



MIDWEST WIRELINE

DUAL INDUCTION LOG

Company The Bill Bowman Oil Company
 Well Clark B #2
 Field Hoxie East
 County Sheridan State Kansas

Company The Bill Bowman Oil Company
 Well Clark B #2
 Field Hoxie East
 County Sheridan
 State Kansas

Location: API #: 15-179-21469-00-00
 2400' FNL & 740' FEL
 SEC 31 TWP 8S RGE 28W
 Permanent Datum Ground Level Elevation 2739'
 Log Measured From Kelly Bushing
 Drilling Measured From Kelly Bushing
 Other Services
 CNL/CDL
 MEL
 Elevation
 K.B. 2744'
 D.F. N/A
 G.L. 2739'

| | |
|------------------------|---------------|
| Date | 9/20/2020 |
| Run Number | One |
| Depth Driller | 4126' |
| Depth Logger | 4124' |
| Bottom Logged Interval | 4123' |
| Top Log Interval | 200' |
| Casing Driller | 8.625" @ 219' |
| Casing Logger | 219' |
| Bit Size | 7.875" |
| Type Fluid in Hole | Chemical |
| Salinity, ppm CL | 800 |
| Density / Viscosity | 8.7 41 |
| pH / Fluid Loss | 9.5 6.0 |
| Source of Sample | FLOWLINE |
| Rm @ Meas. Temp | 0.60 @ 70 |
| Rmt @ Meas. Temp | 0.45 @ 70 |
| Rmc @ Meas. Temp | 0.81 @ 70 |
| Source of Rmf / Rmc | CHARTS |
| Rm @ BHT | 0.36 @ 117 |
| Operating Rig Time | 3 Hours |
| Max Rec. Temp. F | 117 |
| Equipment Number | P-24 |
| Location | HAYS |
| Recorded By | D. Schmidt |
| Witnessed By | Jerry Green |

<<< Fold Here >>>

All interpretations are opinions based on inferences from electrical or other measurements and Midwest Wireline LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Midwest Wireline LLC will not 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.

Comments

N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.

Hoxie,
 3 South to 30 Rd, 1 3/4 West,
 South and West to location

Log Measured From: Kelly Bushing 5 Ft. Above Permanent Datum

THANK YOU FOR USING MIDWEST WIRELINE LLC
 785-625-3858

| | |
|---|--|
| Your Midwest Wireline Crew Engineer: D. Schmidt Operator: Operator: Operator: | This Log Record Was Witnessed By Primary Witness: Jerry Green Secondary Witness: Secondary Witness: Secondary Witness: |
|---|--|

| | | | | | | |
|------|-------------|-------|-------------|-------------|-----------|-------------|
| Case | Offset (ft) | Depth | Description | Length (ft) | O.D. (in) | Weight (lb) |
|------|-------------|-------|-------------|-------------|-----------|-------------|

| Sensor | Offset (ft) | Schematic | Description | Length (ft) | O.D. (in) | Weight (lb) |
|--------------------|-------------------------|-----------|--|-------------|-----------|-------------|
| GR | 40.58 | | GR-M&W (233-M&W) | 3.00 | 3.50 | 50.00 |
| CNLSC CNSSC | 37.48 36.73 | | CNT-M&W (207-MW) | 5.50 | 3.50 | 100.00 |
| LSD DCAL SSD | 28.43 28.42 27.93 | | CDL-M&W (817-947) | 8.50 | 4.00 | 250.00 |
| MCAL MI MN | 19.83 19.83 19.83 | | ML-PSIML (PSI-01) GO Micro log tools converted to Simplec electronics | 7.58 | 4.00 | 65.00 |
| RLL3F RLL3 | 15.80 15.80 | | | | | |
| CILD | 8.00 | | DIL-PSI HIGH TEMP (952-828) | 18.50 | 3.50 | 220.00 |
| CILM | 4.70 | | | | | |
| SP | 0.20 | | | | | |

Dataset: bowman_clark b 2.db: field/well/STKML/pass3.4
 Total length: 43.08 ft
 Total weight: 685.00 lb
 O.D.: 4.00 in

Log Variables

DatabaseC:\ProgramData\Warrior\Data\bowman_clark b 2.db
 Dataset field/well/STKML/pass3.4/_vars_

Top - Bottom

| | | | | | | | |
|-----------|--------------|------------------|-------------------|----------------|------------------|-------|------------------|
| A | BOREID in | BOTTEMP degF | CASEOD in | CASETHCK in | FLUIDDEN g/cc | M | MATRXDEN g/cc |
| 1 | 7.875 | 100 | 5.5 | 0 | 1 | 2 | 2.71 |
| NPORSEL | PERFS | SNDERR mmho/m | SNDERRM mmho/m | SPSHIFT mV | SRFTEMP degF | SZCOR | TDEPTH ft |
| Limestone | 0 | 0 | 0 | 235 | 0 | Off | 0 |

Variable Description

A : Cement Factor (a)
 BOREID : Borehole I.D.
 BOTTEMP : Bottom Hole Temperature
 CASEOD : Casing O.D.
 CASETHCK : Casing Thickness
 FLUIDDEN : Fluid Density
 M : Cement Exp (m)
 MATRXDEN : Matrix Density

NPORSEL : Neutron Porosity Curve Select
 PERFS : Perforation Flag
 SNDERR : Deep Sonde Error Correction
 SNDERRM : Medium Sonde Error Correction
 SPSHIFT : S.P. Baseline Offset
 SRFTEMP : Surface Temperature
 SZCOR : CN Size Cor. ?
 TDEPTH : Total Depth

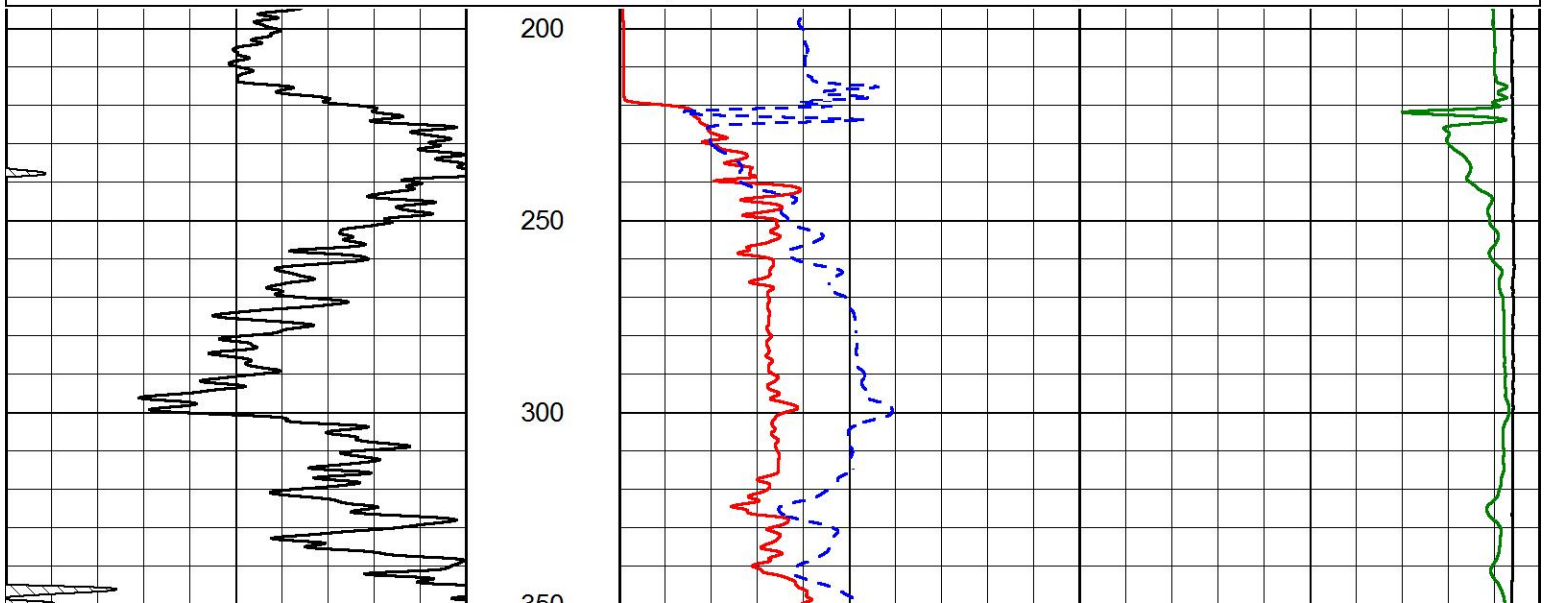


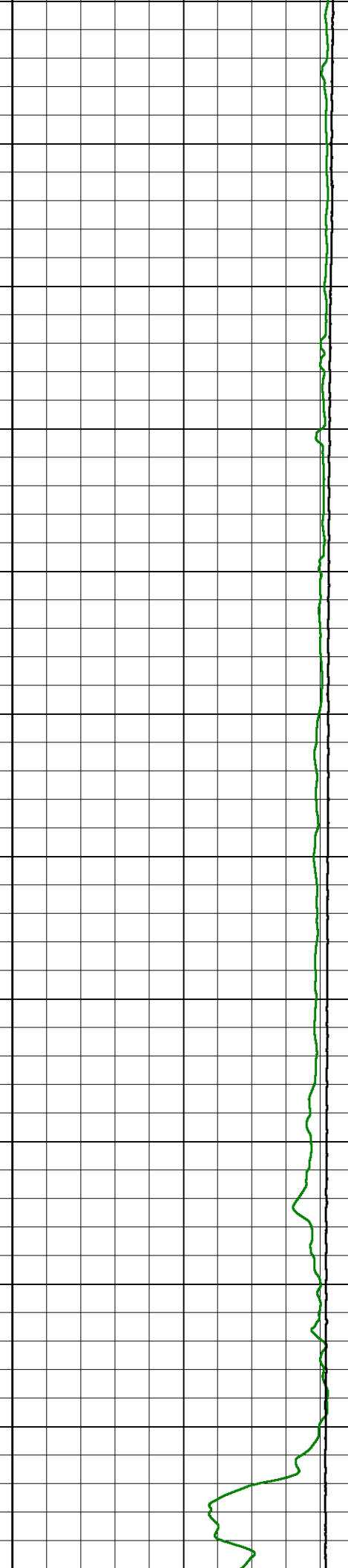
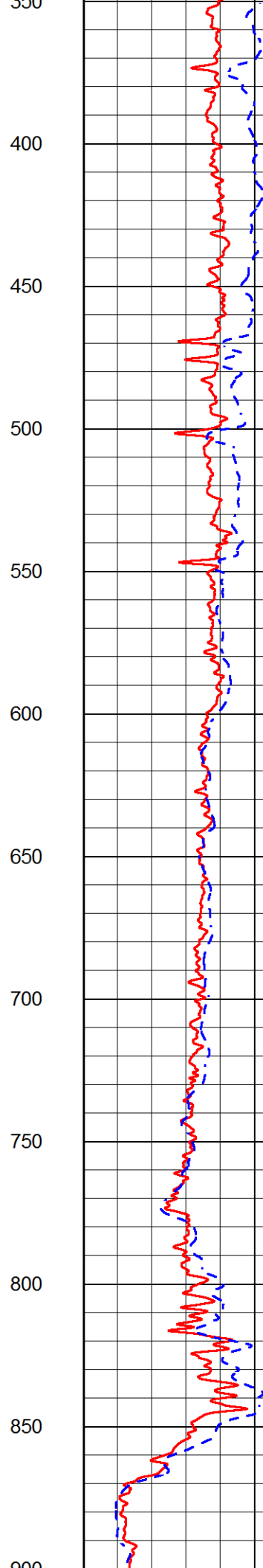
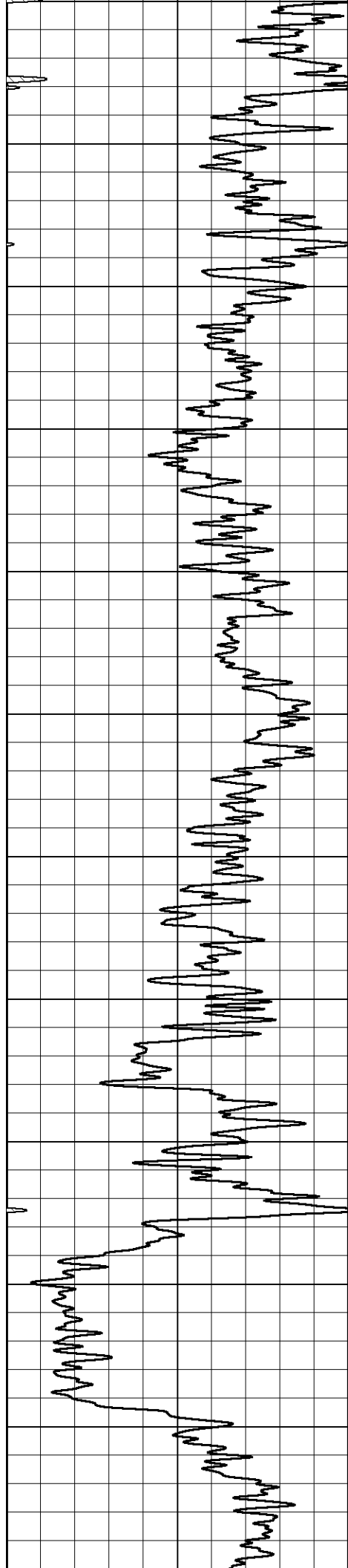
MIDWEST WIRELINE

