



DUAL COMP POROSITY LOG

Pioneer Energy Services

Company MURFIN DRILLING COMPANY, INC.
 Well CULWELL 'G' #1-20
 Field WILDCAT
 County CHEYENNE
 State KANSAS

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Location: API #: 15-023-21472-00-00
 1320' FNL & 1980' FWL
 SEC 20 TWP 2S RGE 37W
 Permanent Datum GROUND LEVEL Elevation 3413'
 Log Measured From KELLY BUSHING
 Drilling Measured From KELLY BUSHING
 Other Services
 DIL/MEL
 BHCS
 Elevation
 K.B. 3418'
 D.F. N/A
 G.L. 3413'

| | | | | | | | |
|------------------------|---------------|------|------|--------|------|------|------|
| Date | 11/17/2017 | | | | | | |
| Run Number | ONE | | | | | | |
| Type Log | CNL/CDL | | | | | | |
| Depth Driller | 5100' | | | | | | |
| Depth Logger | 5100' | | | | | | |
| Bottom Logged Interval | 5071' | | | | | | |
| Top Logged Interval | 4000' | | | | | | |
| Type Fluid In Hole | CHEMICAL | | | | | | |
| Salinity, PPM CL | 1000 | | | | | | |
| Density | 9.2 | | | | | | |
| Level | FULL | | | | | | |
| Max. Rec. Temp. F | 127 | | | | | | |
| Operating Rig Time | 5 HOURS | | | | | | |
| Equipment -- Location | 91 HAYS | | | | | | |
| Recorded By | D. SCHMIDT | | | | | | |
| Witnessed By | ROCKY MILFORD | | | | | | |
| Borehole Record | | | | | | | |
| Run No. | Bit | From | To | Size | Wgt. | From | To |
| ONE | 12.25" | 0' | 348' | 8.625" | 23# | 0' | 348' |
| TWO | 7.875" | 348' | TD | | | | |
| Casing Record | | | | | | | |

<<< Fold Here >>>

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.
 BIRD CITY,
 7 NORTH TO U RD, 2 EAST TO 30 RD, 1 NORTH,
 EAST AND SOUTH TO LOCATION

Log Measured From: KELLY BUSHING 5 Ft. Above Permanent Datum

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

| | | | |
|-----------------------------------|-----------|----------------------------------|--------------------|
| Your Pioneer Energy Services Crew | | This Log Record Was Witnessed By | |
| Engineer: D. SCHMIDT | Operator: | Primary Witness: ROCKY MILFORD | Secondary Witness: |
| Operator: | Operator: | Secondary Witness: | Secondary Witness: |
| Operator: | | Secondary Witness: | |

Log Variables

DatabaseC:\ProgramData\Warrior\Data\murfin_culwell g 1-20.db
 Dataset field/well/STKML/pass3.1/_vars_

Top - Bottom

| | | | | | | | |
|------------------|-----------------|----------------|--------------|------------------|------------------|-----------------|-------------------|
| M | A | SZCOR | NPORSEL | FLUIDDEN g/cc | MATRXDEN g/cc | SPSHIFT mV | SNDERRM mmho/m |
| 2 | 1 | Off | Limestone | 1 | 2.71 | 475 | 0 |
| SNDERR mmho/m | SRFTEMP degF | CASETHCK in | CASEOD in | PERFS | TDEPTH ft | BOTTEMP degF | BOREID in |
| 0 | 50 | 0 | 5.5 | 0 | 5100 | 127 | 7.875 |

