

Company: Noble Energy Inc

Well: SLW Ranch State BB07-668

Field: Wattenberg

County: Weld Country:

UltraSonic Summary Print

|           |                          |                    |                    |                   |            |
|-----------|--------------------------|--------------------|--------------------|-------------------|------------|
| County:   | Weld                     |                    |                    |                   |            |
| Field:    | Wattenberg               |                    |                    |                   |            |
| Location: |                          |                    |                    |                   |            |
| Well:     | SLW Ranch State BB07-668 |                    |                    |                   |            |
| Company:  | Noble Energy Inc         |                    |                    |                   |            |
|           | 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 |
|           | API Serial No.           | Max.Hole Deviation | Longitude:         | Latitude:         |            |
|           | 05-123-47110             | 0 deg              | -104.48598 degrees | 40.417000 degrees |            |

|                           |             |                  |             |
|---------------------------|-------------|------------------|-------------|
| Logging Date              | 27-Aug-2019 |                  |             |
| Run Number                | 1A          |                  |             |
| Depth Driller             | 16921.00 ft |                  |             |
| Schlumberger Depth        | 16921.00 ft |                  |             |
| Bottom Log Interval       | 6500.00 ft  |                  |             |
| Top Log Interval          | 100.00 ft   |                  |             |
| Casing Fluid Type         | Water       |                  |             |
| Salinity                  |             |                  |             |
| Density                   | 8.4 lbm/gal |                  |             |
| Fluid Level               | 8.00 ft     |                  |             |
| BIT/CASING/TUBING STRING  |             |                  |             |
| Bit Size                  | 8.50 in     |                  |             |
| From                      | 1942.00 ft  |                  |             |
| To                        | 16921.00 ft |                  |             |
| Casing/Tubing Size        | 5.5 in      |                  |             |
| Weight                    | 17 lbm/ft   |                  |             |
| Grade                     | N/A         |                  |             |
| From                      | 0.00 ft     |                  |             |
| To                        | 16911.40 ft |                  |             |
| Max Recorded Temperatures |             |                  |             |
| Logger on Bottom          | Time        |                  |             |
| Unit Number               | Location:   | 2161             | Fort Morgan |
| Recorded By               |             | Caroline Ibrahim |             |
| 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.

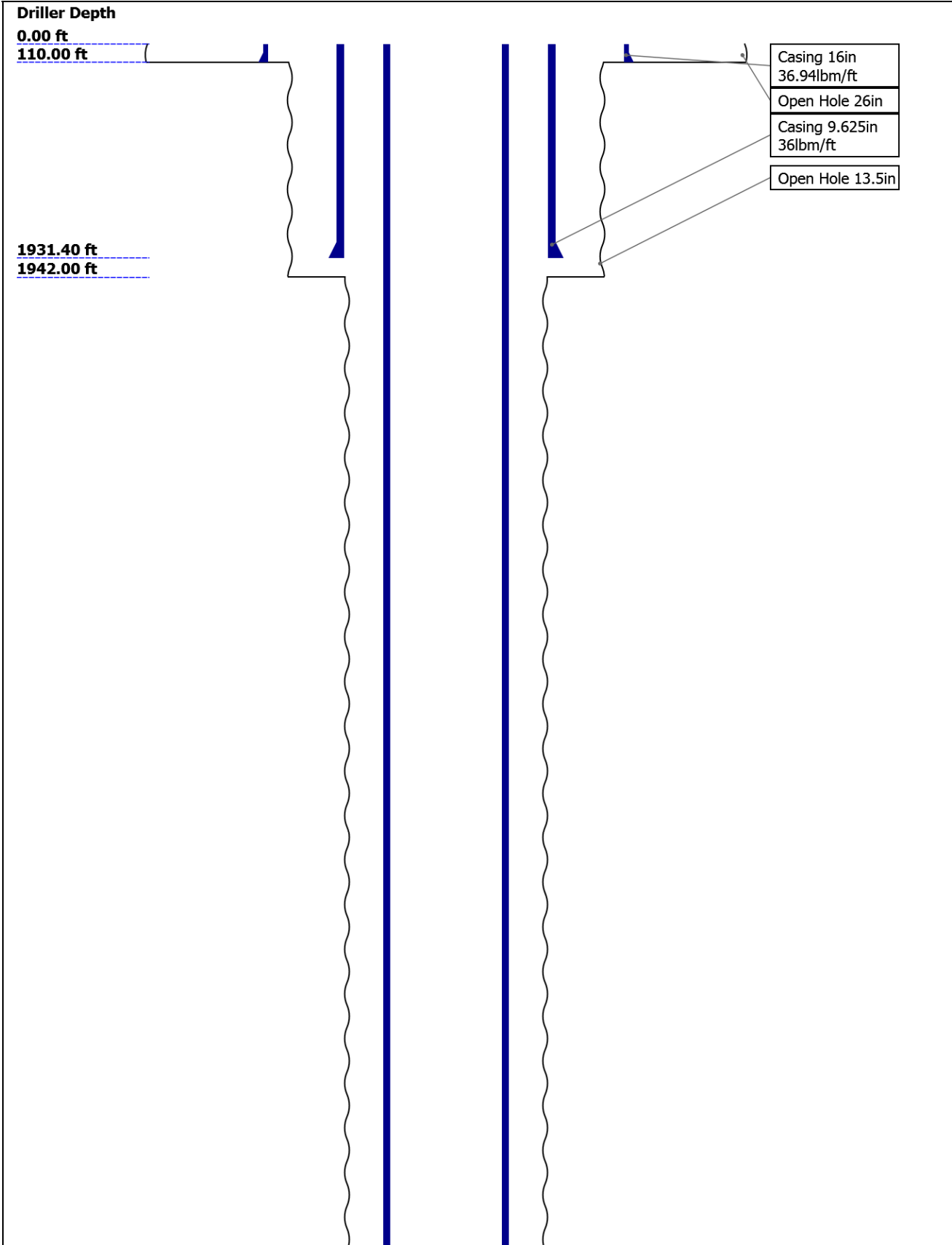
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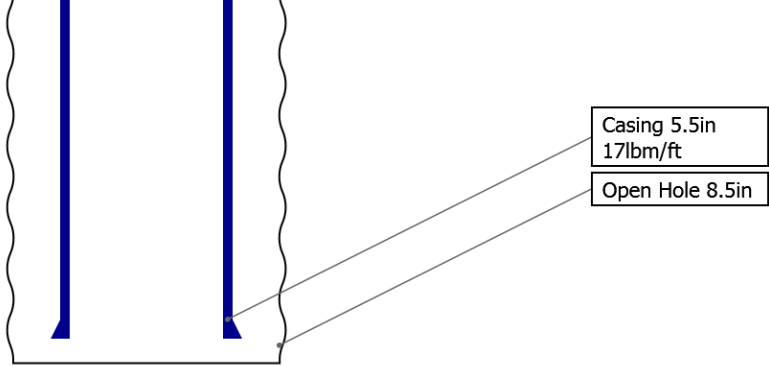
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Well Sketch



16911.40 ft  
16921.00 ft

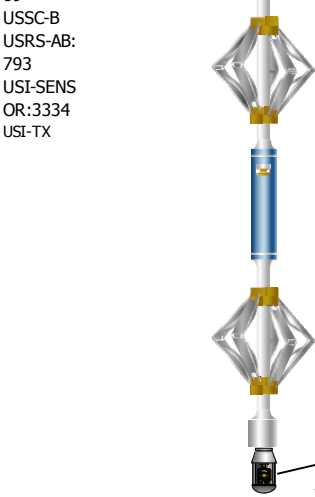


Borehole Size/Casing/Tubing Record

|                       |        |        |         |  |  |  |
|-----------------------|--------|--------|---------|--|--|--|
| Bit                   |        |        |         |  |  |  |
| Bit Size ( in )       | 26     | 13.5   | 8.5     |  |  |  |
| Top Driller ( ft )    | 0      | 110    | 1942    |  |  |  |
| Top Logger ( ft )     | 0      | 110    | 1942    |  |  |  |
| Bottom Driller ( ft ) | 110    | 1942   | 16921   |  |  |  |
| Bottom Logger ( ft )  | 110    | 1942   | 16921   |  |  |  |
| 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    | 1931.4 | 16911.4 |  |  |  |
| Bottom Logger ( ft )  | 110    | 1931.4 | 16911.4 |  |  |  |

Remarks and Equipment Summary

| 1A: Toolstring  |  |  |  | 1A: Remarks   |  |
|---|--|--|--|---|--|
| <div><div><div>Equip name</div><div>Length</div><div>MP name</div><div>Offset</div></div><div><div>LEH-QC</div><div>28.52</div><div></div><div></div></div><div><div>EDTC-B</div><div>26.06</div><div></div><div></div></div><div><div>EDTH-B</div><div></div><div></div><div></div></div><div><div>EDTG-A</div><div></div><div></div><div></div></div><div><div>EDTC-B</div><div></div><div></div><div></div></div><div><div>AH-184[2]</div><div>19.56</div><div></div><div></div></div><div><div>AH-184[1]</div><div>17.56</div><div></div><div></div></div><div><div>USIT-E:914</div><div>15.56</div><div></div><div></div></div><div><div>ECH-MFA:</div><div>1781</div><div></div><div></div></div><div><div>USAC-A:9</div><div>14</div><div></div><div></div></div><div><div>USIS-A:17</div><div></div><div></div><div></div></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</div><div>19.56</div></div><div><div>s</div><div></div></div></div> |  |  |  | Thank you for choosing Schlumberger.                |  |
|   |  |  |  | Toolstring run as per toolsketch.                   |  |
|   |  |  |  | Repeat pass logged from 2500' to 2000' at 0 psi.    |  |
|   |  |  |  | Main pass logged from 6400' to surface at 2500 psi. |  |
|   |  |  |  |   |  |



