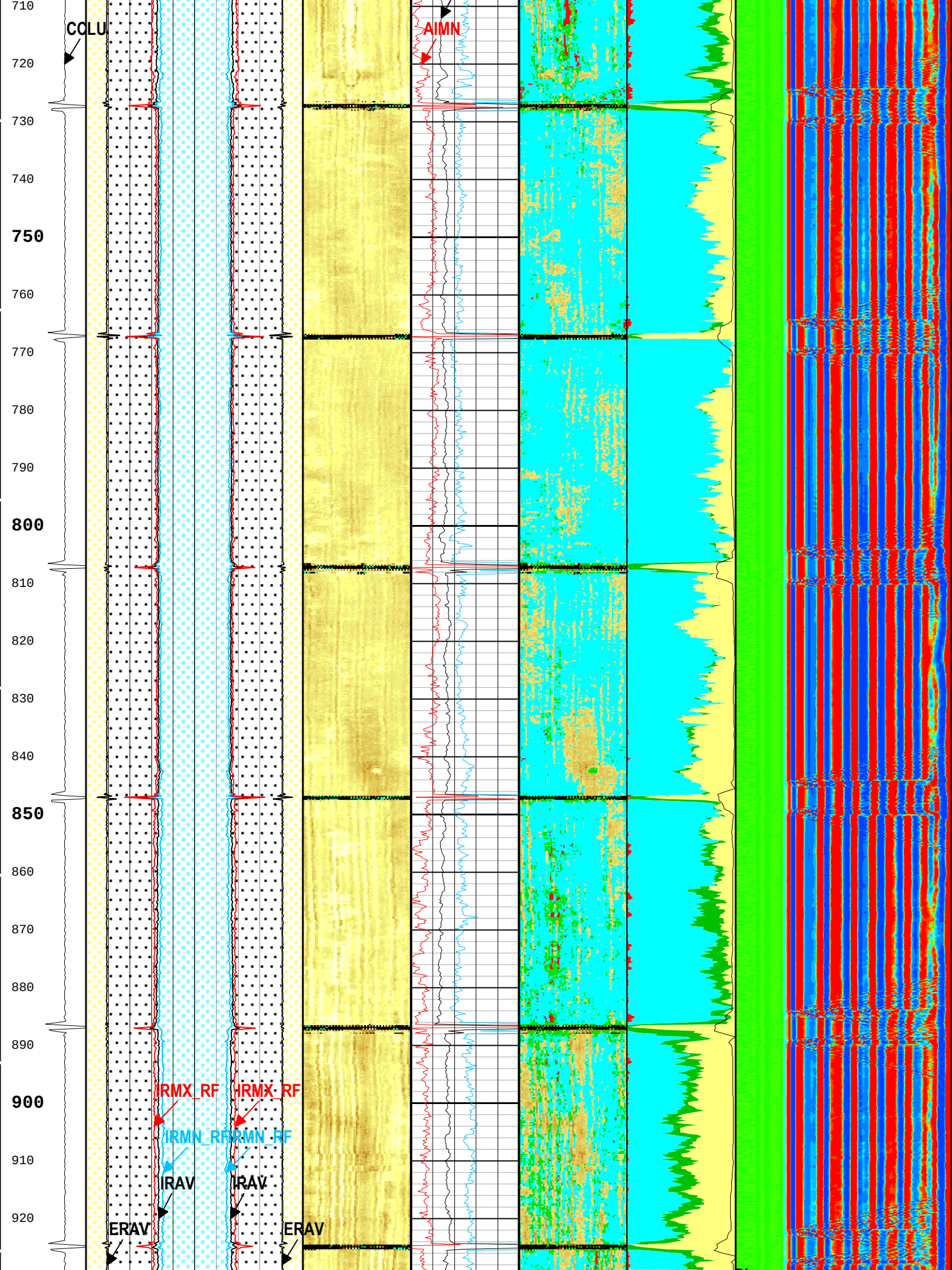
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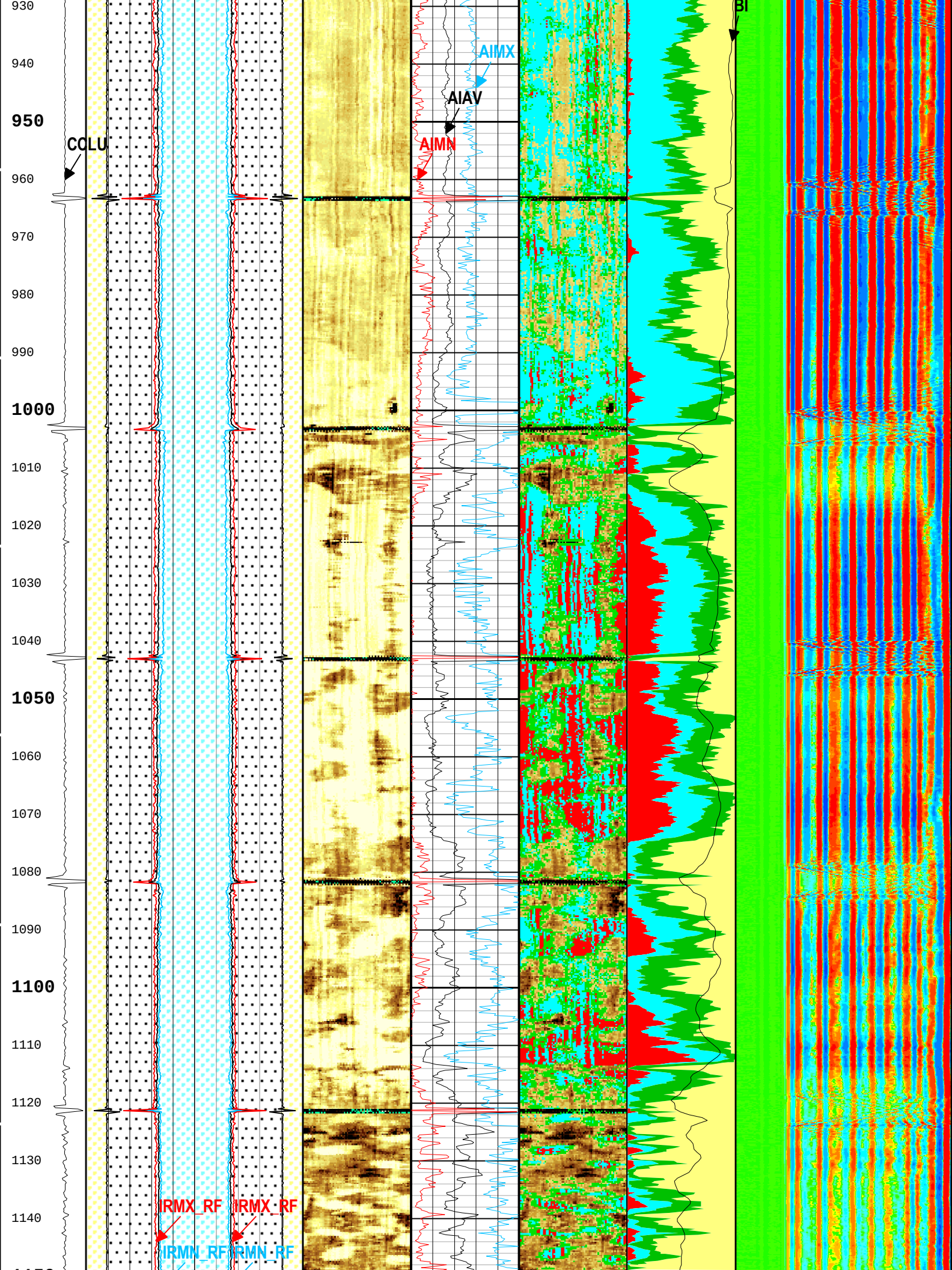
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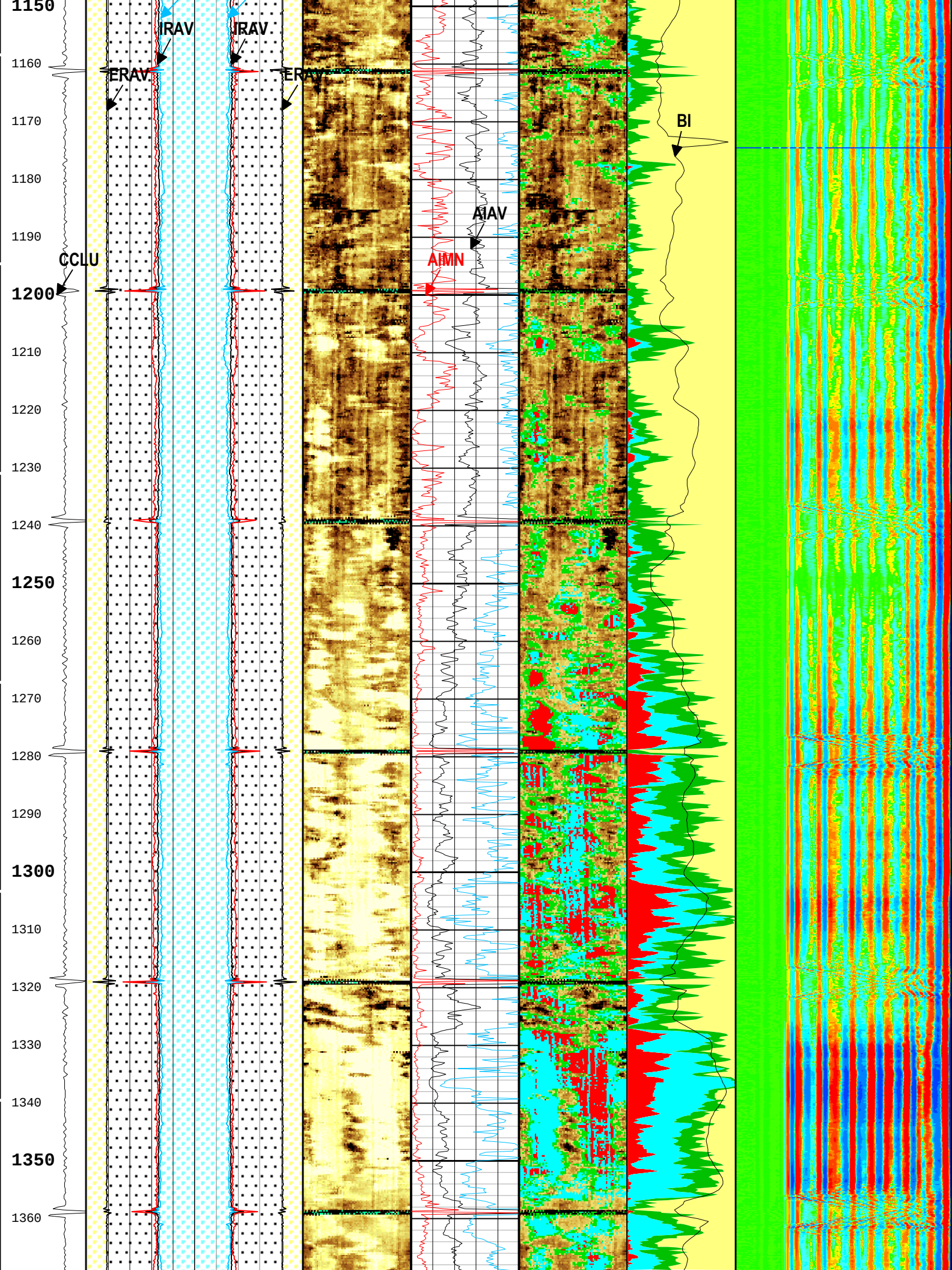
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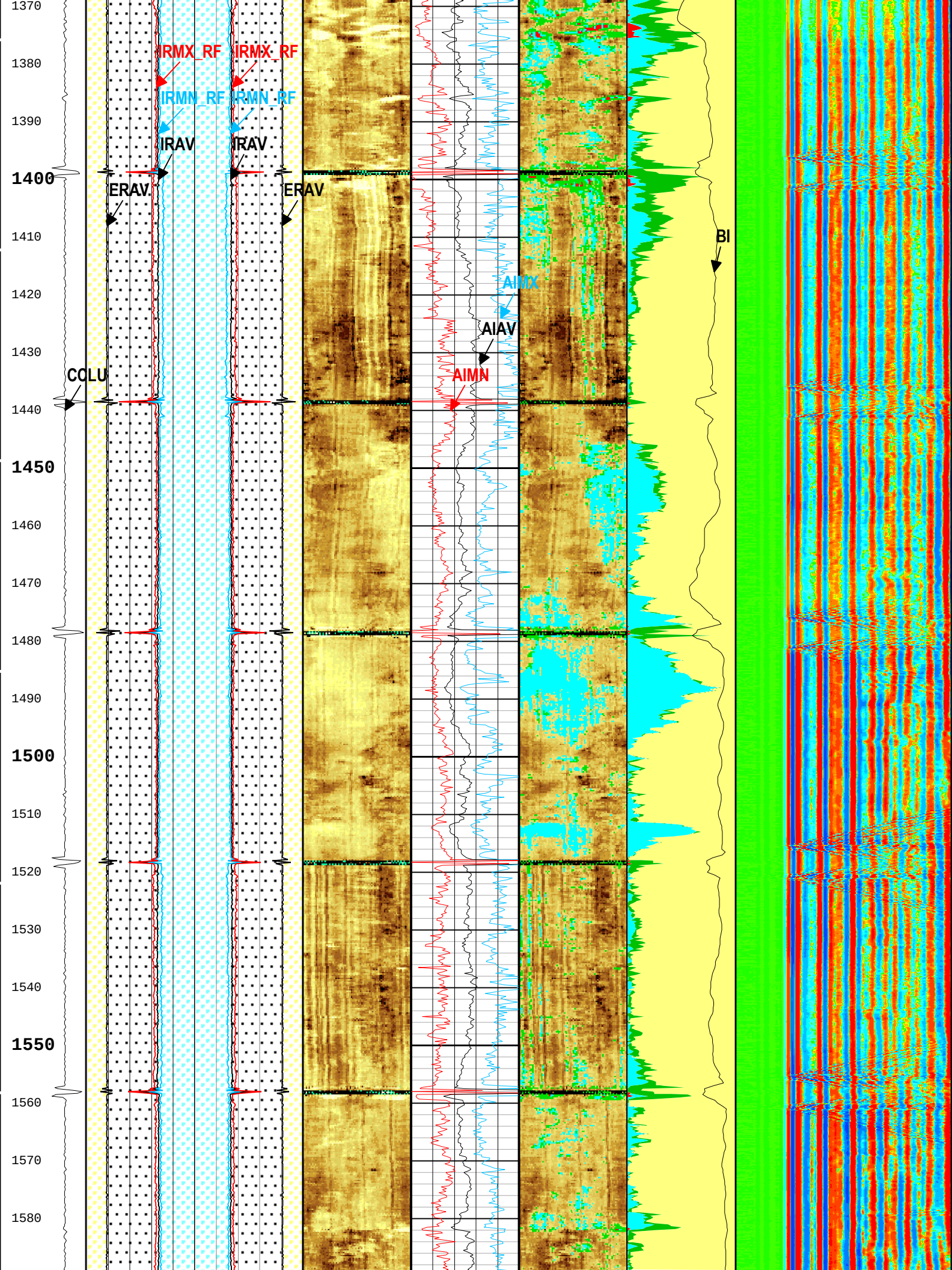
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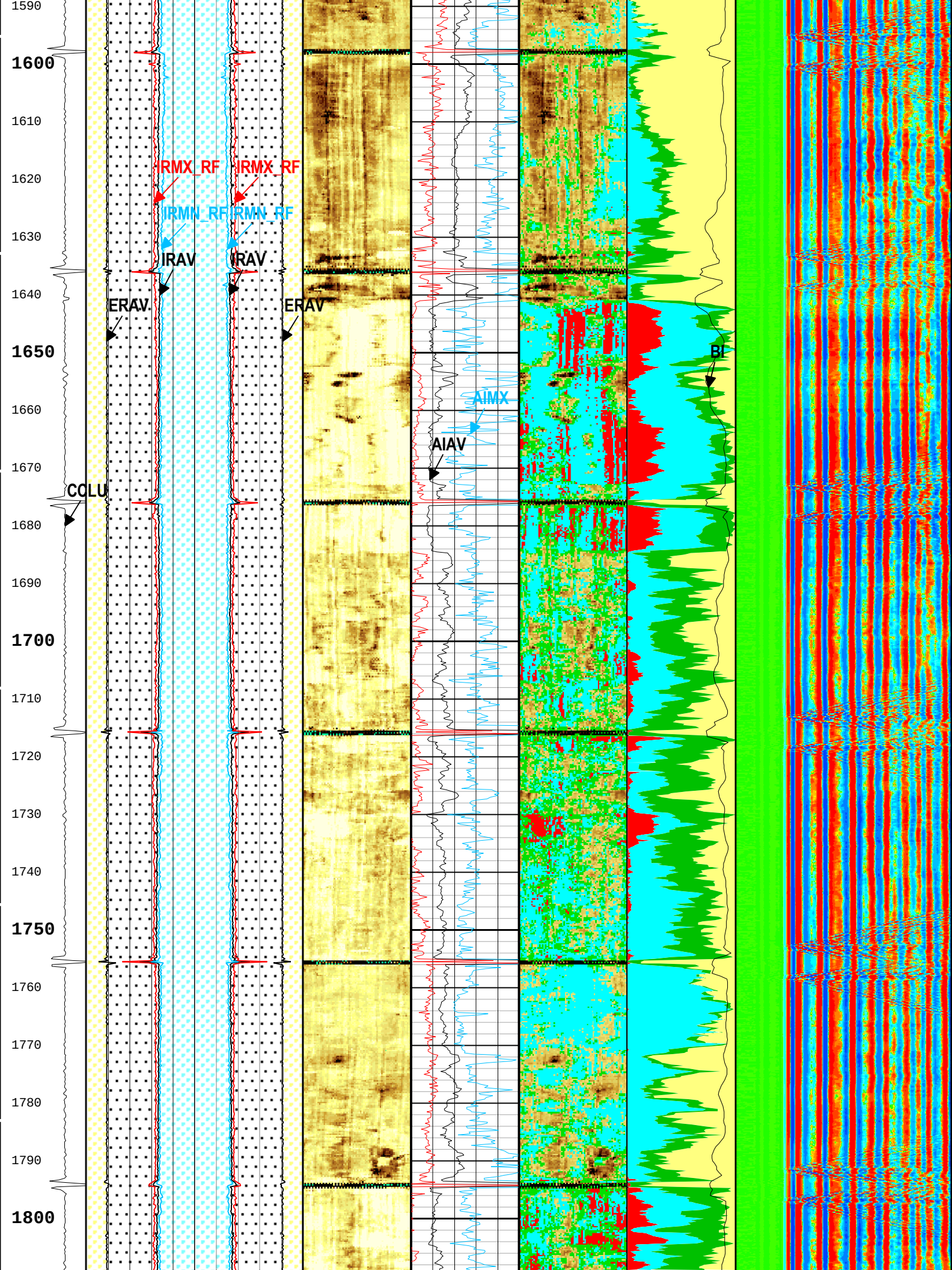
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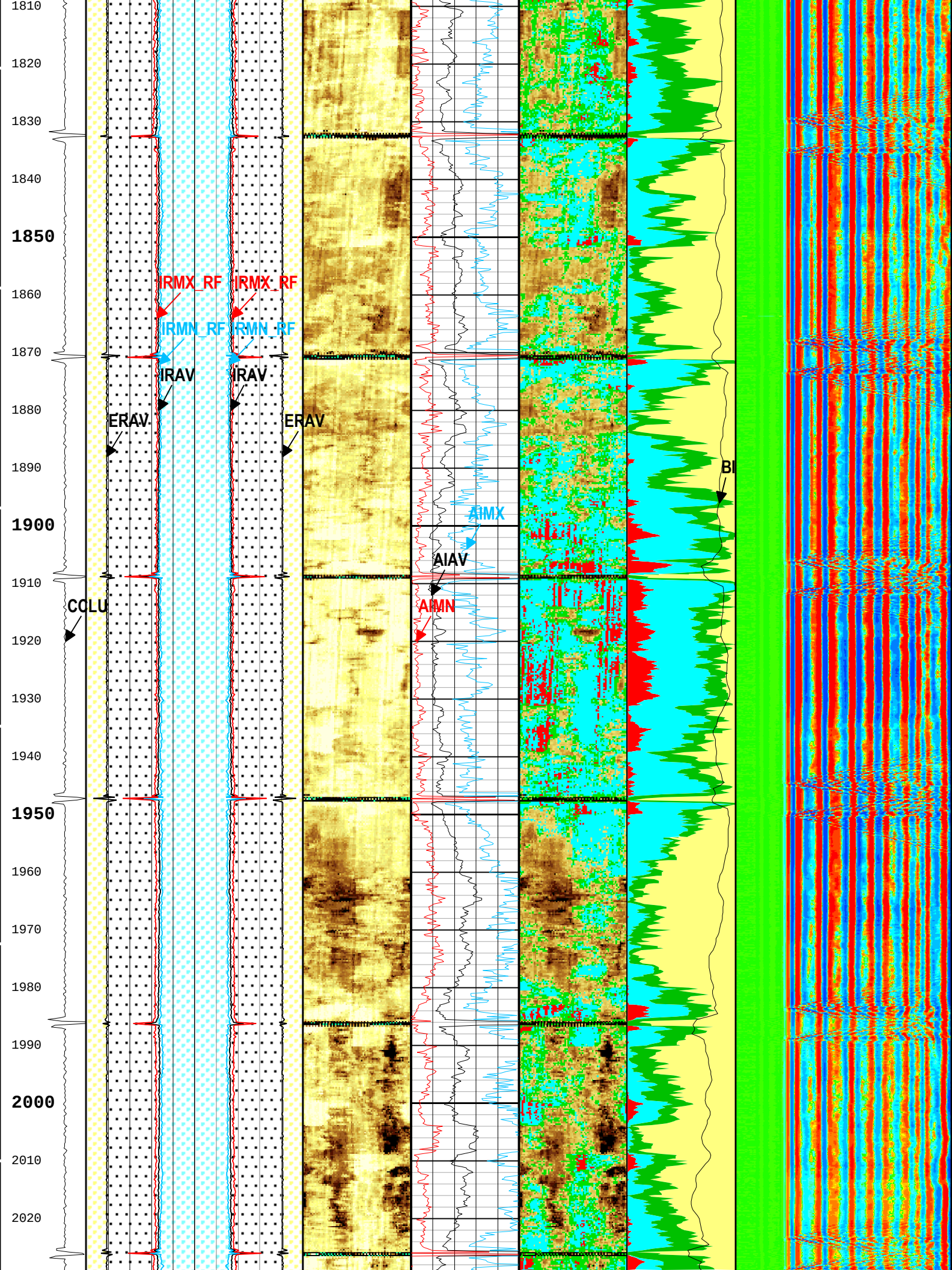
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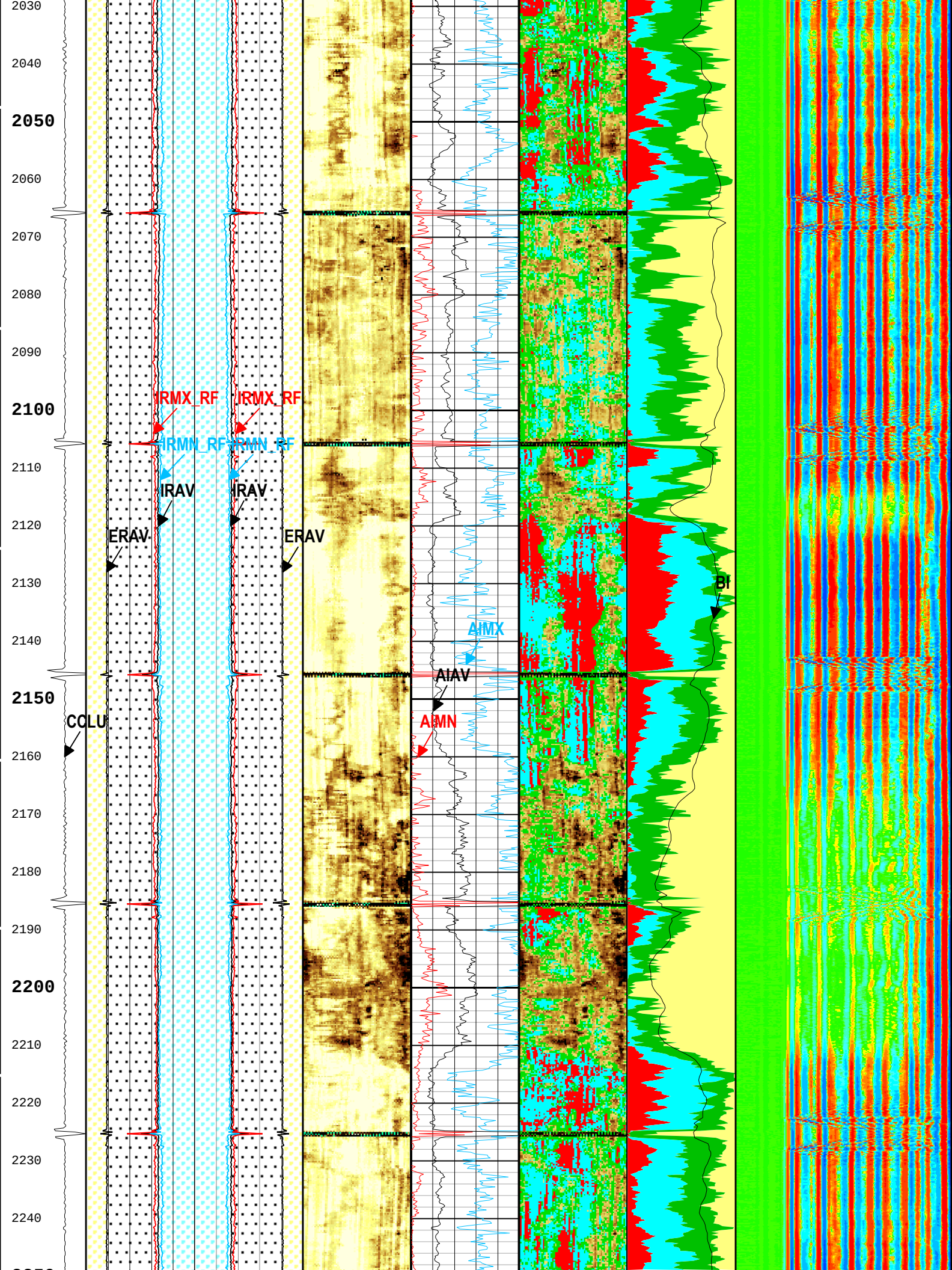
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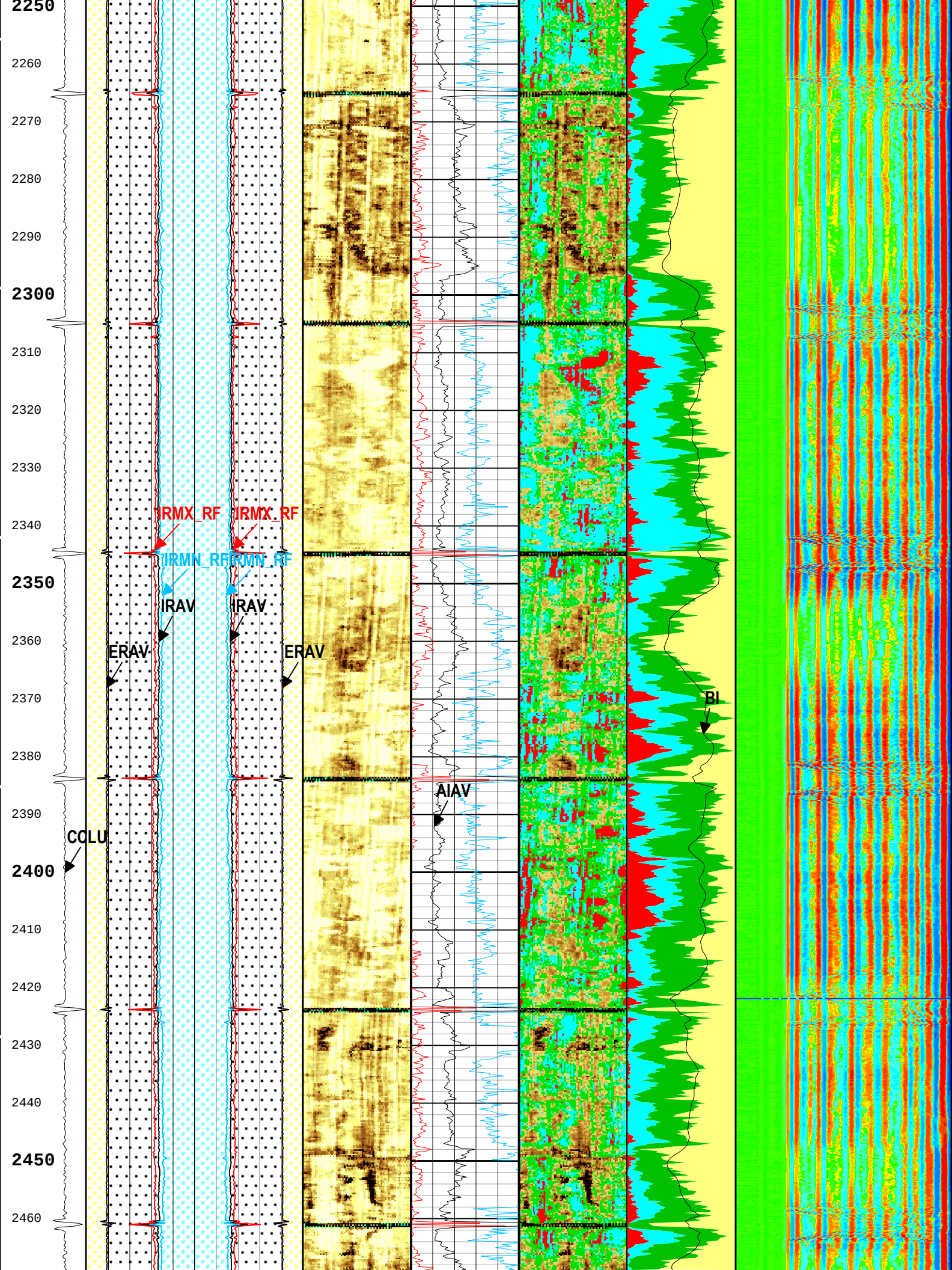
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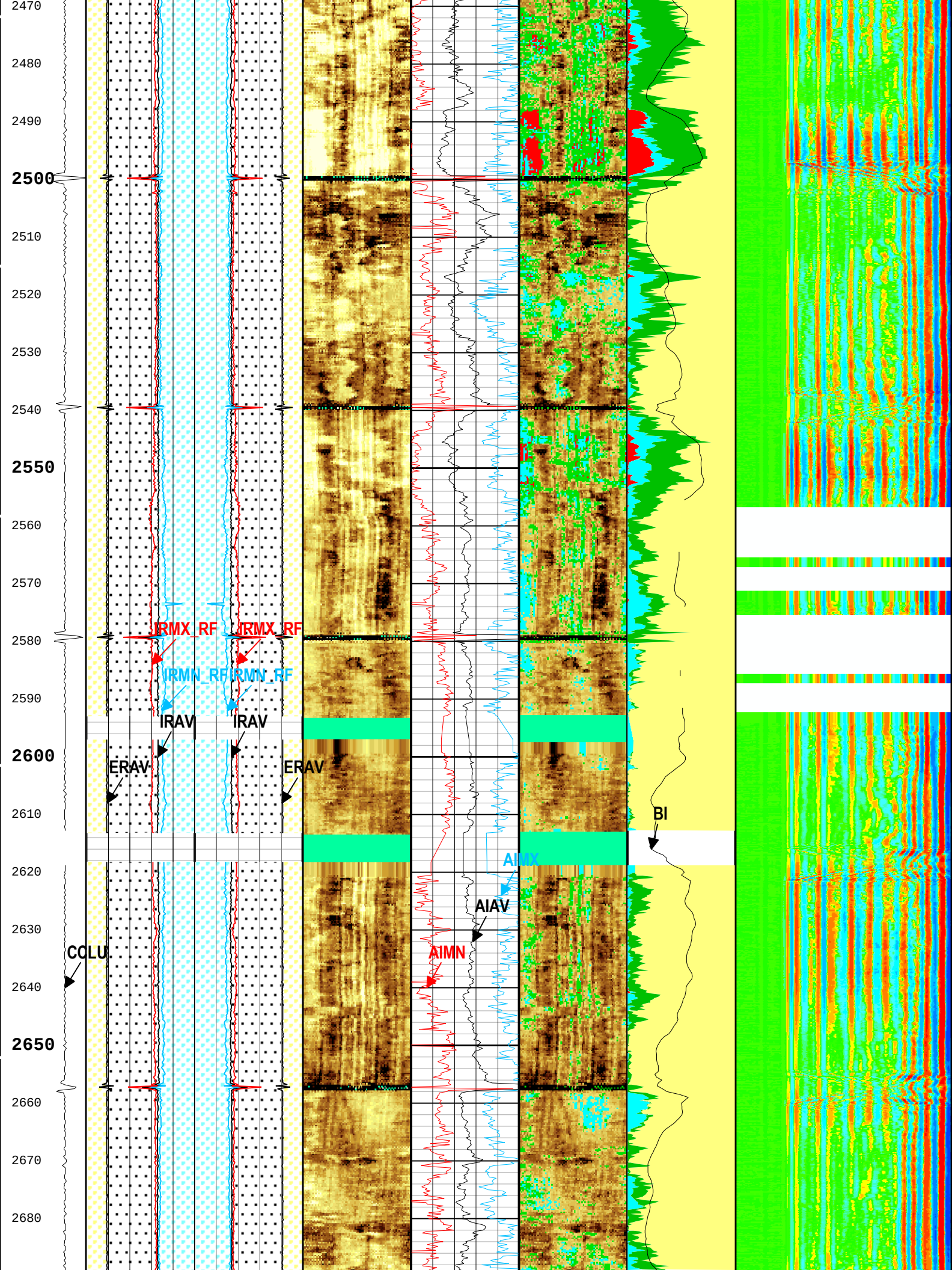
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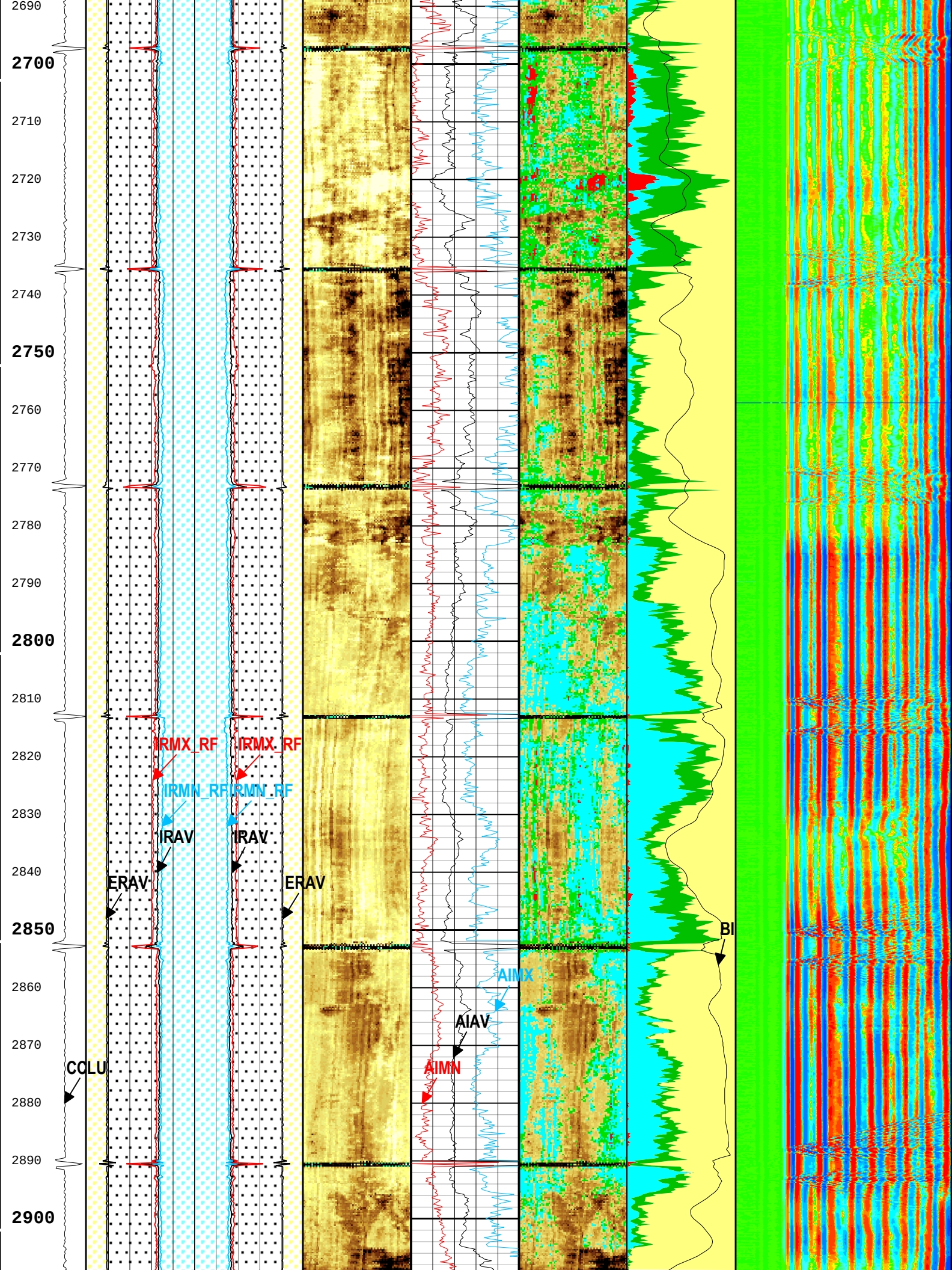
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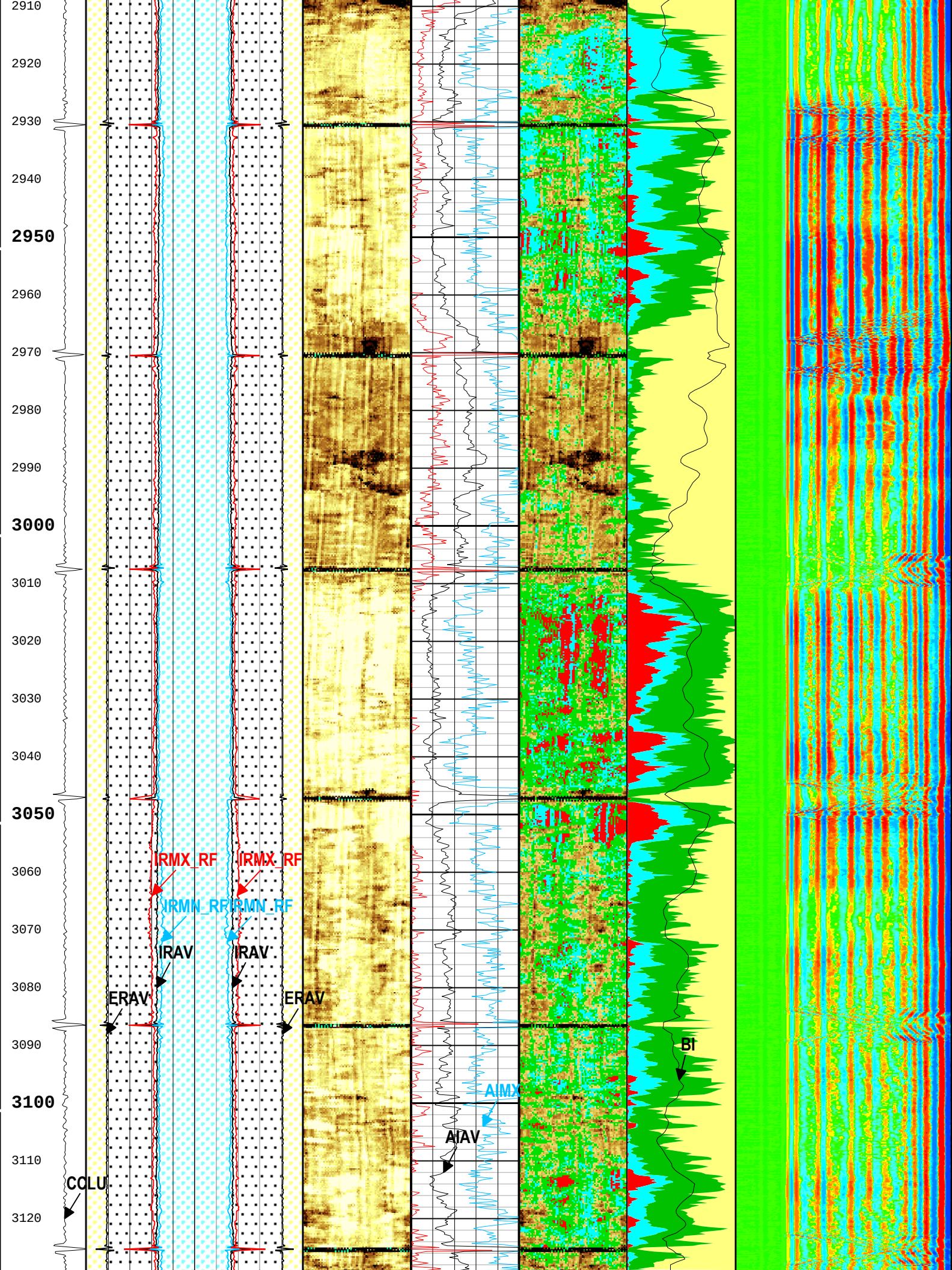
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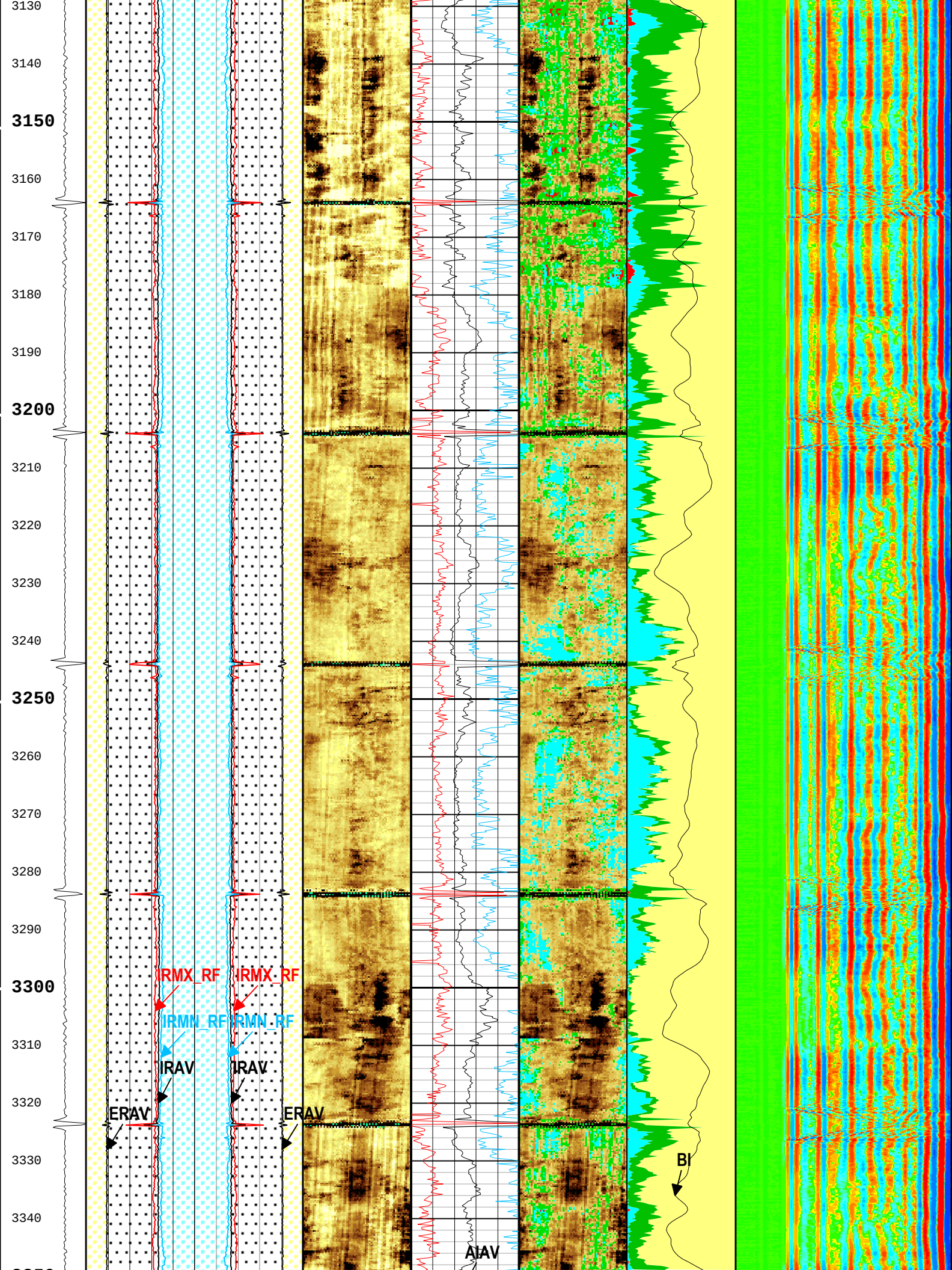
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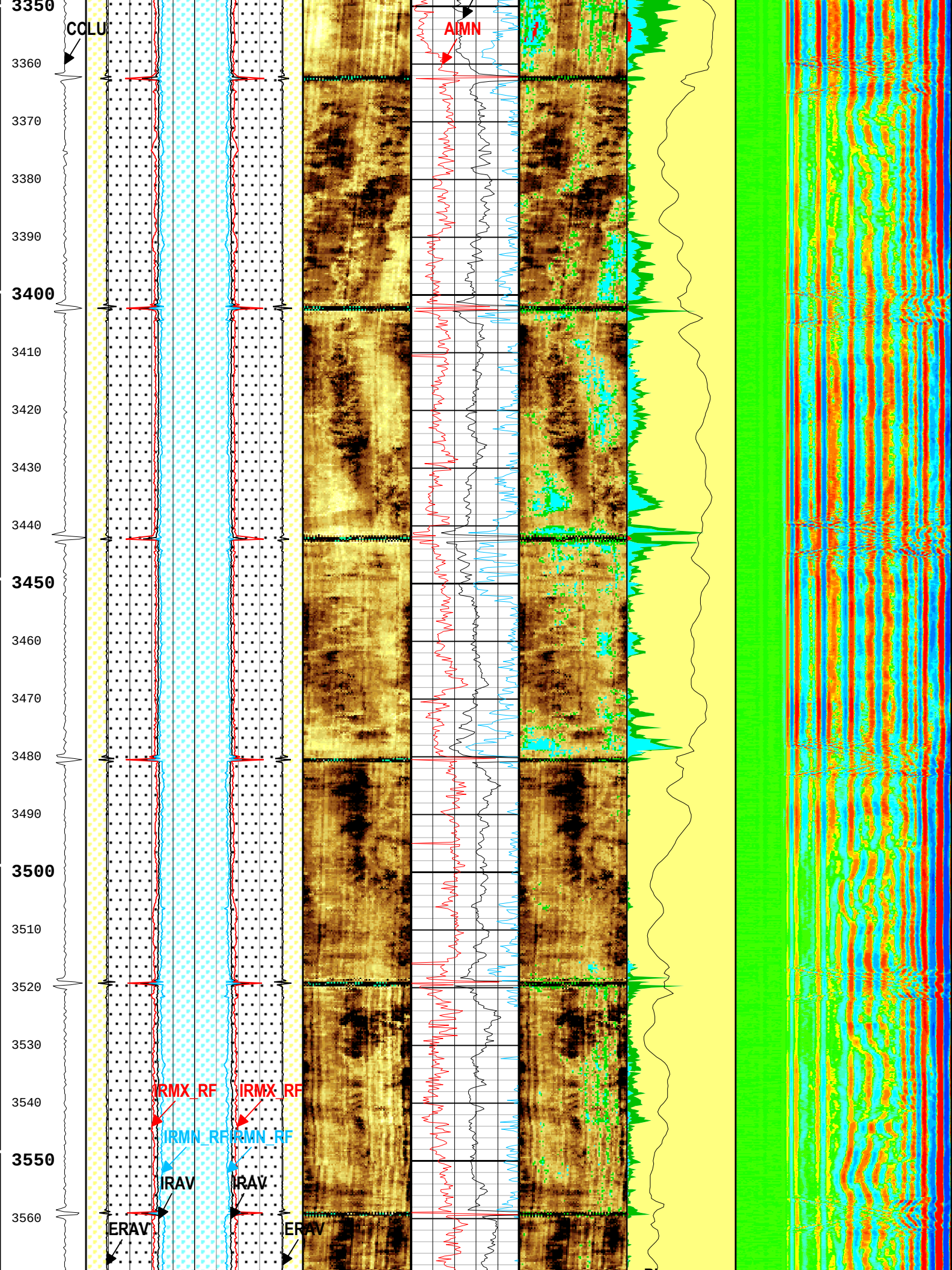
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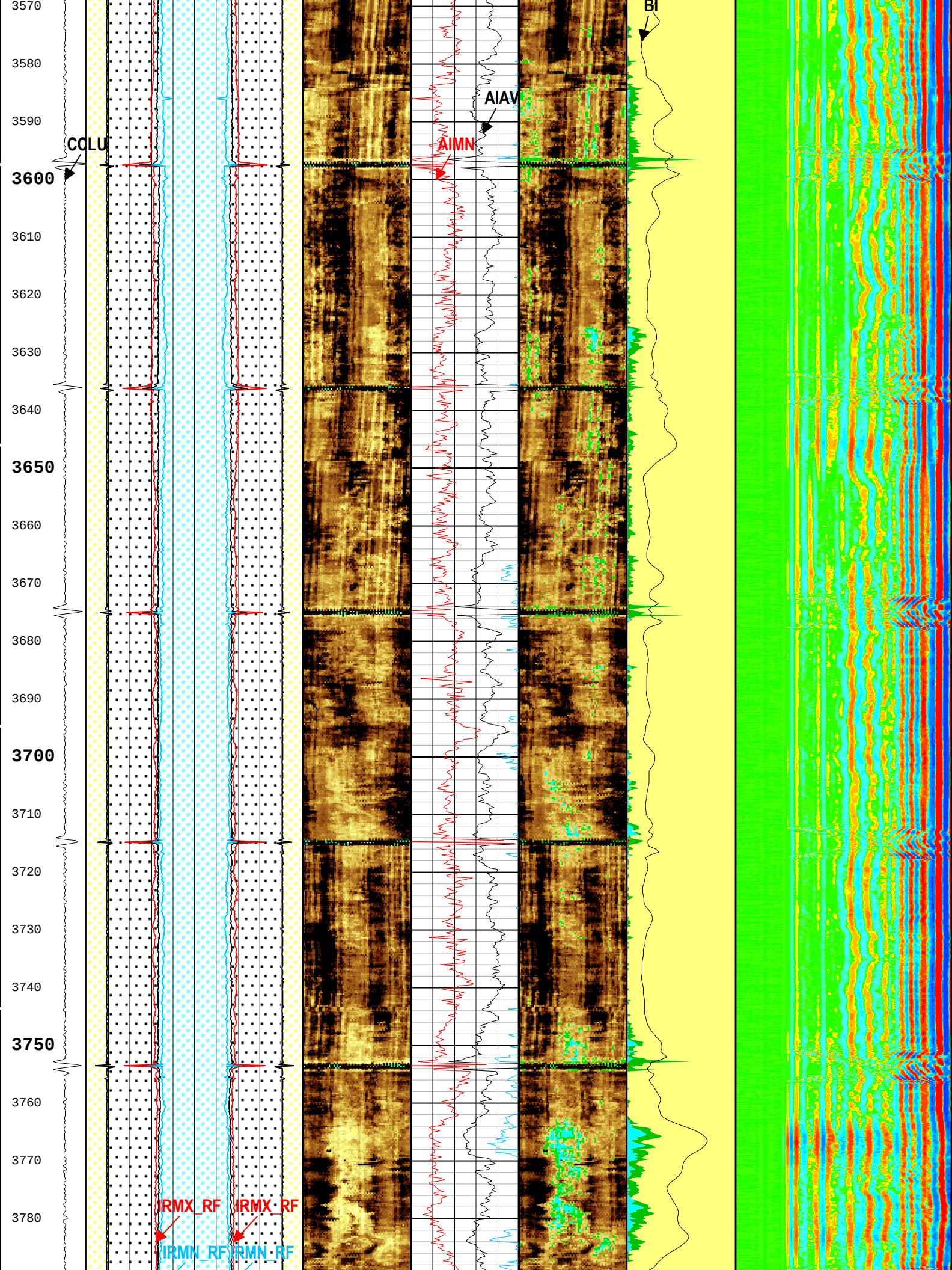
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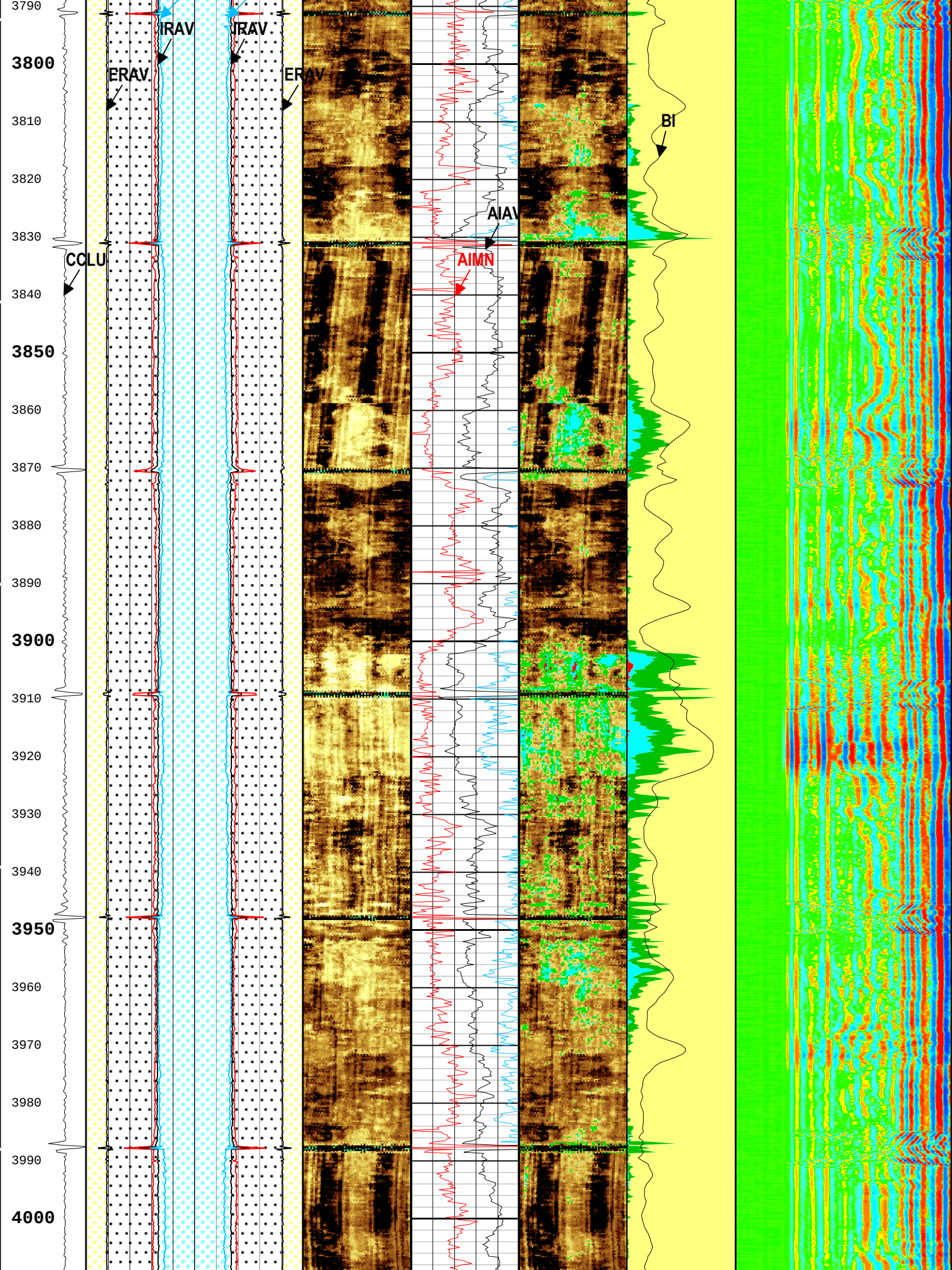
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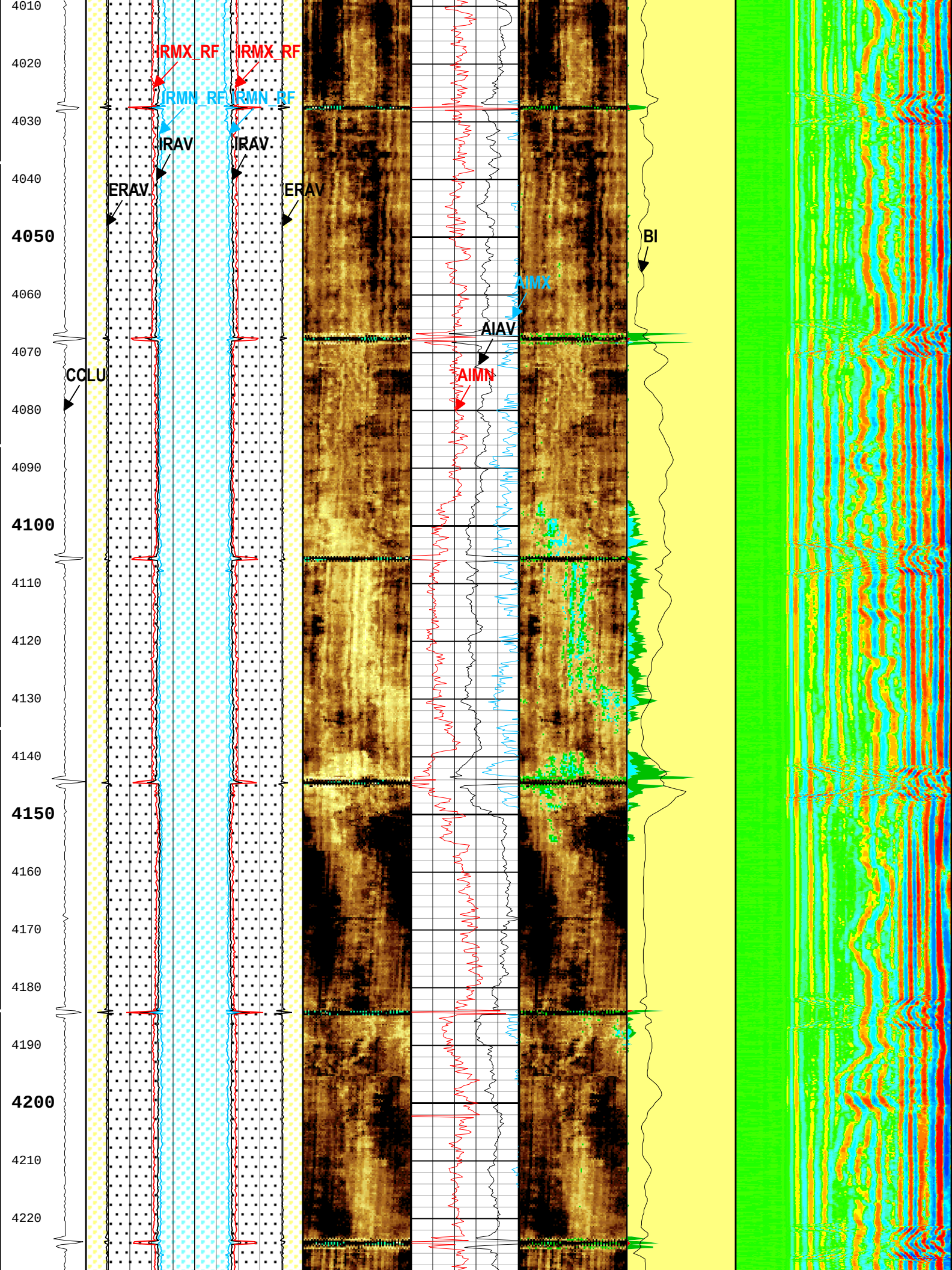
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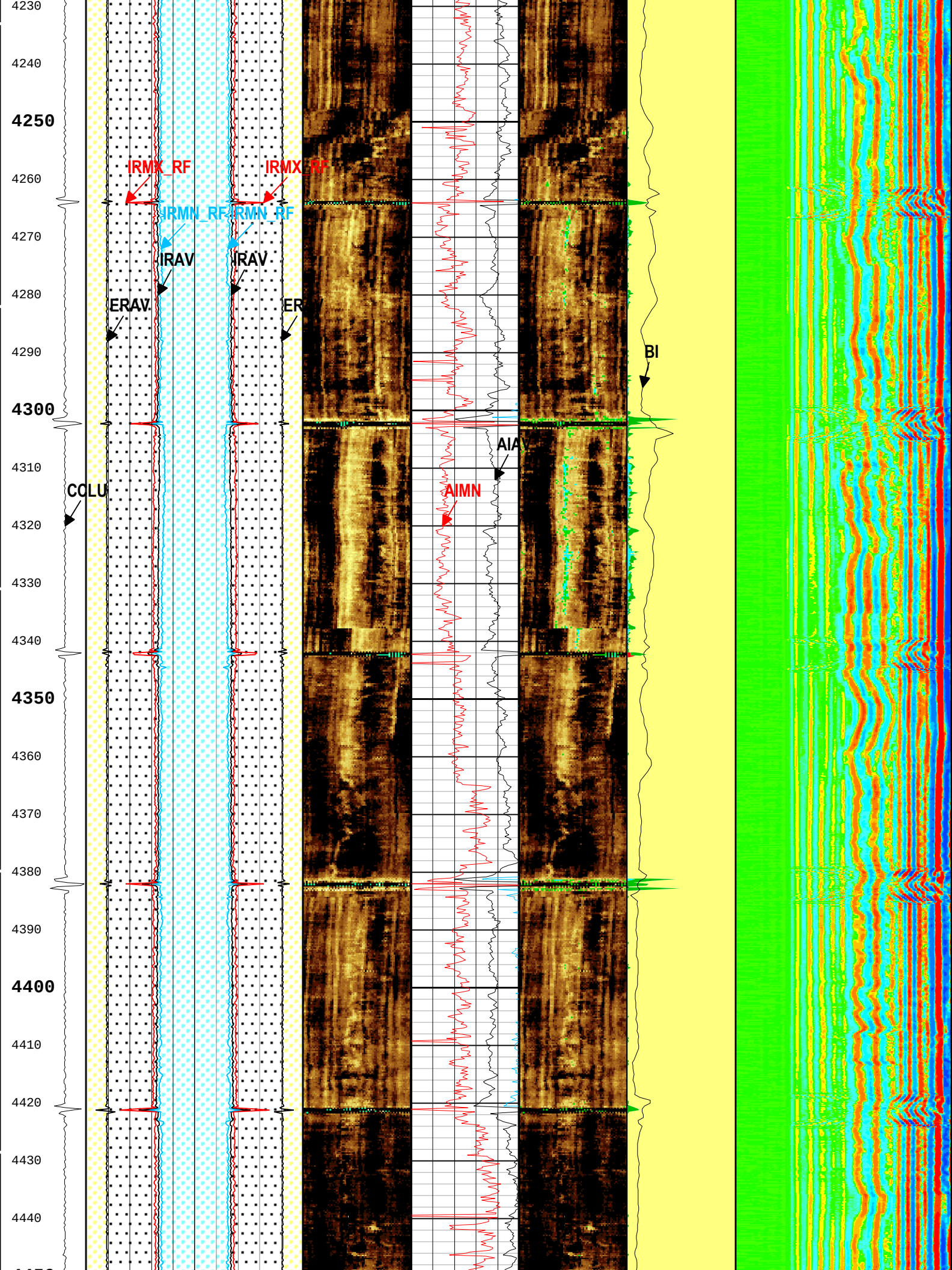
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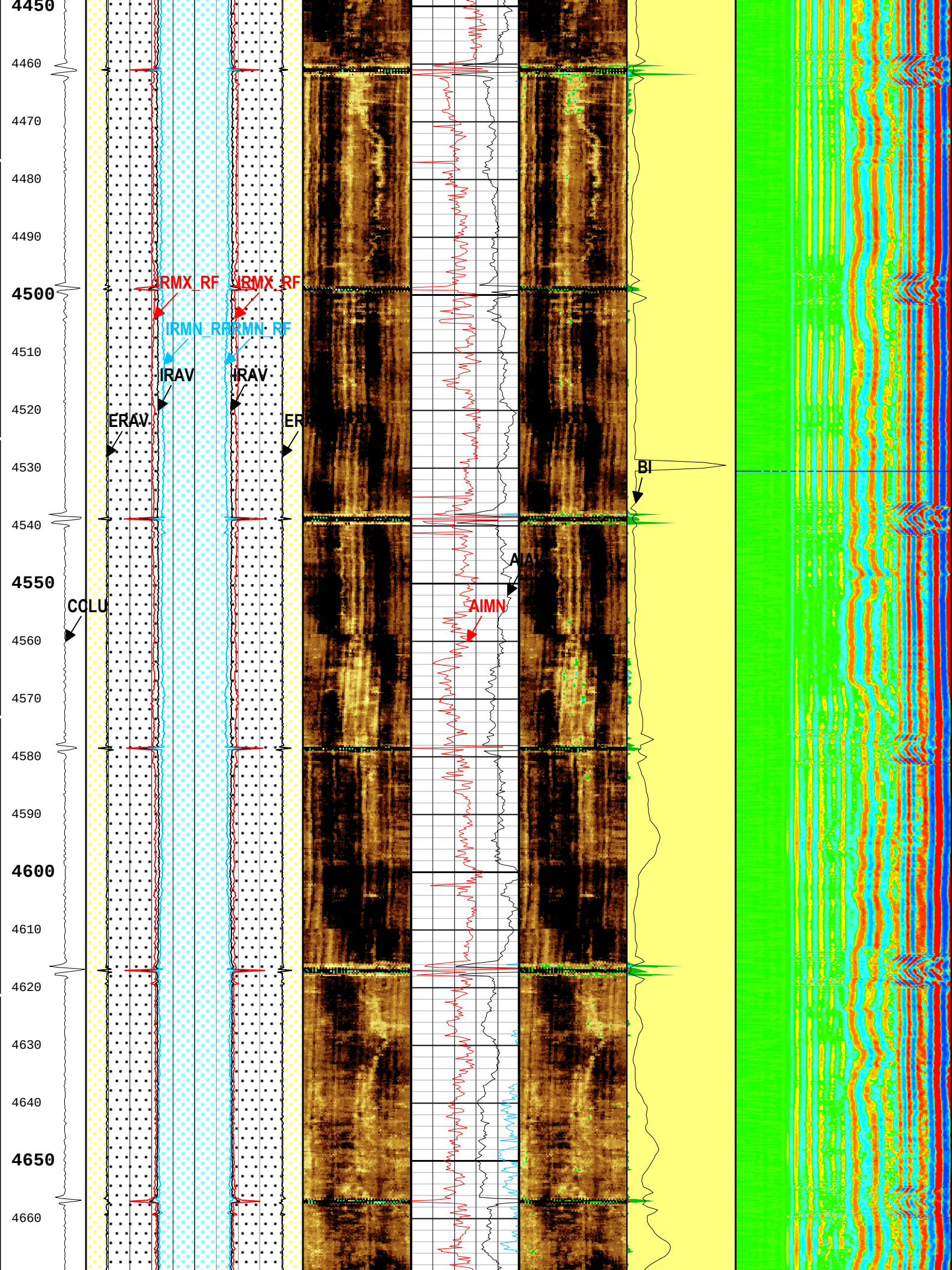
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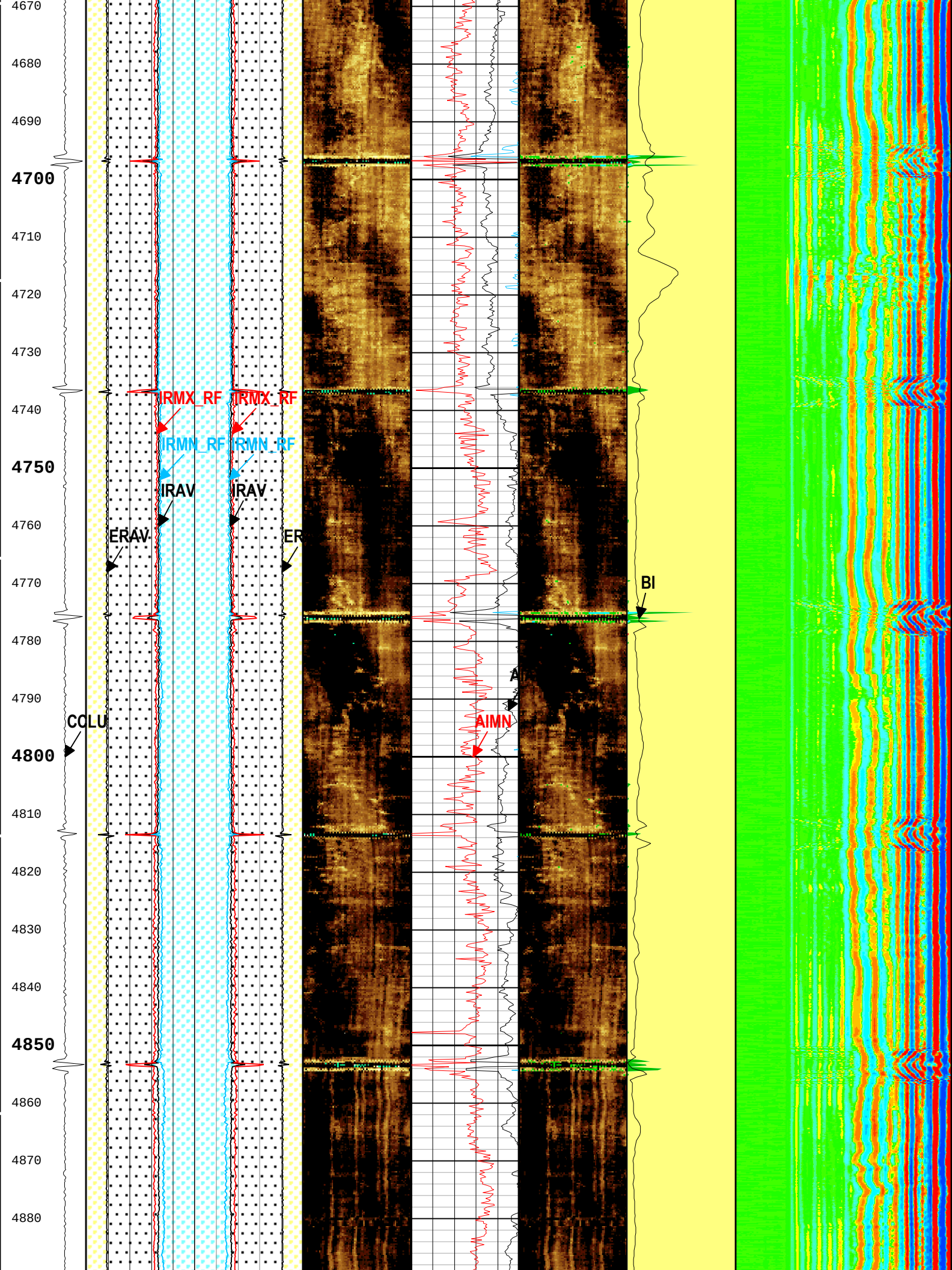
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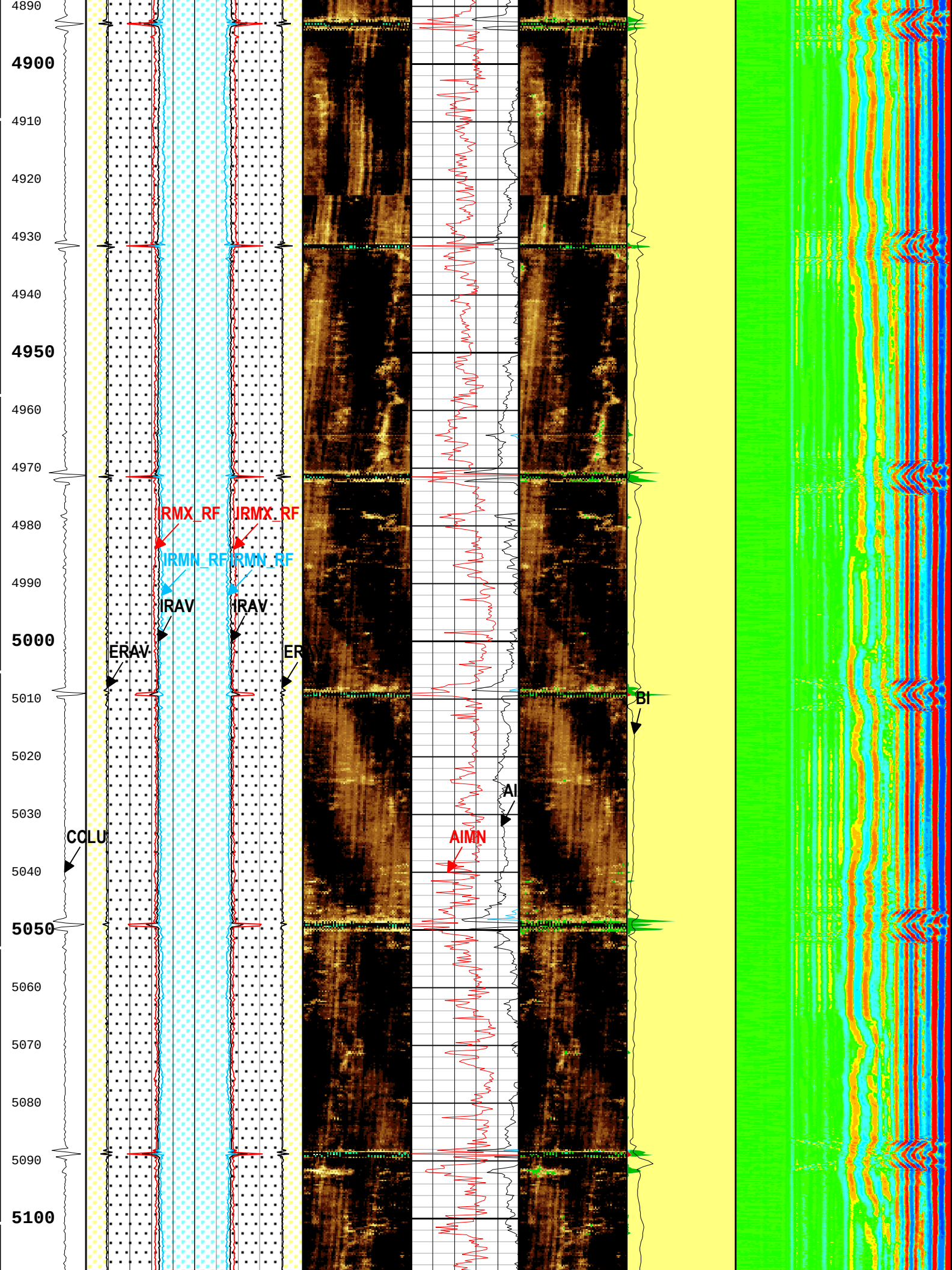
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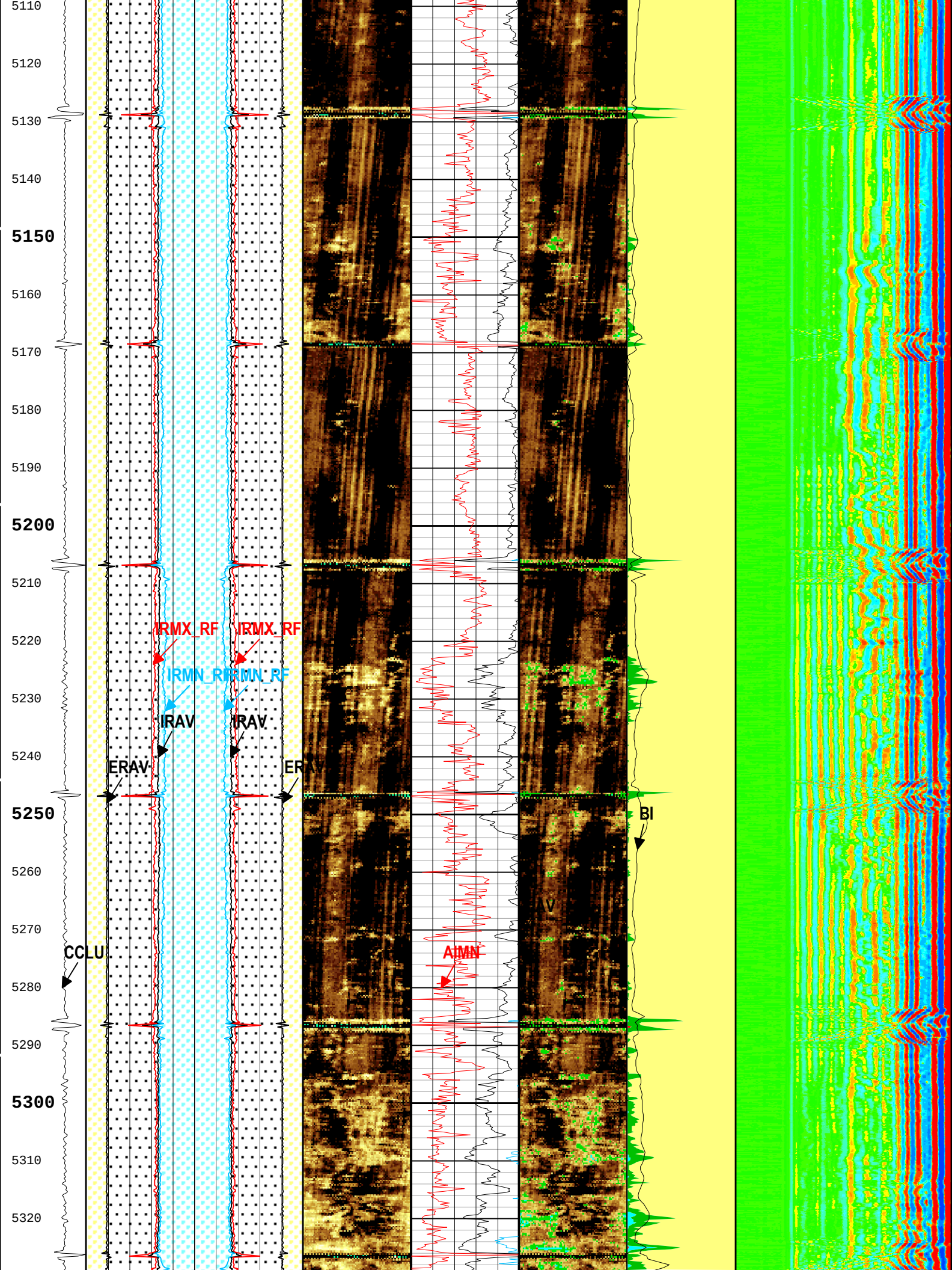
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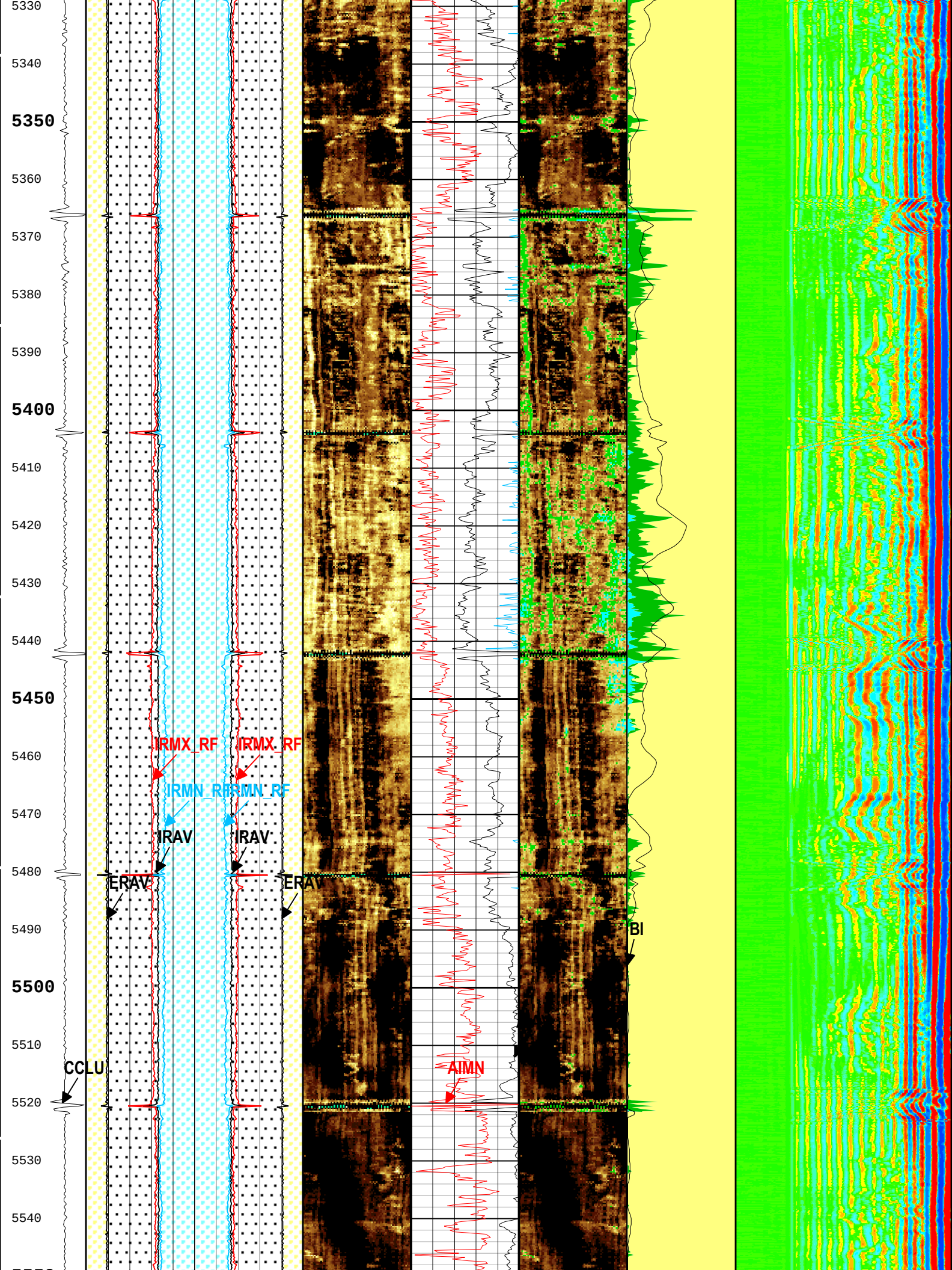
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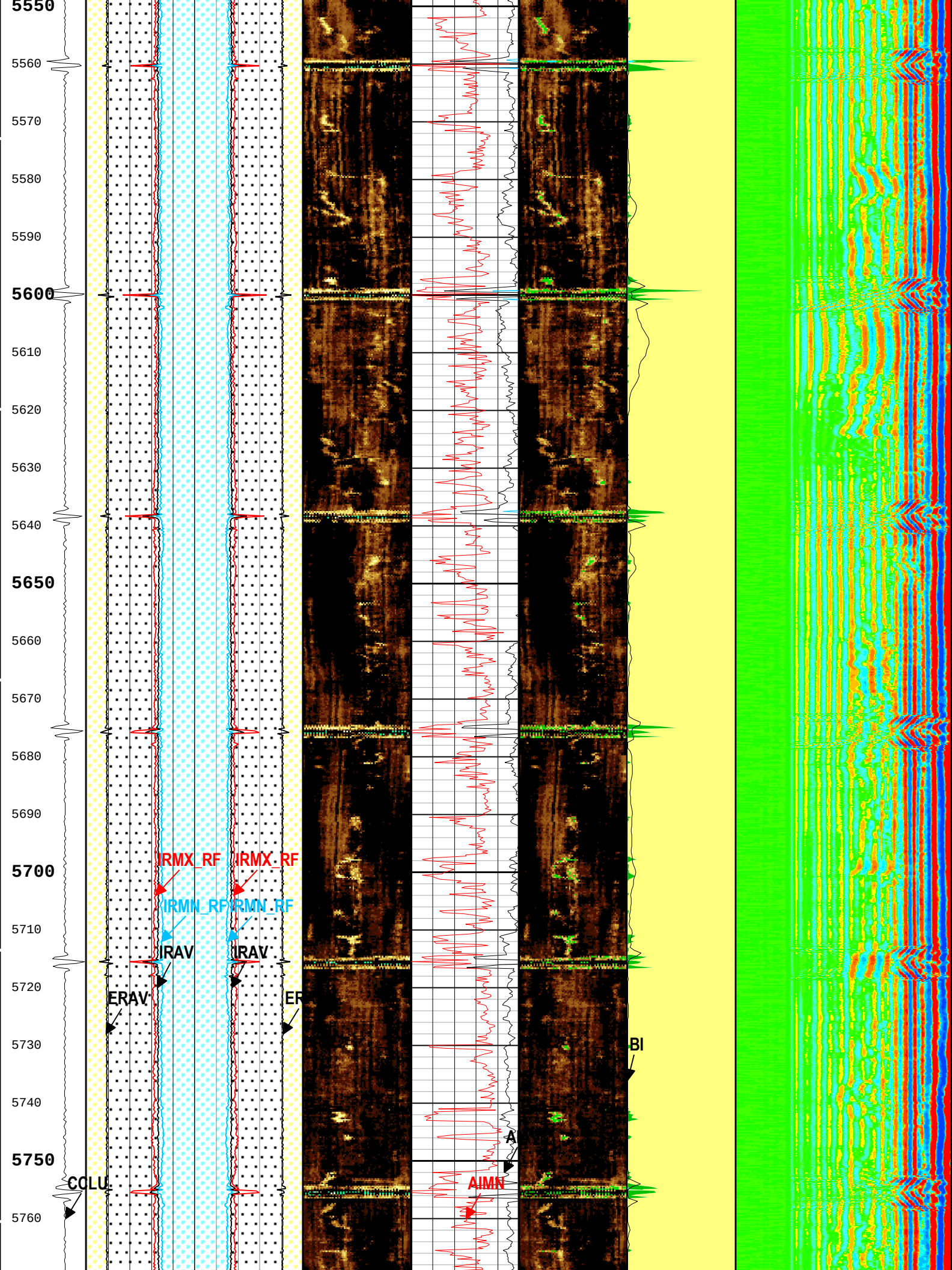
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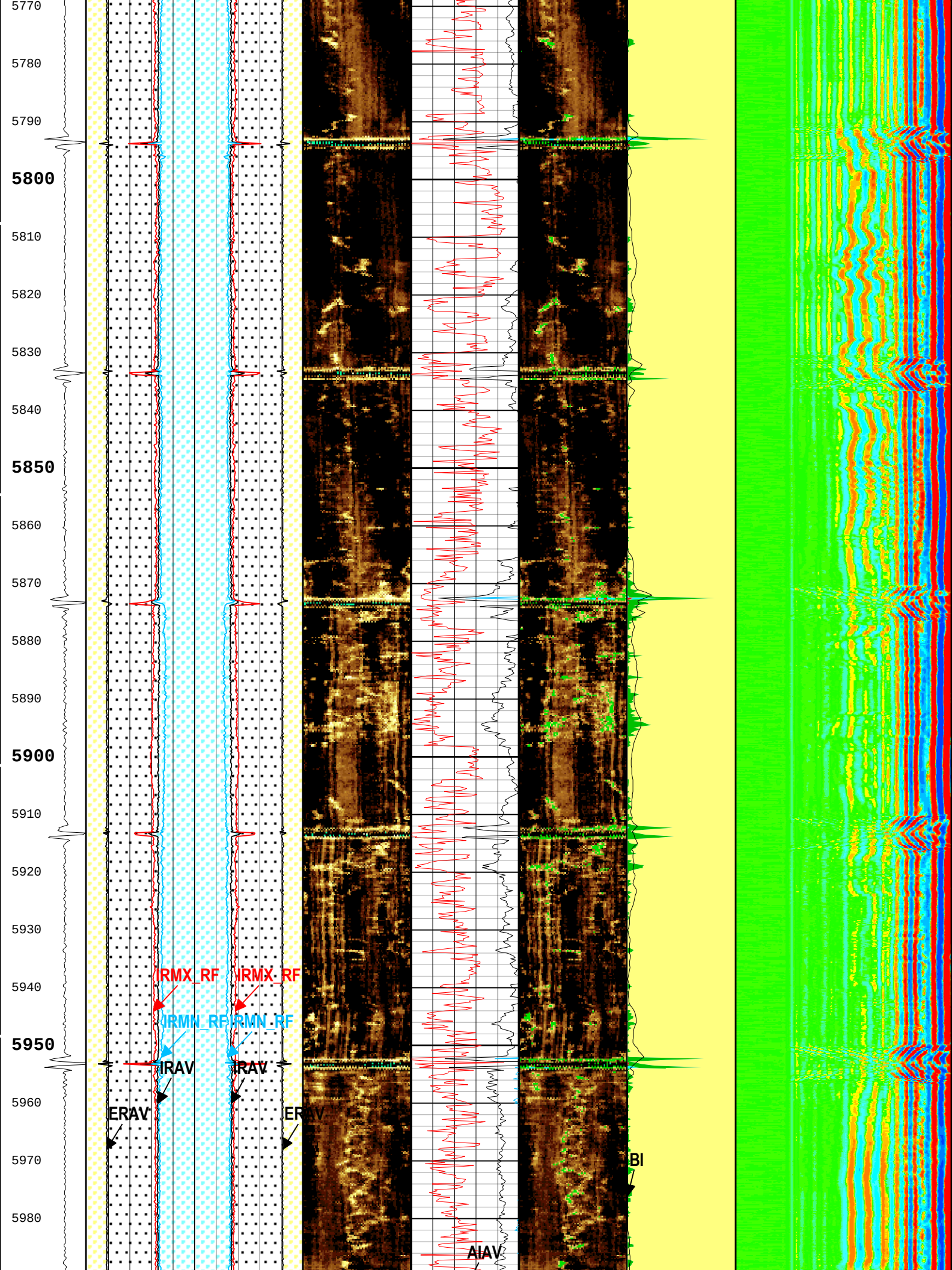
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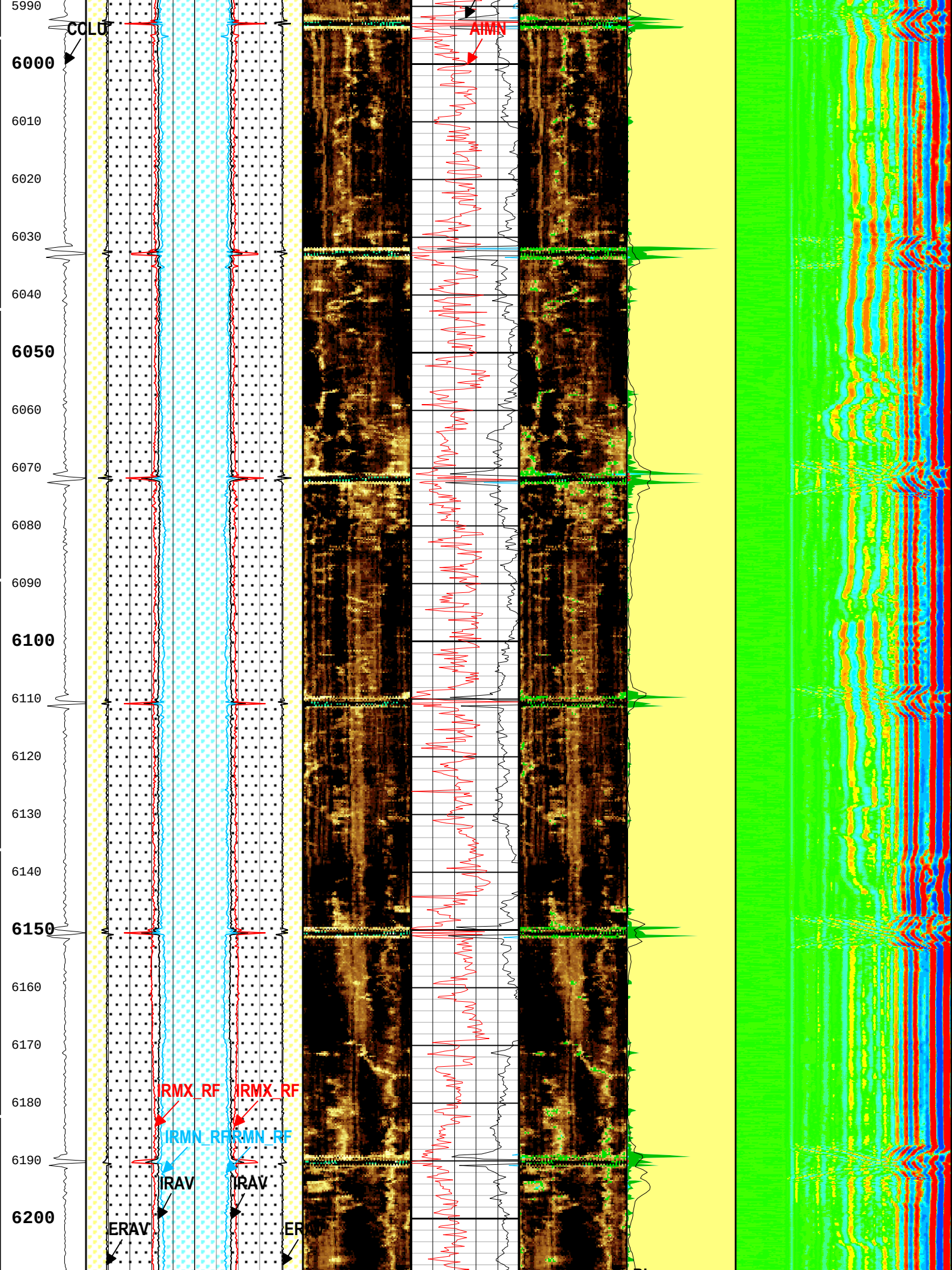
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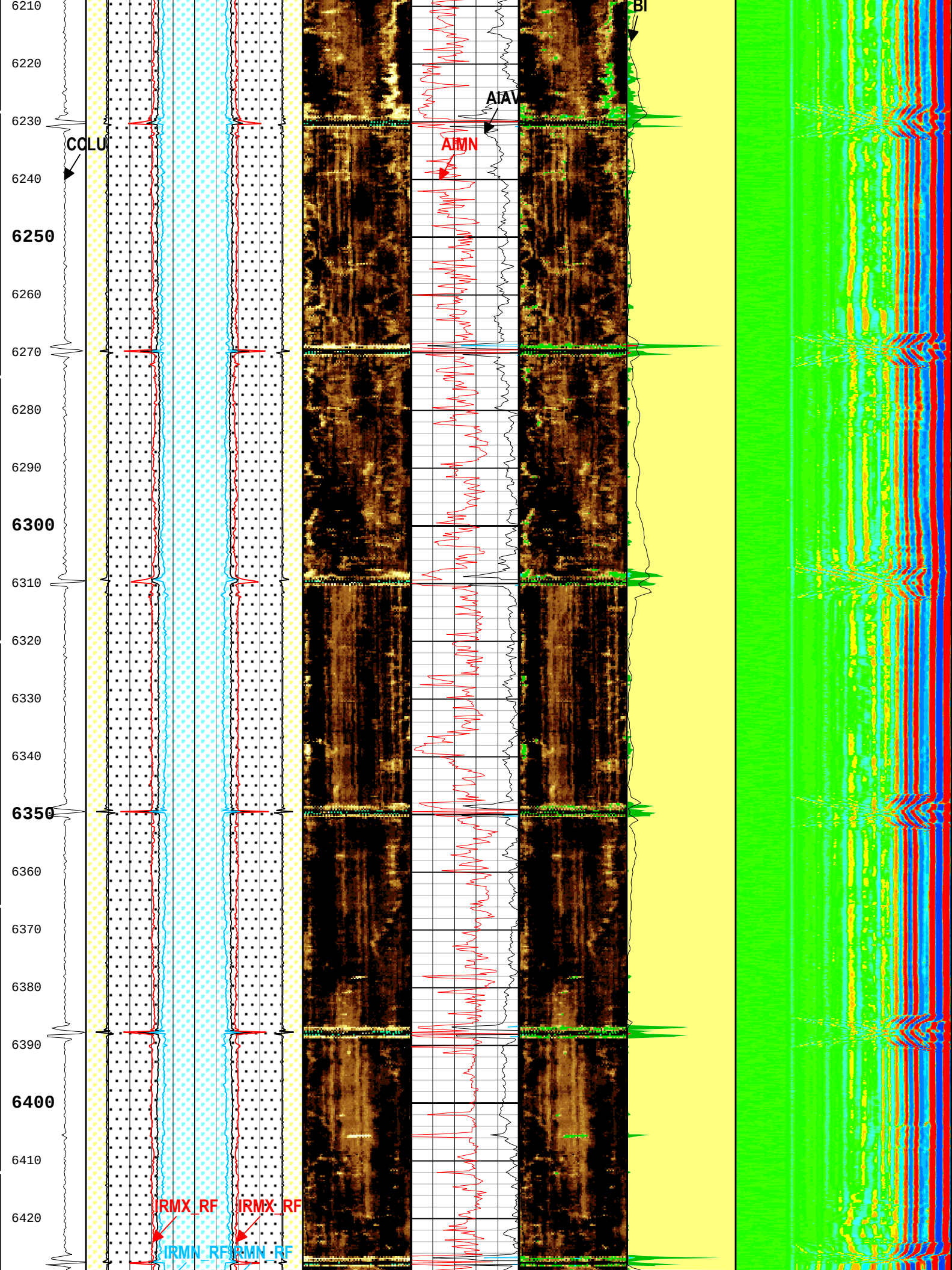
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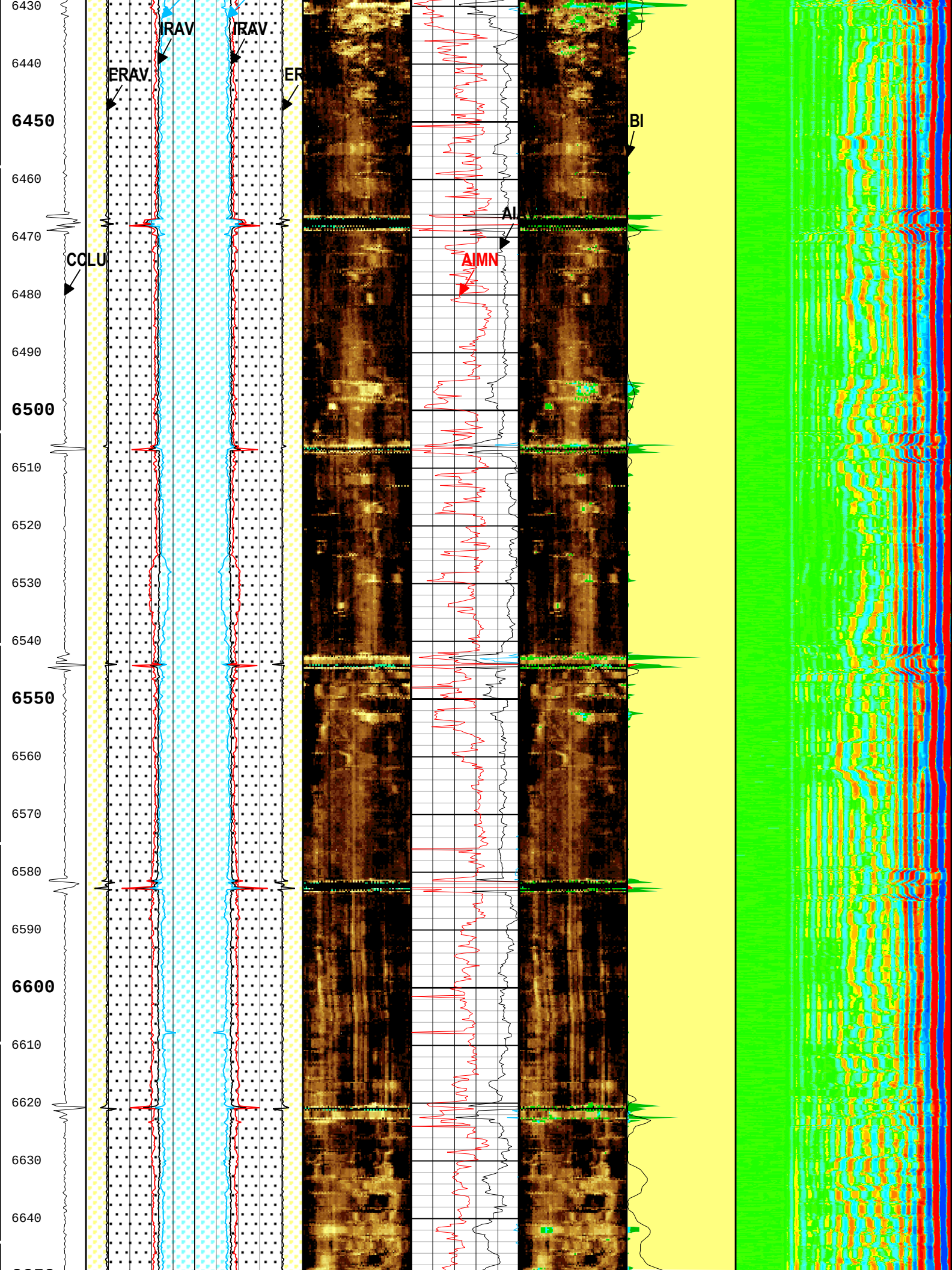
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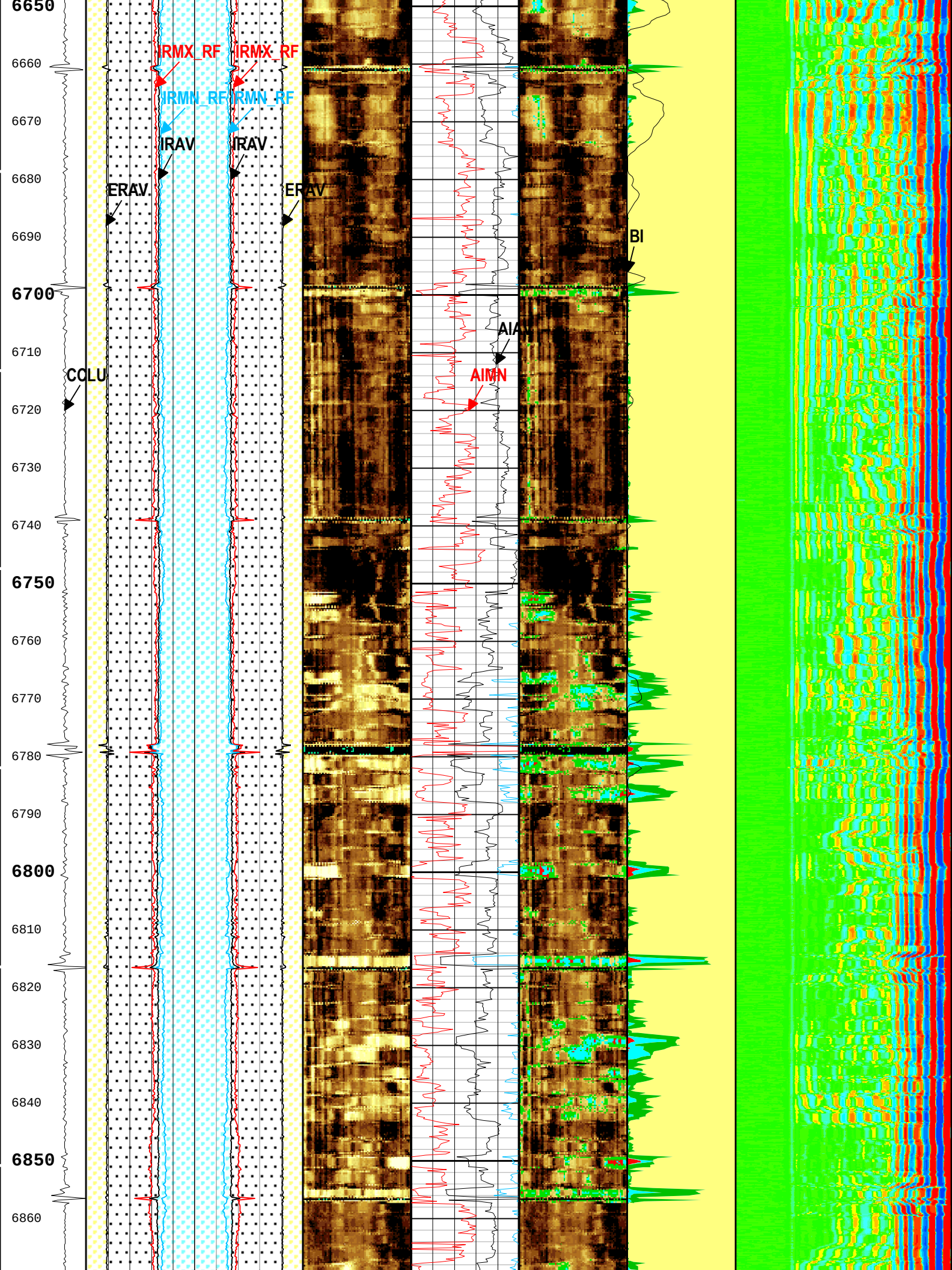
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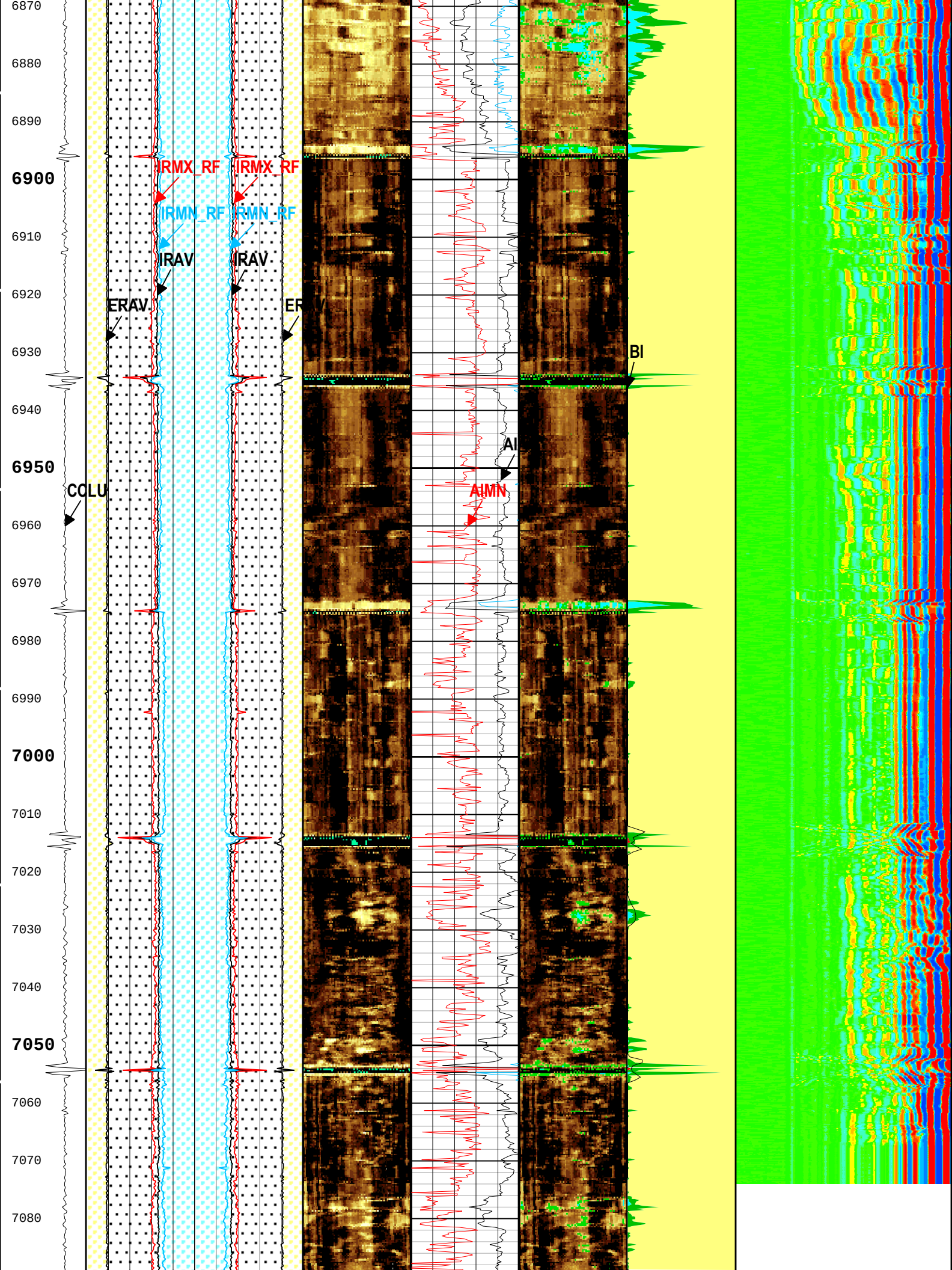
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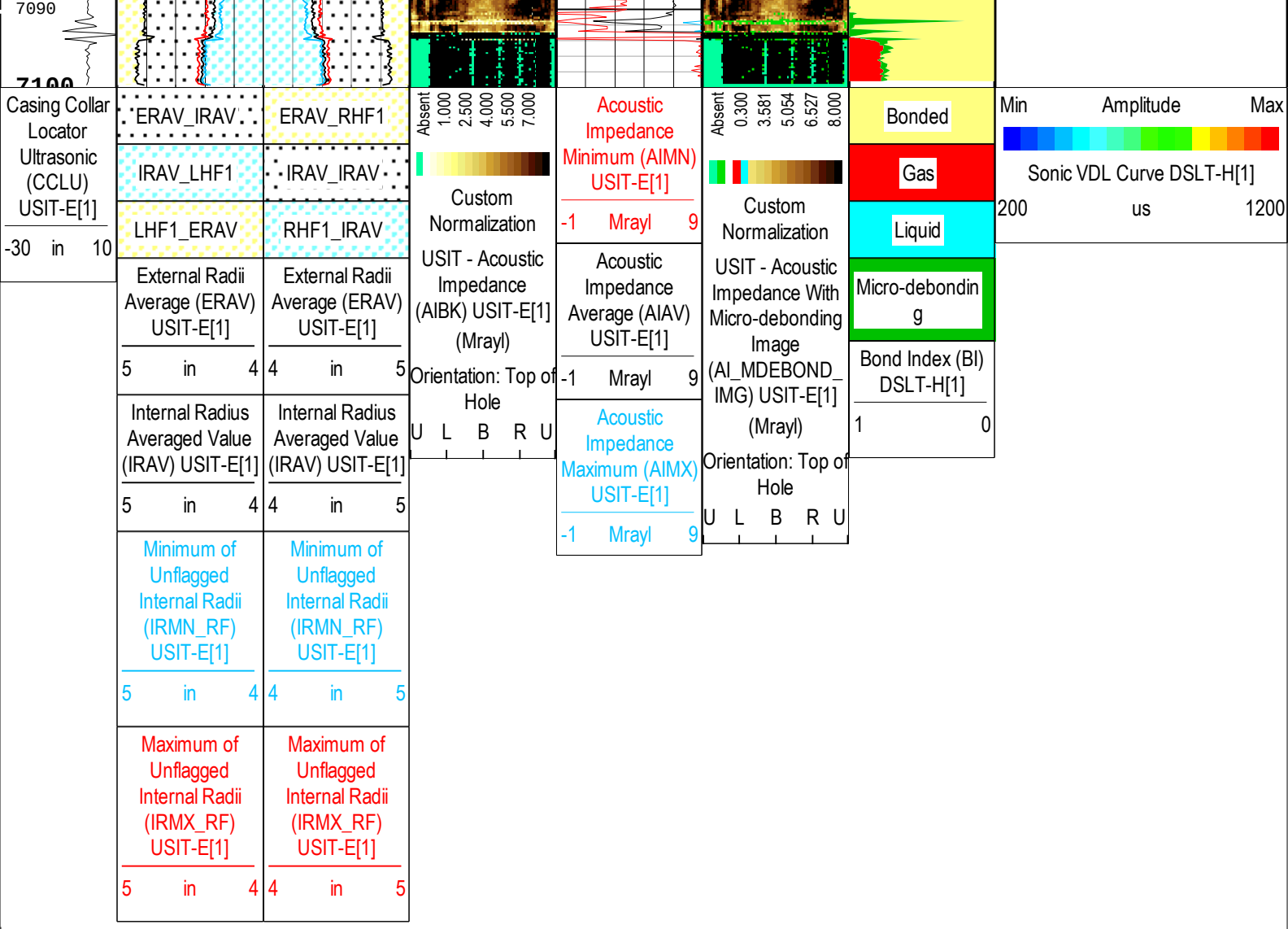

