



**Segmented Radial Cement Bond
W/Gamma Ray , CCL
Log**

Company ANTERO RESOURCES CORPORATION
Well HENNESSY UNIT 2H
Field MARCELLUS
County TYLER
State WV Country US

Company ANTERO RESOURCES CORPORATION
Well HENNESSY UNIT 2H
Field MARCELLUS
County TYLER
State WV Country US

Location: API #: 47095025750000
SEC N/A TWP N/A RGE N/A
GROUND LEVEL Elevation
Log Measured From R.K.B. 25'
Drilling Measured From R.K.B.

Other Services
NONE
Elevation
K.B.
D.F.
G.L.

| | | | | | | | |
|------------------------|---------------|---------|---------|--------|--------|------|----|
| Date | 27-OCT-2019 | | | | | | |
| Run Number | ONE | | | | | | |
| Depth Driller | 13950' | | | | | | |
| Depth Logger | 6325' | | | | | | |
| Bottom Logged Interval | 6325' | | | | | | |
| Top Log Interval | SURFACE | | | | | | |
| Open Hole Size | 8.25" | | | | | | |
| Type Fluid | F/W | | | | | | |
| Density / Viscosity | 8.6 | | | | | | |
| Max. Recorded Temp. | 136 degF | | | | | | |
| Estimated Cement Top | 3020' | | | | | | |
| Time Well Ready | 10:00 | | | | | | |
| Time Logger on Bottom | 10:30 | | | | | | |
| Equipment Number | 214181 | | | | | | |
| Location | BRIDGEPORT WV | | | | | | |
| Recorded By | S.BUTLER | | | | | | |
| Witnessed By | JAYSON LUKES | | | | | | |
| Borehole Record | | | | | | | |
| Run Number | Bit | From | To | Size | Weight | From | To |
| ONE | 24" | SURFACE | 125' | | | | |
| TWO | 17.5" | 125' | 409' | | | | |
| THREE | 12.25" | 409' | 2635' | | | | |
| FOUR | 8.25" | 2635' | 13950' | | | | |
| Casing Record | | | | | | | |
| Surface String | Size | Wgt/Ft | Top | Bottom | | | |
| Prot. String | 13.375" | 54.5 | SURFACE | 409' | | | |
| Production String | 9.625" | 40 | SURFACE | 2635' | | | |
| Liner | 5.5 | 20 | SURFACE | 13950' | | | |

<< 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

ZERO @ R.K.B. 25'
MARKER JOINT: 4608' - 4618'
LOG TD:6325'
LOG RAN UNDER 1500 PSI

RECEIVED
Office of Oil and Gas
SEP 24 2020
WV Department of
Environmental Protection

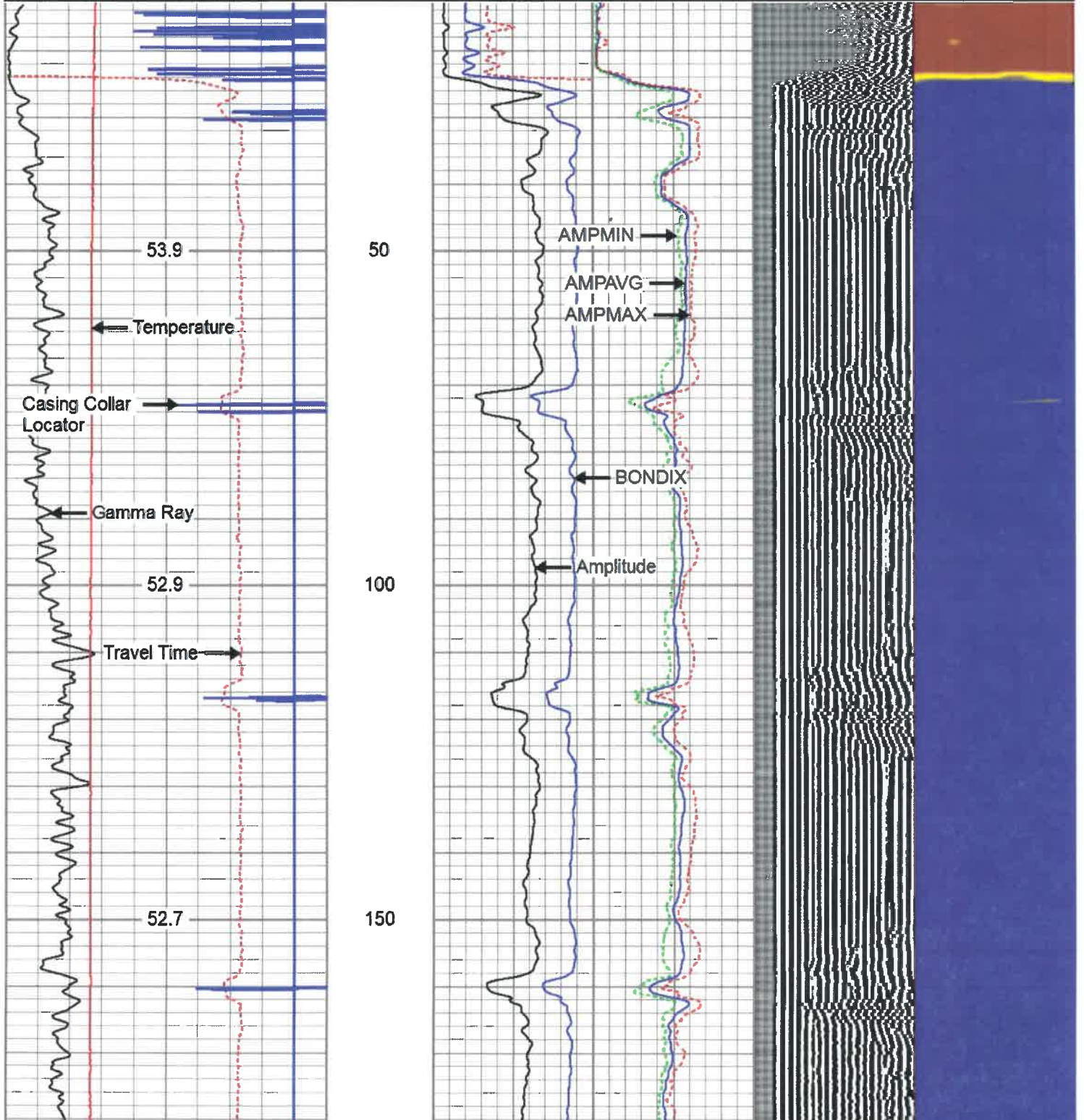


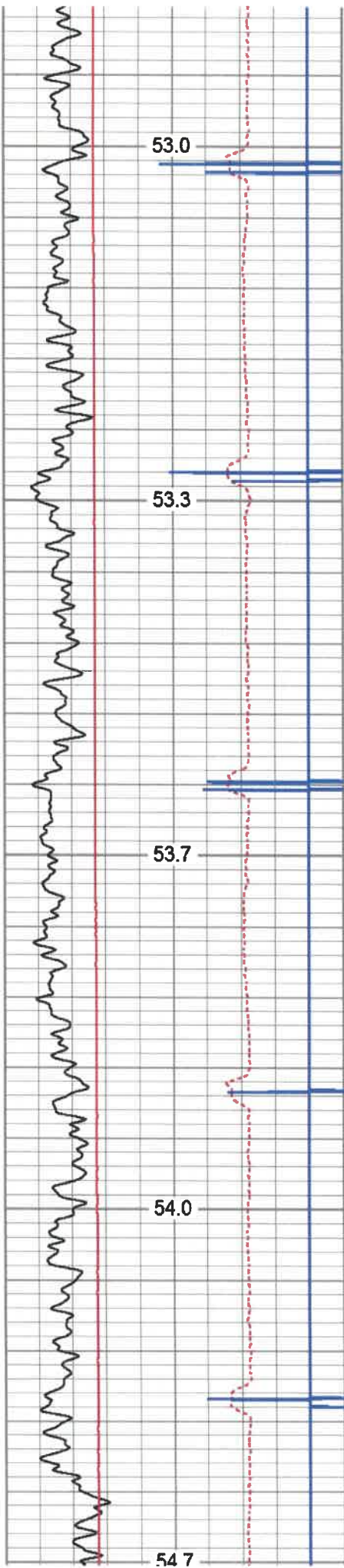
Main Pass

Database File antero_hennessy_unit_2h.db
 Dataset Pathname pass2.1
 Presentation Format antero1
 Dataset Creation Tue Oct 29 15:06:46 2019
 Charted by Depth in Feet scaled 1:240

| | | | | | | | | |
|-----|--------------------|-----|------------|----------------|-----------------|---|------------|----|
| 280 | Travel Time (usec) | 180 | Amplitude | Sector Amp AVG | VDL | 1 | Sector Map | 12 |
| 9 | Casing Collar | -1 | 0 (mV) 100 | Sector Amp MAX | 200 (usec) 1200 | | | |
| 0 | Gamma Ray (GAPI) | 180 | Amp X5 | Sector Amp MIN | | | | |
| 0 | TEMP (degF) | 200 | 0 (mV) 20 | | | | | |
| 180 | GR (GAPI) | 360 | 1 BONDIX | 0 | | | | |

TEMP (degF)





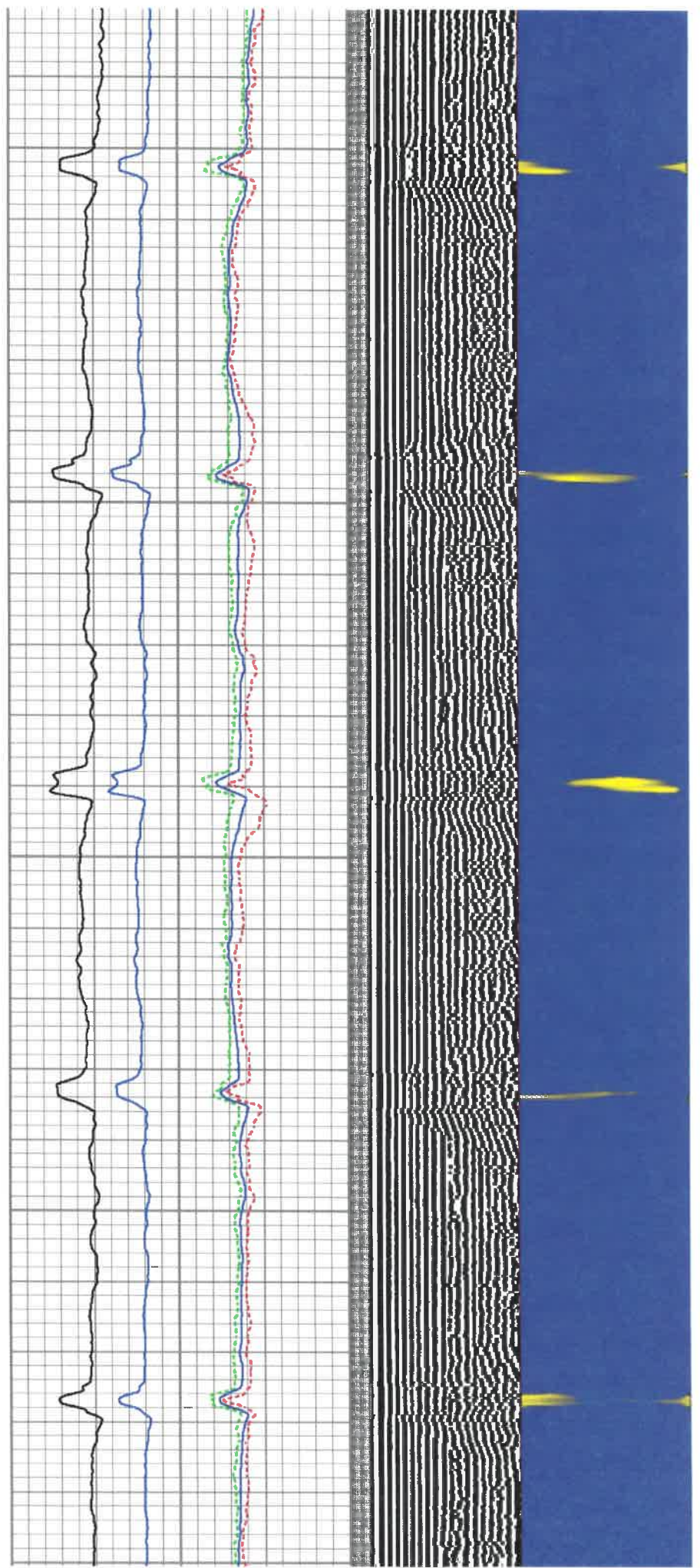
200

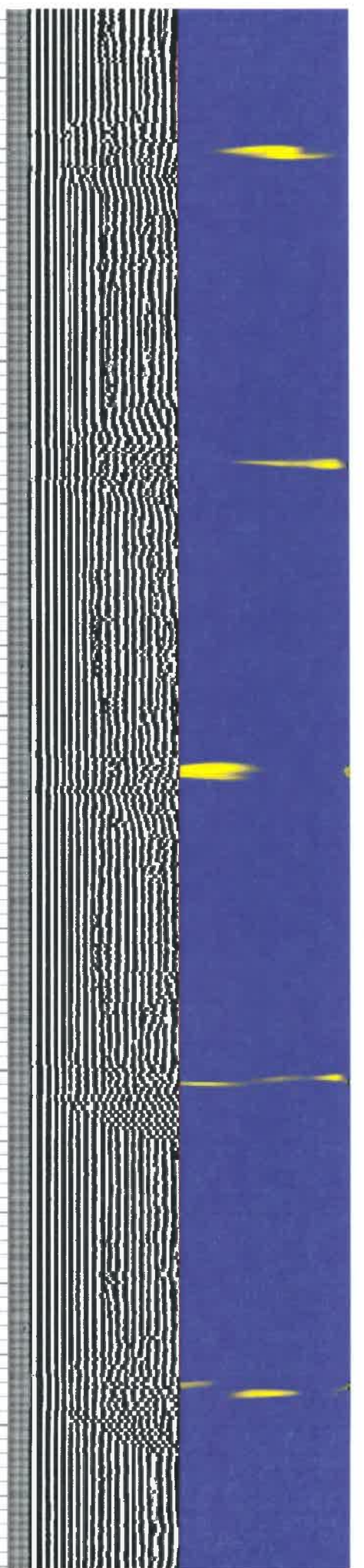
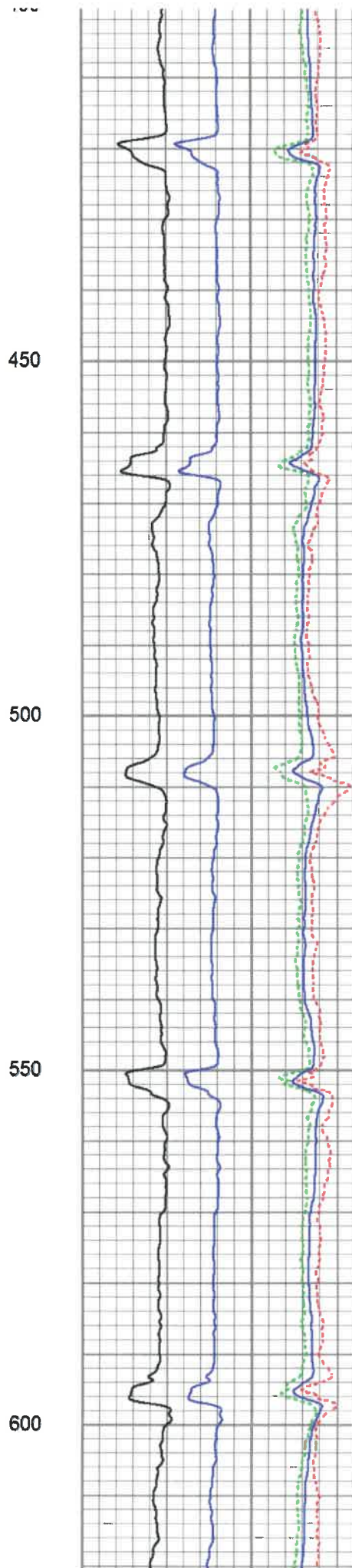
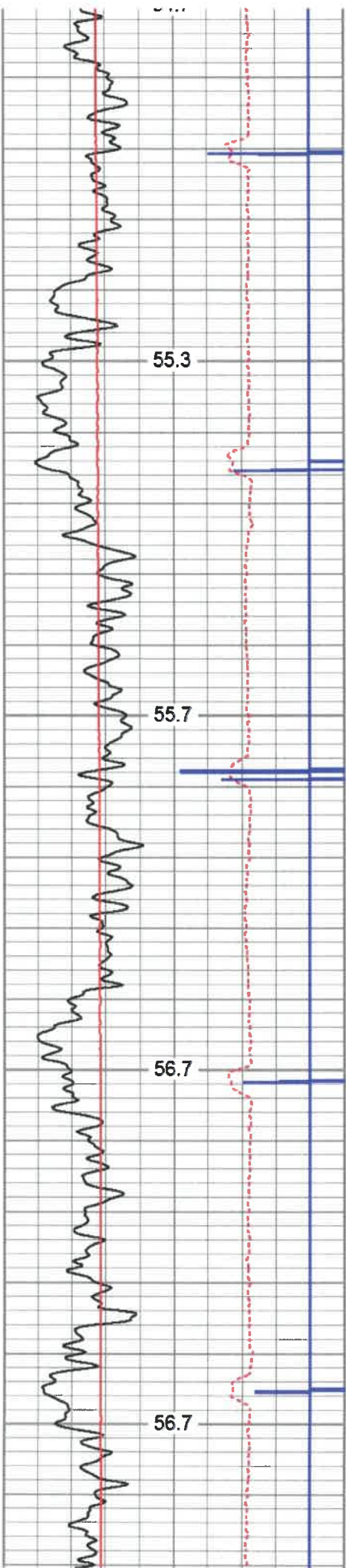
250

