Schlumberger

Company: Southern California Gas Company

Well: Porter 24A

Field: Aliso Canyon

County: Los Angeles State: California

Cement Bond Log

Variable Density Log

Gamma Ray - CCL

County: Los Angeles
Field: Aliso Canyon
Location: 886' South & 1983' West of Station 84
Well: Porter 24A
Company: Southern California Gas Company

Location: 886' South & 1983' West of Station 84

Elev.: K.B. 2229.50 ft
G.L. 2206.00 ft
D.F.

Permanent Datum: Ground Level Elev.: 2206.00 f
Log Measured From: Kelly Bushing 23.50 ft above Perm.Datum
Drilling Measured From: Kelly Bushing

API Serial No.	Section:	Township:	Range:
04-037-24143	27	3N	16W

Logging Date		23-Sep-2016	
Run Number		Four	
Depth Driller		7331.00 ft	
Schlumberger Depth		7311.00 ft	
Bottom Log Interval		7305.00 ft	
Top Log Interval		35.00 ft	
Casing Fluid Type		KCl Water with Polymer	
Salinity			
Density		9 lbm/gal	
Fluid Level		8.00 ft	
BIT/CASING/TUBING STRING			
Bit Size		12.25 in	
From		818.00 ft	
To		7412.00 ft	
Casing/Tubing Size		9.625 in	
Weight		47 lbm/ft	
Grade		N80	
From		0.00 ft	
To		7412.00 ft	
Max Recorded Temperatures			
Logger on Bottom	Time	23-Sep-2016 10:15:00	
Unit Number	Location:	3189 Ventura	
Recorded By		I. Kartawidjaja	
Witnessed By		Mr. Tom McMahon	

Disclaimer

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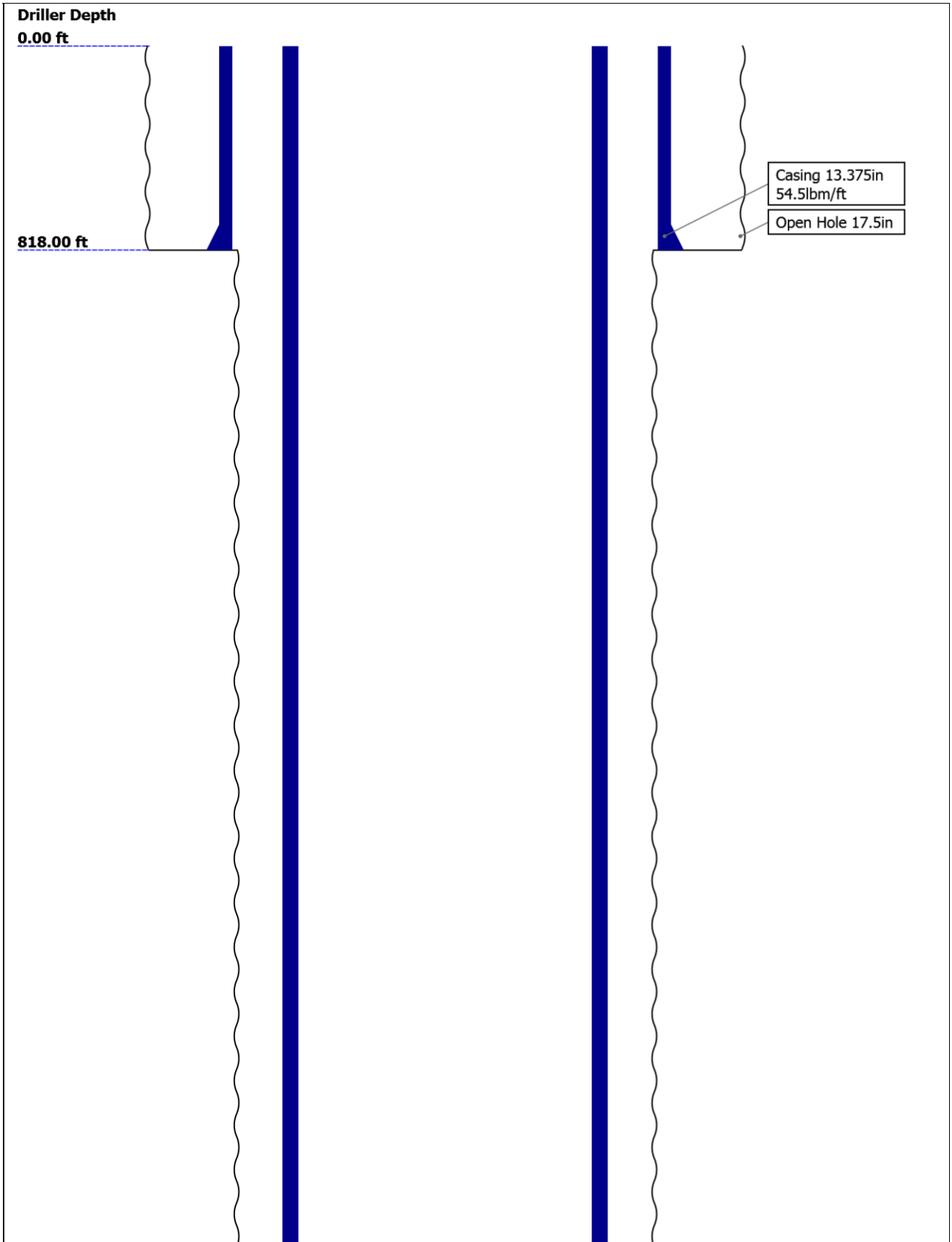
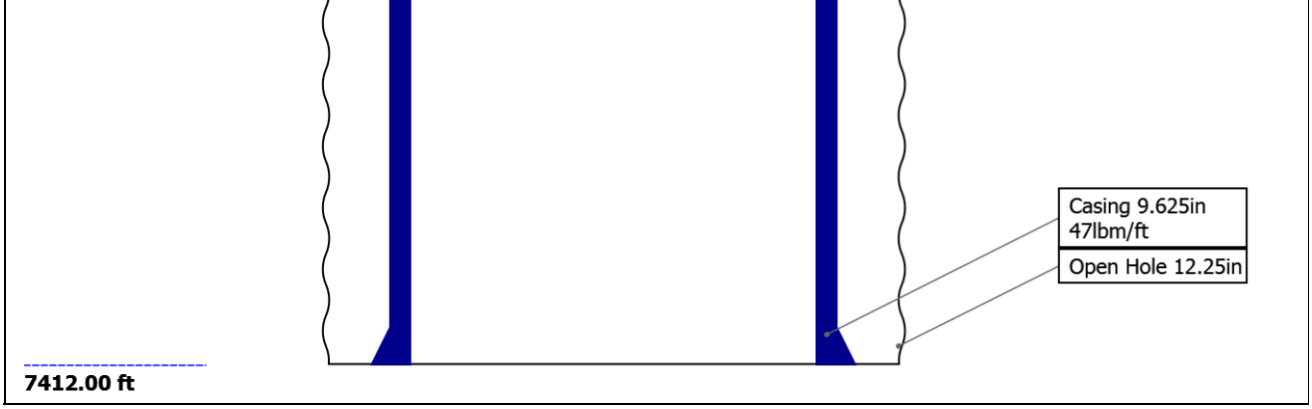
Well Sketch





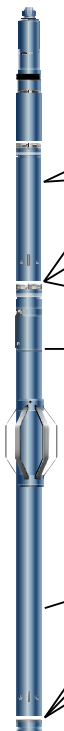
Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	17.5	12.25				
Top Driller (ft)	0	818				
Top Logger (ft)	0	818				
Bottom Driller (ft)	818	7412				
Bottom Logger (ft)	818	7412				
Casing						
Size (in)	13.375	9.625				
Weight (lbm/ft)	54.5	47				
Inner Diameter (in)	12.615	8.681				
Grade	K55	N80				
Top Driller (ft)	0	0				
Top Logger (ft)	0	0				
Bottom Driller (ft)	818	7412				
Bottom Logger (ft)	818	7412				

Remarks and Equipment Summary

Four: Toolstring

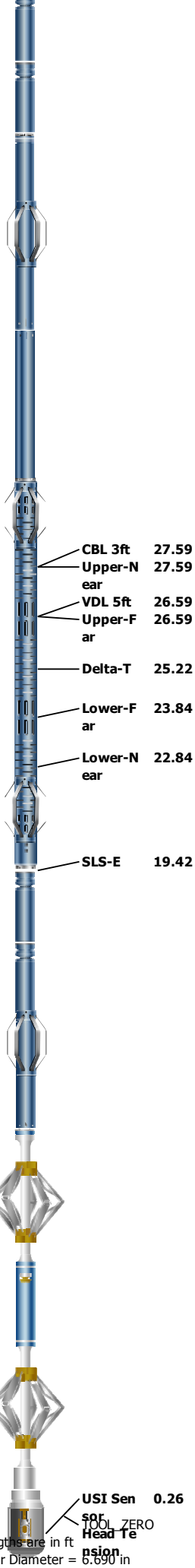
Equip name	Length
LEH-QT:2867	**59.39**
LEH-QT:2867	
DTC-H	**56.47**
ECH-KC	
DTC-H	
HGNS-H:3923	**53.47**
HGNH:4819	
NPV-N	
NSR-F:1303	
HMCA-H	
HGNS-H:3923	
HACCZ-H:4177	
AH-184[	**44.06**



MP name	Offset
Red	
CTEM	**55.57**
HV	**0.00**
TelStatus	**53.47**
ToolStatus	**53.47**
Temperature	**53.44**
GR	**52.73**
CNL Porosity	**46.4**
HGNS	**44.06**
HMCA	**44.06**
Accelerometer	**0.00**

Four: Remarks

Depth correlated to SLB Compensated Neutron log dated 17-Oct-1993 Run Two
USIT logged at 10 deg 1.5 inch, speed 3200
Anomalies repeated at very hi-res
Main pass recorded with 0 psi pressure. Repeat pass at from 7000-7300 ft recorded with 1000 psi.



AH-184[4] 44.06

AH-184[3] 42.06

DSLT-H 40.06
ECH-KH
DSLC-H
SLS-E:1468

AH-184[2]:2882 19.42

AH-184[1]:6735 17.42

USIT-E:1726 15.42
ECH-MFA:199
USAC-A:1726
USIS-A:1804
USSC-B:992
USRS-C:959
USI-SENSOR:3350

Lengths are in ft
Maximum Outer Diameter = 6.690 in
Line: Sensor Location, Value: Gating Offset
All measurements are relative to TOOL_ZERO

Job Event Summary

Event	Time	Duration	Interval	Remark
Run 1				**Sep-23-2016 08:10**
Log[2]:Down	Sep-23-2016 08:32	01:52:43	251.01 - 7325.24 ft	Fluid Properties Measurement
Log[4]:Up	Sep-23-2016 09:58	00:11:43	7301.95 - 7075.77 ft	Hi-Res Repeat
Log[5]:Up	Sep-23-2016 10:15	02:20:41	7305.95 - 60.8 ft	Main Pass
Log[6]:Up	Sep-23-2016 12:56	00:02:59	3097.6 - 3039.02 ft	Hi-Res Repeat
Log[7]:Up	Sep-23-2016 13:12	00:03:33	1142.53 - 1076.53 ft	Hi-Res Repeat
Run 2				**Sep-23-2016 13:50**
Log[1]:Up	Sep-23-2016 13:58	00:05:40	118.98 - 6.06 ft	Surface Pass

Four

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

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

Tool Elements	Description	Software Version	Firmware Version
HGNS-H	HILT Gamma-Ray and Neutron Sonde, 150 degC	6.1.58882.3100	2.0
SLS-E	Sonic Logging Sonde E supports 3'-5'BHC DT and CBL/VDL	6.1.58882.3100	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
Four	Log[5]:Up	Up	60.80 ft	7305.95 ft	23-Sep-2016 10:15:49 AM	23-Sep-2016 12:36:31 PM	ON	-4.14 ft	Yes

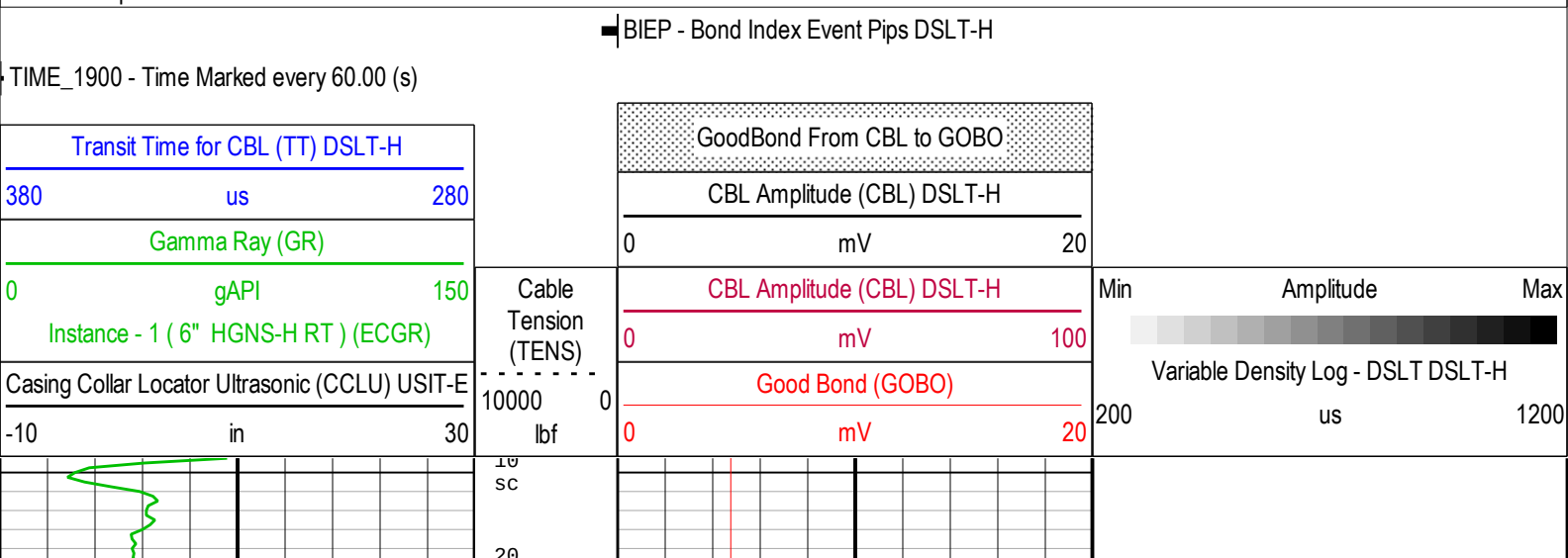
All depths are referenced to toolstring zero

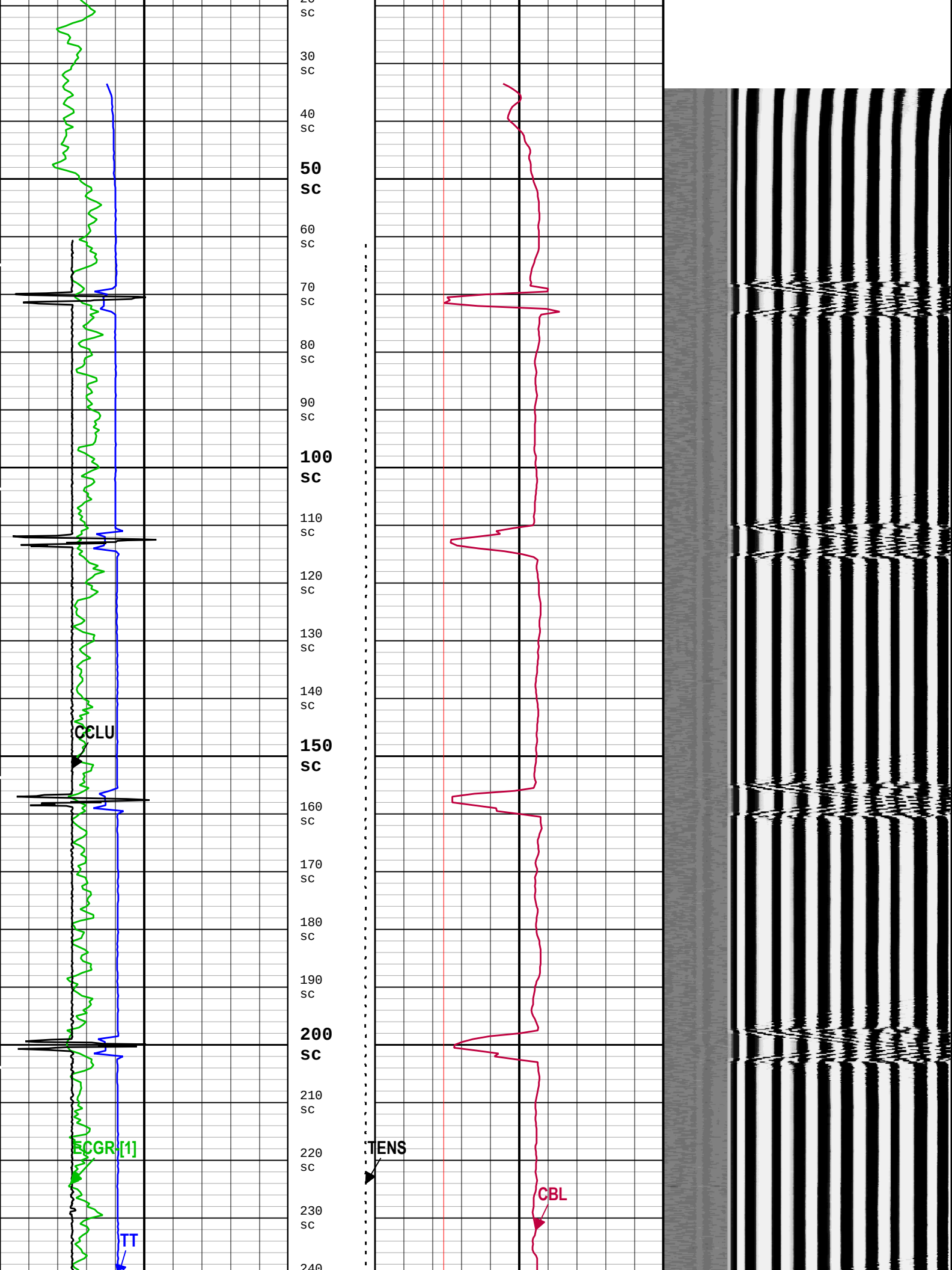
Log

Company:Southern California Gas Company Well:Porter 24A

Four: Log[5]:Up:S010

Description: Sonic CBL with VDL Format: Log (Sonic CBL with VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 23-Sep-2016 18:15:28

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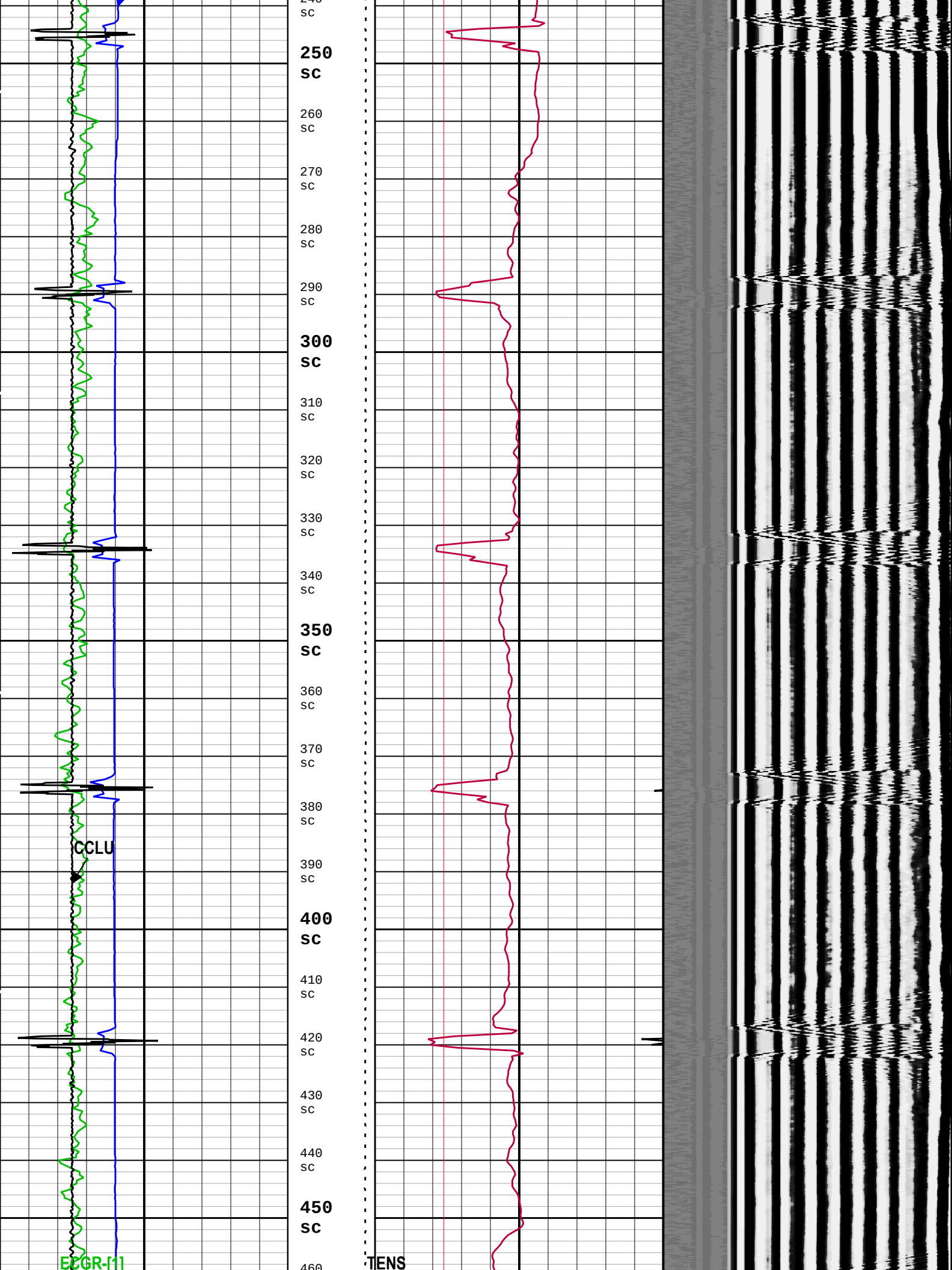
TT
TENS
CBL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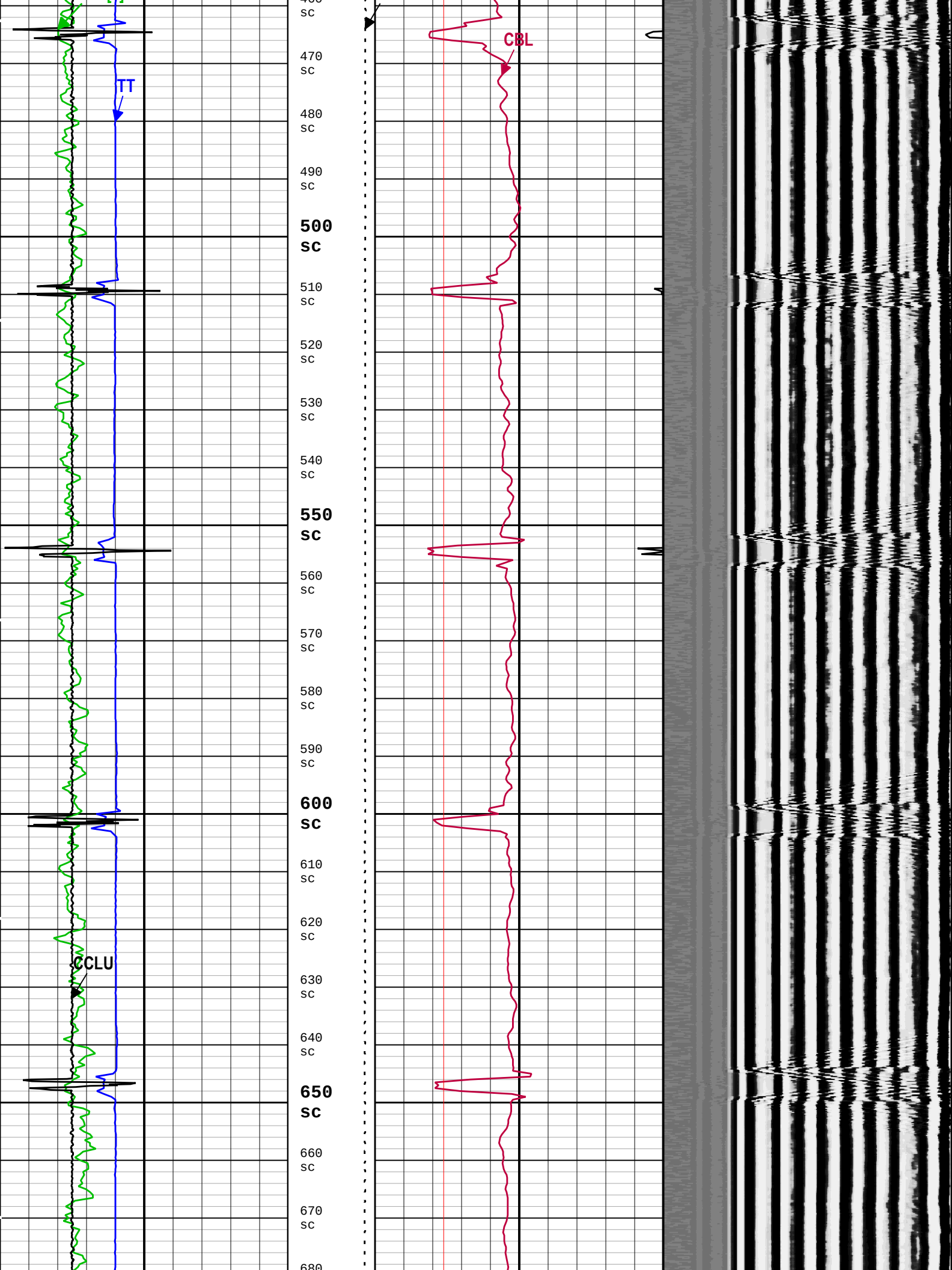
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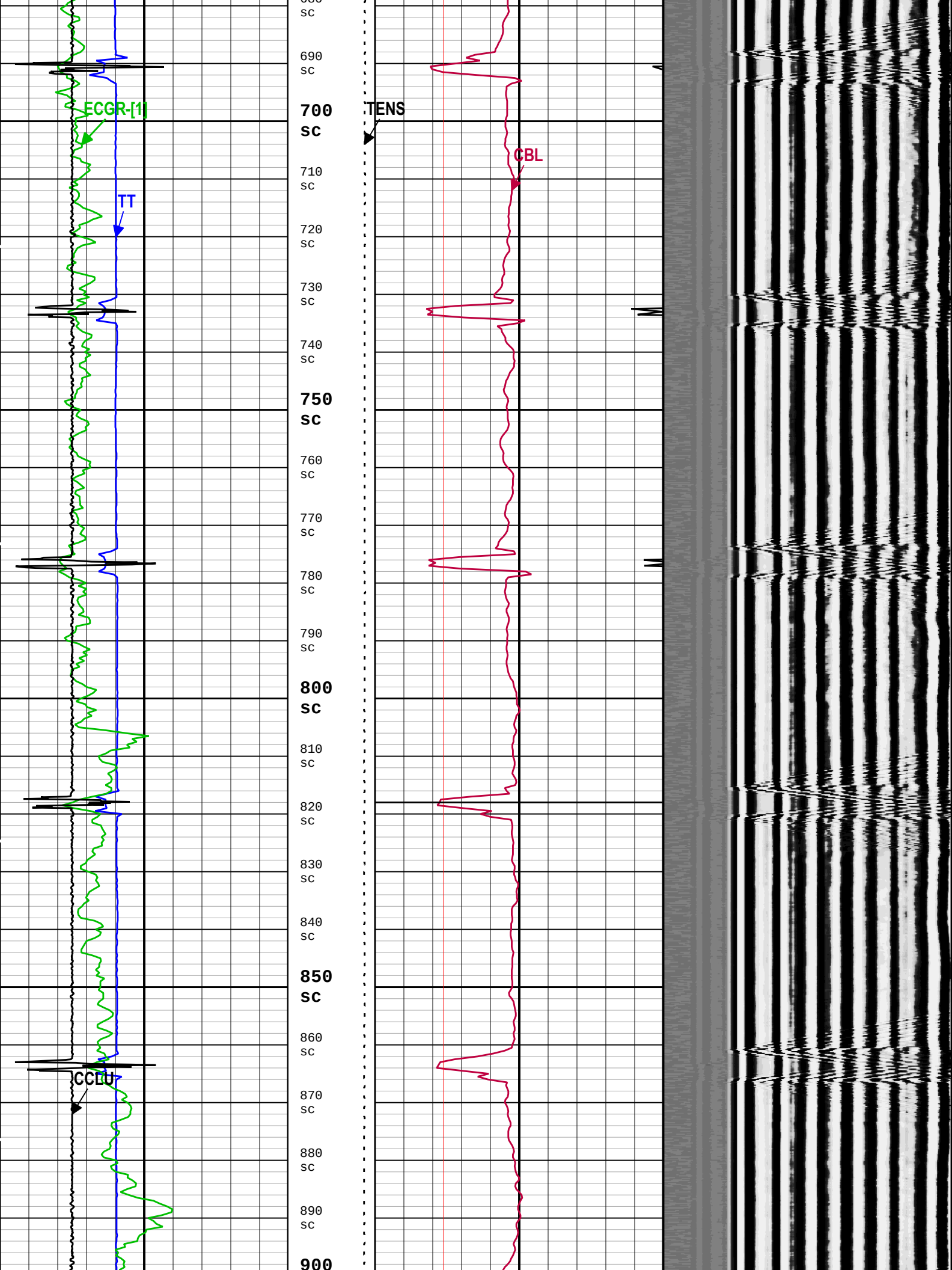
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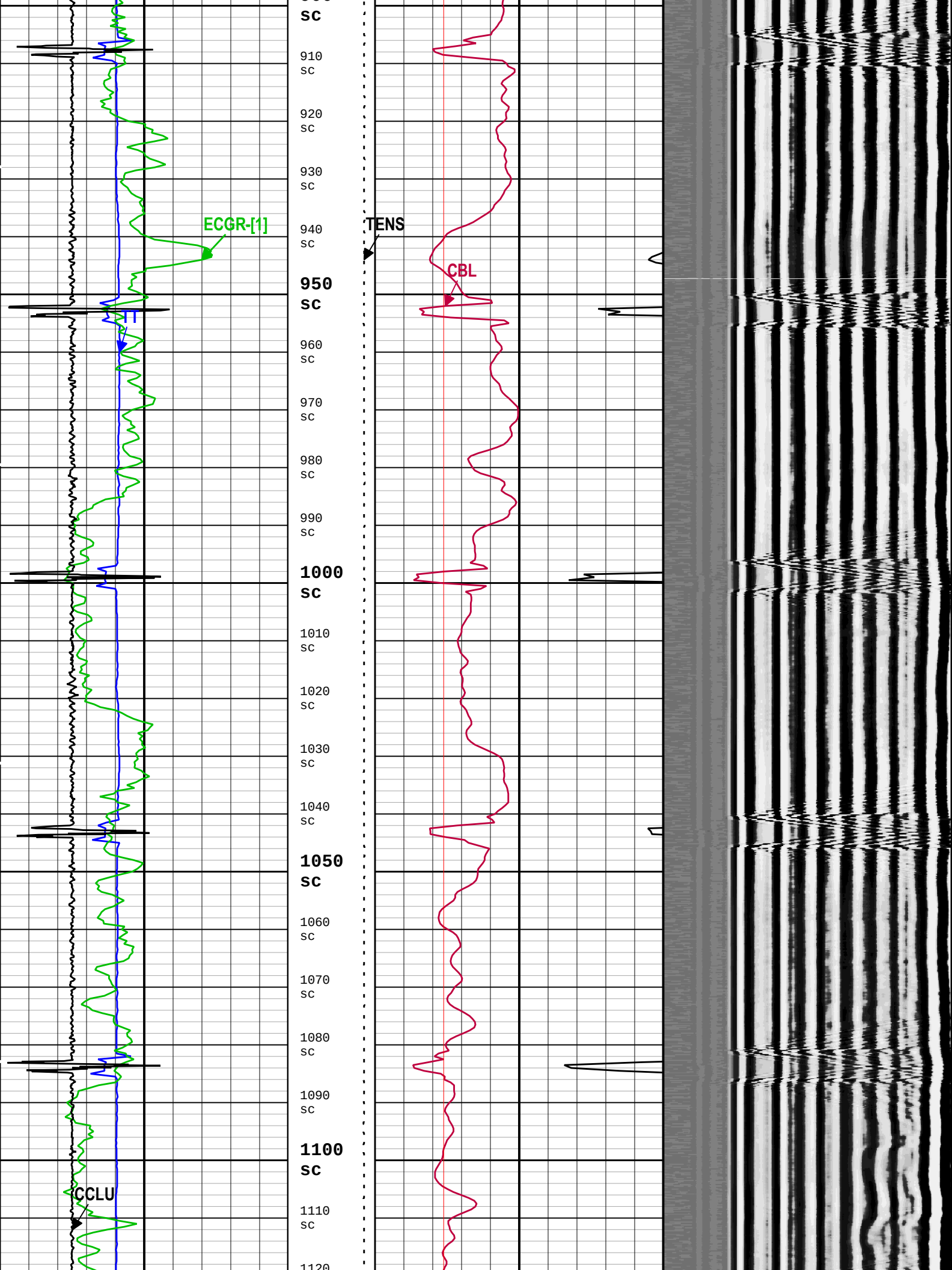
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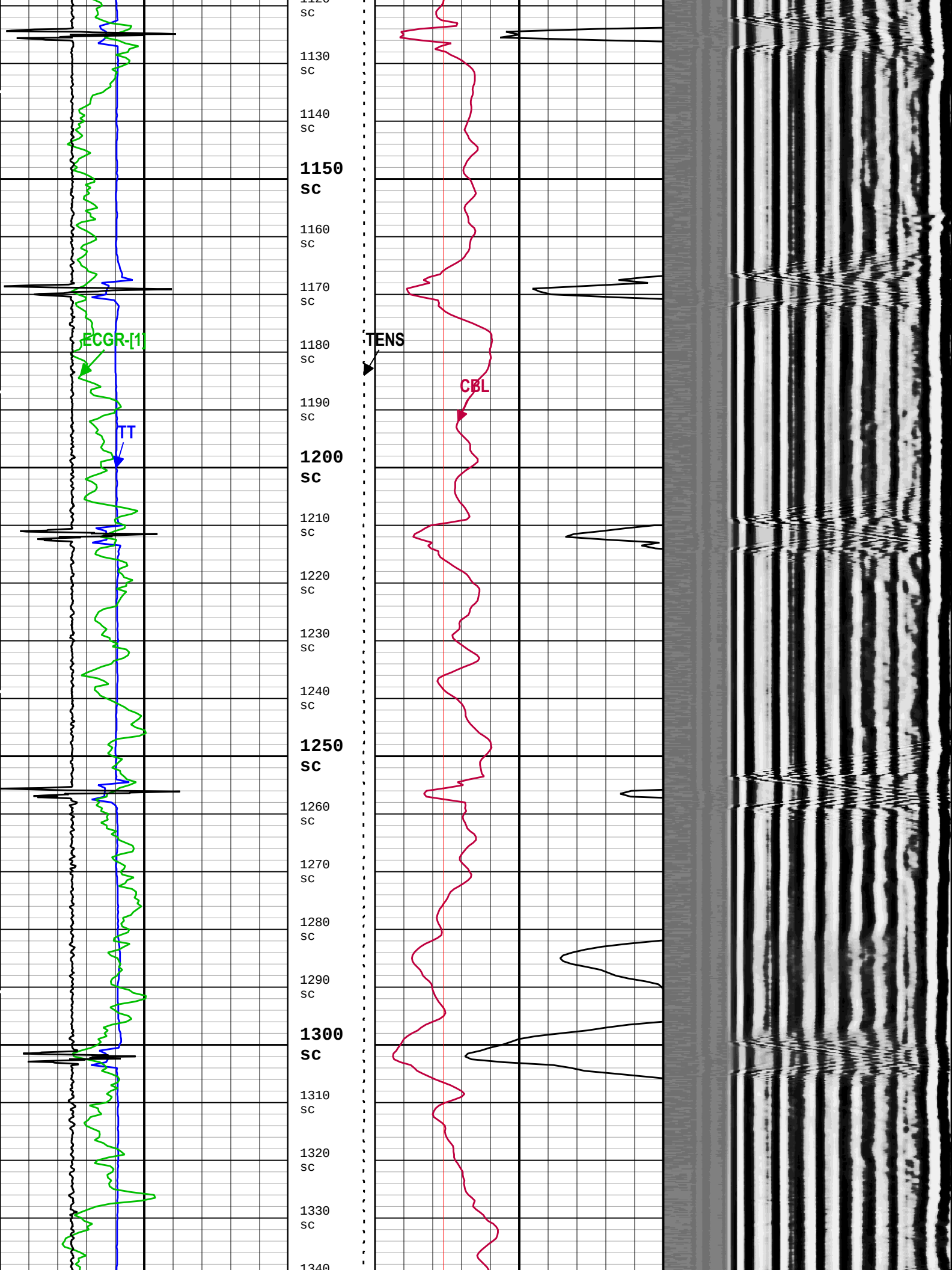
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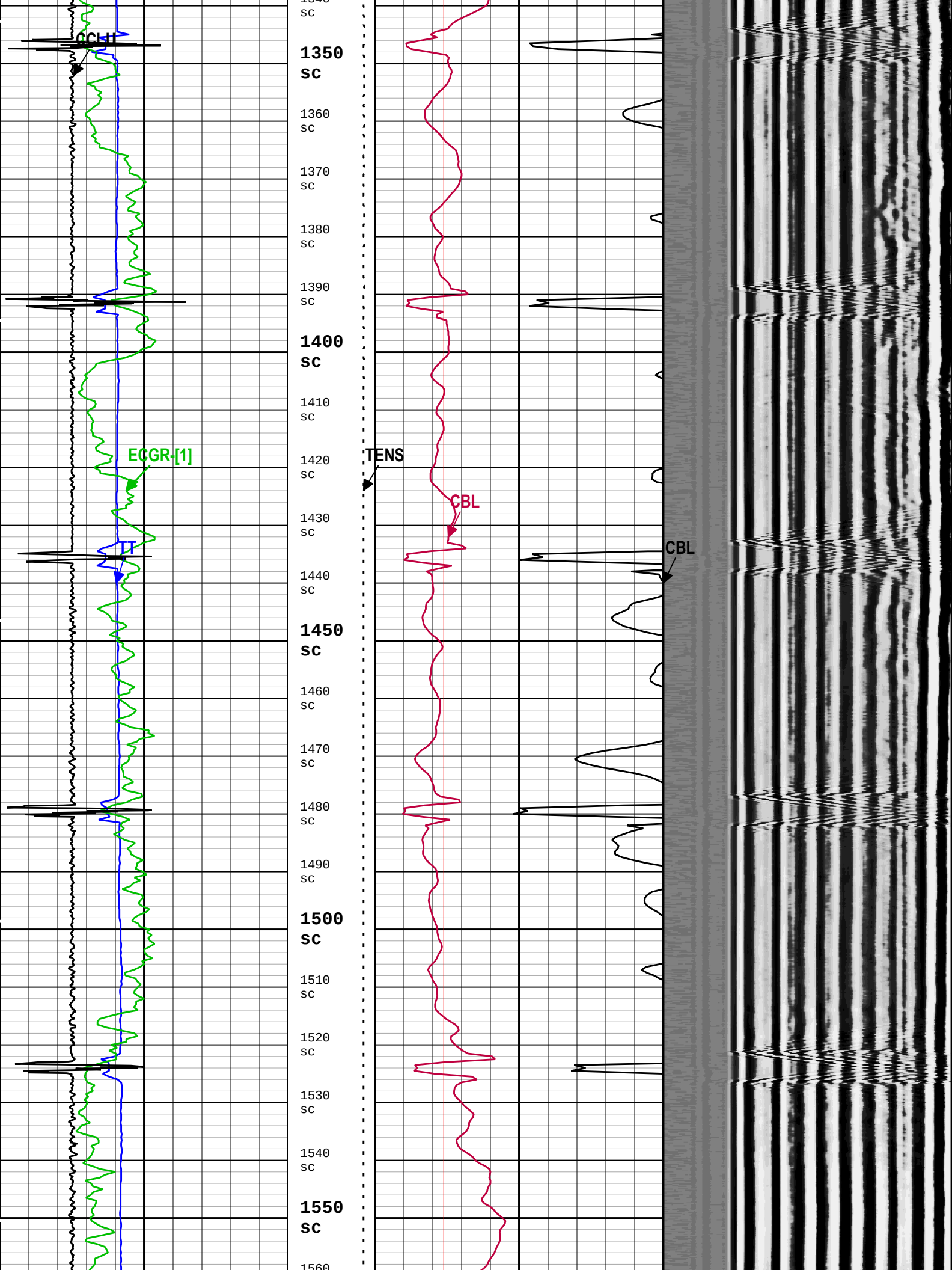
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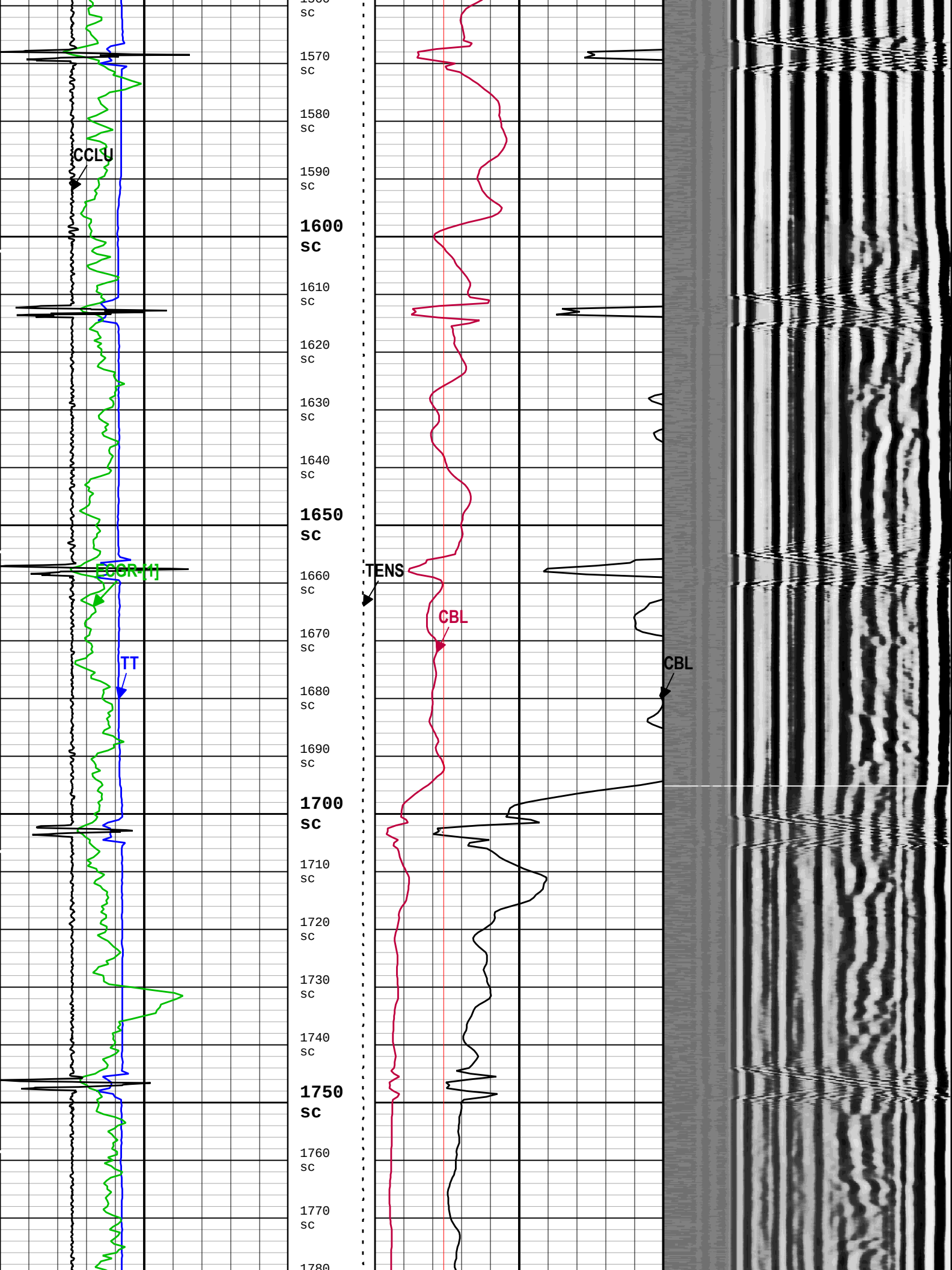

