



MIDWEST WIRELINE

**DUAL COMPENSATED
POROSITY /
MICRO LOG**

Company Murfin Drilling Company, Inc.
Well Carolyn A #4-24
Field Unnamed
County Cheyenne
State Kansas

Company Murfin Drilling Company, Inc.
Well Carolyn A #4-24
Field Unnamed
County Cheyenne State Kansas

Location: API #: 15-023-21568-00-00
500 FSL & 2090 FEL
SEC 24 TWP 1S RGE 37W
Permanent Datum Ground Level Elevation 3344
Log Measured From Kelly Bushing
Drilling Measured From Kelly Bushing
Other Services
DIL
MEL/BHCS
K.B. 3349
D.F.
G.L. 3344

| | | | | | | | |
|------------------------|----------------|------|-----|-------|------|------|-----|
| Date | 3/19/2022 | | | | | | |
| Run Number | One | | | | | | |
| Type Log | CNL / CDL / ML | | | | | | |
| Depth Driller | 5094 | | | | | | |
| Depth Logger | 5094 | | | | | | |
| Bottom Logged Interval | 5066 | | | | | | |
| Top Logged Interval | 3650 | | | | | | |
| Type Fluid In Hole | Chemical | | | | | | |
| Salinity, PPM CL | 900 | | | | | | |
| Density | 9.2 | | | | | | |
| Level | Full | | | | | | |
| Max. Rec. Temp. F | 127 | | | | | | |
| Operating Rig Time | 5.5 Hours | | | | | | |
| Equipment -- Location | P-108 HAYS | | | | | | |
| Recorded By | T. Martin | | | | | | |
| Witnessed By | Robert Hendrix | | | | | | |
| Borehole Record | | | | | | | |
| Run No. | Bit | From | To | Size | Wgt. | From | To |
| One | 12.25 | 00 | 350 | 8.625 | 23 | 00 | 350 |
| Two | 7.875 | 350 | TD | | | | |
| Casing Record | | | | | | | |

<<< 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.

McDonald, KS, 2 W to Co Ln, 10.5 N,
1/2 W, 1/2 N, N and E to TB, N & W 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 | | This Log Record Was Witnessed By | |
| Engineer: T. Martin | Operator: | Primary Witness: Robert Hendrix | Secondary Witness: |
| Operator: | Operator: | Secondary Witness: | Secondary Witness: |
| Operator: | | Secondary Witness: | |

| | | | | | | |
|---------|-------------|-----------|-------------|-------------|-----------|-------------|
| Run No. | Offset (ft) | Schematic | Description | Length (ft) | C.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 (303-03) | 8.50 | 4.00 | 250.00 |
| MCAL MI MN | 19.58 19.58 19.58 | | ML-PSI STKBL ML (402) | 7.58 | 4.00 | 65.00 |
| RLL3F RLL3 | 15.50 15.50 | | | | | |
| CILD | 8.33 | | DIL-M&W (504 HT) | 18.25 | 3.50 | 220.00 |
| CILM | 4.50 | | | | | |
| SP | 0.20 | | | | | |

Dataset: murfin_carolyn a #4-24.db: field/well/StkMI/pass4.1
 Total length: 42.33 ft
 Total weight: 685.00 lb
 O.D.: 4.00 in

Log Variables

DatabaseC:\ProgramData\Warrior\Data\murfin_carolyn a #4-24.db
 Dataset field/well/StkMI/pass4.1/_vars_

Top - Bottom

| | | | | | | | |
|-----------|--------------|------------------|-------------------|----------------|------------------|-------|------------------|
| A | BOREID in | BOTTEMP degF | CASEOD in | CASETHCK in | FLUIDDEN g/cc | M | MATRXDEN g/cc |
| 1 | 7.875 | 127 | 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 | 460 | 70 | Off | 5094 |

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

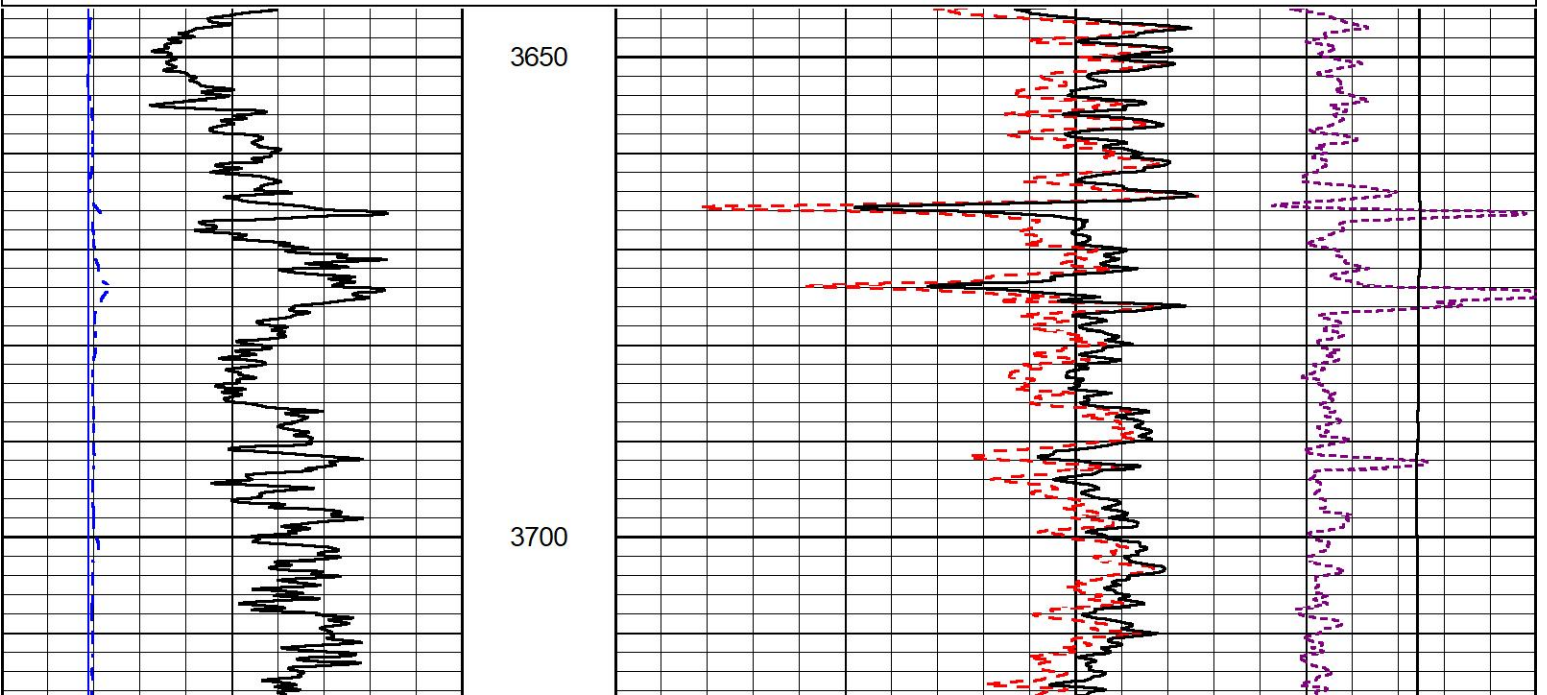


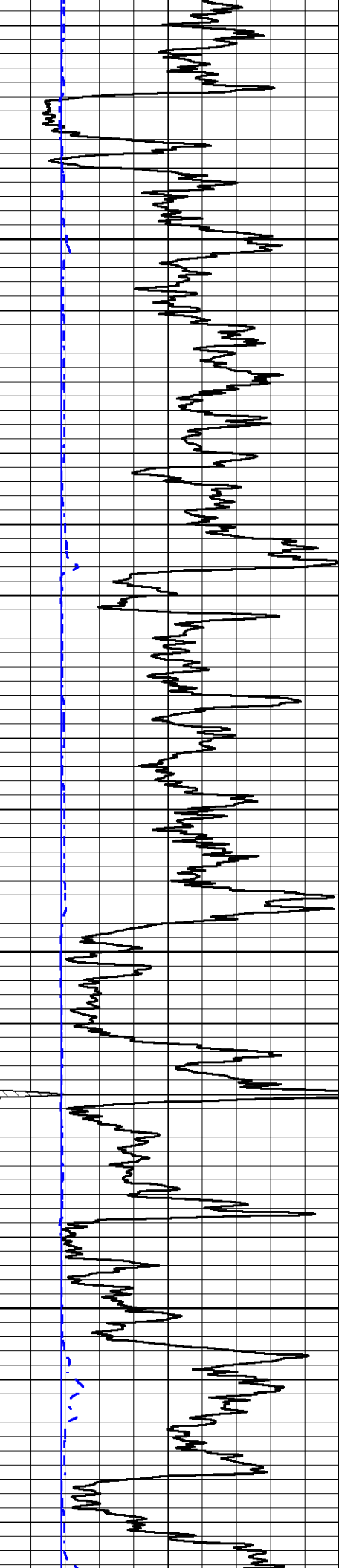
5" SCALE BULK DENSITY

MAIN PASS

Database File murfin_carolyn a #4-24.db
 Dataset Pathname StkMI/pass4.3
 Presentation Format _cdl
 Dataset Creation Sat Mar 19 18:17:28 2022
 Charted by Depth in Feet scaled 1:240

| | | | | | | |
|---|------------------|-----|-------|--------------------------|-------------------|------|
| 0 | Gamma Ray (GAPI) | 150 | 30 | Compensated Density (pu) | -10 | |
| 6 | Caliper (in) | 16 | 2 | Bulk Density (g/cc) | 3 | |
| | | | 15000 | Line Tension (lb) | 0 | |
| | | | | -0.25 | Correction (g/cc) | 0.25 |



