



**RADIAL CEMENT BOND  
GAMMA RAY/CCLV/DL**

|                        |               |                              |         |
|------------------------|---------------|------------------------------|---------|
| Company                |               | ANTERO RESOURCES CORPORATION |         |
| Well                   |               | FENDER UNIT 2H               |         |
| Field                  |               | MARCELLUS                    |         |
| County                 |               | TYLER                        |         |
| State                  |               | W.V.                         |         |
| Location:              |               | API # : 47-095-02671000      |         |
| SEC                    |               | TWP                          |         |
| RGE                    |               | Elevation 1014'              |         |
| Permanent Datum        |               | G.L.                         |         |
| Log Measured From      |               | K.B.                         |         |
| Drilling Measured From |               | K.B. OF 25'                  |         |
| Elevation              |               | K.B. 1039'                   |         |
| Other Services         |               | D.F. 1039'                   |         |
|                        |               | G.L. 1014'                   |         |
| Date                   | 4/9/20        |                              |         |
| Run Number             | ONE           |                              |         |
| Depth Driller          | 16110'        |                              |         |
| Depth Logger           | 7074'         |                              |         |
| Bottom Logged Interval | 7074'         |                              |         |
| Top Log Interval       | SURFACE       |                              |         |
| Open Hole Size         | N/A           |                              |         |
| Type Fluid             | H2O           |                              |         |
| Density / Viscosity    | N/A           |                              |         |
| Max. Recorded Temp.    | 143 DEG       |                              |         |
| Estimated Cement Top   | N/A           |                              |         |
| Time Well Ready        | N/A           |                              |         |
| Time Logger on Bottom  | N/A           |                              |         |
| Equipment Number       | 340           |                              |         |
| Location               | BRIDGEPORT.WV |                              |         |
| Recorded By            | J.BOGGS       |                              |         |
| Witnessed By           | BRANDON HAIRE |                              |         |
| Borehole Record        |               | Casing Record                |         |
| Run Number             | Bit           | From                         | To      |
|                        |               | 5"                           | 18LB    |
|                        |               |                              | SURFACE |
|                        |               |                              | 16110'  |

<<< Fold Here >>>

All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

**Comments**

**THANK YOU FOR USING KLX ENERGY SERVICES**

**LOG WAS RAN ON 5" CASING  
BOTTOM HOLE TEMP- 143 DEG  
MARKER JOINT @ 5669'-5680'**



**MAIN LOG 5"/100'**

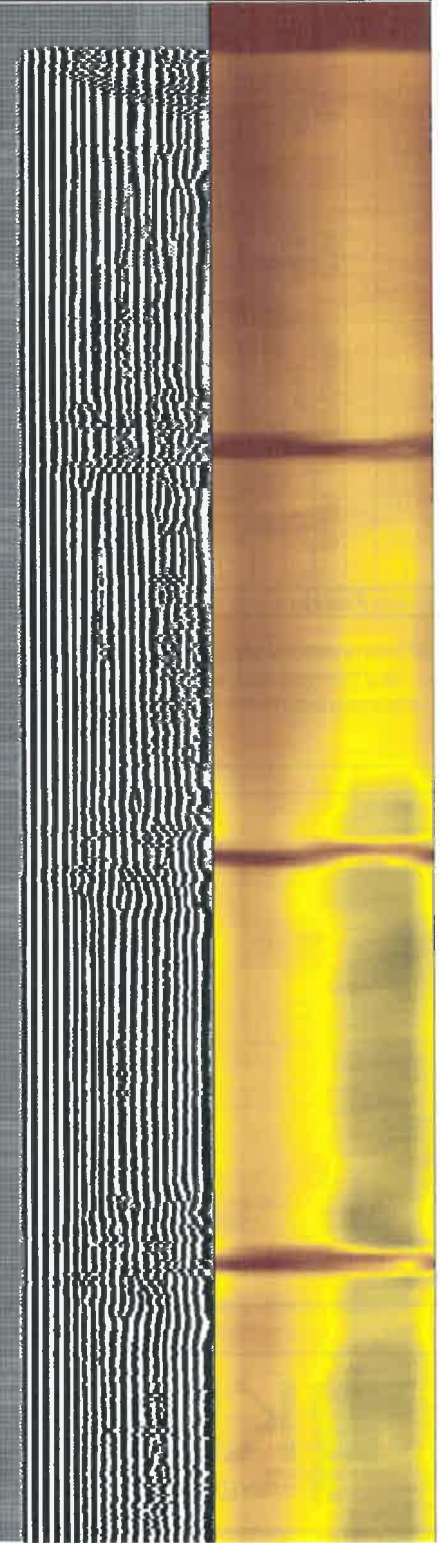
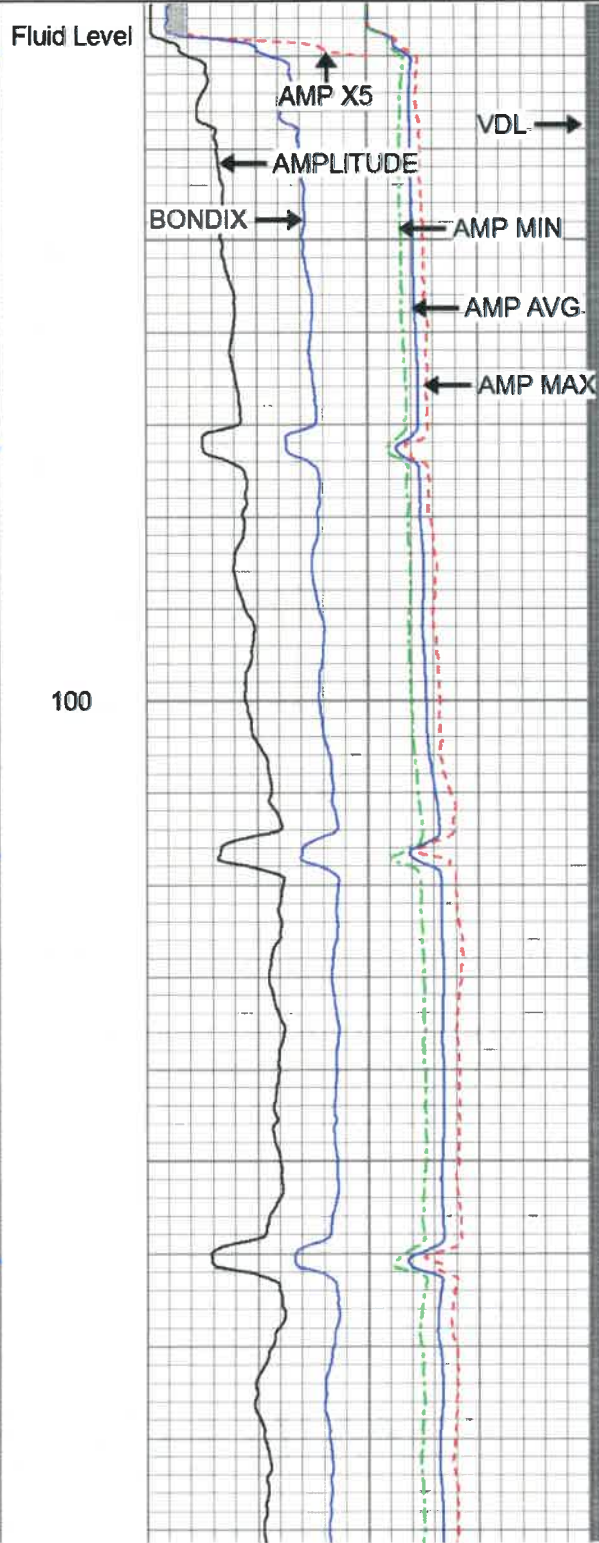
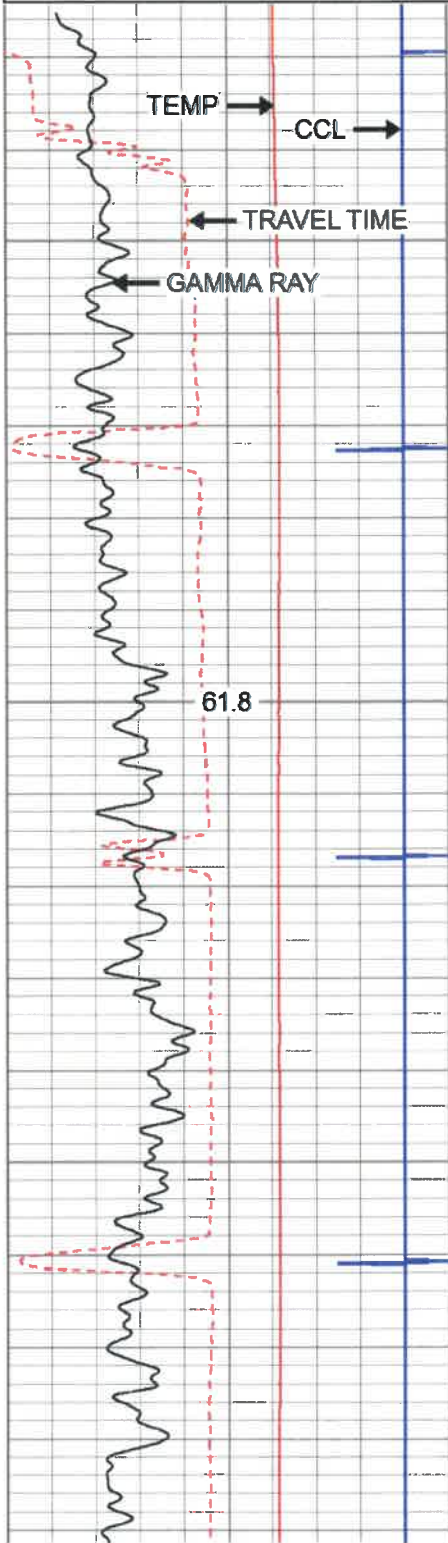
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 Dataset Pathname: pass4.4  
 Presentation Format: \_scblt12  
 Dataset Creation: Fri Apr 10 12:56:57 2020 by Calc Std Casedhole 10081  
 Charted by: Depth in Feet scaled 1:240

|     |                    |     |
|-----|--------------------|-----|
| 280 | Travel Time (usec) | 180 |
| 9   | Casing Collars     | -1  |
| 0   | Gamma Ray          | 180 |
| 0   | TEMP (degF)        | 100 |
| 180 | GR                 | 360 |

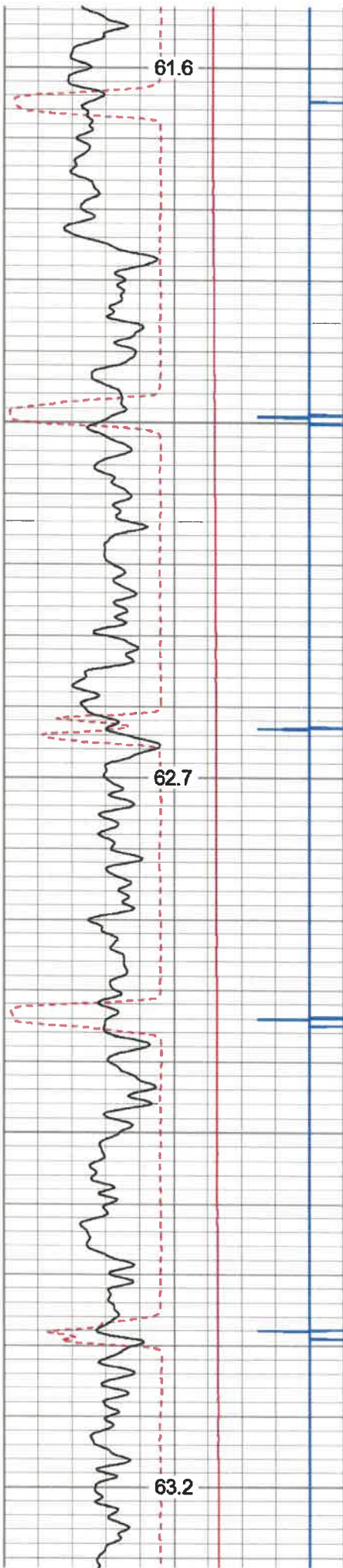
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|------------|-----|---------|-----|
| Amplitude  | 0   | Amp Avg | 150 |
| (mV)       | 100 | Amp Max | 150 |
| AmpX5 (mV) | 20  | Amp Min | 150 |
| BONDIX     | 0   |         |     |

|     |     |      |   |            |    |
|-----|-----|------|---|------------|----|
| 200 | VDL | 1200 | 1 | Sector Map | 8  |
|     |     |      |   |            | 80 |

TEMP  
(degF)



