

Company: Noble Energy Inc

Well: SLW Ranch State BB07-660

Field: Wattenberg

County: Weld Country:

UltraSonic Summary Print

County:		Weld			
Field:		Wattenberg			
Location:					
Well:		SLW Ranch State BB07-660			
Company:		Noble Energy Inc			
<div>API Serial No. 05-123-47007</div> <div>Max.Hole Deviation</div> <div>Longitude: -104.48598 degrees</div> <div>Latitude: 40.416940 degrees</div>		Location:			
		Permanent Datum:	Ground Level	Elev.:	K.B. 4661.00 ft
		Log Measured From:	Kelly Bushing	30.00 ft	G.L. 4631.00 ft
		Drilling Measured From:	Kelly Bushing		D.F. 4660.00 ft
		4631.00 f			
		above Perm.Datum			

Logging Date 28-Aug-2019

Run Number 1A

Depth Driller 17038.00 ft

Schlumberger Depth 17038.00 ft

Bottom Log Interval

Top Log Interval

Casing Fluid Type

Salinity

Density

Fluid Level

BIT/CASING/TUBING STRING

Bit Size

From

To

Casing/Tubing Size

Weight

Grade

From

To

Max Recorded Temperatures

Logger on Bottom

Unit Number

Recorded By

Witnessed By

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.

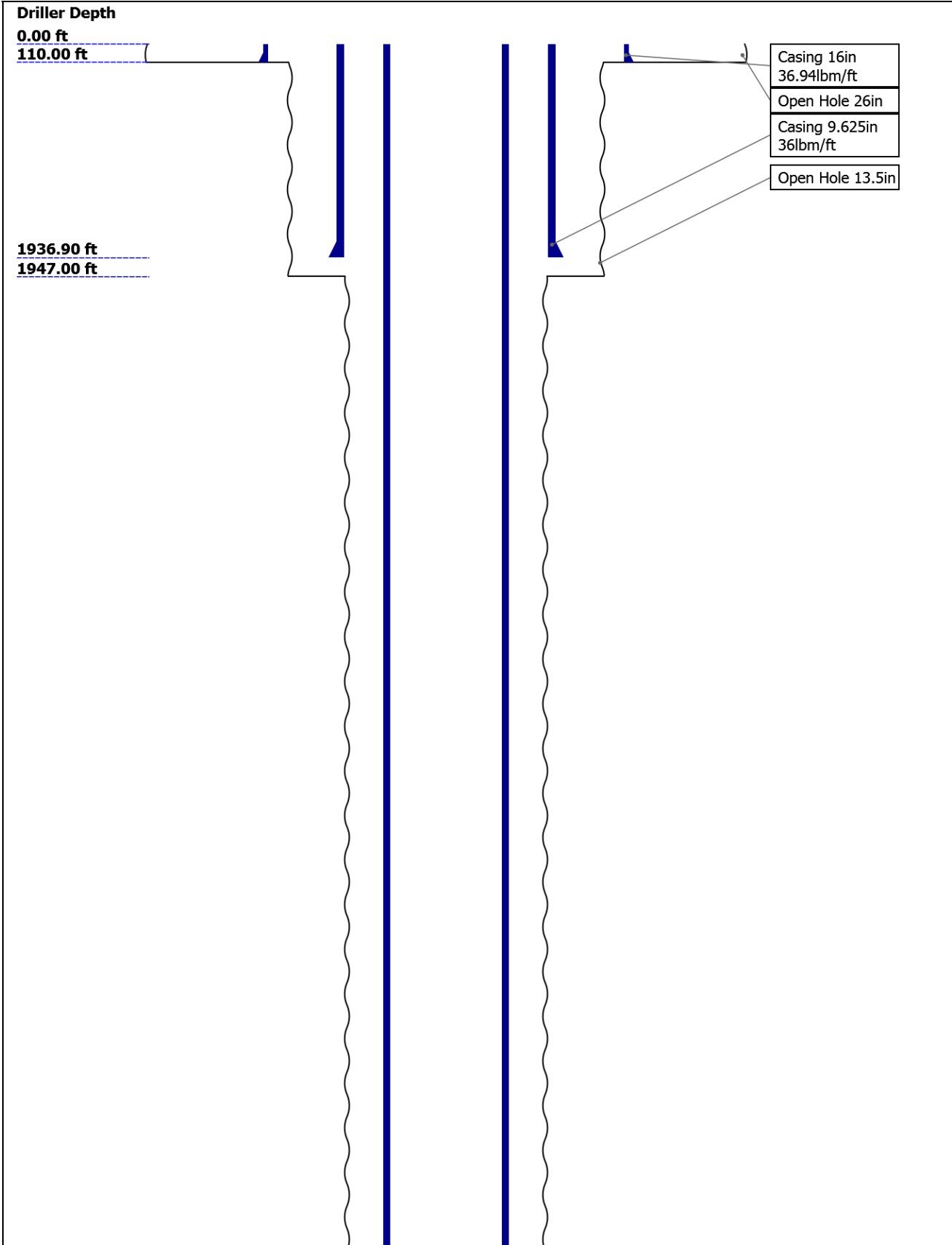
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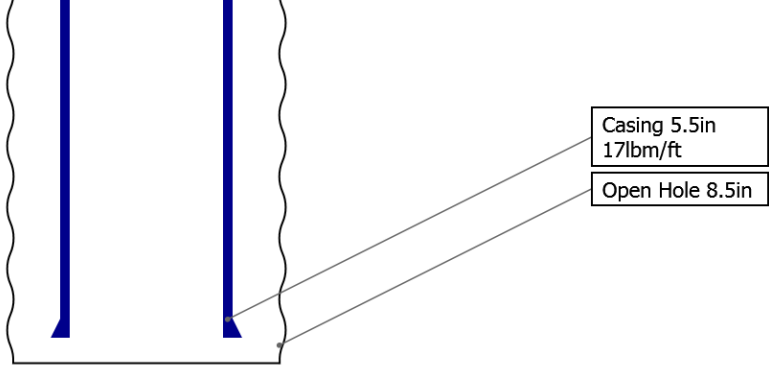
- in)
- 13. Tail

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Well Sketch




17024.30 ft
17038.00 ft



Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	26	13.5	8.5			
Top Driller (ft)	0	110	1947			
Top Logger (ft)	0	110	1947			
Bottom Driller (ft)	110	1947	17038			
Bottom Logger (ft)	110	1947	17038			
Casing						
Size (in)	16	9.625	5.5			
Weight (lbm/ft)	36.94	36	17			
Inner Diameter (in)	15.572	8.921	4.892			
Grade	N/A	N/A	N/A			
Top Driller (ft)	0	0	0			
Top Logger (ft)	0	0	0			
Bottom Driller (ft)	110	1936.9	17024.3			
Bottom Logger (ft)	110	1936.9	17024.3			

Remarks and Equipment Summary

1A: Toolstring				1A: Remarks	
<div><div><div>Equip name</div><div>Length</div></div><div>LEH-QC</div><div>28.52</div></div> <div><div><div>EDTC-B</div><div>26.06</div></div><div>EDTH-B</div><div>EDTG-A</div><div>EDTC-B</div></div> <div><div><div>AH-184[2]</div><div>19.56</div></div><div>AH-184[1]</div><div>17.56</div></div> <div><div><div>USIT-E:914</div><div>15.56</div></div><div>ECH-MFA:1781</div><div>USAC-A:914</div><div>USIS-A:17</div></div> <div></div> <div><div><div>MP name</div><div>Offset</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>TelStatus</div><div>19.56</div></div>				Thank you for choosing Schlumberger.	
				Toolstring run as per toolsketch.	
				Repeat pass logged from 2700'-1900' at 0 psi.	
				Main pass logged from 6500'-surface at 2500 psi.	

CTEM

22.56

ACCZ

0.00

HV

0.00

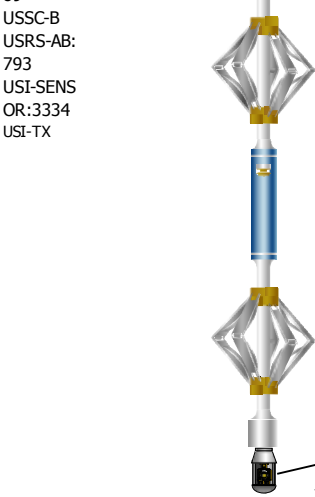
Gamma Ray

20.69

TelStatu

19.56

s



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

1A

Depth Measuring Device

Type	IDW-B
Serial Number	6565
Calibration Date	25-May-2019
Calibrator Serial Number	
Calibration Cable Type	7-39PIXXS
Wheel Correction 1	-2
Wheel Correction 2	1

Tension Device

Type	CMTD-B/A
Serial Number	180
Calibration Date	
Calibrator Serial Number	
Number of Calibration Points	0

Logging Cable

Type	7-39PI-XXS
Serial Number	
Length	24000.00 ft
Conveyance Type	Wireline
Rig Type	

1A:Depth Control Parameters

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	

Depth Control Remarks

All Schlumberger depth control procedures followed.

IDW used as primary depth device.

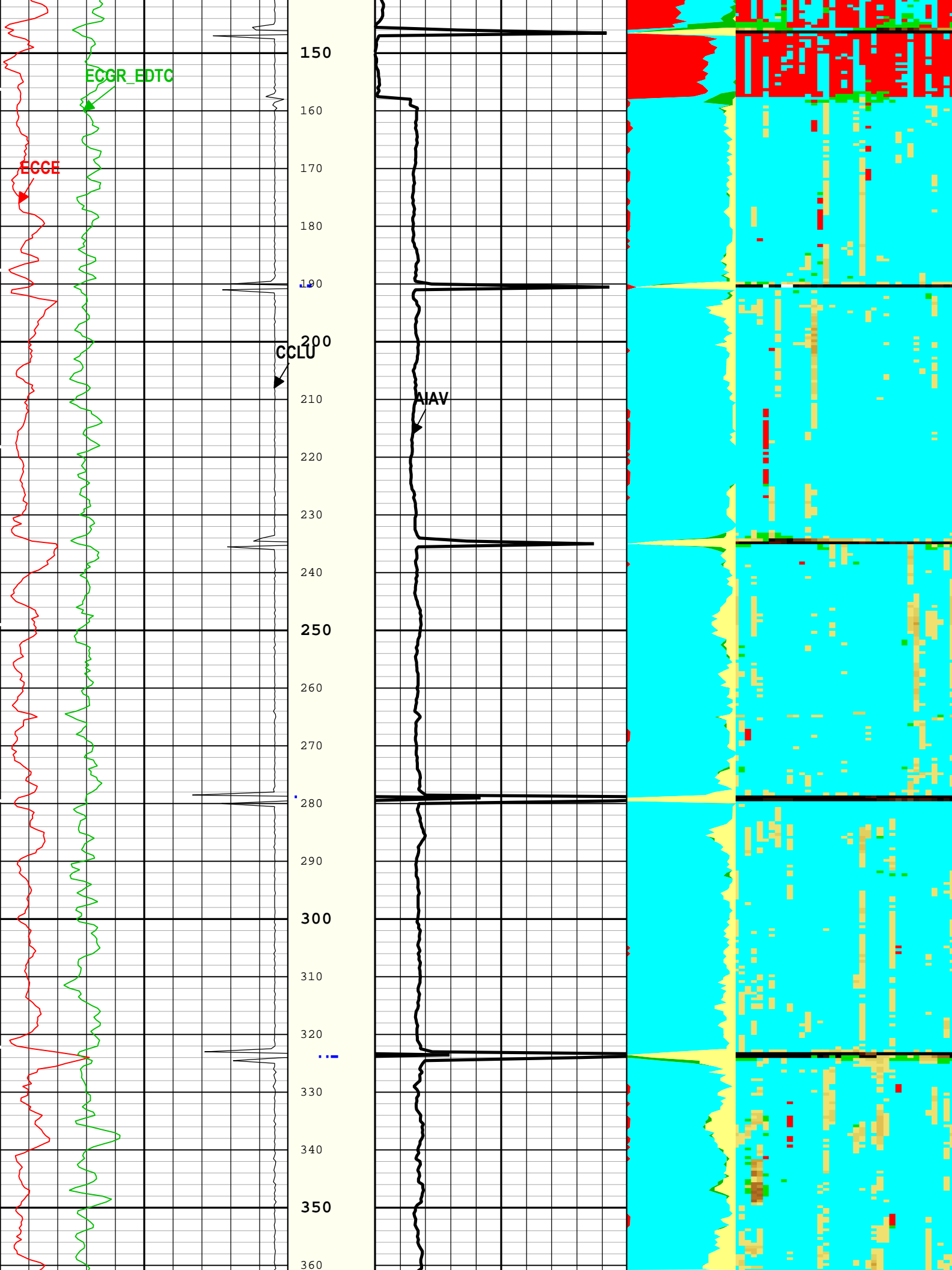
Z-chart used as secondary depth device.

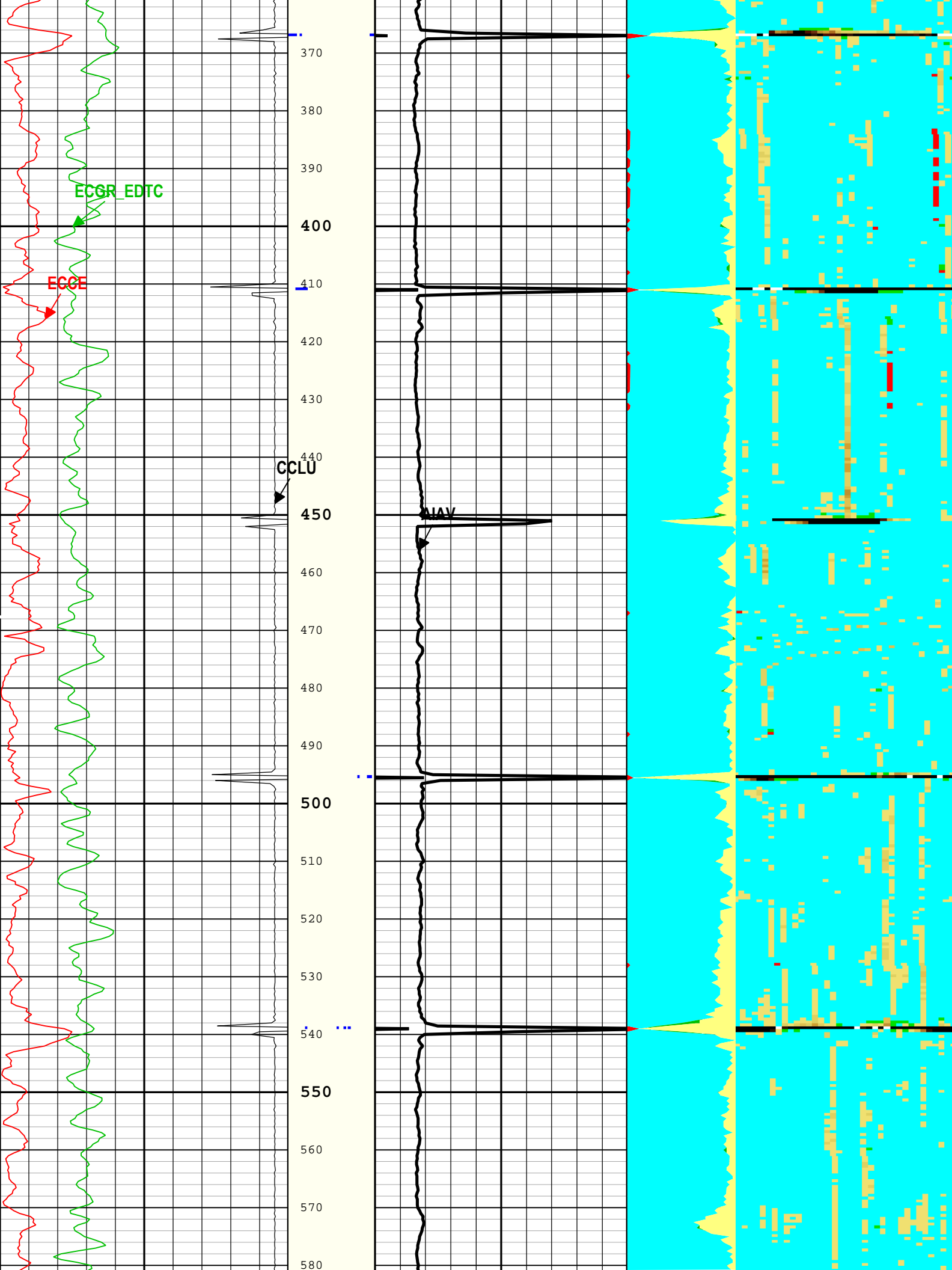
Logs correlated to down log, GR and CCL curve