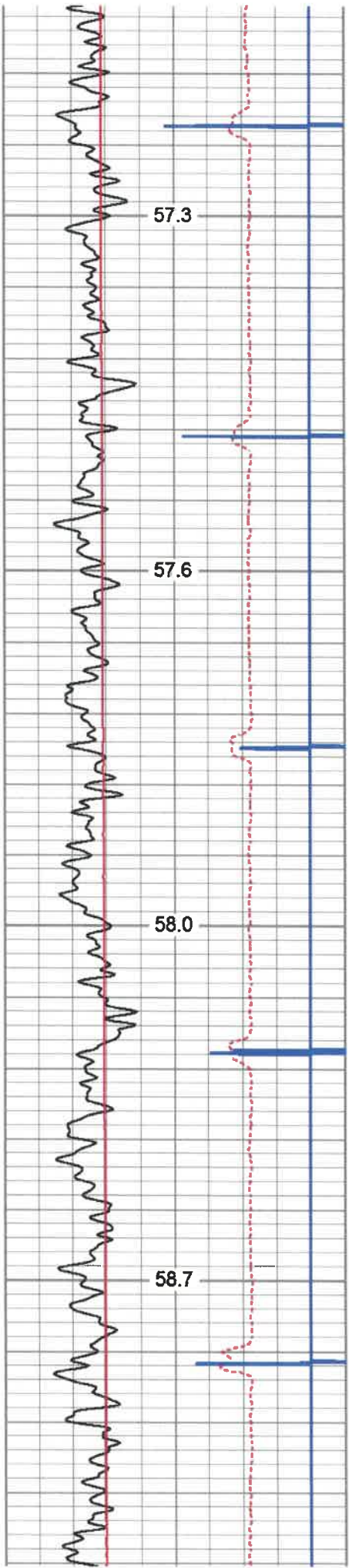
300

350

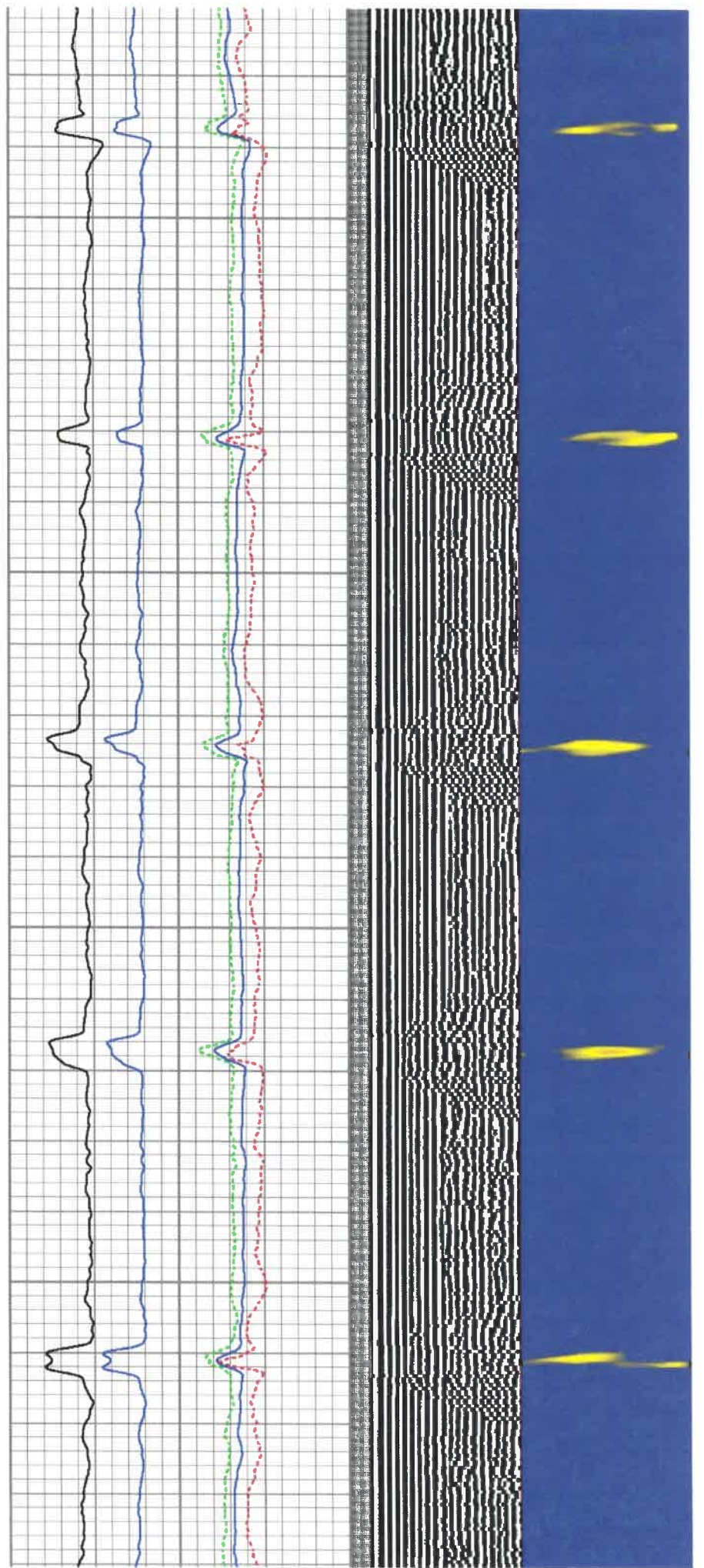
400

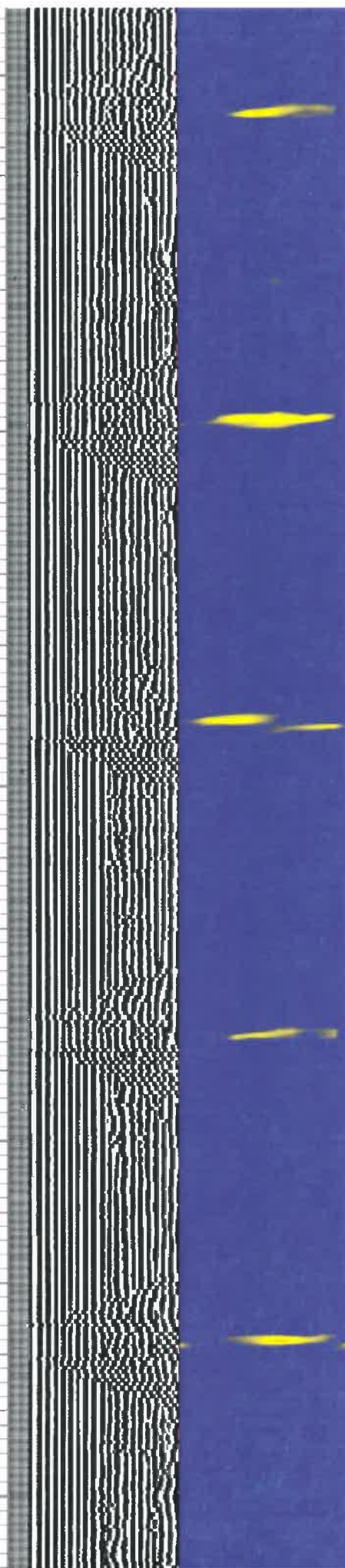
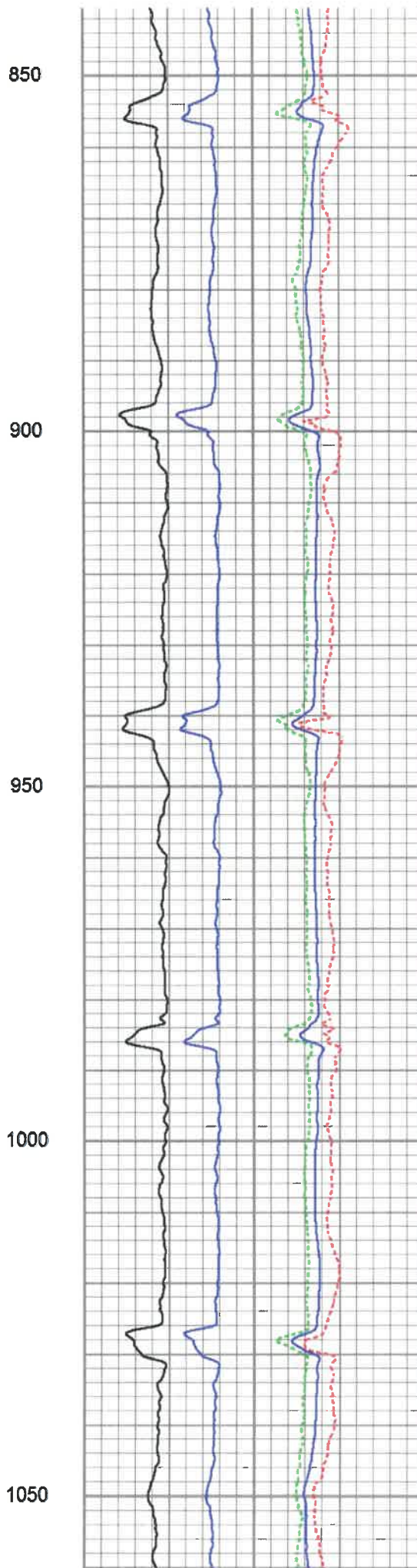
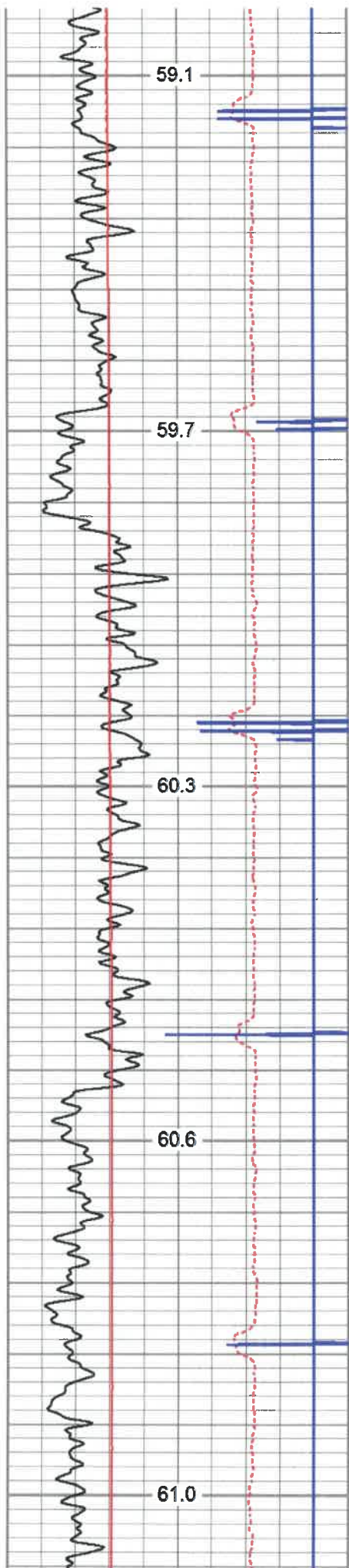


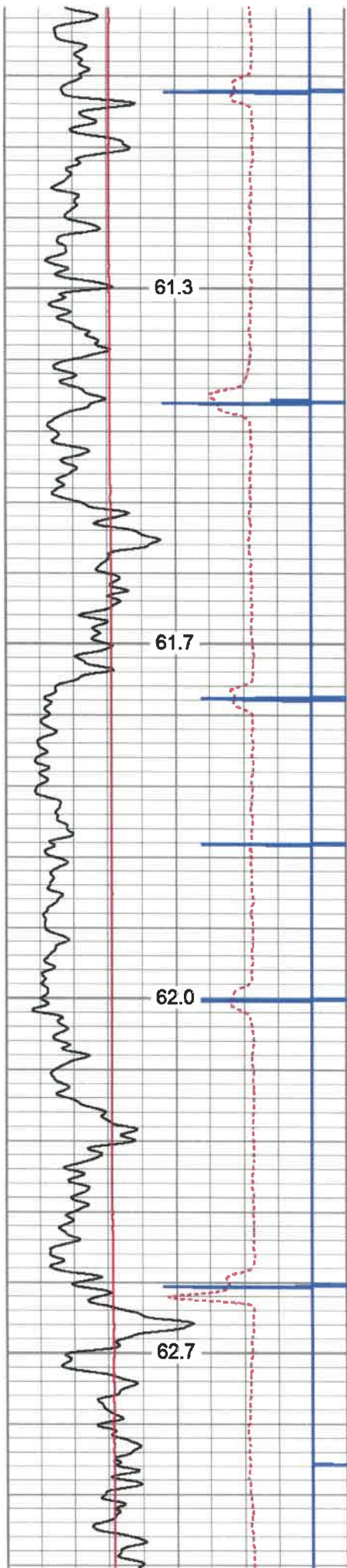




650
700
750
800





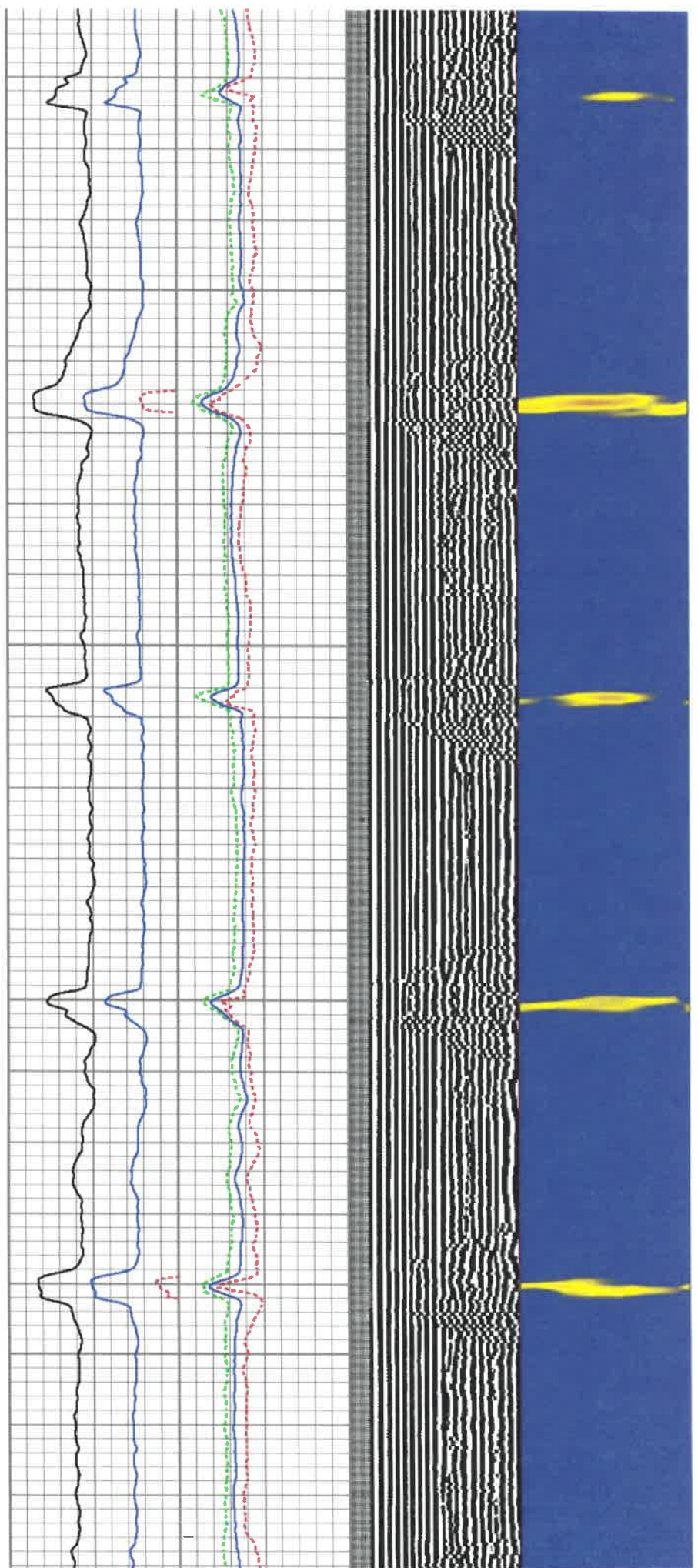


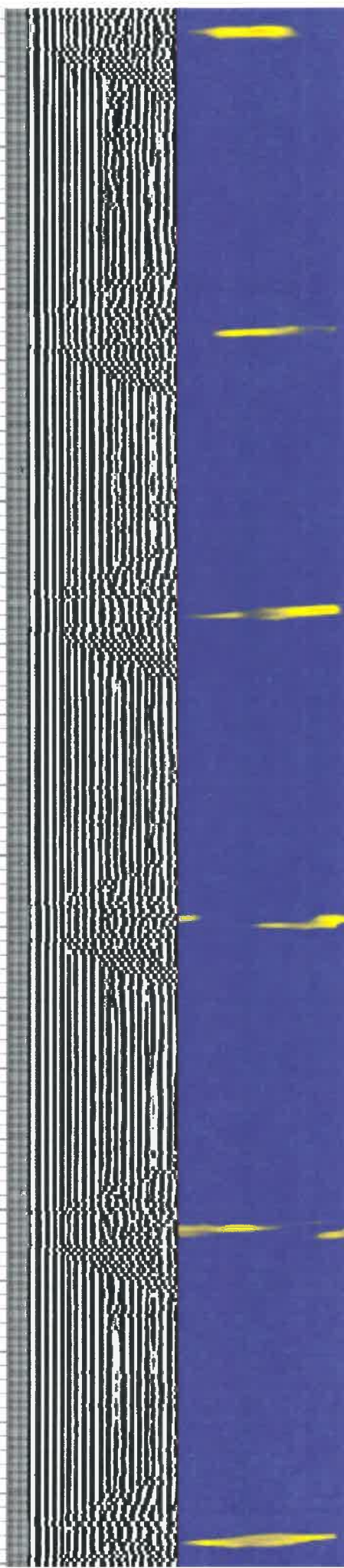
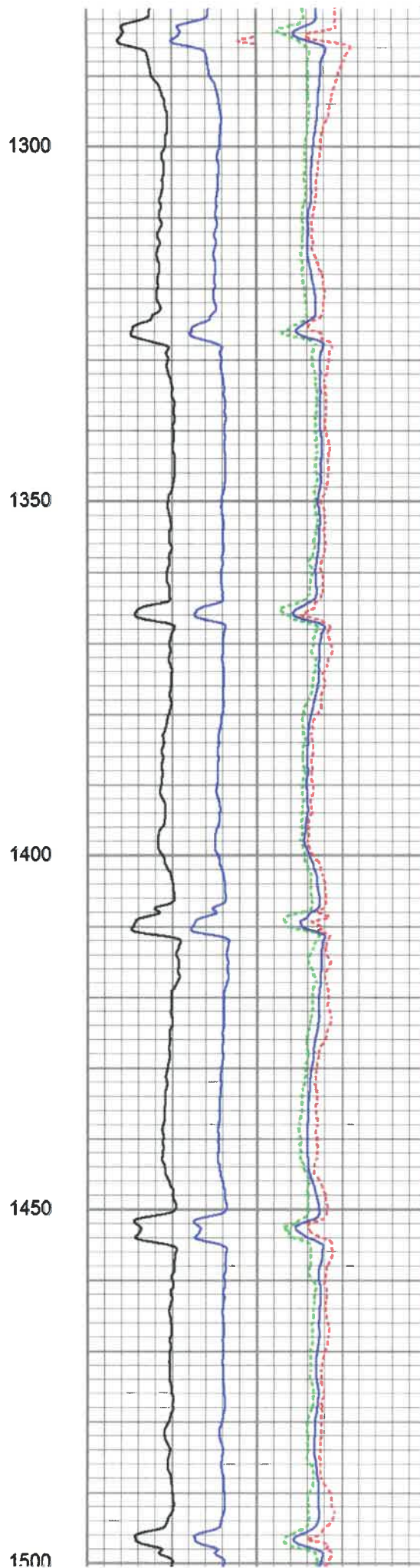
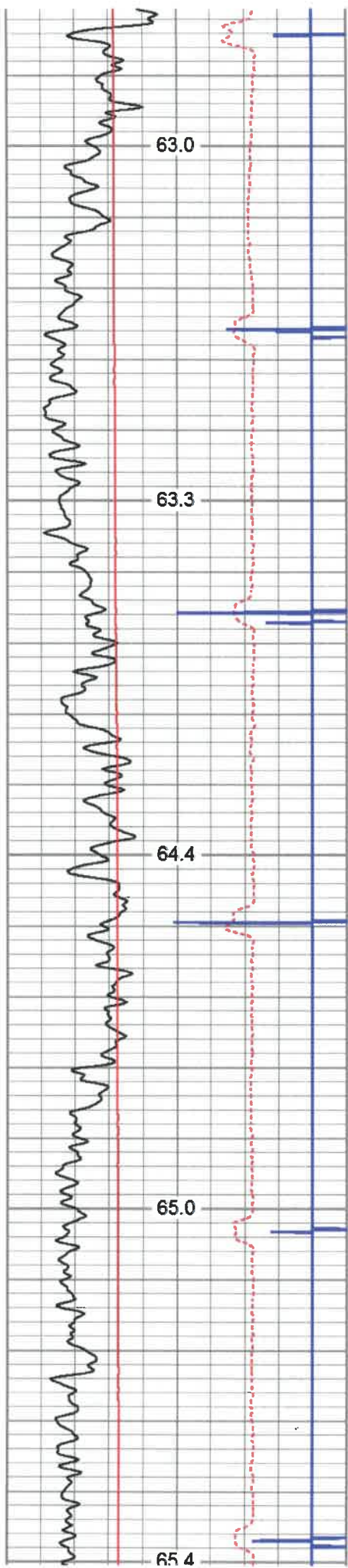
1100

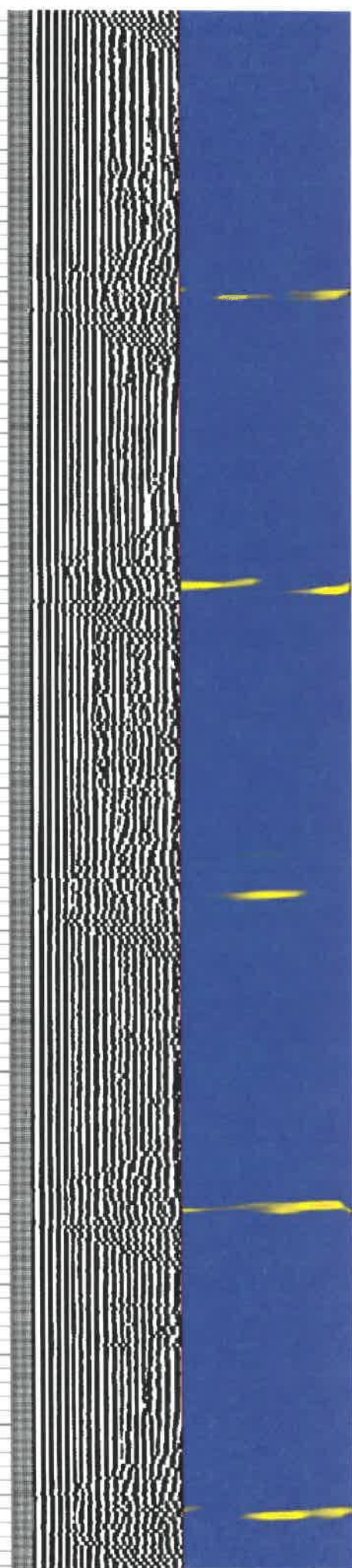
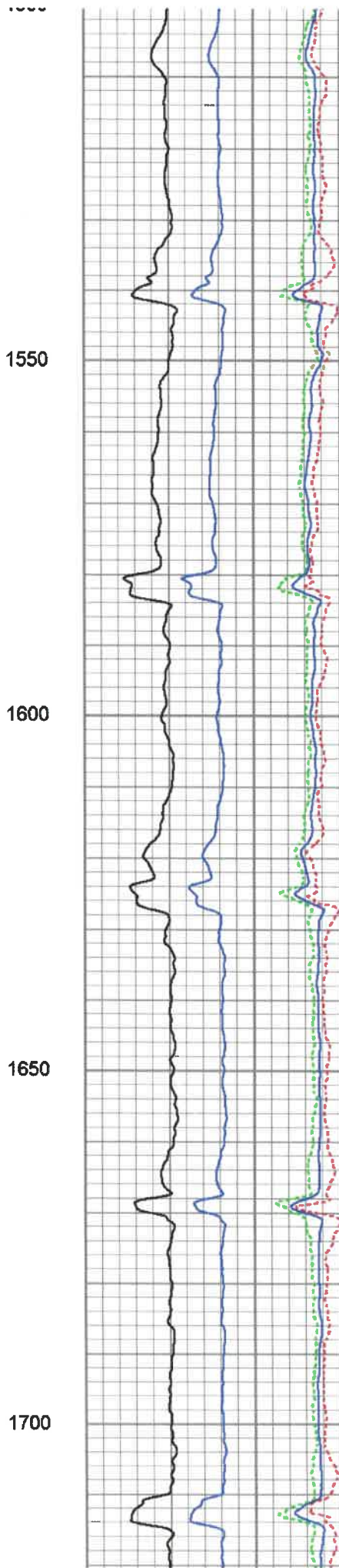
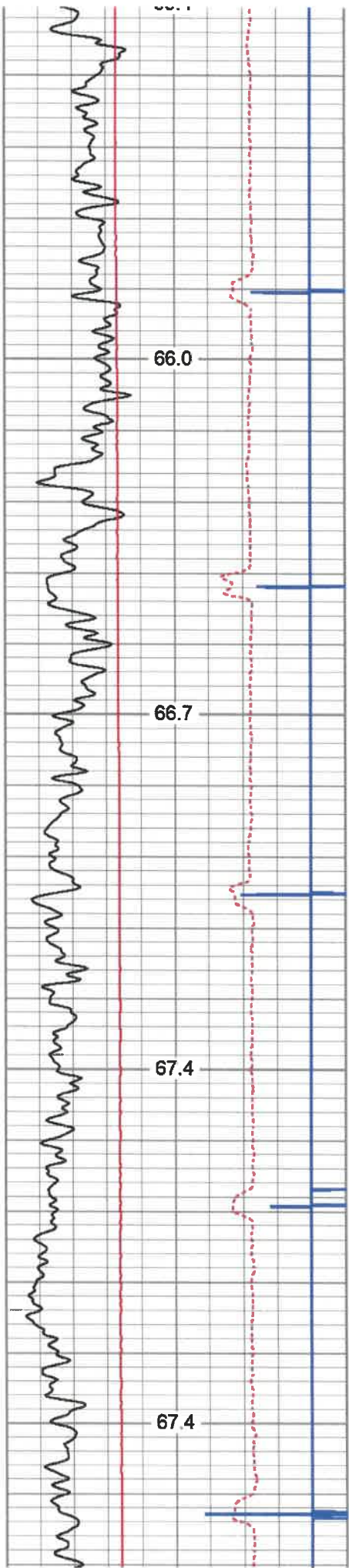
1150

