

Company: Noble Energy Inc

Well: Hullabaloo State Y21-716

Field: Wattenberg

County: Weld State: Colorado

UltraSonic Summary Print

County:		Weld	
Field:		Wattenberg	
Location:		NENE Sec. 16, T2N, R64W	
Well:		Hullabaloo State Y21-716	
Company:		Noble Energy Inc	
<div>API Serial No. 05-123-45232</div> <div>Section: 16</div> <div>Township: 2N</div> <div>Range: 64W</div>		Location:	
		NENE Sec. 16, T2N, R64W	
		SHL: 100' FSL & 415' FEL	
		Lat/Long: 40.14452 / -104.55018	
		Permanent Datum:	
Log Measured From:		Ground Level	
Drilling Measured From:		Kelly Bushing	
		Kelly Bushing	
		Elev.: 30.00 ft	
		4946.00 f	
		above Perm. Datum	

Logging Date	07-Nov-2017		
Run Number	ONE		
Depth Driller	17414.00 ft		
Schlumberger Depth	7010.00 ft		
Bottom Log Interval	7010.00 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	7010.00 ft		
Casing/Tubing Size	5.5 in		
Weight	20 lbm/ft		
Grade	P110		
From	0.00 ft		
To	7010.00 ft		
Max Recorded Temperatures	228 degF		
Logger on Bottom	07-Nov-2017	11:22:00	
Unit Number	Location:		
Recorded By	A.BLOCHOWICZ	Fort Morgan, CO	
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.

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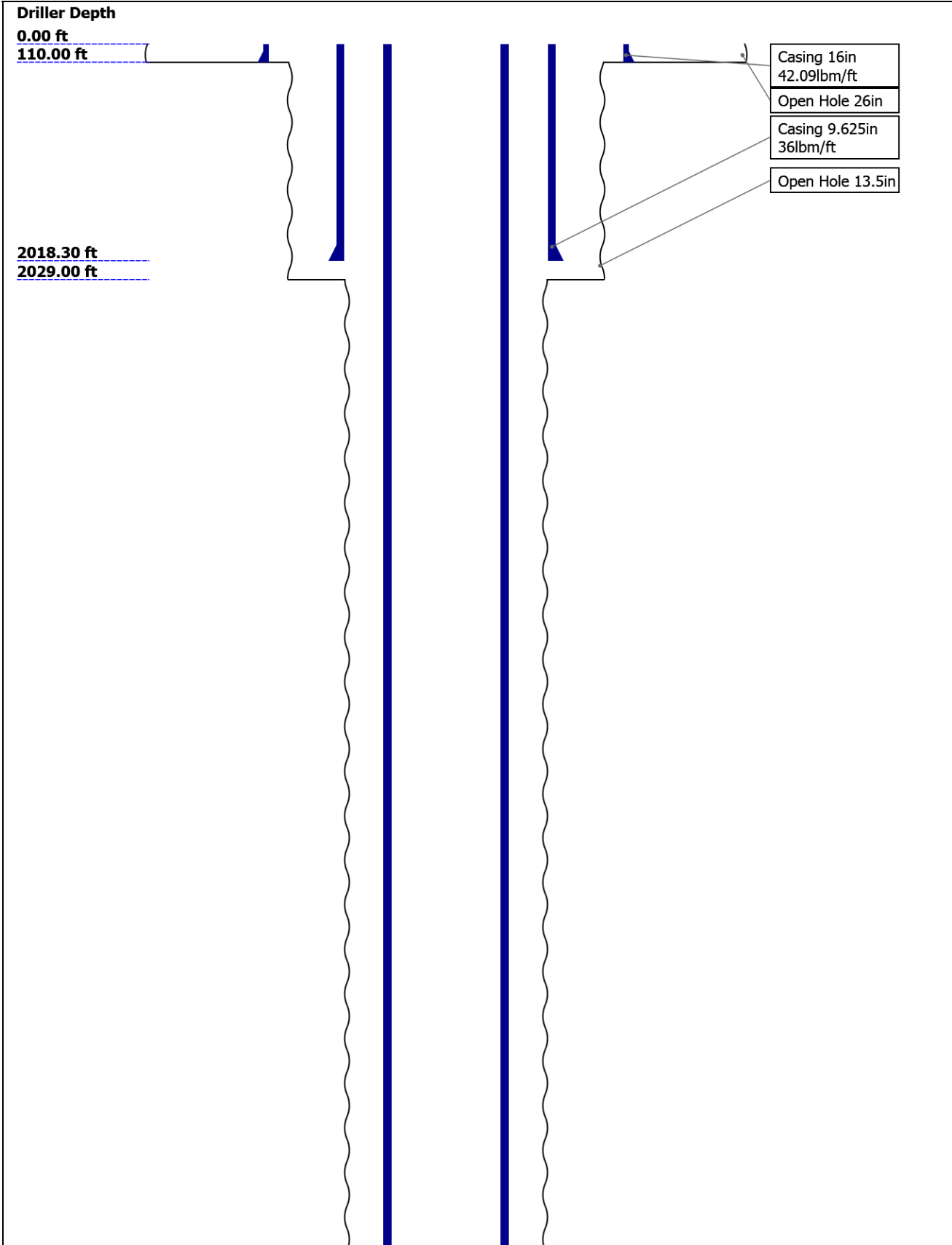
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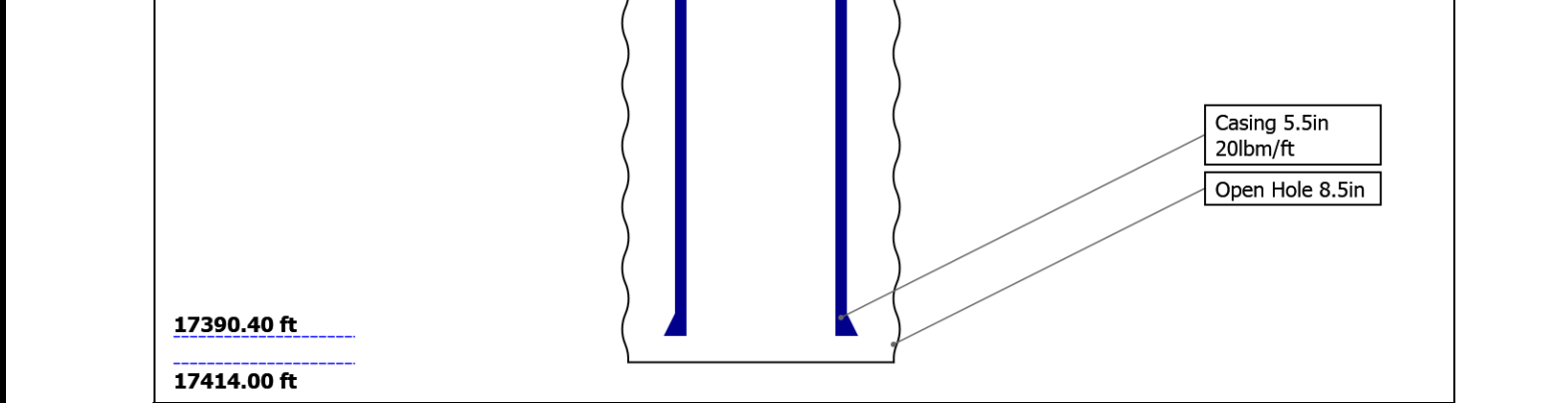
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Well Sketch





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	17414			
Bottom Logger (ft)	110	2029	7010			
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	2018.3	17390.4			
Bottom Logger (ft)	110	2018.3	7010			

Operational Run Summary

Parameter (unit)	ONE					
Date Log Started	07-Nov-2017					
Time Log Started	09:09:57					
Date Log Finished	07-Nov-2017					
Time Log Finished	12:37:08					
Top Log Interval (ft)	50.00					
Bottom Log Interval (ft)	7010.00					
Total Depth (ft)						
Max Hole Deviation (deg)	0.00					
Azimuth of Max Deviation (deg)	0.00					
Bit Size (in)	8.500					
Logging Unit Number	2161					
Logging Unit Location	Fort Morgan, CO					
Recorded By	A.BLOCHOWICZ					

Witnessed By	BILL MANSFIELD					
Service Order Number	DXCR-00013					

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>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>AH-184:2</div><div>17.56</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><div>MP name</div><div>Offset</div></div><div>CTEM</div><div>20.56</div></div><div><div><div><div>ACCZ</div><div>0.00</div></div><div>HV</div><div>0.00</div></div><div><div><div><div>Gamma</div><div>18.69</div></div><div>Ray</div><div>TelStatu</div><div>s</div><div>17.56</div></div></div></div><div><div><div><div>USI Sen</div><div>0.37</div></div><div>sor</div><div>TOOL_ZERO</div><div>Head Te</div><div>nsion</div></div></div></div> <div><div>Lengths are in ft</div><div>Maximum Outer Diameter = 3.625 in</div><div>Line: Sensor Location, Value: Gating Offset</div><div>All measurements are relative to TOOL_ZERO</div></div> <tr><td colspan="2">Thank you for choosing Schlumberger!</td></tr> <tr><td colspan="2">Tool string run as per tool sketch and clinet logging program.</td></tr> <tr><td colspan="2">2 Gemcos run on tool string for centralization.</td></tr> <tr><td colspan="2">Repeat Pass logged at 0 PSI; Main Pass logged at 2500 PSI.</td></tr>	Thank you for choosing Schlumberger!		Tool string run as per tool sketch and clinet logging program.		2 Gemcos run on tool string for centralization.		Repeat Pass logged at 0 PSI; Main Pass logged at 2500 PSI.		
	Thank you for choosing Schlumberger!								
	Tool string run as per tool sketch and clinet logging program.								
	2 Gemcos run on tool string for centralization.								
Repeat Pass logged at 0 PSI; Main Pass logged at 2500 PSI.									

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	7025.48	46.51

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 : 15.35m(50.37ft) to 18.34m(60.16ft)
MUD_N_FRP = 1.13
DFD = 1.01g/cm3(8.40lbm/gal)
CZMD median computed in free pipe normalization interval = 1.60 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

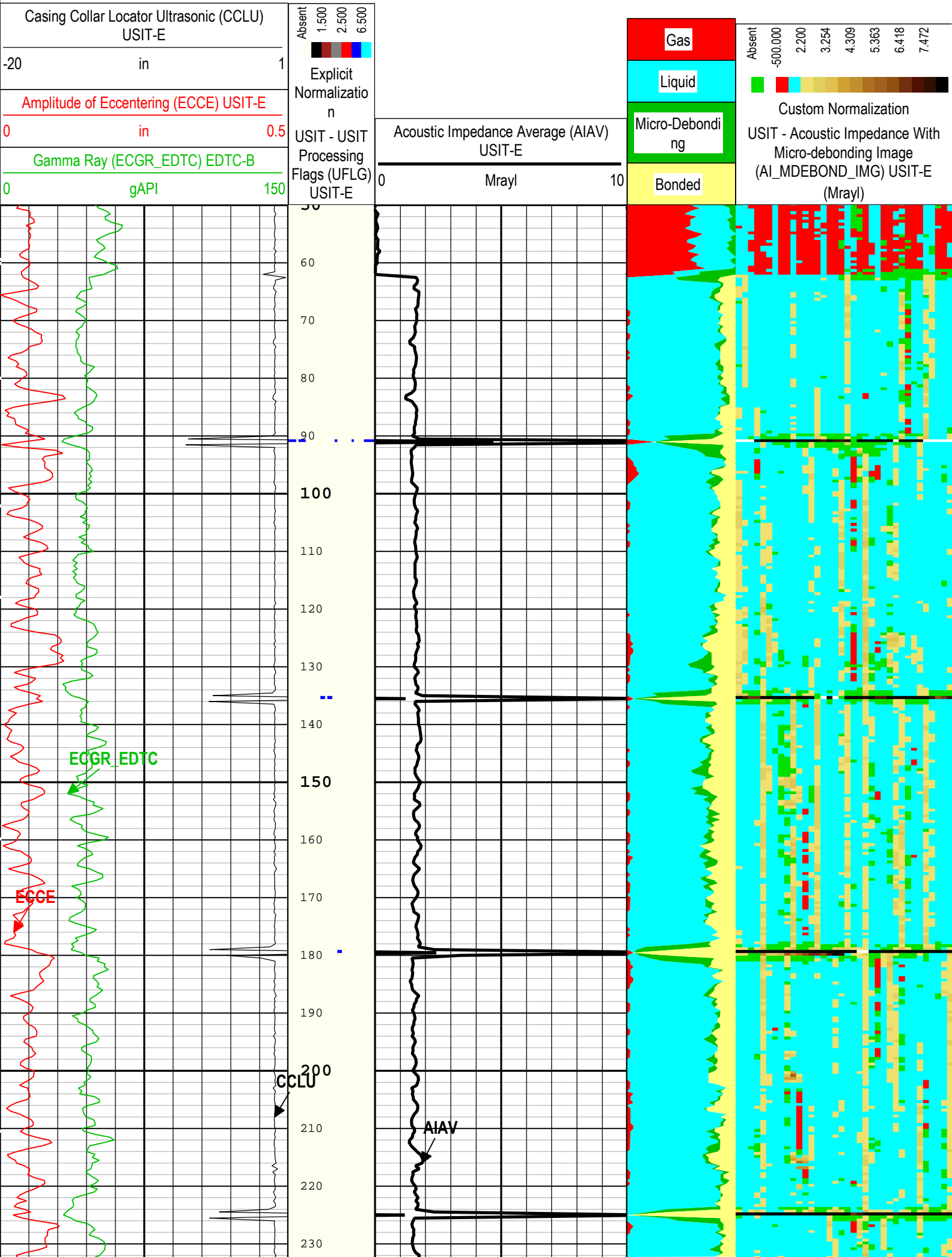
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	46.51 ft	7025.48 ft	07-Nov-2017 11:19:38 AM	07-Nov-2017 12:36:53 PM	ON	13.61 ft	Yes

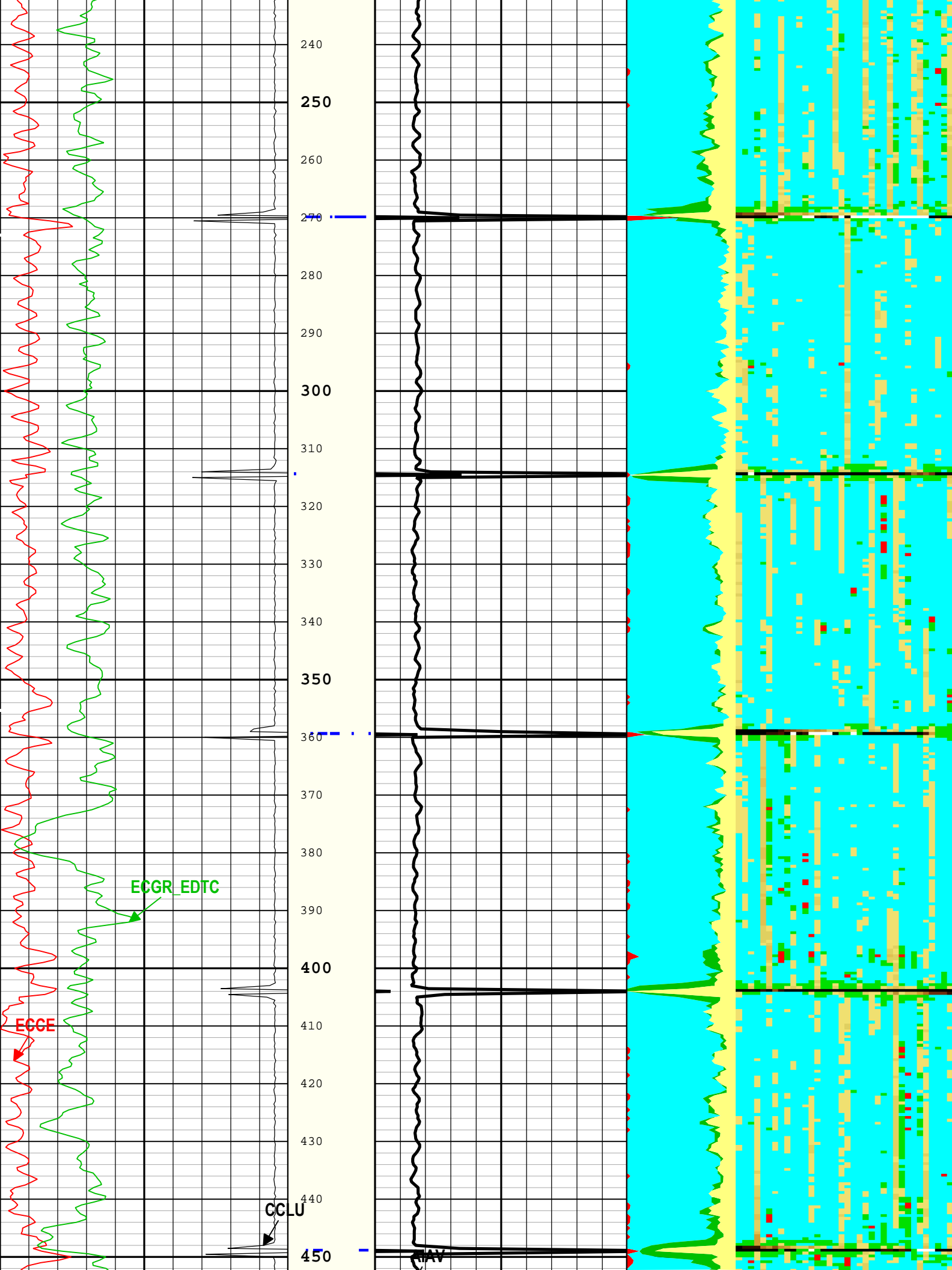
All depths are referenced to toolstring zero