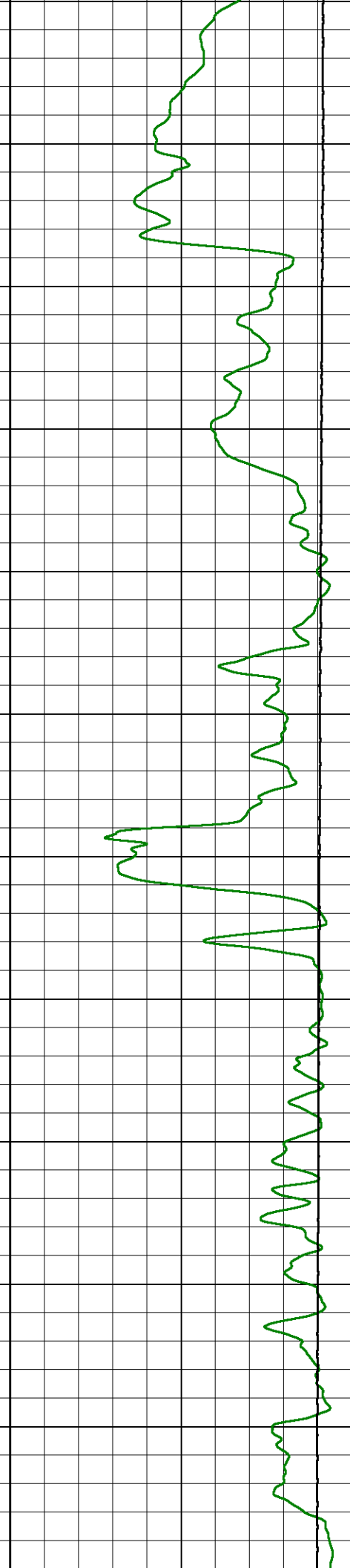
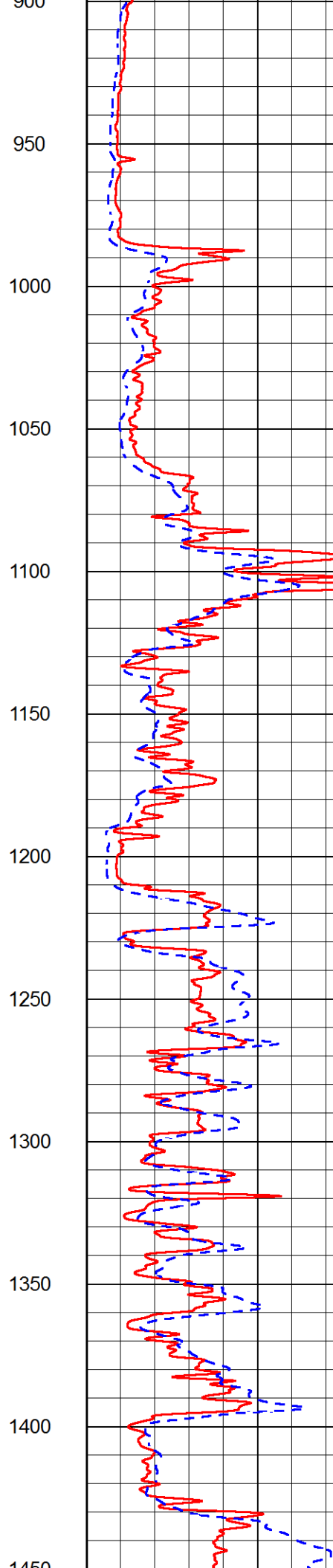
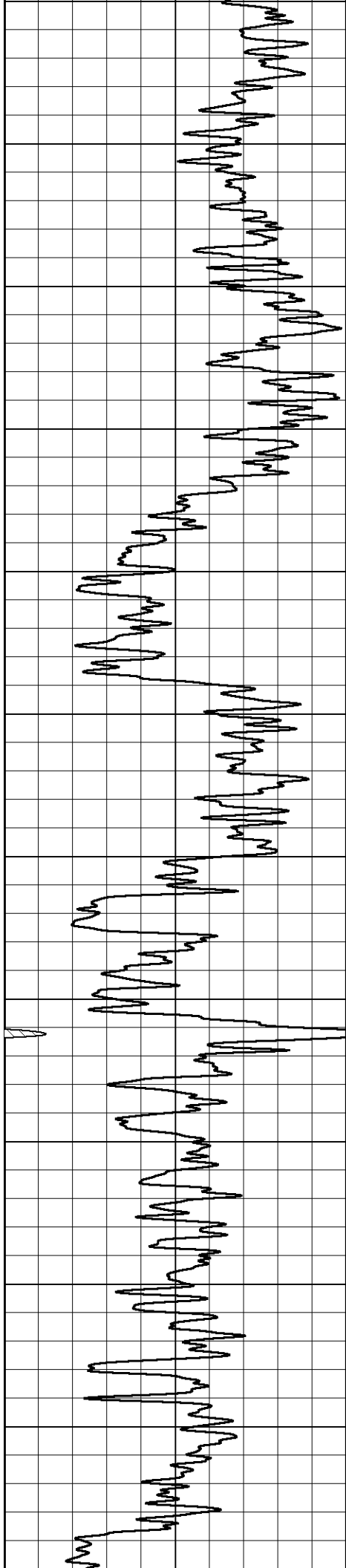
MAIN PASS

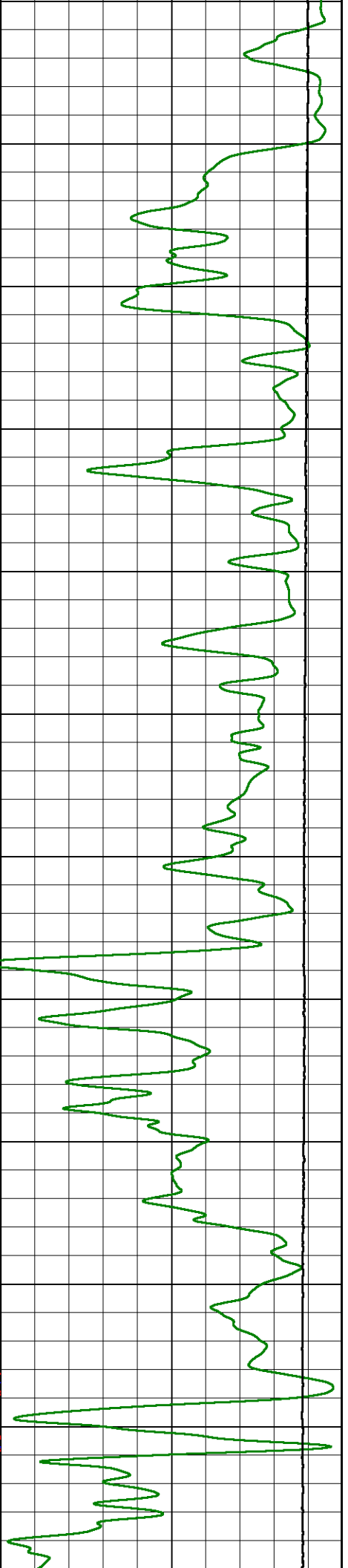
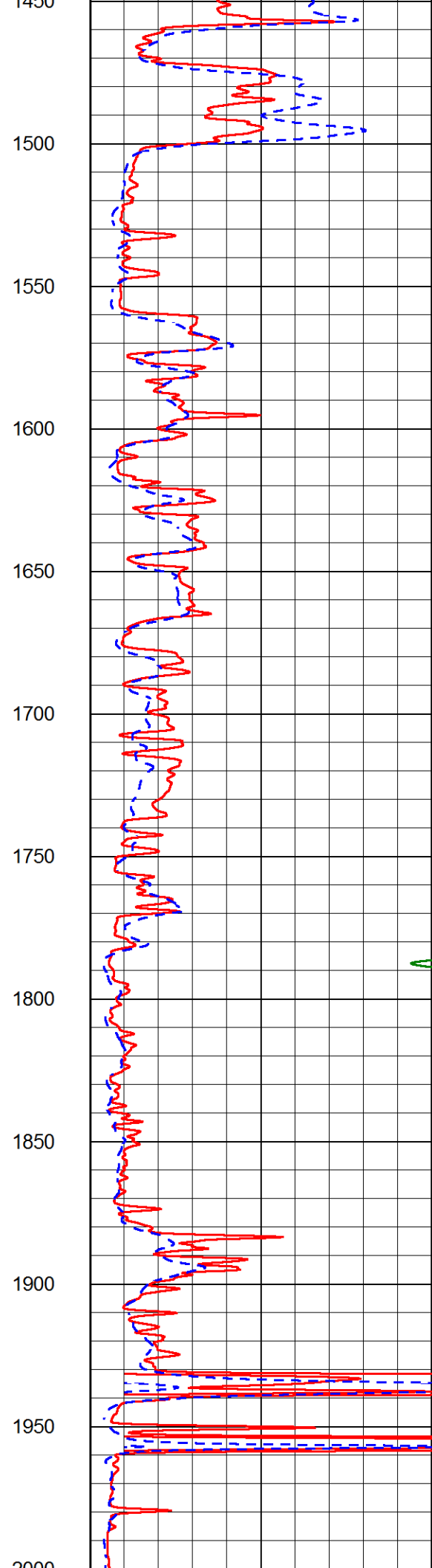
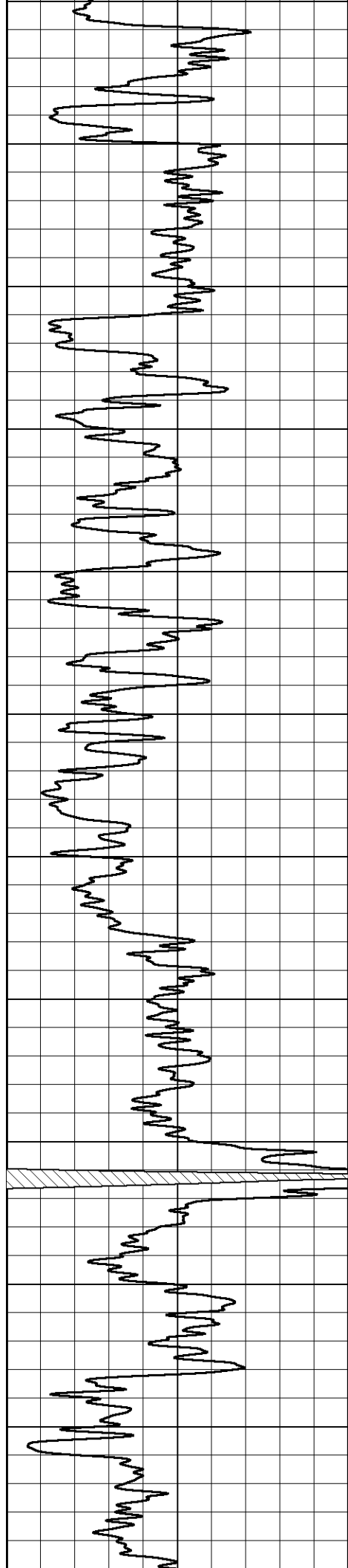
Database File bowman_clark b 2.db
 Dataset Pathname STKML/pass4.1
 Presentation Format _dil2in
 Dataset Creation Sun Sep 20 23:26:29 2020
 Charted by Depth in Feet scaled 1:600

