



MICRORESISTIVITY LOG

Company AMERICAN WARRIOR, INC.
 Well GLEN MARCELLUS B #5-36
 Field SHUCK NORTHWEST
 County STEVENS
 State KANSAS

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 Well GLEN MARCELLUS B #5-36
 Field SHUCK NORTHWEST
 County STEVENS State KANSAS

Location: API #: 15-189-22,842-00-00
 SE SW NE NE
 1250' FNL & 800' FEL
 SEC 36 TWP 32S RGE 35W
 Permanent Datum GROUND LEVEL Elevation 2932'
 Log Measured From KELLY BUSHING
 Drilling Measured From KELLY BUSHING
 Other Services
 CNL/CDL
 DIL
 Elevation
 K.B. 2944'
 D.F.
 G.L. 2932'

| | |
|------------------------|----------------|
| Date | 5/13/2016 |
| Run Number | ONE |
| Depth Driller | 6350' |
| Depth Logger | 6352' |
| Bottom Logged Interval | 6351' |
| Top Log Interval | 4100' |
| Casing Driller | 8.625" @ 1744' |
| Casing Logger | 1744' |
| Bit Size | 7.875" |
| Type Fluid in Hole | CHEMICAL |
| Salinity, ppm CL | 3,000 |
| Density / Viscosity | 9.55 53 |
| pH / Fluid Loss | 9.5 10.4 |
| Source of Sample | FLOWLINE |
| Rm @ Meas. Temp | 1.05 @ 75 |
| Rmt @ Meas. Temp | 0.79 @ 75 |
| Rmc @ Meas. Temp | 1.42 @ 75 |
| Source of Rmf / Rmc | CHARTS |
| Rm @ BHT | 0.56 @ 140 |
| Operating Rig Time | 5 HOURS |
| Max Rec. Temp. F | 140 |
| Equipment Number | 91 |
| Location | COLBY |
| Recorded By | T. MARTIN |
| Witnessed By | KEVIN TIMSON |

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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.
 HUGOTON, 15.5 E TO A RD,
 4 N, W INTO

Log Measured From: KELLY BUSHING 12 Ft. Above Permanent Datum

THANK YOU FOR USING PIONEER ENERGY SERVICES
 www.pioneerenergy.com 785-625-3858

| | |
|---|---|
| Your Pioneer Energy Services Crew Engineer: T. MARTIN Operator: Operator: Operator: | This Log Record Was Witnessed By Primary Witness: KEVIN TIMSON Secondary Witness: Secondary Witness: Secondary Witness: |
|---|---|

Top - Bottom

| | | | | | | | |
|------------------|-----------------|----------------|--------------|------------------|------------------|-----------------|-------------------|
| M | A | SZCOR | NPORSEL | FLUIDDEN g/cc | MATRXDEN g/cc | SPSHIFT mV | SNDERRM mmho/m |
| 2 | 1 | Off | Limestone | 1 | 2.71 | -240 | 0 |
| SNDERR mmho/m | SRFTEMP degF | CASETHCK in | CASEOD in | PERFS | TDEPTH ft | BOTTEMP degF | BOREID in |
| 0 | 70 | 0 | 5.5 | 0 | 6352 | 140 | 7.875 |

| Sensor | Offset (ft) | Schematic | Description | Length (ft) | O.D. (in) | Weight (lb) |
|--------------------|-------------------------|-----------|--|-------------|-----------|-------------|
| GR | 40.58 | | GR-M&W (89) | 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 (90-1031) | 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

CILM 4.70

SP 0.20

DIL-PSI HIGH TEMP (PSI 216 HT)

18.50

3.50

220.00

Dataset: amwar_glenmarcellusb_#5-36.db: field/well/stack/pass3.1
 Total length: 43.08 ft
 Total weight: 685.00 lb
 O.D.: 4.00 in

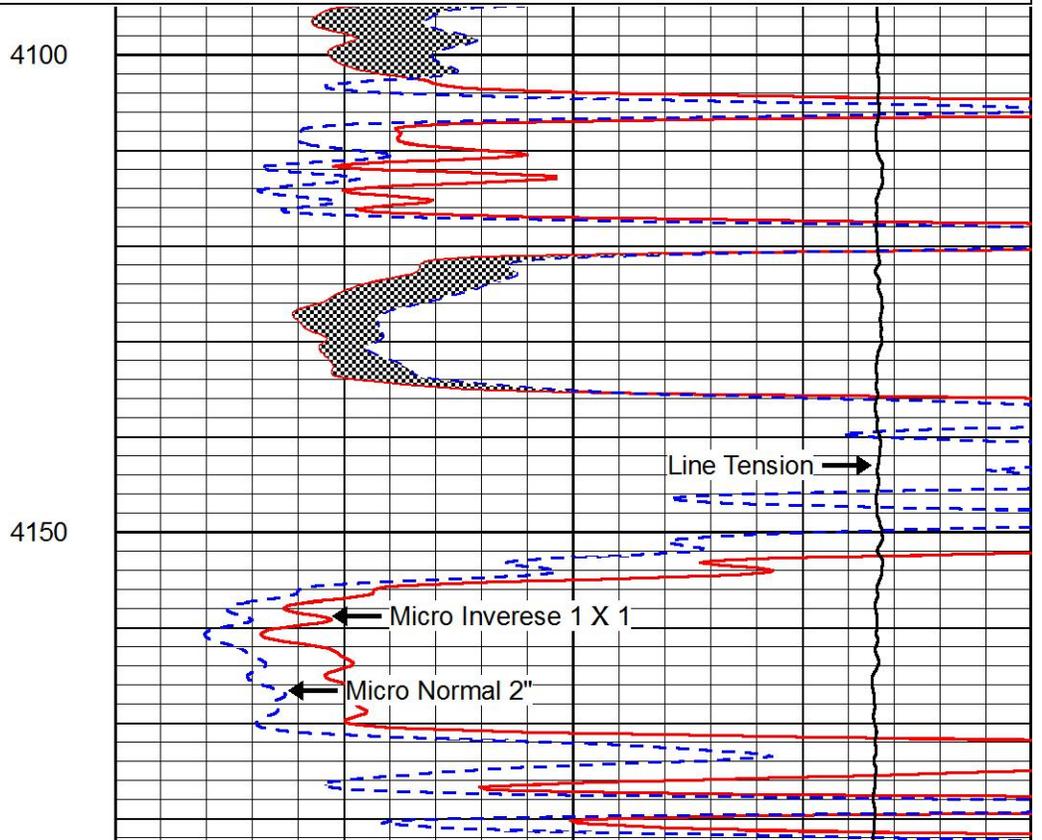
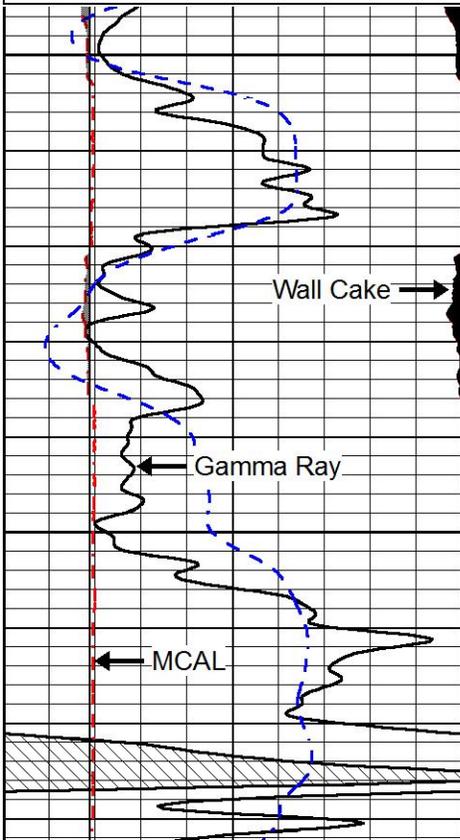


