



MIDWEST WIRELINE

GAMMA RAY / CALIPER LOG

Company Murfin Drilling Company, Inc.
Well Kaus #1-21
Field
County Cheyenne **State** Kansas

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 Well Kaus #1-21
 Field
 County Cheyenne
 State Kansas

| | |
|------------------------|--------------------------------|
| Location: | API #: 15-023-21576-00-00 |
| 2310 FSL & 175 FEL | Other Services |
| SEC 21 TWP 3S RGE 37W | CNL/CDL DIL/MEL BHCS |
| Permanent Datum | Ground Level |
| Log Measured From | Elevation 3423 |
| Drilling Measured From | Kelly Bushing Kelly Bushing |
| | K.B. 3428 D.F. G.L. 3423 |

| | | |
|------------------------|--------------|--|
| Date | 8/14/2022 | |
| Run Number | One | |
| Type Log | BHV | |
| Depth Driller | 5191 | |
| Depth Logger | 5163 | |
| Bottom Logged Interval | 5134 | |
| Top Logged Interval | 350 | |
| Type Fluid In Hole | Chemical | |
| Salinity, PPM CL | 1000 | |
| Density | 9.0 | |
| Level | Full | |
| Max. Rec. Temp. F | 128 | |
| Operating Rig Time | 5 Hours | |
| Equipment -- Location | P-108 HAYS | |
| Recorded By | D. Schmidt | |
| Witnessed By | Curtis Covey | |

| Borehole Record | | | | Casing Record | | | |
|-----------------|-------|------|-----|---------------|------|------|-----|
| Run No. | Bit | From | To | Size | Wgt. | From | To |
| One | 12.25 | 0 | 388 | 8.625 | 23 | 0 | 388 |
| Two | 7.875 | 388 | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

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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.

Bird City,
East to Rd 32, 3/4 North,
West into

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: Curtis Covey Secondary Witness: Secondary Witness: Secondary Witness: |
|--|--|

| | | | | | | |
|------|-------------|-----------|-------------|-------------|-----------|-------------|
| Open | Offset (ft) | Schematic | Description | Length (ft) | O.D. (in) | Weight (lb) |
|------|-------------|-----------|-------------|-------------|-----------|-------------|

| Sensor | Offset (ft) | Schematic | Description | Length (ft) | O.D. (in) | Weight (lb) |
|--------------------|-------------------------|-----------|-----------------------|-------------|-----------|-------------|
| GR | 40.33 | | GR-M&W (103) | 3.00 | 3.50 | 50.00 |
| CNLSC CNSSC | 37.23 36.48 | | CNT-M&W (210) | 5.00 | 3.50 | 100.00 |
| LSD DCAL SSD | 28.18 28.17 27.68 | | CDL-M&W (304-04) | 8.50 | 4.00 | 250.00 |
| MCAL MI MN | 19.58 19.58 19.58 | | ML-PSI STKBL ML (401) | 7.58 | 4.00 | 65.00 |
| RLL3F RLL3 | 15.50 15.50 | | | | | |
| CILD | 8.33 | | DIL-M&W (505 HT) | 18.25 | 3.50 | 220.00 |
| CILM | 4.50 | | | | | |
| SP | 0.20 | | | | | |

Dataset: murfin_kaus 1-21.db: field/well/stkml/pass4.17
 Total length: 42.33 ft
 Total weight: 685.00 lb
 O.D.: 4.00 in

Log Variables

DatabaseC:\ProgramData\Warrior\Data\murfin_kaus 1-21.db
 Dataset field/well/stkml/pass4.17/_vars_

Top - Bottom

| | | | | | | | |
|-----------|--------------|------------------|-------------------|----------------|------------------|-------|------------------|
| A | BOREID in | BOTTEMP degF | CASEOD in | CASETHCK in | FLUIDDEN g/cc | M | MATRXDEN g/cc |
| 1 | 7.875 | 128 | 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 | 375 | 80 | Off | 5162 |

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

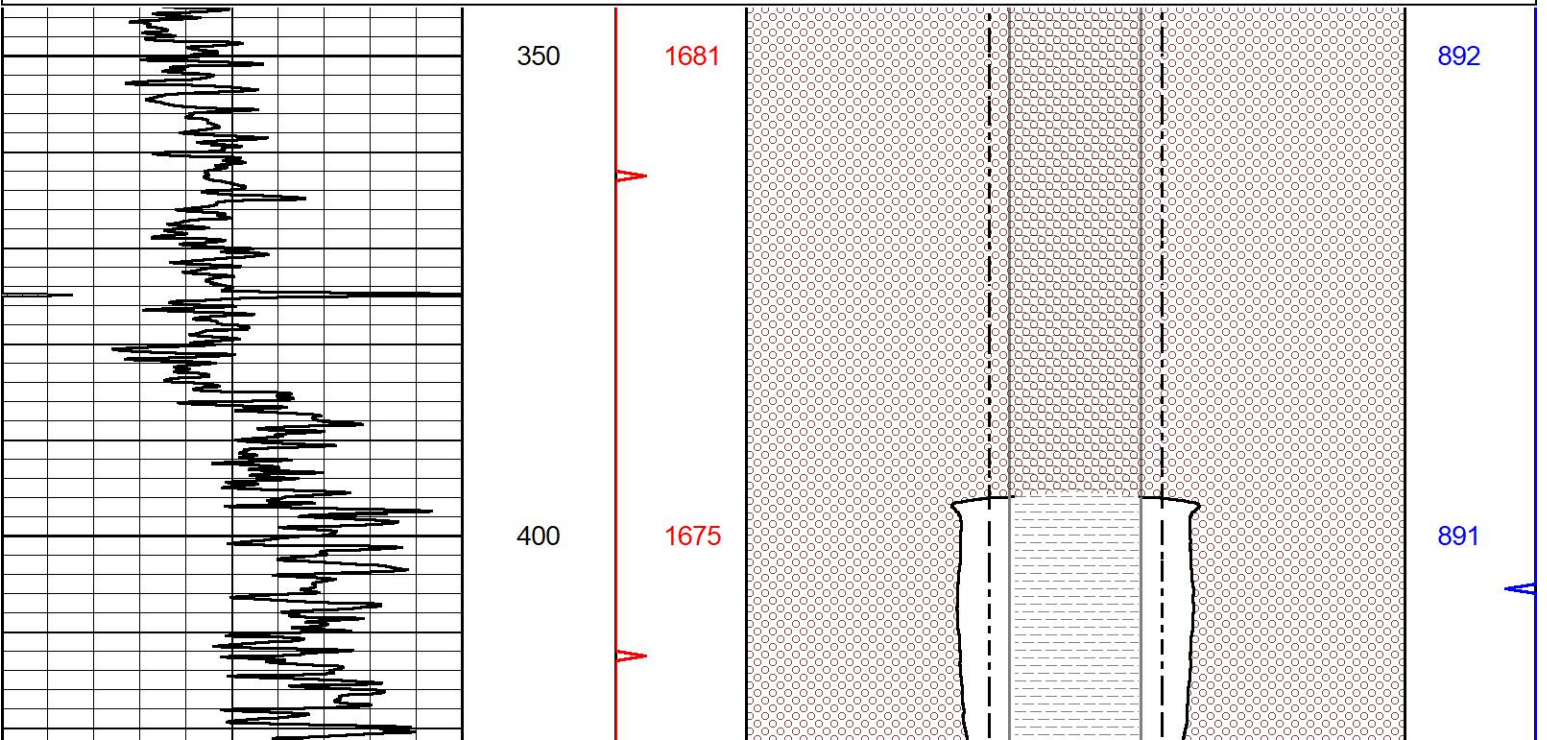


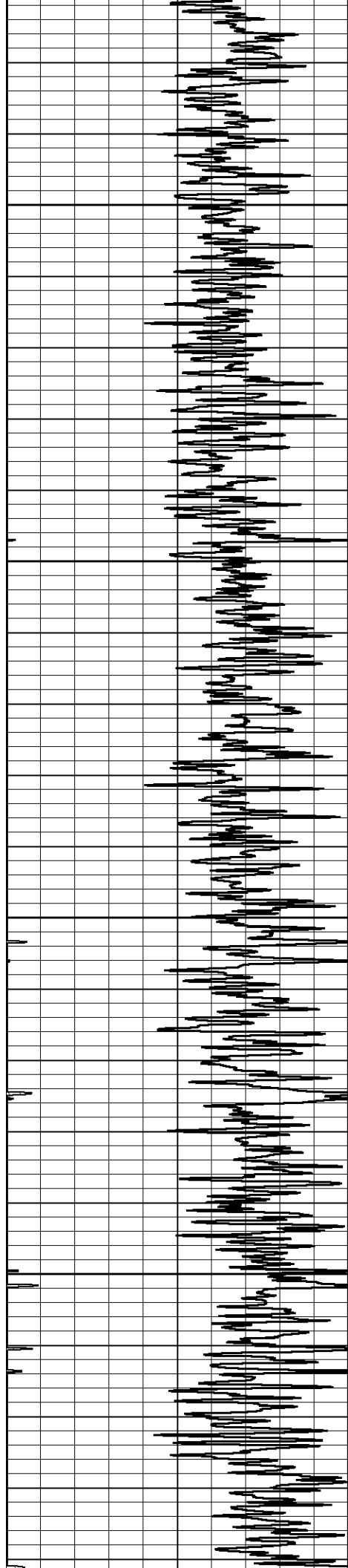
DETAIL SECTION

MAIN PASS

Database File murfin_kaus 1-21.db
 Dataset Pathname stkml/pass4.1
 Presentation Format bhv5half
 Dataset Creation Sun Aug 14 22:29:22 2022
 Charted by Depth in Feet scaled 1:240

| | | | | | | | | |
|---|------------------|-----|----|--------------|----|----|--------------|----|
| 0 | GAMMA RAY (GAPI) | 150 | 16 | CALIPER (in) | 6 | 6 | CALIPER (in) | 16 |
| | | | 16 | BIT SIZE | 6 | 6 | BIT SIZE | 16 |
| | | | 0 | BVTX (ft3) | 15 | 15 | AVTX (ft3) | 0 |





450

1655

500

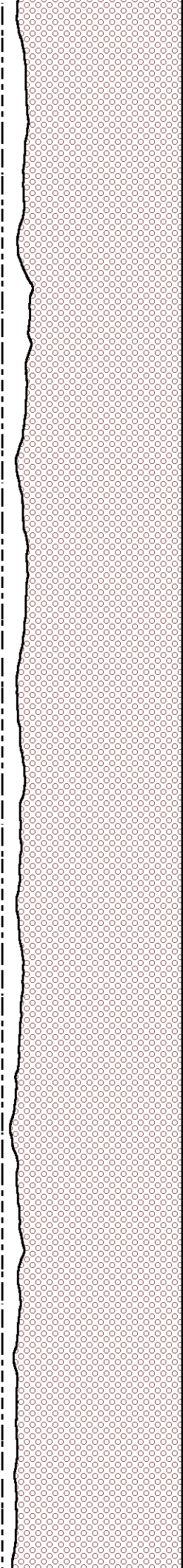
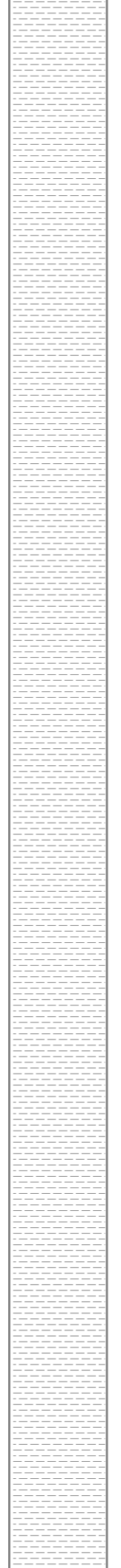
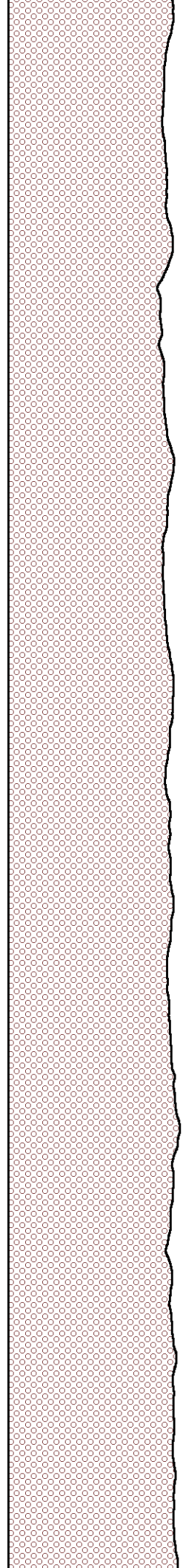
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550

