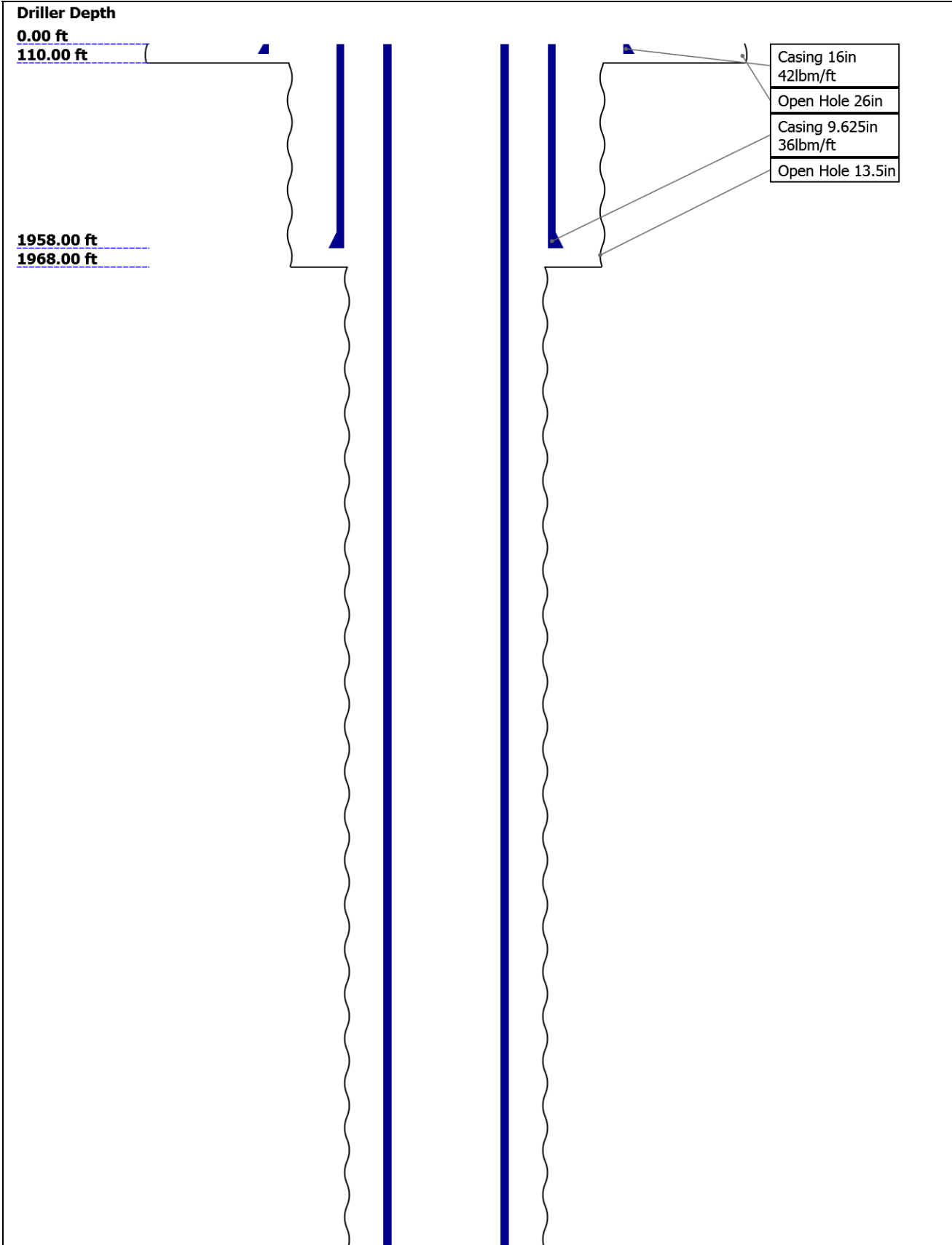


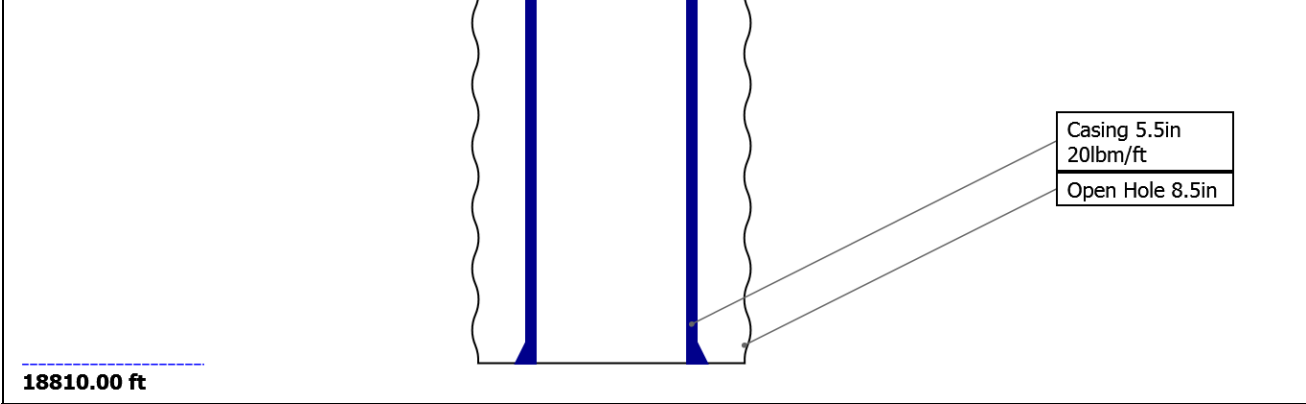
Schlumberger									
Company:		Noble Energy Inc							
Well:		Kona A19-685							
Field:		Wildcat							
County:		Weld							
UltraSonic Summary Print		County: Weld							
		Field: Wildcat							
		Location: NWSW Sec. 21, T6N, R64W							
		Well: Kona A19-685							
		Company: Noble Energy Inc							
		Location:		Permanent Datum:		Ground Level		Elev.:	
				Log Measured From:		Kelly Bushing		30.00 ft	
		Drilling Measured From:		Kelly Bushing				above Perm.Datum	
		API Serial No.		Section:		Township:		Range:	
		05-123-44525		21		6N		64W	
Logging Date		11-Jul-2017							
Run Number		ONE							
Depth Driller		18810.00 ft							
Schlumberger Depth		18810.00 ft							
Bottom Log Interval		6010.00 ft							
Top Log Interval		55.00 ft							
Casing Fluid Type		Water							
Salinity									
Density		10 lbm/gal							
Fluid Level		8.00 ft							
BIT/CASING/TUBING STRING									
Bit Size		8.50 in							
From		1968.00 ft							
To		18810.00 ft							
Casing/Tubing Size		5.5 in							
Weight		20 lbm/ft							
Grade		N/A							
From		0.00 ft							
To		18810.00 ft							
Max Recorded Temperatures		191 degF							
Logger on Bottom		Time		11-Jul-2017 11:52:00					
Unit Number		Location:		3046 Fort Morgan, CO					
Recorded By		Evan Meadows							
Witnessed By									

Disclaimer									
THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.									
Contents									
1. Header					13. XYZ ( USI Acoustic Impedance of Mud vs Depth 3.0 in )				
2. Disclaimer					14. Tail				
3. Contents									
4. Well Sketch									
5. Borehole Size/Casing/Tubing Record									
6. Operational Run Summary									
7. Remarks and Equipment Summary									
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9. USI Fluid Properties Measurement_1									
10. ONE 2500 PSI Main Pass									
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- 11.1 Integration Summary
- 11.2 Software Version
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- 11.4 Log ( DJ Basin Ultrasonic Cement Summary Report )
- 11.5 Parameter Listing
- 12. XYZ ( USI Fluid Acoustic Slowness vs Depth 3.0 in )

Well Sketch





Borehole Size/Casing/Tubing Record

Bit						
Bit Size ( in )	26	13.5	8.5			
Top Driller ( ft )	0	110	1968			
Top Logger ( ft ) ( ft )	0	110	1968			
Bottom Driller ( ft )	110	1968	18810			
Bottom Logger ( ft )	110	1968	18810			
Casing						
Size ( in )	16	9.625	5.5			
Weight ( lbm/ft )	42	36	20			
Inner Diameter ( in )	15.512	8.921	4.778			
Grade	N/A	N/A	N/A			
Top Driller ( ft )	0	0	0			
Top Logger ( ft )	0	0	0			
Bottom Driller ( ft )	80	1958	18810			
Bottom Logger ( ft )	80	1958	18810			

Operational Run Summary

Parameter ( unit )	ONE					
Date Log Started	11-Jul-2017					
Time Log Started	11:33:24					
Date Log Finished	11-Jul-2017					
Time Log Finished	12:32:30					
Top Log Interval ( ft )	55.00					
Bottom Log Interval ( ft )	6010.00					
Total Depth ( ft )						
Max Hole Deviation ( deg )	0.00					
Azimuth of Max Deviation ( deg )	0.00					
Bit Size ( in )	8.500					
Logging Unit Number	3046					
Logging Unit Location	Fort Morgan, CO					
Recorded By	Evan Meadows					



Calibrator Serial Number	57		
Calibration Cable Type	7-39 PLXS		
Wheel Correction 1	-4		
Wheel Correction 2	-1		

<b>Tension Device</b>			
Type	CMTD-B/A		
Serial Number	1398		
Calibration Date	05-Jul-2017		
Calibrator Serial Number	207746A		
Number of Calibration Points	10		
Calibration Root Mean Square Error	16		
Calibration Peak Error	33		

<b>Logging Cable</b>			
Type	7-39P-LXS		
Serial Number	F713178		
Length	18000.00 ft		
Conveyance Type	Wireline		
Rig Type	Crane		

<b>ONE:Depth Control Parameters</b>		<b>Depth Control Remarks</b>	
Log Sequence	First Log In the Well	1. ALL SCHLUMBERGER DEPTH CONTROL PROCEDURES WERE FOLLOWED DURING LOGGING OPERATIONS 2. IDW USED AS PRIMARY DEPTH CONTROL MEASURE 3. Z CHART USED AS SECONDARY DEPTH CONTROL MEASURE 4. STRETCH CORRECTION: 7'	
Rig Up Length At Surface			
Rig Up Length At Bottom			
Rig Up Length Correction			
Stretch Correction	7.00 ft		
Tool Zero Check At Surface			

## USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 1	Main[3]:Up	6018.39	55.32

**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 : 17.76m(58.28ft) to 22.08m(72.44ft)**  
**MUD\_N\_FRP = 1.01**  
**DFD = 1.20g/cm3(10.00lbm/gal)**  
**CZMD median computed in free pipe normalization interval = 1.78 MRayl**

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

## ONE

## 2500 PSI Main Pass

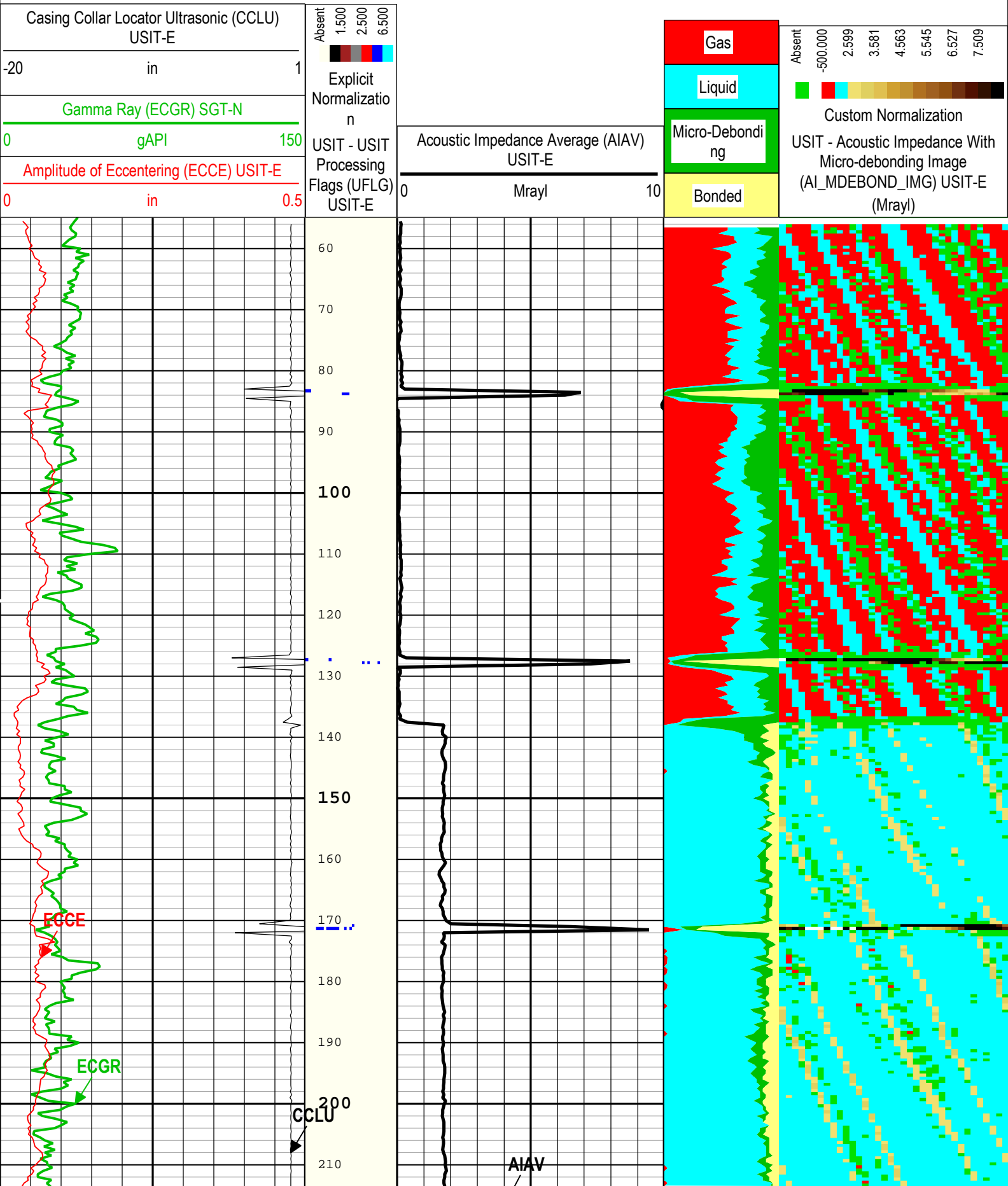
<b>Software Version</b>									
<b>Acquisition System</b>						<b>Version</b>			
Maxwell 2017 SP2						7.2.87778.3100			