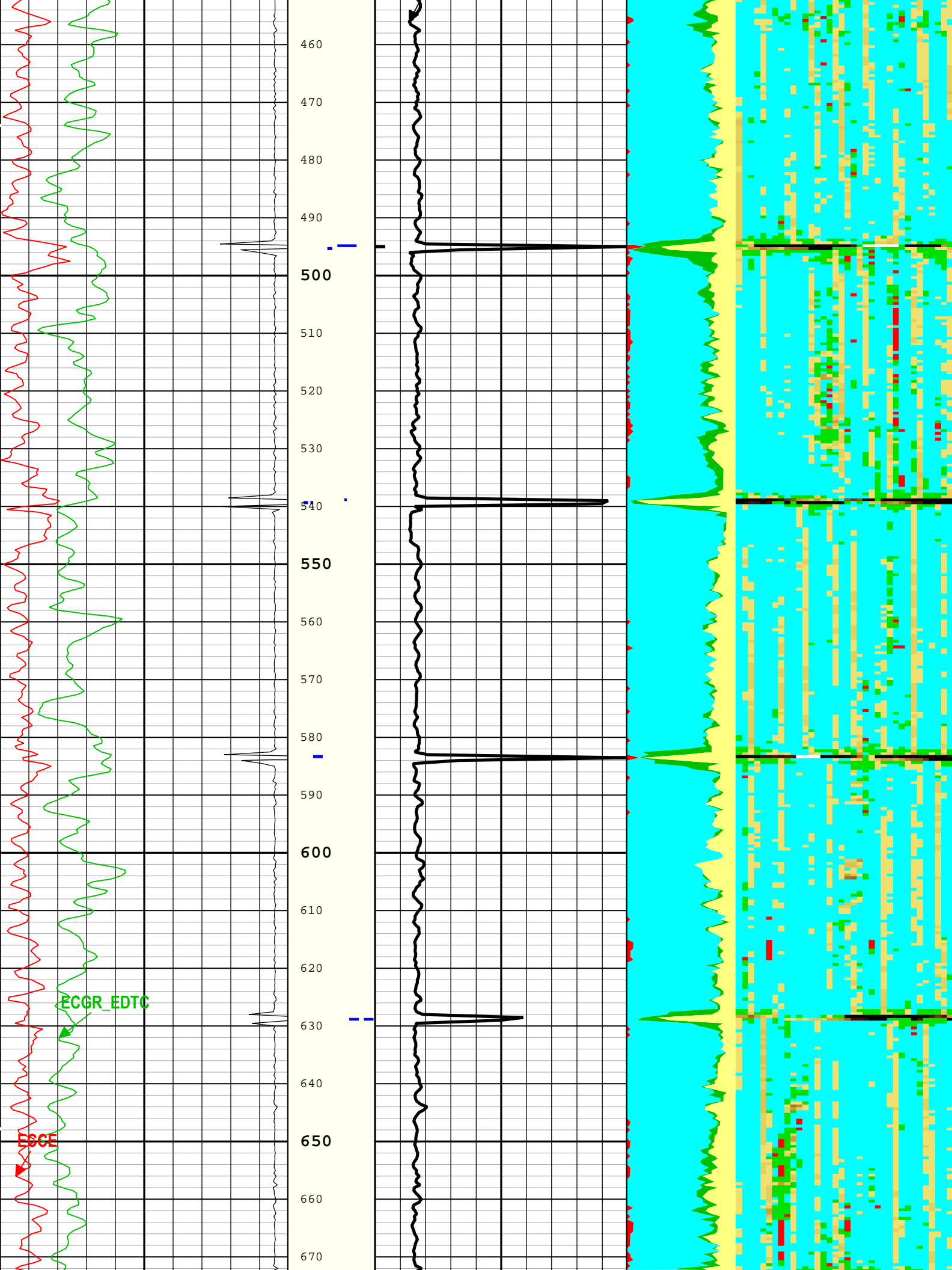
Log	Company:Noble Energy Inc	Well:Hullabaloo State Y21-716
	ONE: Log[4]:Up:S006	

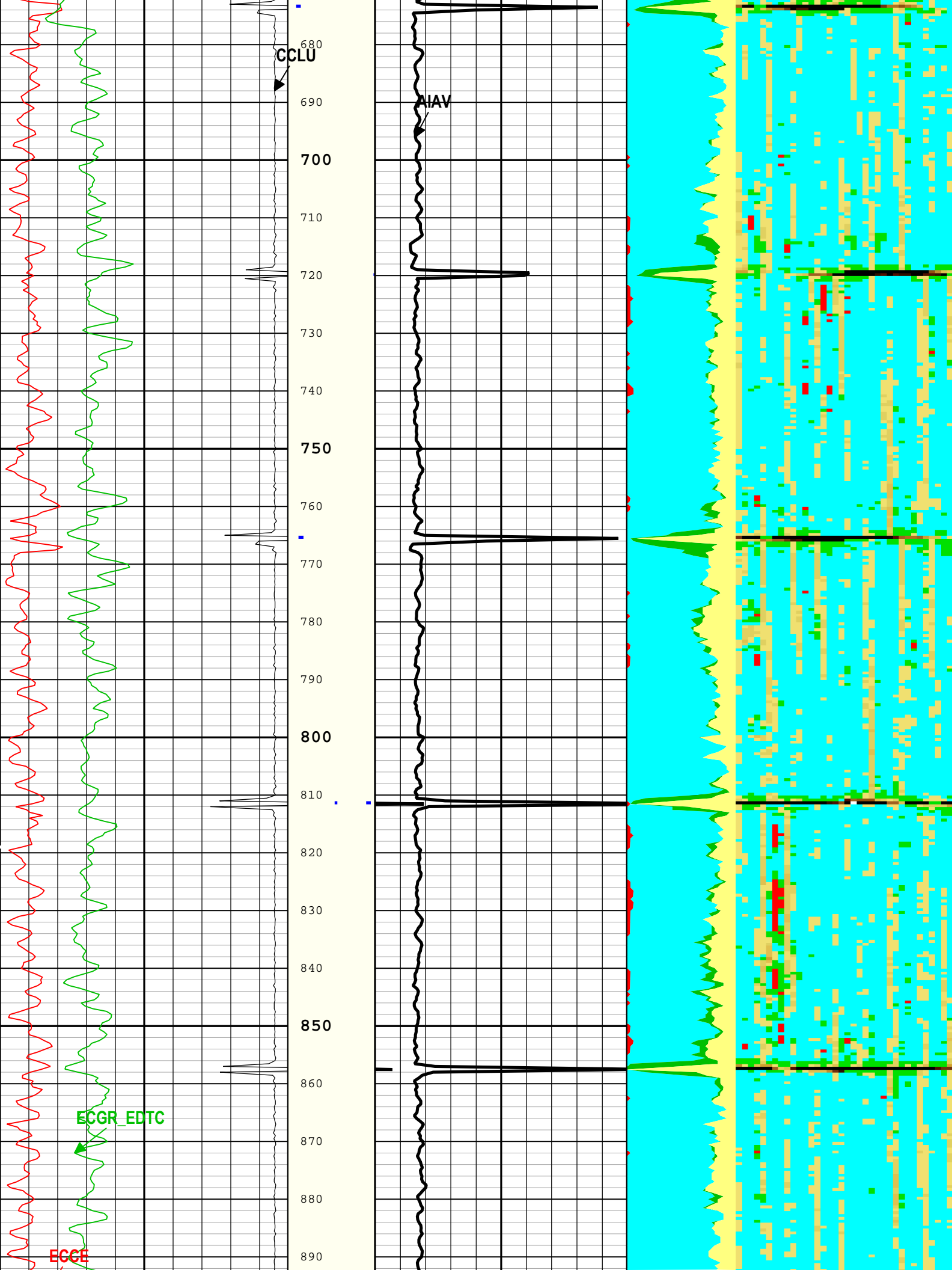
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Creation Date: 07-Nov-2017 13:46:20

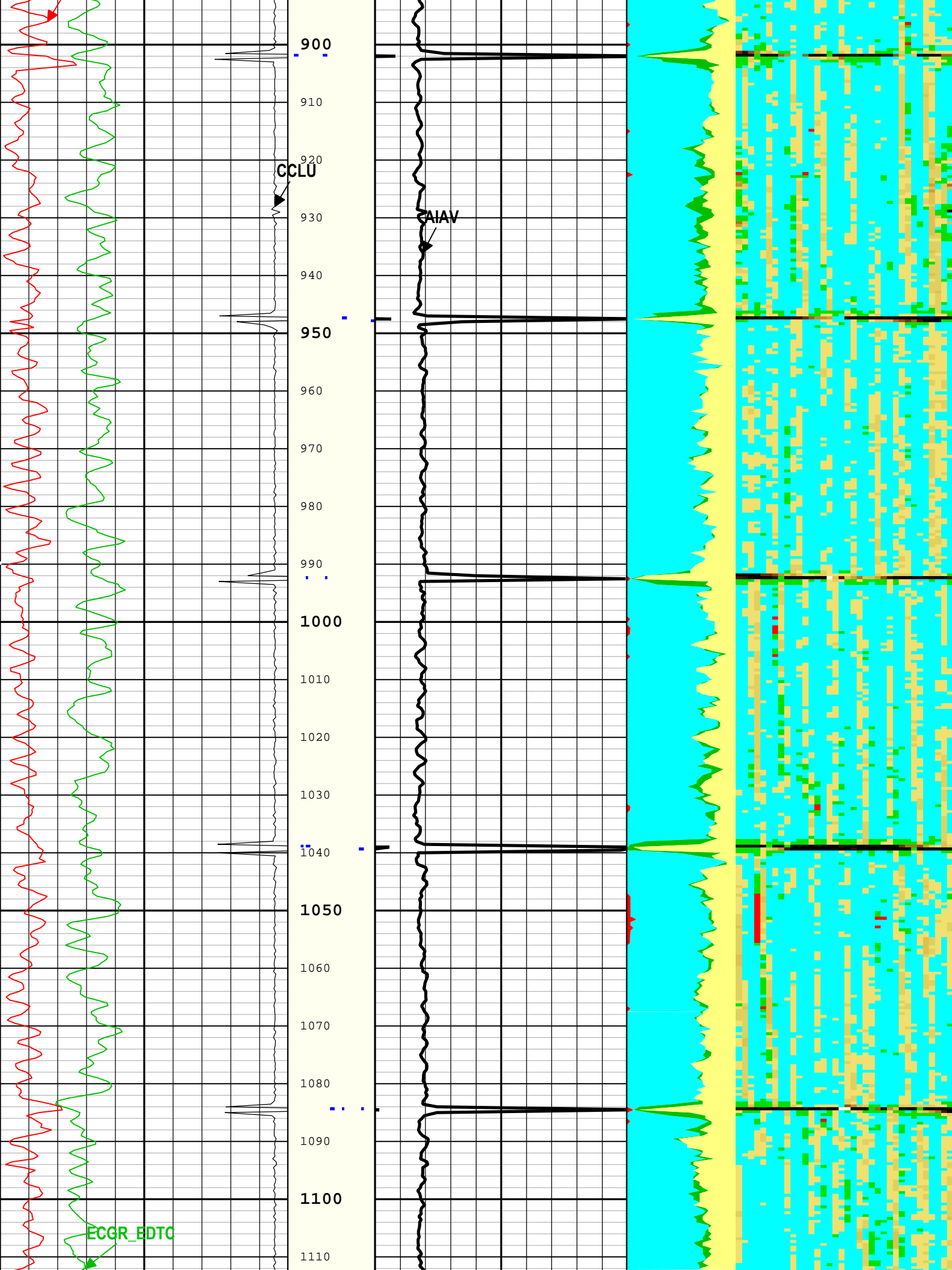
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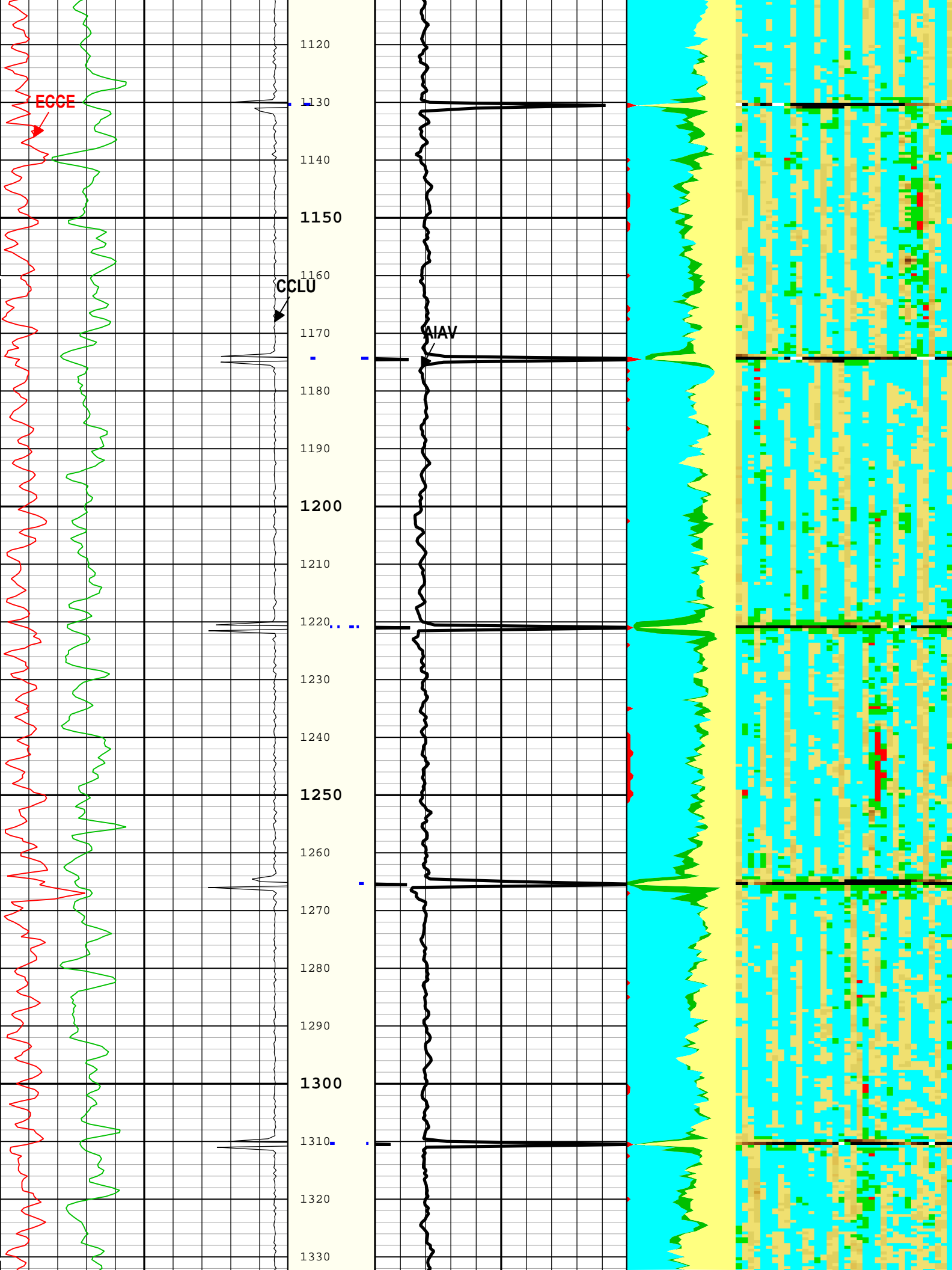