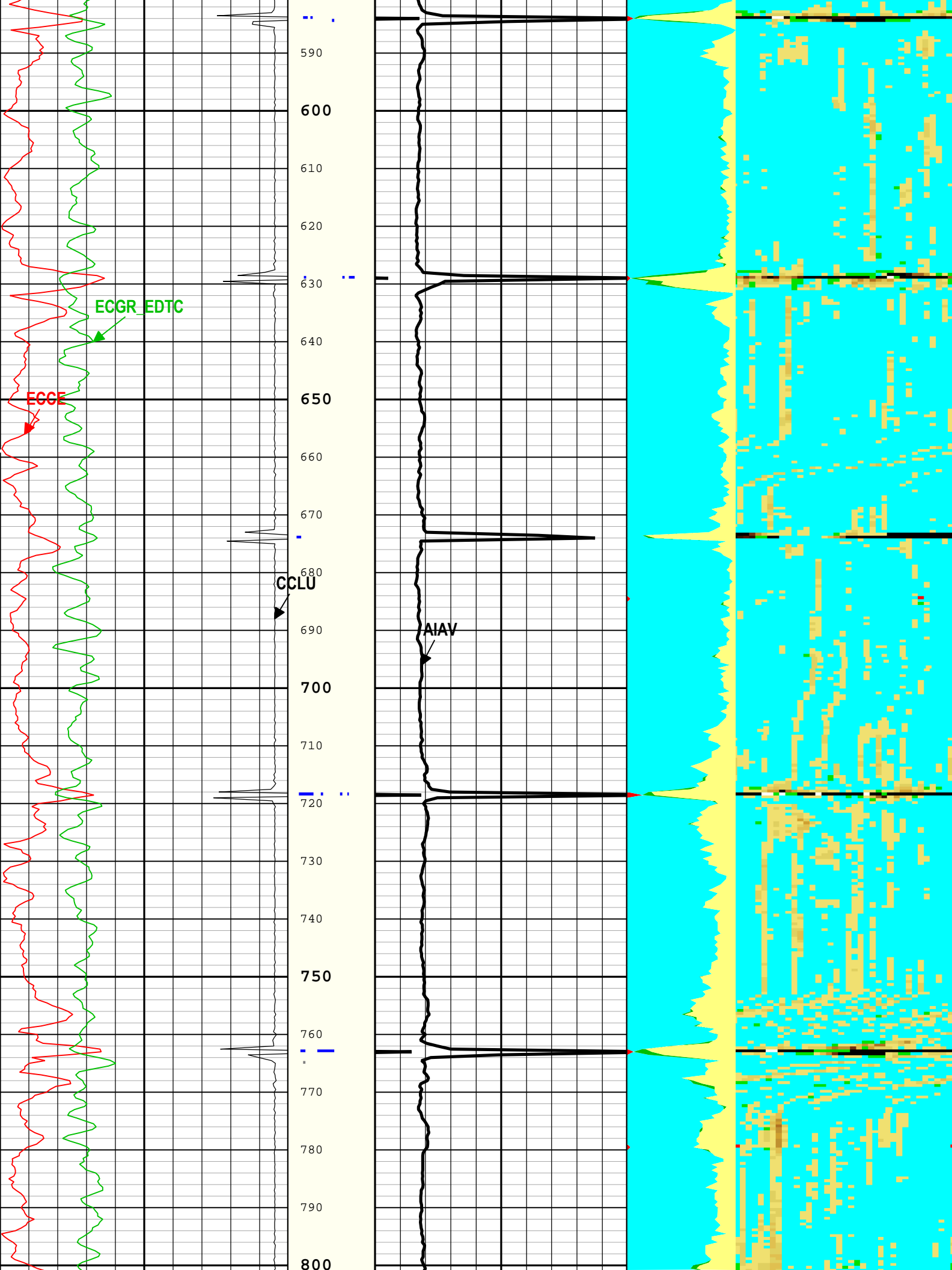
USIT - Fluid Properties Measurement

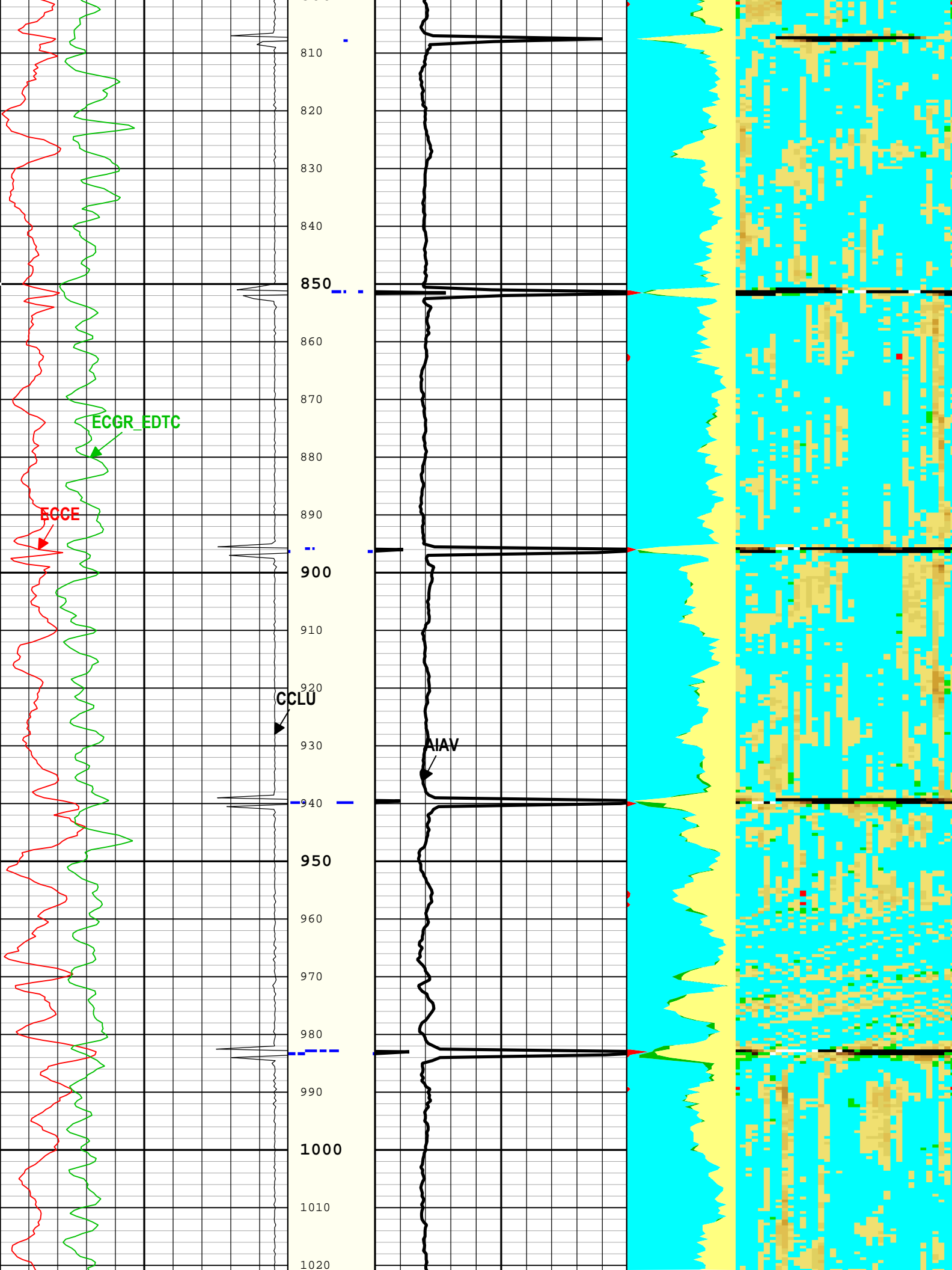
Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
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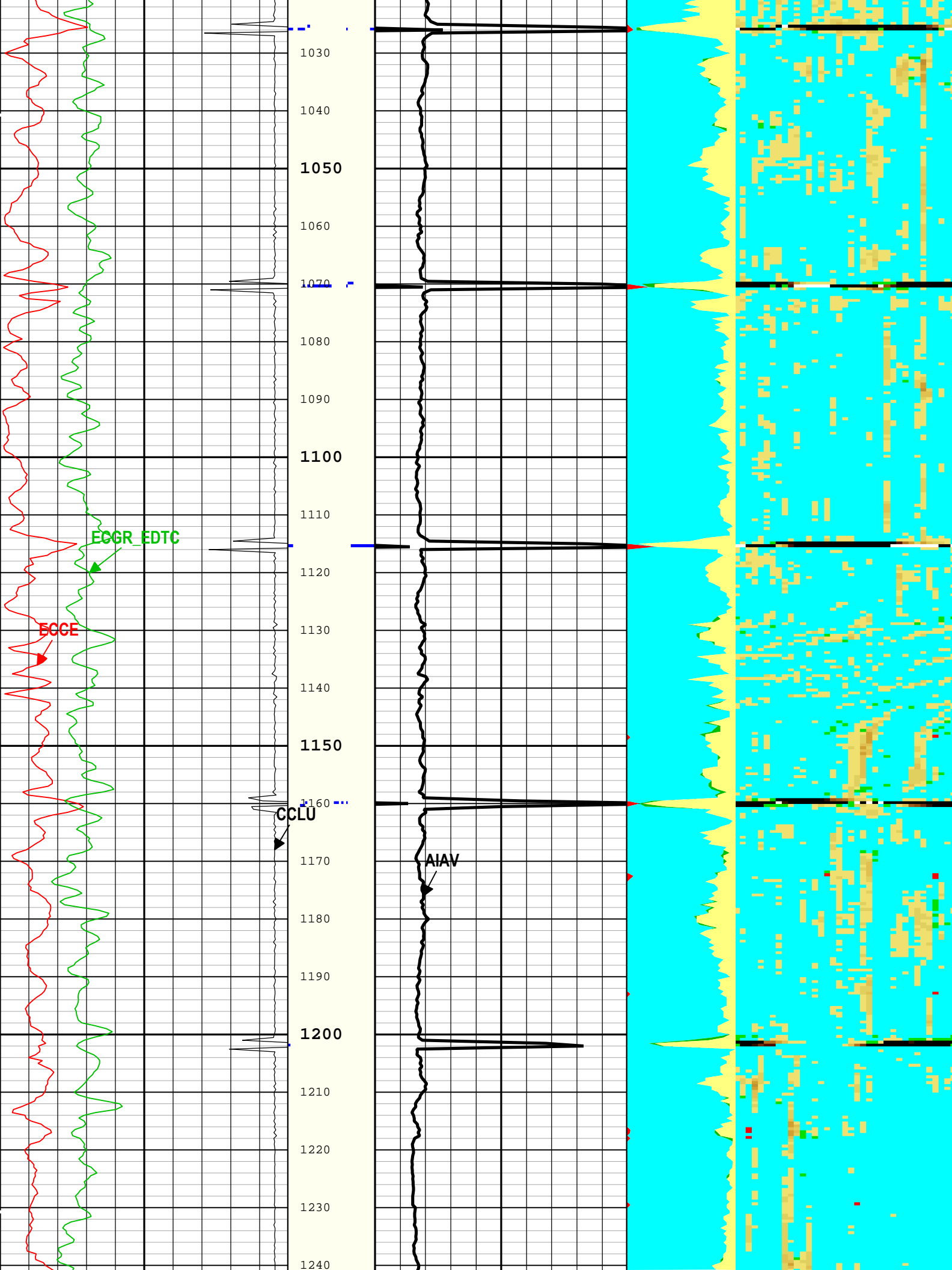
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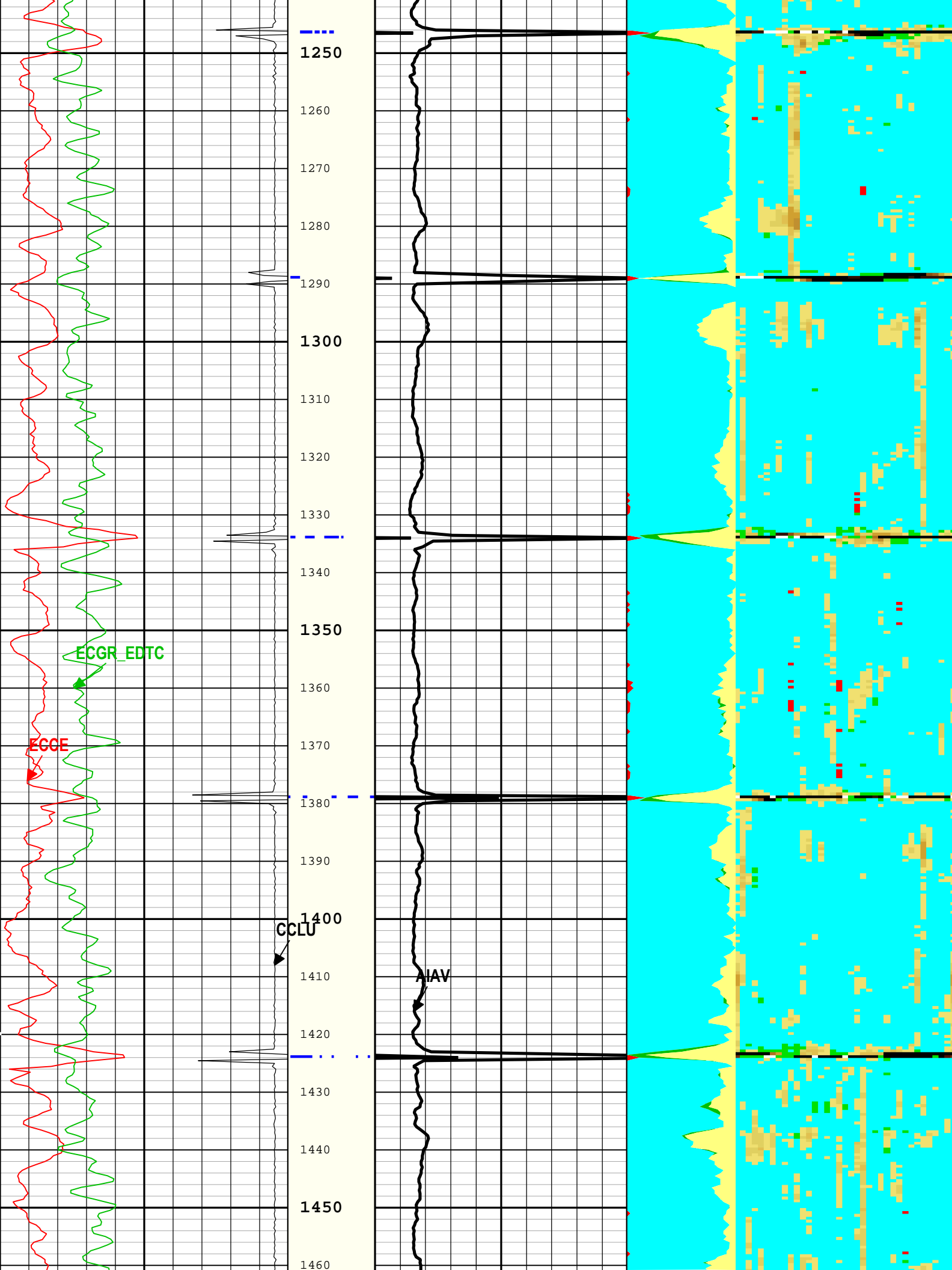


