

Company: Noble Energy Inc

Well: Shufly State Y34-714

Field: Wattenberg

County: Weld State: Colorado

UltraSonic Summary Print

County:	Weld
Field:	Wattenberg
Location:	SESE Sec. 34, T2N, R64W
Well:	Shufly State Y34-714
Company:	Noble Energy Inc
Location:	
SESE Sec. 34, T2N, R64W	Elev.: K.B. 5069.00 ft
SHL: 300' FSL & 750' FEL	G.L. 5039.00 ft
Lat/Long: 40.088460 / -104.530500	D.F. 5069.00 ft
Permanent Datum:	Ground Level
Log Measured From:	Kelly Bushing
Drilling Measured From:	Kelly Bushing
API Serial No.	Section: 34
05-123-45621	Township: 2N
	Range: 64W

Logging Date	14-Feb-2018
Run Number	ONE
Depth Driller	19794.00 ft
Schlumberger Depth	19794.00 ft
Bottom Log Interval	6675.00 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	2152.00 ft
To	19794.00 ft
Casing/Tubing Size	5.5 in
Weight	20 lbm/ft
Grade	P110
From	0.00 ft
To	19646.00 ft
Max Recorded Temperatures	209 degF
Logger on Bottom	14-Feb-2018 08:31:00
Unit Number	2377
Recorded By	Ashley Rosacker / Loren Await
Witnessed By	Mike Stenger

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.

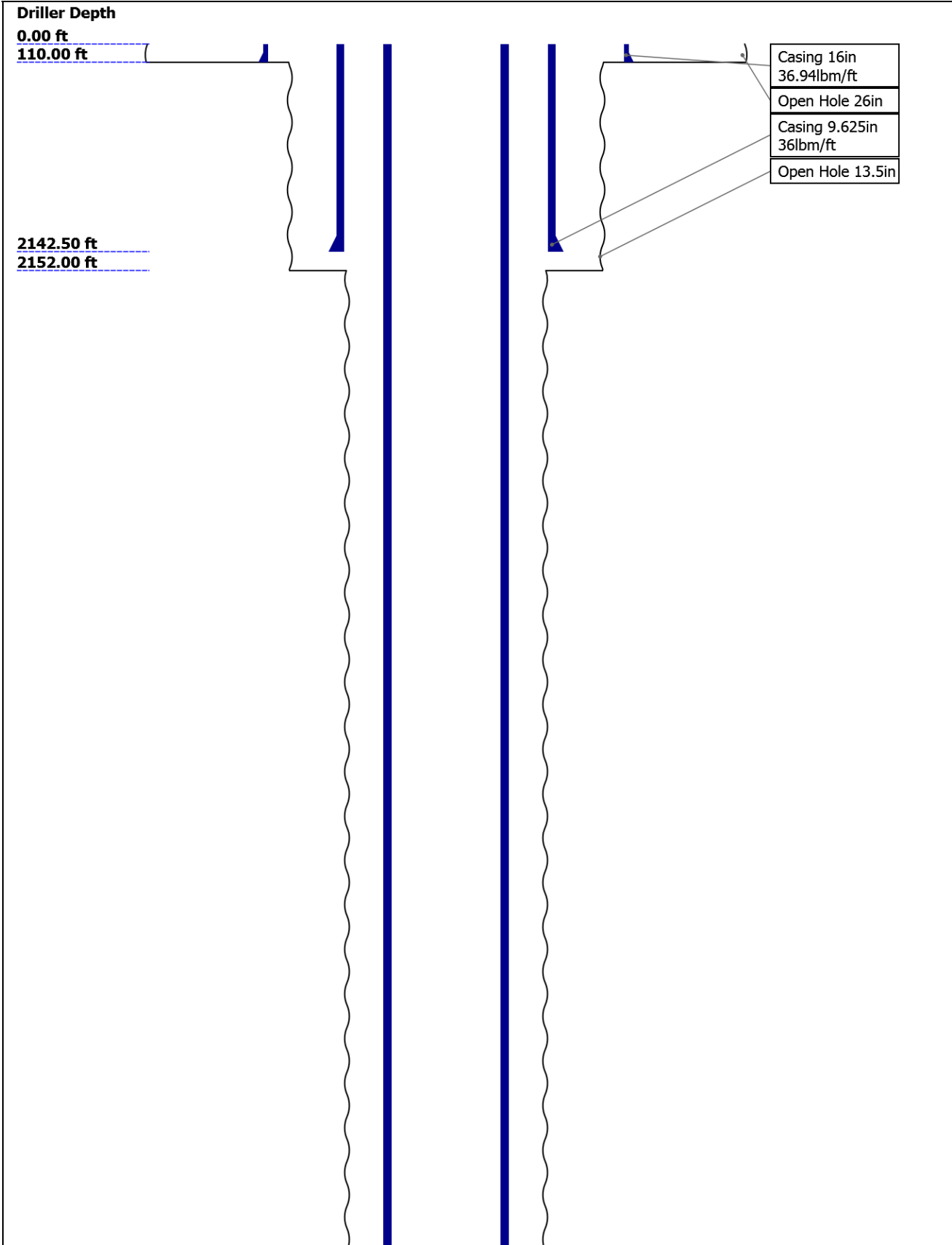
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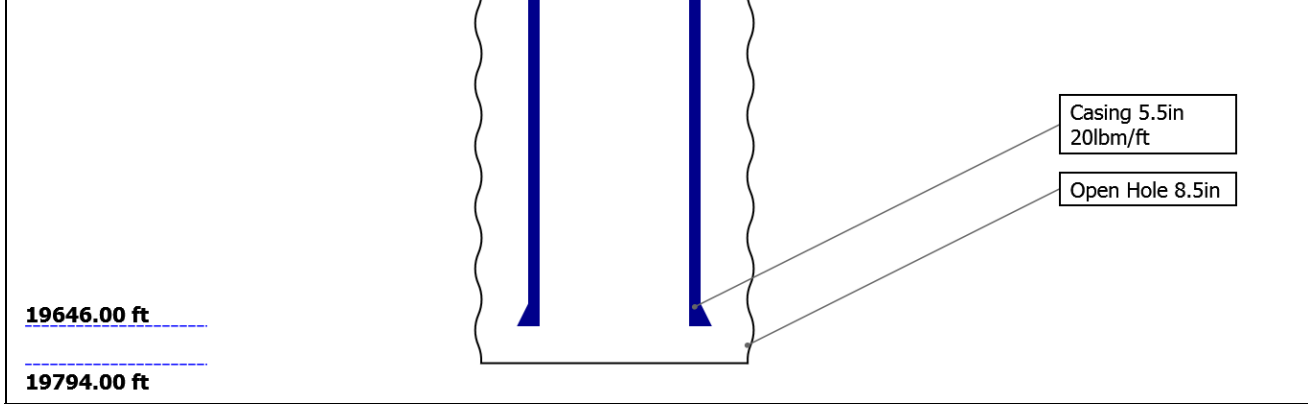
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Well Sketch




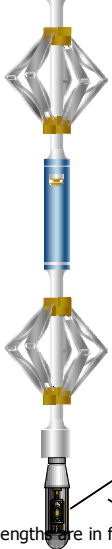


Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	26	13.5	8.5			
Top Driller (ft)	0	110	2152			
Top Logger (ft)	0	110	2152			
Bottom Driller (ft)	110	2152	19794			
Bottom Logger (ft)	110	2152	19794			
Casing						
Size (in)	16	9.625	5.5			
Weight (lbm/ft)	36.94	36	20			
Inner Diameter (in)	15.572	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	2142.5	19646			
Bottom Logger (ft)	110	2142.5	19646			

Remarks and Equipment Summary

ONE: Toolstring				ONE: Remarks	
<div><div><div>Equip nameLengthMP nameOffset</div><div>LEH-QT:328.97409LEH-QT:3409</div><div>EDTC-B:826.06424EDTH-B:8432EDTG-AEDTC-B:8424</div><div>AH-107:219.56997</div><div>AH-184:517.56941</div><div>USIT-E:9315.560ECH-MFA:1924USAC-A:930USAC-A:10</div></div><div></div><div><div>CTEM22.56ACCZ0.00HV0.00Gamma20.69RayTelStatu19.56s</div></div></div>	Thank you for choosing Schlumberger!			Tool string run as per tool sketch and client logging program.	
				4.75" gemcos ran on USAC and EDTC for centralization.	
				This is the first log in the well.	
				Main pass logged at 2500 psi. Repeat pass logged at 0 psi.	
				BHT: 187.29 degF	

USLS-A:19 94 USSC-B:92 5 USRS-AB: 873 USI-SENS OR:929 USI-TX	 <p> USI Sen 0.37 TOOL_ZERO Head Extension Length in ft Maximum Outer Diameter = 3.625 in Line: Sensor Location, Value: Gating Offset All measurements are relative to TOOL_ZERO </p>	
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Depth Summary			
	ONE		
Depth Measuring Device			
Type	IDW-C		
Serial Number	5845		
Calibration Date	07-Jul-2017		
Calibrator Serial Number	IDWC-C-57		
Calibration Cable Type	7-46 PXS		
Wheel Correction 1	-4		
Wheel Correction 2	-5		
Tension Device			
Type	CMTD-B/A		
Serial Number	5236		
Calibration Date	13-Feb-2018		
Calibrator Serial Number	107		
Number of Calibration Points	10		
Calibration Root Mean Square Error	12		
Calibration Peak Error	19		
Logging Cable			
Type	7-46P-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. IDW used as primary depth reference. Z-chart used as secondary depth reference.	
Rig Up Length At Surface			
Rig Up Length At Bottom			
Rig Up Length Correction			
Stretch Correction			

USIT - Fluid Properties Measurement

Run Name	Pass Name	Start Depth(ft)	Stop Depth(ft)
Run 1	Log[8]:Up	6677.58	97.24

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 : 40.00m(131.22ft) to 41.77m(137.05ft)
MUD_N_FRP = 1.18
DFD = 1.01g/cm3(8.40lbm/gal)
CZMD median computed in free pipe normalization interval = 1.70 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 SP1	7.1.82245.3100
Application Patch	Wireline_TestKit-CMR-NG-2017SP1_7.1.84132 Wireline_NPD-ICE2-2017SP1_7.1.87324

Pass Summary

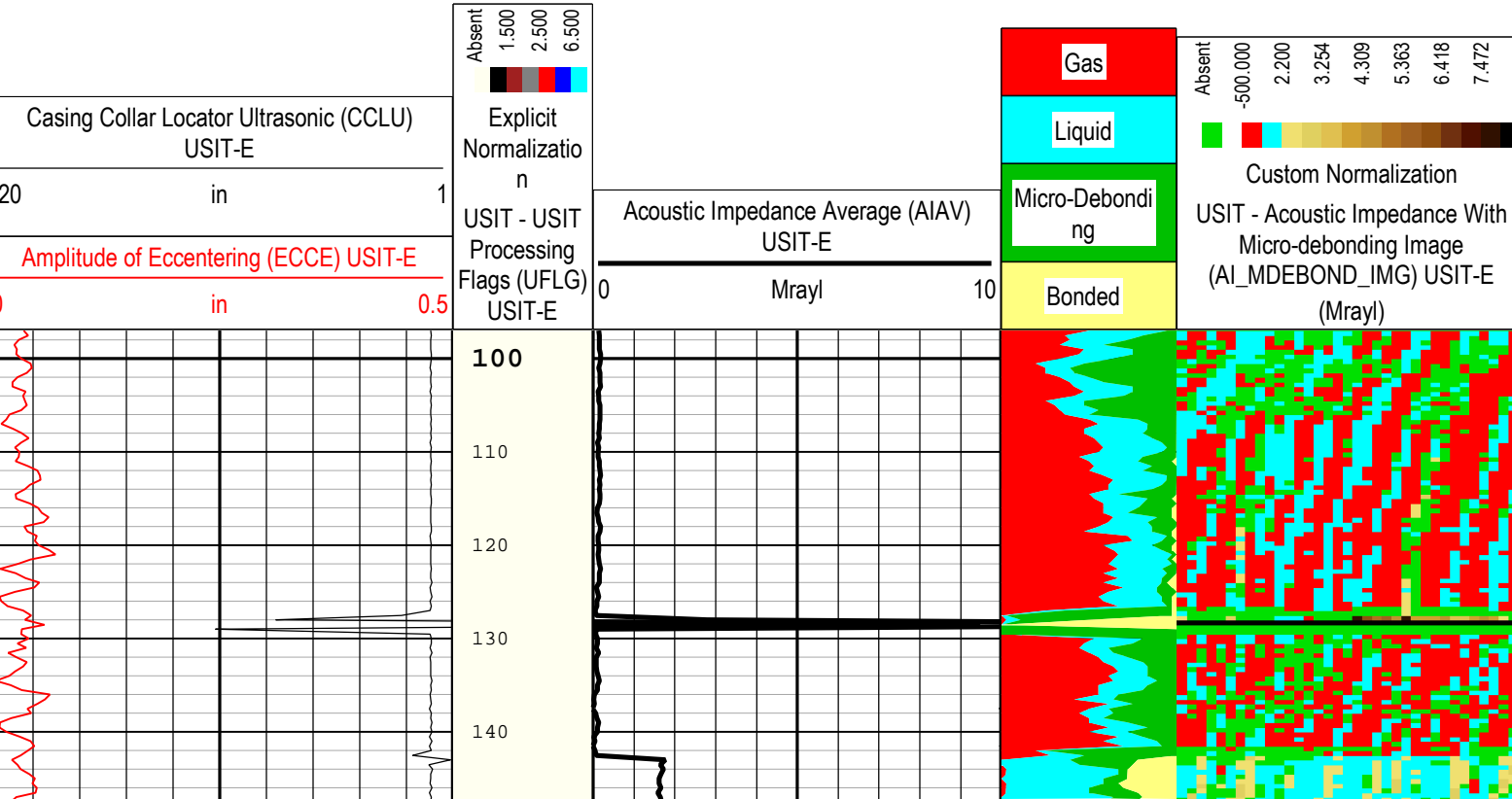
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[8]:Up	Up	97.24 ft	6677.58 ft	14-Feb-2018 9:20:16 AM	14-Feb-2018 10:08:43 AM	ON	27.62 ft	Yes

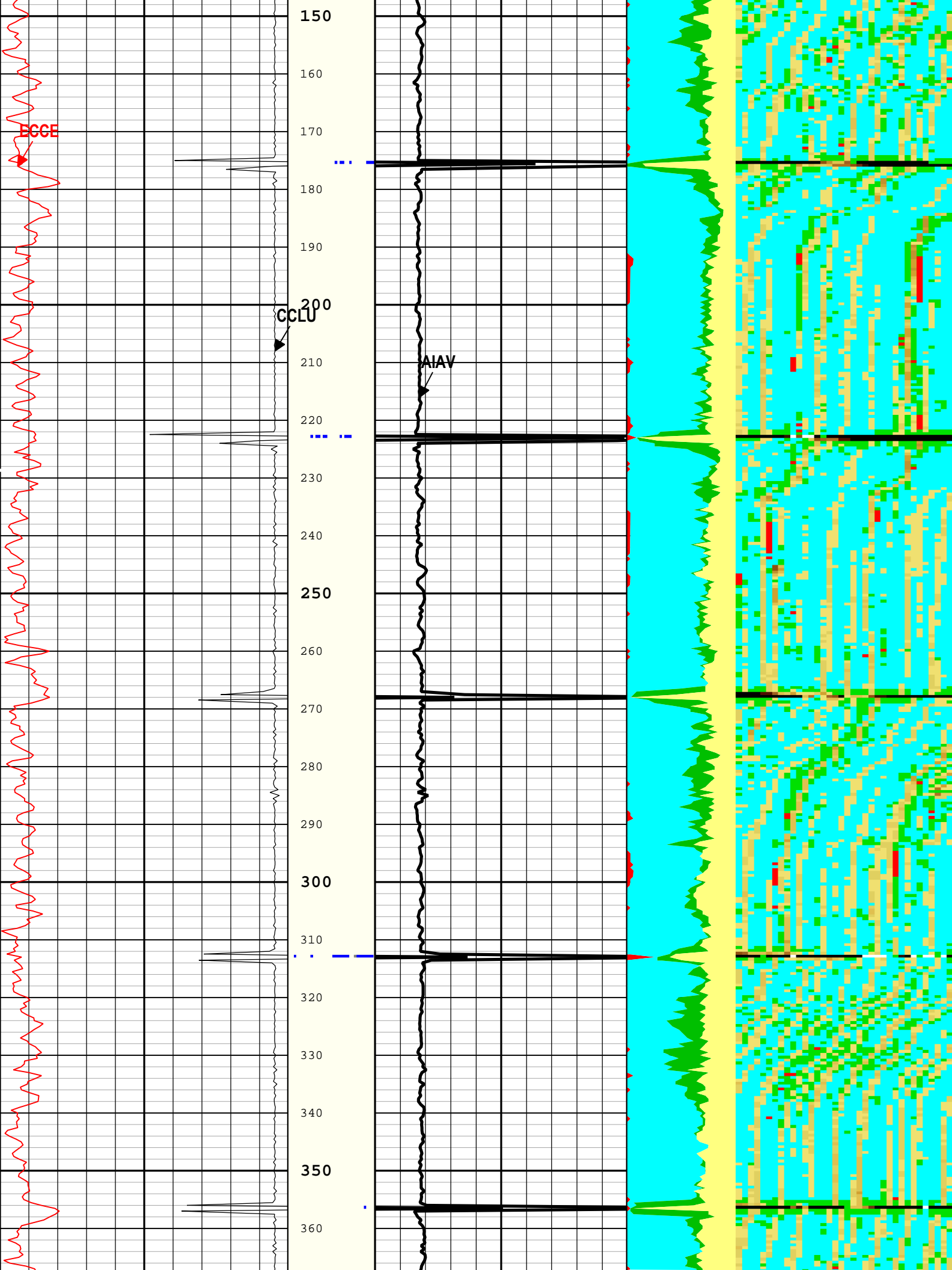
All depths are referenced to toolstring zero