USSC-B  
USRS-AB:  
793  
USI-SENS  
OR:3334  
USI-TX

USI Sen 0.37  
sor  
TOOL\_ZERO

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        |             |

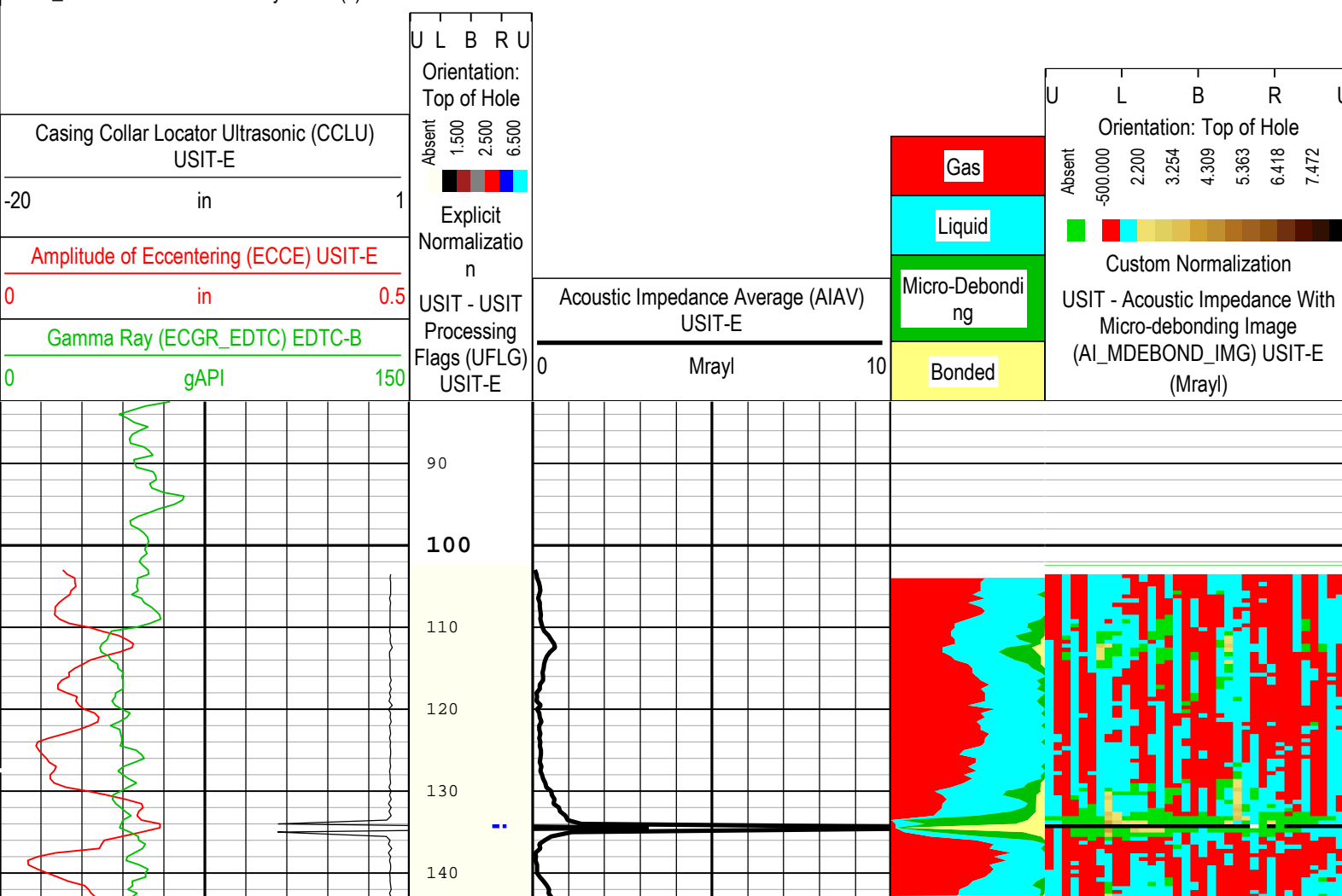
1A:Depth Control Parameters

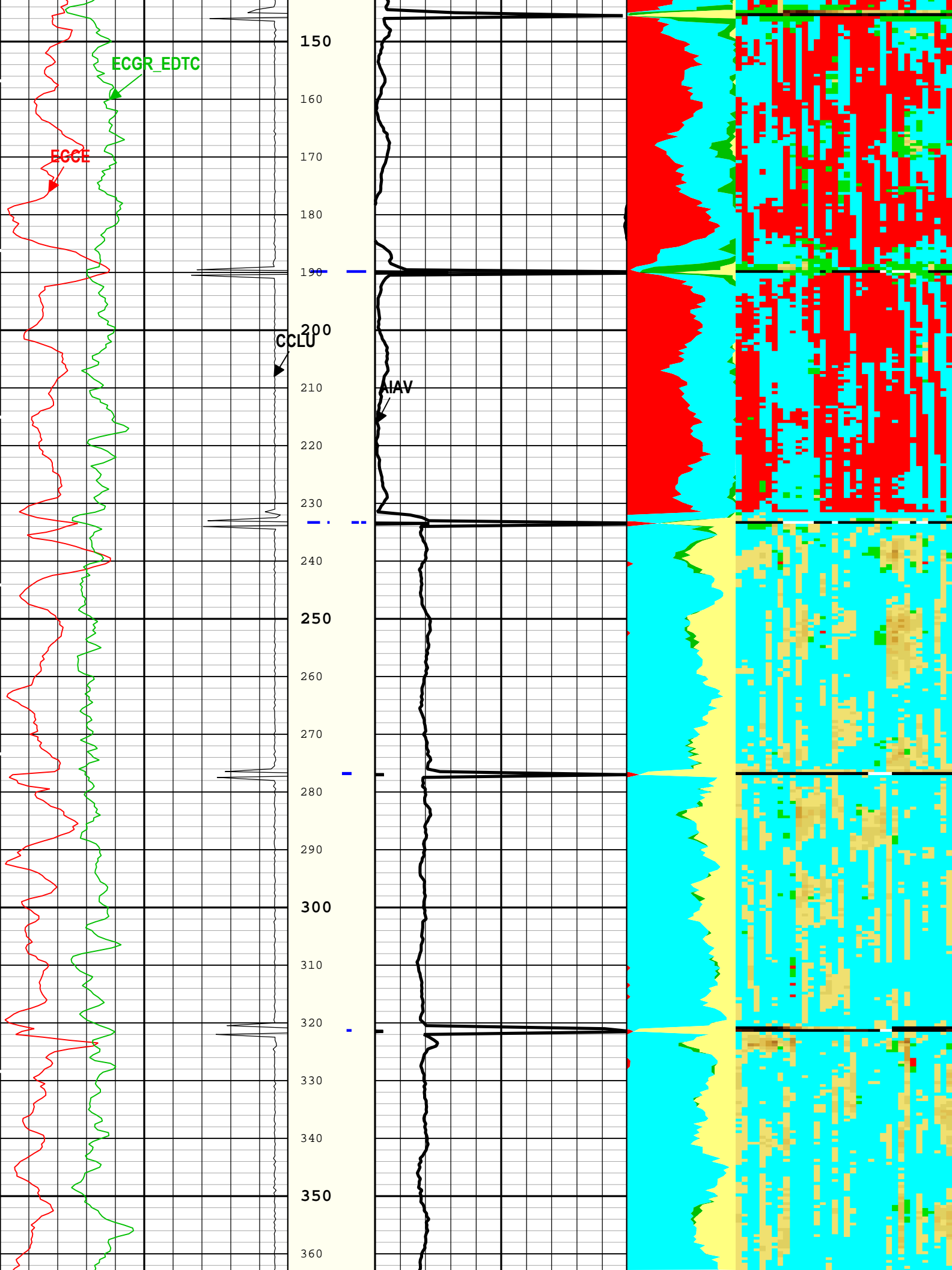
Depth Control Remarks

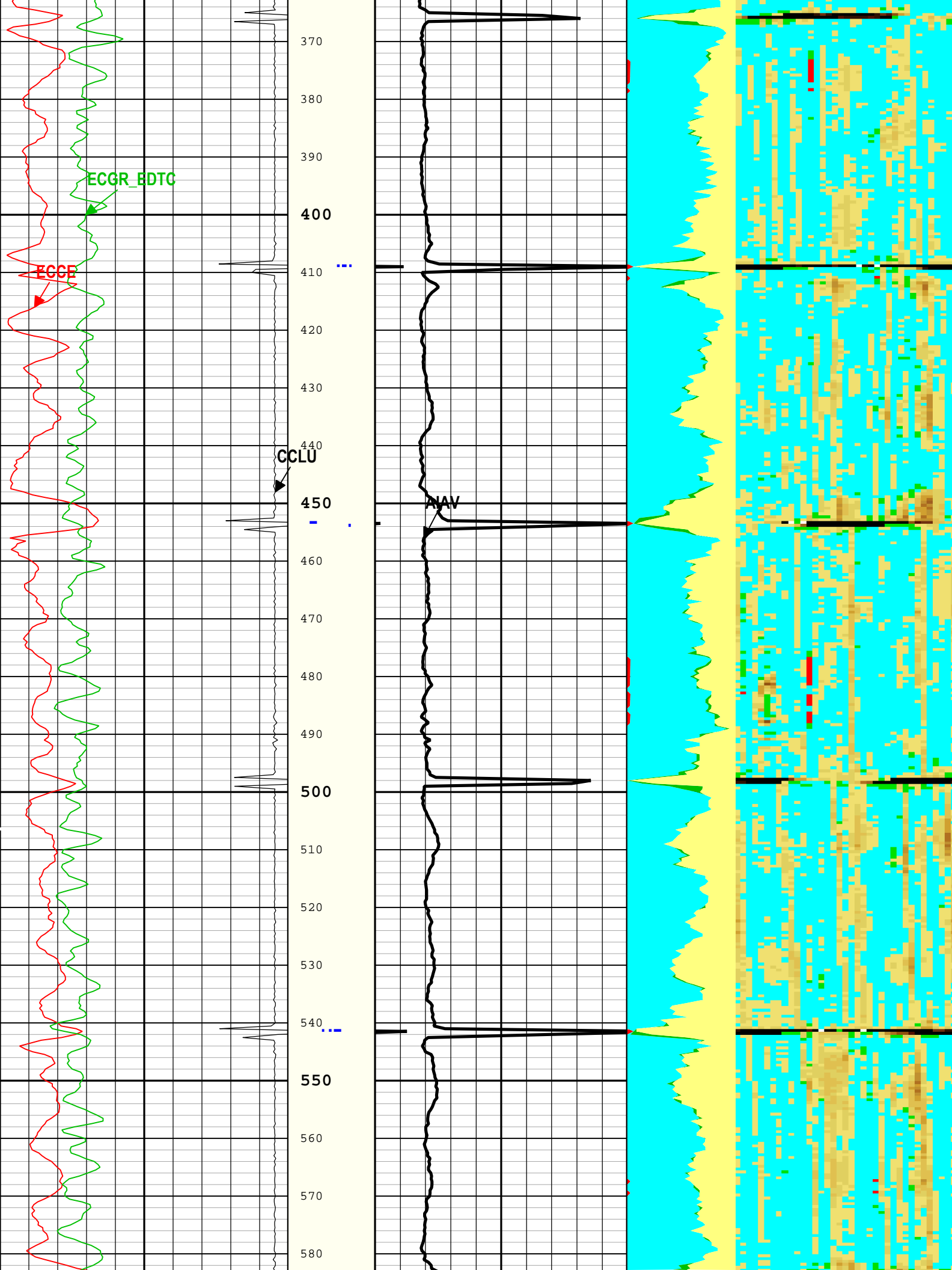
|                            |                       |   |
|----------------------------|-----------------------|---|
| Log Sequence               | First Log In the Well | All Schlumberger depth control procedures followed. |
| Rig Up Length At Surface   |                       | IDW used as primary depth device.                   |
| Rig Up Length At Bottom    |                       | Z-chart used as secondary depth device.             |
| Rig Up Length Correction   |                       | Logs correlated to down log, GR and CCL curve.      |
| Stretch Correction         |                       |   |
| Tool Zero Check At Surface |                       |   |

