



**PIONEER**

Pioneer Energy Services

## DUAL COMP POROSITY LOG

Company MURFIN DRILLING CO., INC.

Well GAMBLIN #1-22

Field WILDCAT

County CHEYENNE State KANSAS

Location: API #: 15-023-21495-00-00

2310' FNL & 1805' FWL

SEC 22 TWP 2S RGE 37W

Permanent Datum GROUND LEVEL Elevation 3410'  
Log Measured From KELLY BUSHING  
Drilling Measured From KELLY BUSHING

Elevation  
K.B. 3415'  
D.F. N/A  
G.L. 3410'

Company MURFIN DRILLING CO., INC.

Well GAMBLIN #1-22

Field WILDCAT

County CHEYENNE

State KANSAS

Date

9/25/2018

Run Number

ONE

Type Log

CNL/CDL

Depth Driller

4950'

Depth Logger

4954'

Bottom Logged Interval

4925'

Top Logged Interval

4000'

Type Fluid In Hole

CHEMICAL

Salinity, PPM CL

900

Density

9.0

Level

FULL

Max. Rec. Temp. F

126

Operating Rig Time

5 HOURS

Equipment -- Location

91 HAYS

Recorded By

IAN MABB

Witnessed By

SAMAN SHARIFAIE

Borehole Record

Casing Record

| Run No. | Bit    | From | To   | Size   | Wgt. | From | To   |
|---------|--------|------|------|--------|------|------|------|
| ONE     | 12.25" | 0'   | 387' | 8.625" | 23#  | 0'   | 387' |
| TWO     | 7.875" | 387' | TD   |        |      |      |      |
|         |        |      |      |        |      |      |      |
|         |        |      |      |        |      |      |      |
|         |        |      |      |        |      |      |      |
|         |        |      |      |        |      |      |      |
|         |        |      |      |        |      |      |      |
|         |        |      |      |        |      |      |      |
|         |        |      |      |        |      |      |      |
|         |        |      |      |        |      |      |      |

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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.

BIRD CITY, KS.

EAST TO RD. 32, NORTH 7 MILES, EAST INTO AT  
THE TANK BATTERY

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

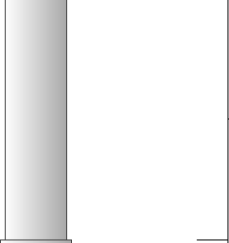
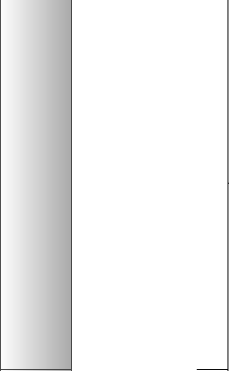
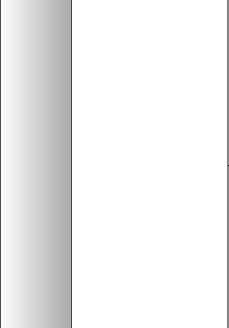
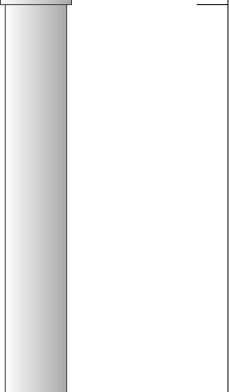
Engineer: IAN MABB  
Operator:  
Operator:  
Operator:

This Log Record Was Witnessed By

Primary Witness: SAMAN SHARIFAIE  
Secondary Witness:  
Secondary Witness:  
Secondary Witness:

