

Company: Noble Energy Inc

Well: Wells Ranch State AA33-744

Field: Wattenberg

County: Weld Country: US

UltraSonic Summary Print

County:	Weld			
Field:	Wattenberg			
Location:	SHL: SESW Sec. 21, T6n, R63W			
Well:	Wells Ranch State AA33-744			
Company:	Noble Energy Inc			
	Location:			
	SHL: SESW Sec. 21, T6n, R63W		Elev.:	K.B. 4750.00 ft
	255' FSL & 2540' FWL			G.L. 4720.00 ft
	Lat: 40.4655 / Long: -104.44167			D.F. 4750.00 ft
	Permanent Datum:	Ground Level	Elev.:	4720.00 f
	Log Measured From:	Kelly Bushing	30.00 ft	above Perm.Datum
	Drilling Measured From:	Kelly Bushing		
	API Serial No.	Max.Hole Deviation	Longitude:	Latitude:
	05-123-43878	0 deg	-104.44167 degrees	40.465550 degrees
Logging Date	11-Apr-2017			

Run Number	One		
Depth Driller	16456.00 ft		
Schlumberger Depth	16456.00 ft		
Bottom Log Interval	6100.00 ft		
Top Log Interval	60.00 ft		
Casing Fluid Type	Water		
Salinity			
Density	9 lbm/gal		
Fluid Level	8.00 ft		
BIT/CASING/TUBING STRING			
Bit Size	8.50 in		
From	1936.00 ft		
To	16456.00 ft		
Casing/Tubing Size	5.5 in		
Weight	20 lbm/ft		
Grade	N/A		
From	0.00 ft		
To	16440.80 ft		
Max Recorded Temperatures	213 degF		
Logger on Bottom	11-Apr-2017	17:34:00	
Unit Number	9115	Fort Morgan, CO	
Recorded By	Benjamin Mammon		
Witnessed By	Bill Mansfield		

Disclaimer

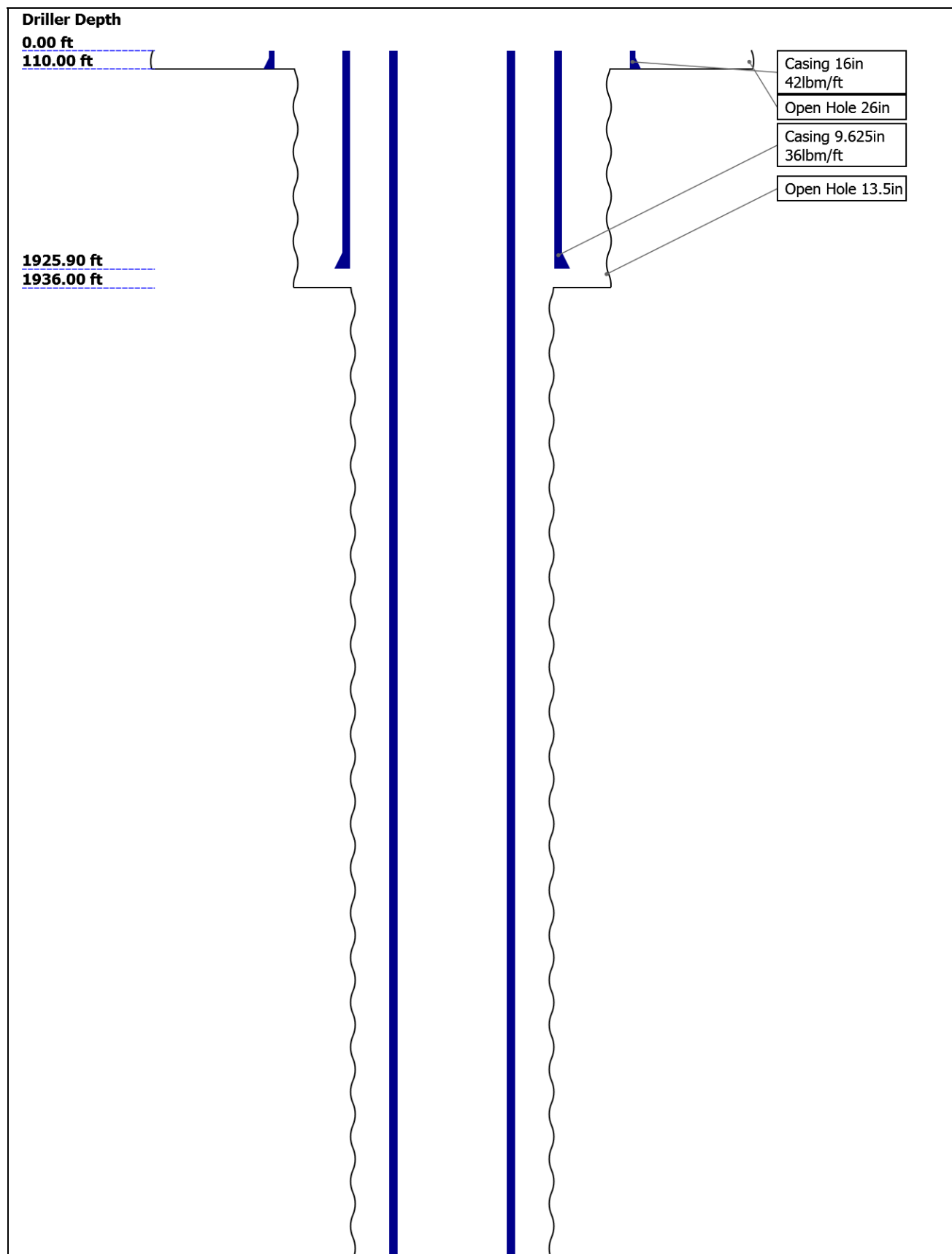
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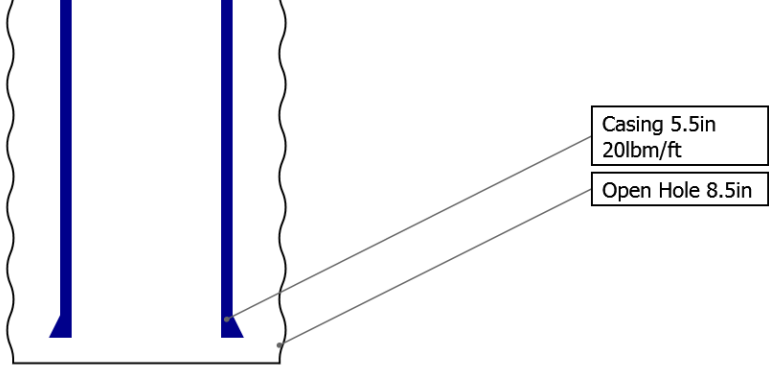
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Well Sketch	
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16440.80 ft

16456.00 ft



Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	26	13.5	8.5			
Top Driller (ft)	0	110	1936			
Top Logger (ft)	0	110	1936			
Bottom Driller (ft)	110	1936	16456			
Bottom Logger (ft)	110	1936	16456			
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)	110	1925.9	16440.8			
Bottom Logger (ft)	110	1925.9	16440.8			

Operational Run Summary

Parameter (unit)	One					
Date Log Started	11-Apr-2017					
Time Log Started	16:55:16					
Date Log Finished	11-Apr-2017					
Time Log Finished	18:25:17					
Top Log Interval (ft)	60.00					
Bottom Log Interval (ft)	6100.00					
Total Depth (ft)						
Max Hole Deviation (deg)	0.00					
Azimuth of Max Deviation (deg)	0.00					
Bit Size (in)	8.500					
Logging Unit Number	9115					
Logging Unit Location	Fort Morgan, CO					
Recorded By	Benjamin Marmon					

Witnessed By	Bill Mansfield					
Service Order Number	DSP3-00008					
Borehole Fluids						
Parameter(unit)	One					
Fluid Type	Water					
Max Recorded Temperatures (degF)	213					
Source of Sample	Active Tank					
Salinity (ppm)	0					
Density (lbm/gal)	9					
Funnel Viscosity (s)	26					
Fluid Loss (cm3)						
PH						
Date/Time Circulation Stopped	NaN					
Date Logger on Bottom	11-Apr-2017					
Time Logger on Bottom	17:34:00					
Source RMF						
RMC	Pressed					
RM @ Meas Temp (ohm.m@degF)	0.2 @ 68					
RMF @ Meas Temp (ohm.m@degF)	0.15 @ 68					
RMC @ Meas Temp (ohm.m@degF)						
RM @ BHT (ohm.m@degF)	0.07 @ 212					
RMF @ BHT (ohm.m@degF)	0.05 @ 212					
RMC @ BHT (ohm.m@degF)	NaN @ 212					
Total Solid (%)						
High Gravity Solids (%)						
Remarks and Equipment Summary						
One: Toolstring		One: Remarks				
<div><div><div>Equip nameLength</div><div>LEH-QT34.88</div><div>LEH-QT</div></div><div><div>DTC-H:9170</div><div>31.97</div><div>70</div><div>ECH-KC:9579</div><div>DTC-H:9170</div><div>HGNS-H:4779</div><div>28.97</div><div>HGNH:3826</div><div>NPV-N</div><div>NSR-F:5068</div><div>HACCZ-H:5736</div><div>HGNS-H:4779</div><div>HMCA-H</div></div><div><div>CTEM31.07</div><div>HV0.00</div><div>TelStatus28.97</div><div>ToolStatus28.97</div><div>Temperature28.94</div><div>GR28.23</div></div><div><div>CNL Porosity21.89</div><div>HGNS19.56</div><div>HMCA19.56</div><div>Acceler0.00</div></div></div>		This is the first log in the well.				
		Toolstring ran as per toolsketch.				
		Main pass recorded at 2500 PSI. Repeat pass recorded at 0 PSI.				
		Expected TOC - 1565'				
		Lead/Tail Cement 13.2#s, Spacer 11.5#s				
		BHT - 213 degF				

AH-184[2]:1972

19.56

AH-184[1]:2749

17.56

USIT-E:930

15.56

ECH-MFA:1924

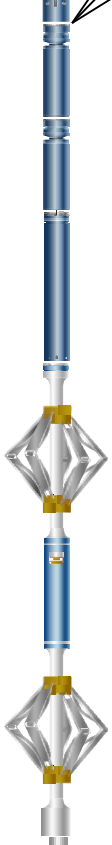
USAC-A:930

USIS-A:2800

USSC-B:767

USRS-A:840

USI-SENS OR:3248



USI Sensor Head Fe nsion 0.37

TOOL_ZERO

Lengths are in ft

Maximum Outer Diameter = 3.560 in

Line: Sensor Location, Value: Gating Offset

All measurements are relative to TOOL_ZERO

Depth Summary

	One		
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Depth Measuring Device

Type	IDW-B		
Serial Number	1976		
Calibration Date	26-Jan-2017		
Calibrator Serial Number	16		
Calibration Cable Type	7-46		
Wheel Correction 1	-0.74		
Wheel Correction 2	-0.17		

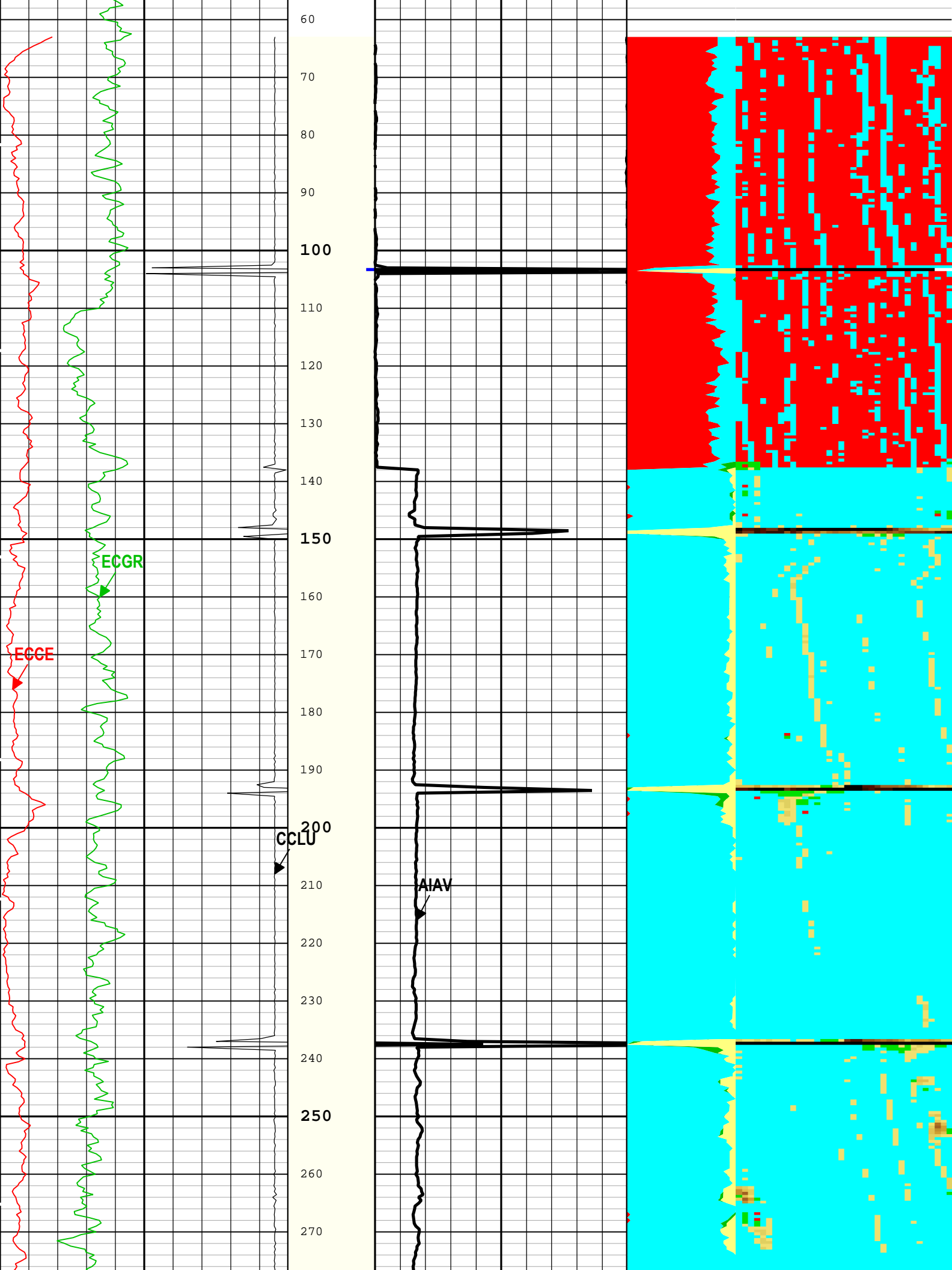
Tension Device

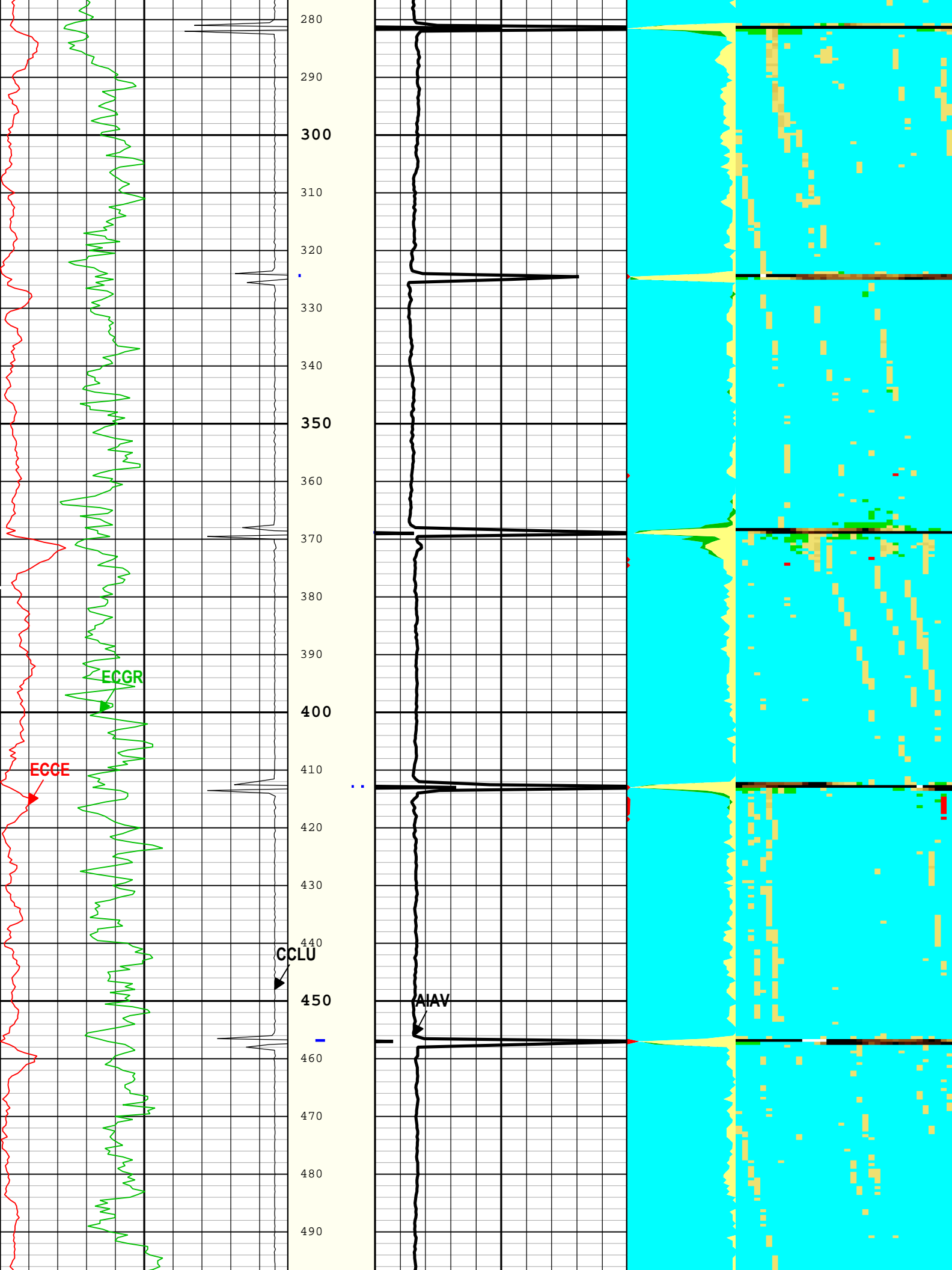
Type	CMTD-B/A		
Serial Number	191		
Calibration Date	12-Feb-2017		
Calibrator Serial Number	12345A		
Number of Calibration Points	10		
Calibration Root Mean Square Error	13		
Calibration Peak Error	20		