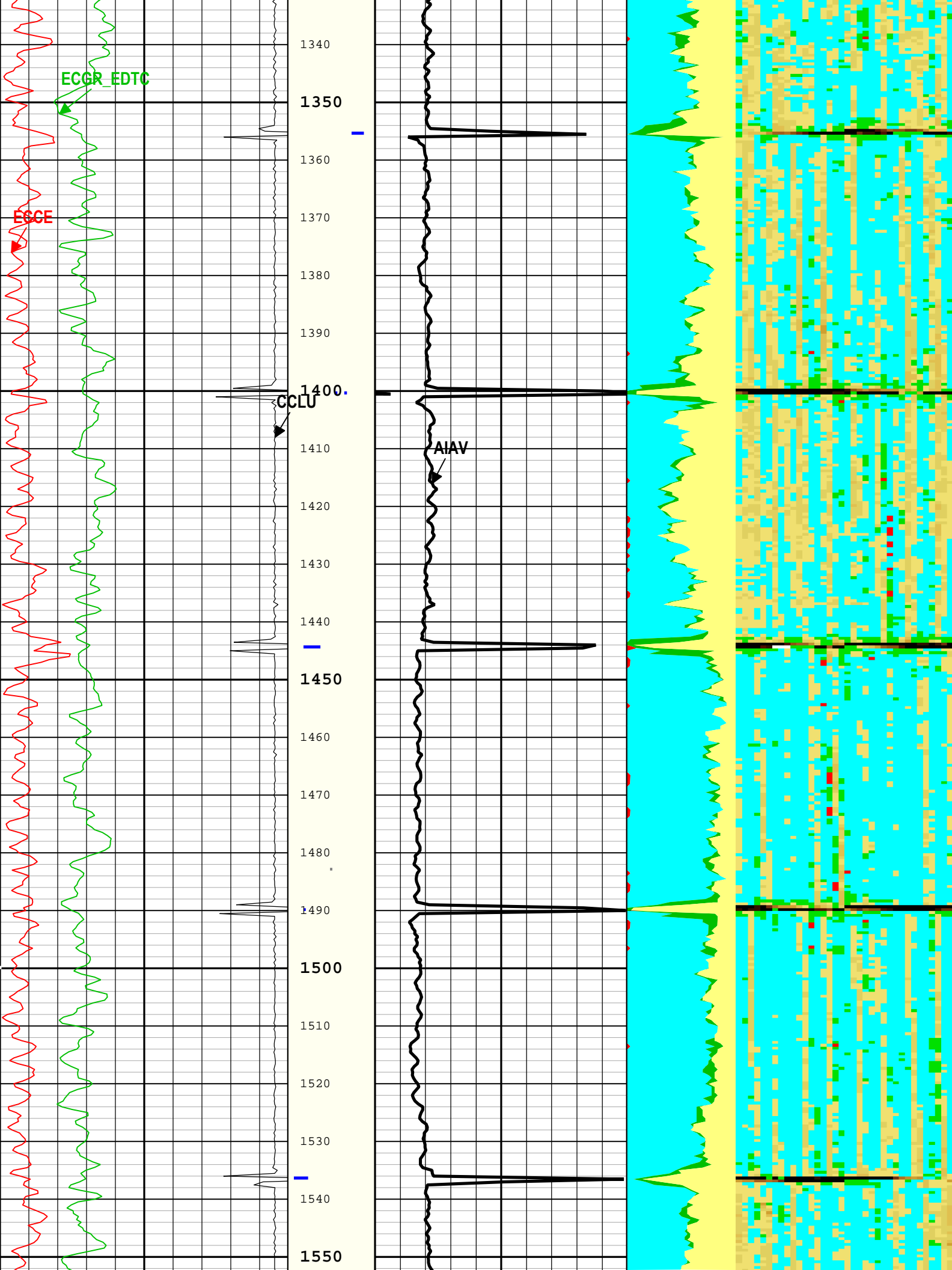


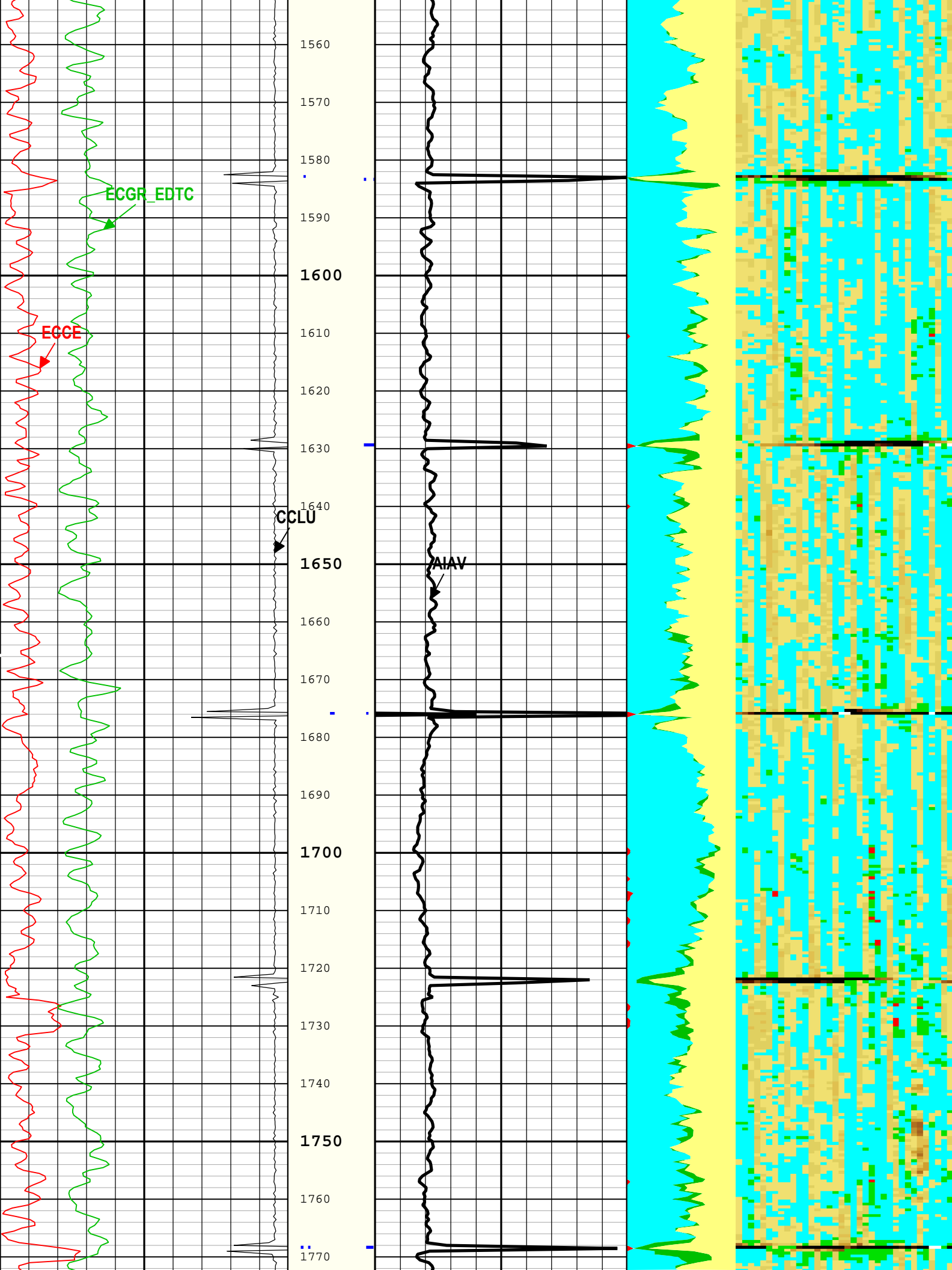


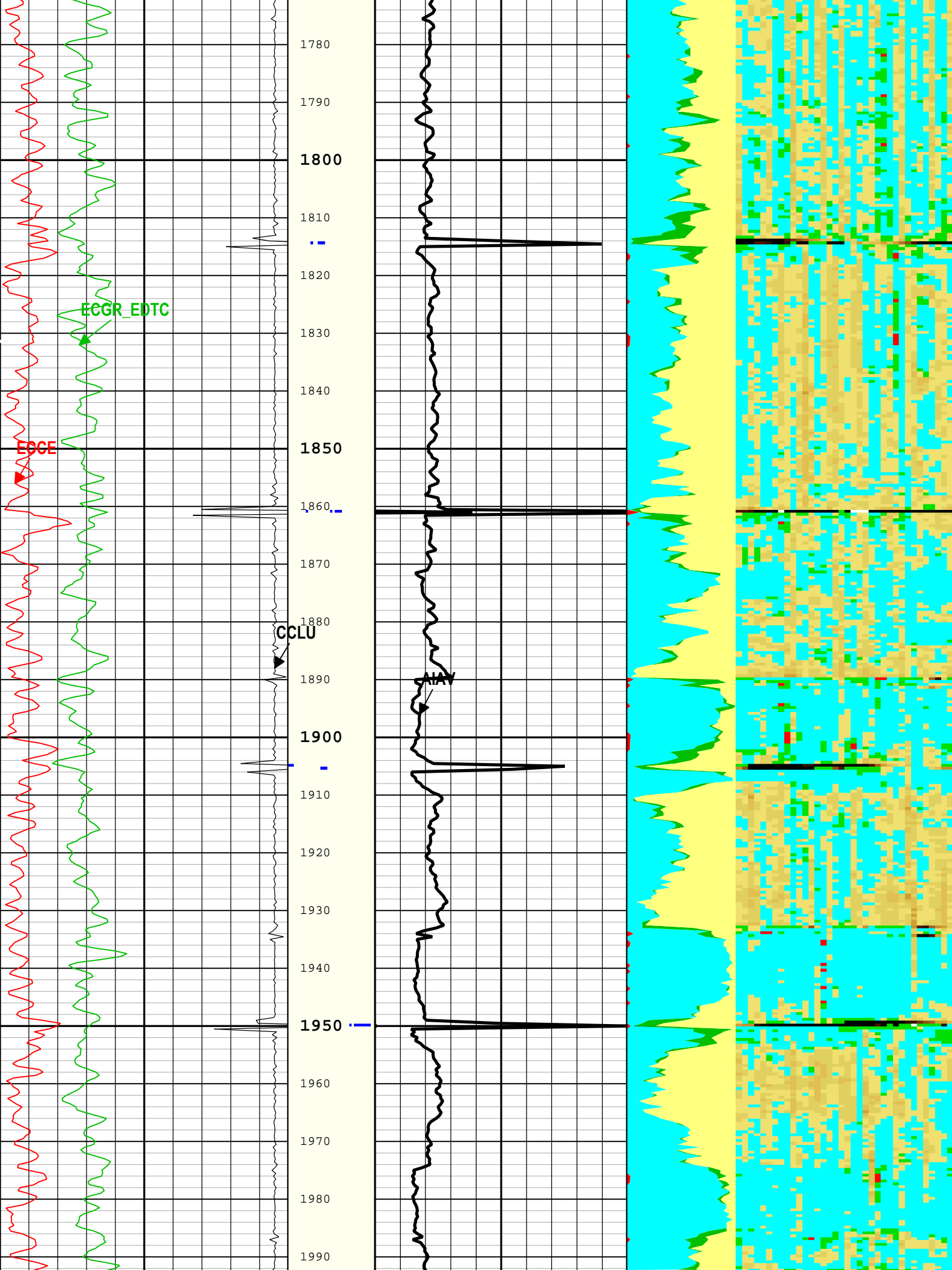


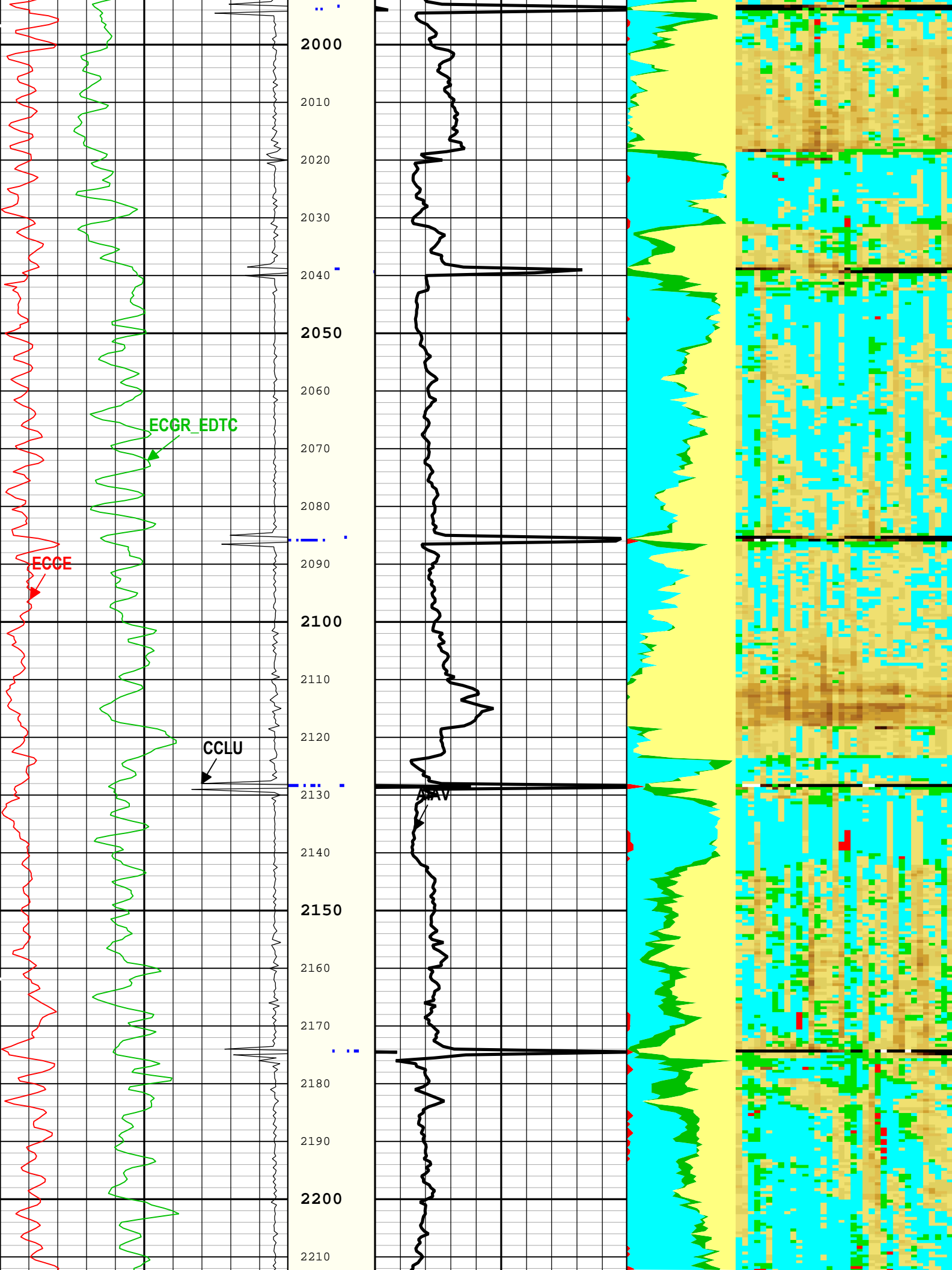


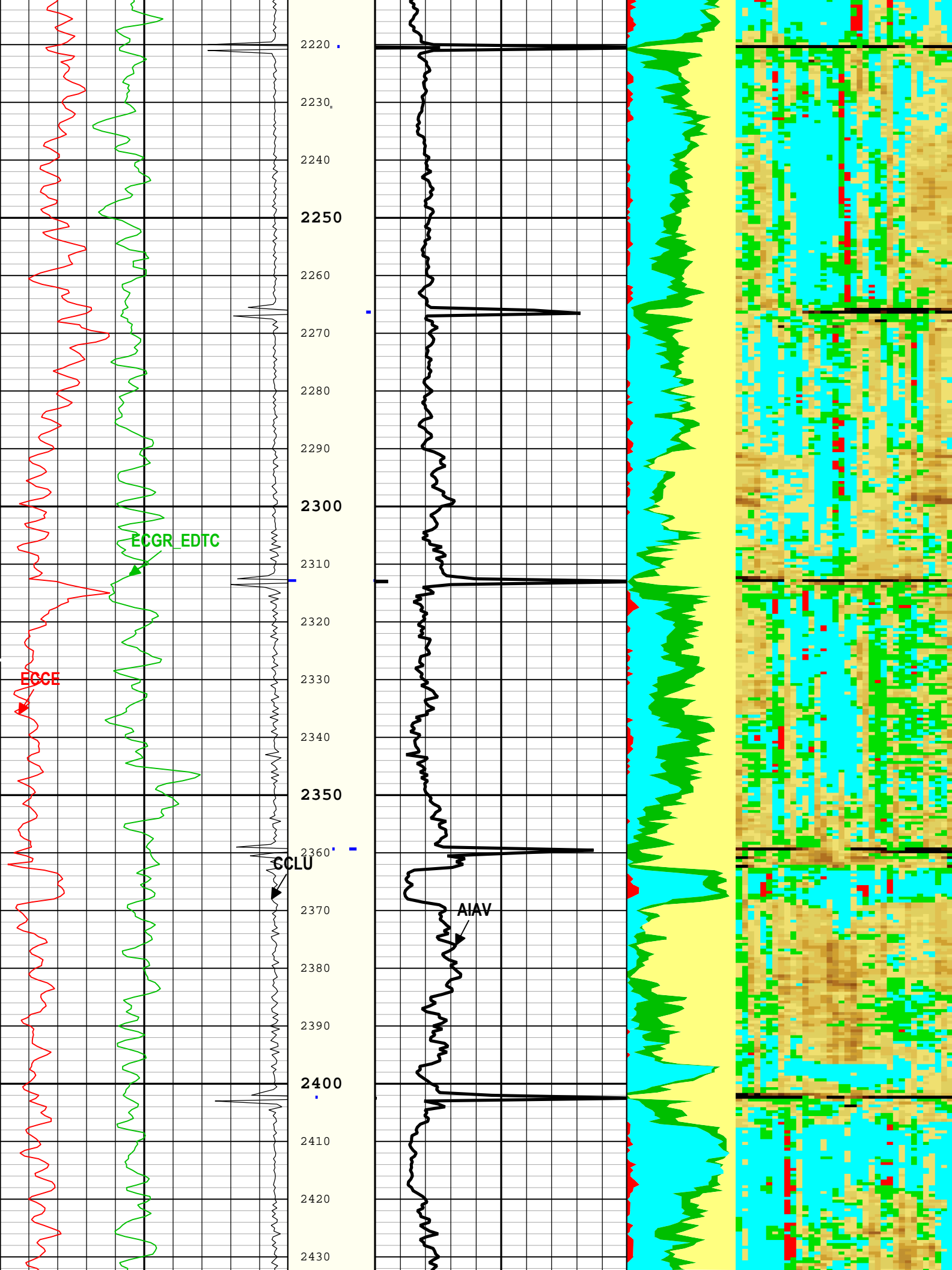


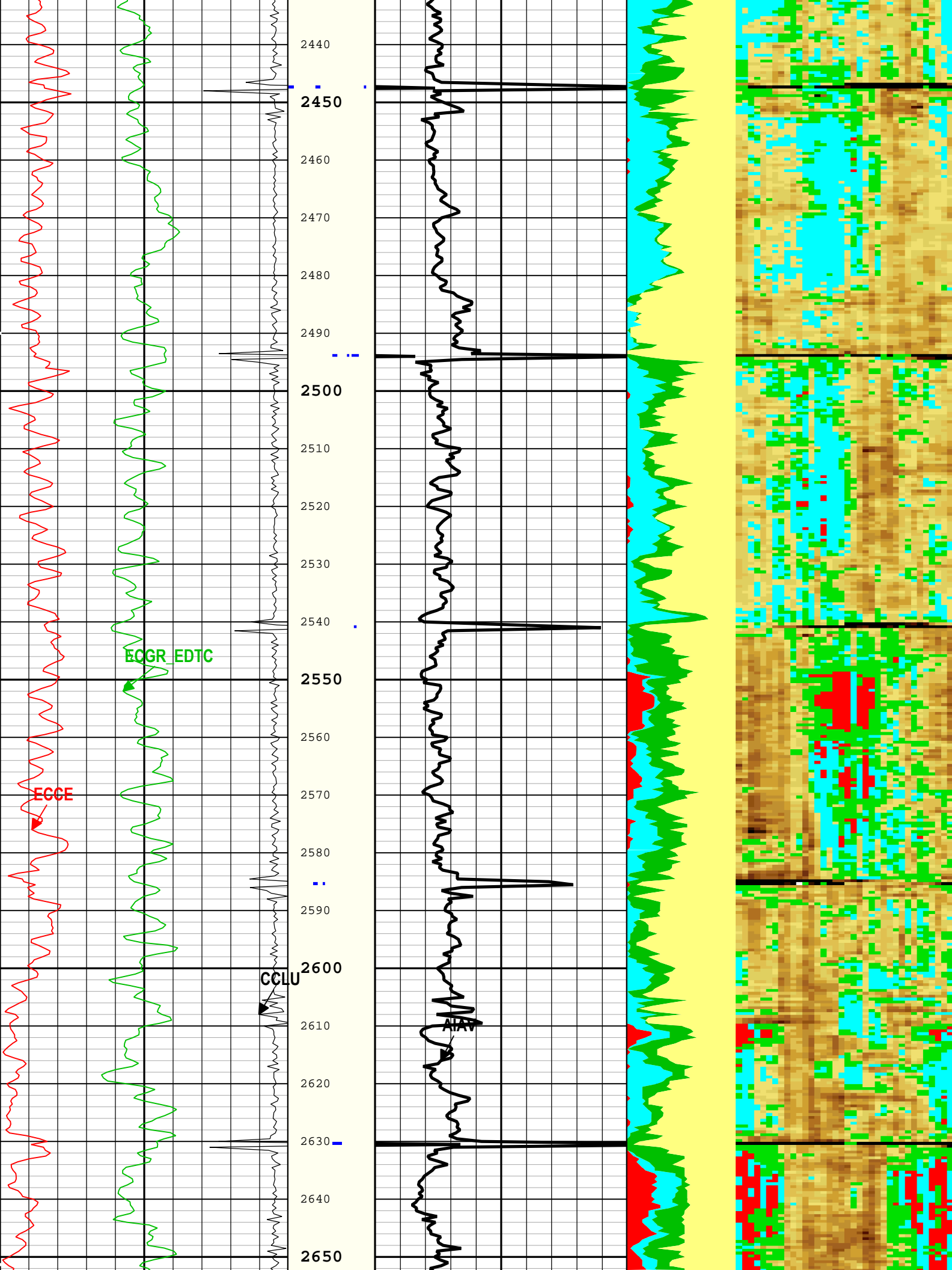


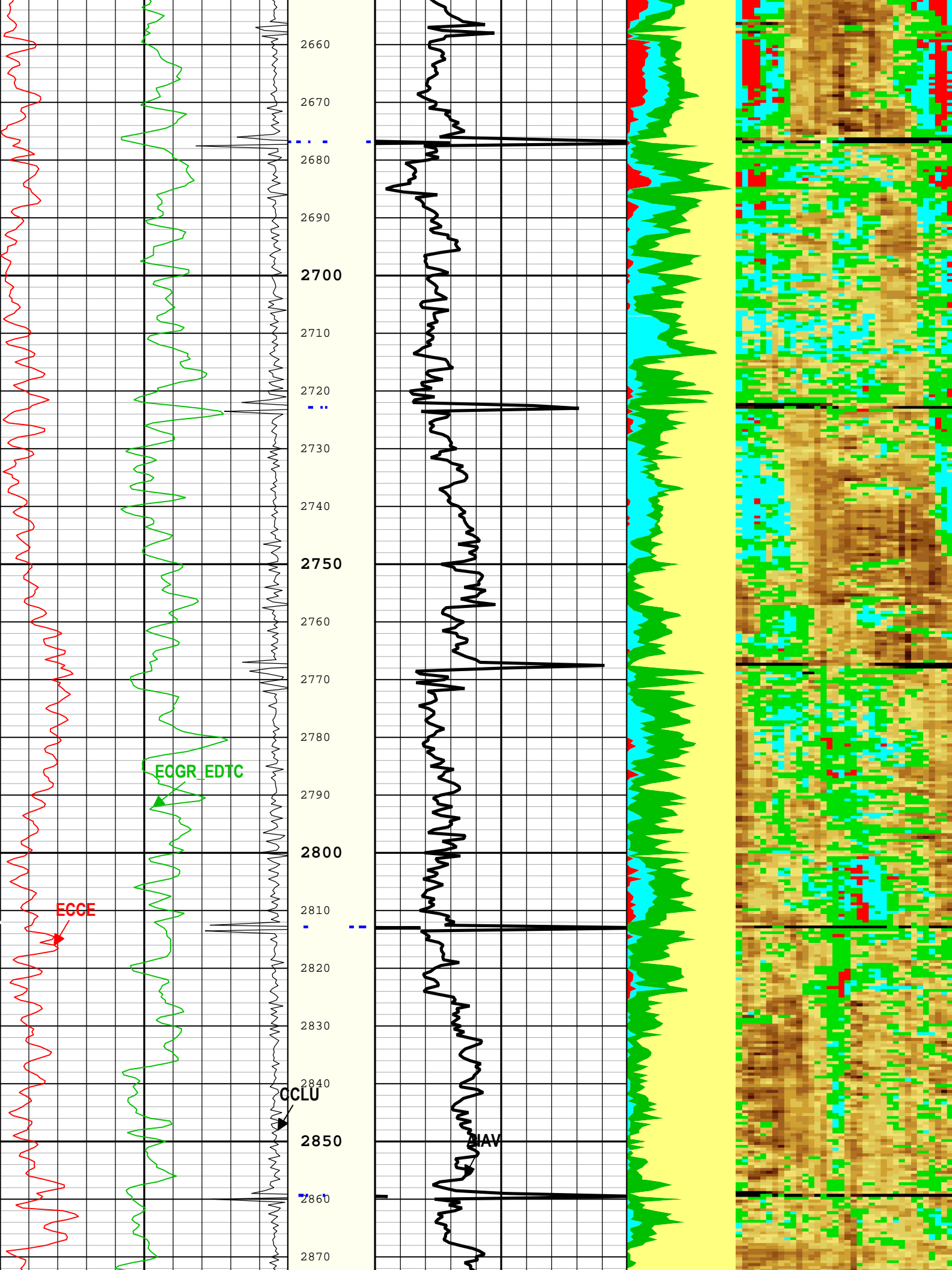


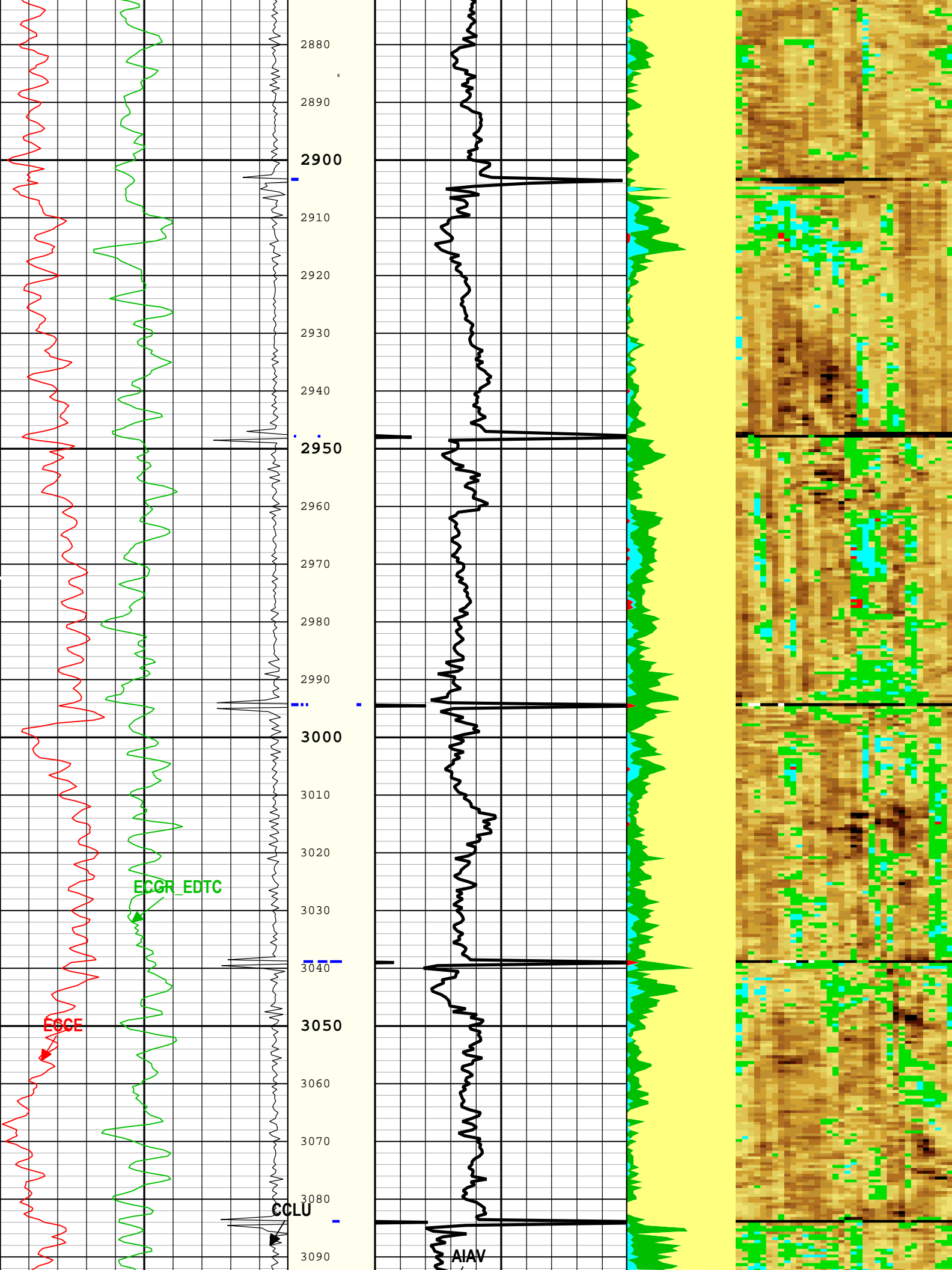


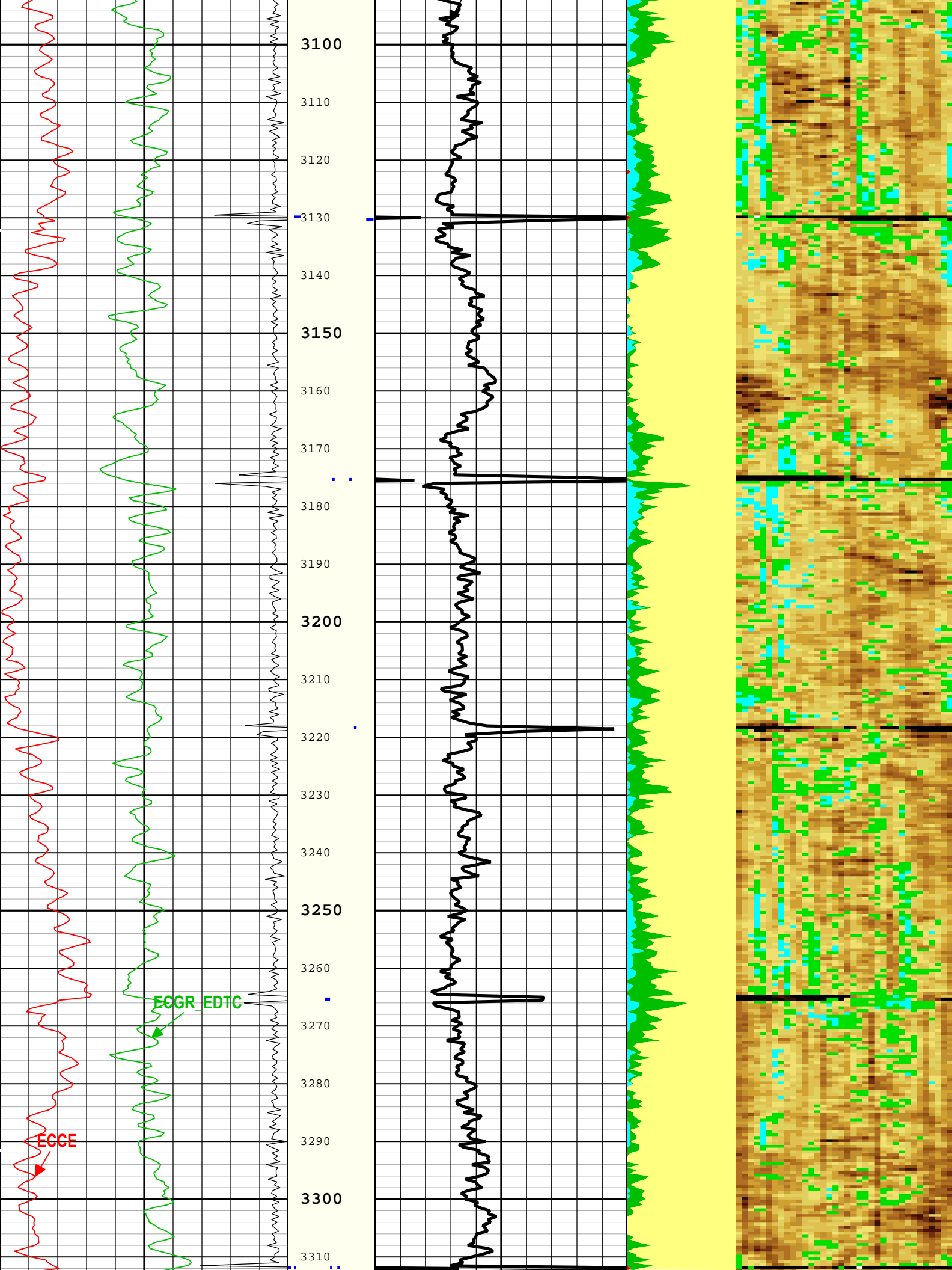


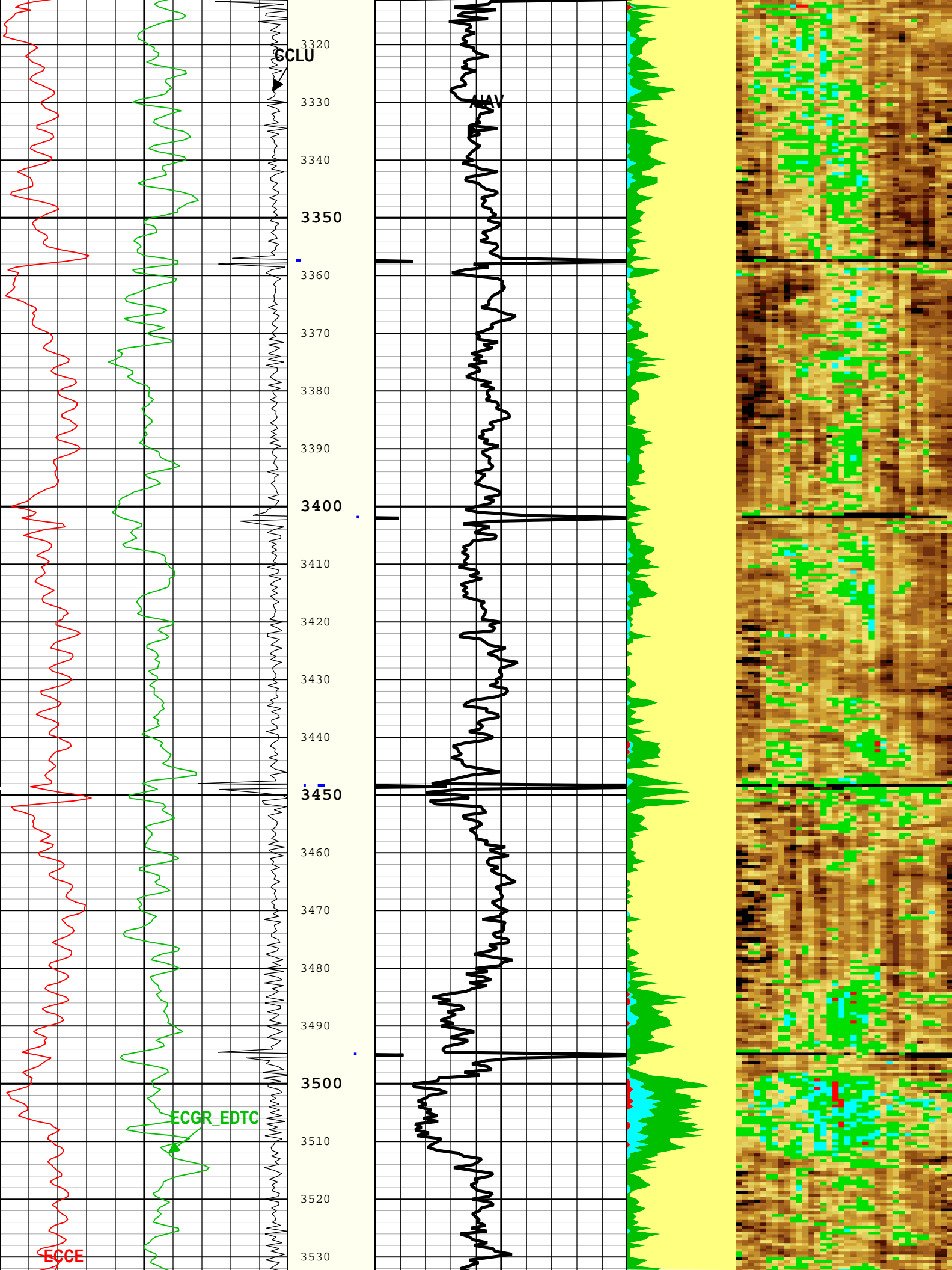


