

Company: Noble Energy Inc

Well: Hullabaloo State Y21-736

Field: Wattenberg

County: Weld State: Colorado

UltraSonic Summary Print			
Location:			
NENE Sec. 16, T2N, R64W		Elev.: K.B. 4975.00 ft	
SHL: 100' FSL & 1735' FEL		G.L. 4945.00 ft	
Lat/Long: 40.14452 / -104.55044		D.F. 4975.00 ft	
Permanent Datum:	Ground Level	Elev.:	4945.00 f
Log Measured From:	Kelly Bushing	30.00 ft	above Perm.Datum
Drilling Measured From:	Kelly Bushing		
API Serial No.	Section:	Township:	Range:
05-123-45233	16	2N	64W
Logging Date	08-Nov-2017		

Run Number	ONE	
Depth Driller	17186.00 ft	
Schlumberger Depth	6870.00 ft	
Bottom Log Interval	6870.00 ft	
Top Log Interval	50.00 ft	
Casing Fluid Type	Brine	
Salinity		
Density	8.4 lbm/gal	
Fluid Level	0.00 ft	
BIT/CASING/TUBING STRING		
Bit Size	8.50 in	
From	2029.00 ft	
To	6870.00 ft	
Casing/Tubing Size	5.5 in	
Weight	20 lbm/ft	
Grade	P110	
From	0.00 ft	
To	6870.00 ft	
Max Recorded Temperatures	221 degF	
Logger on Bottom	08-Nov-2017	08:47:00
Unit Number	2161	Fort Morgan, CO
Recorded By	A.BLOCHOWICZ	
Witnessed By	BILL MANSFIELD	

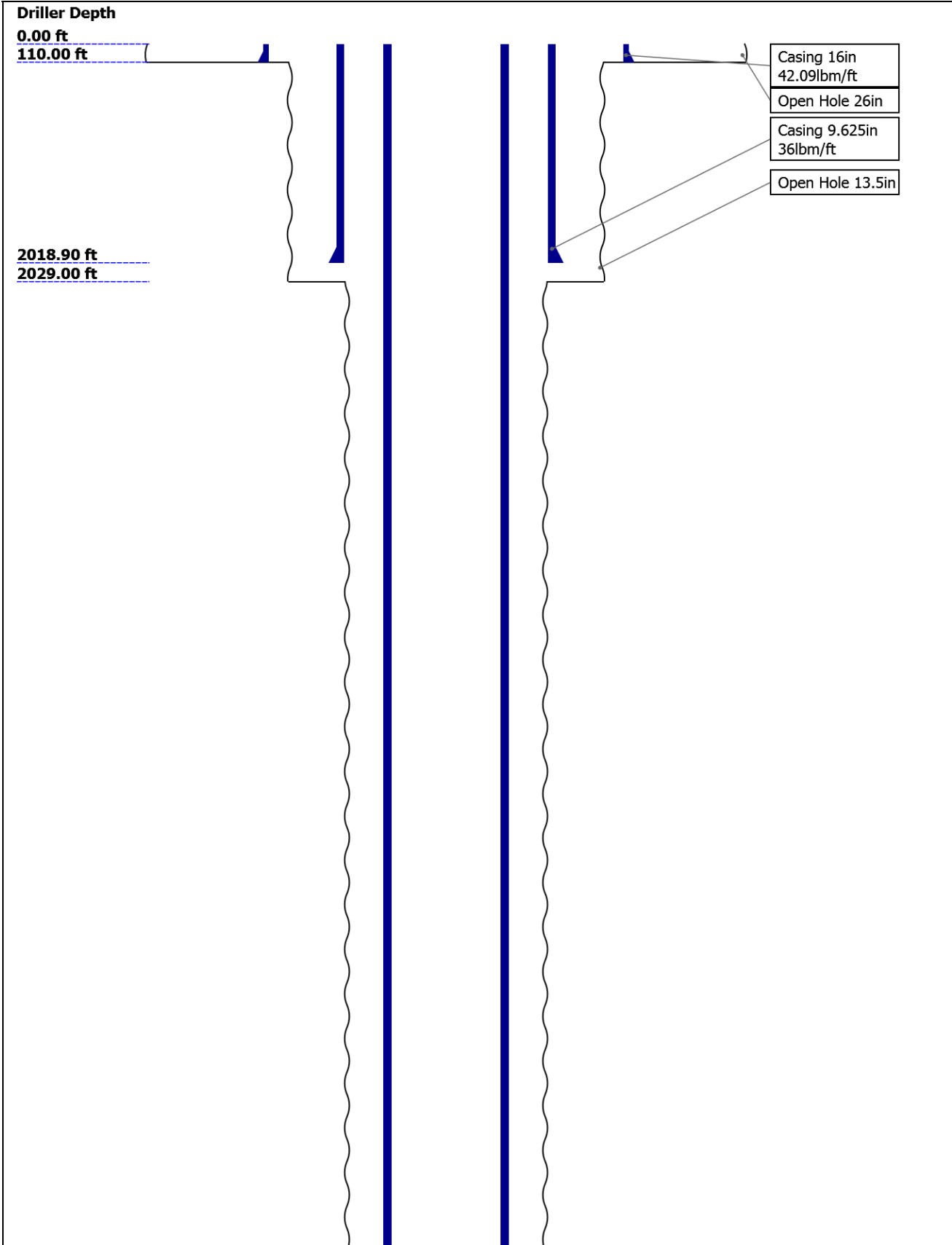
Disclaimer

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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	
8. Depth Summary	
9. USI Fluid Properties Measurement_1	
10. ONE 2500 PSI Main Pass	
10.1 Integration Summary	
10.2 Software Version	
10.3 Composite Summary	
10.4 Log (DJ Basin Ultrasonic Cement Summary Report)	
10.5 Parameter Listing	
11. ONE 0 PSI Repeat Pass	

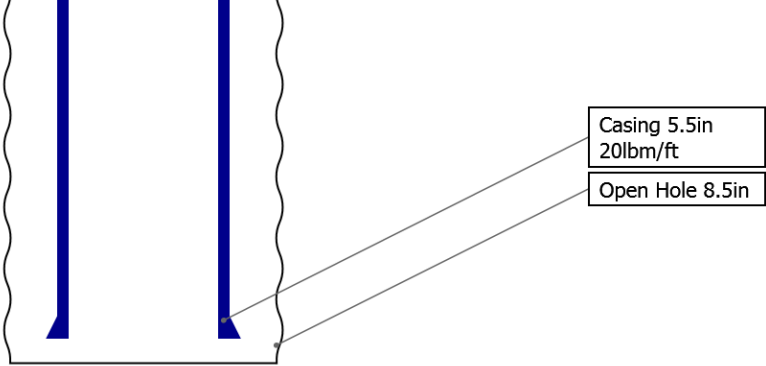
- 11.1 Integration Summary
- 11.2 Software Version
- 11.3 Composite Summary
- 11.4 Log (DJ Basin Ultrasonic Cement Summary Report)
- 11.5 Parameter Listing
- 12. XYZ (USI Fluid Acoustic Slowness vs Depth 3.0 in)

Well Sketch



17181.20 ft

17186.00 ft



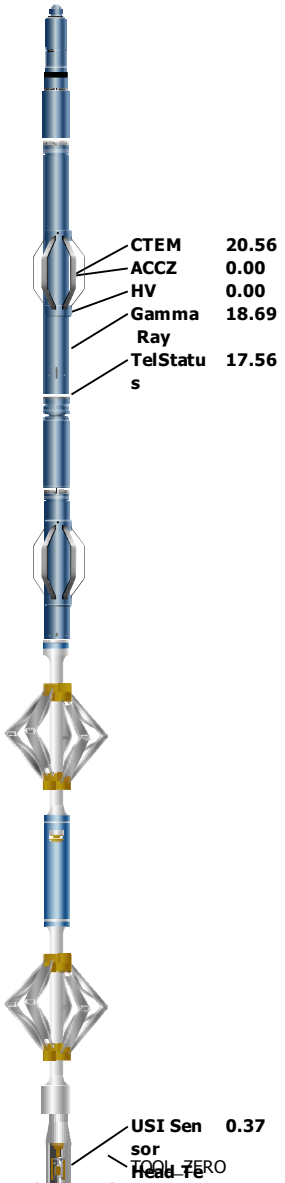
Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	26	13.5	8.5			
Top Driller (ft)	0	110	2029			
Top Logger (ft)	0	110	2029			
Bottom Driller (ft)	110	2029	17186			
Bottom Logger (ft)	110	2029	6870			
Casing						
Size (in)	16	9.625	5.5			
Weight (lbm/ft)	42.09	36	20			
Inner Diameter (in)	15.511	8.921	4.778			
Grade	N/A	J55	P110			
Top Driller (ft)	0	0	0			
Top Logger (ft)	0	0	0			
Bottom Driller (ft)	110	2018.9	17181.2			
Bottom Logger (ft)	110	2018.9	6870			

Operational Run Summary

Parameter (unit)	ONE					
Date Log Started	08-Nov-2017					
Time Log Started	07:29:04					
Date Log Finished	08-Nov-2017					
Time Log Finished	10:09:00					
Top Log Interval (ft)	50.00					
Bottom Log Interval (ft)	6870.00					
Total Depth (ft)	6870.00					
Max Hole Deviation (deg)	0.00					
Azimuth of Max Deviation (deg)	0.00					
Bit Size (in)	8.500					
Logging Unit Number	2161					
Logging Unit Location	Fort Morgan, CO					
Recorded By	A.BLOCHOWICZ					

Witnessed By	BILL MANSFIELD					
Service Order Number	DXCR-00015					

Remarks and Equipment Summary					
ONE: Toolstring				ONE: Remarks	
<div><div><div><div><div>Equip name</div><div>Length</div></div><div>LEH-QT</div><div>26.97</div></div><div>LEH-QT</div></div><div><div><div><div>MP name</div><div>Offset</div></div><div>EDTC-B:8</div><div>24.06</div></div><div>102</div><div>EDTH-B:92</div><div>45</div><div>EDTG-B:77</div><div>004</div><div>EDTC-B:81</div><div>02</div></div><div><div><div><div>AH-184:2</div><div>17.56</div></div><div>765</div></div><div><div><div><div>USIT-E:94</div><div>15.56</div></div><div>3</div><div>ECH-MFA:</div><div>1928</div><div>USAC-A:9</div><div>43</div><div>USIS-A:90</div><div>2</div><div>USSC-B:17</div><div>30</div><div>USRS-A</div><div>USI-SENS</div><div>OR:1383</div><div>USI-TX</div></div></div><div><div><div><div>CTEM</div><div>20.56</div></div><div>ACCZ</div><div>0.00</div><div>HV</div><div>0.00</div><div>Gamma</div><div>18.69</div><div>Ray</div><div>TelStatu</div><div>s</div><div>17.56</div></div><div><div><div><div>USI Sen</div><div>0.37</div></div><div>sor</div><div>Head Fe</div><div>nsion</div></div><div><div>Lengths are in ft</div><div>Maximum Outer Diameter = 4.500 in</div><div>Line: Sensor Location, Value: Gating Offset</div><div>All measurements are relative to TOOL_ZERO</div></div></div></div><div></div></div></div> <div>Thank you for choosing Schlumberger!</div> <div>Tool string run as per tool sketch and client logging program.</div> <div>Two gemcos run on tool for centralization</div> <div>Repeat Pass logged at 0 PSI. Main Pass logged at 2500 PSI.</div>					

Depth Summary			
	ONE		
Depth Measuring Device			
Type	IDW-JA		
Serial Number	6483		
Calibration Date	28-SEP-2017		
Calibrator Serial Number	IDWC-C-57		
Calibration Cable Type	7-39PL XS		
Wheel Correction 1	-4		
Wheel Correction 2	-5		
Tension Device			
Type	CMTD-B/A		

Serial Number	1109	
Calibration Date	12-Sep-2017	
Calibrator Serial Number	441345a	
Number of Calibration Points	10	
Calibration Root Mean Square Error	7	
Calibration Peak Error	11	

Logging Cable

Type	7-39PI-XXS		
Serial Number	F716045		
Length	22000.00 ft		
Conveyance Type	Wireline		
Rig Type	Crane USA		

ONE:Depth Control Parameters

Depth Control Remarks

Log Sequence	First Log In the Well	All Schlumberger depth control policies followed.
Rig Up Length At Surface		IDW used as primary depth reference.
Rig Up Length At Bottom		Z-chart used as secondary depth reference.
Rig Up Length Correction		
Stretch Correction		
Tool Zero Check At Surface		

USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 1	Log[4]:Up	6878.6	47.56

**Fluid Velocity = "Automatic".
CFVL equals DFSL channel**

Start Depth(ft)	Stop Depth(ft)	Start Value(us/ft)	End Value(us/ft)
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Mud Impedance = "FreePipe Norm."
Free Pipe normalization zone is : 296.25m(971.96ft) to 302.54m(992.58ft)
MUD_N_FRP = 1.13
DFD = 1.01g/cm3(8.40lbm/gal)
CZMD median computed in free pipe normalization interval = 1.67 MRayl

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

2500 PSI Main Pass

Software Version

Acquisition System	Version
Maxwell 2017 SP3	7.3.92069.3100
Application Patch	Wireline_NPD-ICE2-2017SP3_7.3.93033

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	47.56 ft	6878.60 ft	08-Nov-2017 8:46:41 AM	08-Nov-2017 10:08:44 AM	ON	5.93 ft	Yes