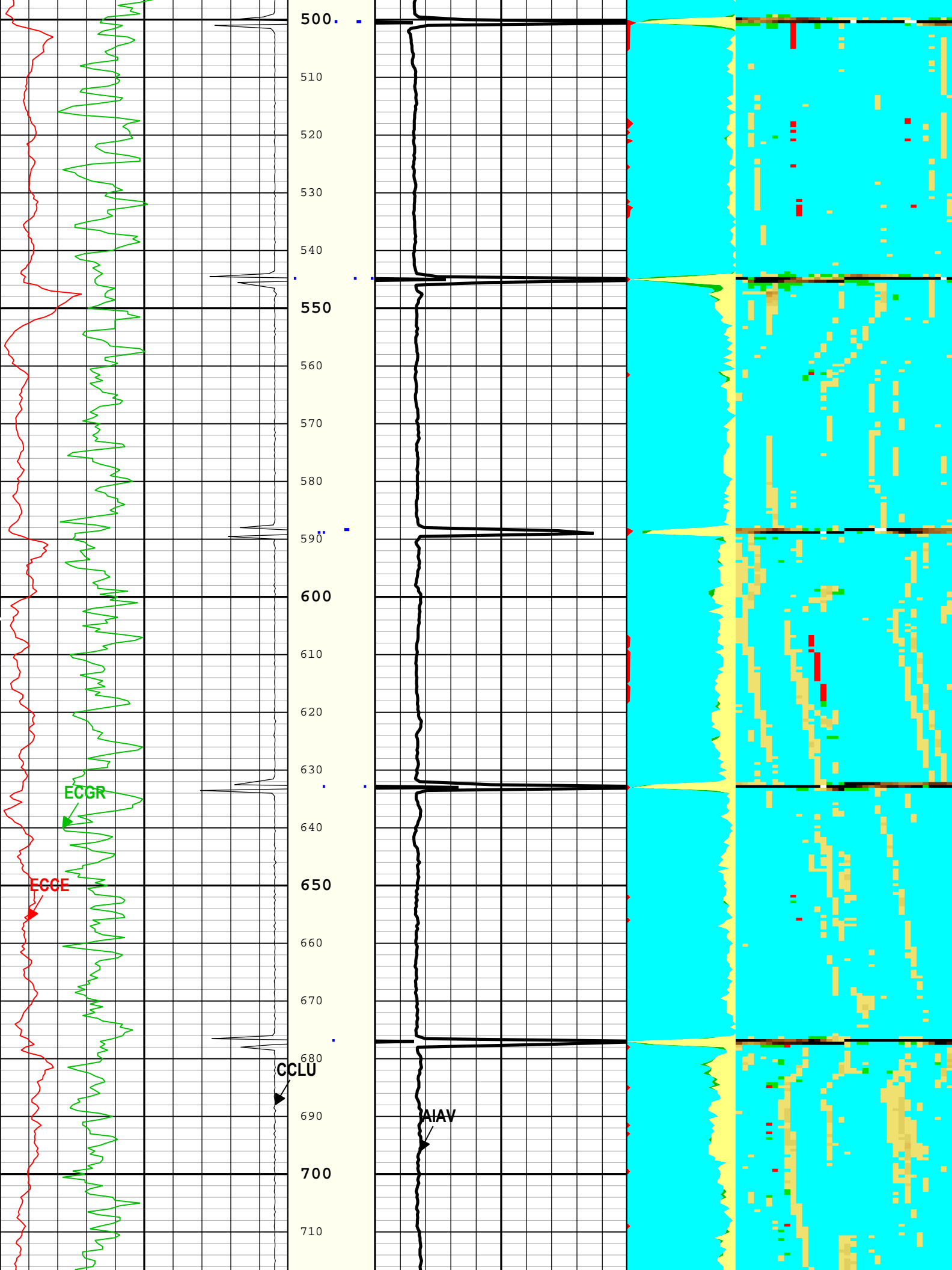
Logging Cable

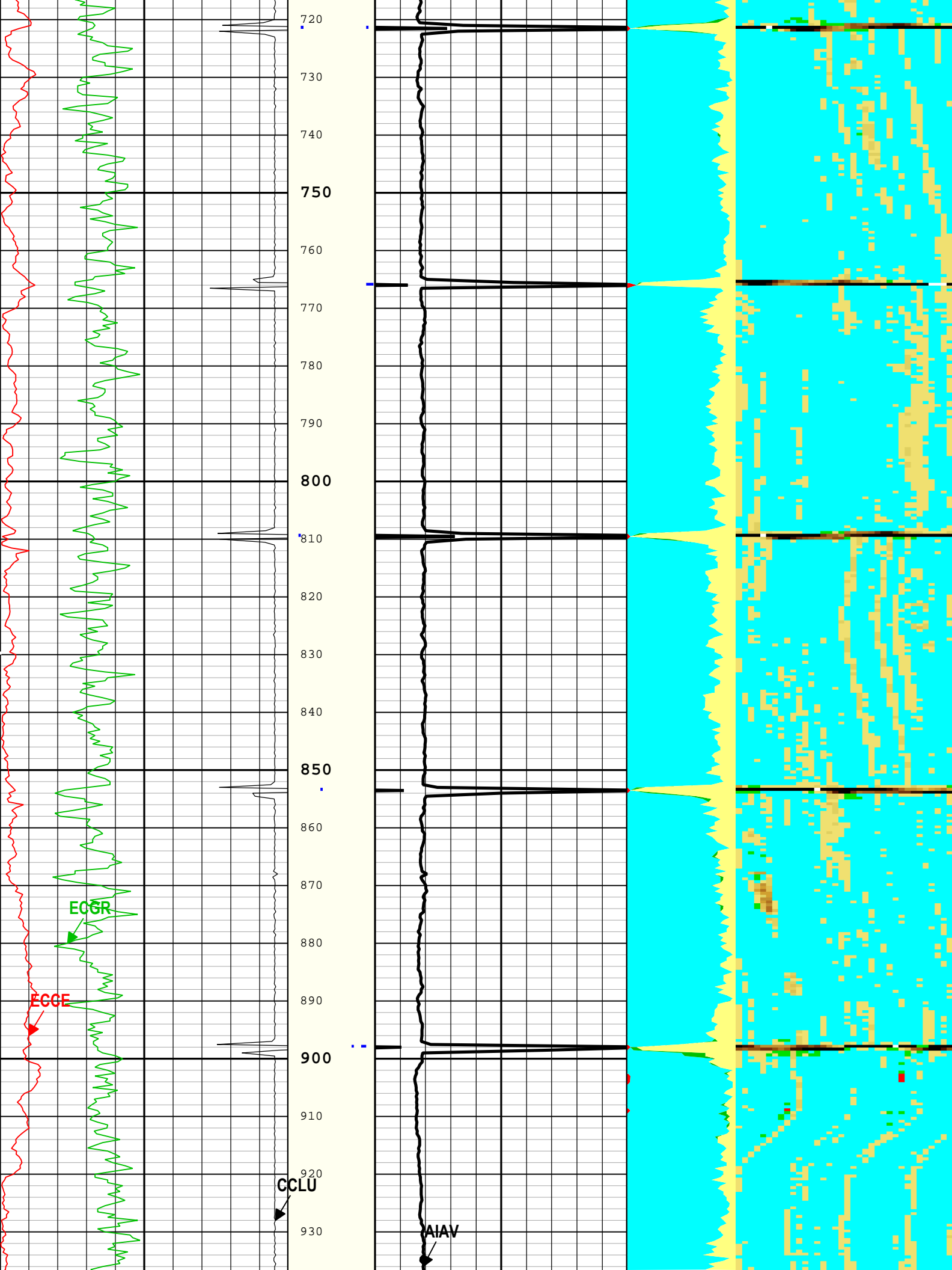
Type	7-46A-XS		
Serial Number	U715043		
Length	15000.00 ft		
Convergence Type	Wireline		

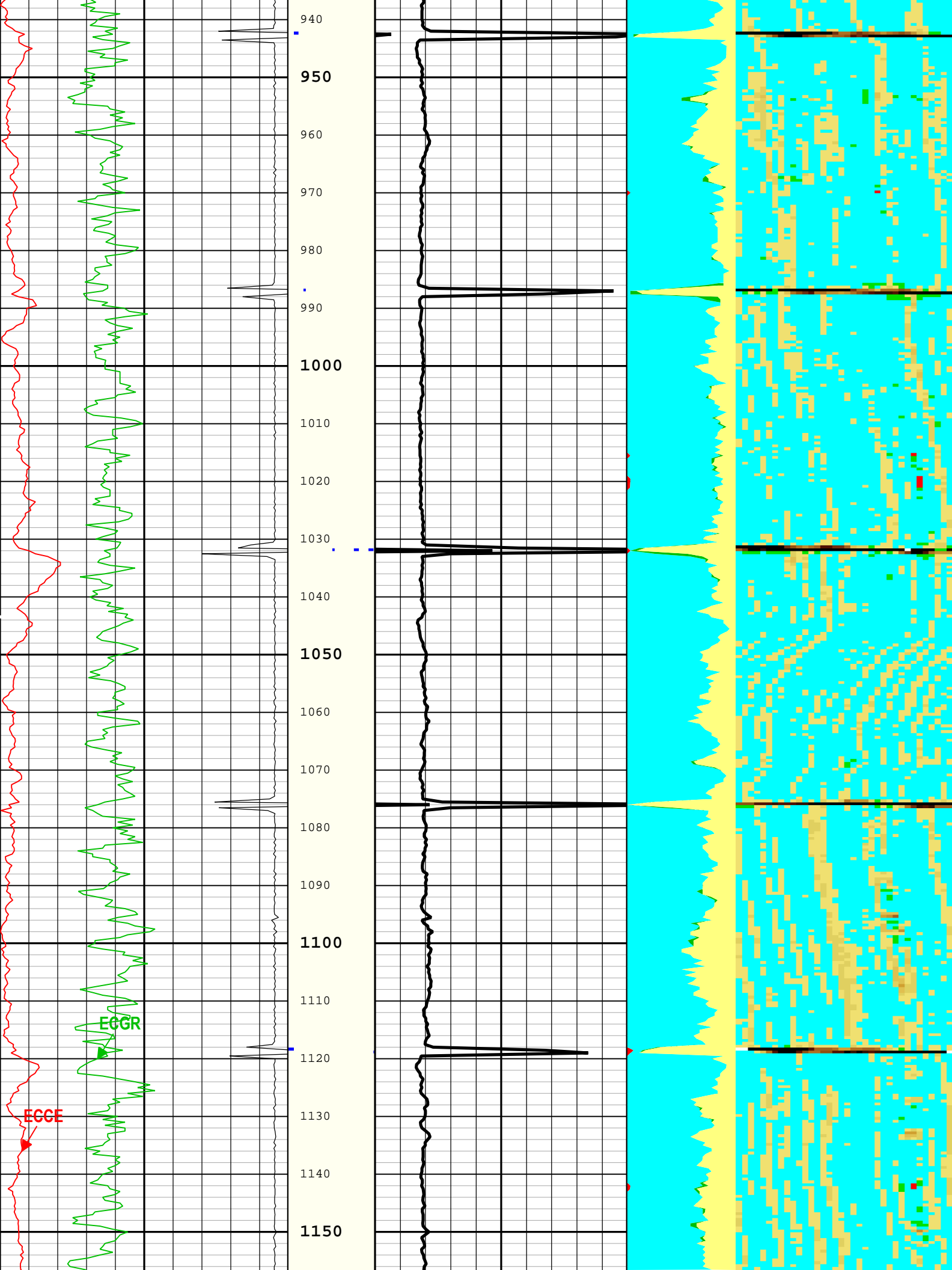
Conveyance Type		Wireline							
Rig Type		Crane							
One:Depth Control Parameters				Depth Control Remarks					
Log Sequence		First Log In the Well							
Rig Up Length At Surface									
Rig Up Length At Bottom									
Rig Up Length Correction									
Stretch Correction									
Tool Zero Check At Surface									
USIT - Fluid Properties Measurement									
Run Name		Pass Name		Start Depth(ft)		Stop Depth(ft)			
Run 1		Log[4]:Up		6503.31		62.94			
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 : 32.14m(105.43ft) to 38.68m(126.89ft) MUD_N_FRP = 1.10 DFD = 1.08g/cm3(9.00lbm/gal) CZMD median computed in free pipe normalization interval = 1.67 MRayl									
Start Depth(ft)		Stop Depth(ft)		Start Value(Mrayl)		End Value(Mrayl)			
One									
2500 PSI Main Pass									
Software Version									
Acquisition System				Version					
Maxwell 2016 SP2				6.2.68624.3100					
Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
One	Log[4]:Up	Up	62.94 ft	6503.31 ft	11-Apr-2017 5:35:29 PM	11-Apr-2017 6:24:38 PM	ON	3.25 ft	Yes
All depths are referenced to toolstring zero									
Log		Company:Noble Energy Inc				Well:Wells Ranch State AA33-744			
						One: Log[4]: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: 11-Apr-2017 18:40:32									
TIME_1900 - Time Marked every 60.00 (s)									
Casing Collar Locator Ultrasonic (CCLU) USIT-E			Amplitude of Eccentering (ECCE) USIT-E		Gamma Ray (ECGR) HGNS-H		Acoustic Impedance Average (AIAV) USIT-E		
-20 in 1			0 in 0.5		0 gAPI 150		0 Mrayl 10		
40			50						

