

Company: Noble Energy, Inc.

Well: Beretta Federal LC24-760

Field: Wildcat

County: Weld State: Colorado

UltraSonic Summary Print

County: Weld

Field: Wildcat

Location: NWNE Sec 24 T9N R59W

Well: Beretta Federal LC24-760

Company: Noble Energy, Inc.

Location:

NWNE Sec 24 T9N R59W

SHL: 859 FNL 1884 FWL

Latitude: 40.74127 Longitude: -103.92899

Elev.: K.B. 4888.00 ft

G.L. 4858.00 ft

D.F. 4887.00 ft

Permanent Datum:

Ground Level

Elev.: 4858.00 f

Log Measured From:

Kelly Bushing

30.00 ft

above Perm.Datum

Drilling Measured From:

Kelly Bushing

API Serial No.

05-123-42960

Section: 24

Township: 9N

Range: 59W

Logging Date	20-Dec-2016			
Run Number	One			
Depth Driller	10397.00 ft			
Schlumberger Depth	10397.00 ft			
Bottom Log Interval	6080.00 ft			
Top Log Interval	0.00 ft			
Casing Fluid Type	Water			
Salinity				
Density	9.4 lbm/gal			
Fluid Level	8.00 ft			
BIT/CASING/TUBING STRING				
Bit Size	8.50 in			
From	1950.00 ft			
To	10397.00 ft			
Casing/Tubing Size	5.5 in			
Weight	20 lbm/ft			
Grade	N/A			
From	0.00 ft			
To	10386.90 ft			
Max Recorded Temperatures				
230 degF				
Logger on Bottom				
Unit Number	2161	Time	20-Dec-2016 08:57:00	
Recorded By	Location:		Fort Morgan	
Recorded By	Stephen Tang			
Witnessed By	Bill Mansfield			

Disclaimer

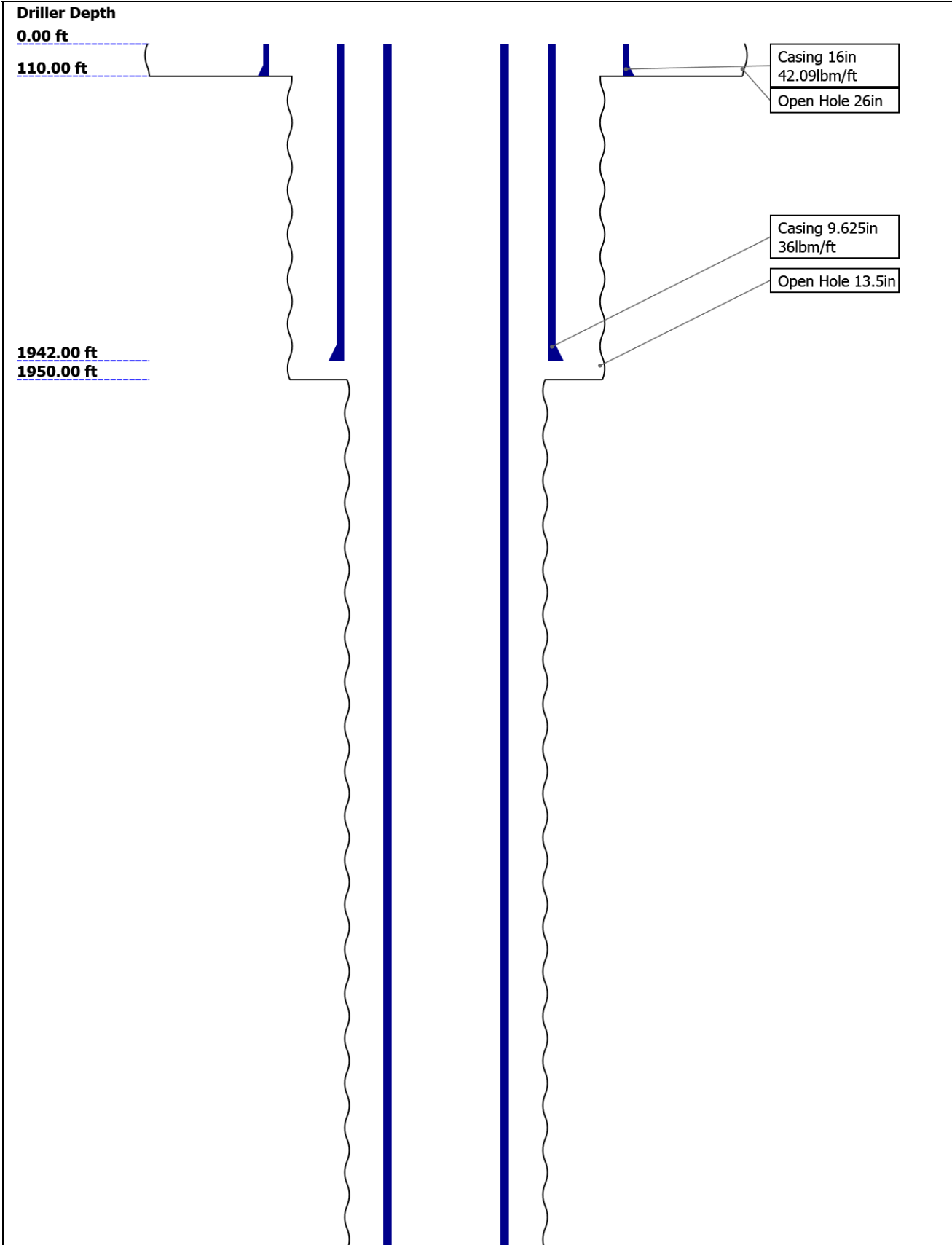
THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (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	
2. Disclaimer	
3. Contents	
4. Well Sketch	
5. Borehole Size/Casing/Tubing Record	
6. Remarks and Equipment Summary	
7. Depth Summary	
8. USI Fluid Properties Measurement_1	
9. Composite 1 2500 PSI Main Pass	
9.1 Integration Summary	
9.2 Software Version	
9.3 Composite Summary	
9.4 Log ( DJ Basin Ultrasonic Cement Summary Report )	
9.5 Parameter Listing	
10. One 0 PSI Repeat Pass	
10.1 Integration Summary	
13. Tail	in )

- 10.2 Software Version
- 10.3 Composite Summary
- 10.4 Log ( DJ Basin Ultrasonic Cement Summary Report )
- 10.5 Parameter Listing
- 11. XYZ ( USI Fluid Acoustic Slowness vs Depth 3.0 in )
- 12. XYZ ( USI Acoustic Impedance of Mud vs Depth 3.0

Well Sketch





<div> <div> <div>AH-184[ 17.56</div> <div>2]</div> </div> <div> <div>USIT-E:92 15.56</div> <div>1</div> <div>ECH-MFA:</div> <div>1908</div> <div>USAC-A:9</div> <div>21</div> <div>USIS-A:27</div> <div>75</div> <div>USSC-B:98</div> <div>5</div> <div>USRS-A:93</div> <div>2</div> <div>USI-SENS</div> <div>OR</div> </div> <div> <div>USI Sen 0.37</div> <div>son</div> <div>TOOL_ZERO</div> <div>Head Fe</div> <div>nsion</div> </div> <div> <div>Lengths are in ft</div> <div>Maximum Outer Diameter = 4.700 in</div> <div>Line: Sensor Location, Value: Gating Offset</div> <div>All measurements are relative to TOOL_ZERO</div> </div> </div> <div data-bbox="223 0 335 882"> </div>		
--	--	--

Depth Summary			
	One		
Depth Measuring Device			
Type Serial Number Calibration Date Calibrator Serial Number Calibration Cable Type Wheel Correction 1 Wheel Correction 2	IDW-B      0 0		
Tension Device			
Type Serial Number Calibration Date Calibrator Serial Number Number of Calibration Points	CMTD-B/A    0		
Logging Cable			
Type Serial Number Length Conveyance Type Rig Type	7-46NT-XS  24000.00 ft Wireline		
One:Depth Control Parameters		Depth Control Remarks	
Log Sequence	First Log In the Well	All Schlumberger depth procedures followed	

All Schrammberger depth procedures followed.

IDW used as primary depth device.

Z-Chart used as secondary depth device.

Start Depth(ft)	Stop Depth(ft)
105.77	2866.52

\_\_\_\_\_

Start Value(us/ft)	End Value(us/ft)
--------------------	------------------

142.58ft)

= 1.67 MRayl

Start Value(Mrayl)	End Val
--------------------	---------

## Composite 1

## Main Pass

---

	Version
	6.2.64464.3100

---

Start	Stop	DSC Mode	Location
20-Dec-2016 2:48:34 PM	20-Dec-2016 3:14:41 PM	ON	4
20-Dec-2016 3:20:46 PM	20-Dec-2016 3:39:16 PM	ON	4

---

Company:Noble Energy, Inc.      Well:Be

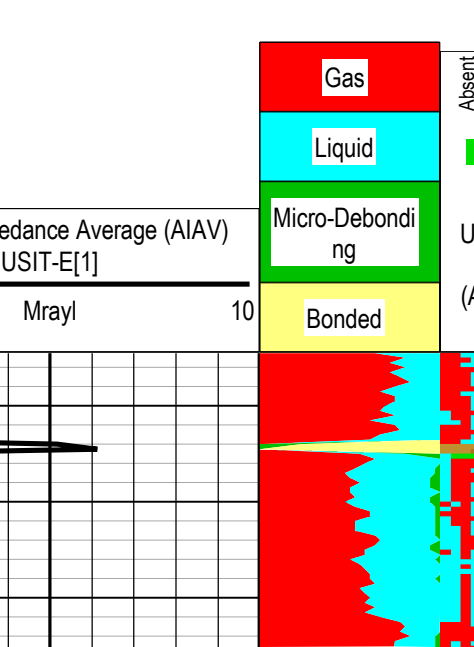
Well:Beretta Federal LC24-760

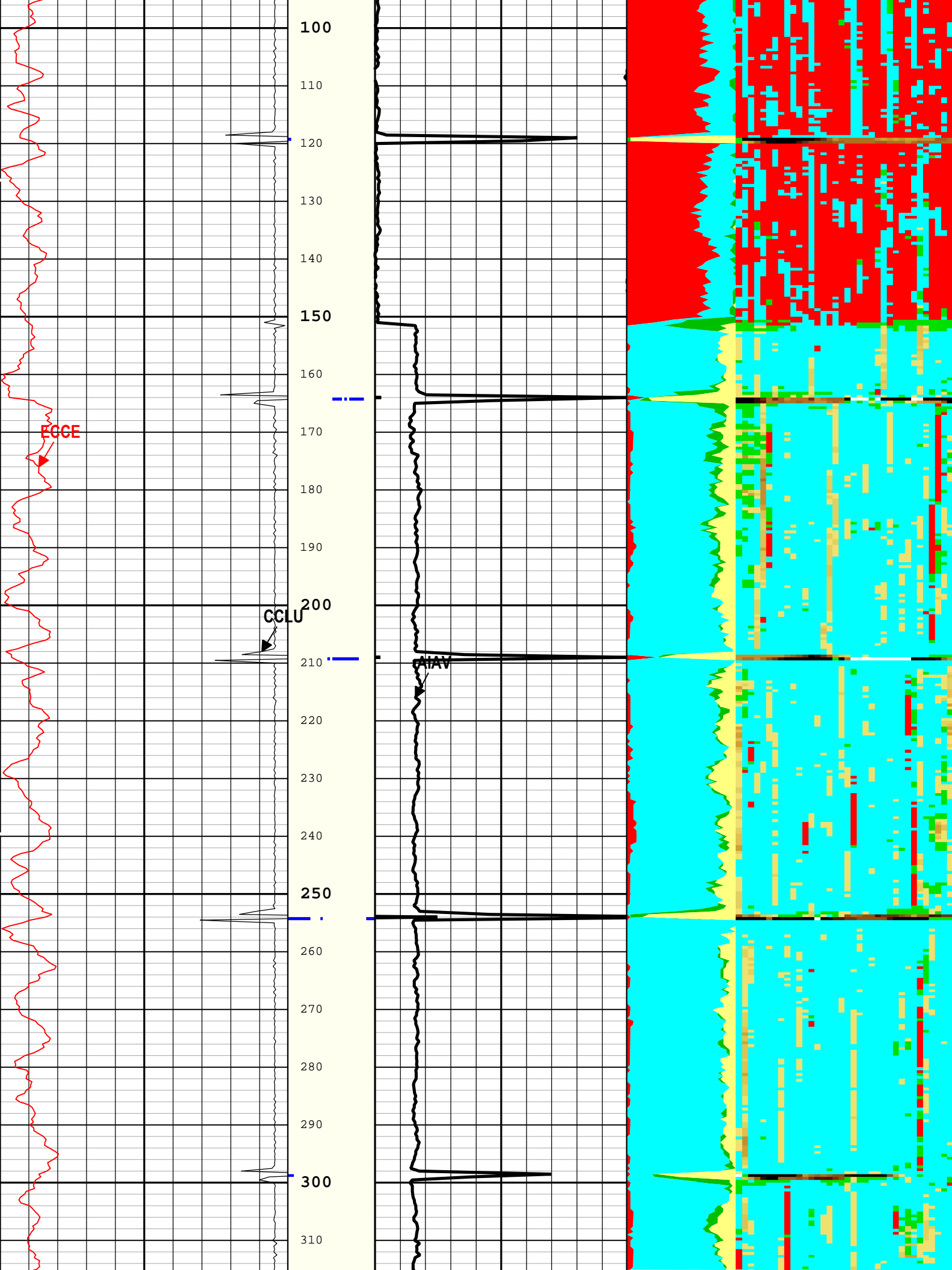
---

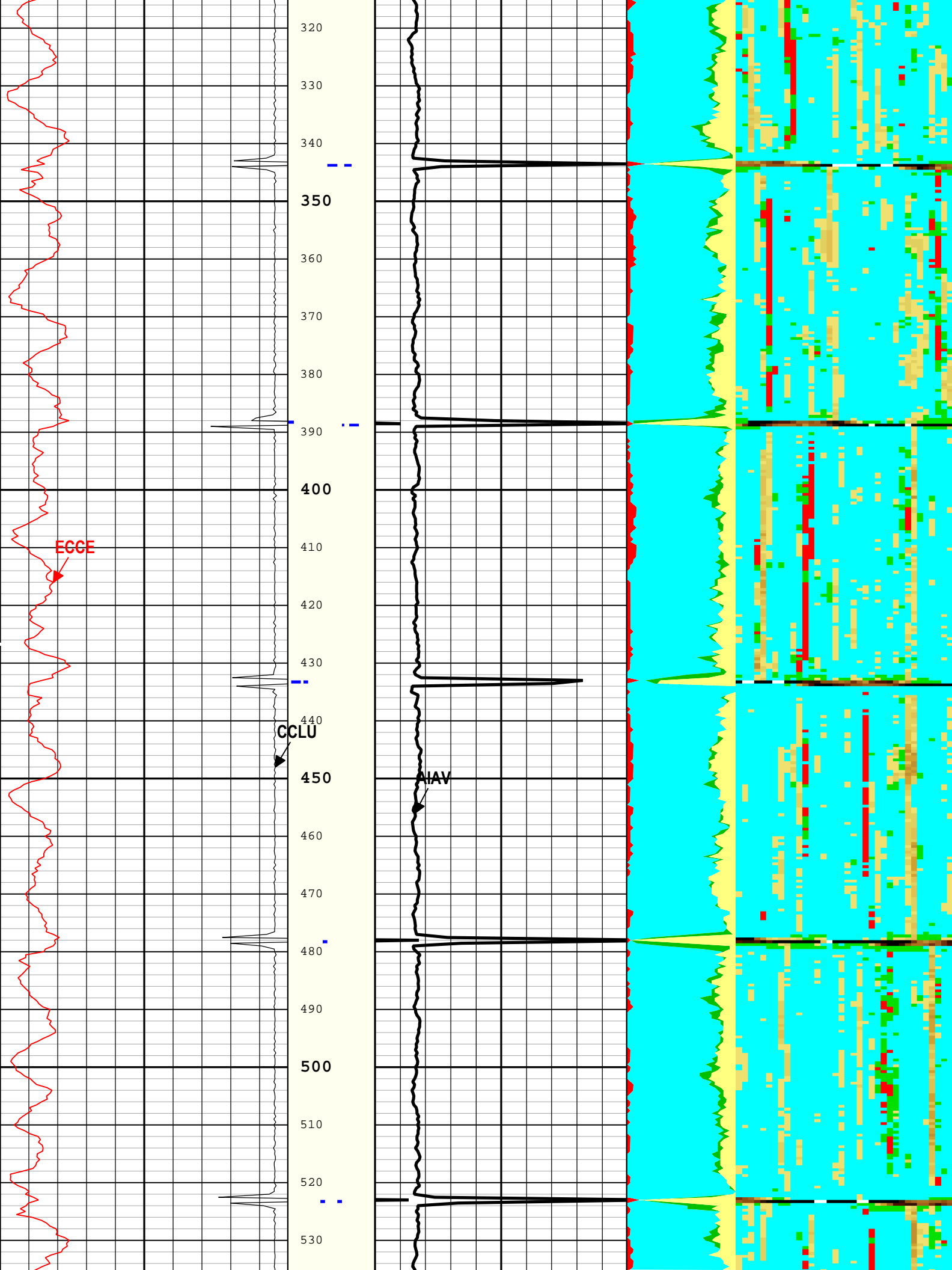
Index Scale: 5 in per 100 ft   Index Unit: ft   Index