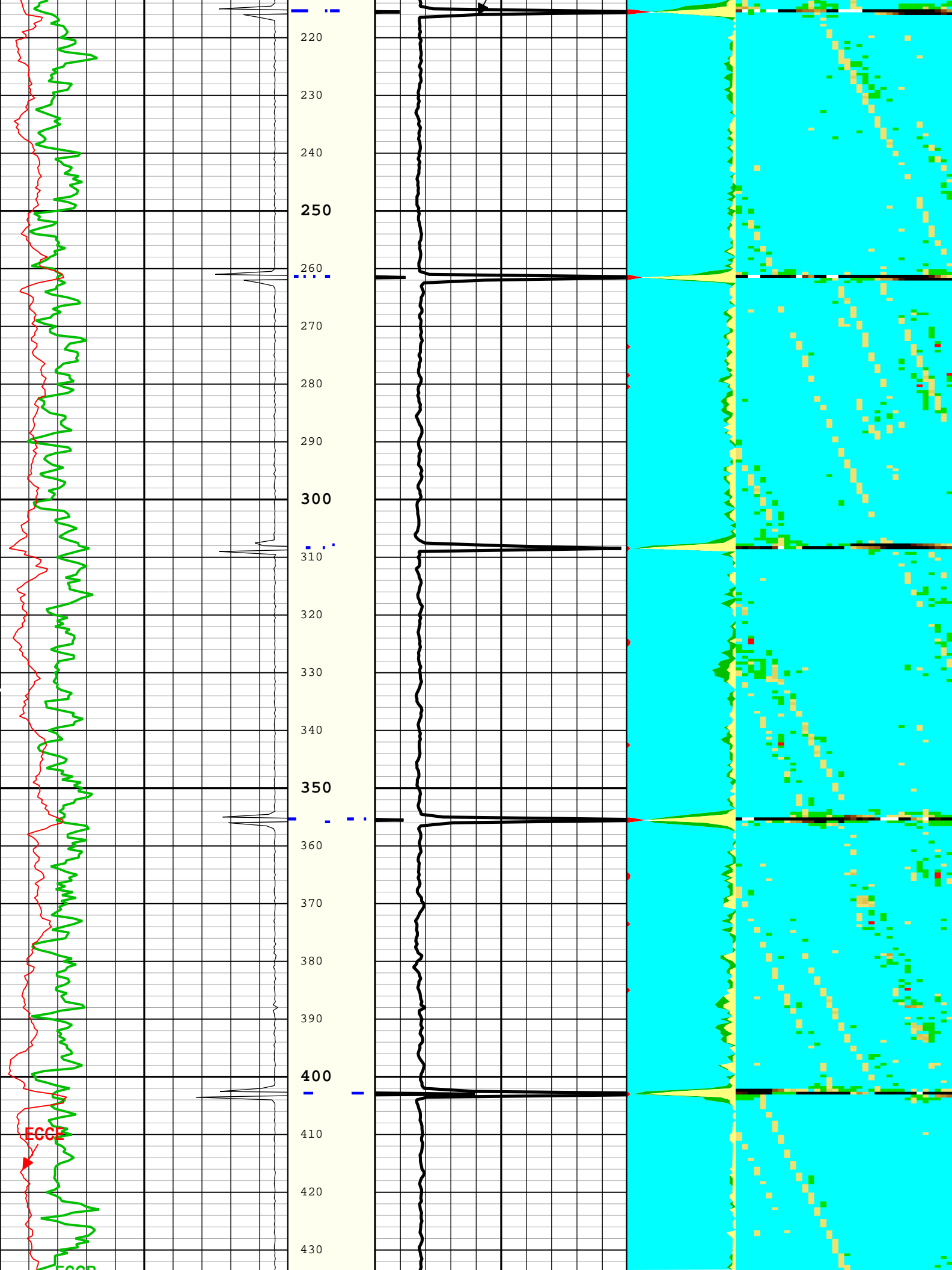
## Pass Summary

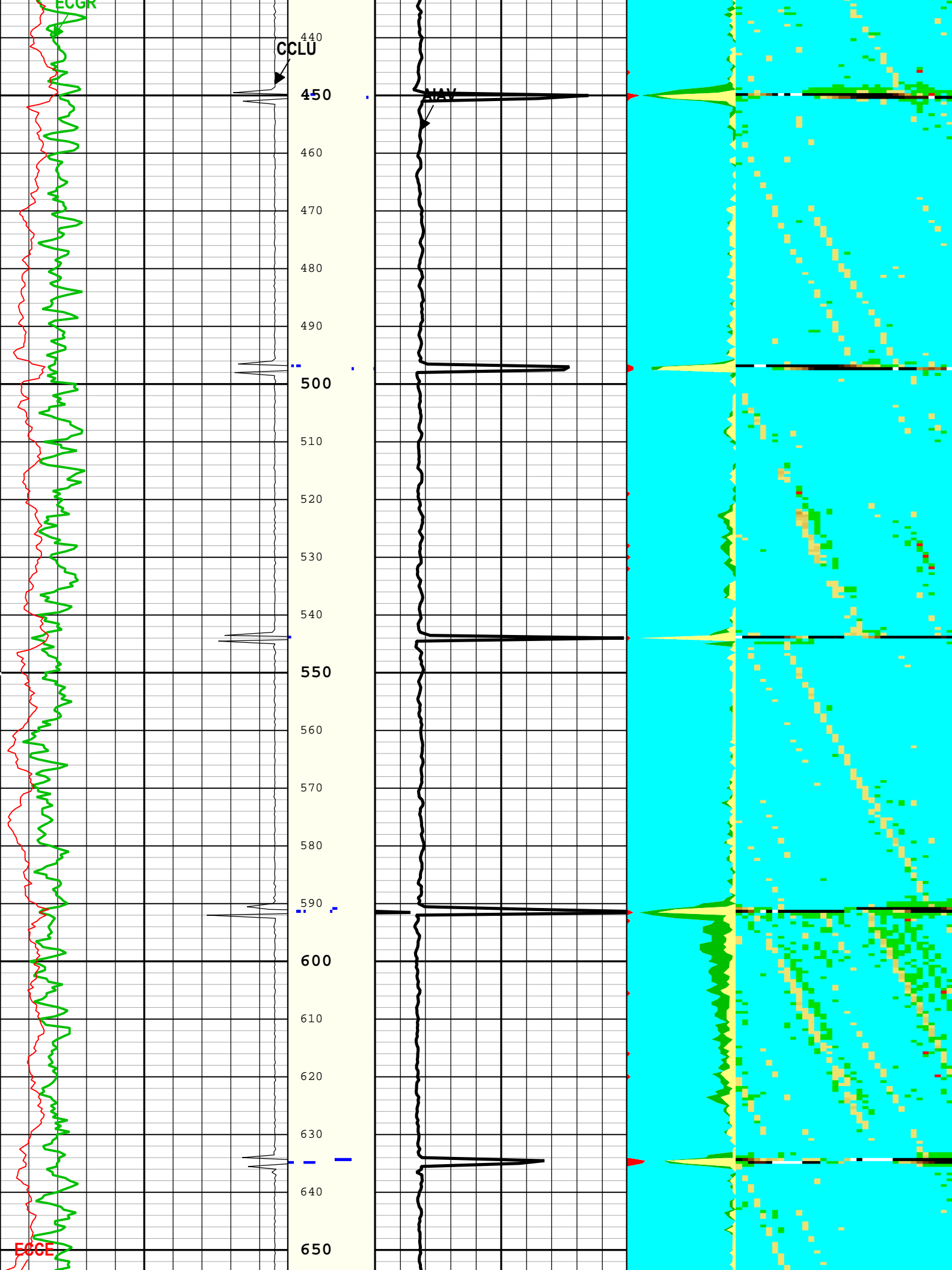
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Main[3]:Up	Up	55.32 ft	6018.39 ft	11-Jul-2017 11:52:18 AM	11-Jul-2017 12:32:03 PM	ON	7.03 ft	Yes

Description:    Format: Log ( DJ Basin Ultrasonic Cement Summary Report )    Index Scale: 5 in per 100 ft    Index Unit: ft    Index Type: Measured Depth  
Creation Date: 11-Jul-2017 13:02:21

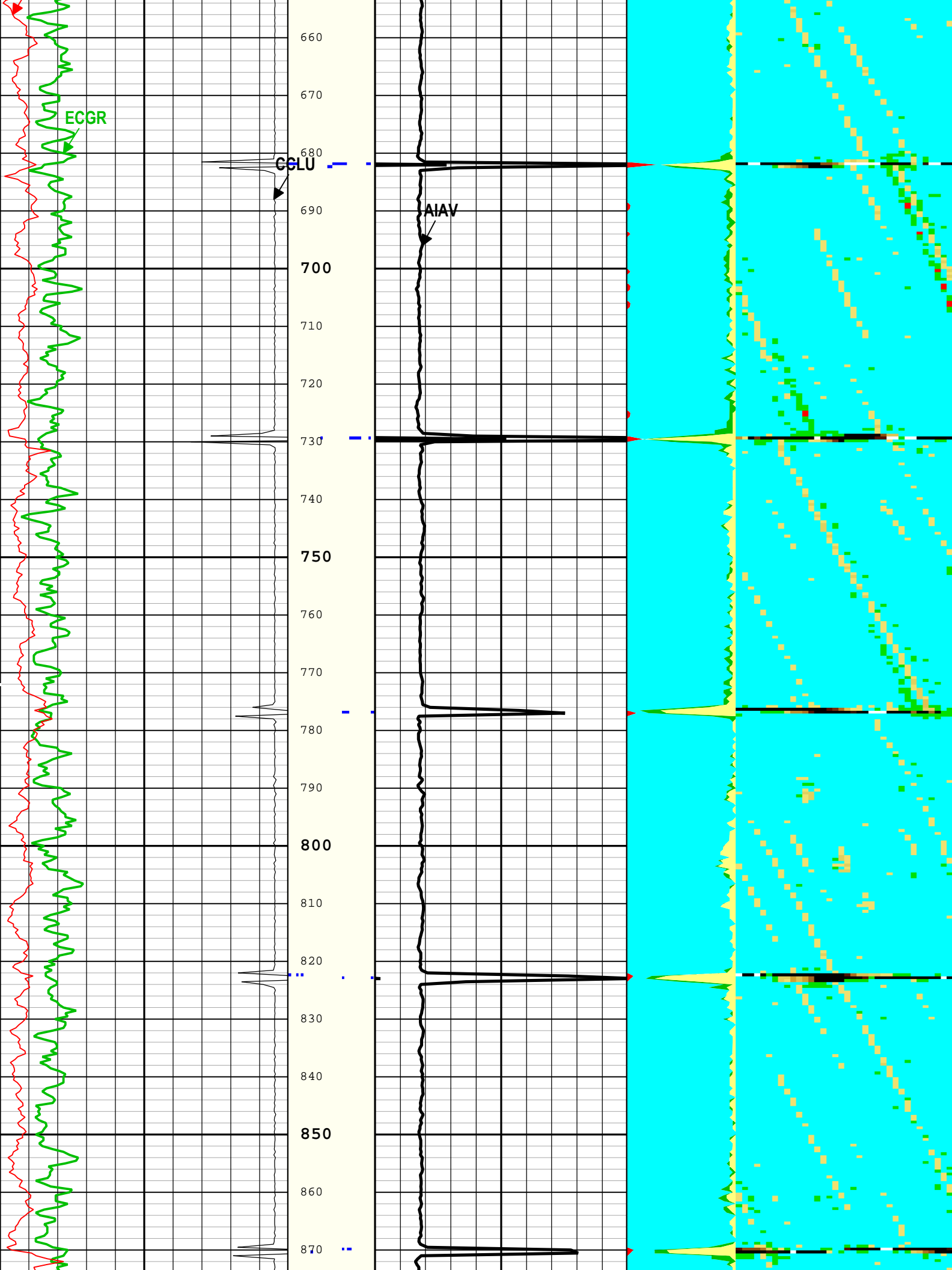
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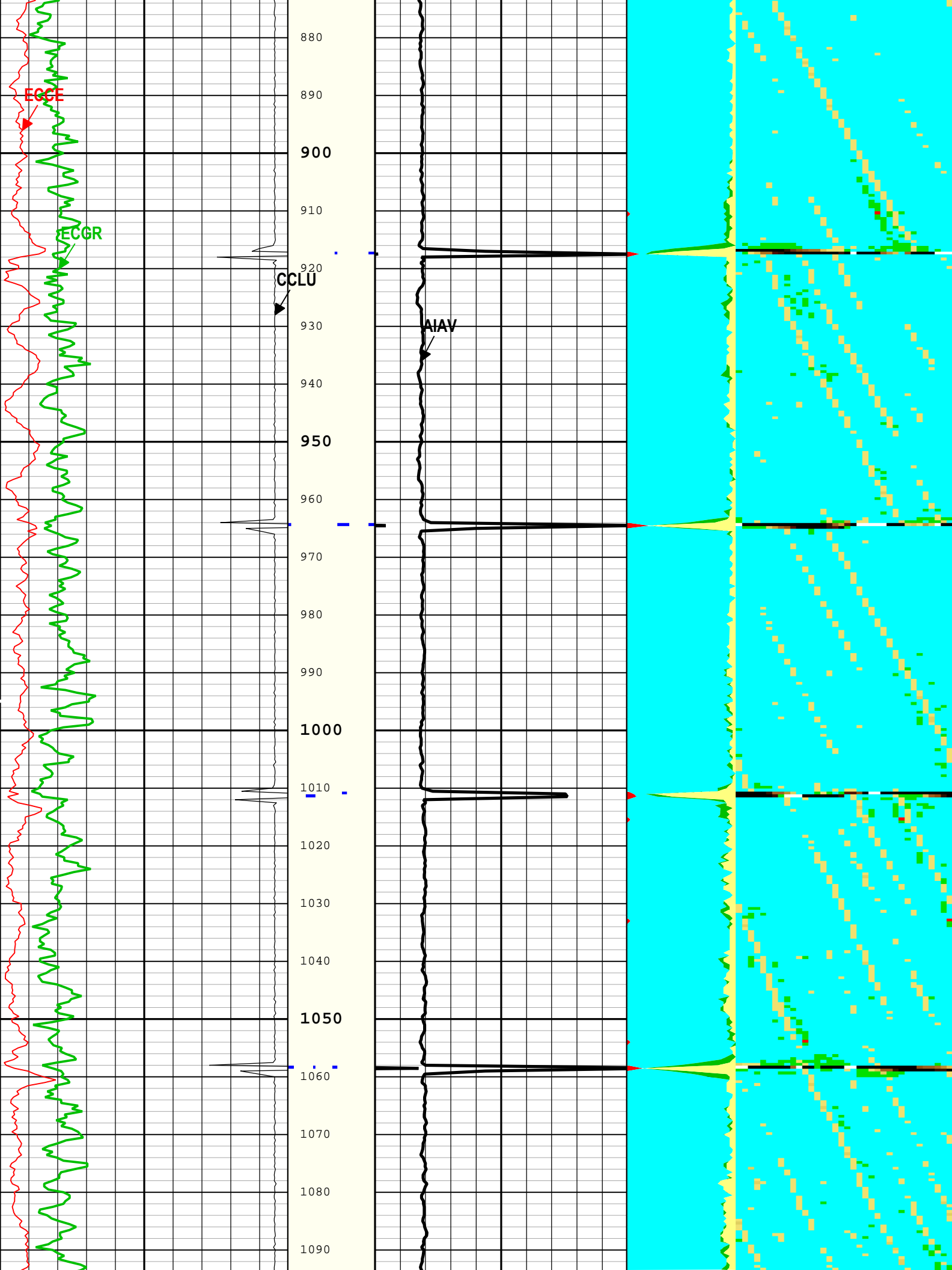