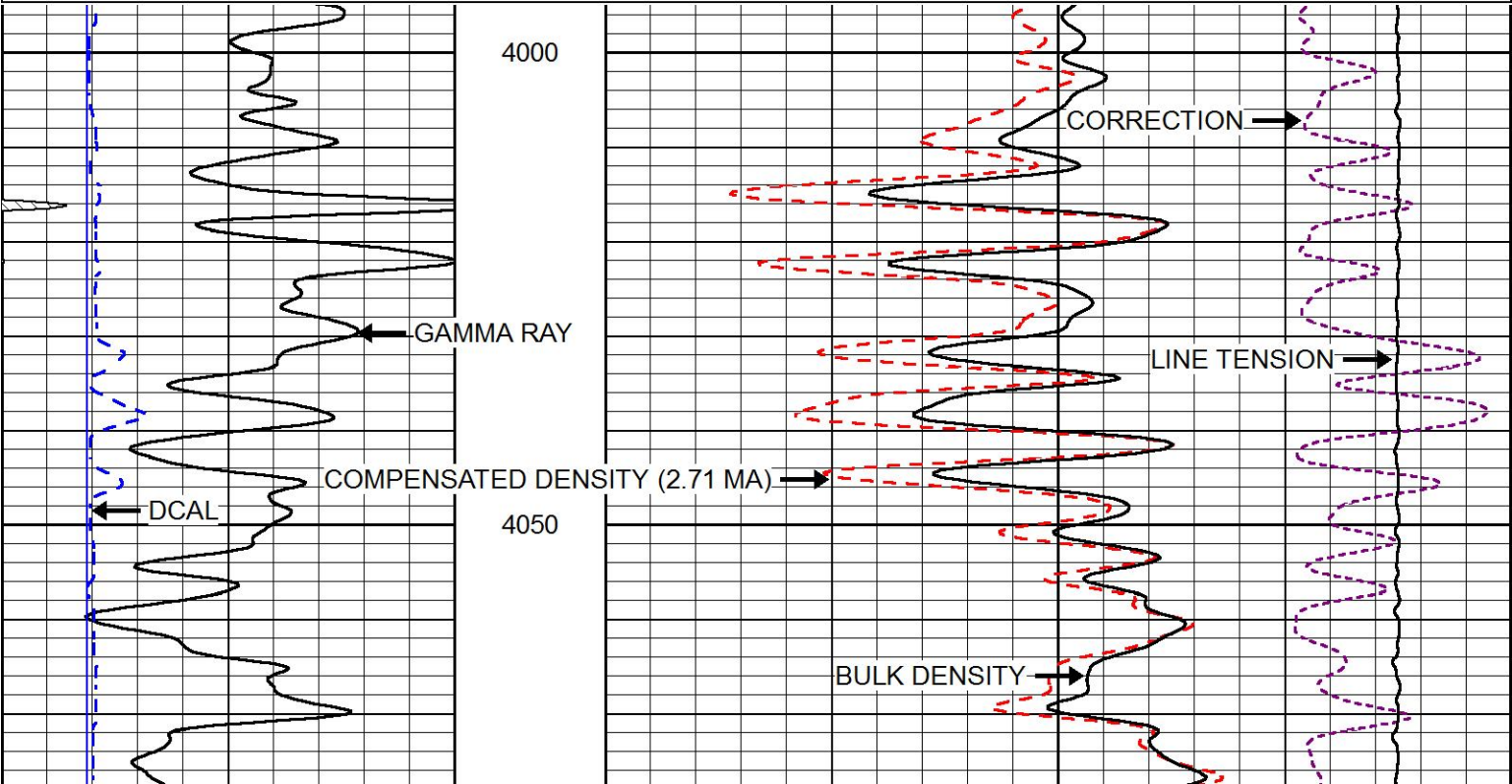
Top - Bottom

|                  |                 |                |              |                  |                  |                 |                   |
|------------------|-----------------|----------------|--------------|------------------|------------------|-----------------|-------------------|
| M                | A               | SZCOR          | NPORSEL      | FLUIDDEN<br>g/cc | MATRXDEN<br>g/cc | SPSHIFT<br>mV   | SNDERRM<br>mmho/m |
| 2                | 1               | Off            | Limestone    | 1                | 2.71             | 689             | 3                 |
| SNDERR<br>mmho/m | SRFTEMP<br>degF | CASETHCK<br>in | CASEOD<br>in | PERFS            | TDEPTH<br>ft     | BOTTEMP<br>degF | BOREID<br>in      |
| 5                | 55              | 0              | 5.5          | 0                | 4954             | 126             | 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<br>CNSSC     | 37.48<br>36.73          |   | CNT-M&W (207-MW)                                                         | 5.50        | 3.50      | 100.00      |
| LSD<br>DCAL<br>SSD | 28.43<br>28.42<br>27.93 |  | CDL-M&W (144-84)                                                         | 8.50        | 4.00      | 250.00      |
| MCAL<br>MI<br>MN   | 19.83<br>19.83<br>19.83 |  | ML-PSIML (PSI-01)<br>GO Micro log tools converted to Simplec electronics | 7.58        | 4.00      | 65.00       |
| RLL3F<br>RLL3      | 15.80<br>15.80          |  |                                                                          |             |           |             |

|                                                                                                                                    |      |  |  |                              |       |      |        |
|------------------------------------------------------------------------------------------------------------------------------------|------|--|--|------------------------------|-------|------|--------|
|                                                                                                                                    |      |  |  | DIL-PSI HIGH TEMP (967 (HT)) | 18.50 | 3.50 | 220.00 |
| CILD                                                                                                                               | 8.00 |  |  |                              |       |      |        |
| CILM                                                                                                                               | 4.70 |  |  |                              |       |      |        |
| SP                                                                                                                                 | 0.20 |  |  |                              |       |      |        |
| Dataset: murfin_gamblin_1_22.db: field/well/stackmel/pass3.1<br>Total length: 43.08 ft<br>Total weight: 685.00 lb<br>O.D.: 4.00 in |      |  |  |                              |       |      |        |

|                                                                                                                                             |                  |     |                                                                                                                                                                                     |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <div><br/><b>PIONEER</b><br/>Pioneer Energy Services</div> |                  |     | <h1>MAIN PASS</h1>                                                                                                                                                                  |  |  |
| Database File                                                                                                                               |                  |     | murfin_gamblin_1_22.db                                                                                                                                                              |  |  |
| Dataset Pathname                                                                                                                            |                  |     | stackmel/pass3.1                                                                                                                                                                    |  |  |
| Presentation Format                                                                                                                         |                  |     | cdl                                                                                                                                                                                 |  |  |
| Dataset Creation                                                                                                                            |                  |     | Tue Sep 25 07:07:00 2018                                                                                                                                                            |  |  |
| Charted by                                                                                                                                  |                  |     | Depth in Feet scaled 1:240                                                                                                                                                          |  |  |
| 0                                                                                                                                           | GAMMA RAY (GAPI) | 150 | <div>COMPENSATED DENSITY<br/>(2.71 MA)</div> <div>30 (pu) -10</div> <div>2 BULK DENSITY (g/cc) 3</div> <div>15000 LINE TENSION (lb) 0</div> <div>-0.25 CORRECTION (g/cc) 0.25</div> |  |  |
| 6                                                                                                                                           | DCAL (in)        | 16  |                                                                                                                                                                                     |  |  |
| <div></div>                                                                                                                                 |                  |     |                                                                                                                                                                                     |  |  |
| <div></div>                                                                                                                                 |                  |     |                                                                                                                                                                                     |  |  |
| <div></div>                                                                                                                                 |                  |     |                                                                                                                                                                                     |  |  |