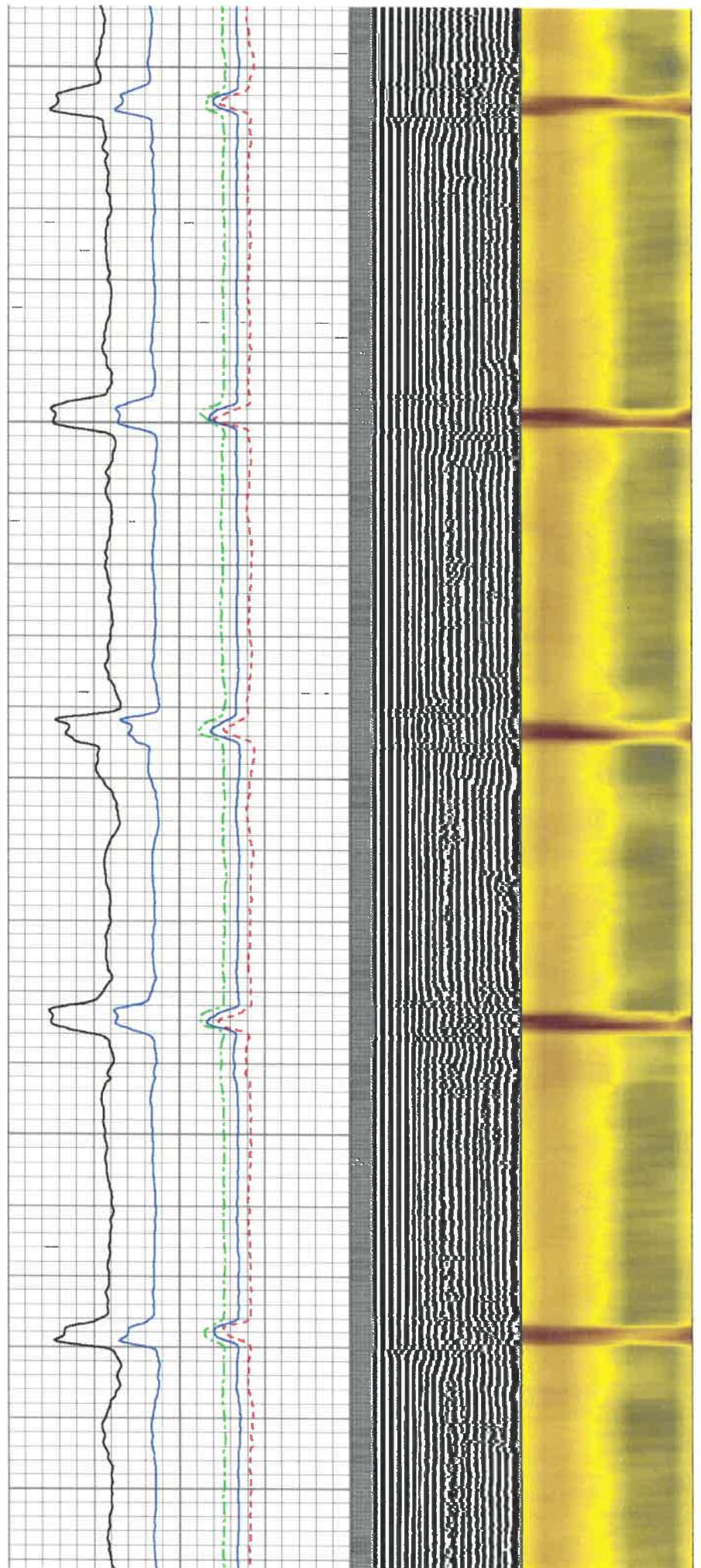




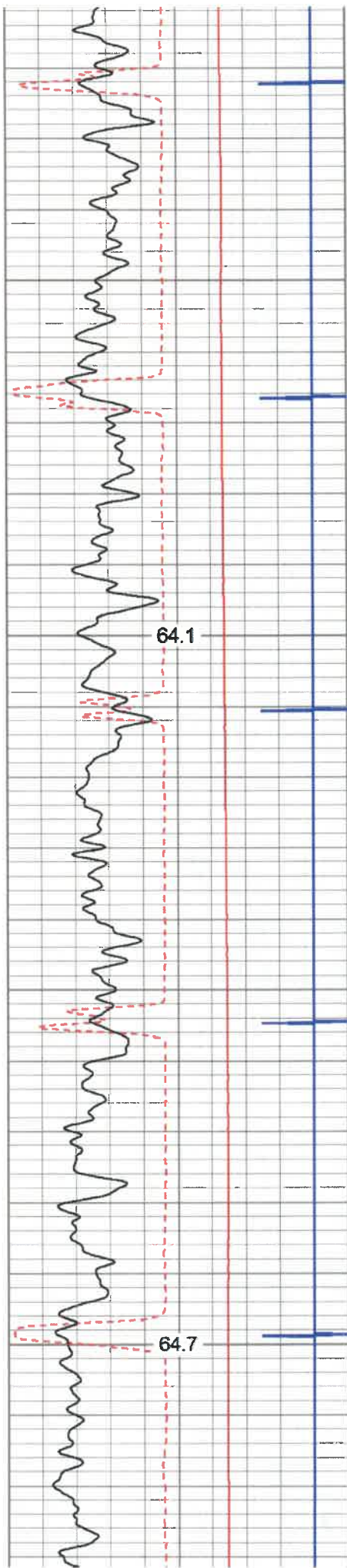
200

300

400

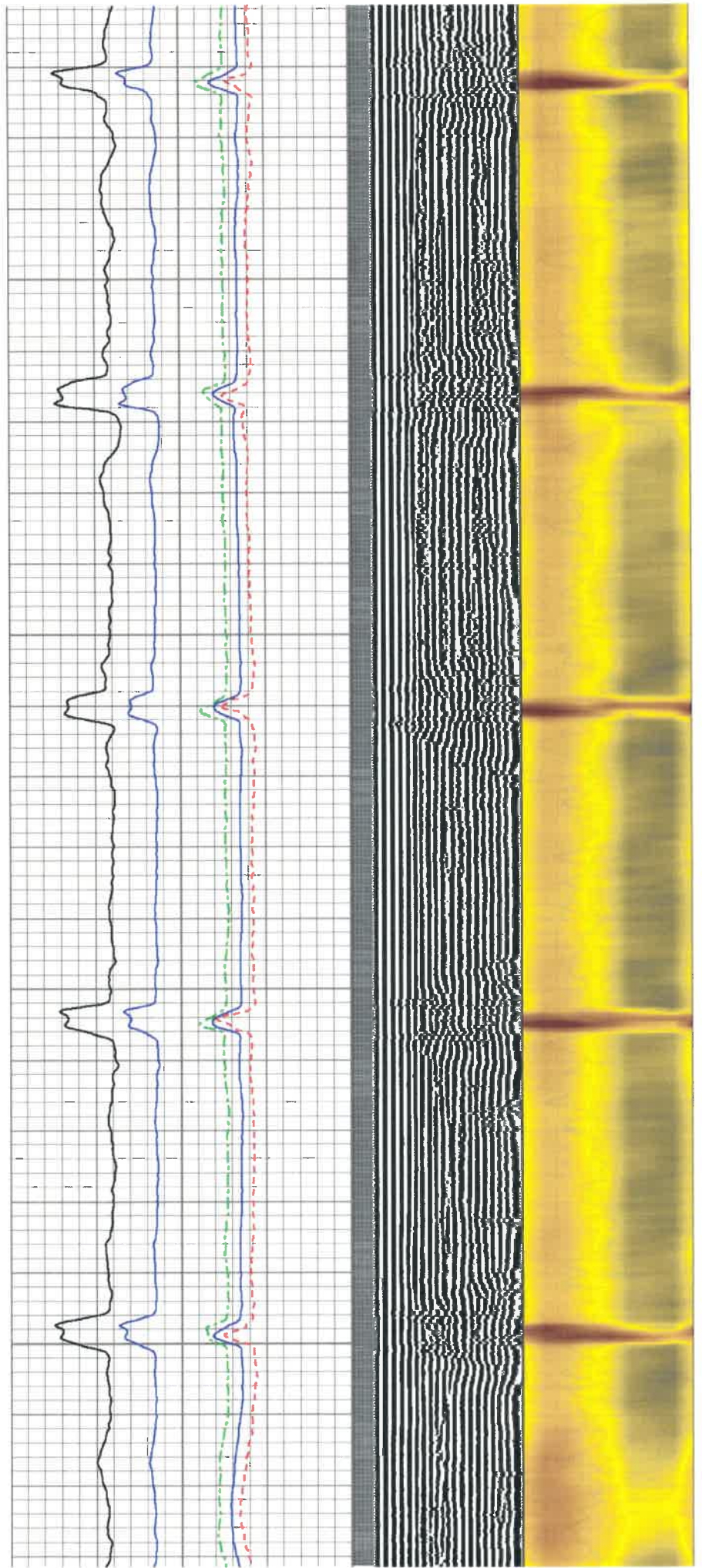




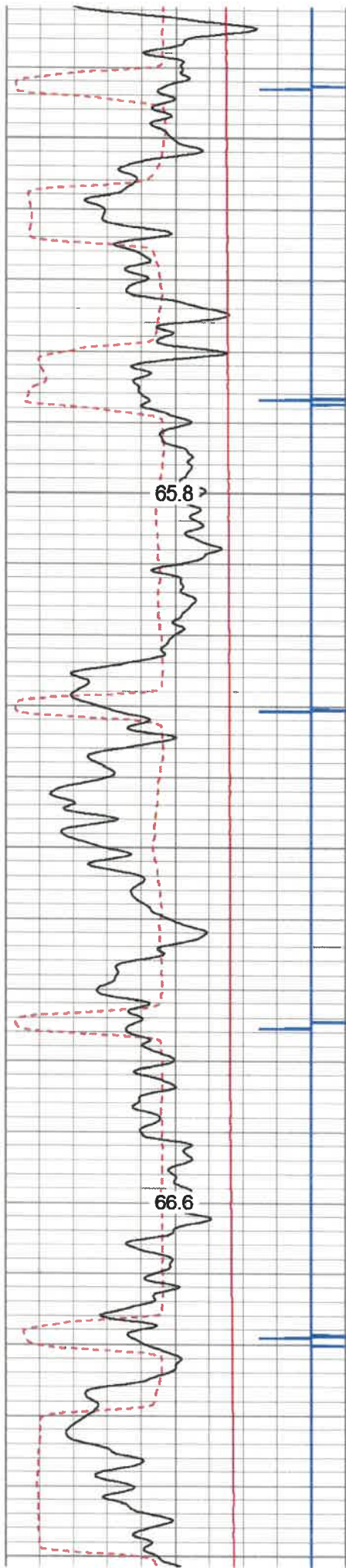


500

600

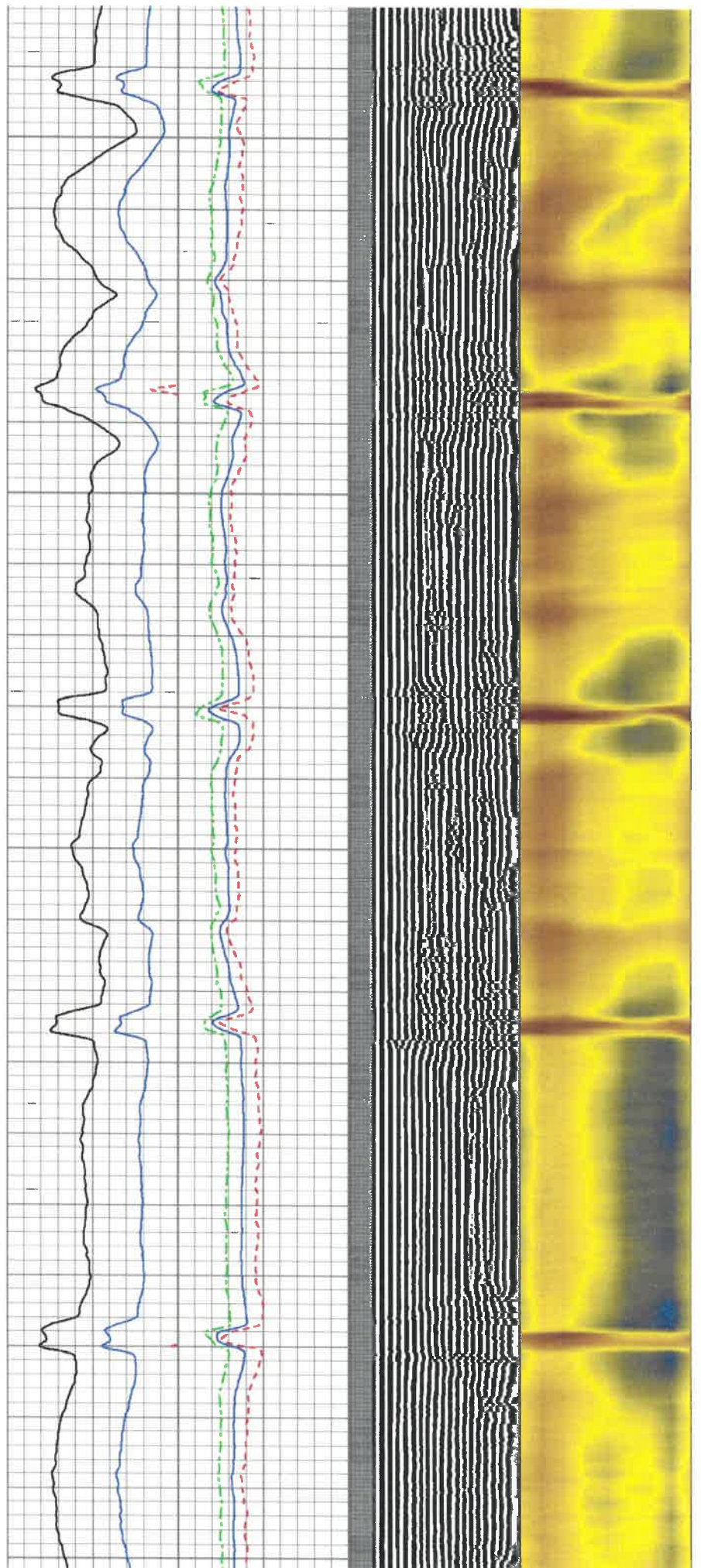




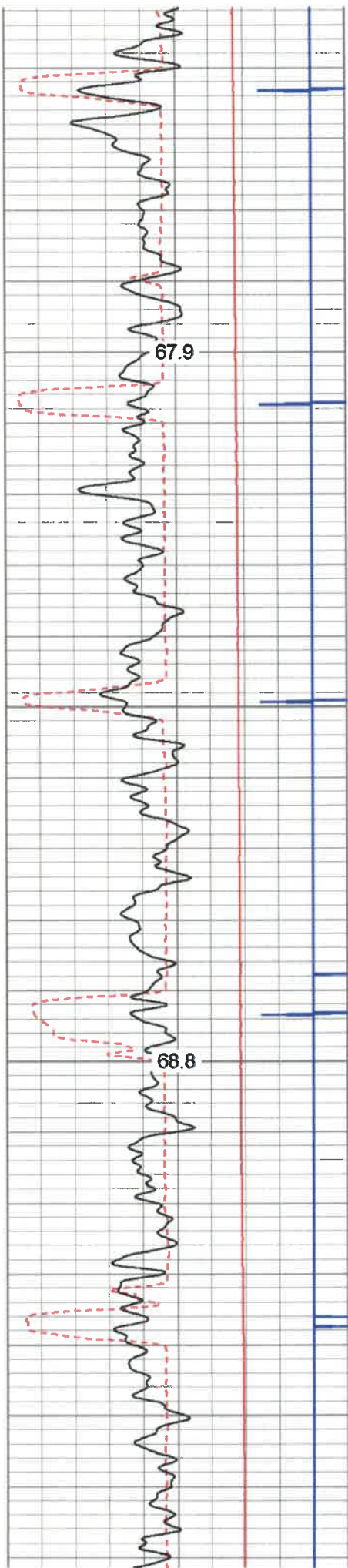


700

800

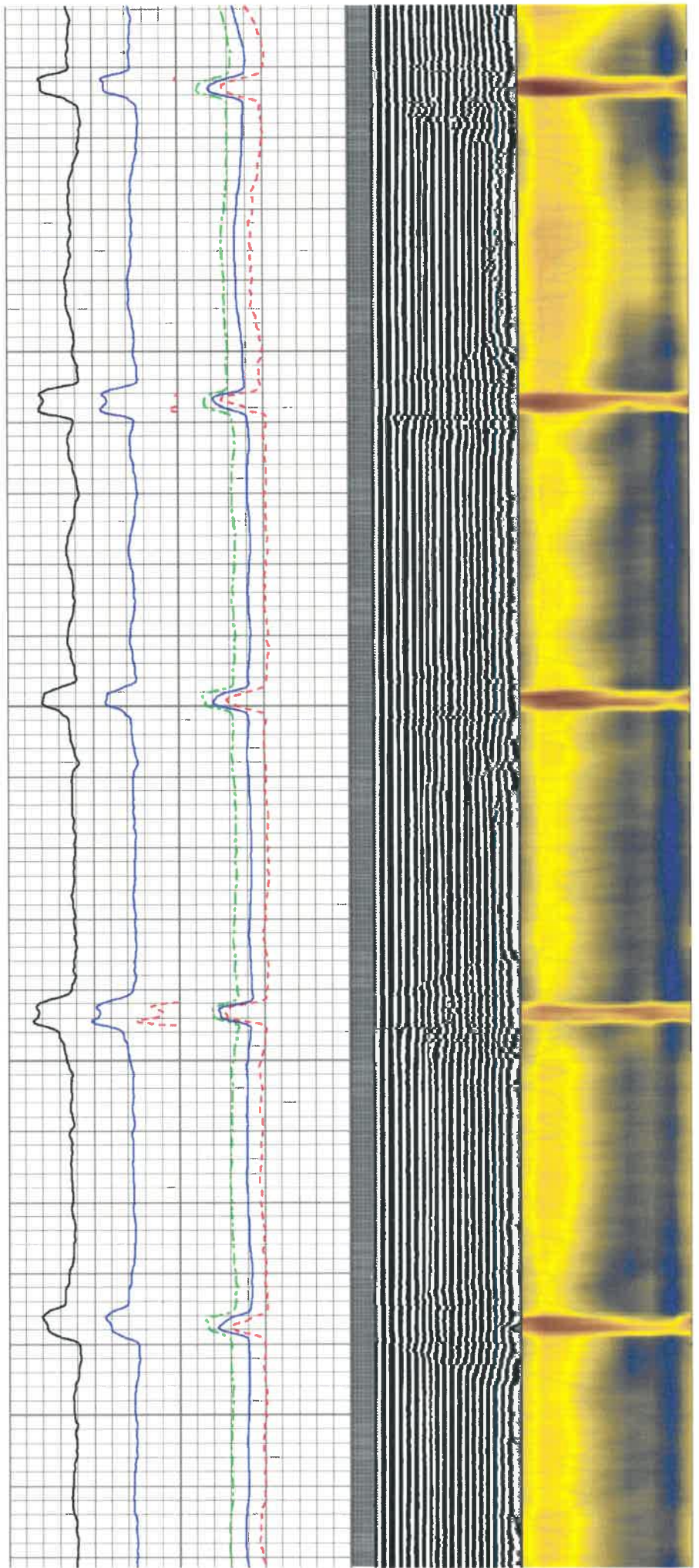




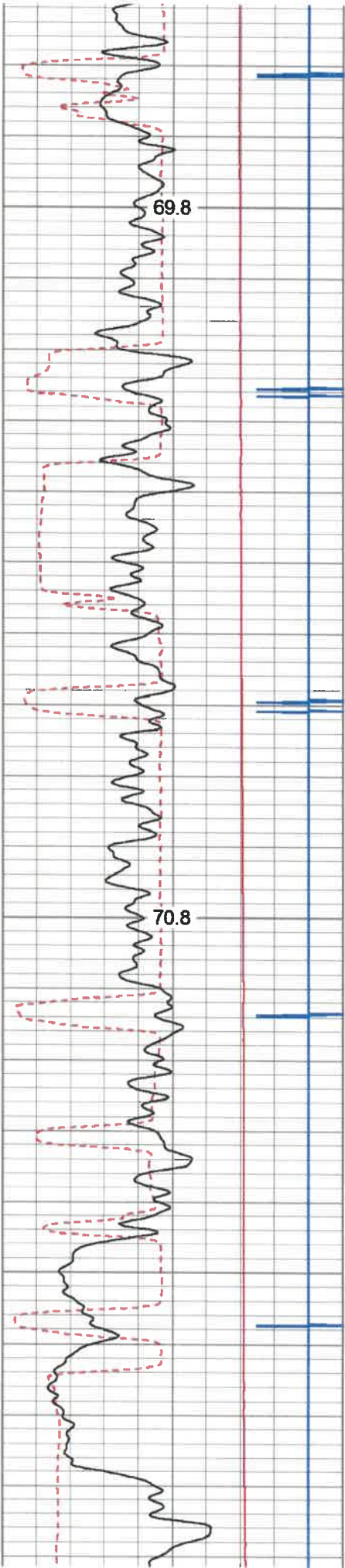


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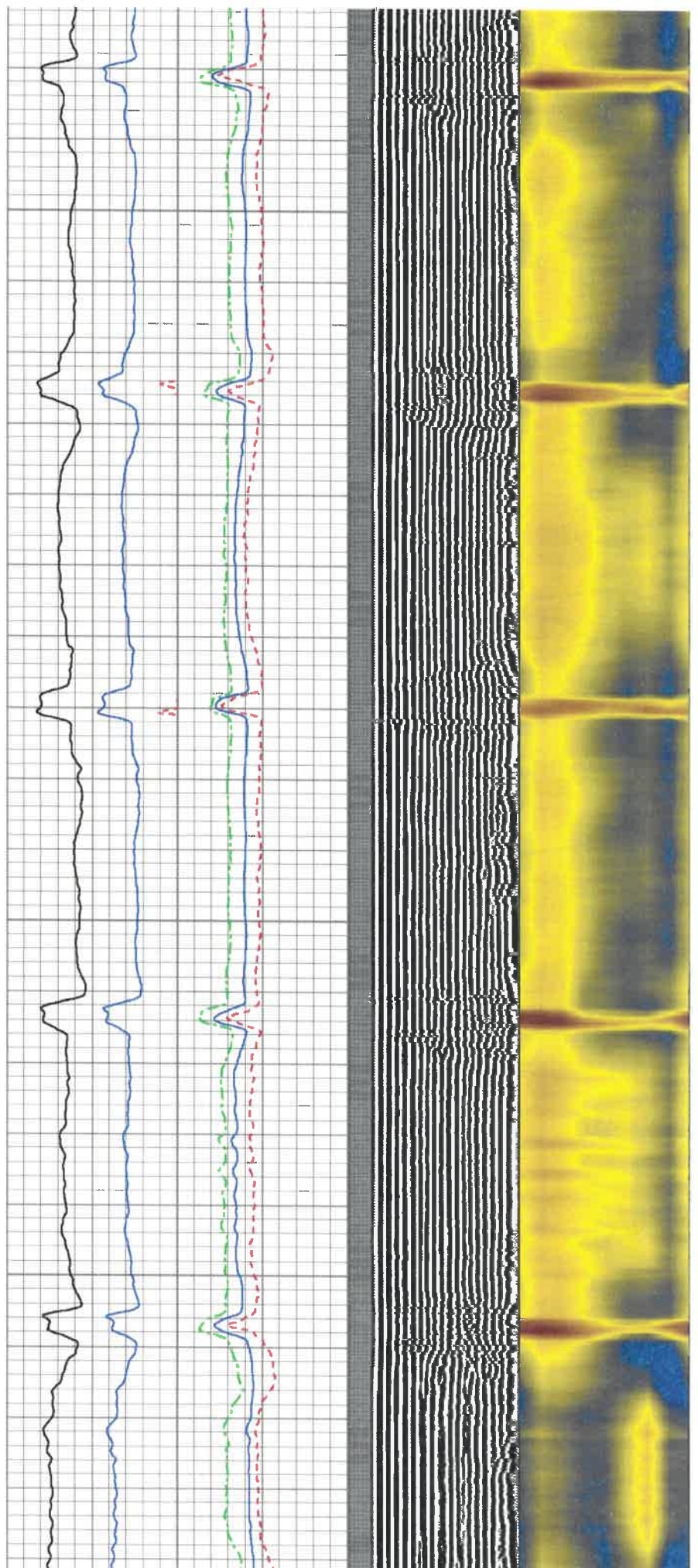




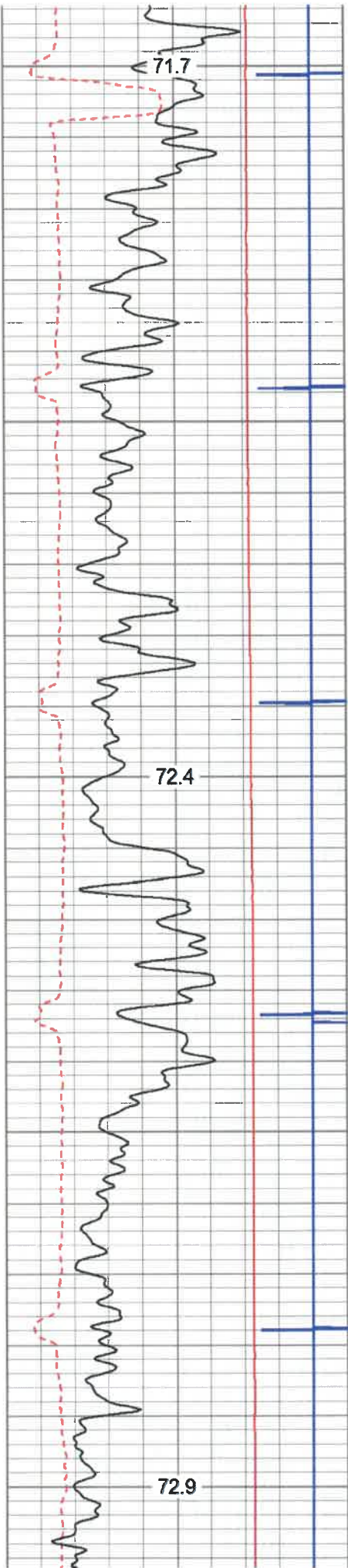


1100

1200



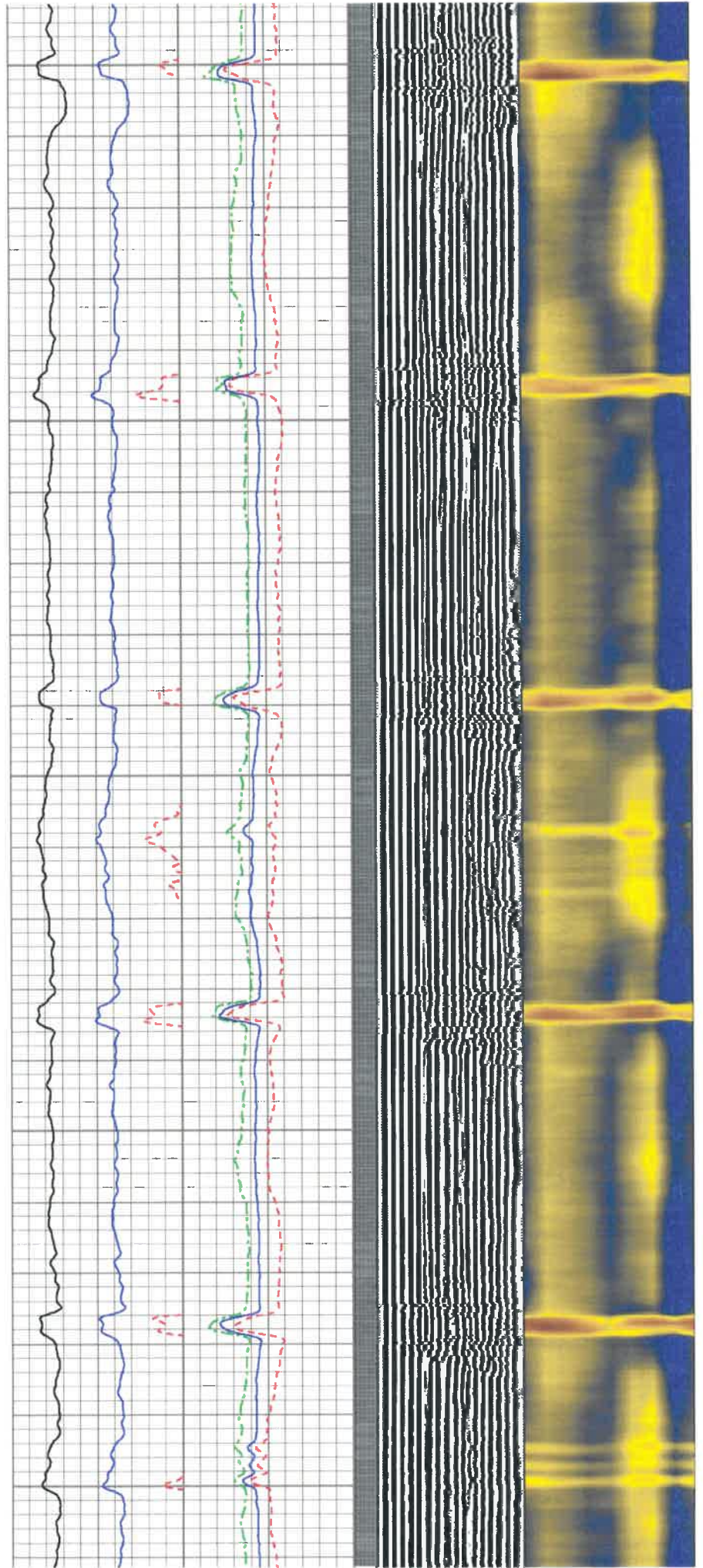




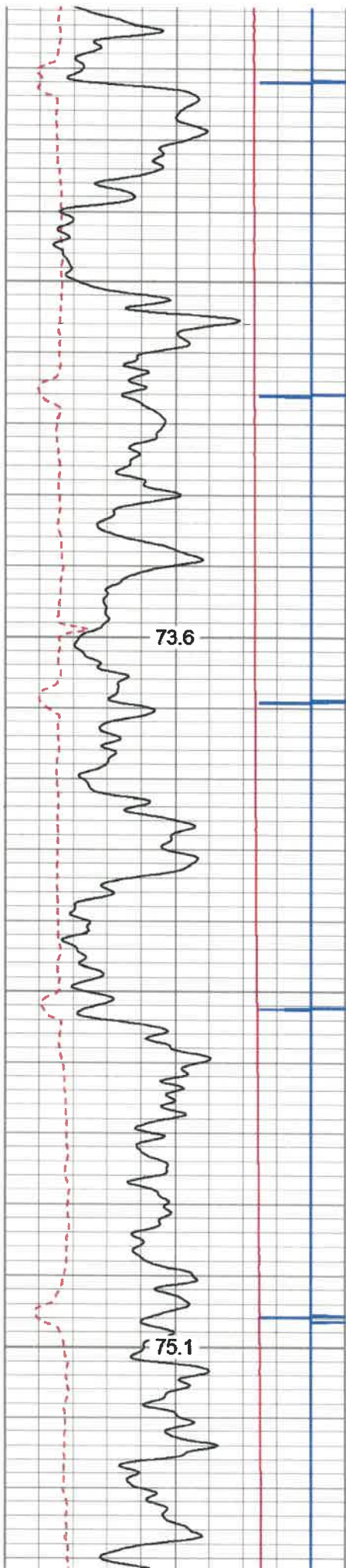
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1400

