

Company: Noble Energy Inc

Well: RATTLESNAKE FEDERAL LC10-785

Field: Wildcat

County: WELD State: COLORADO

UltraSonic Summary Print

County:	WELD				
Field:	Wildcat				
Location:	400' FNL & 1236' FWL				
Well:	RATTLESNAKE FEDERAL LC10-785				
Company:	Noble Energy Inc				
Location:	400' FNL & 1236' FWL	Elev.:		K.B.	4974.00 ft
	NWNW			G.L.	4944.00 ft
				D.F.	4974.00 ft
	Permanent Datum:	Ground Level		4944.00 f	
	Log Measured From:	Kelly Bushing		30.00 ft	above Perm.Datum
API Serial No.	Drilling Measured From:	Kelly Bushing			
		Section:		Towship:	Range:
	05-123-42972	22		9N	59W
Logging Date	25-Jul-2017				

Logging Date	25-Jul-2017			
Run Number	ONE			
Depth Driller	10938.00 ft			
Schlumberger Depth	6390.00 ft			
Bottom Log Interval	6390.00 ft			
Top Log Interval	50.00 ft			
Casing Fluid Type	BRINE			
Salinity				
Density	8.4 lbm/gal			
Fluid Level	8.00 ft			
BIT/CASING/TUBING STRING				
Bit Size	8.50 in			
From	1958.00 ft			
To	6390.00 ft			
Casing/Tubing Size	5.5 in			
Weight	20 lbm/ft			
Grade	P110			
From	0.00 ft			
To	6390.00 ft			
Max Recorded Temperatures	224 degF			
Logger on Bottom	25-Jul-2017		09:00:00	
Unit Number	Location:	2132	MOORE	
Recorded By	MEGAN LEONE			
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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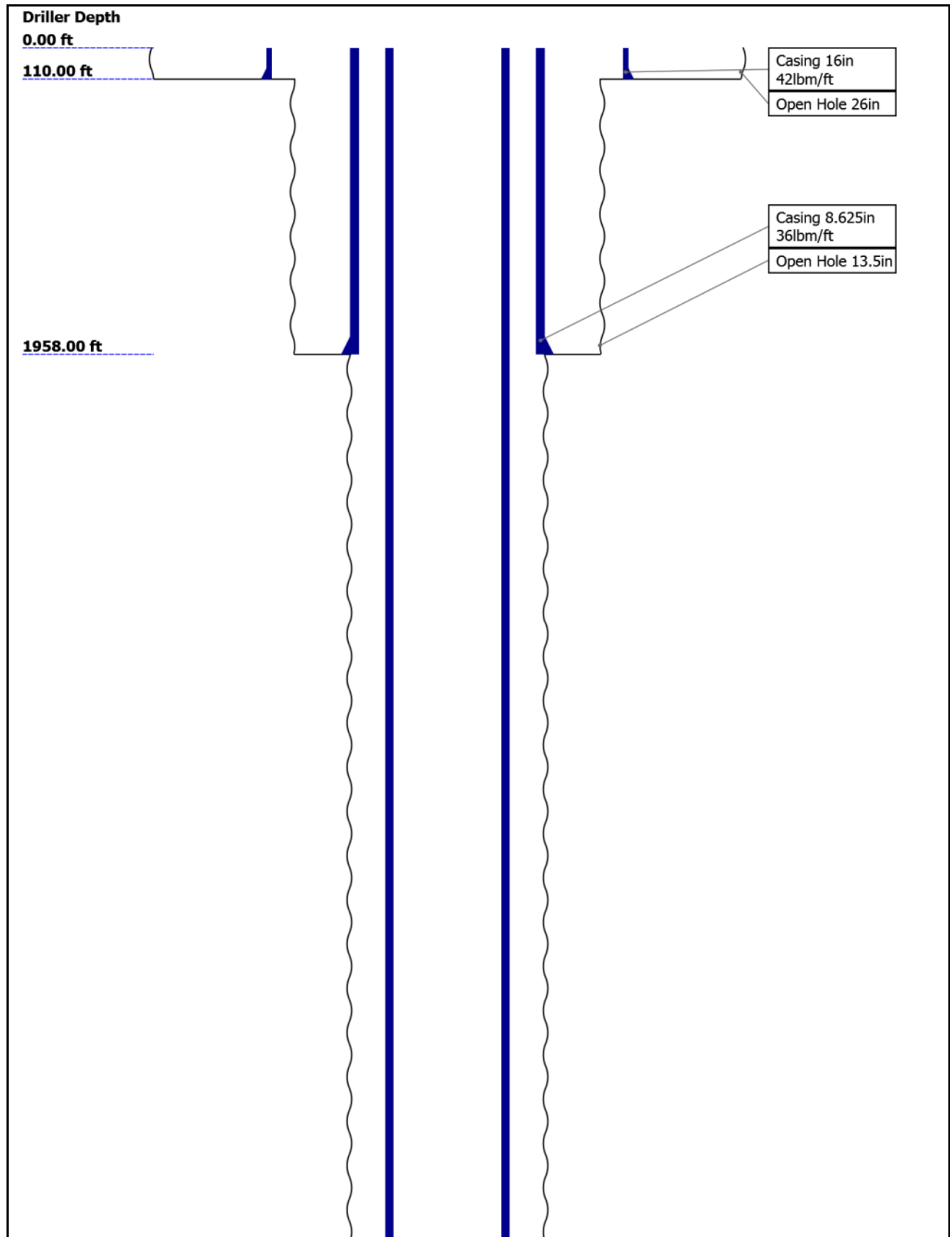
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Report)

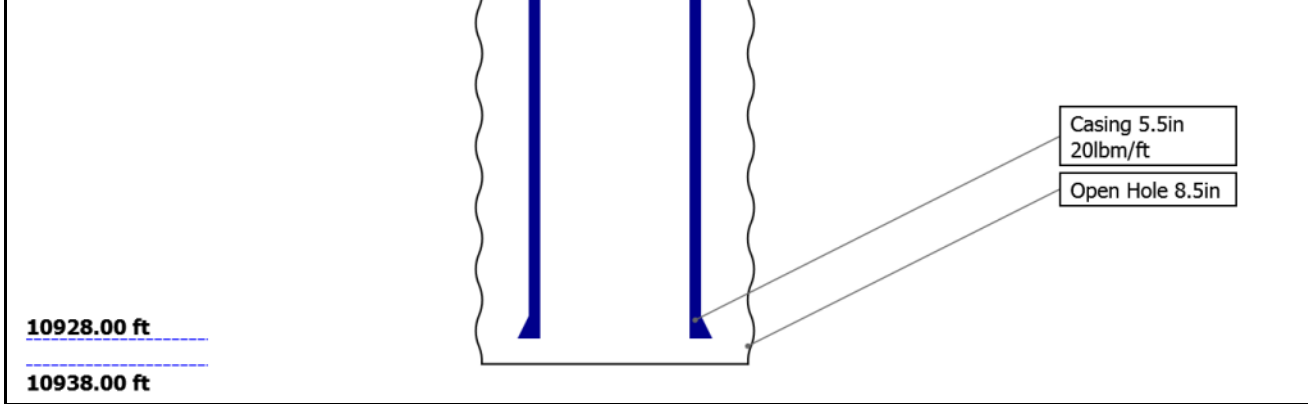
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in)

Well Sketch





Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	26	13.5	8.5			
Top Driller (ft)	0	110	1958			
Top Logger (ft)	0	110	1958			
Bottom Driller (ft)	110	1958	10938			
Bottom Logger (ft)	110	1958	6390			
Casing						
Size (in)	16	8.625	5.5			
Weight (lbm/ft)	42	36	20			
Inner Diameter (in)	15.512	7.825	4.778			
Grade	N/A	J55	P110			
Top Driller (ft)	0	0	0			
Top Logger (ft)	0	0	0			
Bottom Driller (ft)	110	1958	10928			
Bottom Logger (ft)	110	1958	6390			

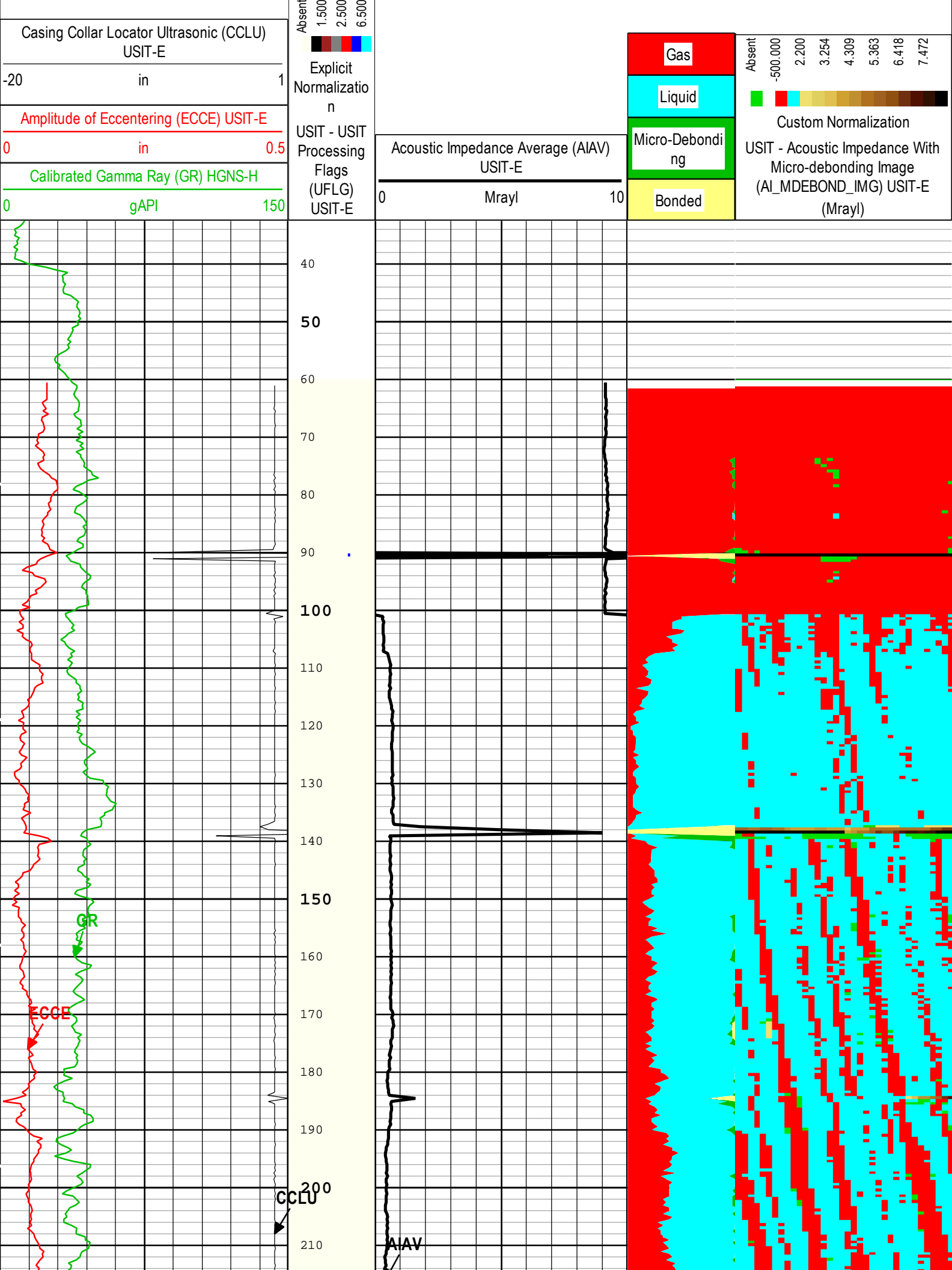
Remarks and Equipment Summary

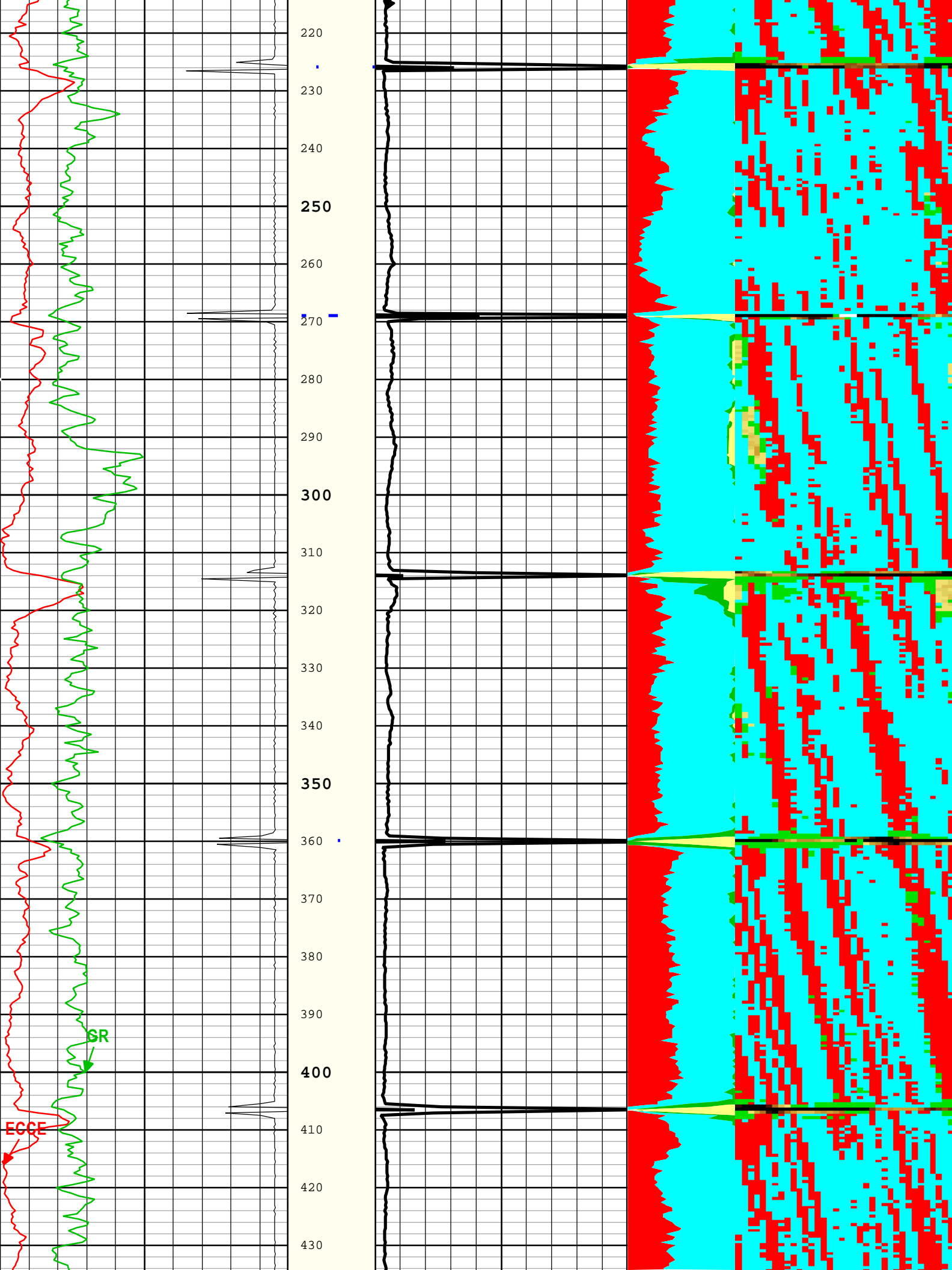
ONE: Toolstring				ONE: Remarks	
<div><div><div>Equip nameLengthMP nameOffset</div><div>LEH-QT34.88LEH-QT</div><div>DTC-H31.97ECH-KCDTC-H</div><div>HGNS-H28.97HGNHNPV-NSR-F:5226HGNS-HHACCH-HMCA-H</div><div>AH-184119.56</div></div><div><div>CTEM31.07HVV28.97TelStatustus28.97ToolStatustus28.94Temperature28.23GR</div><div>CNL Porosity21.89HMCA19.56HGNS19.56Accelerometer0.00</div></div></div>				THANK YOU FOR CHOOSING SCHLUMBERGER	
				BOTTOM HOLE TEMPERATURE IS 224 DEG F	
				REPEAT PASS LOGGED UNDER 0 PSI	
				MAIN PASS LOGGER UNDER 2500 PSI	
				TOOLSTRING RUN AS PER TOOLSKETCH	

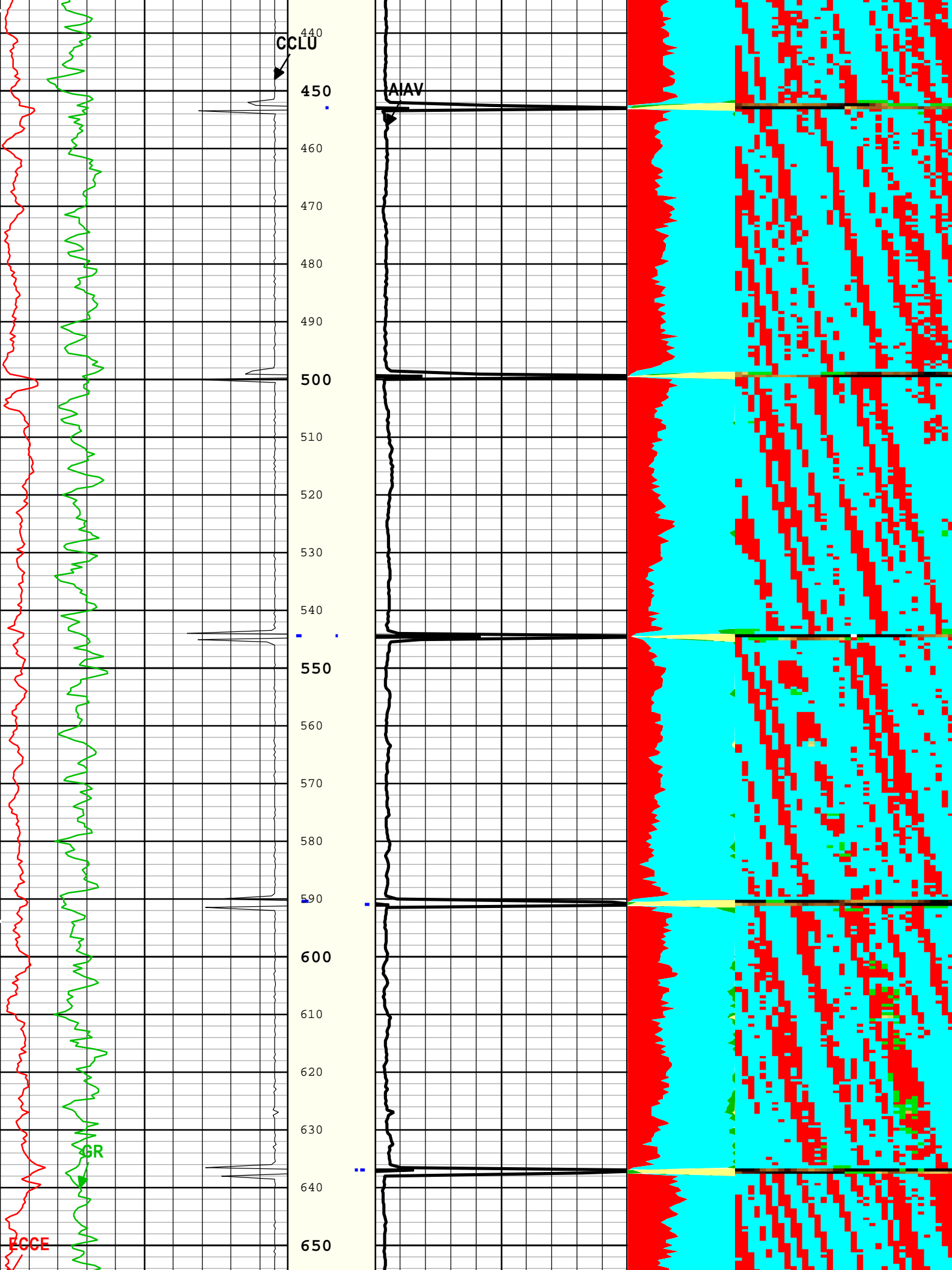
USI Sen 0.37
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TOOL ZERO
Head-Fe
nsion