Description: USI VDL Cement Format: Log (LBV1_USI-VDL (DSLT) Cement 9.625inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 16-Mar-2016 22:45:28

Channel Processing Parameters

16Mar2016: 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	
BILI	Bond Index Level for Zone Isolation	DSLT-H	0.8	
BS	Bit Size	WLSESSION	14	in
CASING_PRATIO	Casing Poisson Ratio	USIT-E	Standard Poisson Ratio	
CBLG	CBL Gate Width	DSLT-H	100	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLT-H	52	mV
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	0.472	in
DETE	Delta-T Detection	DSLT-H	E1	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FCF	CBL Fluid Compensation Factor	DSLT-H	1.01	
FDIL	FPM Data Interpolation Interval	USIT-E	0	ft

PDI	PPM Data Interpolation Interval	USIT-E	0	ft
GOBO_CURR	Good Bond in Arbitrary Cement	DSLT-H	4.74	mV
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	9.3	dB/ft
MCI	Minimum Cemented Interval for Isolation	DSLT-H	Depth Zoned	ft
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	29.67	us
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLT-H	100	
MSA	Minimum Sonic Amplitude	DSLT-H	2.61	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	DSLT-H	2.61	mV
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.11	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1	
NMSG	Near Minimum Sliding Gate	DSLT-H	280	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	1.378	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
TCUB	T^3 Processing Level	USIT-E	Loop	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	120	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	65	%
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0.1	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	FreePipe Norm.	
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	1.48	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl

ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

16Mar2016Depth Zoned Parameters

Parameter	Value	Start (ft)	Stop (ft)
MCI	21.68	1	1012
MCI	14.81	1012	7100

All depth are actual.

