Schlumberger

Company: Noble Energy Inc

Well: ANNI LD29-763

Field: Wildcat

County: Weld State: Colorado

UltraSonic Summary Print

County: Weld
Field: Wildcat
Location: SESW: Sec20, T9N, R58W
Well: ANNI LD29-763
Company: Noble Energy Inc

Location:				
SESW: Sec20, T9N, R58W		Elev.:	K.B.	4895.00 ft
SHL: 380'FSL x 1365'FWL			G.L.	4865.00 ft
Lat/Long: 40.73031/-103.89269			D.F.	4894.00 ft
Permanent Datum:	Ground Level	Elev.:	4865.00 f	
Log Measured From:	Kelly Bushing	30.00 ft	above Perm.Datum	
Drilling Measured From:	Kelly Bushing			

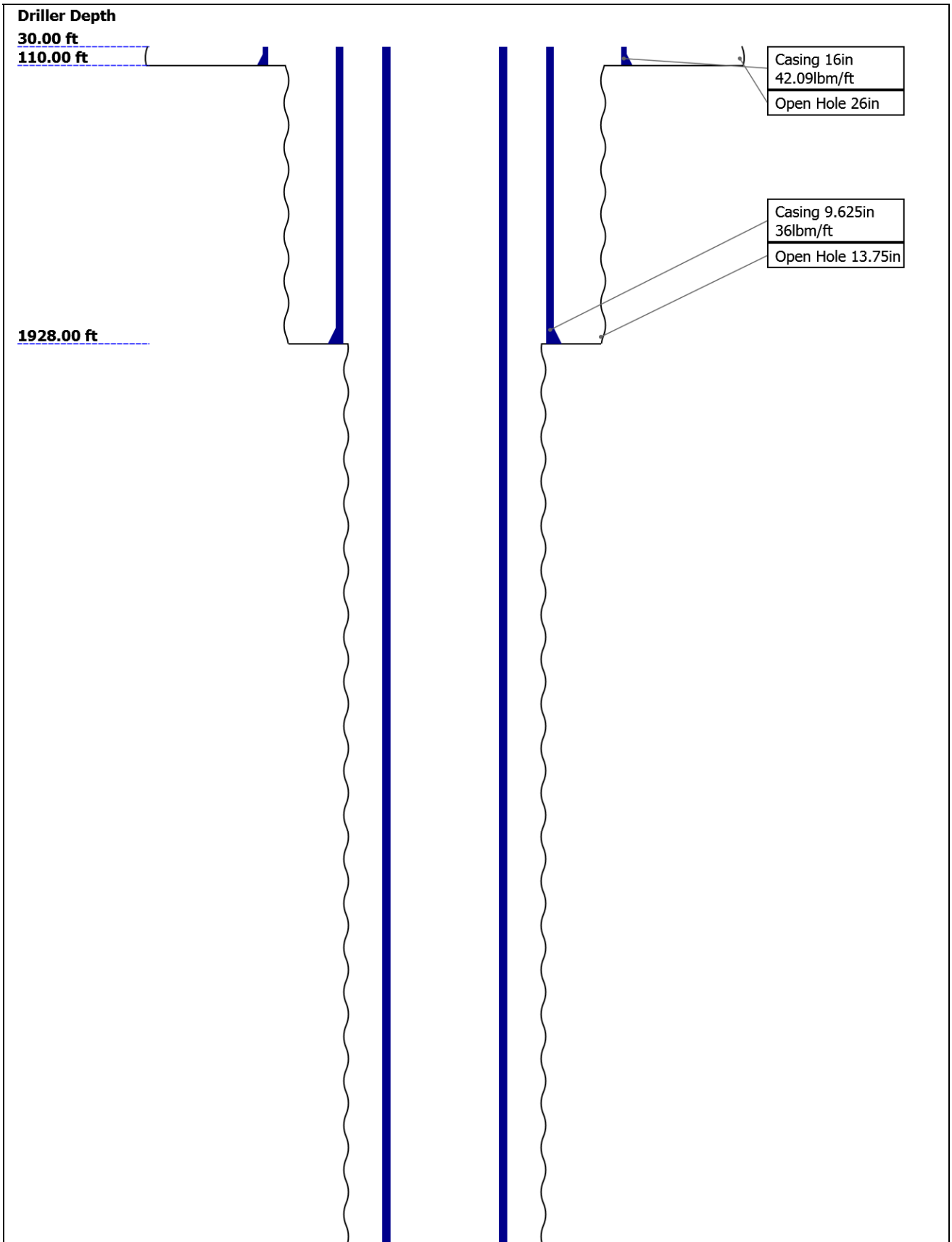
API Serial No.	Section:	Township:	Range:
05-123-43288	20	9N	58W

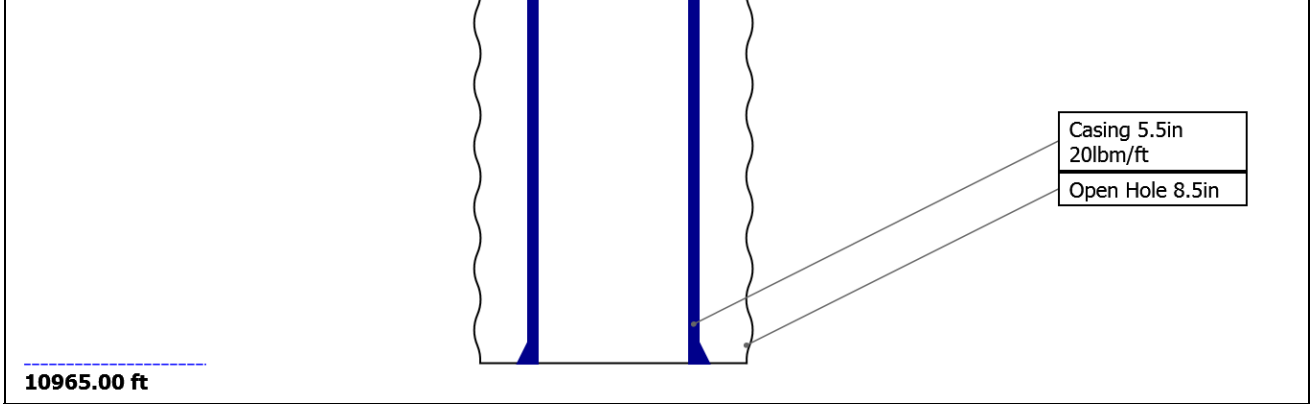
Logging Date	05-Nov-2016		
Run Number	One		
Depth Driller	10965.00 ft		
Schlumberger Depth	10965.00 ft		
Bottom Log Interval	6000.00 ft		
Top Log Interval	60.00 ft		
Casing Fluid Type	BRINE		
Salinity			
Density	9.3 lbm/gal		
Fluid Level	8.00 ft		
BIT/CASING/TUBING STRING			
Bit Size	8.50 in		
From	1928.00 ft		
To	10965.00 ft		
Casing/Tubing Size	5.5 in		
Weight	20 lbm/ft		
Grade	N/A		
From	30.00 ft		
To	10965.00 ft		
Max Recorded Temperatures	210 degF		
Logger on Bottom Time	05-Nov-2016	17:34:00	
Unit Number Location:	9115	Ft Morgan	
Recorded By	B Kesek		
Witnessed By	Bill Mansfield		

Disclaimer

Contents

Well Sketch



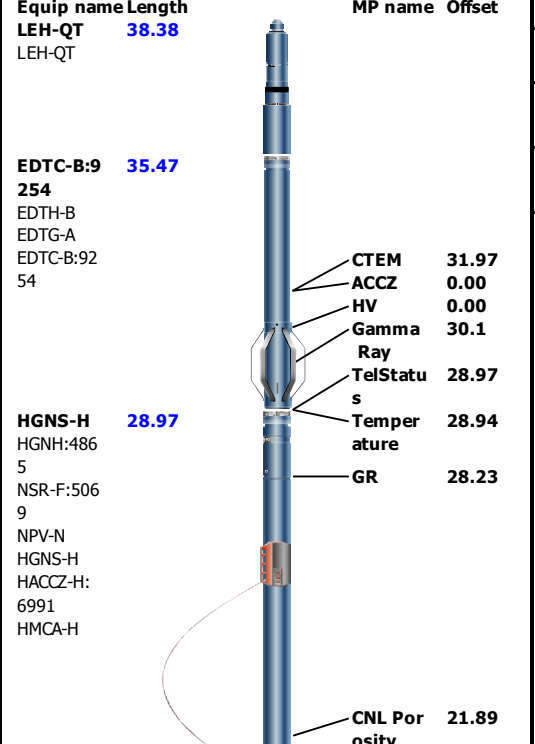


Borehole Size/Casing/Tubing Record

Bit						
Bit Size (in)	26	13.75	8.5			
Top Driller (ft)	30	110	1928			
Top Logger (ft)	30	110	1928			
Bottom Driller (ft)	110	1928	10965			
Bottom Logger (ft)	110	1928	10965			
Casing						
Size (in)	16	9.625	5.5			
Weight (lbm/ft)	42.09	36	20			
Inner Diameter (in)	15.511	8.921	4.778			
Grade	N/A	N/A	N/A			
Top Driller (ft)	30	30	30			
Top Logger (ft)	30	30	30			
Bottom Driller (ft)	110	1928	10965			
Bottom Logger (ft)	110	1928	10965			

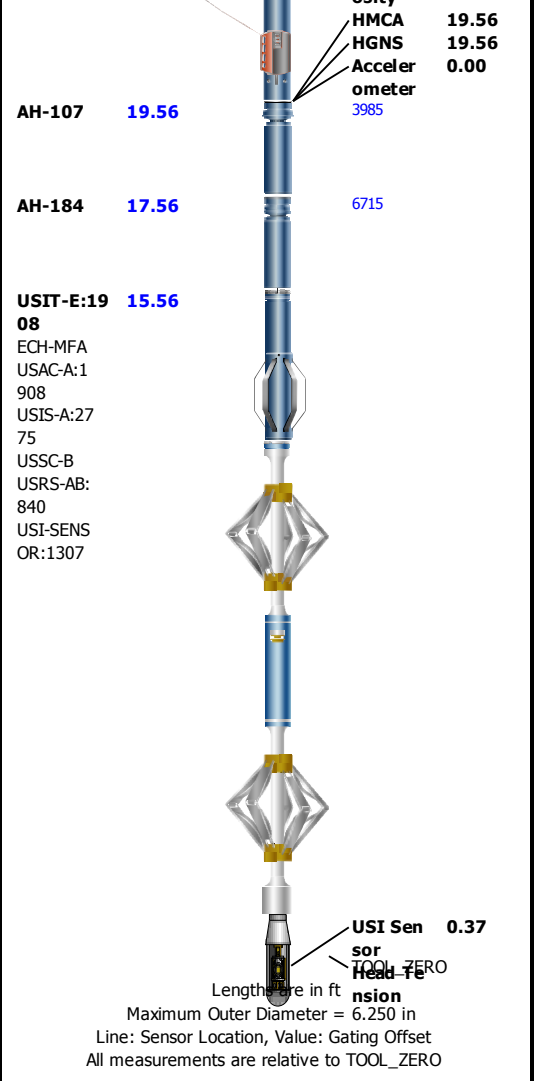
Remarks and Equipment Summary

One: Toolstring



One: Remarks

This is the first run in the hole.
Tool ran as per toolsketch.
Houma kit, small hole kit and inline centralisers used for centralisation.
Main Pass recorded at 2500PSI, record pass at 0PSI.



Depth Summary

	One		
Depth Measuring Device			
Type	IDW-JA		
Serial Number	5797		
Calibration Date			
Calibrator Serial Number			
Calibration Cable Type	7-46 AXXS		
Wheel Correction 1	-5		
Wheel Correction 2	-3		
Tension Device			
Type	CMTD-B/A		
Serial Number	146		
Calibration Date			
Calibrator Serial Number			
Number of Calibration Points	0		
Logging Cable			
Type	7-46A-XS		
Serial Number			
Length	22000.00 ft		
Conveyance Type	Wireline		

Rig Type			

One: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		
Stretch Correction		
Tool Zero Check At Surface		

One

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
One	Main[4]:Up	Up	56.27 ft	6040.69 ft	05-Nov-2016 6:01:26 PM	05-Nov-2016 7:39:23 PM	ON	6.35 ft	Yes

All depths are referenced to toolstring zero

Log

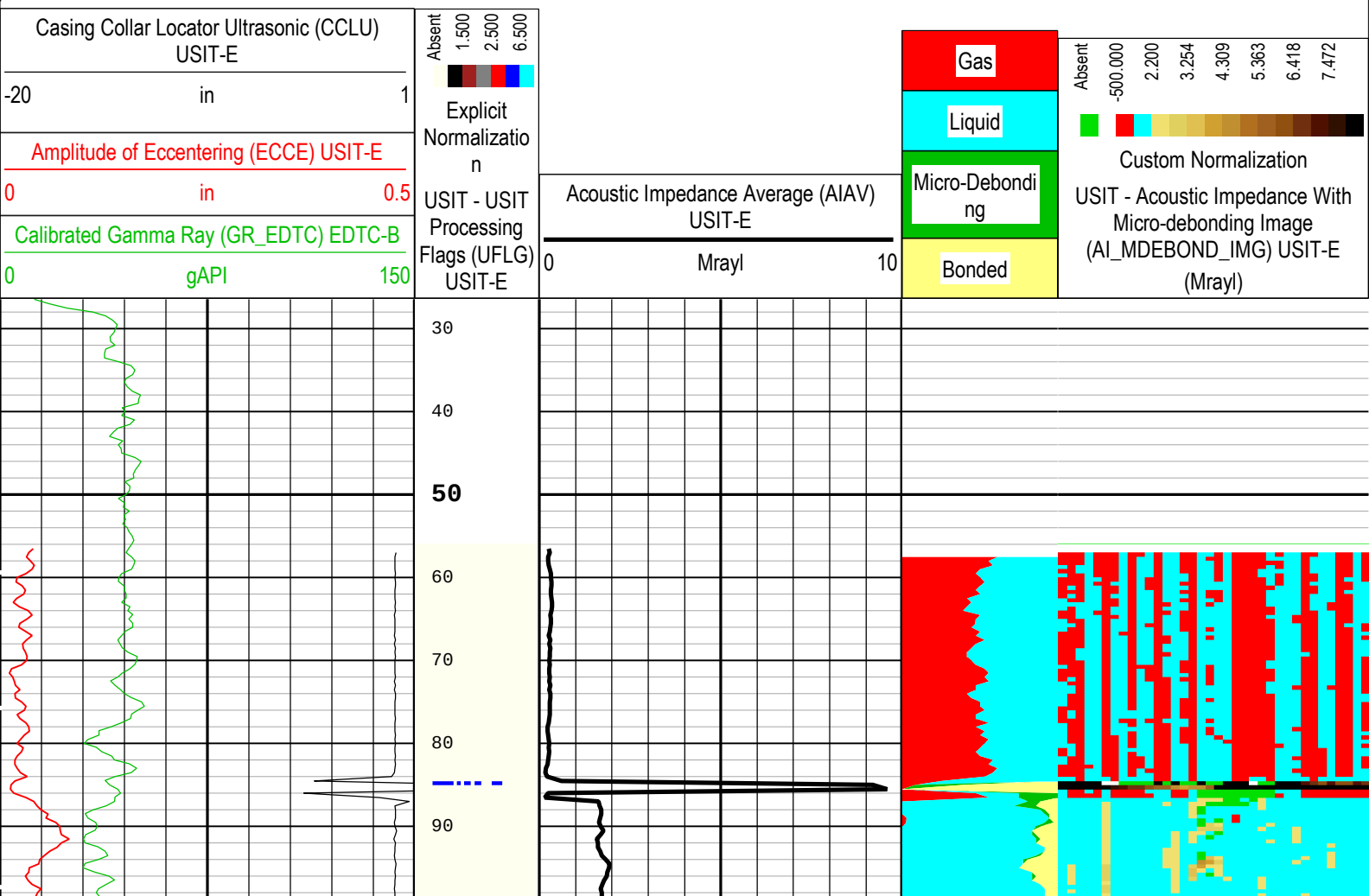
Company:Noble Energy Inc Well:ANNI LD29-763