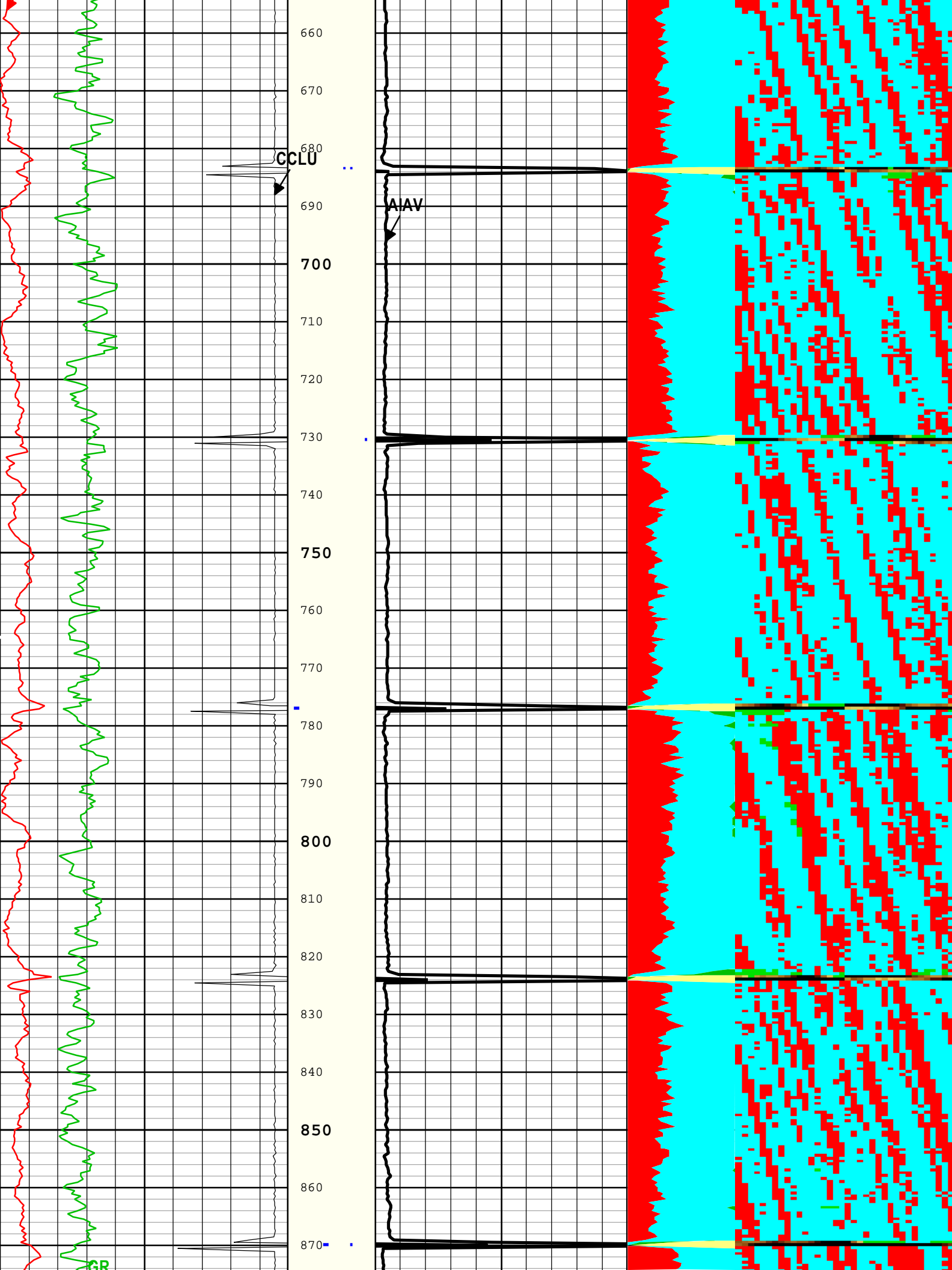
Maximum Outer Diameter = 3.560 in
Line: Sensor Location, Value: Gating Offset
All measurements are relative to TOOL ZERO

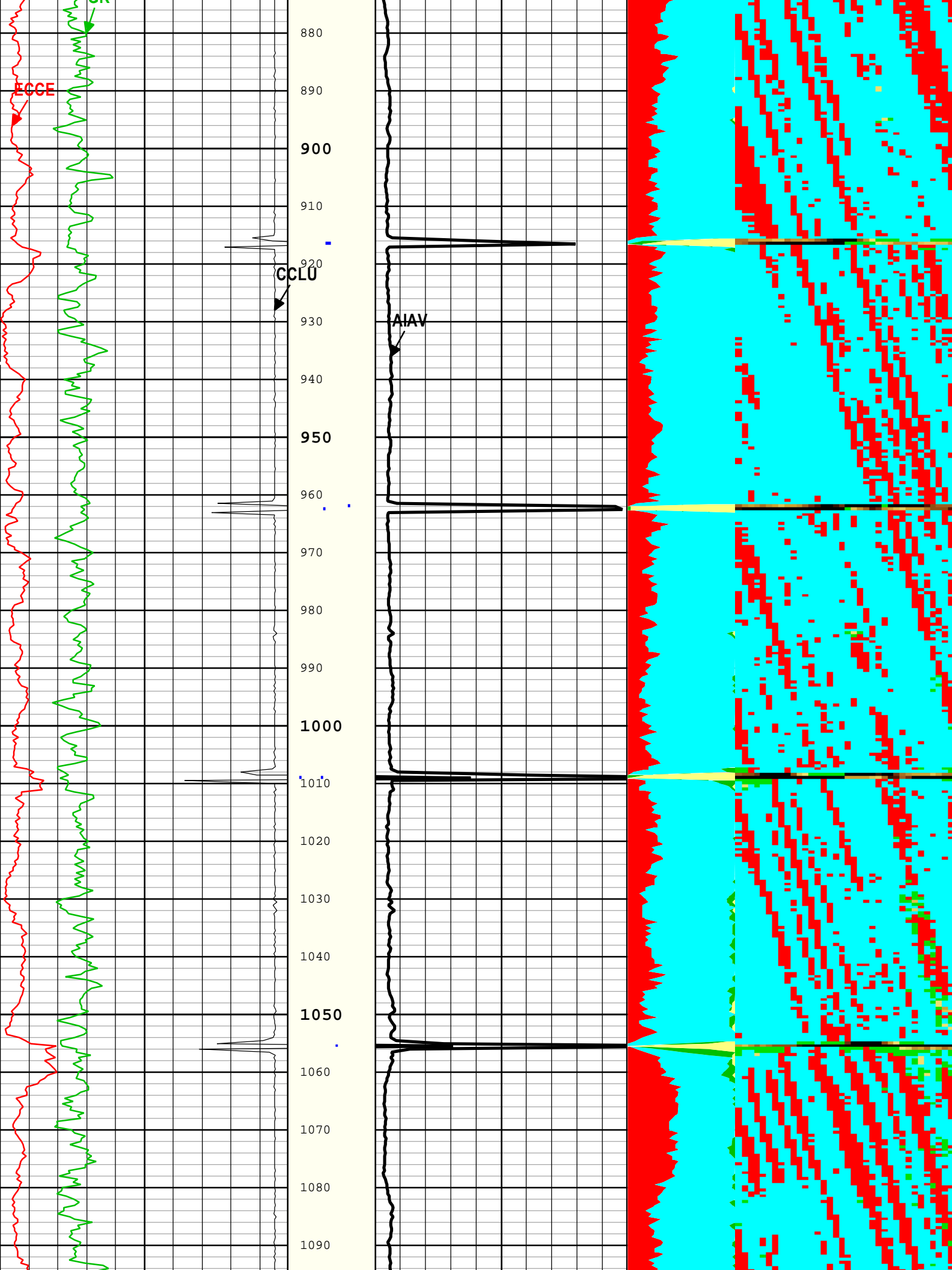
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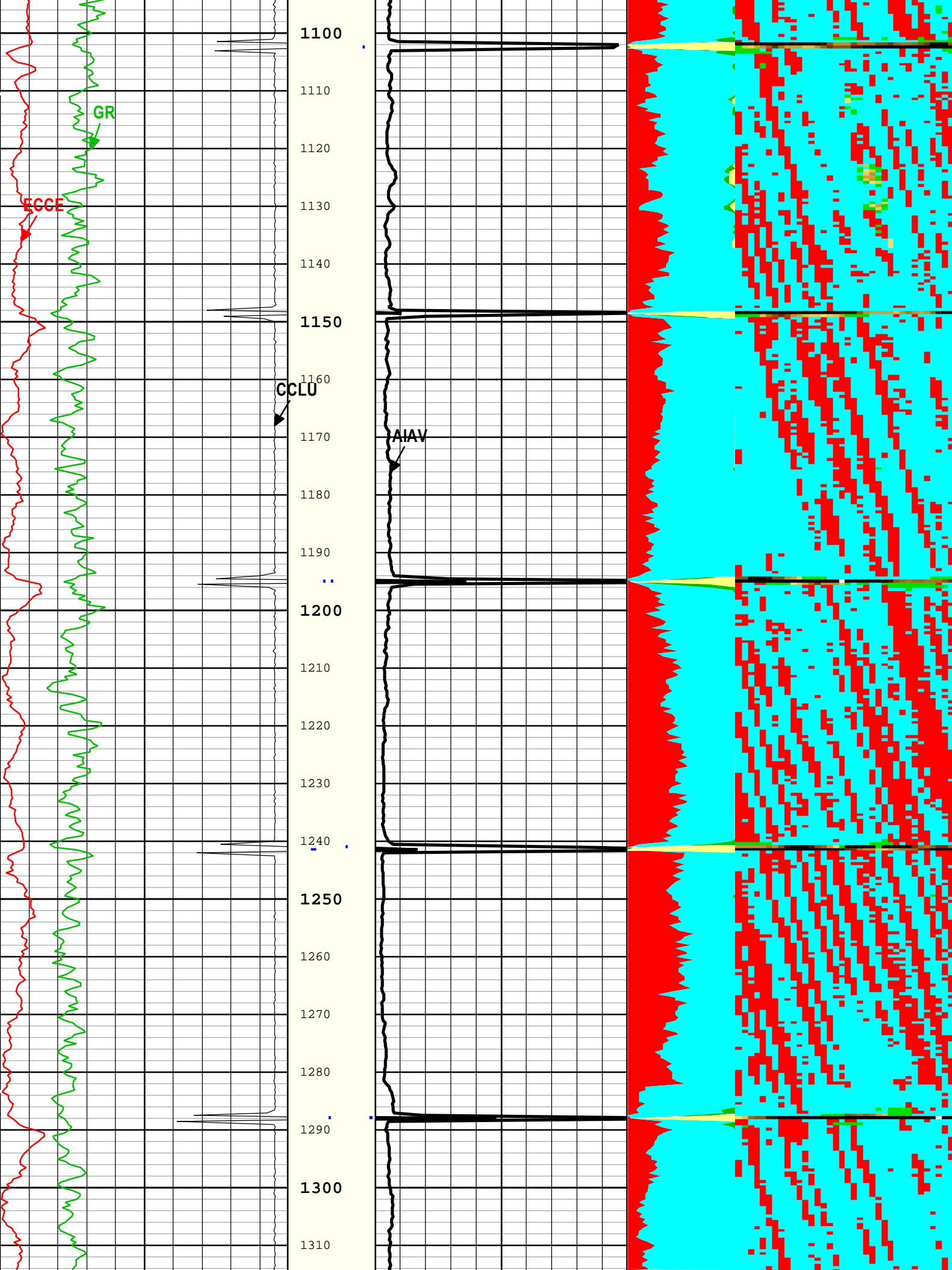