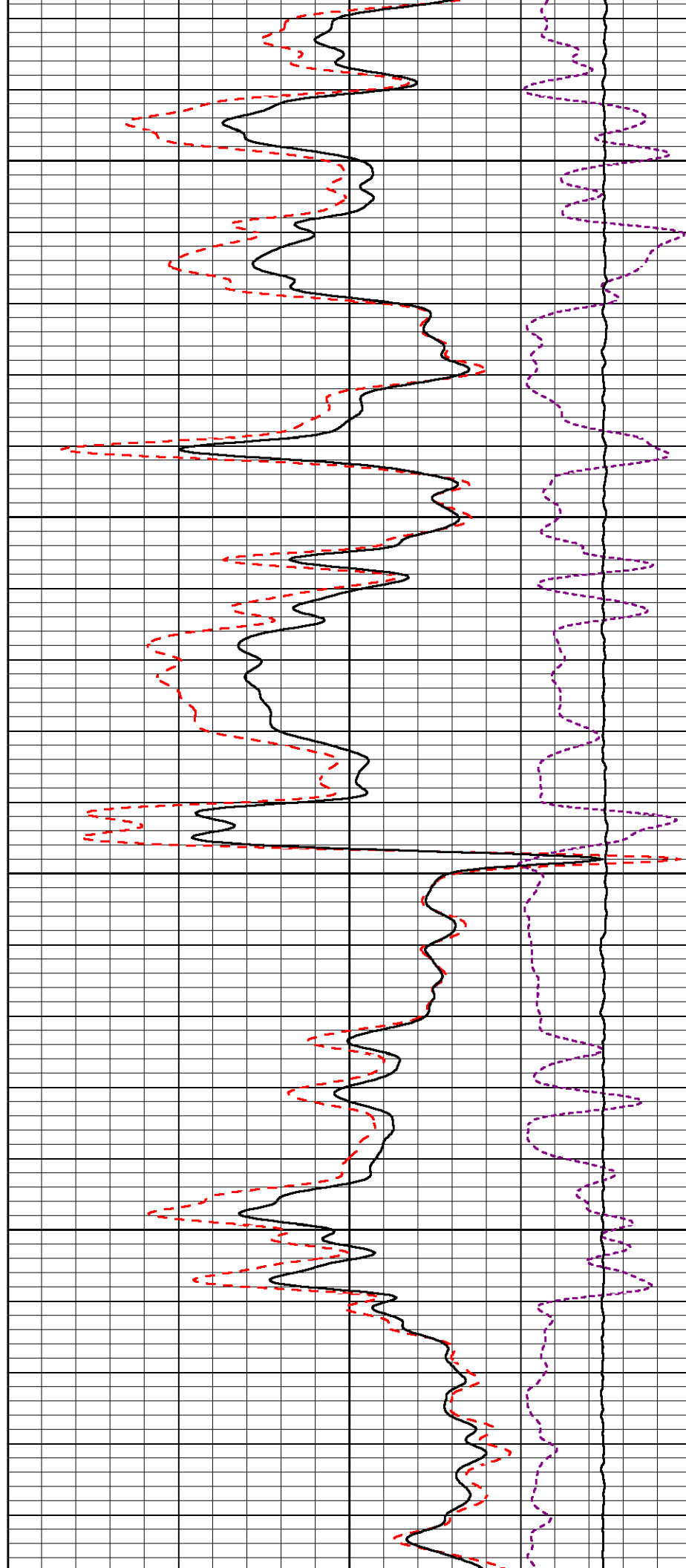


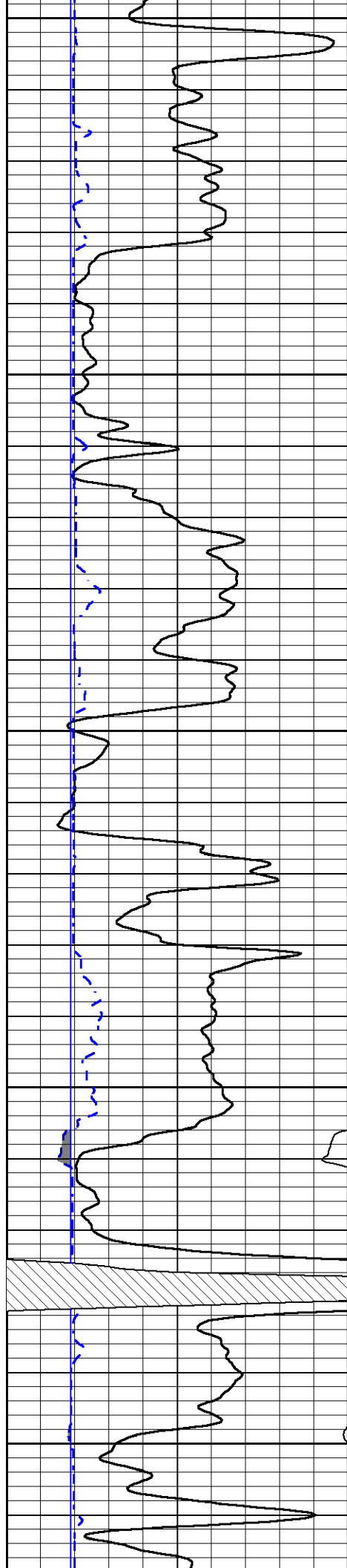
4100

4150

4200

4250





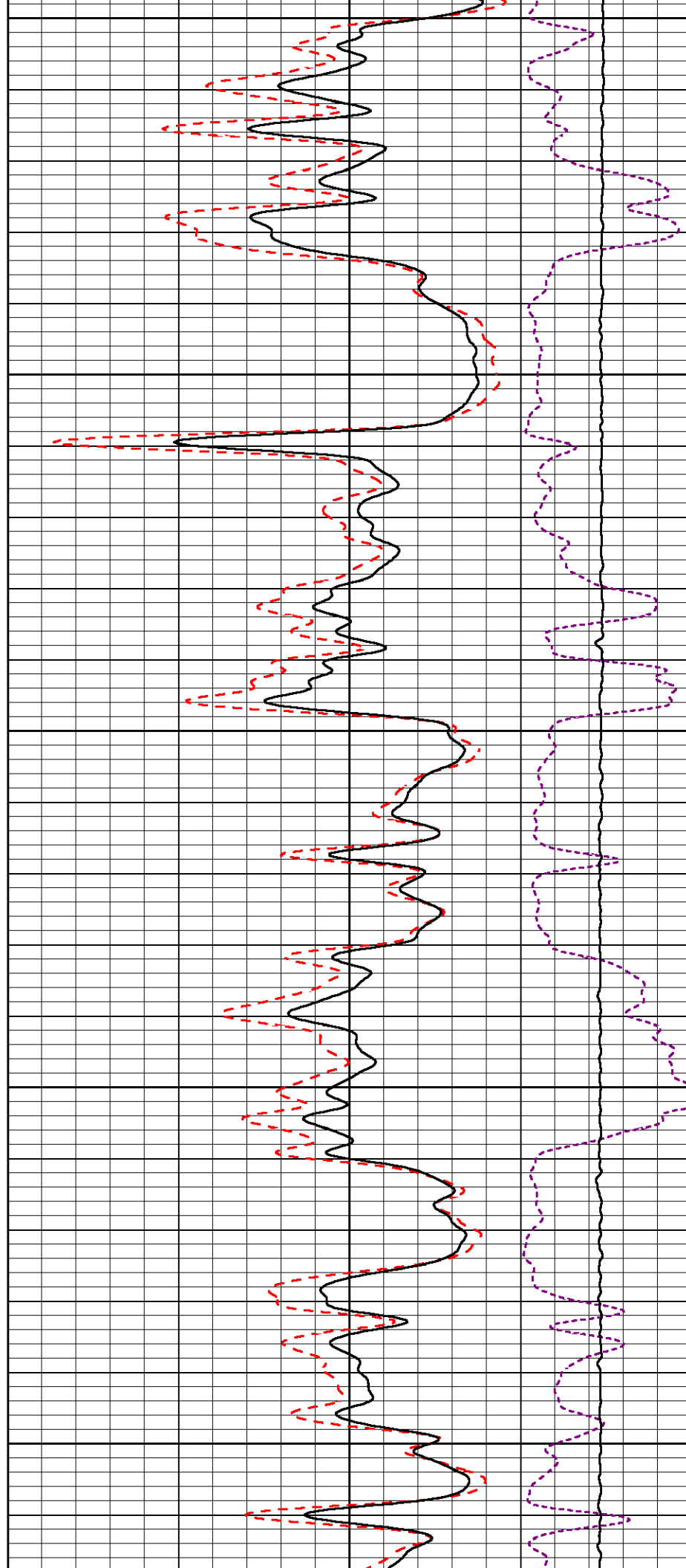
4300

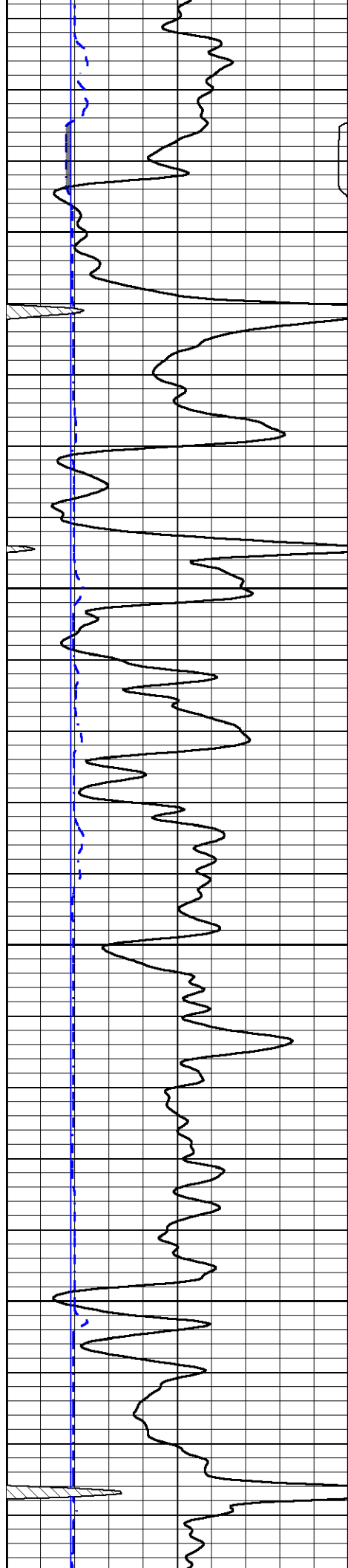
4350

4400

4450

4500



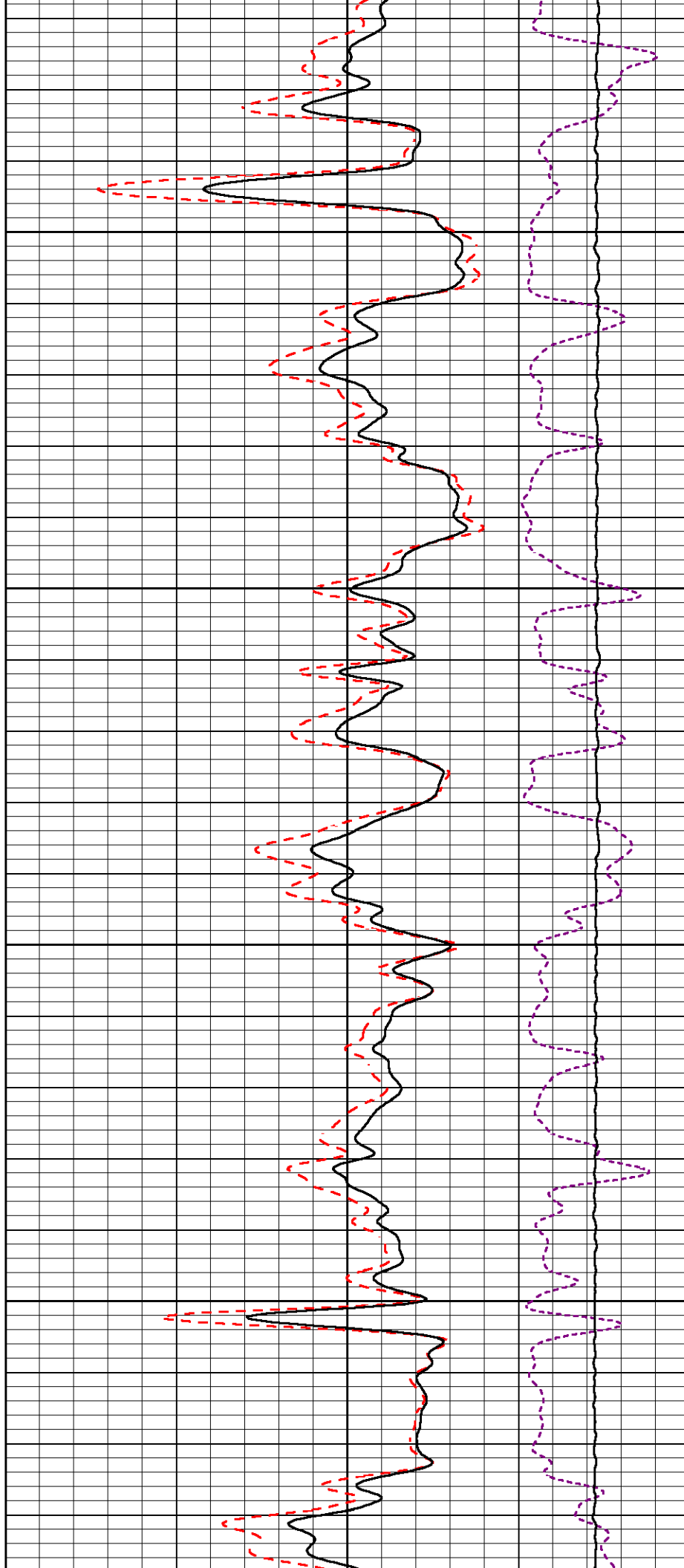


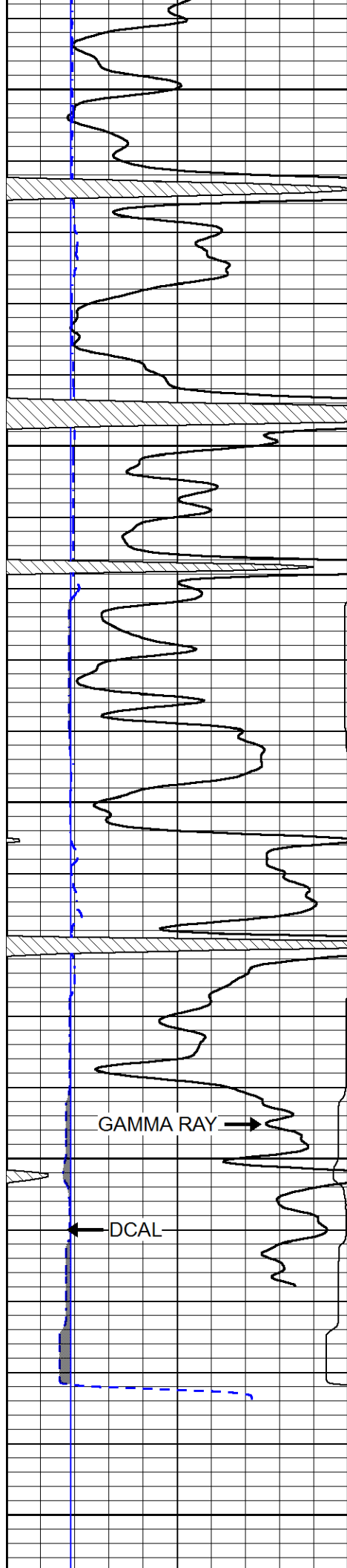
4550

4600

4650

4700





4750

4800

4850

4900

4950

GAMMA RAY →

← DCAL