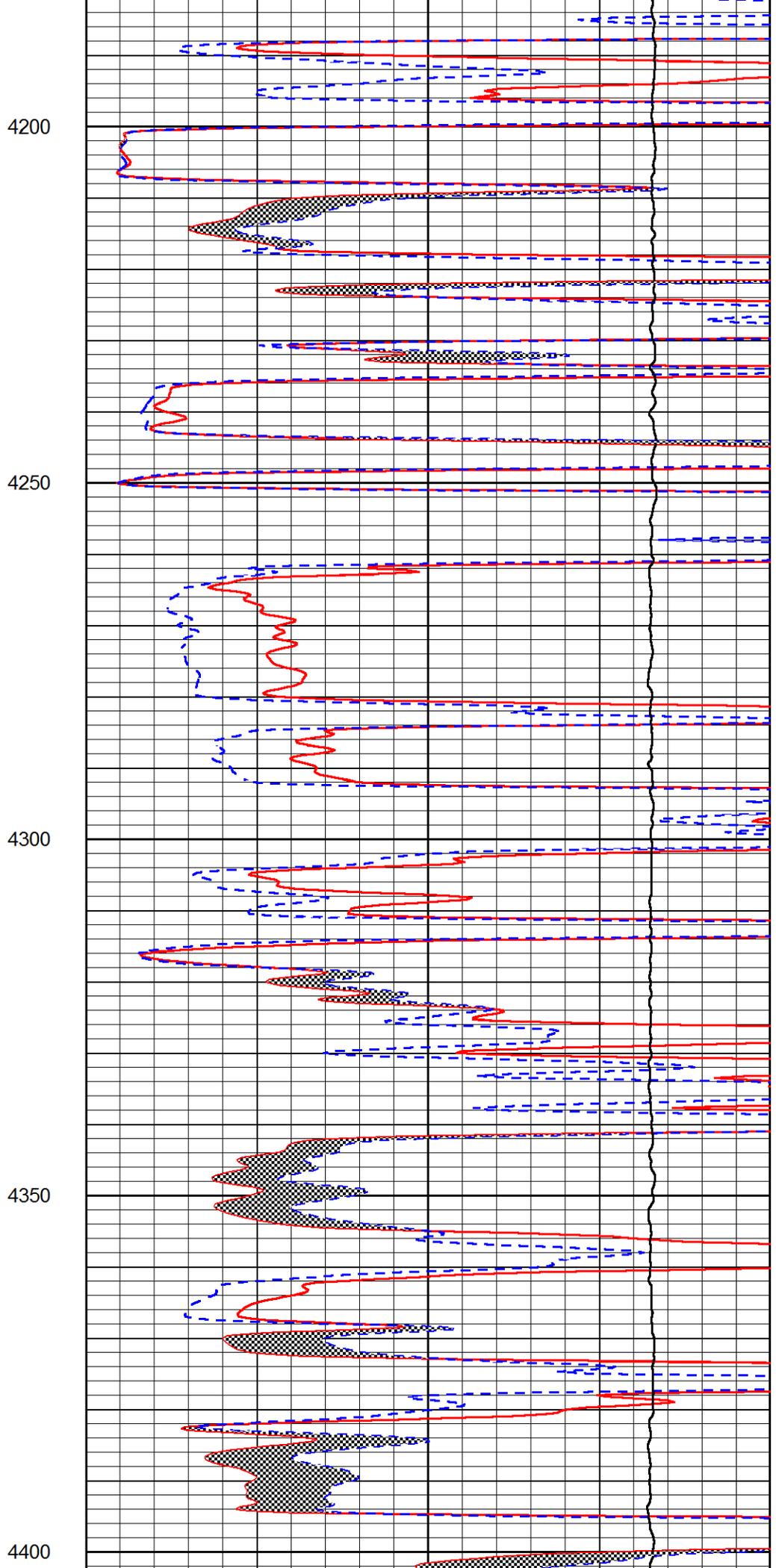
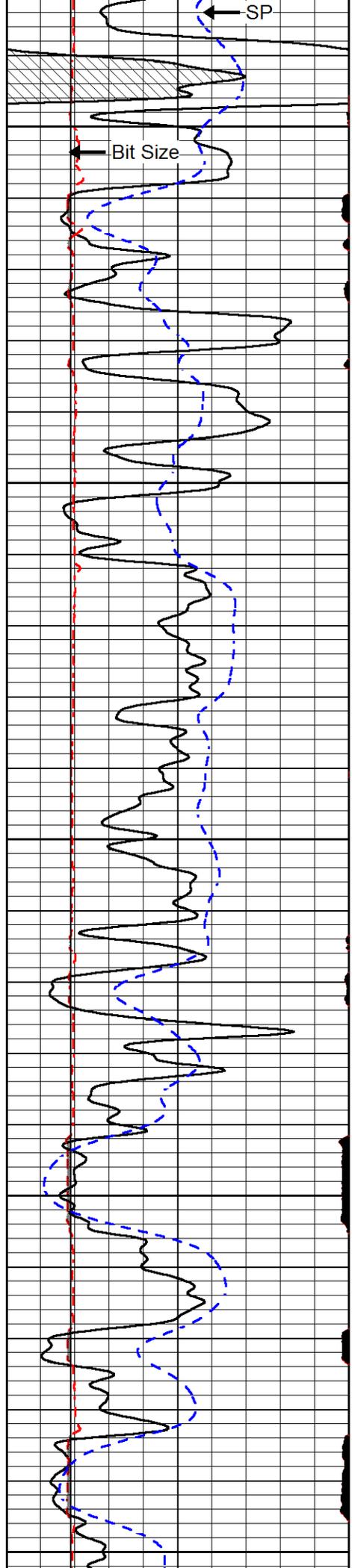
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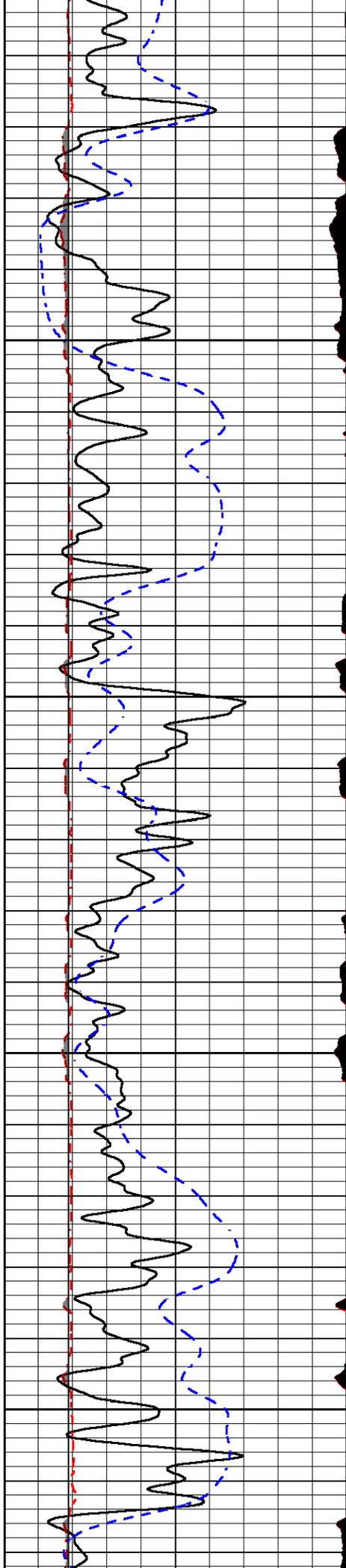
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 Dataset Pathname stack/pass3.1
 Presentation Format micro
 Dataset Creation Fri May 13 02:35:53 2016
 Charted by Depth in Feet scaled 1:240

| | | |
|-------|------------------|-------|
| 0 | Gamma Ray (GAPI) | 150 |
| 6 | MCAL (in) | 16 |
| 2.875 | mcal (in) | 7.875 |
| 6 | Bit Size (in) | 16 |
| -200 | SP (mV) | 0 |

| | | |
|-------|-----------------------------|----|
| 0 | Micro Inverse 1 X 1 (Ohm-m) | 40 |
| 0 | Micro Normal 2" (Ohm-m) | 40 |
| 10000 | Line Weight (lb) | 0 |