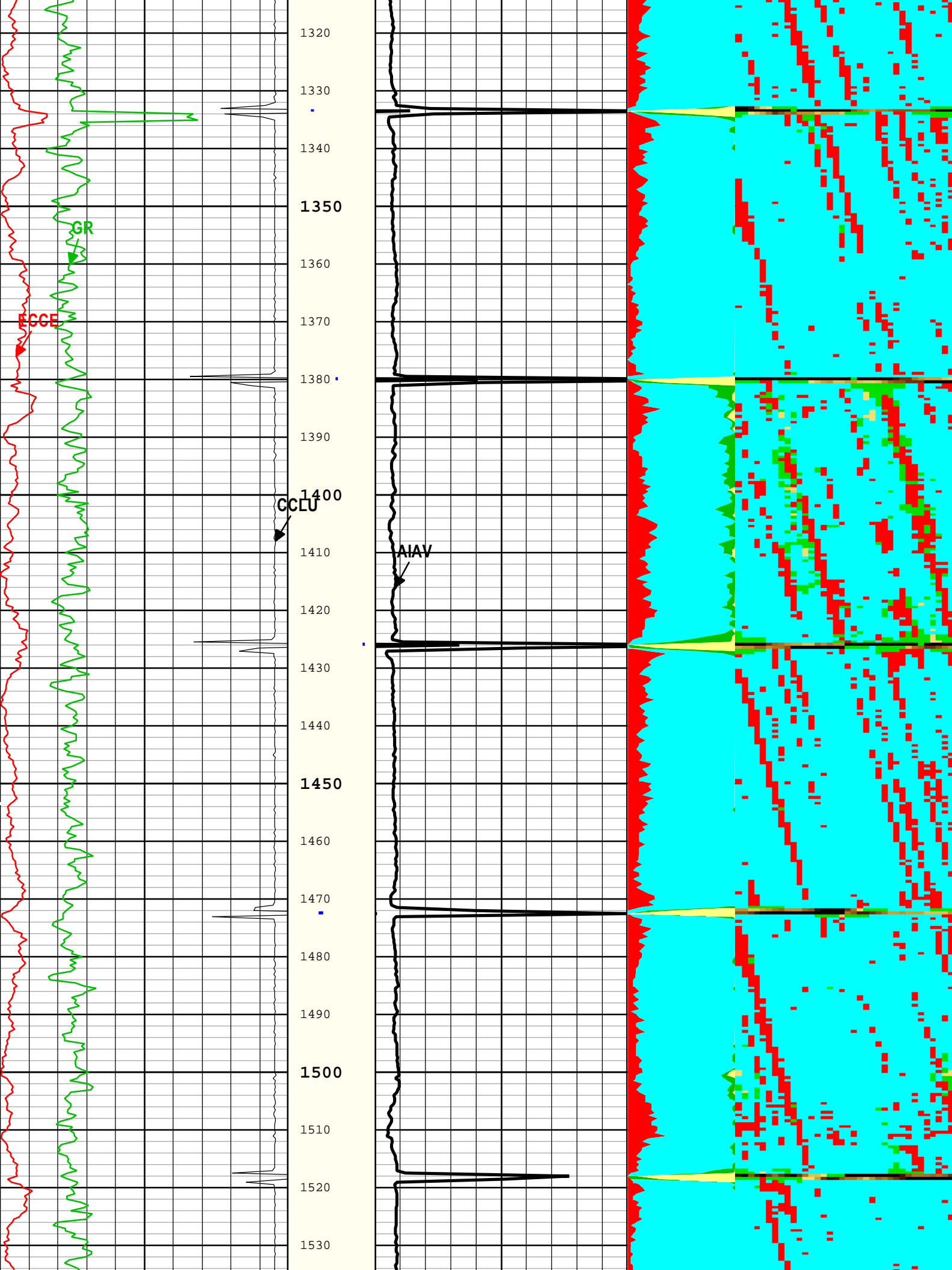


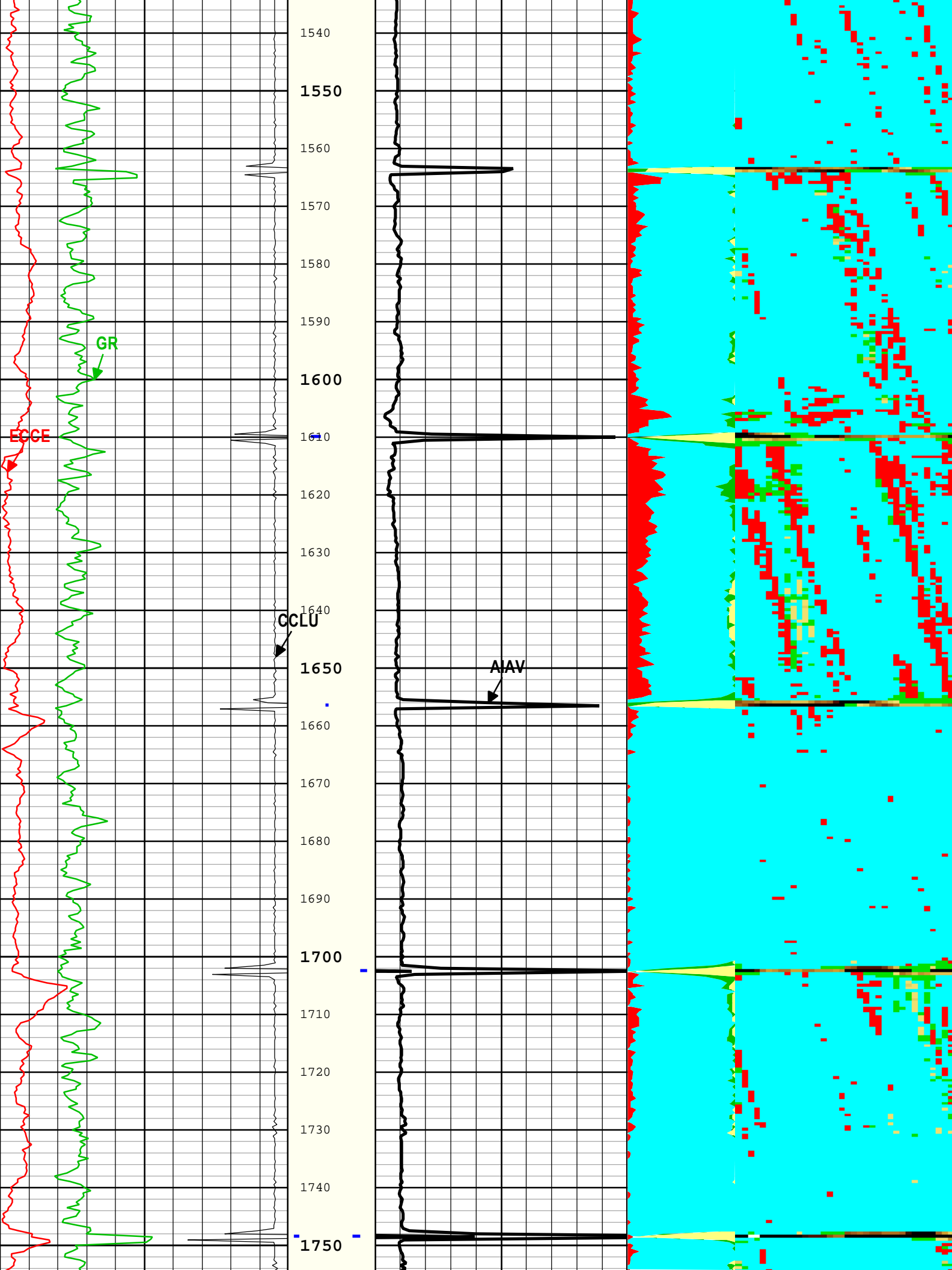


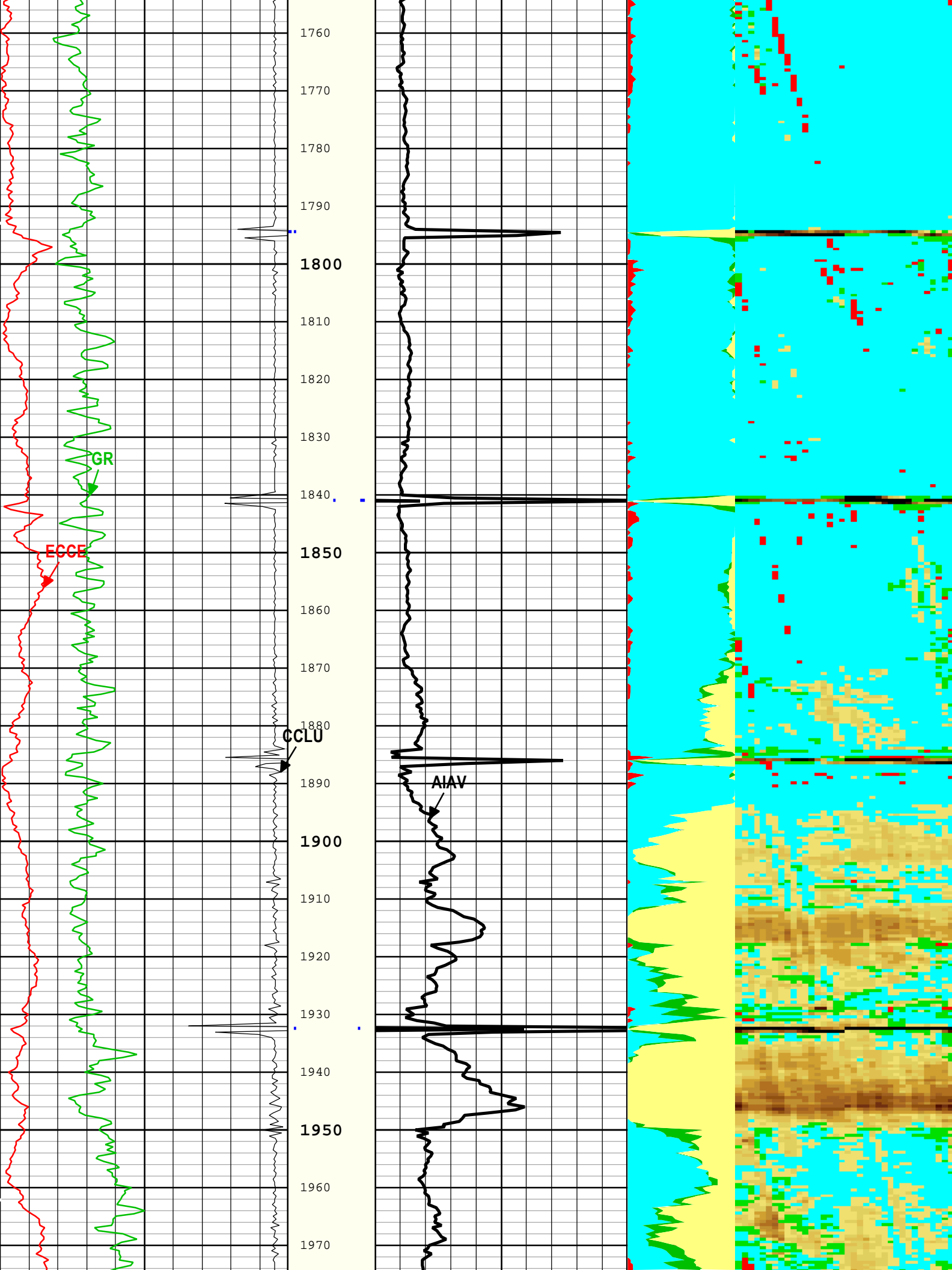


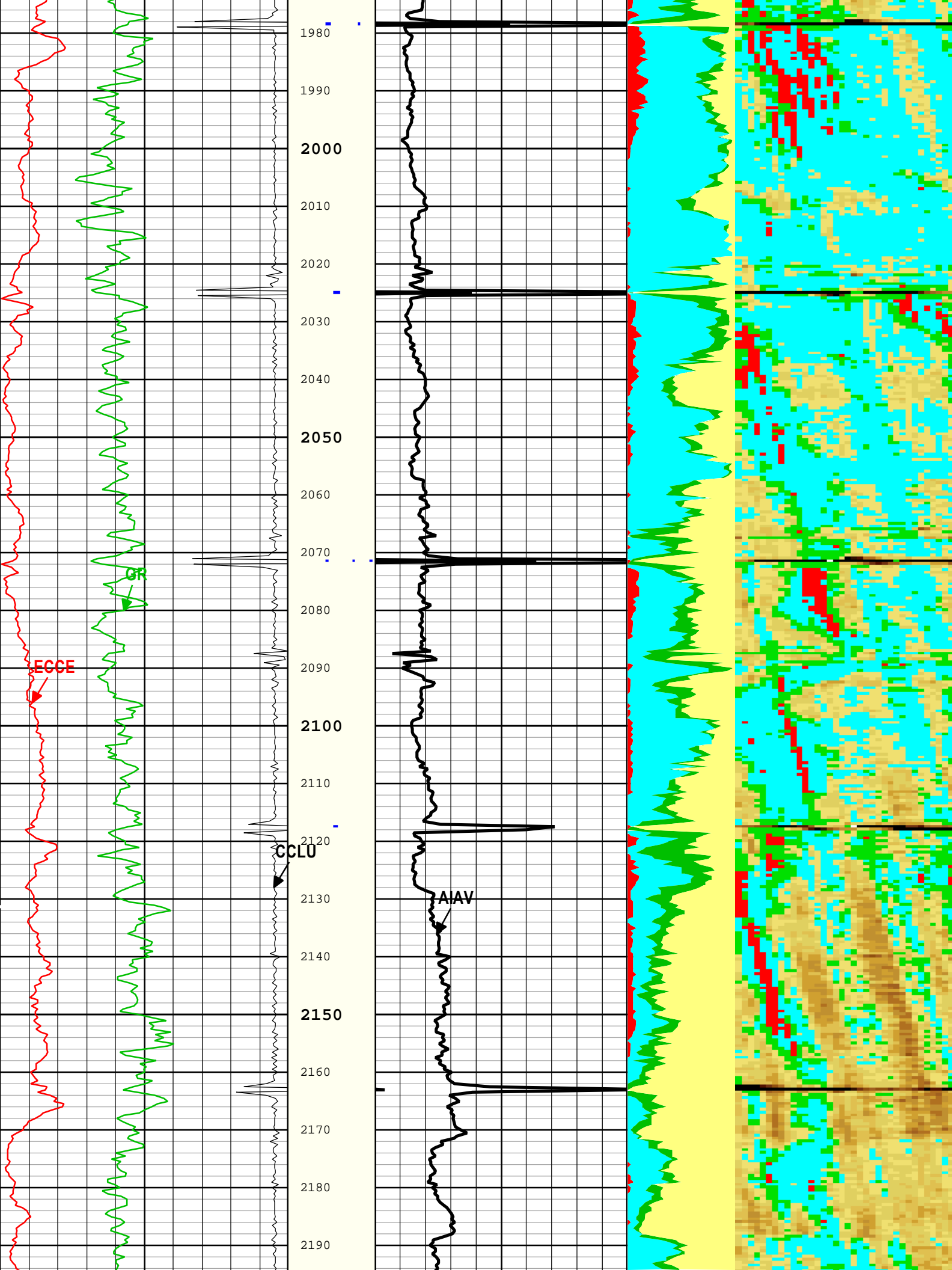


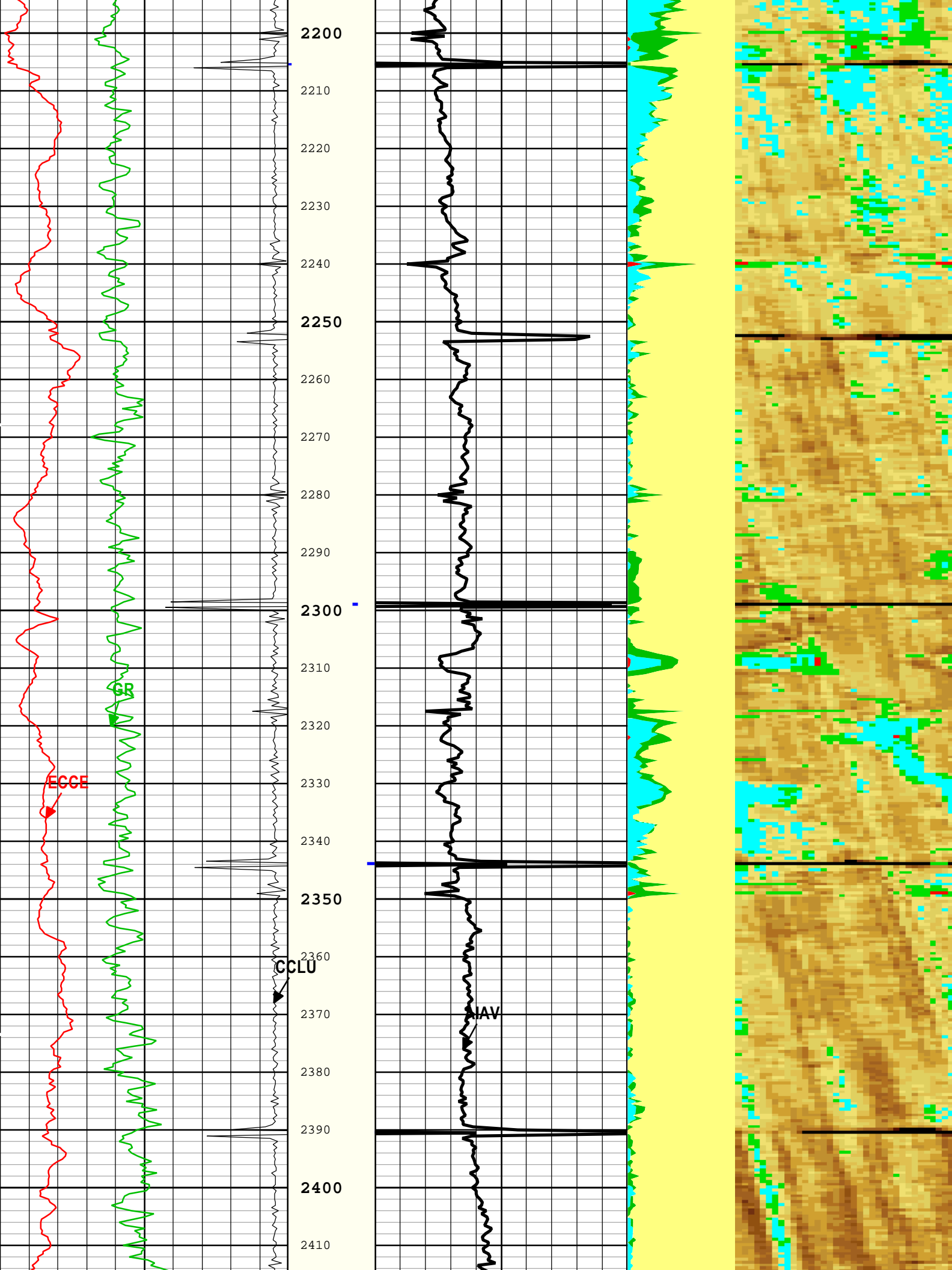