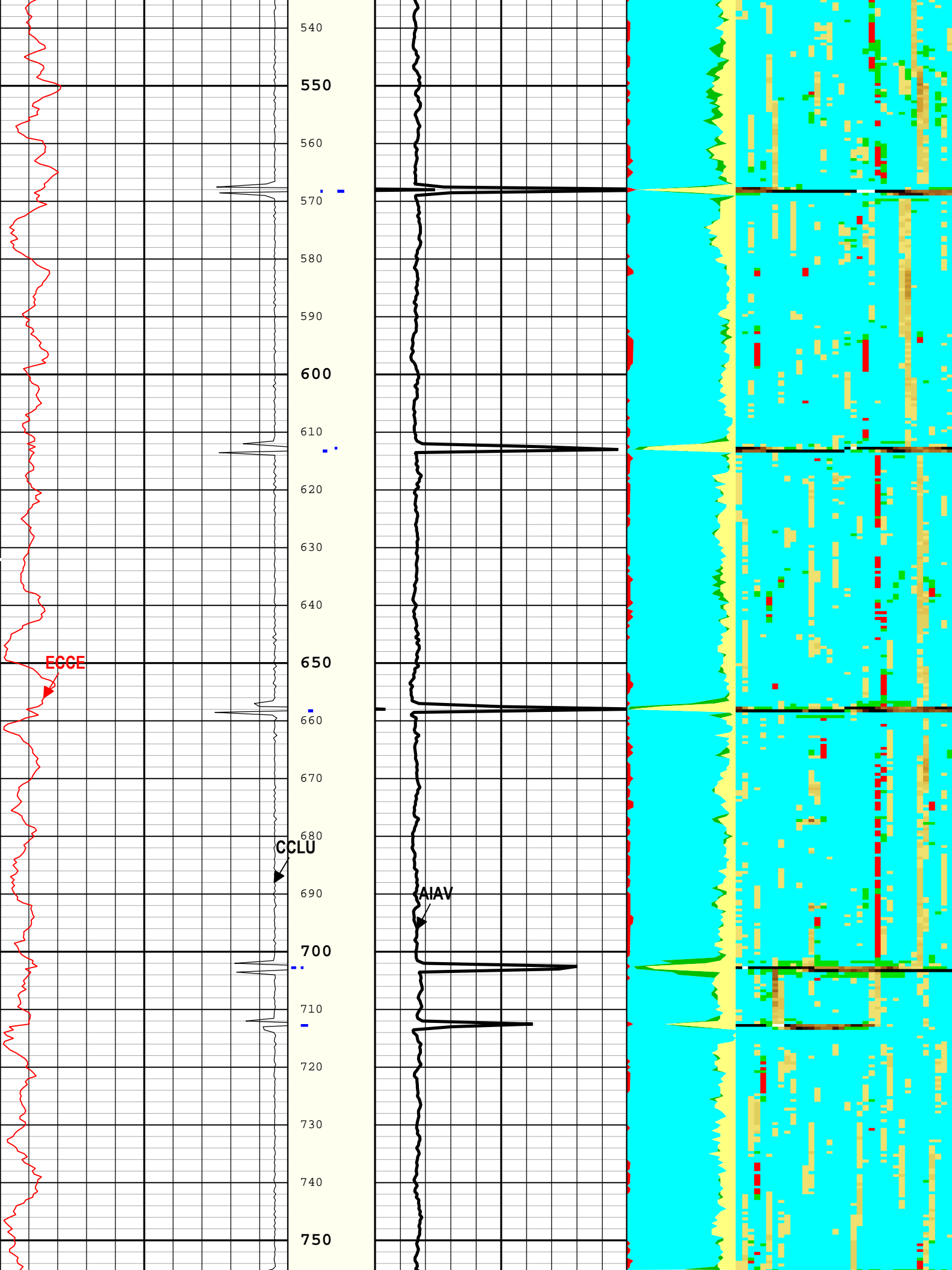
... ..

