

Company: Noble Energy Inc

Well: Reagan LD06-675

Field: Wildcat

County: Weld

Country: US

UltraSonic Summary Print

County: Weld

Field: Wildcat

Location: SHL: NENE S5, T9N, R58W

Well: Reagan LD06-675

Company: Noble Energy Inc

Location: SHL: NENE S5, T9N, R58W
990 FNL & 330 FWL
Lat: 40.78571 / Long: -103.88041

Elev.: K.B. 4786.00 ft
G.L. 4756.00 ft
D.F. 4786.00 ft

Permanent Datum: Ground Level

Elev.: 4756.00 f

Log Measured From: Kelly Bushing

30.00 ft

Drilling Measured From: Kelly Bushing

above Perm.Datum

API Serial No. 05-123-40819

Max.Hole Deviation 0 deg

Longitude: -103.88041 degrees

Latitude: 40.785710 degrees

Logging Date	02-Sep-2016		
Run Number			
Depth Driller	16038.00 ft		
Schlumberger Depth	16038.00 ft		
Bottom Log Interval	5400.00 ft		
Top Log Interval	60.00 ft		
Casing Driller Size @ Depth	5.5 in @ 16018.50 ft		
Casing Schlumberger	16018.5 ft		
Bit Size	8.5 in		
Type Fluid In Hole	Water		
Density	Viscosity	26 s	
Fluid Loss	PH		
MUD			
Source of Sample	Active Tank		
RM @ Meas Temp	0.2 ohm.m	@ 68 degF	
RMF @ Meas Temp	0.15 ohm.m	@ 68 degF	
RMC @ Meas Temp			
Source RMF	RMC	Pressed	
RM @ BHT	RMF @ BHT	0.06 @ 179	
Max Recorded Temperatures	179 degF		
Circulation Stopped	Time		
Logger on Bottom	Time		
Unit Number	Location:	2161	Fort Morgan, CO
Recorded By	Benjamin Mammon		
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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12.1 Integration Summary

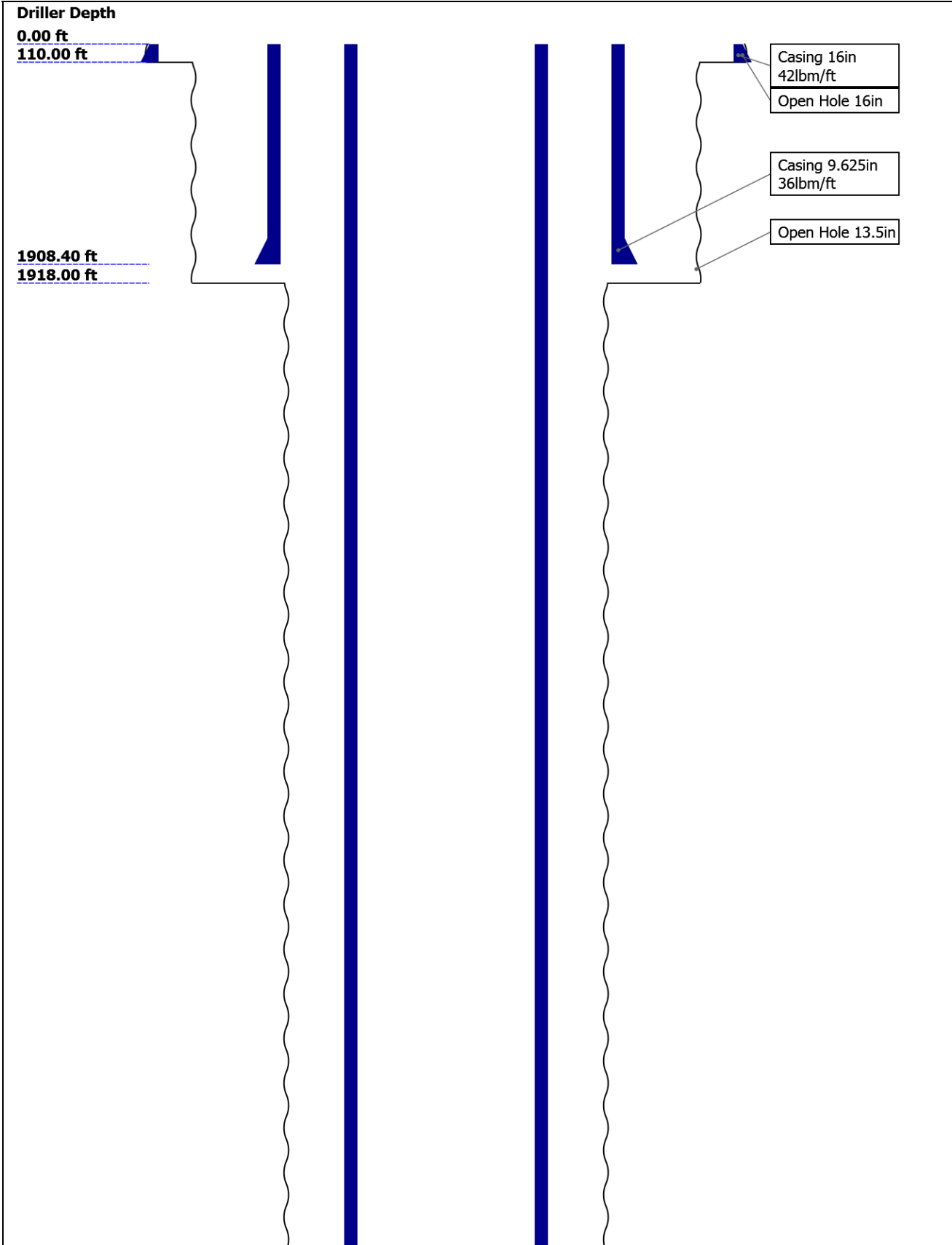
12.2 Software Version

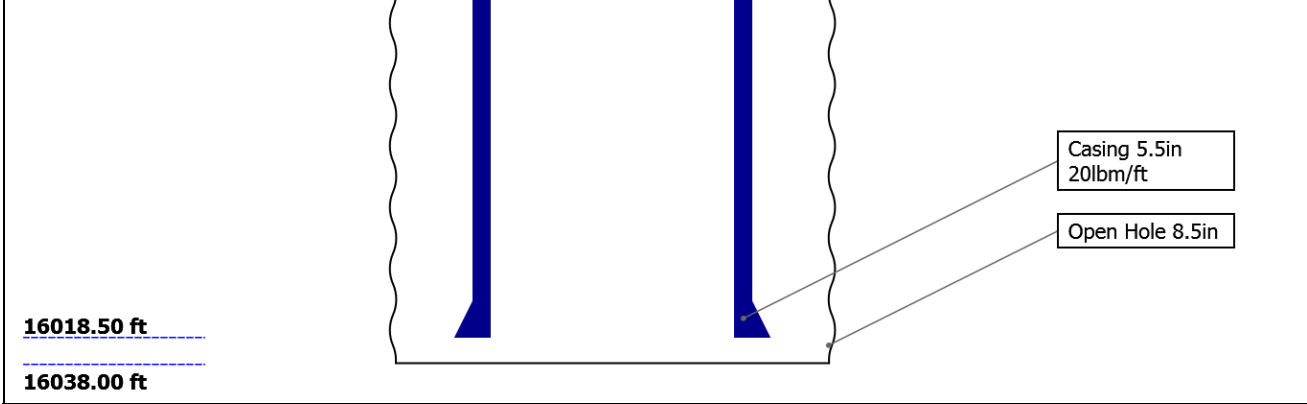
12.3 Composite Summary

12.4 Log (DJ Basin Ultrasonic Cement Summary Report)

12.5 Parameter Listing

Well Sketch






Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	16	13.5	8.5			
Top Driller (ft)	0	110	1918			
Top Logger (ft)	0	110	1918			
Bottom Driller (ft)	110	1918	16038			
Bottom Logger (ft)	110	1918	16038			
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	1908.4	16018.5			
Bottom Logger (ft)	110	1908.4	16018.5			

Operational Run Summary

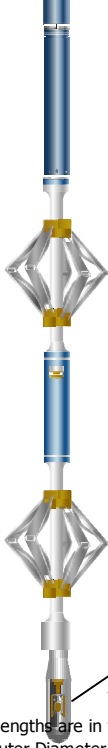
Parameter (unit)	Run 2					
Date Log Started	02-Sep-2016					
Time Log Started	08:00:27					
Date Log Finished	02-Sep-2016					
Time Log Finished	09:26:51					
Top Log Interval (ft)						
Bottom Log Interval (ft)						
Total Depth (ft)						
Max Hole Deviation (deg)						
Azimuth of Max Deviation (deg)						
Bit Size (in)	8.500					
Logging Unit Number	2161					
Logging Unit Location	Fort Morgan, CO					
Recorded By	Benjamin Marmon					

Witnessed By	Bill Mansfield					
Service Order Number	D5ND-00121					
Borehole Fluids						
Parameter(unit)	Run 2					
Fluid Type	Water					
Max Recorded Temperatures (degF)	179					
Source of Sample	Active Tank					
Salinity (ppm)	0					
Density (lbm/gal)	8.8					
Funnel Viscosity (s)	26					
Fluid Loss (cm3)						
PH						
Date/Time Circulation Stopped	NaN					
Date Logger on Bottom	NaN					
Time Logger on Bottom	NaN					
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)	0.08 @ 179					
RMF @ BHT (ohm.m@degF)	0.06 @ 179					
RMC @ BHT (ohm.m@degF)	NaN @ 179					
Total Solid (%)						
High Gravity Solids (%)						
Remarks and Equipment Summary						
Run 2: Toolstring		Run 2: Remarks				
<div> <div> <div>Equip name</div> <div>Length</div> </div> <div> <div>LEH-QT</div> <div>31.85</div> </div> <div>LEH-QT</div> </div> <div> <div>SAH-E</div> <div>28.93</div> </div> <div> <div>EDTC-B:9</div> <div>26.06</div> <div>254</div> <div>EDTH-B:80</div> <div>97</div> <div>EDTG-A:7</div> <div>941</div> <div>EDTC-B:92</div> <div>54</div> </div> <div> <div>AH-184[2]:2829</div> <div>19.56</div> </div> <div> <div>AH-184[1]:2746</div> <div>17.56</div> </div> <div>  <div> <div>CTEM</div> <div>22.56</div> </div> <div> <div>ACCZ</div> <div>0.00</div> </div> <div> <div>HV</div> <div>0.00</div> </div> <div> <div>Gamma Ray</div> <div>20.69</div> </div> <div> <div>TelStatu s</div> <div>19.56</div> </div> </div>		This is the first log in the well.				
		Toolstring ran as per toolsketch.				
		Expected TOC: 2000'				
		Estimated TOC:				

USIT-E:98 15.56

4

ECH-MFA
USAC-A:9
84
USIS-A:75
8
USSC-B
USRS-A
USI-SENS
OR



Lengths are in ft

Maximum Outer Diameter = 3.625 in

Line: Sensor Location, Value: Gating Offset

All measurements are relative to TOOL_ZERO

Depth Summary

Run 2

Depth Measuring Device

Type

IDW-B

Serial Number

Calibration Date

Calibrator Serial Number

Calibration Cable Type

7-39 PLXS

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

7-39P-LXS

Serial Number

Length

14000.00 ft

Conveyance Type

Wireline

Rig Type

Crane

Run 2: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

Log Depth Correction

Stretch Correction

Tool Zero Check At Surface

USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
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Fluid Velocity

Start Depth(ft)	Stop Depth(ft)	Start Value(us/ft)	End Value(us/ft)
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Mud Impedance

Start Depth(ft)	Stop Depth(ft)	Start Value(Mrayl)	End Value(Mrayl)
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Run 2

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
Run 2	Log[7]:Up	Up	66.01 ft	5910.35 ft	02-Sep-2016 8:49:05 AM	02-Sep-2016 9:23:35 AM	ON	4.41 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Noble Energy Inc

