



**DUAL  
INDUCTION  
LOG**

**Company American Oil LLC.**

**Well Reidel 1-32**

**Field Irvin**

**County Ellis**

**State Kansas**

**Location:** API #: 15 051 26902

2075' FSL & 1436' FWL

SEC 32 TWP 13S RGE 19W

Permanent Datum Ground Level Elevation 2226'  
Log Measured From KB 8' AGL  
Drilling Measured From KB

CDNL

Other Services  
Elevation  
K.B. 2234'  
D.F. 2233'  
G.L. 2226'

|                              |                    |
|------------------------------|--------------------|
| Company                      | American Oil LLC.  |
| Well                         | Reidel 1-32        |
| Field                        | Irvin              |
| County                       | Ellis              |
| State                        | Kansas             |
| Date                         | 2-18-18            |
| Run Number                   | One                |
| Depth Driller                | 3930'              |
| Depth Logger                 | 3931'              |
| Bottom Logged Interval       | 3929'              |
| Top Log Interval             | 200'               |
| Casing Driller               | 8 5/8" @ 220'      |
| Casing Logger                | 220'               |
| Bit Size                     | 7 7/8"             |
| Type Fluid in Hole           | Chemical           |
| Density / Viscosity          | 9.2/52             |
| PH / Fluid Loss              | 9.7/8.6            |
| Source of Sample             | Pit                |
| Rm @ Meas. Temp              | .75 @ 60 degf      |
| Rmf @ Meas. Temp             | .6 @ 60 degf       |
| Rmc @ Meas. Temp             | 1.08 @ 60 degf     |
| Source of Rmf / Rmc          | Calculated         |
| Rm @ BHT                     | 0.45 @ 97 degf     |
| Time Circulation Stopped     | 7:00 am            |
| Time Logger on Bottom        | 9:30 am            |
| Maximum Recorded Temperature | 97 degf            |
| Equipment Number             | T127               |
| Location                     | Hays, KS.          |
| Recorded By                  | L. Smith           |
| Witnessed By                 | Mr. Austin Klaus   |
|                              | Mr. Zach Patterson |

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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**

Thanks for using Gemini Wireline LLC  
785-625-1182



**Main Pass**

Database File aoreidel1-32oh.db  
 Dataset Pathname pass3.2  
 Presentation Format kdillinn  
 Dataset Creation Sun Feb 18 12:36:13 2018  
 Charted by Depth in Feet scaled 1:600

0 GR (GAPI) 150

1000 CILD (mmho/m) 0

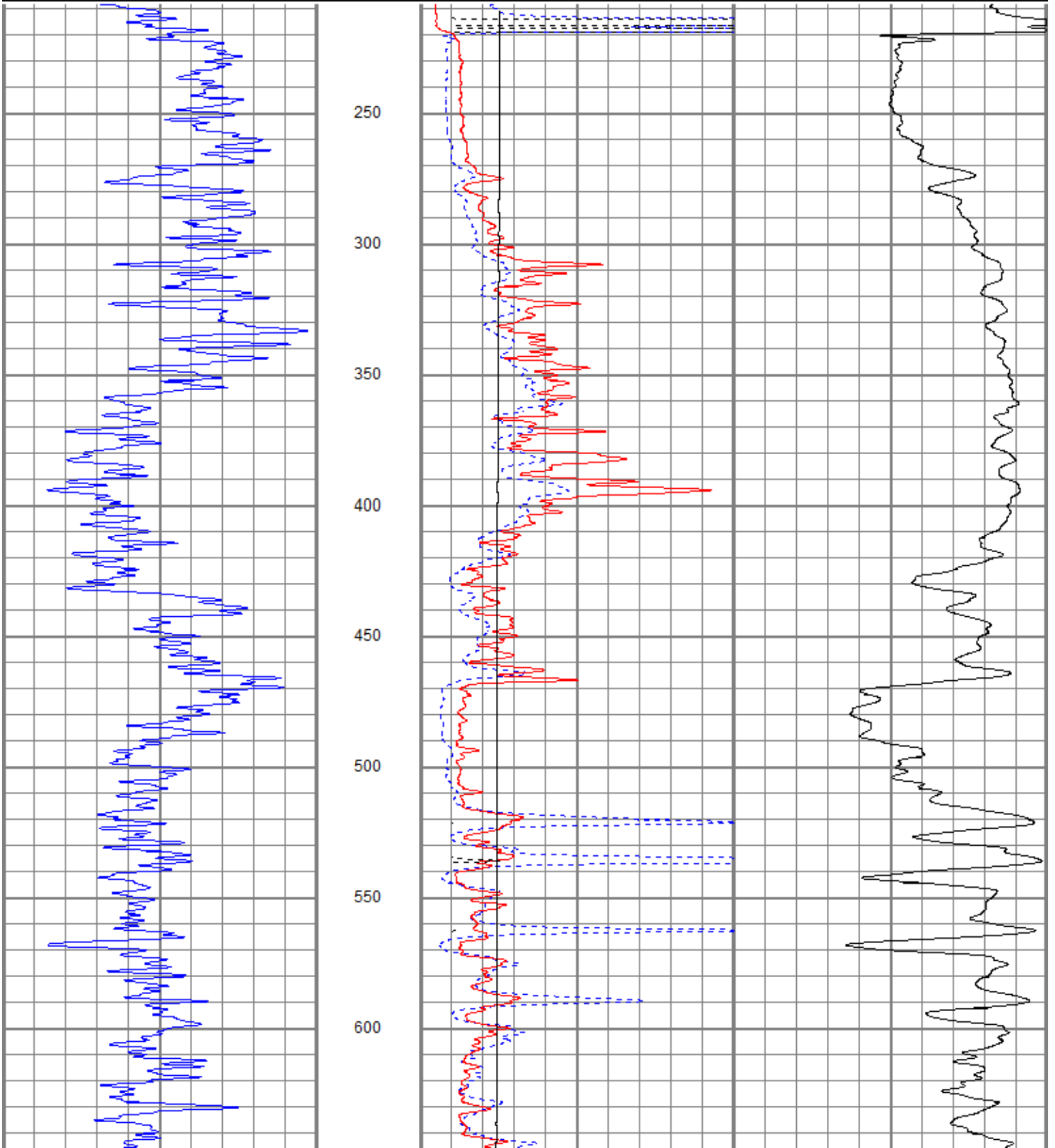
10000 LTEN (lb) 0

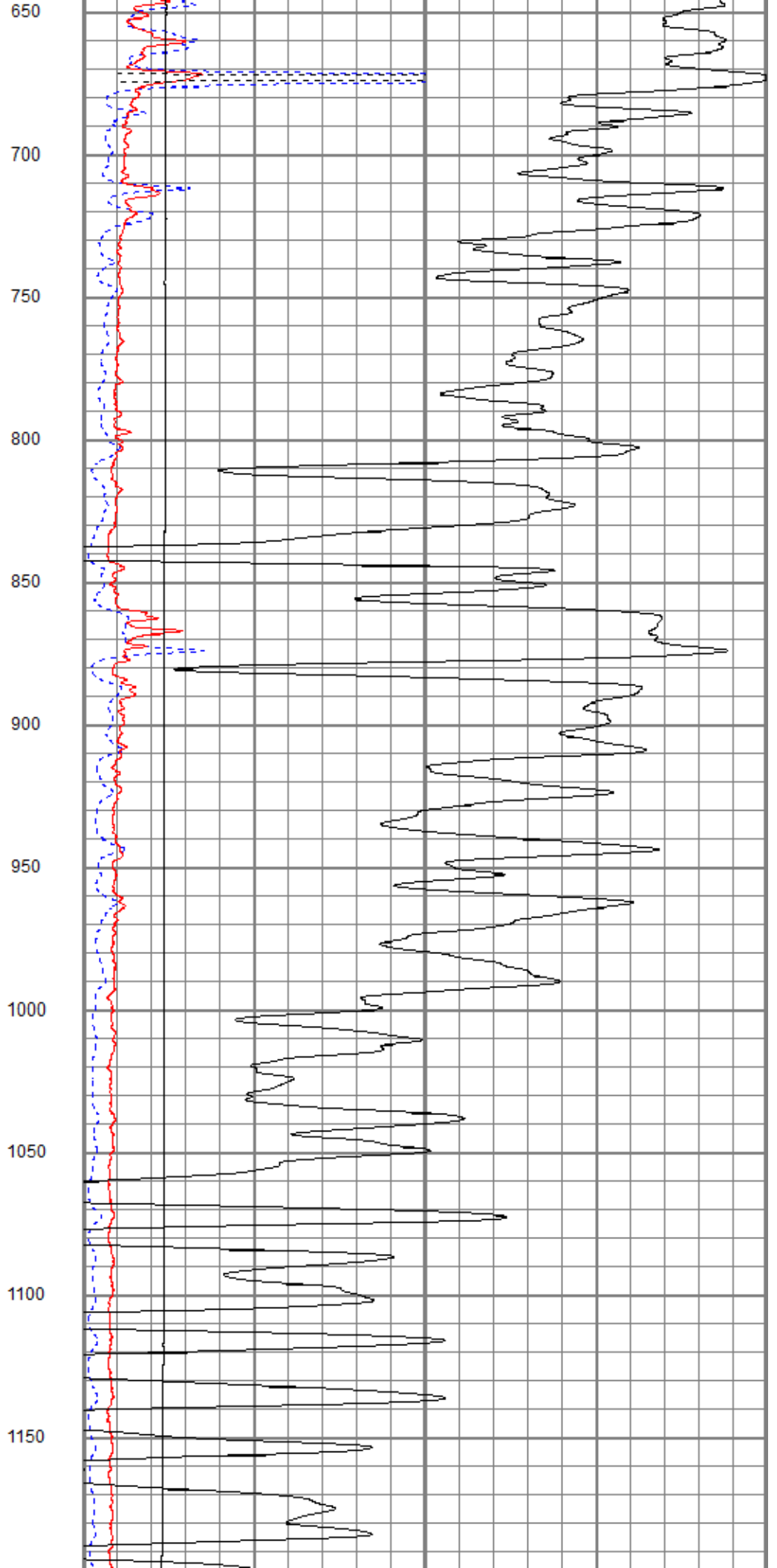
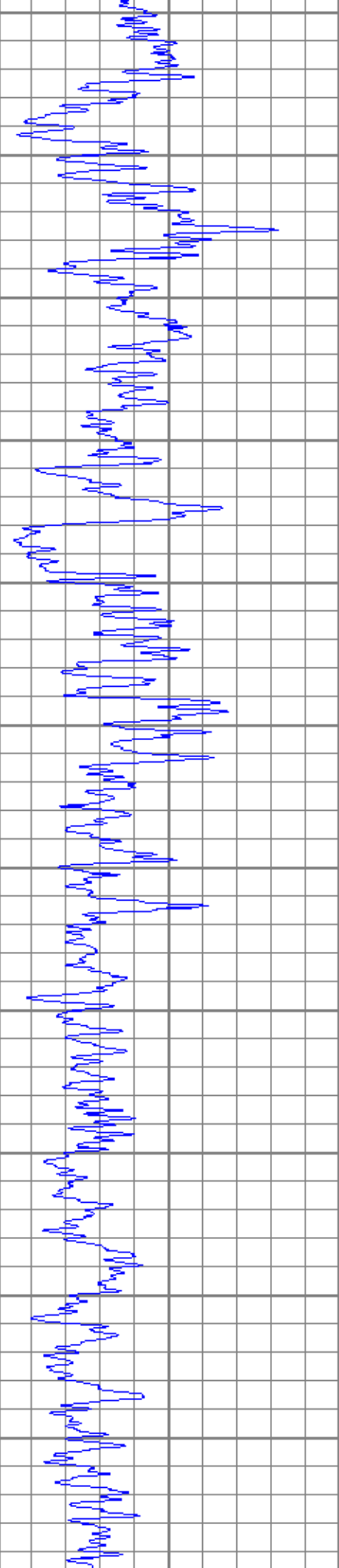
0 RILD (Ohm-m) 50