---

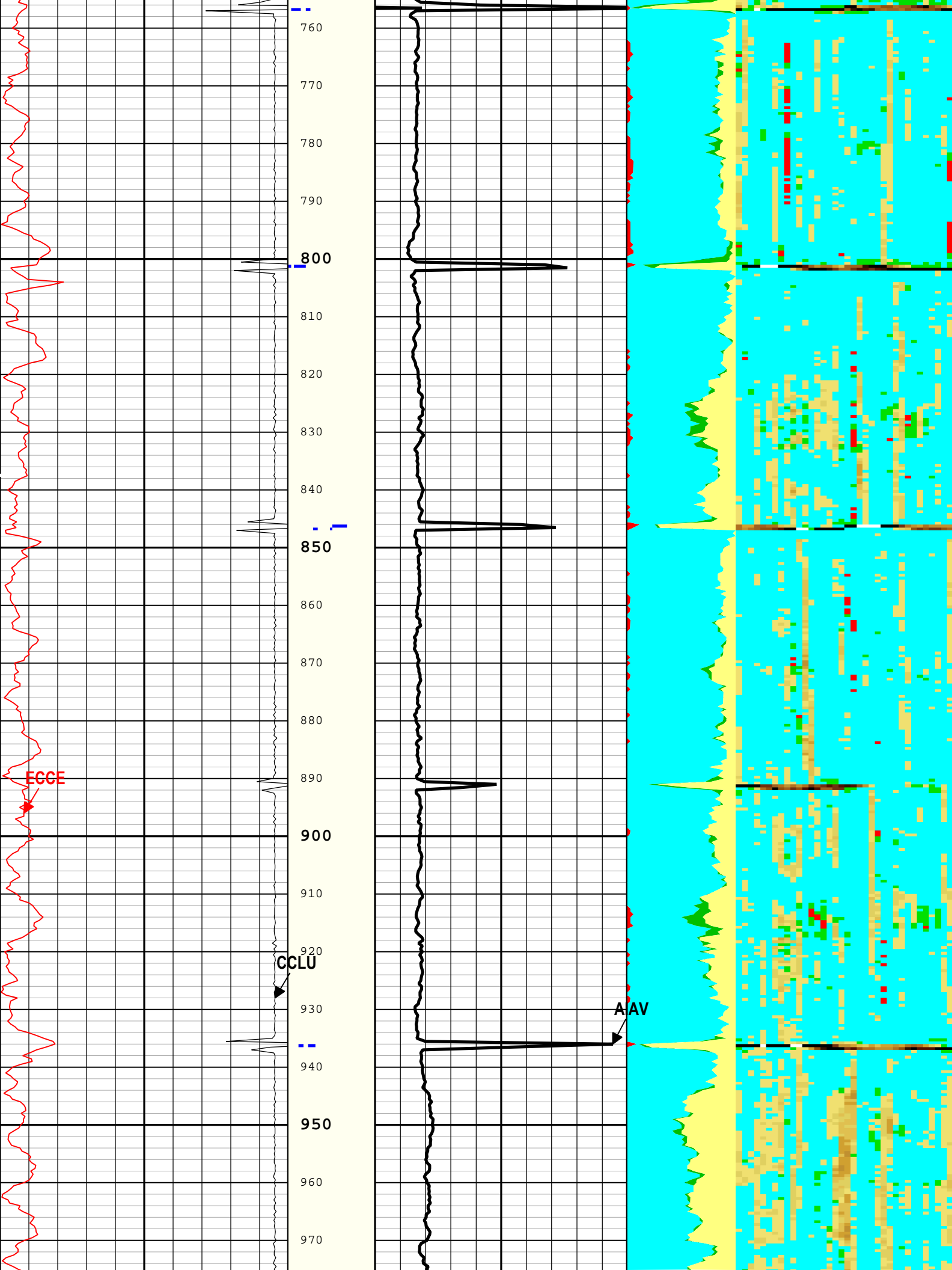


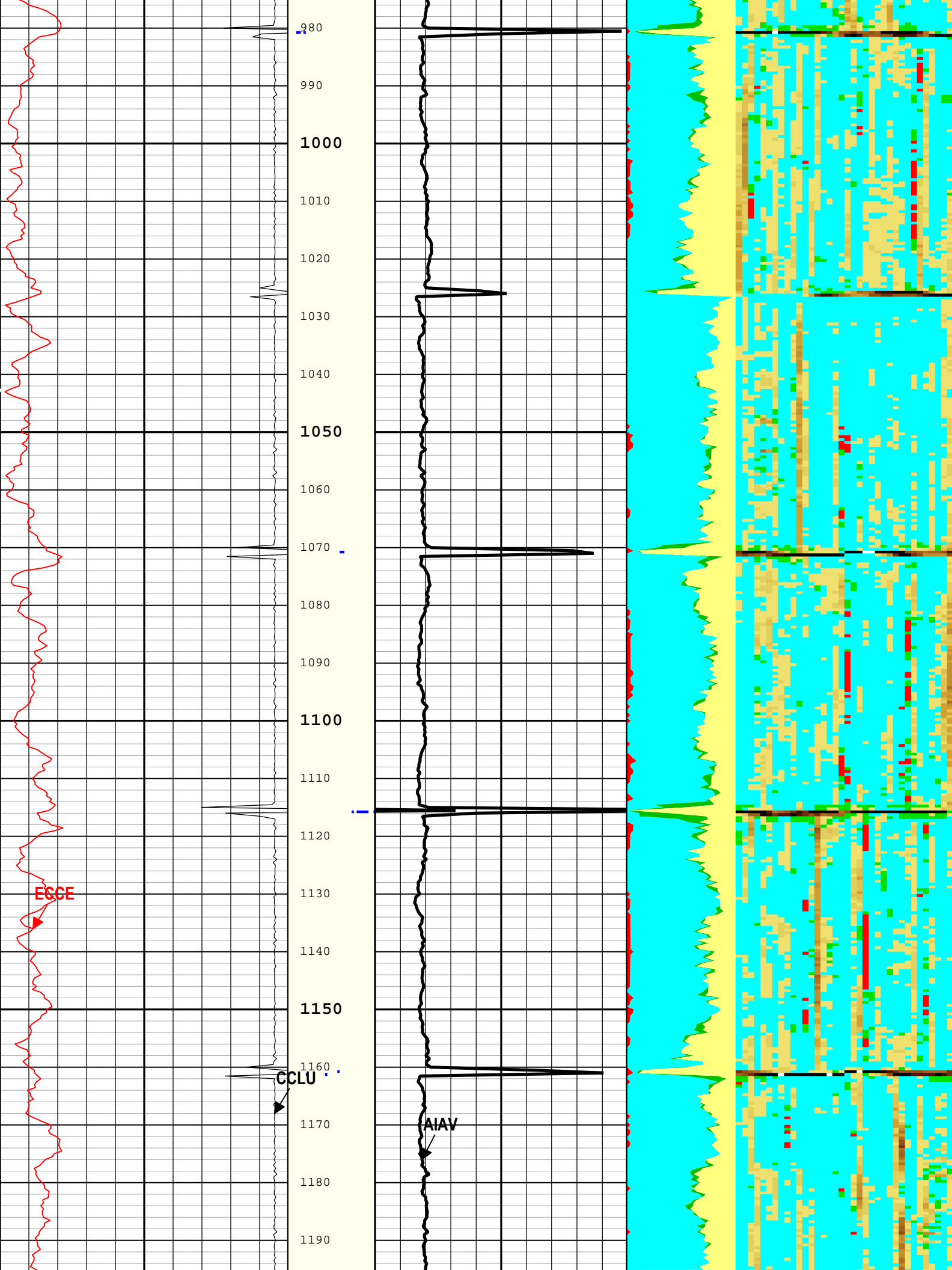


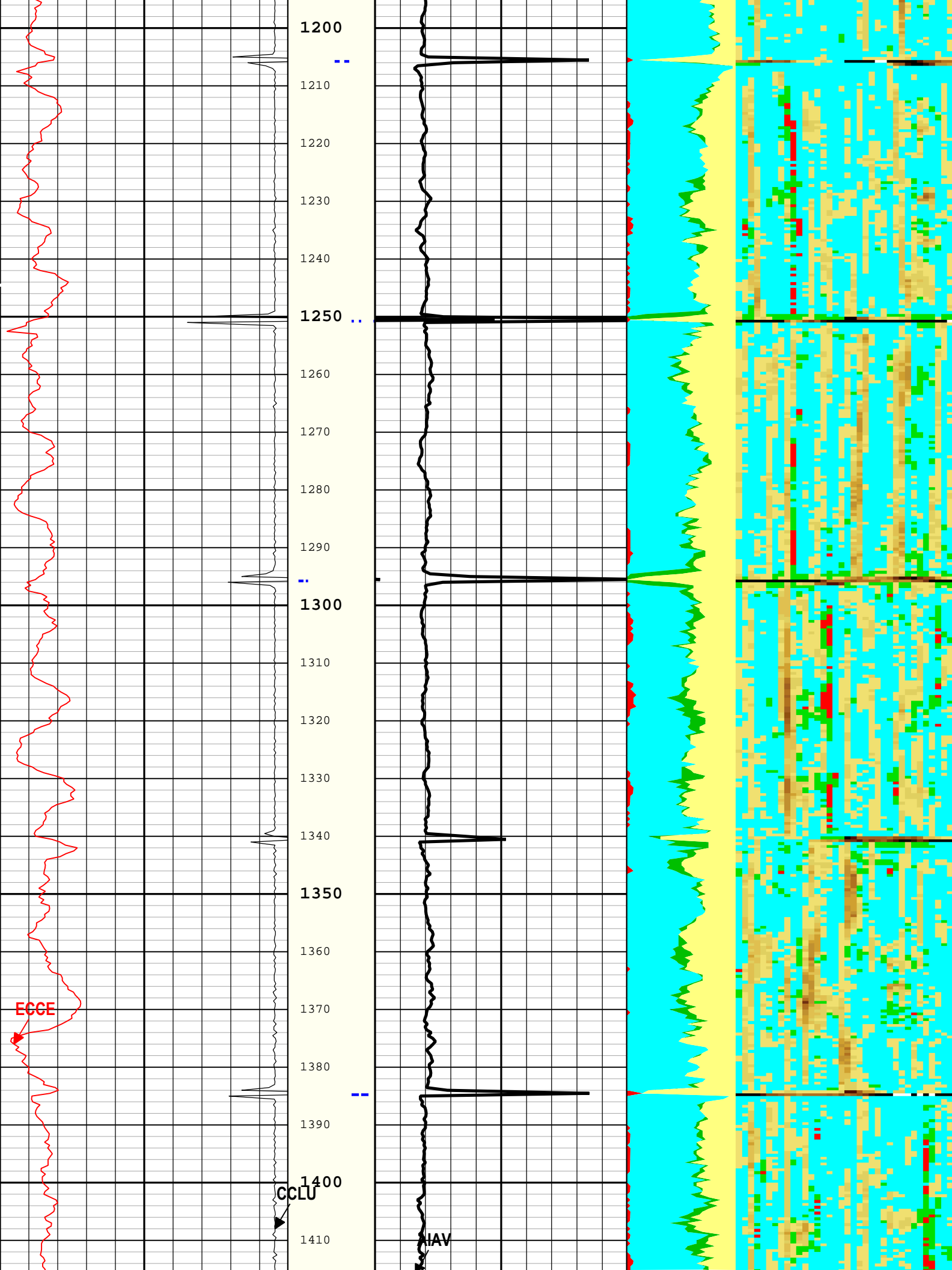


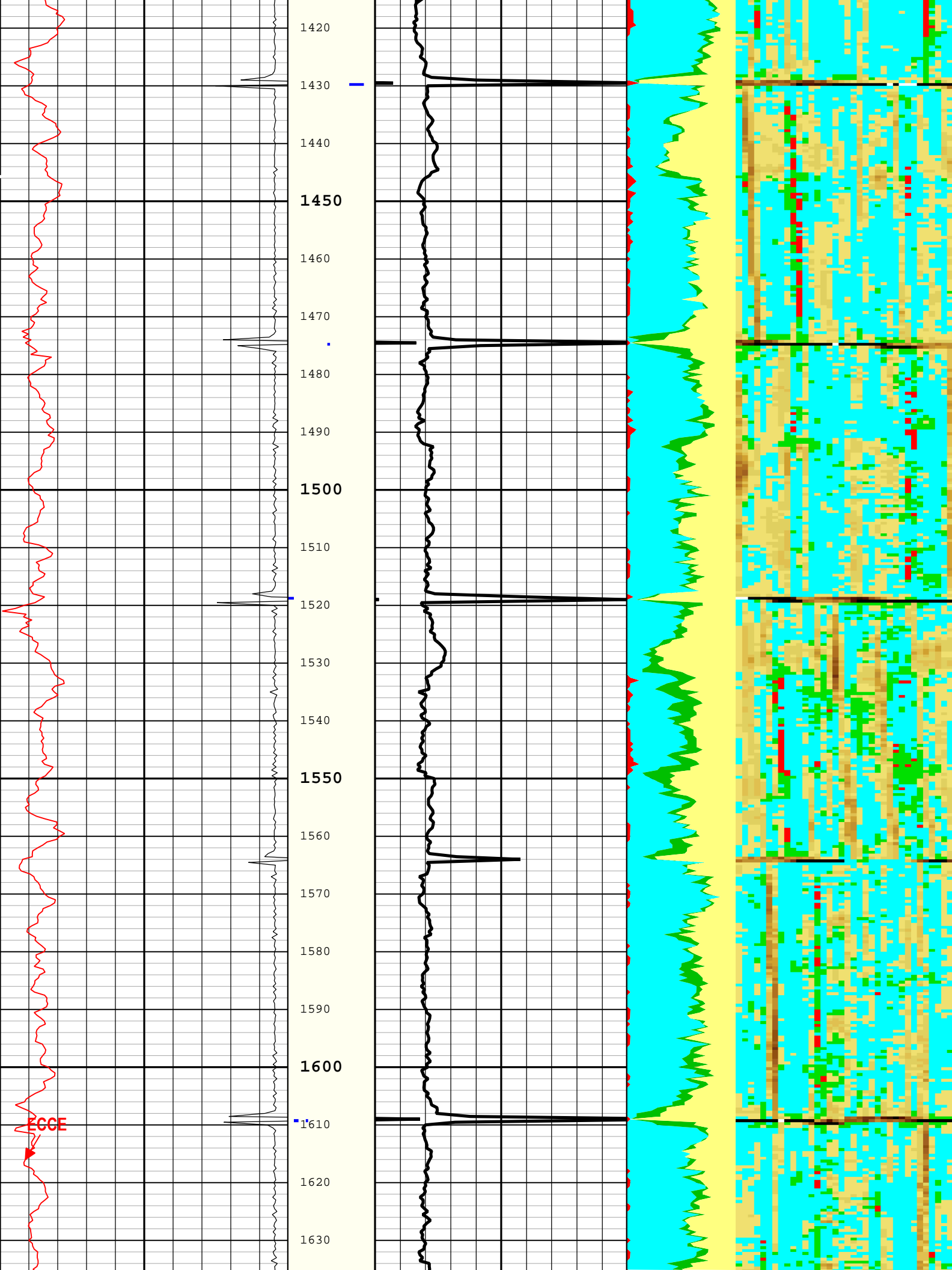


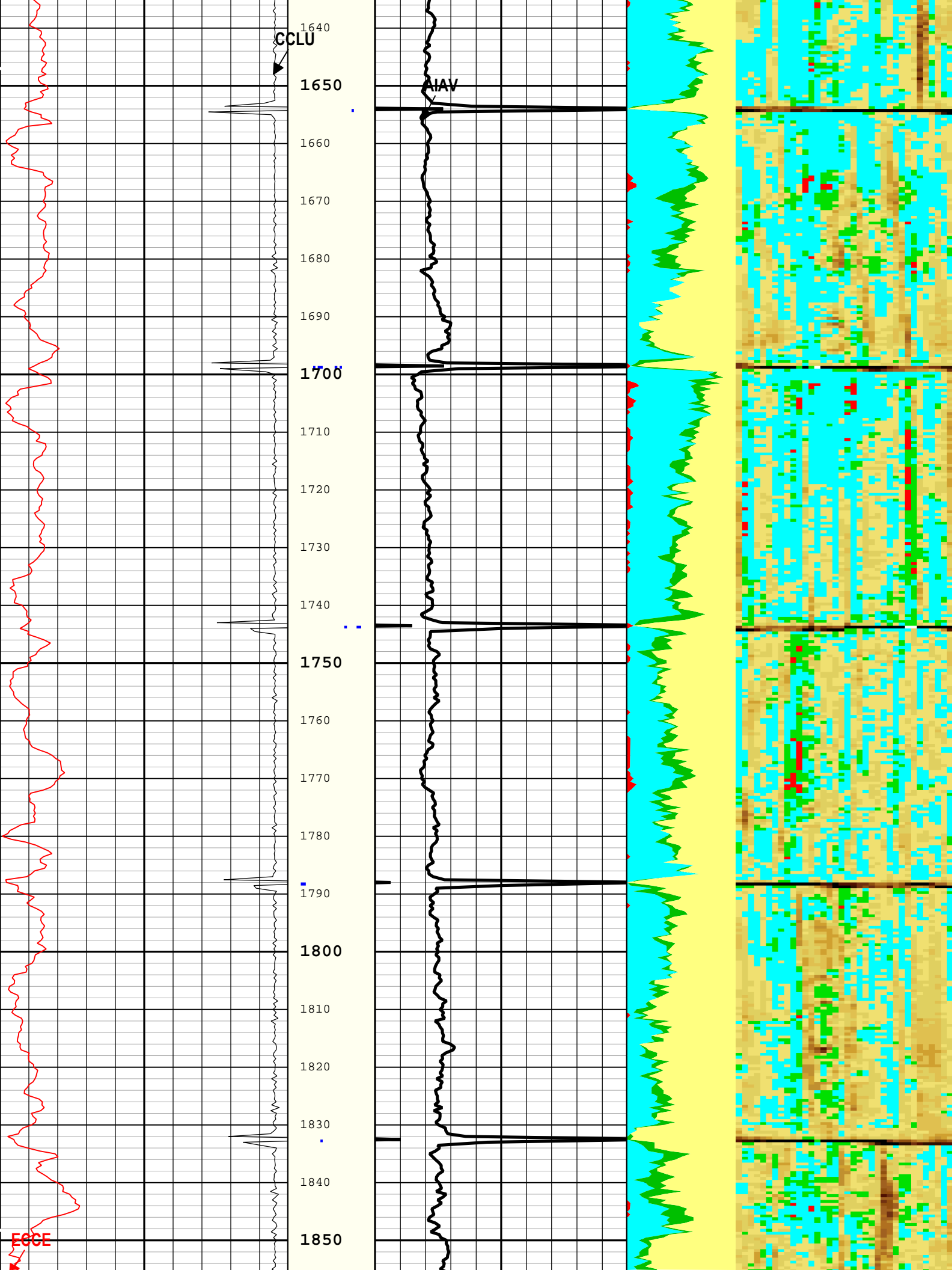


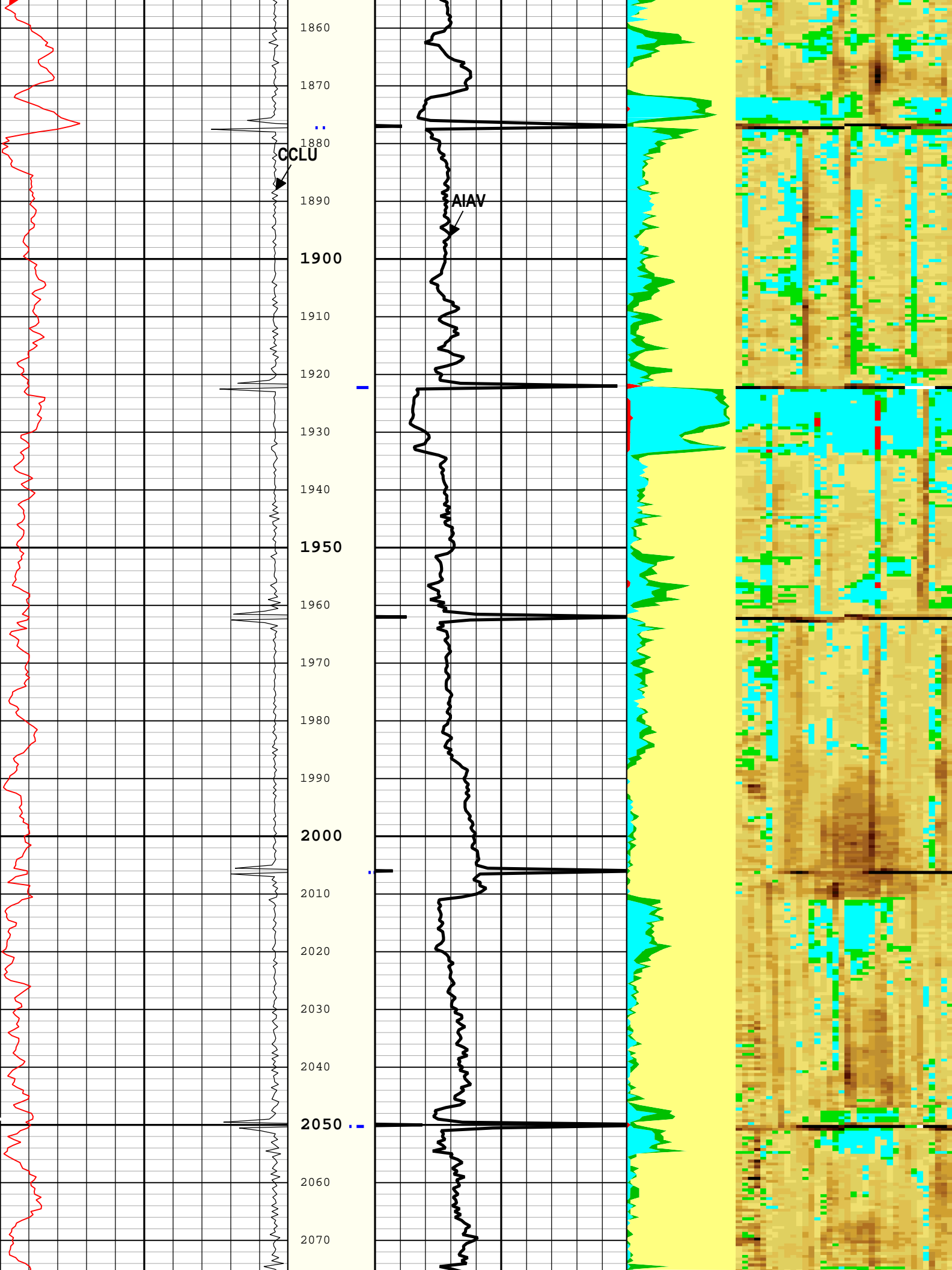


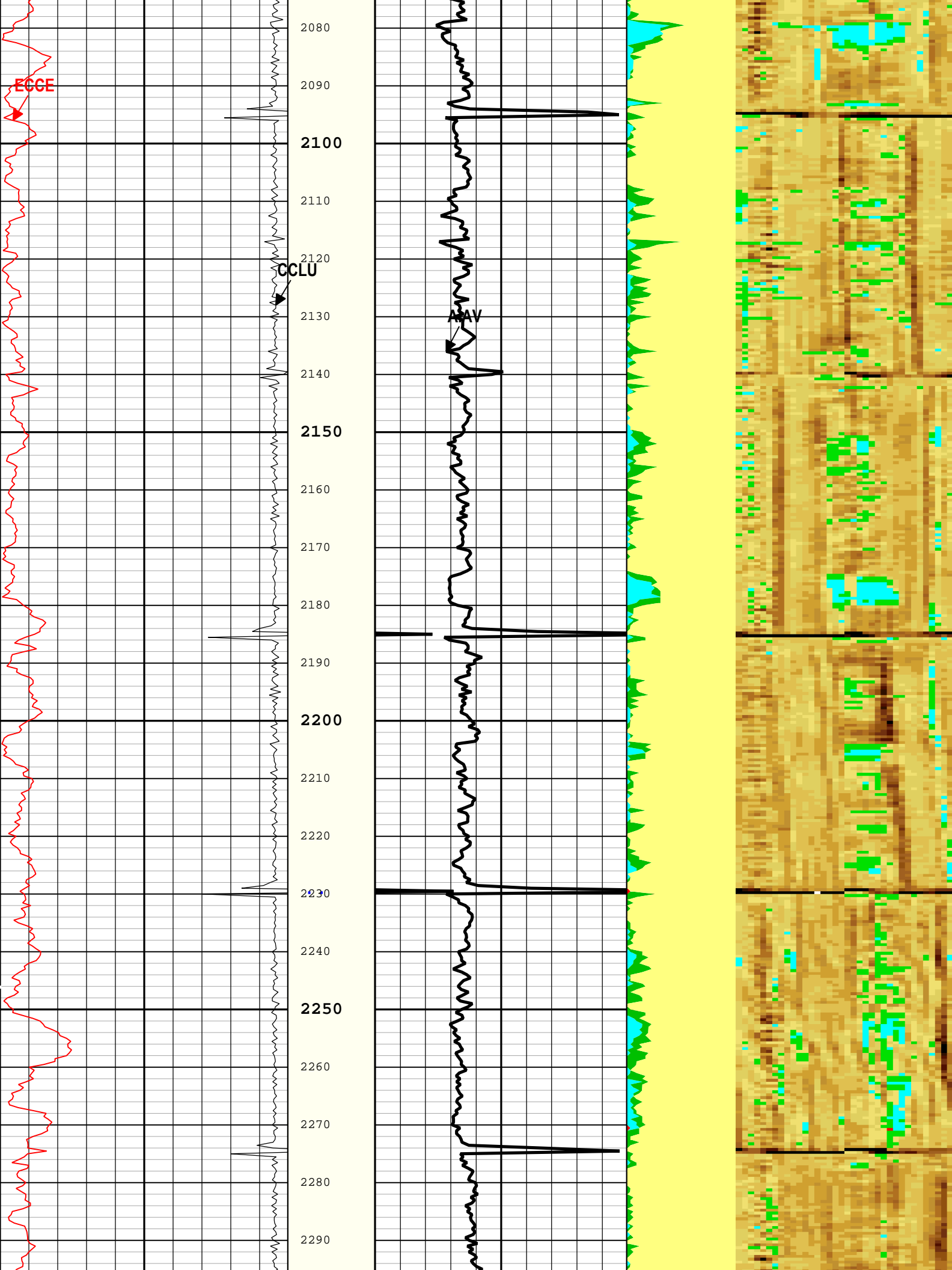


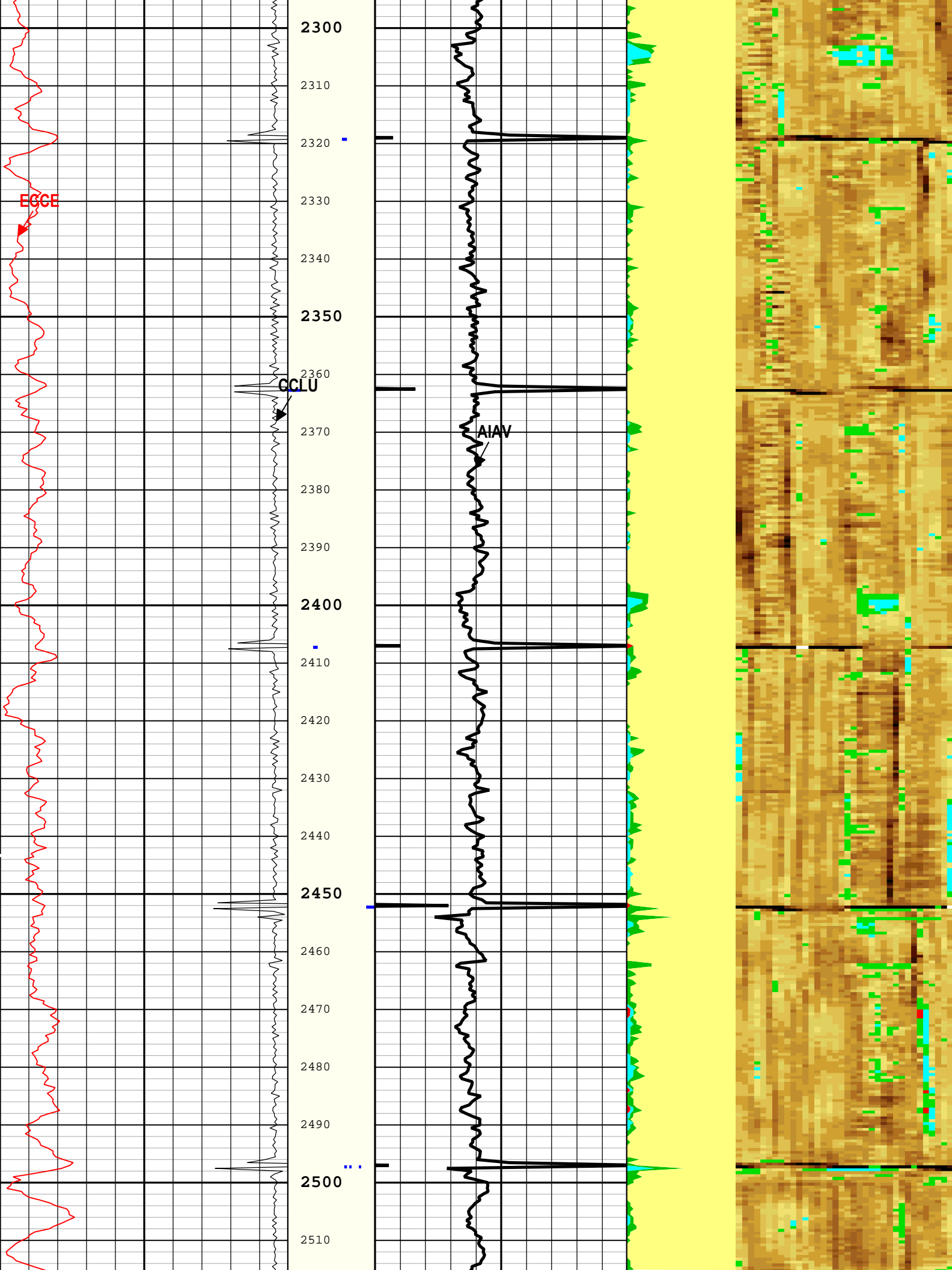




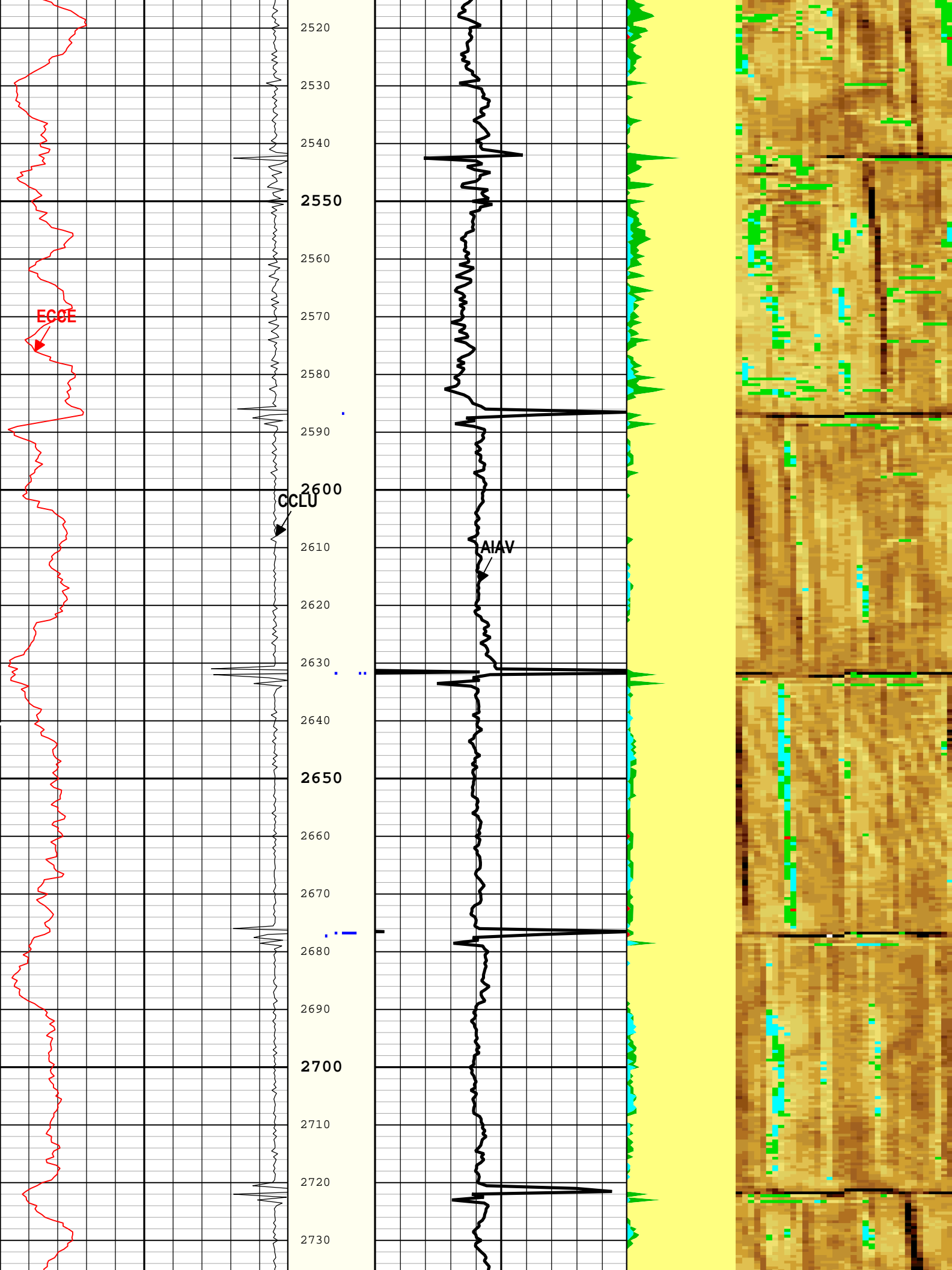


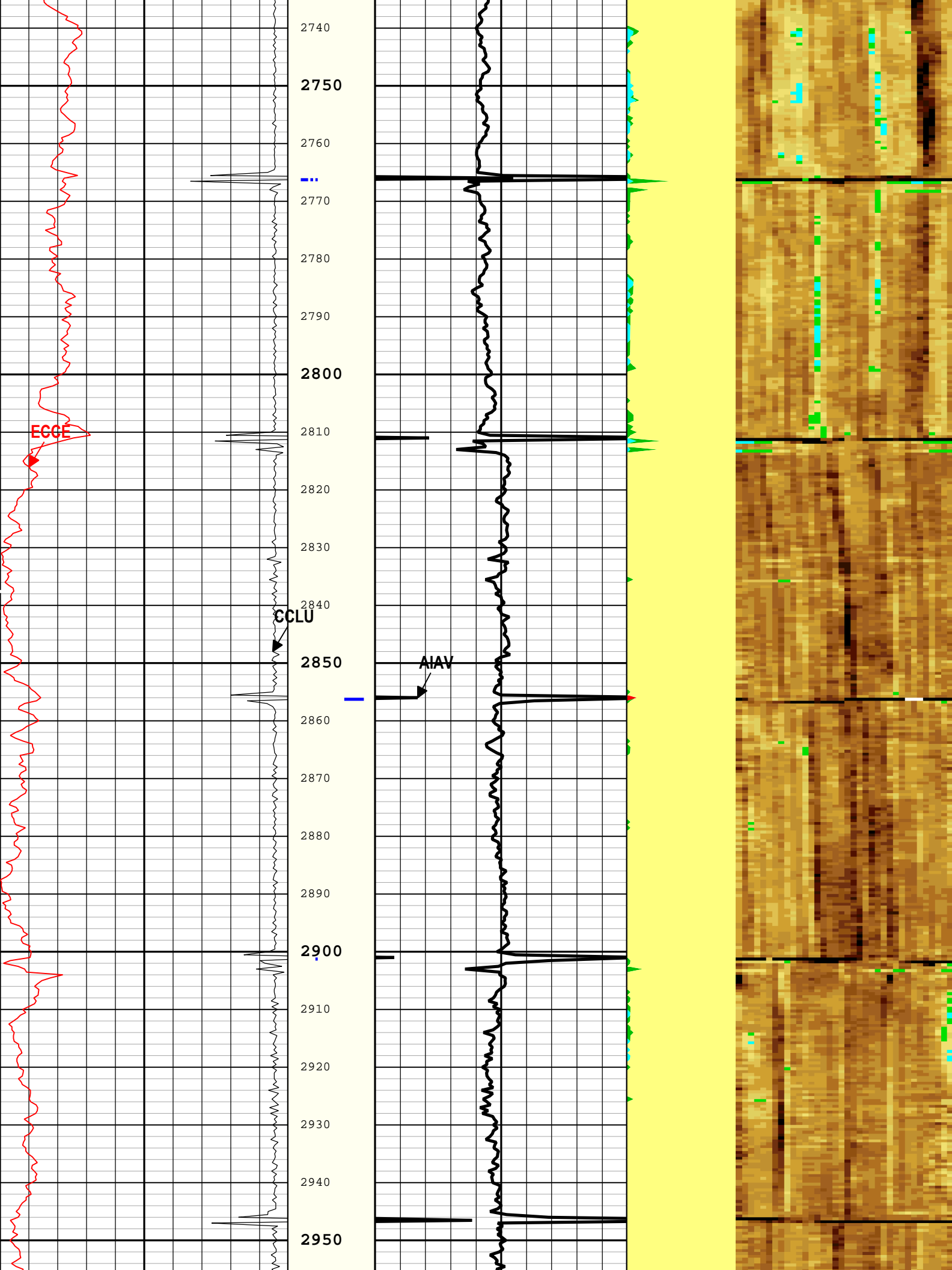


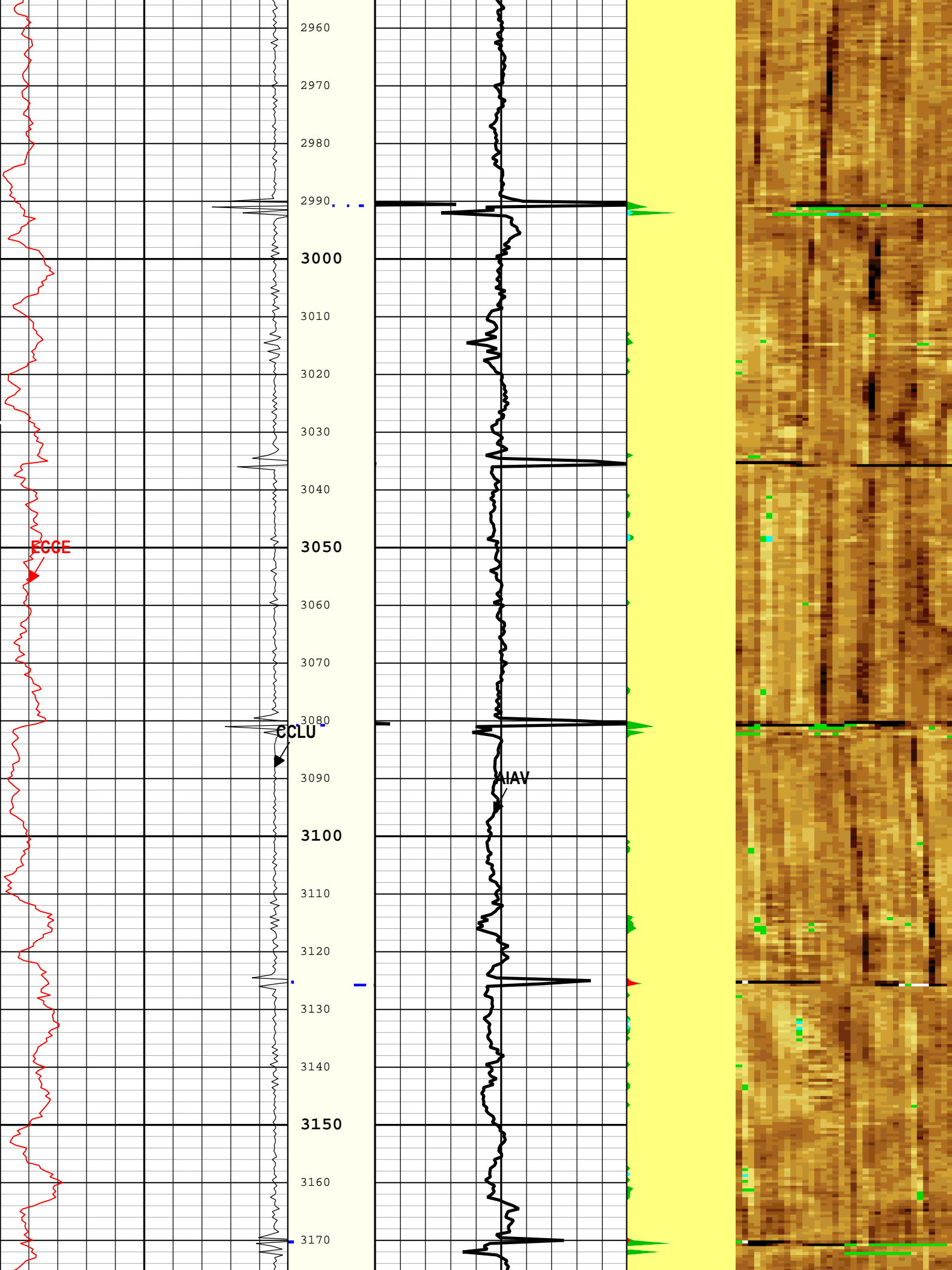


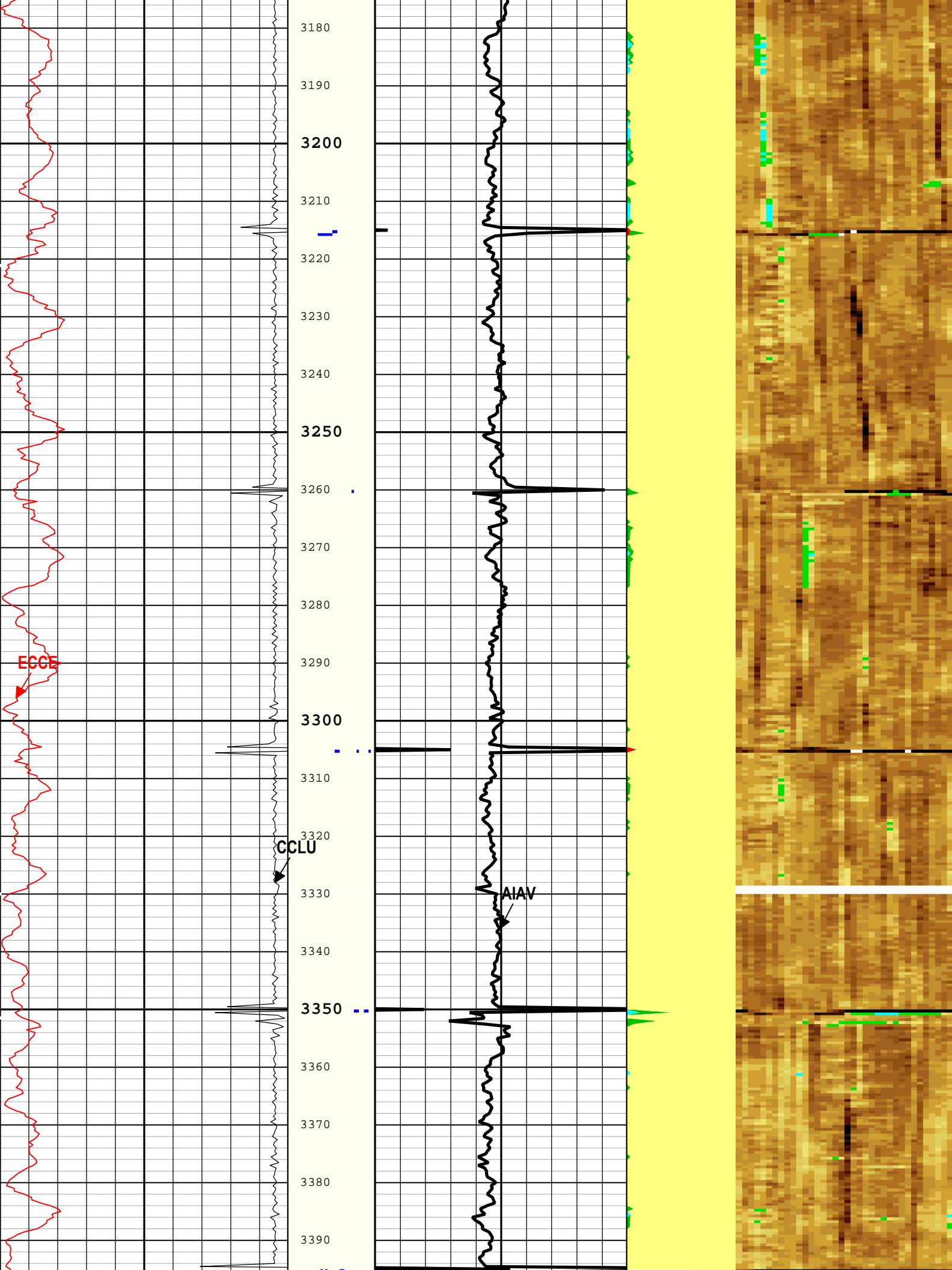


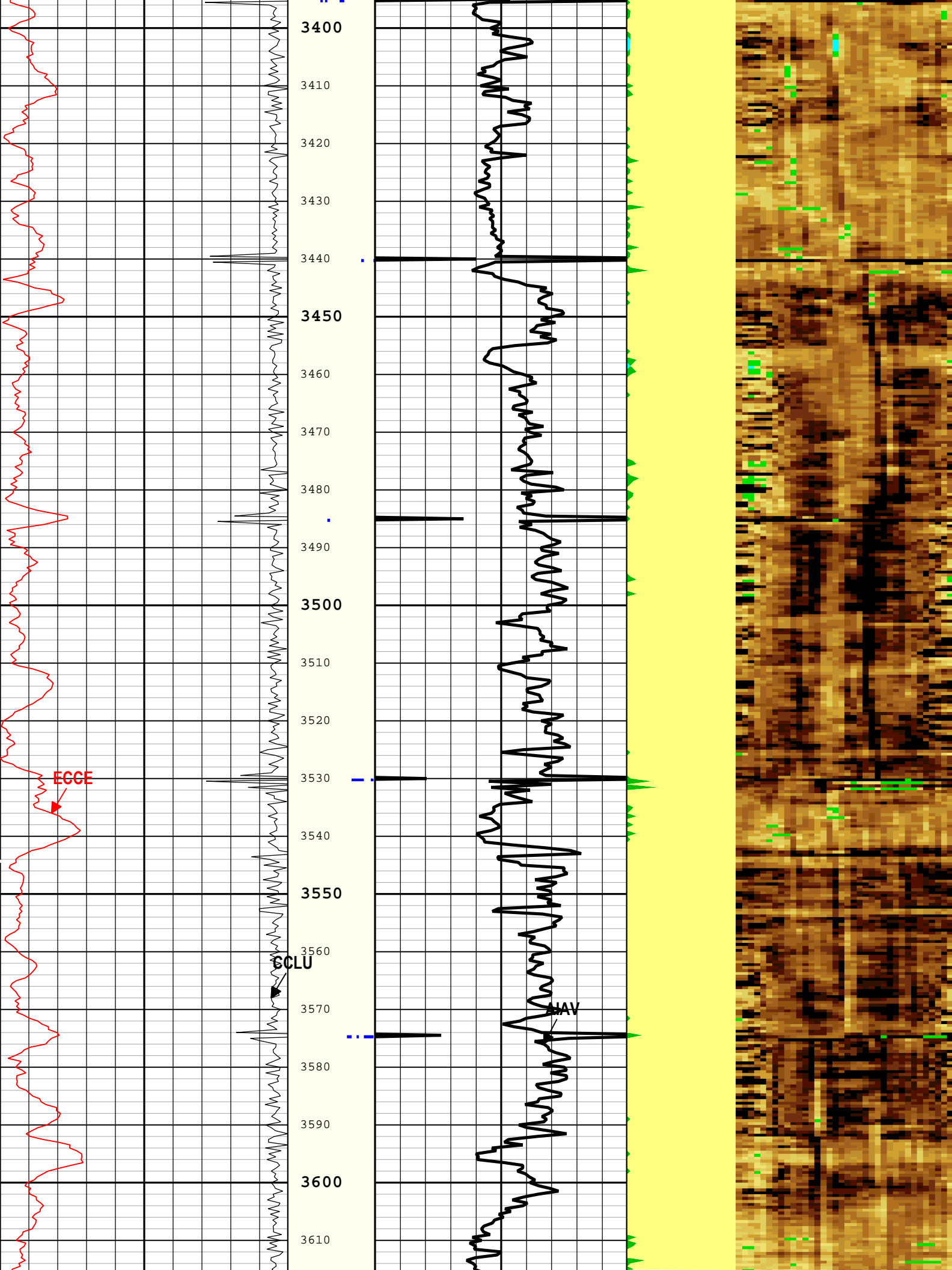


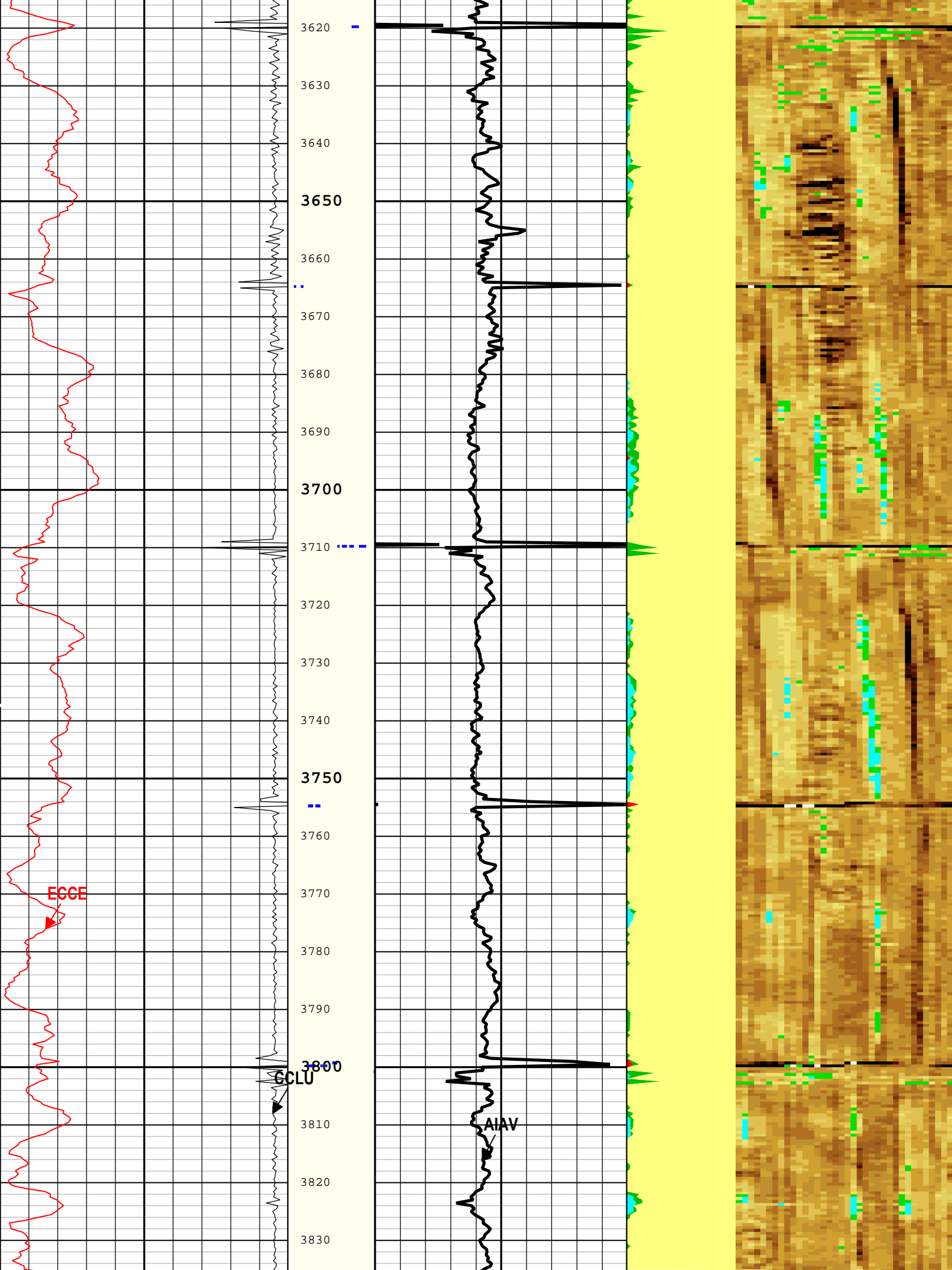


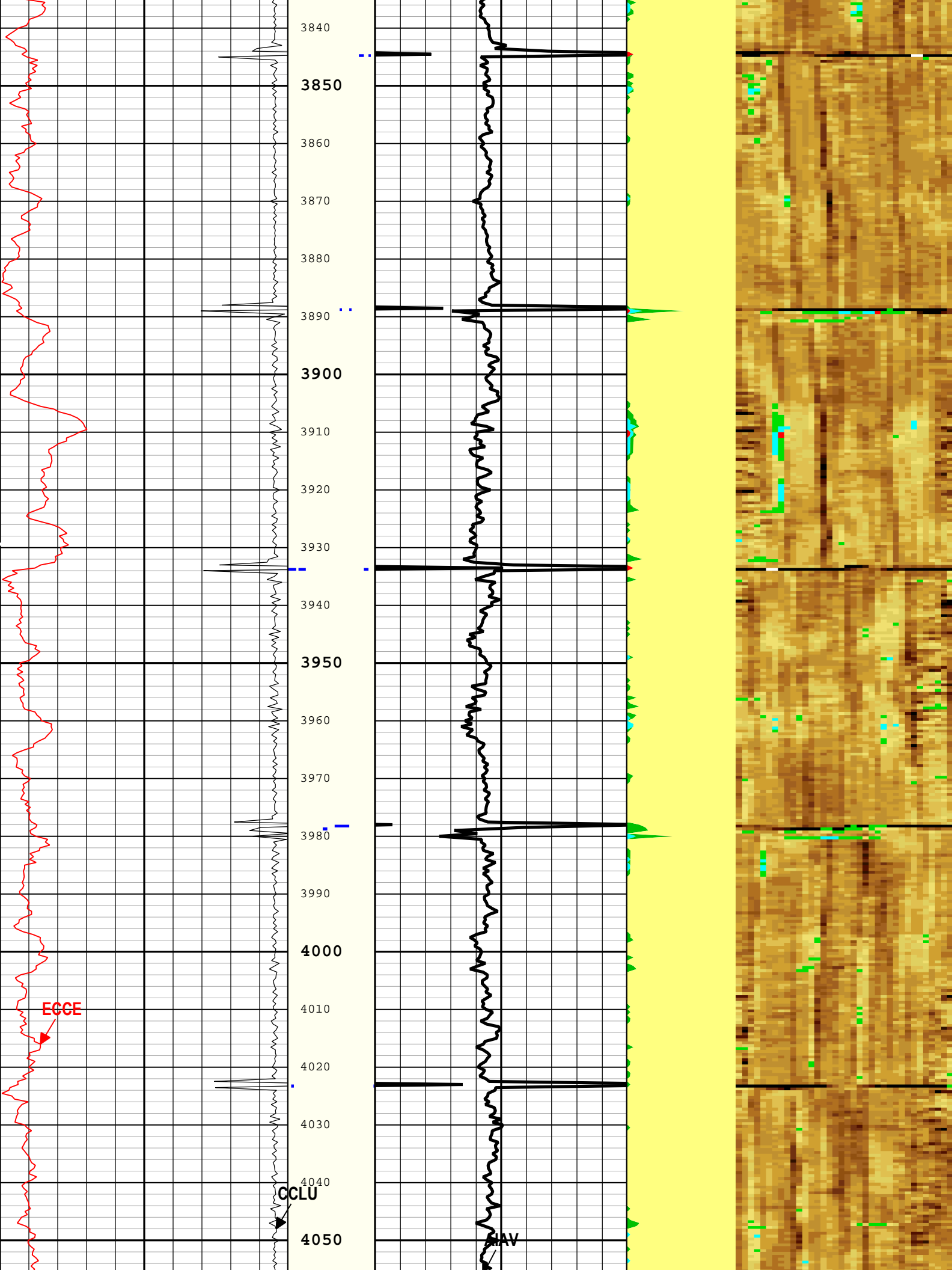


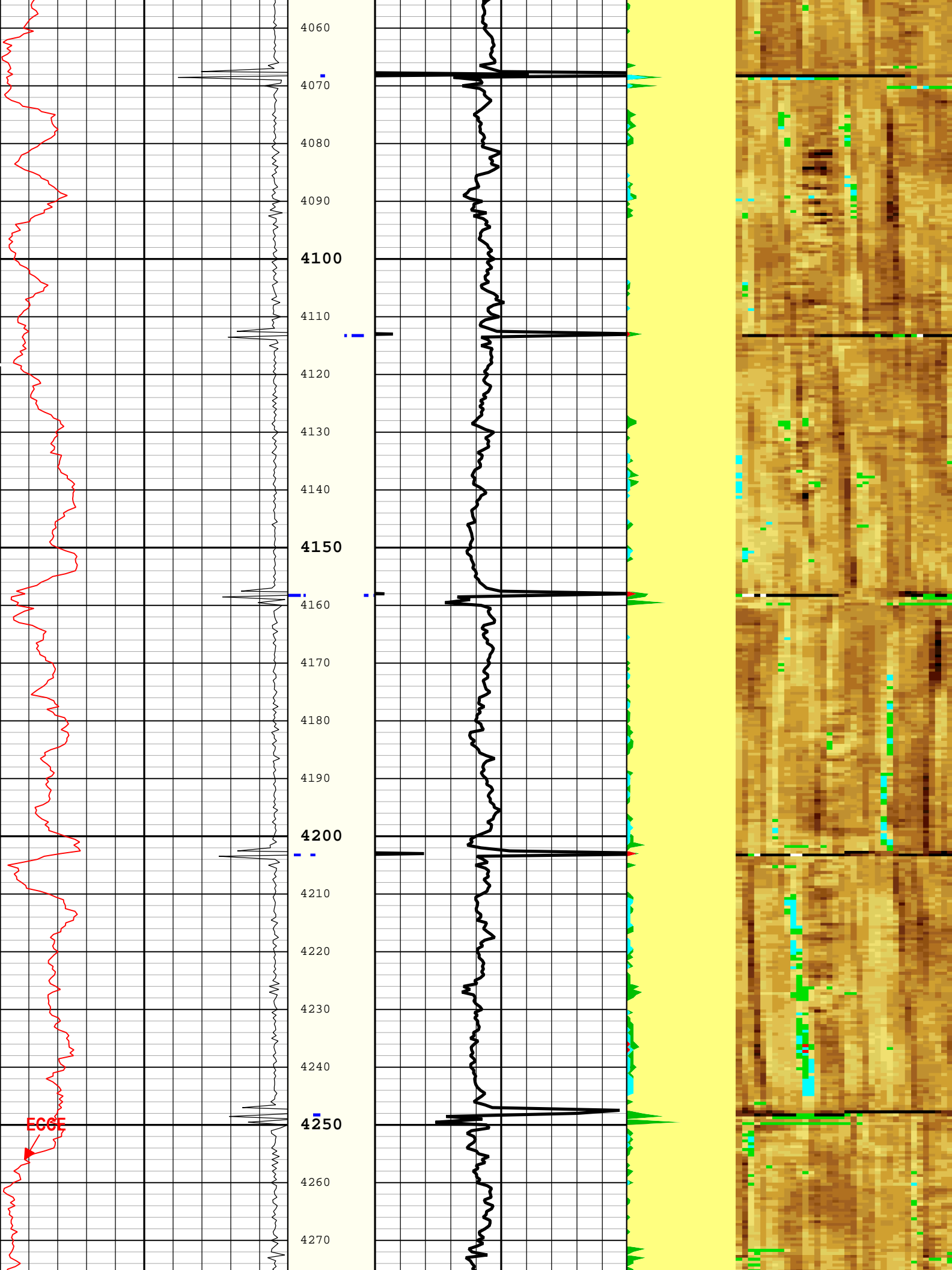