All depths are referenced to toolstring zero

Log

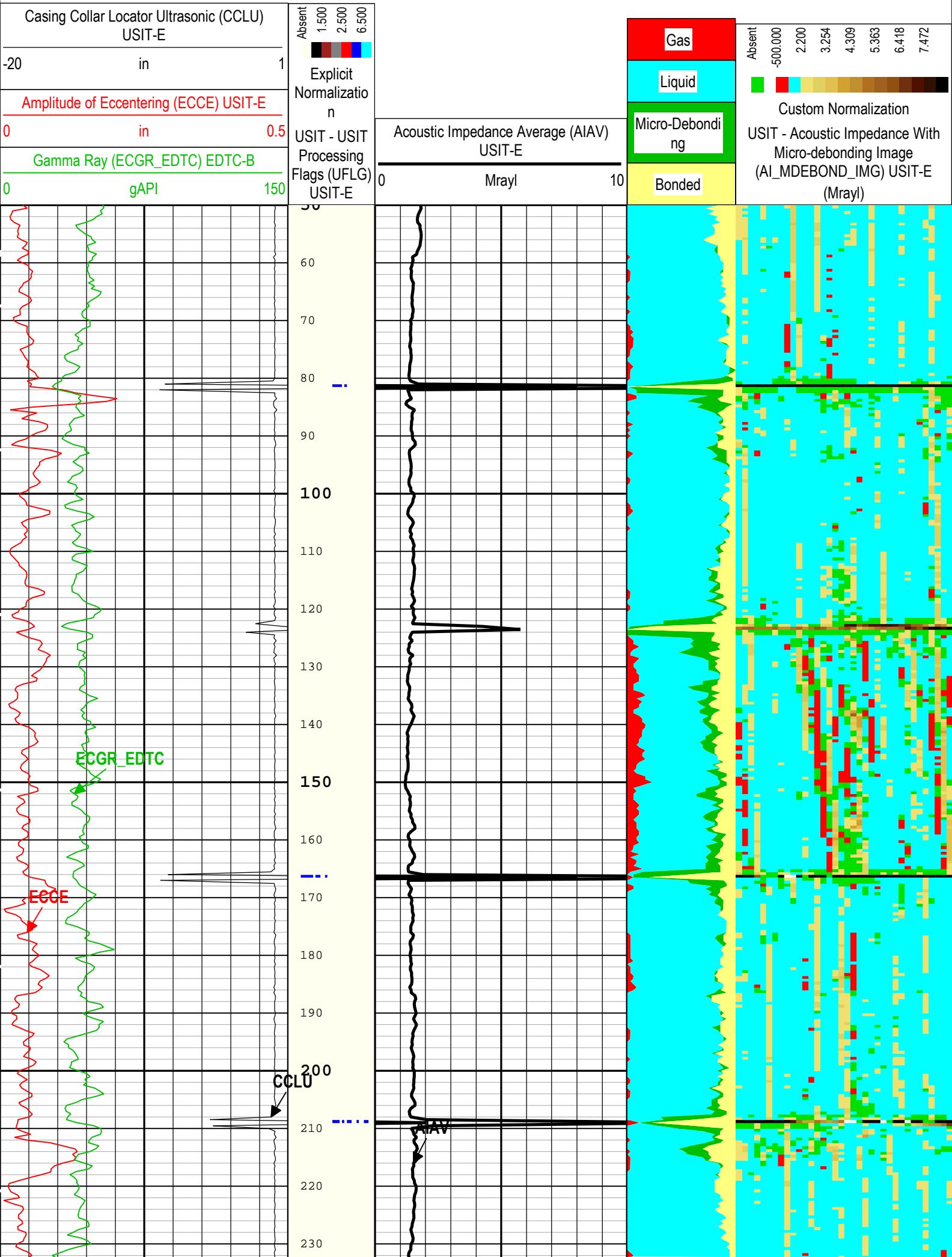
Company:Noble Energy Inc

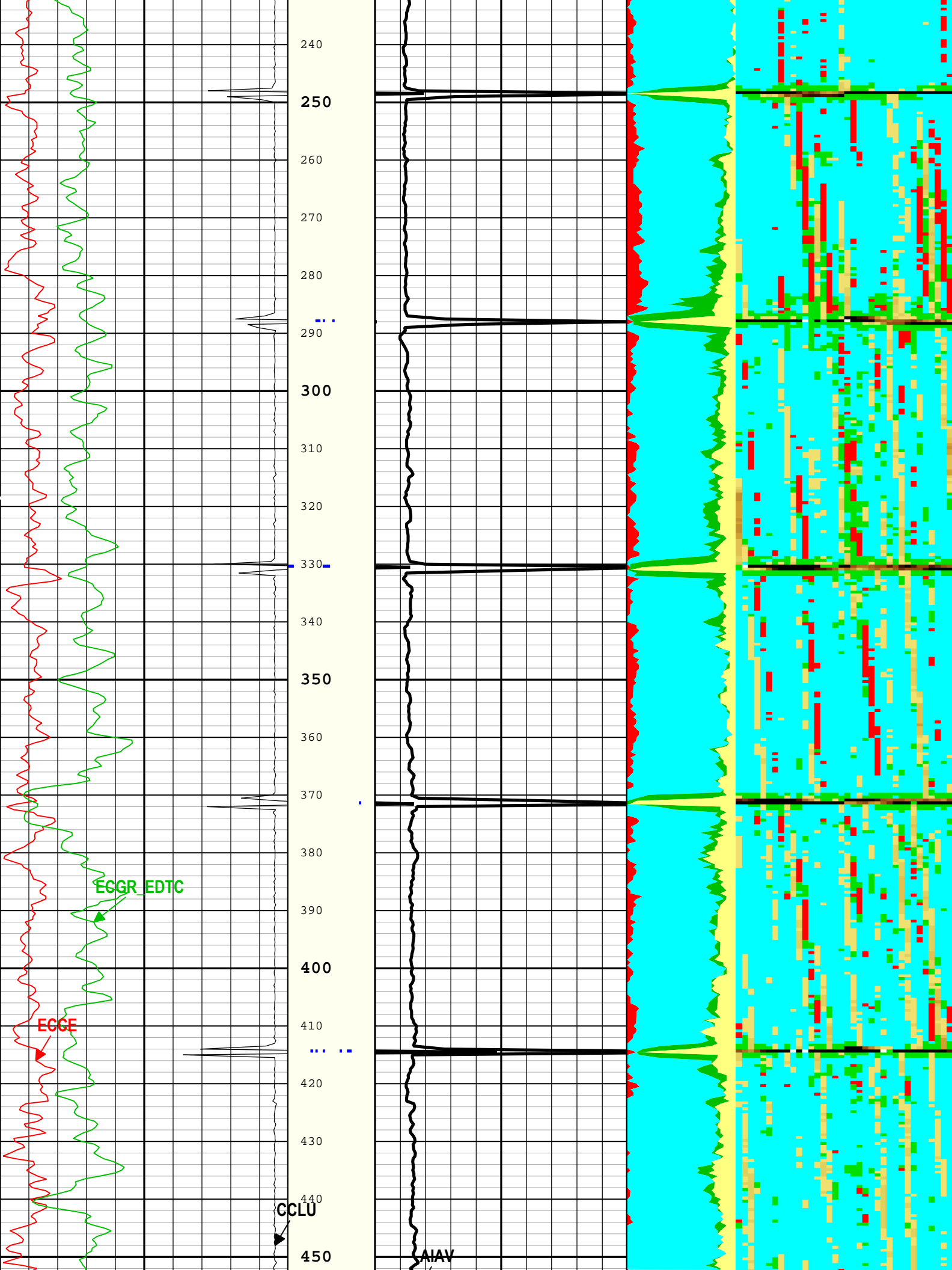
Well:Hullabaloo State Y21-736

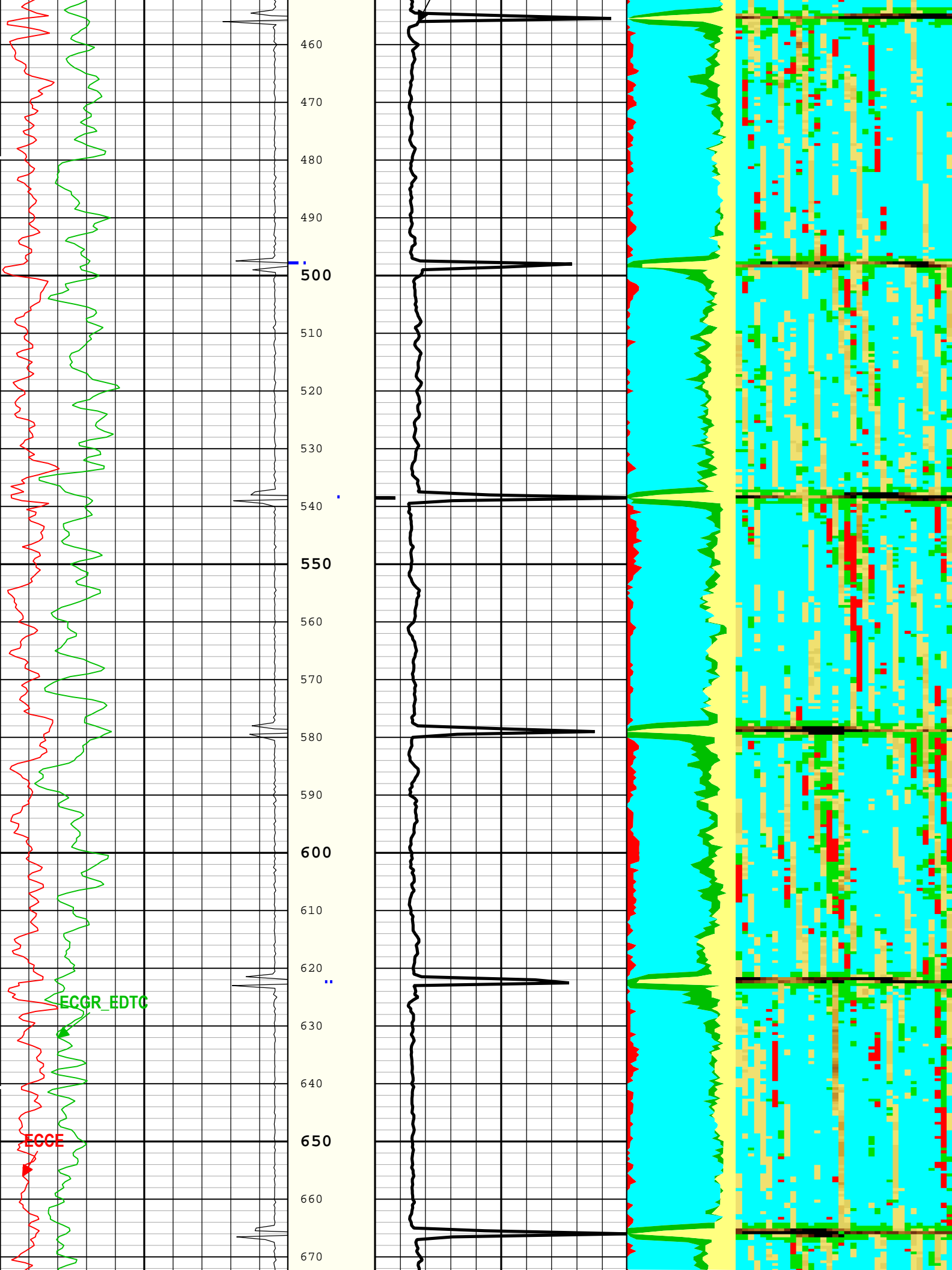
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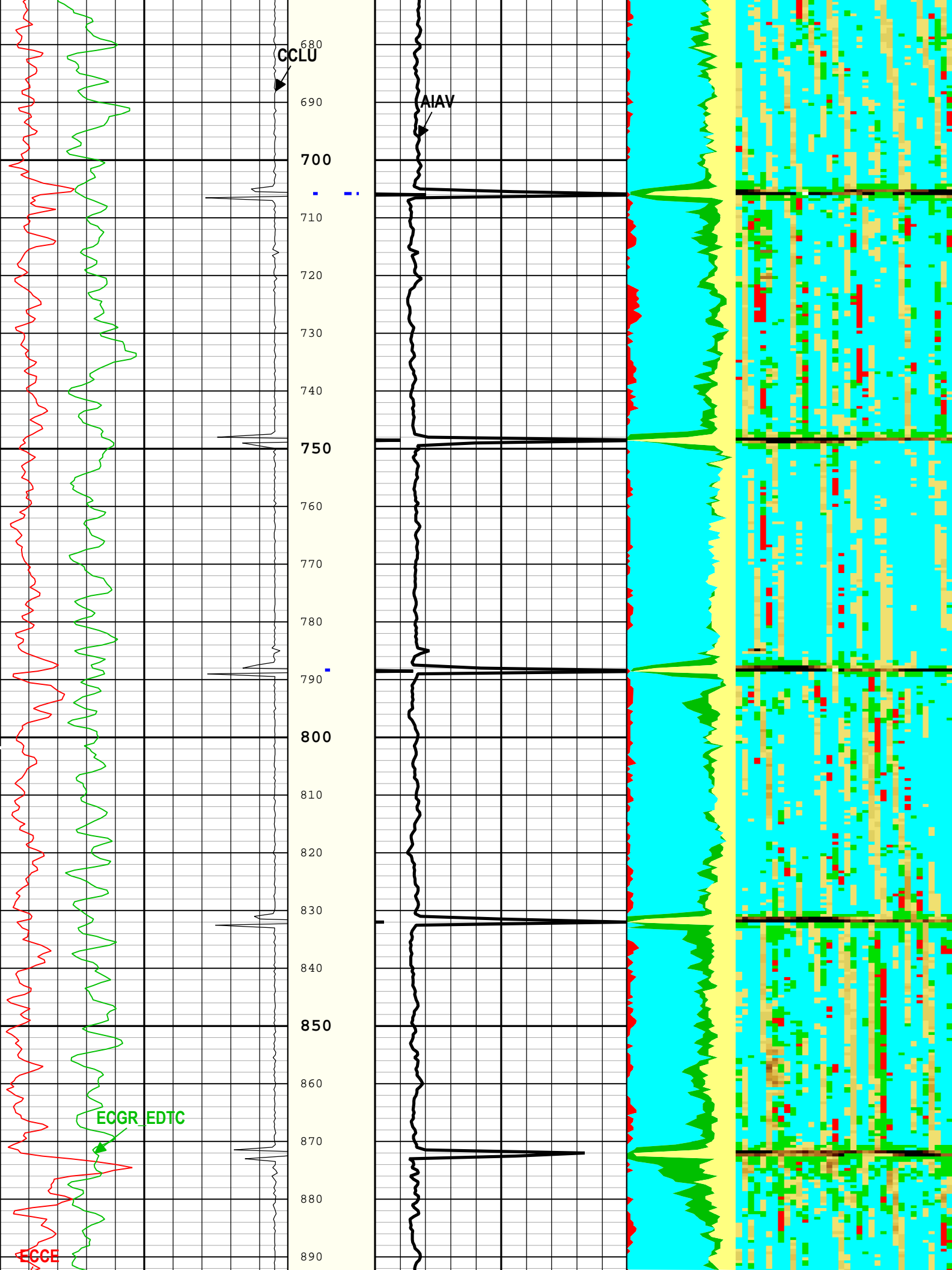
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Creation Date: 08-Nov-2017 12:31:51

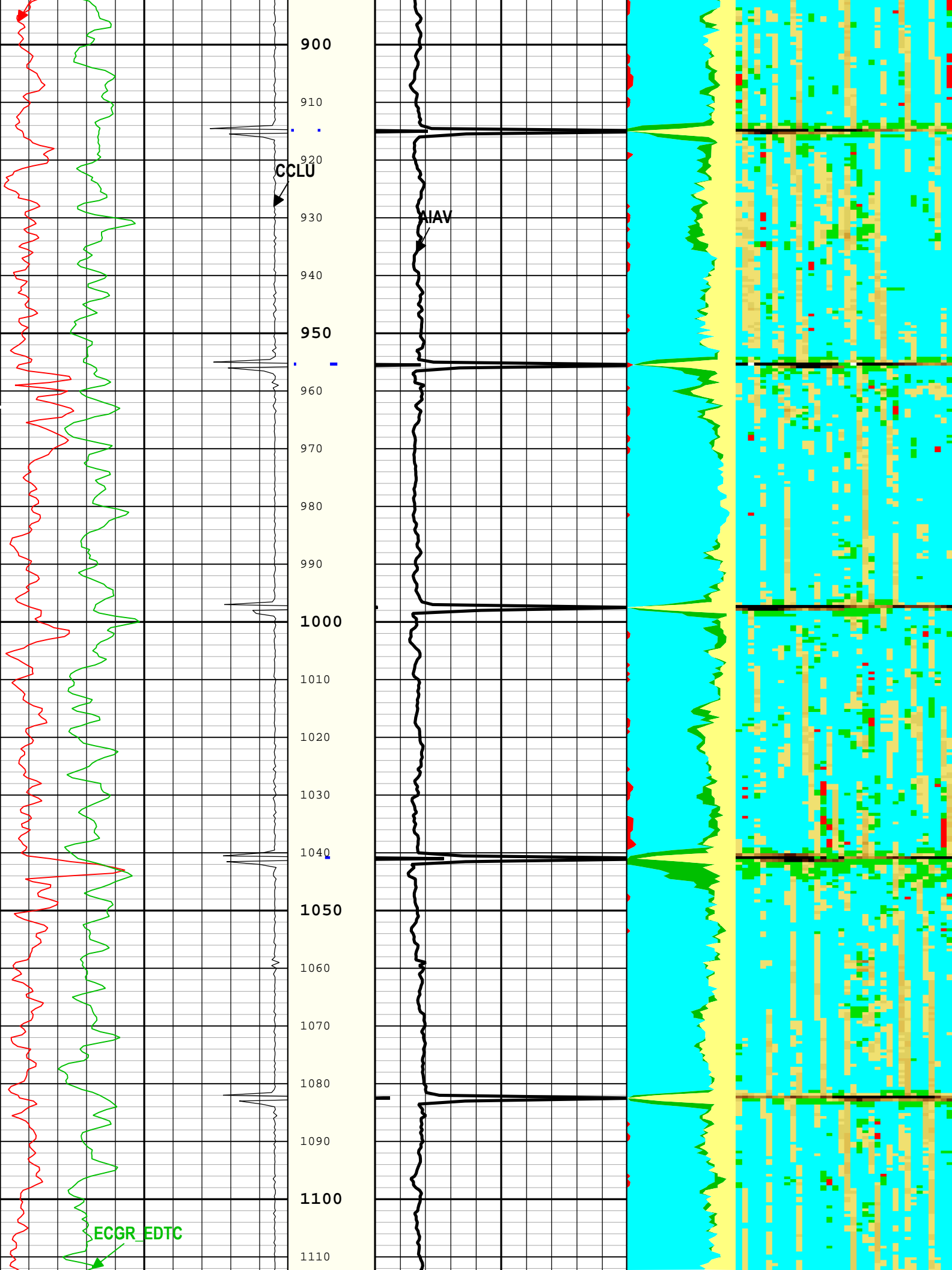
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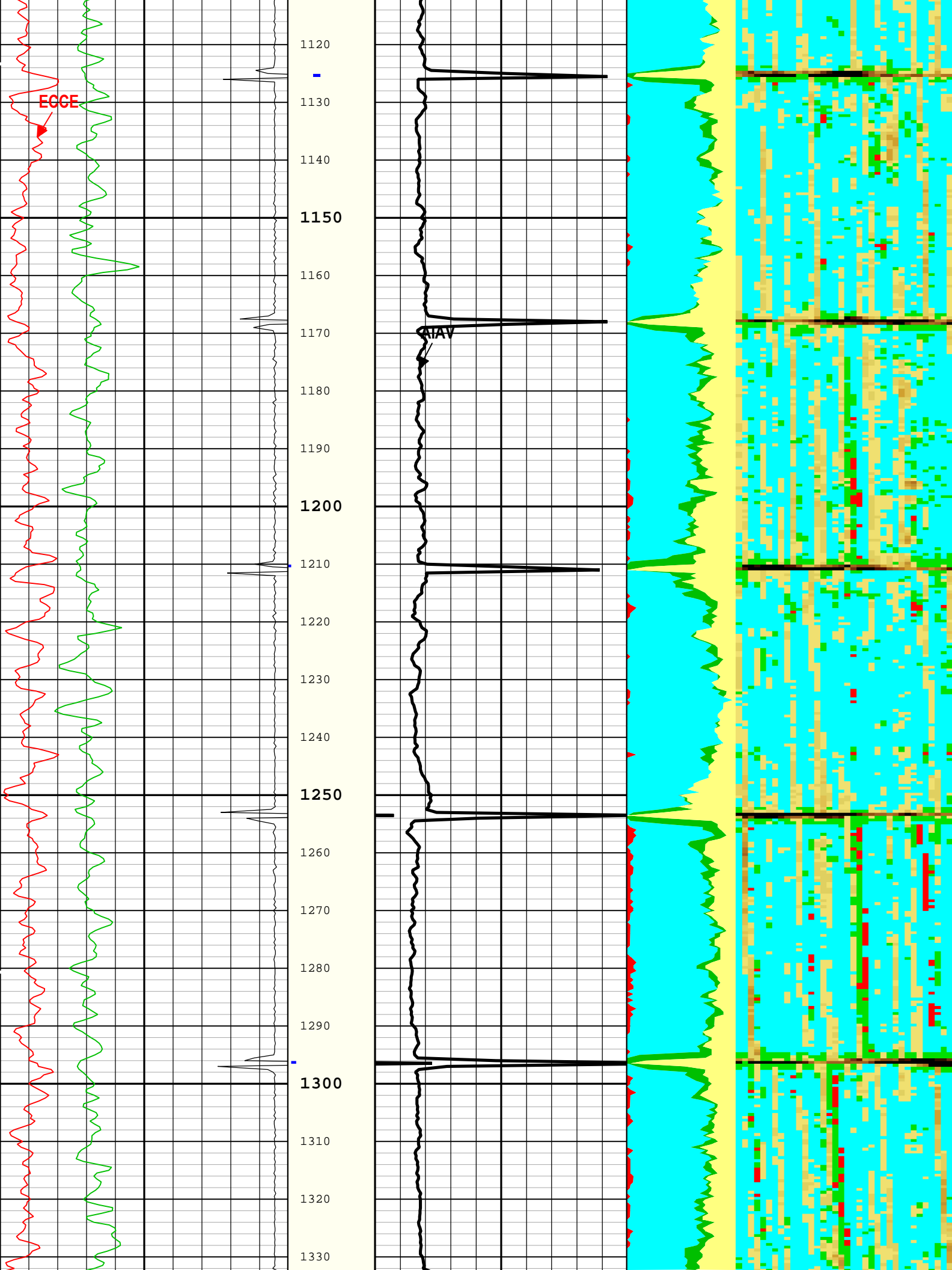