1500

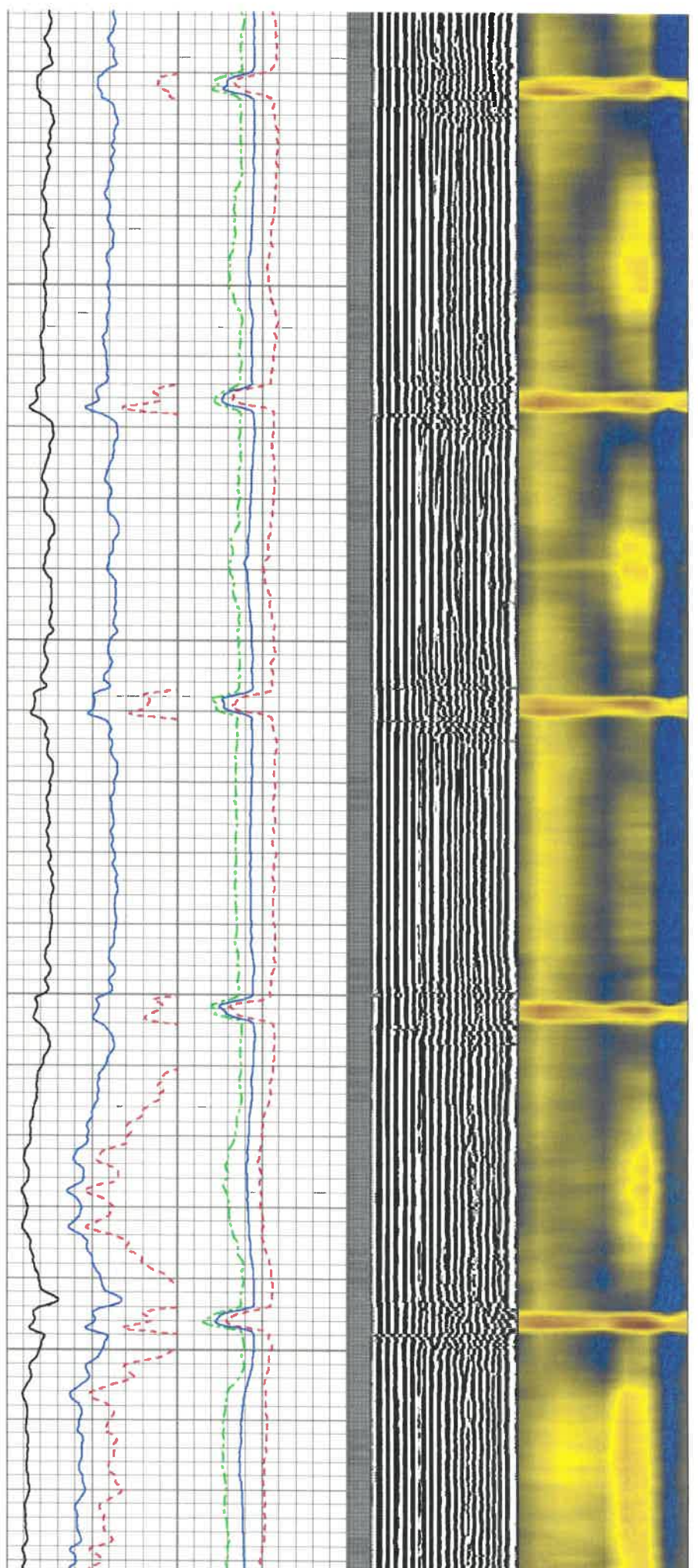




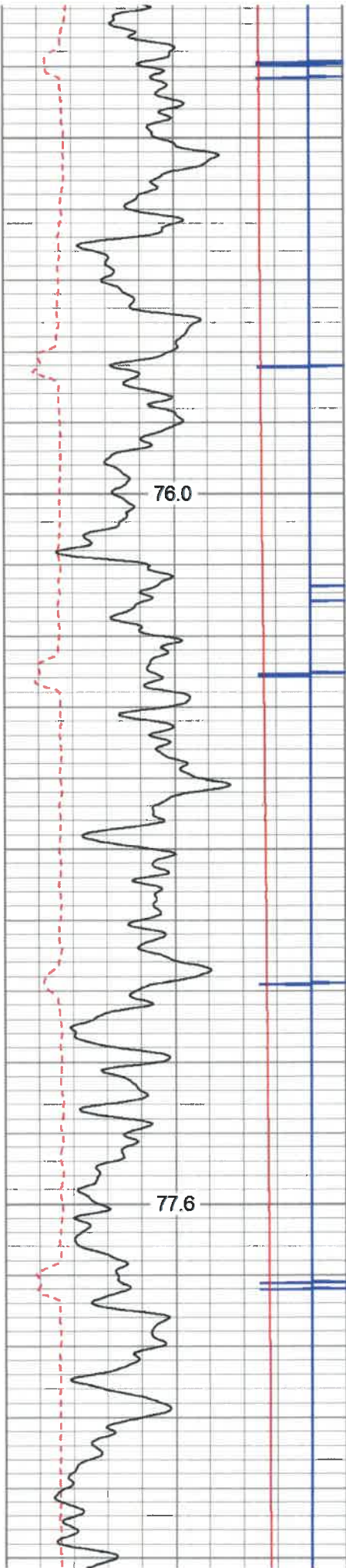


1600

1700

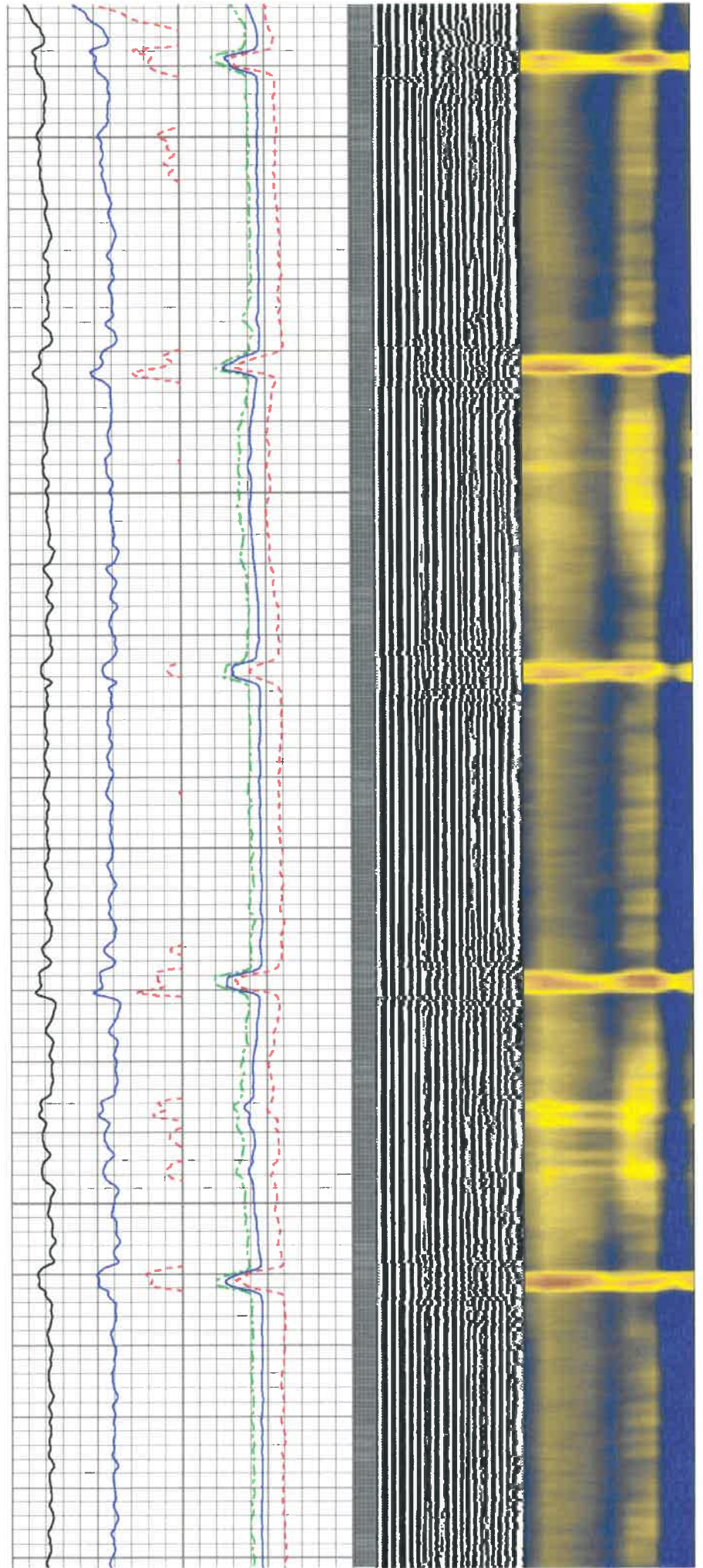




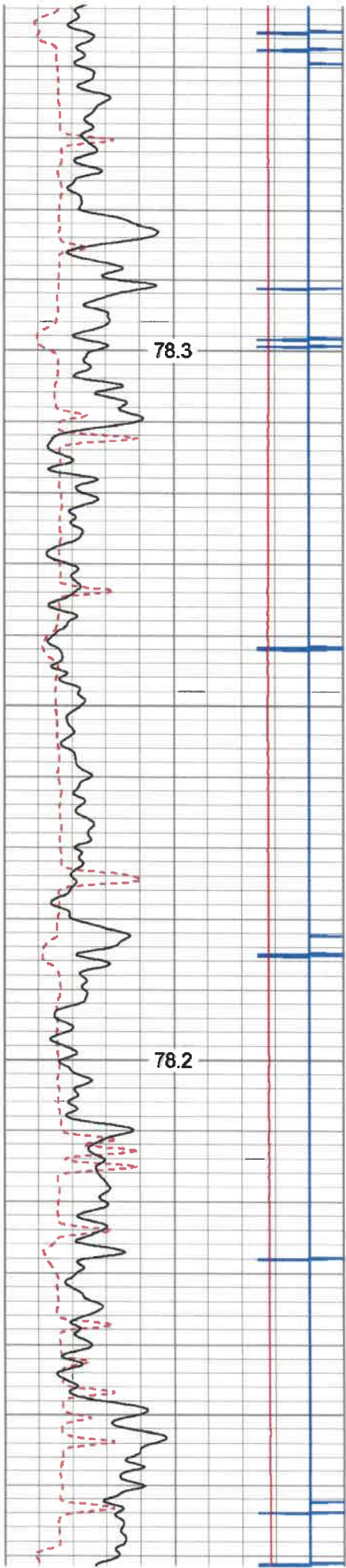


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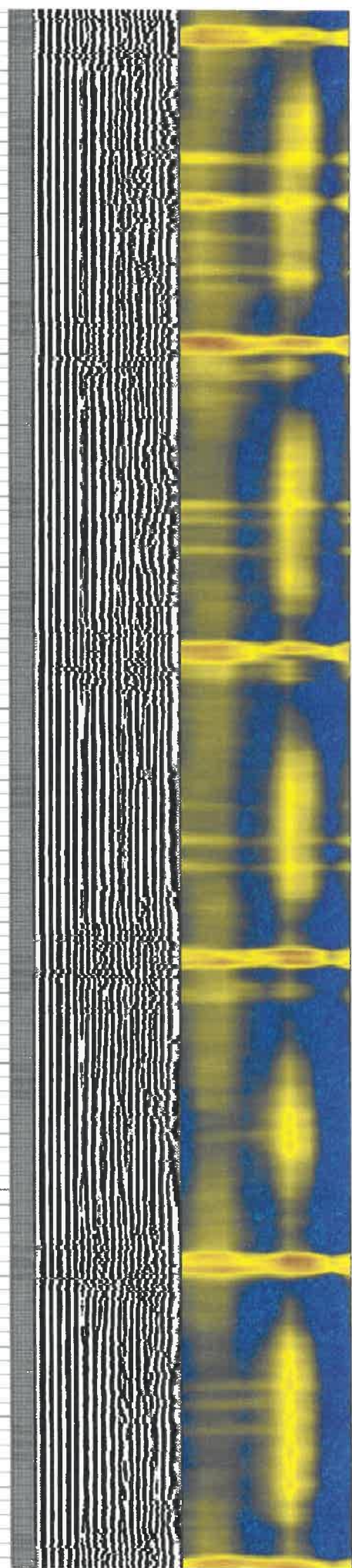
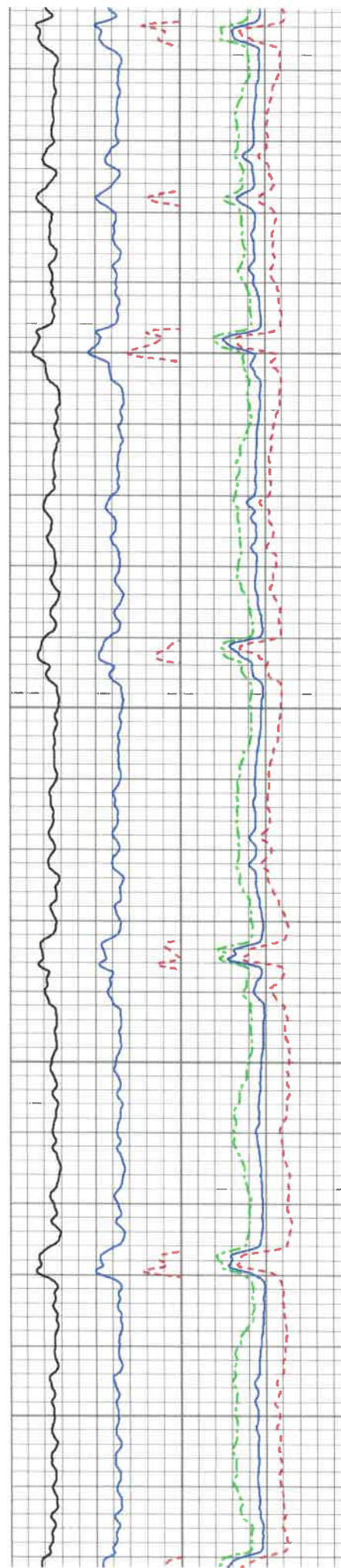




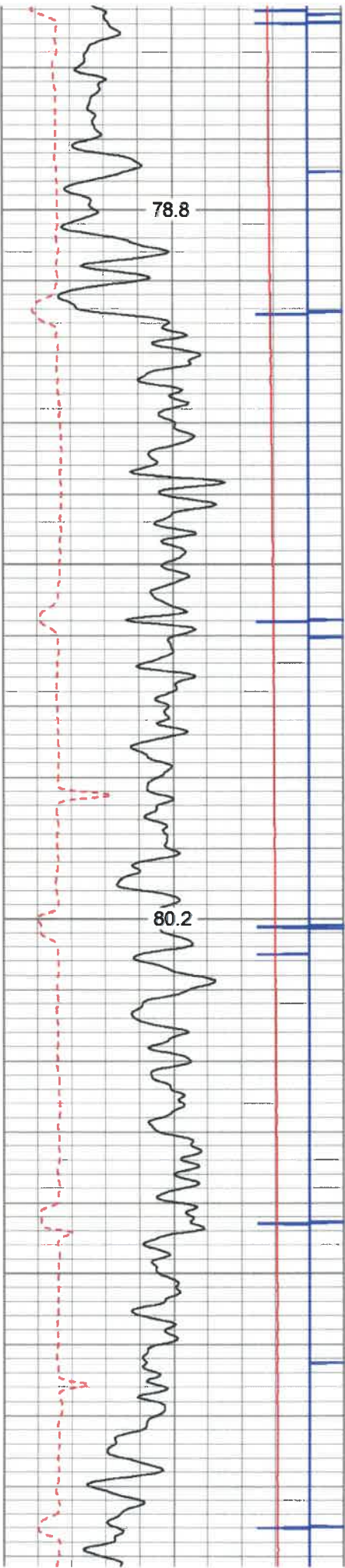


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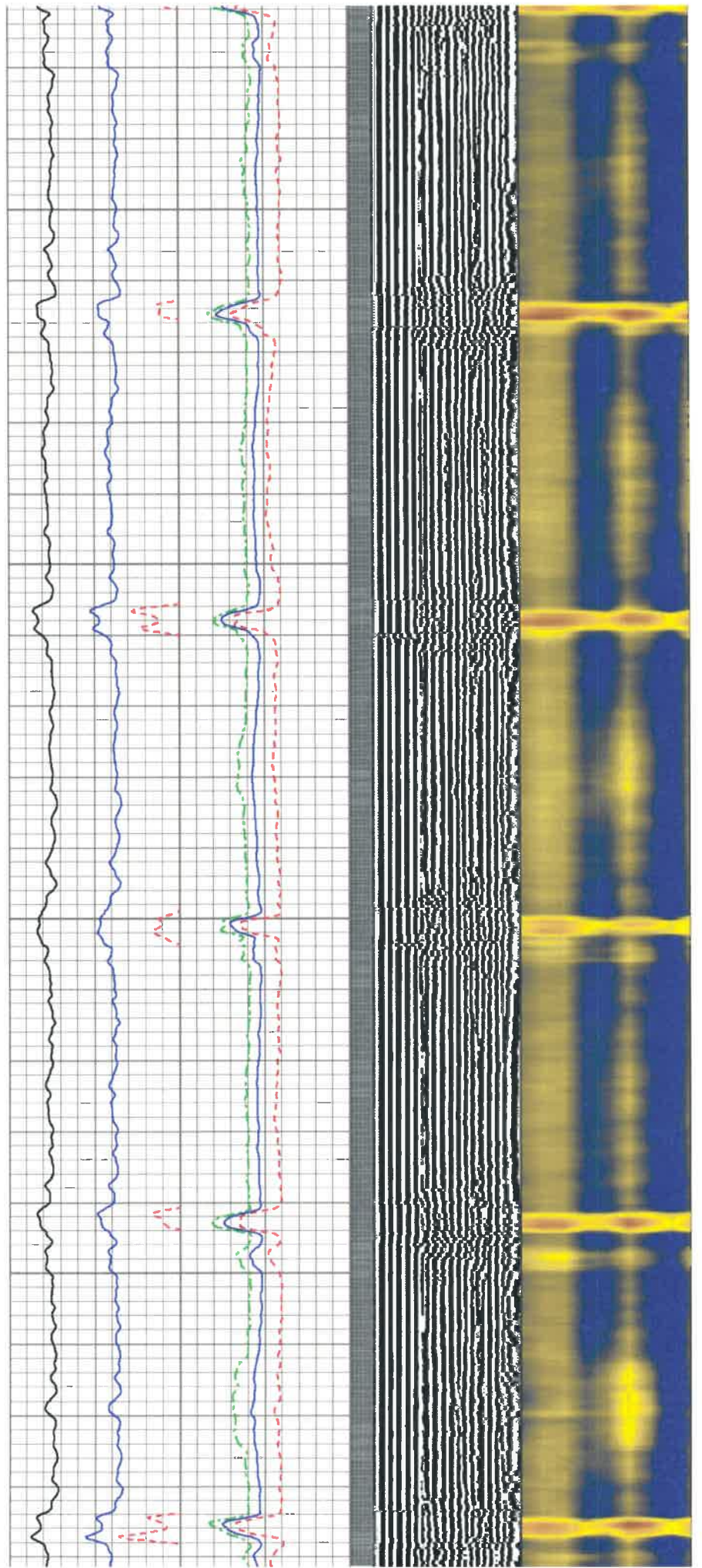




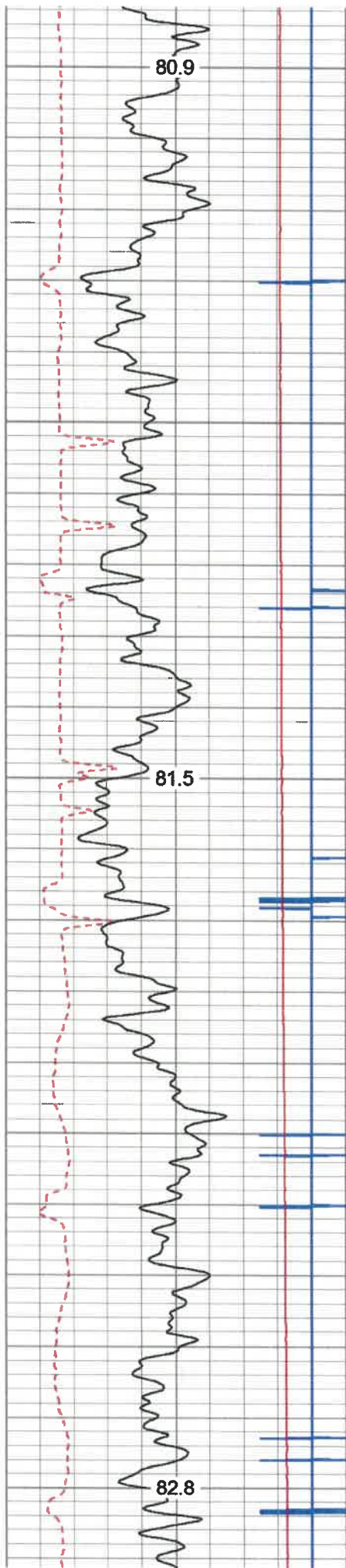


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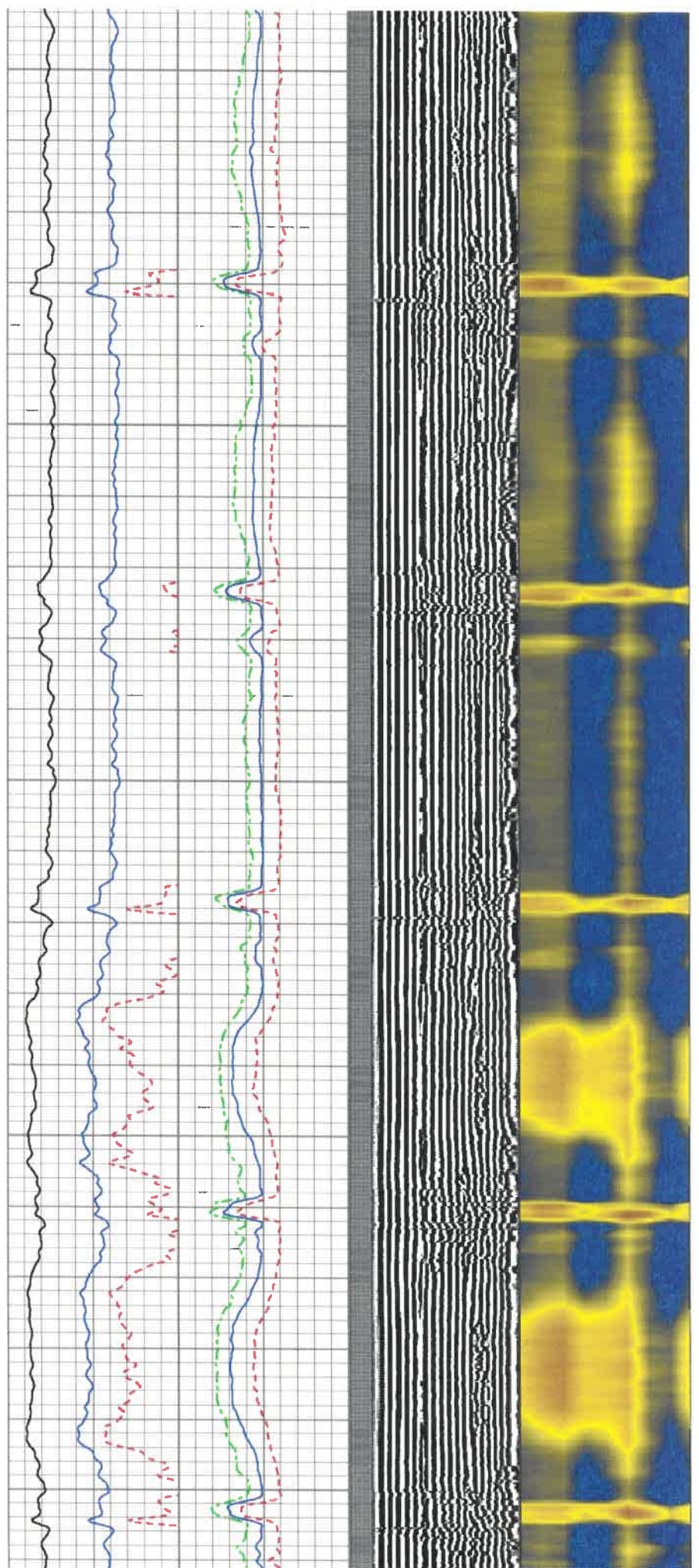




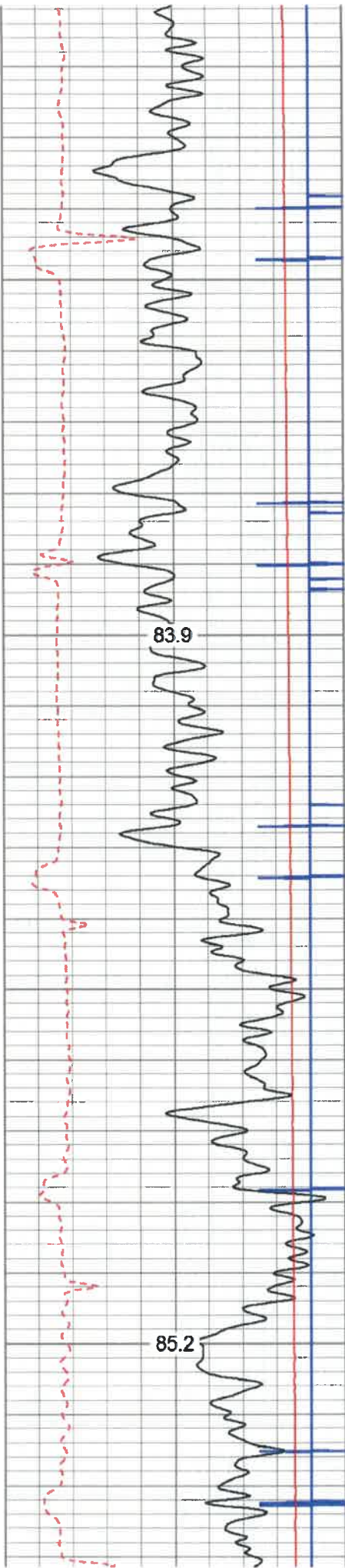
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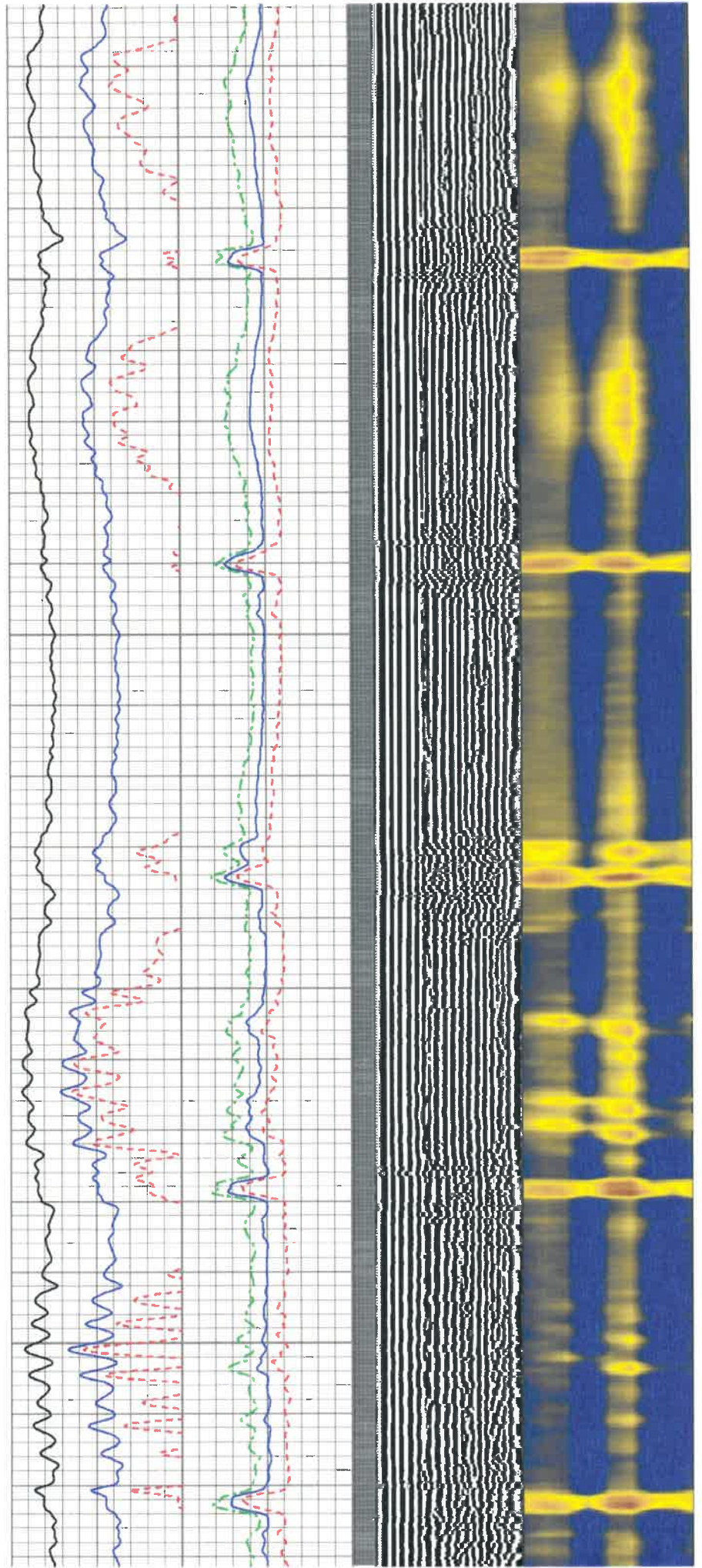