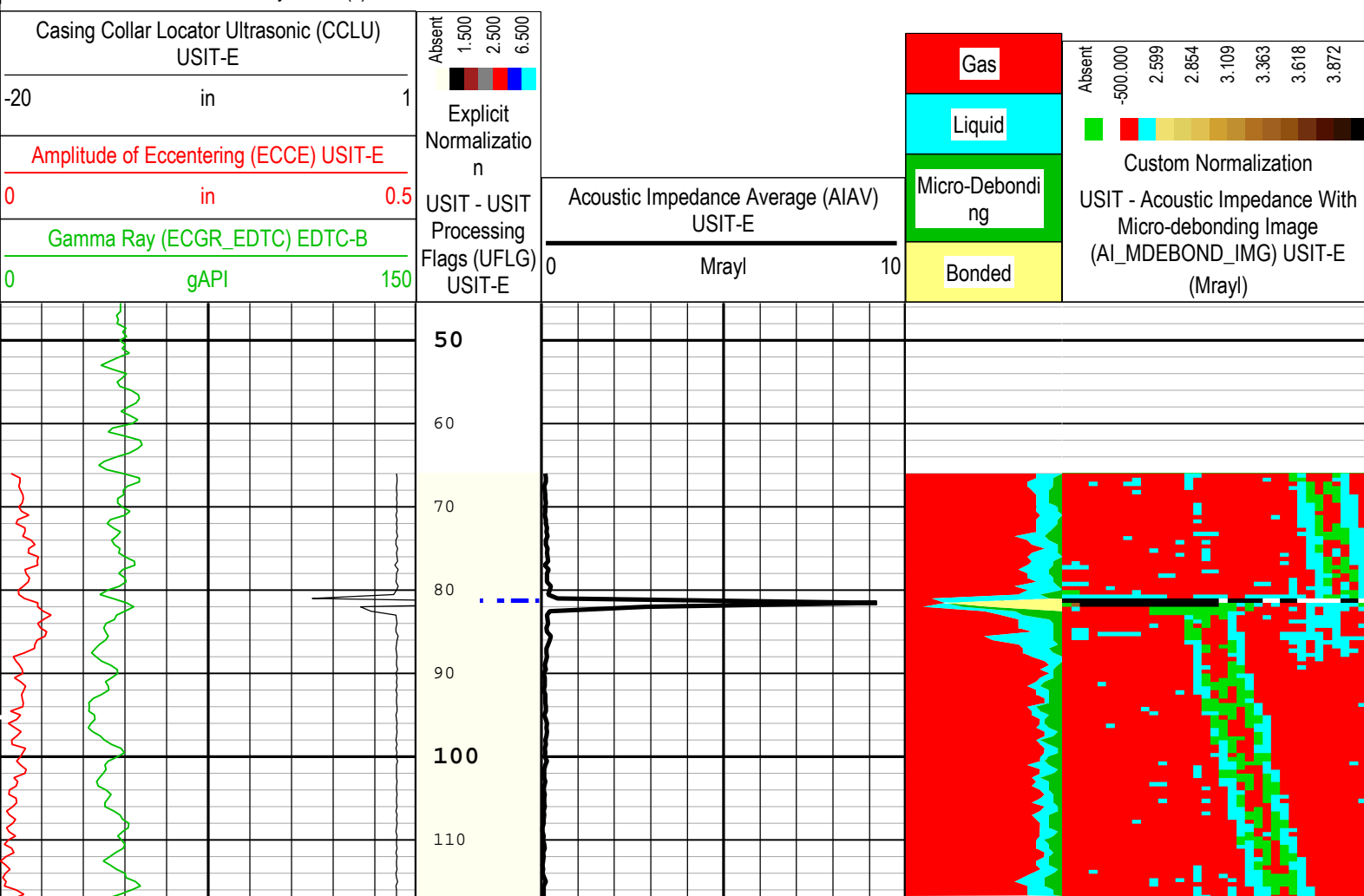
Well:Reagan LD06-675

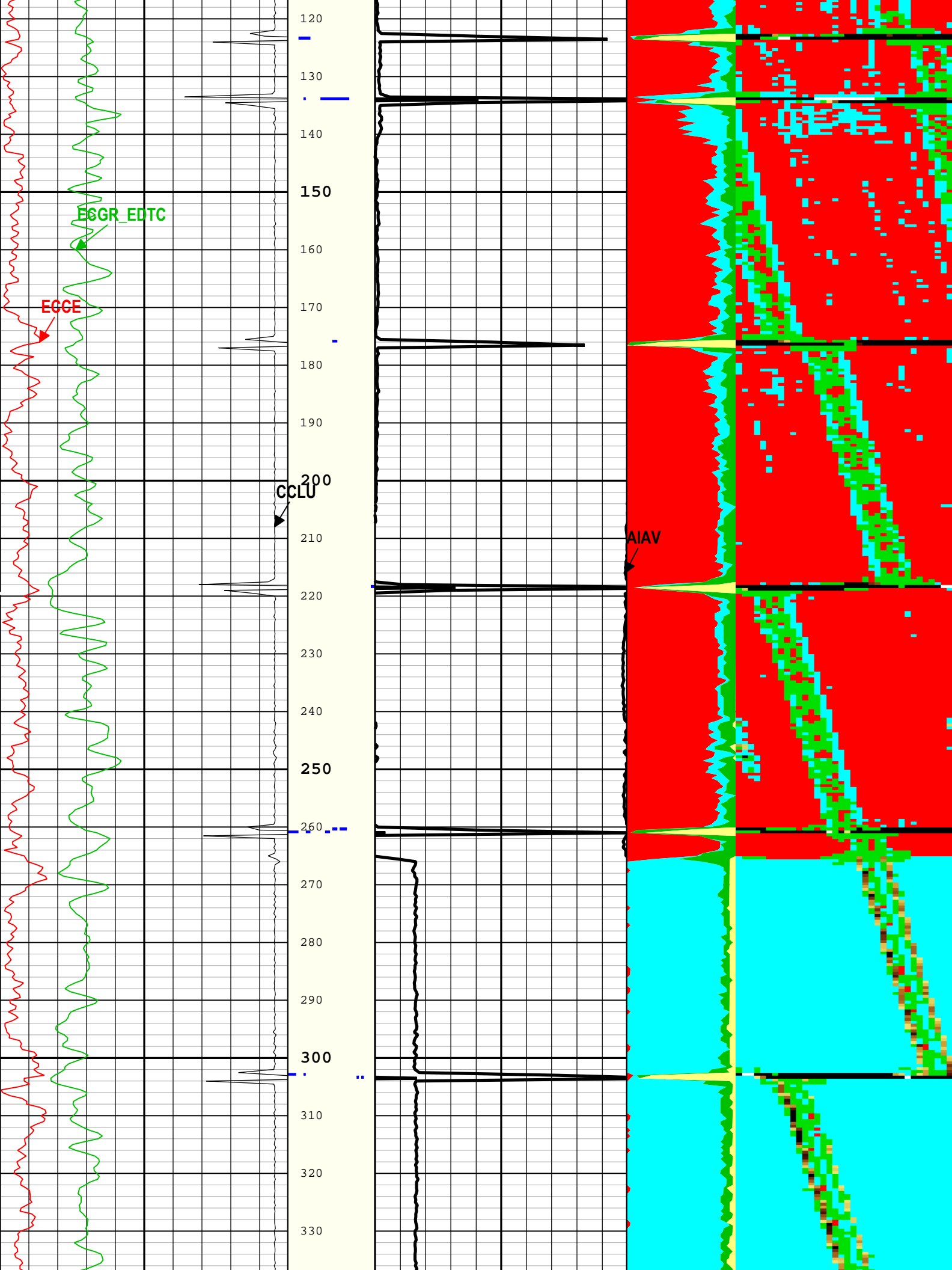
Run 2: Log[7]:Up:S009

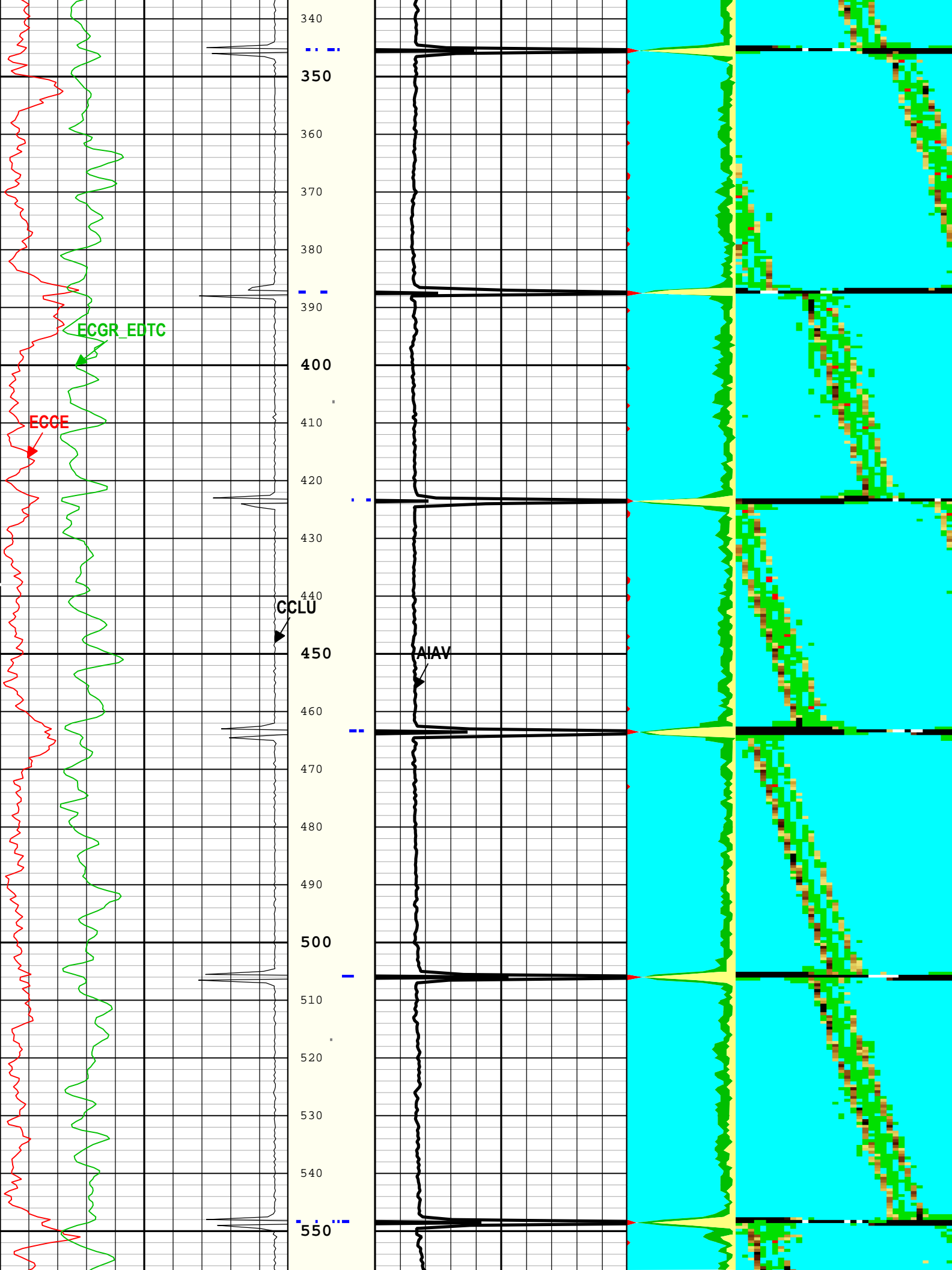
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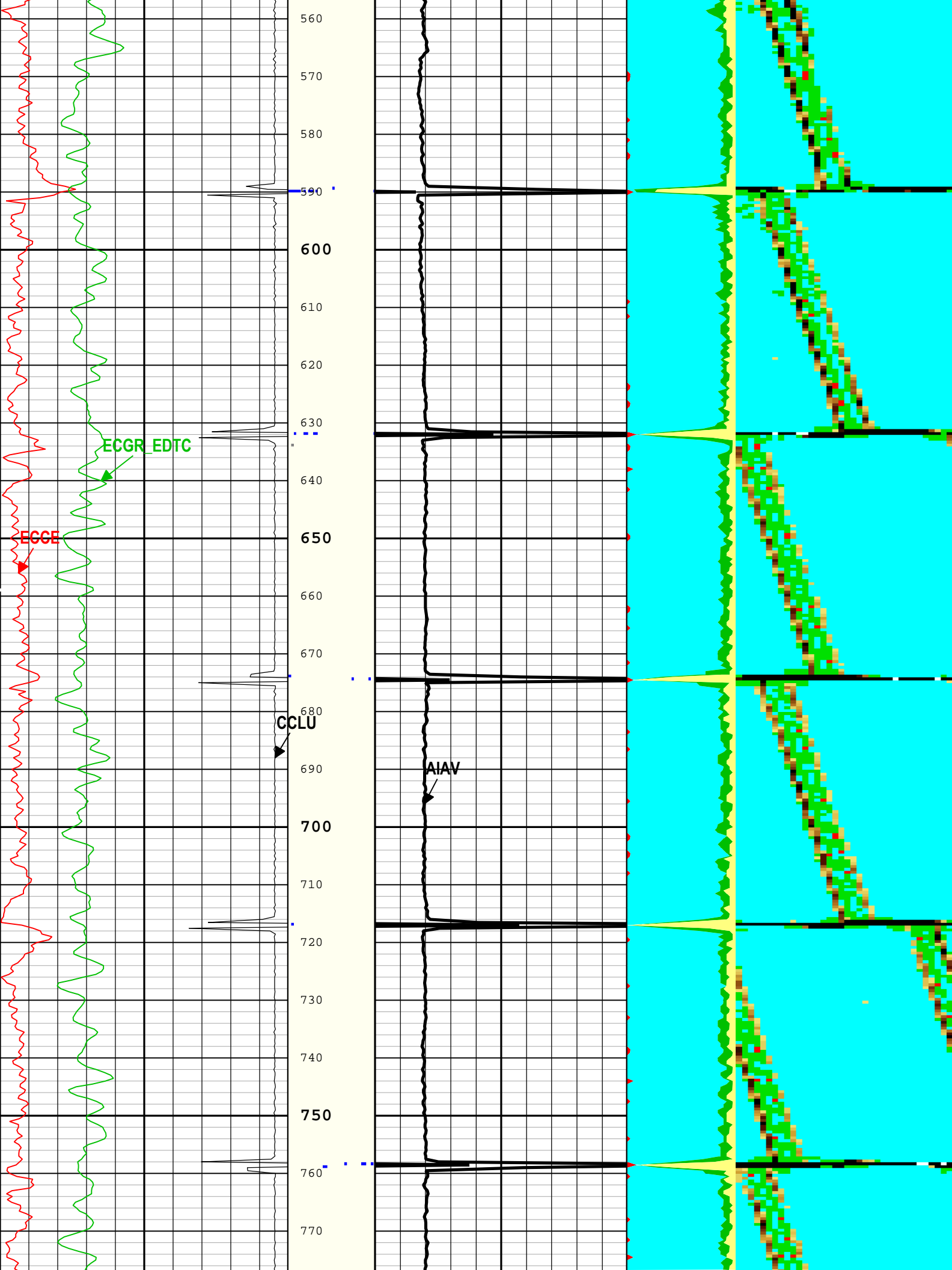
Creation Date: 02-Sep-2016 09:54:58

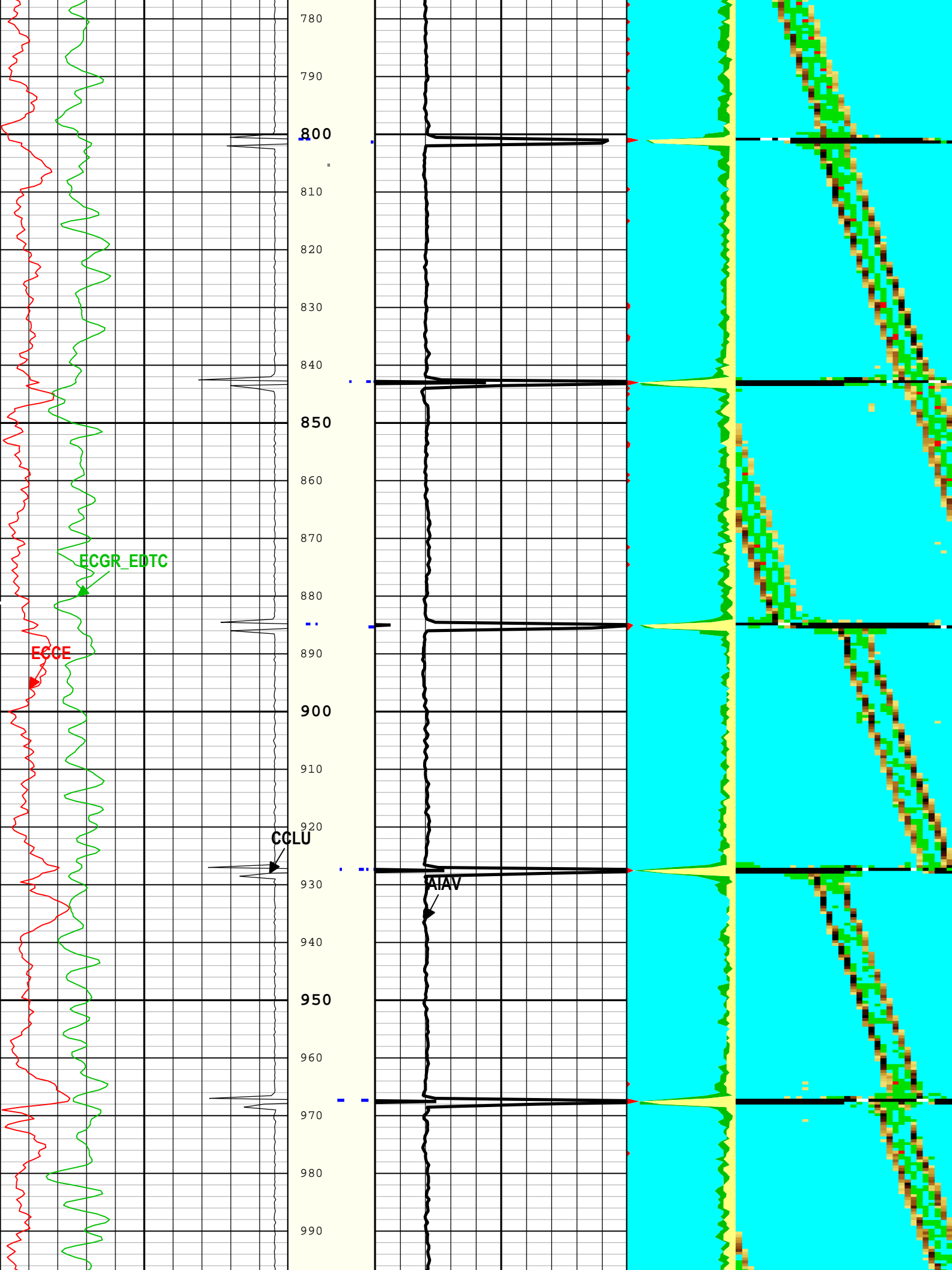
TIME_1900 - Time Marked every 60.00 (s)