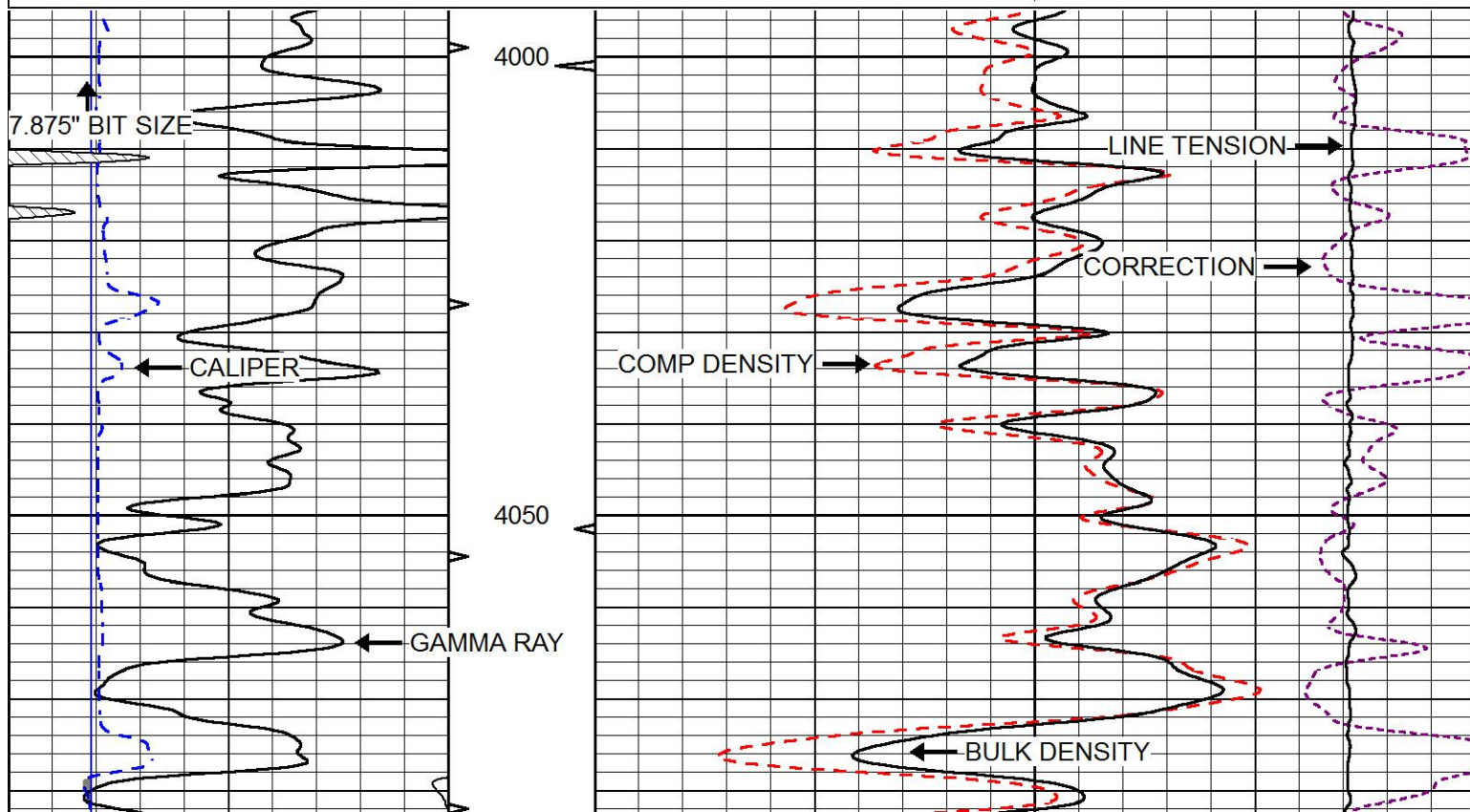


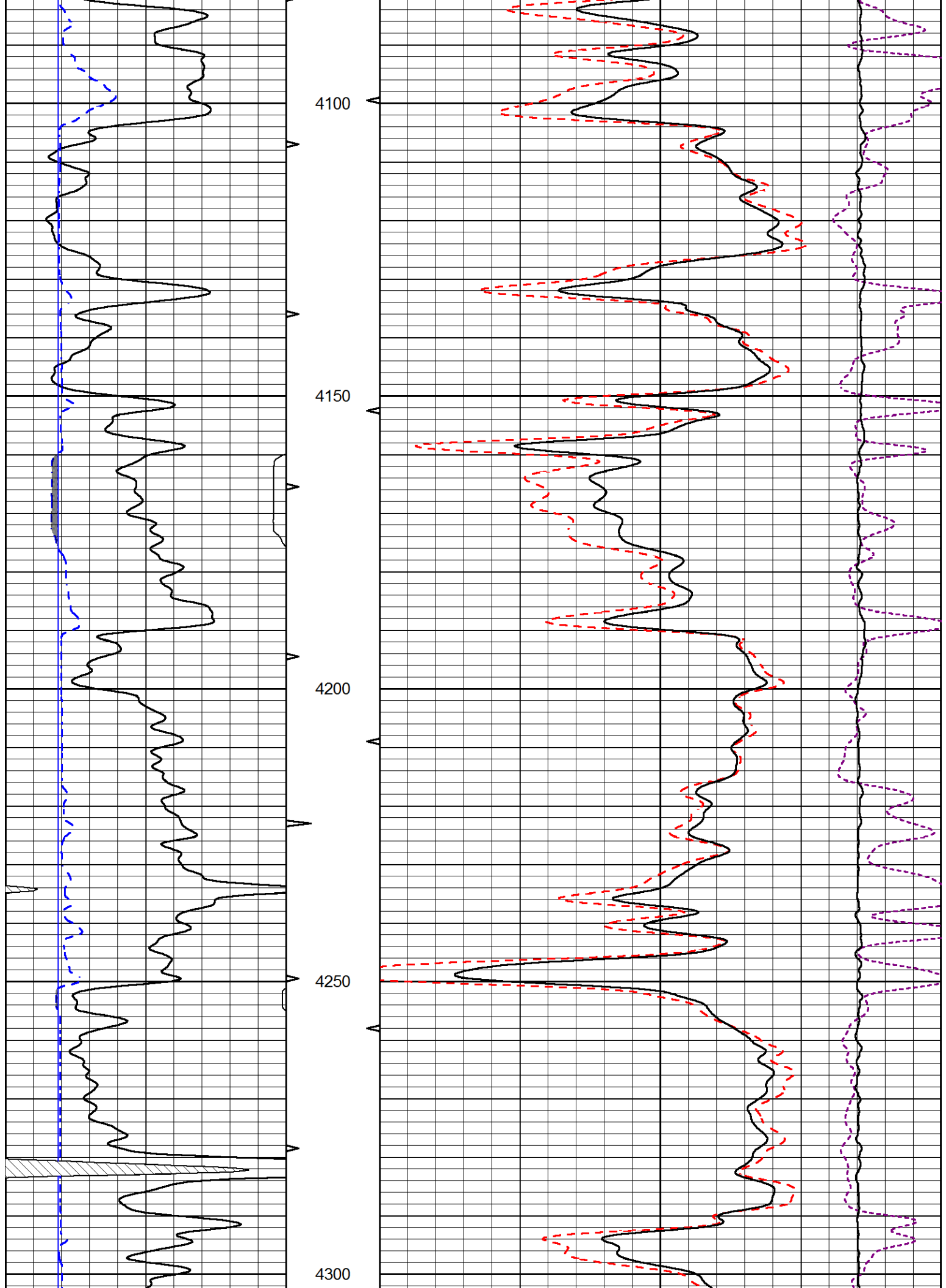
MAIN PASS

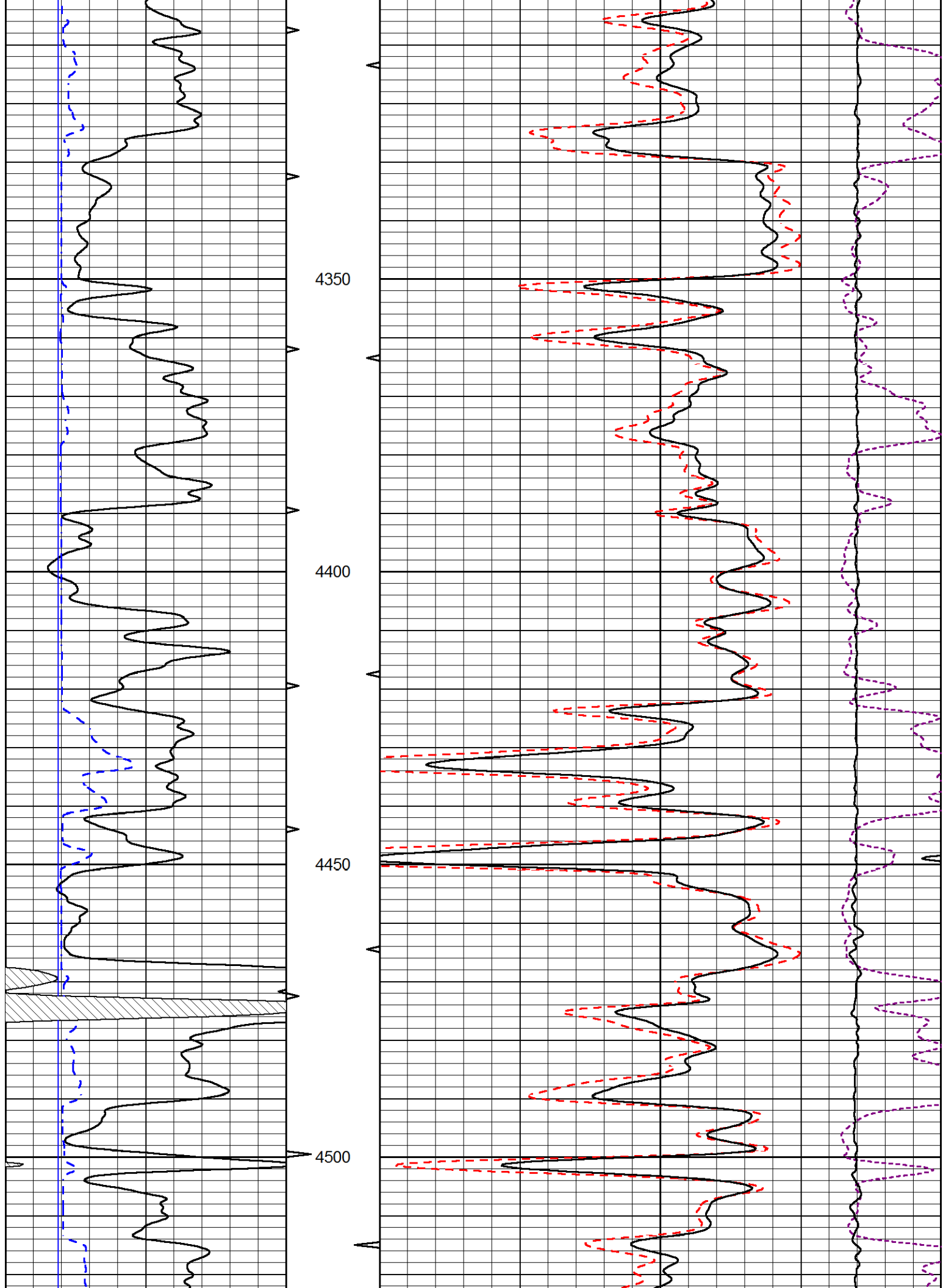
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 Presentation Format cdl
 Dataset Creation Fri Nov 17 02:45:35 2017
 Charted by Depth in Feet scaled 1:240

