



**PIONEER**  
Pioneer Energy Services

## DUAL INDUCTION LOG

Company **BEREXCO, LLC**  
Well **BISAGNO NO. 1-14 OWWO**  
Field **UNKNOWN**  
County **NESS** State **KANSAS**

Location: API #: 15-135-24969-00-01

Other Services

1710' FNL & 2010' FEL  
SEC 14 TWP 16S RGE 22W

CNL/CDL  
MEL

Permanent Datum GROUND LEVEL Elevation 2409'  
Log Measured From KELLY BUSHING  
Drilling Measured From KELLY BUSHING

Elevation  
K.B. 2417'  
D.F. N/A  
G.L. 2409'

|                        |               |  |  |
|------------------------|---------------|--|--|
| Date                   | 4/27/17       |  |  |
| Run Number             | ONE           |  |  |
| Depth Driller          | 4395'         |  |  |
| Depth Logger           | 4396'         |  |  |
| Bottom Logged Interval | 4395'         |  |  |
| Top Log Interval       | 200'          |  |  |
| Casing Driller         | 8.625" @ 213' |  |  |
| Casing Logger          | 215'          |  |  |
| Bit Size               | 7.875"        |  |  |
| Type Fluid in Hole     | CHEMICAL      |  |  |
| Salinity, ppm CL       | 3,000         |  |  |
| Density / Viscosity    | 8.6 60        |  |  |
| pH / Fluid Loss        | 10.5 7.2      |  |  |
| Source of Sample       | FLOWLINE      |  |  |
| Rm @ Meas. Temp        | .85 @ 53      |  |  |
| Rmt @ Meas. Temp       | .64 @ 53      |  |  |
| Rmc @ Meas. Temp       | 1.15 @ 53     |  |  |
| Source of Rmt / Rmc    | CHARTS        |  |  |
| Rm @ BHT               | .38 @ 120     |  |  |
| Operating Rig Time     | 2 HOURS       |  |  |
| Max Rec. Temp. F       | 120 DEGF      |  |  |
| Equipment Number       | 108           |  |  |
| Location               | HAYS          |  |  |
| Recorded By            | J. HENRICKSON |  |  |
| Witnessed By           | ANDREW MOORE  |  |  |

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

BROWNELL KANSAS

1/2 EAST TO HWY 147, 2 NORTH, 1/2 EAST, SOUTH INTO

NO REPEAT DUE TO WASHOUTS ON BOTTOM

Log Measured From: KELLY BUSHING

8 Ft. Above Permanent Datum

THANK YOU FOR USING PIONEER ENERGY SERVICES

[www.pioneerenergy.com](http://www.pioneerenergy.com)

785-625-3858

### Your Pioneer Energy Services Crew

Engineer: J. HENRICKSON

Operator:

Operator:

Operator:

### This Log Record Was Witnessed By

Primary Witness: ANDREW MOORE

Secondary Witness:

Secondary Witness:

Secondary Witness:

Top - Bottom

|           |             |             |             |            |            |       |              |
|-----------|-------------|-------------|-------------|------------|------------|-------|--------------|
| A         | BOREID      | BOTTEMP     | CASEOD      | CASETHCK   | FLUIDDEN   | M     | MATRXDEN     |
| 1         | in<br>7.875 | degF<br>120 | in<br>5.5   | in<br>0    | g/cc<br>1  | 2     | g/cc<br>2.71 |
| NPORSEL   | PERFS       | SNDERR      | SNDERRM     | SPSHIFT    | SRFTEMP    | SZCOR | TDEPTH       |
| Limestone | 0           | mmho/m<br>0 | mmho/m<br>0 | mV<br>-410 | degF<br>43 | Off   | ft<br>4396   |

| Sensor | Offset (ft) | Schematic                                                                           |                                                                                     | Description                                          | Length (ft) | O.D. (in) | Weight (lb) |
|--------|-------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------|-------------|-----------|-------------|
| GR     | 40.58       |    |    | GR-M&W (89-M&W)                                      | 3.00        | 3.50      | 50.00       |
|        |             |                                                                                     |                                                                                     |                                                      |             |           |             |
| CNLSC  | 37.48       |    |    | CNT-M&W (tk10-MW)                                    | 5.50        | 3.50      | 100.00      |
| CNSSC  | 36.73       |    |    |                                                      |             |           |             |
| LSD    | 28.43       |  |   | CDL-M&W (168-986)                                    | 8.50        | 4.00      | 250.00      |
|        |             |                                                                                     |                                                                                     |                                                      |             |           |             |
|        |             |                                                                                     |                                                                                     |                                                      |             |           |             |
| DCAL   | 28.42       |  |  | ML-PSI STKBL ML (PSI-02)<br>Stackable Microlog Tools | 7.58        | 4.00      | 65.00       |
| SSD    | 27.93       |  |  |                                                      |             |           |             |
| MCAL   | 19.83       |  |  |                                                      |             |           |             |
|        |             |                                                                                     |                                                                                     |                                                      |             |           |             |
|        |             |                                                                                     |                                                                                     |                                                      |             |           |             |
| MI     | 19.83       |  |  |                                                      |             |           |             |
| MN     | 19.83       |  |  |                                                      |             |           |             |
| RLL3   | 15.80       |  |  |                                                      |             |           |             |
|        |             |                                                                                     |                                                                                     |                                                      |             |           |             |
| RLL3F  | 15.79       |  |  |                                                      |             |           |             |
|        |             |                                                                                     |                                                                                     |                                                      |             |           |             |
| CILD   | 8.00        |  |  | DIL-M&W (1987)                                       | 18.50       | 3.50      | 220.00      |
|        |             |                                                                                     |                                                                                     |                                                      |             |           |             |

CILM

4.70

SP

0.20

Dataset: berexco\_bisagno\_1\_14\_owwo.db: field/well/stackml/pass2.1  
Total length: 43.08 ft  
Total weight: 685.00 lb  
O.D.: 4.00 in



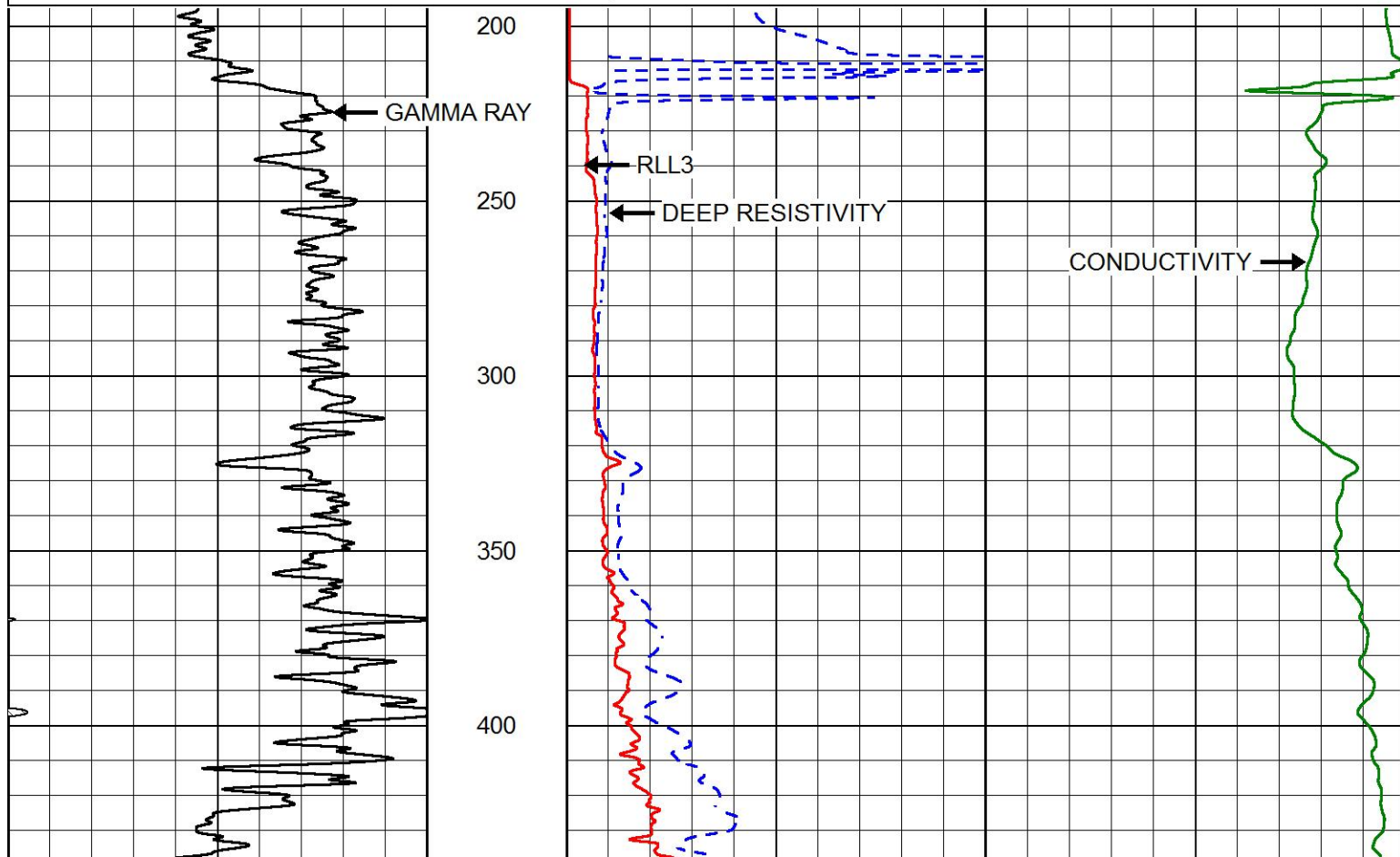
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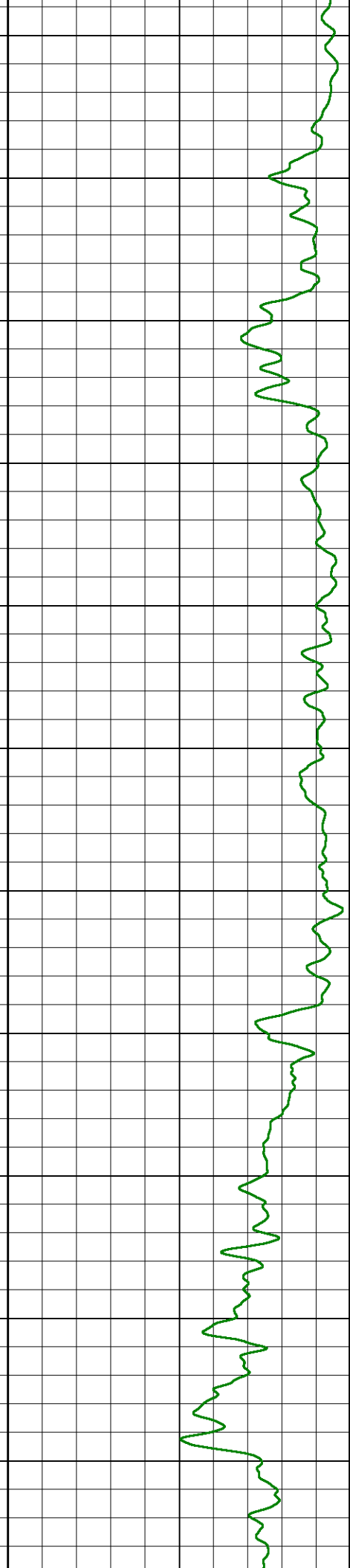
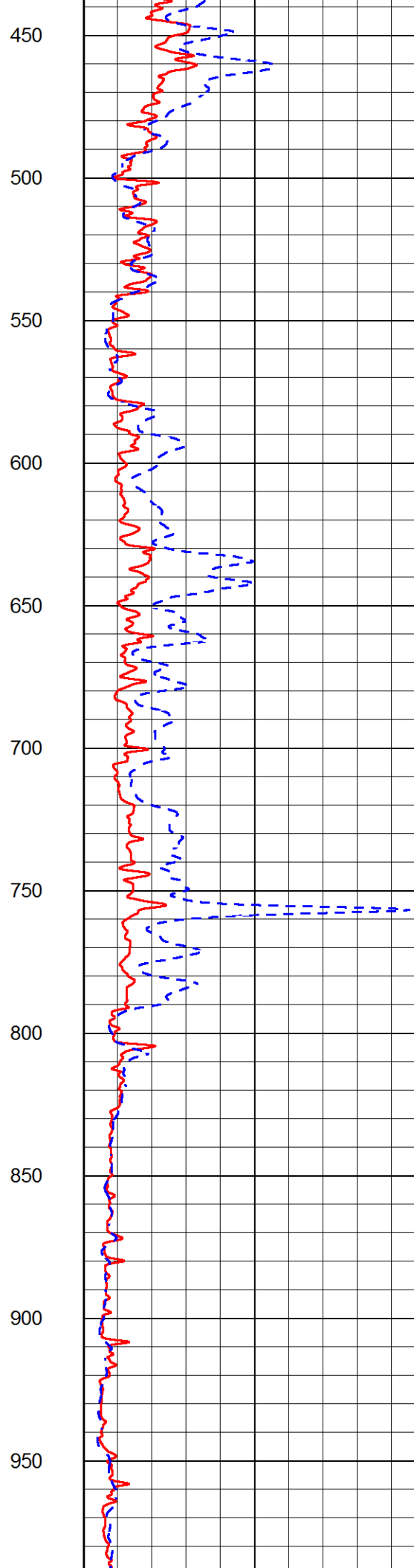
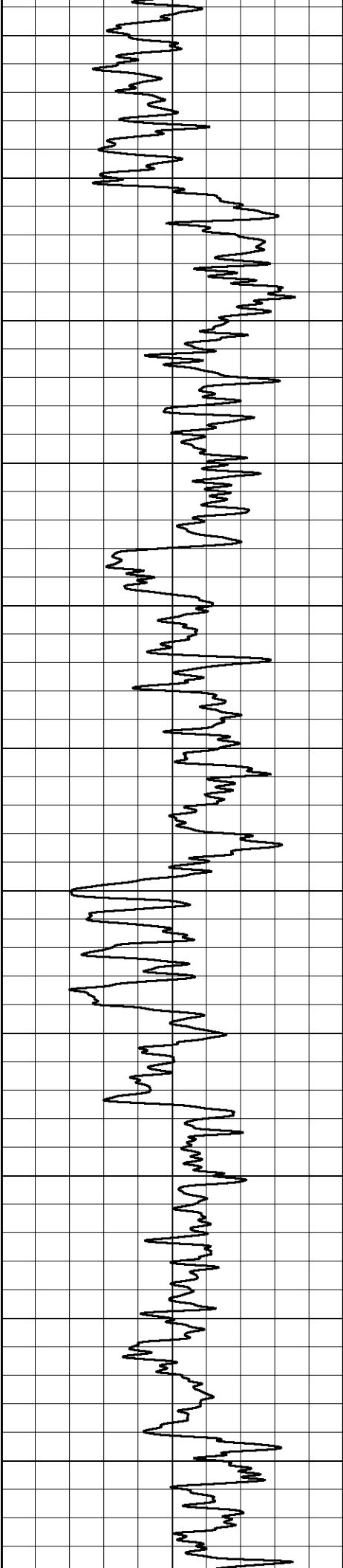
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Presentation Format dil2in  
Dataset Creation Thu Apr 27 05:43:37 2017  
Charted by Depth in Feet scaled 1:600