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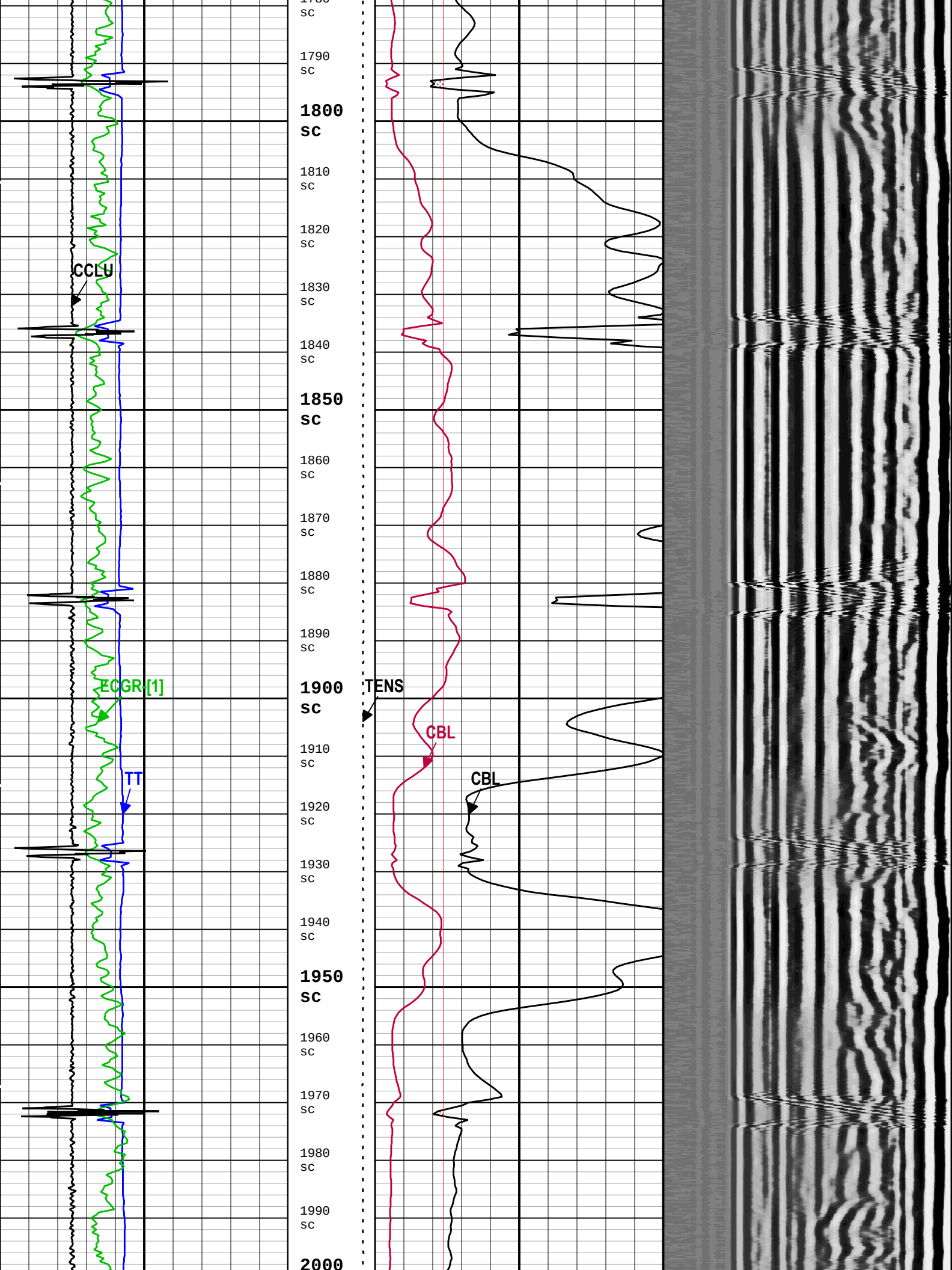
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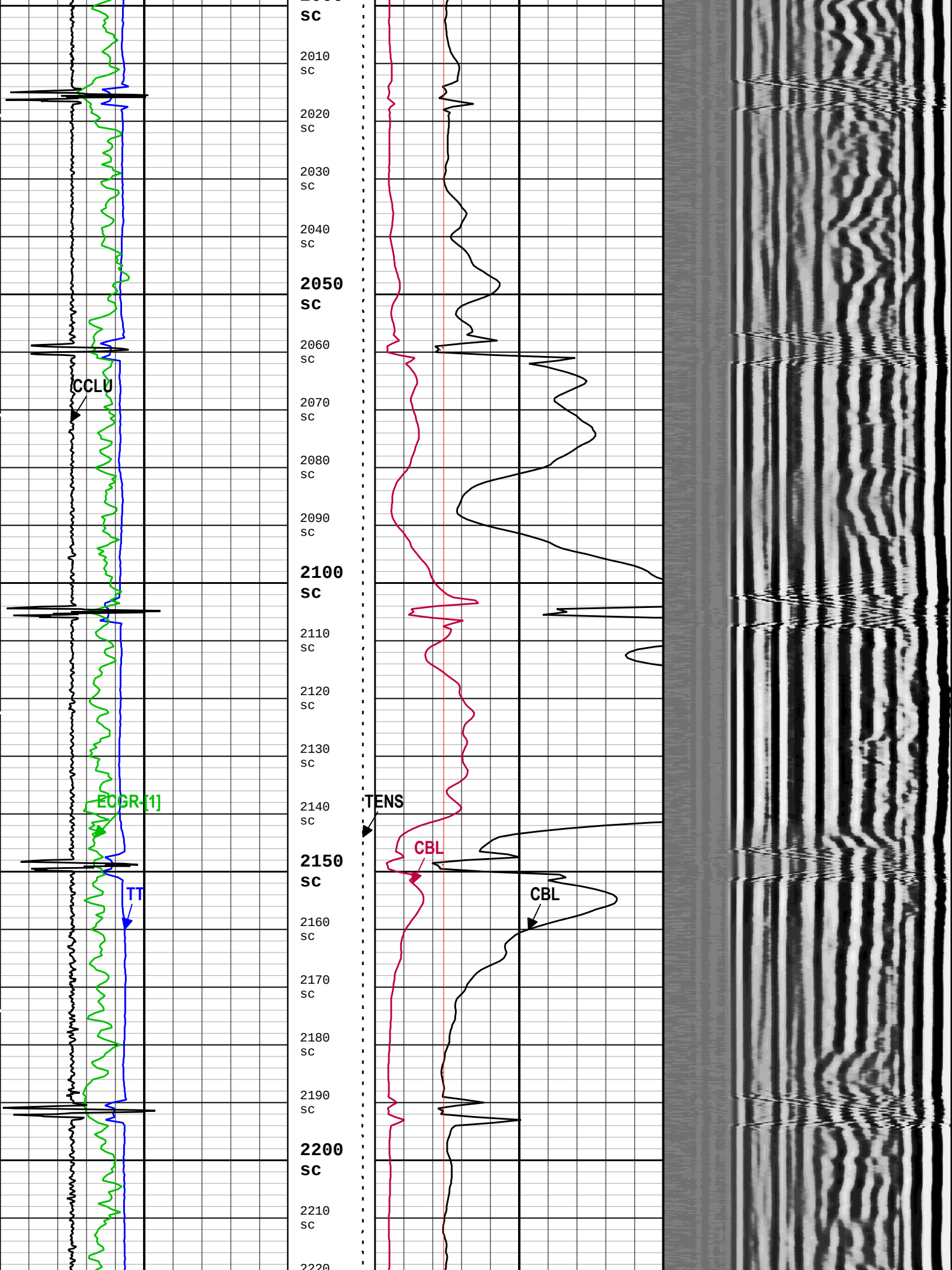
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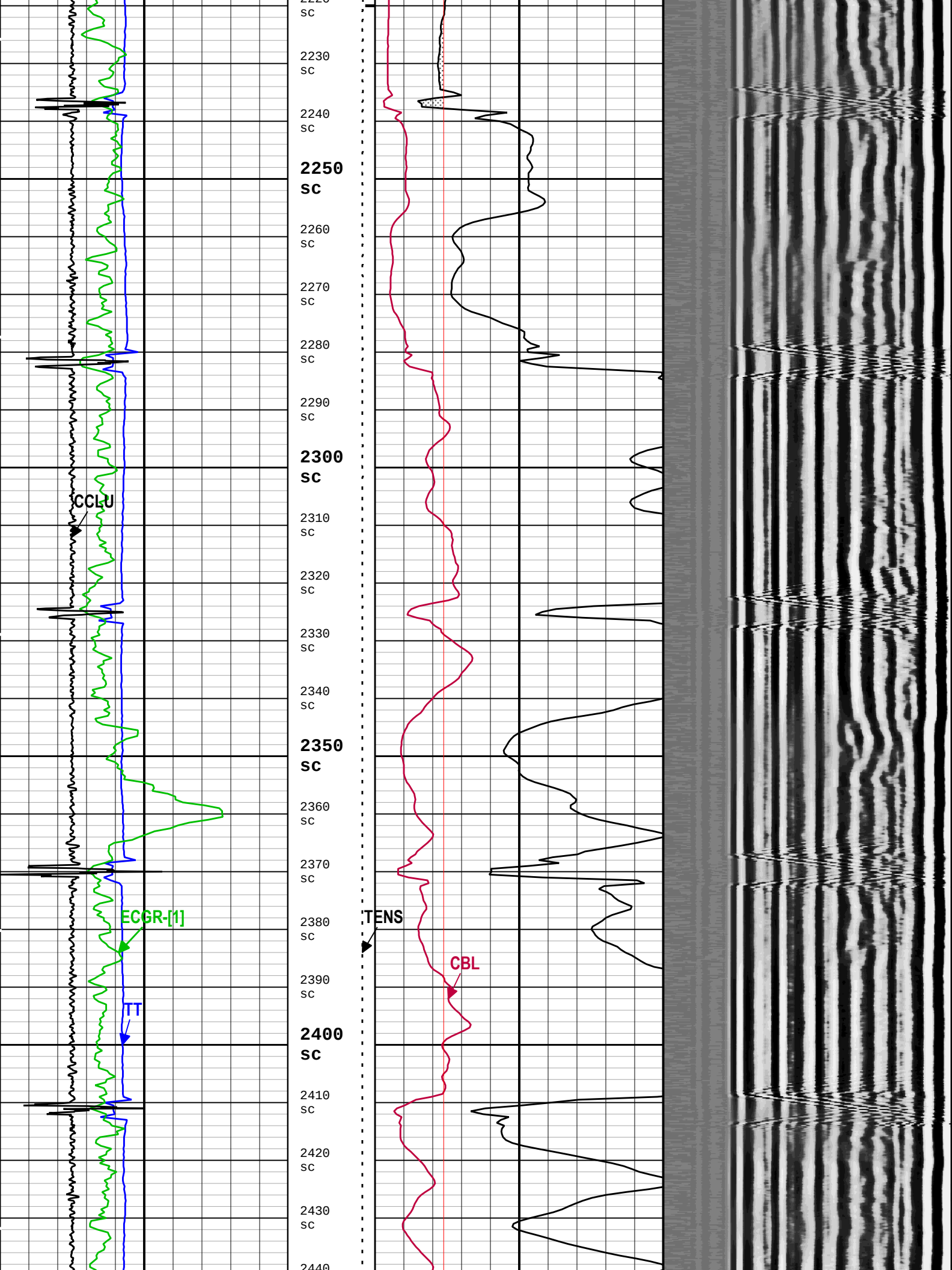
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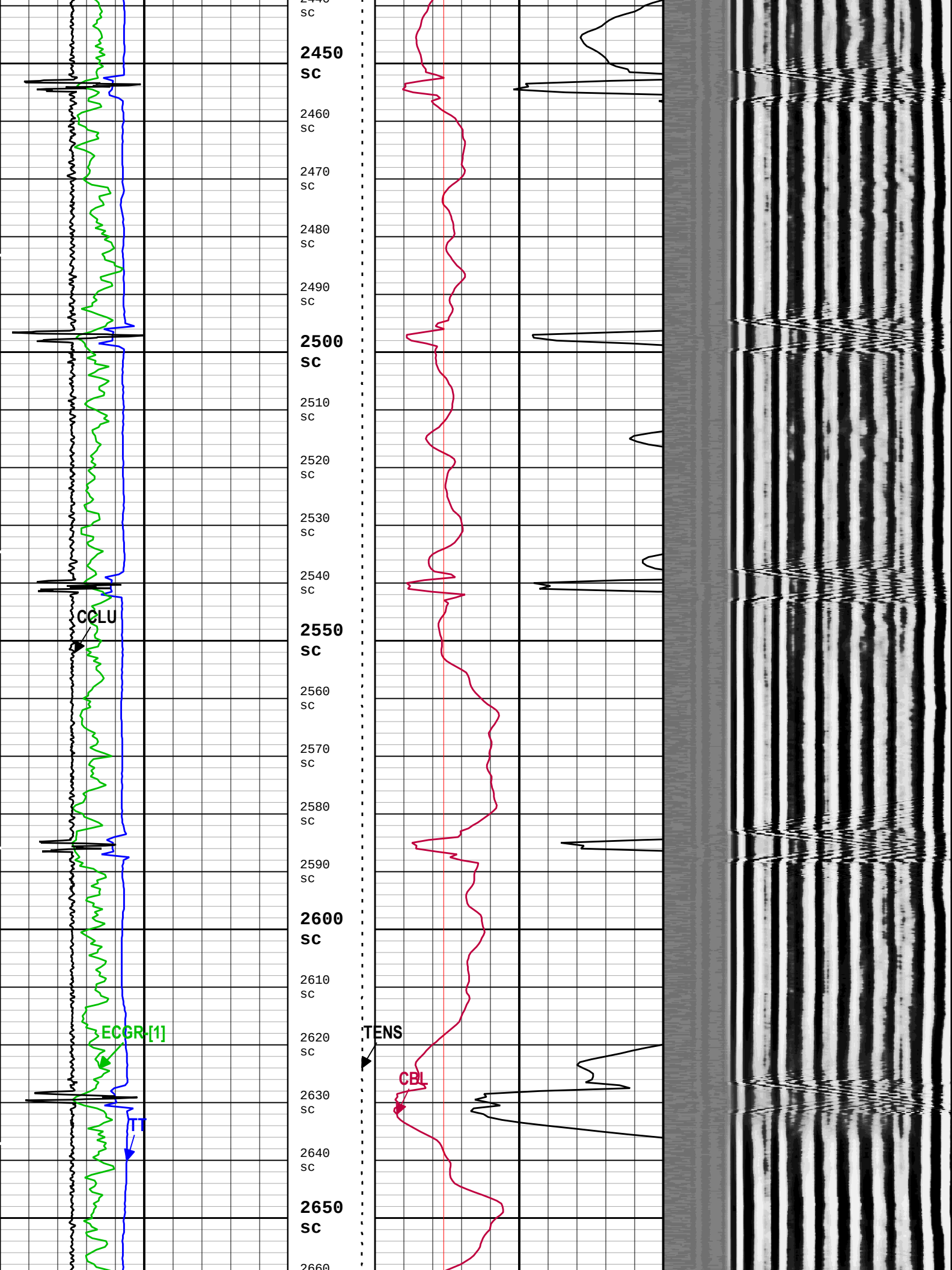
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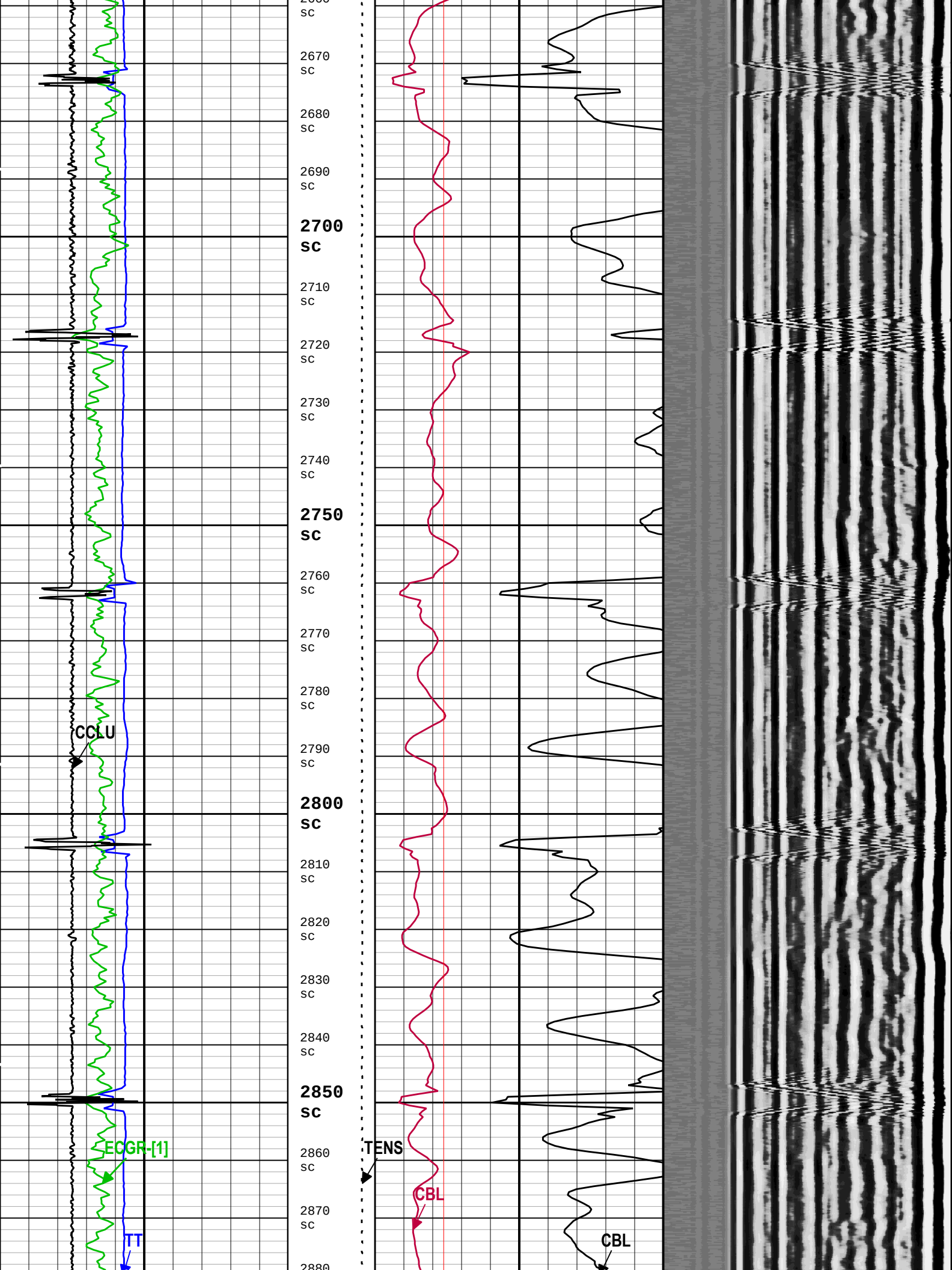
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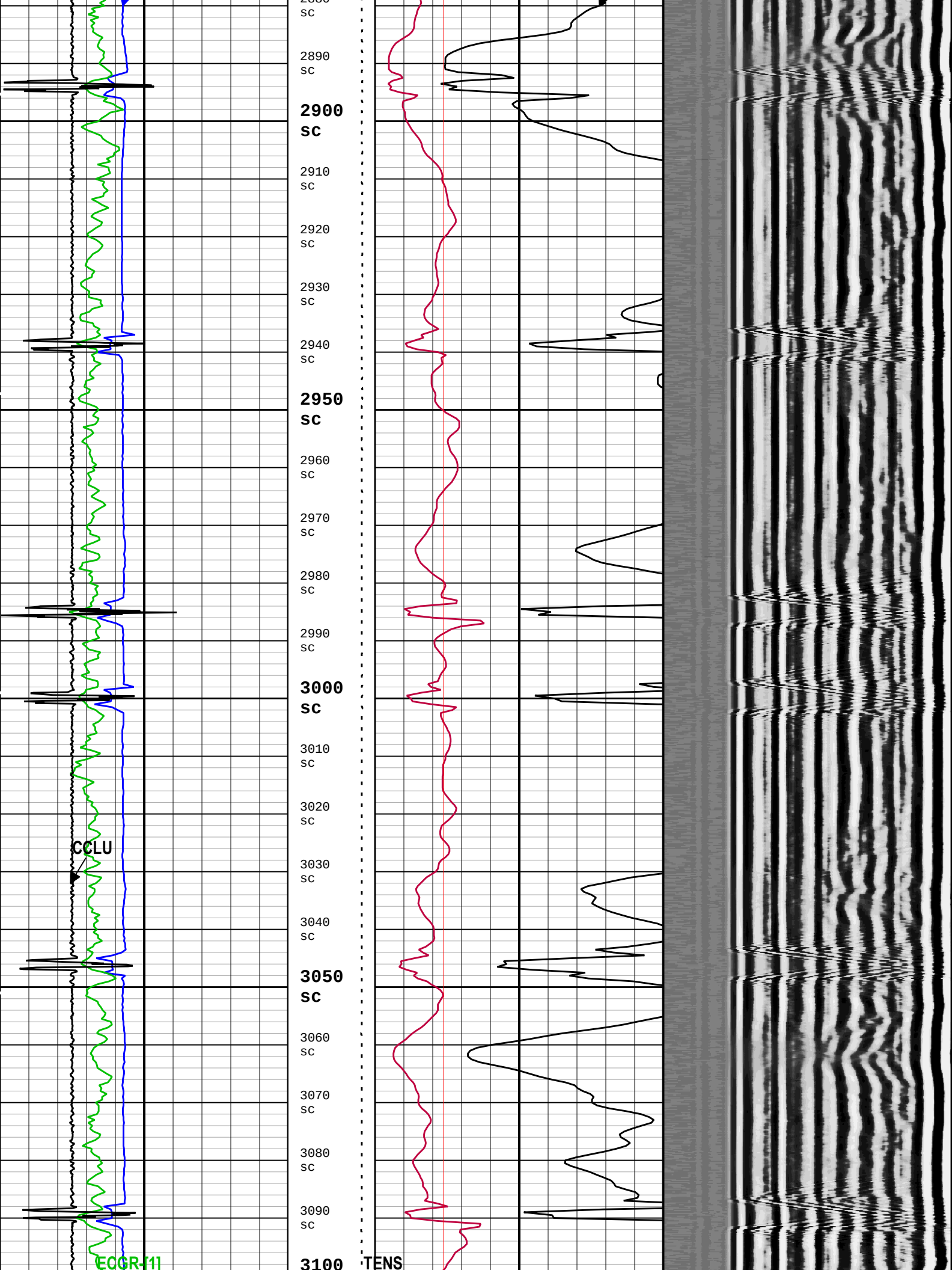
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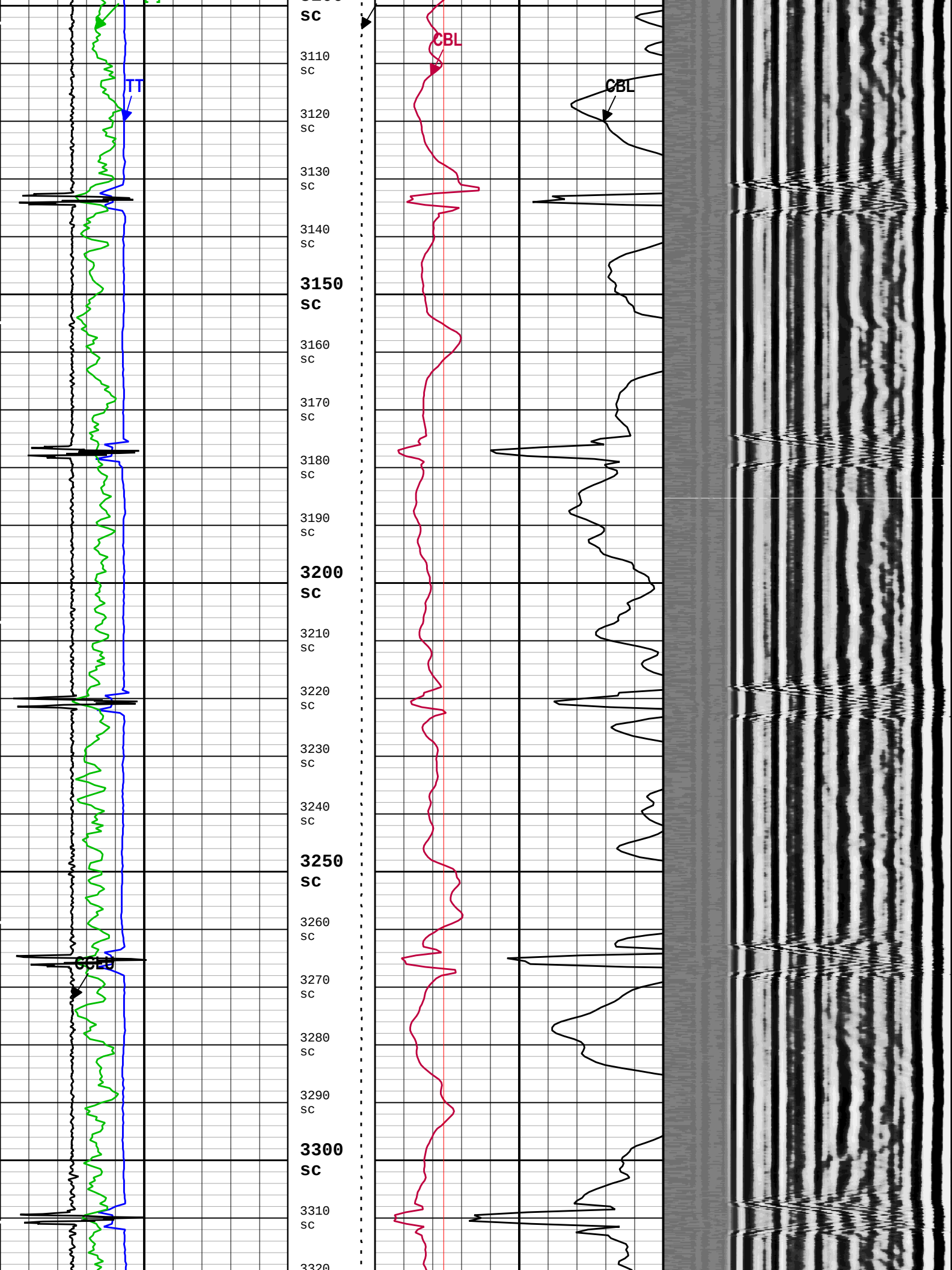
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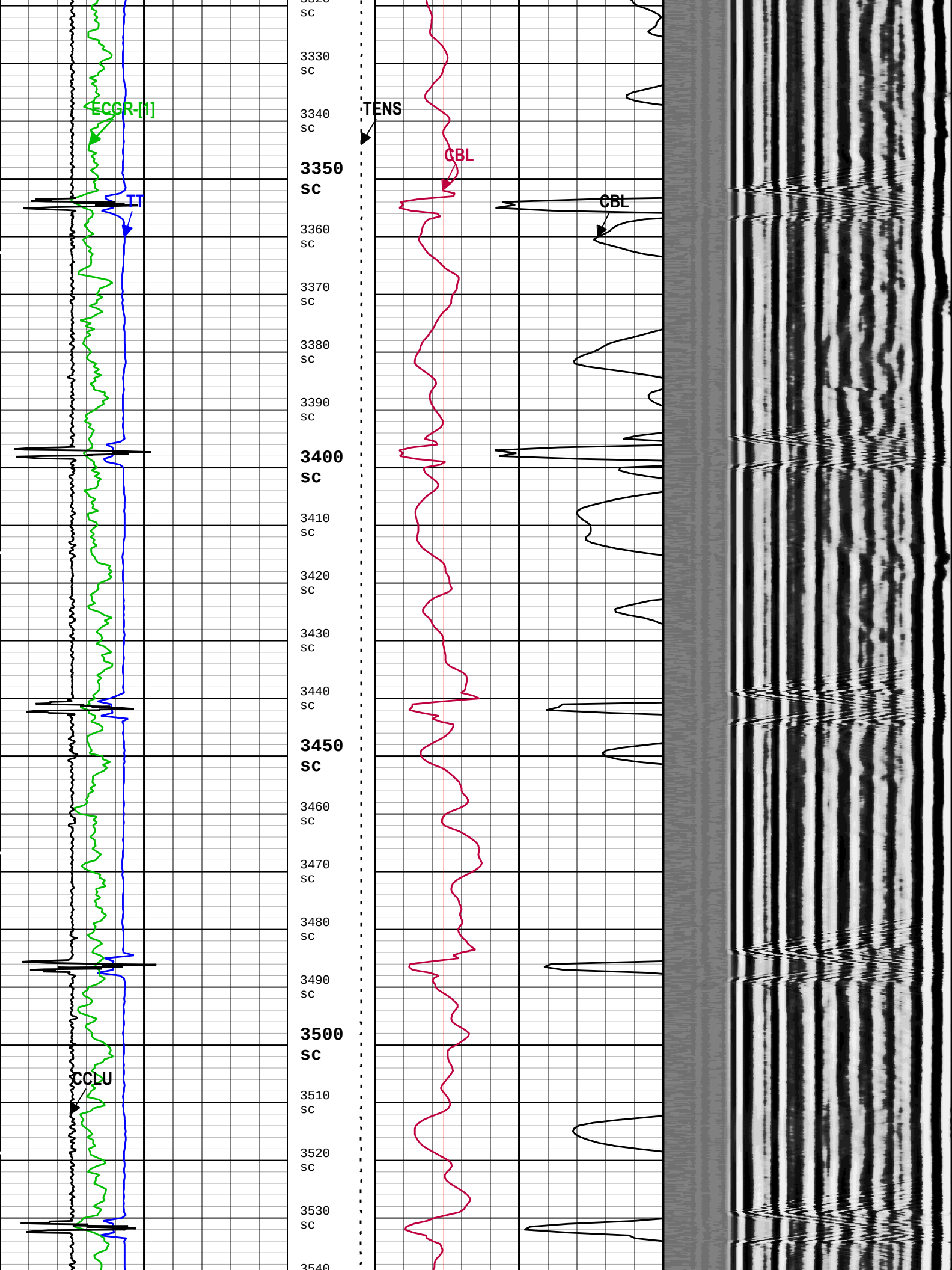
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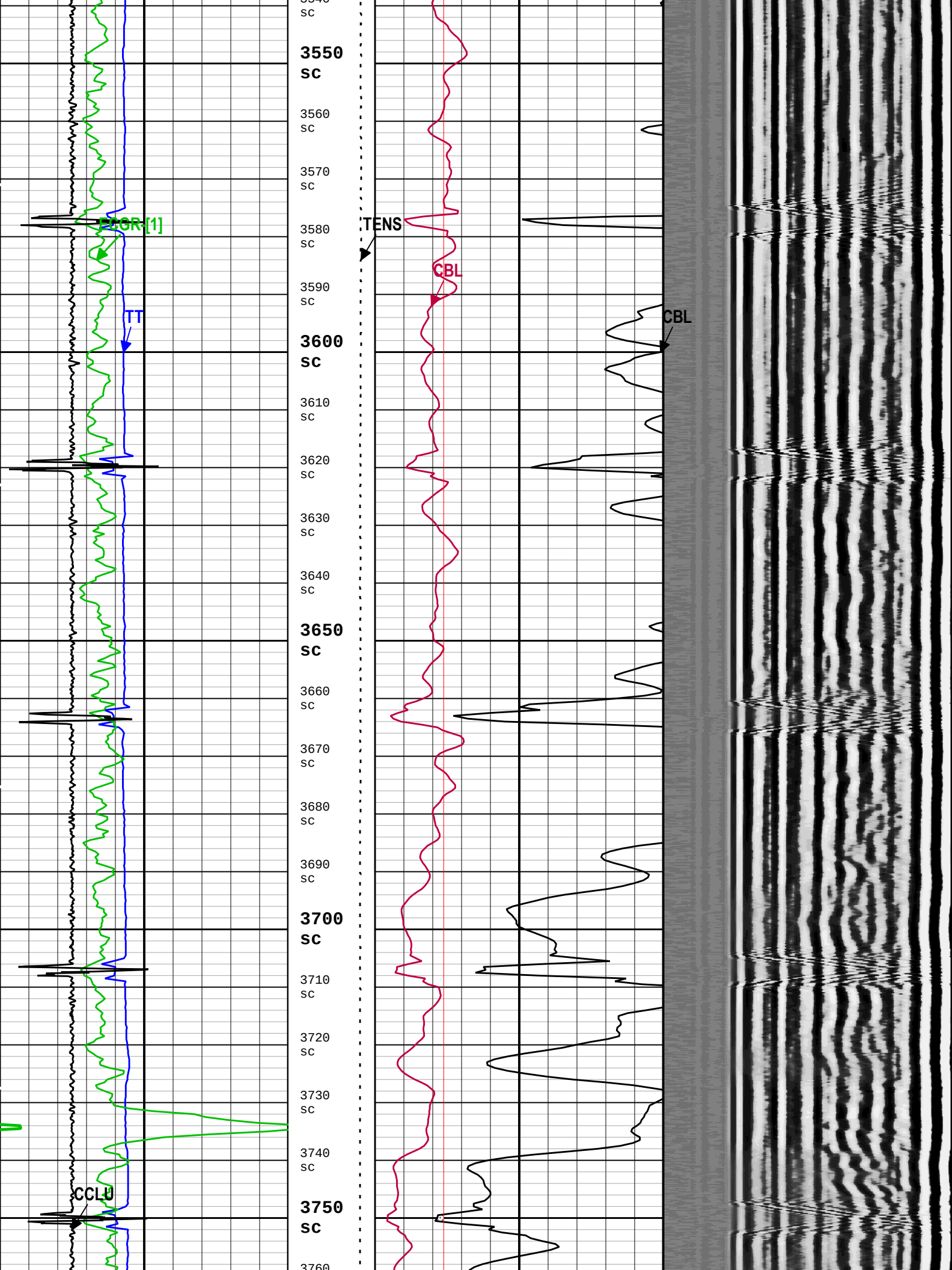
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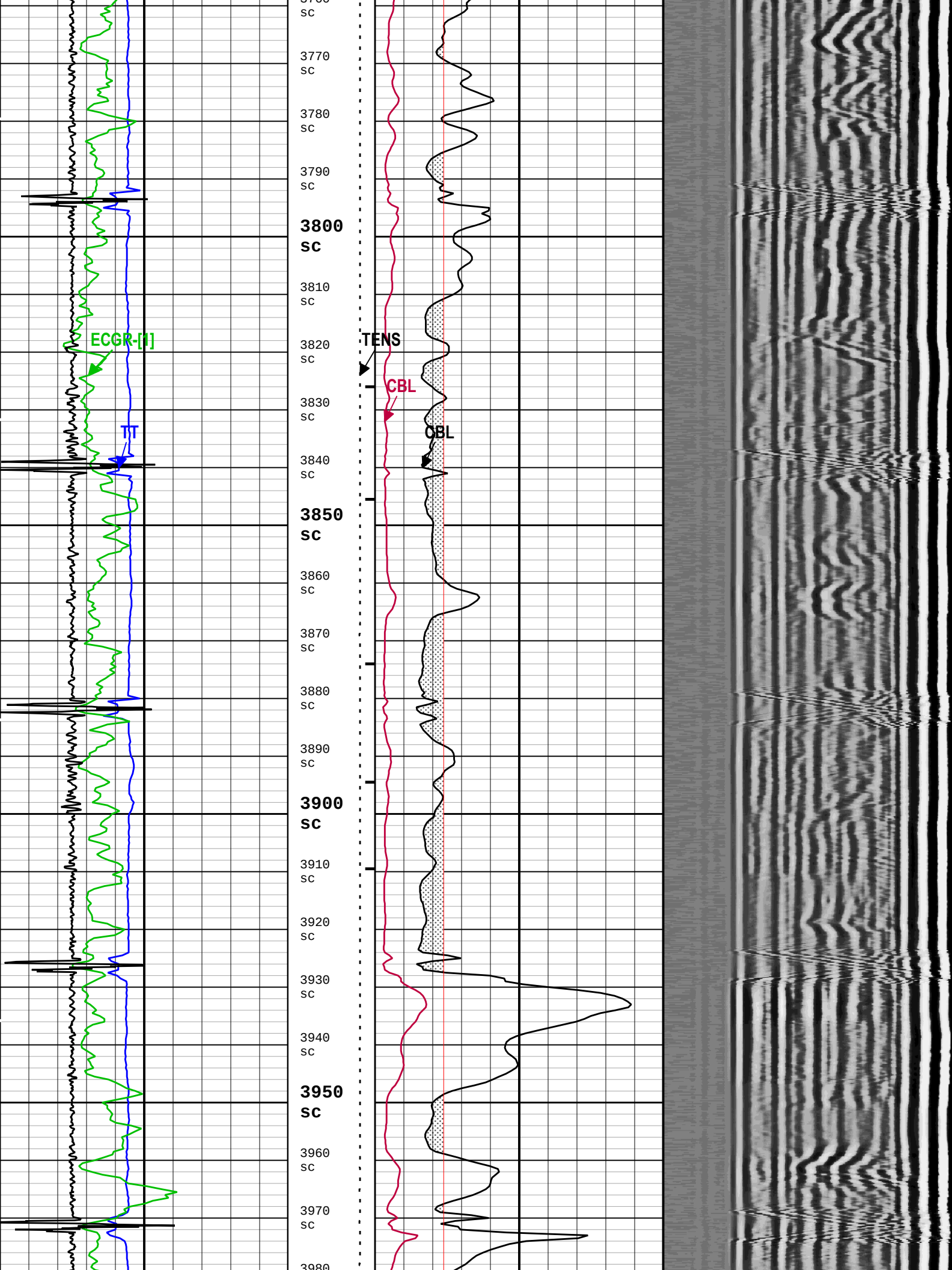
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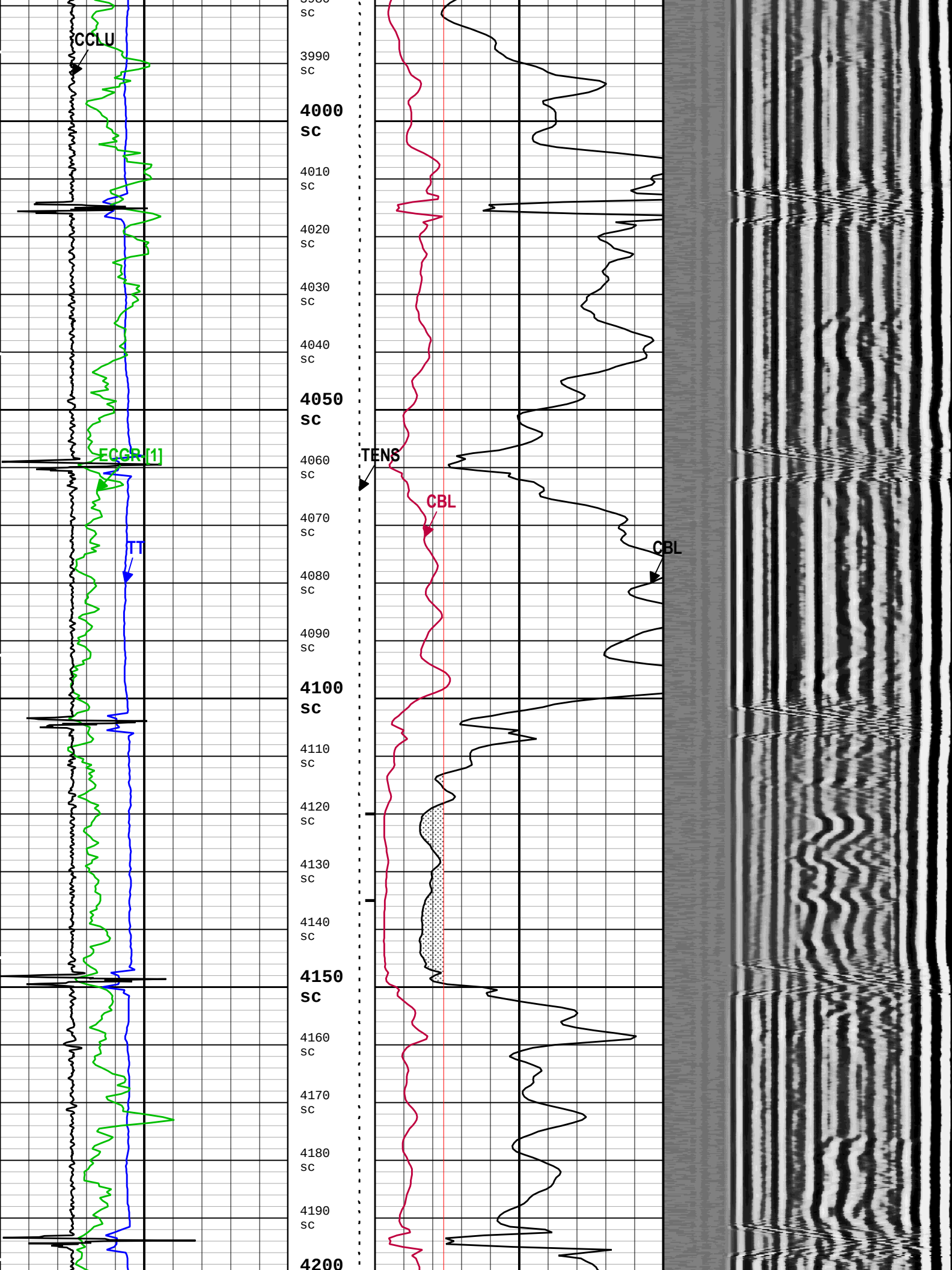
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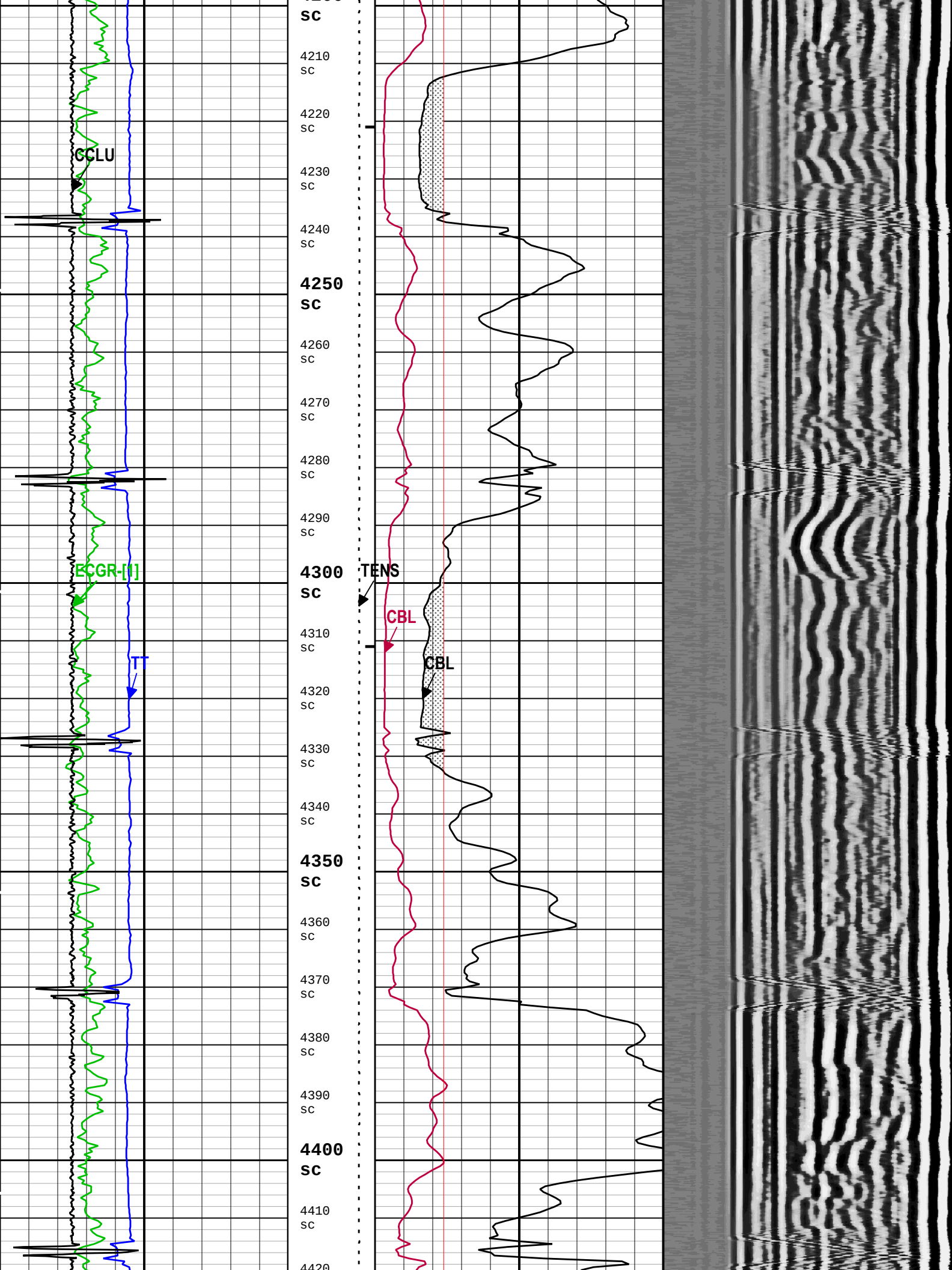
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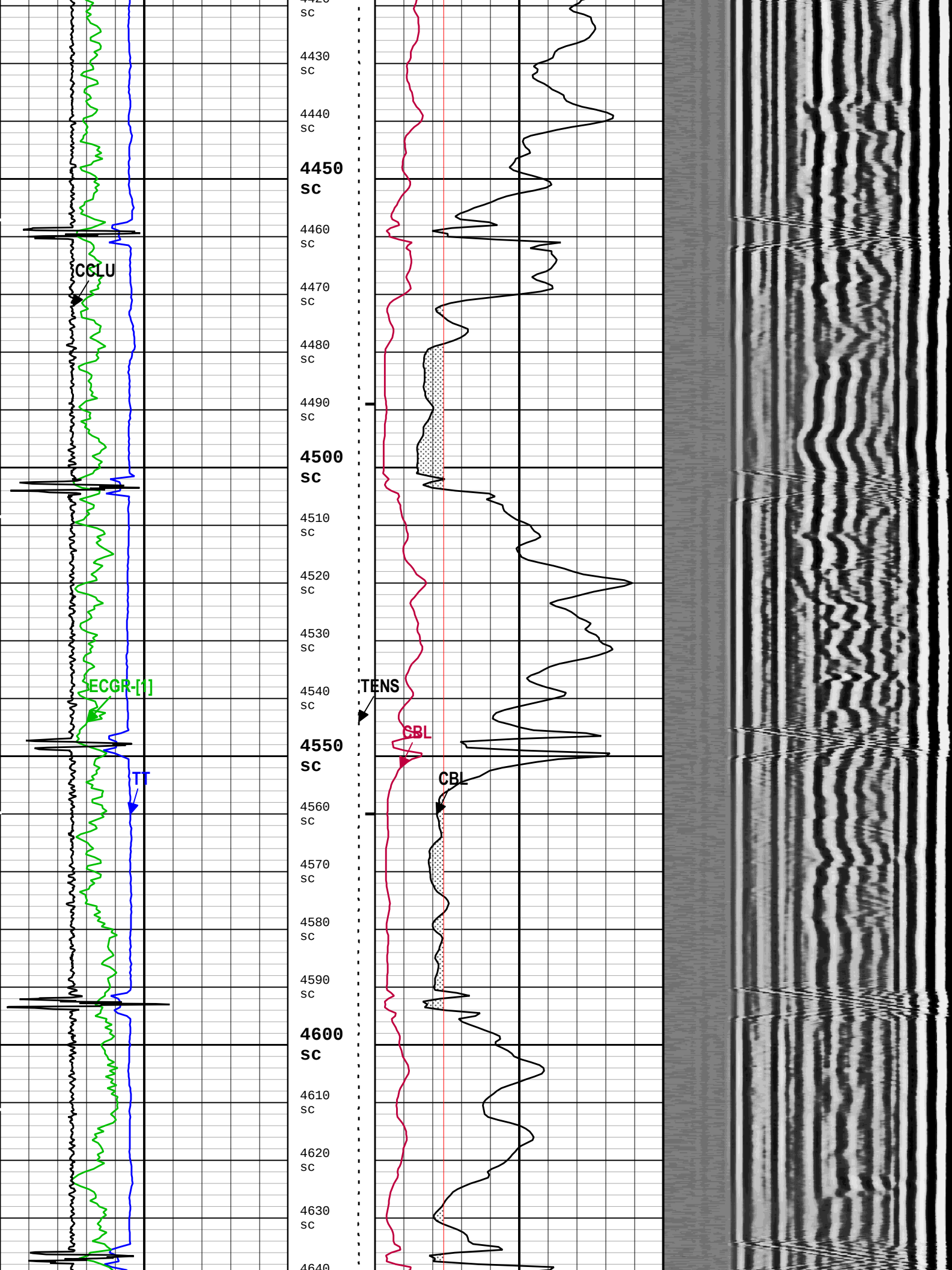
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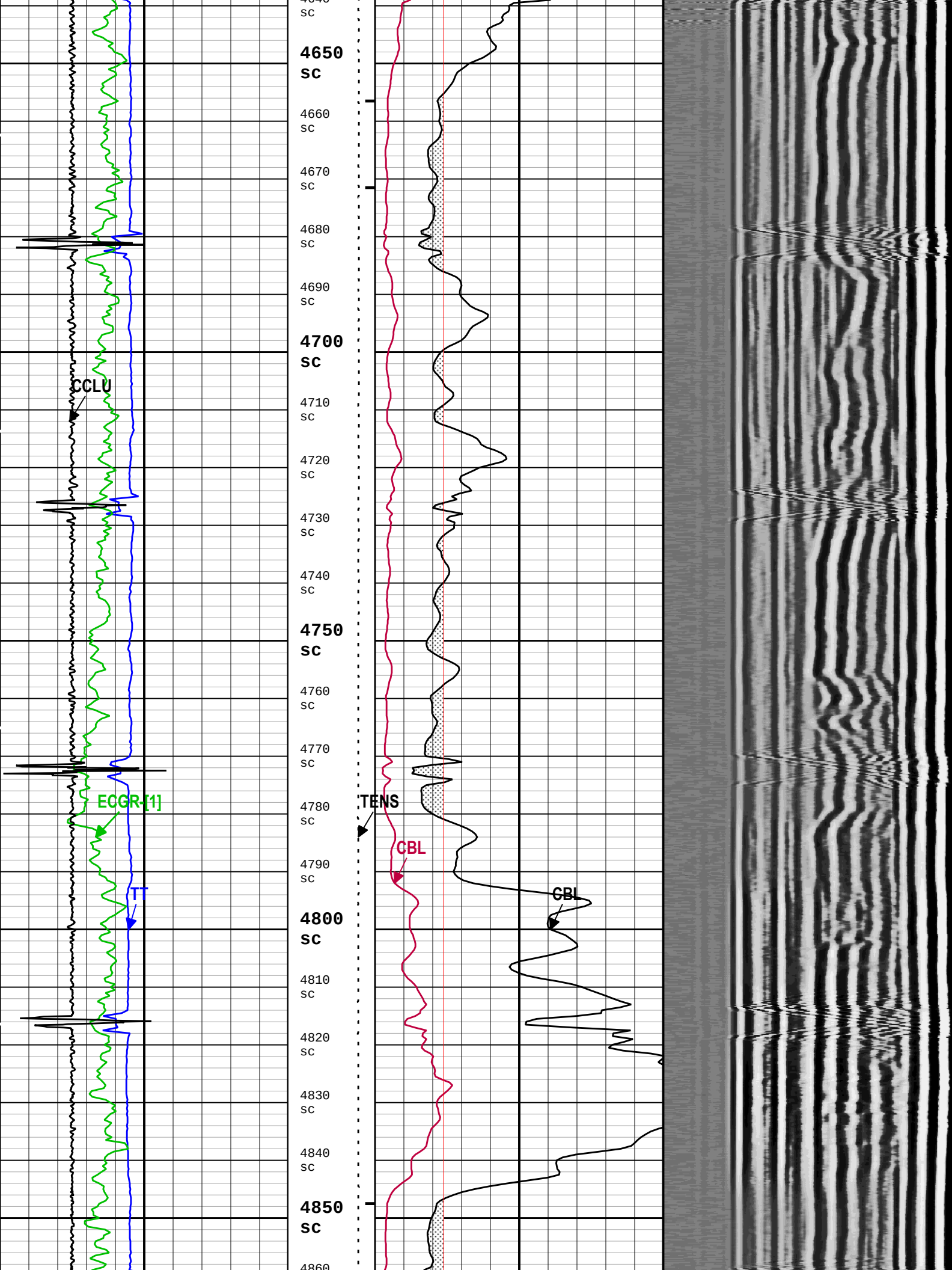
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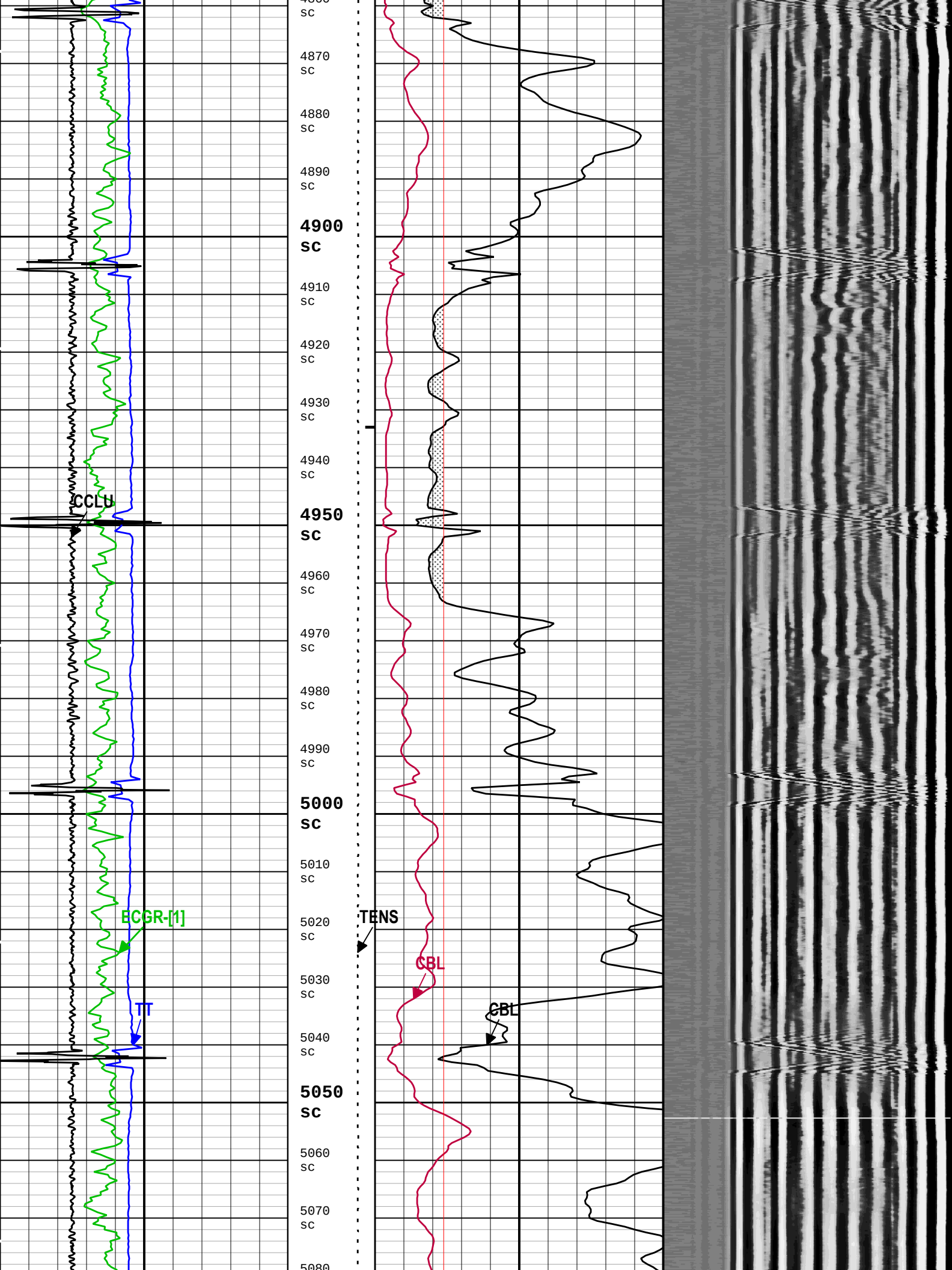
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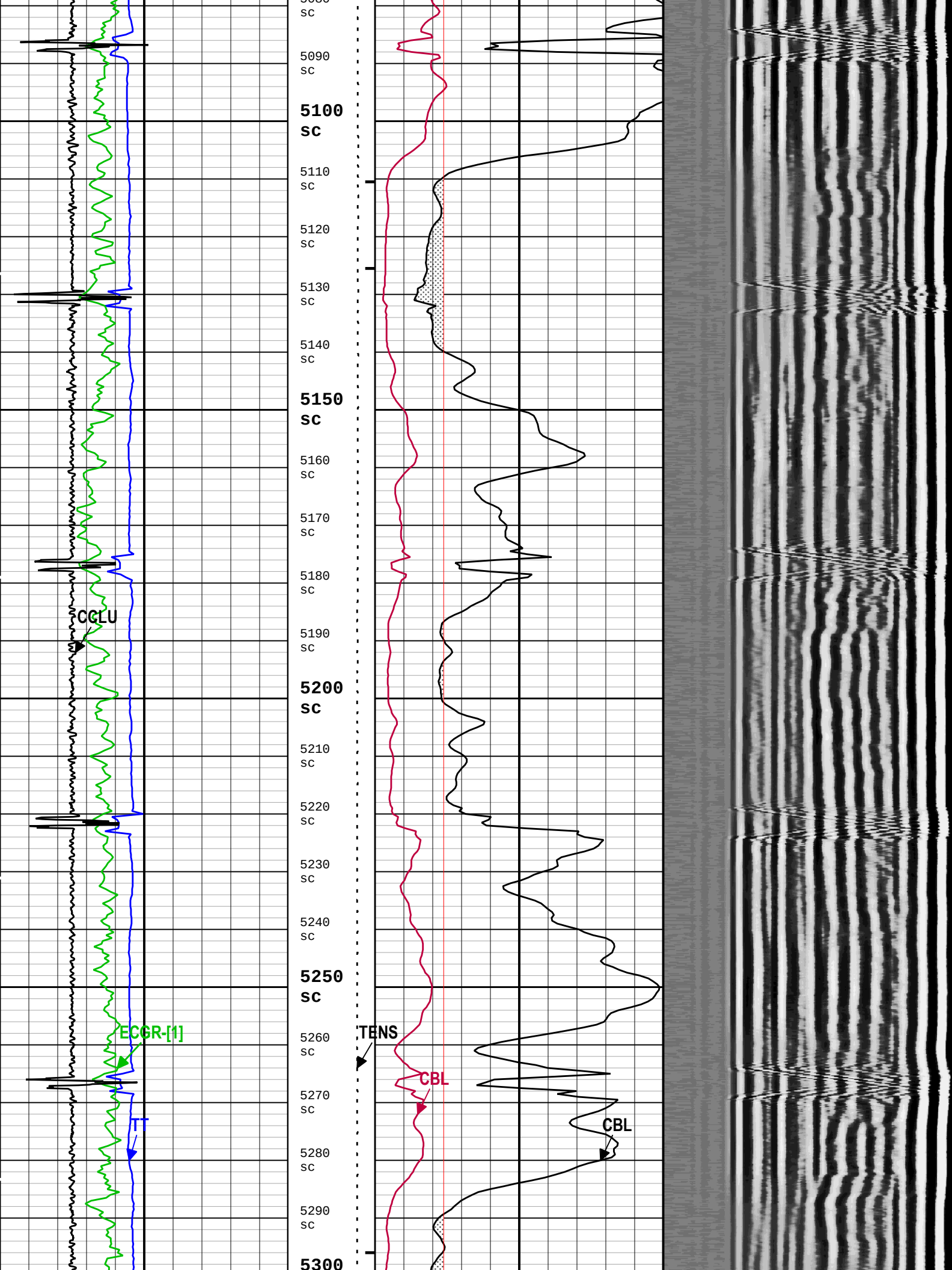
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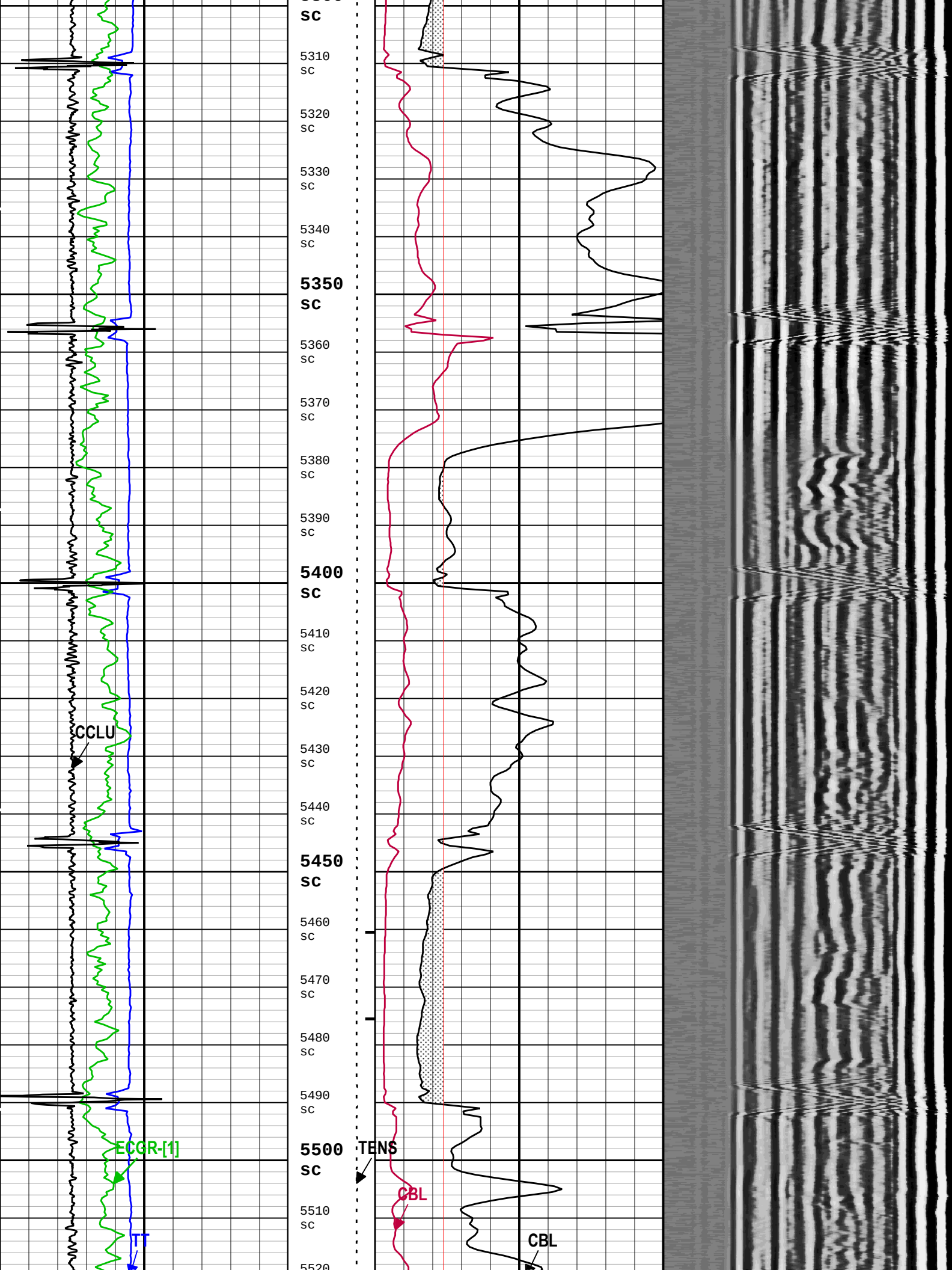
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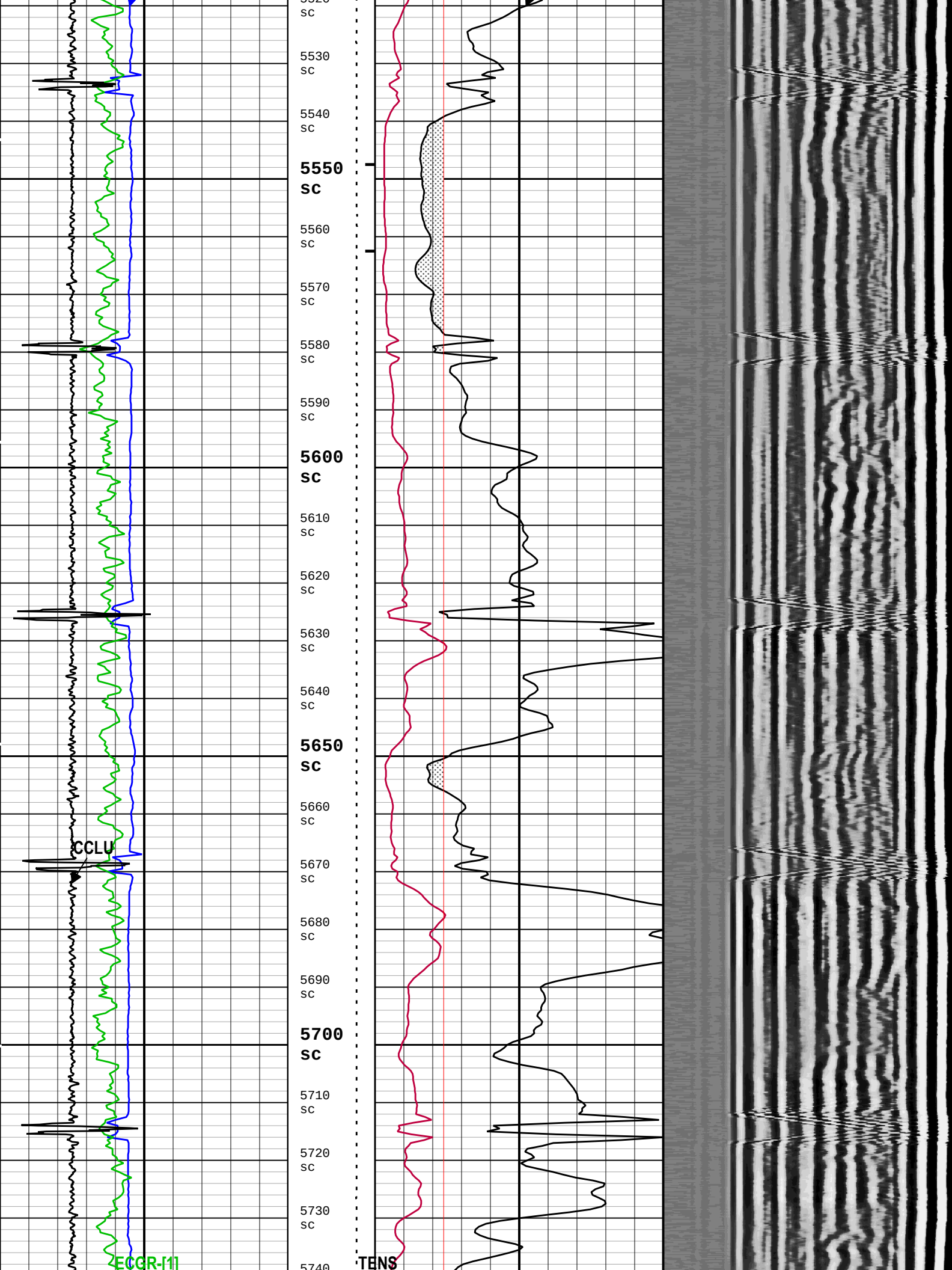
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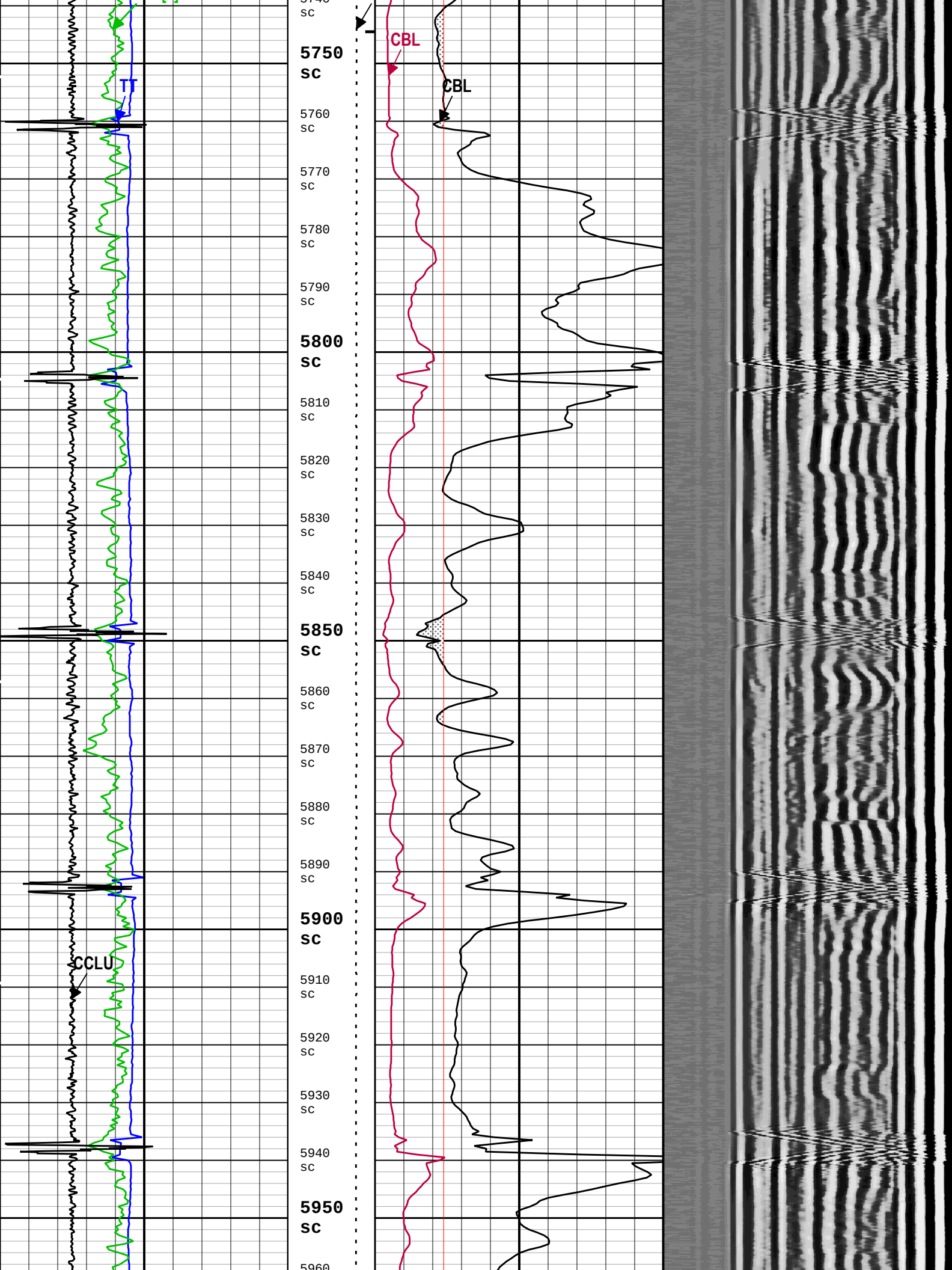
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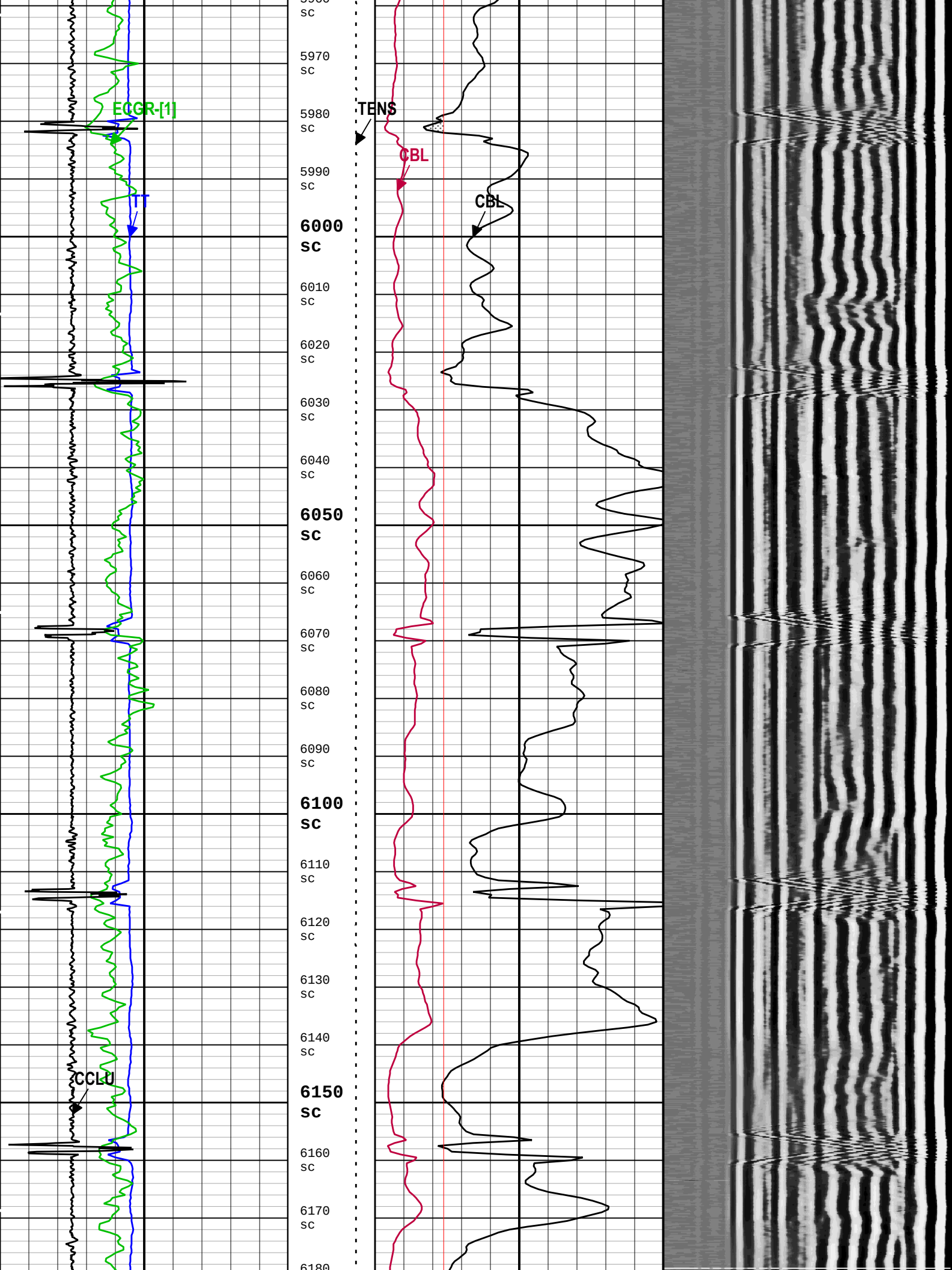
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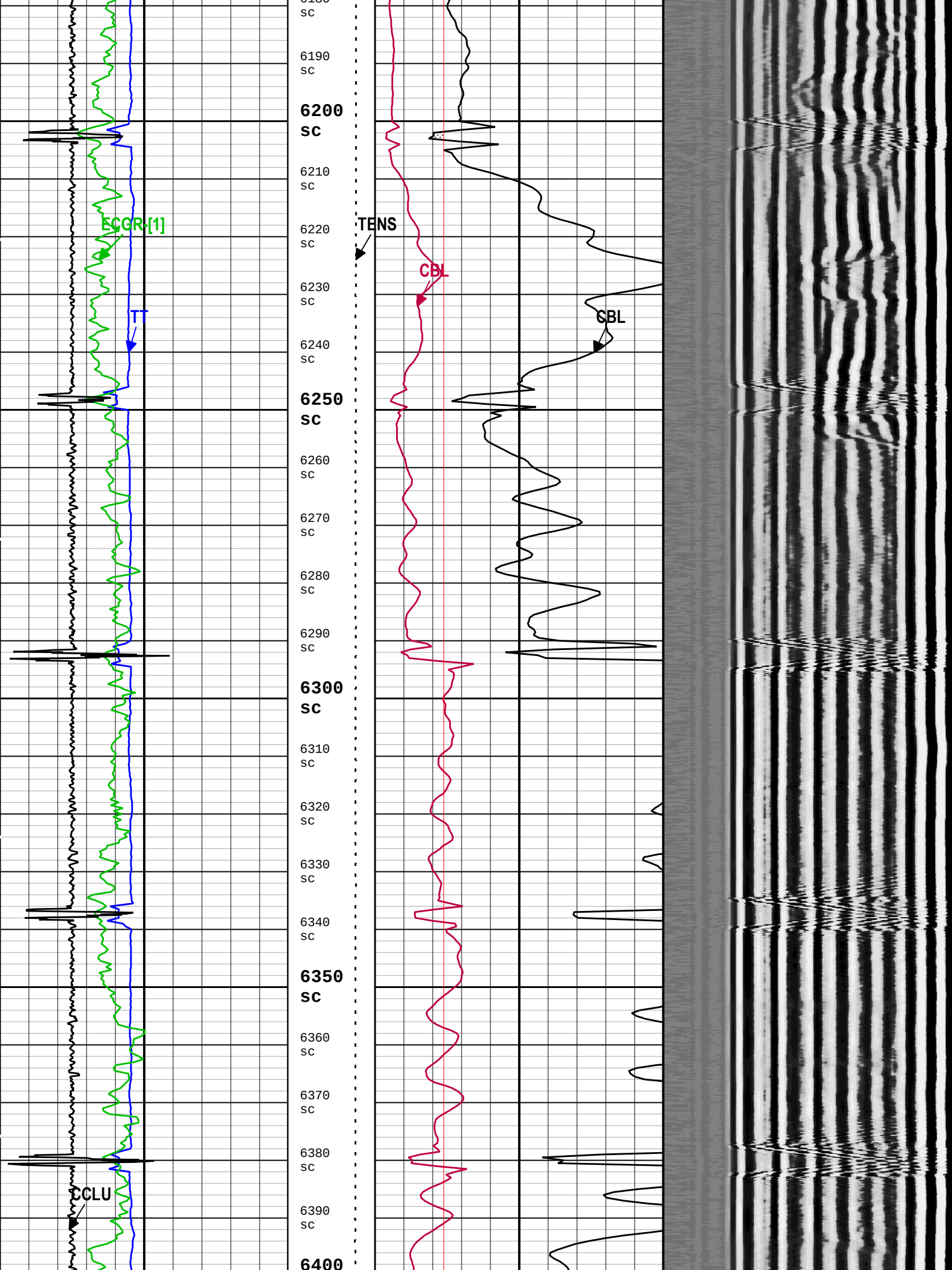
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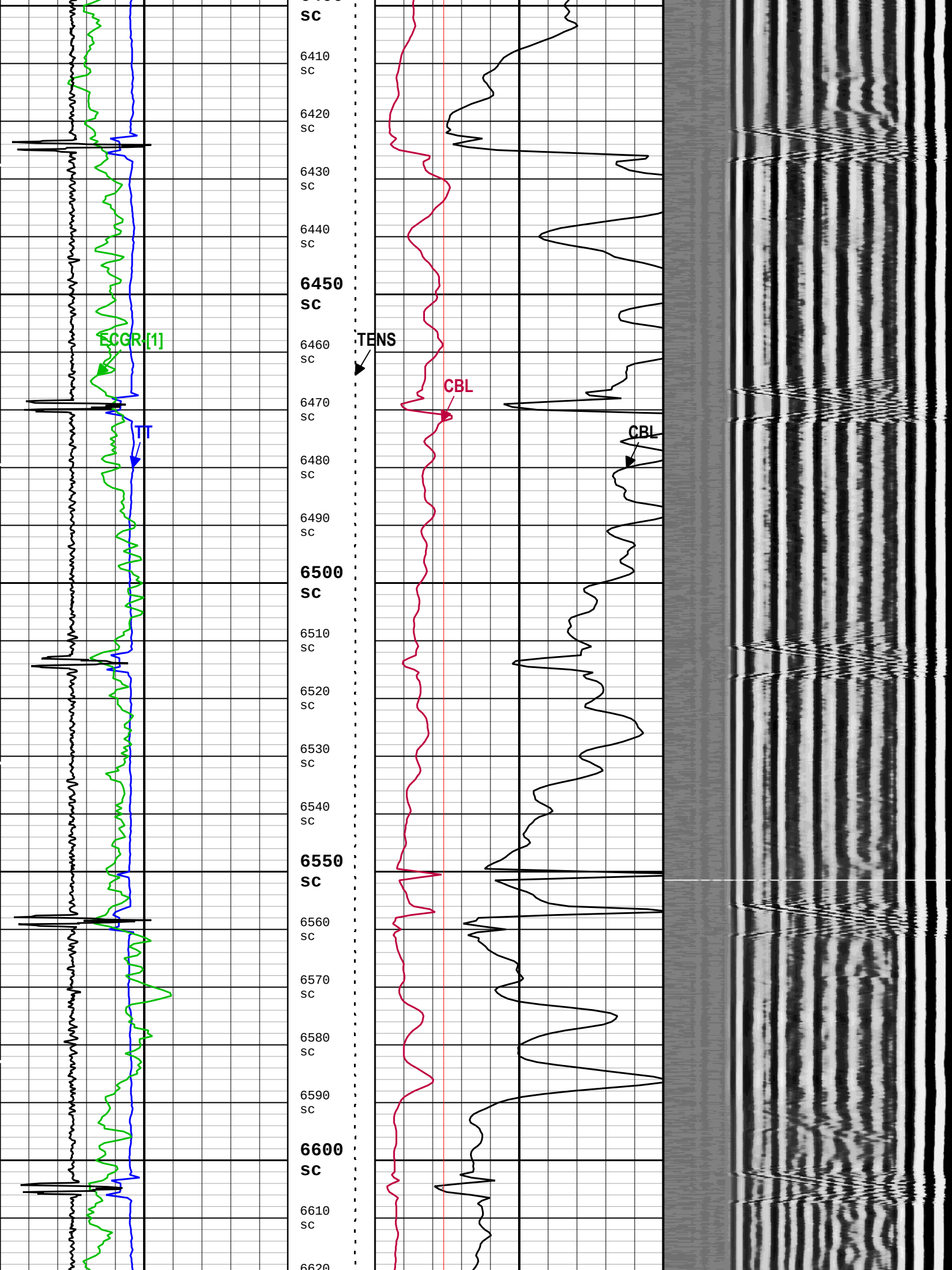
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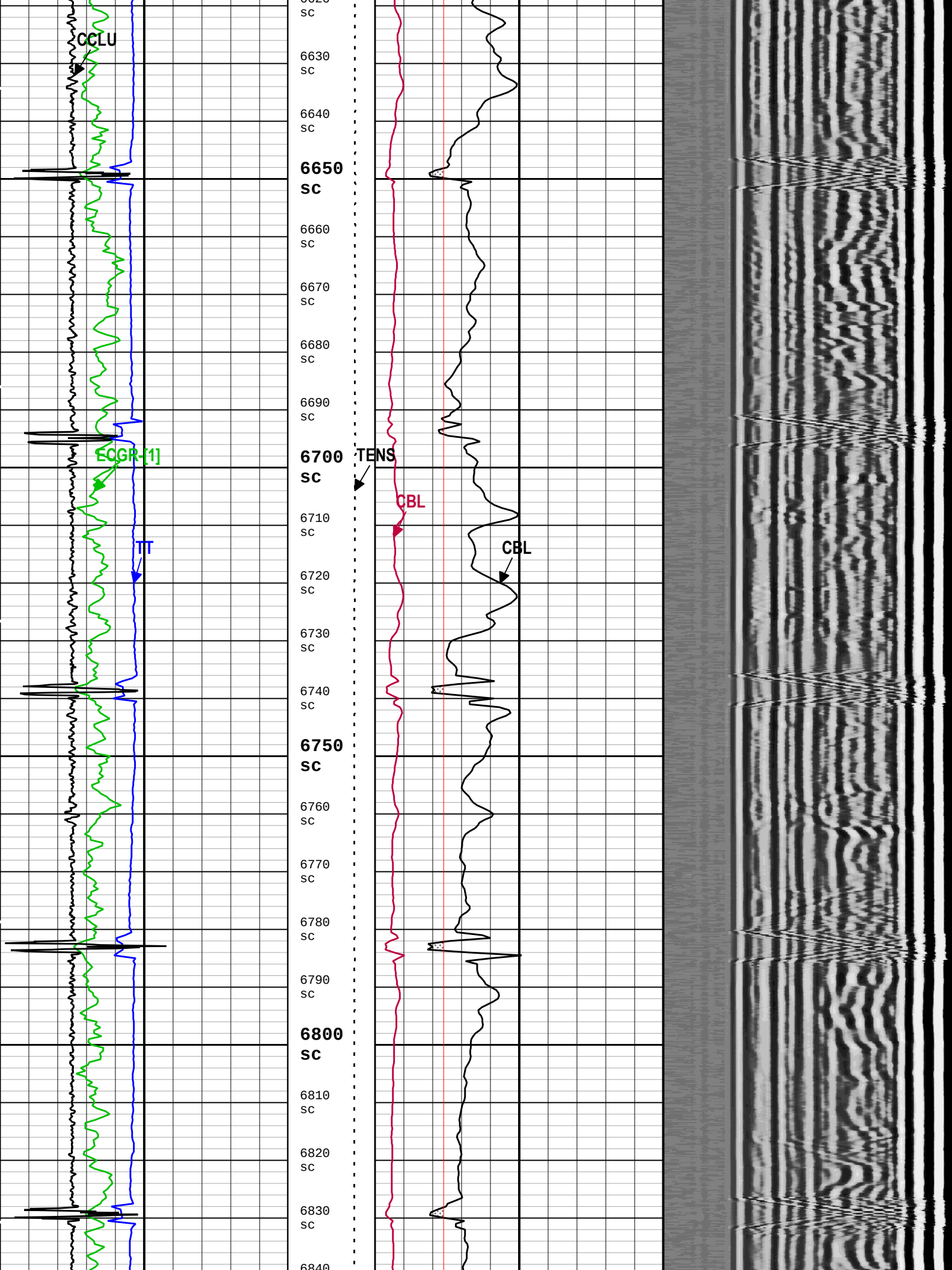
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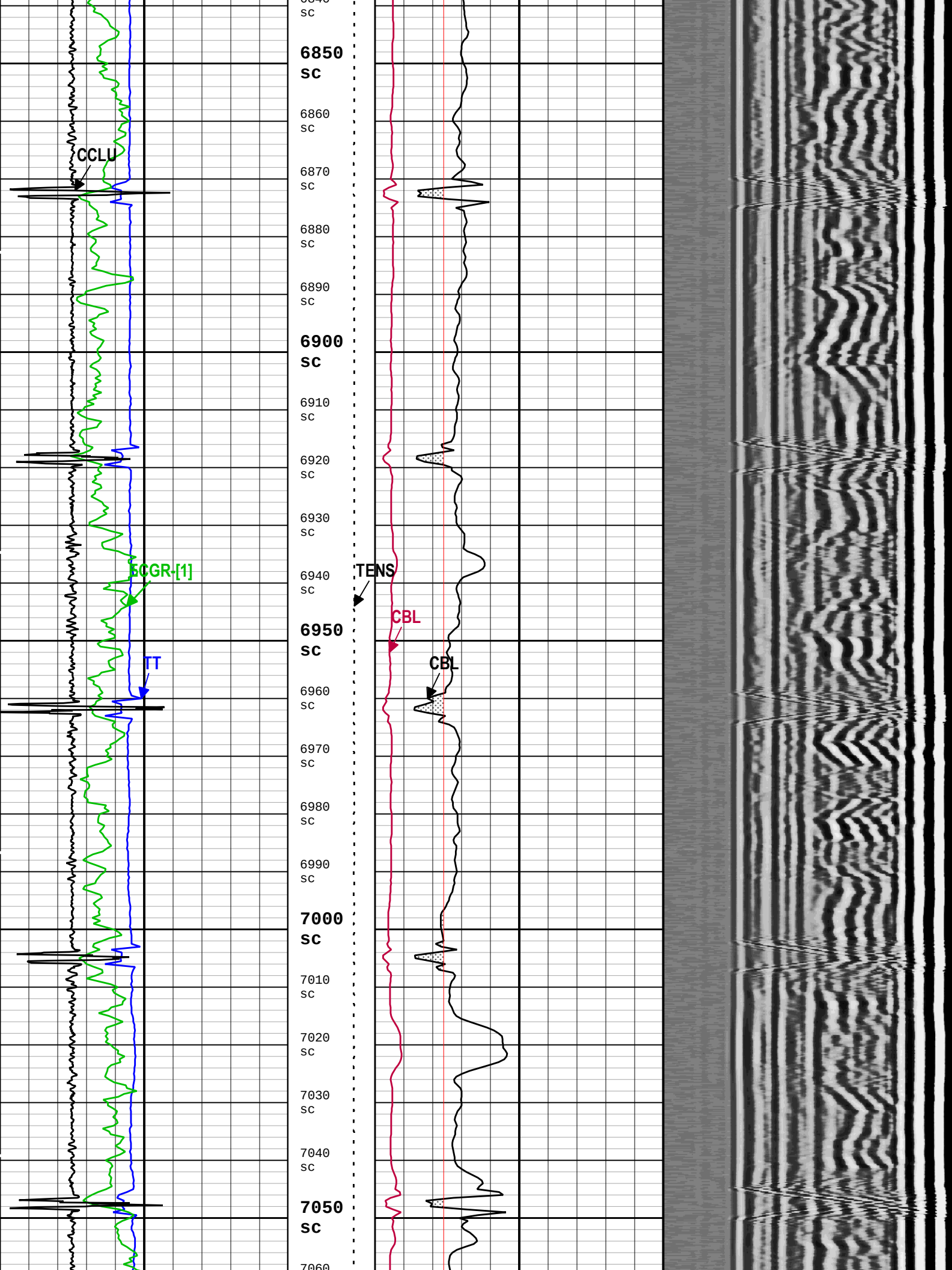
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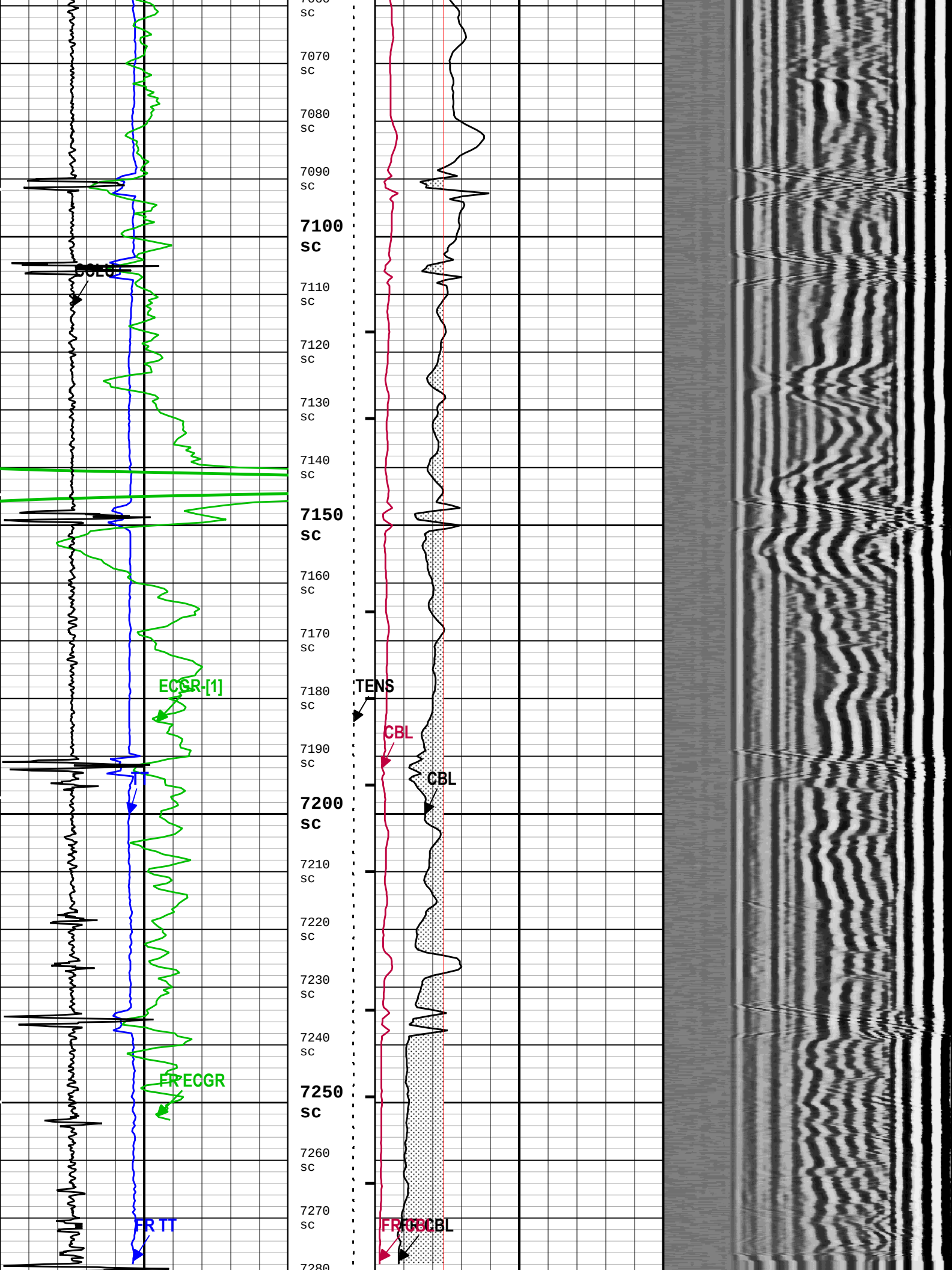
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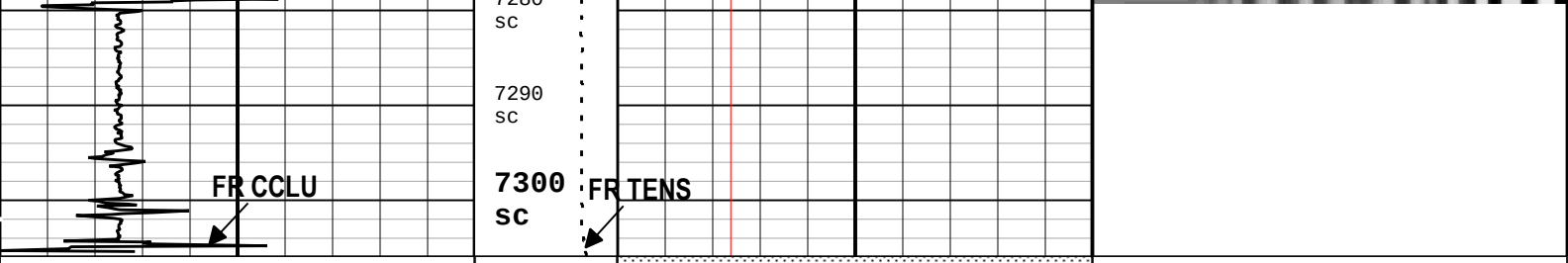