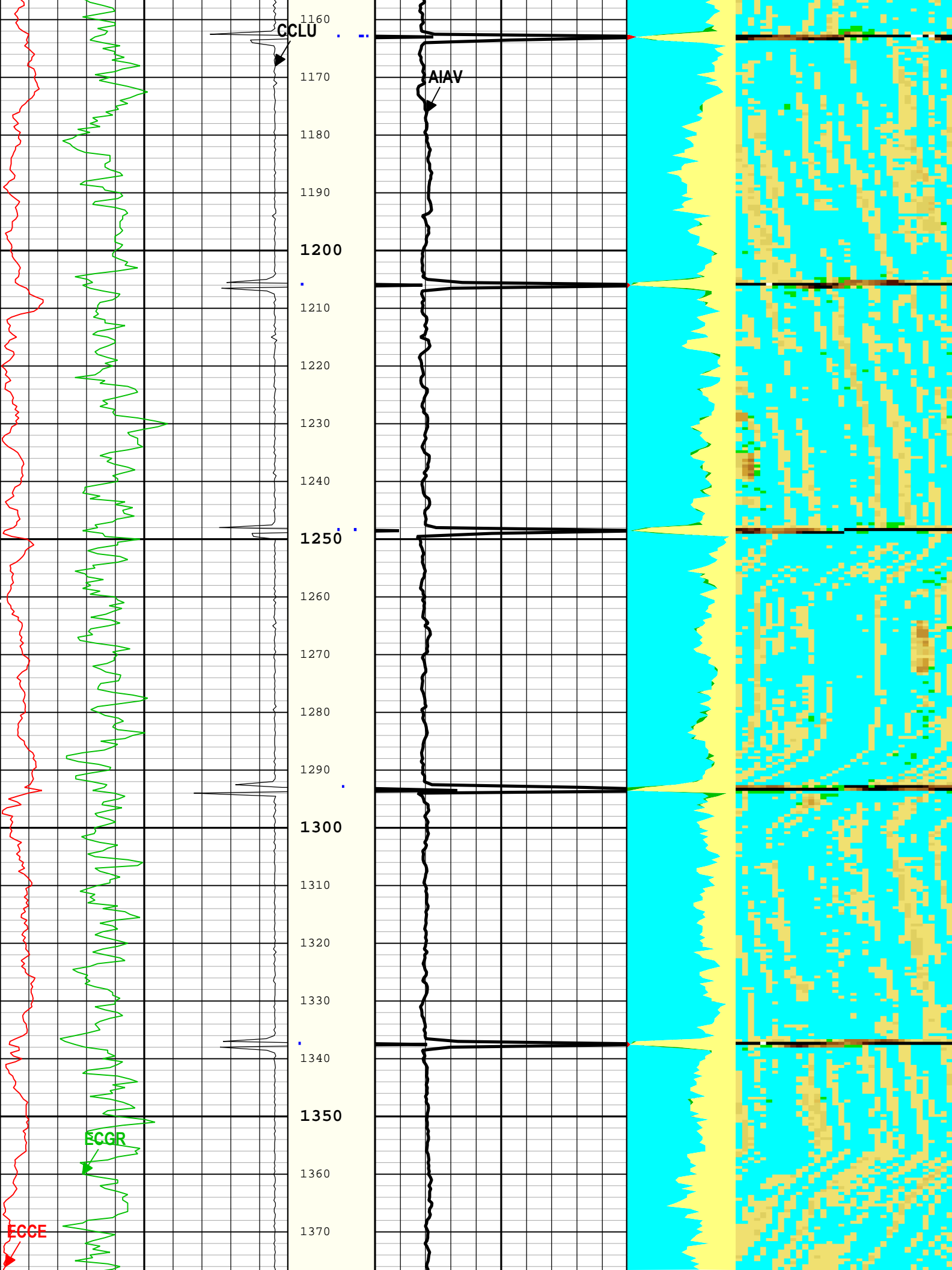


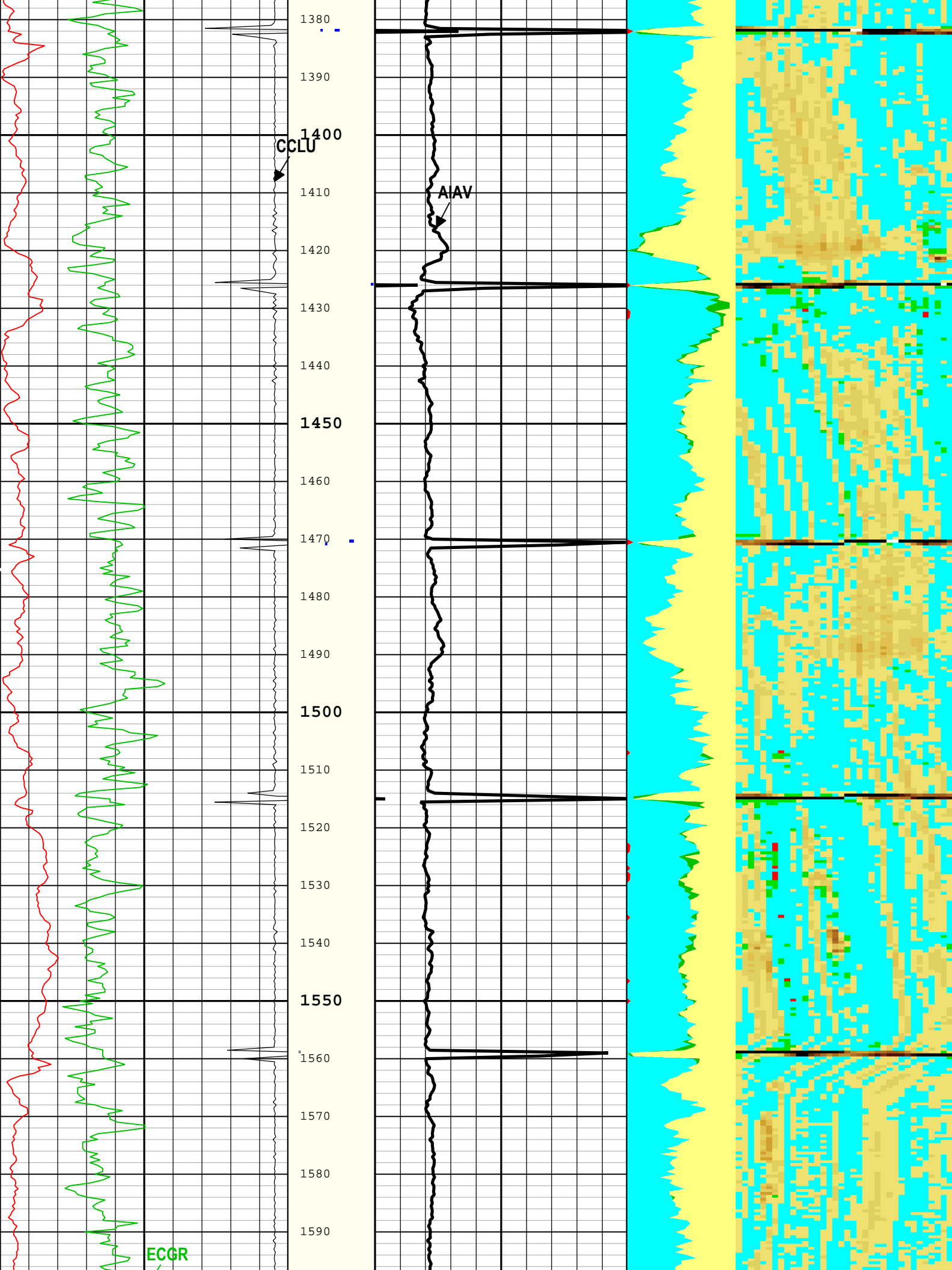


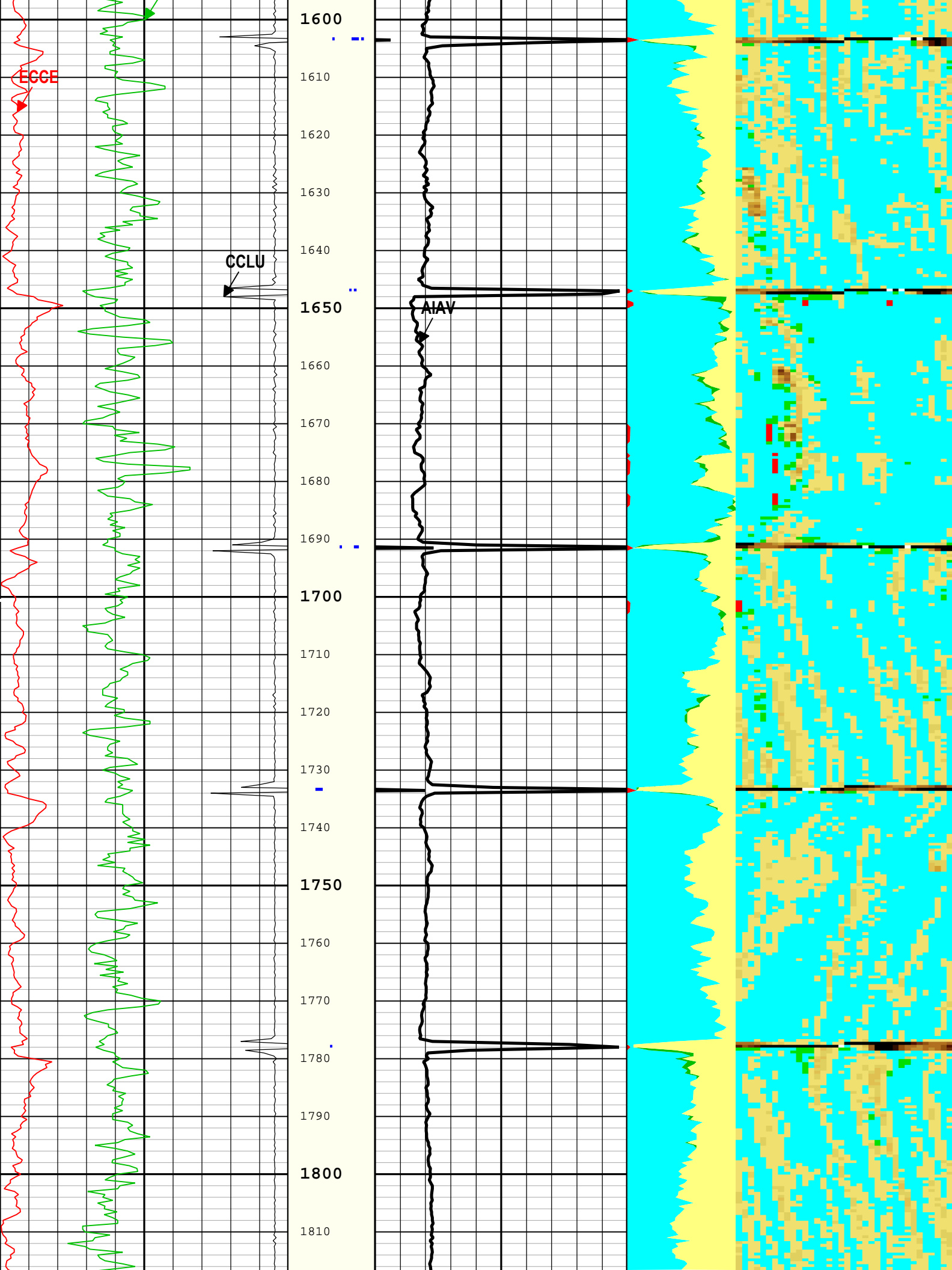


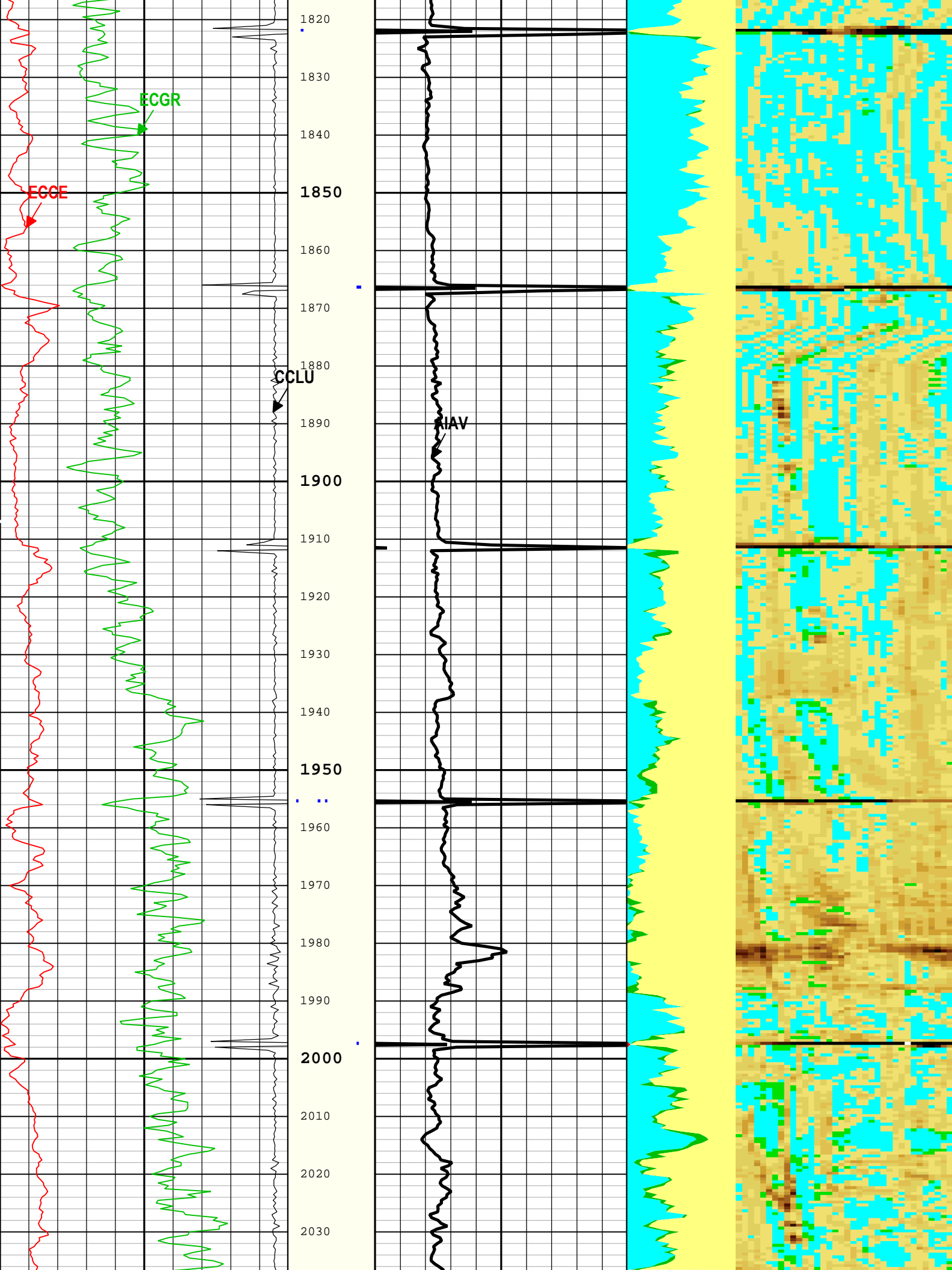


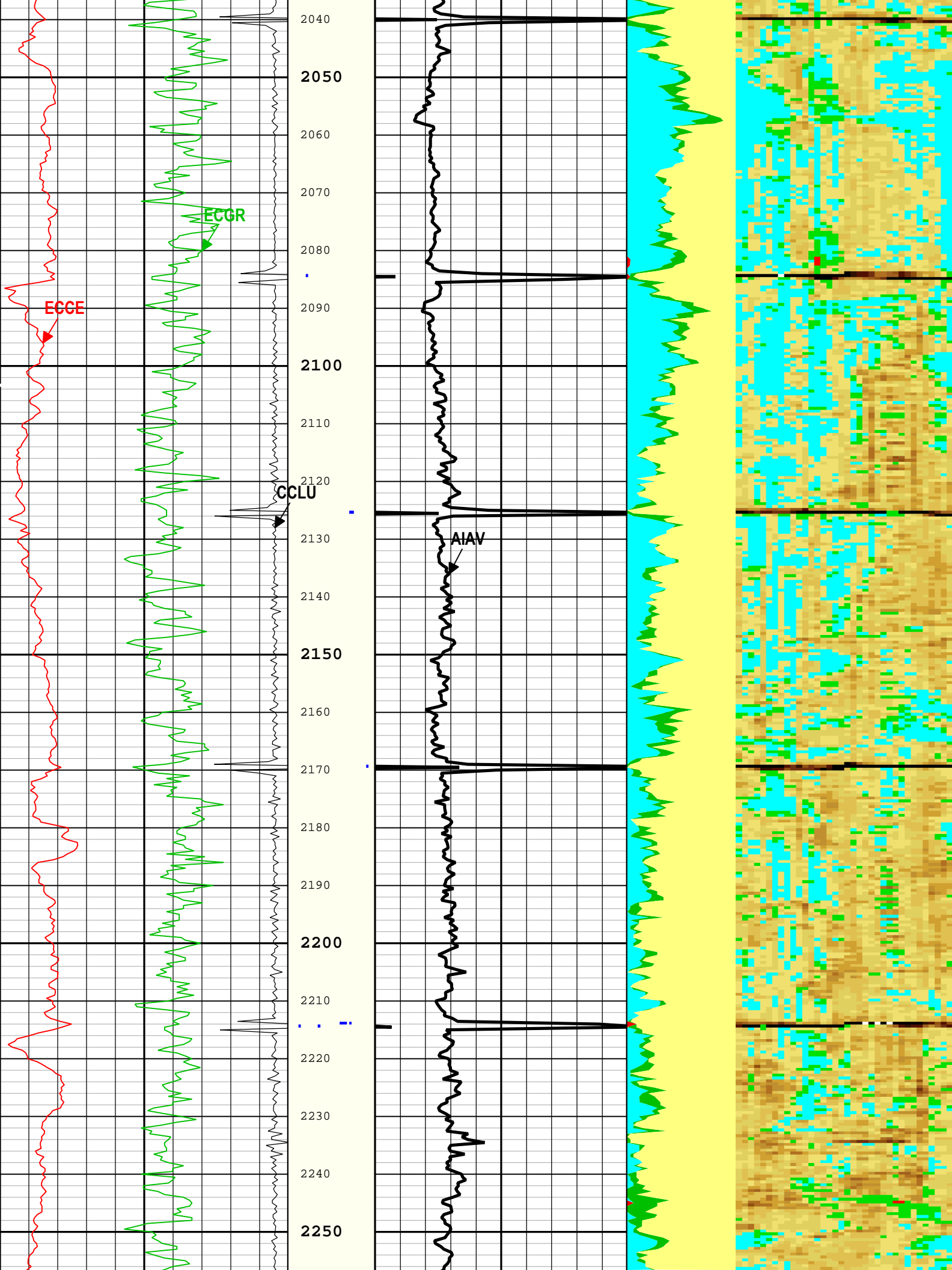


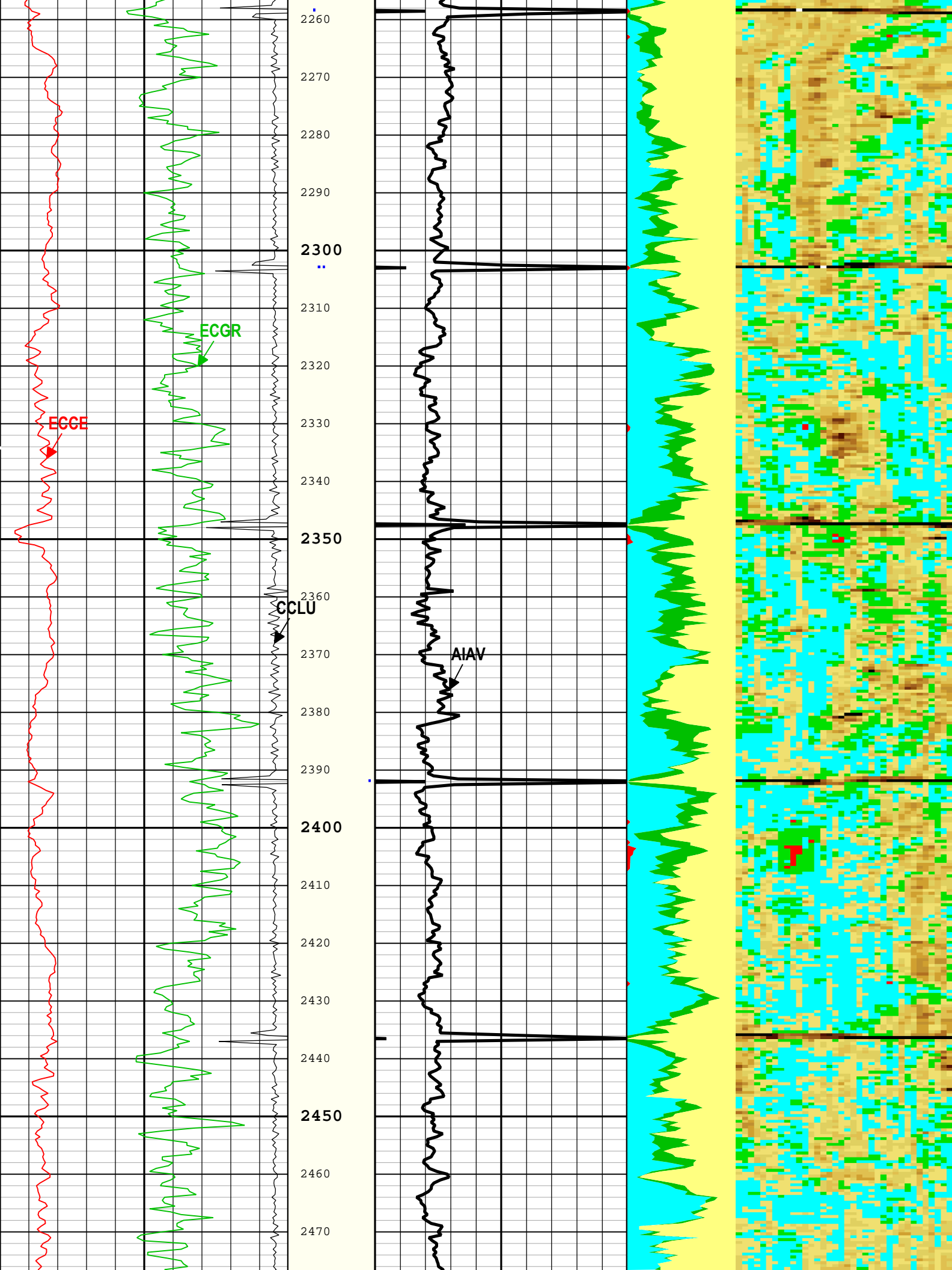


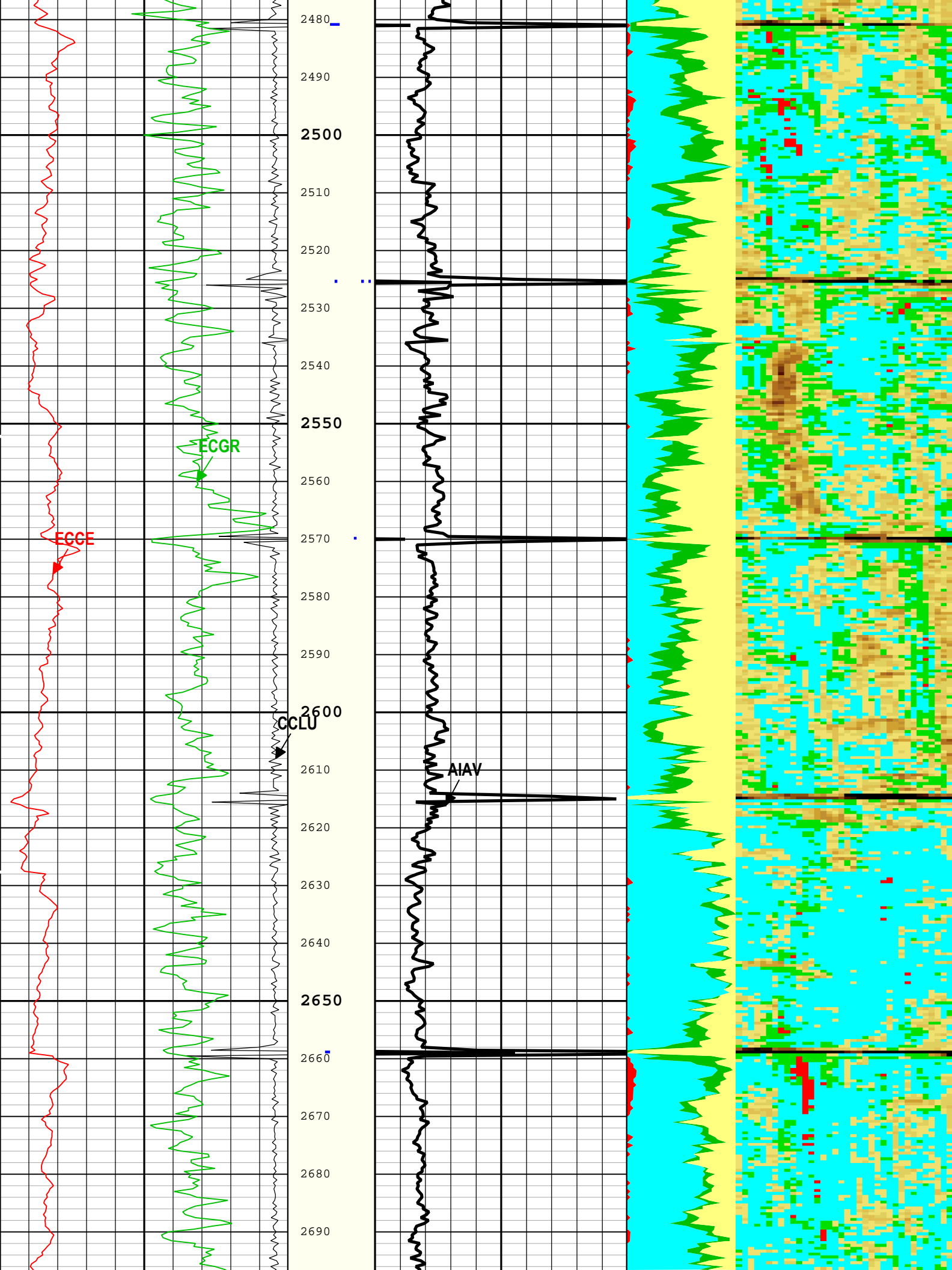


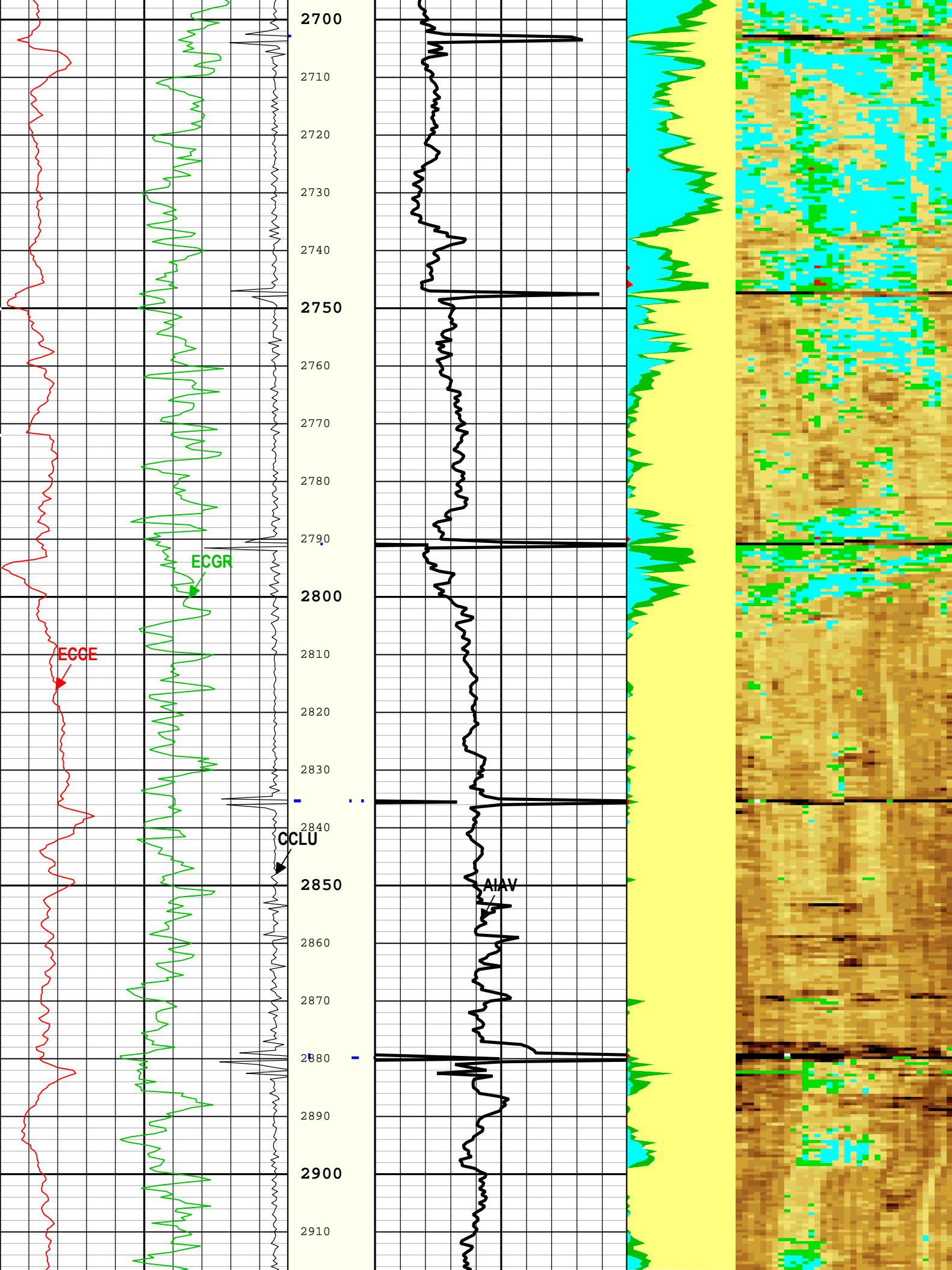


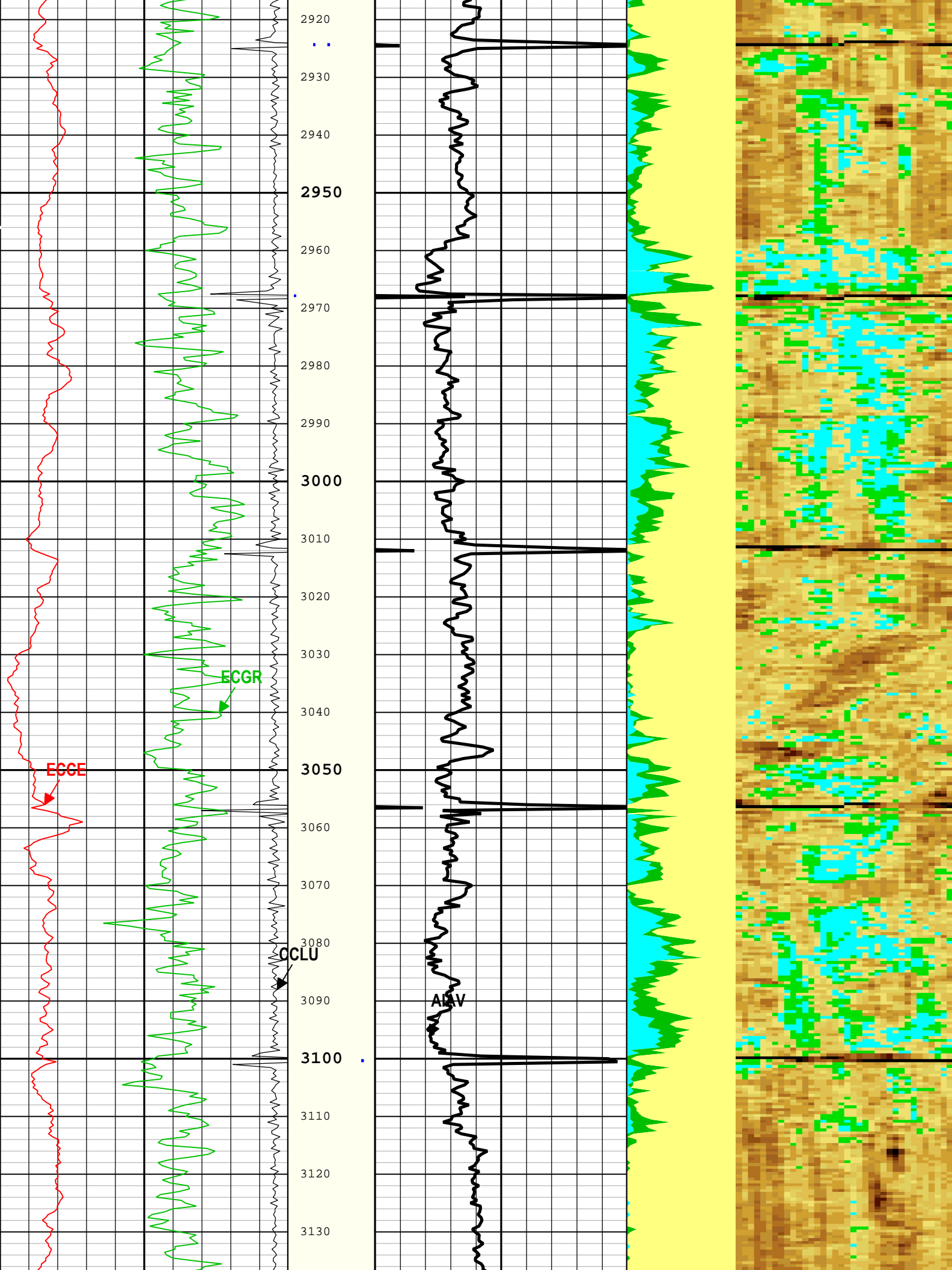


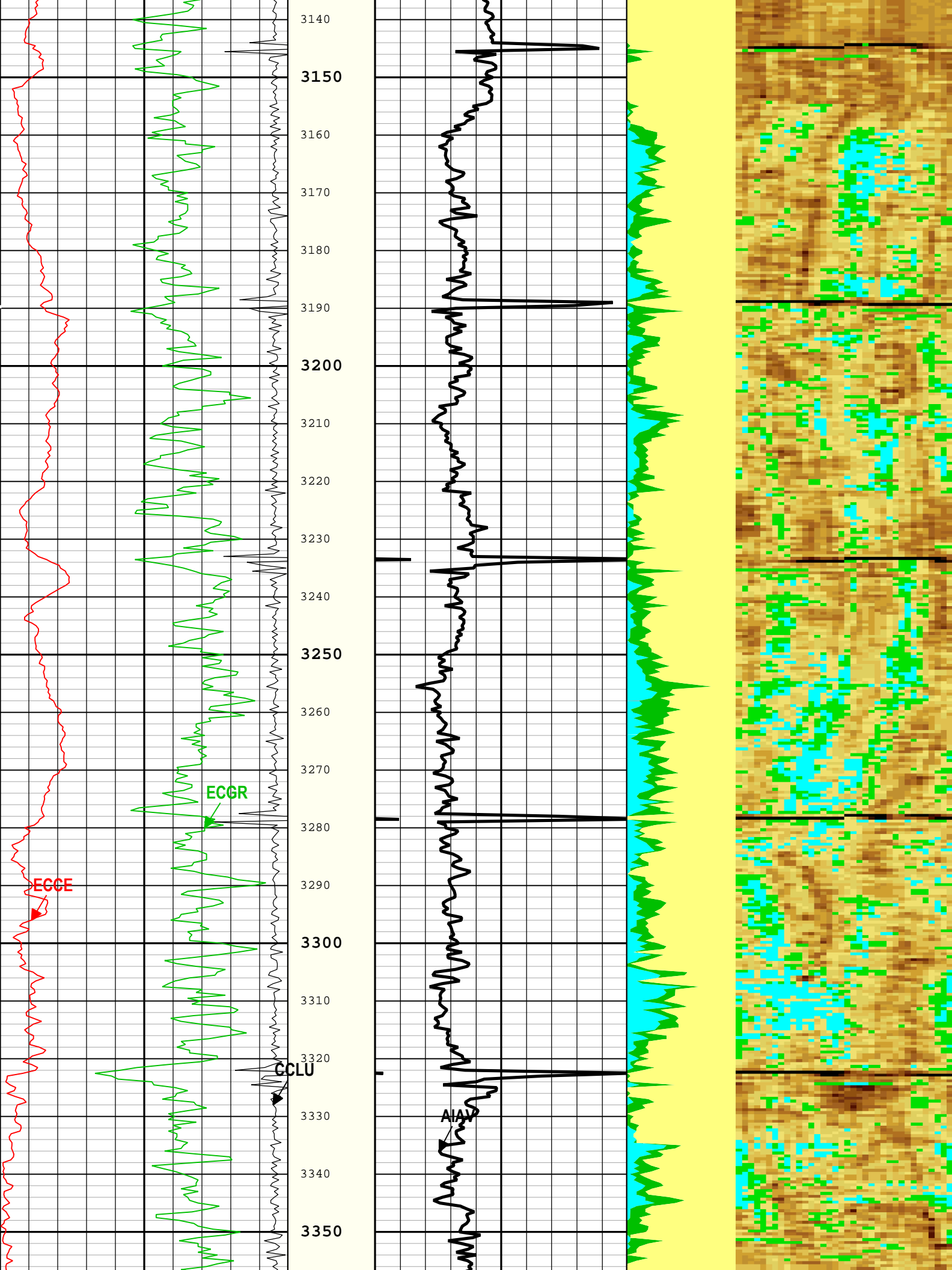


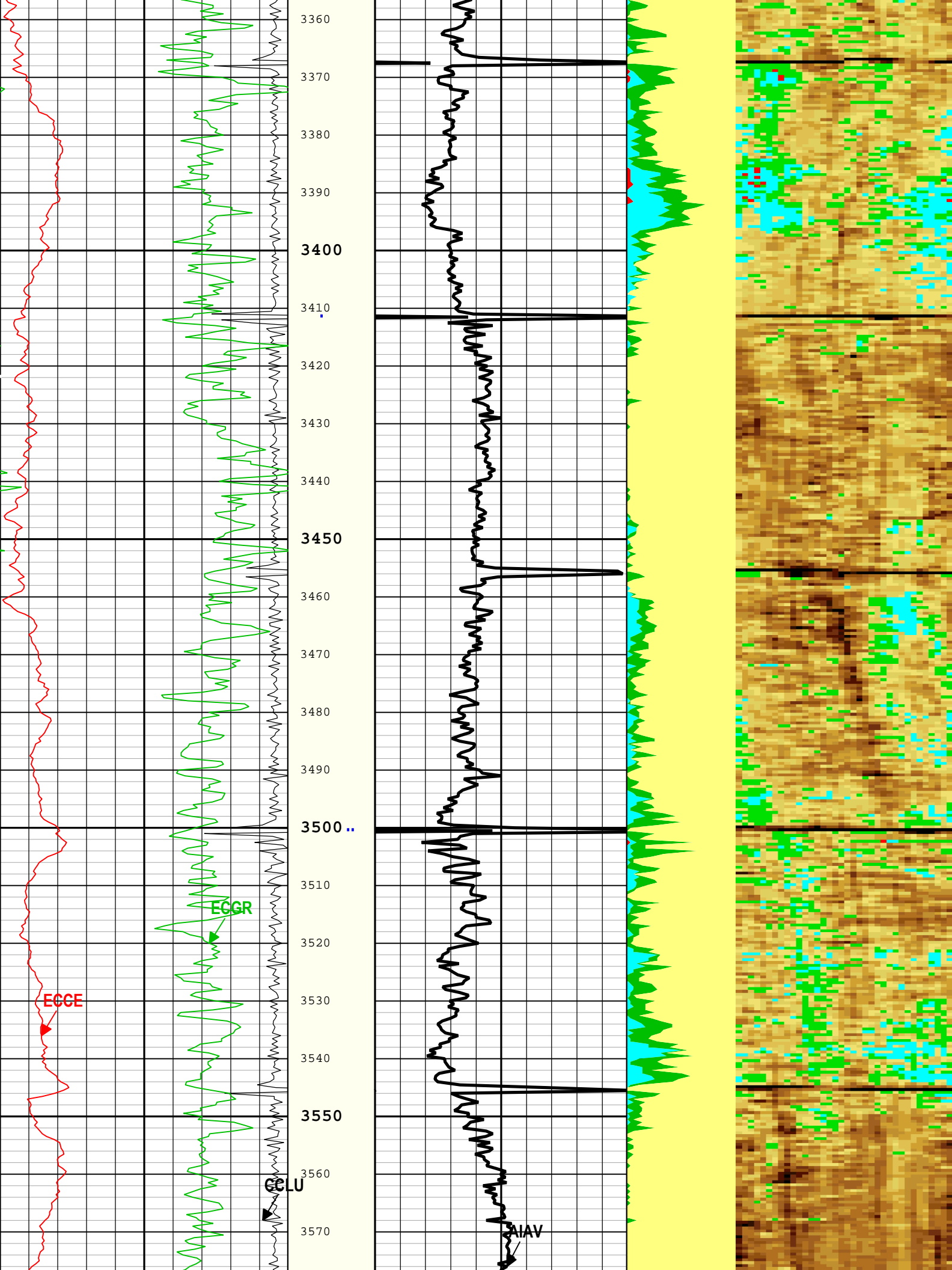


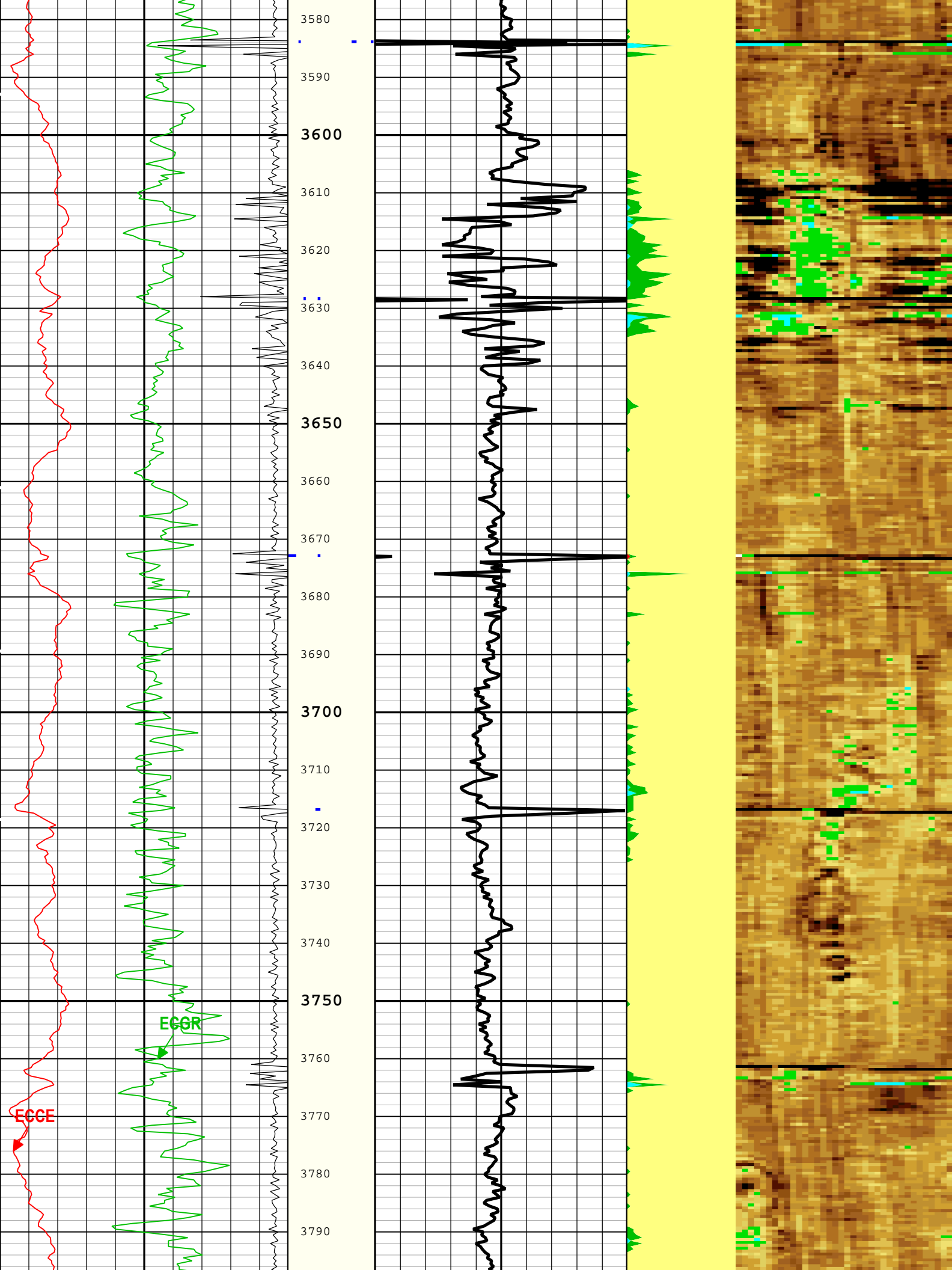


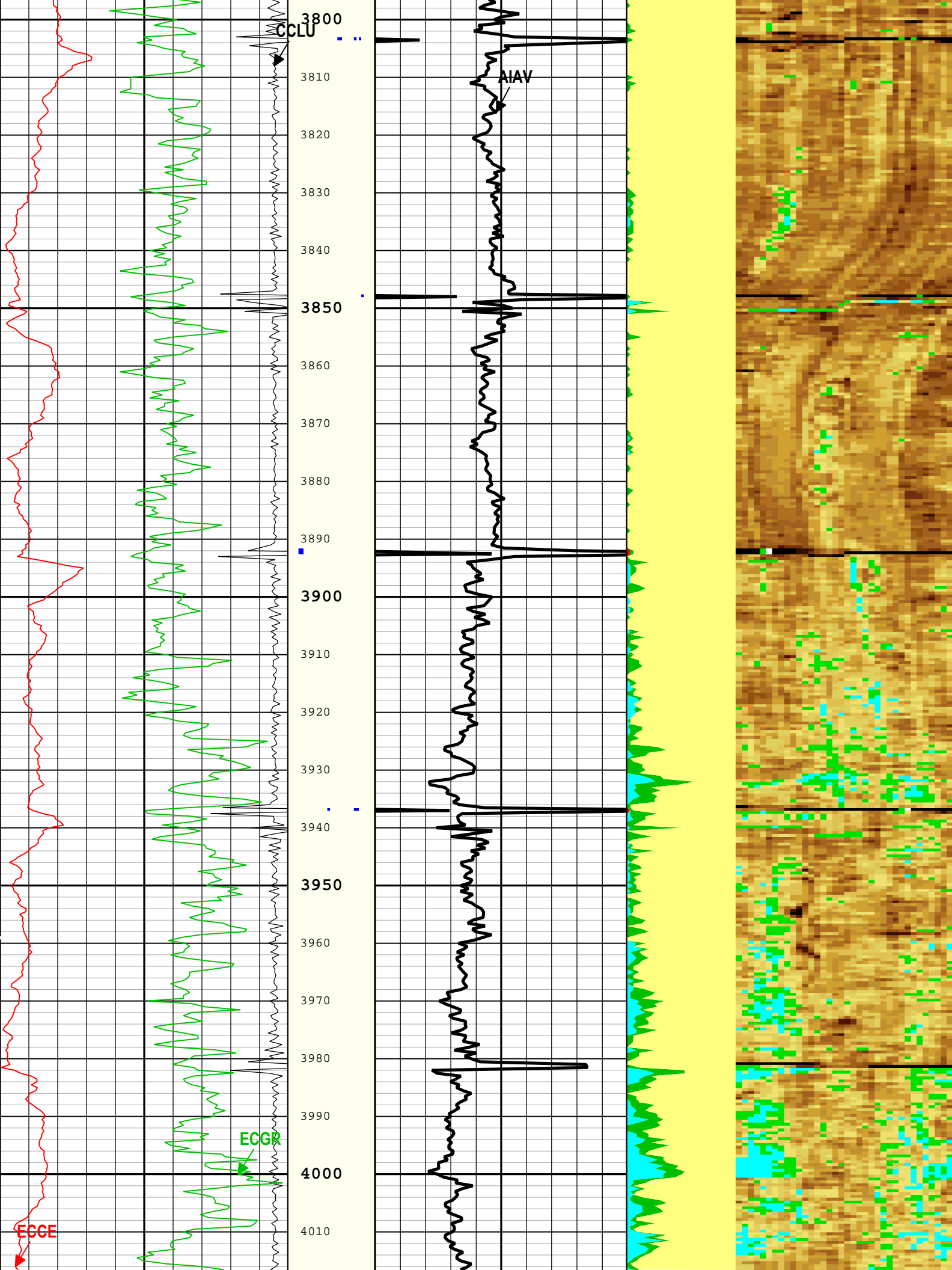