1616

600

1597



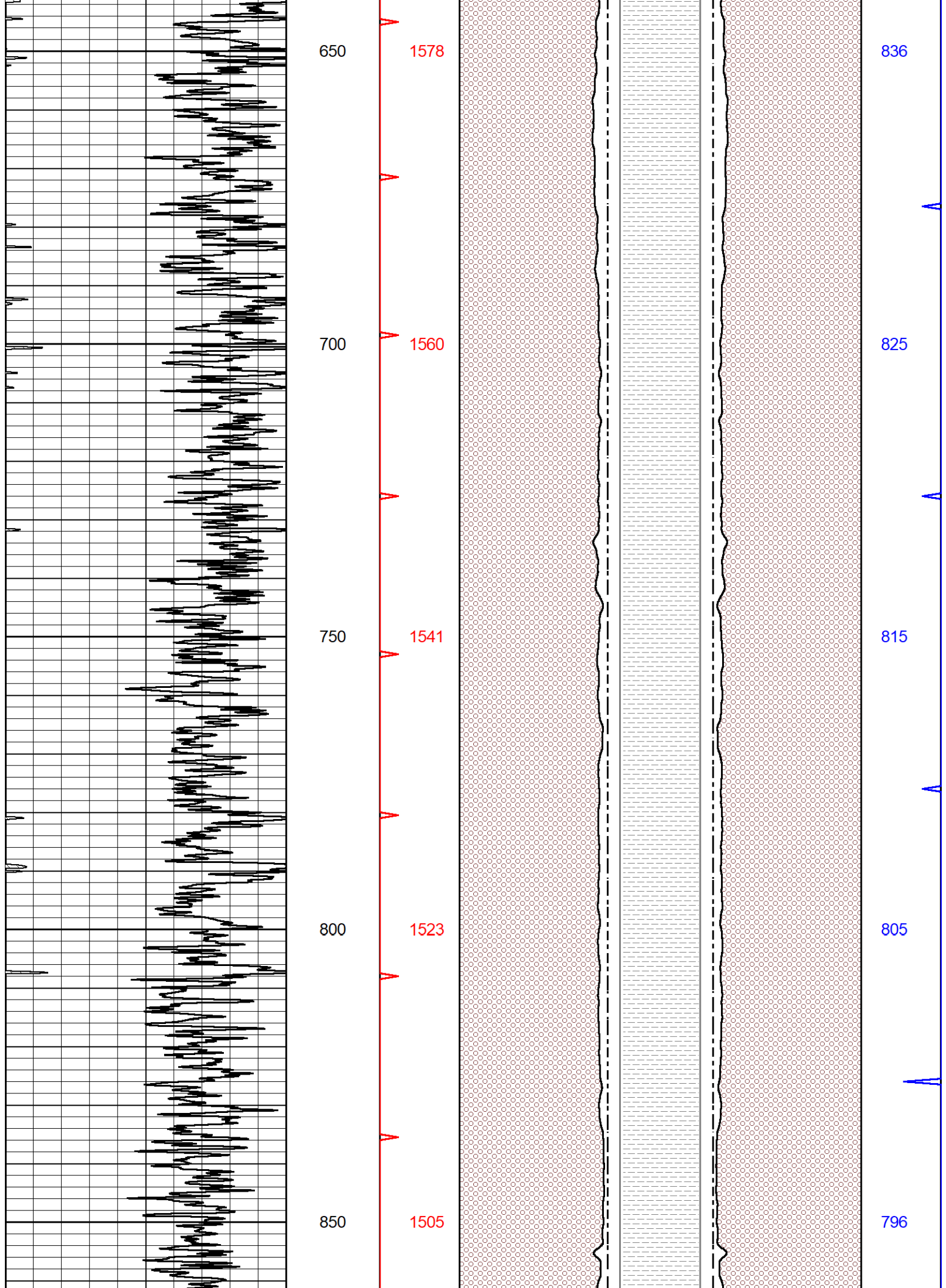
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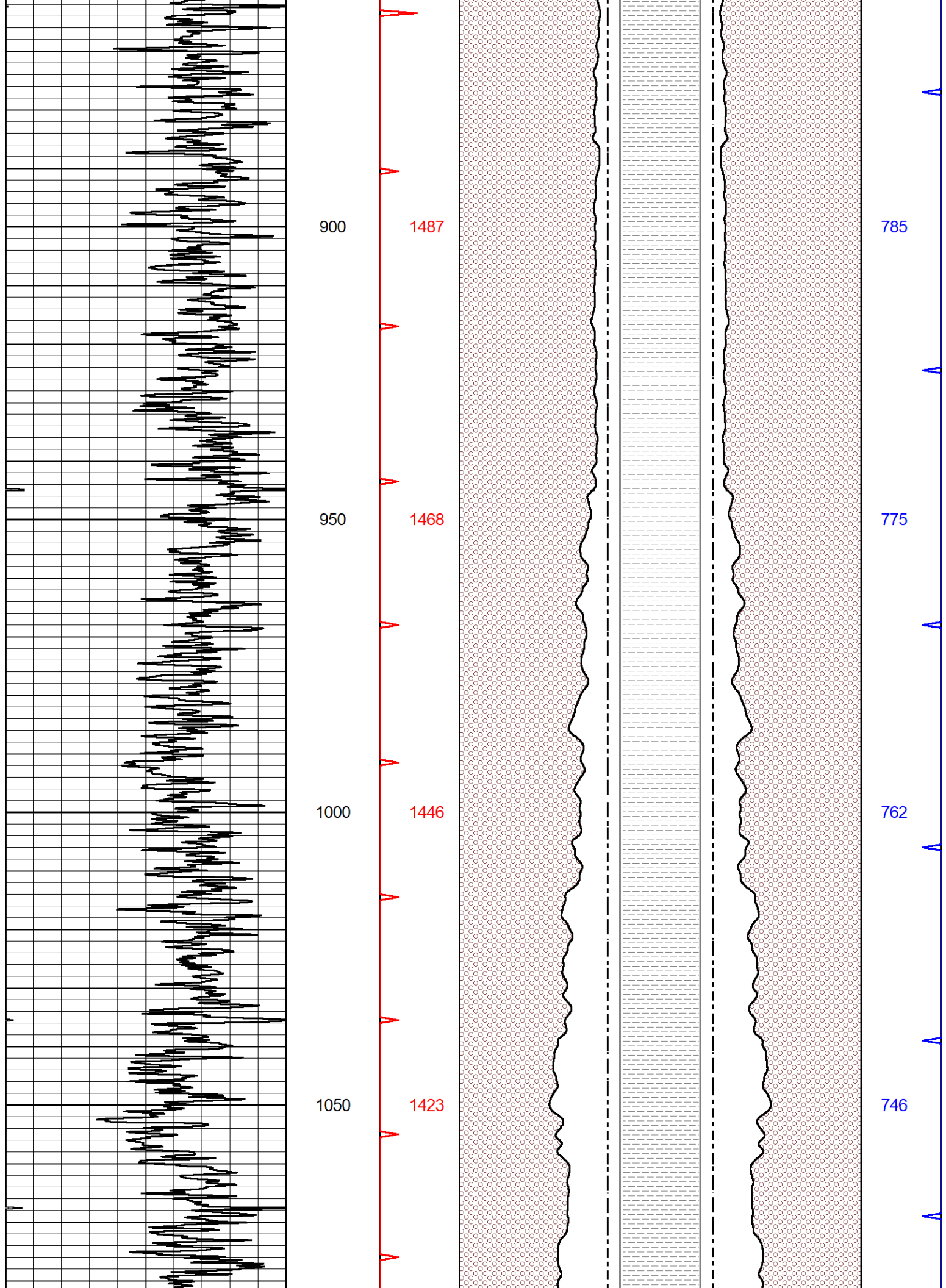
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857

846







900

1487

785

950

1468

775

1000

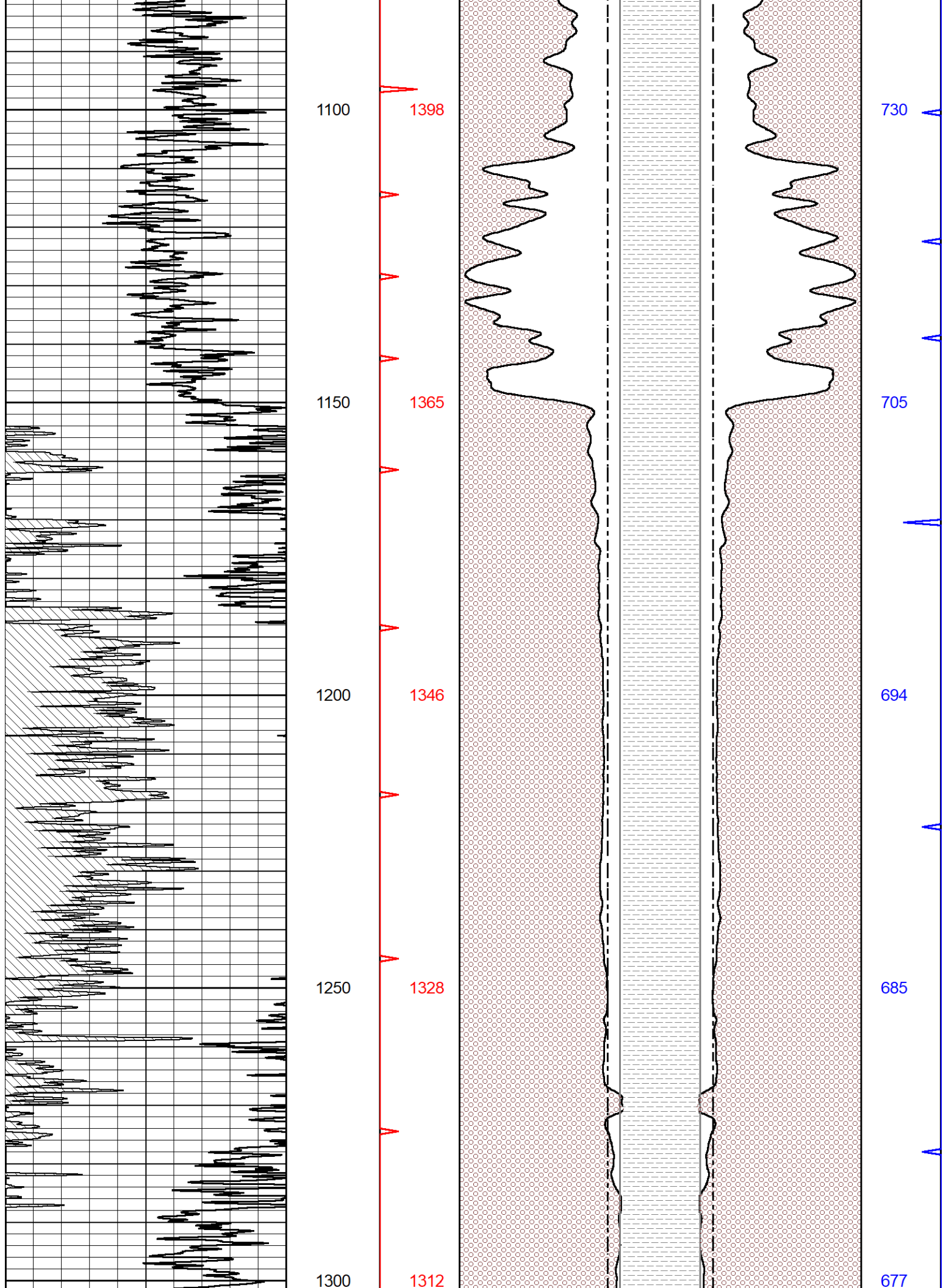
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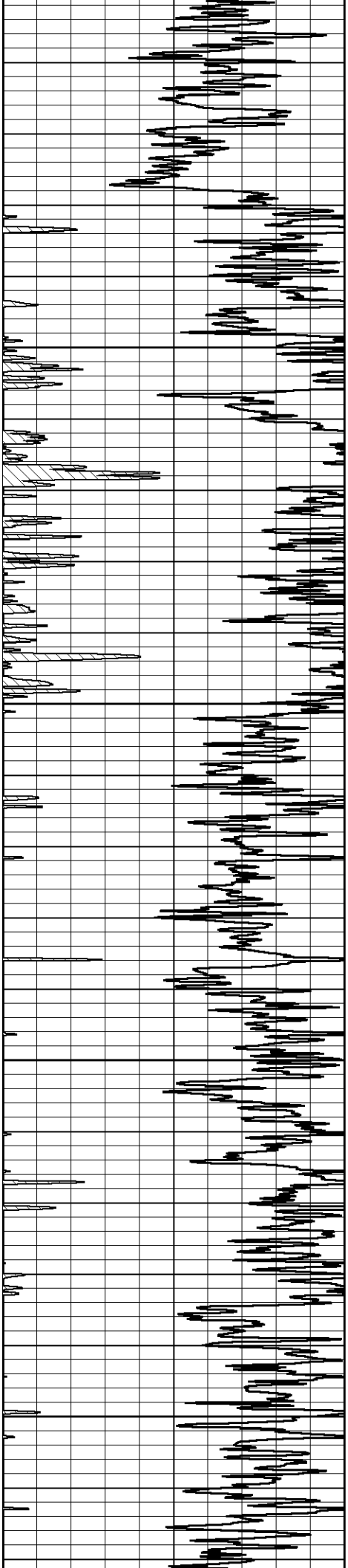
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1423