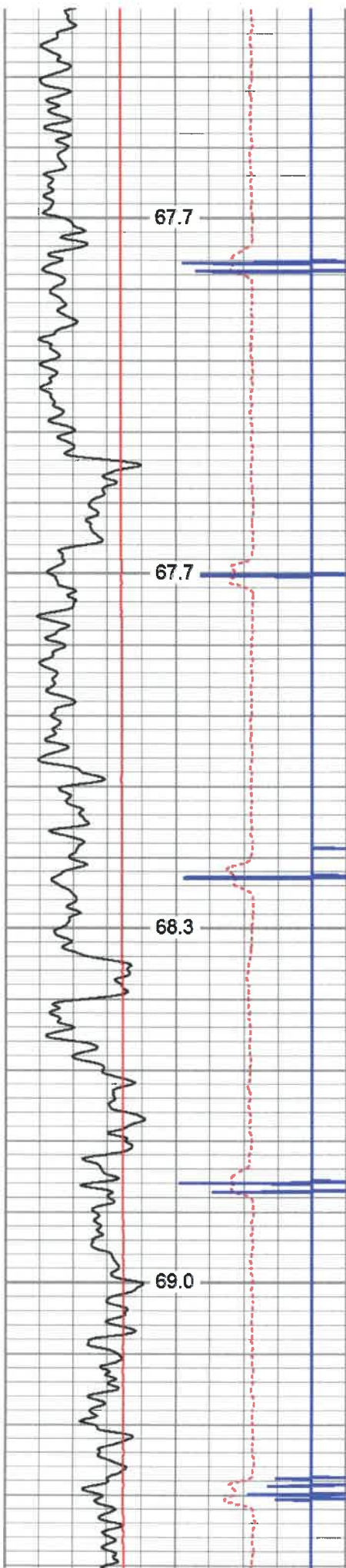
1200

1250







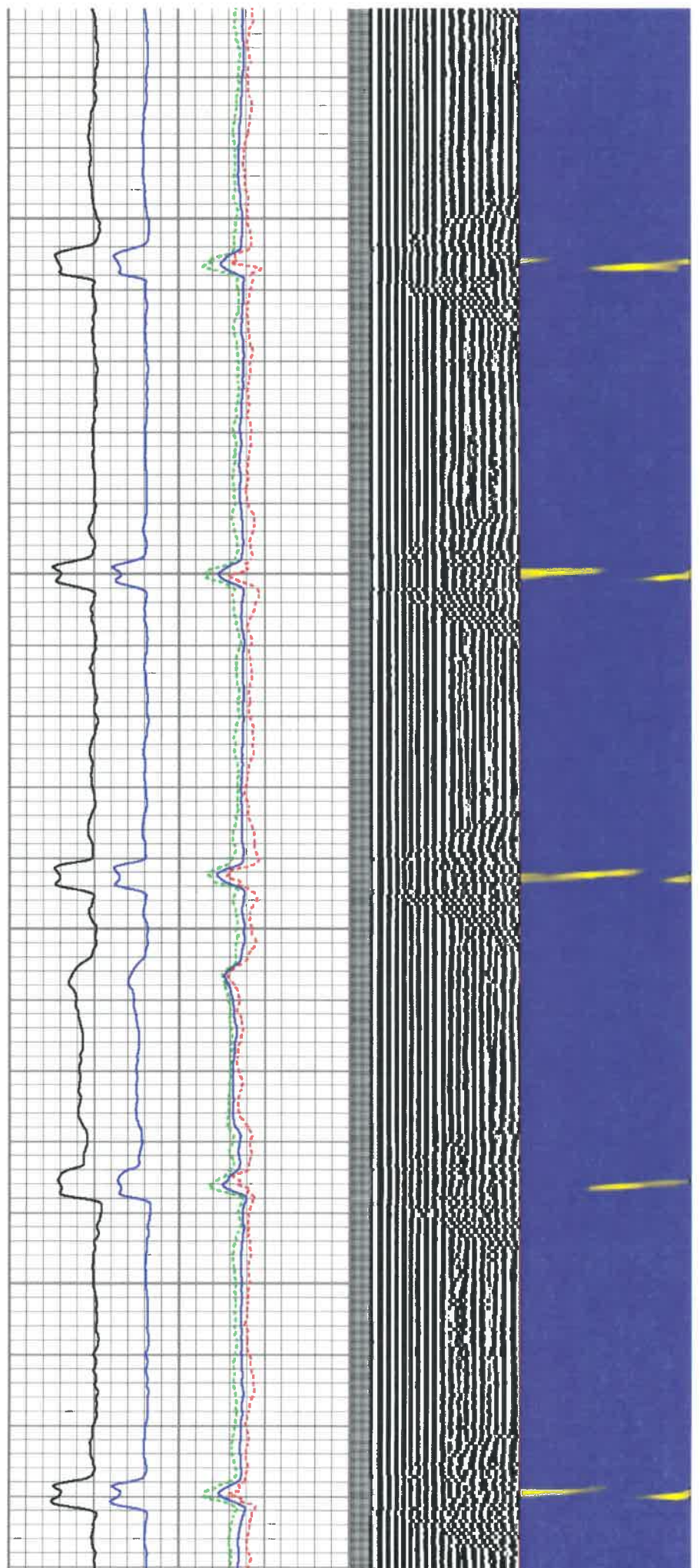


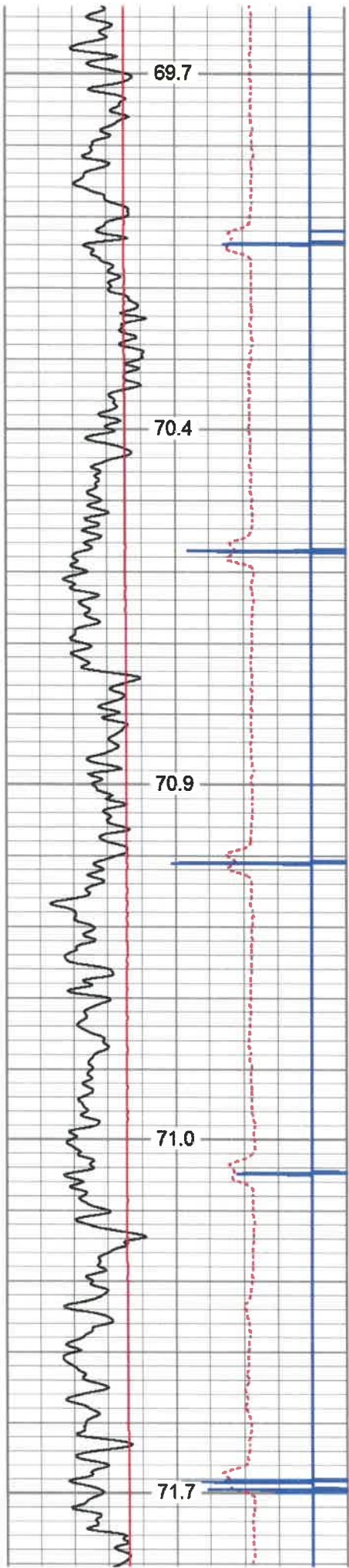
1750

1800

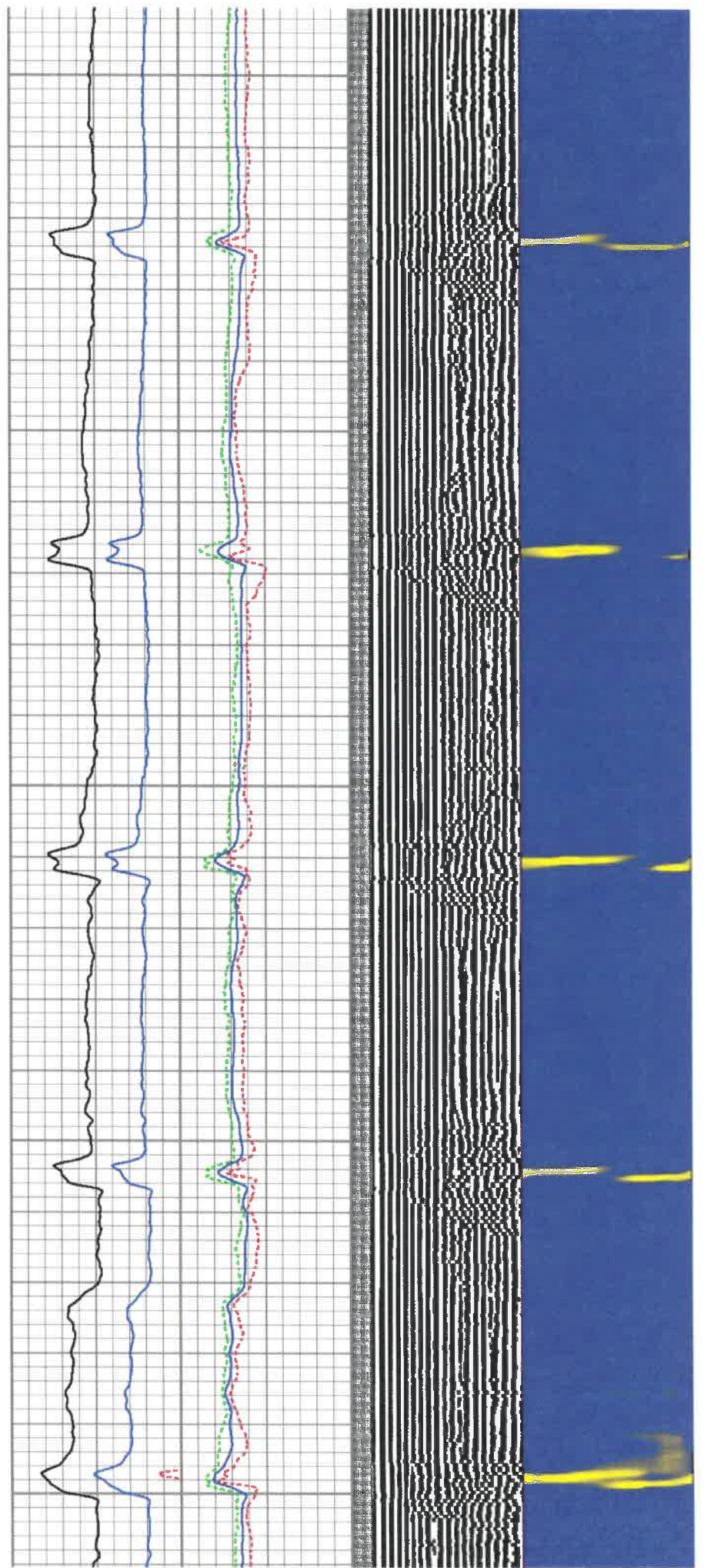
1850

1900

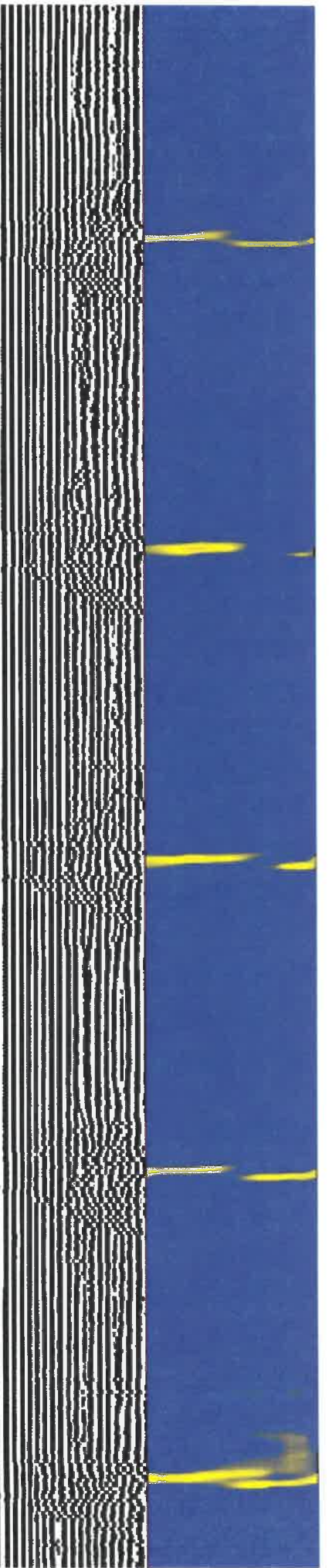


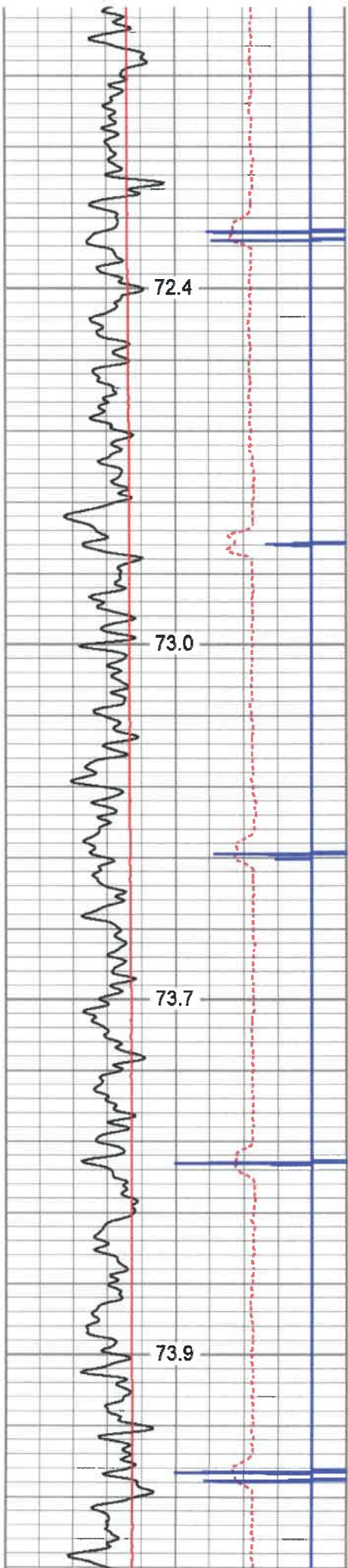


1950
2000
2050
2100
2150