Transit Time for CBL (TT) DSLT-H
380 us 280

Gamma Ray (GR)
0 gAPI 150
Instance - 1 (6" HGNS-H RT) (ECGR)

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

Cable Tension (TENS)
10000 0
lbf

GoodBond From CBL to GOBO

CBL Amplitude (CBL) DSLT-H
0 mV 20

CBL Amplitude (CBL) DSLT-H
0 mV 100

Good Bond (GOBO)
0 mV 20

Min Amplitude Max

Variable Density Log - DSLT DSLT-H
200 us 1200

TIME_1900 - Time Marked every 60.00 (s)

BIEP - Bond Index Event Pips DSLT-H

Description: Sonic CBL with VDL Format: Log (Sonic CBL with VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 23-Sep-2016 18:15:28

Channel Processing Parameters

Four: Parameters

Parameter	Description	Tool	Value	Unit
AMSG	Auxiliary Minimum Sliding Gate	DSLT-H	140	us
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BERJ	Bad Echo Rejection	USIT-E	On	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BILI	Bond Index Level for Zone Isolation	DSLT-H	0.8	
BS	Bit Size	WLSESSION	Depth Zoned	in
CASING_PRATIO	Casing Poisson Ratio	USIT-E	Standard Poisson Ratio	
CBLG	CBL Gate Width	DSLT-H	45	us
CBLO	Casing Bottom (Logger)	WLSESSION	7412	ft
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSLT-H	52	mV
CDEN	Cement Density	HGNS-H	2	g/cm3
CMCF	CBL Cement Type Compensation Factor	DSLT-H	0.48	
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DETE	Delta-T Detection	DSLT-H	E1	
DFD	Drilling Fluid Density	Borehole	9	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FCF	CBL Fluid Compensation Factor	DSLT-H	0.94	
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS	
GOBO_CURR	Good Bond in Arbitrary Cement	DSLT-H	8.47	mV
GR_MULTIPLIER	Gamma Ray Multiplier	HGNS-H	1	
HEMA	Hematite Presence Flag	Borehole	No	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	Off	
MAHTR	Manual High Threshold Reference for first arrival detection	DSLT-H	120	
MATT_CURR	Maximum Attenuation in Arbitrary Cement	DSLT-H	7.13	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	5.38	mV
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.09	
MUD_N_THE	Theoretical Mud Normalization Factor	USIT-E	1	
NMSG	Near Minimum Sliding Gate	DSLT-H	325	us
NMXG	Near Maximum Sliding Gate	DSLT-H	950	us
NUMP	Number of Detection Passes	DSLT-H	2	
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
SFAF	Sonic Formation Attenuation Factor	DSLT-H	3.25	dB/ft
SGAD	Sliding Gate Status	DSLT-H	Off	
SGCL	Sliding Gate Closing Delta-T	DSLT-H	130	us/ft
SGCW	Sliding Gate Closing Width	DSLT-H	25	us
SGDT	Sliding Gate Delta-T	DSLT-H	57	us/ft
SGW	Sliding Gate Width	DSLT-H	110	us
SLEV	Signal Level for AGC	DSLT-H	5000	mV
SOCN	Standoff Distance	HGNS-H	0.125	in
SOCO	Standoff Correction Option	HGNS-H	No	
TCUB	T^3 Processing Level	USIT-E	Loop	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	120	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	65	%
HISC	Tool Position: Centered or Eccentered	HGNS-H	Eccentered	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0.1	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	4.85	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

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	17.5	8.5	818
BS	12.25	818	7305.92
MCI	21.68	8.5	818
MCI	14.81	818	7305.92

All depth are actual.

Tool Control Parameters

Four: 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	10 deg	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	3375	ft/h
MOTOR_PROTECT	Motor Protection	USIT-E	On	
SDTH	Switch Down Threshold	DSLT-H	20000	
SGAI	Selectable Acquisition Gain	DSLT-H	x1	
SUTH	Switch Up Threshold	DSLT-H	1000	
TMUC	Type of Mud	USIT-E	BRI	
UACLV_PERM	Ultrasonic ACLV Permanent	USIT-E	No	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
UMFR	Modulation Frequency	USIT-E	333333	Hz
USFR	Ultrasonic Sampling Frequency	USIT-E	500000	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 500 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 1.5 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	7300	ft
USSP	Ultrasonic Service	USIT-E	USI	
VRES	Vertical Resolution	USIT-E	1.5 in	
WINB	Window Begin Time	USIT-E	25	us
WINE	Window End Time	USIT-E	100	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	23-Sep-2016 10:15:49	23-Sep-2016 12:35:24	7305.95	83.15
EMXV	60	23-Sep-2016 12:35:24	23-Sep-2016 12:35:35	83.15	73.48
EMXV	80	23-Sep-2016 12:35:35	23-Sep-2016 12:36:31	73.48	60.8

All depth are at tool zero.