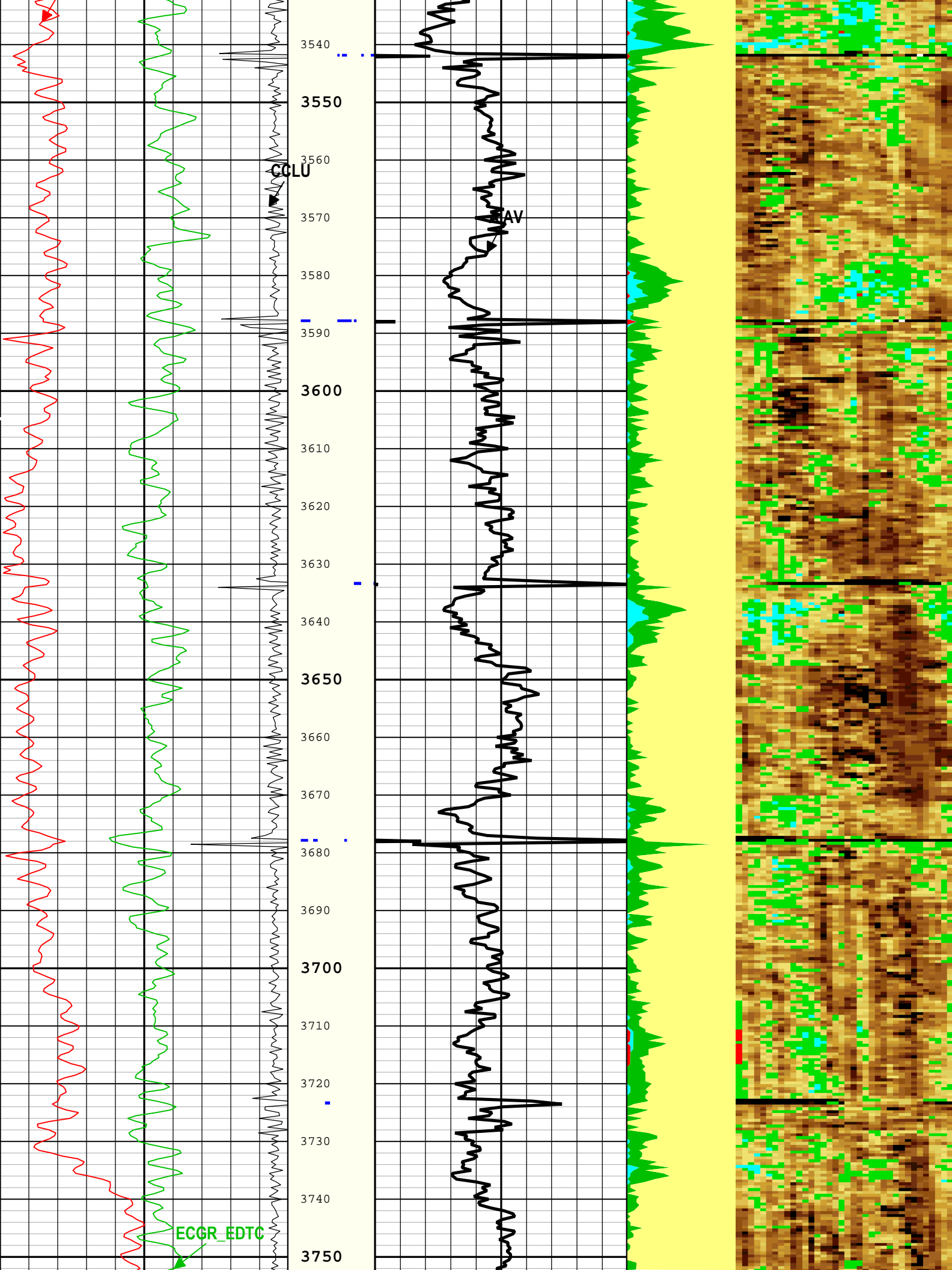


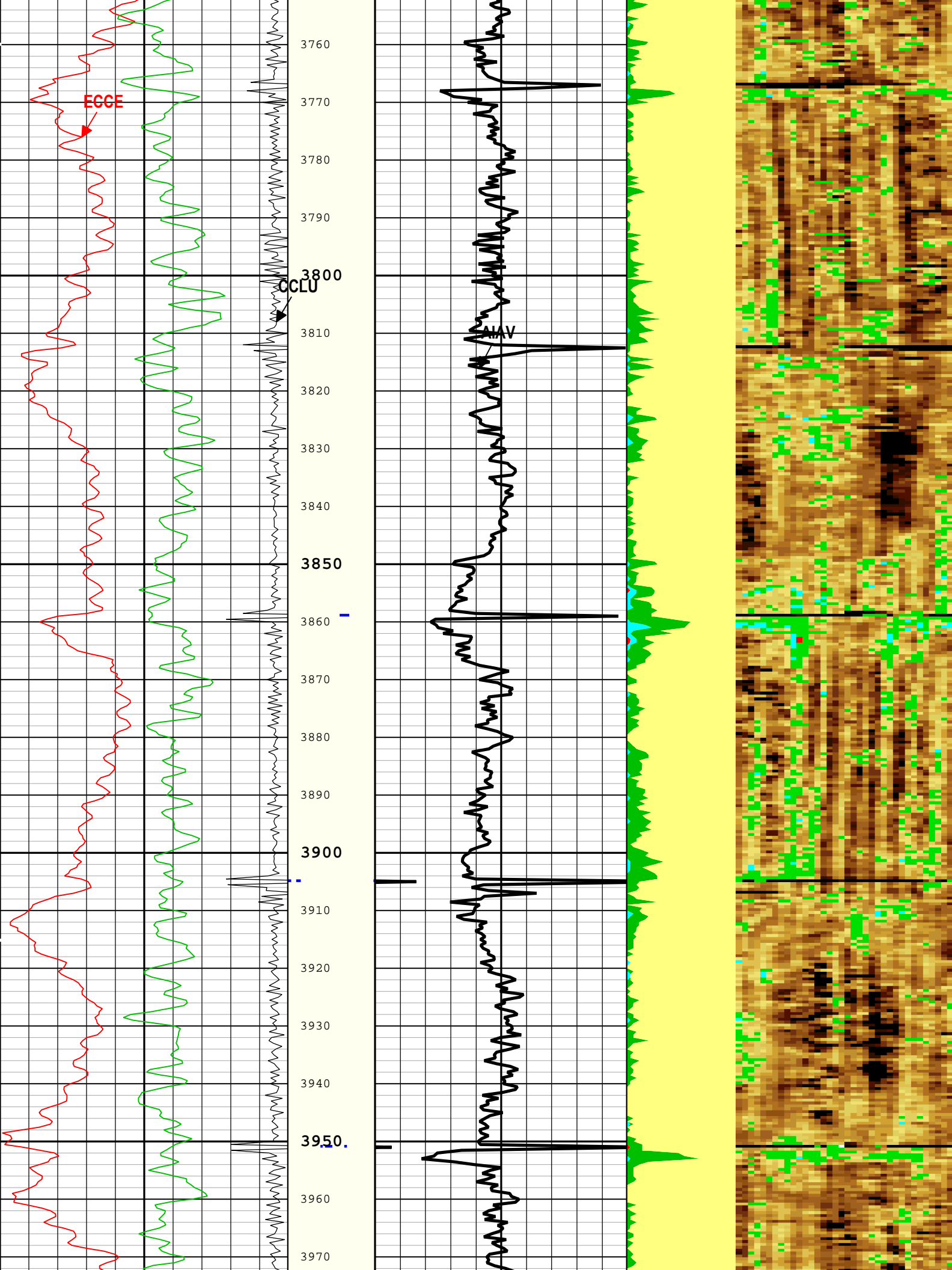


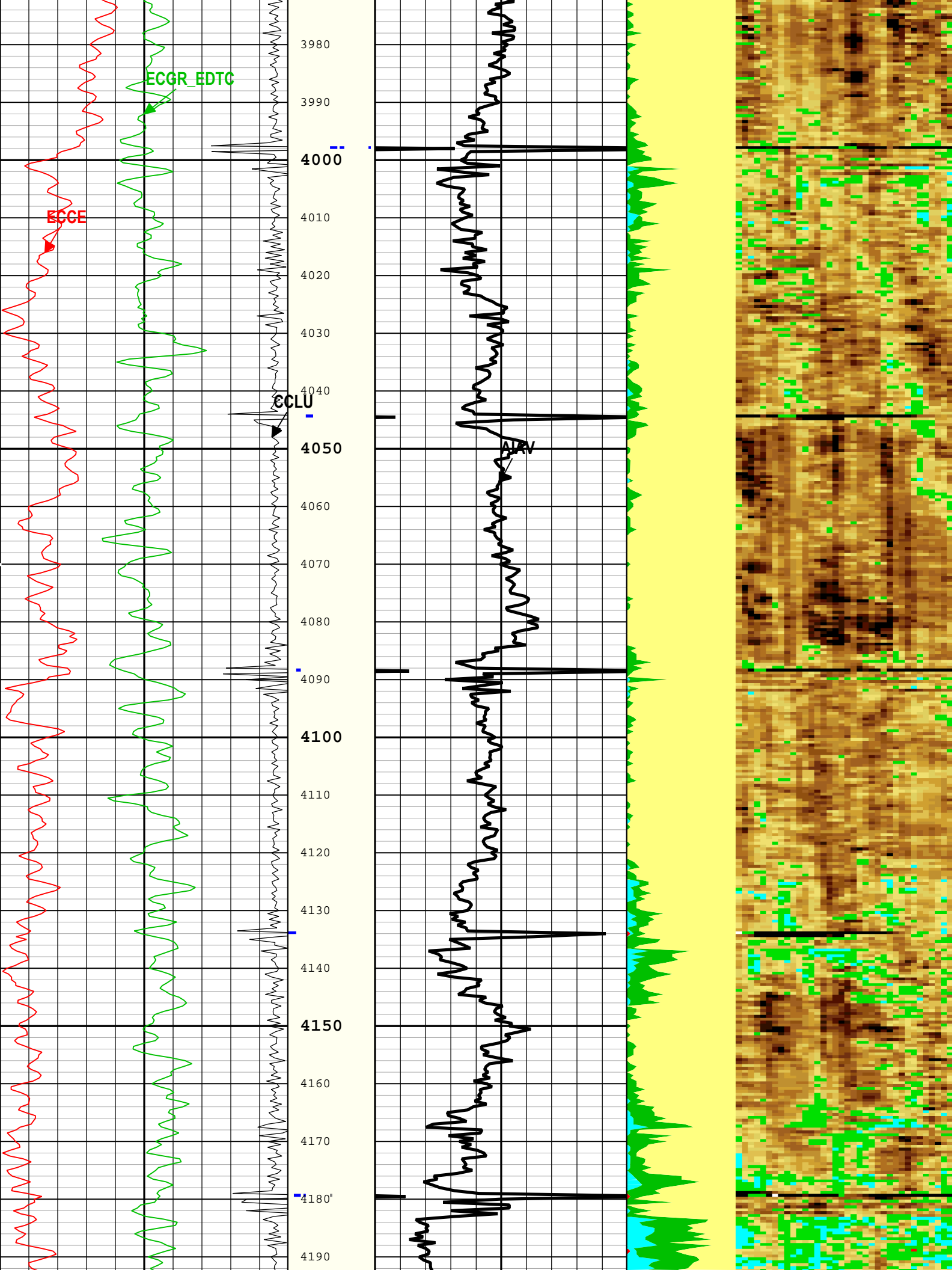


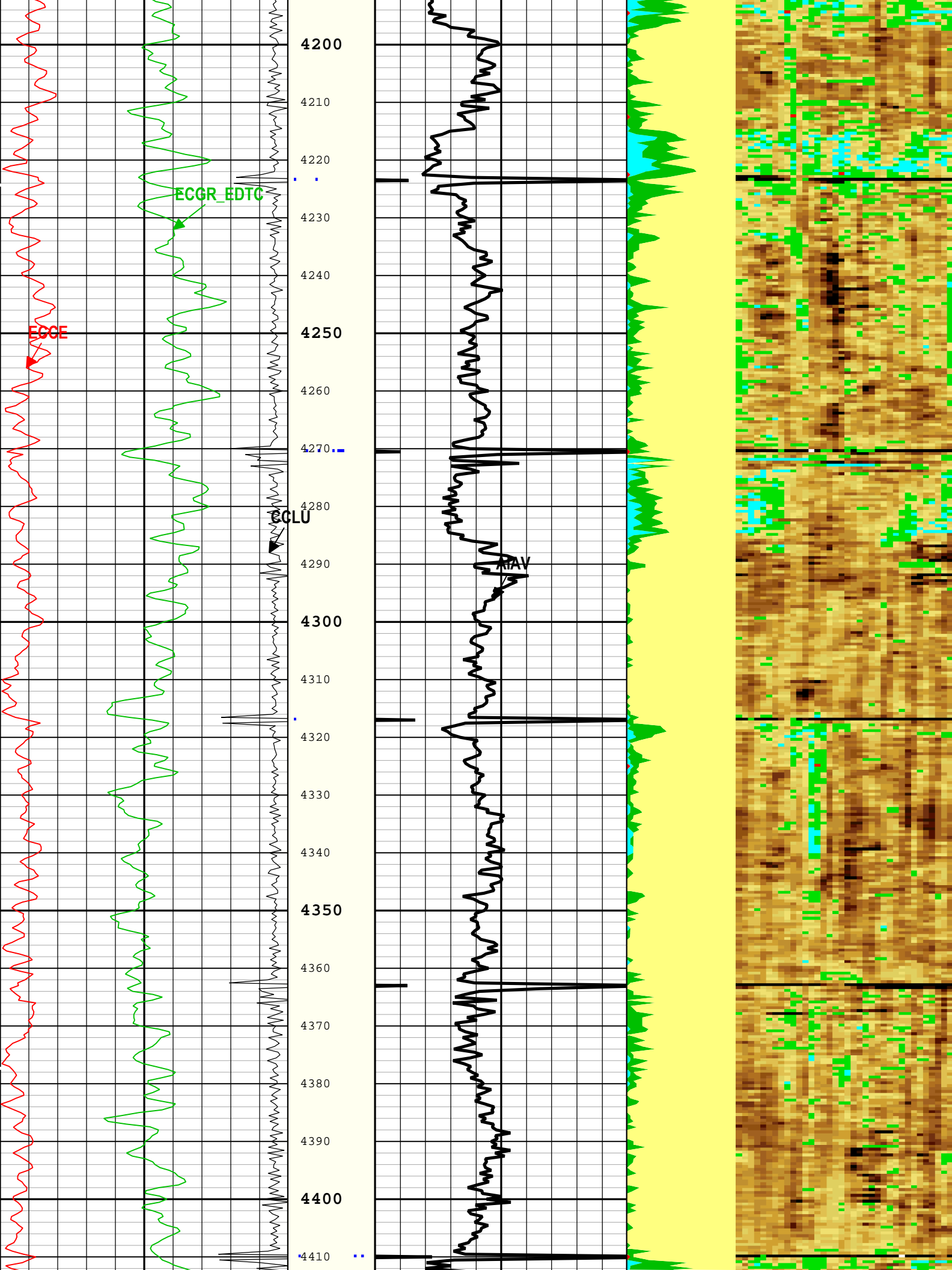


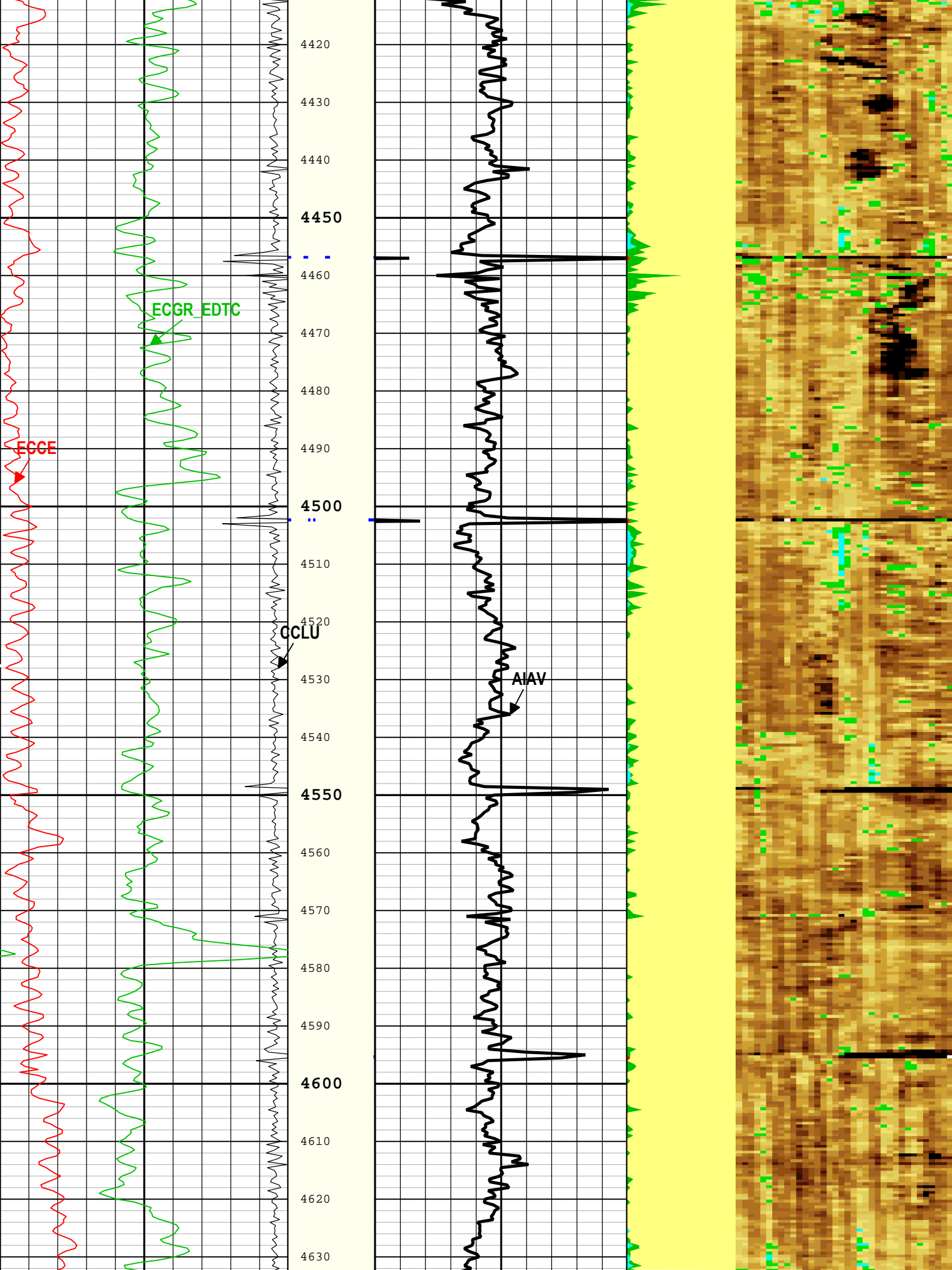


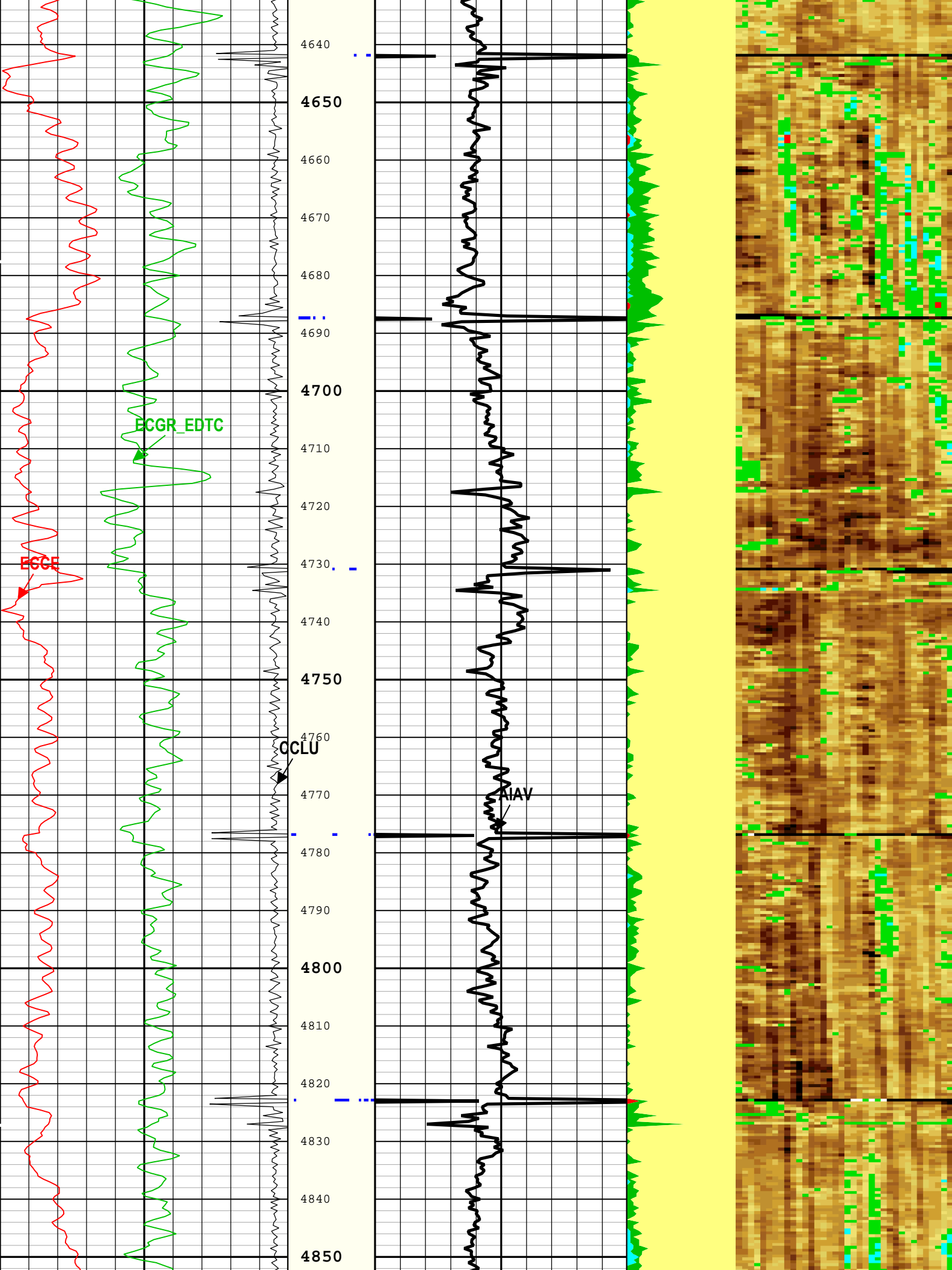


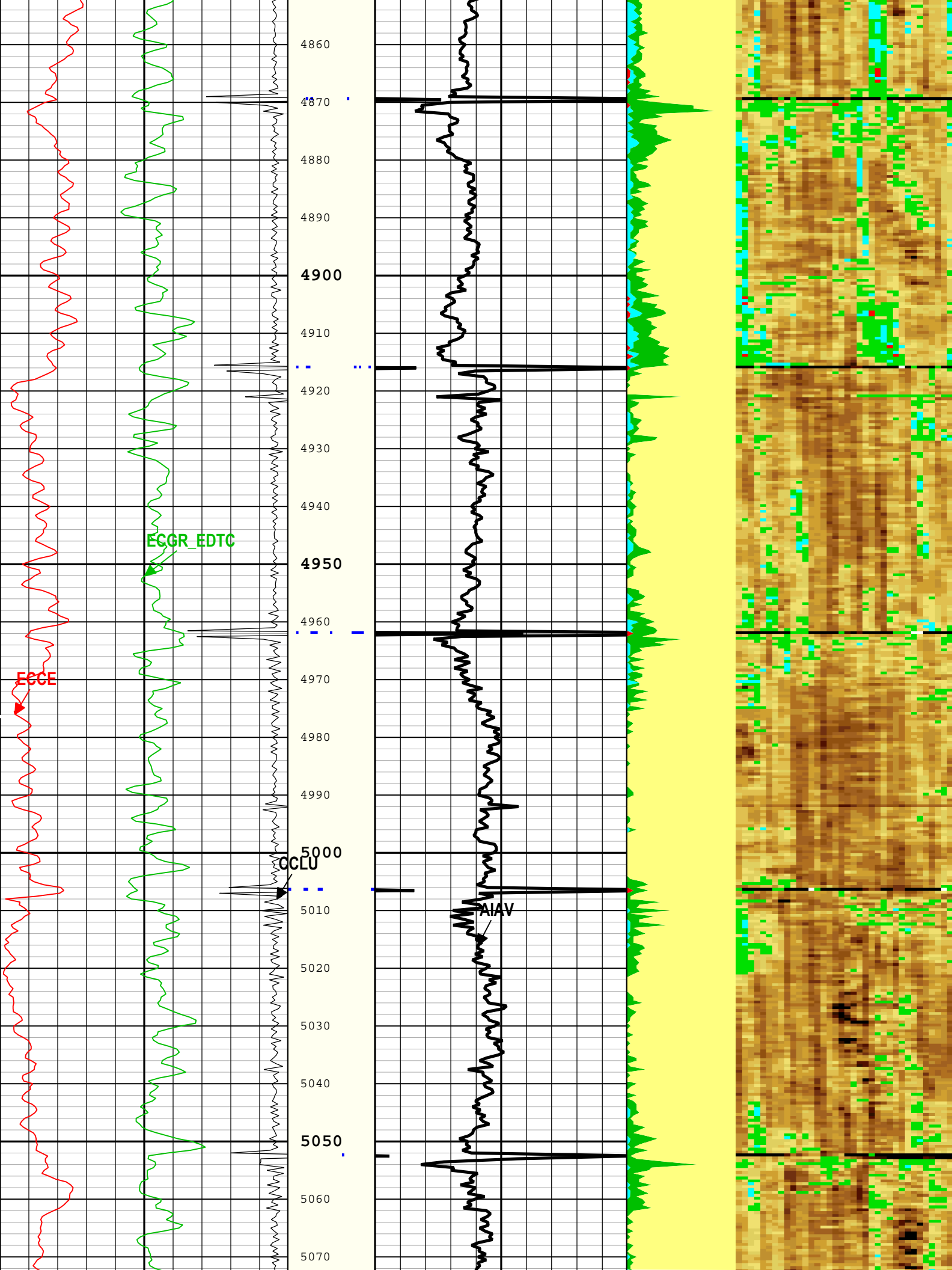


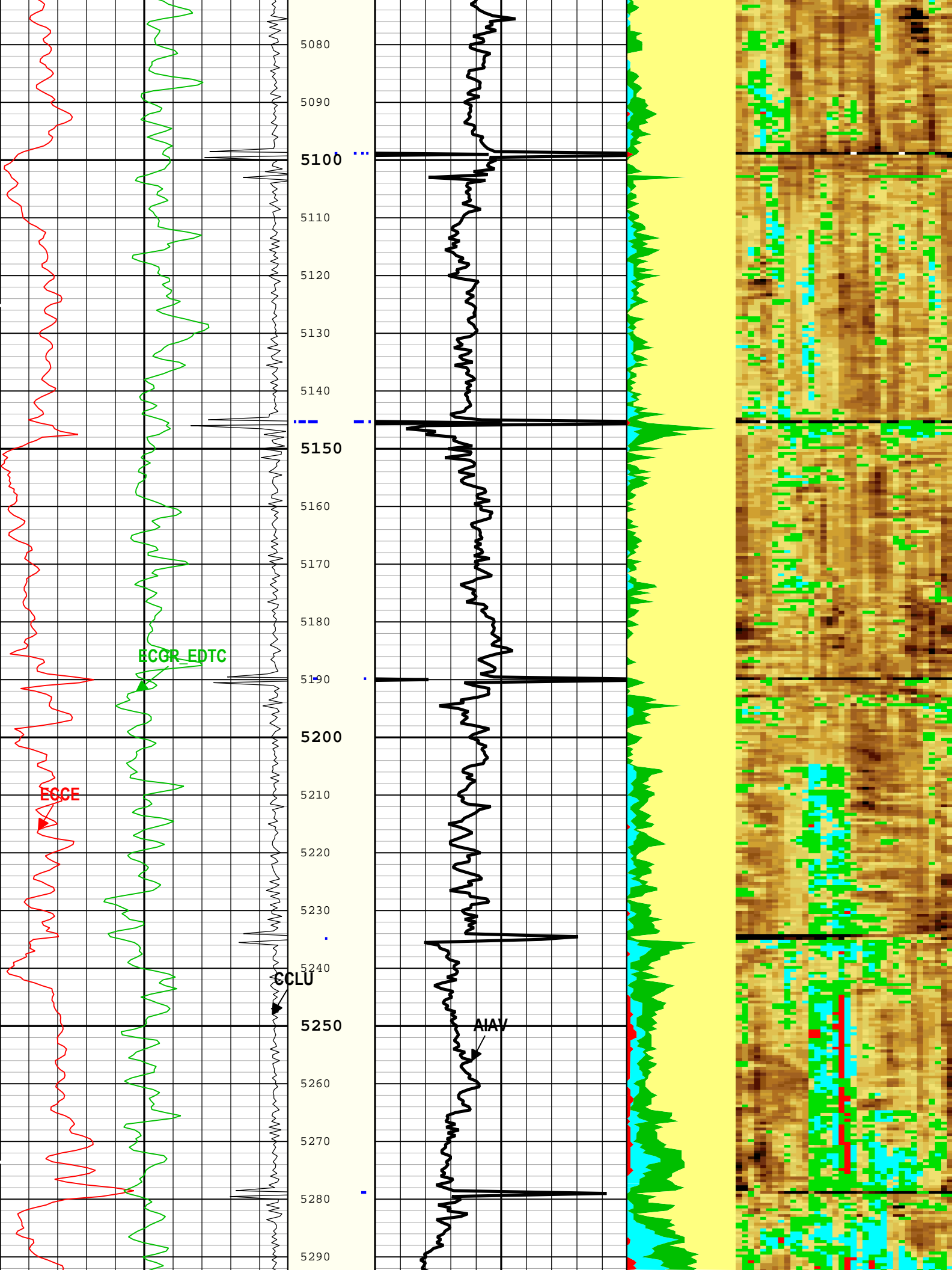


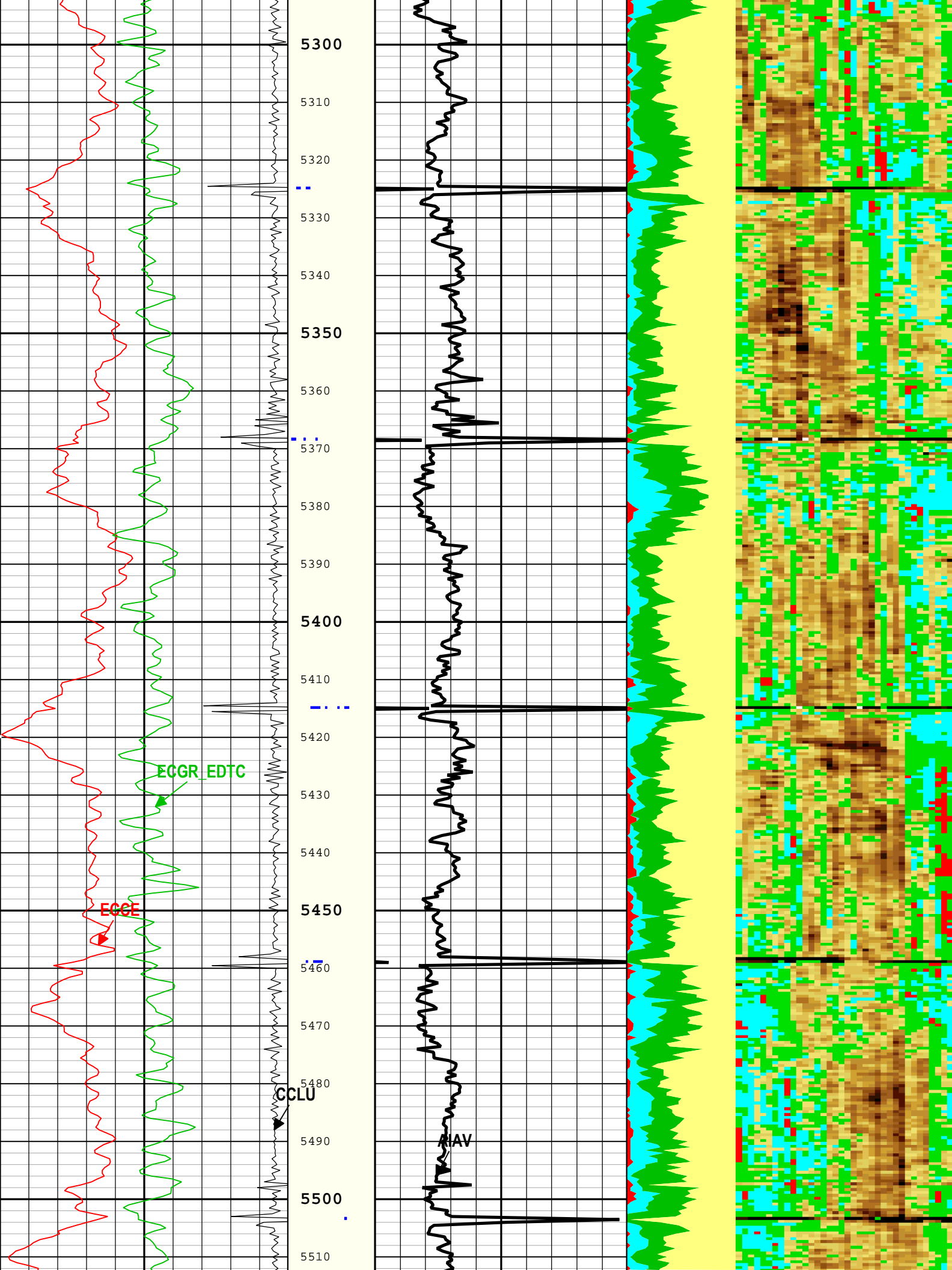


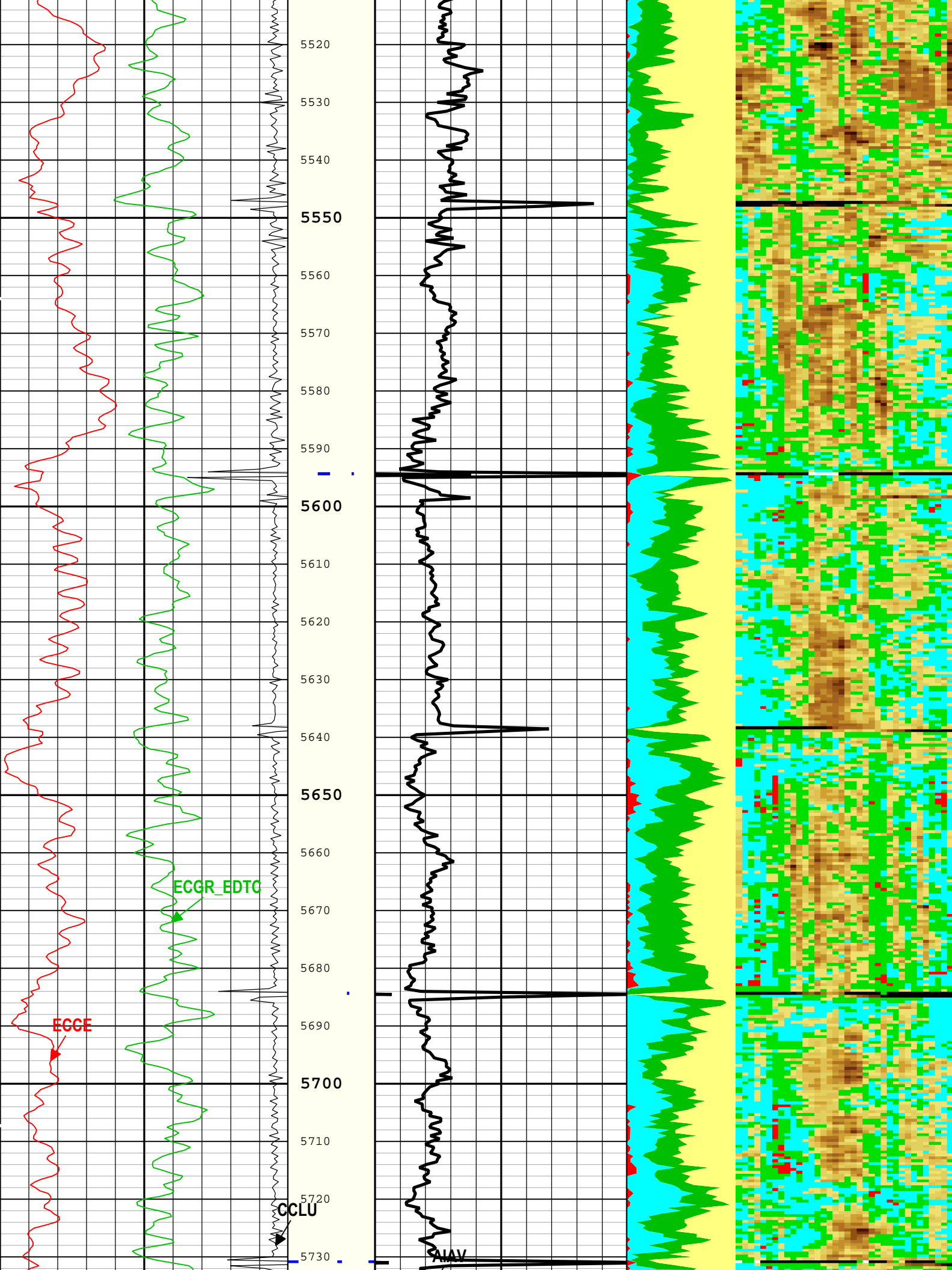