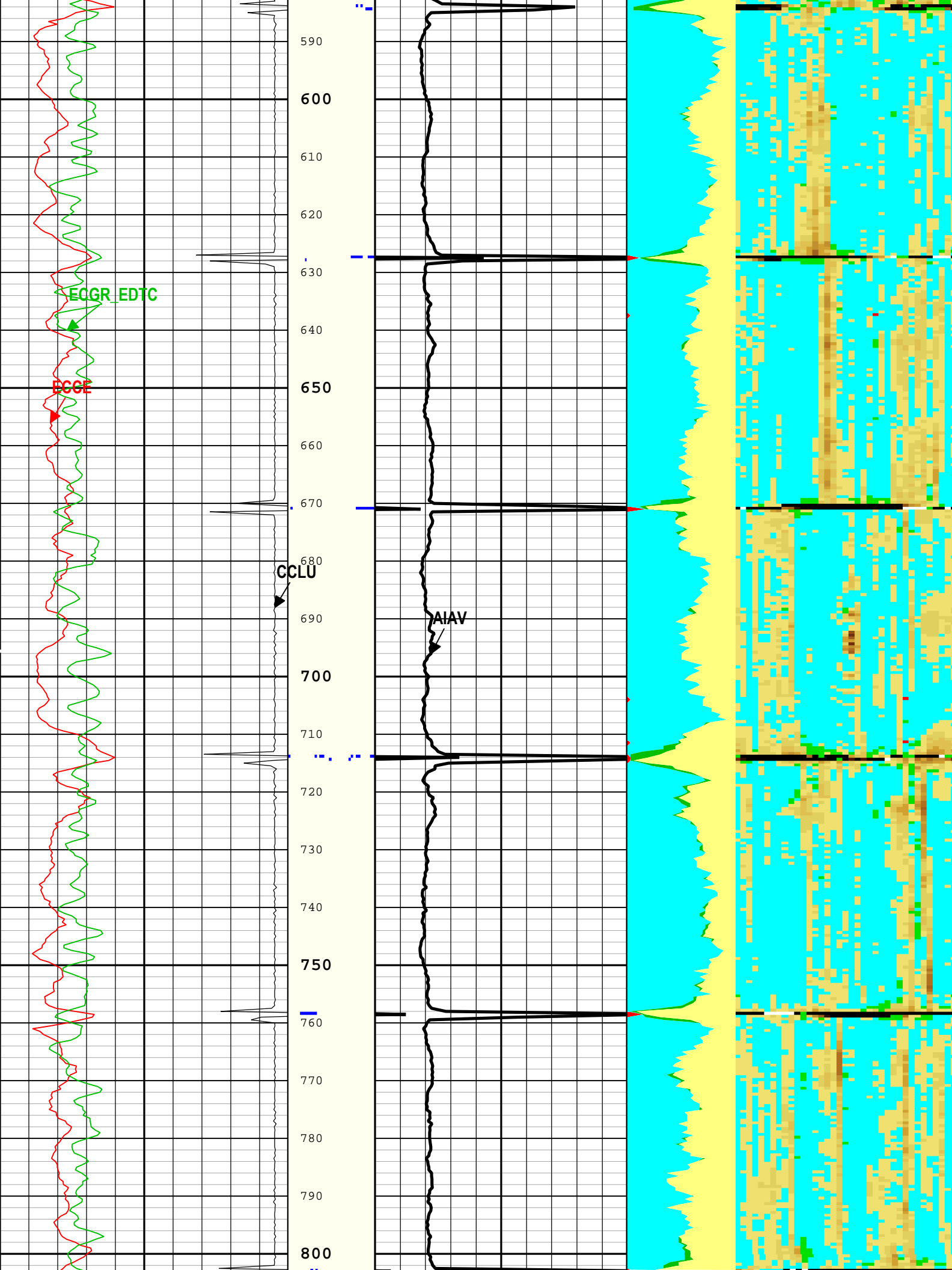
USIT - Fluid Properties Measurement

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

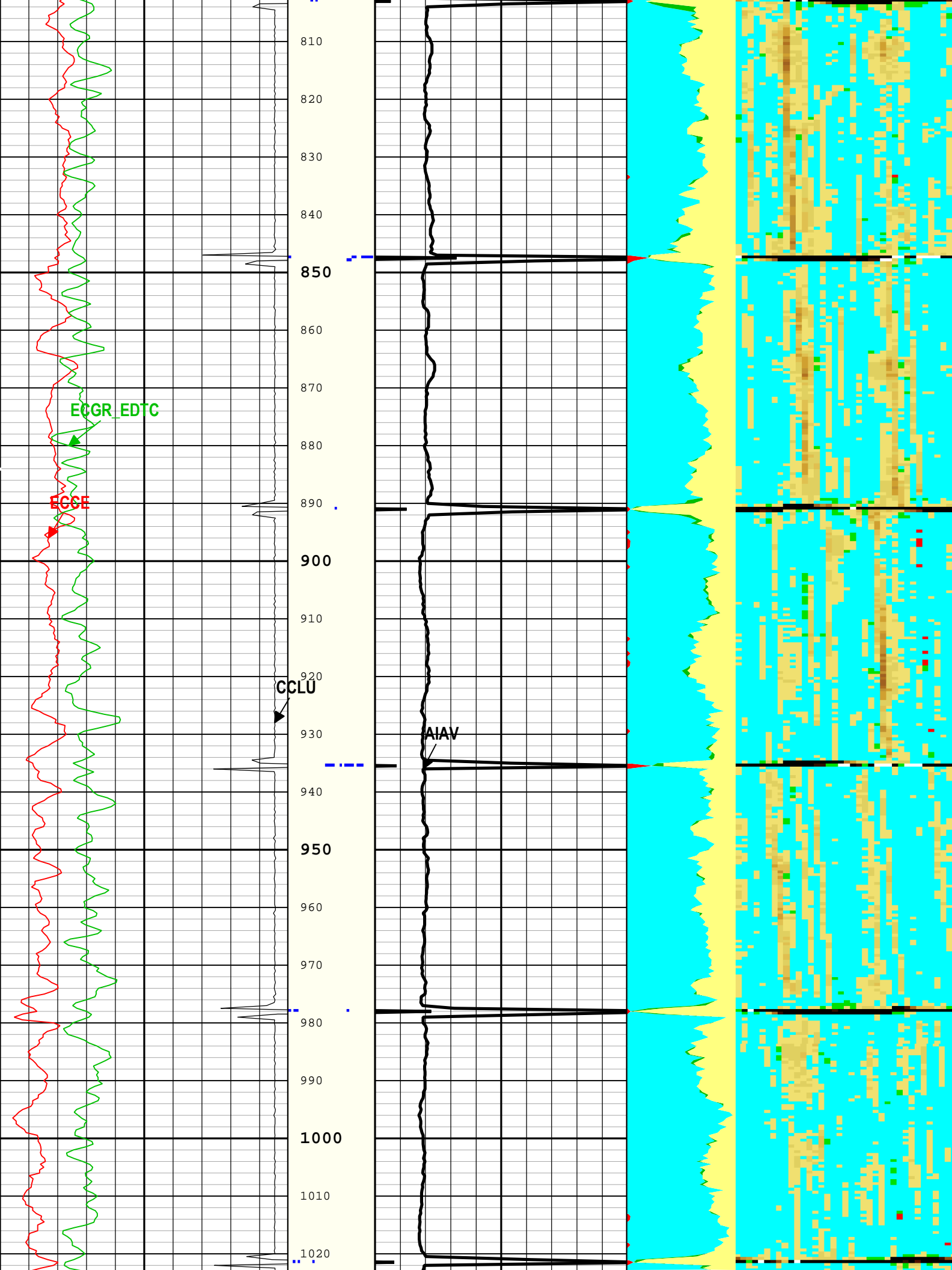


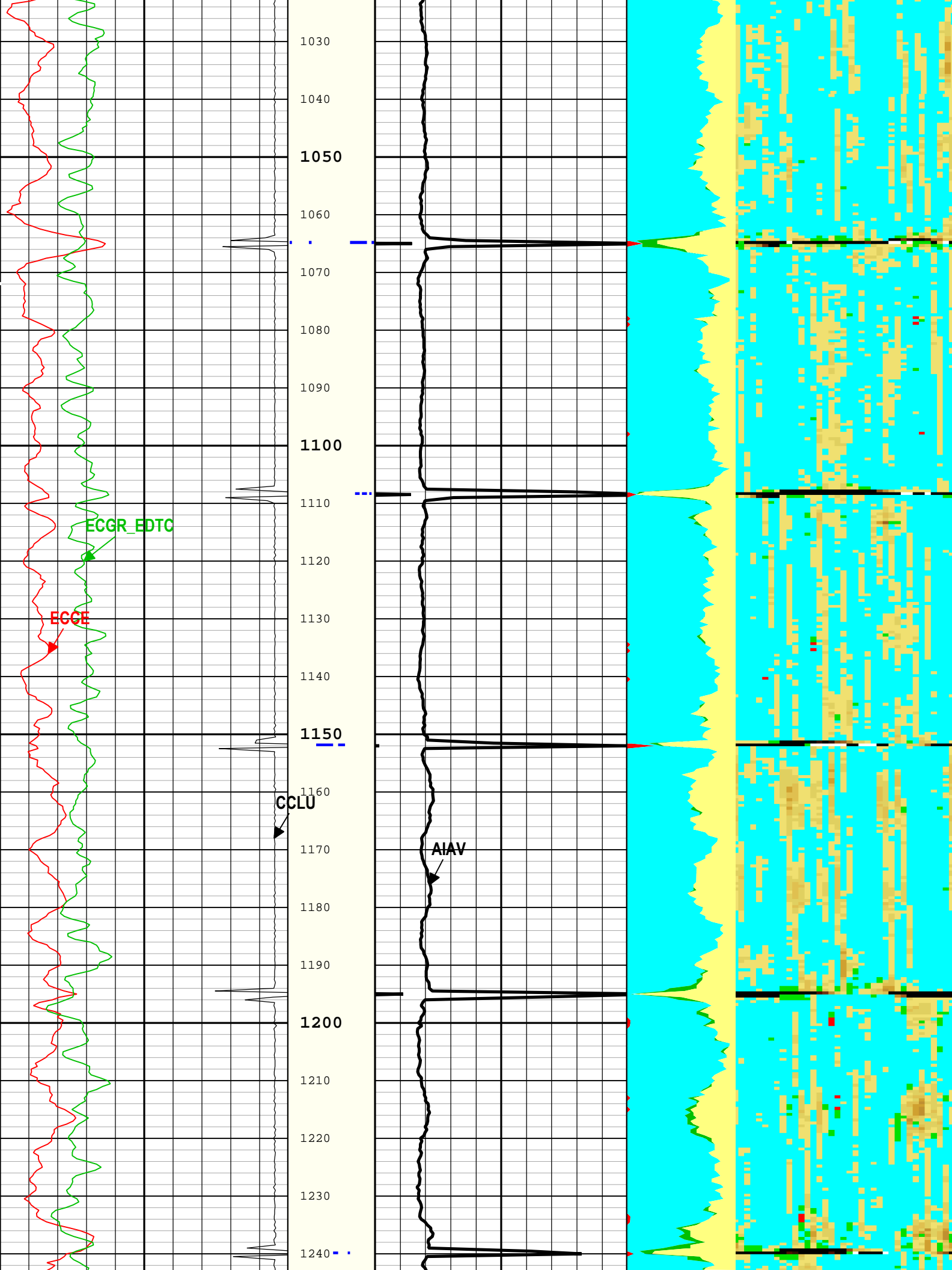


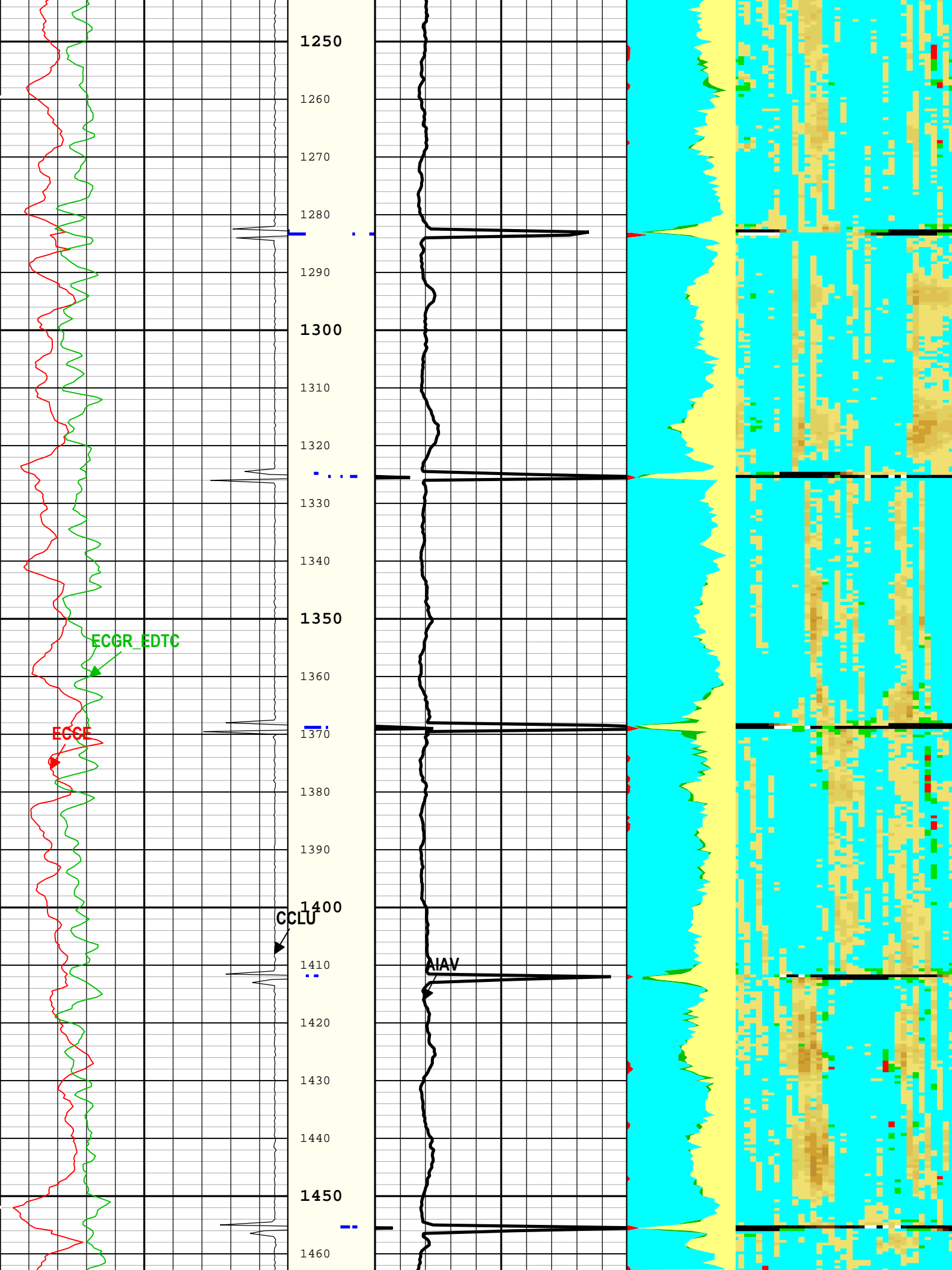


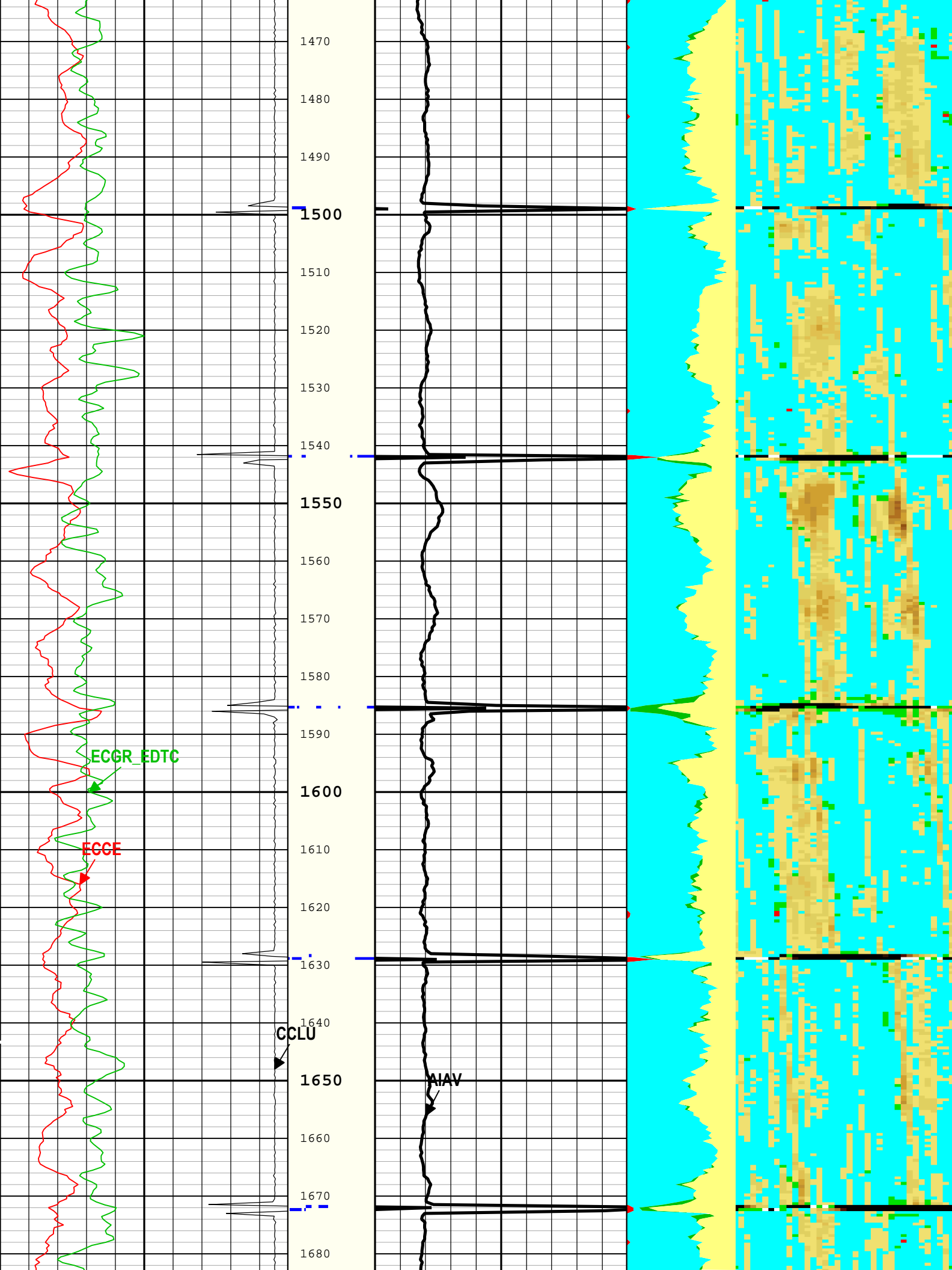


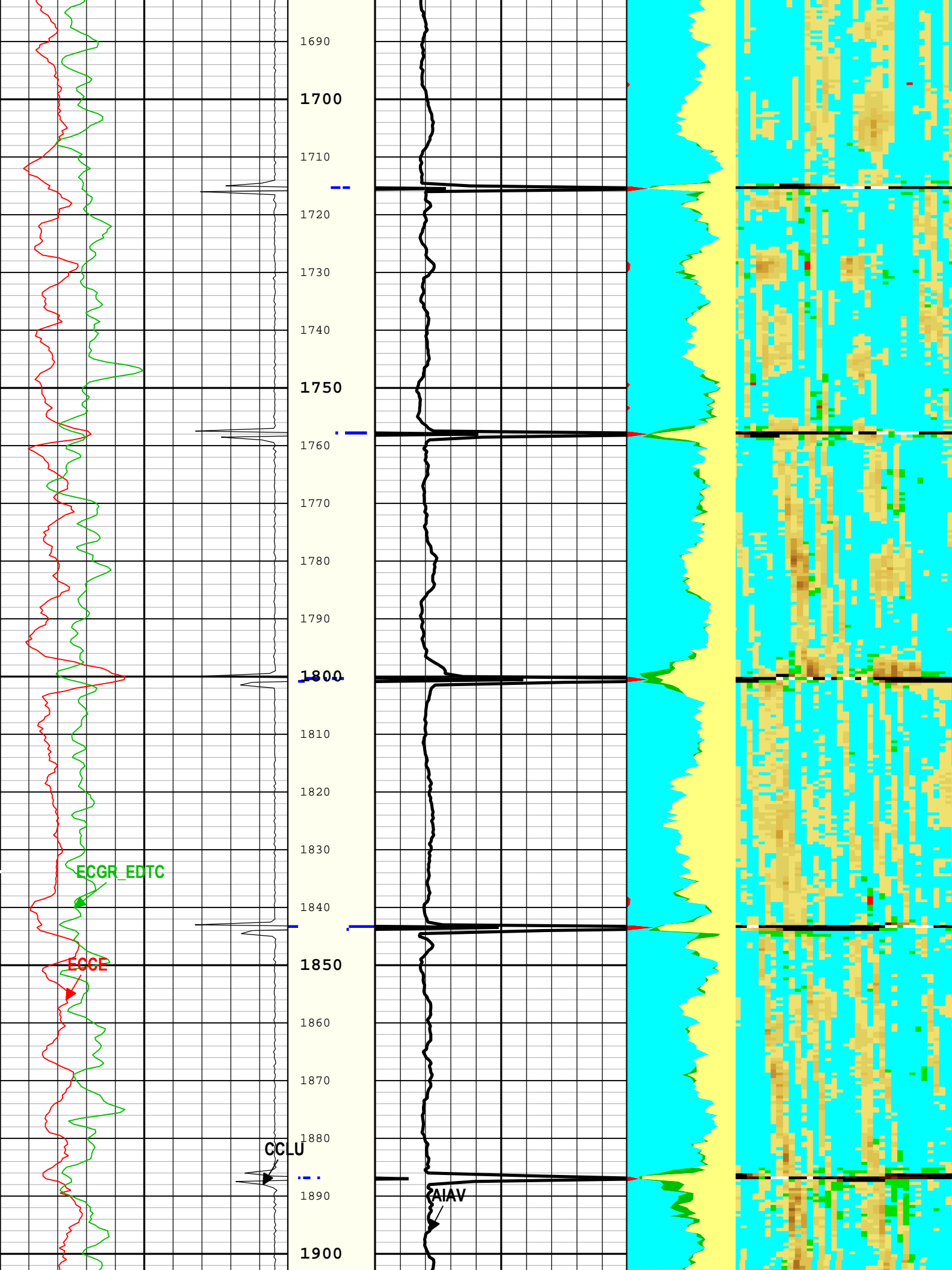


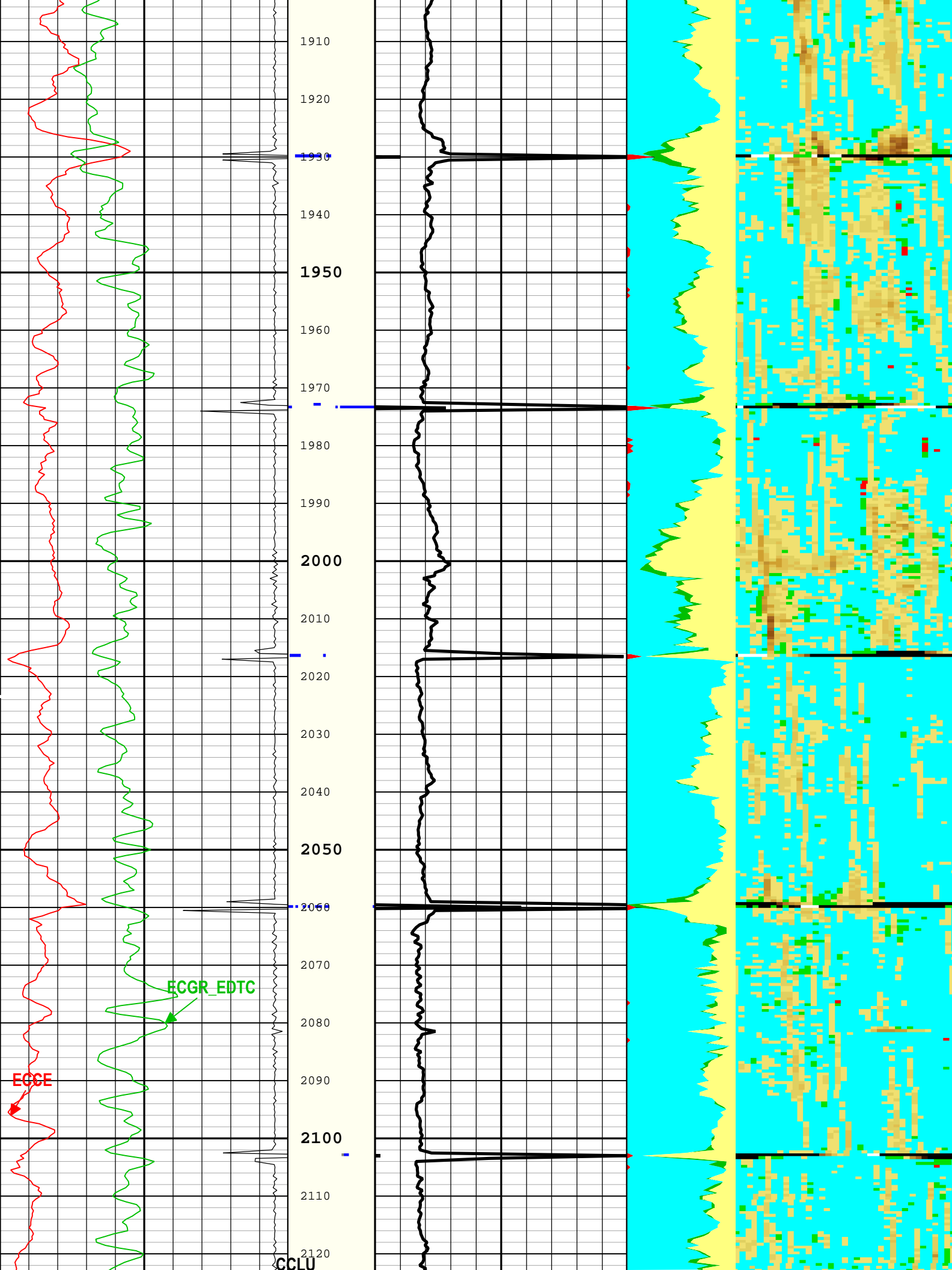


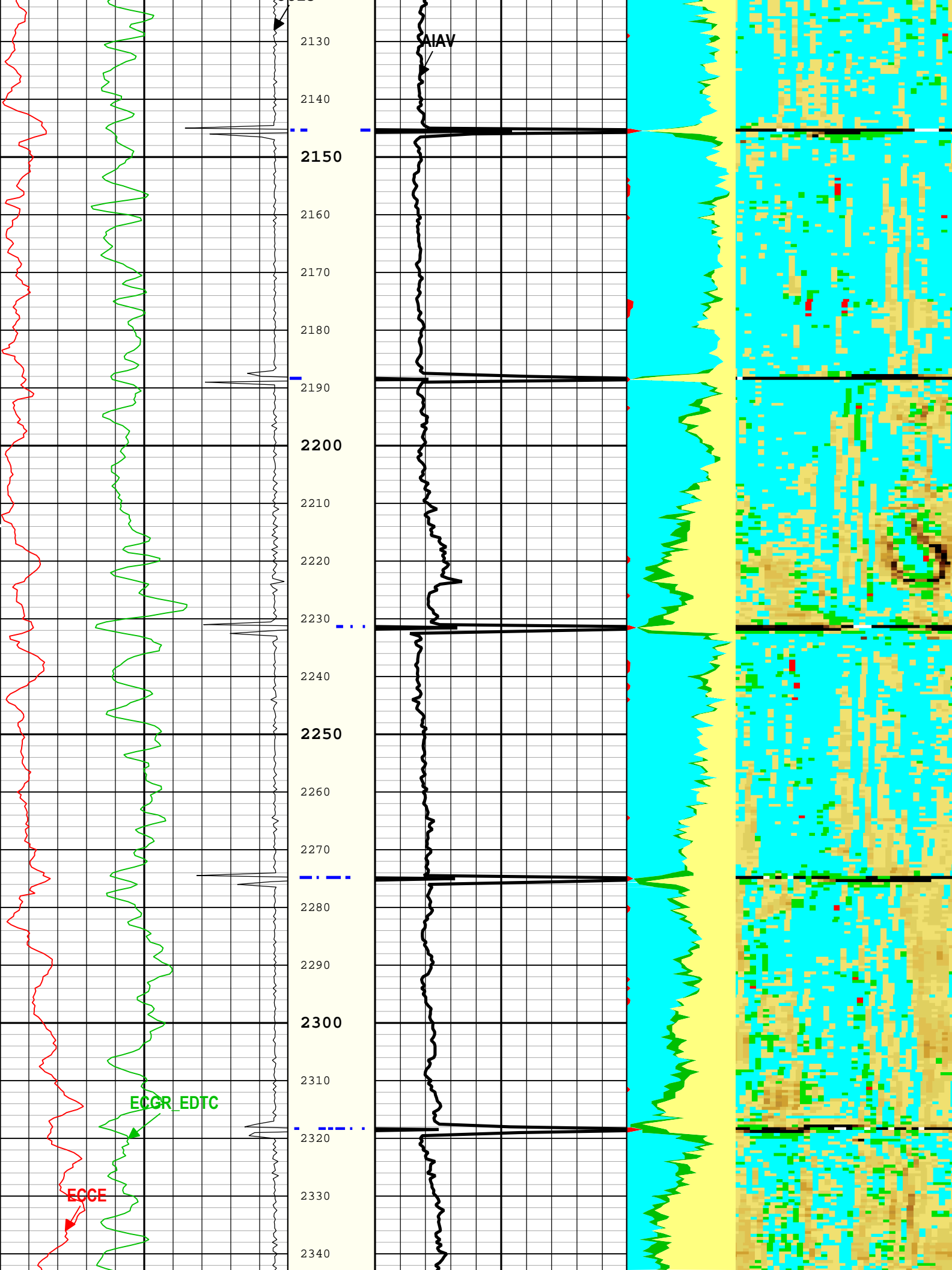


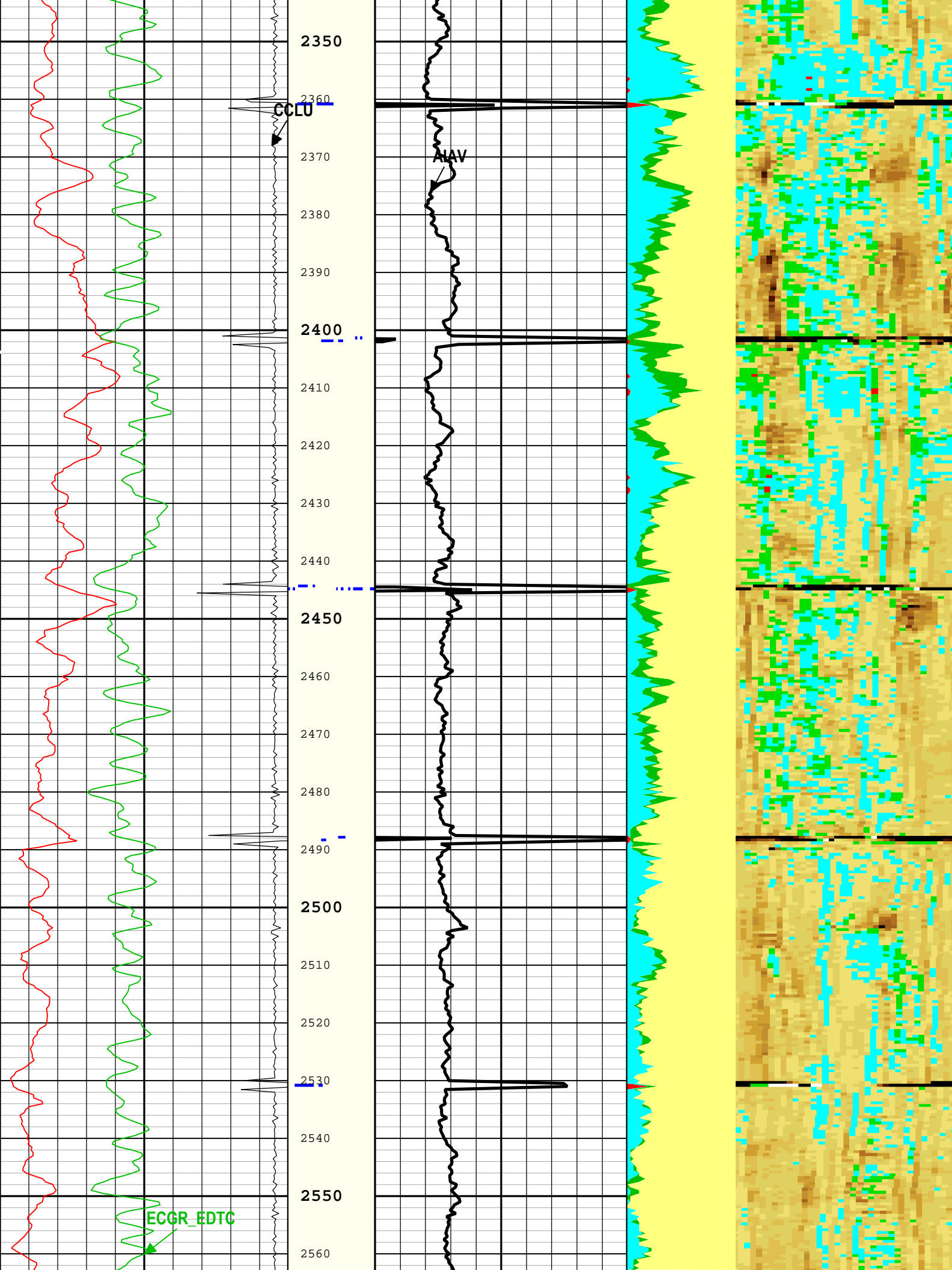




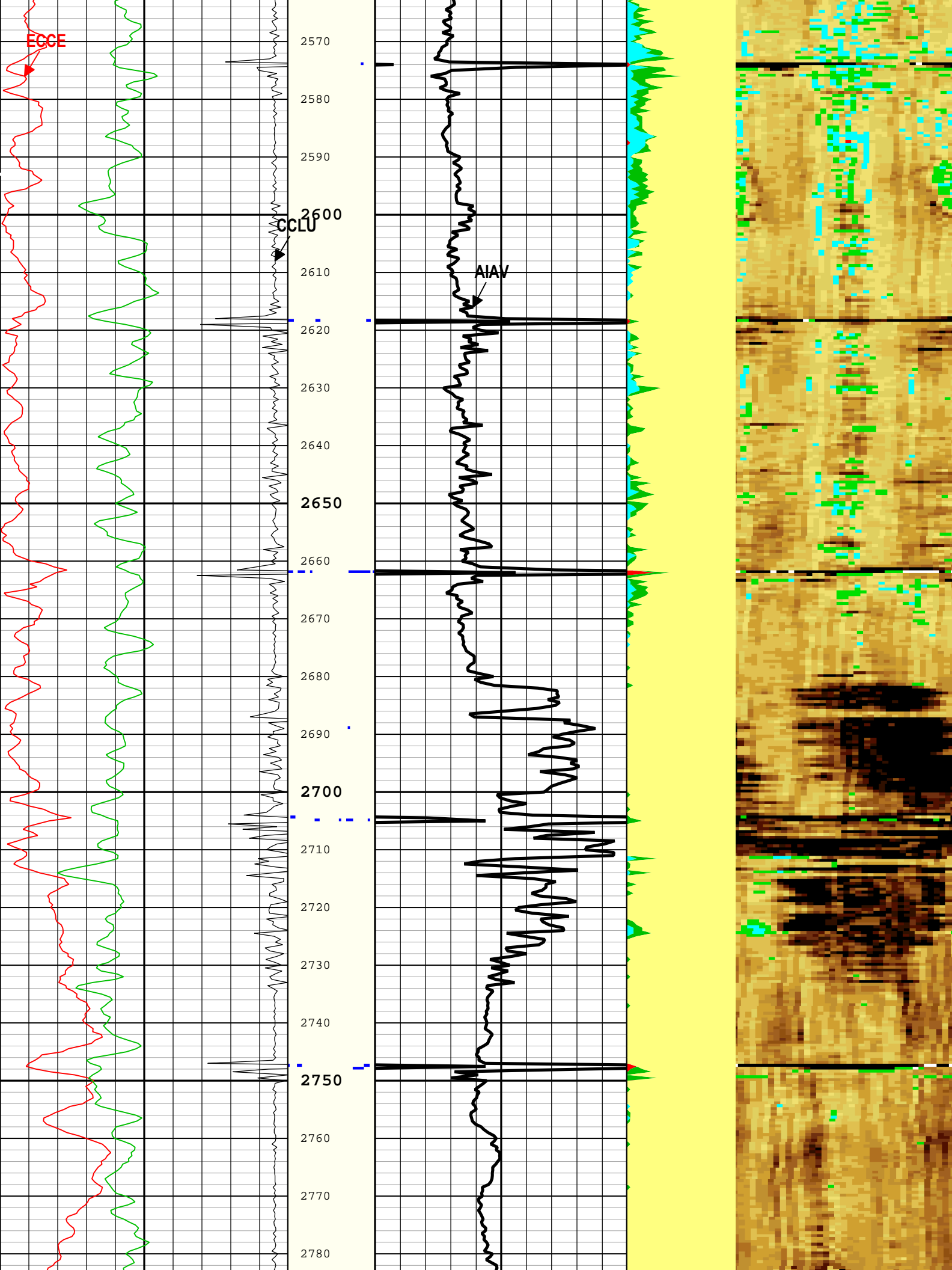