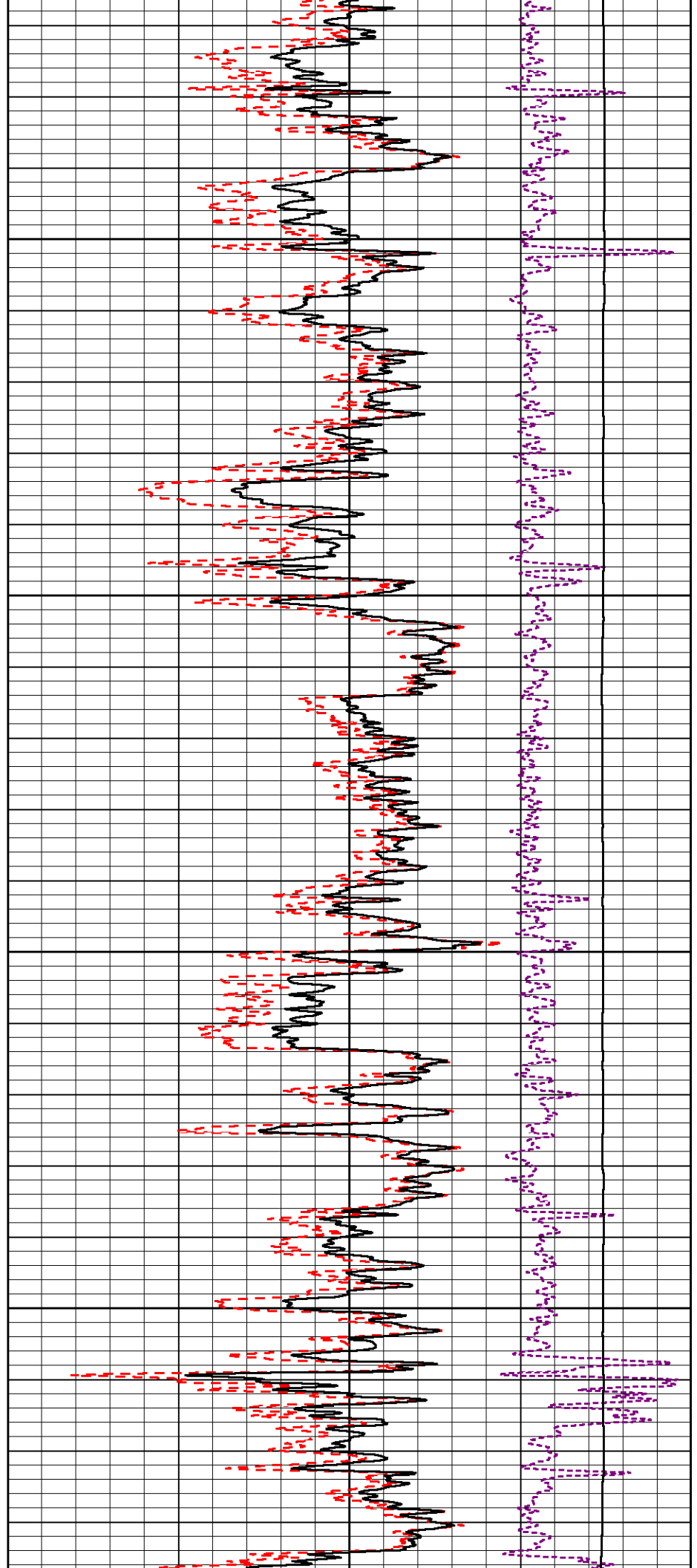


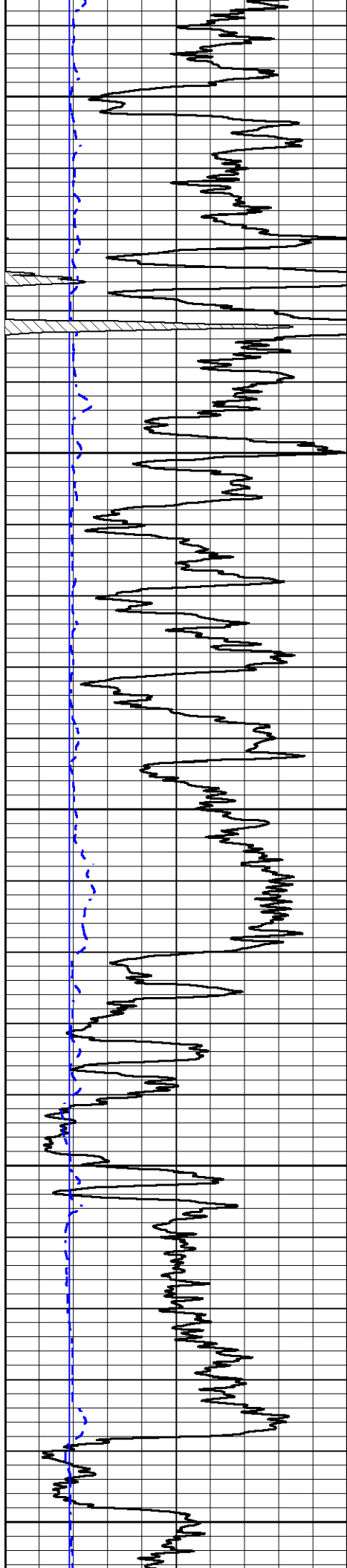
3750

3800

3850

3900





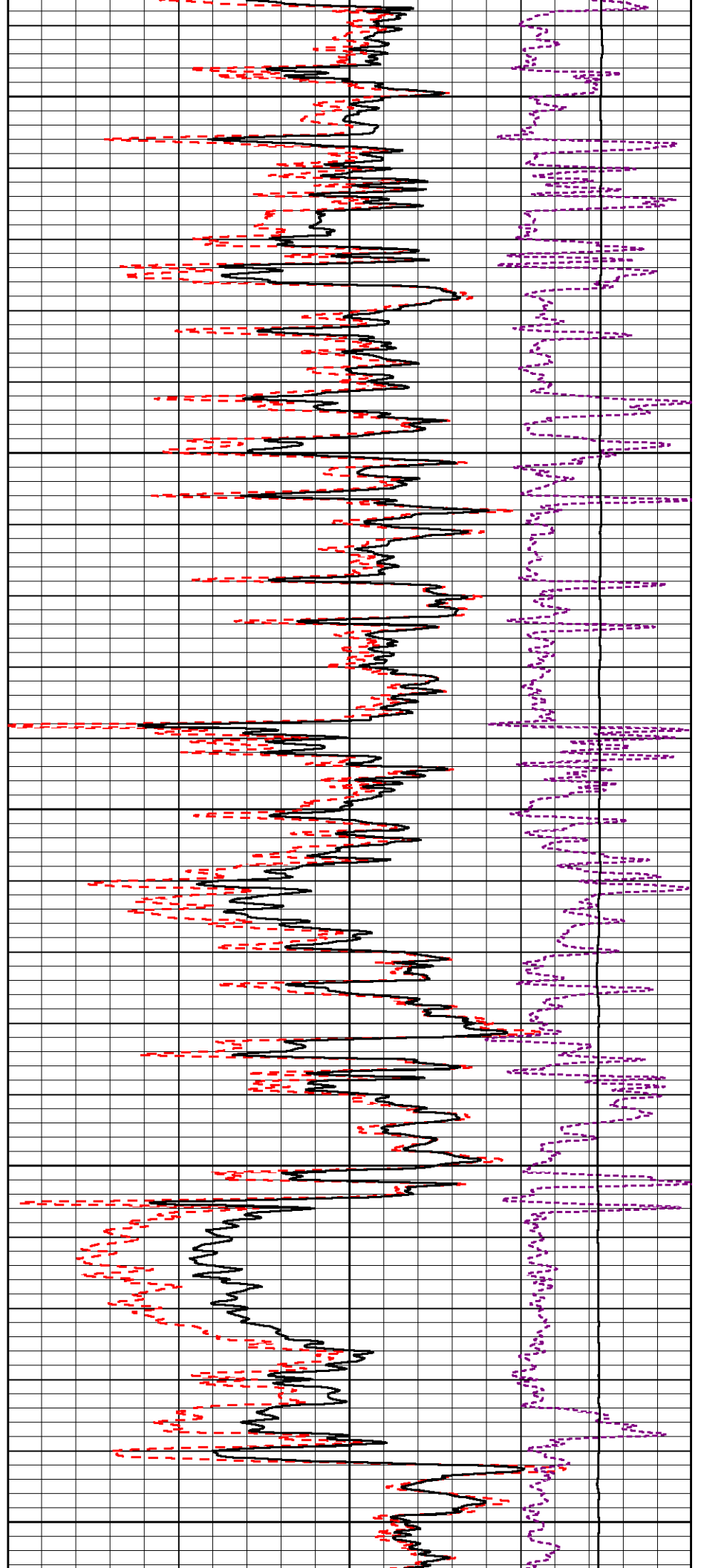
3950

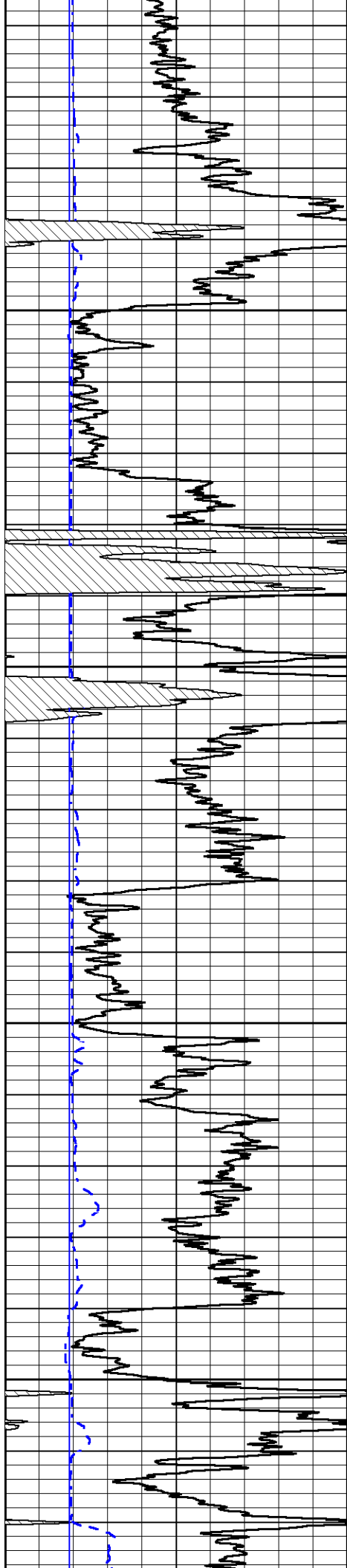
4000

4050

4100

4150



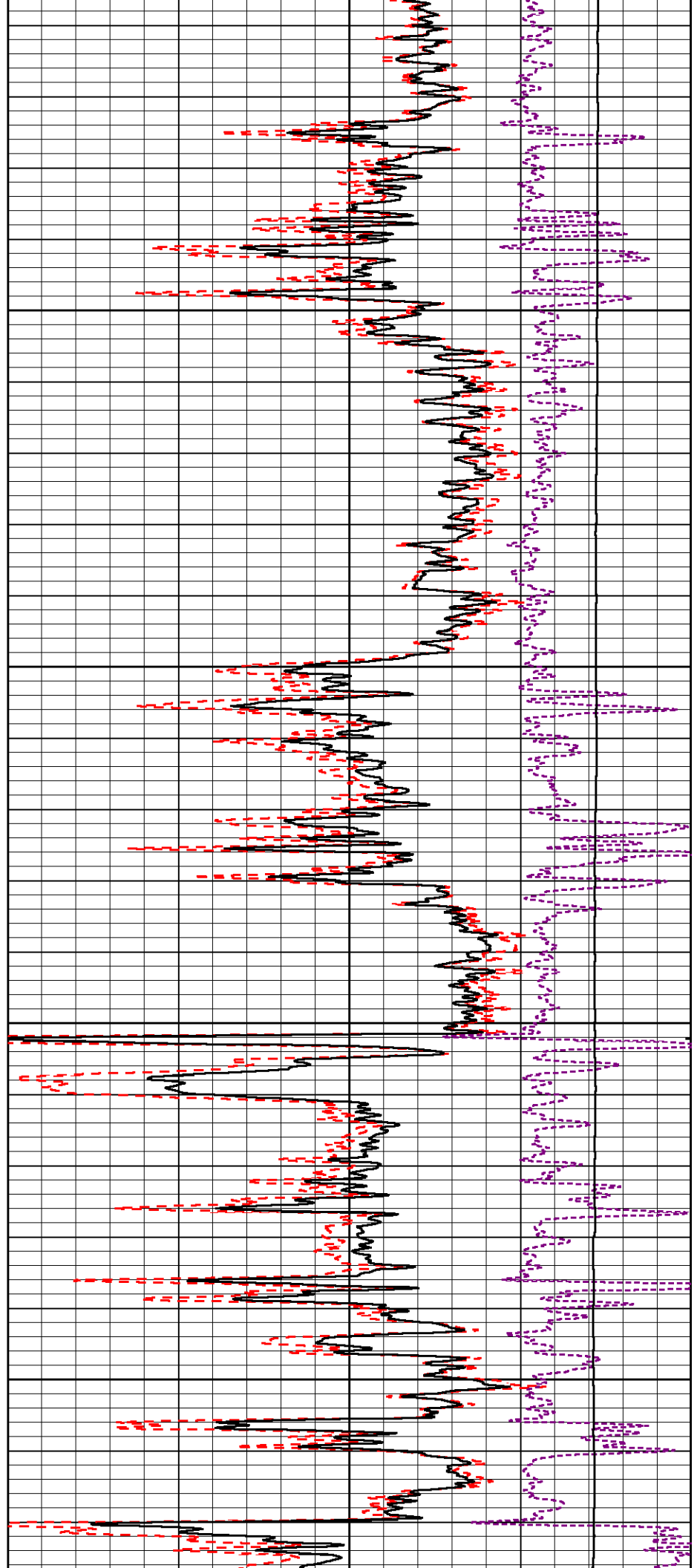


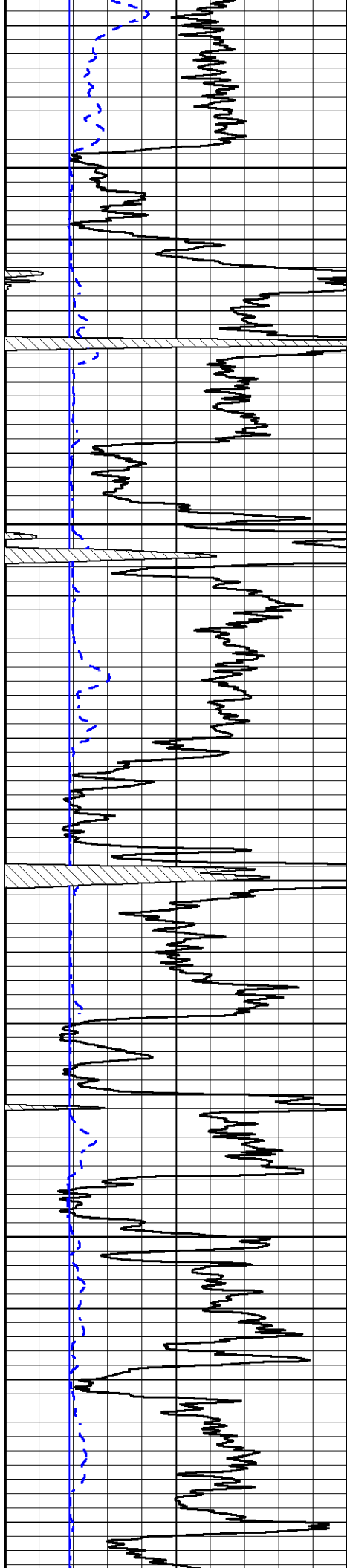
4200

4250

4300

4350



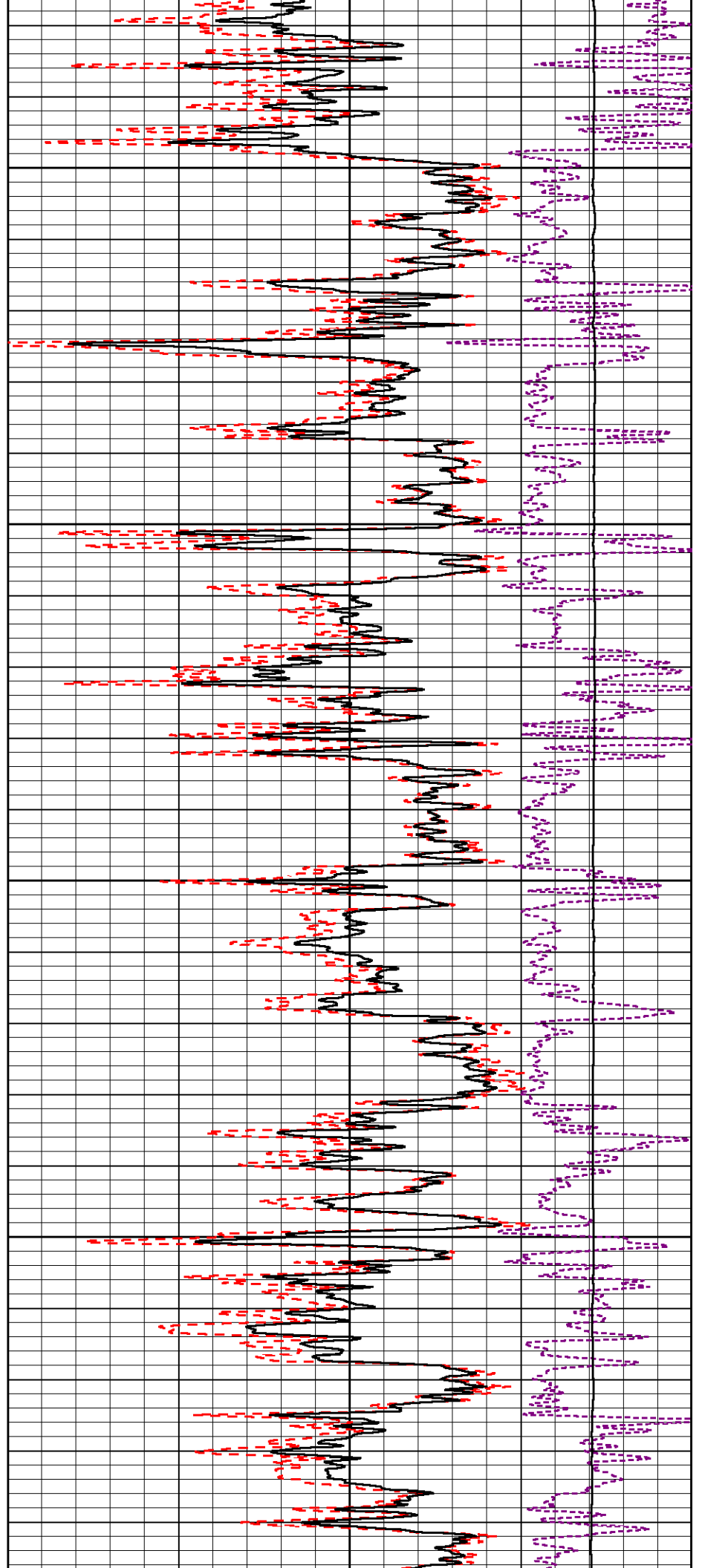