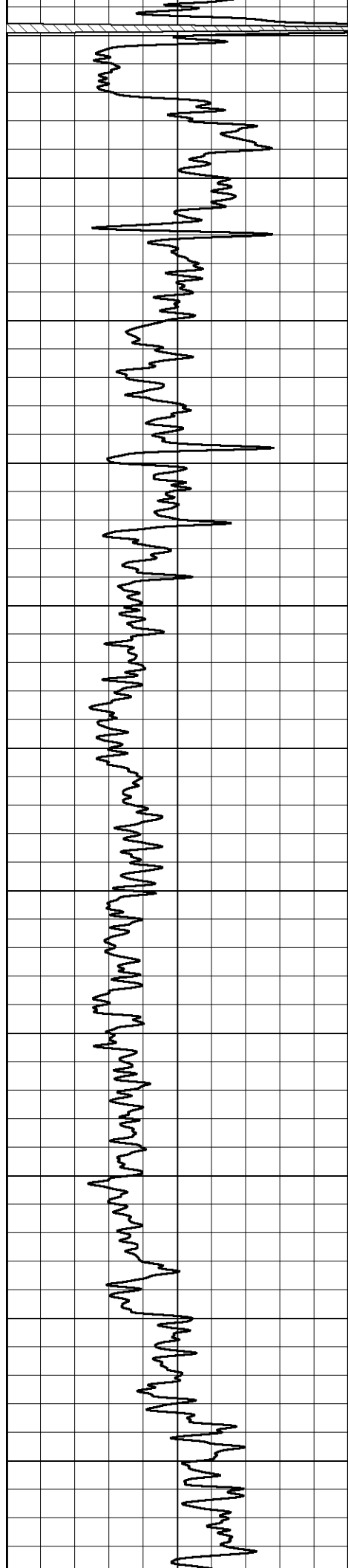
0 GAMMA RAY (GAPI) 150

2000 CONDUCTIVITY (mmho/m) 0

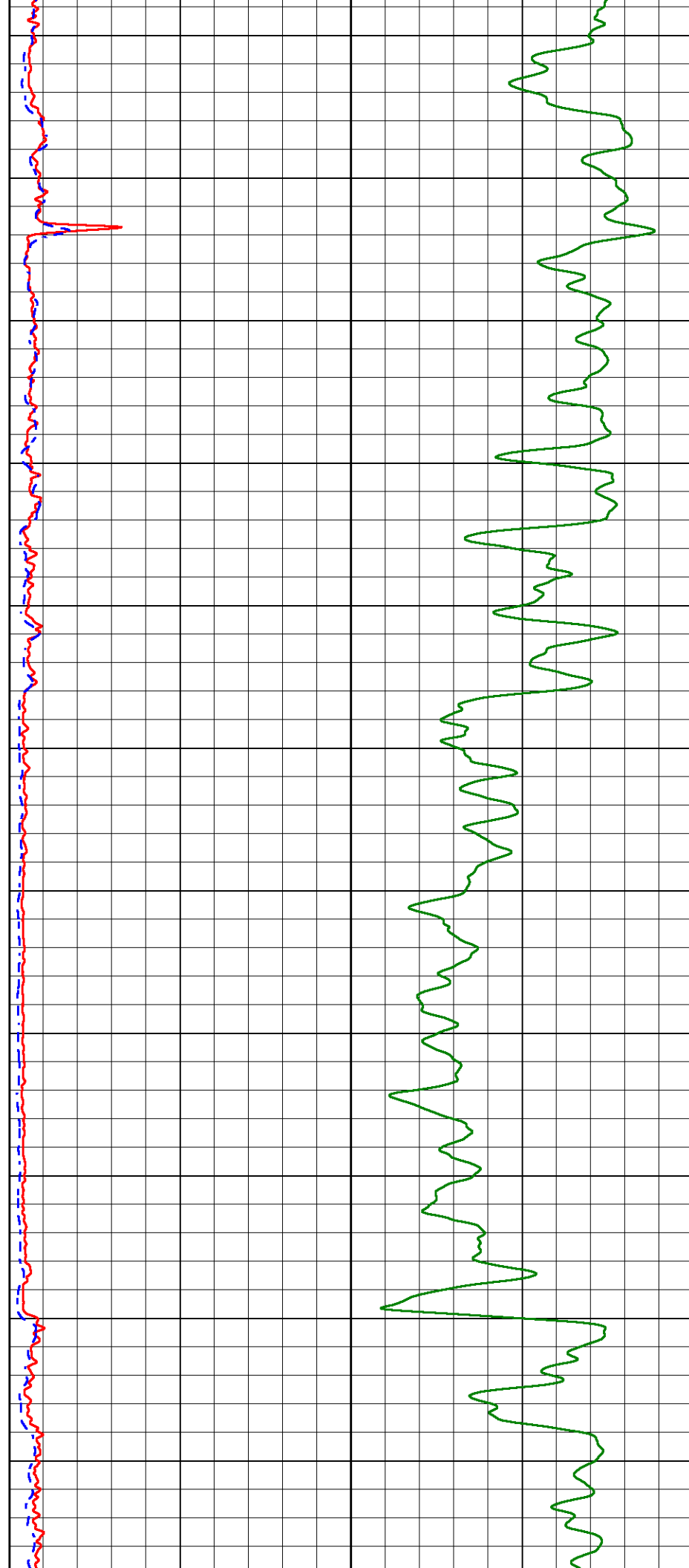
|    |                          |     |
|----|--------------------------|-----|
| 0  | RLL3 (Ohm-m)             | 50  |
| 0  | DEEP RESISTIVITY (Ohm-m) | 50  |
| 50 | RLL3 (Ohm-m)             | 500 |
| 50 | DEEP RESISTIVITY (Ohm-m) | 500 |