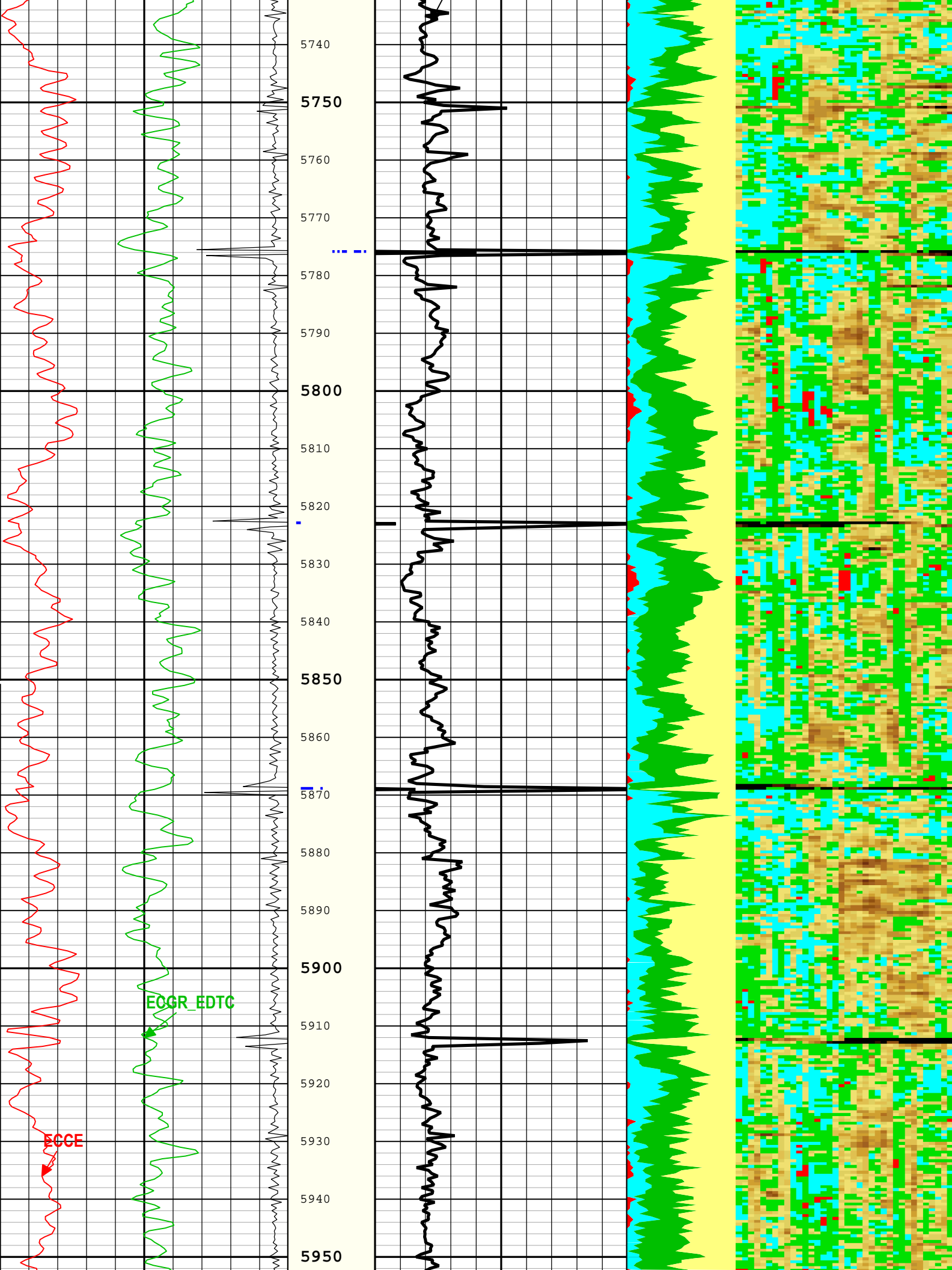


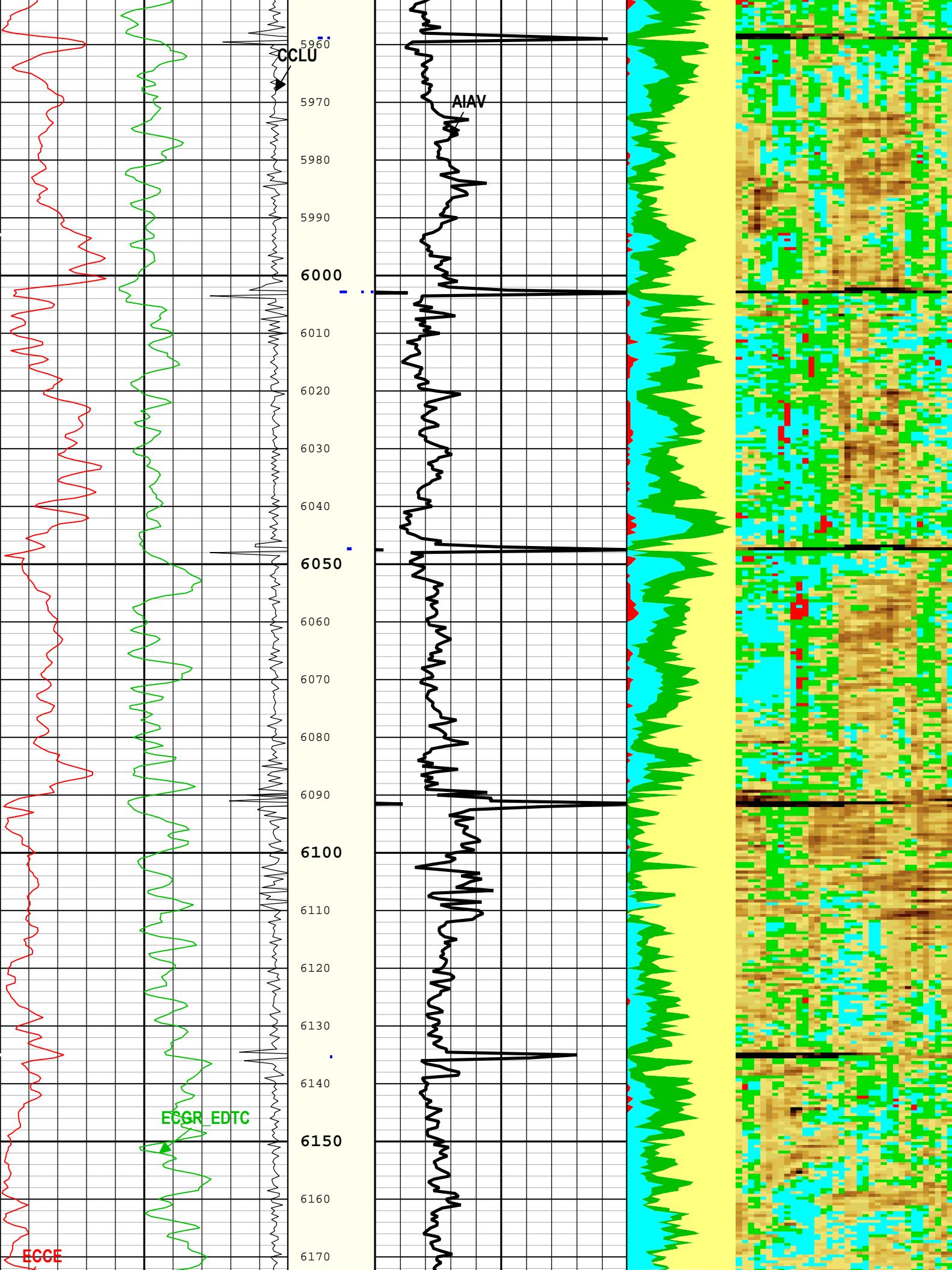


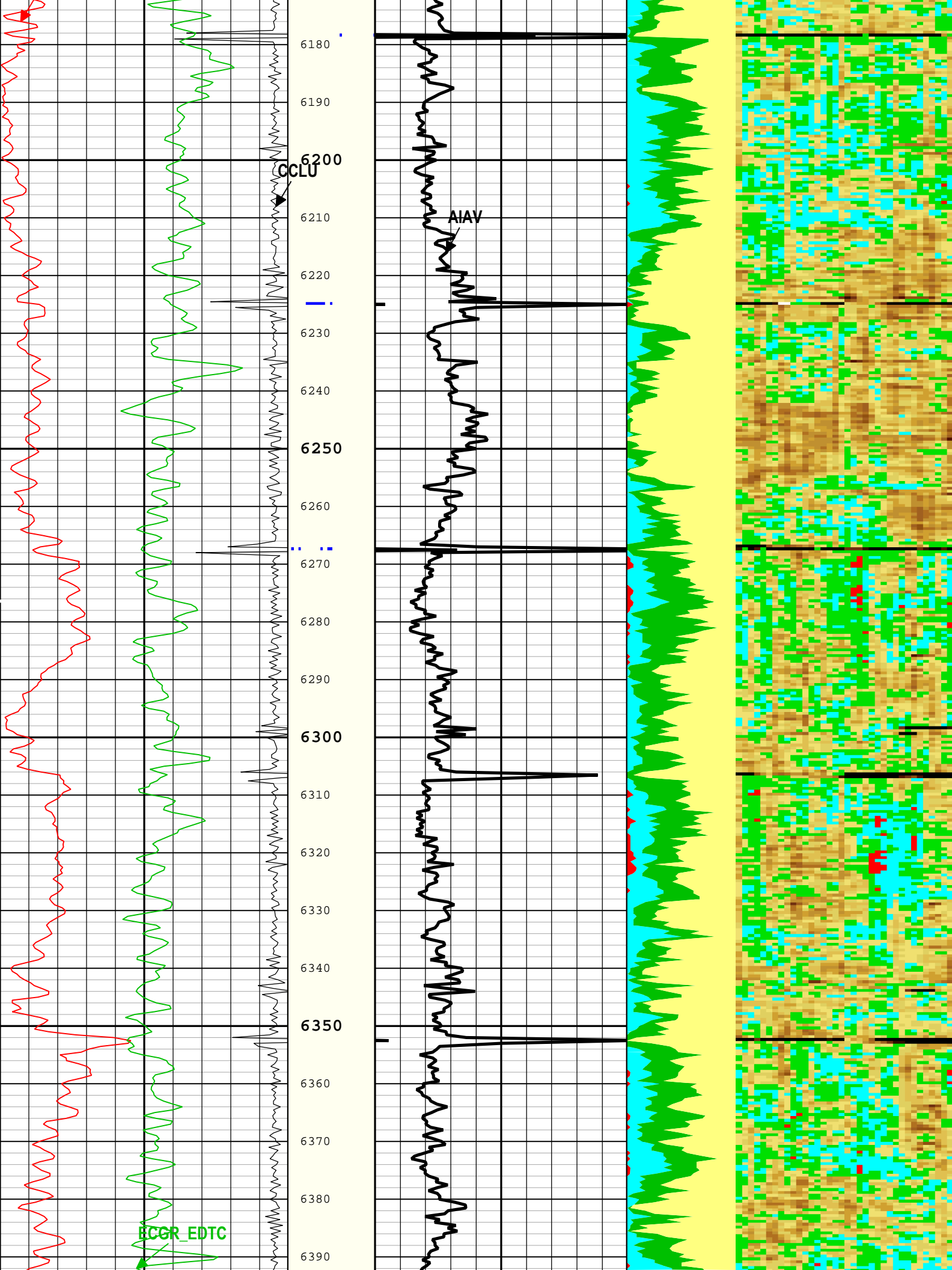


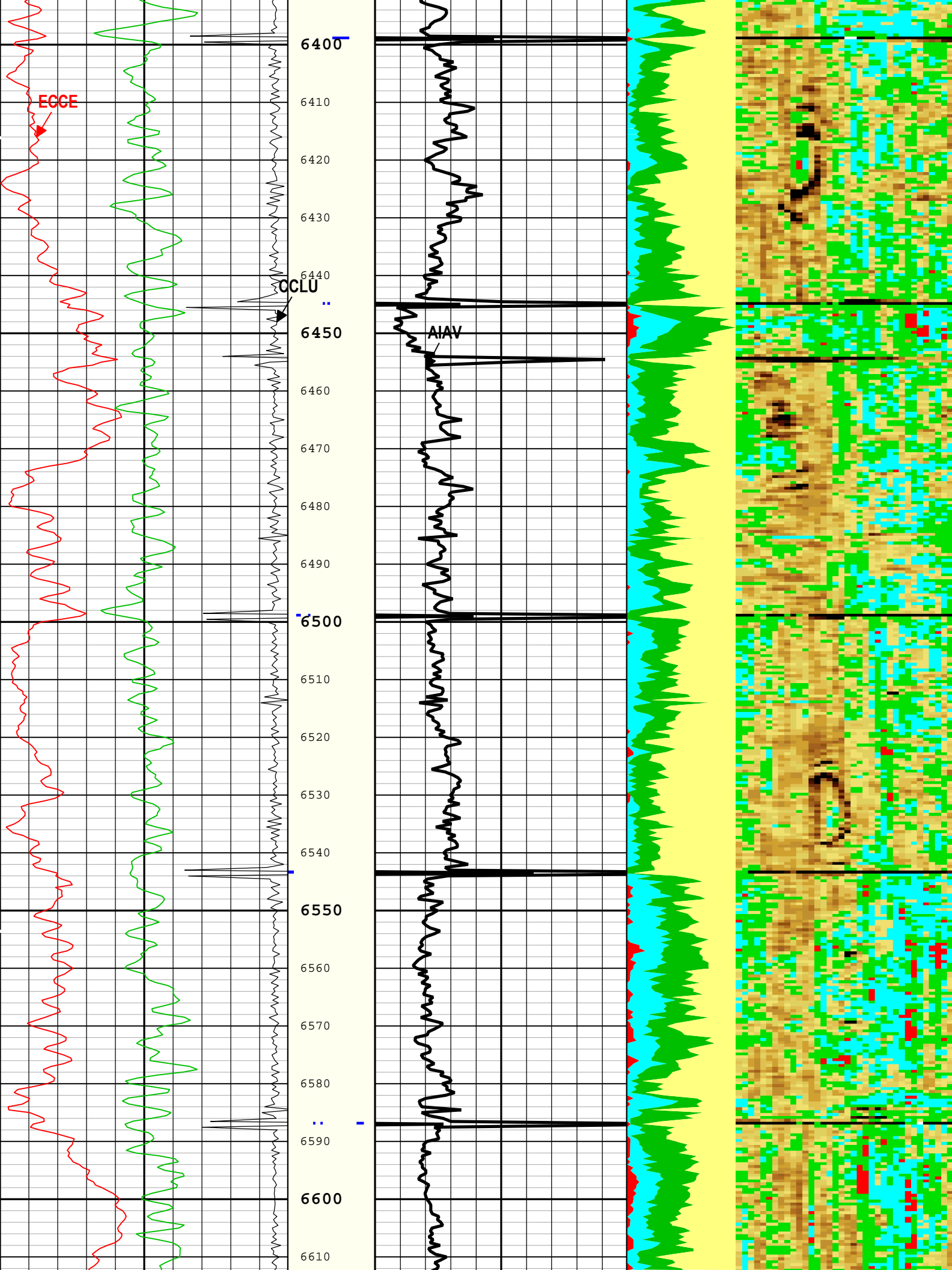


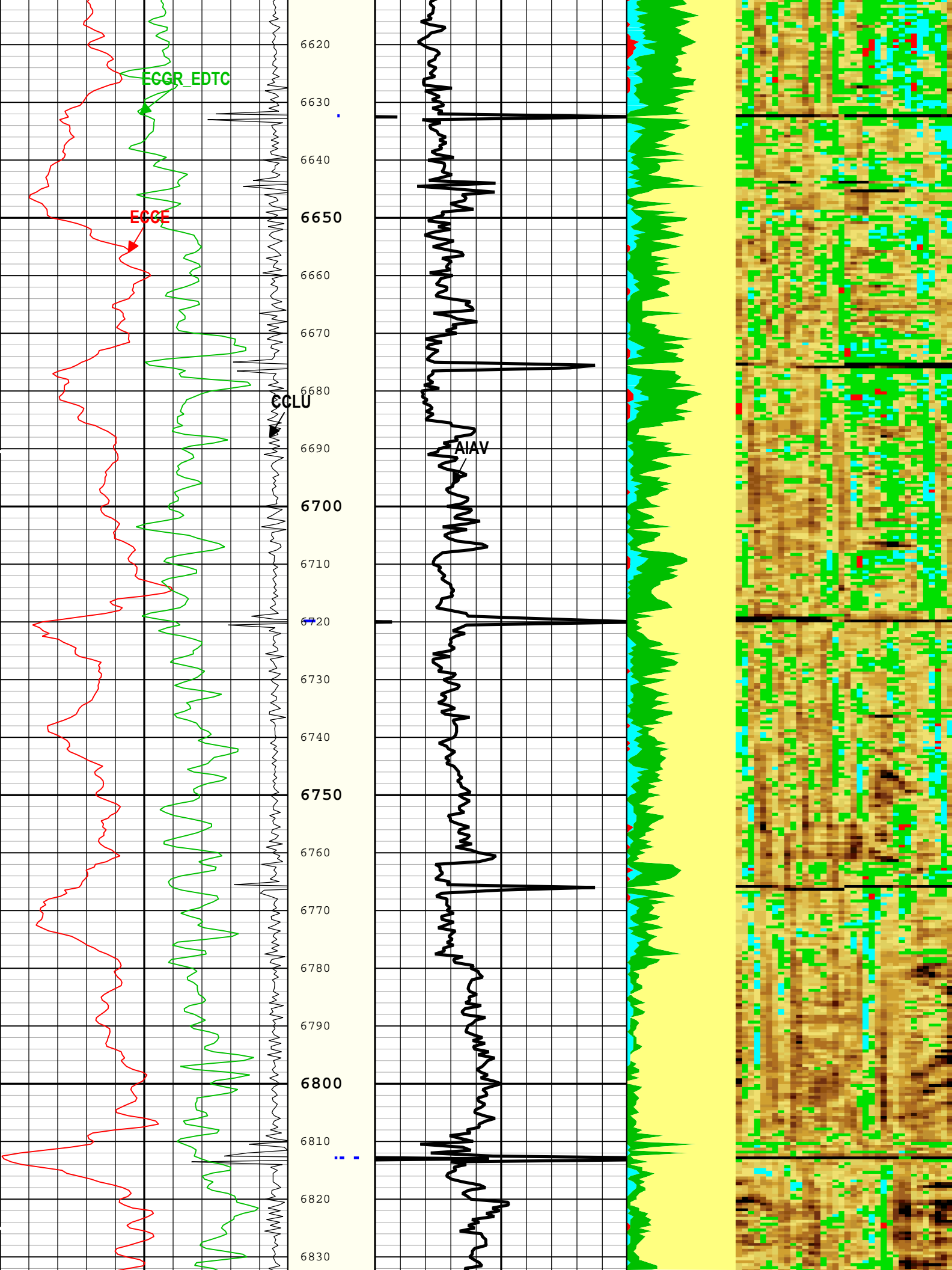


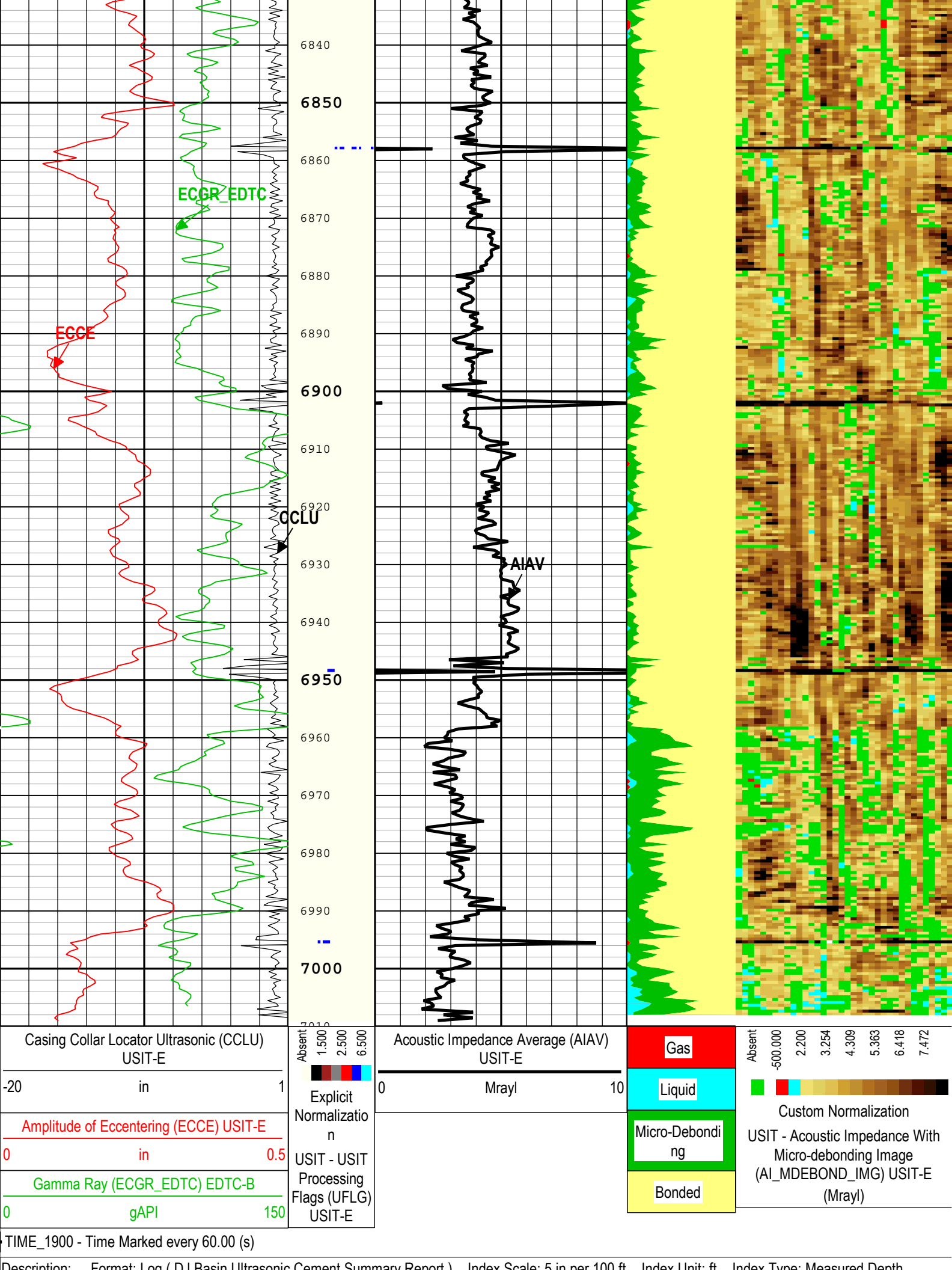








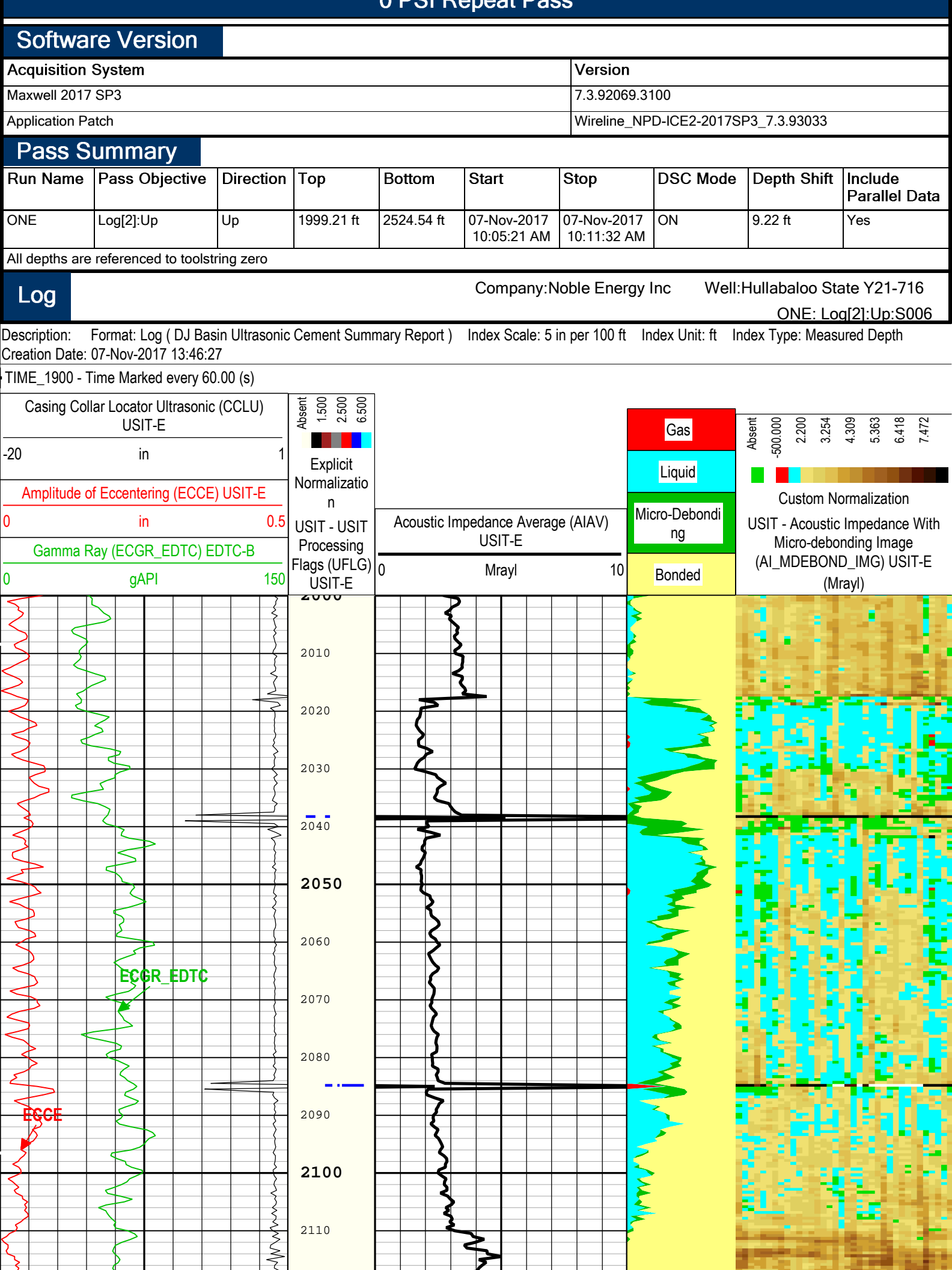


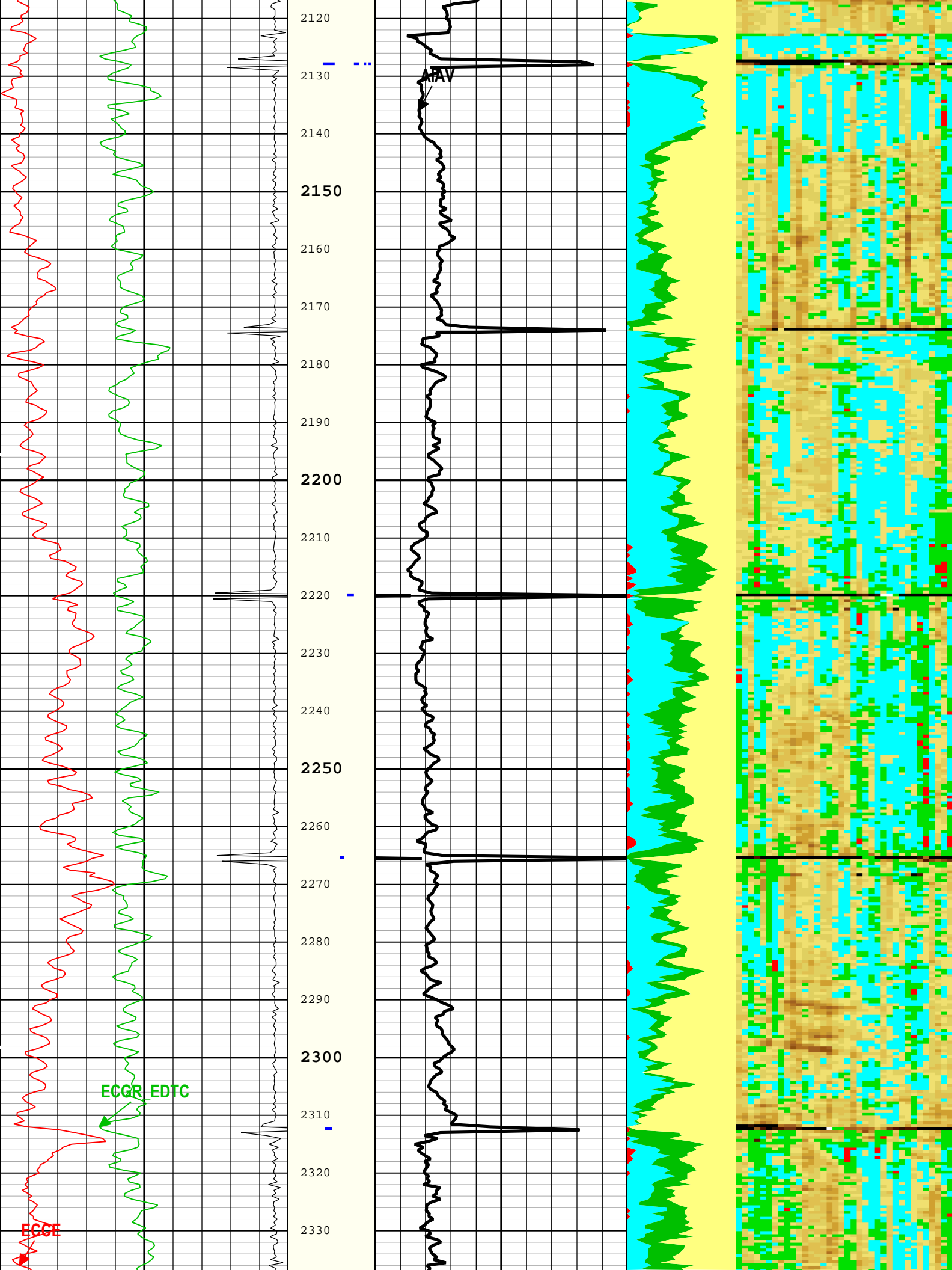


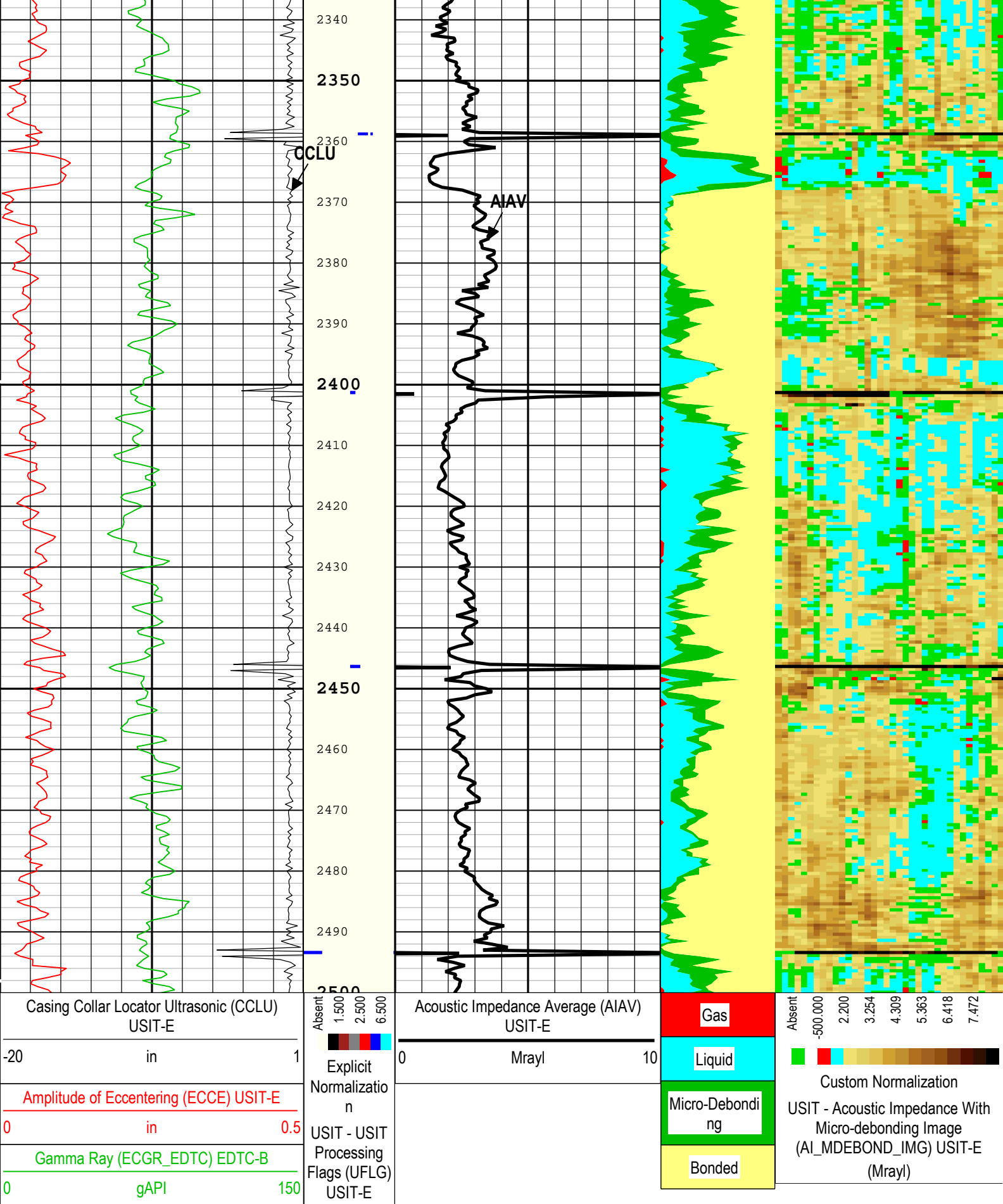
Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	7010	ft