Tool Control Parameters

16Mar2016: 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	4.874	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	50	V
HRES	Horizontal Resolution	USIT-E	5 deg	
MOTOR_PROTECT	Motor Protection	USIT-E	Off	
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 5 deg at 3.0 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	7112	ft
USSP	Ultrasonic Service	USIT-E	USI	
VRES	Vertical Resolution	USIT-E	3.0 in	
WINB	Window Begin Time	USIT-E	35	us
WINE	Window End Time	USIT-E	85.35	us
WMOD	Waveform Firing Mode	DSLT-H	Full	

Composite 1

Main Pass 5 IN = 100 FT

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
16Mar2016	Log[4]:Up	Up	2075.53 ft	7100.62 ft	16-Mar-2016 11:36:33 AM	16-Mar-2016 1:27:21 PM	ON	-10.00 ft	Yes
16Mar2016	Log[5]:Up	Up	194.84 ft	2291.90 ft	16-Mar-2016 1:31:17 PM	16-Mar-2016 2:31:41 PM	ON	-10.00 ft	Yes
16Mar2016	Log[6]:Up	Up	28.19 ft	401.83 ft	16-Mar-2016 2:34:30 PM	16-Mar-2016 2:51:45 PM	ON	-10.00 ft	Yes

All depths are referenced to toolstring zero

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Porter 50C

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: 16-Mar-2016 22:45:55

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 -4.799 -2.799 -0.800
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

ERAV
ERAV-IRAV
IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
5 in 4

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
5 in 4

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
5 in 4

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
5 in 4

IRAV
IRAV-ERAV
ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
4 in 5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
4 in 5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
4 in 5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
4 in 5

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[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

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[1] (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[1] (Mrayl)