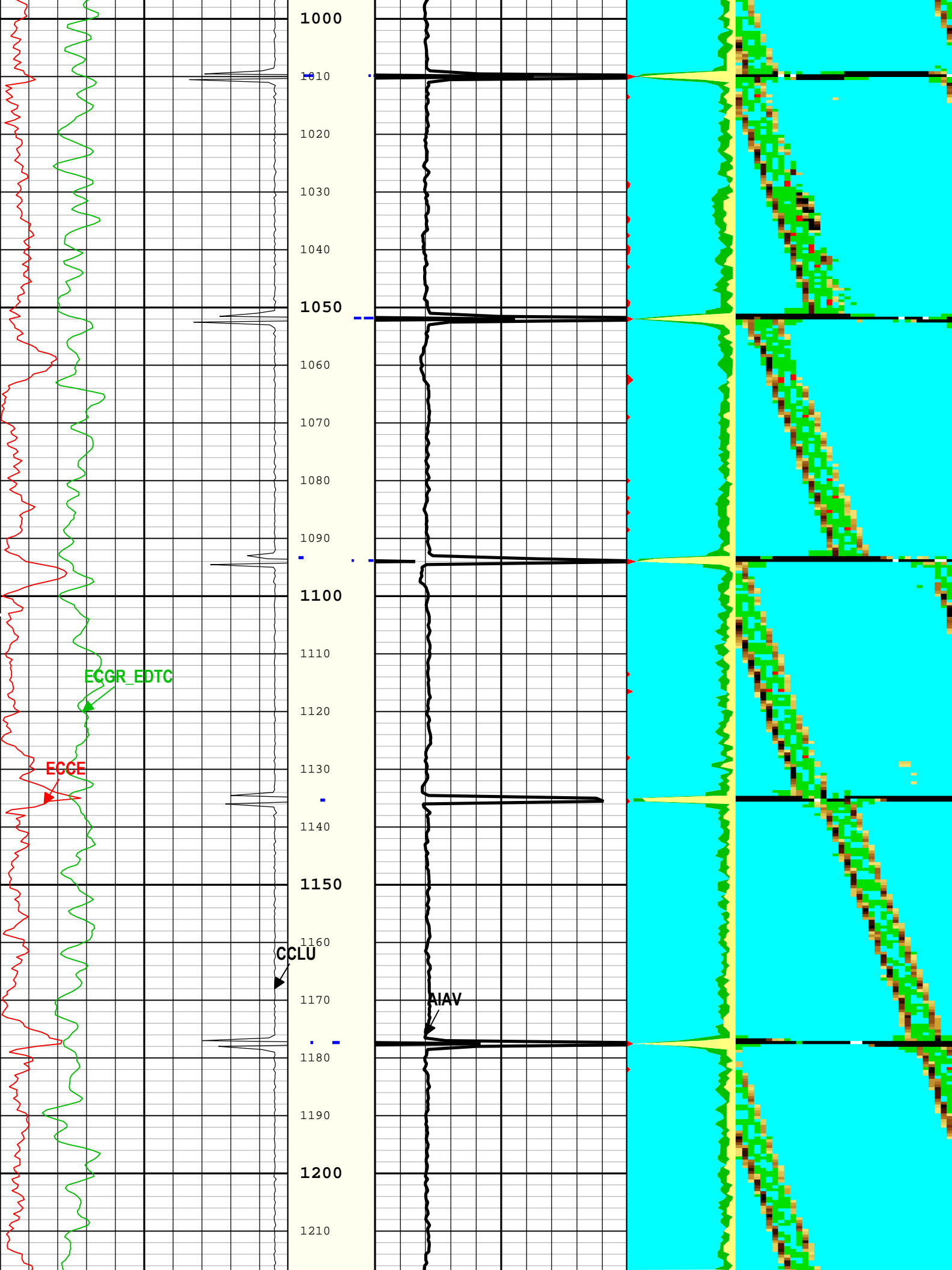


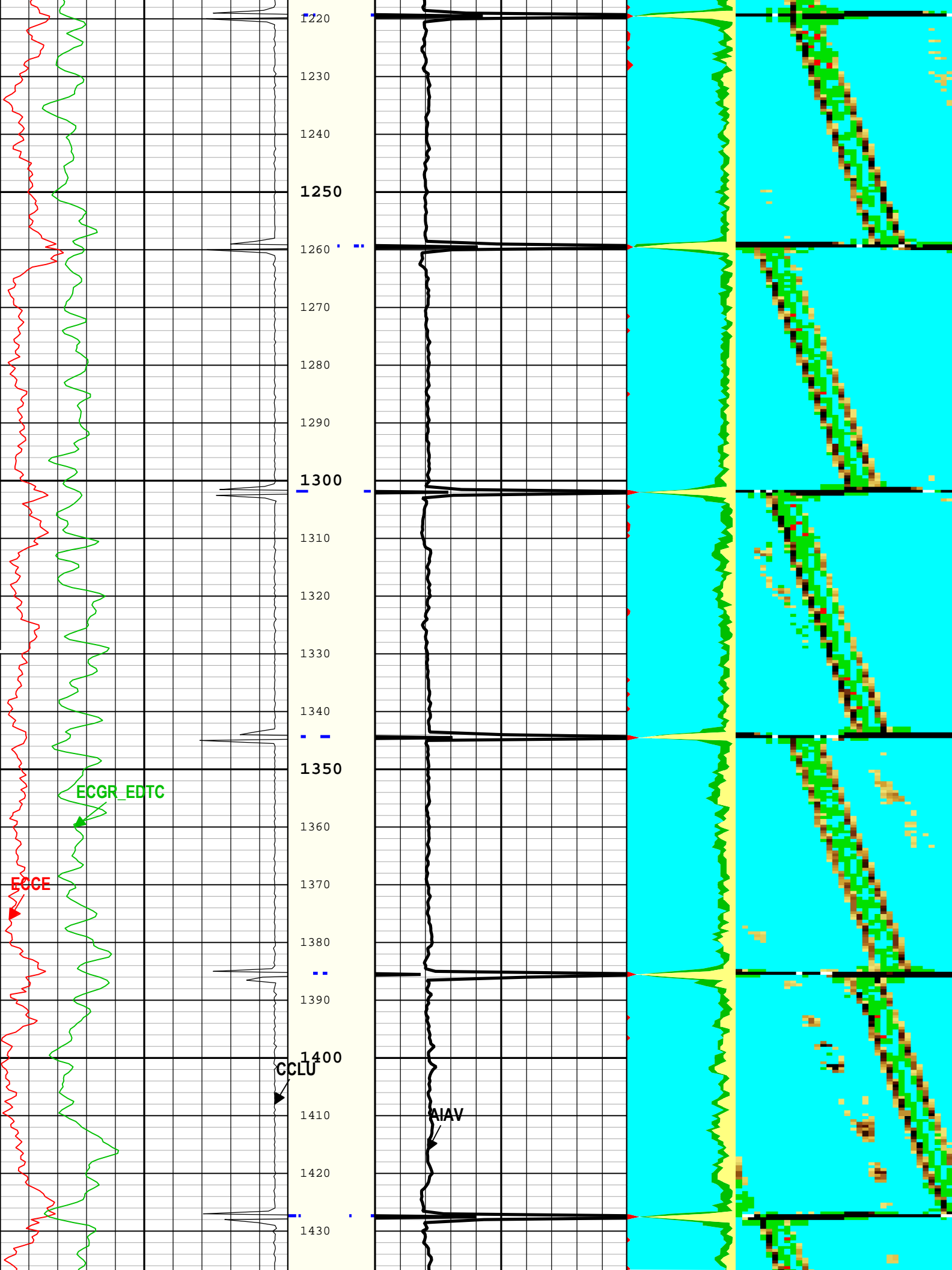


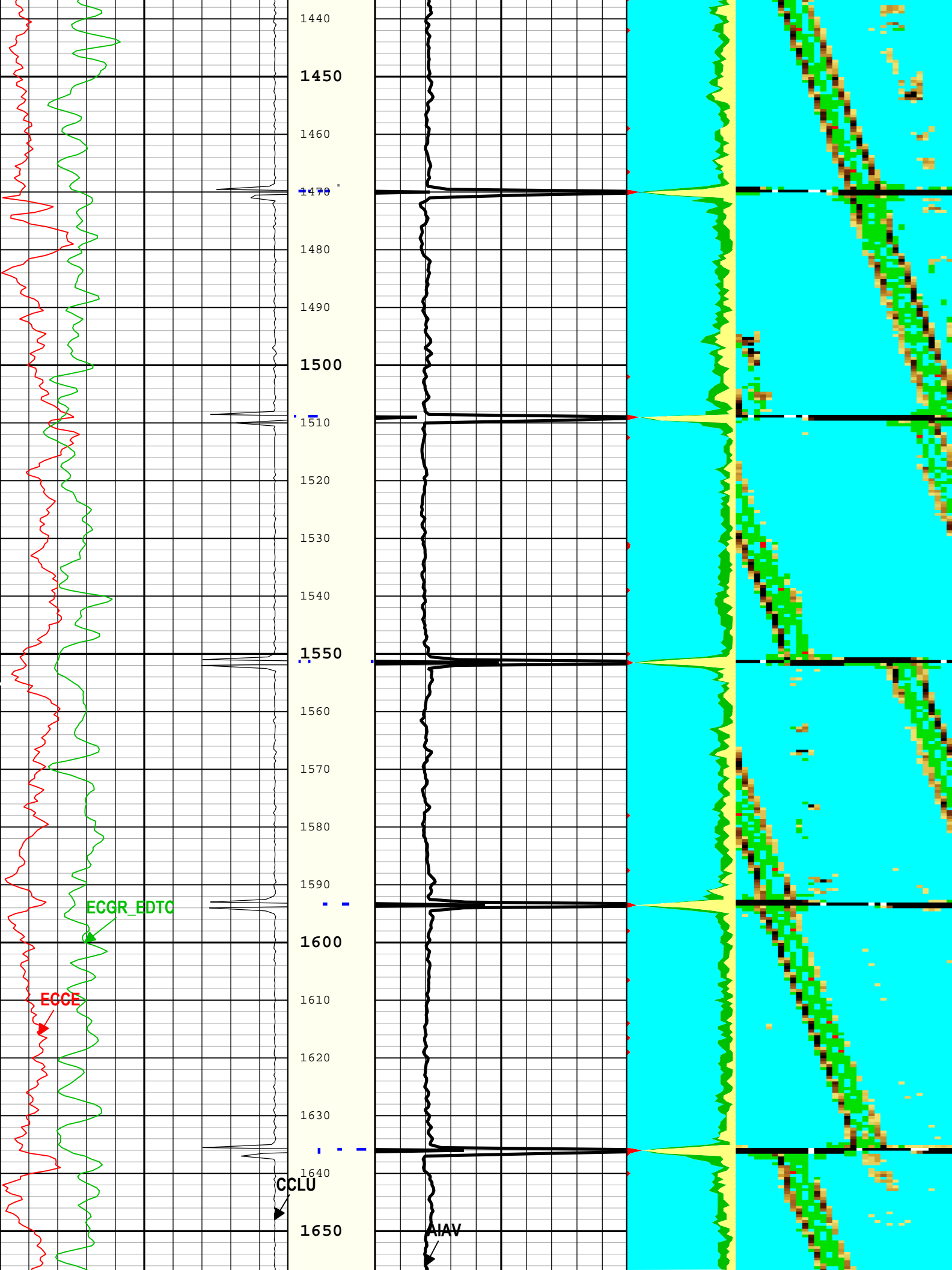


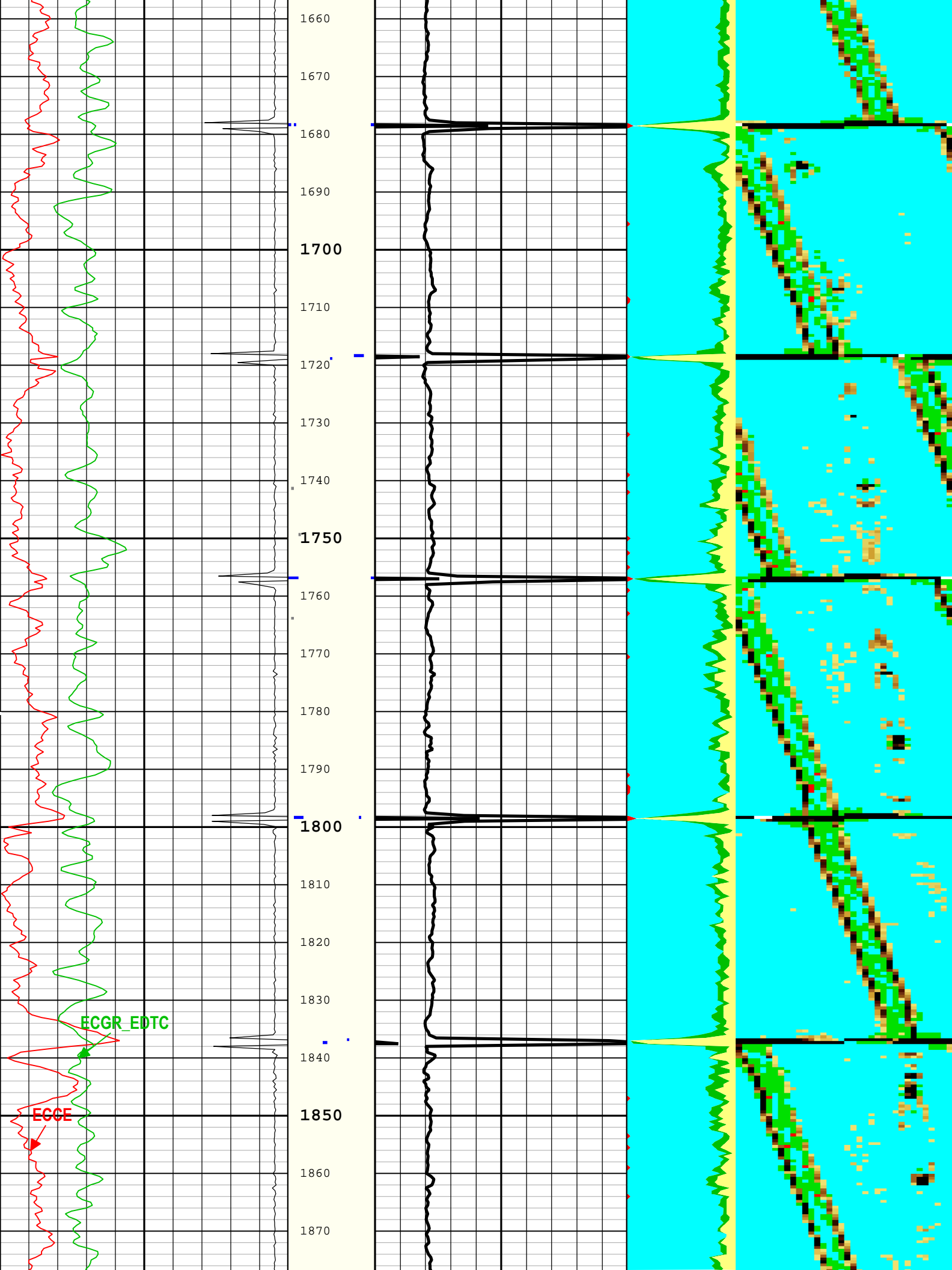


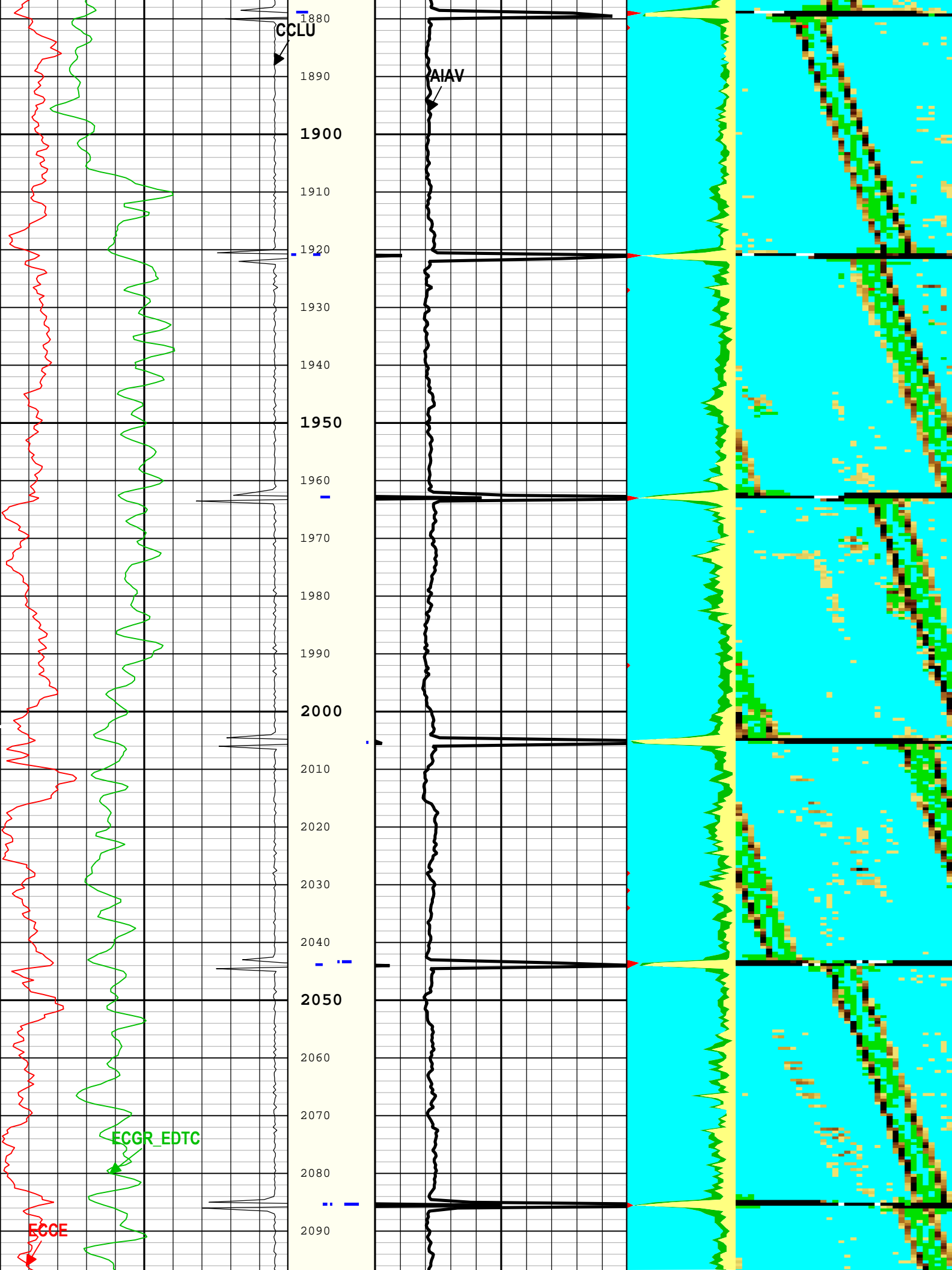


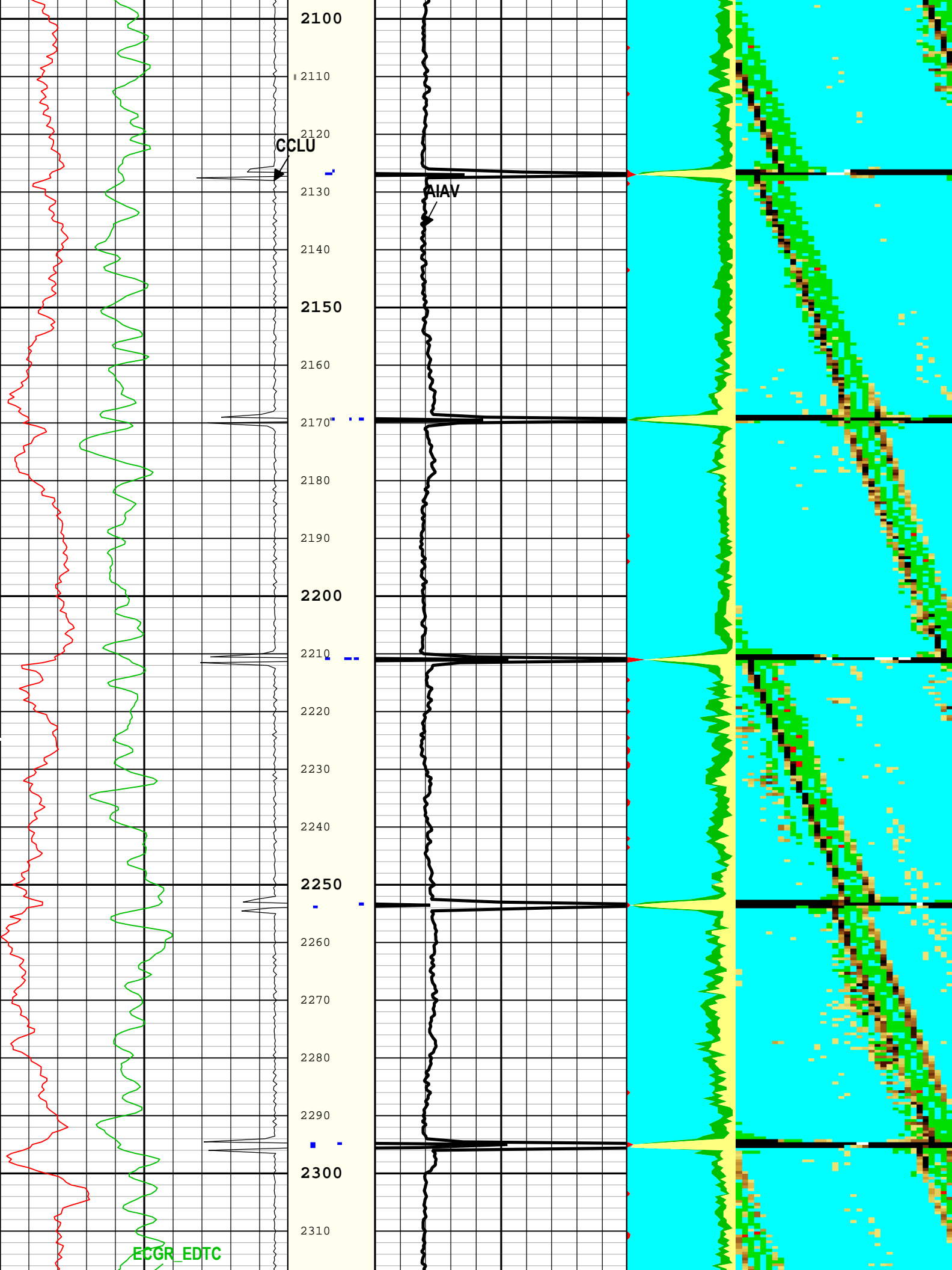


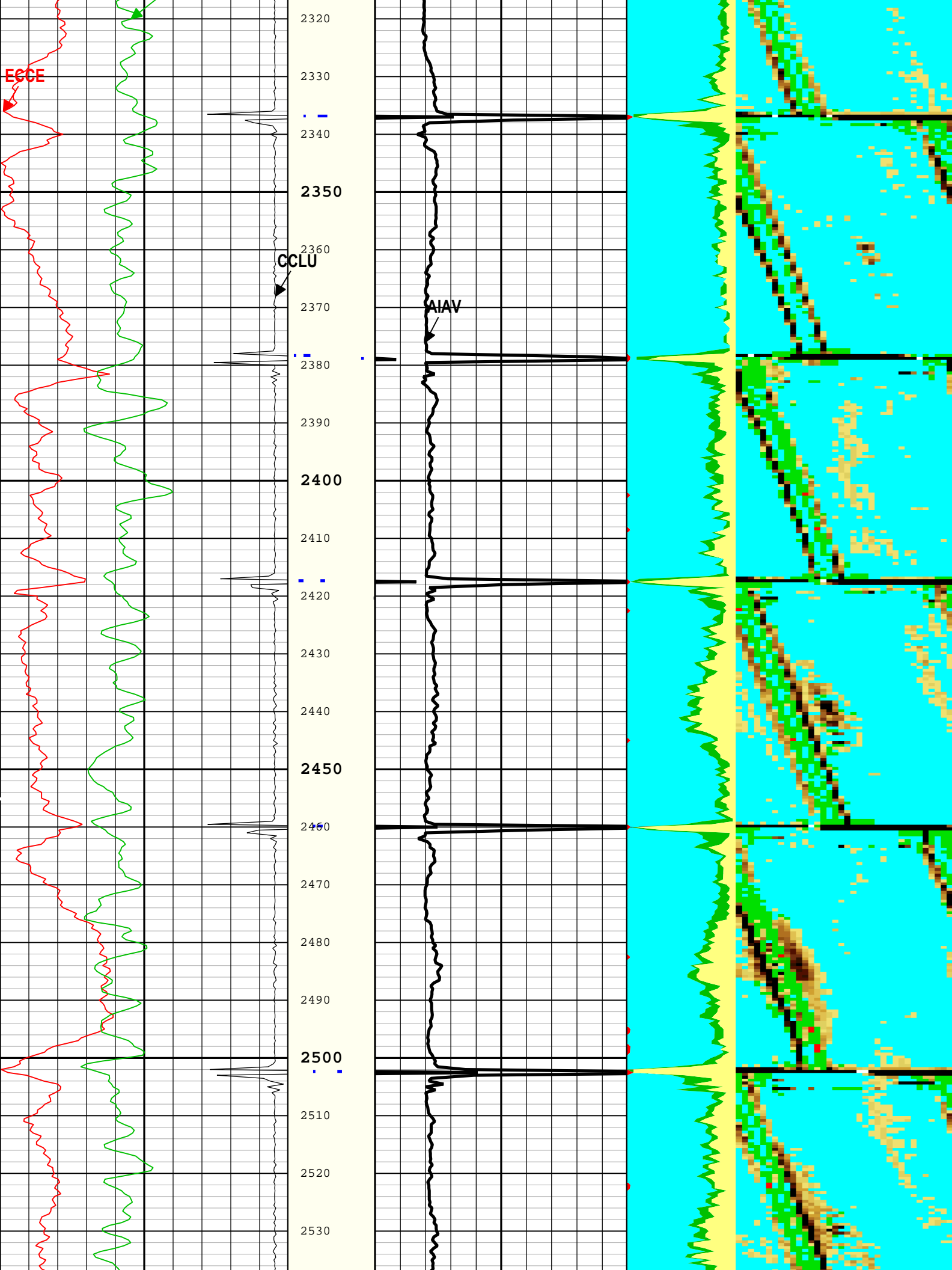


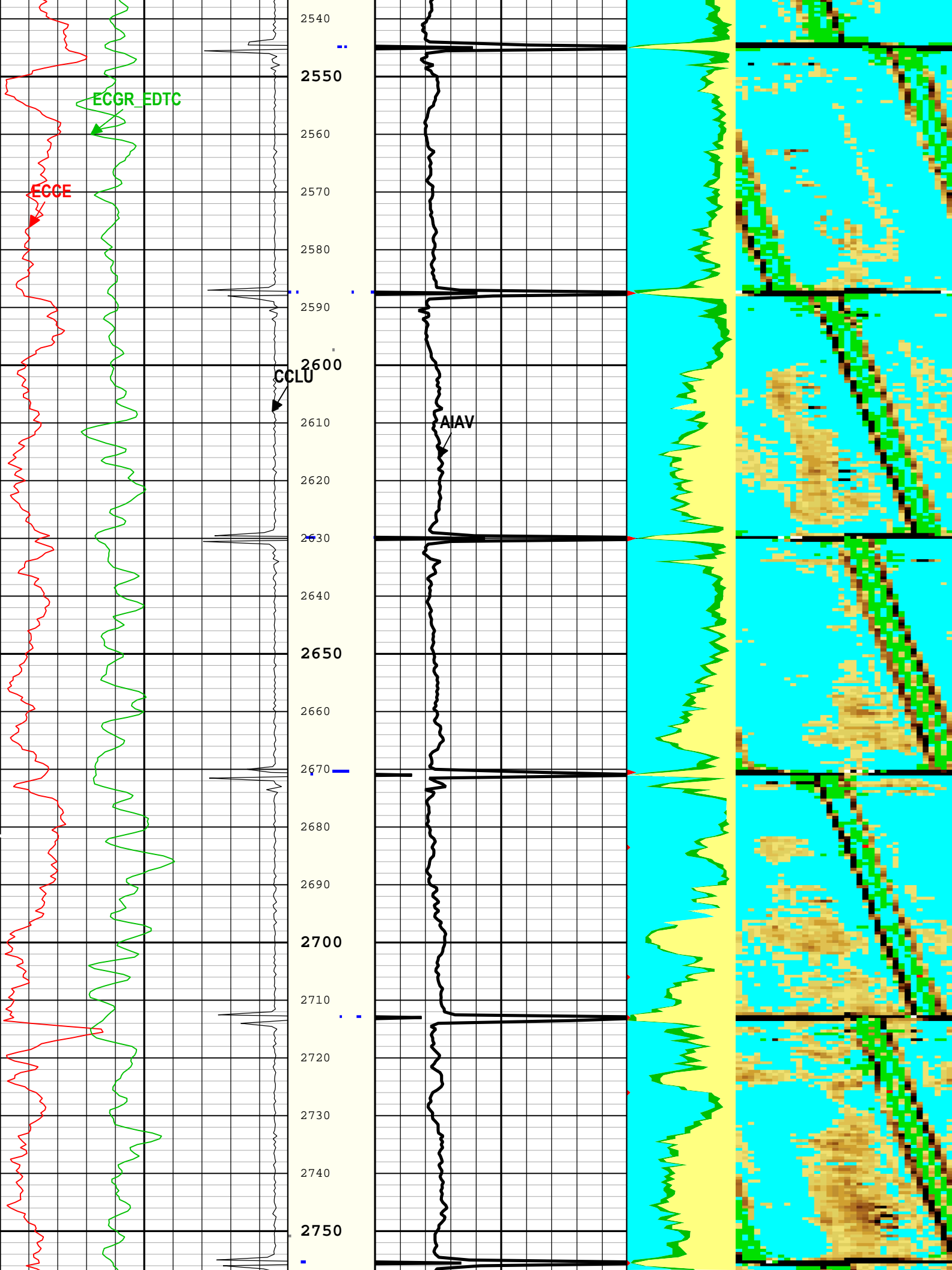


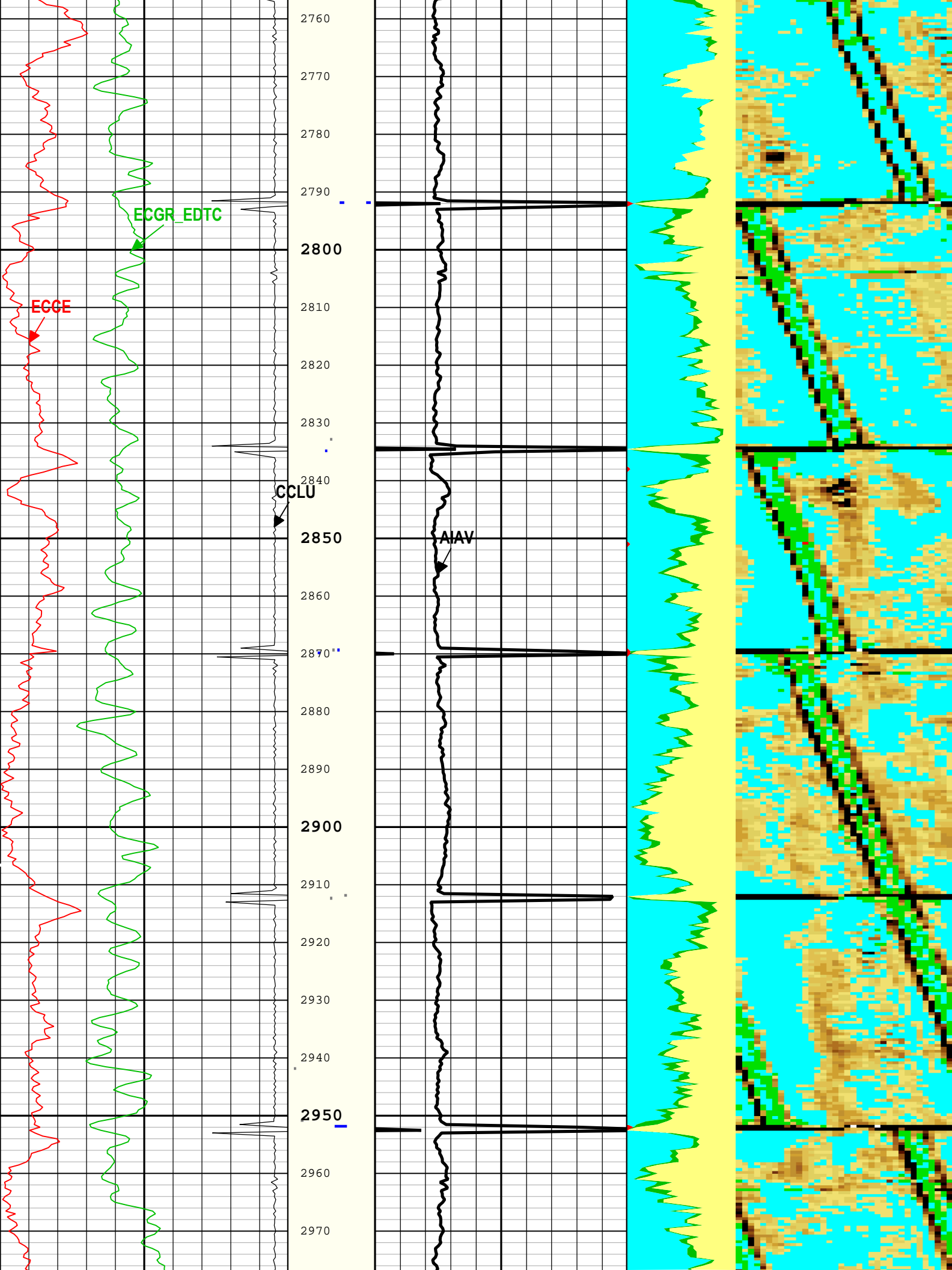


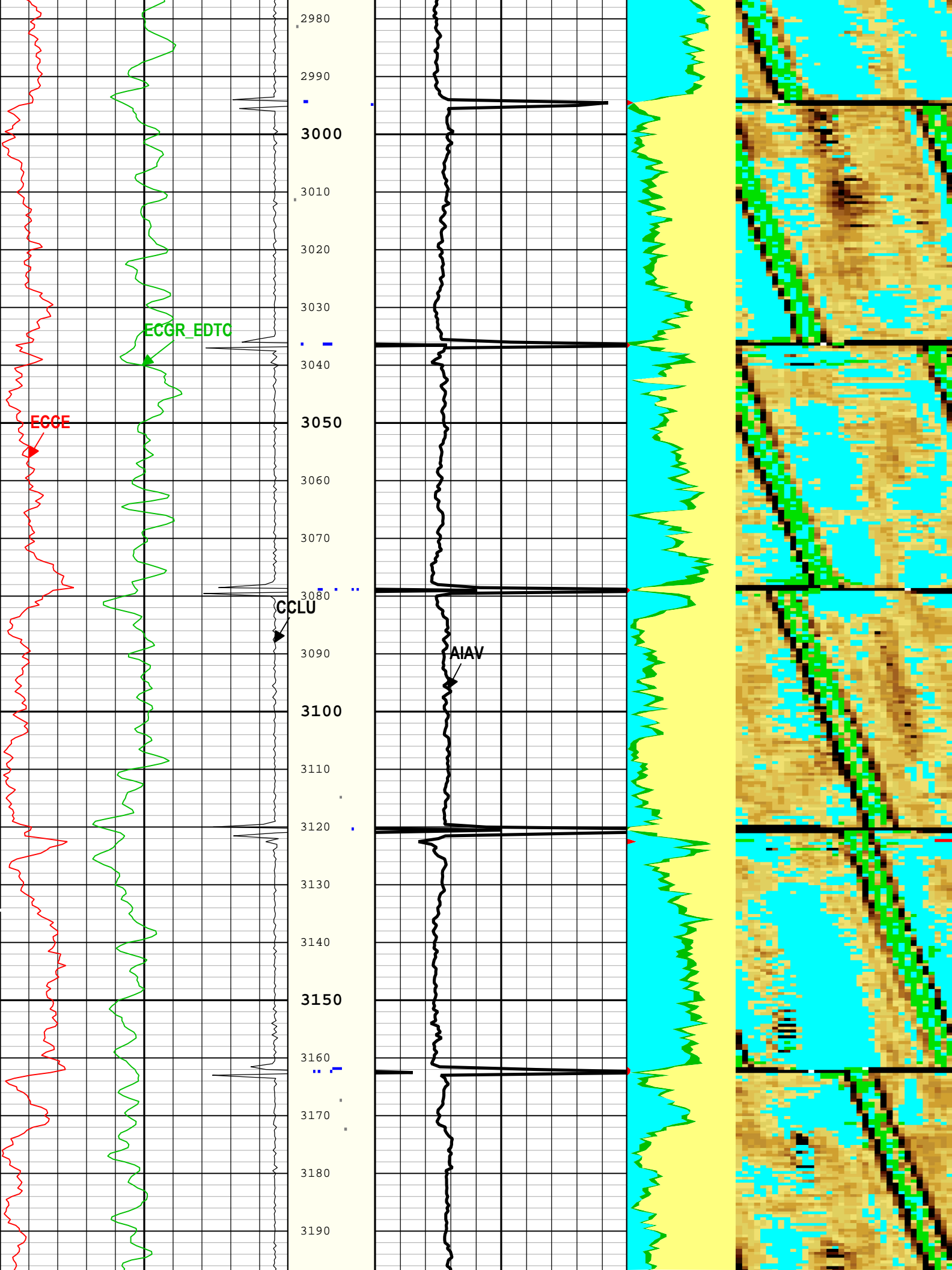


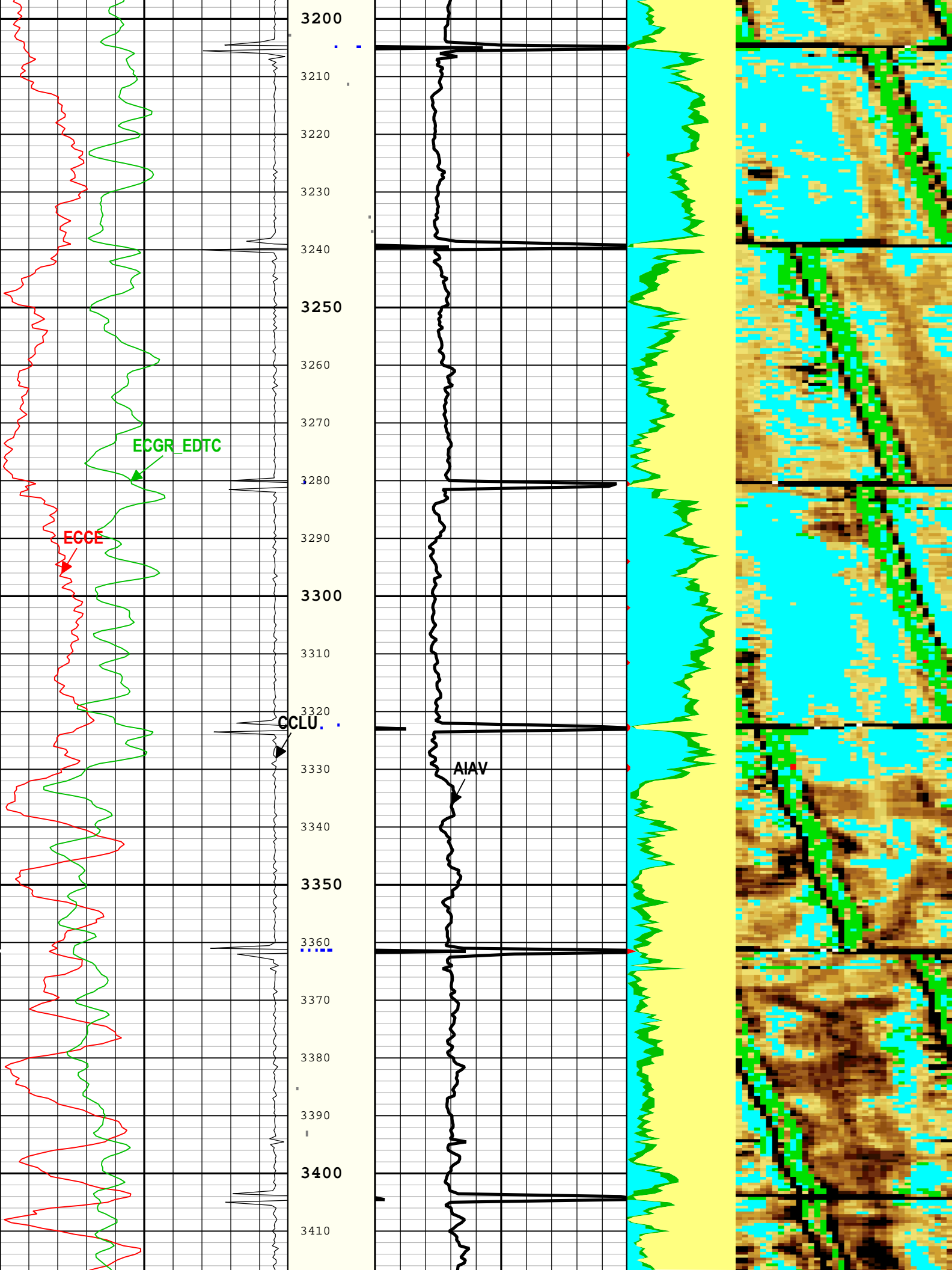


