

Company: Noble Energy Inc

Well: Hurley H26-756

Field: Wattenberg

County: Weld

State: Colorado

UltraSonic Summary Print

County: Weld

Field: Wattenberg

Location: SENW Sec. 26, T3N, R65W

Well: Hurley H26-756

Company: Noble Energy Inc

Location:

SENW Sec. 26, T3N, R65W

SHL: 2366' FNL & 1364' FWL

Lat/Long: 40.1971/-104.63533

Elev.: K.B. 4852.00 ft

G.L. 4822.00 ft

D.F. 4852.00 ft

Permanent Datum:

Log Measured From:

Drilling Measured From:

Ground Level

Kelly Bushing

Kelly Bushing

Elev.: 30.00 ft

above Perm.Datum

API Serial No.

05-123-46772

Section: 26

Township: 3N

Range: 65W

Logging Date	18-Aug-2018
Run Number	ONE
Depth Driller	16186.00 ft
Schlumberger Depth	16186.00 ft
Bottom Log Interval	6770.00 ft
Top Log Interval	100.00 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	1932.00 ft
To	16186.00 ft
Casing/Tubing Size	5.5 in
Weight	20 lbm/ft
Grade	P110
From	0.00 ft
To	16173.50 ft
Max Recorded Temperatures	222.87 degF
Logger on Bottom	18-Aug-2018
Unit Number	2377
Recorded By	Ashley Rosacker
Witnessed By	Bill Mansfield

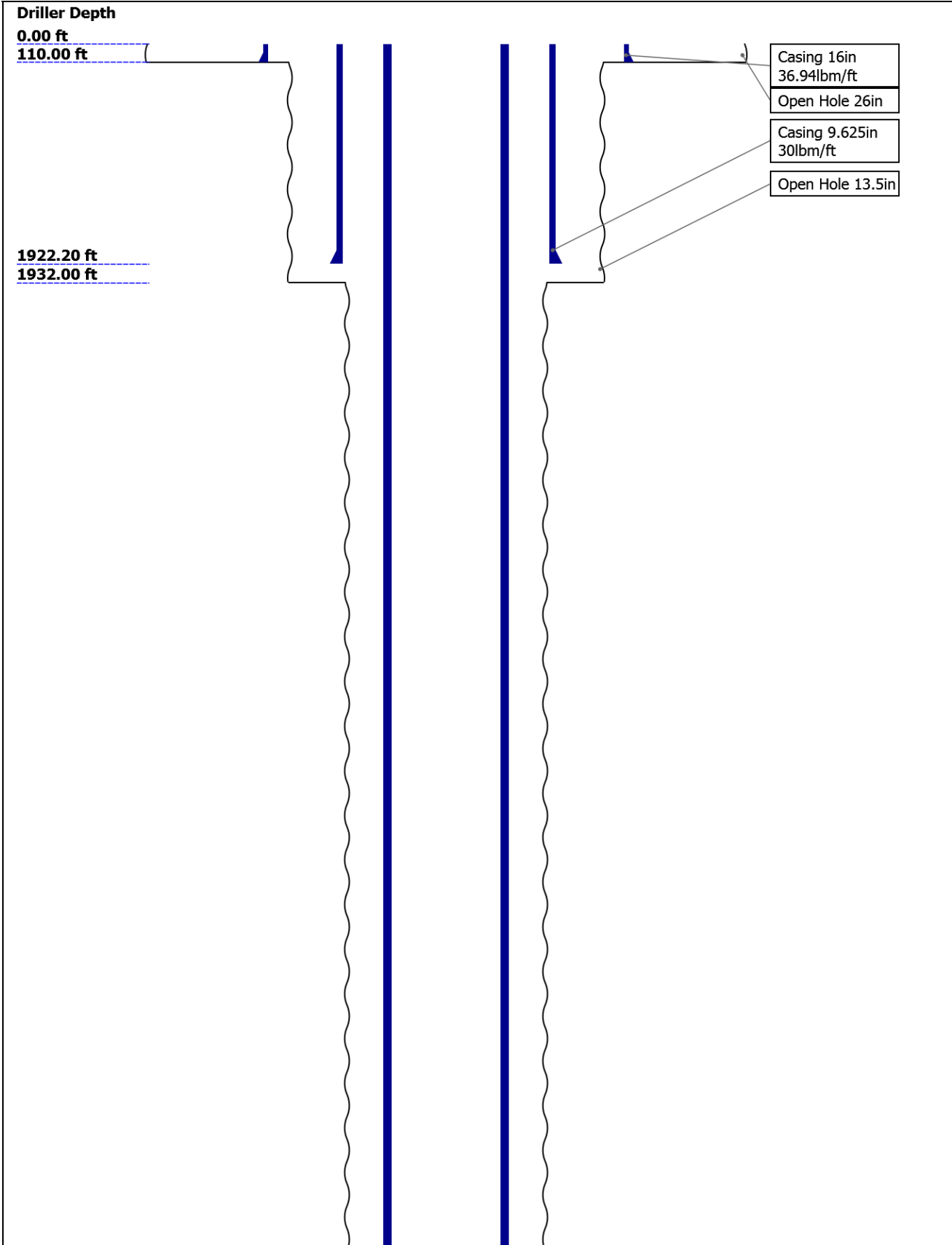
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Contents	
1. Header	
2. Disclaimer	
3. Contents	
4. Well Sketch	
5. Borehole Size/Casing/Tubing Record	
6. Remarks and Equipment Summary	
7. Depth Summary	
8. USI Fluid Properties Measurement_1	
9. ONE 2500 PSI Main Pass	
9.1 Integration Summary	
9.2 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	
	in)
	13. Tail

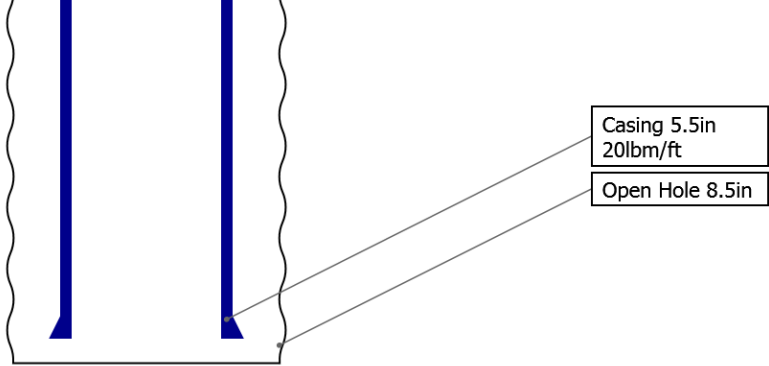
- 10.2 Software Version
- 10.3 Composite Summary
- 10.4 Log (DJ Basin Ultrasonic Cement Summary Report)
- 10.5 Parameter Listing
- 11. XYZ (USI Fluid Acoustic Slowness vs Depth 3.0 in)
- 12. XYZ (USI Acoustic Impedance of Mud vs Depth 3.0

Well Sketch



16173.50 ft

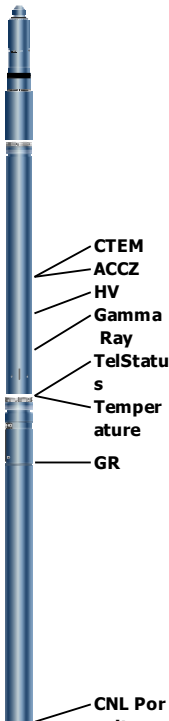
16186.00 ft

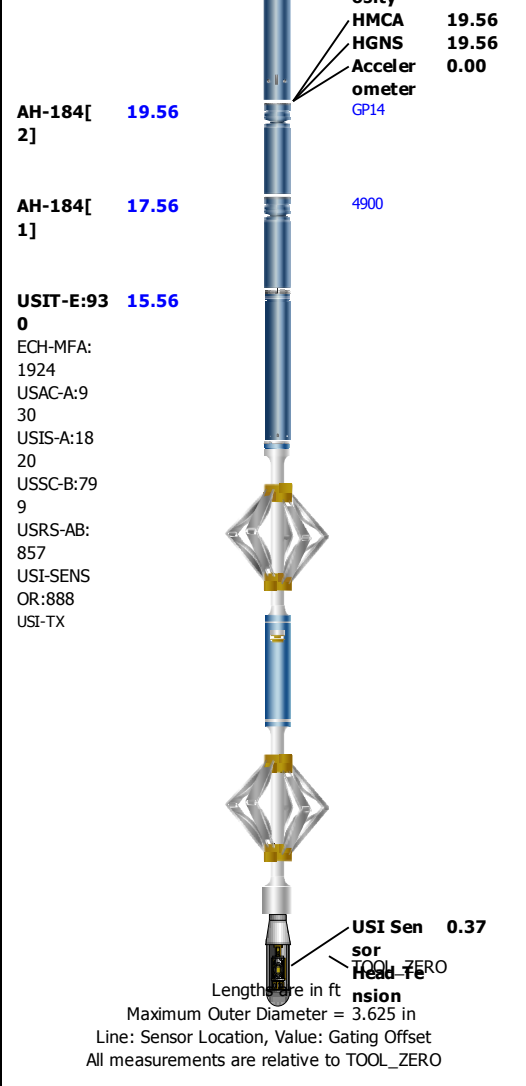


Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	26	13.5	8.5			
Top Driller (ft)	0	110	1932			
Top Logger (ft)	0	110	1932			
Bottom Driller (ft)	110	1932	16186			
Bottom Logger (ft)	110	1932	16186			
Casing						
Size (in)	16	9.625	5.5			
Weight (lbm/ft)	36.94	30	20			
Inner Diameter (in)	15.572	9.036	4.778			
Grade	N/A	J55	P110			
Top Driller (ft)	0	0	0			
Top Logger (ft)	0	0	0			
Bottom Driller (ft)	110	1922.2	16173.5			
Bottom Logger (ft)	110	1922.2	16173.5			

Remarks and Equipment Summary

ONE: Toolstring				ONE: Remarks	
Equip name Length LEH-QT 38.95 LEH-QT		MP name Offset		Thank you for choosing Schlumberger!	
		CTEM 31.97		Toolstring run as per tool sketch and client logging program.	
		ACCZ 0.00		5" gemcos run on EDTC and USAC for centralization.	
		HV 0.00		This is the first log in well.	
		Gamma 30.1		Main pass logged at 2500 PSI, Repeat pass logged at 0 PSI.	
		Ray		BHT: 220 degF	
		TelStatu 28.97			
		s			
		Temper 28.94			
		ature			
		GR 28.23			
HGNS-H:4 28.97 736 HGNS-H:298 7 NPV-N NSR-F:507 0 HGNS-H:4 736 HACCZ-H: 5118 HMCA-H		CNL Por 21.89 osity			



Depth Summary			
	ONE		
Depth Measuring Device			
Type	IDW-B		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Calibration Cable Type			
Wheel Correction 1	0		
Wheel Correction 2	0		
Tension Device			
Type	CMTD-B/A		
Serial Number			
Calibration Date			
Calibrator Serial Number			
Number of Calibration Points	0		
Logging Cable			
Type	7-46NT-XS		
Serial Number			
Length	24000.00 ft		
Conveyance Type	Wireline		

Rig Type	Crane	
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		Logs depth shifted to marker joint at 6453.5 ft.
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	6768.17	88.38

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 : 33.60m(110.25ft) to 36.19m(118.75ft)
MUD_N_FRP = 1.13
DFD = 1.01g/cm3(8.40lbm/gal)
CZMD median computed in free pipe normalization interval = 1.65 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 2018 SP2	8.2.102758.3100

Pass Summary	
1	100%
2	100%
3	100%
4	100%
5	100%
6	100%
7	100%
8	100%
9	100%
10	100%
11	100%
12	100%
13	100%
14	100%
15	100%
16	100%
17	100%
18	100%
19	100%
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86	100%
87	100%
88	100%
89	100%
90	100%
91	100%
92	100%
93	100%
94	100%
95	100%
96	100%
97	100%
98	100%
99	100%
100	100%

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	88.38 ft	6768.17 ft	18-Aug-2018 1:48:56 PM	18-Aug-2018 2:46:52 PM	ON	-1.48 ft	No

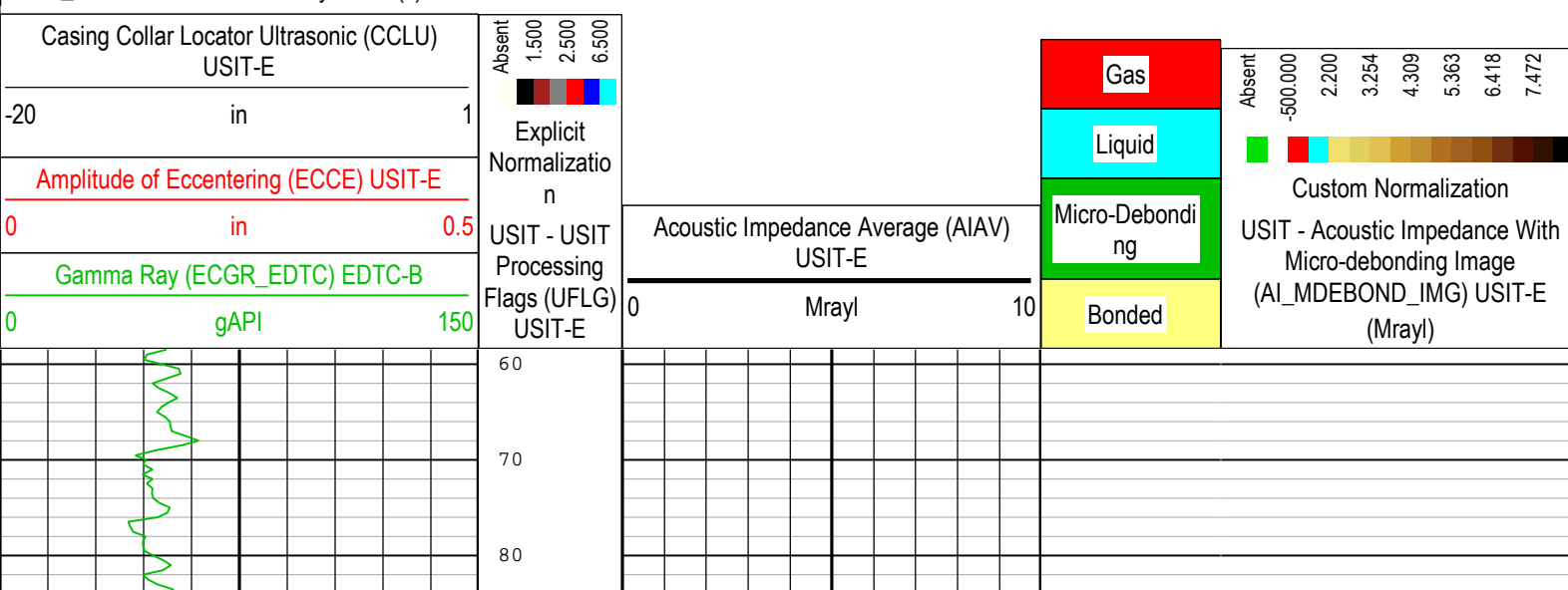
All depths are referenced to toolstring zero

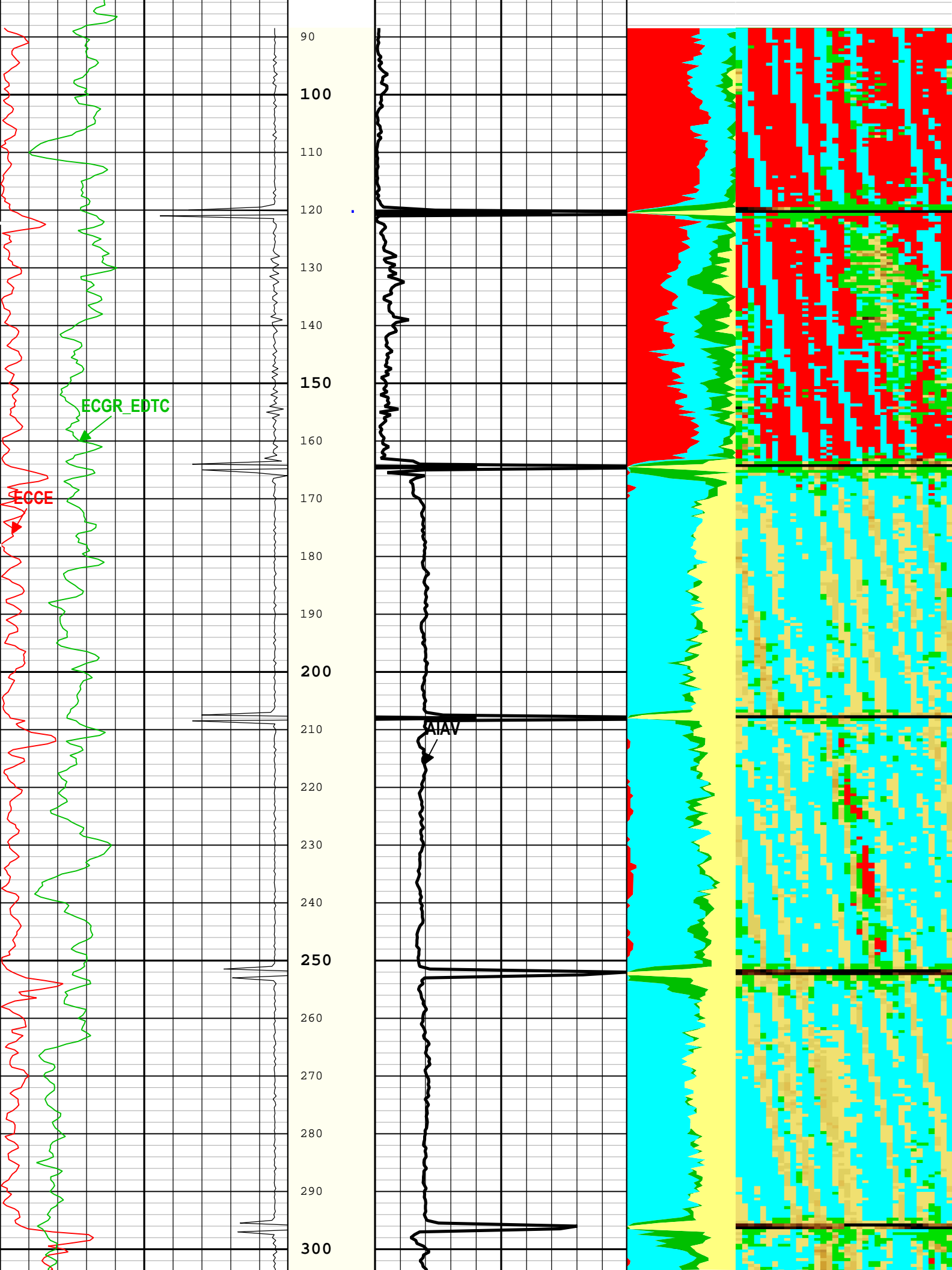
Log	Company:Noble Energy Inc	Well:Hurley H26-756
		ONE: Log[4]:Up:S006