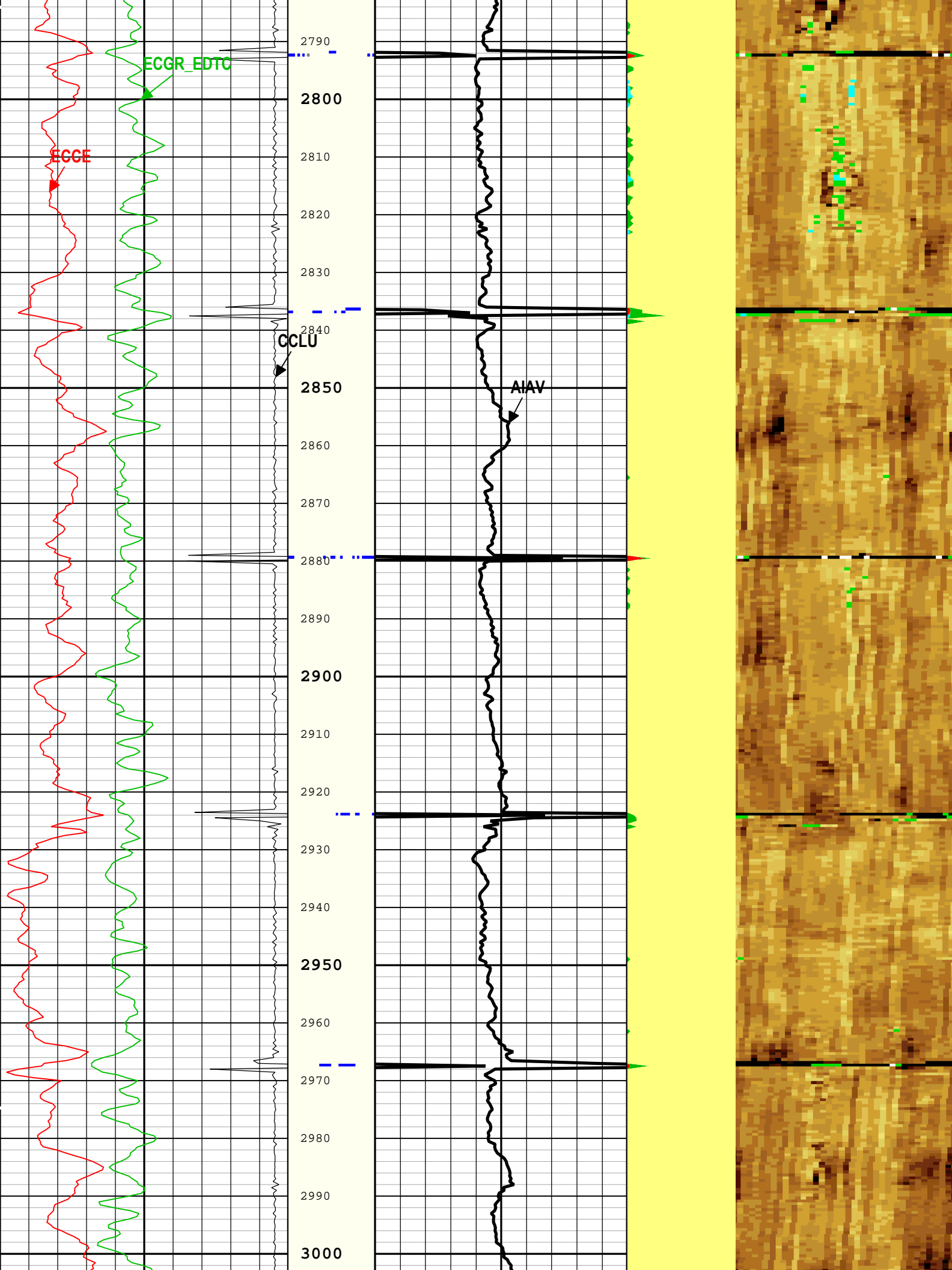


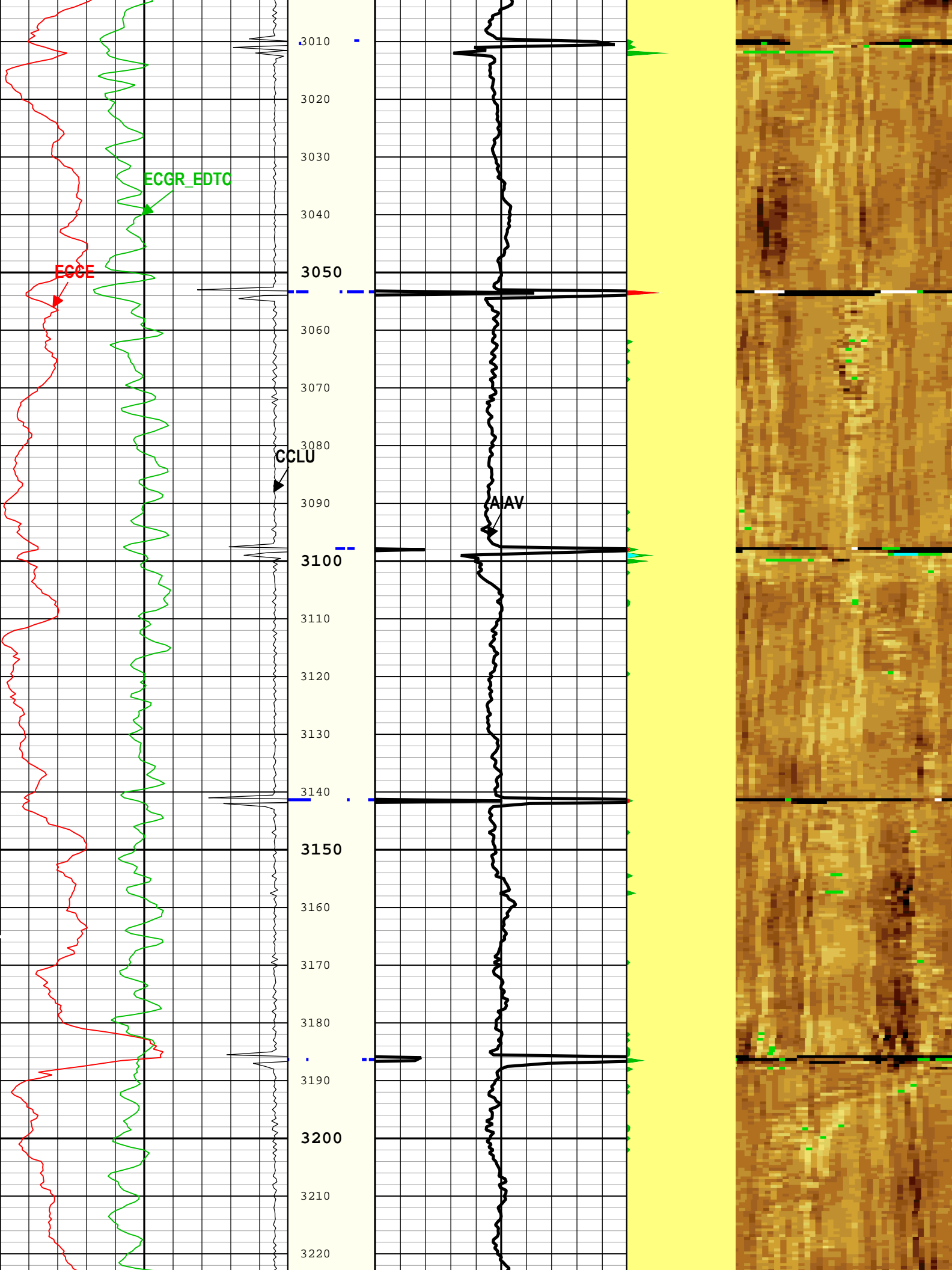


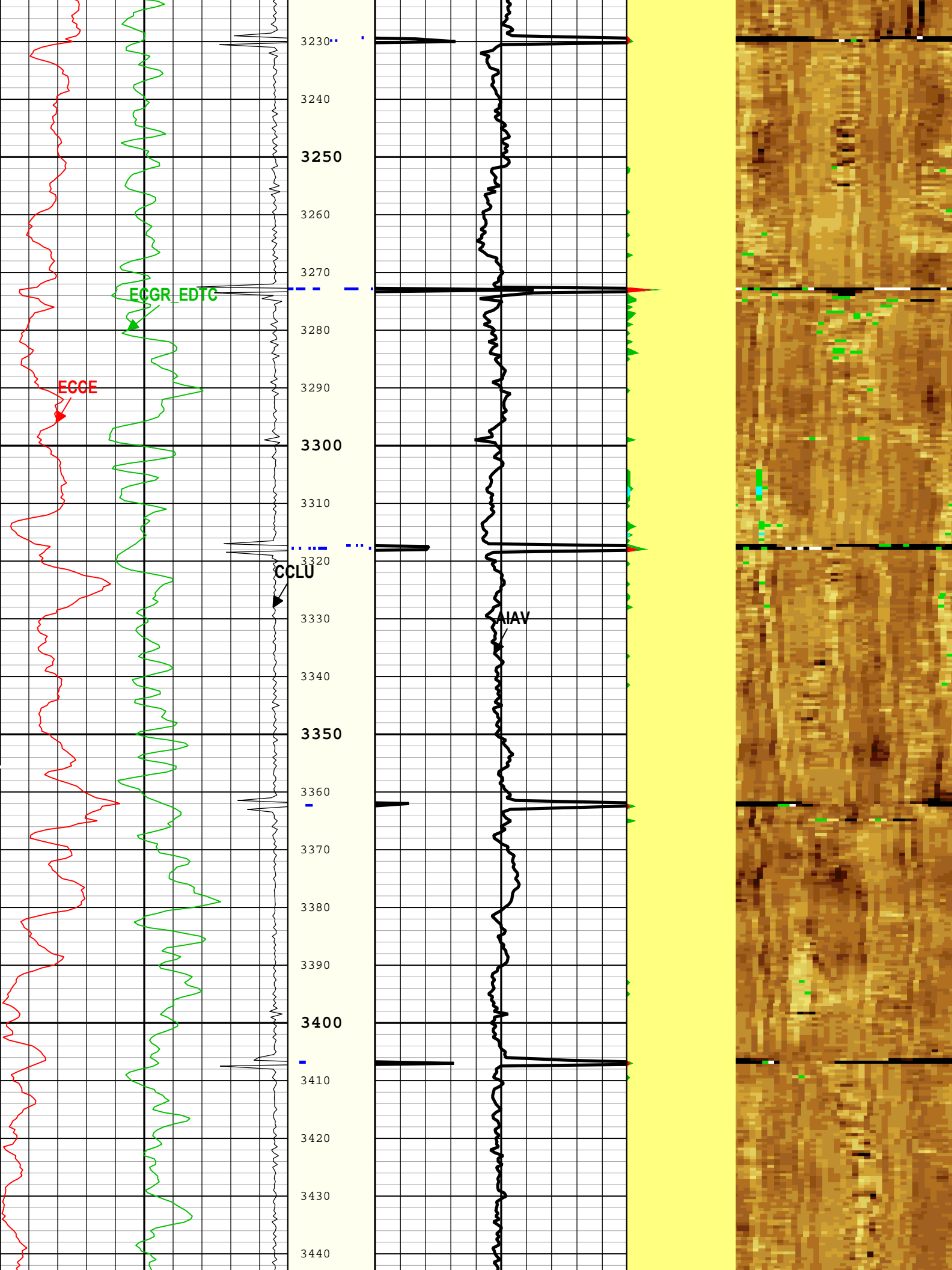


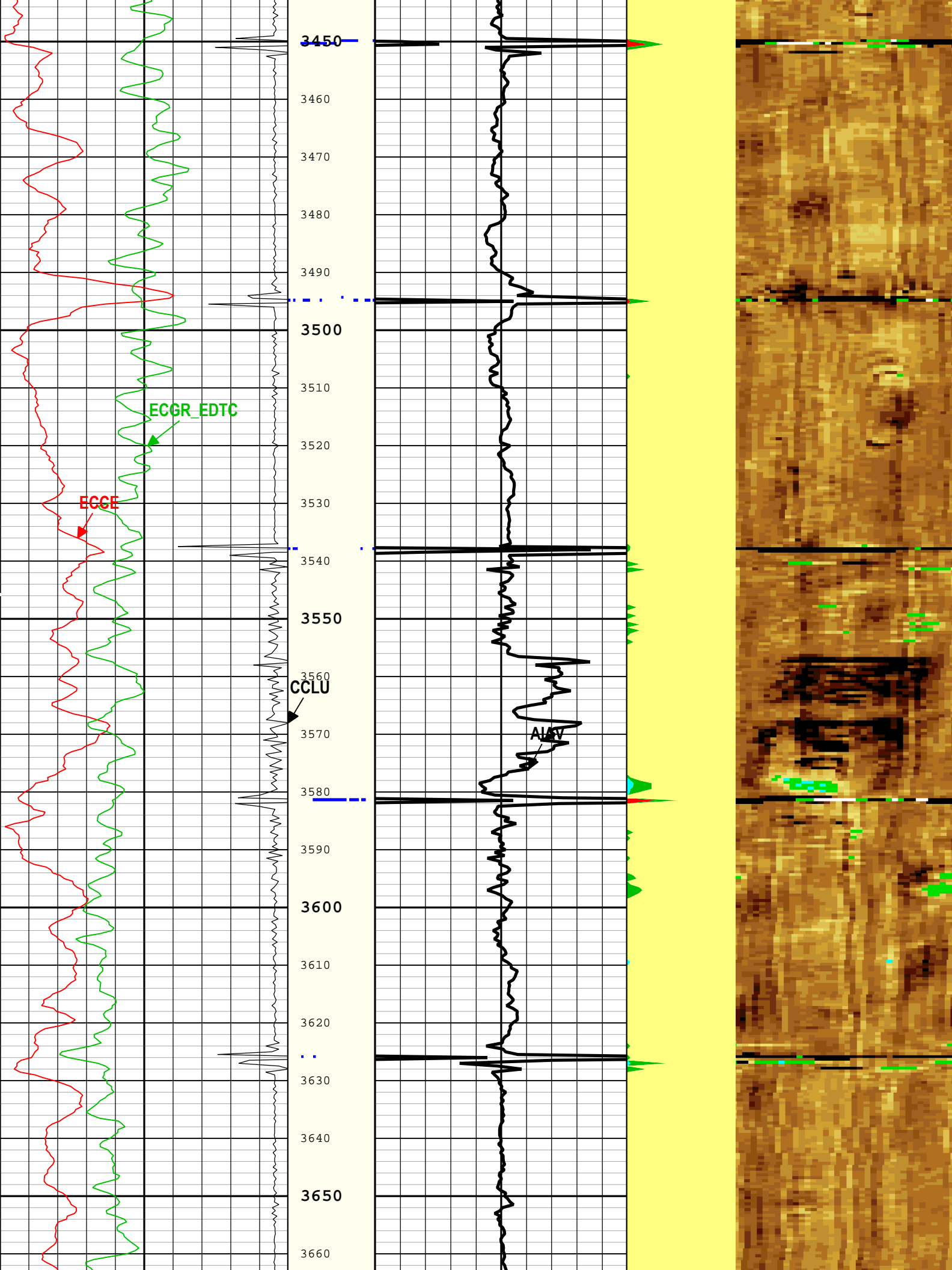


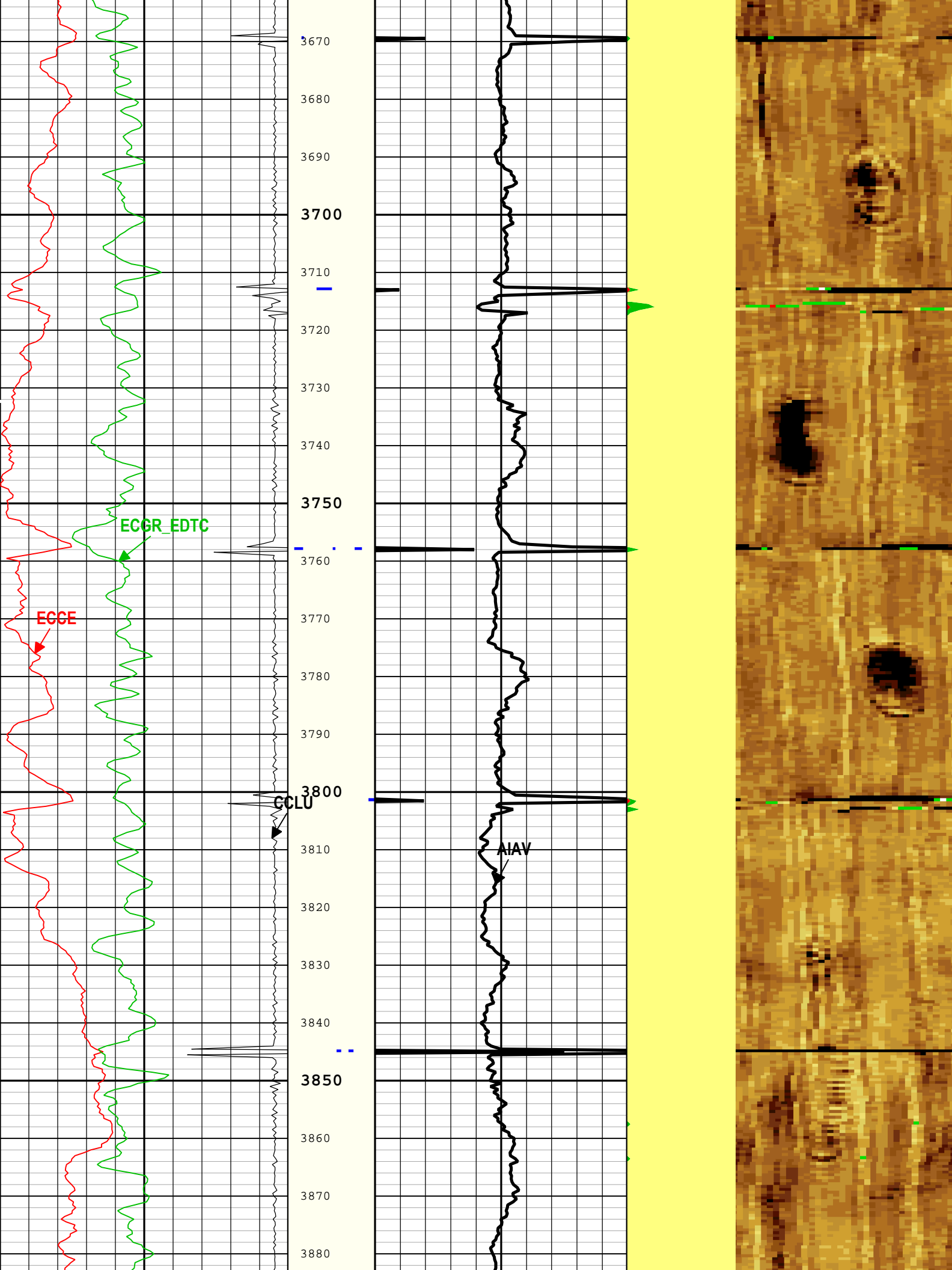


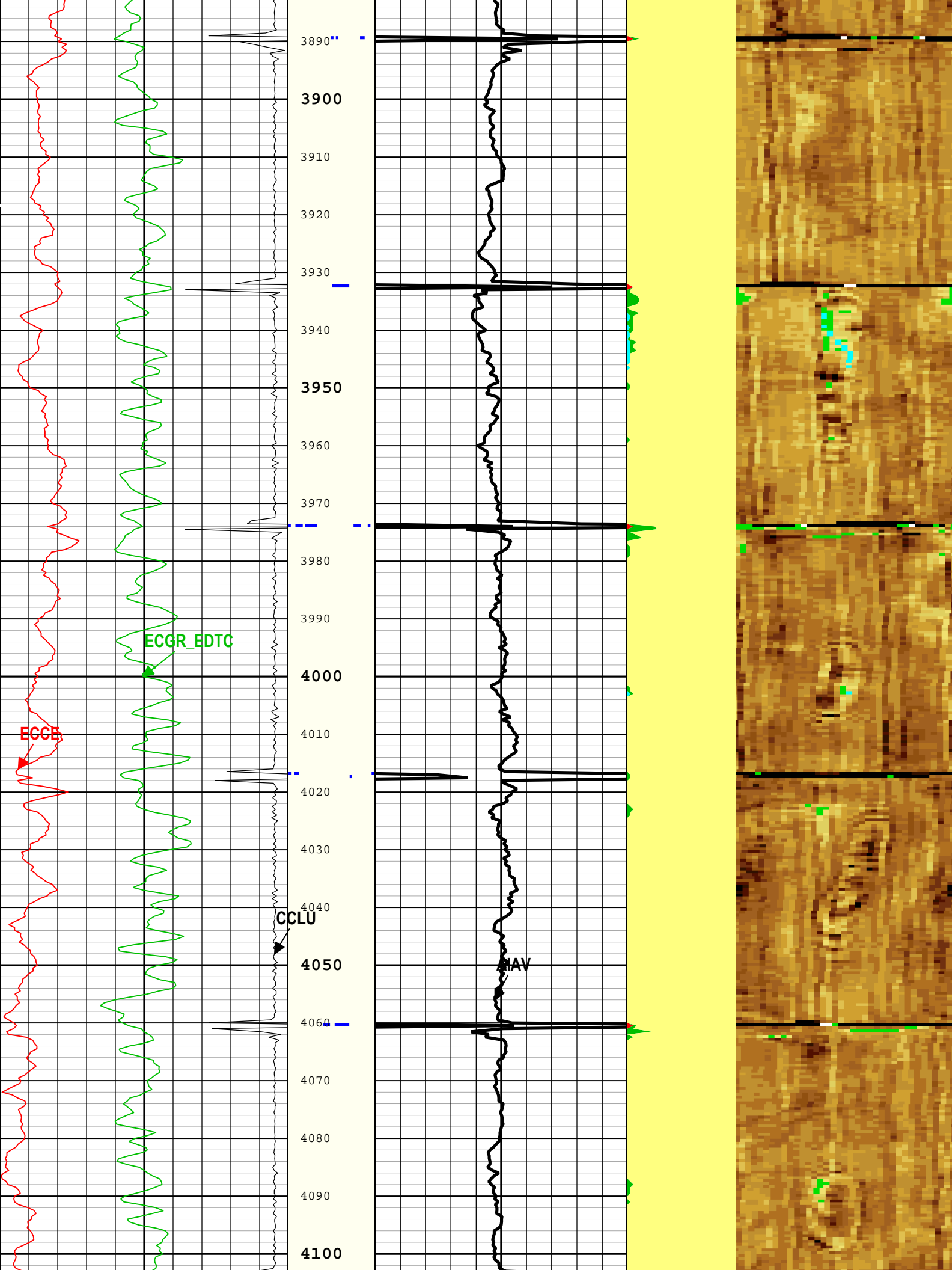


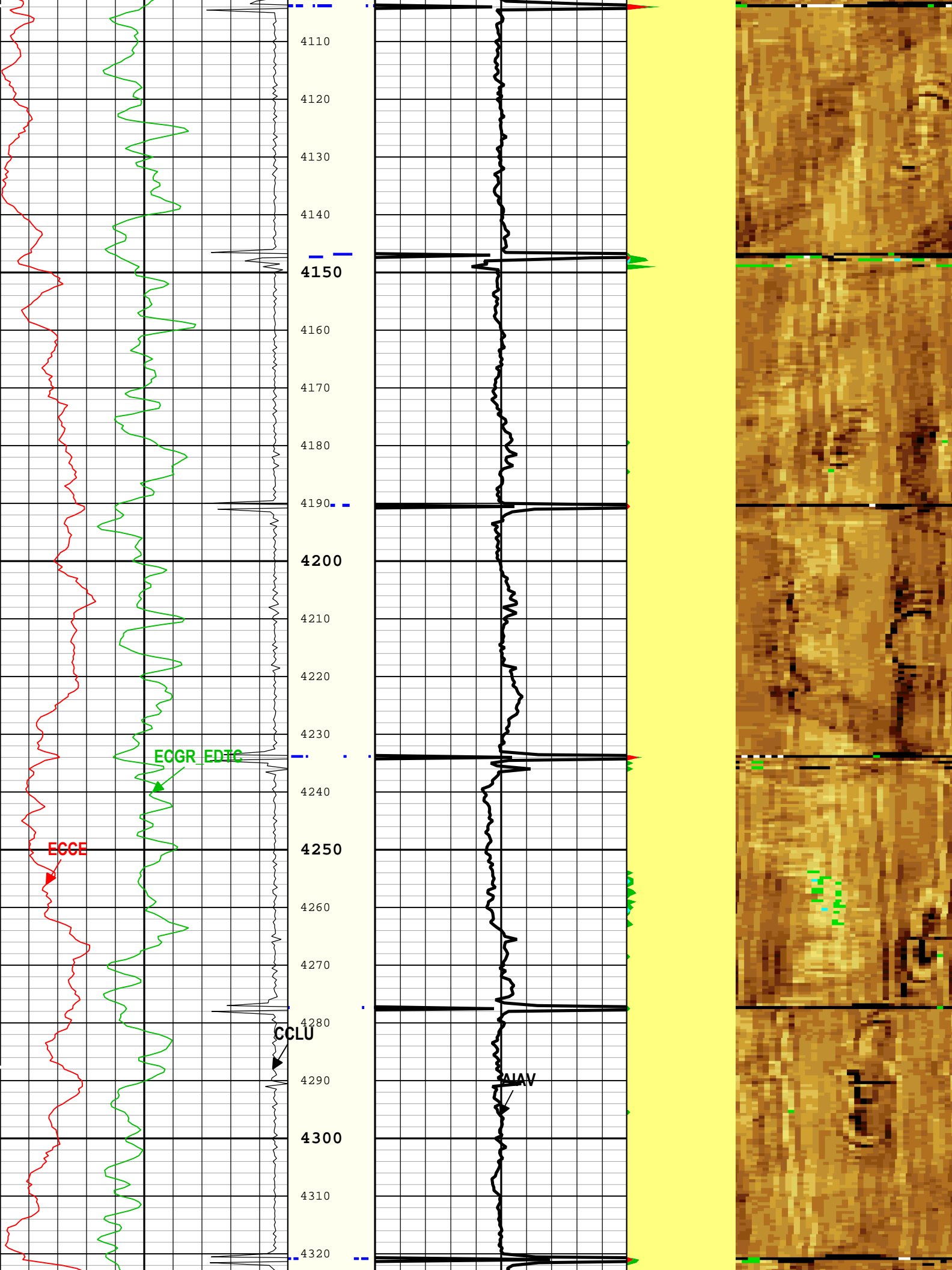




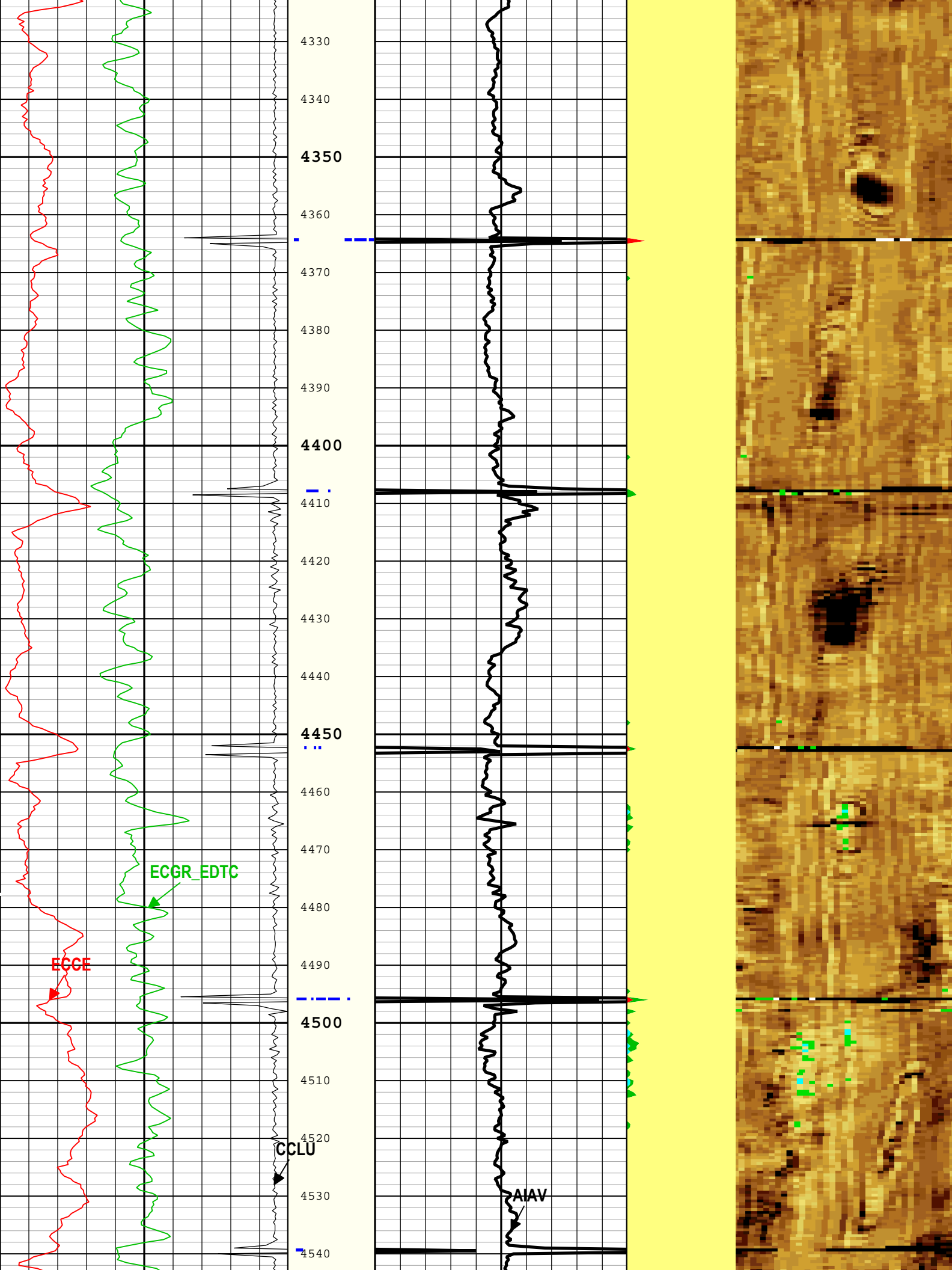


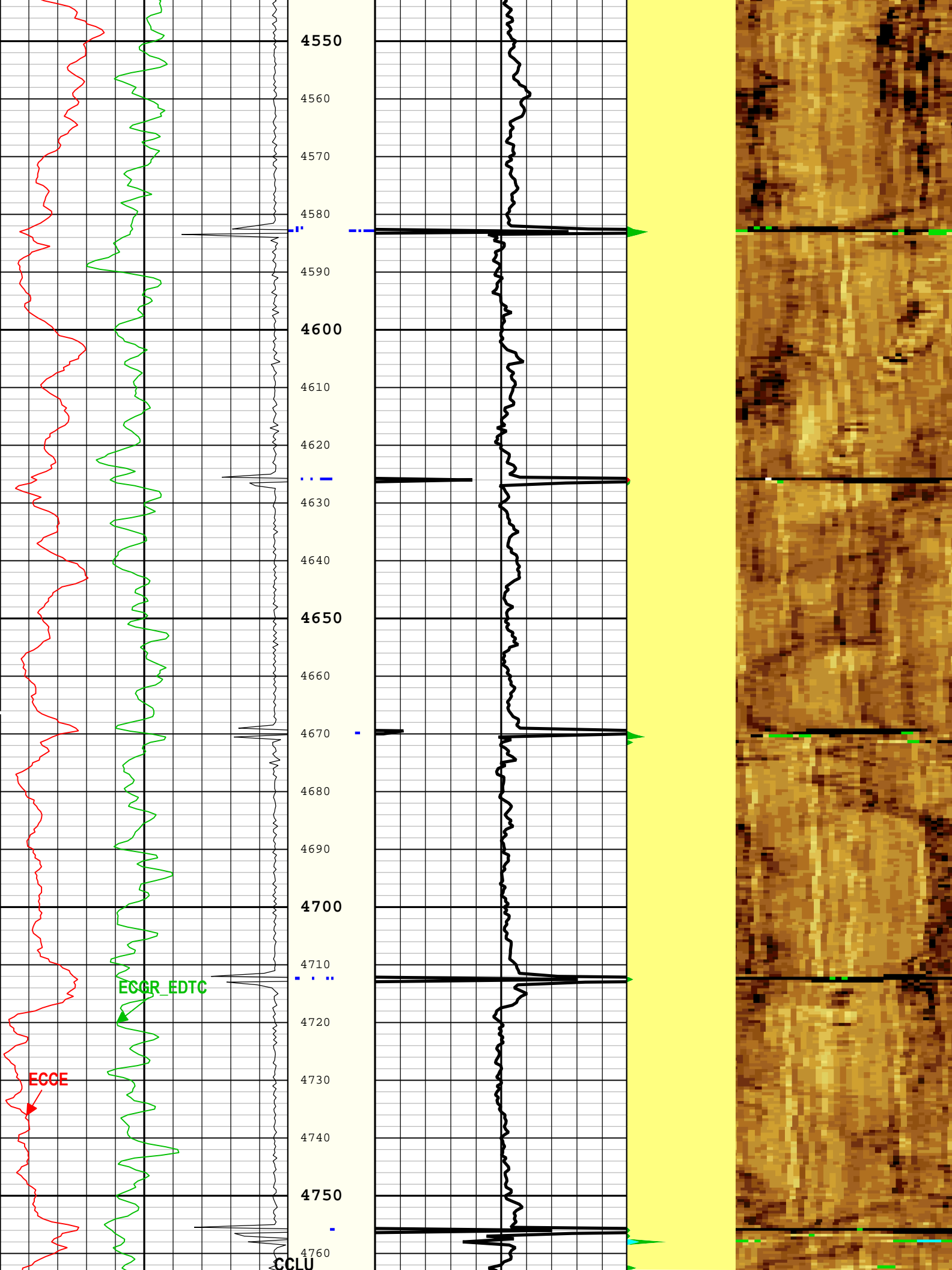


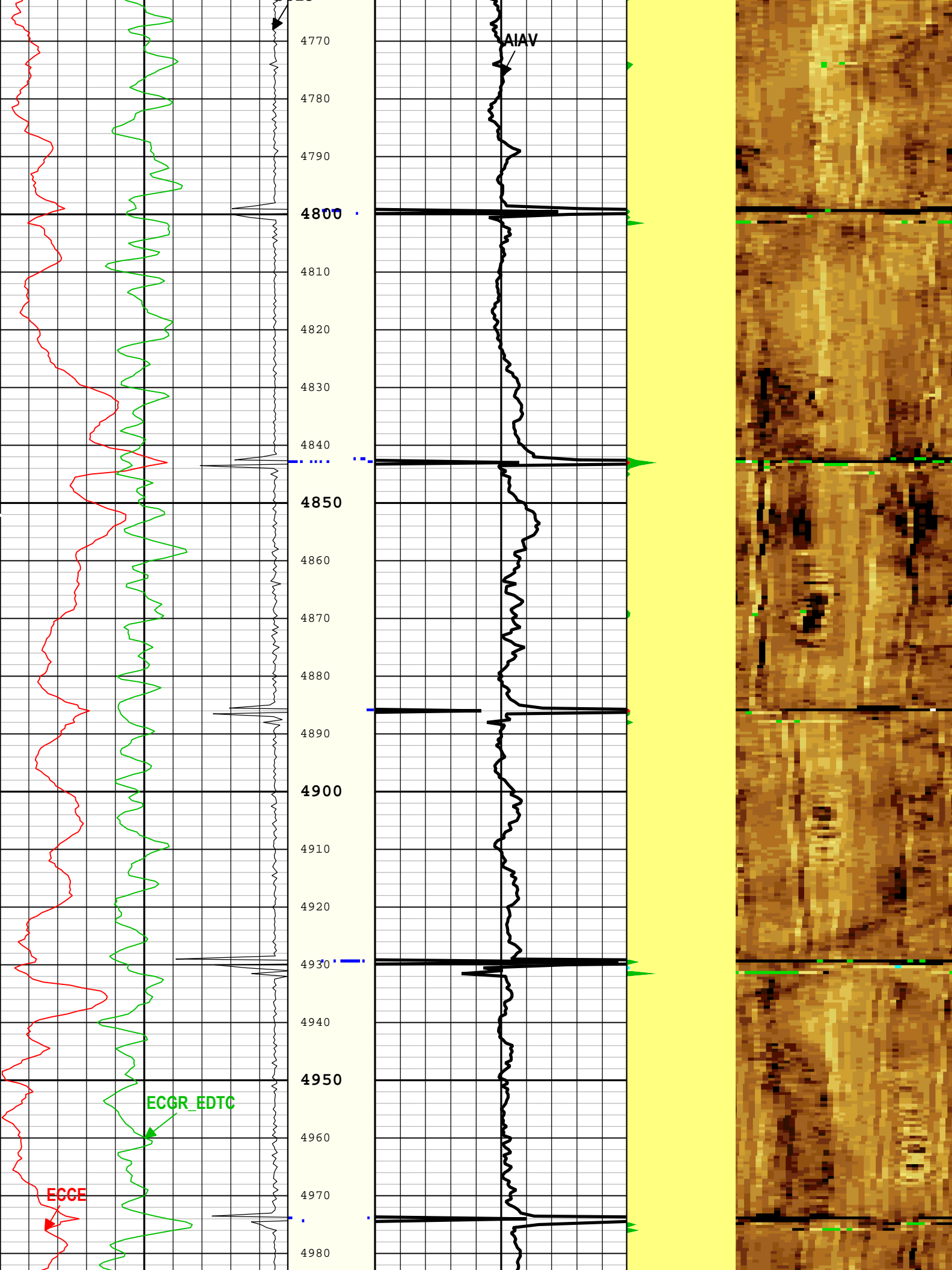


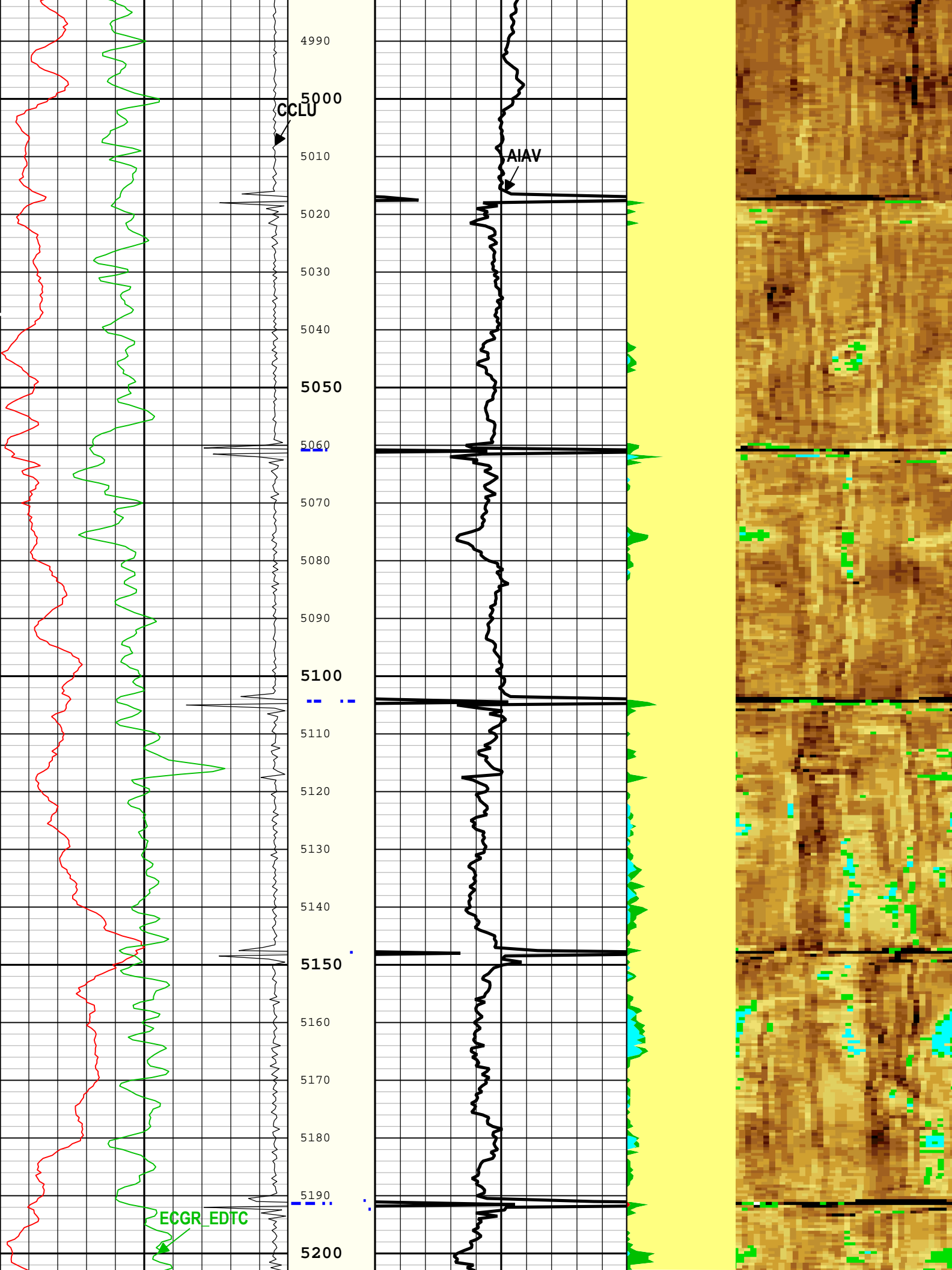