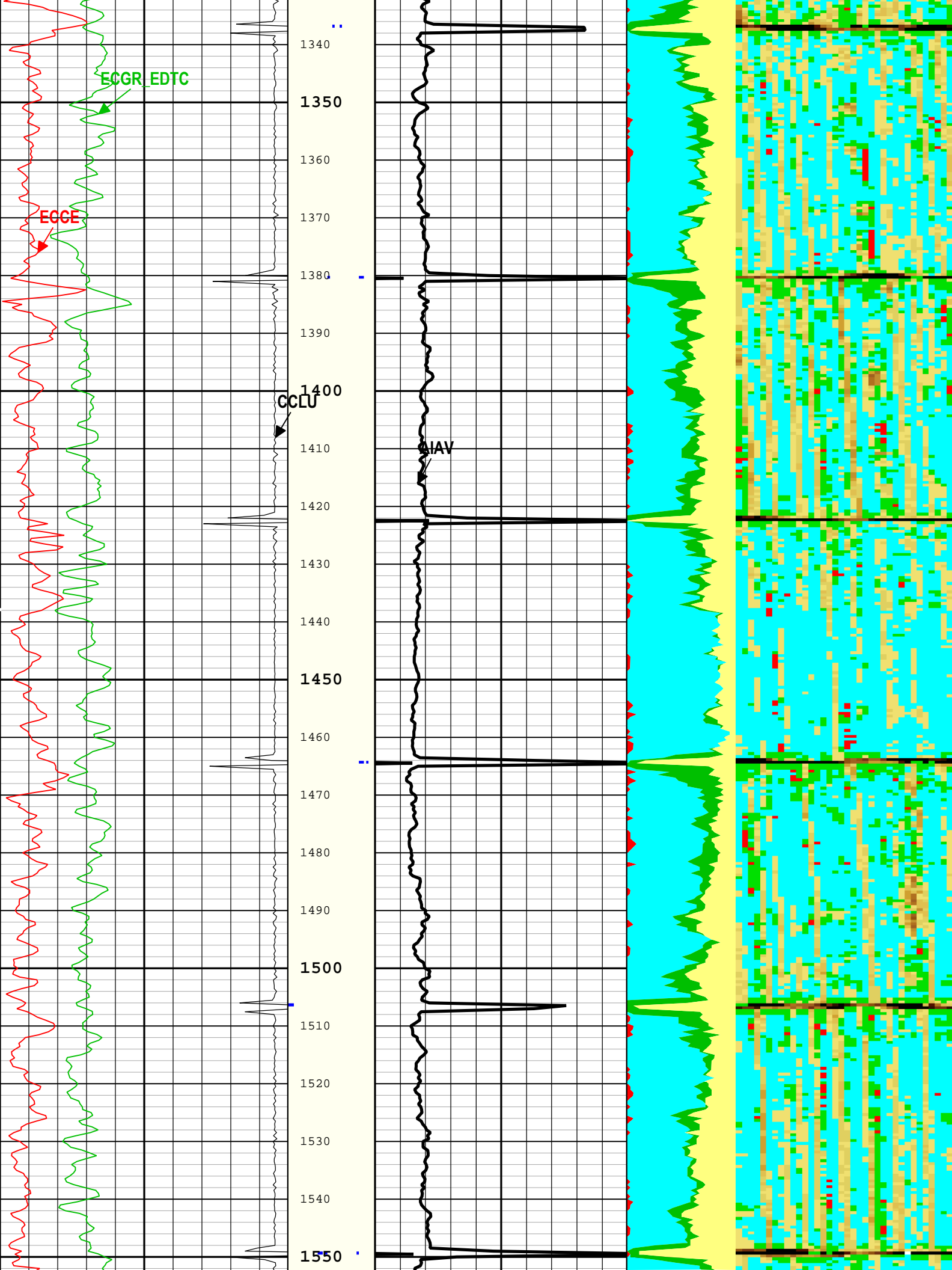


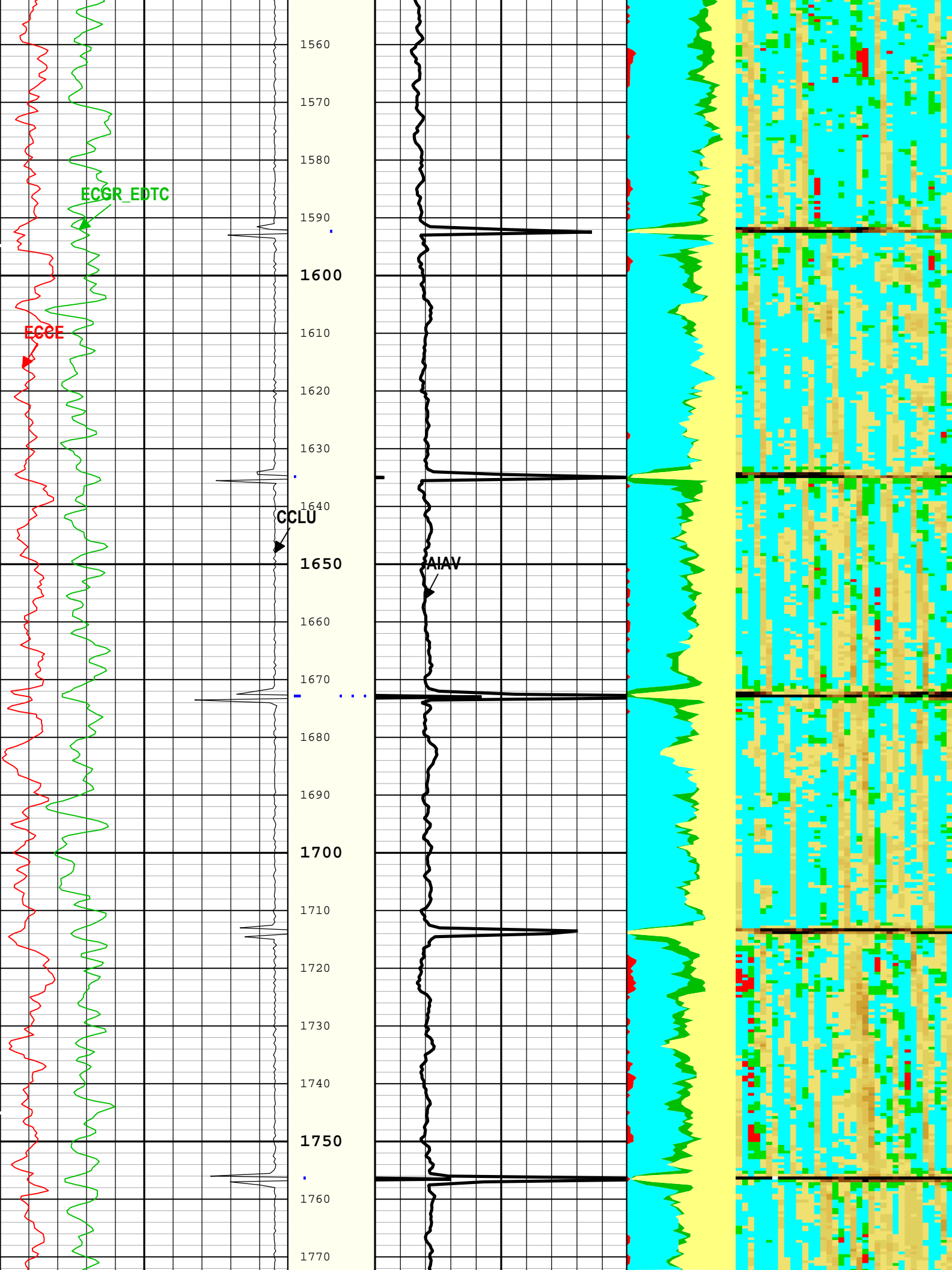


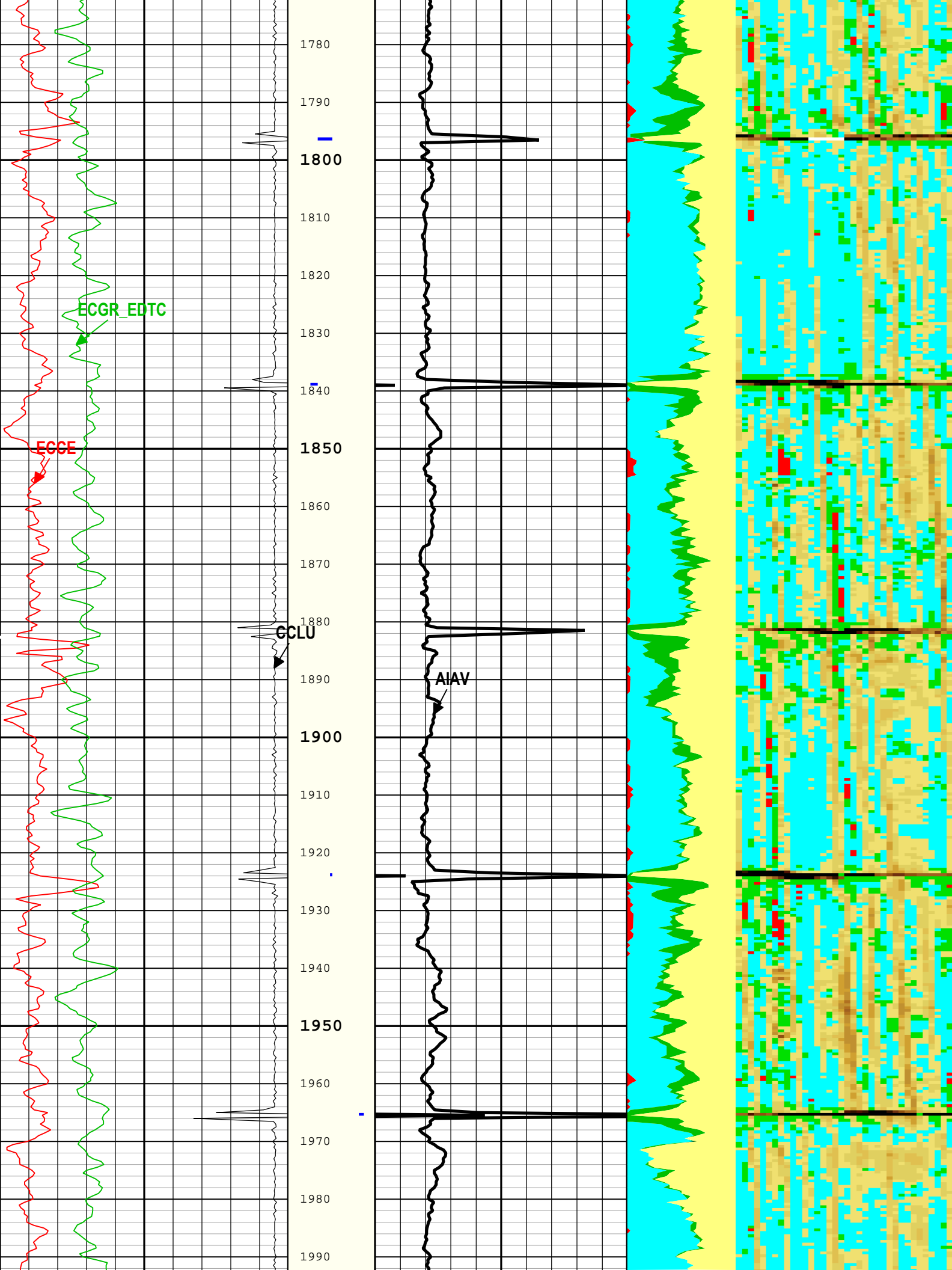


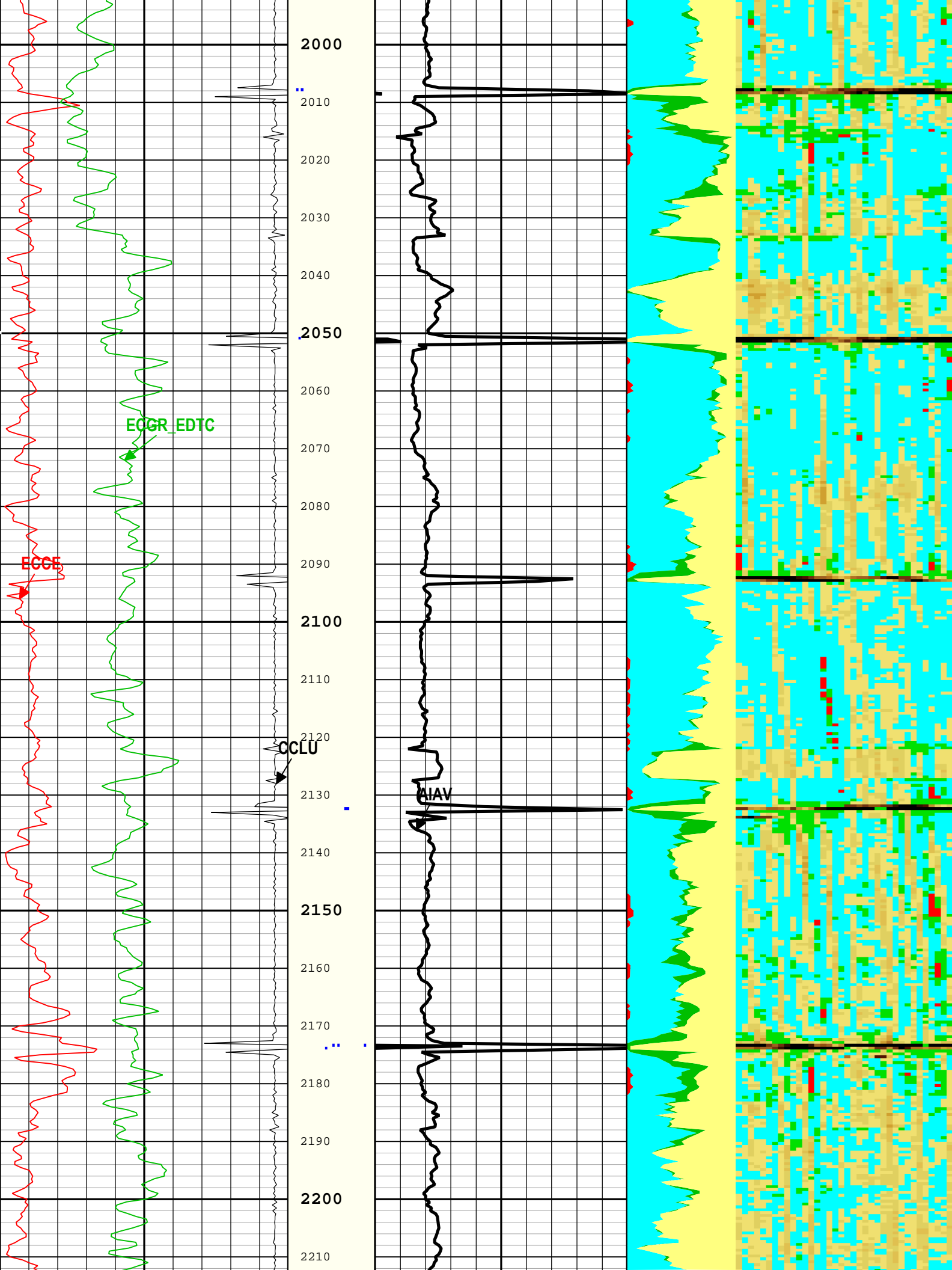


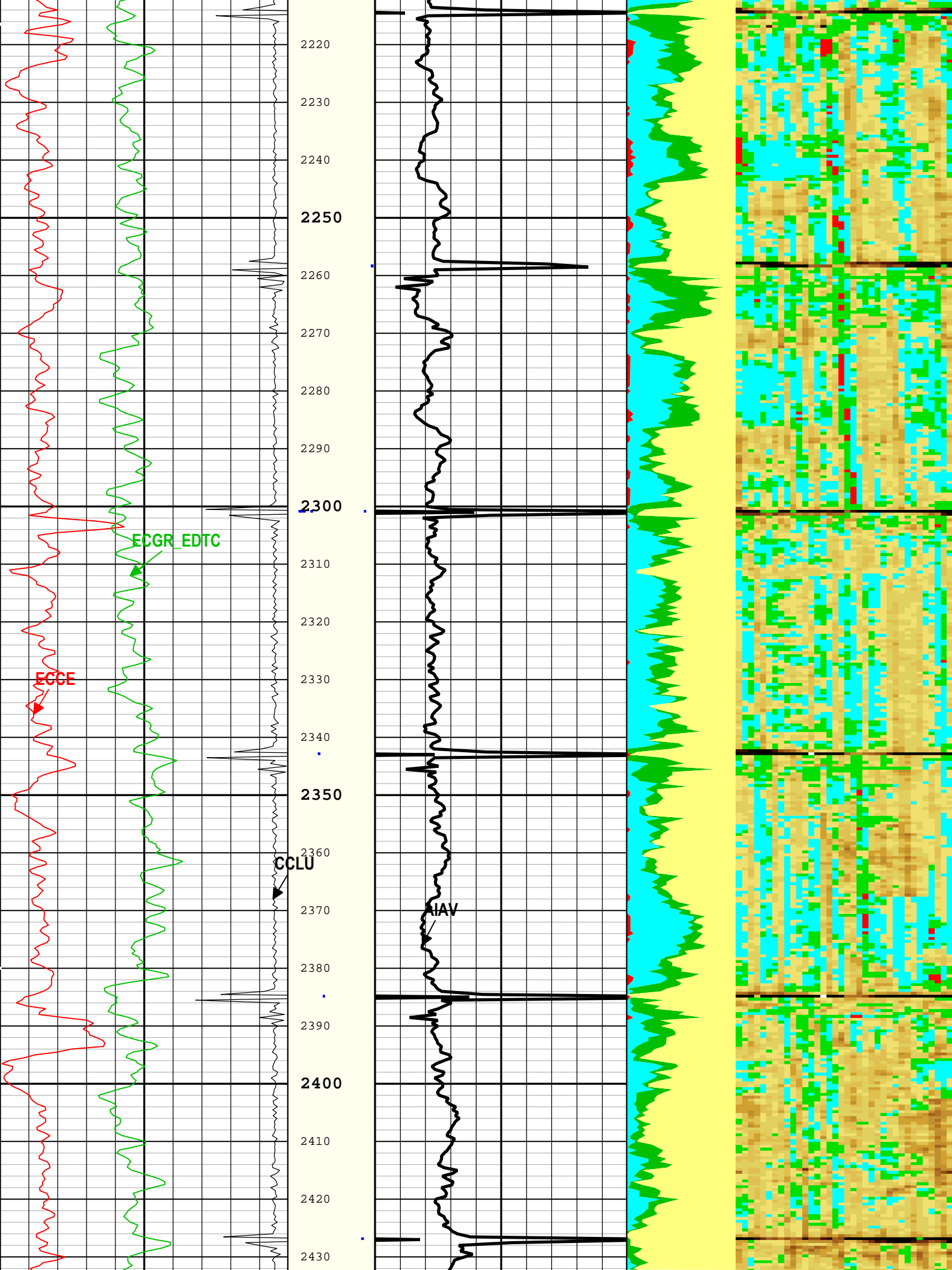


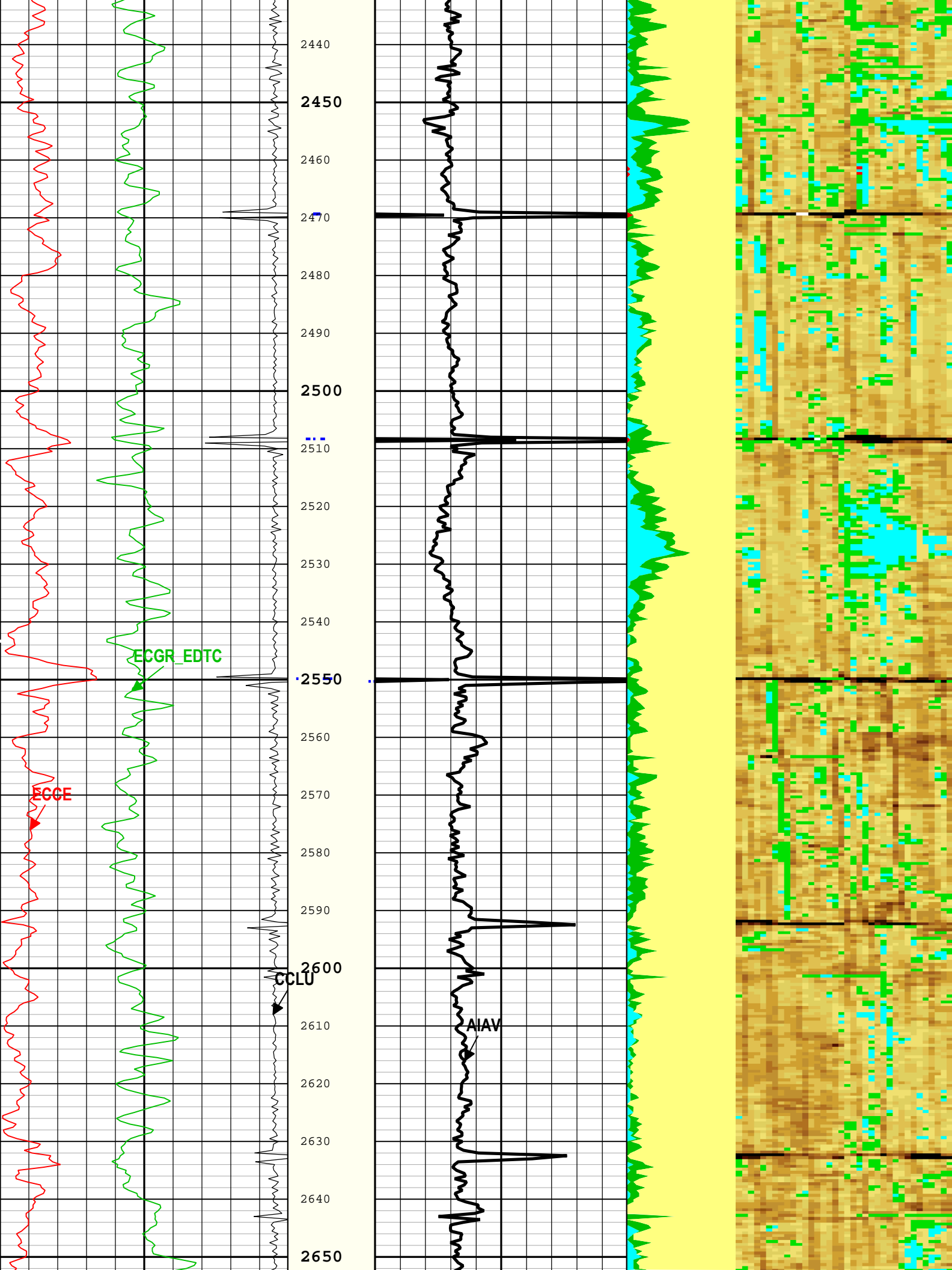