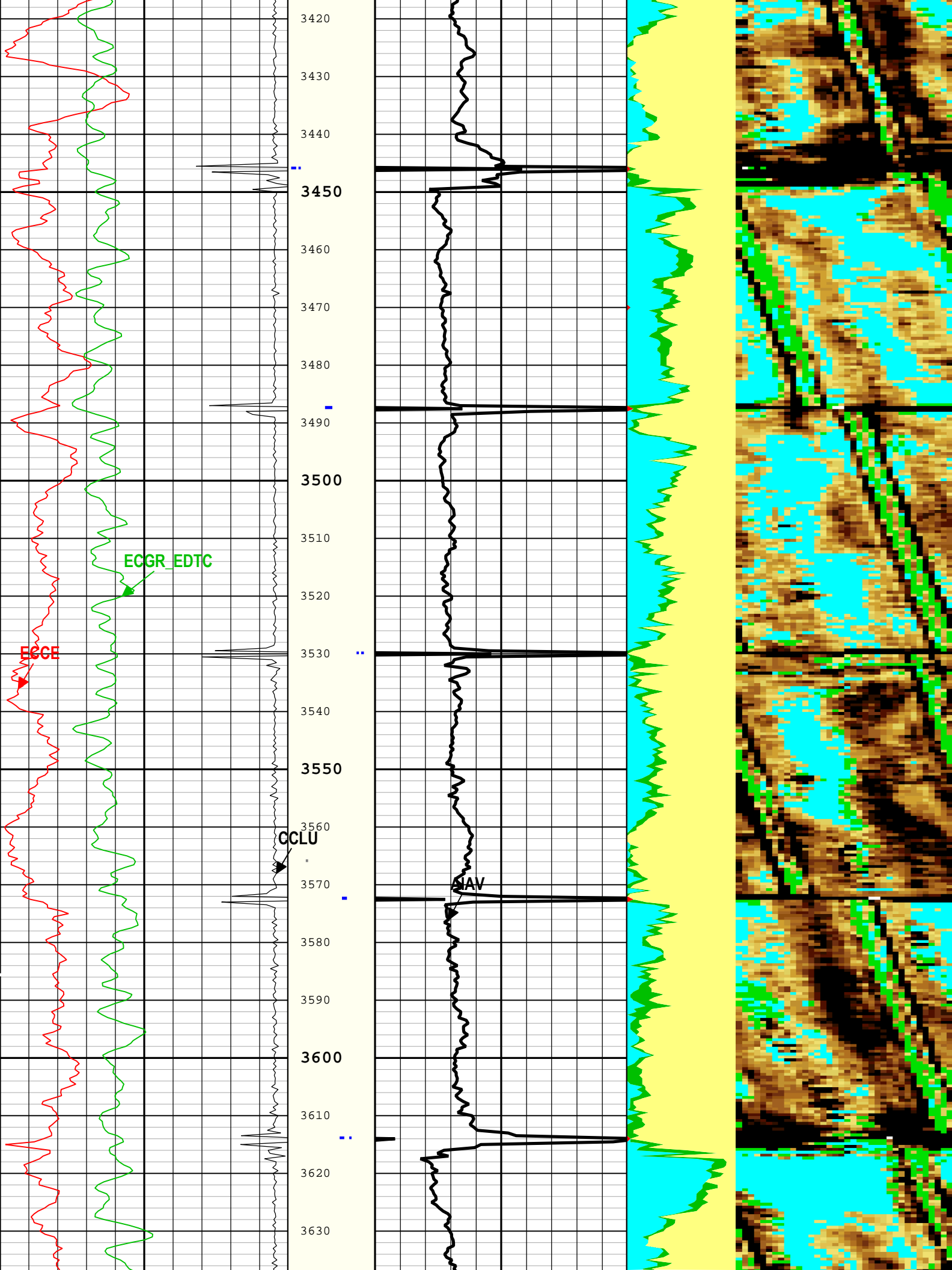


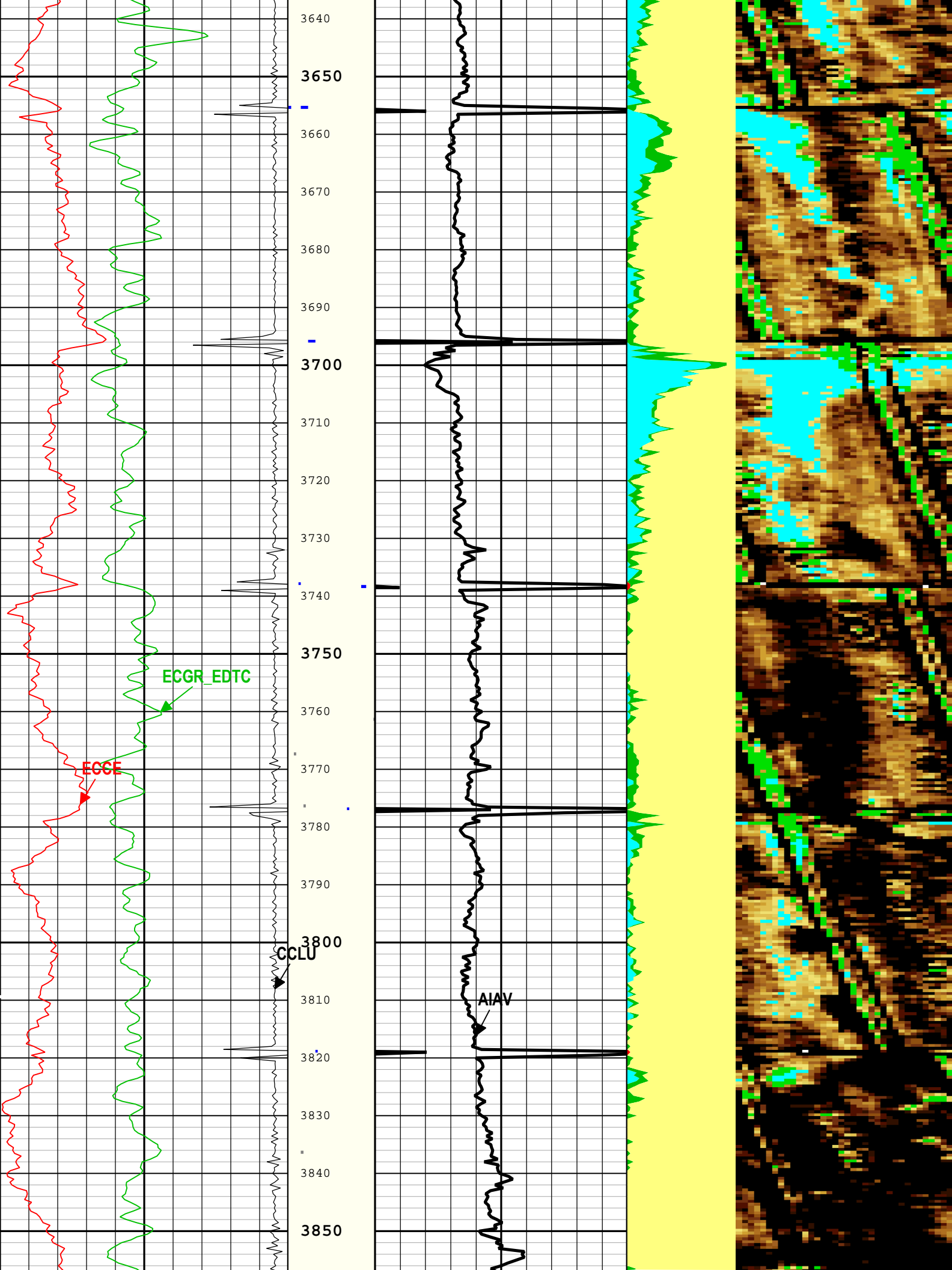


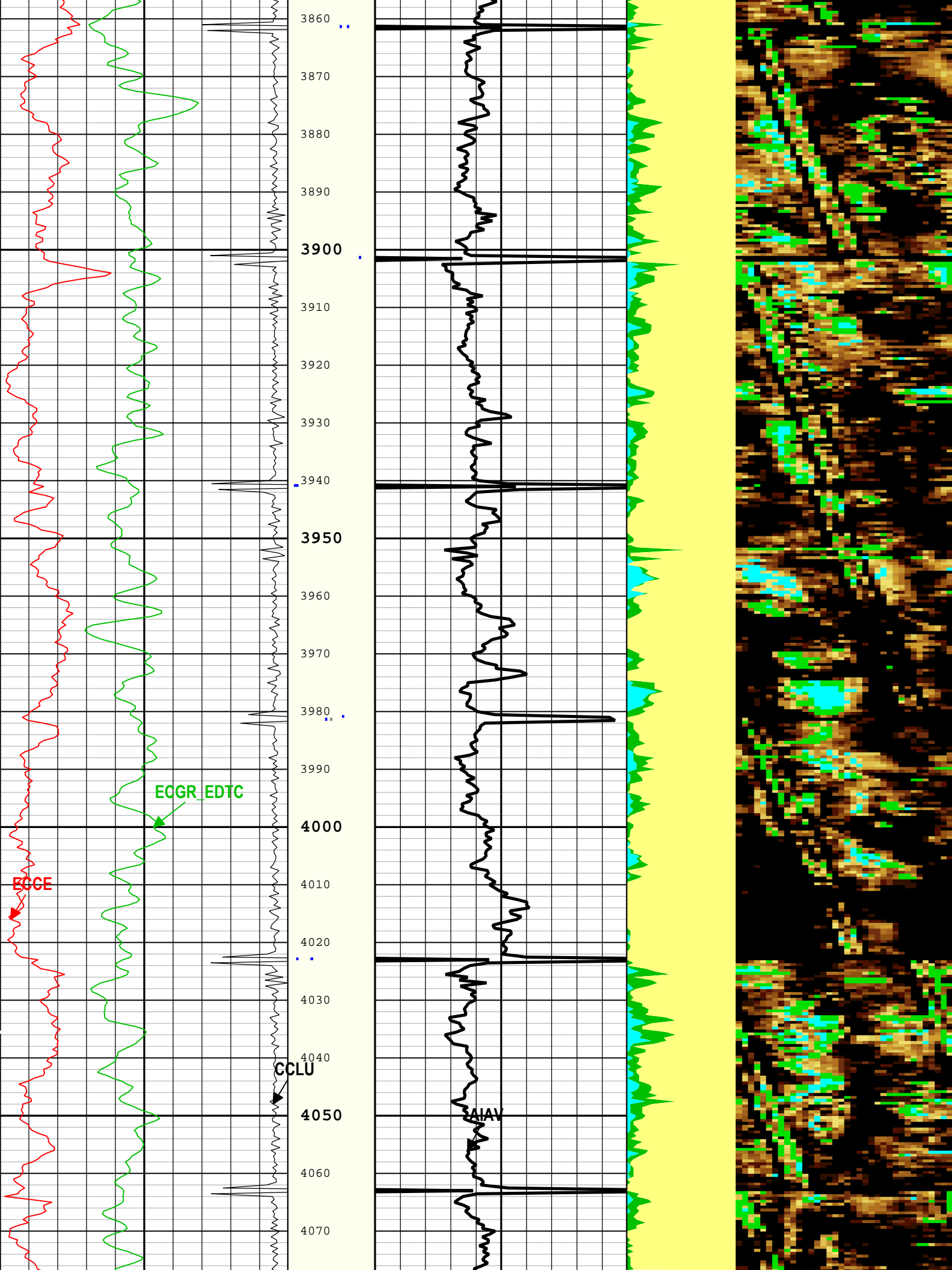


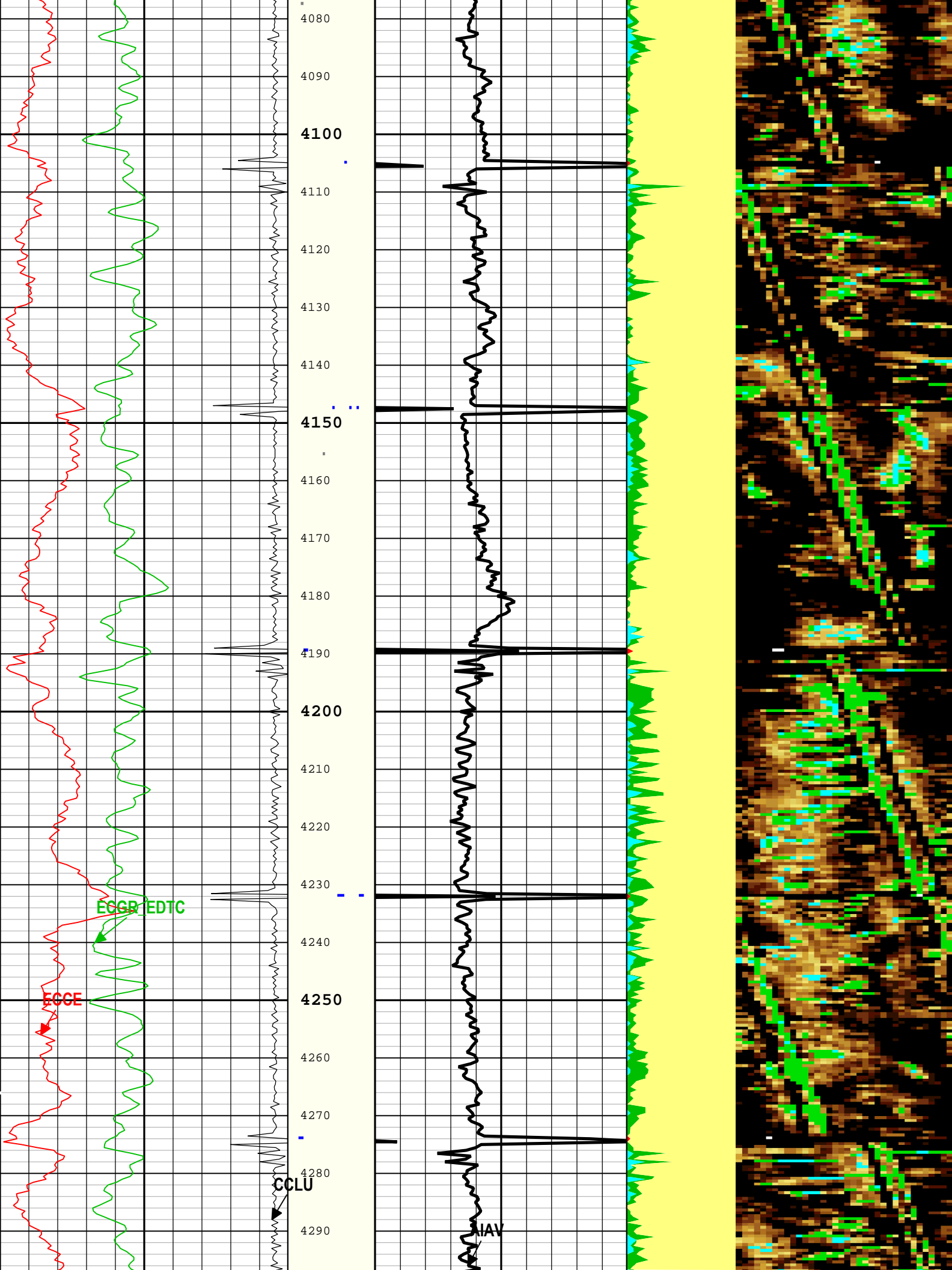


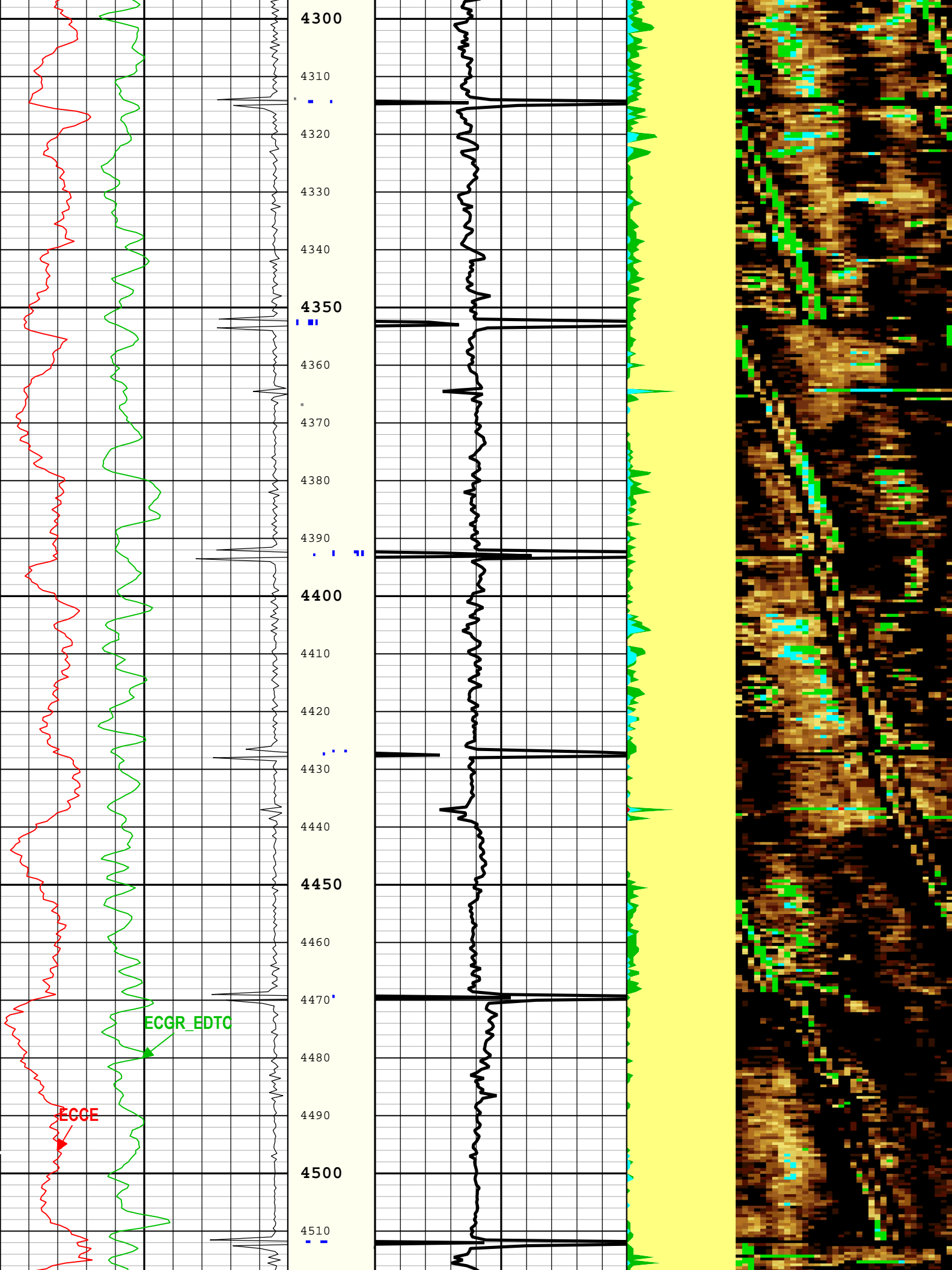


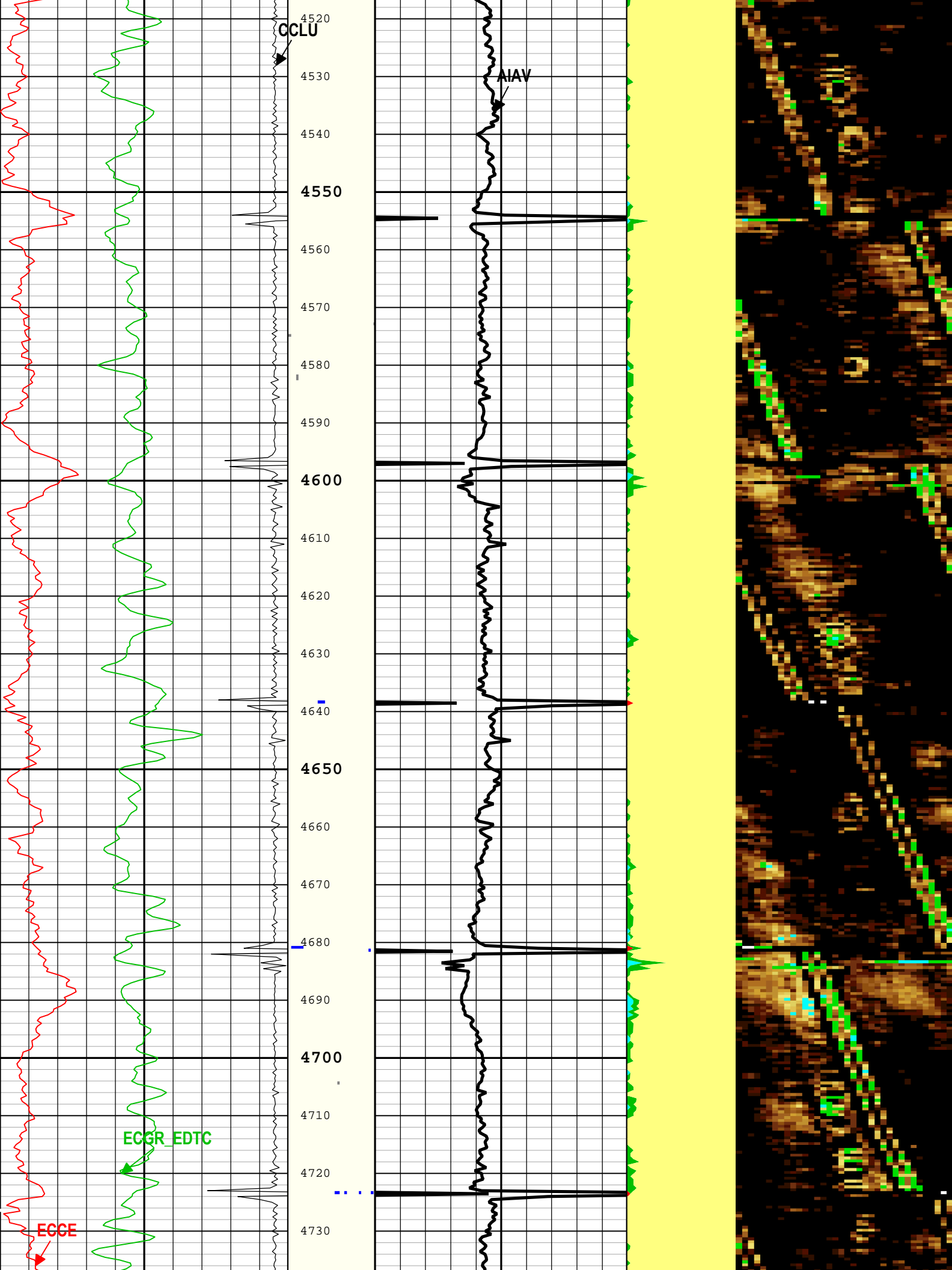


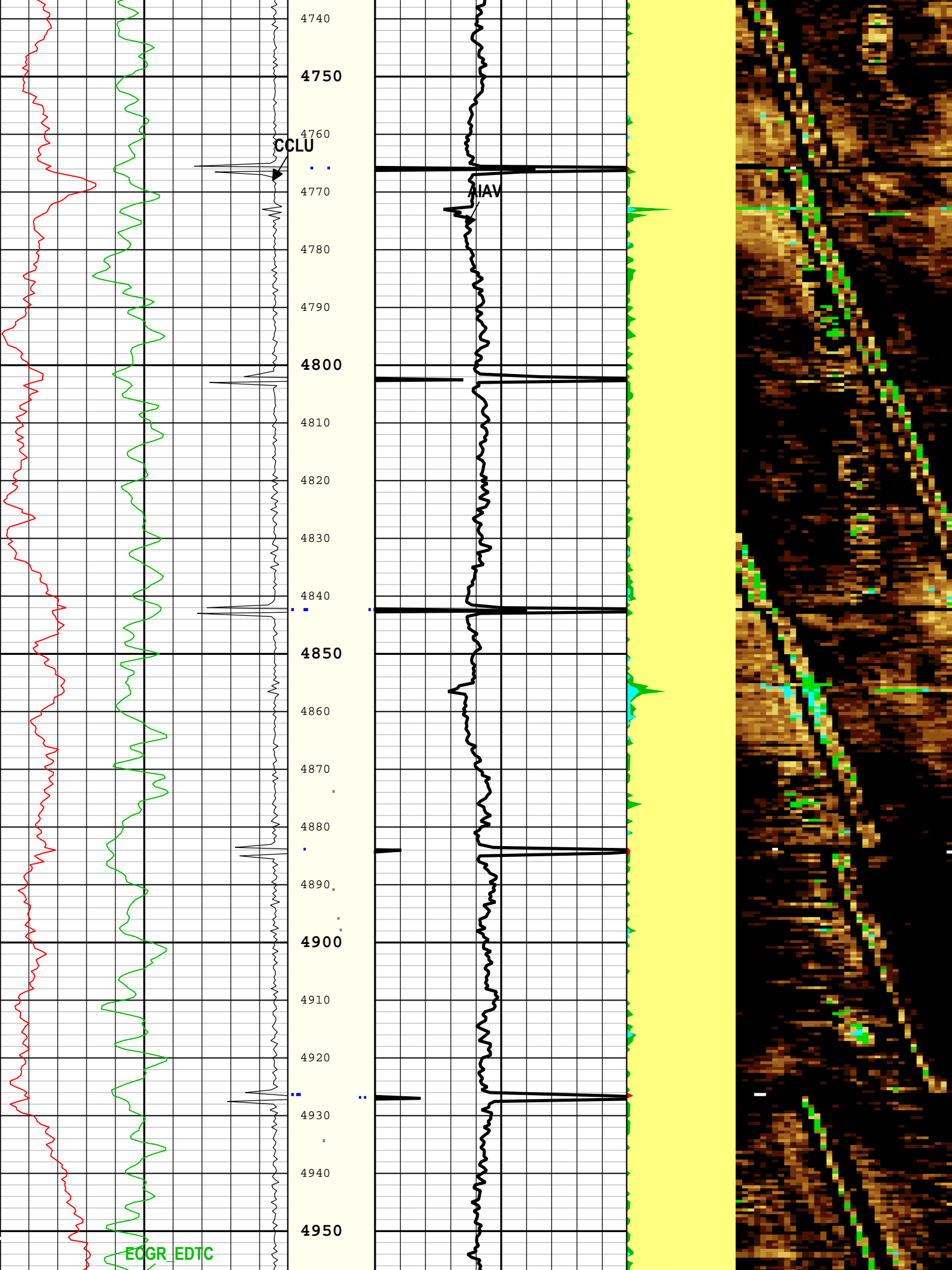


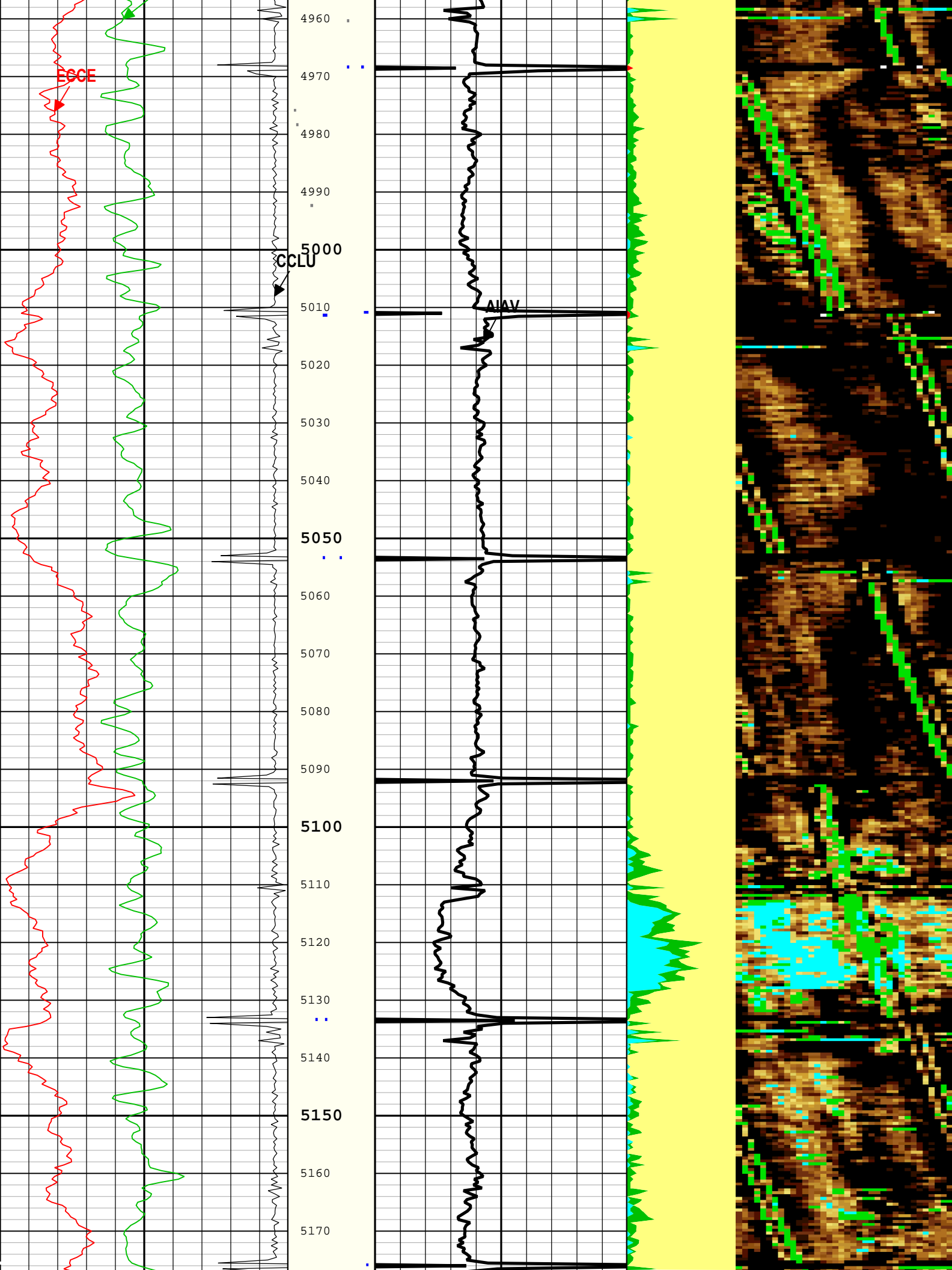


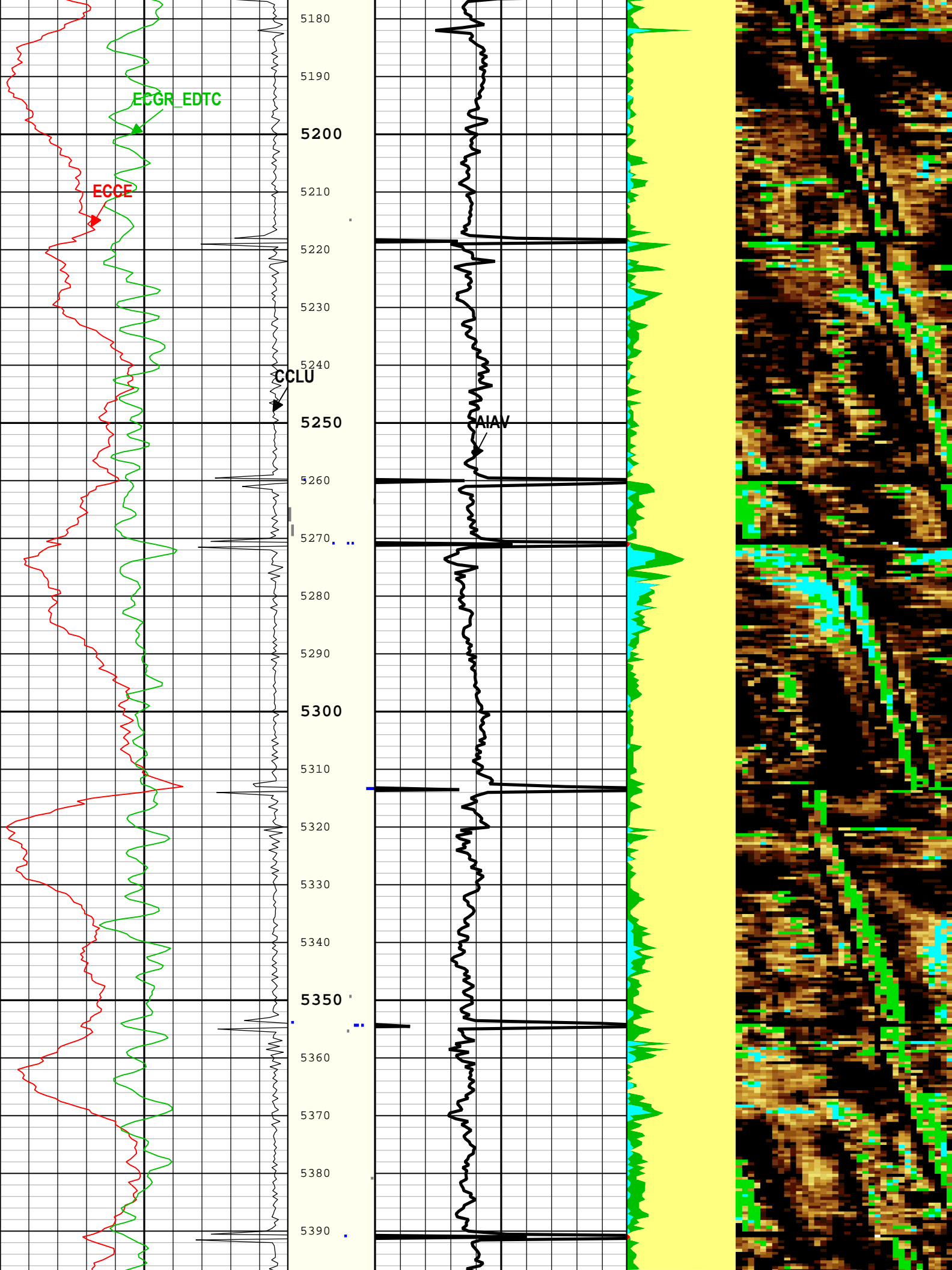












Run 2: Parameters