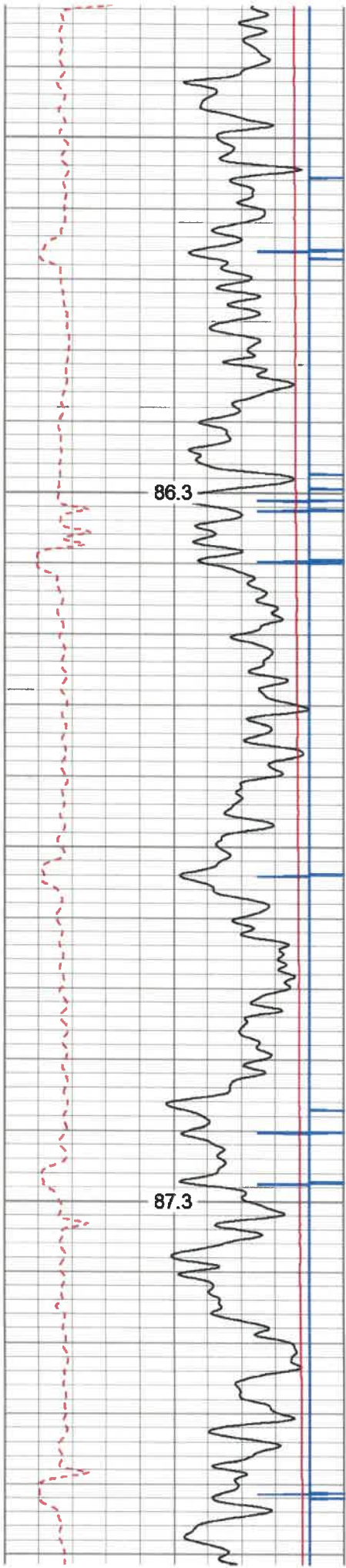


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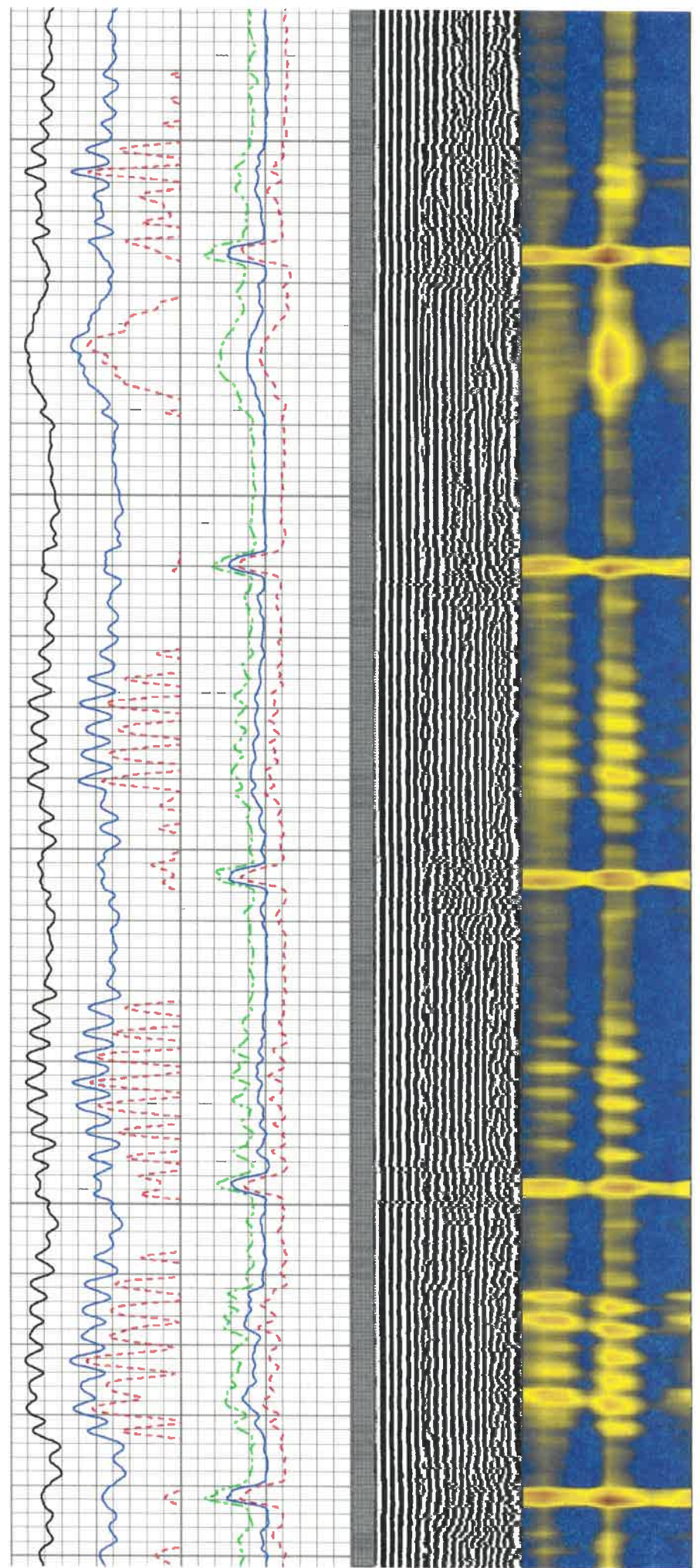




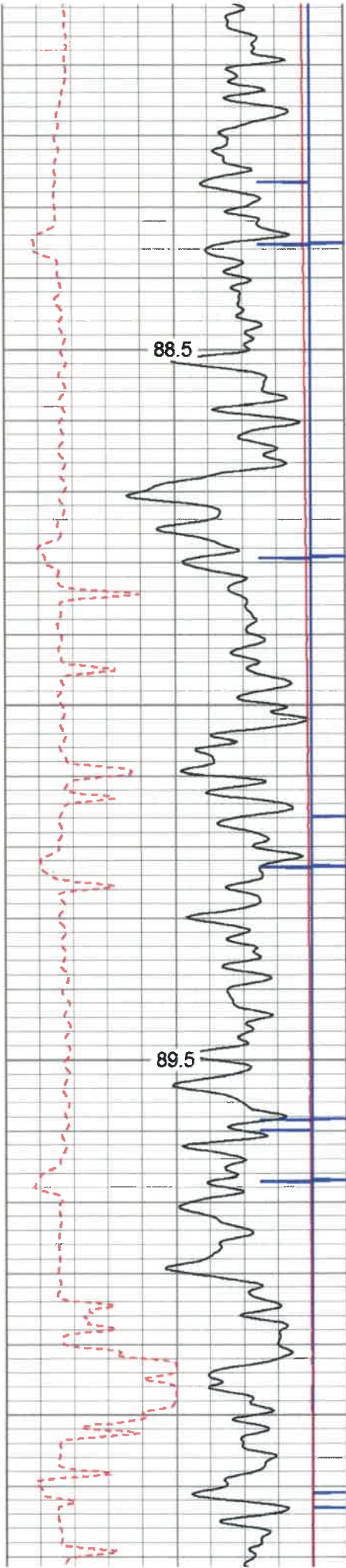


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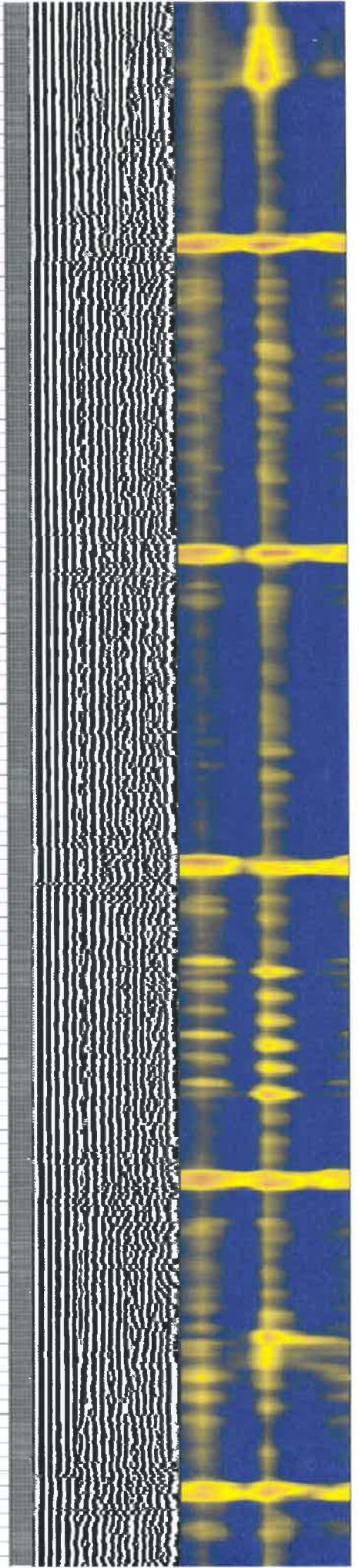
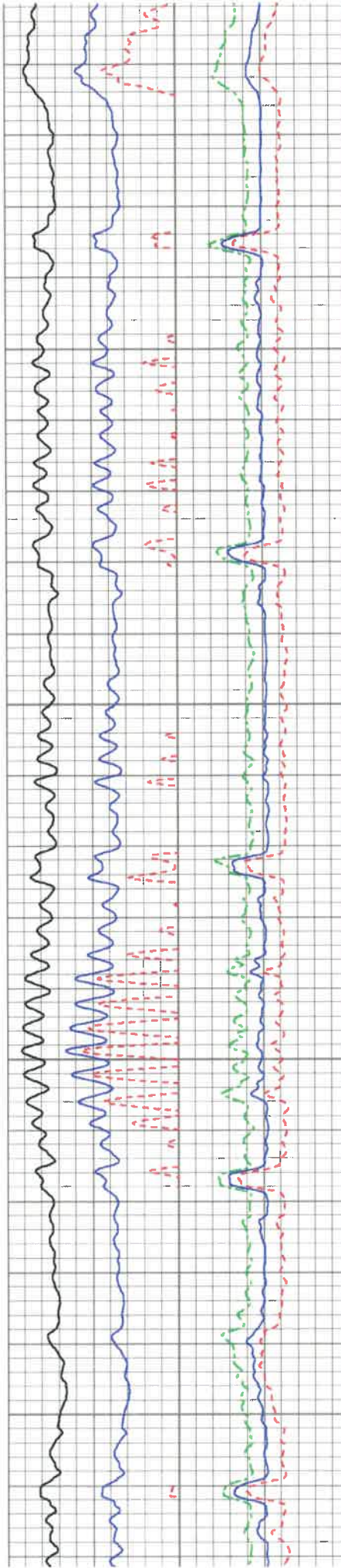




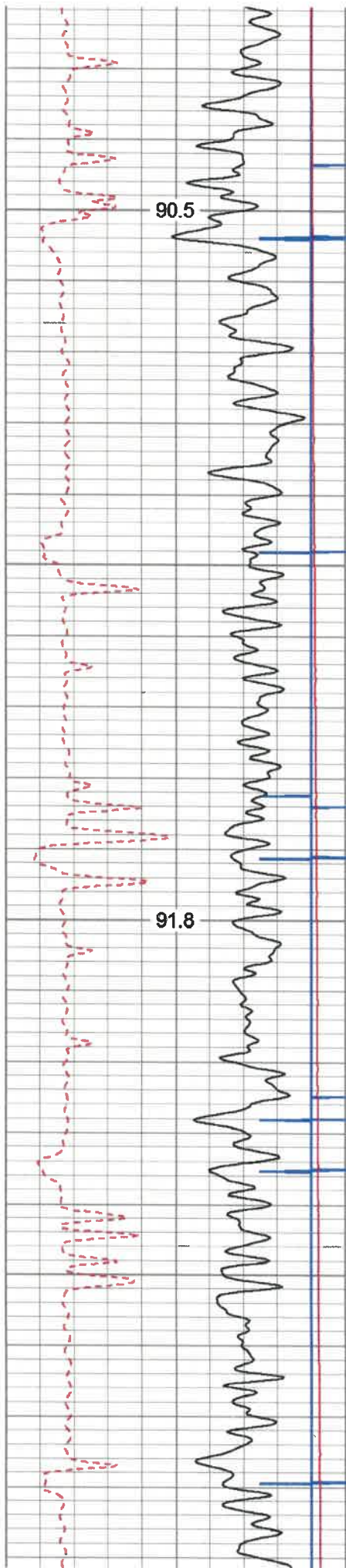


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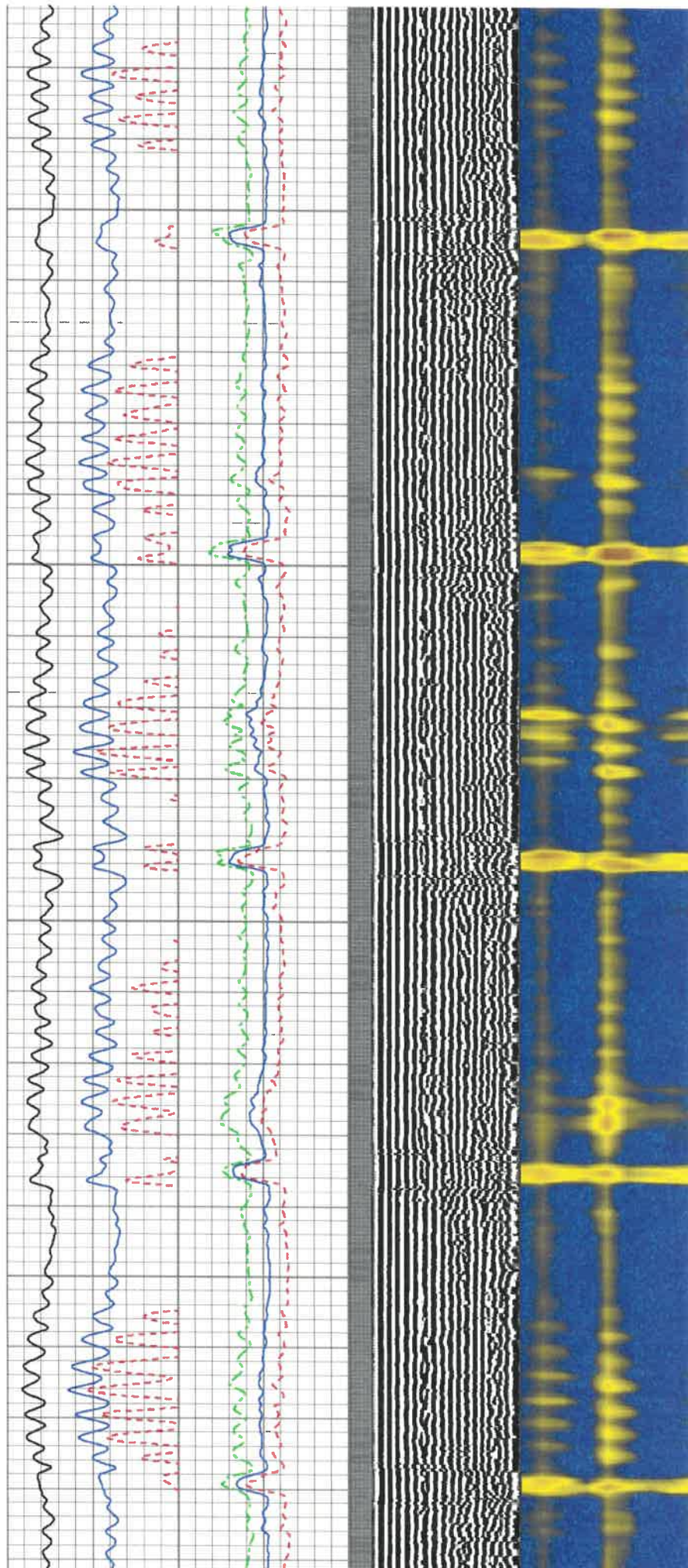




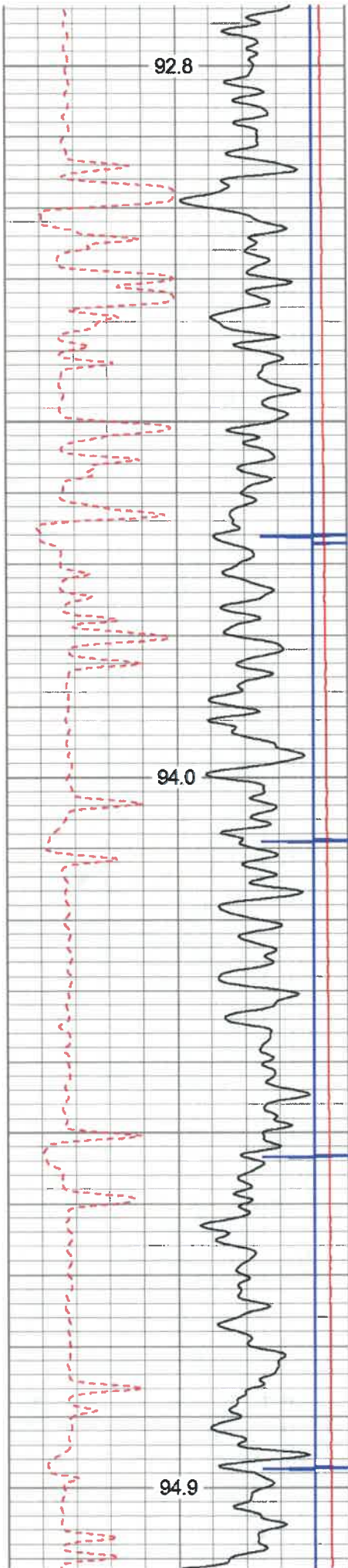


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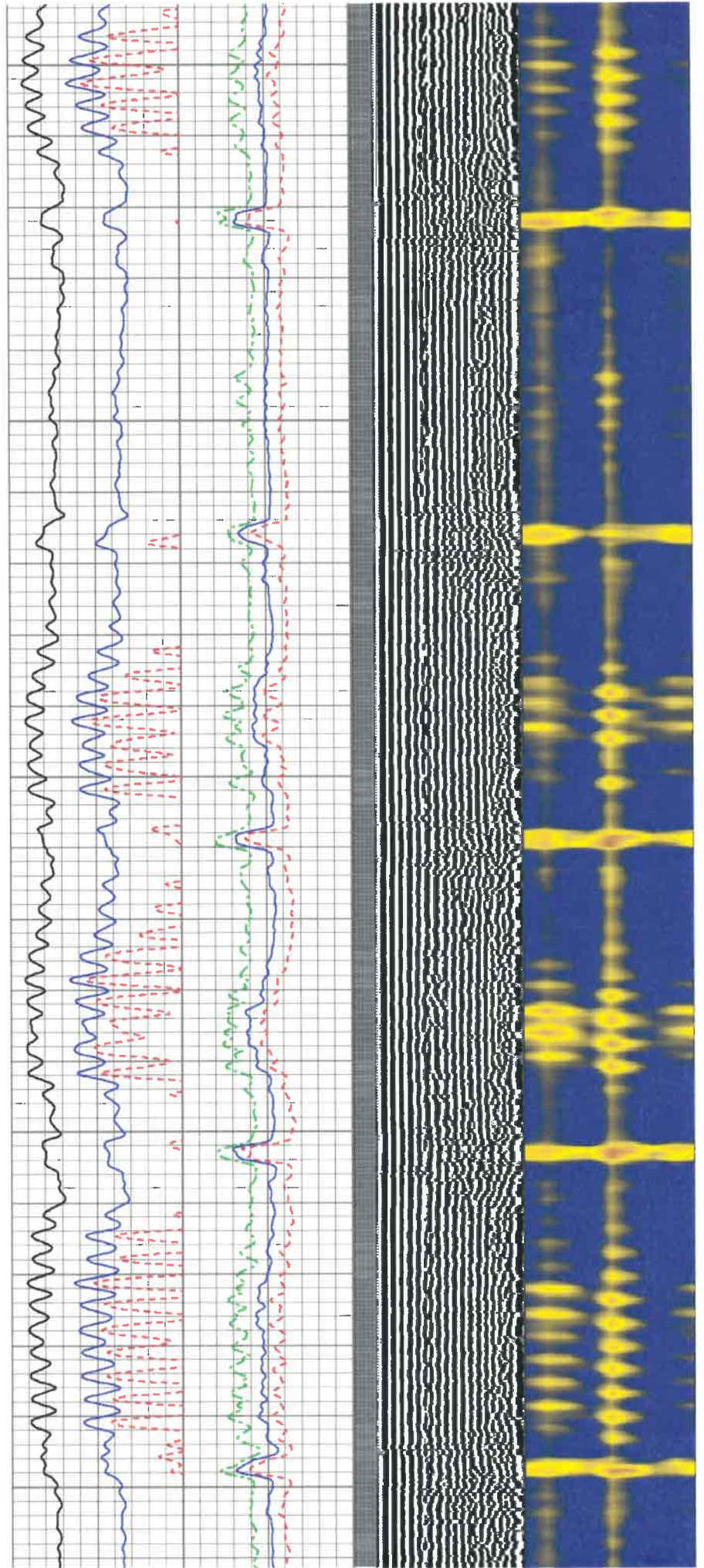