COMPENSATED DENSITY (2.71 MA) →

BULK DENSITY →

CORRECTION →

LINE TENSION →

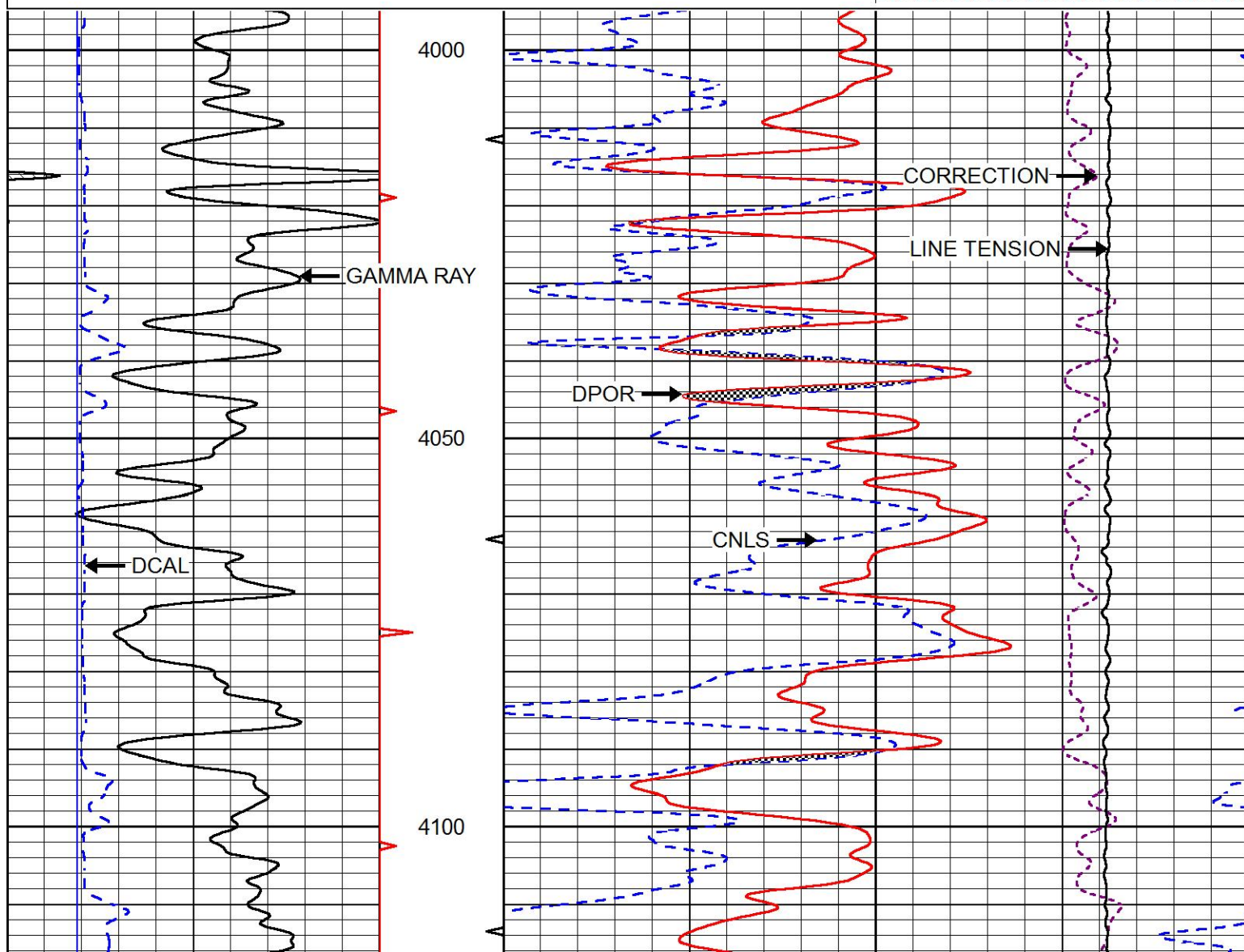
|   |                  |     |                                  |                     |     |
|---|------------------|-----|----------------------------------|---------------------|-----|
| 0 | GAMMA RAY (GAPI) | 150 | COMPENSATED DENSITY<br>(2.71 MA) |                     |     |
| 6 | DCAL (in)        | 16  | 30                               | (pu)                | -10 |
|   |                  |     | 2                                | BULK DENSITY (g/cc) | 3   |
|   |                  |     | 15000                            | LINE TENSION (lb)   | 0   |
|   |                  |     | -0.25 CORRECTION (g/cc) 0.25     |                     |     |