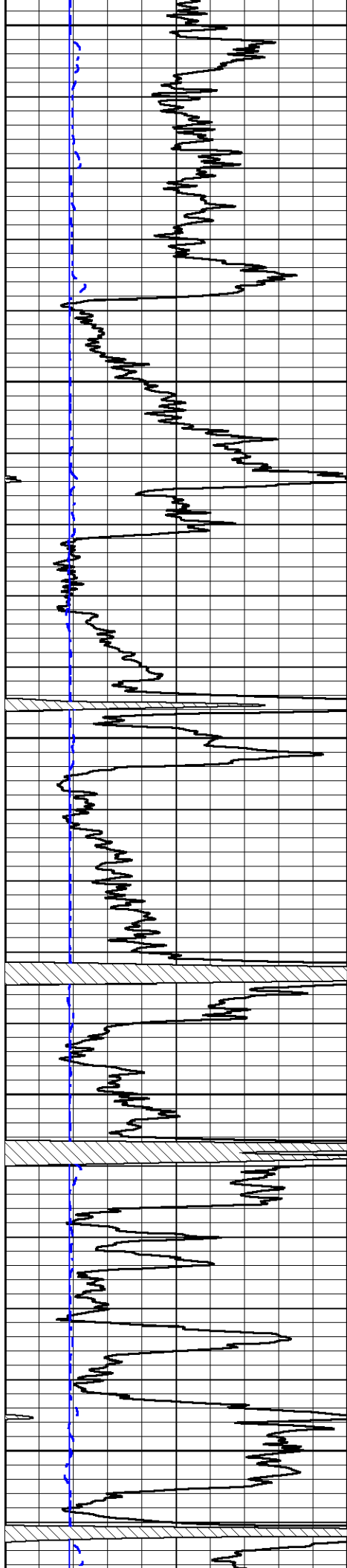
4400

4450

4500

4550





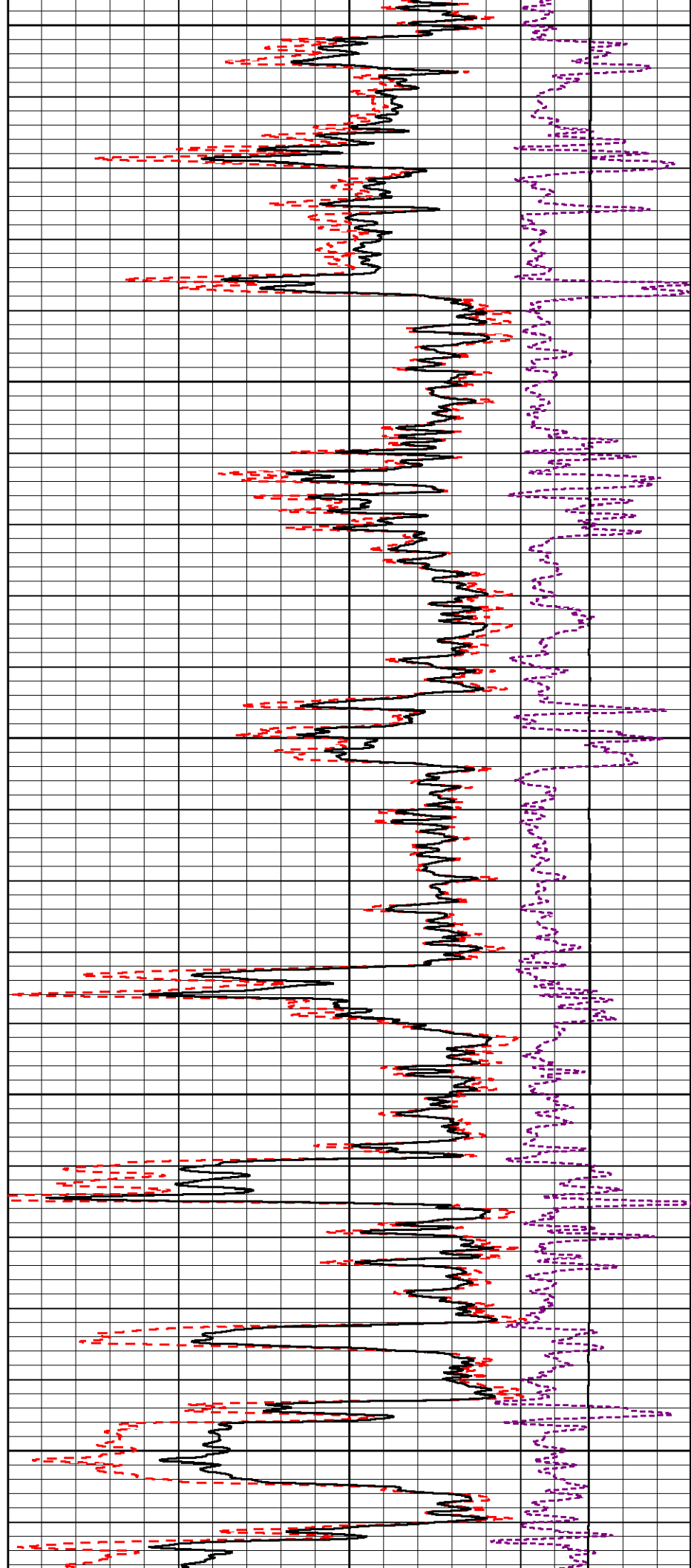
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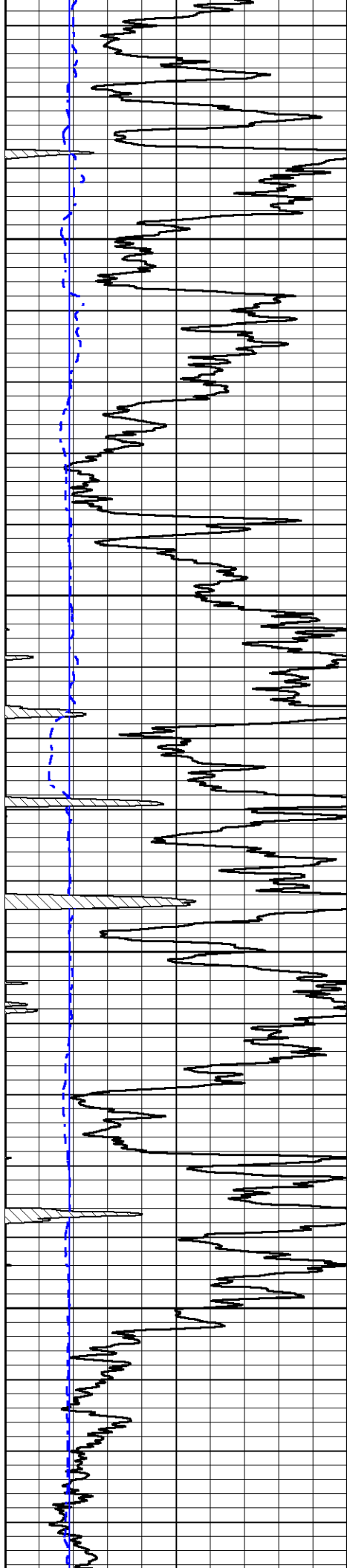
4650

4700

4750

4800



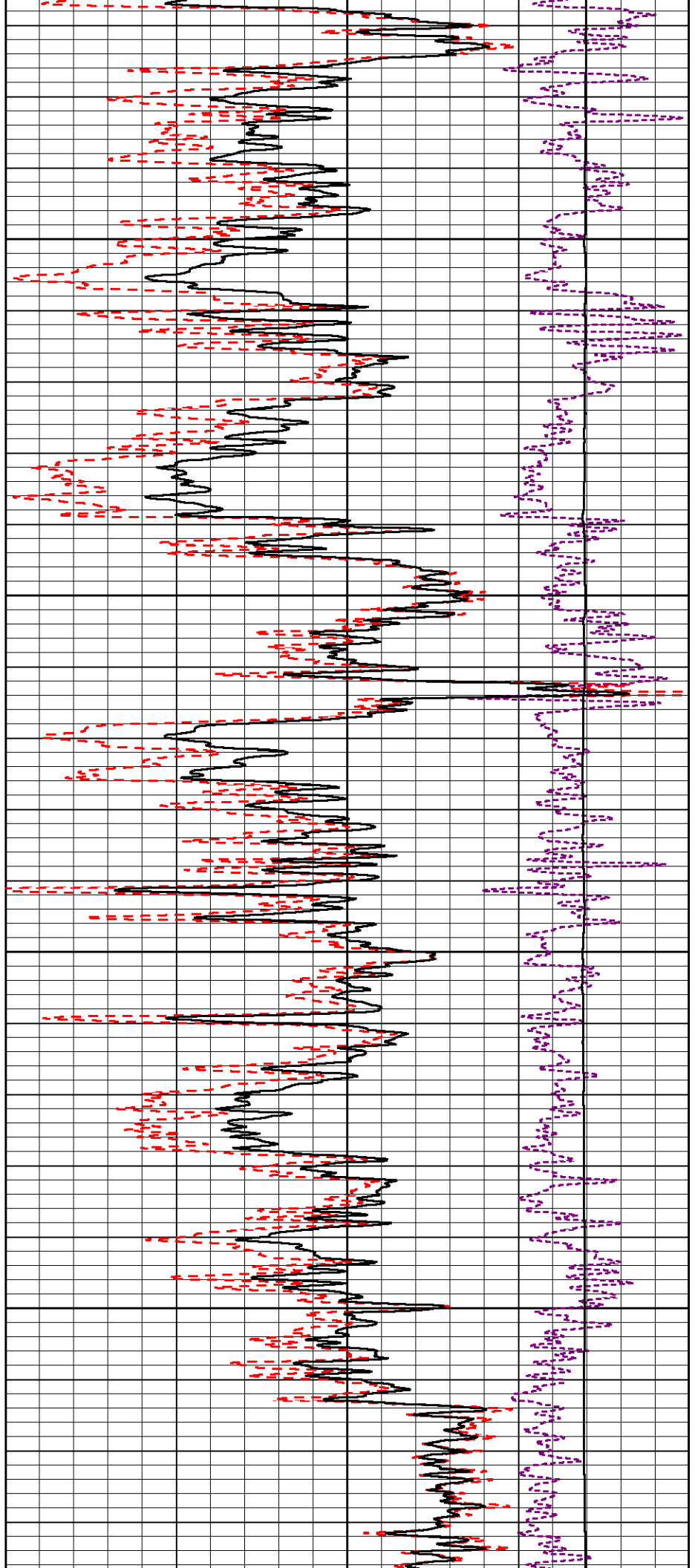


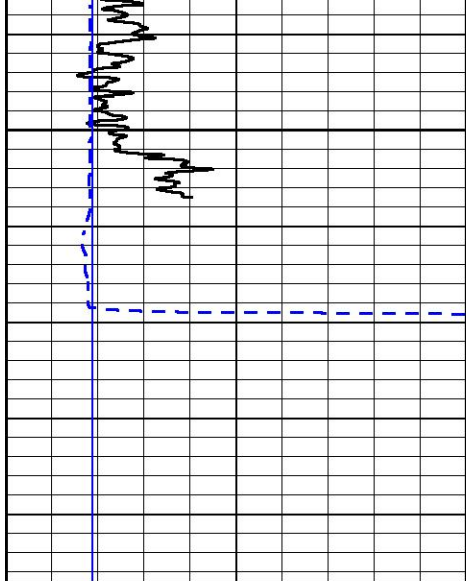
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4900