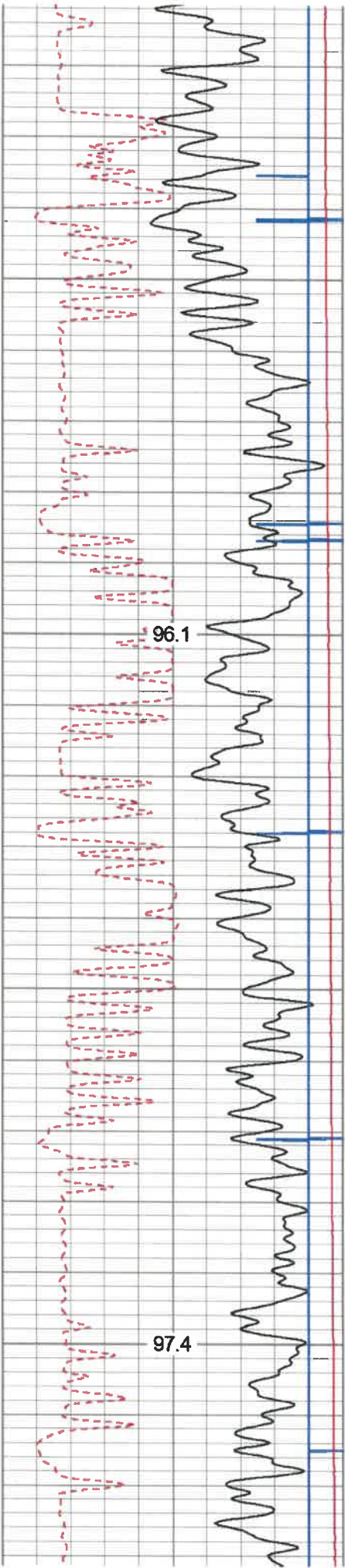
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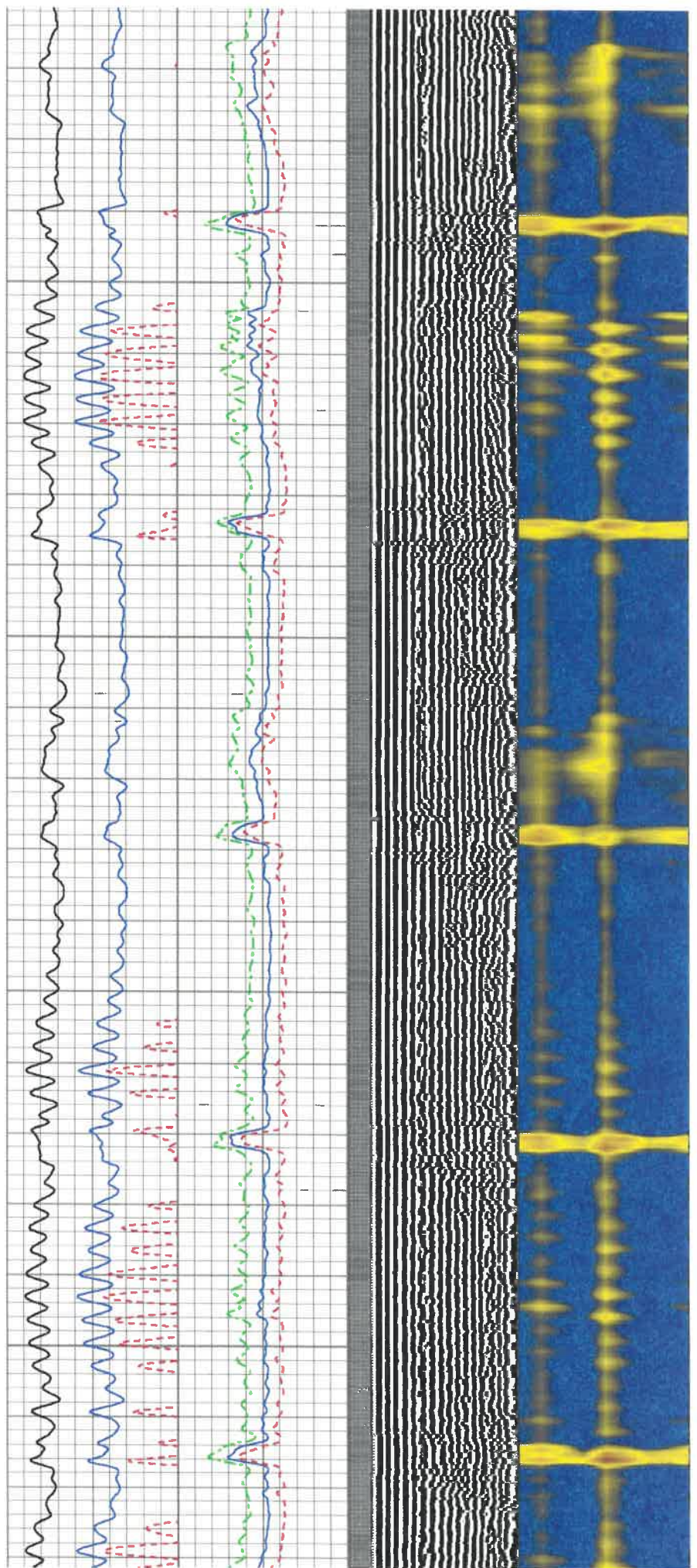




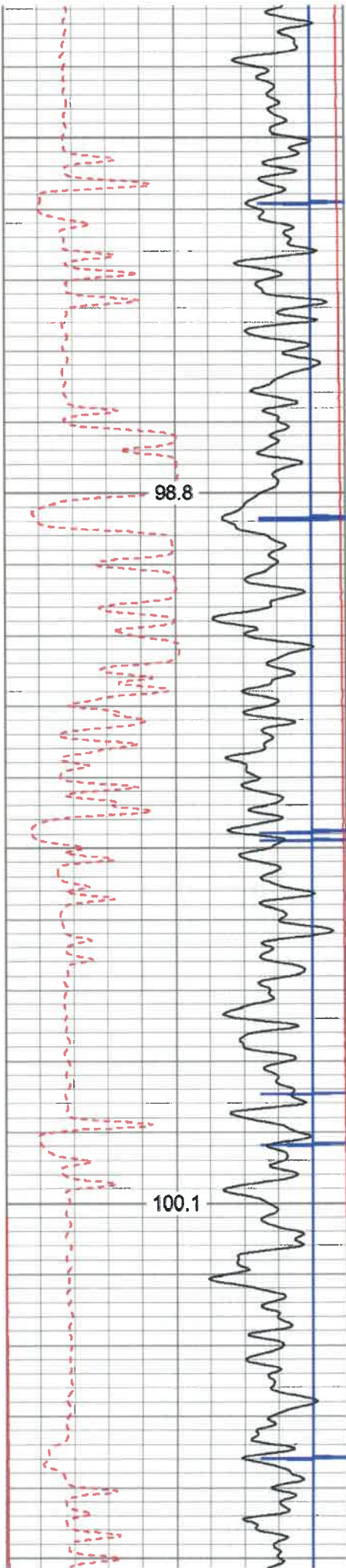


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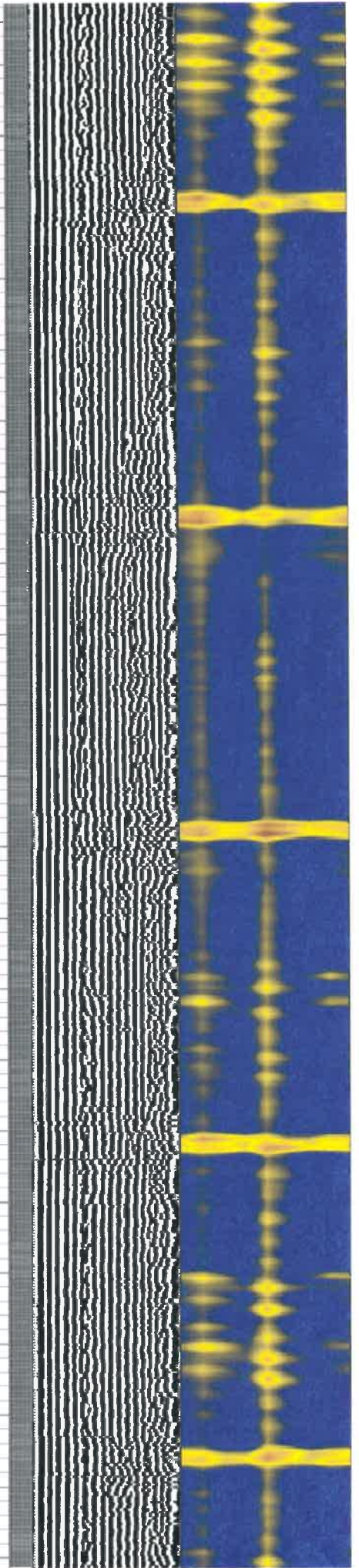
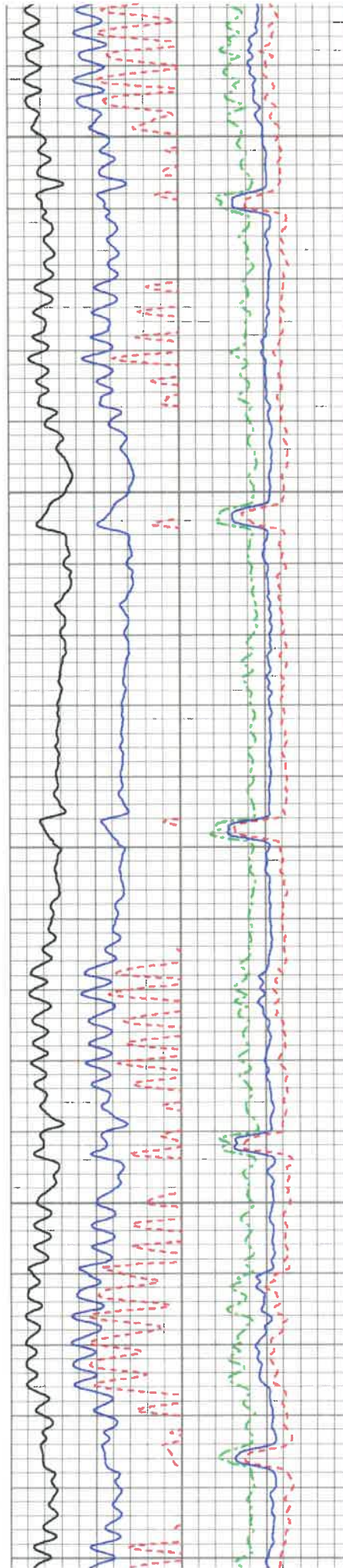




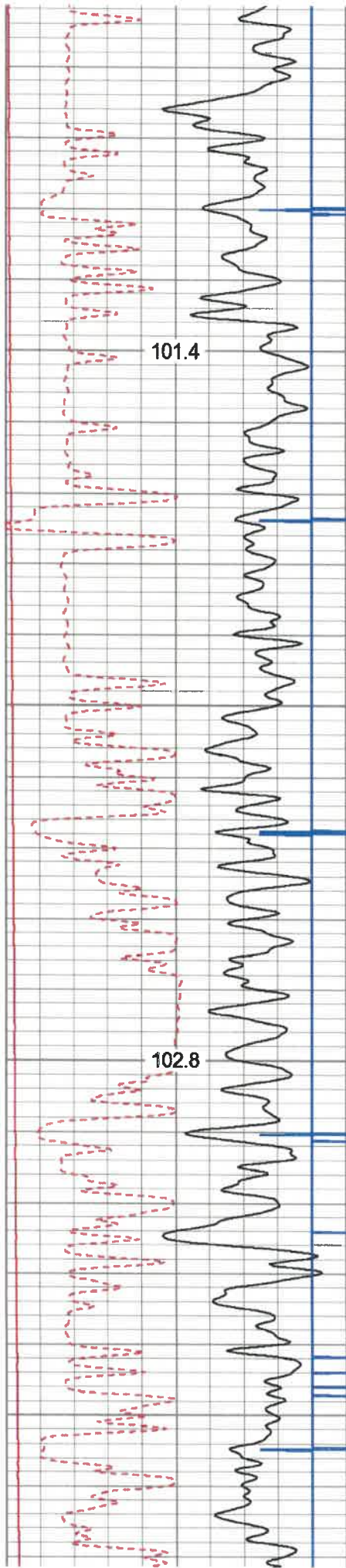


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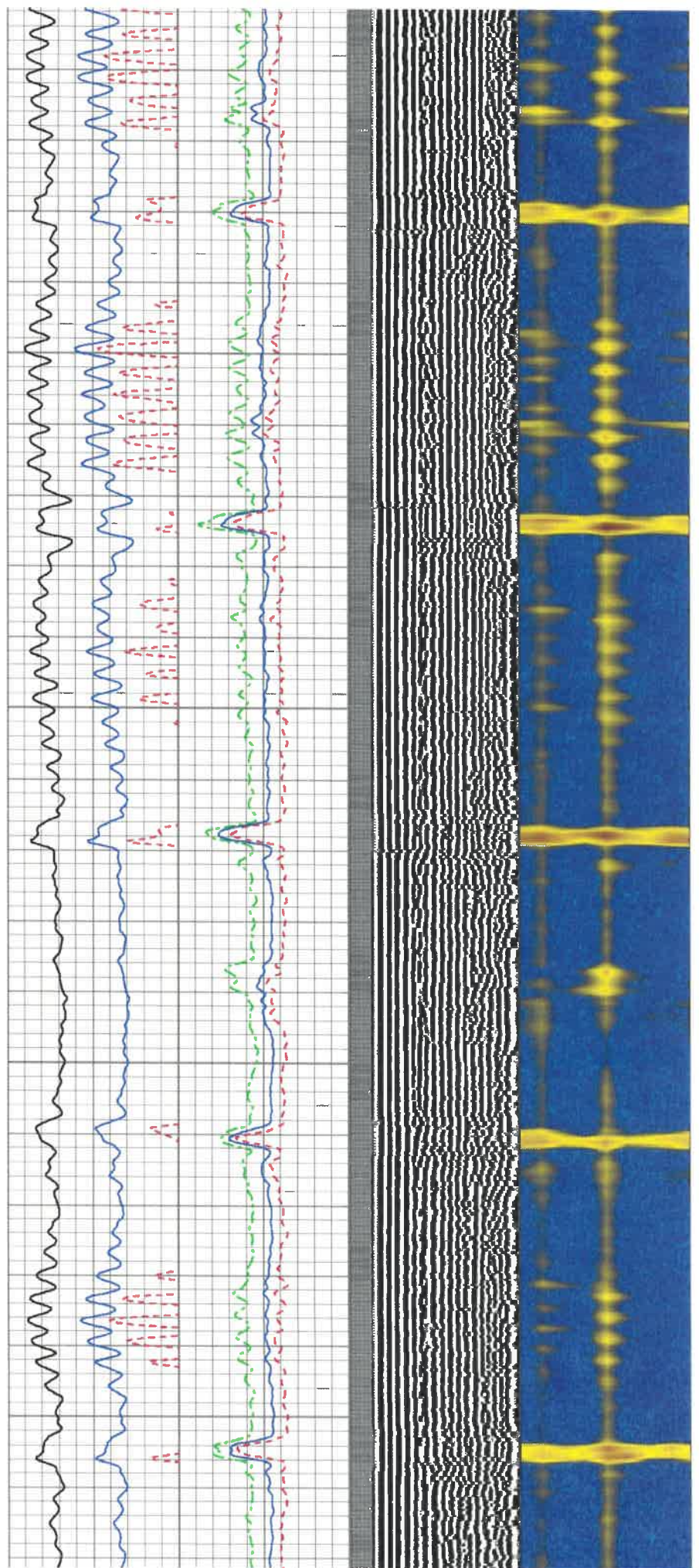




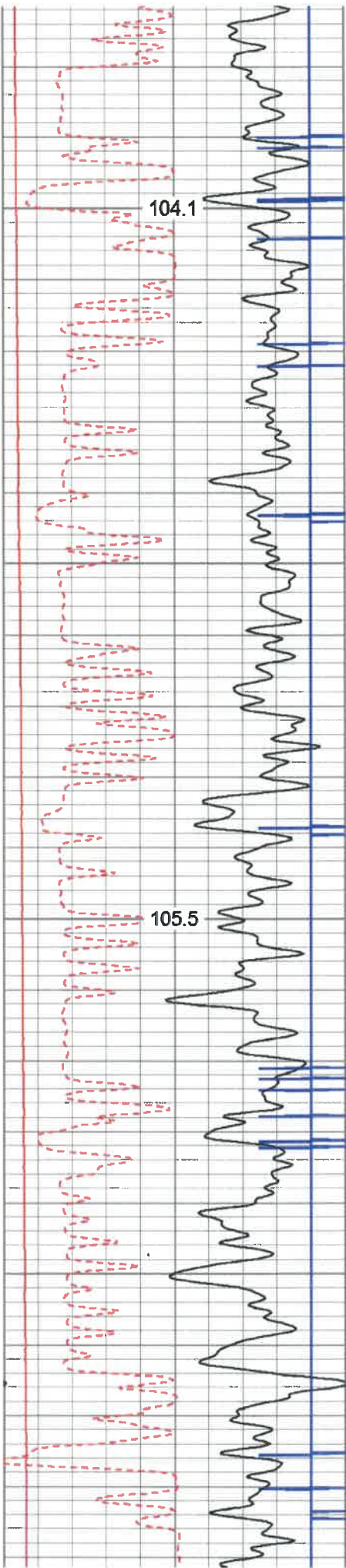


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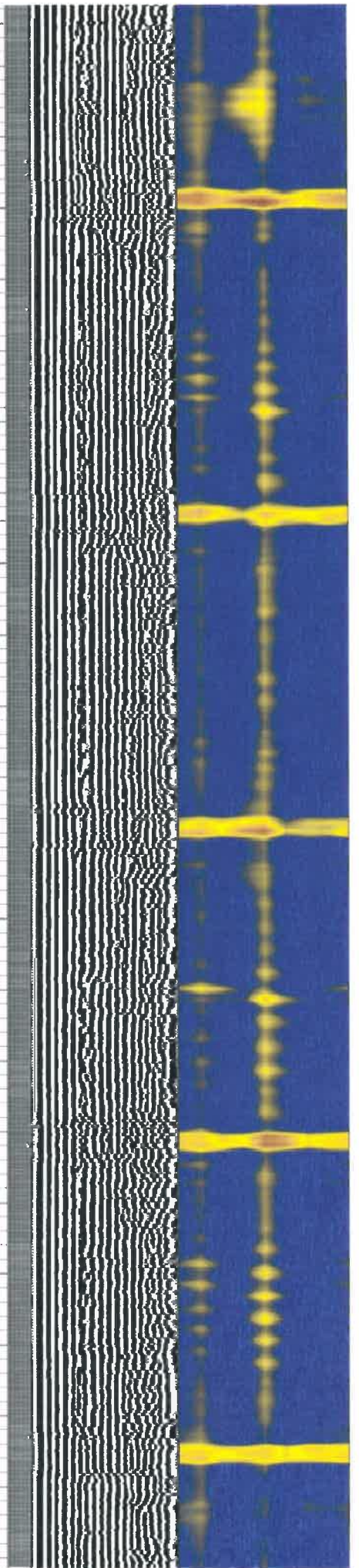
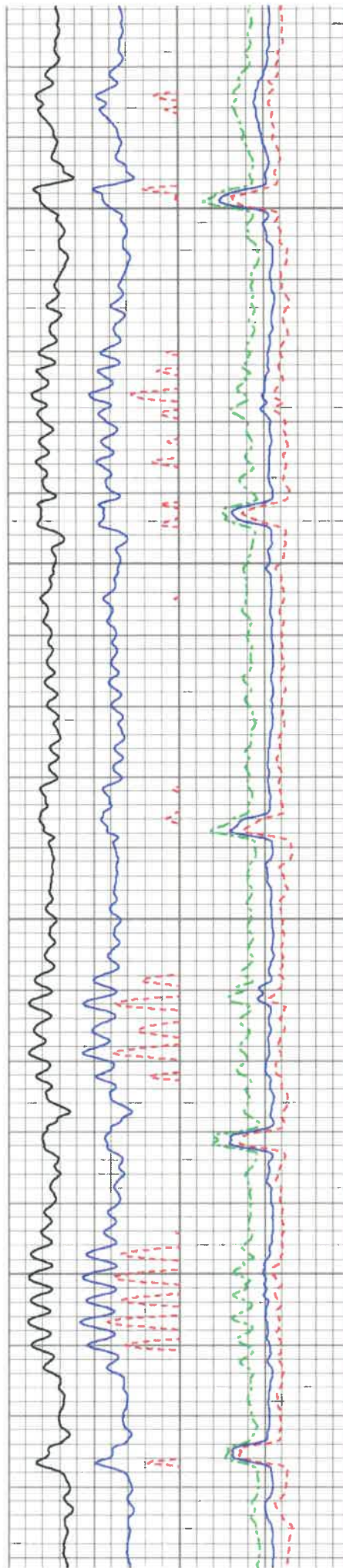




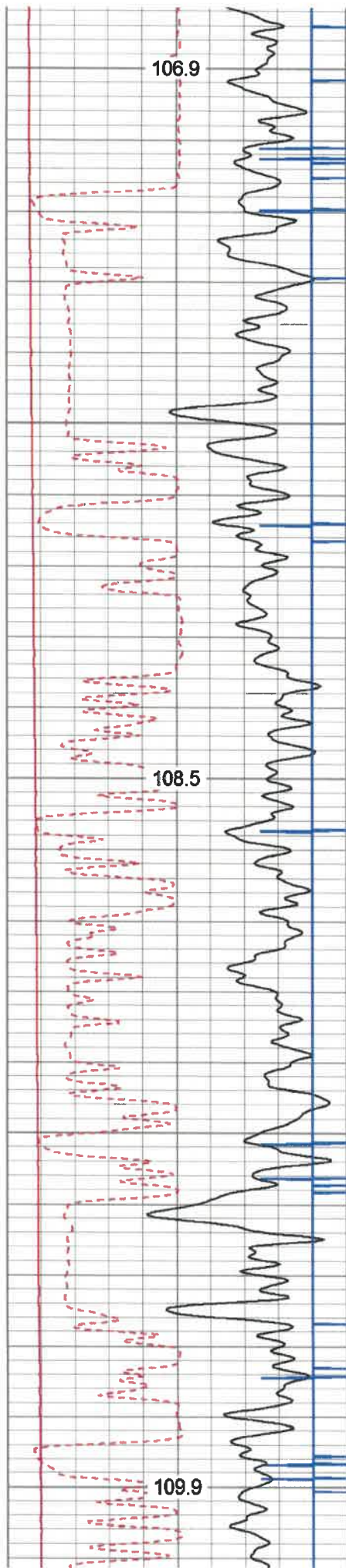


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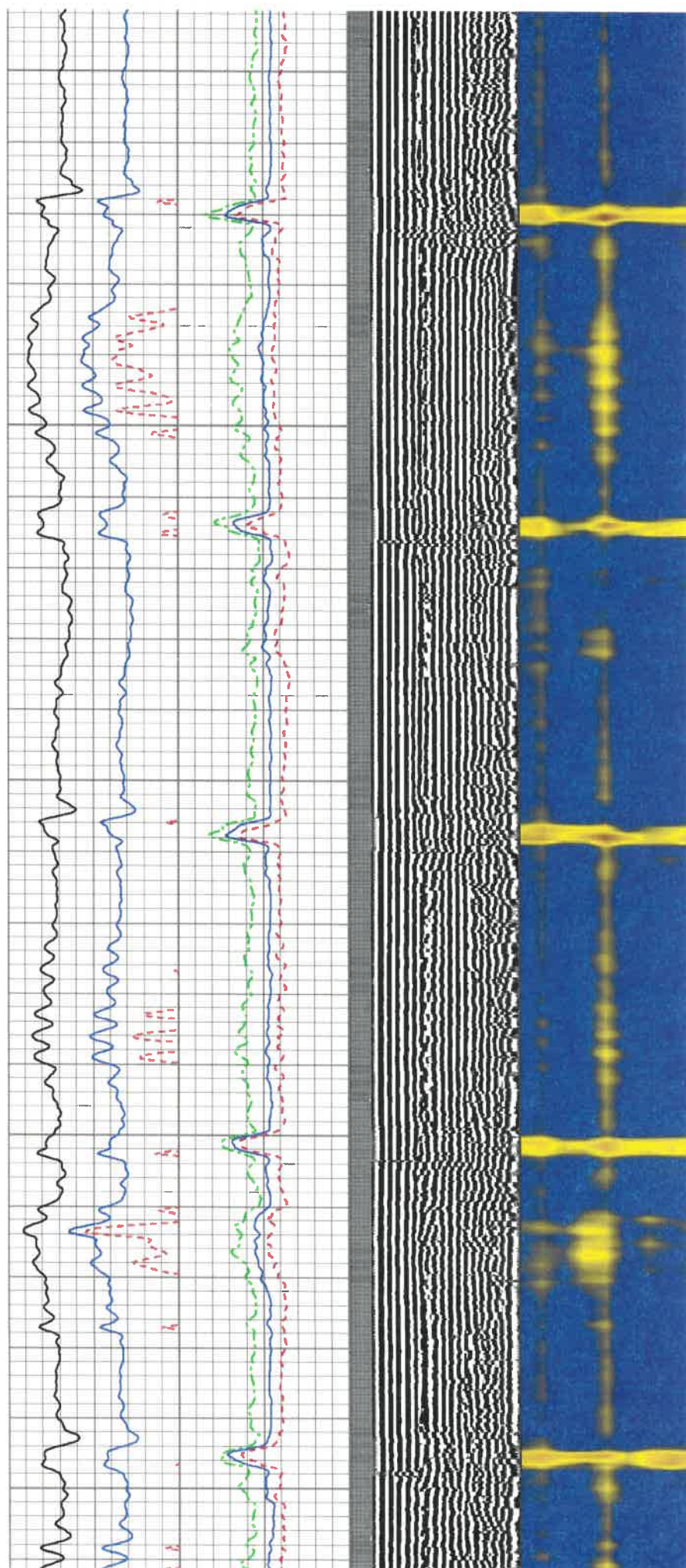