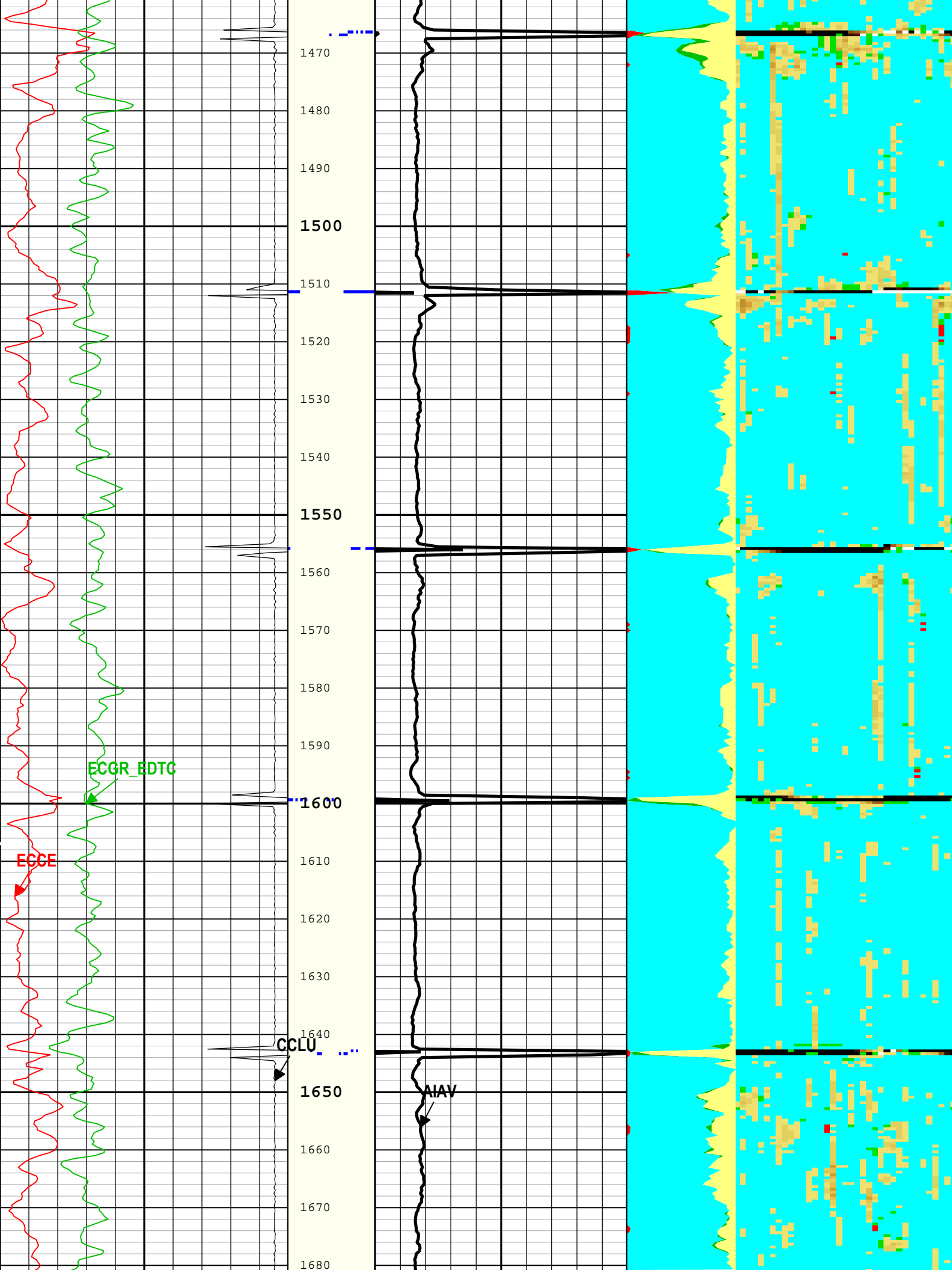


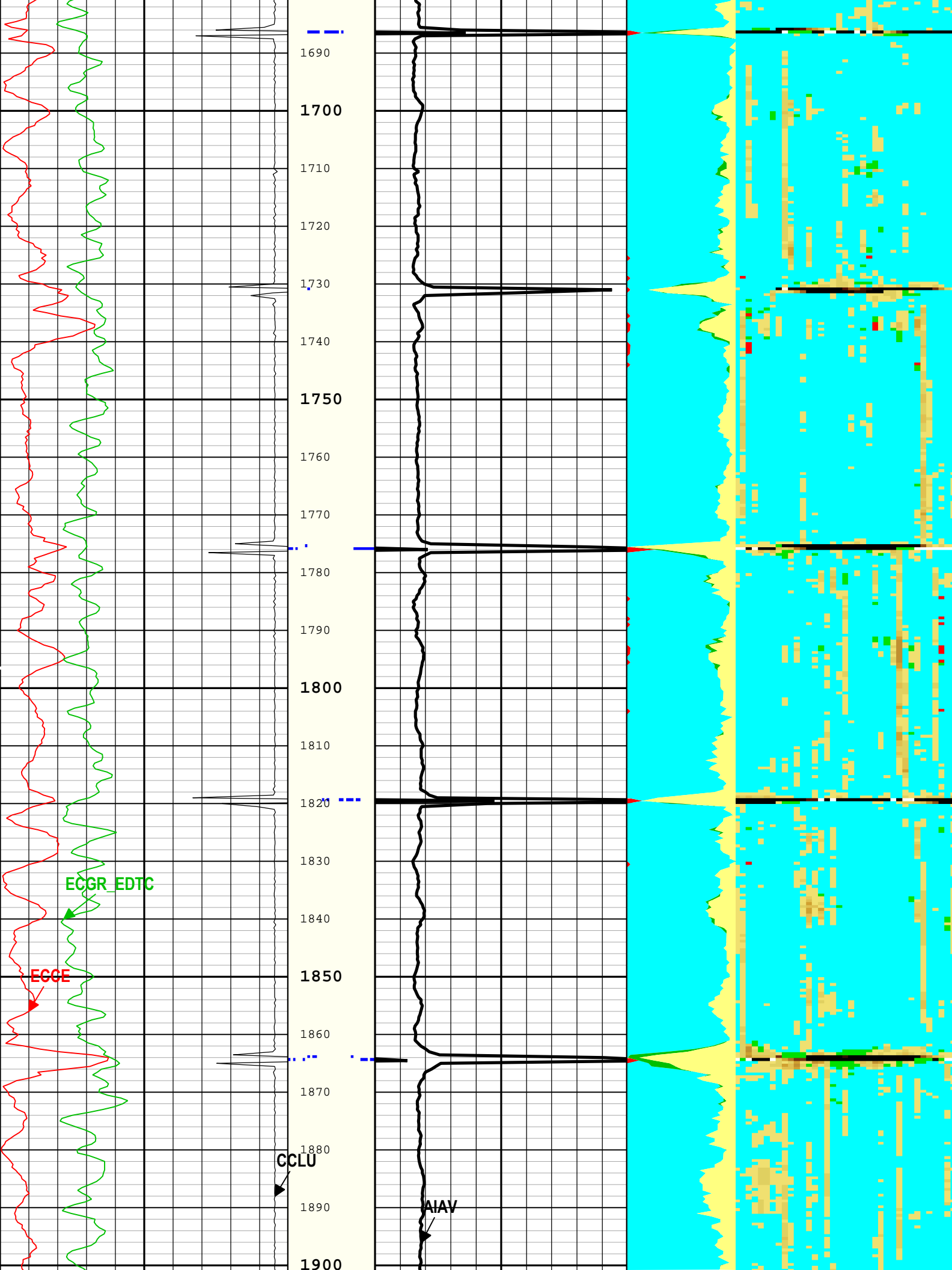


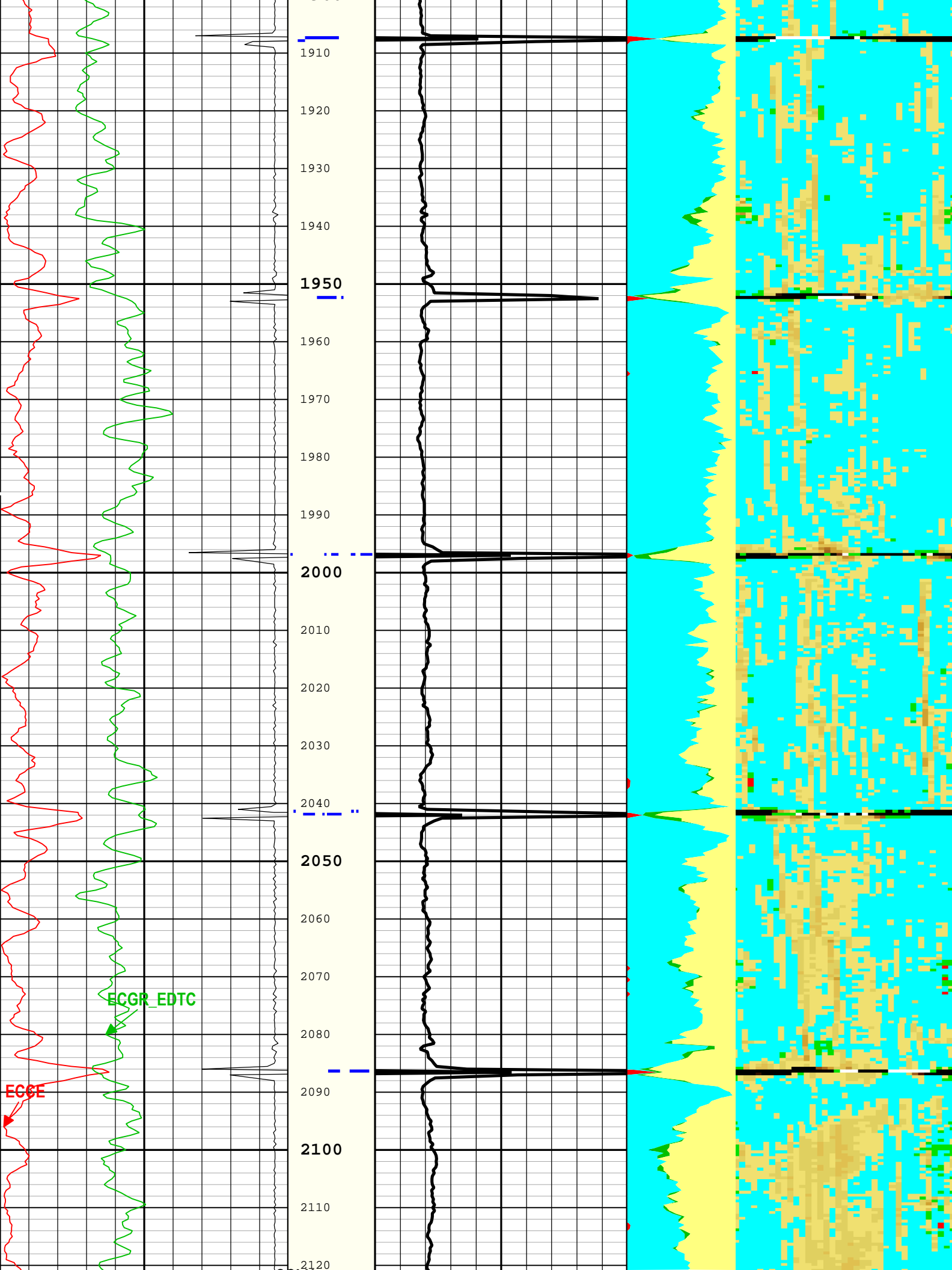


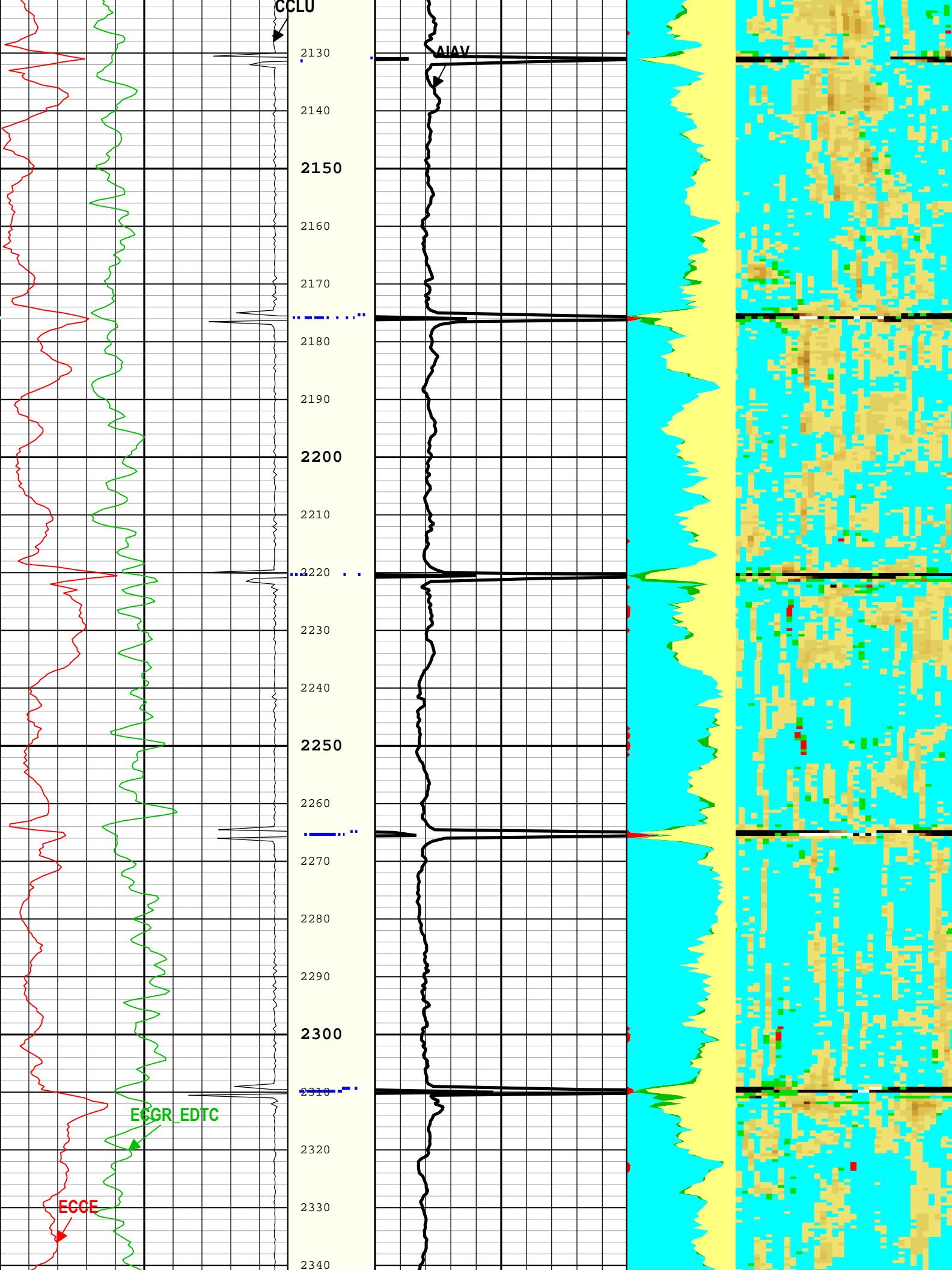


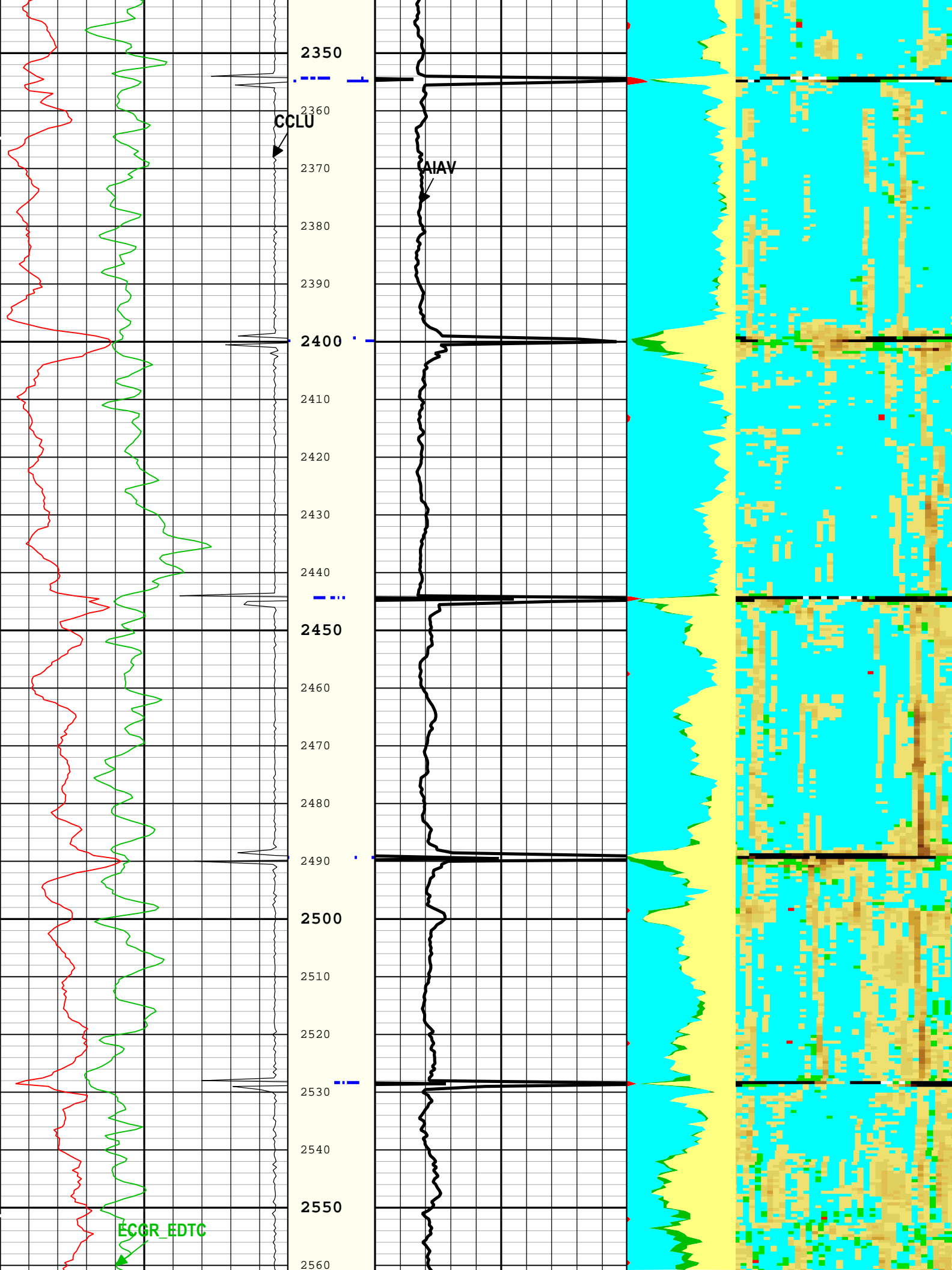


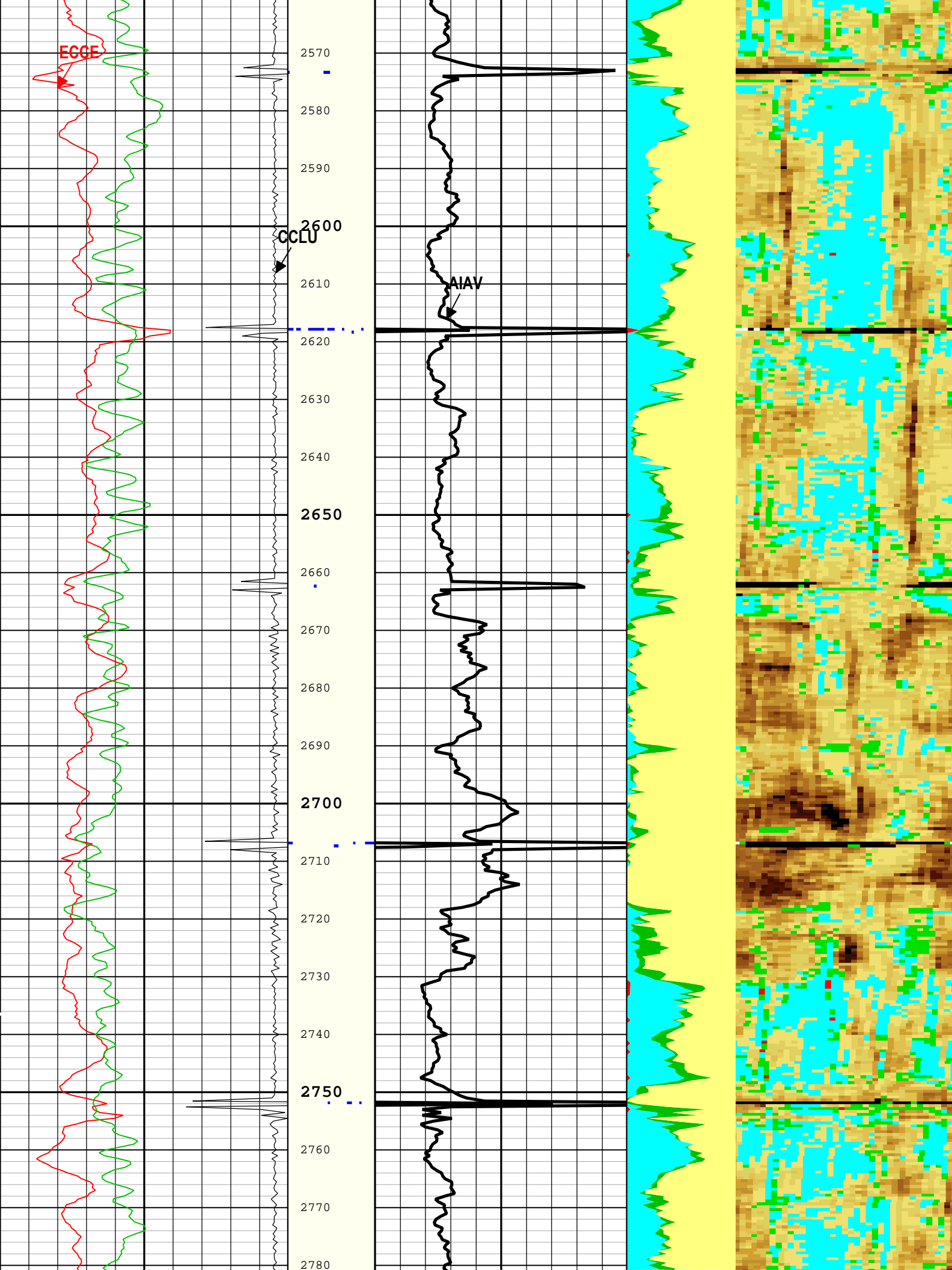


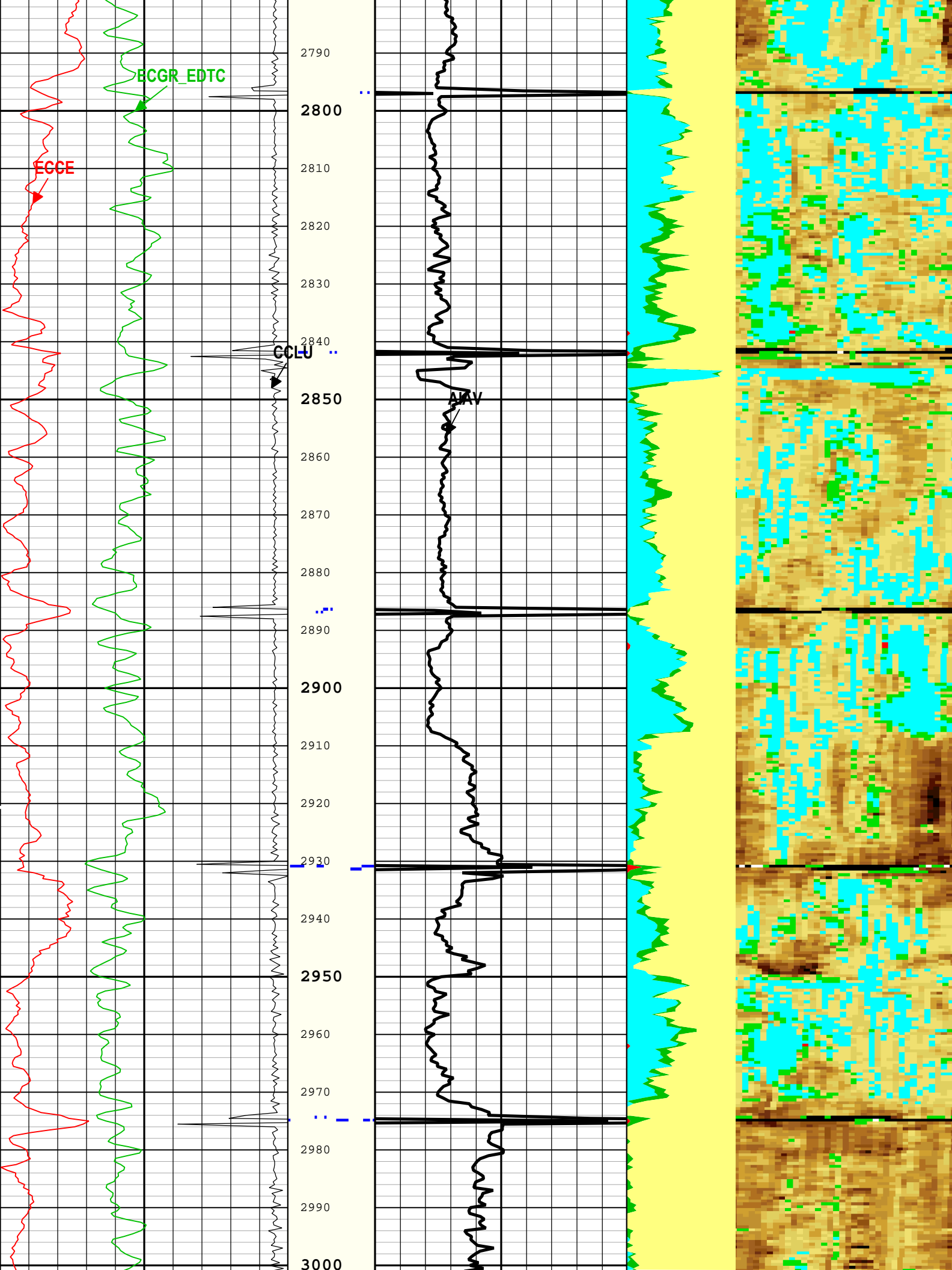


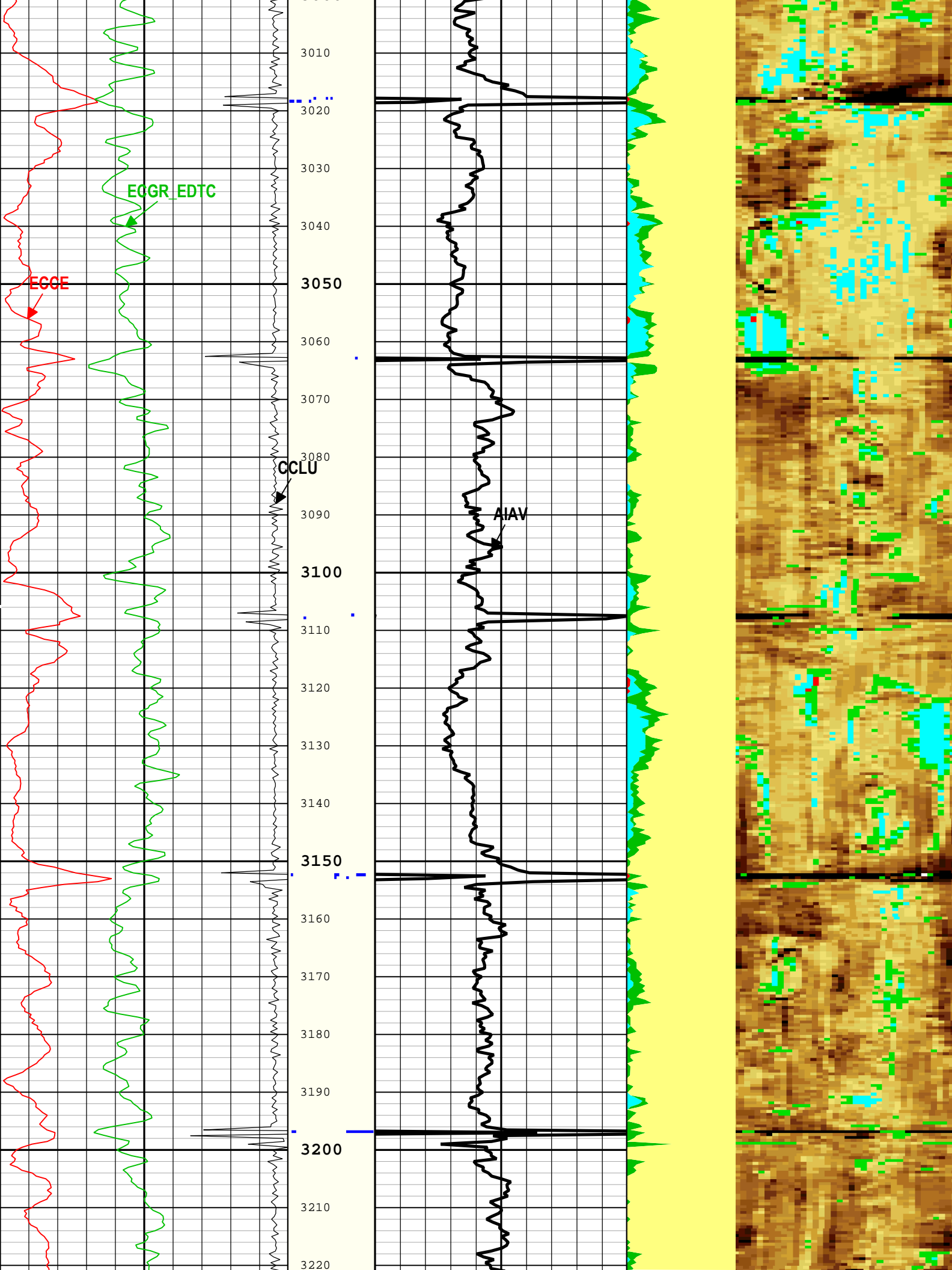


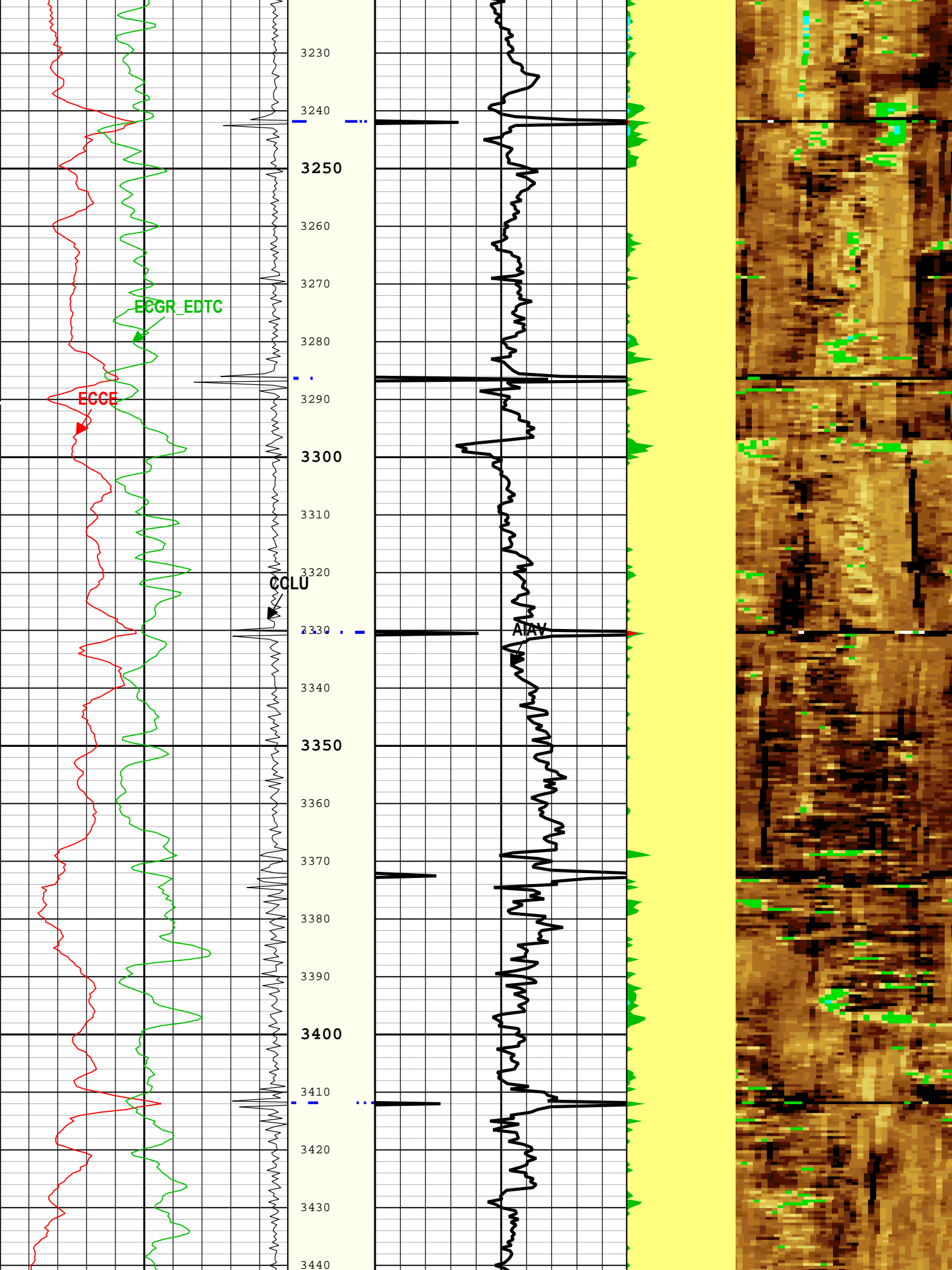


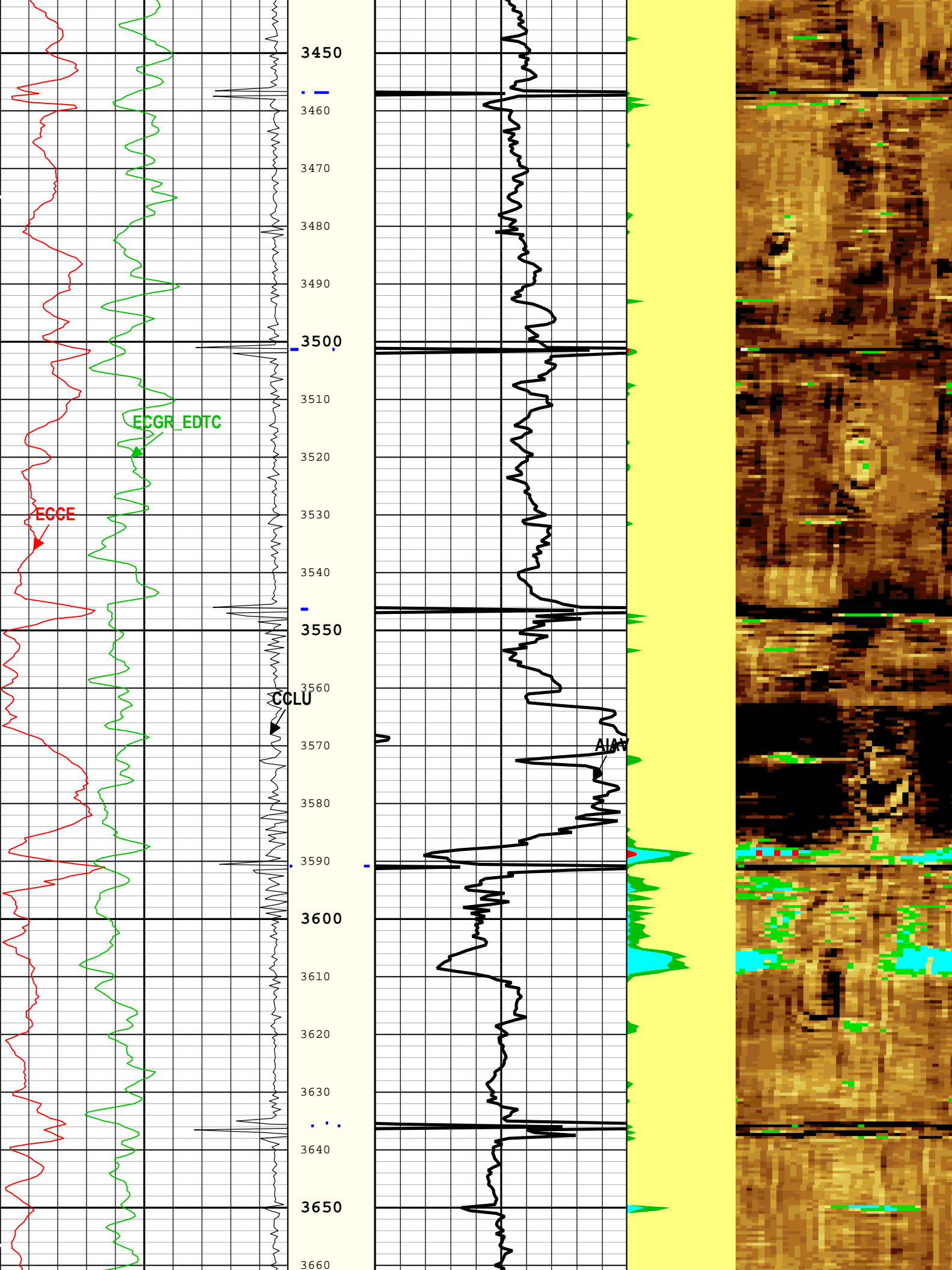


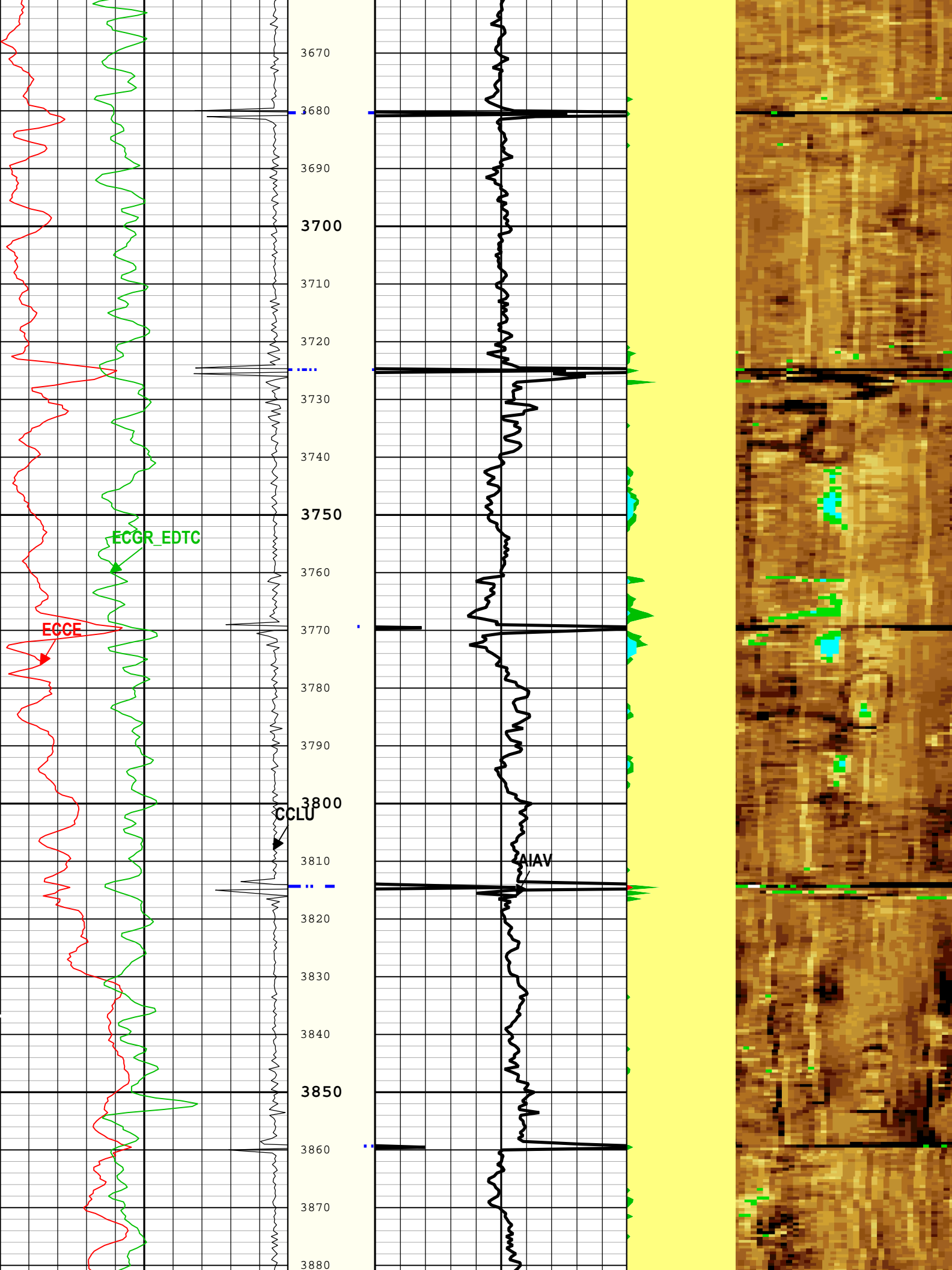


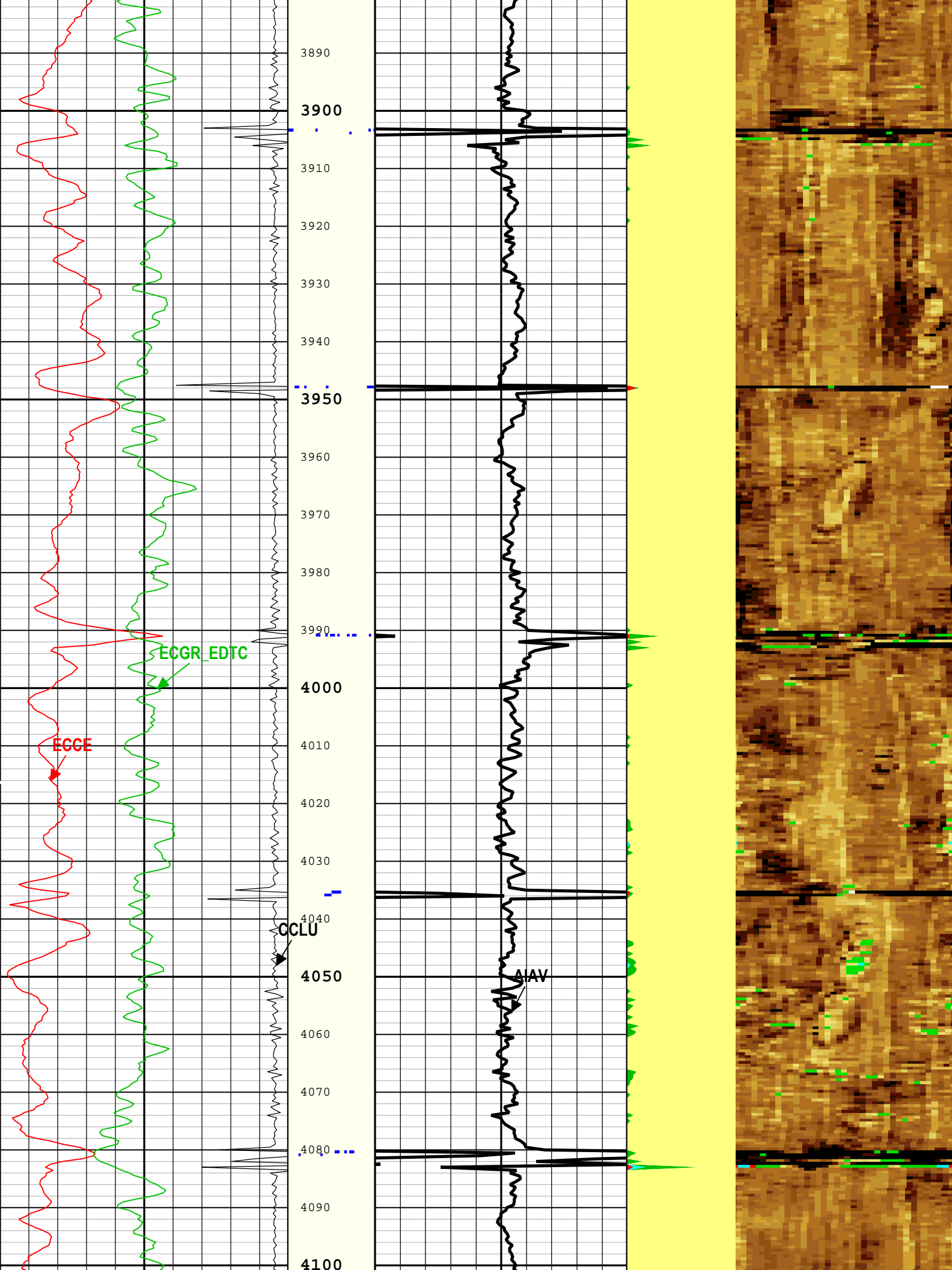


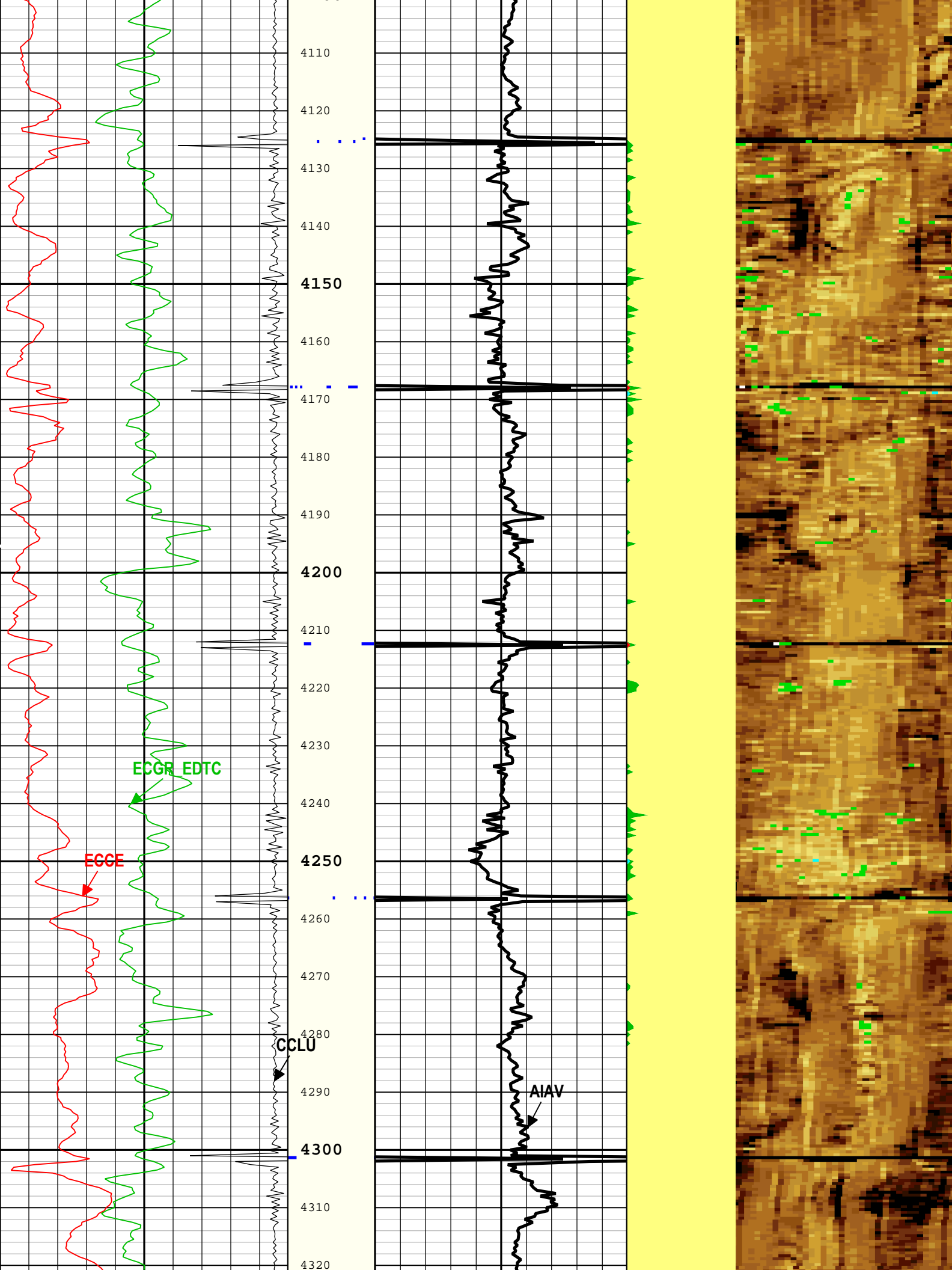


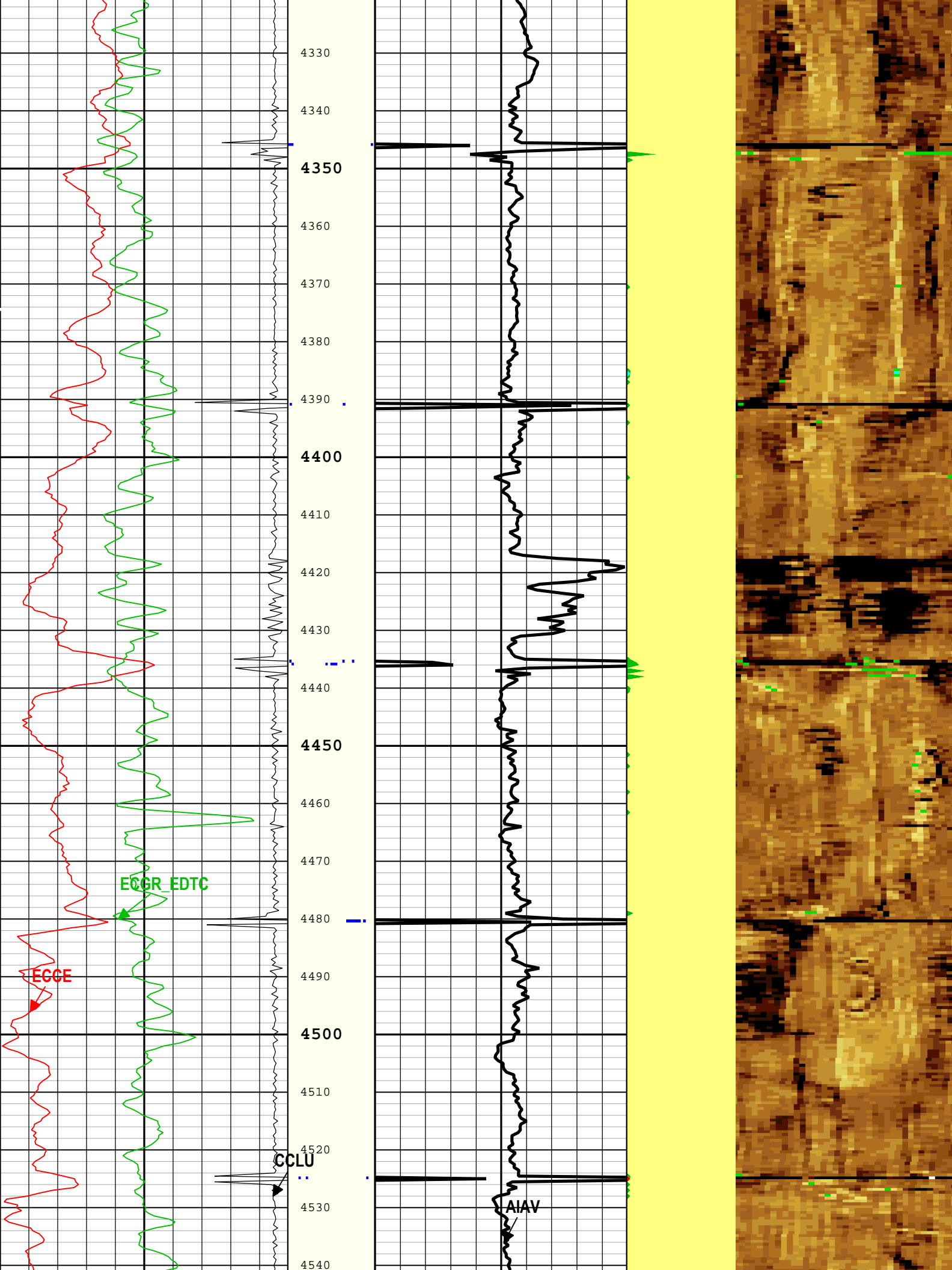


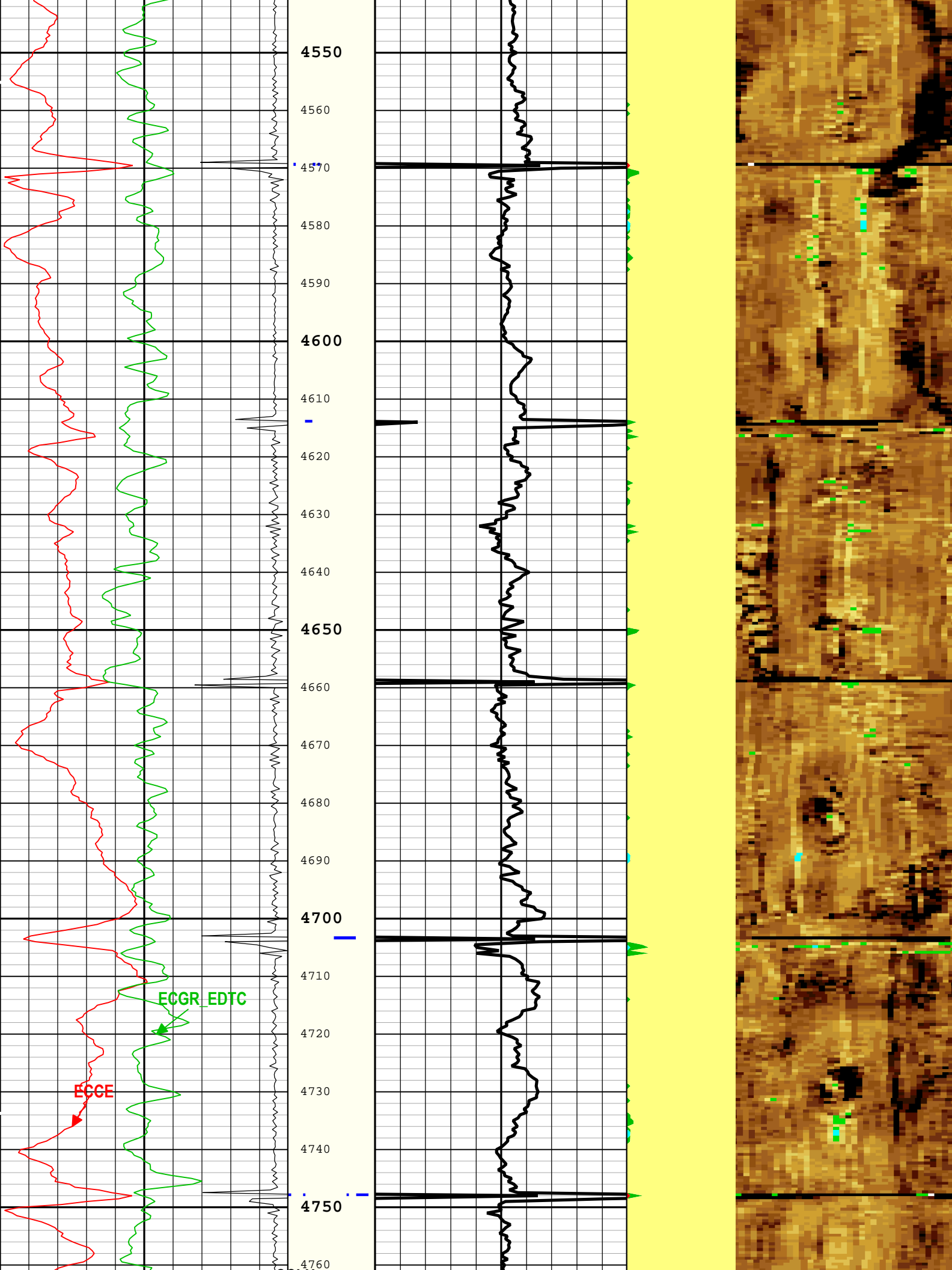


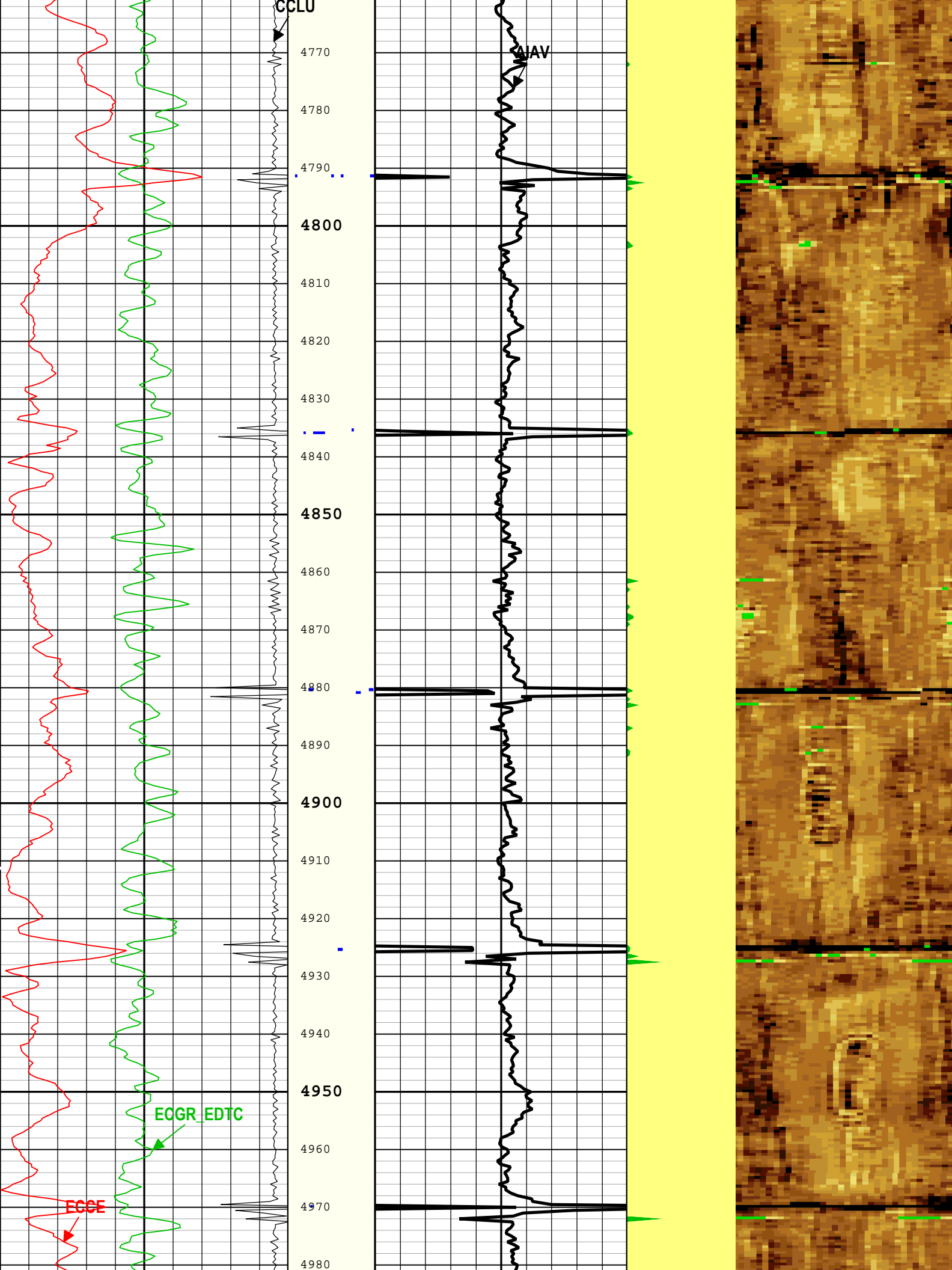