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

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

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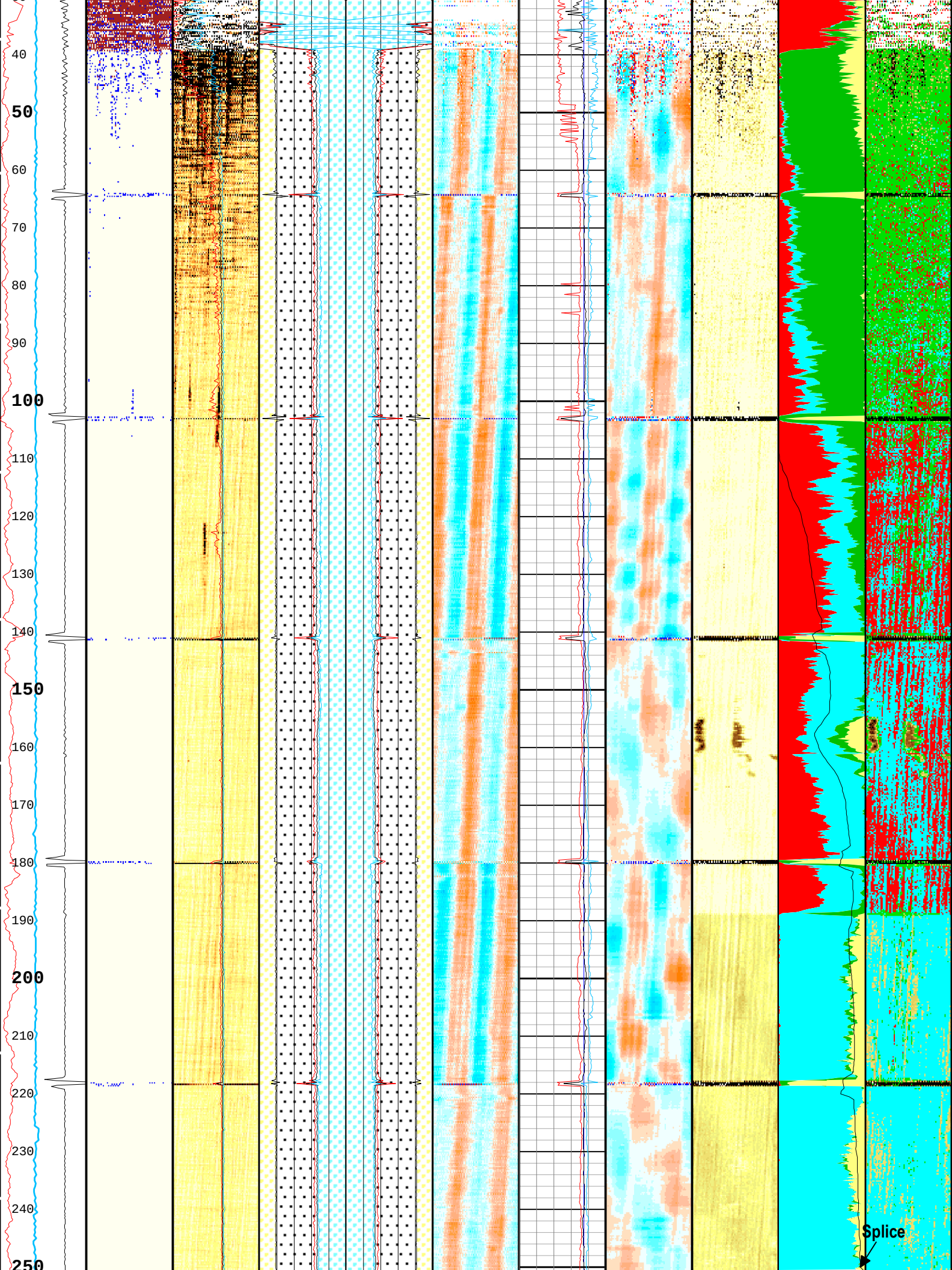
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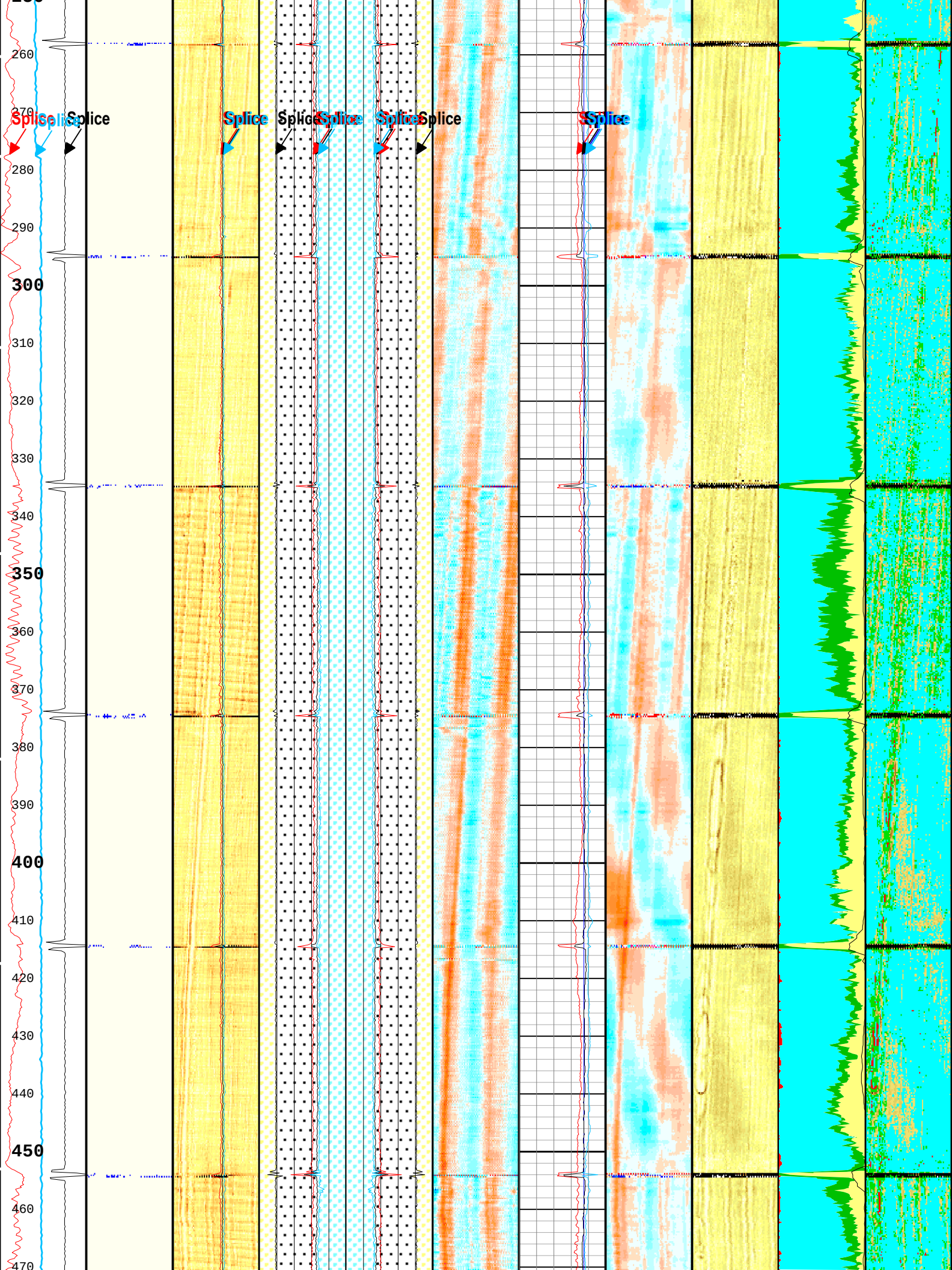
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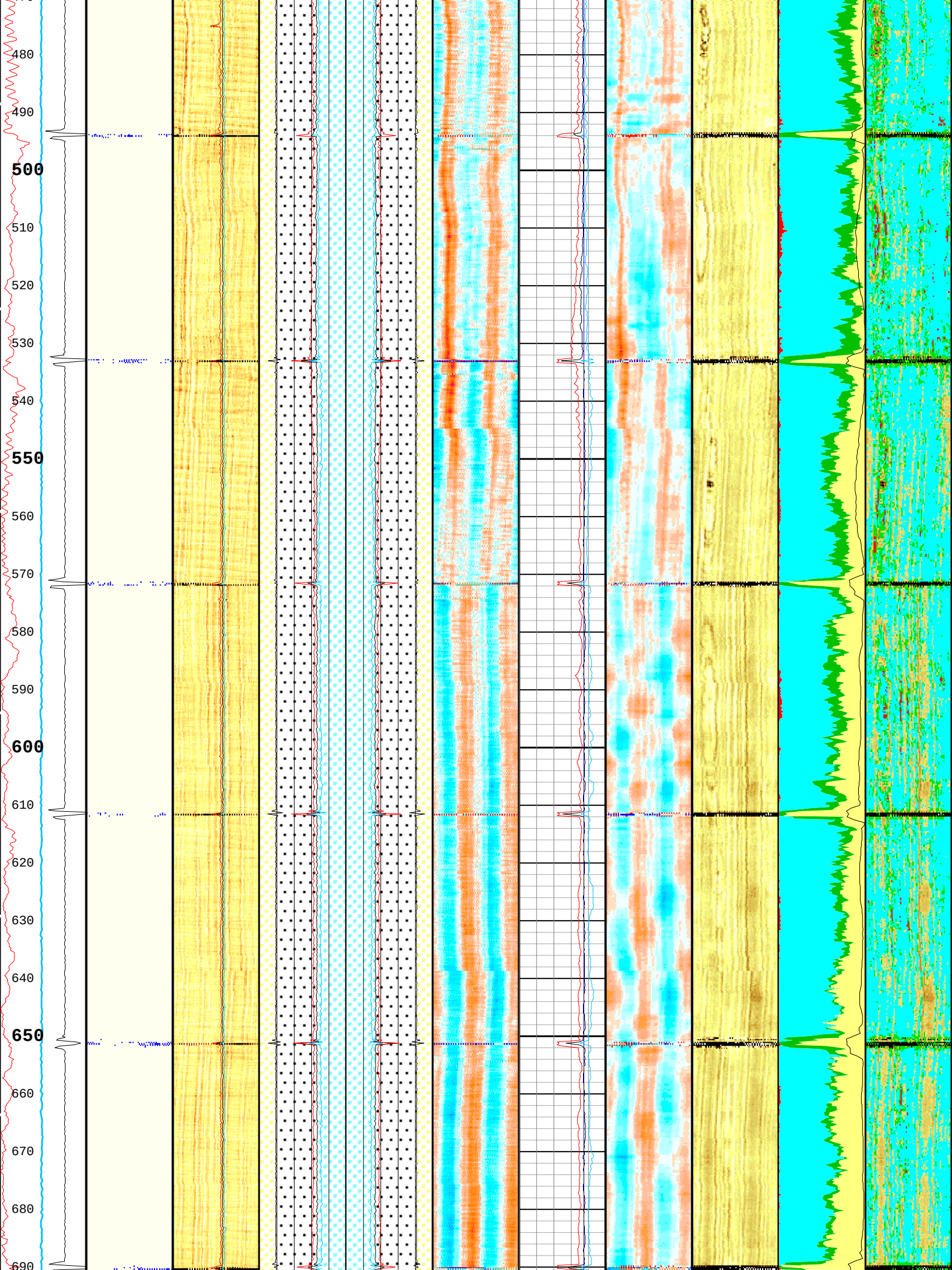
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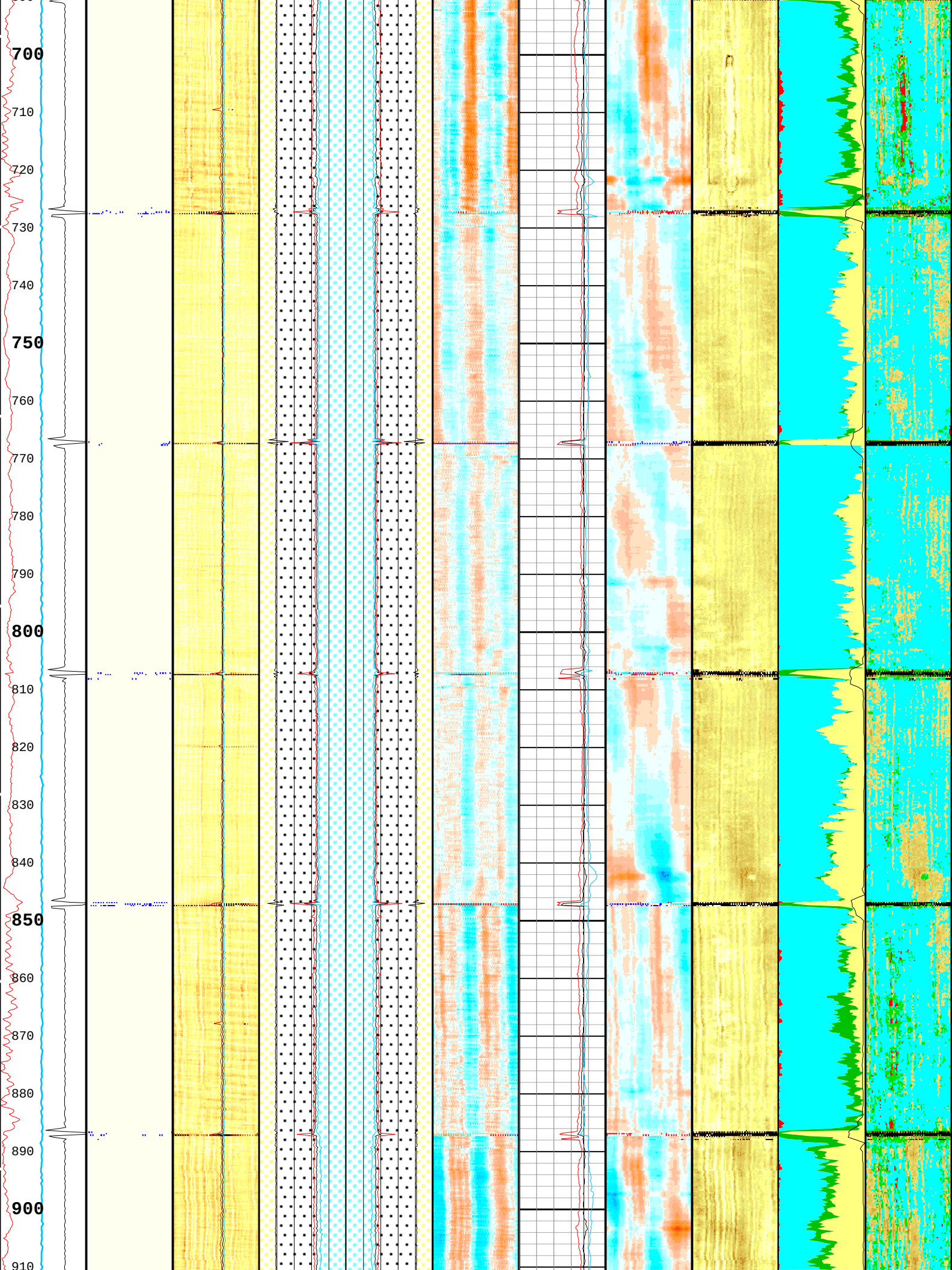
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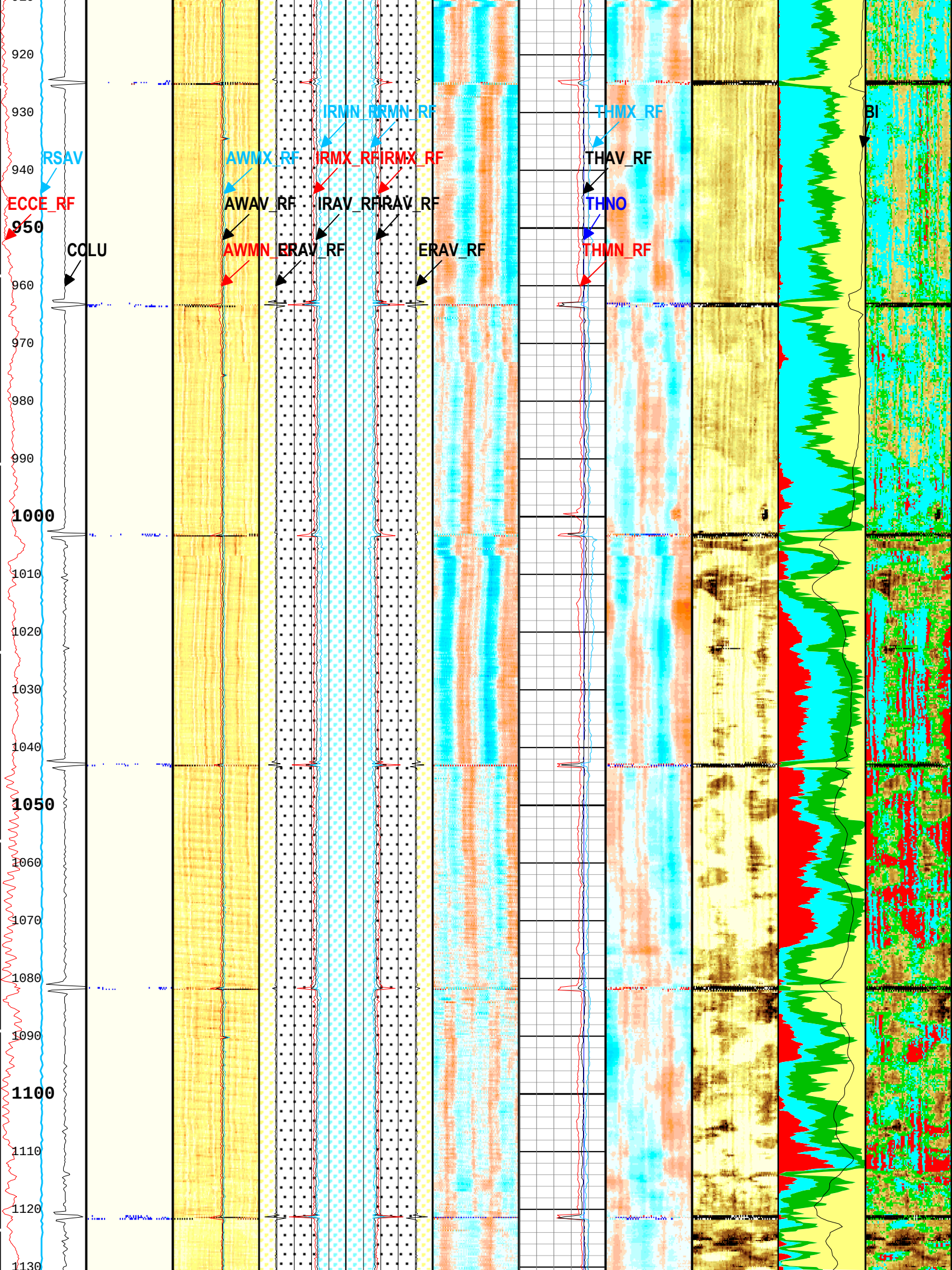
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COLU
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AWAV_RF
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IRMX_RF
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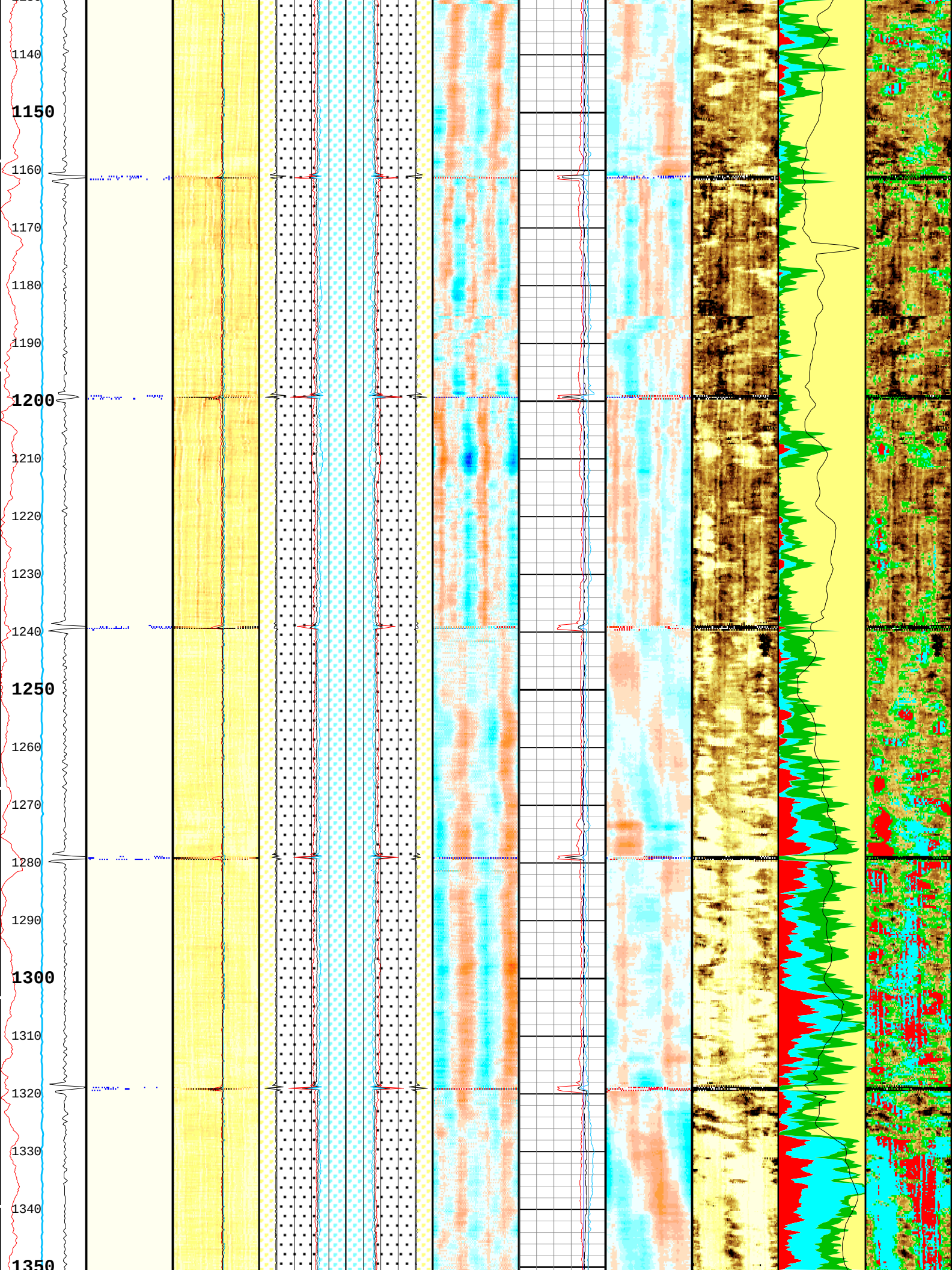
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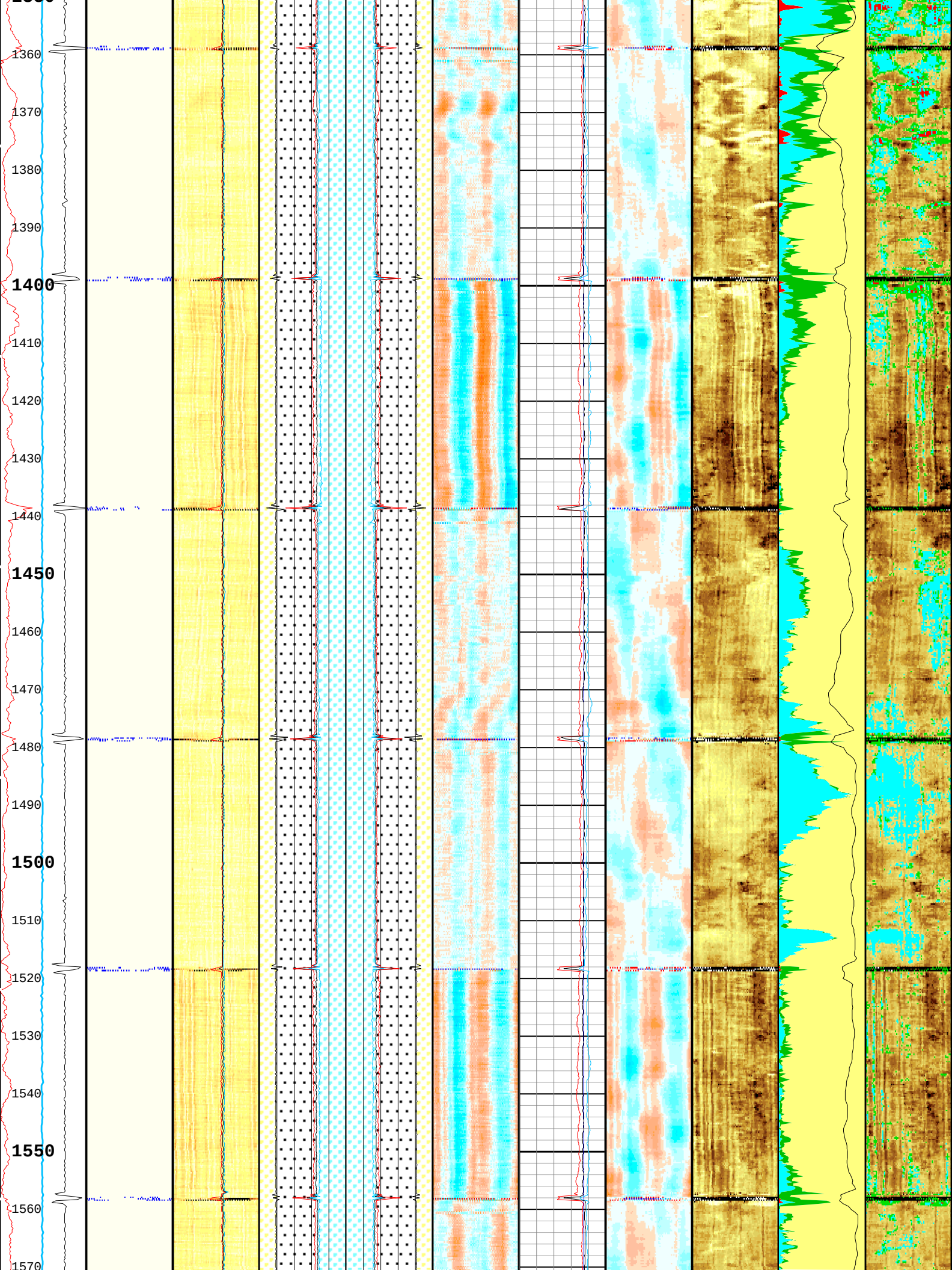
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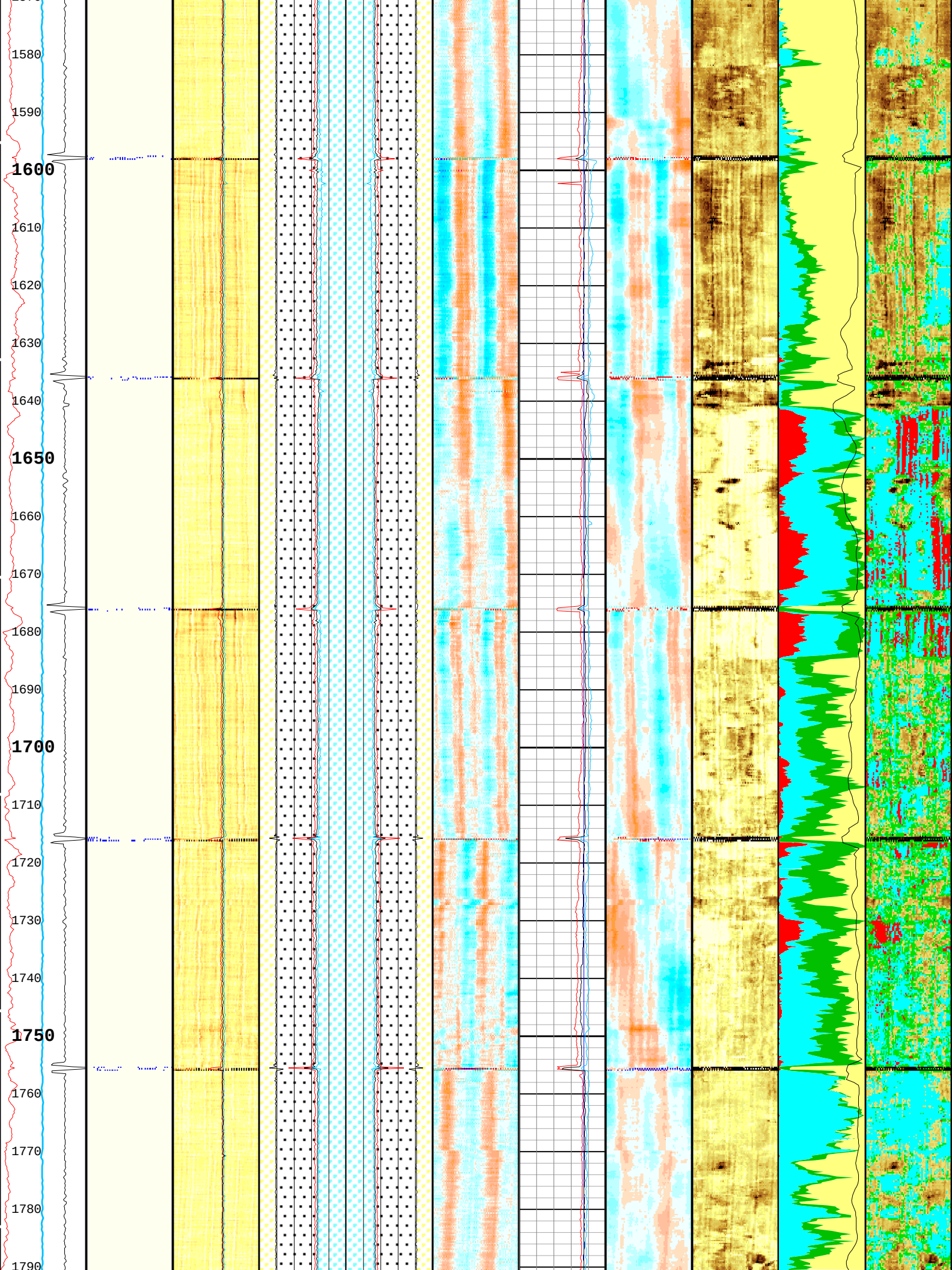
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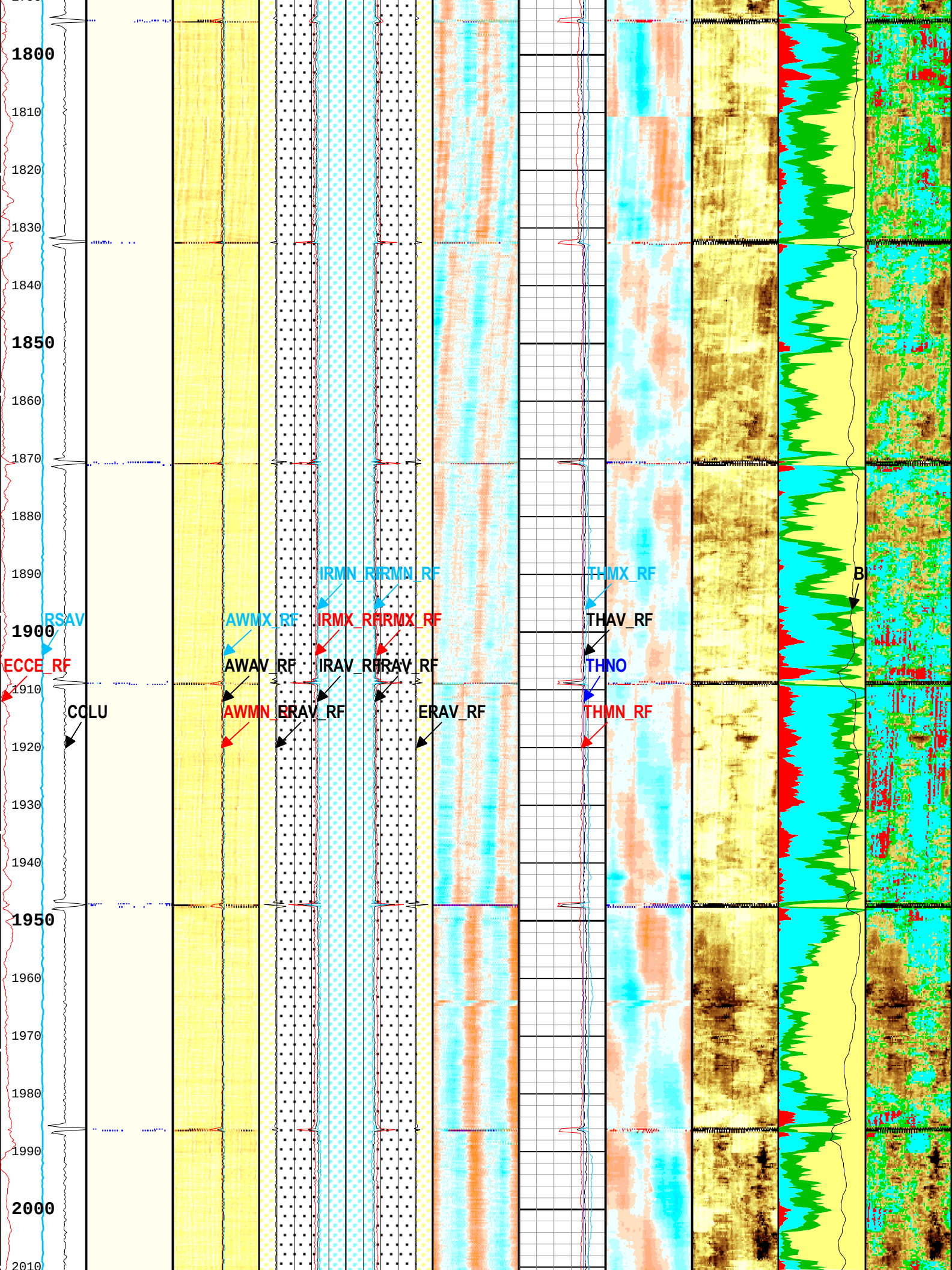
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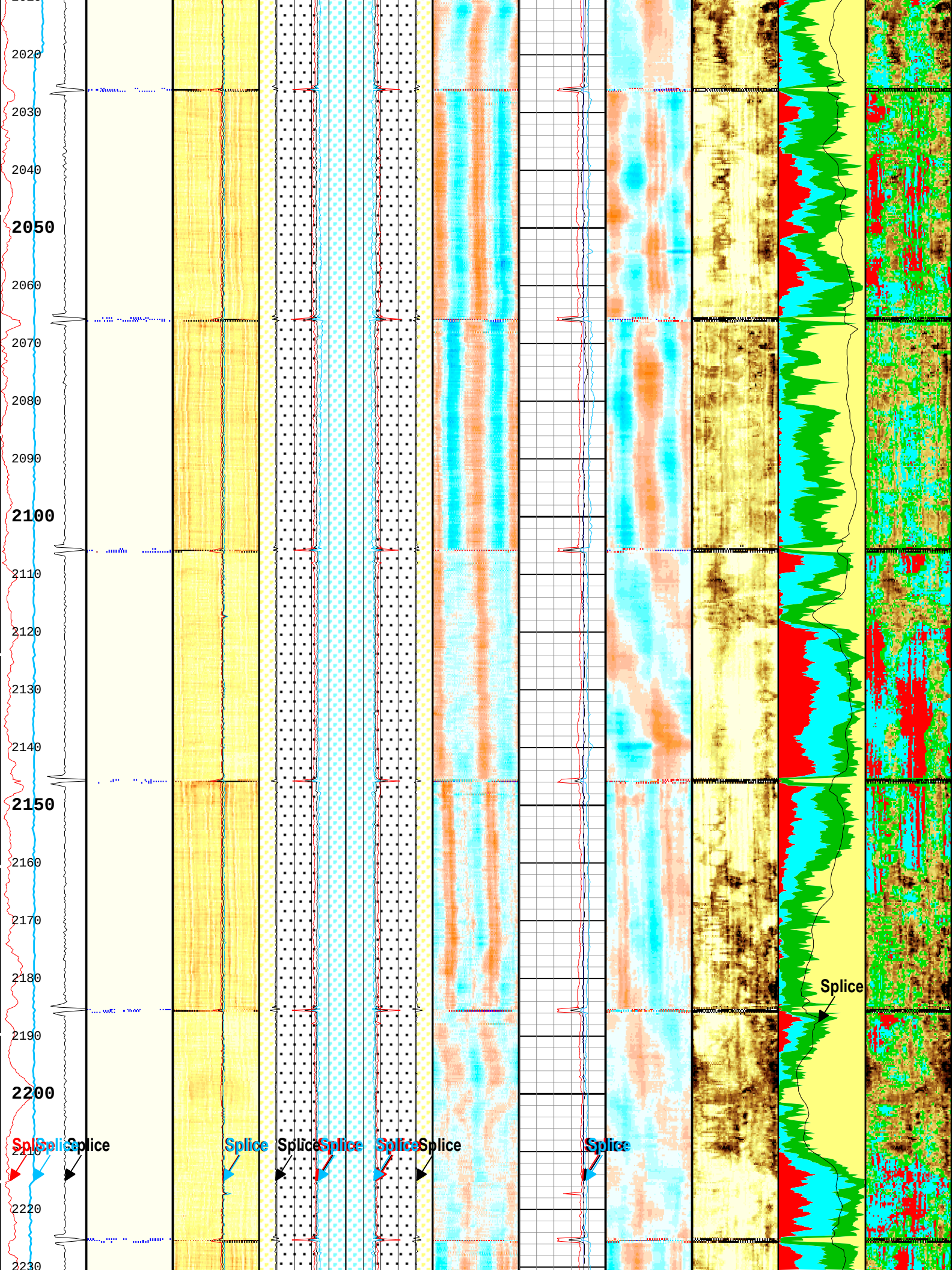
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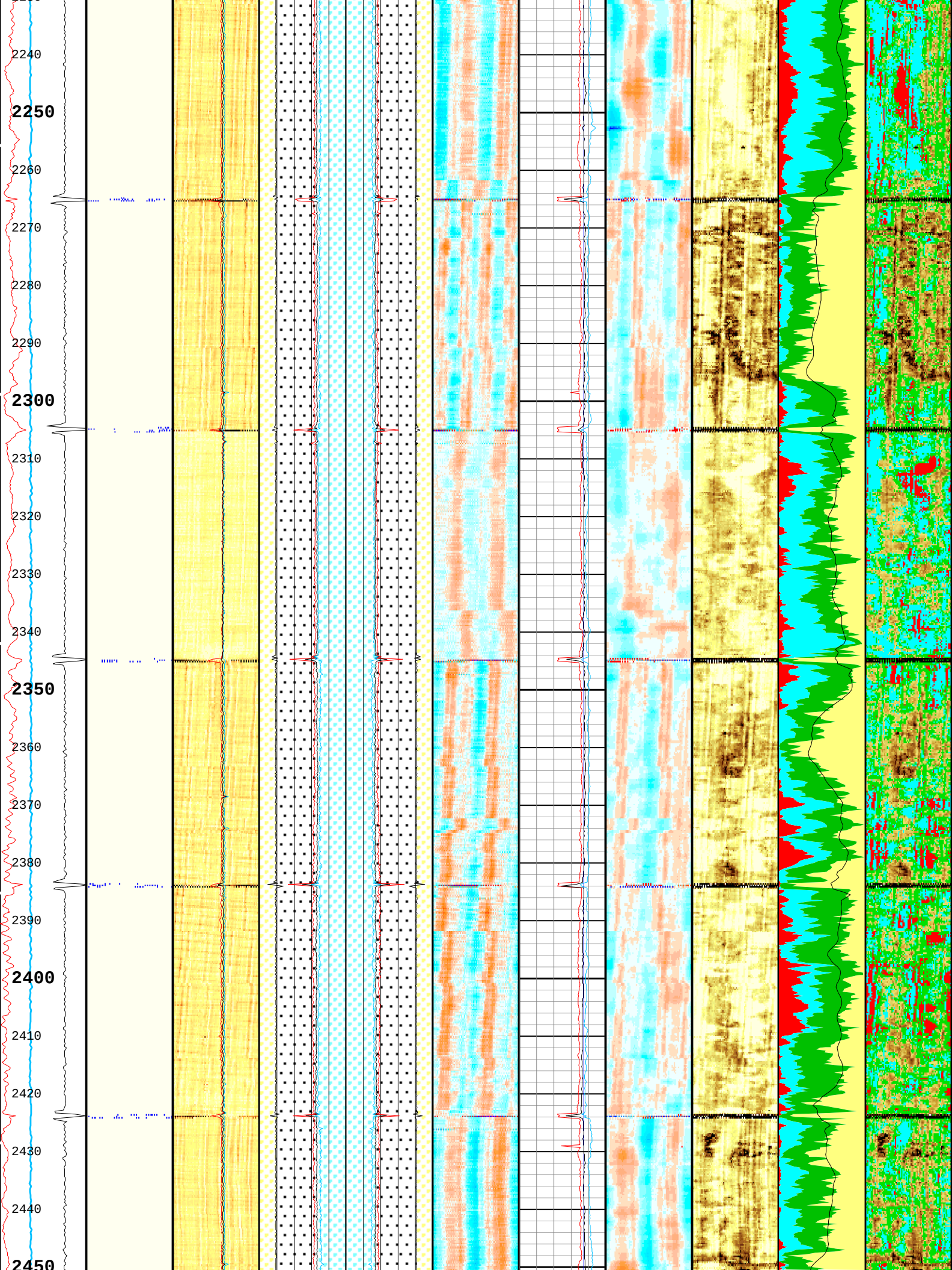
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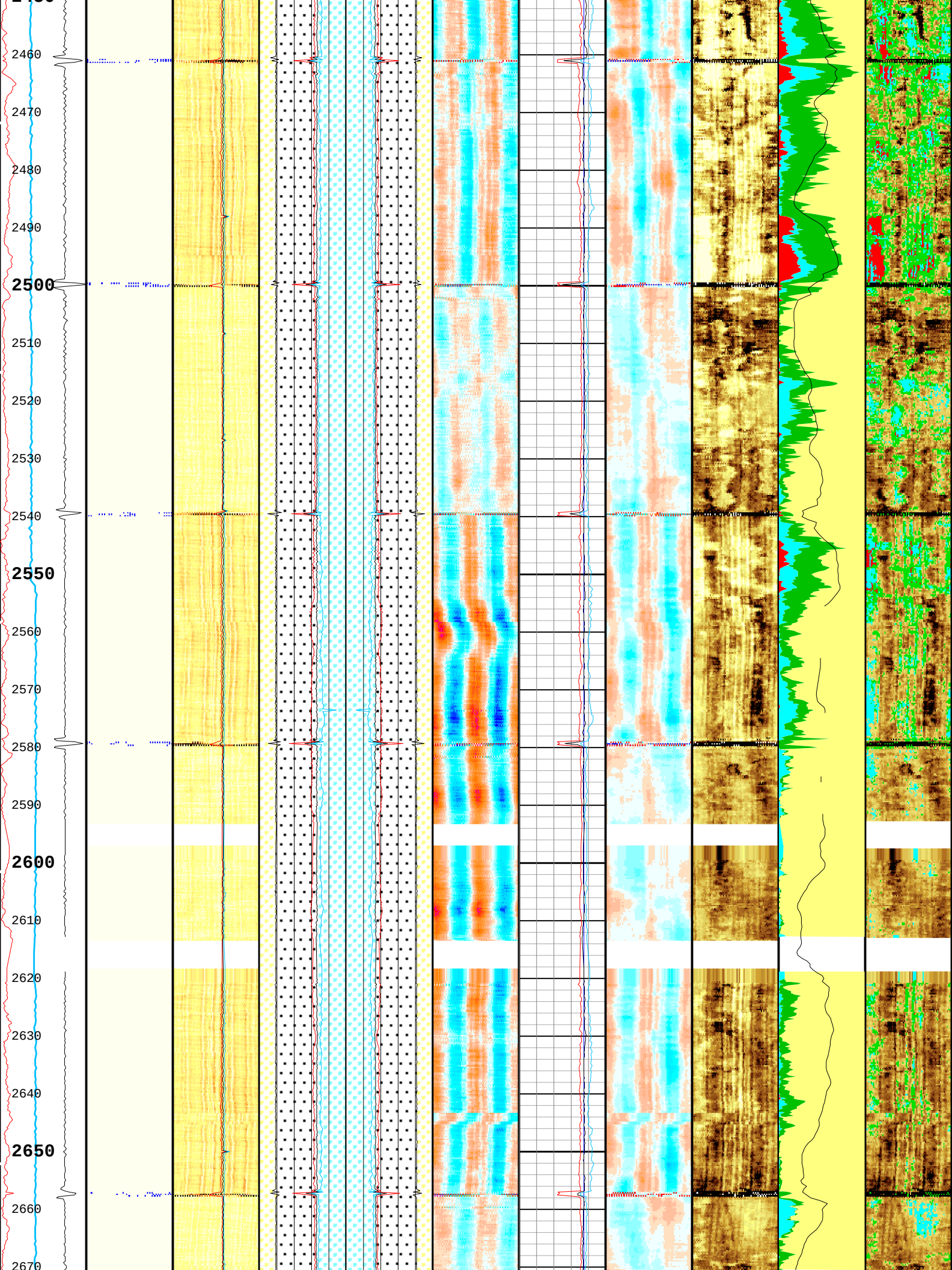
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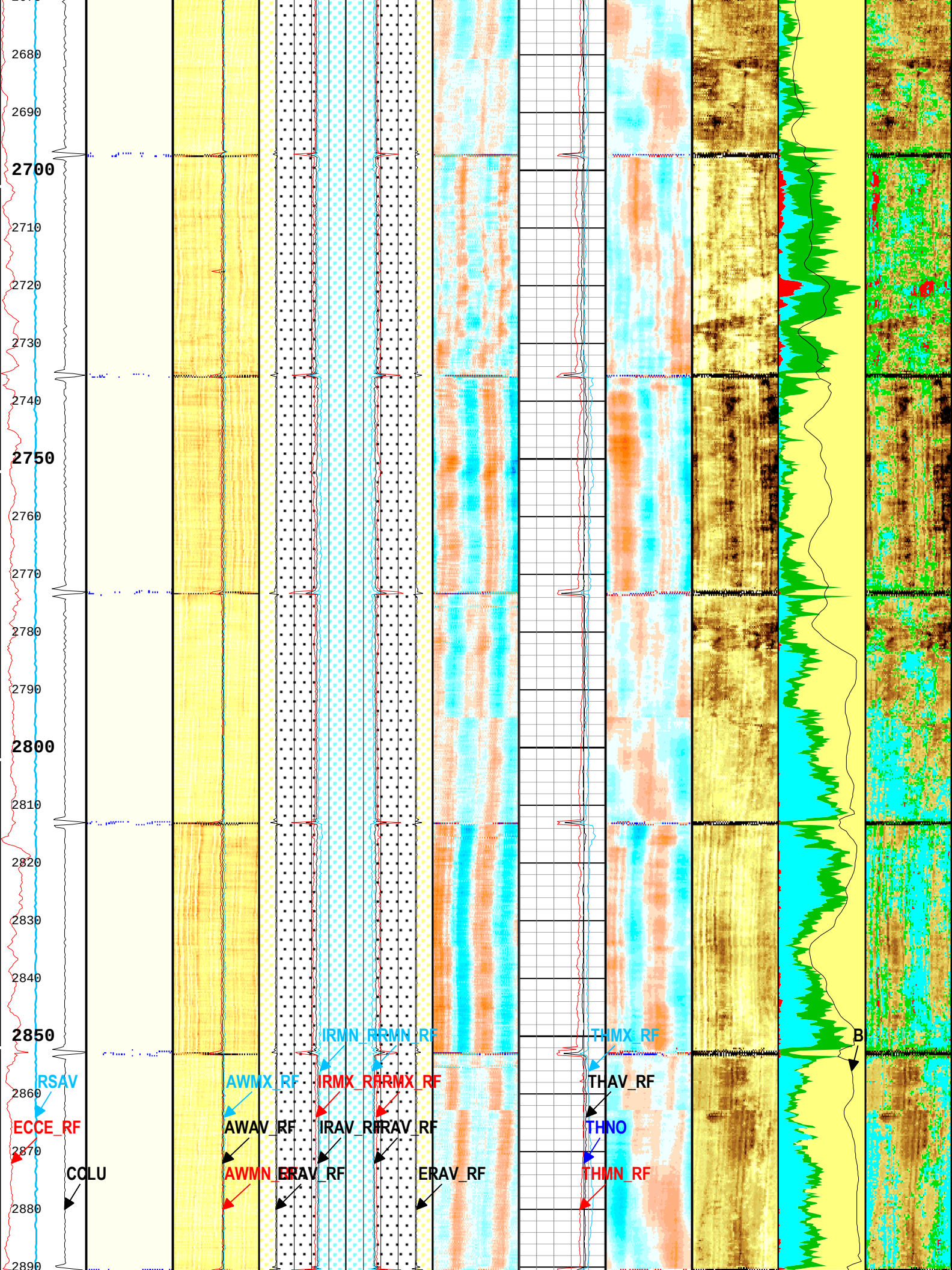
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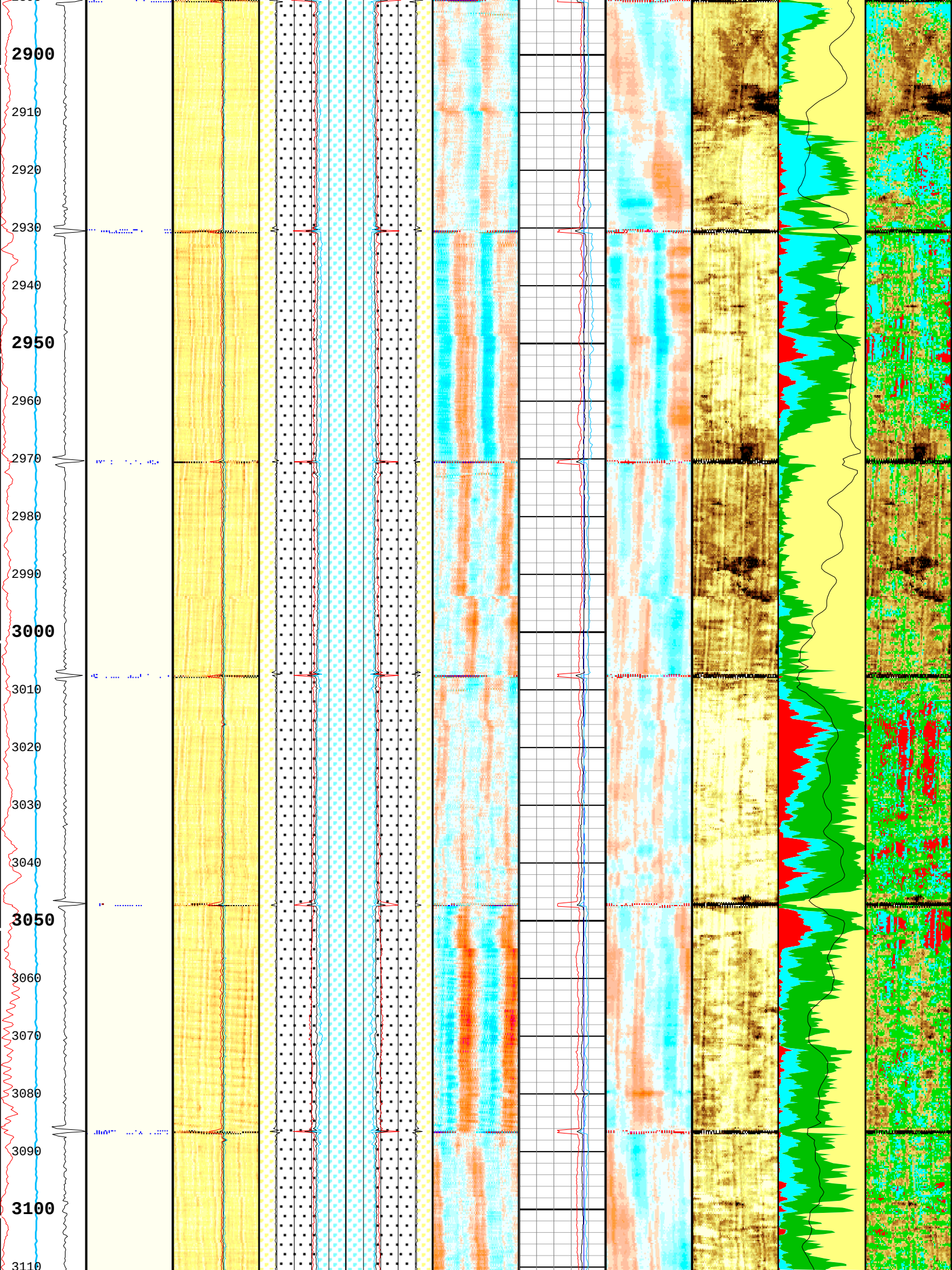
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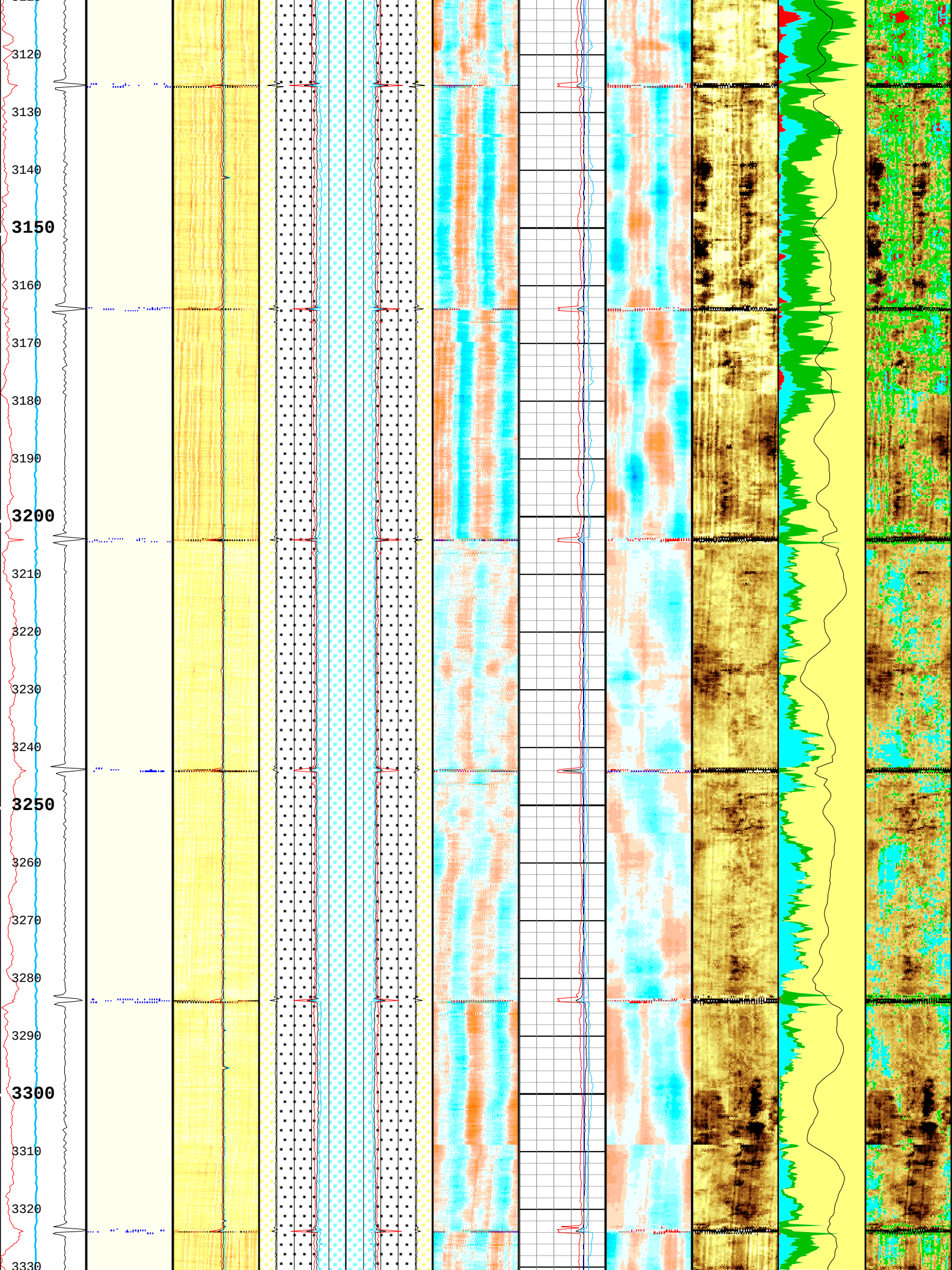
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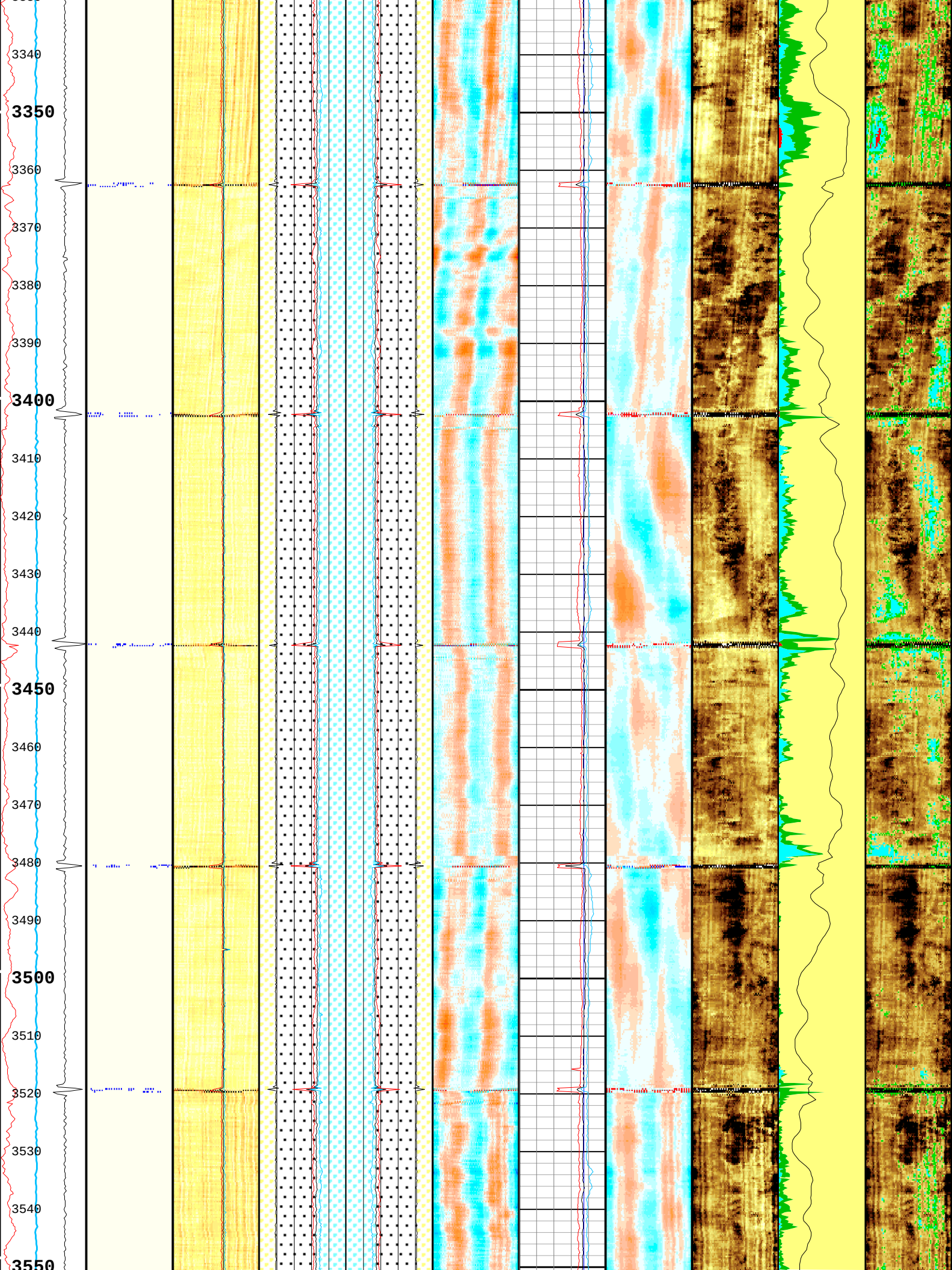
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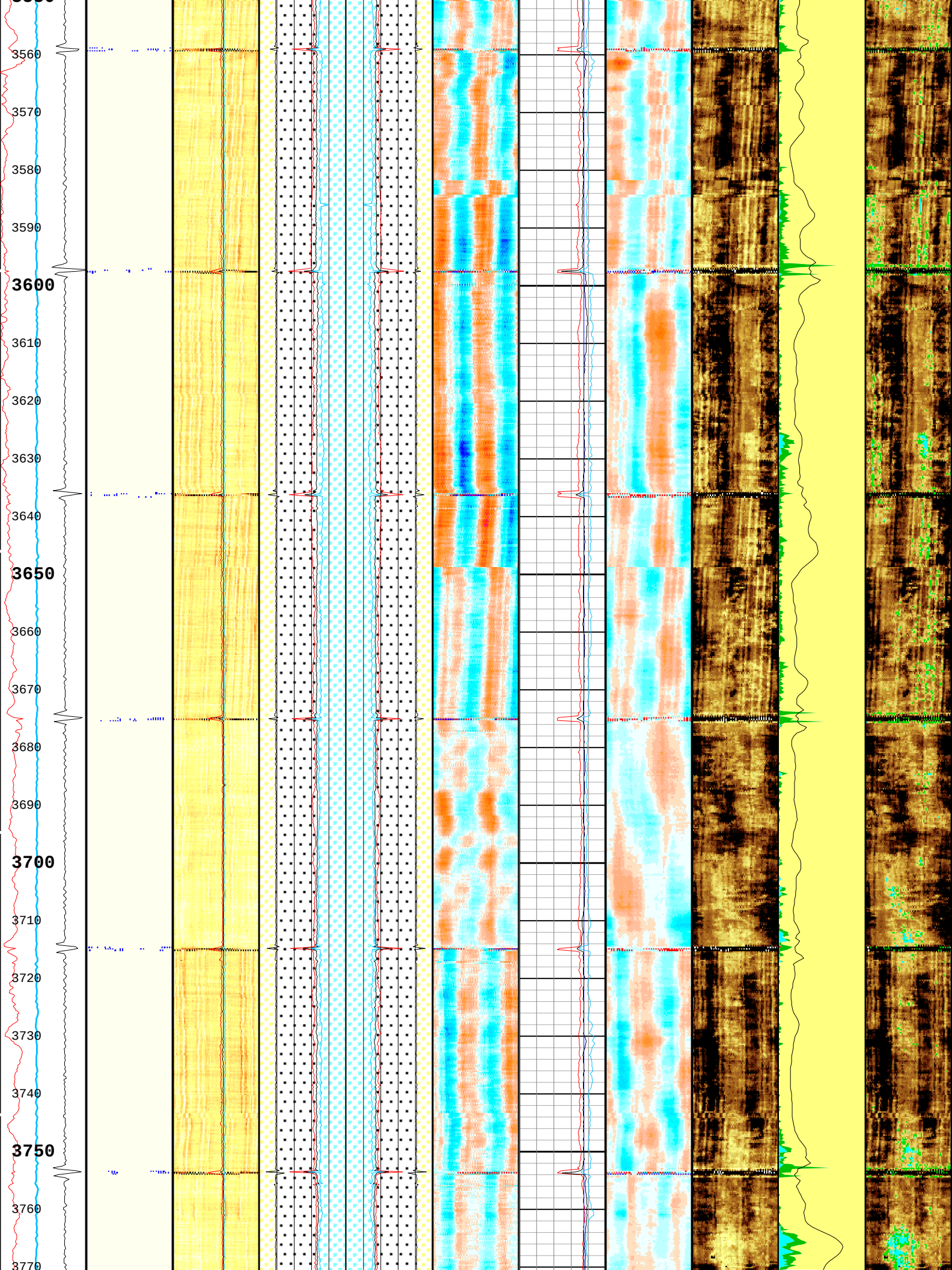
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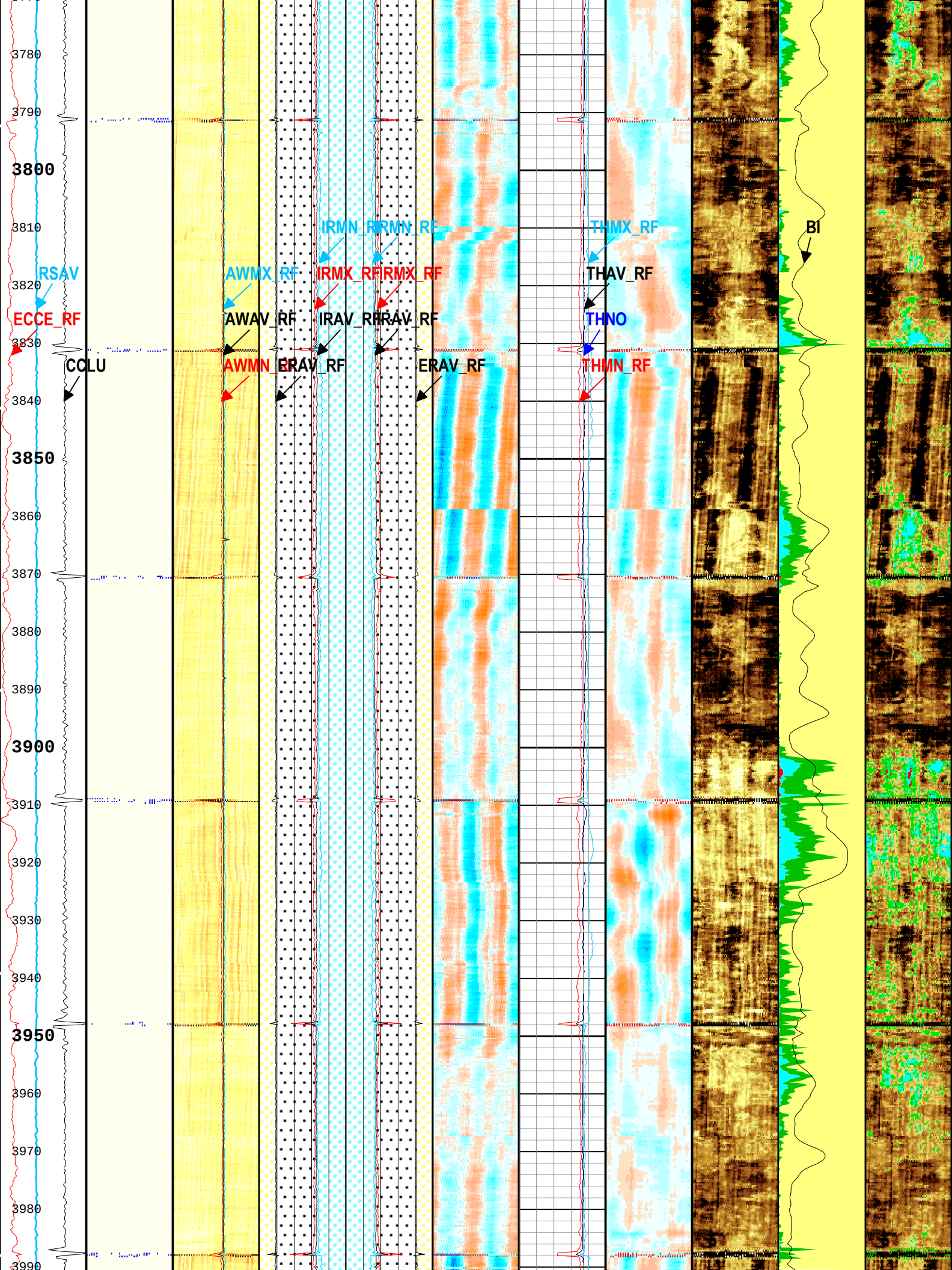
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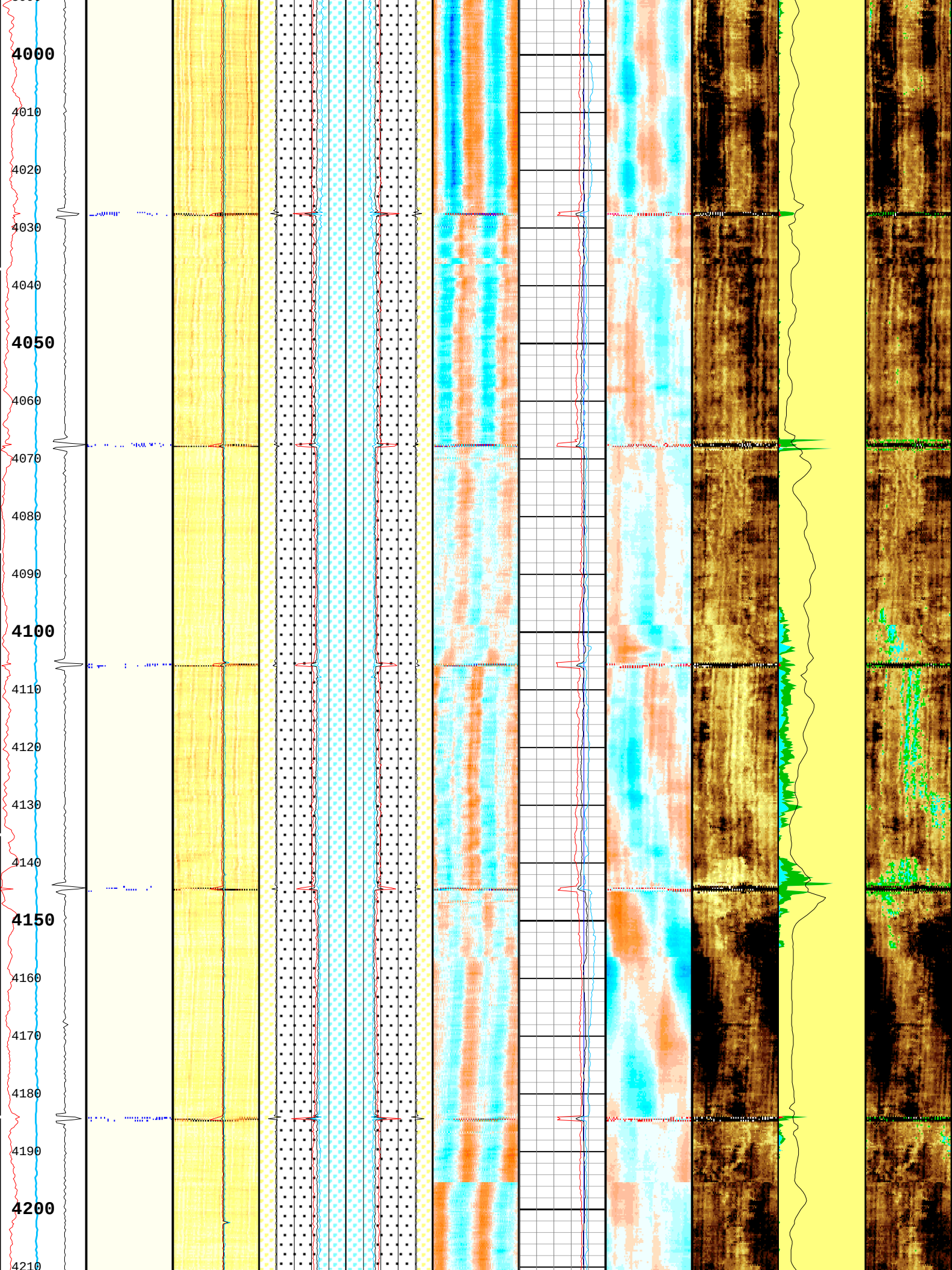
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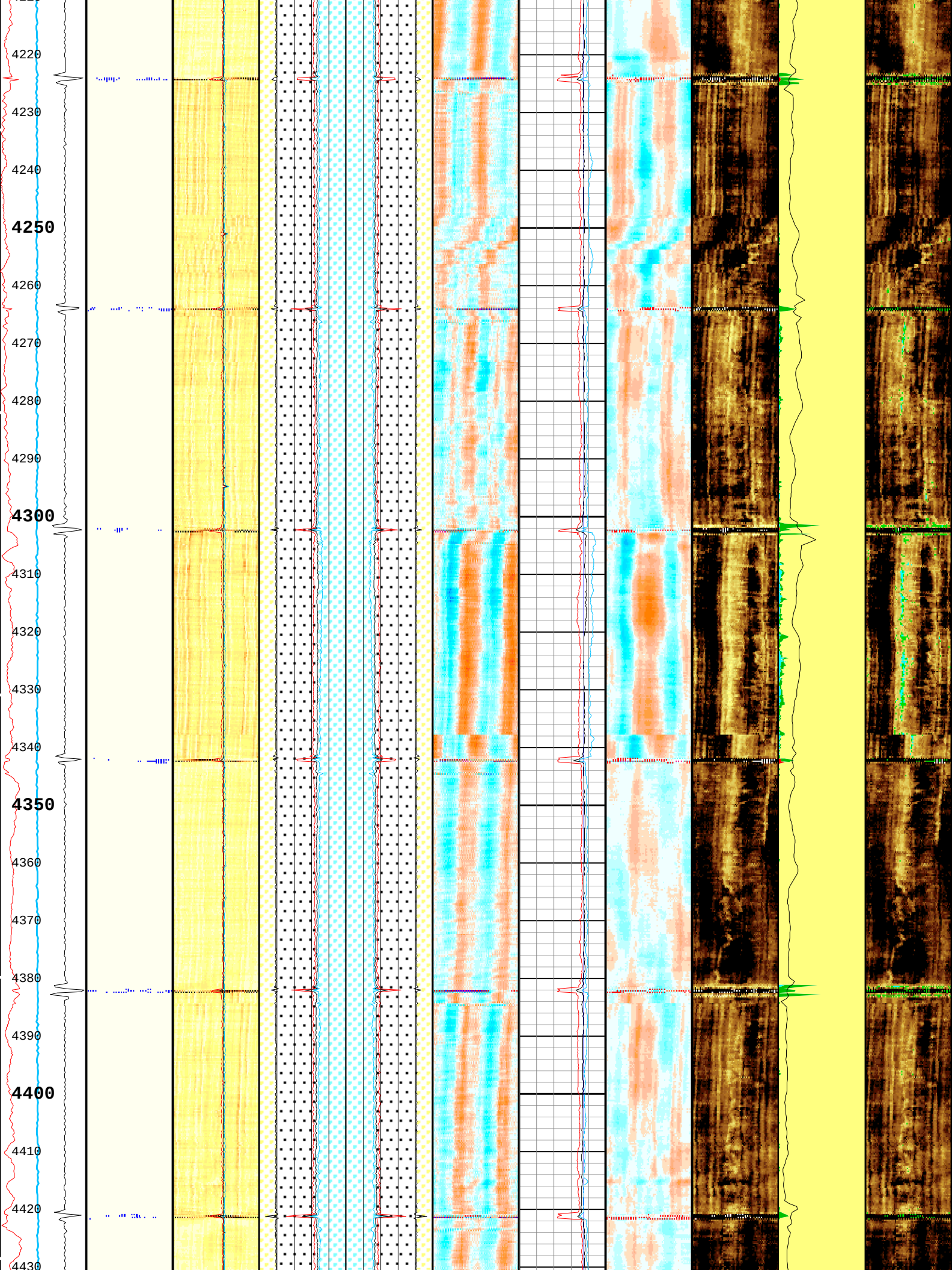
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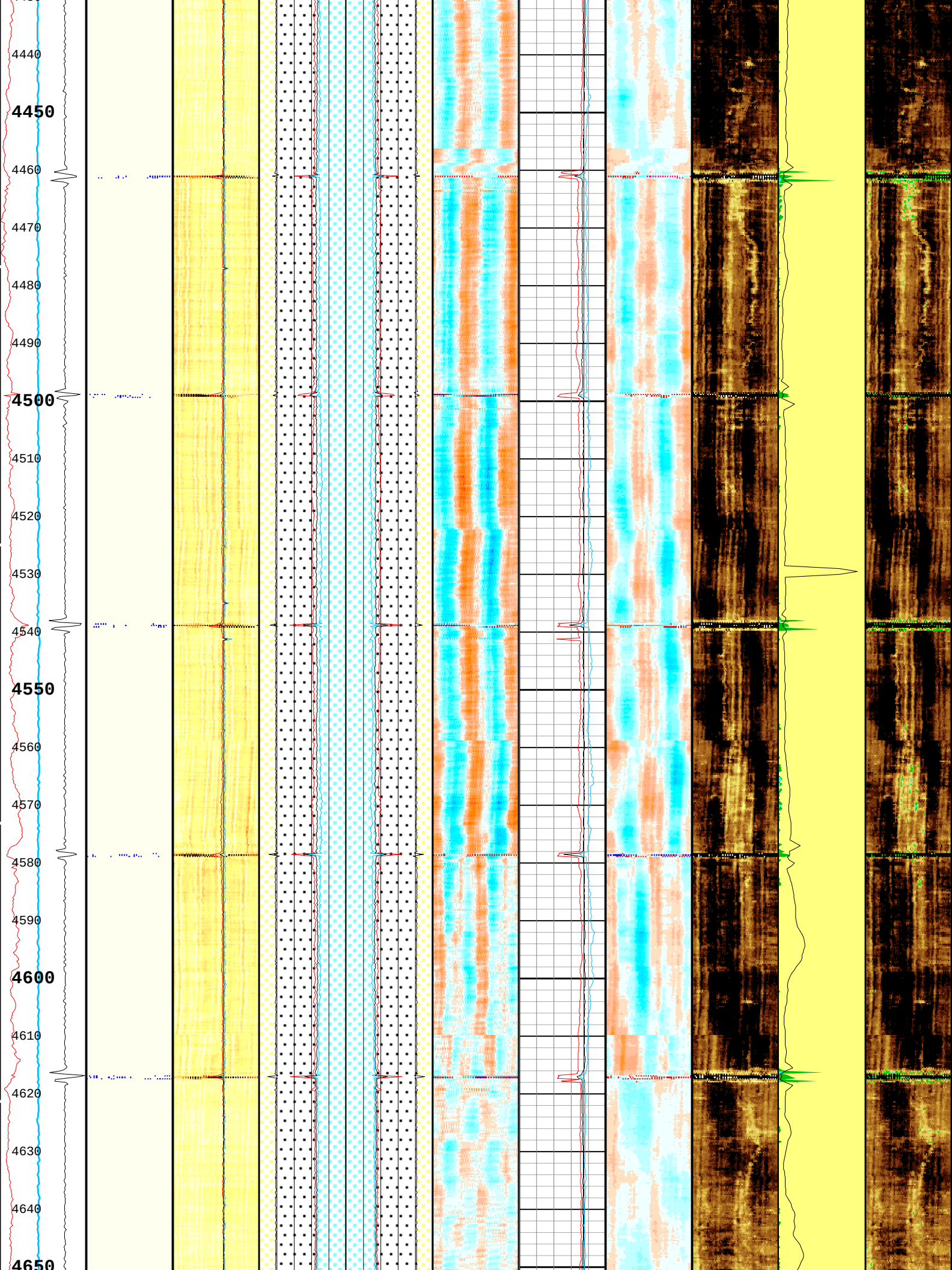
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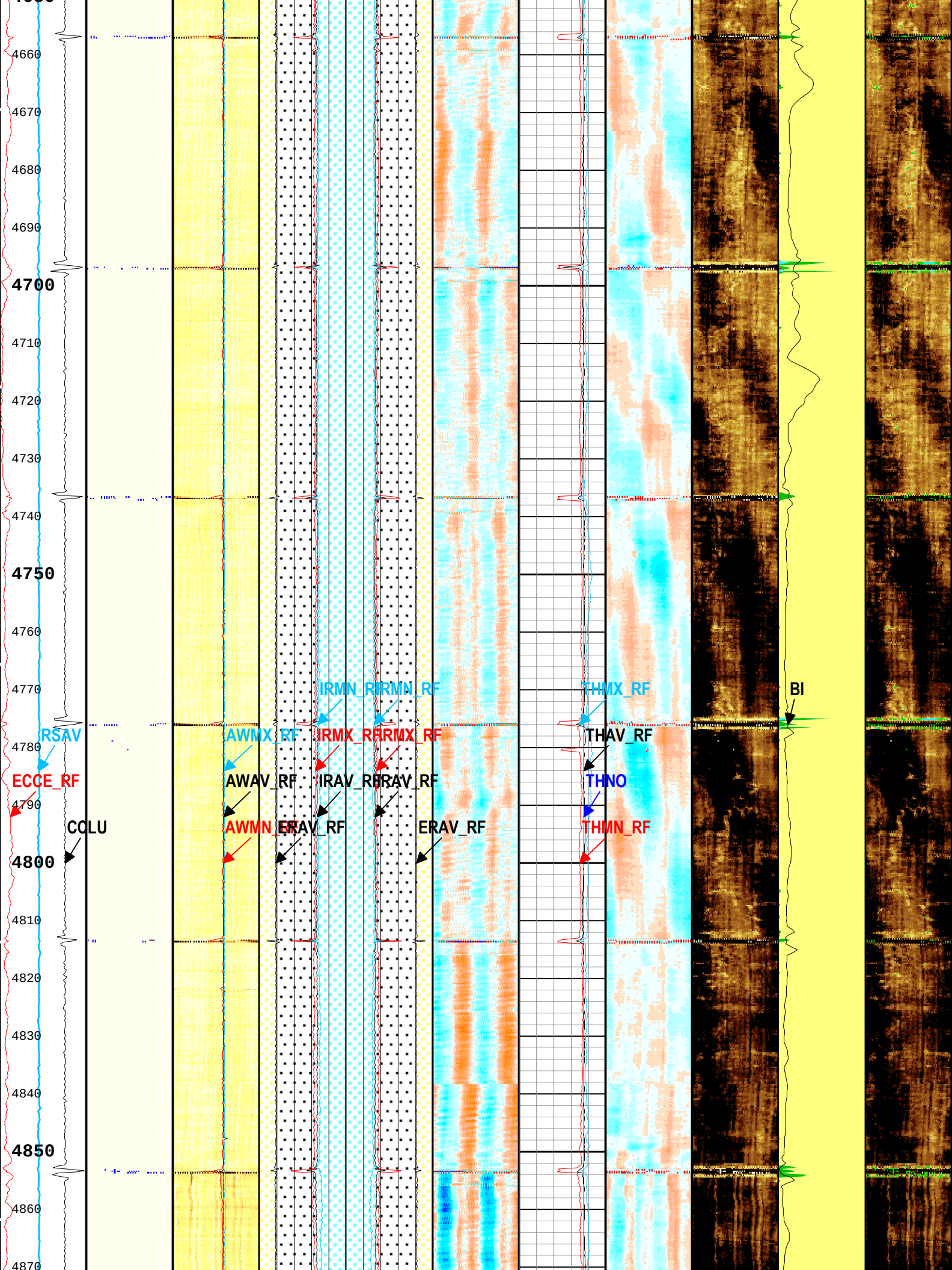
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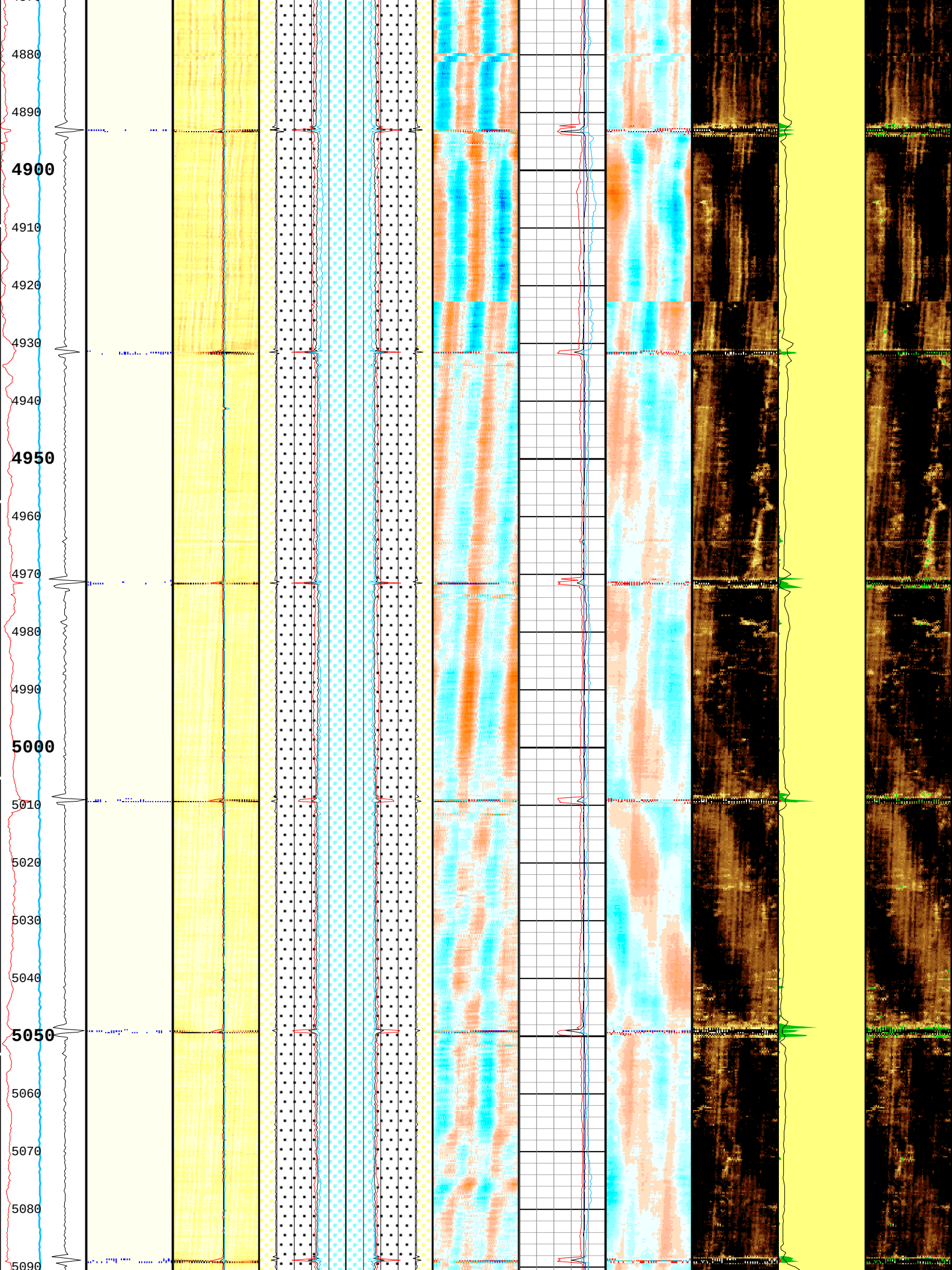
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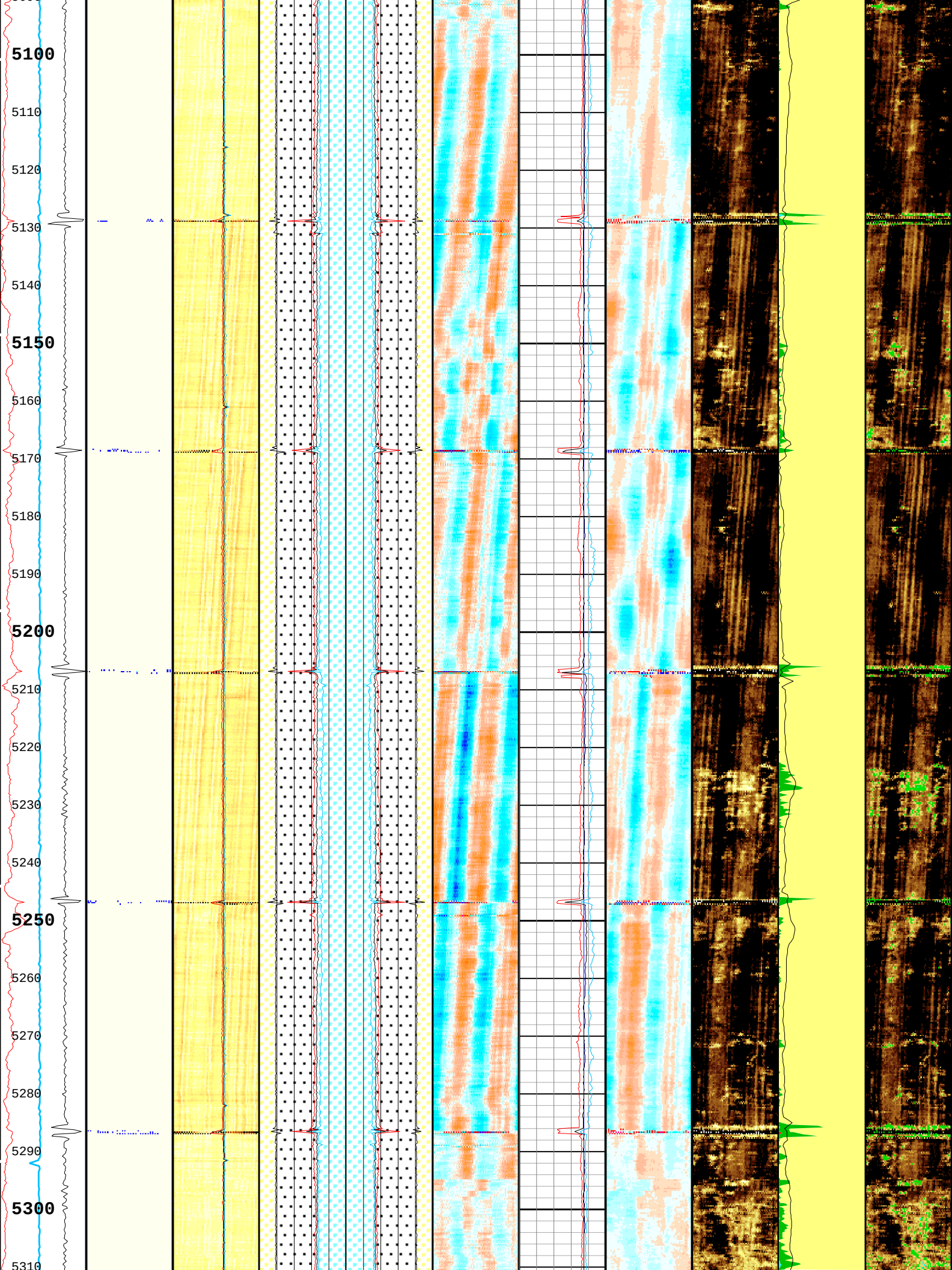
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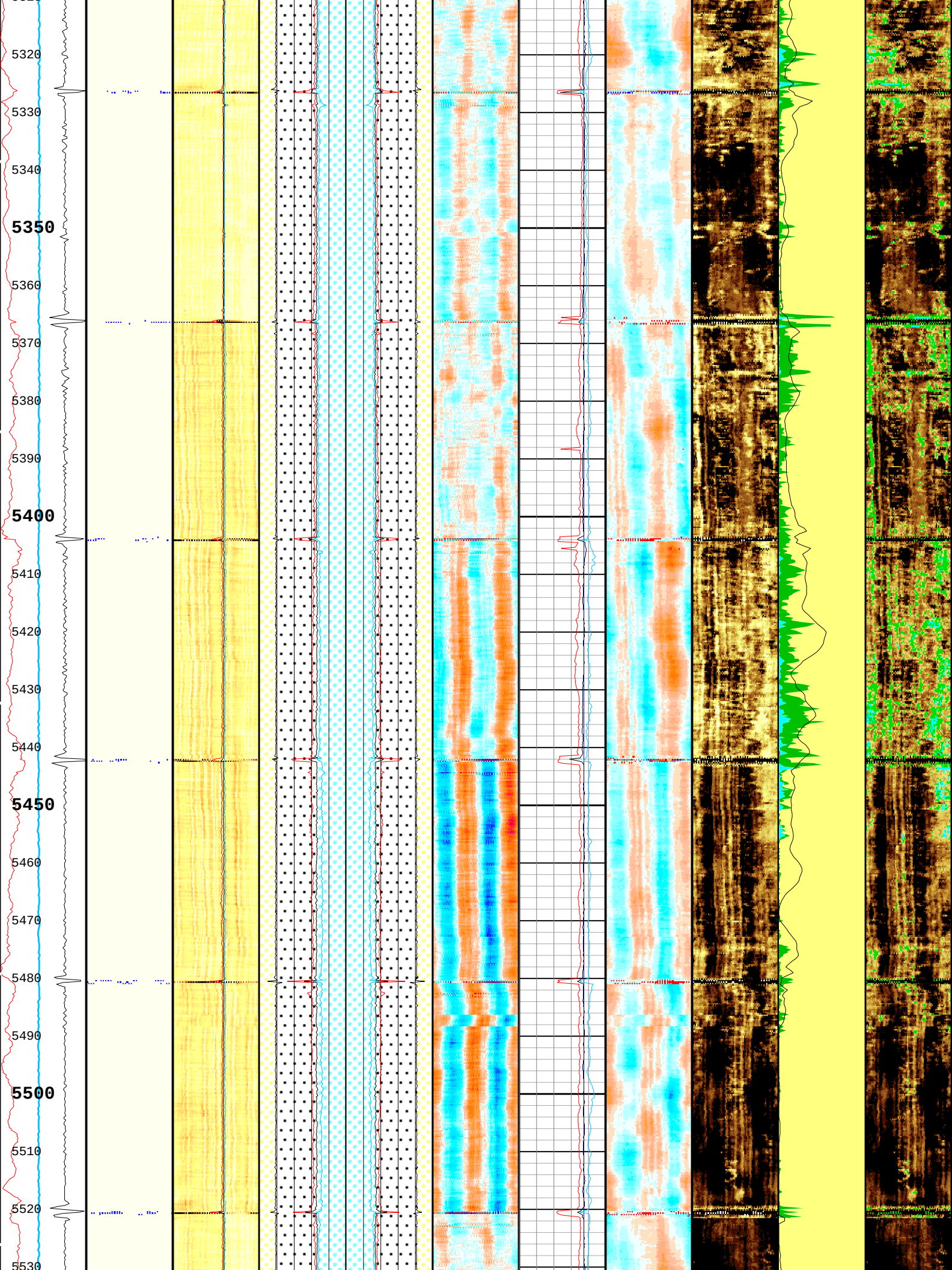
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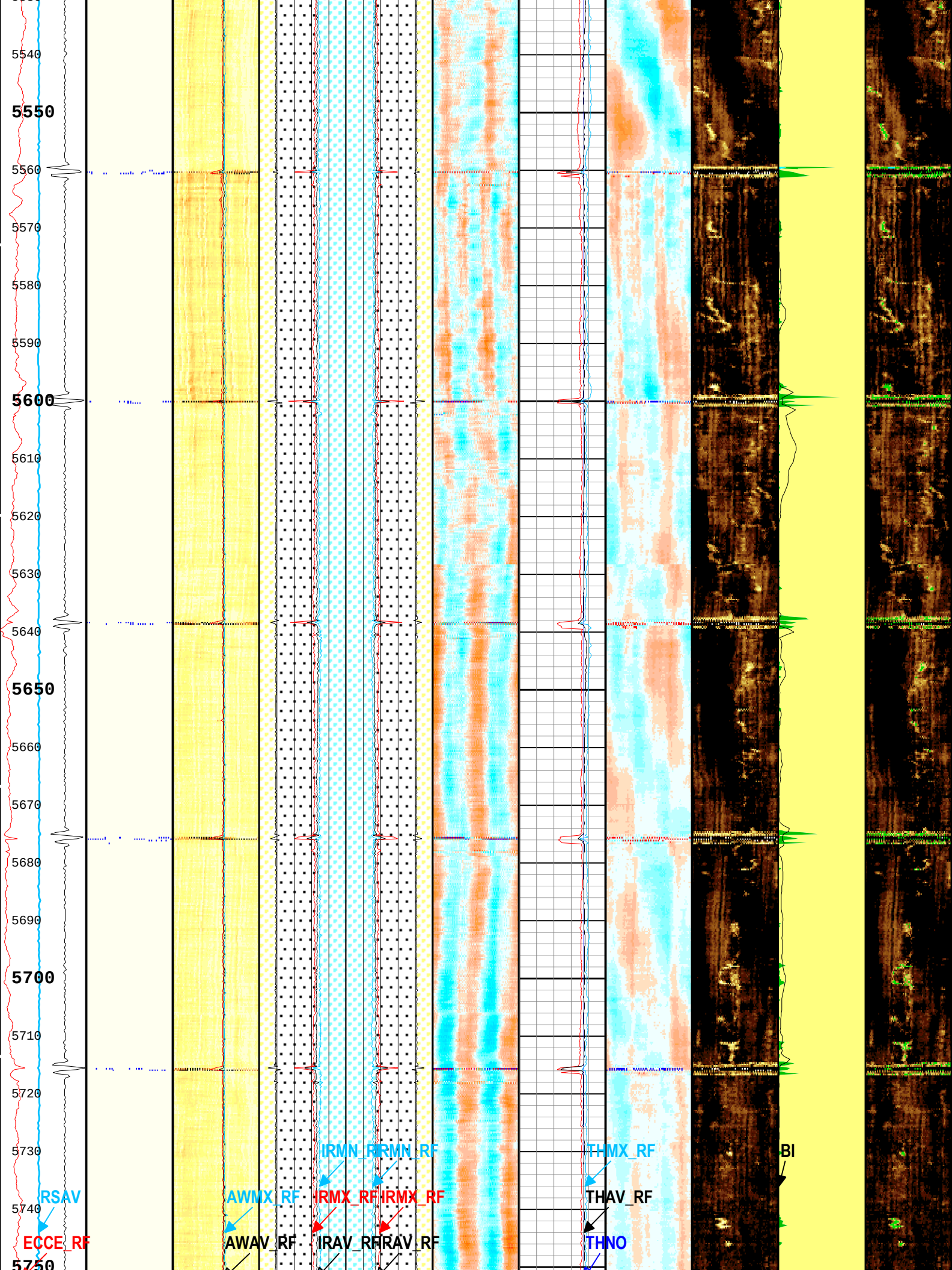
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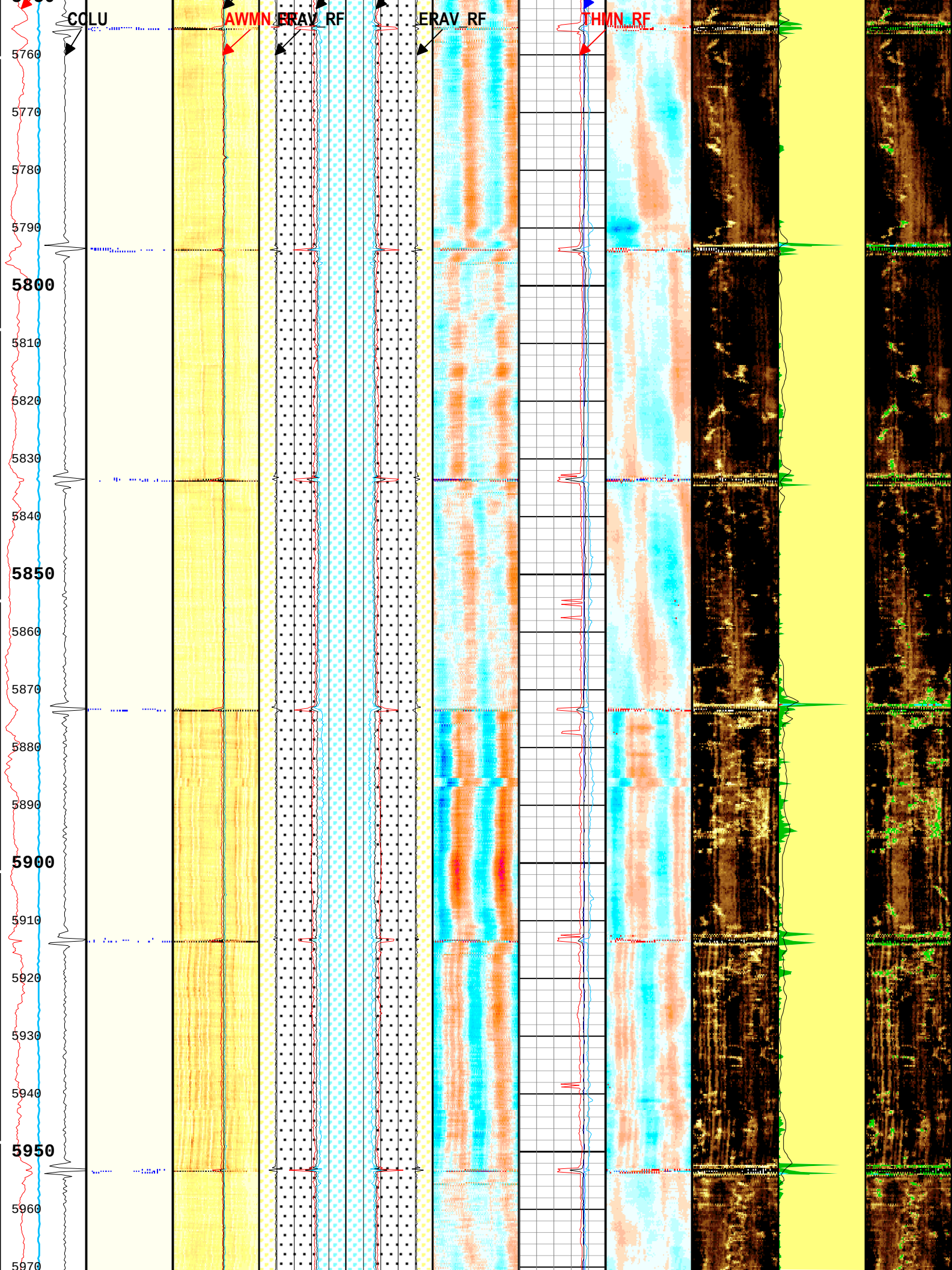
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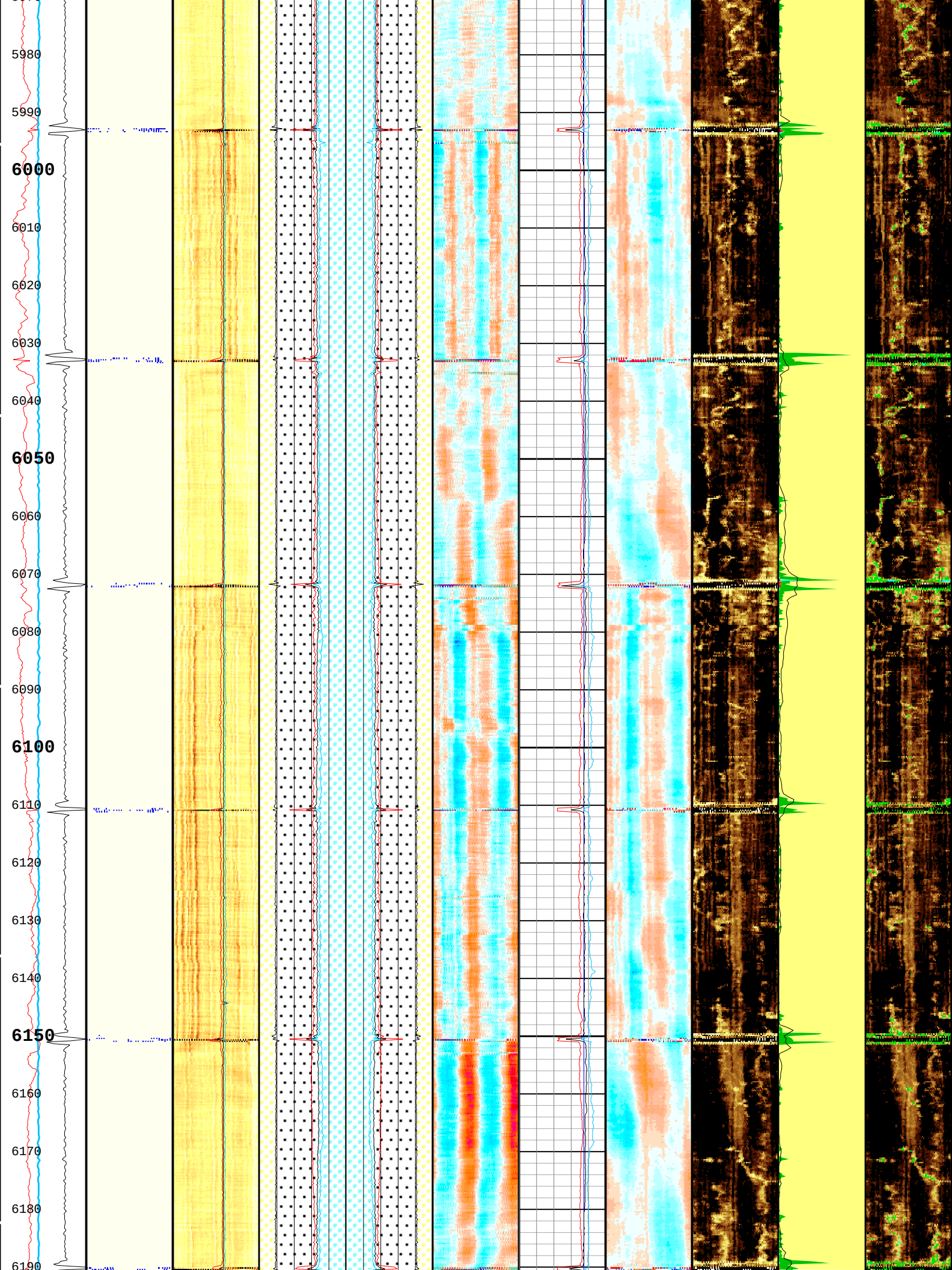
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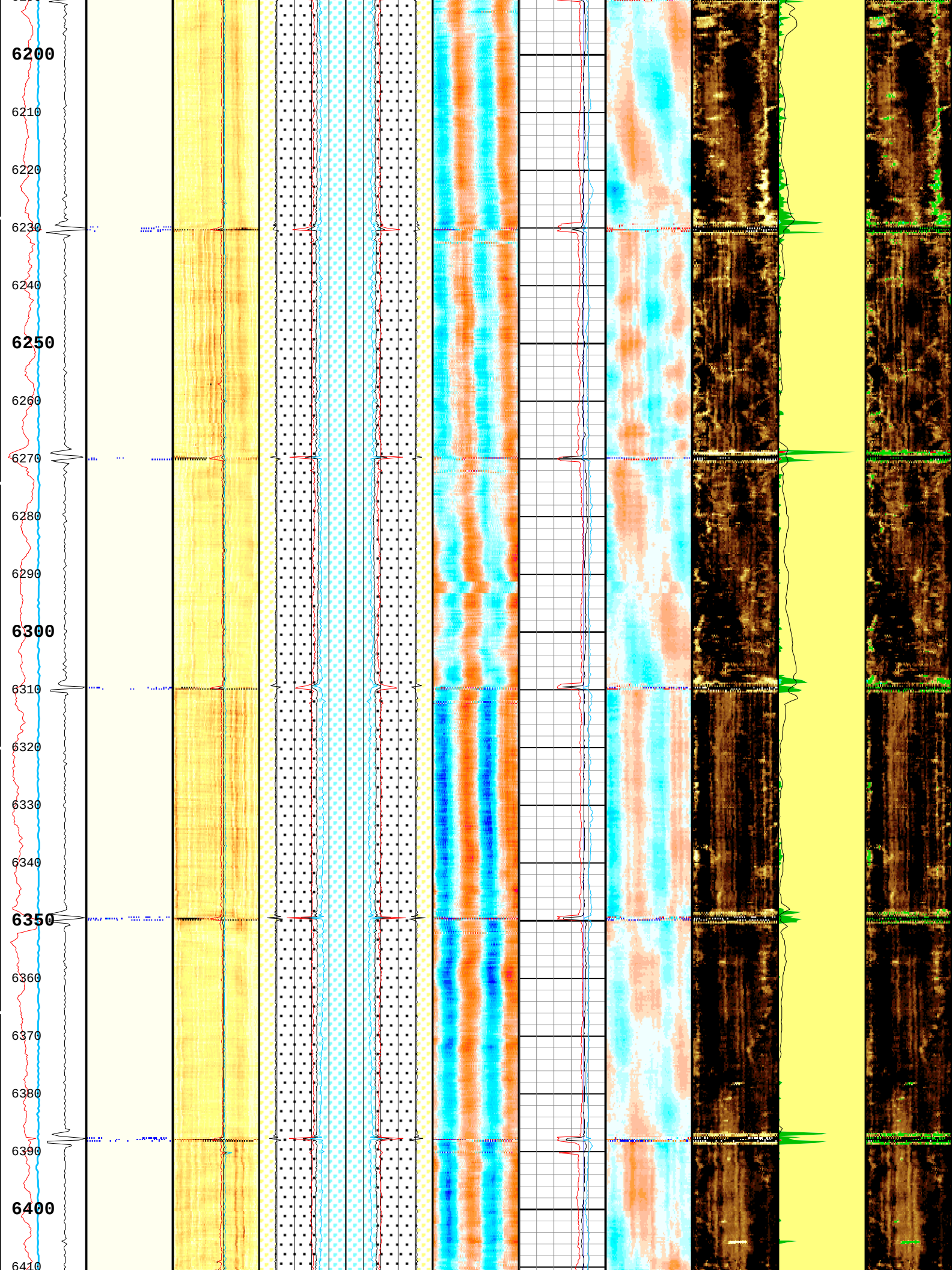
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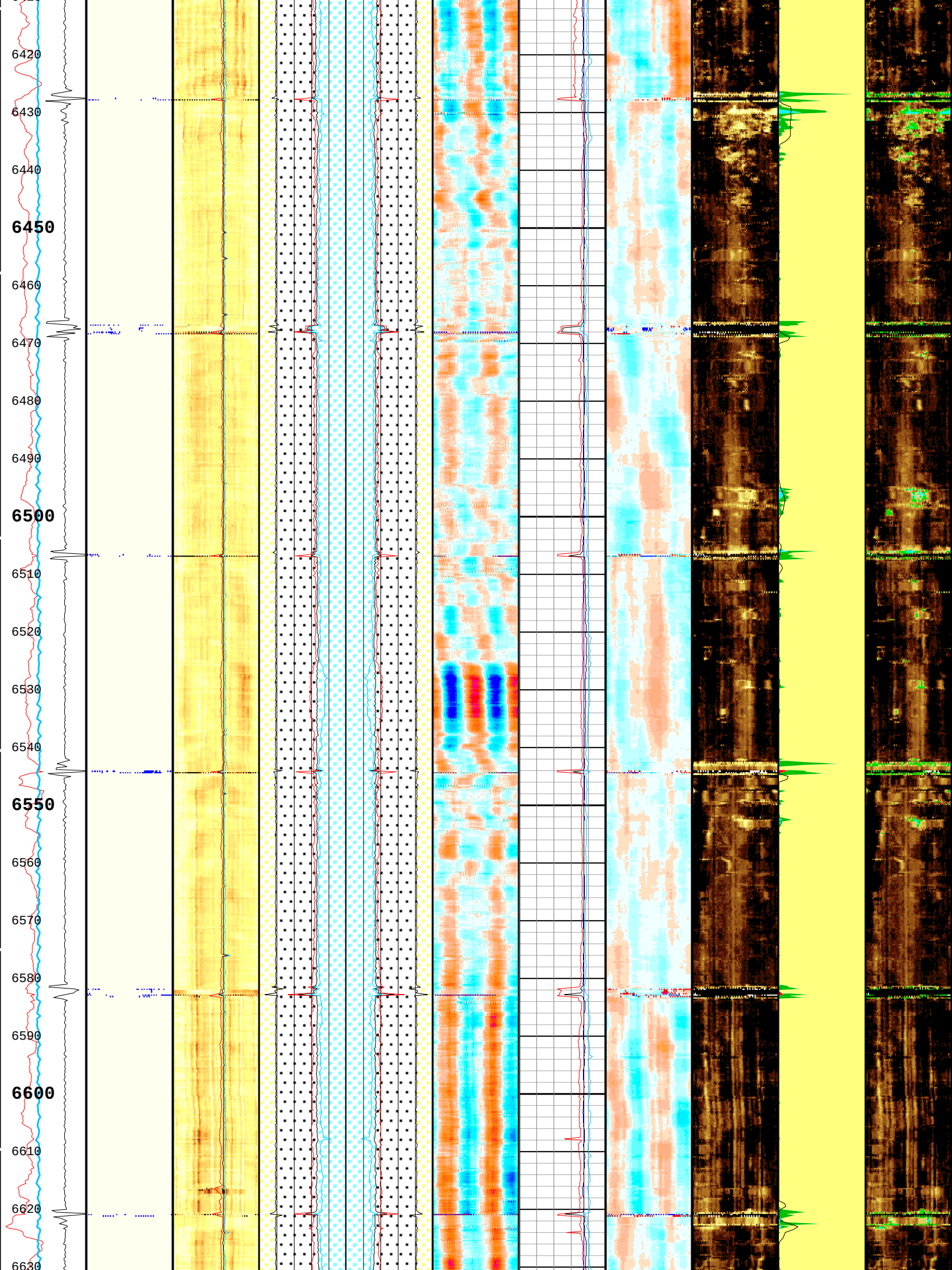
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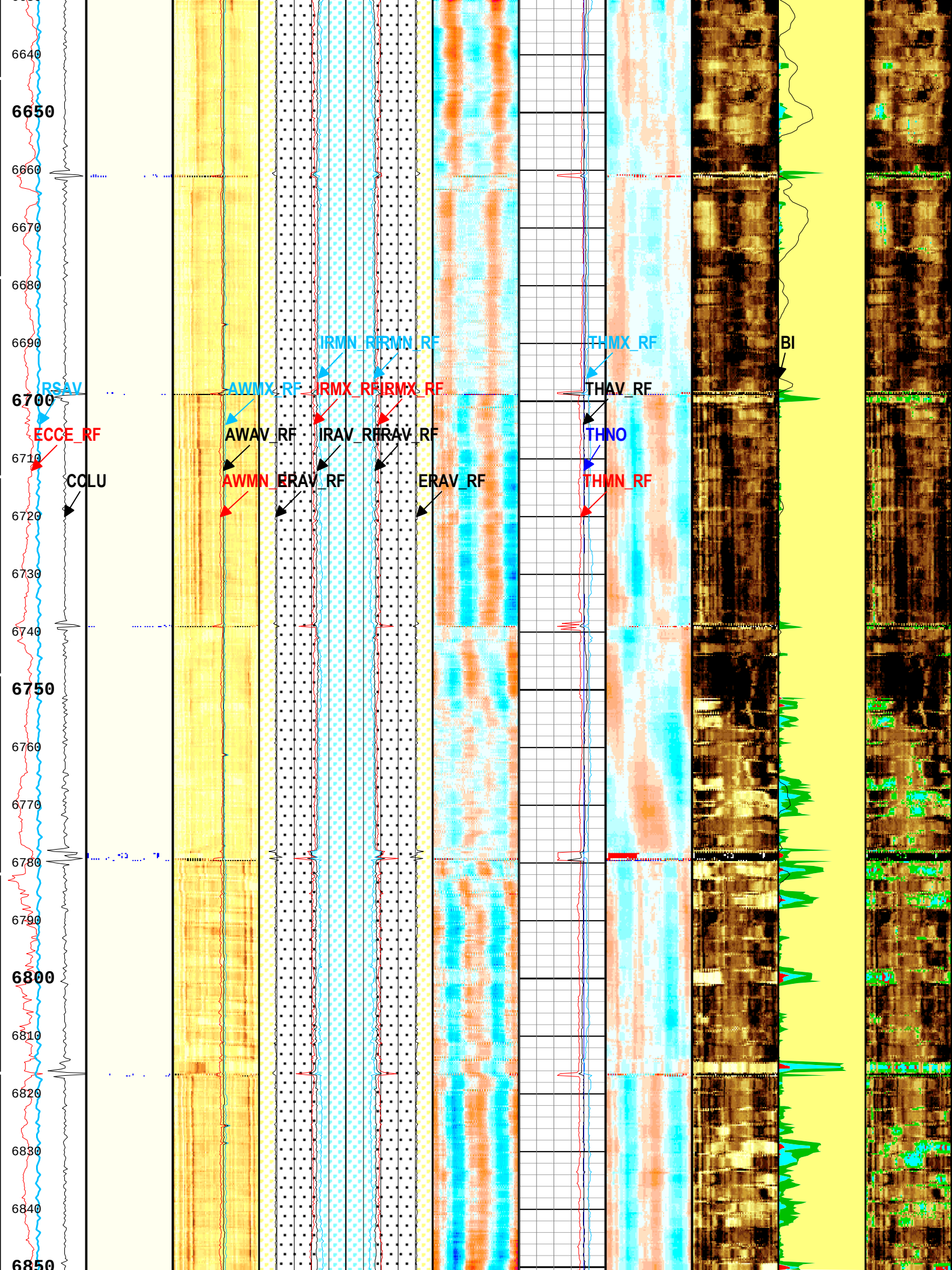
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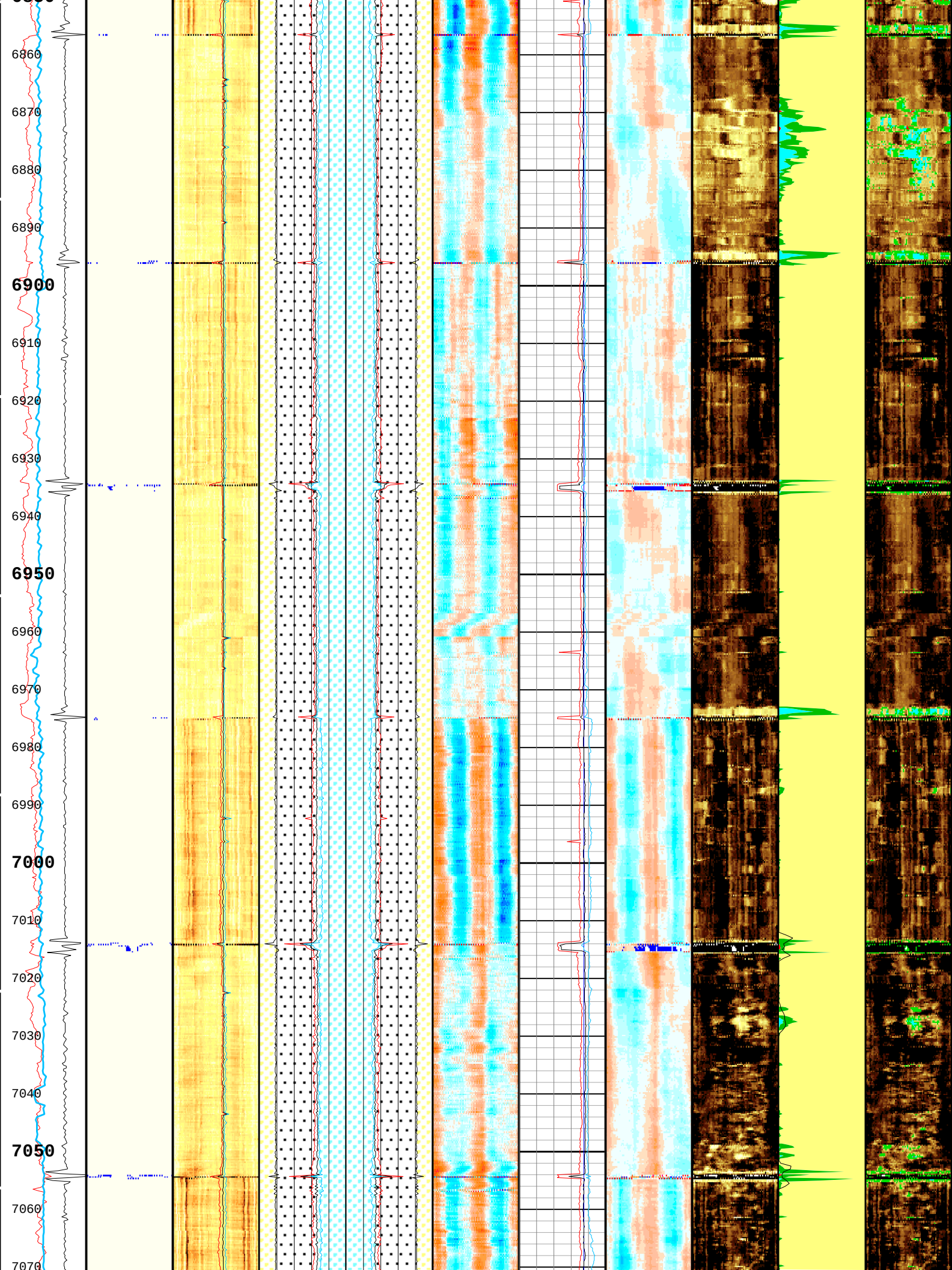
ERAV_RF
THMN_RF