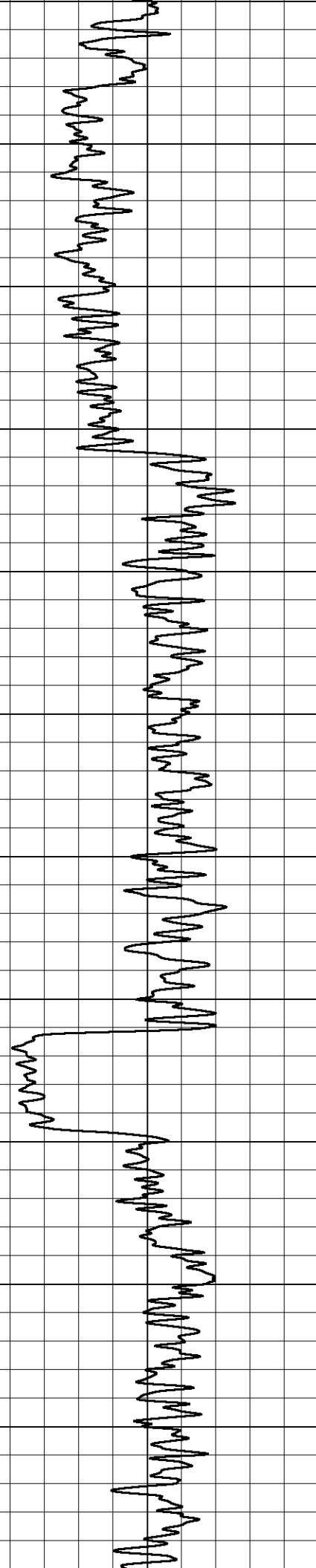
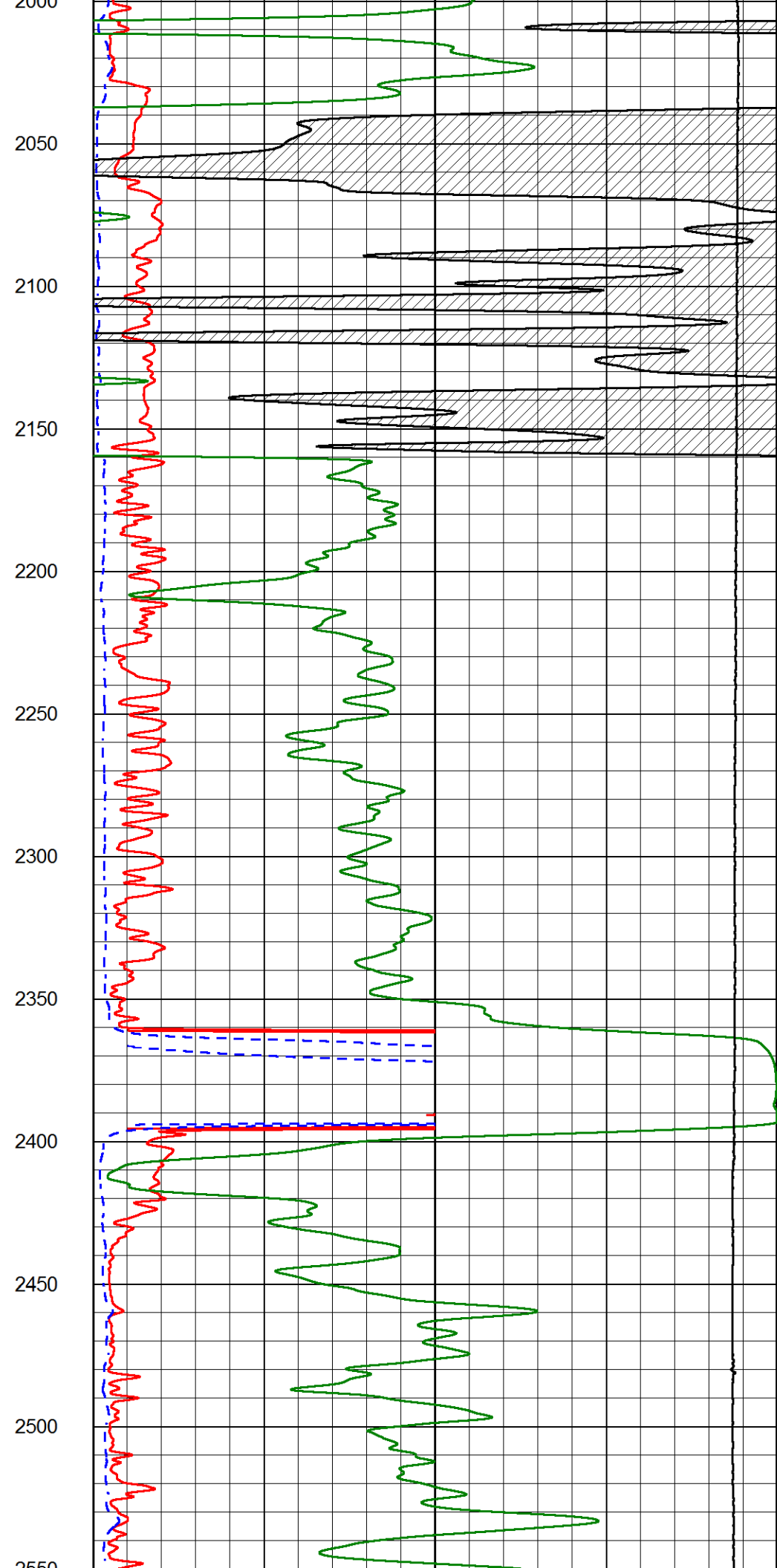
| | | | |
|---------------------|-------|--------------------------|-----|
| GAMMA RAY (GAPI) | 1000 | CONDUCTIVITY (mmho/m) | 0 |
| | 15000 | Line Tension (lb) | 0 |
| | 0 | RLL3 (Ohm-m) | 50 |
| | 0 | RILD (Ohm-m) | 50 |
| | 50 | RLL3 (Ohm-m) | 200 |
| | 50 | Deep Resistivity (Ohm-m) | 200 |