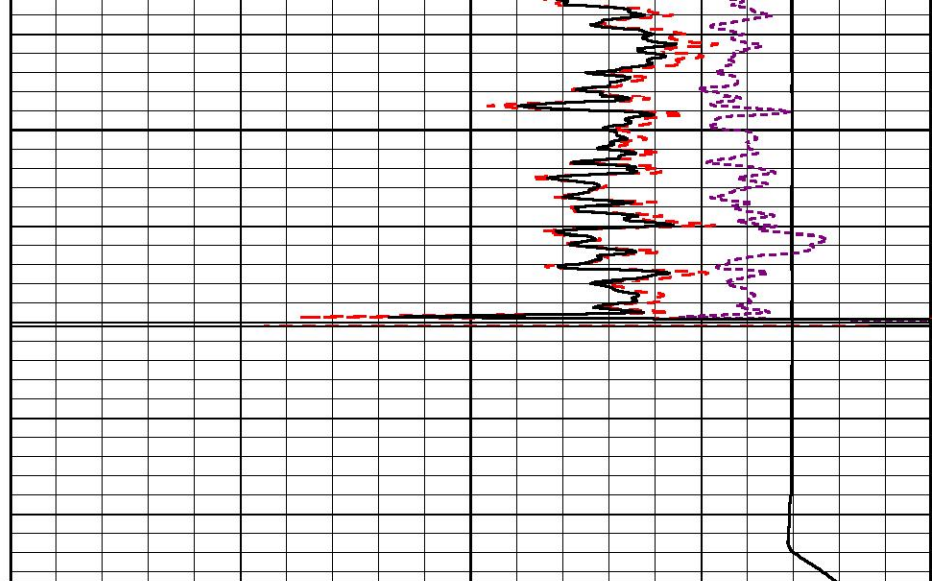
4950

5000





5050



| | | |
|---|------------------|-----|
| 0 | Gamma Ray (GAPI) | 150 |
| 6 | Caliper (in) | 16 |

| | | |
|-------|--------------------------|------|
| 30 | Compensated Density (pu) | -10 |
| 2 | Bulk Density (g/cc) | 3 |
| 15000 | Line Tension (lb) | 0 |
| -0.25 | Correction (g/cc) | 0.25 |