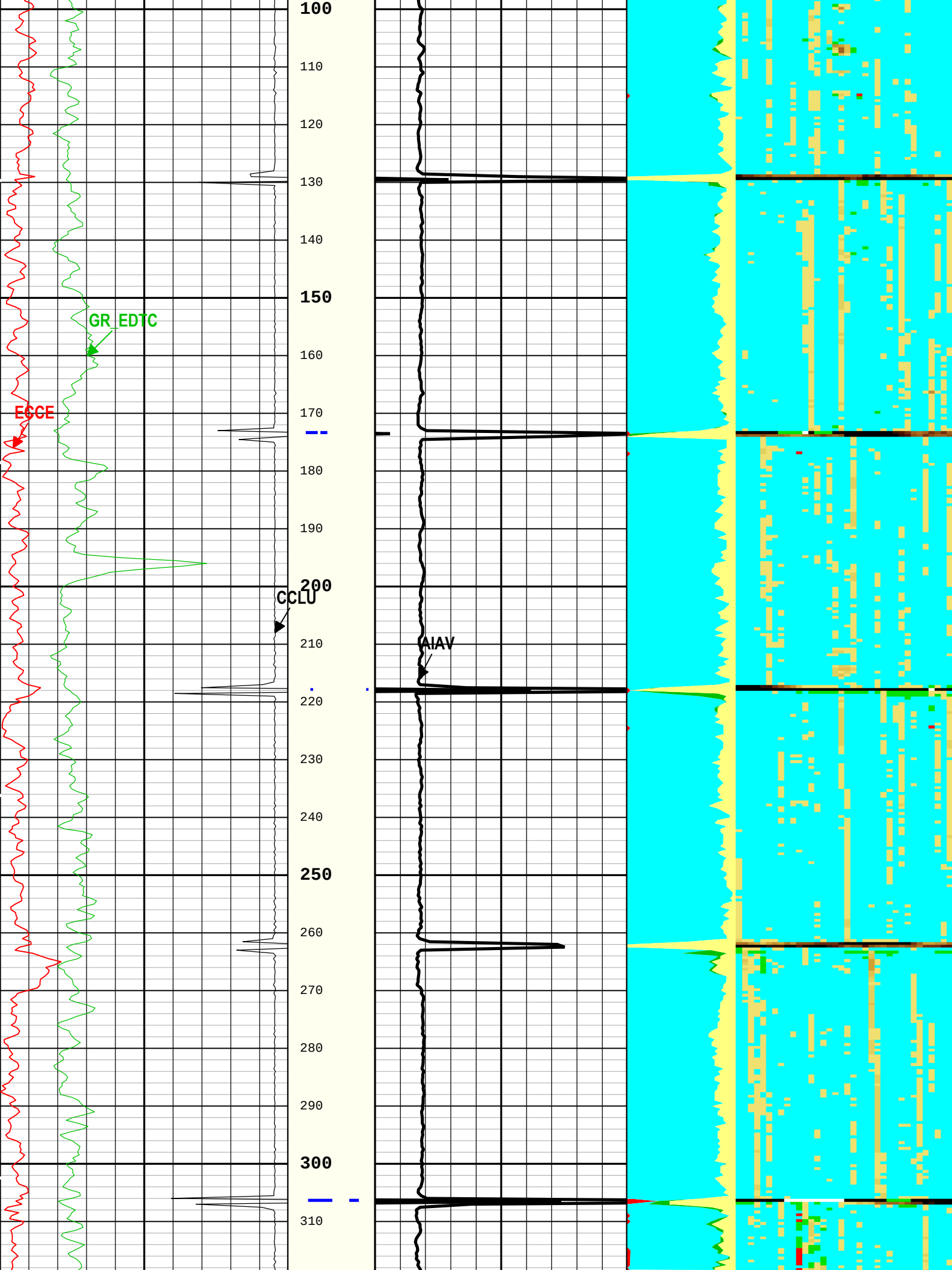
One: Main[4]:Up:S004

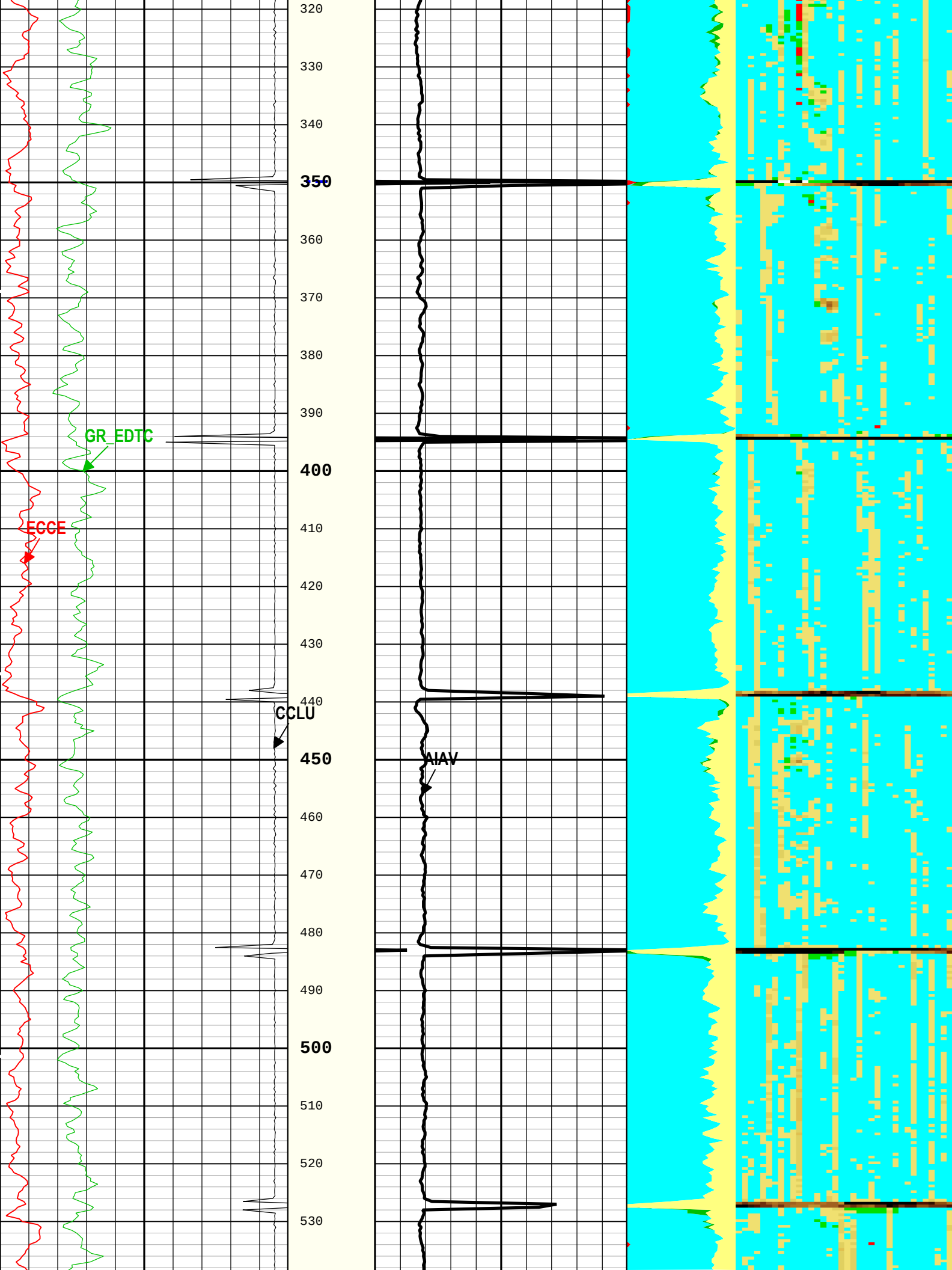
Description: Format: Log (DJ Basin Ultrasonic Cement Summary Report) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth

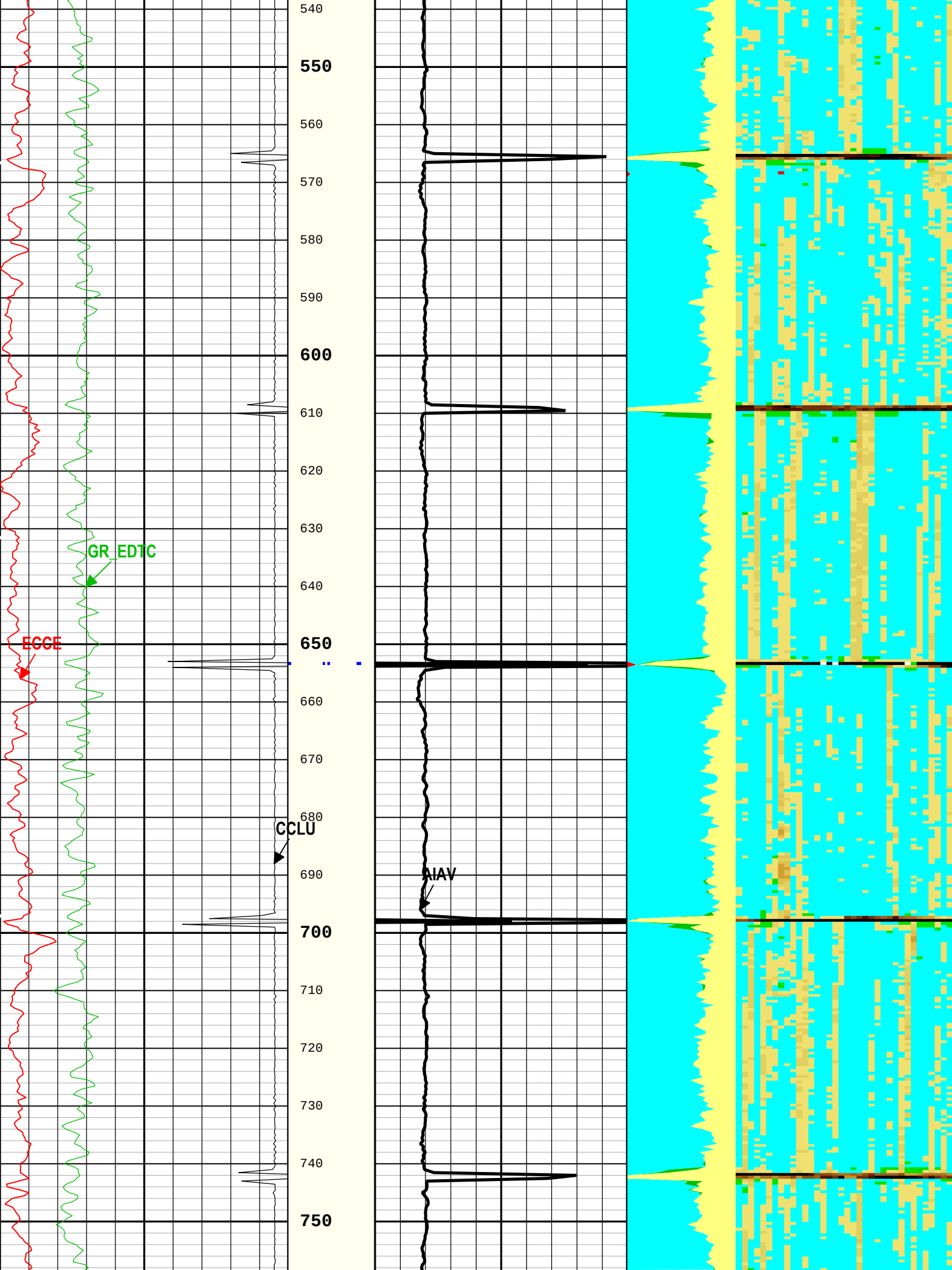
Creation Date: 05-Nov-2016 20:23:47

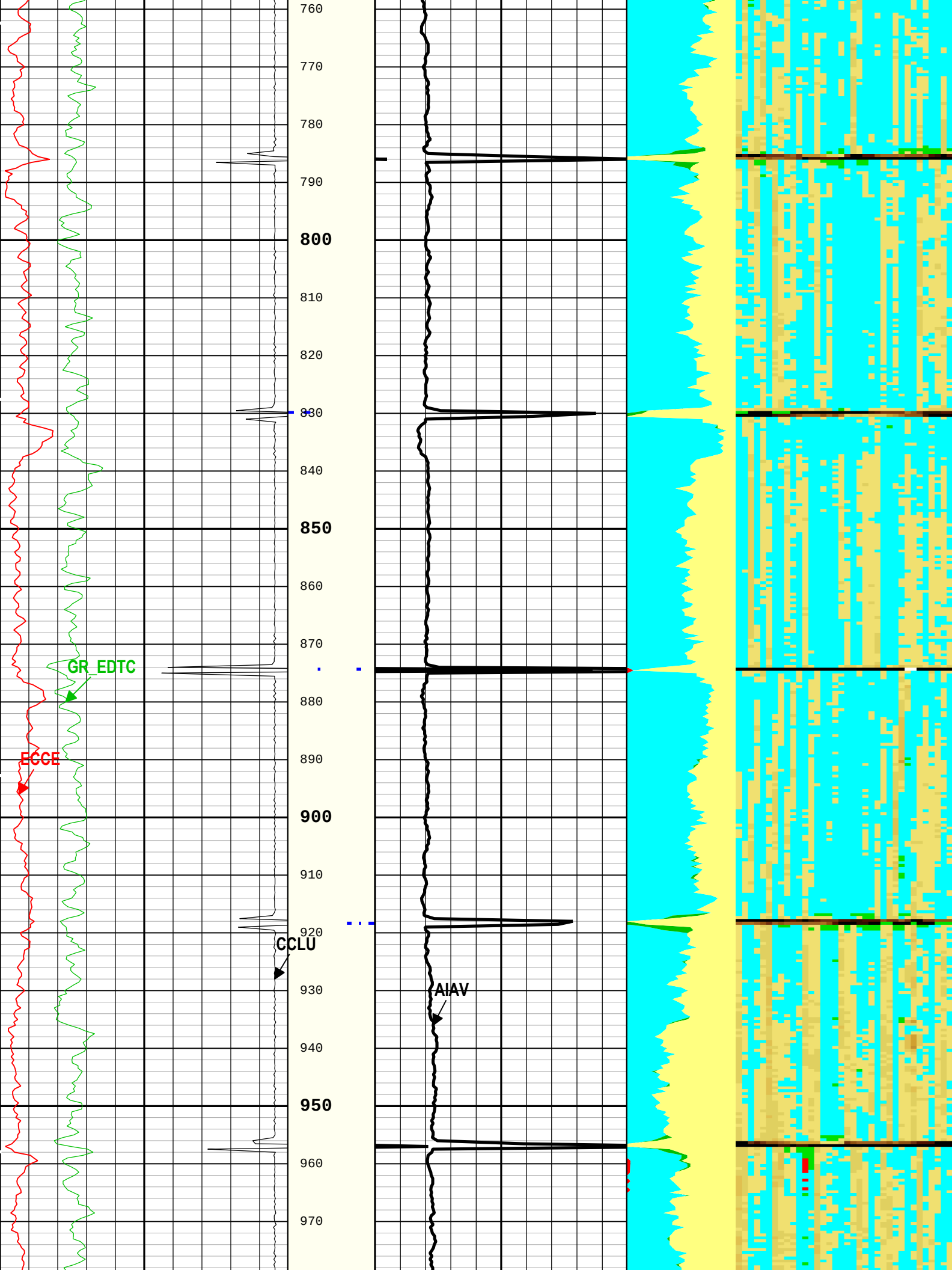
TIME_1900 - Time Marked every 60.00 (s)