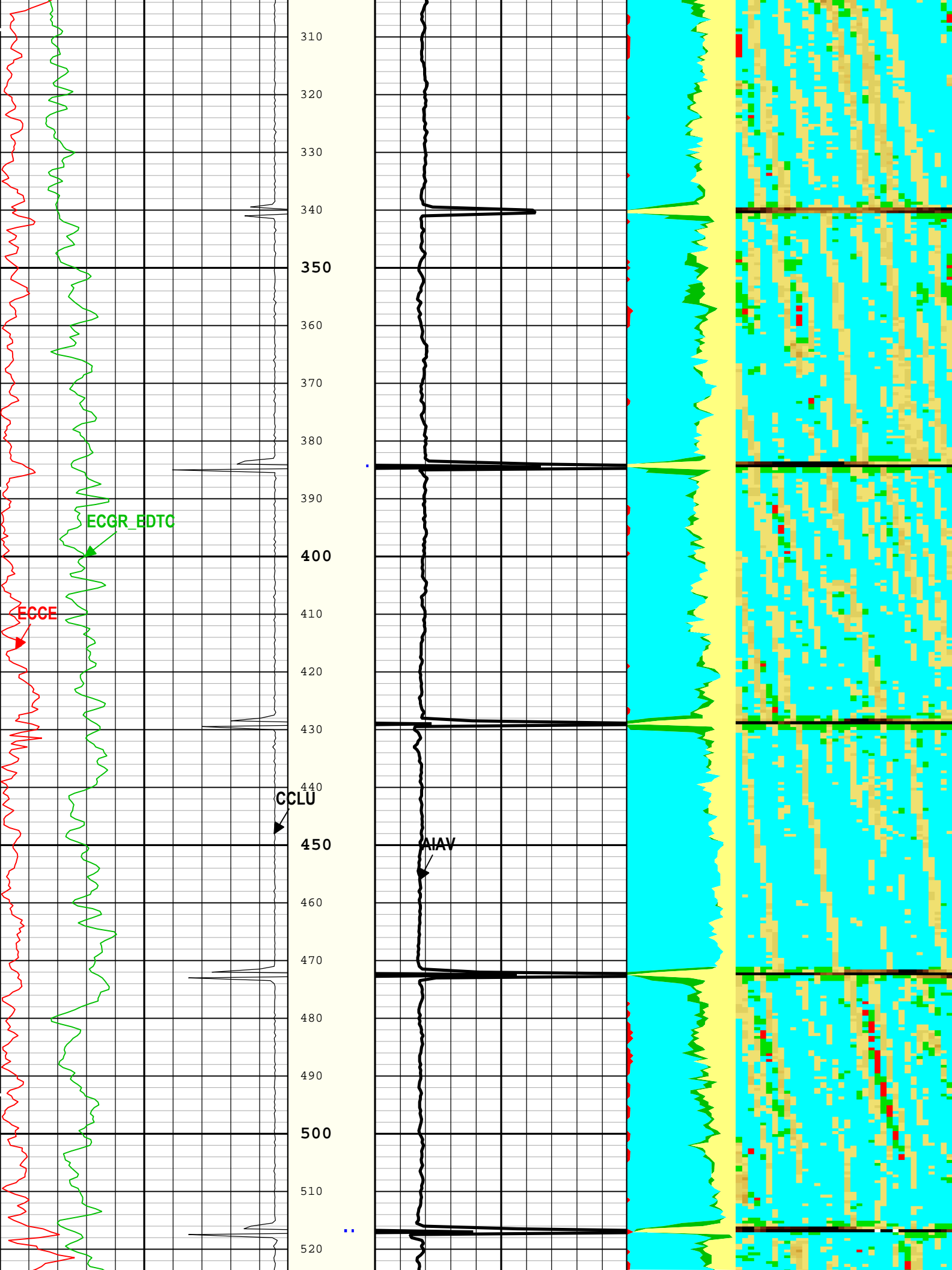
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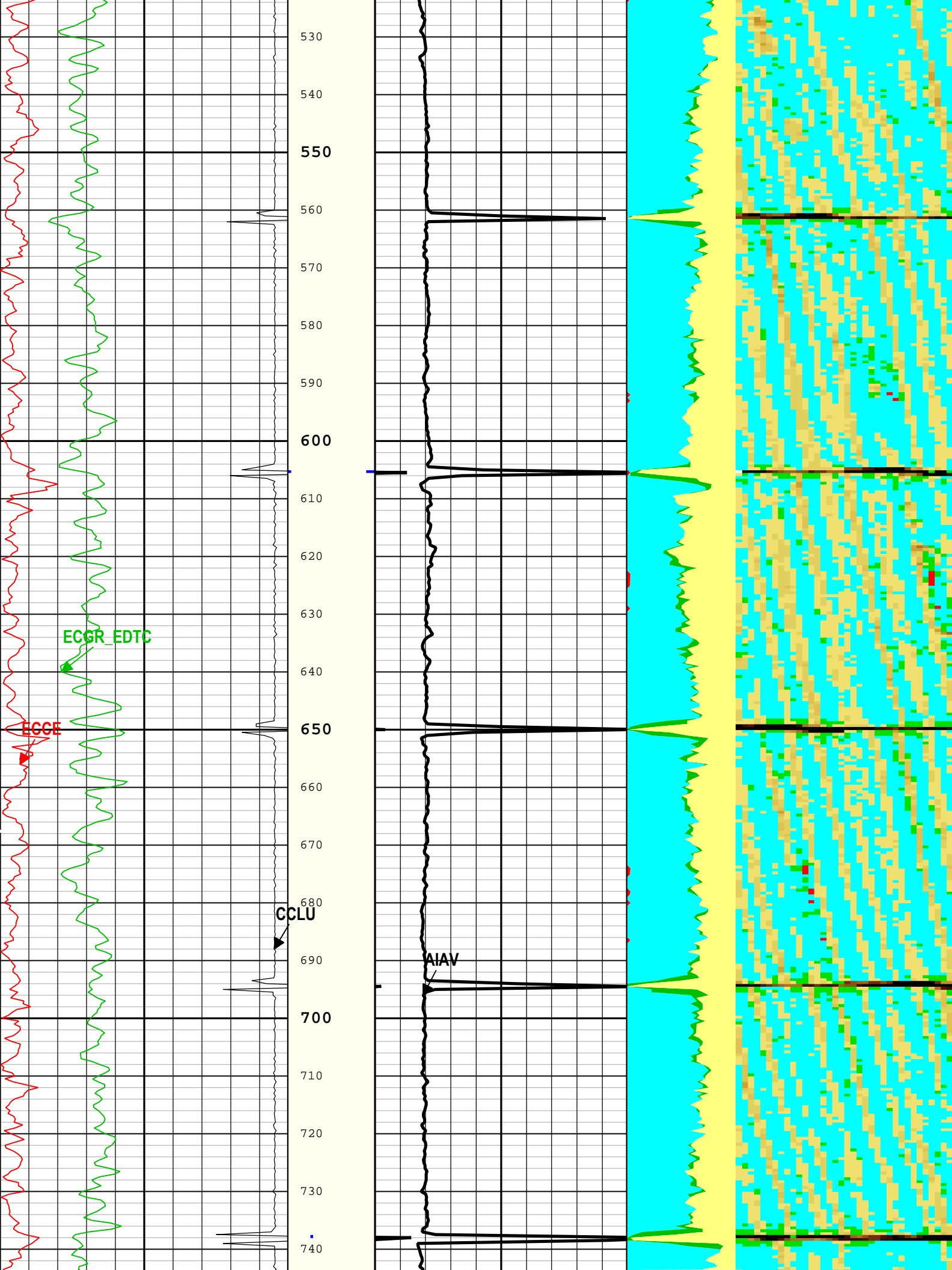
Creation Date: 18-Aug-2018 16:28:29

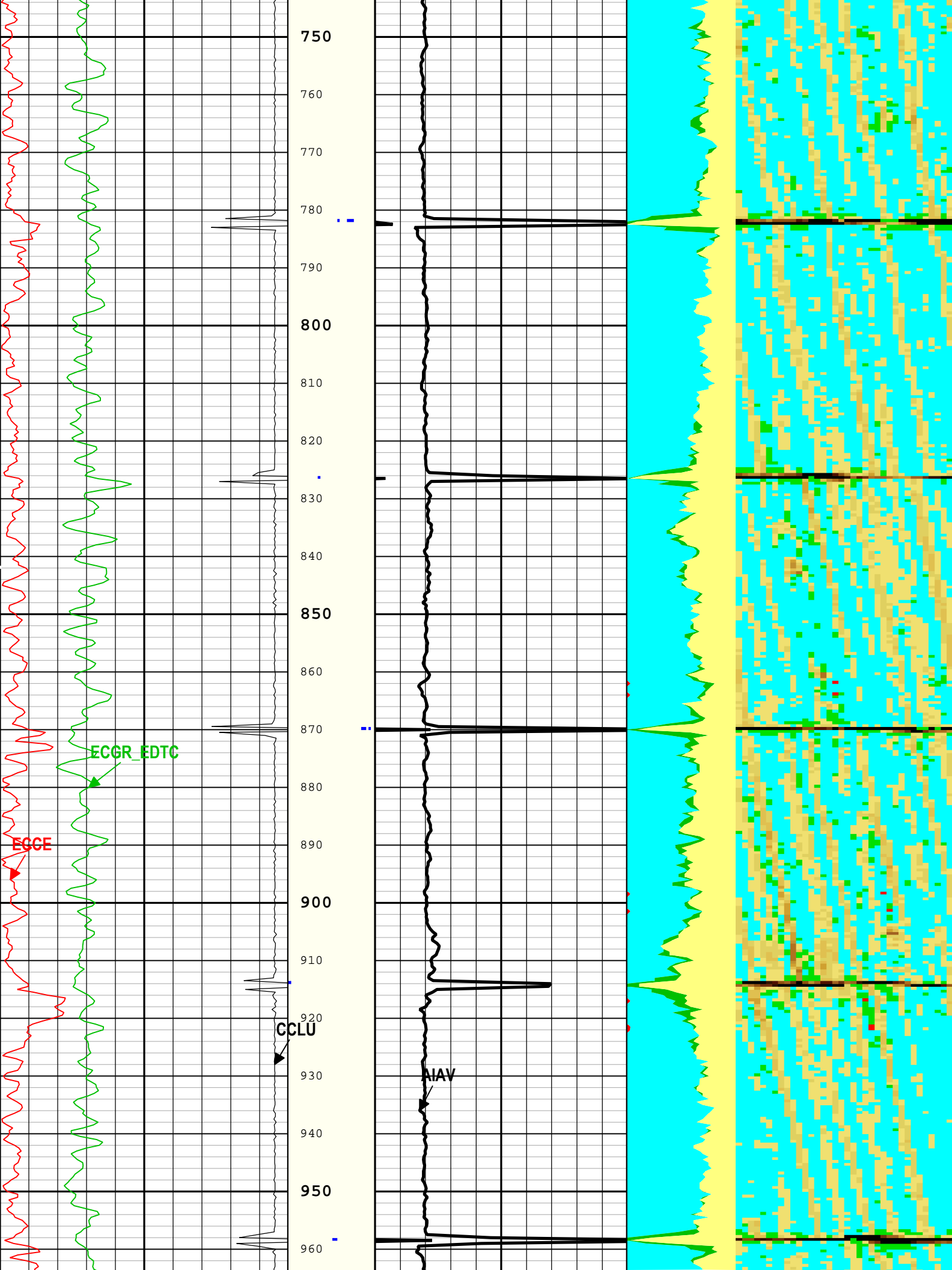
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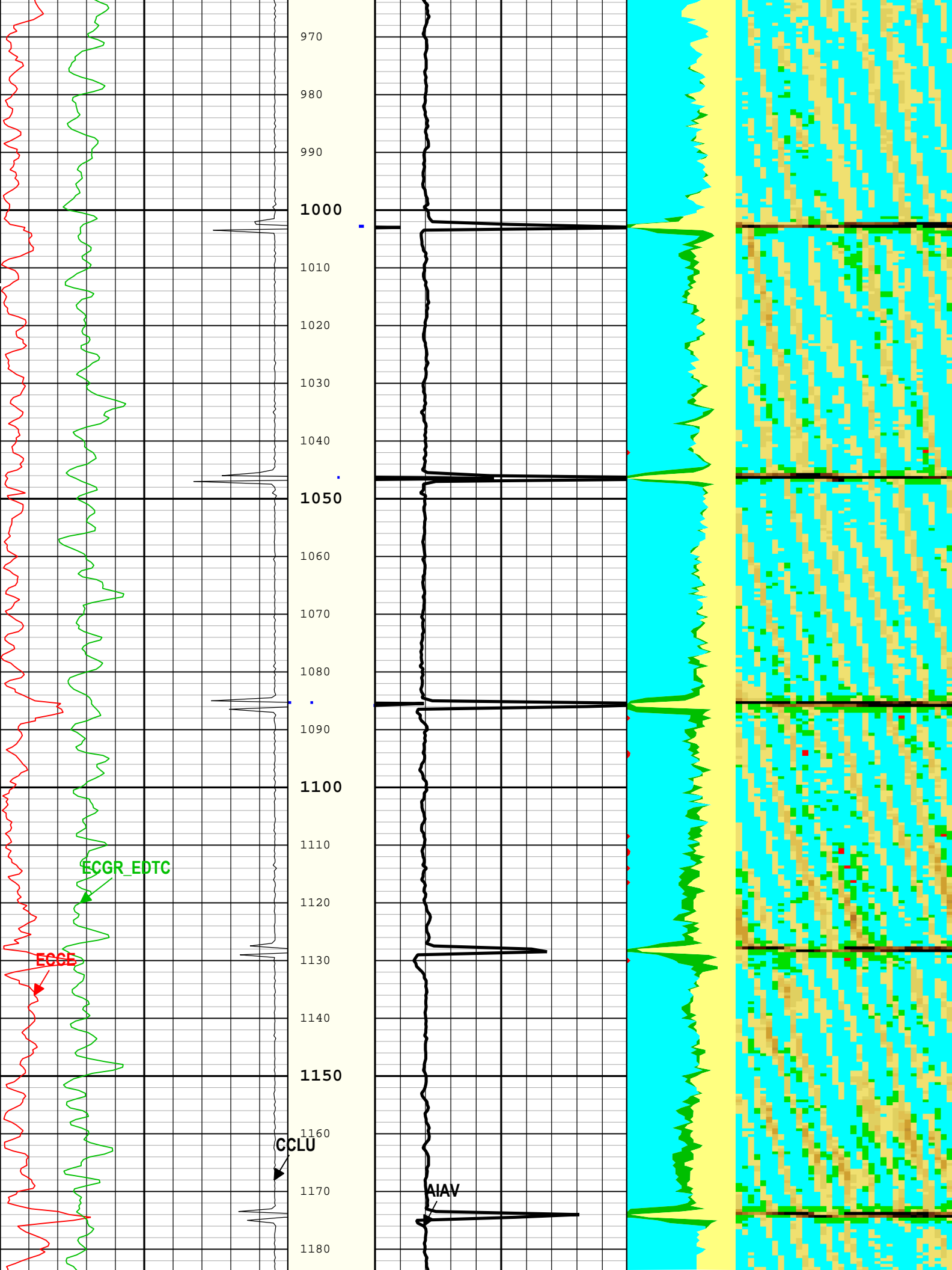