MIDWEST WIRELINE

DETAIL SECTION

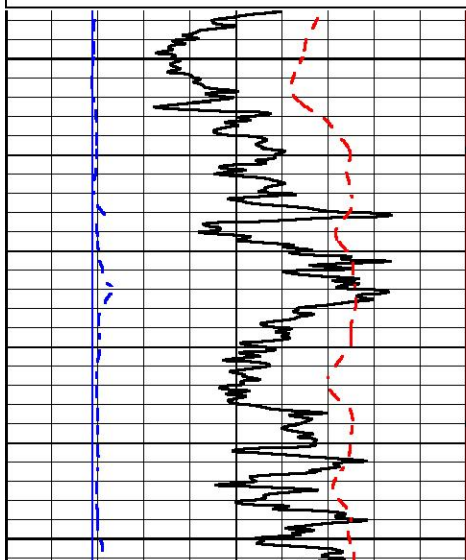
MAIN PASS

Database File murfin_carolyn a #4-24.db
 Dataset Pathname StkMI/pass4.1
 Presentation Format _CNDLS~2
 Dataset Creation Sat Mar 19 19:04:42 2022
 Charted by Depth in Feet scaled 1:240

| | | |
|------|------------------|-----|
| 0 | Gammy Ray (GAPI) | 150 |
| 6 | Caliper (in) | 16 |
| -200 | SP (mV) | 0 |

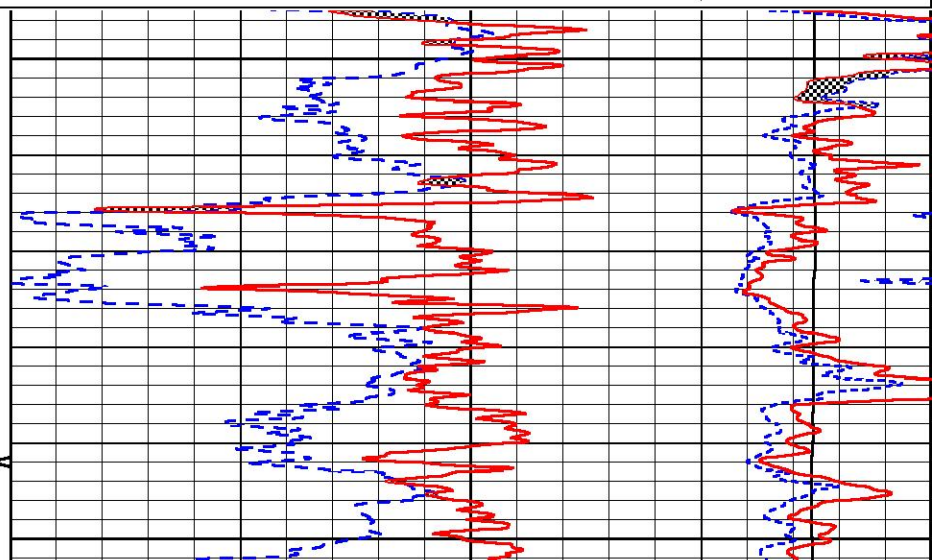
| | | |
|-------|--------------------------|-----|
| 30 | Compensated Neutron (pu) | -10 |
| 30 | Compensated Density (pu) | -10 |
| 15000 | Line Tension (lb) | 0 |

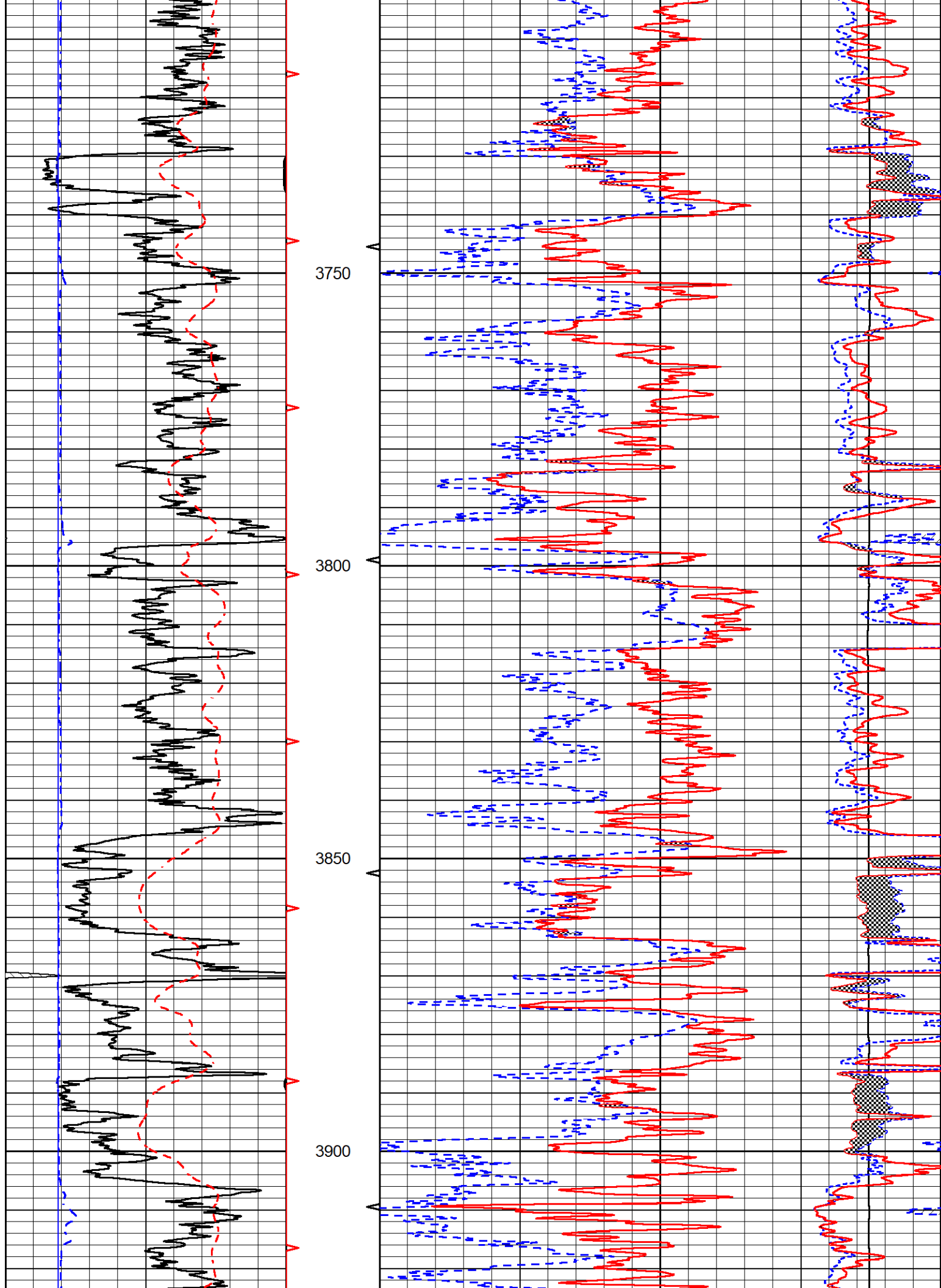
| | |
|---------------|----|
| Micro Normal | |
| 0 (Ohm-m) | 20 |
| Micro Inverse | |
| 0 (Ohm-m) | 20 |