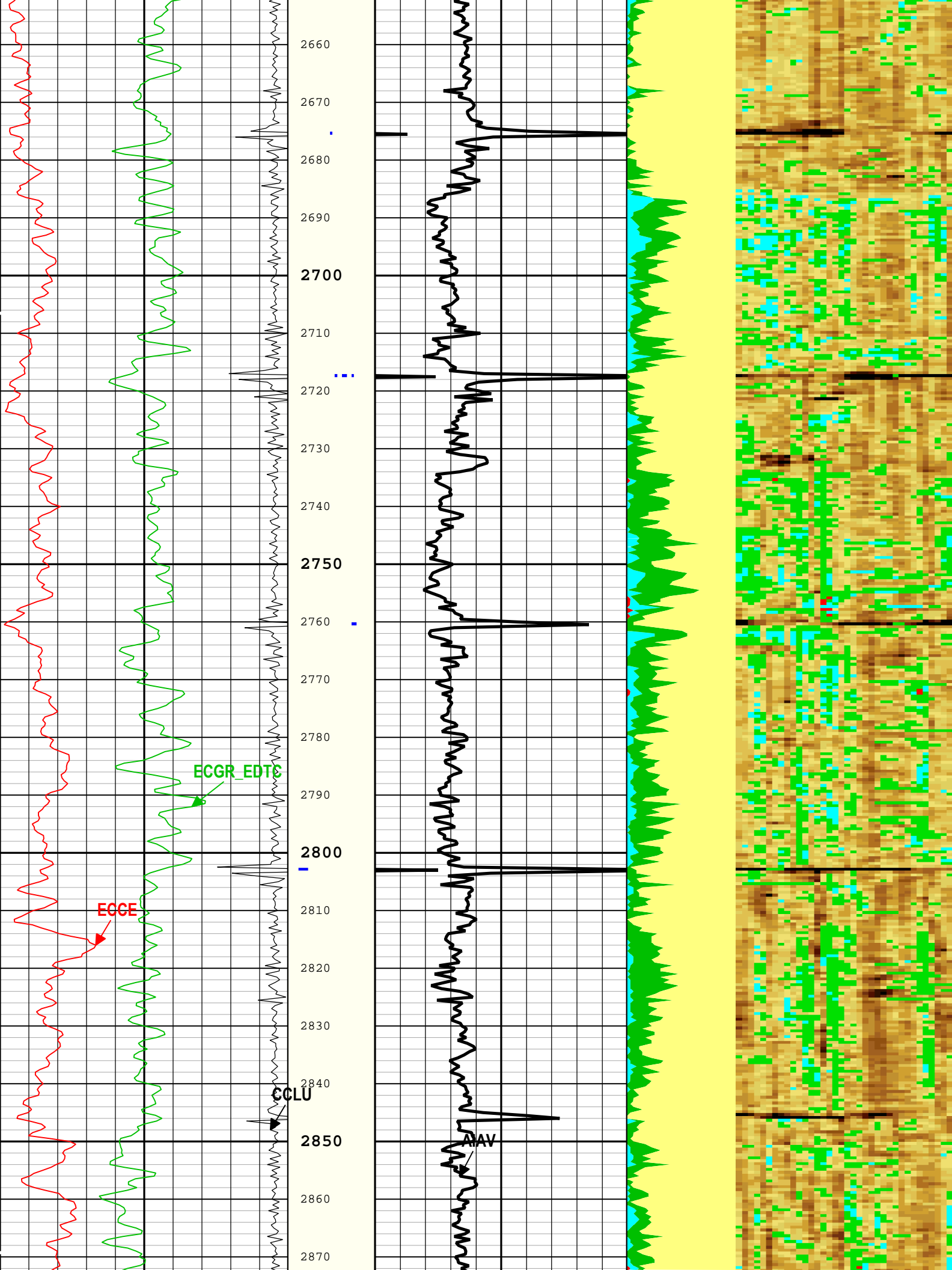


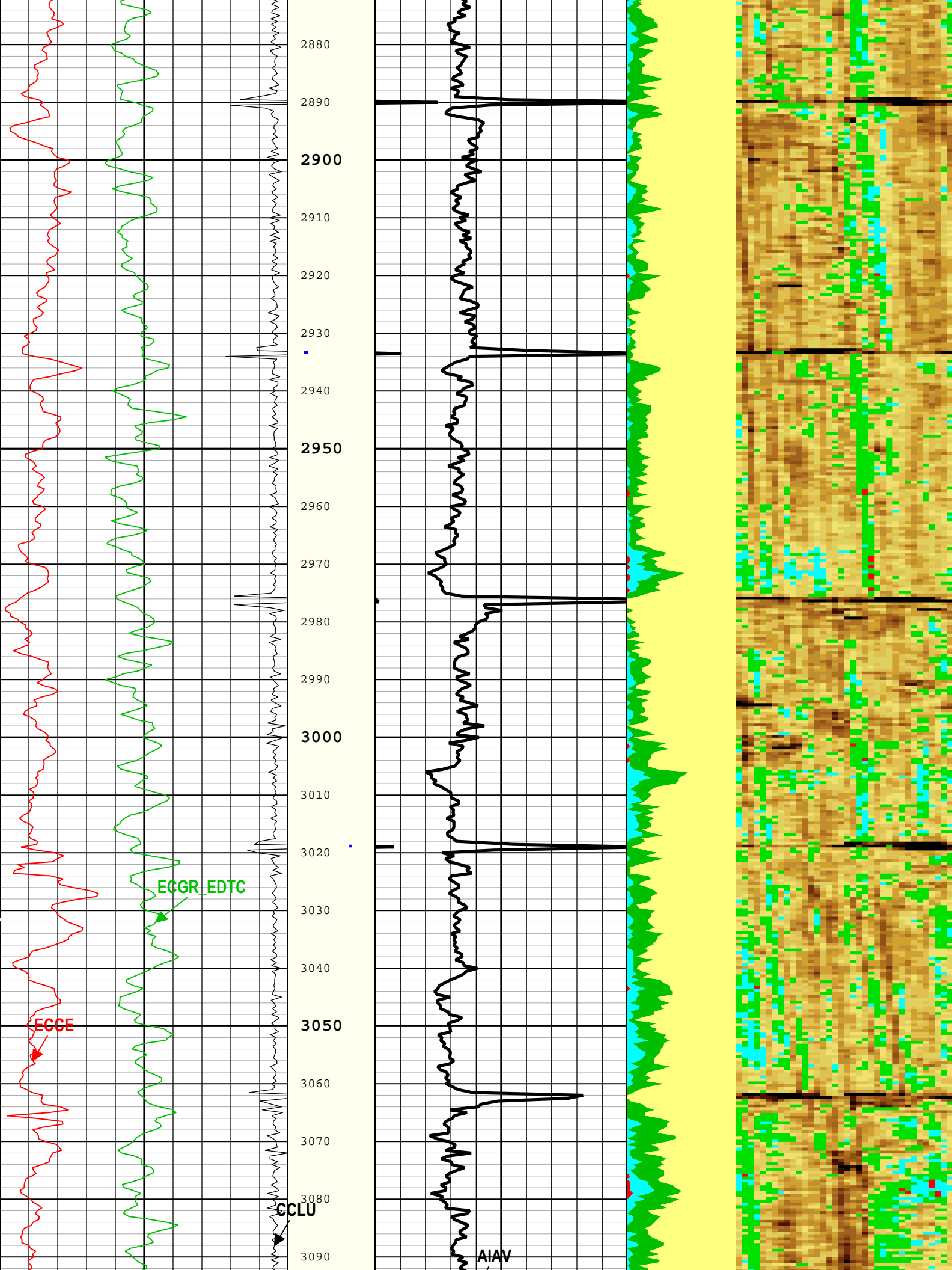


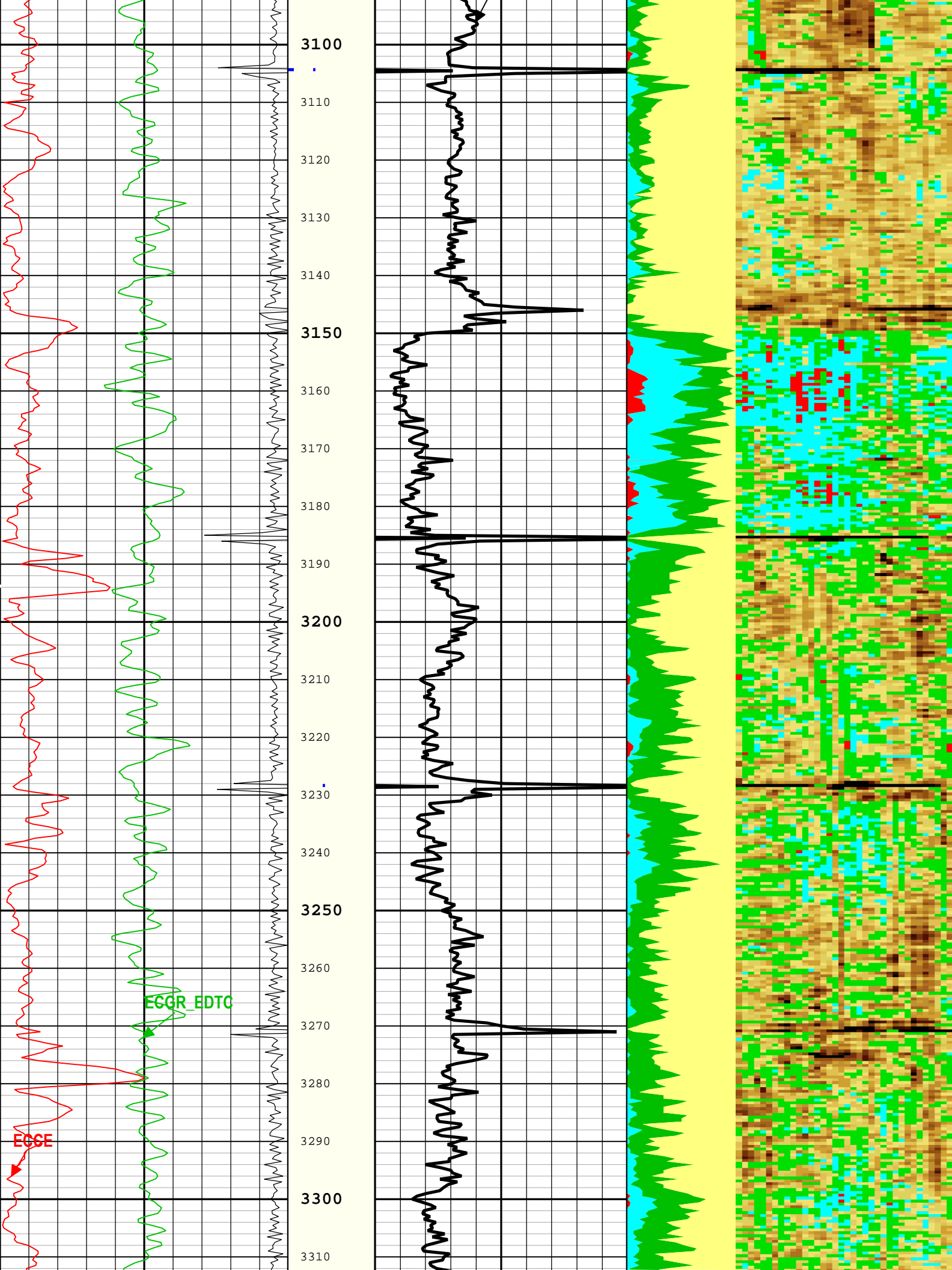


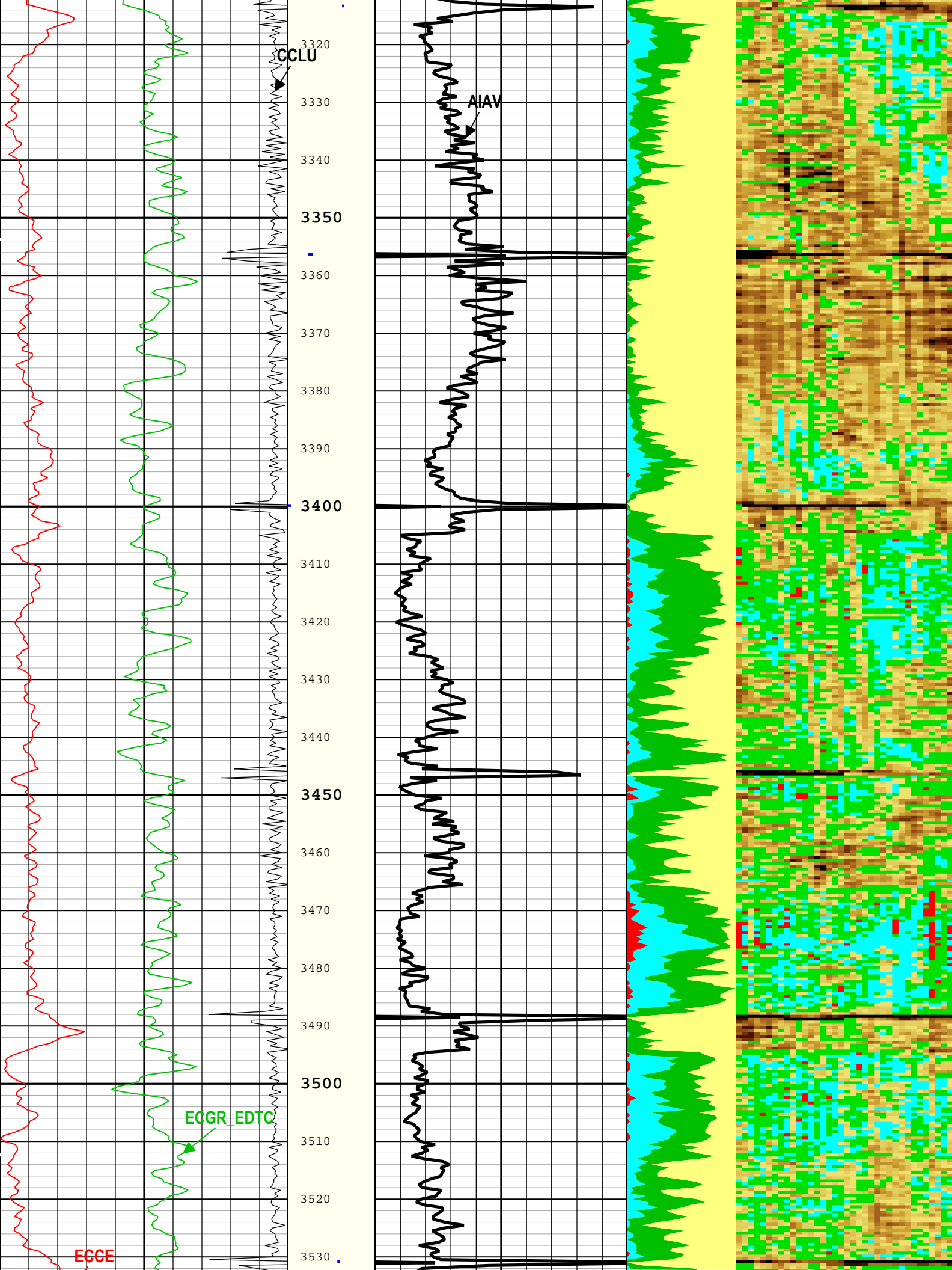


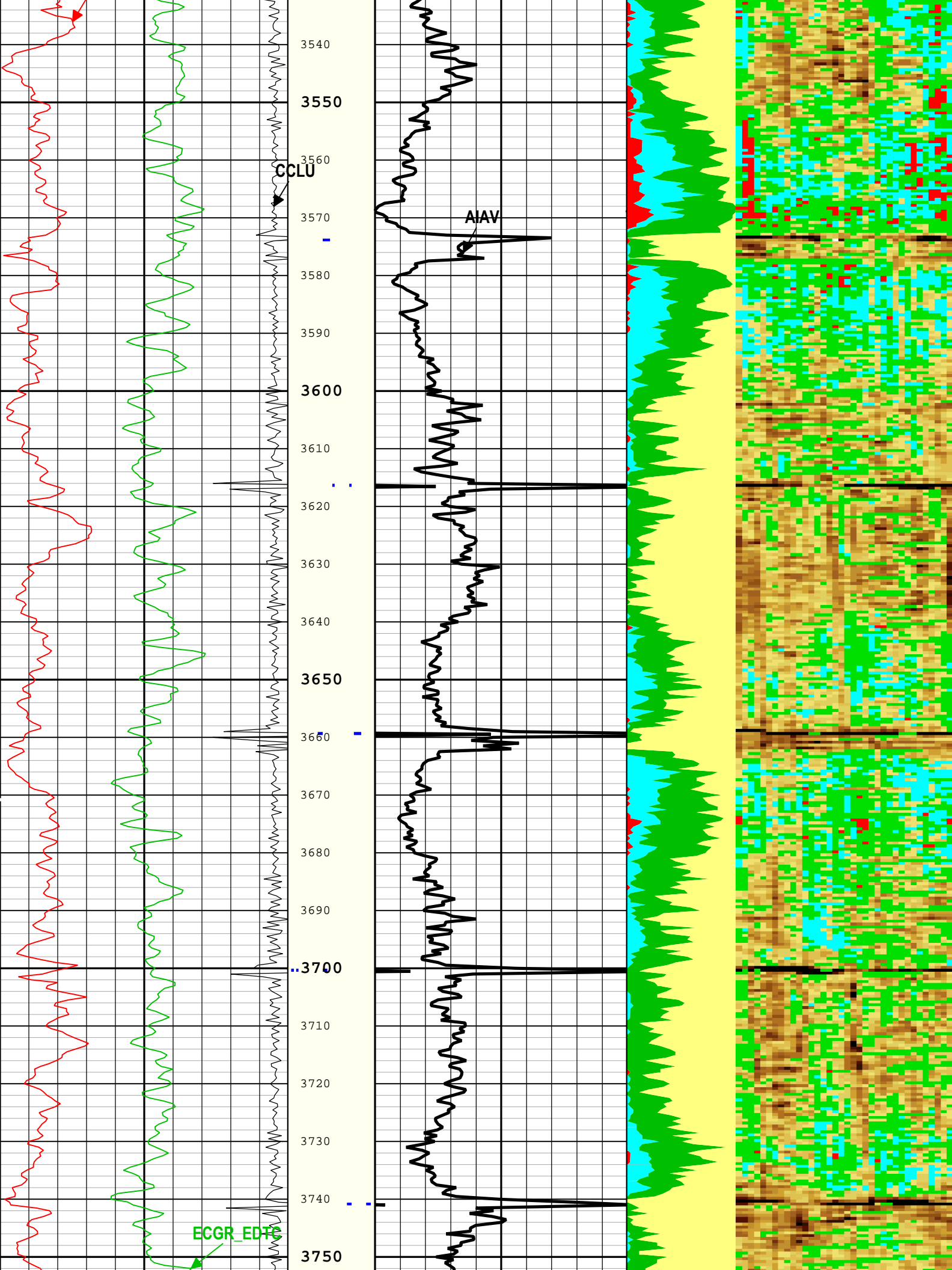


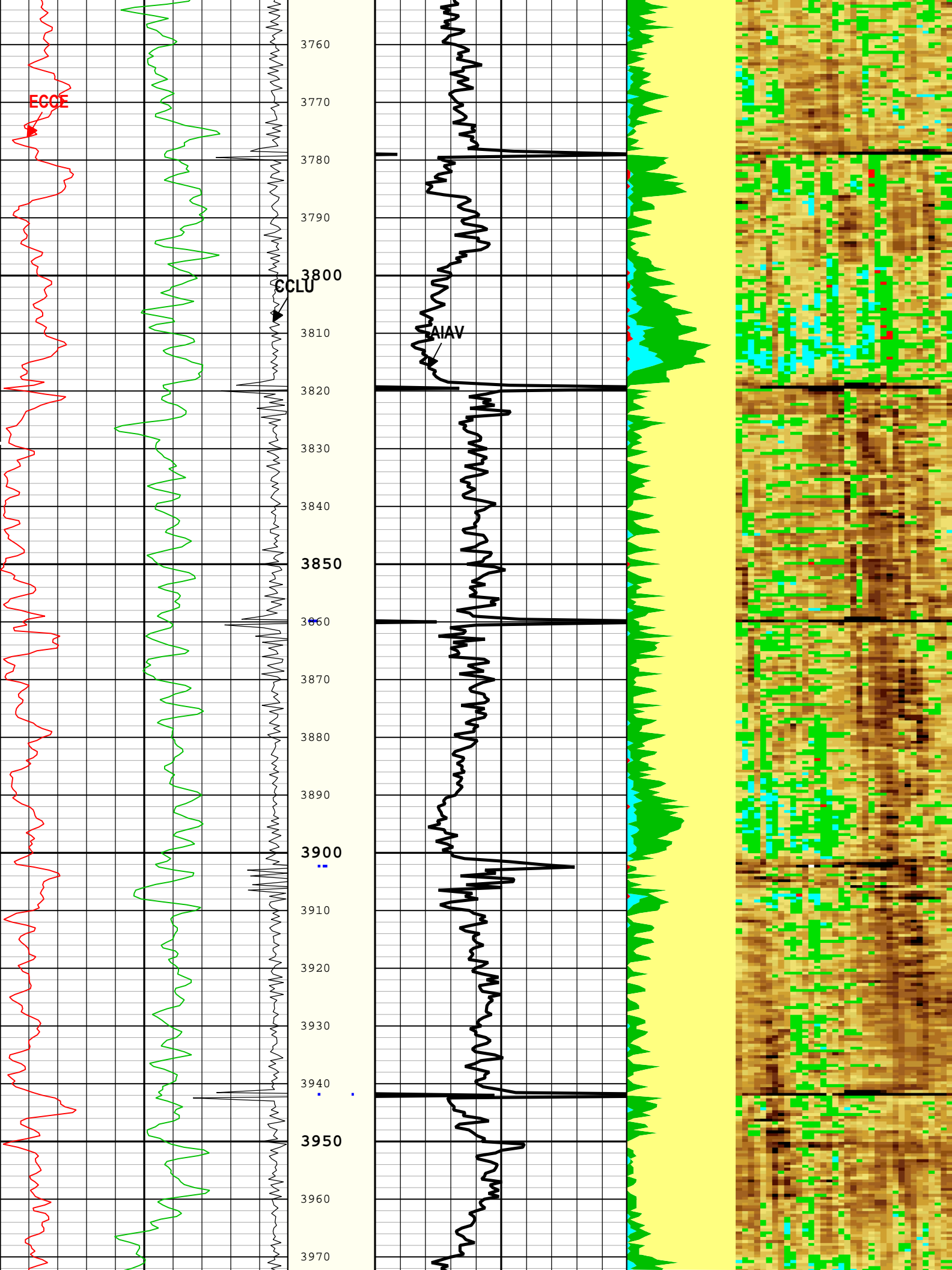