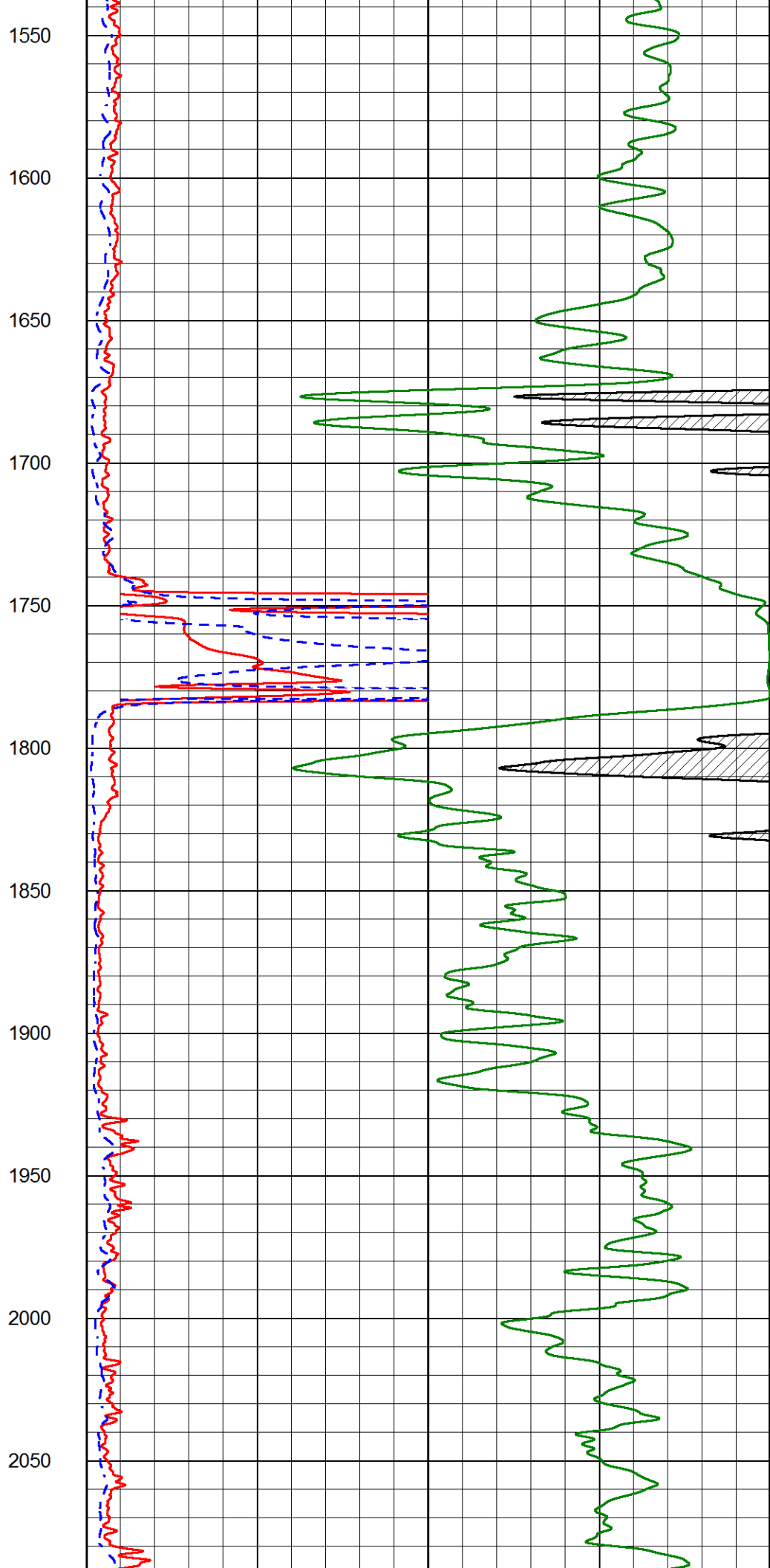
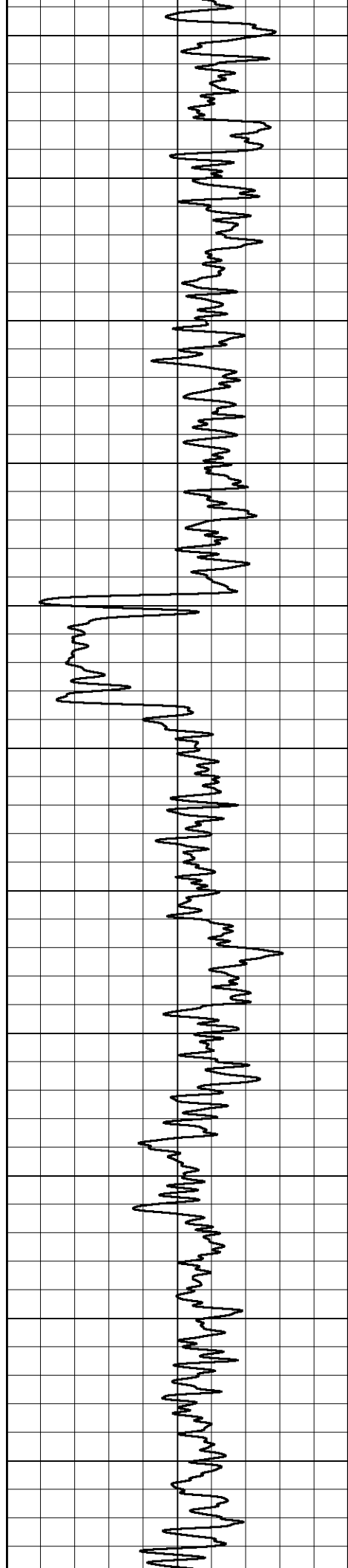




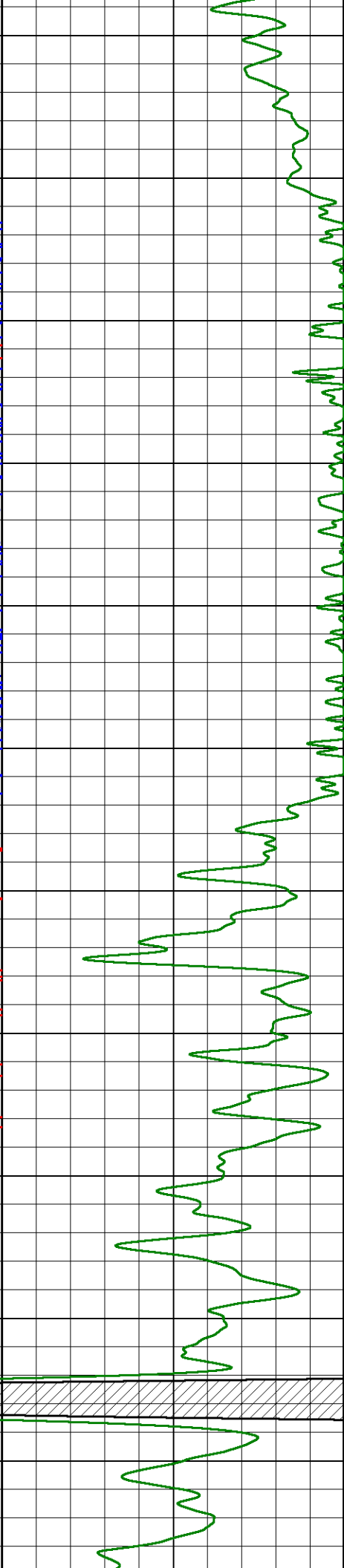
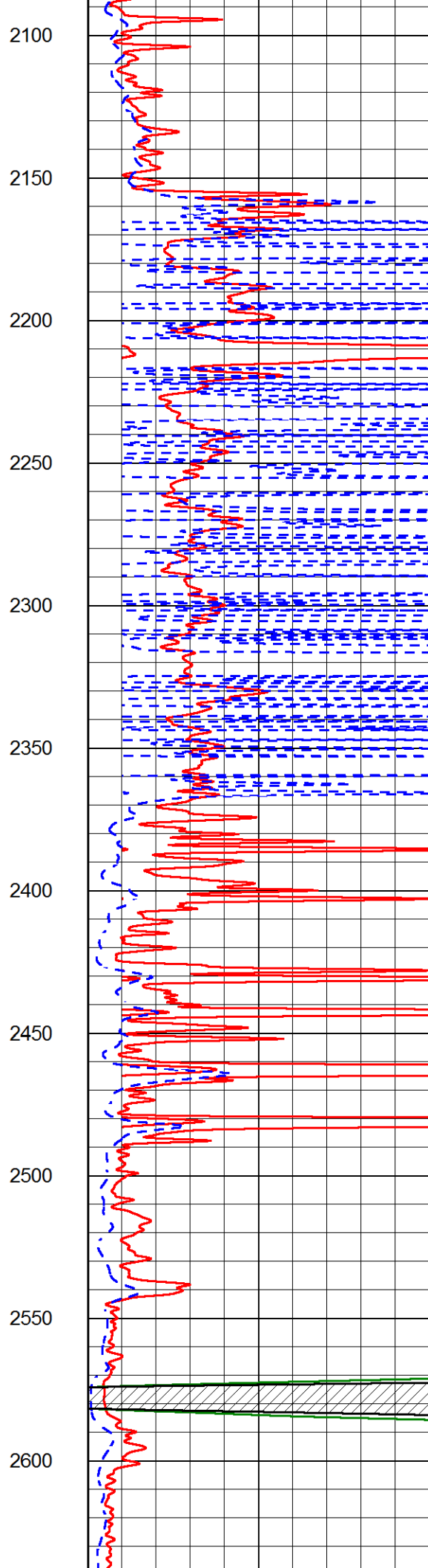
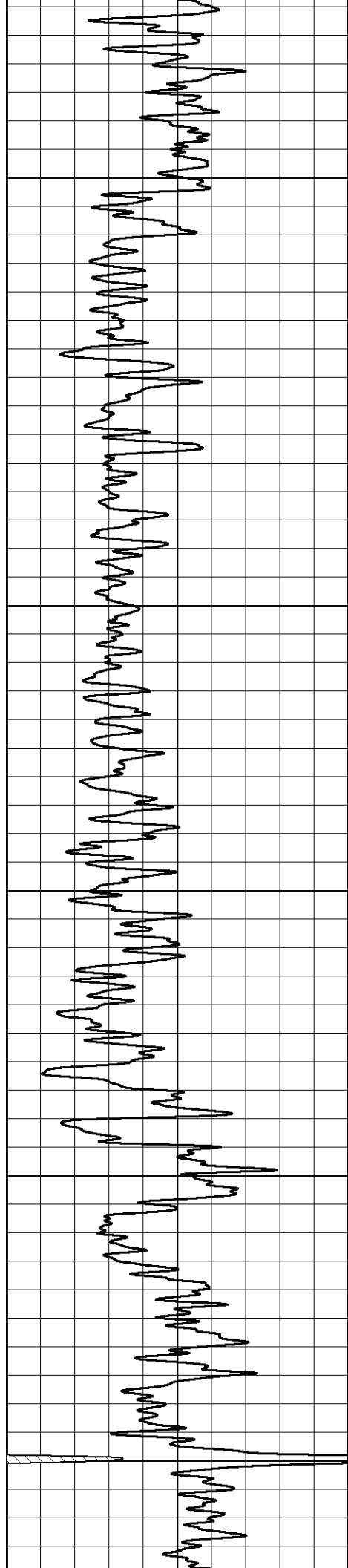