746





1350

1296

669

1400

1281

662

1450

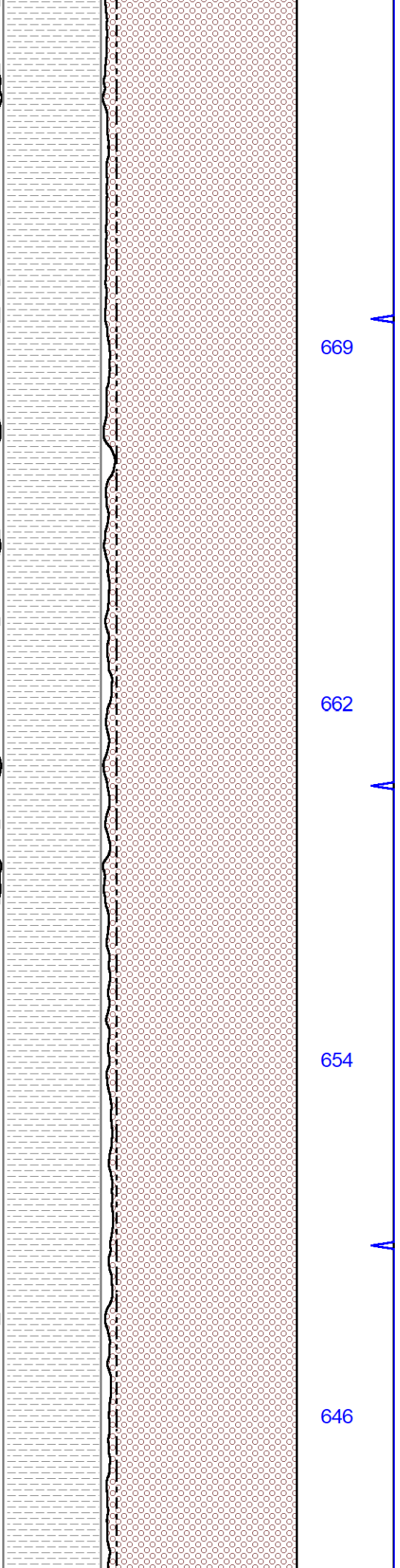
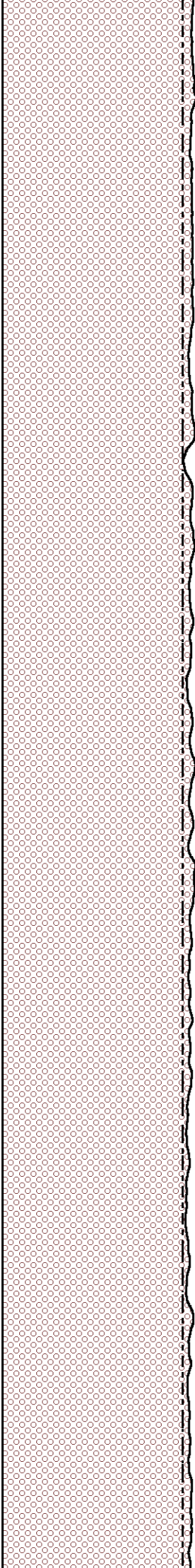
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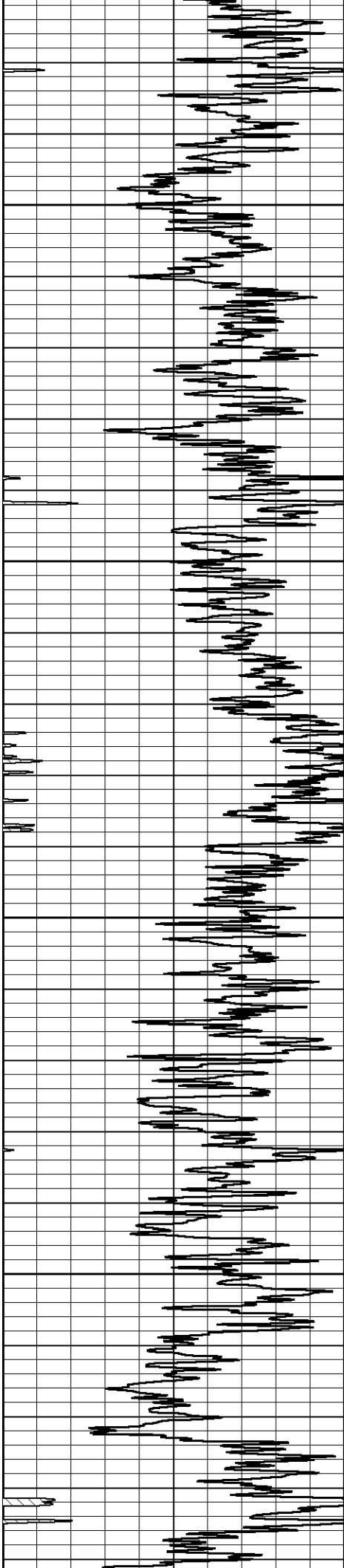
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1249