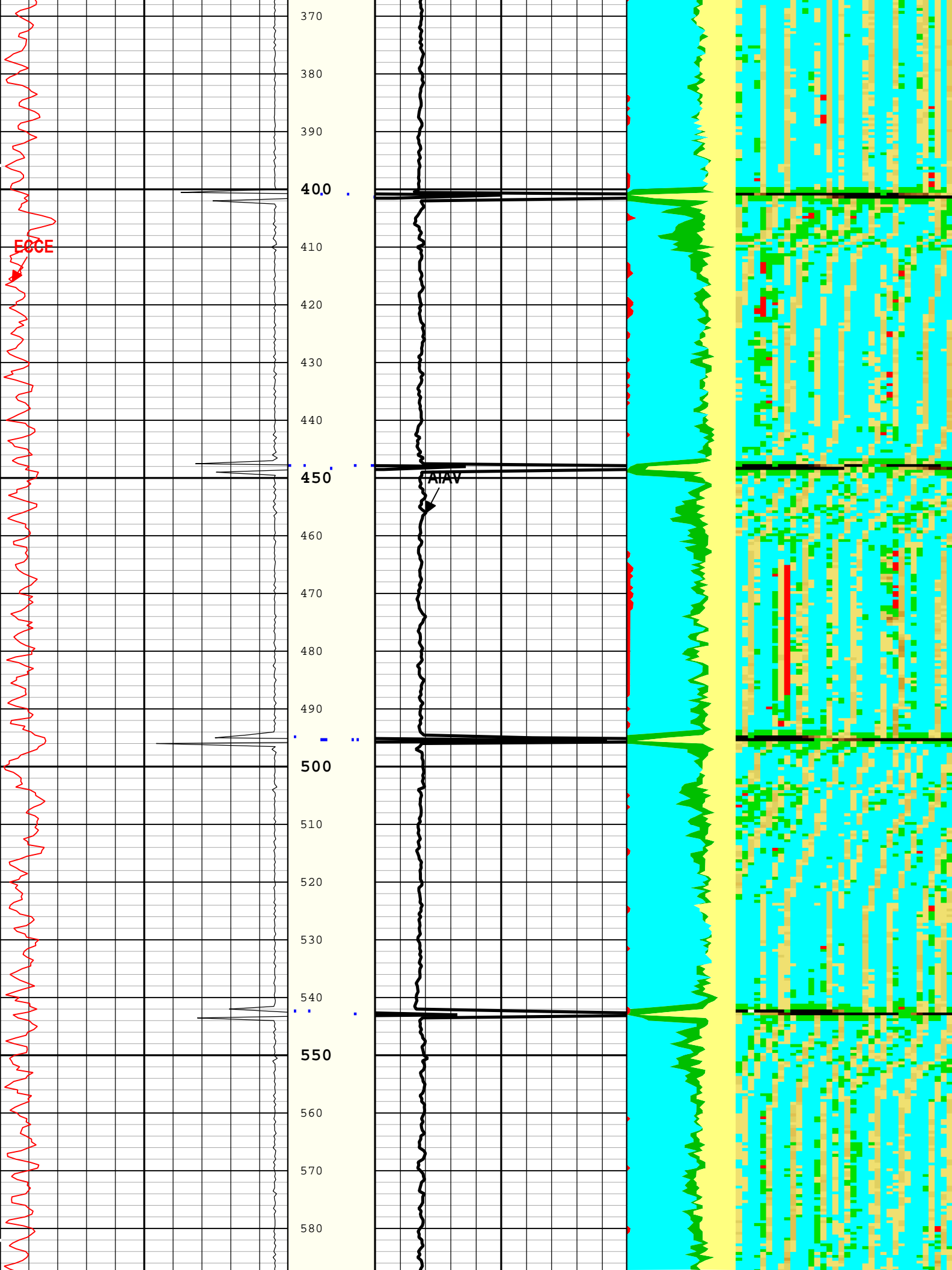
Log	Company:Noble Energy Inc Well:Shufly State Y34-714 ONE: Log[8]:Up:S008
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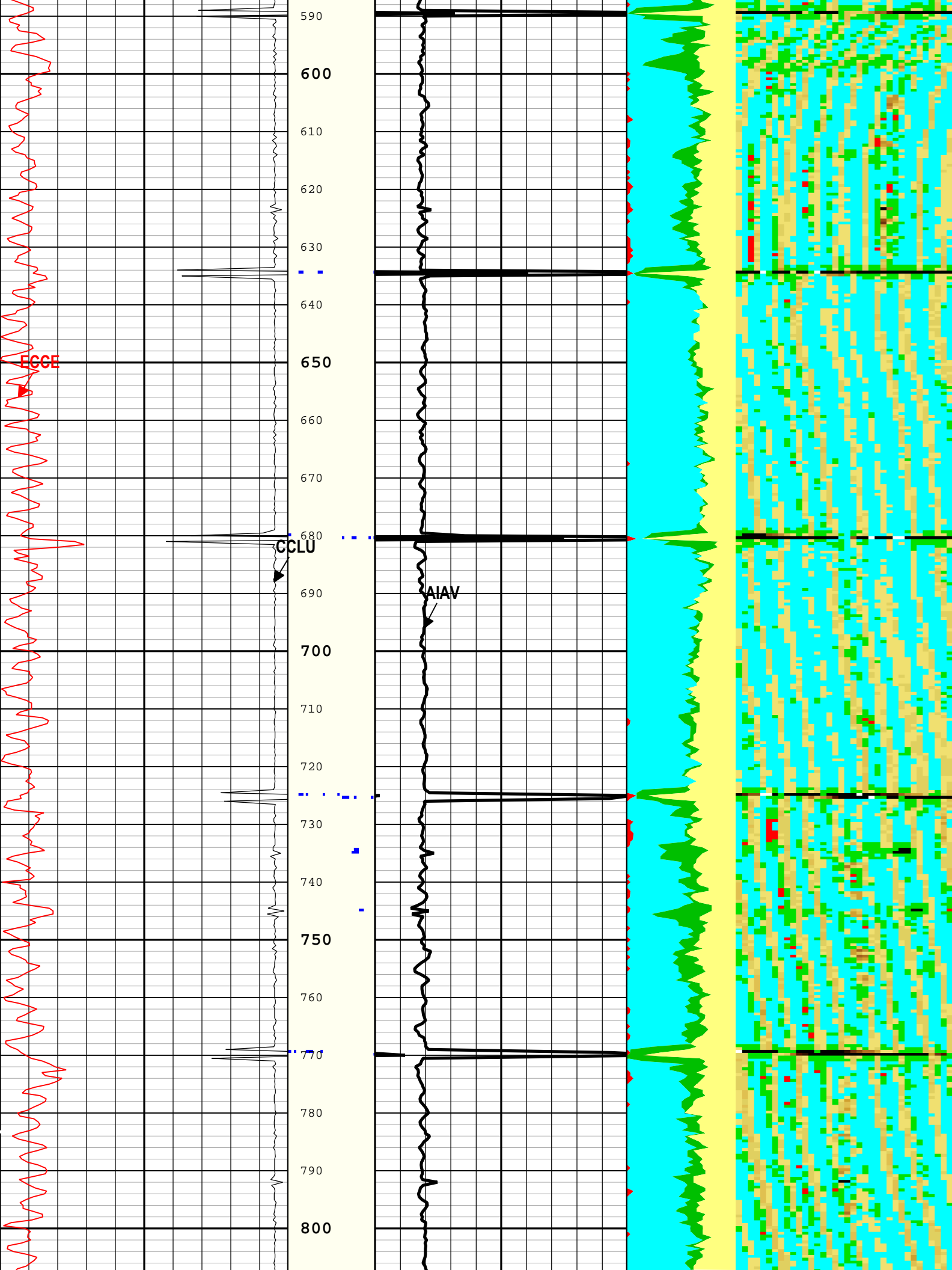
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Creation Date: 14-Feb-2018 11:28:10

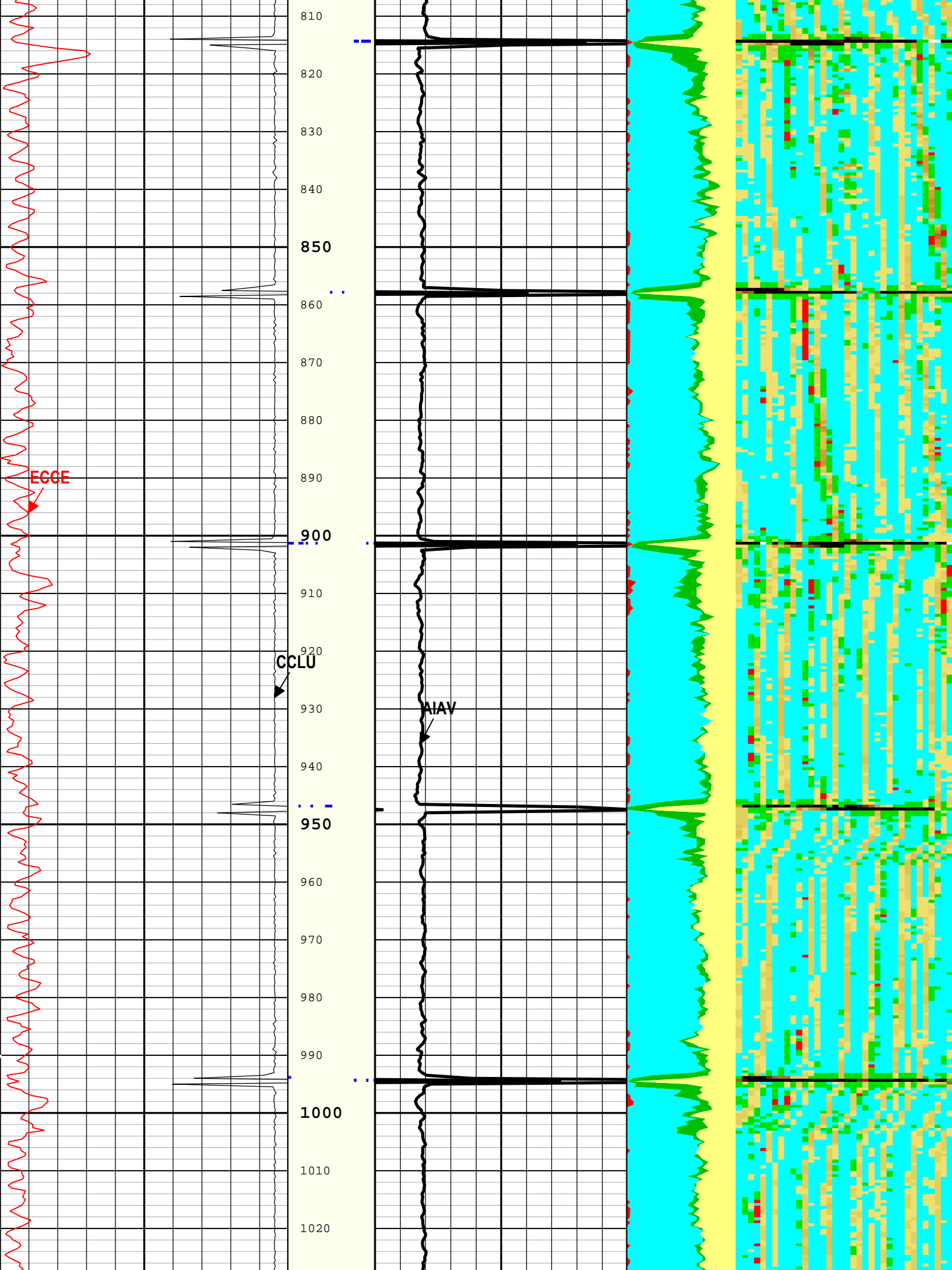
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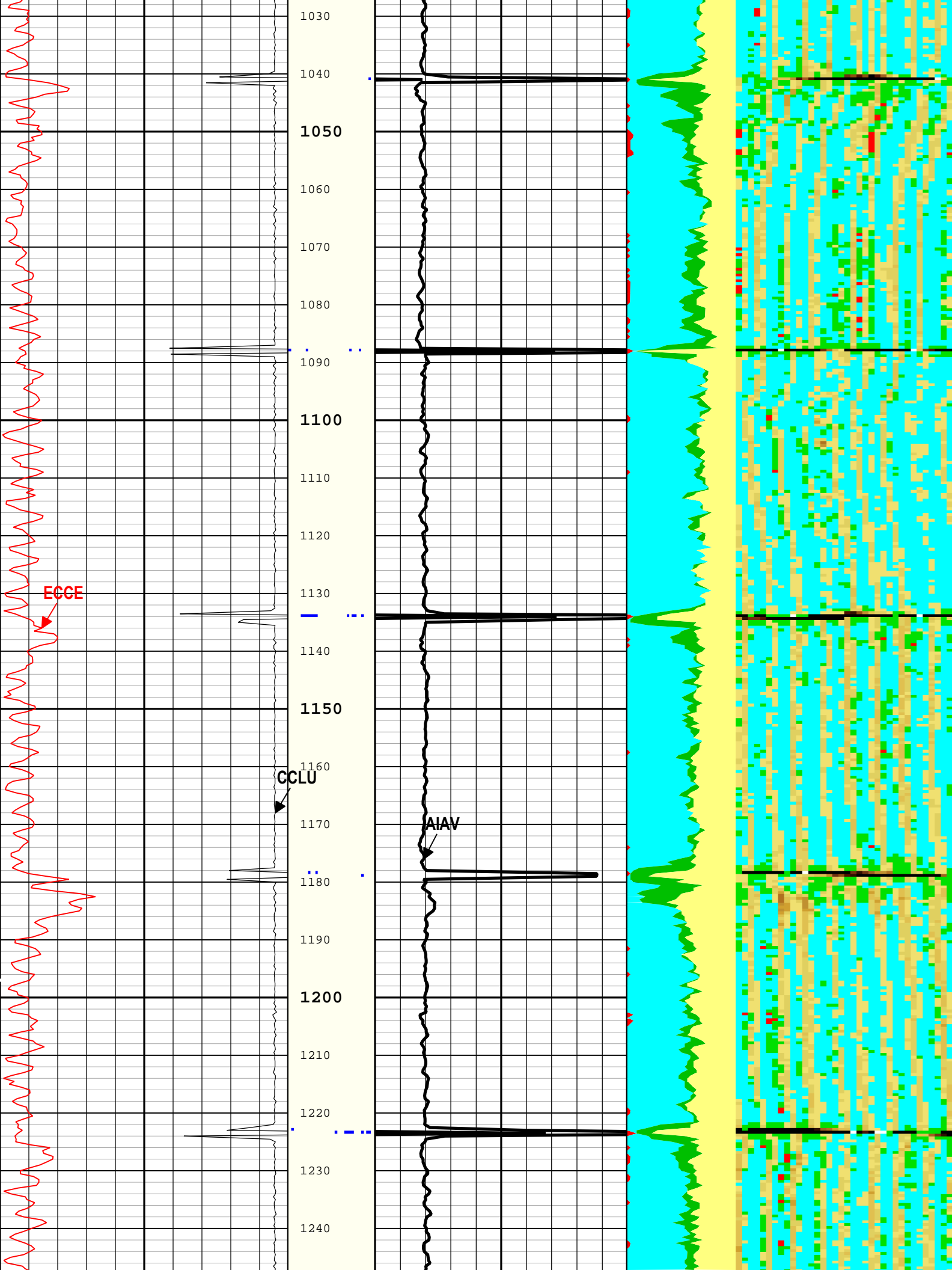