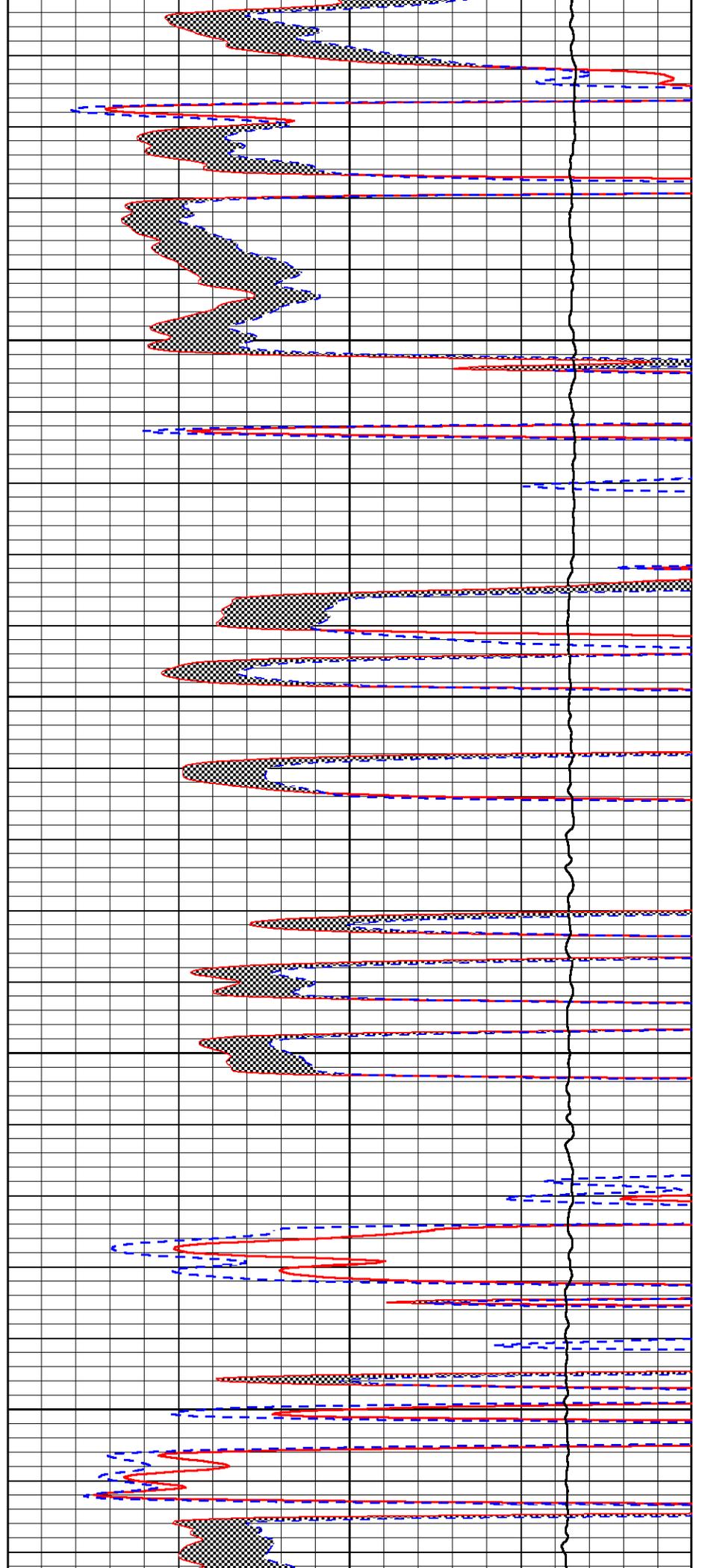


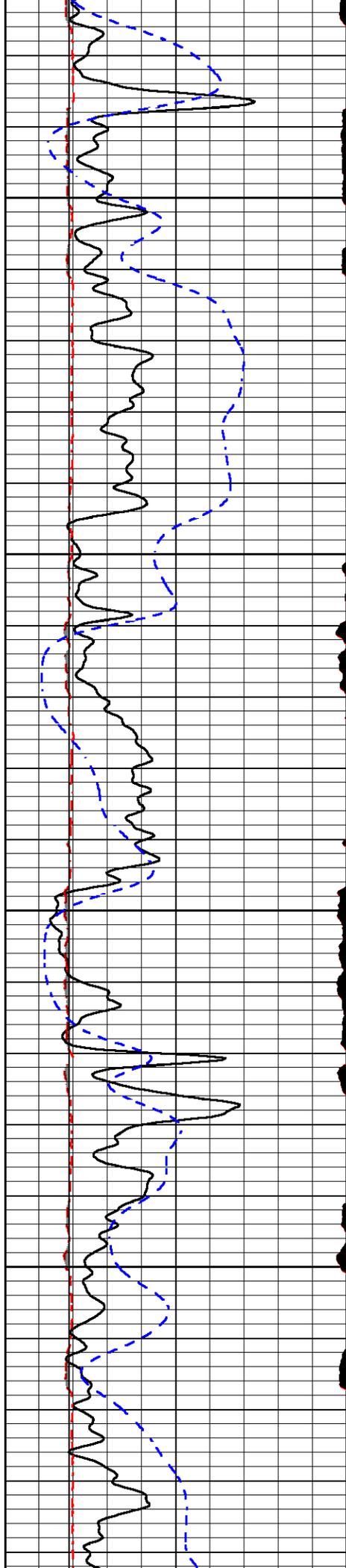
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4500

4550

4600



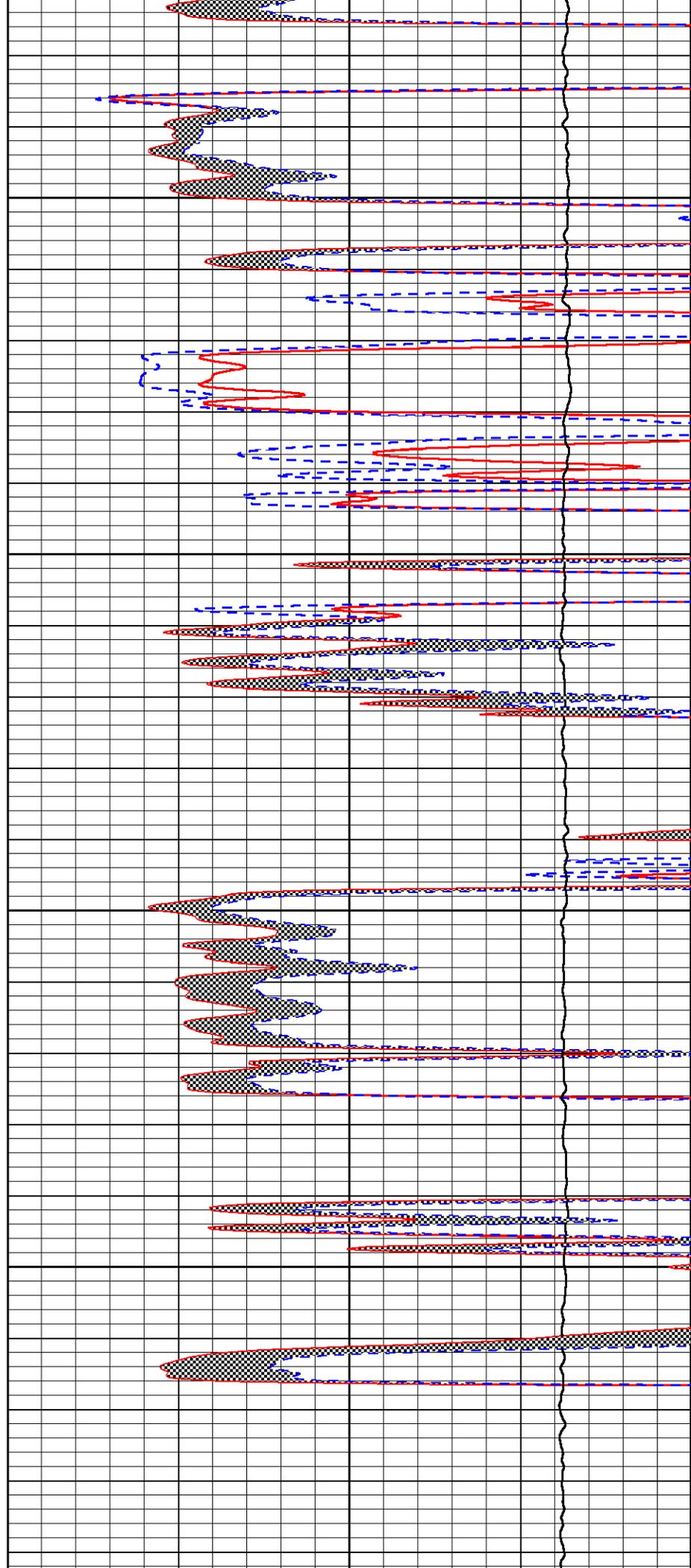


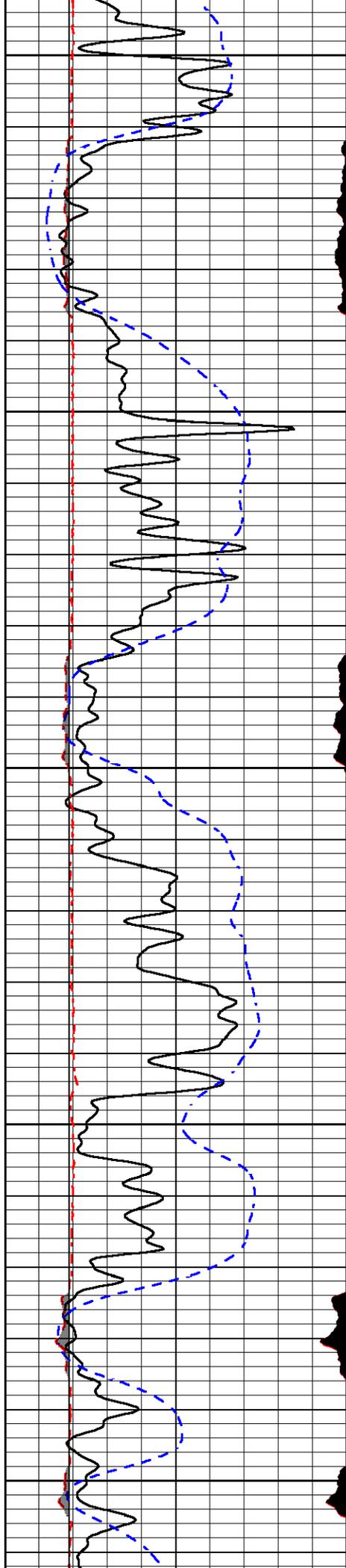
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4700