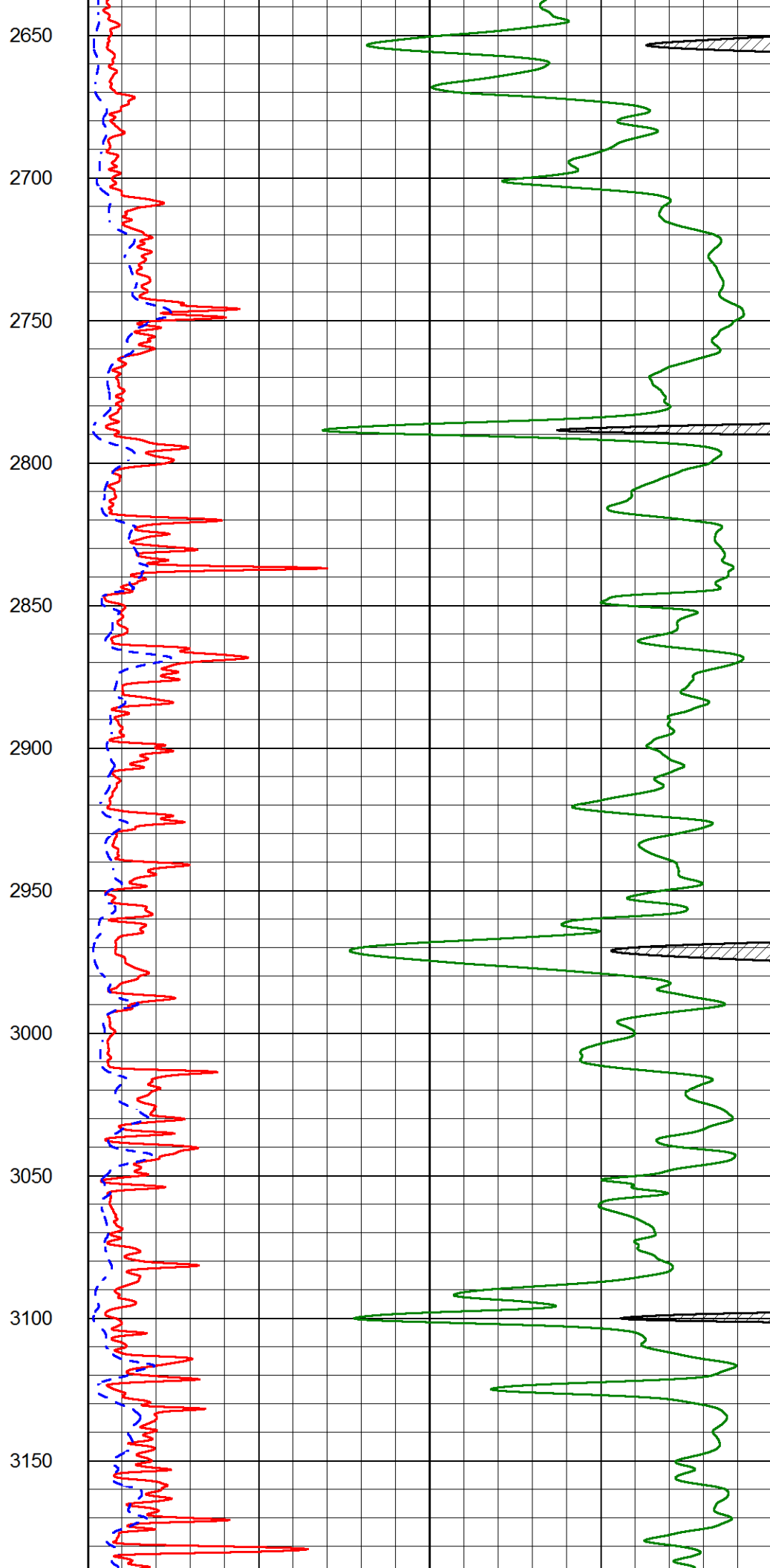
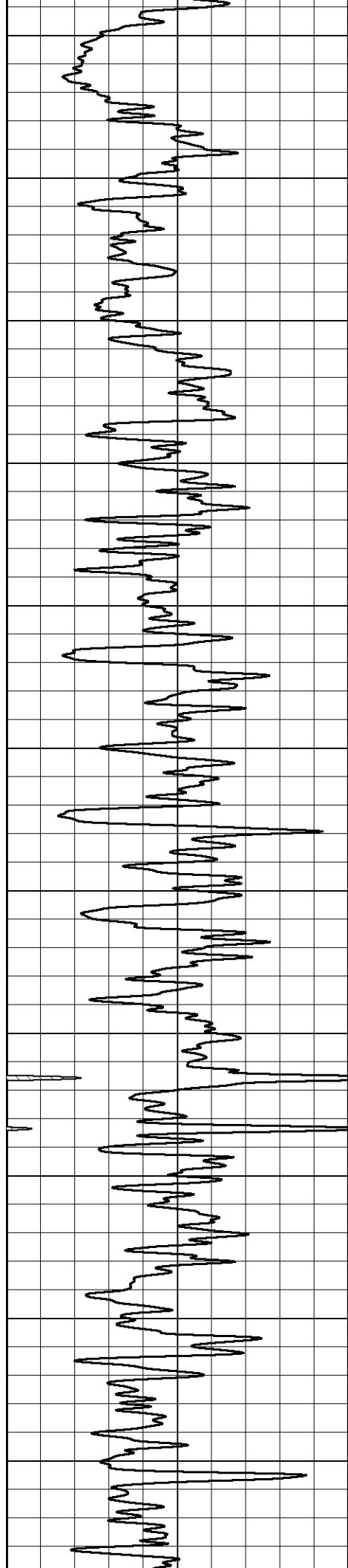
1000  
1050  
1100  
1150  
1200  
1250  
1300  
1350  
1400  
1450  
1500



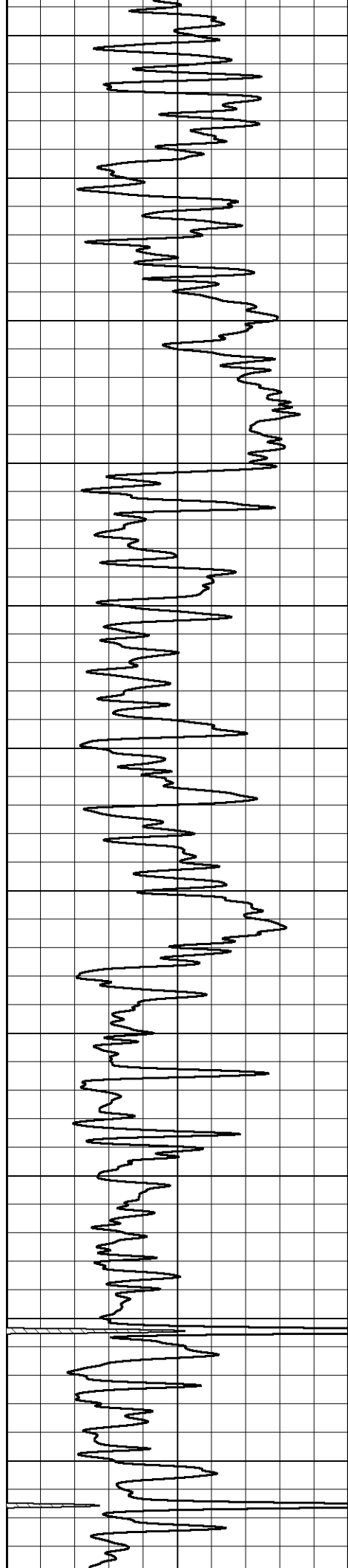












3200

3250

3300

3350

3400

3450

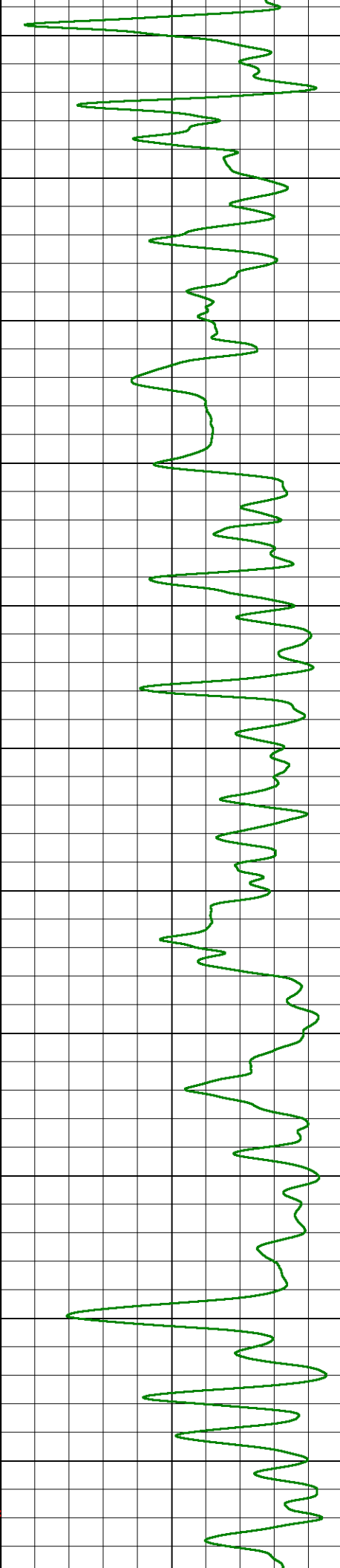
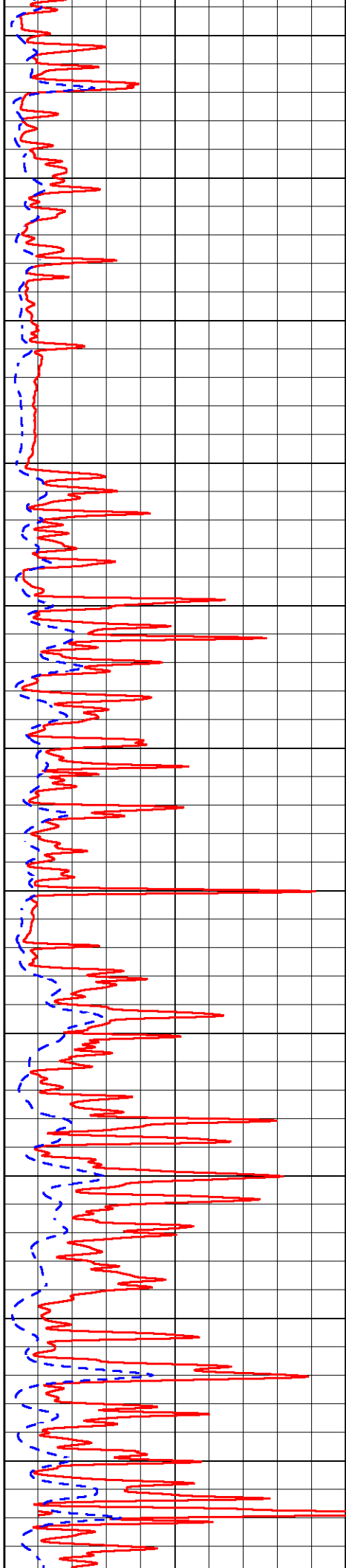
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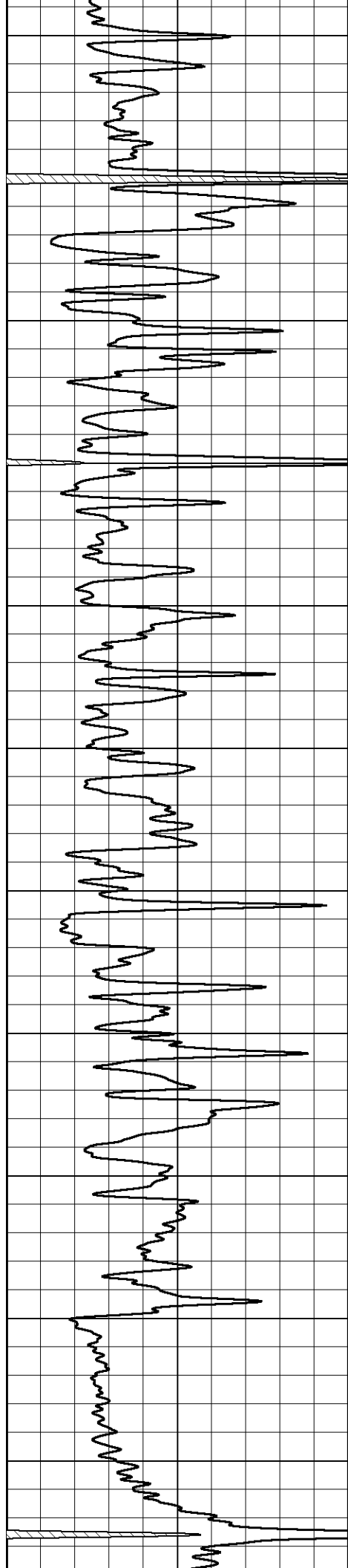
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3600