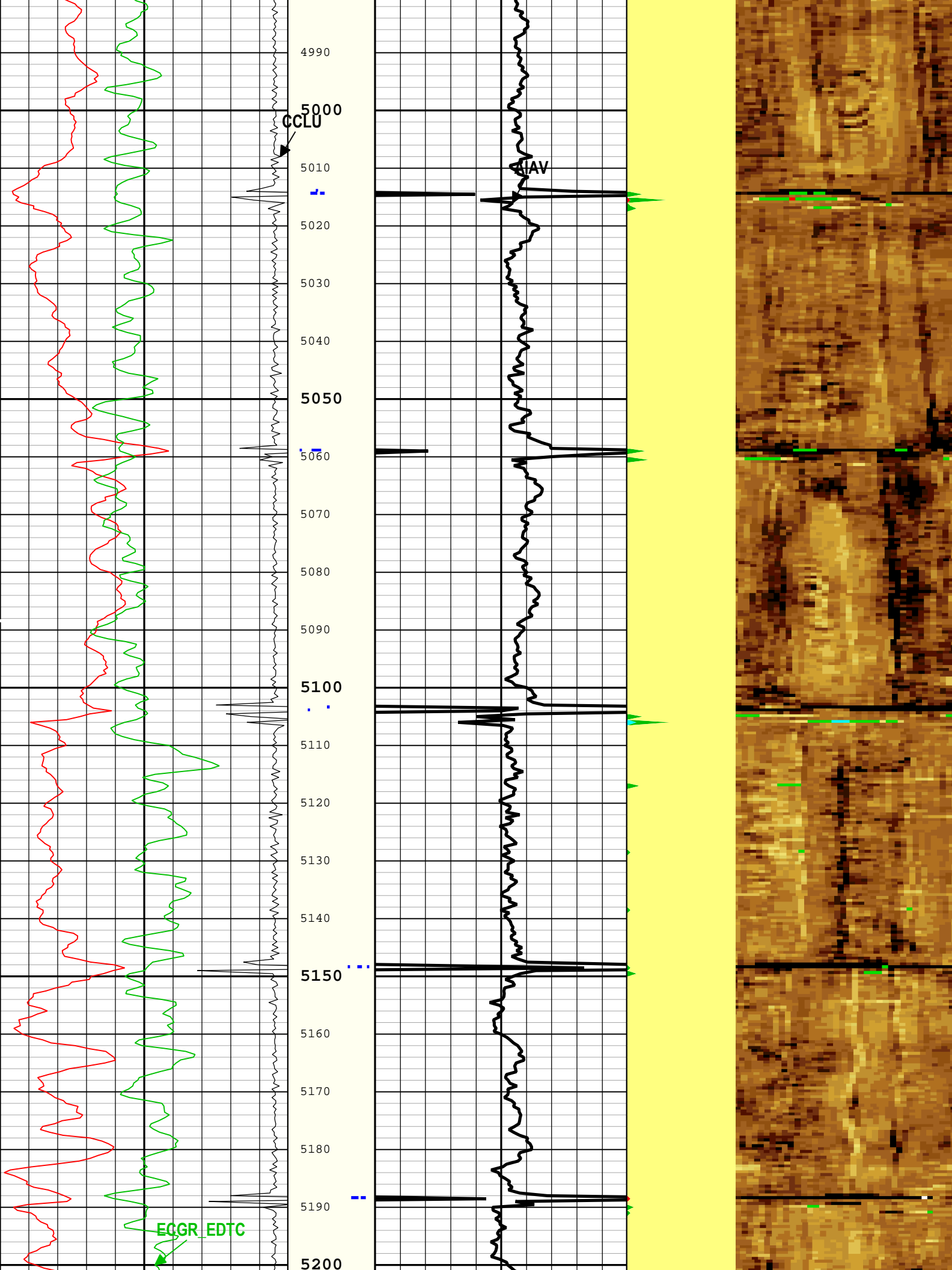


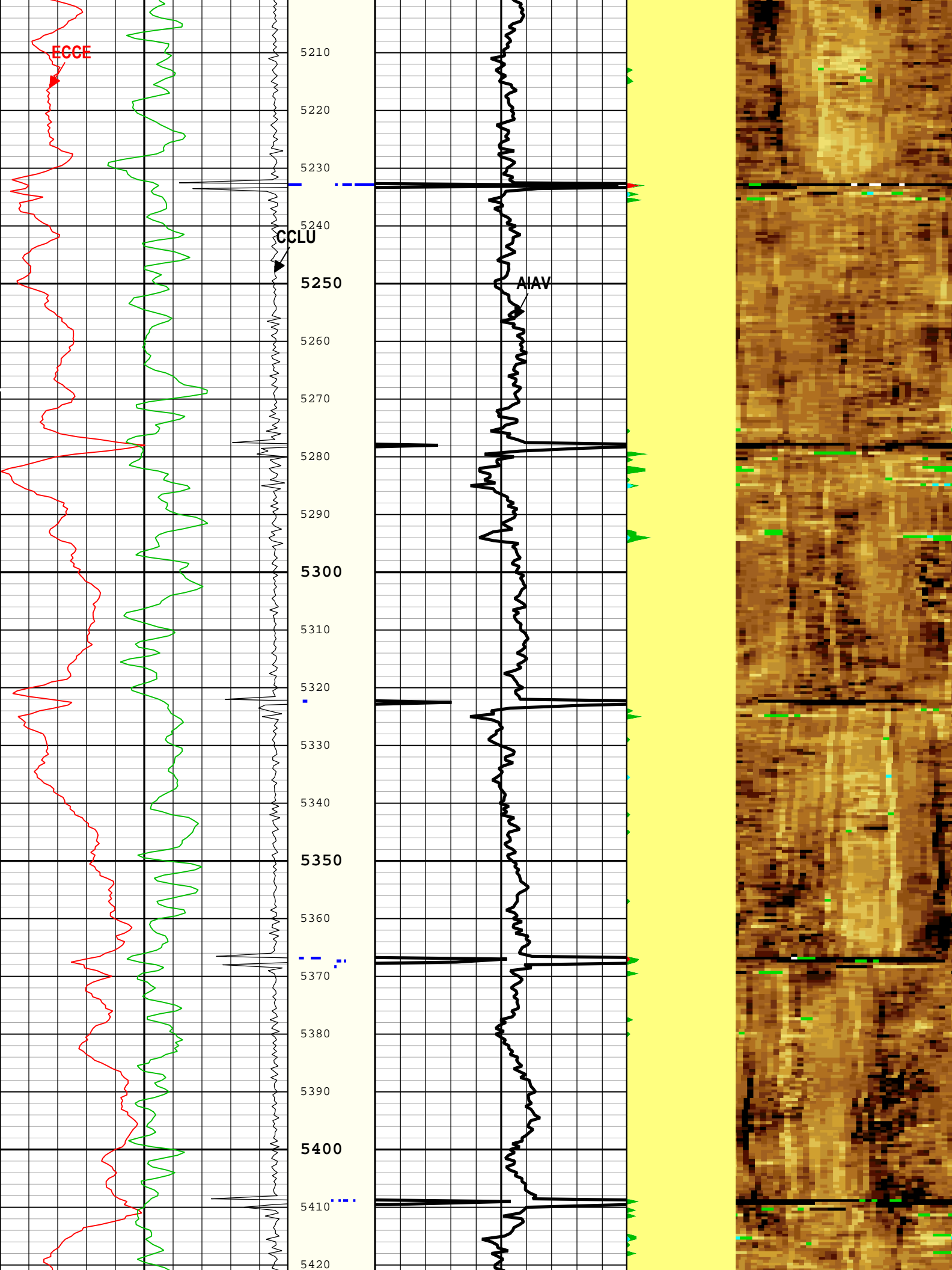


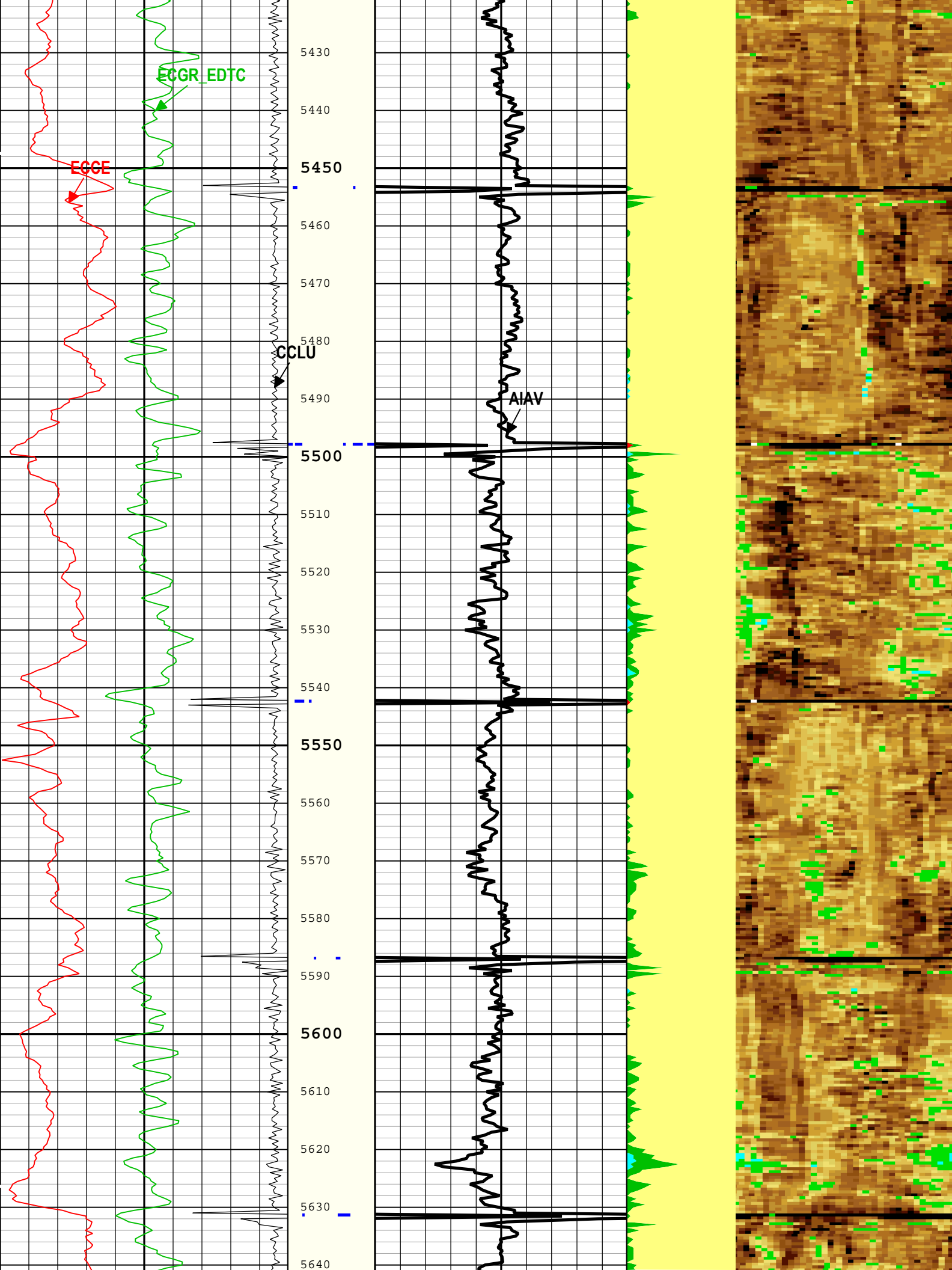


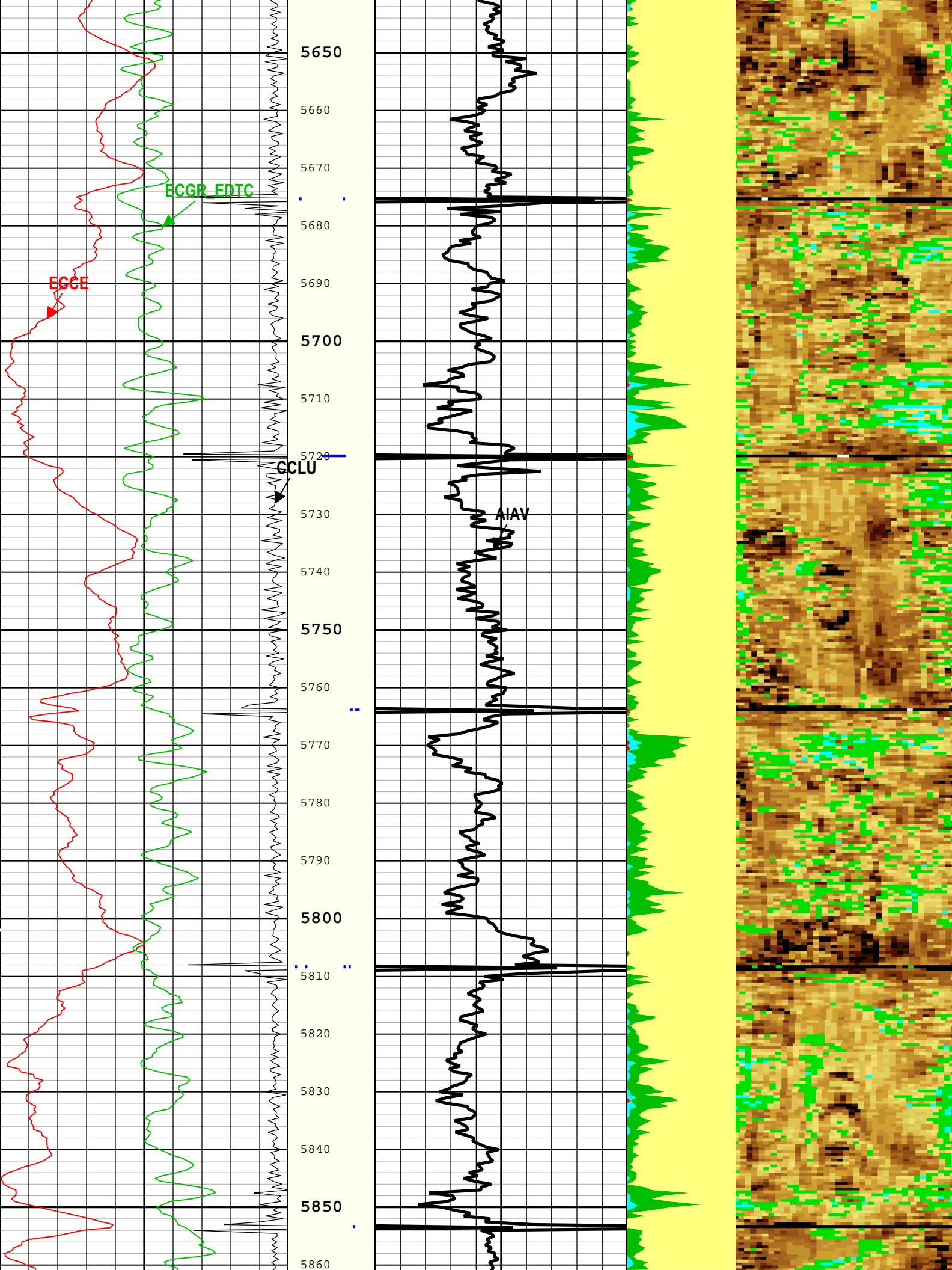


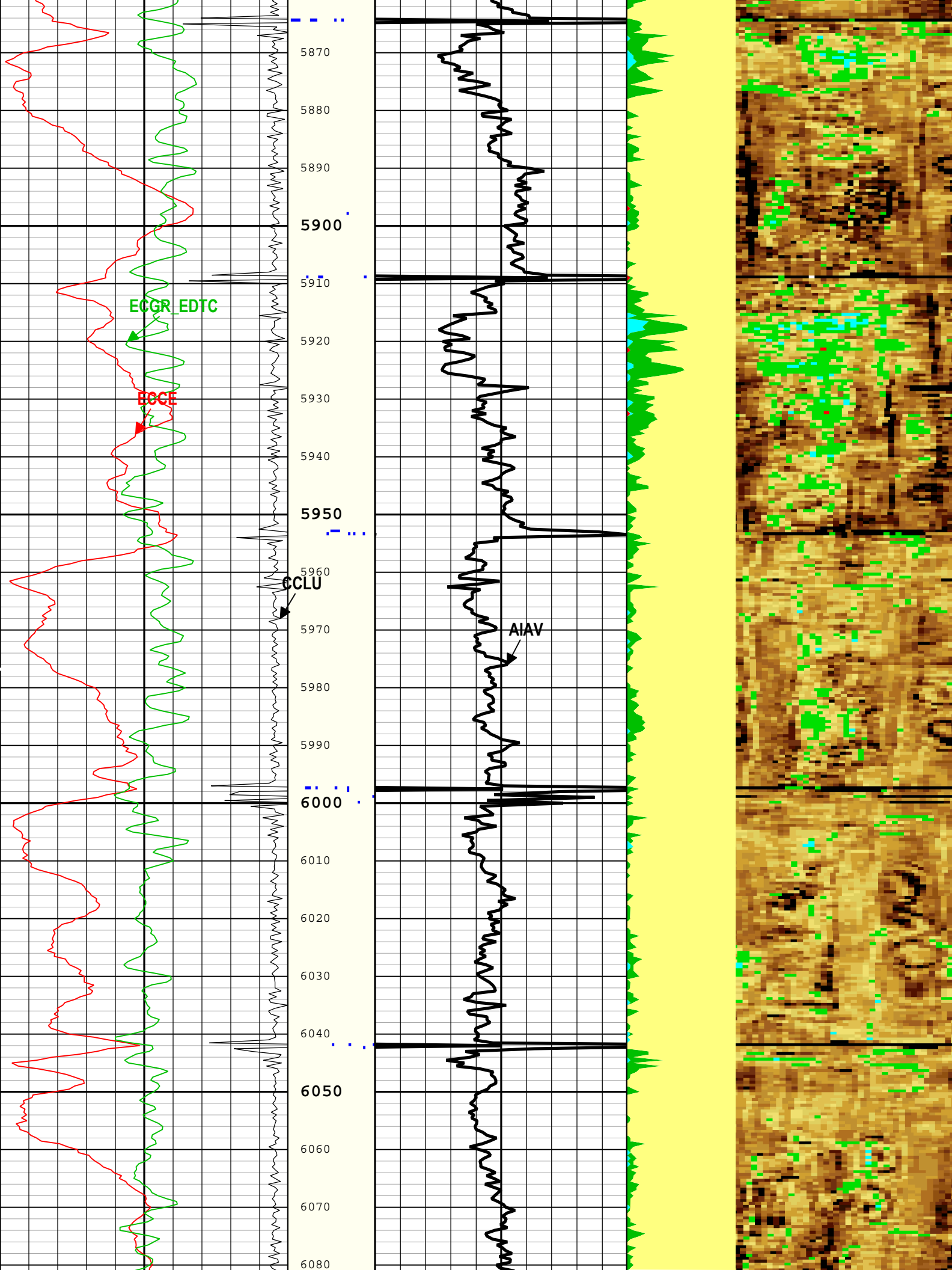


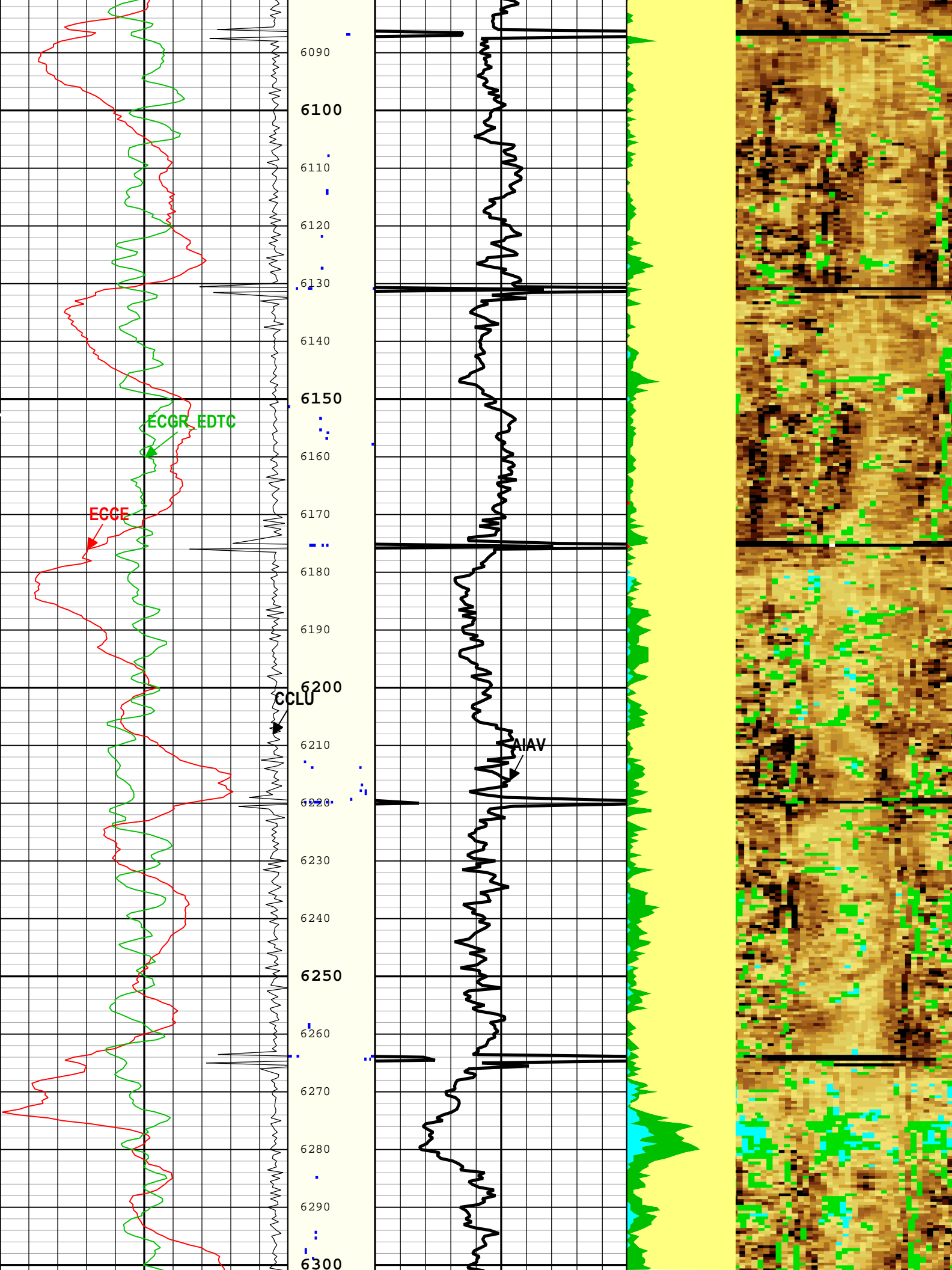


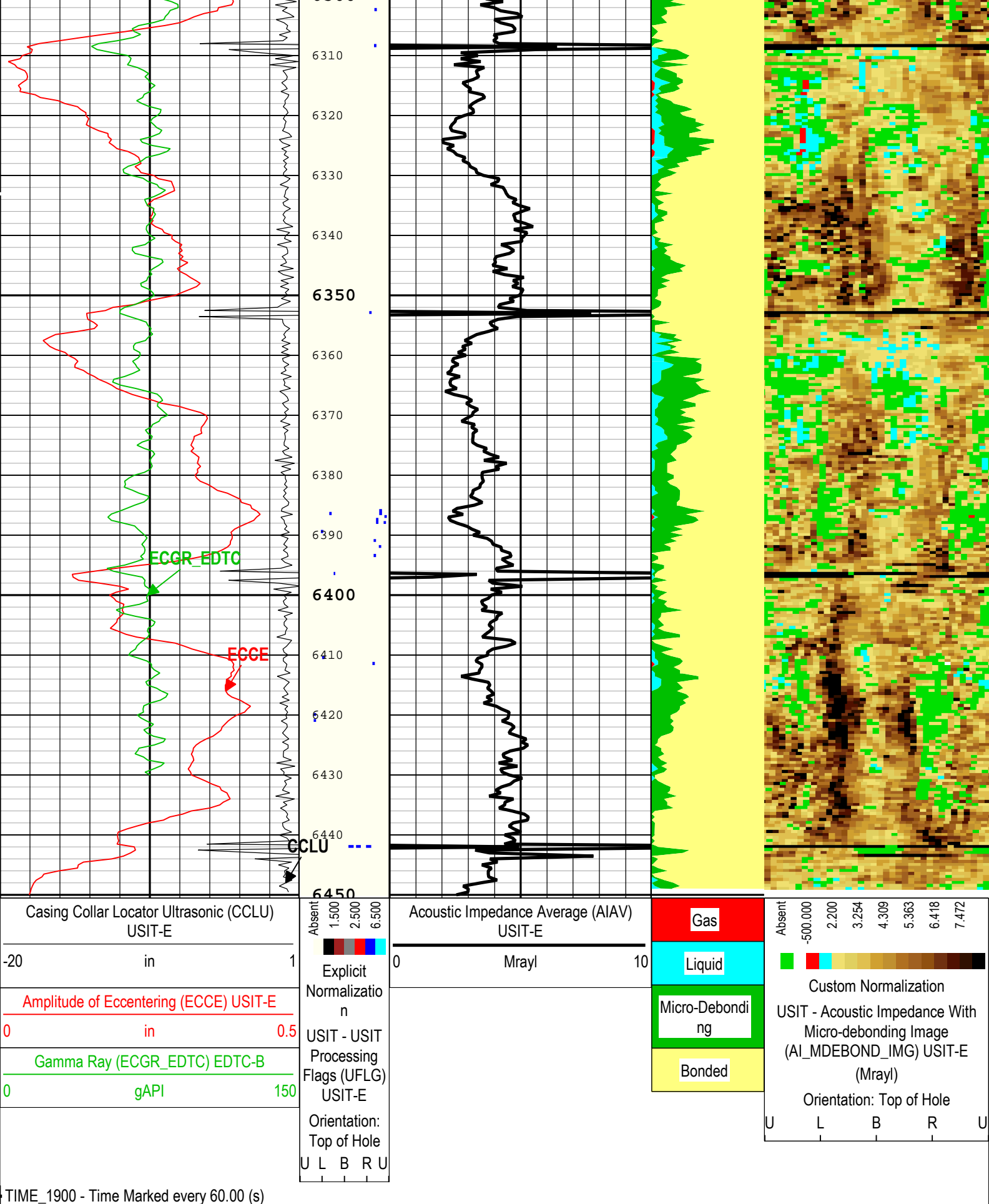












Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	17024.3	ft
CDEN	Cement Density	EDTC-B	16.69	lbm/gal
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	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	RB	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	18.79	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.17	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.6	