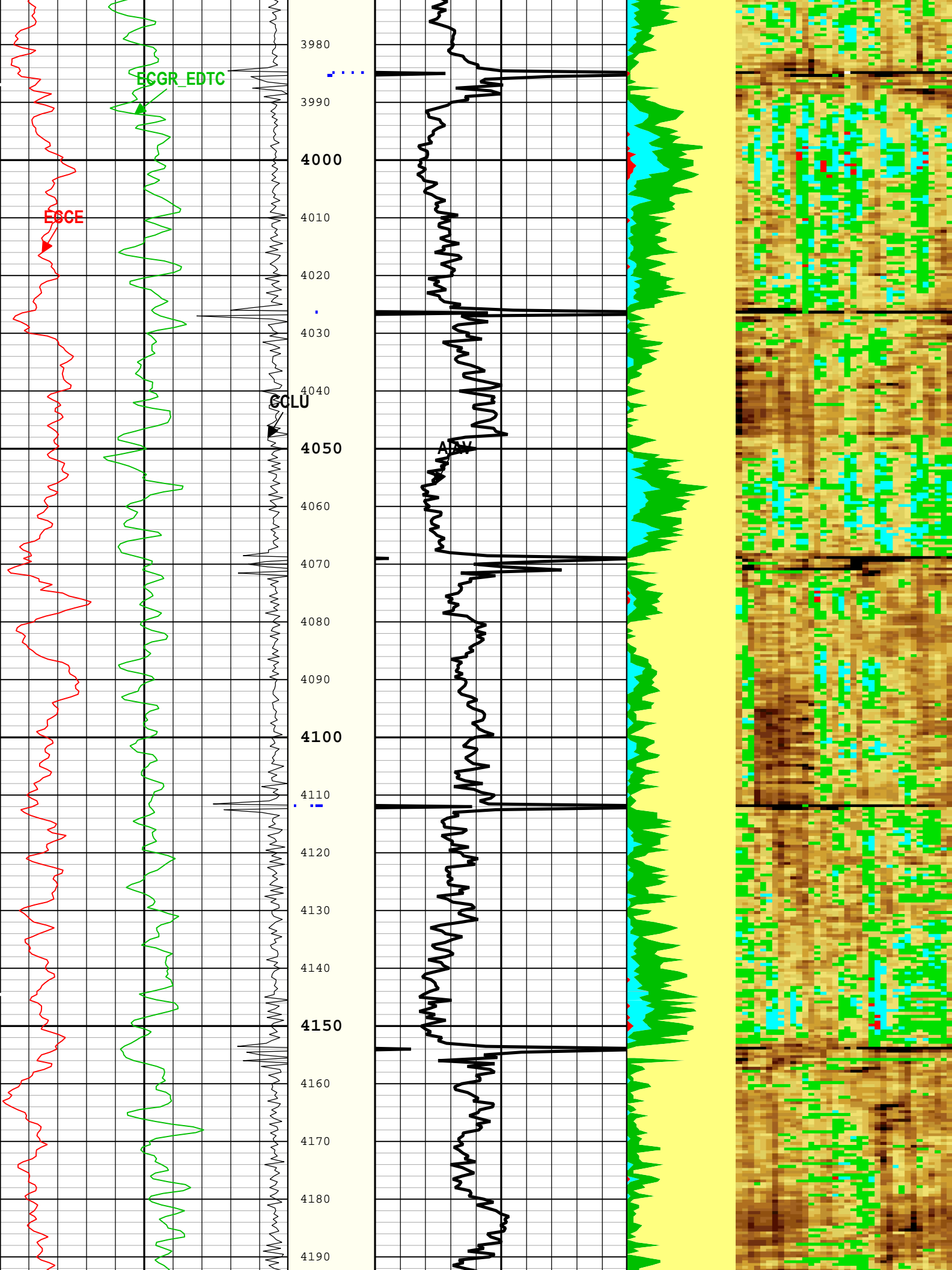


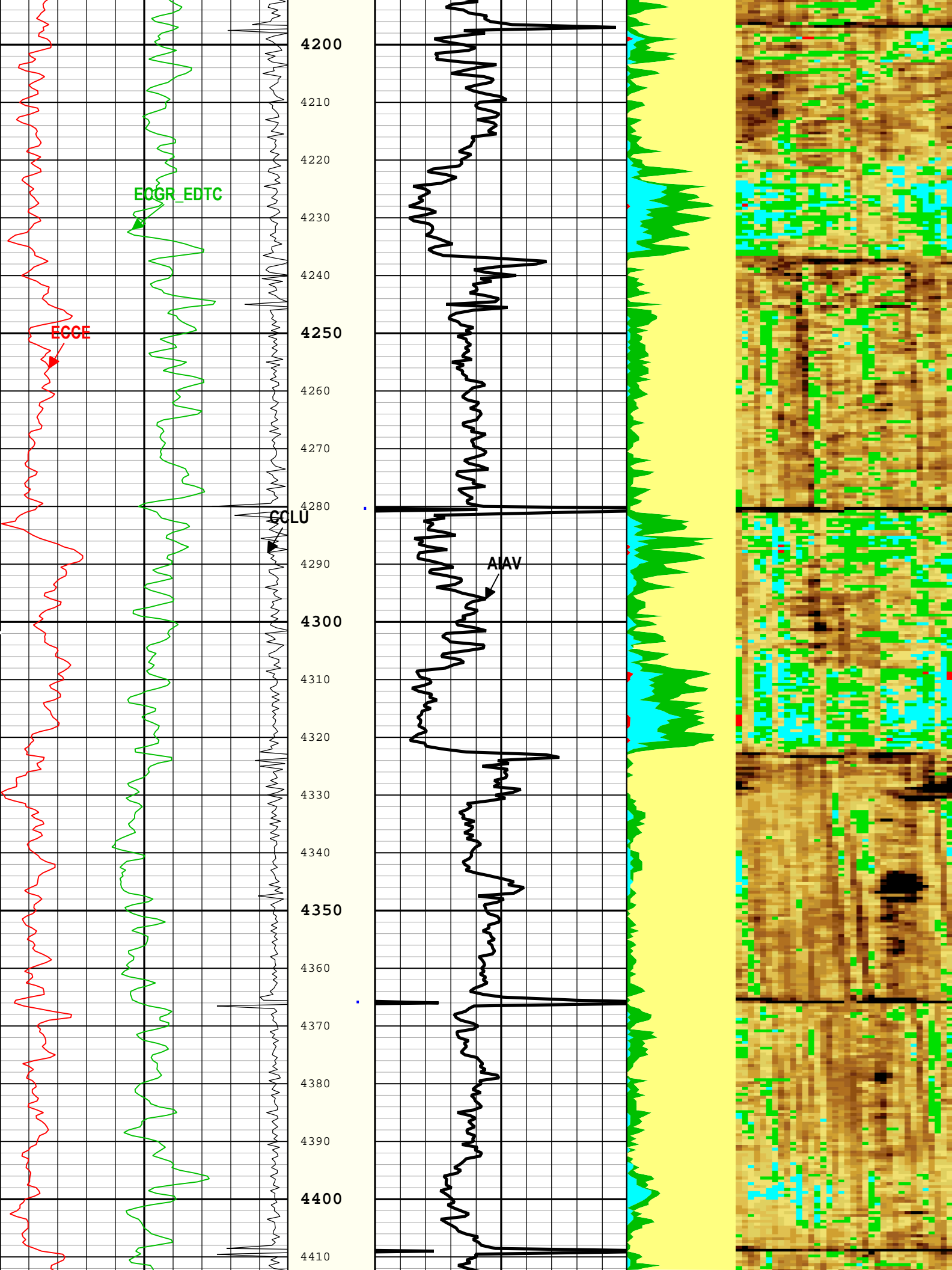


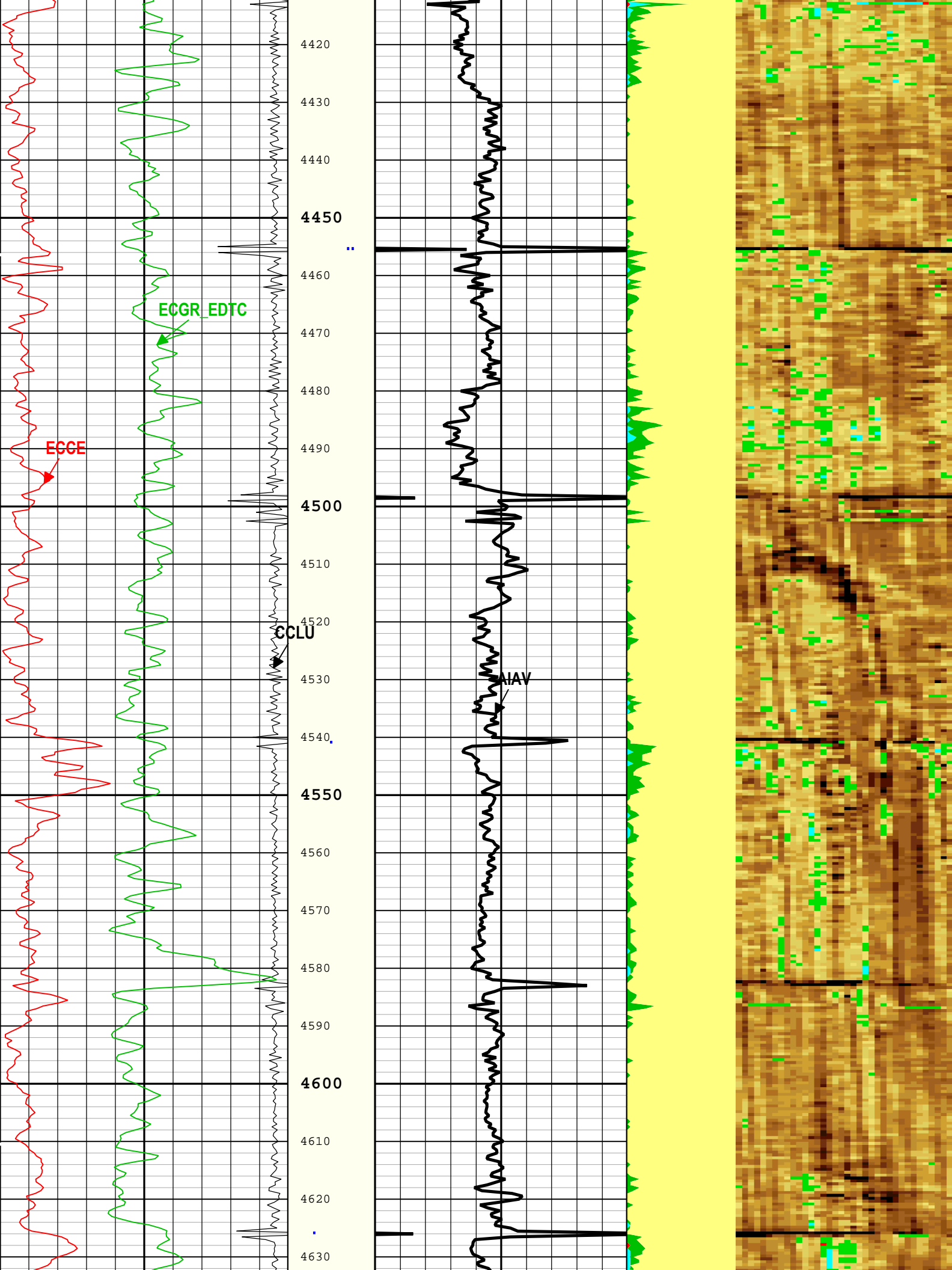


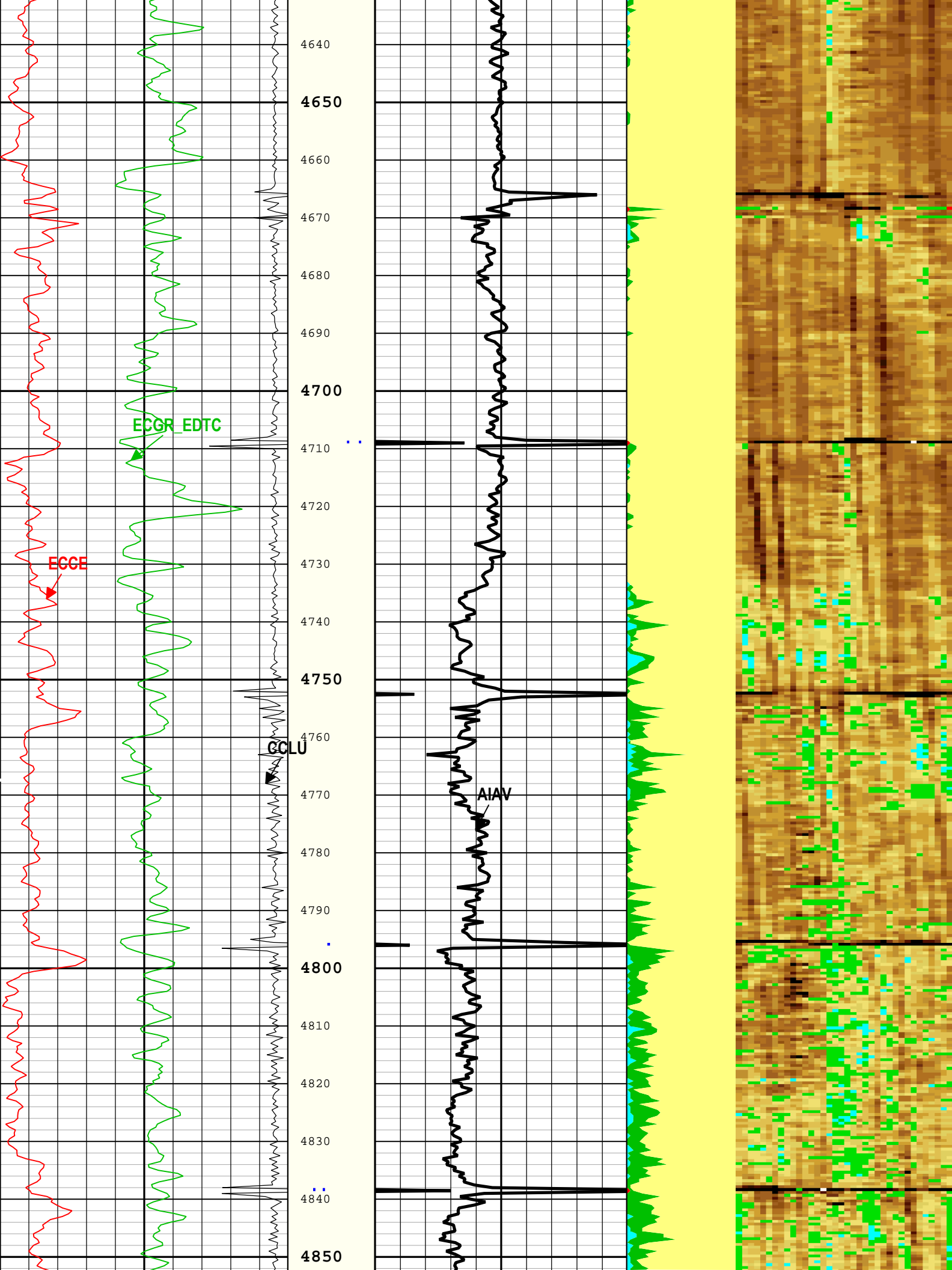


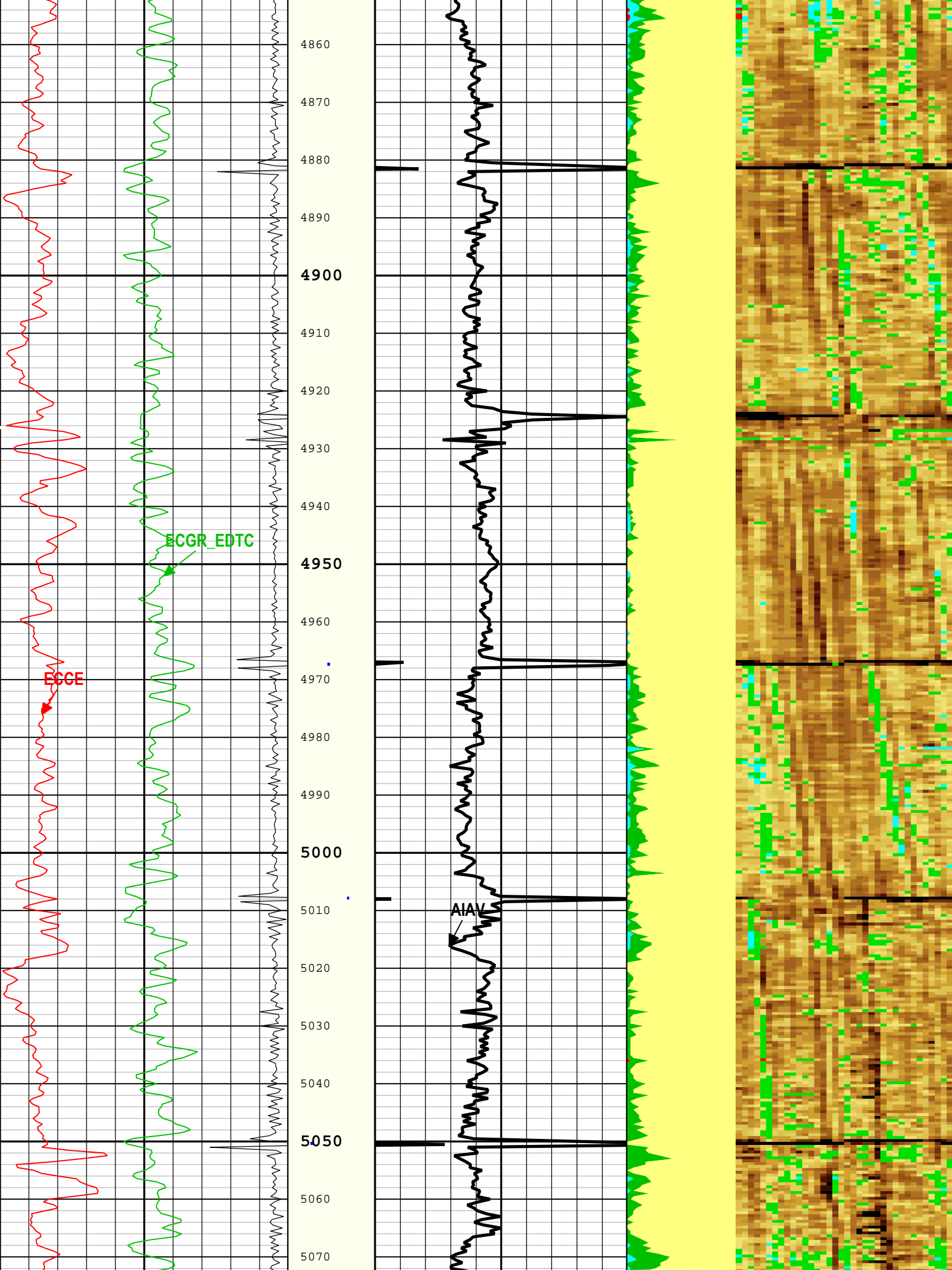