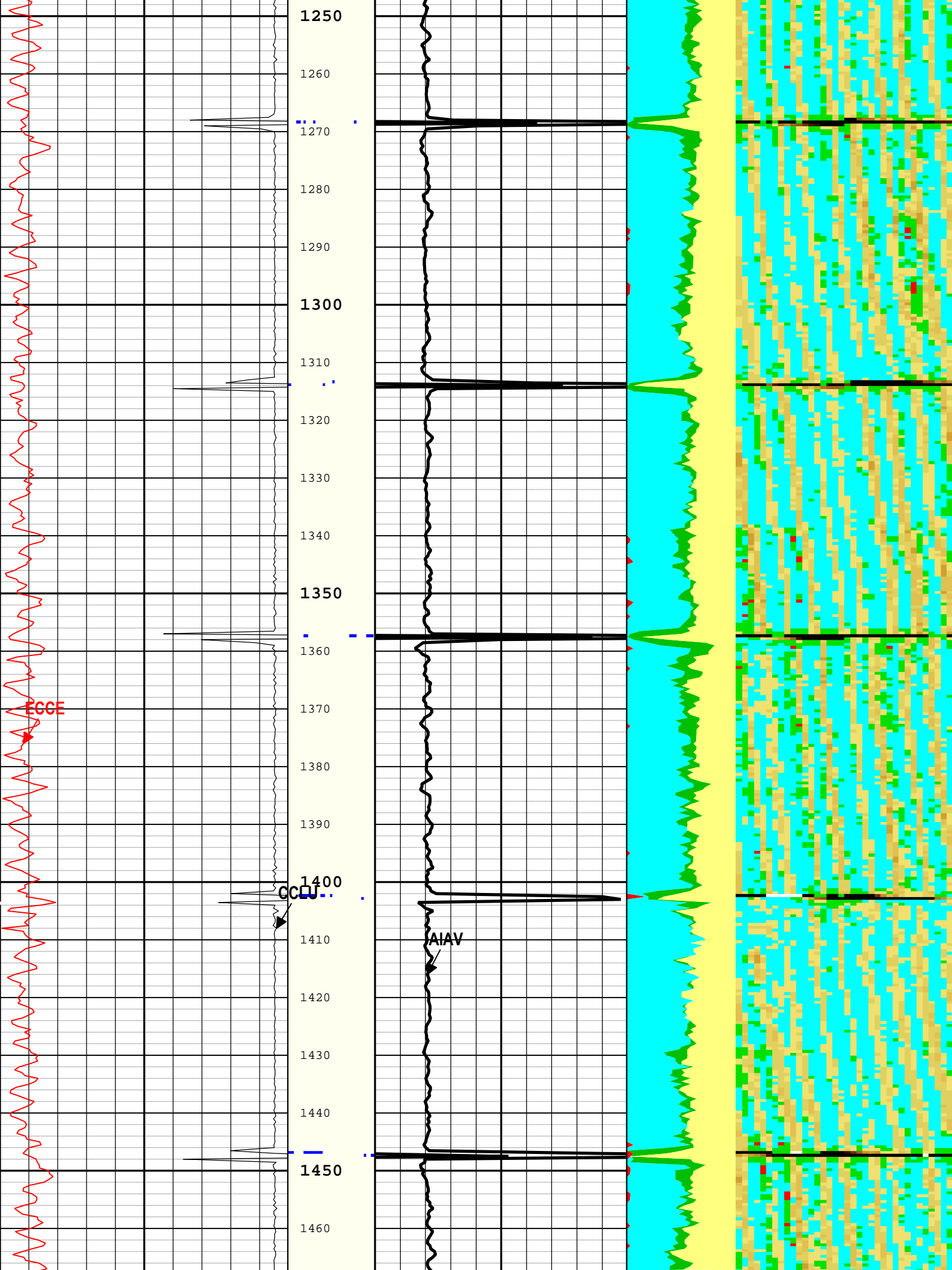


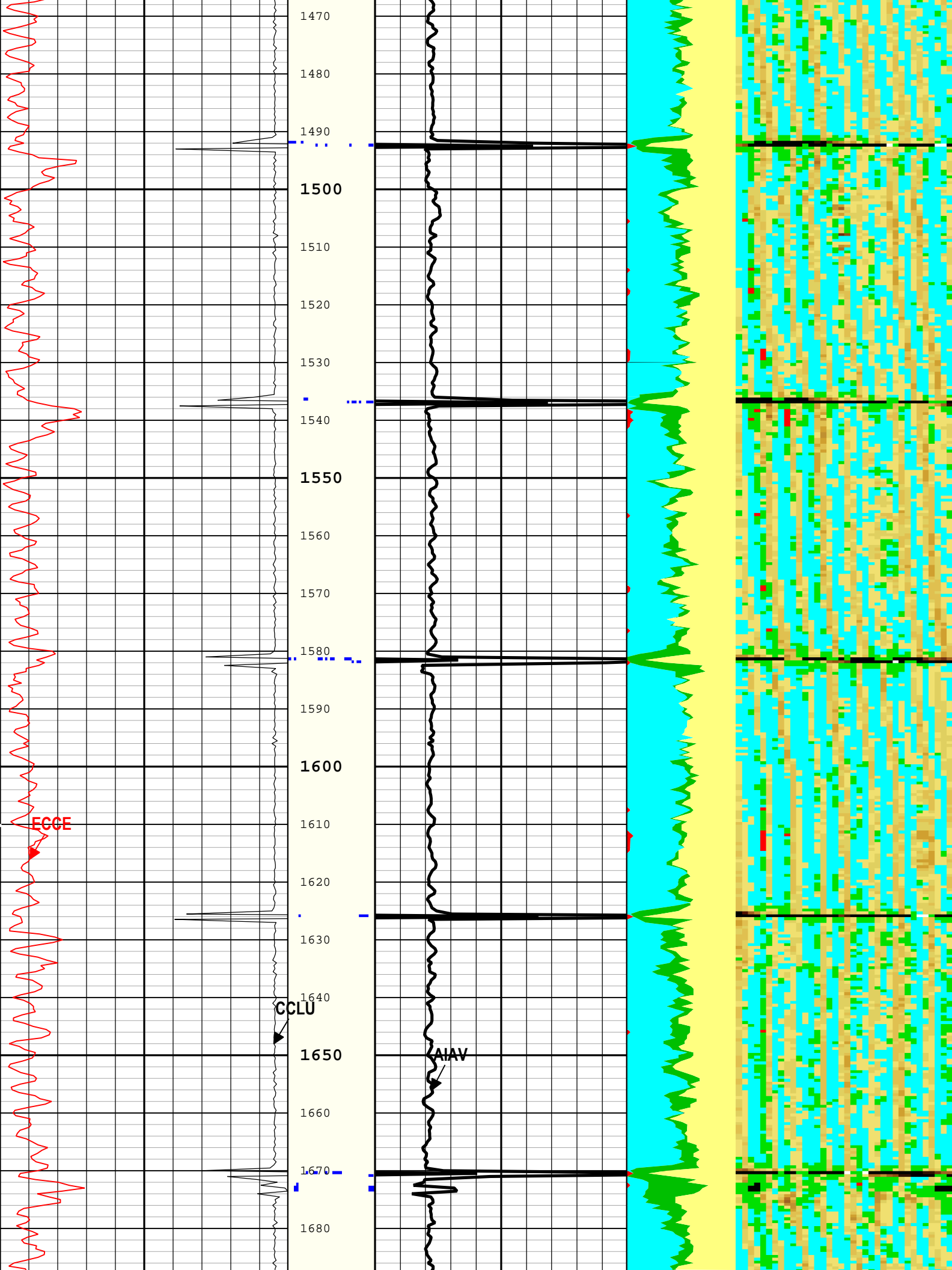


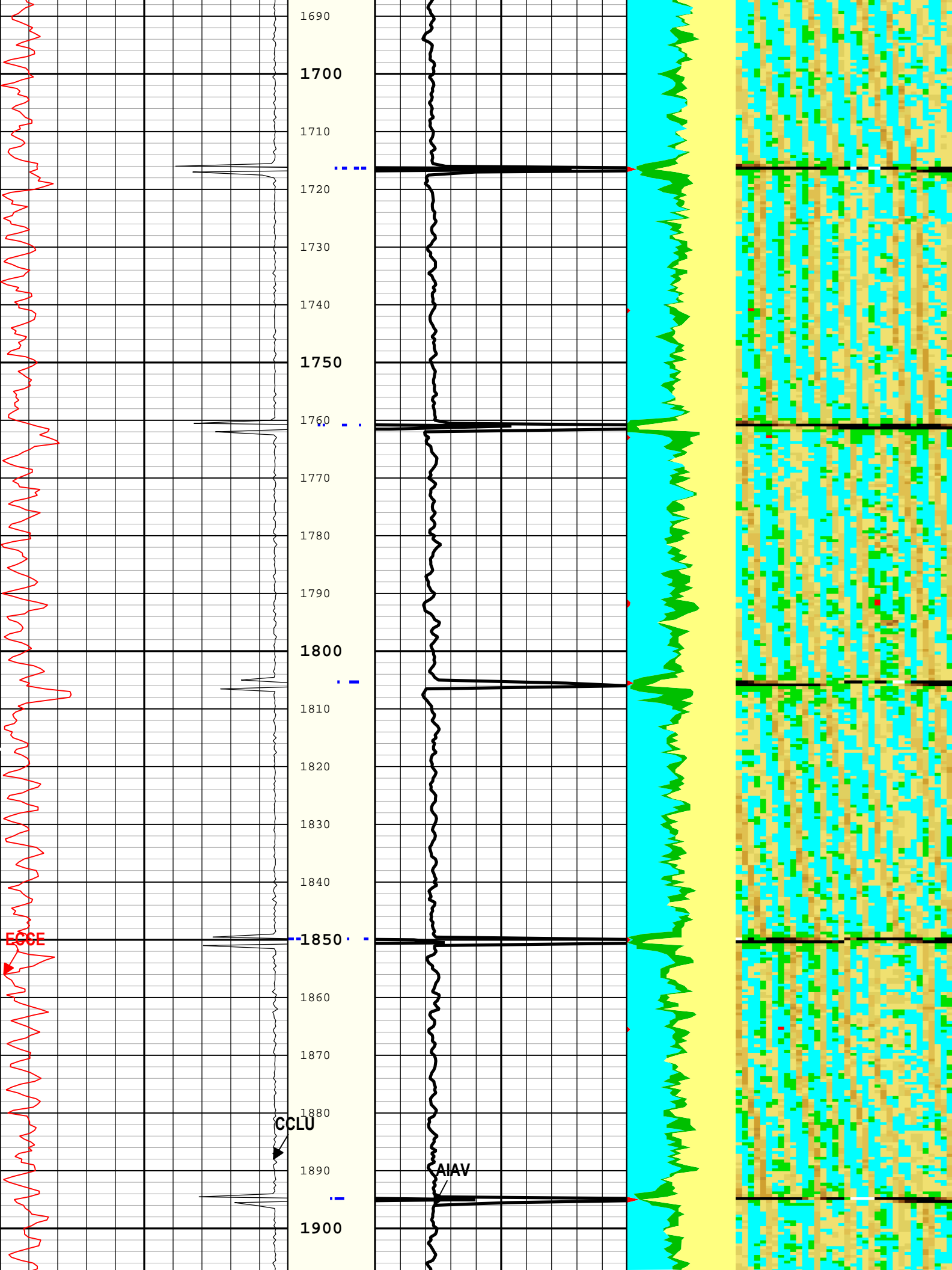


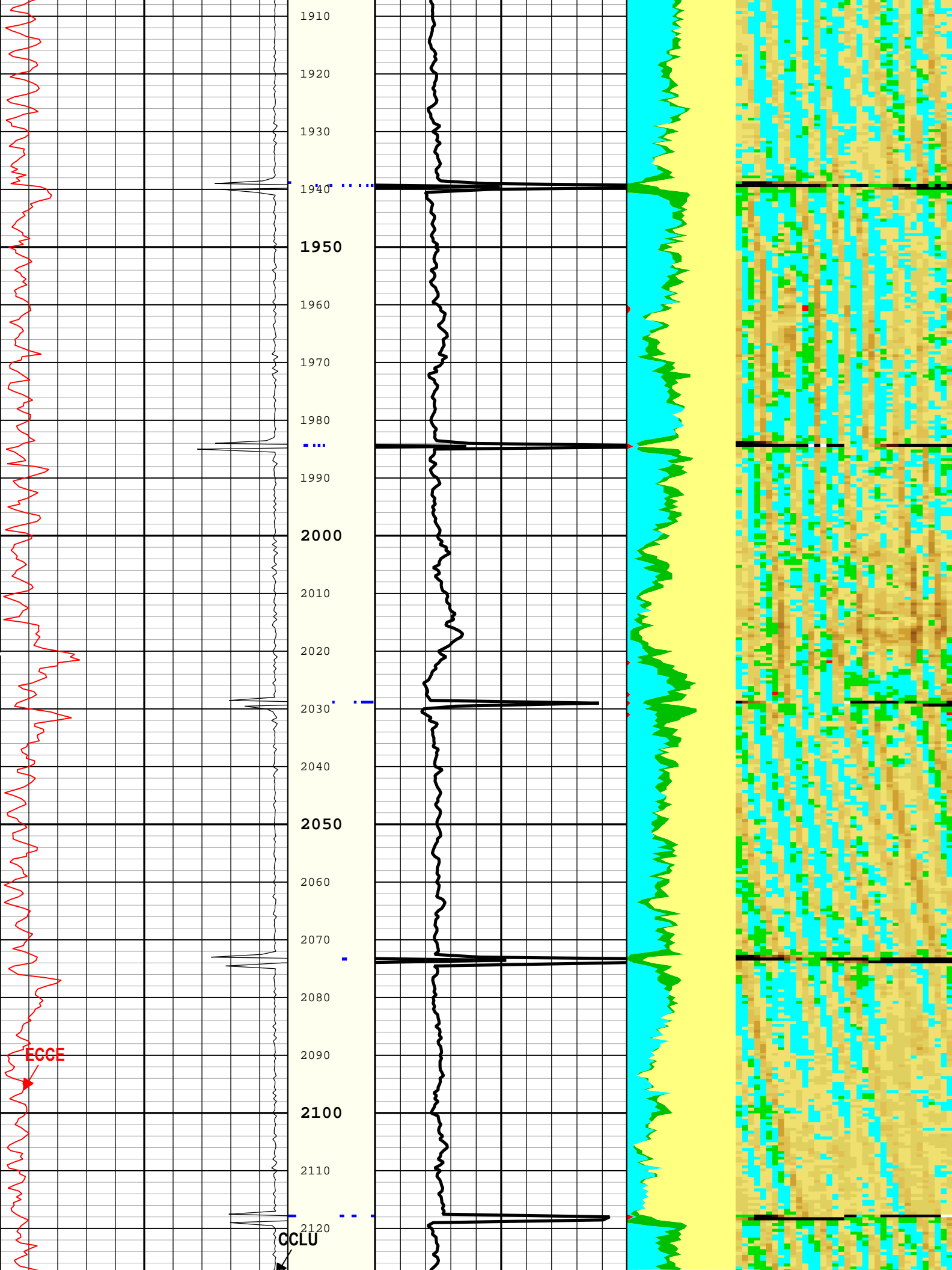


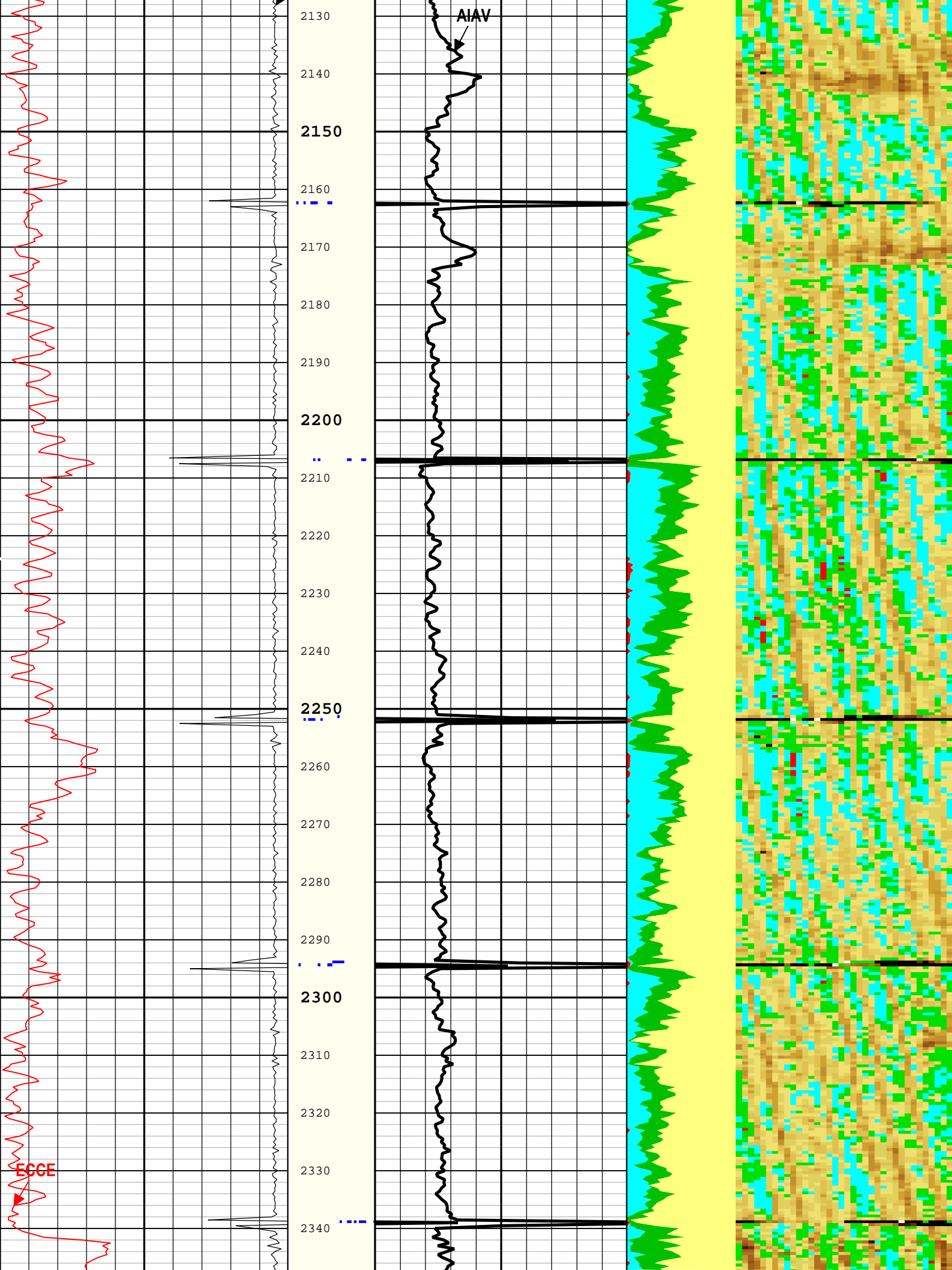


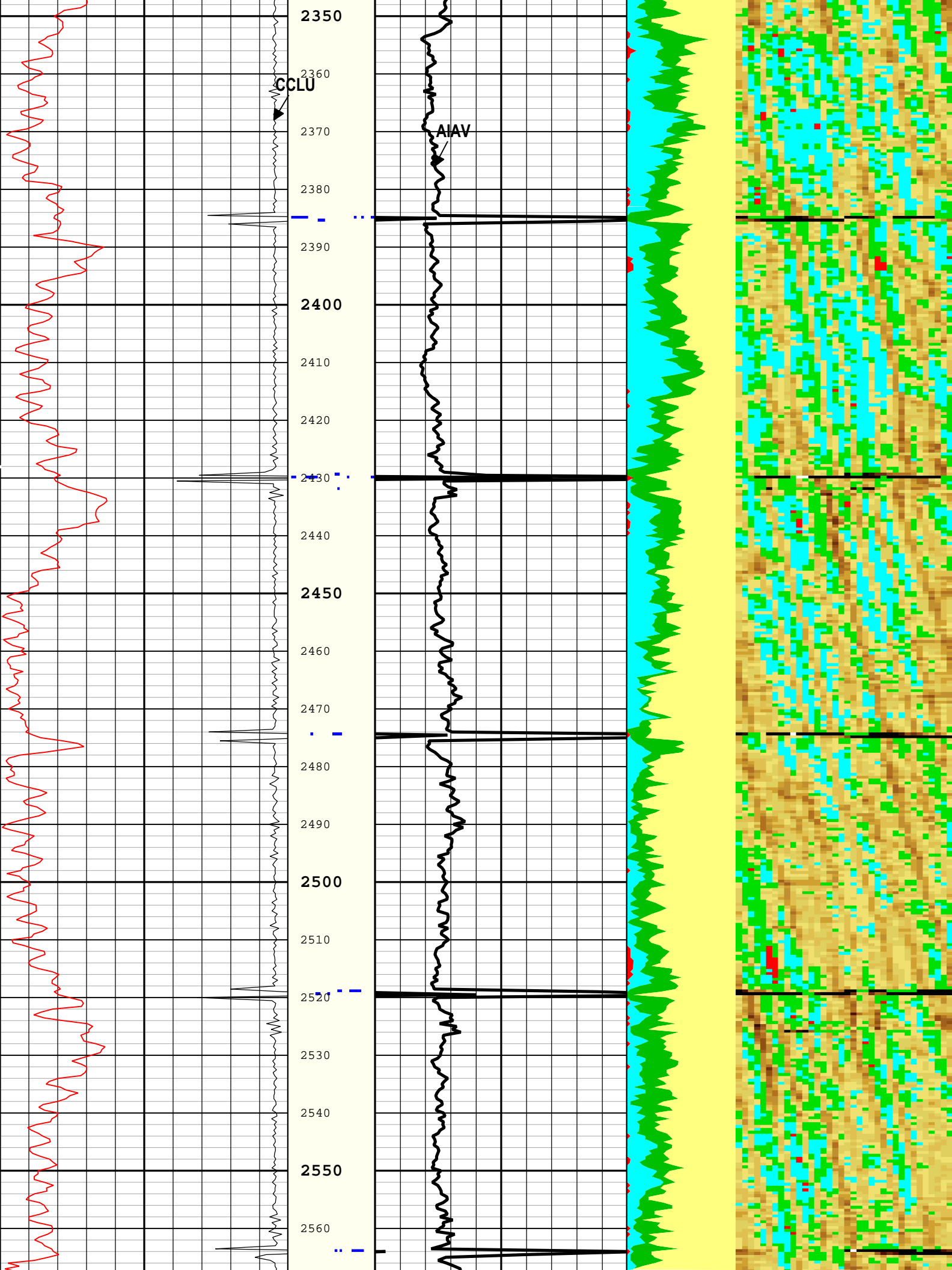


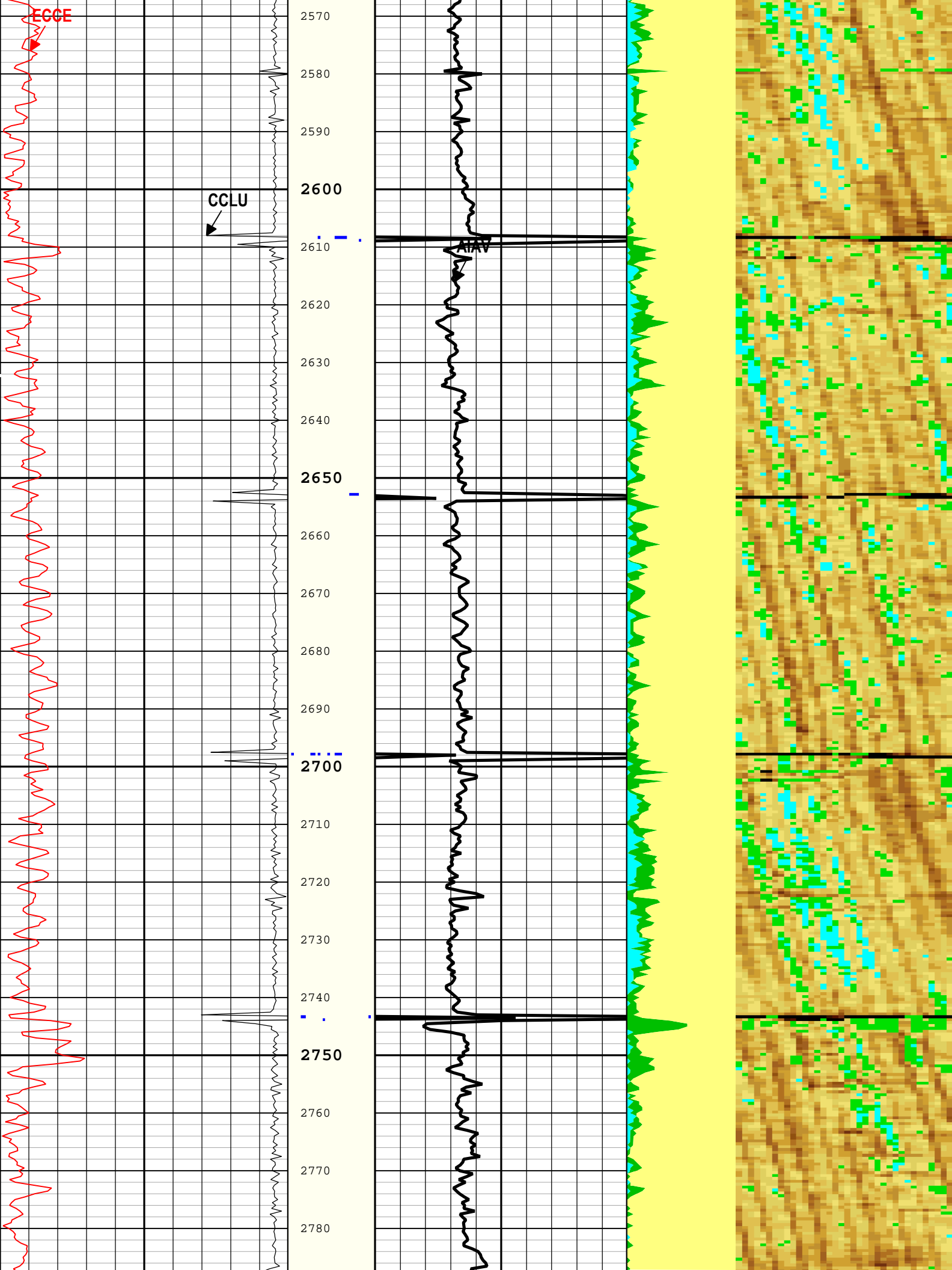


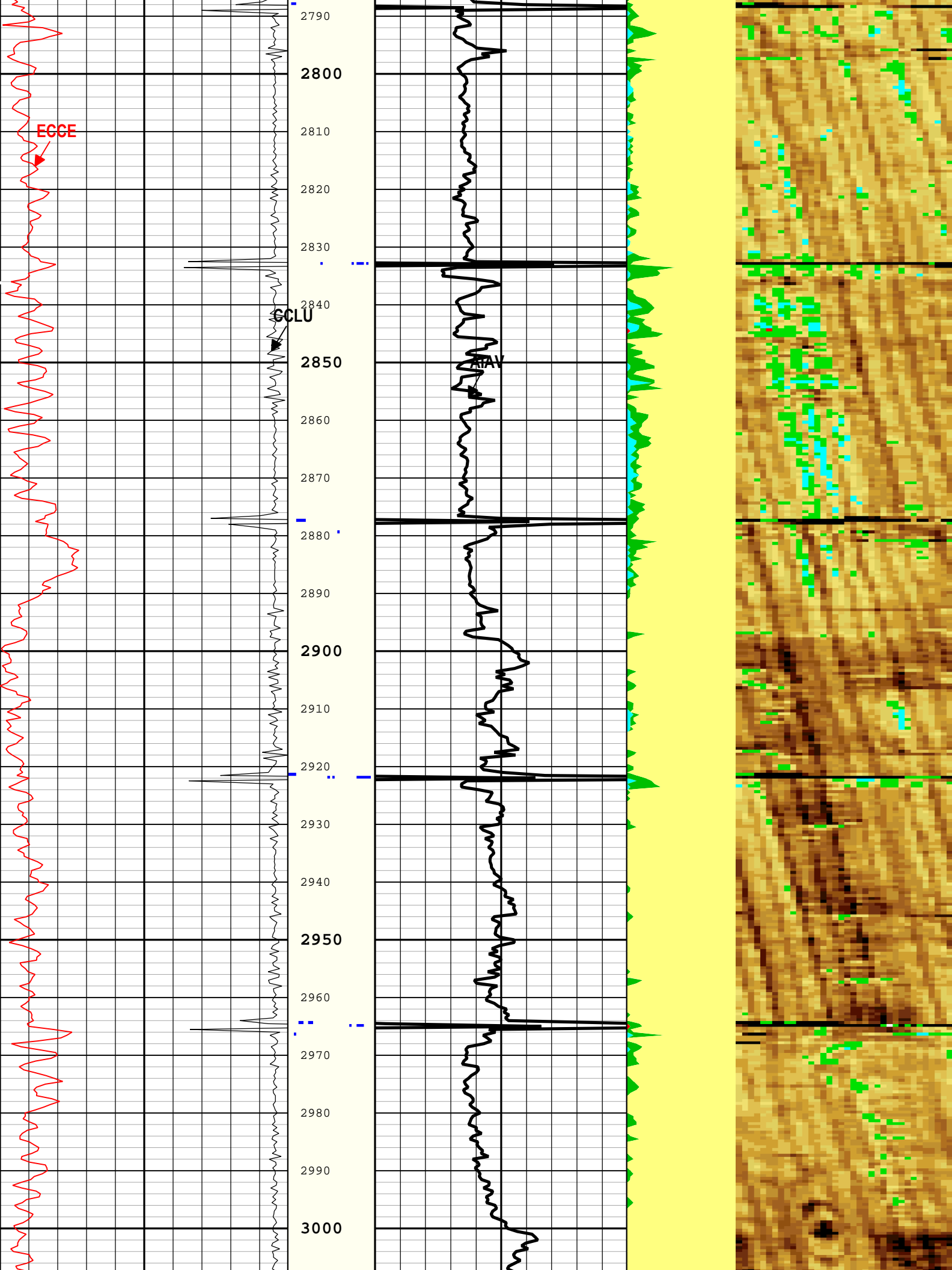


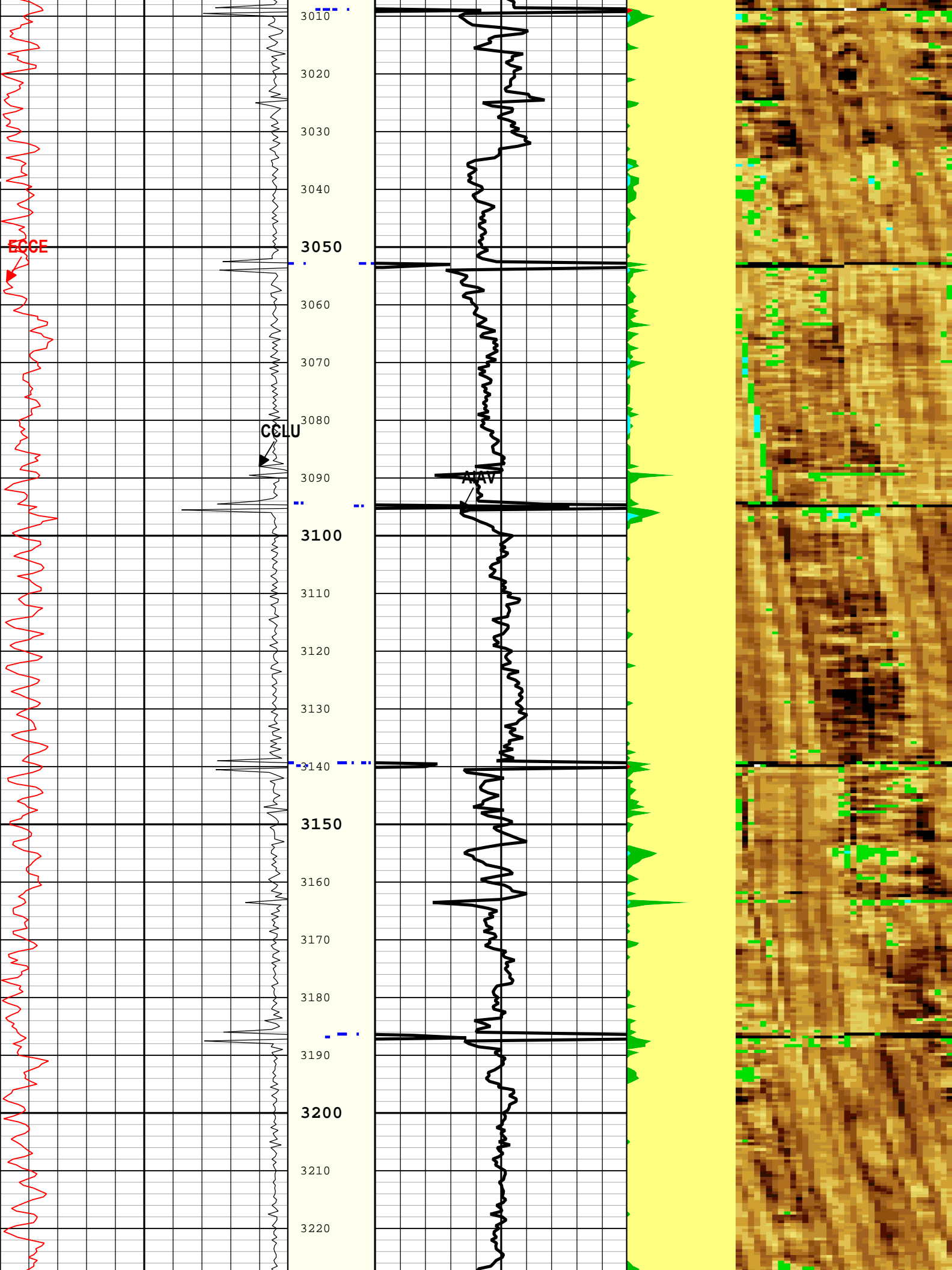


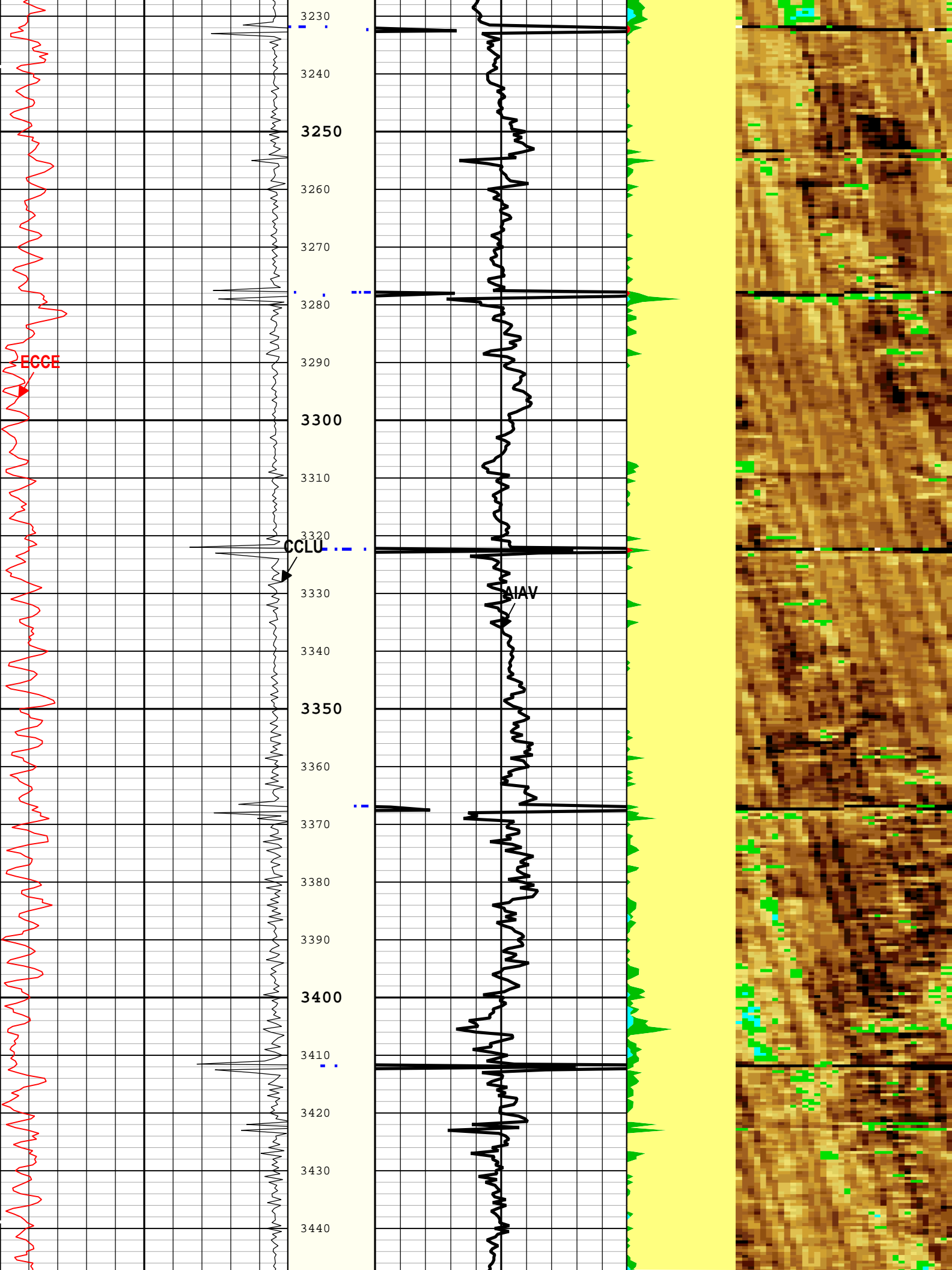


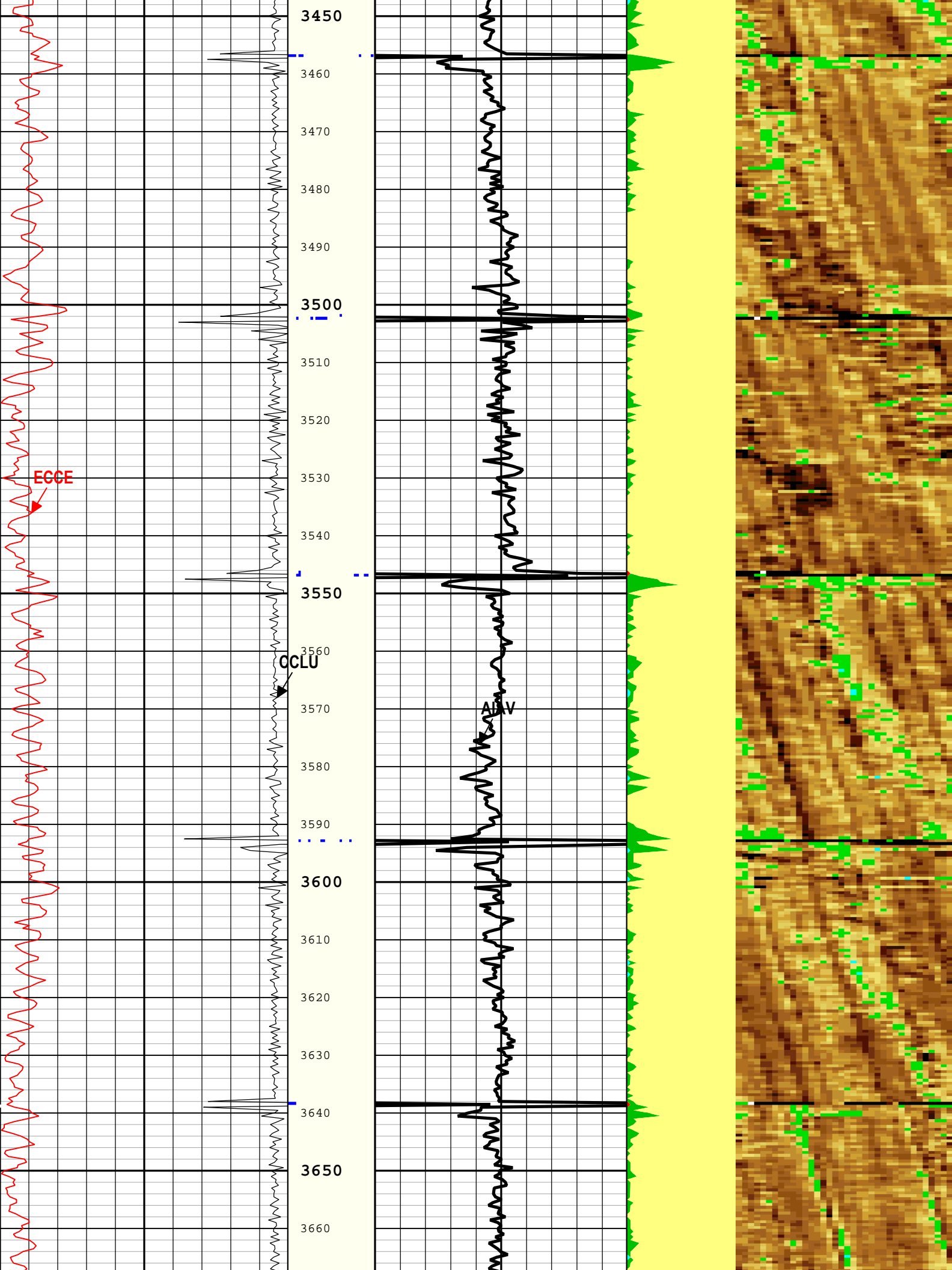


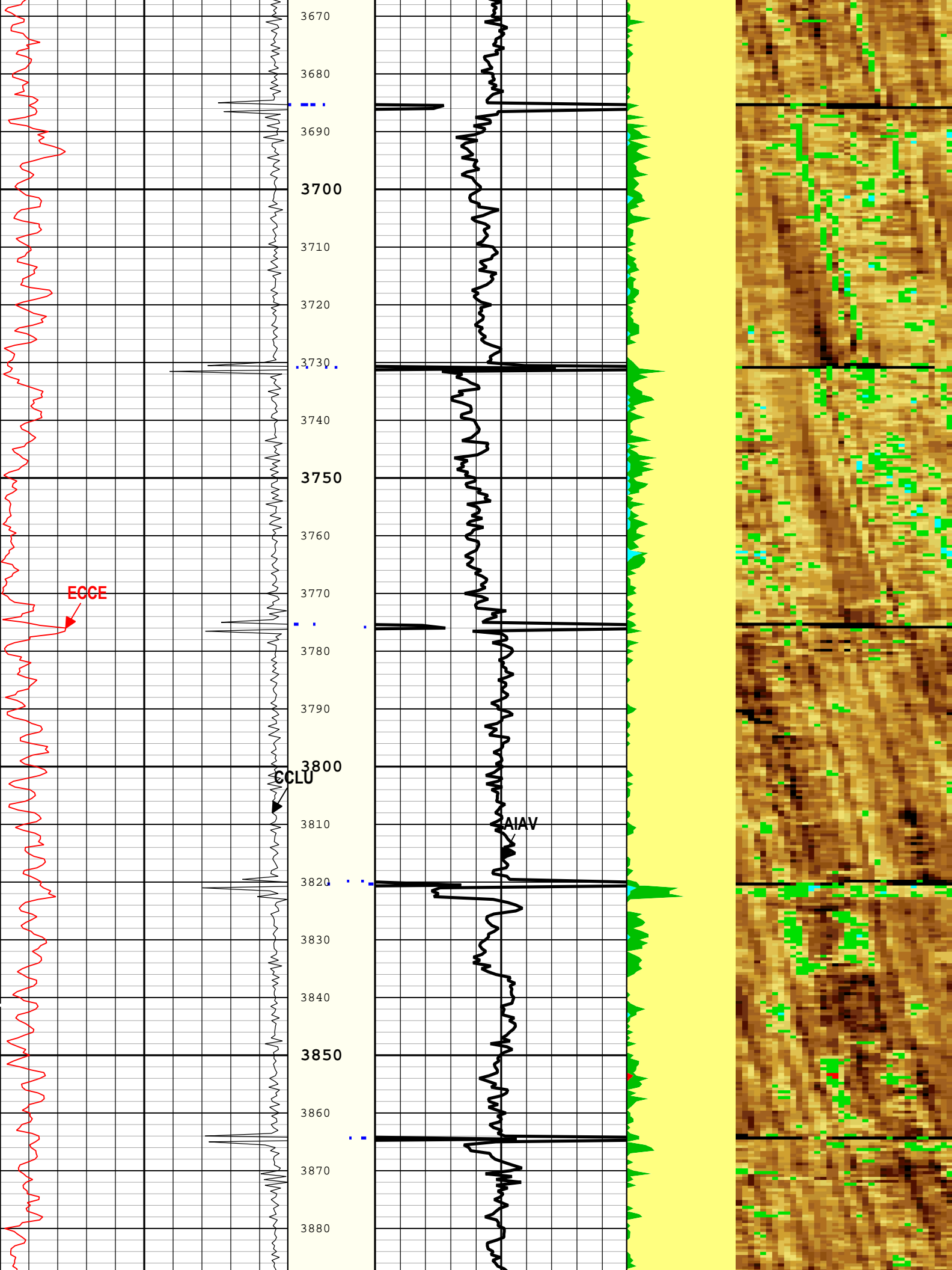