1950
2000
2050
2100
2150



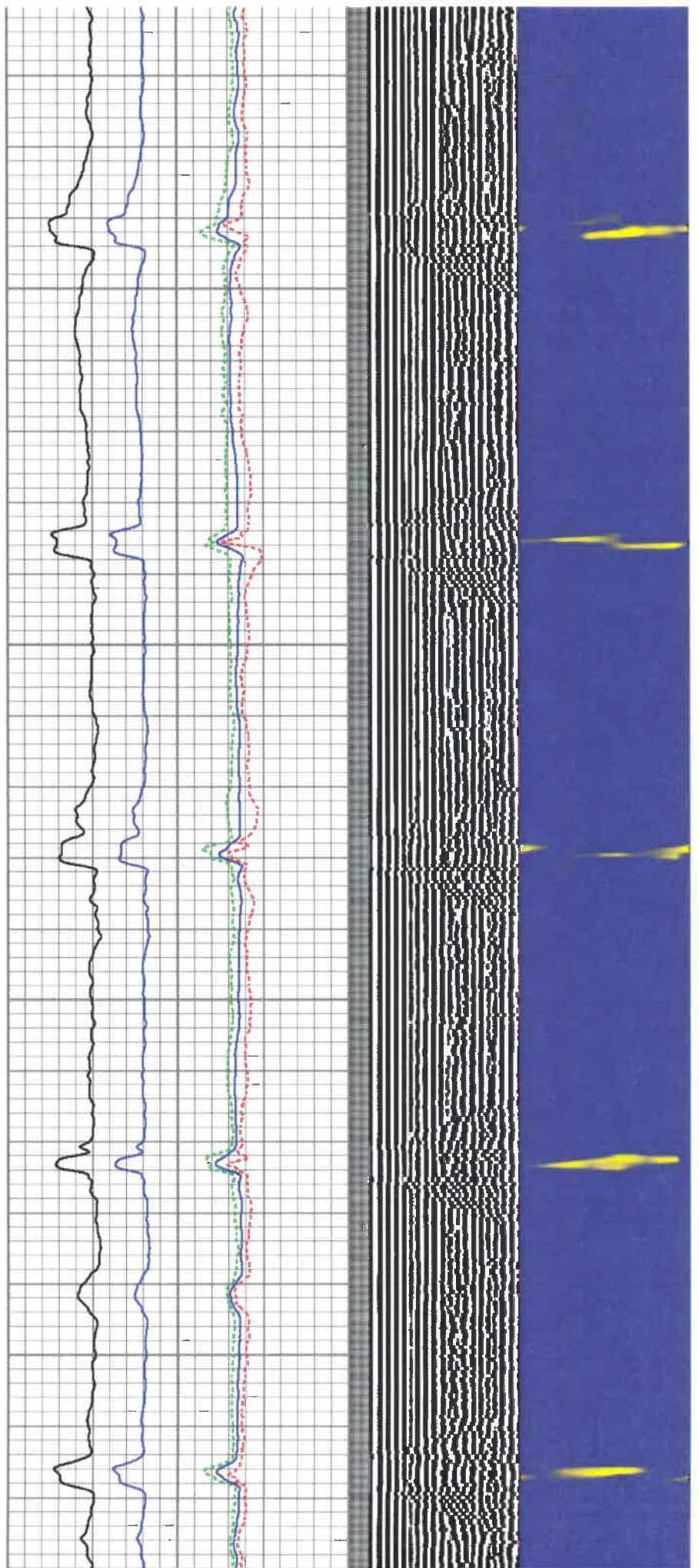


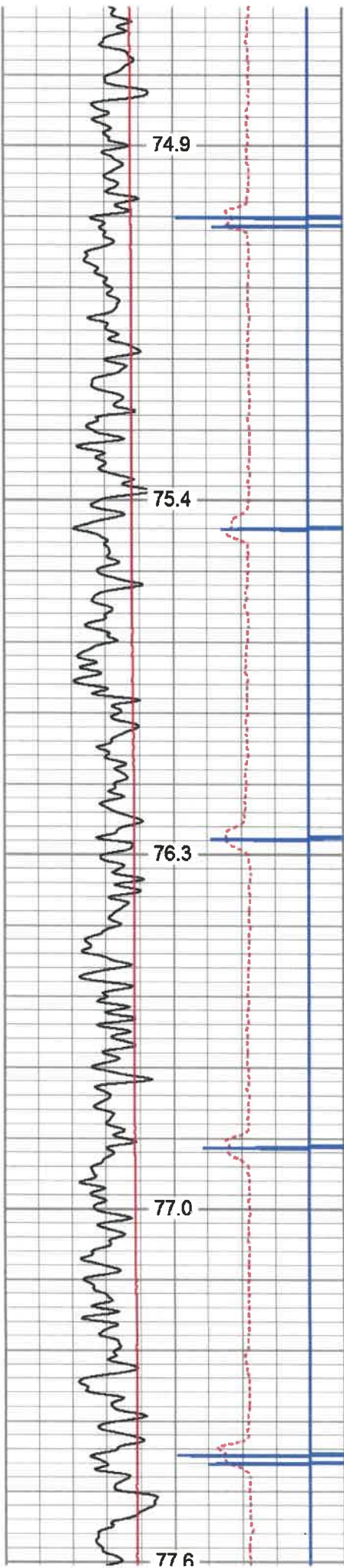
2200

2250

2300

2350





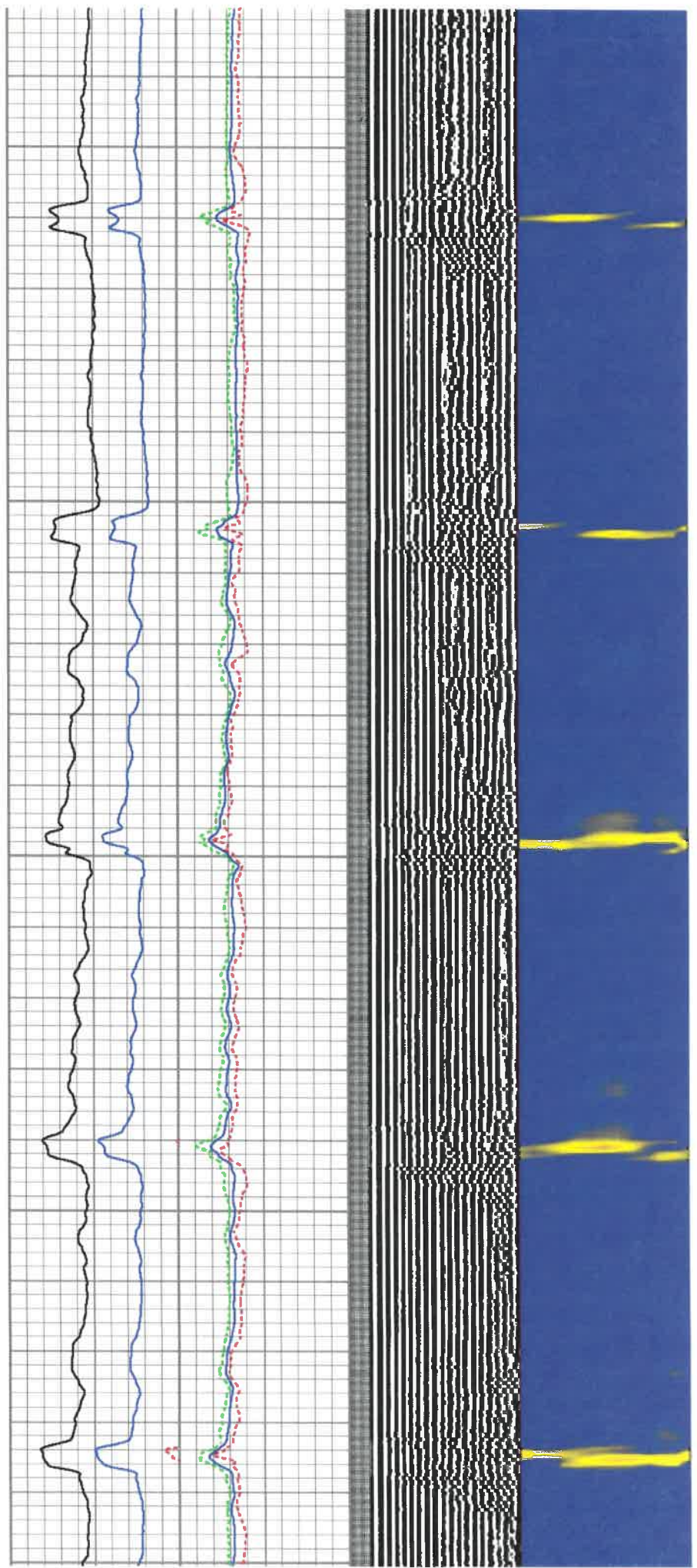
2400

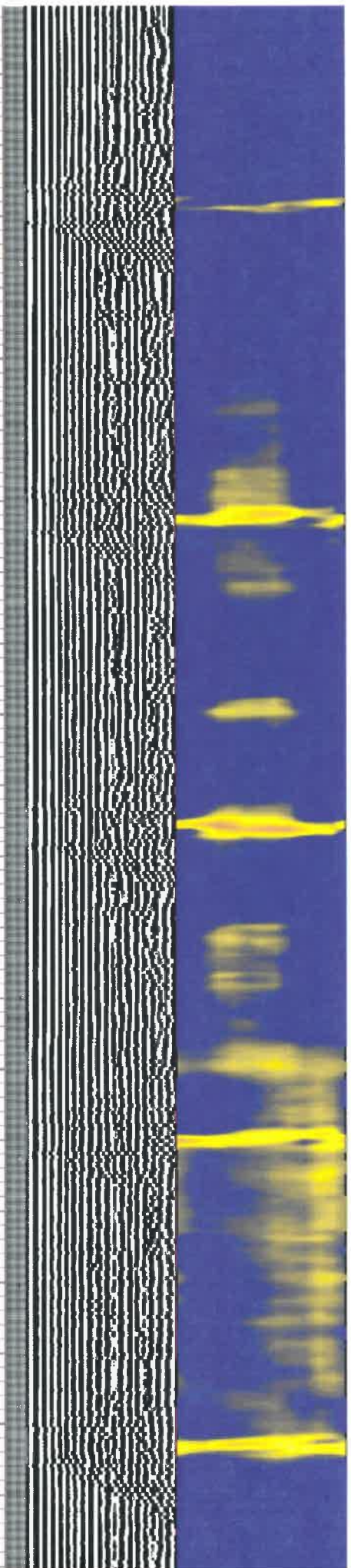
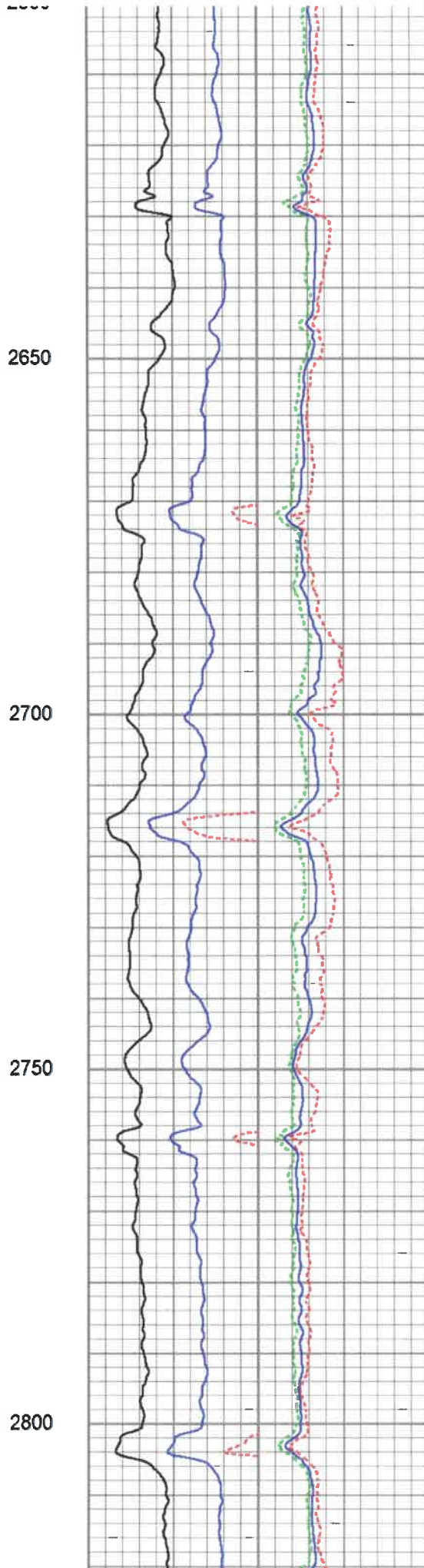
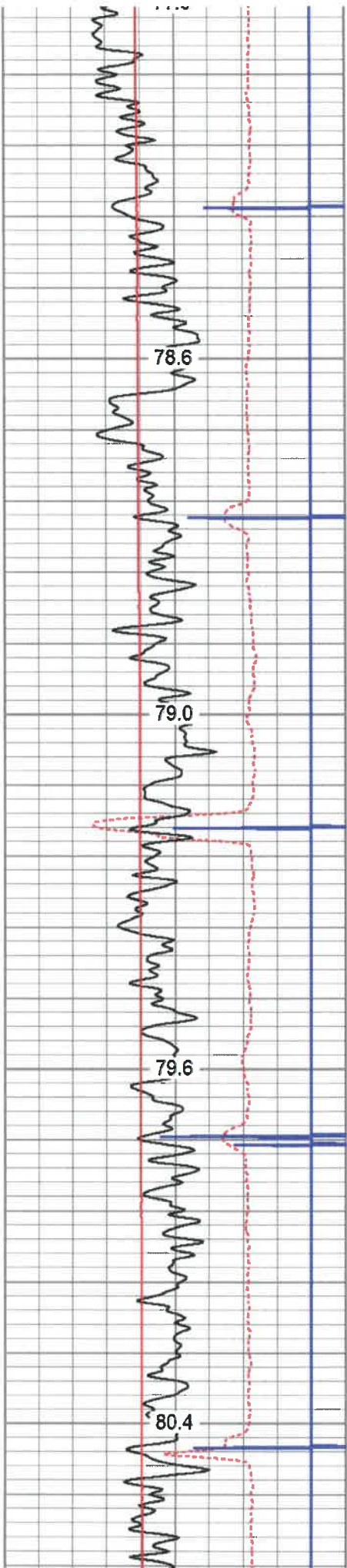
2450