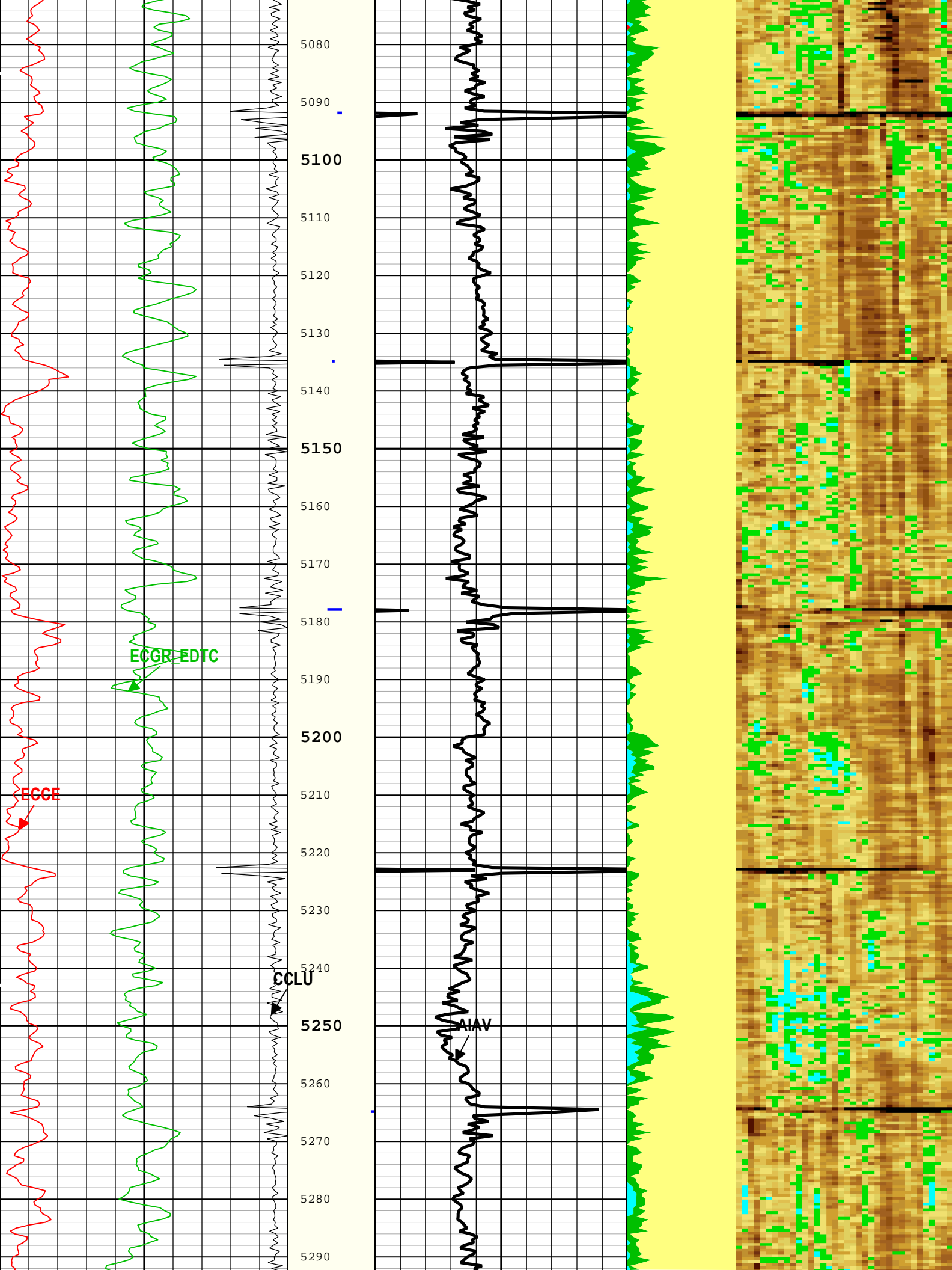


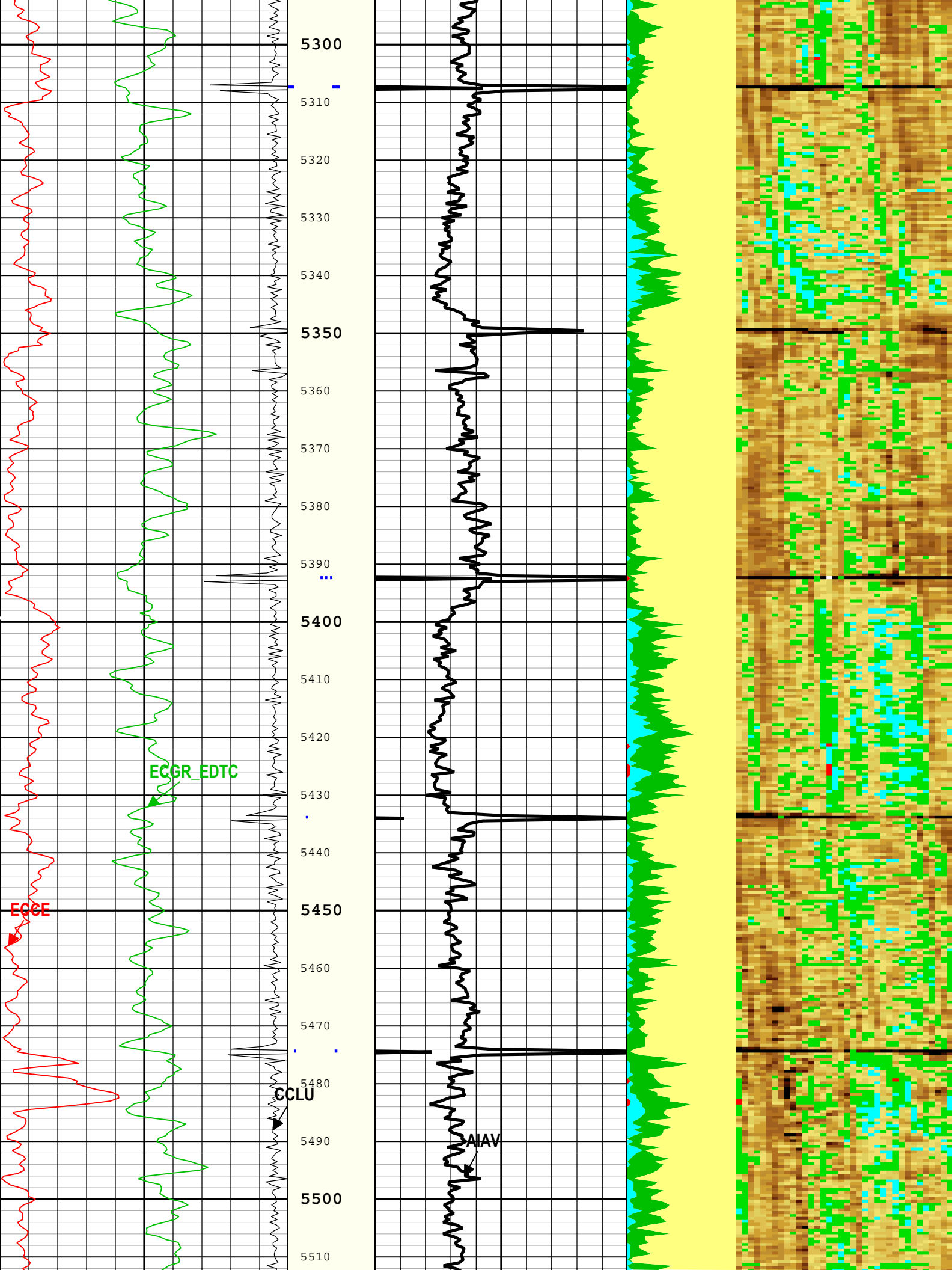


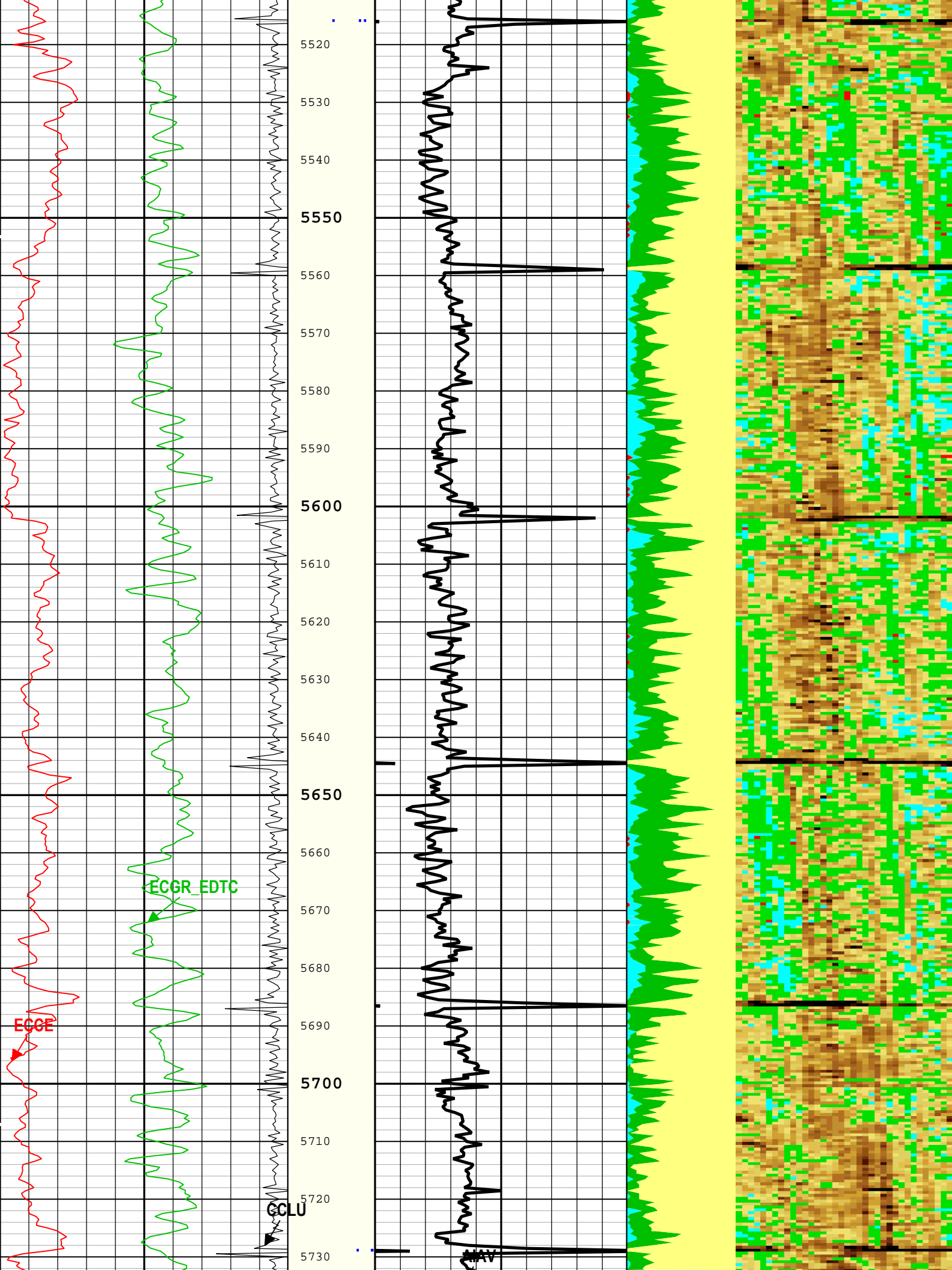


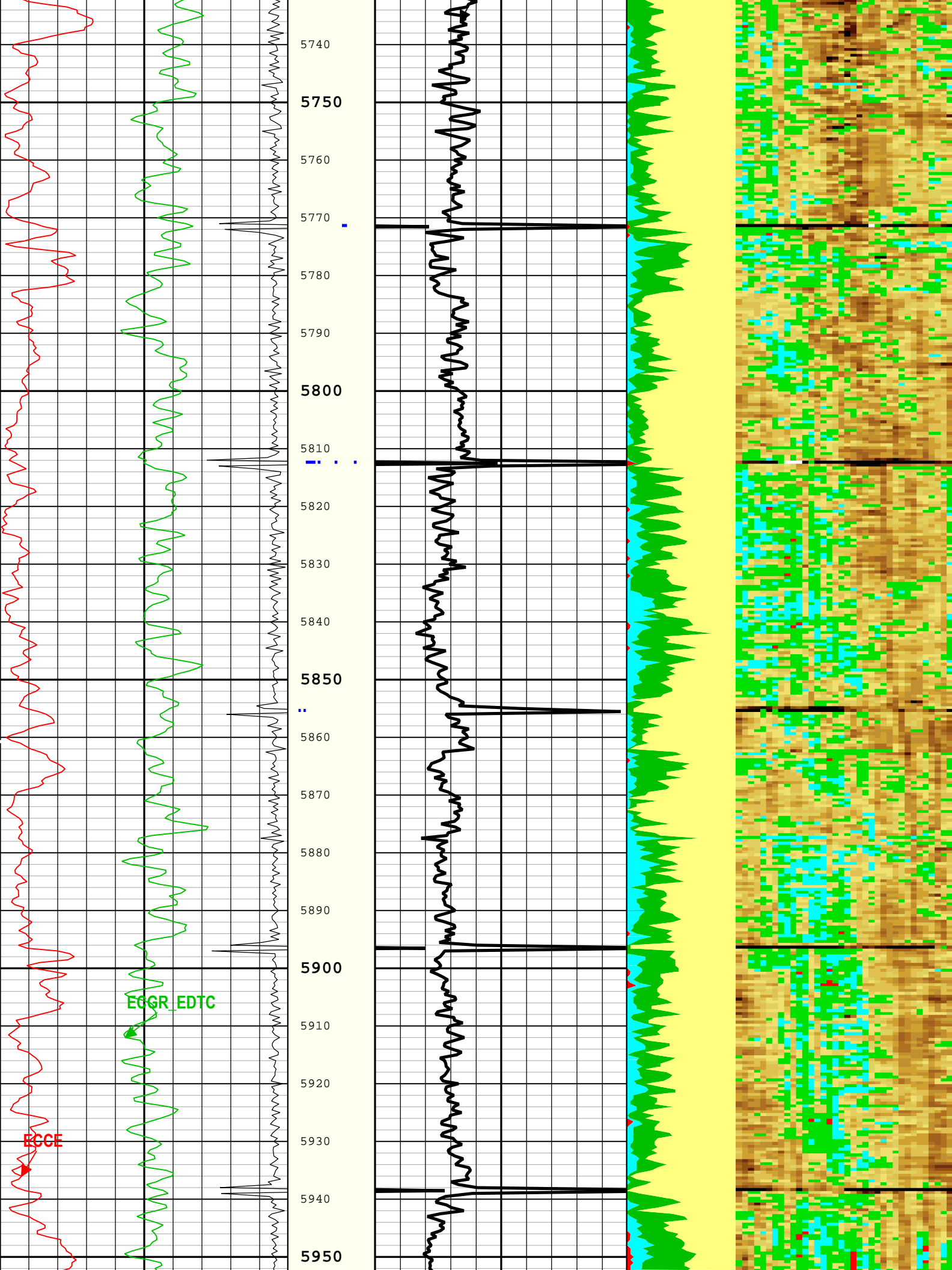


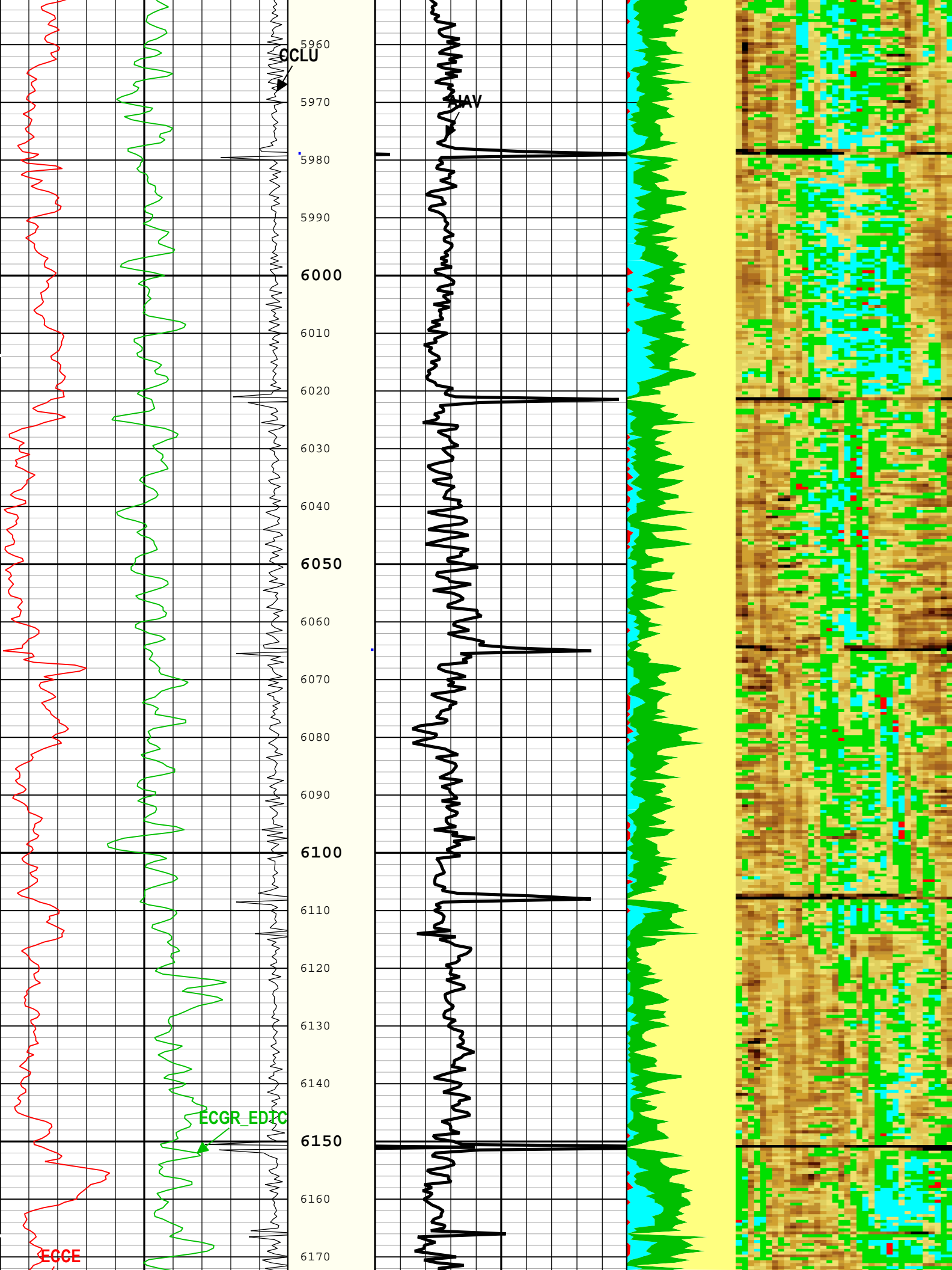


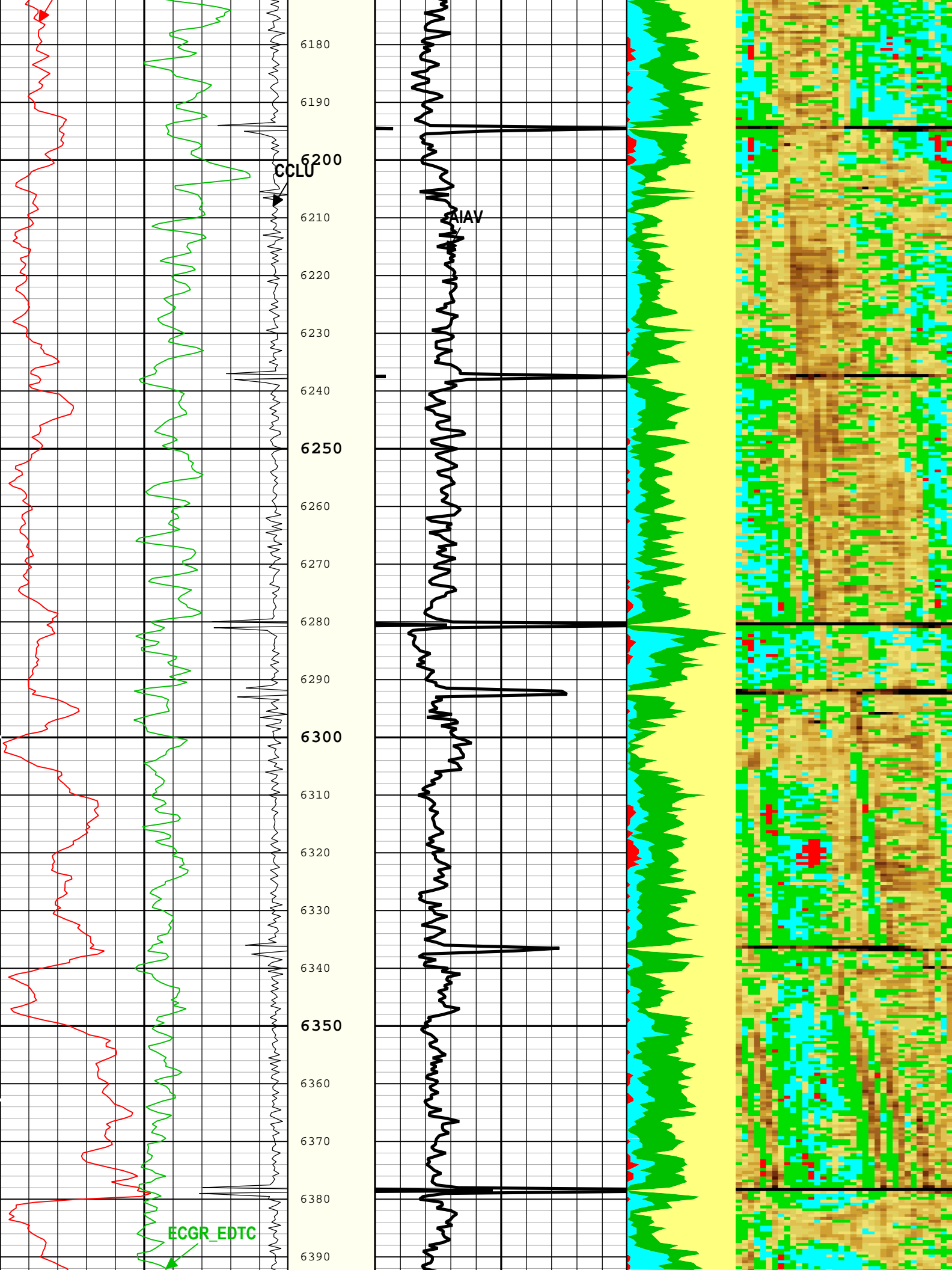