646





1550

1233

639

1600

1216

631

1650

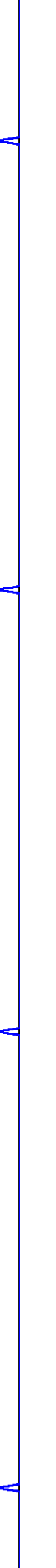
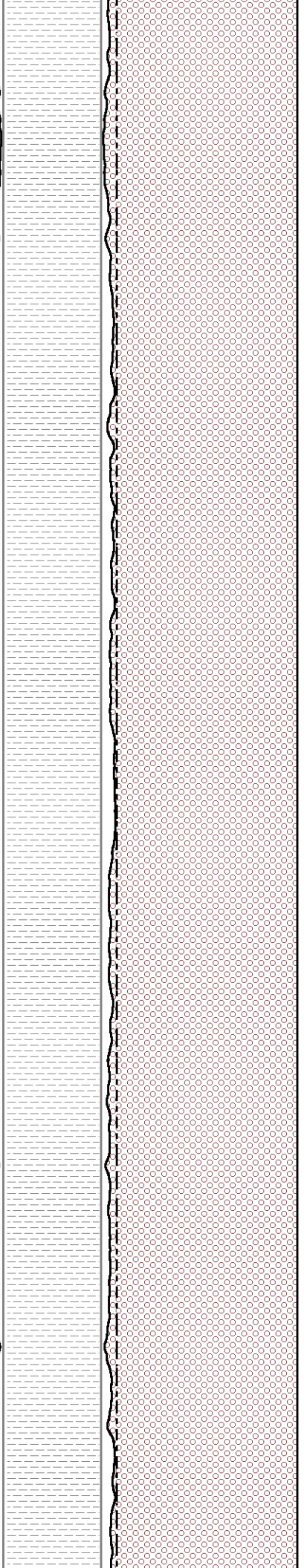
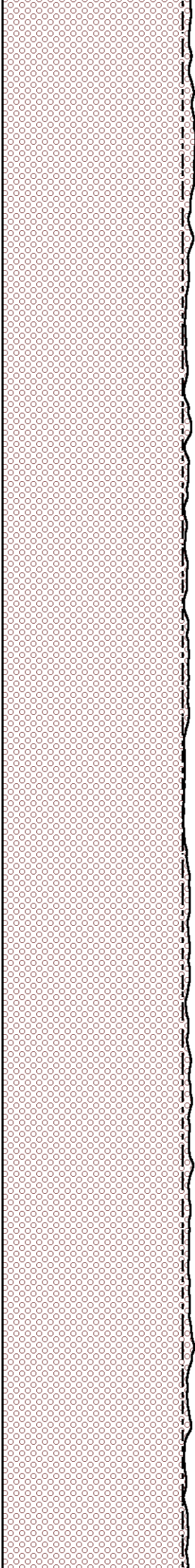
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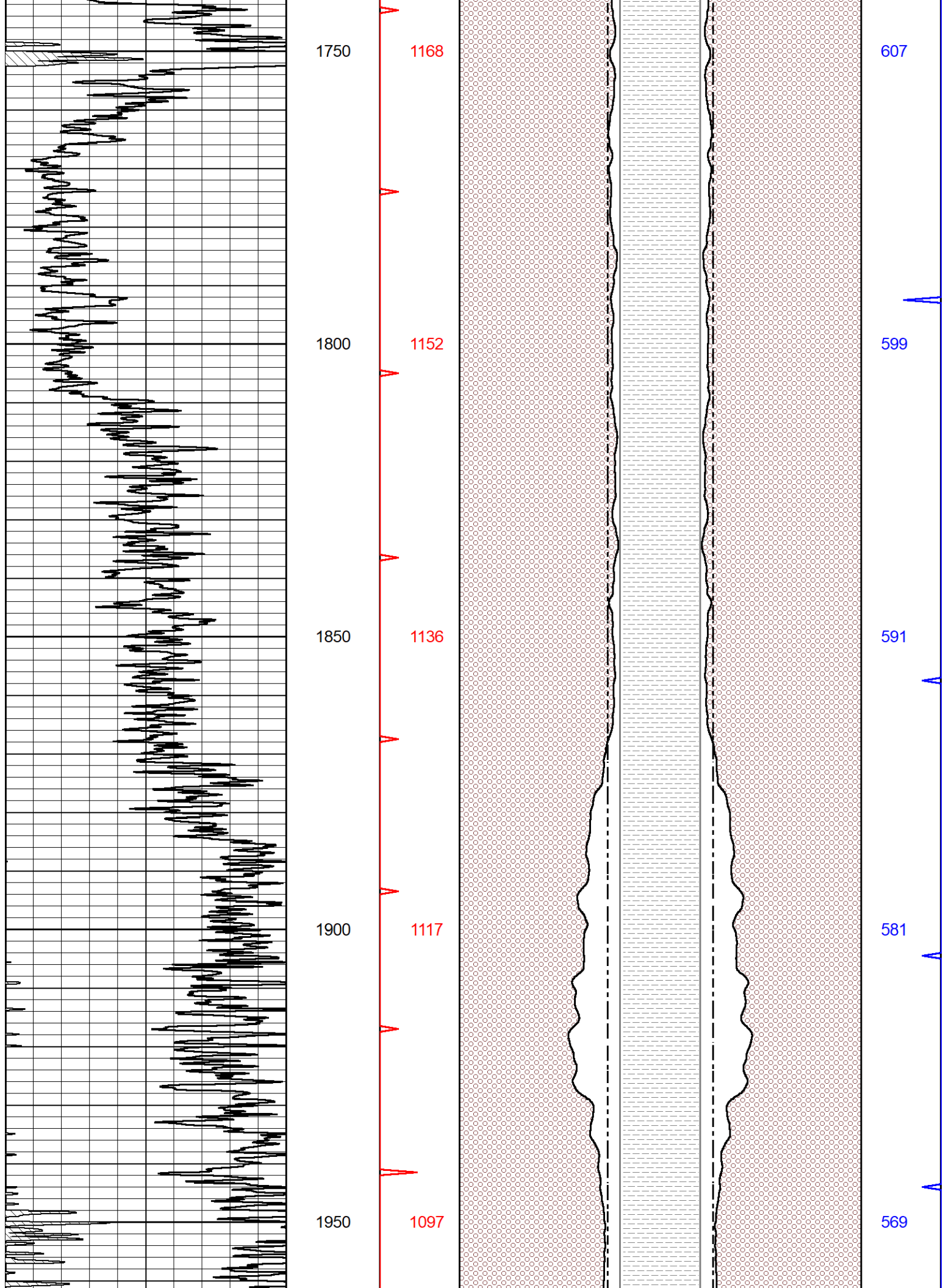
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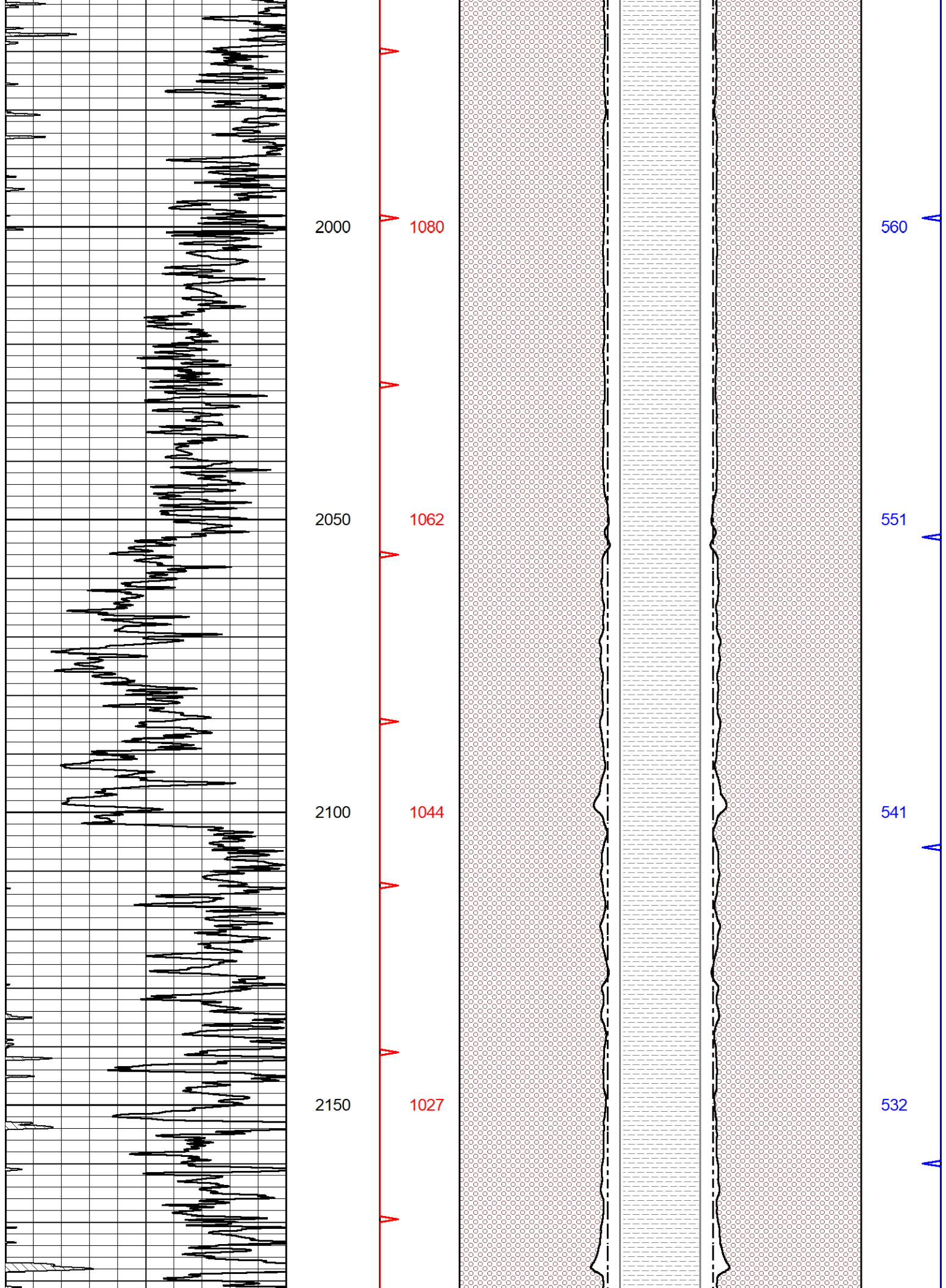
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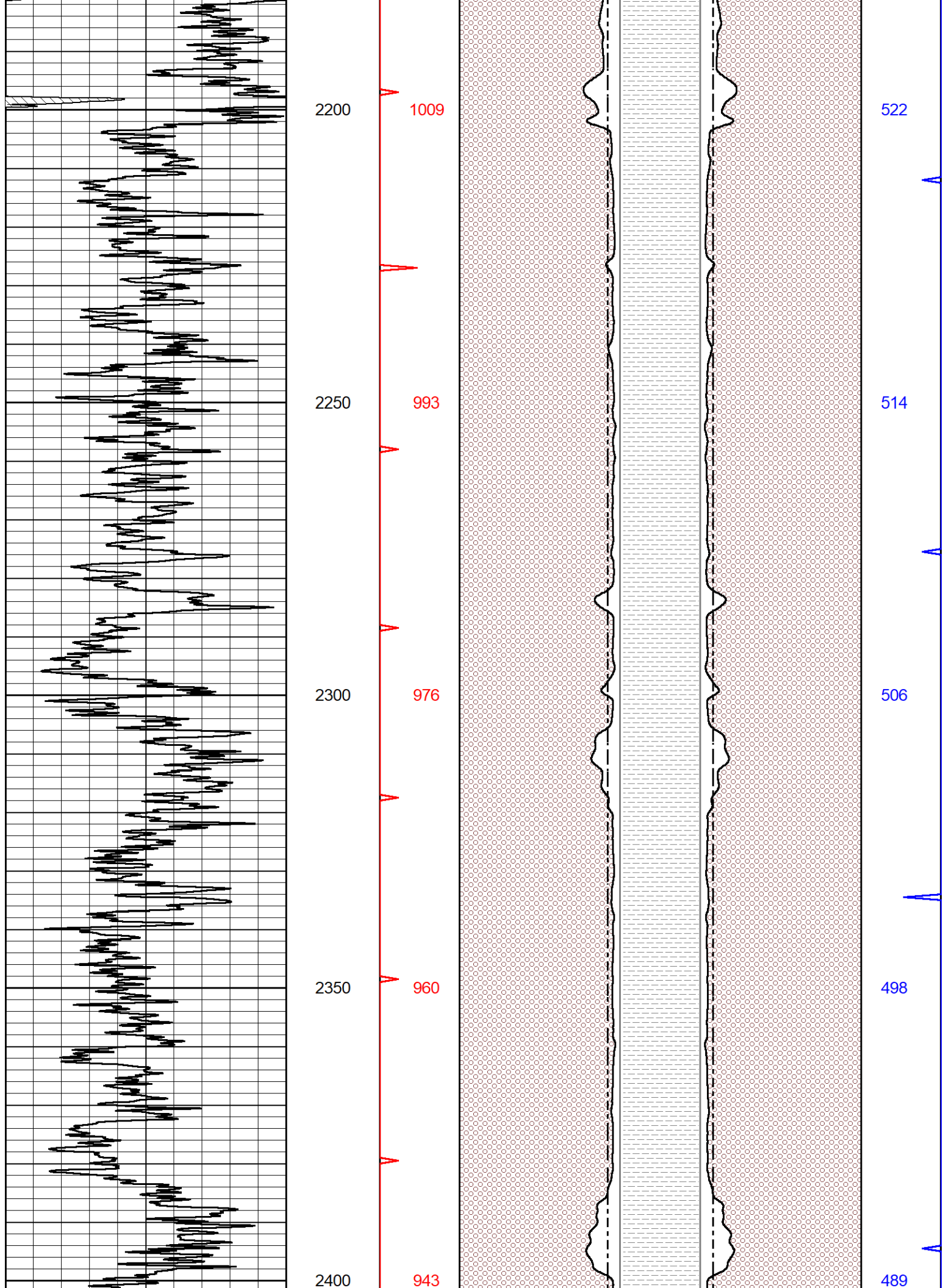
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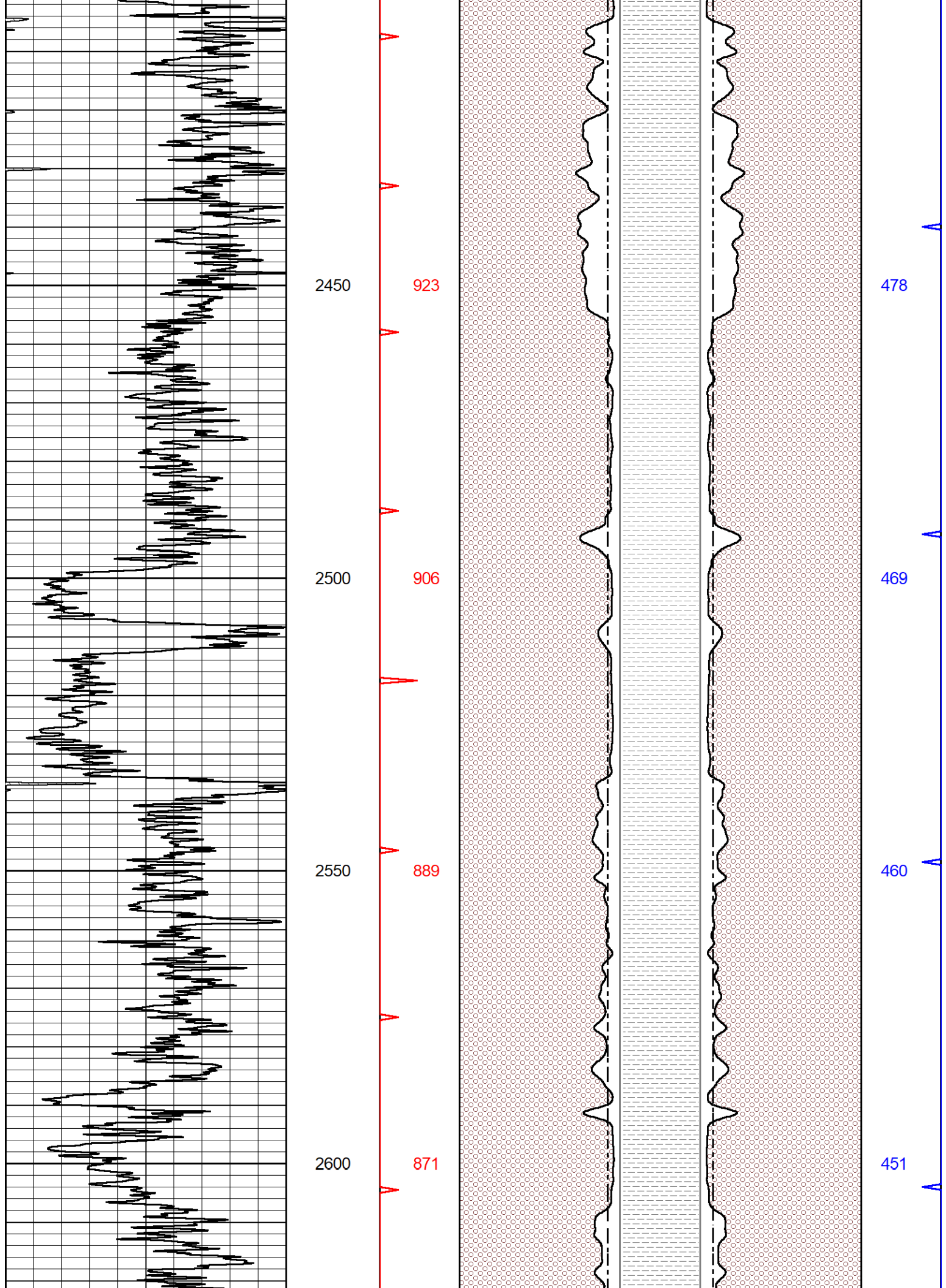
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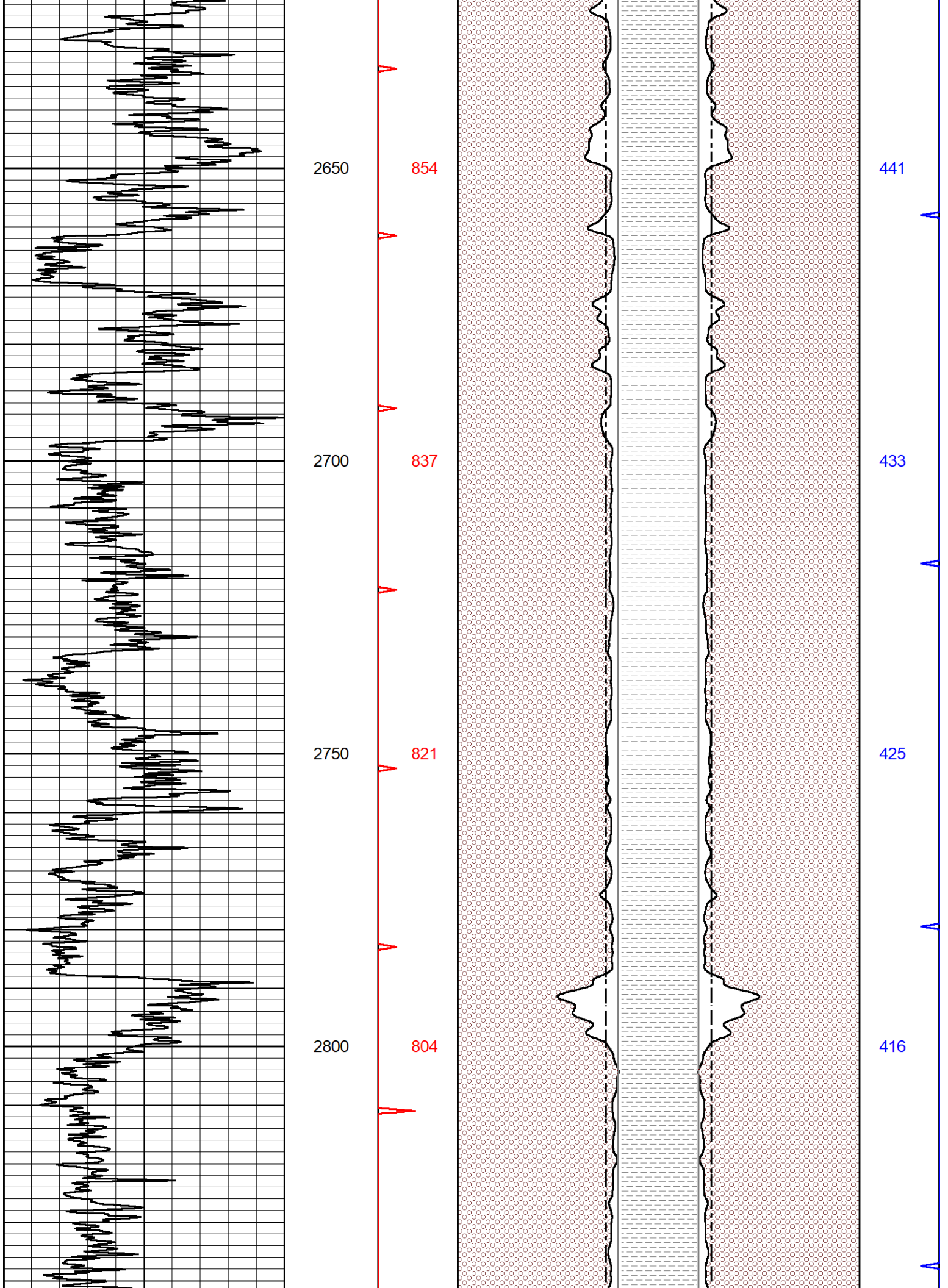