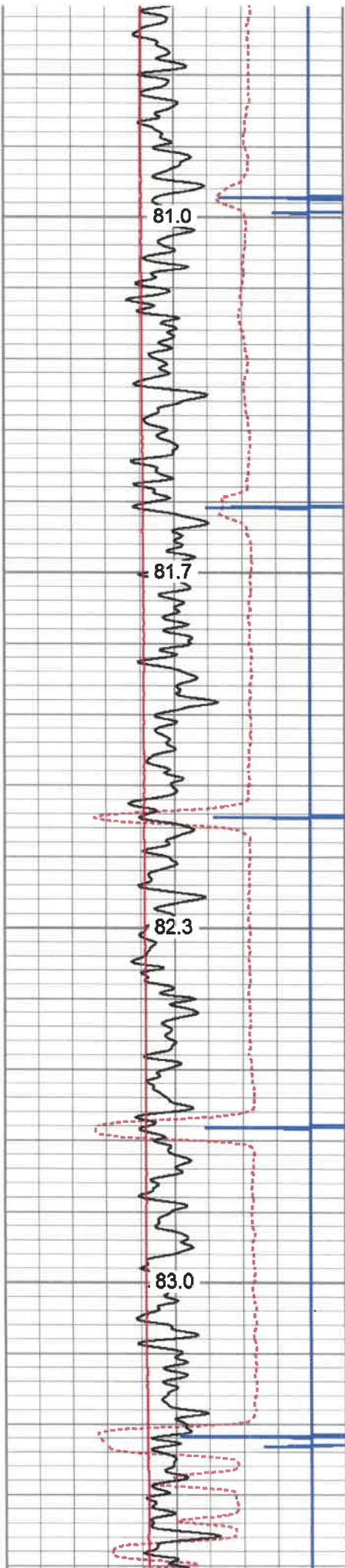
2500

2550

2600





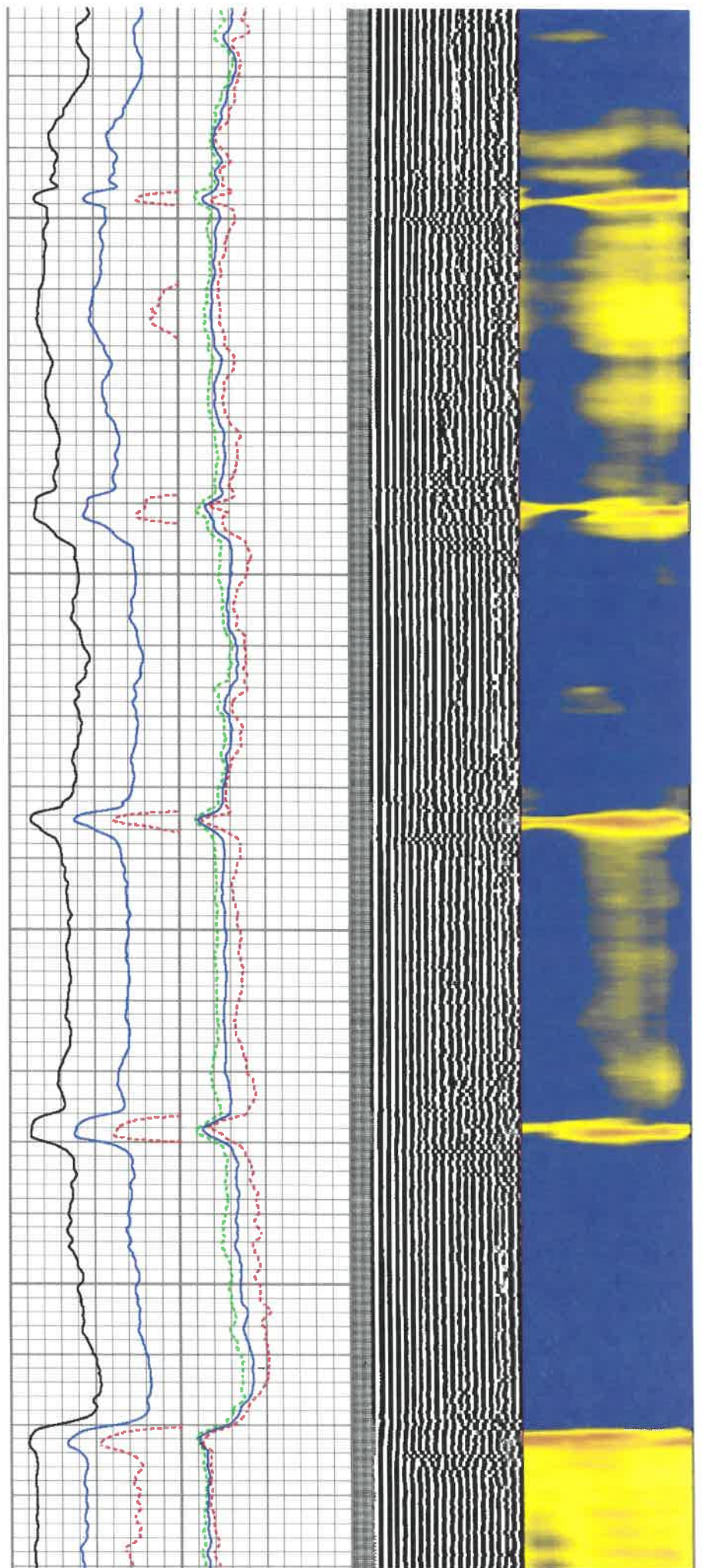


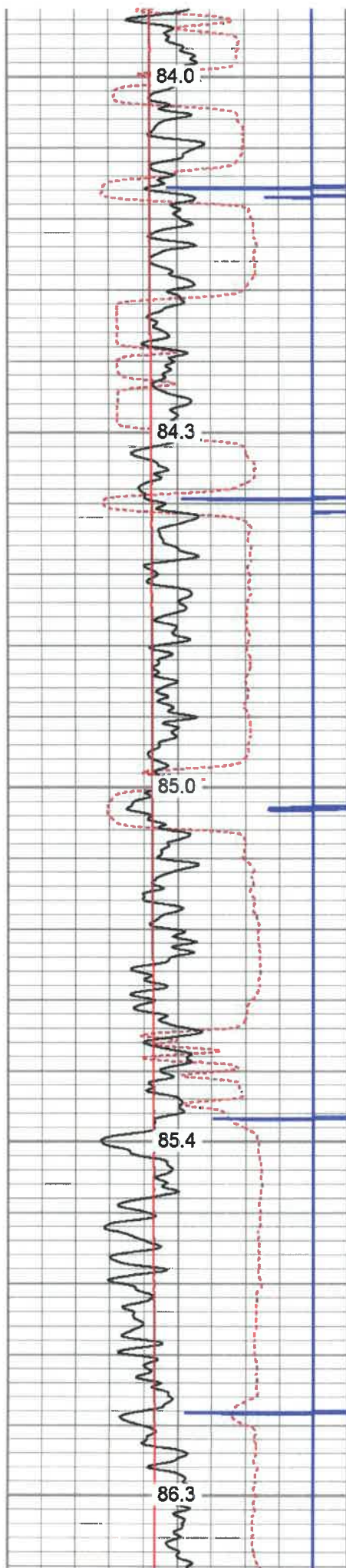
2850

2900

2950

3000





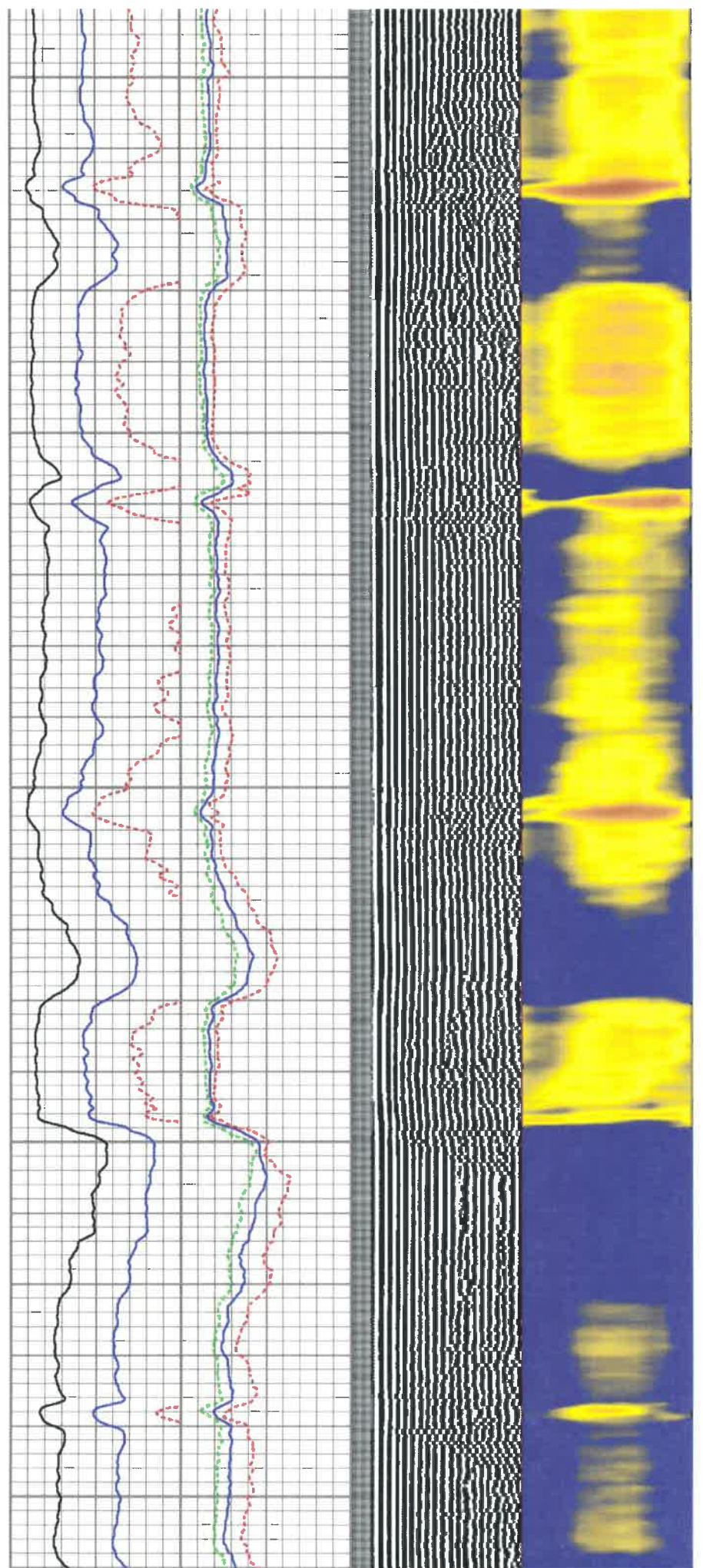
3050

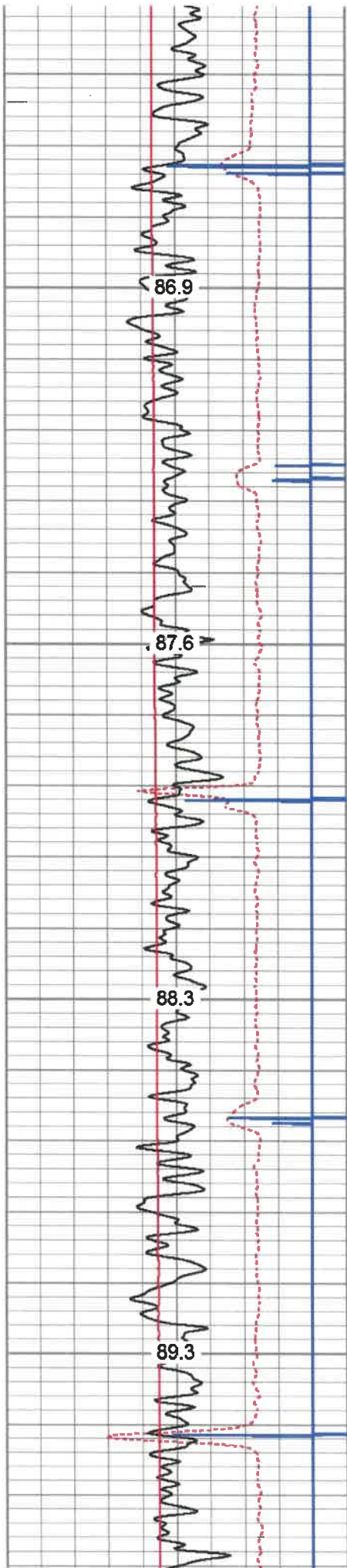
3100

3150

3200

3250



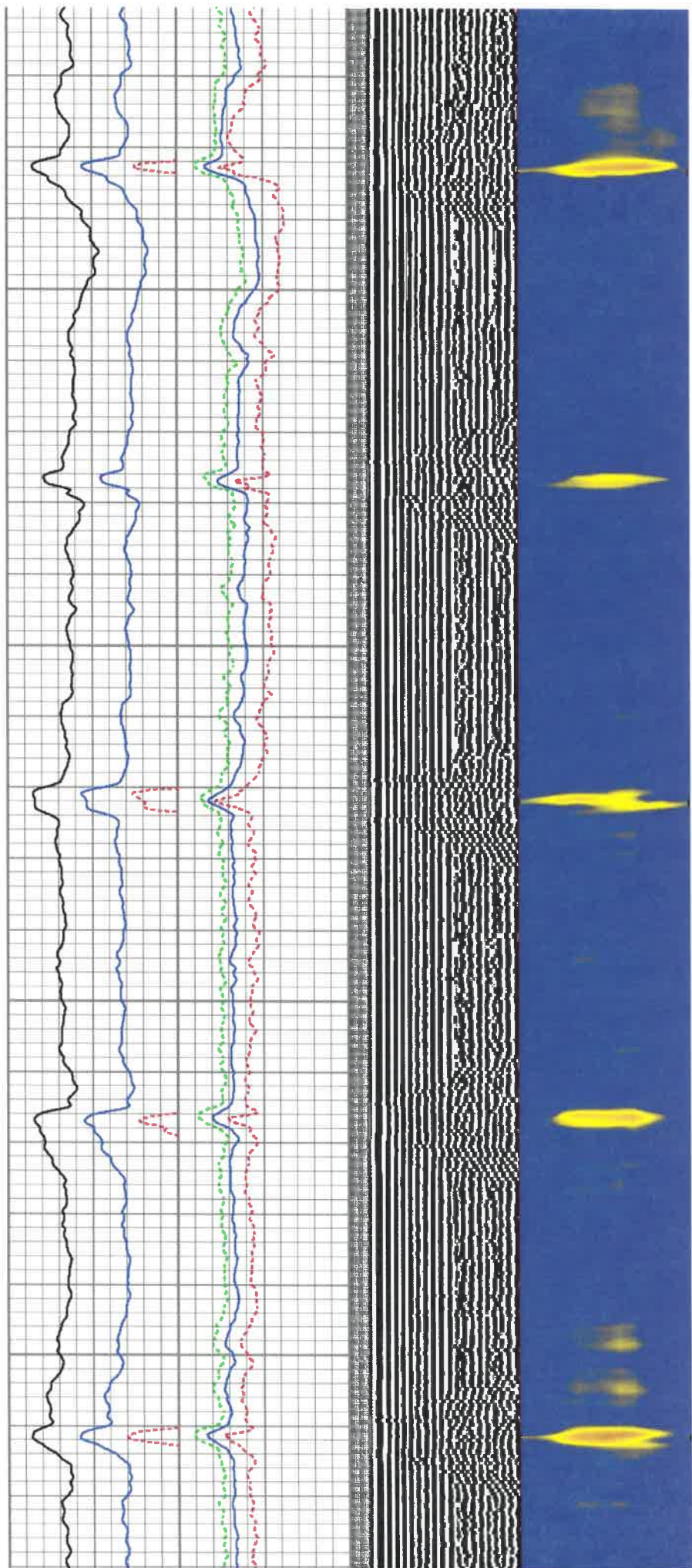


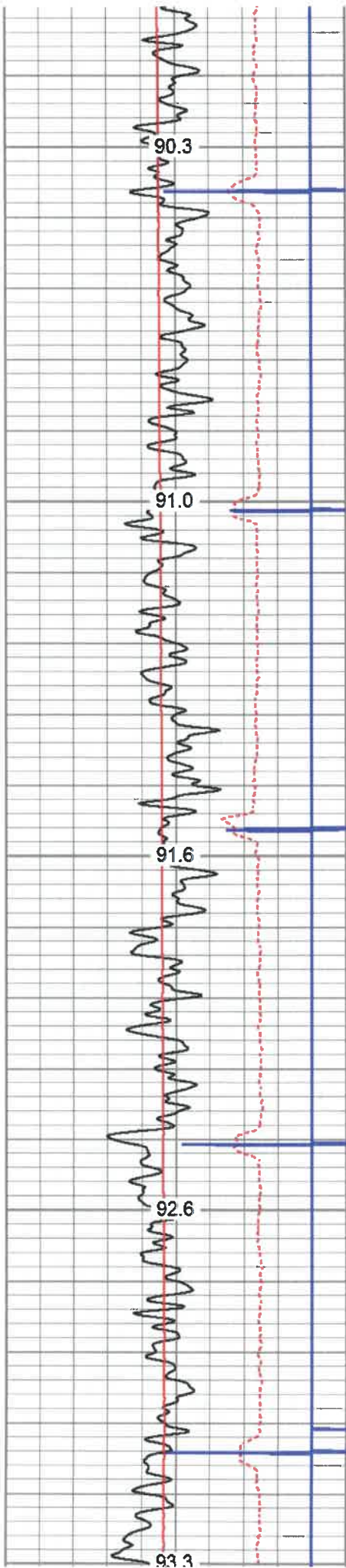
3300

3350

3400

3450





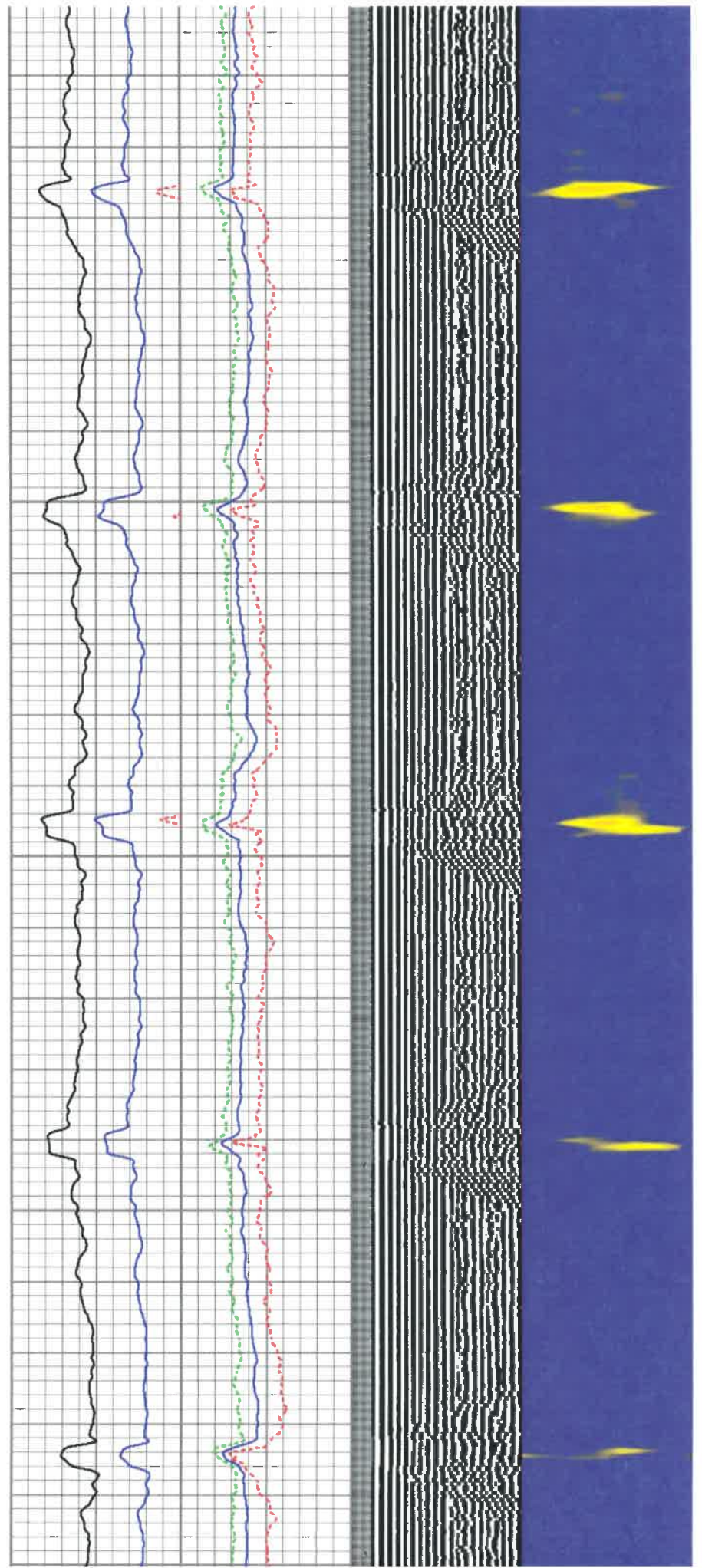
3500

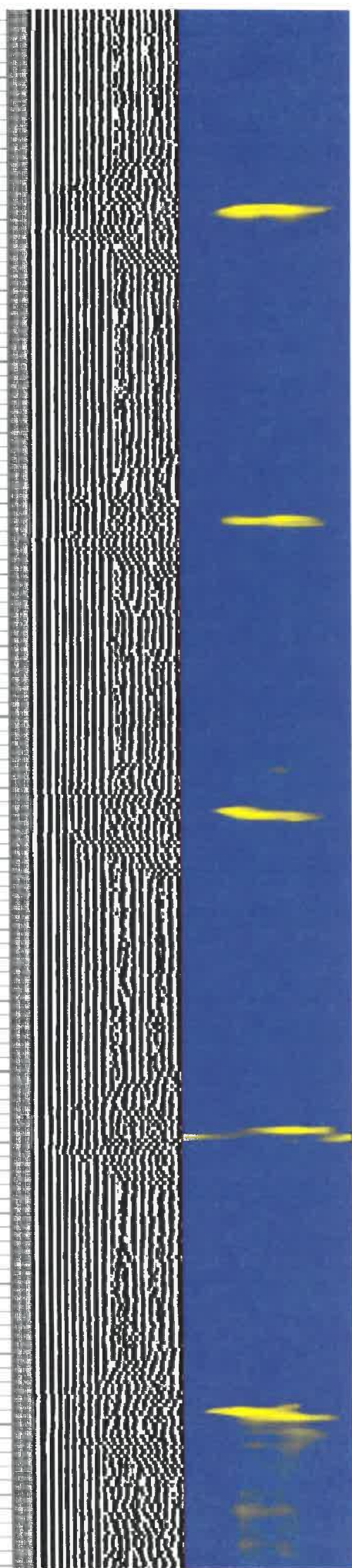
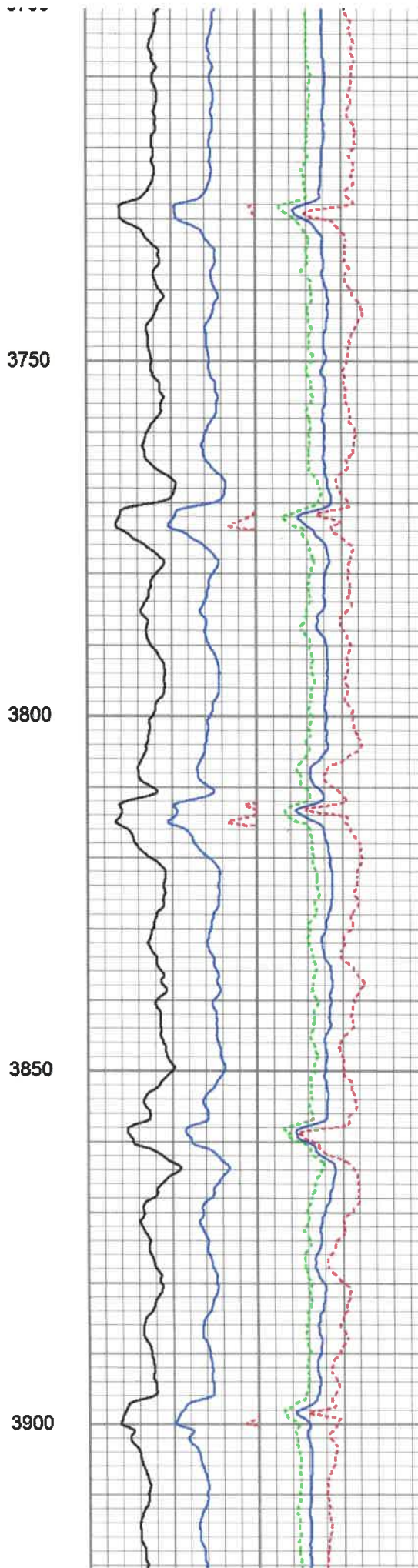
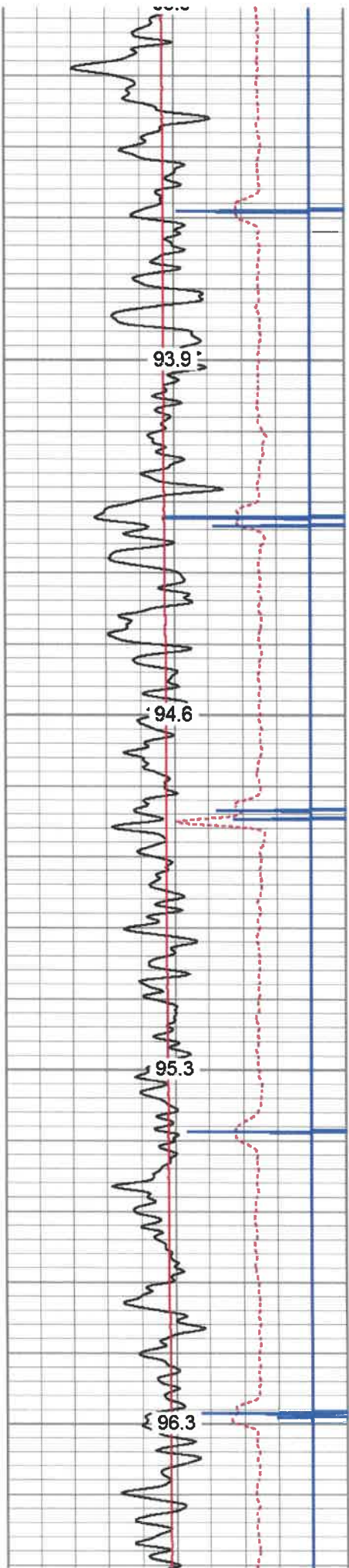
3550