4750

4800





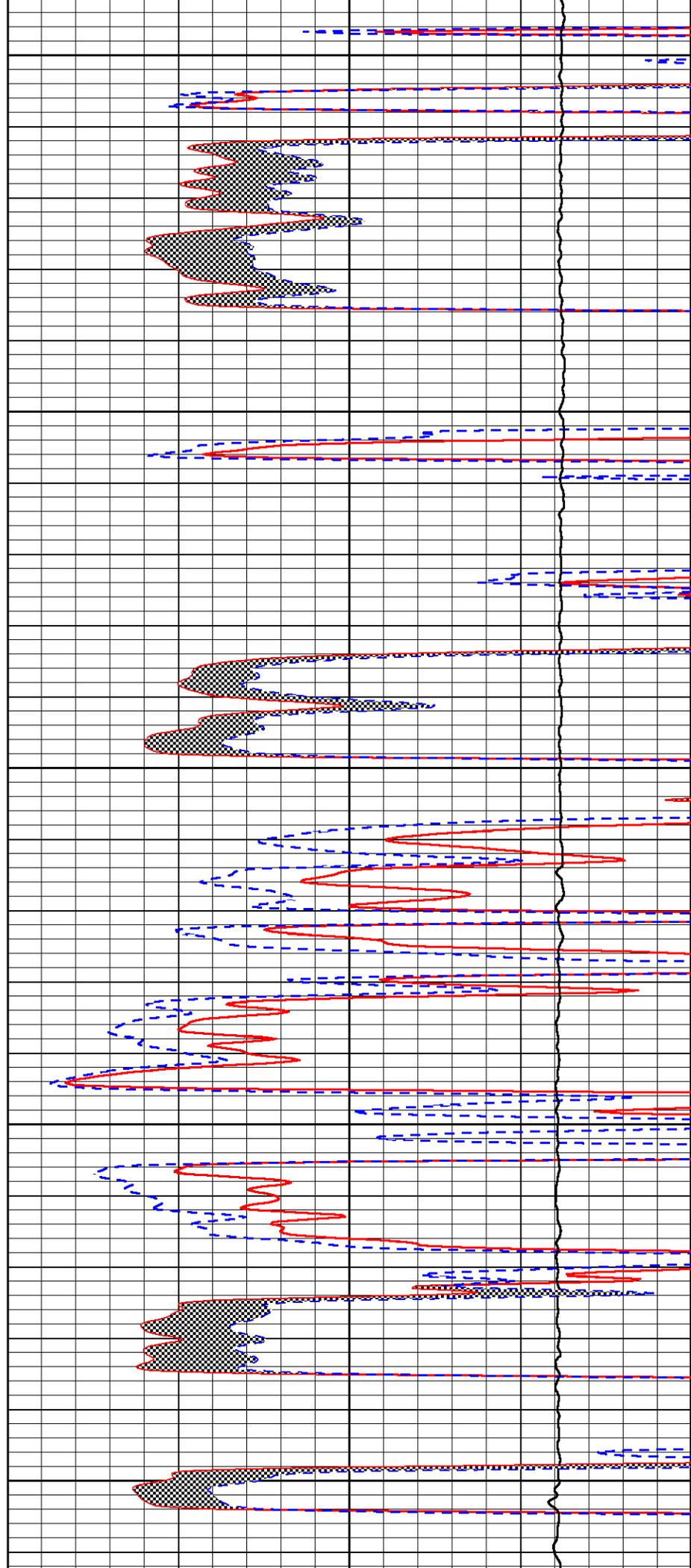
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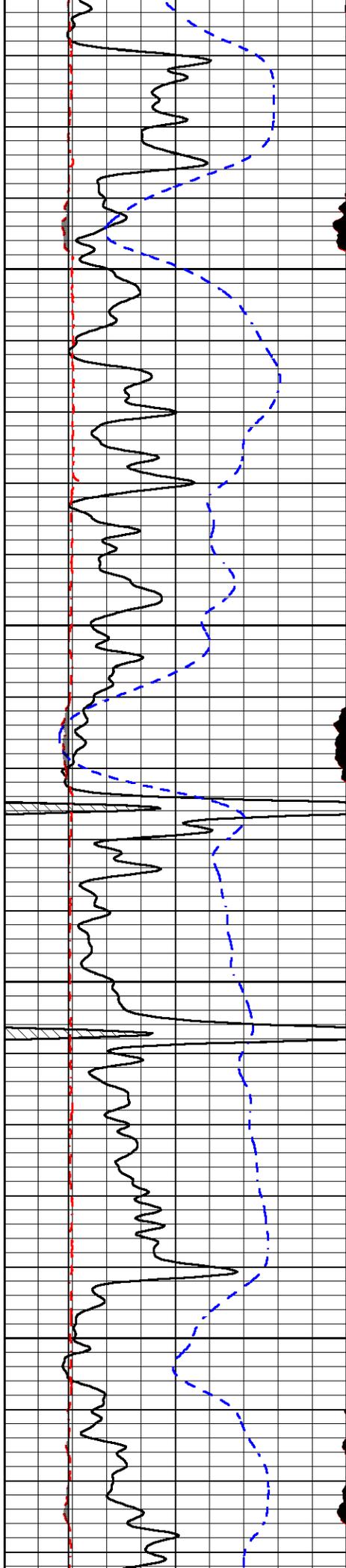
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4950

5000

5050



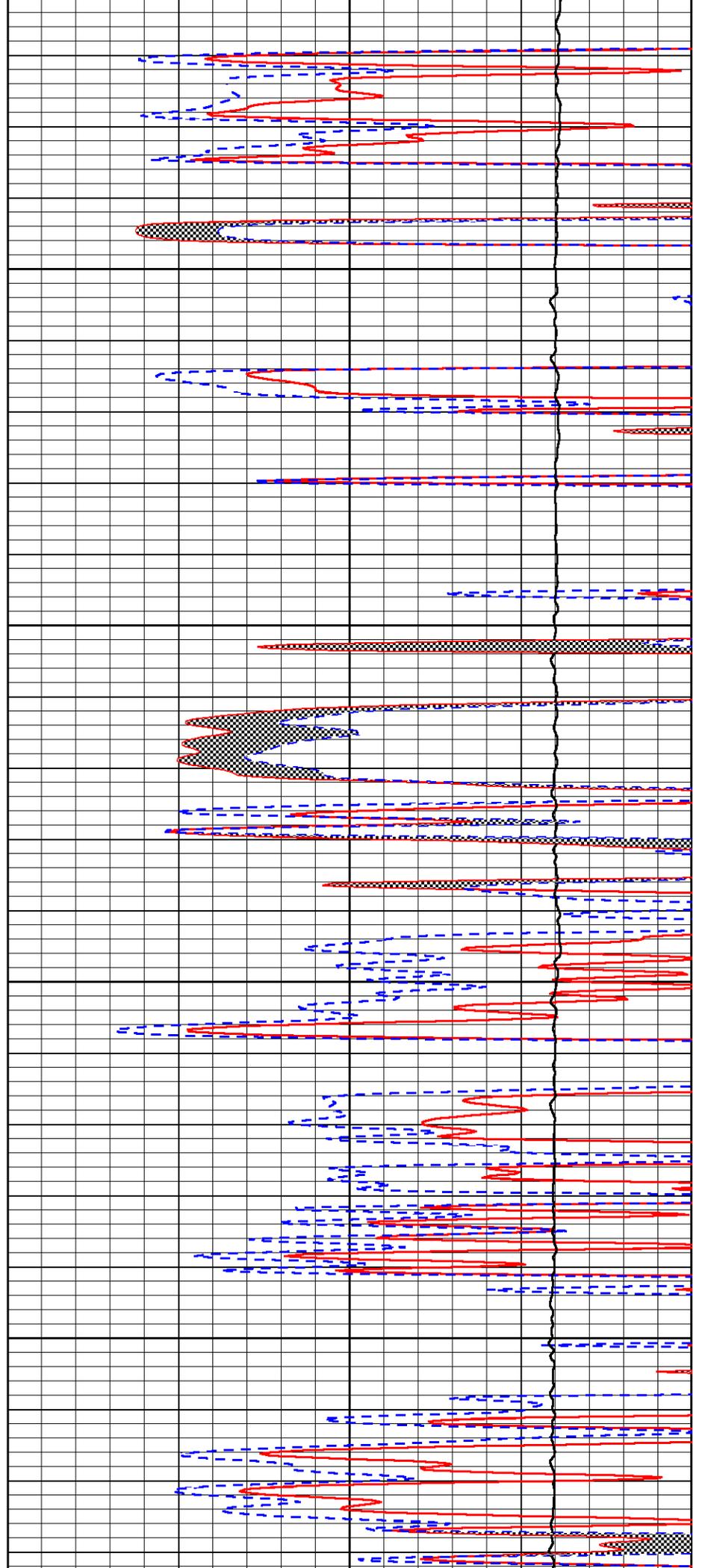


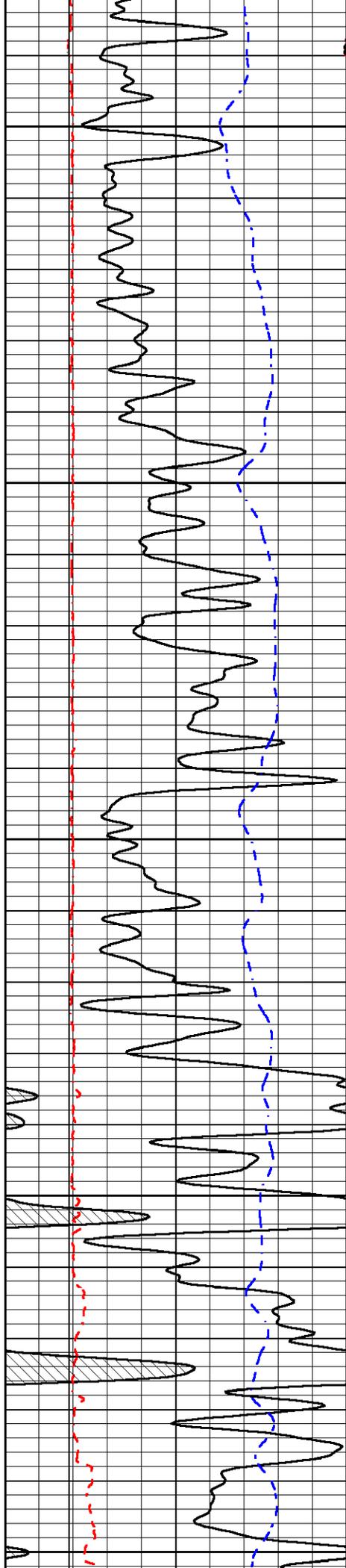
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5150