Four

Repeat Pass 5 in = 100 ft

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Four	Log[4]:Up	Up	7075.81 ft	7301.95 ft	23-Sep-2016 9:58:05 AM	23-Sep-2016 10:09:49 AM	ON	-9.70 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Southern California Gas Company Well:Porter 24A

Four: Log[4]:Up:S010

Description: Sonic CBL with VDL Format: Log (Sonic CBL with VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 23-Sep-2016 18:15:36

BIEP - Bond Index Event Pips DSLT-H

TIME_1900 - Time Marked every 60.00 (s)

GoodBond From CBL to GOBO

CBL Amplitude (CBL) DSLT-H

0 mV 20

Transit Time for CBL (TT) DSLT-H

380 us 280

Gamma Ray (GR)

0 gAPI 150

Instance - 1 (6" HGNS-H RT) (ECGR)

Cable Tension (TENS)

10000 0 lbf

CBL Amplitude (CBL) DSLT-H

0 mV 100

Good Bond (GOBO)

0 mV 20

Min Amplitude Max

Variable Density Log - DSLT DSLT-H

200 us 1200

7030 sc

7040 sc

7050 sc

7060 sc

7070 sc

7080 sc

7090 sc

7100 sc

7110 sc

7120 sc

7130 sc

7140 sc

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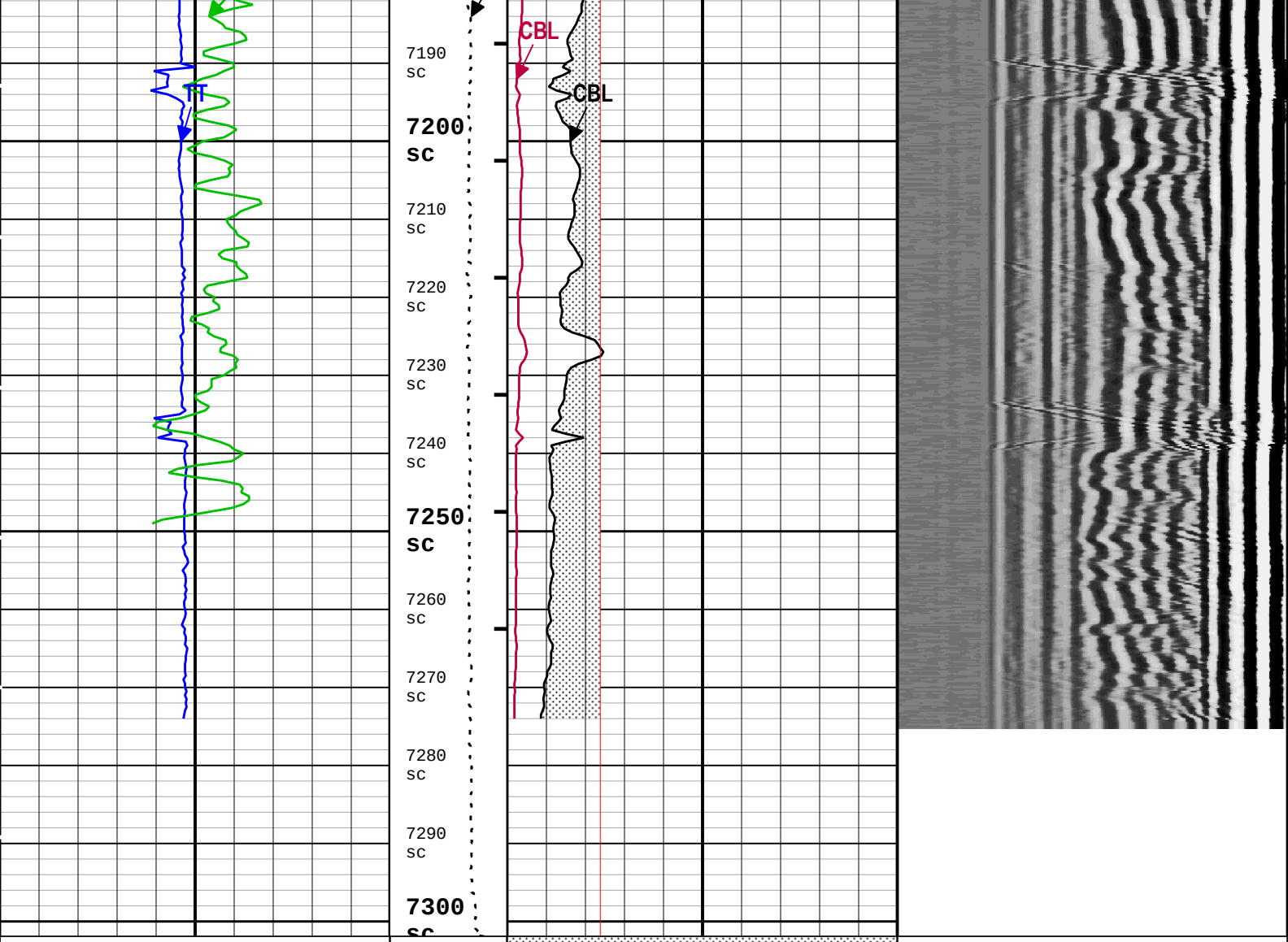
7170 sc

7180 sc

ECGR-[1]

TENS



TIME_1900 - Time Marked every 60.00 (s)

BIEP - Bond Index Event Pips DSLT-H

Description: Sonic CBL with VDL Format: Log (Sonic CBL with VDL) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 23-Sep-2016 18:15:36

USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 1	Log[5]:Up	7305.95	60.80

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 : 35.49m(116.44ft) to 41.65m(136.64ft)
MUD_N_FRP = 1.09
DFD = 1.08g/cm3(9.00lbm/gal)
CZMD median computed in free pipe normalization interval = 1.76 MRayl

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

Four

Main Pass 5 in = 100 ft

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Four	Log[5]:Up	Up	60.80 ft	7305.95 ft	23-Sep-2016 10:15:49 AM	23-Sep-2016 12:36:31 PM	ON	-4.14 ft	Yes

All depths are referenced to toolstring zero

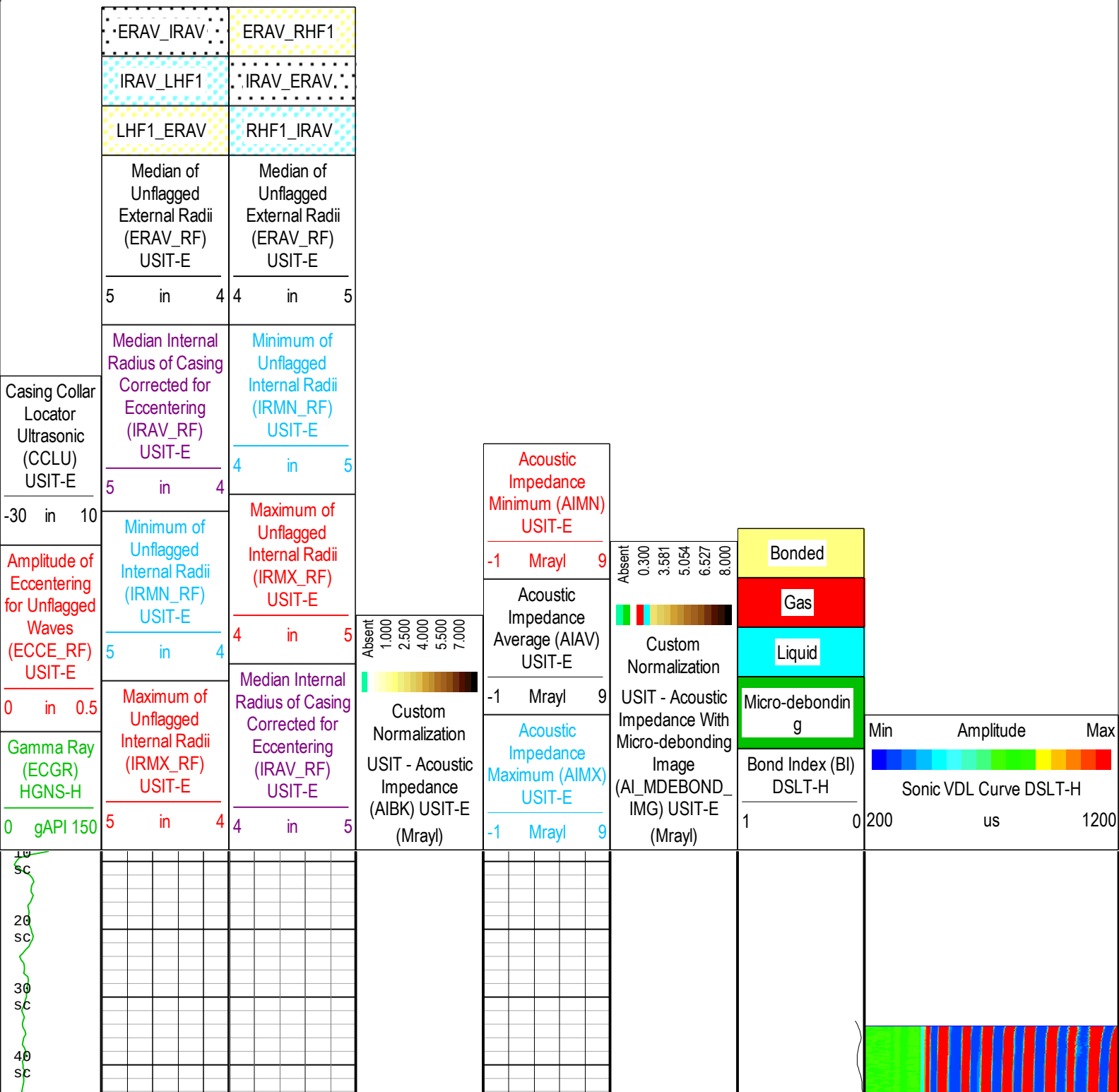
Log

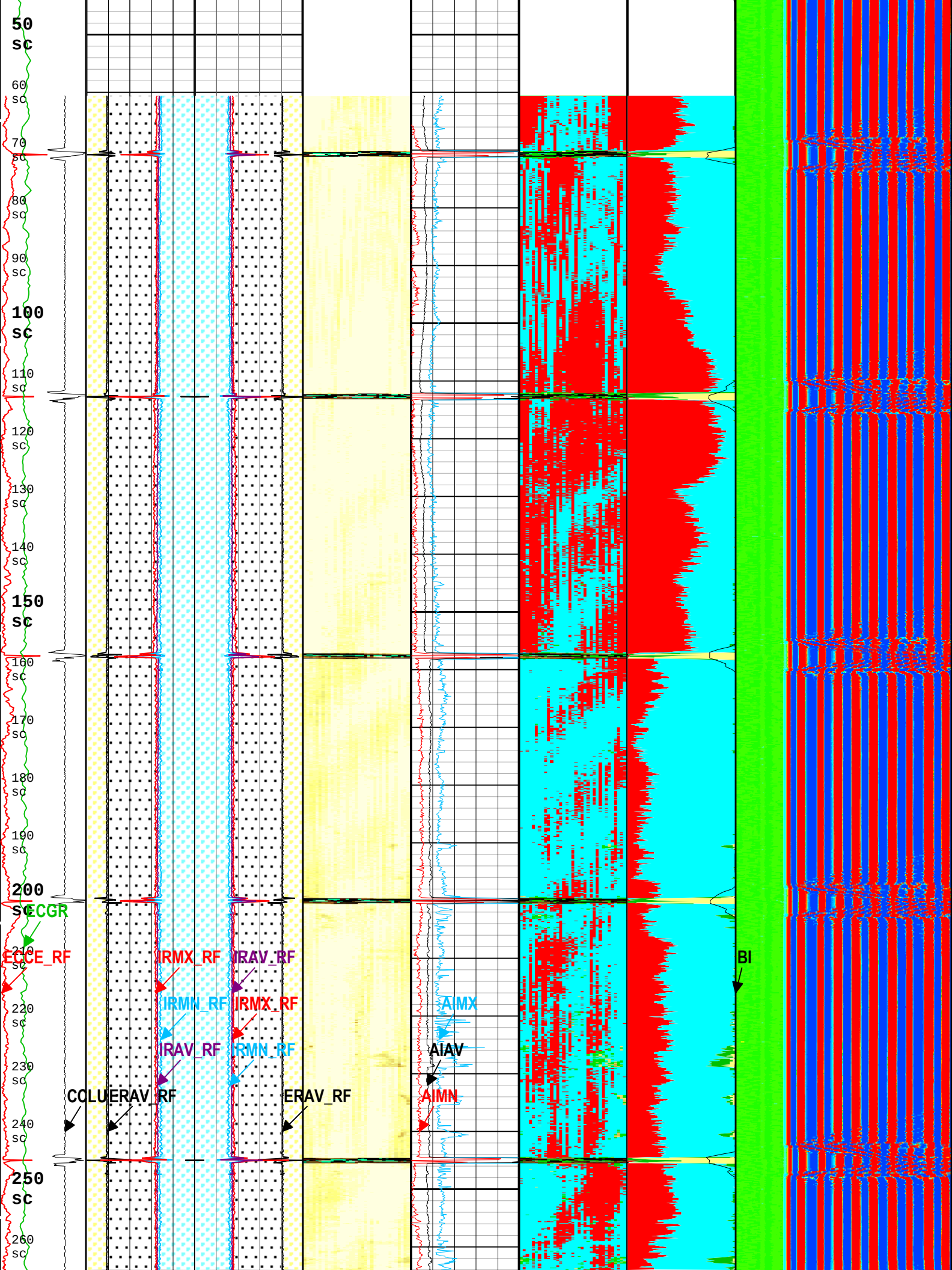
Company:Southern California Gas Company Well:Porter 24A

Four: Log[5]:Up:S010

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: 23-Sep-2016 18:15:44

TIME_1900 - Time Marked every 60.00 (s)