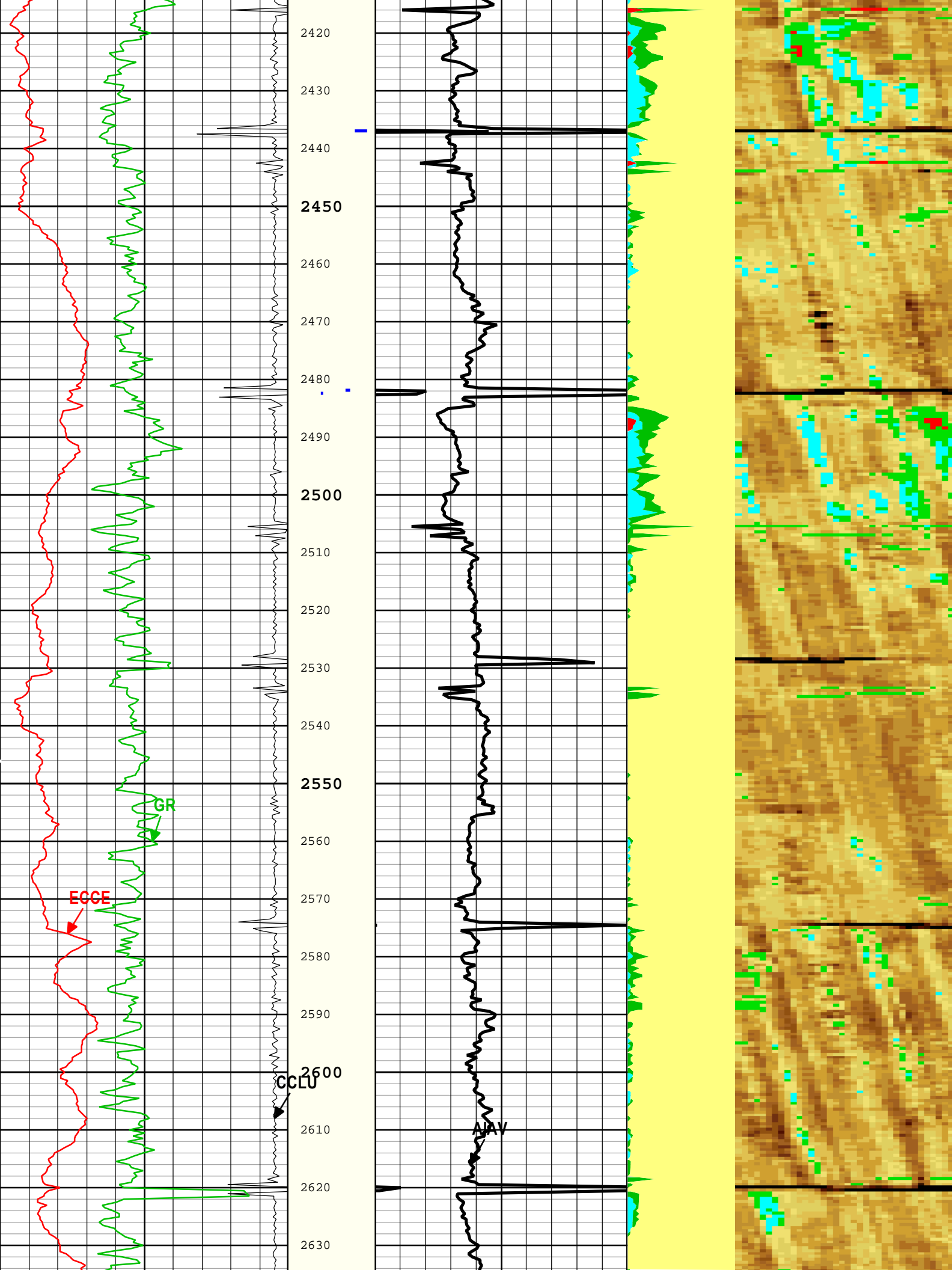


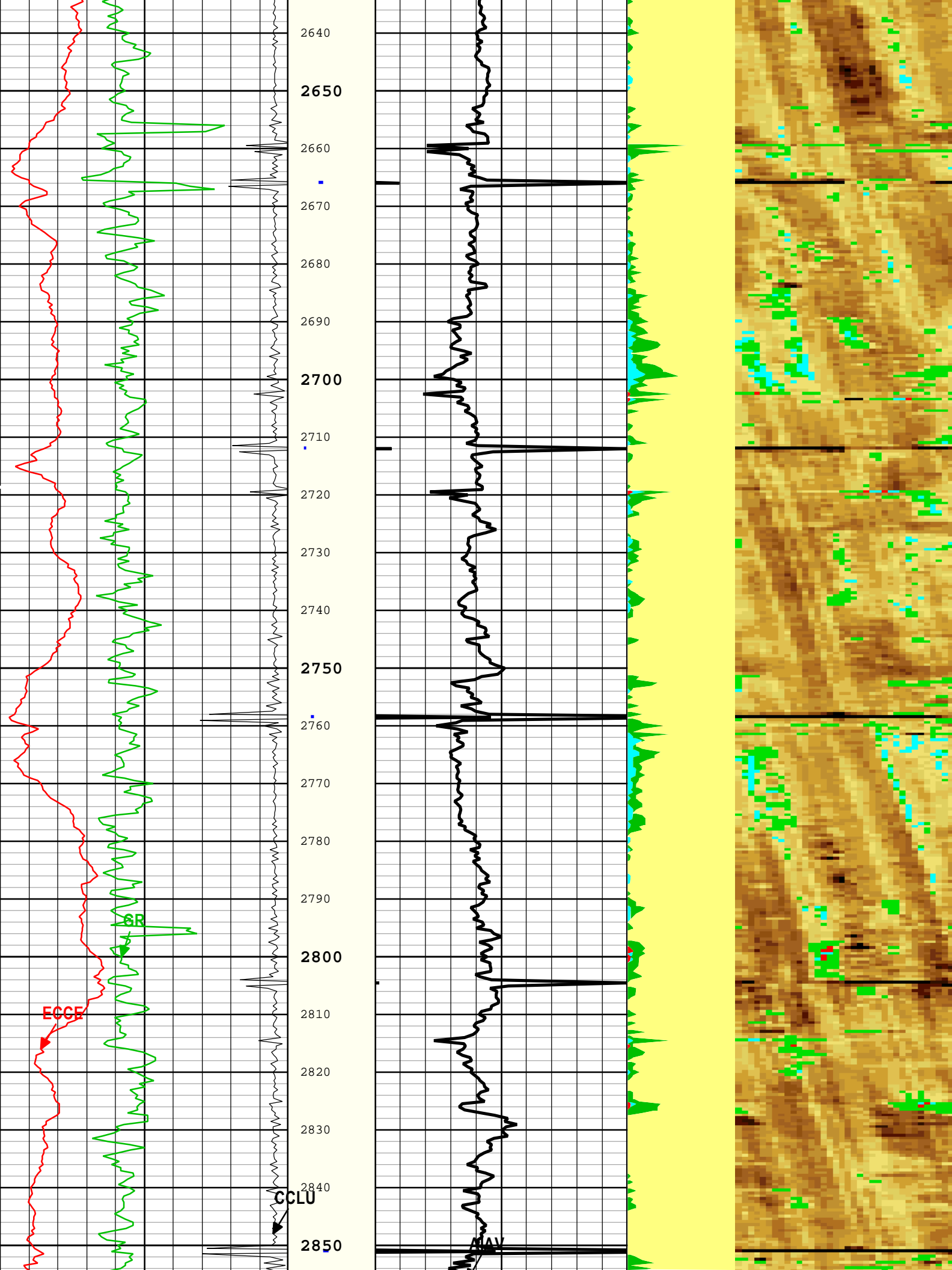


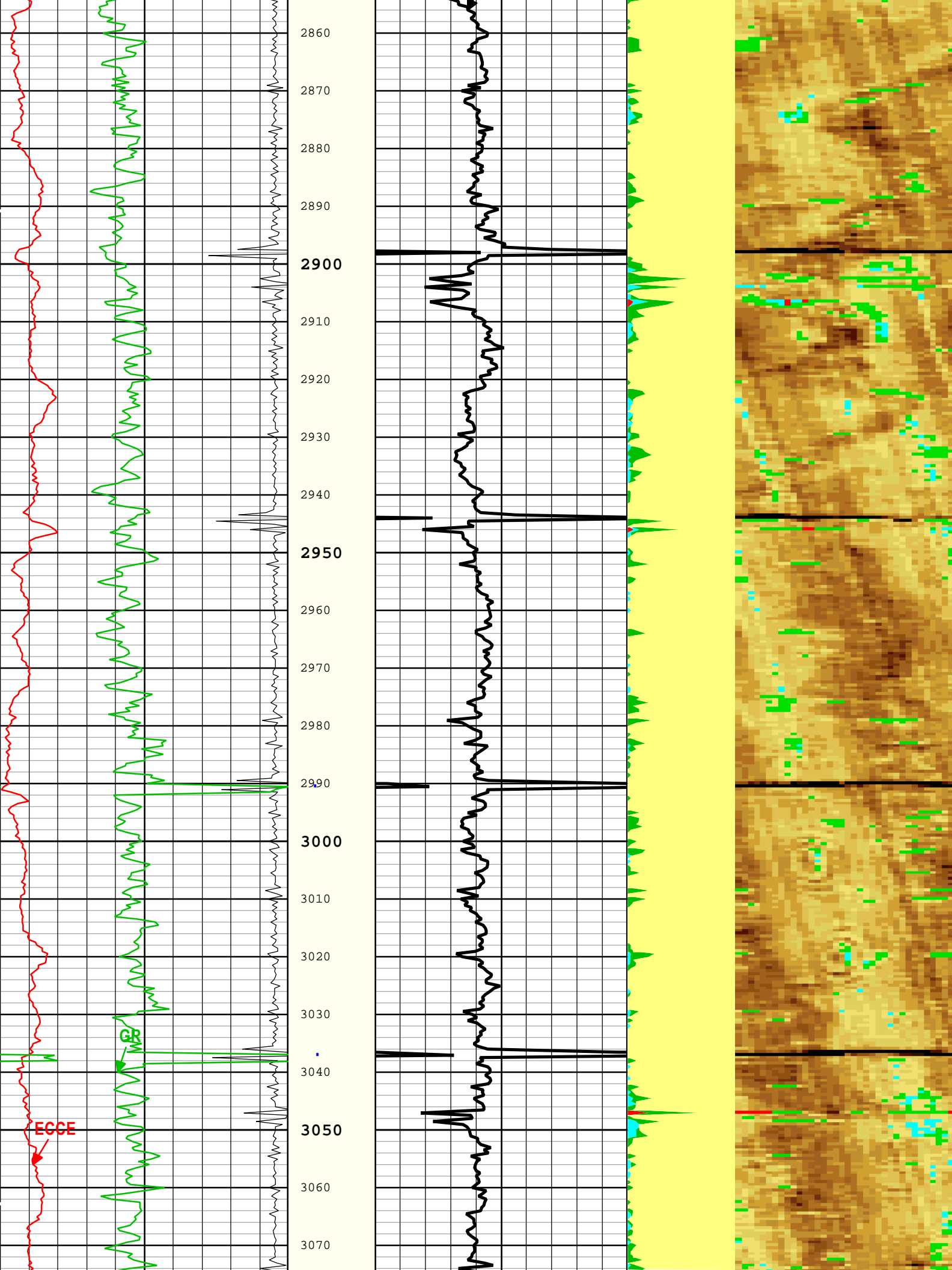


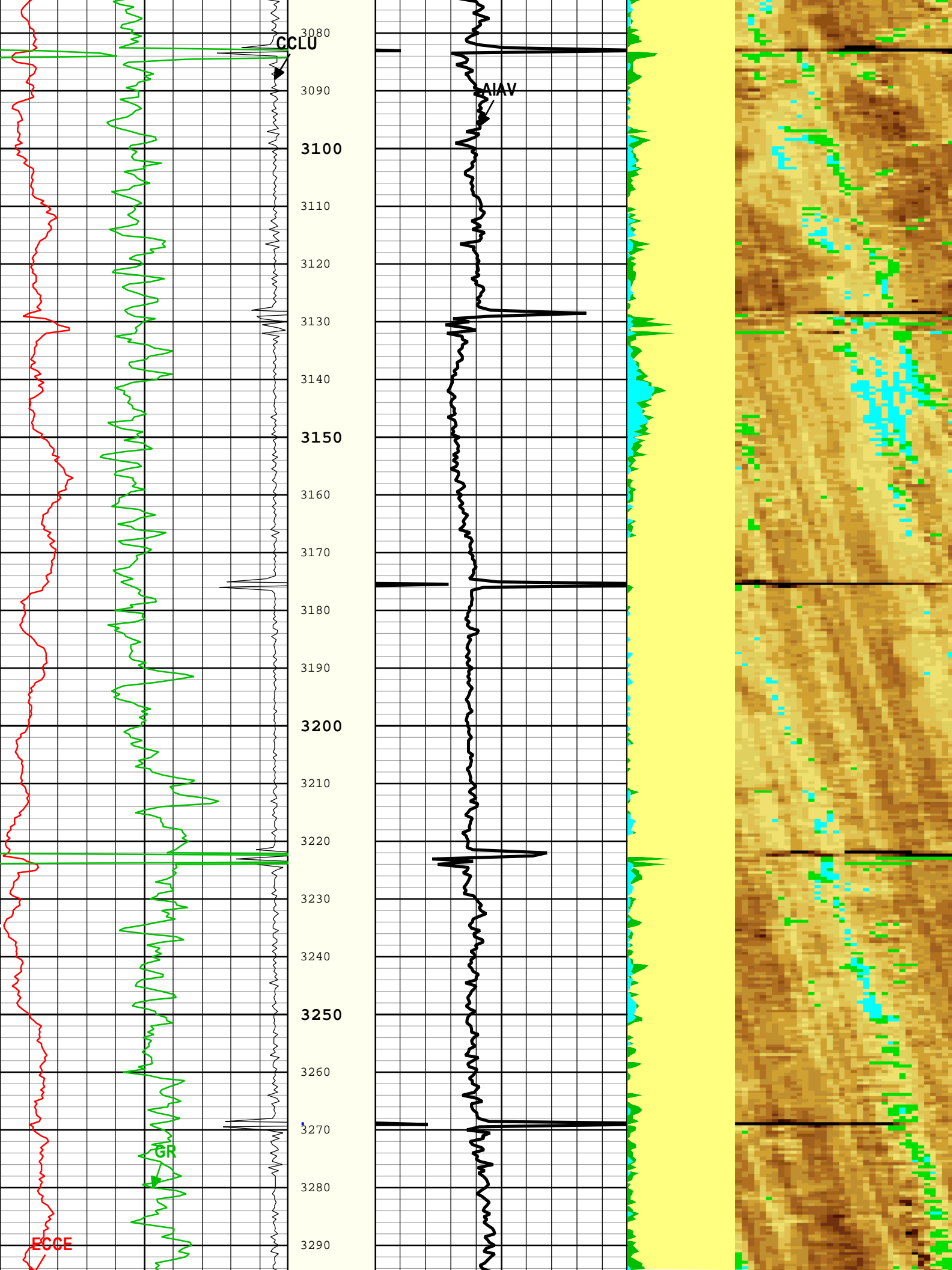