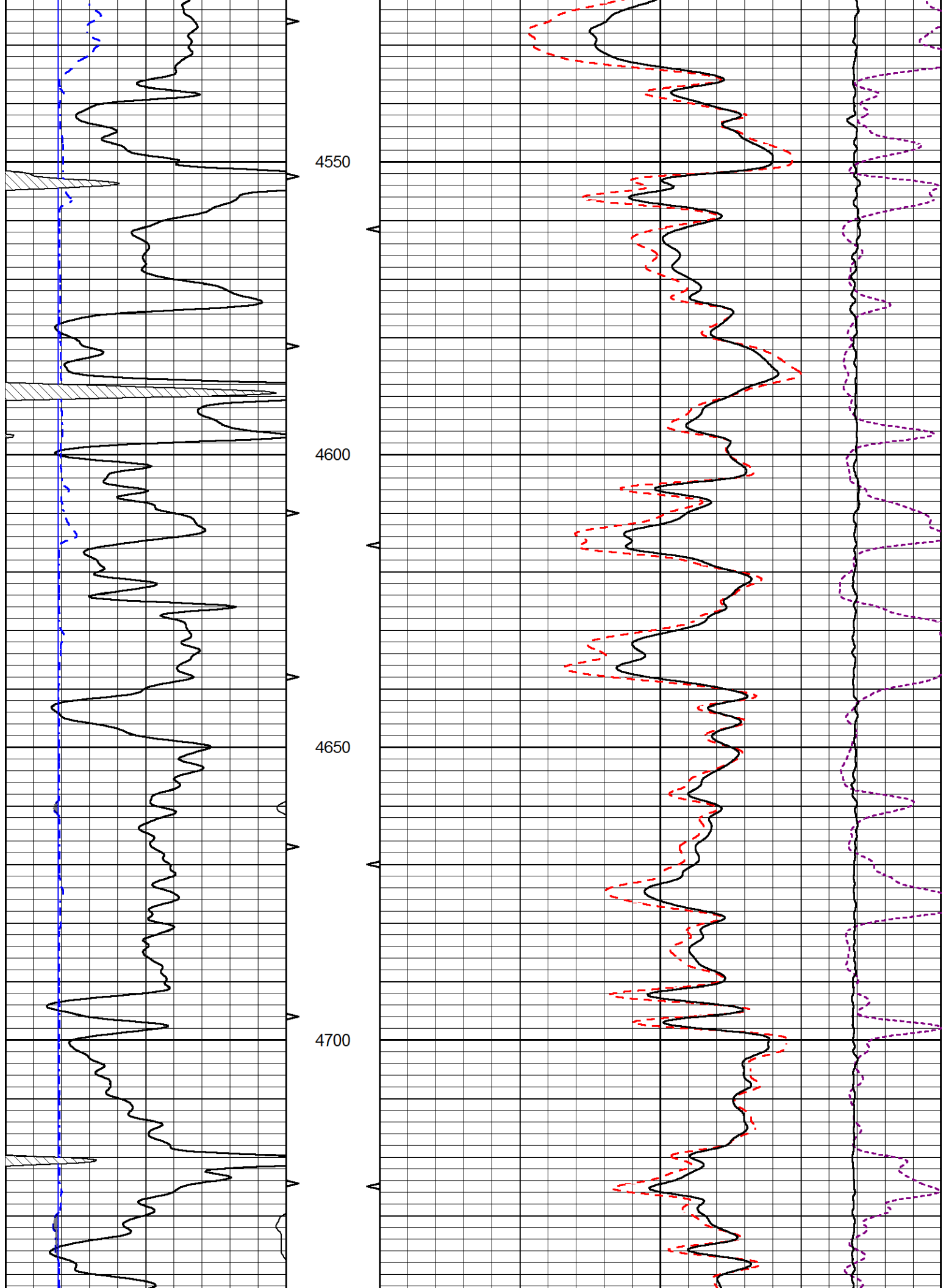
| | | |
|---|------------------|-----|
| 0 | Gamma Ray (GAPI) | 150 |
| 6 | Caliper (in) | 16 |