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	1.5	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	80.5	110
BS	13.5	110	1947
BS	8.5	1947	6450.5

All depth are actual.

Tool Control Parameters

1A: 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	Time Zoned	V
HRES	Horizontal Resolution	USIT-E	10 deg	
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	No	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
USFR	Ultrasonic Sampling Frequency	USIT-E	500000	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 500 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 6.0 in LF	
WINB	Window Begin Time	USIT-E	33.83	us
WINE	Window End Time	USIT-E	73.83	us

Time Zone Parameters

Parameter	Value	Start Time	Stop Time	Start Depth (ft)	Stop Depth (ft)
EMXV	40	28-Aug-2019 10:14:44	28-Aug-2019 10:15:31	6450.96	6413.37
EMXV	35	28-Aug-2019 10:15:31	28-Aug-2019 10:16:21	6413.37	6267.64

EMXV	30	28-Aug-2019 10:16:21	28-Aug-2019 10:16:39	6267.64	6214.18
EMXV	25	28-Aug-2019 10:16:39	28-Aug-2019 10:16:50	6214.18	6181.57
EMXV	40	28-Aug-2019 10:16:50	28-Aug-2019 10:17:12	6181.57	6116.28
EMXV	45	28-Aug-2019 10:17:12	28-Aug-2019 10:17:37	6116.28	6041.4
EMXV	40	28-Aug-2019 10:17:37	28-Aug-2019 10:31:10	6041.4	3626.17
EMXV	35	28-Aug-2019 10:31:10	28-Aug-2019 10:56:01	3626.17	101.15

All depths are at tool zero.

1A

0 PSI Repeat Pass