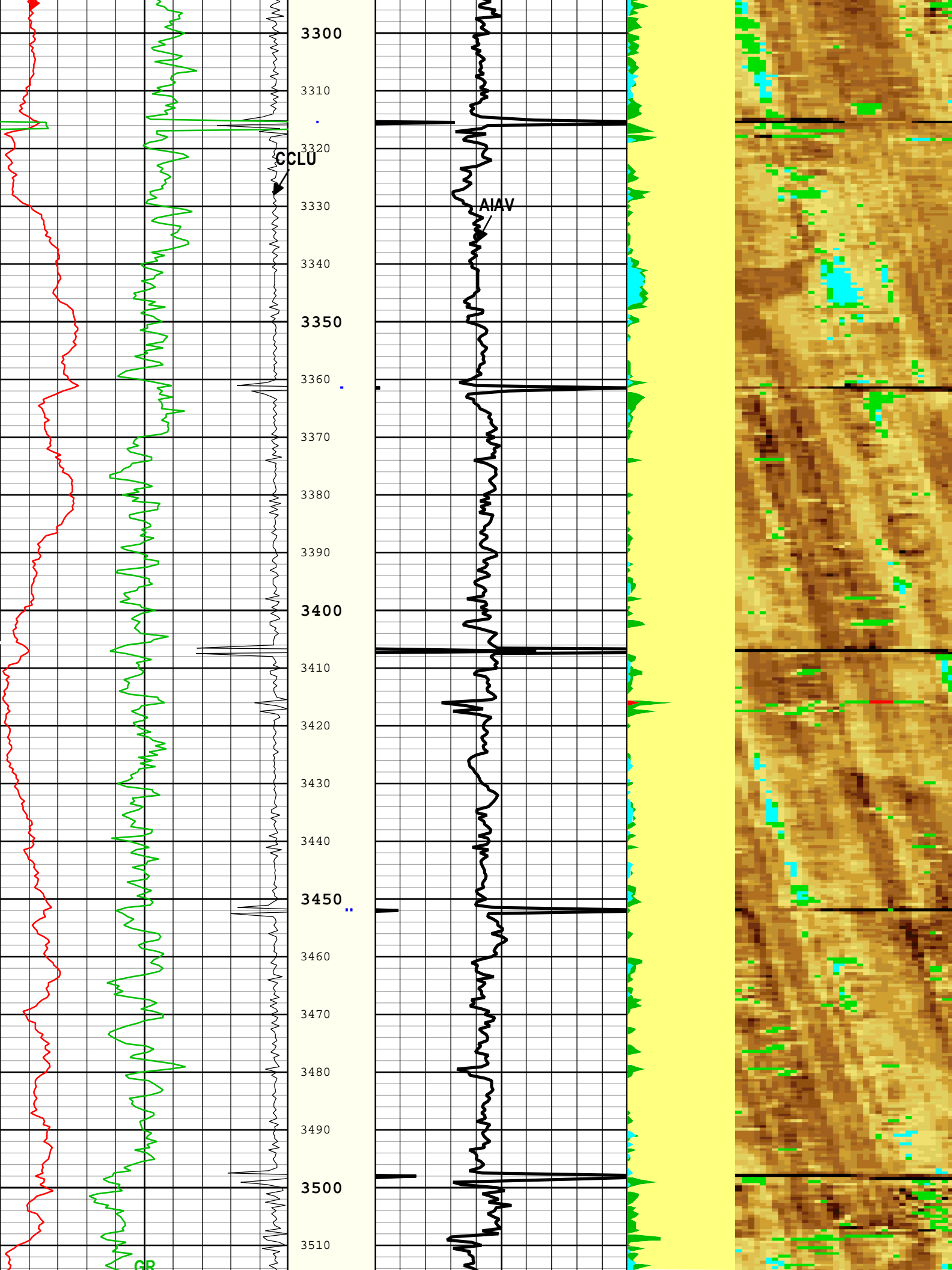


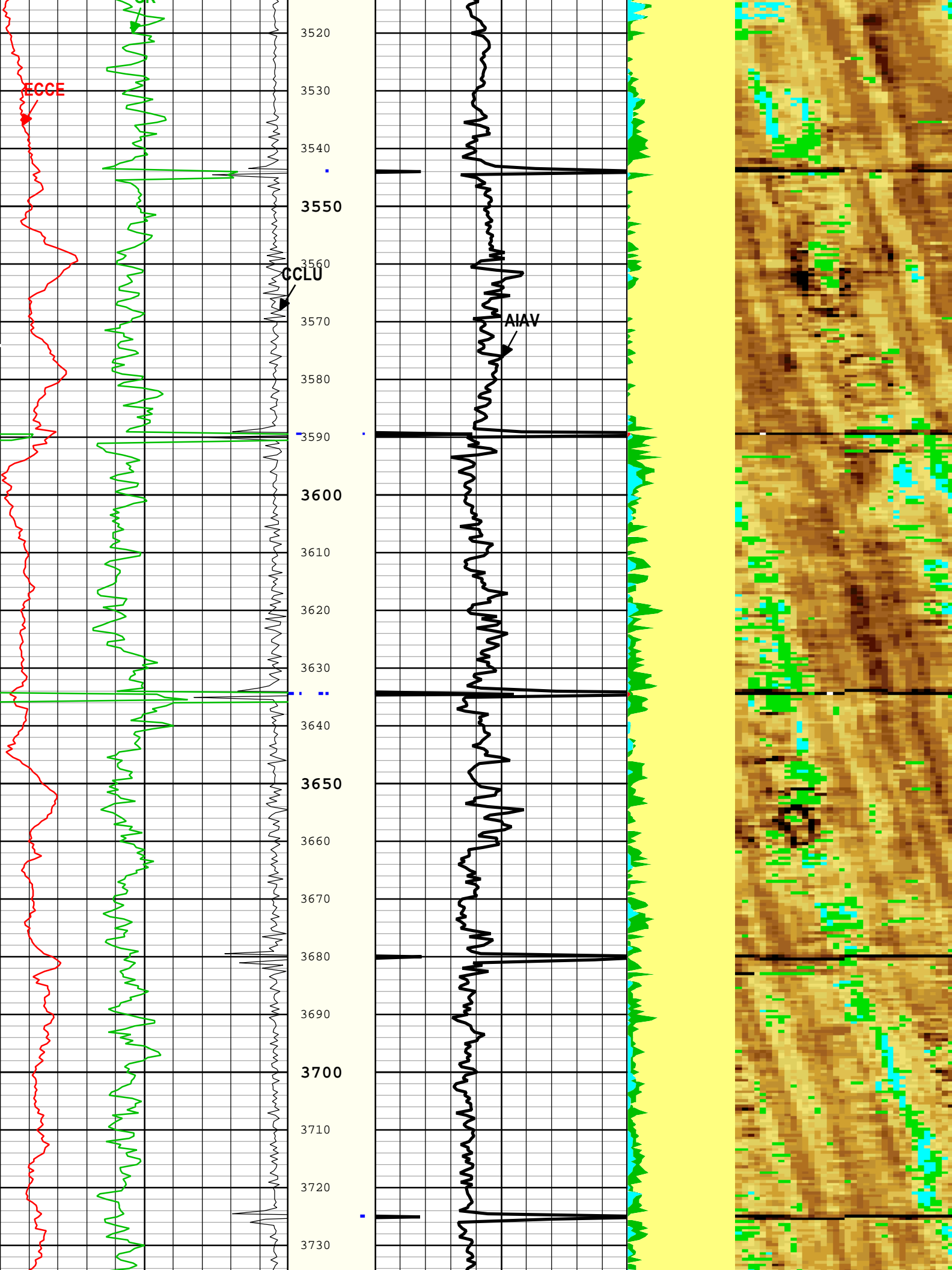


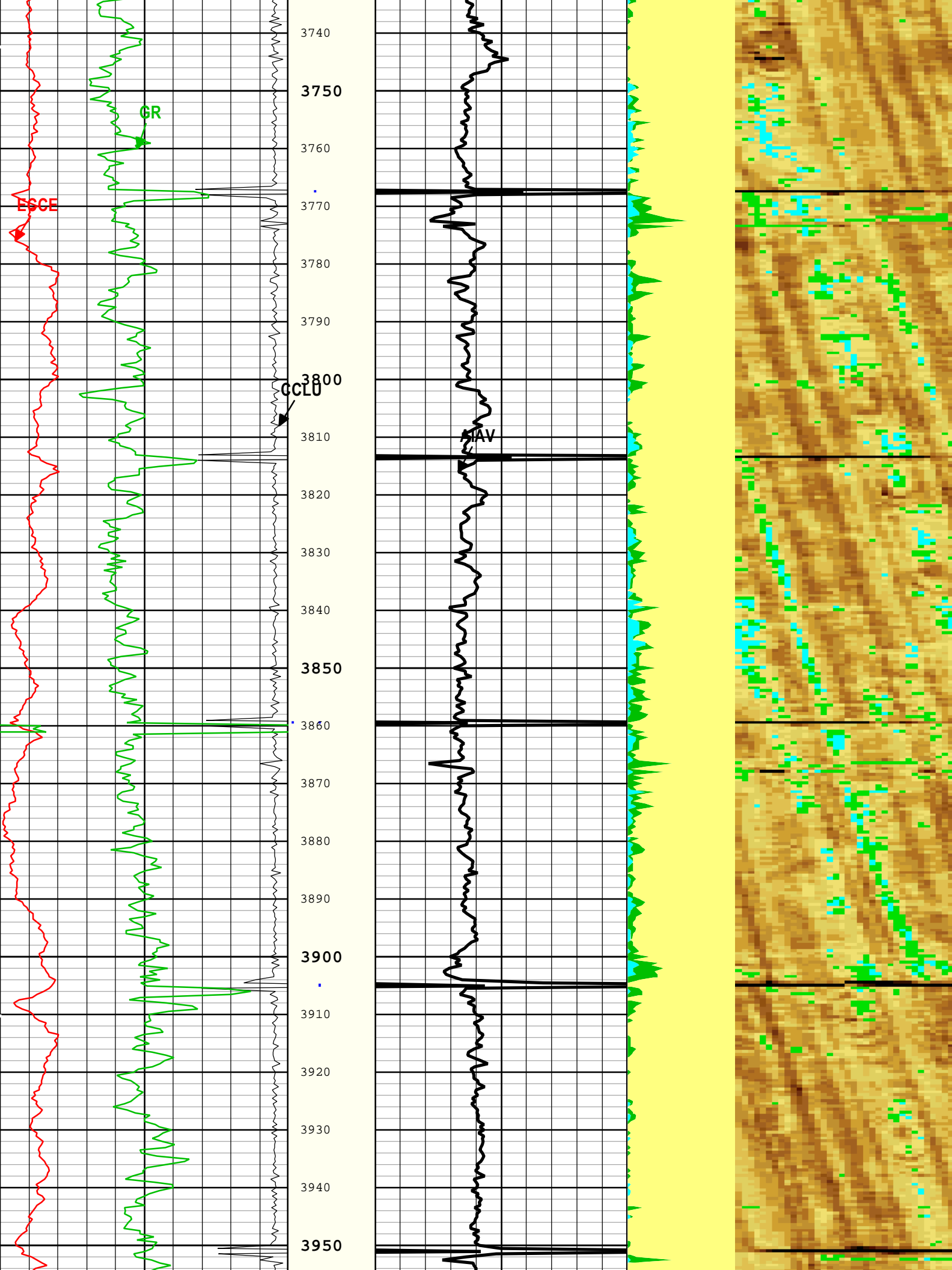


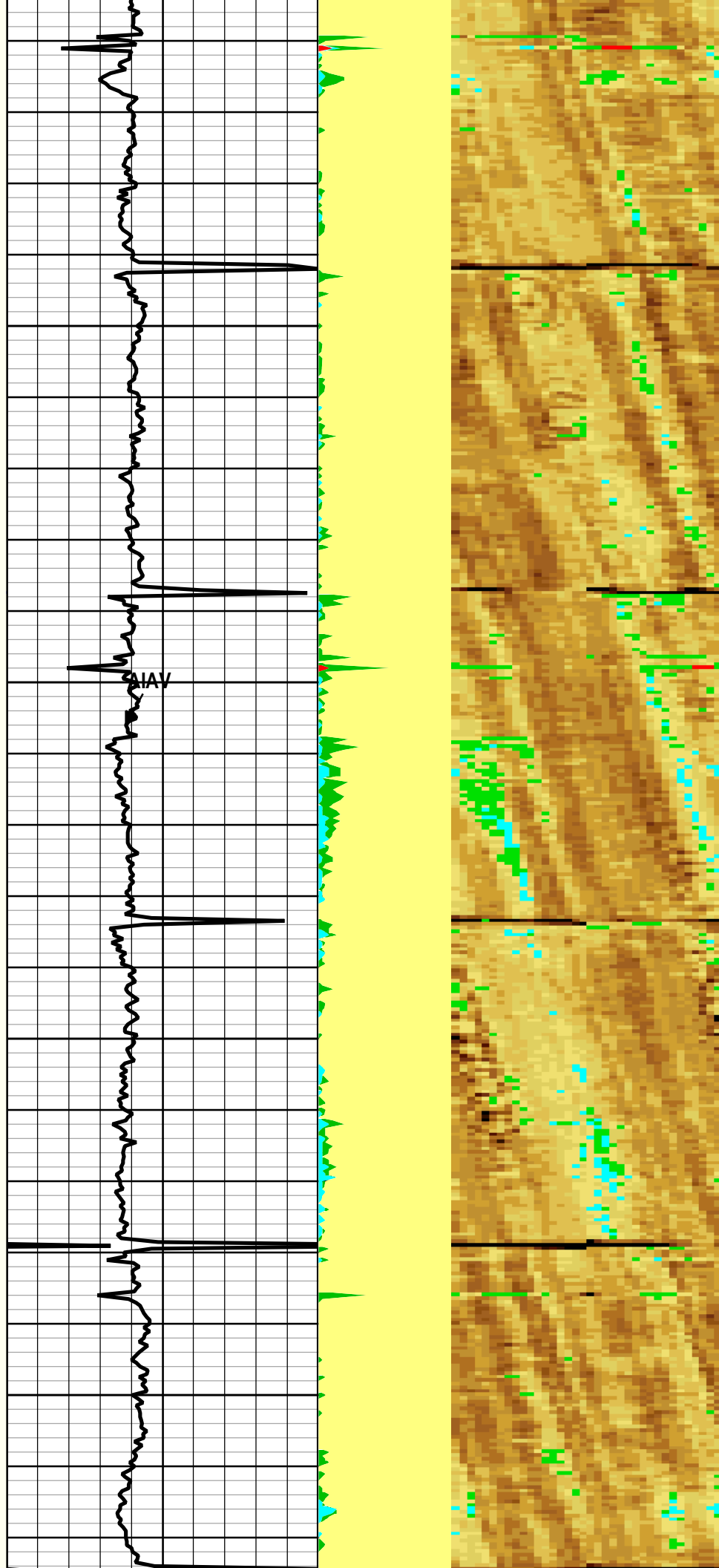
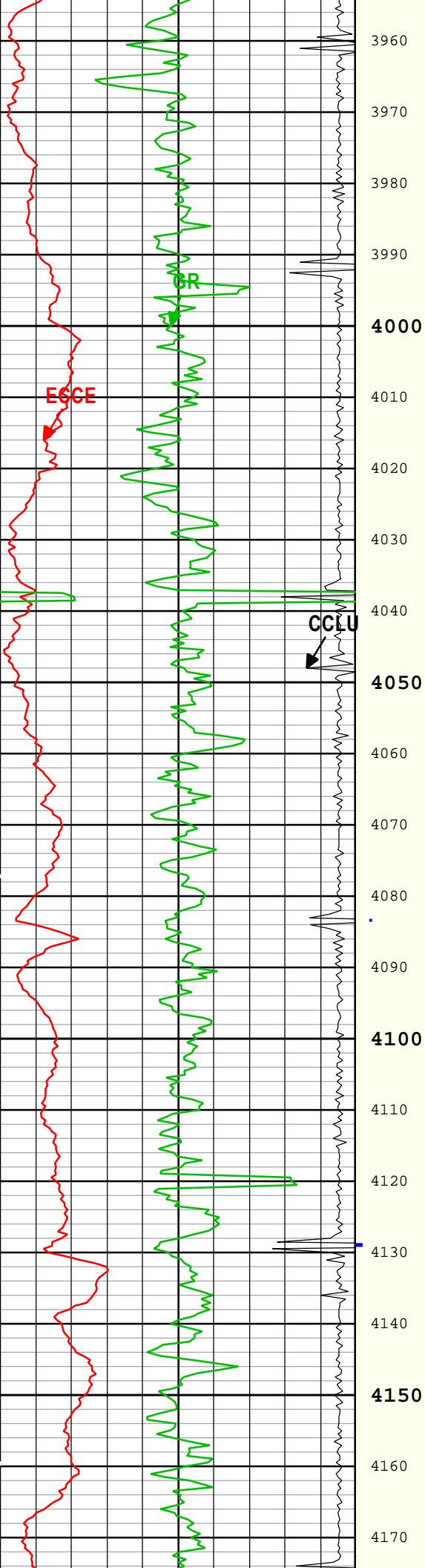