# MAIN PASS

Database File murfin\_gamblin\_1\_22.db  
Dataset Pathname stackmel/pass3.1  
Presentation Format cndlspec  
Dataset Creation Tue Sep 25 07:07:00 2018  
Charted by Depth in Feet scaled 1:240

|   |                  |     |                              |                   |     |
|---|------------------|-----|------------------------------|-------------------|-----|
| 0 | GAMMA RAY (GAPI) | 150 | 30                           | CNLS (pu)         | -10 |
| 6 | DCAL (in)        | 16  | 30                           | DPOR (pu)         | -10 |
|   |                  |     | 10000                        | LINE TENSION (lb) | 0   |
|   |                  |     | -0.75 CORRECTION (g/cc) 0.75 |                   |     |



4150

4200

4250

4300

DST #1

DST #2

**DST #1 4203-4280****(Oread):** 30-60-30-60.

IF: 1/8" blw @ open, blt to 1/4", died back to surf blw. FF: no blw. Rec.:

5'OCM (85%M, 13%O, 2%G). HP: 2059-2038. FP: 17/18, 20/21. SIP:

504-112. BHT: 132°.

**DST #2 4280-4360 (LKC):**

30-60-60-90. IF: blw blt to BOB (11") @ 5½ mins, blt to 62½".

ISI: blw increased from 62½" to 72". FF: blw blt to BOB @

8mins, blt to 84½". FSI: blw increased from 84½" to 105½".

Rec.: 1125' GIP: 185' GGO (71% O, 27%G, 2%M). 445' GMCO

(43%G, 42%O, 15%M), 180' GMCO (52%O, 26%M, 22%G). HP: 2120-2109. FP: 57/211,

219/330. SIP: 1305-1306. BHT: 141°.

4350

DST #3

**DST #3 4360-4420****(LKC D):** 30-60-60-90.

IF: blw blt to BOB (11")

@ 5½ mins, blt to 65¾".

ISI: blw increased from

65¾" to 90¾". FF: Blw

blt to BOB 12½ mins, blt

to 60½". FSI: blw

increased from 60½" to

92". Rec.: 1715' GIP,

450'CGO (69%O, 31%

G), 90'GMCO (40%O,

33%G, 27%G). HP:

2179-2142. FP: 29/112,

126/213. SIP: 362-361.

BHT: 137°.

4400

DST #4

**DST #4 4422-4470 (LKC G):**

30-60-60-90. IF: blw blt to BOB

@ 5½ mins, blt to 57½". ISI:

blw increased from 57½" to

69¾". FF: blw blt to BOB @

8mins, blt to 77¾". FSI: blw

increased from 77¾" to 96"

Rec.: 200'CGO (76%O, 24%G),

210'GMCO (50%O, 37%G, 13%

M), 185'GMCO (68%O, 17%M,

15%G), 60'GMCO (55%G, 34%

O, 11%M). HP: 2153-2146. FP:

56/158, 169/260. SIP: 388-389.

BHT: 143°.

4450

DST #5

**DST #5 4470-4556 (LKC H-J):**

30-60-30-60. IF: blw blt to BOB

(11") @ 1½ mins, blt to 281".

ISI: blw increased from 281' to

382". FF: blw blt to BOB @ 1¼

mins, blt to 200". FSI: blw

increased from 200" to 284".

Rec.: 1765'GIP, 2080'Rev out

GMCO (71%O, 17%M, 12%G),

120'GMCO (44%O, 29%M, 27%

G). HP: 2186-2145. FP:

213/563, 584/802. SIP:

1252-1239. BHT: 146°.