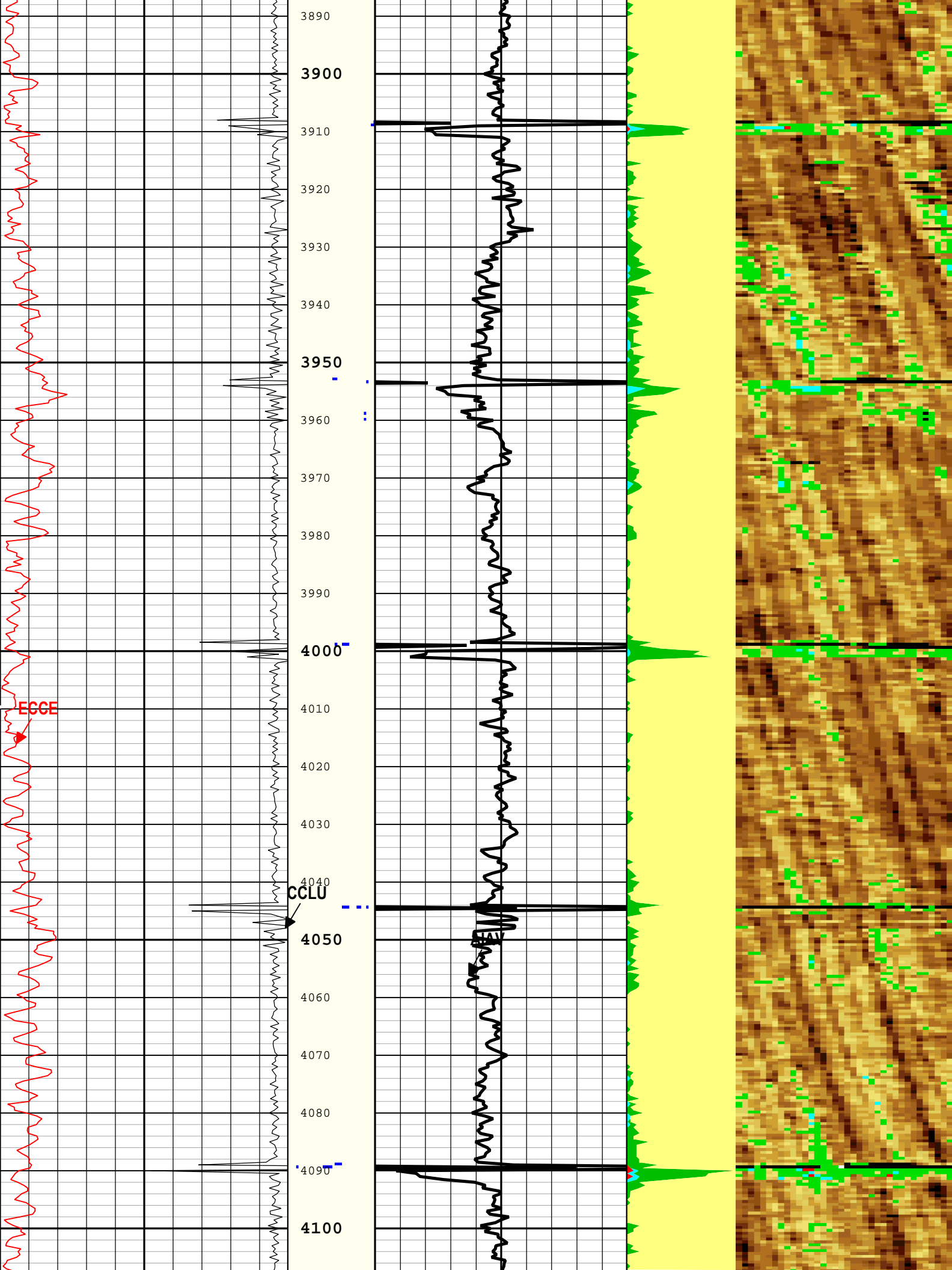


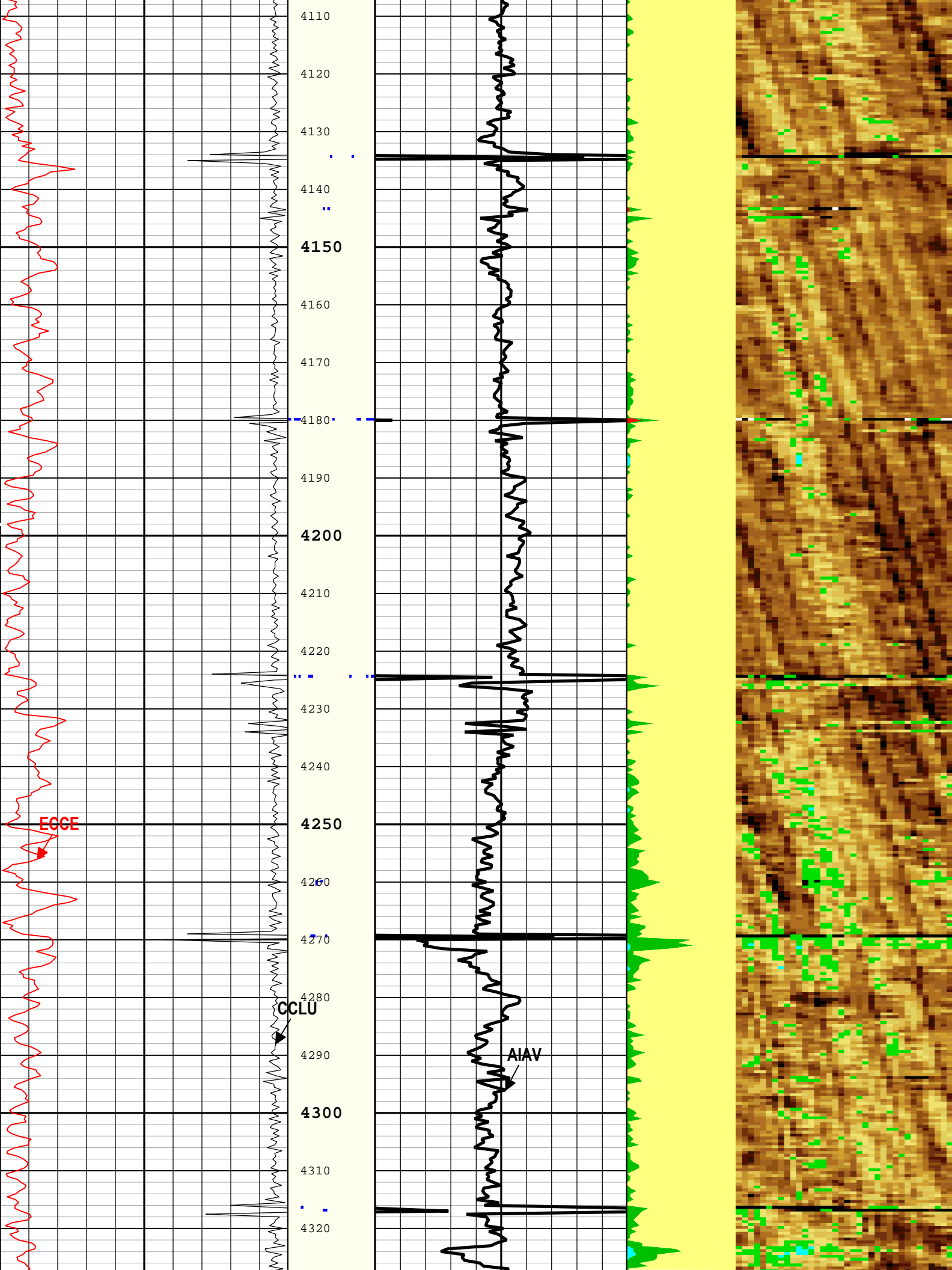


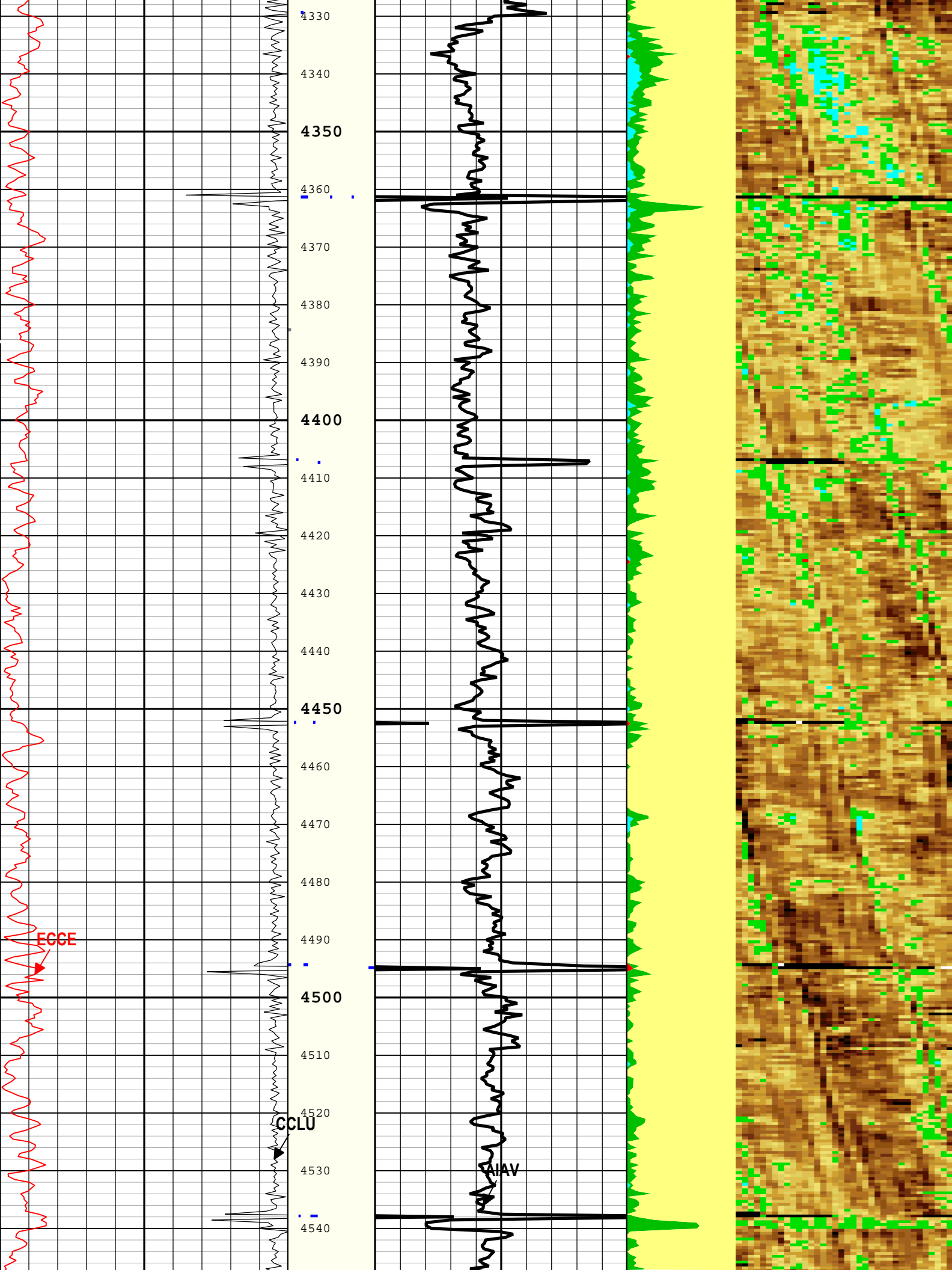


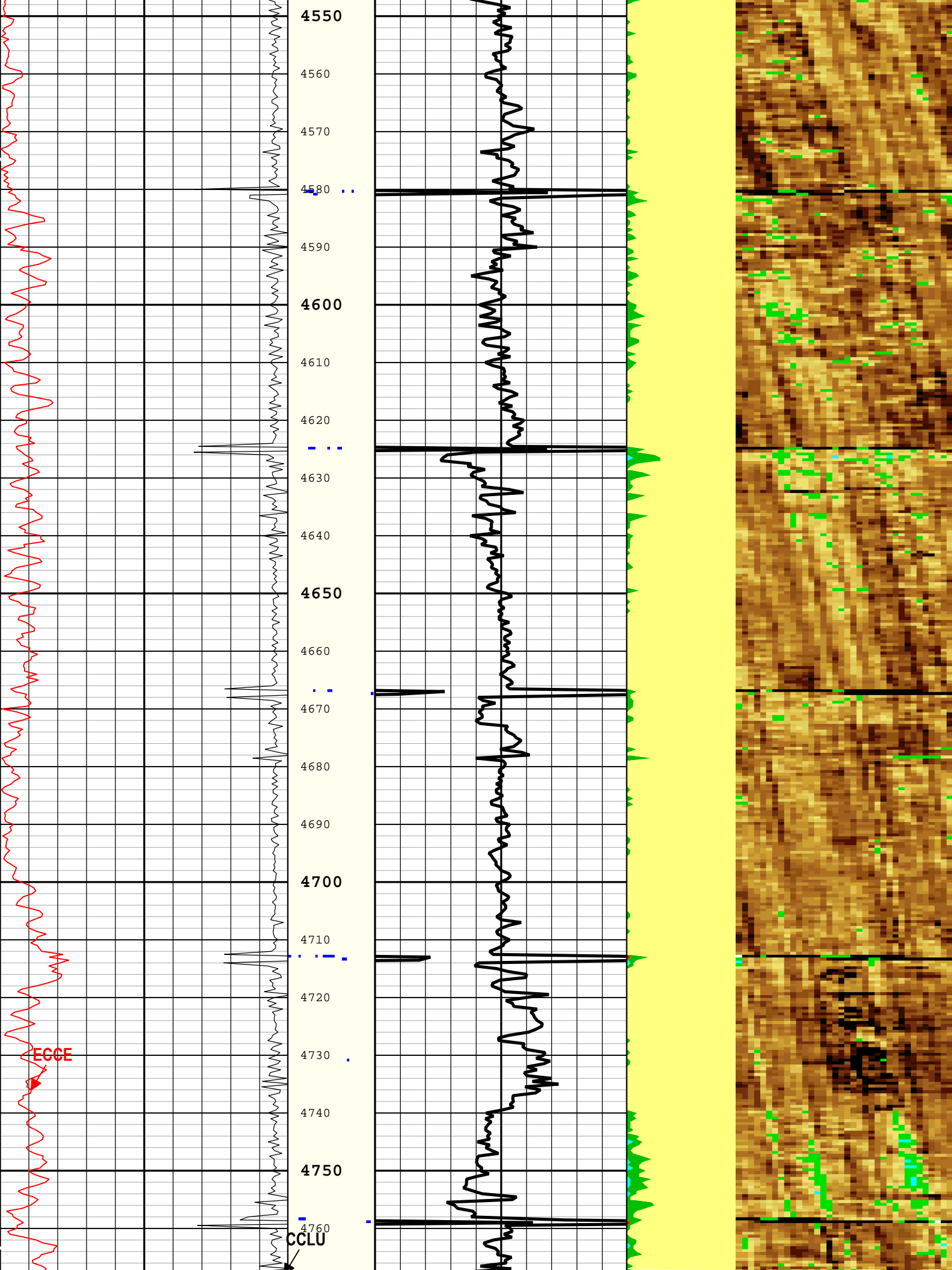


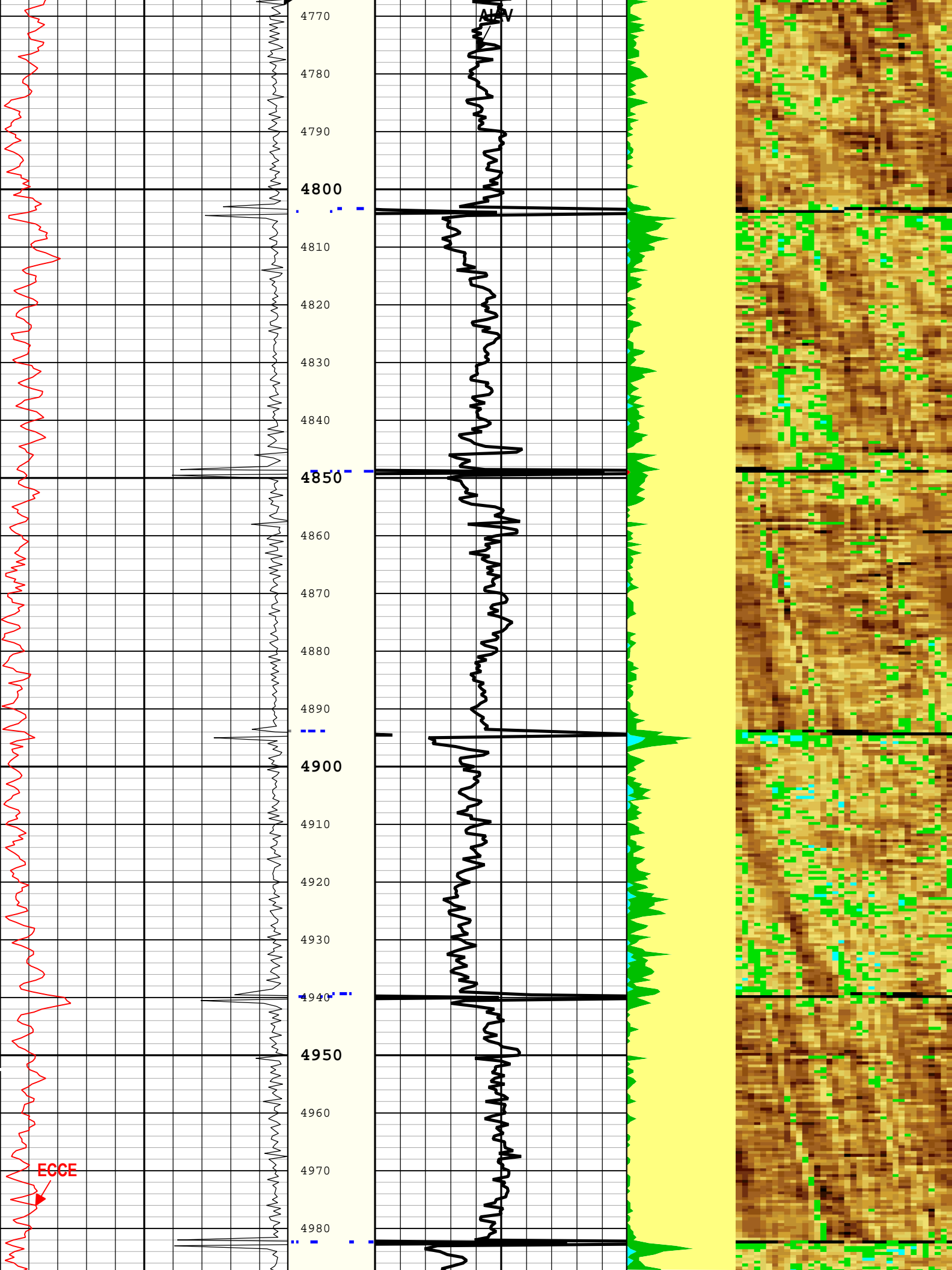


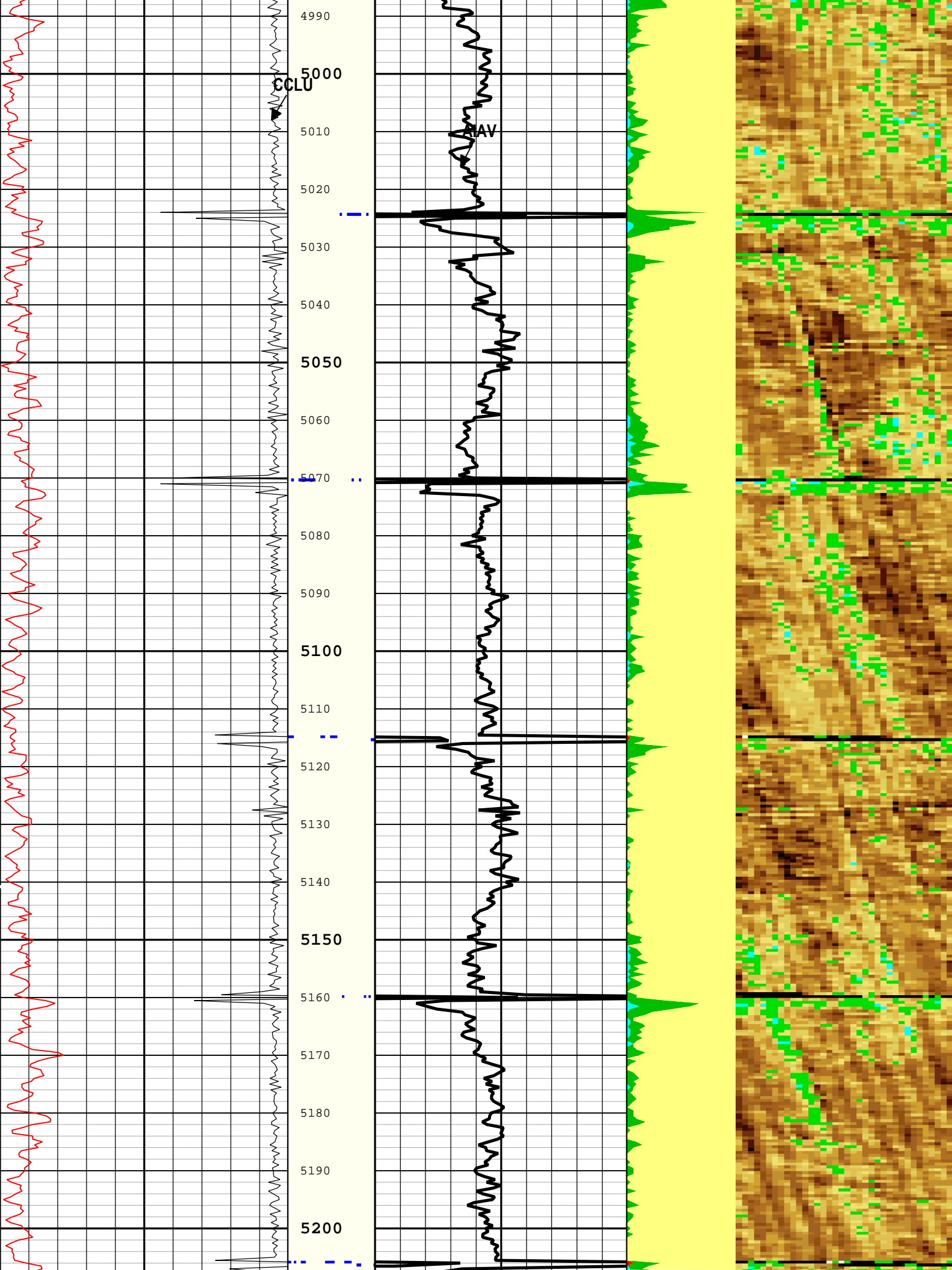


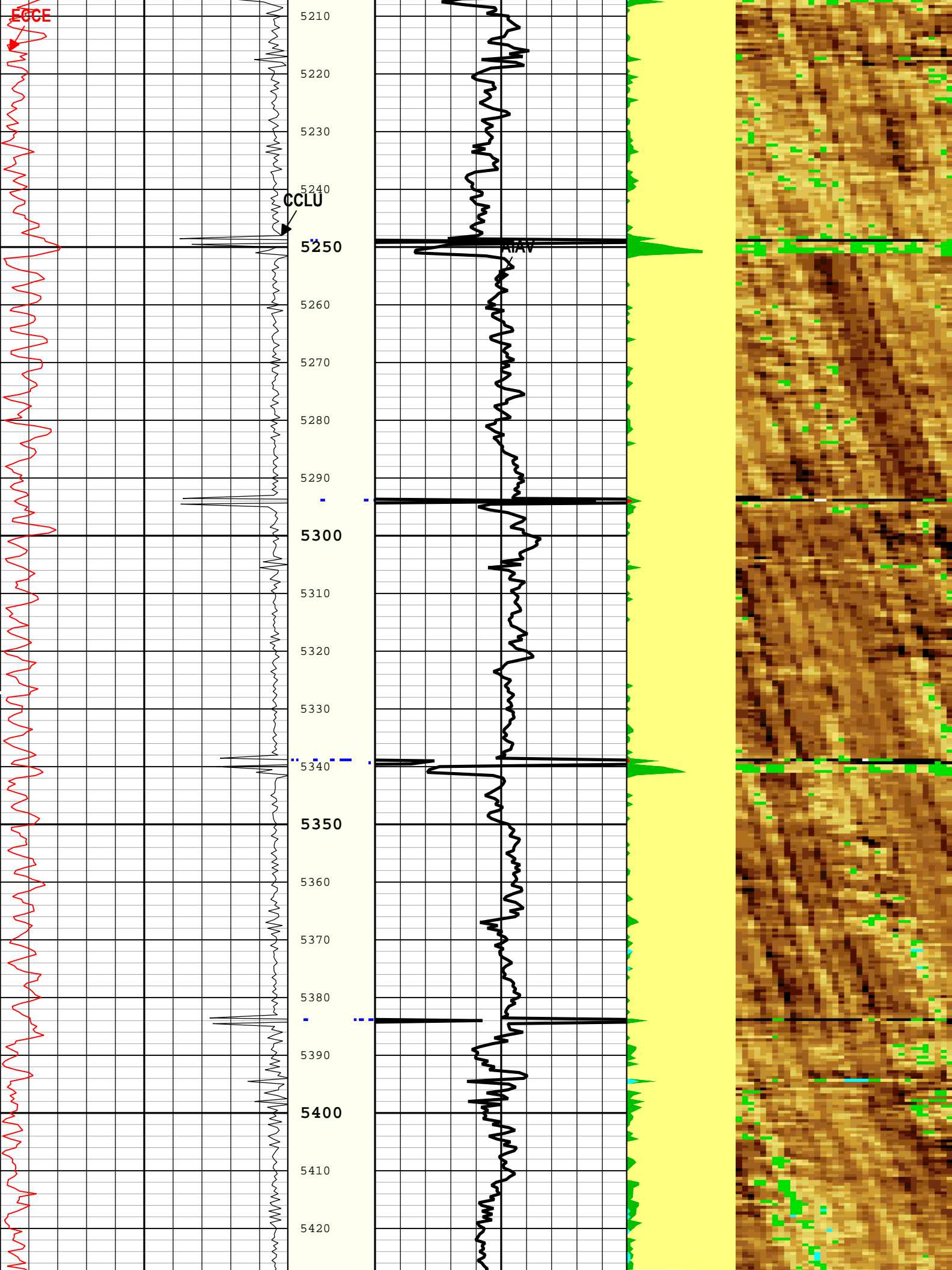


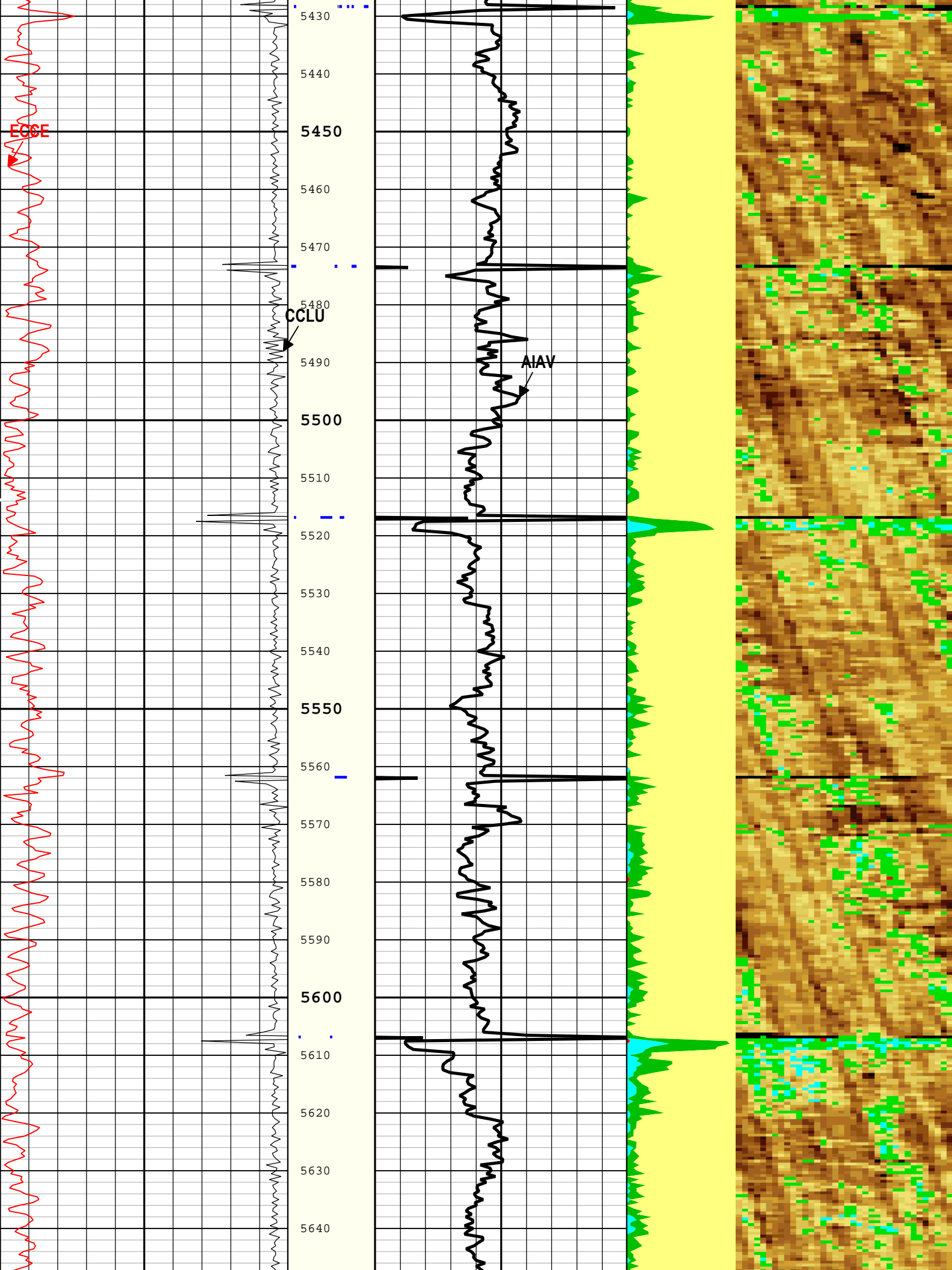


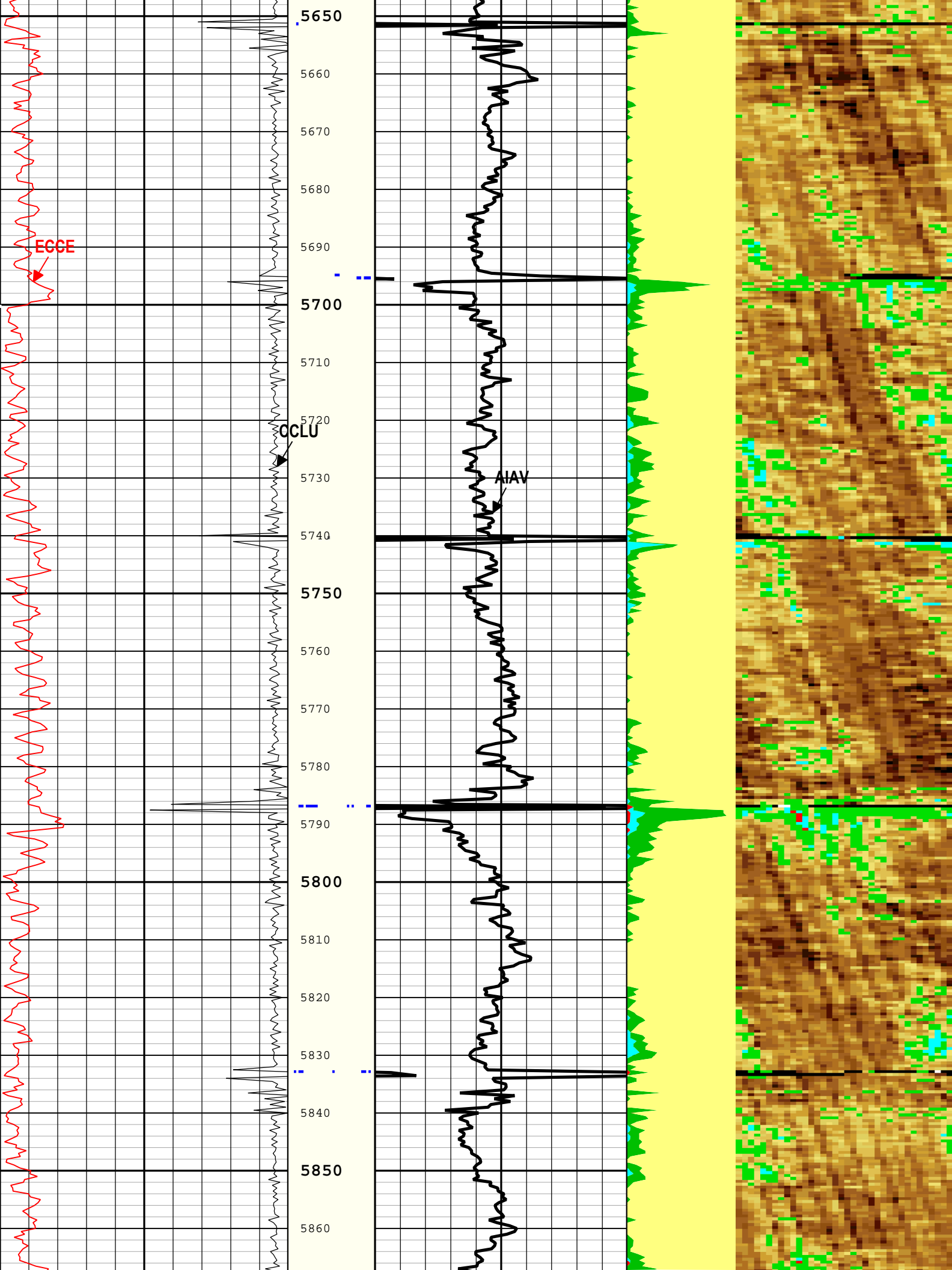


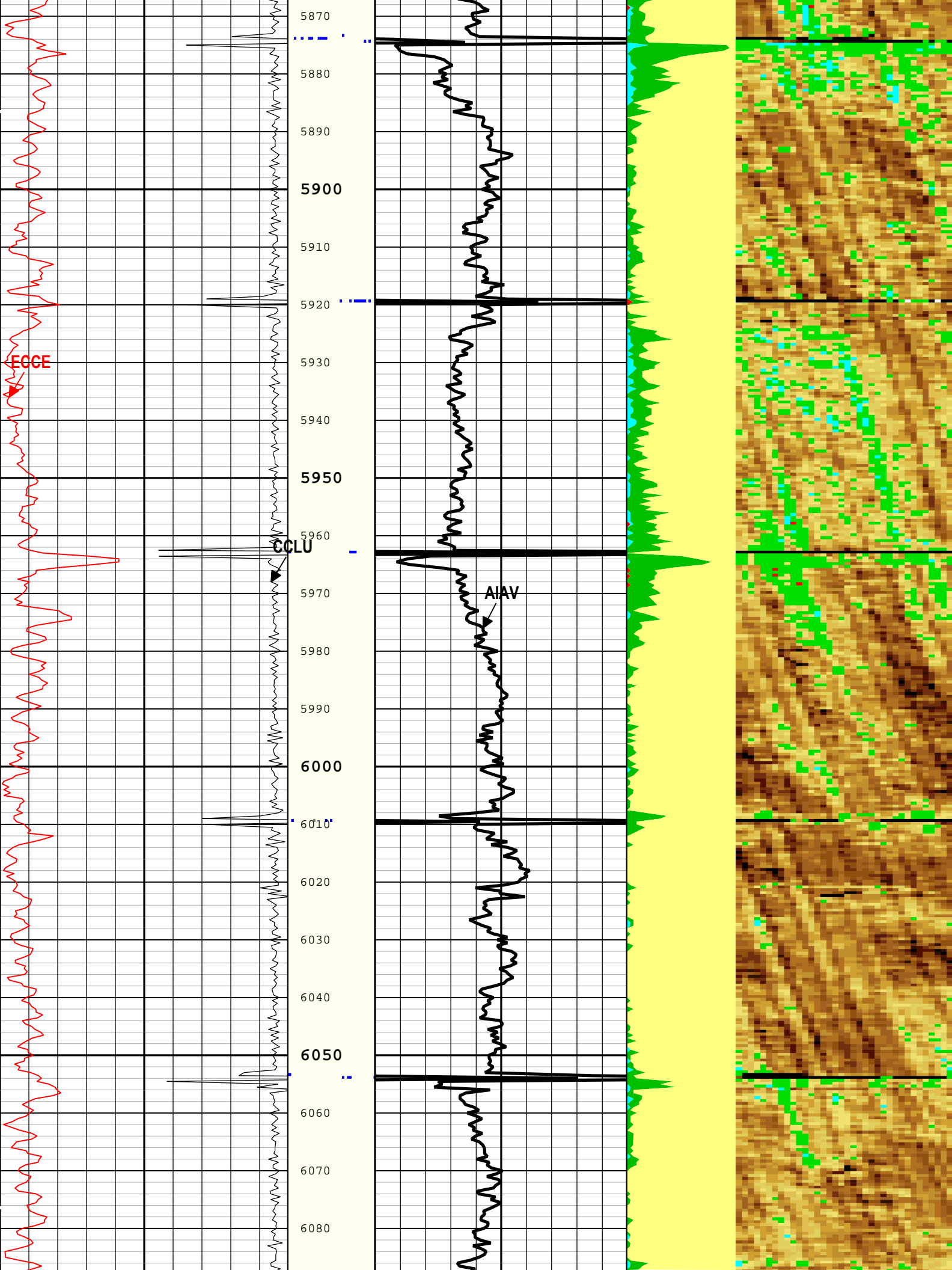


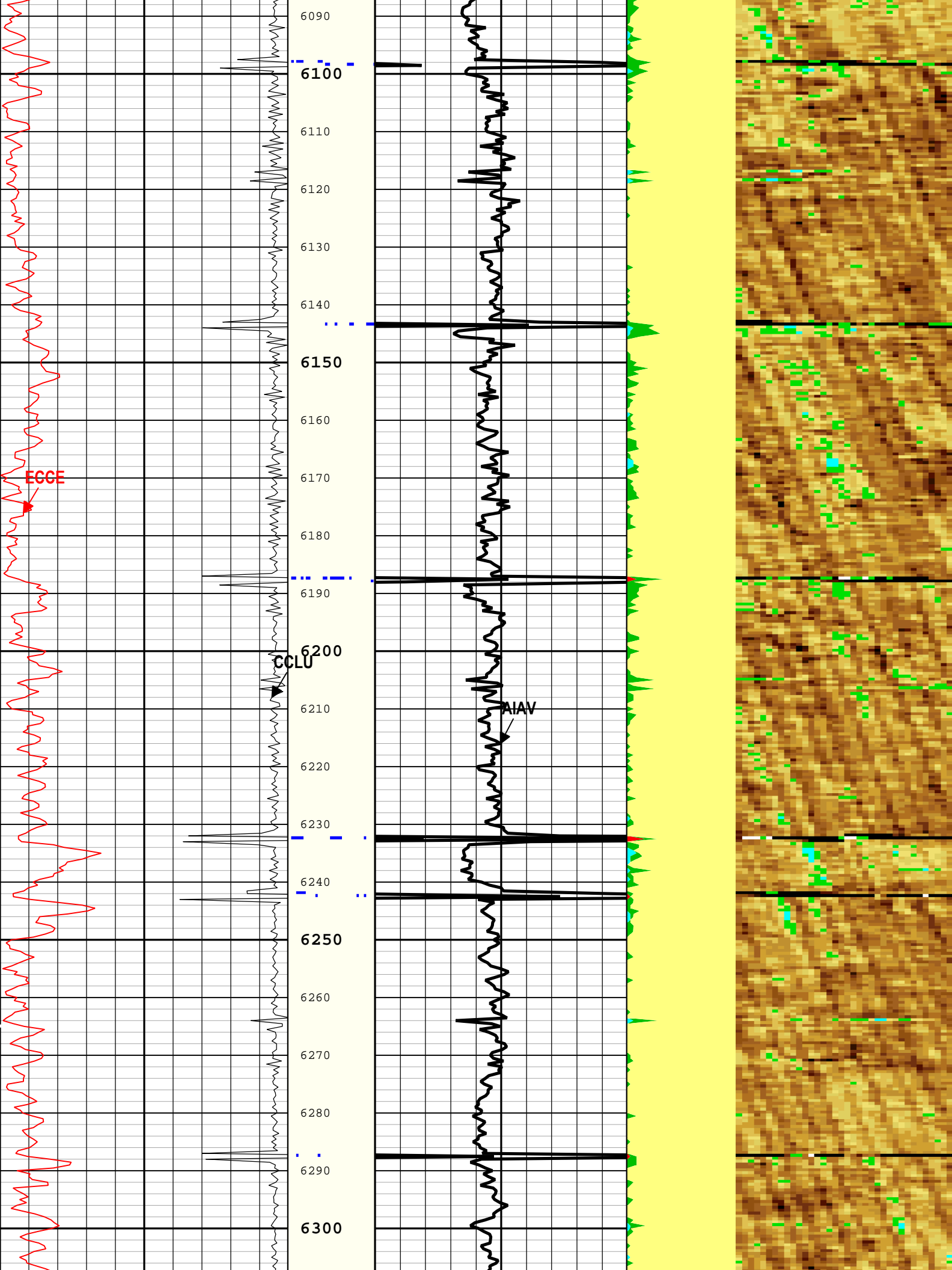


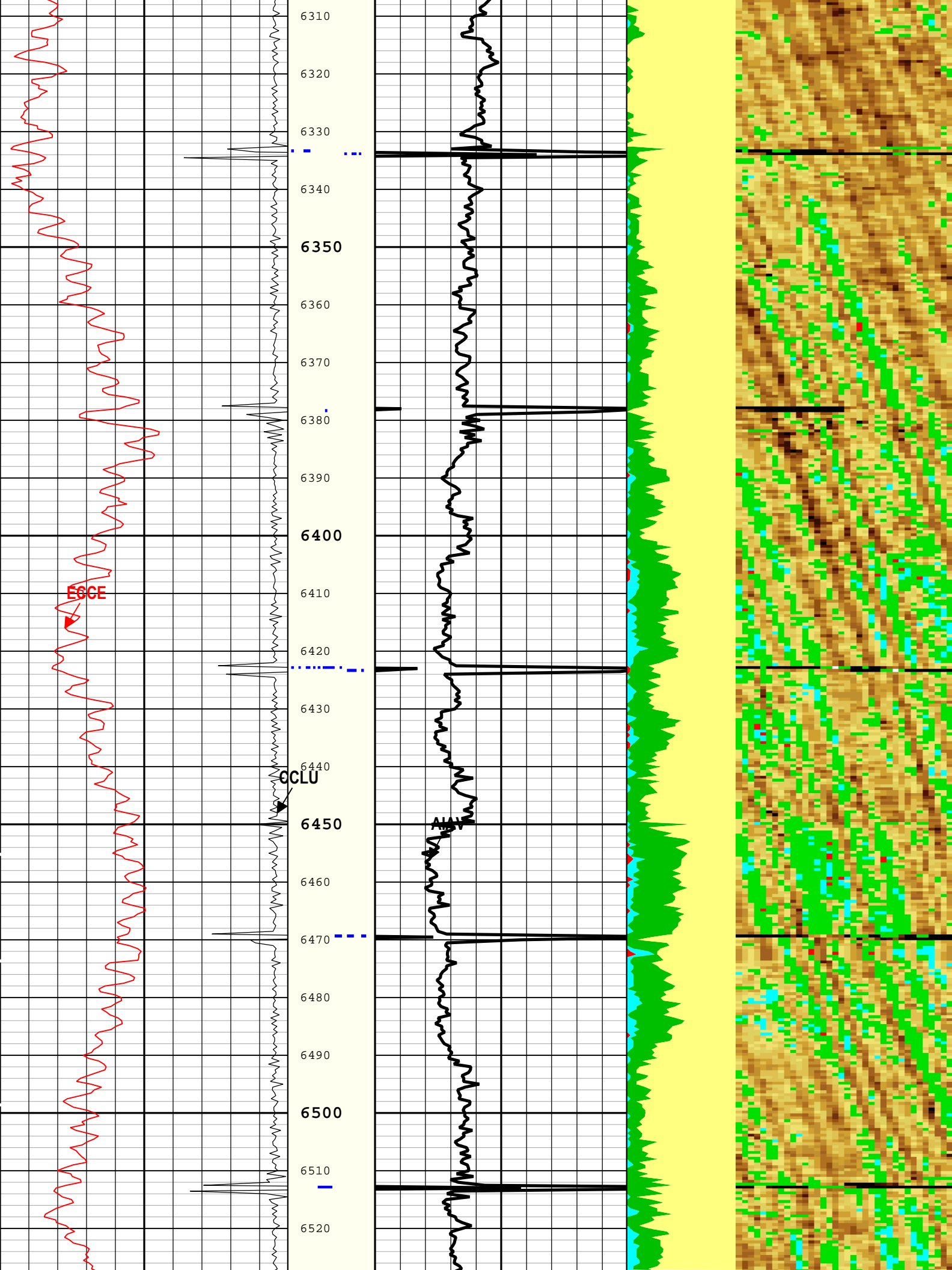