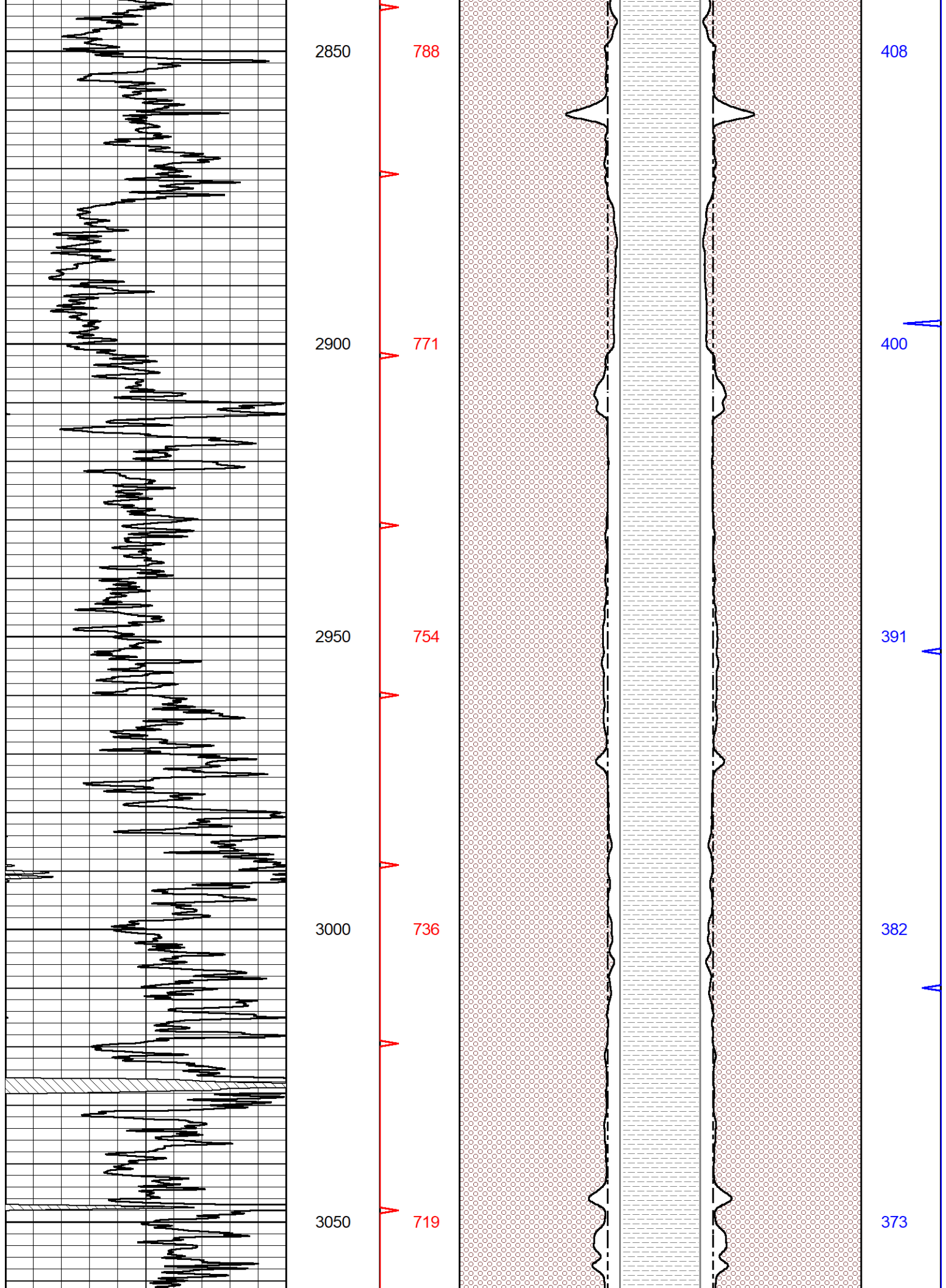


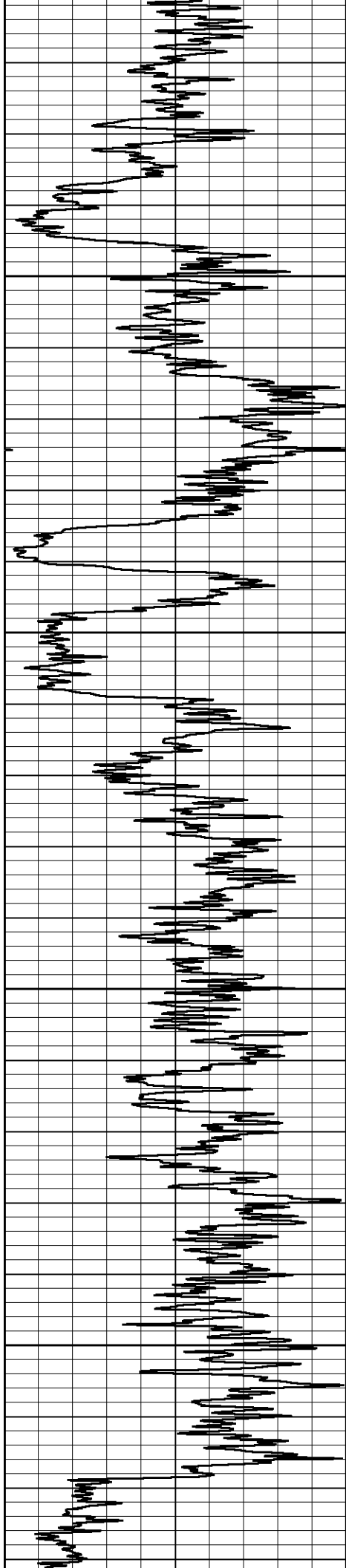












3100

701

3150

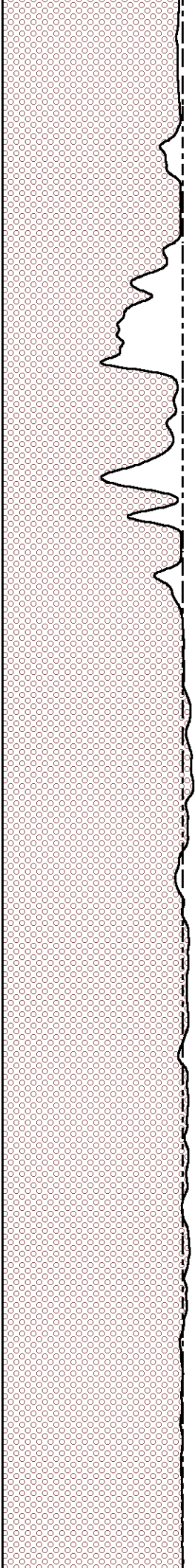
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3200