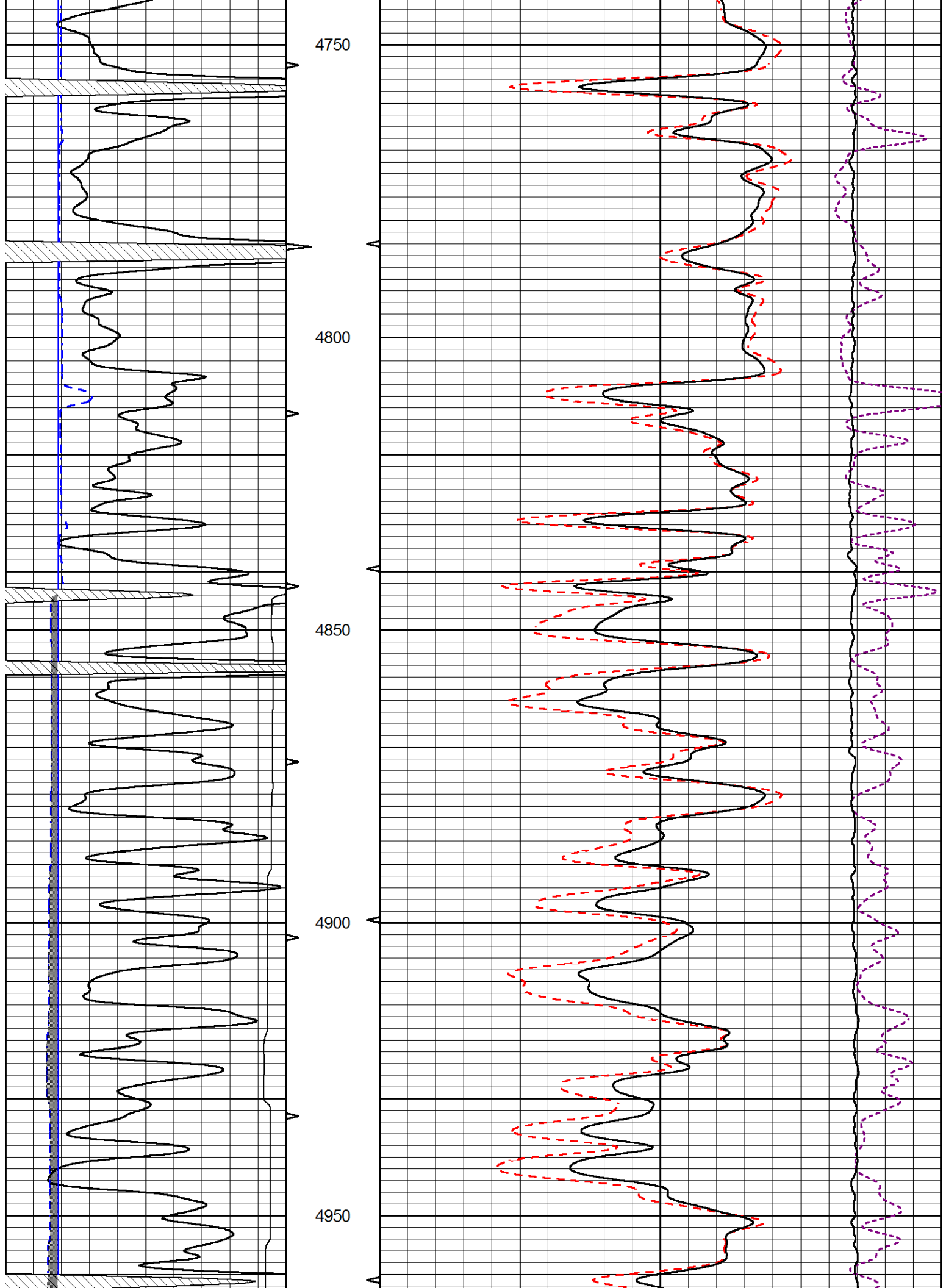
| | | |
|----------------------------------|---------------------|------|
| Compensated Density (2.71 MA) | | |
| 30 | (pu) | -10 |
| 2 | Bulk Density (g/cc) | 3 |
| 15000 | Line Tension (lb) | 0 |
| -0.25 | Correction (g/cc) | 0.25 |