4500

4550

4600

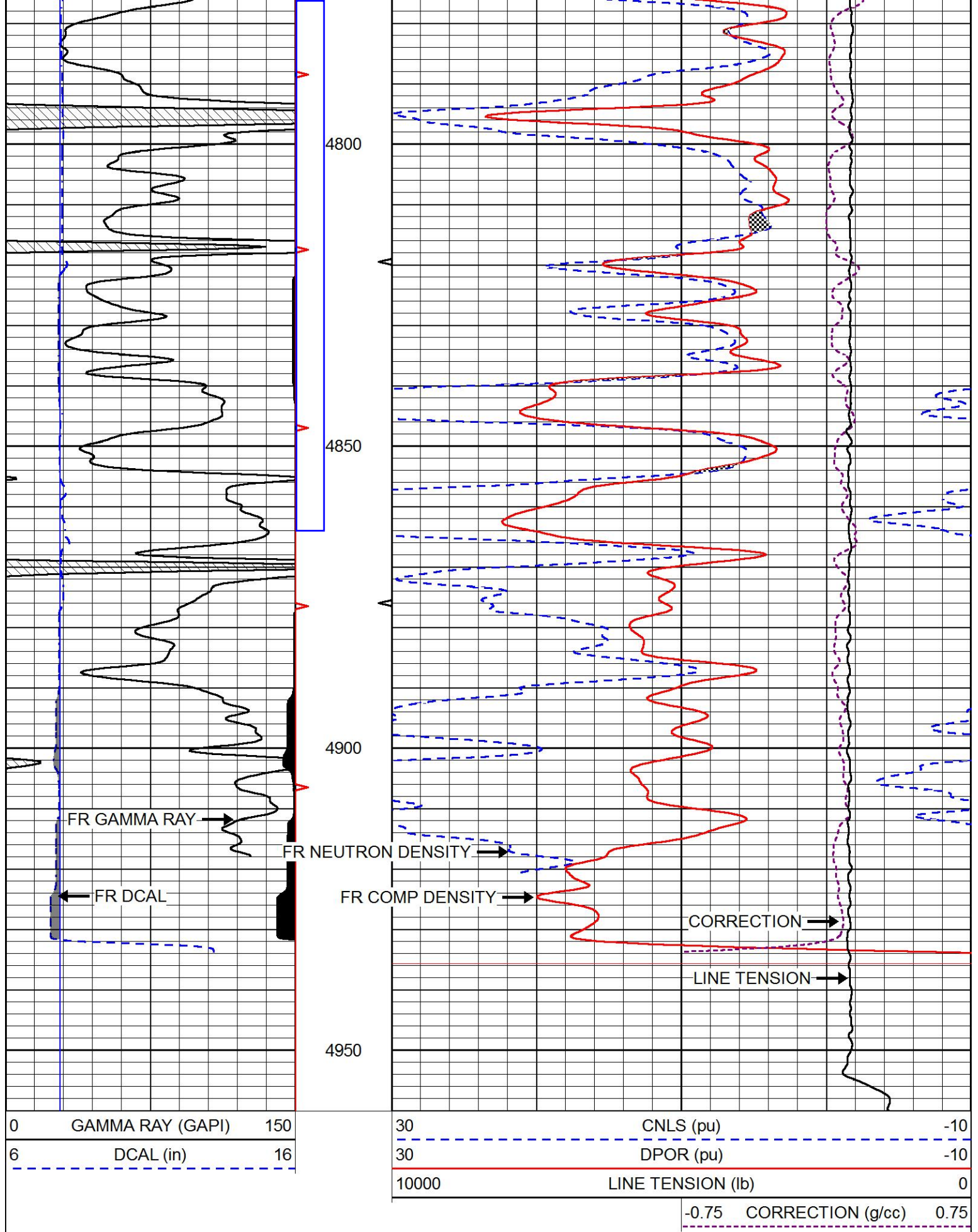
4650

DST #6  
4700

4750

**DST #6 4698-4864 (Ft  
Scott-Celia)**

30-60-60-90. IF: 1/2" blw  
@ open bit to 4 1/2". FF:  
Blw bit to 8 1/2". FSI: wk  
surf blw back. Rec.:  
30'OM (60%M, 40%O),  
180'GOM (49%M, 33%O,  
18%G). HP: 2296-2269.  
FP: 25/58, 25/103. SIP:  
983-899. BHT: 138°.