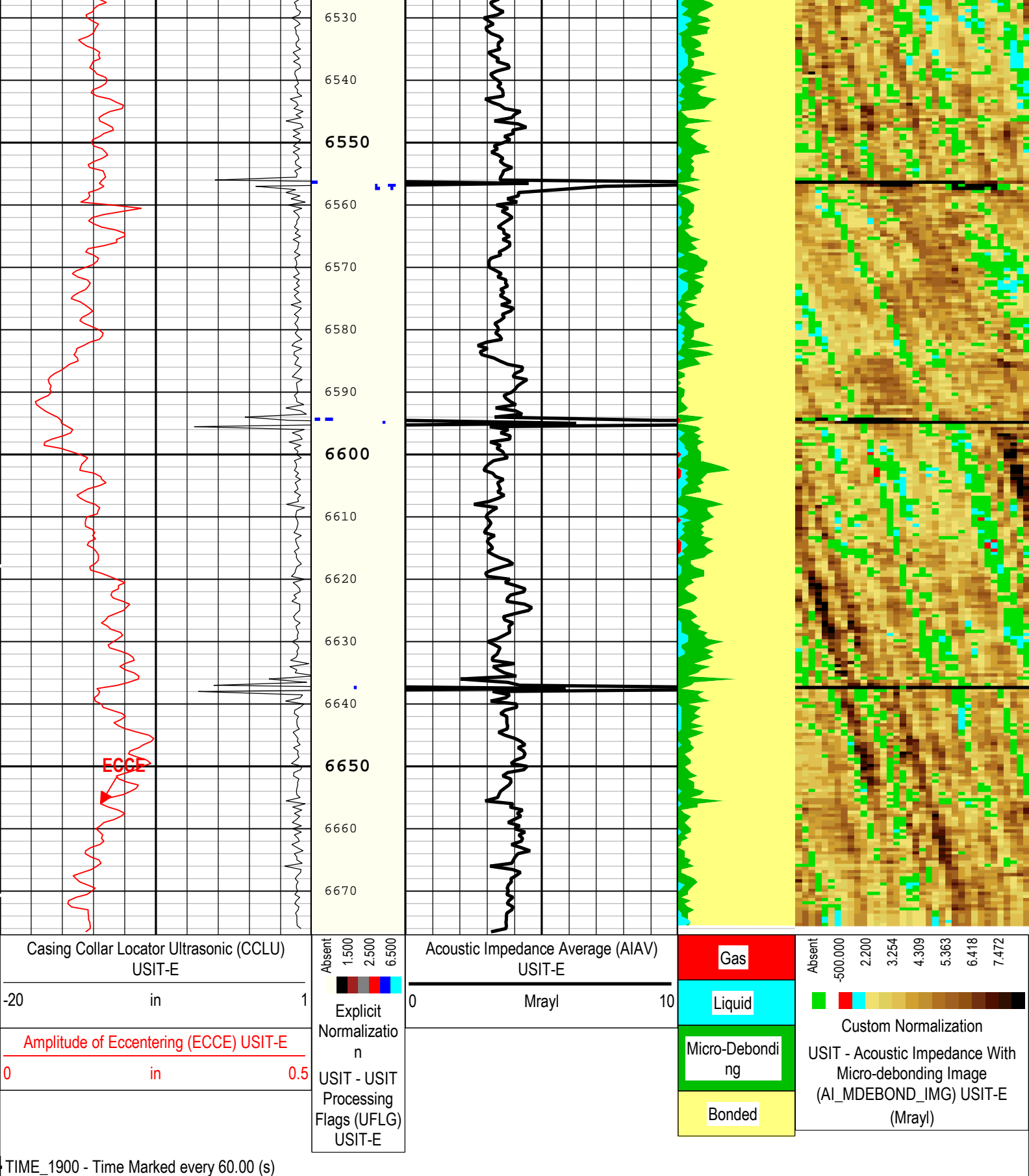












Description: Format: Log (DJ Basin Ultrasonic Cement Summary Report) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
Creation Date: 14-Feb-2018 11:28:10

Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BS	Bit Size	WI SESSION	Depth Zoned	in

US	Bit Size	WESELECTION	Depth Zoned	in
CMTY(U-USIT_CENT)	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
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	1.18	