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	5900	ft
WINB	Window Begin Time	USIT-E	Time Zoned	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)
EMXV	30	02-Sep-2016 08:49:05	02-Sep-2016 08:56:05	5910.35	5883.69
EMXV	40	02-Sep-2016 08:56:05	02-Sep-2016 08:56:14	5883.69	5869.68
EMXV	45	02-Sep-2016 08:56:14	02-Sep-2016 08:57:54	5869.68	5638.77
EMXV	60	02-Sep-2016 08:57:54	02-Sep-2016 08:58:41	5638.77	5466.55
EMXV	75	02-Sep-2016 08:58:41	02-Sep-2016 08:59:37	5466.55	5259.97
EMXV	65	02-Sep-2016 08:59:37	02-Sep-2016 09:23:35	5259.97	66.01
WINB	15	02-Sep-2016 08:49:05	02-Sep-2016 09:01:00	5910.35	4950.34
WINB	20	02-Sep-2016 09:01:00	02-Sep-2016 09:23:35	4950.34	66.01
WINE	75	02-Sep-2016 08:49:05	02-Sep-2016 08:57:21	5910.35	5750.42
WINE	85	02-Sep-2016 08:57:21	02-Sep-2016 09:00:57	5750.42	4960.27
WINE	75	02-Sep-2016 09:00:57	02-Sep-2016 09:23:35	4960.27	66.01

All depth are at tool zero.

Run 2