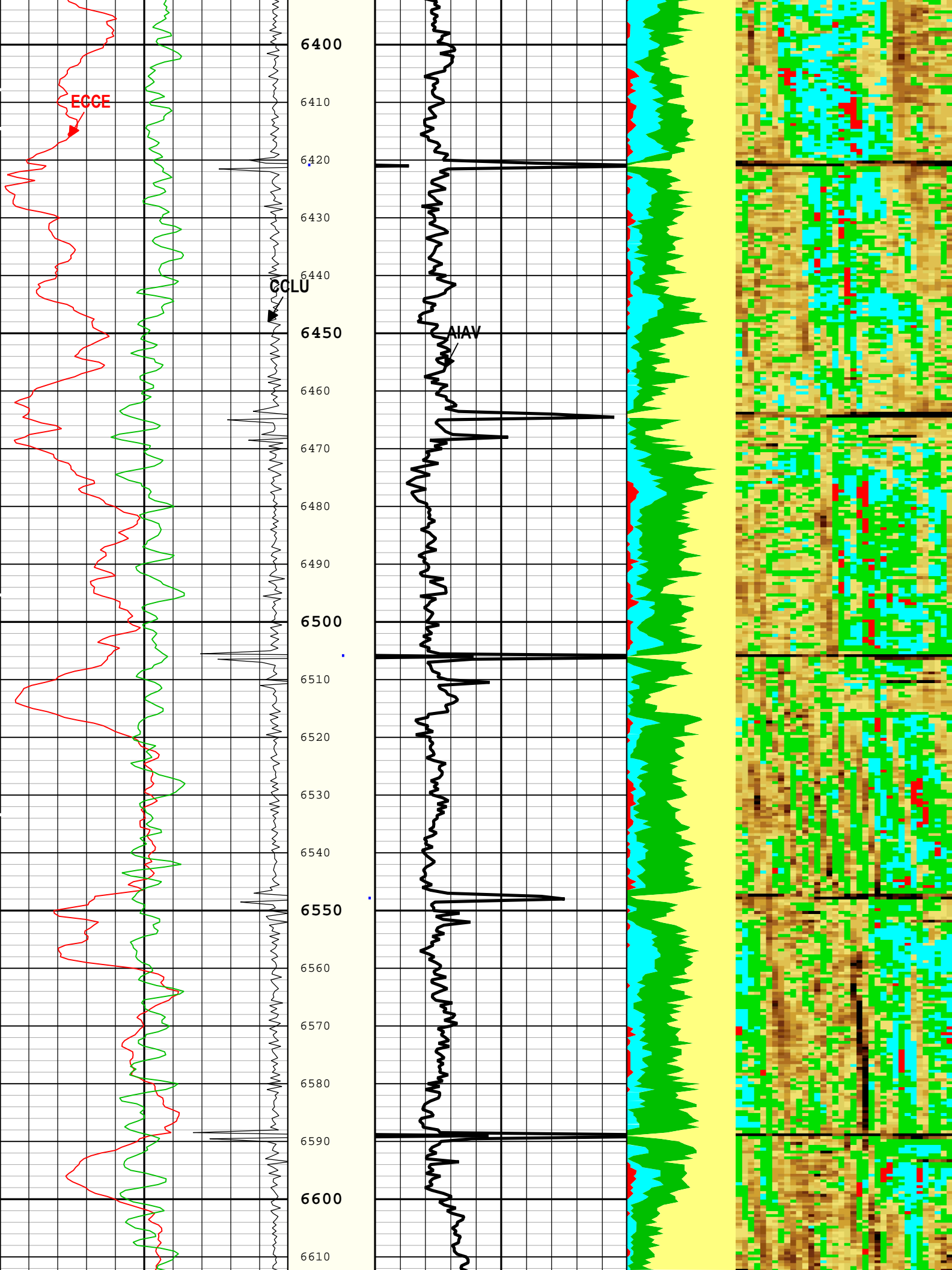


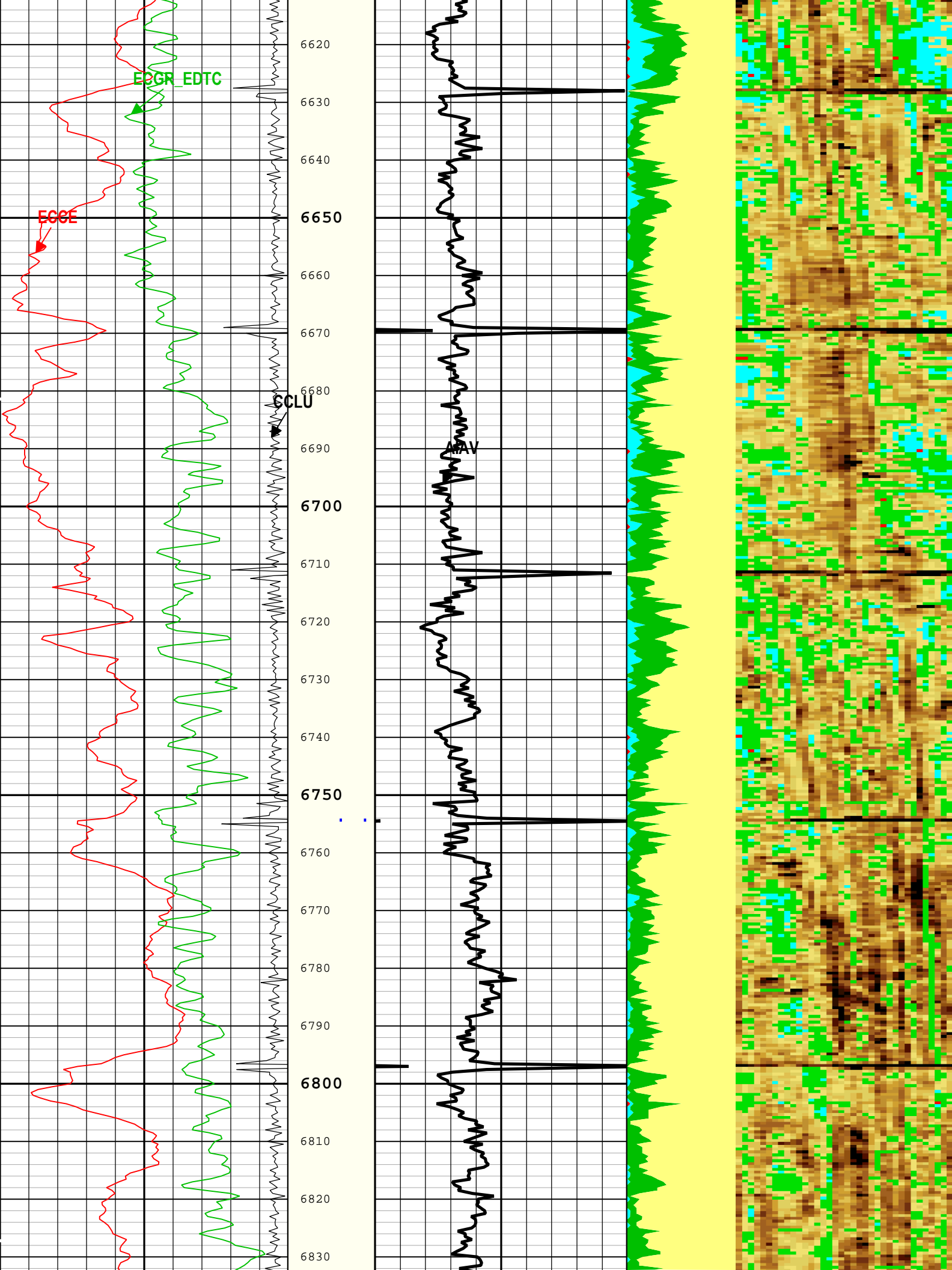




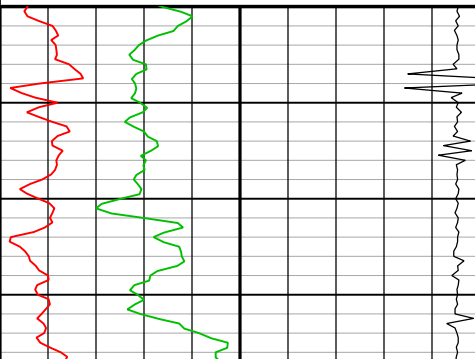
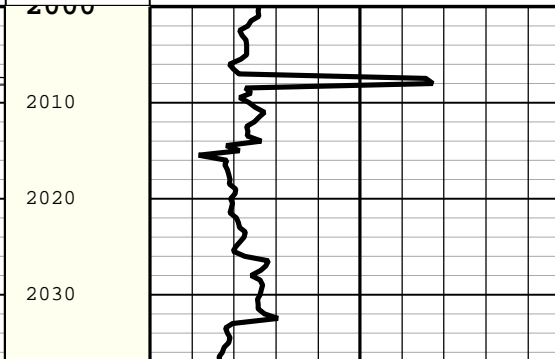
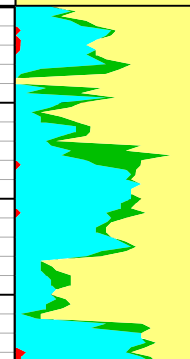
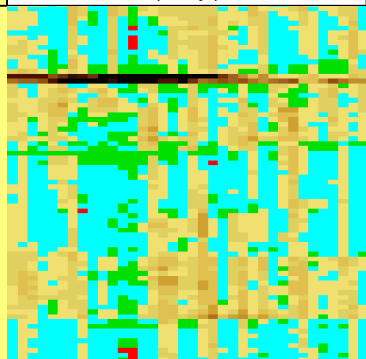