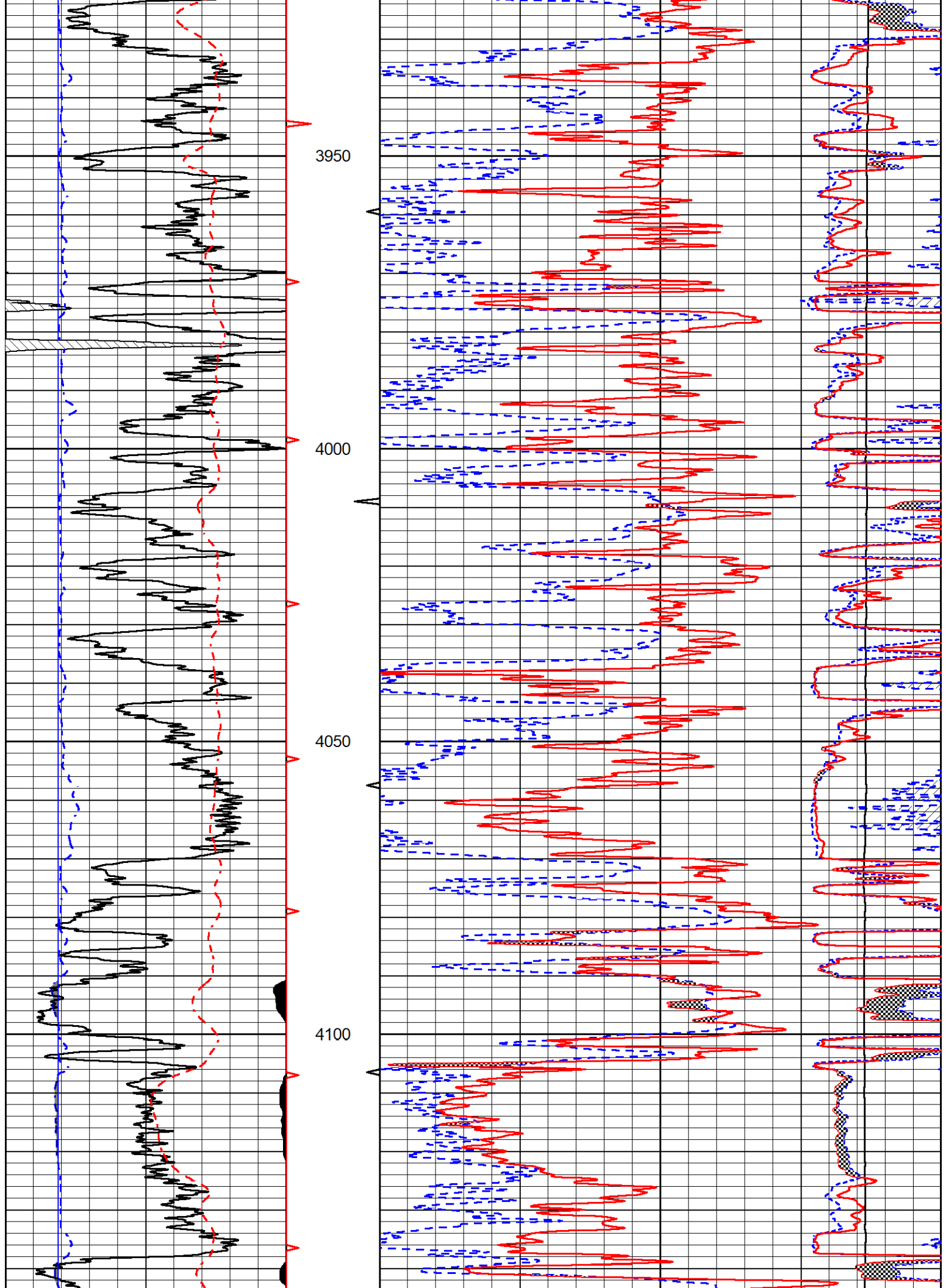


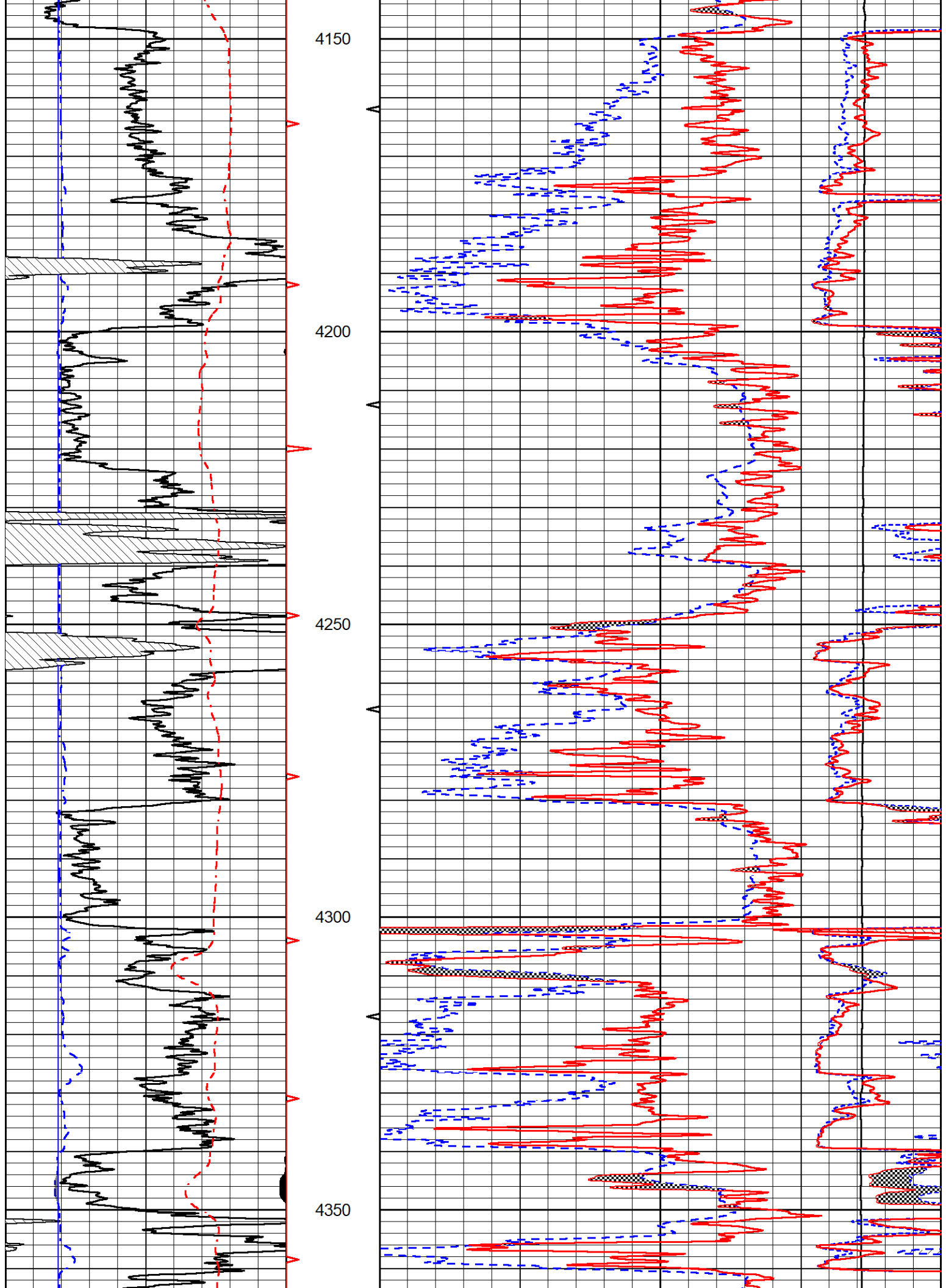
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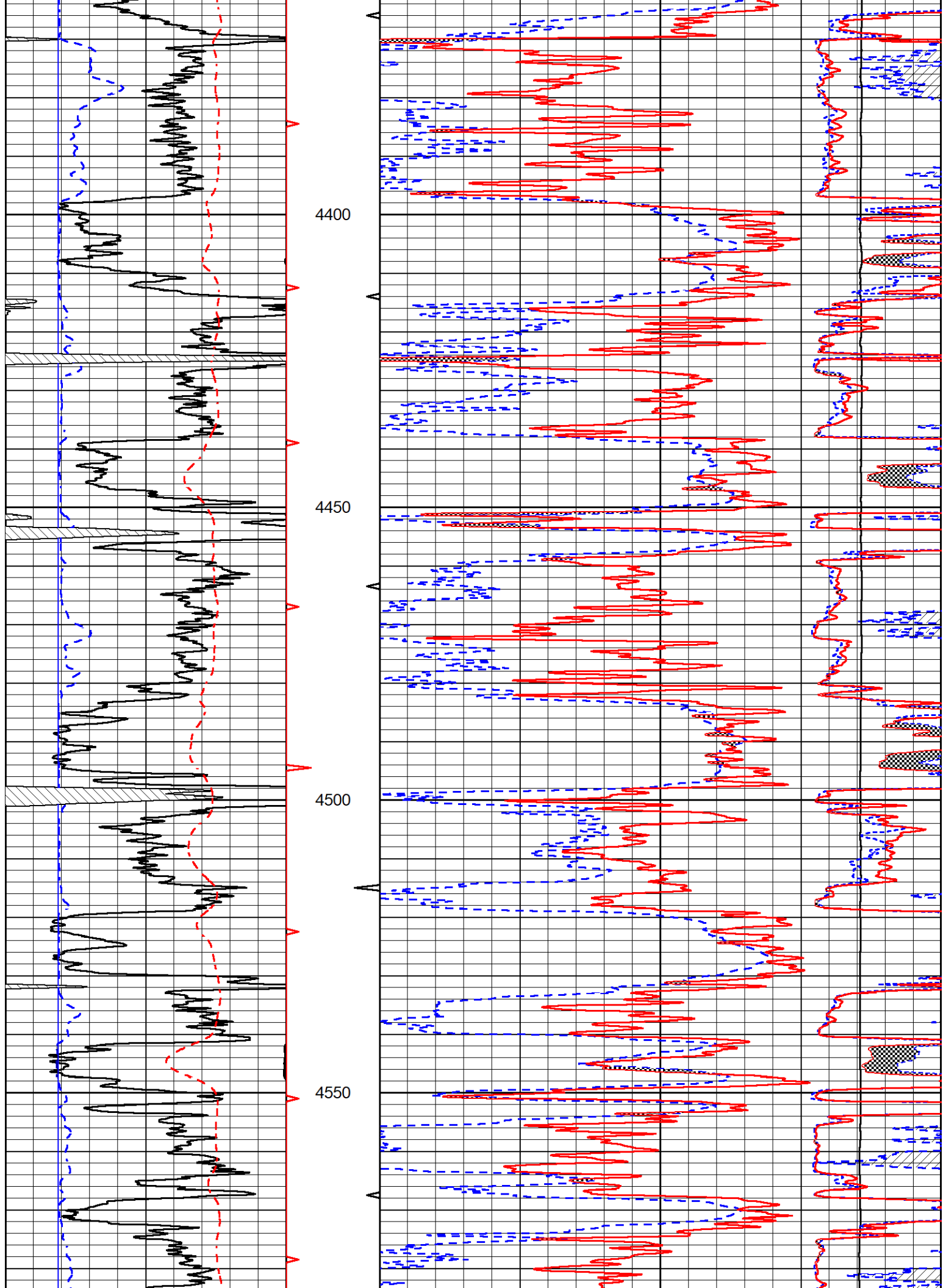
3700