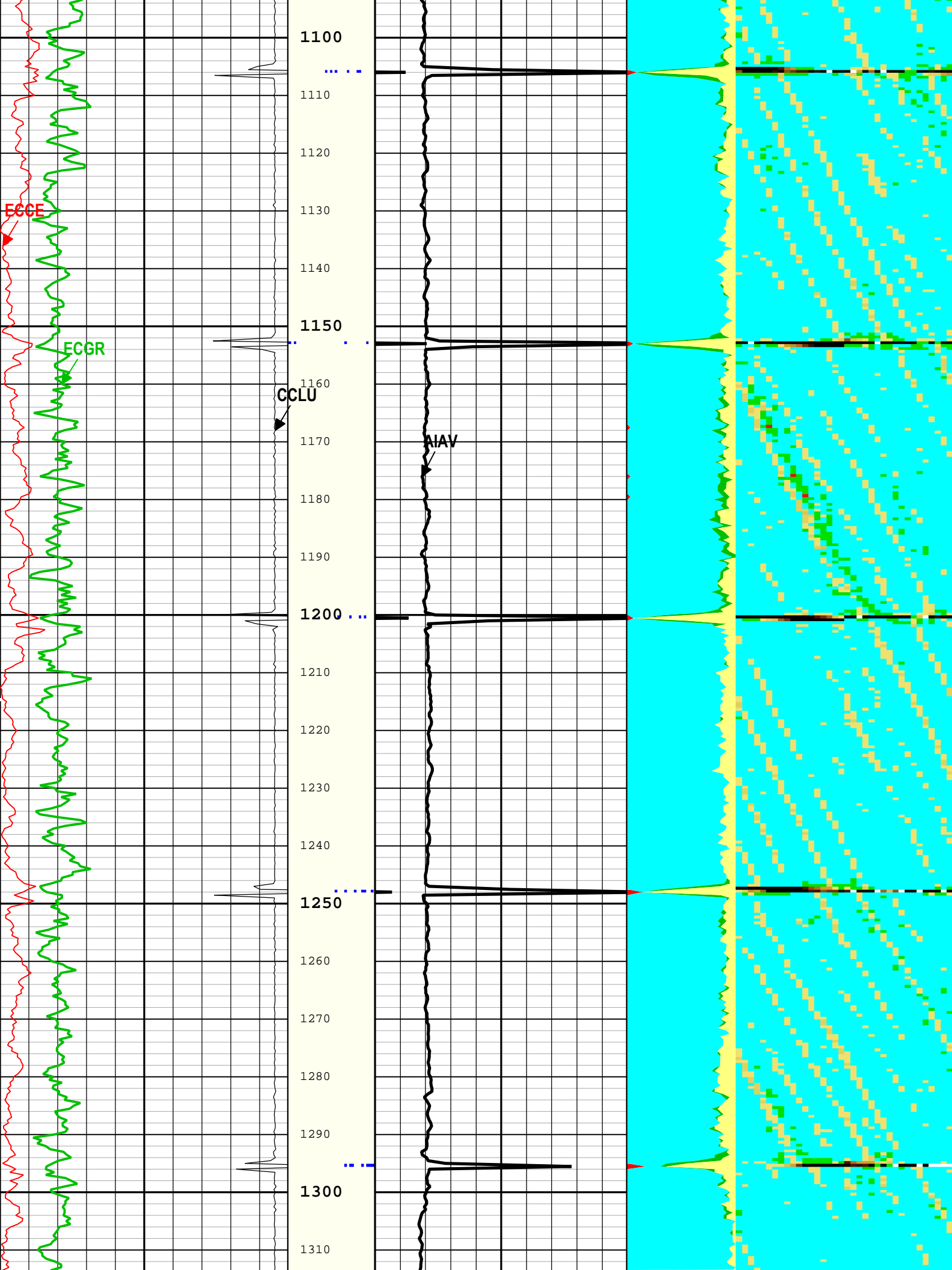


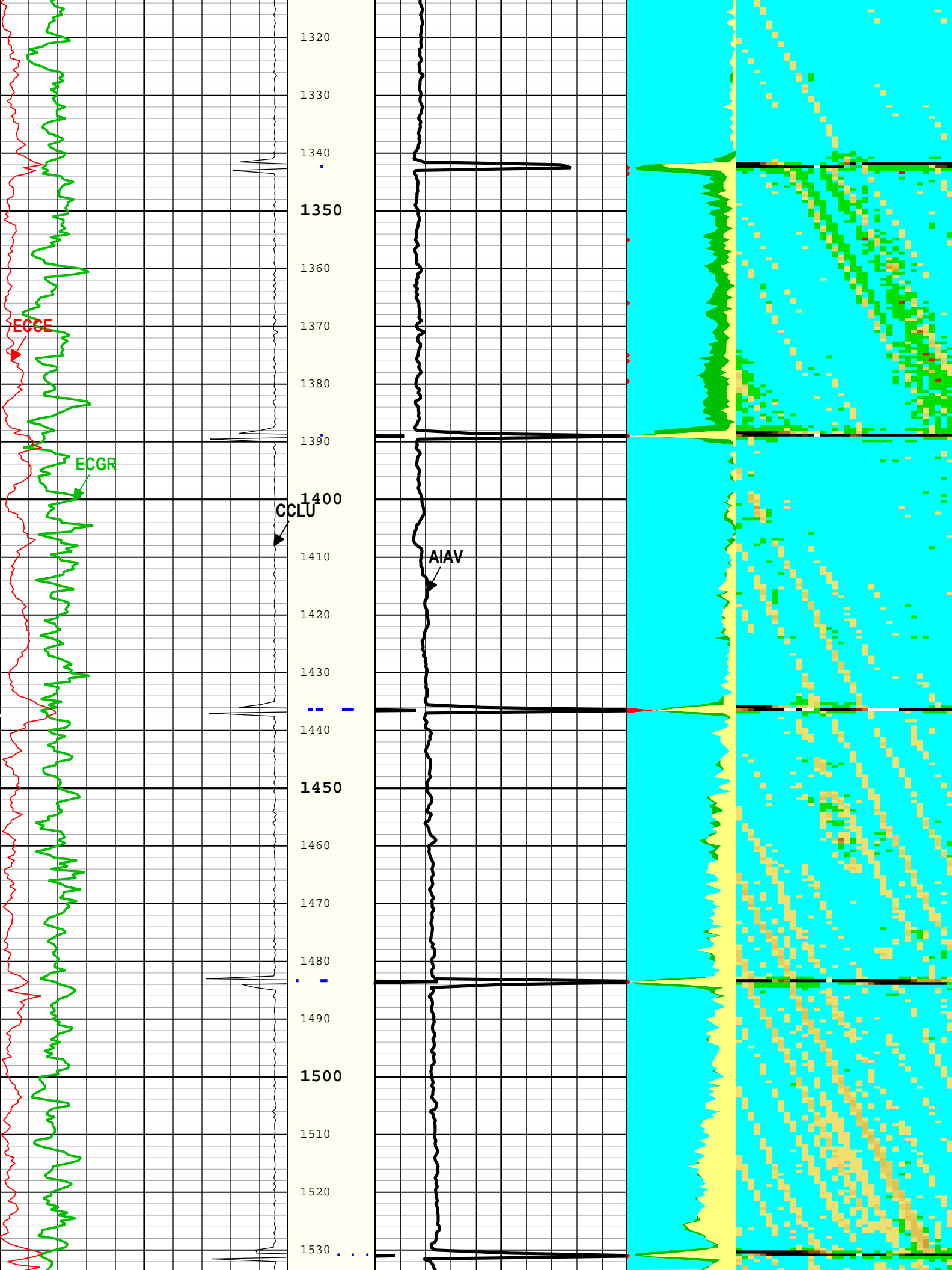


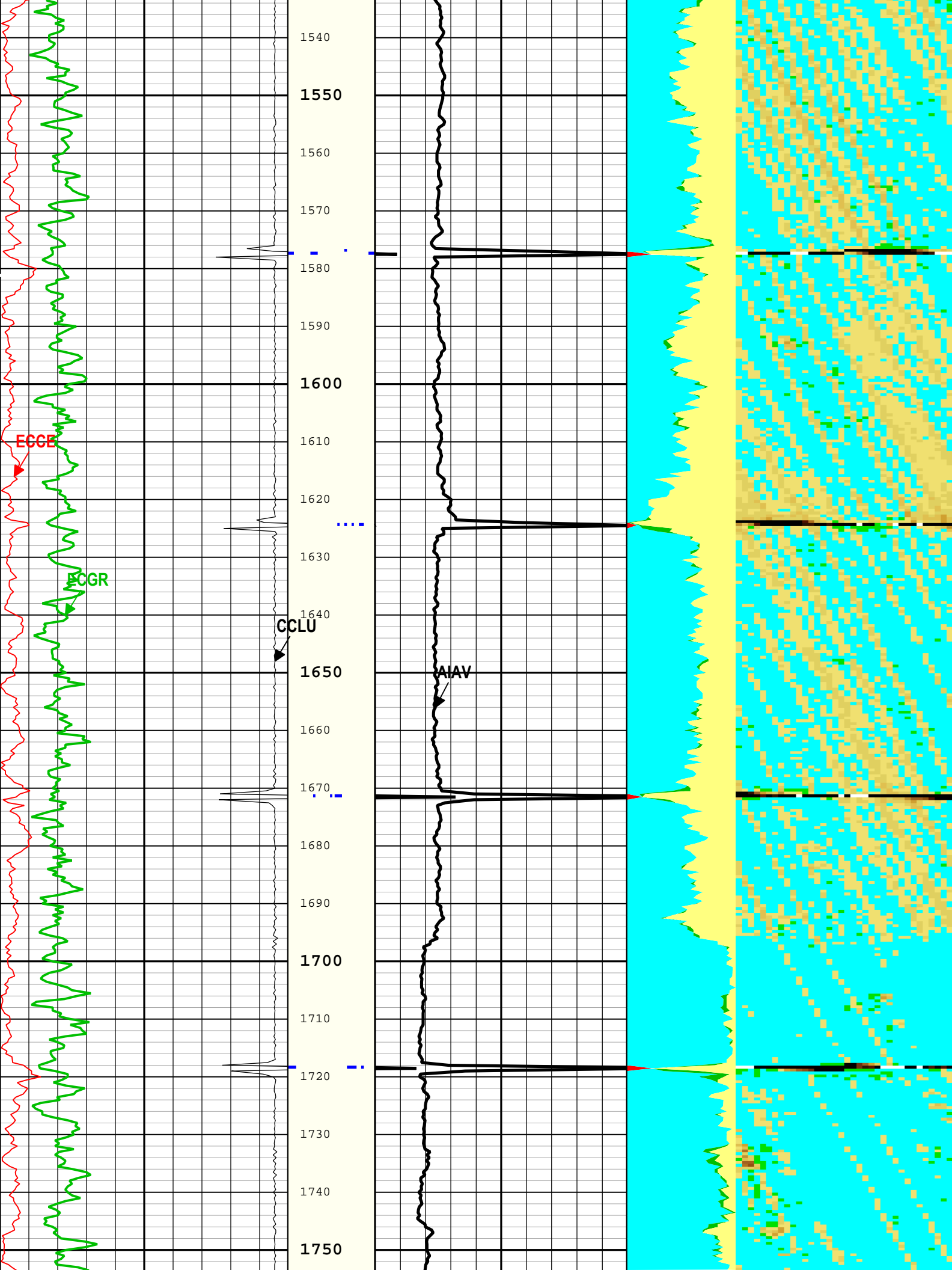


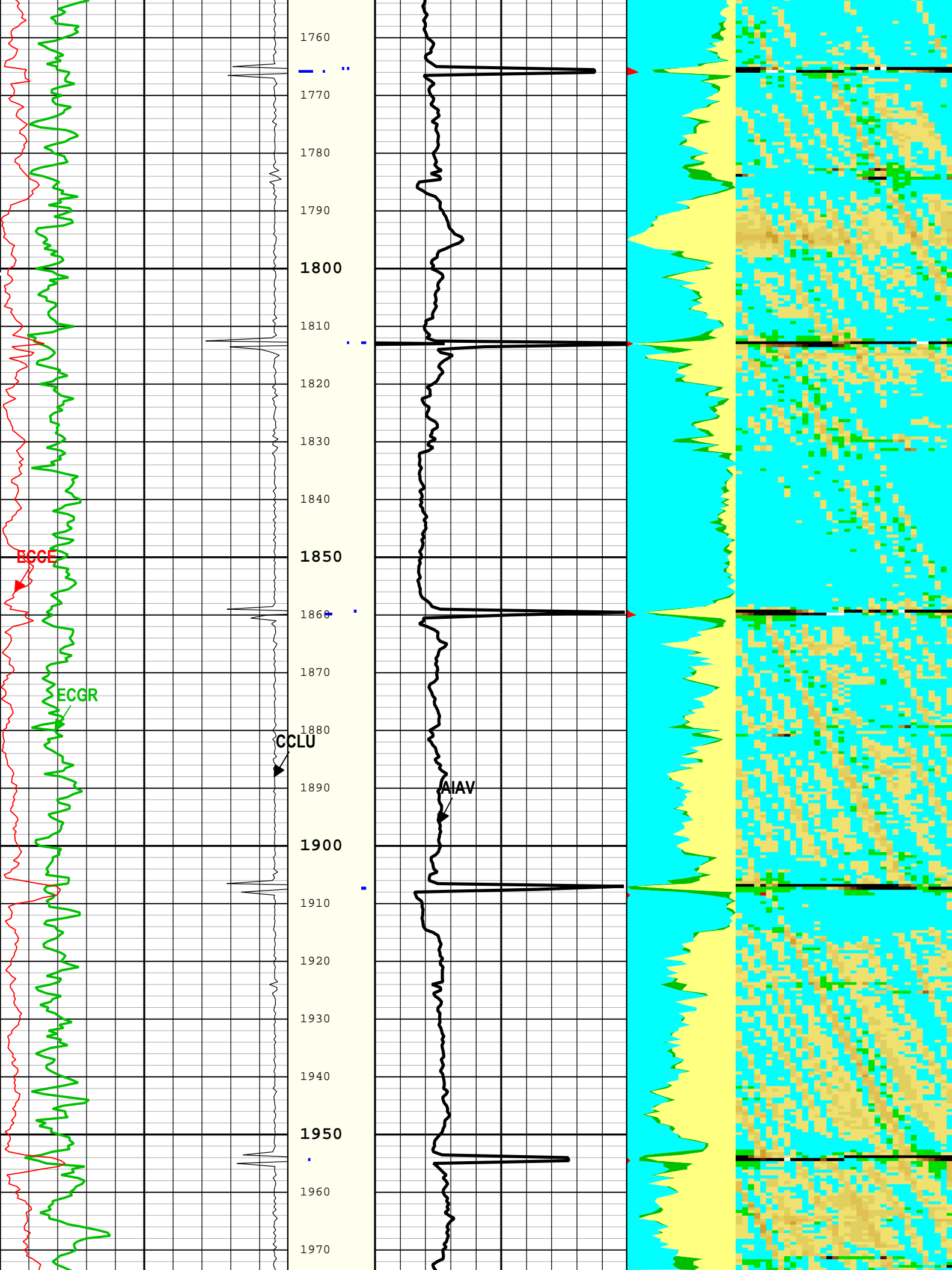


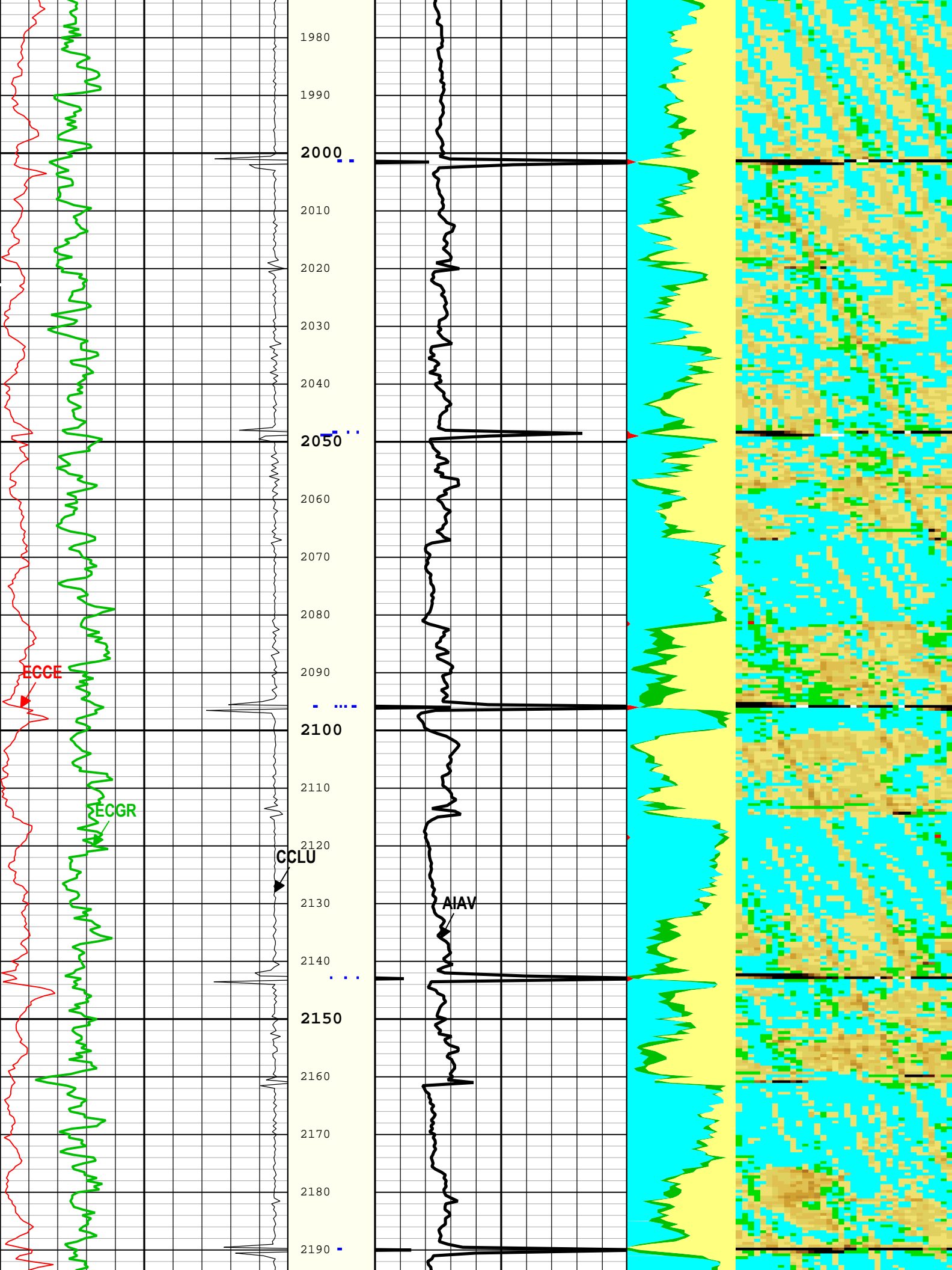


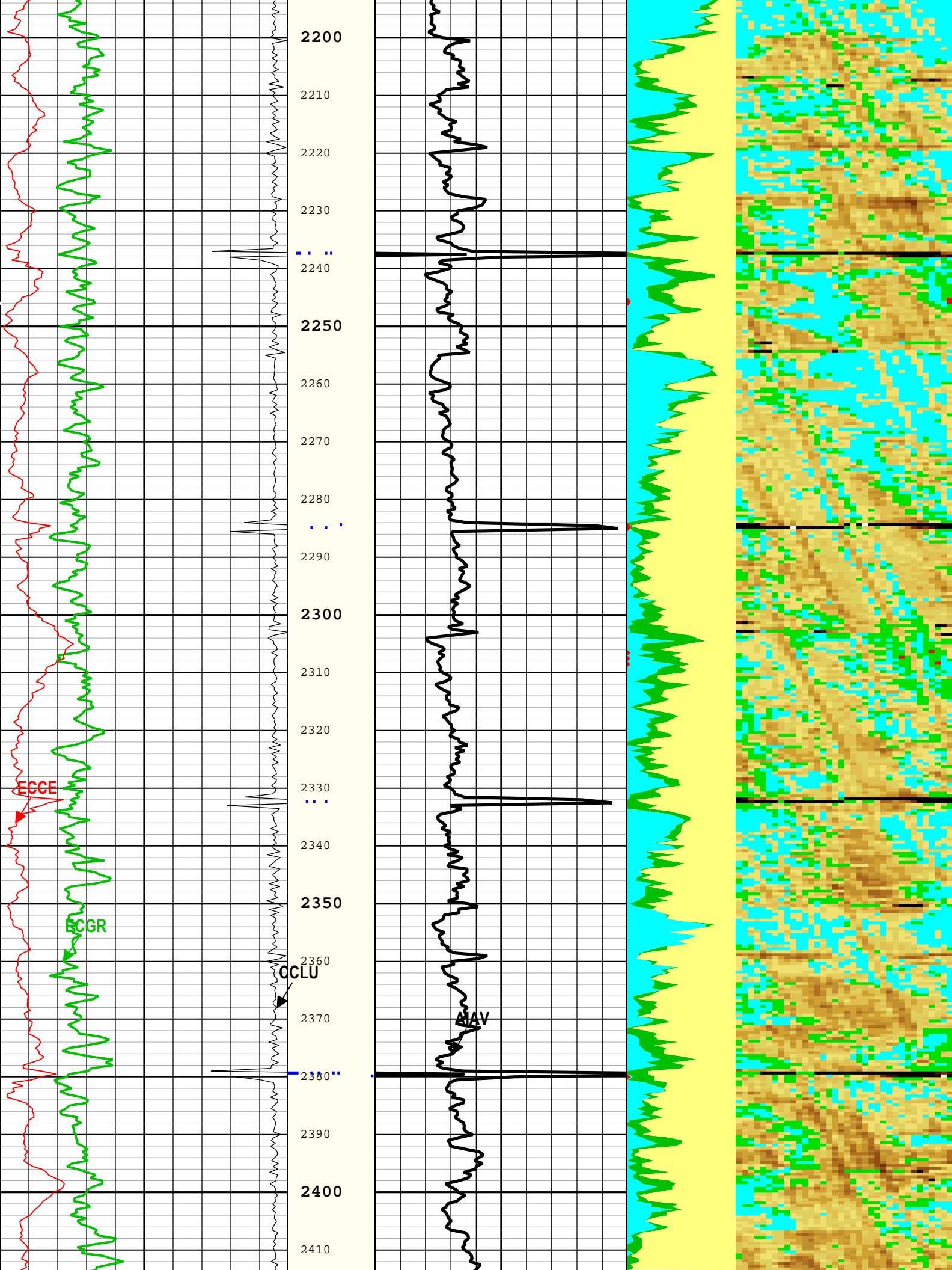




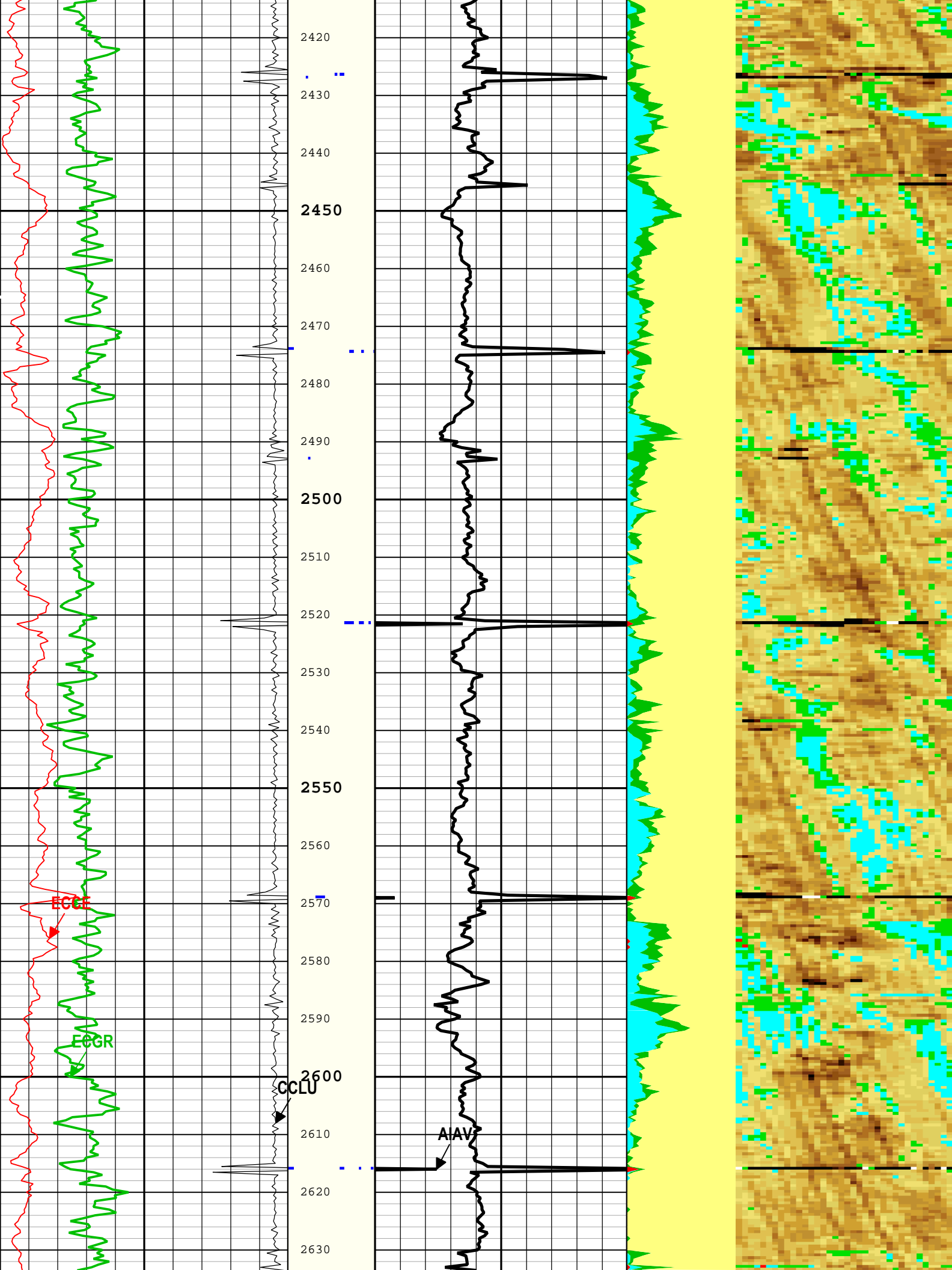


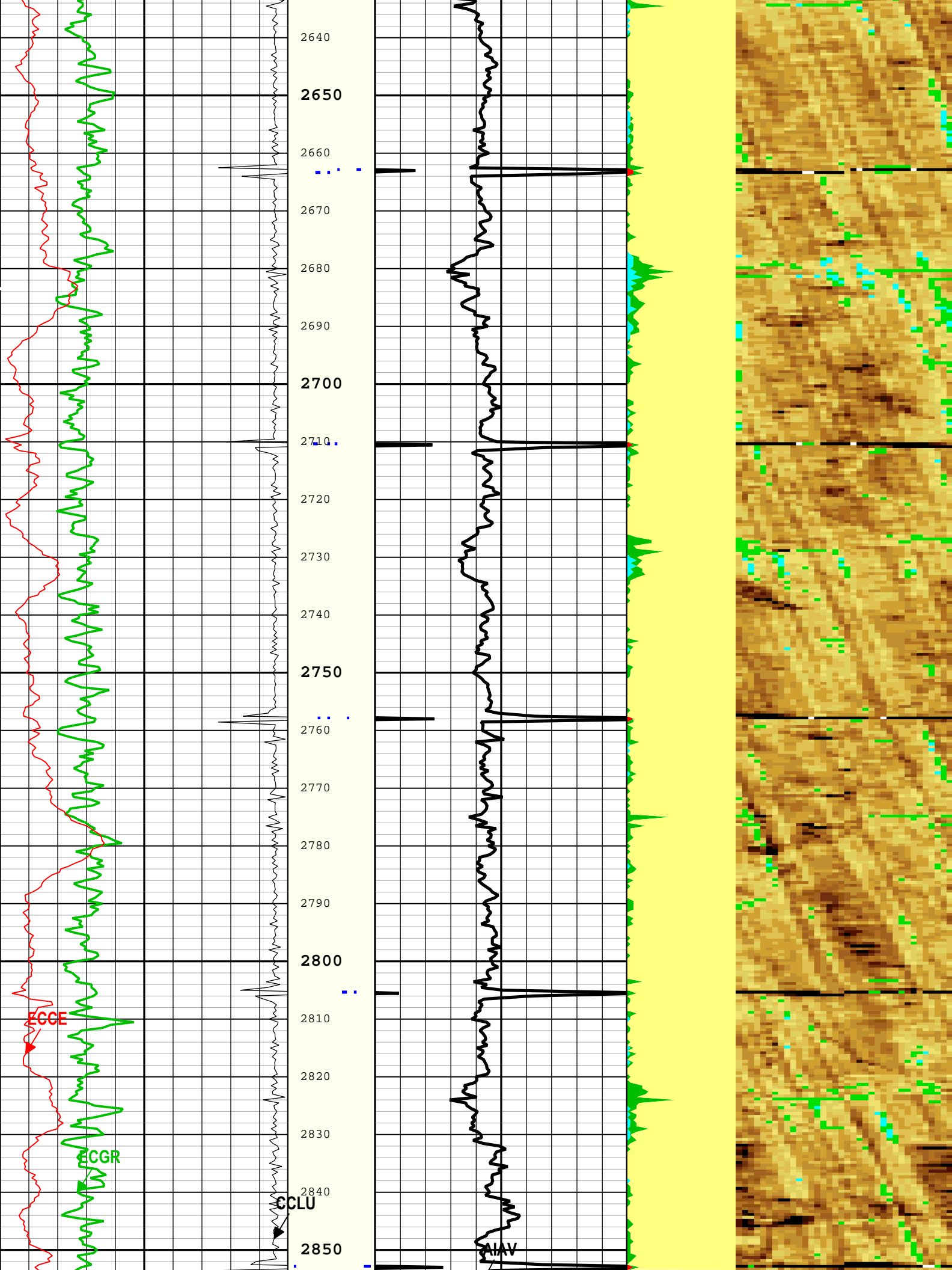


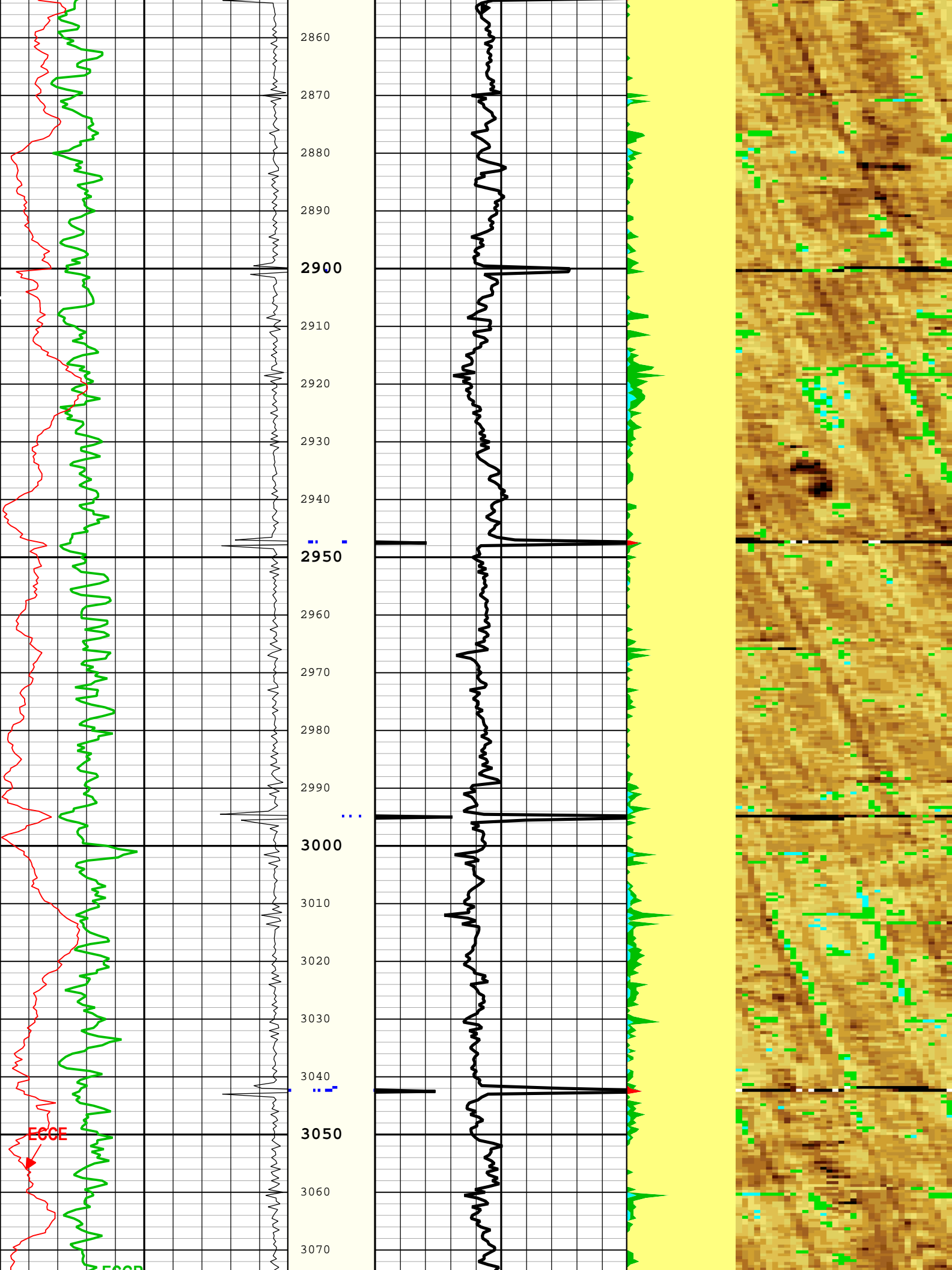


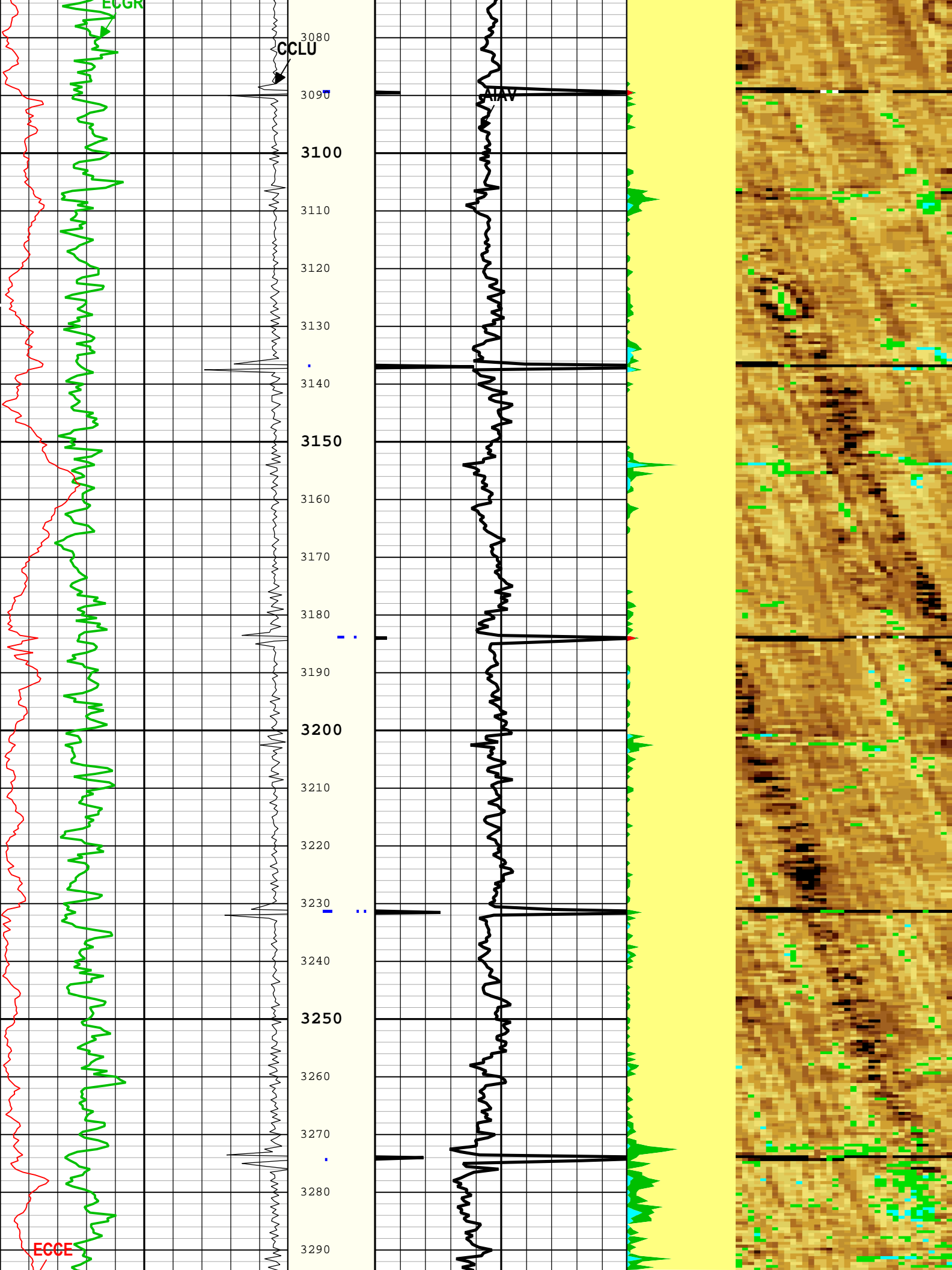


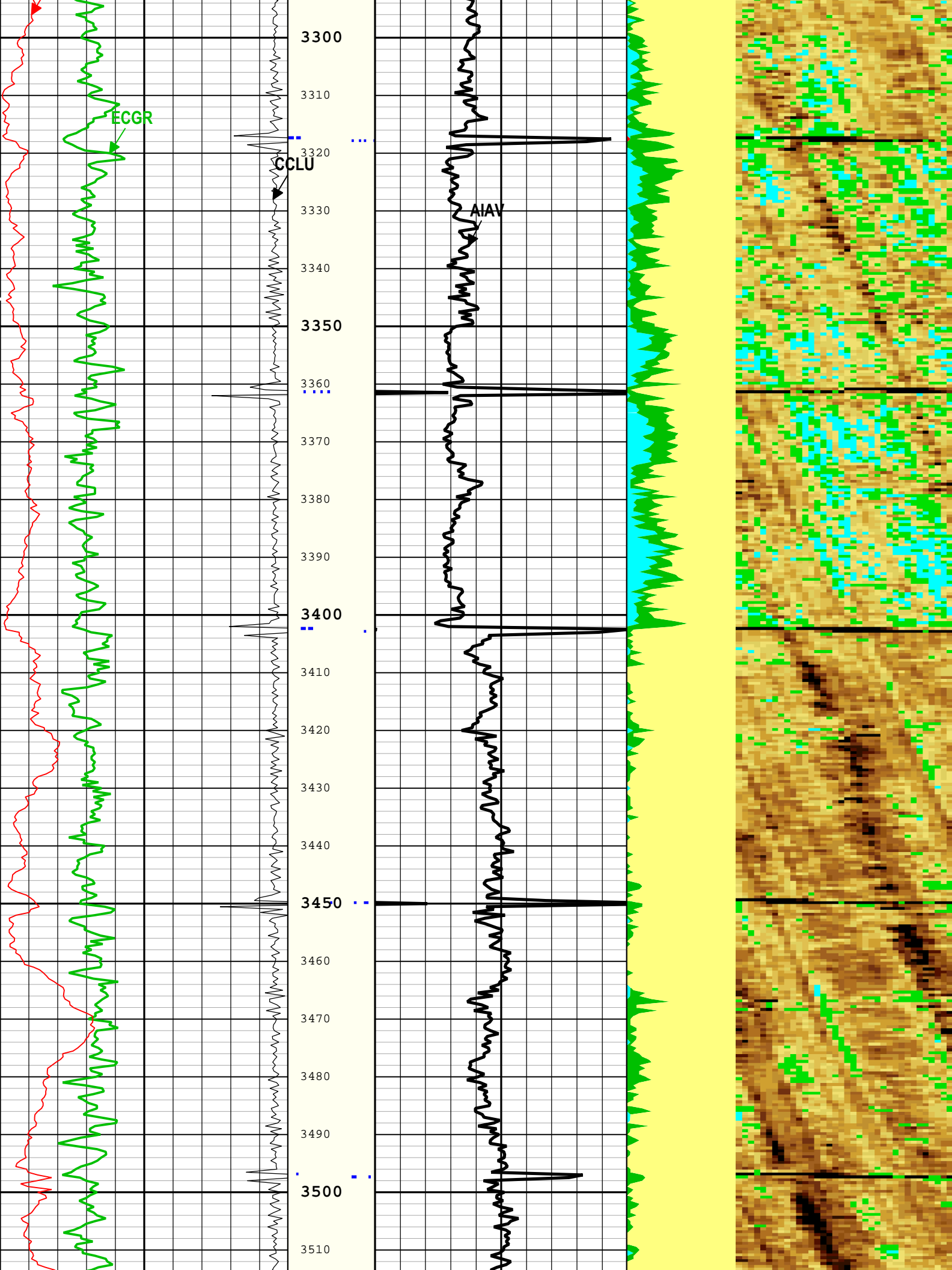


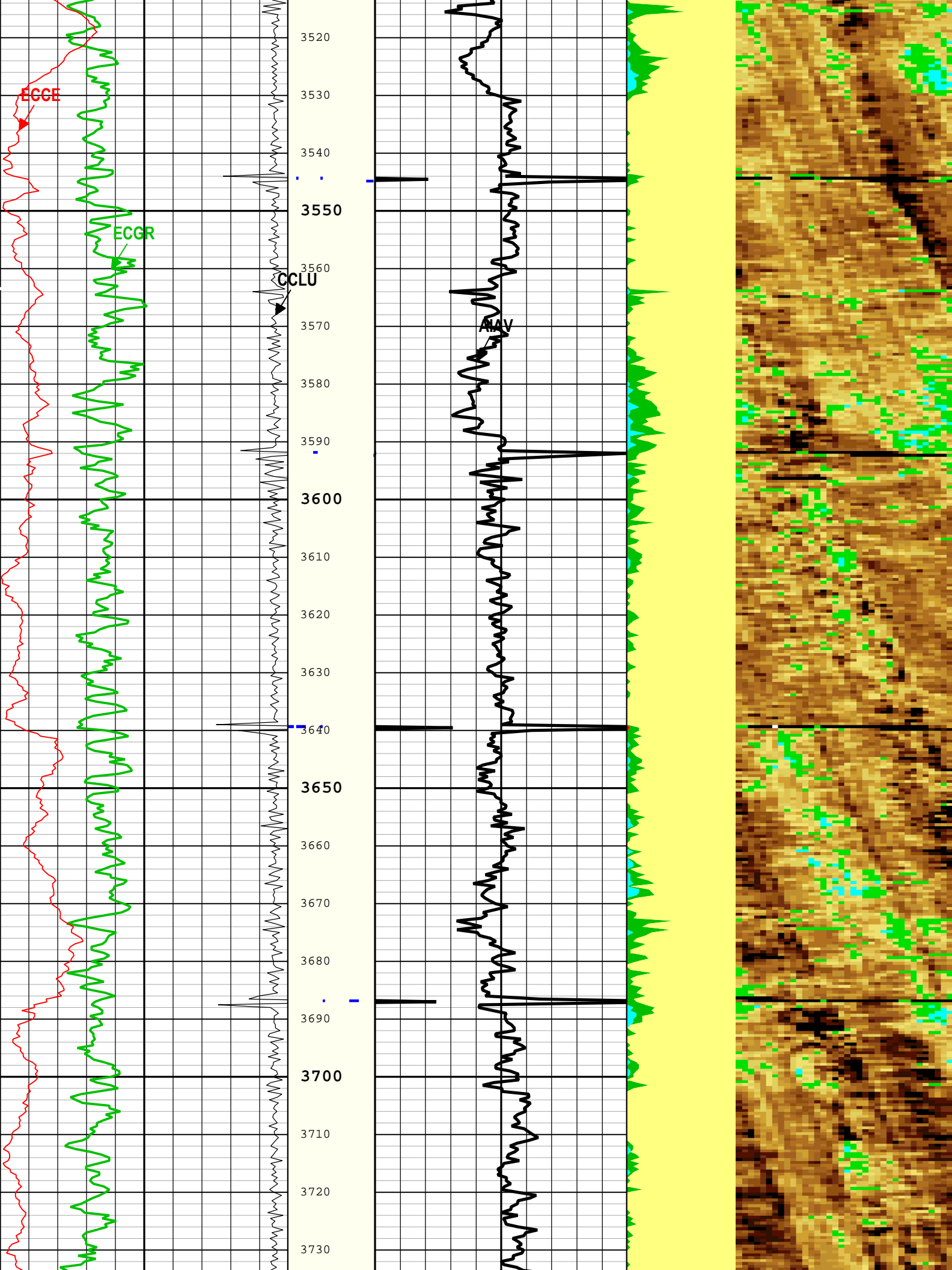


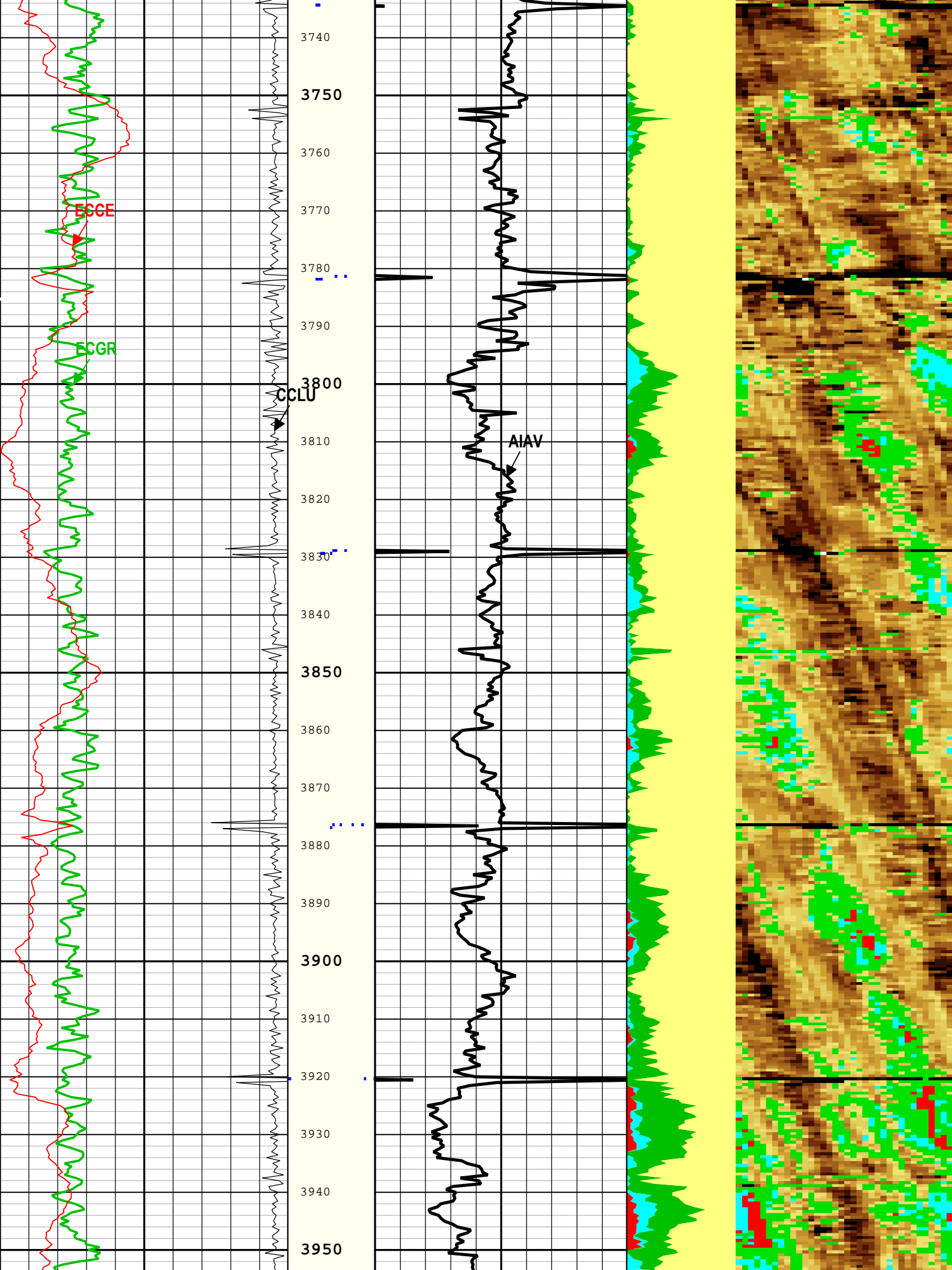