5200

5250





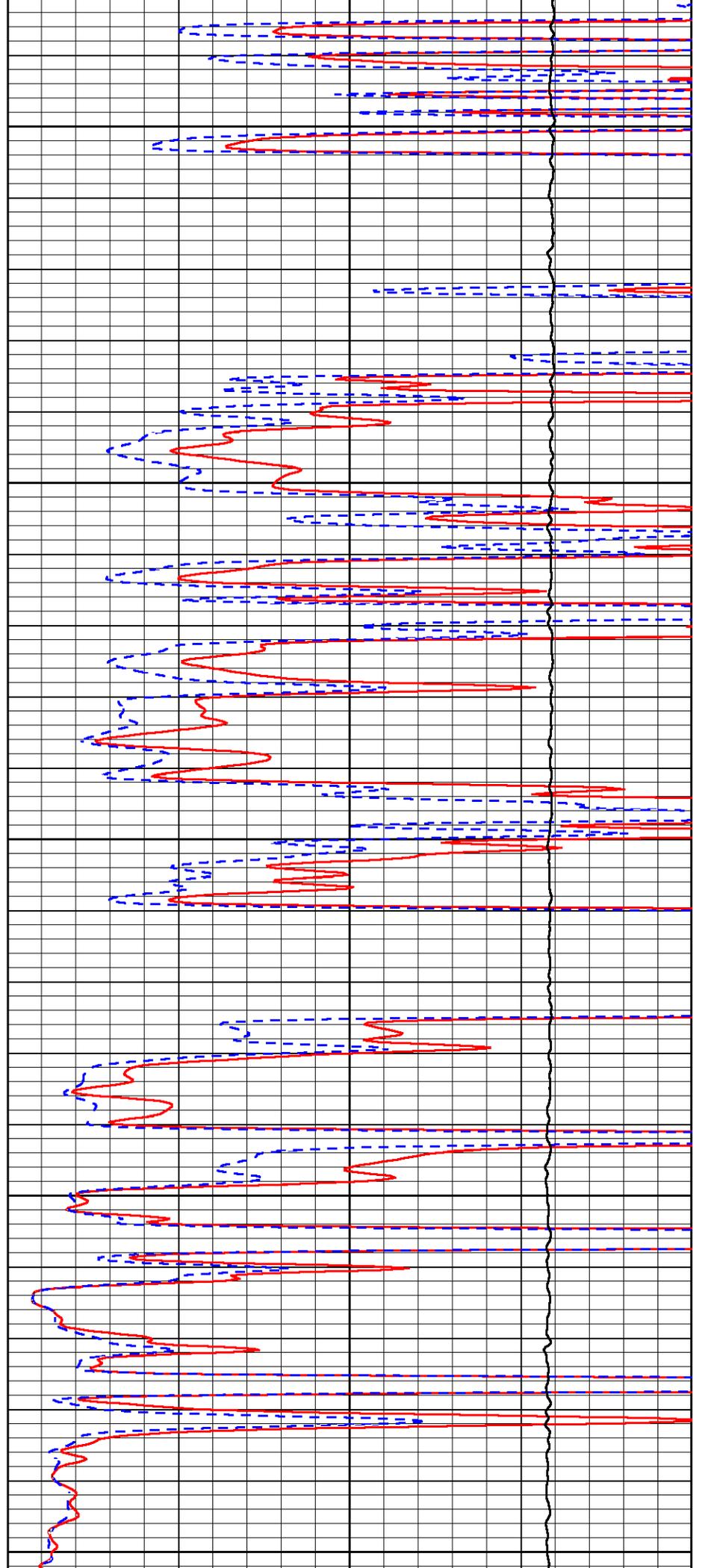
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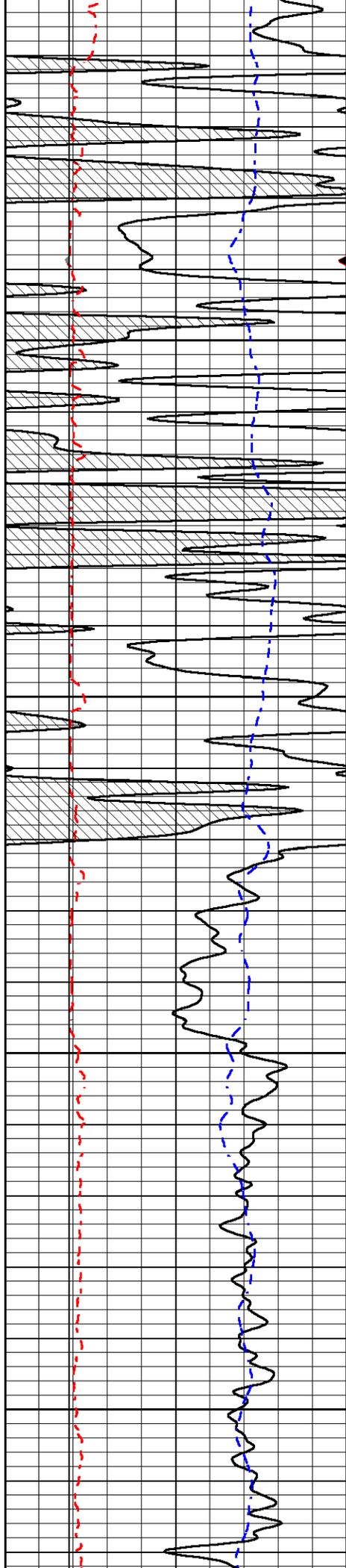
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5450

5500



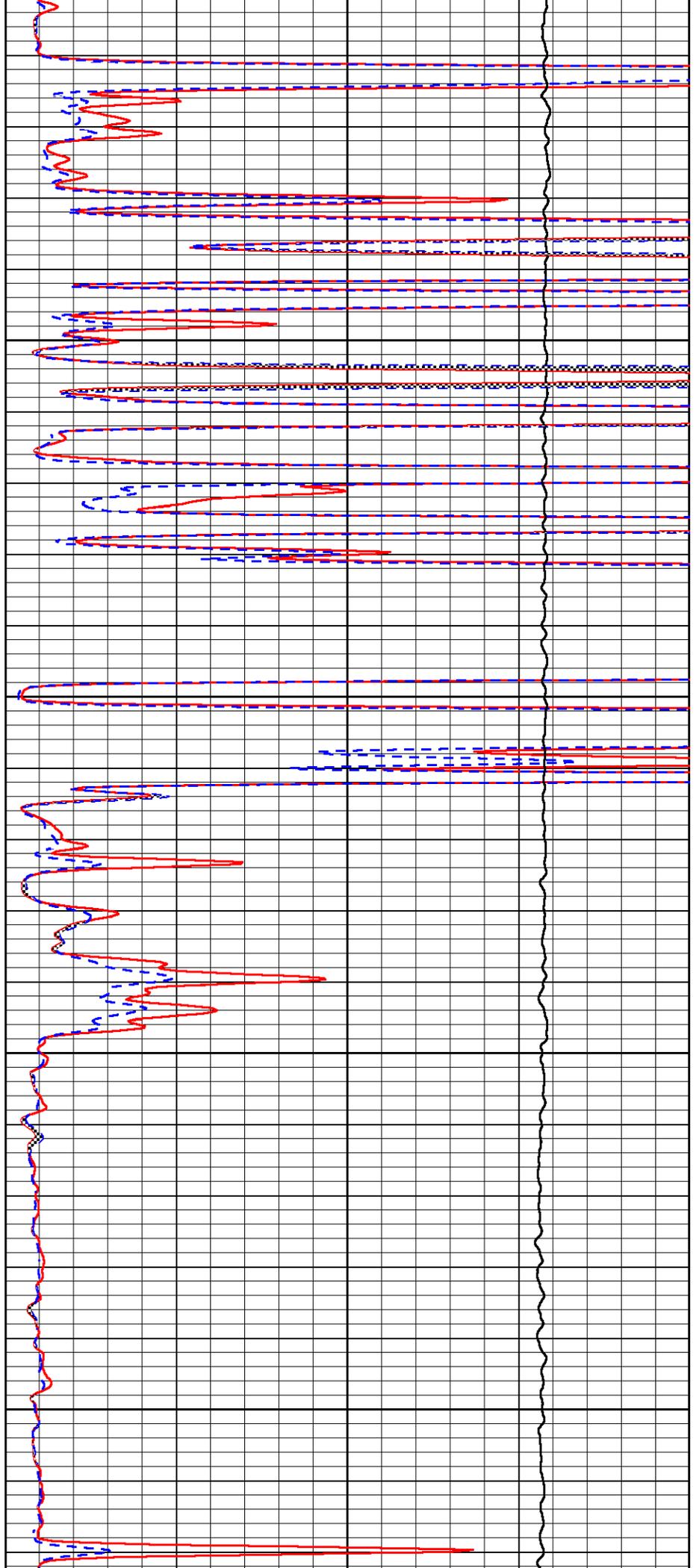


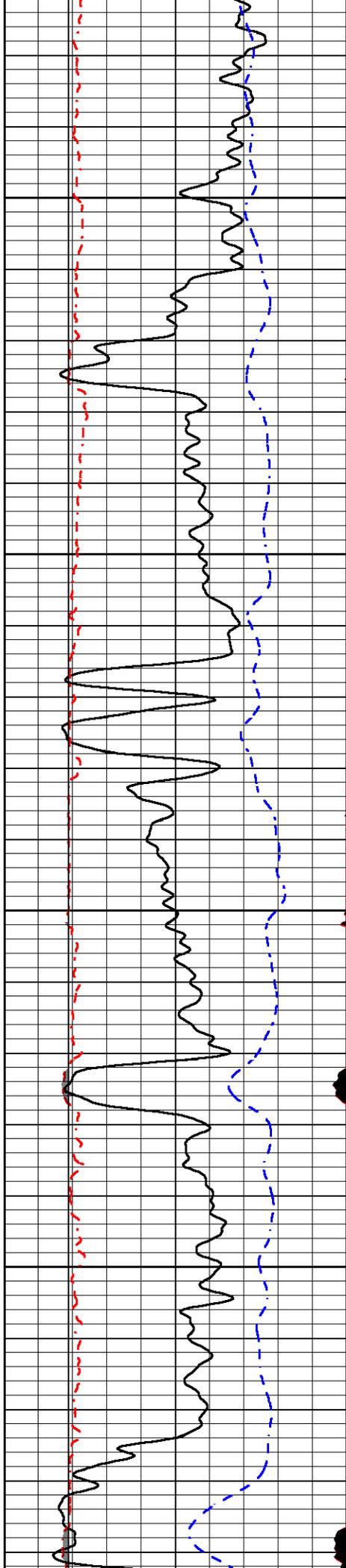
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5600