0 PSI Repeat 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
Run 2	Log[5]:Up	Up	1968.70 ft	2503.66 ft	02-Sep-2016 8:33:04 AM	02-Sep-2016 8:36:08 AM	ON	2.13 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Noble Energy Inc

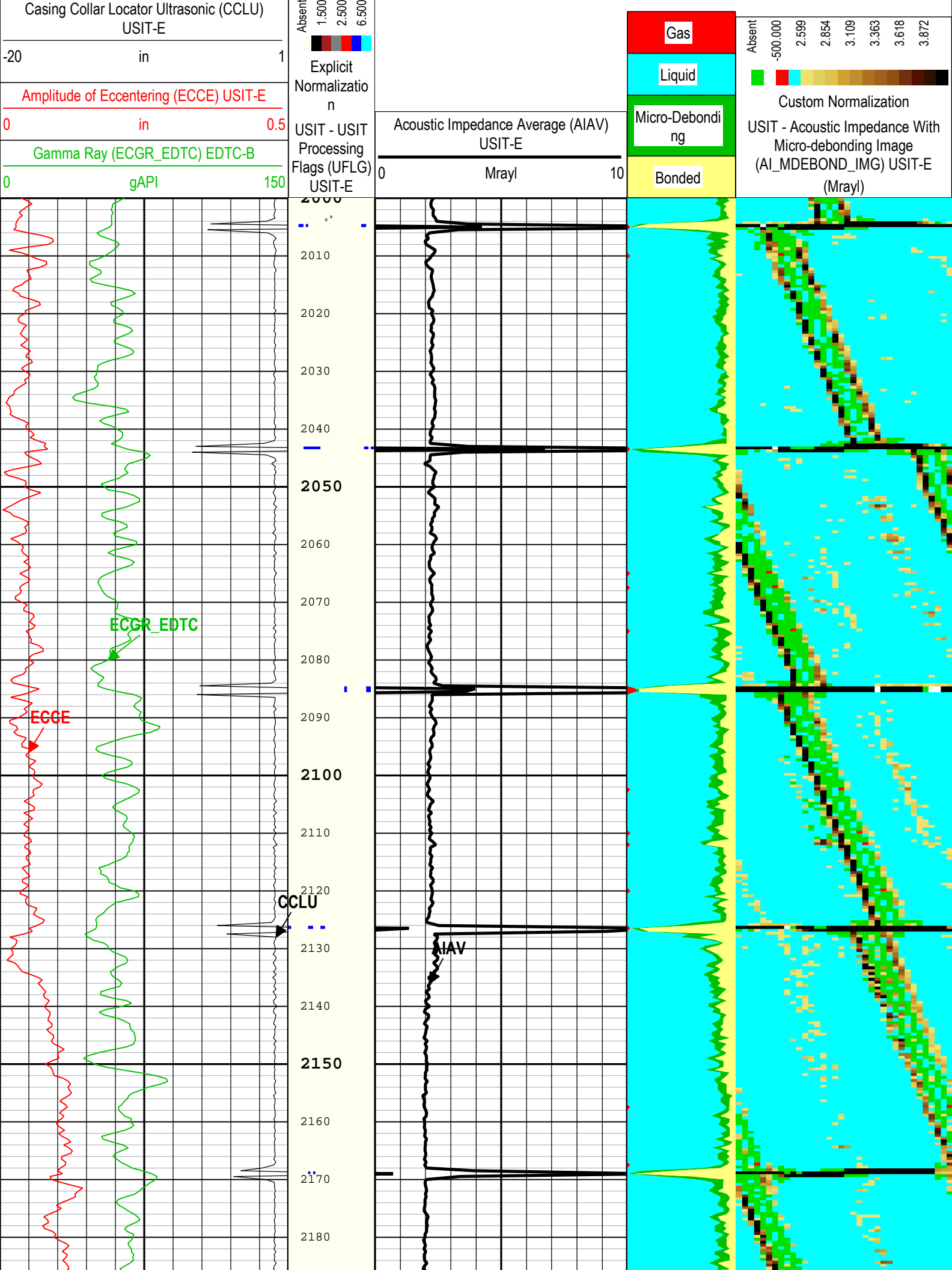
Well:Reagan LD06-675

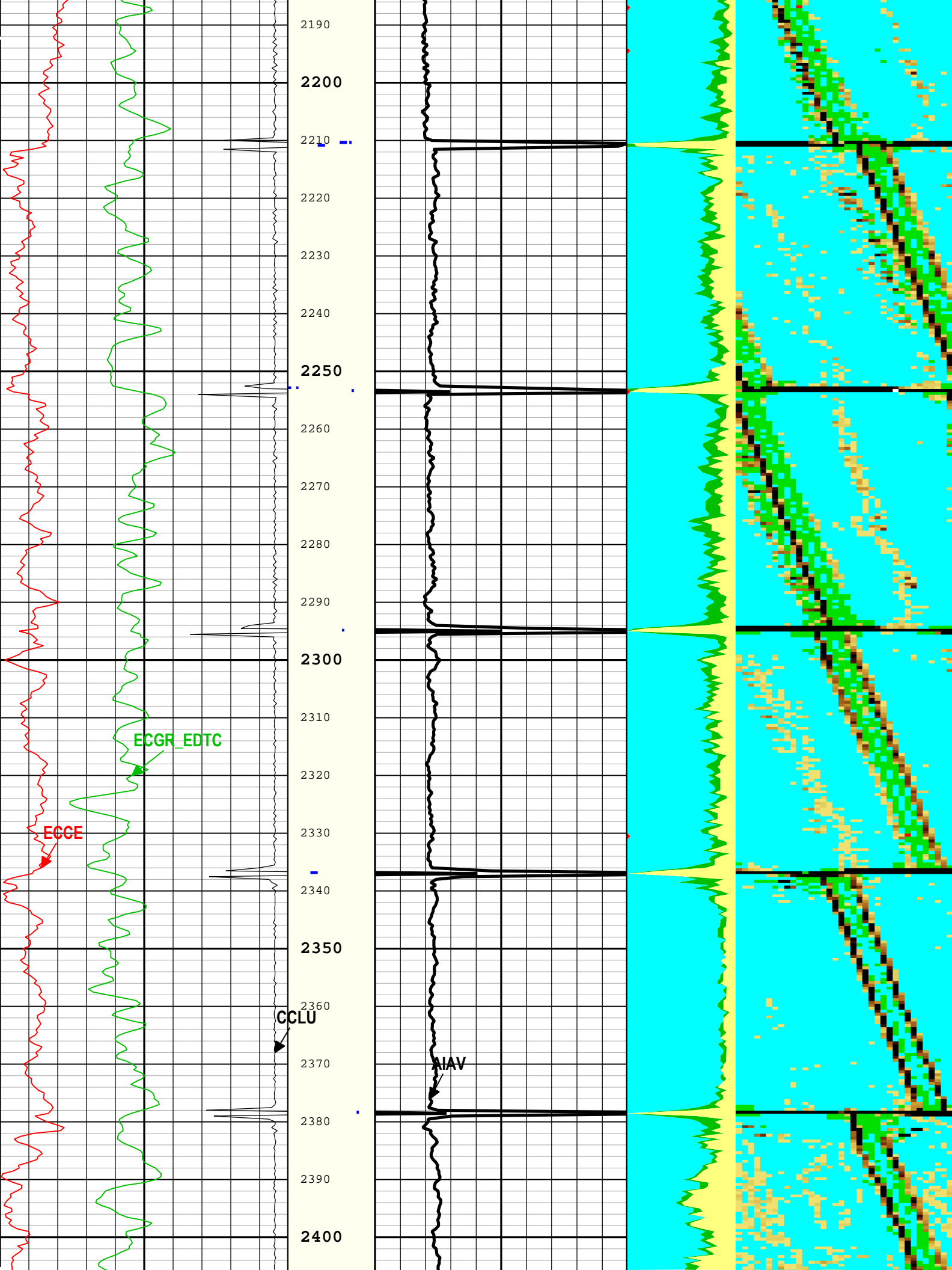
Run 2: Log[5]:Up:S009

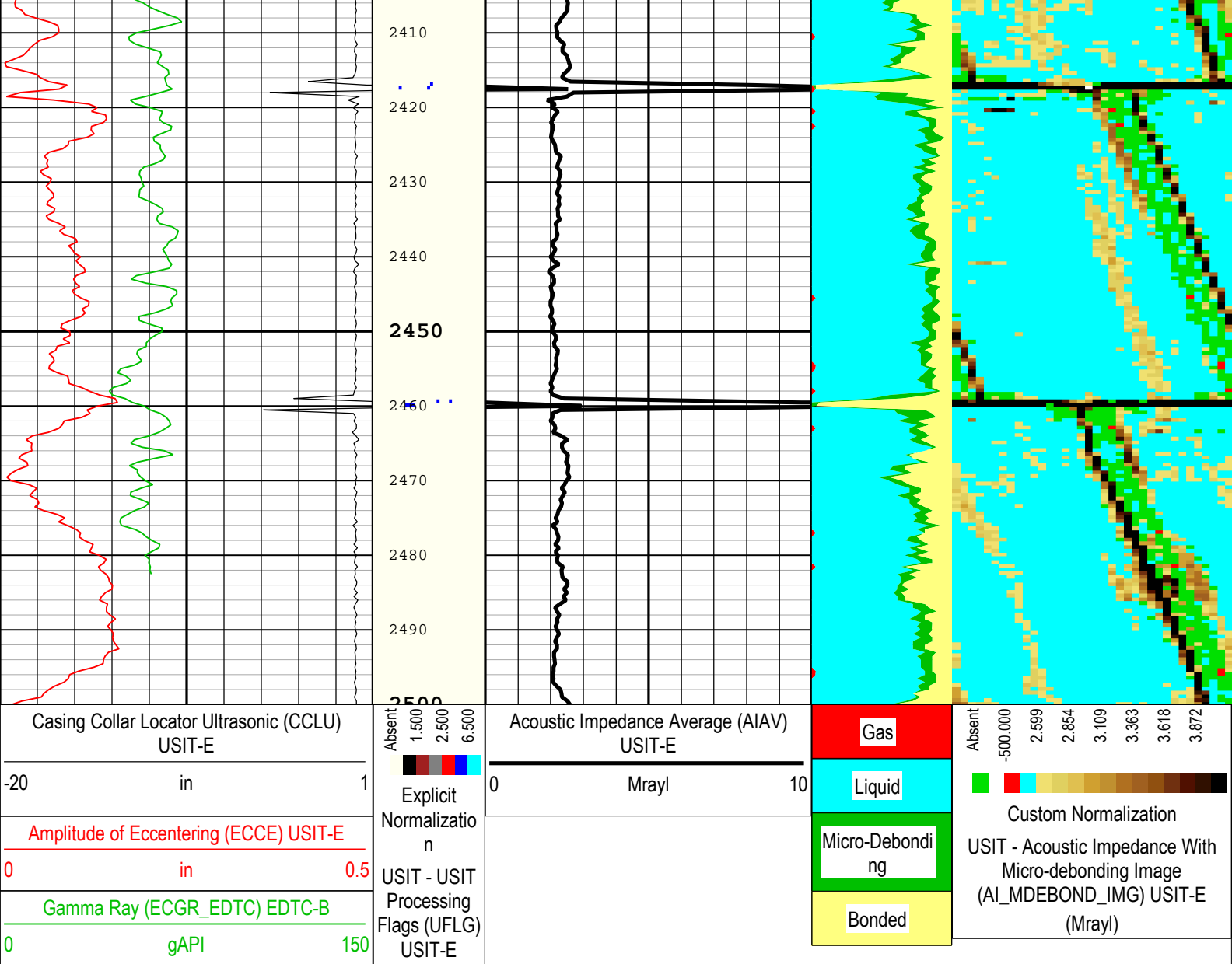
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Creation Date: 02-Sep-2016 09:55:06