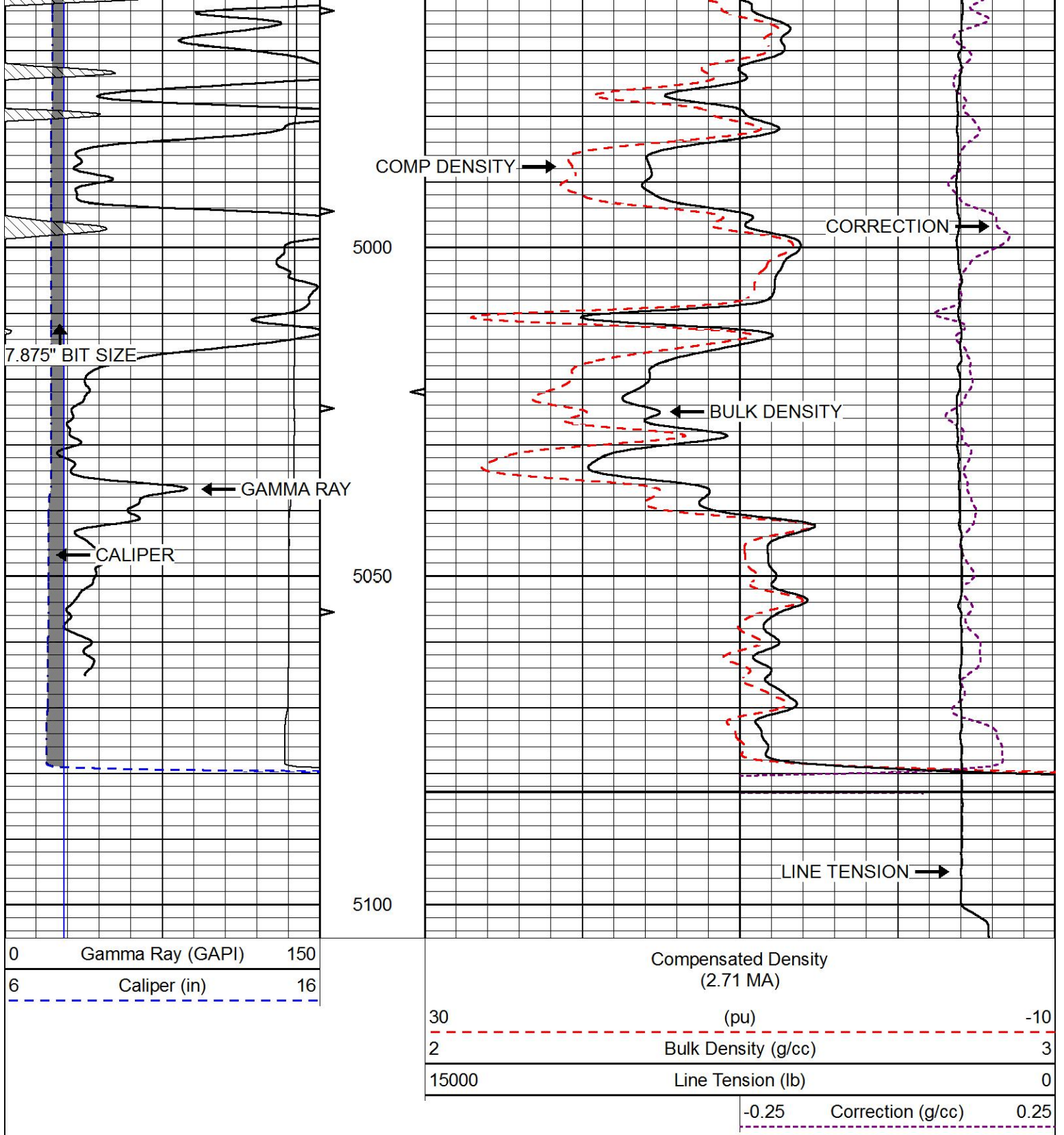












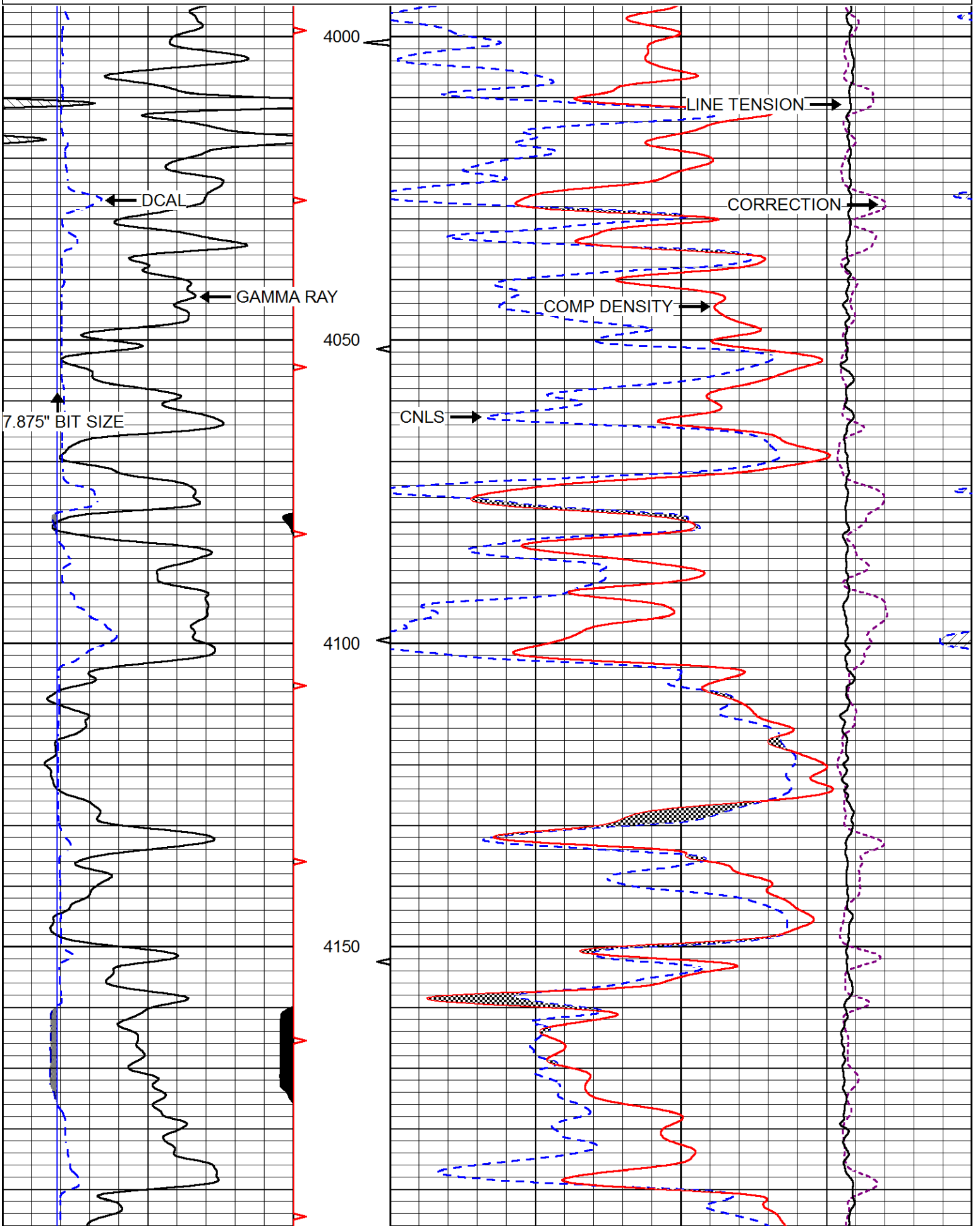
MAIN PASS

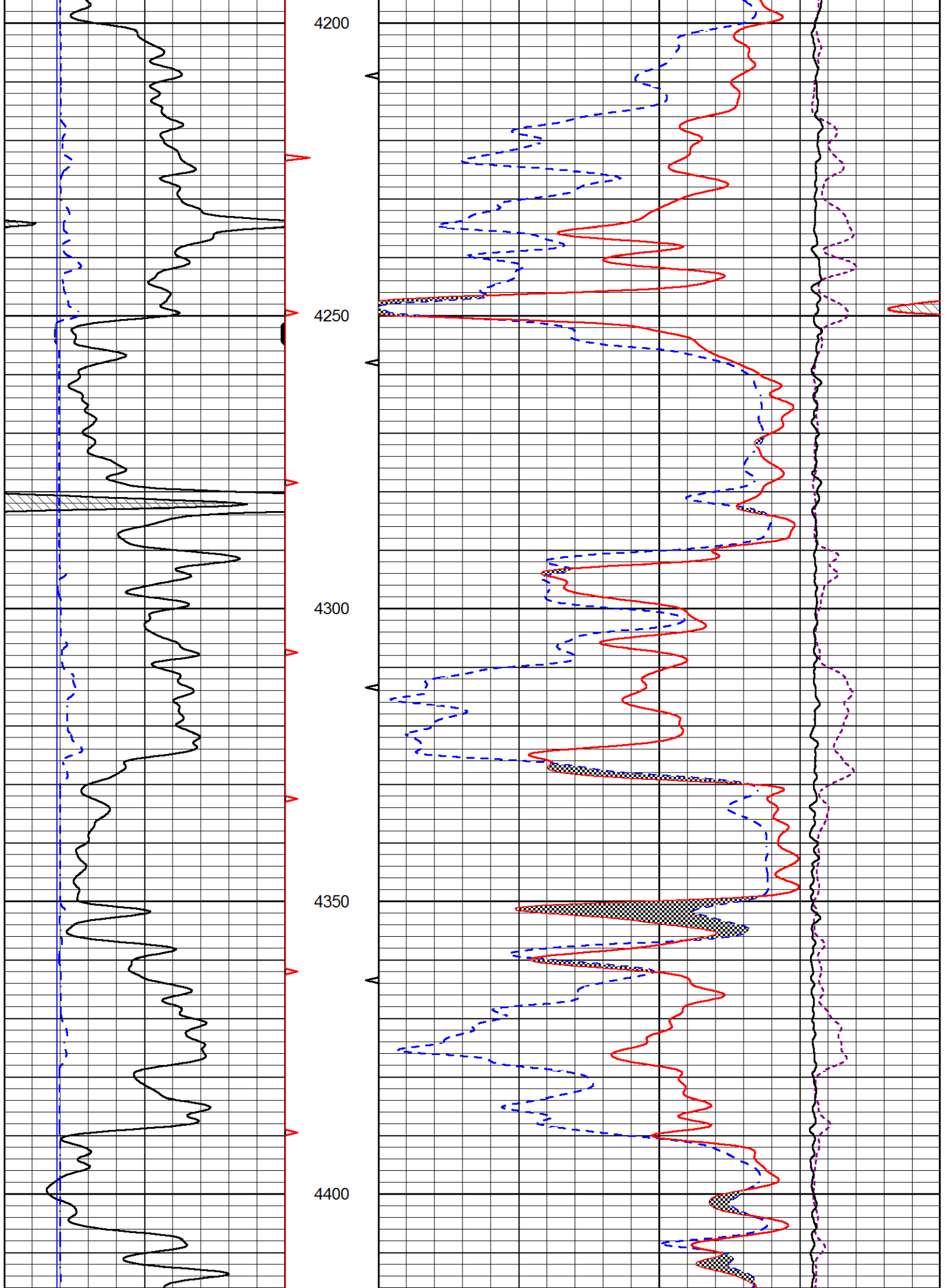
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 Charted by Depth in Feet scaled 1:240