664

3250

648

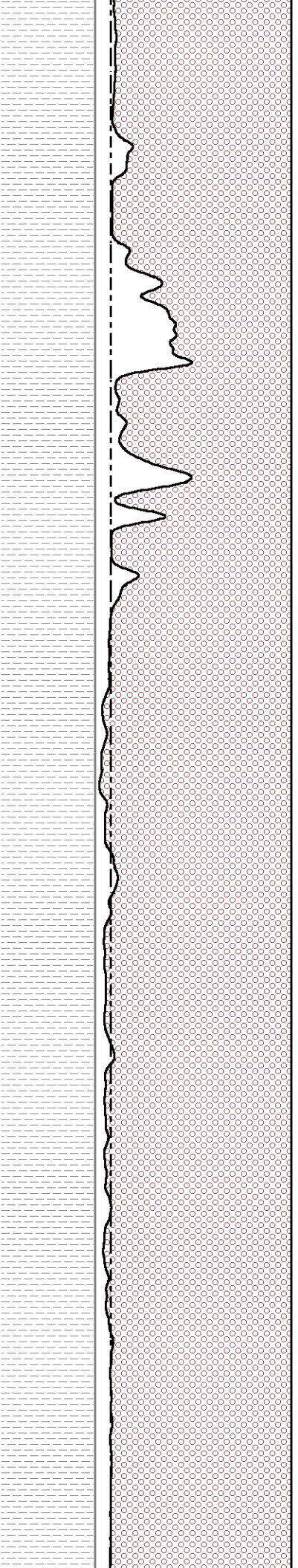


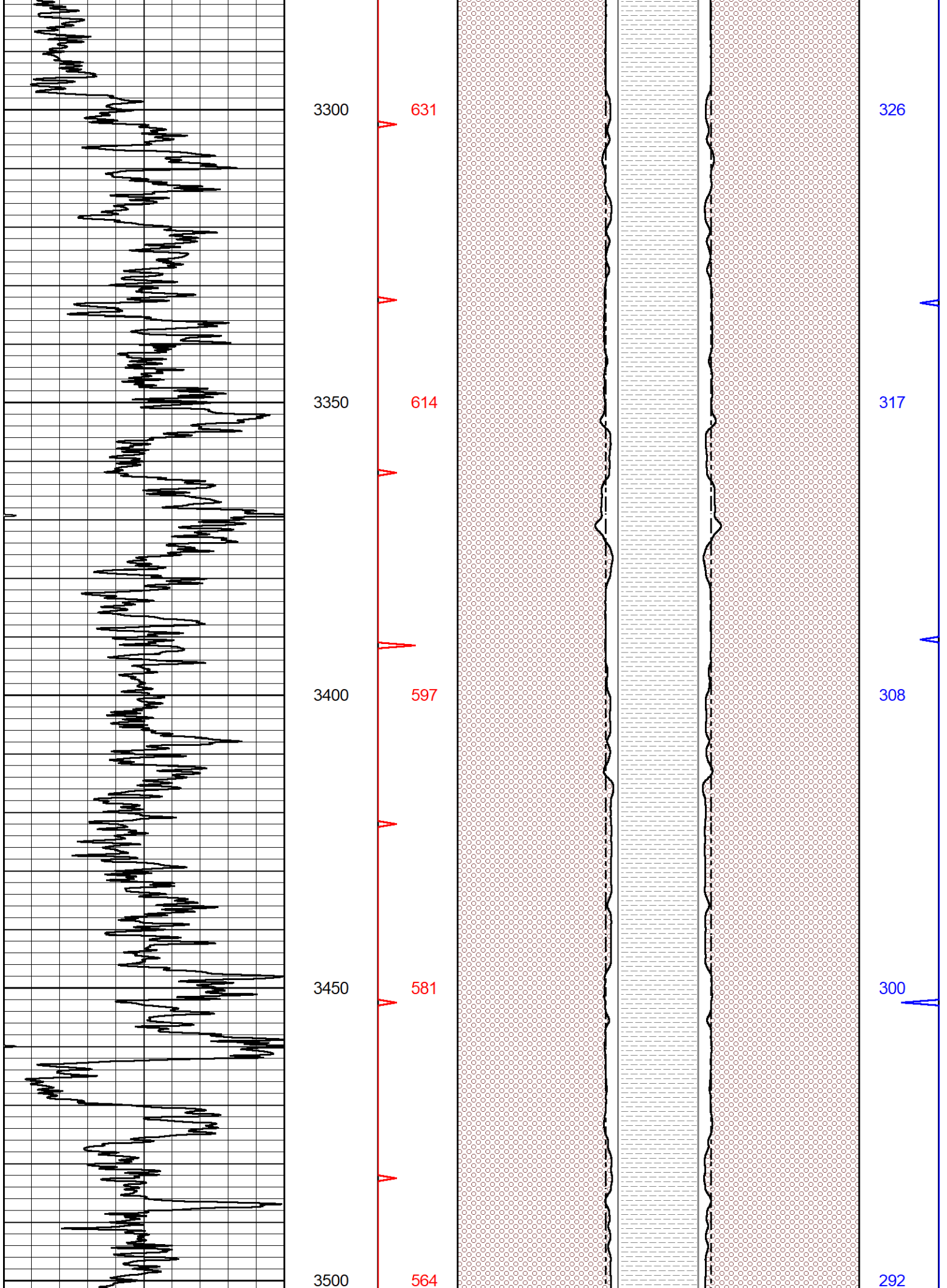
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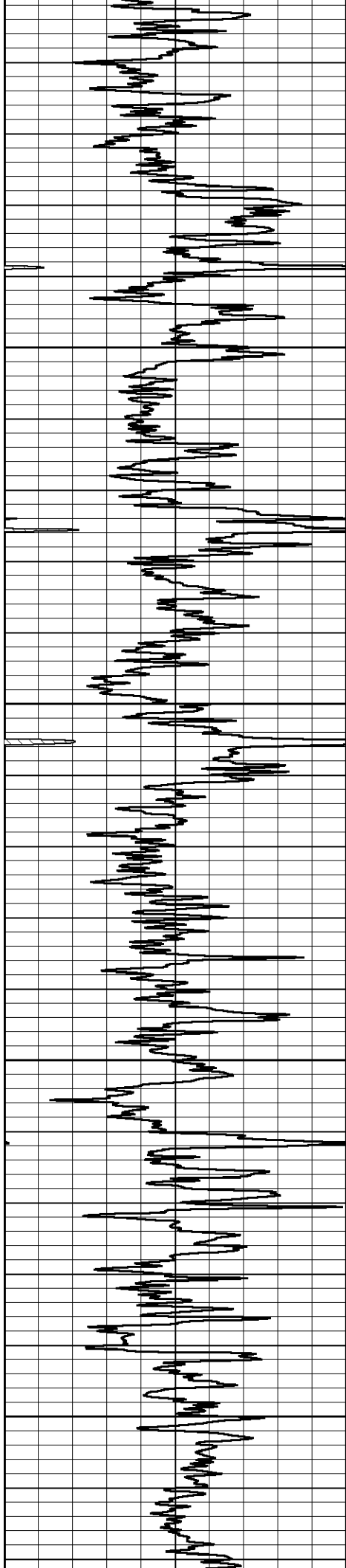
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3550

548

283

3600

531

275

3650

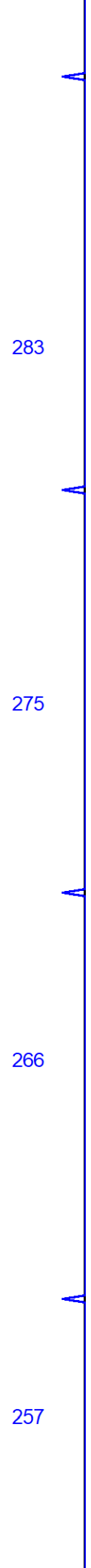
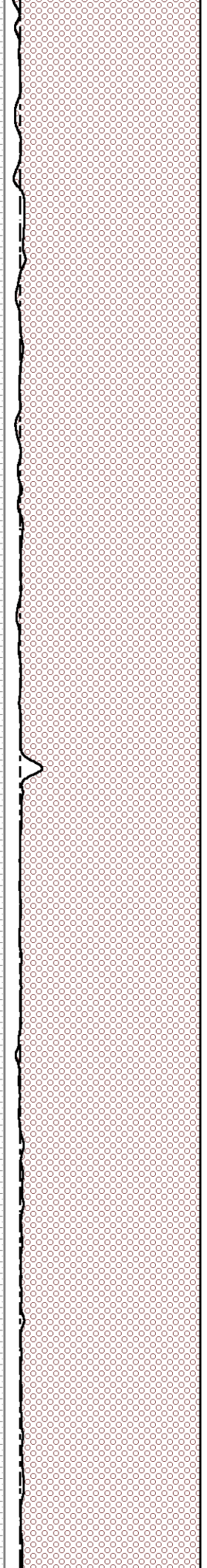
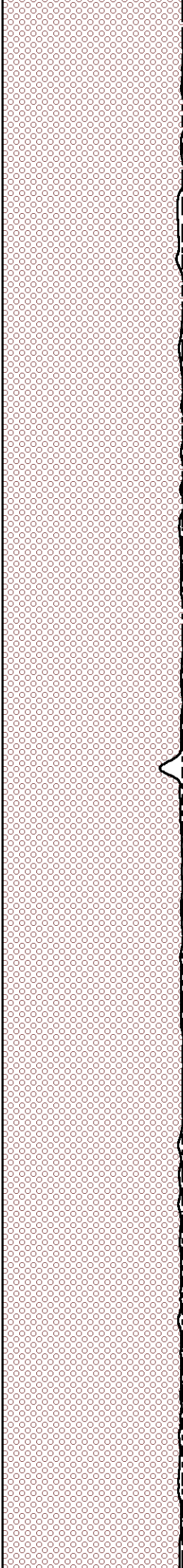
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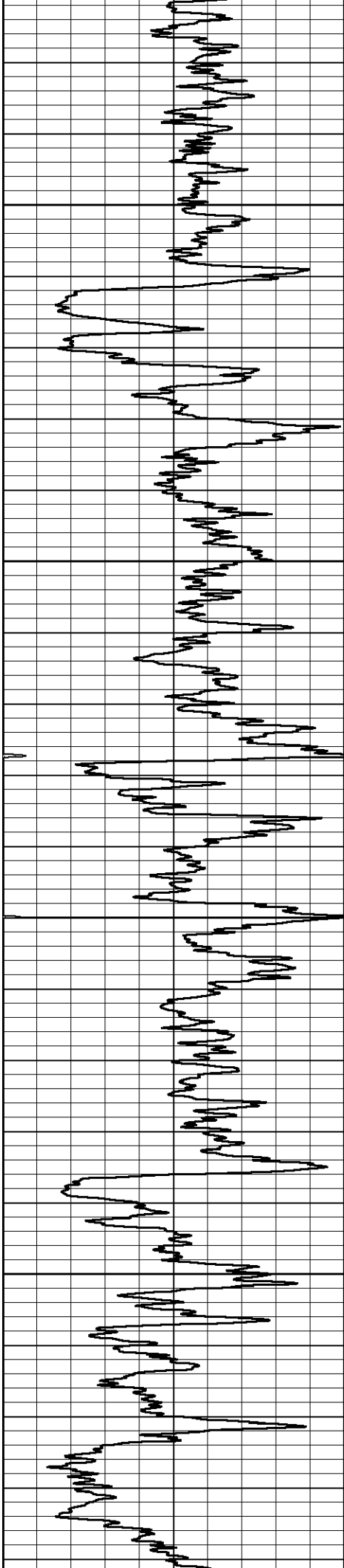
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3750