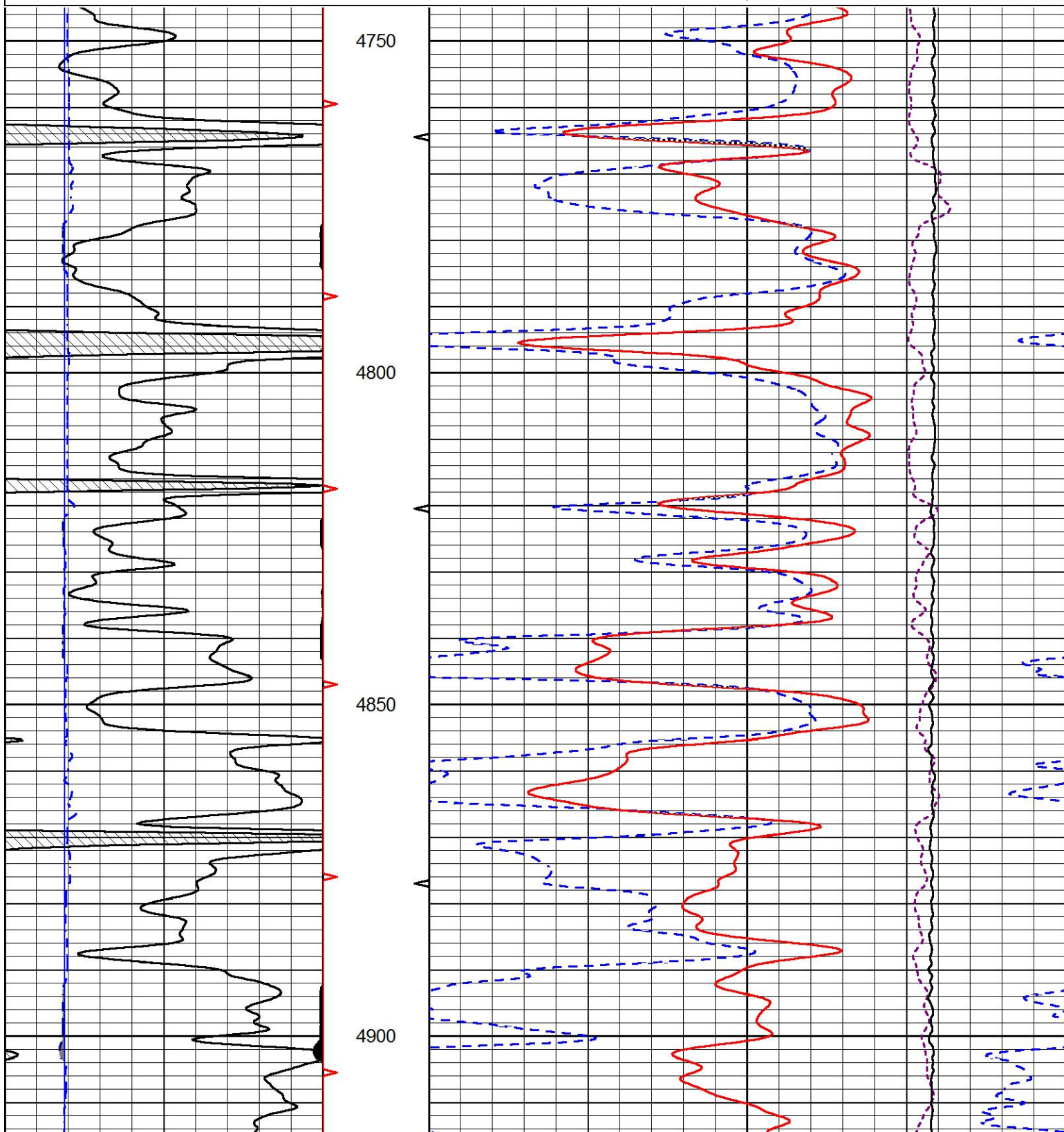


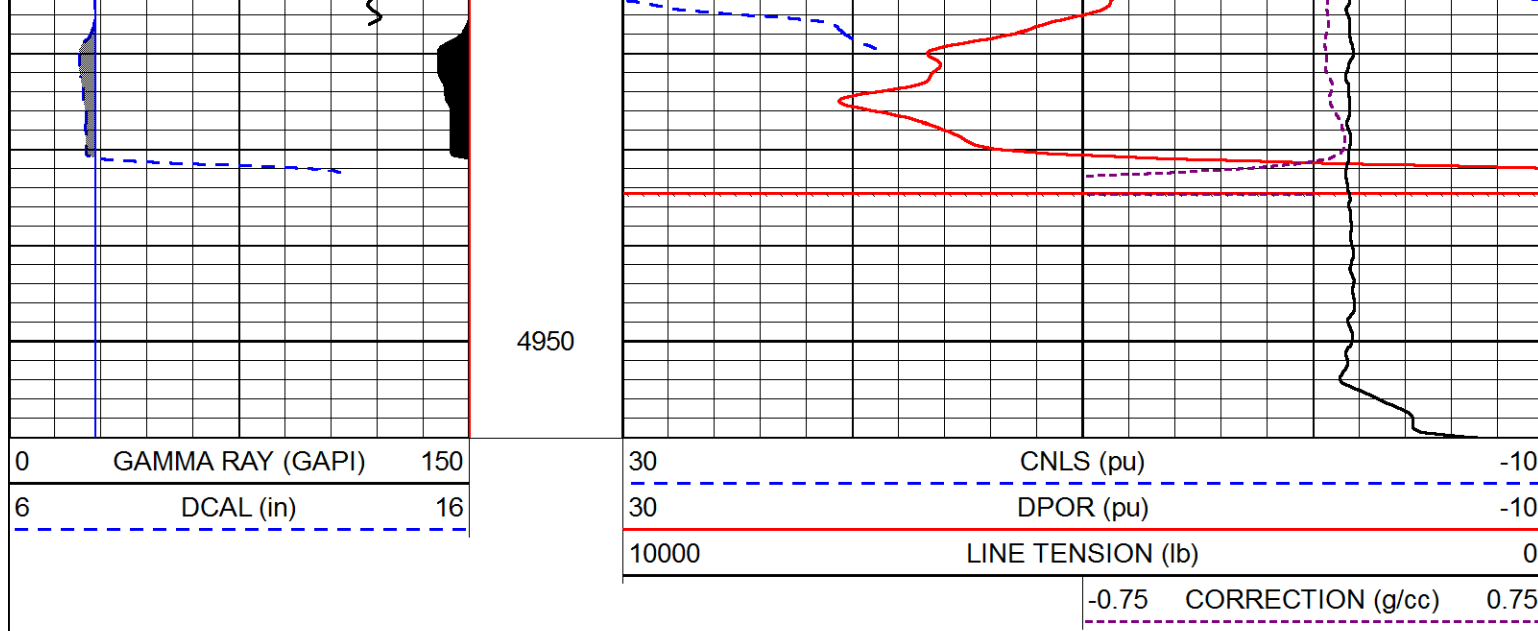
REPEAT SECTION

Database File      murfin\_gamblin\_1\_22.db  
 Dataset Pathname      stackmel/pass2.1  
 Presentation Format      cndlspec  
 Dataset Creation      Tue Sep 25 07:06:27 2018  
 Charted by      Depth in Feet scaled 1:240

|   |                  |     |
|---|------------------|-----|
| 0 | GAMMA RAY (GAPI) | 150 |
| 6 | DCAL (in)        | 16  |

|       |                   |      |
|-------|-------------------|------|
| 30    | CNLS (pu)         | -10  |
| 30    | DPOR (pu)         | -10  |
| 10000 | LINE TENSION (lb) | 0    |
| -0.75 | CORRECTION (g/cc) | 0.75 |





### Calibration Report

Database File: murfin\_gamblin\_1\_22.db  
 Dataset Pathname: stackmel/pass3.1  
 Dataset Creation: Tue Sep 25 07:07:00 2018

### Dual Induction Calibration Report

Serial-Model: 967 (HT)-PSI HIGH TEMP  
 Calibration Performed: Sun Aug 26 00:41:13 2018

| Loop:  | Readings |          | References |         |        | Results |         |
|--------|----------|----------|------------|---------|--------|---------|---------|
|        | Air      | Loop     | Air        | Loop    |        | Gain    | Offset  |
| Deep   | 167.000  | 835.000  | 0.000      | 255.800 | mmho/m | 0.565   | -20.000 |
| Medium | 0.000    | 1348.000 | 142.000    | 255.800 | mmho/m | 0.390   | -40.000 |

### Microlog Calibration Report

Serial-Model: PSI-01-PSIML  
 Performed: Sat Sep 08 05:17:35 2018

|         | Readings |        | References |         |       | Results    |          |
|---------|----------|--------|------------|---------|-------|------------|----------|
|         | Zero     | Cal    | Zero       | Cal     |       | m          | b        |
| Normal  | 0.0000   | 1.0000 | 0.0000     | 1.0000  | Ohm-m | 28000.0000 | -0.8000  |
| Inverse | 0.0000   | 1.0000 | 0.0000     | 1.0000  | Ohm-m | 35000.0000 | -0.6000  |
| Caliper | 1.0001   | 1.1397 | 6.5000     | 18.5000 | in    | 70.0000    | -65.9500 |

### Compensated Density Calibration Report

Serial-Model: 144-84-M&W  
 Source / Verifier: 16955B / 2ci  
 Master Calibration Performed: Thu Aug 30 10:10:19 2018

### Master Calibration

|           | Density |      | Far Detector |  | Near Detector |
|-----------|---------|------|--------------|--|---------------|
| Magnesium | 1.755   | g/cc | 4867.47      |  | 6031.92 cps   |

|           |       |      |         |         |     |
|-----------|-------|------|---------|---------|-----|
| Magnesium | 1.735 | g/cc | 4887.47 | 6631.92 | cps |
| Aluminum  | 2.650 | g/cc | 906.23  | 3806.99 | cps |

Spine Angle = 74.69

Density/Spine Ratio = 0.514

|            | Size  |    | Reading |
|------------|-------|----|---------|
| Small Ring | 5.00  | in | 0.70    |
| Large Ring | 15.00 | in | 0.04    |

### Compensated Neutron Calibration Report

Serial Number: 207-MW  
Tool Model: M&W  
Calibration Performed: FRI AUG 24 10:30:30 2018

| 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: Fri Aug 24 11:16:10 2018

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps  
Calibrator Reading: 1.0 cps

Sensitivity: 0.6000 GAPI/cps



Company MURFIN DRILLING CO., INC.  
Well GAMBLIN #1-22  
Field WILDCAT  
County CHEYENNE  
State KANSAS