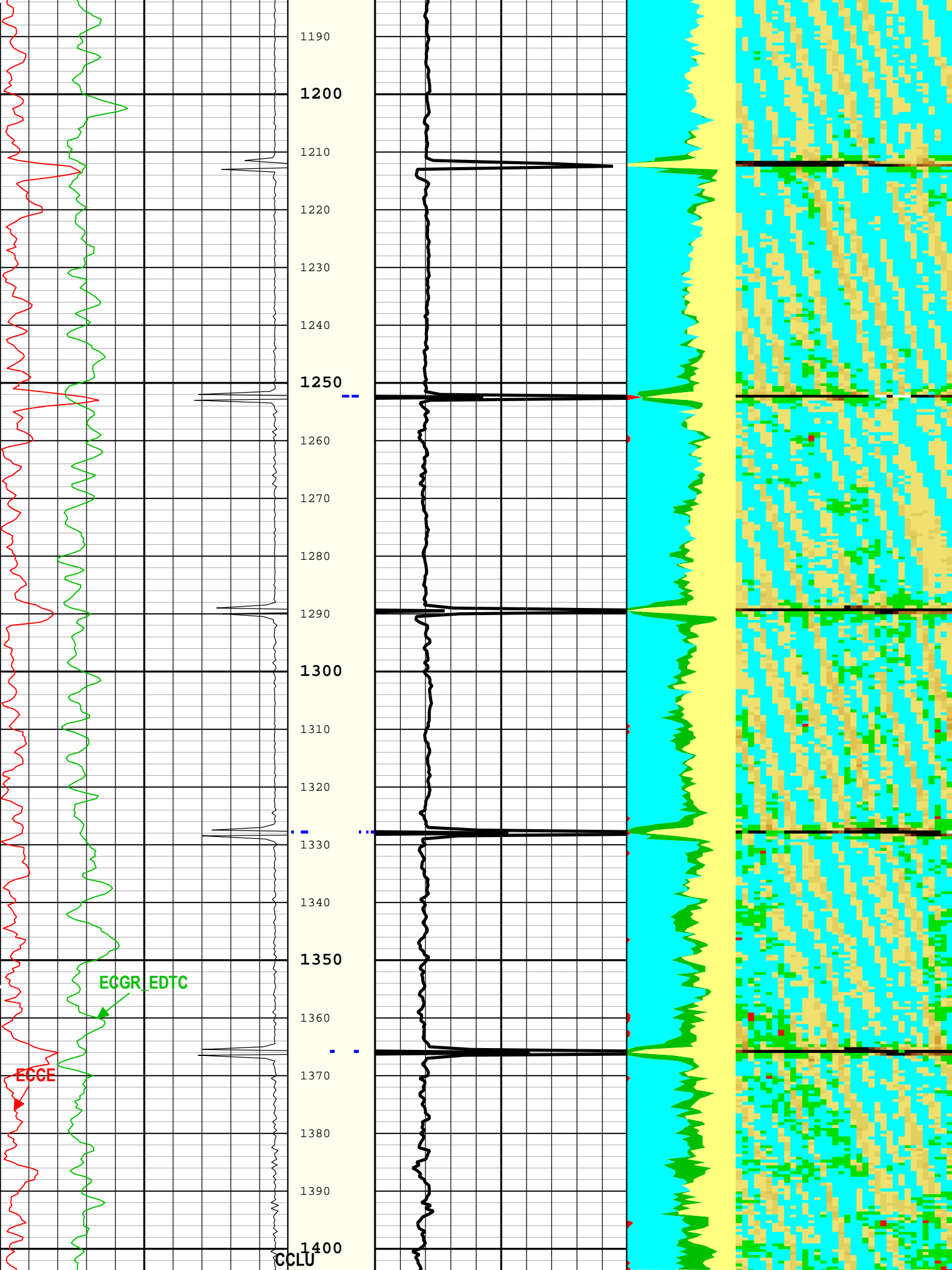


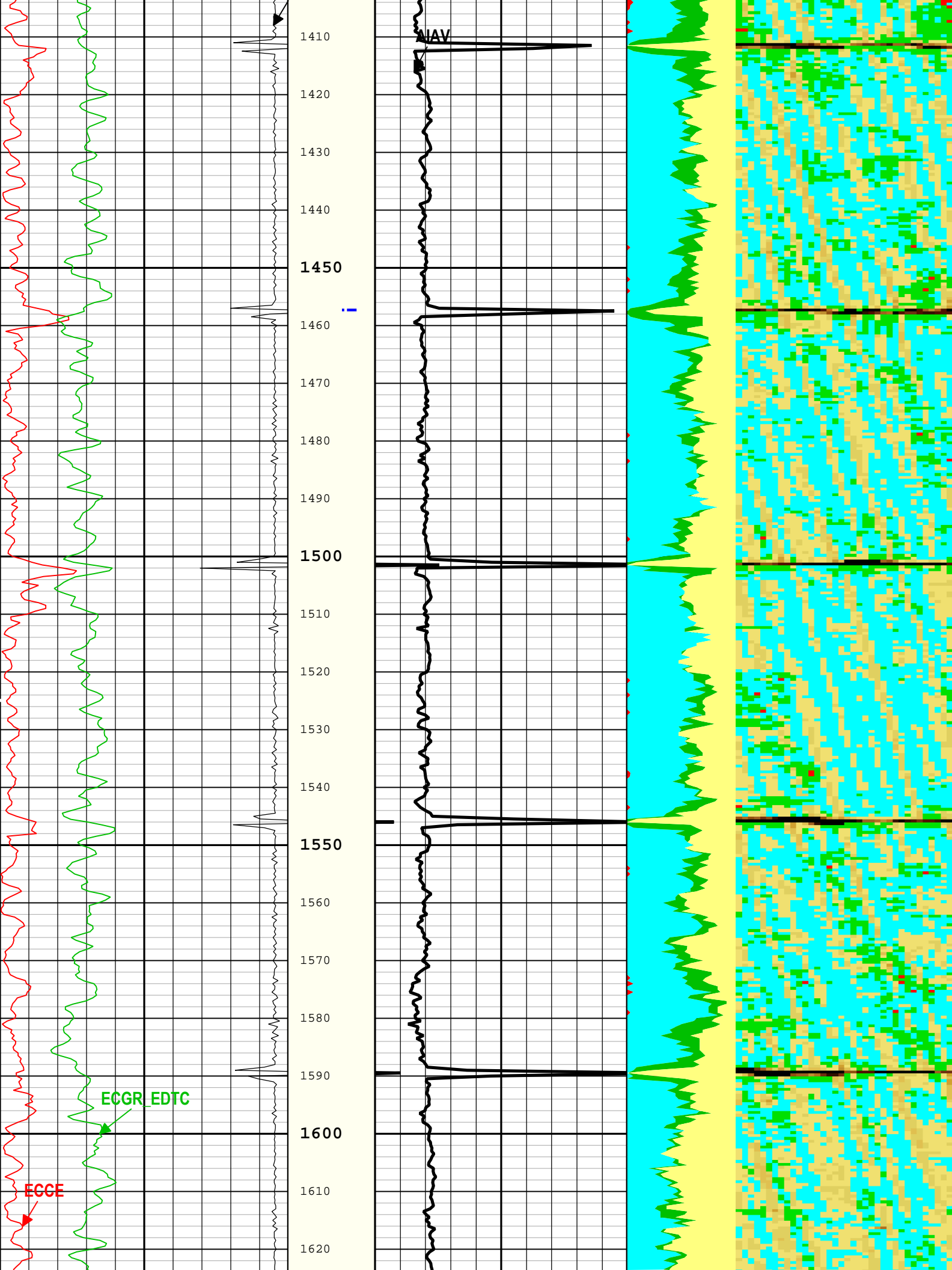


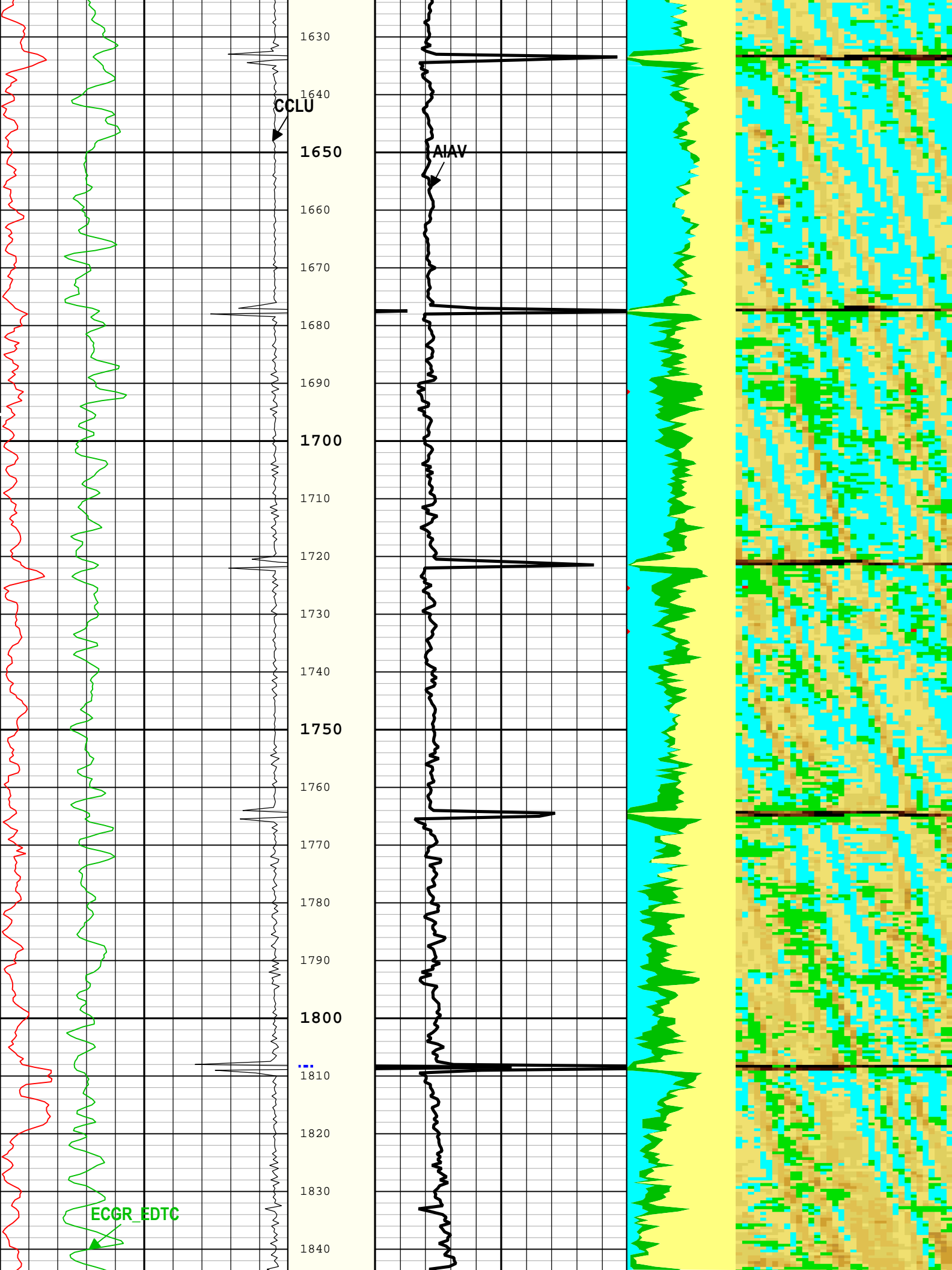


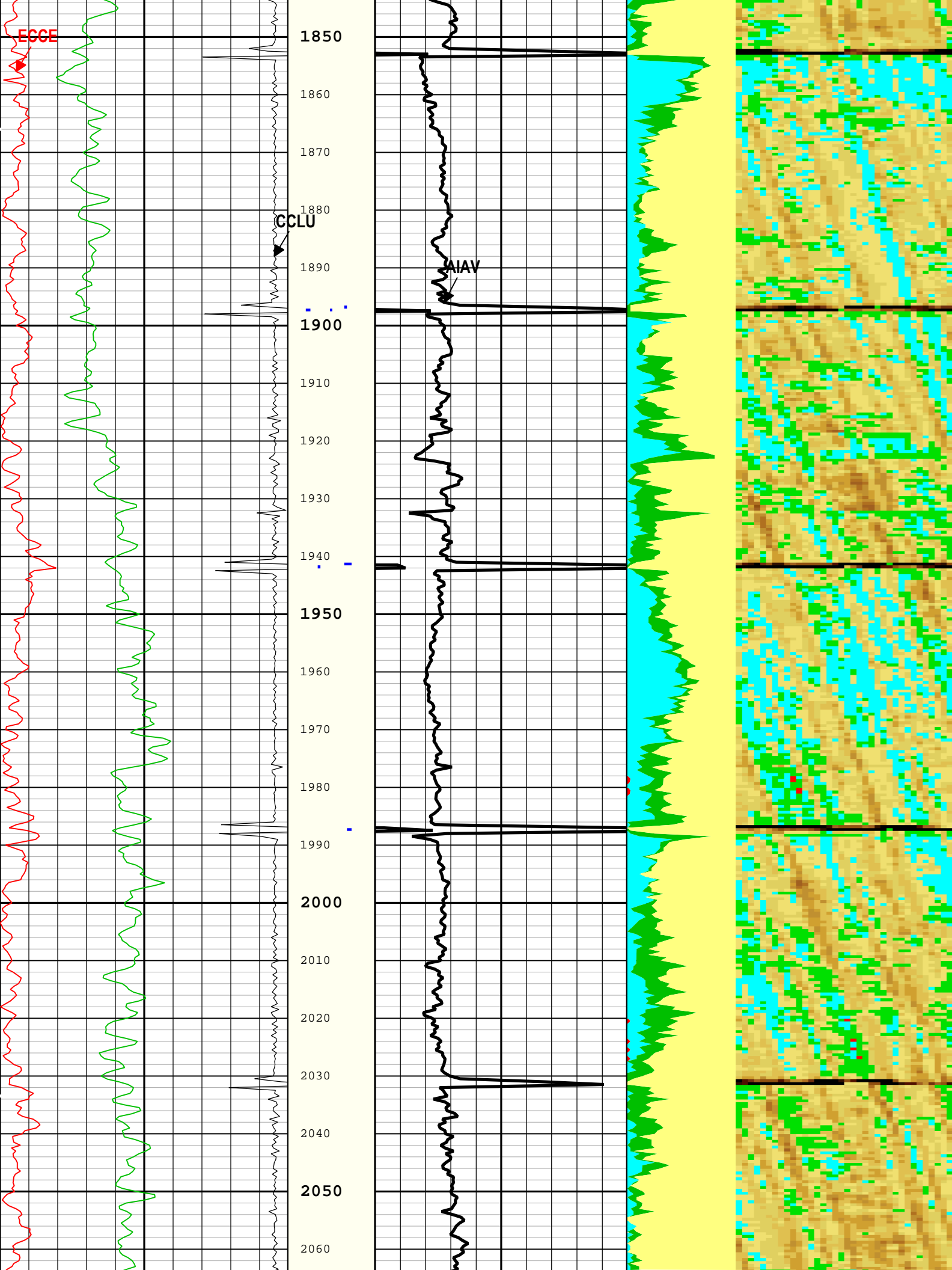


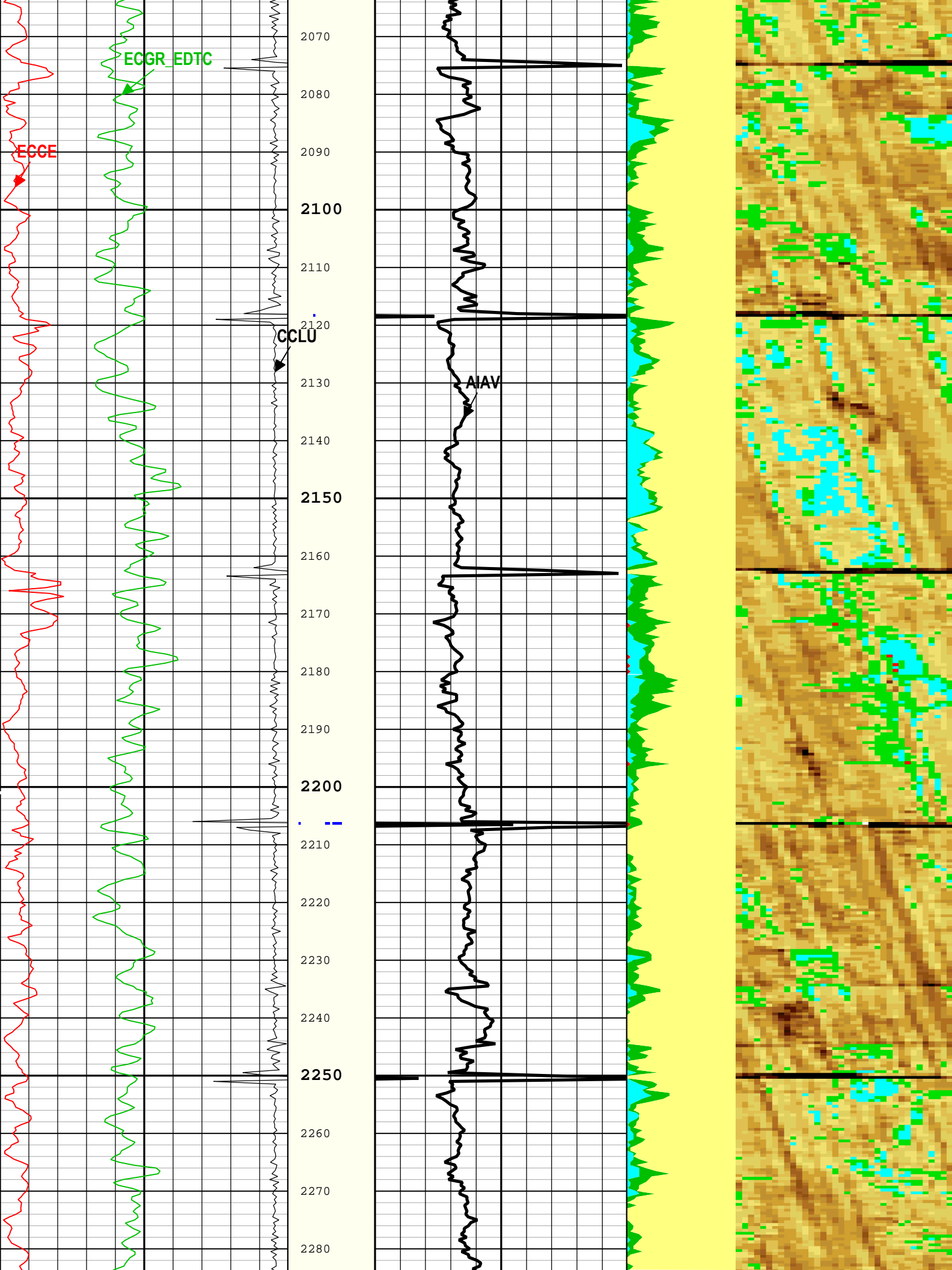


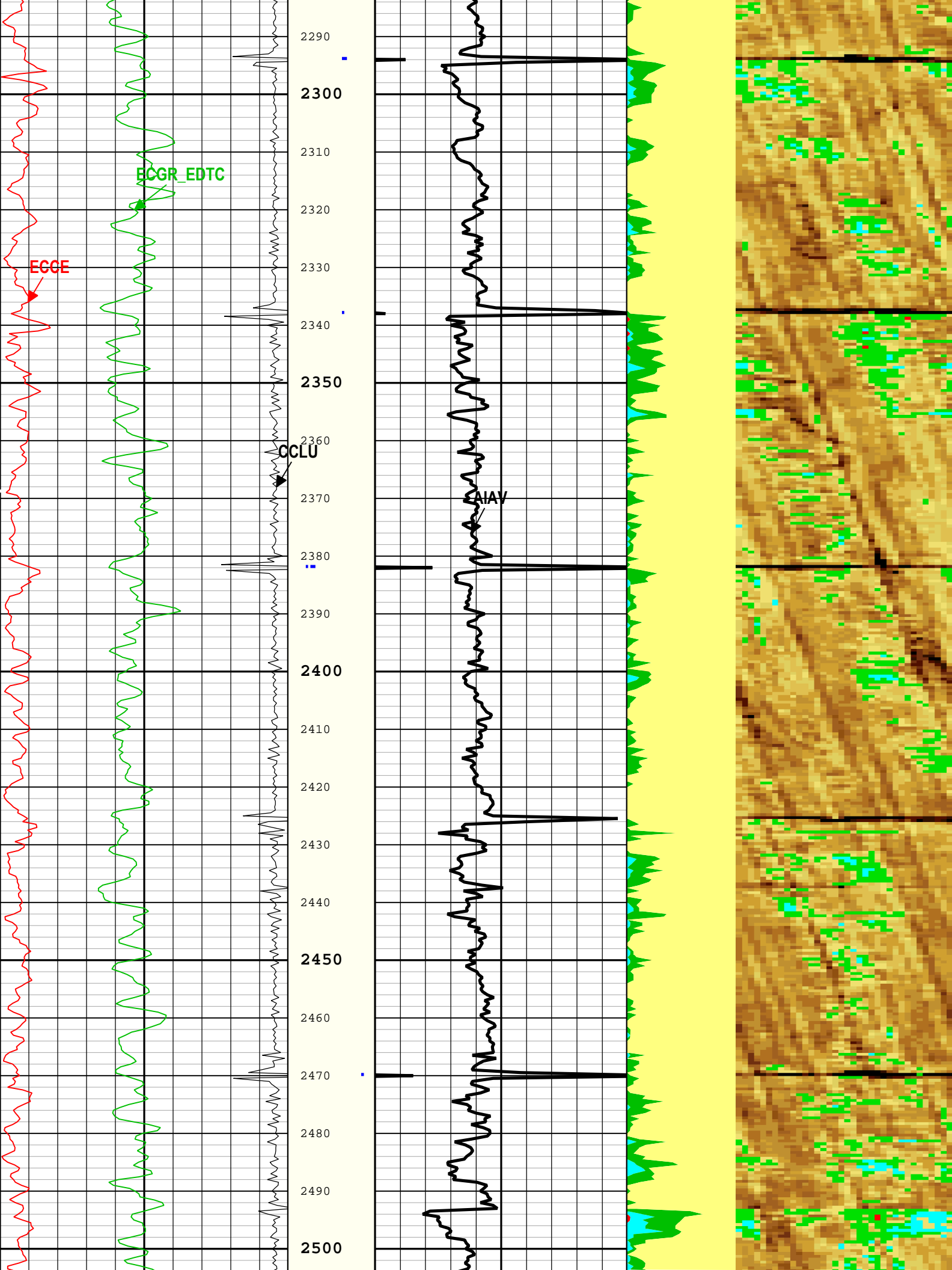


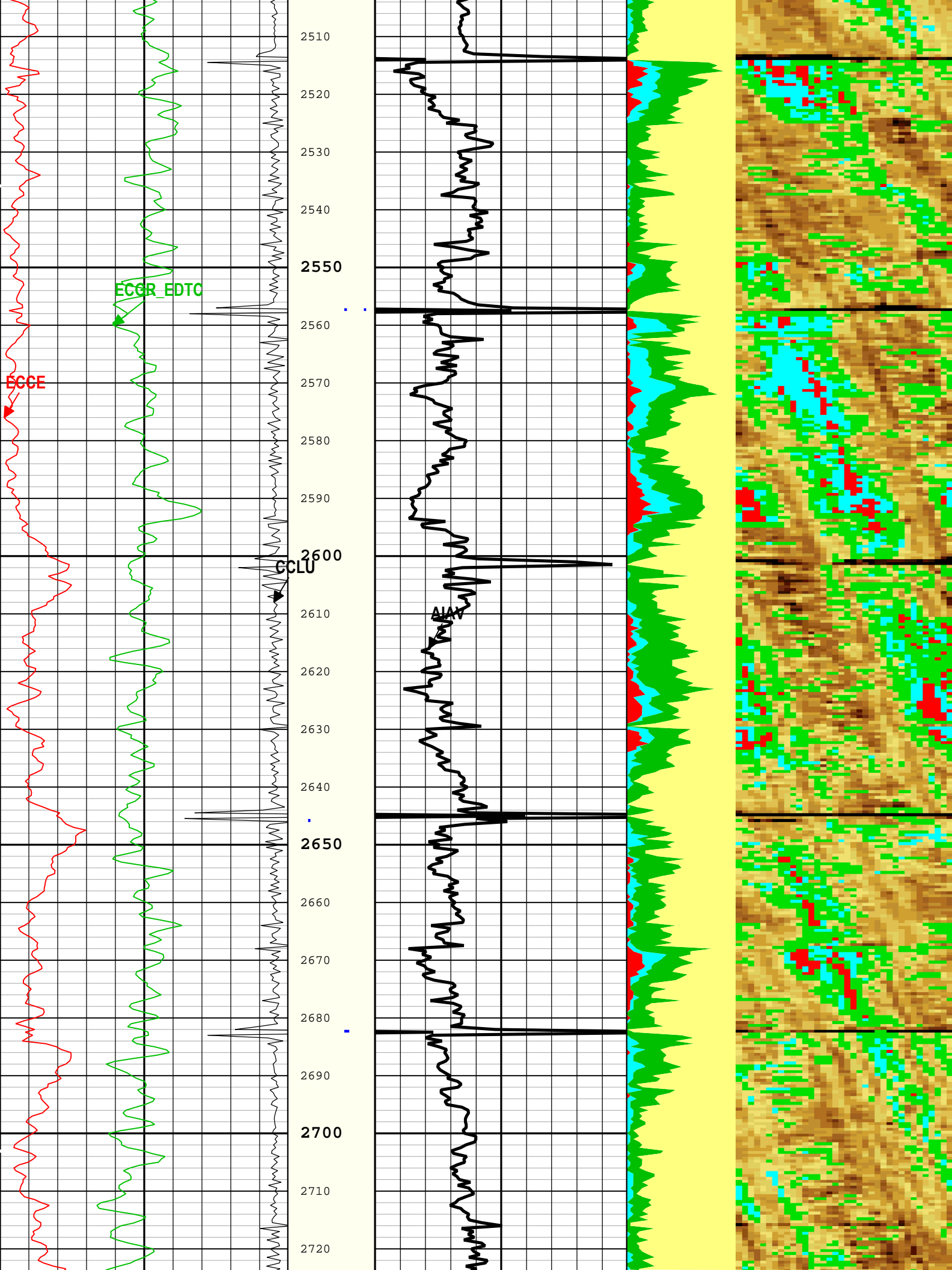


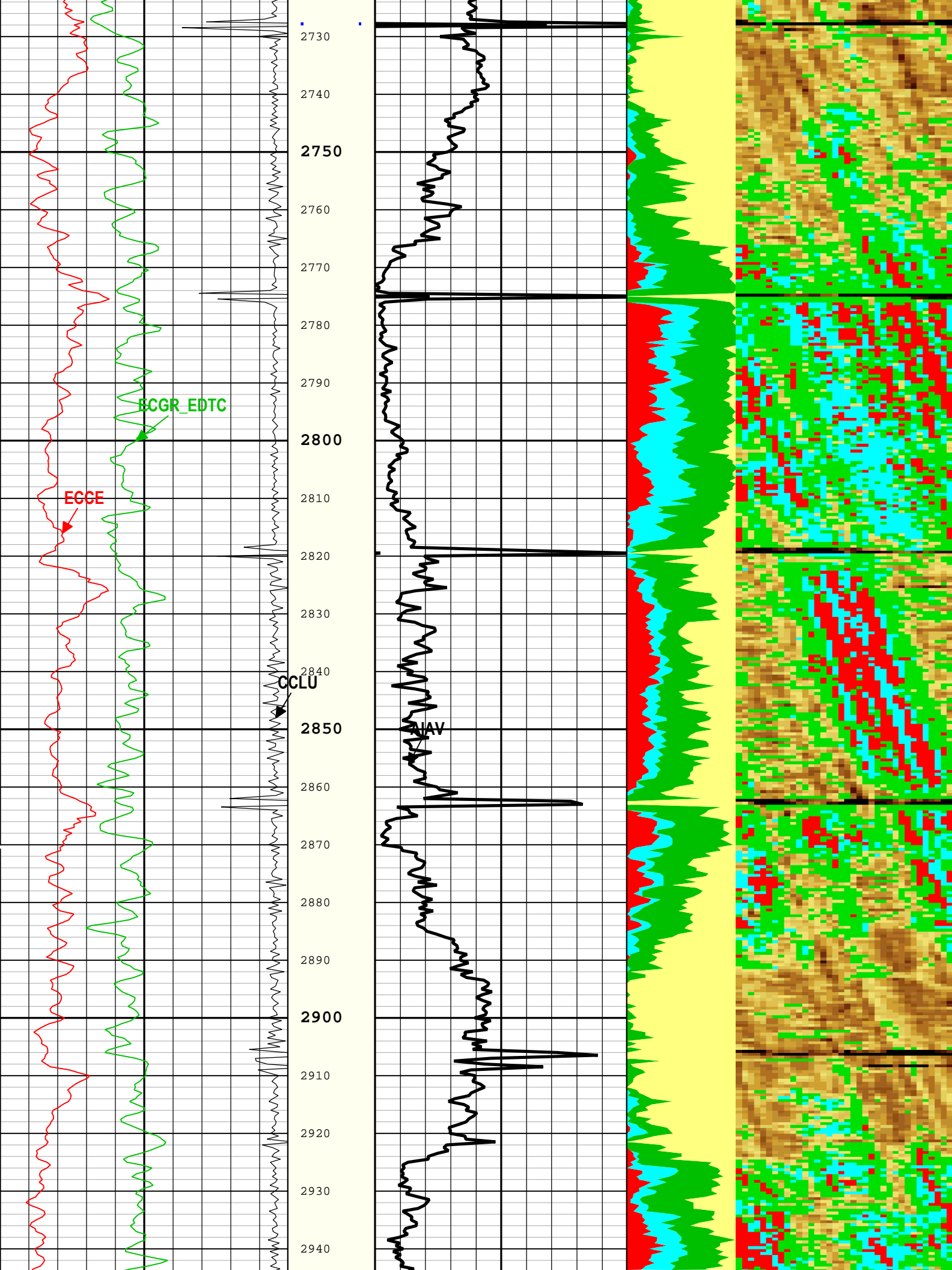


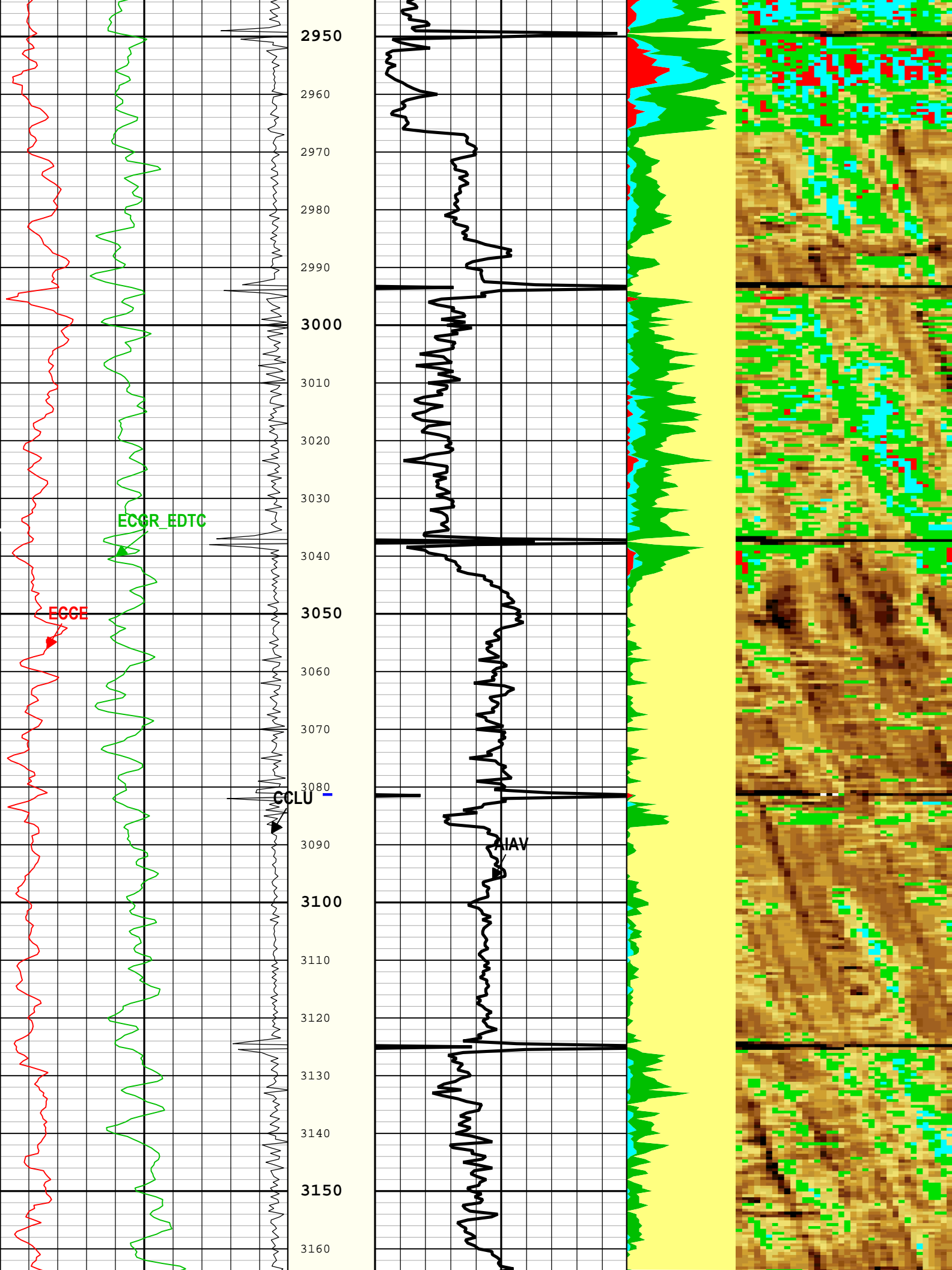


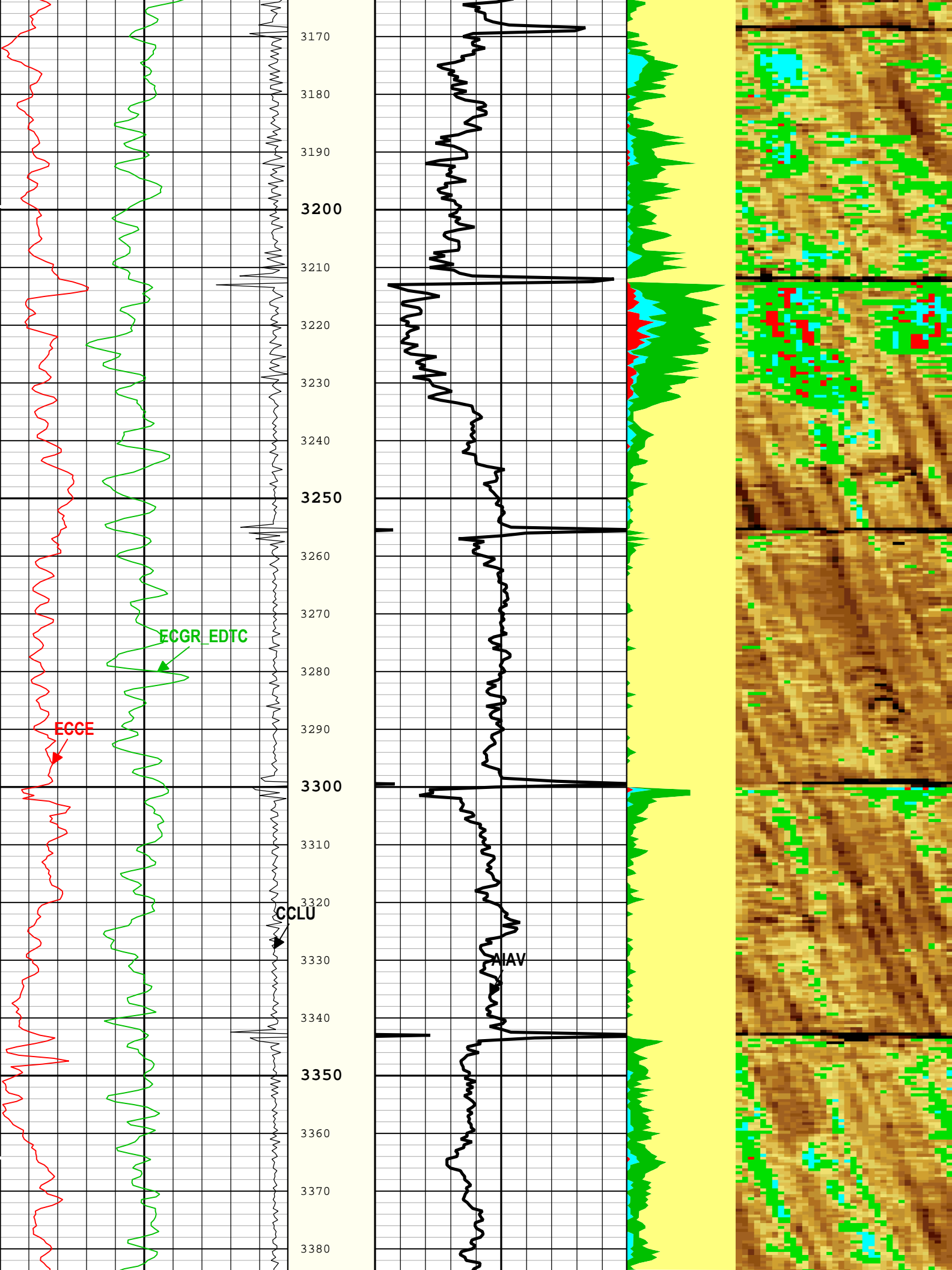


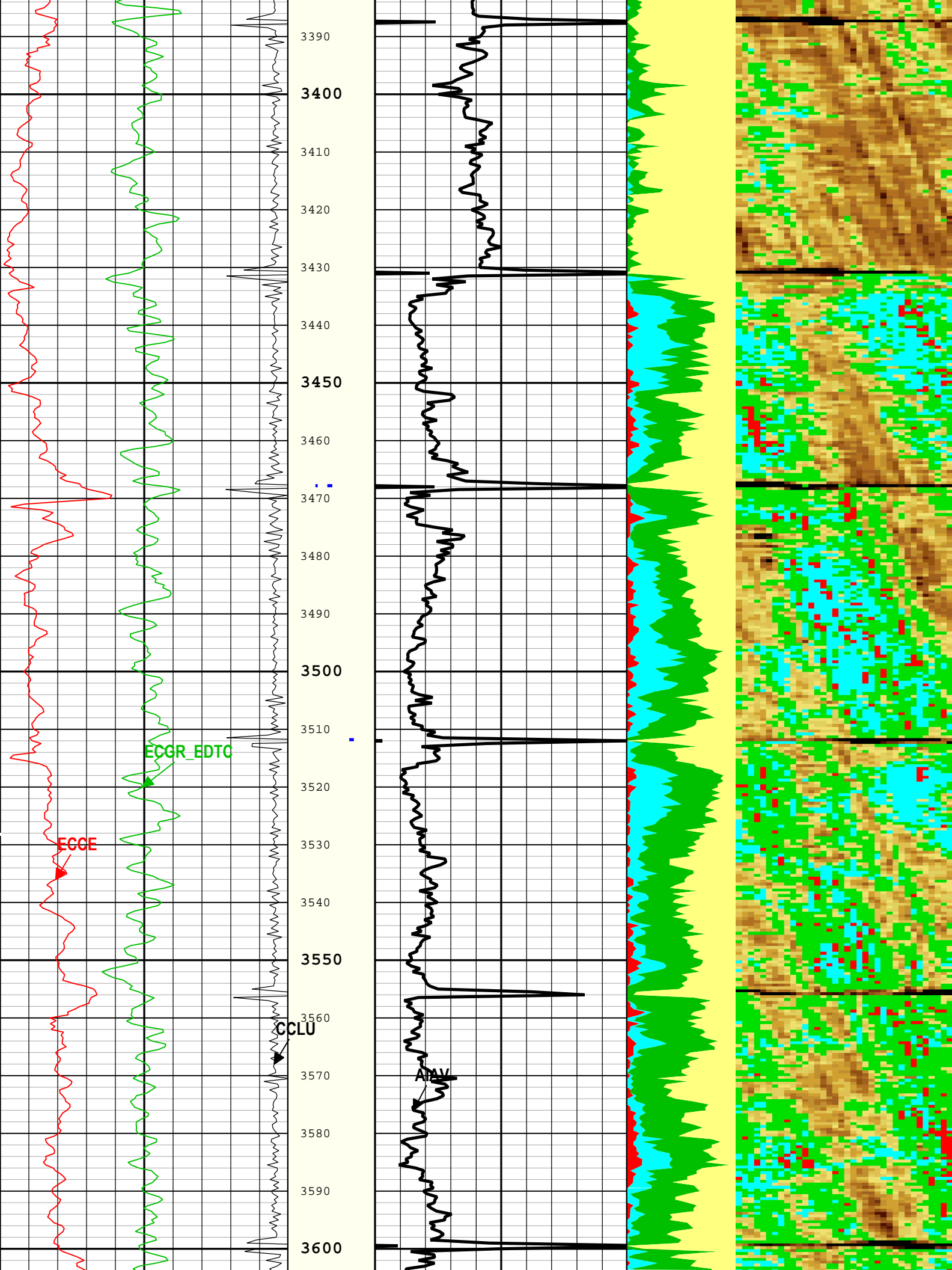