6860
6870
6880
6890
6900
6910
6920
6930
6940
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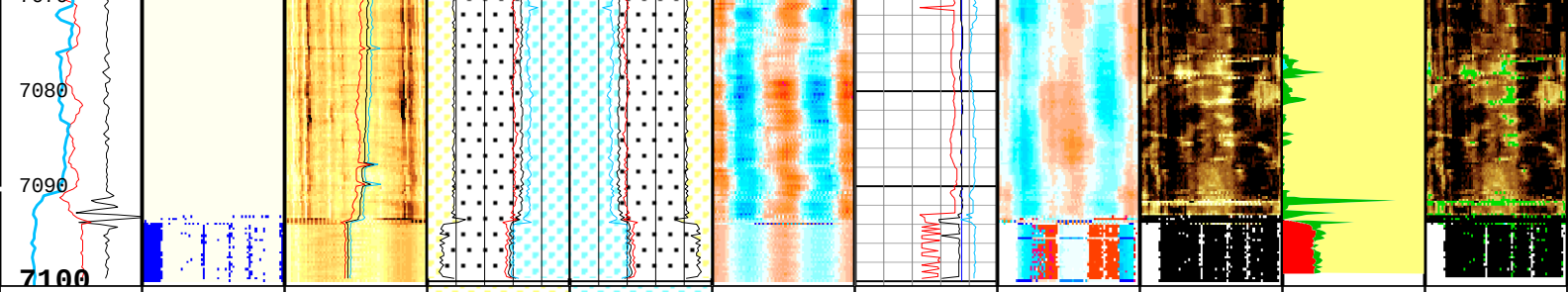
6960
6970
6980
6990
7000
7010
7020
7030
7040
7050
7060
7070



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]
5 in 4

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
5 in 4

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
5 in 4

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E[1]
5 in 4

IRAV
ERAV
IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E[1]
4 in 5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E[1]
4 in 5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
4 in 5

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

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)

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: 16-Mar-2016 22:45:55

Composite 1

Cement Log 2 IN = 100 FT

Cement Log 2 IN = 100 FT

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
16Mar2016	Log[4]:Up	Up	2075.53 ft	7100.62 ft	16-Mar-2016 11:36:33 AM	16-Mar-2016 1:27:21 PM	ON	-10.00 ft	Yes
16Mar2016	Log[5]:Up	Up	194.84 ft	2291.90 ft	16-Mar-2016 1:31:17 PM	16-Mar-2016 2:31:41 PM	ON	-10.00 ft	Yes
16Mar2016	Log[6]:Up	Up	28.19 ft	401.83 ft	16-Mar-2016 2:34:30 PM	16-Mar-2016 2:51:45 PM	ON	-10.00 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Porter 50C

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: 16-Mar-2016 22:46:33

TIME_1900 - Time Marked every 60.00 (s)

ERAV_IRAV ERAV_RHF1

IRAV_LHF1 IRAV_ERAV

LHF1_ERAV RHF1_IRAV

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

5 in 4 | 4 in 5

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

5 in 4 | 4 in 5

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

5 in 4 | 4 in 5

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

5 in 4 | 4 in 5

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

-30 in 10

Gamma Ray (ECGR) HGNS[1]

0 gAPI 100

U L B R U

Orientation: Top of Hole

Absent 0.500 1.500 2.500 3.500 4.500 5.500 6.500 7.500

Custom Normalization

USIT - Acoustic Impedance (AIBK) USIT-E[1]

(Mrayl)

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

U L B R U

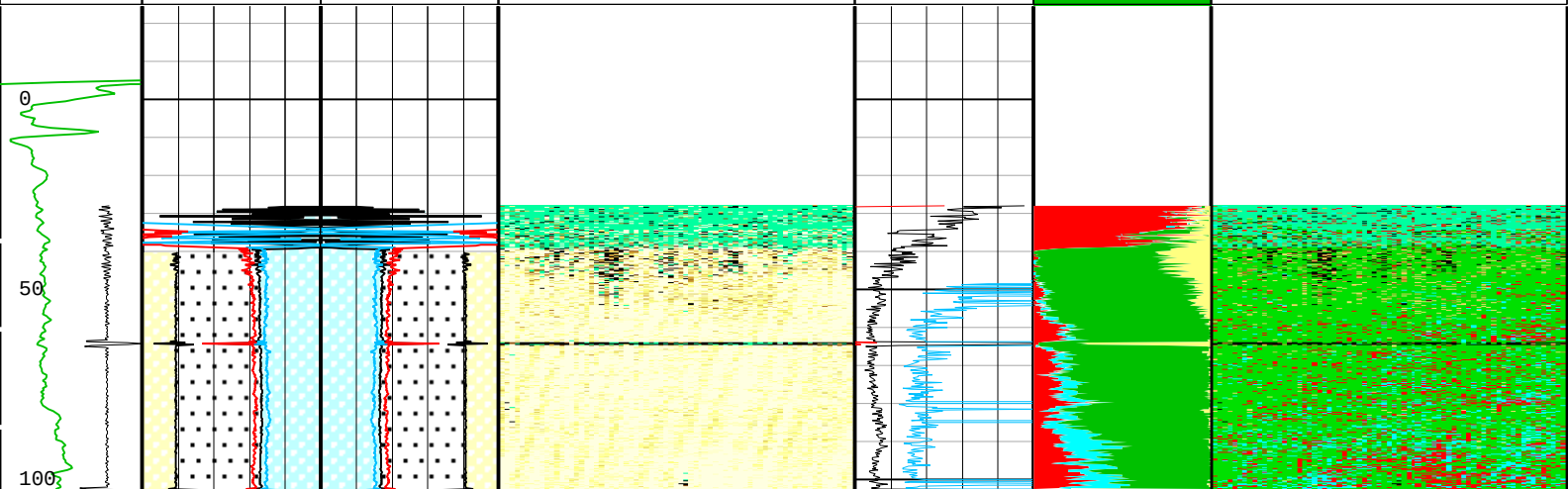
Orientation: Top of Hole

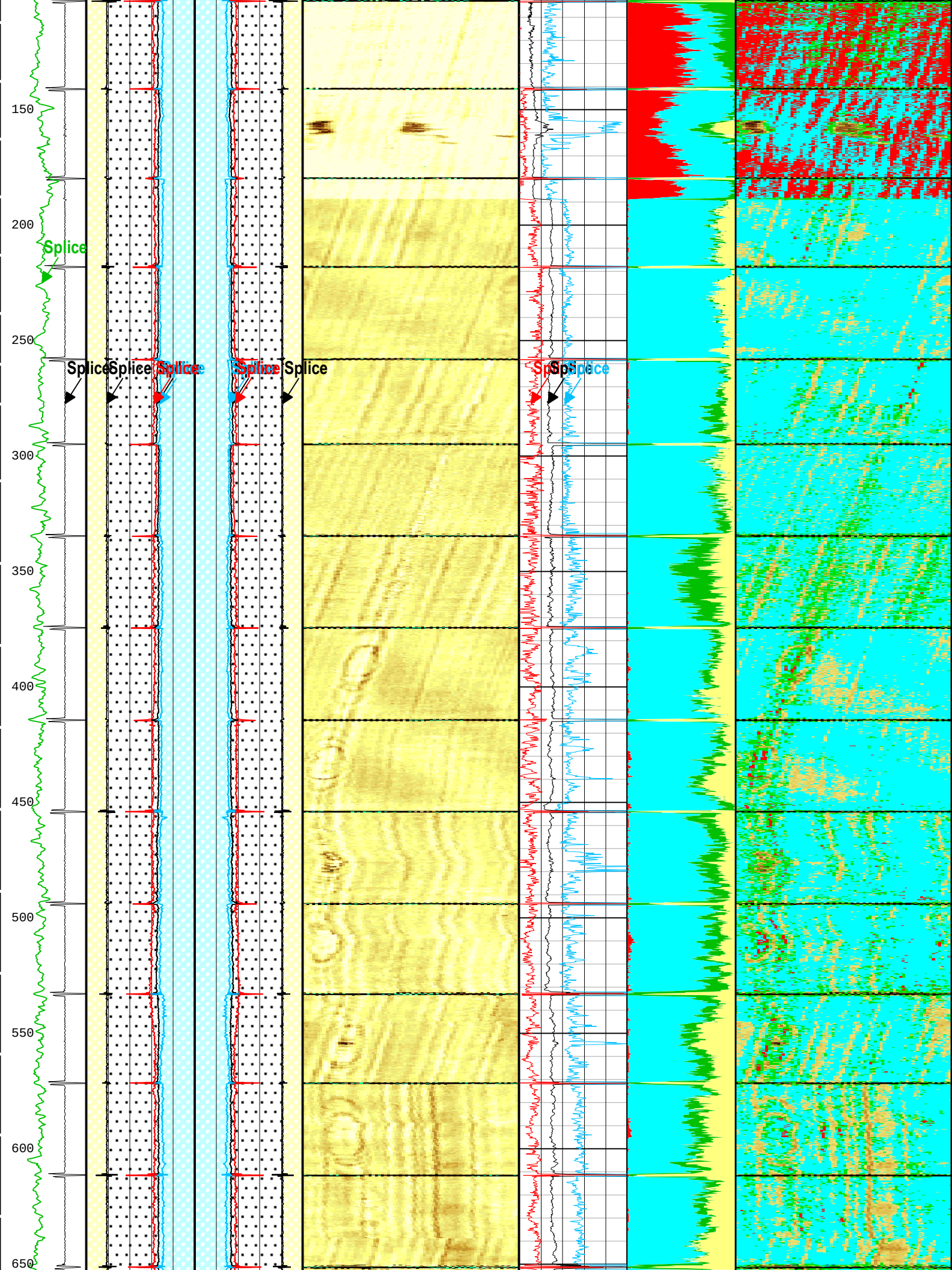
Absent -500.000 2.599 3.581 4.563 5.545 6.527 7.509

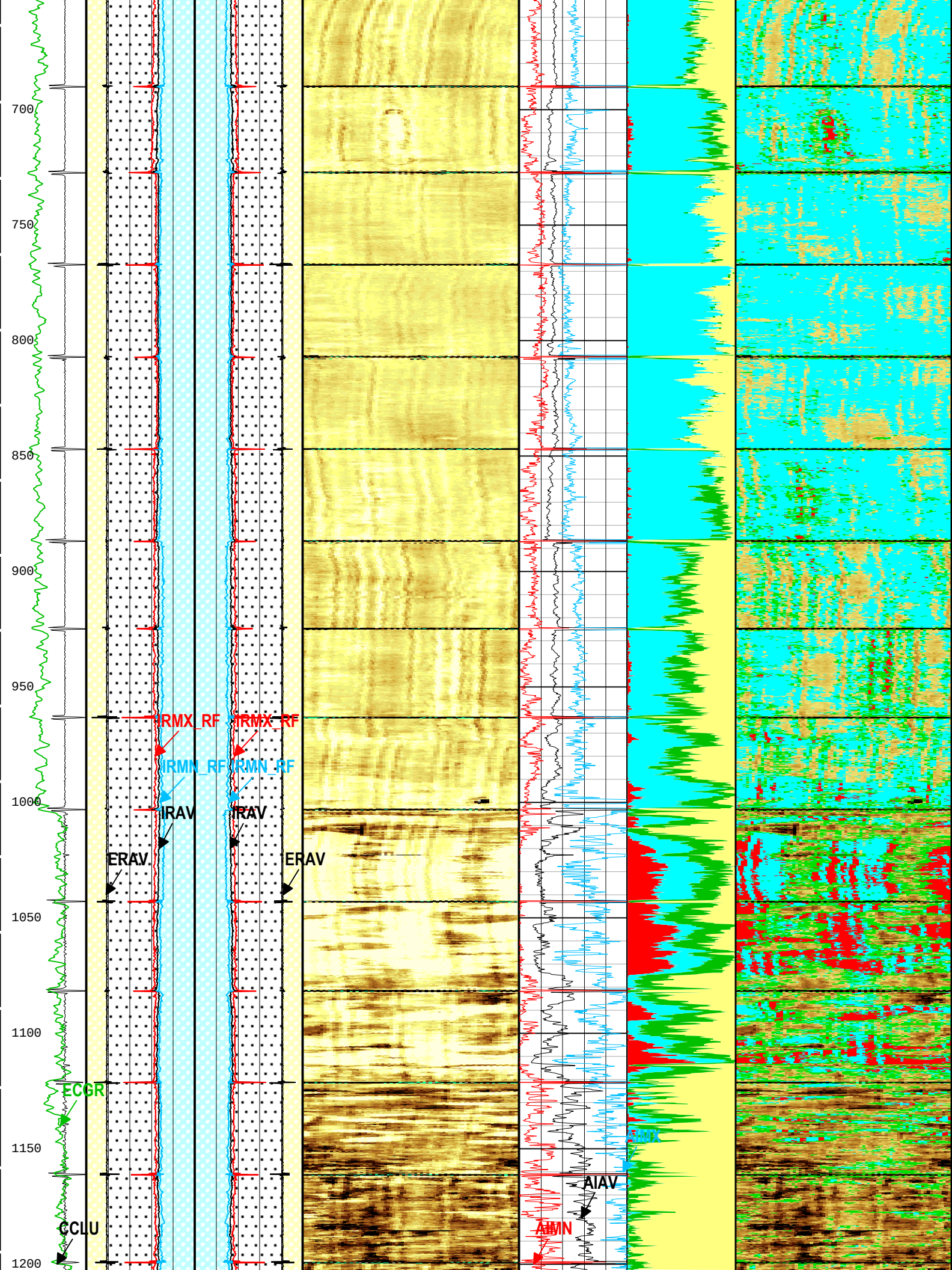
Custom Normalization

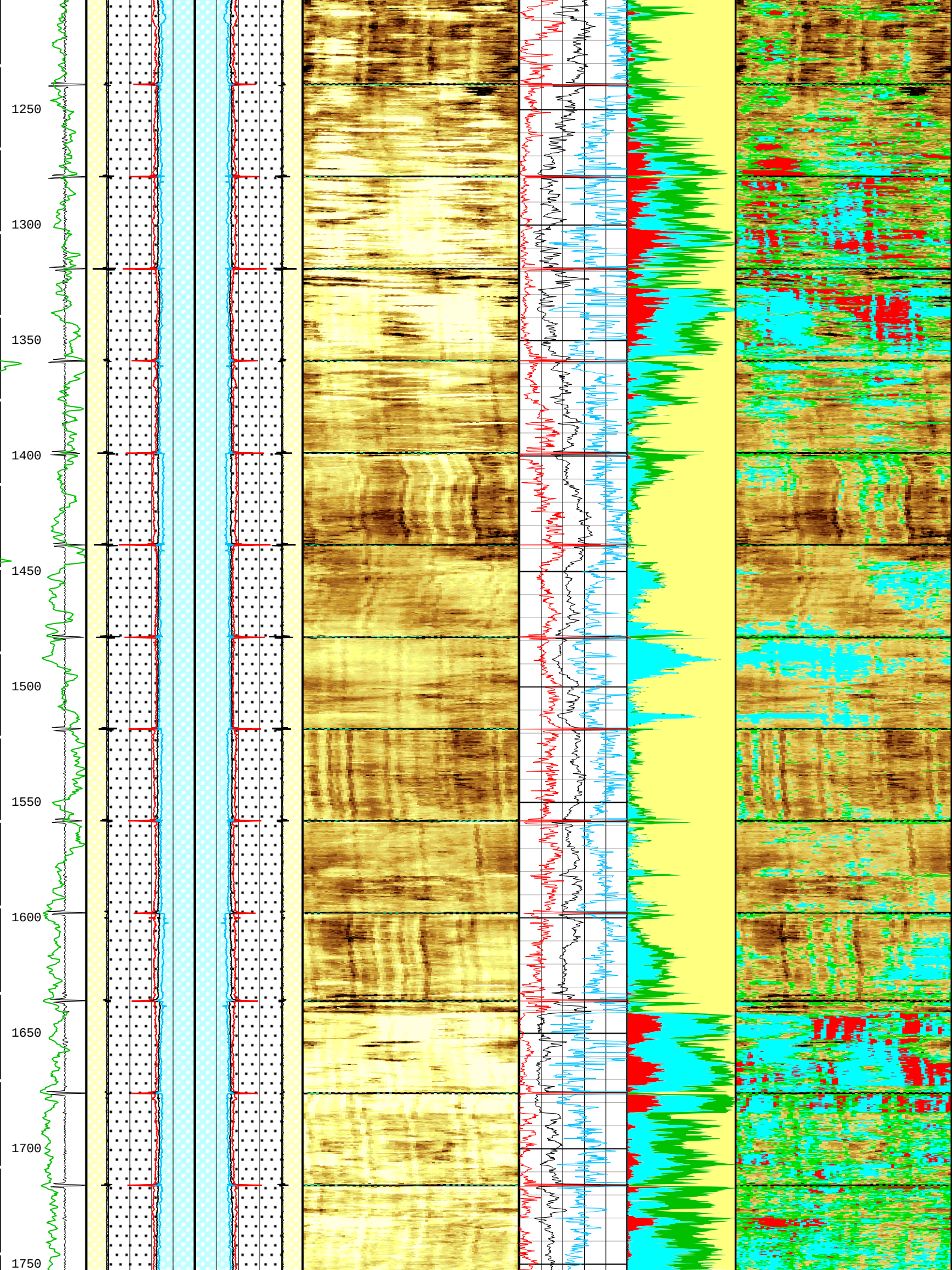
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E[1]

(Mrayl)




150
200
250
300
350
400
450
500
550
600
650
Splice
Splice
Splice
Splice
Splice
Splice
Splice
Splice


700
750
800
850
900
950
1000
1050
1100
1150
1200
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV
IRAV
ERAV
ERAV
ECGR
CCLU
AIAV
AIMN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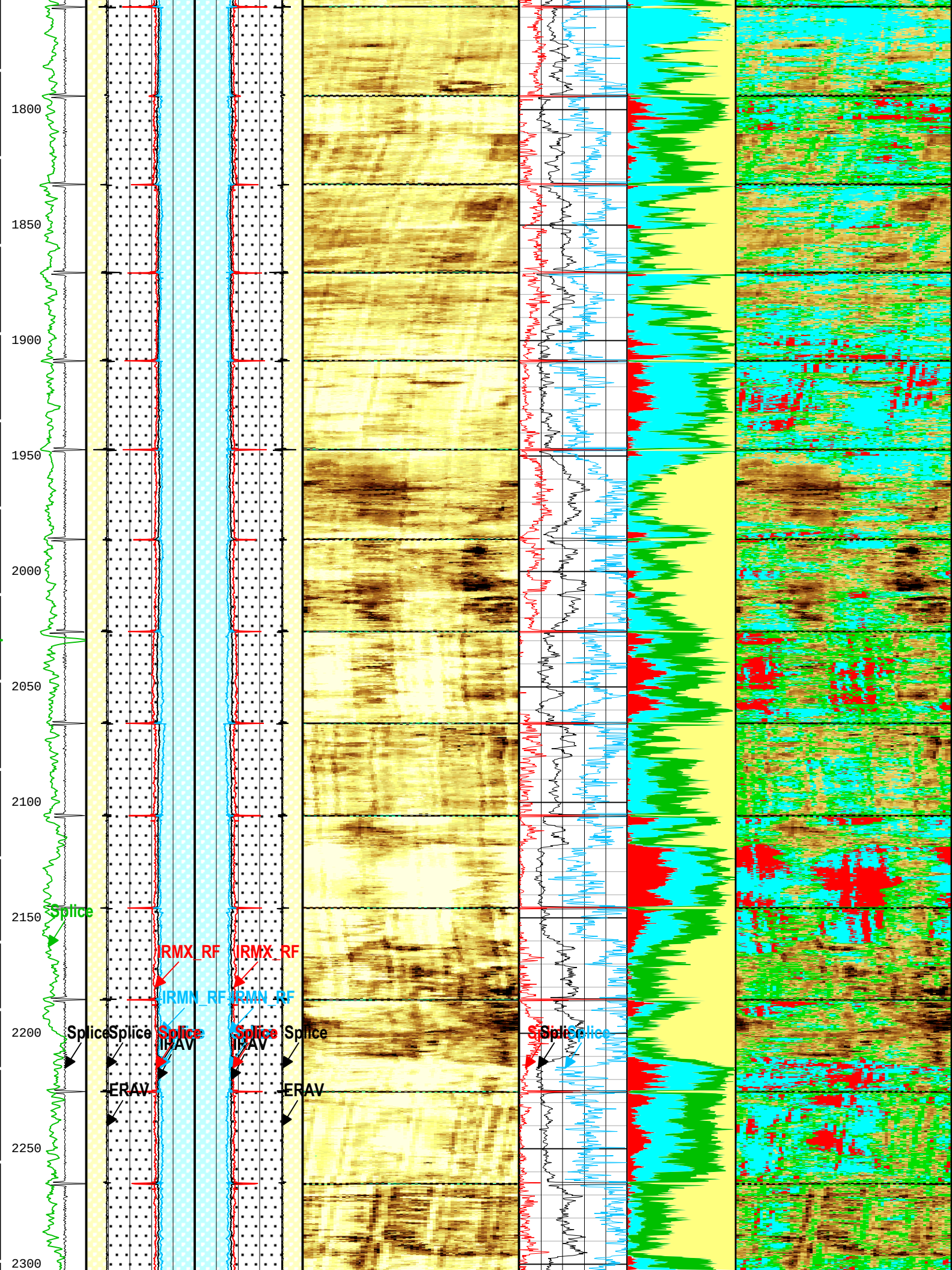
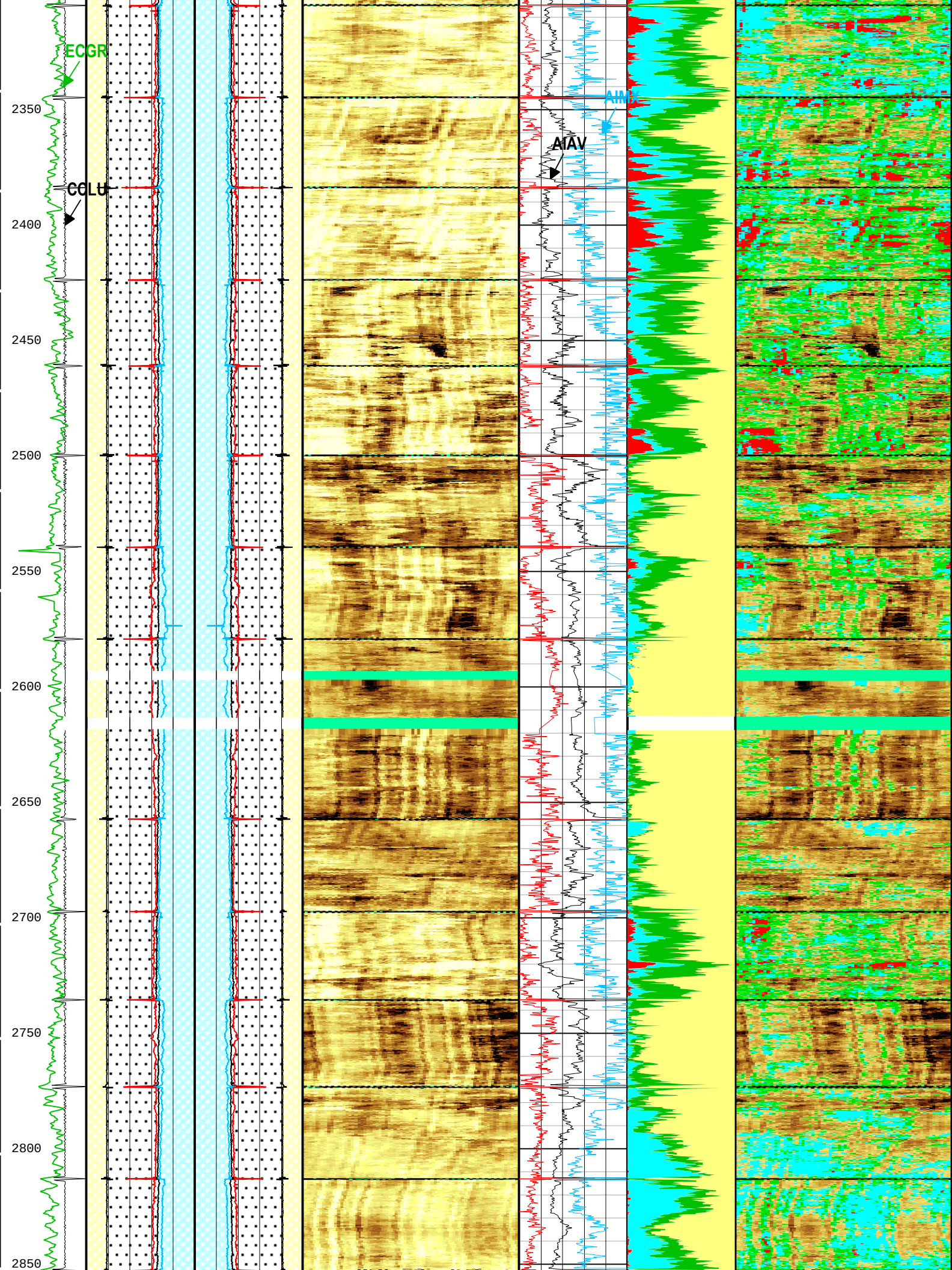
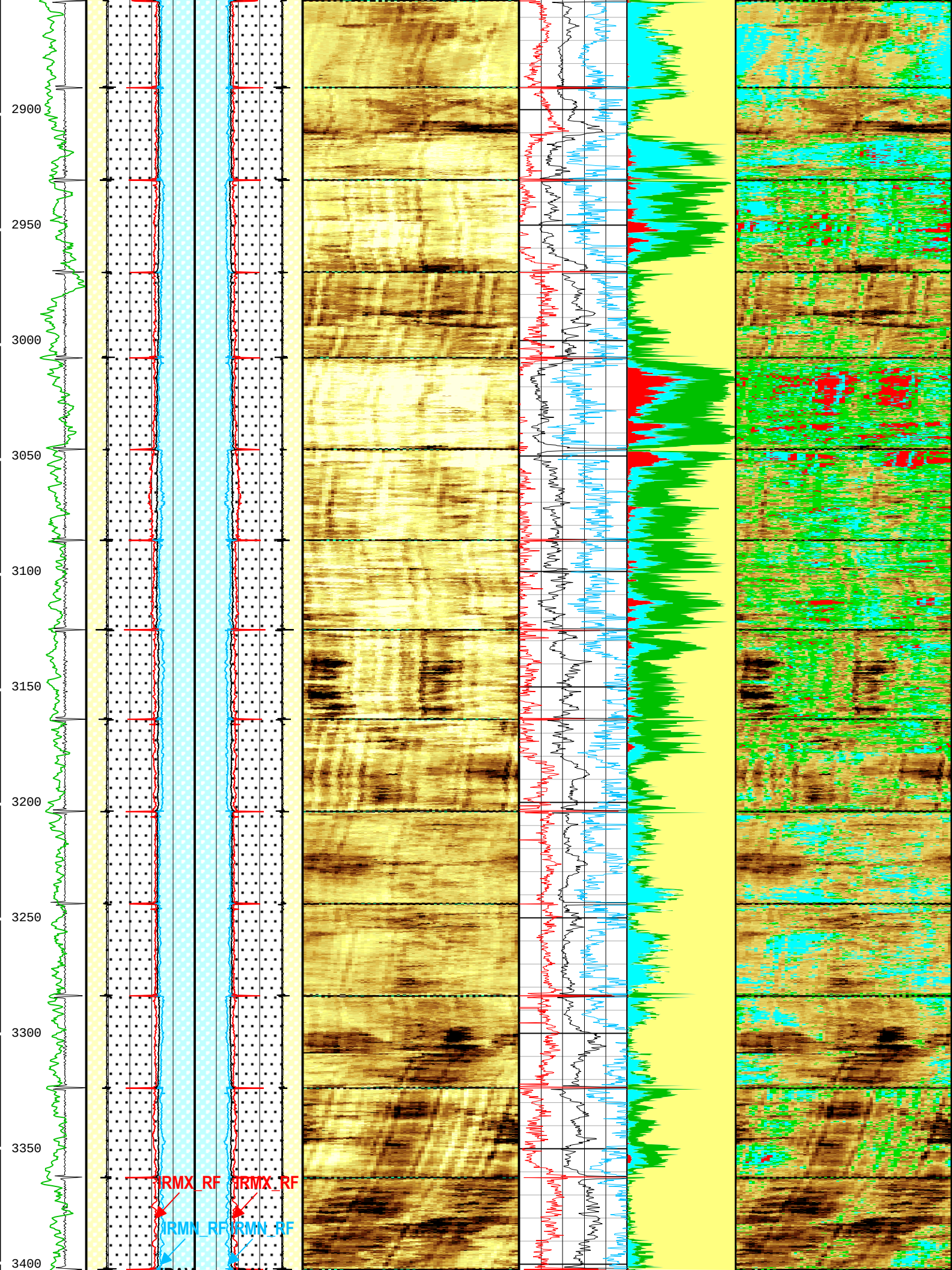
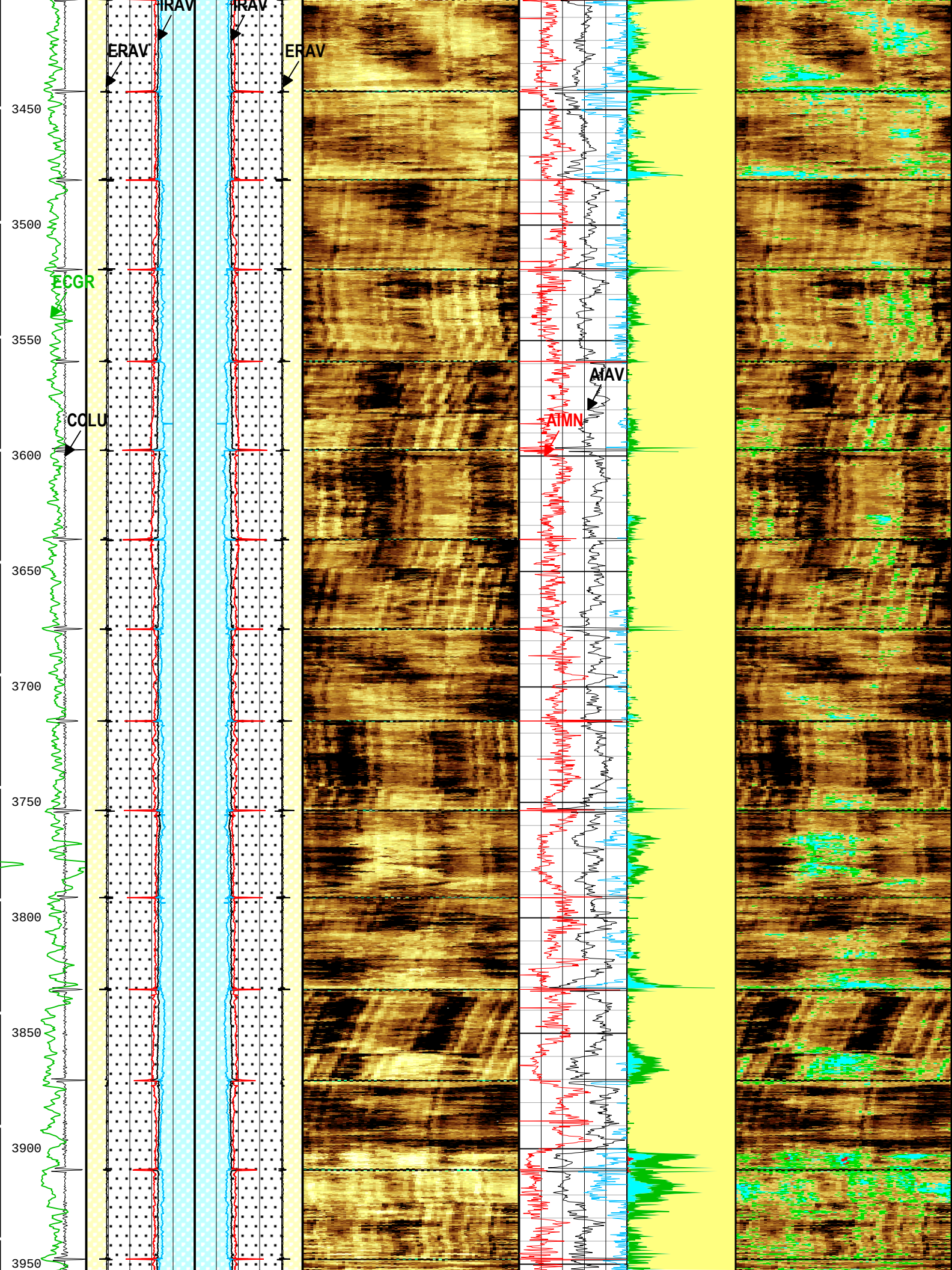
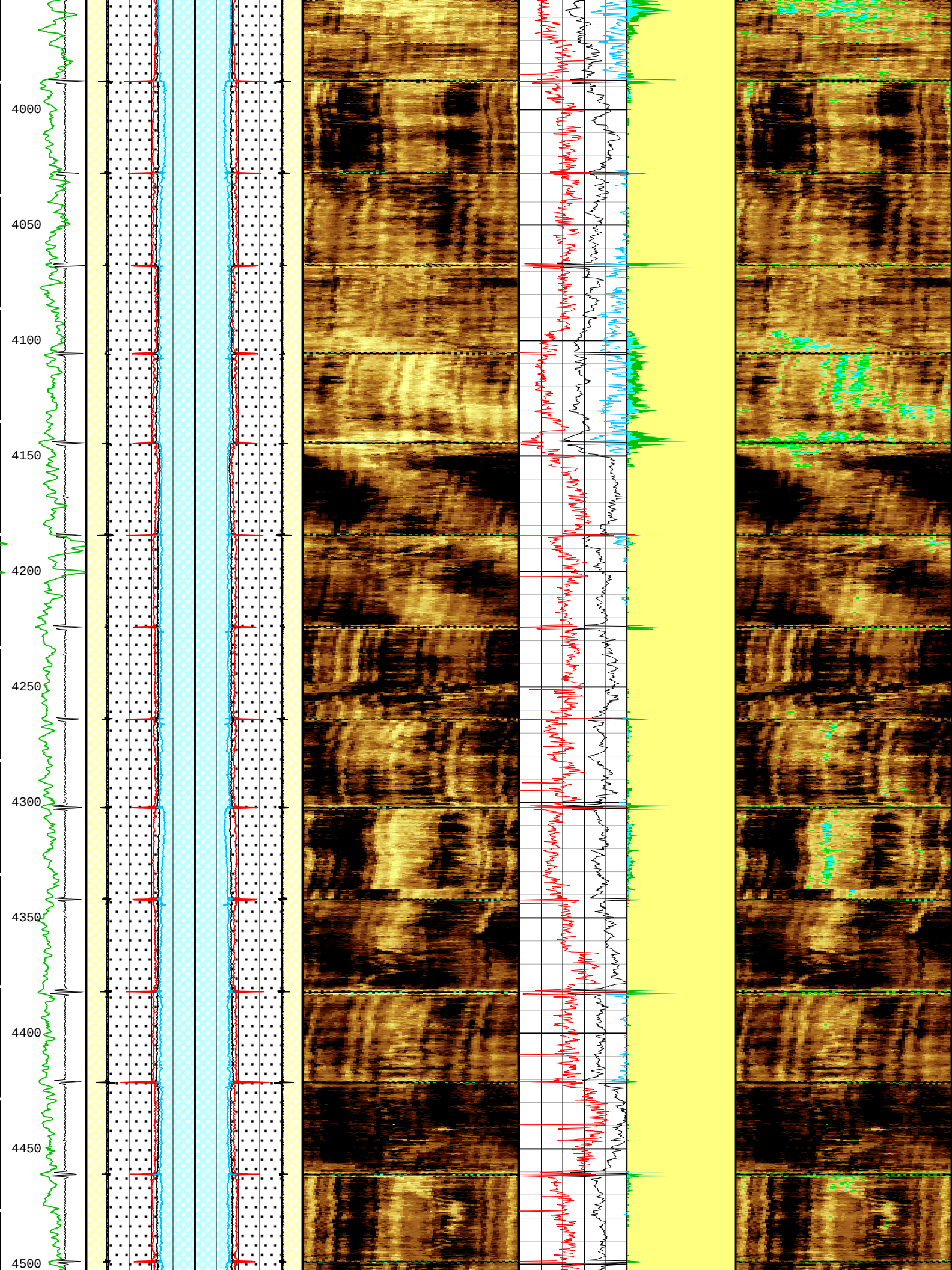
1300
1350
1400
1450
1500
1550
1600
1650
1700
1750


1800
1850
1900
1950
2000
2050
2100
2150
2200
2250
2300
Splice
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
Splice
Splice
Splice
Splice
Splice
Splice
Splice
IRAV
IRAV
ERAV
ERAV