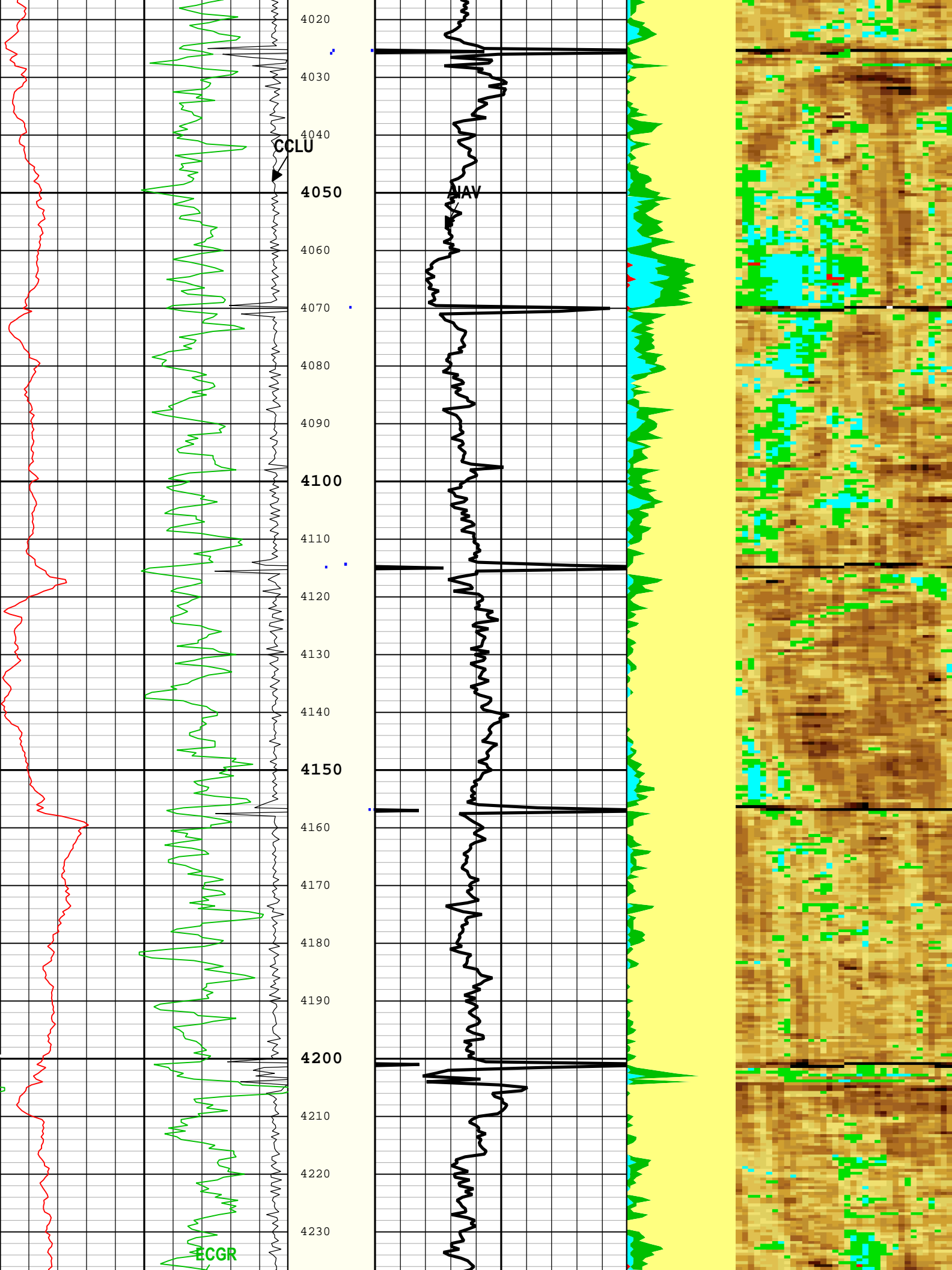


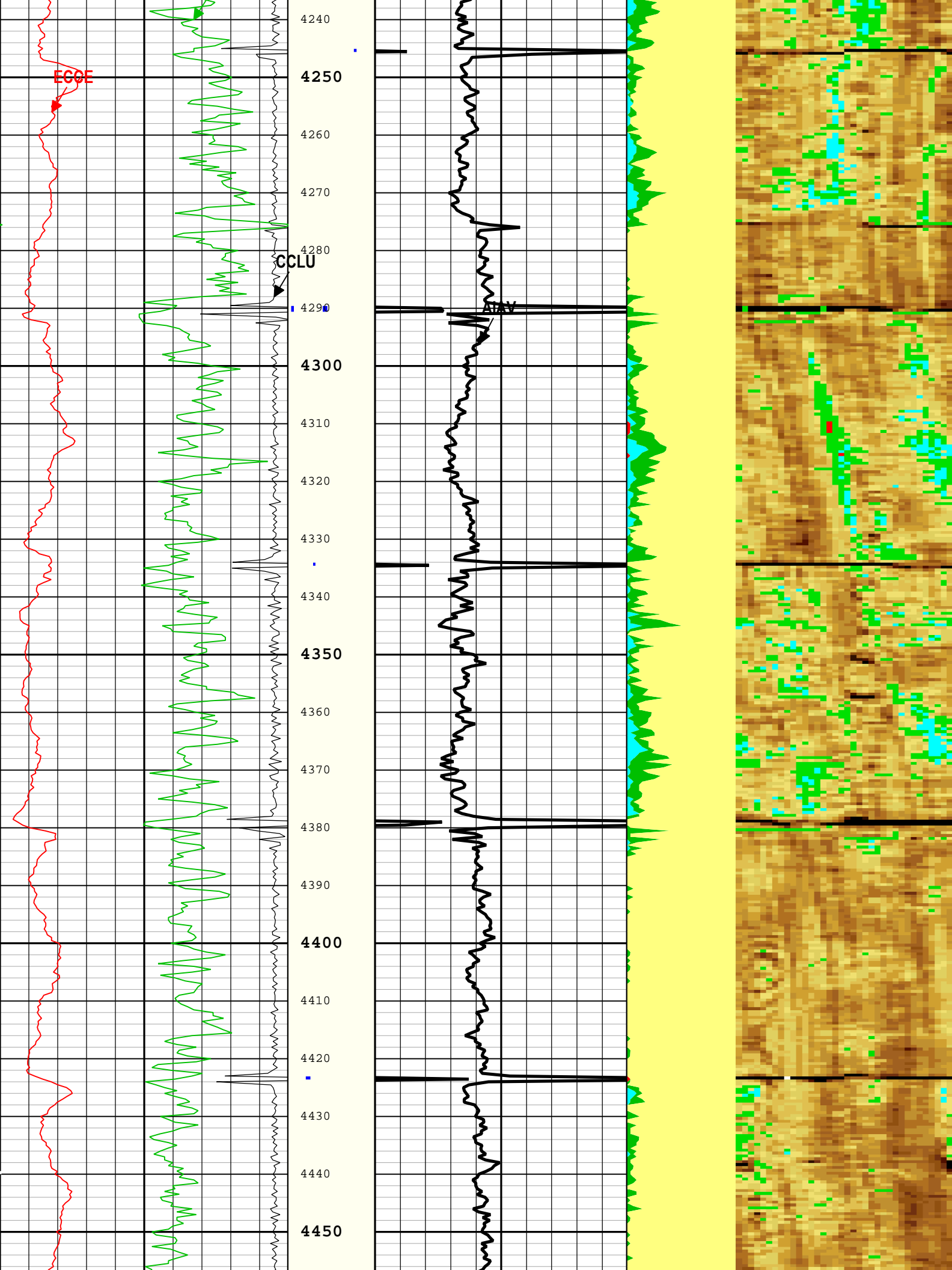


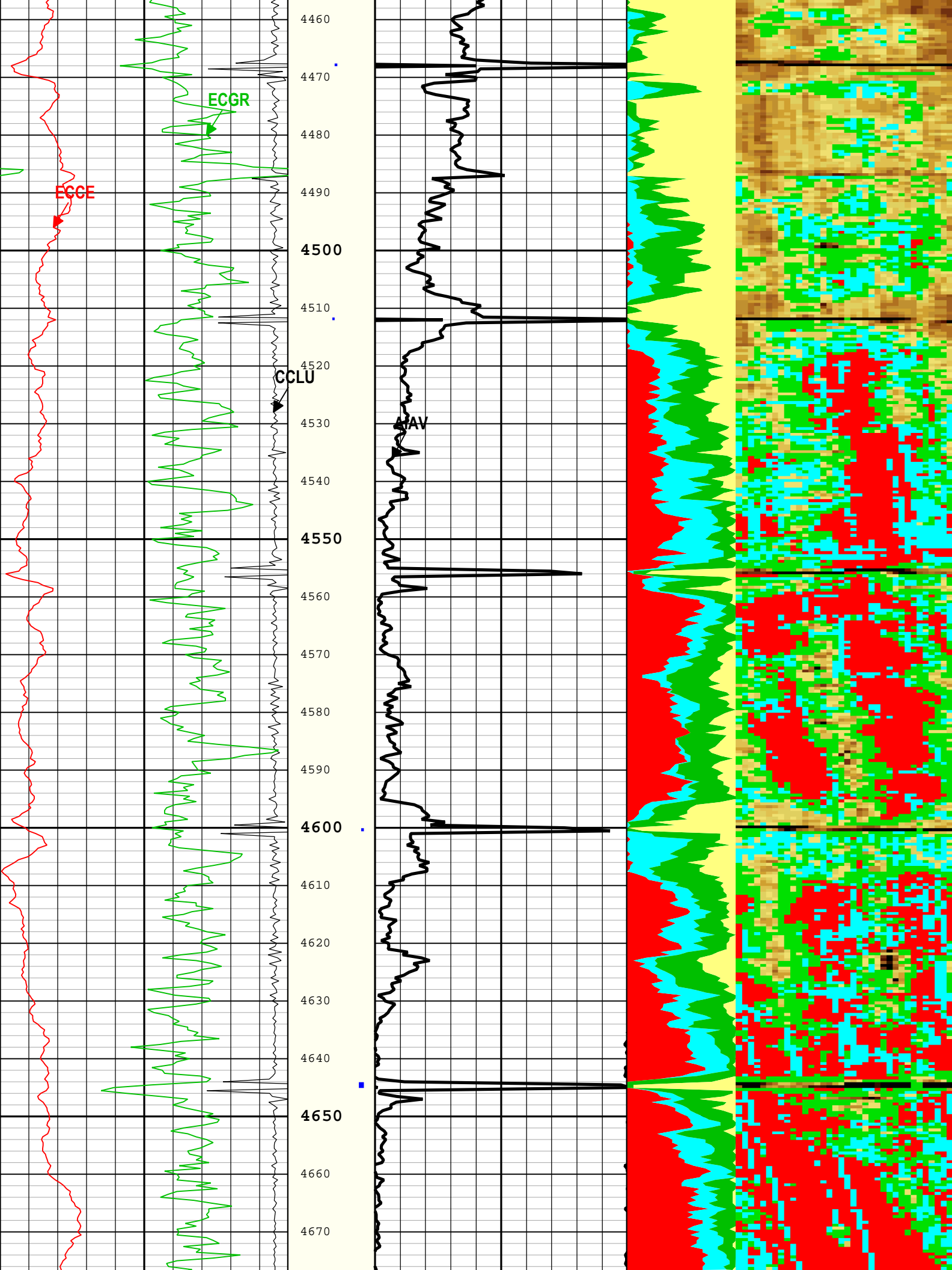


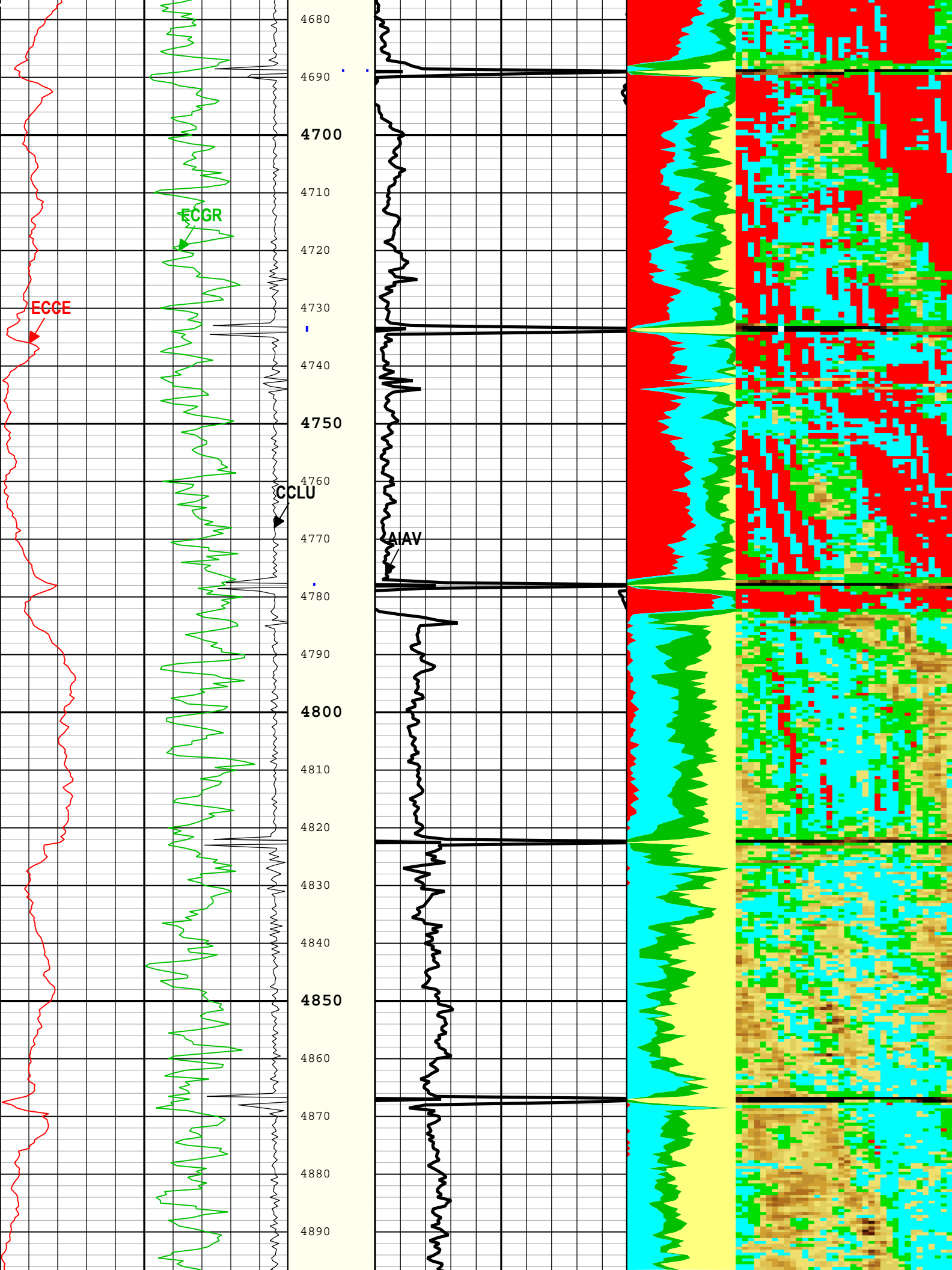


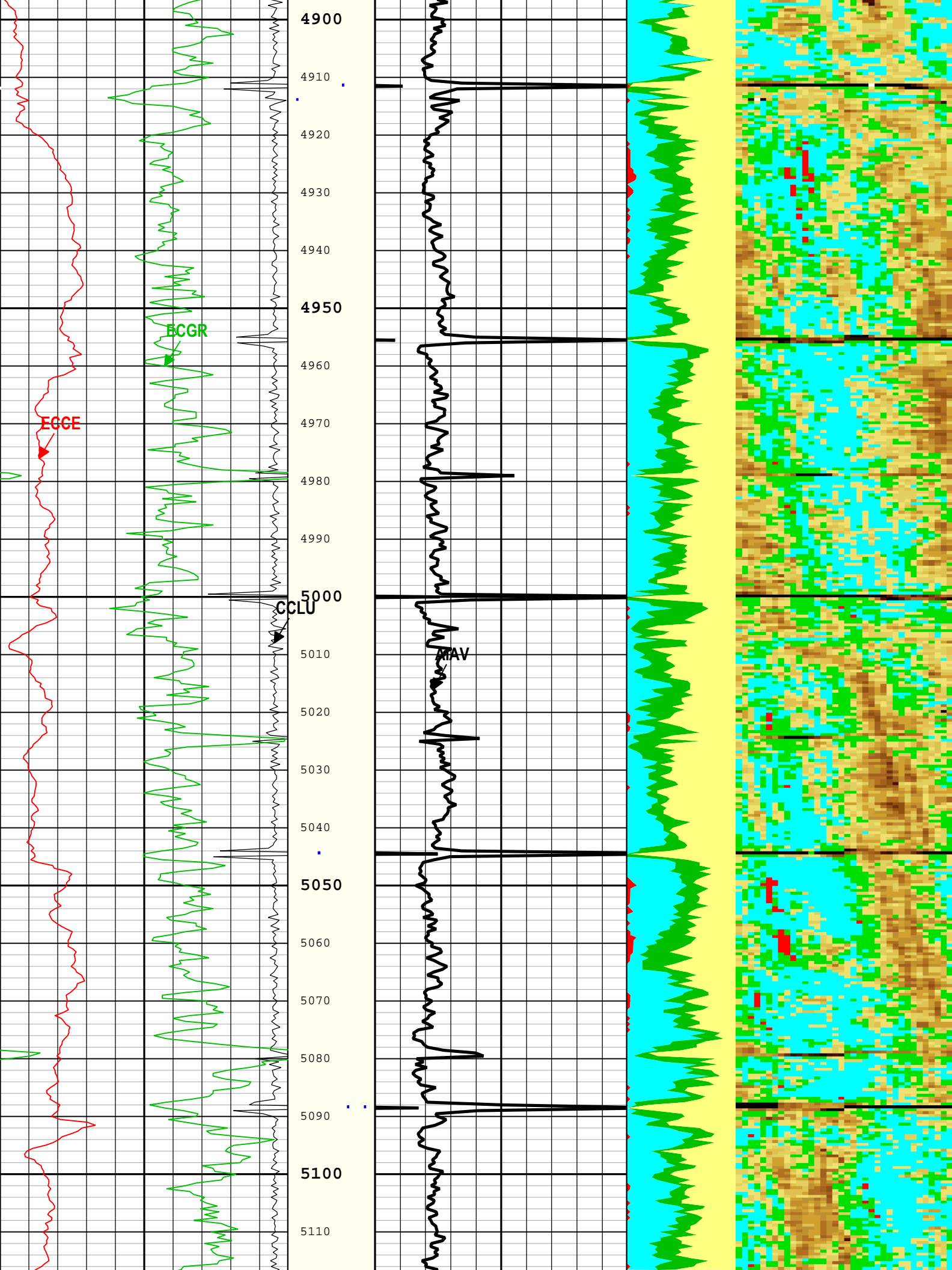


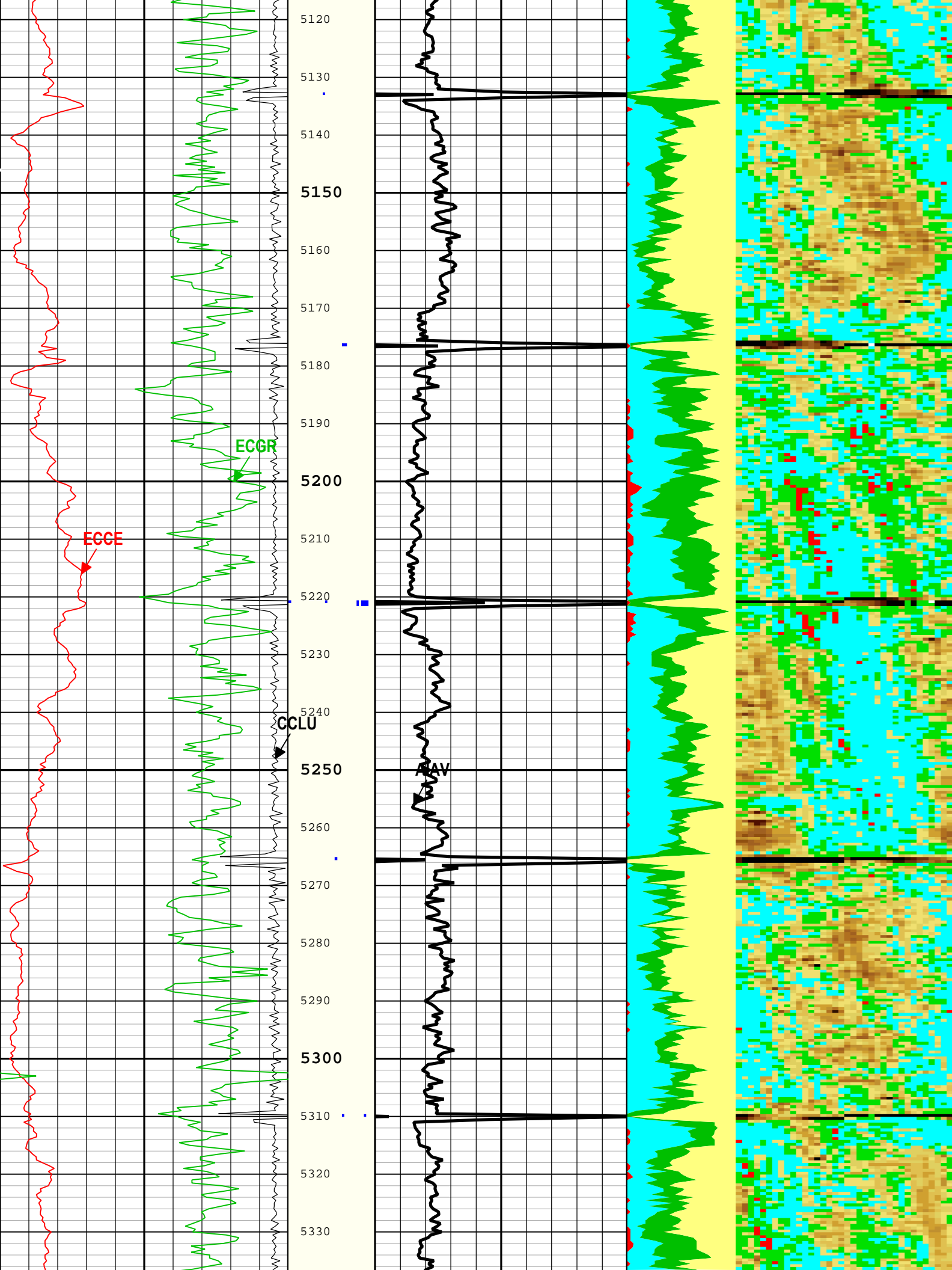


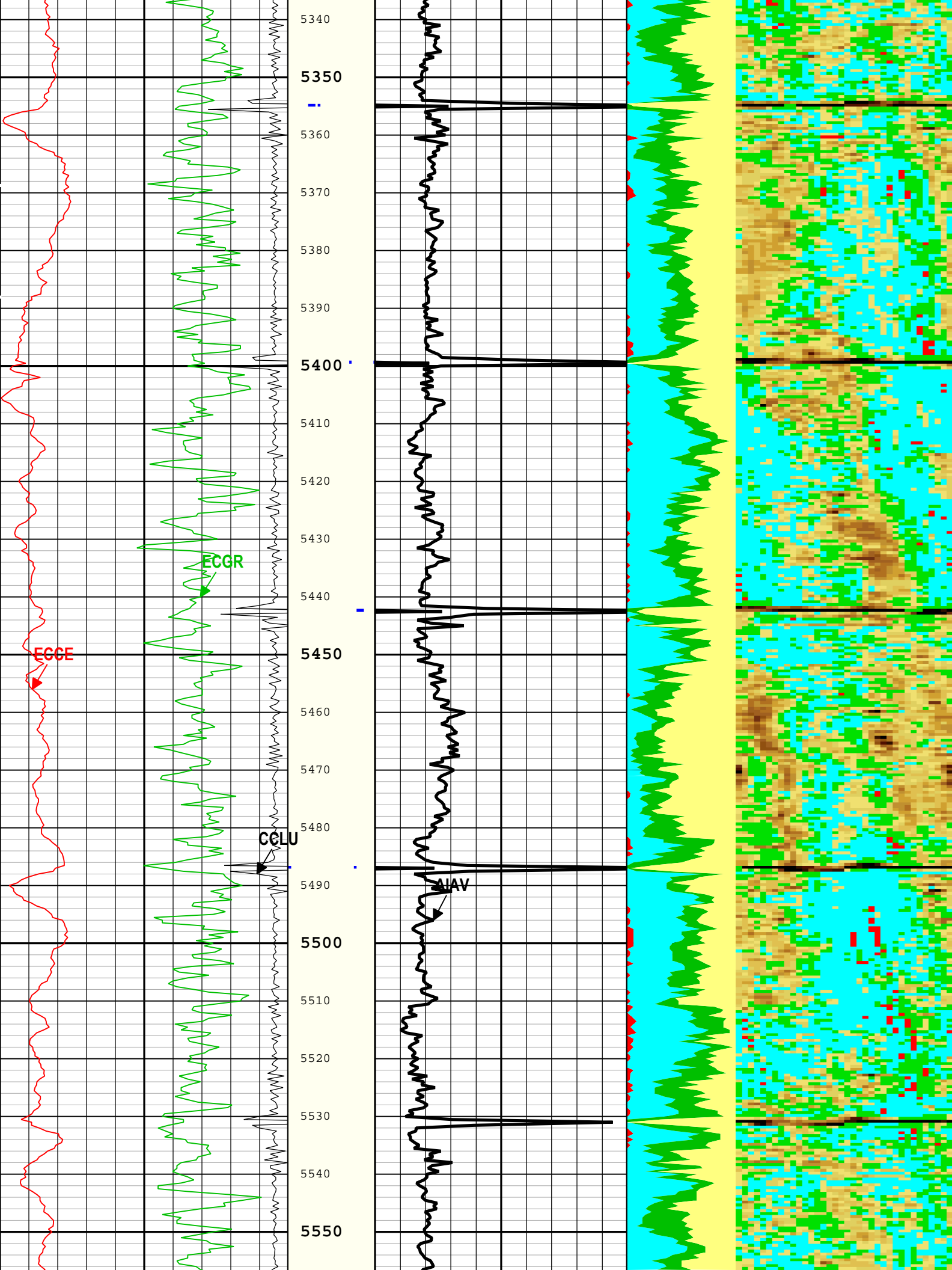


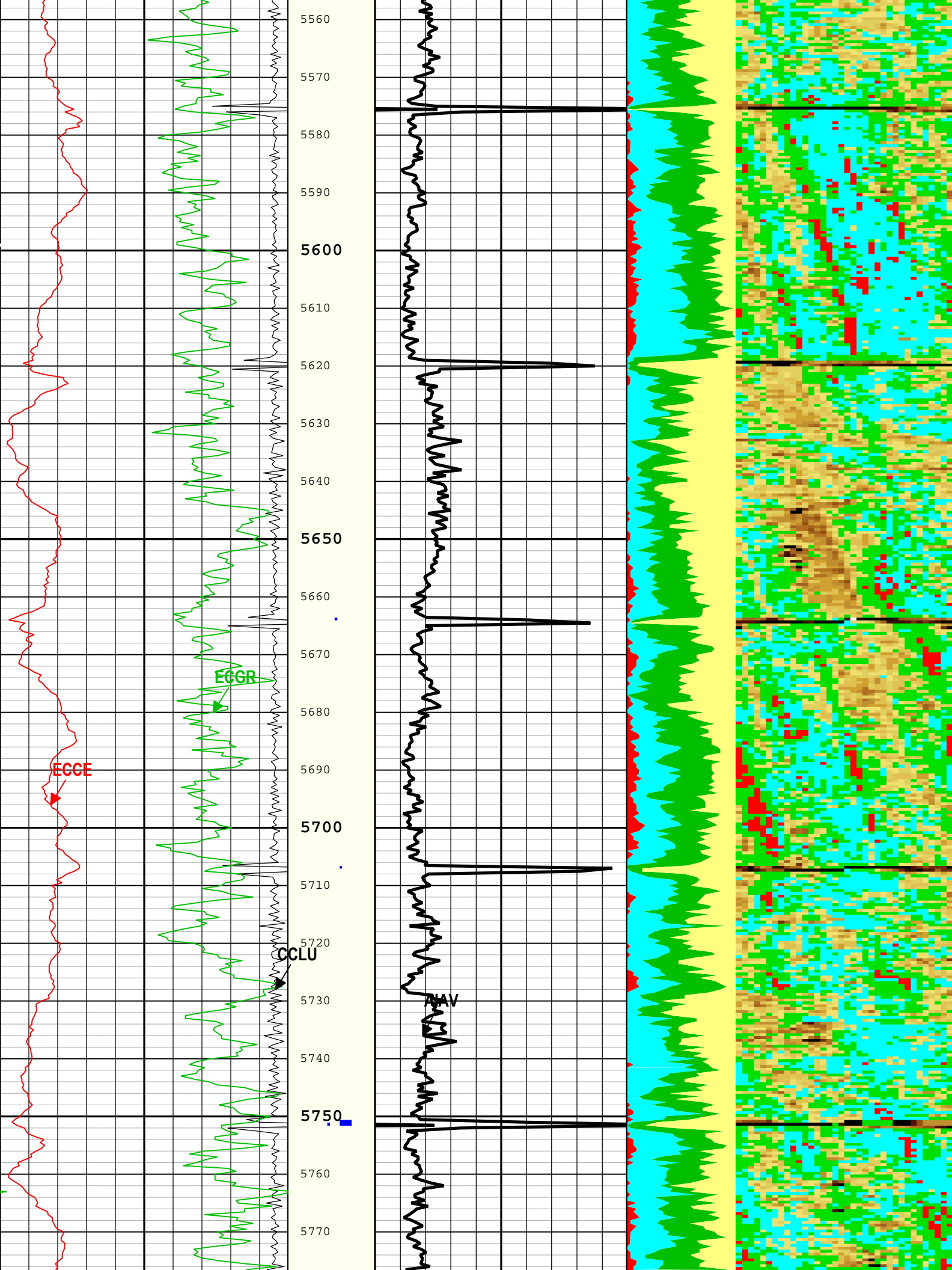


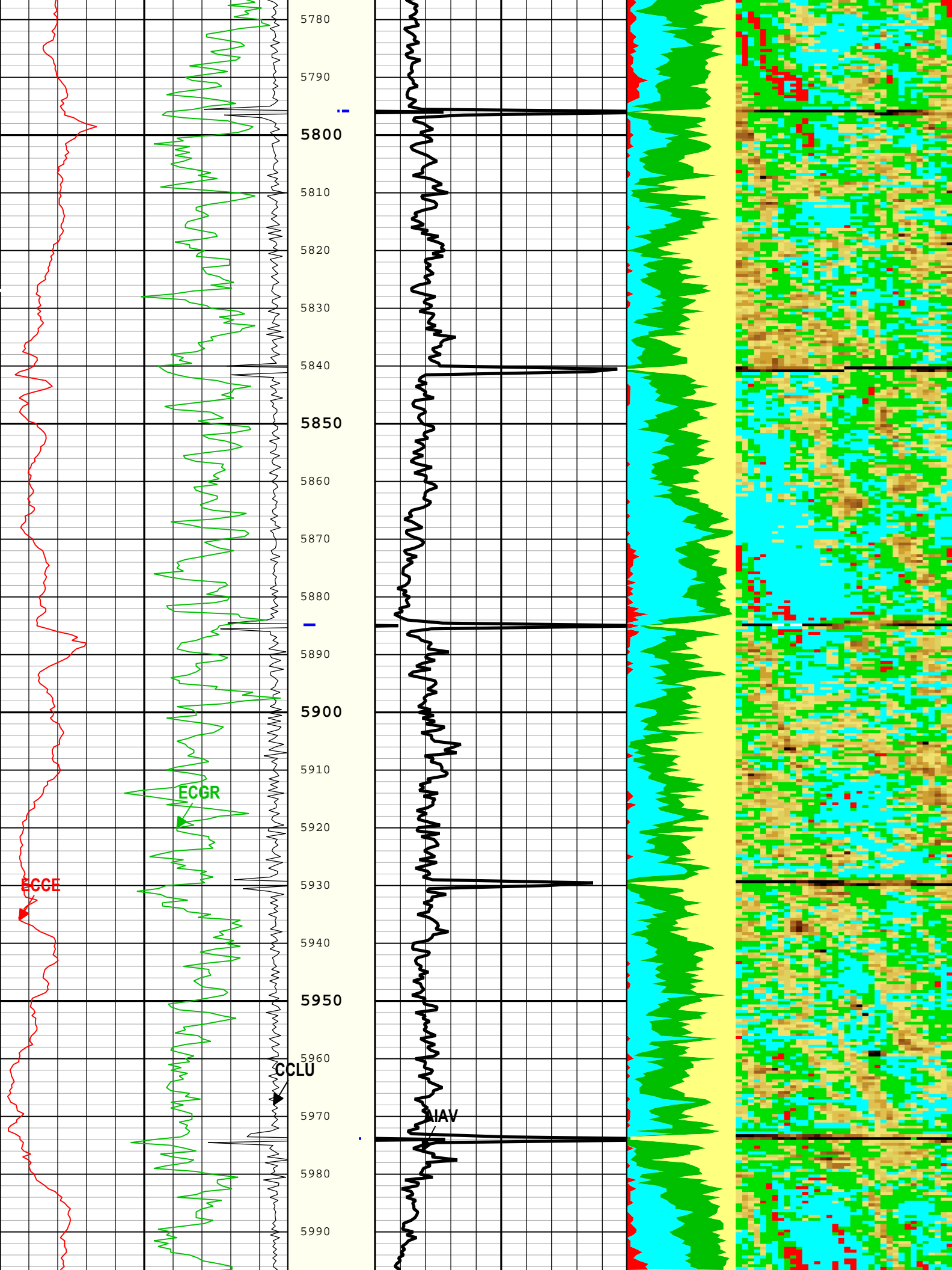


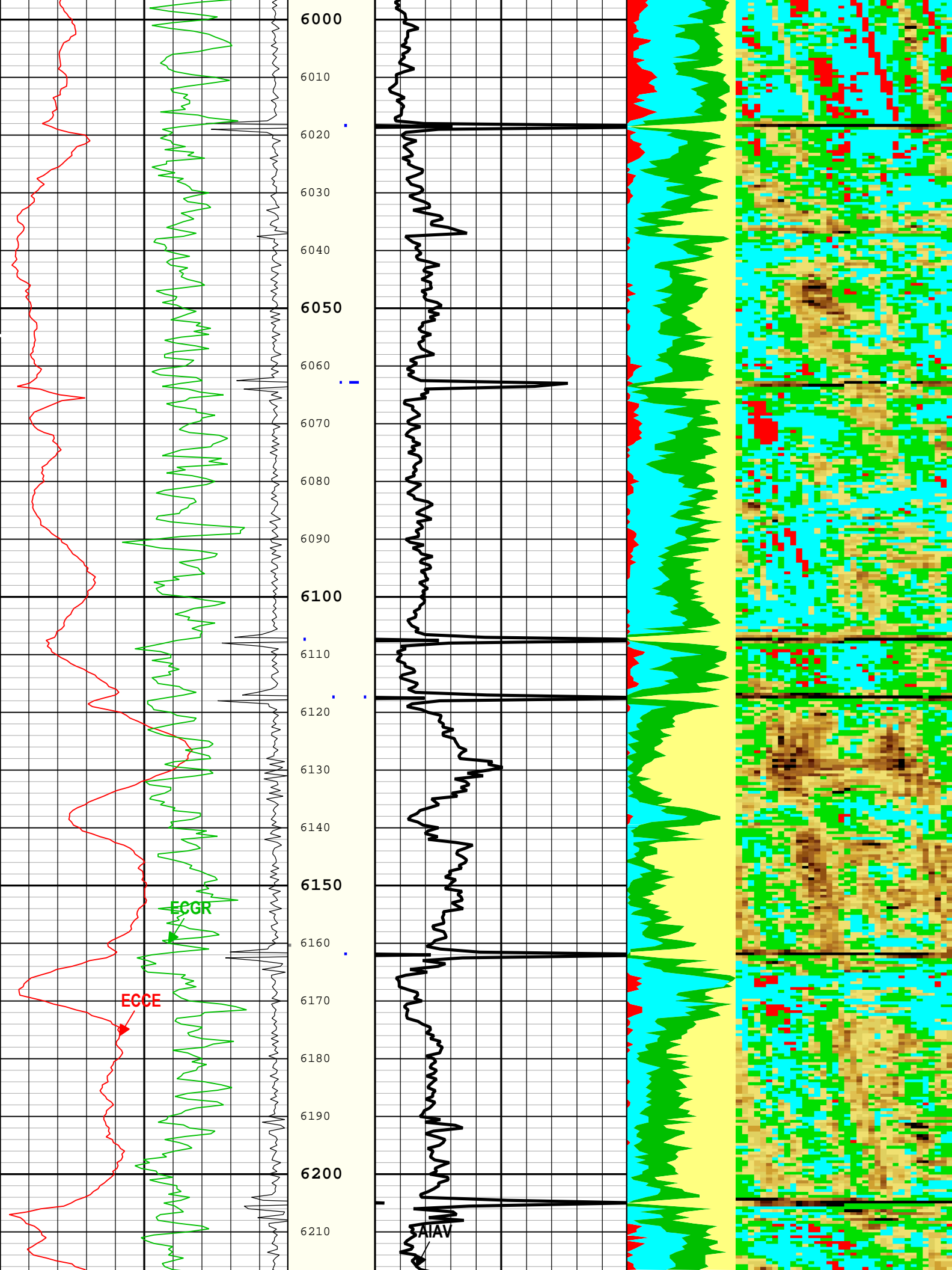


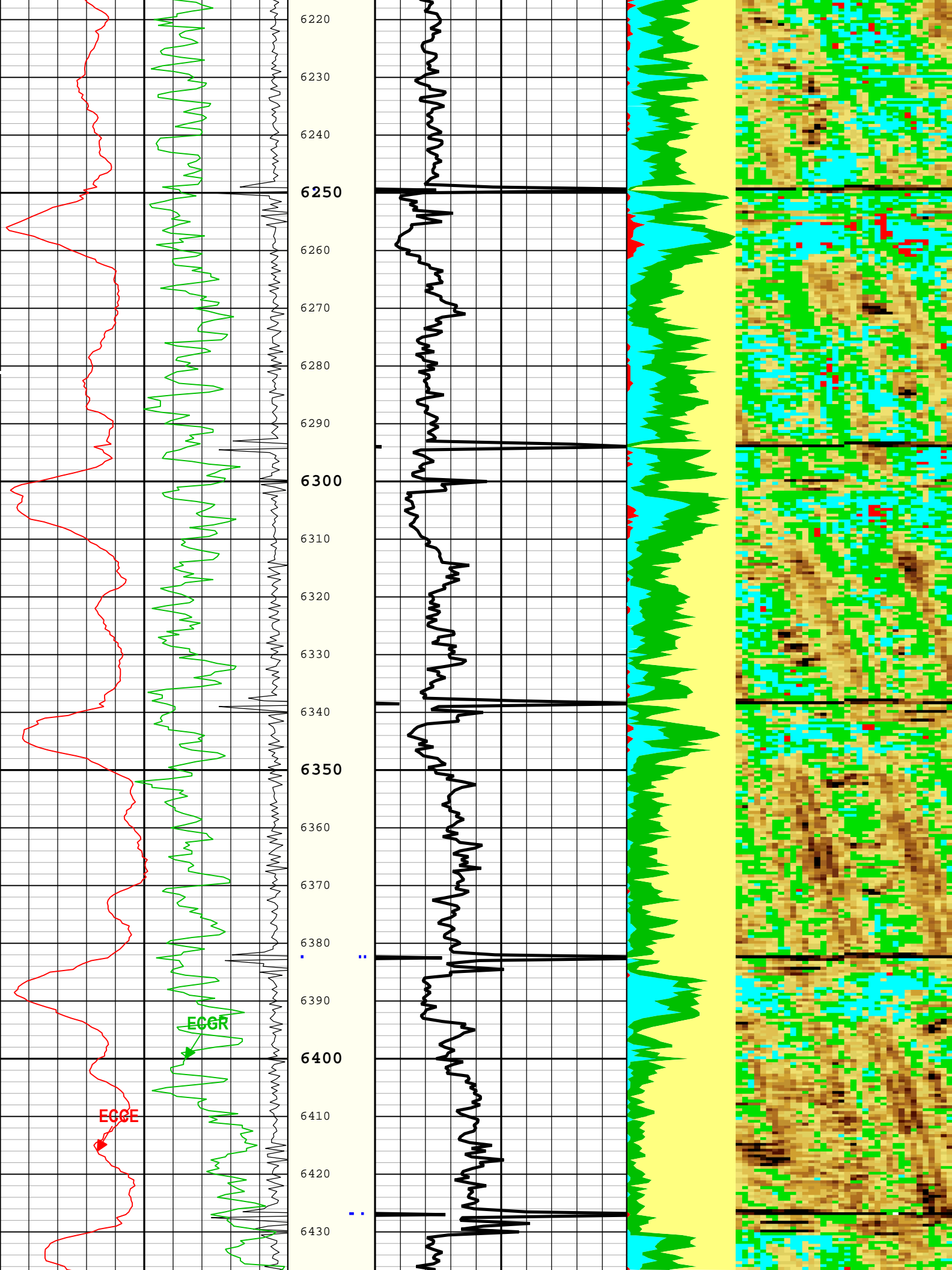


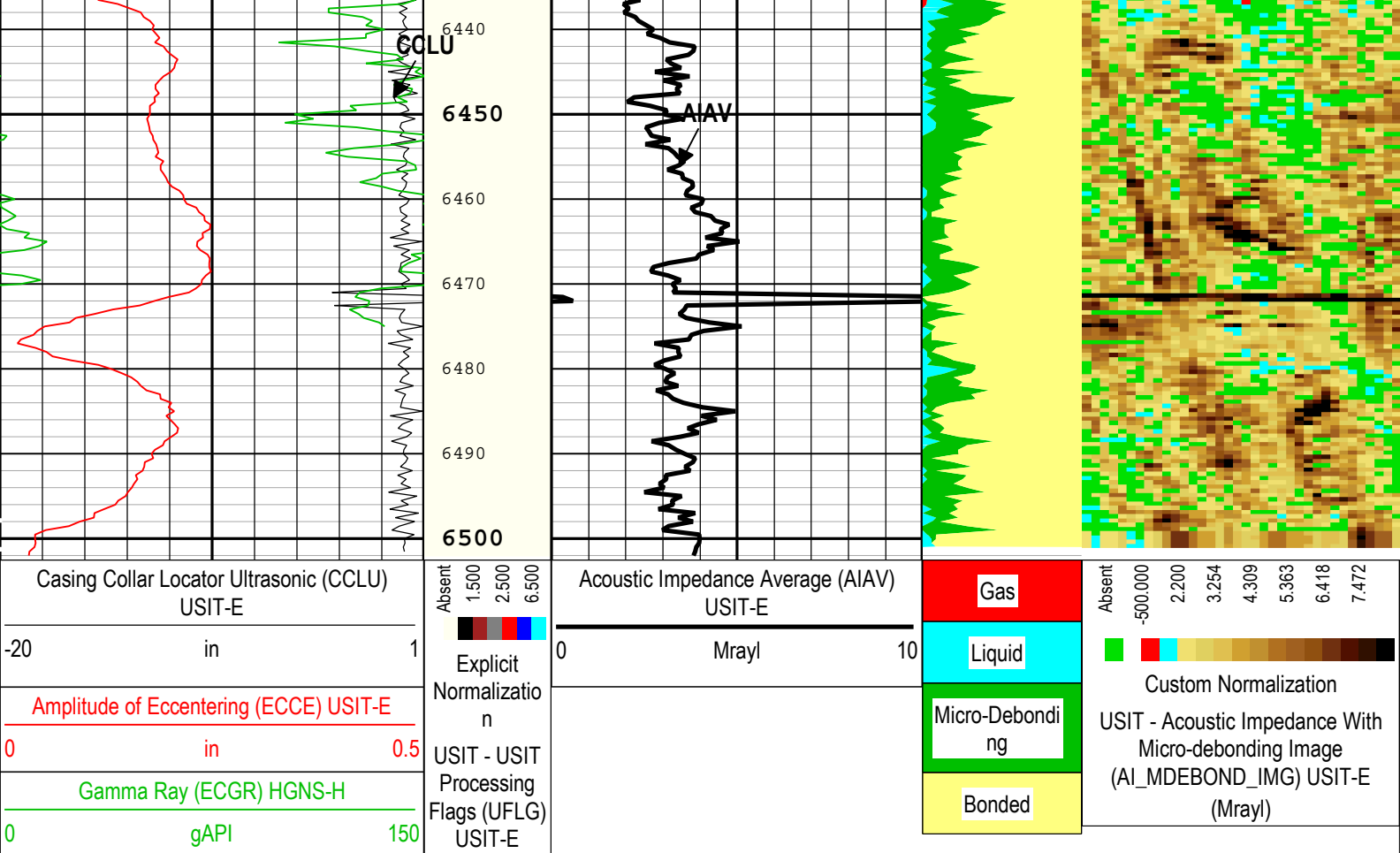