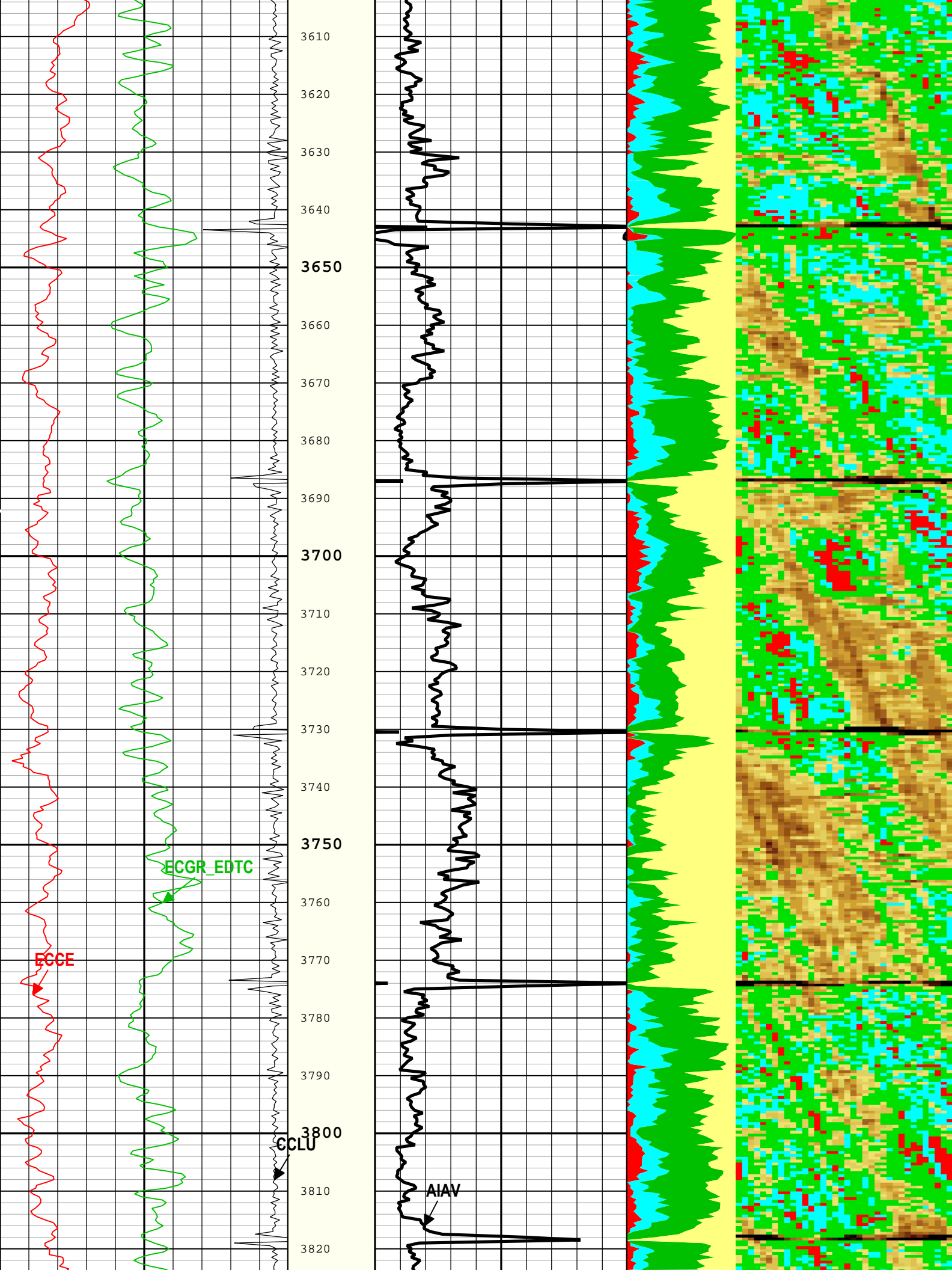


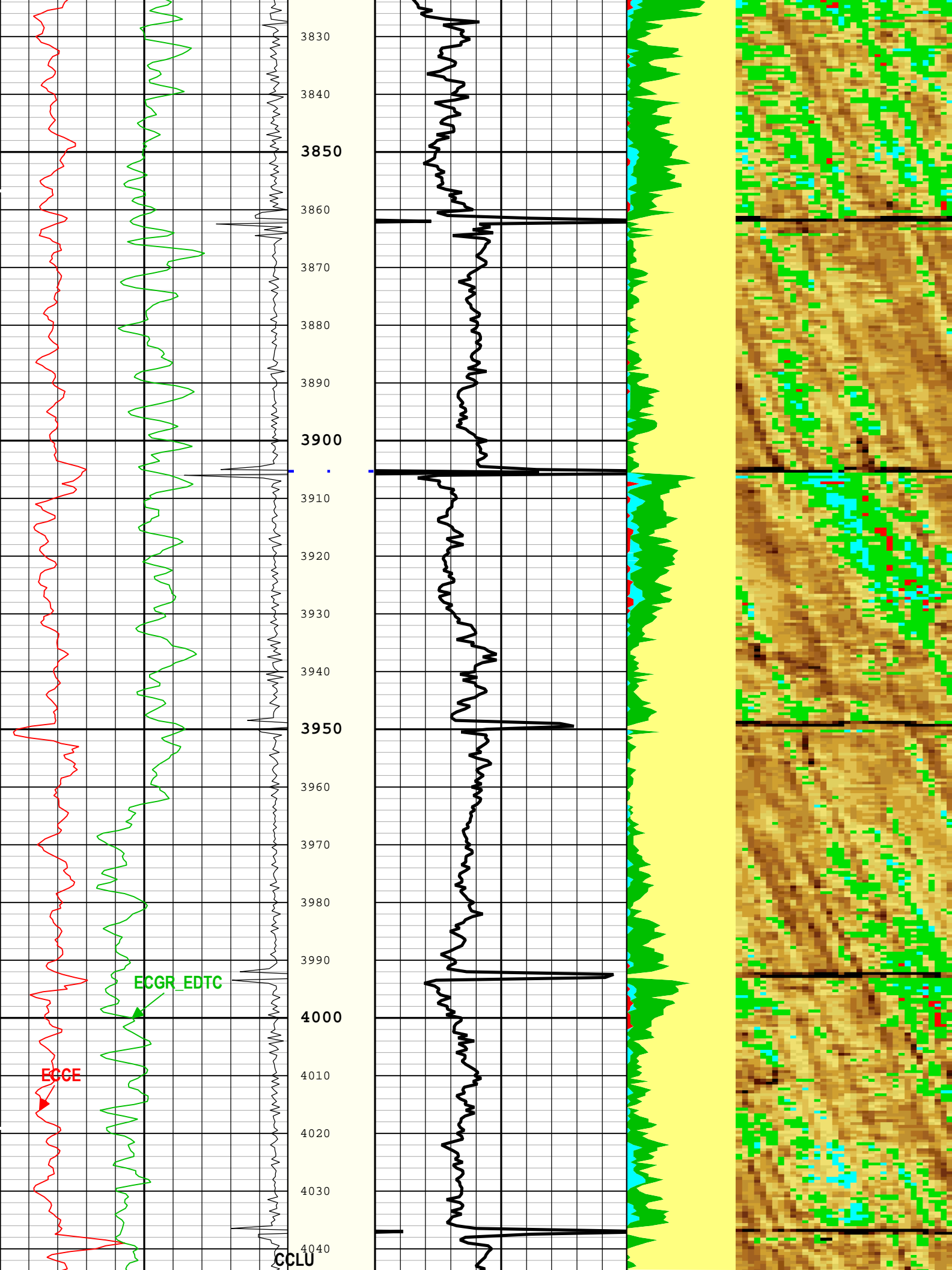


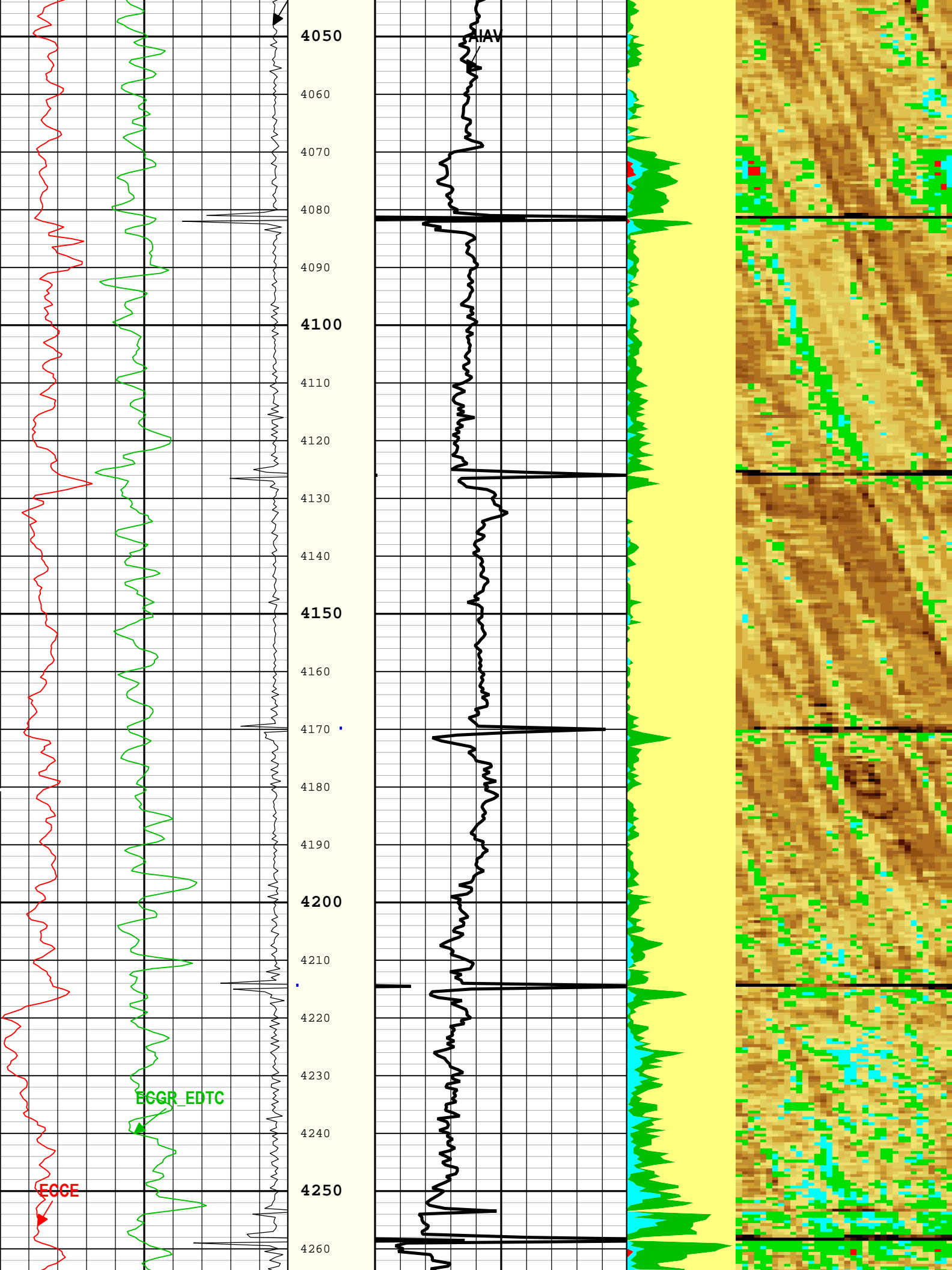


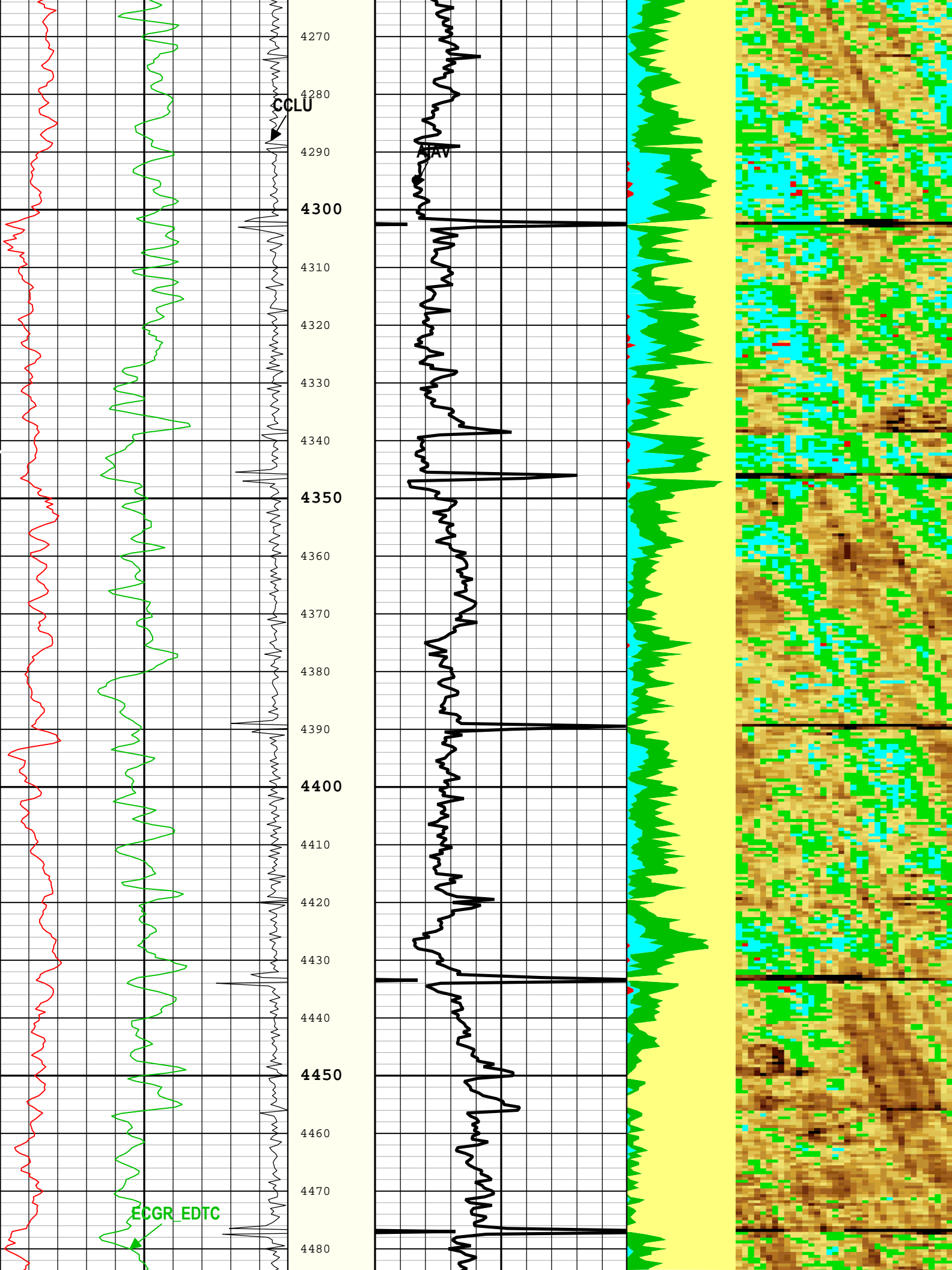


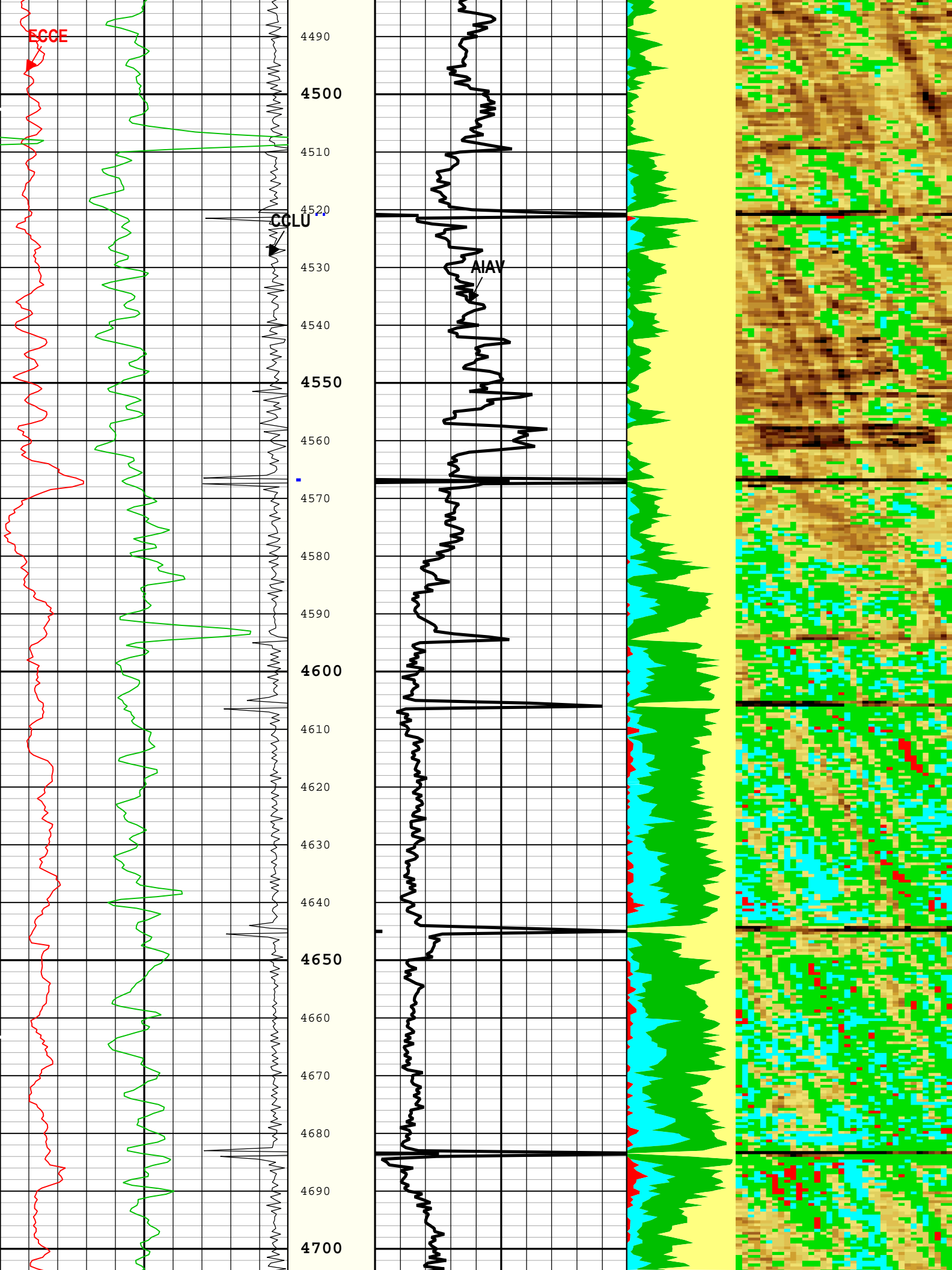


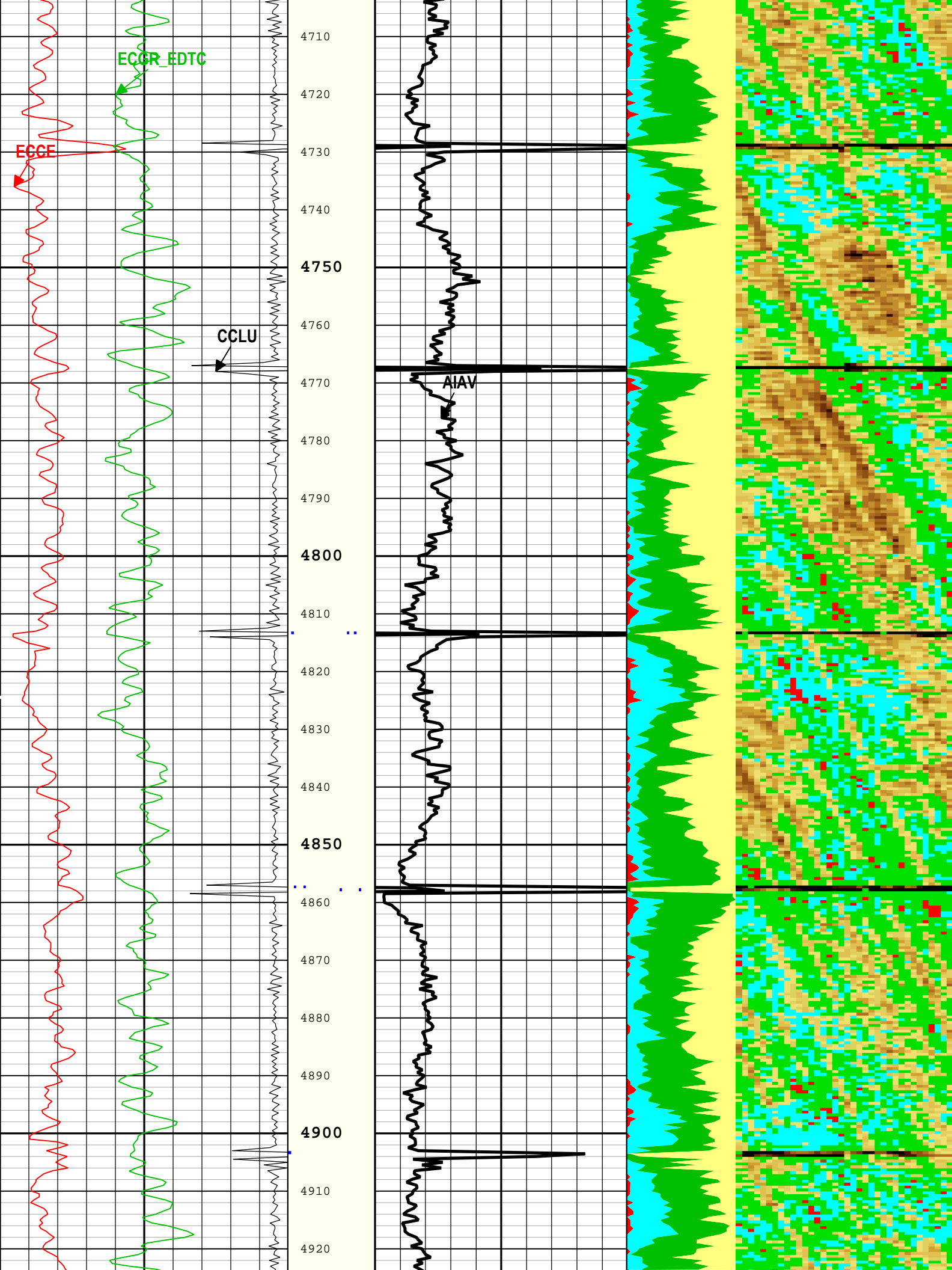


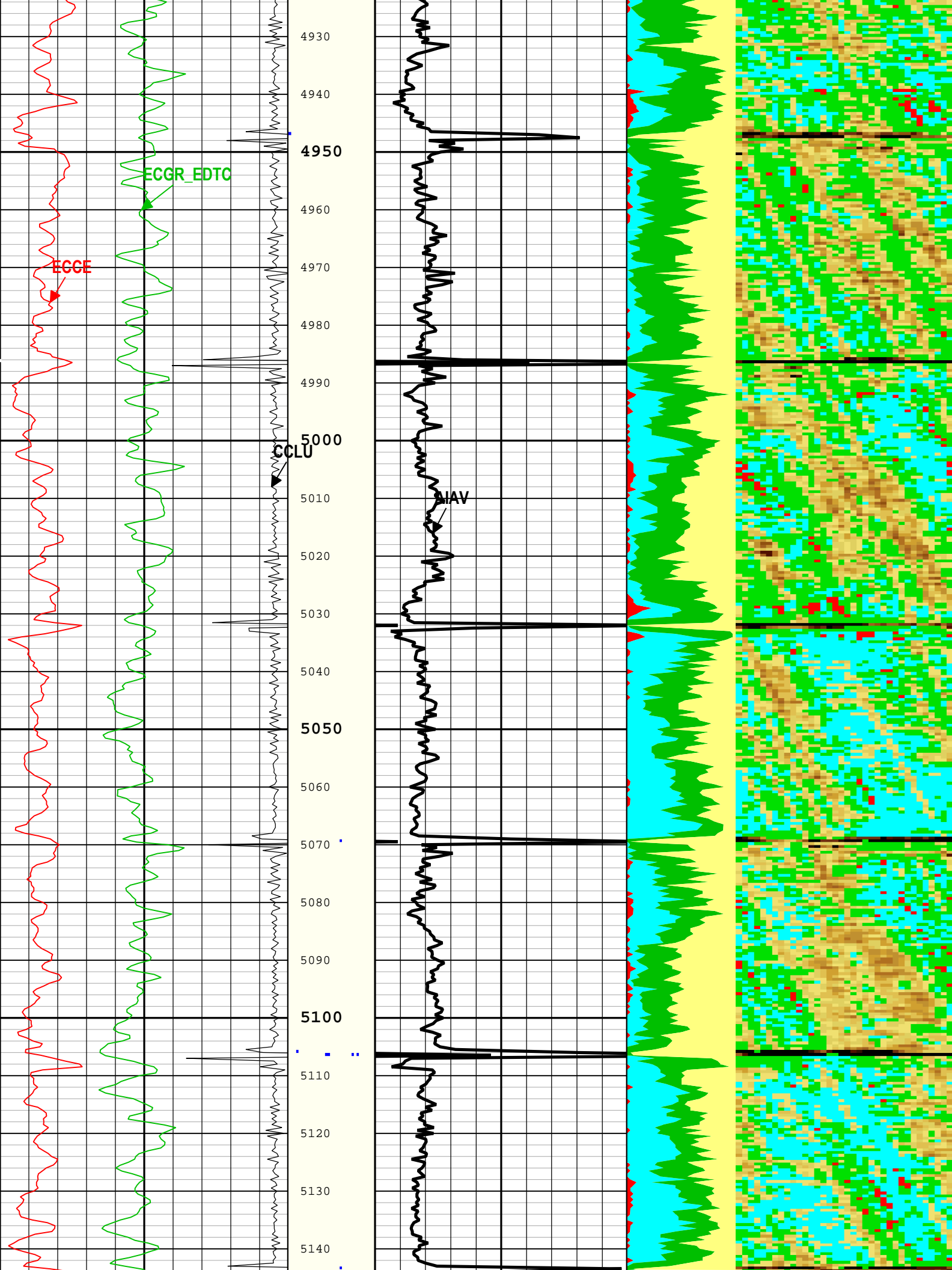


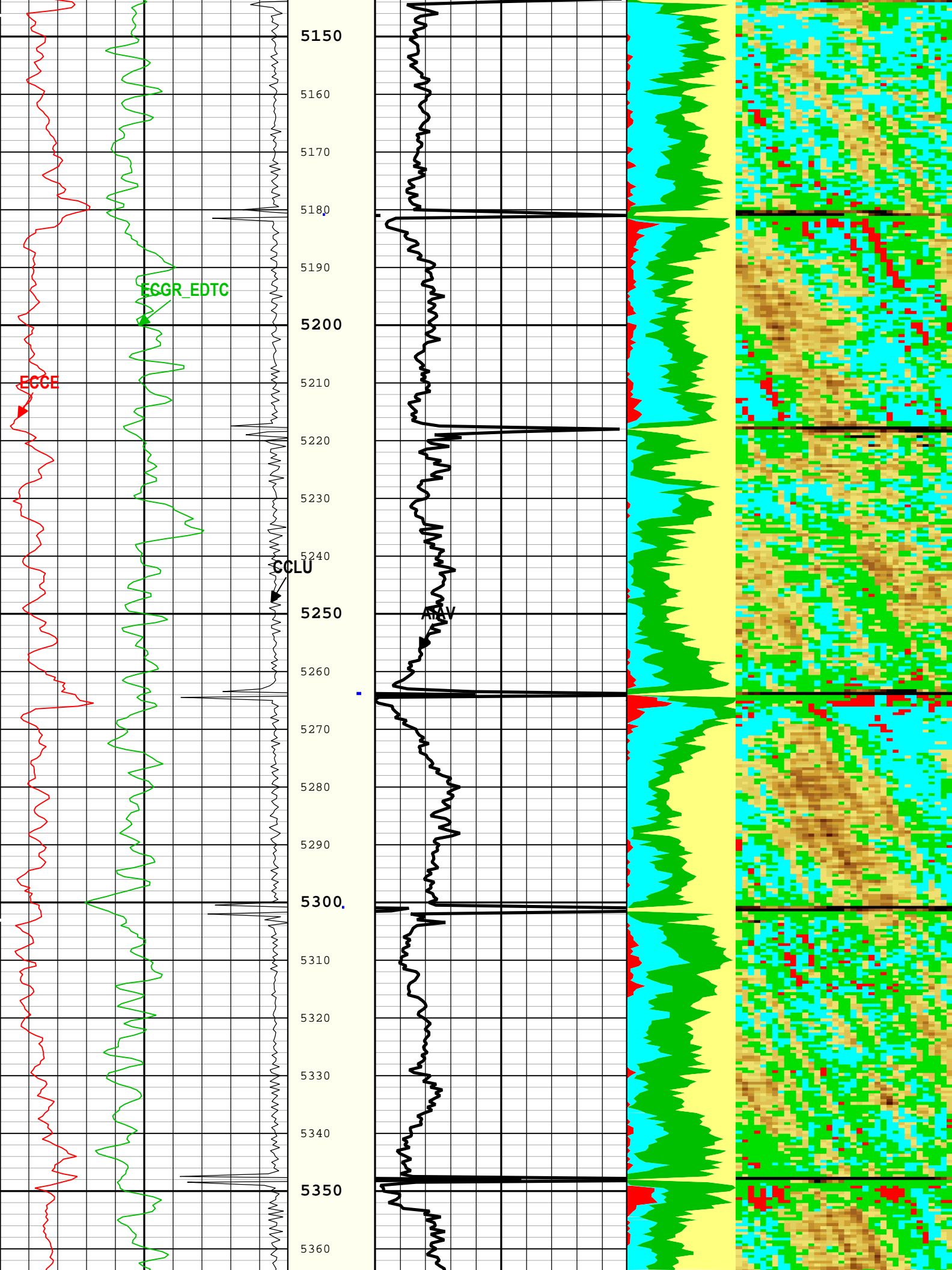


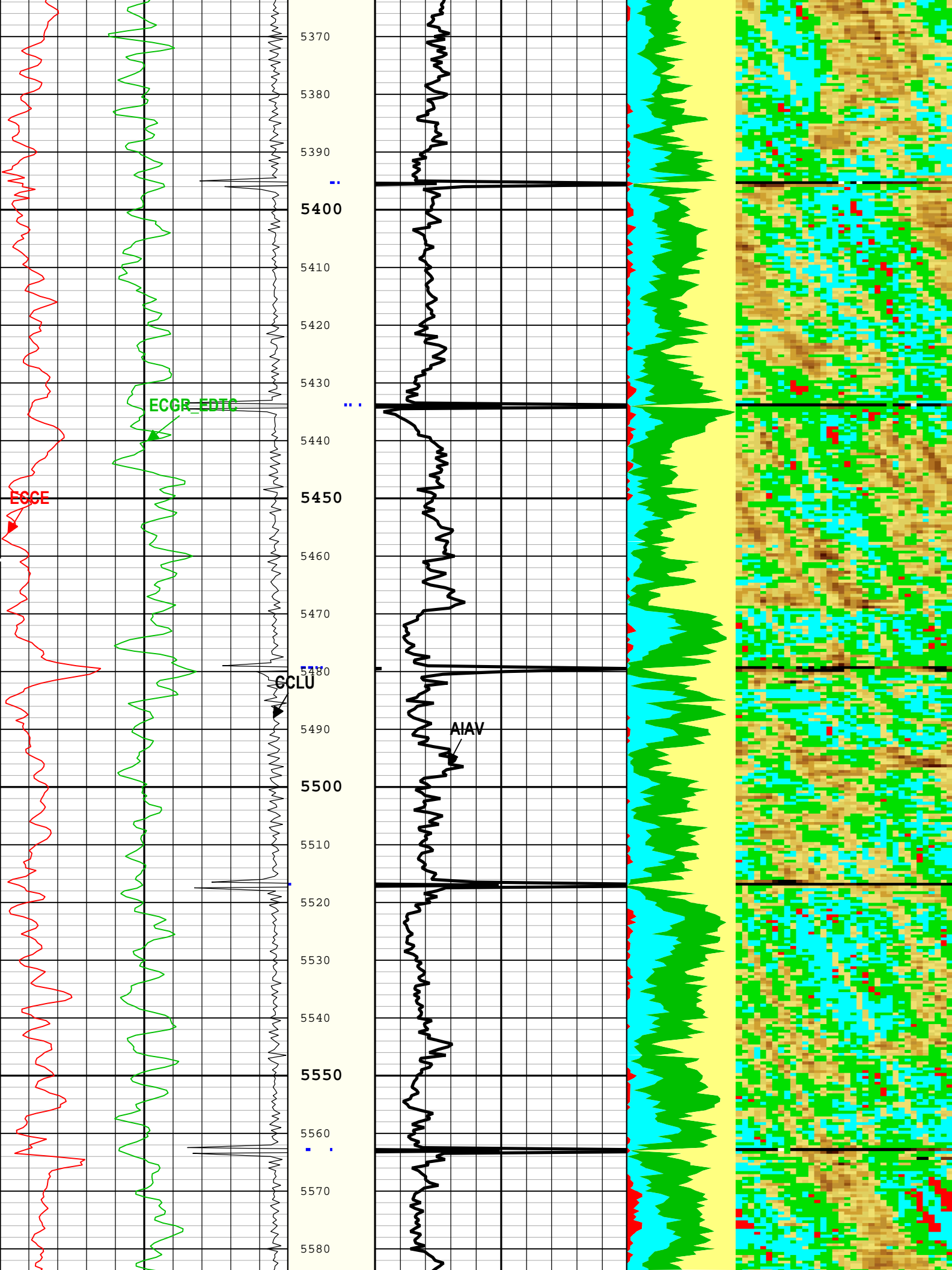


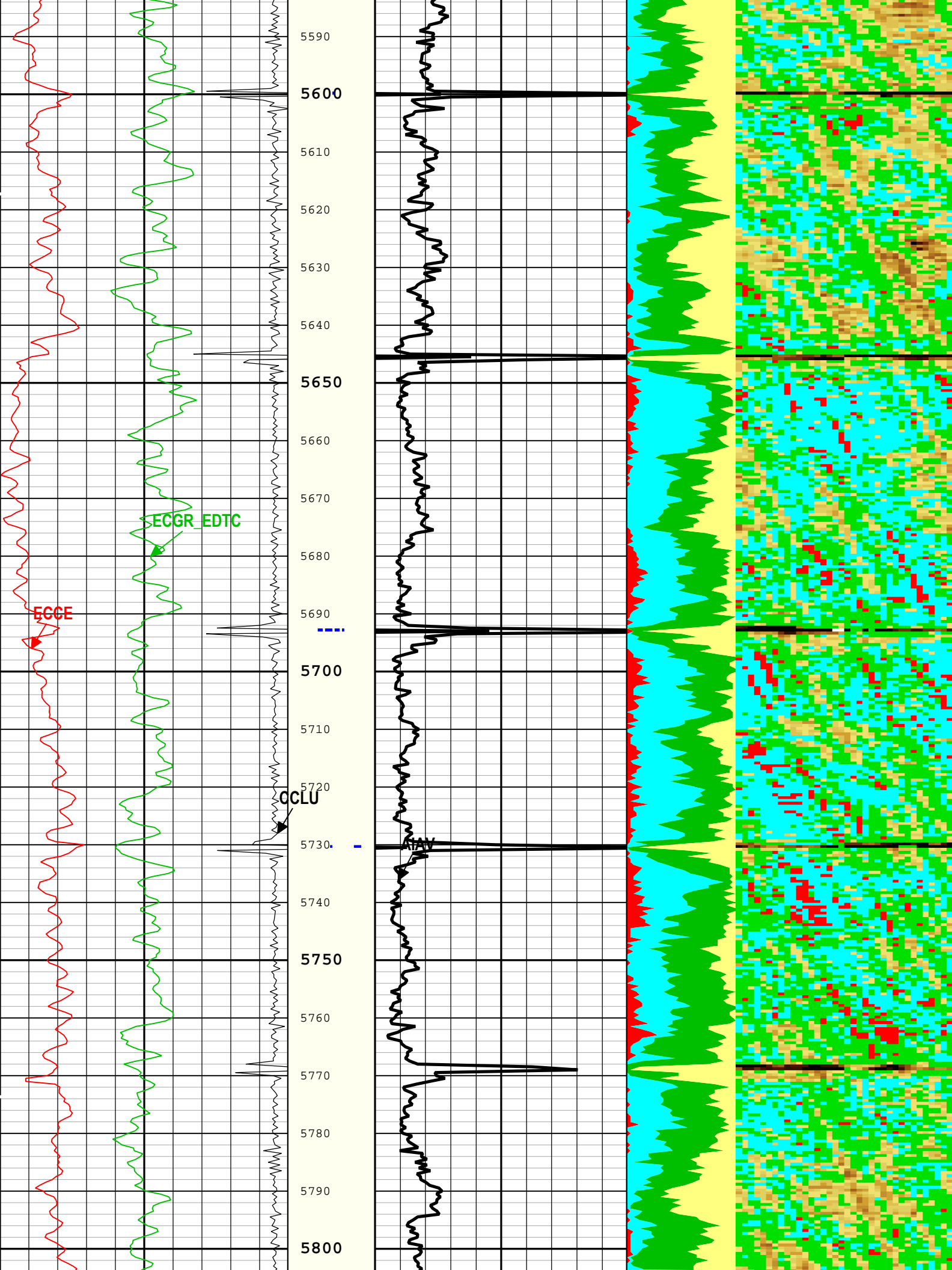