ECGR
2350
CCLU
2400
2450
2500
2550
2600
2650
2700
2750
2800
2850
AIM
AIAV


2900
2950
3000
3050
3100
3150
3200
3250
3300
3350
3400
RMX_RF
RMX_RF
RMN_RF
RMN_RF


IRAV
IRAV
ERAV
ERAV
3450
3500
TCGR
3550
AIAV
COLU
AIMN
3600
3650
3700
3750
3800
3850
3900
3950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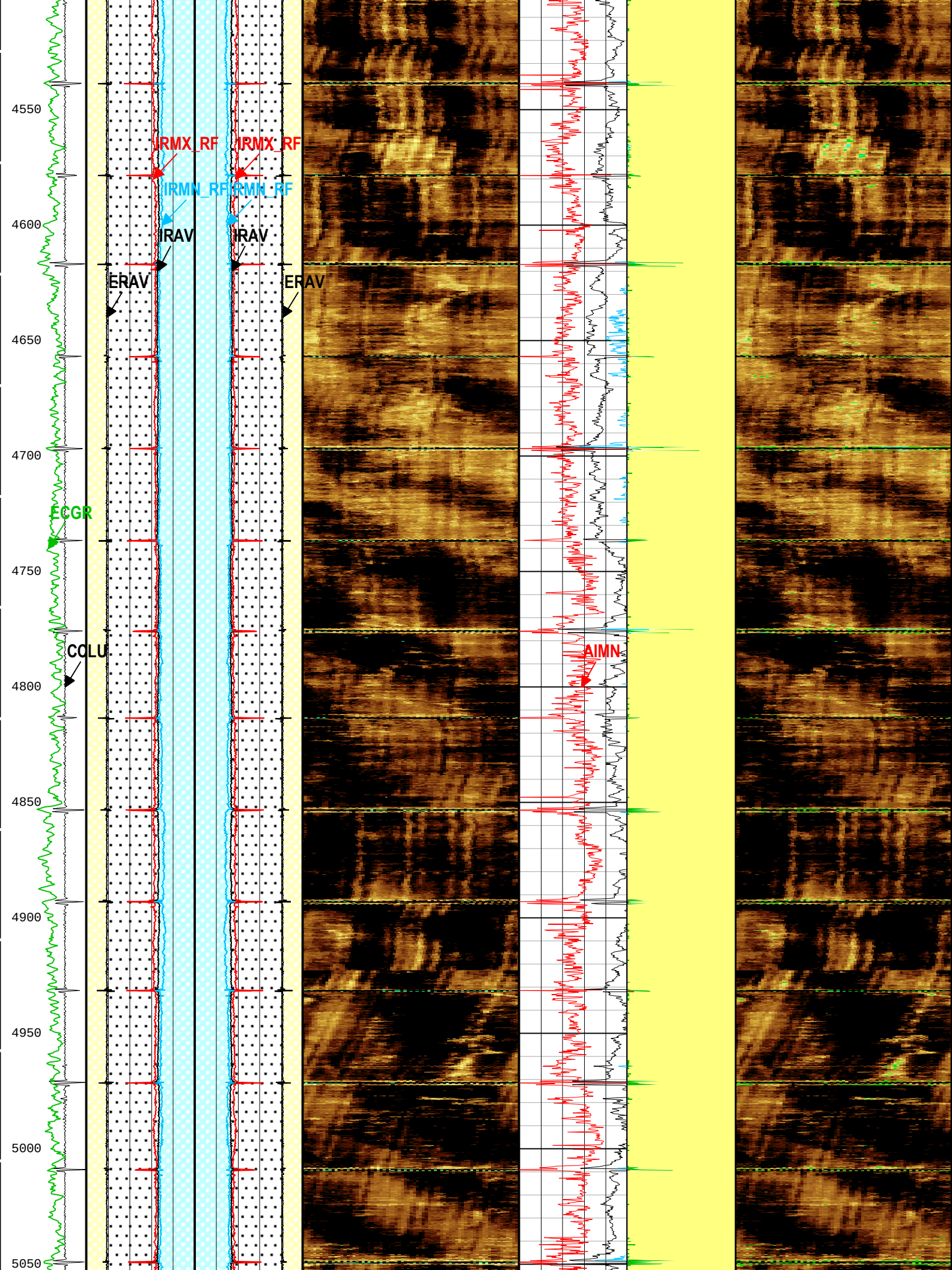
4050
4100
4150
4200
4250
4300
4350
4400
4450
4500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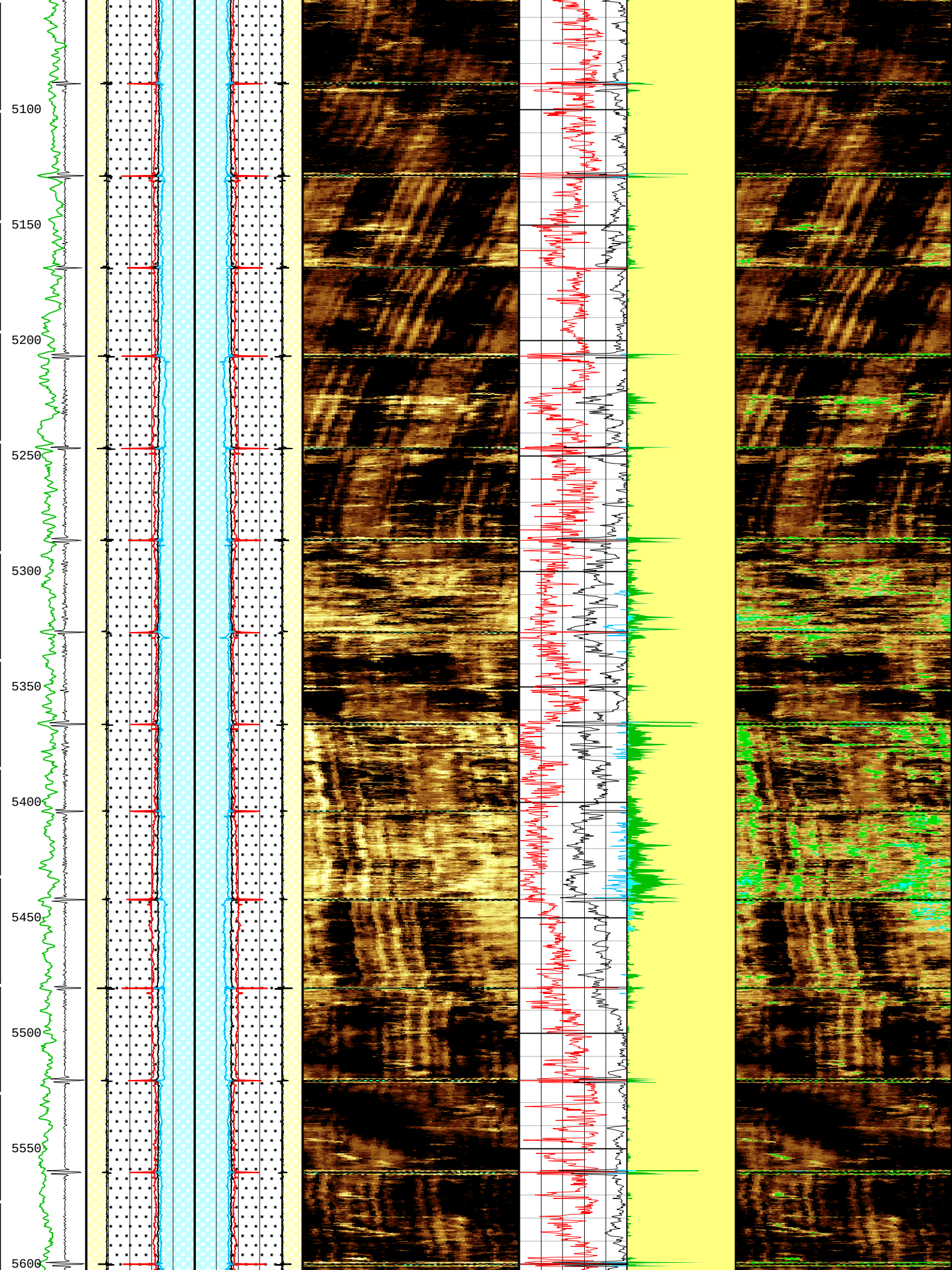
4600
4650
4700
4750
4800
4850
4900
4950
5000
5050
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV
IRAV
ERAV
ERAV
ECGR
COLU
AIMN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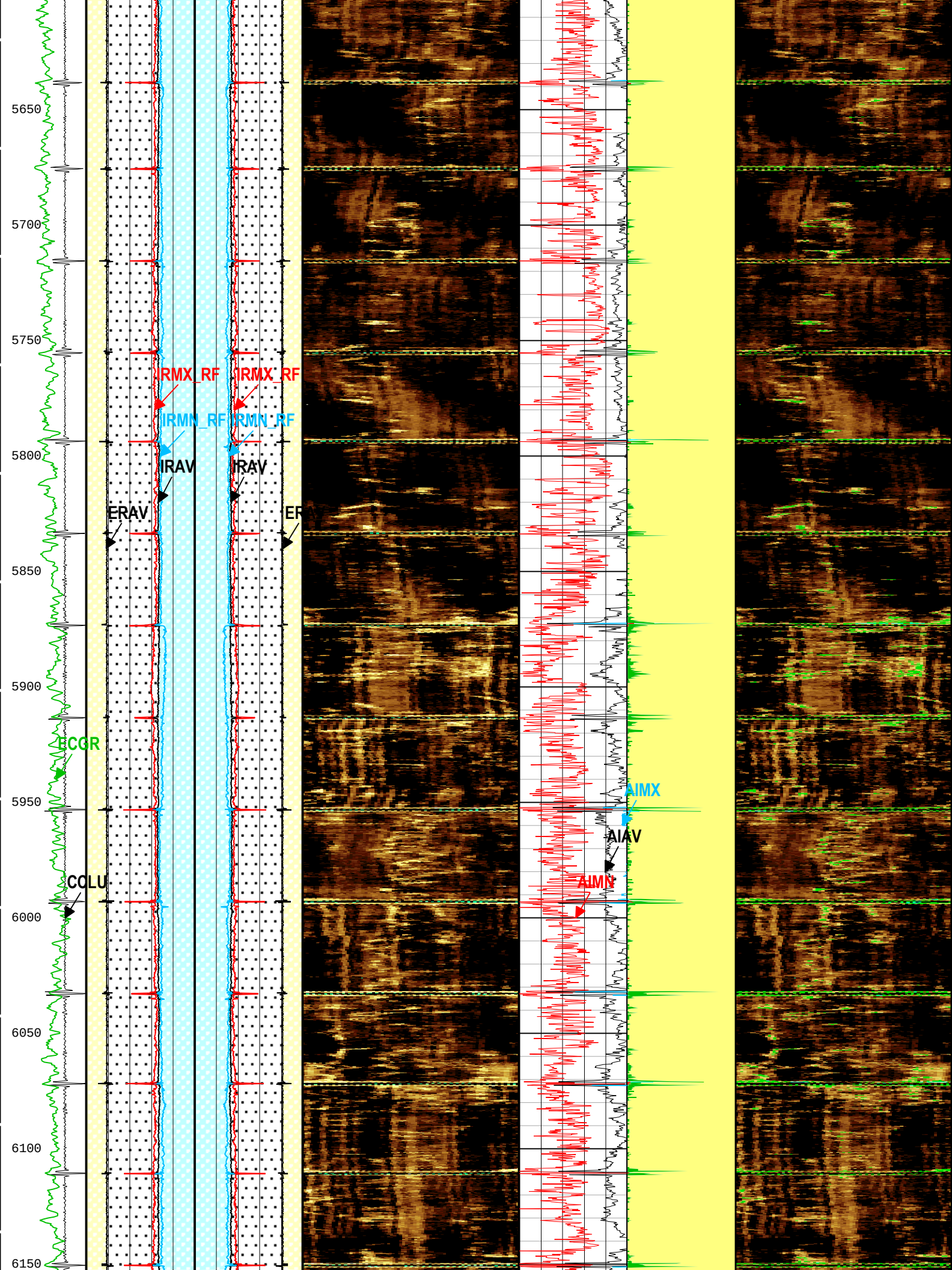
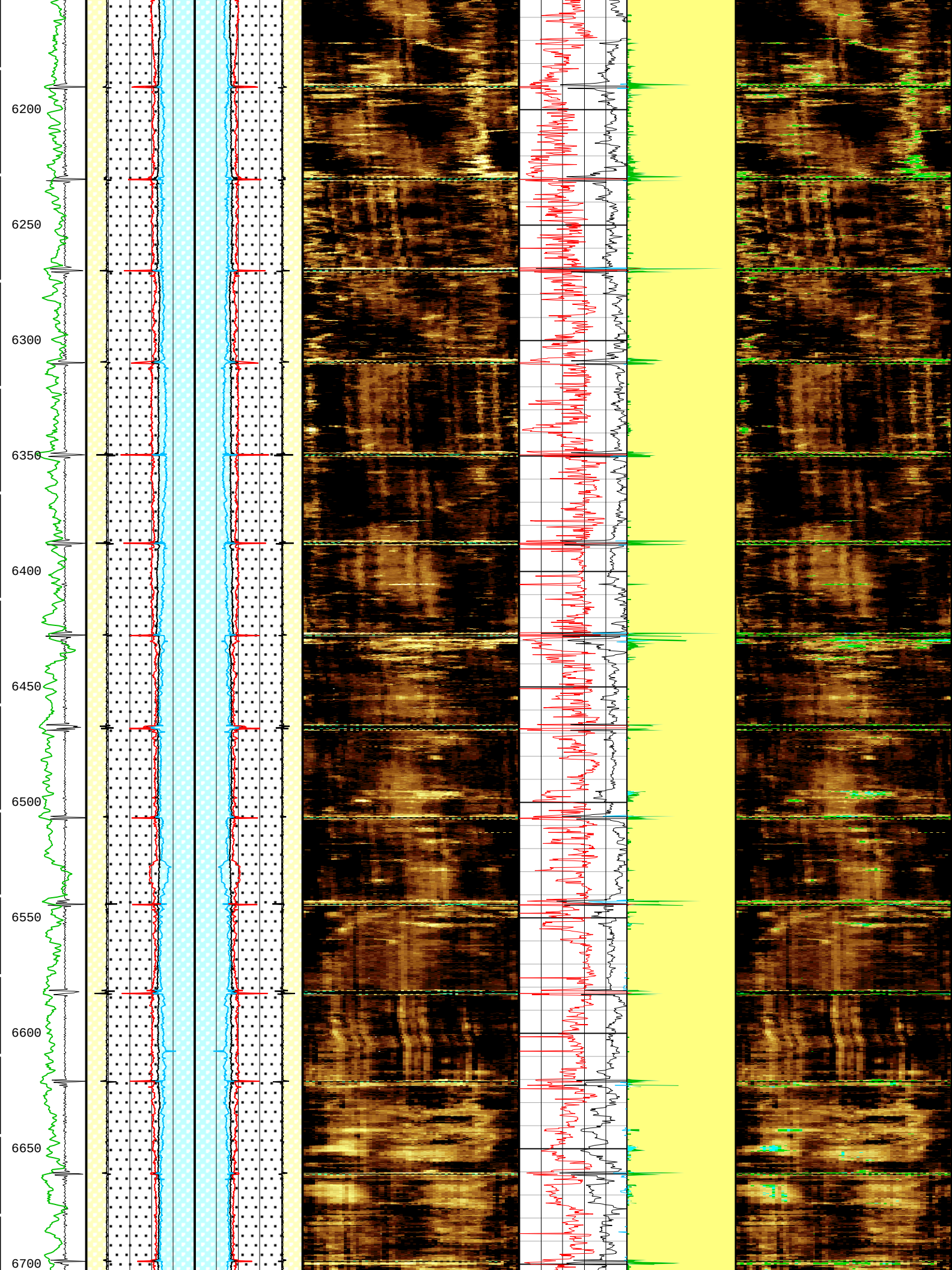
5150
5200
5250
5300
5350
5400
5450
5500
5550
5600


5650
5700
5750
5800
5850
5900
5950
6000
6050
6100
6150
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV
IRAV
ERAV
ER
ECGR
COLU
AIMX
AIAV
AIMN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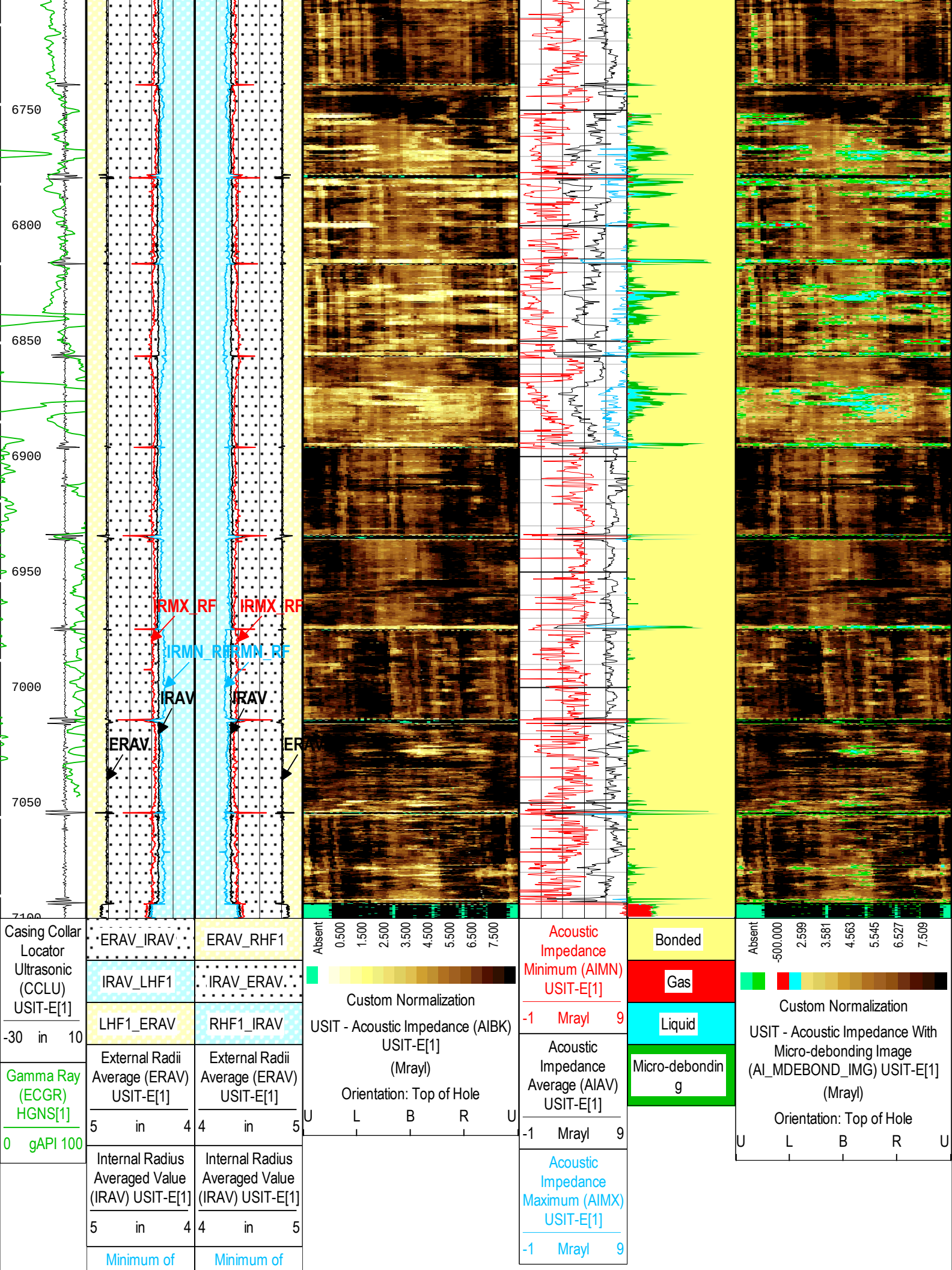
6450
6500
6550
6600
6650
6700


6750
6800
6850
6900
6950
7000
7050
7100
IRMX_RF
IRMX_RF
IRMN_RF
IRMN_RF
IRAV
IRAV
ERAV
ERAV
Casing Collar Locator Ultrasonic (CCLU) USIT-E[1]
-30 in 10
Gamma Ray (ECGR) HGNS[1]
0 gAPI 100
ERAV_IRAV
ERAV_RHF1
IRAV_LHF1
IRAV_ERAV
LHF1_ERAV
RHF1_IRAV
External Radii Average (ERAV) USIT-E[1]
5 in 4
4 in 5
Internal Radius Averaged Value (IRAV) USIT-E[1]
5 in 4
4 in 5
Minimum of
Minimum of
Absent 0.500 1.500 2.500 3.500 4.500 5.500 6.500 7.500
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
Absent -500.000 2.599 3.581 4.563 5.545 6.527 7.509
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

Unflagged Internal Radii (IRMN_RF) USIT-E[1]	Unflagged Internal Radii (IRMN_RF) USIT-E[1]
5 in 4	4 in 5
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]	Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E[1]
5 in 4	4 in 5

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: 16-Mar-2016 22:46:33

Composite 1

USIT Goodwin Compressed

Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
16Mar2016	Log[4]:Up	Up	2075.53 ft	7100.62 ft	16-Mar-2016 11:36:33 AM	16-Mar-2016 1:27:21 PM	ON	-10.00 ft	Yes
16Mar2016	Log[5]:Up	Up	194.84 ft	2291.90 ft	16-Mar-2016 1:31:17 PM	16-Mar-2016 2:31:41 PM	ON	-10.00 ft	Yes
16Mar2016	Log[6]:Up	Up	28.19 ft	401.83 ft	16-Mar-2016 2:34:30 PM	16-Mar-2016 2:51:45 PM	ON	-10.00 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Porter 50C

Composite 1:S005

Description: USI Goodwin Format: Log (LBV1_Long Beach Custom Goodwin) Index Scale: 1 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 16-Mar-2016 22:46:55

TIME_1900 - Time Marked every 60.00 (s)

Average Acoustic Impedance 1 (AV_AI1) USIT-E[1]	Average Acoustic Impedance 2 (AV_AI2) USIT-E[1]	Average Acoustic Impedance 3 (AV_AI3) USIT-E[1]	Average Acoustic Impedance 4 (AV_AI4) USIT-E[1]	Average Acoustic Impedance 5 (AV_AI5) USIT-E[1]	Average Acoustic Impedance 6 (AV_AI6) USIT-E[1]	Average Acoustic Impedance 7 (AV_AI7) USIT-E[1]	Average Acoustic Impedance 8 (AV_AI8) USIT-E[1]	Average Acoustic Impedance 9 (AV_AI9) USIT-E[1]
0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl
Maximum Acoustic Impedance 1 (MAX_AI1) USIT-E[1]	Maximum Acoustic Impedance 2 (MAX_AI2) USIT-E[1]	Maximum Acoustic Impedance 3 (MAX_AI3) USIT-E[1]	Maximum Acoustic Impedance 4 (MAX_AI4) USIT-E[1]	Maximum Acoustic Impedance 5 (MAX_AI5) USIT-E[1]	Maximum Acoustic Impedance 6 (MAX_AI6) USIT-E[1]	Maximum Acoustic Impedance 7 (MAX_AI7) USIT-E[1]	Maximum Acoustic Impedance 8 (MAX_AI8) USIT-E[1]	Maximum Acoustic Impedance 9 (MAX_AI9) USIT-E[1]
0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl

U L B R U Orientation: Top of Hole

U L B R U Orientation: Top of Hole

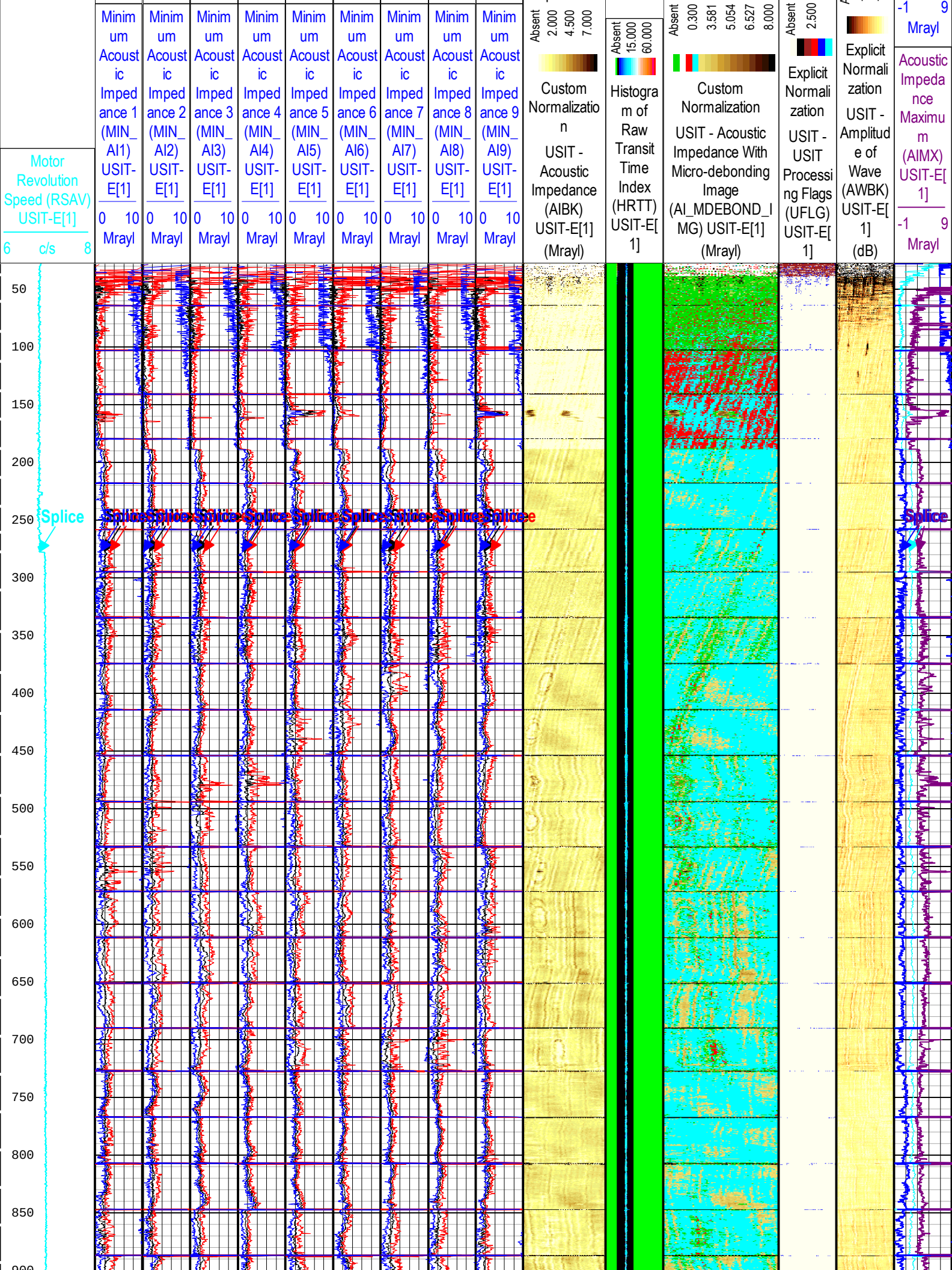
U L B R U Orientation Top of Hole

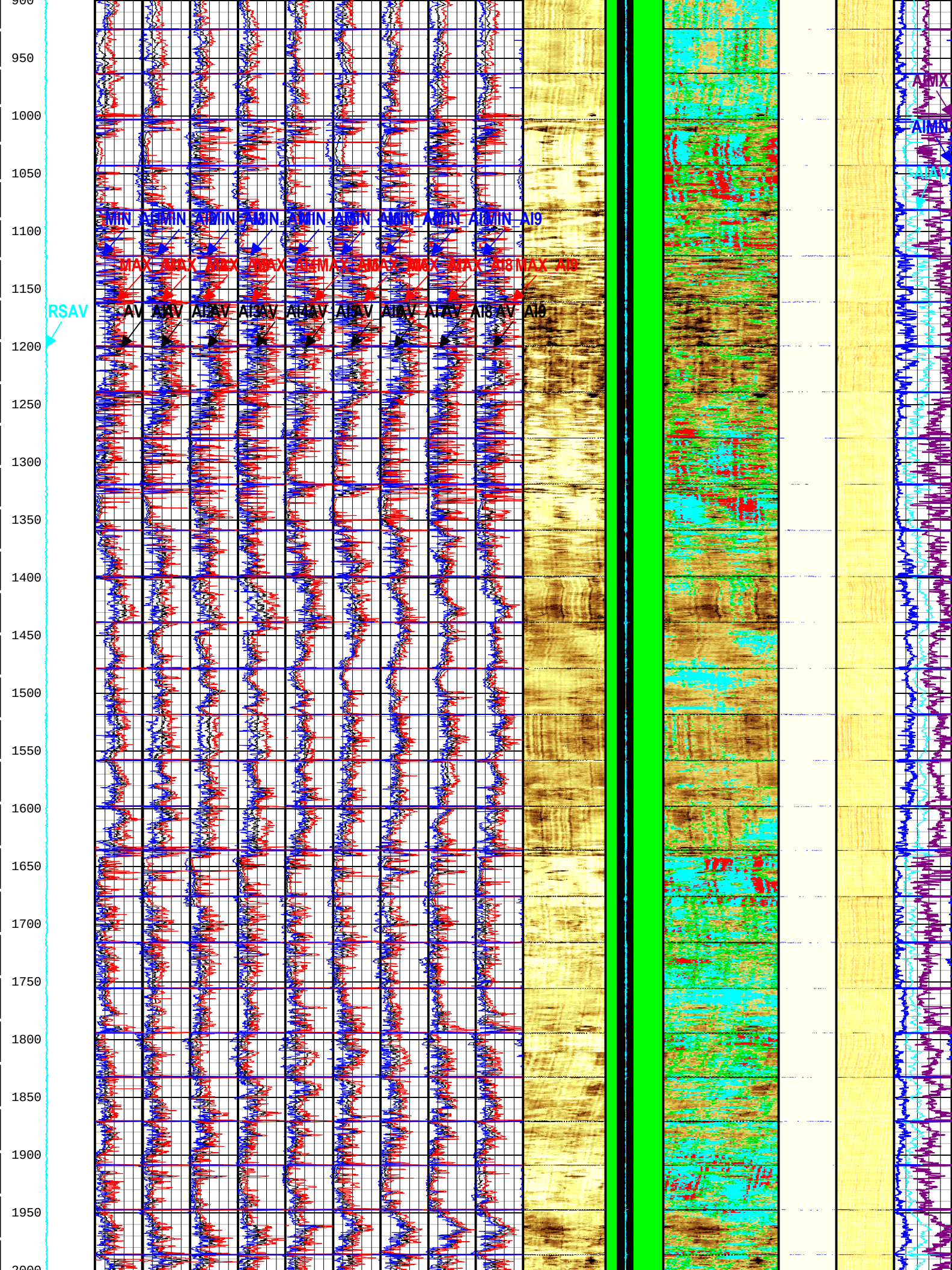
U L B R U Orientation Top of Hole

Absent -4.000 -1.200

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

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


Minimum Acoustic Impedance 1 (MIN_AI1) USIT-E[1]
Minimum Acoustic Impedance 2 (MIN_AI2) USIT-E[1]
Minimum Acoustic Impedance 3 (MIN_AI3) USIT-E[1]
Minimum Acoustic Impedance 4 (MIN_AI4) USIT-E[1]
Minimum Acoustic Impedance 5 (MIN_AI5) USIT-E[1]
Minimum Acoustic Impedance 6 (MIN_AI6) USIT-E[1]
Minimum Acoustic Impedance 7 (MIN_AI7) USIT-E[1]
Minimum Acoustic Impedance 8 (MIN_AI8) USIT-E[1]
Minimum Acoustic Impedance 9 (MIN_AI9) USIT-E[1]
0 10 Mrayl
Motor Revolution Speed (RSAV) USIT-E[1]
6 c/s 8
Absent 2.000 4.500 7.000
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E[1] (Mrayl)
Absent 15.000 60.000
Histogram of Raw Transit Time Index (HRTT) USIT-E[1]
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[1] (Mrayl)
Absent 2.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E[1]
Explicit Normalization
USIT - Amplitude of Wave (AWBK) USIT-E[1] (dB)
-1 9 Mrayl
Acoustic Impedance Maximum (AIMX) USIT-E[1]
-1 9 Mrayl
50
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
850
900
Splice


900
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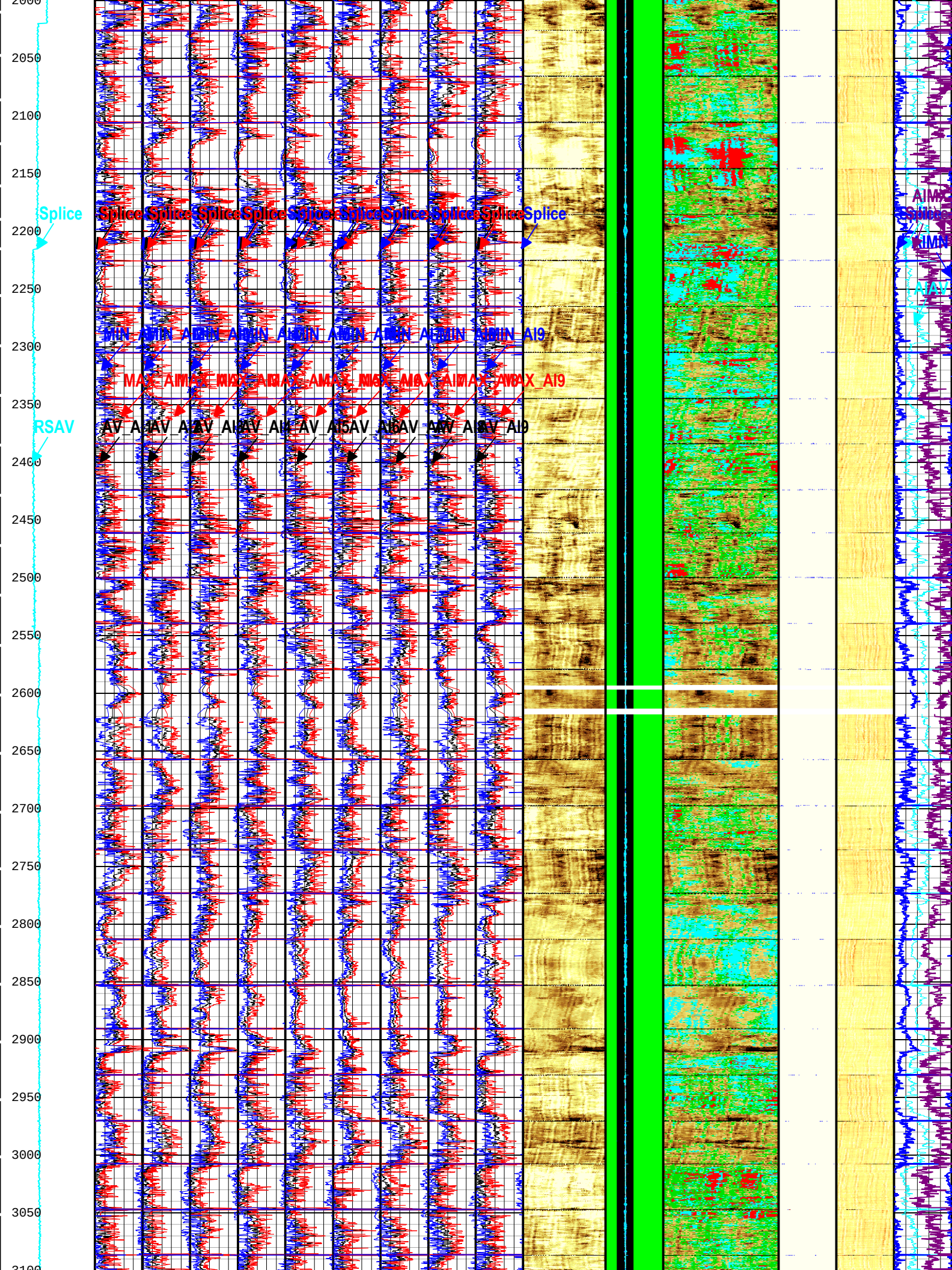
1950
2000
RSAV
AIMIN
AIMAX
AIAV


2000
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2100
2150
Splice
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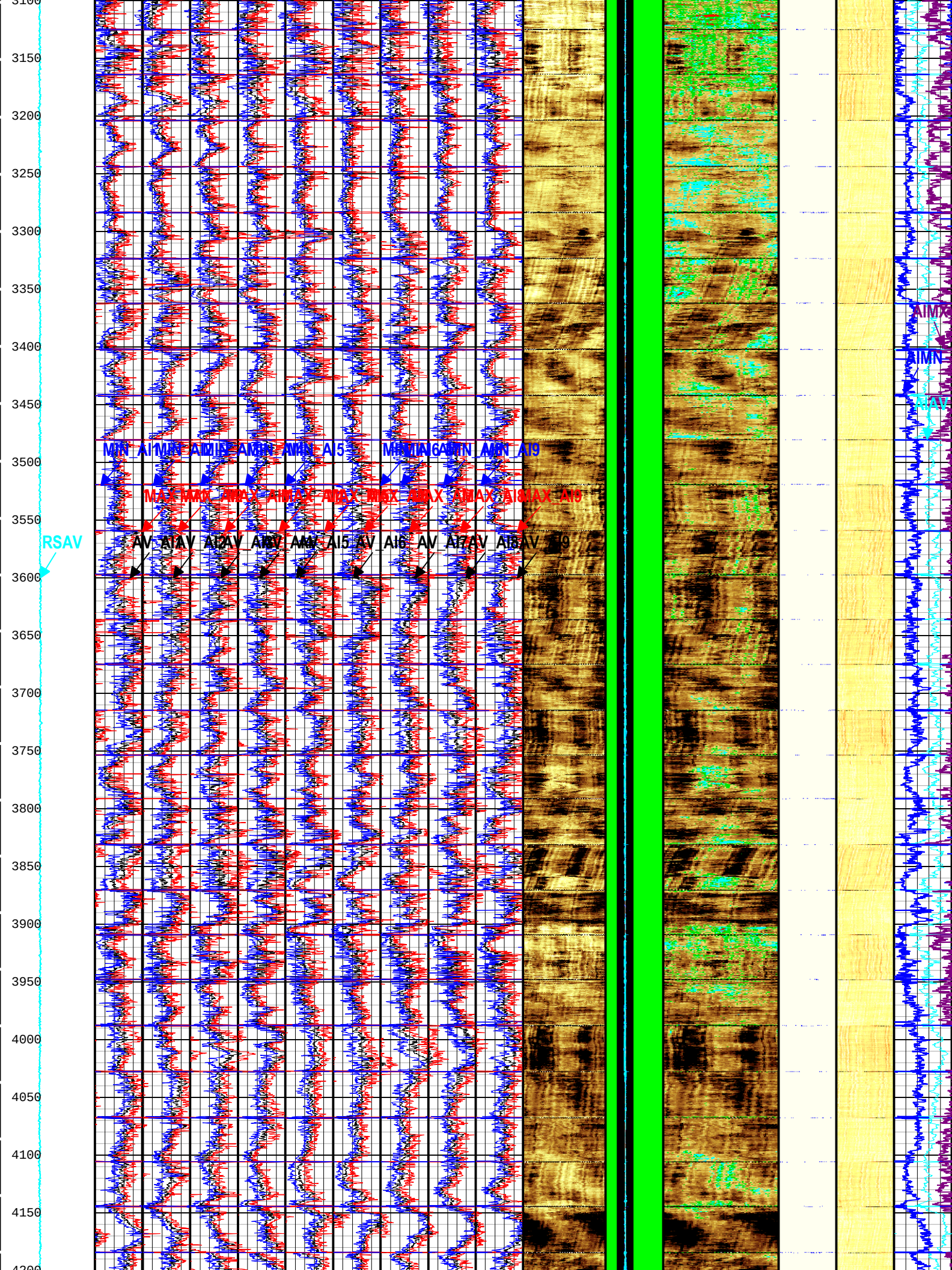
3100



3100
3150
3200
3250
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3350
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3650
3700
3750
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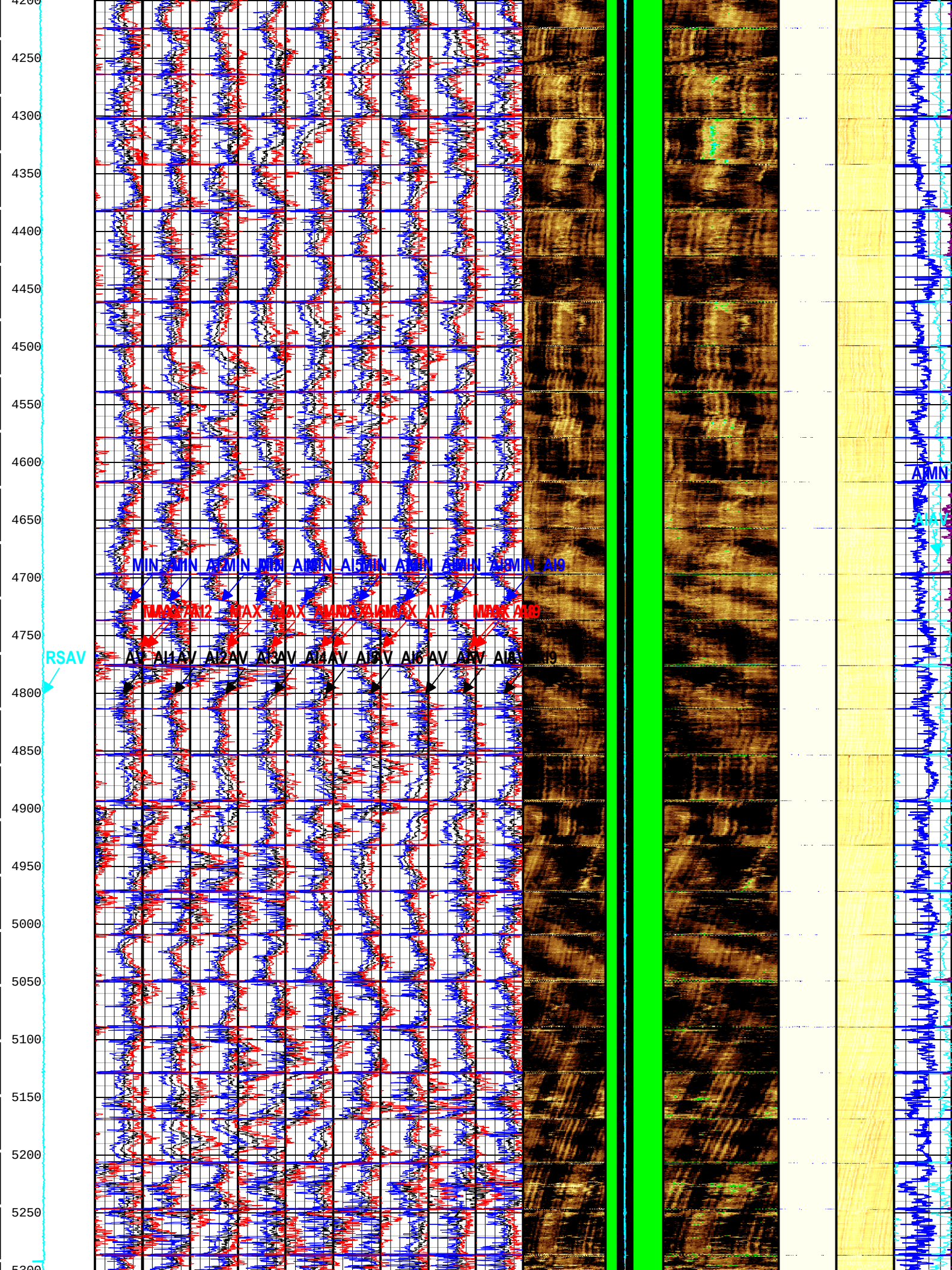
3850
3900
3950
4000
4050
4100
4150
4200
RSAV
MIN AI1 MIN AI2 MIN AI3 MIN AI4 MIN AI5 MIN AI6 MIN AI7 MIN AI8 MIN AI9
MAX AI1 MAX AI2 MAX AI3 MAX AI4 MAX AI5 MAX AI6 MAX AI7 MAX AI8 MAX AI9
AV AI1 AV AI2 AV AI3 AV AI4 AV AI5 AV AI6 AV AI7 AV AI8 AV AI9
AIMX
AIMN
AIAV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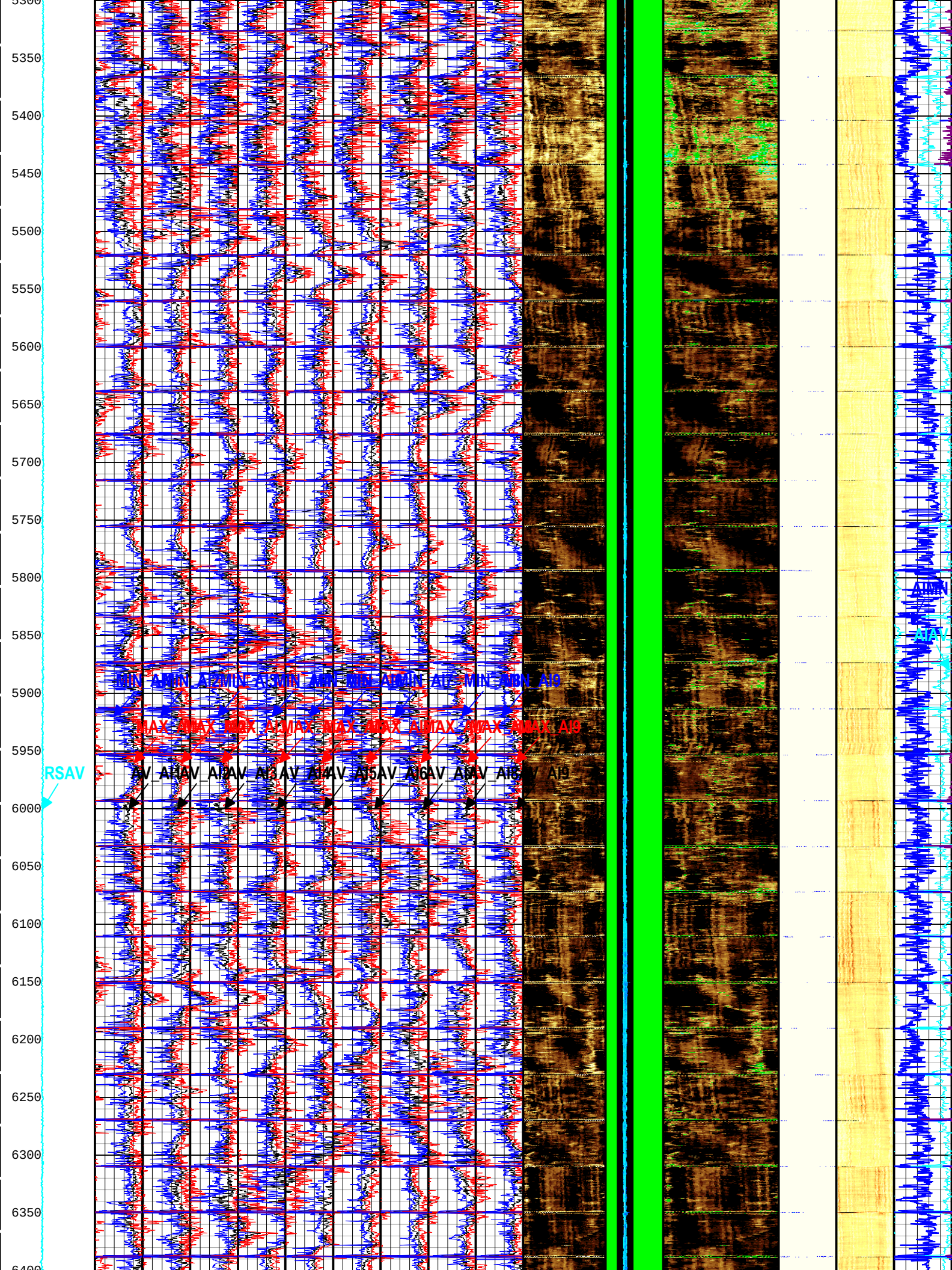
RSAV
AMN
AV
AI1AV
AI2AV
AI3AV
AI4AV
AI5V
AI6 AV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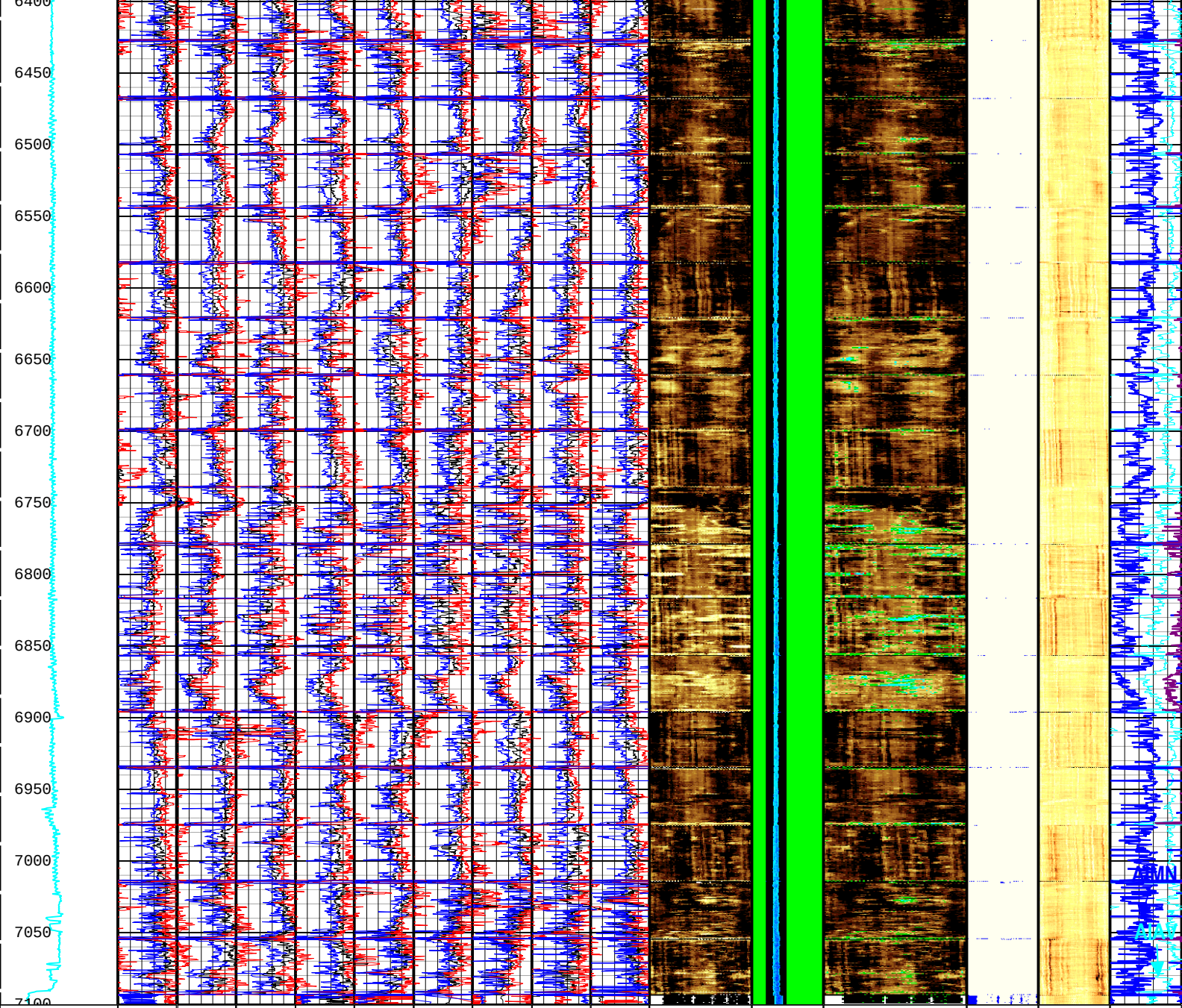
6050
6100
6150
6200
6250
6300
6350
6400
RSAV
AV AI1AV AI2AV AI3AV AI4AV AI5AV AI6AV AI7AV AI8AV AI9
MIN AI1MIN AI2MIN AI3MIN AI4MIN AI5MIN AI6MIN AI7MIN AI8MIN AI9
MAX AI1MAX AI2MAX AI3MAX AI4MAX AI5MAX AI6MAX AI7MAX AI8MAX AI9



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

Average Acoustic Impedance 1 (AV_AI1) USIT-E[1]
0 10 Mrayl

Maximum Acoustic Impedance 1 (MAX_AI1) USIT-E[1]

Average Acoustic Impedance 2 (AV_AI2) USIT-E[1]
0 10 Mrayl

Maximum Acoustic Impedance 2 (MAX_AI2) USIT-E[1]

Average Acoustic Impedance 3 (AV_AI3) USIT-E[1]
0 10 Mrayl

Maximum Acoustic Impedance 3 (MAX_AI3) USIT-E[1]

Average Acoustic Impedance 4 (AV_AI4) USIT-E[1]
0 10 Mrayl

Maximum Acoustic Impedance 4 (MAX_AI4) USIT-E[1]

Average Acoustic Impedance 5 (AV_AI5) USIT-E[1]
0 10 Mrayl

Maximum Acoustic Impedance 5 (MAX_AI5) USIT-E[1]

Average Acoustic Impedance 6 (AV_AI6) USIT-E[1]
0 10 Mrayl

Maximum Acoustic Impedance 6 (MAX_AI6) USIT-E[1]

Average Acoustic Impedance 7 (AV_AI7) USIT-E[1]
0 10 Mrayl

Maximum Acoustic Impedance 7 (MAX_AI7) USIT-E[1]

Average Acoustic Impedance 8 (AV_AI8) USIT-E[1]
0 10 Mrayl

Maximum Acoustic Impedance 8 (MAX_AI8) USIT-E[1]

Average Acoustic Impedance 9 (AV_AI9) USIT-E[1]
0 10 Mrayl

Maximum Acoustic Impedance 9 (MAX_AI9) USIT-E[1]

Absent 2.000 4.500 7.000
Custom Normalization
USIT - Acoustic Impedance (AIBK) USIT-E[1] (Mrayl)
Orientation: Top of Hole
U L B R U

Absent 15.000 60.000
Histogram of Raw Transit Time Index (HRTT) USIT-E[1]

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[1] (Mrayl)
Orientation: Top of Hole
U L B R U

Absent 2.500
Explicit Normalization
USIT - USIT Processing Flags (UFLG) USIT-E[1]
Orientation Top of Hole
UL B RU

Absent -4.000 -1.200
Explicit Normalization
USIT - Amplitude of Wave (AWBK) USIT-E[1] (dB)
Orientation Top of Hole
UL B RU

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

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

Acoustic Impeda

0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl
Minimum Acoustic Impedance 1 (MIN_AI1) USIT-E[1]	Minimum Acoustic Impedance 2 (MIN_AI2) USIT-E[1]	Minimum Acoustic Impedance 3 (MIN_AI3) USIT-E[1]	Minimum Acoustic Impedance 4 (MIN_AI4) USIT-E[1]	Minimum Acoustic Impedance 5 (MIN_AI5) USIT-E[1]	Minimum Acoustic Impedance 6 (MIN_AI6) USIT-E[1]	Minimum Acoustic Impedance 7 (MIN_AI7) USIT-E[1]	Minimum Acoustic Impedance 8 (MIN_AI8) USIT-E[1]	Minimum Acoustic Impedance 9 (MIN_AI9) USIT-E[1]
0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl	0 10 Mrayl

nce Maximum (AIMX) USIT-E[1]

-1 9 Mrayl

TIME_1900 - Time Marked every 60.00 (s)

Description: USI Goodwin Format: Log (LBV1_Long Beach Custom Goodwin) Index Scale: 1 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 16-Mar-2016 22:46:55

200 ft

Very Hi-Res Repeat 10 IN=100 FT

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
200 ft	Log[2]:Up	Up	8.89 ft	111.33 ft	16-Mar-2016 6:18:51 PM	16-Mar-2016 6:25:23 PM	ON	0.00 ft	No

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Porter 50C
200 ft: Log[2]:Up:S005

Description: USI Composite Format: Log (LBV1_USI Composite 9.625inch) Index Scale: 10 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 16-Mar-2016 22:47:32

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

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)