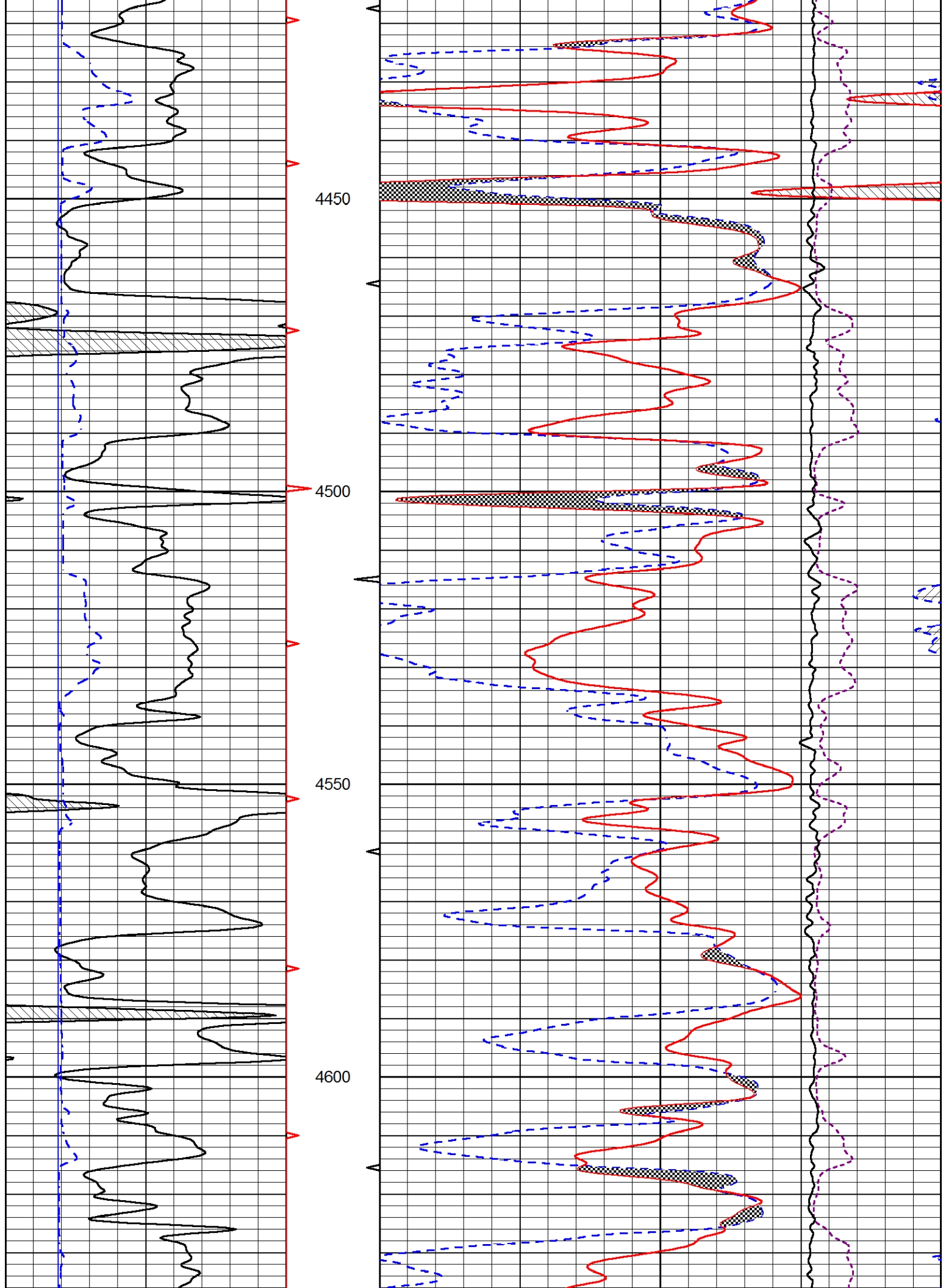
| | | | | | | |
|---|------------------|-----|----|-------------------------------|------|-----|
| 0 | Gamma Ray (GAPI) | 150 | 30 | Compensated Density (2.71 MA) | (pu) | -10 |
|---|------------------|-----|----|-------------------------------|------|-----|