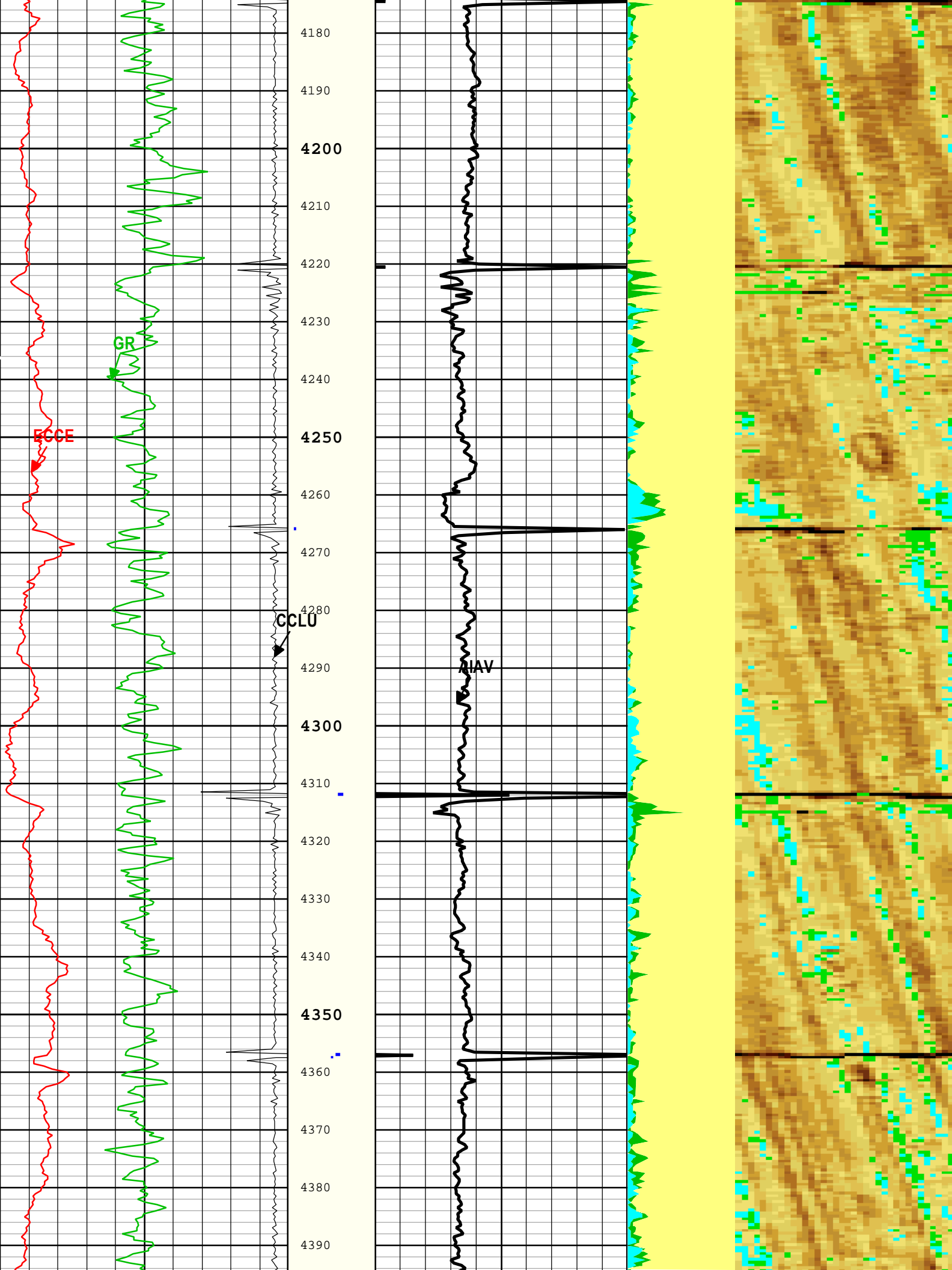


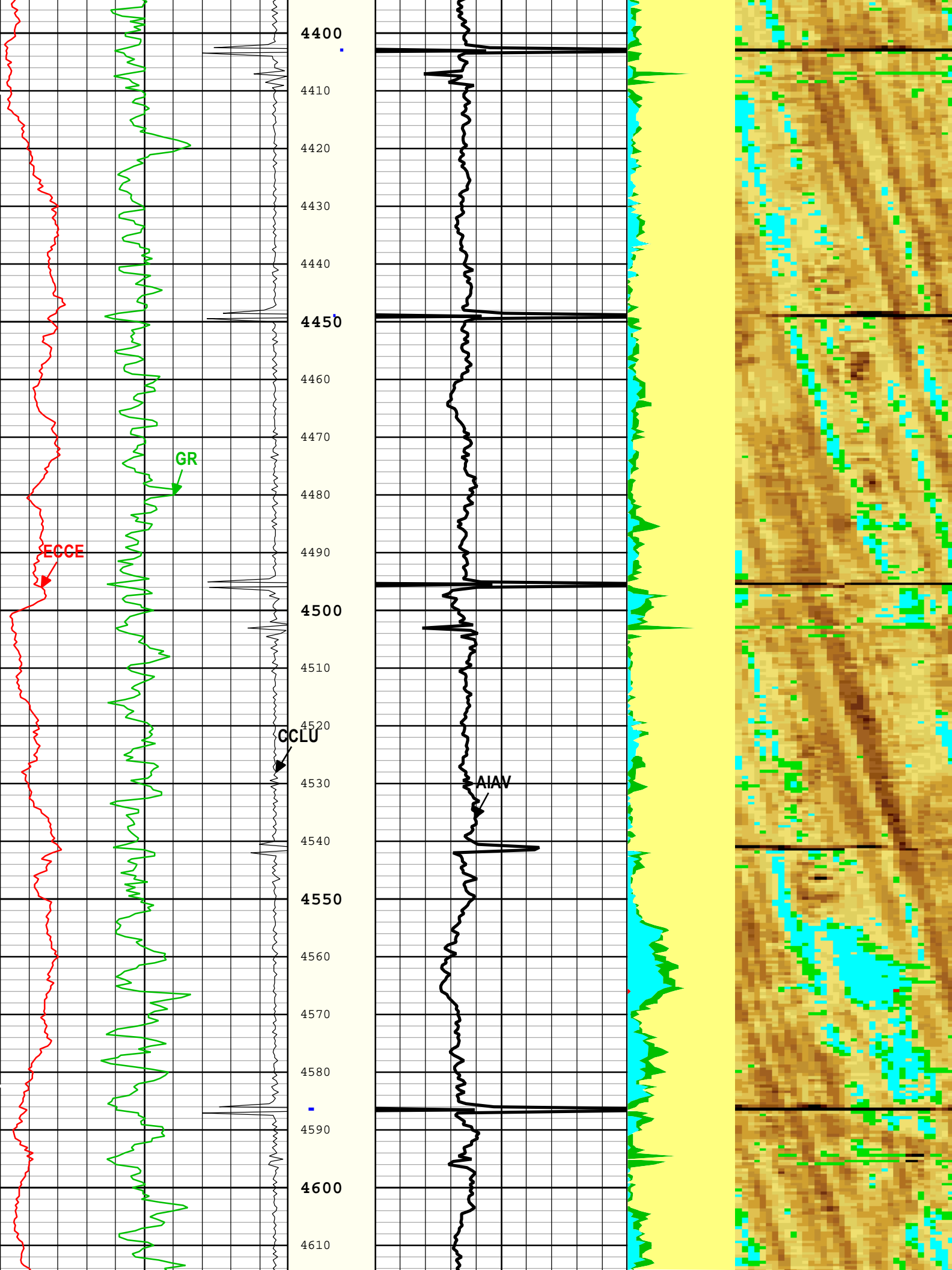


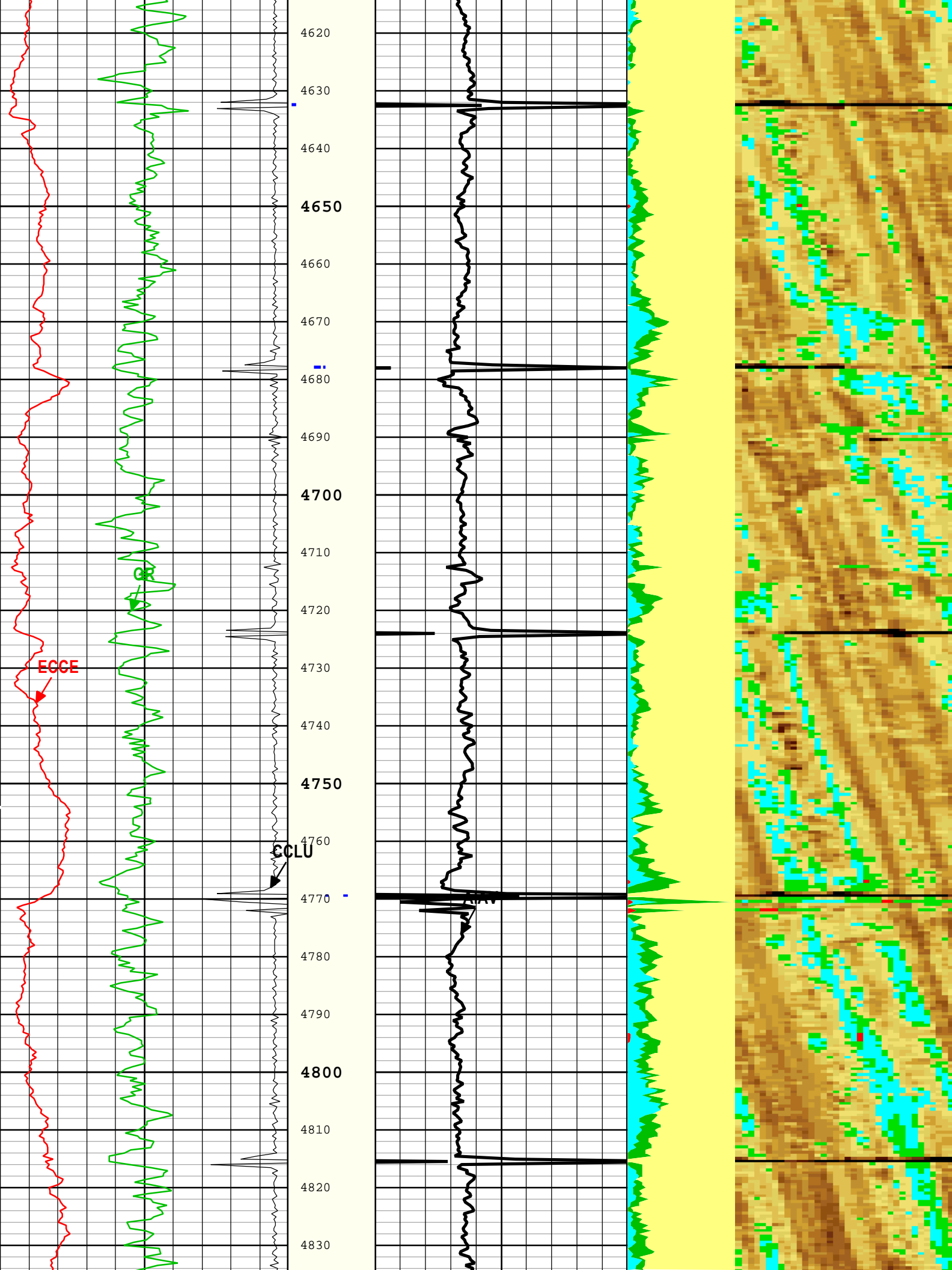


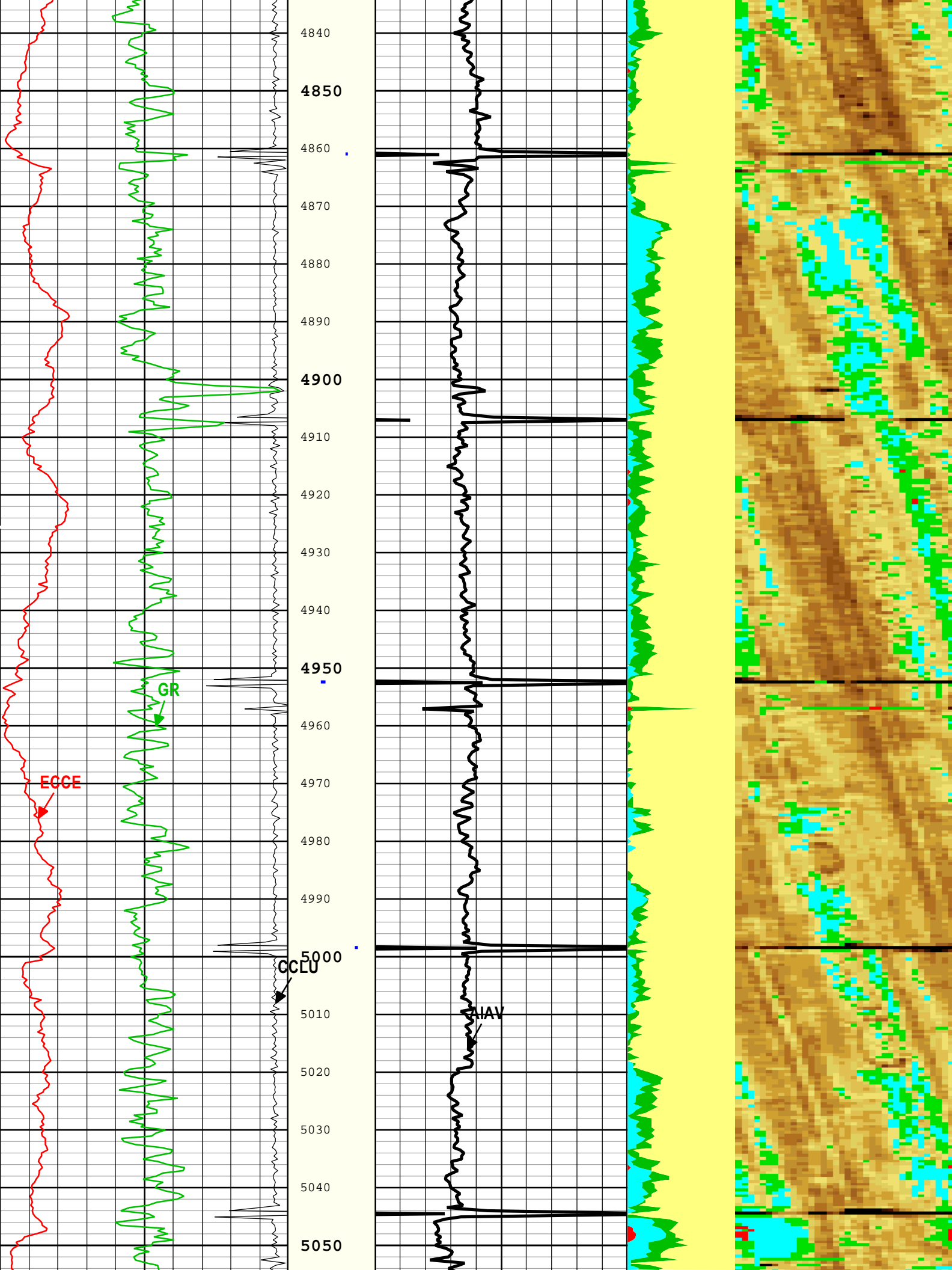


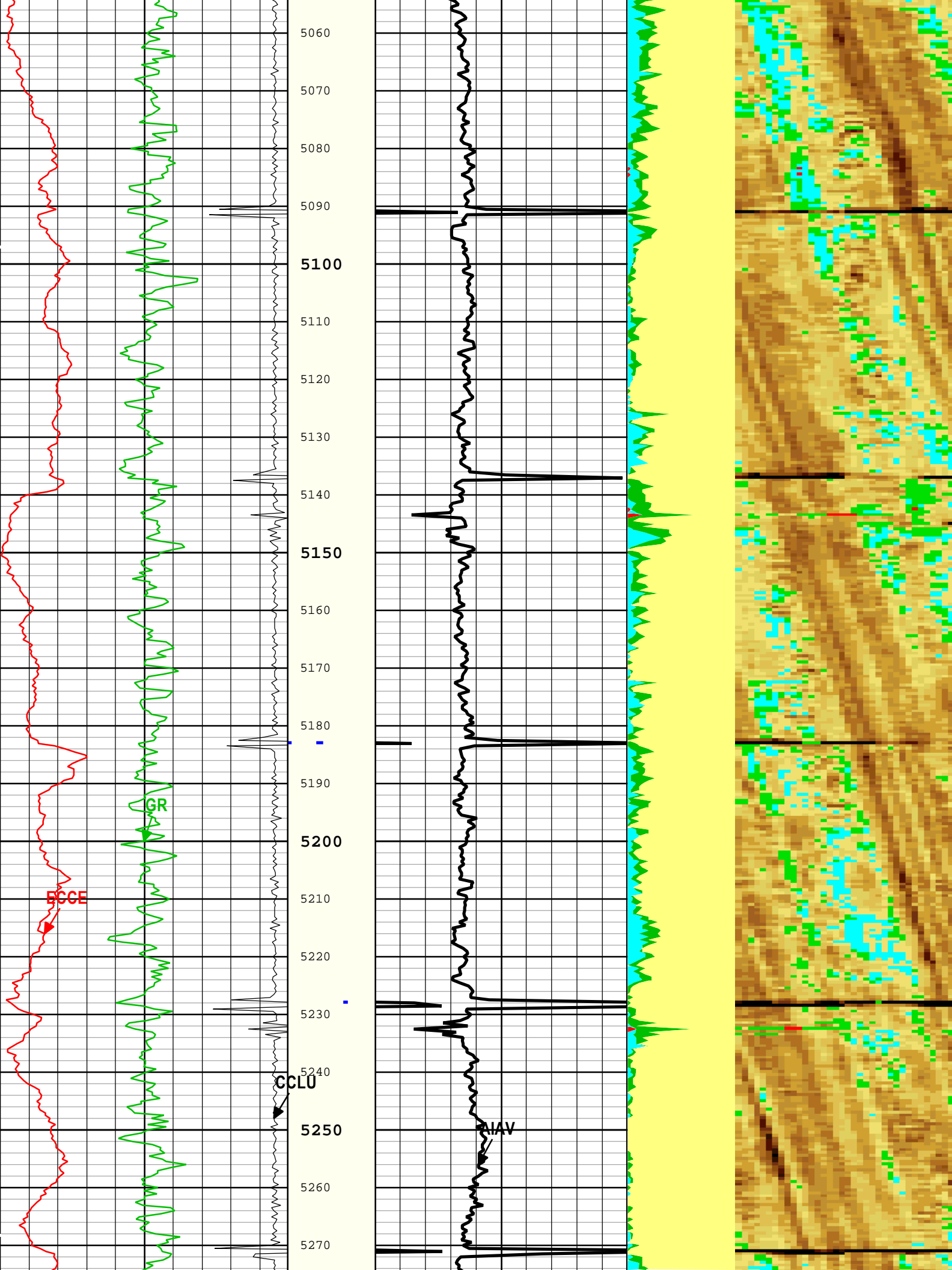


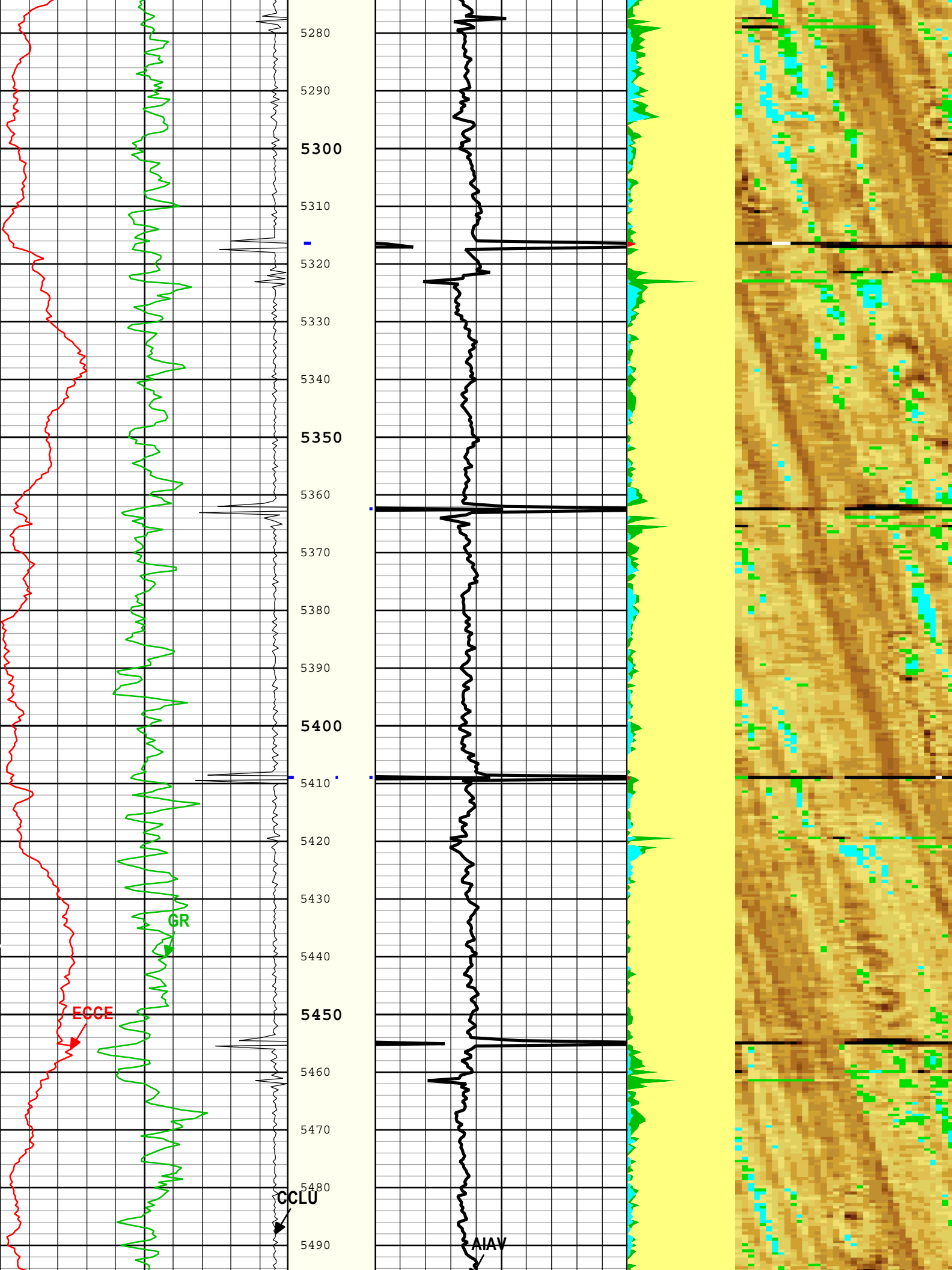


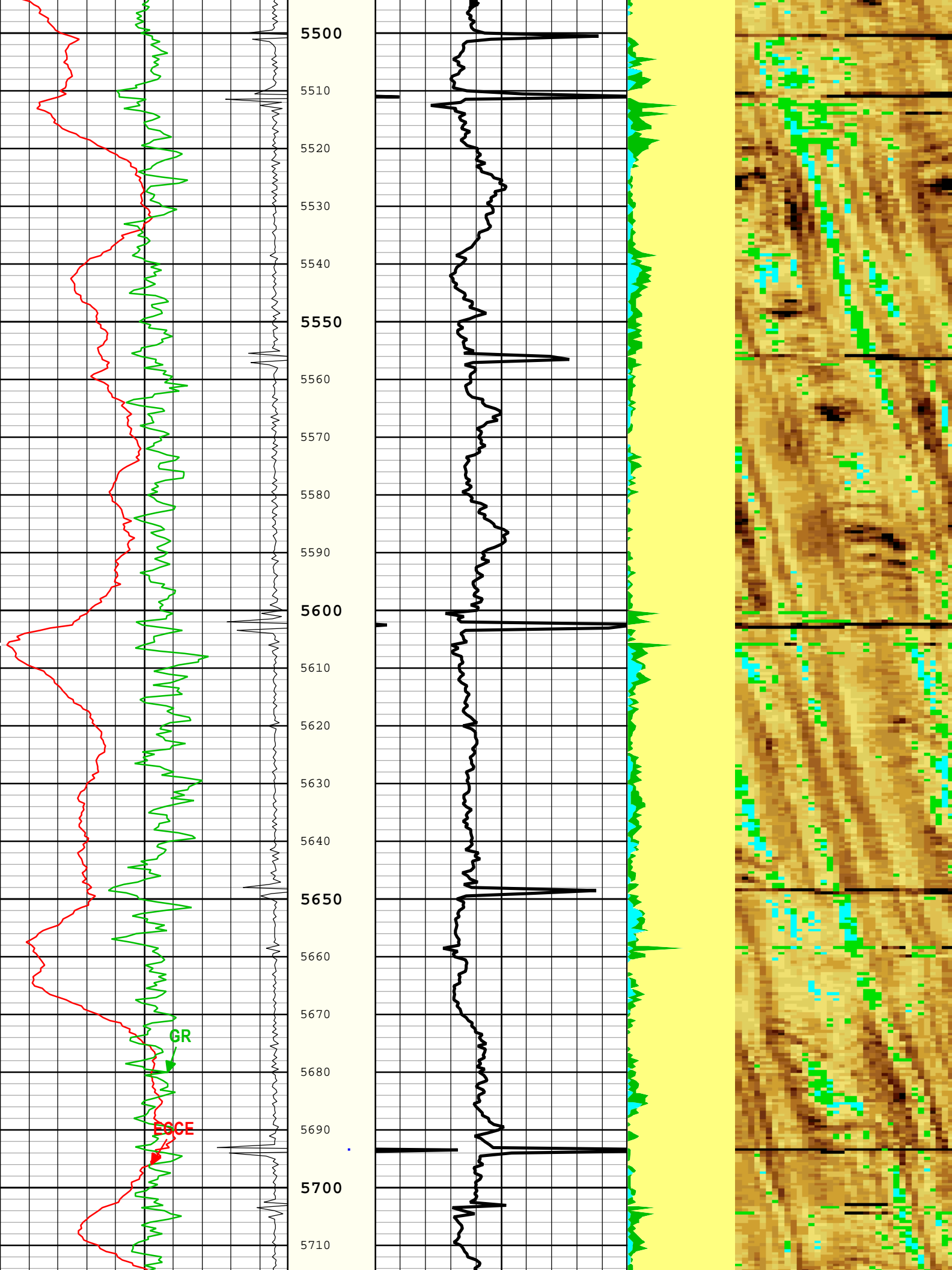


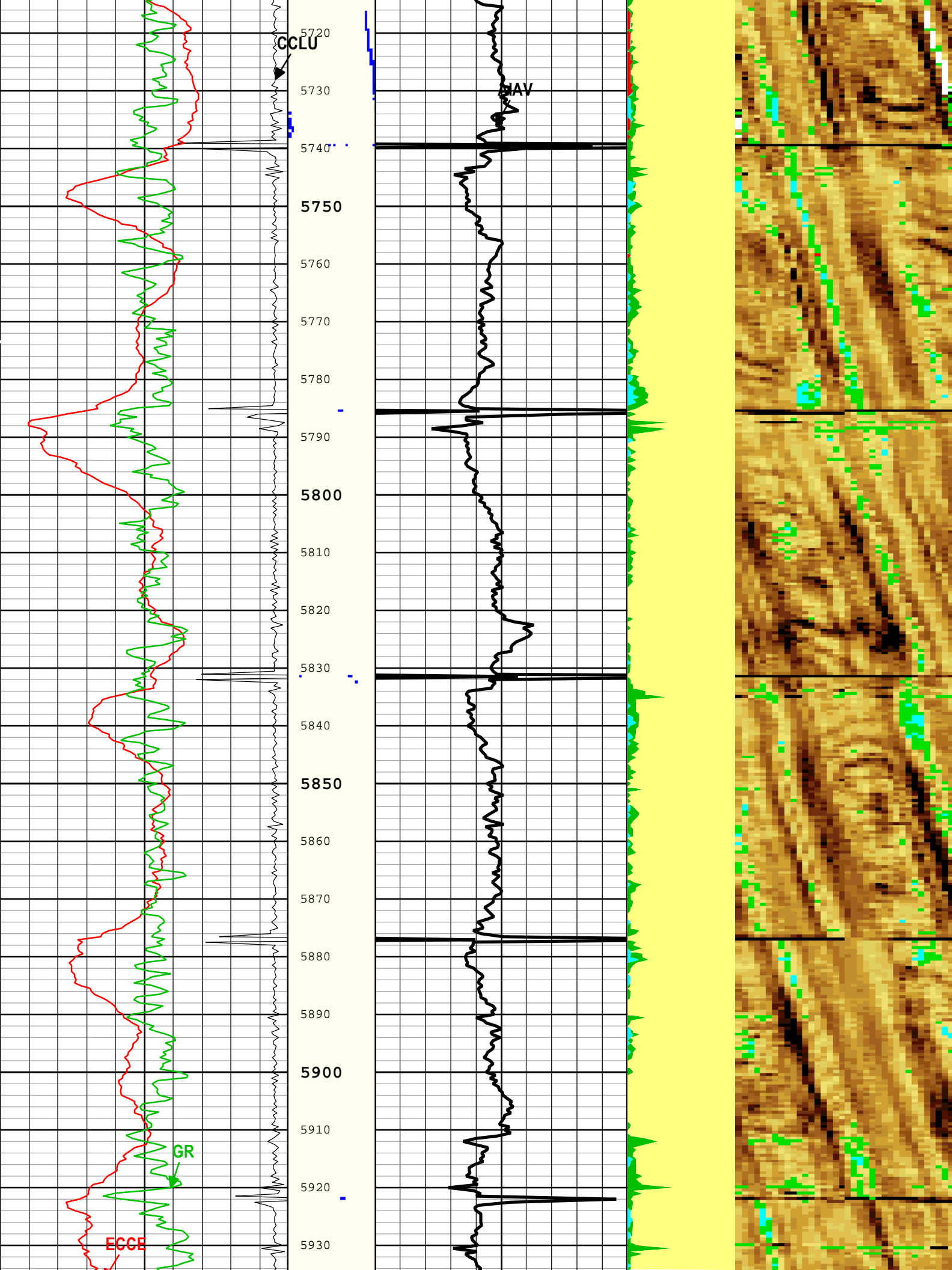


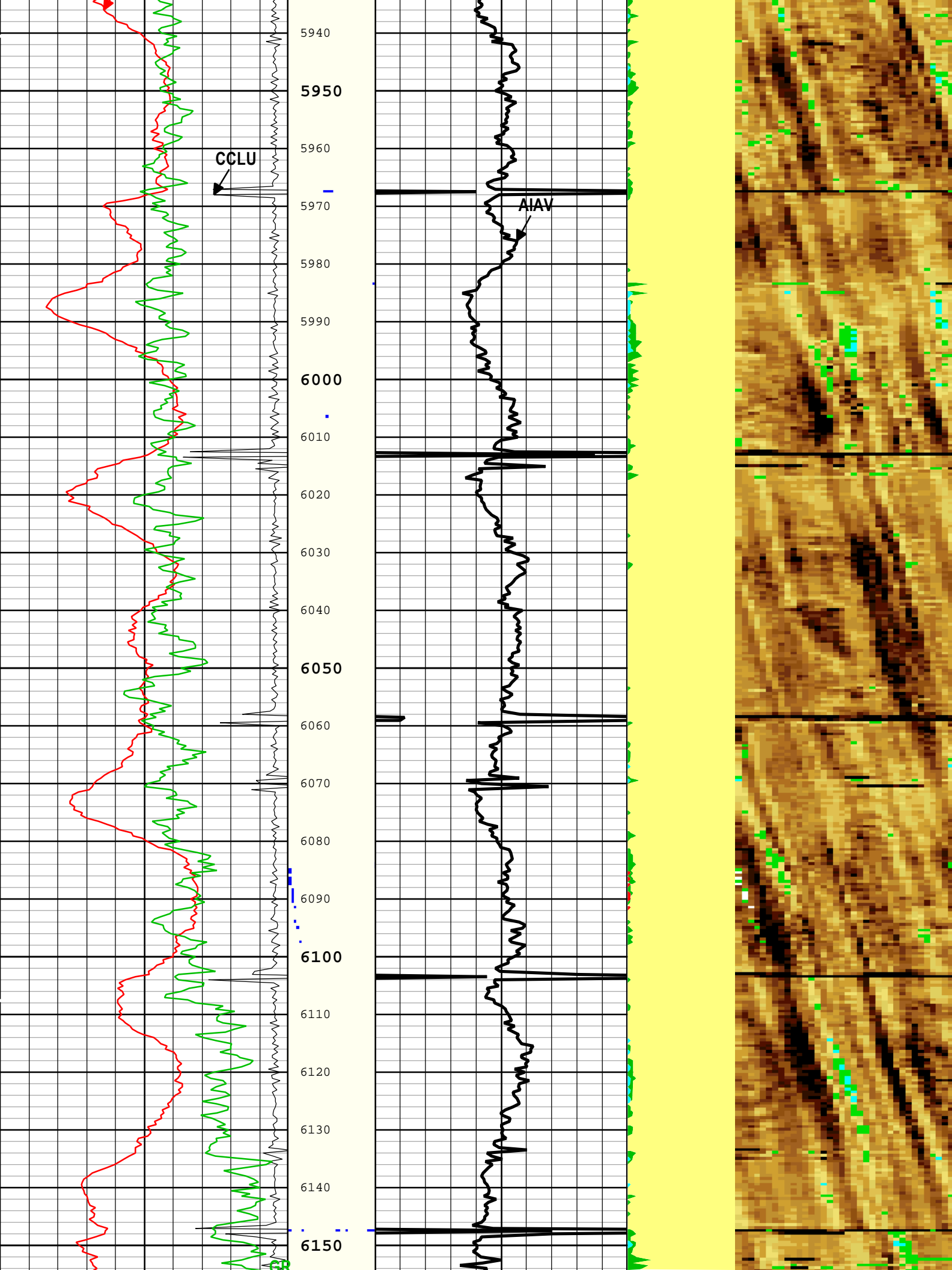


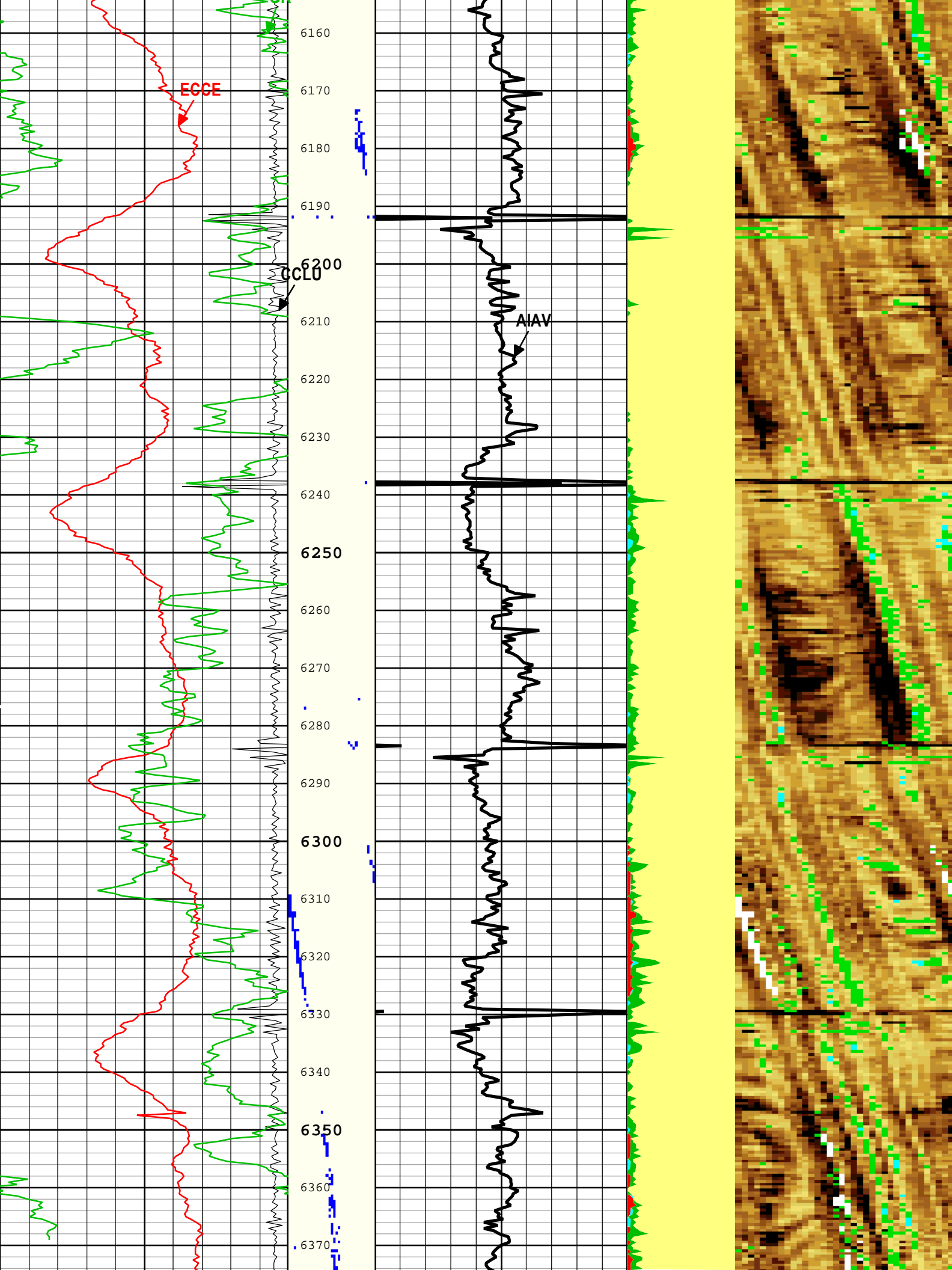












All depth are actual.

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	36	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
EMXV	EMEX Voltage	USIT-E	40	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	6400	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)
WINB	31.88	25-Jul-2017 09:30:08	25-Jul-2017 09:34:33	6397.28	6348.56
WINB	25.06	25-Jul-2017 09:34:33	25-Jul-2017 09:39:25	6348.56	5534.18
WINB	27.37	25-Jul-2017 09:39:25	25-Jul-2017 10:33:48	5534.18	60.23