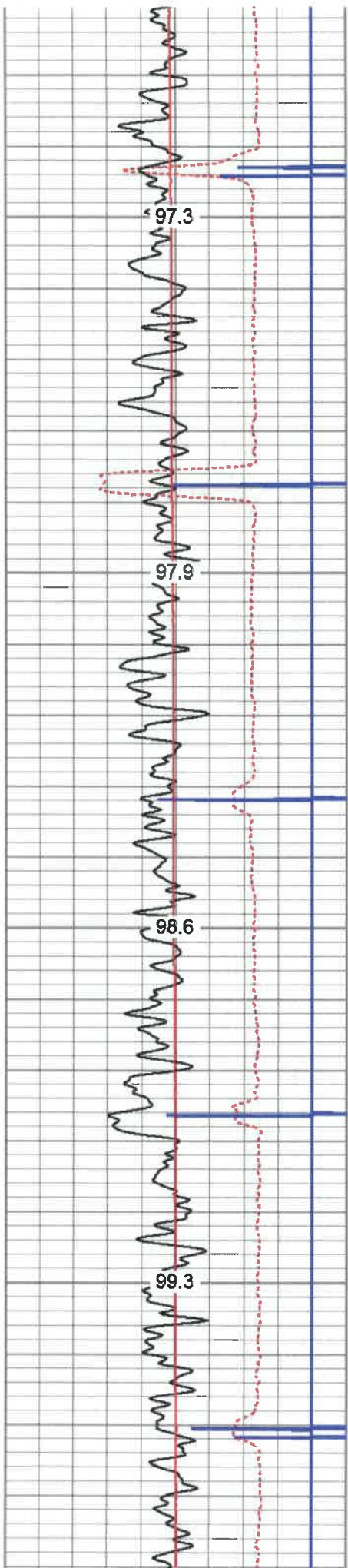
3600

3650

3700





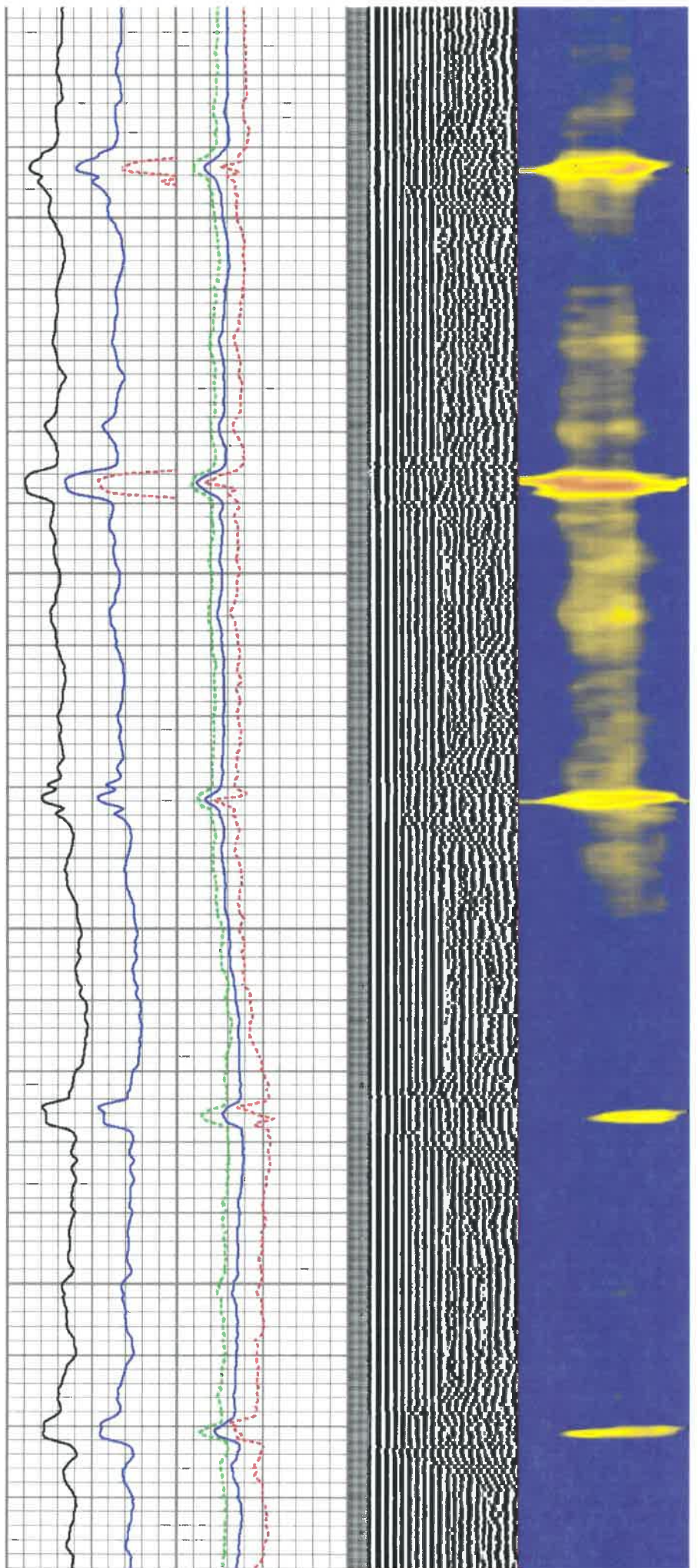


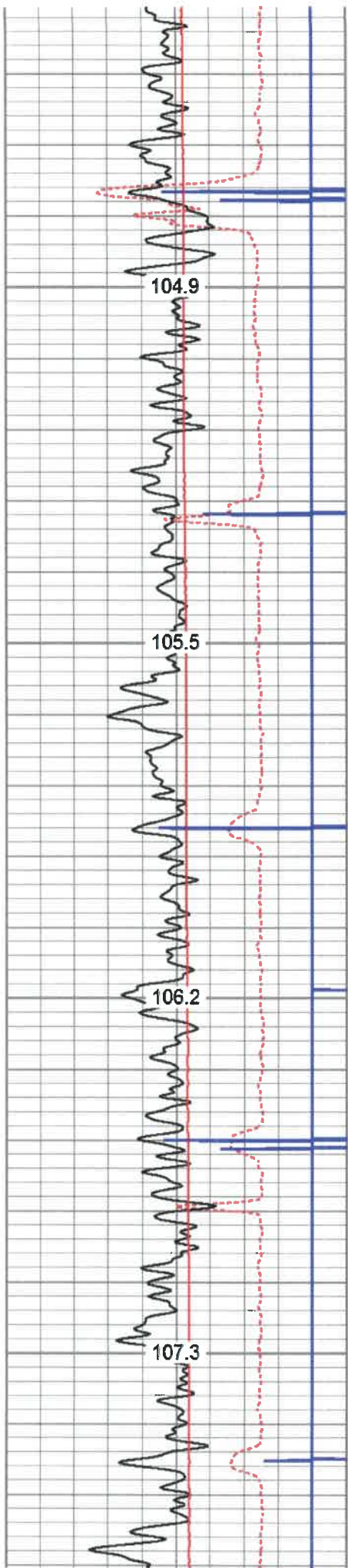
3950

4000

4050

4100



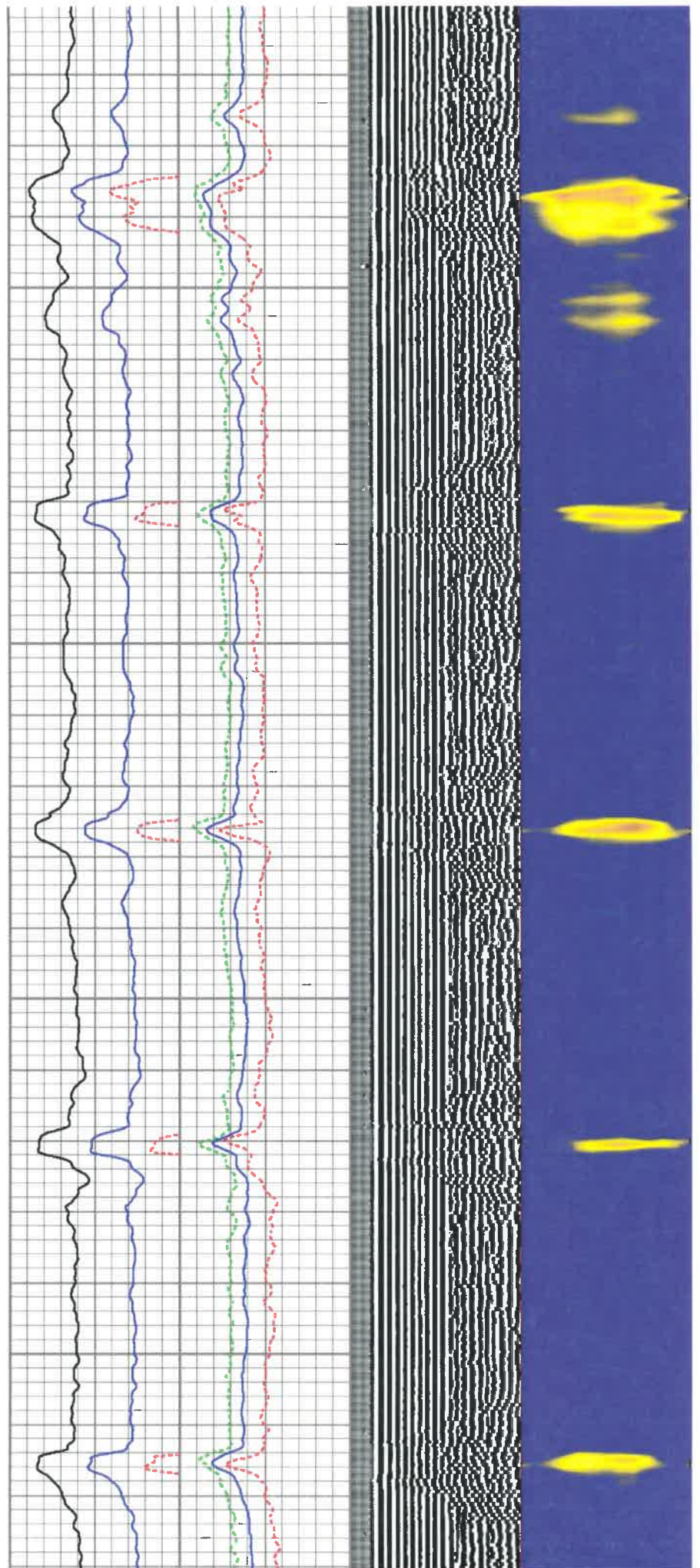


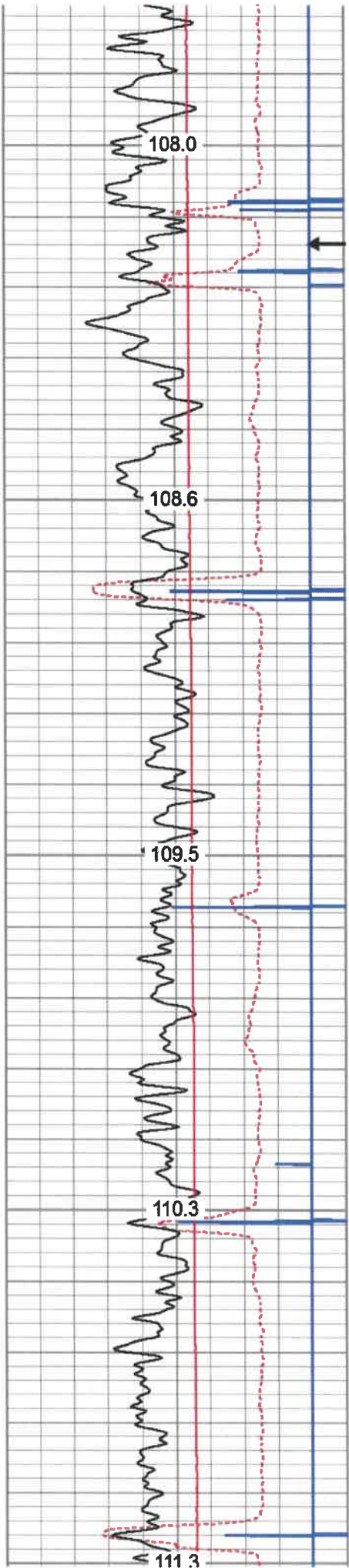
4400

4450

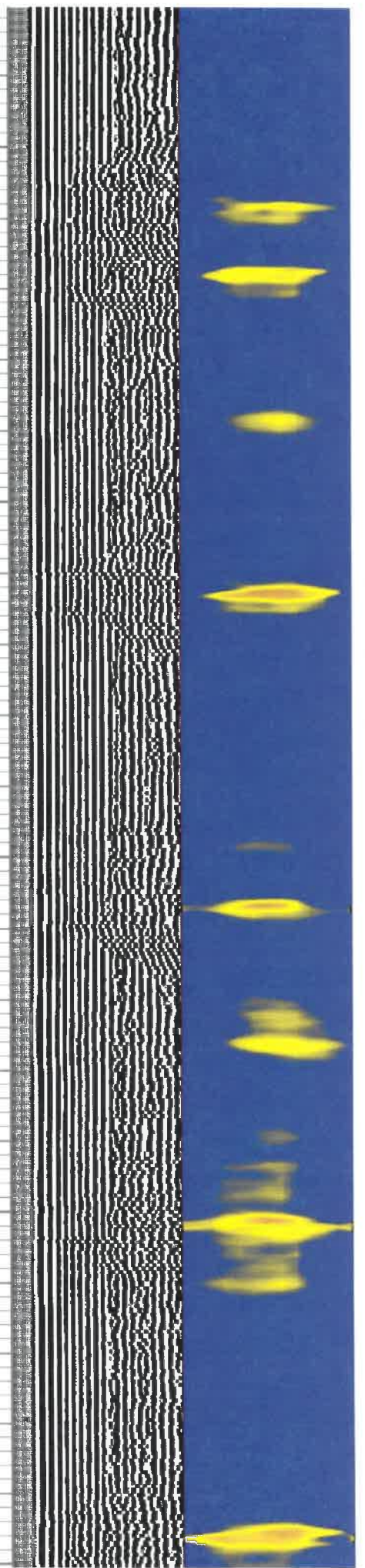
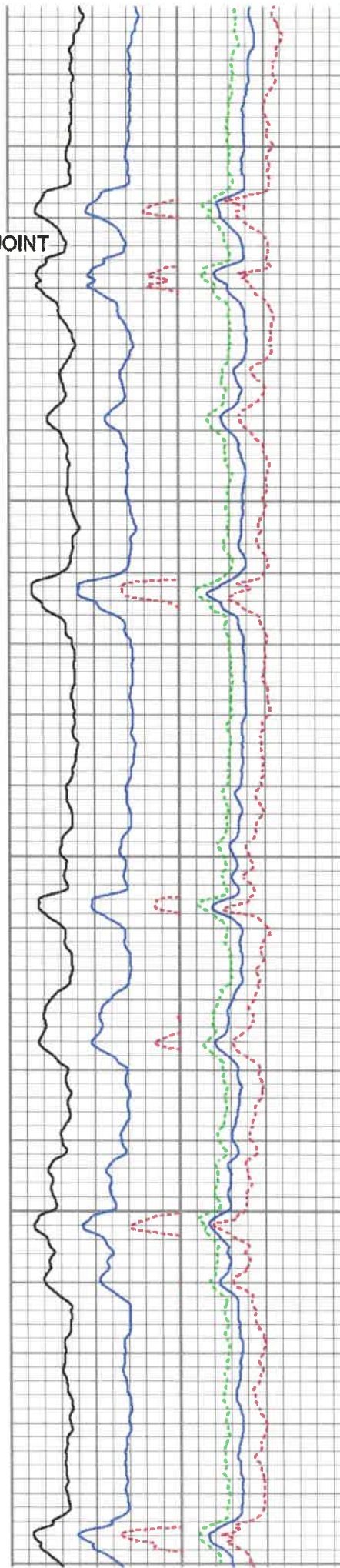
4500

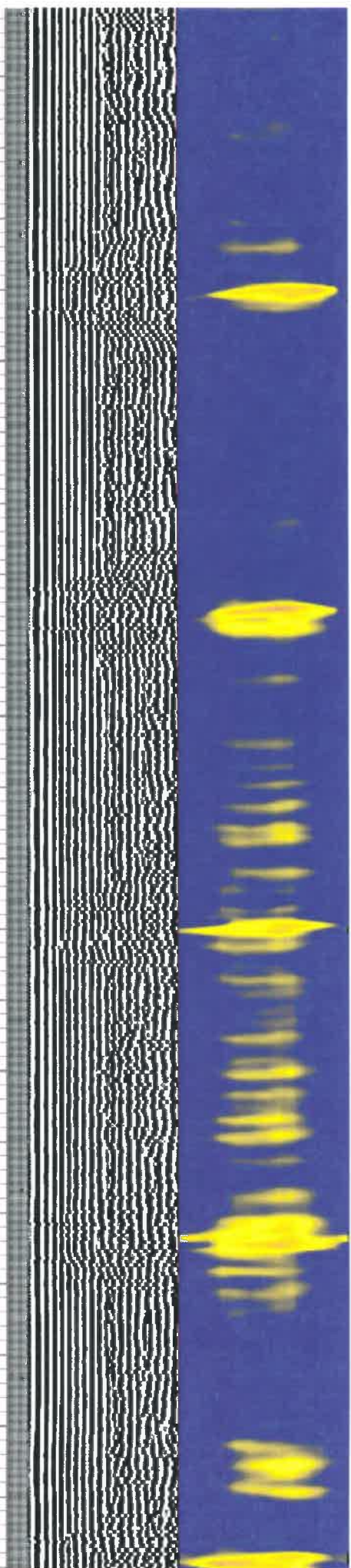
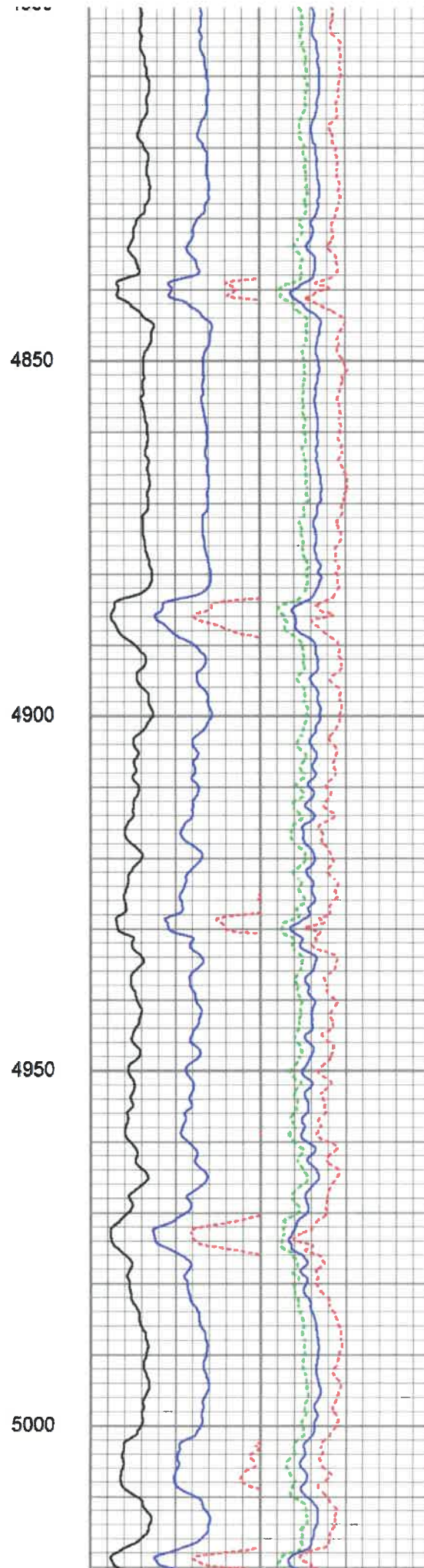
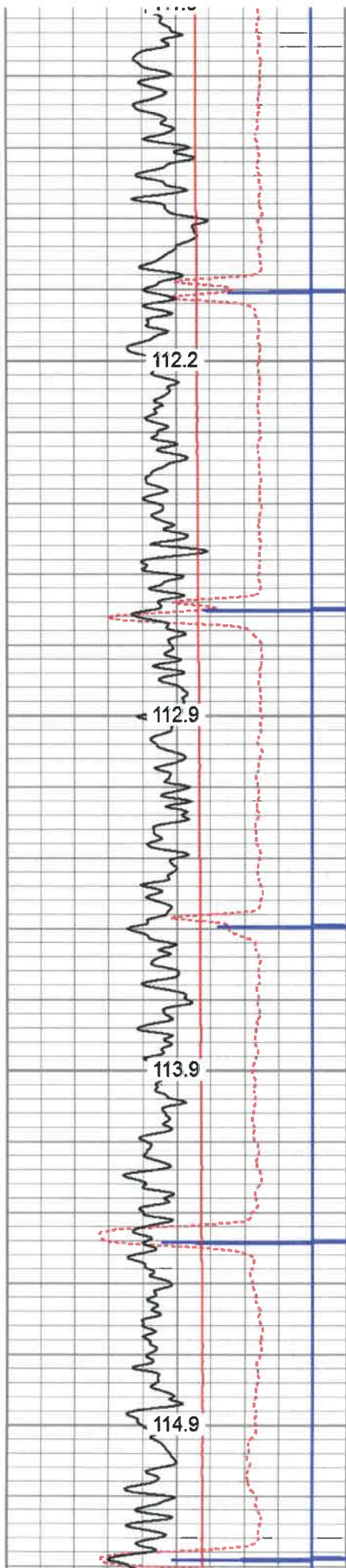
4550