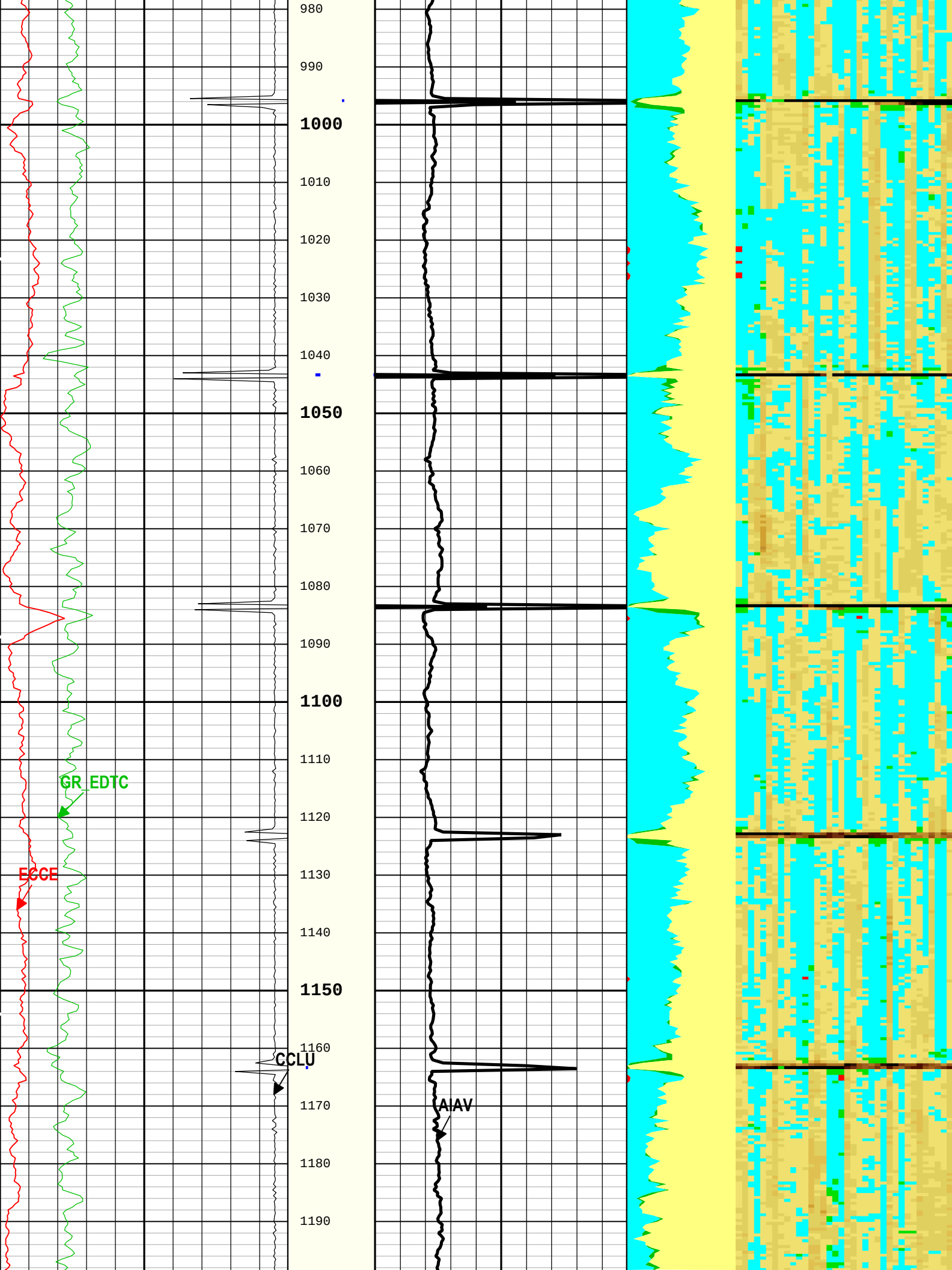


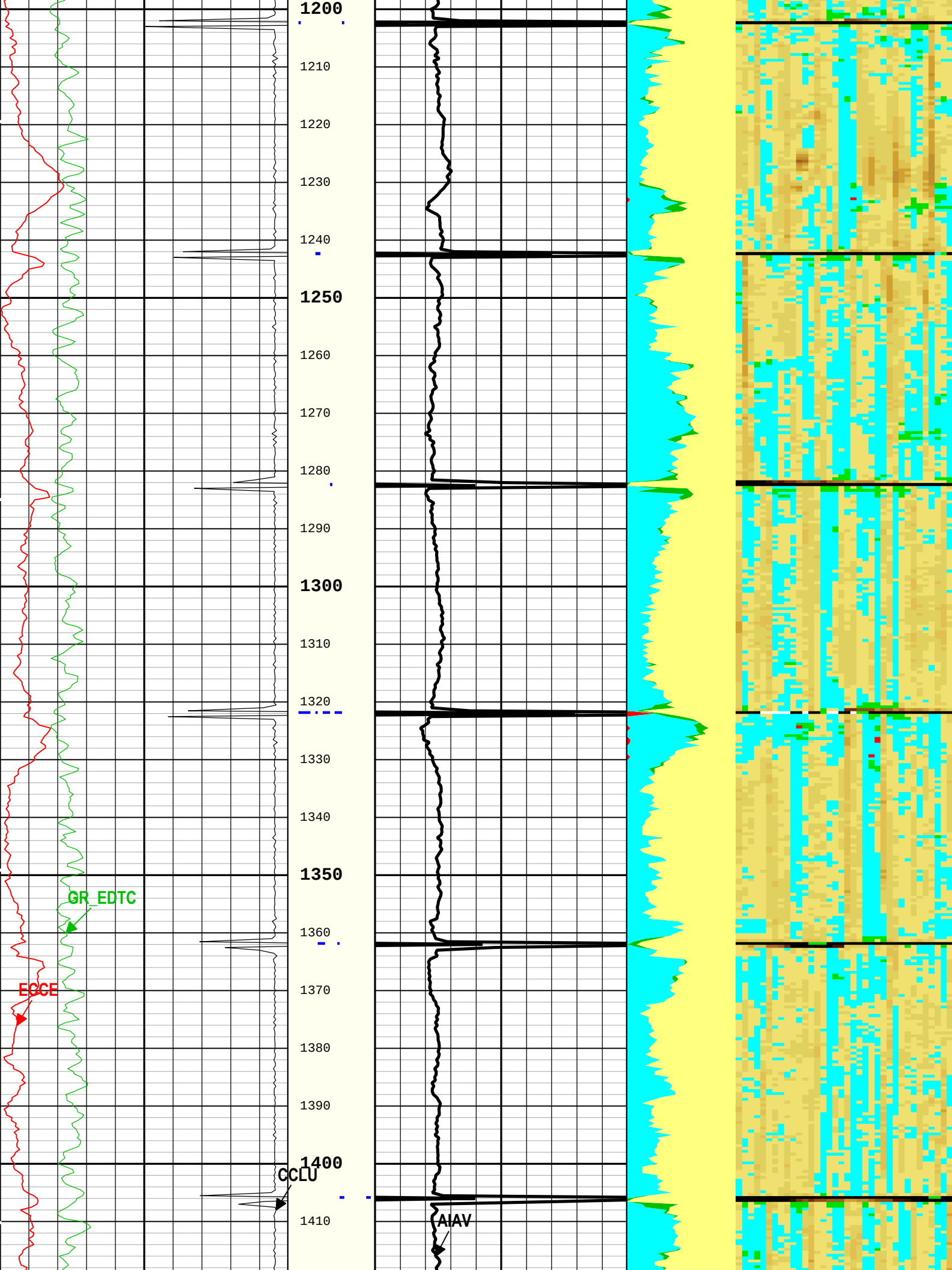

GR_EDTC
ECGE
CCLU
AIAV
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310

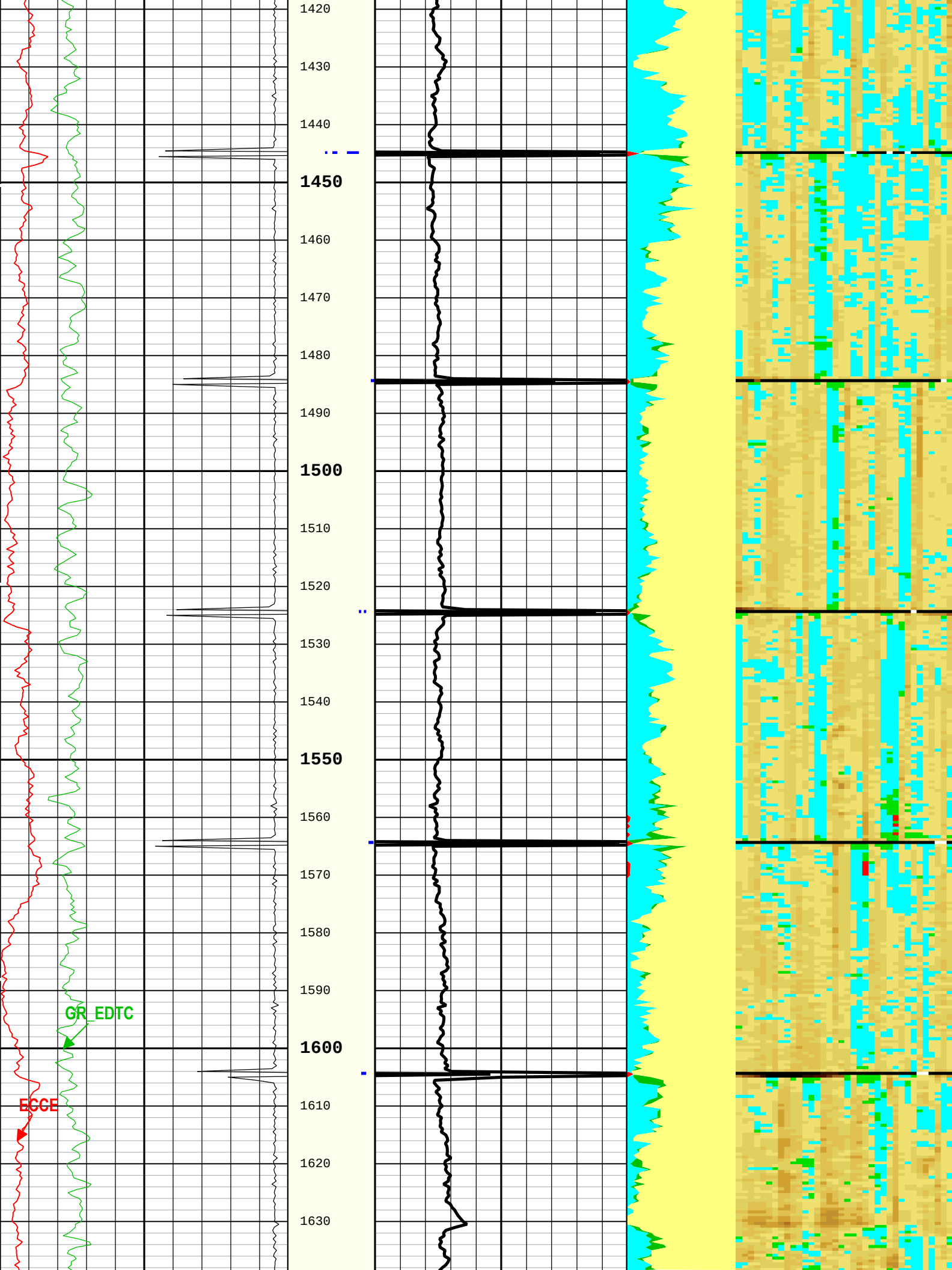

320
330
340
350
360
370
380
390
GR_EDTC
400
ECCE
410
420
430
440
CCLU
450
AIAV
460
470
480
490
500
510
520
530

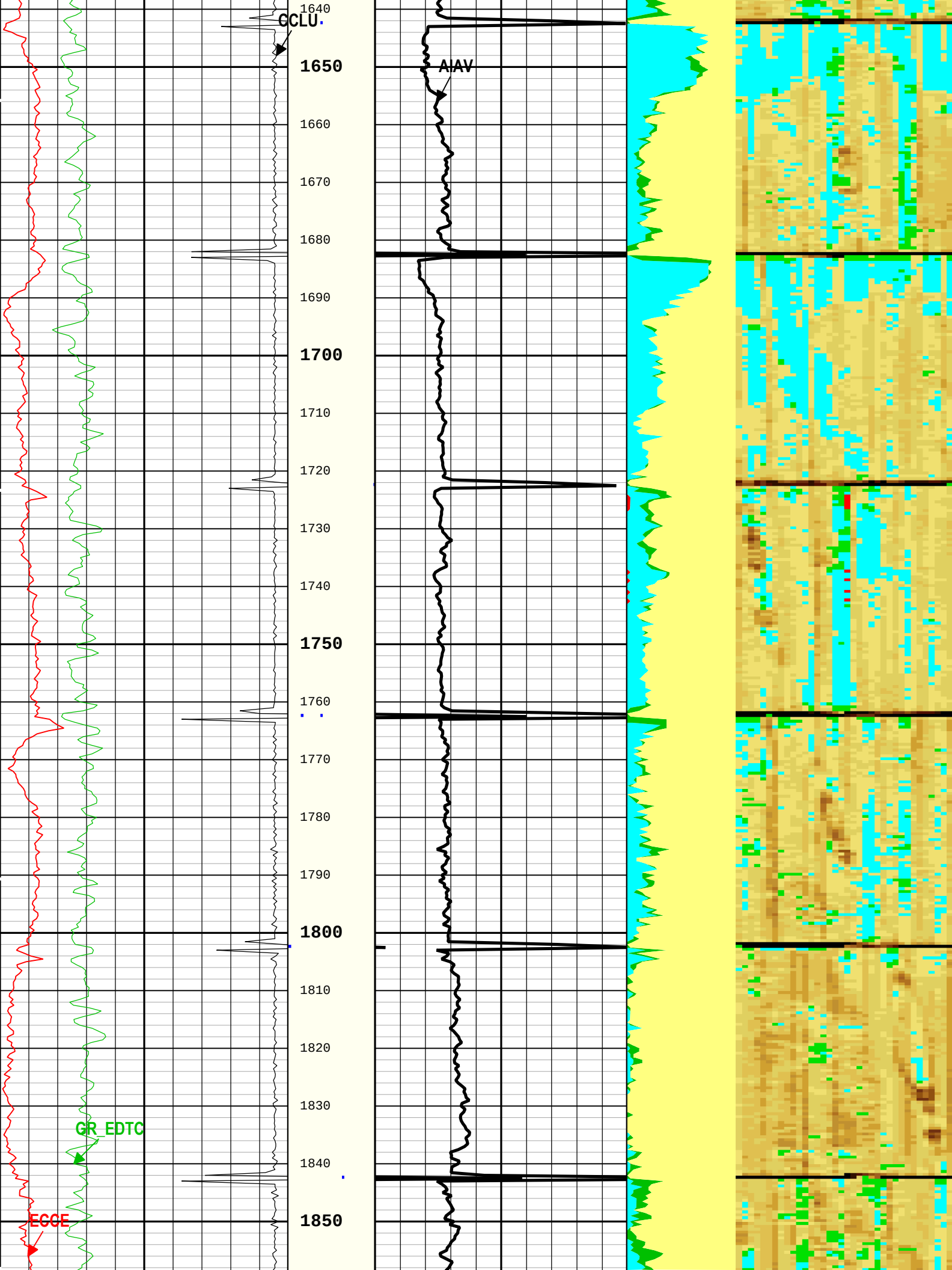

GR_EDTC
ECCE
CCLU
AIAV
540
550
560
570
580
590
600
610
620
630
640
650
660
670
680
690
700
710
720
730
740
750

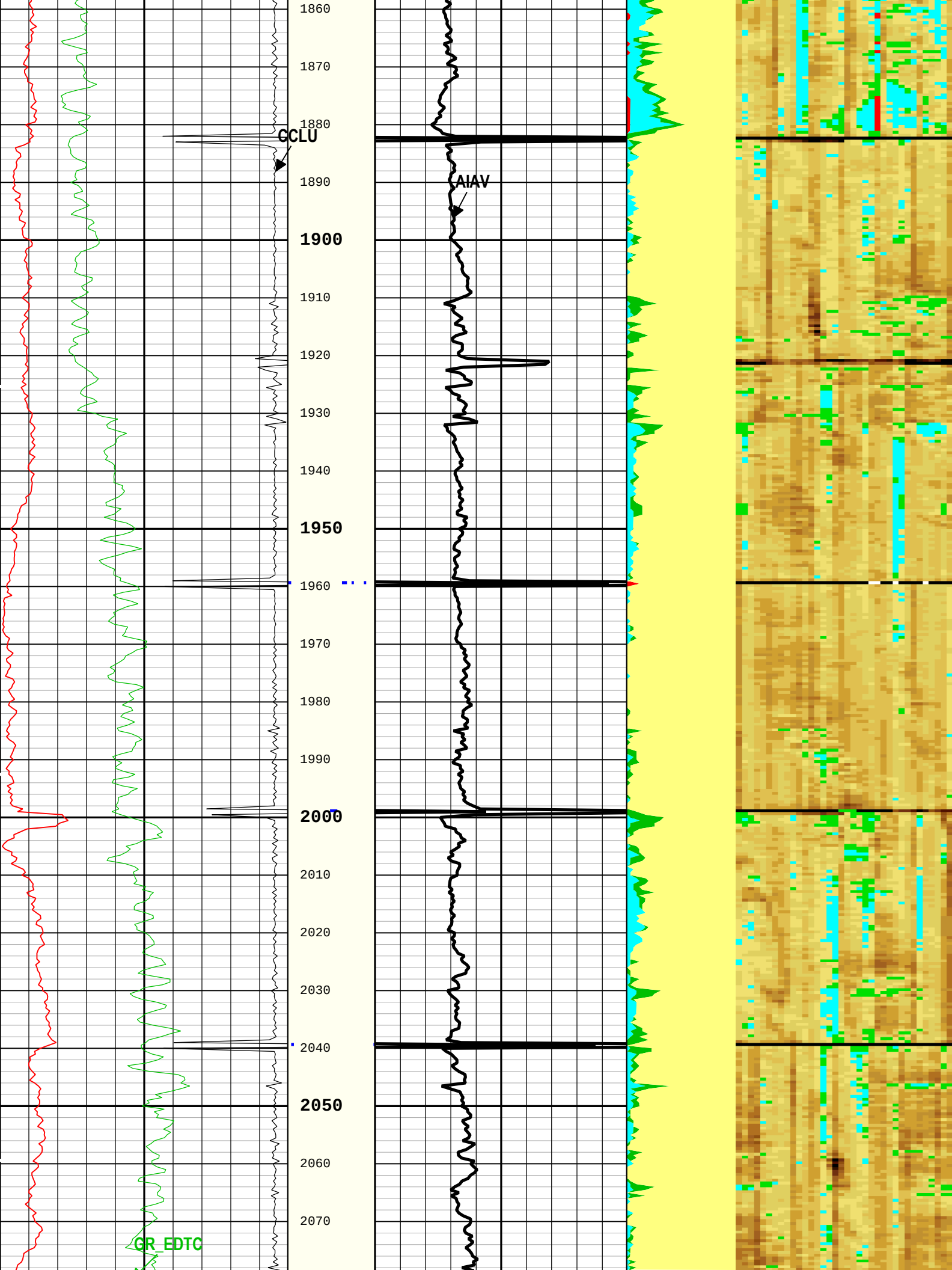

760
770
780
790
800
810
820
830
840
850
860
870
880
890
900
910
920
930
940
950
960
970
GR_EDTC
ECCE
CCLU
AIAV

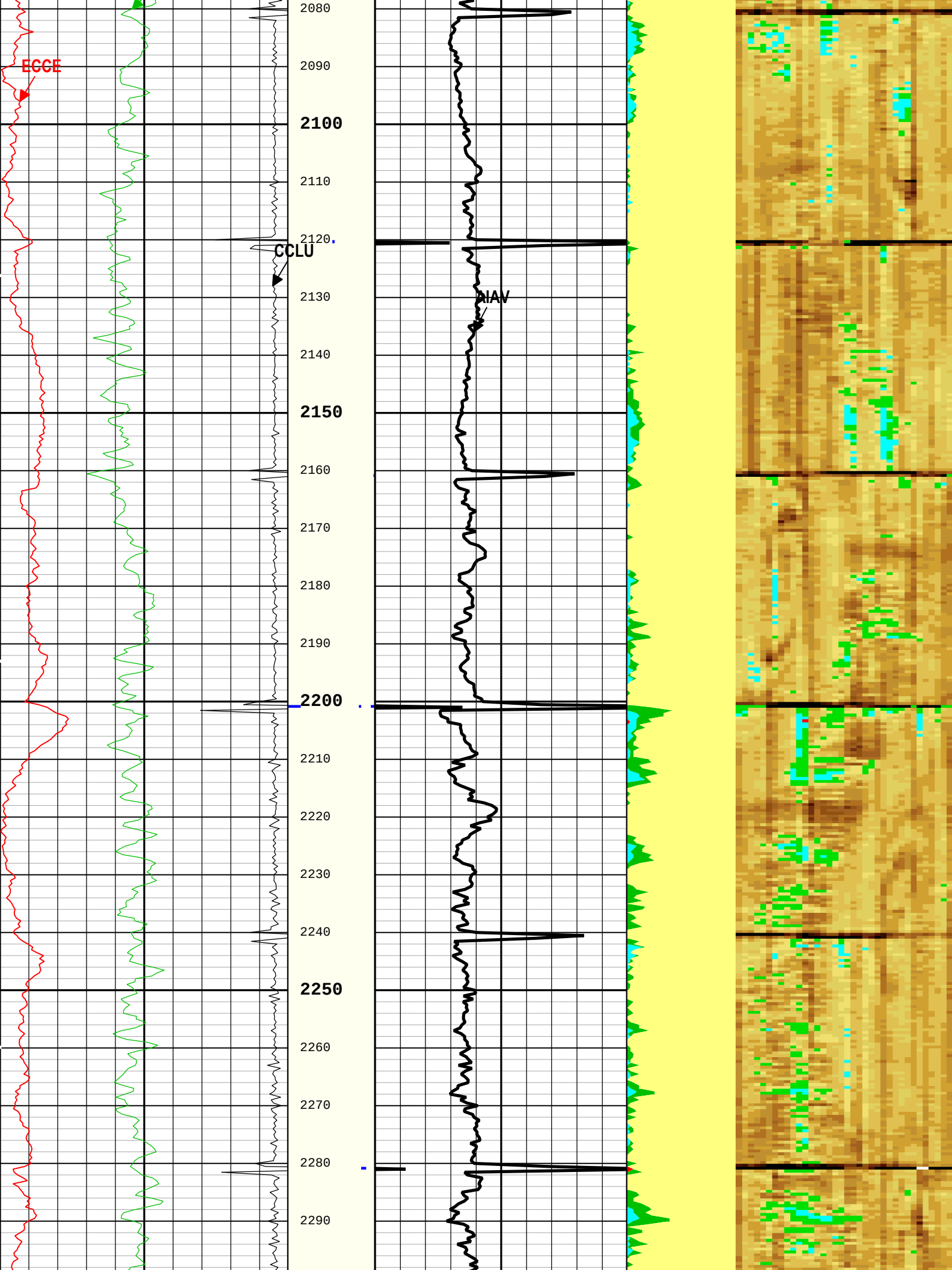

980
990
1000
1010
1020
1030
1040
1050
1060
1070
1080
1090
1100
1110
1120
1130
1140
1150
1160
1170
1180
1190
GR_EDTC
ECCE
CCLU
AIAV