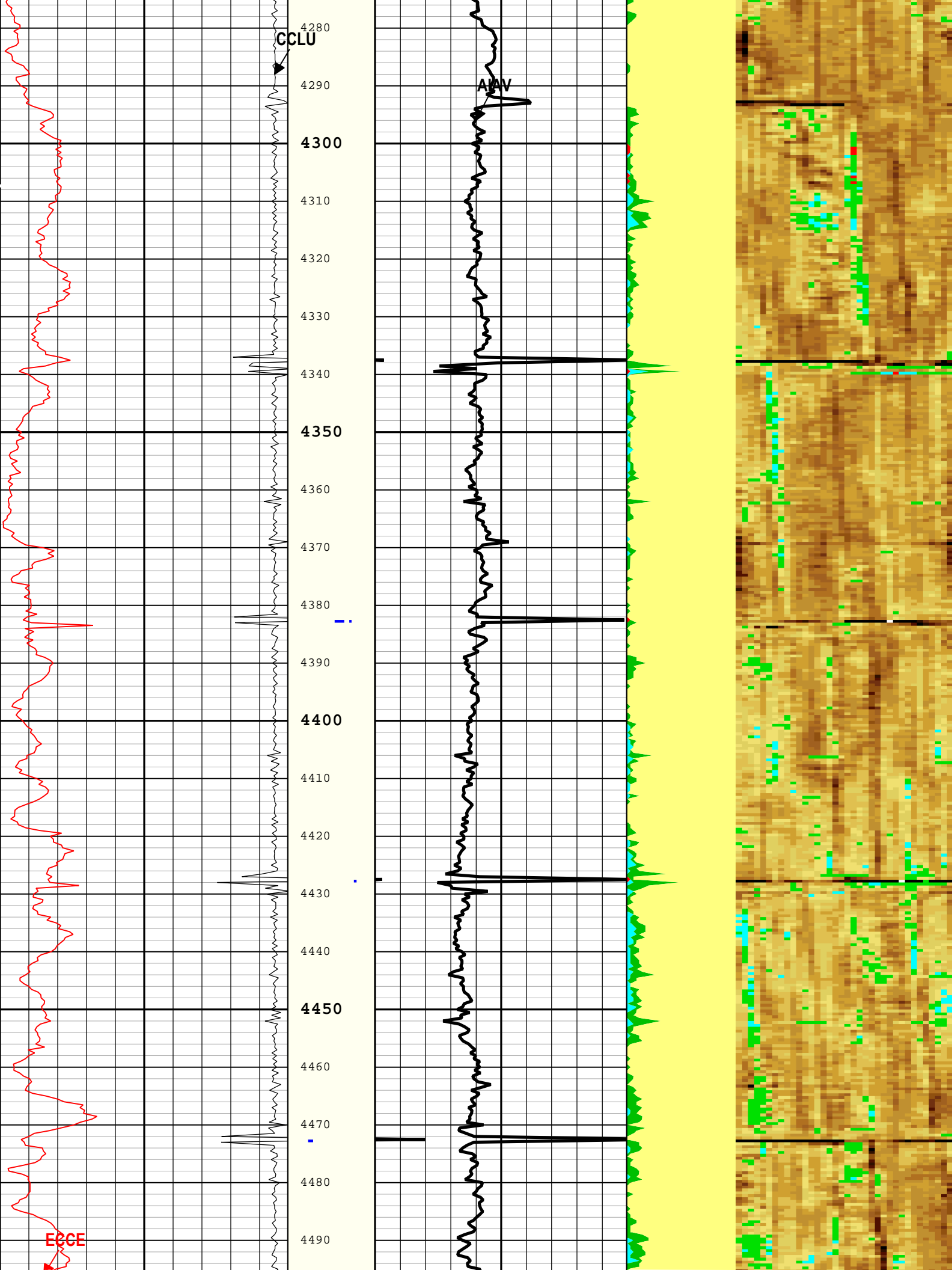


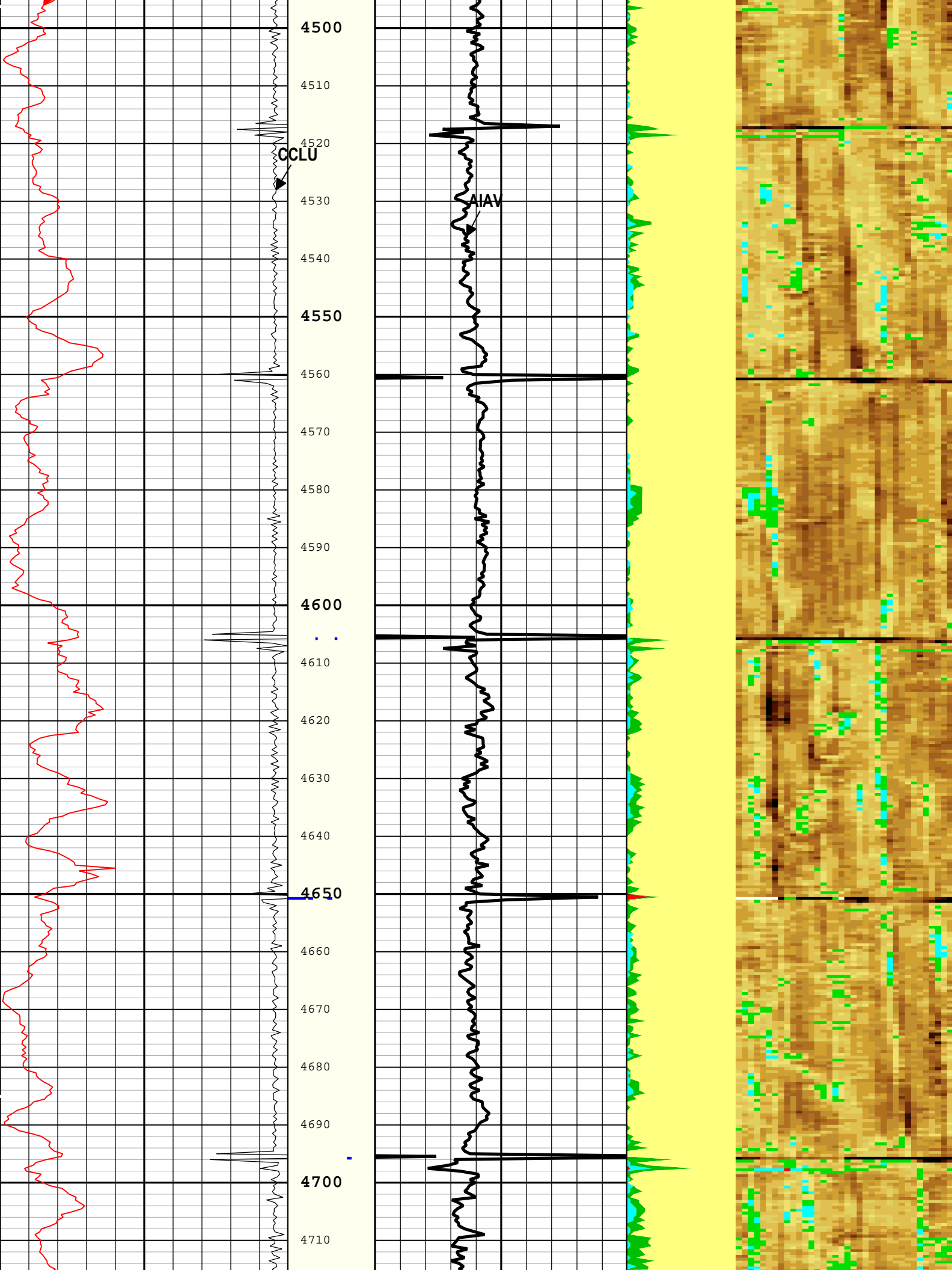


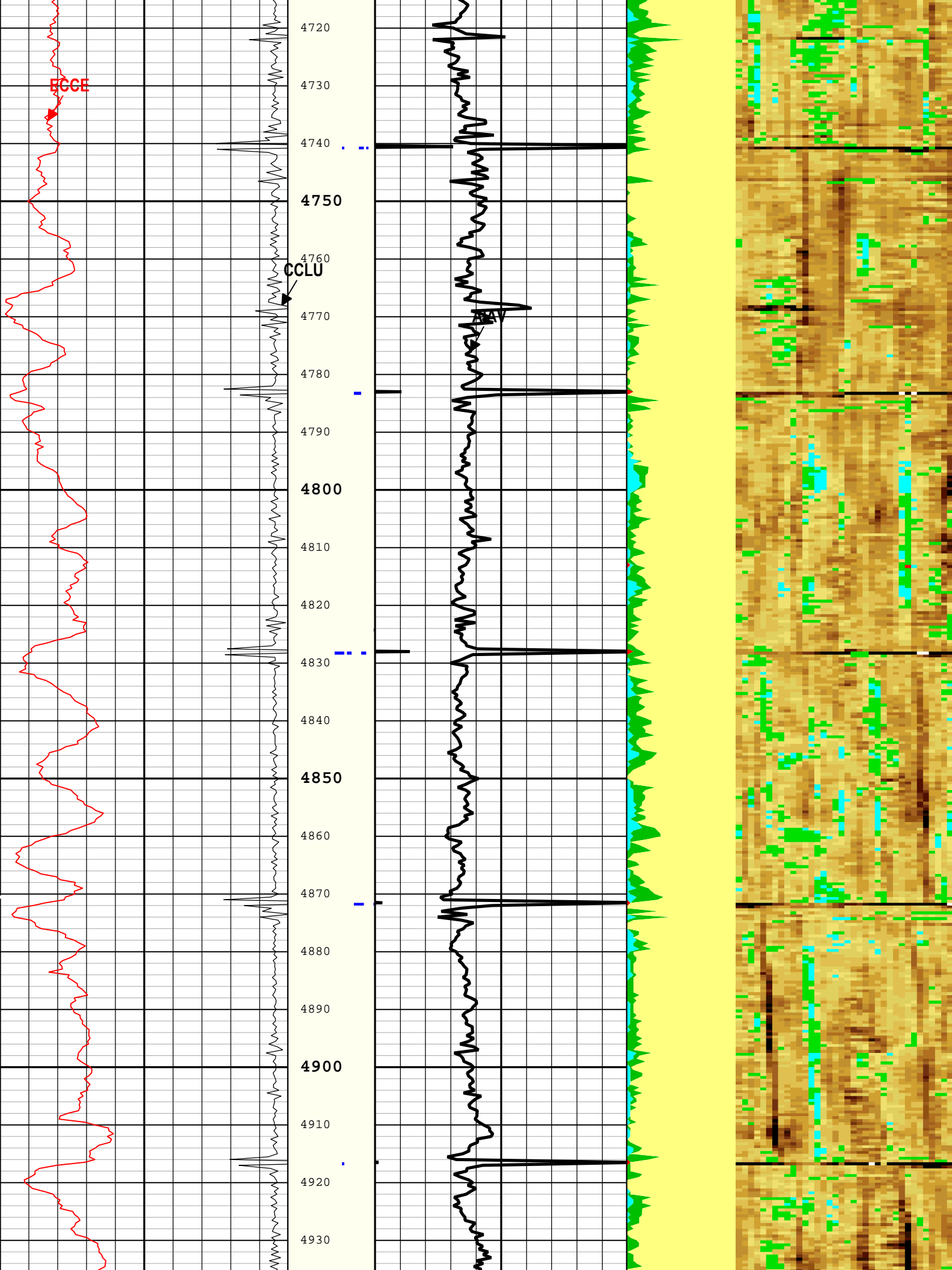


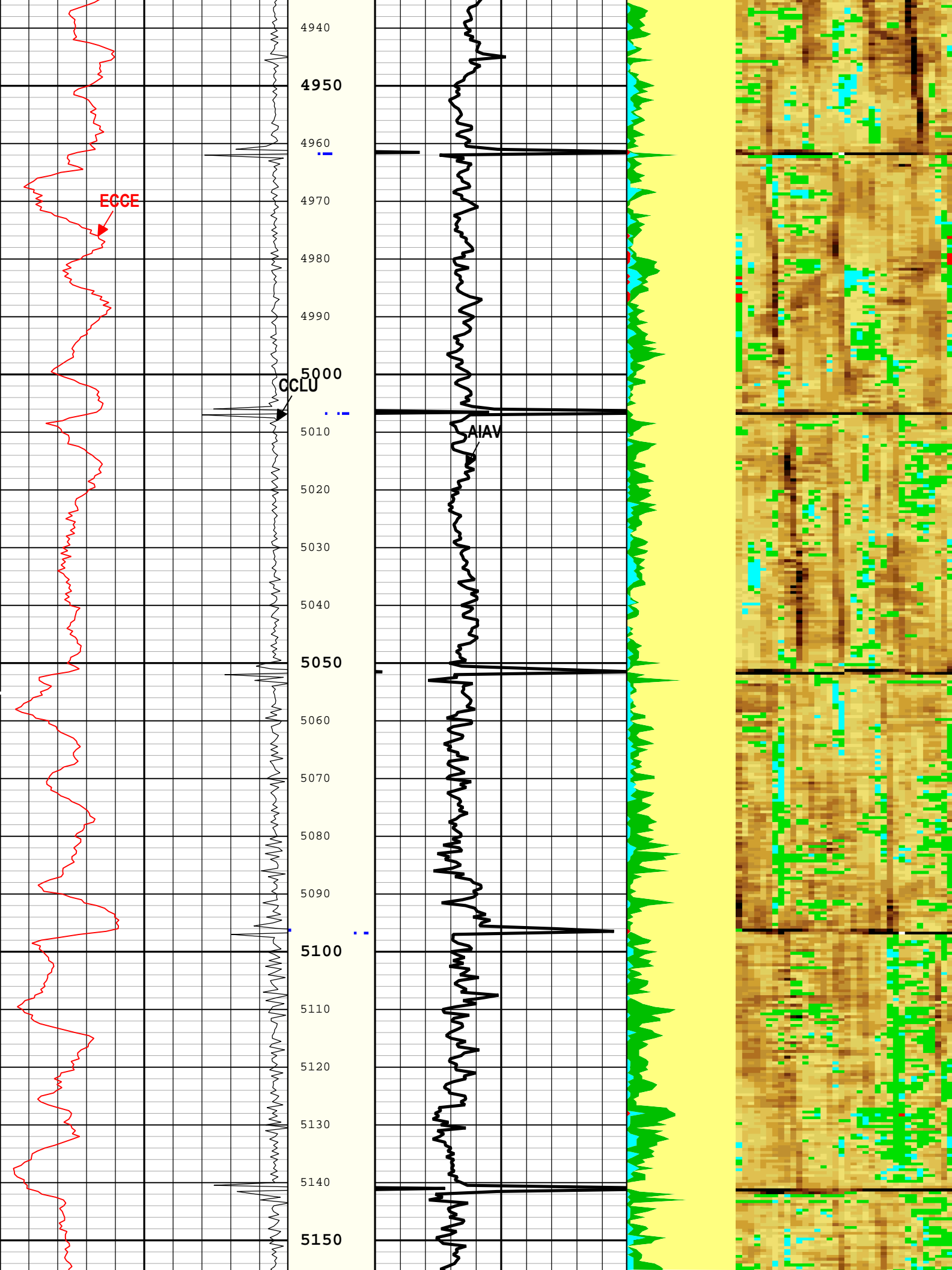


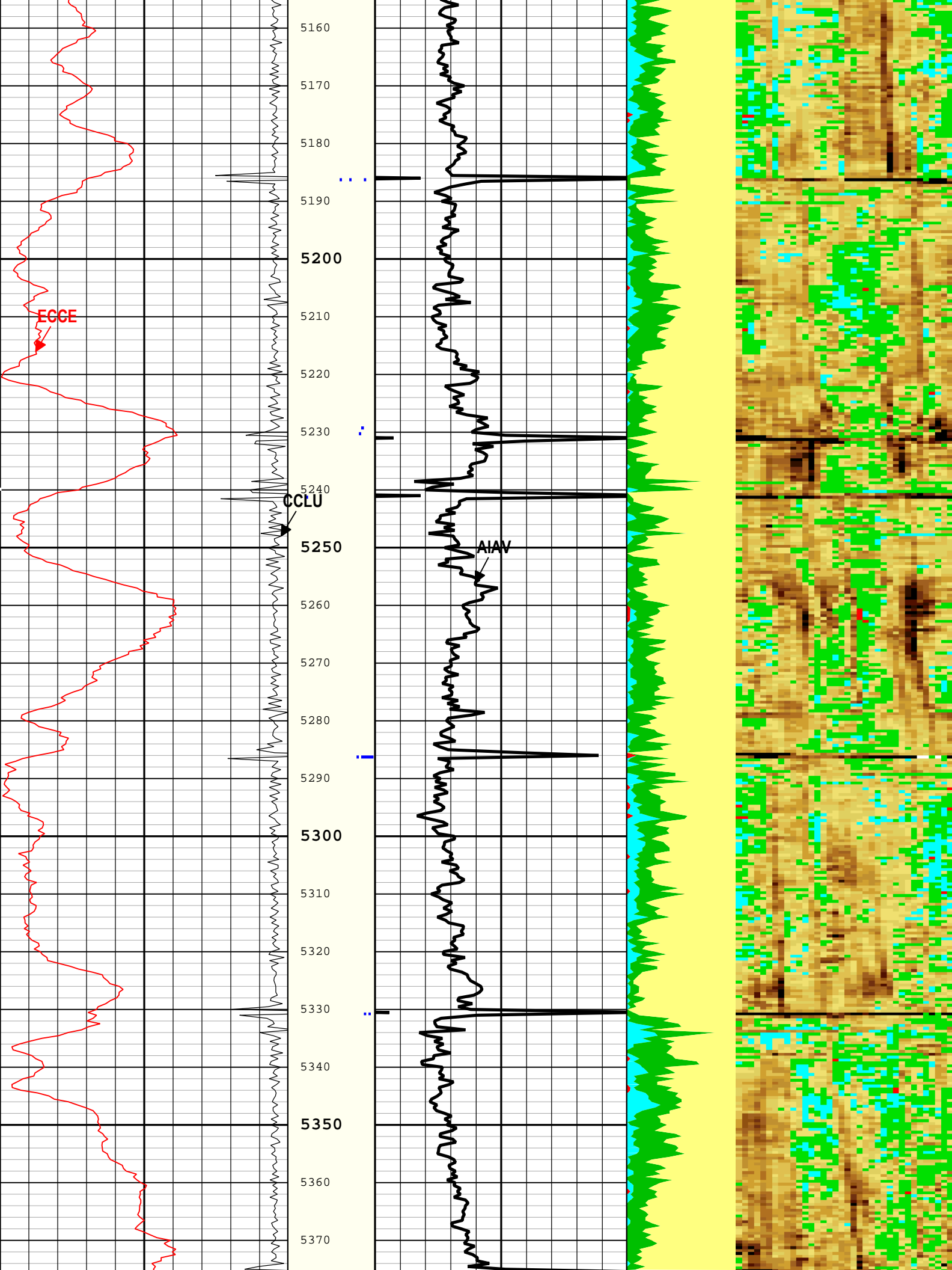


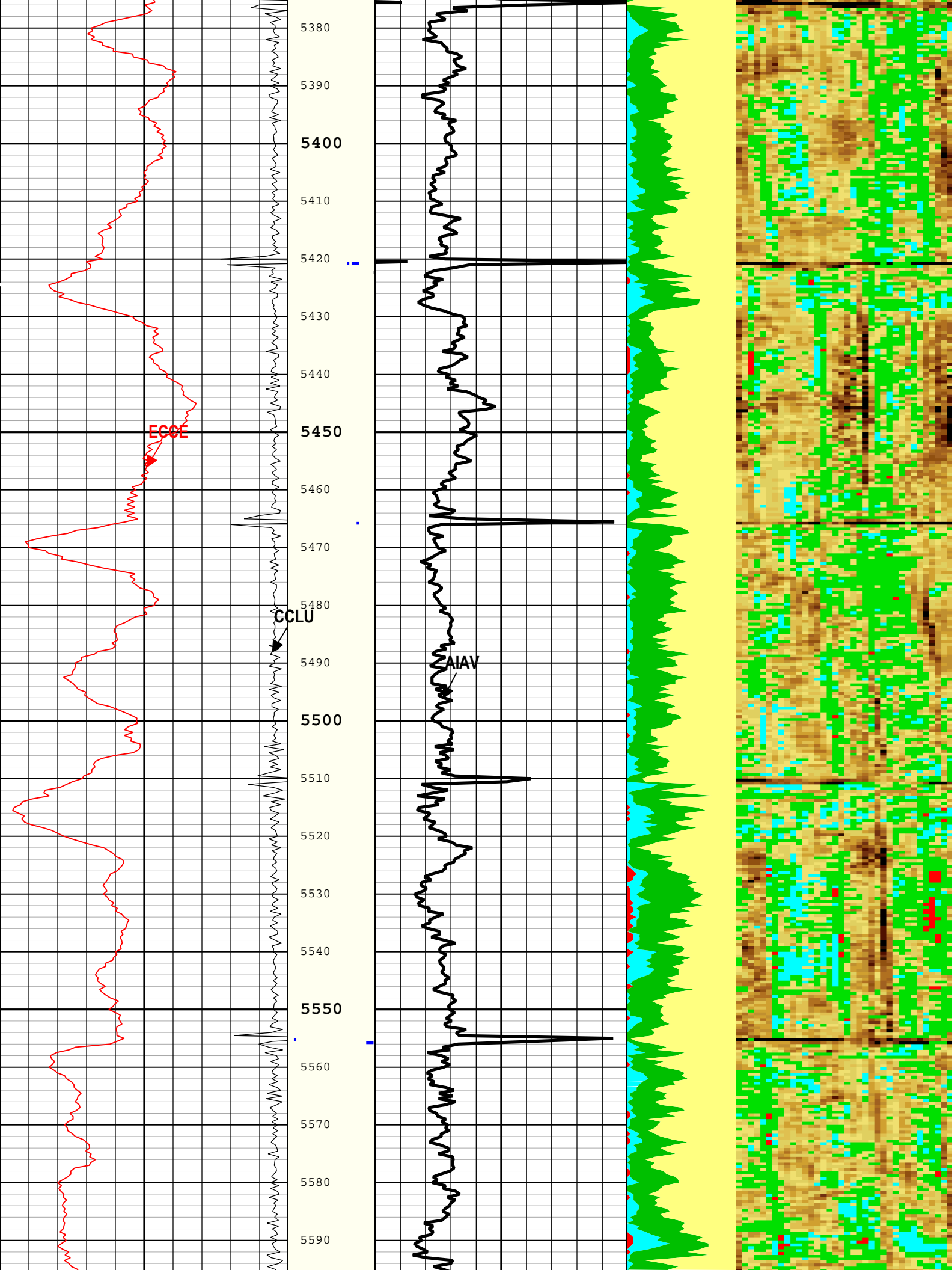


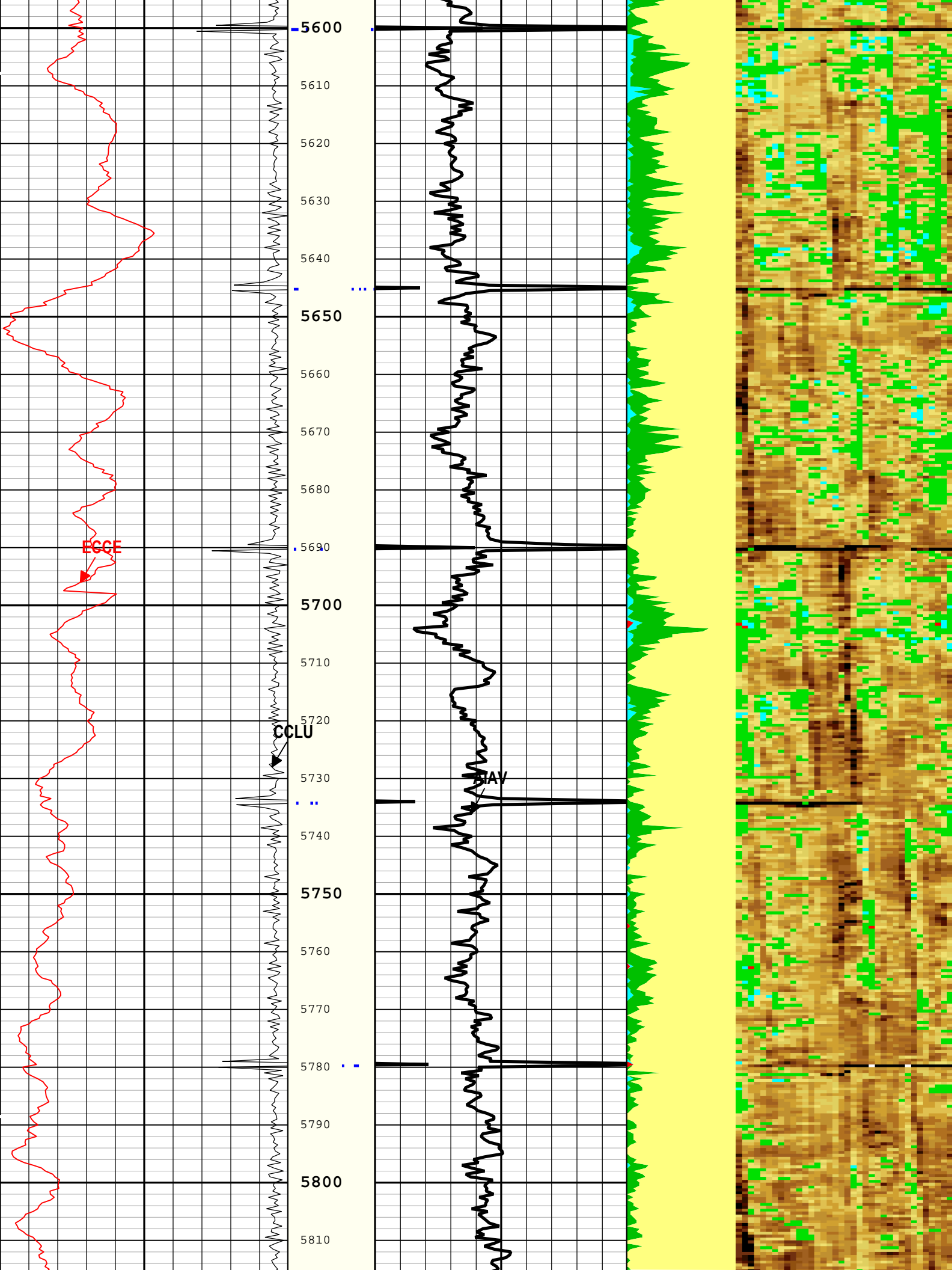


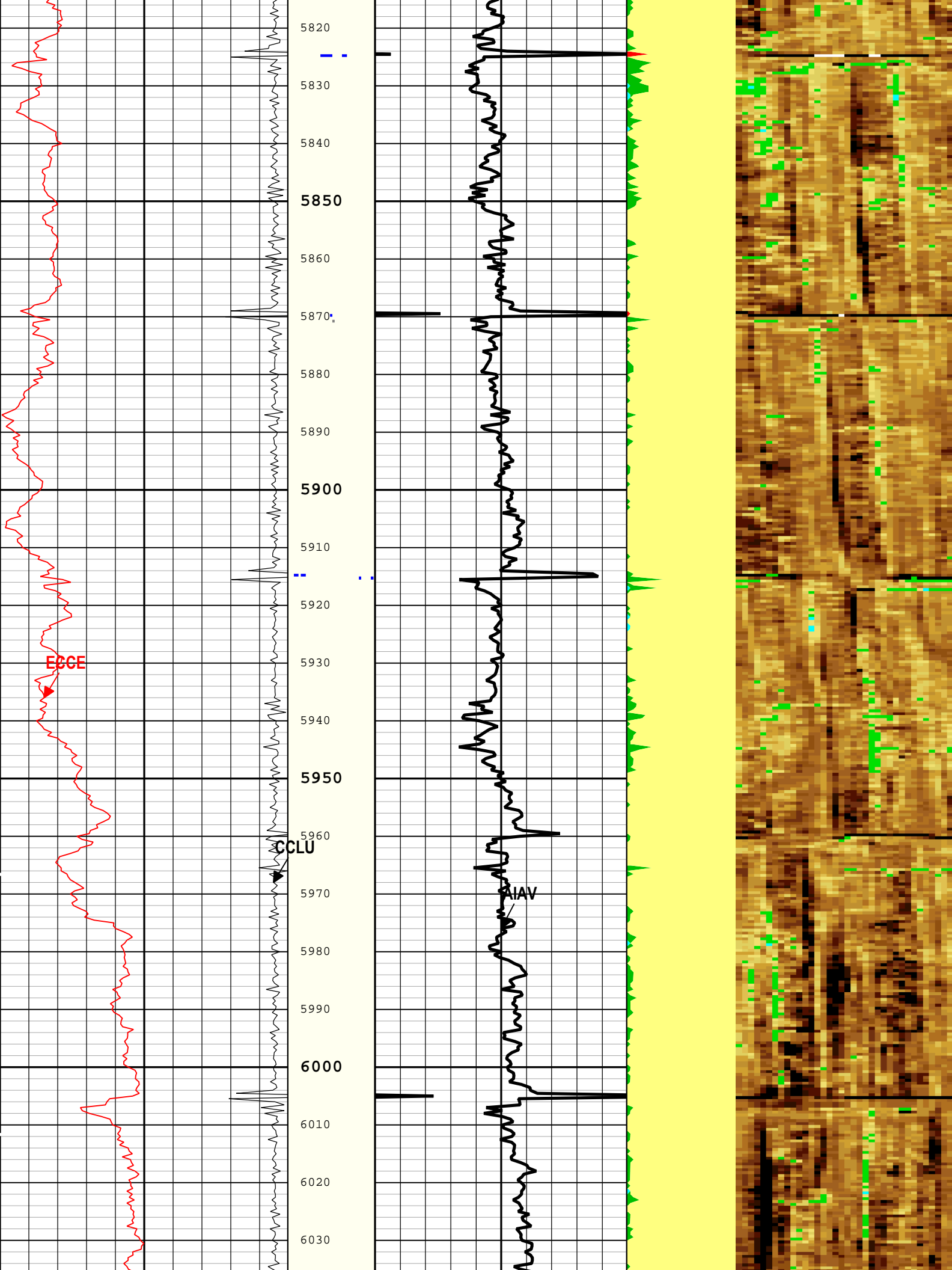




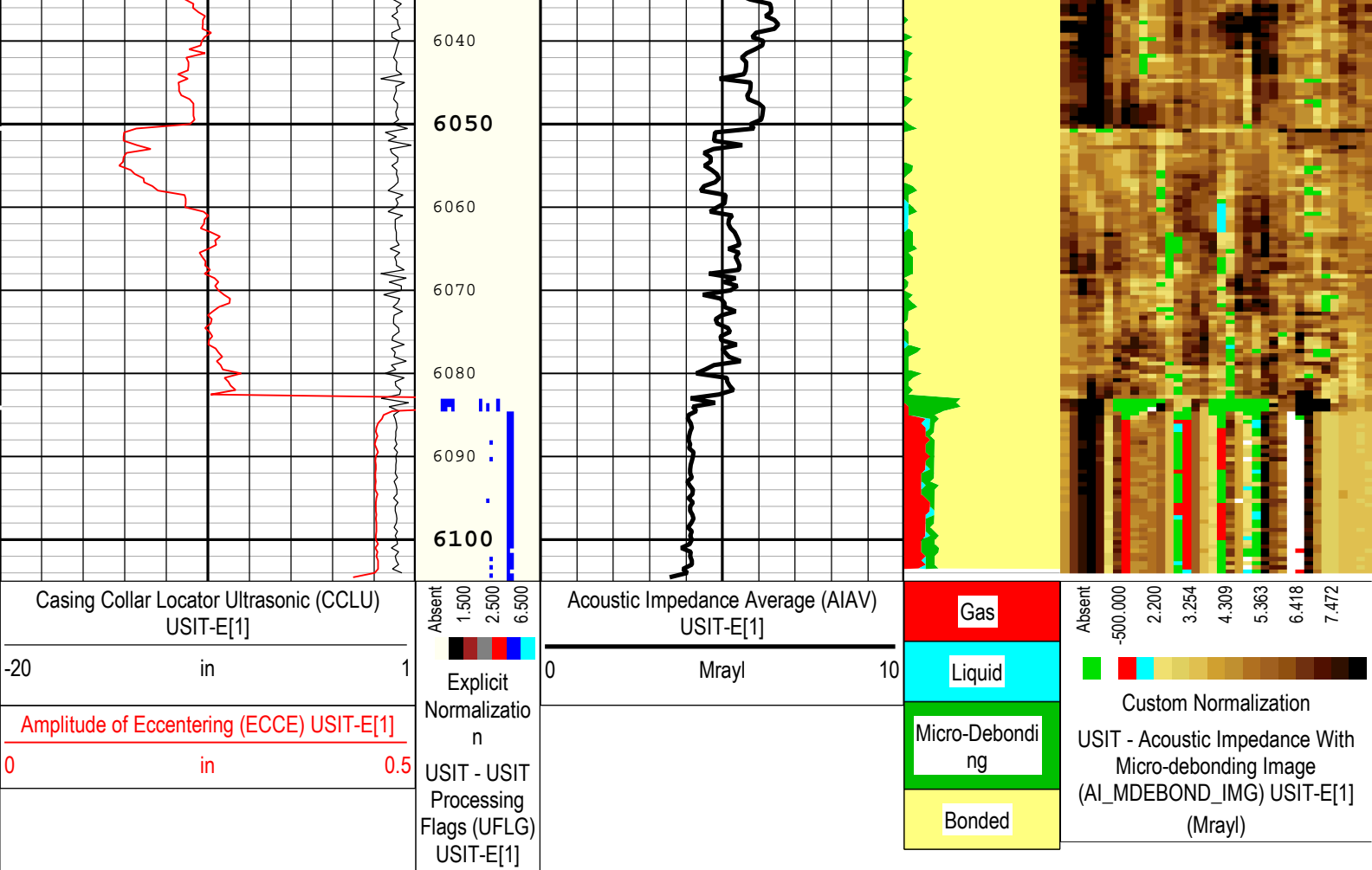












TIME\_1900 - Time Marked every 60.00 (s)

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: 20-Dec-2016 17:32:24

## Channel Processing Parameters

### One: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BS	Bit Size	WLSESSION	Depth Zoned	in
CMTY(U-USIT_CENT)	Cement Type	USIT-E	Regular Cement	