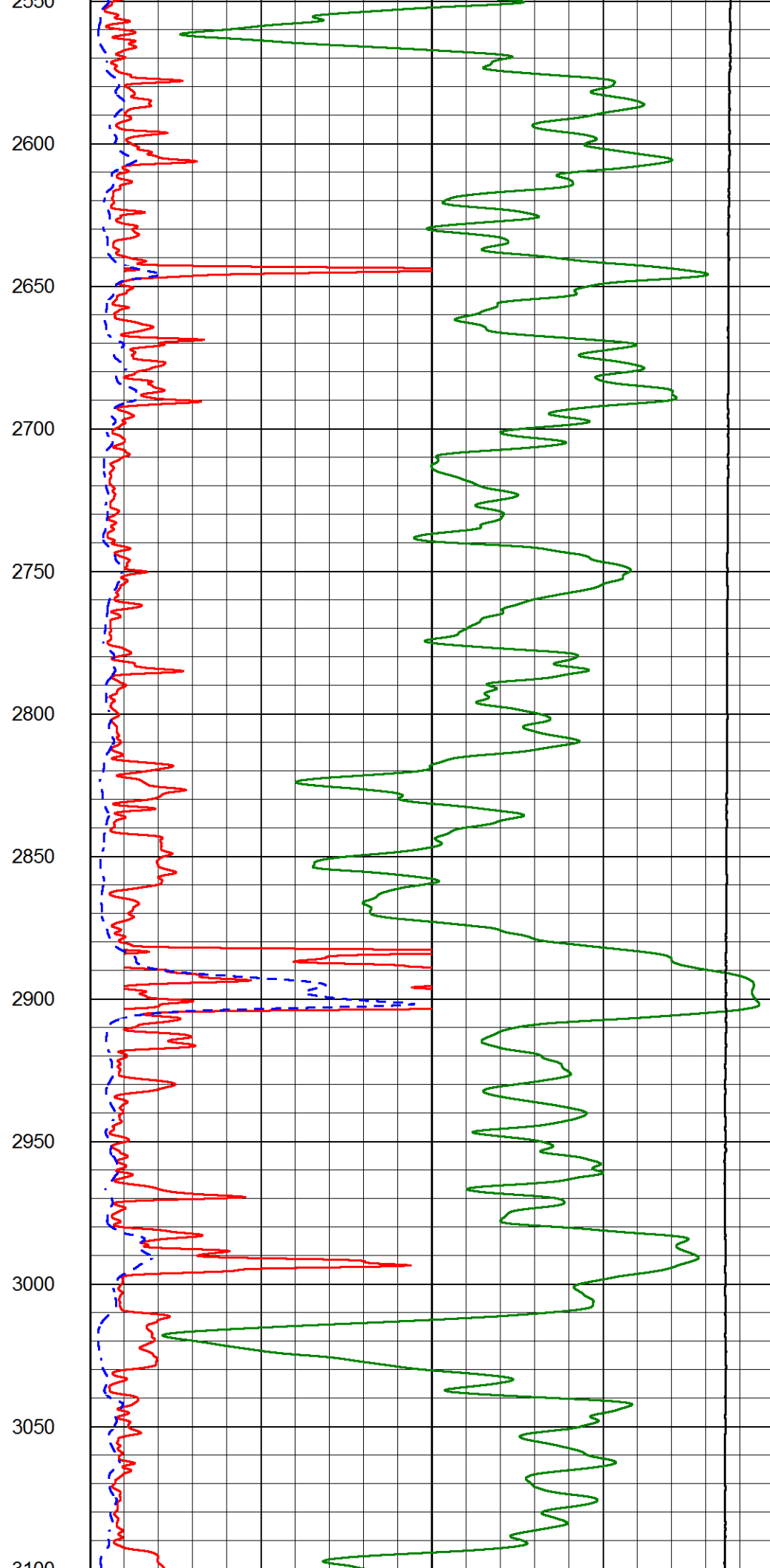
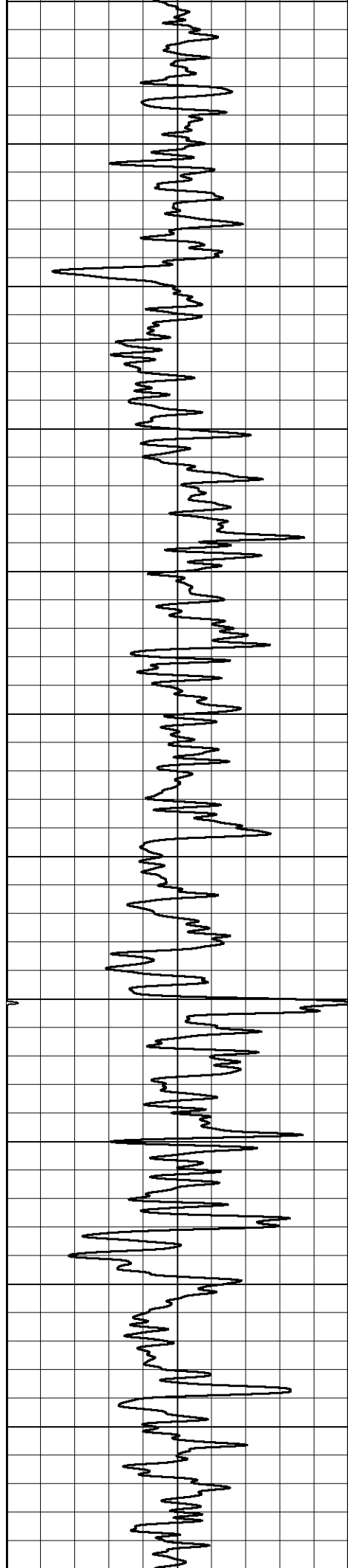


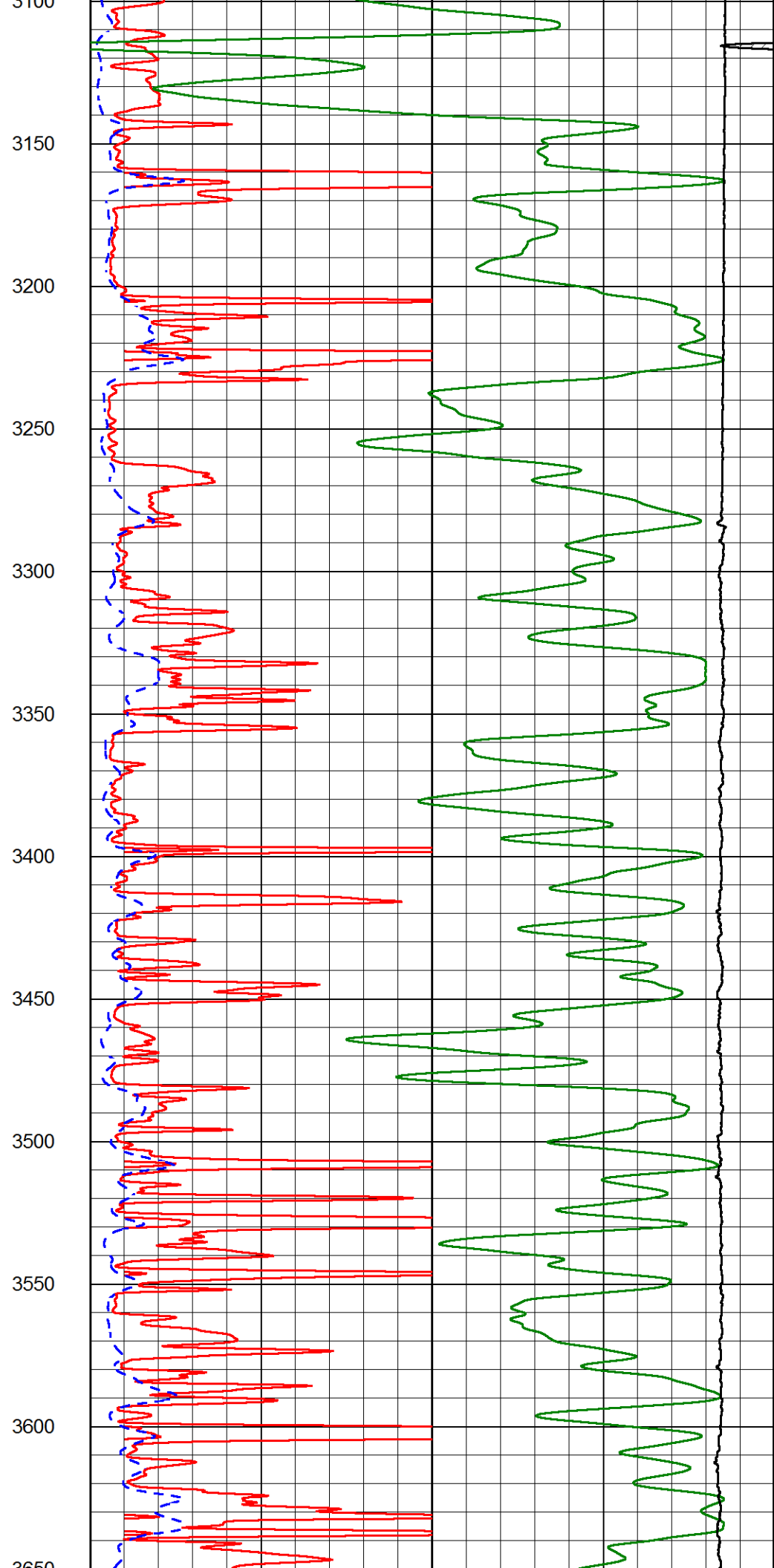
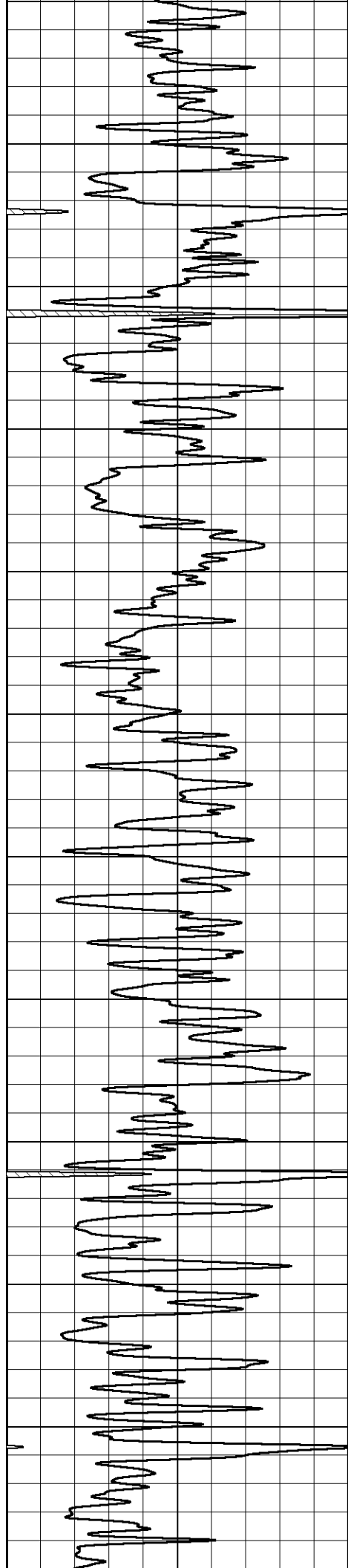