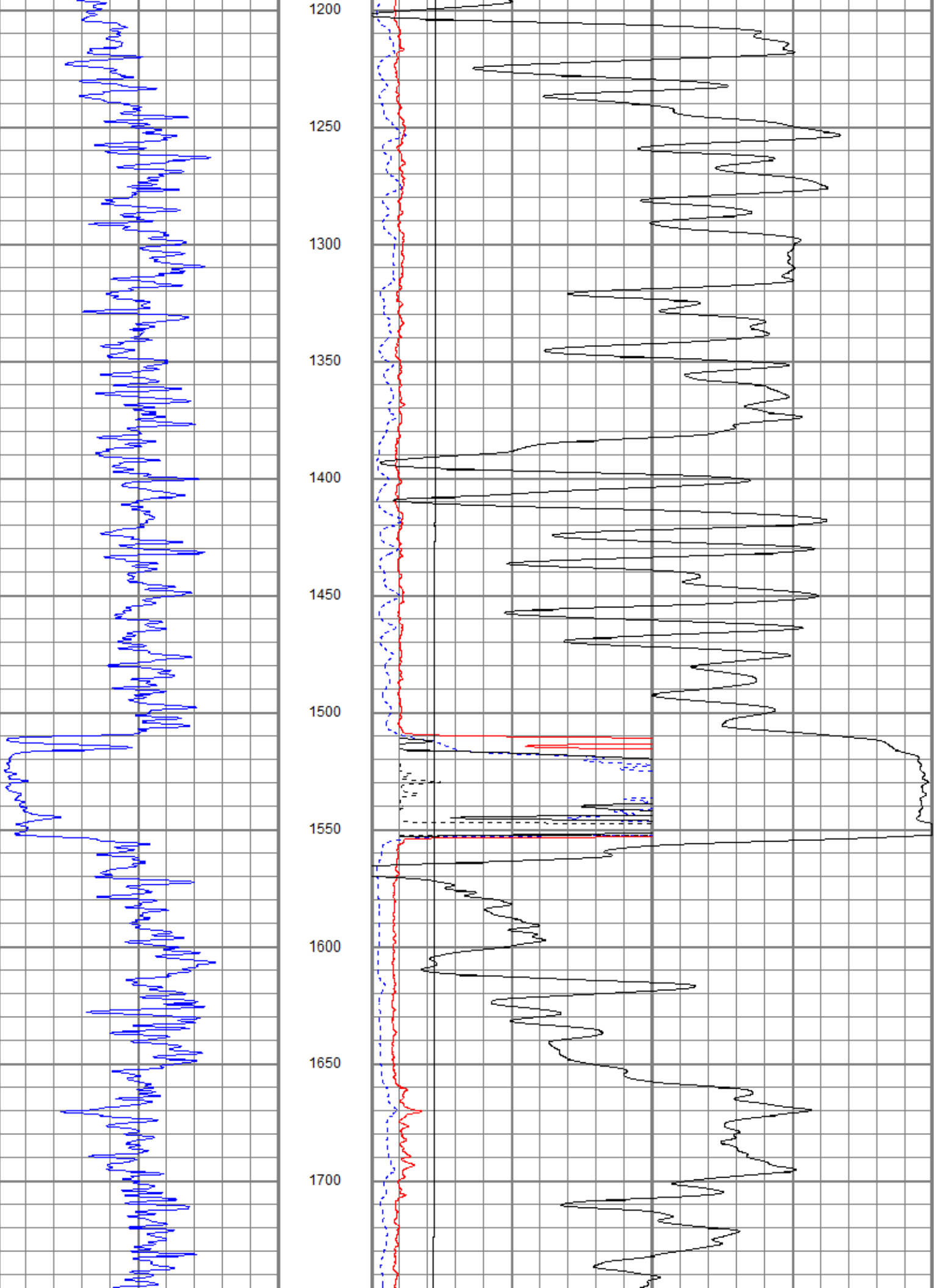
0 RLL3 (Ohm-m) 50

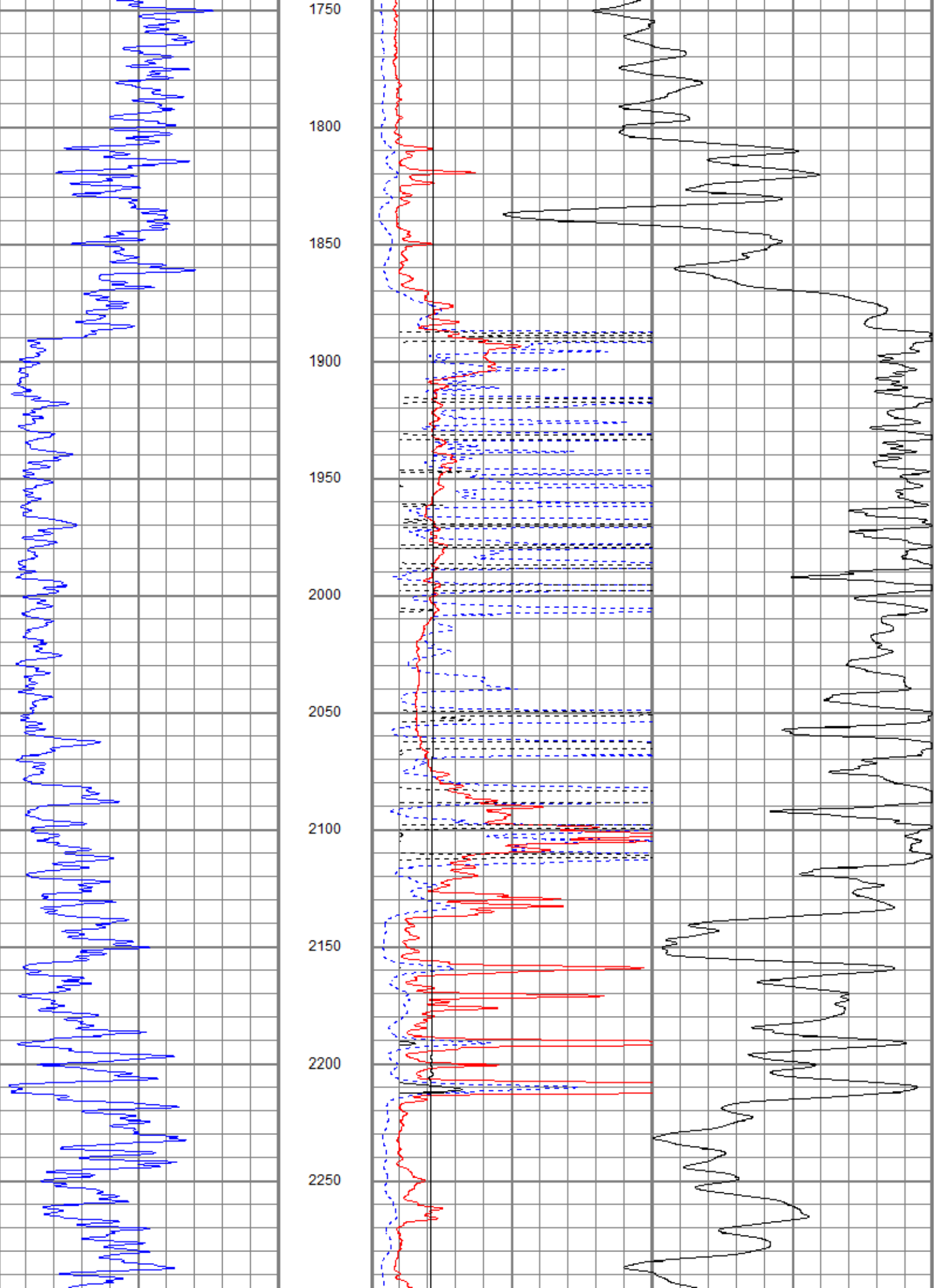
50 RILD x 10 (Ohm-m) 500

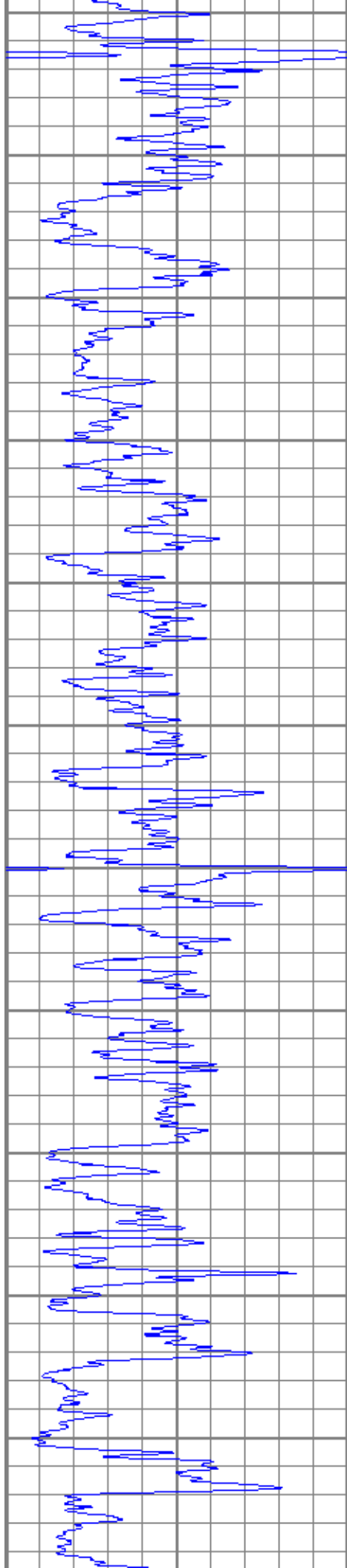
50 RLL3 x 10 (Ohm-m) 500



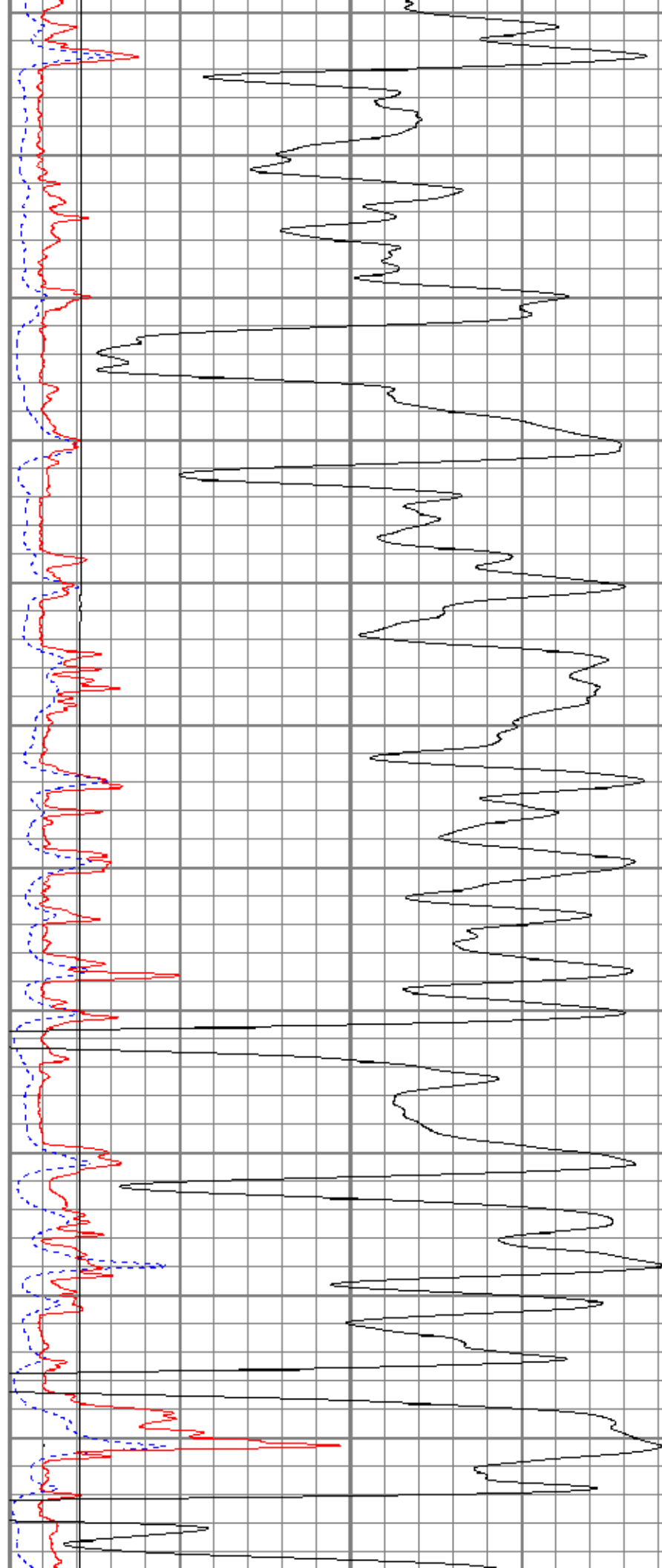


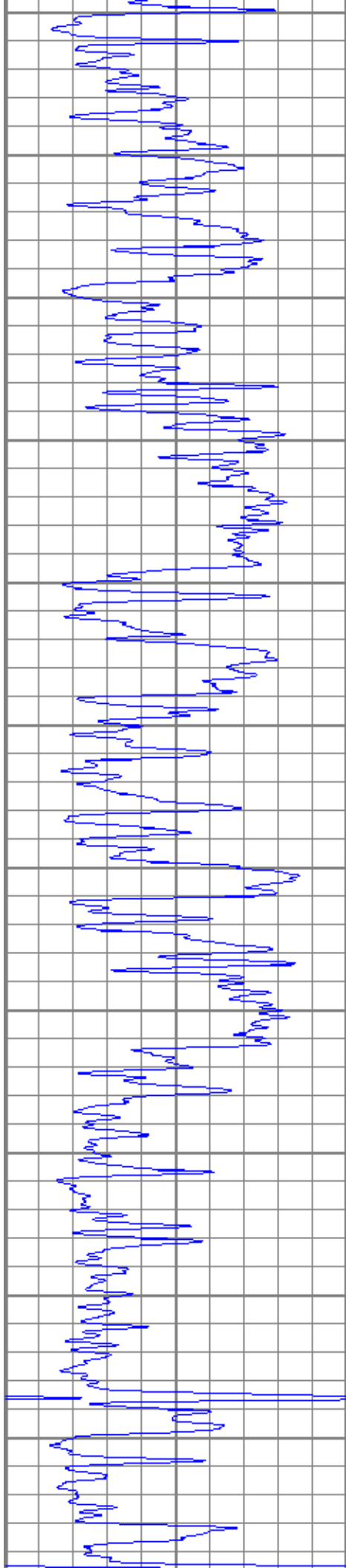




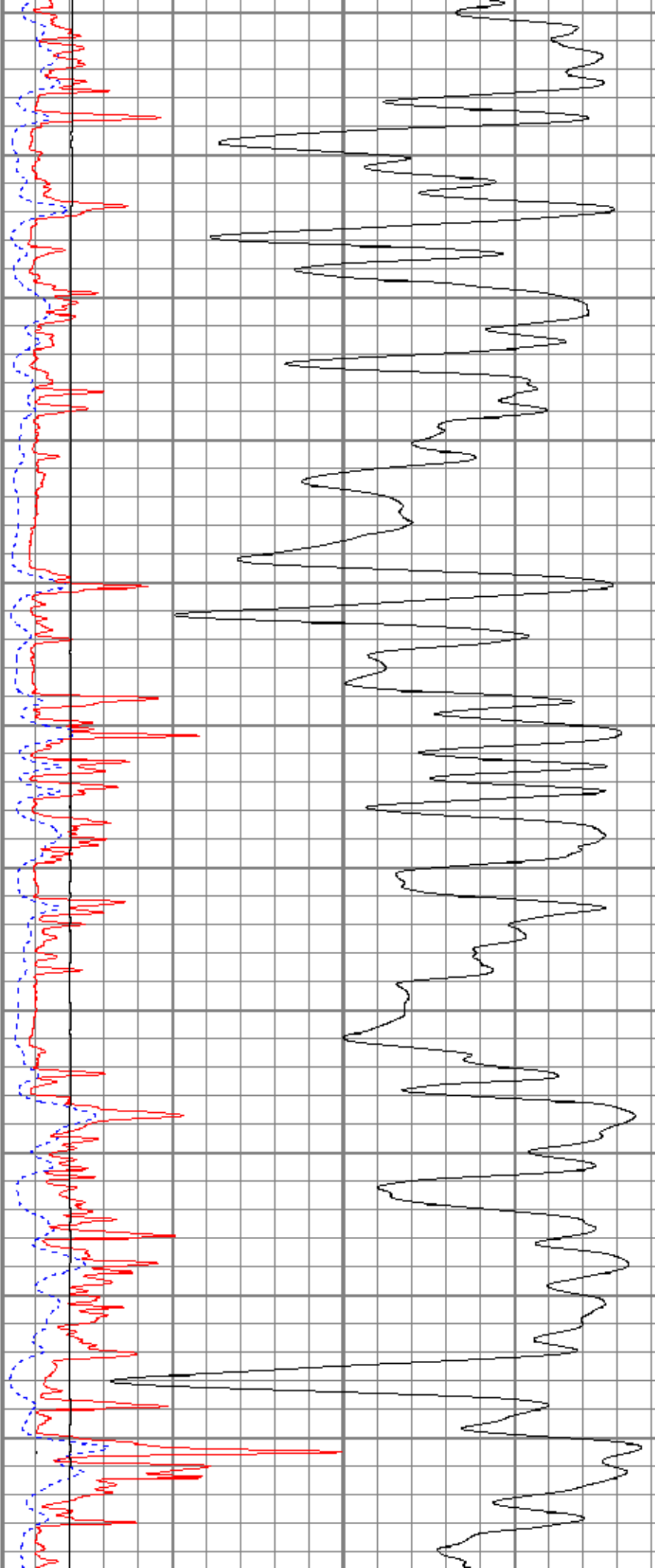