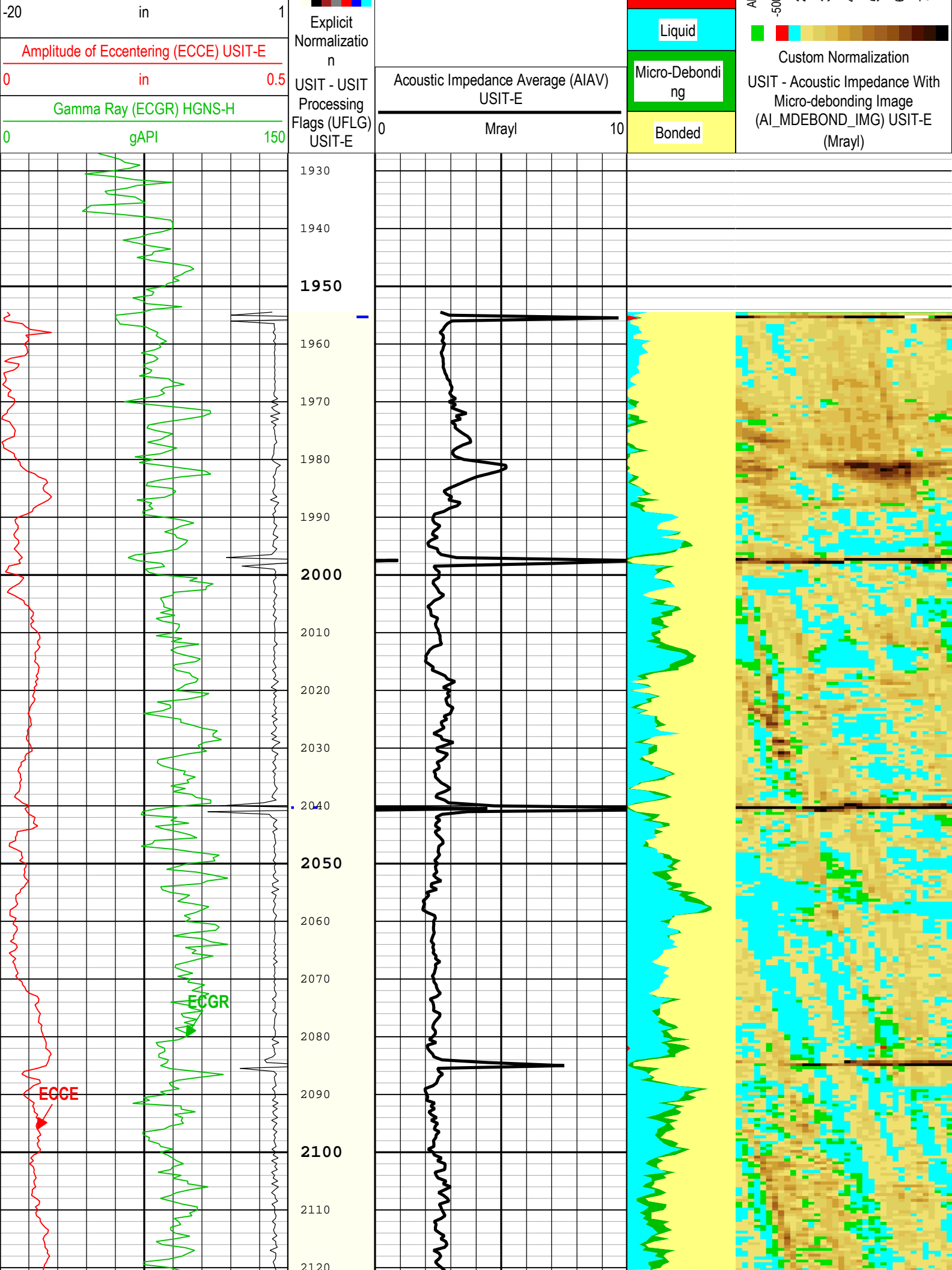
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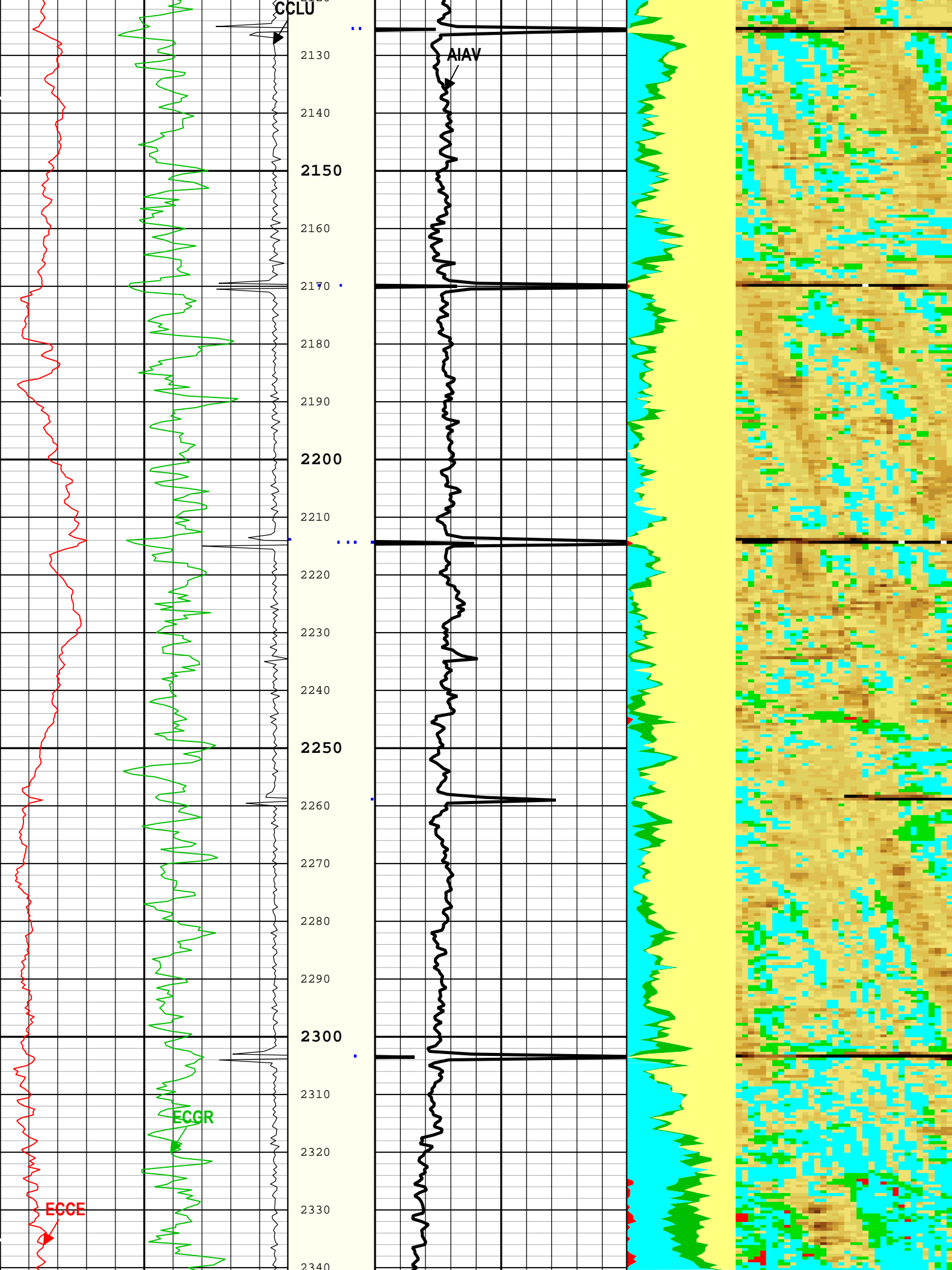
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Creation Date: 11-Apr-2017 18:40:32

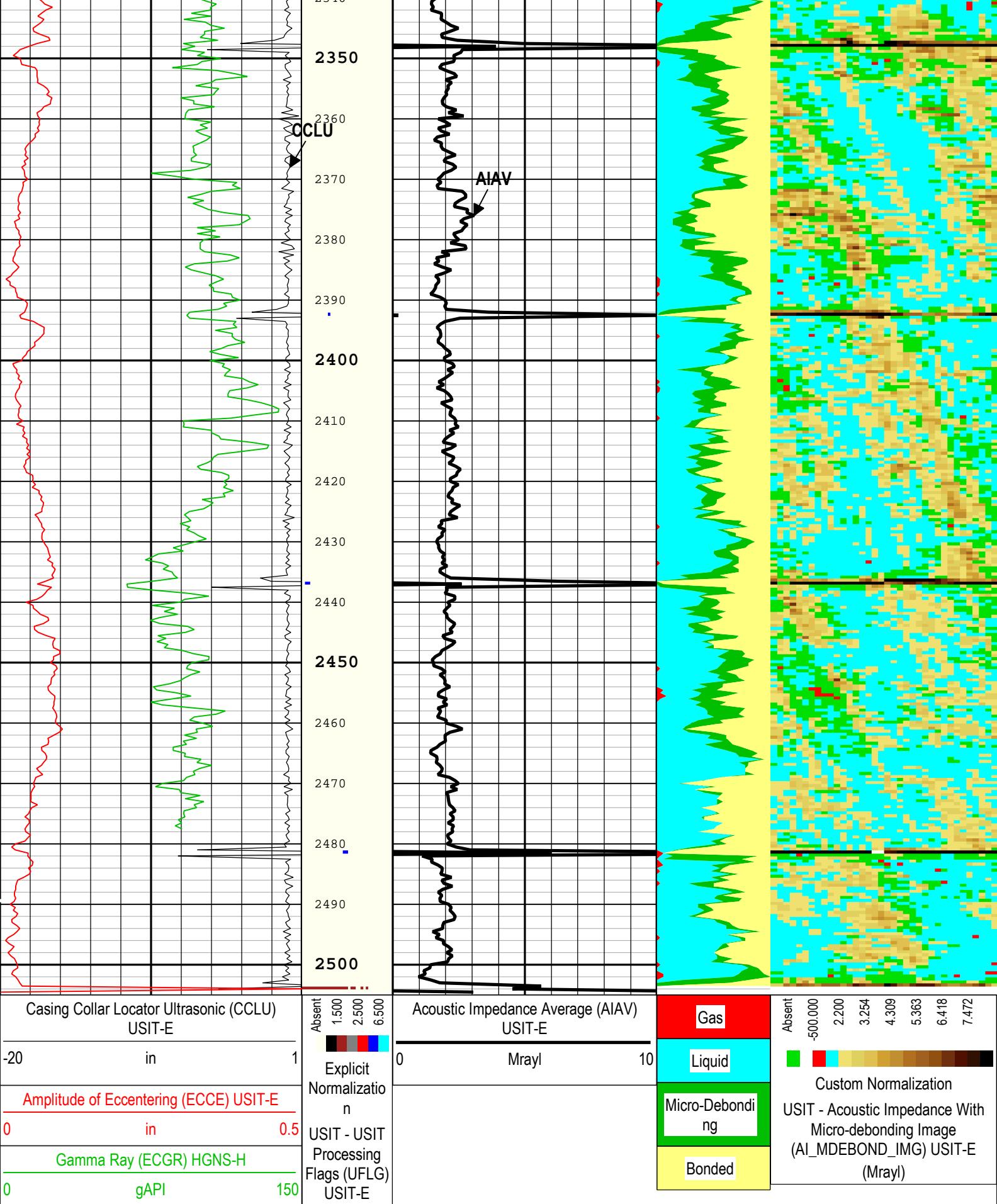
Channel Processing Parameters

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	16440.8	ft
CDEN	Cement Density	HGNS-H	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DFD	Drilling Fluid Density	Borehole	9	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