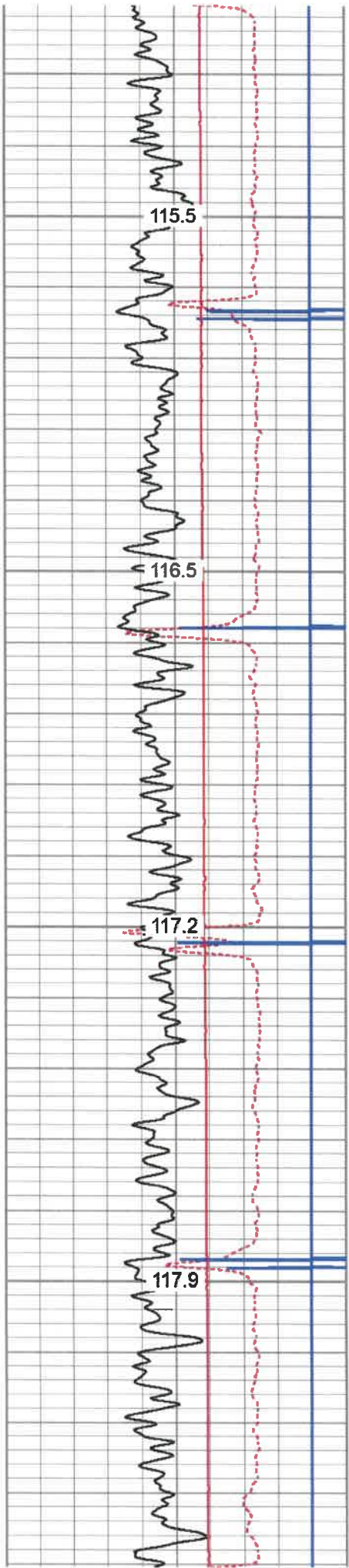




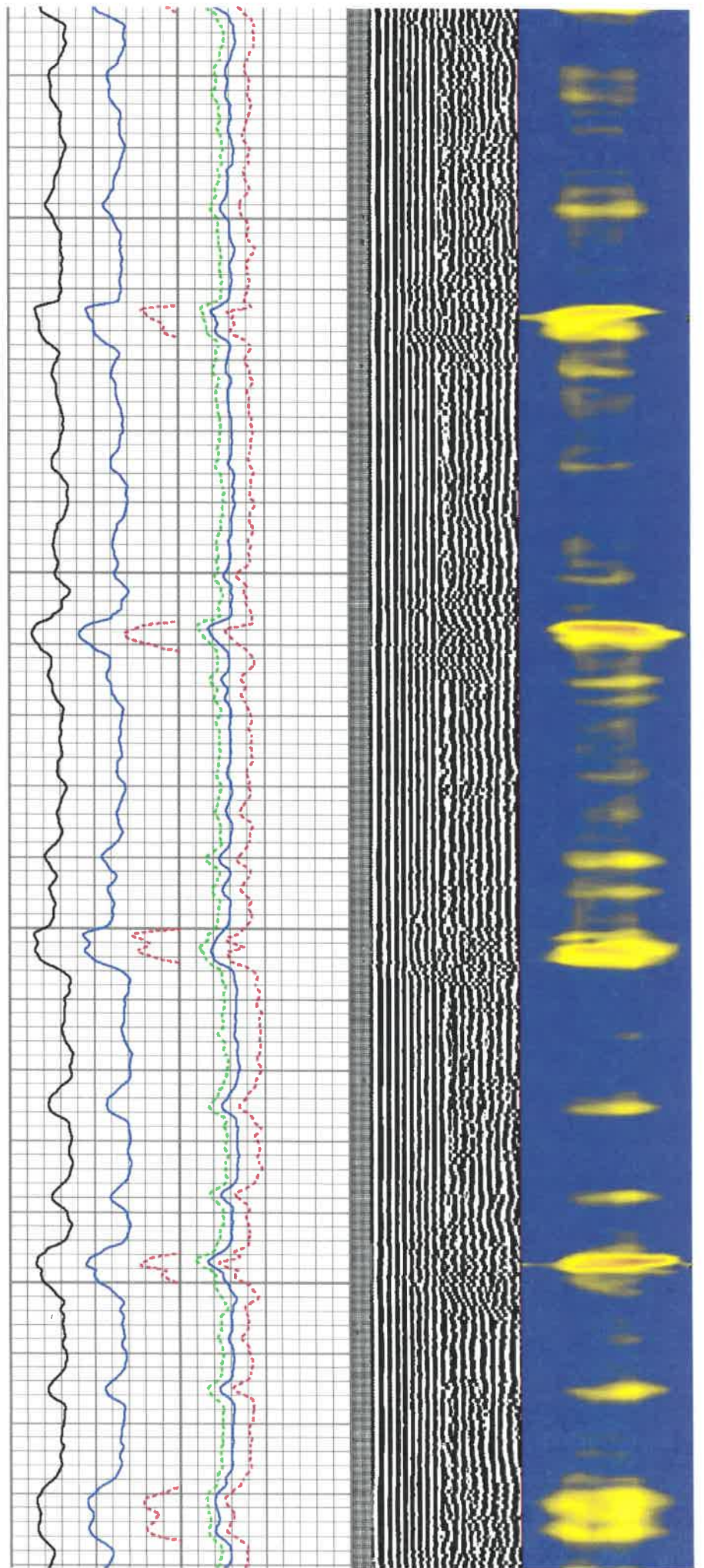
4600
4650
4700
4750
4800

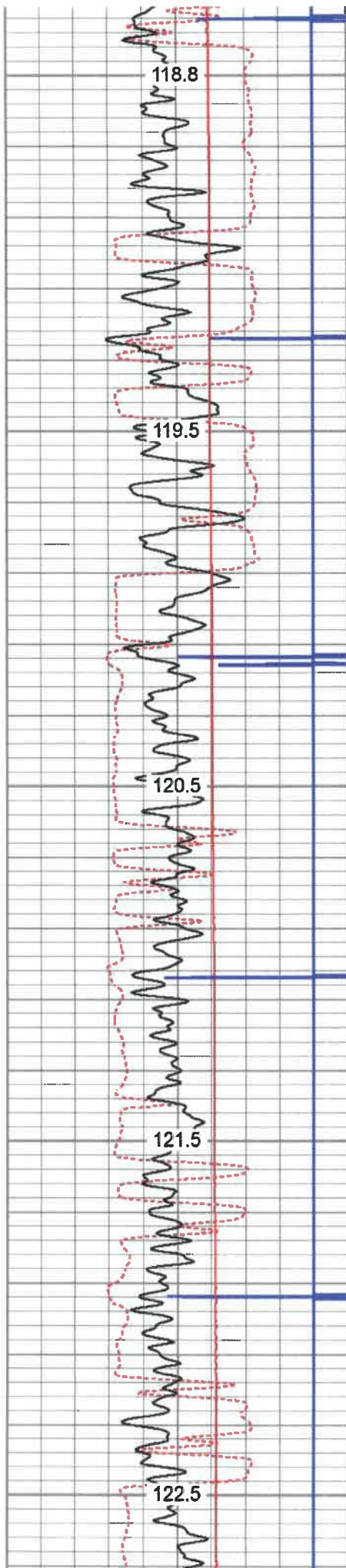






5050
5100
5150
5200





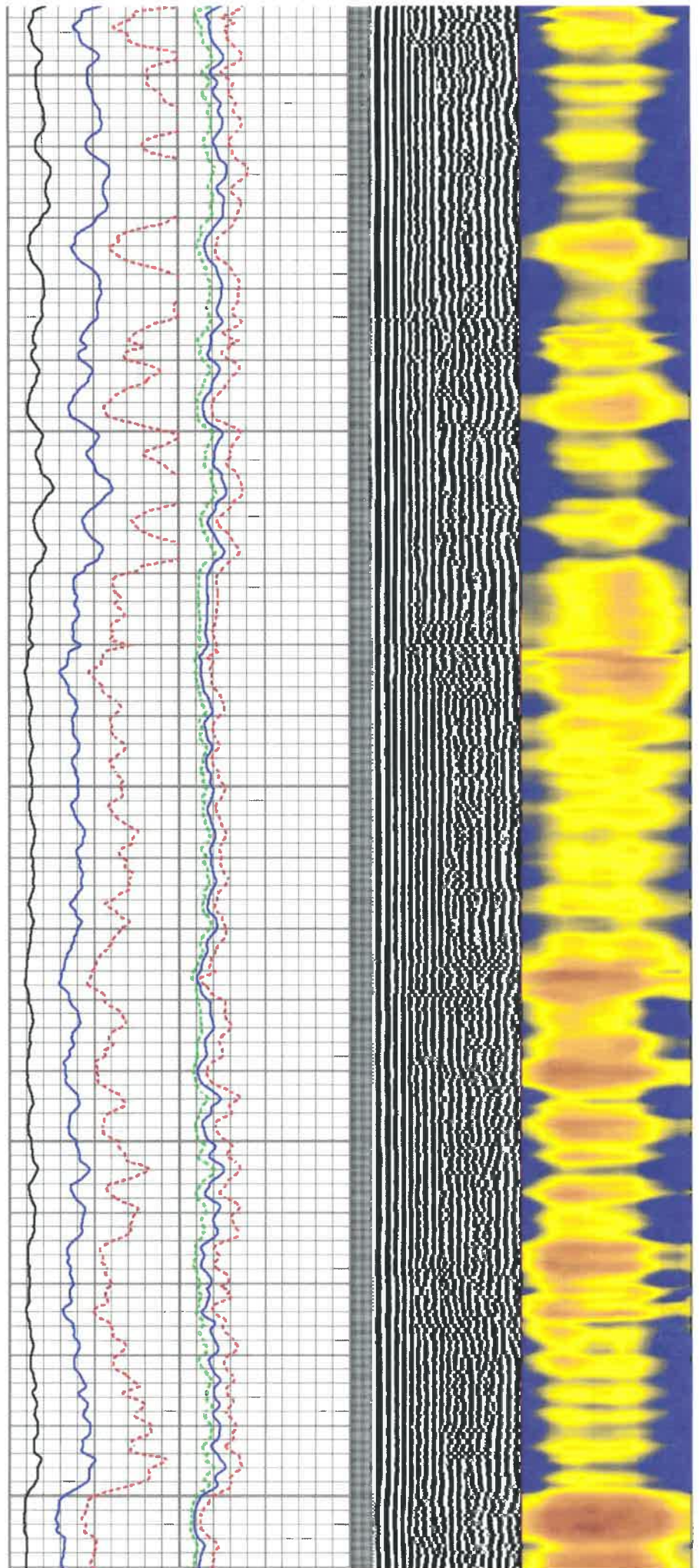
5250

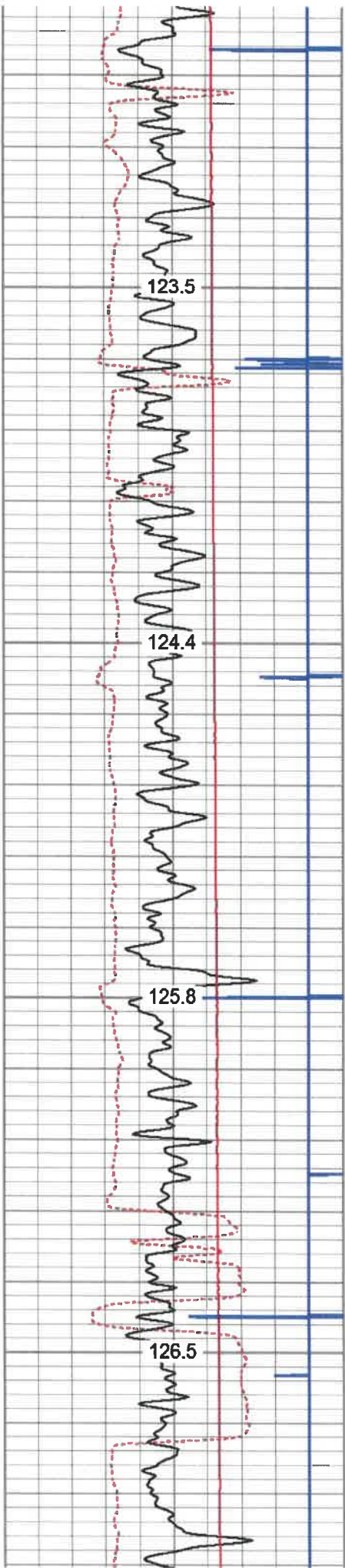
5300

5350

5400

5450



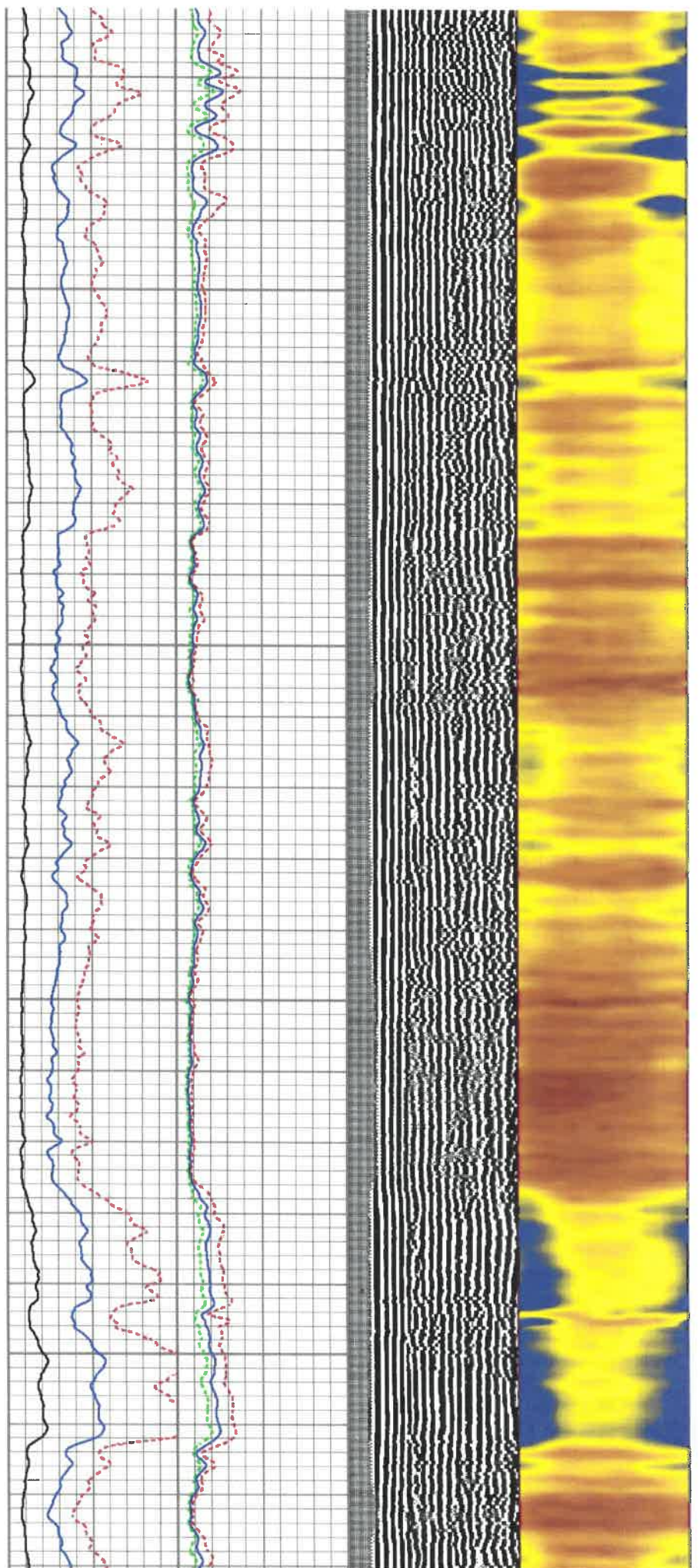


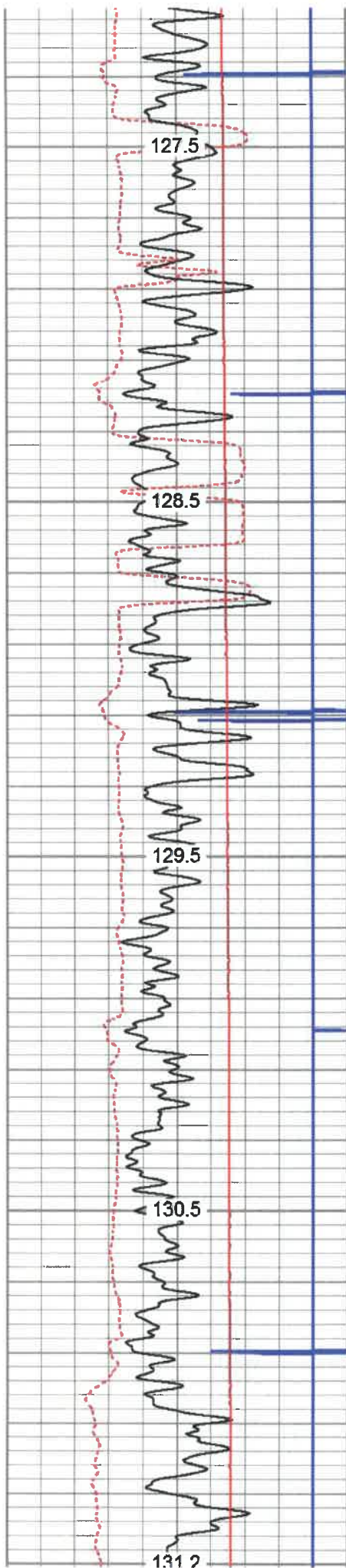
5500

5550

5600

5650





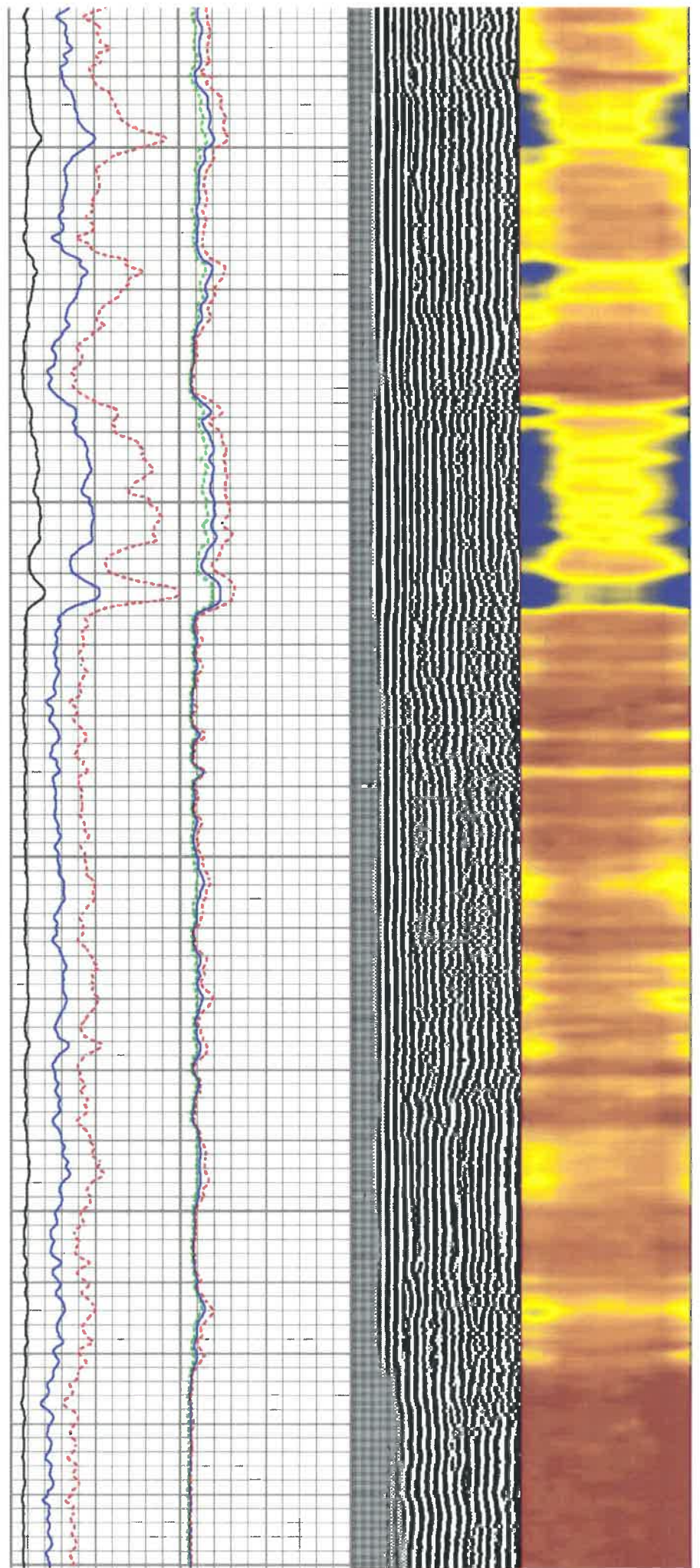
5700

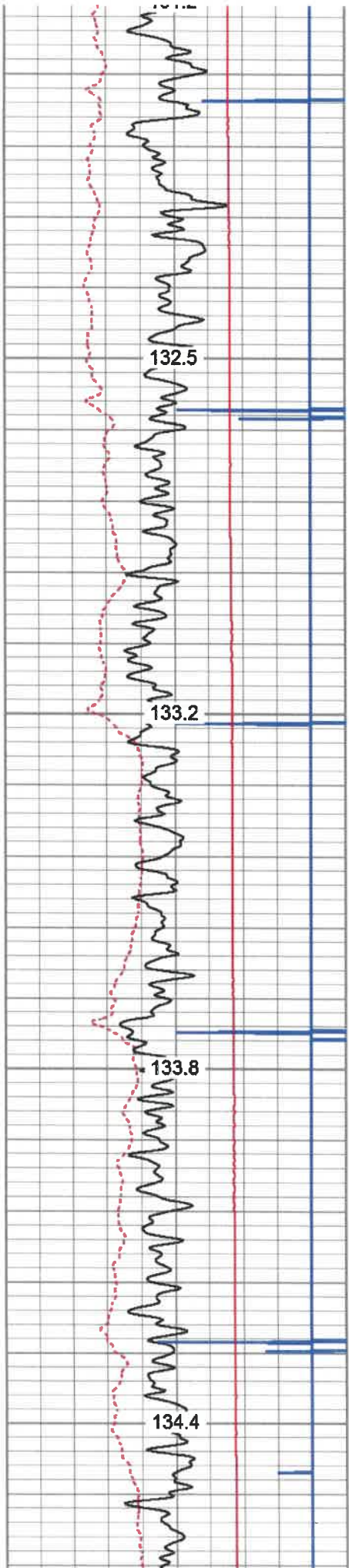
5750

5800

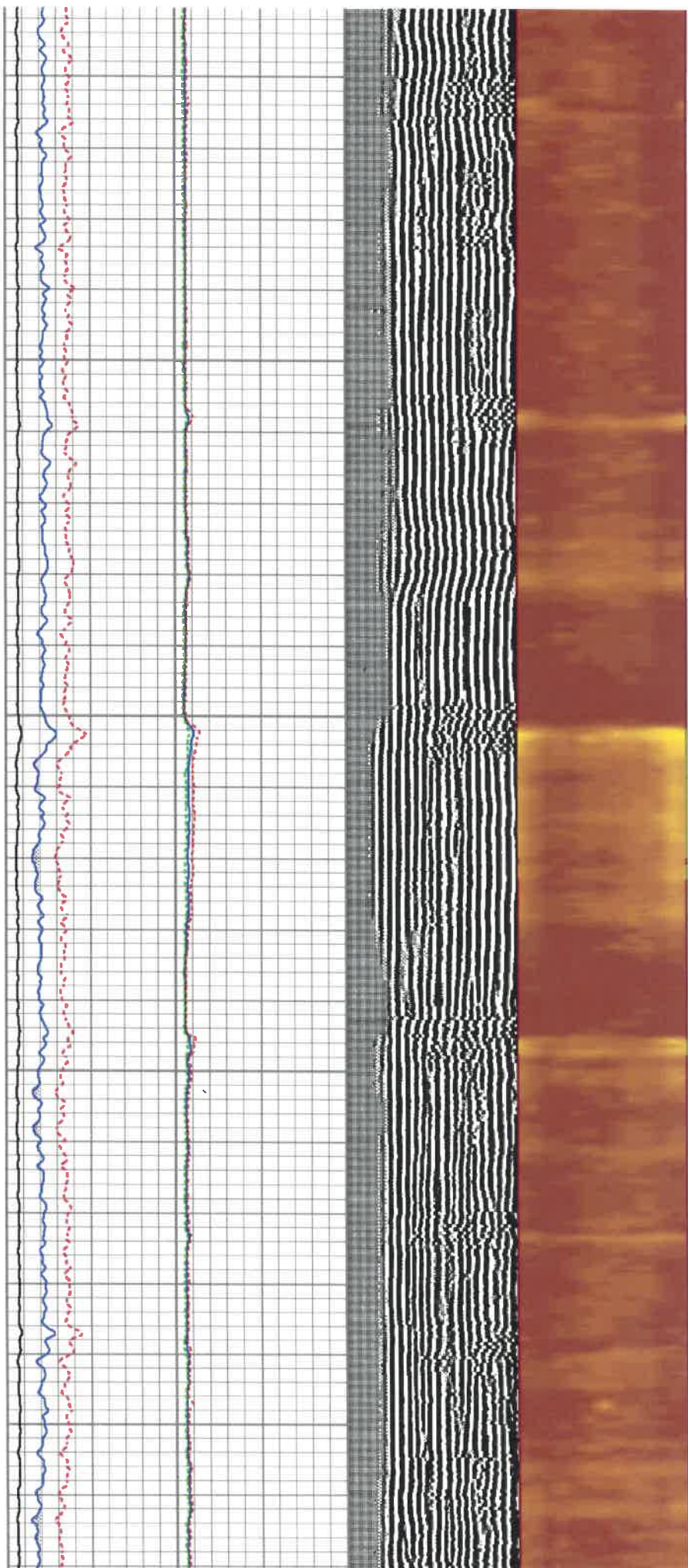
5850

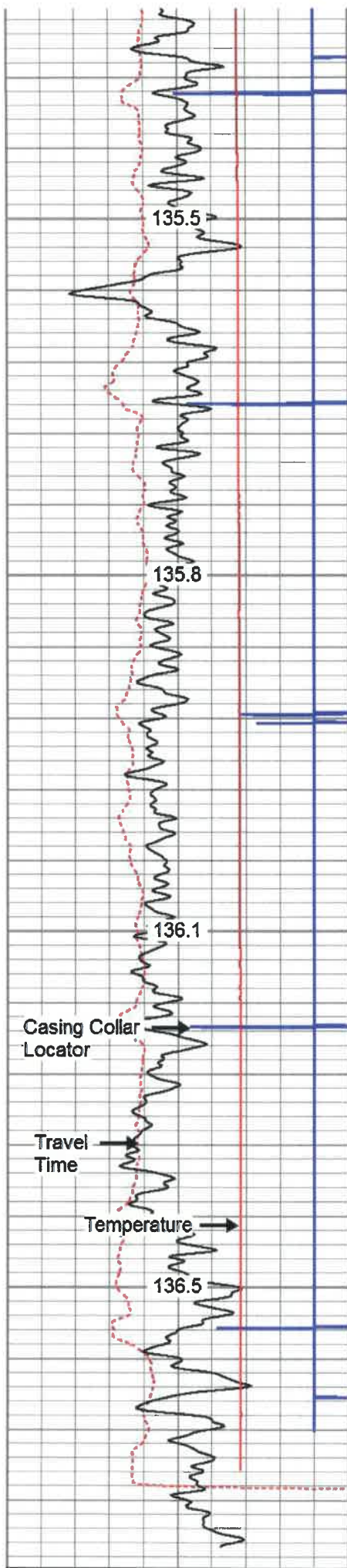
5900





5950
6000
6050
6100



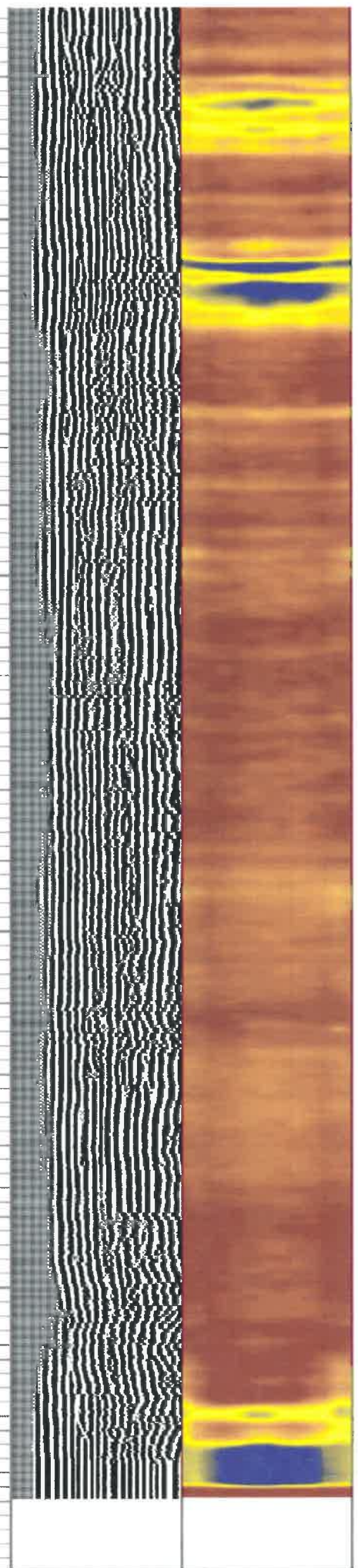
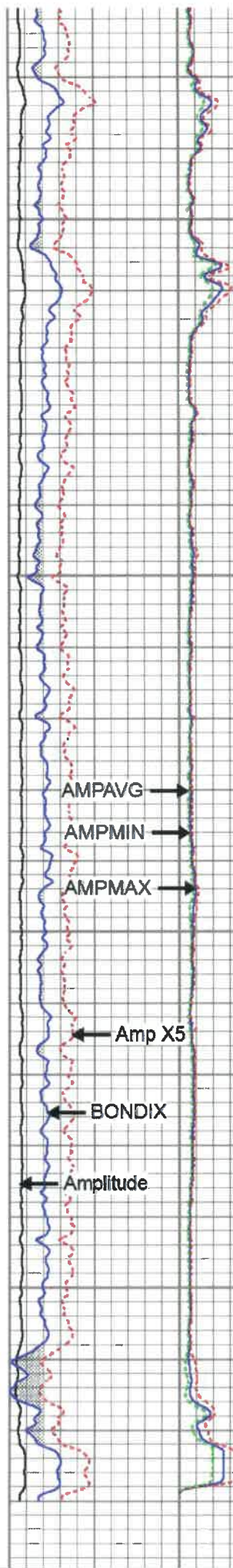


6150

6200

6250

6300



| | | |
|-------------|--------------------|-----|
| 280 | Travel Time (usec) | 180 |
| 9 | Casing Collar | -1 |
| 0 | Gamma Ray (GAPI) | 180 |
| 0 | TEMP (degF) | 200 |
| 180 | GR (GAPI) | 360 |
| TEMP (degF) | | |

| | | | | |
|-----------|-----|----------------|------------|-----------------|
| Amplitude | | Sector Amp AVG | VDL | 1 Sector Map 12 |
| 0 (mV) | 100 | Sector Amp MAX | 200 (usec) | 1200 |
| Amp X5 | | Sector Amp MIN | | |
| 0 (mV) | 20 | | | |
| 1 BONDIX | 0 | | | |

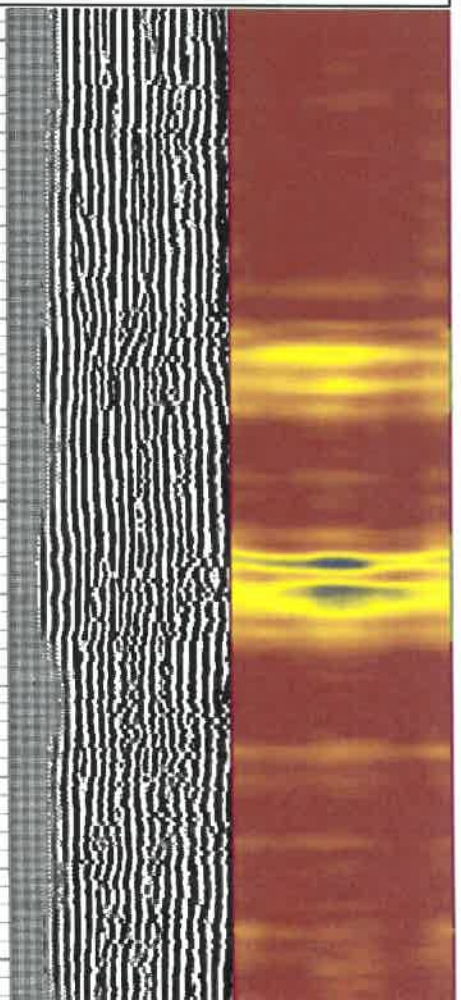
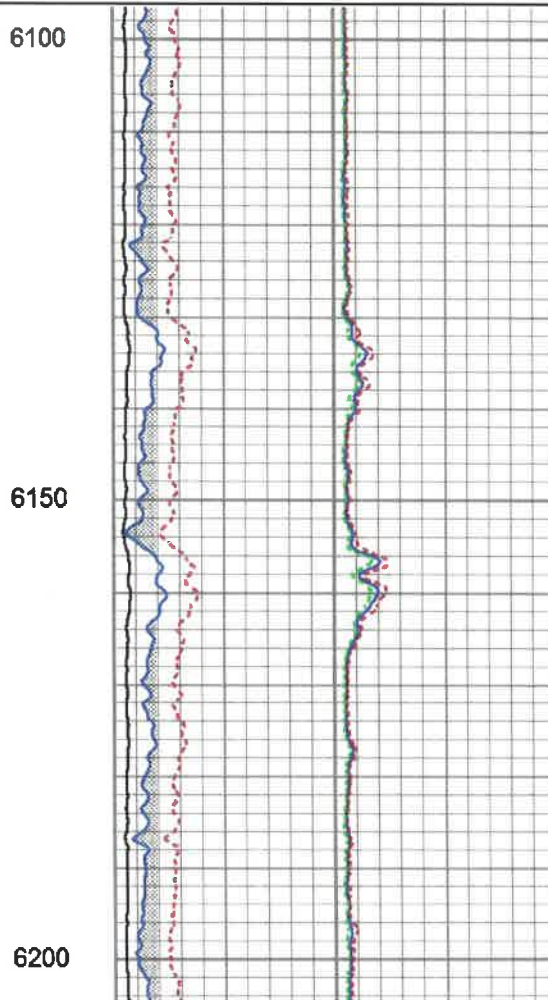
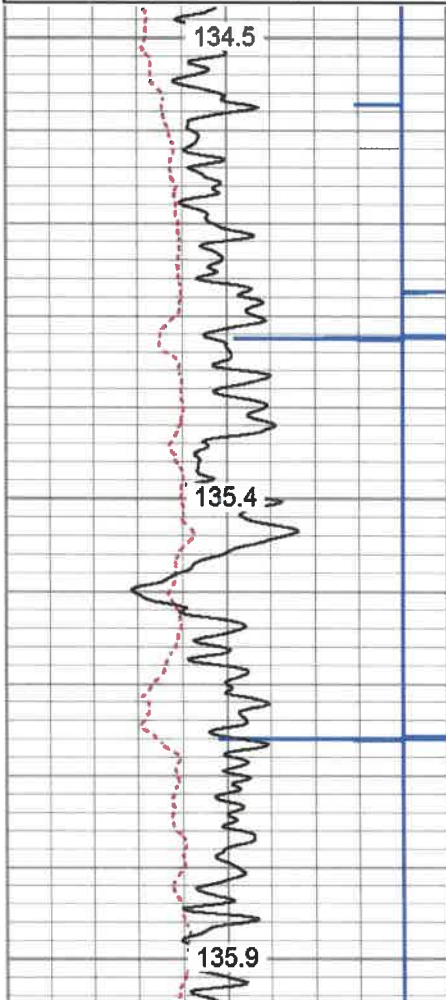


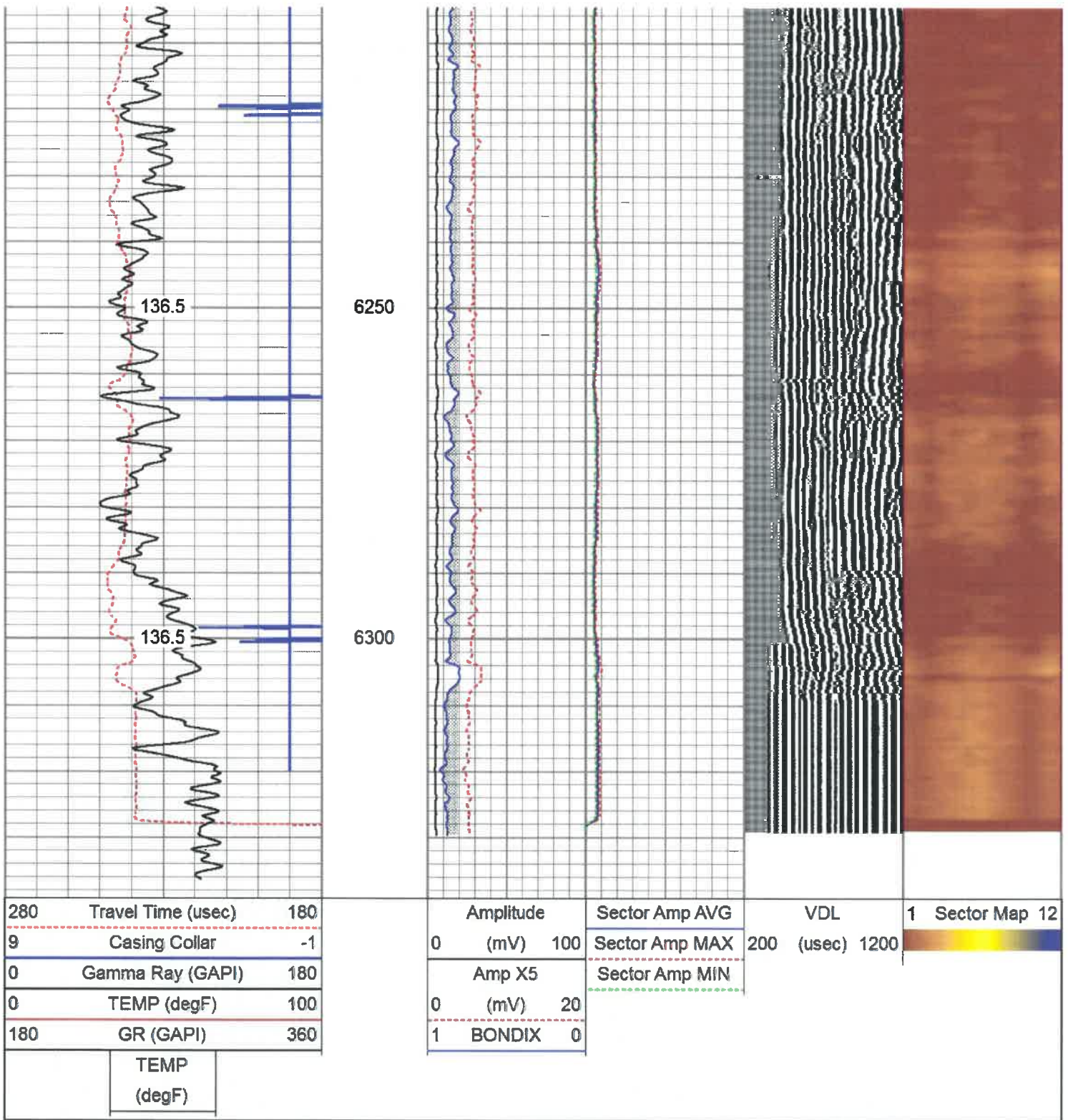
Repeat Pass

Database File antero_hennessy_unit_2h.db
 Dataset Pathname pass1
 Presentation Format antero1
 Dataset Creation Sun Oct 27 10:37:58 2019
 Charted by Depth in Feet scaled 1:240

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

| | | | | |
|-----------|-----|----------------|------------|-----------------|
| Amplitude | | Sector Amp AVG | VDL | 1 Sector Map 12 |
| 0 (mV) | 100 | Sector Amp MAX | 200 (usec) | 1200 |
| Amp X5 | | Sector Amp MIN | | |
| 0 (mV) | 20 | | | |
| 1 BONDIX | 0 | | | |





Log Variables

DatabaseC:\ProgramData\Warrior\Data\antero_hennessy_unit_2h.db
 Dataset field/well/run1/pass2/_vars_

Top - Bottom

| | | | | | | |
|------------|--------------|-------------|-------------|-----------|-------------|------------|
| BHTEMP_Src | BOREID | BOTTEMP | CASEOD | CASETHCK | CASEWGHT | MAXAMPL |
| TEMP | in 8.25 | degF 100 | in 5.5 | in 0 | lb/ft 20 | mV 71.9 |
| MINAMPL | MINATTN | PERFS | PPT | SRFTEMP | TDEPTH | |
| mV 3.5 | db/ft 0.8 | No | usec 219 | degF 0 | ft 0 | |

Variable Description

variable Description

BHTEMP_Src : BHTEMP Input Source Selector
 BOREID : Borehole I.D.
 BOTTEMP : Bottom Hole Temperature
 CASEOD : Casing O.D.
 CASETHCK : Casing Thickness
 CASEWGHT : Casing Weight
 MAXAMPL : Maximum Amplitude

MINAMPL : Minimum Amplitude
 MINATTN : Minimum Attenuation
 PERFS : Perforation Flag
 PPT : Predicted Pipe Time
 SRFTEMP : Surface Temperature
 TDEPTH : Total Depth

Calibration Report

Database File antero_hennessy_unit_2h.db
 Dataset Pathname pass2
 Dataset Creation Sun Oct 27 10:57:31 2019

Gamma Ray Calibration Report

Serial Number: 0111
 Tool Model: Tek-Co 2 3/4
 Performed: Thu Oct 24 08:41:06 2019

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
 Calibrator Reading: 1.0 cps

Sensitivity: 0.5000 GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number: T12_01