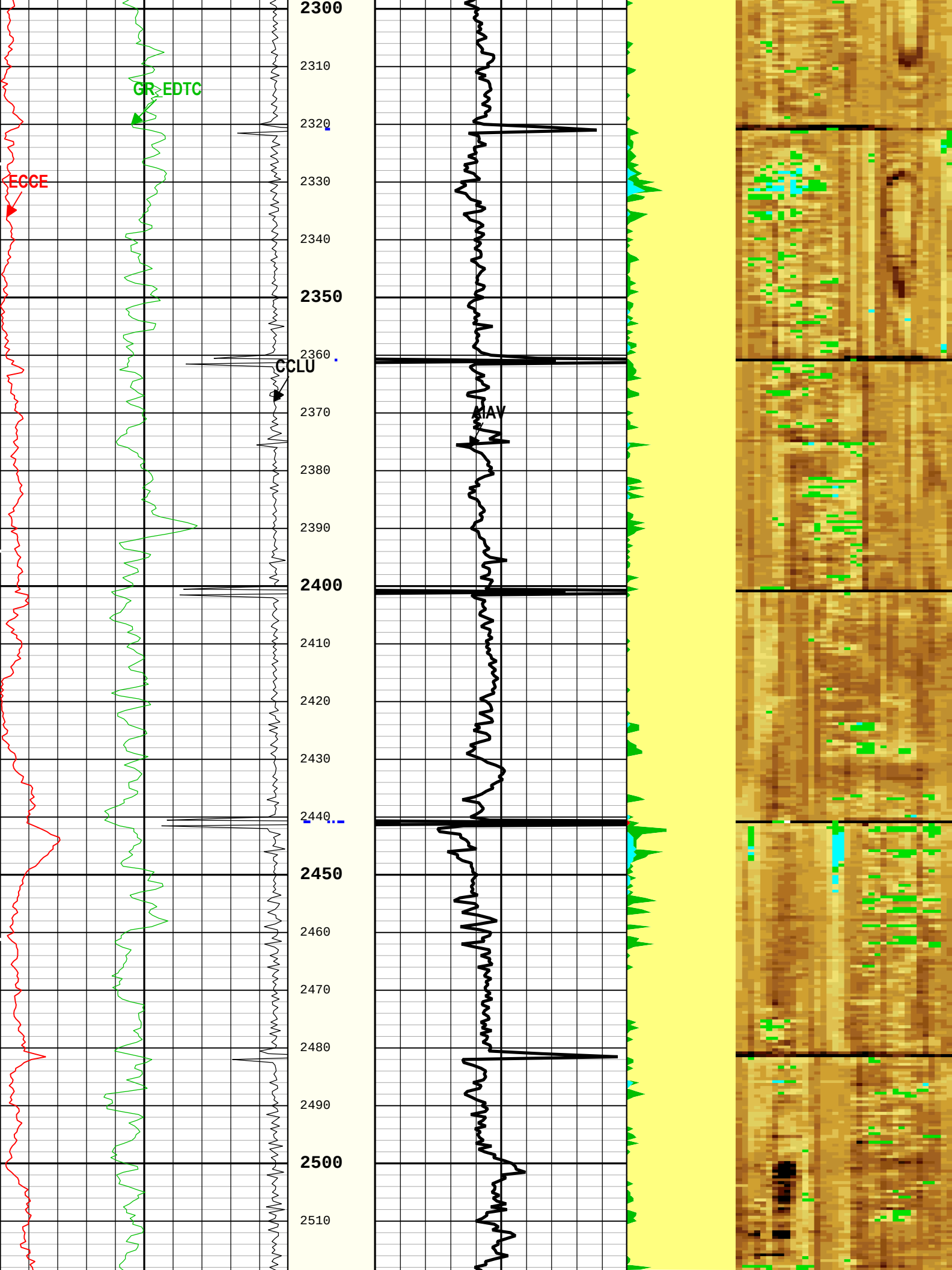

1200
1210
1220
1230
1240
1250
1260
1270
1280
1290
1300
1310
1320
1330
1340
1350
1360
1370
1380
1390
1400
1410
GR_EDTC
ECCE
CCLU
AIAV

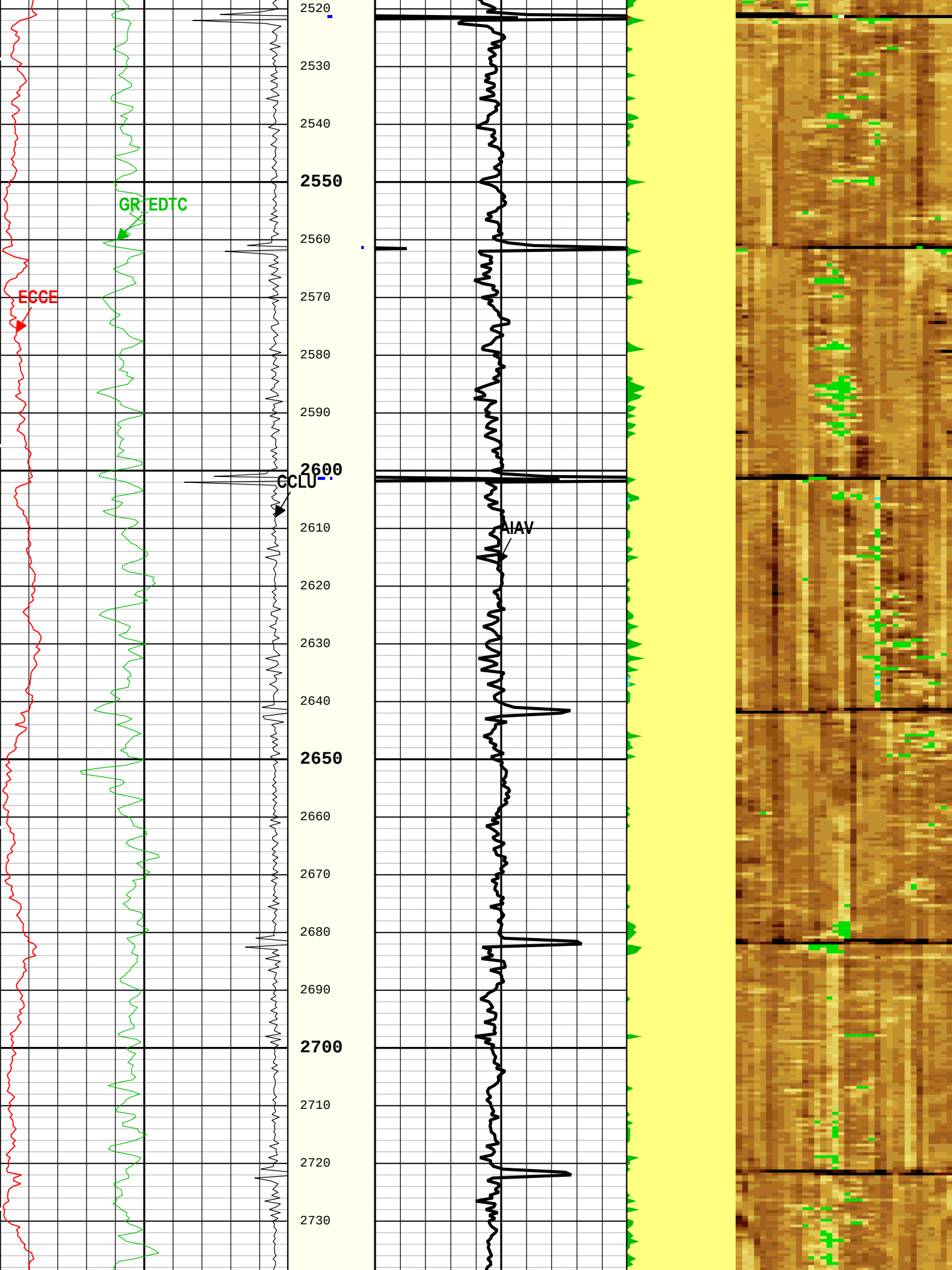

GR_EDTC
ECCE
1420
1430
1440
1450
1460
1470
1480
1490
1500
1510
1520
1530
1540
1550
1560
1570
1580
1590
1600
1610
1620
1630

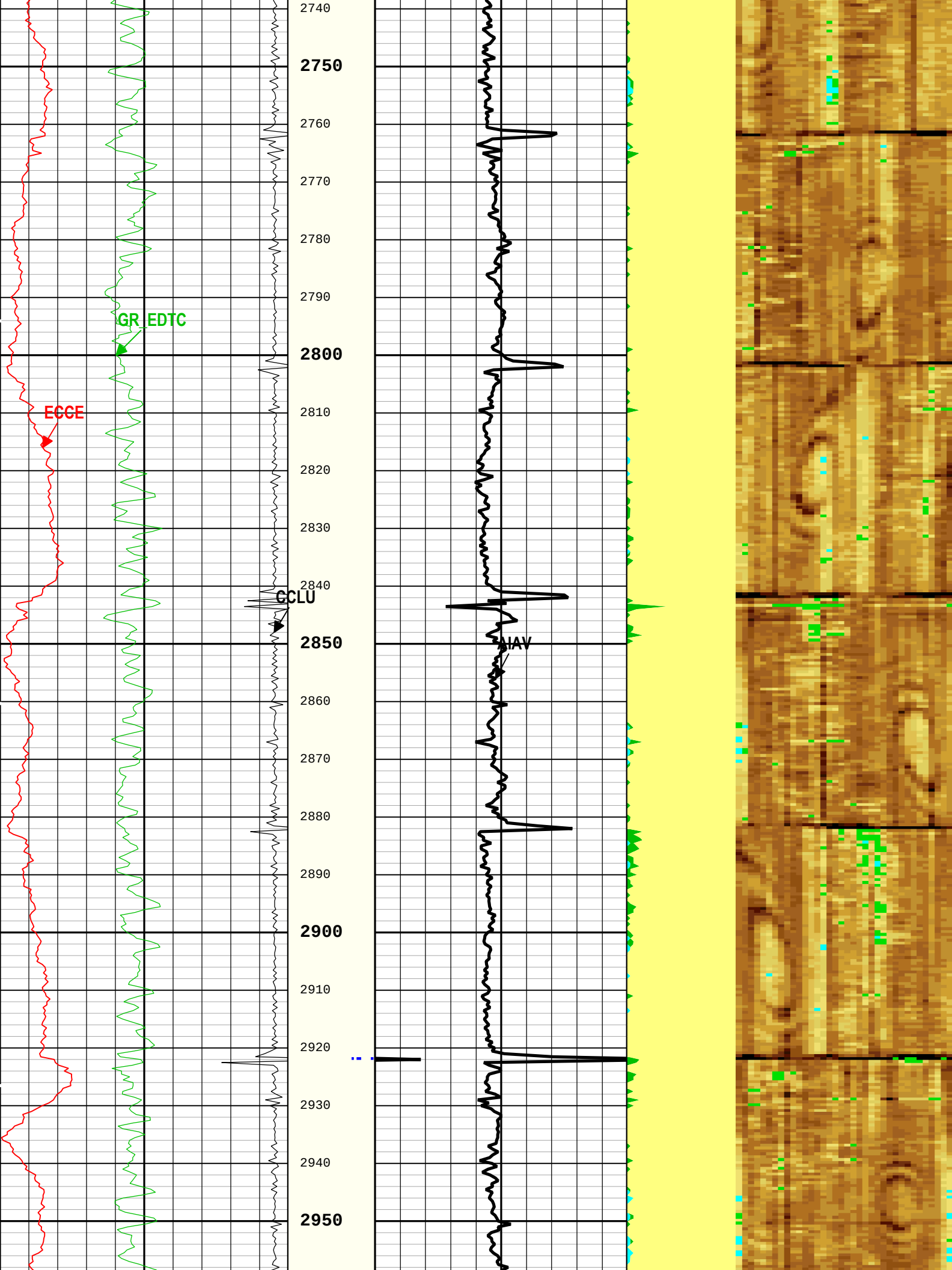

CCLU
AIAV
GR_EDTC
ECGE
1640
1650
1660
1670
1680
1690
1700
1710
1720
1730
1740
1750
1760
1770
1780
1790
1800
1810
1820
1830
1840
1850

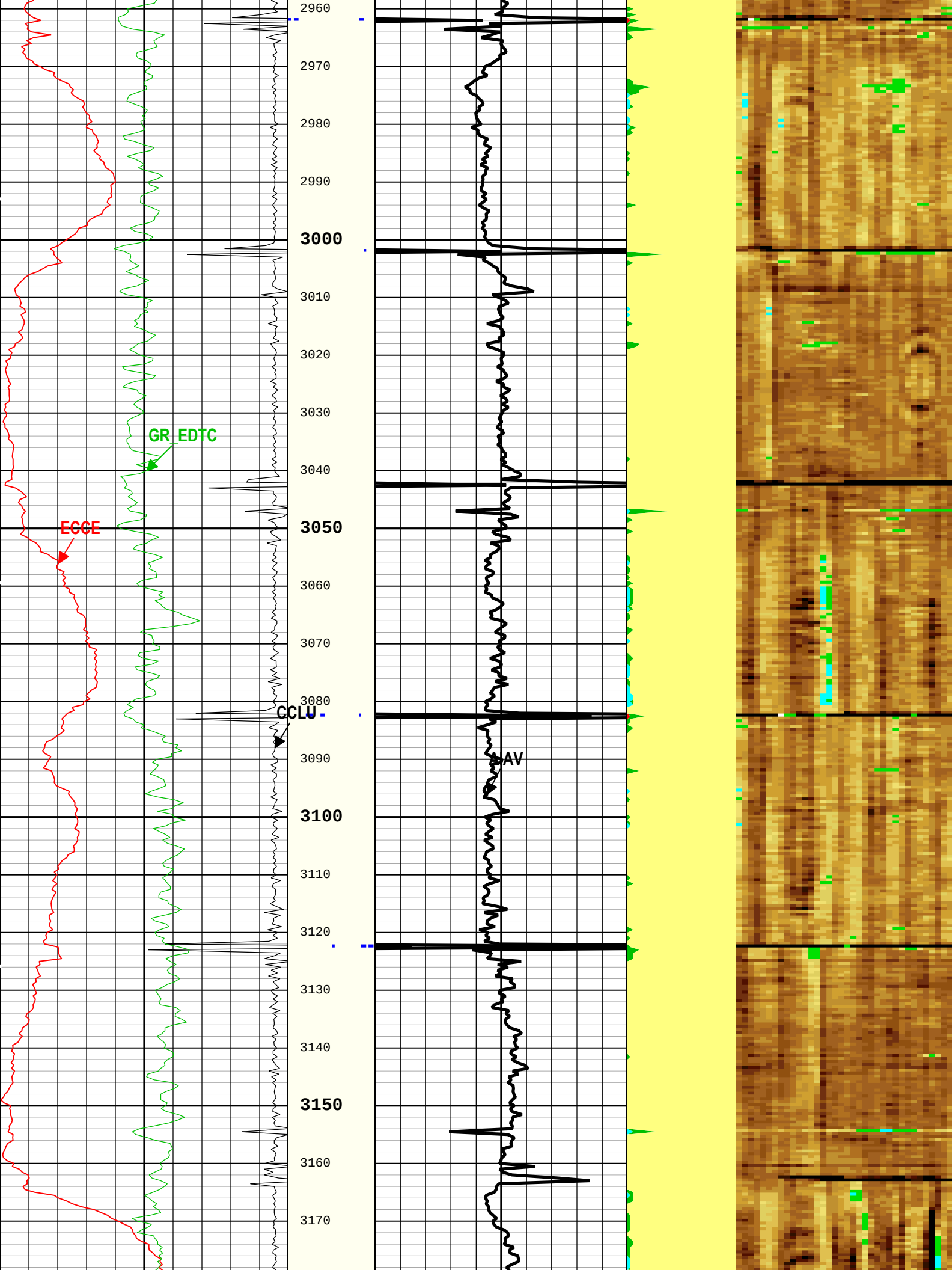

1860
1870
1880
CCLU
1890
AIAV
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
2030
2040
2050
2060
2070
GR_EDTC

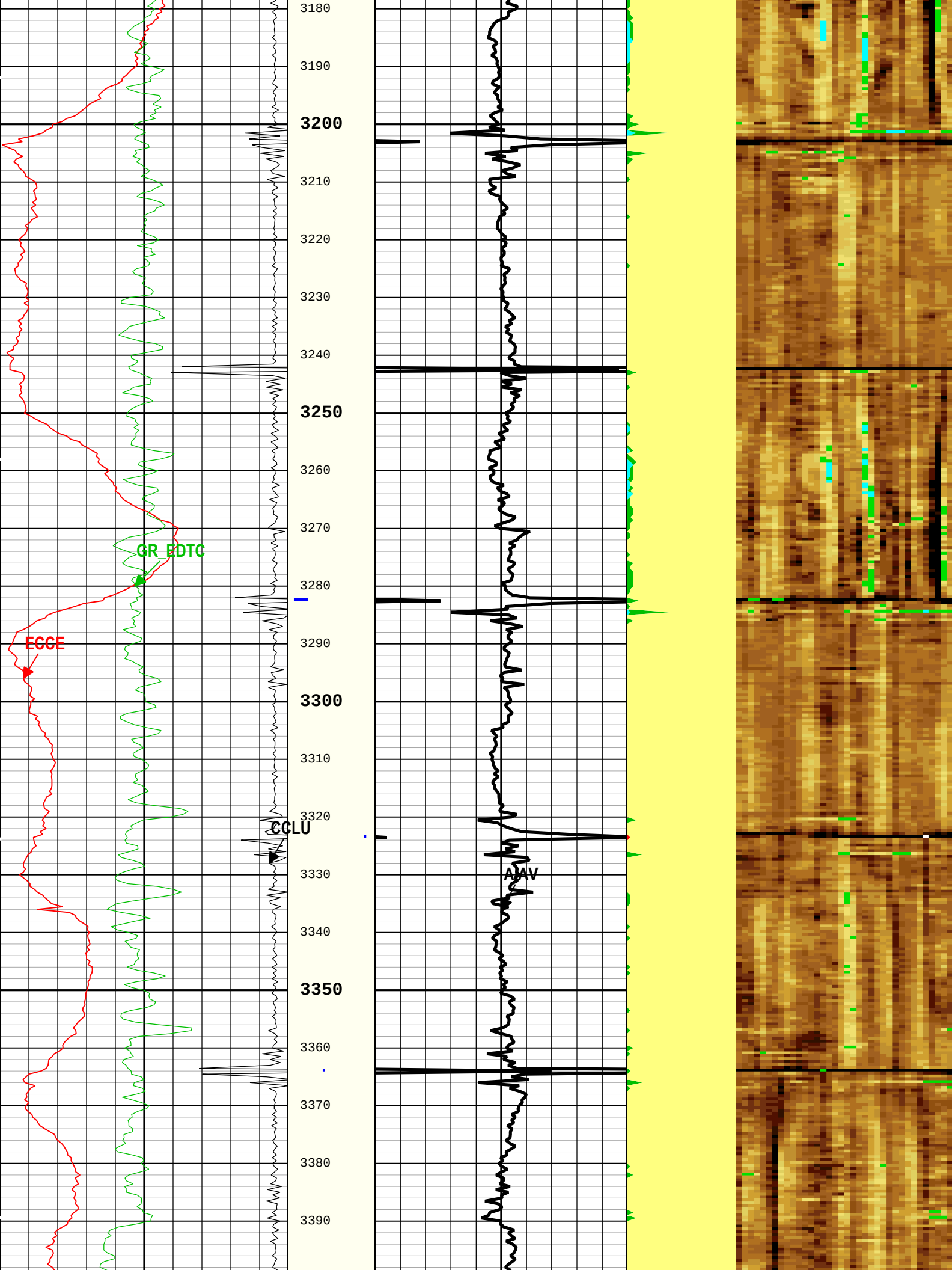

ECCE
CCLU
HAV
2080
2090
2100
2110
2120
2130
2140
2150
2160
2170
2180
2190
2200
2210
2220
2230
2240
2250
2260
2270
2280
2290