TIME_1900 - Time Marked every 60.00 (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: 02-Sep-2016 09:55:06

Channel Processing Parameters				
Run 2: 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	8.5	in
CBLO	Casing Bottom (Logger)	WLSESSION	16018.5	ft
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Light Cement	
DFD	Drilling Fluid Density	Borehole	8.8	lbm/gal
DFT	Drilling Fluid Type	Borehole	Water	
DTMD	Borehole Fluid Slowness	Borehole	190	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	1.18	
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	1.78	Mrayl
ZTCM	Acoustic Impedance Threshold for Cement	USIT-E	2.6	Mrayl
ZTGS	Acoustic Impedance Threshold for Gas	USIT-E	0.3	Mrayl

Tool Control Parameters

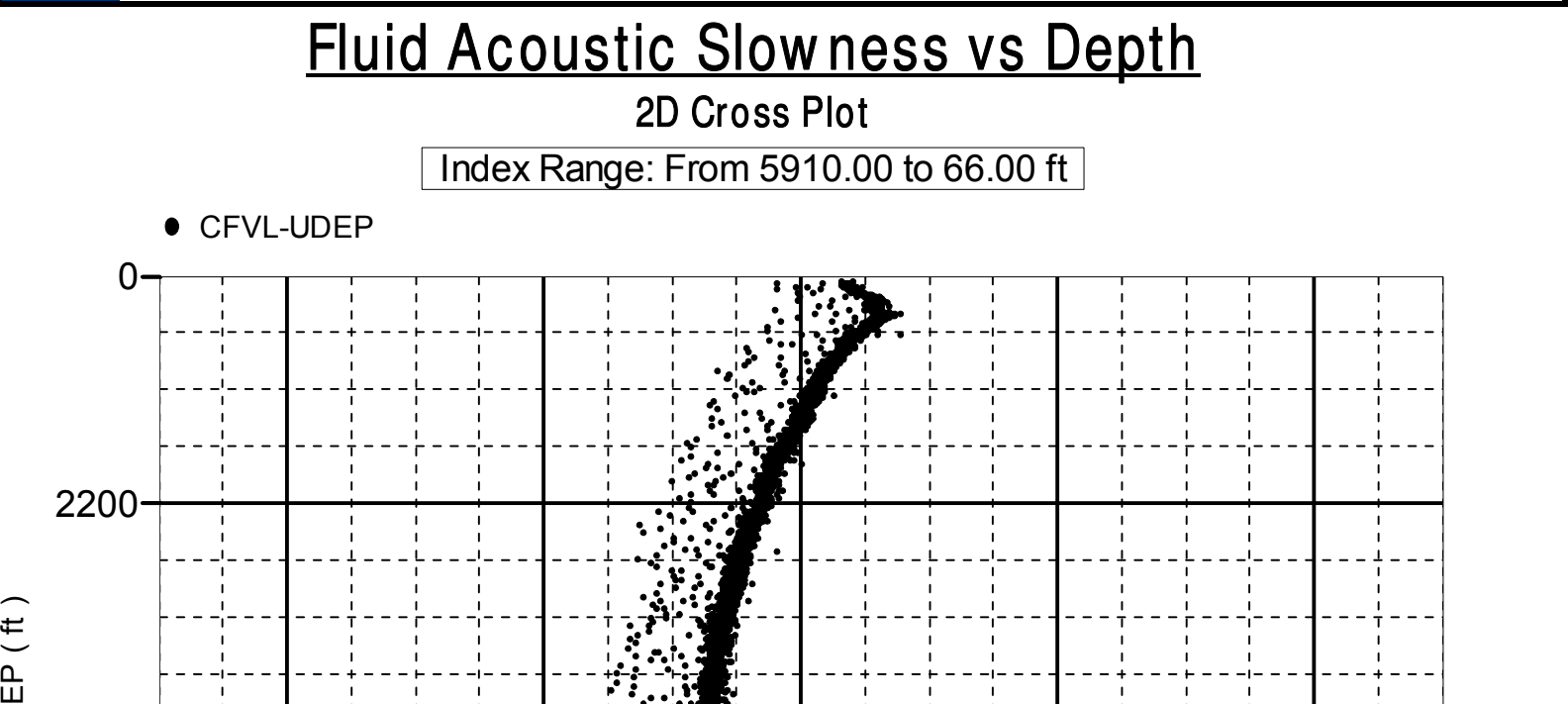
Run 2: Parameters

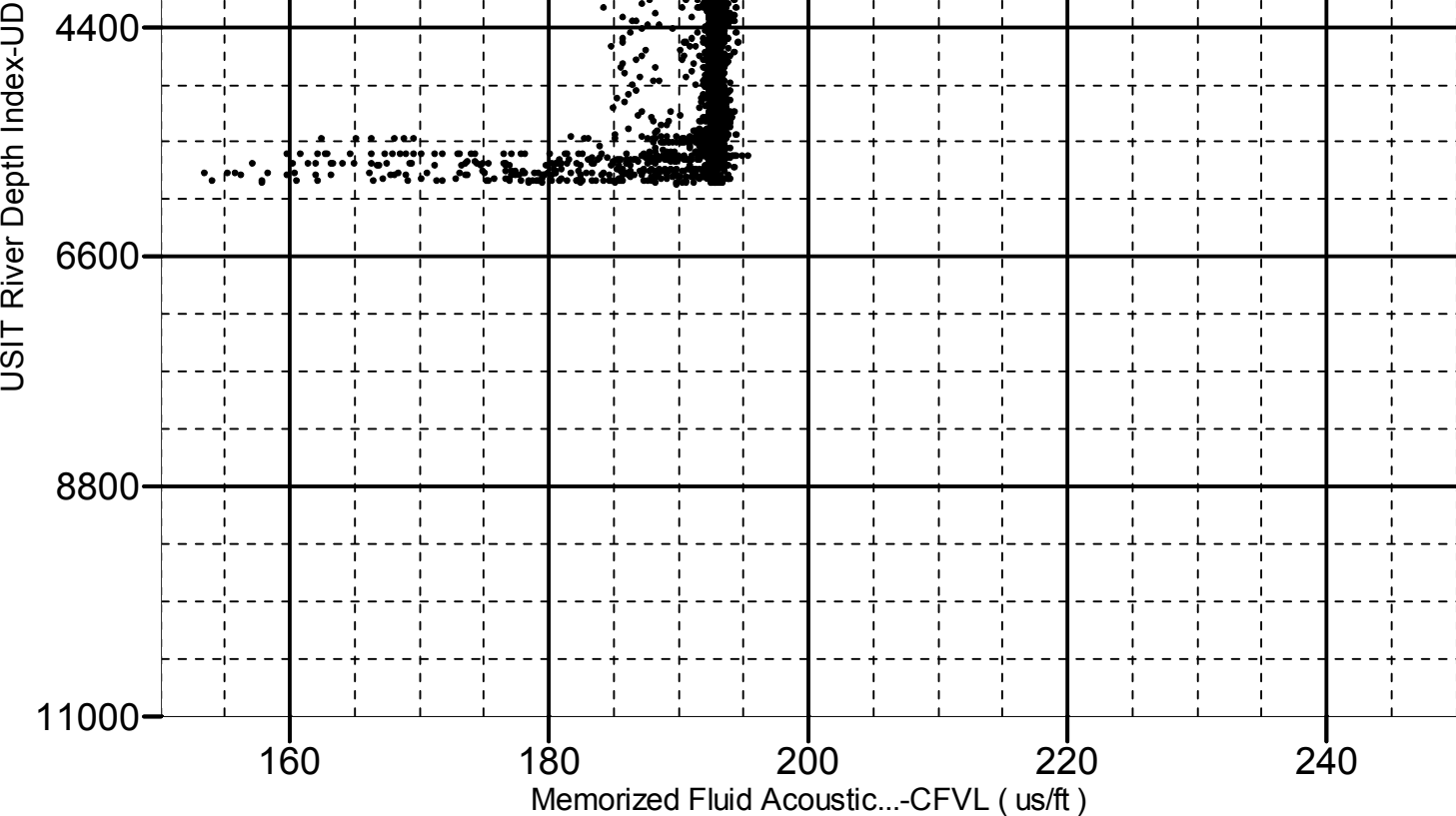
Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	18	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
EMXV	EMEX Voltage	USIT-E	30	V
HRES	Horizontal Resolution	USIT-E	10 deg	
TMUC	Type of Mud	USIT-E	BRI	
ULOG	Logging 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	27.85	us
WINE	Window End Time	USIT-E	67.85	us

XYZ

Company:Noble Energy Inc Well:Reagan LD06-675

Run 2: Log[7]:Up:S009

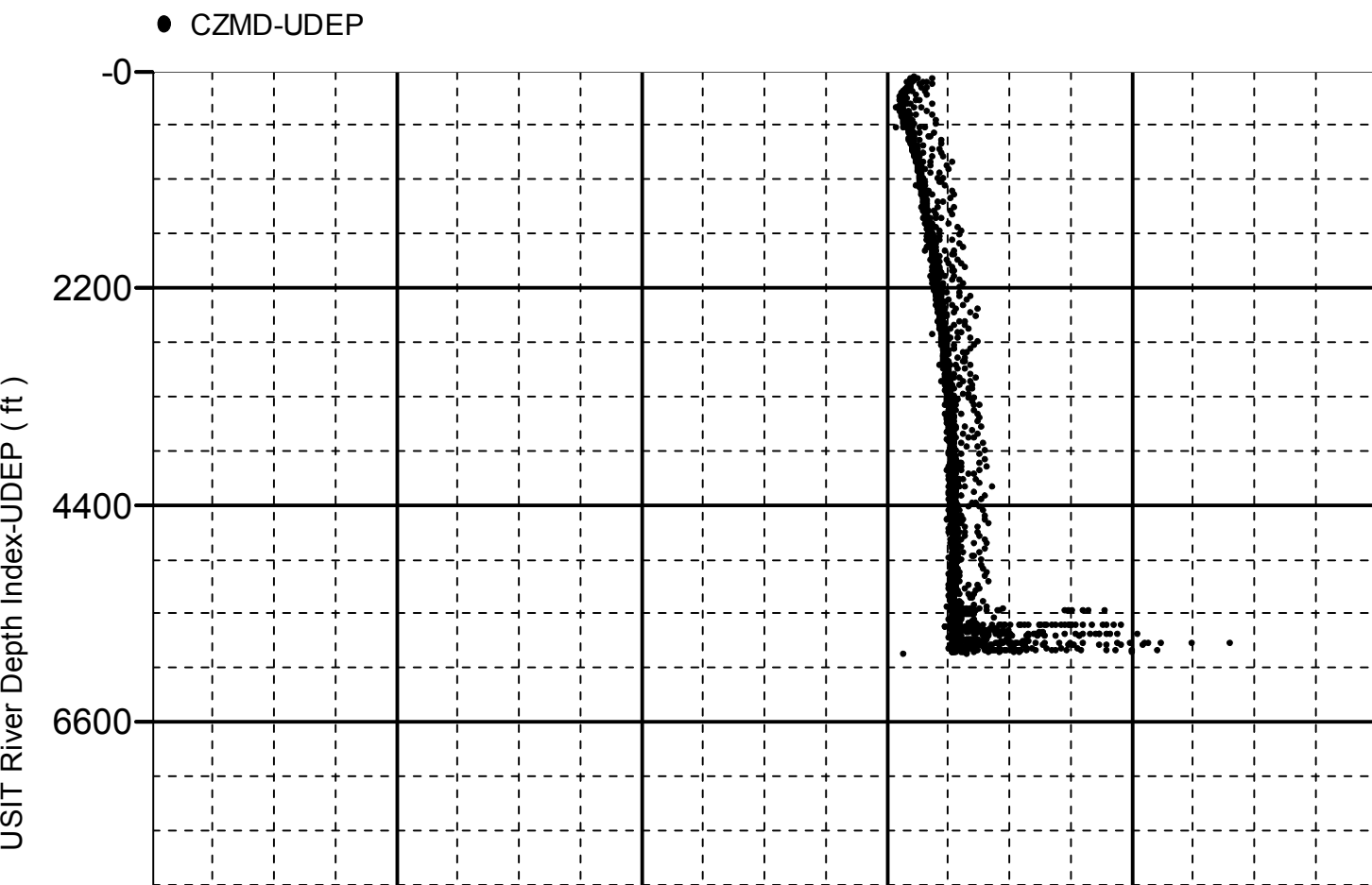


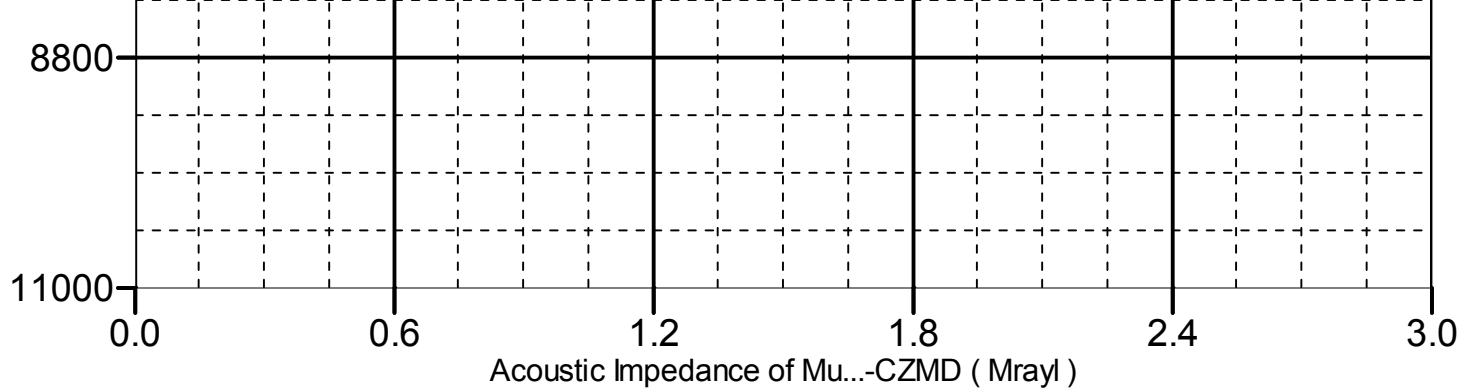


Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 5910.00 to 66.00 ft





Company:	Noble Energy Inc	Schlumberger
Well:	Reagan LD06-675	
Field:	Wildcat	
County:	Weld	
Country:	US	

UltraSonic Summary Print