3650

3700





3750

3800

3850

3900

3950

4000

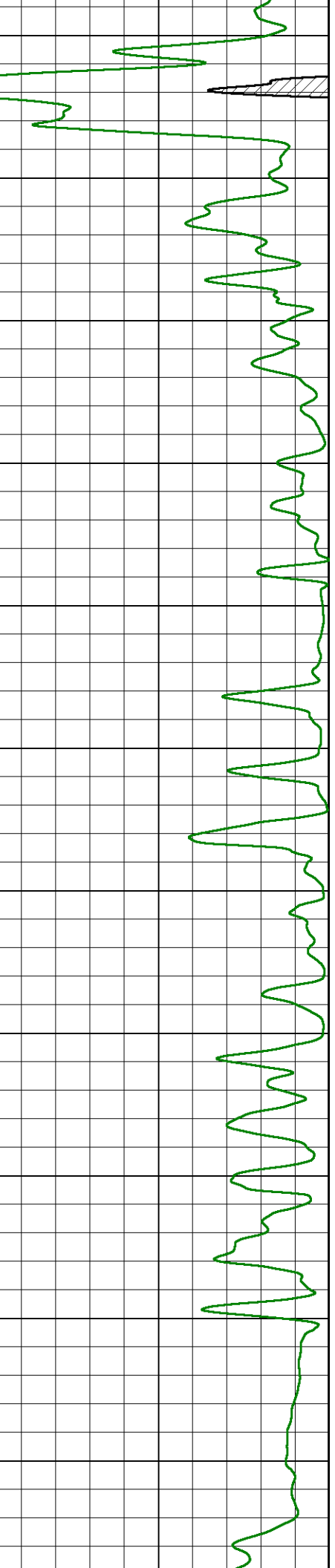
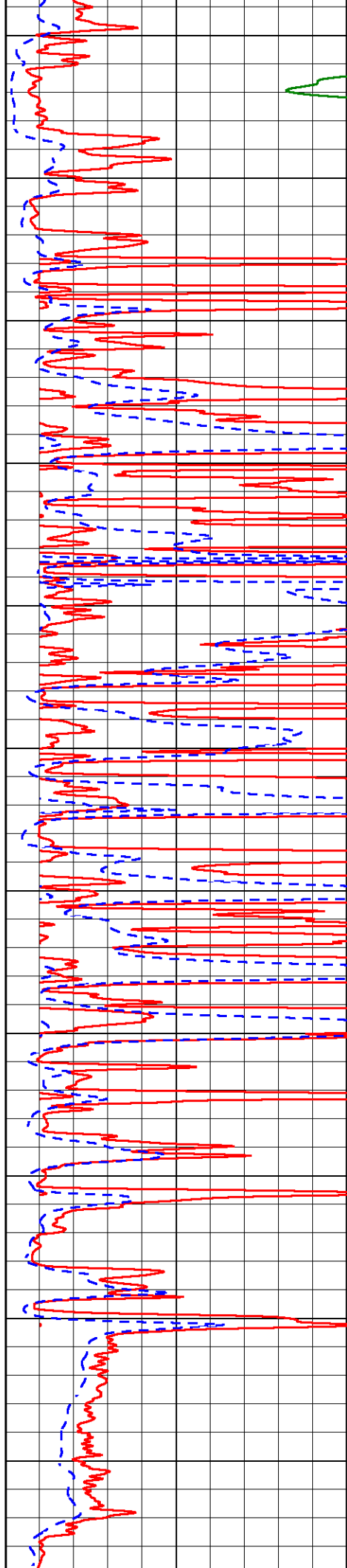
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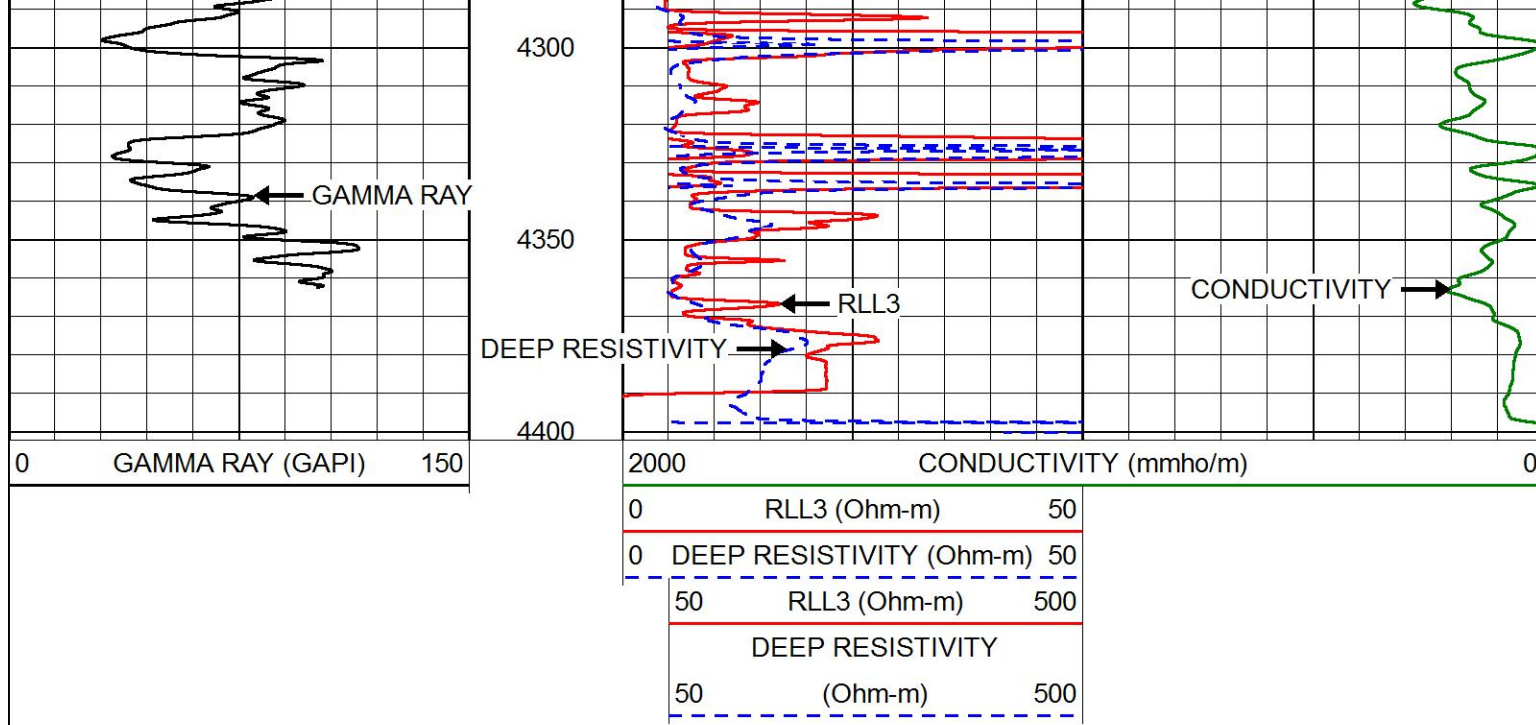
4100