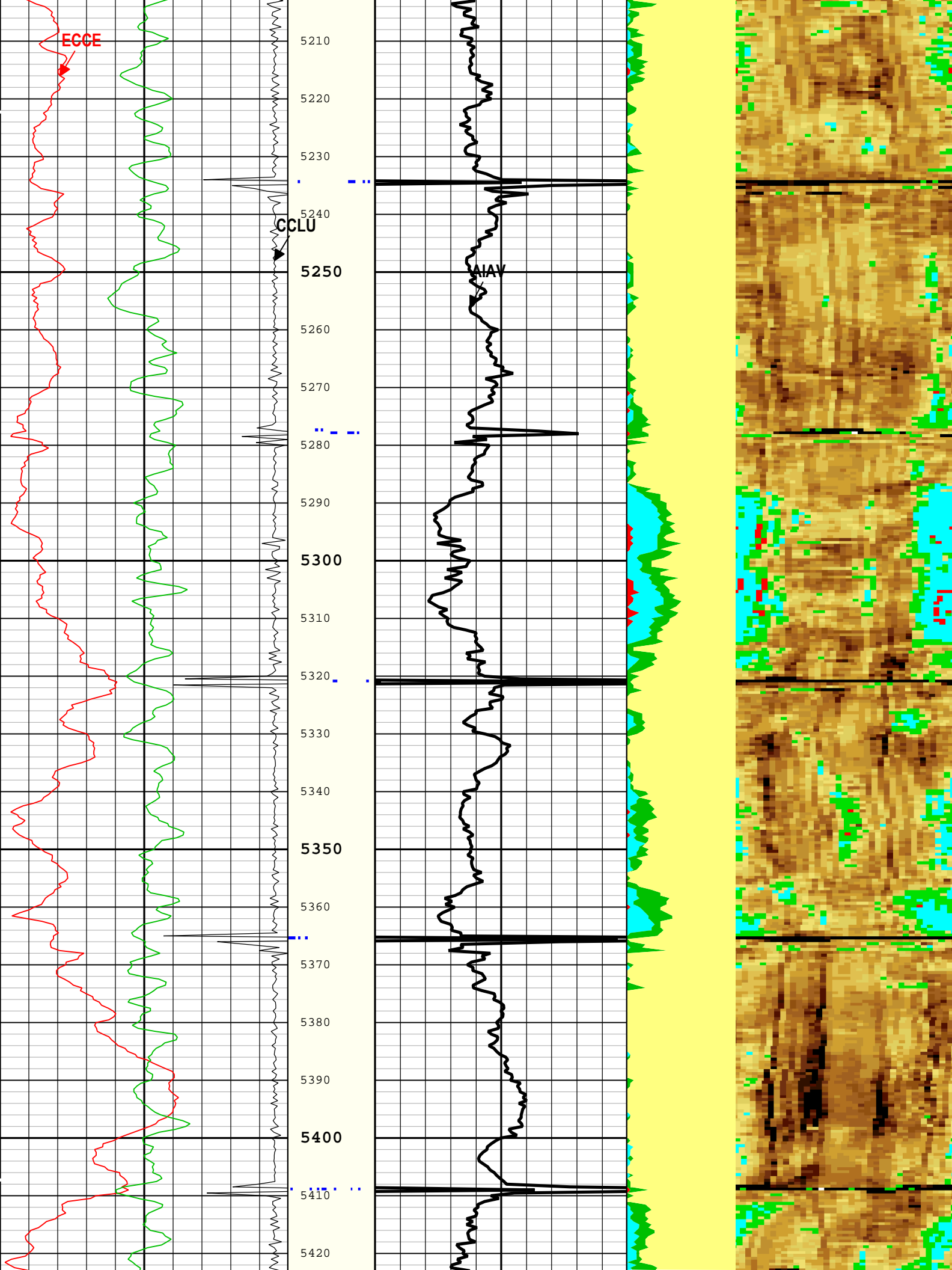


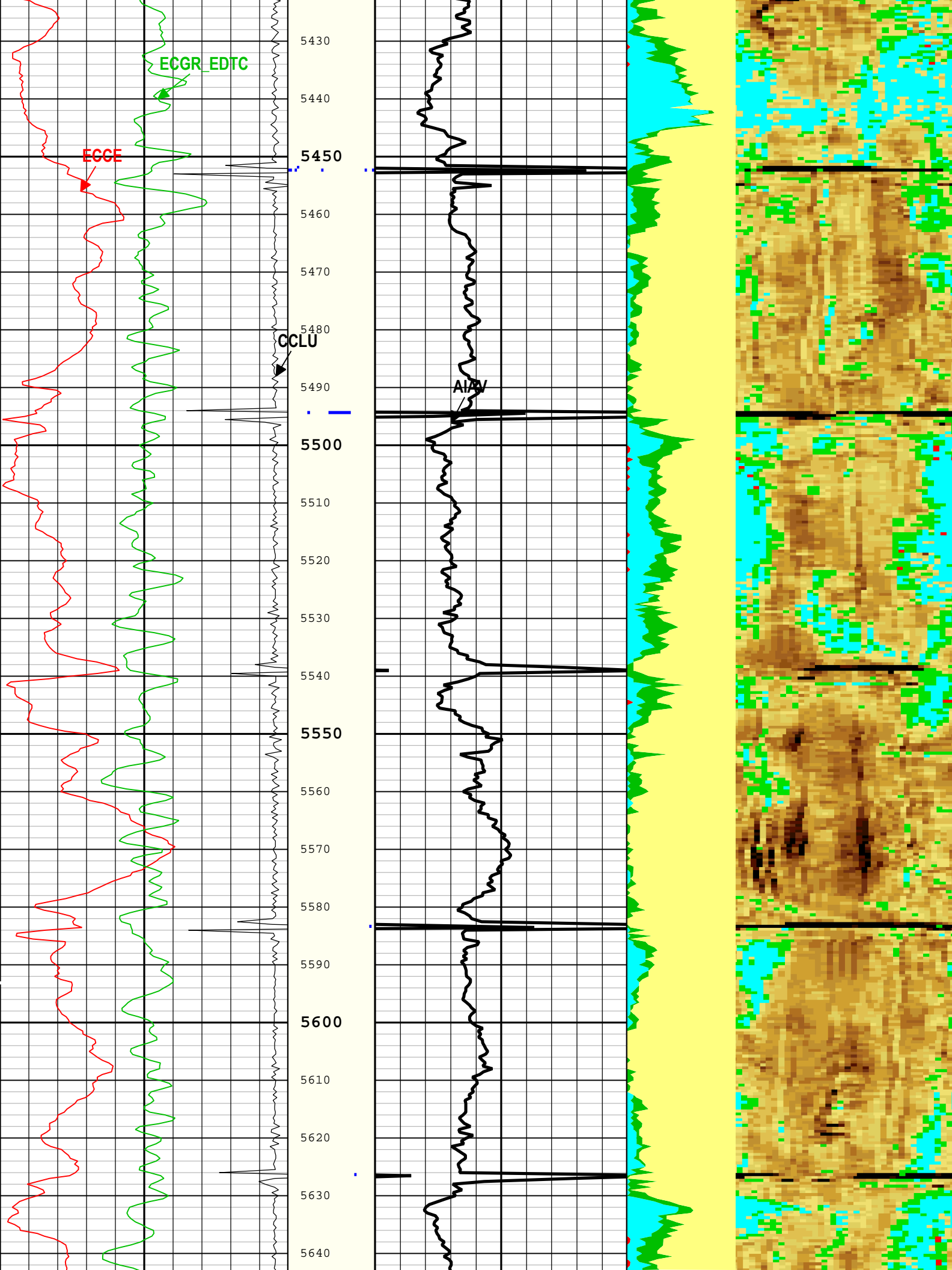


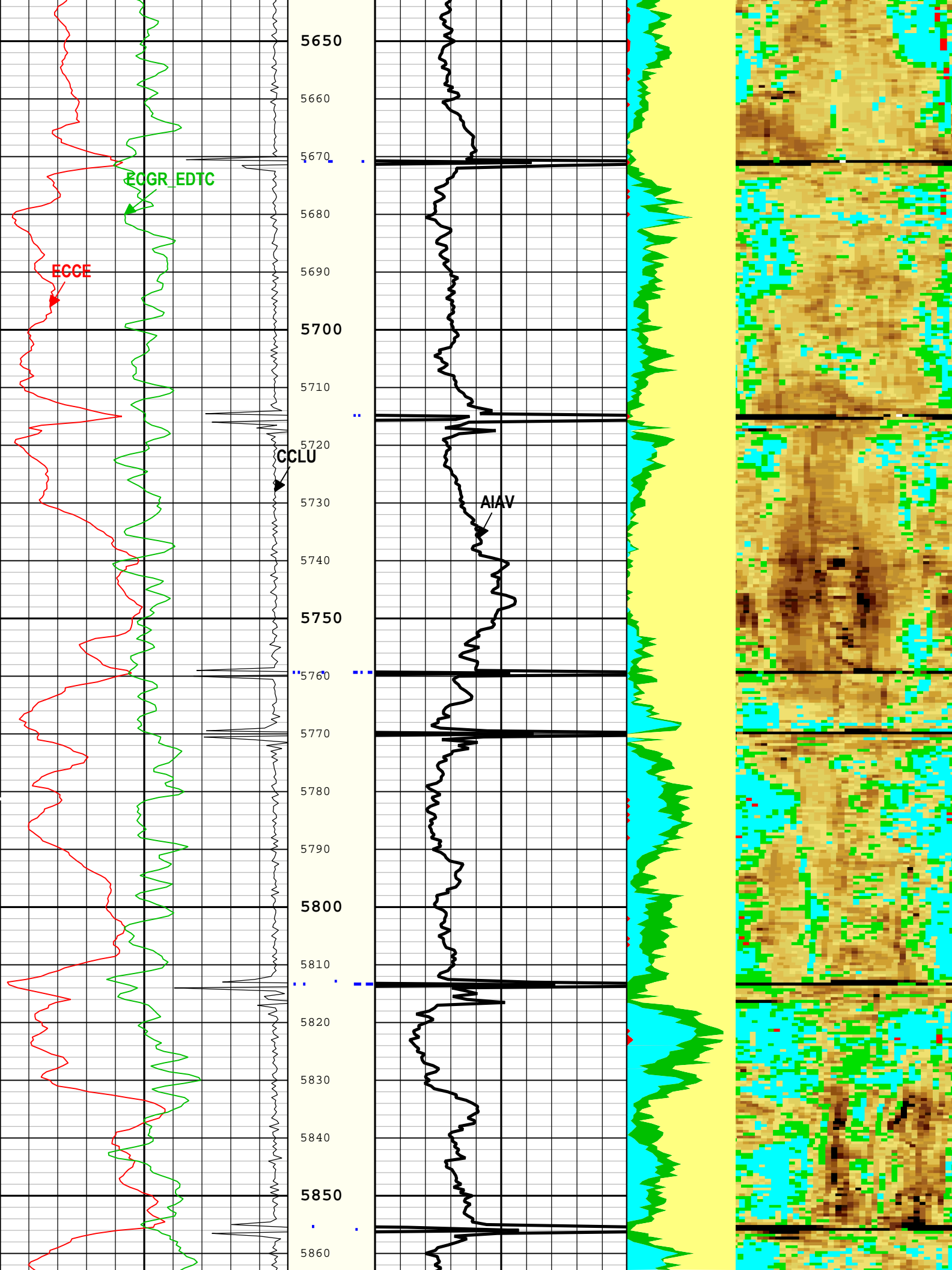


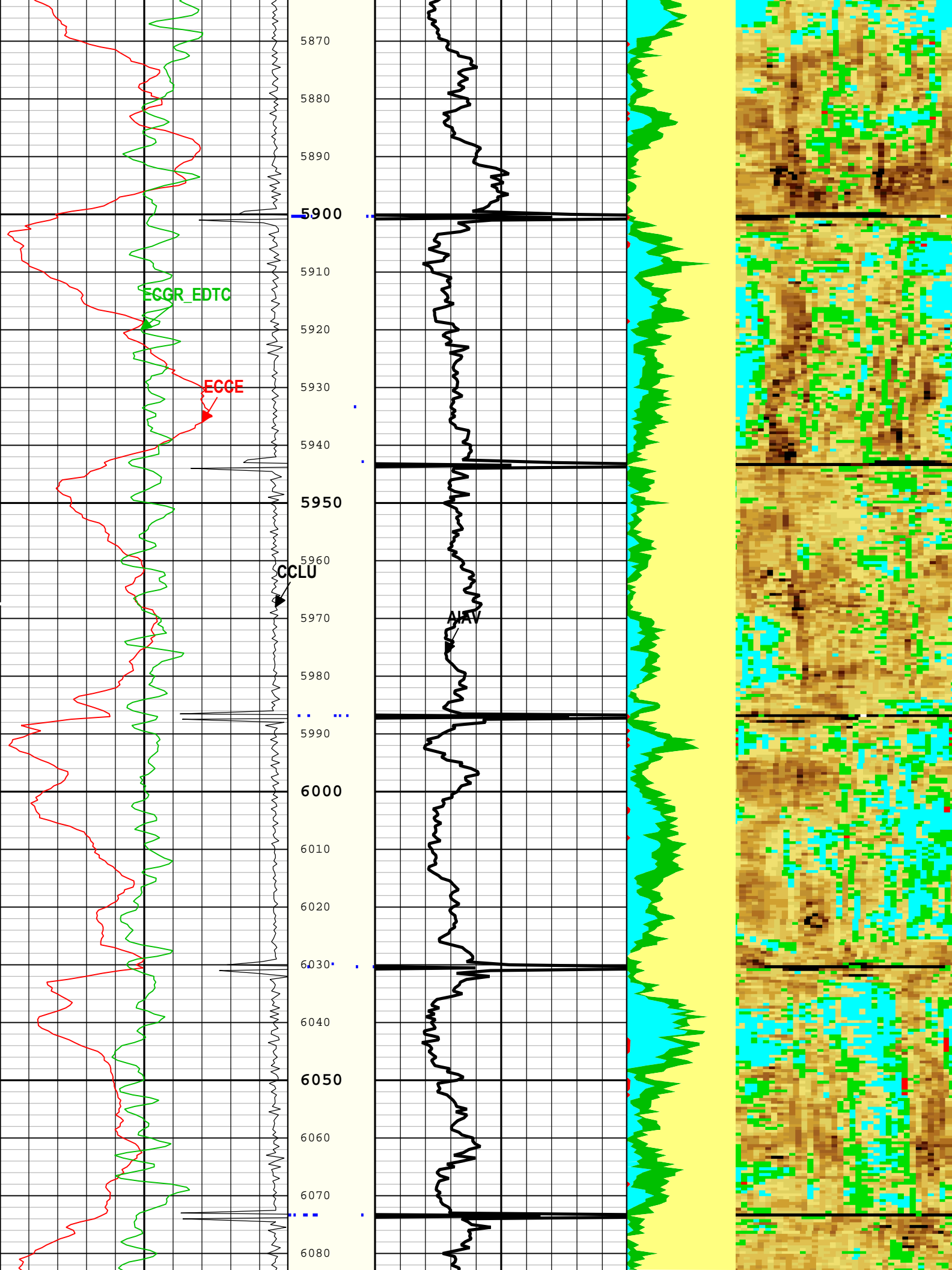




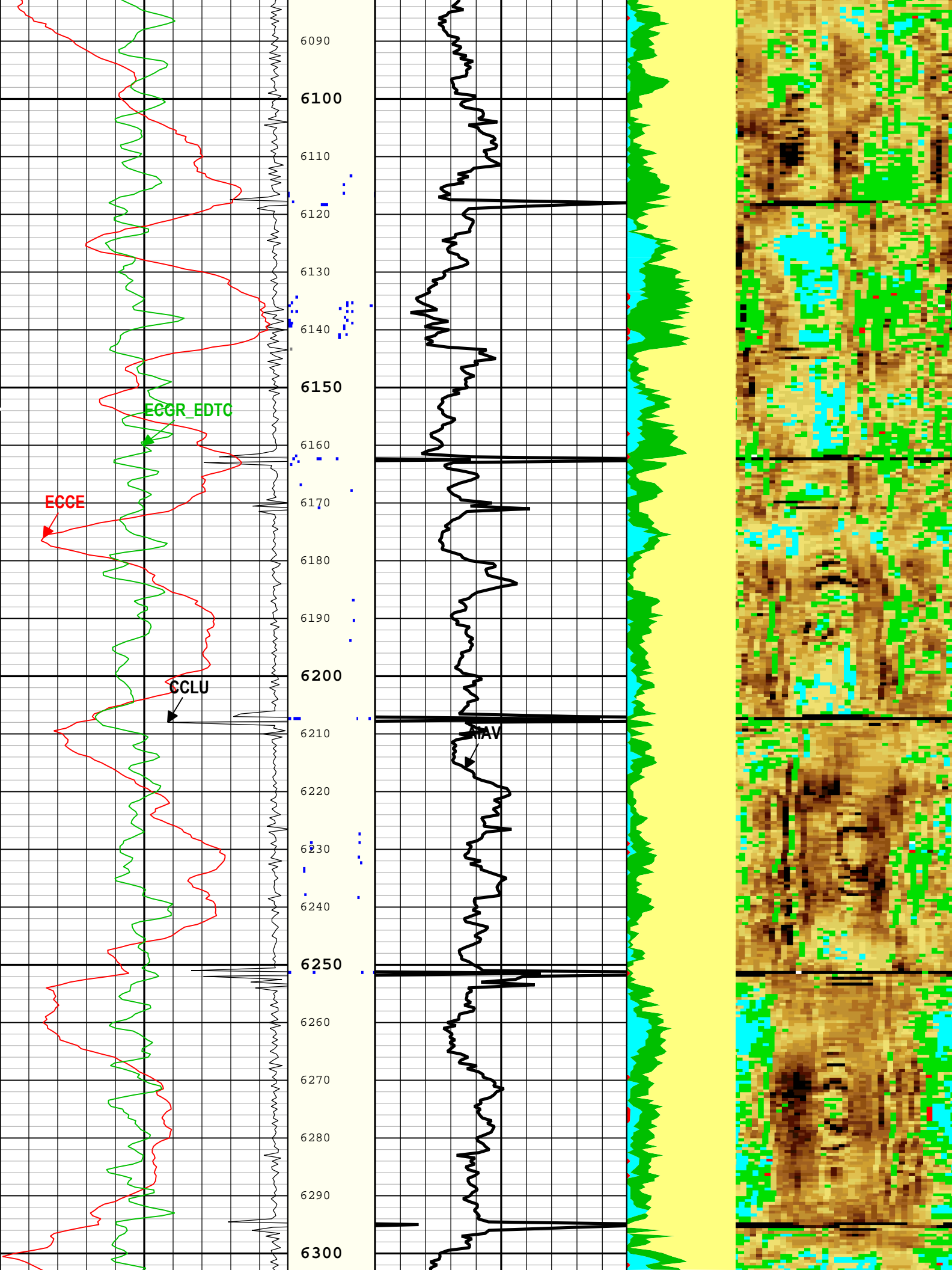


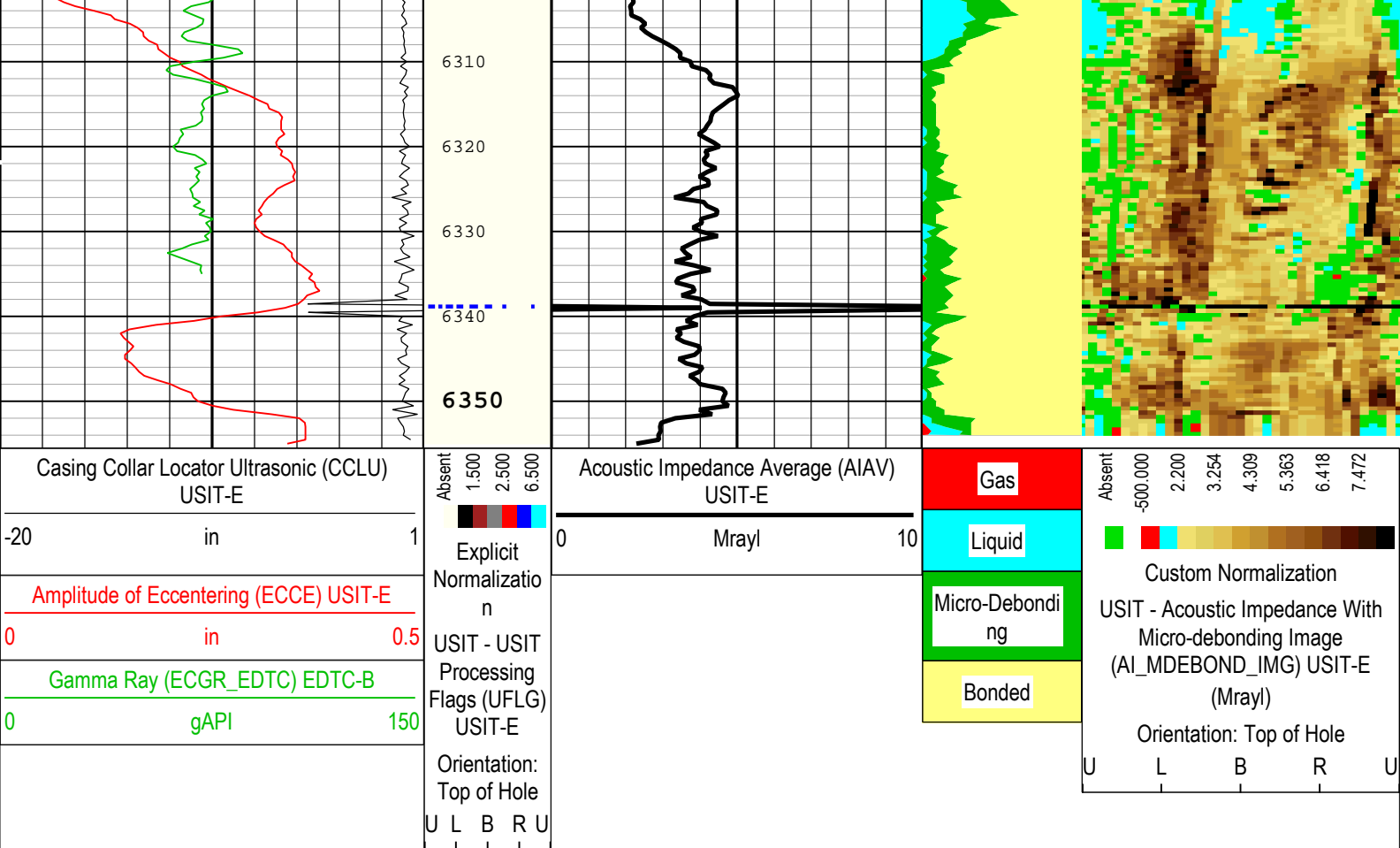












TIME\_1900 - Time Marked every 60.00 (s)

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: 27-Aug-2019 19:33:35

## 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 | 16911.4        | 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    | 82.5         | 110         |
| BS        | 13.5  | 110          | 1942        |
| BS        | 8.5   | 1942         | 6355.5      |

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      | 35    | 27-Aug-2019 18:16:14 | 27-Aug-2019 18:24:53 | 6355.98            | 4870.99           |
| EMXV      | 30    | 27-Aug-2019 18:24:53 | 27-Aug-2019 18:55:57 | 4870.99            | 102.87            |

All depth 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        | 1902.34 ft | 2707.94 ft | 27-Aug-2019 5:39:37 PM | 27-Aug-2019 5:46:24 PM | ON       | 1.63 ft     | No                    |

All depths are referenced to toolstring zero

Log

Company:Noble Energy Inc      Well:SLW Ranch State BB07-668

1A: 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: 27-Aug-2019 19:33:43

TIME\_1900 - Time Marked every 60.00 (s)

U L B R U

Orientation: Top of Hole

Absent 1.500 2.500 6.500

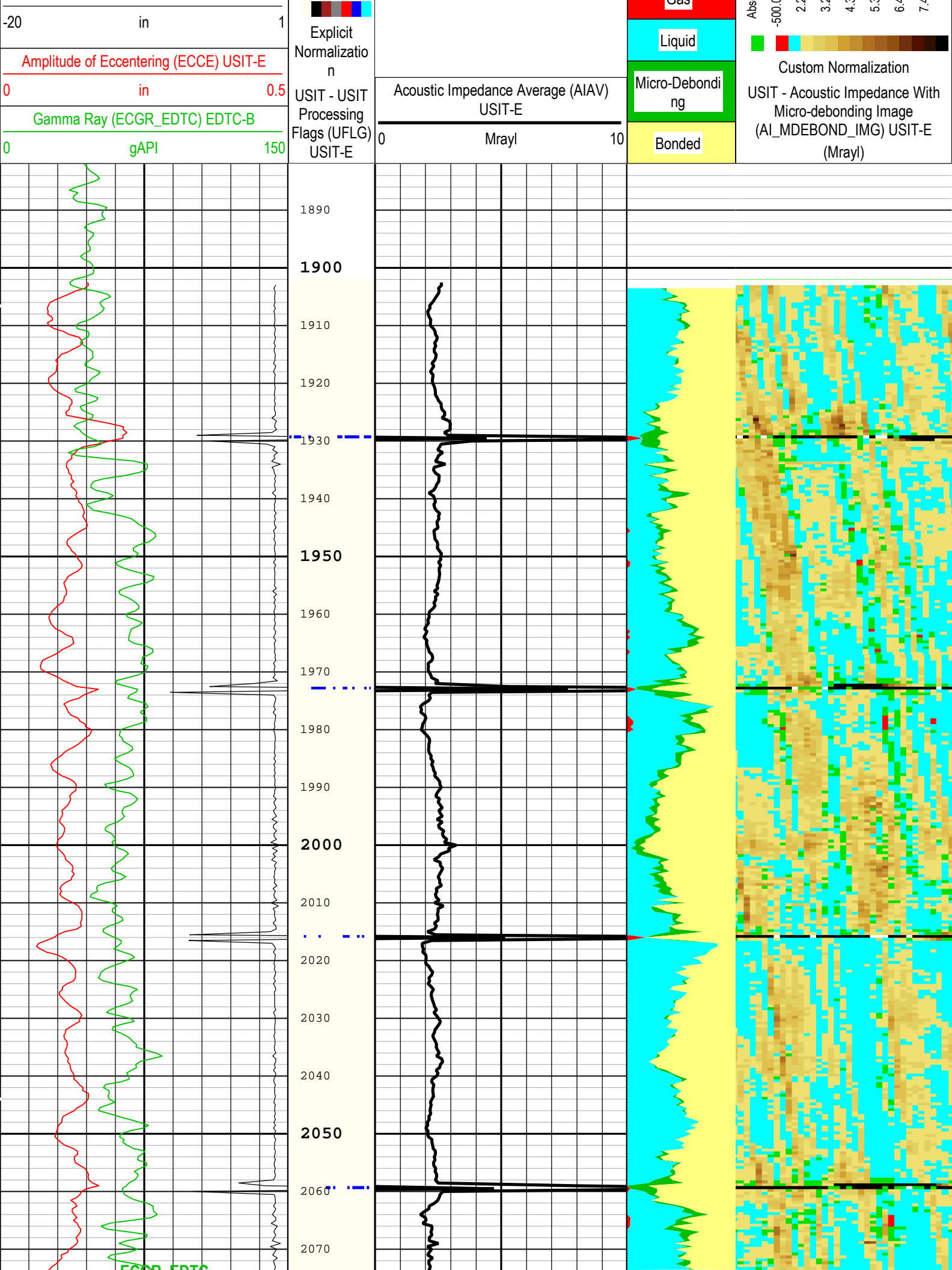
Casing Collar Locator Ultrasonic (CCLU)  
USIT-E