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	1.1	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0.05	Mrayl
UFGDE	Fiberglass Density	USIT-E	16.27	lbm/gal
UFGPS	Fiberglass Processing Selection	USIT-E	No	
UFGVI	Fiberglass Velocity	USIT-E	9678.48	ft/s







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: 11-Apr-2017 18:40:41

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	16440.8	ft
CDEN	Cement Density	HGNS-H	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DFD	Drilling Fluid Density	Borehole	9	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
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	1.1	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0.05	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

Depth Zone Parameters

Parameter	Value	Start (ft)	Stop (ft)
BS	13.5	1927	1936
BS	8.5	1936	2505

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	40	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	7500	ft

SON-DEP TIME	Starting Depth Log for Ultrasonics	USIT-E	7500	us
WINB	Window Begin Time	USIT-E	31.88	us
WINE	Window End Time	USIT-E	71.88	us

XYZ

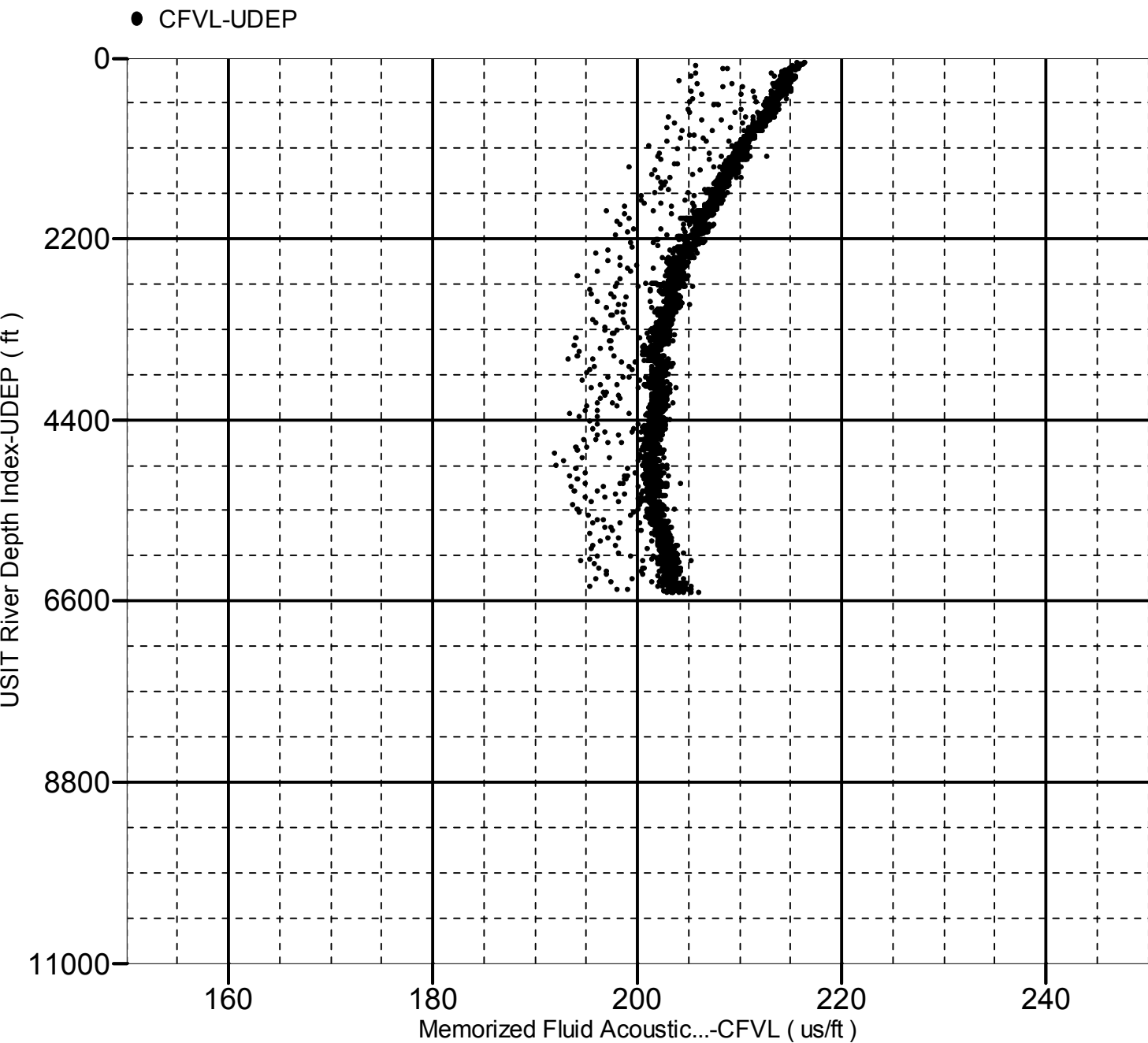
Company:Noble Energy Inc Well:Wells Ranch State AA33-744

One: Log[4]:Up:S004

Fluid Acoustic Slowness vs Depth

2D Cross Plot

Index Range: From 6503.00 to 63.00 ft



XYZ

Company:Noble Energy Inc Well:Wells Ranch State AA33-744

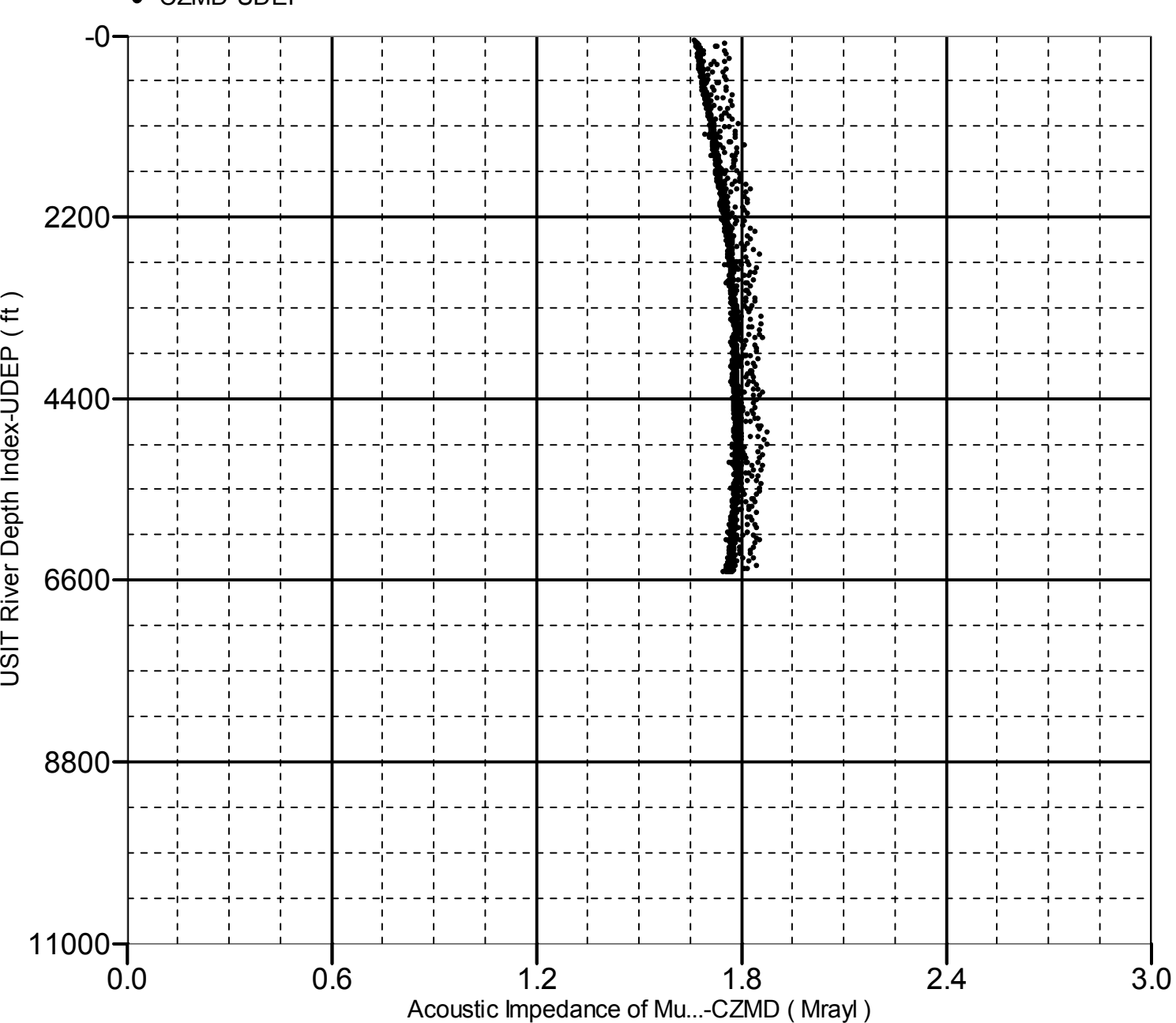
One: Log[4]:Up:S004

Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 6503.00 to 63.00 ft

● CZMD-UDEP



Company: Noble Energy Inc

Schlumberger

Well: Wells Ranch State AA33-744

Field: Wattenberg

County:	Weld
Country:	US
UltraSonic Summary Print	