4150

4200

4250

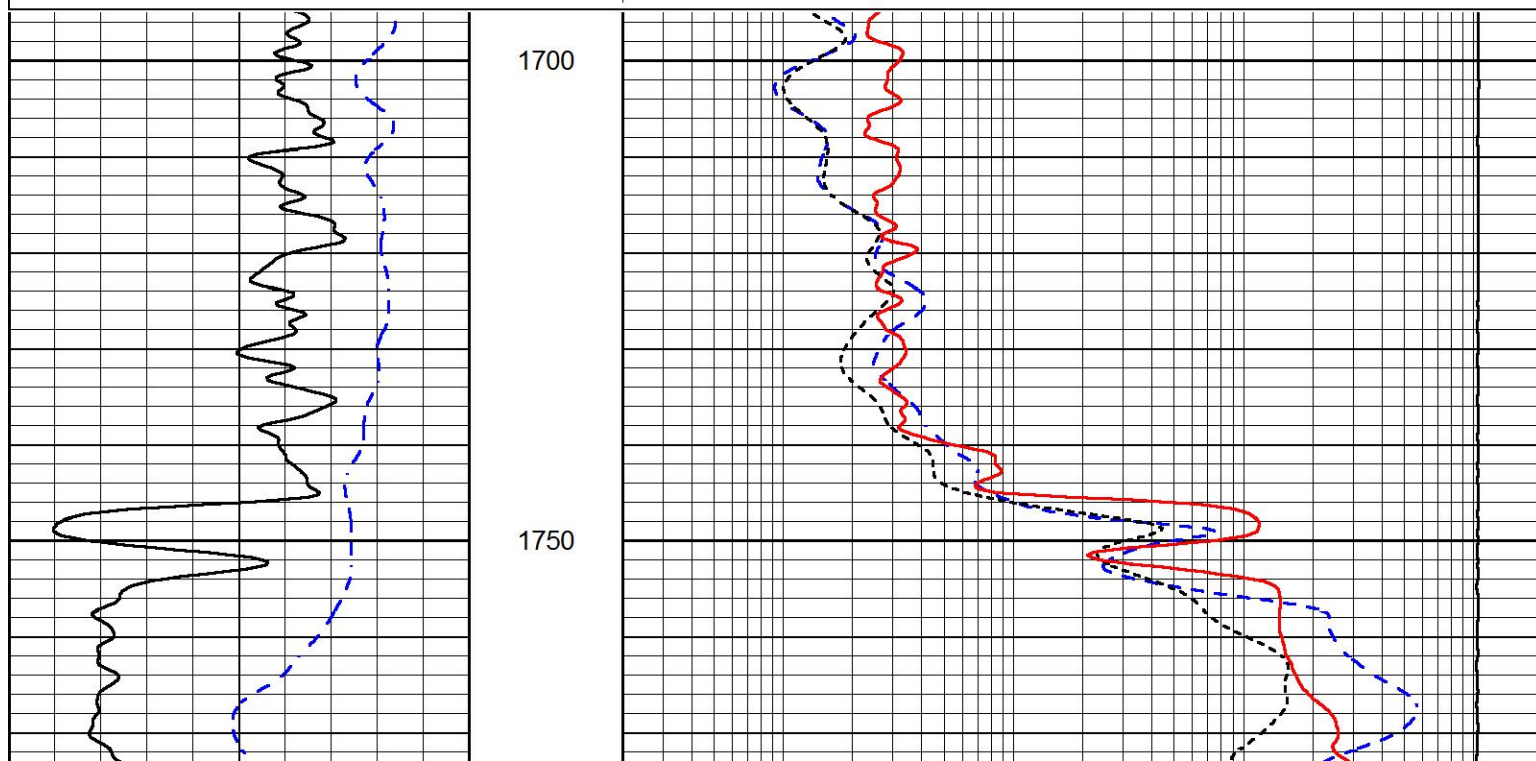


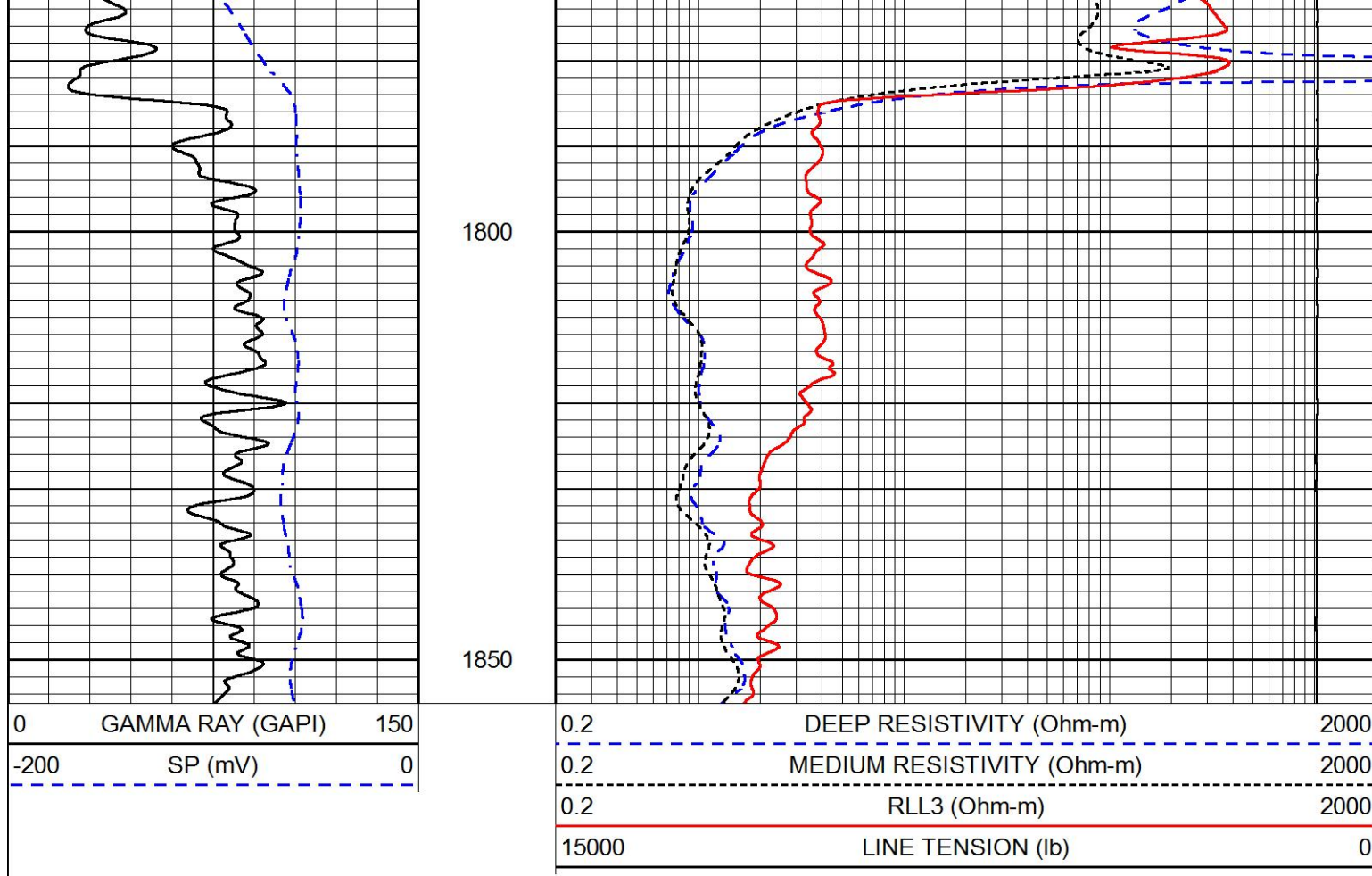


# MAIN PASS

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 Dataset Pathname: stackml/pass2.1  
 Presentation Format: dil  
 Dataset Creation: Thu Apr 27 05:43:37 2017  
 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 |
| 15000 | LINE TENSION (lb)          | 0    |



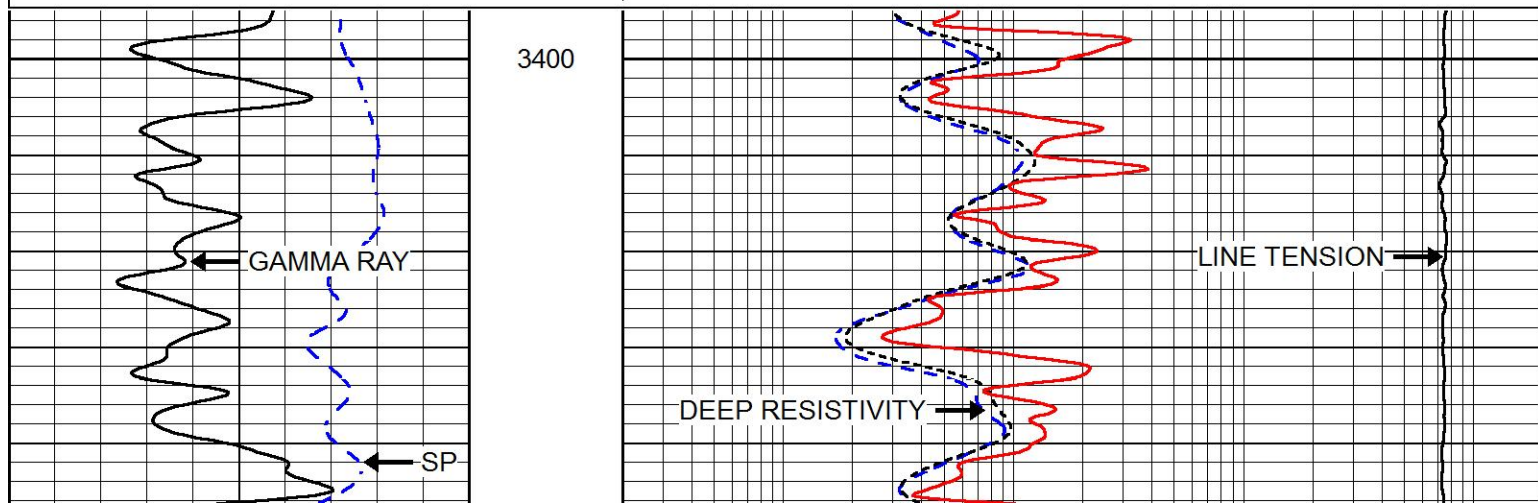
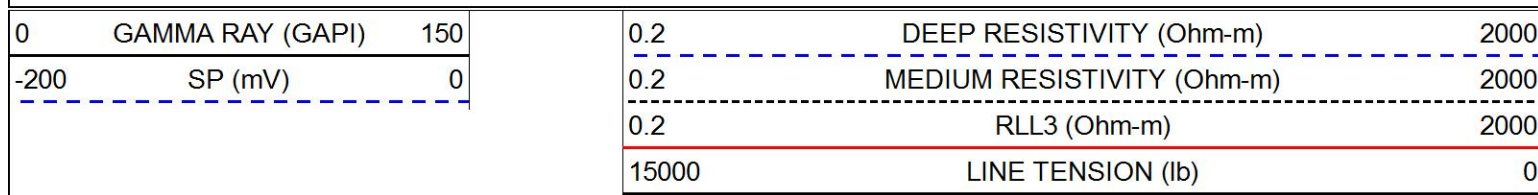


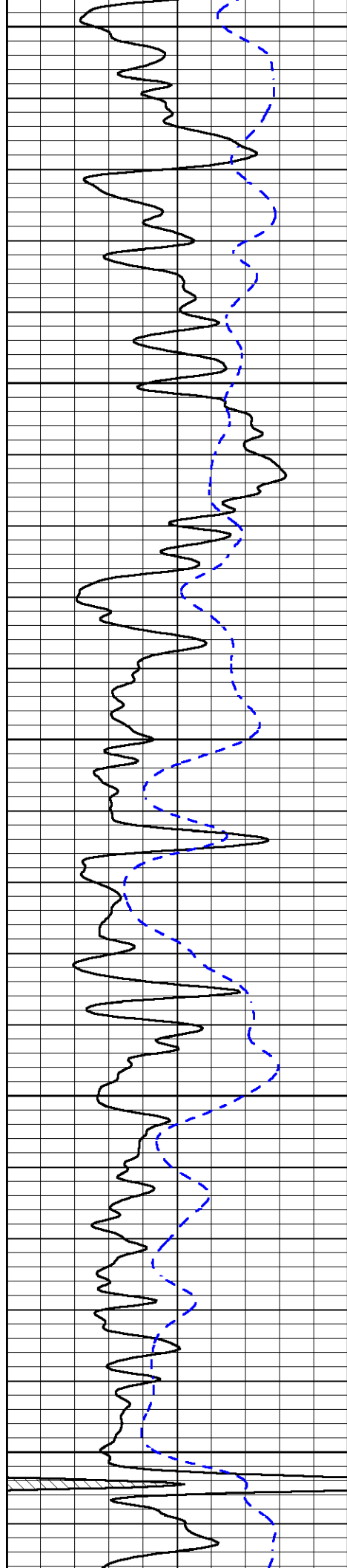


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 Dataset Pathname: stackml/pass2.1  
 Presentation Format: dil  
 Dataset Creation: Thu Apr 27 05:43:37 2017  
 Charted by: Depth in Feet scaled 1:240





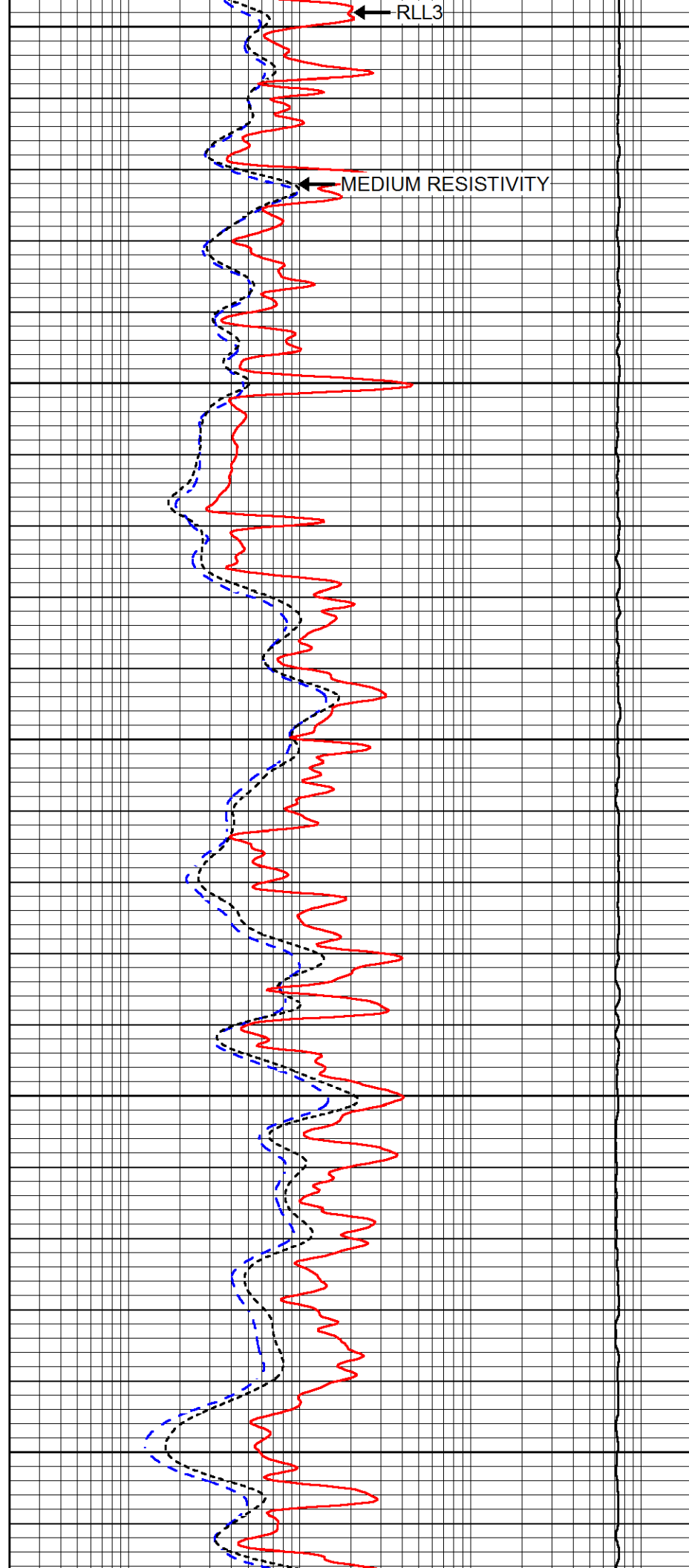
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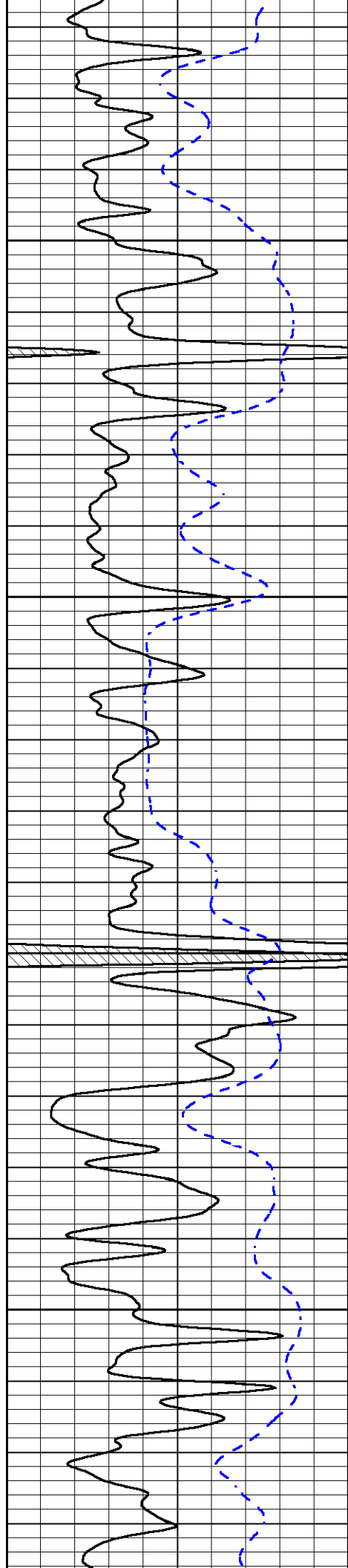
3500