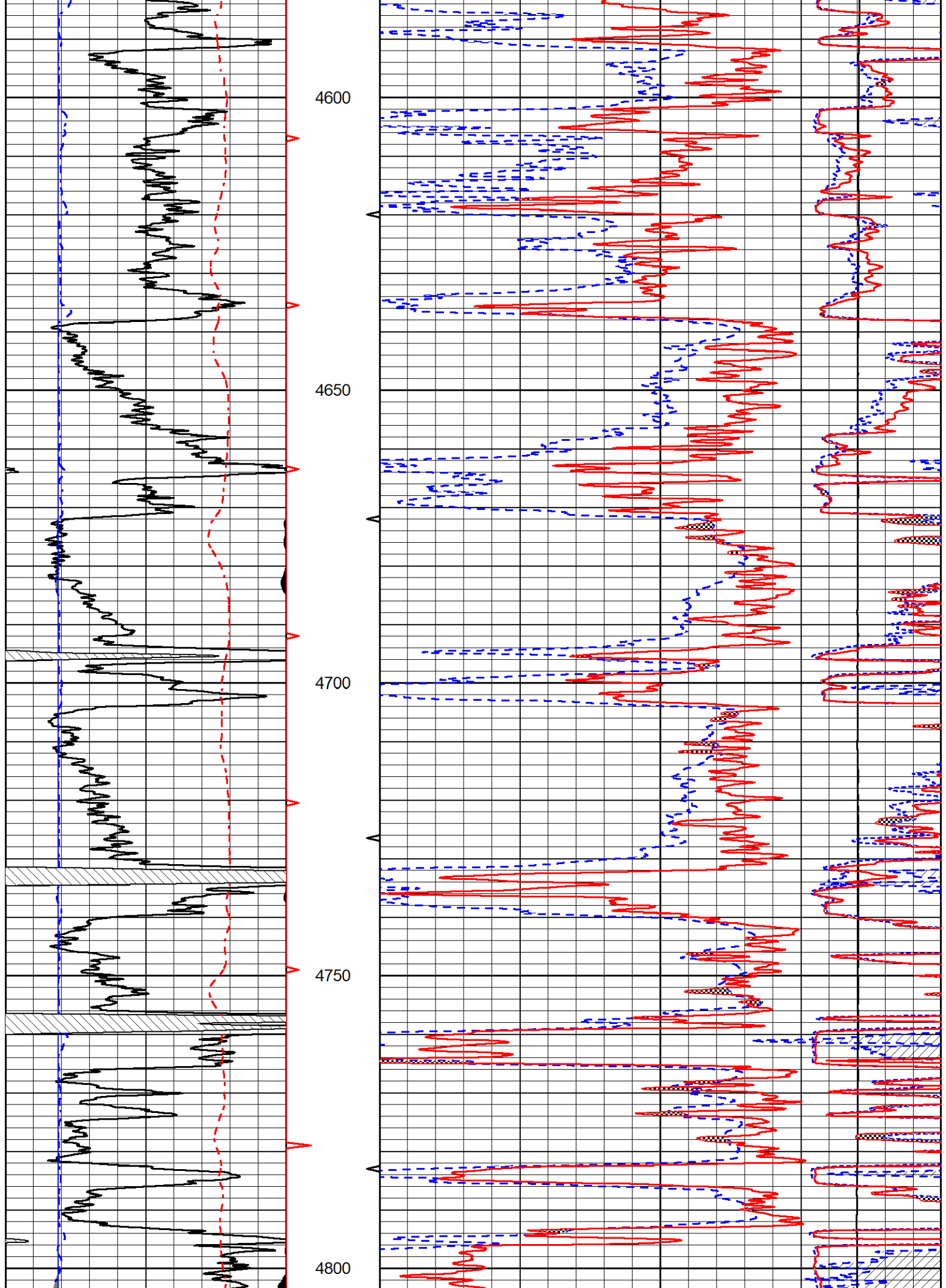


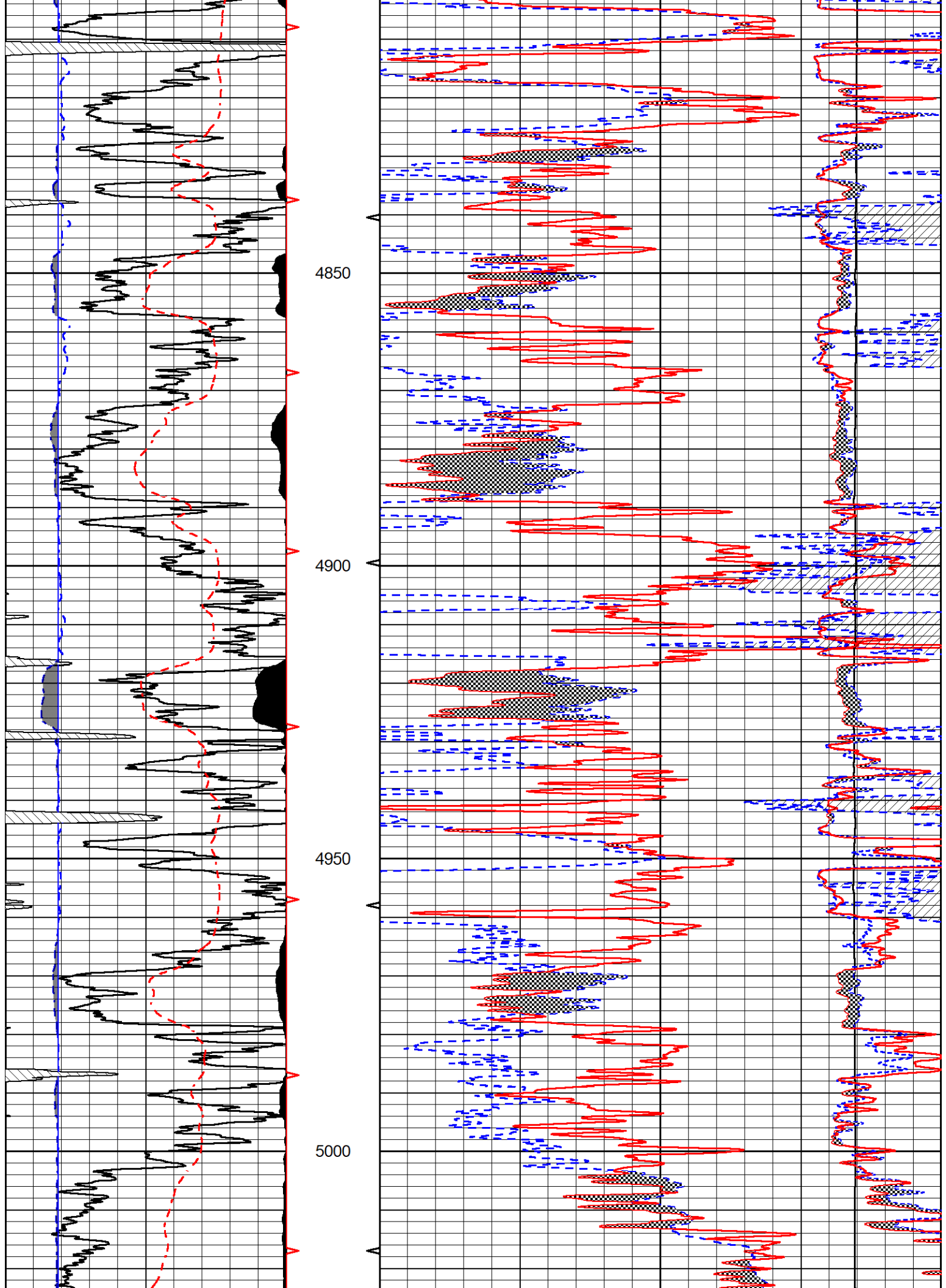


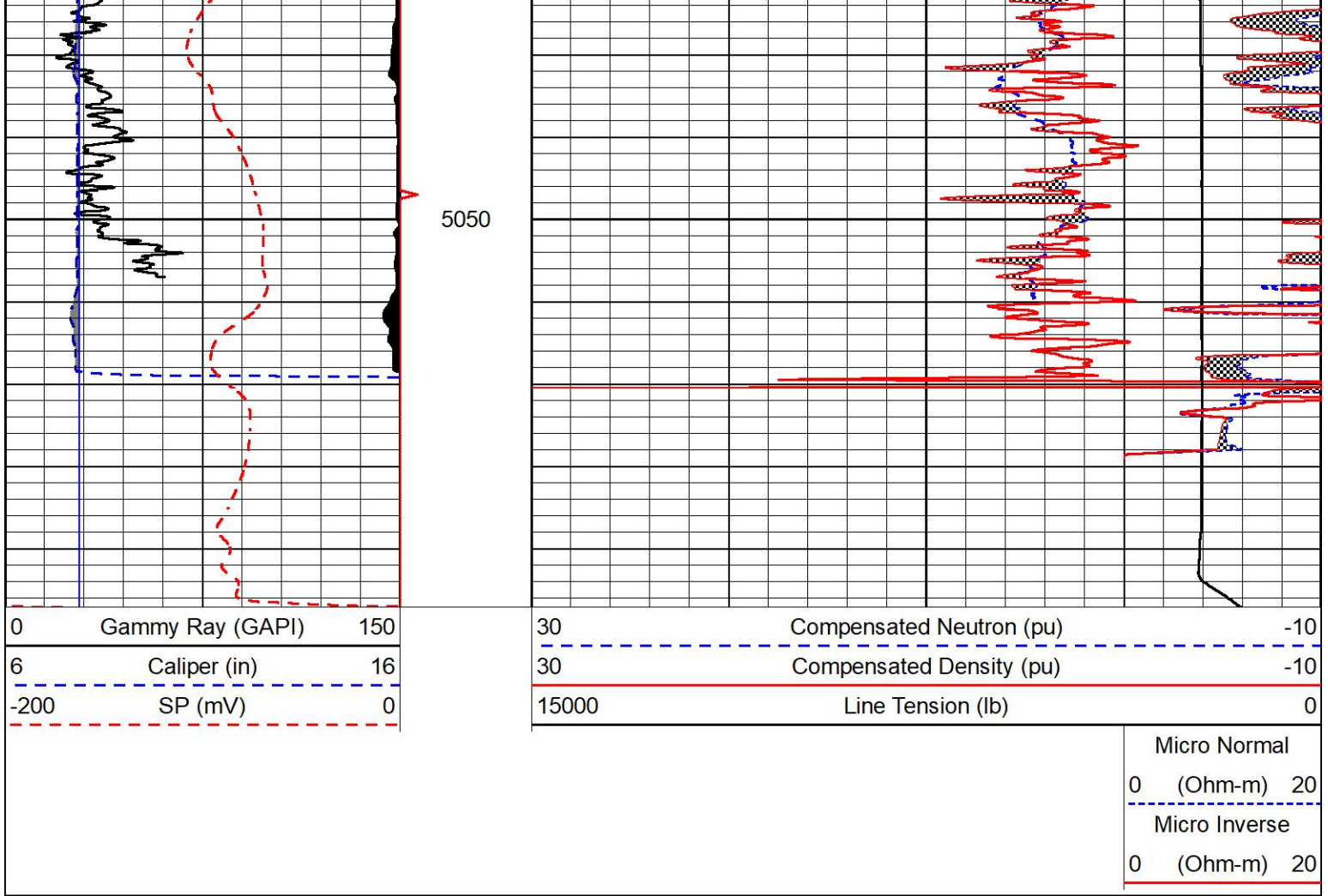








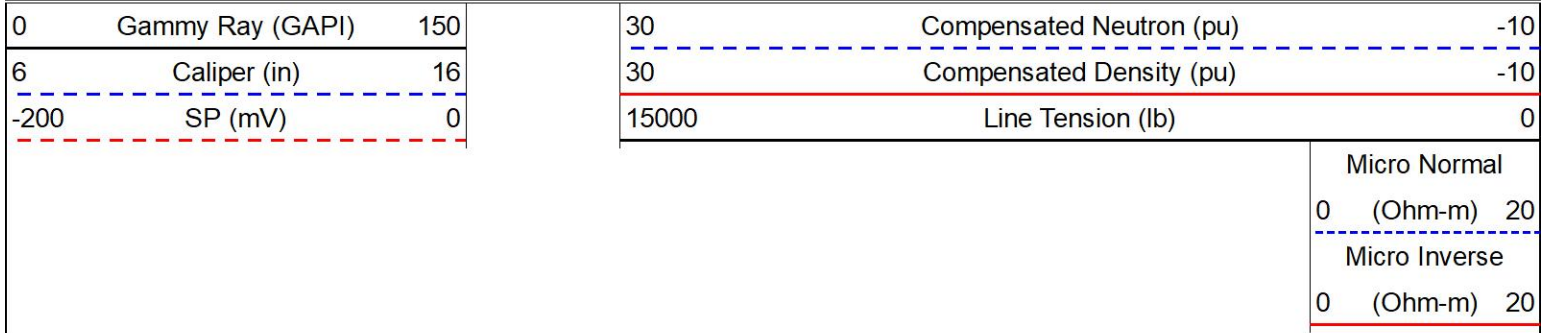


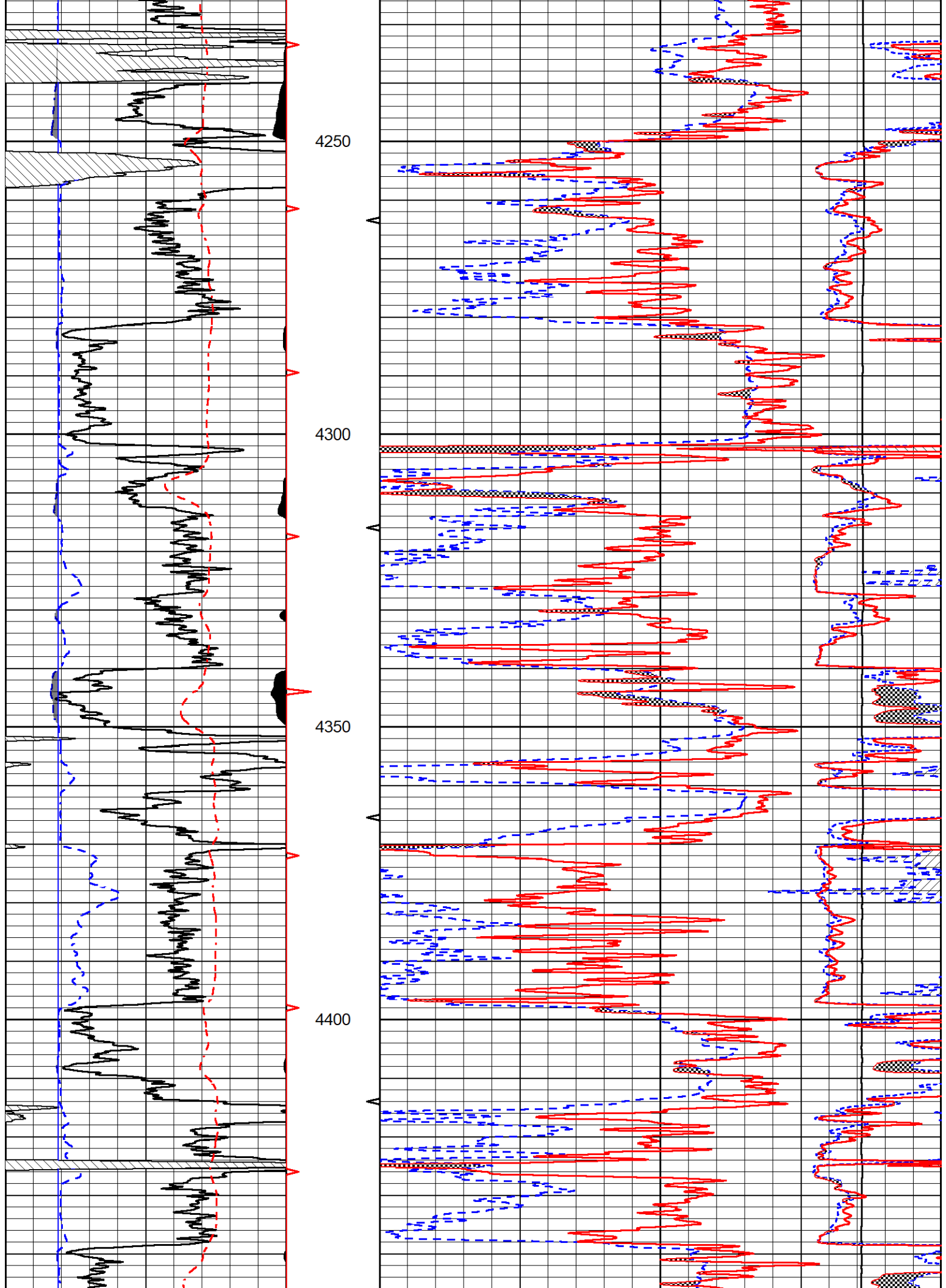


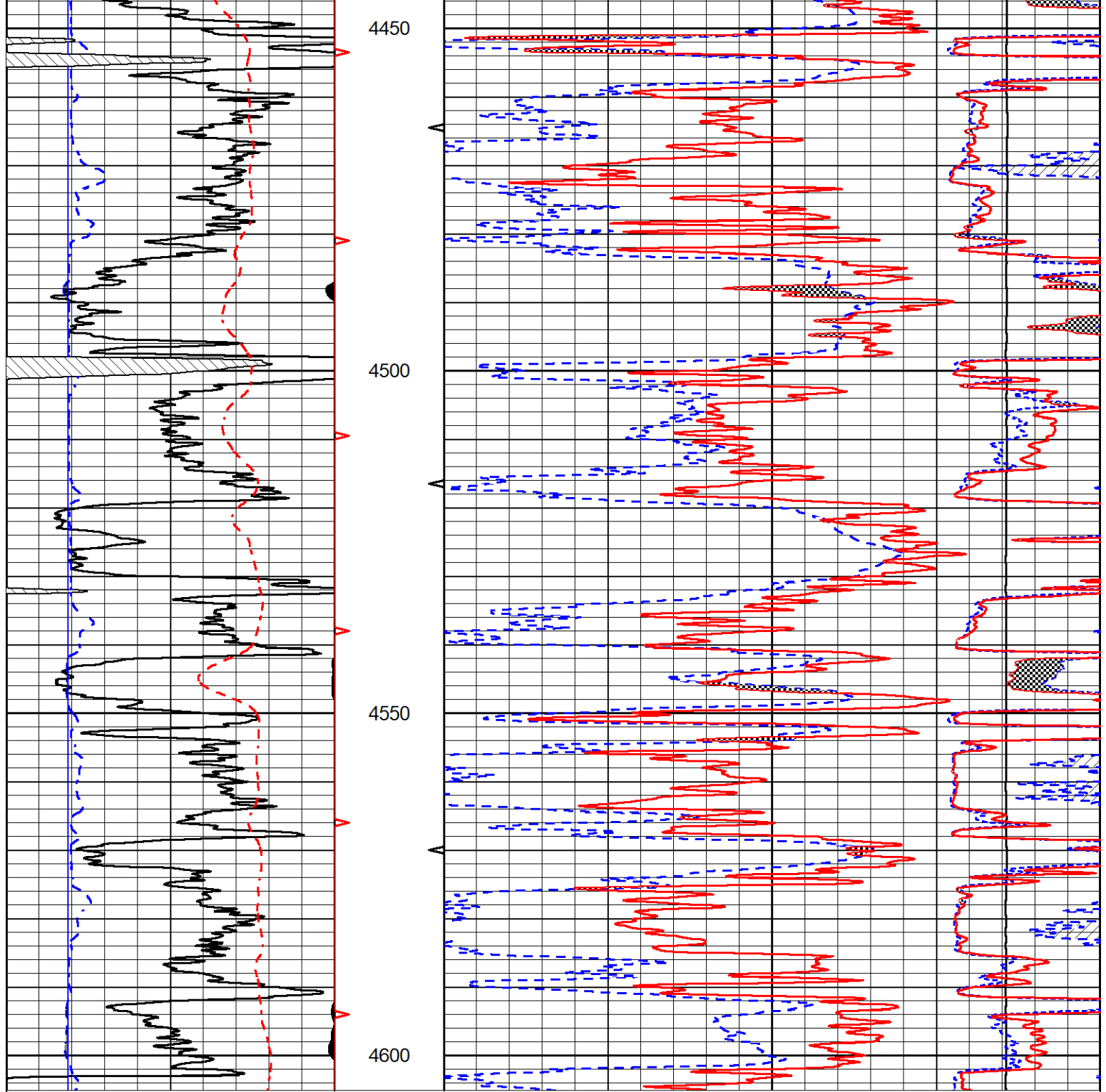
REPEAT SECTION

REPEAT PASS

Database File murfin_carolyn a #4-24.db
 Dataset Pathname StkMI/pass2.1
 Presentation Format _CNDLS~2
 Dataset Creation Sat Mar 19 18:14:10 2022
 Charted by Depth in Feet scaled 1:240







| | | |
|------|------------------|-----|
| 0 | Gammy Ray (GAPI) | 150 |
| 6 | Caliper (in) | 16 |
| -200 | SP (mV) | 0 |

| | | |
|-------|--------------------------|-----|
| 30 | Compensated Neutron (pu) | -10 |
| 30 | Compensated Density (pu) | -10 |
| 15000 | Line Tension (lb) | 0 |

| | | |
|---------------|---------|----|
| Micro Normal | | |
| 0 | (Ohm-m) | 20 |
| Micro Inverse | | |
| 0 | (Ohm-m) | 20 |

Calibration Report

Database File murfin_carolyn a #4-24.db
 Dataset Pathname StkMI/pass4.1
 Dataset Creation Sat Mar 19 19:04:42 2022

Serial-Model: 504 HT-M&W
 Surface Cal Performed: Thu Dec 16 22:32:49 2021

| Loop: | Readings | | References | | | Results | |
|--------|----------|----------|------------|---------|--------|---------|---------|
| | Air | Loop | Air | Loop | | m | b |
| Deep | 178.615 | 710.235 | 0.000 | 255.800 | mmho/m | 0.650 | -19.000 |