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	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	0.1	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	26	50	110
BS	13.5	110	2029
BS	8.5	2029	7010
All depths 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				







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: 07-Nov-2017 13:46:27

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	7010	ft
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	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	0.1	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

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	70	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

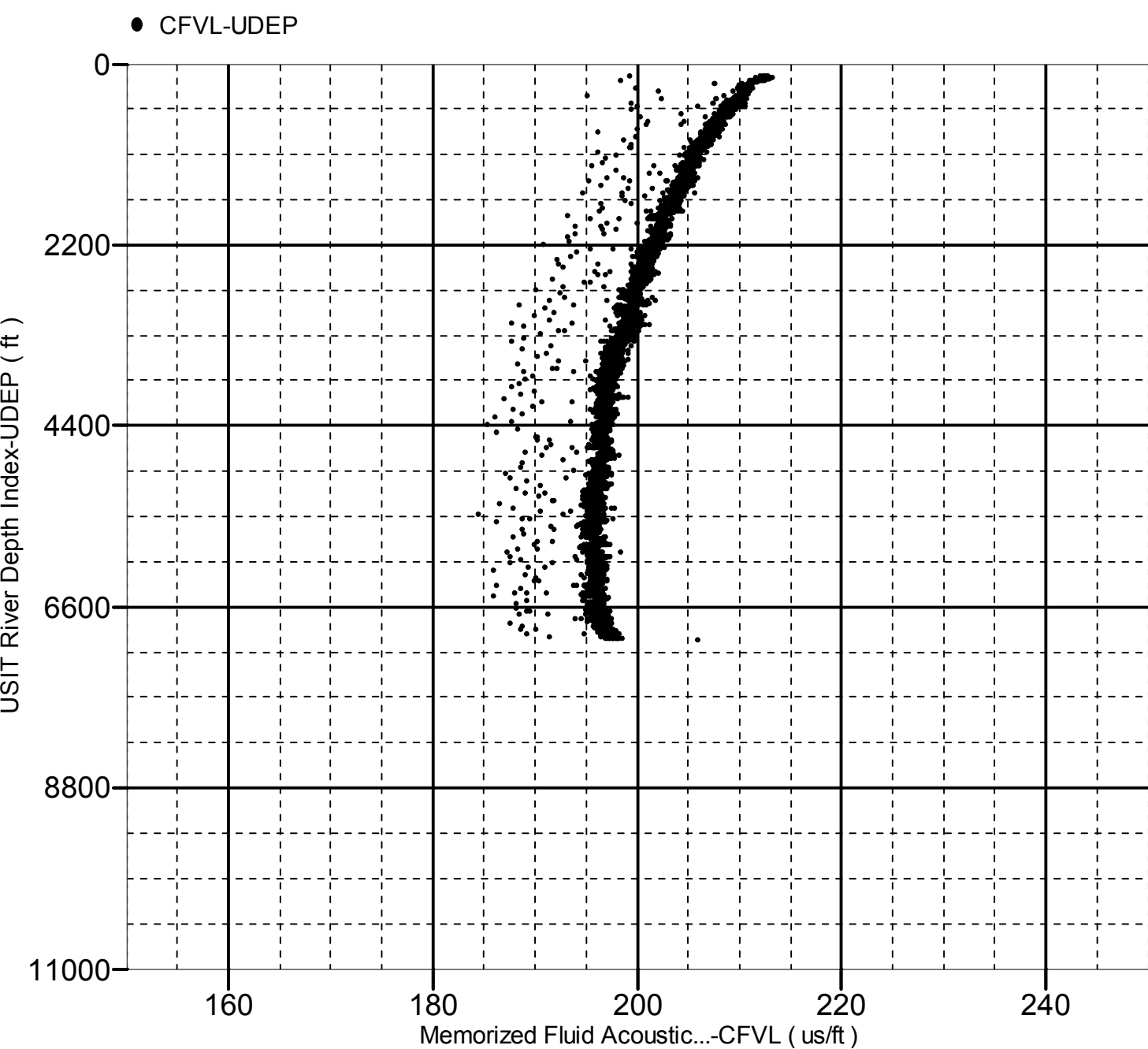
XYZ

Company:Noble Energy Inc Well:Hullabaloo State Y21-716
ONE: Log[4]:Up:S006

Fluid Acoustic Slowness vs Depth