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3800

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239

3850

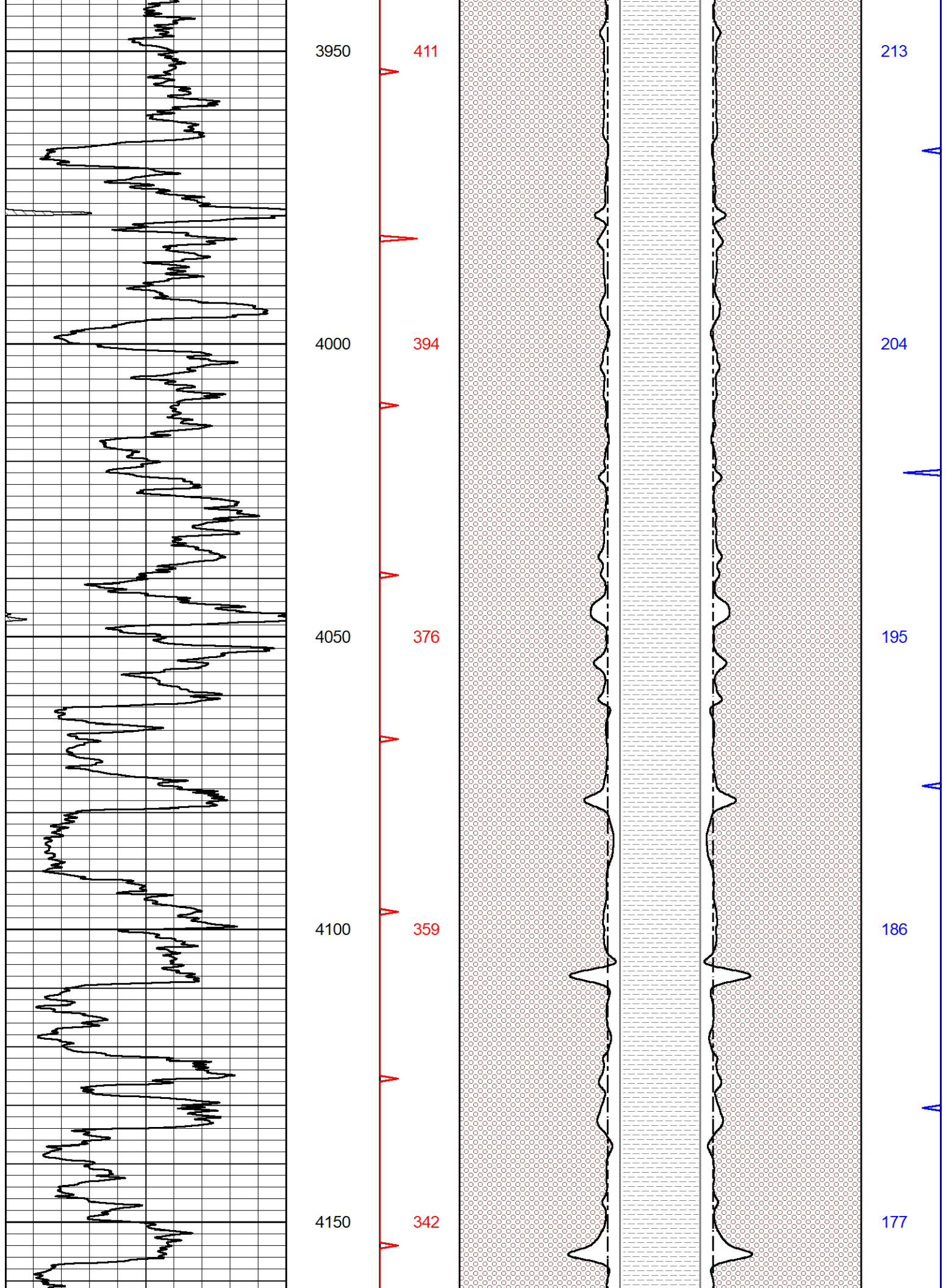
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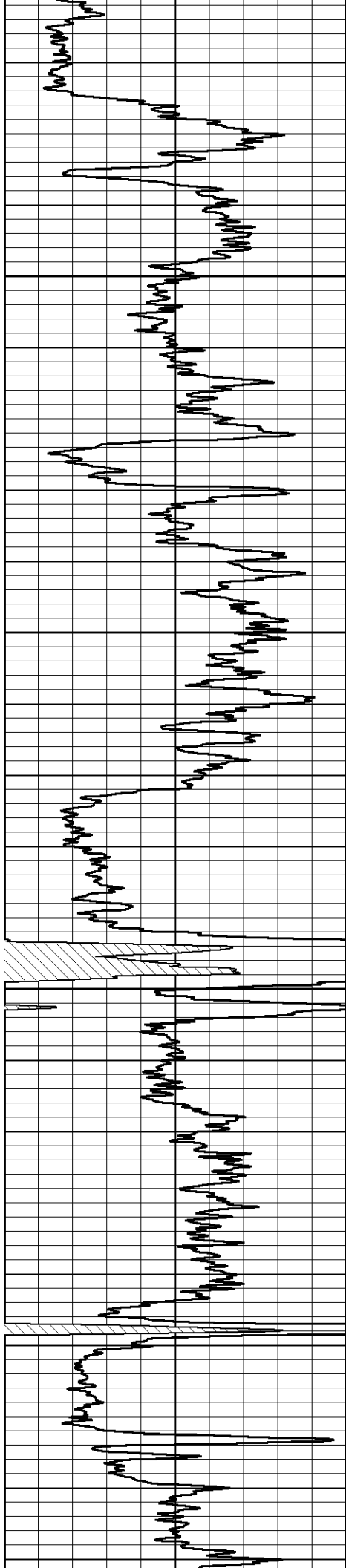
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3900

428

222





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4250

4300

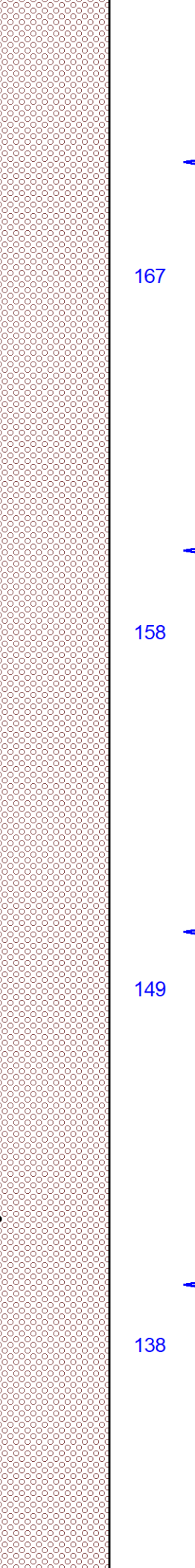
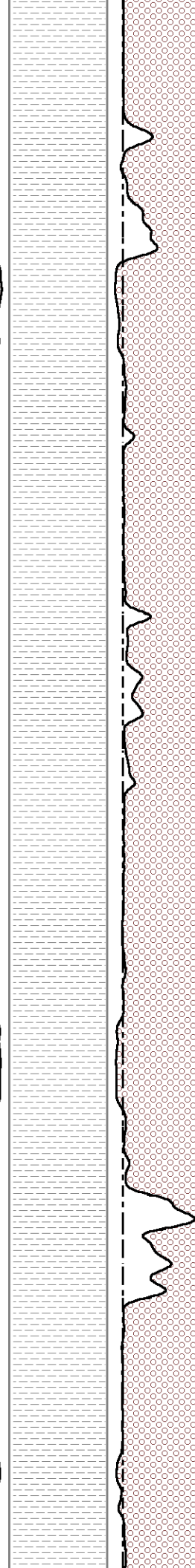
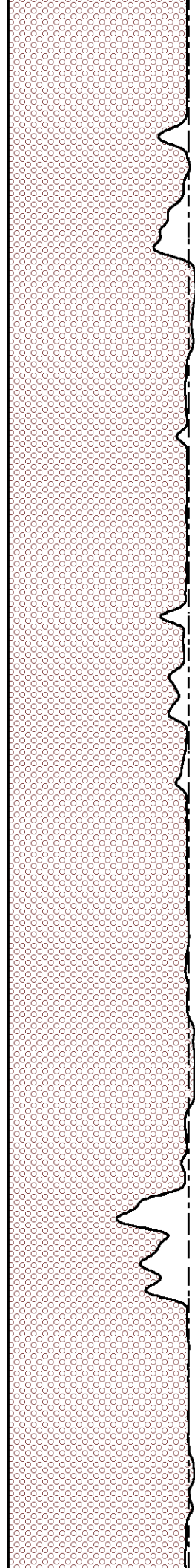
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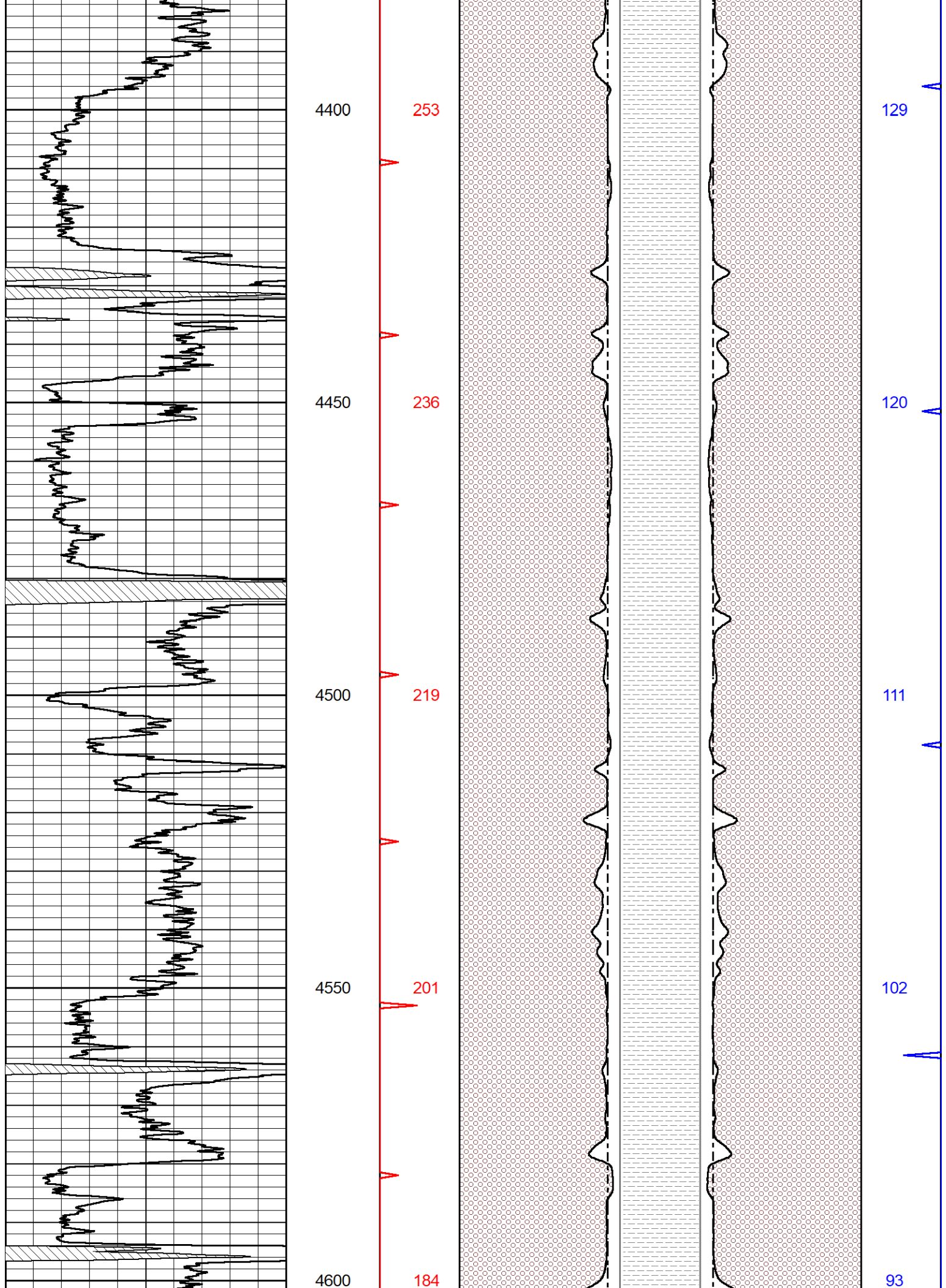
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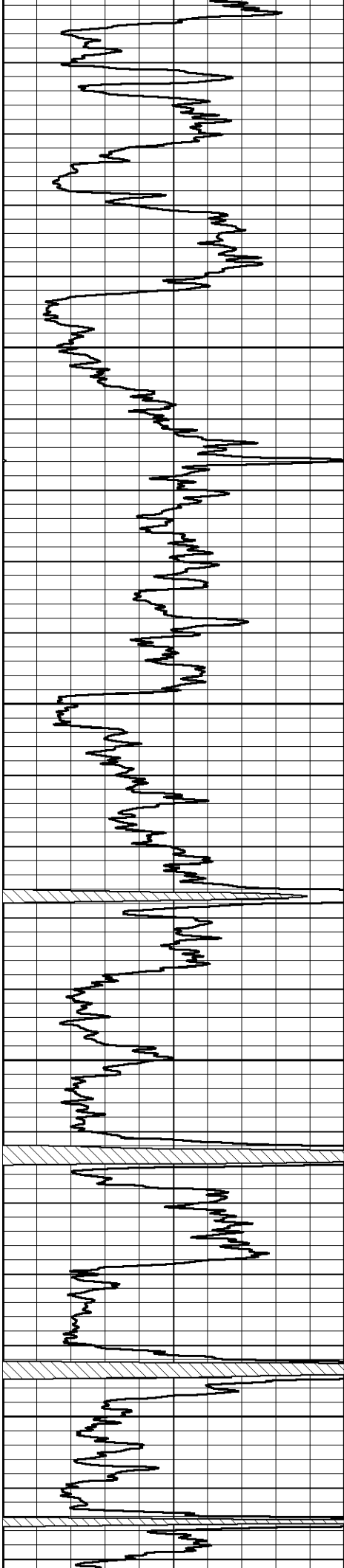
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138