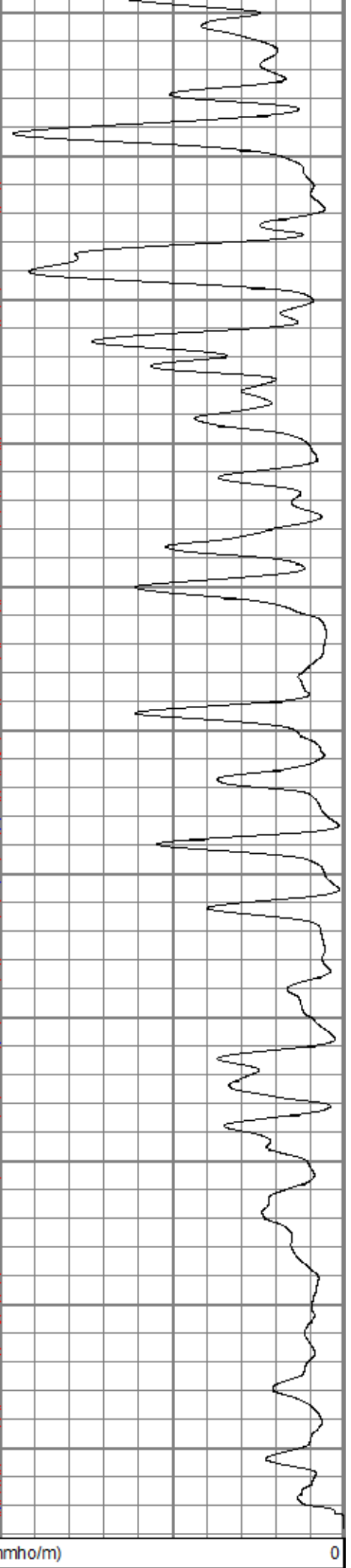
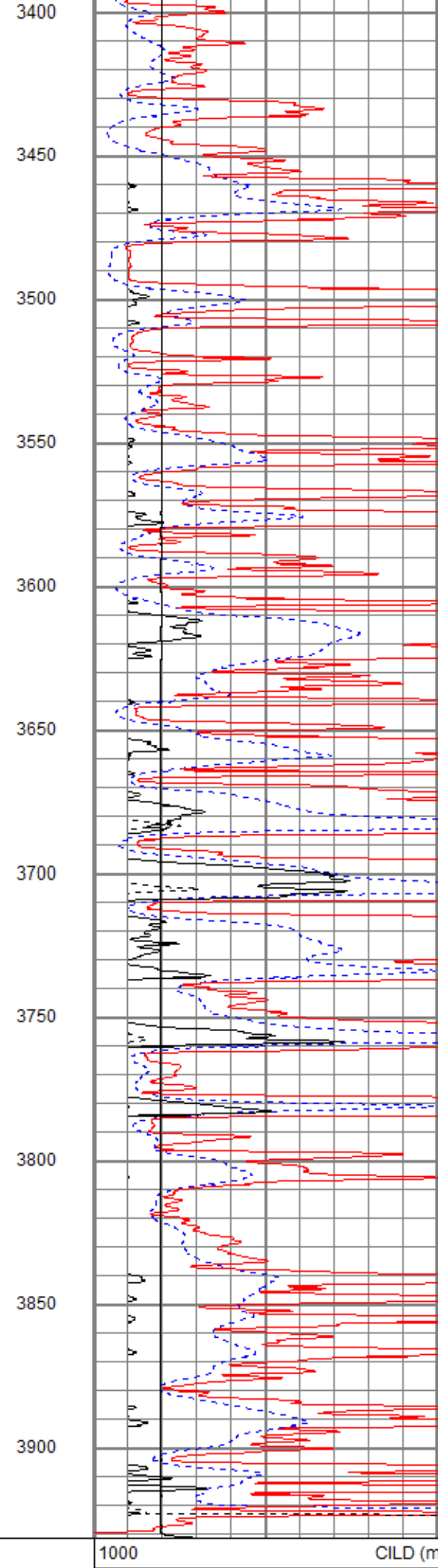
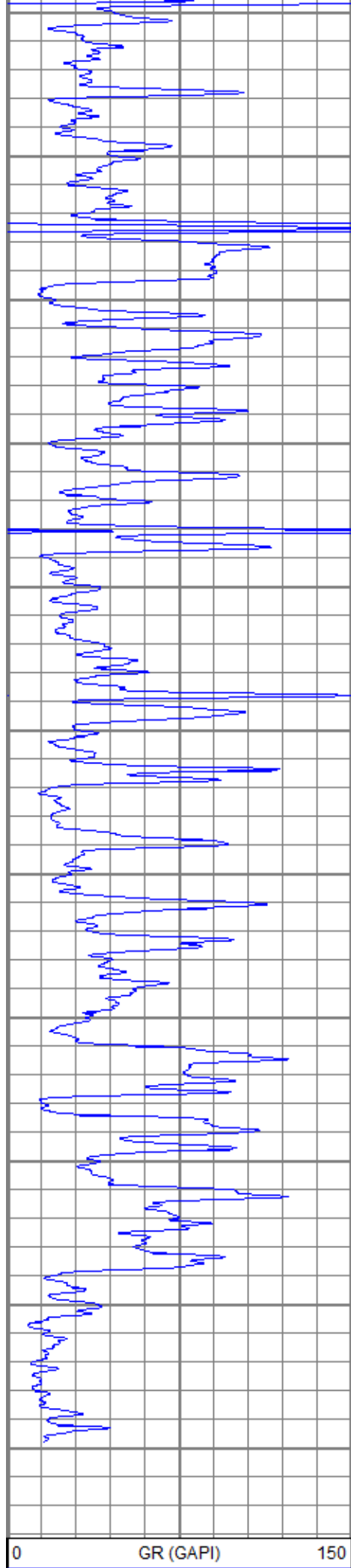
2300  
2350  
2400  
2450  
2500  
2550  
2600  
2650  
2700  
2750  
2800





2850  
2900  
2950  
3000  
3050  
3100  
3150  
3200  
3250  
3300  
3350





|       |                   |           |     |
|-------|-------------------|-----------|-----|
| 10000 |                   | LTEN (lb) | 0   |
| 0     | RILD (Ohm-m)      |           | 50  |
| 0     | RLL3 (Ohm-m)      |           | 50  |
| 50    | RILD x 10 (Ohm-m) |           | 500 |
| 50    | RLL3 x 10 (Ohm-m) |           | 500 |