WINE	71.88	25-Jul-2017 09:30:08	25-Jul-2017 09:34:25	6397.28	6366.83
WINE	78.78	25-Jul-2017 09:34:25	25-Jul-2017 09:34:35	6366.83	6343.17
WINE	68.81	25-Jul-2017 09:34:35	25-Jul-2017 09:39:21	6343.17	5546.07
WINE	71.88	25-Jul-2017 09:39:21	25-Jul-2017 10:33:48	5546.07	60.23

All depth are at tool zero.

ONE

0 PSI Repeat Pass

Software Version

Acquisition System	Version
Maxwell 2017	7.0.78557.3100

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	DSC Mode	Depth Shift	Include Parallel Data
ONE	Log[4]:Up	Up	5759.84 ft	6215.41 ft	25-Jul-2017 9:04:19 AM	25-Jul-2017 9:09:09 AM	ON	5.89 ft	Yes

All depths are referenced to toolstring zero

Log

Company:Noble Energy Inc

Well:RATTLESNAKE FEDERAL LC10-785

ONE: Log[4]: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: 25-Jul-2017 15:35:14

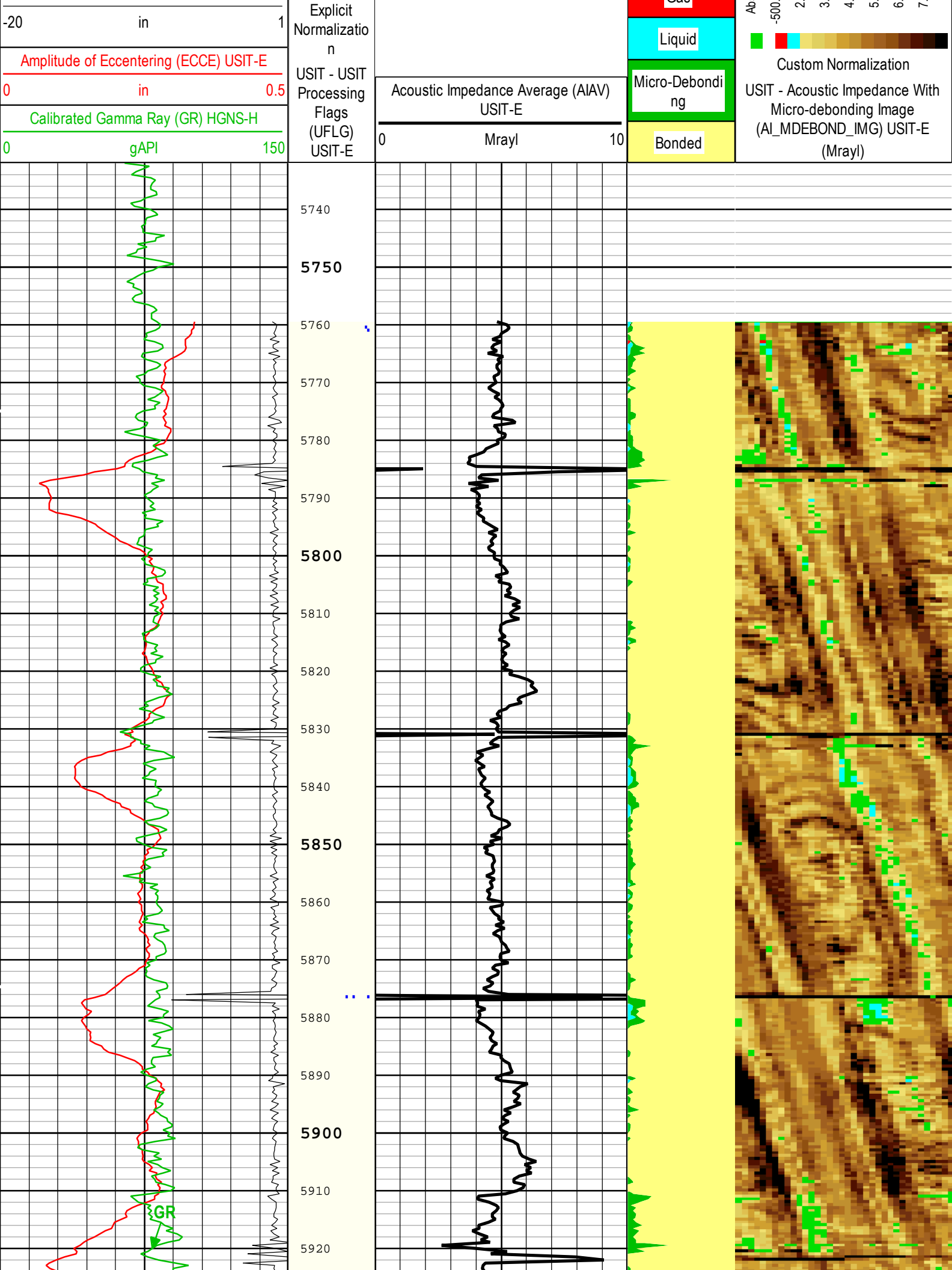
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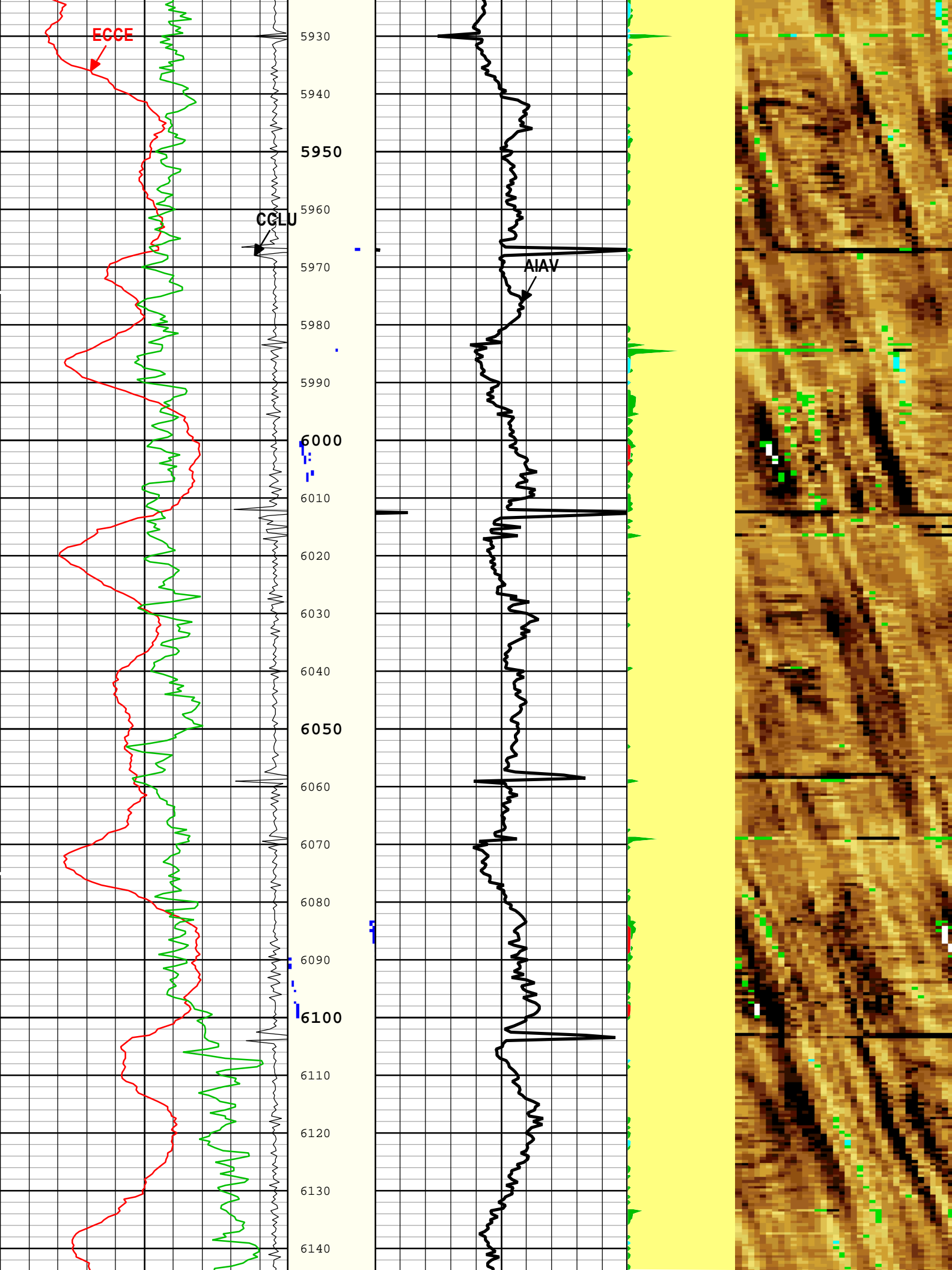
Casing Collar Locator Ultrasonic (CCLU)
USIT-E