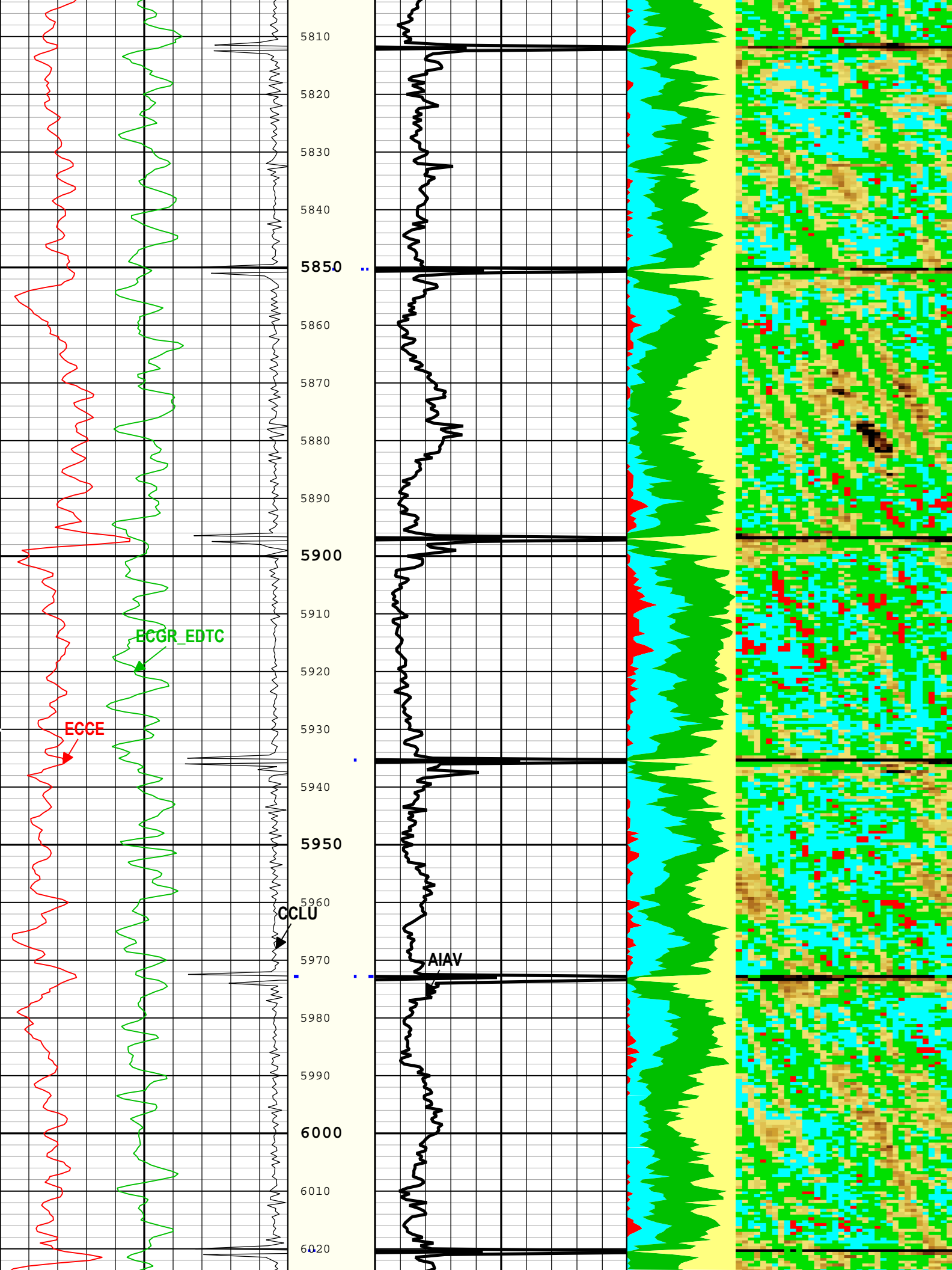


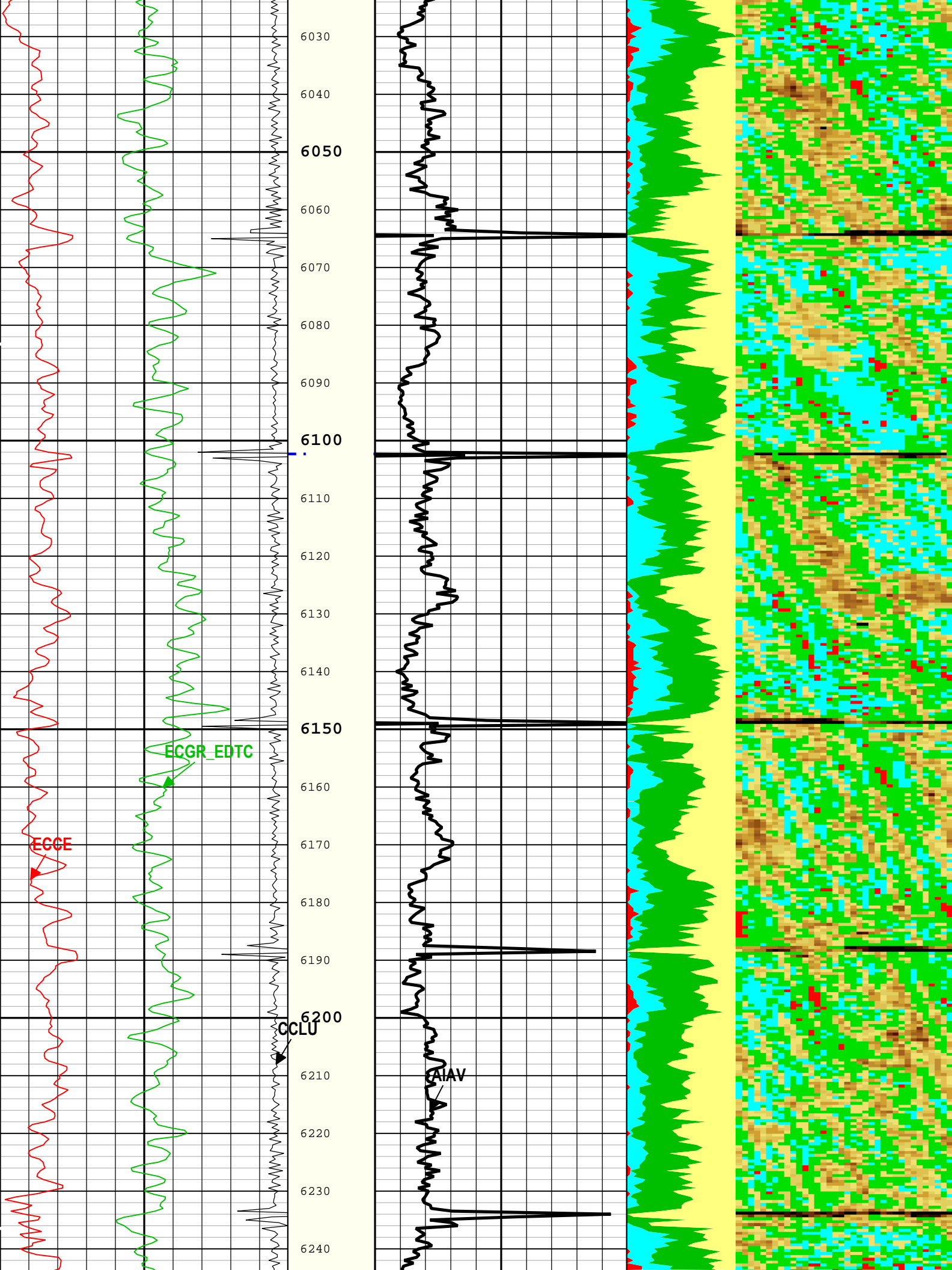


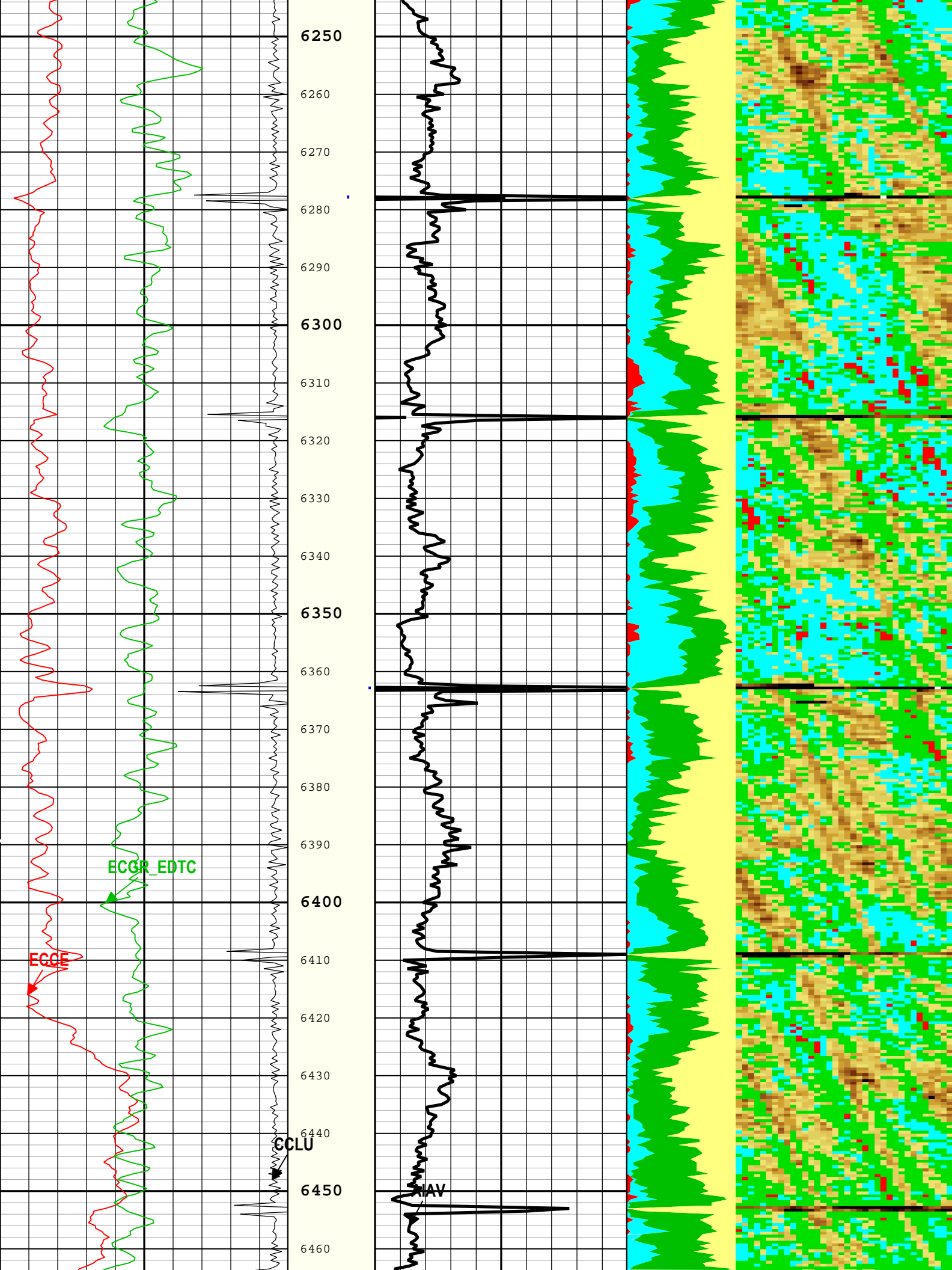


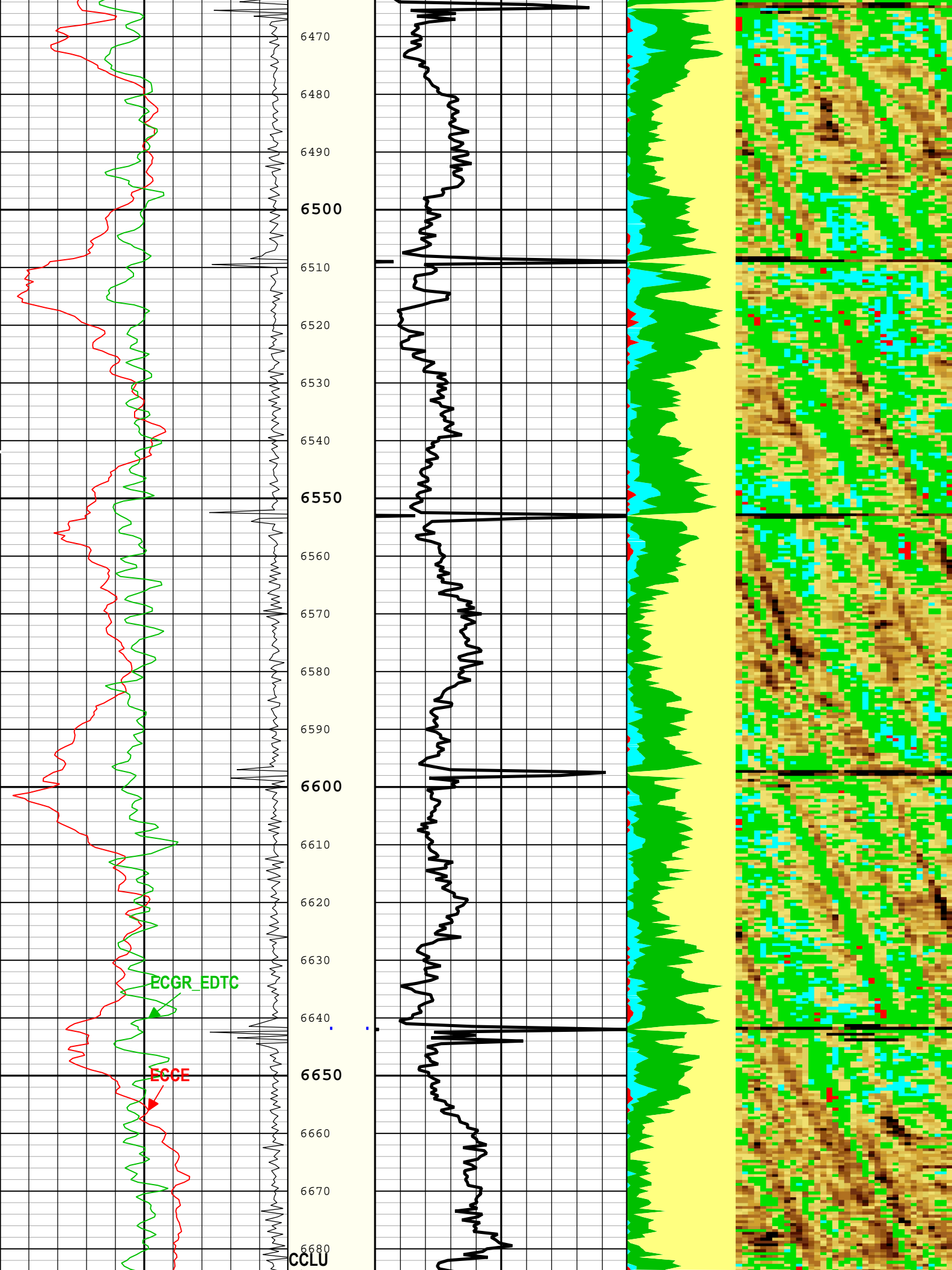


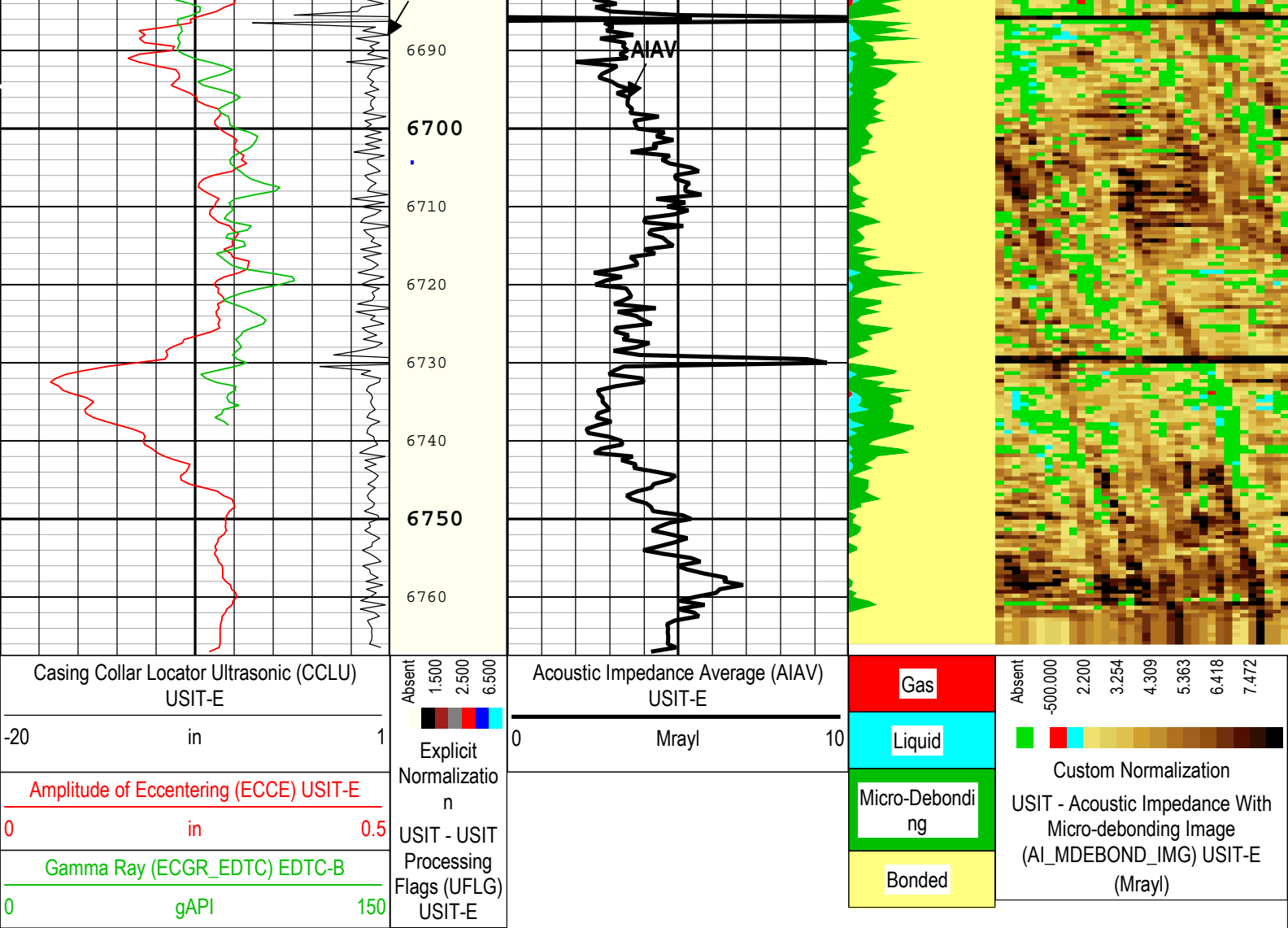












TIME_1900 - Time Marked every 60.00 (s)

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: 18-Aug-2018 16:28:29

Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
BARI(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	16173.5	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
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	1.13	
UUSIT_DESZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	0.1	Mrayl

USIT-E	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	58.5	110
BS	13.5	110	1932
BS	8.5	1932	6767.5
All depth are actual.			

Tool Control Parameters	
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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	45	V
HRES	Horizontal Resolution	USIT-E	10 deg	
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
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	
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Acquisition System	Version
Maxwell 2018 SP2	8.2.102758.3100

Pass Summary									
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[2]:Up	Up	1870.51 ft	2548.80 ft	18-Aug-2018 1:20:02 PM	18-Aug-2018 1:24:29 PM	ON	-1.56 ft	No