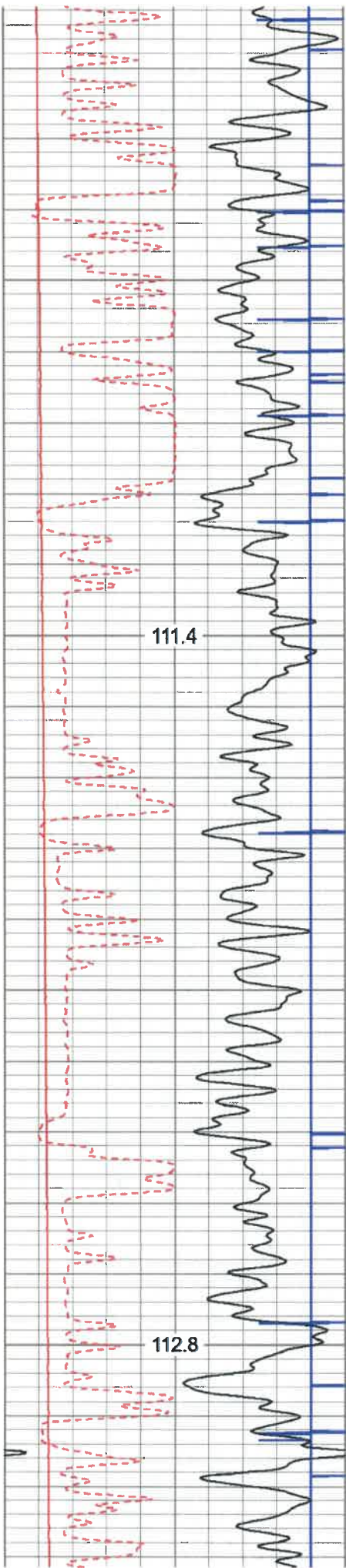
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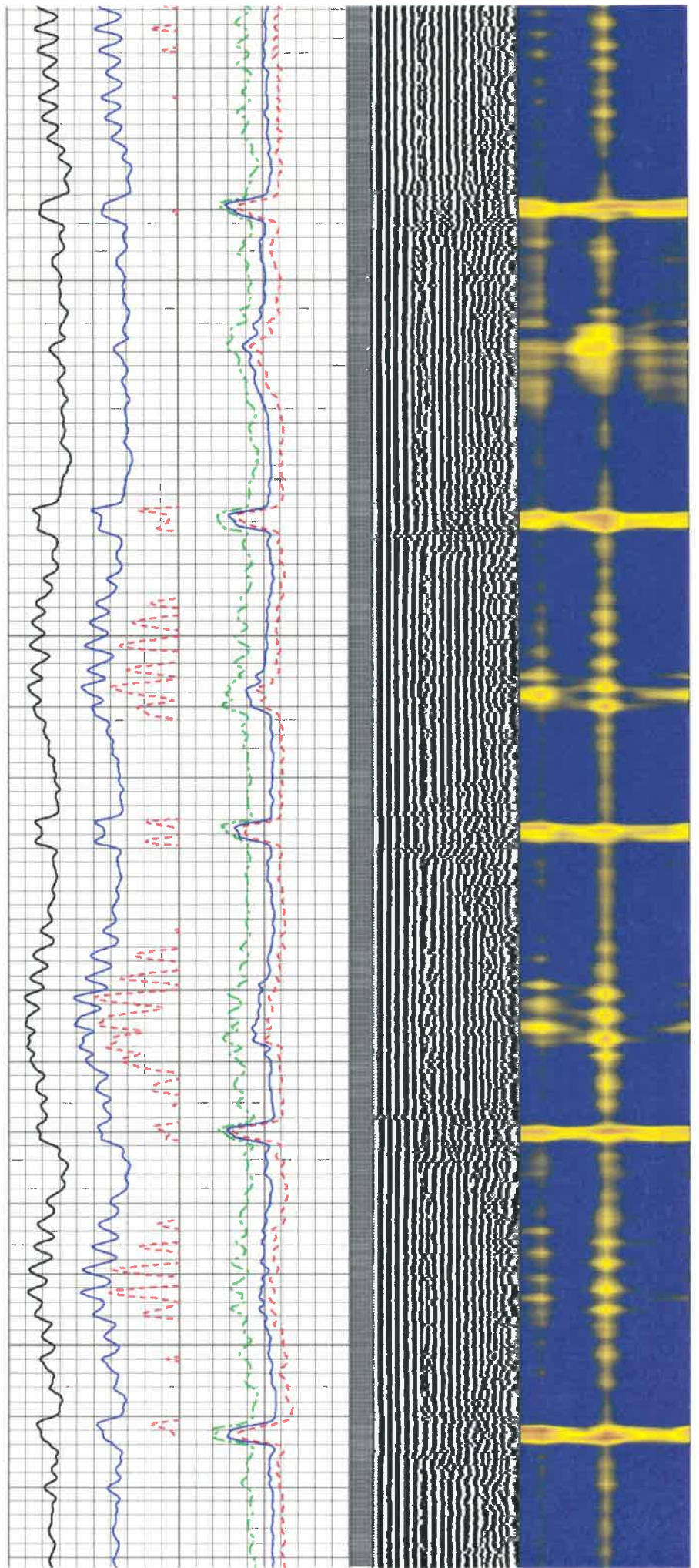




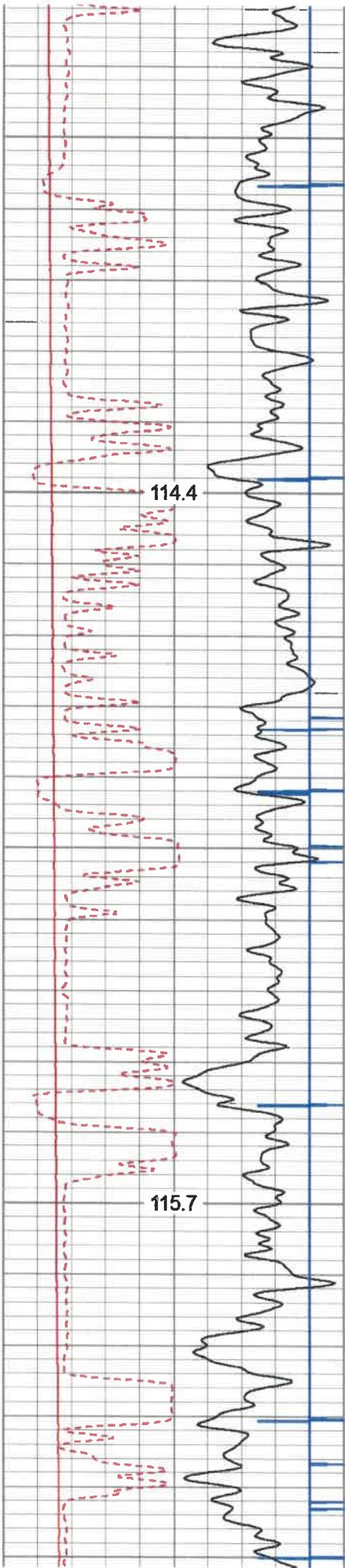


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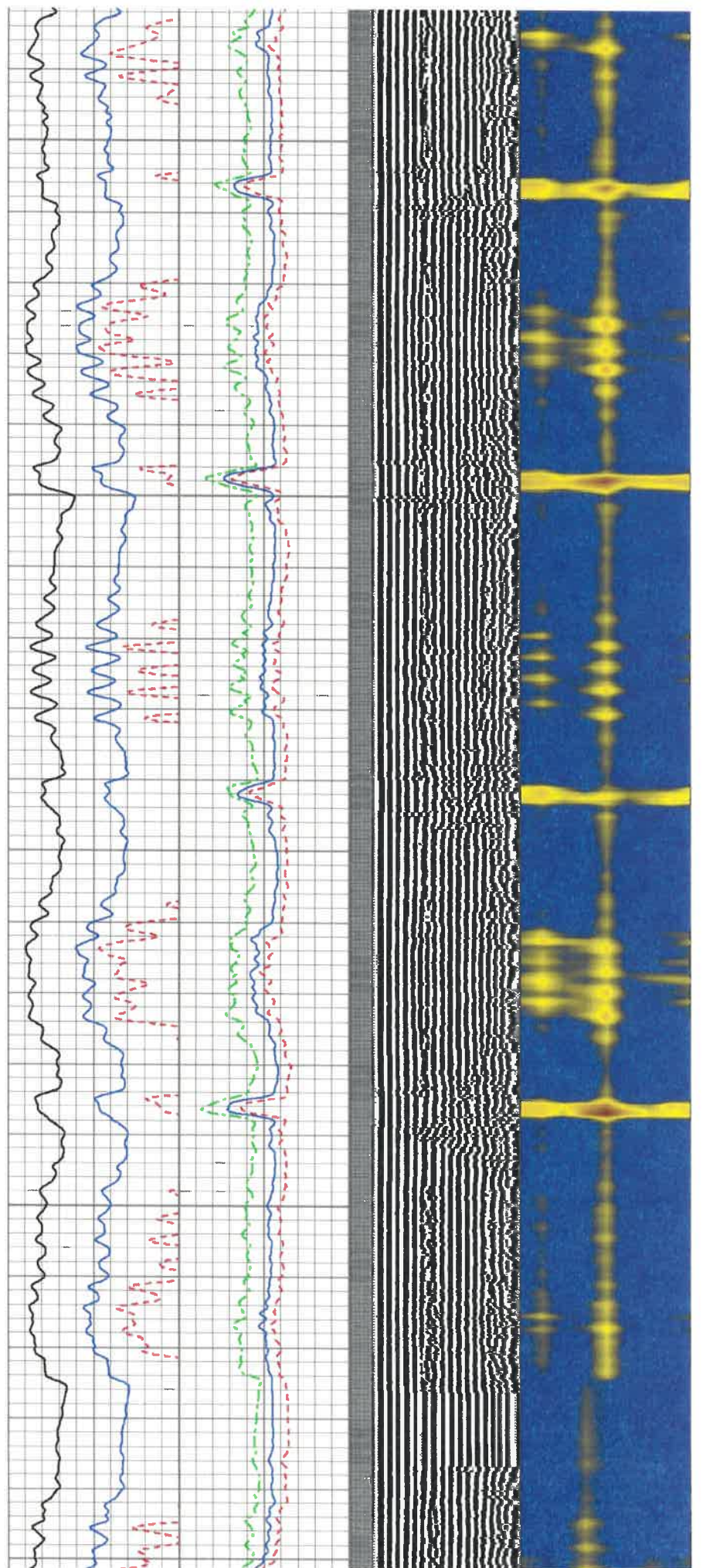




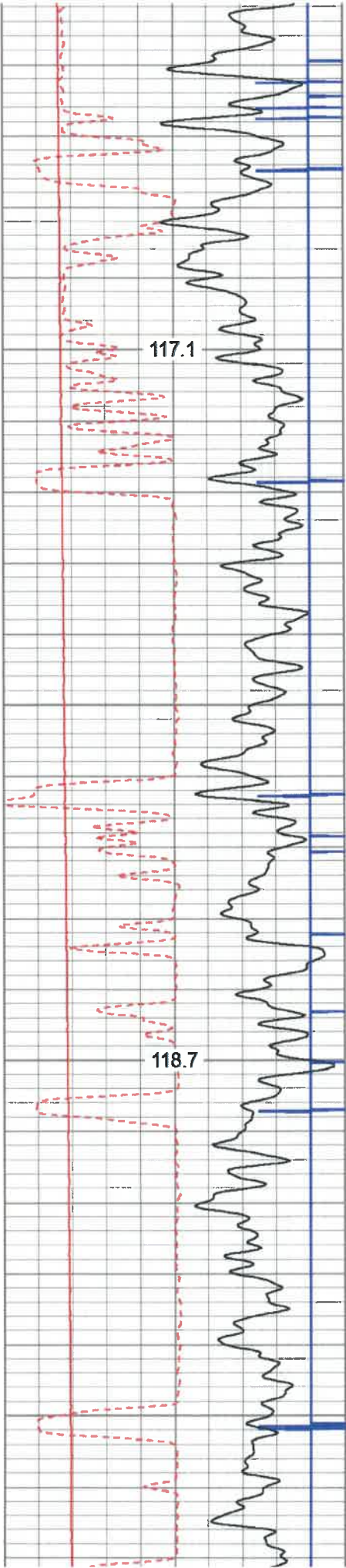


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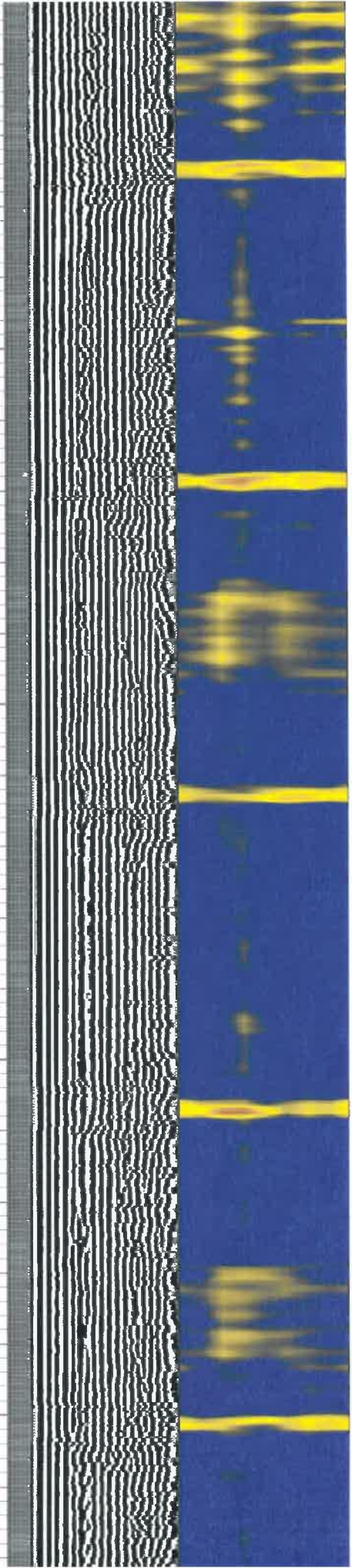




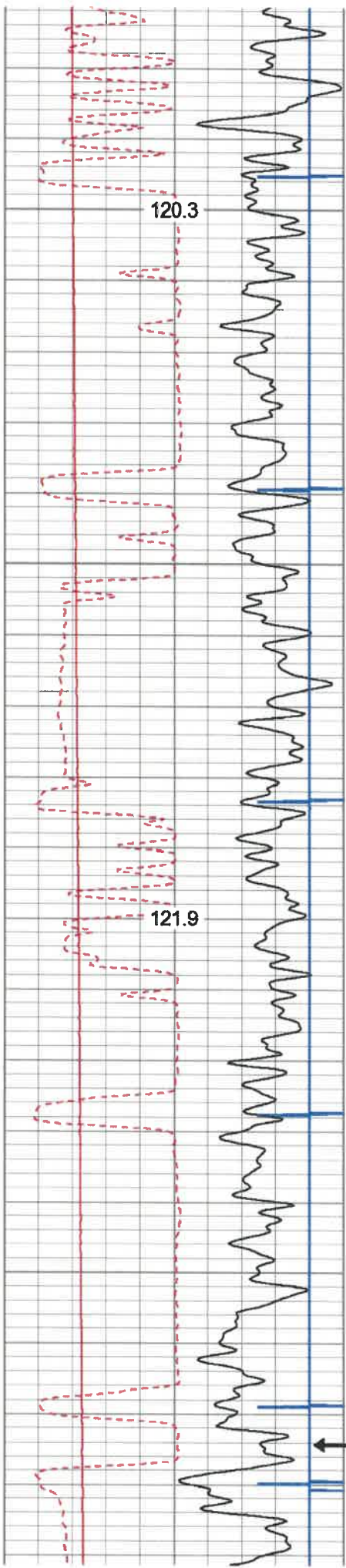


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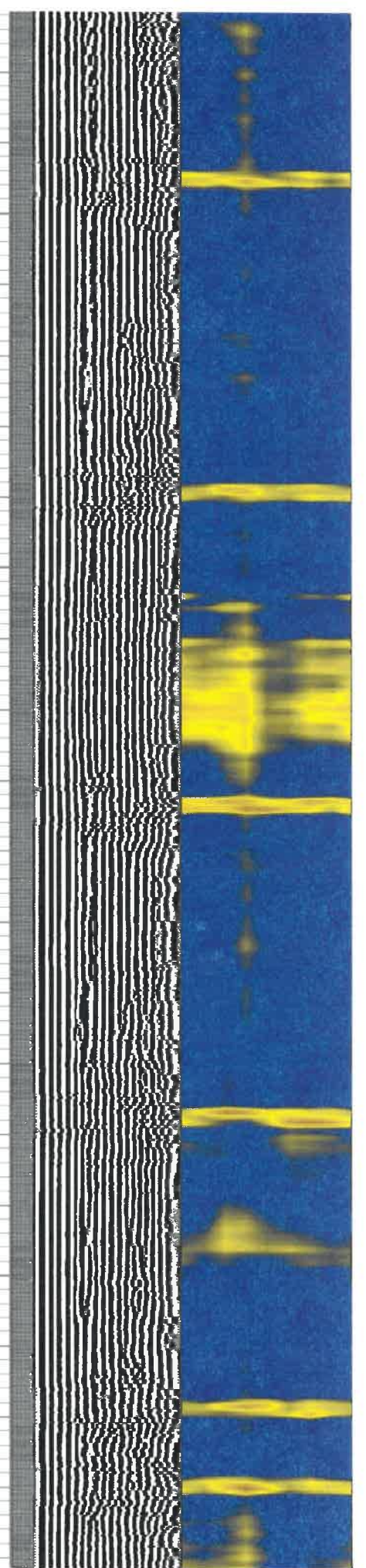
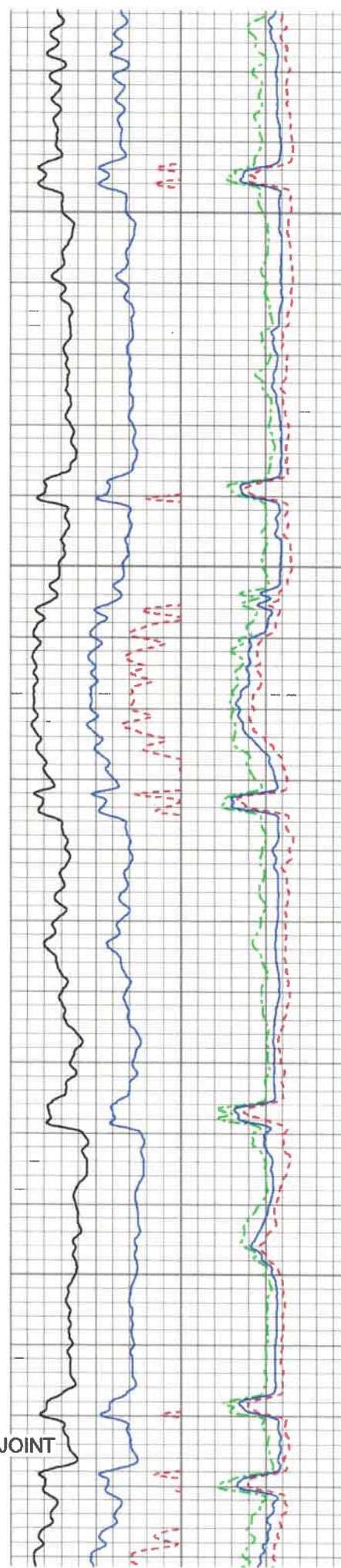




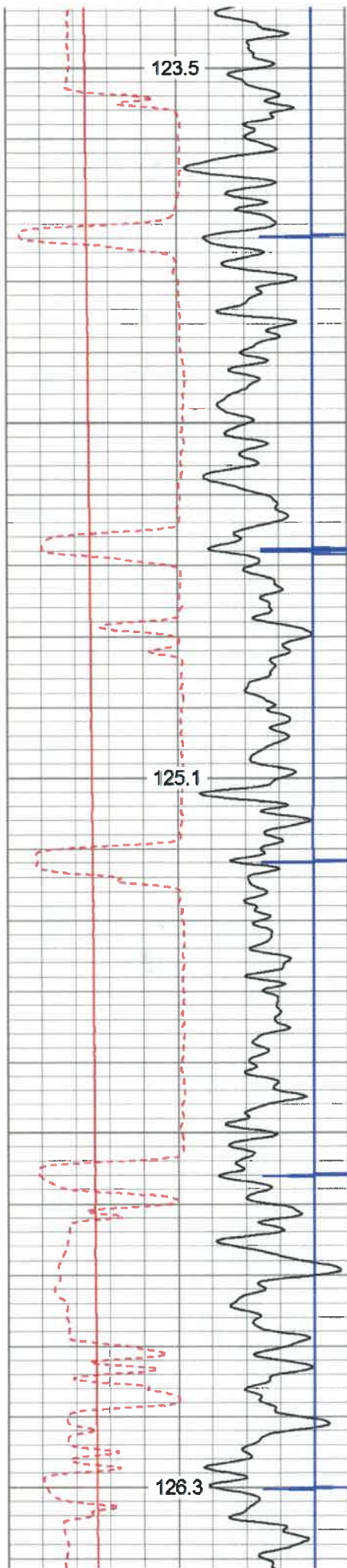
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5600