3550

3600

3650



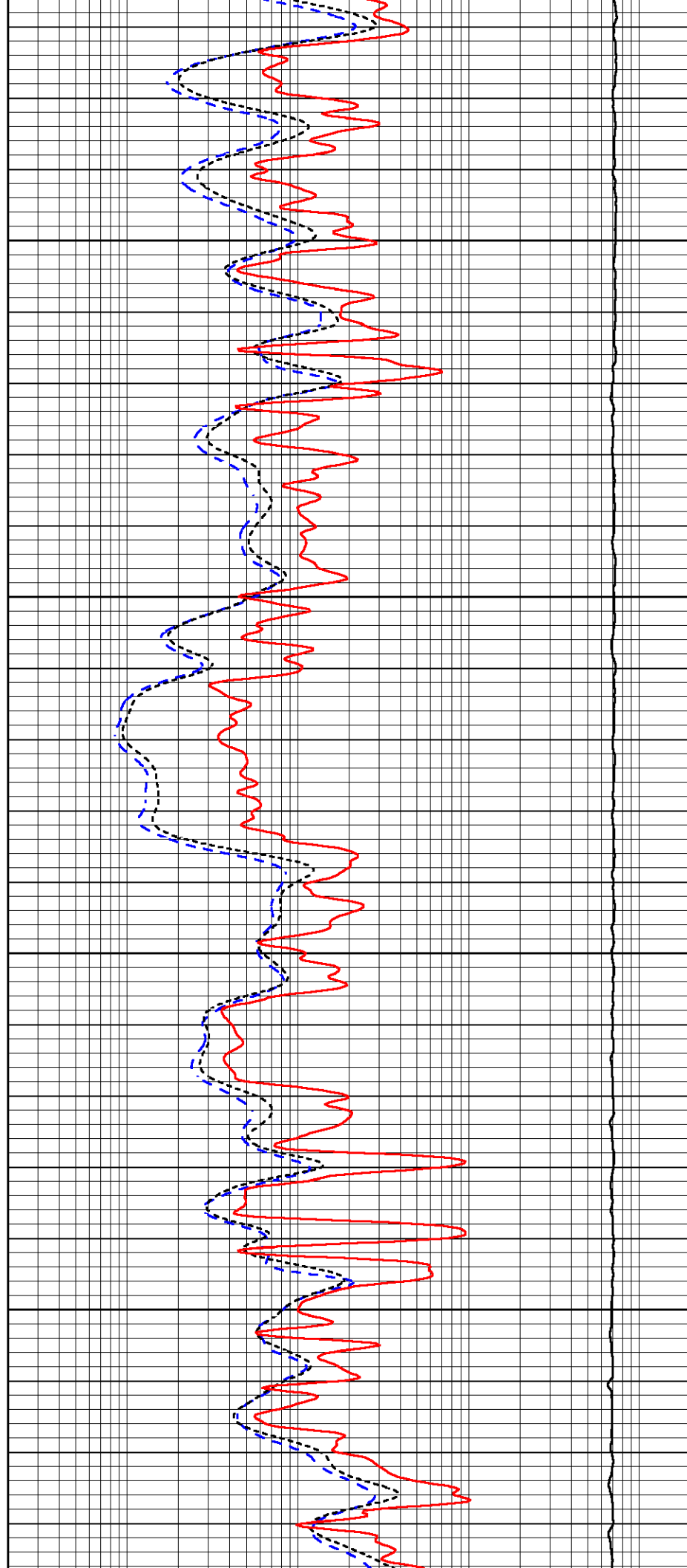


3700

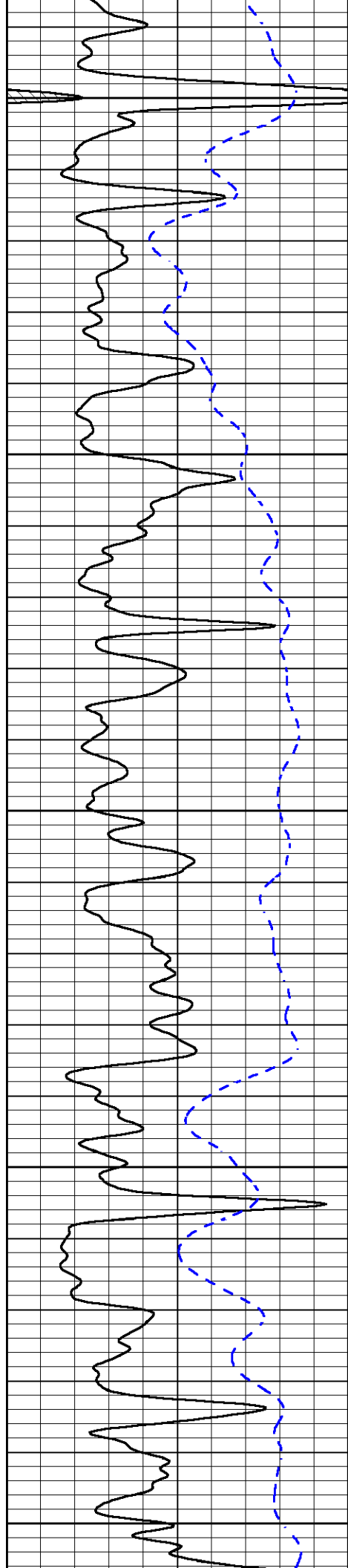
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3800

3850







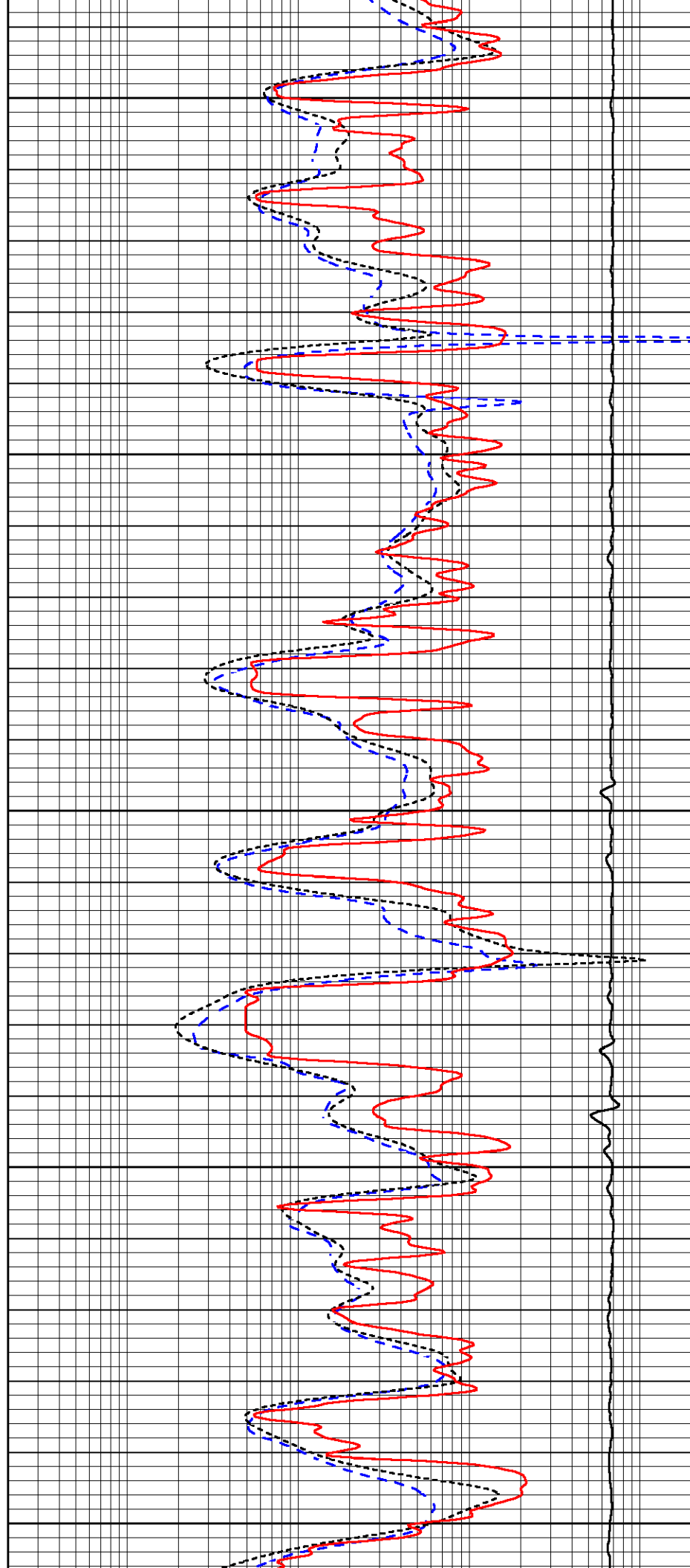
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3950