5650

5700



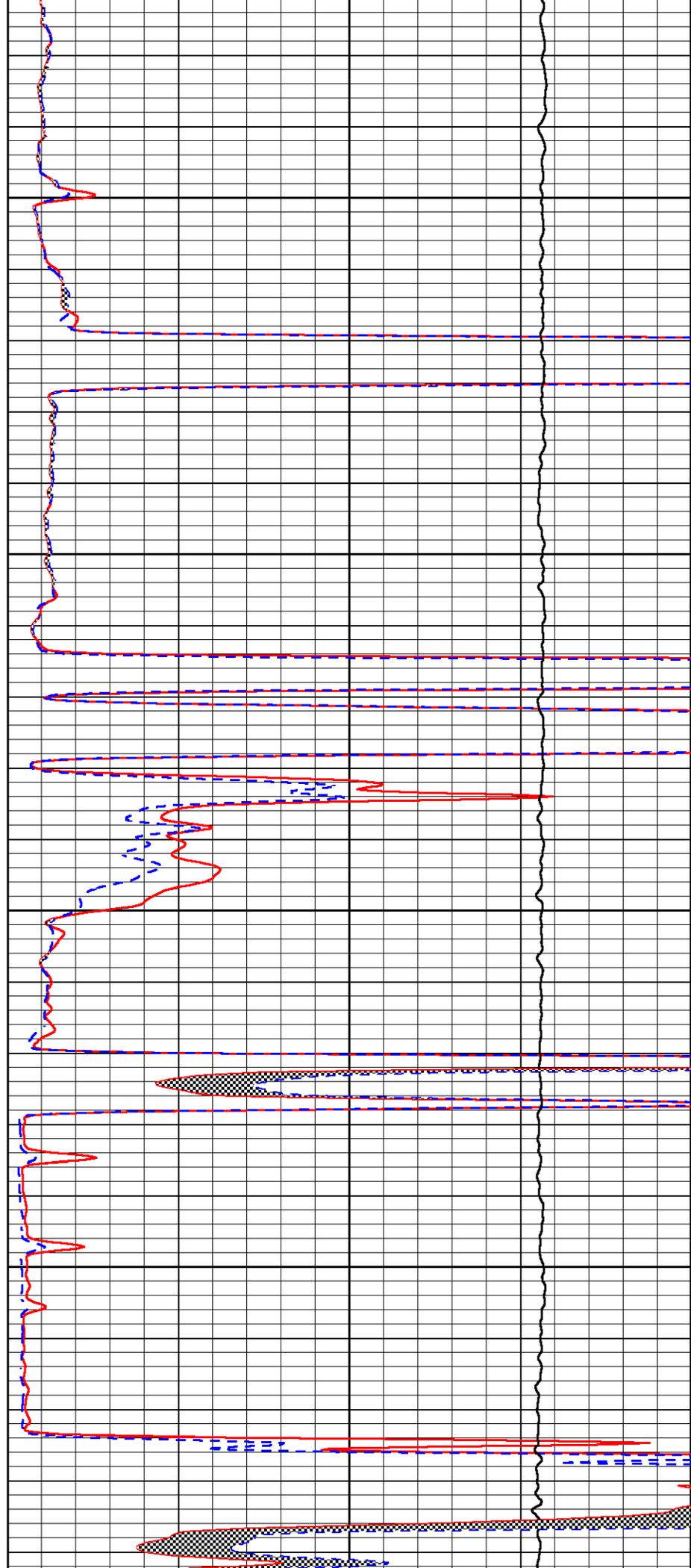


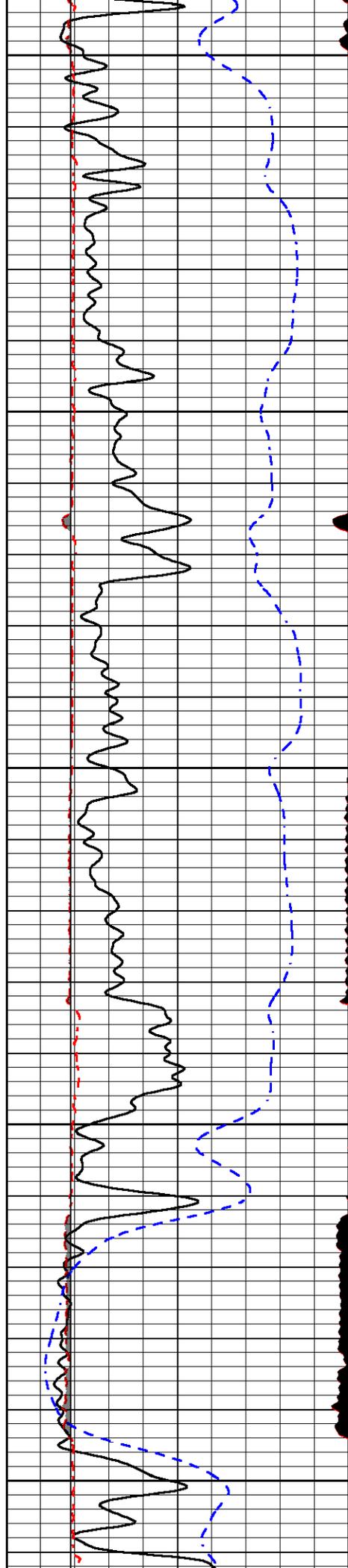
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5800

5850

5900





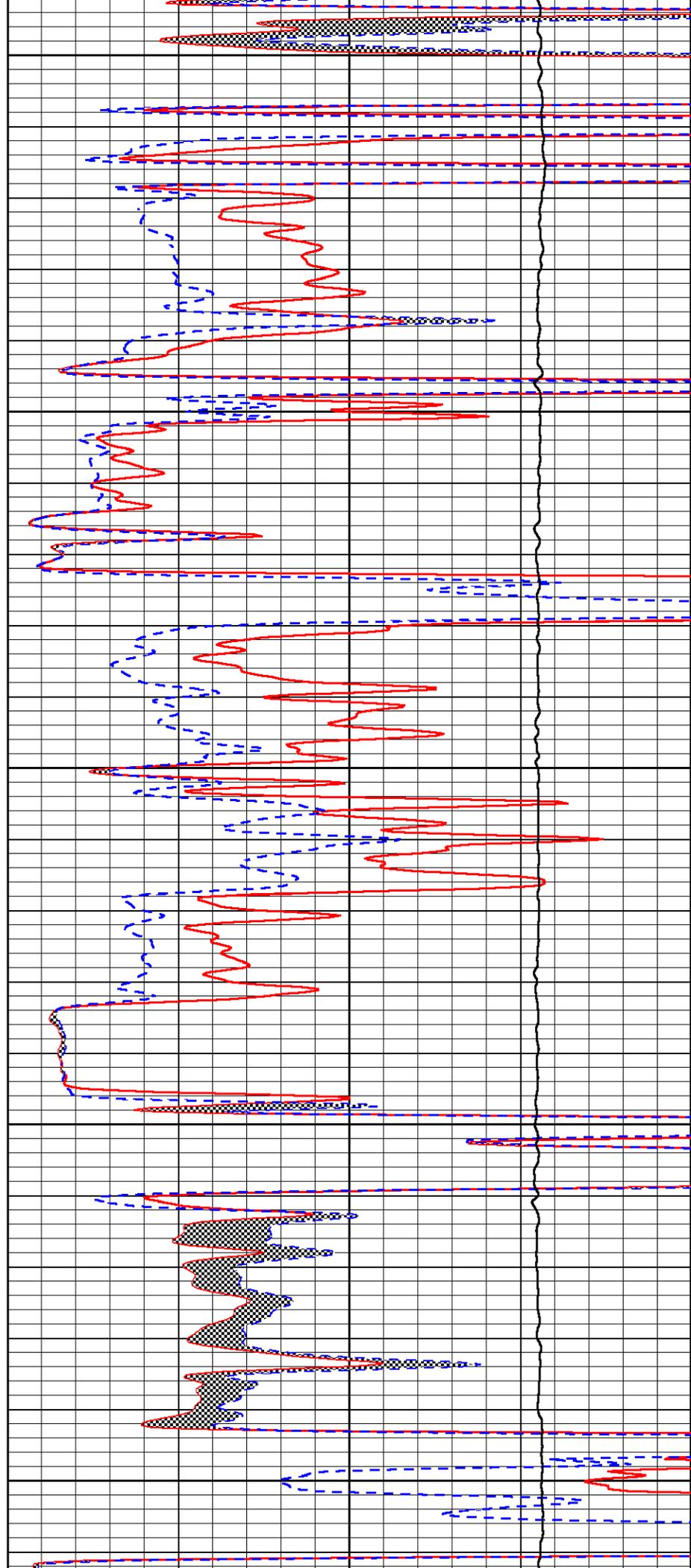
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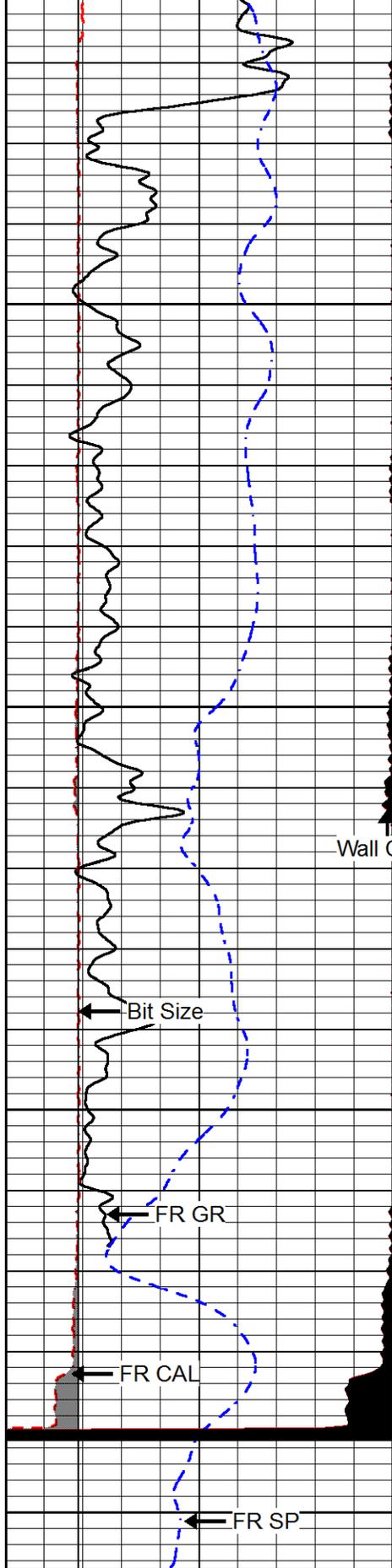
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6050