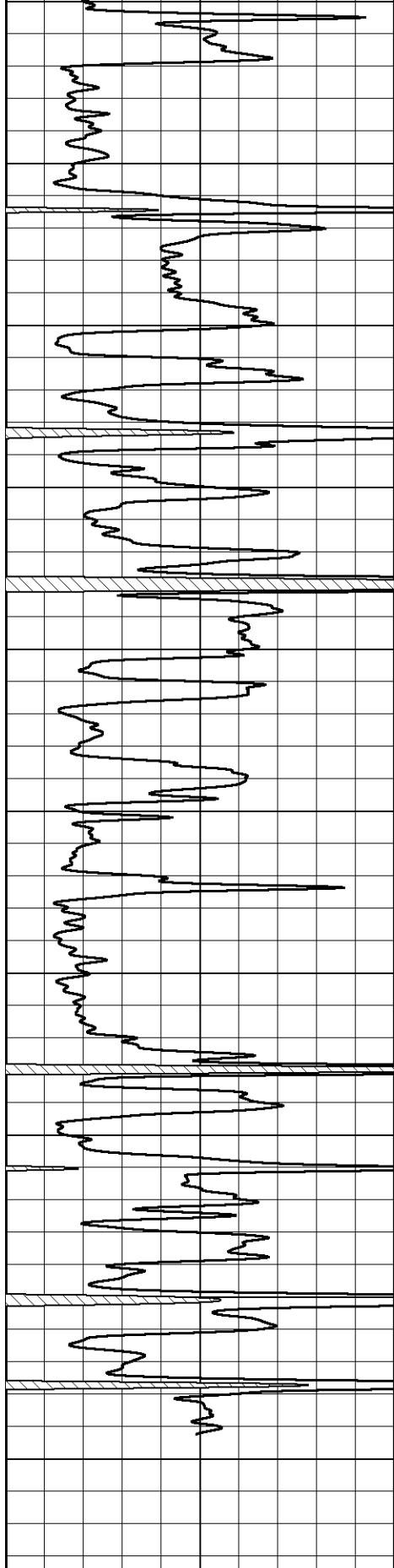










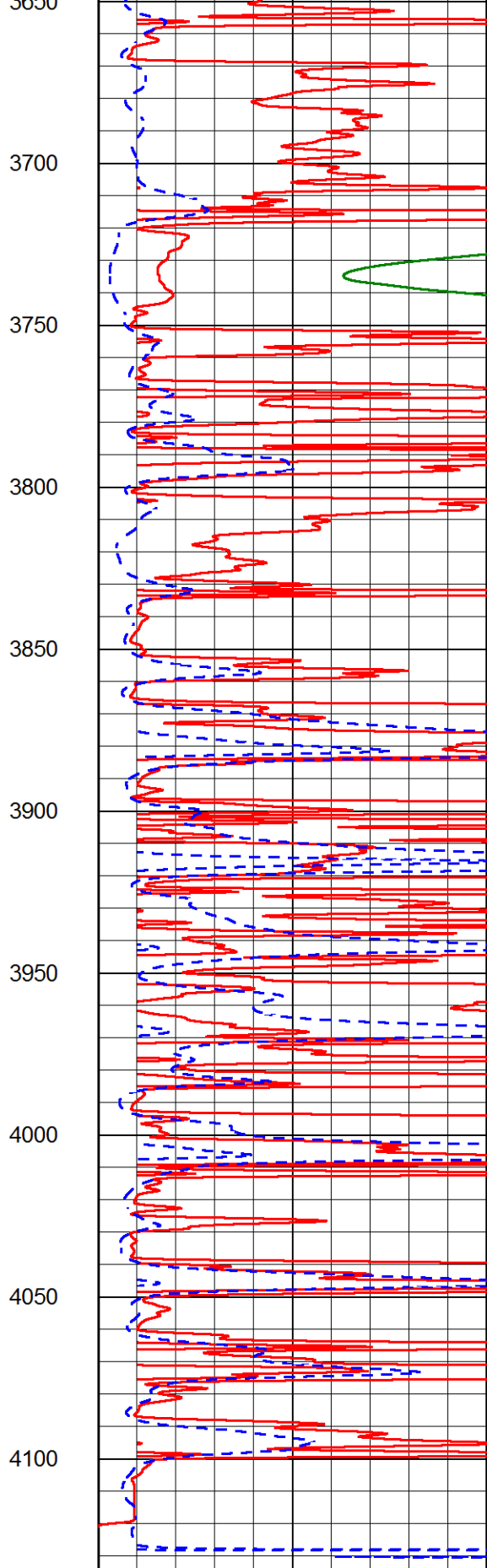


GAMMA RAY

(GAPI)

0

150



1000

CONDUCTIVITY (mmho/m)

0

15000

Line Tension (lb)

0

0

RLL3 (Ohm-m)

50

0

RILD (Ohm-m)

50

50

RLL3 (Ohm-m)

200

50

RILD (Ohm-m)

200

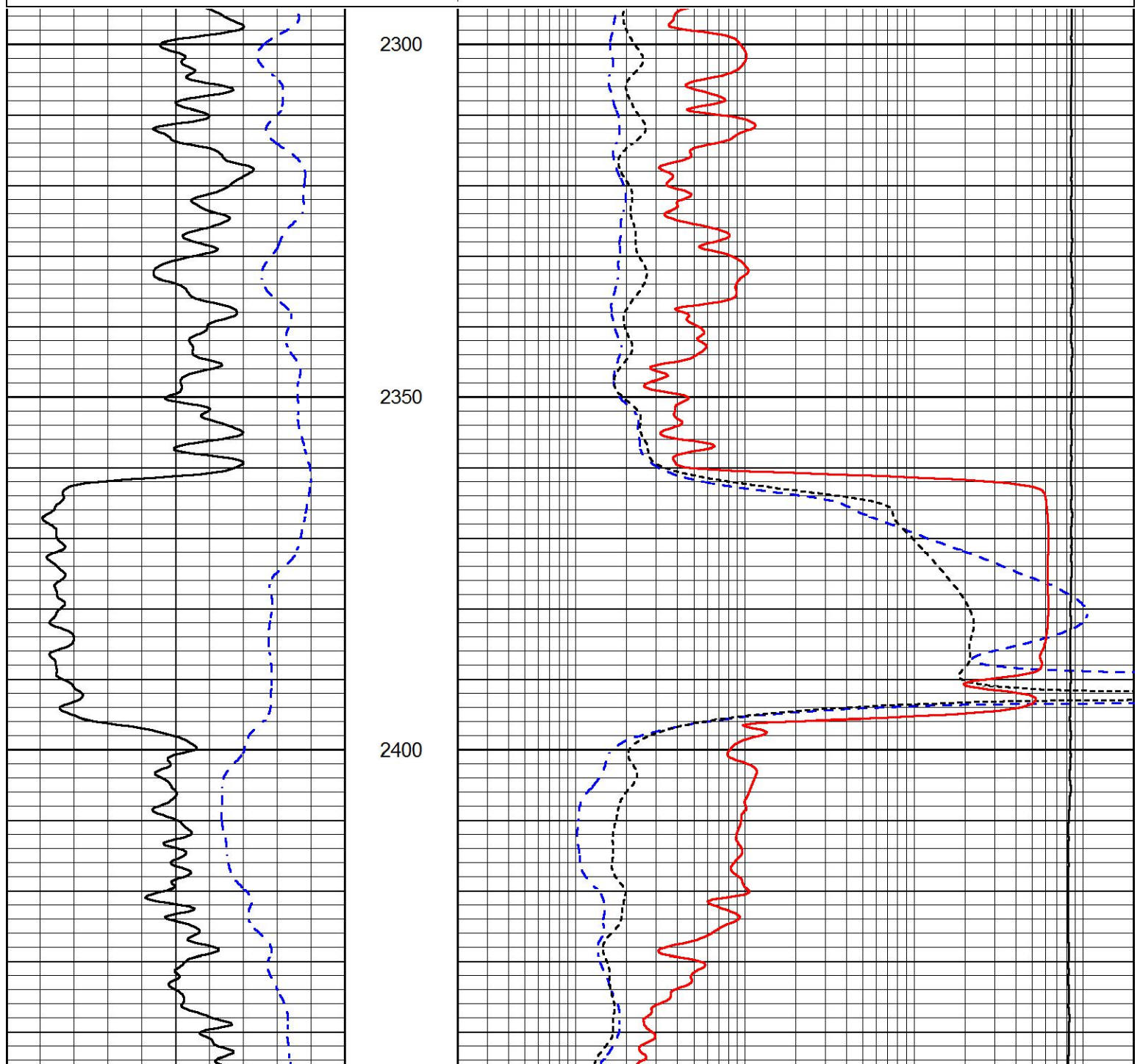


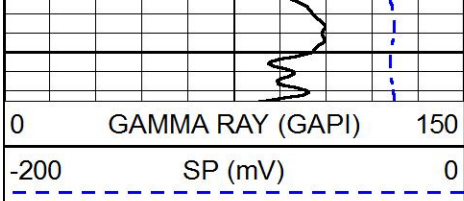


MAIN PASS

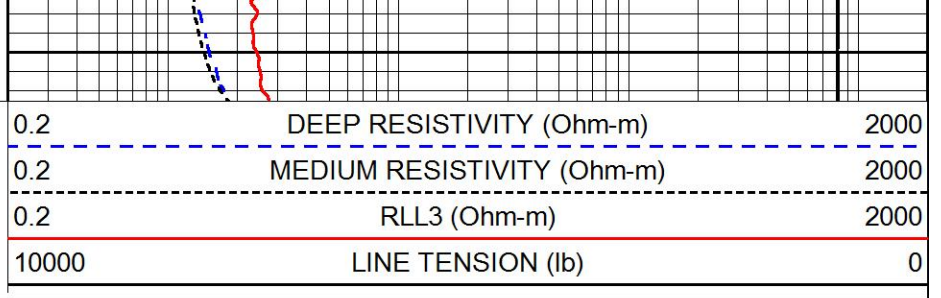
Database File bowman_clark b 2.db
 Dataset Pathname STKML/pass4.1
 Presentation Format _dil
 Dataset Creation Sun Sep 20 23:26:29 2020
 Charted by Depth in Feet scaled 1:240

| | | | | | |
|------|------------------|-----|-------|----------------------------|------|
| 0 | GAMMA RAY (GAPI) | 150 | 0.2 | DEEP RESISTIVITY (Ohm-m) | 2000 |
| -200 | SP (mV) | 0 | 0.2 | MEDIUM RESISTIVITY (Ohm-m) | 2000 |
| | | | 0.2 | RLL3 (Ohm-m) | 2000 |
| | | | 10000 | LINE TENSION (lb) | 0 |





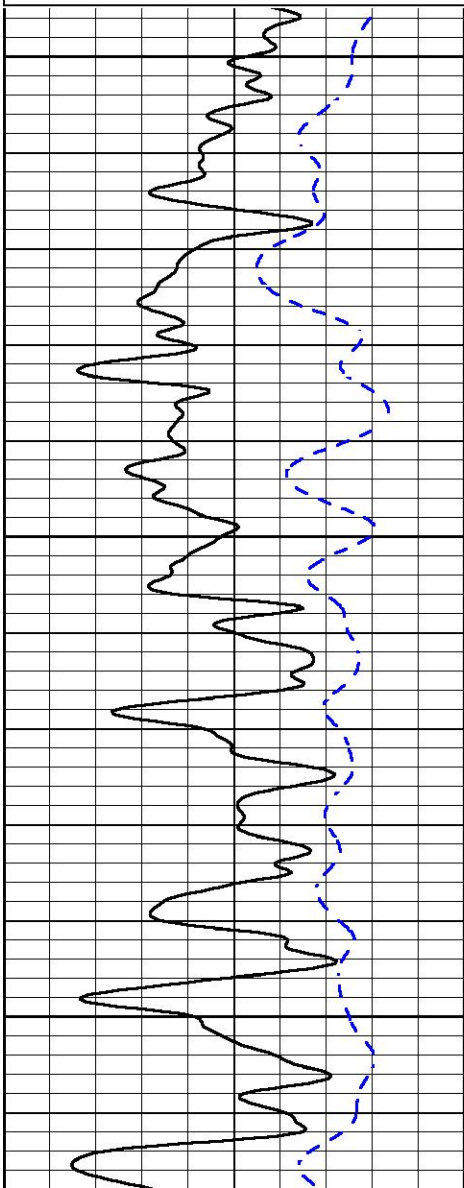
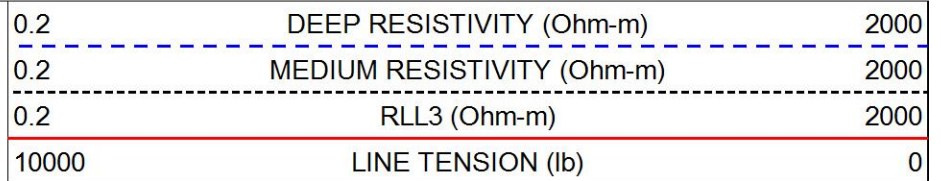
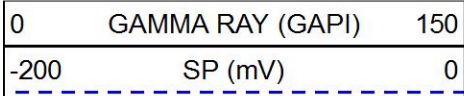
2450