ERAV
ERAV-IRAV
IRAV

IRAV
ERAV
IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
5 in 4

Median of Unflagged External Radii (ERAV_RF) USIT-E
4 in 5

Minimum of Unflagged

Median Internal Radius of

Median Internal Radius of

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

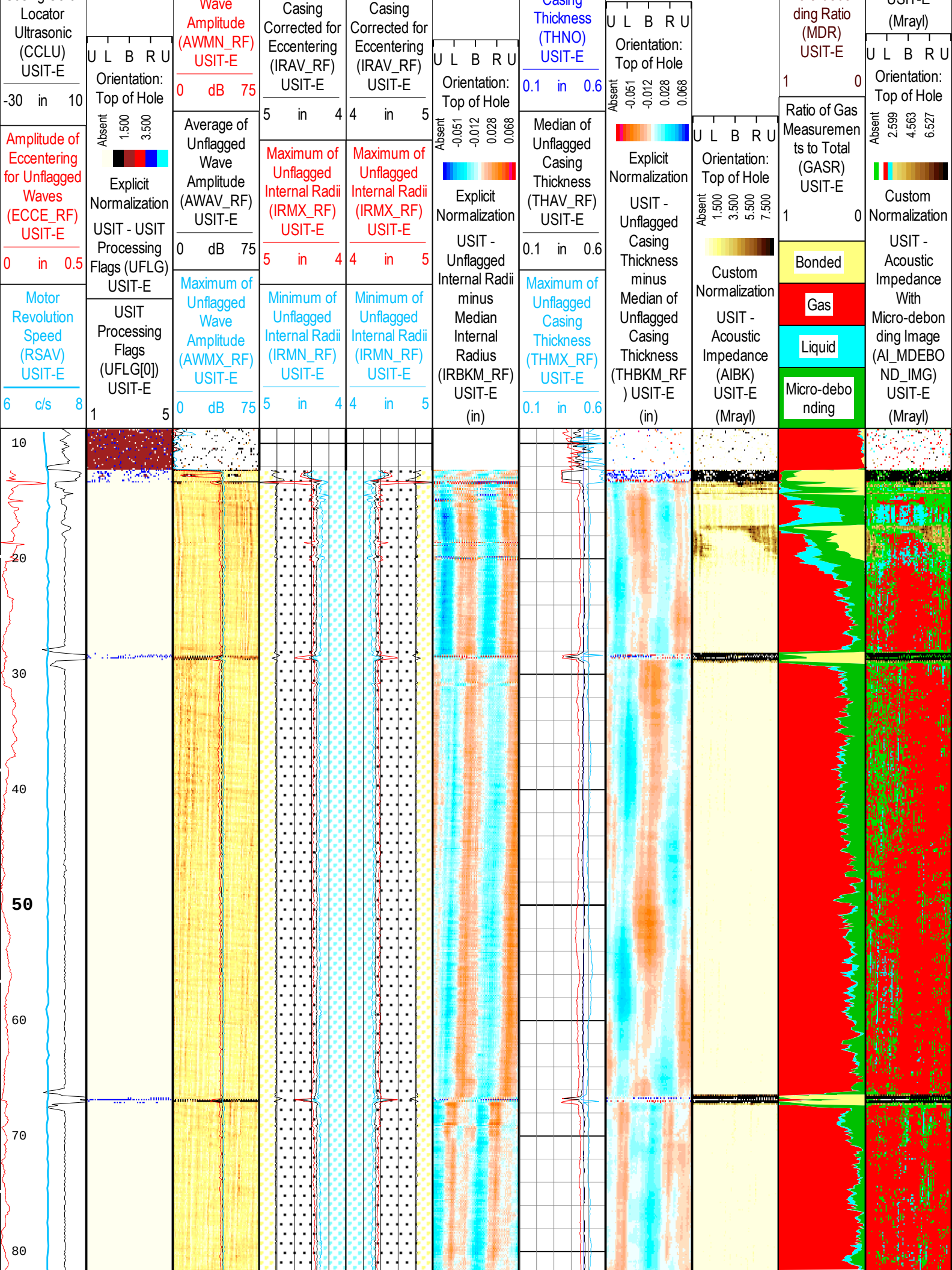
Nominal Casing

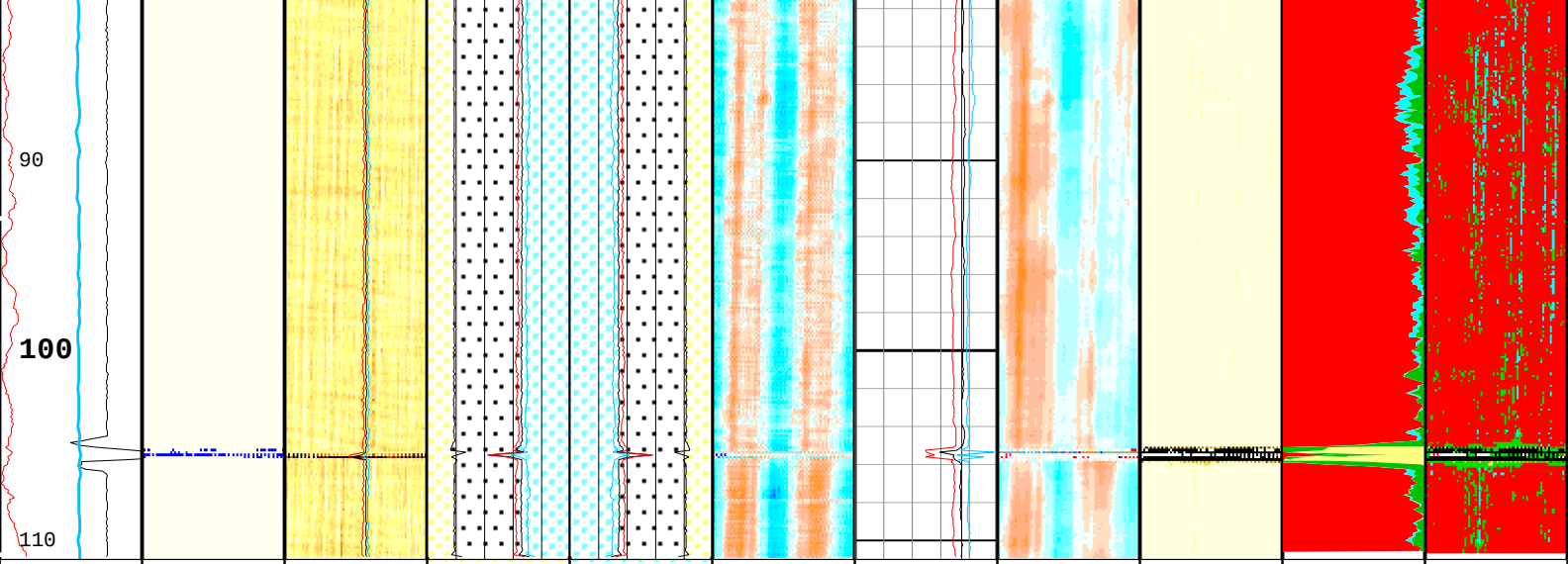
Ratio of Cement Measurements to Total (CEMR) USIT-E
1 0

Micro-debon

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

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
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
Casing Corrected for Eccentering (IRAV_RF) USIT-E
5 in 4
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
5 in 4
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
5 in 4
Casing Corrected for Eccentering (IRAV_RF) USIT-E
4 in 5
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4 in 5
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4 in 5
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)
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)
ding Ratio (MDR) USIT-E
1 0
Ratio of Gas Measurements to Total (GASR) USIT-E
1 0
Bonded
Gas
Liquid
Micro-debonding
(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)
10
20
30
40
50
60
70
80



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
5 in 4

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
5 in 4

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
5 in 4

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
5 in 4

IRAV
ERAV
IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
4 in 5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4 in 5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4 in 5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4 in 5

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

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] - :

UTIM Error
Pulse Origin Not Detected
WINLEN Error
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 Composite 9.625inch) Index Scale: 10 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 16-Mar-2016 22:47:32

200 ft

Very Hi-Res Repeat 10 IN=100 FT

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
200 ft	Log[1]:Up	Up	10.84 ft	330.68 ft	16-Mar-2016 5:56:00 PM	16-Mar-2016 6:16:34 PM	ON	0.00 ft	No

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Porter 50C
200 ft: Log[1]:Up: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: 16-Mar-2016 22:47:36

TIME_1900 - Time Marked every 60.00 (s)

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

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

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

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

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

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

Median of Unflagged External Radii (ERAV_RF) USIT-E
5 in 4

Median of Unflagged External Radii (ERAV_RF) USIT-E
4 in 5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
5 in 4

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4 in 5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
5 in 4

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4 in 5

U L B R U
Orientation: Top of Hole
Absent -0.051 -0.012 0.028 0.068
Explicit Normalization
USIT - Unflagged Internal Radii

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

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

U L B R U
Orientation: Top of Hole
Absent 1.500 3.500 5.500 7.500
Custom

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

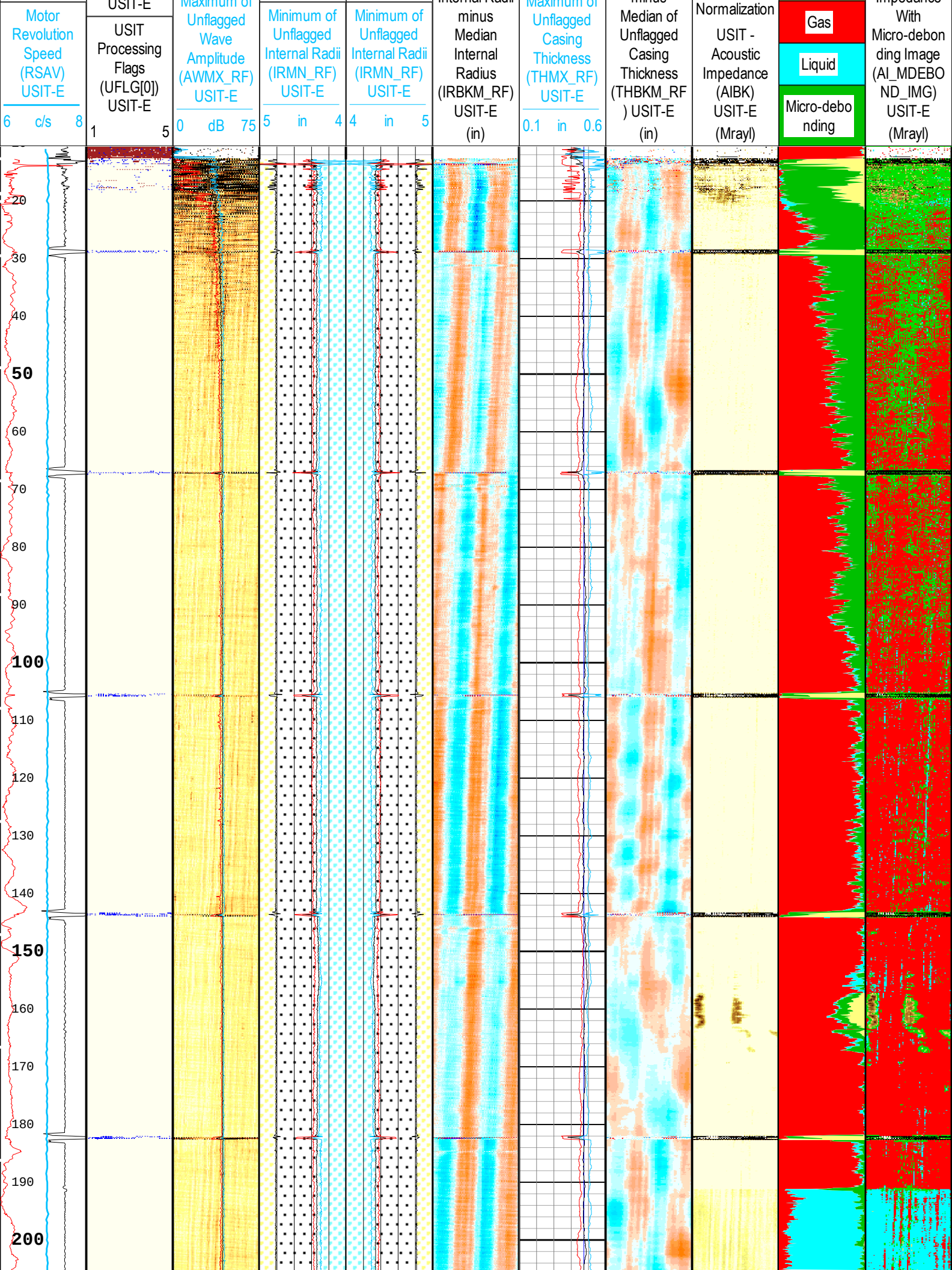
Micro-debonding Ratio (MDR) USIT-E
1 0

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

Bonded

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


Motor Revolution Speed (RSAV) USIT-E
6 c/s 8
USIT-E
USIT Processing Flags (UFLG[0]) USIT-E
1 5
Maximum of Unflagged Wave Amplitude (AWMX_RF) USIT-E
0 dB 75
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
5 in 4
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4 in 5
minus Median Internal Radius (IRBKM_RF) USIT-E (in)
Maximum of Unflagged Casing Thickness (THMX_RF) USIT-E
0.1 in 0.6
Median of Unflagged Casing Thickness (THBKM_RF) USIT-E (in)
Normalization USIT - Acoustic Impedance (AIBK) USIT-E (Mrayl)
Gas
Liquid
Micro-debonding
With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E (Mrayl)
20
30
40
50
60
70
80
90
100
110
120
130
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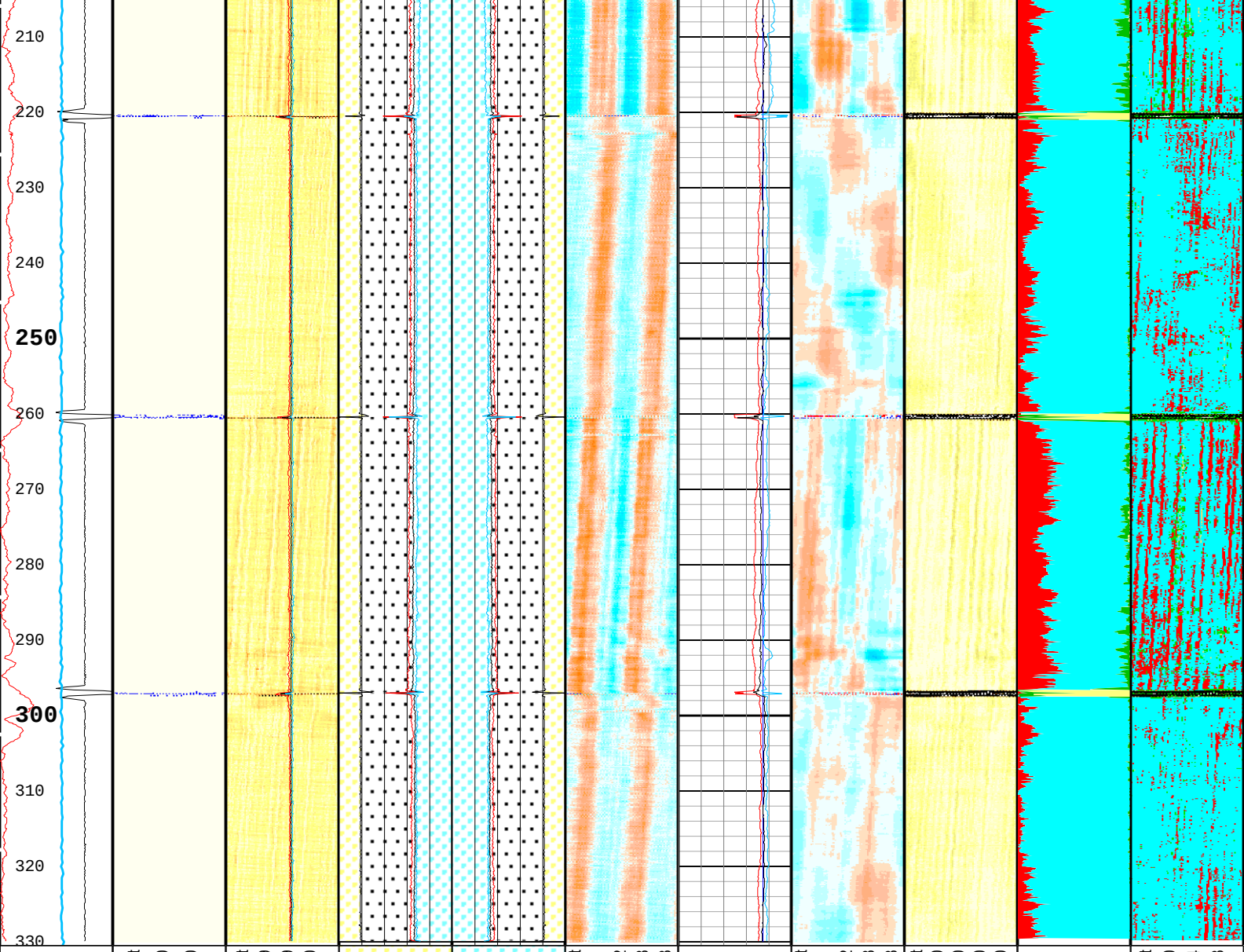
150
160
170
180
190
200



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

ERAV
ERAV-IRAV
IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
5 in 4

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
5 in 4

Maximum of Unflagged Internal Radii

IRAV
ERAV
IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
4 in 5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4 in 5

Maximum of Unflagged Internal Radii

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

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

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

Amplitude (AWAV_RF) USIT-E
0 dB 75

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

(IRMX_RF) USIT-E
5 in 4

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
5 in 4

(IRMX_RF) USIT-E
4 in 5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4 in 5

(THMX_RF) USIT-E
0.1 in 0.6

Micro-debo nding

(AI_MDEBO ND_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 9.625inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 16-Mar-2016 22:47:36

200 ft

Software Version

Acquisition System	Version
Maxwell 2016 SP1	6.1.58882.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
200 ft	Log[2]:Up	Up	8.89 ft	111.33 ft	16-Mar-2016 6:18:51 PM	16-Mar-2016 6:25:23 PM	ON	0.00 ft	No

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Porter 50C
200 ft: Log[2]:Up: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: 16-Mar-2016 22:47:41

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] - :

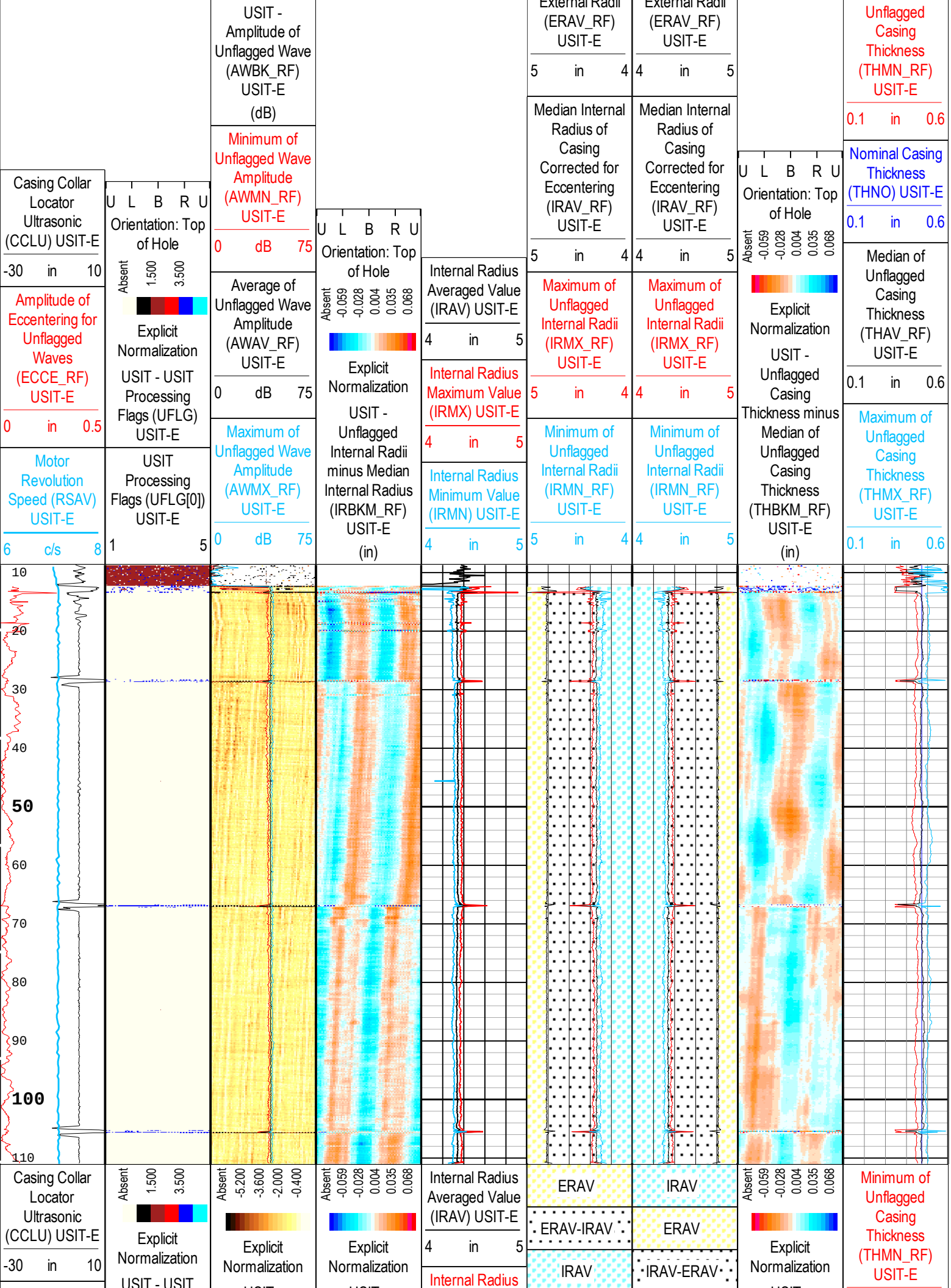
UTIM Error
Pulse Origin Not Detected
WINLEN Error
Casing Thickness Error
Loop Processing Error

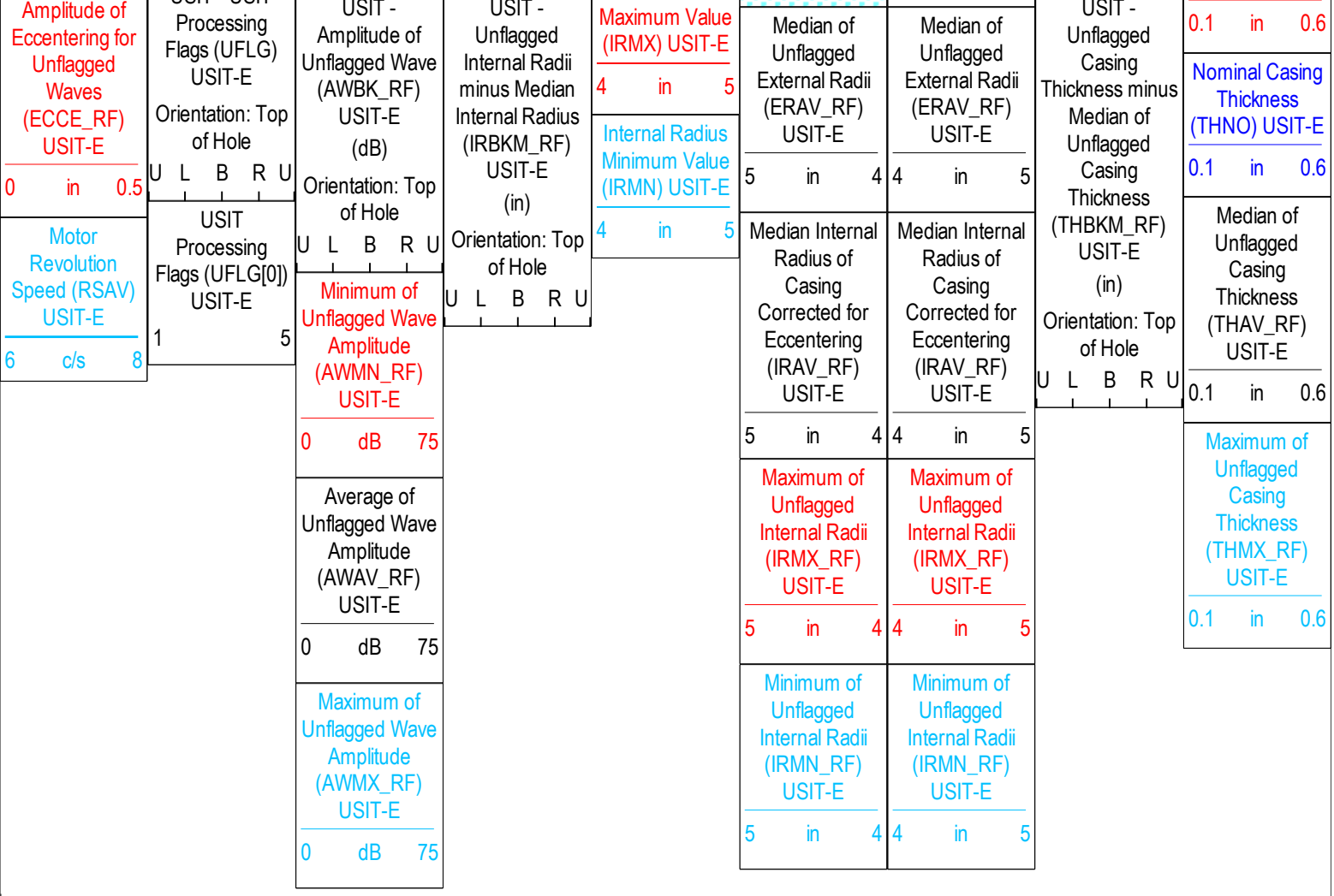
TIME_1900 - Time Marked every 60.00 (s)

U L B R U
Orientation: Top of Hole
Absent -5.200 -3.600 -2.000 -0.400
Explicit Normalization

ERAV IRAV
ERAV-IRAV ERAV
IRAV IRAV-ERAV
Median of Unflagged
Median of Unflagged

Minimum of


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
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
Absent -5.200 -3.600 -2.000 -0.400
Explicit Normalization
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)
Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
Internal Radius Averaged Value (IRAV) USIT-E
4 in 5
Internal Radius Maximum Value (IRMX) USIT-E
4 in 5
Internal Radius Minimum Value (IRMN) USIT-E
4 in 5
Internal Radius
External Radii (ERAV_RF) USIT-E
5 in 4
Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
5 in 4
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
5 in 4
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
5 in 4
ERAV
ERAV-IRAV
IRAV
External Radii (ERAV_RF) USIT-E
4 in 5
Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4 in 5
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4 in 5
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4 in 5
IRAV
ERAV
IRAV-ERAV
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)
Absent -0.059 -0.028 0.004 0.035 0.068
Explicit Normalization
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
Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E
10
20
30
40
50
60
70
80
90
100
110



Channel Processing Parameters

200 ft: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BS	Bit Size	WLSESSION	14	in
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.472	in
CYSTLGR	Casing Yield Strength - Zoned along logger depths	WLSESSION	80000	psi
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
HEMA	Hematite Presence Flag	Borehole	No	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	RB	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	29.67	us

MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.08	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0.1	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	
ZMUD	Acoustic Impedance of Mud	Borehole	1.48	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Tool Control Parameters

200 ft: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	18	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
EMXV	EMEX Voltage	USIT-E	50	V
HRES	Horizontal Resolution	USIT-E	5 deg	
TMUC	Type of Mud	USIT-E	BRI	
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 5 deg at 1.5 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	2000	ft
VRES	Vertical Resolution	USIT-E	1.5 in	
WINB	Window Begin Time	USIT-E	35	us
WINE	Window End Time	USIT-E	85.35	us

200 ft

Corrosion 5 in = 100 ft

Software Version

Acquisition System	Version
Maxwell 2016 SP1	6.1.58882.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
200 ft	Log[1]:Up	Up	10.84 ft	330.68 ft	16-Mar-2016 5:56:00 PM	16-Mar-2016 6:16:34 PM	ON	0.00 ft	No

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Porter 50C

200 ft: Log[1]:Up: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: 16-Mar-2016 22:47:45

TIME_1900 - Time Marked every 60.00 (s)

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

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

UTIM Error

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

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

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 -5.200 -3.600 -2.000 -0.400
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

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
4 in 5

Internal Radius Maximum Value (IRMX) USIT-E
4 in 5

Internal Radius Minimum Value (IRMN) USIT-E
4 in 5

ERAV
ERAV-IRAV
IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
5 in 4

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
5 in 4

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
5 in 4

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
5 in 4

IRAV
ERAV
IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
4 in 5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4 in 5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4 in 5

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

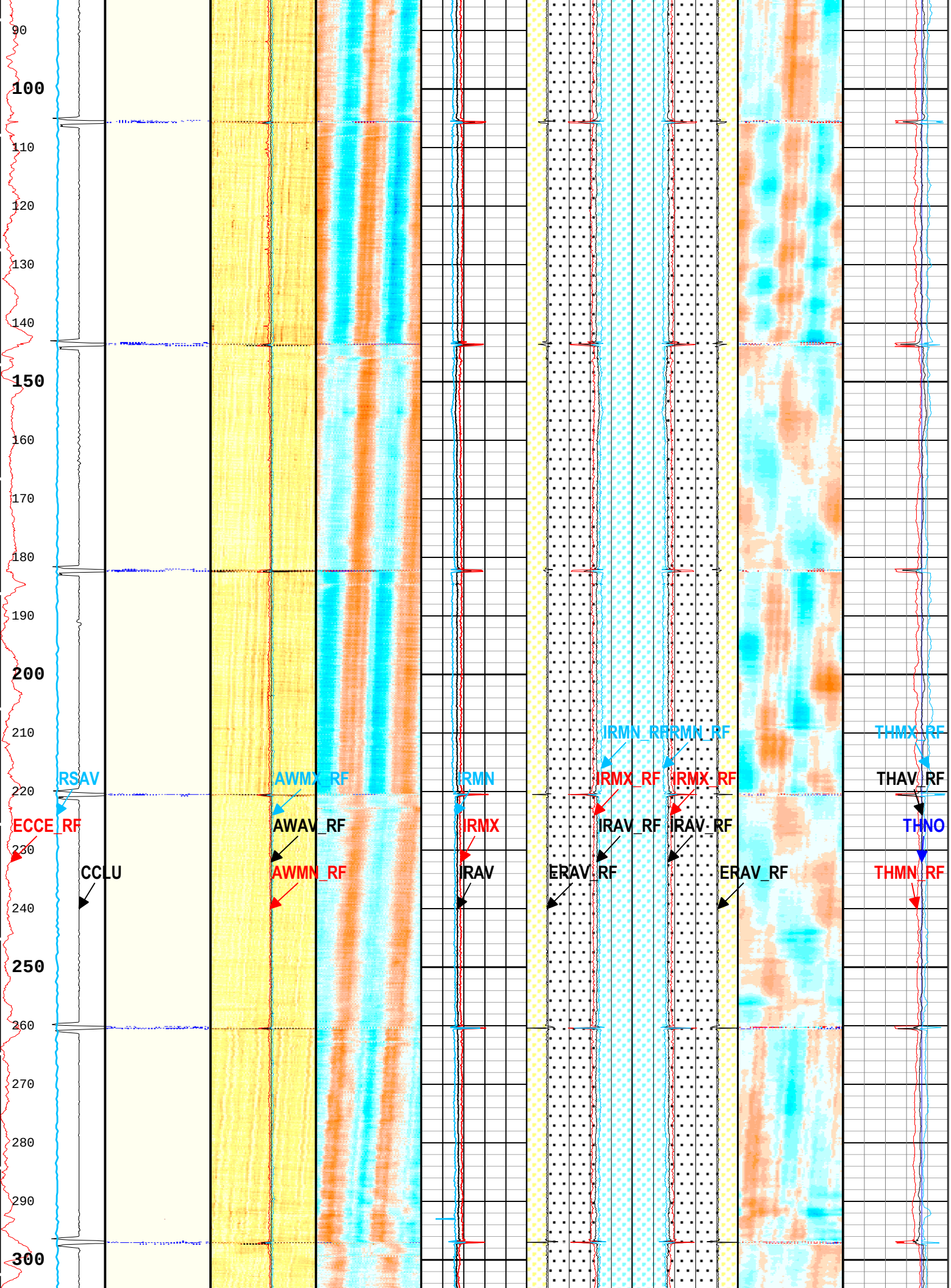
Minimum of Unflagged Casing Thickness (THMN_RF) USIT-E
0.1 in 0.6

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

20
30
40
50
60
70
80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RSAV
ECCE_RF
CCLU
AWMX_RF
AWAV_RF
AWMN_RF
IRMN
IRMX
IRAV
IRMN_RF
IRMN_RF
IRMX_RF
IRMX_RF
IRAV_RF
IRAV_RF
ERAV_RF
ERAV_RF
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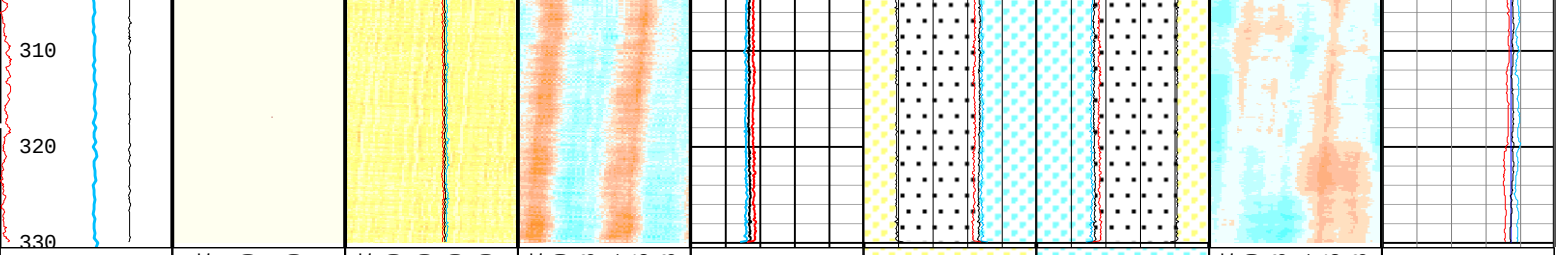
THAV_RF
THNO
THMN_RF



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 -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

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

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 of Hole
U L B R U

Internal Radius Averaged Value (IRAV) USIT-E
4 in 5

Internal Radius Maximum Value (IRMX) USIT-E
4 in 5

Internal Radius Minimum Value (IRMN) USIT-E
4 in 5

ERAV
ERAV-IRAV
IRAV

IRAV
ERAV
IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
5 in 4

Median of Unflagged External Radii (ERAV_RF) USIT-E
4 in 5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
5 in 4

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4 in 5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
5 in 4

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4 in 5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
5 in 4

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4 in 5

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)
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

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 Corrosion 9.625inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 16-Mar-2016 22:47:45

Channel Processing Parameters

200 ft: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BS	Bit Size	WLSESSION	14	in

CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.472	in
CYSTLGR	Casing Yield Strength - Zoned along logger depths	WLSESSION	80000	psi
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
HEMA	Hematite Presence Flag	Borehole	No	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	RB	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	29.67	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.08	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0.1	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	
ZMUD	Acoustic Impedance of Mud	Borehole	1.48	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Tool Control Parameters

200 ft: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	18	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
EMXV	EMEX Voltage	USIT-E	50	V
HRES	Horizontal Resolution	USIT-E	5 deg	
TMUC	Type of Mud	USIT-E	BRI	
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 5 deg at 1.5 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	2000	ft
VRES	Vertical Resolution	USIT-E	1.5 in	
WINB	Window Begin Time	USIT-E	35	us
WINE	Window End Time	USIT-E	85.35	us

16Mar2016

REPEAT Pass 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	6.1.58882.3100

	Channels	
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
SLS-E	Sonic Logging Sonde E supports 3'-5'BHC DT and CBL/VDL	6.1.58882.3100	4.0
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
16Mar2016	Log[3]:Up	Up	6714.23 ft	7100.42 ft	16-Mar-2016 11:15:45 AM	16-Mar-2016 11:30:22 AM	ON	-10.00 ft	Yes

All depths are referenced to toolstring zero

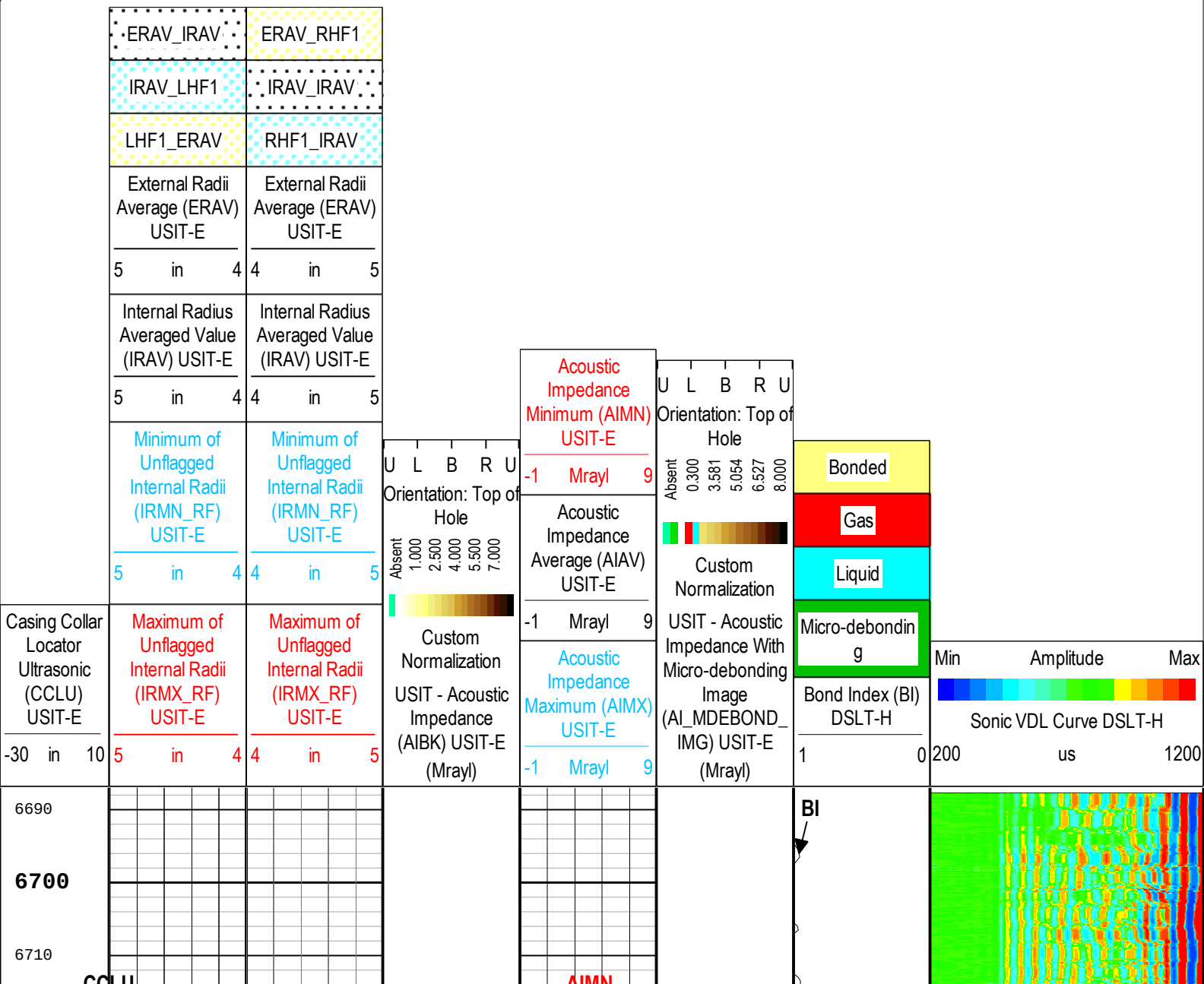
Log

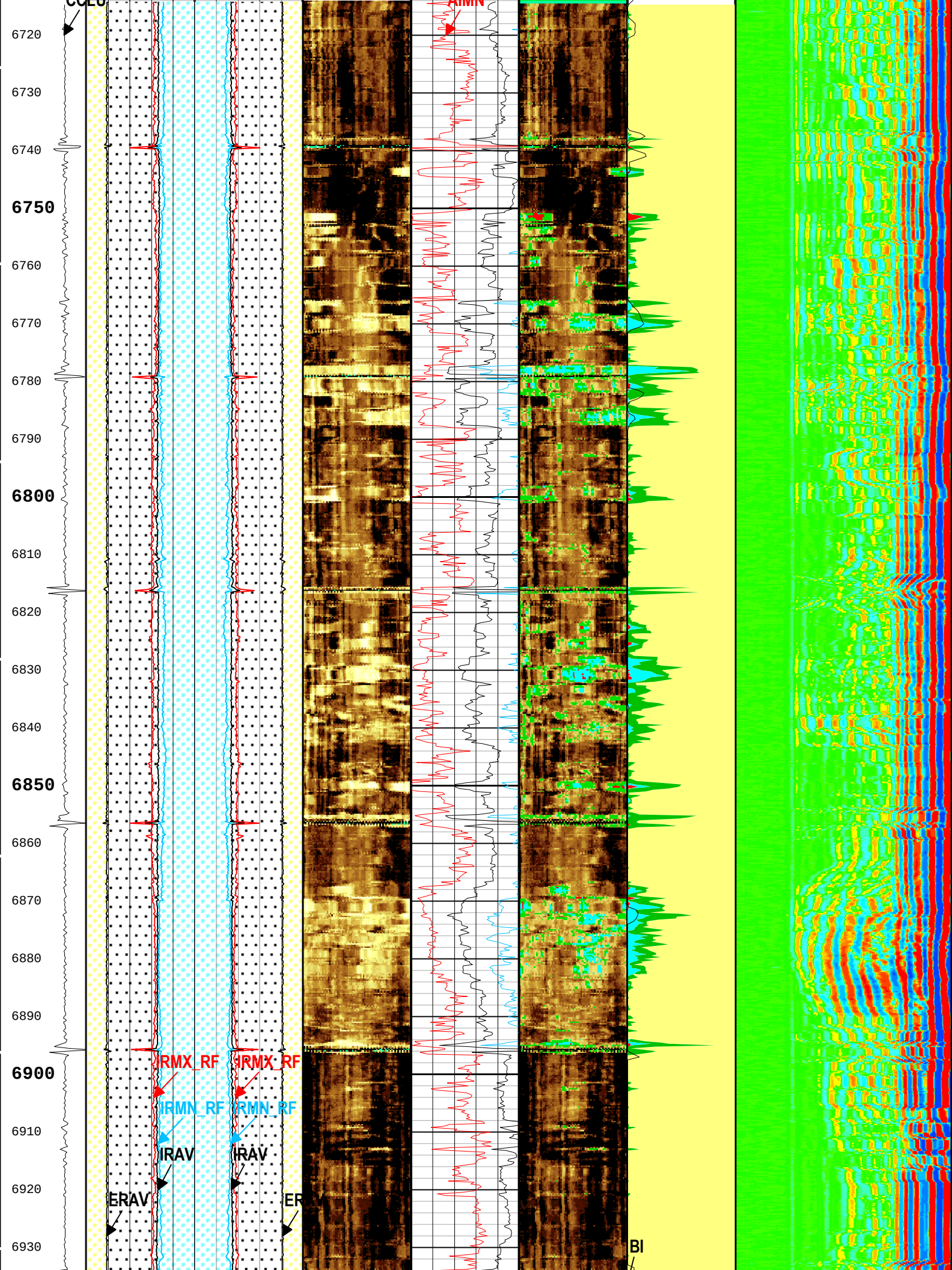
Company:Southern California Gas Company Well:Porter 50C

16Mar2016: Log[3]:Up: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: 16-Mar-2016 22:47:49

TIME_1900 - Time Marked every 60.00 (s)

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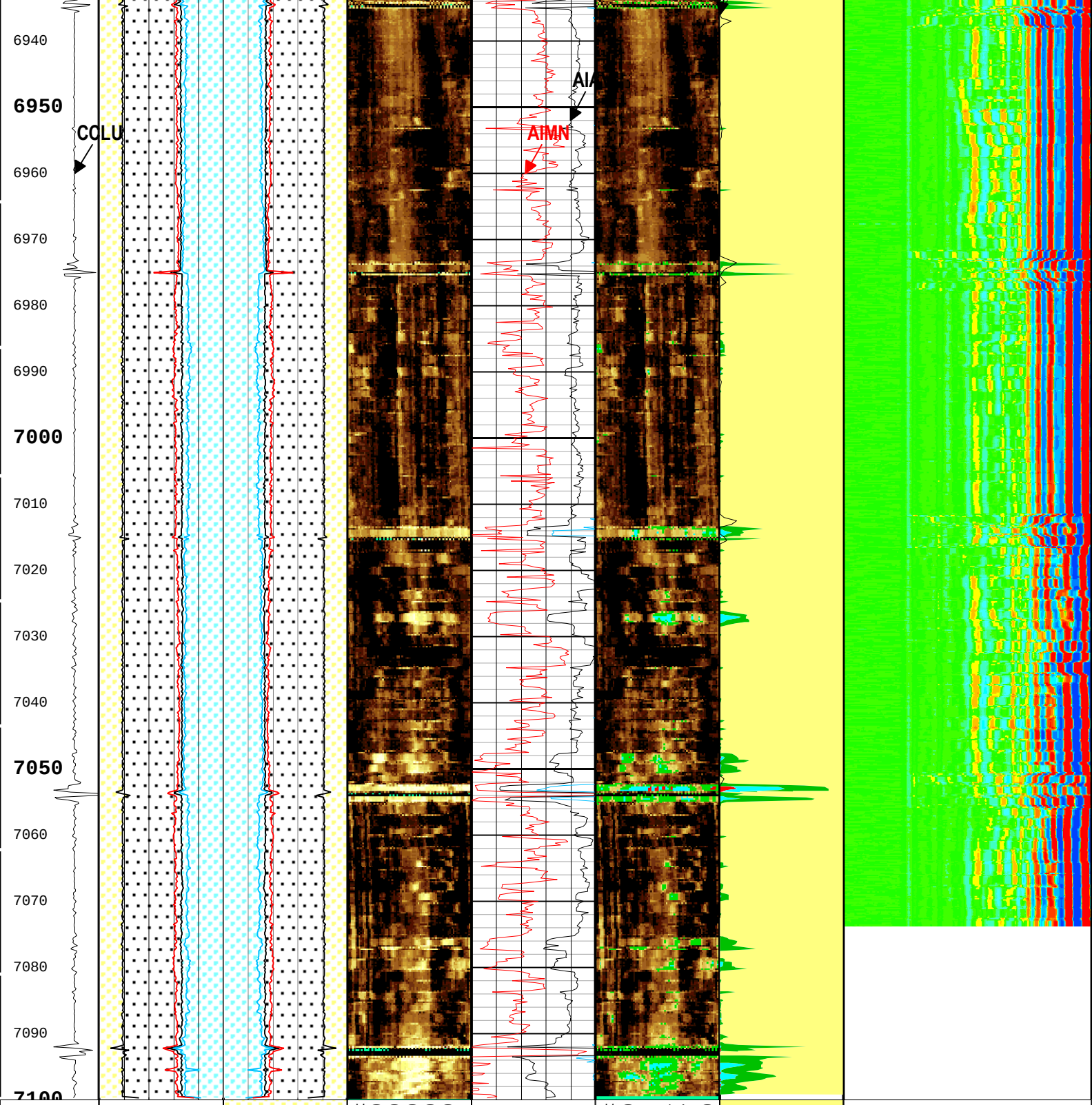


Casing Collar Locator Ultrasonic (CCLU) USIT-E

-30 in 10

ERAV_IRAV

IRAV_LHF1

LHF1_ERAV

External Radii Average (ERAV) USIT-E

5 in 4

Internal Radius Averaged Value (IRAV) USIT-E

5 in 4

ERAV_RHF1

IRAV_IRAV

RHF1_IRAV

External Radii Average (ERAV) USIT-E

4 in 5

Internal Radius Averaged Value (IRAV) USIT-E

4 in 5

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

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

Bonded

Gas

Liquid

Micro-debondin g

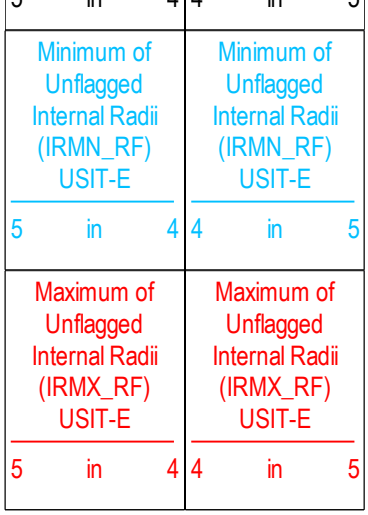
Bond Index (BI) DSLT-H

1 0

Min Amplitude Max

Sonic VDL Curve DSLT-H

200 us 1200



TIME_1900 - Time Marked every 60.00 (s)

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: 16-Mar-2016 22:47:49

Channel Processing Parameters

16Mar2016: 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	
BILI	Bond Index Level for Zone Isolation	DSLT-H	0.8	
BS	Bit Size	WLSESSION	14	in
CASING_PRATIO	Casing Poisson Ratio	USIT-E	Standard Poisson Ratio	
CBLG	CBL Gate Width	DSLT-H	100	us
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLT-H	52	mV
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	0.472	in
DETE	Delta-T Detection	DSLT-H	E1	
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FCF	CBL Fluid Compensation Factor	DSLT-H	1.01	
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GOBO_CURR	Good Bond in Arbitrary Cement	DSLT-H	4.74	mV
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	9.3	dB/ft
MCI	Minimum Cemented Interval for Isolation	DSLT-H	14.81	ft
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	29.67	us
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLT-H	100	
MSA	Minimum Sonic Amplitude	DSLT-H	2.61	mV
MSA_CURR	Minimum Sonic Amplitude in Arbitrary Cement	DSLT-H	2.61	mV
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.11	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1	
NMSG	Near Minimum Sliding Gate	DSLT-H	280	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	1.378	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
TCUB	T^3 Processing Level	USIT-E	Loop	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	120	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	65	%
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0.1	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	FreePipe Norm.	
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	1.48	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Tool Control Parameters

16Mar2016: 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	4.874	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	5 deg	
MOTOR_PROTECT	Motor Protection	USIT-E	Off	
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 5 deg at 3.0 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	7112	ft
USSP	Ultrasonic Service	USIT-E	USI	
VRES	Vertical Resolution	USIT-E	3.0 in	
WINB	Window Begin Time	USIT-E	Time Zoned	us
WINE	Window End Time	USIT-E	85.35	us
WMOD	Waveform Firing Mode	DSLT-H	Full	

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
EMXV	40	16-Mar-2016 11:15:45	16-Mar-2016 11:16:26	7100.42	7091.53
EMXV	50	16-Mar-2016 11:16:26	16-Mar-2016 11:30:22	7091.53	6714.23
WINB	45.35	16-Mar-2016 11:15:45	16-Mar-2016 11:16:53	7100.42	7082.94
WINB	35	16-Mar-2016 11:16:53	16-Mar-2016 11:30:22	7082.94	6714.23

All depth are at tool zero.