Software Version

Acquisition System	Version
Maxwell 2018 SP1	8.1.99839.3100

Pass Summary

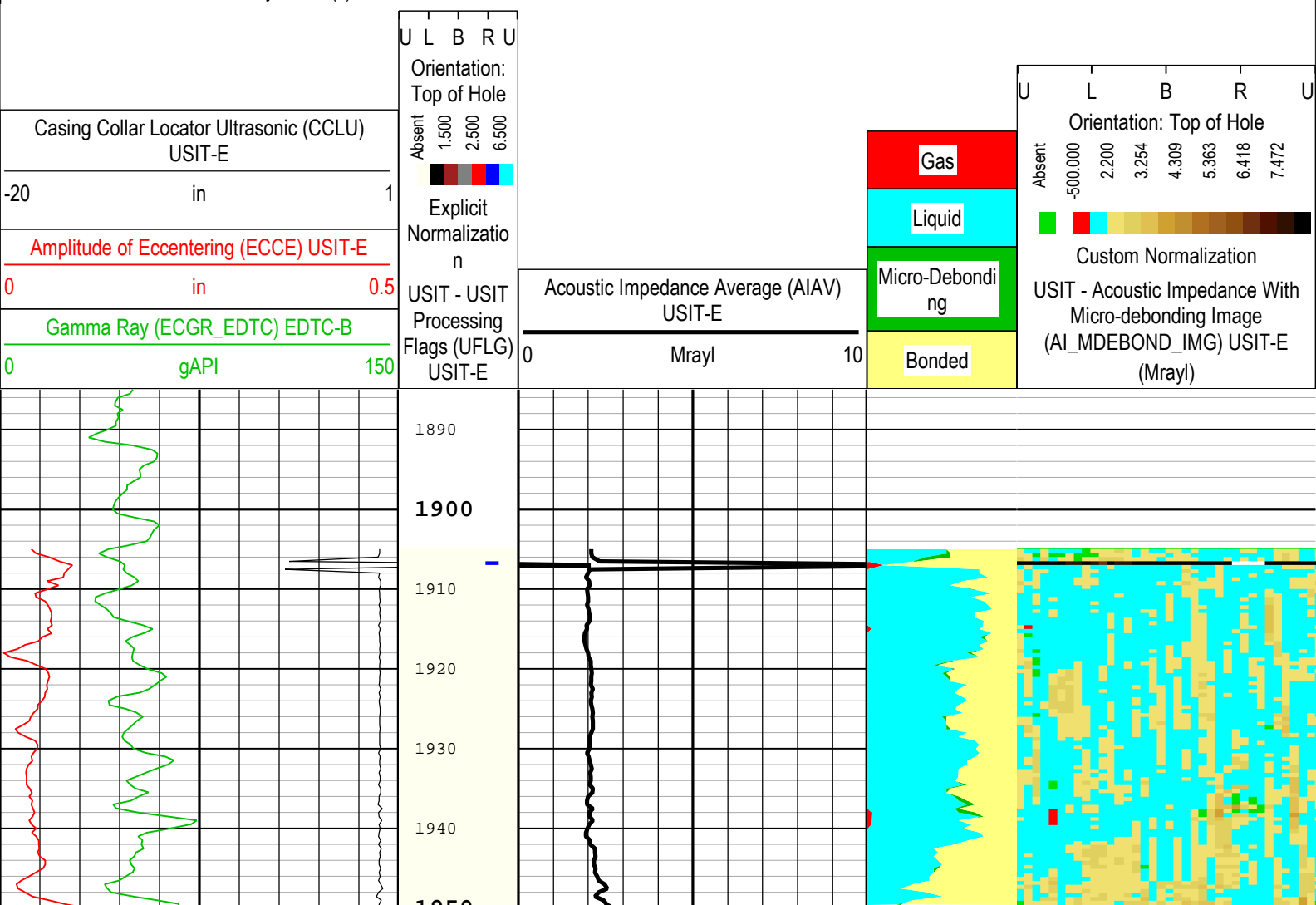
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
1A	Log[2]:Up	Up	1905.37 ft	2704.02 ft	28-Aug-2019 9:23:29 AM	28-Aug-2019 9:28:37 AM	ON	2.02 ft	No

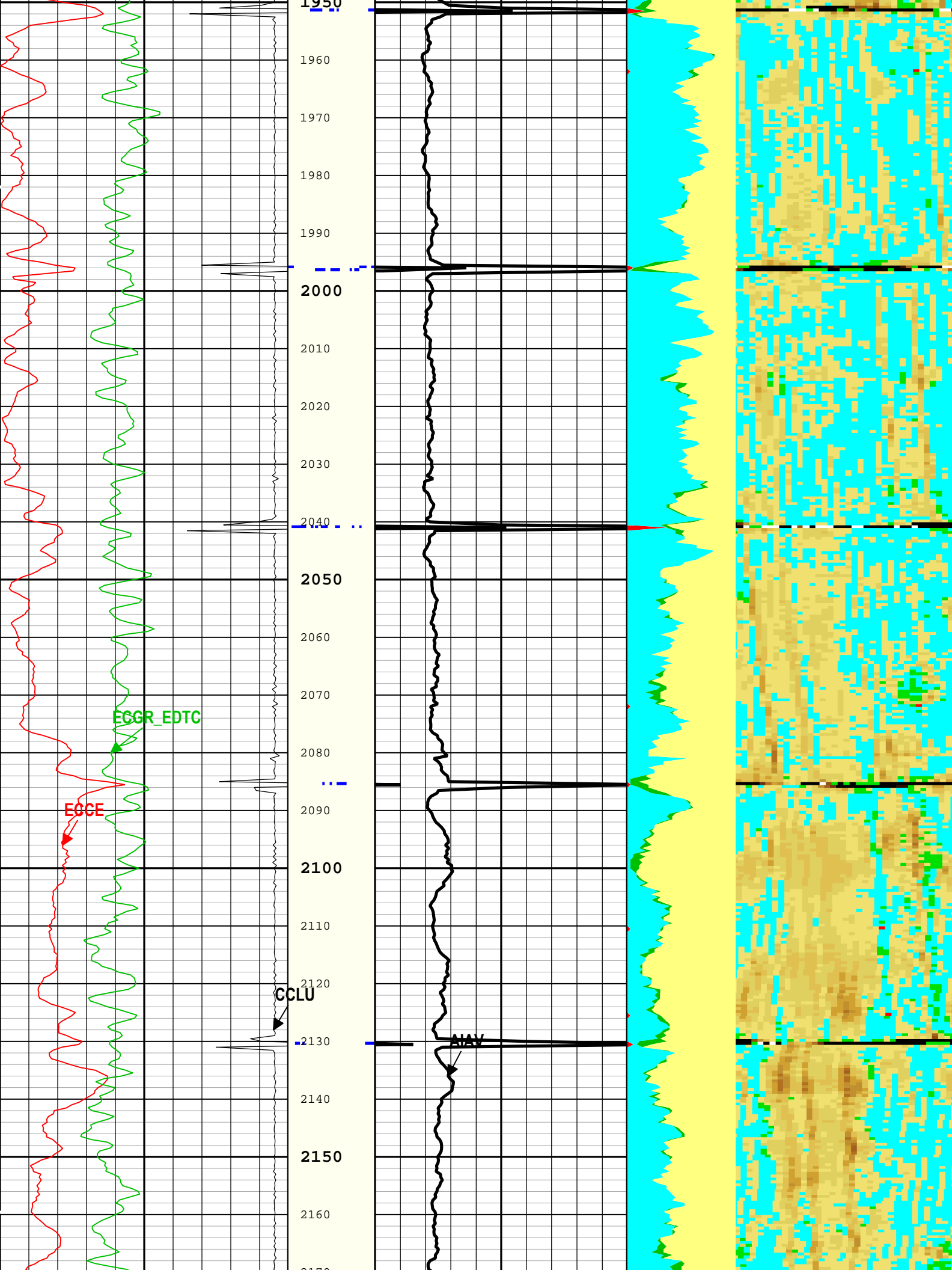
All depths are referenced to toolstring zero

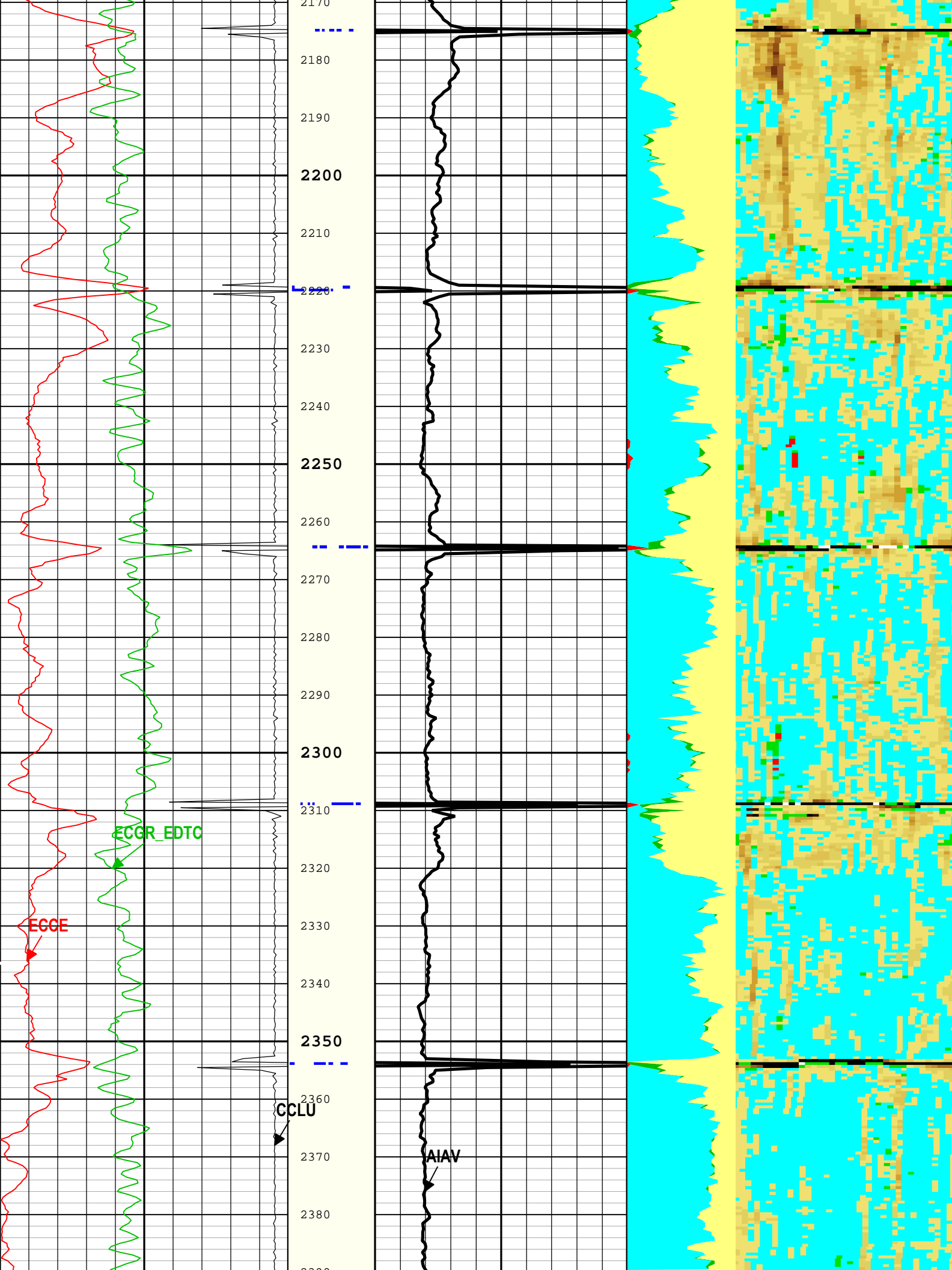
Log	Company:Noble Energy Inc	Well:SLW Ranch State BB07-660
	1A: Log[2]:Up:S005	

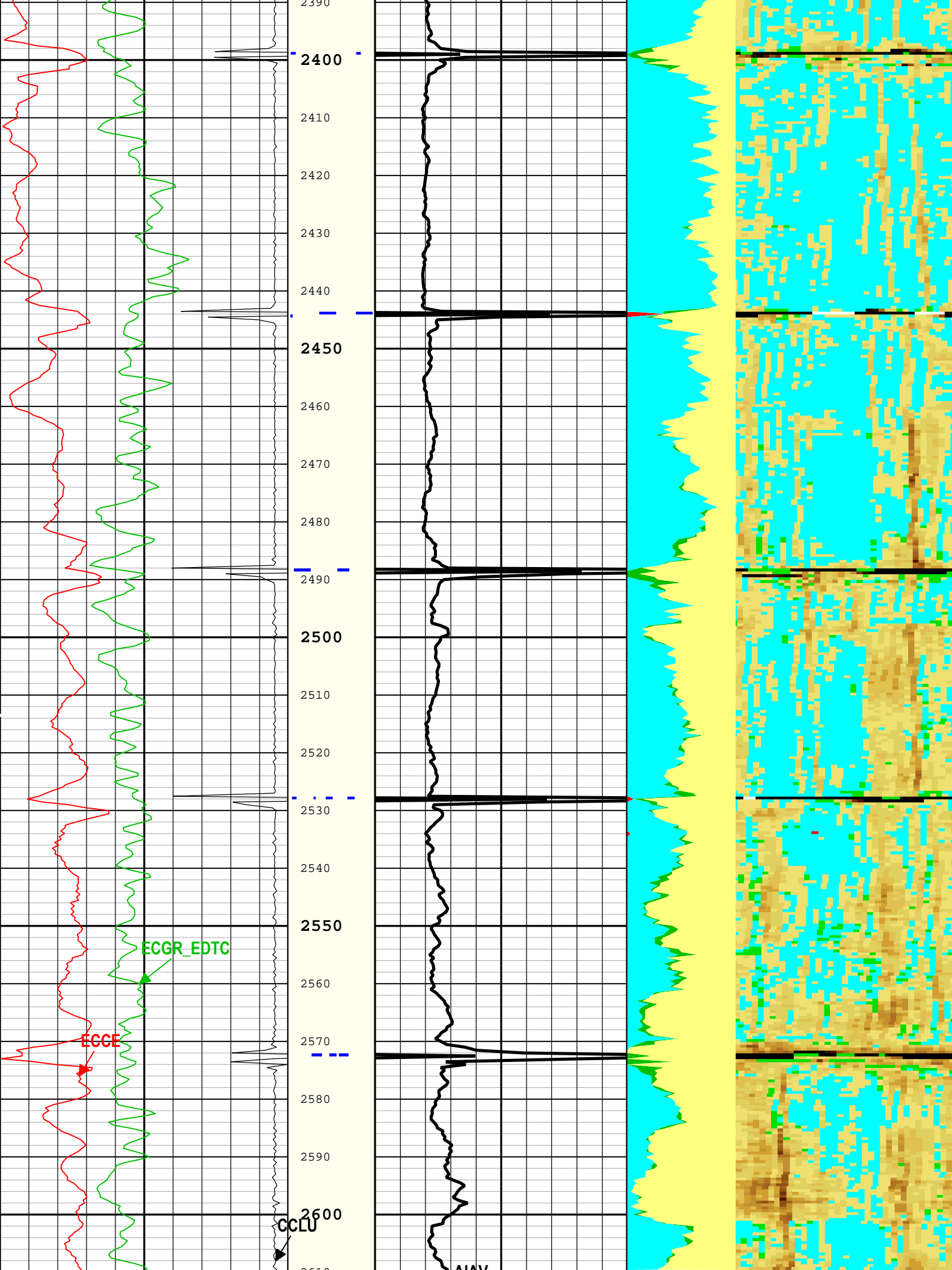
Description: Format: Log (DJ Basin Ultrasonic Cement Summary Report) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 28-Aug-2019 12:03:46