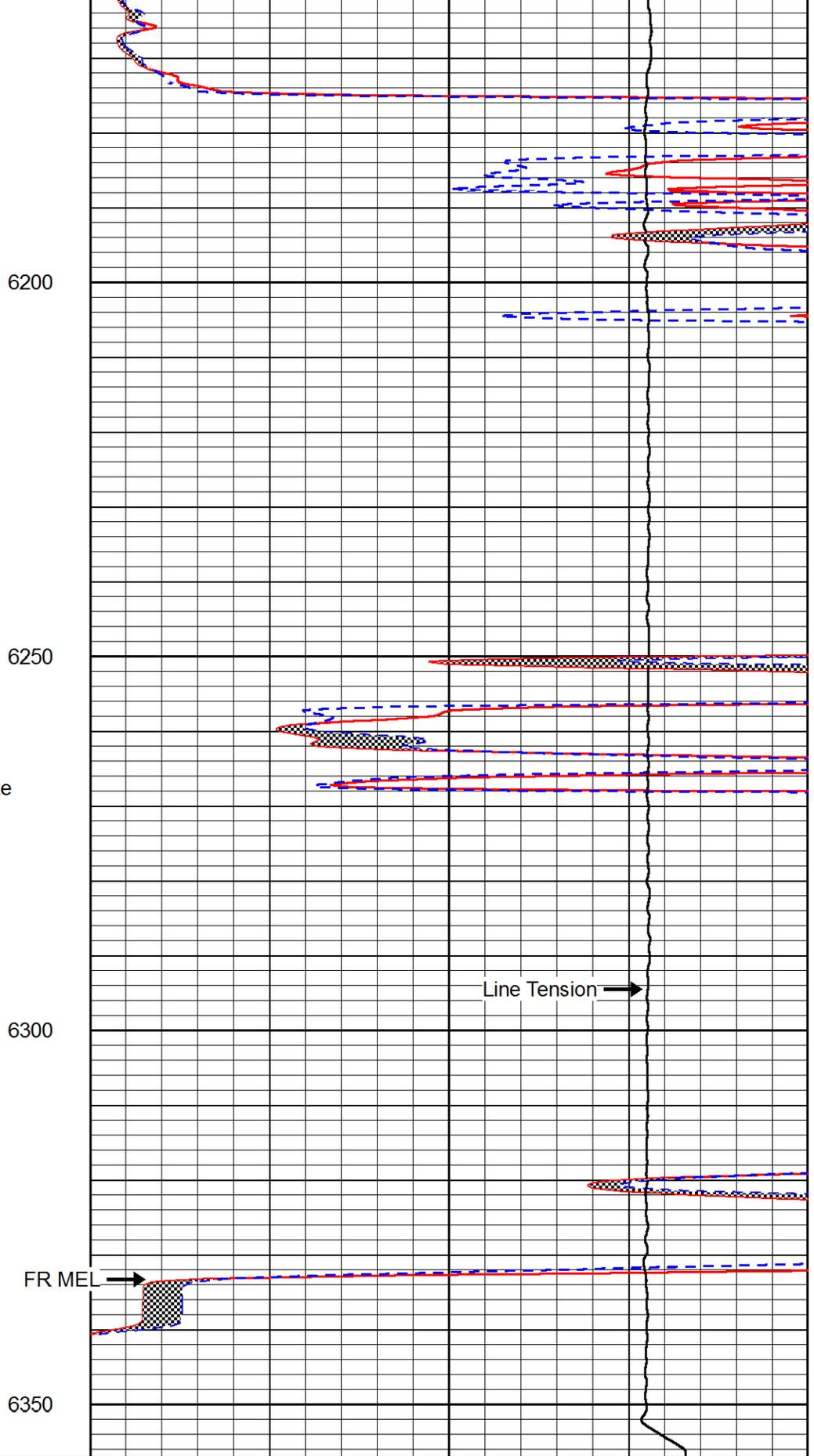
6100

6150





| | | |
|-------|------------------|-------|
| 0 | Gamma Ray (GAPI) | 150 |
| 6 | MCAL (in) | 16 |
| 2.875 | mcal (in) | 7.875 |
| 6 | Bit Size (in) | 16 |
| -200 | SP (mV) | 0 |



| | | |
|-------|-----------------------------|----|
| 0 | Micro Inverse 1 X 1 (Ohm-m) | 40 |
| 0 | Micro Normal 2" (Ohm-m) | 40 |
| 10000 | Line Weight (lb) | 0 |

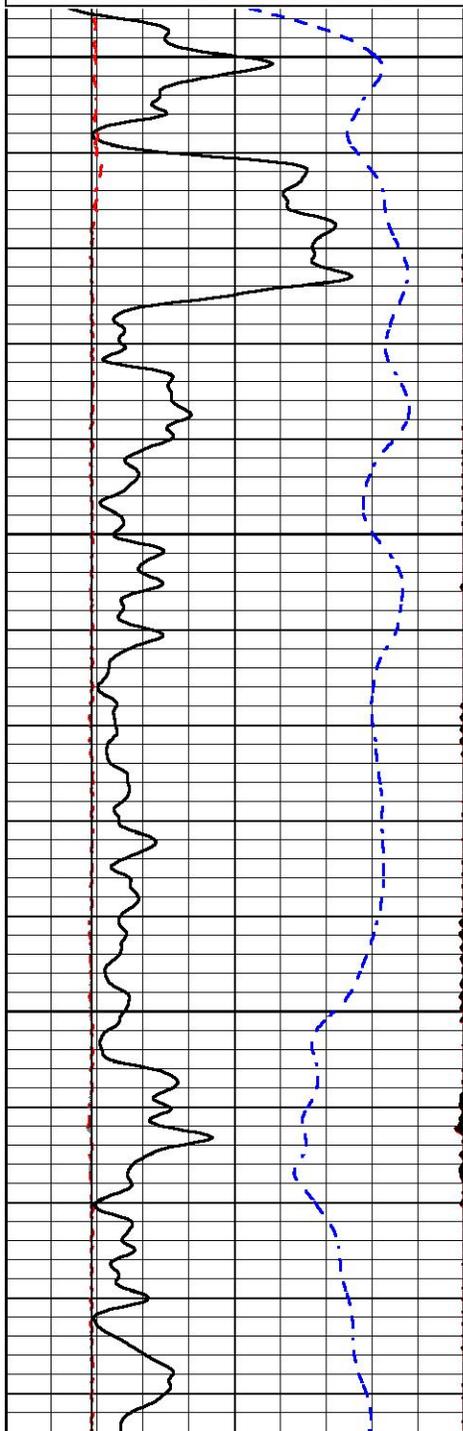


REPEAT SECTION

Database File amwar_glenmarcellusb_#5-36.db
 Dataset Pathname stack/pass2.1
 Presentation Format micro
 Dataset Creation Fri May 13 01:57:31 2016
 Charted by Depth in Feet scaled 1:240

| | | |
|-------|------------------|-------|
| 0 | Gamma Ray (GAPI) | 150 |
| 6 | MCAL (in) | 16 |
| 2.875 | mcal (in) | 7.875 |
| 6 | Bit Size (in) | 16 |
| -200 | SP (mV) | 0 |