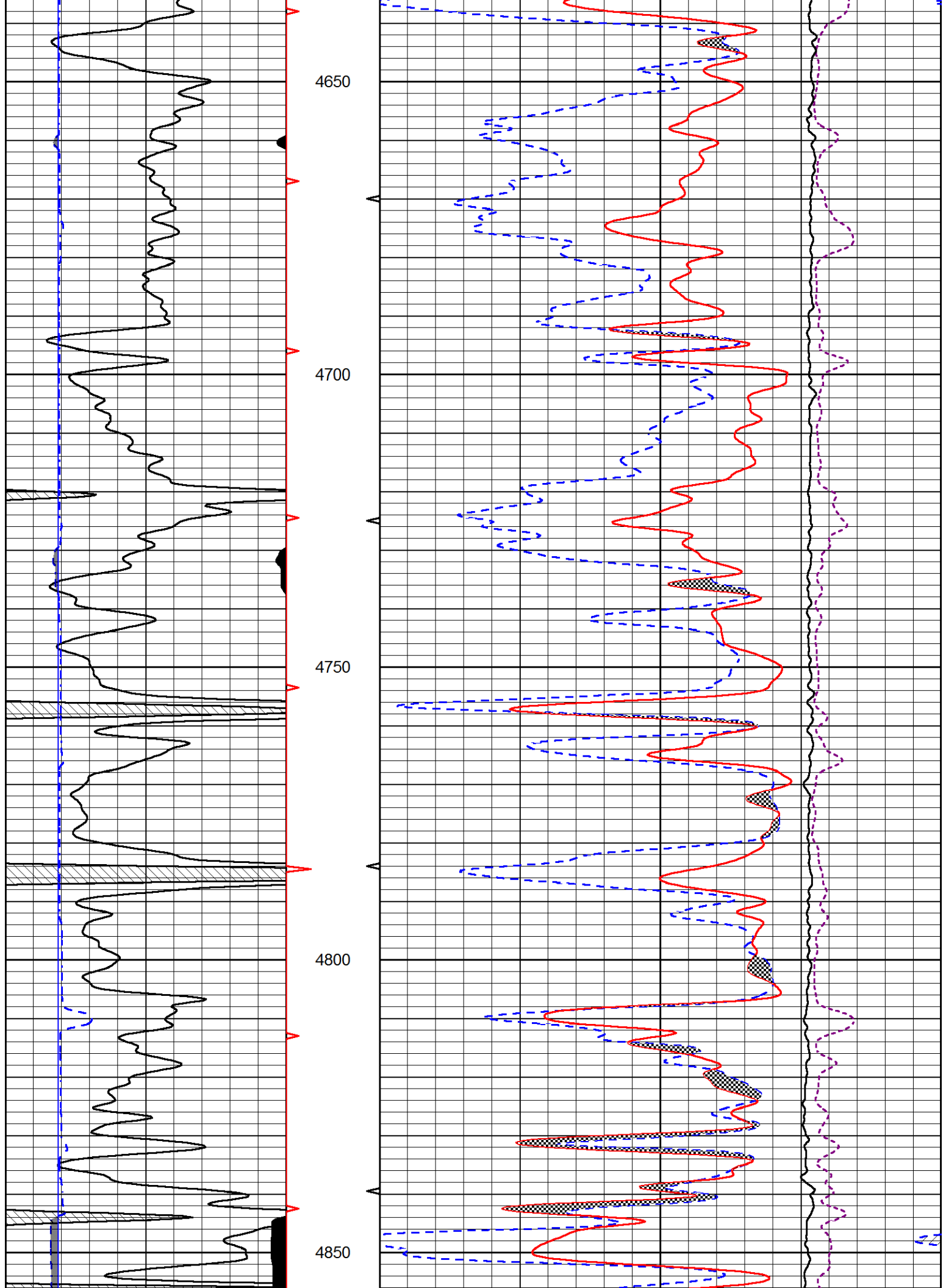
| | | |
|---|------------------|-----|
| 0 | Gamma Ray (GAPI) | 150 |
| 6 | DCAL (in) | 16 |

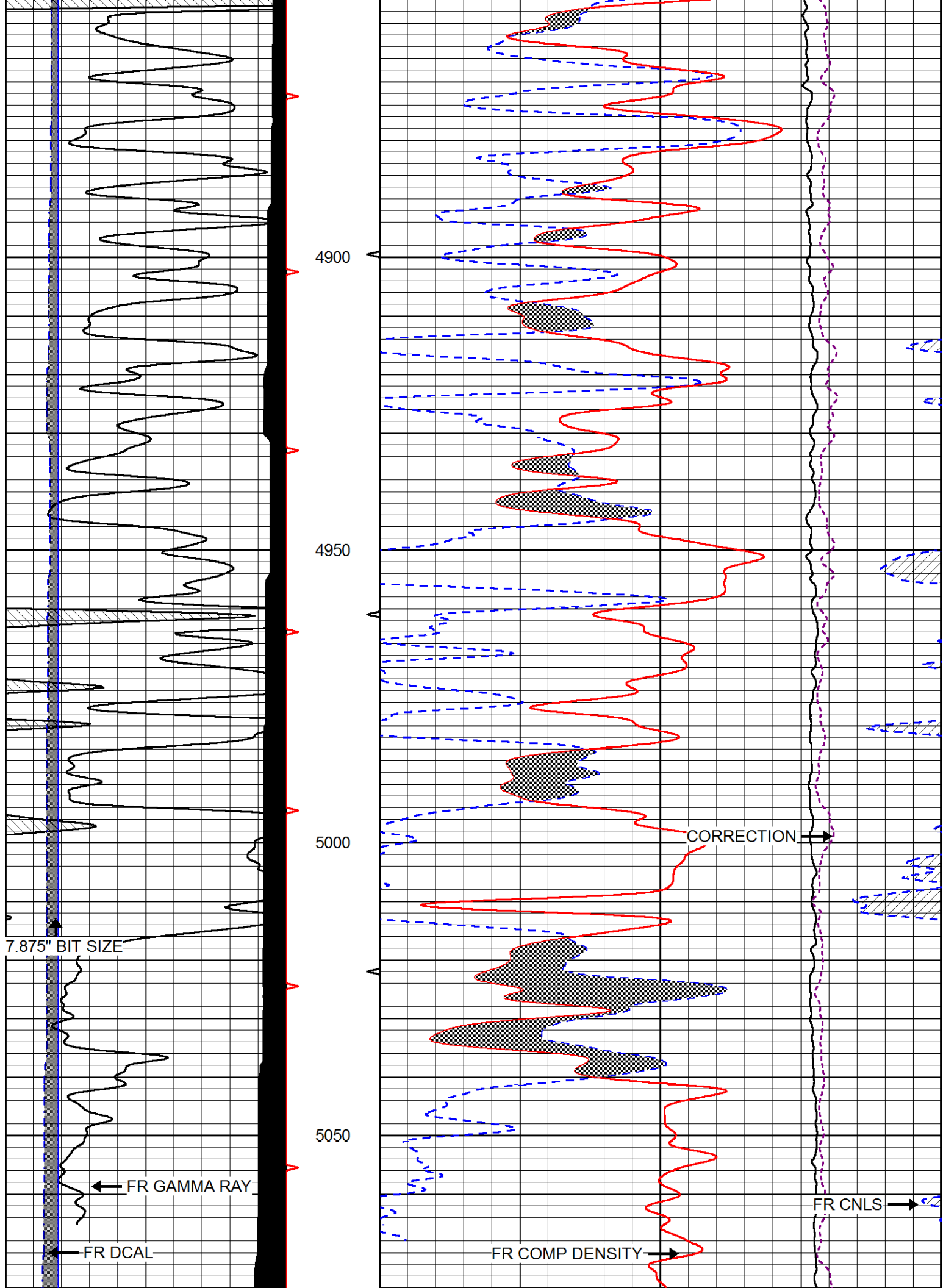
| | | |
|-------|------------------------------------|------|
| 30 | CNLS (pu) | -10 |
| 30 | Compensated Density 2.71 g/cc (pu) | -10 |
| 10000 | Line Tension (lb) | 0 |
| | -0.75 Correction (g/cc) | 0.75 |