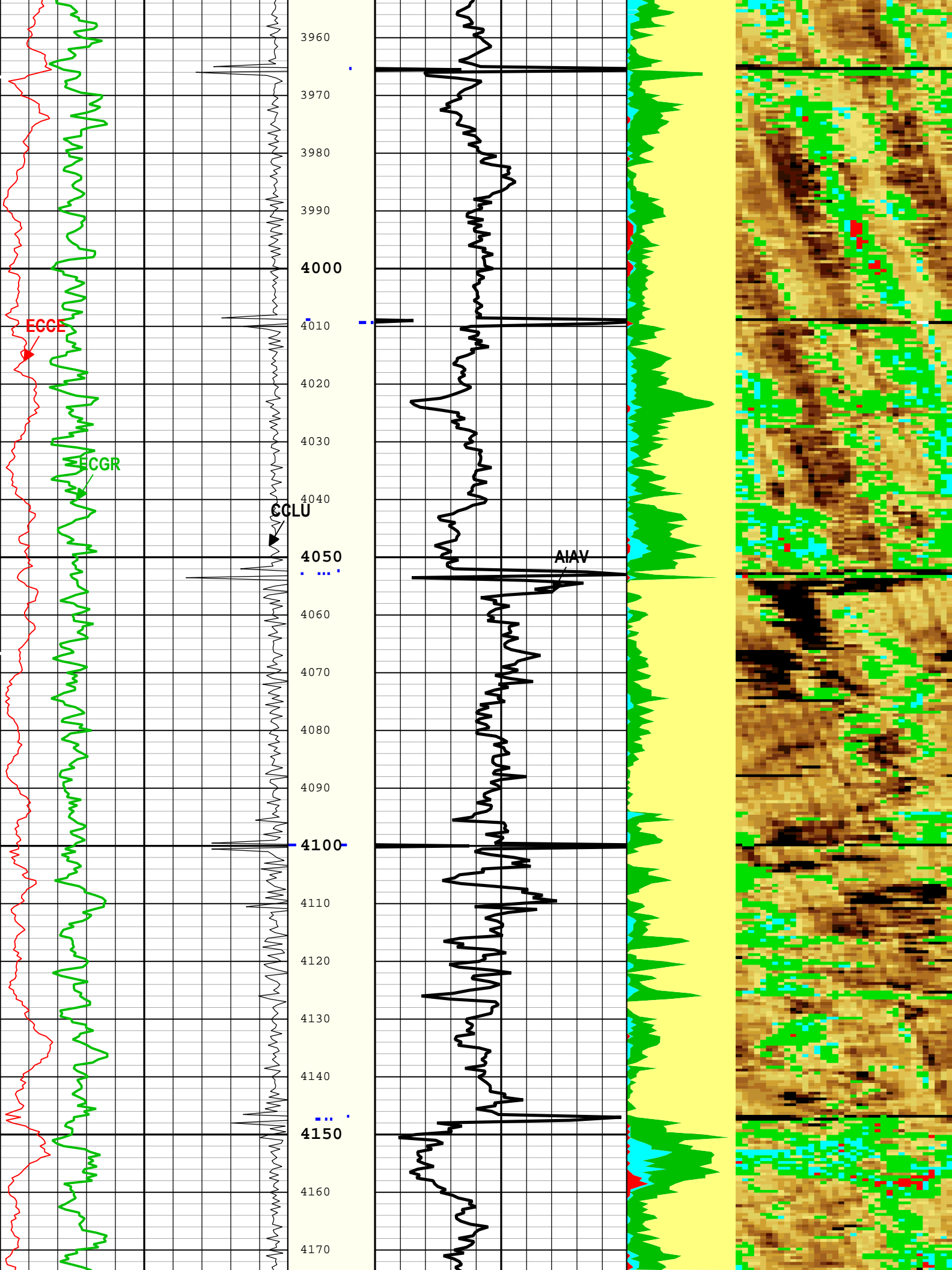




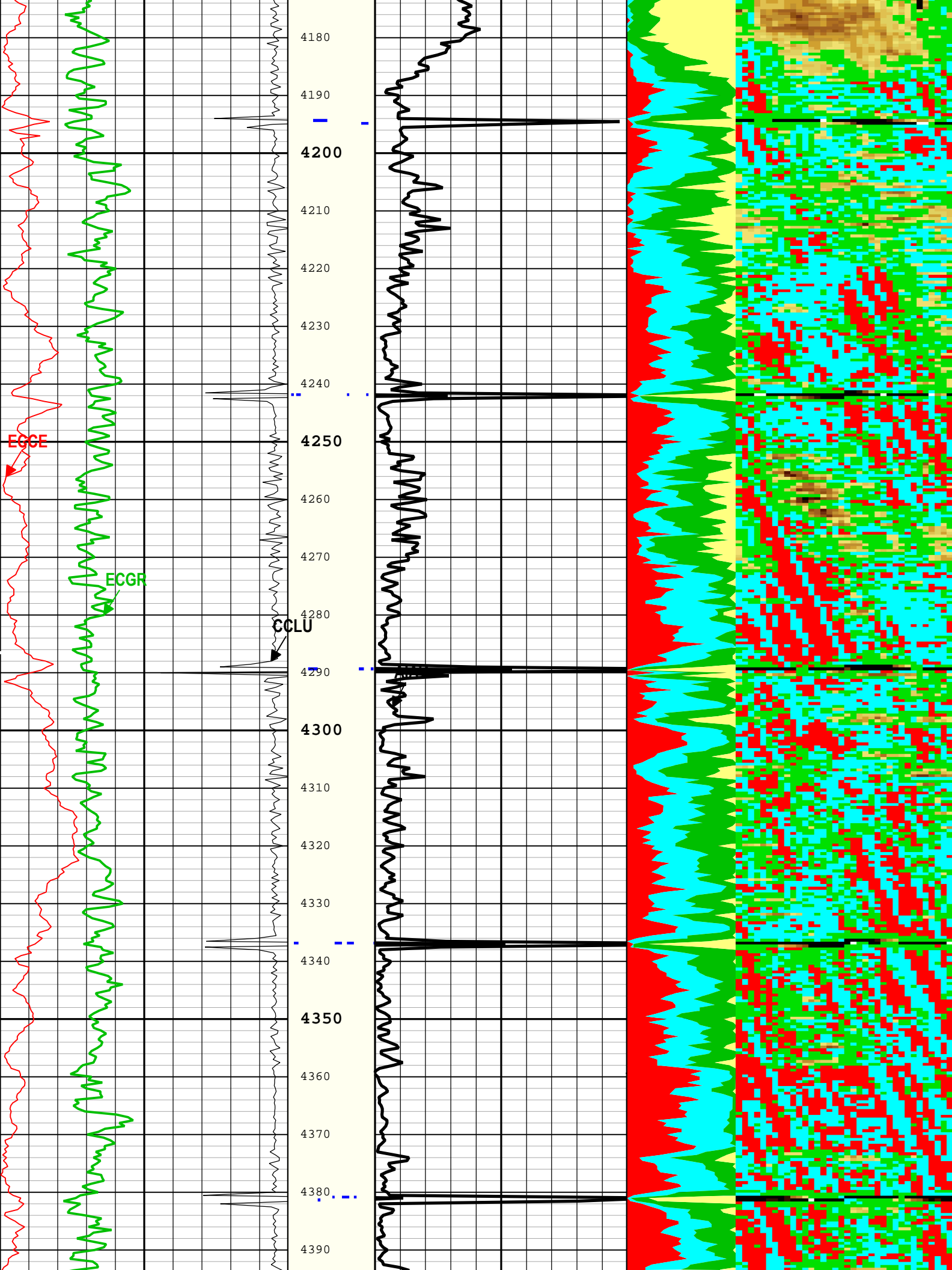


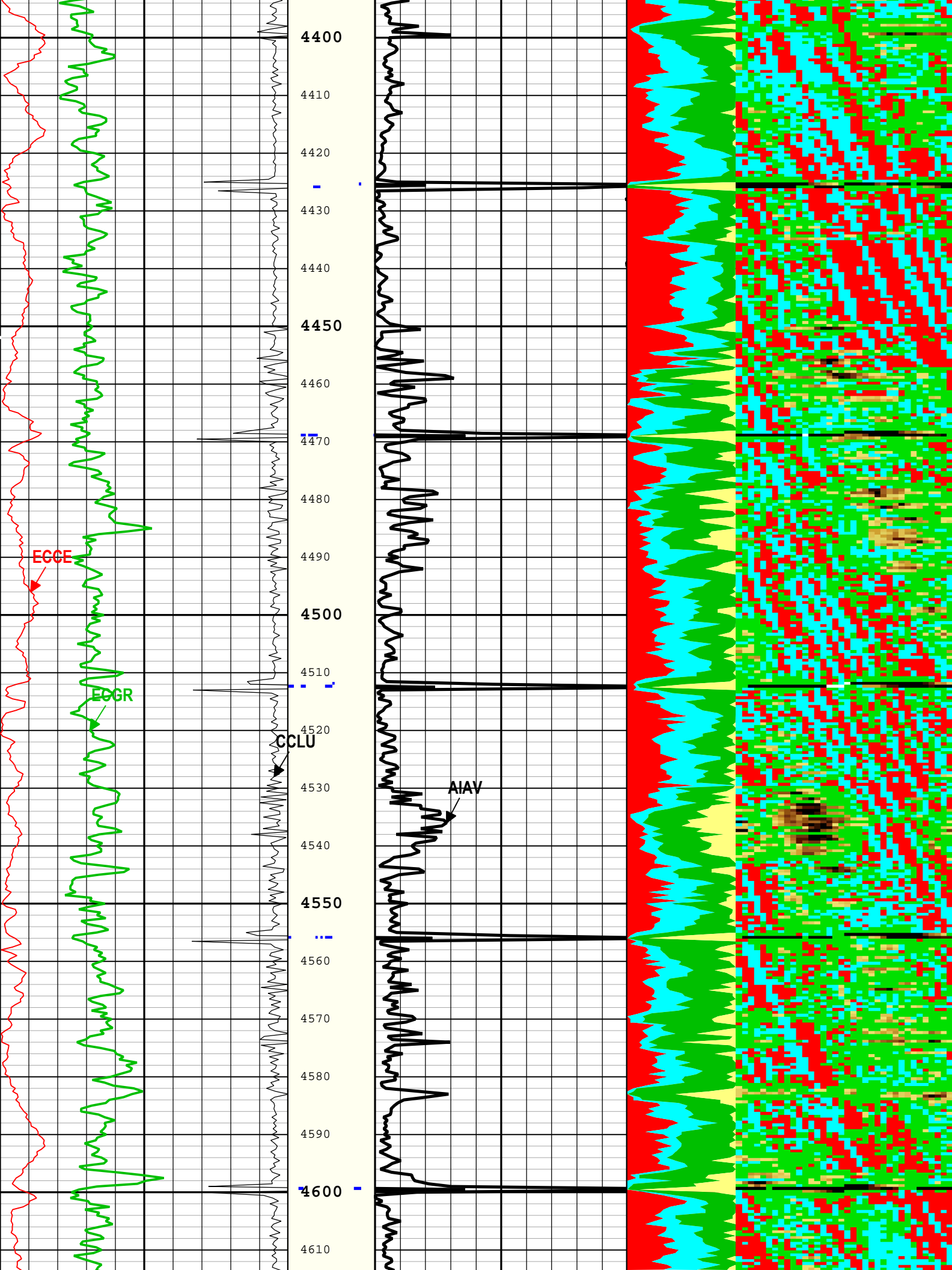


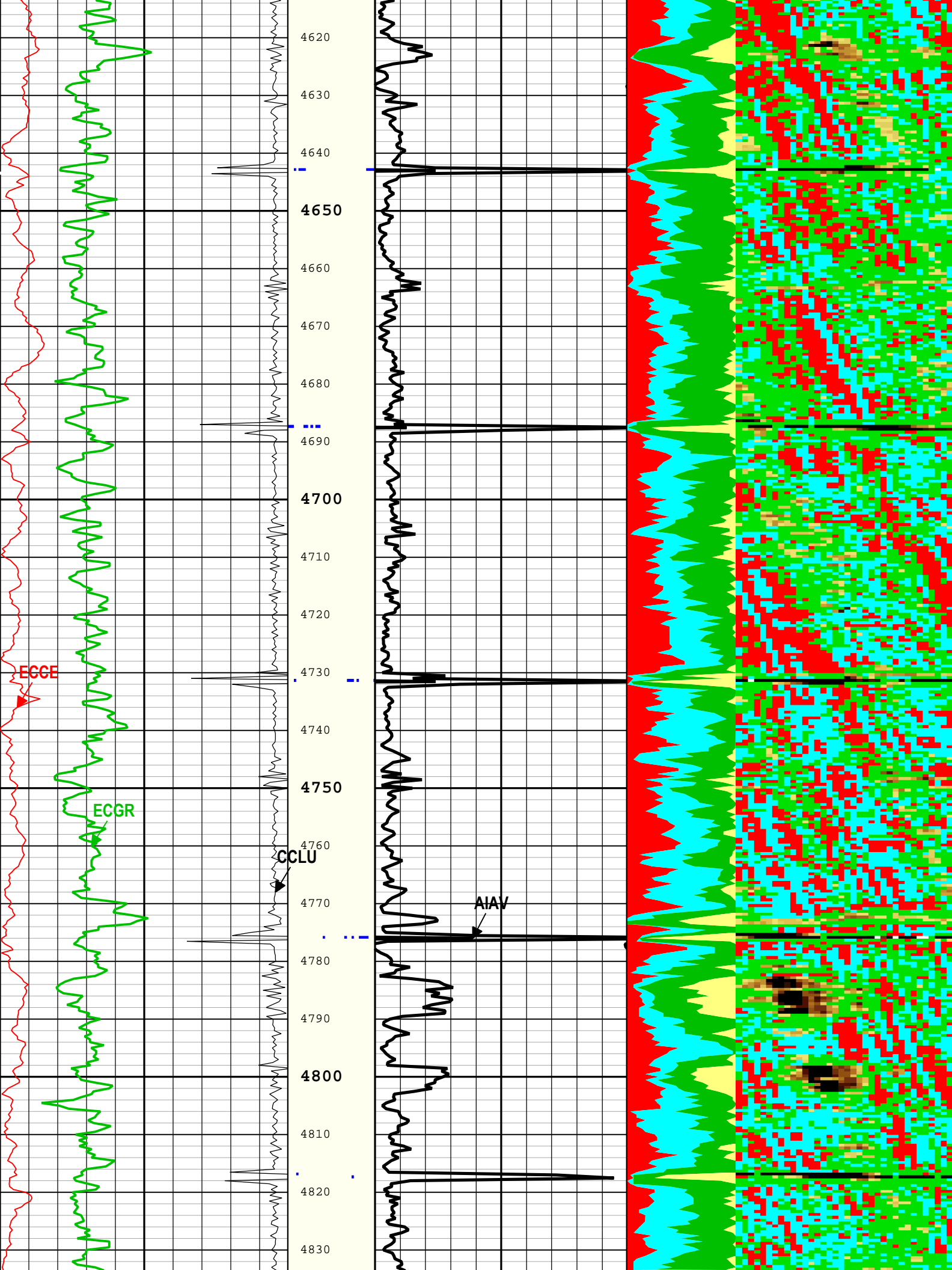


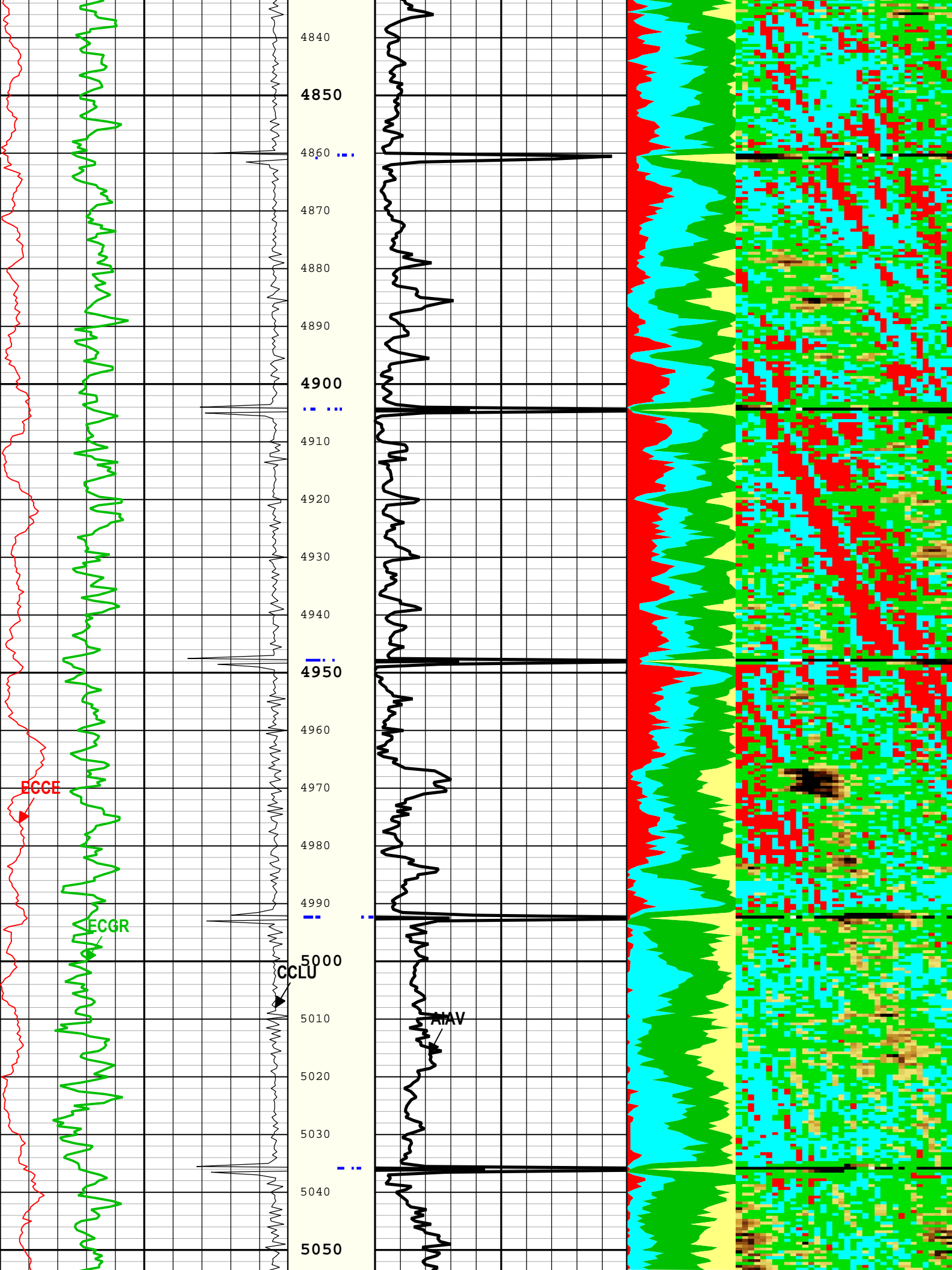


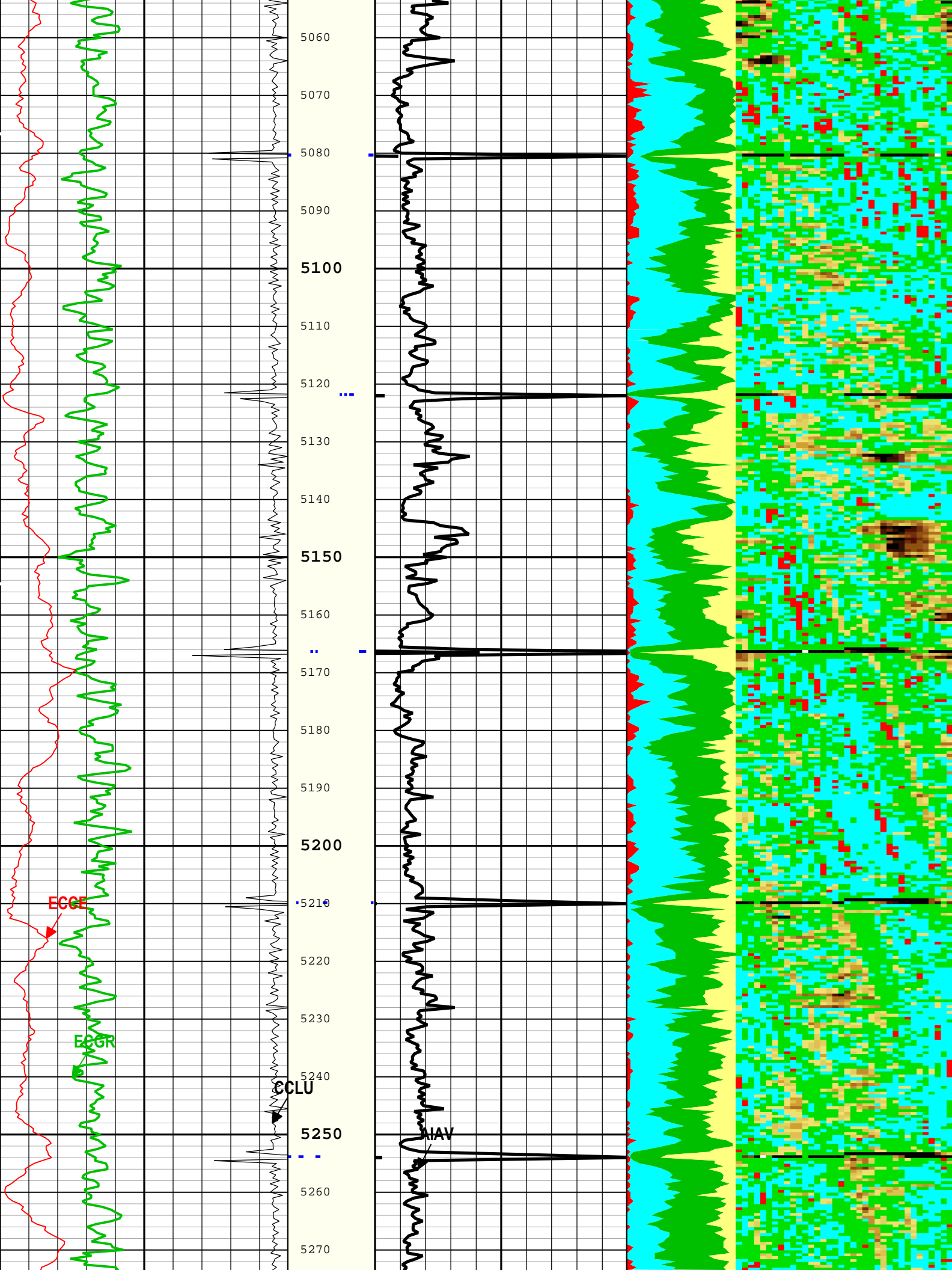


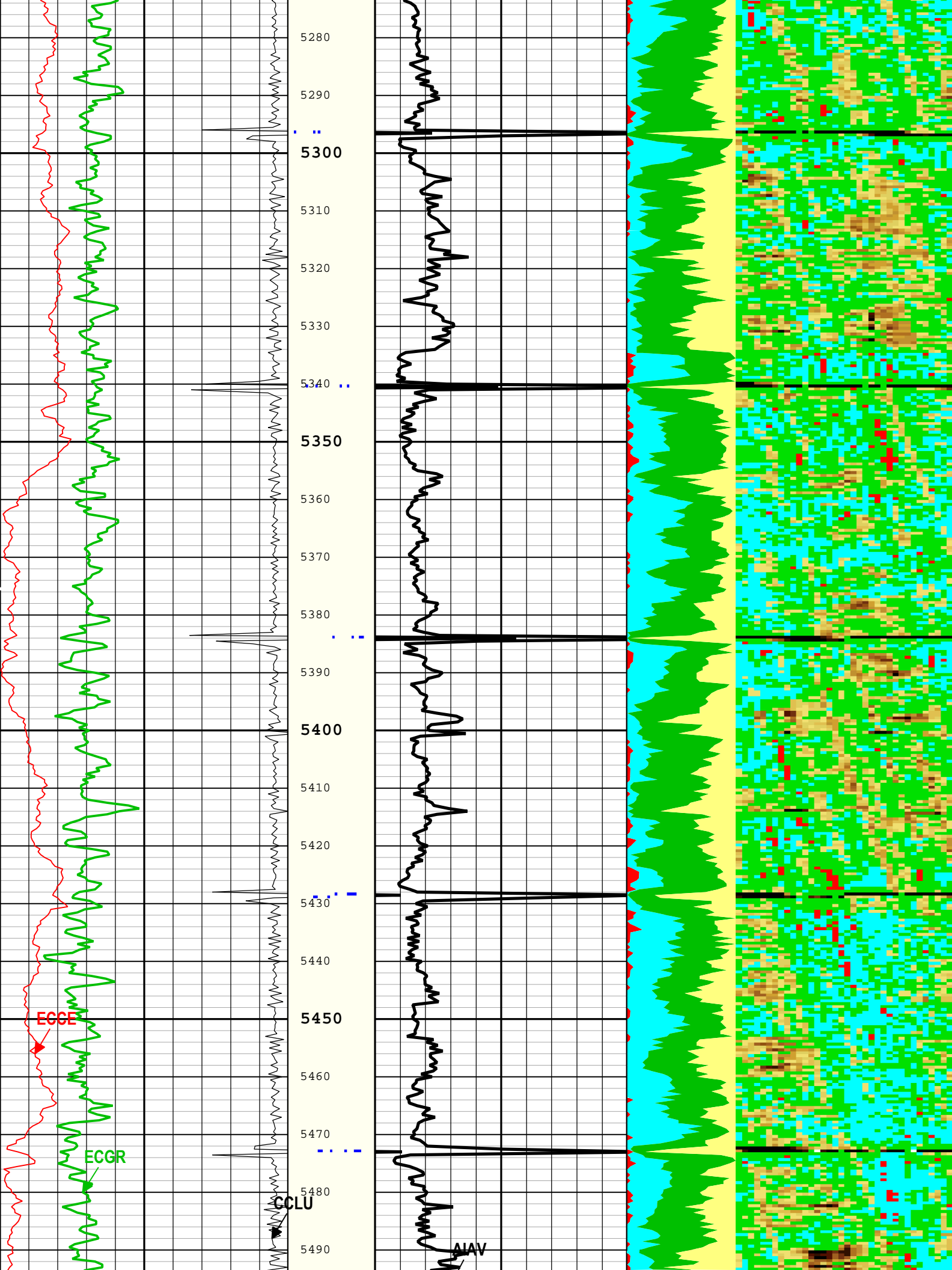


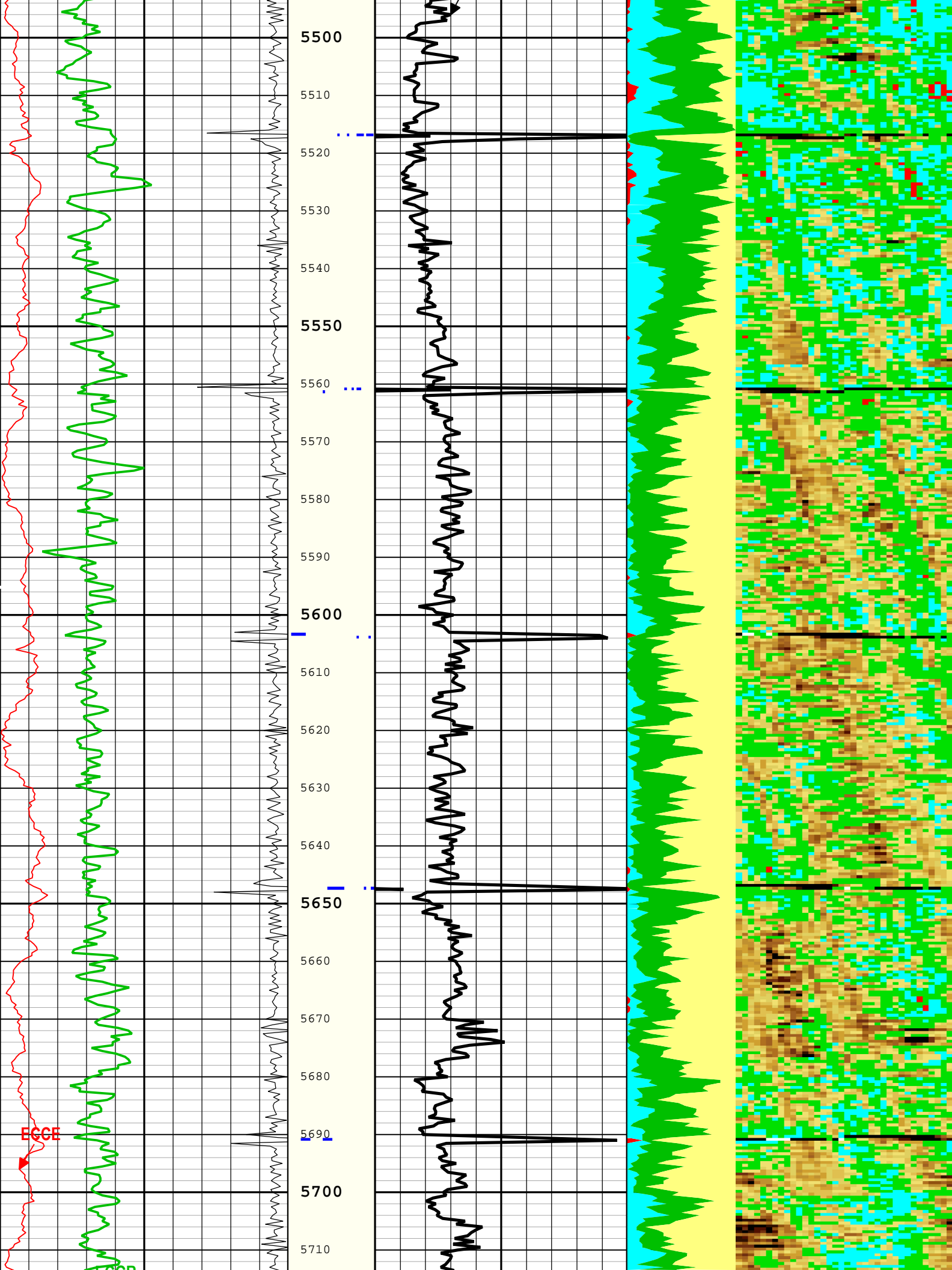




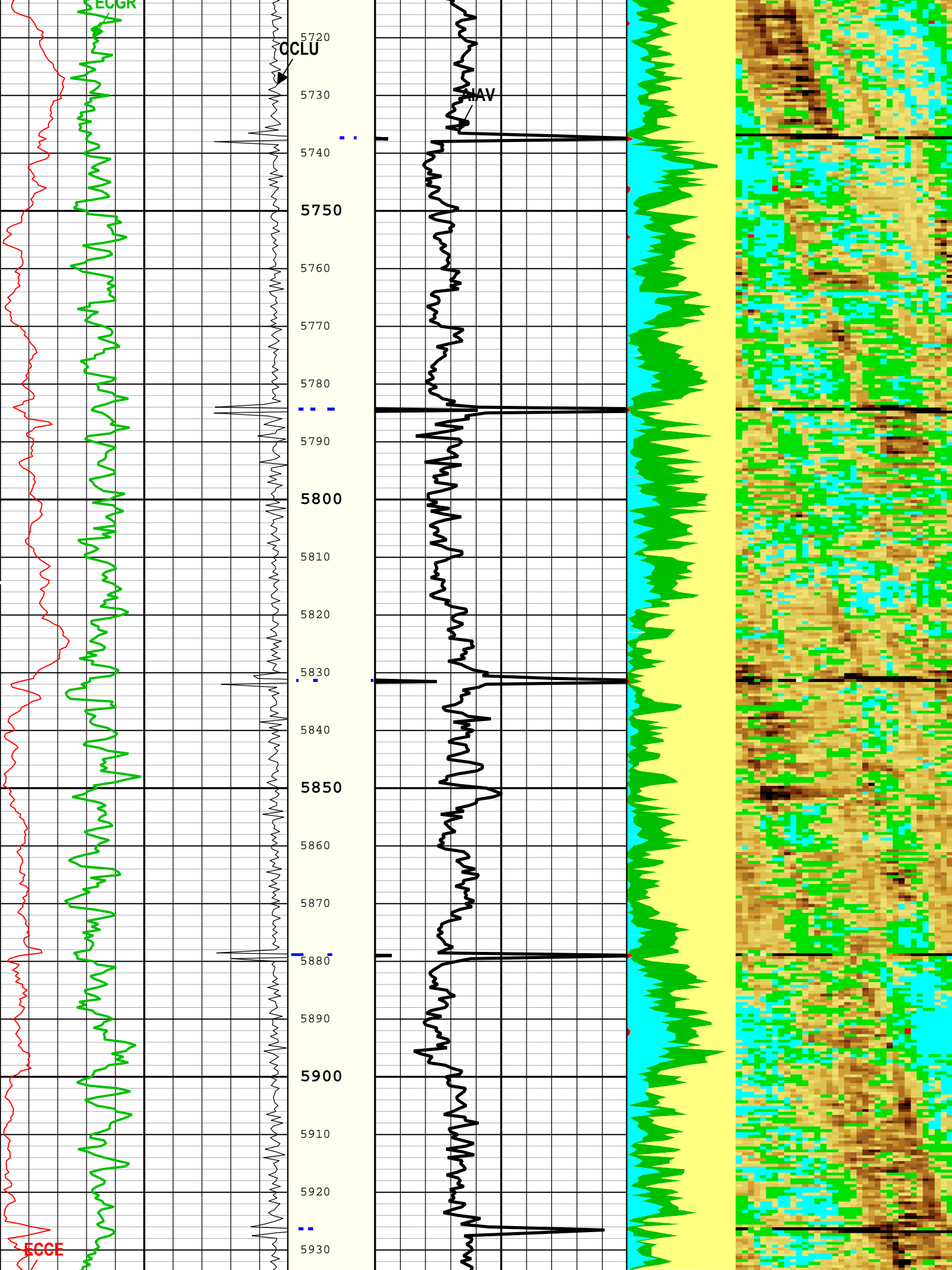




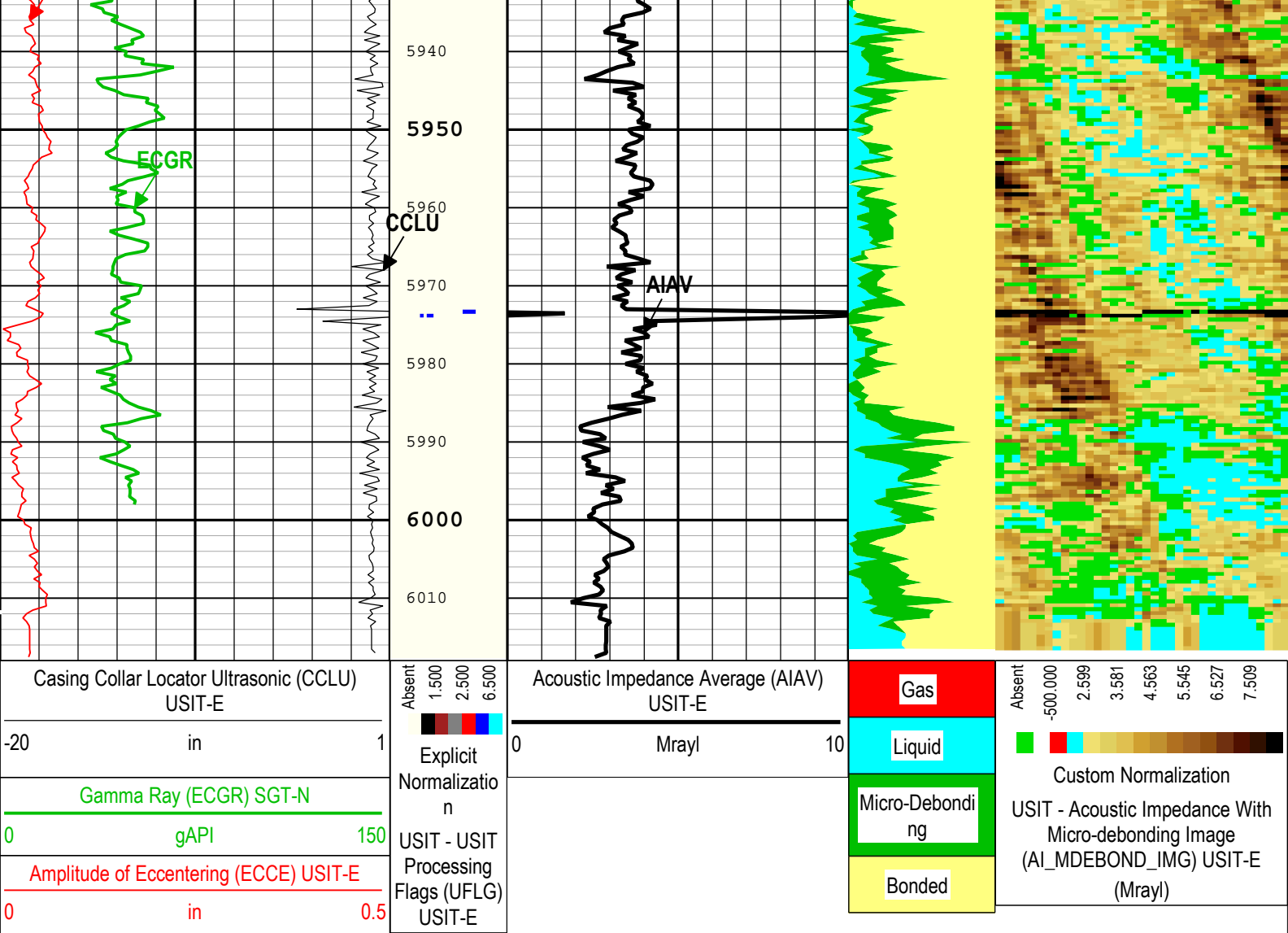








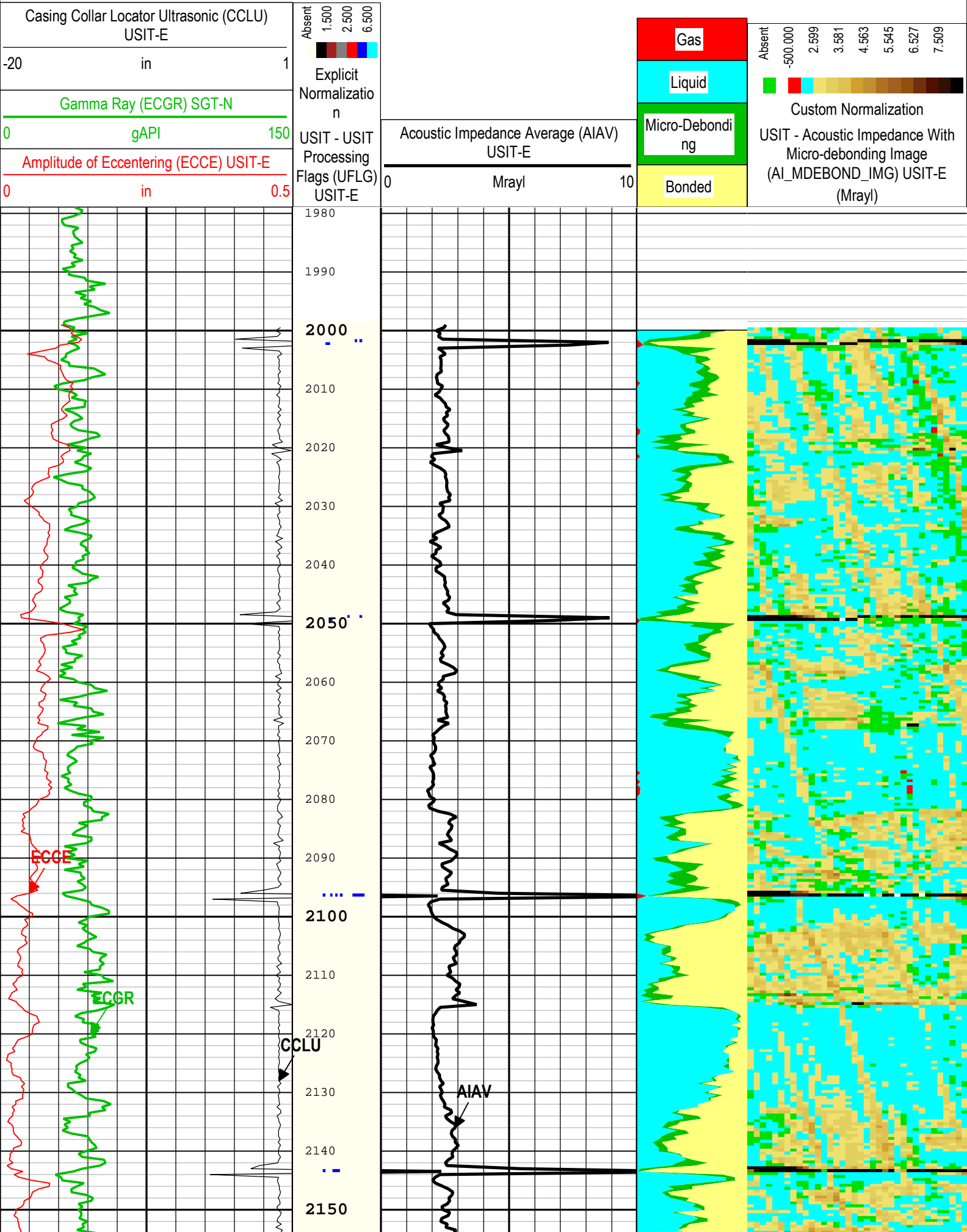


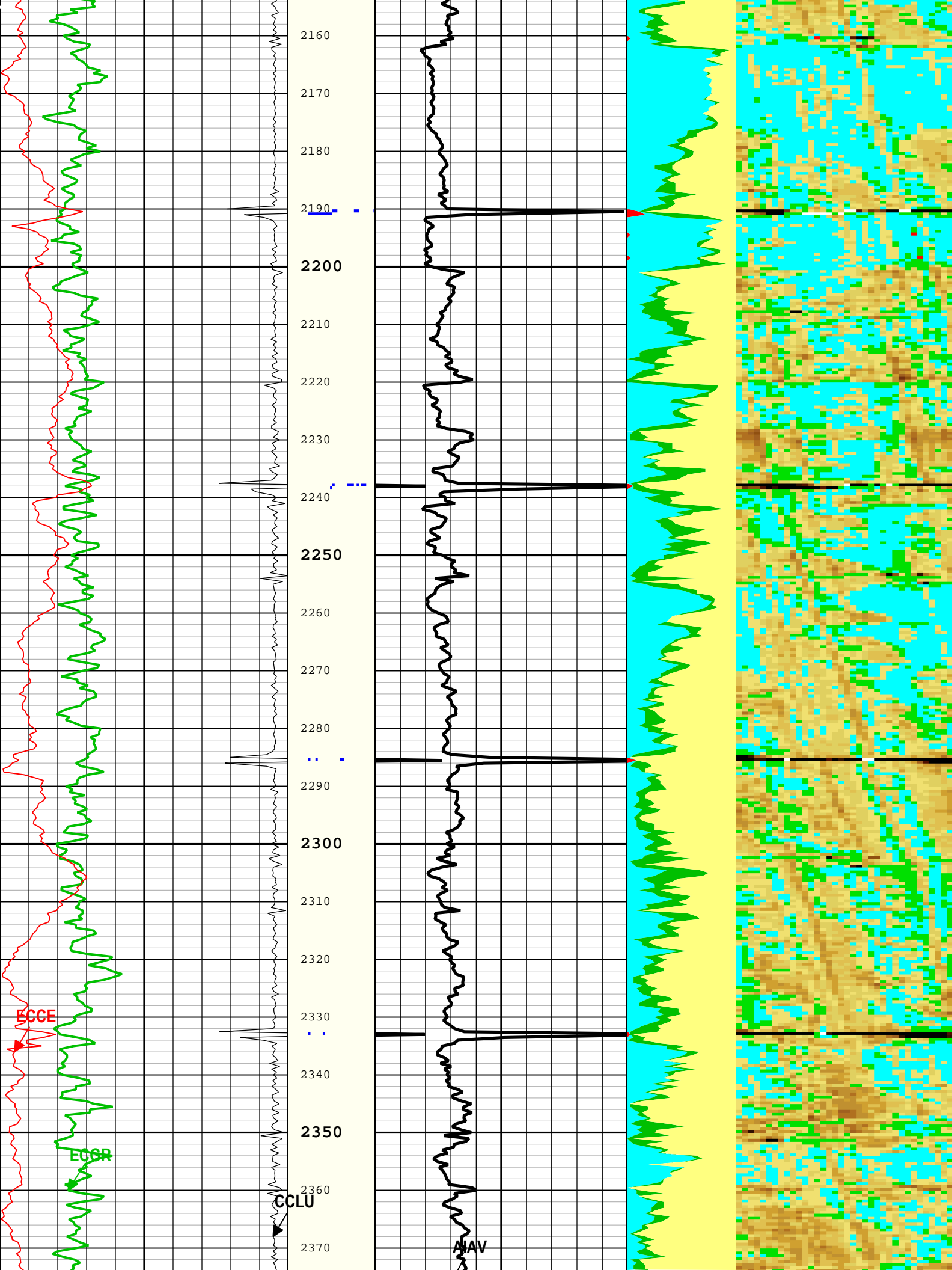


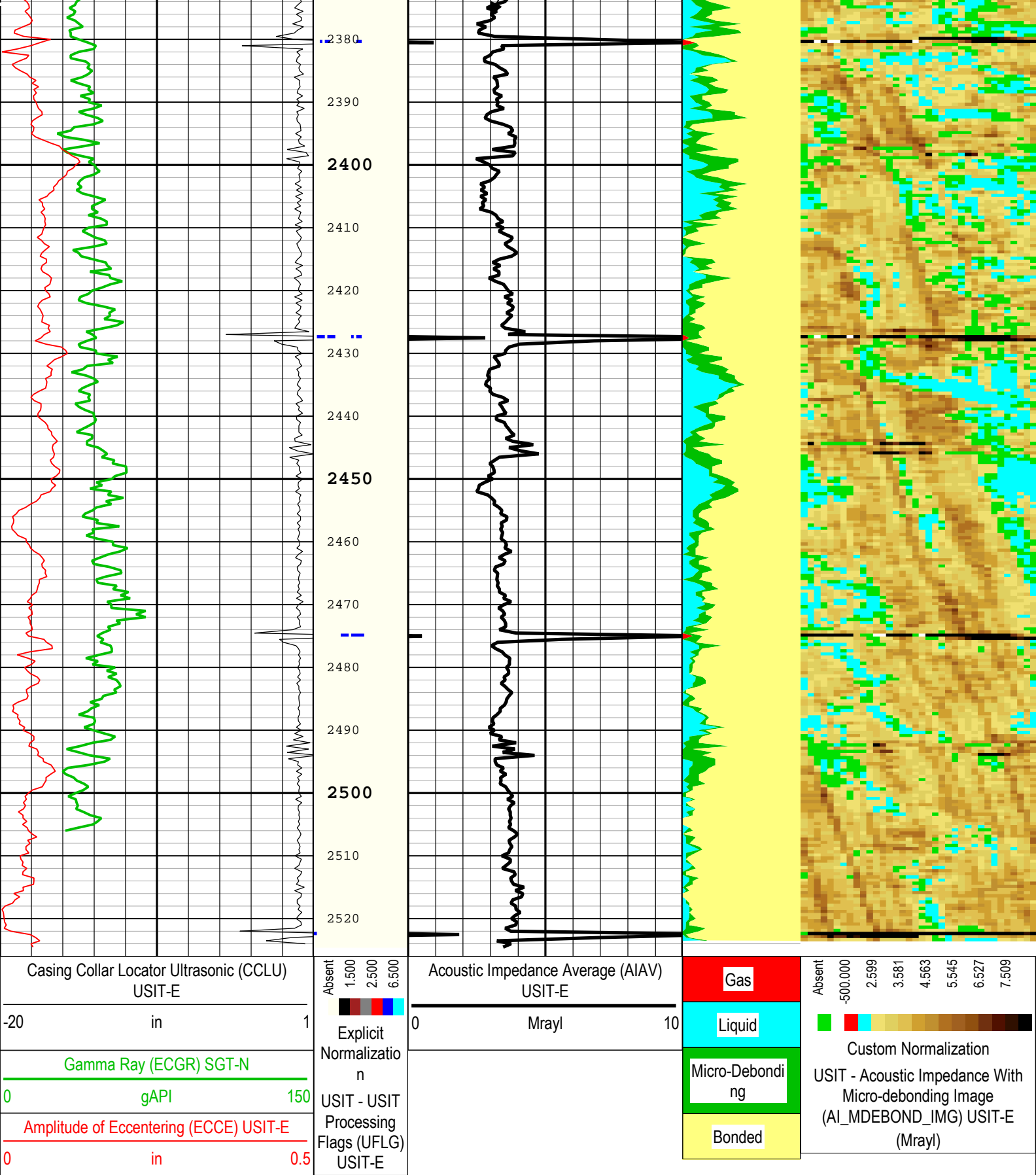
Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	18810	ft
CDEN	Cement Density	SGT-N	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
HEMA	Hematite Presence Flag	Borehole	No	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	Off	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	22.44	us



TIME\_1900 - Time Marked every 60.00 (s)







## Channel Processing Parameters

### ONE: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	

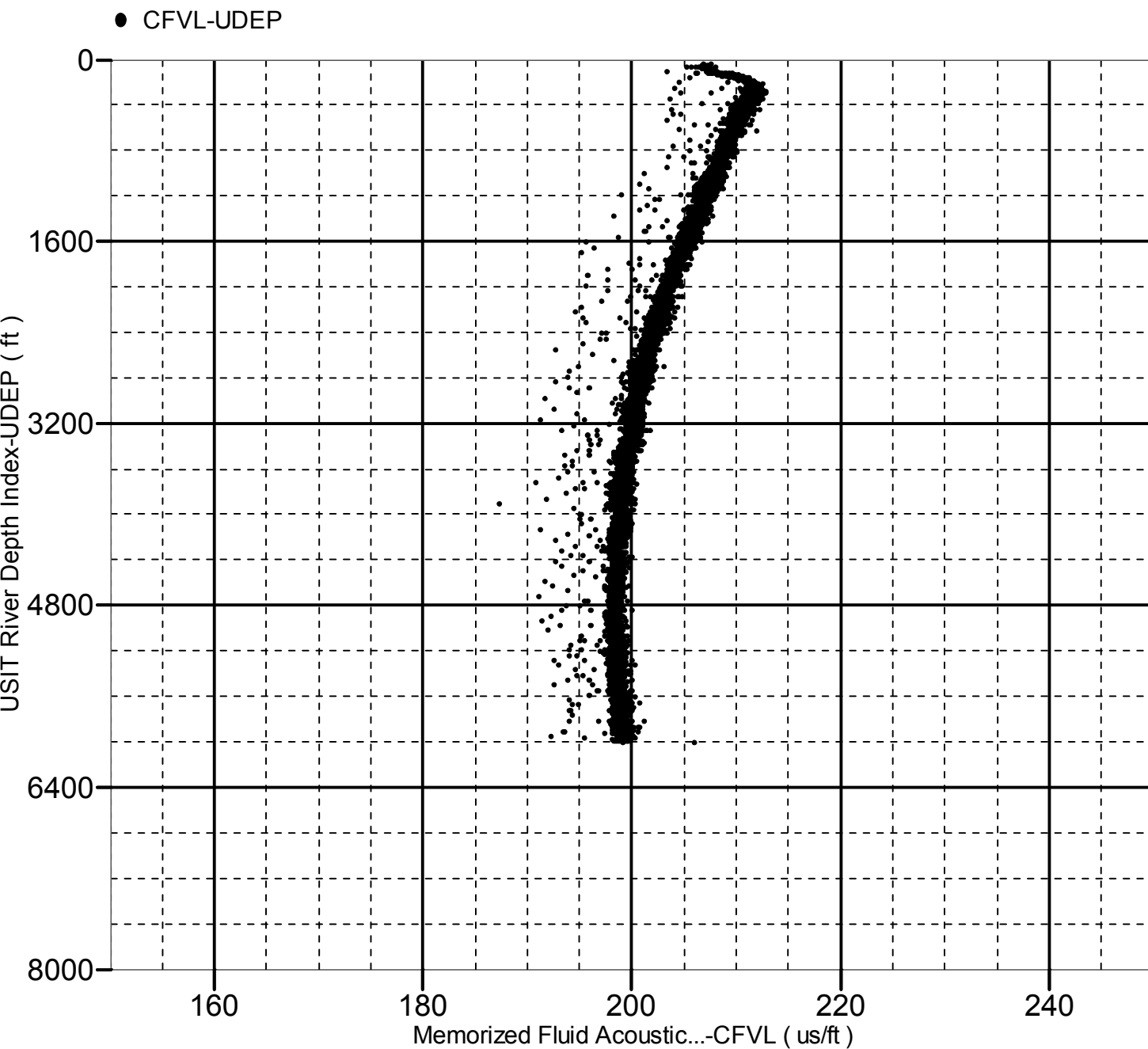
BHS	Borehole Status (Open or Cased Hole)	Borehole	Open	
BS	Bit Size	WLSESSION	8.5	in