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IRMX_RF
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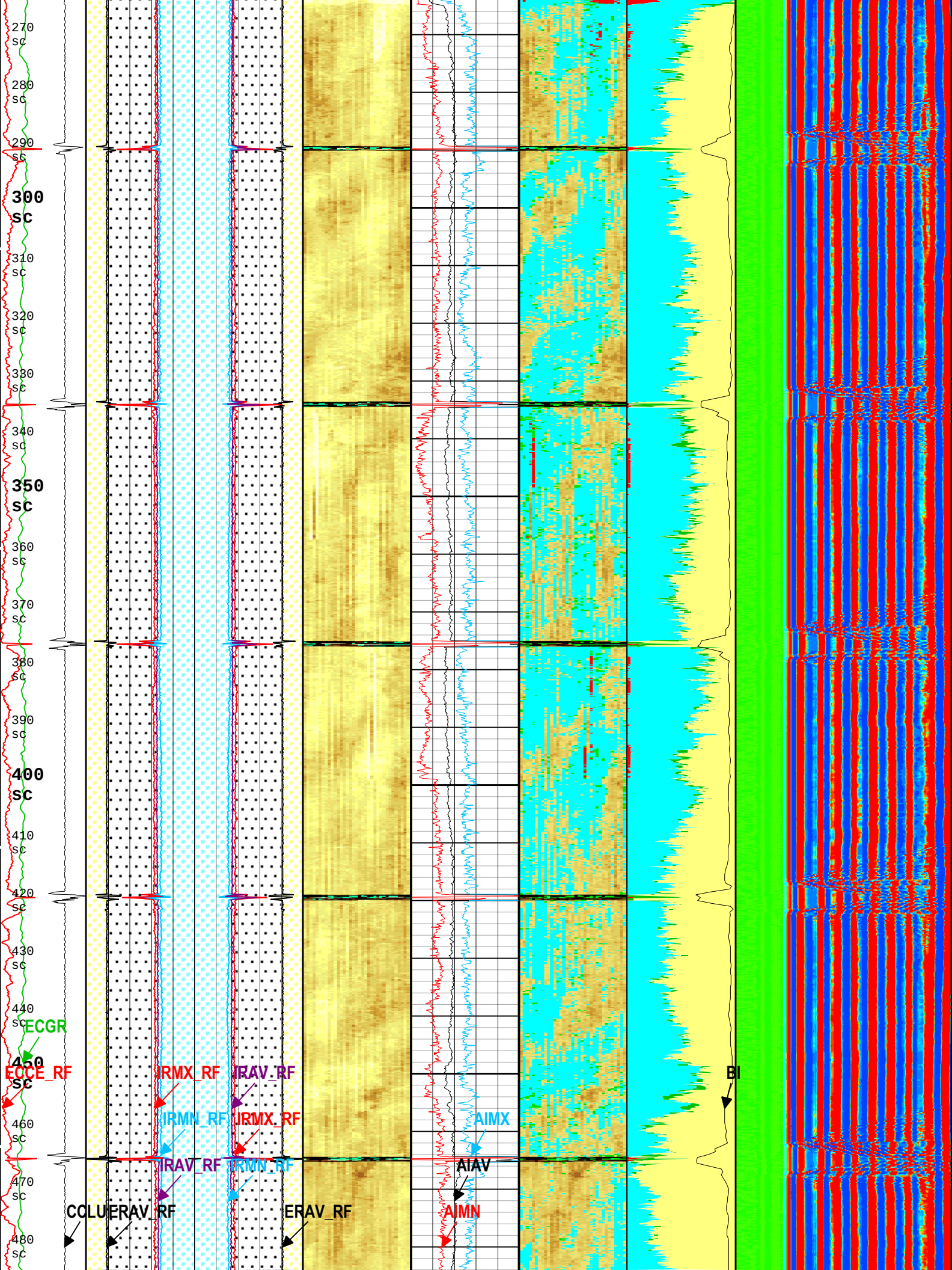
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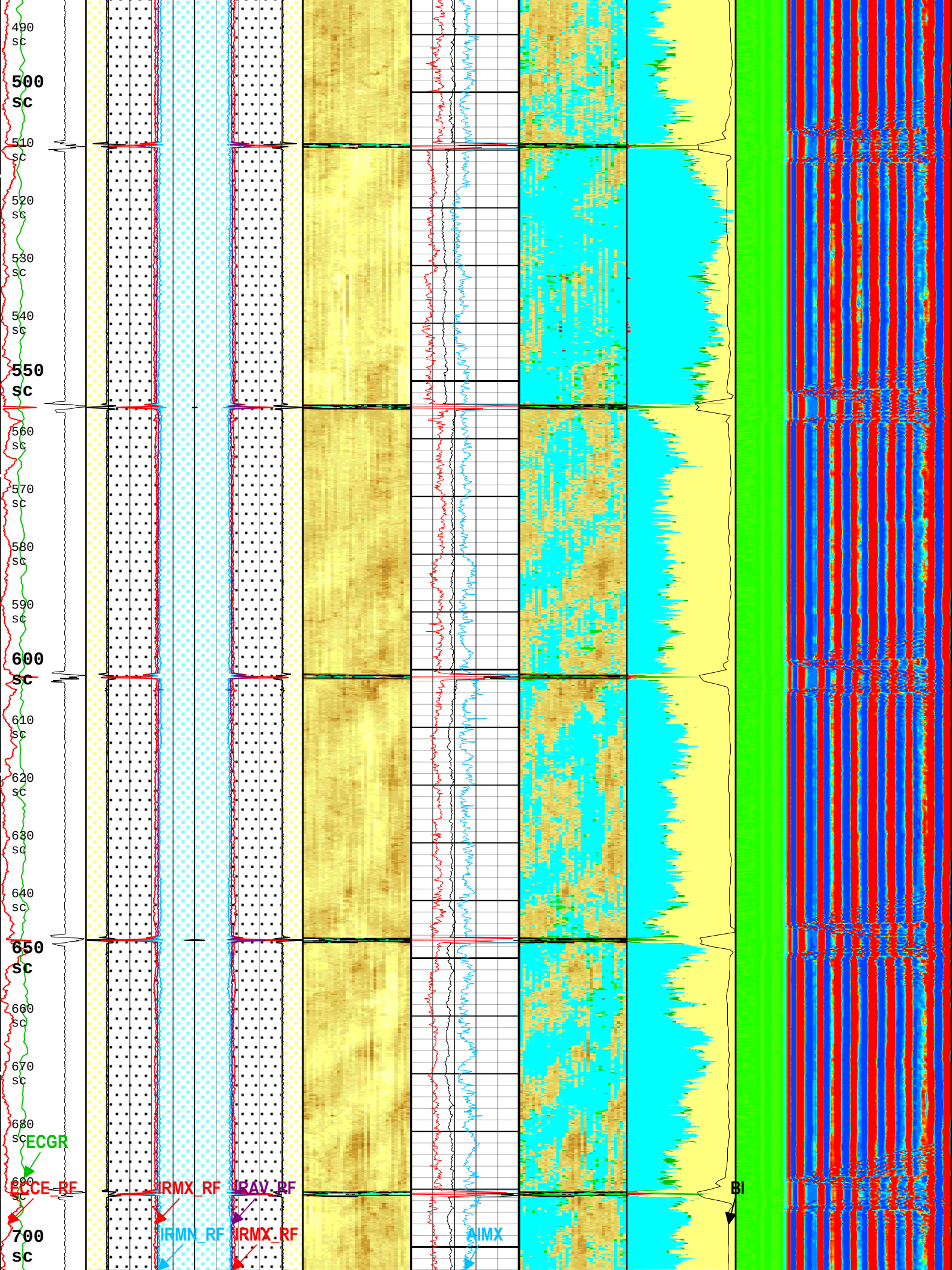
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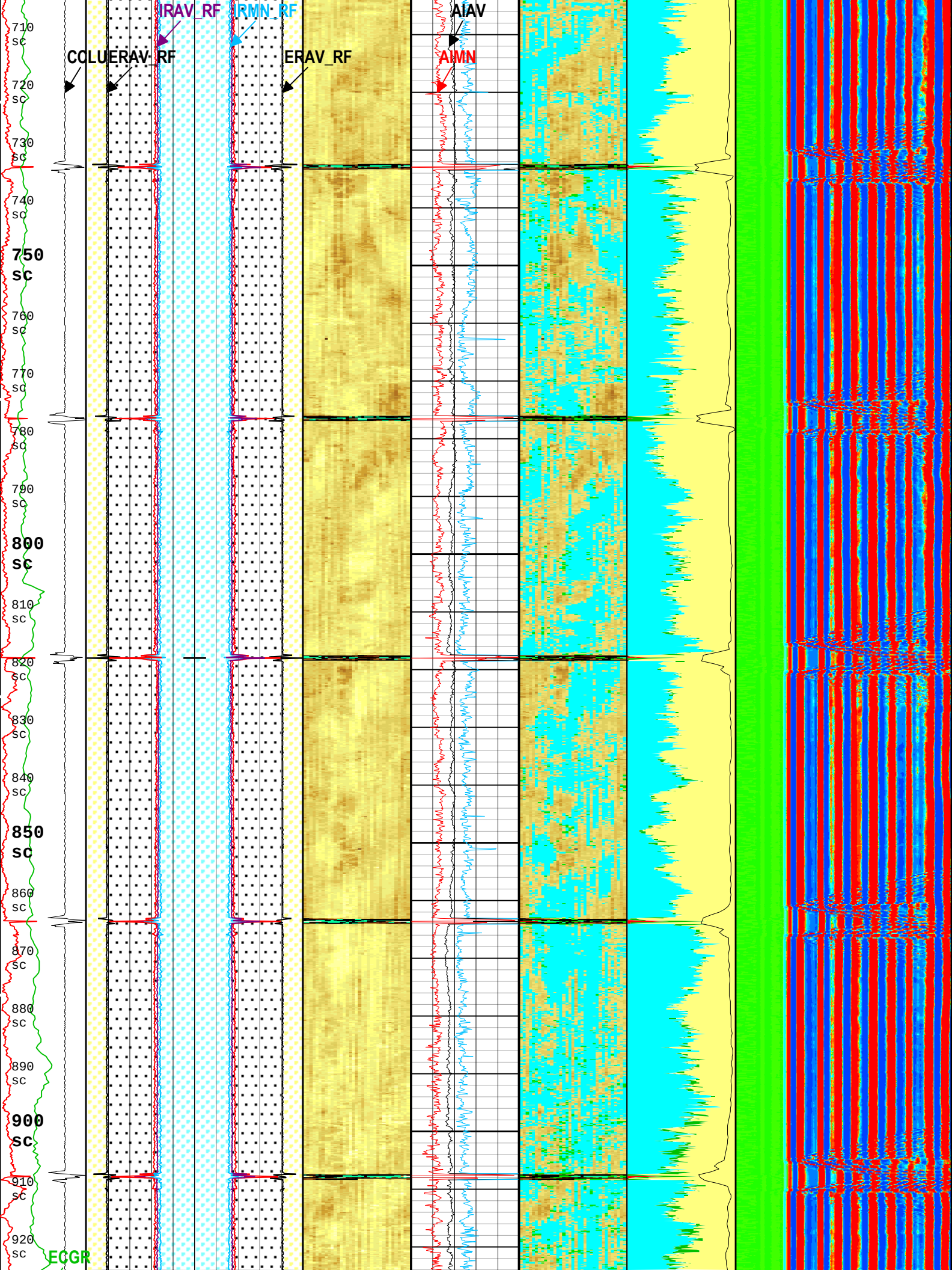
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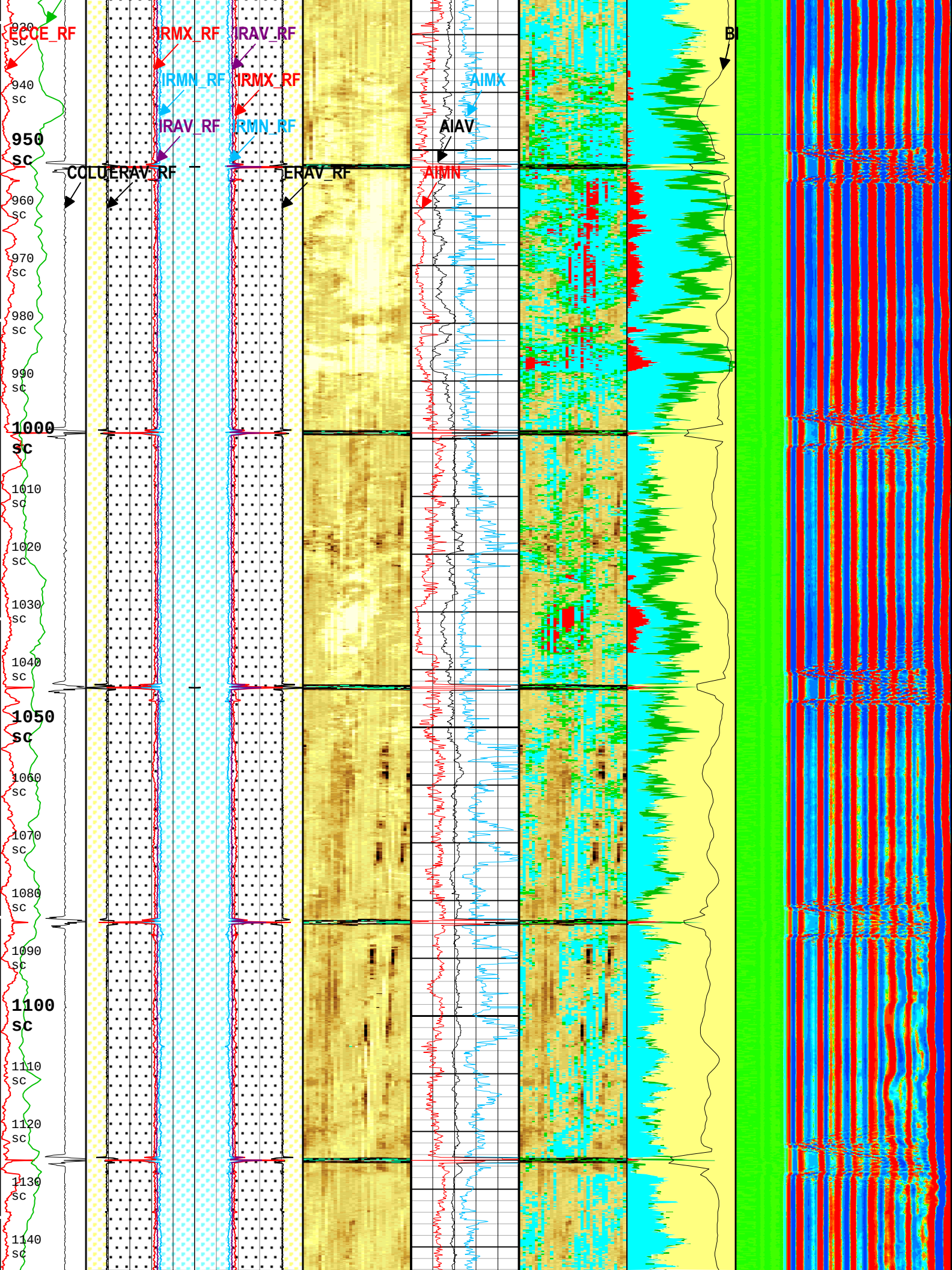
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COLUERAV_RF
ERAV_RF
920 sc
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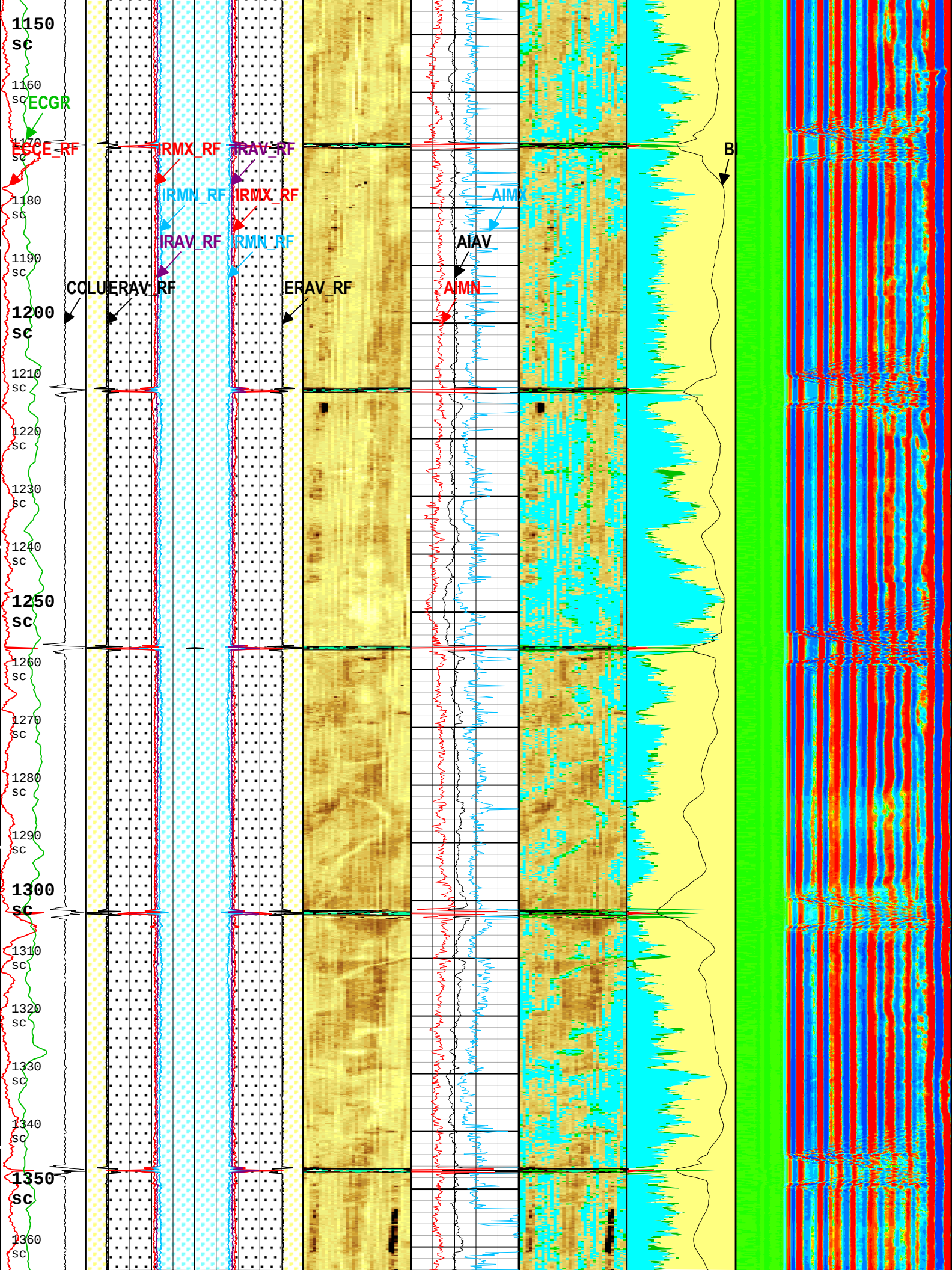
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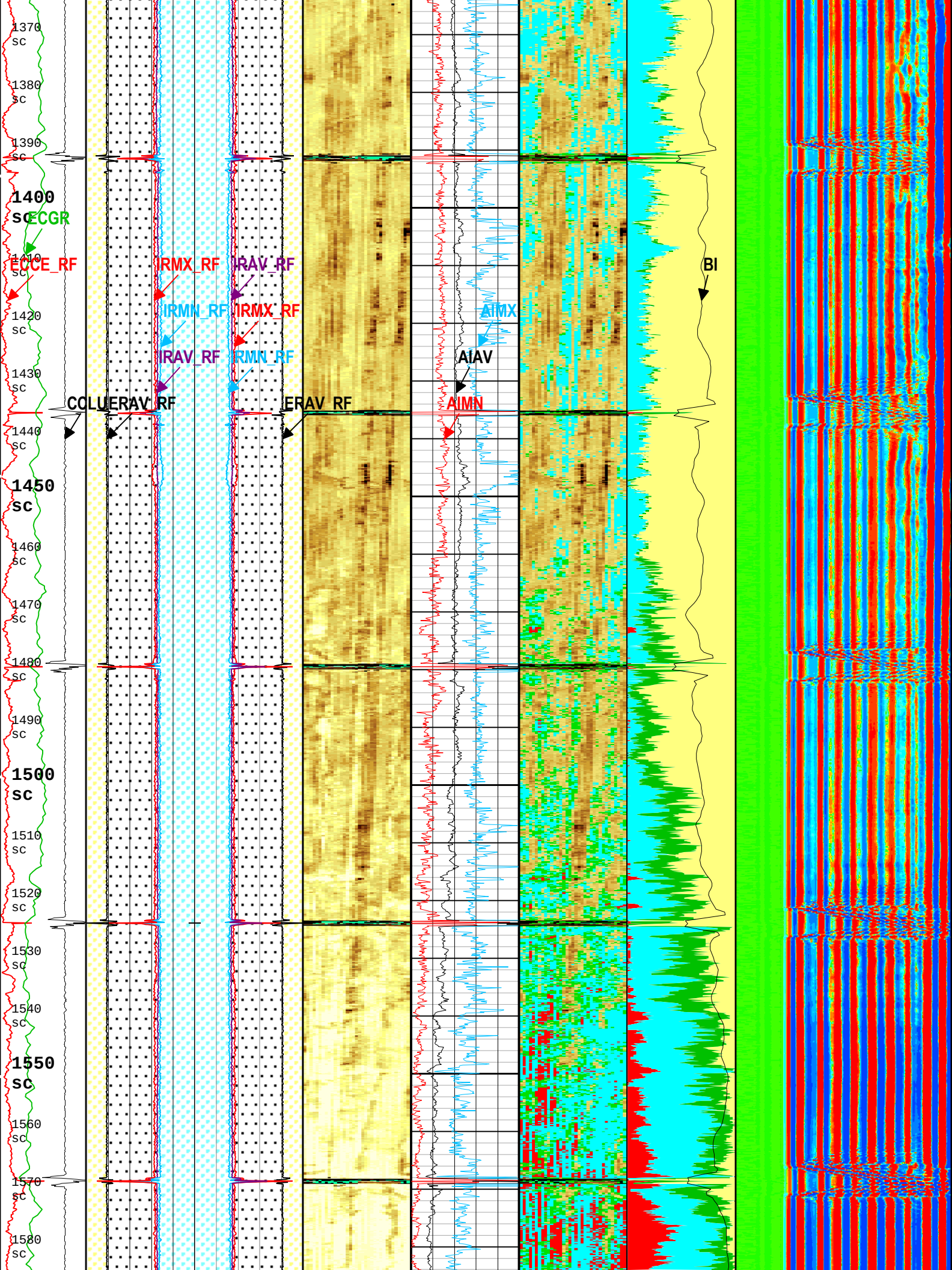
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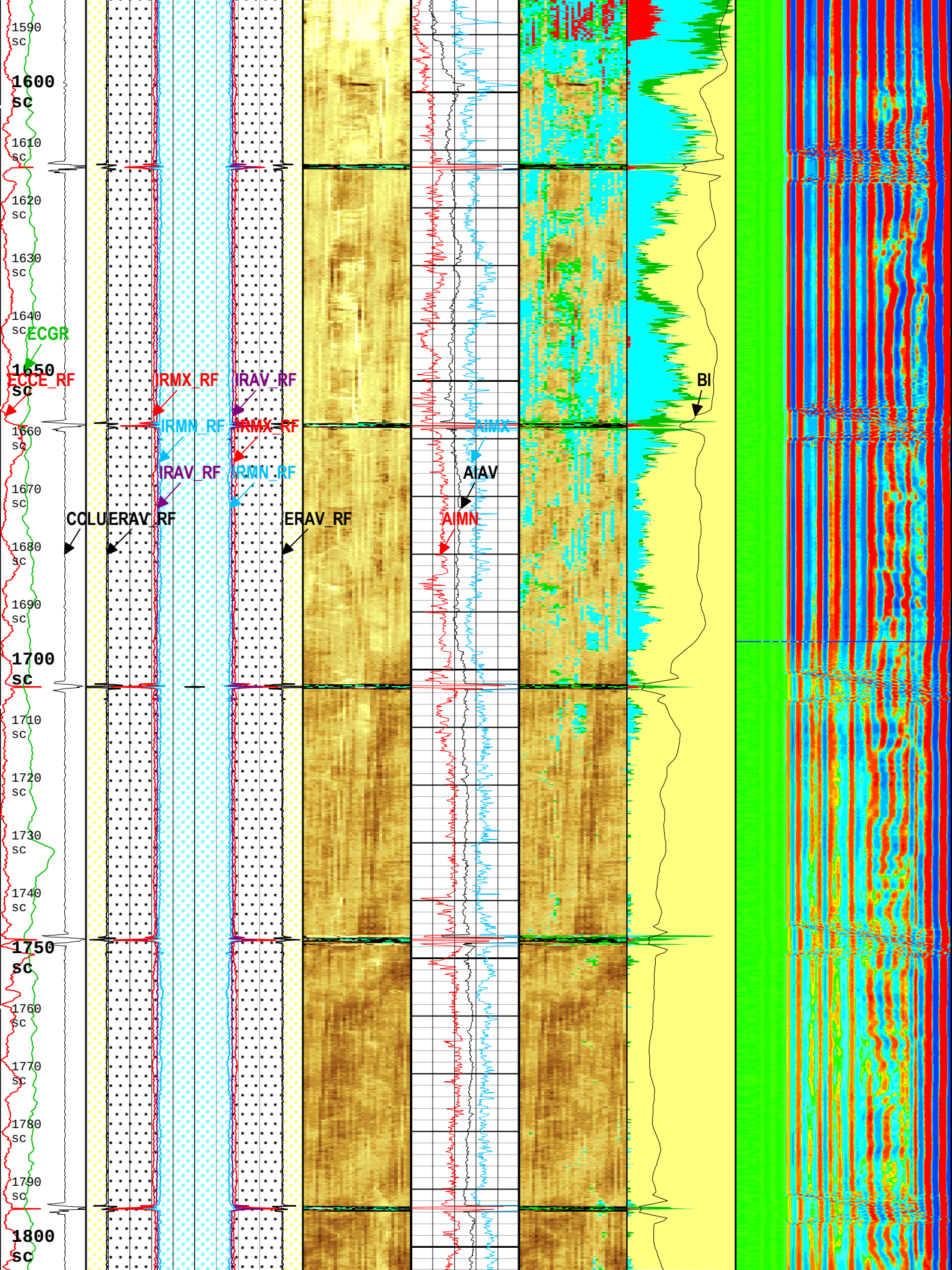
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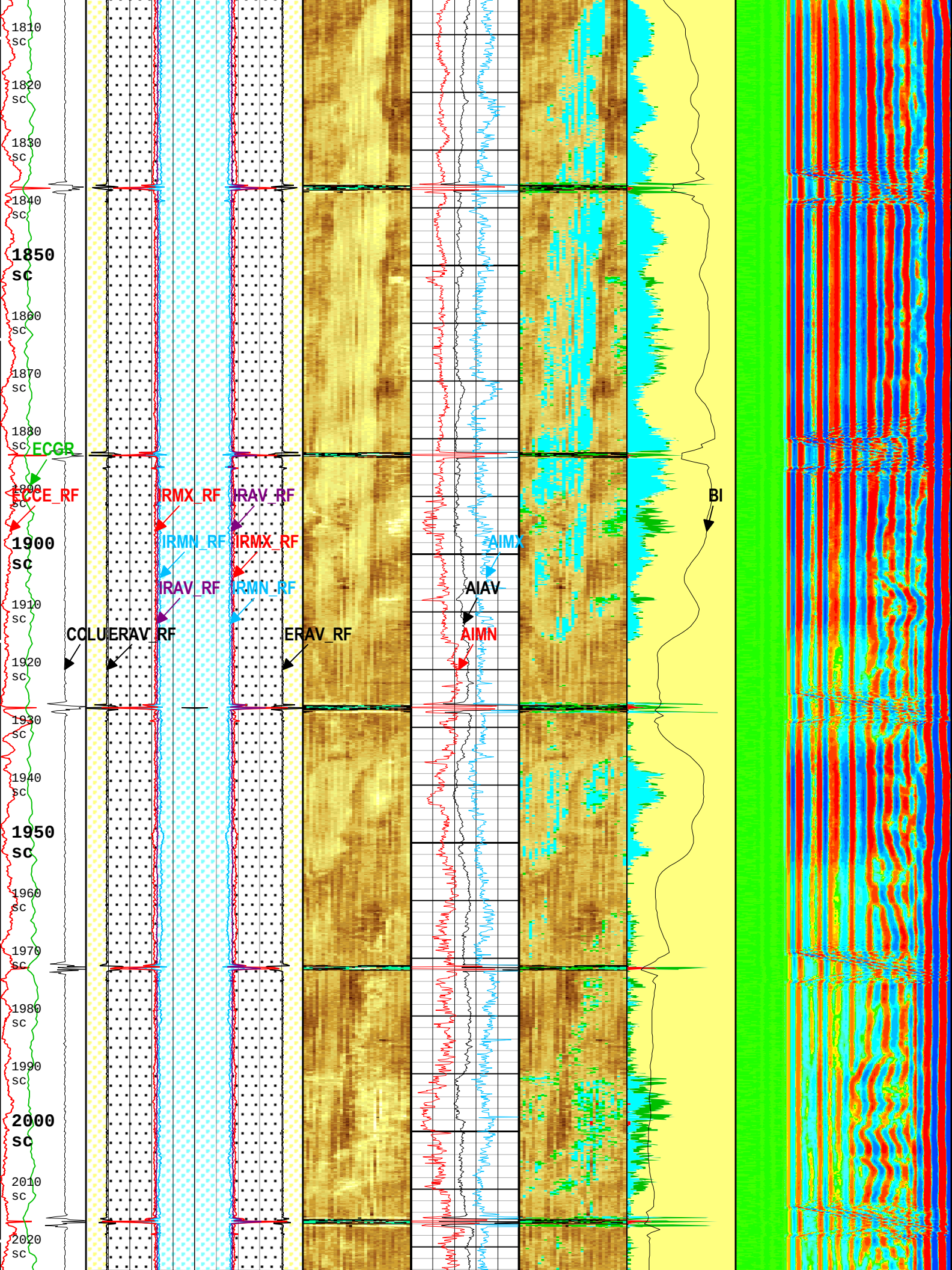
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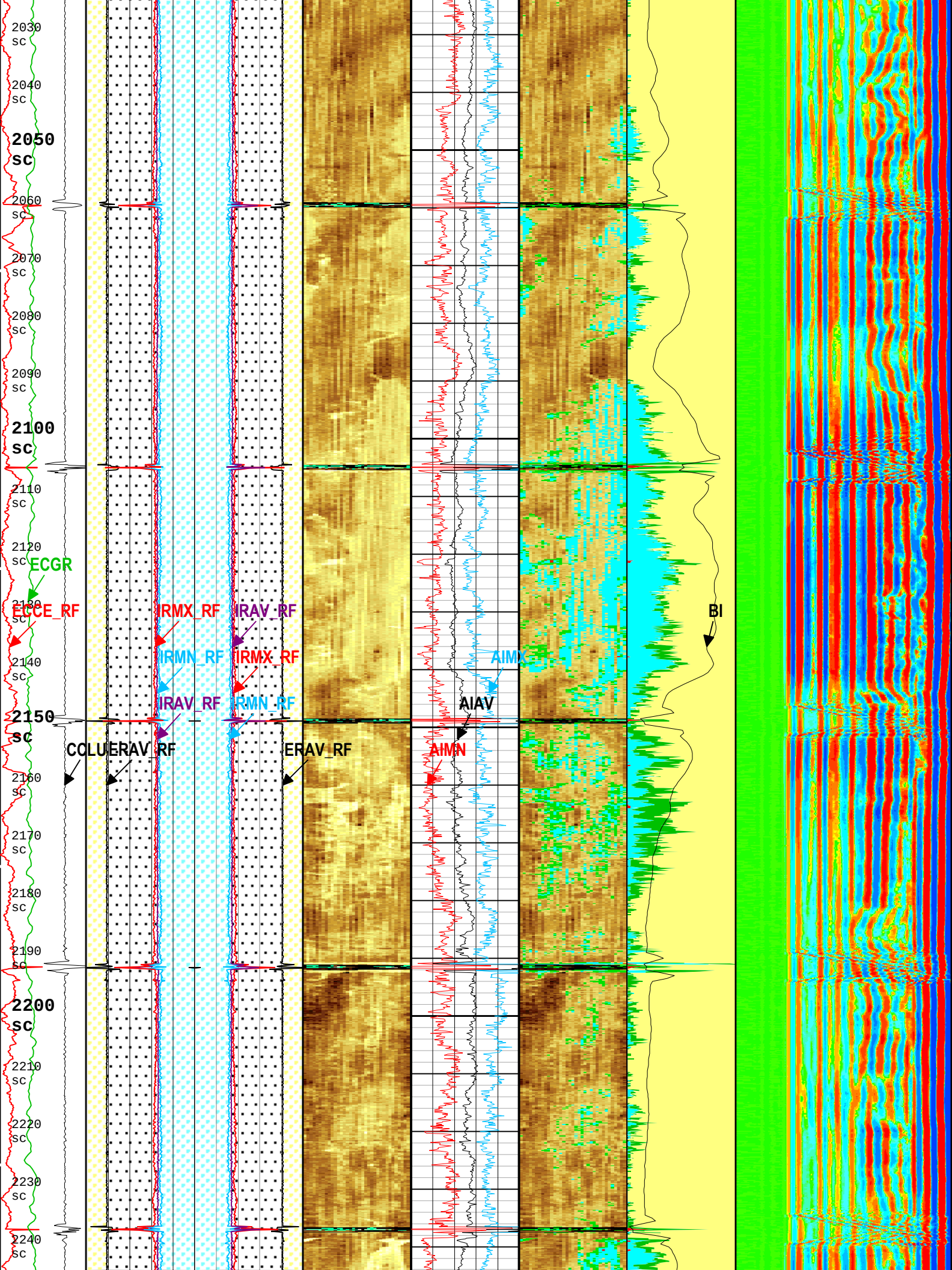
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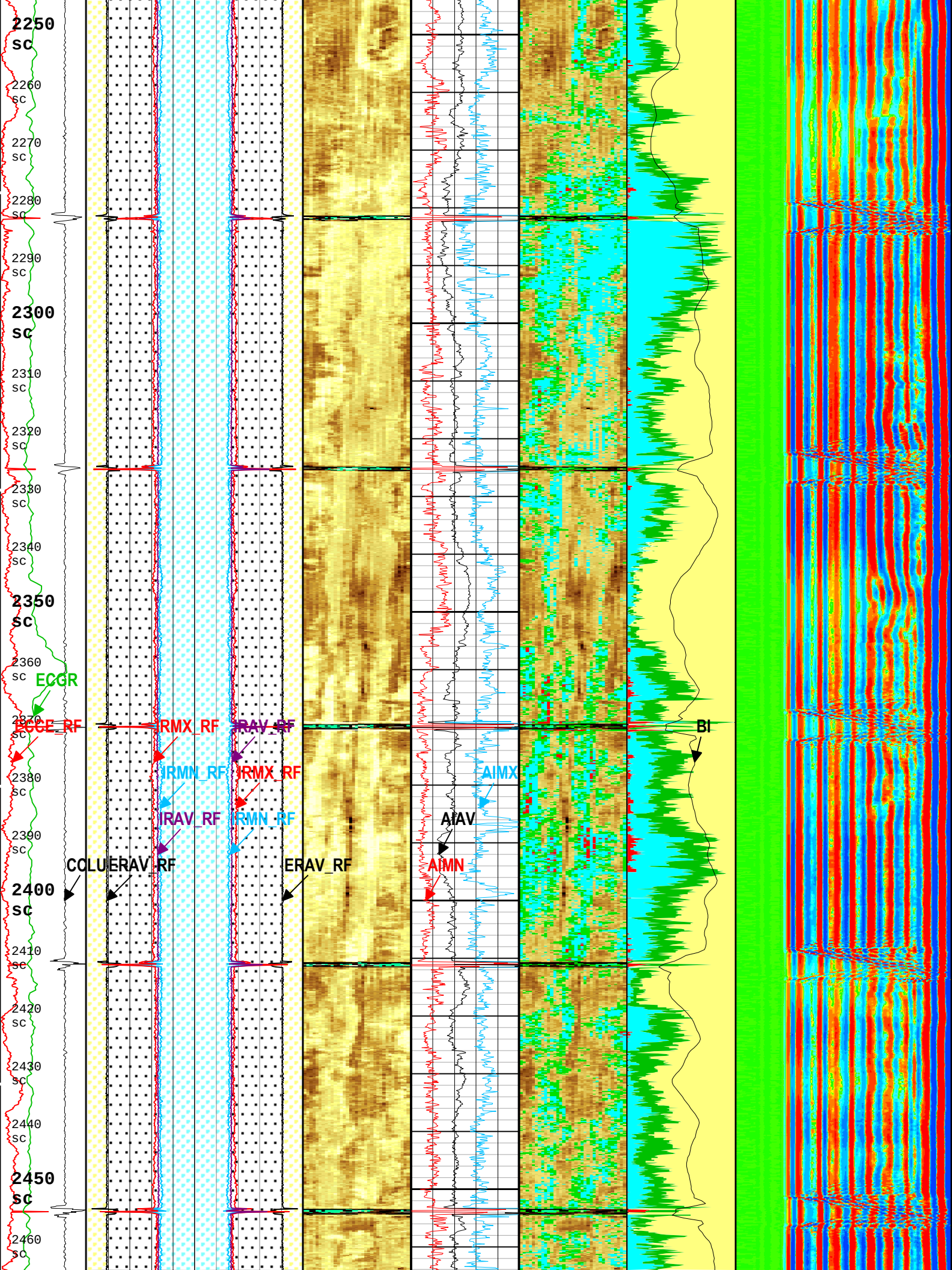
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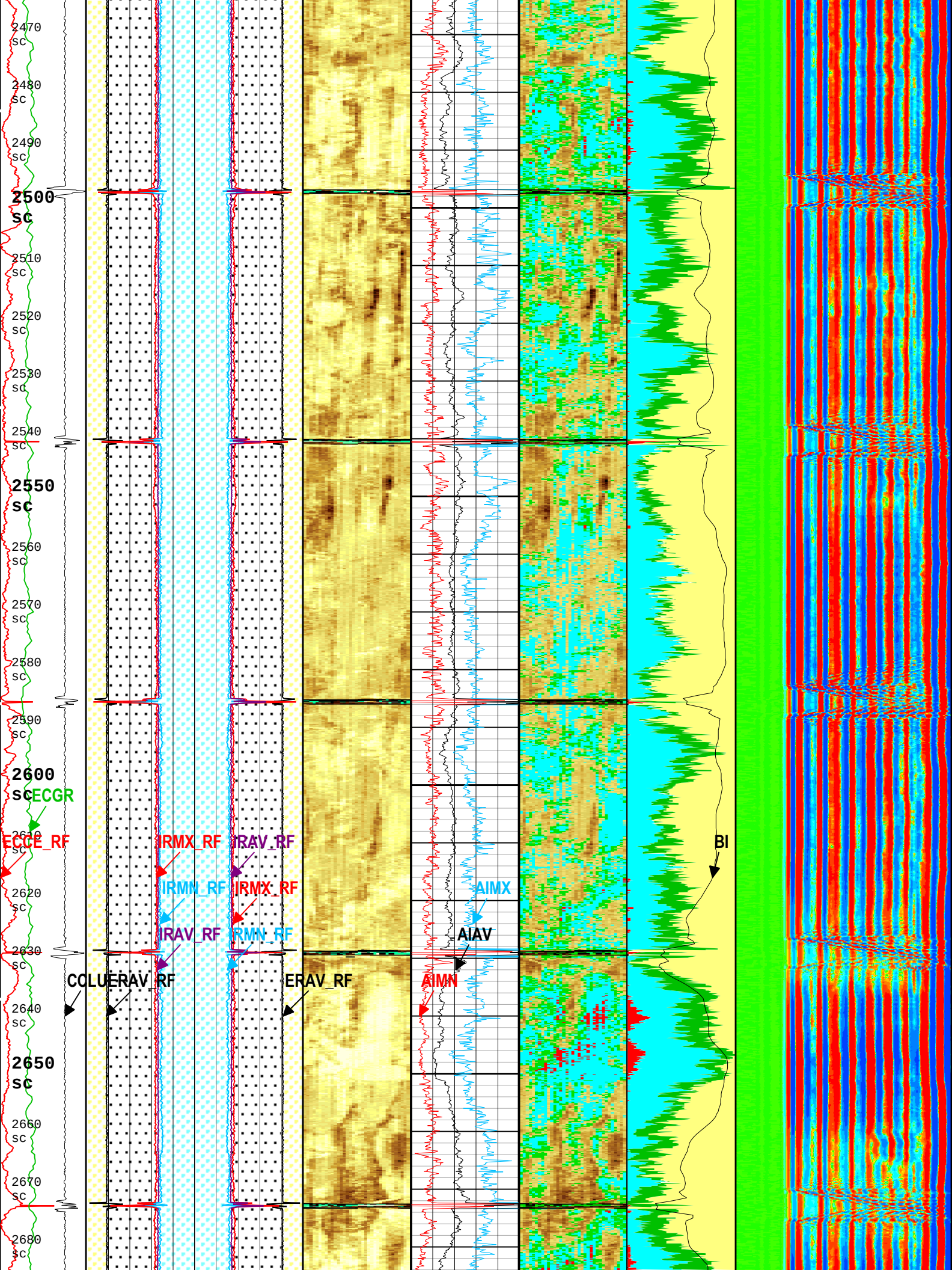
BI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IRMX_RF
IRAV_RF
IRMN_RF
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IRAV_RF
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AIAV
AIMN
BI
COLUERAV_RF
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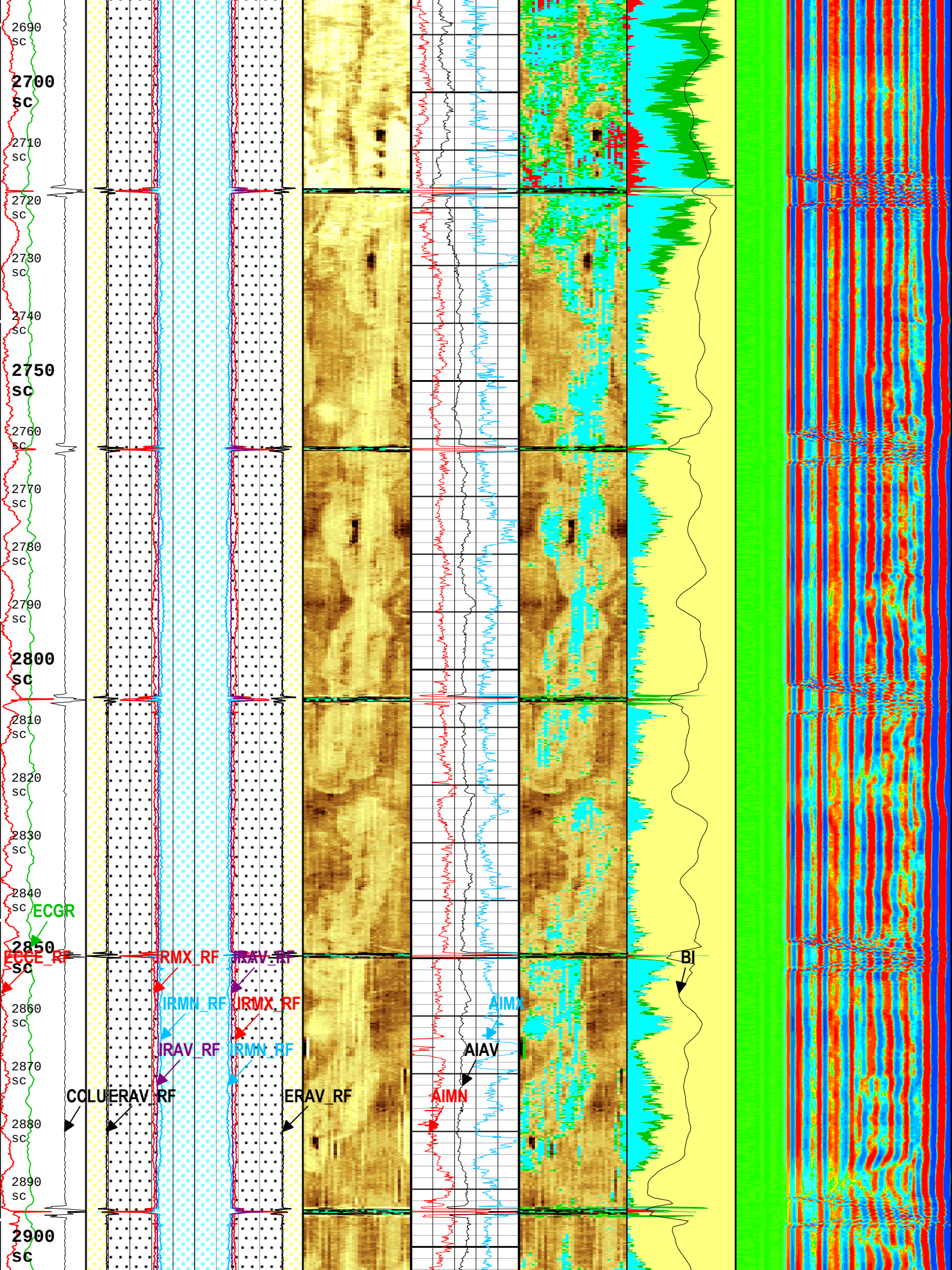
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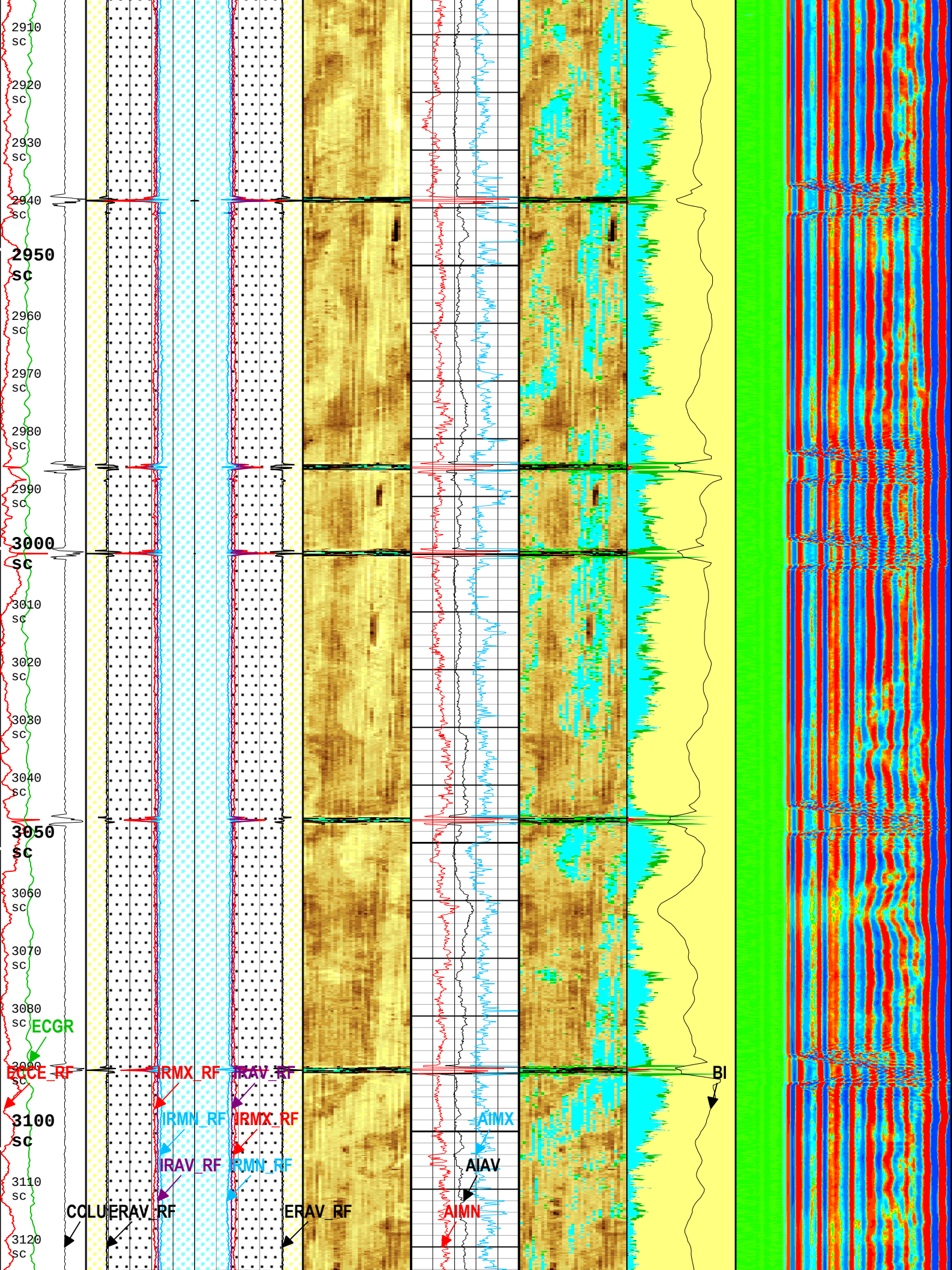
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3110 sc
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IRAV_RF
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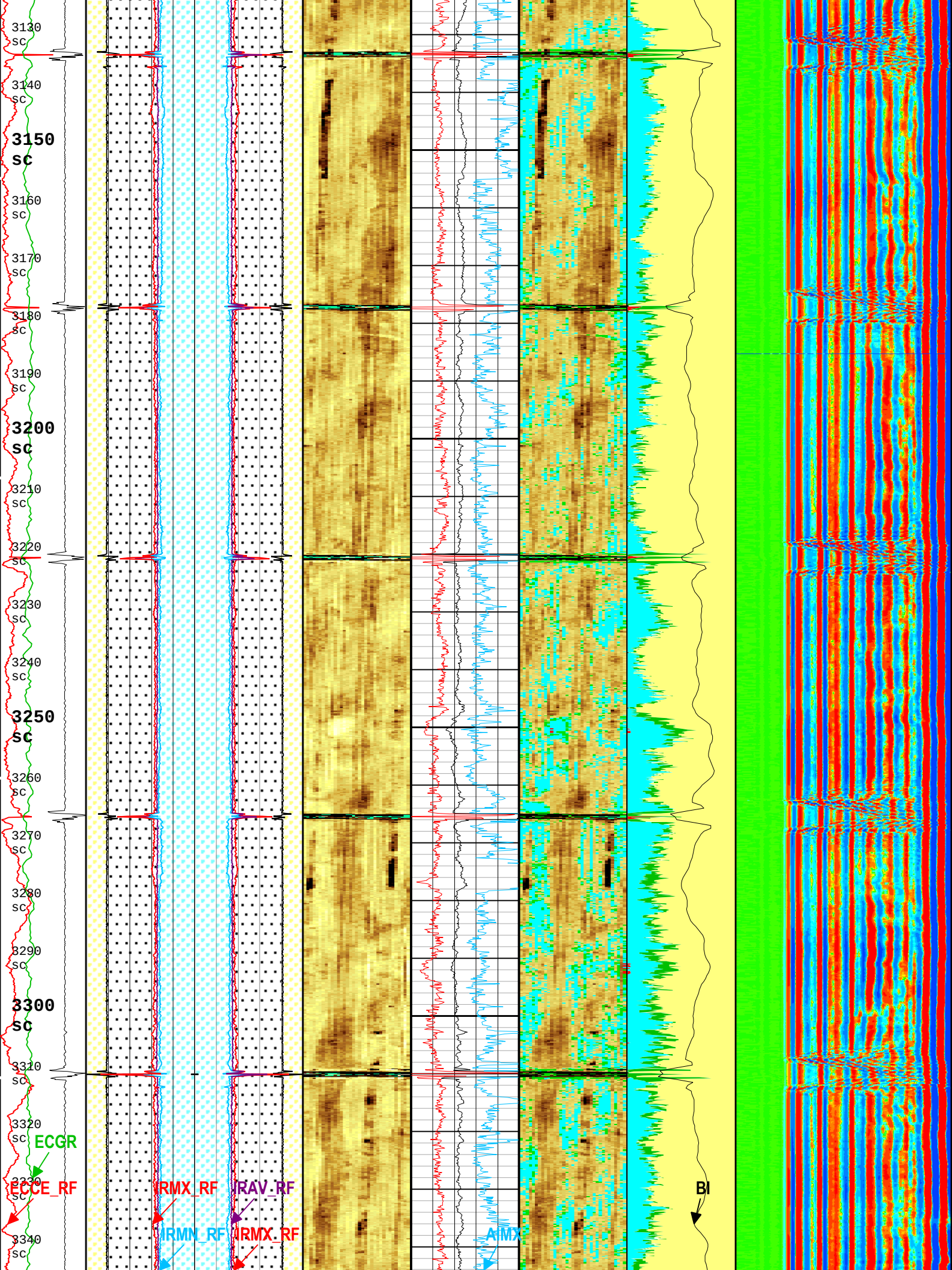
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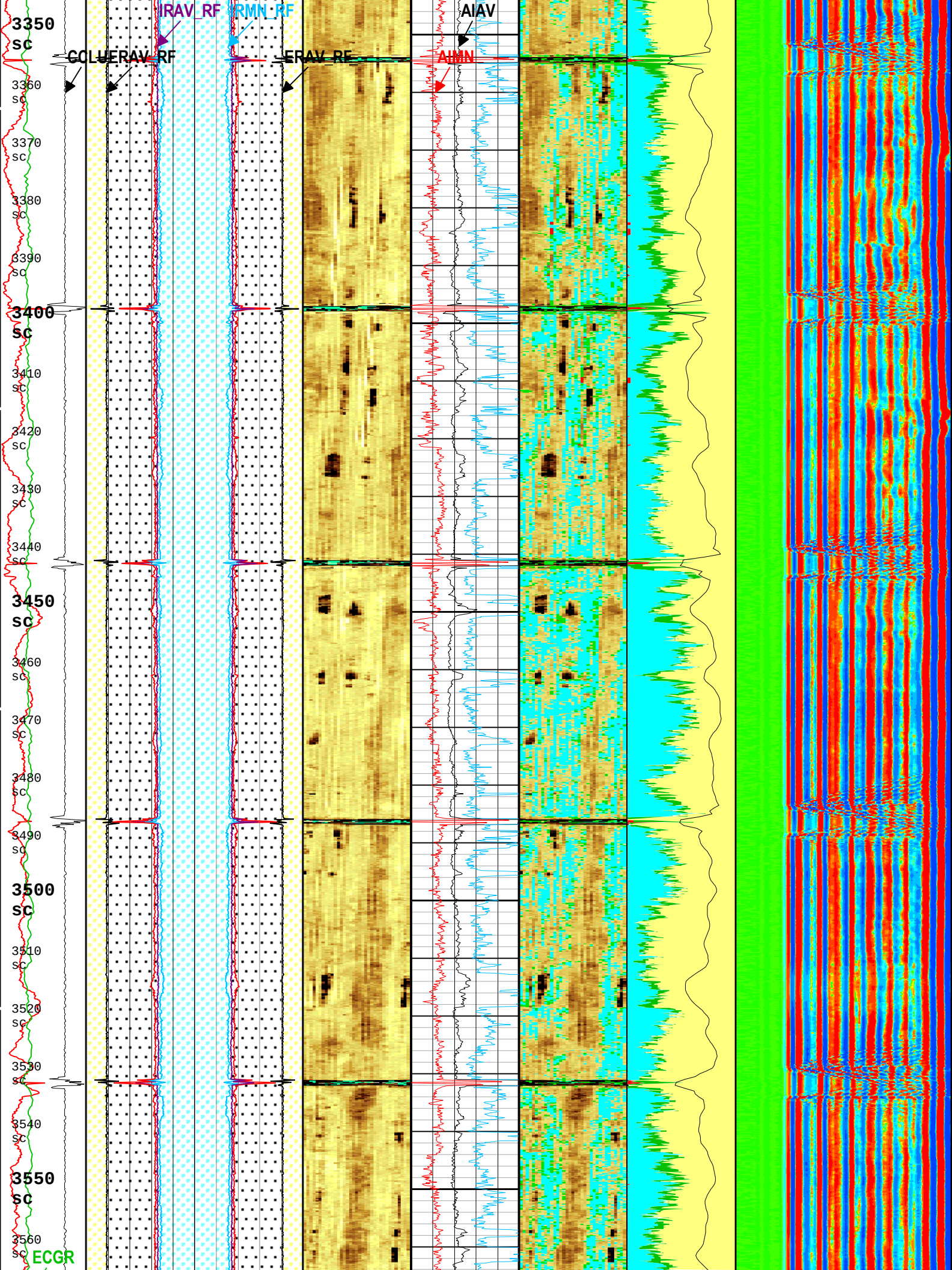
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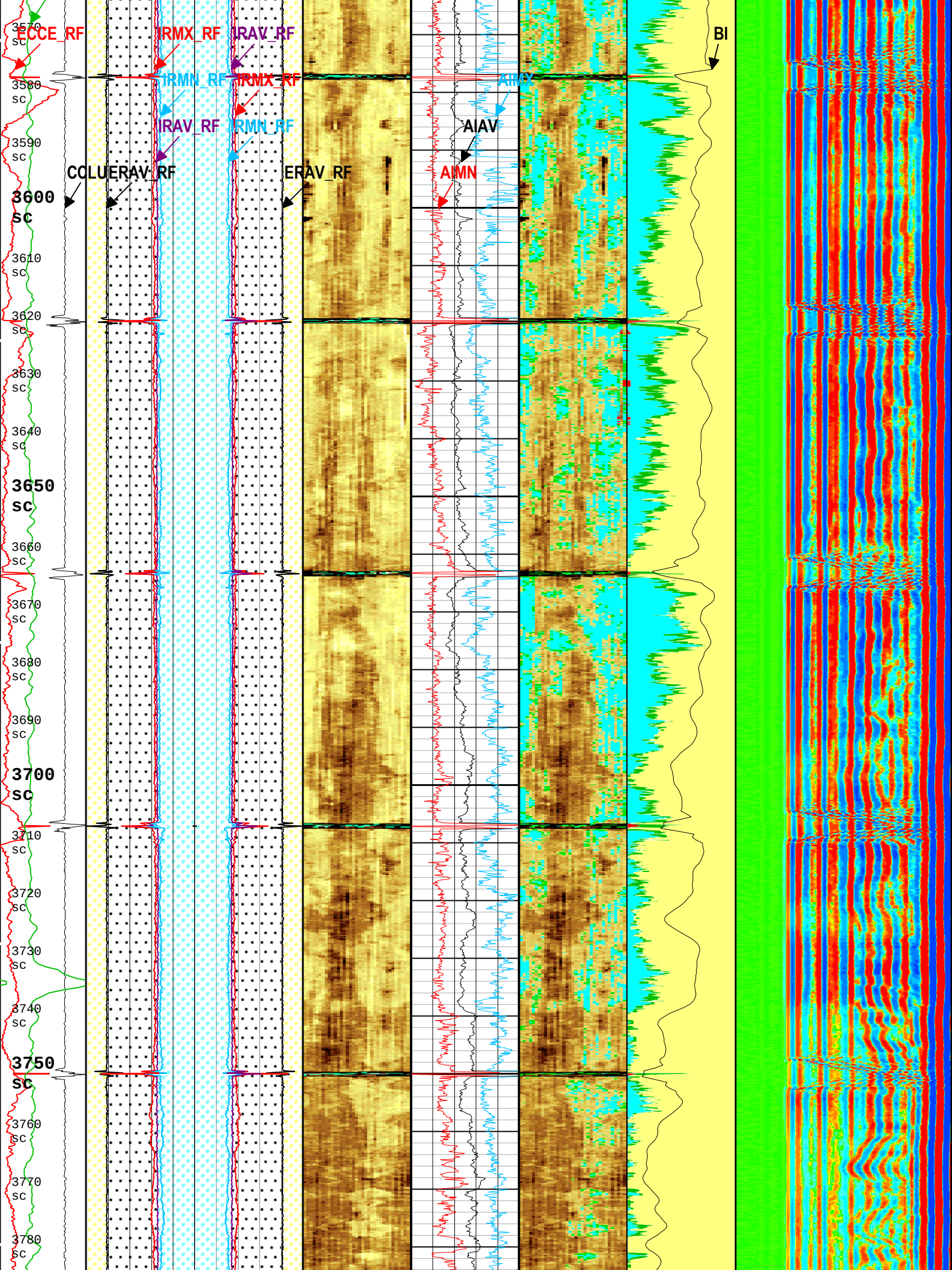
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COLUERAV_RF