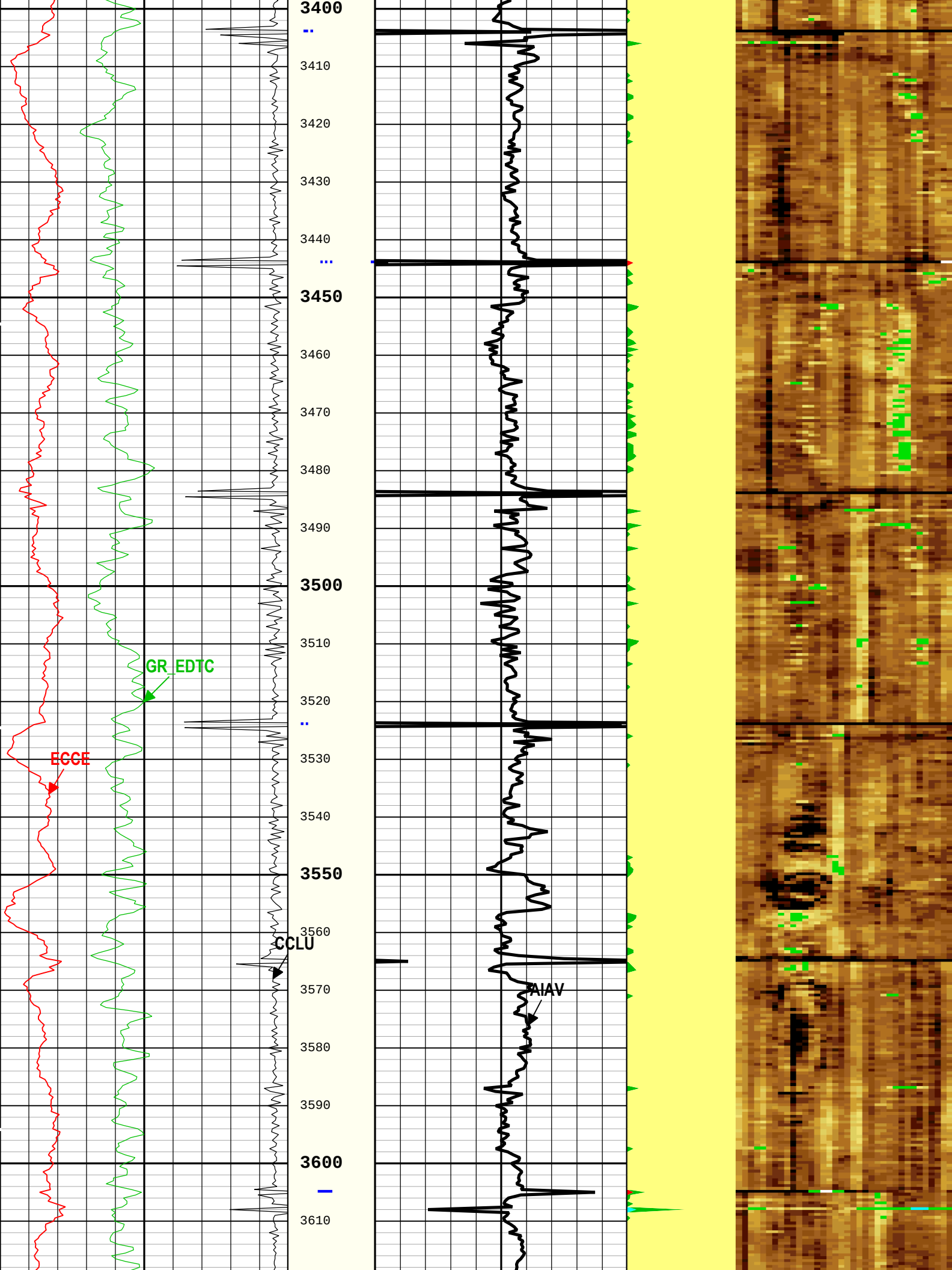

GR_EDTC
ECCE
CCLU
2300
2310
2320
2330
2340
2350
2360
2370
2380
2390
2400
2410
2420
2430
2440
2450
2460
2470
2480
2490
2500
2510

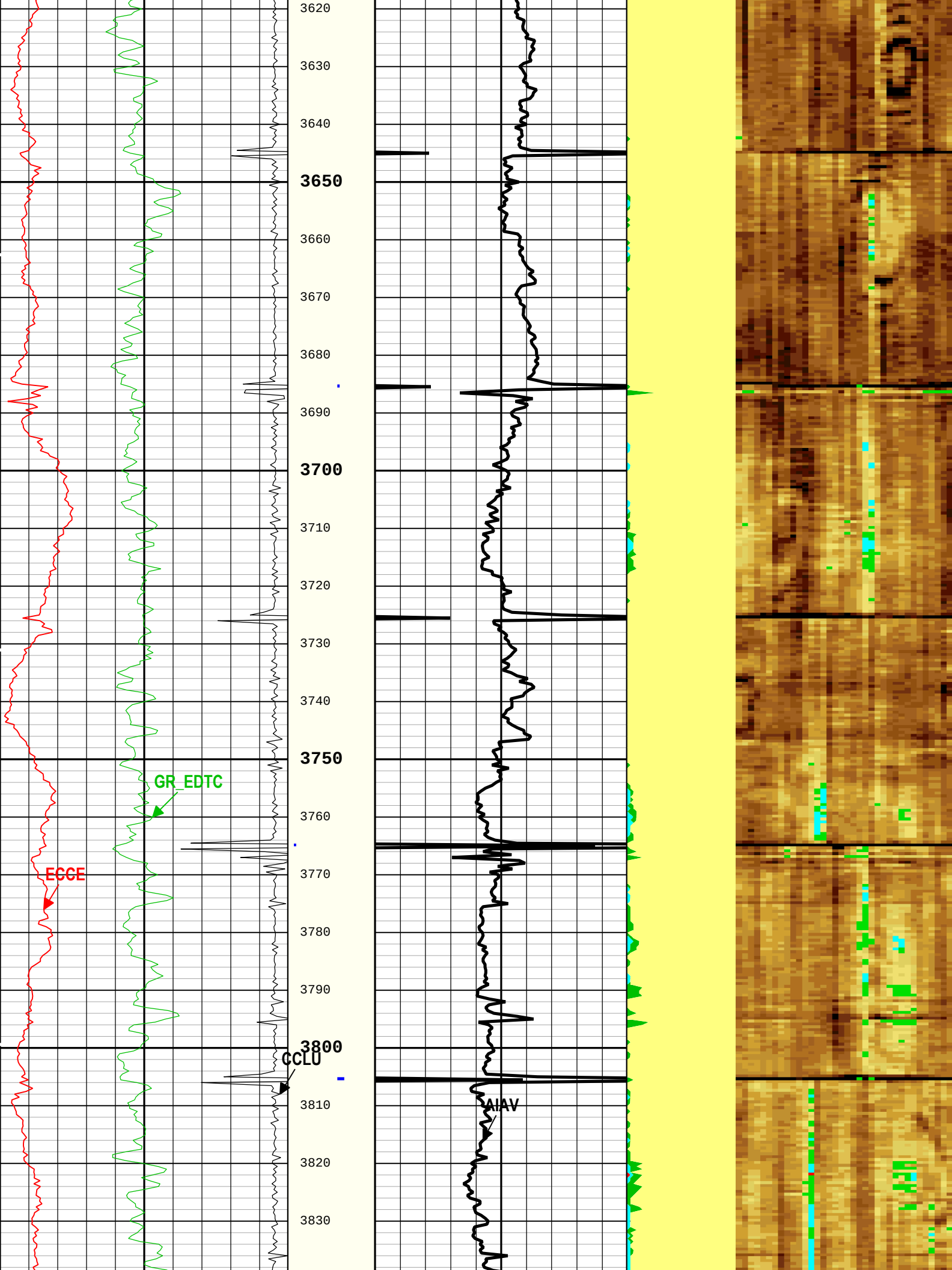

GR_EDTC
ECCE
CCLU
AIAV
2520
2530
2540
2550
2560
2570
2580
2590
2600
2610
2620
2630
2640
2650
2660
2670
2680
2690
2700
2710
2720
2730

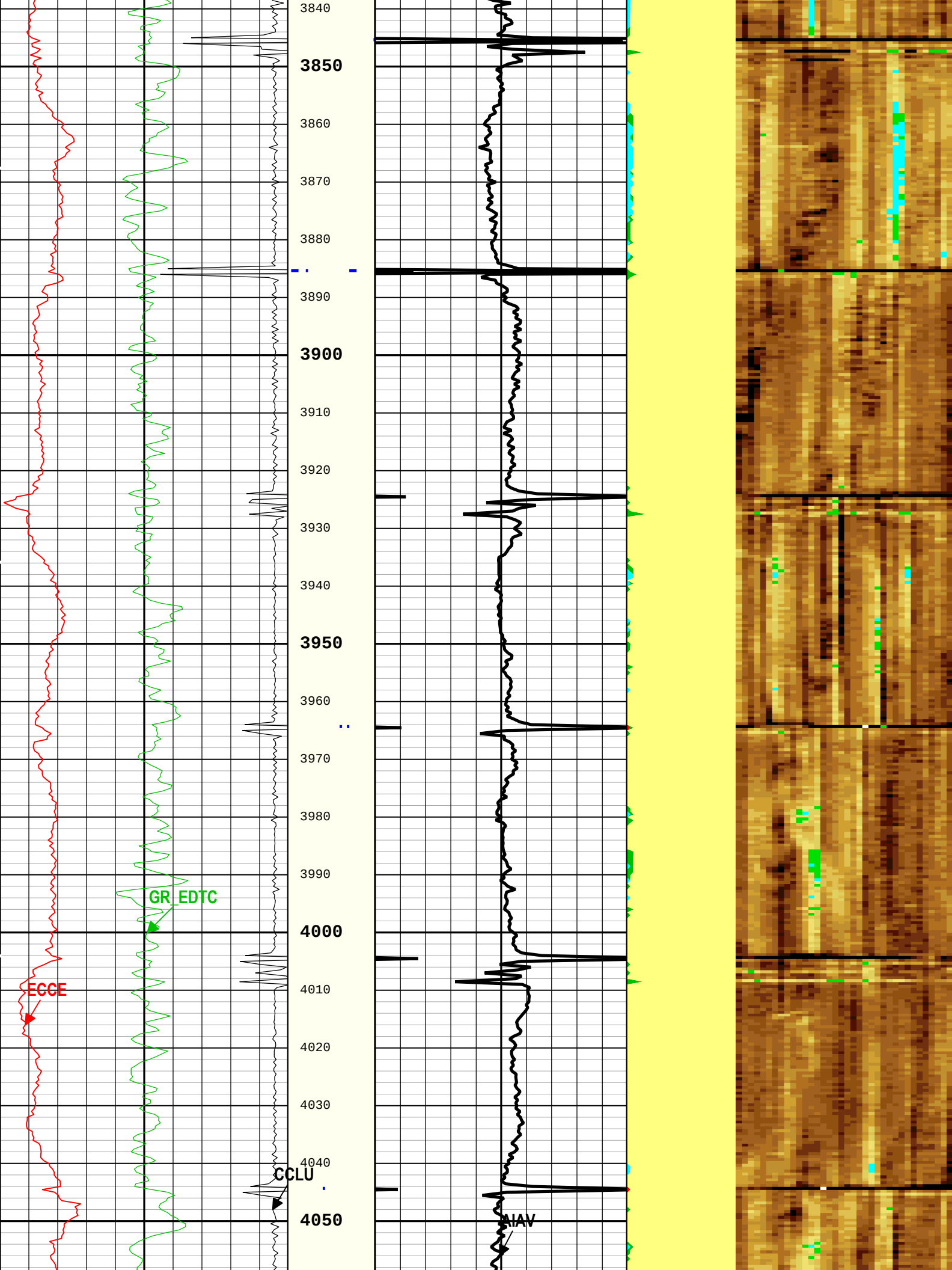

GR_EDTC
ECCE
CCLU
AIAV
2740
2750
2760
2770
2780
2790
2800
2810
2820
2830
2840
2850
2860
2870
2880
2890
2900
2910
2920
2930
2940
2950

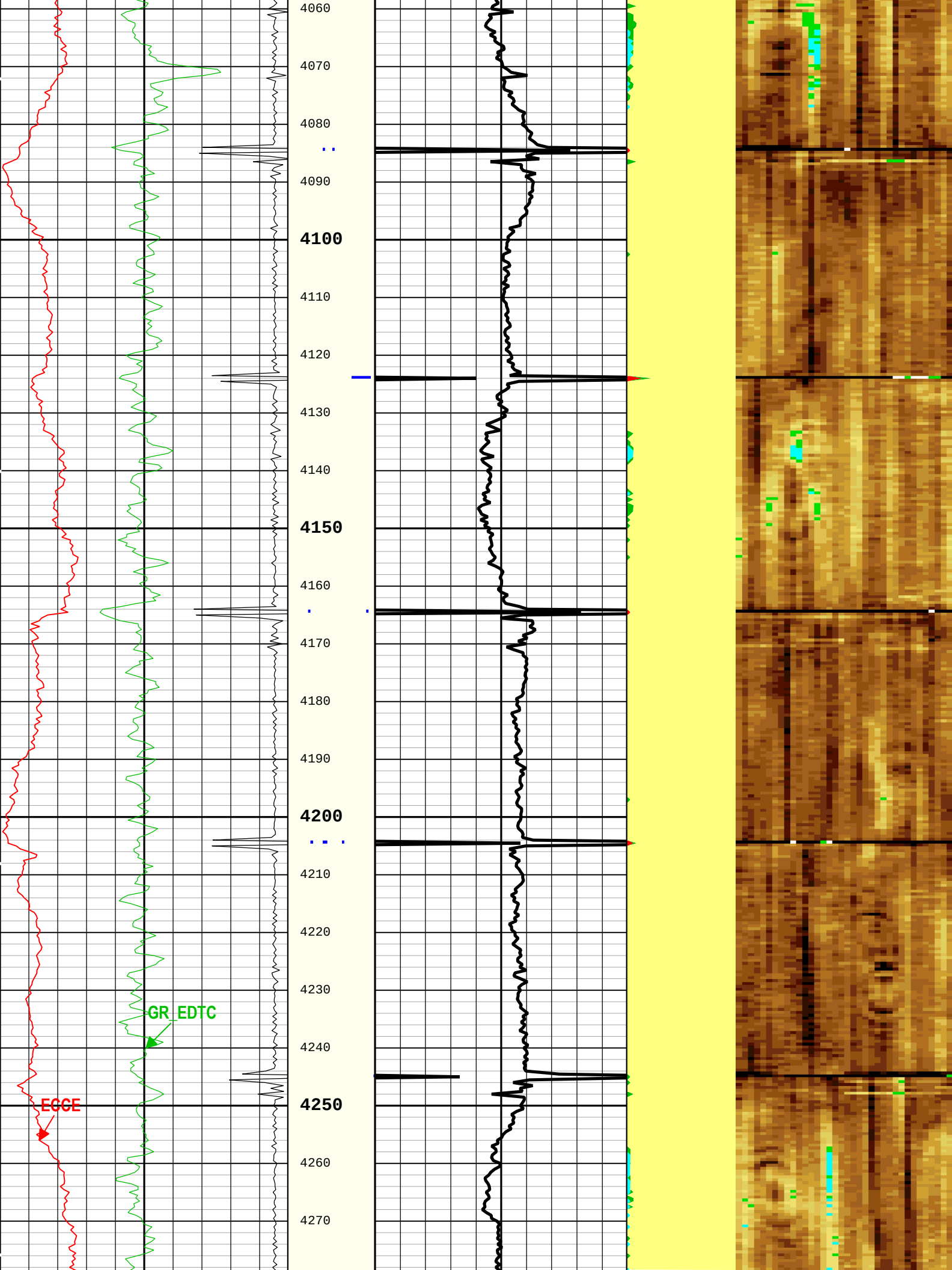

2960
2970
2980
2990
3000
3010
3020
3030
3040
3050
3060
3070
3080
3090
3100
3110
3120
3130
3140
3150
3160
3170
GR_EDTC
ECGE
CCLU
AV

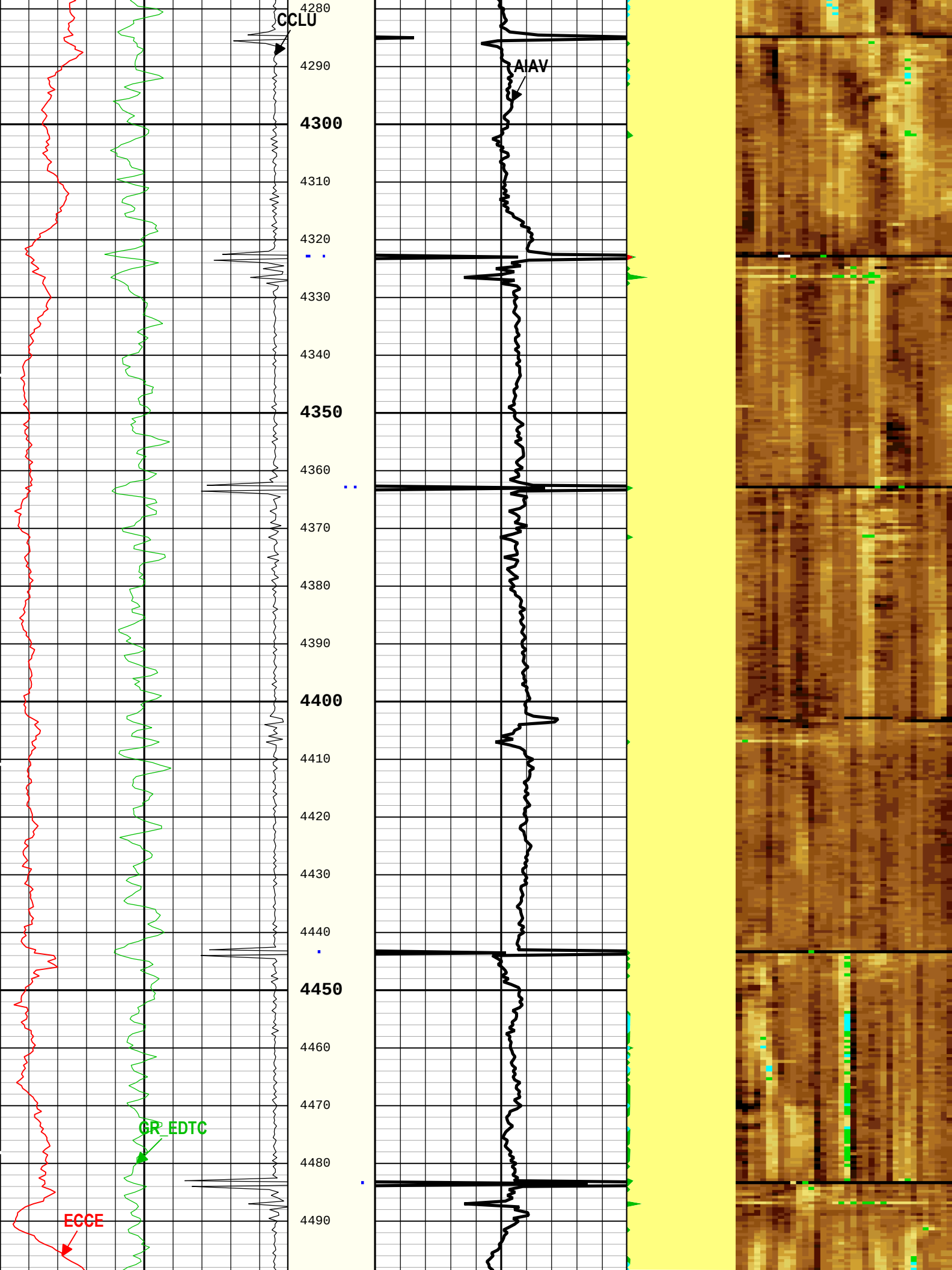

3180
3190
3200
3210
3220
3230
3240
3250
3260
3270
GR_EDTC
3280
ECCE
3290
3300
3310
3320
CCLU
3330
AMV
3340
3350
3360
3370
3380
3390