| Medium | 161.982 | 1441.110 | 0.000 | 255.800 | mmho/m | 0.450 | -47.500 |

Microlog Calibration Report

Serial-Model: 402-PSI STKBL ML
 Performed: Thu Dec 16 22:29:48 2021

| | Readings | | References | | | Results | |
|---------|----------|--------|------------|---------|-------|------------|-----------|
| | Zero | Cal | Zero | Cal | | m | b |
| Normal | 0.0037 | 0.0043 | 0.0000 | 10.0000 | Ohm-m | 14000.0000 | -0.5000 |
| Inverse | 0.1208 | 0.0013 | 0.0000 | 10.0000 | Ohm-m | 13250.0000 | 0.0000 |
| Caliper | 1.0020 | 1.0834 | 5.5000 | 16.5000 | in | 135.1520 | -131.1000 |

Compensated Density Calibration Report

Serial-Model: 303-03-M&W
 Source #: 21170B
 Master Calibration Performed: Thu Dec 16 23:28:34 2021

Master Calibration

| | Density | | Far Detector | Near Detector | |
|---------------------|---------|------|-----------------------------|---------------|-----|
| Magnesium | 1.755 | g/cc | 3841.78 | 5151.73 | cps |
| Aluminum | 2.670 | g/cc | 700.98 | 3068.49 | cps |
| Spine Angle = 73.06 | | | Density/Spine Ratio = 0.515 | | |
| | Size | | Reading | | |
| Small Ring | 4.00 | in | 1.17 | | |
| Large Ring | 14.00 | in | 1.04 | | |

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 | Carolyn A #4-24 |
| Field | Unnamed |
| County | Cheyenne |
| State | Kansas |