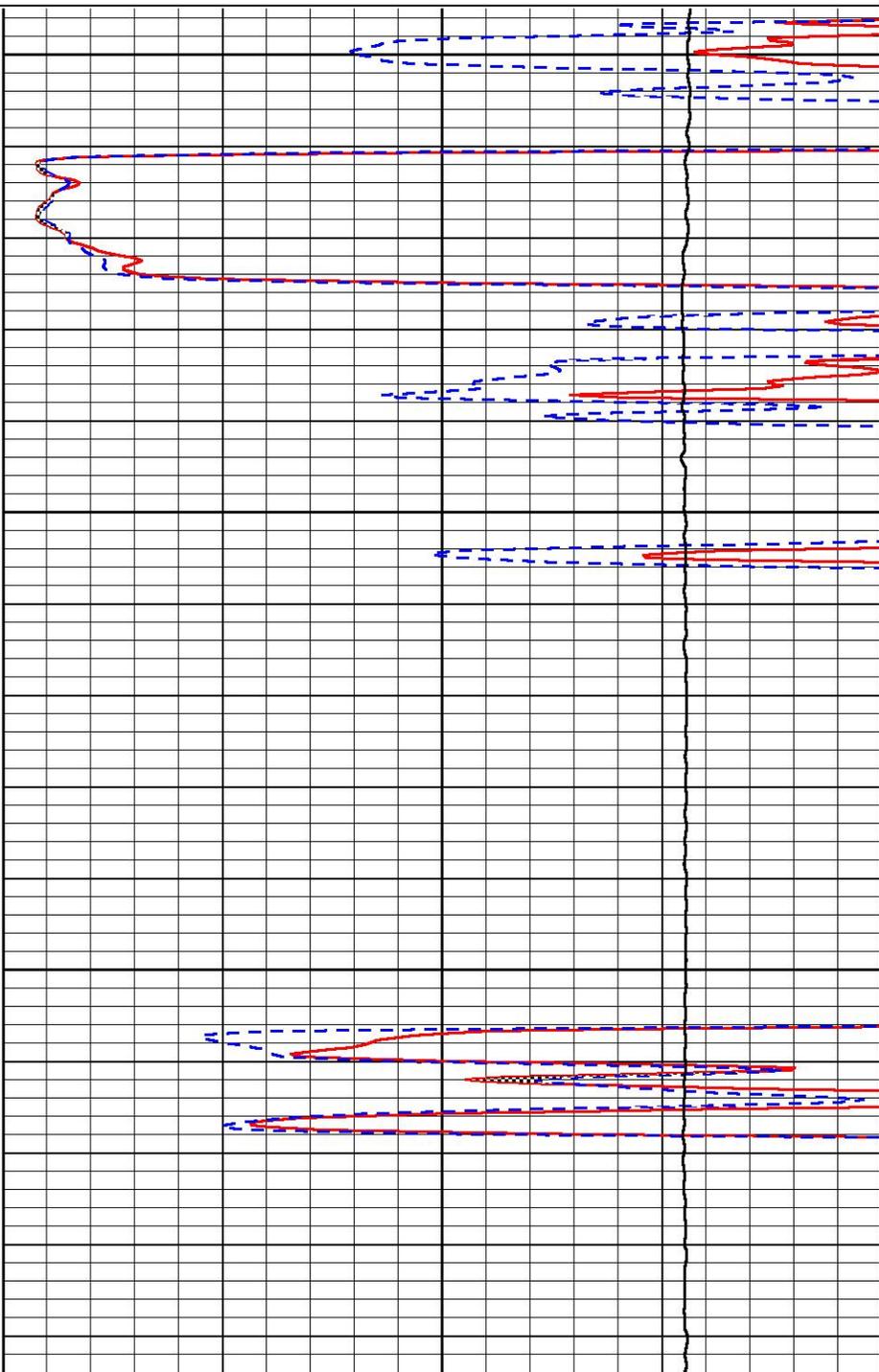
| | | |
|-------|-----------------------------|----|
| 0 | Micro Inverse 1 X 1 (Ohm-m) | 40 |
| 0 | Micro Normal 2" (Ohm-m) | 40 |
| 10000 | Line Weight (lb) | 0 |

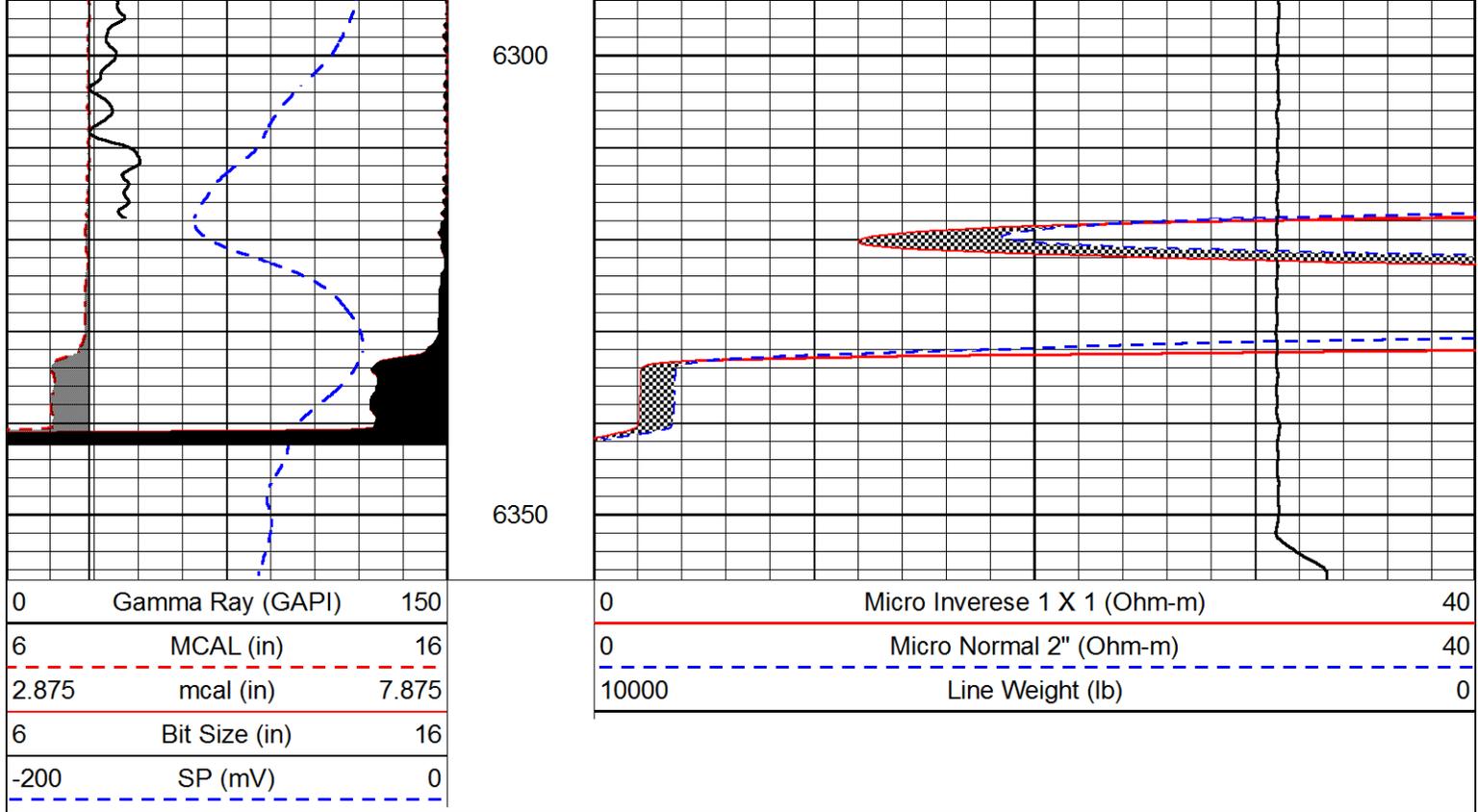


6150

6200

6250





Calibration Report

Database File amwar_glenmarcellusb_#5-36.db
 Dataset Pathname stack/pass3.3
 Dataset Creation Fri May 13 02:11:04 2016

Dual Induction Calibration Report

Serial-Model: PSI 216 HT-PSI HIGH TEMP
 Calibration Performed: Tue May 03 16:59:30 2016

| Loop: | Readings | | References | | | Results | |
|--------|----------|---------|------------|---------|--------|---------|---------|
| | Air | Loop | Air | Loop | | Gain | Offset |
| Deep | 75.411 | 495.929 | 4.000 | 250.000 | mmho/m | 0.580 | -42.000 |
| Medium | 75.269 | 470.661 | 10.000 | 100.000 | mmho/m | 0.600 | -13.000 |

Microlog Calibration Report

Serial-Model: PSI-01-PSIML
 Performed: Tue May 03 16:59:46 2016

| | Readings | | References | | | Results | |
|---------|----------|--------|------------|---------|-------|------------|----------|
| | Zero | Cal | Zero | Cal | | m | b |
| Normal | 0.0000 | 1.0000 | 0.0000 | 1.0000 | Ohm-m | 24000.0000 | -0.5000 |
| Inverse | 0.0000 | 1.0000 | 0.0000 | 1.0000 | Ohm-m | 29500.0000 | -0.5000 |
| Caliper | 1.0001 | 1.1397 | 6.5000 | 18.5000 | in | 70.0000 | -65.7000 |

Compensated Density Calibration Report

Serial-Model: 90-1031-M&W
 Source / Verifier: 16955B / 2ci
 Master Calibration Performed: Sun Apr 17 04:30:15 2016

Master Calibration

| | Density | | Far Detector | Near Detector | |
|---------------------|---------|------|-----------------------------|---------------|-----|
| Magnesium | 1.755 | g/cc | 5174.18 | 6425.27 | cps |
| Aluminum | 2.665 | g/cc | 963.17 | 4037.42 | cps |
| Spine Angle = 74.55 | | | Density/Spine Ratio = 0.522 | | |
| | Size | | Reading | | |
| Small Ring | 4.00 | in | 1.82 | | |
| Large Ring | 14.00 | in | 1.44 | | |

Compensated Neutron Calibration Report

Serial Number: 207-MW
 Tool Model: M&W
 Calibration Performed: Sat Apr 16 10:30:30 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
 Tool Model: M&W
 Calibration Performed: Wed Apr 13 09:27:46 2016

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
 Calibrator Reading: 1.0 cps

Sensitivity: 0.6000 GAPI/cps



PIONEER
 Pioneer Energy Services

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