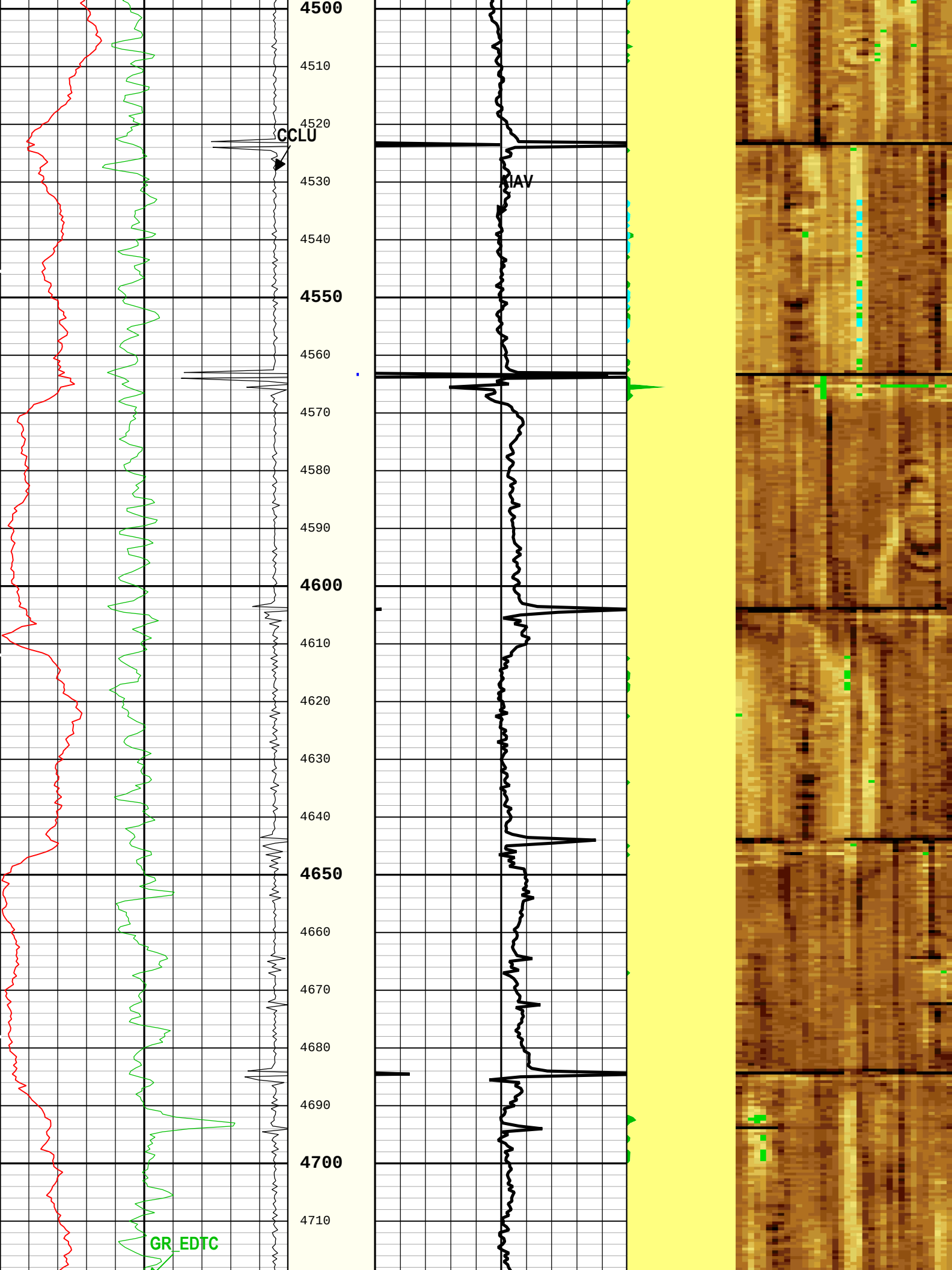

3400
3410
3420
3430
3440
3450
3460
3470
3480
3490
3500
3510
3520
3530
3540
3550
3560
3570
3580
3590
3600
3610
GR_EDTC
ECCE
CCLU
AIAV

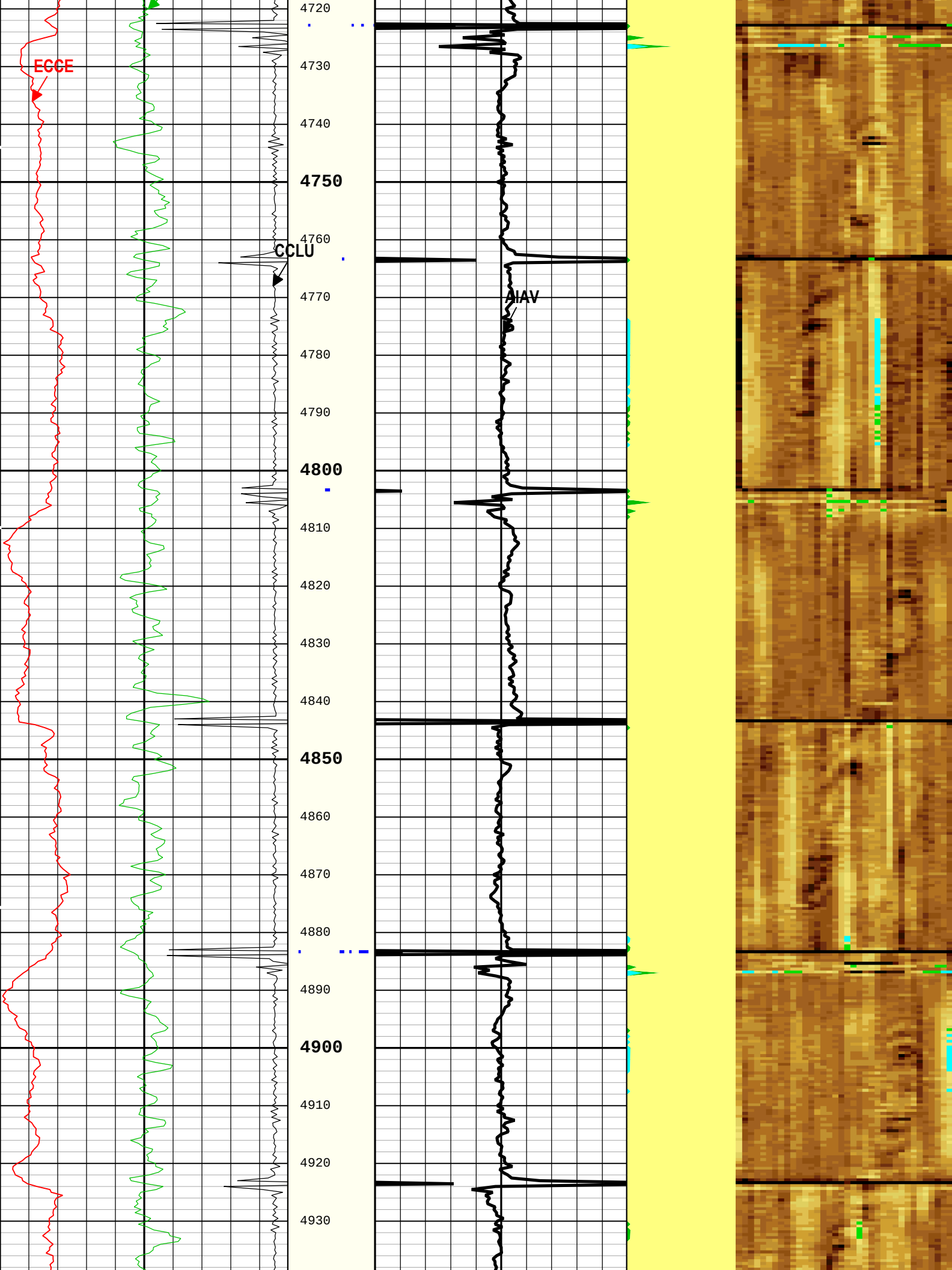

3620
3630
3640
3650
3660
3670
3680
3690
3700
3710
3720
3730
3740
3750
3760
3770
3780
3790
3800
3810
3820
3830
GR_EDTC
ECCE
CCLU
AIAV

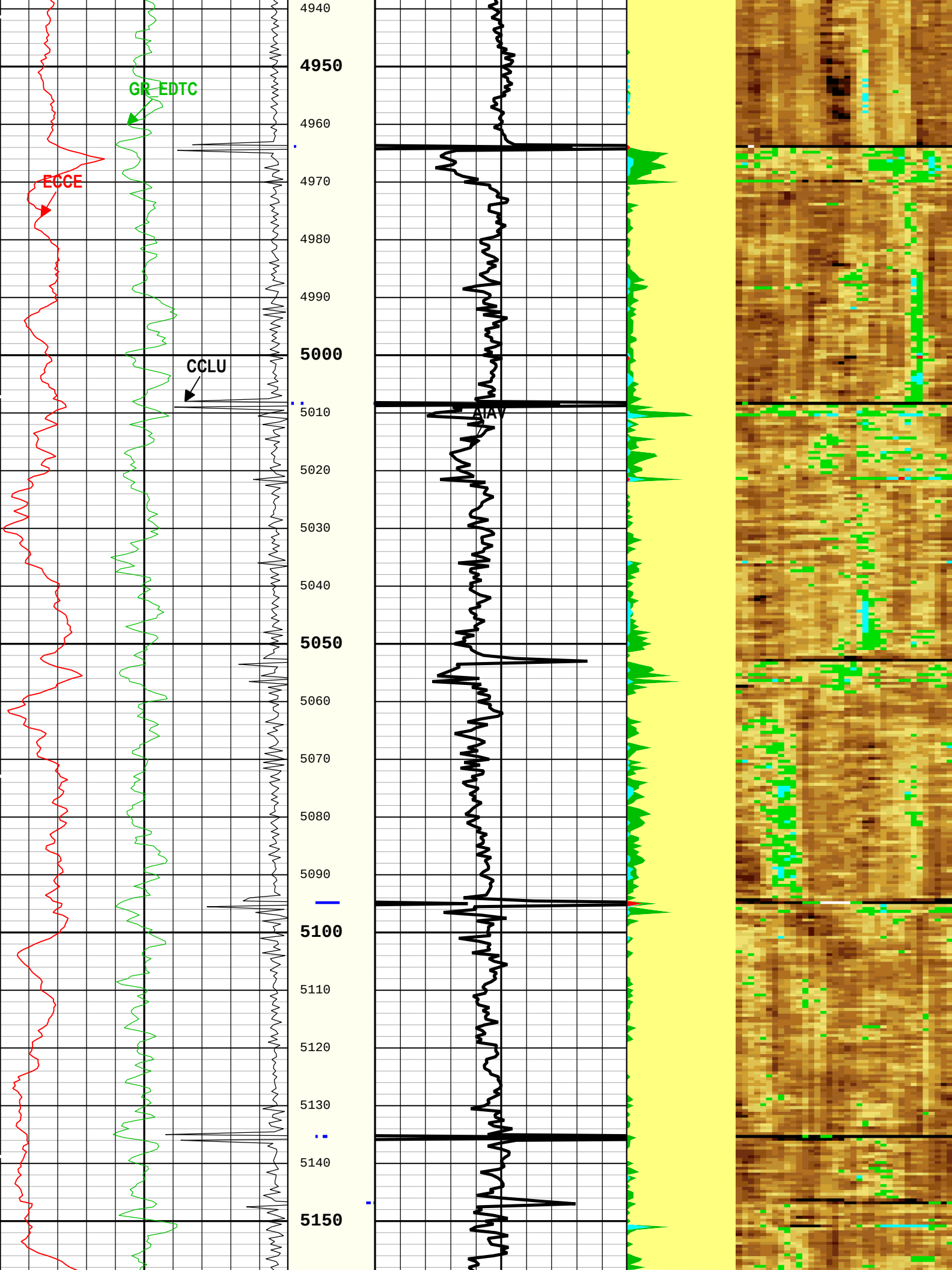

3840
3850
3860
3870
3880
3890
3900
3910
3920
3930
3940
3950
3960
3970
3980
3990
4000
4010
4020
4030
4040
4050
GR_EDTC
ECCE
CCLU
AIAV

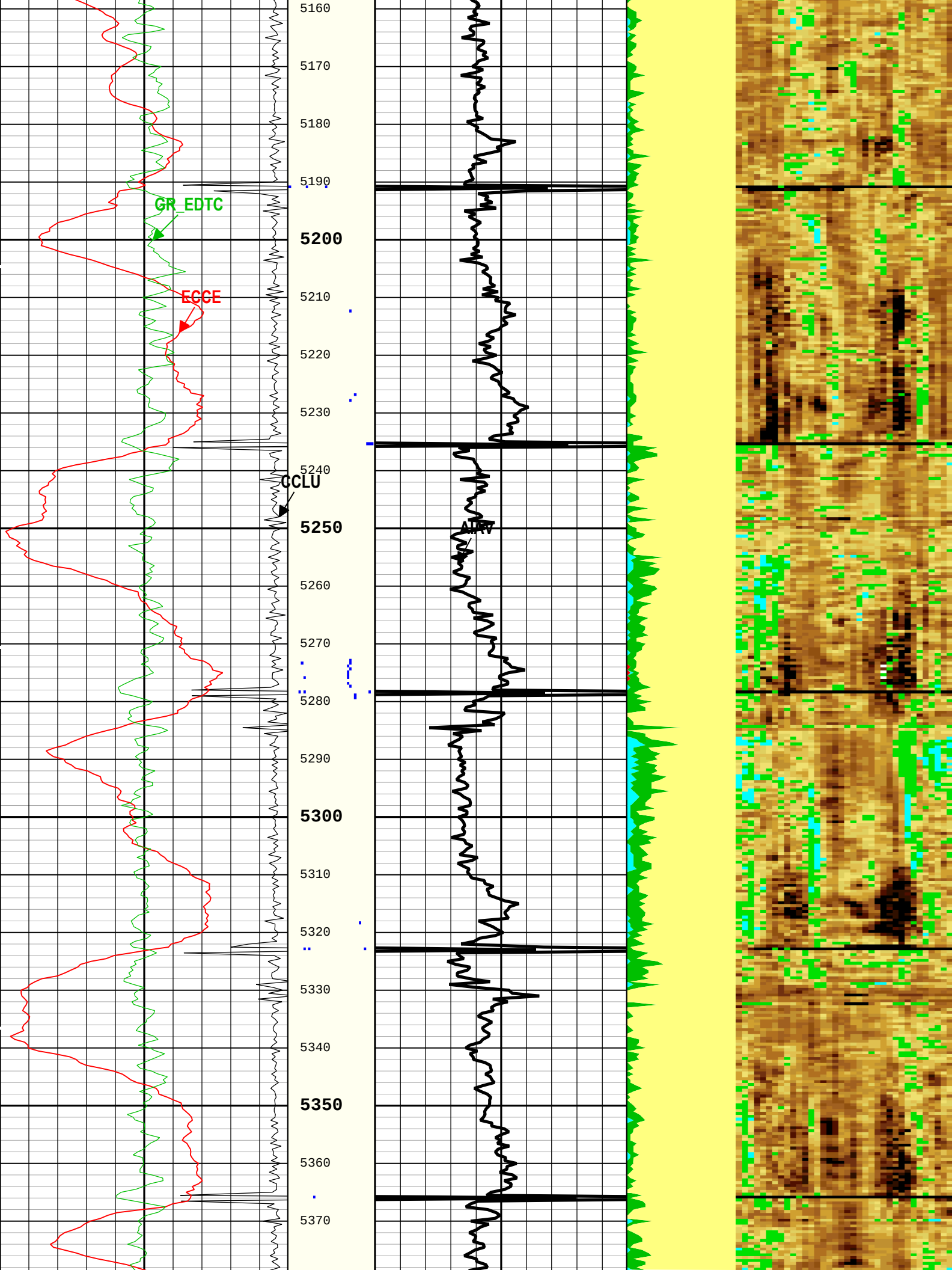

4060
4070
4080
4090
4100
4110
4120
4130
4140
4150
4160
4170
4180
4190
4200
4210
4220
4230
4240
4250
4260
4270
GR_EDTC
ECGE