16Mar2016

Corrosion 5 in = 100 ft REPEAT

Software Version

Acquisition System	Version
Maxwell 2016 SP1	6.1.58882.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
16Mar2016	Log[3]:Up	Up	6714.23 ft	7100.42 ft	16-Mar-2016 11:15:45 AM	16-Mar-2016 11:30:22 AM	ON	-10.00 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Porter 50C

16Mar2016: Log[3]:Up:S005

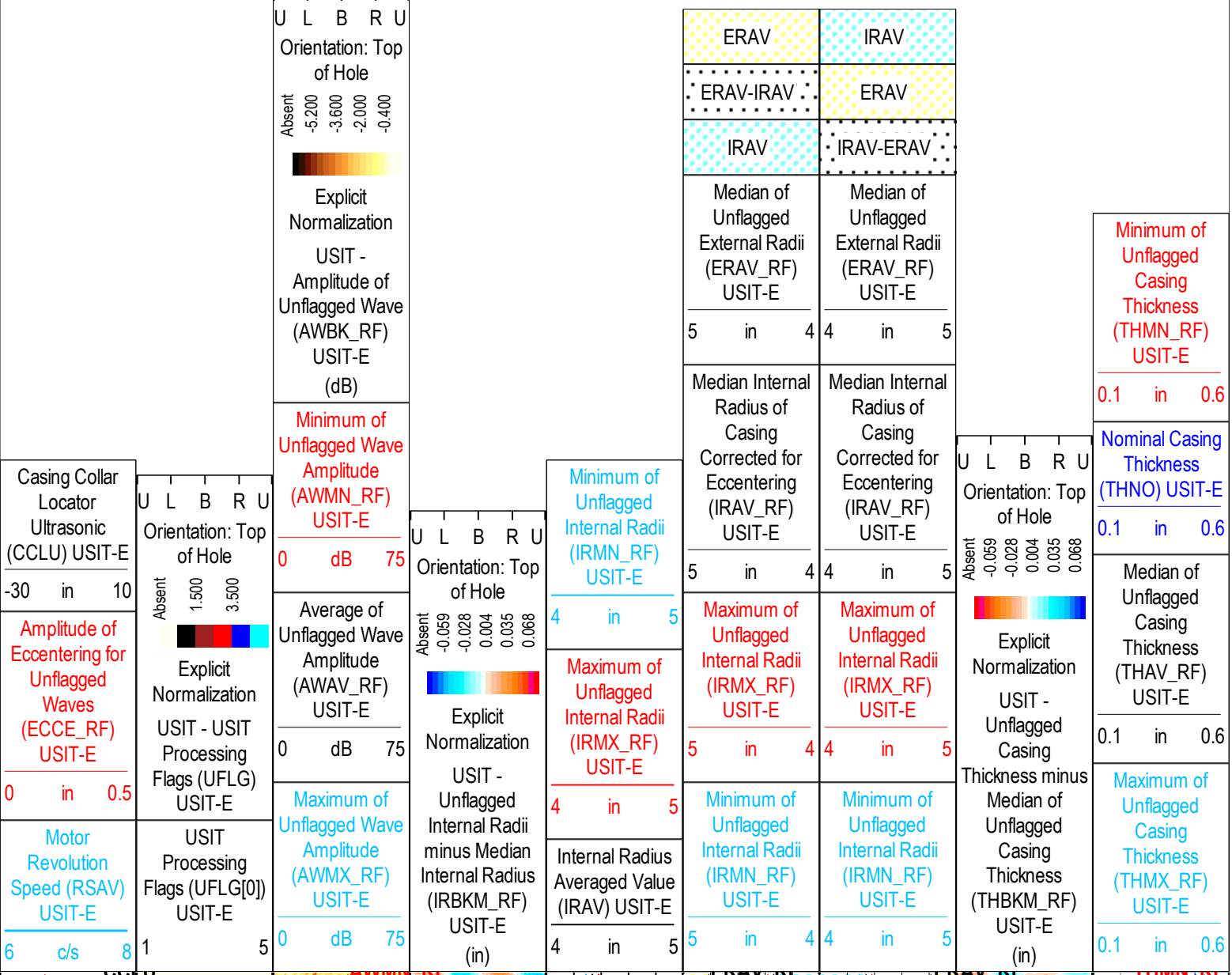
Description: USI Composite Format: Log (LBV1_USI Corrosion 9.625inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 16-Mar-2016 22:47:53

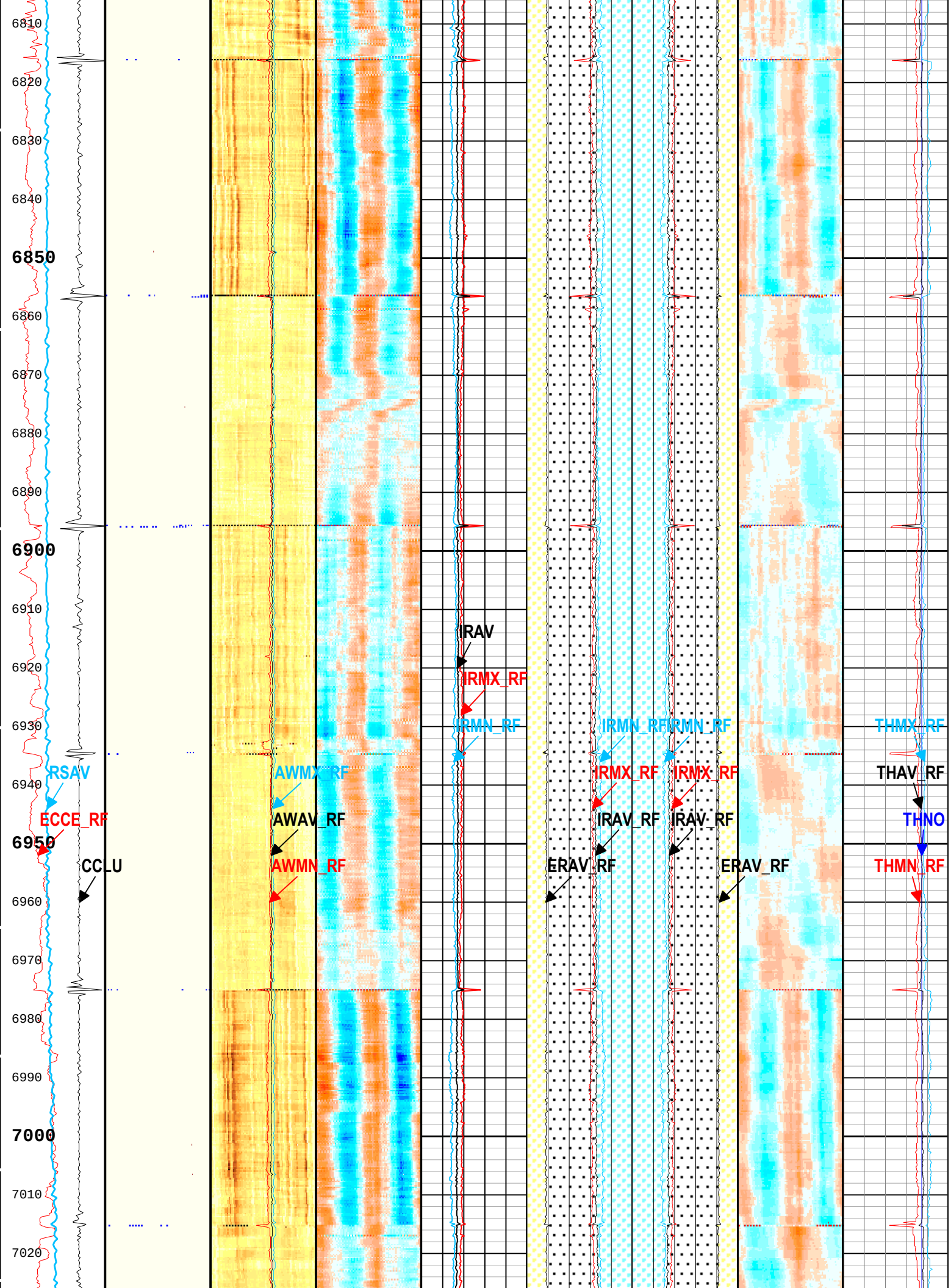
TIME_1900 - Time Marked every 60.00 (s)

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 -5.200 -3.600 -2.000 -0.400
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
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)
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4 in 5
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4 in 5
Internal Radius Averaged Value (IRAV) USIT-E
4 in 5
ERAV
ERAV-IRAV
IRAV
Median of Unflagged External Radii (ERAV_RF) USIT-E
5 in 4
Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
5 in 4
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
5 in 4
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
5 in 4
IRAV
IRAV-ERAV
ERAV
Median of Unflagged External Radii (ERAV_RF) USIT-E
4 in 5
Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4 in 5
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4 in 5
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4 in 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
(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
CCLU
AWMN_RI
ERAV_RI
ERAV_RI
THMN_RI
6720
6730
6740
6750
6760
6770
6780
6790
6800


6810
6820
6830
6840
6850
6860
6870
6880
6890
6900
6910
6920
6930
6940
6950
6960
6970
6980
6990
7000
7010
7020
RSAV
ECCE_RF
CC_LU
AWMX_RF
AWAV_RF
AWMN_RF
IRAV
IRMX_RF
IRMN_RF
IRMN_RF
IRMN_RF
IRMX_RF
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IRAV_RF
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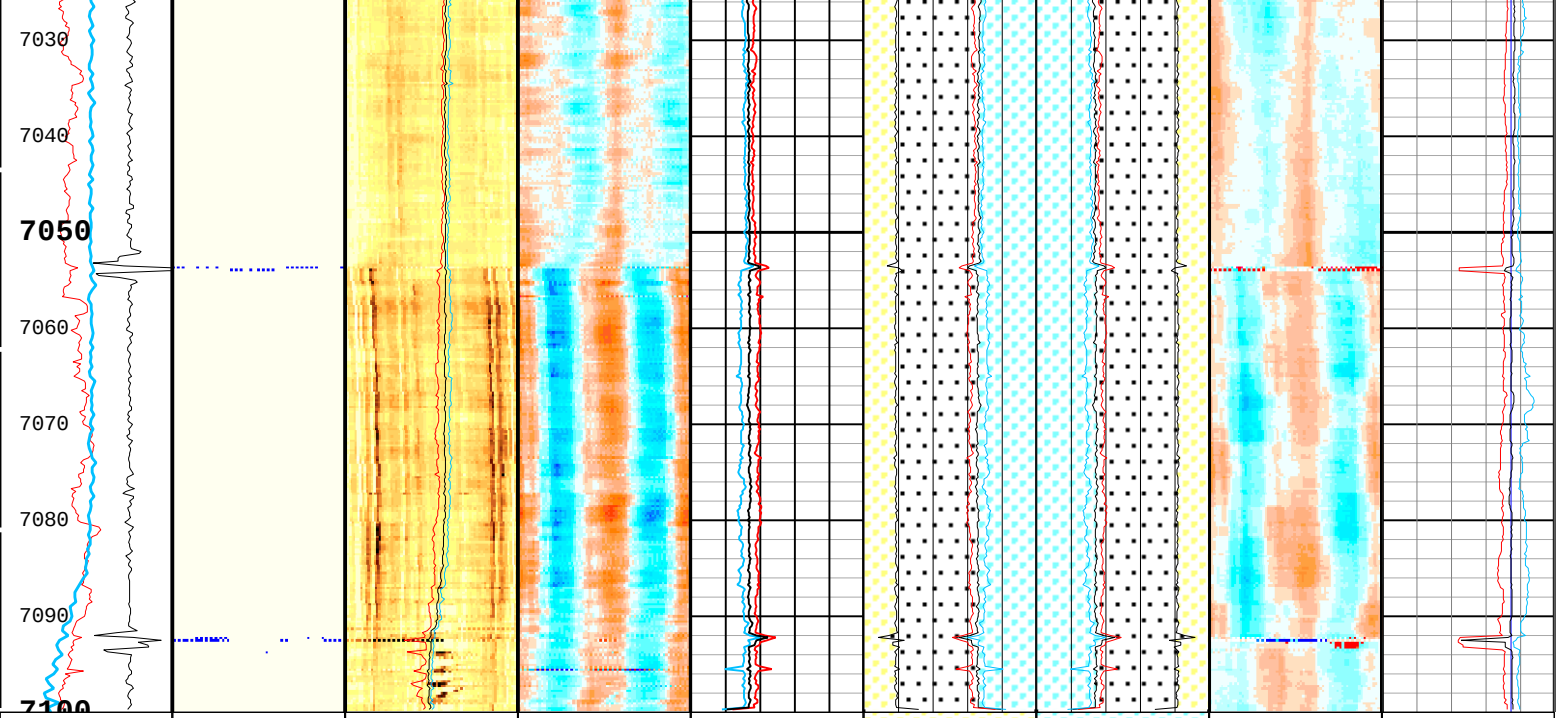
THAV_RF
THNO
THMN_RF



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 -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

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

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 of Hole
U L B R U

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4 in 5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4 in 5

Internal Radius Averaged Value (IRAV) USIT-E
4 in 5

ERAV
ERAV-IRAV
IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
5 in 4

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
5 in 4

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
5 in 4

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
5 in 4

IRAV
ERAV
IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
4 in 5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4 in 5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4 in 5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4 in 5

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)
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

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] - :
UTIM Error
Pulse Origin Not Detected
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: 16-Mar-2016 22:47:53

Channel Processing Parameters

16Mar2016: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BS	Bit Size	WLSESSION	14	in
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
THNO	Nominal Casing Thickness - Zoned along logger depths	WLSESSION	0.472	in
CYSTLGR	Casing Yield Strength - Zoned along logger depths	WLSESSION	80000	psi
DFD	Drilling Fluid Density	Borehole	8.4	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
HEMA	Hematite Presence Flag	Borehole	No	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	RB	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	29.67	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.11	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	120	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	65	%
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0.1	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	FreePipe Norm.	
ZMUD	Acoustic Impedance of Mud	Borehole	1.48	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Tool Control Parameters

16Mar2016: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	18	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
EMXV	EMEX Voltage	USIT-E	Time Zoned	V
HRES	Horizontal Resolution	USIT-E	5 deg	
MOTOR_PROTECT	Motor Protection	USIT-E	Off	
TMUC	Type of Mud	USIT-E	BRI	
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 5 deg at 3.0 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	7112	ft
VRES	Vertical Resolution	USIT-E	3.0 in	
WINB	Window Begin Time	USIT-E	Time Zoned	us
WINE	Window End Time	USIT-E	85.35	us

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
EMXV	40	16-Mar-2016 11:15:45	16-Mar-2016 11:16:26	7100.42	7091.53
EMXV	50	16-Mar-2016 11:16:26	16-Mar-2016 11:30:22	7091.53	6714.23
WINB	45.35	16-Mar-2016 11:15:45	16-Mar-2016 11:16:53	7100.42	7082.94
WINB	35	16-Mar-2016 11:16:53	16-Mar-2016 11:30:22	7082.94	6714.23

All depth are at tool zero.

16Mar2016

Very Hi-Res Repeat 10 IN=100 FT

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
16Mar2016	Log[9]:Up	Up	2406.64 ft	2852.78 ft	16-Mar-2016 4:31:19 PM	16-Mar-2016 4:53:05 PM	ON	0.00 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Porter 50C

16Mar2016: Log[9]:Up:S005

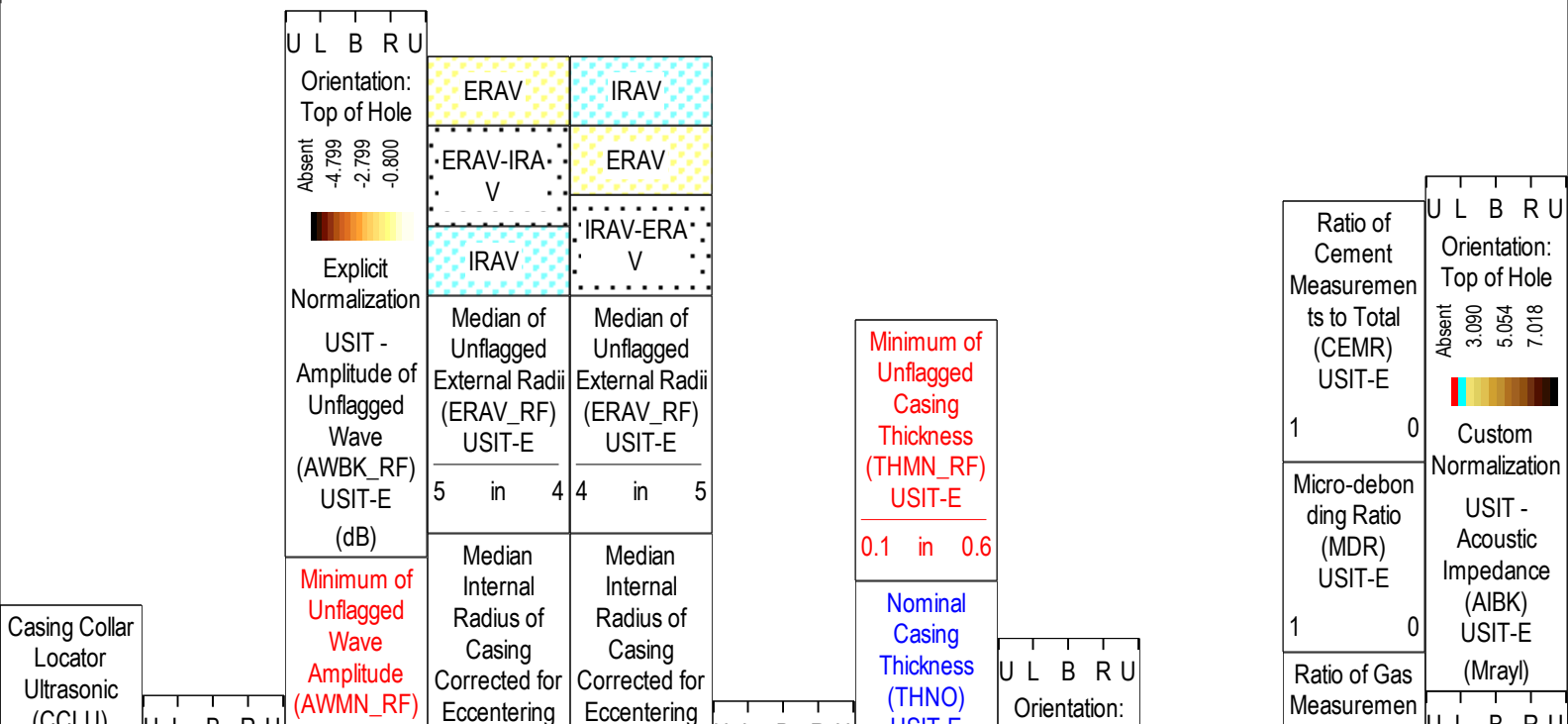
Description: USI Composite Format: Log (LBV1_USI Composite 9.625inch) Index Scale: 10 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 16-Mar-2016 22:47:56

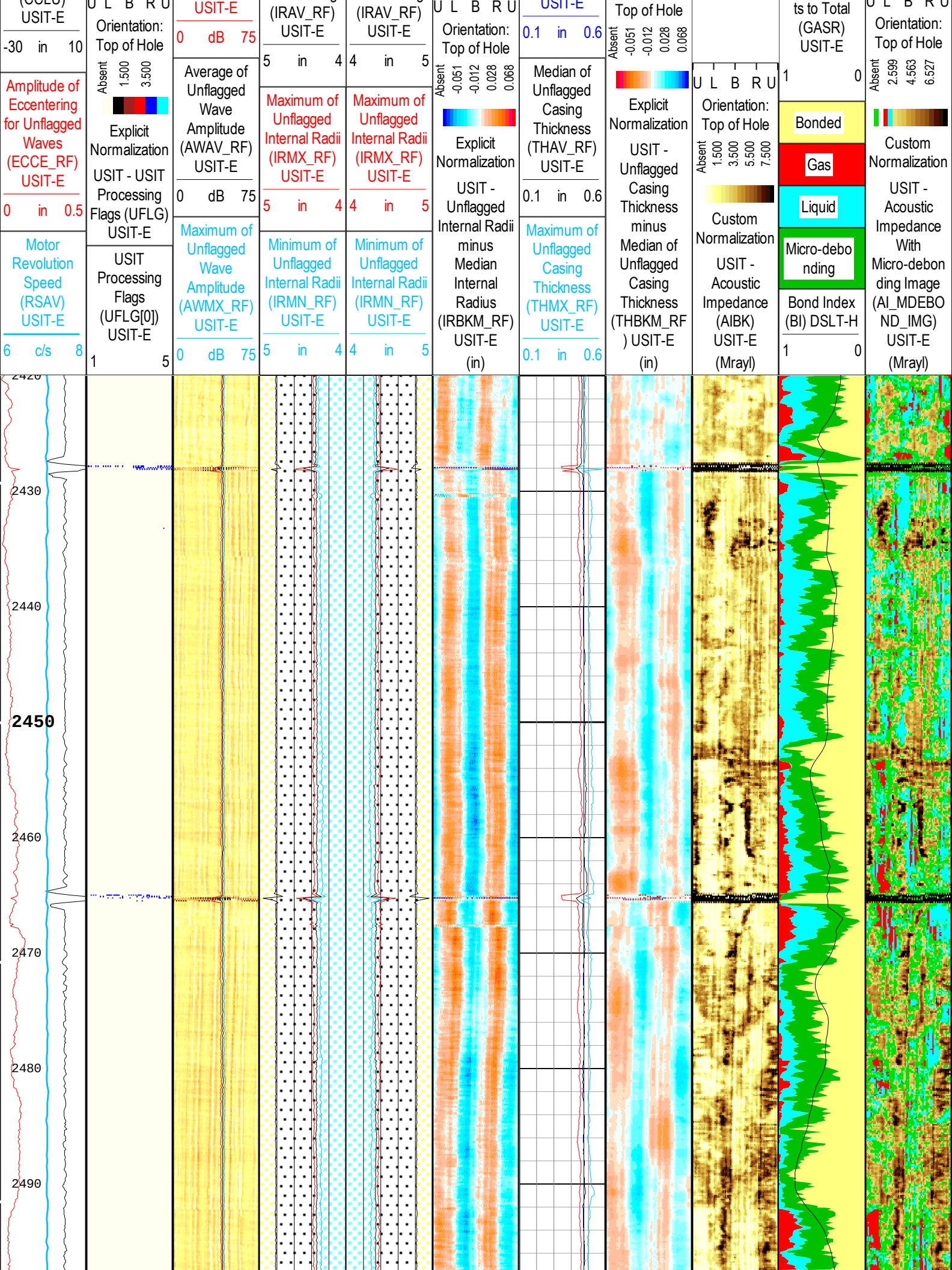
USIT Processing Flags (UFLG[0]) USIT-E

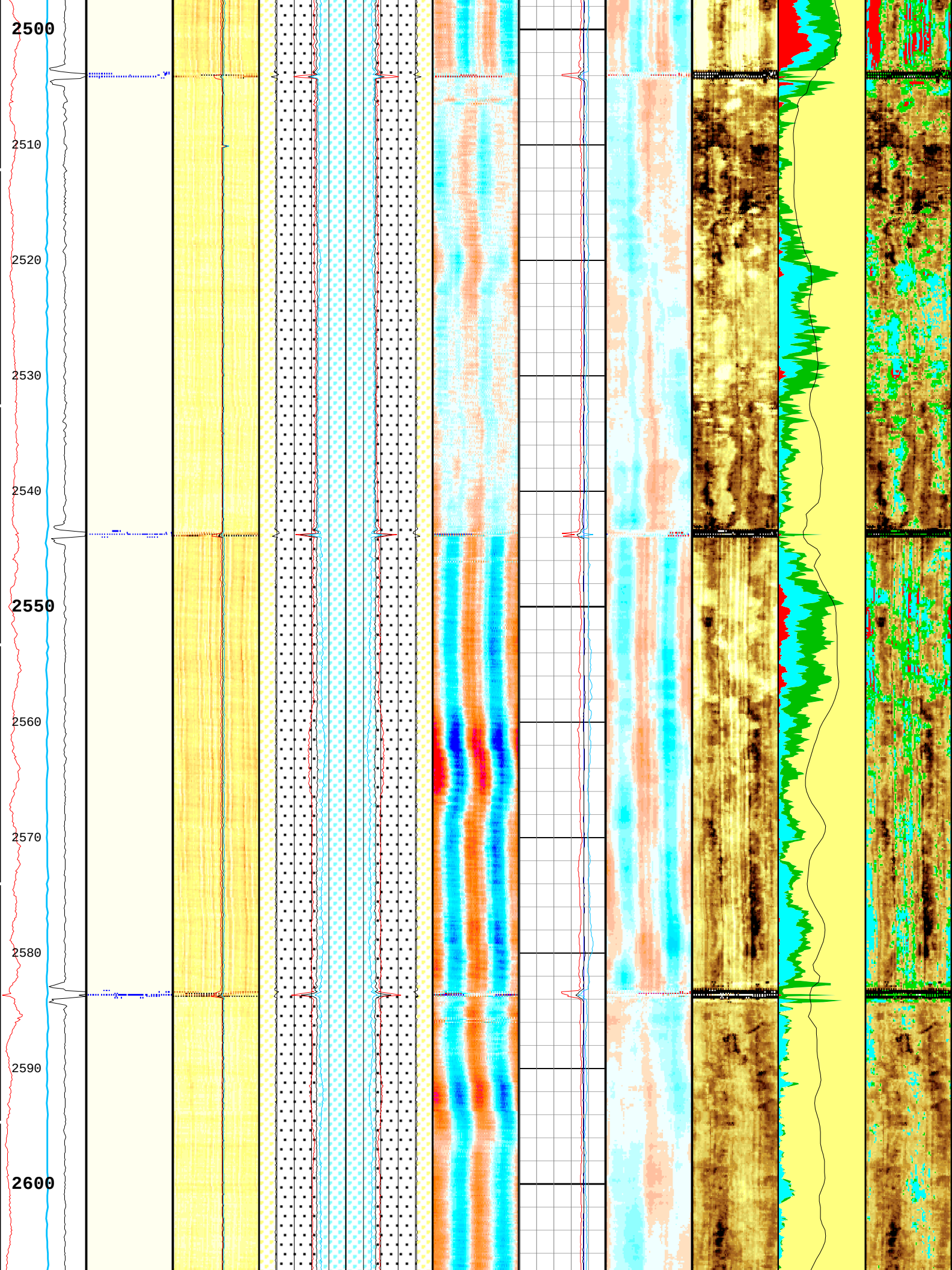
1 - UFLG 1 Value within [0.0 - 1.5] - :
2 - UFLG 2 Value within [1.5 - 2.5] - :
3 - UFLG 3 Value within [2.5 - 3.5] - :
4 - UFLG 4 UFLG 5 UFLG 6 Value within [3.5 - 6.5] - :
5 - UFLG 7 UFLG 8 UFLG 9 Value within [6.5 - 10] - :

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

TIME_1900 - Time Marked every 60.00 (s)




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
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
(IRAV_RF) USIT-E
5 in 4
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
5 in 4
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
5 in 4
(IRAV_RF) USIT-E
4 in 5
Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4 in 5
Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4 in 5
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)
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
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)
ts to Total (GASR) USIT-E
1 0
Bonded
Gas
Liquid
Micro-debo nding
Bond Index (BI) DSLT-H
1 0
U L B R U
Orientation: Top of Hole
Absent 2.599 4.563 6.527
Custom Normalization
USIT - Acoustic Impedance With Micro-debon ding Image (AI_MDEBO ND_IMG) USIT-E
(Mrayl)
2420
2430
2440
2450
2460
2470
2480
2490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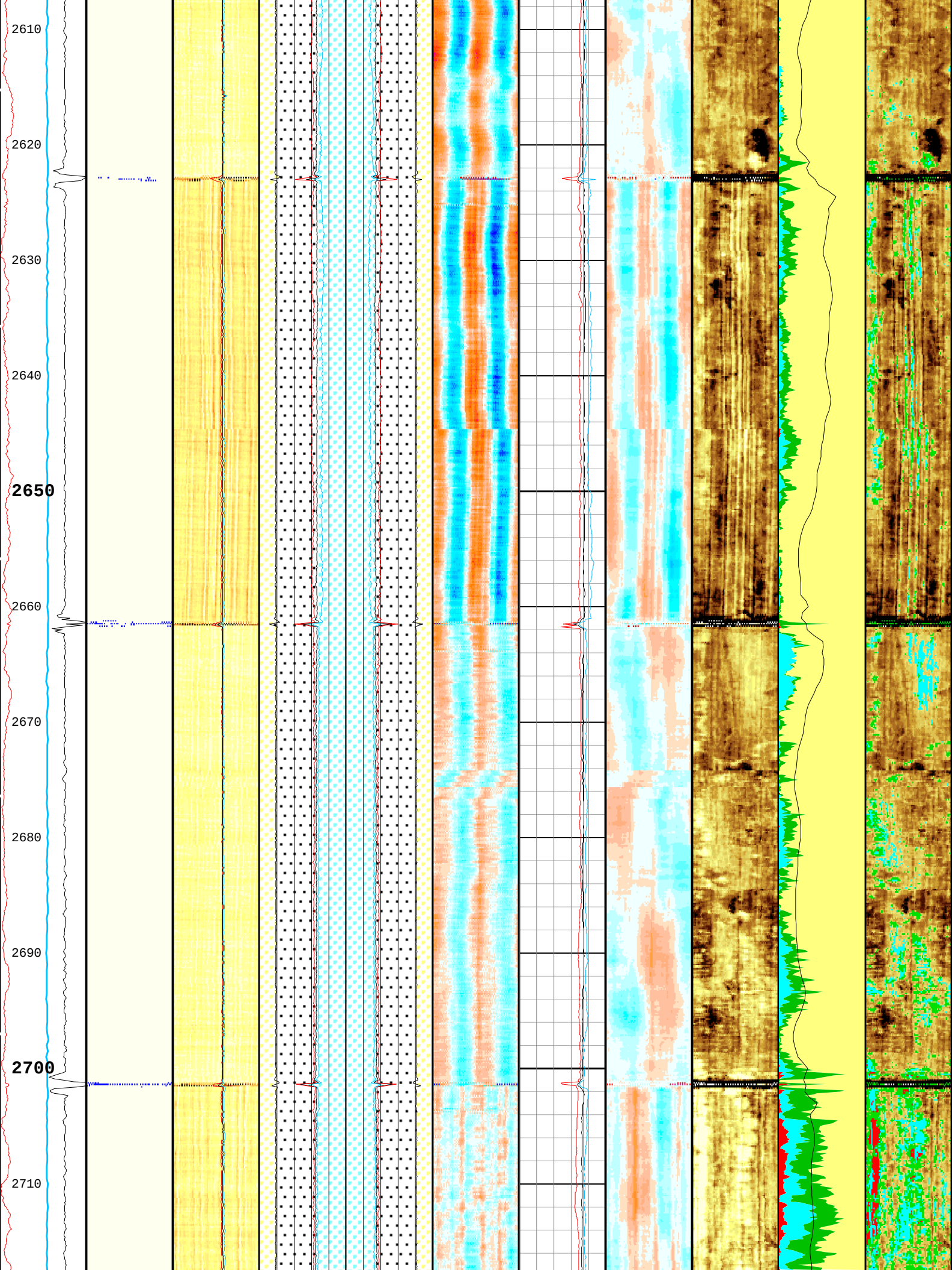
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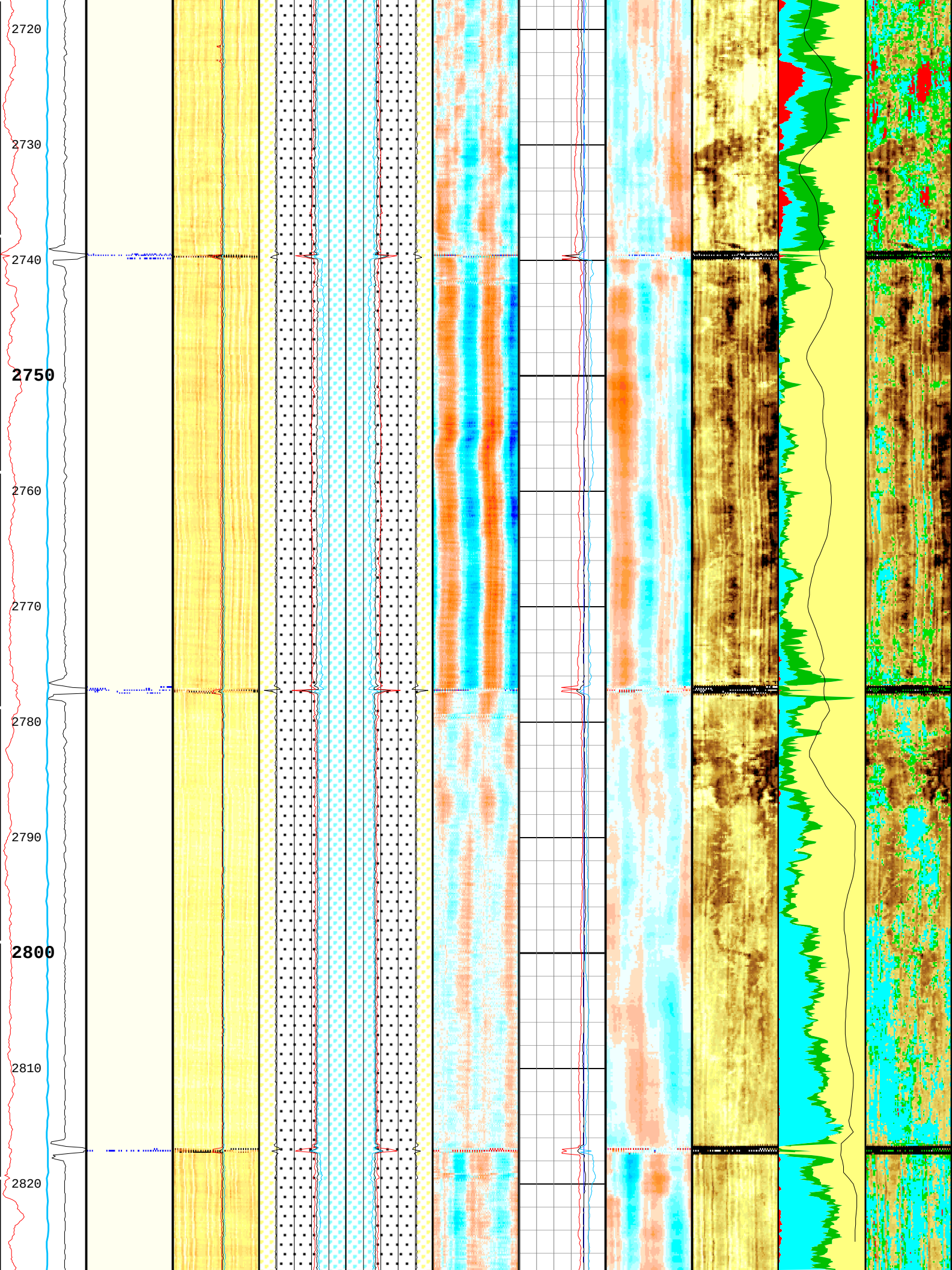
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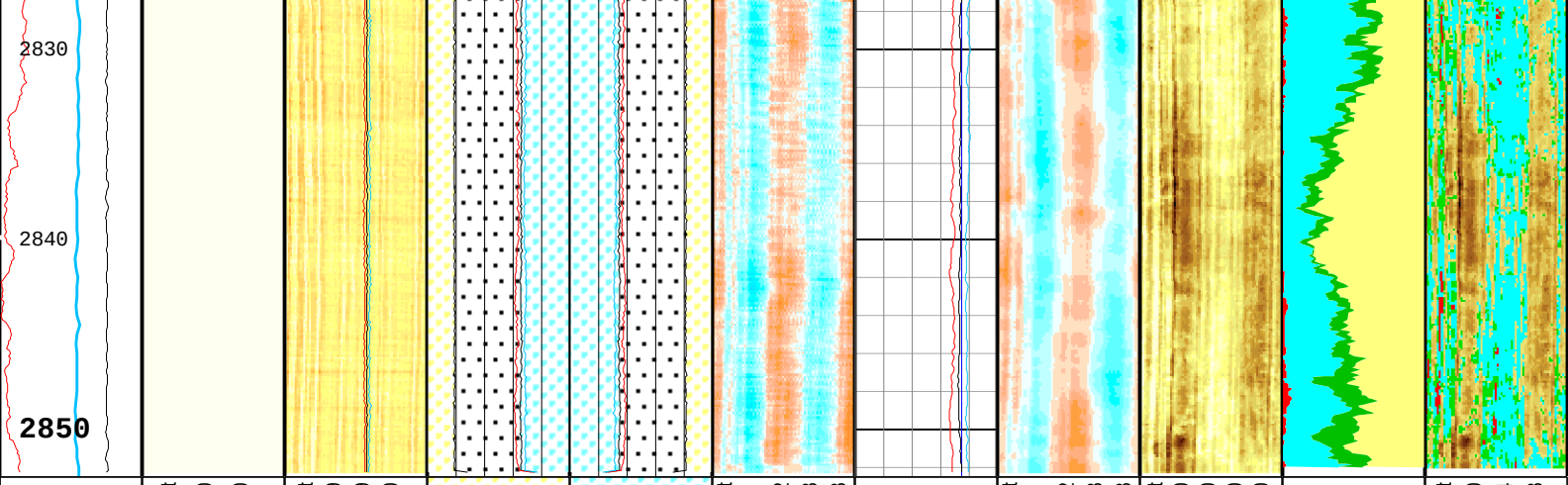


Casing Collar Locator Ultrasonic (CCLU) USIT-E
-30 in 10

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

Motor 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
5 in 4

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
5 in 4

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
5 in 4

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
5 in 4

IRAV
IRAV-ERAV
ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
4 in 5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4 in 5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4 in 5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4 in 5

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

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

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: 10 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 16-Mar-2016 22:47:56

16Mar2016

Very Hi-Res Repeat 10 IN=100 FT

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
16Mar2016	Log[7]:Up	Up	6230.74 ft	6561.96 ft	16-Mar-2016 3:30:33 PM	16-Mar-2016 3:49:06 PM	ON	0.00 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Porter 50C
16Mar2016: Log[7]:Up:S005

Description: USI Composite Format: Log (LBV1_USI Composite 9.625inch) Index Scale: 10 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 16-Mar-2016 22:48:02

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

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

USIT

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

ERAV
ERAV-IRAV
IRAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
5 in 4

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
5 in 4

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
5 in 4

Minimum of Unflagged

IRAV
ERAV
IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
4 in 5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4 in 5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4 in 5

Minimum of Unflagged

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

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

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

U L B R U
Orientation: Top of Hole
Absent 1.500 3.500 5.500 7.500
Custom Normalization
USIT -

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

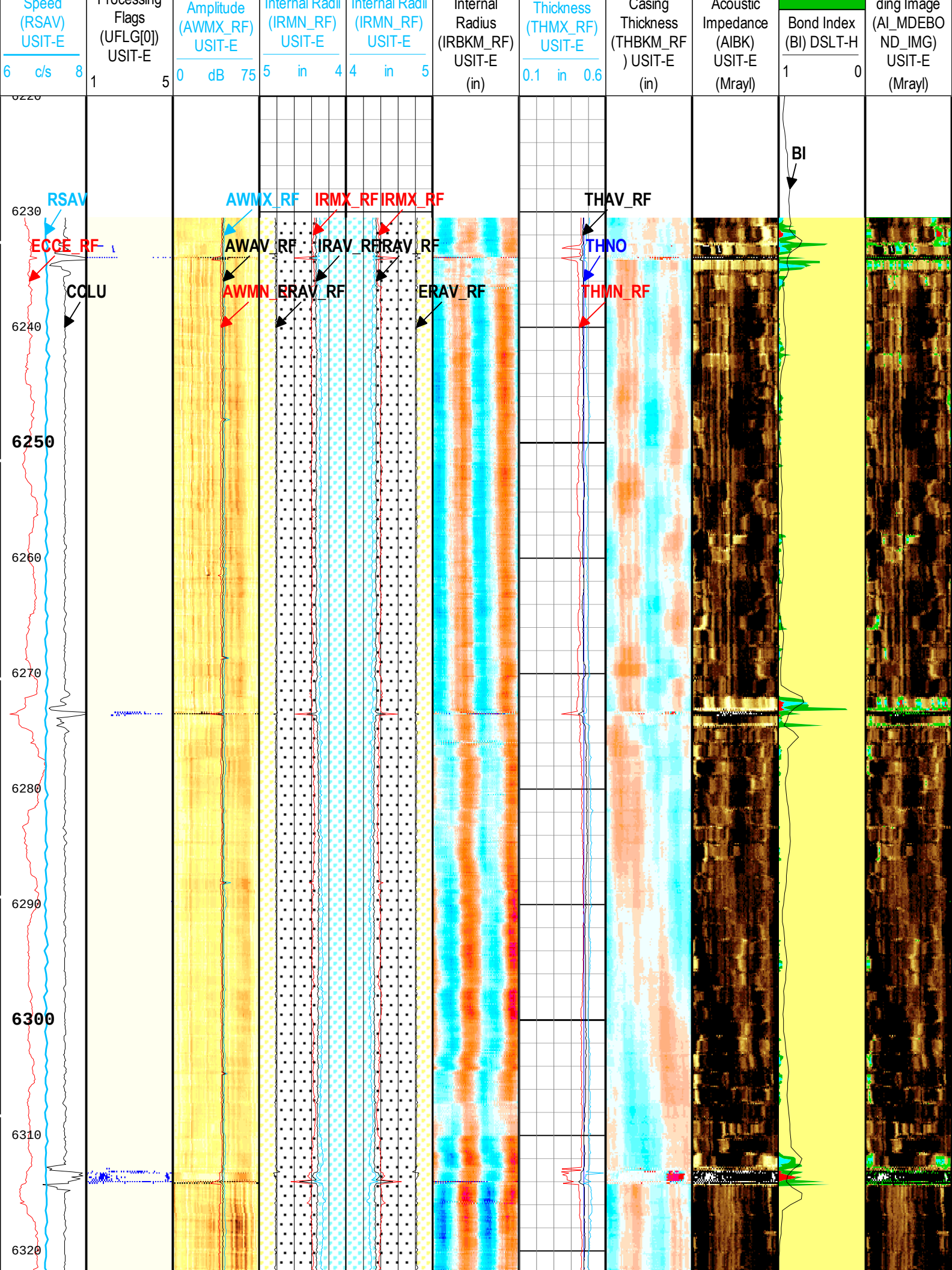
Micro-debonding Ratio (MDR) USIT-E
1 0

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

Bonded
Gas
Liquid
Micro-debonding

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-debon


Speed (RSAV) USIT-E
6 c/s 8
Processing Flags (UFLG[0]) USIT-E
1 5
Amplitude (AWMX_RF) USIT-E
0 dB 75
Internal Radii (IRMN_RF) USIT-E
5 in 4
Internal Radii (IRMN_RF) USIT-E
4 in 5
Internal Radius (IRBKM_RF) USIT-E
(in)
Thickness (THMX_RF) USIT-E
0.1 in 0.6
Casing Thickness (THBKM_RF) USIT-E
(in)
Acoustic Impedance (AIBK) USIT-E
(Mrayl)
Bond Index (BI) DSLT-H
1 0
ding Image (AI_MDEBOND_IMG) USIT-E
(Mrayl)
RSAV
ECCE_RF
COLU
AWMX_RF
AWAV_RF
AWMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
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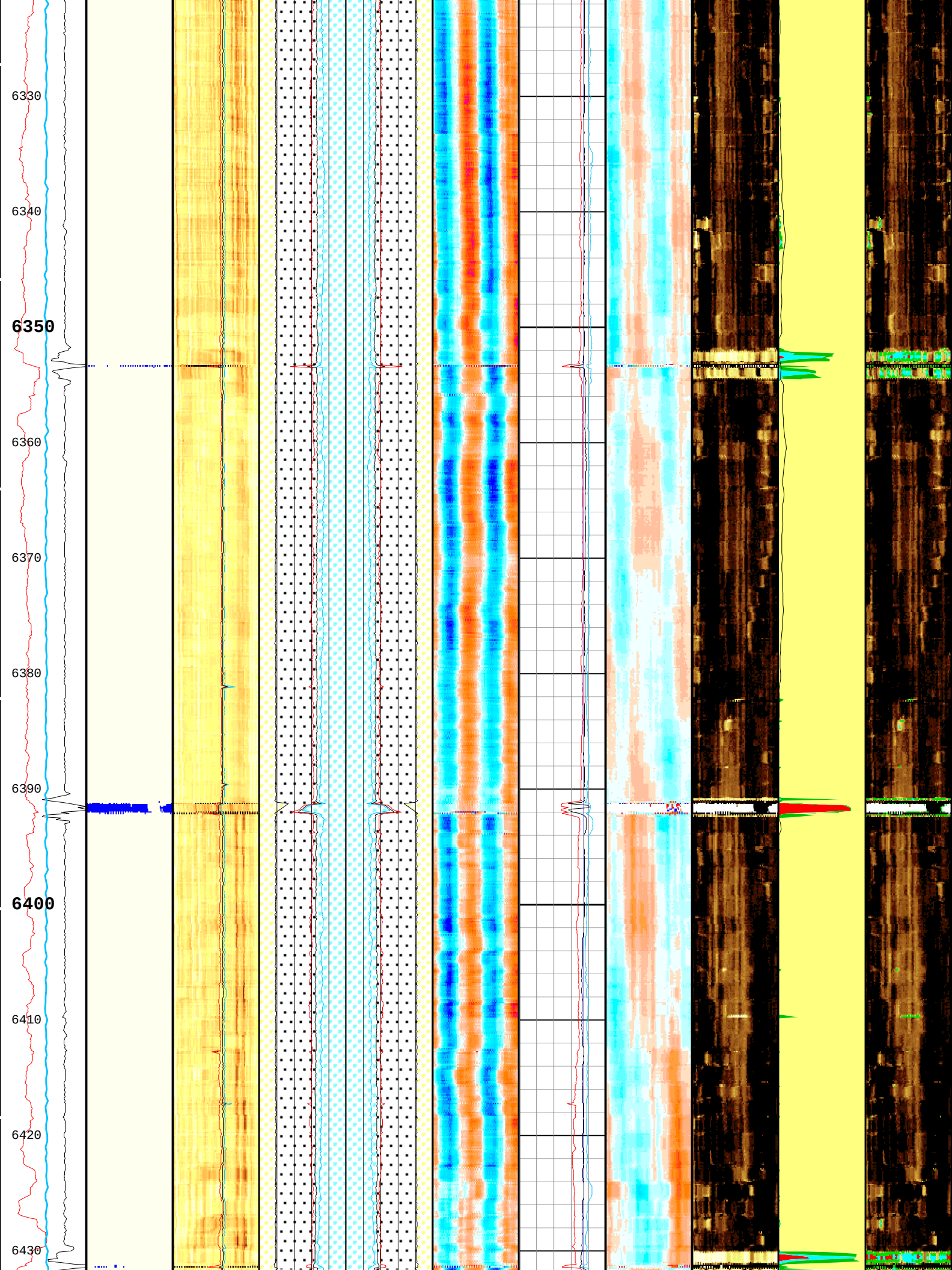
6310
6320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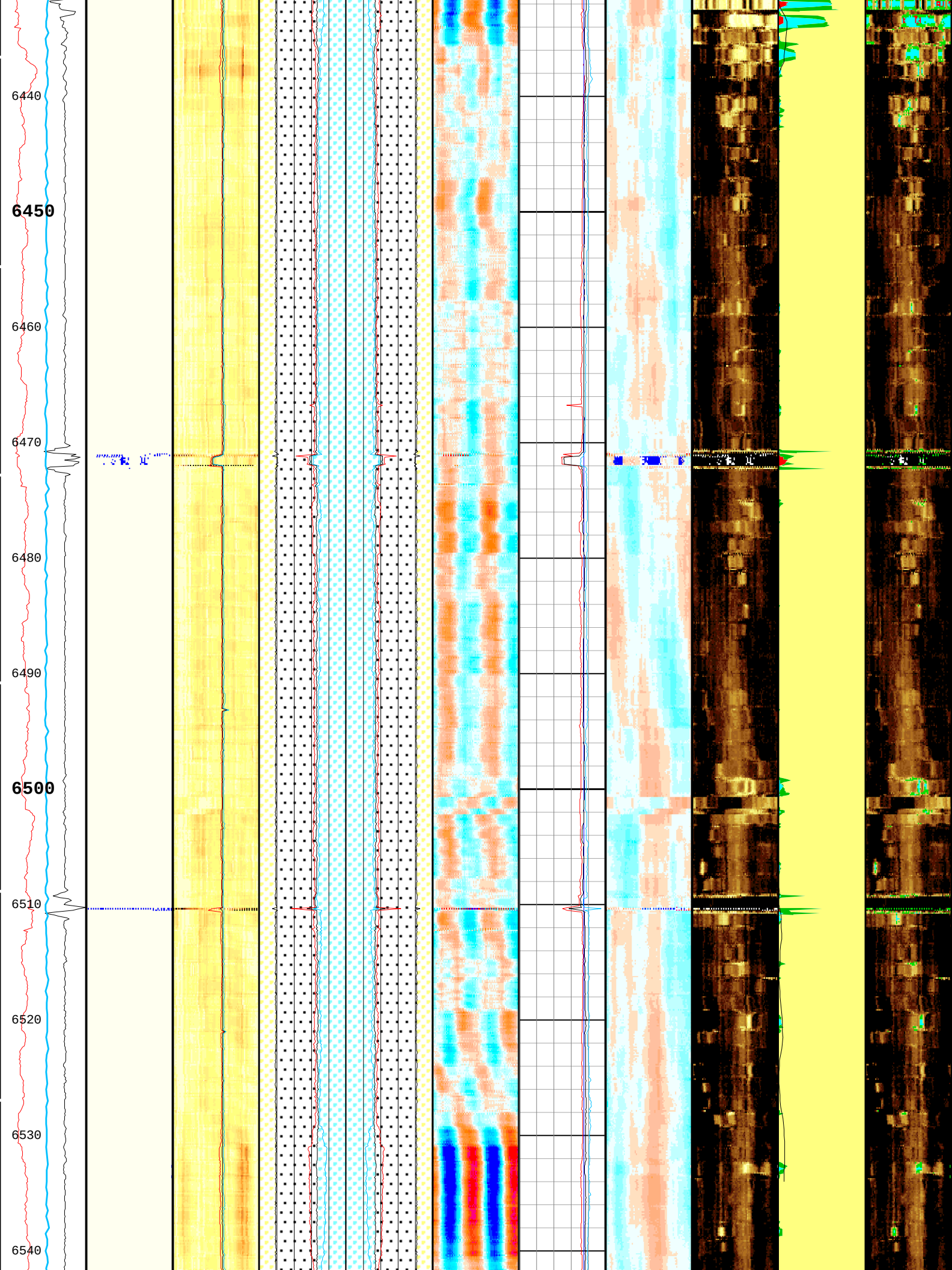
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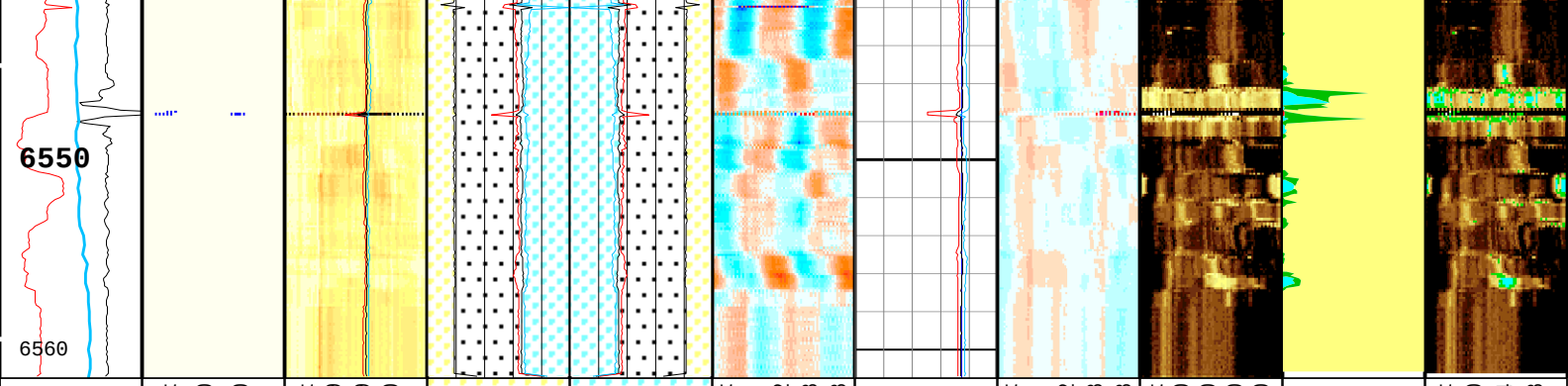
6530
6540



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
5 in 4

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
5 in 4

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
5 in 4

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
5 in 4

IRAV
ERAV
IRAV-ERAV

Median of Unflagged External Radii (ERAV_RF) USIT-E
4 in 5

Median Internal Radius of Casing Corrected for Eccentering (IRAV_RF) USIT-E
4 in 5

Maximum of Unflagged Internal Radii (IRMX_RF) USIT-E
4 in 5

Minimum of Unflagged Internal Radii (IRMN_RF) USIT-E
4 in 5

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

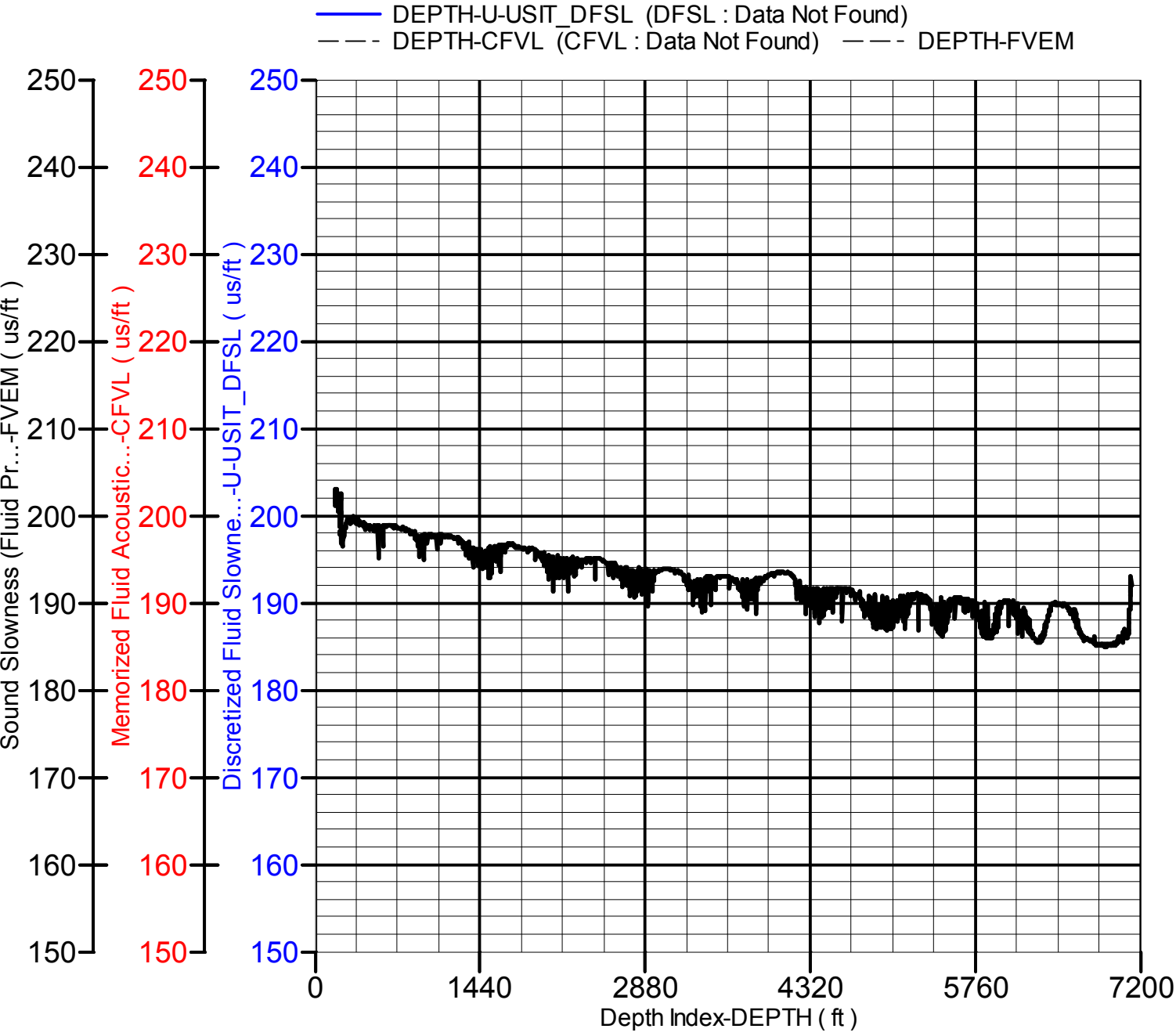
TIME_1900 - Time Marked every 60.00 (s)

Description: USI Composite Format: Log (LBV1_USI Composite 9.625inch) Index Scale: 10 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 16-Mar-2016 22:48:02

Fluid Acoustic Slowness vs Depth

2D Cross Plot

Index Range: From 177.50 to 7122.50 ft



XYZ
Company:Southern California Gas Company Well:Porter 50C
16Mar2016: Log[2]:Down:S005

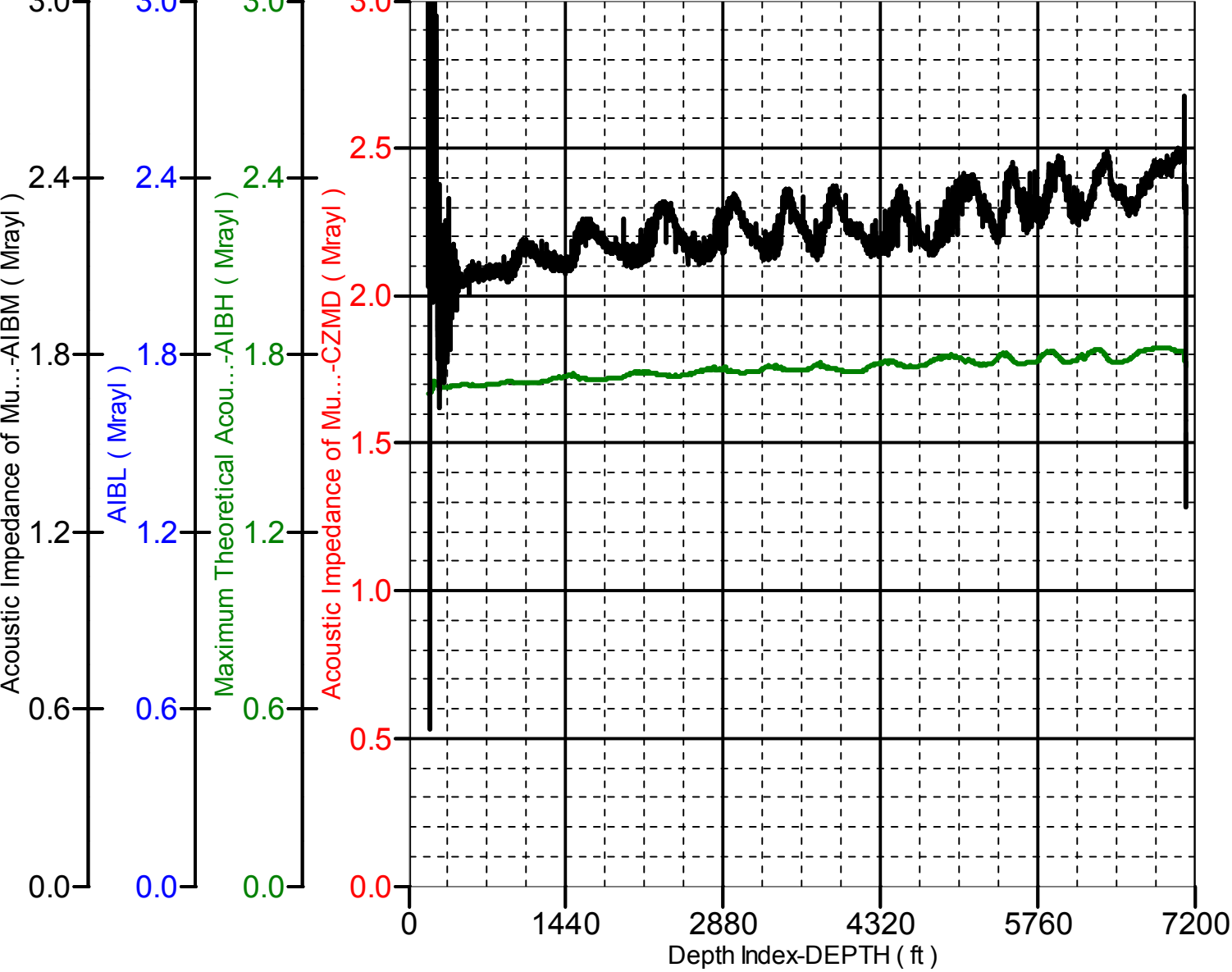
Theoretical Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 177.50 to 7122.50 ft

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

3.0 3.0 3.0 3.0



Company:	Southern California Gas Company
Well:	Porter 50C
Field:	Aliso Canyon
County:	Los Angeles
State:	CALIFORNIA

Schlumberger

Ultrasonic Imager- Cement Bond Log

Neutron - Gamma Ray - CCL

9-5/8" 47# casing