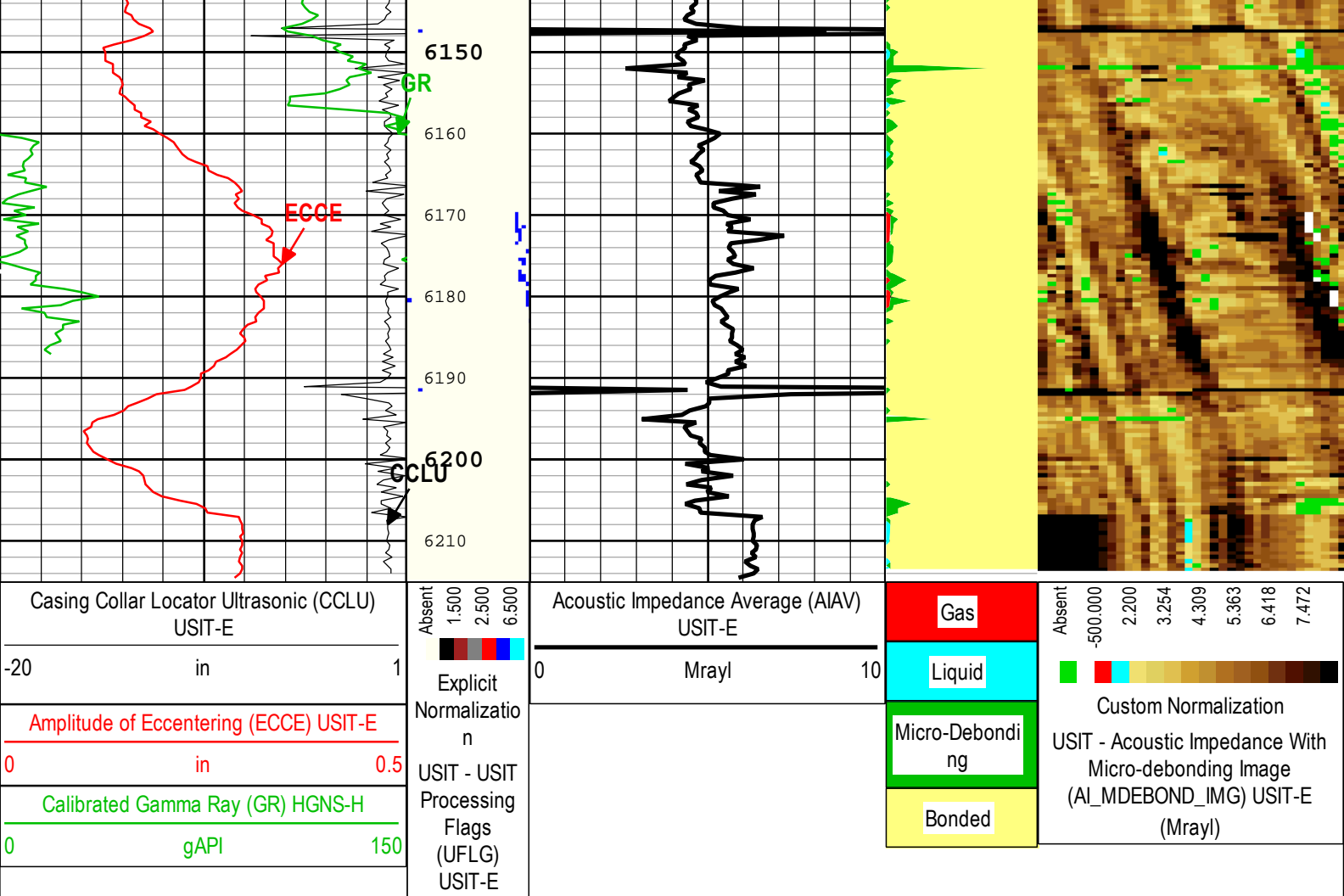
Absent
1.500
2.500
6.500

Gas

sent
000
200
254
309
363
418
472







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: 25-Jul-2017 15:35:14

Channel Processing Parameters				
ONE: Parameters				
Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BS	Bit Size	WLSESSION	8.5	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	
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	1.9	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	Theoretical	
ZMUD	Acoustic Impedance of Mud	Borehole	2	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
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	6200	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)
EMXV	60	25-Jul-2017 09:04:19	25-Jul-2017 09:06:44	6215.41	6001.06
EMXV	40	25-Jul-2017 09:06:44	25-Jul-2017 09:09:09	6001.06	5759.84
WINE	71.88	25-Jul-2017 09:04:19	25-Jul-2017 09:05:07	6215.41	6163.96
WINE	77.25	25-Jul-2017 09:05:07	25-Jul-2017 09:09:09	6163.96	5759.84

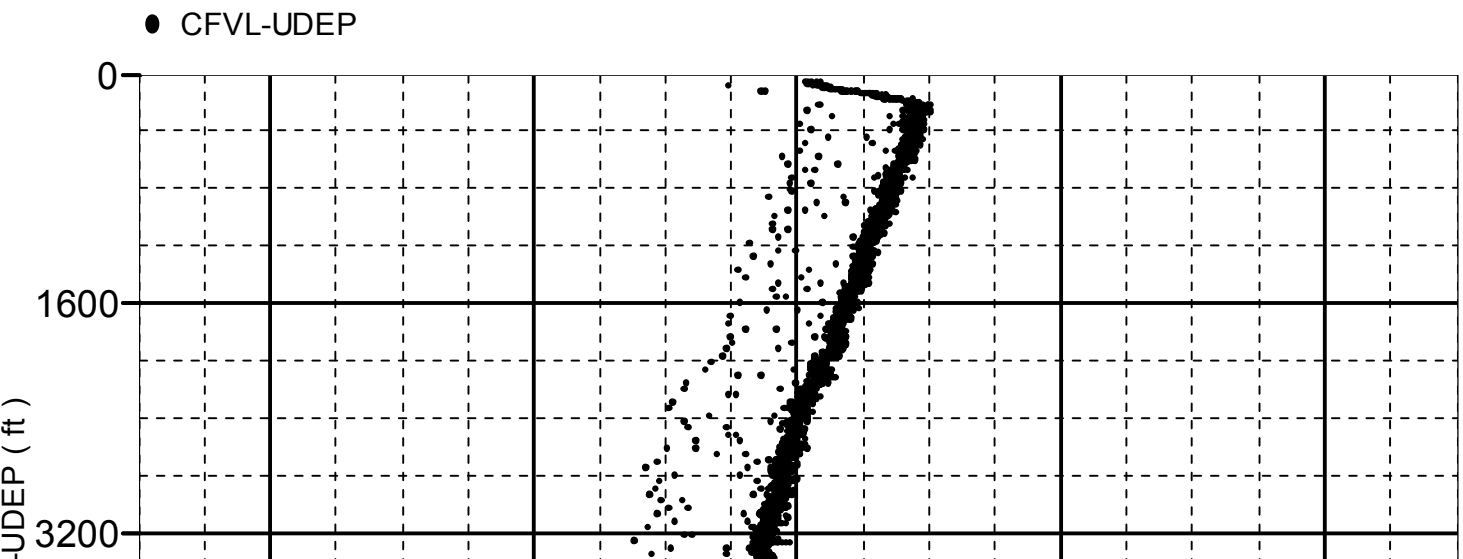
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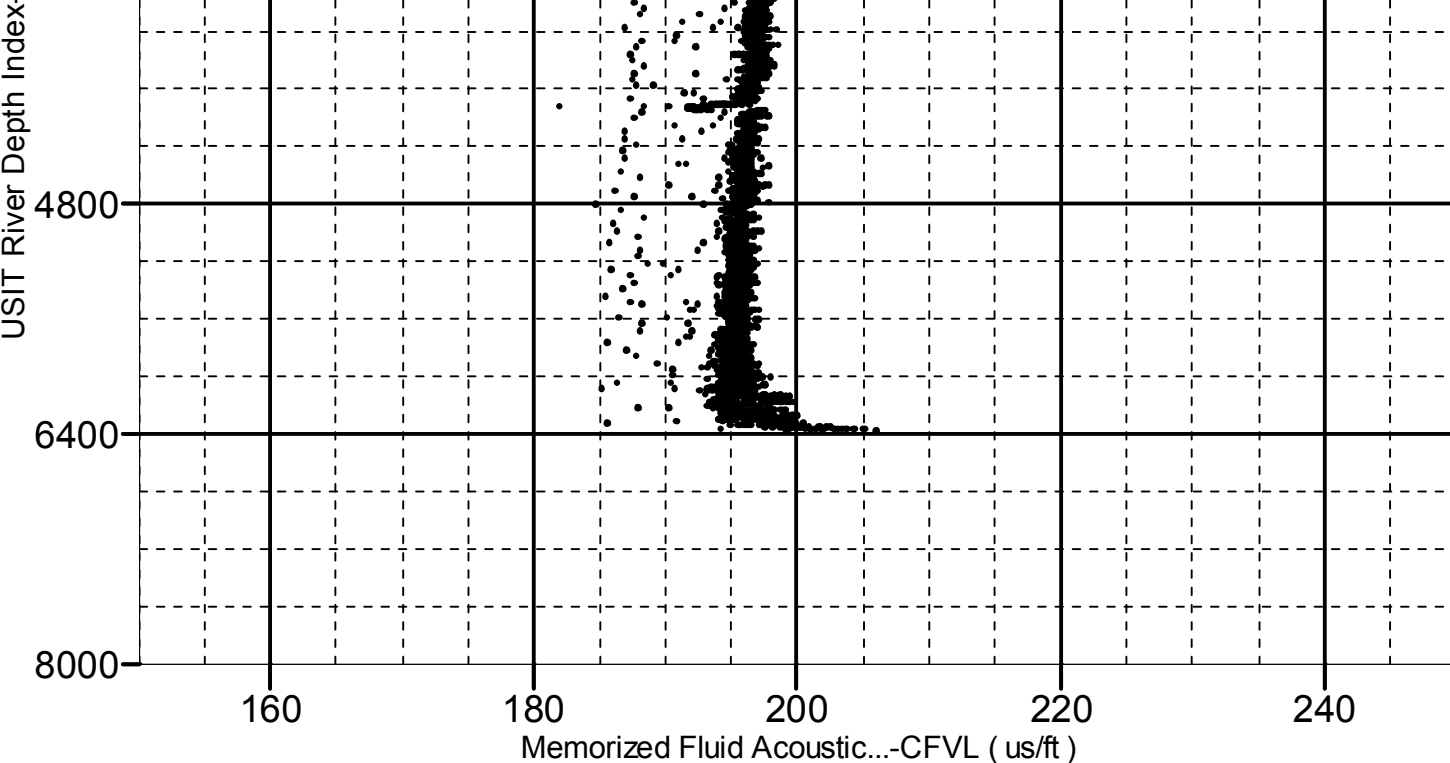
XYZ	Company:Noble Energy Inc Well:RATTLESNAKE FEDERAL LC10-785 ONE: Log[6]:Up:S005
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Fluid Acoustic Slowness vs Depth

2D Cross Plot

Index Range: From 6397.00 to 60.00 ft





XYZ

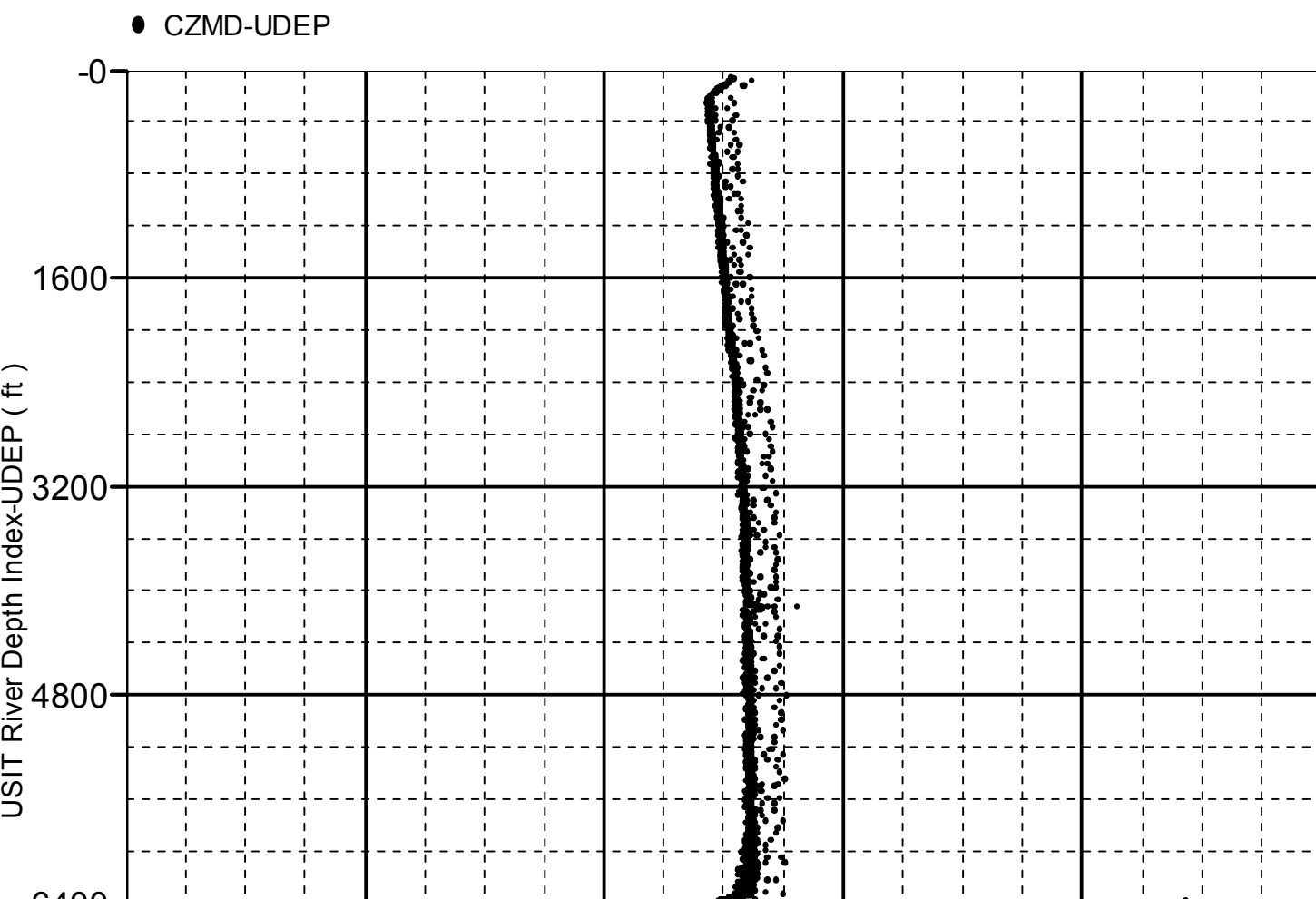
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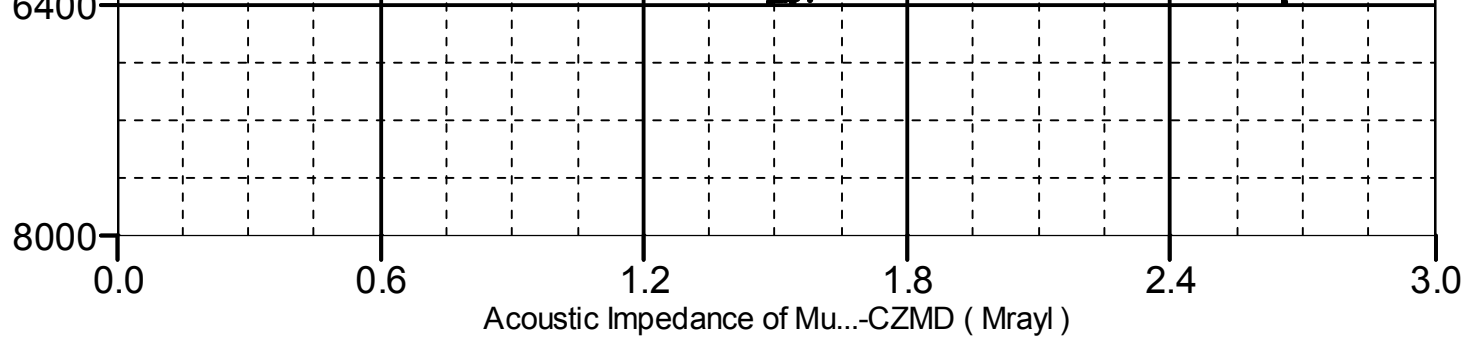
ONE: Log[6]:Up:S005

Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 6397.00 to 60.00 ft





Company:	Noble Energy Inc	Schlumberger
Well:	RATTLESNAKE FEDERAL LC10-785	
Field:	Wildcat	
County:	WELD	
State:	COLORADO	
UltraSonic Summary Print		