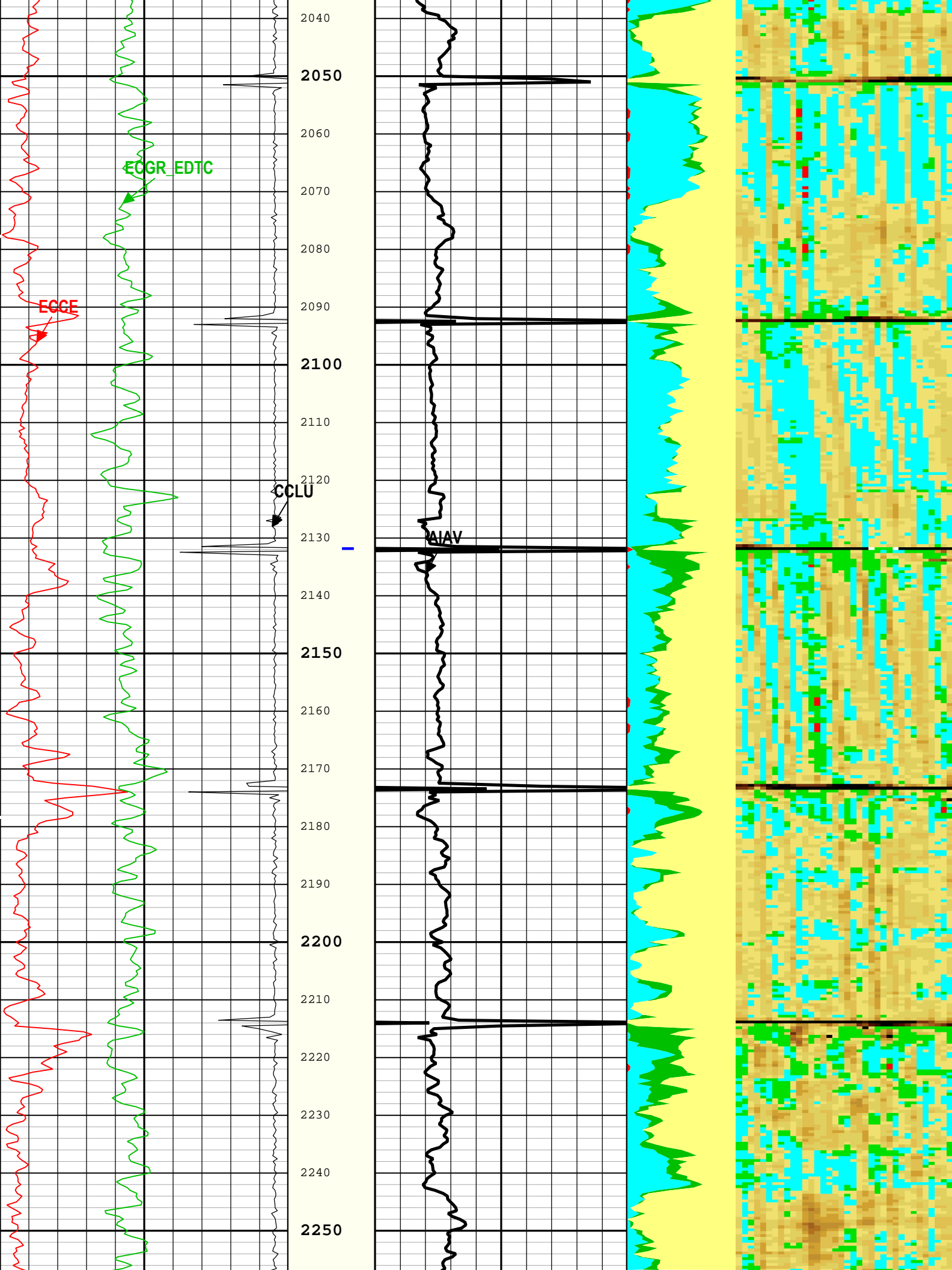


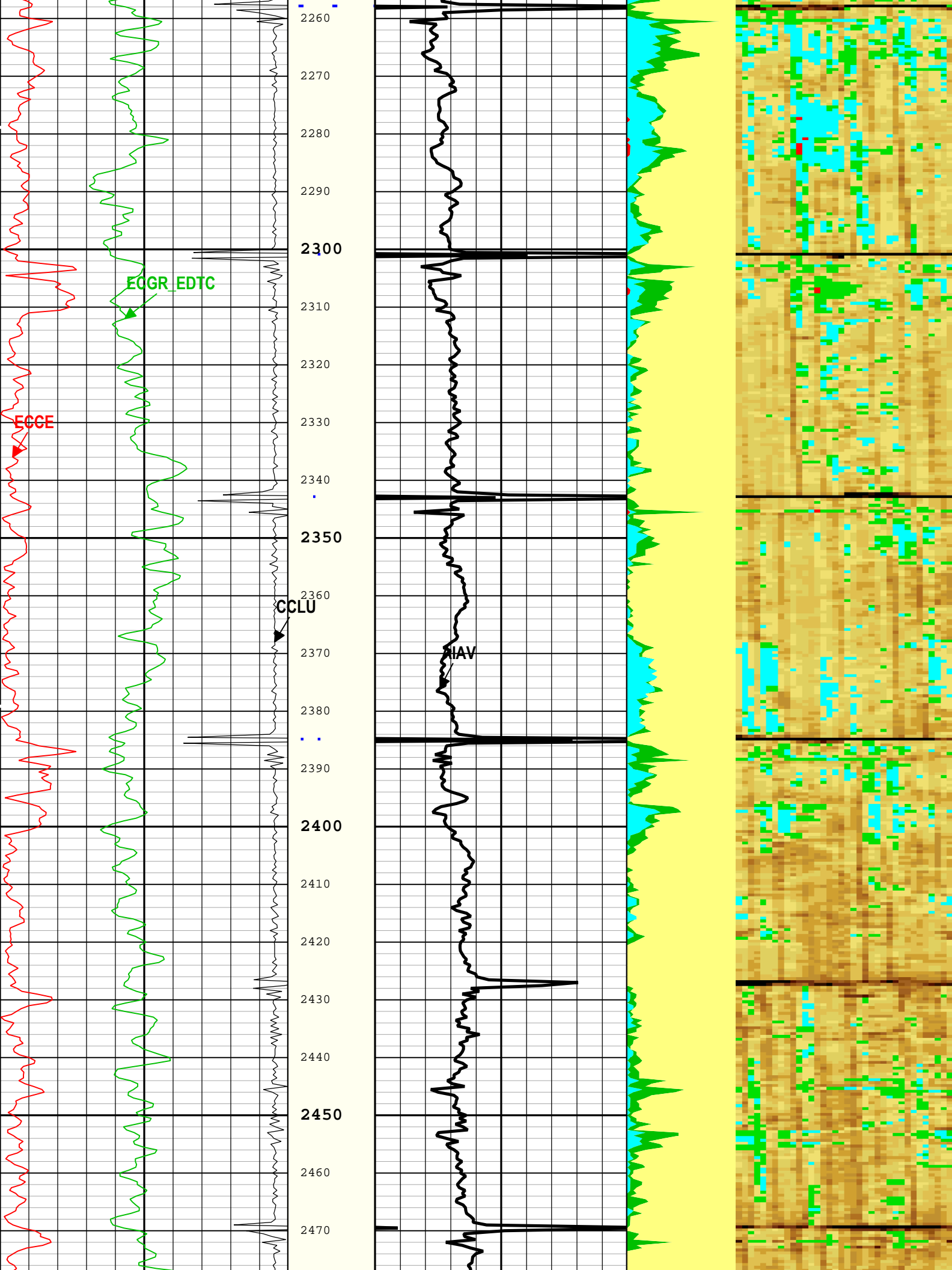


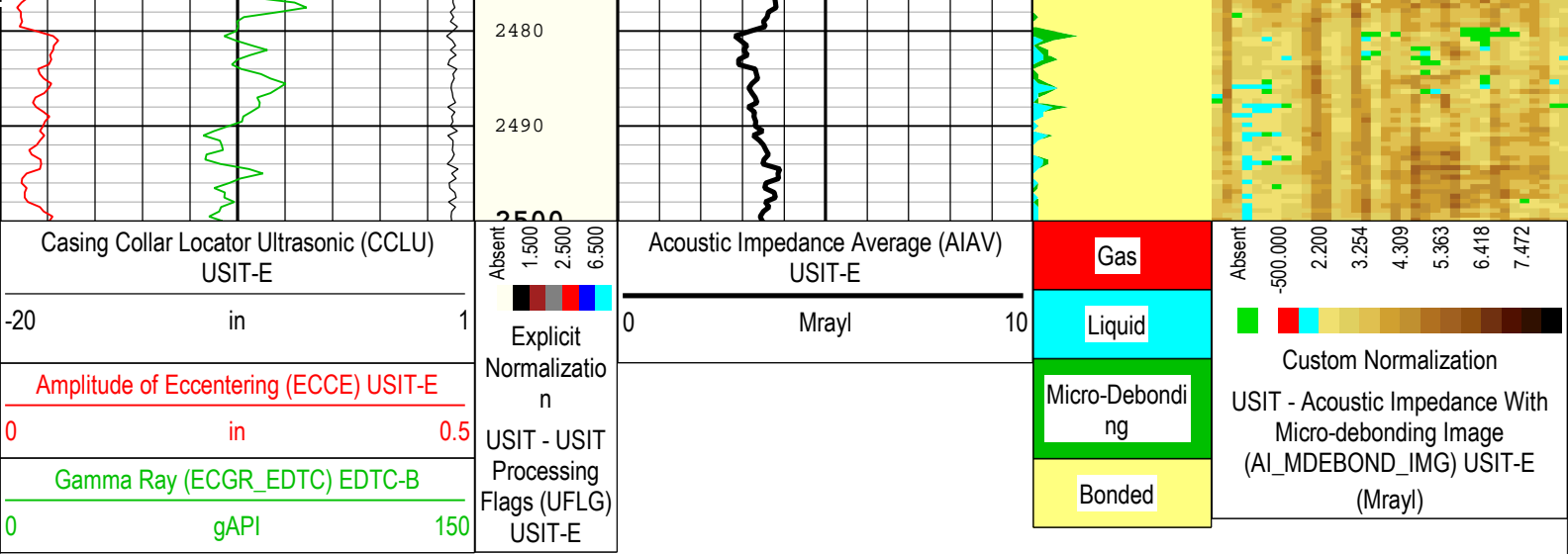


Parameter	Value	Start (ft)	Stop (ft)
BS	26	50	110
BS	13.5	110	2029
BS	8.5	2029	6870

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						
EMXV	EMEX Voltage	USIT-E	120	V						
HRES	Horizontal Resolution	USIT-E	10 deg							
ULOG	Logging Objective	USIT-E	MEASUREMENT							
USFR	Ultrasonic Sampling Frequency	USIT-E	666667	Hz						
UPAT	USIT Emission Pattern	USIT-E	Pattern 375 KHz							
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 6.0 in							
WINB	Window Begin Time	USIT-E	31.88	us						
WINE	Window End Time	USIT-E	71.88	us						
ONE										
0 PSI Repeat Pass										
Software Version										
Acquisition System						Version				
Maxwell 2017 SP3						7.3.92069.3100				
Application Patch						Wireline_NPD-ICE2-2017SP3_7.3.93033				
Pass Summary										
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data	
ONE	Log[2]:Up	Up	1989.10 ft	2520.40 ft	08-Nov-2017 7:52:12 AM	08-Nov-2017 7:58:00 AM	ON	4.33 ft	Yes	
All depths are referenced to toolstring zero										
Log	Company:Noble Energy Inc Well:Hullabaloo State Y21-736 ONE: Log[2]:Up:S009									
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: 08-Nov-2017 12:31:57 TIME_1900 - Time Marked every 60.00 (s)										
Casing Collar Locator Ultrasonic (CCLU) USIT-E			Absent 1,500 2,500 6,500		Gas			Absent -500,000 2,200 3,254 4,309 5,363 6,418 7,472		
-20 in 1			Explicit Normalization		Liquid			Custom Normalization		
Amplitude of Eccentering (ECCE) USIT-E			USIT - USIT Processing Flags (UFLG) USIT-E		Acoustic Impedance Average (AIAV) USIT-E			USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E (Mrayl)		
0 in 0.5					0 Mrayl 10					
Gamma Ray (ECGR_EDTC) EDTC-B					Bonded					
0 gAPI 150										
										







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: 08-Nov-2017 12:31:57

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	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	6870	ft
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CENT)	Cement Type	USIT-E	Regular Cement	
DFD	Drilling Fluid Density	Borehole	8.4	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	
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	1.13	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.61	Mrayl
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

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	13.5	2000	2029
BS	8.5	2029	2500

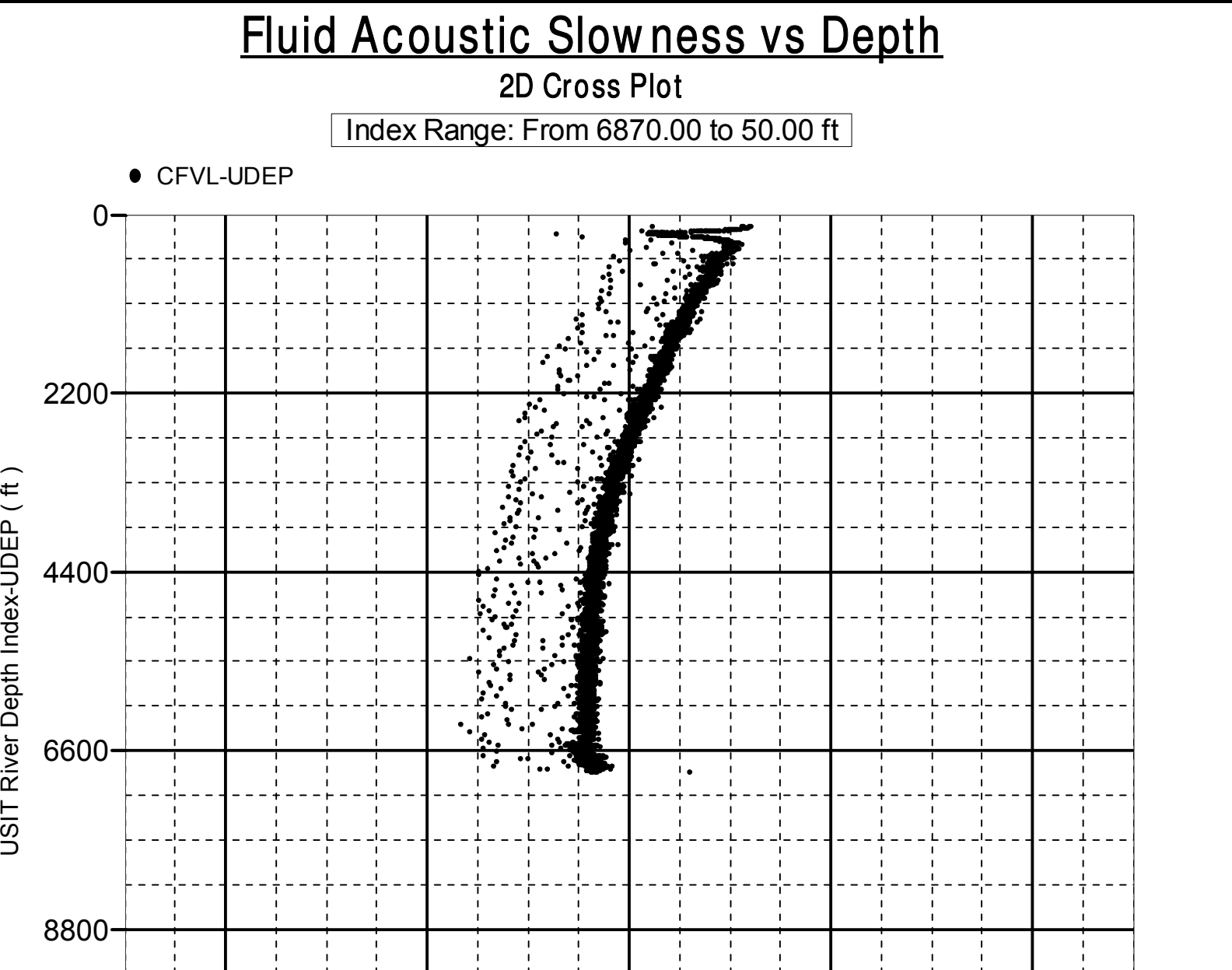
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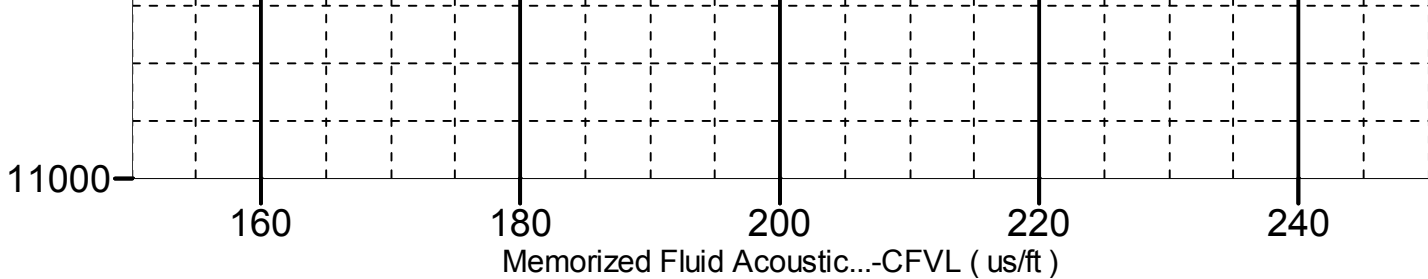
Tool Control Parameters

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
EMXV	EMEX Voltage	USIT-E	60	V
HRES	Horizontal Resolution	USIT-E	10 deg	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
USFR	Ultrasonic Sampling Frequency	USIT-E	666667	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 375 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 6.0 in	
WINB	Window Begin Time	USIT-E	31.88	us
WINE	Window End Time	USIT-E	Time Zoned	us

Time Zone Parameters					
Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
WINE	71.88	08-Nov-2017 07:52:12	08-Nov-2017 07:52:52	2520.4	2490.18
WINE	73.6	08-Nov-2017 07:52:52	08-Nov-2017 07:52:58	2490.18	2479.82
WINE	74.08	08-Nov-2017 07:52:58	08-Nov-2017 07:58:00	2479.82	1989.1
All depth are at tool zero.					
<div> <div>XYZ</div> <div>Company:Noble Energy Inc Well:Hullabaloo State Y21-736</div> <div>ONE: Log[4]:Up:S009</div> </div>					





XYZ

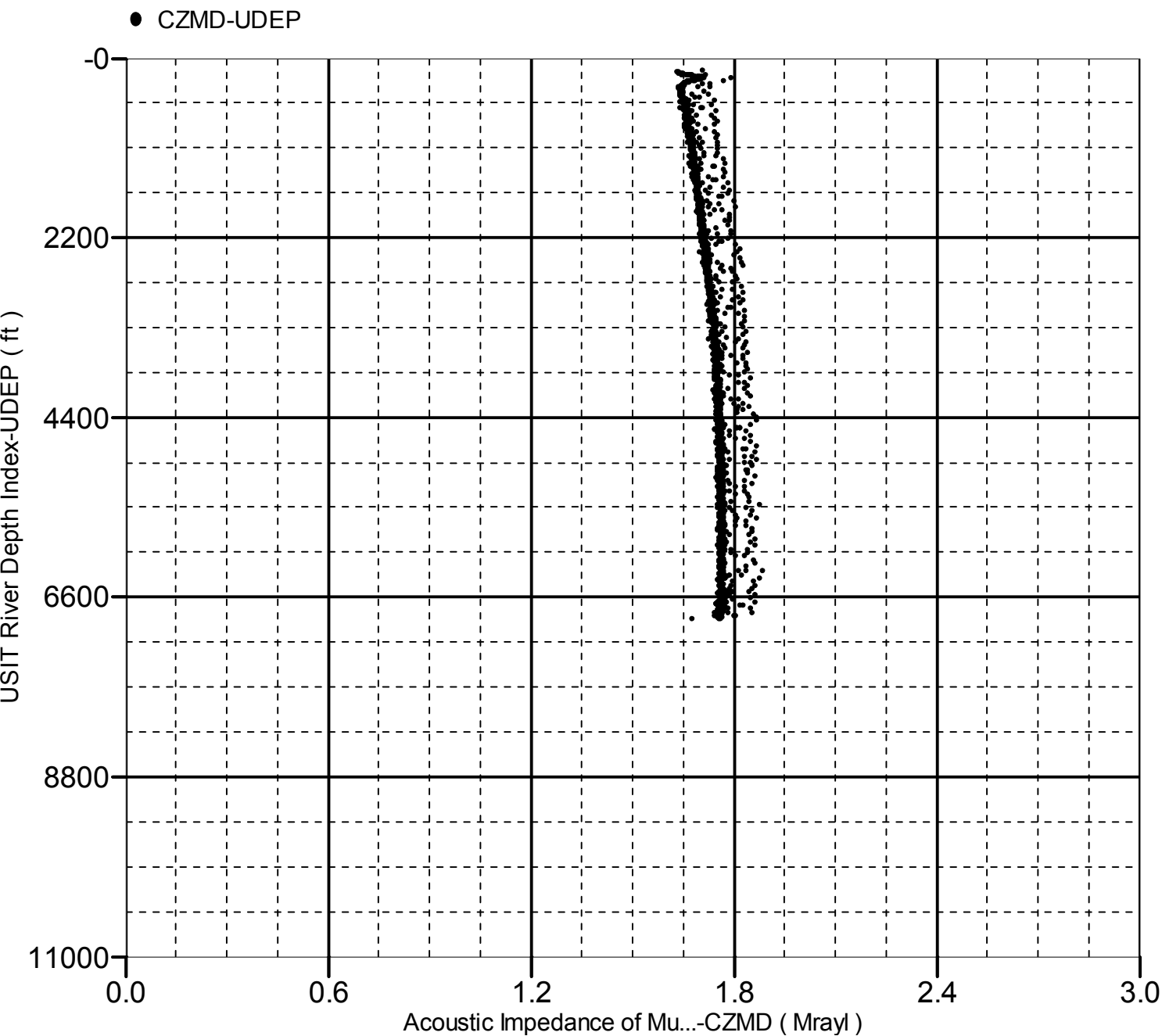
Company:Noble Energy Inc Well:Hullabaloo State Y21-736

ONE: Log[4]:Up:S009

Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 6870.00 to 50.00 ft



Company:	Noble Energy Inc	Schlumberger
Well:	Hullabaloo State Y21-736	
Field:	Wattenberg	
County:	Weld	
State:	Colorado	

UltraSonic Summary Print