MIDWEST WIRELINE

MAIN PASS

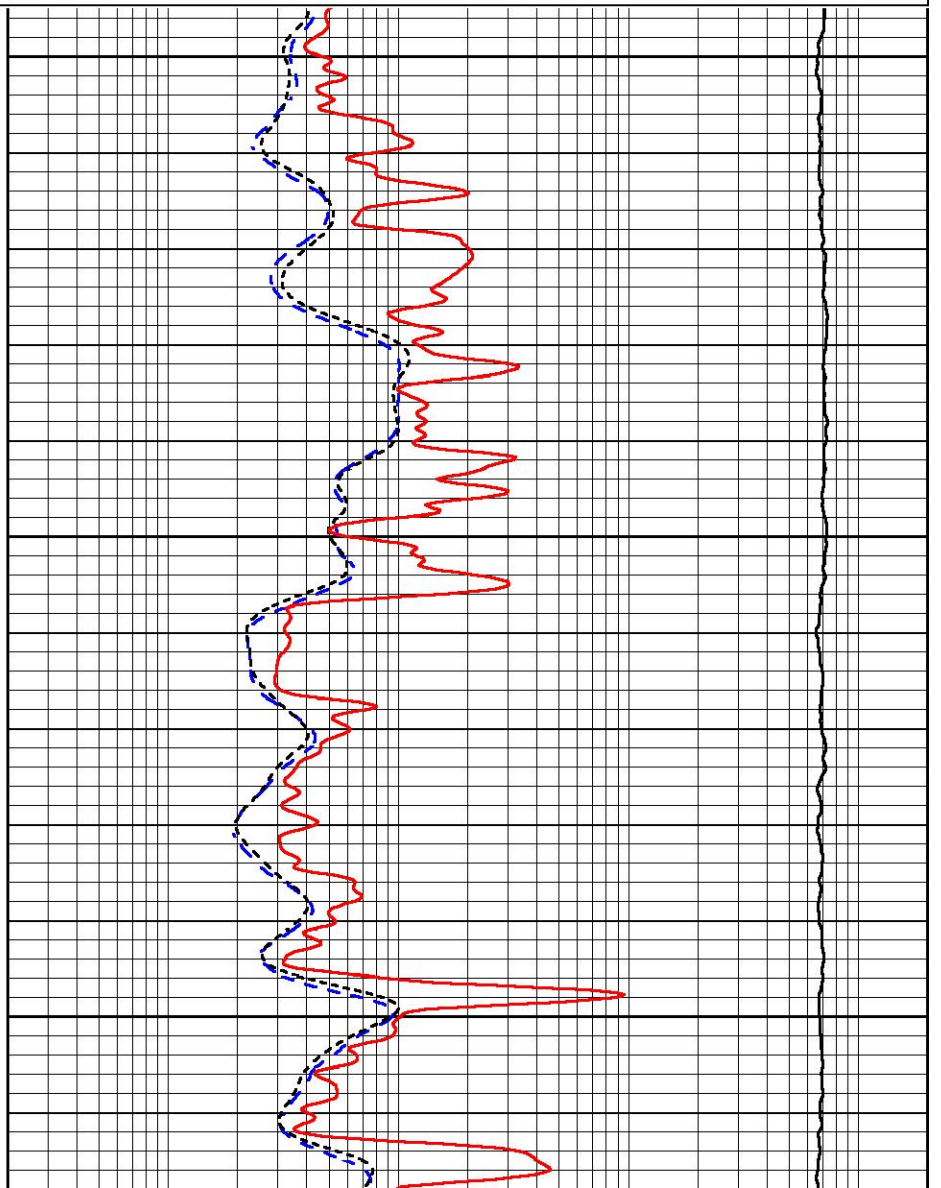
Database File bowman_clark b 2.db
 Dataset Pathname STKML/pass3.1
 Presentation Format _dil
 Dataset Creation Sun Sep 20 23:14:57 2020
 Charted by Depth in Feet scaled 1:240