CBLO	Casing Bottom (Logger)	WLSESSION	18810	ft
CDEN	Cement Density	SGT-N	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DFD	Drilling Fluid Density	Borehole	10	lbm/gal
DFT_CATEGORY	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	206	us/ft
FDII	FPM Data Interpolation Interval	USIT-E	0	ft
GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS(RT)	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	BS(RT)	
HEMA	Hematite Presence Flag	Borehole	No	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	Off	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	22.44	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.01	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0.1	Mrayl
UFGDE	Fiberglass Density	USIT-E	16.27	lbm/gal
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				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	18	dB
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	10 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 375 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 6.0 in LF	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	2500	ft
WINB	Window Begin Time	USIT-E	31.88	us
WINE	Window End Time	USIT-E	71.88	us
XYZ	Company:Noble Energy Inc Well:Kona A19-685			
	ONE: Main[3]:Up:S003			

# Fluid Acoustic Slowness vs Depth

## 2D Cross Plot

Index Range: From 6018.00 to 55.00 ft



XYZ

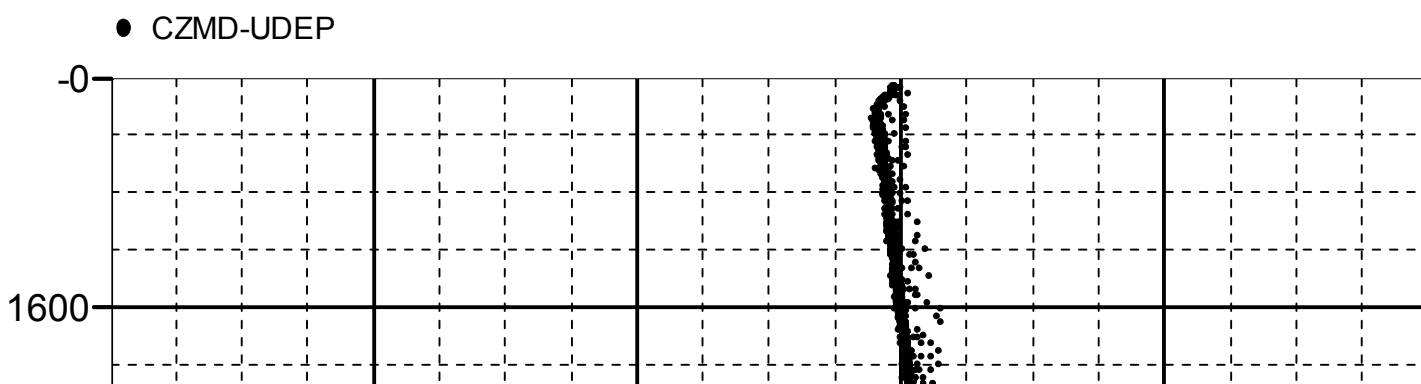
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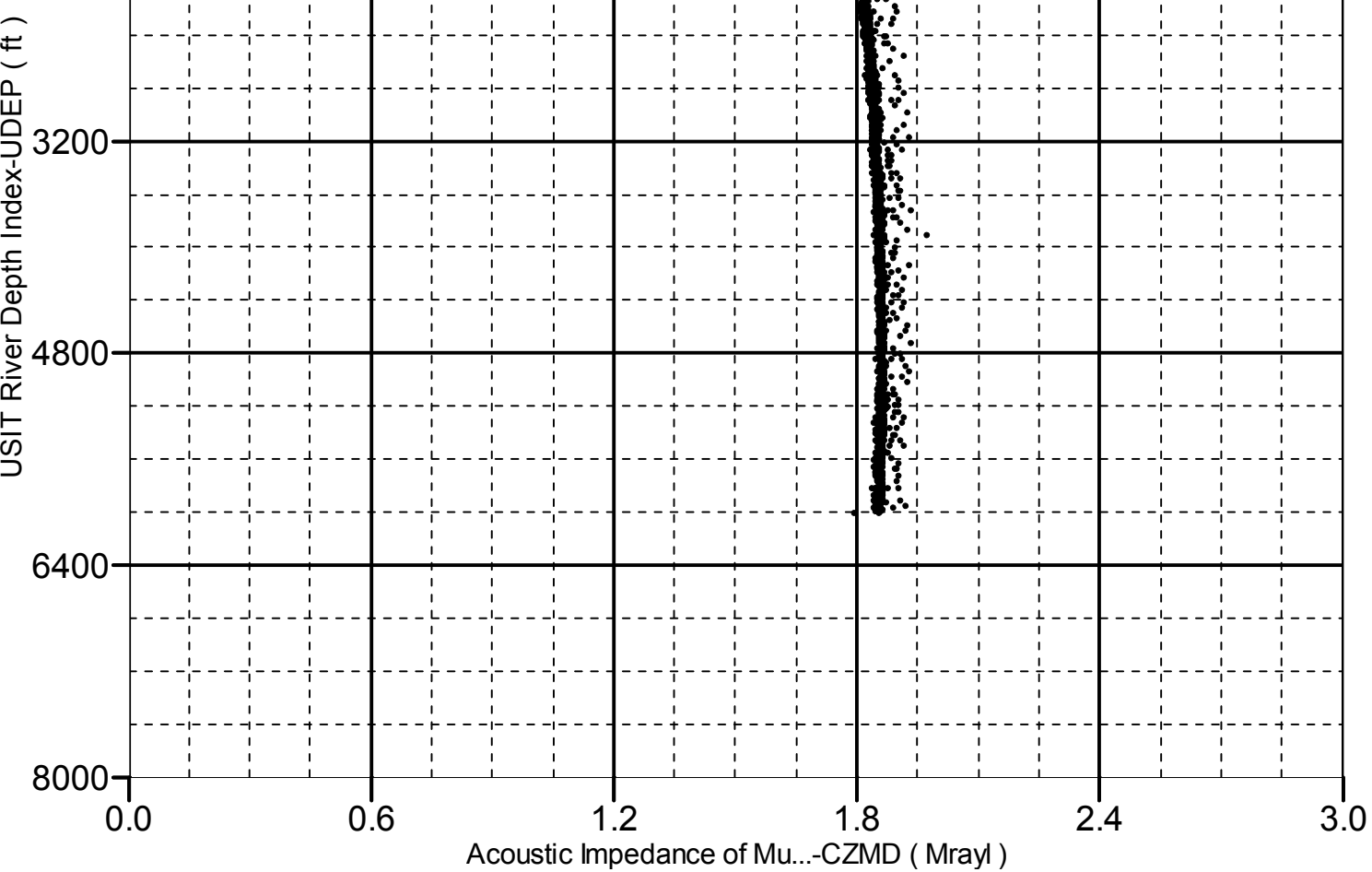
ONE: Main[3]:Up:S003

## Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 6018.00 to 55.00 ft







Company:	Noble Energy Inc	Schlumberger
Well:	Kona A19-685	
Field:	Wildcat	
County:	Weld	
State:	Colorado	
UltraSonic Summary Print		