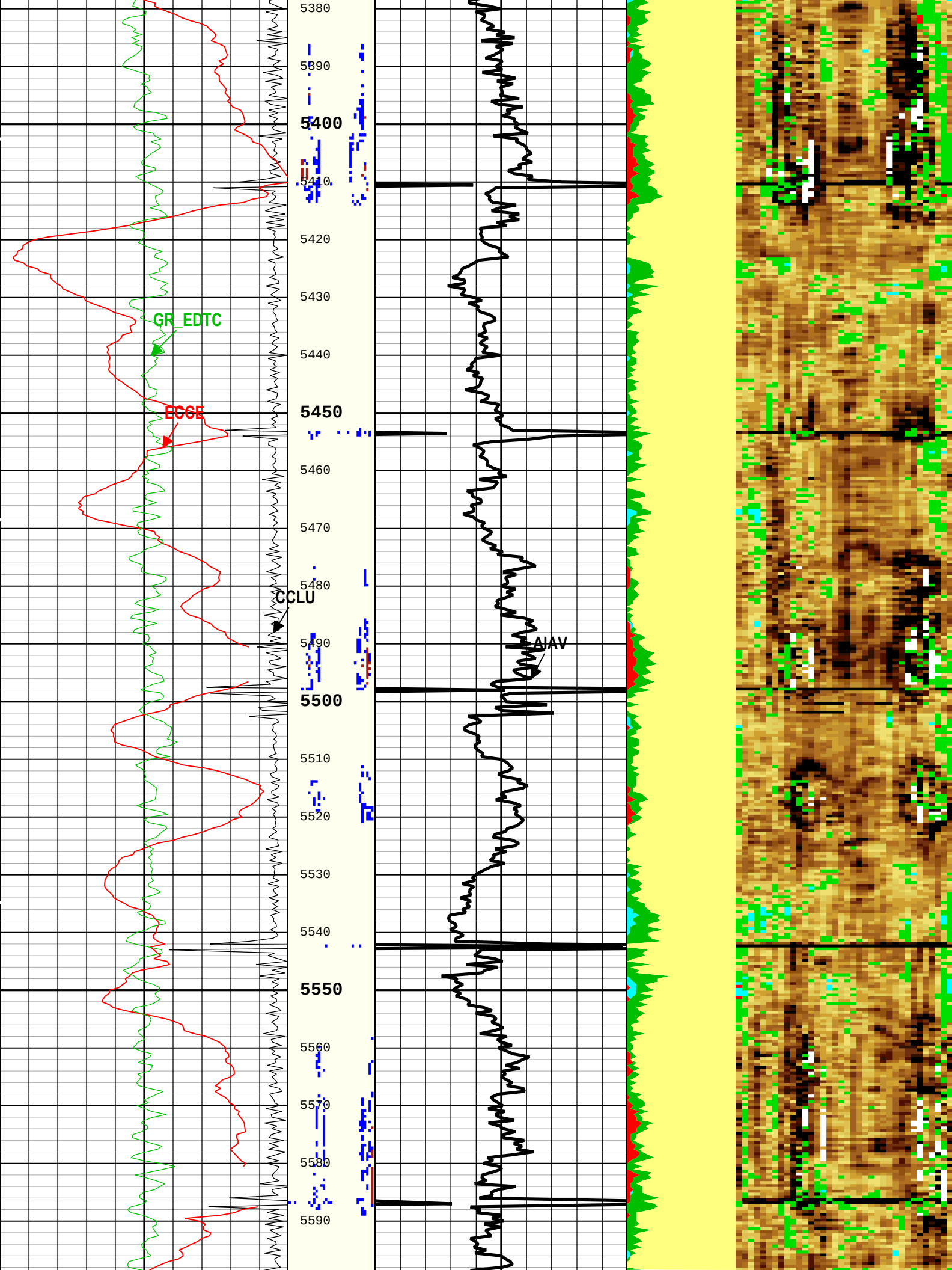

CCLU
AIAV
GR_EDTC
ECCE
4280
4290
4300
4310
4320
4330
4340
4350
4360
4370
4380
4390
4400
4410
4420
4430
4440
4450
4460
4470
4480
4490

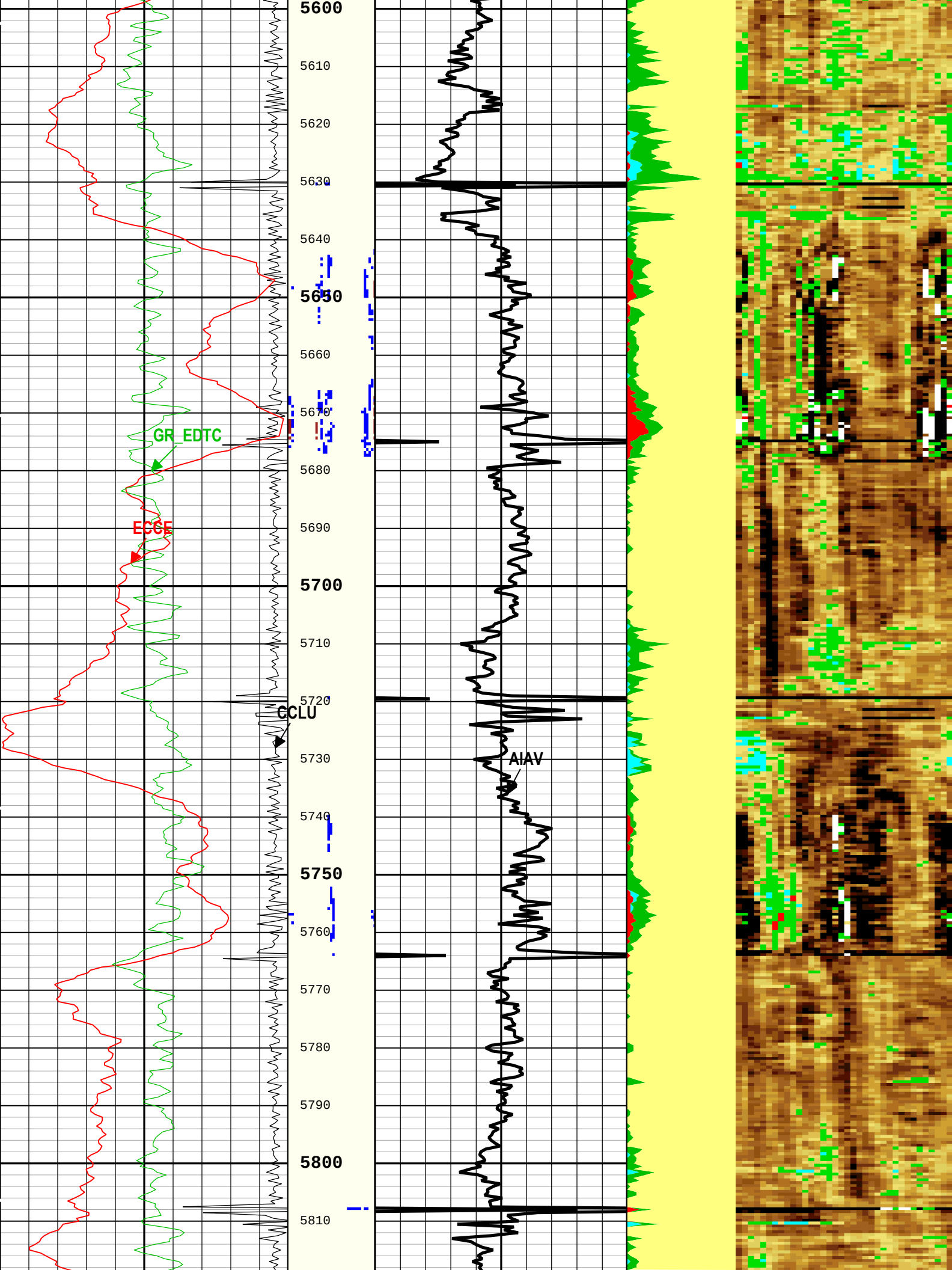

4500
4510
4520
CCLU
4530
HAV
4540
4550
4560
4570
4580
4590
4600
4610
4620
4630
4640
4650
4660
4670
4680
4690
4700
4710
GR_EDTC

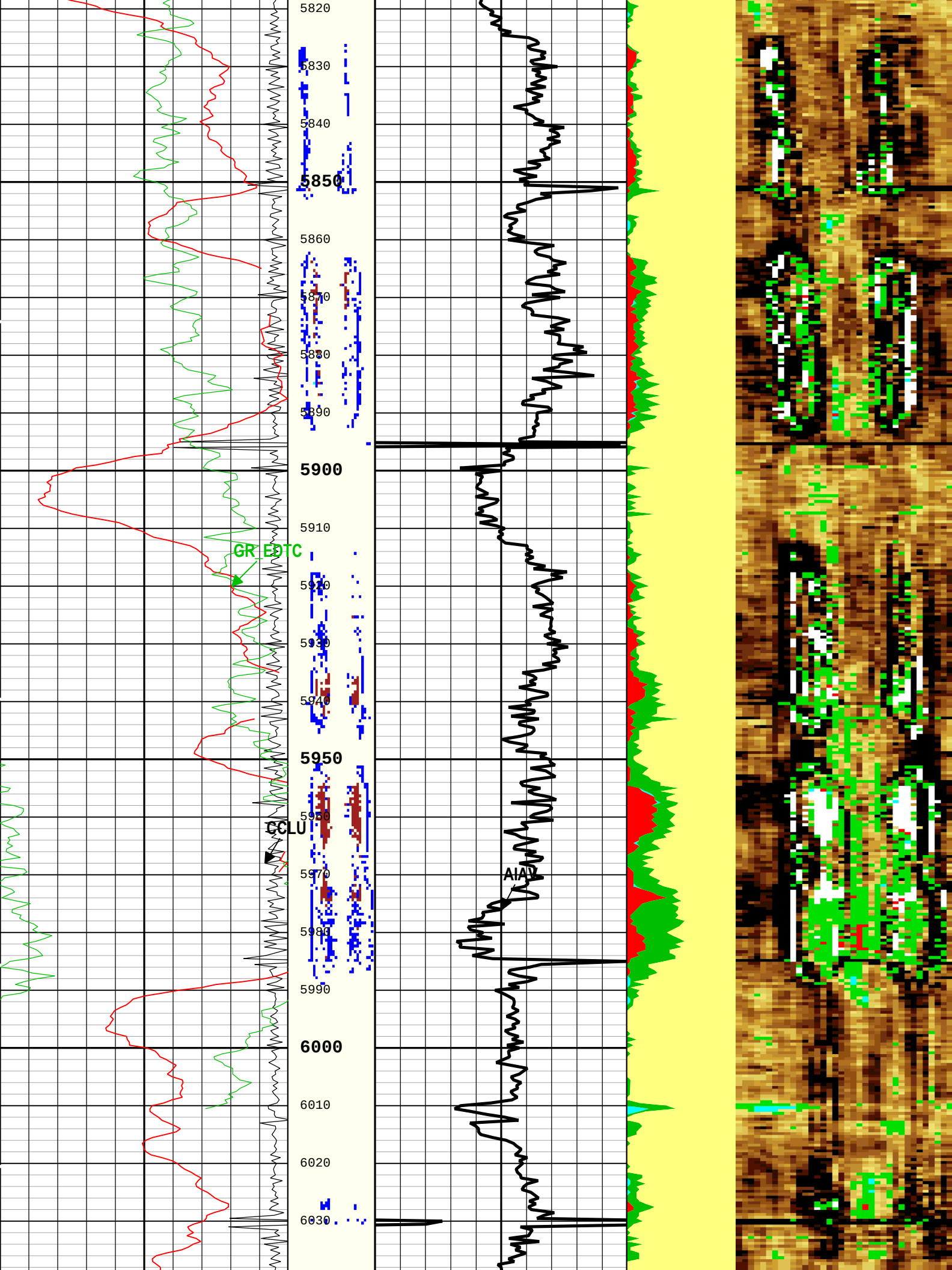

ECCE
CCLU
AIAV
4720
4730
4740
4750
4760
4770
4780
4790
4800
4810
4820
4830
4840
4850
4860
4870
4880
4890
4900
4910
4920
4930

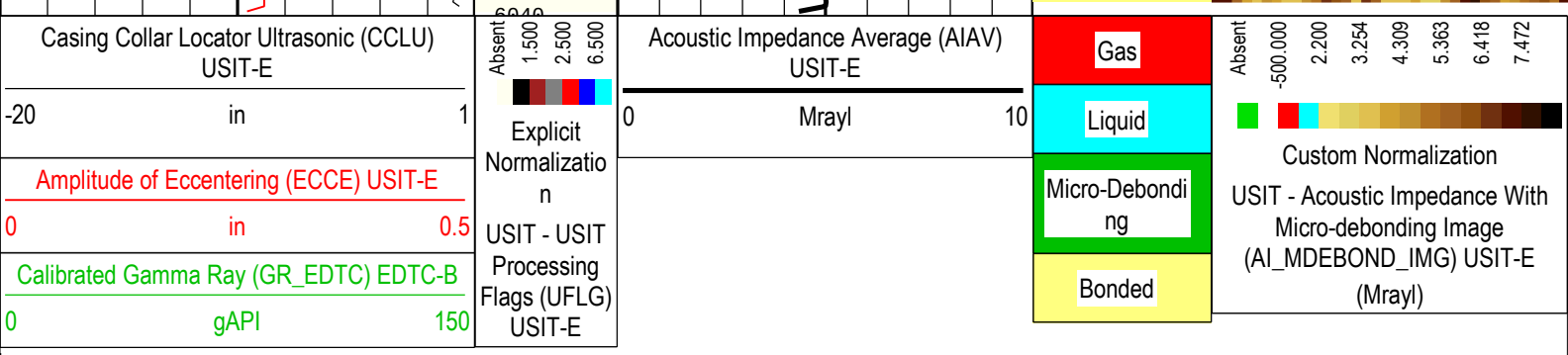

GR_EDTC
ECCE
CCLU
AIAV
4940
4950
4960
4970
4980
4990
5000
5010
5020
5030
5040
5050
5060
5070
5080
5090
5100
5110
5120
5130
5140
5150


GR_EDTC
ECCE
CCLU
ATRT
5160
5170
5180
5190
5200
5210
5220
5230
5240
5250
5260
5270
5280
5290
5300
5310
5320
5330
5340
5350
5360
5370


5380
5390
5400
5410
5420
5430
5440
5450
5460
5470
5480
5490
5500
5510
5520
5530
5540
5550
5560
5570
5580
5590
GR_EDTC
ECGE
CCLU
AIAV


5600
5610
5620
5630
5640
5650
5660
5670
5680
5690
5700
5710
5720
5730
5740
5750
5760
5770
5780
5790
5800
5810
GR_EDTC
ECCE
CCLU
AIAV


5820
5830
5840
5850
5860
5870
5880
5890
5900
5910
GR_EDTC
5920
5930
5940
5950
5960
CCLU
5970
AIAZ
5980
5990
6000
6010
6020
6030



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: 05-Nov-2016 20:23:47

Channel Processing Parameters

One: Parameters

Parameter	Description	Tool	Value	Unit
ISSBAR	Barite Mud Presence Flag	Borehole	No	
BS	Bit Size	WLSESSION	Depth Zoned	in
CMTY(U-USIT_CEMT)	Cement Type	USIT-E	Regular Cement	
DFD	Drilling Fluid Density	Borehole	9.3	lbm/gal
DFT	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	Depth Zoned	us
MUD_N_FRP	Free Pipe Mud Normalization Factor	USIT-E	1.03	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.7	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	30	110
BS	13.75	110	1928
BS	8.5	1928	6040
MEAS_WLEN	20	26.5	30
MEAS_WLEN	22.44	30	6040

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	Time Zoned	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	6000	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)
AGMX	18	05-Nov-2016 18:01:26	05-Nov-2016 18:09:43	6040.69	5824.74
AGMX	48	05-Nov-2016 18:09:43	05-Nov-2016 19:39:23	5824.74	56.27
EMXV	100	05-Nov-2016 18:01:26	05-Nov-2016 18:05:50	6040.69	6025.18
EMXV	105	05-Nov-2016 18:05:50	05-Nov-2016 18:05:54	6025.18	6023.22
EMXV	110	05-Nov-2016 18:05:54	05-Nov-2016 18:07:11	6023.22	5972.37
EMXV	115	05-Nov-2016 18:07:11	05-Nov-2016 18:07:17	5972.37	5966.28
EMXV	120	05-Nov-2016 18:07:17	05-Nov-2016 18:23:07	5966.28	4933.13
EMXV	115	05-Nov-2016 18:23:07	05-Nov-2016 18:23:10	4933.13	4929.55
EMXV	110	05-Nov-2016 18:23:10	05-Nov-2016 18:23:14	4929.55	4925.92
EMXV	105	05-Nov-2016 18:23:14	05-Nov-2016 18:23:17	4925.92	4921.98
EMXV	100	05-Nov-2016 18:23:17	05-Nov-2016 18:23:22	4921.98	4917.15
EMXV	95	05-Nov-2016 18:23:22	05-Nov-2016 18:23:25	4917.15	4913.42
EMXV	90	05-Nov-2016 18:23:25	05-Nov-2016 18:23:29	4913.42	4909.47
EMXV	85	05-Nov-2016 18:23:29	05-Nov-2016 18:23:32	4909.47	4905.66
EMXV	80	05-Nov-2016 18:23:32	05-Nov-2016 18:23:35	4905.66	4902.23
EMXV	75	05-Nov-2016 18:23:35	05-Nov-2016 18:23:39	4902.23	4898.07
EMXV	70	05-Nov-2016 18:23:39	05-Nov-2016 18:23:43	4898.07	4893.83
EMXV	65	05-Nov-2016 18:23:43	05-Nov-2016 18:23:47	4893.83	4889.53
EMXV	60	05-Nov-2016 18:23:47	05-Nov-2016 18:23:51	4889.53	4885.23
EMXV	55	05-Nov-2016 18:23:51	05-Nov-2016 18:23:54	4885.23	4881.57
EMXV	50	05-Nov-2016 18:23:54	05-Nov-2016 18:31:00	4881.57	4409.92
EMXV	45	05-Nov-2016 18:31:00	05-Nov-2016 18:31:05	4409.92	4404.92
EMXV	40	05-Nov-2016 18:31:05	05-Nov-2016 19:39:23	4404.92	56.27
WINB	31.88	05-Nov-2016 18:01:26	05-Nov-2016 18:05:29	6040.69	6035.56
WINB	25.83	05-Nov-2016 18:05:29	05-Nov-2016 18:07:08	6035.56	5975.52
WINB	17.39	05-Nov-2016 18:07:08	05-Nov-2016 18:24:28	5975.52	4844.77
WINB	25.33	05-Nov-2016 18:24:28	05-Nov-2016 18:24:35	4844.77	4837
WINB	31.02	05-Nov-2016 18:24:35	05-Nov-2016 18:30:47	4837	4425.18
WINB	35.99	05-Nov-2016 18:30:47	05-Nov-2016 18:46:48	4425.18	3336.57
WINB	31.02	05-Nov-2016 18:46:48	05-Nov-2016 18:51:46	3336.57	3008.3

WINB	33.15	05-Nov-2016 18:51:46	05-Nov-2016 19:39:23	3008.3	56.27
WINE	71.88	05-Nov-2016 18:01:26	05-Nov-2016 18:05:33	6040.69	6033.38
WINE	79.55	05-Nov-2016 18:05:33	05-Nov-2016 18:24:26	6033.38	4846.97
WINE	75.77	05-Nov-2016 18:24:26	05-Nov-2016 18:24:36	4846.97	4835.1
WINE	69.38	05-Nov-2016 18:24:36	05-Nov-2016 18:30:44	4835.1	4428.54
WINE	67.25	05-Nov-2016 18:30:44	05-Nov-2016 18:51:48	4428.54	3005.86
WINE	66.54	05-Nov-2016 18:51:48	05-Nov-2016 19:39:23	3005.86	56.27

All depth are at tool zero.