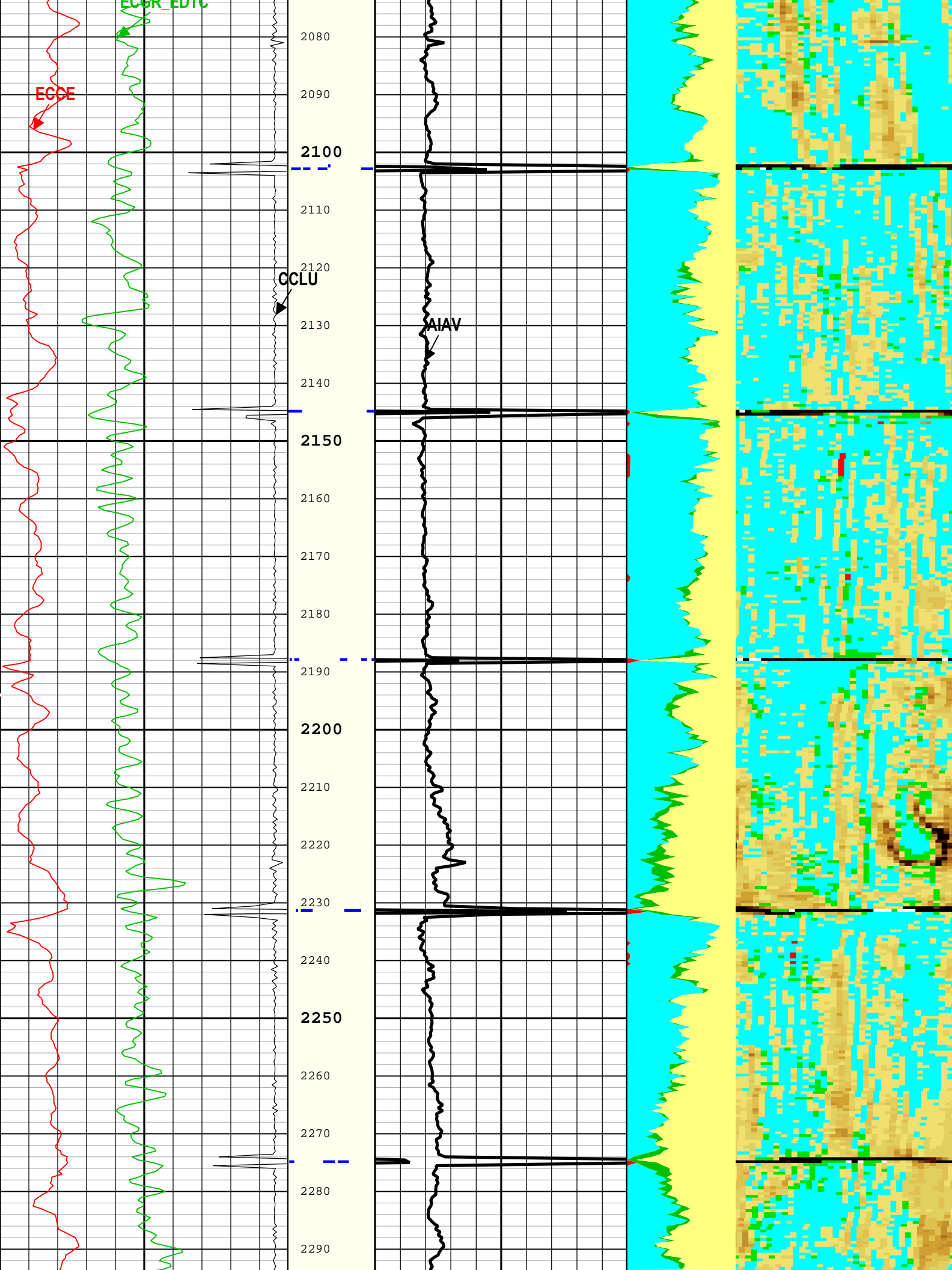
Gas

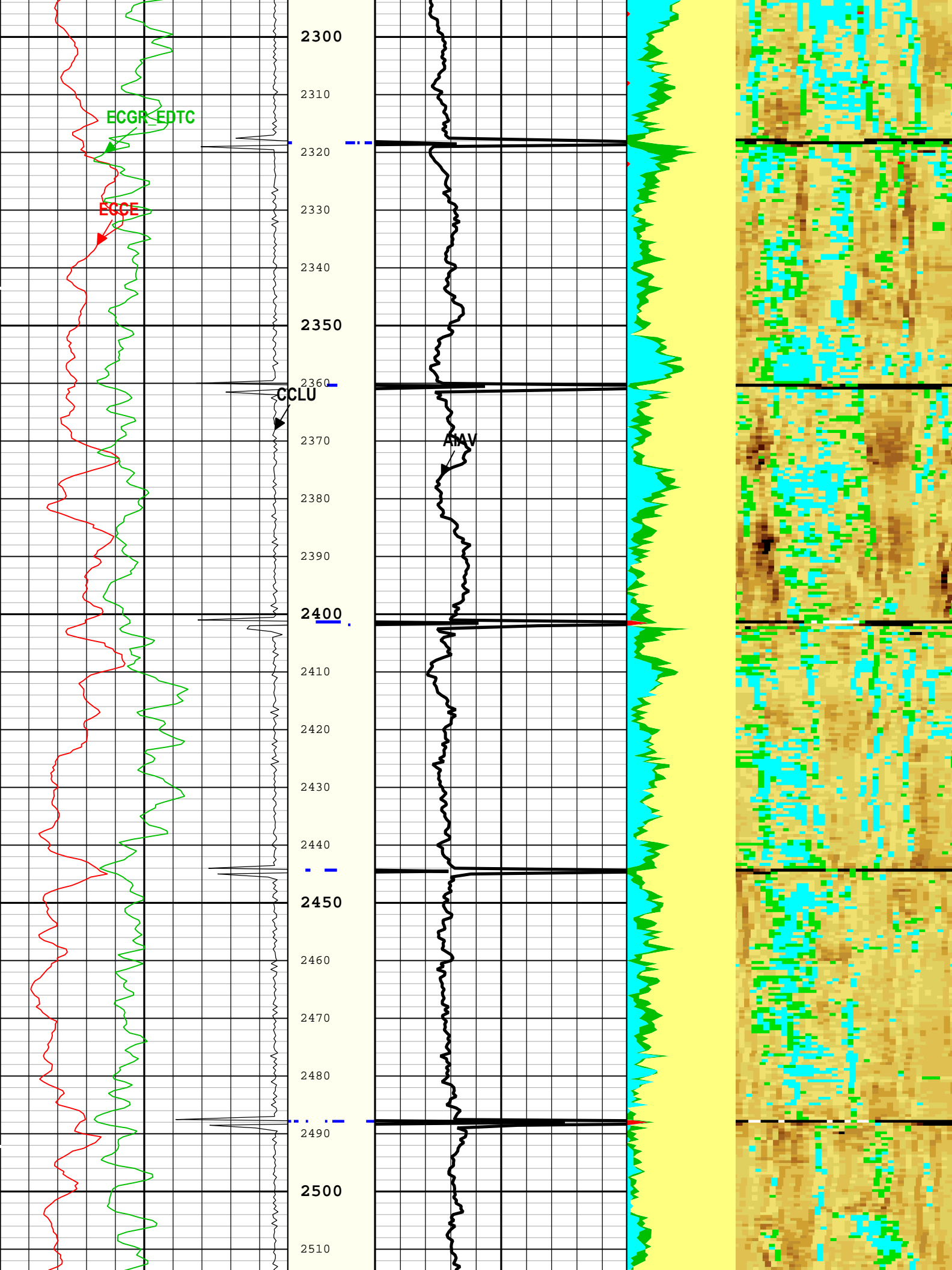
U L B R U

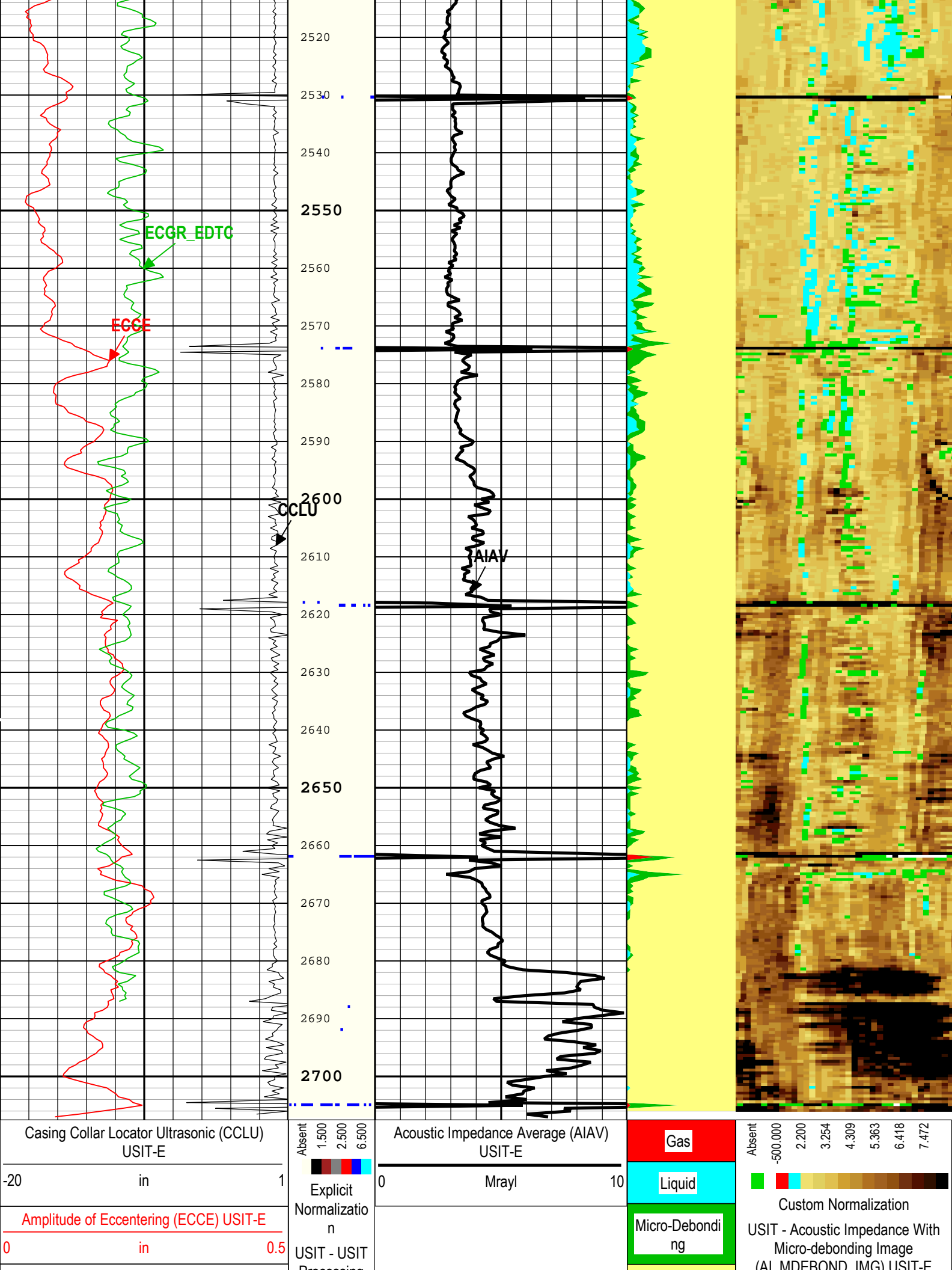
Orientation: Top of Hole

ent 000 200 254 309 363 418 472









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 | 16911.4        | 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        | 13.5  | 1882         | 1942        |
| BS        | 8.5   | 1942         | 2707.5      |

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 |

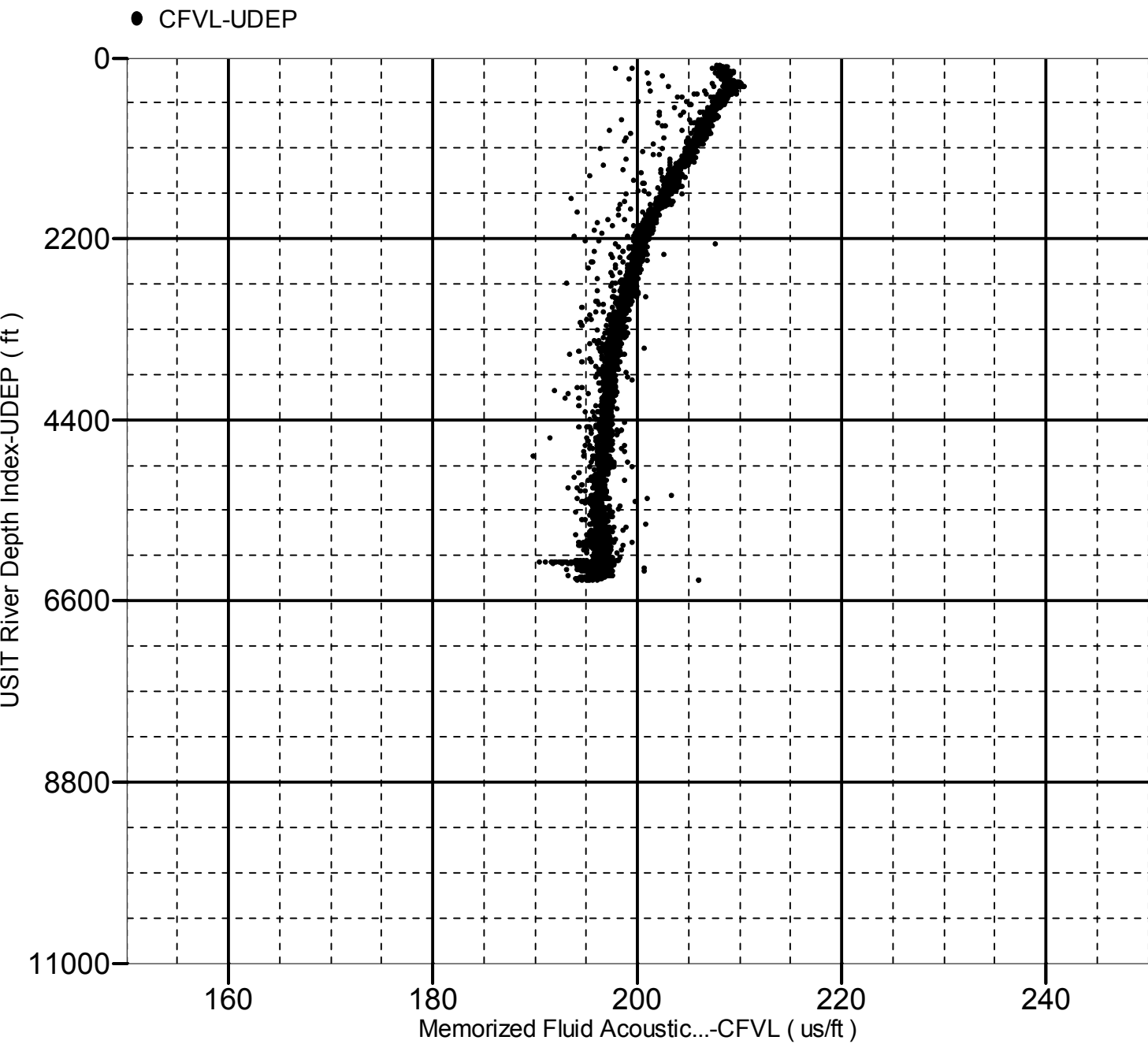
XYZ

Company:Noble Energy Inc Well:SLW Ranch State BB07-668  
1A: Log[5]:Up:S004

# Fluid Acoustic Slowness vs Depth

## 2D Cross Plot

Index Range: From 6355.50 to 102.50 ft



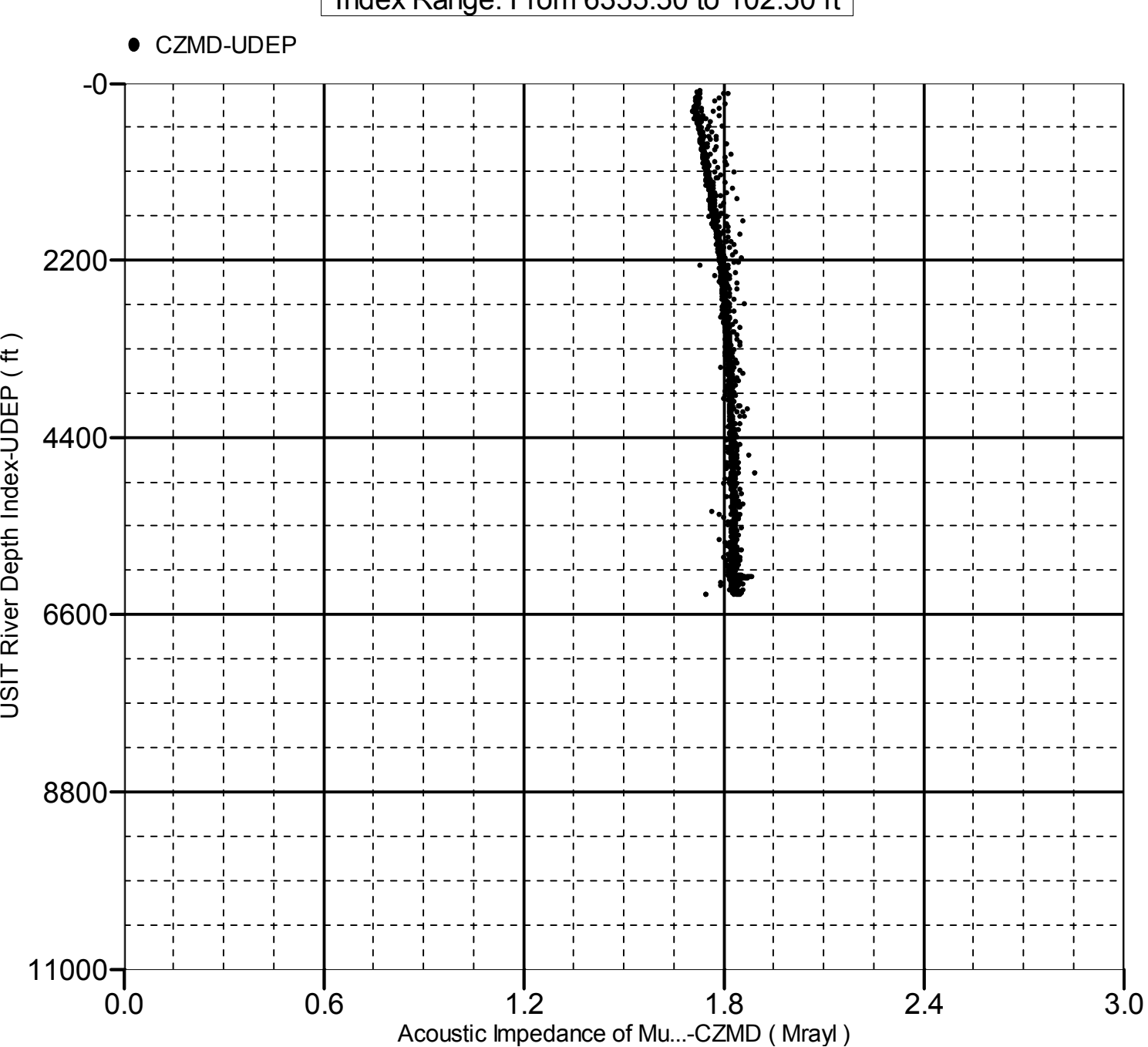
XYZ

Company:Noble Energy Inc Well:SLW Ranch State BB07-668  
1A: Log[5]:Up:S004

# Acoustic Impedance of Mud vs Depth

## 2D Cross Plot

Index Range: From 6355.50 to 102.50 ft



Company: Noble Energy Inc

Well: SLW Ranch State BB07-668

Field: Wattenberg

County: Weld

Country:

**Schlumberger**

UltraSonic Summary Print