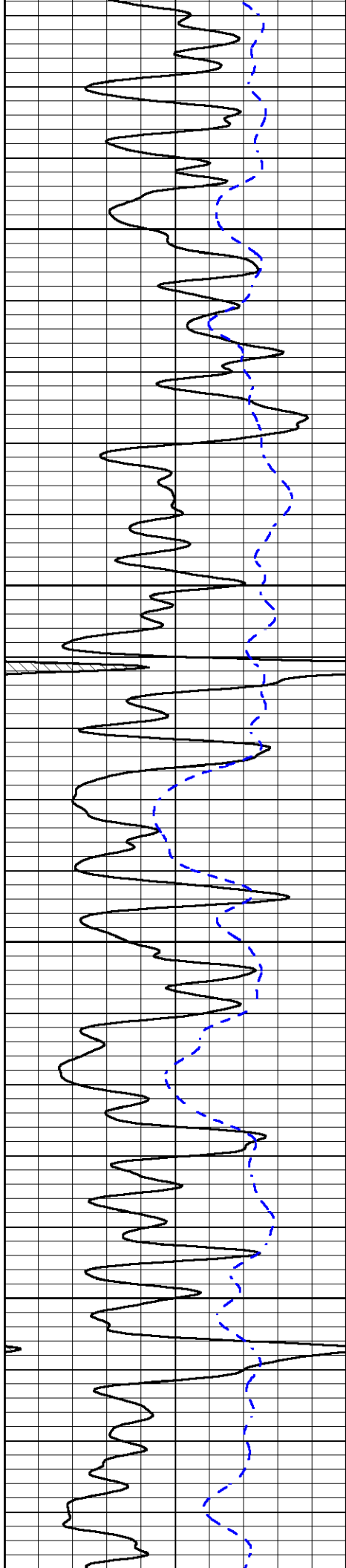


3300

3350

3400



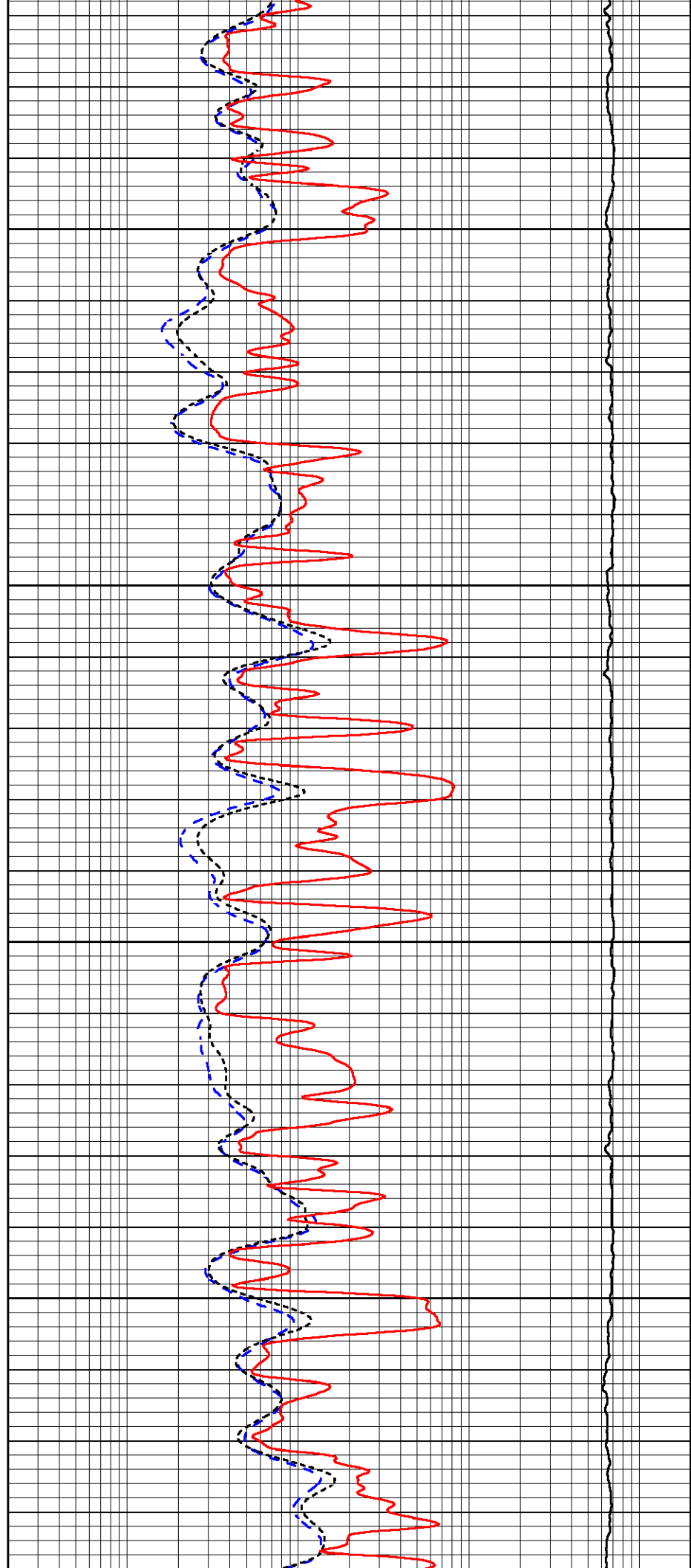


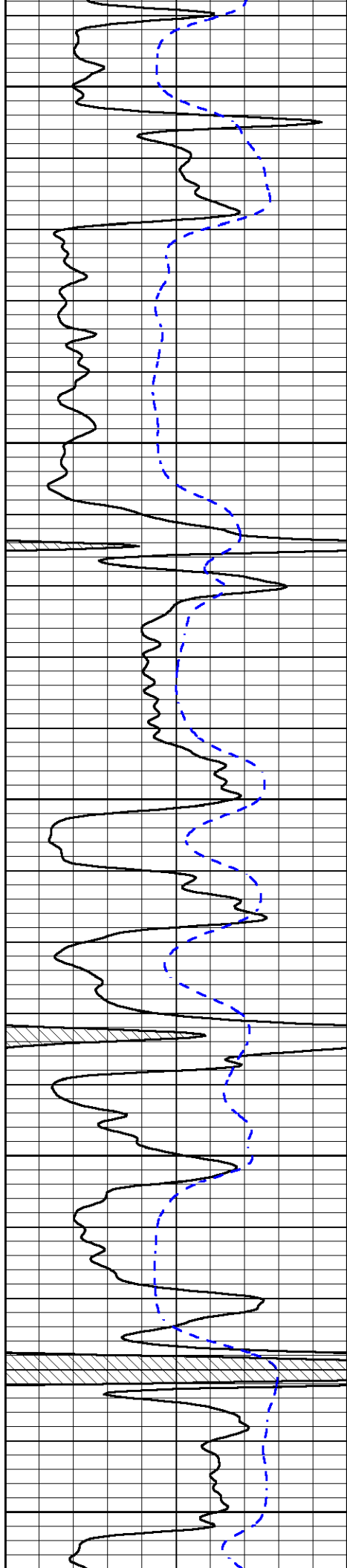
3450

3500

3550

3600





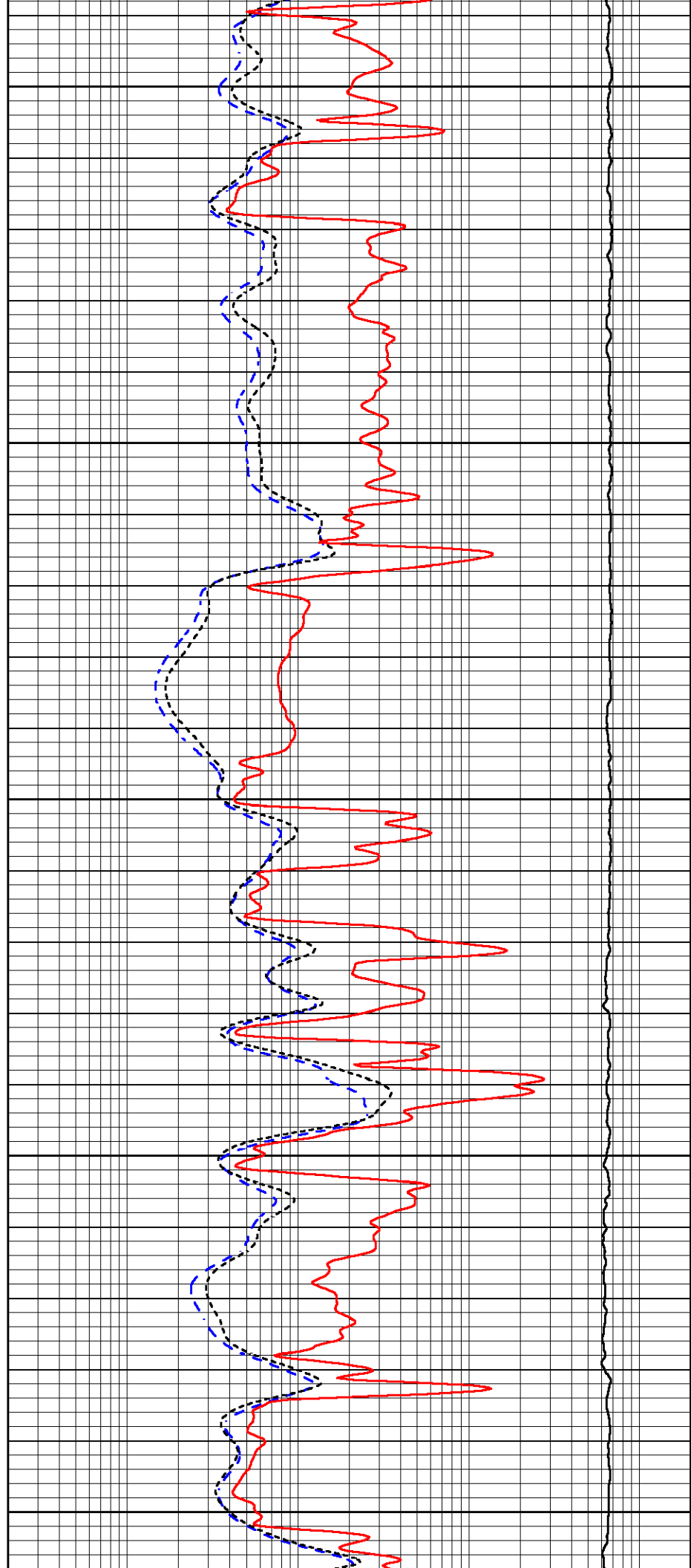
3650

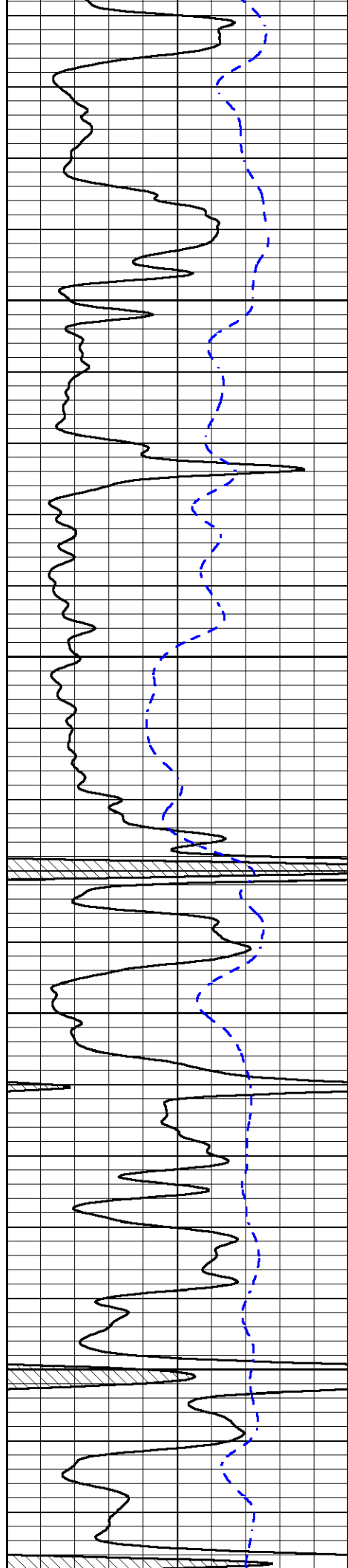
3700

3750

3800

3850



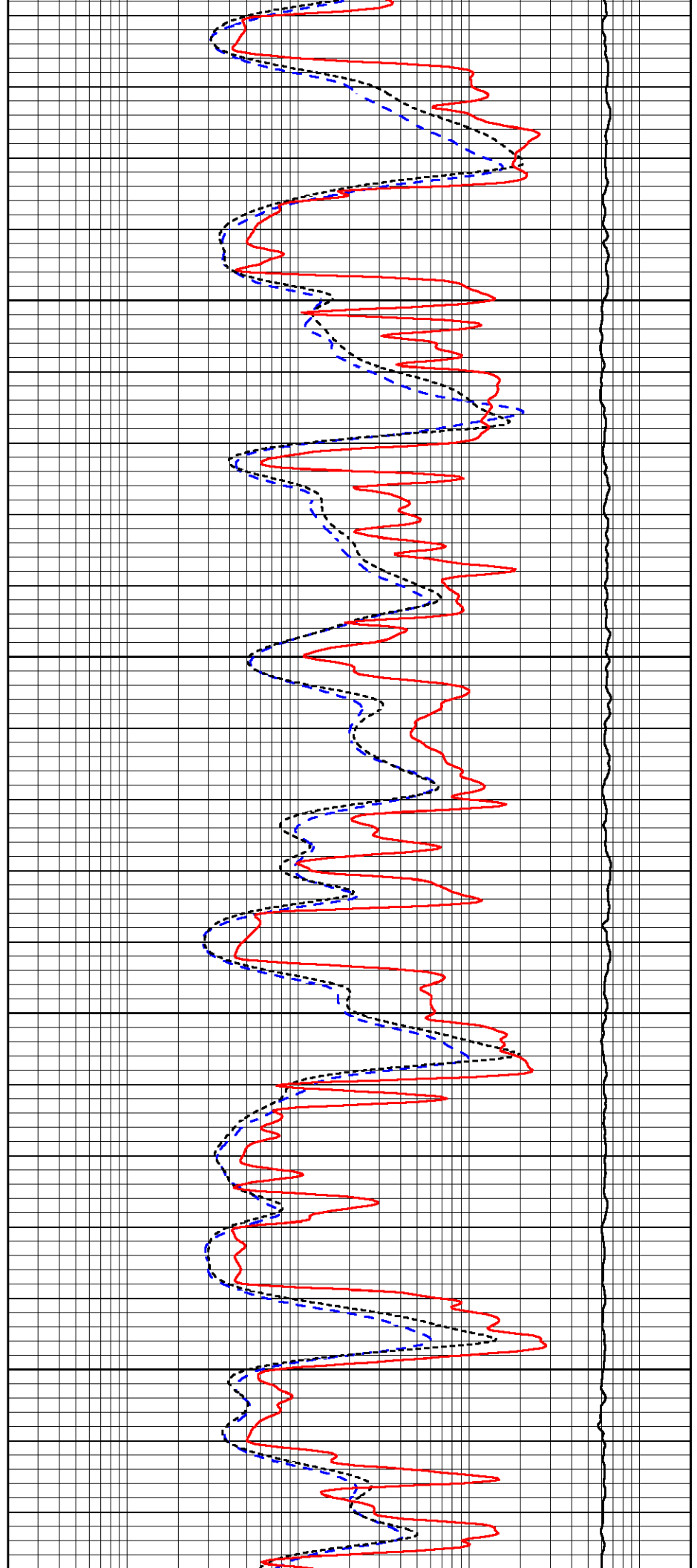


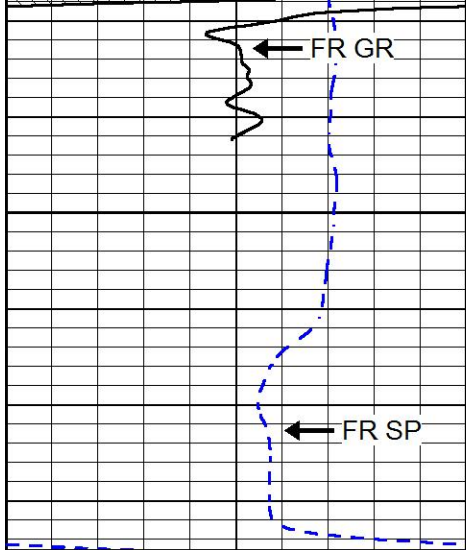
3900

3950

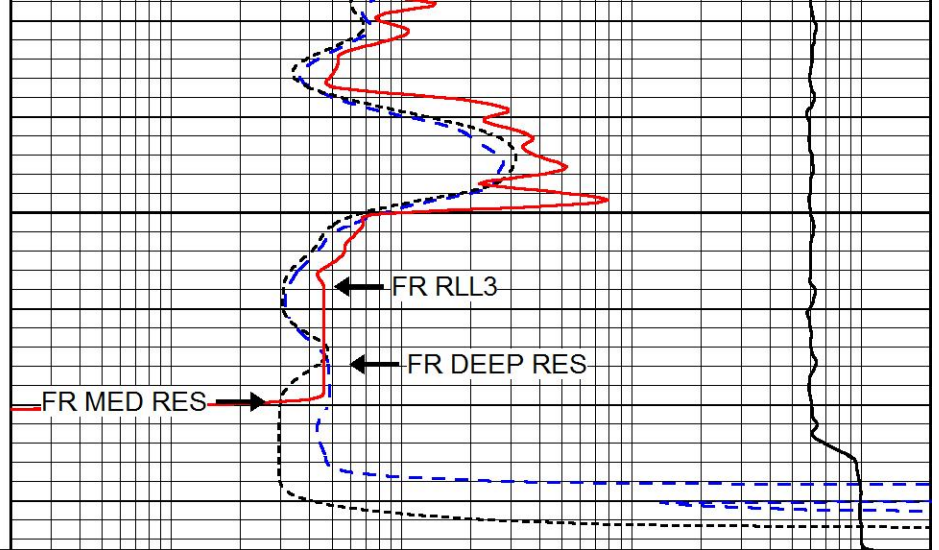
4000

4050





4100



| | | |
|------|------------------|-----|
| 0 | GAMMA RAY (GAPI) | 150 |
| -200 | SP (mV) | 0 |

| | | |
|-------|----------------------------|------|
| 0.2 | DEEP RESISTIVITY (Ohm-m) | 2000 |
| 0.2 | MEDIUM RESISTIVITY (Ohm-m) | 2000 |
| 0.2 | RLL3 (Ohm-m) | 2000 |
| 10000 | LINE TENSION (lb) | 0 |