THDH	Maximum Search Thickness (percentage of nominal)	USIT-E	120	%
THDL	Minimum Search Thickness (percentage of nominal)	USIT-E	80	%
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	1.48	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	97	110
BS	13.5	110	2152
BS	8.5	2152	6677

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
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	
UPLIHT	Ultrasonic Pulse Echo Large Inhibit Time	USIT-E	Off	
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	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	6700	ft
WINB	Window Begin Time	USIT-E	31.88	us
WINE	Window End Time	USIT-E	71.88	us

ONE

0 PSI Repeat Pass

0 PSI Repeat Pass

Acquisition System	Version
Maxwell 2017 SP1	7.1.82245.3100
Application Patch	Wireline_TestKit-CMR-NG-2017SP1_7.1.84132
	Wireline_NPD-ICE2-2017SP1_7.1.87324

Pass Summary

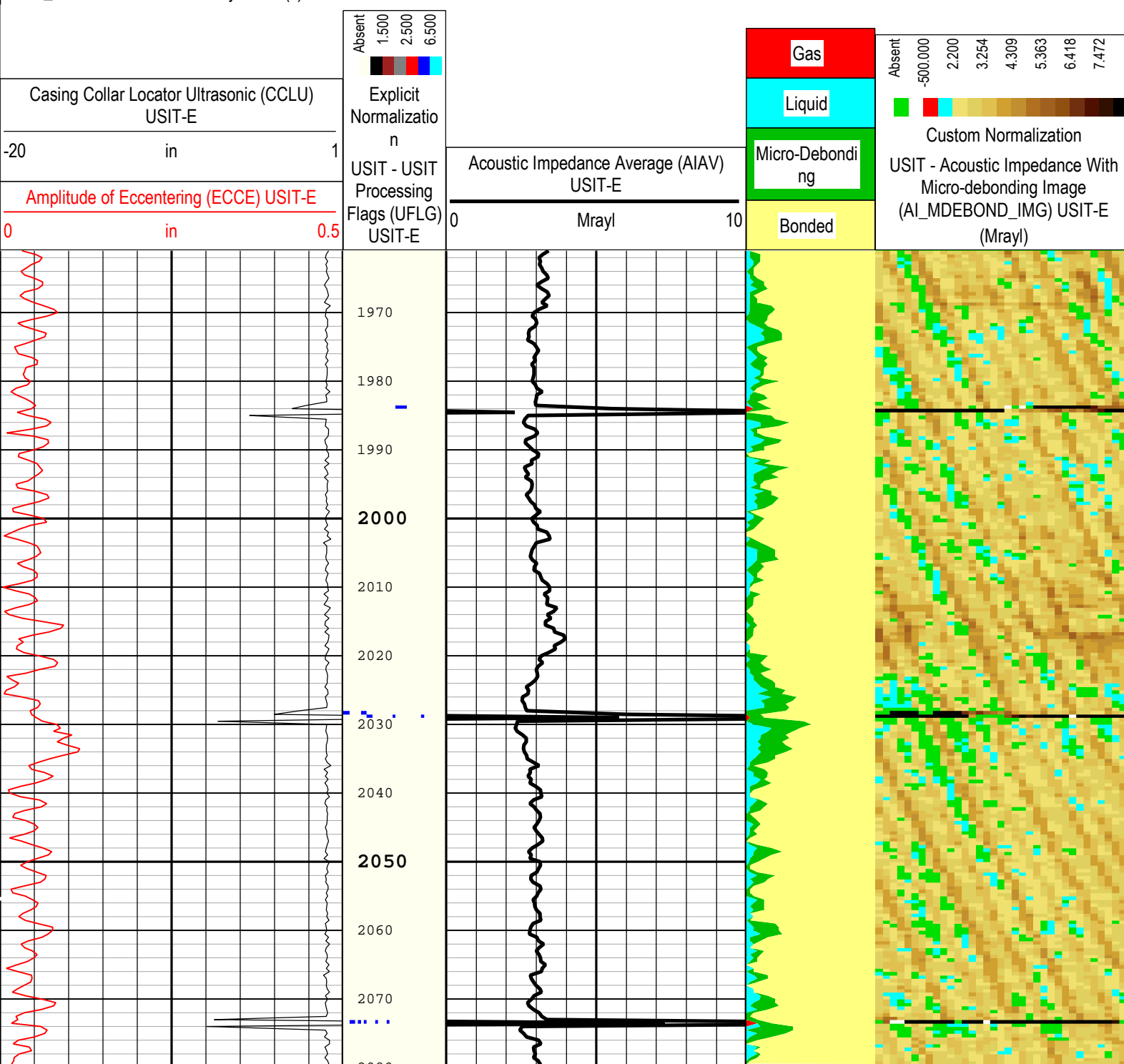
Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[2]:Up	Up	1961.20 ft	2528.08 ft	14-Feb-2018 8:06:23 AM	14-Feb-2018 8:10:45 AM	ON	25.19 ft	Yes