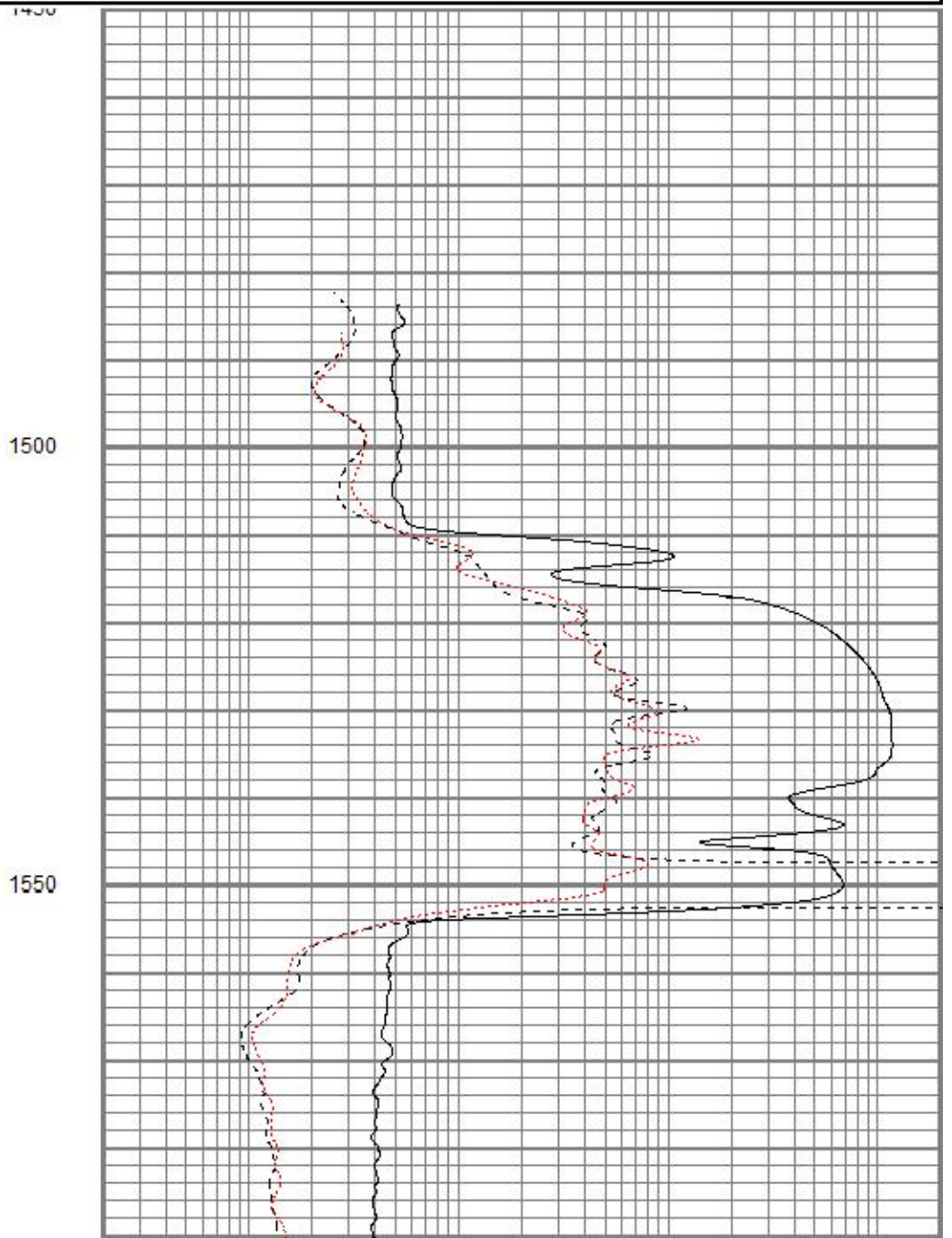
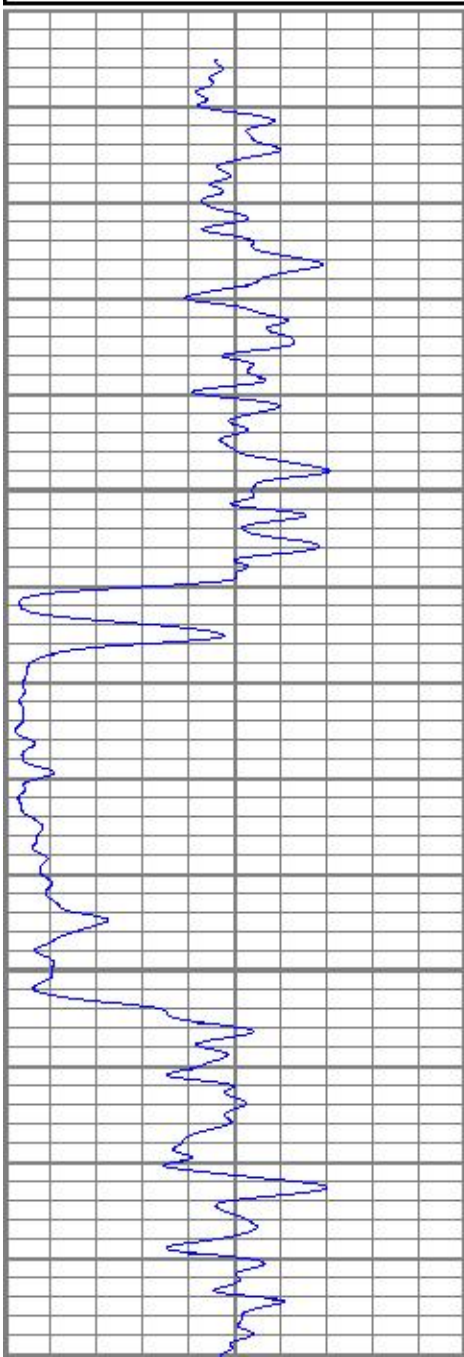


# Main Pass

Database File aoreidel1-32oh.db  
 Dataset Pathname pass32  
 Presentation Format kdil  
 Dataset Creation Sun Feb 18 11:03:50 2018  
 Charted by Depth in Feet scaled 1:240

|     |           |     |
|-----|-----------|-----|
| 0   | GR (GAPI) | 150 |
| 150 | SP (mV)   | 350 |

|     |              |      |
|-----|--------------|------|
| 0.2 | RILD (Ohm-m) | 2000 |
| 0.2 | RLL3 (Ohm-m) | 2000 |
| 0.2 | RILM (Ohm-m) | 2000 |





1600



|     |           |     |
|-----|-----------|-----|
| 0   | GR (GAPI) | 150 |
| 150 | SP (mV)   | 350 |

|     |              |      |
|-----|--------------|------|
| 0.2 | RILD (Ohm-m) | 2000 |
| 0.2 | RLL3 (Ohm-m) | 2000 |
| 0.2 | RILM (Ohm-m) | 2000 |

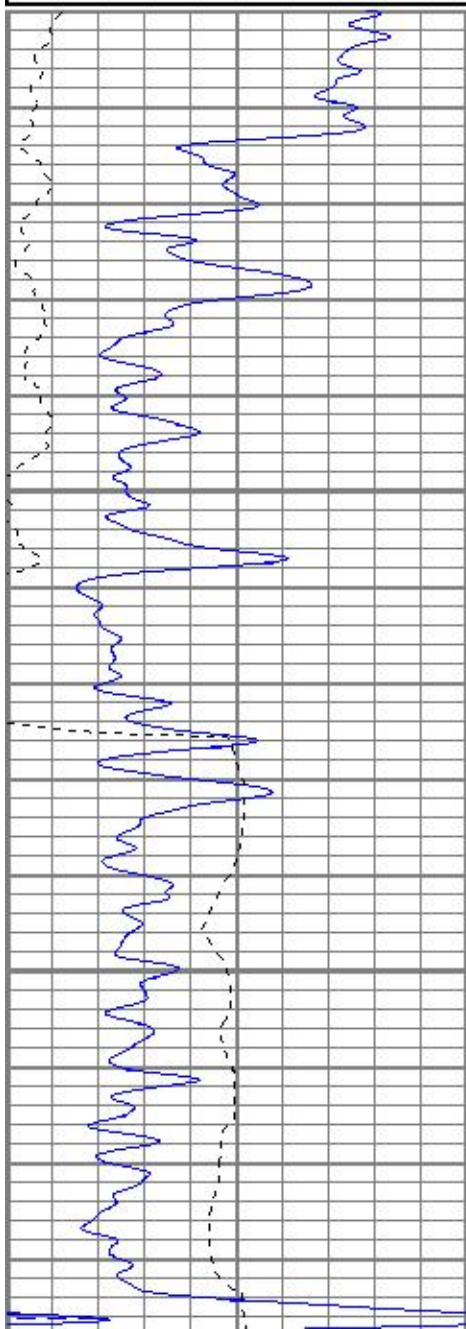


# Main Pass

Database File aoreidel1-32oh.db  
 Dataset Pathname pass32  
 Presentation Format kdil  
 Dataset Creation Sun Feb 18 11:03:50 2018  
 Charted by Depth in Feet scaled 1:240

|     |           |     |
|-----|-----------|-----|
| 0   | GR (GAPI) | 150 |
| 150 | SP (mV)   | 350 |

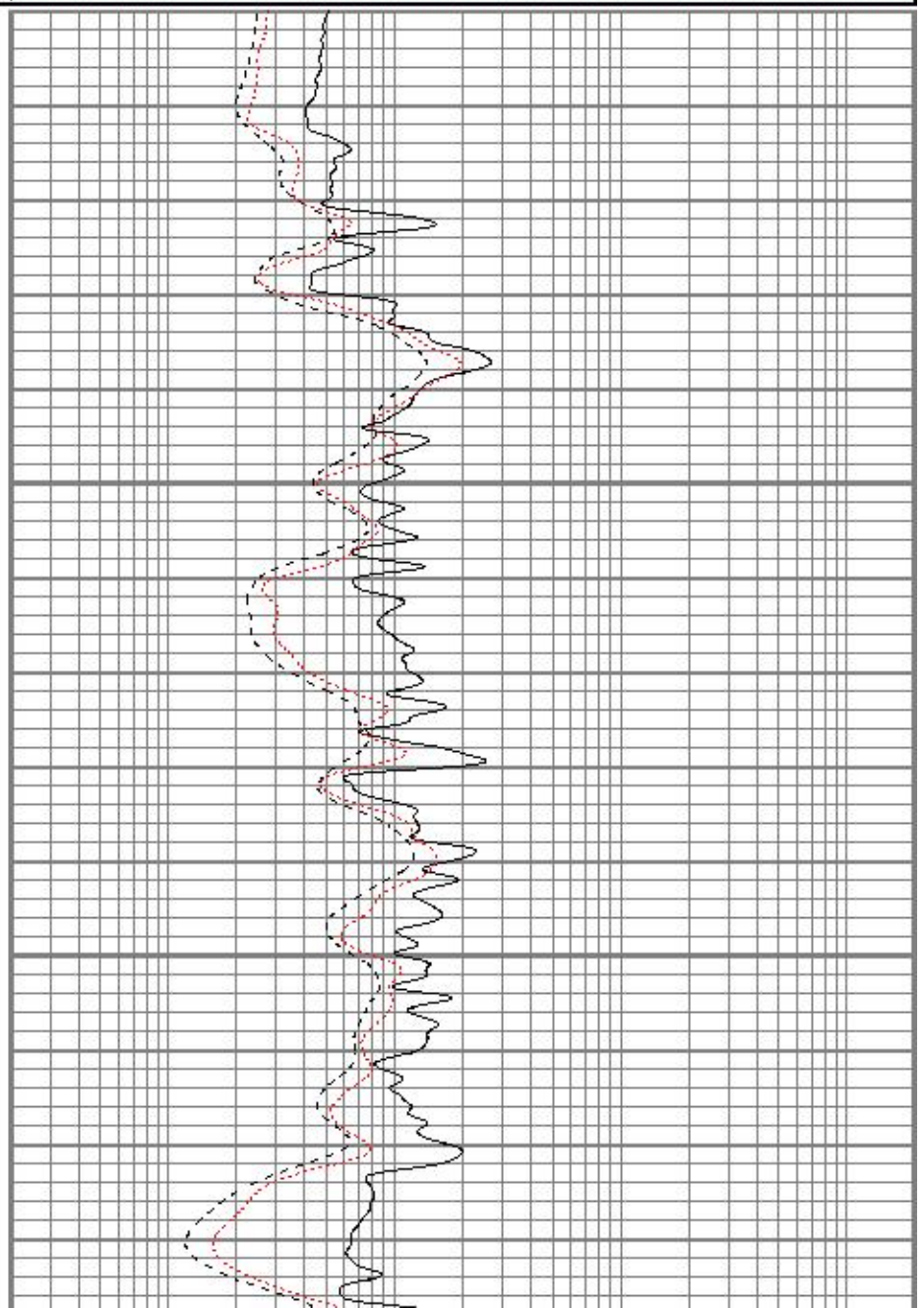
|     |              |      |
|-----|--------------|------|
| 0.2 | RILD (Ohm-m) | 2000 |
| 0.2 | RLL3 (Ohm-m) | 2000 |
| 0.2 | RILM (Ohm-m) | 2000 |