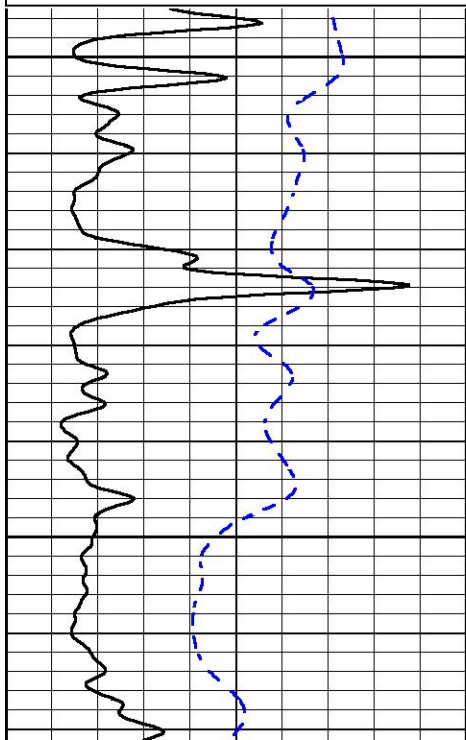
MIDWEST WIRELINE

REPEAT SECTION

Database File bowman_clark b 2.db
 Dataset Pathname STKML/pass2.1
 Presentation Format _dil
 Dataset Creation Sun Sep 20 22:49:19 2020
 Charted by Depth in Feet scaled 1:240

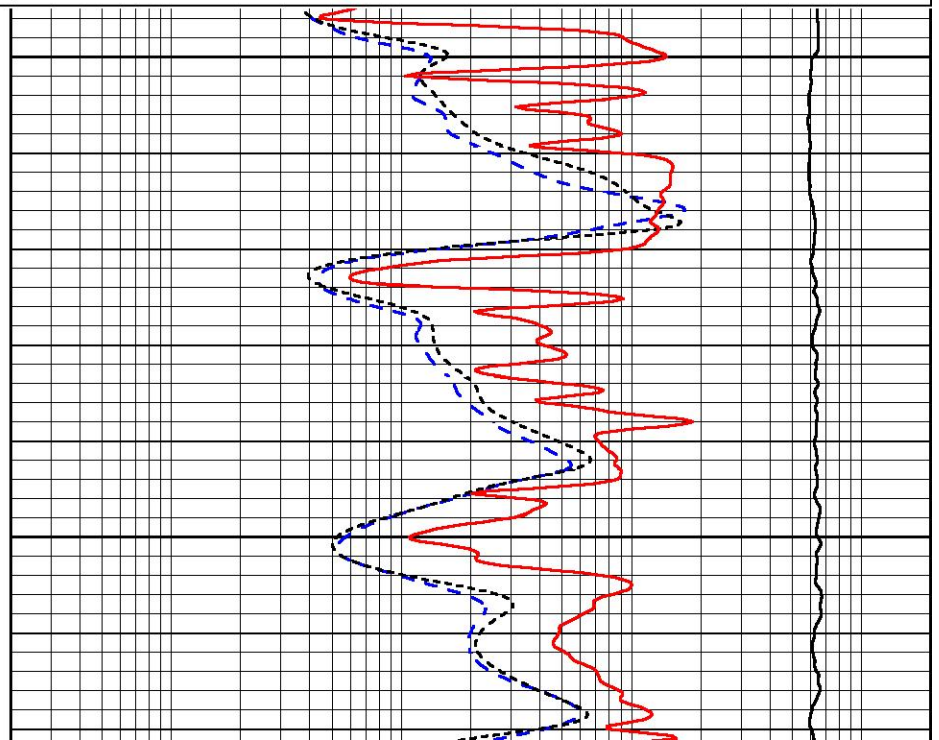
| | | |
|------|------------------|-----|
| 0 | GAMMA RAY (GAPI) | 150 |
| -200 | SP (mV) | 0 |

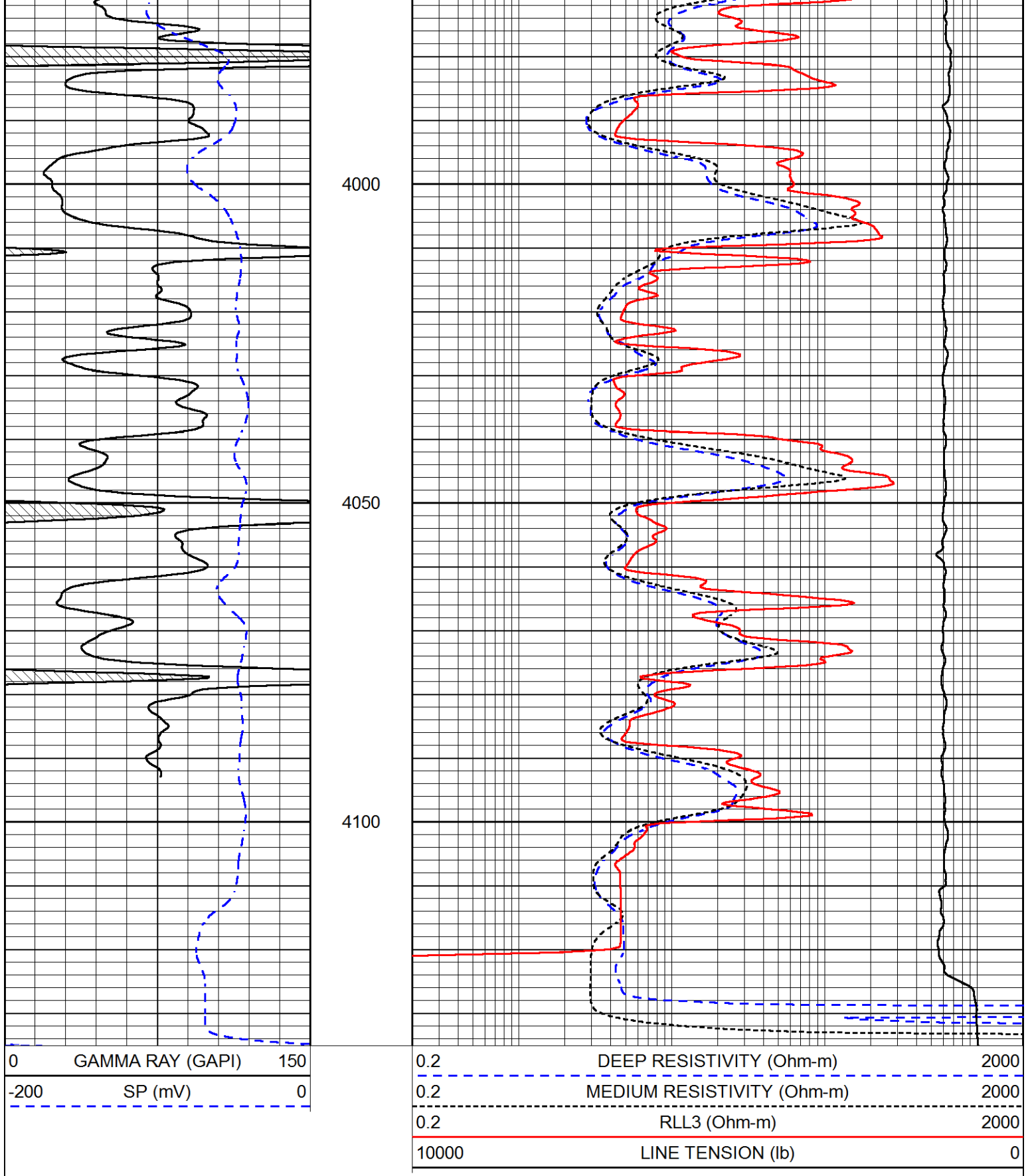
| | | |
|-------|----------------------------|------|
| 0.2 | DEEP RESISTIVITY (Ohm-m) | 2000 |
| 0.2 | MEDIUM RESISTIVITY (Ohm-m) | 2000 |
| 0.2 | RLL3 (Ohm-m) | 2000 |
| 10000 | LINE TENSION (lb) | 0 |



3900

3950





Calibration Report

Database File bowman_clark b 2.db
 Dataset Pathname STKML/pass2.1
 Dataset Creation Sun Sep 20 22:49:19 2020

Dual Induction Calibration Report

Serial-Model: 952-828-PSI HIGH TEMP
 Calibration Performed: Sun Jun 28 08:39:24 2020

| Loop: | Readings | | References | | | Results | |
|--------|----------|----------|------------|---------|--------|---------|---------|
| | Air | Loop | Air | Loop | | Gain | Offset |
| Deep | 167.000 | 835.000 | 0.000 | 255.000 | mmho/m | 0.455 | -32.000 |
| Medium | 0.000 | 1348.000 | 142.000 | 255.000 | mmho/m | 0.325 | -28.000 |

Microlog Calibration Report

Serial-Model: PSI-01-PSIML
 Performed: Tue Jun 16 01:32:04 2020

| | Readings | | References | | | Results | |
|---------|----------|--------|------------|---------|-------|------------|-----------|
| | Zero | Cal | Zero | Cal | | m | b |
| Normal | 0.0000 | 1.0000 | 0.0000 | 1.0000 | Ohm-m | 13000.0000 | -1.5000 |
| Inverse | 0.0000 | 1.0000 | 0.0000 | 1.0000 | Ohm-m | 15000.0000 | -1.3000 |
| Caliper | 1.0033 | 1.0841 | 5.0000 | 16.5000 | in | 142.3500 | -138.5500 |

Compensated Density Calibration Report

Serial-Model: 817-947-M&W
 Source / Verifier: 16955B / 2ci
 Master Calibration Performed: Tue Sep 24 21:18:50 2019

Master Calibration

| | Density | | Far Detector | Near Detector | |
|---------------------|---------|------|-----------------------------|---------------|-----|
| Magnesium | 1.755 | g/cc | 6127.15 | 5922.31 | cps |
| Aluminum | 2.670 | g/cc | 1141.85 | 3762.09 | cps |
| Spine Angle = 74.89 | | | Density/Spine Ratio = 0.526 | | |
| | Size | | Reading | | |
| Small Ring | 4.50 | in | 1.02 | | |
| Large Ring | 14.50 | in | 1.23 | | |

Compensated Neutron Calibration Report

Serial Number: 207-MW
 Tool Model: M&W
 Calibration Performed: WED FEB 13 10:30:30 2019

| Detector | Readings | Target | Normalization |
|-------------|-------------|-------------|---------------|
| Short Space | 6240.00 cps | 1000.00 cps | 1.6025 |
| Long Space | 460.00 cps | 1000.00 cps | 1.9500 |

Gamma Ray Calibration Report

Serial Number: 233-M&W
 Tool Model: M&W
 Calibration Performed: Fri Feb 07 01:42:40 2014

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps

Calibrator Reading: 1.0 cps

Sensitivity: 0.5500 GAPI/cps