ERAV_RF
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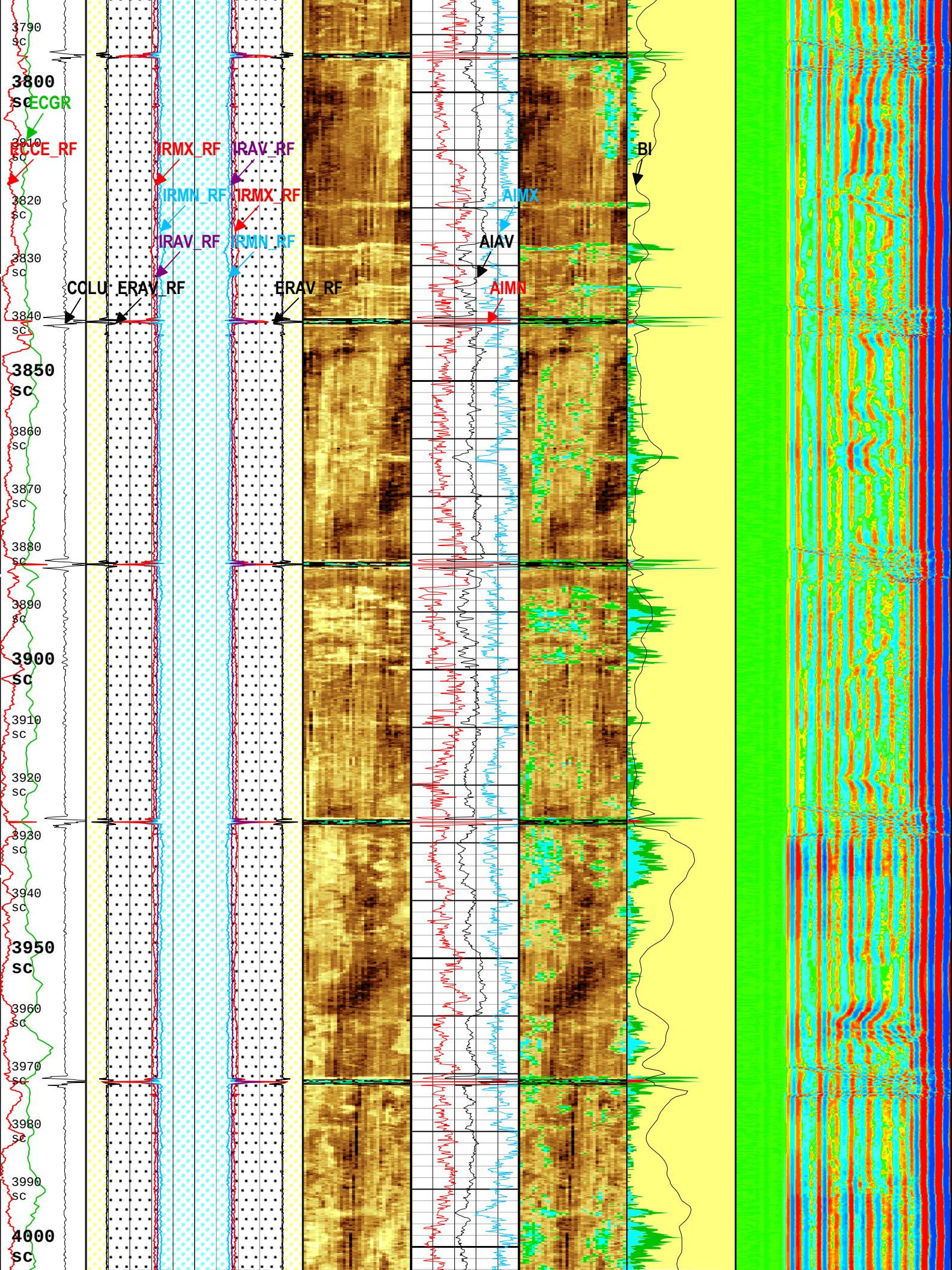
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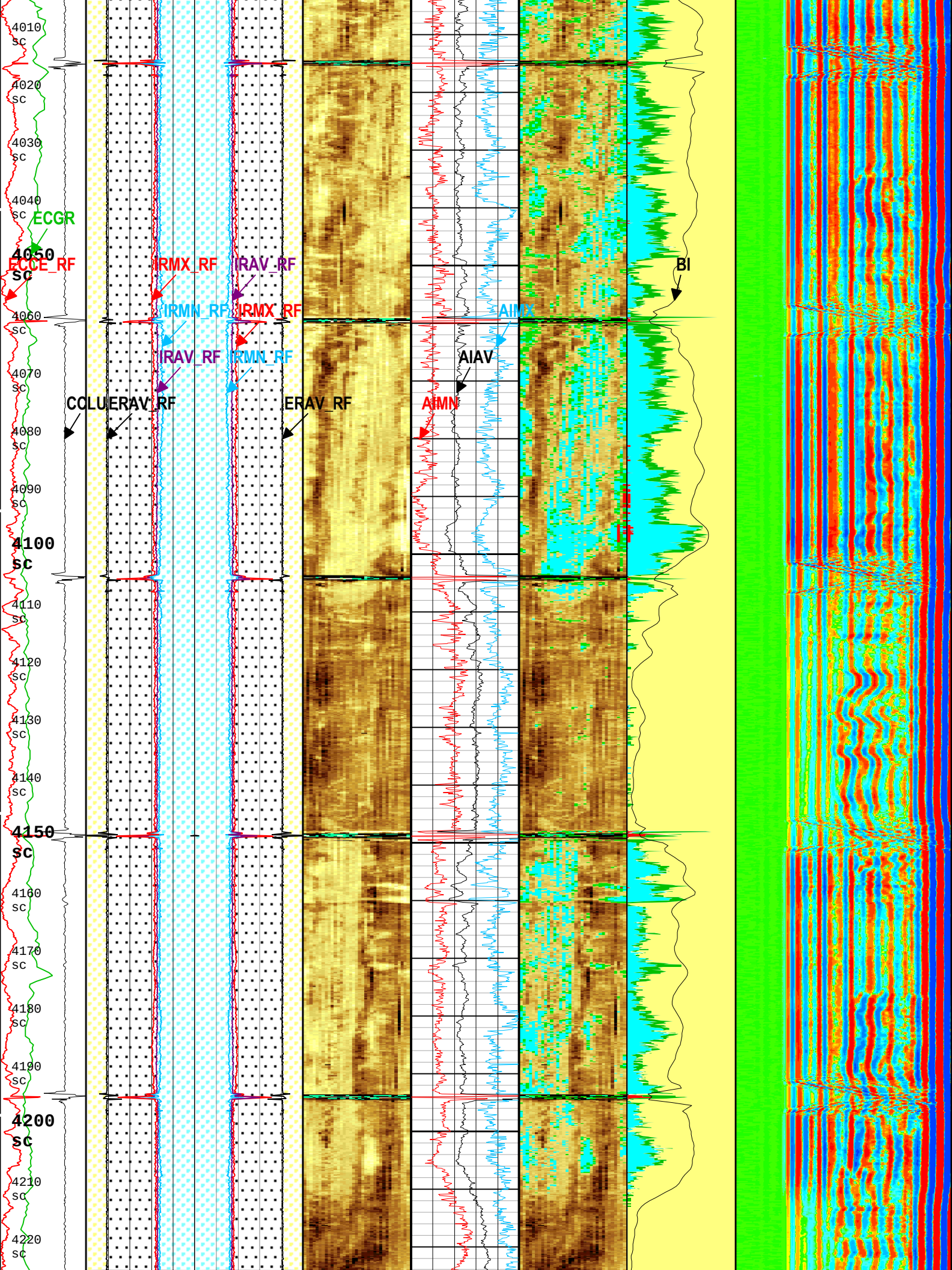
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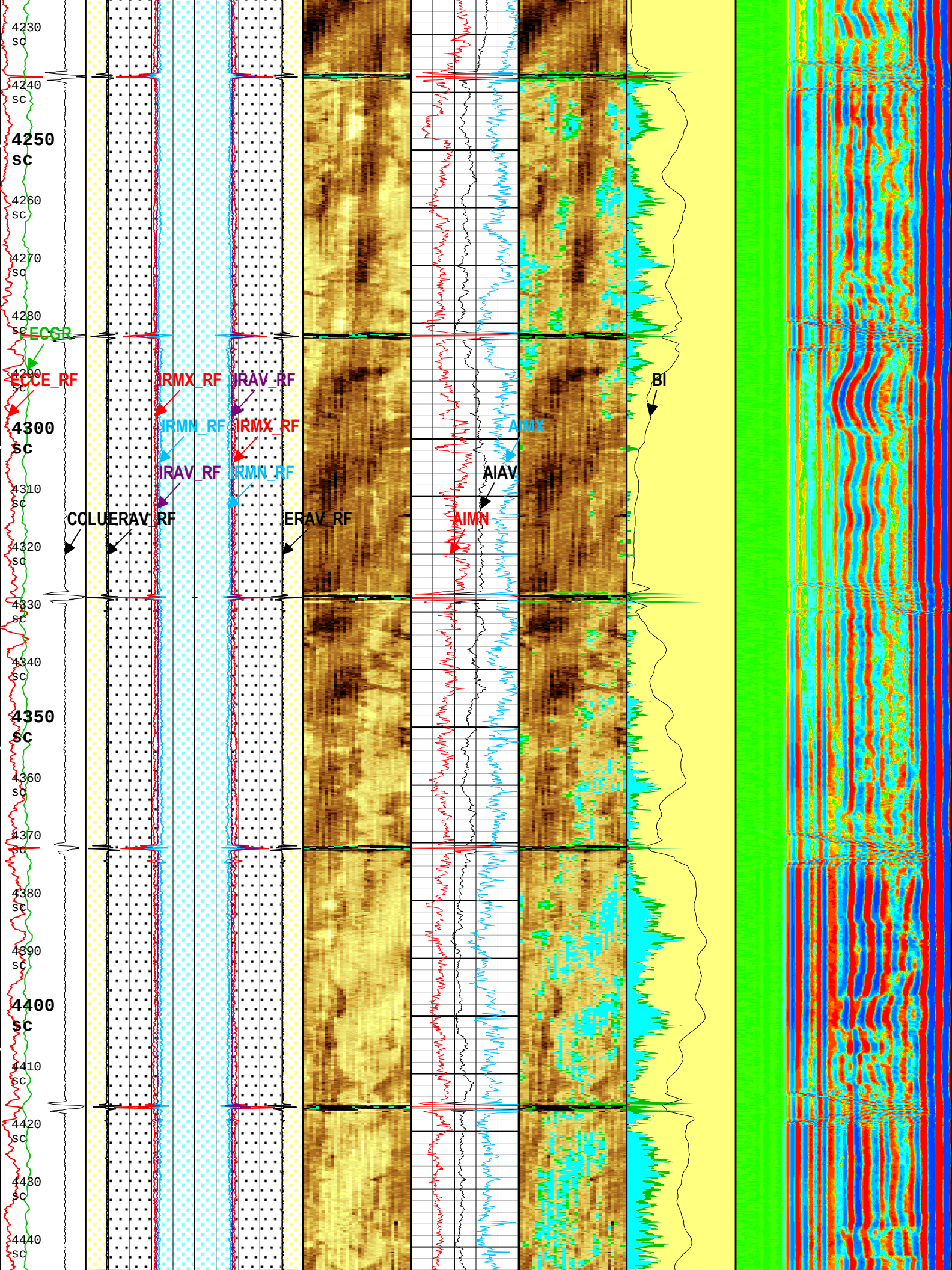
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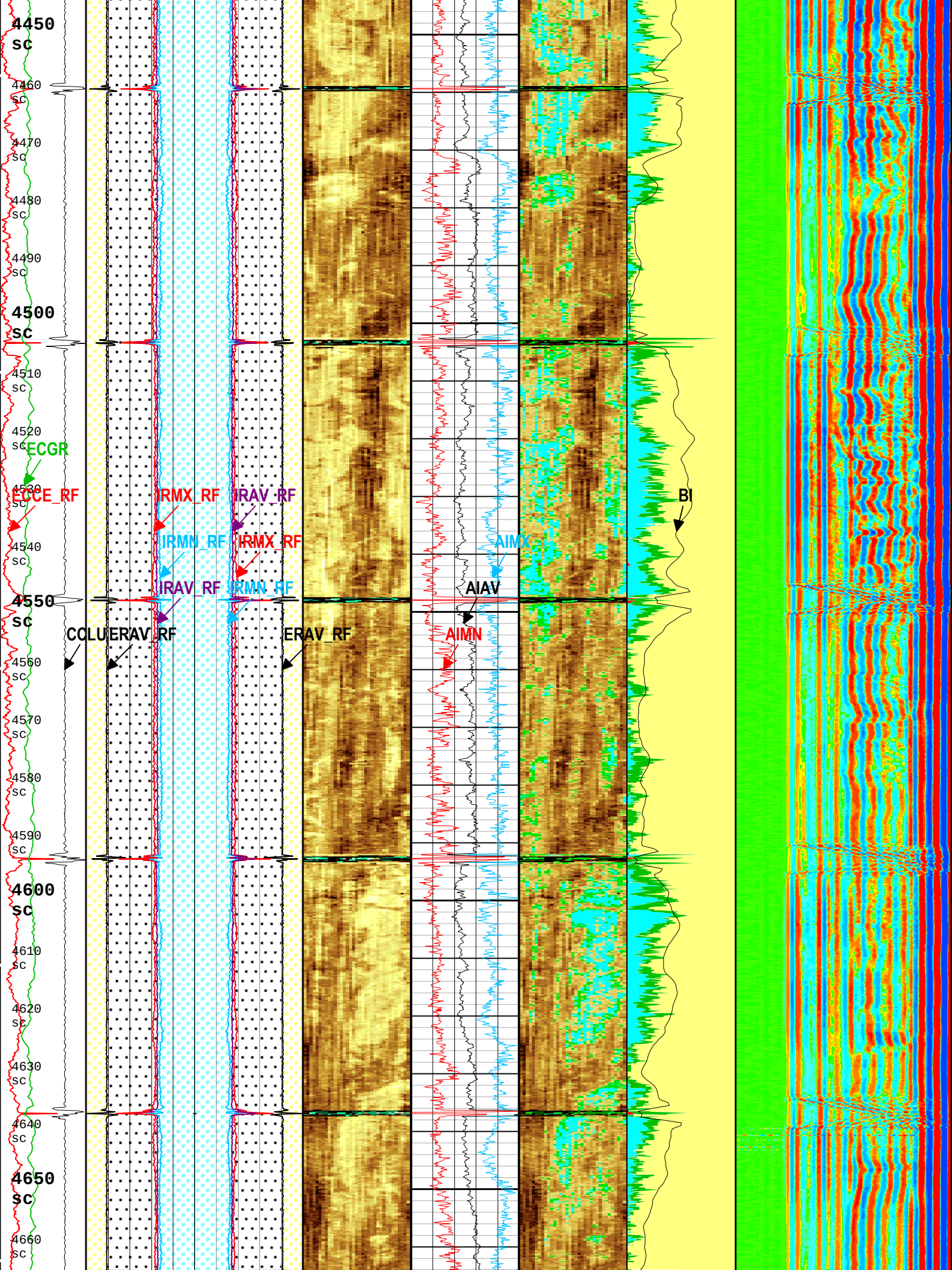
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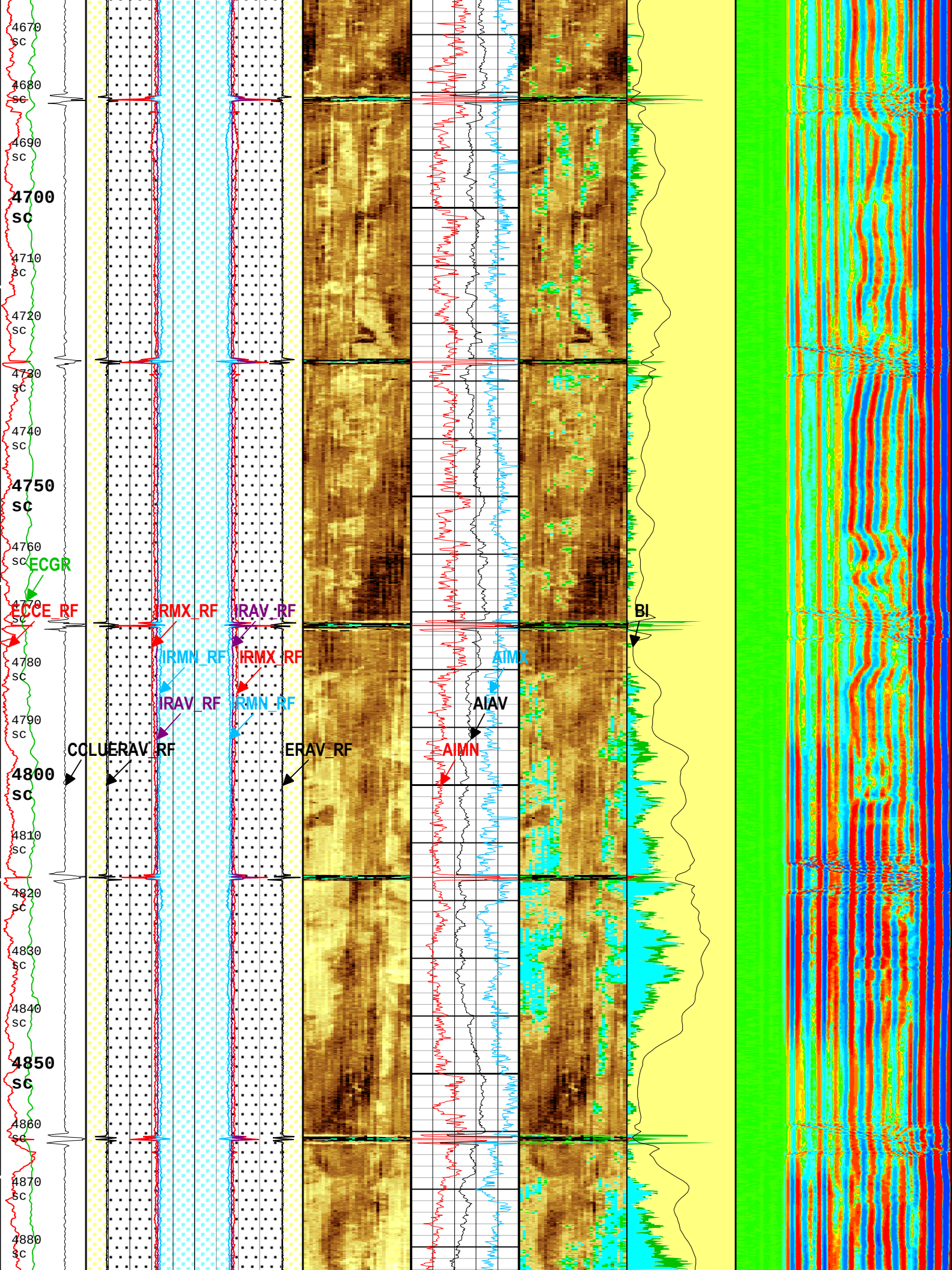
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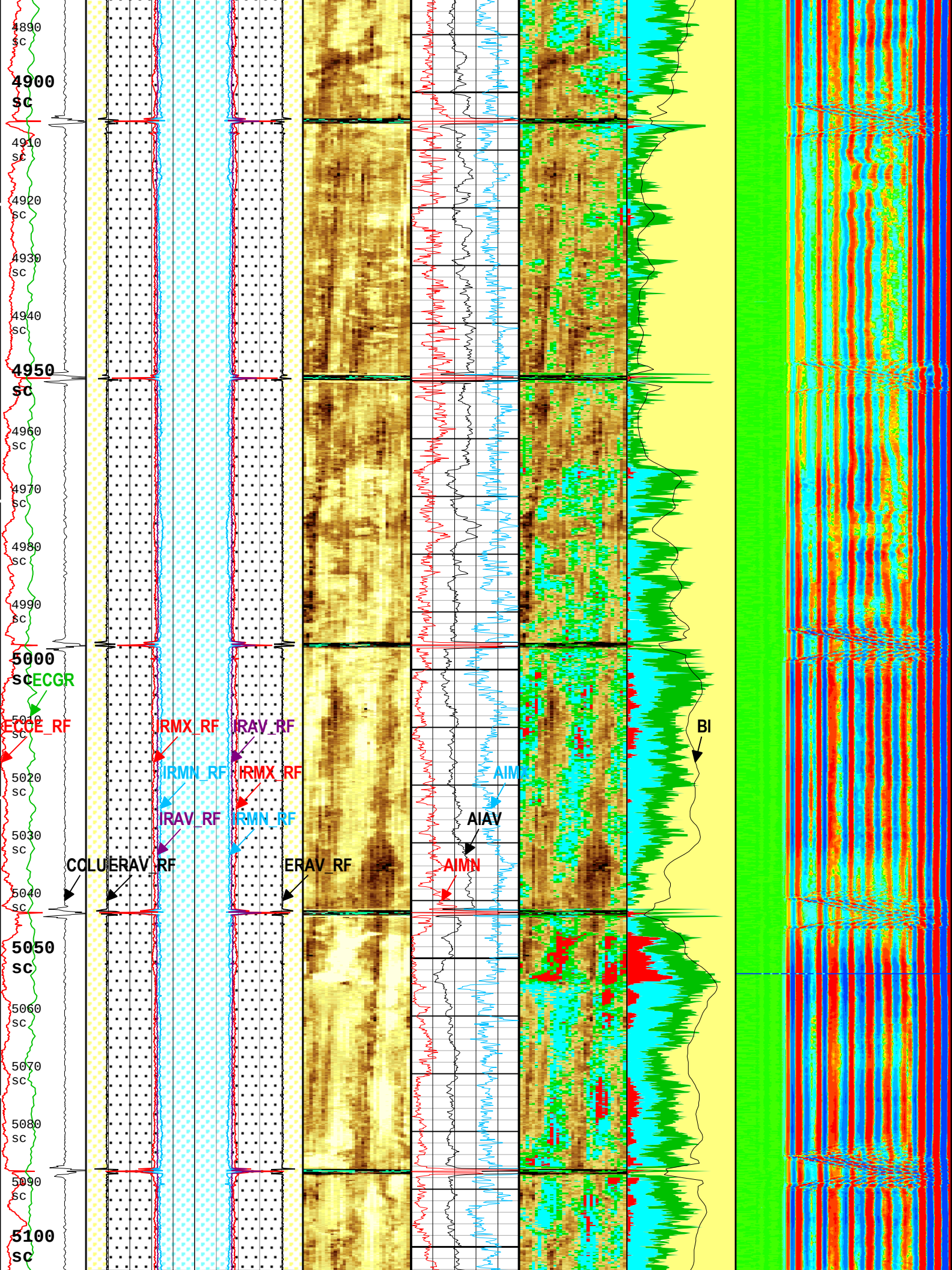
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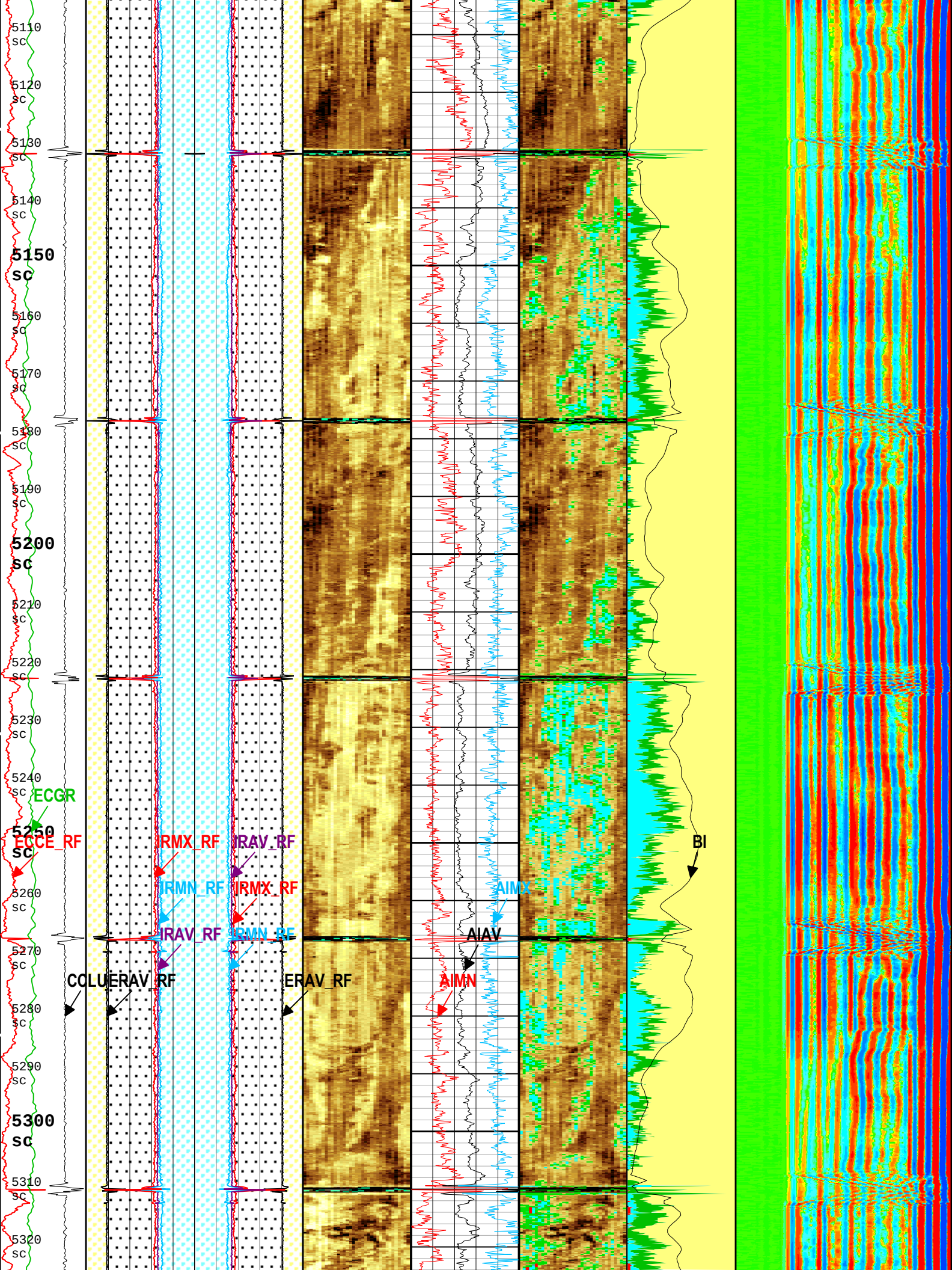
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ERAV_RF
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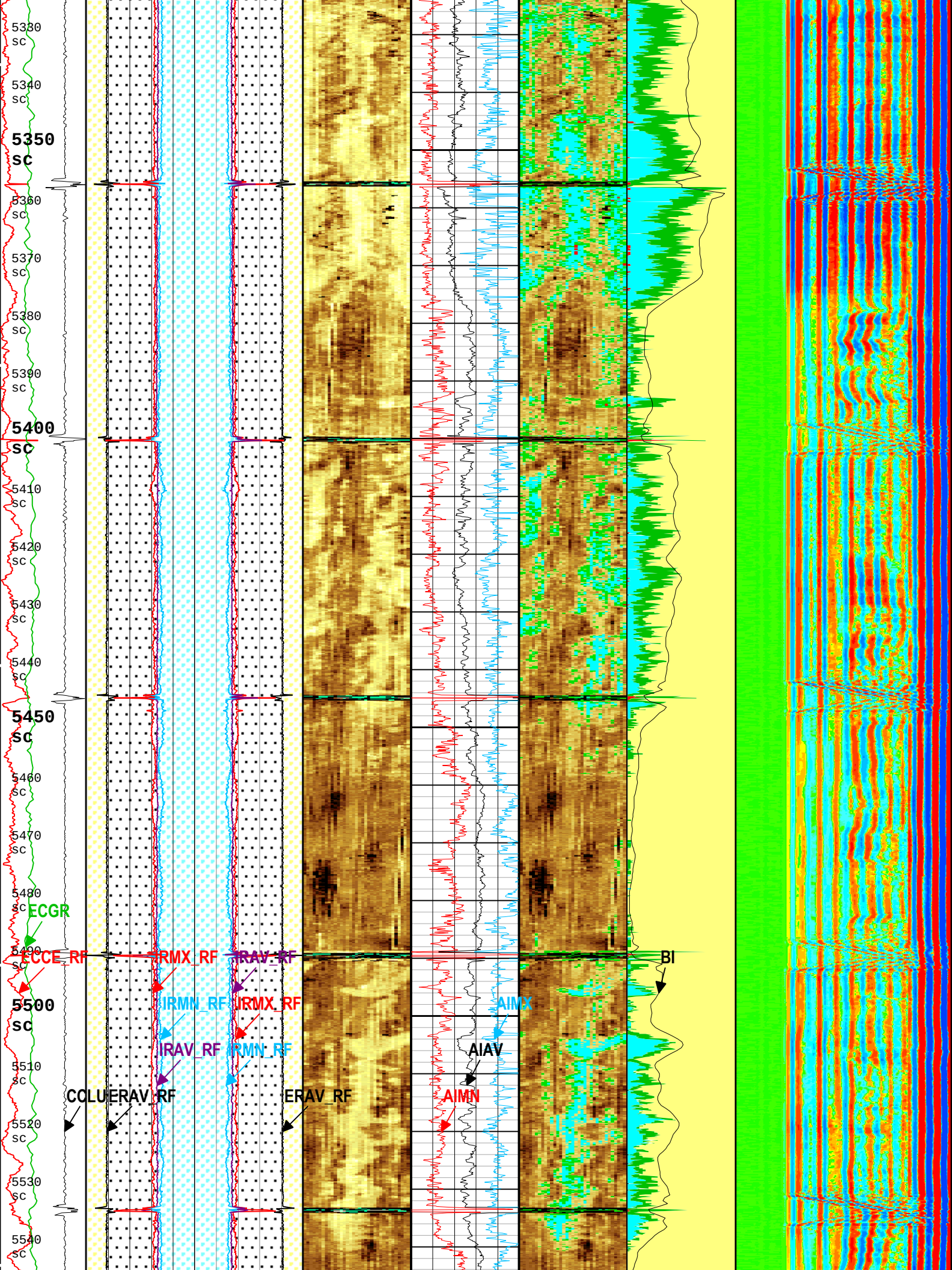
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5520
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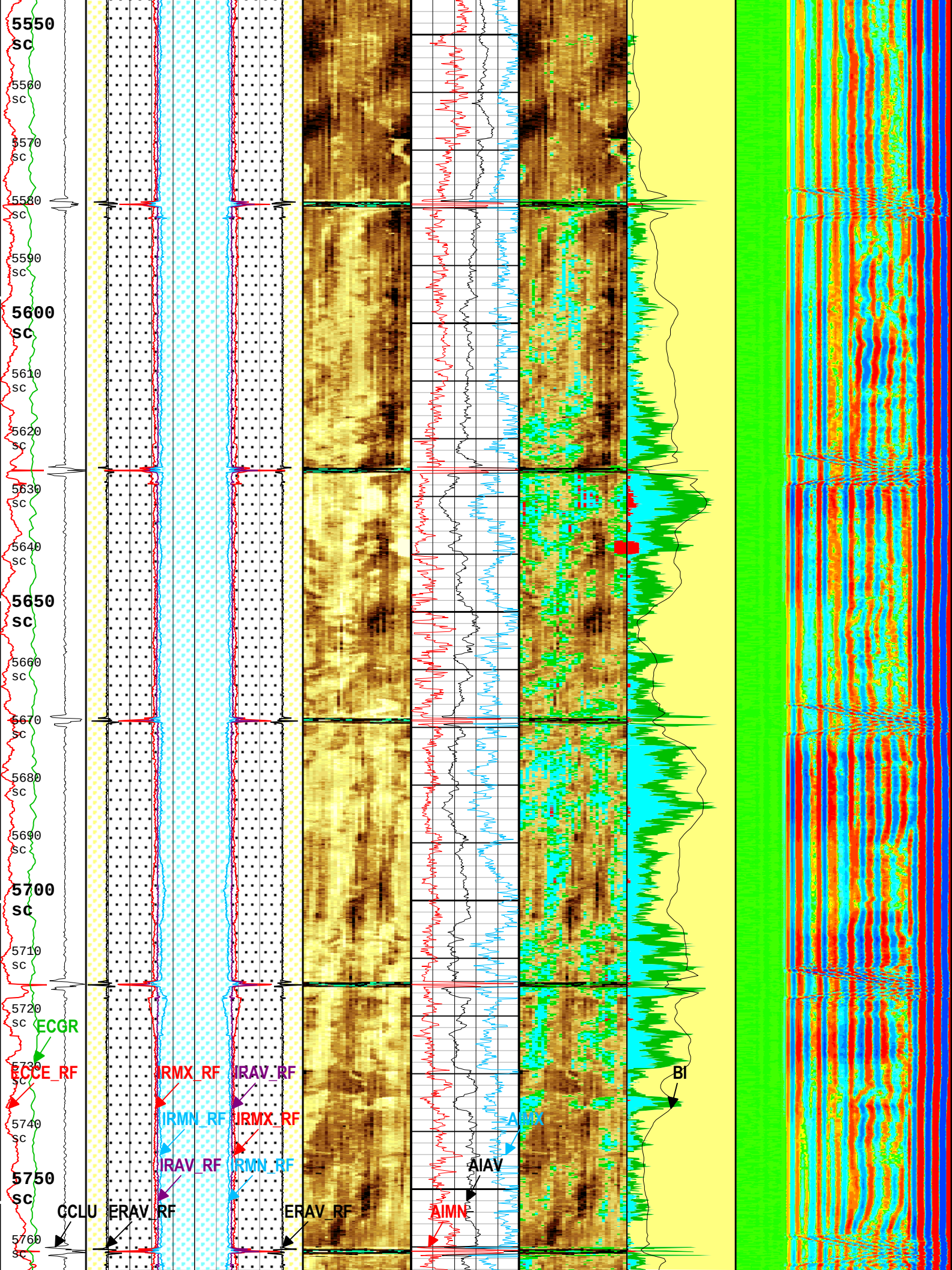
5530
sc
5540
sc
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
BI
IRMN_RF
IRMX_RF
AIMX
IRAV_RF
IRMN_RF
AIAV
CCLU
ERAV_RF
ERAV_RF
AIMN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SC
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SC
5740
SC
5750
SC
5760
SC
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
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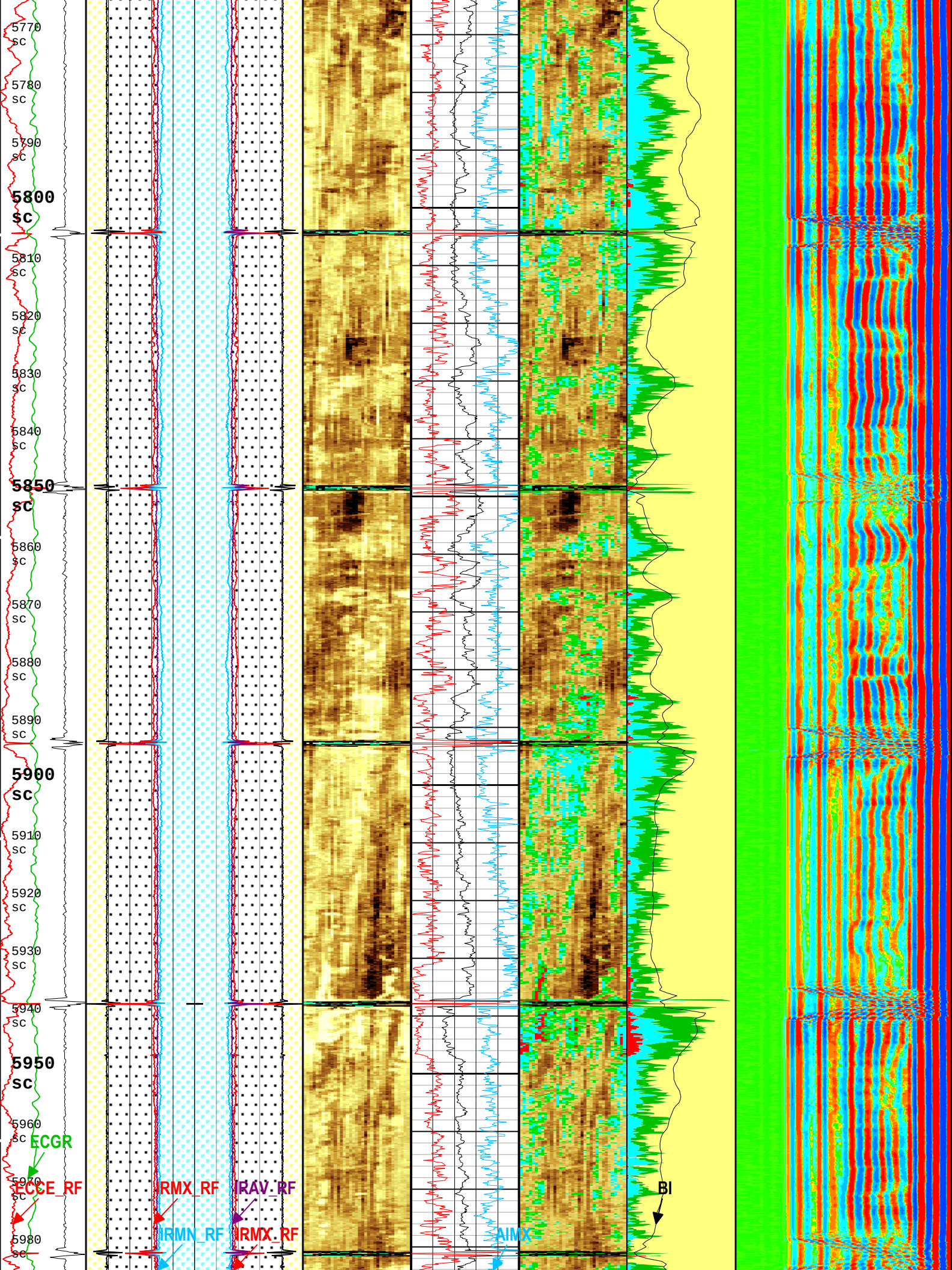
AIMX
IRAV_RF
IRMN_RF
AIAV
BI
CCLU
ERAV_RF
ERAV_RF
AIMN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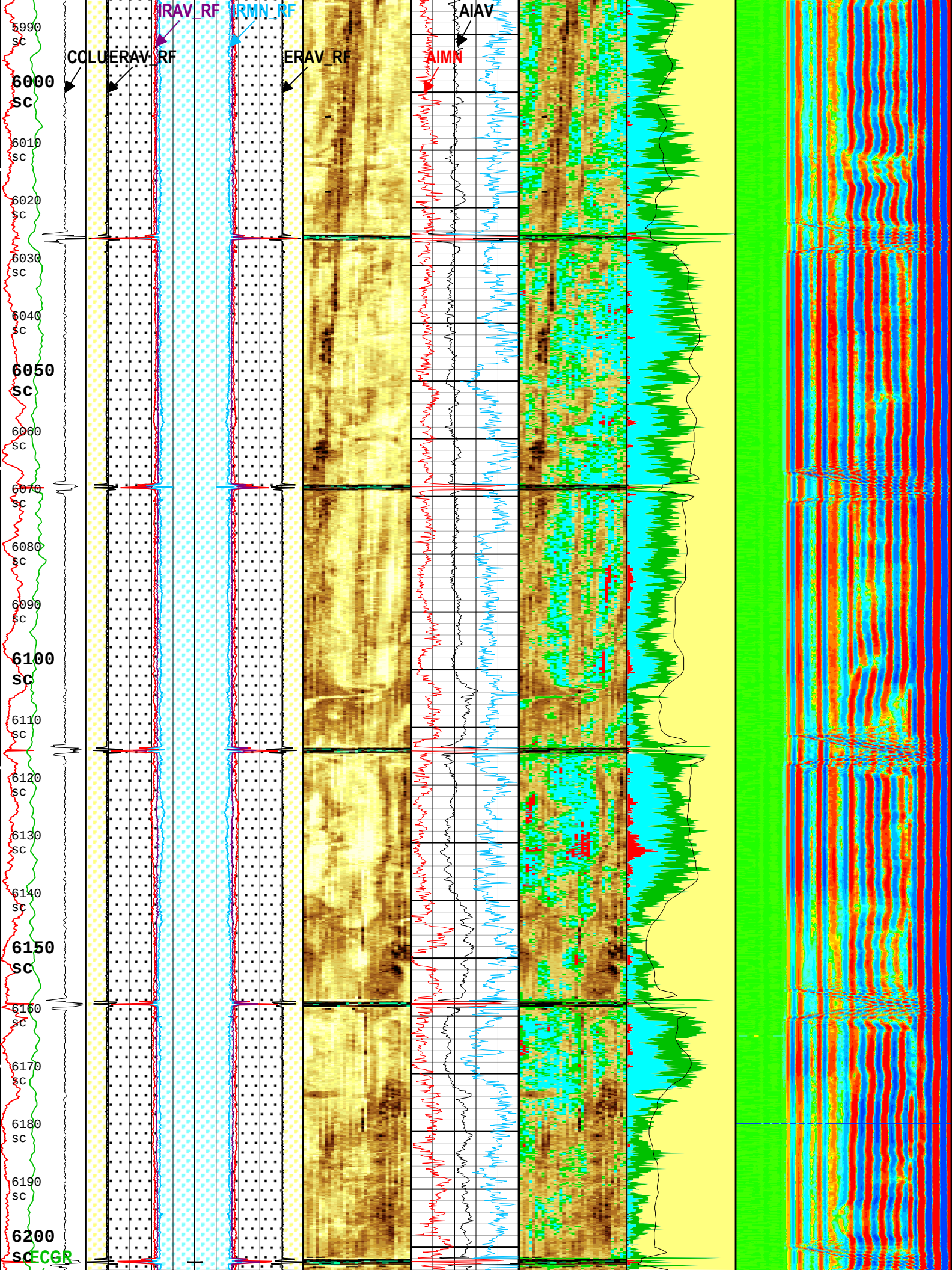
ECGR
ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
AIMX
BI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IRMN_RF
AIAV
COLUERAV_RF
ERAV_RF
AIMN
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SC
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6010
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6030
SC
6040
SC
6050
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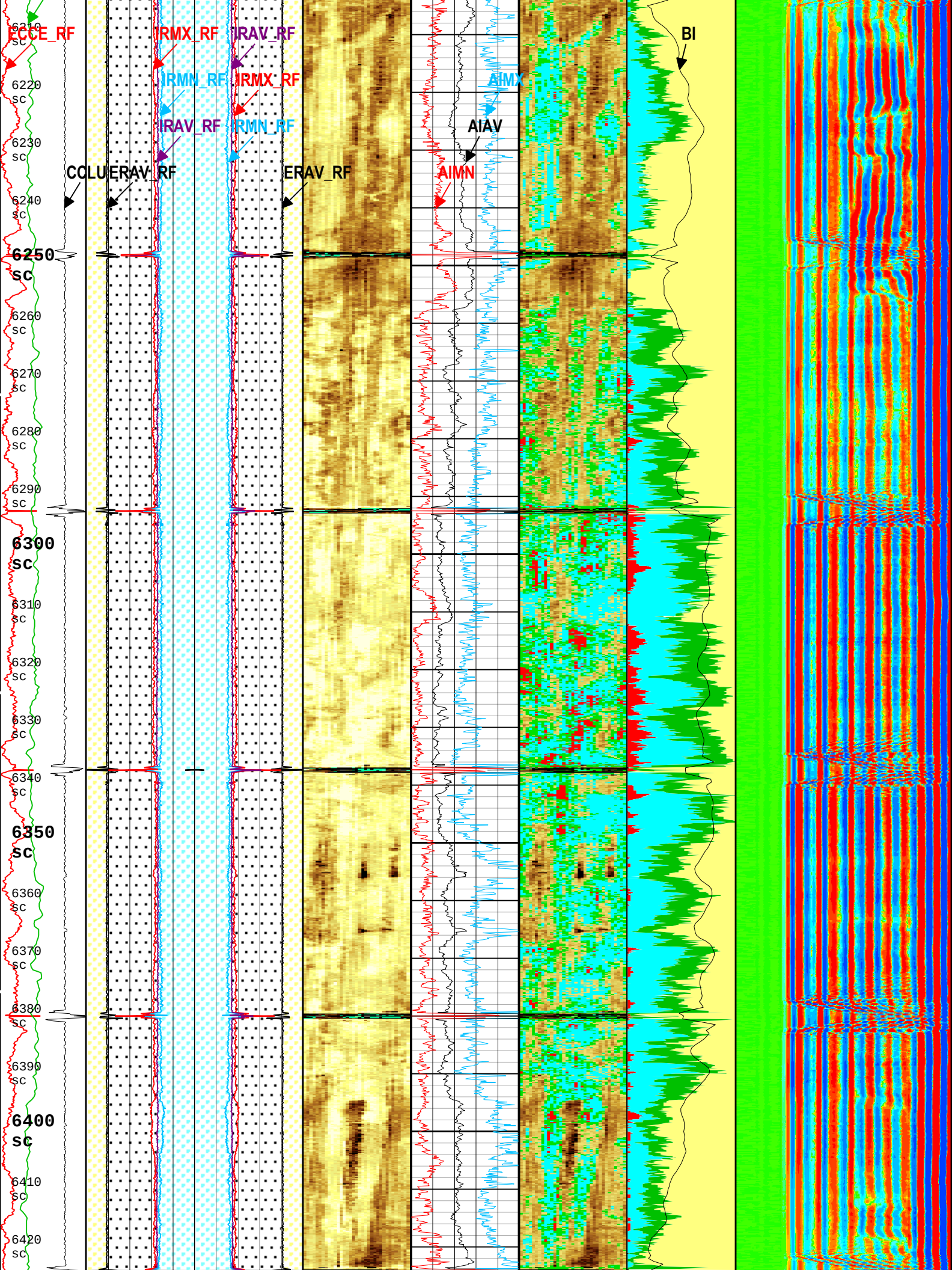
SC
ECGR