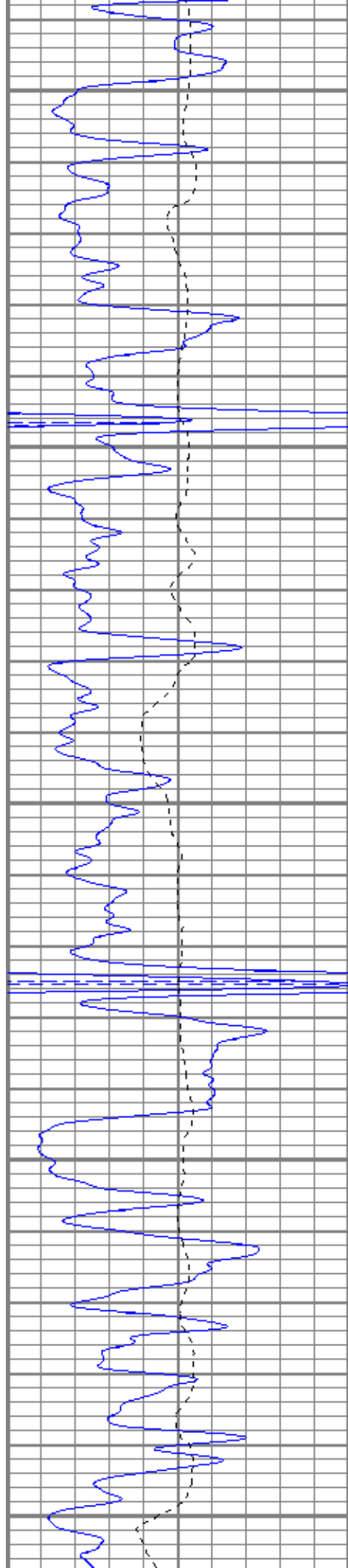


3200

3250

3300





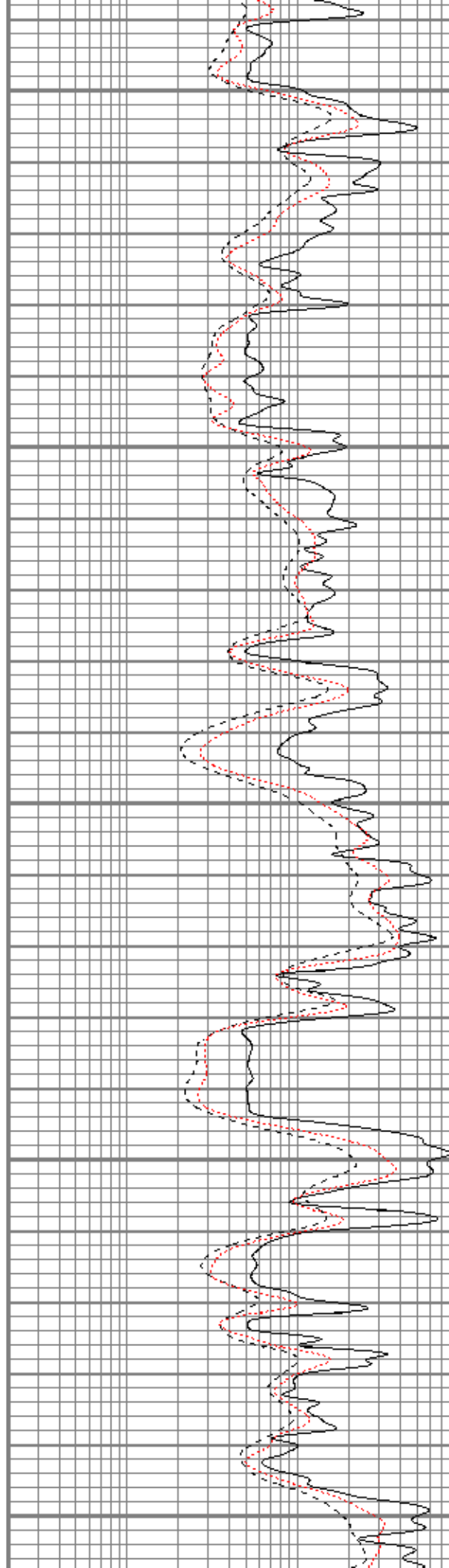
3350

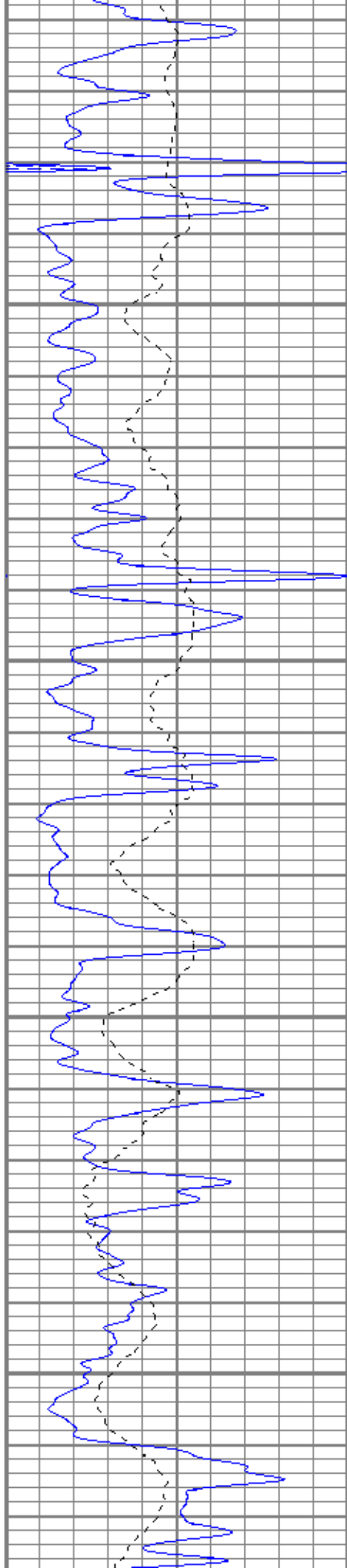
3400

3450

3500

3550



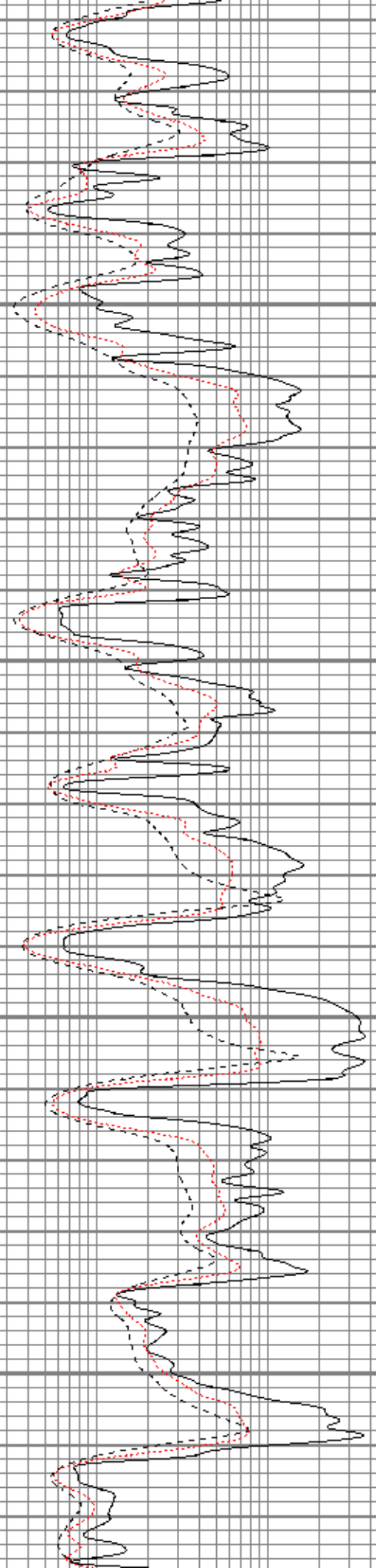


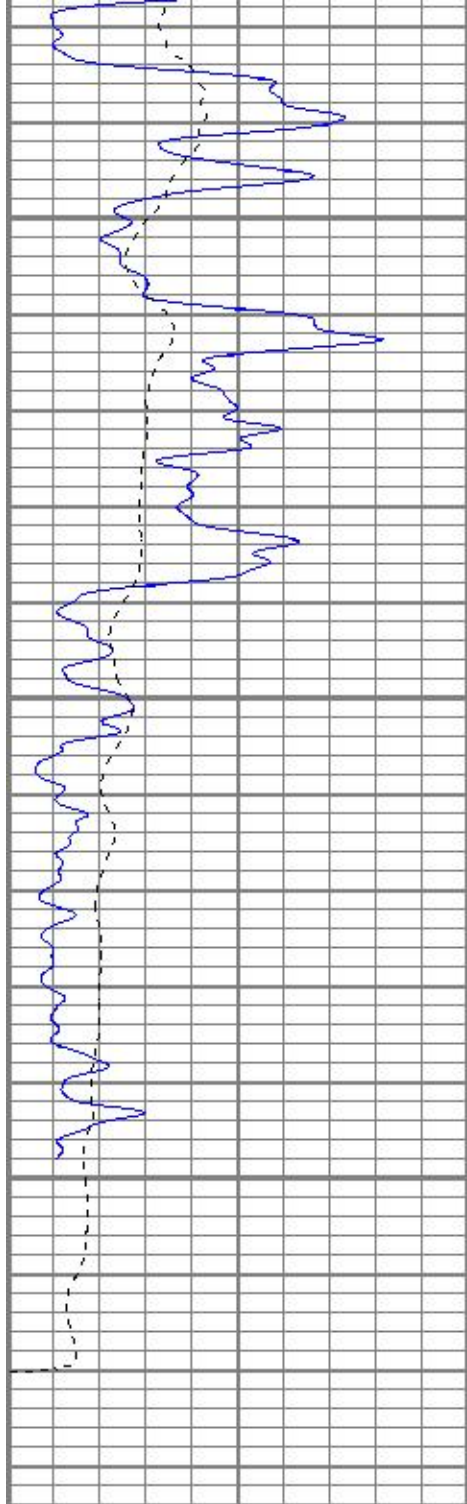
3600

3650

3700

3750



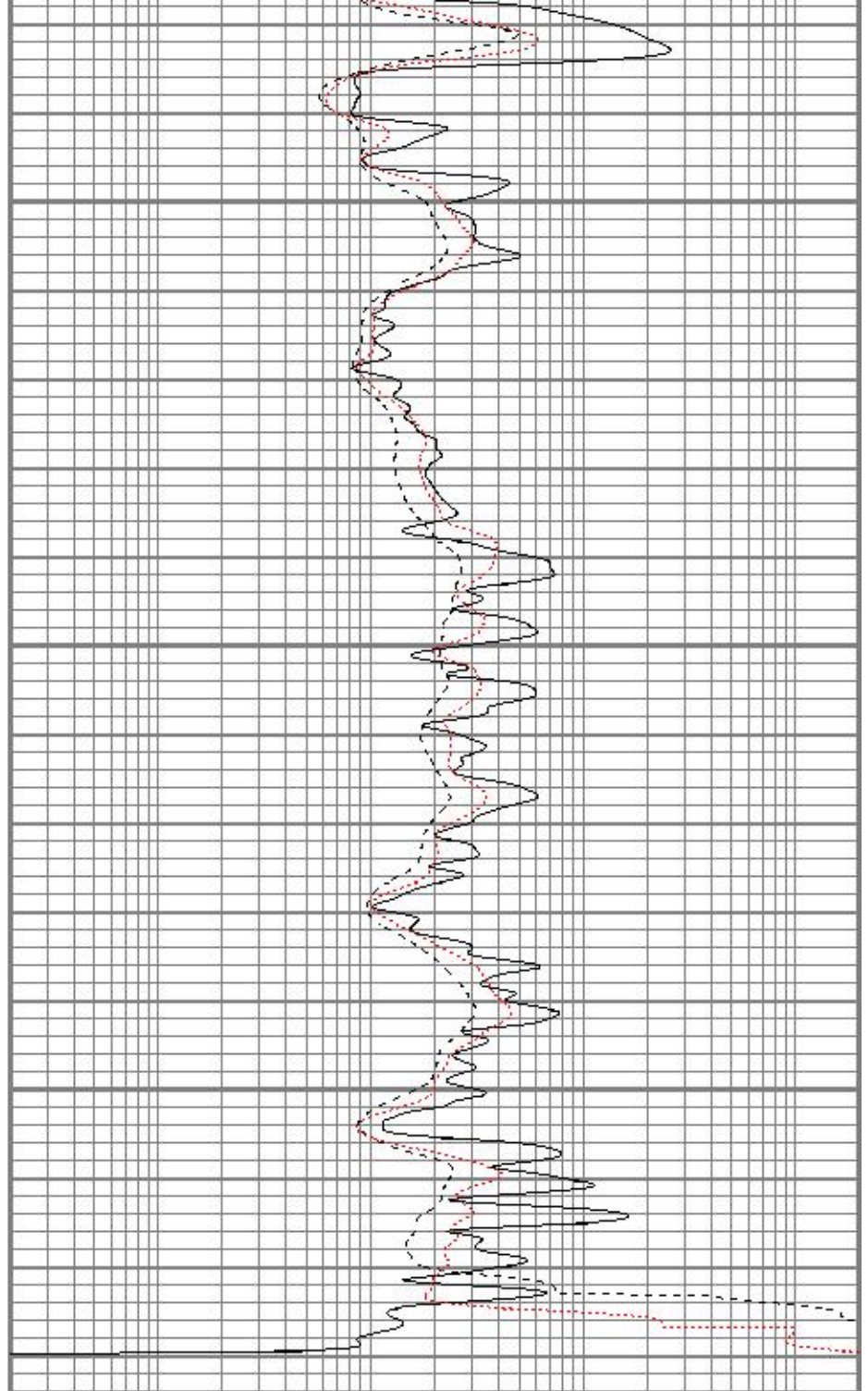


3800

3850

3900

|     |           |     |
|-----|-----------|-----|
| 0   | GR (GAPI) | 150 |
| 150 | SP (mV)   | 350 |



|     |              |      |
|-----|--------------|------|