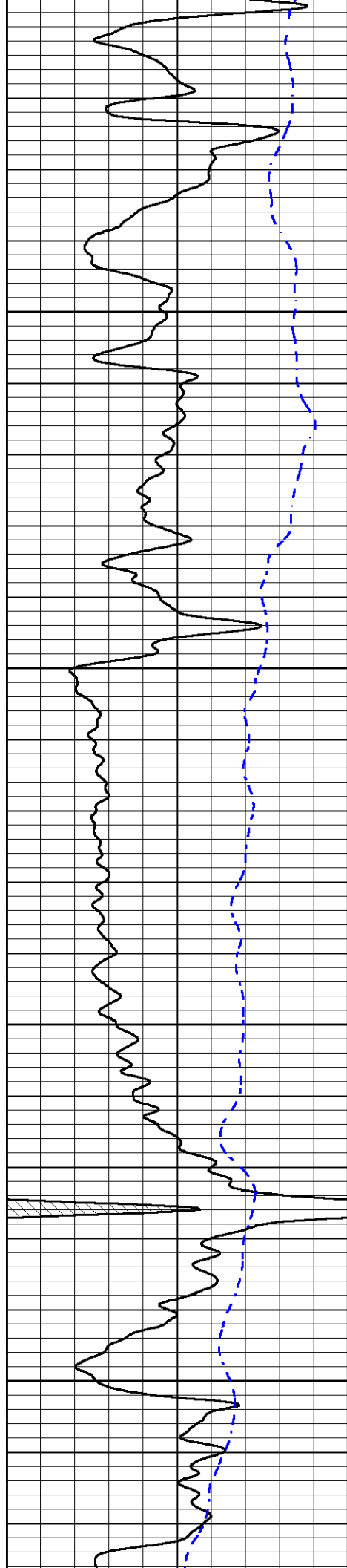
4000

4050

4100





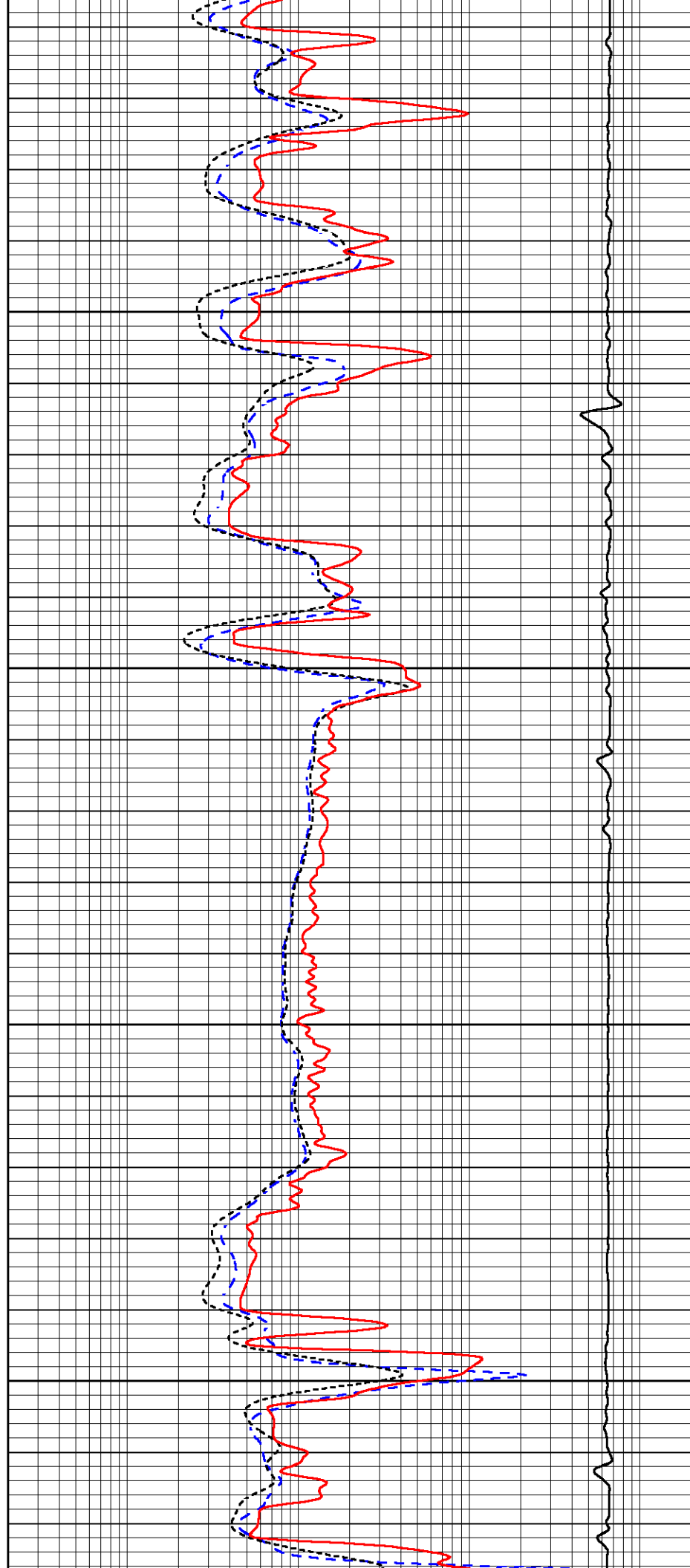


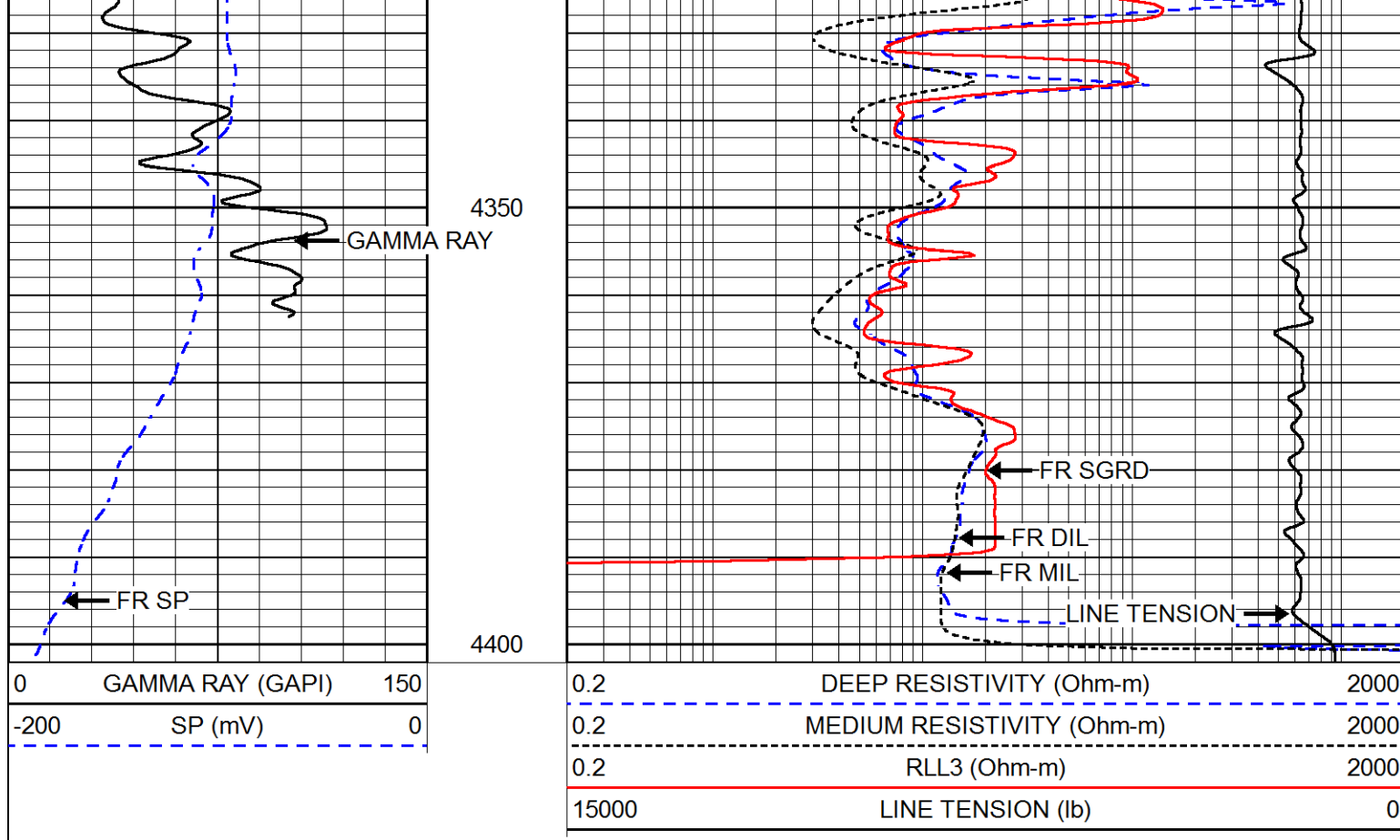
4150

4200

4250

4300





#### Calibration Report

Database File berexco\_bisagno\_1\_14\_owwo.db  
 Dataset Pathname stackml/pass2.1  
 Dataset Creation Thu Apr 27 05:43:37 2017

#### Dual Induction Calibration Report

Serial-Model: 1987-M&W  
 Calibration Performed: Tue Apr 11 16:07:38 2017

| Loop:  | Readings |          | References |         |        | Results |          |
|--------|----------|----------|------------|---------|--------|---------|----------|
|        | Air      | Loop     | Air        | Loop    |        | Gain    | Offset   |
| Deep   | 178.615  | 710.235  | 0.000      | 255.800 | mmho/m | 0.530   | -36.500  |
| Medium | 161.982  | 1441.110 | 0.000      | 255.800 | mmho/m | 0.440   | -110.500 |

#### Microlog Calibration Report

Serial-Model: PSI-02-PSI STKBL ML  
 Performed: Fri Nov 18 10:06:25 2016

|         | Readings |        | References |         |       | Results    |           |
|---------|----------|--------|------------|---------|-------|------------|-----------|
|         | Zero     | Cal    | Zero       | Cal     |       | m          | b         |
| Normal  | 0.0031   | 0.0043 | 0.0000     | 10.0000 | Ohm-m | 19000.0000 | 0.0000    |
| Inverse | 0.0000   | 0.0013 | 0.0000     | 10.0000 | Ohm-m | 22000.0000 | 0.0000    |
| Caliper | 1.0020   | 1.0834 | 5.5000     | 16.5000 | in    | 135.1560   | -131.6000 |

#### Compensated Density Calibration Report

Serial-Model: 168-986-M&W

## Master Calibration

|                     | Density |      | Far Detector                | Near Detector |     |
|---------------------|---------|------|-----------------------------|---------------|-----|
| Magnesium           | 1.755   | g/cc | 4691.86                     | 4818.19       | cps |
| Aluminum            | 2.675   | g/cc | 859.57                      | 3020.22       | cps |
| Spine Angle = 74.61 |         |      | Density/Spine Ratio = 0.523 |               |     |
|                     | Size    |      | Reading                     |               |     |
| Small Ring          | 4.00    | in   | 1.03                        |               |     |
| Large Ring          | 14.00   | in   | 1.23                        |               |     |

## Compensated Neutron Calibration Report

Serial Number: tk10-MW  
Tool Model: M&W  
Calibration Performed: Wed Nov 16 11:21:36 2016

| 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: 89-M&W  
Tool Model: M&W  
Calibration Performed: Tue Apr 11 16:08:01 2017

Calibrator Value: 1000.0 GAPI

Background Reading: 0.0 cps  
Calibrator Reading: 6.2 cps

Sensitivity: 0.5200 GAPI/cps



Company BEREXCO, LLC  
Well BISAGNO NO. 1-14 OWWO  
Field UNKNOWN  
County NESS  
State KANSAS