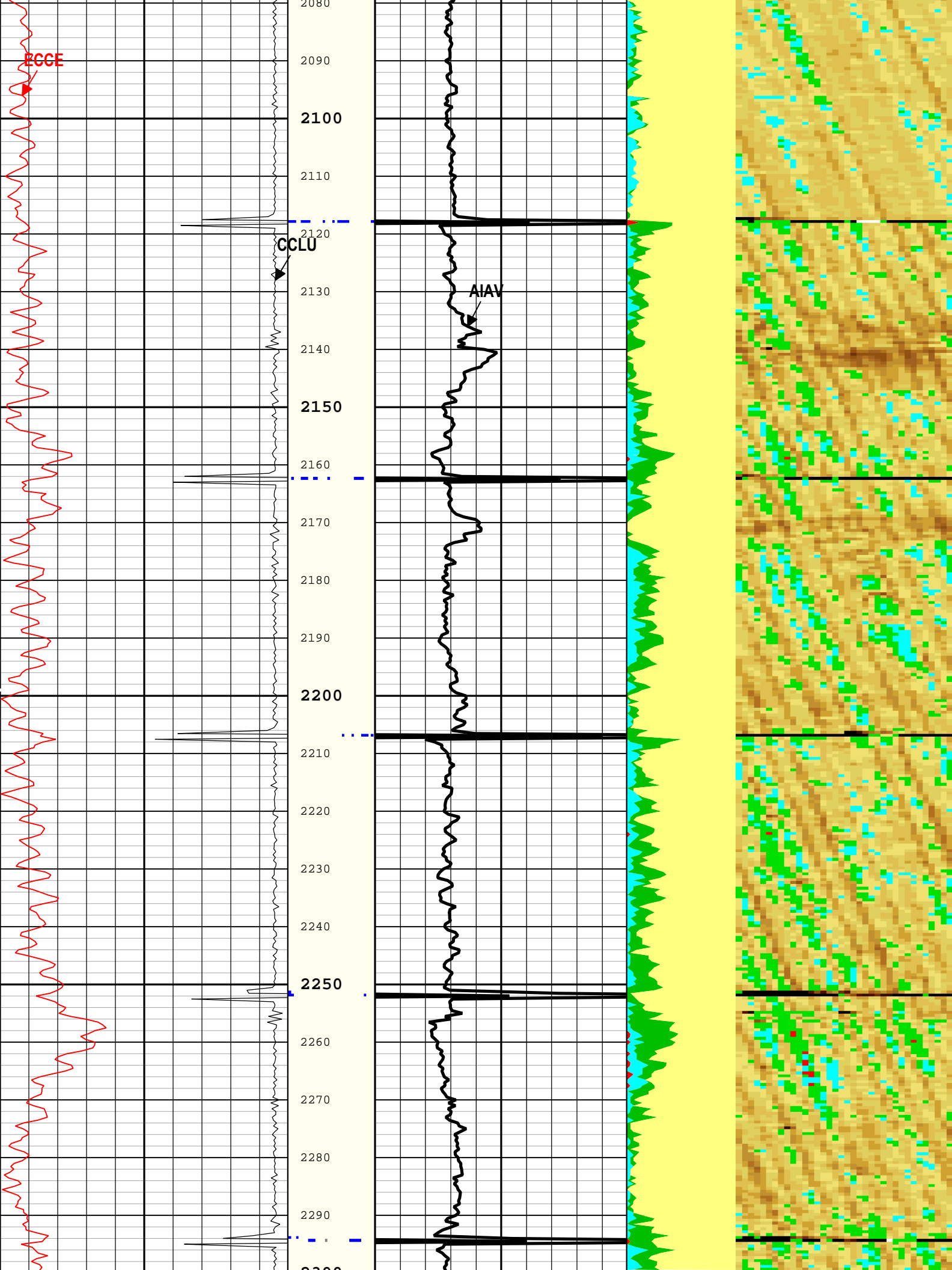
All depths are referenced to toolstring zero

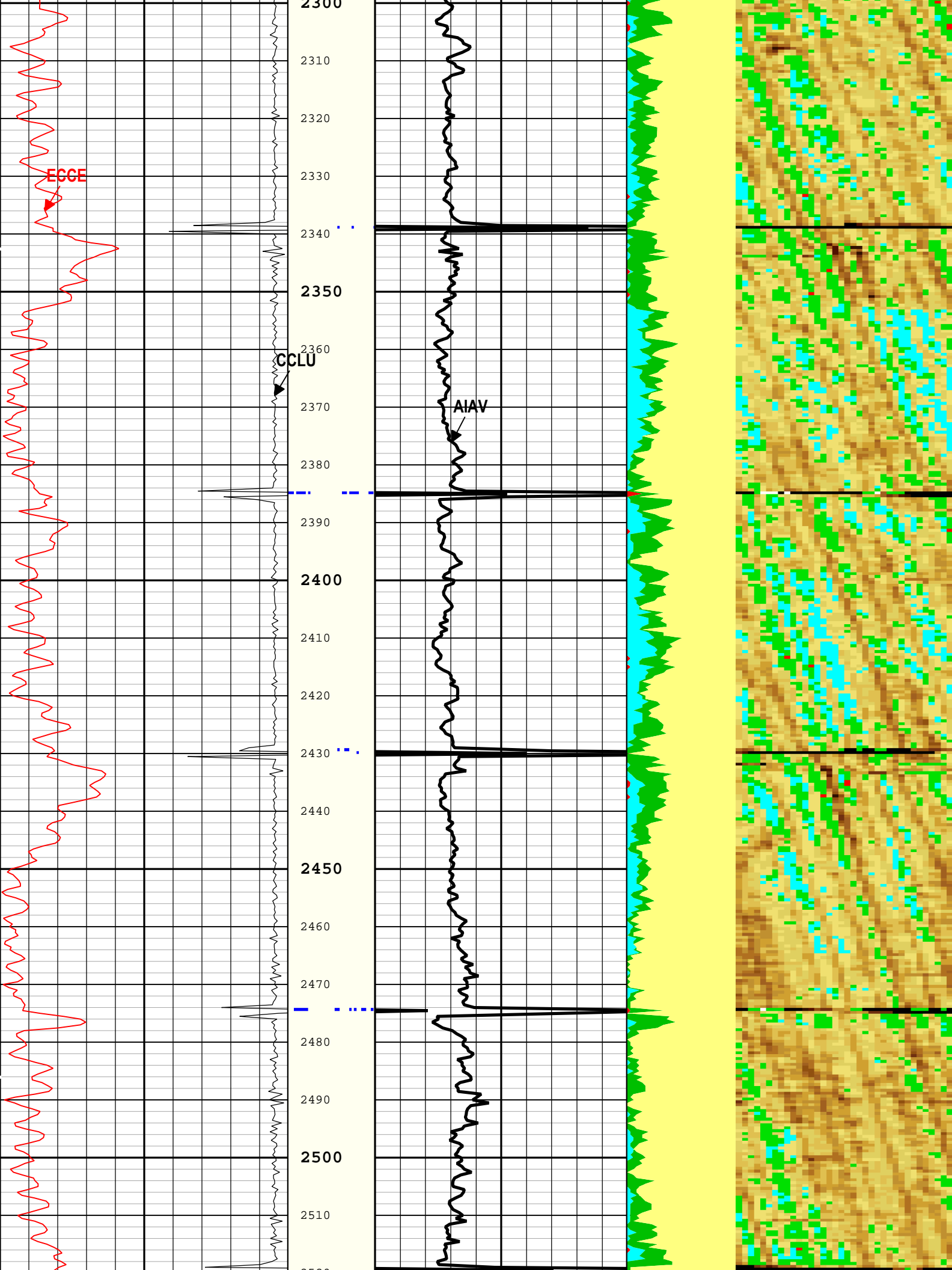
Log	Company:Noble Energy Inc	Well:Shufly State Y34-714
		ONE: Log[2]:Up:S008

Description: Format: Log (DJ Basin Ultrasonic Cement Summary Report) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth
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TIME_1900 - Time Marked every 60.00 (s)

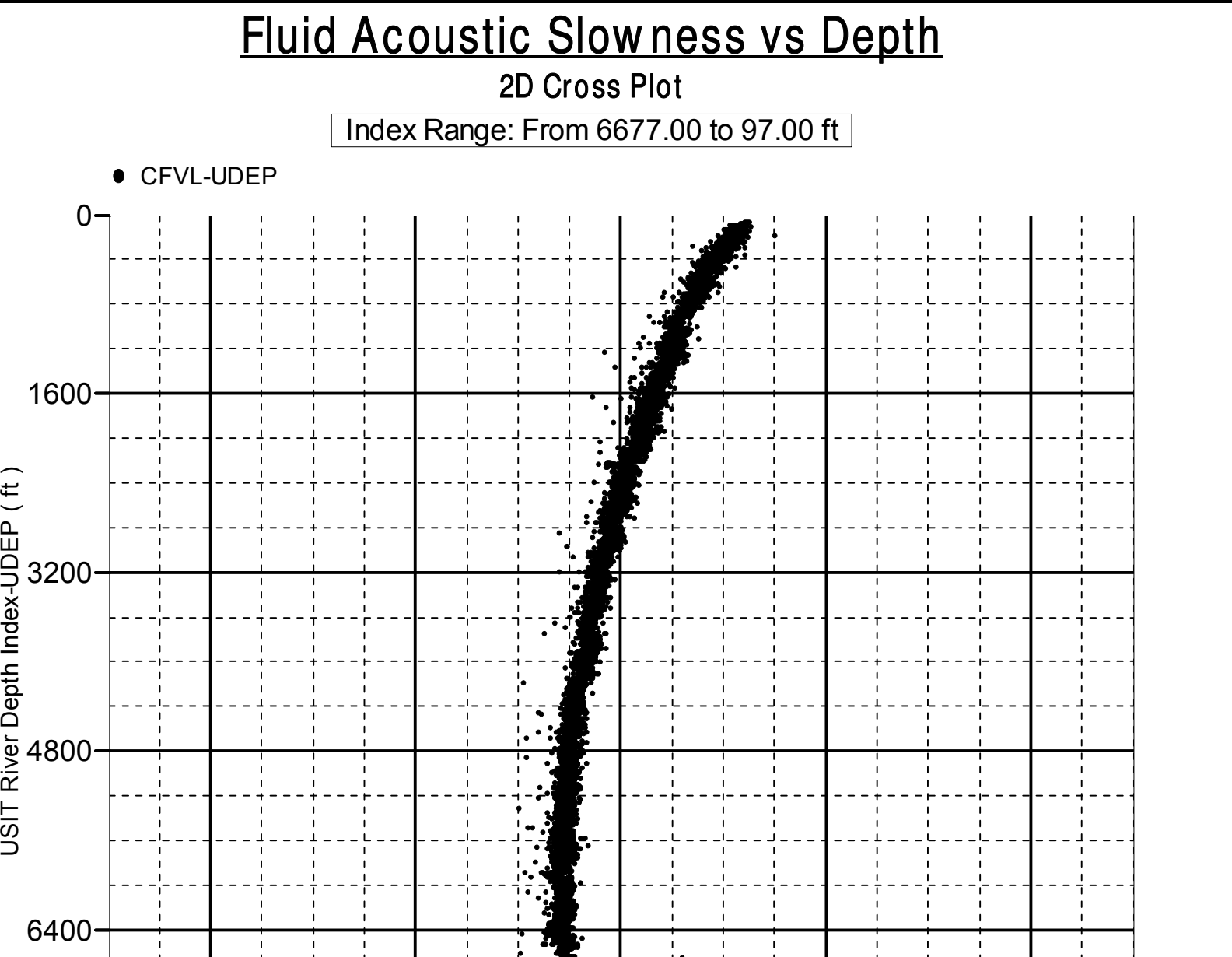


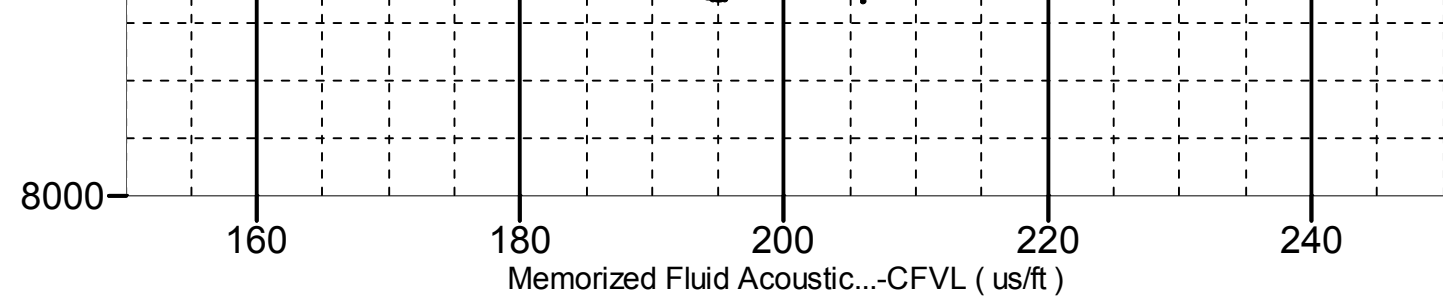




AGMX	Maximum Gain of Cartridge	USIT-E	18	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
EMXV	EMEX Voltage	USIT-E	45	V
HRES	Horizontal Resolution	USIT-E	10 deg	
TMUC	Type of Mud	USIT-E	BRI	
ULOG	Logging Objective	USIT-E	MEASUREMENT	
UPLIHT	Ultrasonic Pulse Echo Large Inhibit Time	USIT-E	Off	
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	
USIT_DEPTHLOG	Starting Depth Log for Ultrasonics	USIT-E	2500	ft
WINB	Window Begin Time	USIT-E	31.88	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)
WINE	71.88	14-Feb-2018 08:06:23	14-Feb-2018 08:07:06	2528.08	2471.7
WINE	74.18	14-Feb-2018 08:07:06	14-Feb-2018 08:10:45	2471.7	1961.2
All depth are at tool zero.					
XYZ		Company:Noble Energy Inc Well:Shufly State Y34-714 ONE: Log[8]:Up:S008			





XYZ

Company:Noble Energy Inc Well:Shufly State Y34-714

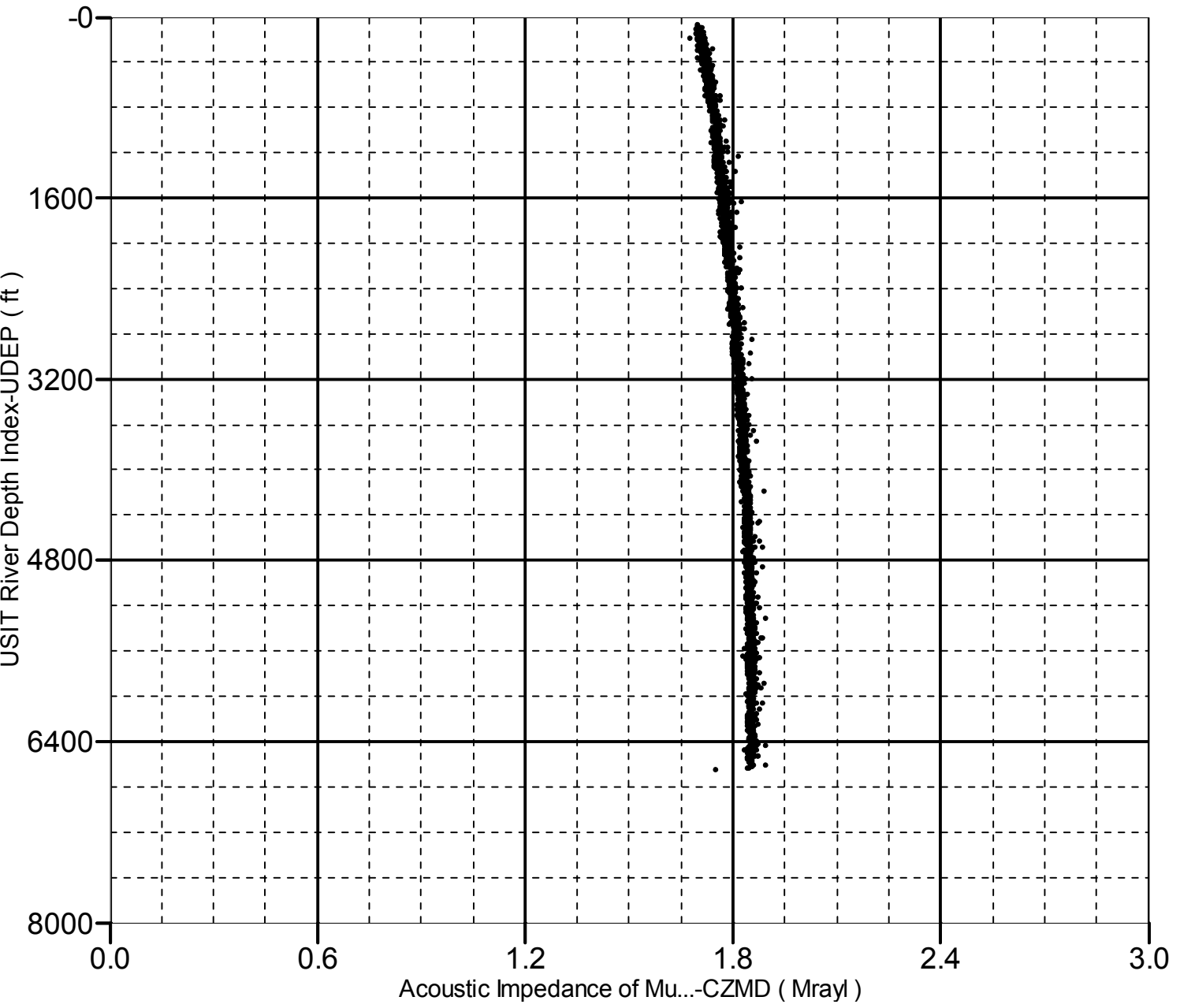
ONE: Log[8]:Up:S008

Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 6677.00 to 97.00 ft

● CZMD-UDEP



Company: Noble Energy Inc

Schlumberger

Well: Shufly State Y34-714

Field: Wattenberg

County:	Weld
State:	Colorado
UltraSonic Summary Print	