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4700

4750

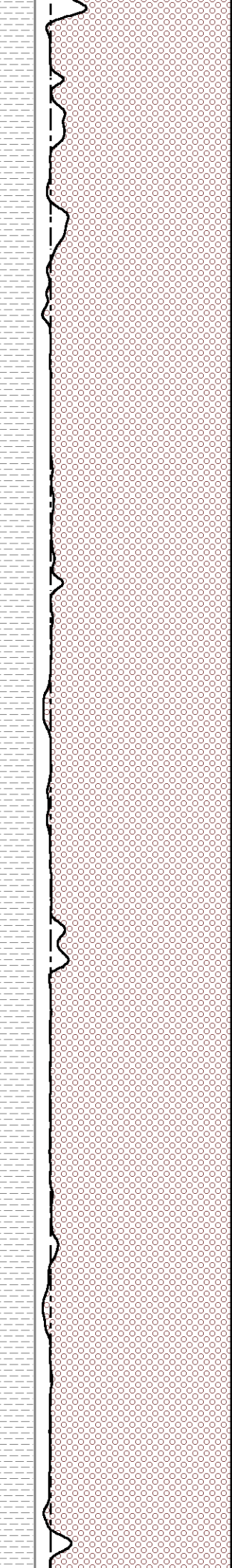
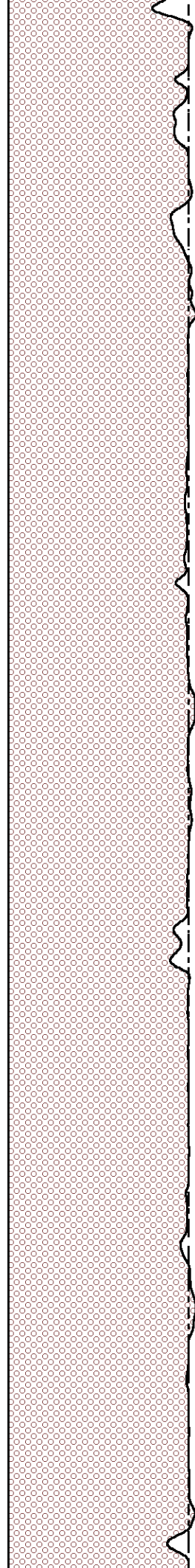
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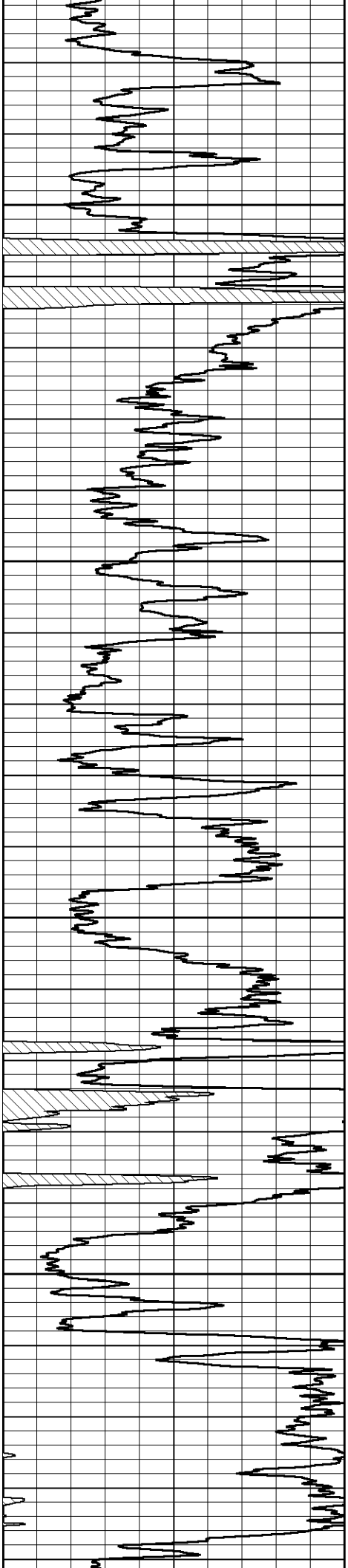
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66

58





4850

98

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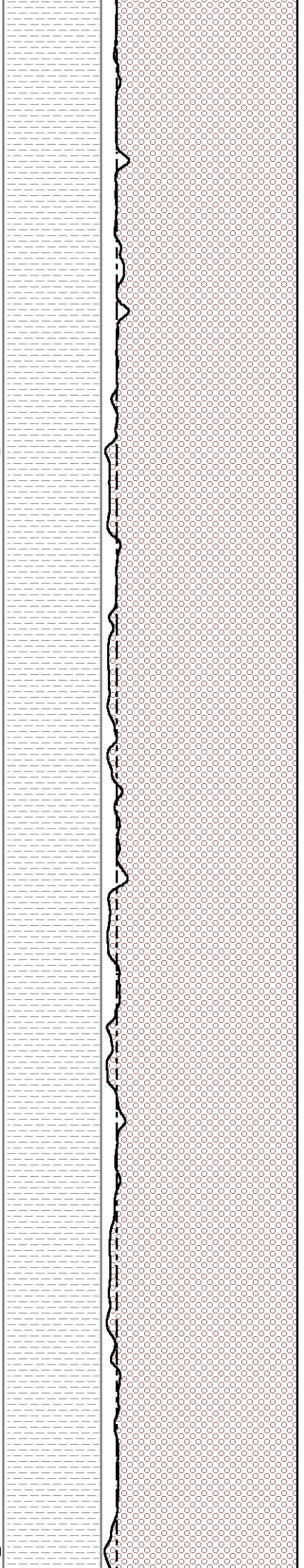
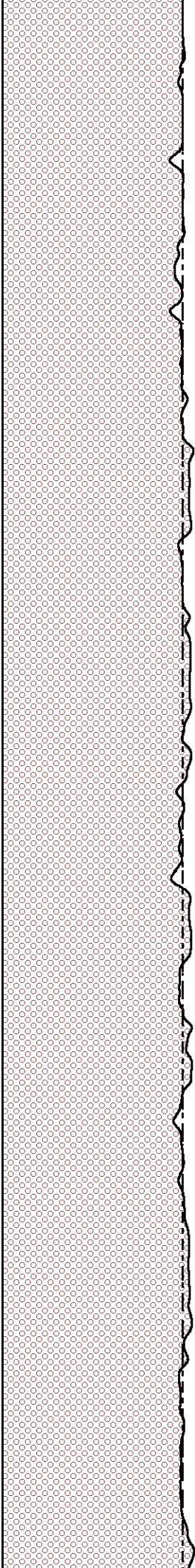
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4950

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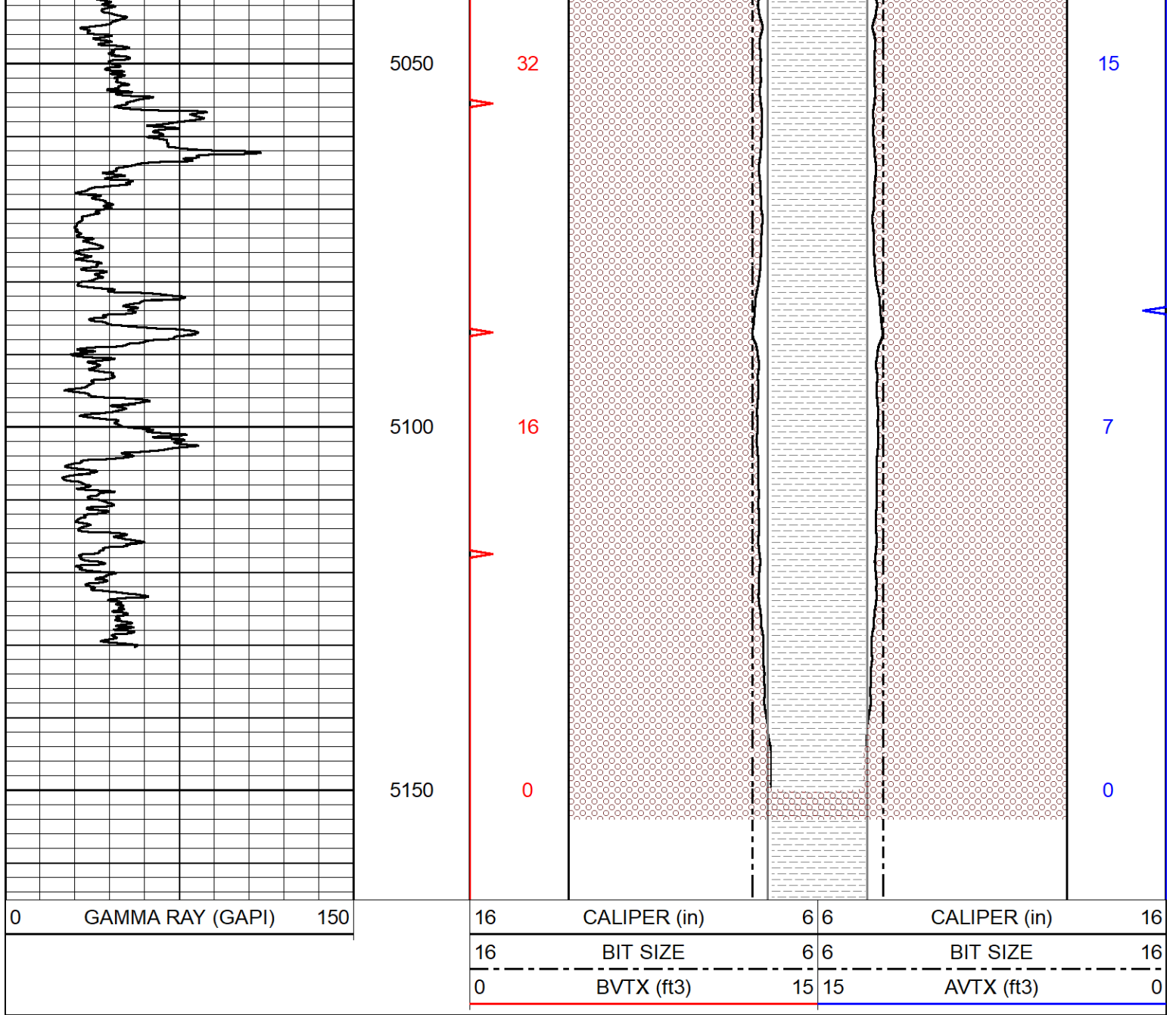


49

40

32

24



Calibration Report

Database File murfin_kaus 1-21.db
 Dataset Pathname stkml/pass4.17
 Dataset Creation Sun Aug 14 21:42:13 2022

Dual Induction Calibration Report

Serial-Model: 505 HT-M&W
 Surface Cal Performed: Wed Feb 2 12:55:14 2022

| Loop: | Readings | | References | | | Results | |
|--------|----------|----------|------------|---------|--------|---------|---------|
| | Air | Loop | Air | Loop | | m | b |
| Deep | 167.000 | 835.000 | 0.000 | 255.800 | mmho/m | 0.480 | -62.000 |
| Medium | 1348.000 | 1348.000 | 0.000 | 255.800 | mmho/m | 0.390 | -59.000 |

Microlog Calibration Report

Serial-Model: 401-PSI STKBL ML
 Performed: Mon Aug 1 06:22:24 2022

| | Readings | | References | | | Results | |
|---------|----------|--------|------------|---------|-------|------------|-----------|
| | Zero | Cal | Zero | Cal | | m | b |
| Normal | 0.0037 | 0.0043 | 0.0000 | 10.0000 | Ohm-m | 16000.0000 | -2.0000 |
| Inverse | 0.1208 | 0.0013 | 0.0000 | 10.0000 | Ohm-m | 13700.0000 | -0.8000 |
| Caliper | 1.0049 | 1.0846 | 5.5000 | 20.0000 | in | 135.0000 | -131.3000 |

Compensated Density Calibration Report

Serial-Model: 304-04-M&W
 Source #: 21170B
 Master Calibration Performed: Sun May 29 09:31:45 2022

Master Calibration

| | Density | | Far Detector | Near Detector | |
|---------------------|---------|-----------------------------|--------------|---------------|-----|
| Magnesium | 1.755 | g/cc | 6392.84 | 8538.69 | cps |
| Aluminum | 2.685 | g/cc | 1184.69 | 5433.63 | cps |
| Spine Angle = 74.99 | | Density/Spine Ratio = 0.533 | | | |
| | Size | | Reading | | |
| Small Ring | 4.00 | in | 1.15 | | |
| Large Ring | 14.00 | in | 1.02 | | |

Compensated Neutron Calibration Report

Serial-Model: 210-M&W
 Source #: N-1238
 Master Calibration Performed: Fri Dec 3 09:16:24 2021

Master Calibration

| 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: 103
 Tool Model: M&W
 Performed: Fri Dec 3 12:13:24 2021

Calibrator Value: 500.0 GAPI

Background Reading: 28.0 cps
 Calibrator Reading: 986.0 cps

Sensitivity: 0.5700 GAPI/cps



Company: Murfin Drilling Company, Inc.
 Well: Kaus #1-21
 Field:
 County: Cheyenne
 State: Kansas

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS 311

LECTURE 1

MECHANICS

LECTURE 1