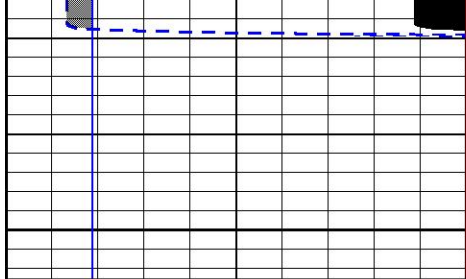




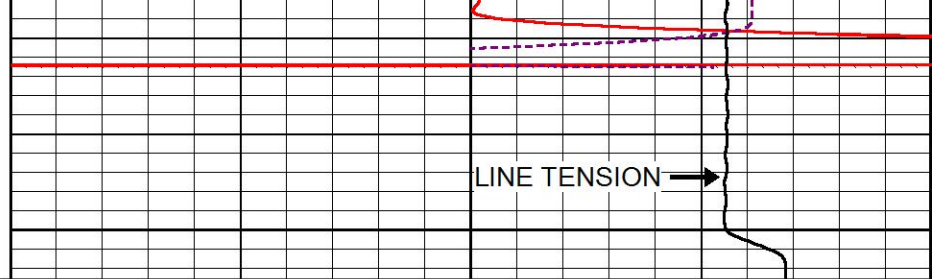








5100



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

| | | |
|-------|------------------------------------|------|
| 30 | CNLS (pu) | -10 |
| 30 | Compensated Density 2.71 g/cc (pu) | -10 |
| 10000 | Line Tension (lb) | 0 |
| | -0.75 Correction (g/cc) | 0.75 |

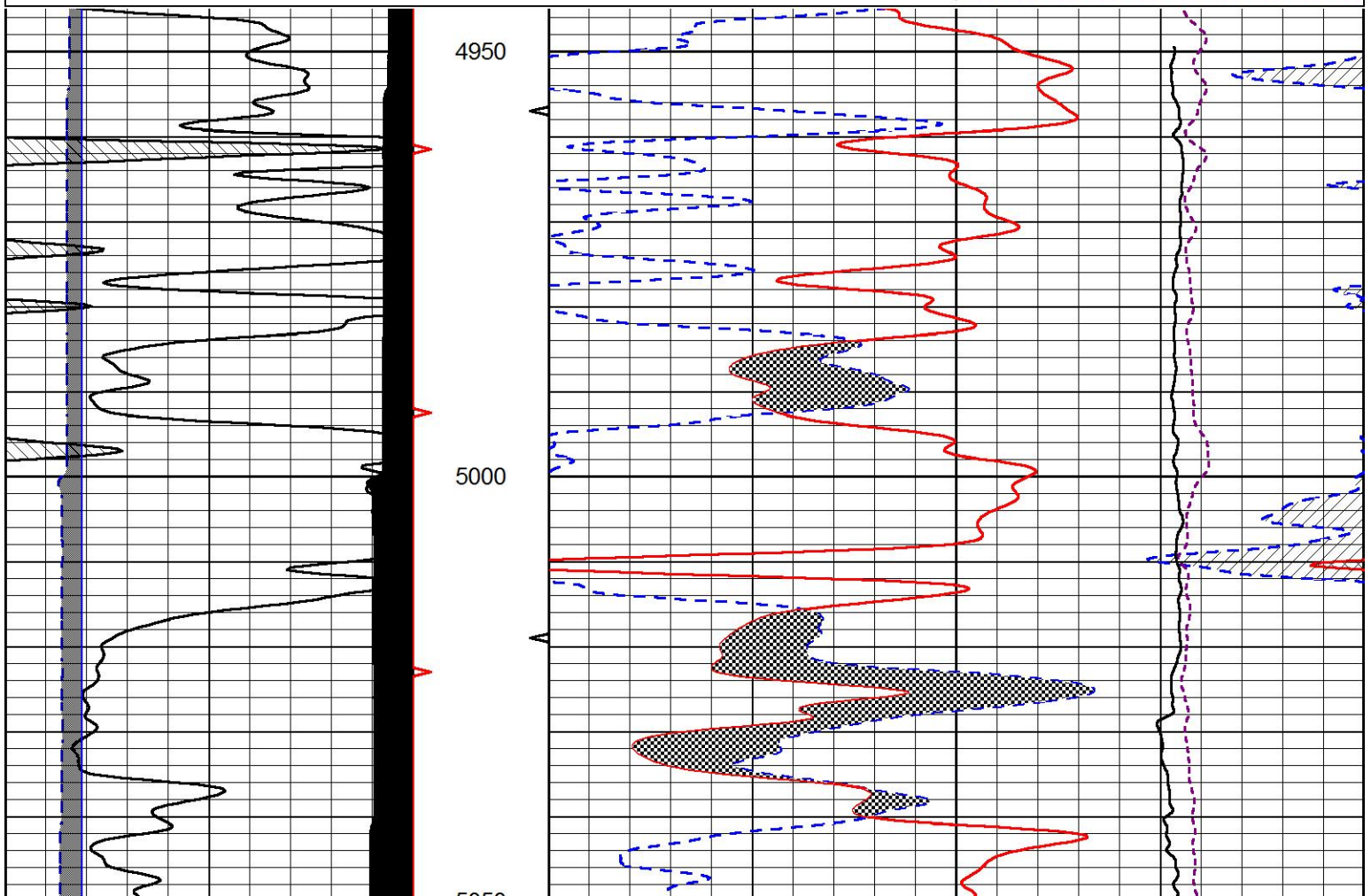


REPEAT SECTION

Database File murfin_culwell g 1-20.db
 Dataset Pathname STKML/pass2.1
 Presentation Format cndlspec
 Dataset Creation Fri Nov 17 02:44:19 2017
 Charted by Depth in Feet scaled 1:240

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

| | | |
|-------|------------------------------------|------|
| 30 | CNLS (pu) | -10 |
| 30 | Compensated Density 2.71 g/cc (pu) | -10 |
| 10000 | Line Tension (lb) | 0 |
| | -0.75 Correction (g/cc) | 0.75 |



| | Density | | Far Detector | Near Detector | |
|---------------------|---------|------|-----------------------------|---------------|-----|
| Magnesium | 1.755 | g/cc | 4903.44 | 6153.79 | cps |
| Aluminum | 2.640 | g/cc | 934.50 | 4021.31 | cps |
| Spine Angle = 75.61 | | | Density/Spine Ratio = 0.517 | | |
| | Size | | Reading | | |
| Small Ring | 8.00 | in | 1.84 | | |
| Large Ring | 22.00 | in | 1.46 | | |

Compensated Neutron Calibration Report

Serial Number: 207-MW
Tool Model: M&W
Calibration Performed: WED SEP 6 10:30:30 2017

| 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 Sep 06 19:51:14 2017

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 1.0 cps

Sensitivity: 0.6000 GAPI/cps



| | |
|---------|-------------------------------|
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| State | KANSAS |