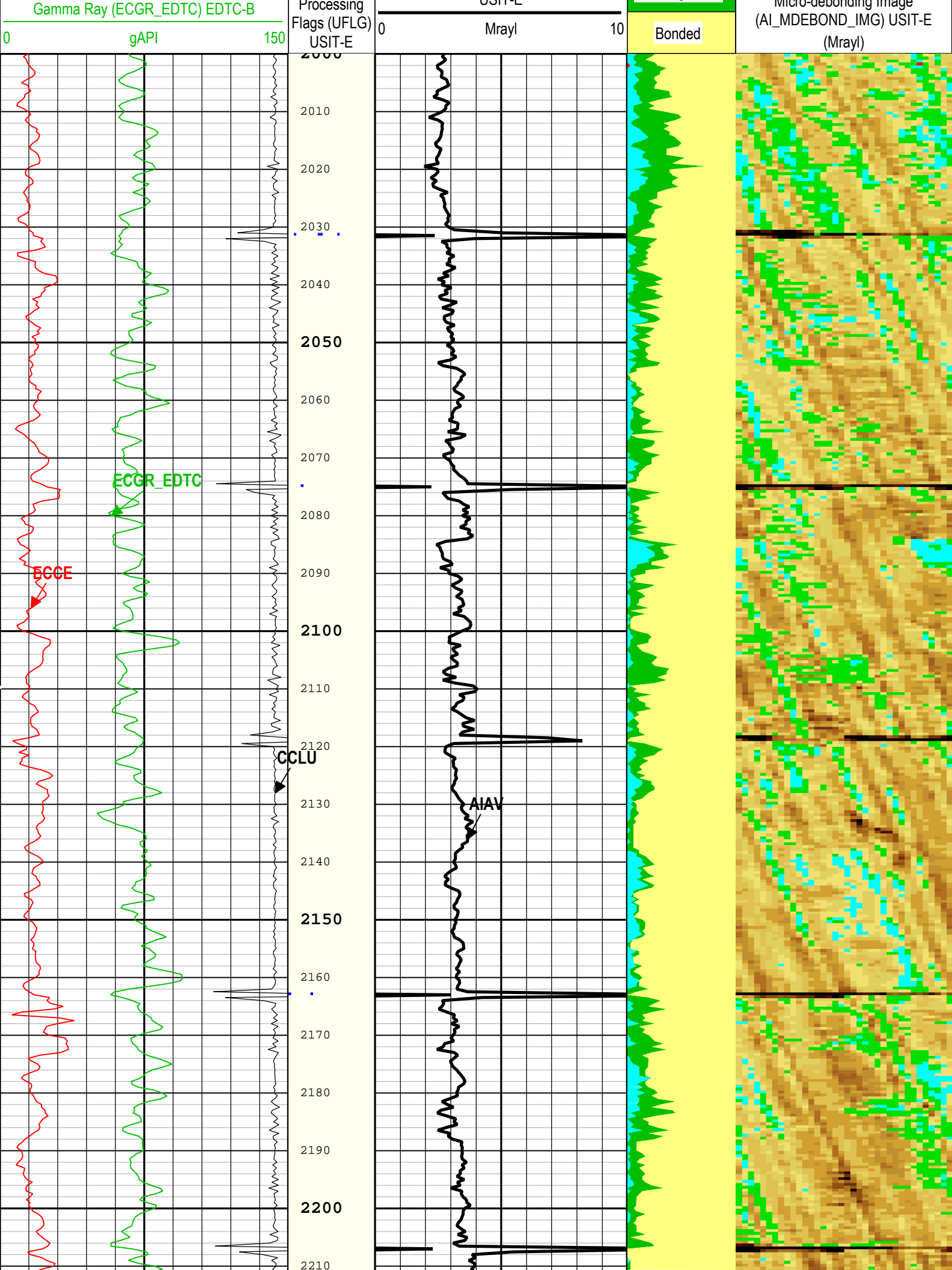
All depths are referenced to toolstring zero									
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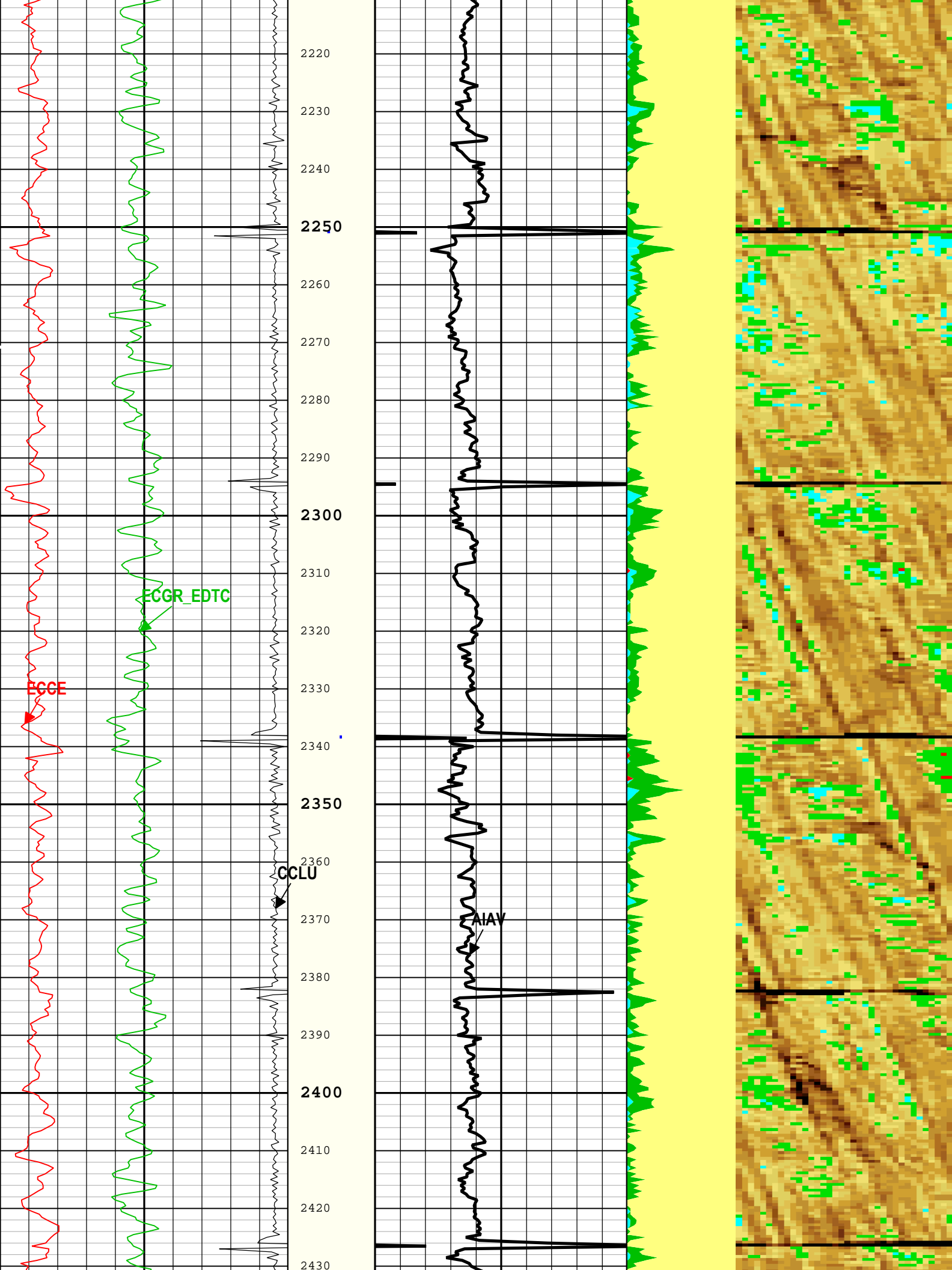
Log	Company:Noble Energy Inc	Well:Hurley H26-756
		ONE: Log[2]:Up:S006

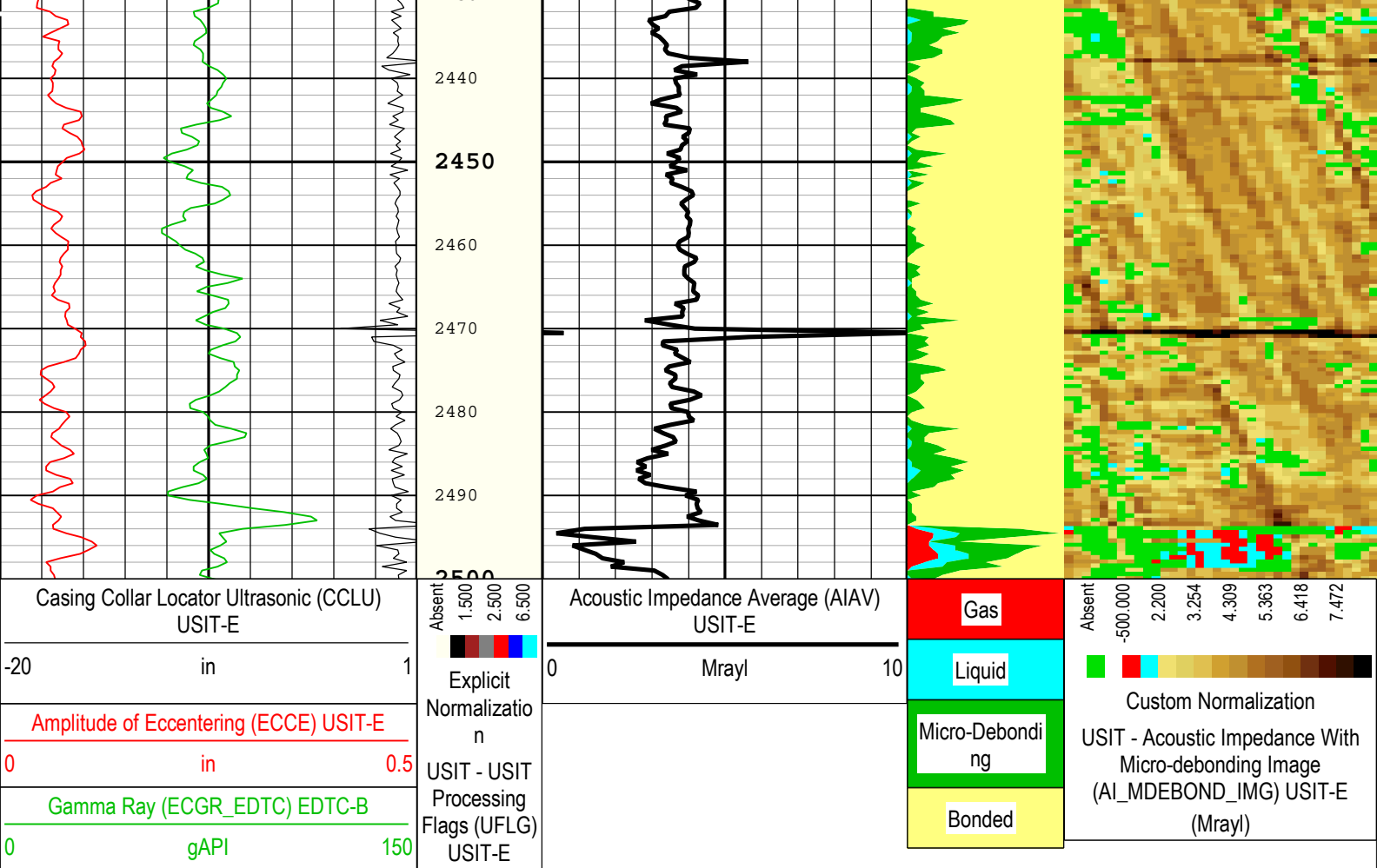
Description: Format: Log (DJ Basin Ultrasonic Cement Summary Report)	Index Scale: 5 in per 100 ft	Index Unit: ft	Index Type: Measured Depth
Creation Date: 18-Aug-2018 16:28:55			

TIME_1900 - Time Marked every 60.00 (s)

Casing Collar Locator Ultrasonic (CCLU) USIT-E		<div> <div>Absent</div> <div>1,500 2,500 6,500</div> <div>Explicit Normalization</div> <div>USIT - USIT</div> </div>	Acoustic Impedance Average (AIAV) USIT-E		<div> <div>Gas</div> <div>Liquid</div> <div>Micro-Debonding</div> </div>	<div> <div>Absent</div> <div>-500,000 2,200 3,254 4,309 5,363 6,418 7,472</div> <div>Custom Normalization</div> <div>USIT - Acoustic Impedance With Micro debonding Image</div> </div>
-20	in					
Amplitude of Eccentering (ECCE) USIT-E						
0	in	0.5				







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: 18-Aug-2018 16:28:55

Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
BAR(ISSBAR)	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	8.5	in
CBLO	Casing Bottom (Logger)	WLSESSION	16173.5	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
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	1.13	
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

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	45	V
HRES	Horizontal Resolution	USIT-E	10 deg	
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	Yes	
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

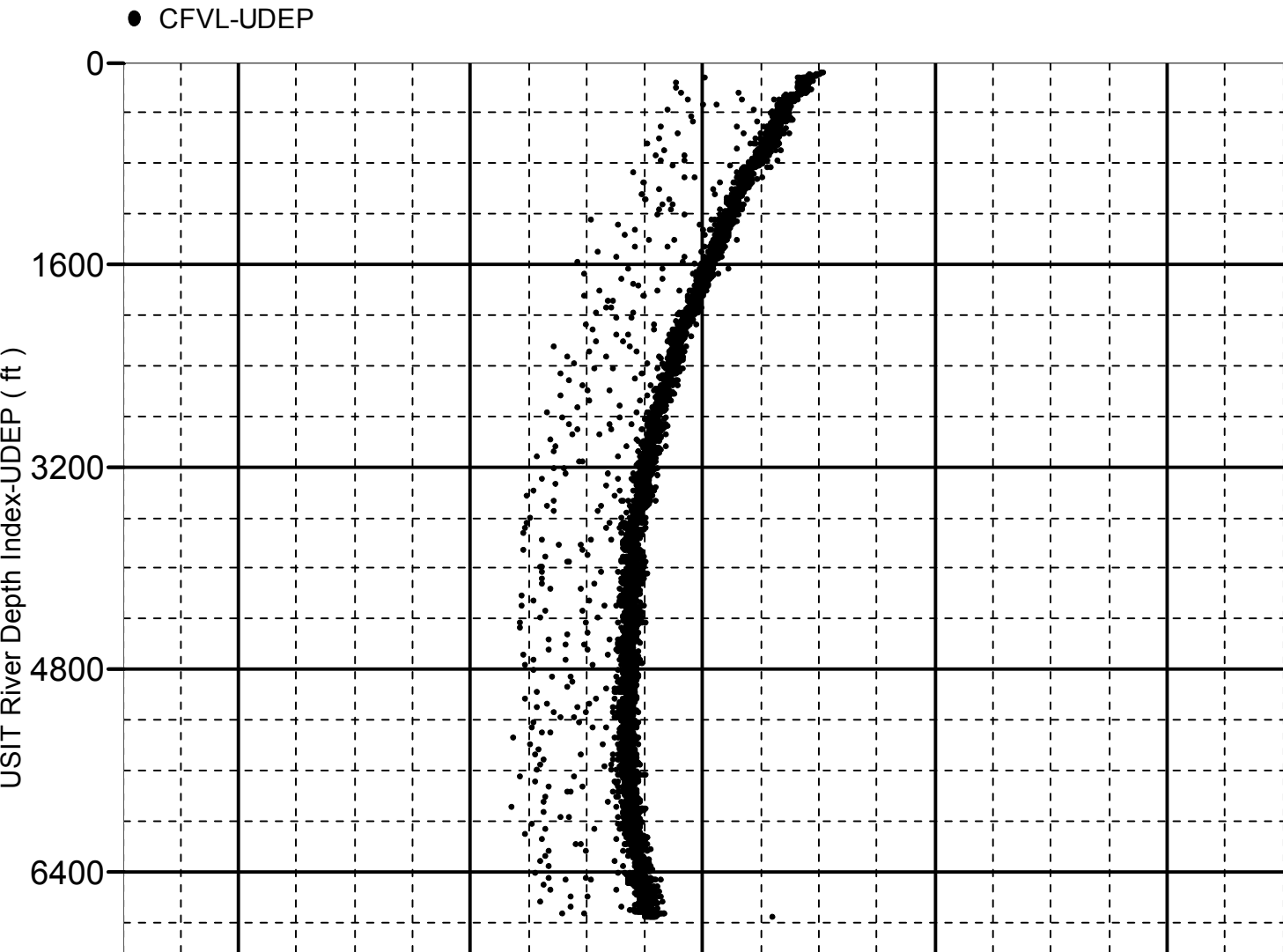
XYZ

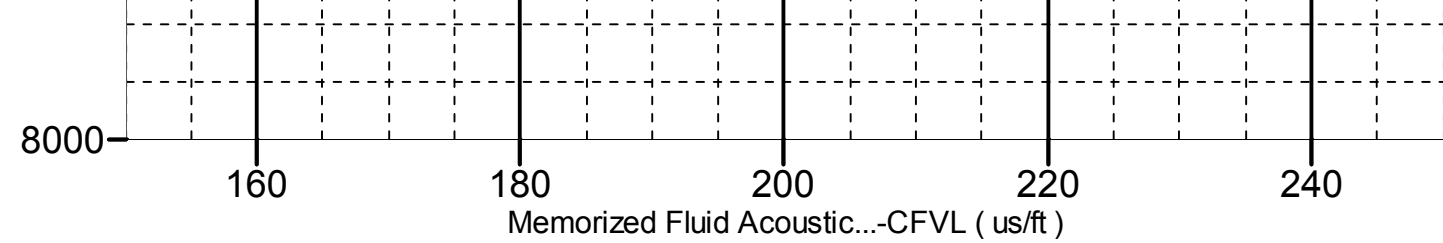
Company:Noble Energy Inc Well:Hurley H26-756
ONE: Log[4]:Up:S006

Fluid Acoustic Slow ness vs Depth

2D Cross Plot

Index Range: From 6768.00 to 88.50 ft





XYZ

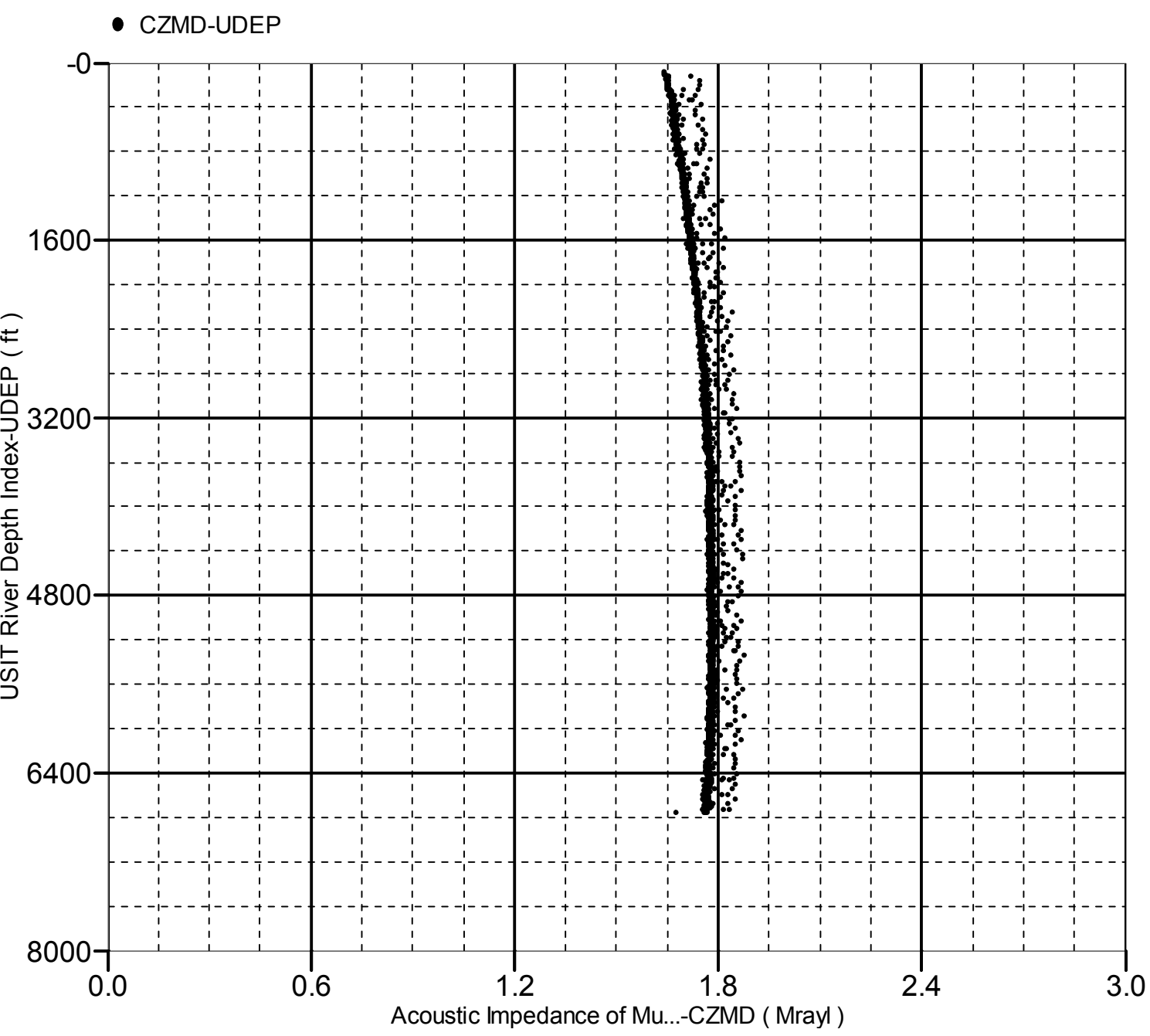
Company:Noble Energy Inc Well:Hurley H26-756

ONE: Log[4]:Up:S006

Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 6768.00 to 88.50 ft



Company: Noble Energy Inc

Schlumberger

Well: Hurley H26-756

Field: Wattenberg

County:	Weld
State:	Colorado
UltraSonic Summary Print	