| 0.2 | RILD (Ohm-m) | 2000 |
| 0.2 | RLL3 (Ohm-m) | 2000 |
| 0.2 | RILM (Ohm-m) | 2000 |



# Repeat Pass

Database File aoreidel1-32oh.db  
 Dataset Pathname pass2.2  
 Presentation Format kdil  
 Dataset Creation Sun Feb 18 11:05:51 2018  
 Charted by Depth in Feet scaled 1:240

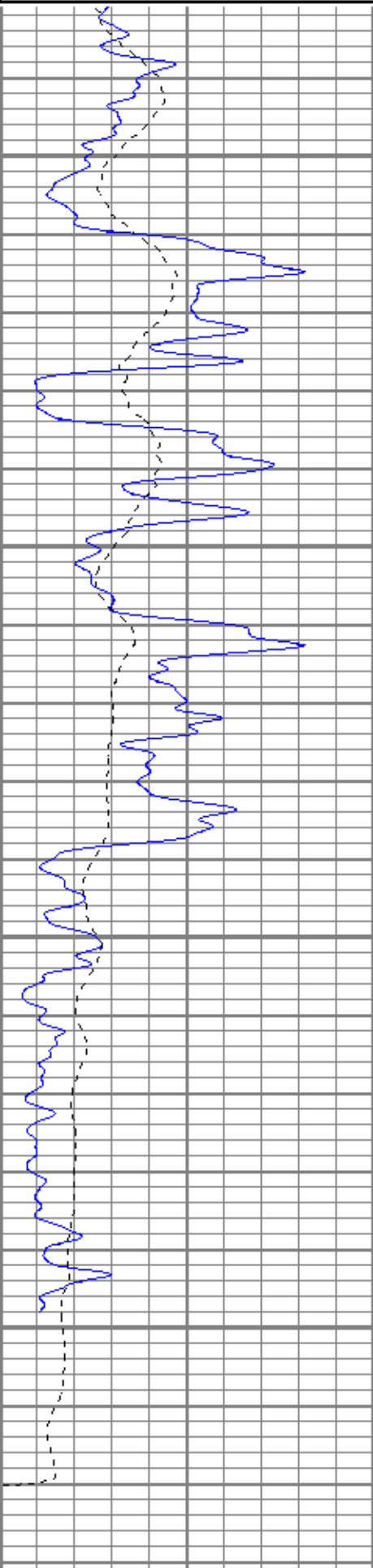
|   |           |     |
|---|-----------|-----|
| 0 | GR (GAPI) | 150 |
|---|-----------|-----|

|     |              |      |
|-----|--------------|------|
| 0.2 | RILD (Ohm-m) | 2000 |
|-----|--------------|------|