ECCE_RF
IRMX_RF
IRAV_RF
IRMN_RF
IRMX_RF
IRAV_RF
IRMN_RF
COLU
ERAV_RF
ERAV_RF
AIMX
AIAV
AIMN
BI
6210 sc
6220 sc
6230 sc
6240 sc
6250 sc
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6270 sc
6280 sc
6290 sc
6300 sc
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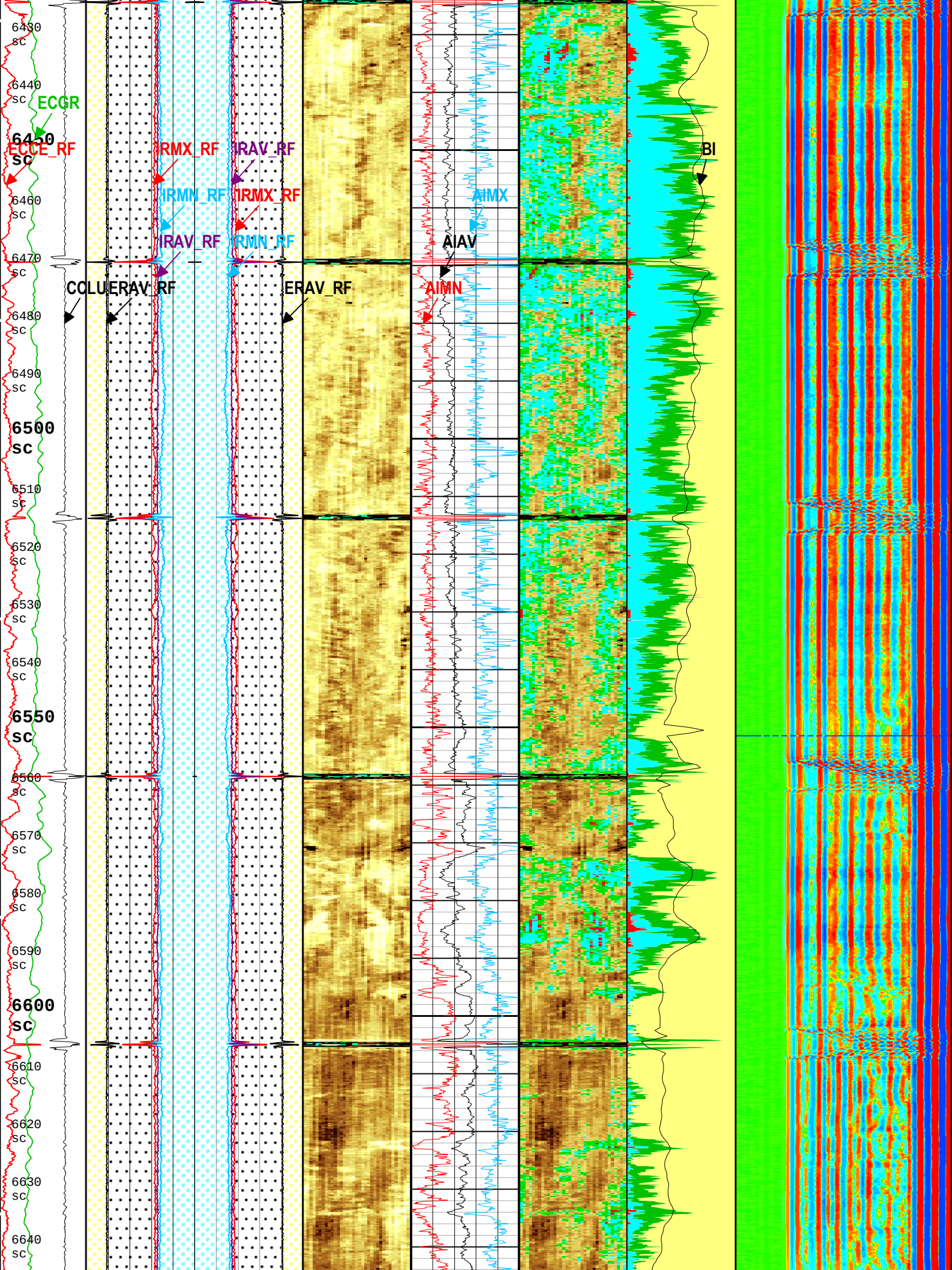
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6440 sc
ECGR
6450 sc
ECCE_RF
IRMX_RF
IRAV_RF
6460 sc
IRMN_RF
IRMX_RF
AIMX
BI
IRAV_RF
IRMN_RF
AIAV
6470 sc
CCLU
ERAV_RF
ERAV_RF
AIMN
6480 sc
6490 sc
6500 sc
6510 sc
6520 sc
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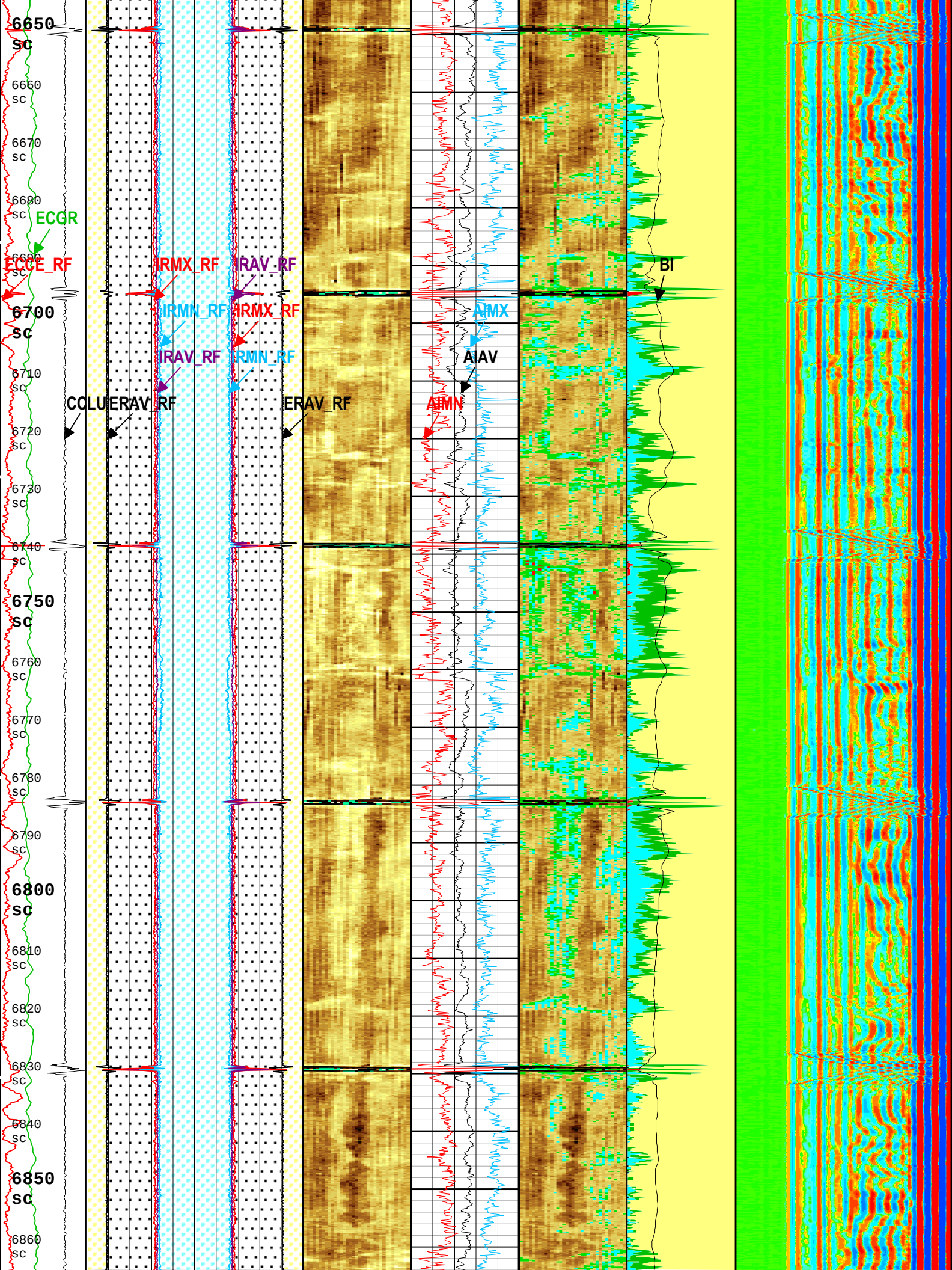
6620 sc
6630 sc
6640 sc