DFD	Drilling Fluid Density	Borehole	9.4	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	Off	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	Depth Zoned	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	2.2	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

## OneDepth Zoned Parameters

Parameter	Value	Start ( ft )	Stop ( ft )
BS	26	64.5	110
BS	13.5	110	1950
BS	8.5	1950	6105
MEAS_WLEN	20	64.5	1918.7
MEAS_WLEN	22.44	1918.7	6105
All depth are actual.			

## Tool Control Parameters

## One: Parameters

Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	18	dB
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	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	6100	ft
WINB	Window Begin Time	USIT-E	Time Zoned	us
WINE	Window End Time	USIT-E	Time Zoned	us

## OneTime Zoned Parameters

## Pass Log[4]:Up

Parameter	Value	Start Time	Stop Time	Start Depth ( ft )	Stop Depth ( ft )
EMXV	45	20-Dec-2016 14:48:34	20-Dec-2016 14:59:00	6105.77	5423.38
EMXV	55	20-Dec-2016 14:59:00	20-Dec-2016 15:08:11	5423.38	3700.07
EMXV	45	20-Dec-2016 15:08:11	20-Dec-2016 15:14:41	3700.07	2866.52
WINB	31.88	20-Dec-2016 14:48:34	20-Dec-2016 14:52:24	6105.77	6096.45
WINB	28	20-Dec-2016 14:52:24	20-Dec-2016 14:52:31	6096.45	6092.74
WINB	25	20-Dec-2016 14:52:31	20-Dec-2016 15:14:41	6092.74	2866.52
WINE	71.88	20-Dec-2016 14:48:34	20-Dec-2016 14:52:28	6105.77	6094.35
WINE	73	20-Dec-2016 14:52:28	20-Dec-2016 15:14:41	6094.35	2866.52

## Pass Log[5]:Up

EMXV	50	20-Dec-2016 15:21:01	20-Dec-2016 15:39:16	3329.98	64.79
WINB	31.88	20-Dec-2016 15:21:01	20-Dec-2016 15:39:16	3329.98	64.79
WINE	71.88	20-Dec-2016 15:21:01	20-Dec-2016 15:39:16	3329.98	64.79

All depth are at tool zero.

## One

## 32015 15:39:16

## Software Version

Acquisition System

Maxwell 2016 SP2

Version

6.2.64464.3100

## Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[2]:Up	Up	2122.08 ft	2519.99 ft	20-Dec-2016 1:39:33 PM	20-Dec-2016 1:45:49 PM	ON	-0.94 ft	Yes

All depths are referenced to toolstring zero

## Log

Company:Noble Energy, Inc.