150 SP (mV) 350

0.2 RLL3 (Ohm-m) 2000

0.2 RILM (Ohm-m) 2000



0 GR (GAPI) 150  
150 SP (mV) 350

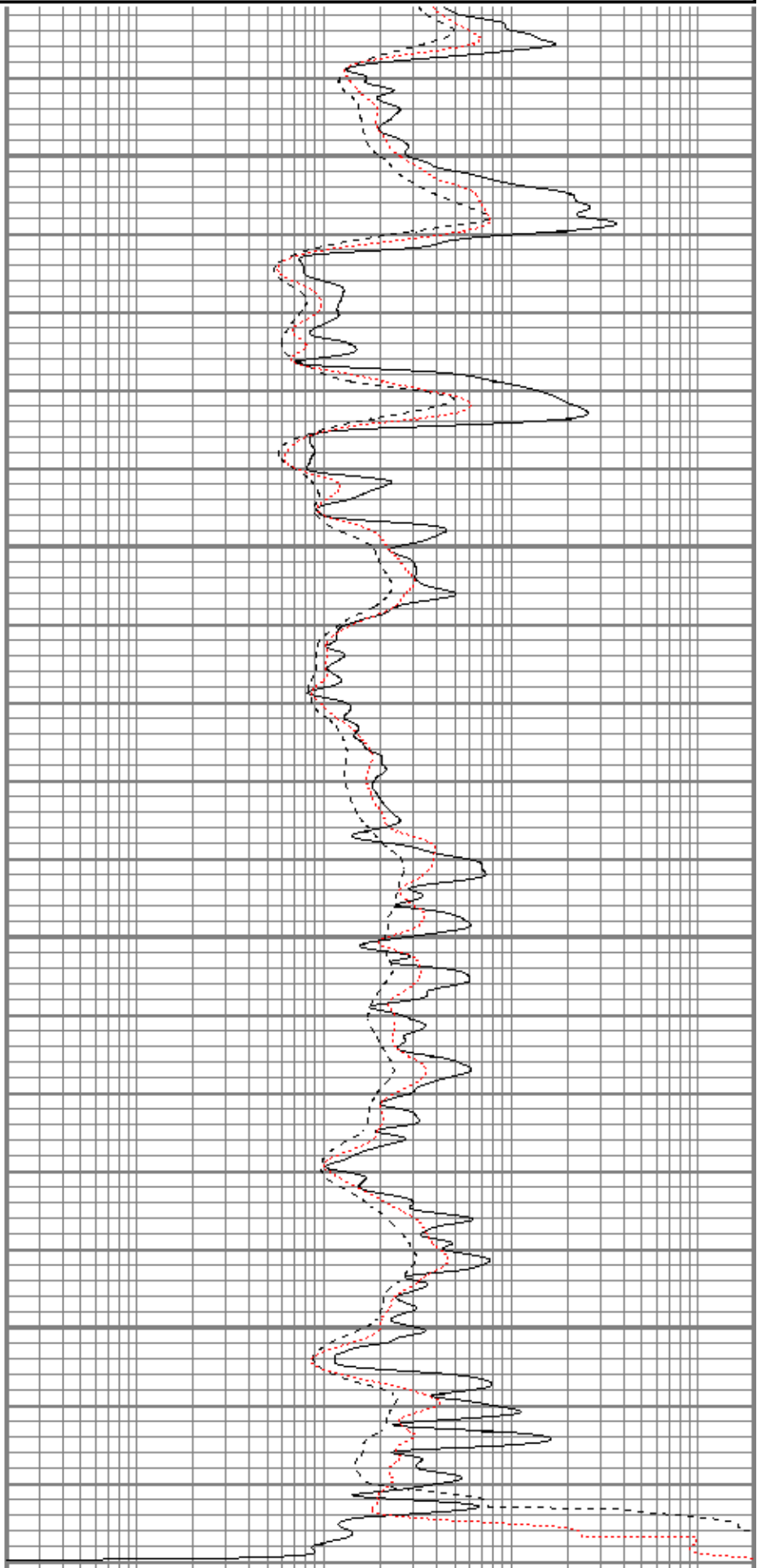
3750

3800

3850

3900

0.2 RILD (Ohm-m) 2000  
0.2 RLL3 (Ohm-m) 2000



0.2 RILD (Ohm-m) 2000  
0.2 RLL3 (Ohm-m) 2000

## Calibration Report

Database File aoreidel1-32oh.db  
 Dataset Pathname pass3.2  
 Dataset Creation Sun Feb 18 12:36:13 2018

## Dual Induction Calibration Report

Serial-Model: 1842-ADM  
 Surface Cal Performed: Sun Feb 18 09:36:23 2018  
 Downhole Cal Performed: Sun Feb 18 09:36:52 2018  
 After Survey Verification Performed: Sun Feb 18 09:36:52 2018

## Surface Calibration

| Loop:     | Readings |       |   |       | References |        |         | Results |   |
|-----------|----------|-------|---|-------|------------|--------|---------|---------|---|
|           | Air      | Loop  |   |       | Air        | Loop   |         | m       | b |
| Deep      | 0.018    | 0.672 | V | 0.000 | 350.000    | mmho/m | 535.475 | -9.896  |   |
| Medium    | 0.003    | 0.769 | V | 0.000 | 400.000    | mmho/m | 522.607 | -1.745  |   |
| Internal: | Zero     | Cal   |   | Zero  | Cal        |        | m       | b       |   |
| Deep      | 0.018    | 0.672 | V | 0.000 | 350.000    | mmho/m | 535.240 | -9.549  |   |
| Medium    | 0.003    | 0.768 | V | 0.000 | 550.000    | mmho/m | 718.637 | -2.088  |   |

## Downhole Calibration

| Internal: | Readings |         |        |         | References |        |         | Results |   |
|-----------|----------|---------|--------|---------|------------|--------|---------|---------|---|
|           | Zero     | Cal     |        |         | Zero       | Cal    |         | m       | b |
| Deep      | -0.219   | 349.905 | mmho/m | -0.343  | 349.810    | mmho/m | 1.000   | -0.124  |   |
| Medium    | -0.118   | 399.722 | mmho/m | -0.226  | 399.745    | mmho/m | 1.000   | -0.108  |   |
| Shallow   | 2.536    | 0.025   | V      | 500.000 | 2.000      | Ohm-m  | 198.330 | -3.043  |   |

## After Survey Verification

| Internal: | Readings |       |        |         | Targets |        |       | Results |    |
|-----------|----------|-------|--------|---------|---------|--------|-------|---------|----|
|           | Zero     | Cal   |        |         | Zero    | Cal    |       | m'      | b' |
| Deep      | 0.000    | 0.000 | mmho/m | -0.219  | 349.905 | mmho/m | 1.000 | -0.124  |    |
| Medium    | 0.000    | 0.000 | mmho/m | -0.118  | 399.722 | mmho/m | 1.000 | -0.108  |    |
| Shallow   | 0.000    | 0.000 | Ohm-m  | 500.000 | 2.000   | Ohm-m  | 1.000 | 0.000   |    |

## Compensated Density Calibration Report

Serial-Model: 2501DHT-DHT  
 Source / Verifier: csv-j12 /  
 Master Calibration Performed: Sun Feb 18 09:53:34 2018  
 Before Survey Verification Performed:  
 After Survey Verification Performed:

## Master Calibration

|                     | Density |      |                             | Far Detector | Near Detector |     |
|---------------------|---------|------|-----------------------------|--------------|---------------|-----|
|                     |         |      |                             |              |               |     |
| Magnesium           | 1.750   | g/cc |                             | 711.36       | 284.22        | cps |
| Aluminum            | 2.660   | g/cc |                             | 133.07       | 180.42        | cps |
| Spine Angle = 74.83 |         |      | Density/Spine Ratio = 0.524 |              |               |     |
|                     | Size    |      |                             | Reading      |               |     |
| Small Ring          | 8.00    | in   |                             | 5979.71      |               |     |
| Large Ring          | 14.00   | in   |                             | 9974.72      |               |     |



## Before Survey Verification

|                           | <u>Target</u> |                      | <u>Measured</u>      |
|---------------------------|---------------|----------------------|----------------------|
|                           |               | g/cc<br>g/cc<br>g/cc | g/cc<br>g/cc<br>g/cc |
| After Survey Verification |               |                      |                      |
|                           | <u>Target</u> |                      | <u>Measured</u>      |
|                           |               | g/cc<br>g/cc<br>g/cc | g/cc<br>g/cc<br>g/cc |

| Gamma Ray Calibration Report |                          |  |          |
|------------------------------|--------------------------|--|----------|
| Serial Number:               | 2000                     |  |          |
| Tool Model:                  | P2000                    |  |          |
| Performed:                   | Sun Feb 18 09:53:39 2018 |  |          |
| Calibrator Value:            | 1.0                      |  | GAPI     |
| Background Reading:          | 0.0                      |  | cps      |
| Calibrator Reading:          | 1.0                      |  | cps      |
| Sensitivity:                 | 0.6500                   |  | GAPI/cps |

| Neutron Calibration Report |                          |  |          |
|----------------------------|--------------------------|--|----------|
| Serial Number:             | 5108                     |  |          |
| Tool Model:                | PROBE                    |  |          |
| Performed:                 | Sun Feb 19 03:21:57 2017 |  |          |
| Calibrator Value:          | 1                        |  | NAPI     |
| Calibrator Reading:        | 1                        |  | cps      |
| Sensitivity:               | 1                        |  | NAPI/cps |

| Sensor                         | Offset (ft)                      | Schematic | Description                                     | Length (ft) | O.D. (in) | Weight (lb) |
|--------------------------------|----------------------------------|-----------|---|-------------|-----------|-------------|
| NEU                            | 36.60                            |           | CHD-None  | 0.75        | 1.50      | 5.00        |
|                                |                                  |           | NEU-PROBE (5108)<br>Probe                       | 4.92        | 3.63      | 85.00       |
| GR                             | 30.81                            |           | GR-P2000 (2000)                                 | 3.67        | 3.25      | 40.00       |
|                                |                                  |           | CDL-DHT (2501DHT)<br>Digital High Temp CDL Tool | 9.69        | 4.00      | 201.00      |
| LSD<br>DCAL<br>SSD<br>HEADVOLT | 22.02<br>21.73<br>21.48<br>19.71 |           |   |             |           |             |
| SP                             | 10.60                            |           |   |             |           |             |

|      |       |   |   |                                  |       |      |        |
|------|-------|---|---|----------------------------------|-------|------|--------|
| CILD | 10.60 |  |  | DIL-ADM (1842)<br>Dual Induction | 19.71 | 4.00 | 300.00 |
| CILM | 6.89  |   |   |                                  |       |      |        |
| RLL3 | 1.70  |   |   |                                  |       |      |        |

Dataset: aoreidel1-32oh.db: field/well/run1/pass3.2  
 Total length: 38.73 ft  
 Total weight: 631.00 lb  
 O.D.: 4.00 in