2D Cross Plot

Index Range: From 7010.00 to 50.00 ft

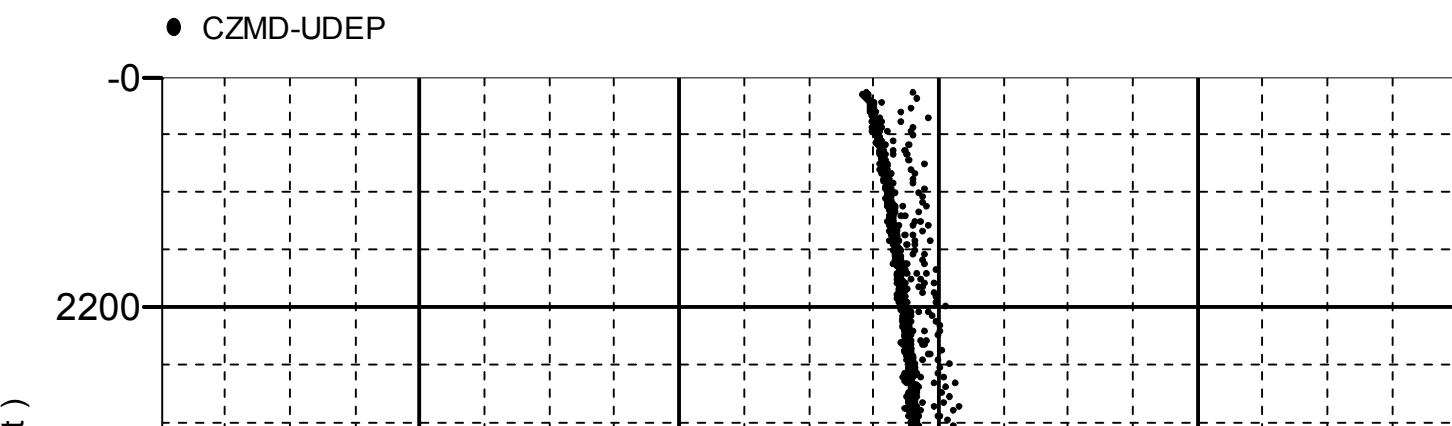


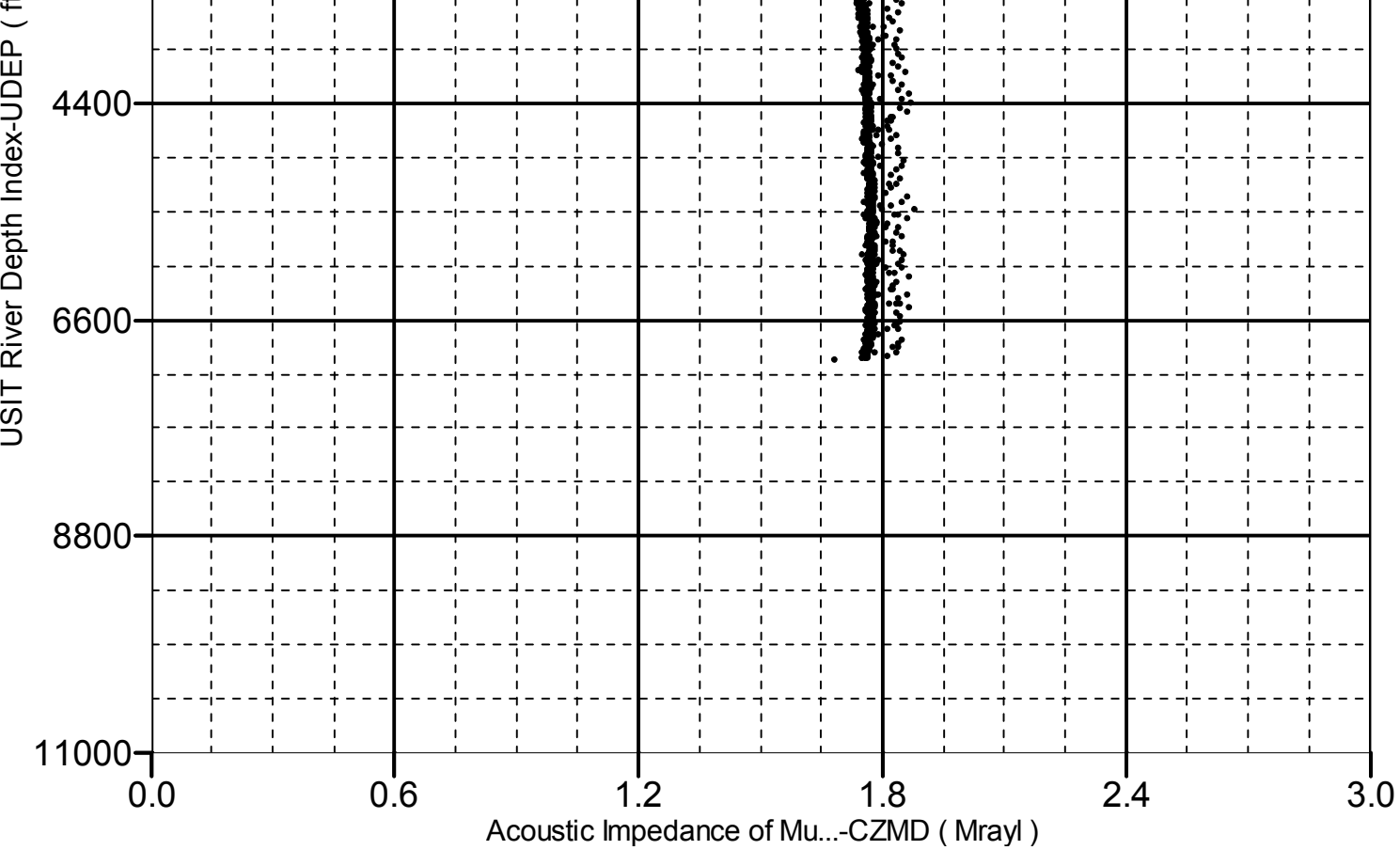
XYZ Company:Noble Energy Inc Well:Hullabaloo State Y21-716
ONE: Log[4]:Up:S006

Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 7010.00 to 50.00 ft





Company:	Noble Energy Inc	Schlumberger
Well:	Hullabaloo State Y21-716	
Field:	Wattenberg	
County:	Weld	
State:	Colorado	

UltraSonic Summary Print