← MARKER JOINT



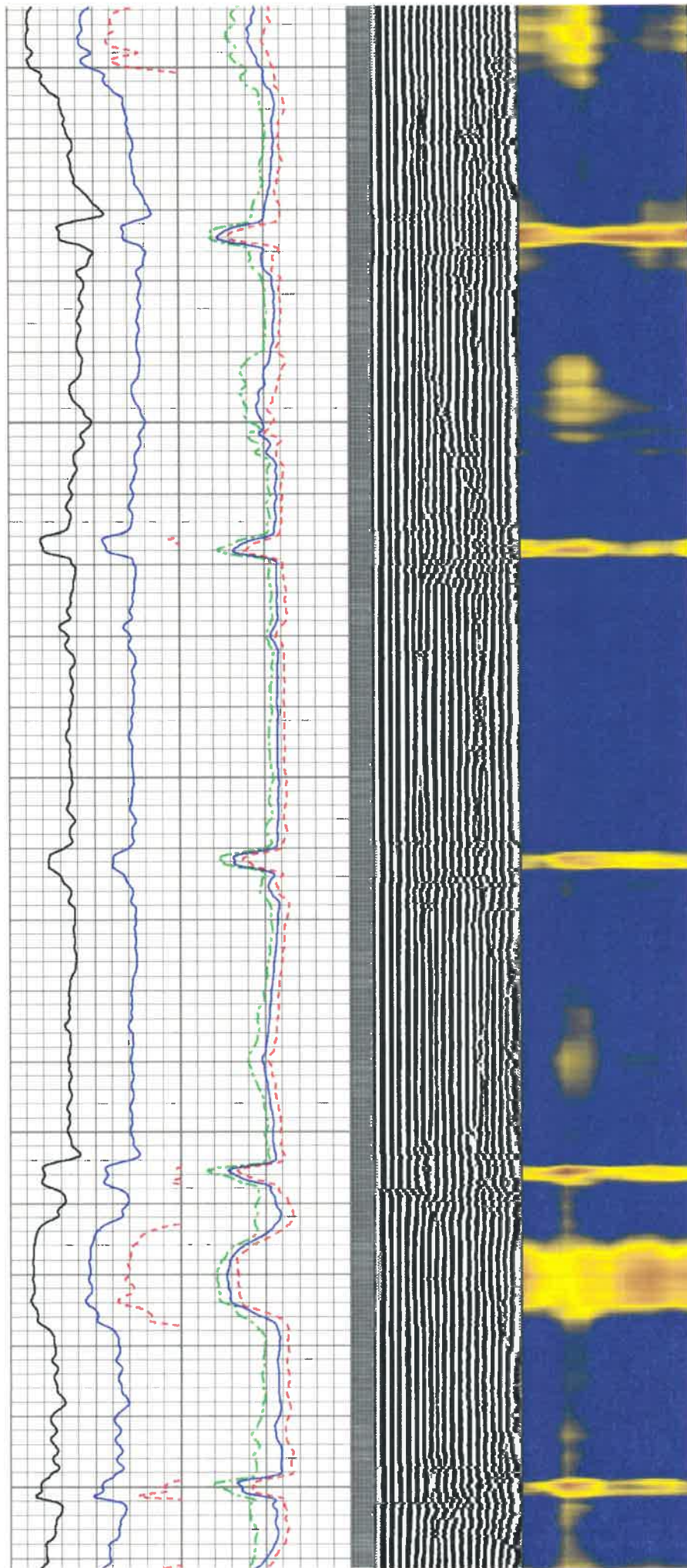




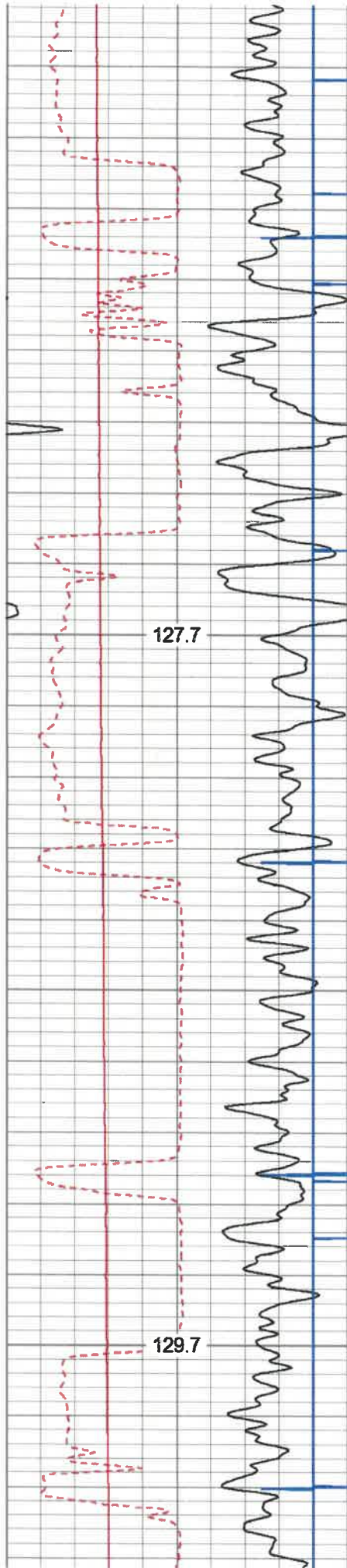
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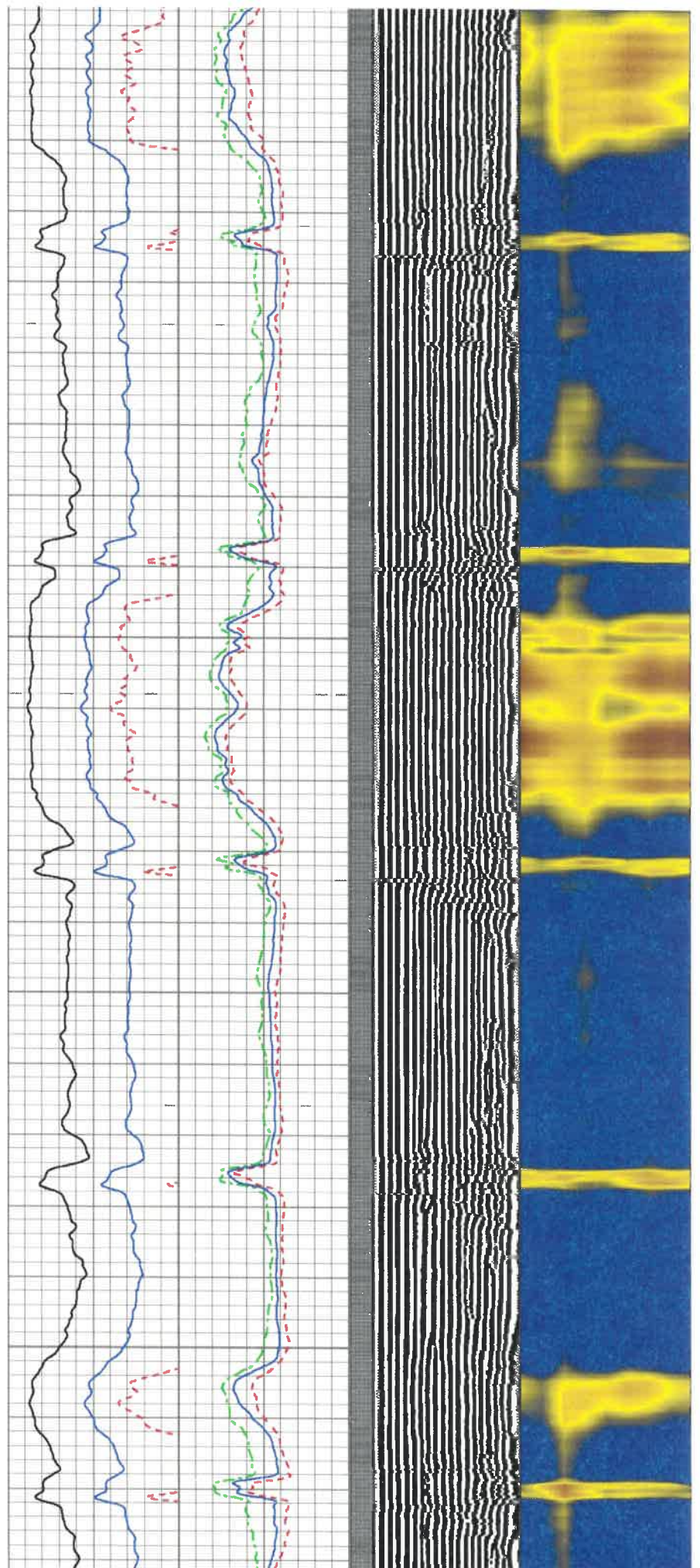




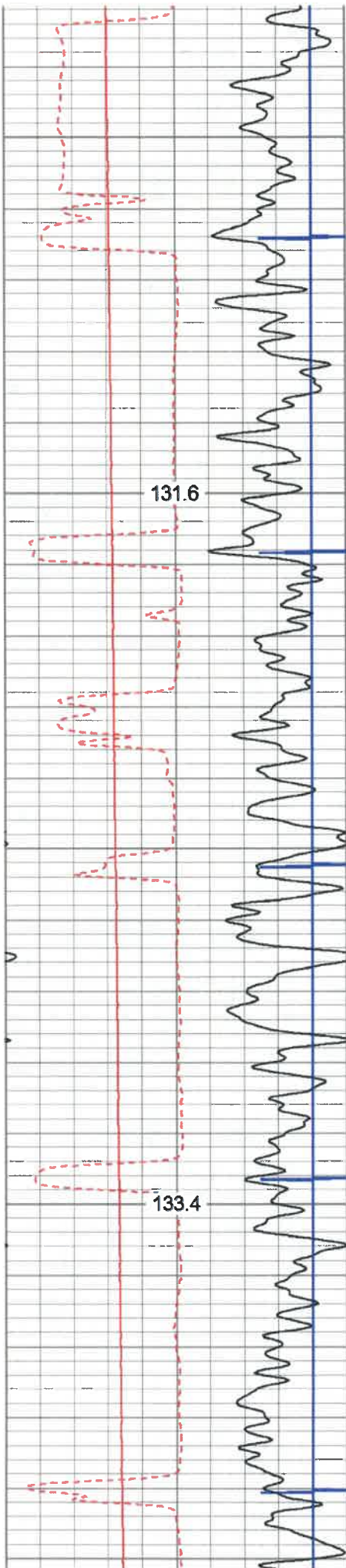


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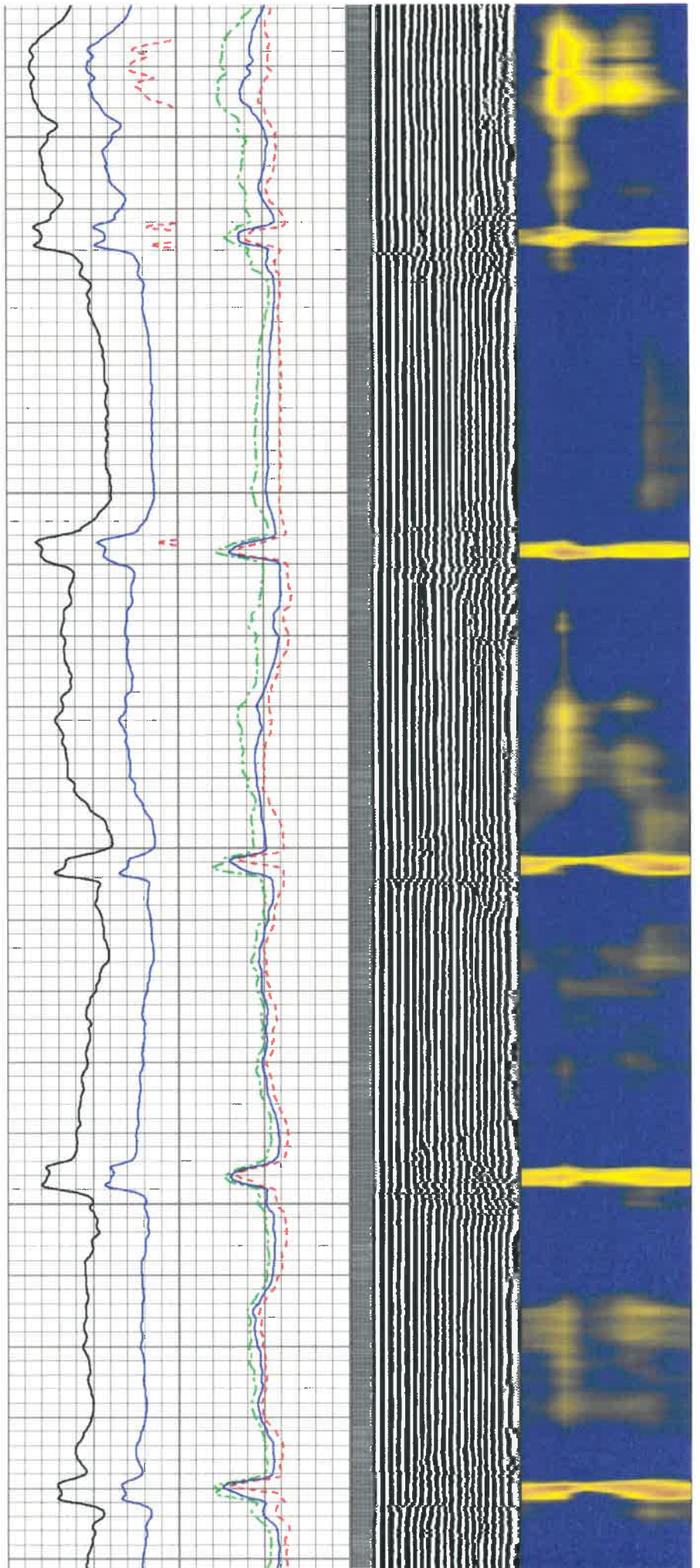




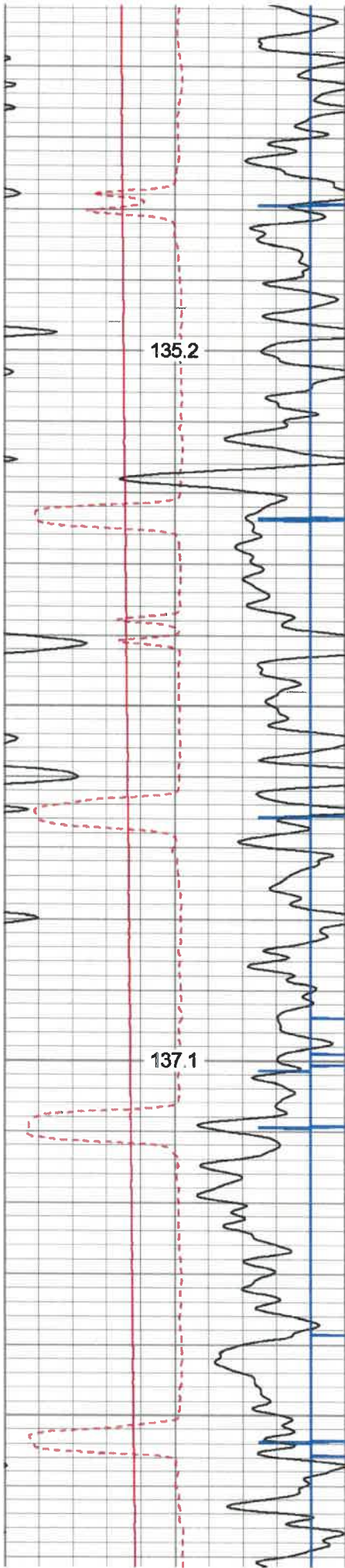


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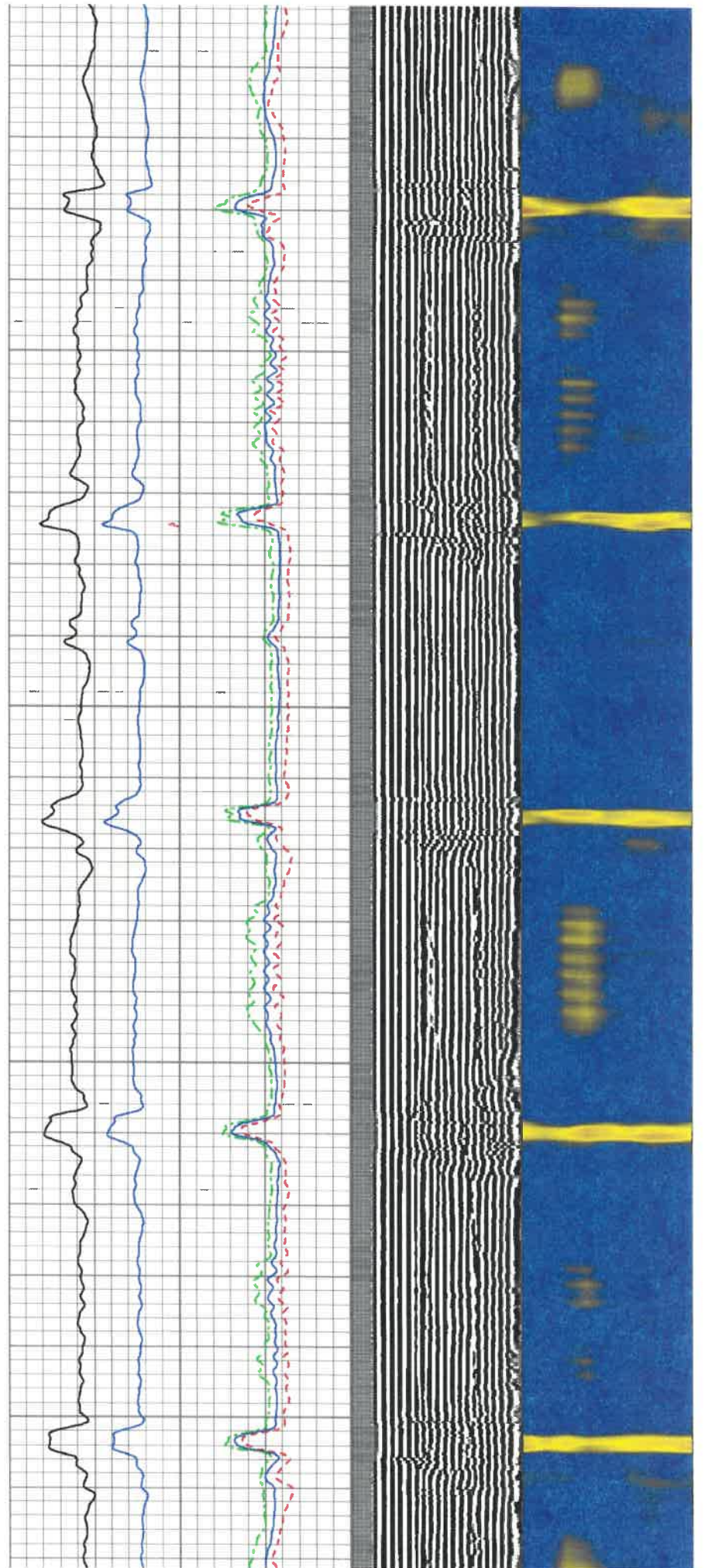




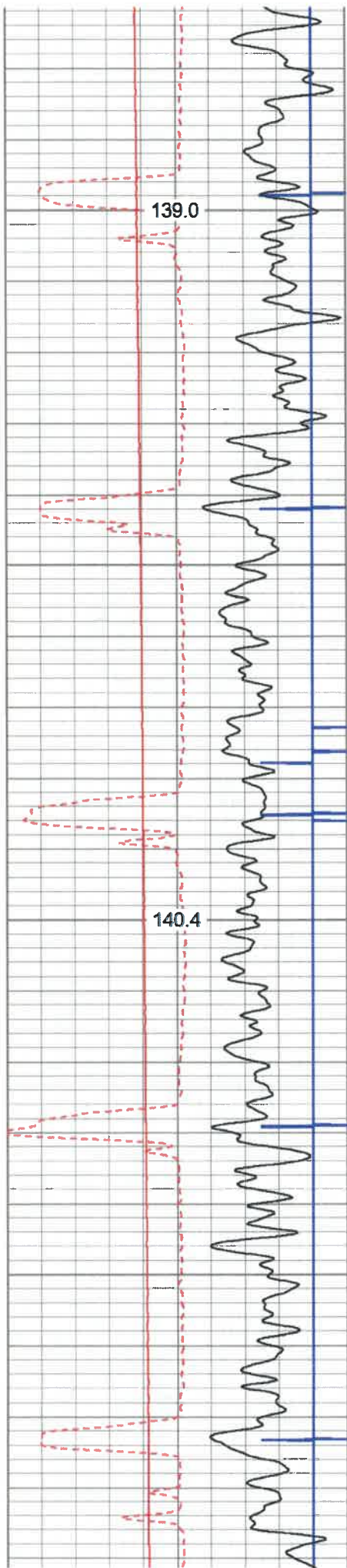


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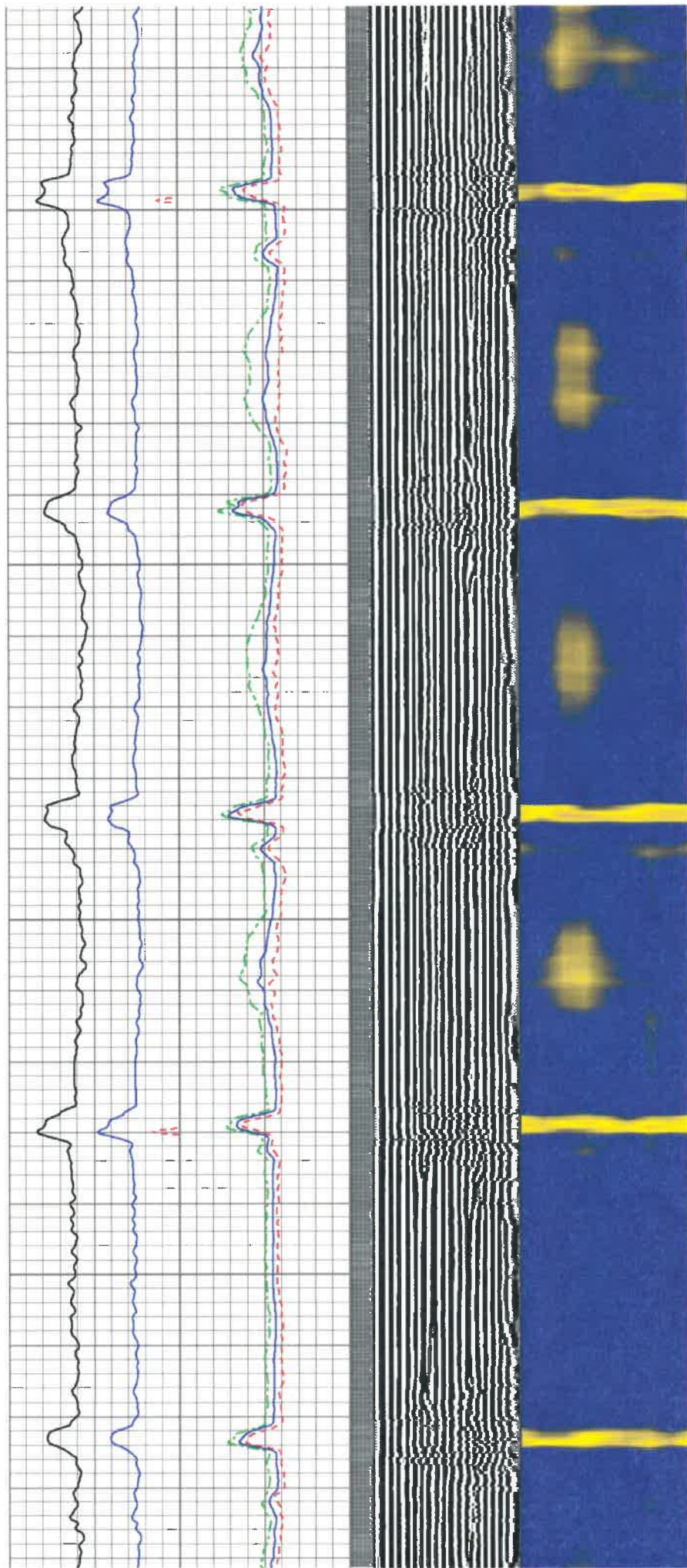