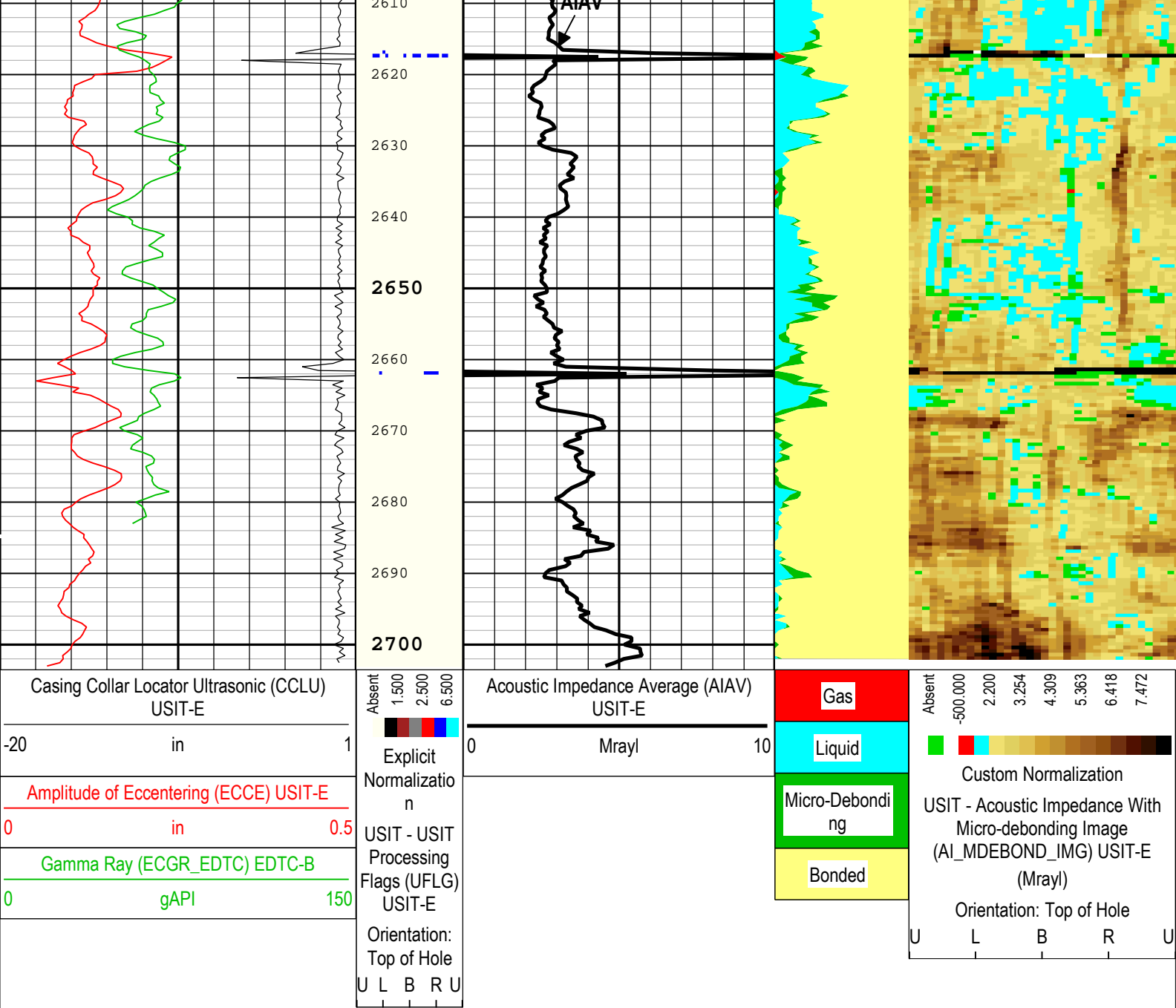
TIME_1900 - Time Marked every 60.00 (s)











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: 28-Aug-2019 12:03:46

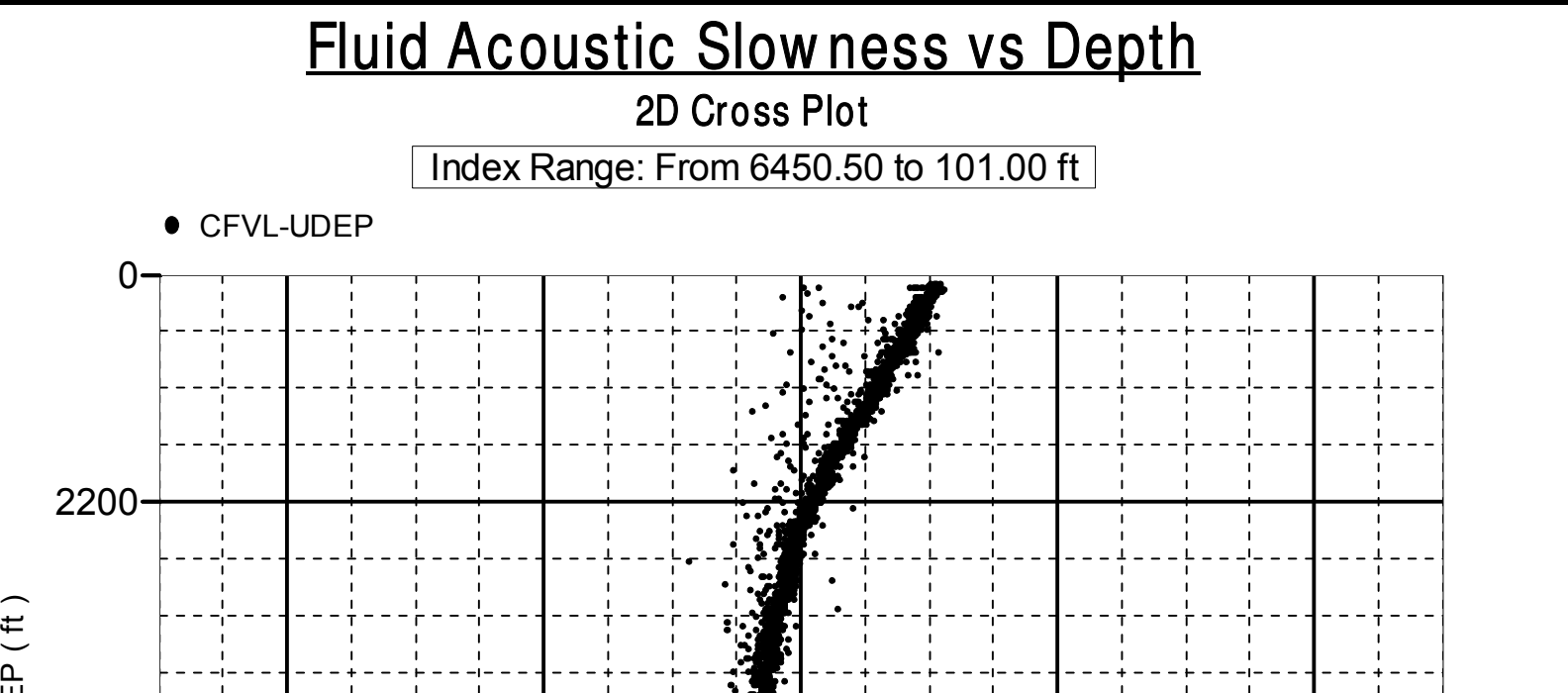
Channel Processing Parameters				
1A: Parameters				
Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
CBLO	Casing Bottom (Logger)	WLSESSION	17024.3	ft
CDEN	Cement Density	EDTC-B	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)	
MEM	Memory Buffer Flag	Borehole	No	

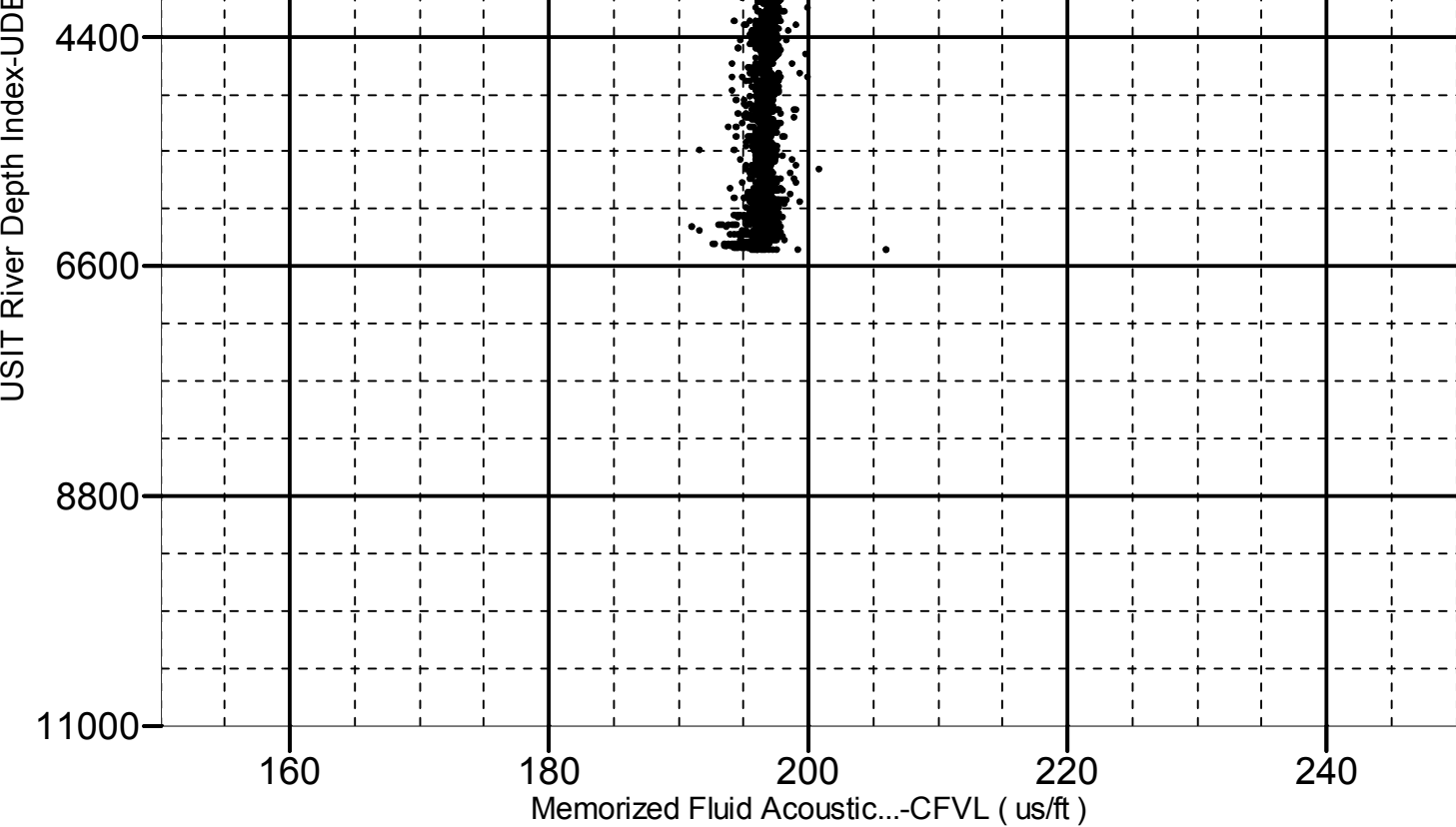
HEMA	Hematite Presence Flag	Borehole	No	
ICE_PROCESS	ICE Processing	USIT-E	Yes	
IMAR	Image Rotation	USIT-E	RB	
MEAS_WLEN	Tcube Processing Window Length in Measurement Mode	USIT-E	18.79	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.17	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.6	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	1.5	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	1885	1947	
BS	8.5	1947	2703.5	
All depth are actual.				

Tool Control Parameters				
1A: 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	35	V
HRES	Horizontal Resolution	USIT-E	10 deg	
ICE2_ACQ	Ultrasonic ICE2 Acquisition	USIT-E	No	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
USFR	Ultrasonic Sampling Frequency	USIT-E	500000	Hz
UPAT	USIT Emission Pattern	USIT-E	Pattern 500 KHz	
UWKM	USIT Working Mode	USIT-E	Uncompressed 10 deg at 6.0 in LF	
WINB	Window Begin Time	USIT-E	33.83	us
WINE	Window End Time	USIT-E	73.83	us

XYZ	Company:Noble Energy Inc Well:SLW Ranch State BB07-660 1A: Log[4]:Up:S005
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XYZ

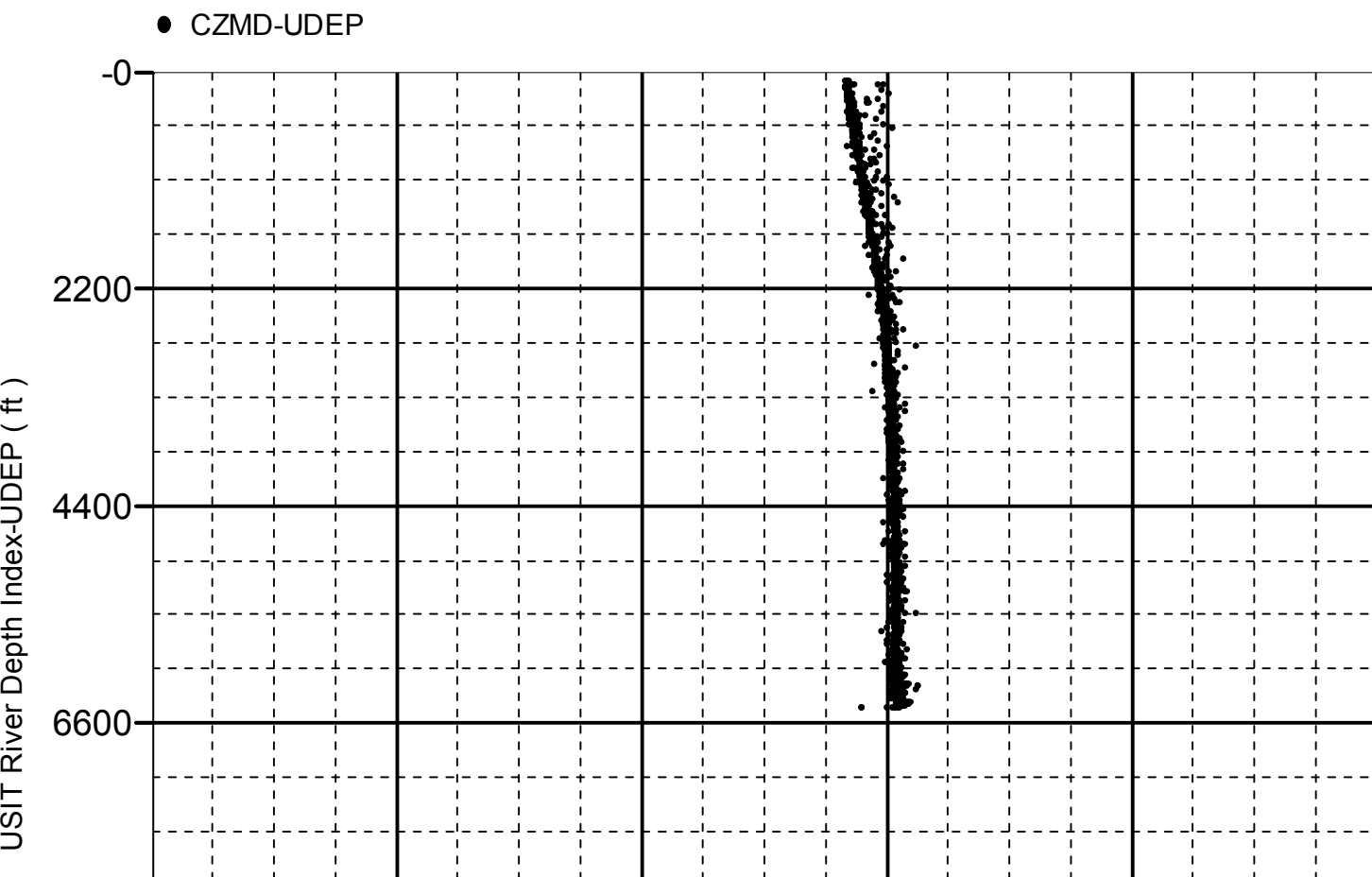
Company:Noble Energy Inc Well:SLW Ranch State BB07-660

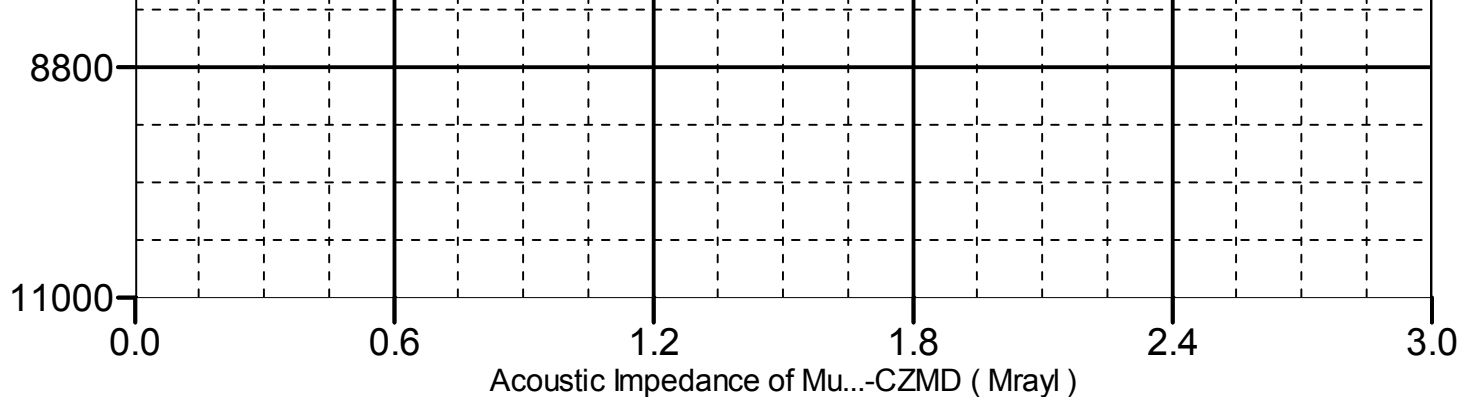
1A: Log[4]:Up:S005

Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 6450.50 to 101.00 ft





Company: Noble Energy Inc

Well: SLW Ranch State BB07-660

Field: Wattenberg

Schlumberger

County:	Weld
Country:	
UltraSonic Summary Print	