 Tool Model: Tek12

Calibration Casing Diameter: 5.500 in
 Calibration Depth: 57.275 ft

Master Calibration, performed Thu Oct 24 13:31:44 2019:

| | Raw (v) | | Calibrated (mv) | | Results | |
|-----|---------|-------|-----------------|---------|---------|--------|
| | Zero | Cal | Zero | Cal | Gain | Offset |
| 3' | -0.006 | 0.919 | 3.500 | 71.921 | 50.880 | 5.245 |
| CAL | 0.630 | 0.627 | | | | |
| 5' | -0.001 | 1.035 | 3.500 | 71.921 | 40.761 | 4.381 |
| SUM | | | | | | |
| S1 | 0.000 | 1.103 | 0.000 | 100.000 | 56.543 | -0.001 |
| S2 | 0.000 | 1.088 | 0.000 | 100.000 | 61.007 | -0.001 |
| S3 | 0.000 | 1.122 | 0.000 | 100.000 | 64.737 | -0.001 |
| S4 | 0.000 | 1.089 | 0.000 | 100.000 | 72.448 | -0.001 |
| S5 | 0.000 | 1.045 | 0.000 | 100.000 | 71.838 | -0.001 |
| S6 | 0.000 | 0.965 | 0.000 | 100.000 | 74.574 | -0.001 |
| S7 | 0.000 | 0.897 | 0.000 | 100.000 | 76.604 | -0.001 |
| S8 | 0.000 | 0.821 | 0.000 | 100.000 | 77.230 | -0.001 |
| S9 | 0.000 | 0.802 | 0.000 | 100.000 | 76.037 | -0.001 |
| S10 | 0.000 | 0.932 | 0.000 | 100.000 | 63.640 | -0.001 |
| S11 | 0.000 | 1.003 | 0.000 | 100.000 | 56.910 | -0.001 |
| S12 | 0.000 | 1.091 | 0.000 | 100.000 | 55.333 | -0.001 |

Temperature Calibration Report

Serial Number: T12_01
 Tool Model: Tek12
 Performed: Fri Oct 22 17:21:06 2010

Reference Reading

Low Reference: 0.00 degF 0.00 usec

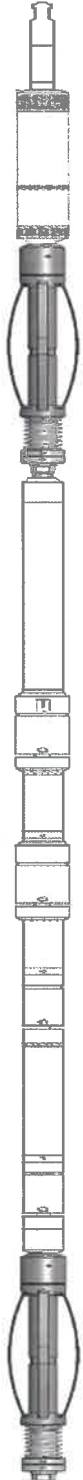

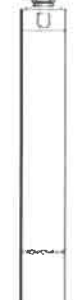
RECEIVED
 Office of Oil and Gas
 SEP 24 2020
 WV Department of
 Environmental Protection

High Reference: 1.00 degF 1.00 usec

Gain: 0.33

Offset: 0.00

Delta Spacing 2

| Sensor | Offset (ft) | Schematic | Description | Length (ft) | O.D. (in) | Weight (lb) |
|---------|-------------|---|--|-------------|-----------|-------------|
| CCL | 19.20 |  | Titan-1.4375 1 7/16 Titan Type II Cable Head | 1.03 | 1.44 | 5.00 |
| | | | CCL-312tekco (3.12TEKCO) Tekco 3 1/8" 450 Deg. "F" SmCo Logging CCL | 1.82 | 3.12 | 25.00 |
| | | | Tek-2.75 2 3/4" Tekco Adjustable Centralizer | 2.73 | 2.75 | 25.00 |
| TEMP | 13.04 |  | SCBL-Tek12 (T12_01) Tekco 400 Deg F 12 Sector RIB with Temp | 9.13 | 3.25 | 135.00 |
| WVFSYNC | 13.04 | | | | | |
| WVFCAL | 13.04 | | | | | |
| WVFS12 | 11.75 | | | | | |
| WVFS11 | 11.75 | | | | | |
| WVFS10 | 11.75 | | | | | |
| WVFS9 | 11.75 | | | | | |
| WVFS8 | 11.75 | | | | | |
| WVFS7 | 11.75 | | | | | |
| WVFS6 | 11.75 | | | | | |
| WVFS5 | 11.75 | | | | | |
| WVFS4 | 11.75 | | | | | |
| WVFS3 | 11.75 | | | | | |
| WVFS2 | 11.75 | | | | | |
| WVFS1 | 11.75 | | | | | |
| WVF3FT | 11.00 | | | | | |
| WVF5FT | 10.00 | | | | | |
| WVFTEMP | 6.67 | Tek-2.75 2 3/4" Tekco Adjustable Centralizer | 2.73 | 2.75 | 25.00 | |
| GR | 1.31 |  | GR-Tek-Co 2 3/4 (0111) Tekco 2 3/4" 400 Deg. F Logging Gamma Ray | 3.67 | 2.75 | 40.00 |



Titan-1.4375_Cap
Titan 1 7/16" Cap

0.27

1.44

1.00

Dataset: antero_hennessy_unit_2h.db: field/well/run1/pass2
 Total length: 21.37 ft
 Total weight: 256.00 lb
 O.D.: 3.25 in



Company ANTERO RESOURCES
 Well HENNESSY UNIT 2H
 Field RABBIT EARS
 County TYLER
 State WV Country US

RECEIVED
Office of Oil and Gas

SEP 24 2020

WV Department of
Environmental Protection