One

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
One	Log[2]:Up	Up	2411.34 ft	2689.09 ft	05-Nov-2016 5:40:25 PM	05-Nov-2016 5:44:46 PM	ON	4.82 ft	Yes

All depths are referenced to toolstring zero

Log

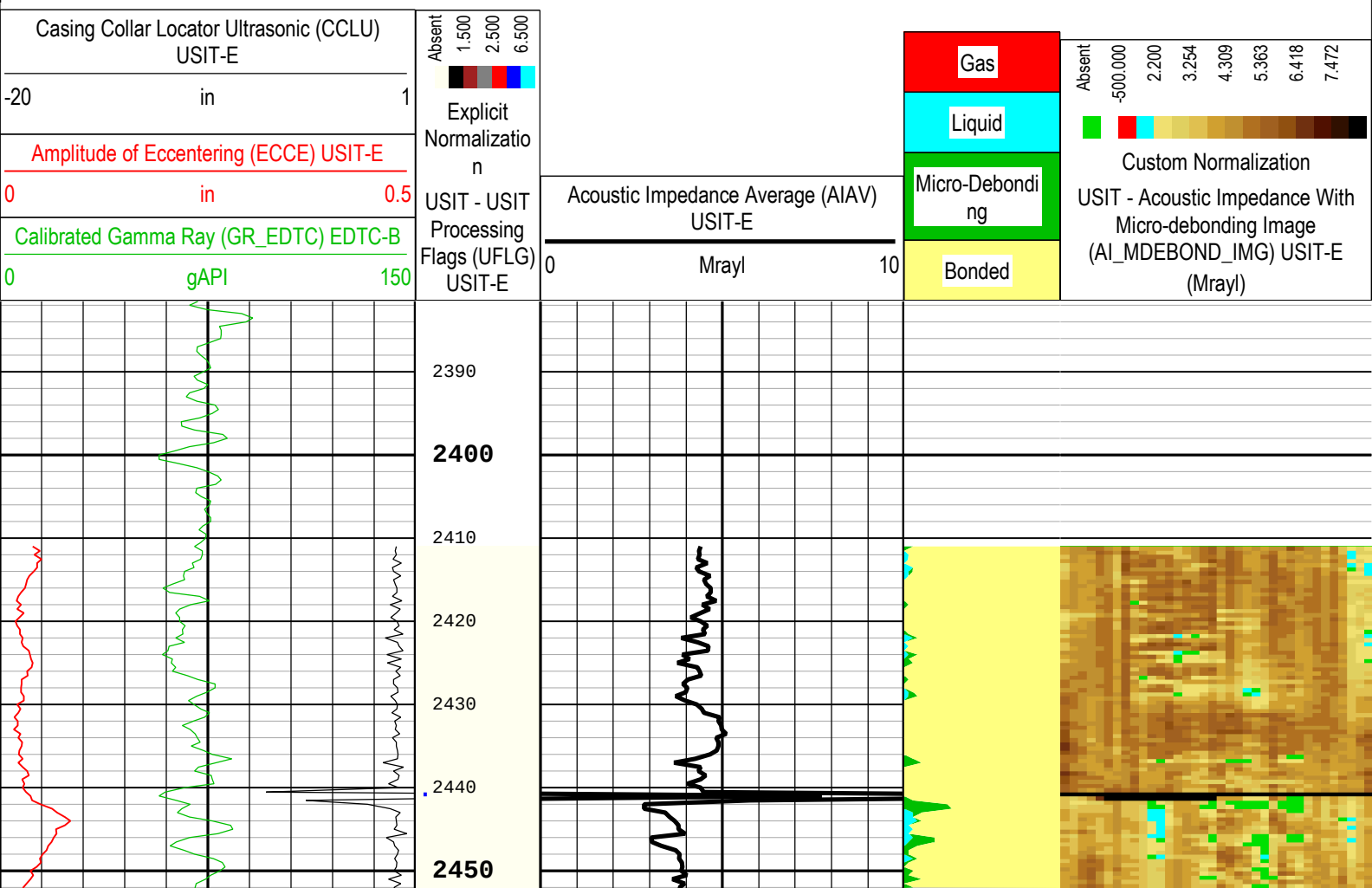
Company:Noble Energy Inc Well:ANNI LD29-763

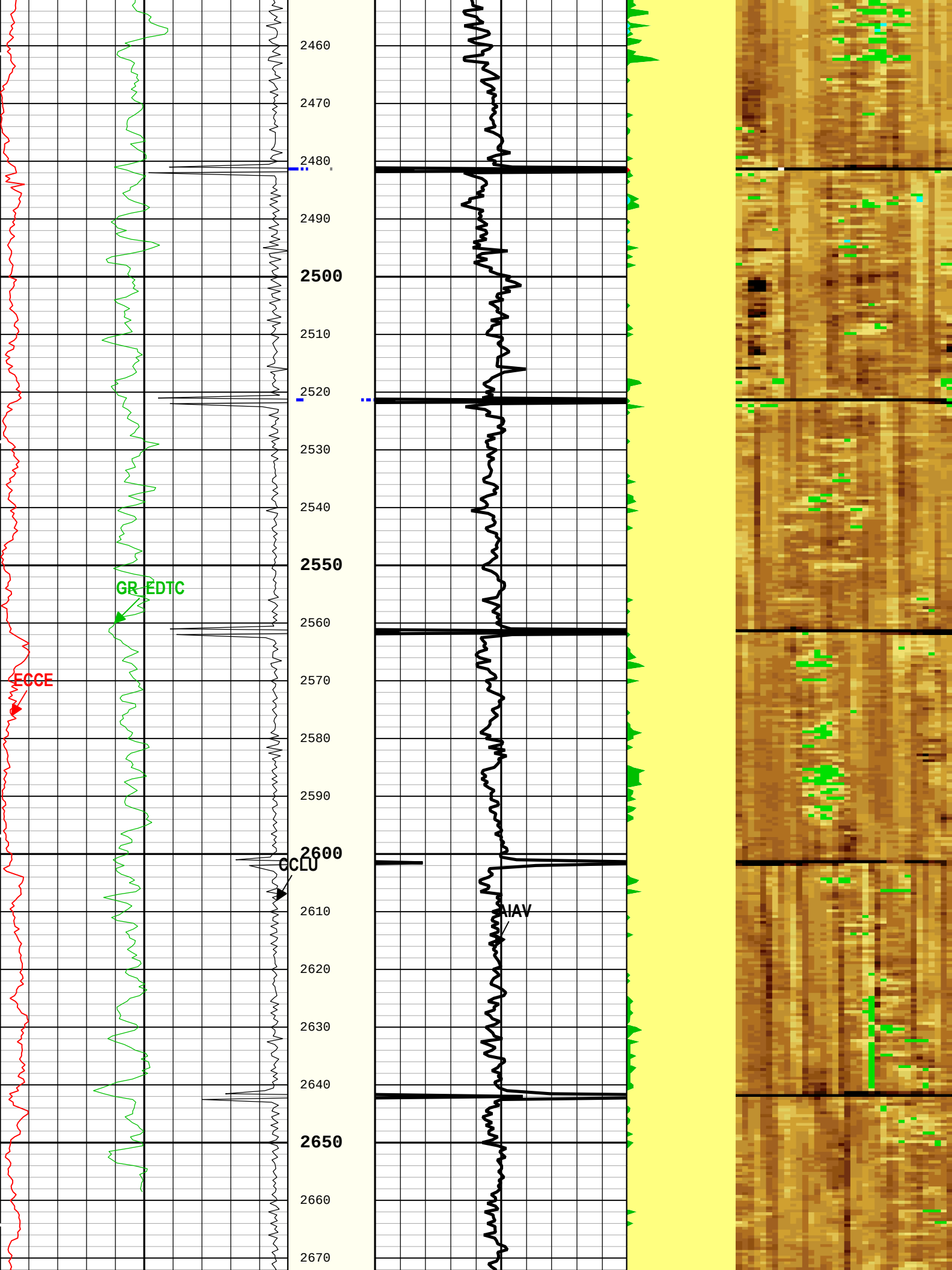
One: Log[2]:Up:S004

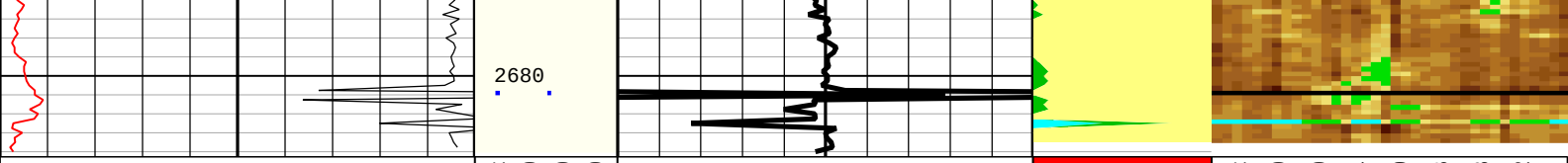
Description: Format: Log (DJ Basin Ultrasonic Cement Summary Report) Index Scale: 5 in per 100 ft Index Unit: ft Index Type: Measured Depth

Creation Date: 05-Nov-2016 20:23:53

TIME_1900 - Time Marked every 60.00 (s)




2460
2470
2480
2490
2500
2510
2520
2530
2540
2550
2560
2570
2580
2590
2600
2610
2620
2630
2640
2650
2660
2670
GR_EDTC
ECCE
CCLU
AIAV



Casing Collar Locator Ultrasonic (CCLU) USIT-E

-20 in 1

Amplitude of Eccentering (ECCE) USIT-E

0 in 0.5

Calibrated Gamma Ray (GR_EDTC) EDTC-B

0 gAPI 150

Absent 1.500 2.500 6.500

Explicit Normalization

USIT - USIT Processing Flags (UFLG) USIT-E

Acoustic Impedance Average (AIAV) USIT-E

0 Mrayl 10

Gas

Liquid

Micro-Debonding

Bonded

Absent -500.000 2.200 3.254 4.309 5.363 6.418 7.472

Custom Normalization

USIT - Acoustic Impedance With Micro-debonding Image (AI_MDEBOND_IMG) USIT-E (Mrayl)

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: 05-Nov-2016 20:23:53

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_CEMT)	Cement Type	USIT-E	Regular Cement	
DFD	Drilling Fluid Density	Borehole	9.3	lbm/gal
DFT	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	1.03	
U-USIT_DFSZ	Drilling Fluid Specific Acoustic Impedance	USIT-E	1.7	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

Tool Control Parameters

One: Parameters

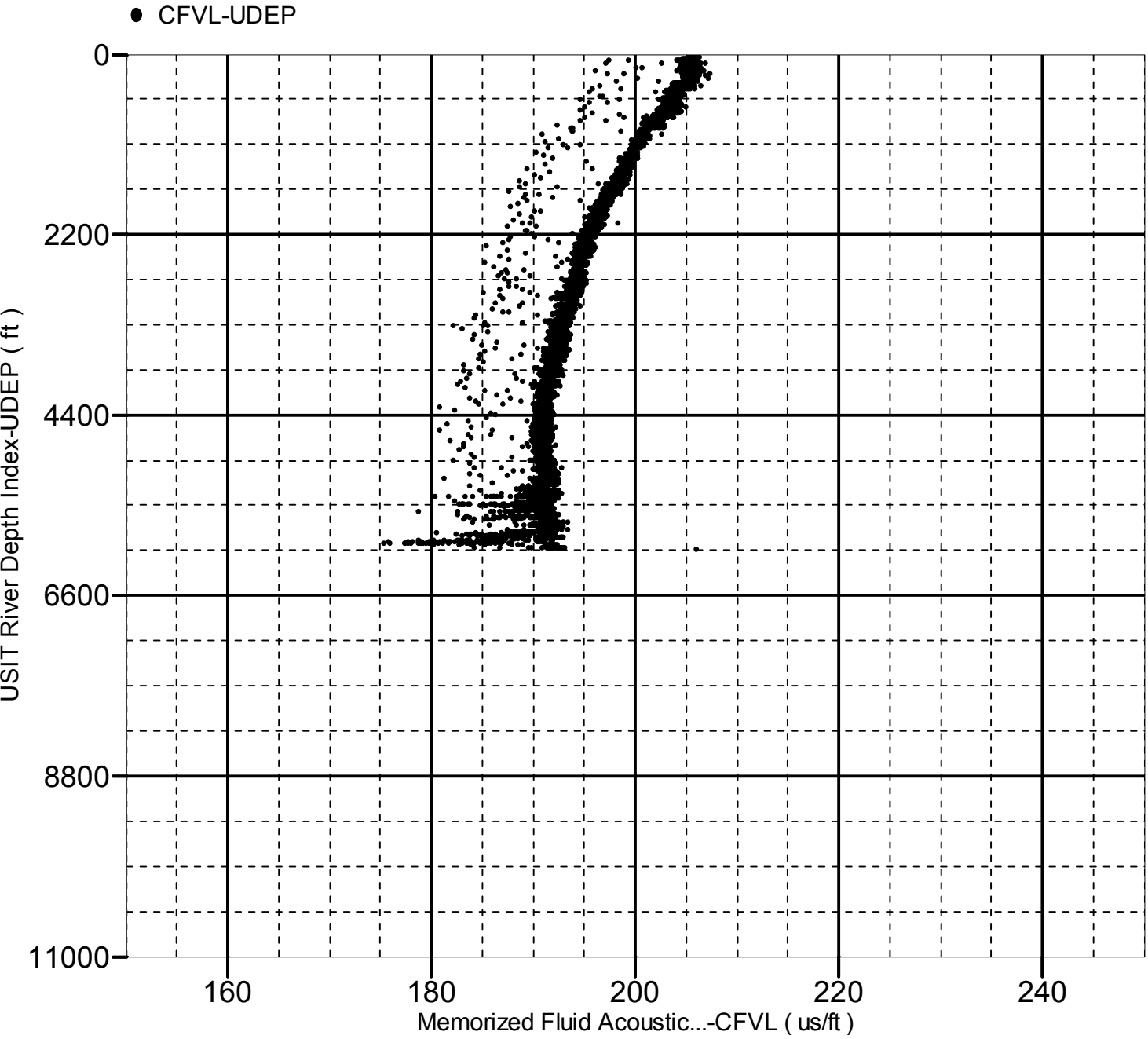
Parameter	Description	Tool	Value	Unit
AGMN	Minimum Gain of Cartridge	USIT-E	-12	dB
AGMX	Maximum Gain of Cartridge	USIT-E	18	dB
U-USIT_DDT5	USIC Downhole Decimation for T5 only	USIT-E	0_NONE	
EMXV	EMEX Voltage	USIT-E	60	V
HRES	Horizontal Resolution	USIT-E	10 deg	
TMUC	Type of Mud	USIT-E	BRI	

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	2600	ft
WINB	Window Begin Time	USIT-E	31.88	us
WINE	Window End Time	USIT-E	71.88	us

Fluid Acoustic Slowness vs Depth

2D Cross Plot

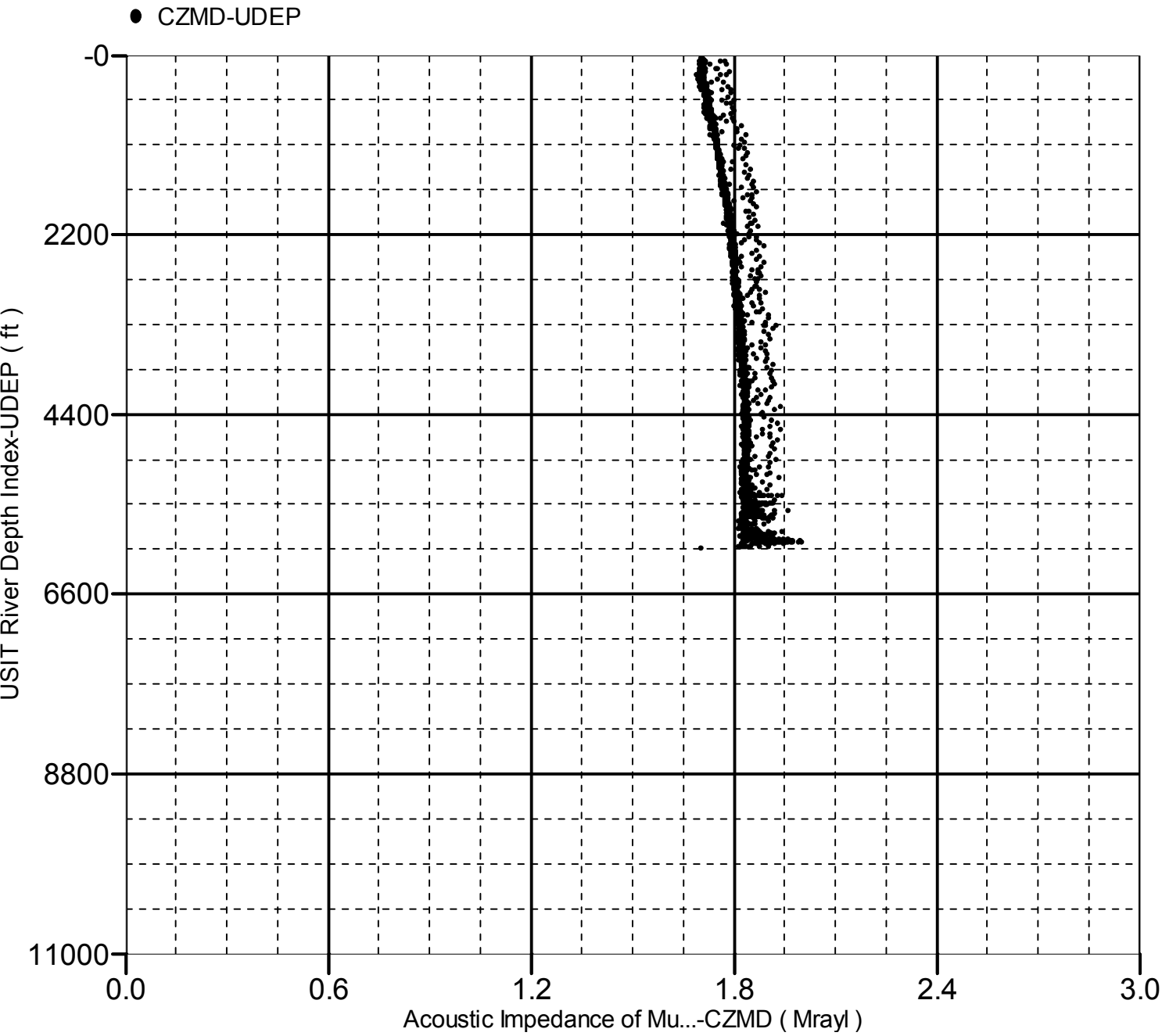
Index Range: From 6040.50 to 56.00 ft



Acoustic Impedance of Mud vs Depth

2D Cross Plot

Index Range: From 6040.50 to 56.00 ft



Company:	Noble Energy Inc
Well:	ANNI LD29-763
Field:	Wildcat
County:	Weld
State:	Colorado

Schlumberger

UltraSonic Summary Print