6650
SC
6660
SC
6670
SC
6680
SC
ECGR
ECCE_RF
6690
SC
IRMX_RF
IRAV_RF
BI
6700
SC
IRMN_RF
IRMX_RF
AIMX
IRAV_RF
IRMN_RF
AIAV
6710
SC
CCLU
ERAV_RF
ERAV_RF
AIMN
6720
SC
6730
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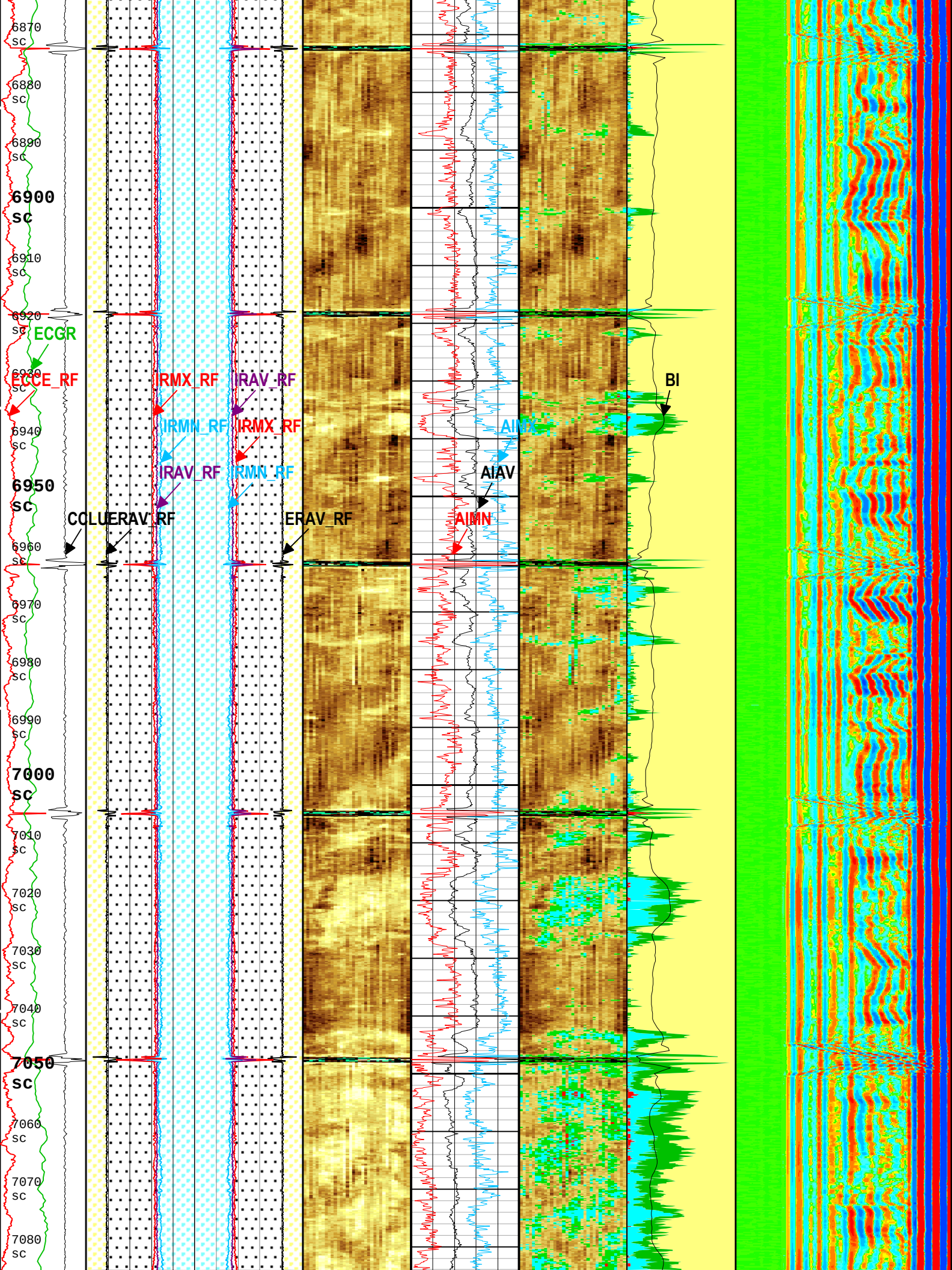
6860
SC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SC
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6890
SC
6900
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6910
SC
6920
SC
ECGR
6930
SC
ECCE_RF
IRMX_RF
IRAV_RF
BI
6940
SC
IRMN_RF
IRMX_RF
AIMX
6950
SC
IRAV_RF
IRMN_RF
AIAV
COLUERAV_RF
ERAV_RF
AIMN
6960
SC
6970
SC
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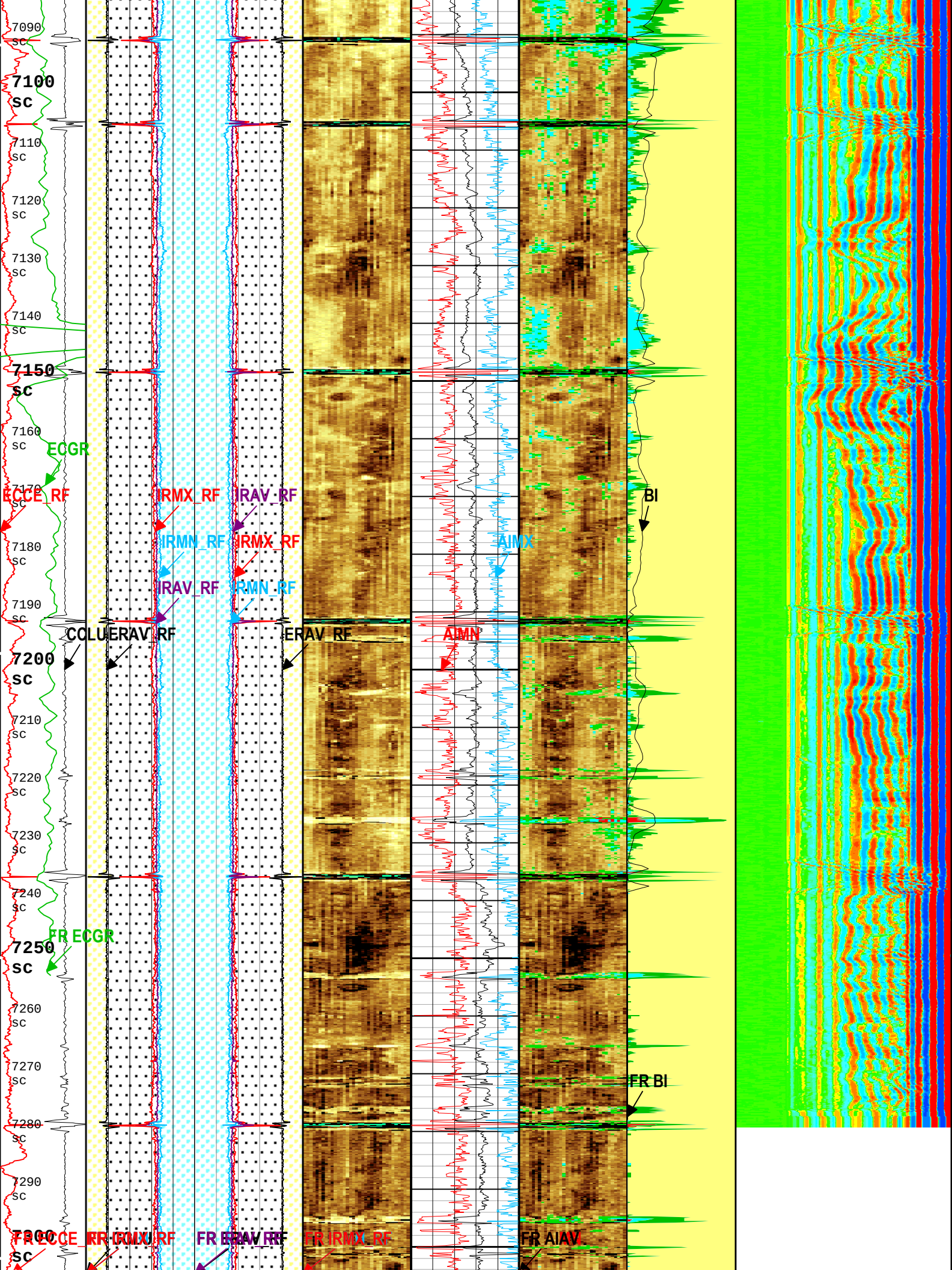
SC


7090
sc
7100
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7110
sc
7120
sc
7130
sc
7140
sc
7150
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ECGR
ECCE_RF
IRMX_RF
IRAV_RF
BI
IRMN_RF
IRMX_RF
AIMX
7180
sc
IRAV_RF
IRMN_RF
7190
sc
CCLU
ERAV_RF
ERAV_RF
AIMN
7200
sc
7210
sc
7220
sc
7230
sc
7240
sc
FR ECGR
7250
sc
7260
sc
7270
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FR BI
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sc
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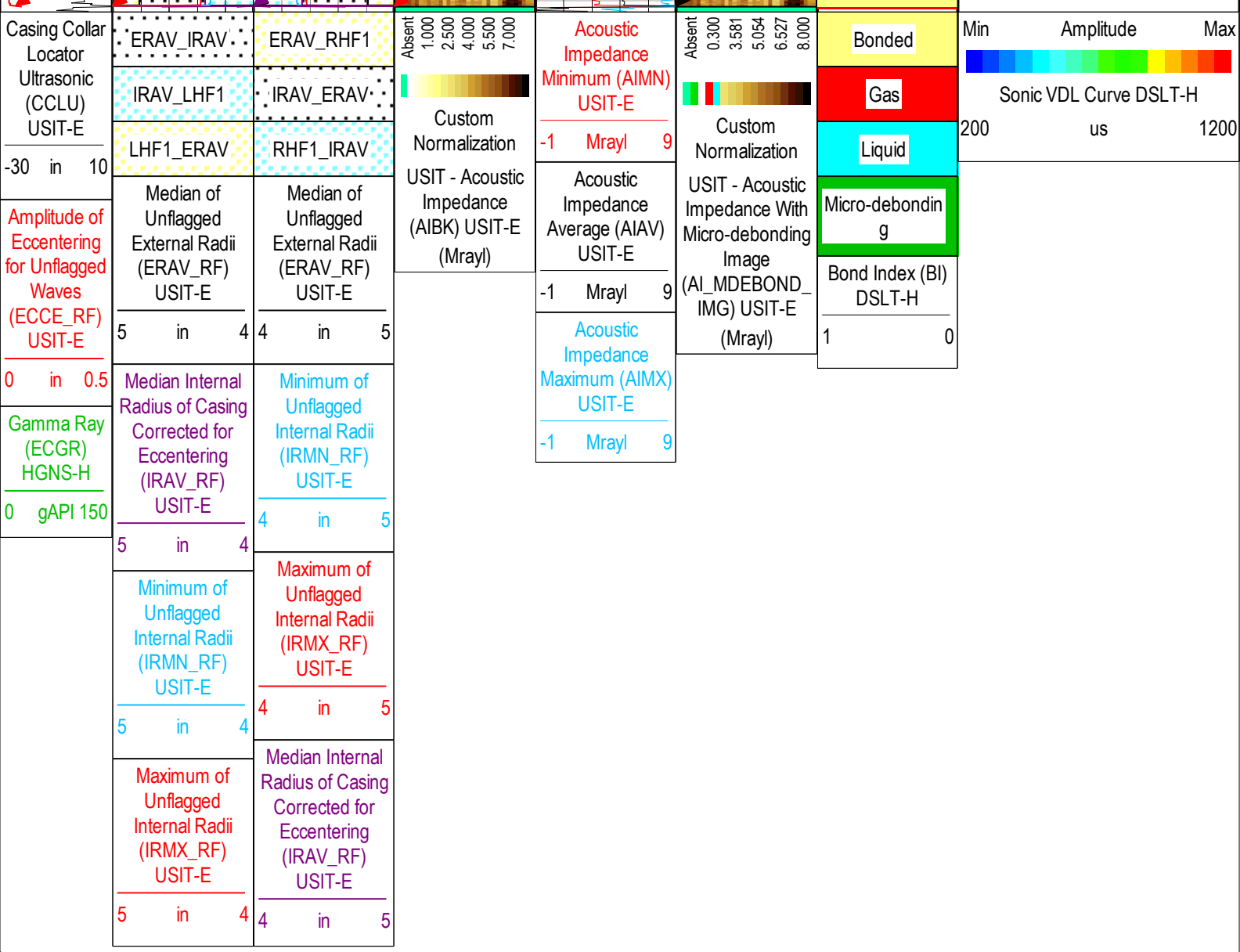
FR ECCE_RF
FR IRMX_RF
FR ERAV_RF
FR IRMX_RF
FR AIAV



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: 23-Sep-2016 18:15:44

Four

Repeat Pass 1000 psi

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
Four	Log[4]:Up	Up	7075.81 ft	7301.95 ft	23-Sep-2016 9:58:05 AM	23-Sep-2016 10:09:49 AM	ON	-9.70 ft	Yes

All depths are referenced to toolstring zero

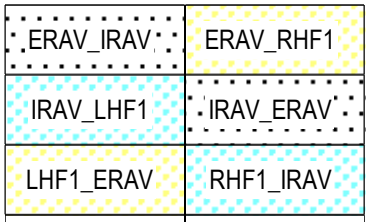
Log

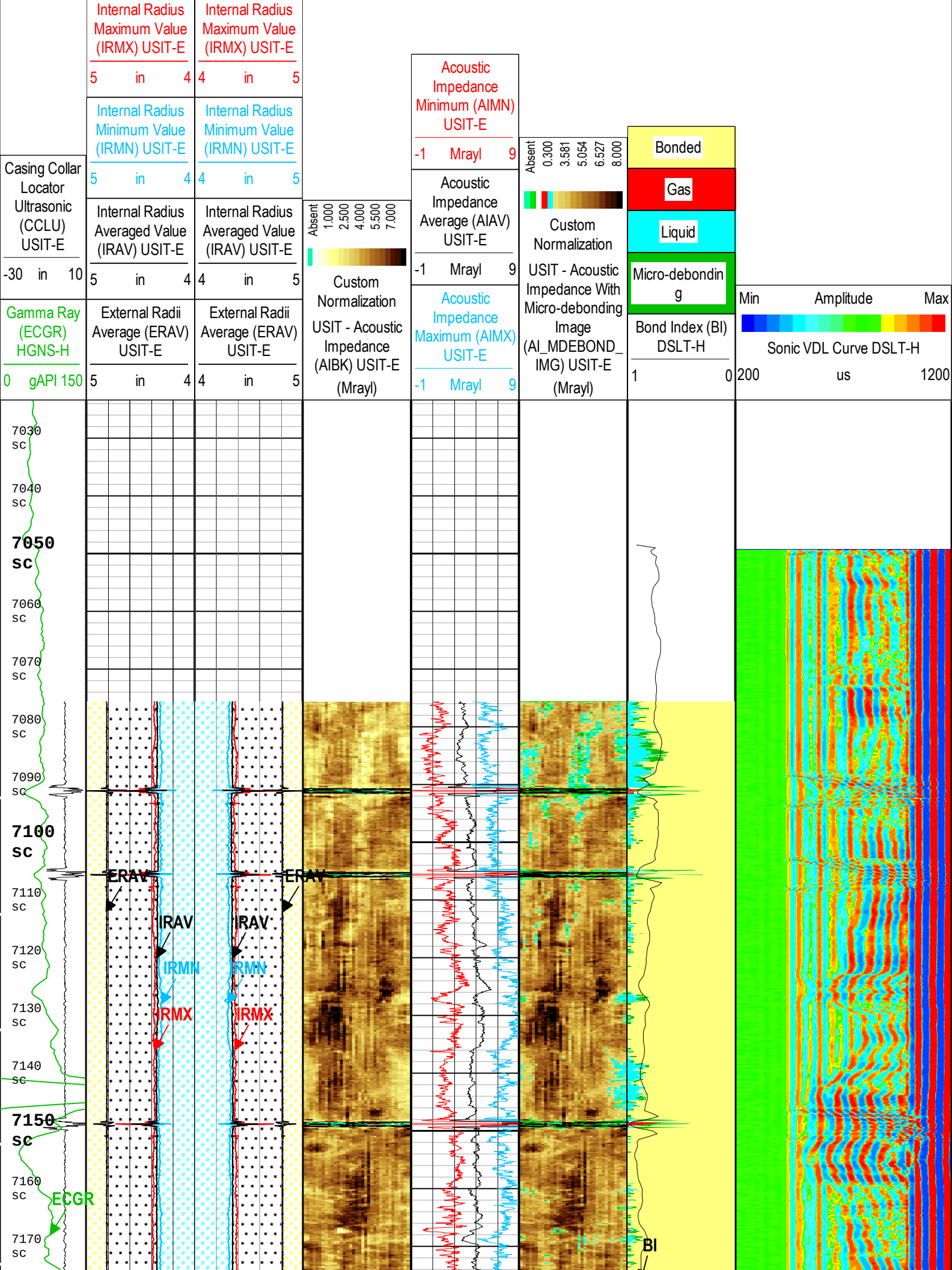
Company:Southern California Gas Company Well:Porter 24A

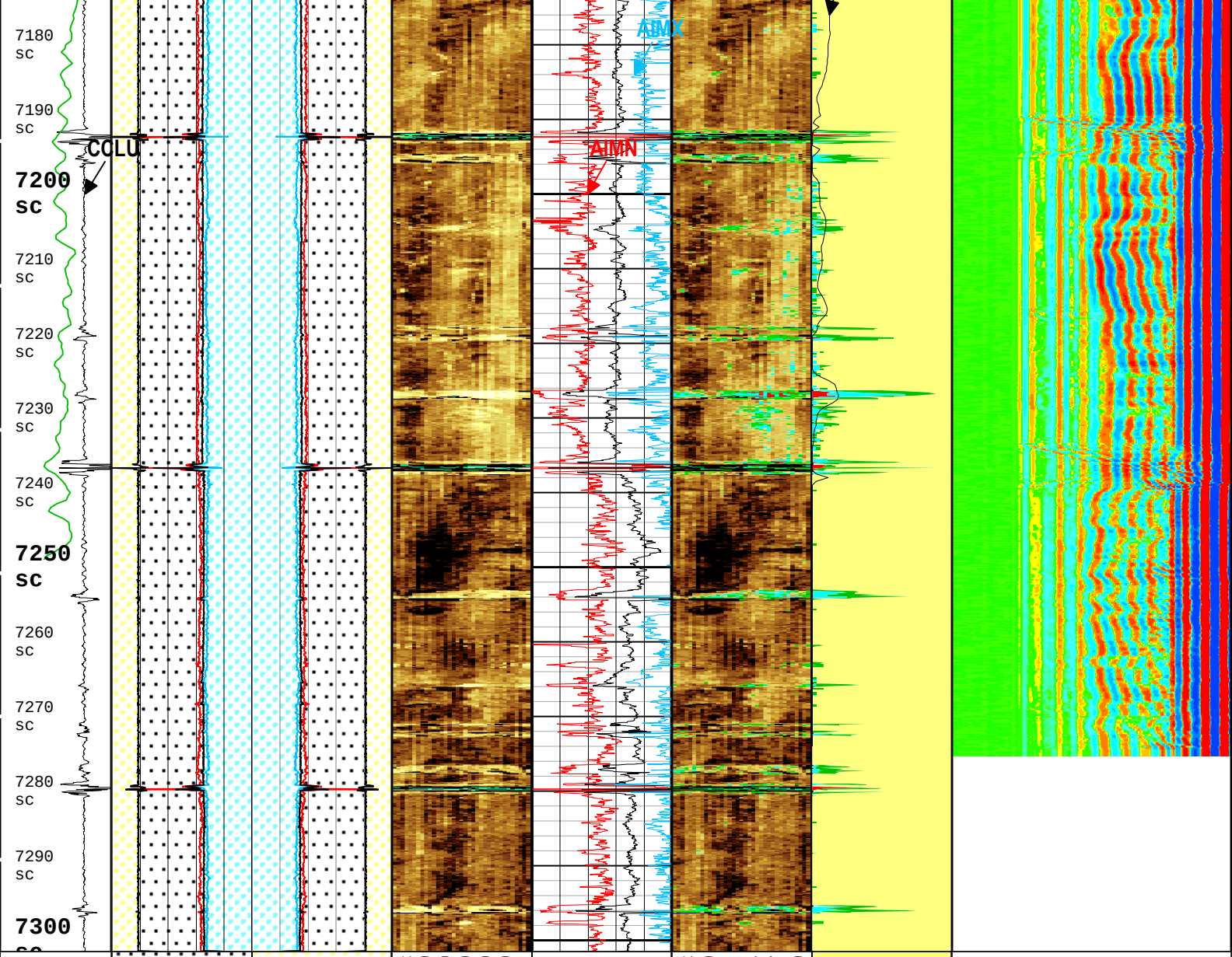
Four: Log[4]:Up:S010

Description: USI VDL Cement Format: Log (LBV1_USI-VDL (DSLT) Cement 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth Creation Date: 23-Sep-2016 18:16:20

TIME_1900 - Time Marked every 60.00 (s)




Internal Radius Maximum Value (IRMX) USIT-E
5 in 4
Internal Radius Maximum Value (IRMX) USIT-E
4 in 5
Internal Radius Minimum Value (IRMN) USIT-E
5 in 4
Internal Radius Minimum Value (IRMN) USIT-E
4 in 5
Casing Collar Locator Ultrasonic (CCLU) USIT-E
-30 in 10
Internal Radius Averaged Value (IRAV) USIT-E
5 in 4
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)
Acoustic Impedance Minimum (AIMN) USIT-E
-1 Mrayl 9
Acoustic Impedance Average (AIAV) USIT-E
-1 Mrayl 9
Acoustic Impedance Maximum (AIMX) USIT-E
-1 Mrayl 9
Absent 0.300 3.581 5.054 6.527 8.000
Custom Normalization
USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E (Mrayl)
Bonded
Gas
Liquid
Micro-debonding
Bond Index (BI) DSLT-H
1 0
Min Amplitude Max
Sonic VDL Curve DSLT-H
200 us 1200
Gamma Ray (ECGR) HGNS-H
0 gAPI 150
External Radii Average (ERAV) USIT-E
5 in 4
External Radii Average (ERAV) USIT-E
4 in 5
7030 sc
7040 sc
7050 sc
7060 sc
7070 sc
7080 sc
7090 sc
7100 sc
7110 sc
7120 sc
7130 sc
7140 sc
7150 sc
7160 sc
7170 sc
ERAV
IRAV
IRMN
IRMX
ERAV
IRAV
IRMN
IRMX
ECGR
BI



Casing Collar Locator Ultrasonic (CCLU) USIT-E

-30 in 10

Gamma Ray (ECGR) HGNS-H

0 gAPI 150

ERAV_IRAV

IRAV_LHF1

LHF1_ERAV

Internal Radius Maximum Value (IRMX) USIT-E

5 in 4

Internal Radius Minimum Value (IRMN) USIT-E

5 in 4

Internal Radius Averaged Value (IRAV) USIT-E

5 in 4

External Radii Average (ERAV) USIT-E

5 in 4

ERAV_RHF1

IRAV_ERAV

RHF1_IRAV

Internal Radius Maximum Value (IRMX) USIT-E

4 in 5

Internal Radius Minimum Value (IRMN) USIT-E

4 in 5

Internal Radius Averaged Value (IRAV) USIT-E

4 in 5

External Radii Average (ERAV) 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)

Acoustic Impedance Minimum (AIMN) USIT-E

-1 Mrayl 9

Acoustic Impedance Average (AIAV) USIT-E

-1 Mrayl 9

Acoustic Impedance Maximum (AIMX) USIT-E

-1 Mrayl 9

Absent 0.300 3.581 5.054 6.527 8.000

Custom Normalization

USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E (Mrayl)

Bonded

Gas

Liquid

Micro-debonding

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 7inch) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 23-Sep-2016 18:16:20

Company:	Southern California Gas Company
Well:	Porter 24A
Field:	Aliso Canyon
County:	Los Angeles
State:	California

Schlumberger

Cement Bond Log
Variable Density Log
Gamma Ray - CCL