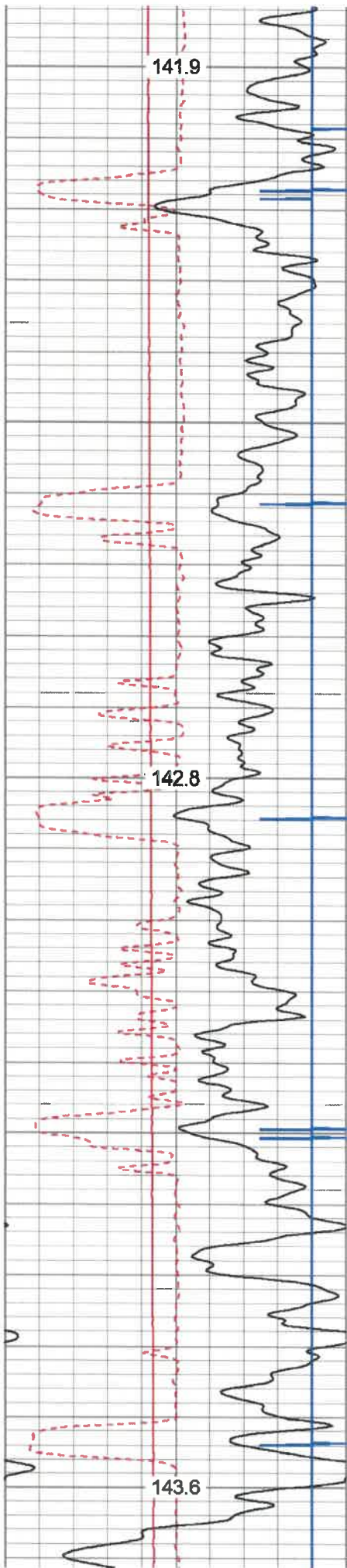


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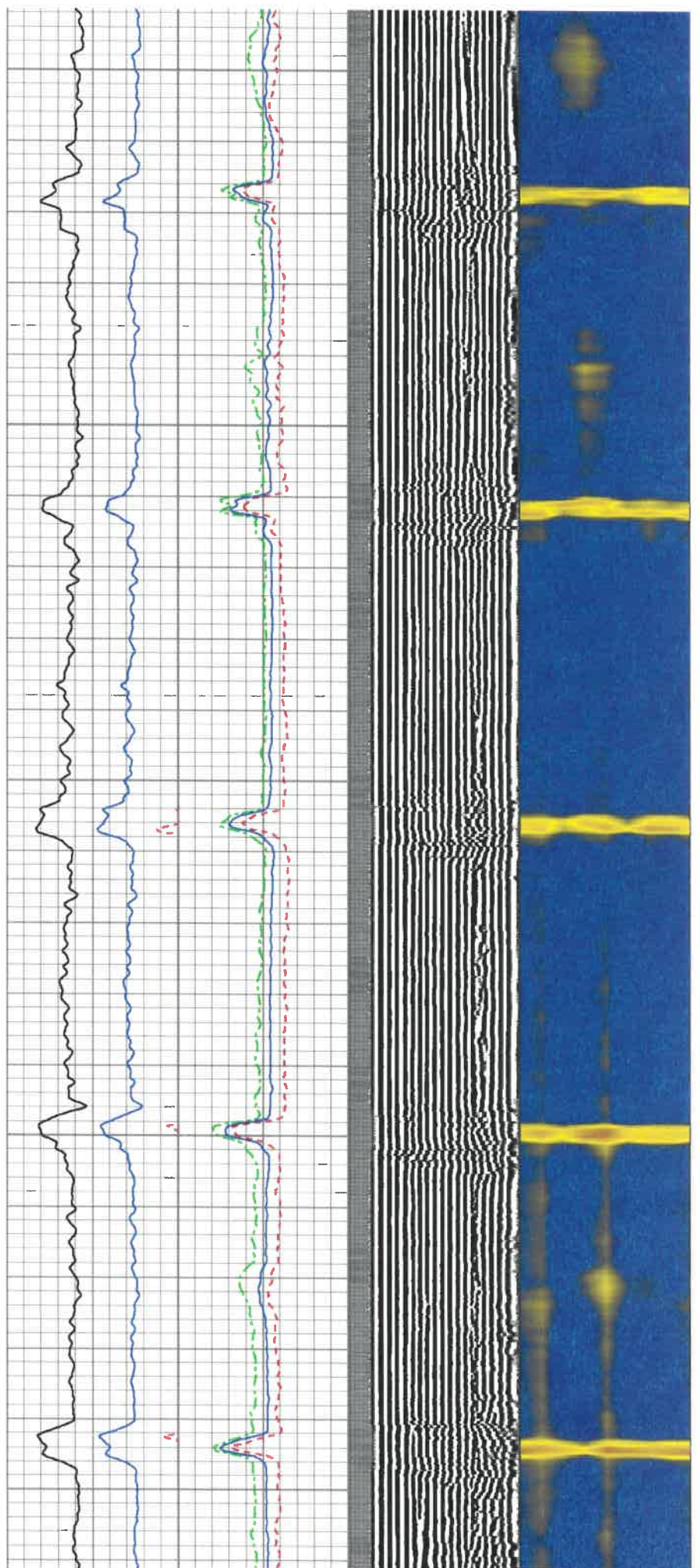




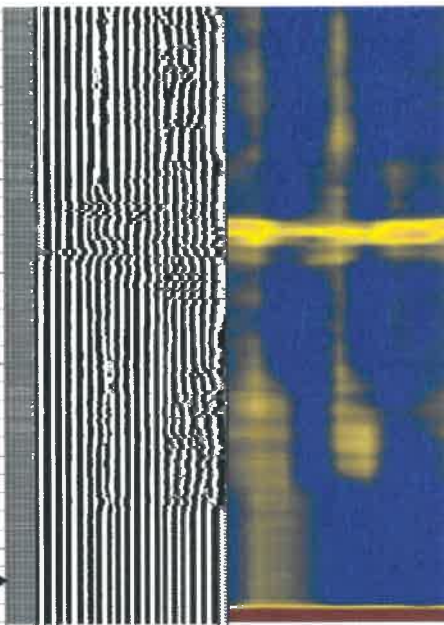
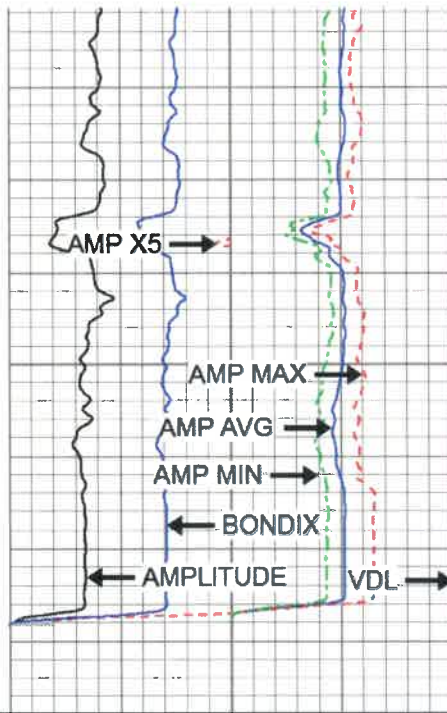
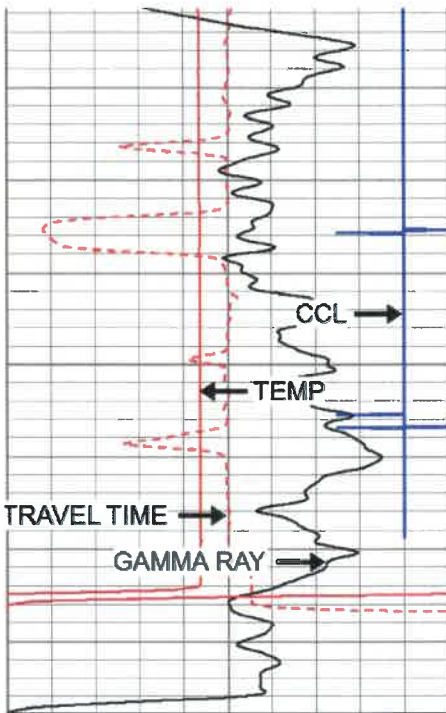
6800

6900

7000







|     |                    |     |
|-----|--------------------|-----|
| 280 | Travel Time (usec) | 180 |
| 9   | Casing Collars     | -1  |
| 0   | Gamma Ray          | 180 |
| 0   | TEMP (degF)        | 100 |
| 180 | GR                 | 360 |

|            |     |         |     |
|------------|-----|---------|-----|
| Amplitude  | 0   | Amp Avg | 150 |
| (mV)       | 100 | Amp Max | 150 |
| AmpX5 (mV) | 20  | Amp Min | 150 |
| BONDIX     | 0   |         |     |

|     |     |      |    |            |    |
|-----|-----|------|----|------------|----|
| 200 | VDL | 1200 | 1  | Sector Map | 8  |
|     |     |      | 20 |            | 80 |

TEMP  
(degF)



# REPEAT SECTION

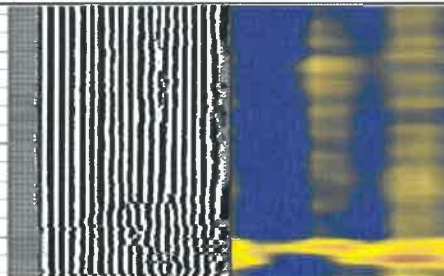
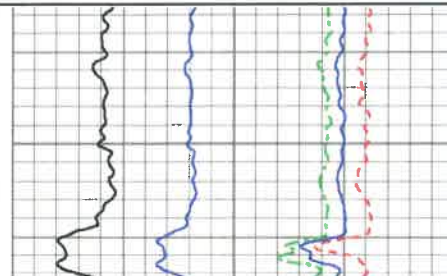
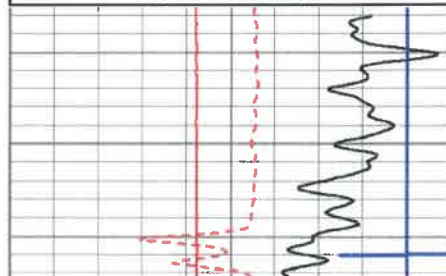
Database File: f:\fender 2h.db  
 Dataset Pathname: pass3.1  
 Presentation Format: \_scblt12  
 Dataset Creation: Fri Apr 10 13:02:41 2020 by Calc Std Casedhole 10081  
 Charted by: Depth in Feet scaled 1:240

|     |                    |     |
|-----|--------------------|-----|
| 280 | Travel Time (usec) | 180 |
| 9   | Casing Collars     | -1  |
| 0   | Gamma Ray          | 180 |
| 0   | TEMP (degF)        | 100 |
| 180 | GR                 | 360 |

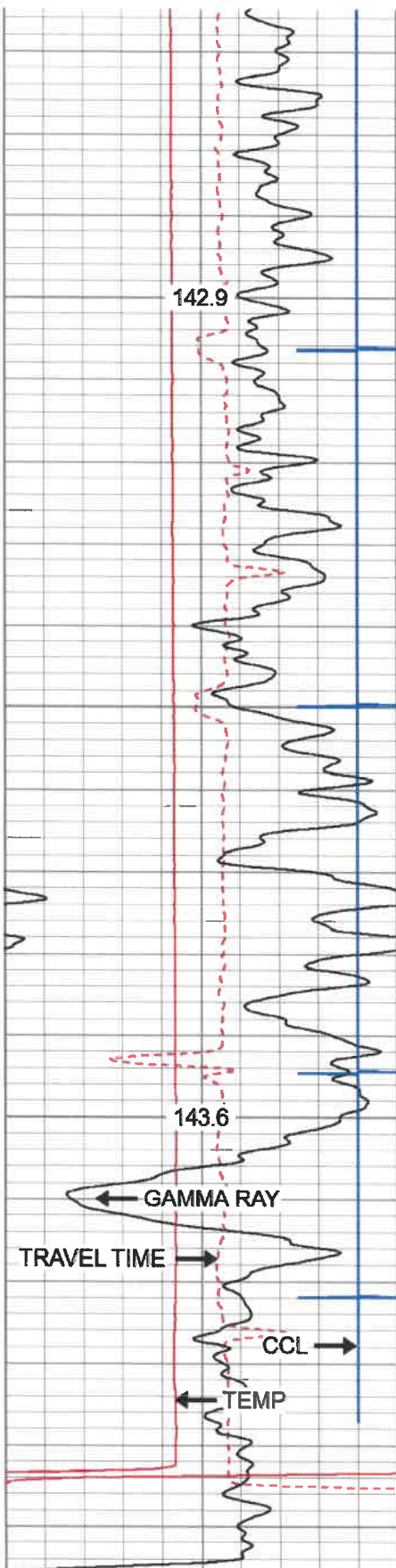
|            |     |         |     |
|------------|-----|---------|-----|
| Amplitude  | 0   | Amp Avg | 150 |
| (mV)       | 100 | Amp Max | 150 |
| AmpX5 (mV) | 20  | Amp Min | 150 |
| BONDIX     | 0   |         |     |

|     |     |      |    |            |    |
|-----|-----|------|----|------------|----|
| 200 | VDL | 1200 | 1  | Sector Map | 8  |
|     |     |      | 20 |            | 80 |

TEMP  
(degF)



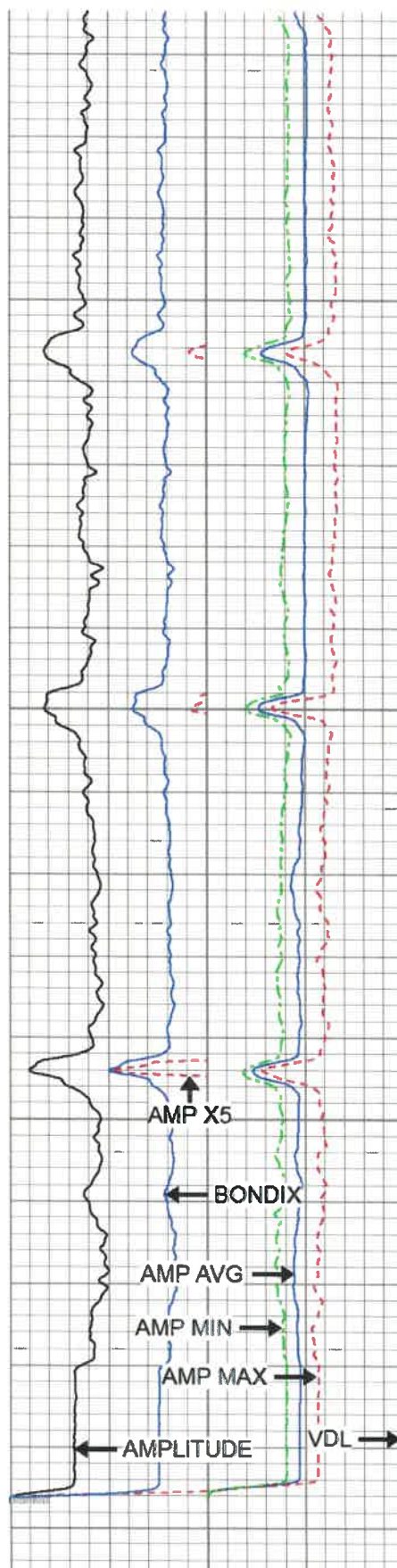




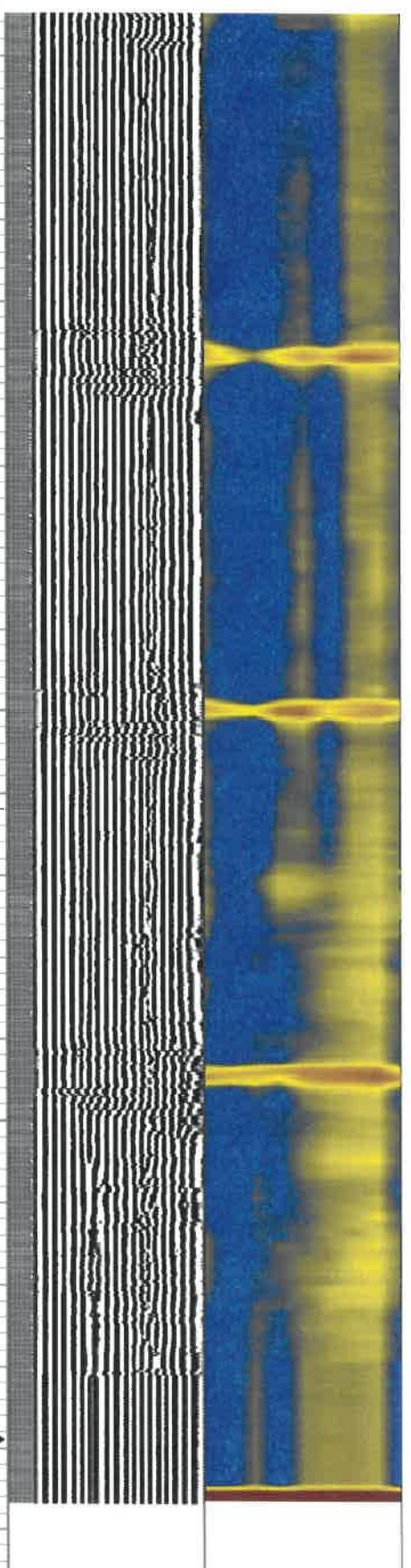
6900

7000

|     |                    |     |
|-----|--------------------|-----|
| 280 | Travel Time (usec) | 180 |
| 9   | Casing Collars     | -1  |
| 0   | Gamma Ray          | 180 |
| 0   | TEMP (degF)        | 100 |
| 180 | GR                 | 360 |
|     | TEMP               |     |



|              |     |         |     |
|--------------|-----|---------|-----|
| Amplitude    | 0   | Amp Avg | 150 |
| (mV)         | 100 | Amp Max | 150 |
| 0 AmpX5 (mV) | 20  | Amp Min | 150 |
| 1 BONDIX     | 0   |         |     |



|     |     |      |    |            |    |
|-----|-----|------|----|------------|----|
| 200 | VDL | 1200 | 1  | Sector Map | 8  |
|     |     |      | 20 |            | 80 |



(degF)

| Sensor  | Offset (ft) | Schematic | Description   | Len (ft)   | OD (in) | Wt (lb) |        |
|---------|-------------|-----------|---|--|---------|---------|--------|
| CCL     | 18.94       |           | CCL-275tekco (111)<br>Tekco 2 3/4" 450 Deg. F Rare Earth Magnets    | 1.83   | 2.75    | 33.00   |        |
|         |             |           | 2.75<br>2 3/4" Tekco Adjustable Centralizer                         | 2.73   | 2.75    | 25.00   |        |
| TEMP    | 12.77       |           |   |  |         |         |        |
| WVFS1   | 11.48       |           |   |  |         |         |        |
| WVFS2   | 11.48       |           |   |  |         |         |        |
| WVFS3   | 11.48       |           |   | SCBLTEKSECT-275 Temp JS (1001)<br>TekCo 2 3/4" 400 Deg. F Sector Tool with<br>Temperature (JS) | 9.13    | 2.75    | 130.00 |
| WVFS4   | 11.48       |           |   |  |         |         |        |
| WVFS5   | 11.48       |           |   |  |         |         |        |
| WVFS6   | 11.48       |           |   |  |         |         |        |
| WVFS7   | 11.48       |           |   |  |         |         |        |
| WVFS8   | 11.48       |           |   |  |         |         |        |
| WVF3FT  | 10.73       |           |   |  |         |         |        |
| WVF5FT  | 9.73        |           |   |  |         |         |        |
| WVFCAL  | 6.40        |           |   |  |         |         |        |
| WVFTEMP | 6.40        |           |   |  |         |         |        |
| WVFSYNC | 6.40        |           |   |  |         |         |        |
|         |             |           | 2.75<br>2 3/4" Tekco Adjustable Centralizer                         | 2.73   | 2.75    | 25.00   |        |
|         |             |           |   |  |         |         |        |
|         |             |           | GR-Tek-Co 2 3/4 (0111)<br>Tekco 2 3/4" 400 Deg. F Logging Gamma Ray | 3.67   | 2.75    | 40.00   |        |
| GR      | 1.04        |           |   |  |         |         |        |

Dataset:

fender 2h.db: field/well/run1/pass4.4



Total Length: 20.08 ft  
 Total Weight: 253.00 lb  
 O.D. 2.75 in

## Log Variables

Database: f:\fender 2h.db  
 Dataset: field/well/run1/pass4.4

### Top - Bottom

|       |              |                   |               |               |                  |                 |              |
|-------|--------------|-------------------|---------------|---------------|------------------|-----------------|--------------|
| XXXX  | PPT<br>usec  | CASEWGHT<br>lb/ft | MAXAMPL<br>mV | MINAMPL<br>mV | MINATTN<br>db/ft | SRFTEMP<br>degF | CASEOD<br>in |
| 0     | 0            | 18                | 77            | 2.4           | 0.8              | 0               | 5            |
| PERFS | TDEPTH<br>ft | BOTTEMP<br>degF   | BOREID<br>in  |               |                  |                 |              |
| 0     | 0            | 100               | 7.875         |               |                  |                 |              |

### Calibration Report

Database File: f:\fender 2h.db  
 Dataset Pathname: pass4.4  
 Dataset Creation: Fri Apr 10 12:56:57 2020 by Calc Std Casedhole 10081

### Gamma Ray Calibration Report

Serial Number: 0111  
 Tool Model: Tek-Co 2 3/4  
 Performed: Wed Jun 20 04:05:02 2018

Calibrator Value: 1.0

Background Reading: 0.0 cps  
 Calibrator Reading: 1.0 cps

Sensitivity: 0.7500 /cps

### Segmented Cement Bond Log Calibration Report

Serial Number: 1001  
 Tool Model: 275 Temp JS

Calibration Casing Diameter: 5.000 in  
 Calibration Depth: 461.783 ft

### Master Calibration, performed Fri Apr 10 12:56:36 2020:

|     | Raw (v) |       | Calibrated (mv) |         | Results |        |
|-----|---------|-------|-----------------|---------|---------|--------|
|     | Zero    | Cal   | Zero            | Cal     | Gain    | Offset |
| 3'  | 0.000   | 0.548 | 2.400           | 76.186  | 134.568 | 2.397  |
| CAL | 0.012   | 0.518 |                 |         |         |        |
| 5'  | -0.199  | 0.758 | 2.400           | 76.186  | 77.075  | 17.757 |
| SUM |         |       |                 |         |         |        |
| S1  | 0.000   | 0.860 | 0.000           | 100.000 | 116.336 | -0.007 |
| S2  | 0.000   | 1.020 | 0.000           | 100.000 | 98.080  | -0.006 |
| S3  | 0.000   | 1.199 | 0.000           | 100.000 | 83.406  | -0.006 |
| S4  | 0.000   | 1.024 | 0.000           | 100.000 | 97.667  | -0.007 |
| S5  | 0.000   | 1.244 | 0.000           | 100.000 | 80.404  | -0.007 |
| S6  | 0.000   | 0.994 | 0.000           | 100.000 | 100.625 | -0.007 |
| S7  | 0.000   | 0.919 | 0.000           | 100.000 | 108.875 | -0.007 |
| S8  | 0.000   | 0.863 | 0.000           | 100.000 | 115.903 | -0.009 |

Internal Reference Calibration, performed Wed Dec 31 19:00:00 1969:



|     | Raw (v) |       | Calibrated (v) |       | Results |        |
|-----|---------|-------|----------------|-------|---------|--------|
|     | Zero    | Cal   | Zero           | Cal   | Gain    | Offset |
| CAL | 0.000   | 0.000 | 0.012          | 0.518 | 1.000   | 0.000  |

Air Zero Calibration, performed Wed Dec 31 19:00:00 1969:

|     | Raw (v) |  | Calibrated (v) |  | Results |  |
|-----|---------|--|----------------|--|---------|--|
|     | Zero    |  | Zero           |  | Offset  |  |
| 3'  | 0.000   |  | 0.000          |  | 0.000   |  |
| 5'  | 0.000   |  | 0.000          |  | 0.000   |  |
| SUM |         |  |                |  |         |  |
| S1  | 0.000   |  | 0.000          |  | 0.000   |  |
| S2  | 0.000   |  | 0.000          |  | 0.000   |  |
| S3  | 0.000   |  | 0.000          |  | 0.000   |  |
| S4  | 0.000   |  | 0.000          |  | 0.000   |  |
| S5  | 0.000   |  | 0.000          |  | 0.000   |  |
| S6  | 0.000   |  | 0.000          |  | 0.000   |  |
| S7  | 0.000   |  | 0.000          |  | 0.000   |  |
| S8  | 0.000   |  | 0.000          |  | 0.000   |  |

#### Temperature Calibration Report

Serial Number: 1001  
 Tool Model: 275 Temp JS  
 Performed: Mon Dec 28 13:58:25 2015

|                 | Reference |      | Reading |      |
|-----------------|-----------|------|---------|------|
| Low Reference:  | 0.00      | degF | 0.00    | usec |
| High Reference: | 1.00      | degF | 1.00    | usec |
| Gain:           | 0.32      |      |         |      |
| Offset:         | 0.00      |      |         |      |
| Delta Spacing   | 1         |      |         |      |



|         |                              |         |
|---------|------------------------------|---------|
| Company | ANTERO RESOURCES CORPORATION |         |
| Well    | FENDER UNIT 2H               |         |
| Field   | MARCELLUS                    |         |
| County  | TYLER                        |         |
| State   | W.V.                         | Country |