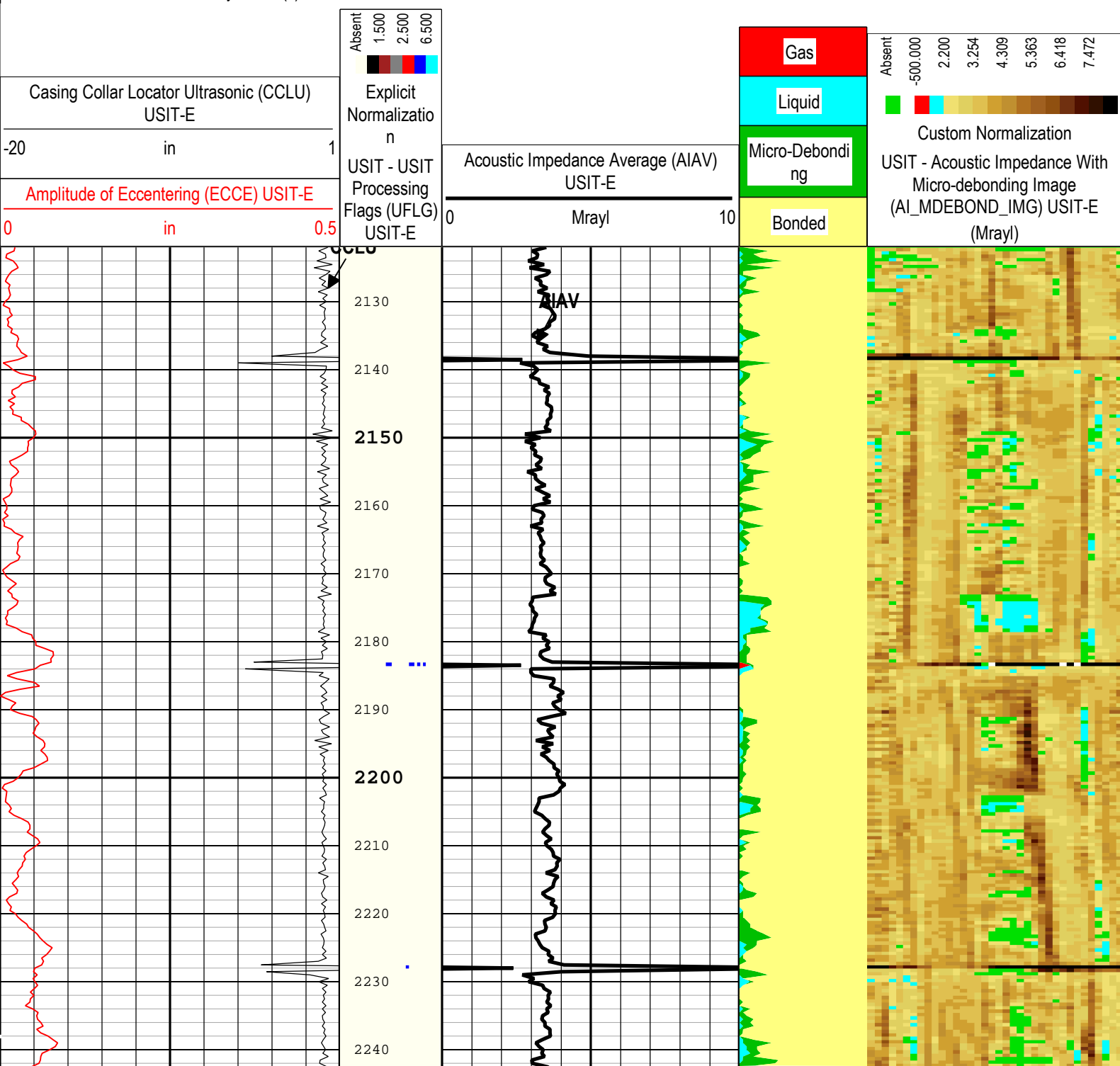
Well:Beretta Federal LC24-760

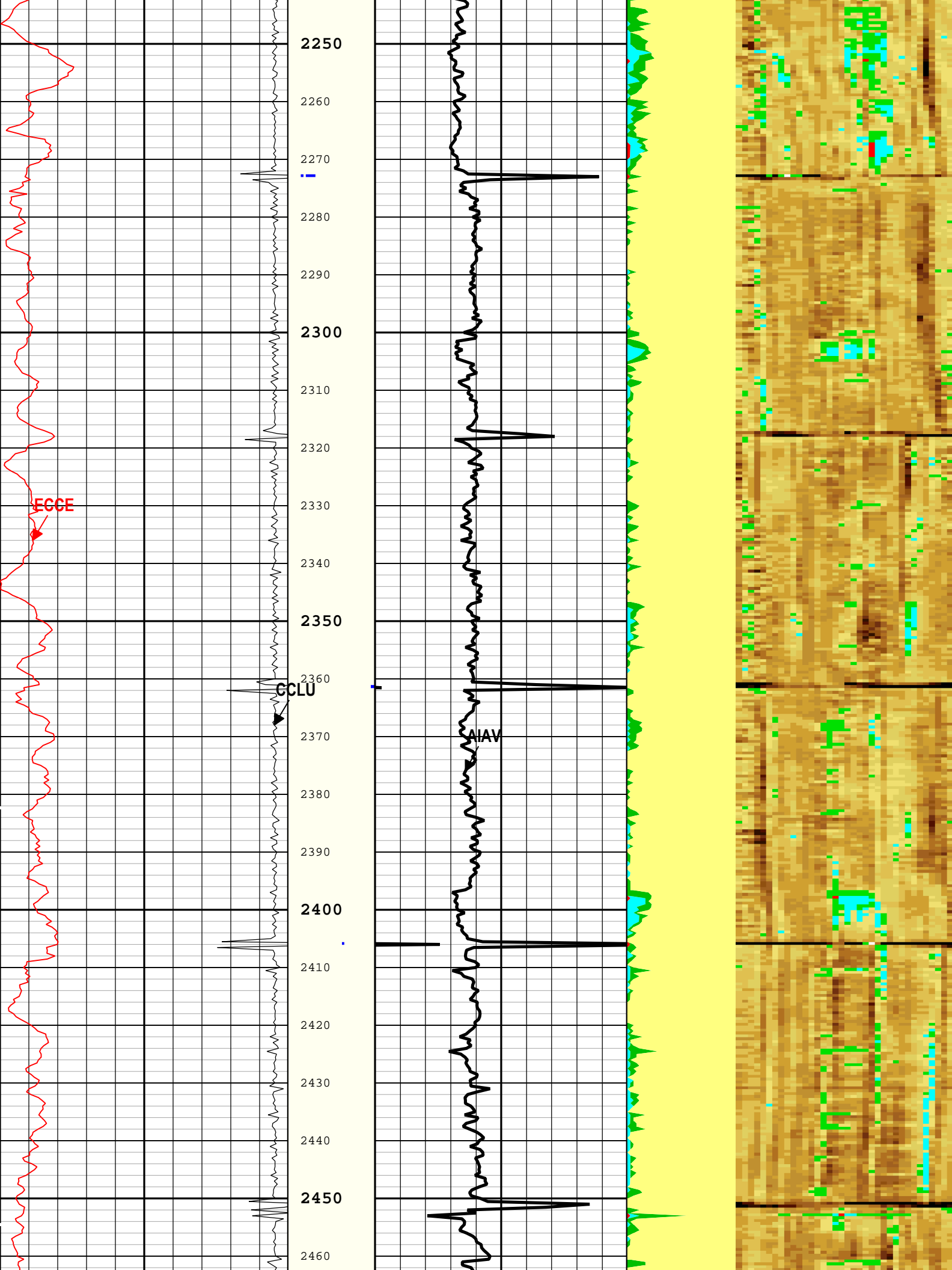
One: Log[2]:Up:S004

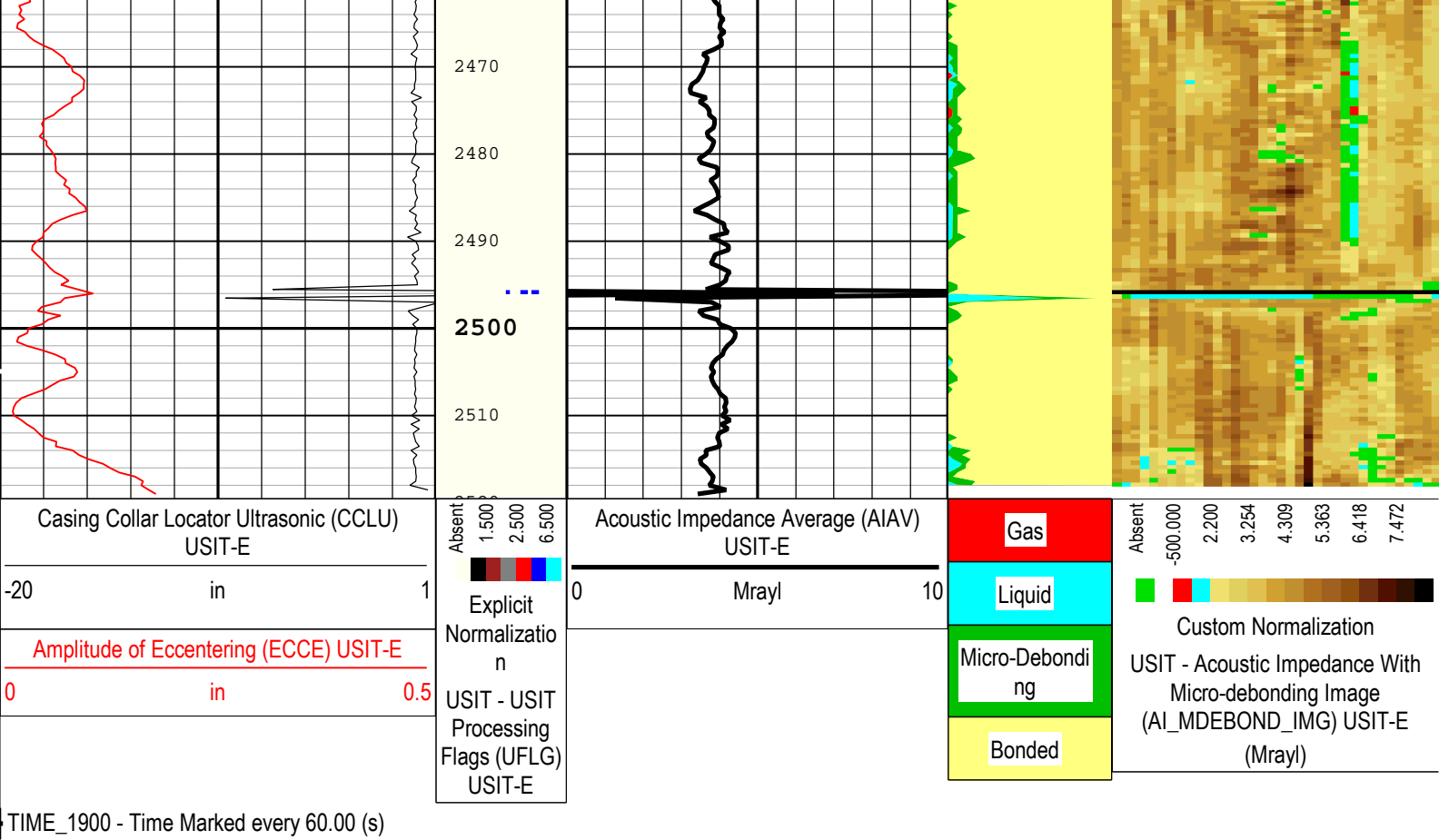
Description: Format: Log ( DJ Basin Ultrasonic Cement Summary Report ) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth

Creation Date: 20-Dec-2016 17:32:30

TIME\_1900 - Time Marked every 60.00 (s)







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: 20-Dec-2016 17:32:30

## Channel Processing Parameters

### One: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BS	Bit Size	WLSESSION	8.5	in
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DFD	Drilling Fluid Density	Borehole	9.4	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	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	2.2	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

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	45	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

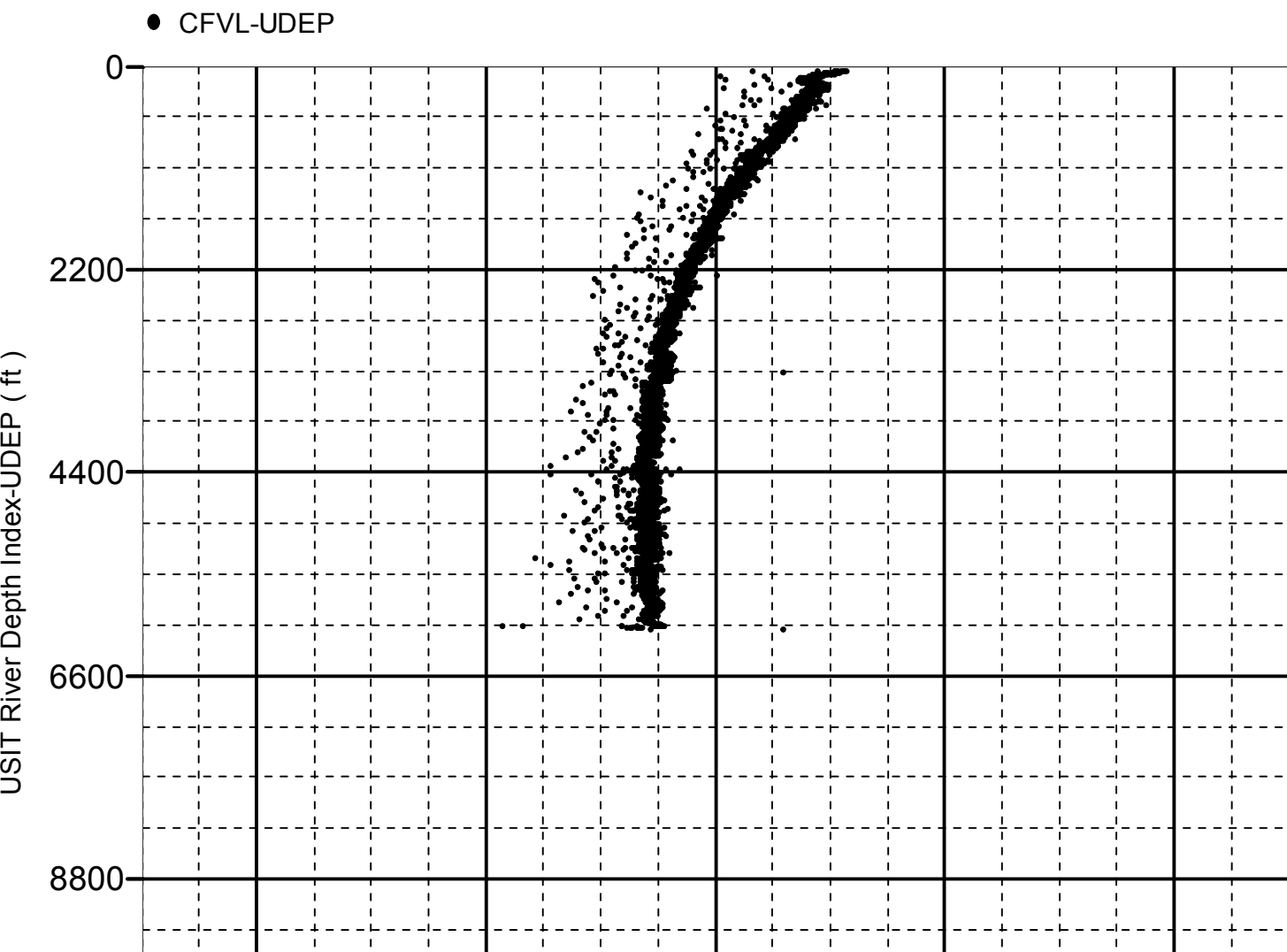
Company:Noble Energy, Inc. Well:Beretta Federal LC24-760

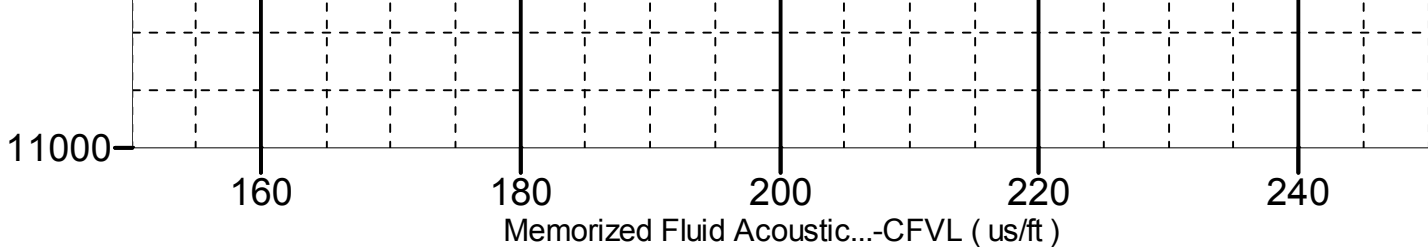
Composite 1:S004

# Fluid Acoustic Slowness vs Depth

## 2D Cross Plot

Index Range: From 64.50 to 6105.50 ft





XYZ

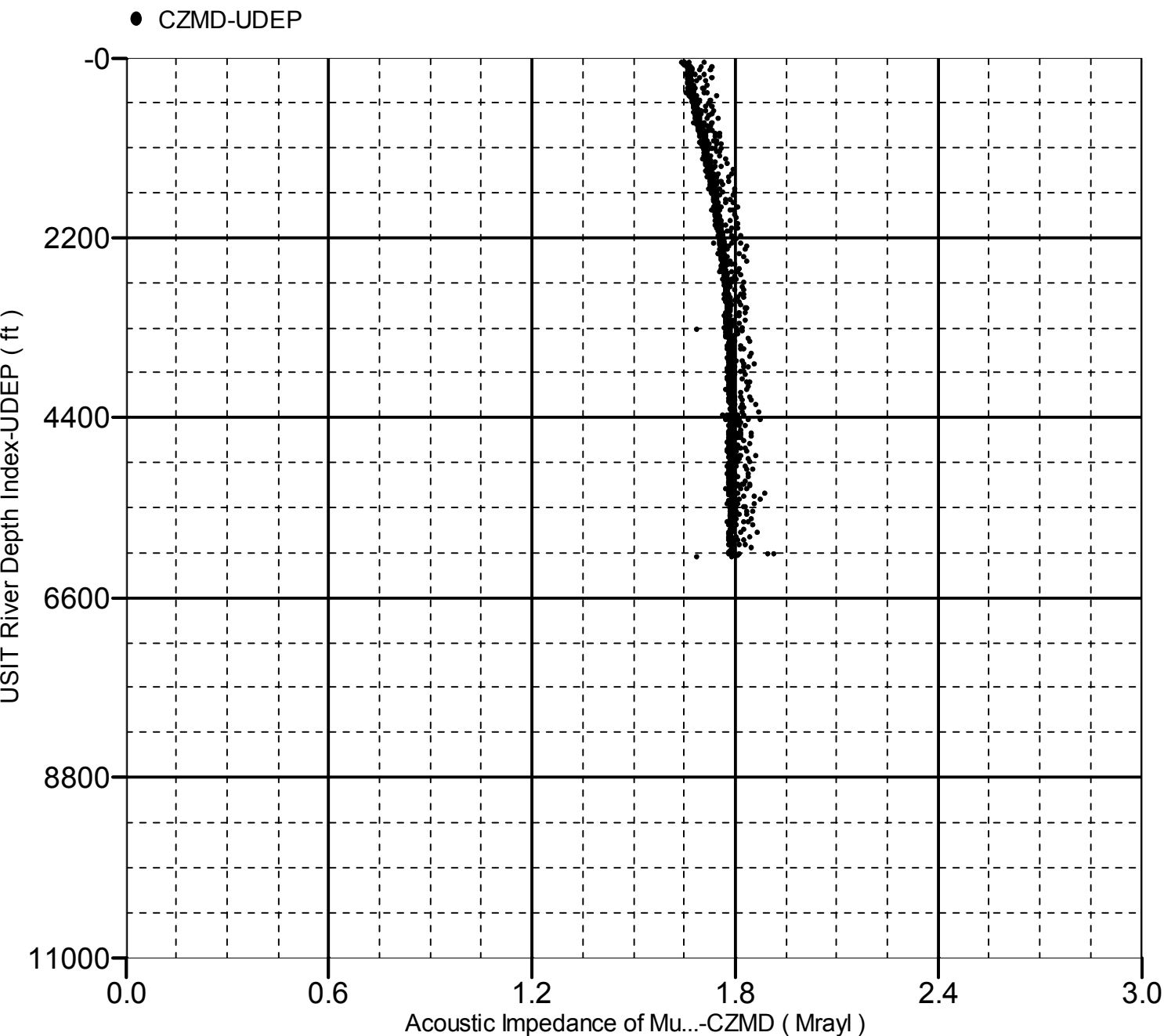
Company:Noble Energy, Inc. Well:Beretta Federal LC24-760

Composite 1:S004

# Acoustic Impedance of Mud vs Depth

## 2D Cross Plot

Index Range: From 64.50 to 6105.50 ft



Company:	Noble Energy, Inc.	Schlumberger
Well:	Beretta Federal LC24-760	
Field:	Wildcat	
County:	Weld	
State:	Colorado	

UltraSonic Summary Print