



**PIONEER**

Pioneer Energy Services

## DUAL COMP POROSITY LOG

Company **BEREXCO, LLC**  
Well **HEATON #10**  
Field **MEULLER**  
County **STAFFORD** State **KANSAS**

Location: API #: 15-185-24044-00-00

1485' FSL & 2310' FWL

Other Services  
DIL  
MEL/BHCS

SEC 17 TWP 21S RGE 12W

Permanent Datum GROUND LEVEL Elevation 1863'  
Log Measured From KELLY BUSHING  
Drilling Measured From KELLY BUSHING

Elevation  
K.B. 1870'  
D.F. 1869'  
G.L. 1863'

Date 1/9/2019

Run Number ONE

Type Log CNL/CDL

Depth Driller 3700'

Depth Logger 3699'

Bottom Logged Interval 3678'

Top Logged Interval 2300'

Type Fluid In Hole CHEMICAL

Salinity, PPM CL 6000

Density 9.2

Level FULL

Max. Rec. Temp. F 113 DEG/F

Operating Rig Time 3 1/2 HOURS

Equipment -- Location 108 HAYS

Recorded By J. HENRICKSON

Witnessed By JERRY SMITH

Witnessed By JERRY SMITH

Borehole Record

Casing Record

| Run No. | Bit    | From | To   | Size   | Wgt. | From | To   |
|---------|--------|------|------|--------|------|------|------|
| ONE     | 12.25" | 0    | 682' | 8.625" | 23#  | 0    | 682' |
| TWO     | 7.875" | 682' | 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.

GREAT BEND KANSAS  
SOUTH TO COUNTY LINE, SOUTH TO 180TH, 4 1/4 EAST  
NORTH AND EAST INTO

Log Measured From: KELLY BUSHING 7 Ft. Above Permanent Datum

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

### Your Pioneer Energy Services Crew

Engineer: J. HENRICKSON  
Operator:  
Operator:  
Operator:

### This Log Record Was Witnessed By

Primary Witness: JERRY SMITH  
Secondary Witness:  
Secondary Witness:  
Secondary Witness:

Top - Bottom

|           |             |             |             |           |            |       |              |
|-----------|-------------|-------------|-------------|-----------|------------|-------|--------------|
| A         | BOREID      | BOTTEMP     | CASEOD      | CASETHCK  | FLUIDDEN   | M     | MATRXDEN     |
| 1         | in<br>7.875 | degF<br>113 | in<br>5.5   | in<br>0   | g/cc<br>1  | 2     | g/cc<br>2.71 |
| NPORSEL   | PERFS       | SNDERR      | SNDERRM     | SPSHIFT   | SRFTEMP    | SZCOR | TDEPTH       |
| Limestone | 0           | mmho/m<br>0 | mmho/m<br>0 | mV<br>130 | degF<br>32 | Off   | ft<br>3699   |

| Sensor             | Offset (ft)             | Schematic                                                                           |  | Description        | Length (ft) | O.D. (in) | Weight (lb) |
|--------------------|-------------------------|-------------------------------------------------------------------------------------|--|--------------------|-------------|-----------|-------------|
| GR                 | 33.00                   |    |  | GR-M&W (89-M&W)    | 3.00        | 3.50      | 50.00       |
|                    |                         |                                                                                     |  |                    |             |           |             |
| CNLSC<br>CNSSC     | 29.90                   |    |  | CNT-M&W (tk10-MW)  | 5.50        | 3.50      | 100.00      |
|                    | 29.15                   |                                                                                     |  |                    |             |           |             |
| LSD<br>DCAL<br>SSD | 20.85<br>20.83<br>20.35 |   |  | CDL-M&W (934-5002) | 8.50        | 4.00      | 250.00      |
|                    |                         |                                                                                     |  |                    |             |           |             |
|                    |                         |                                                                                     |  |                    |             |           |             |
|                    |                         |                                                                                     |  |                    |             |           |             |
| RLL3<br>RLL3F      | 15.80                   |  |  | DIL-M&W (PSI 988)  | 18.50       | 3.50      | 220.00      |
|                    | 15.79                   |                                                                                     |  |                    |             |           |             |
| CILD               | 8.00                    |  |  |                    |             |           |             |

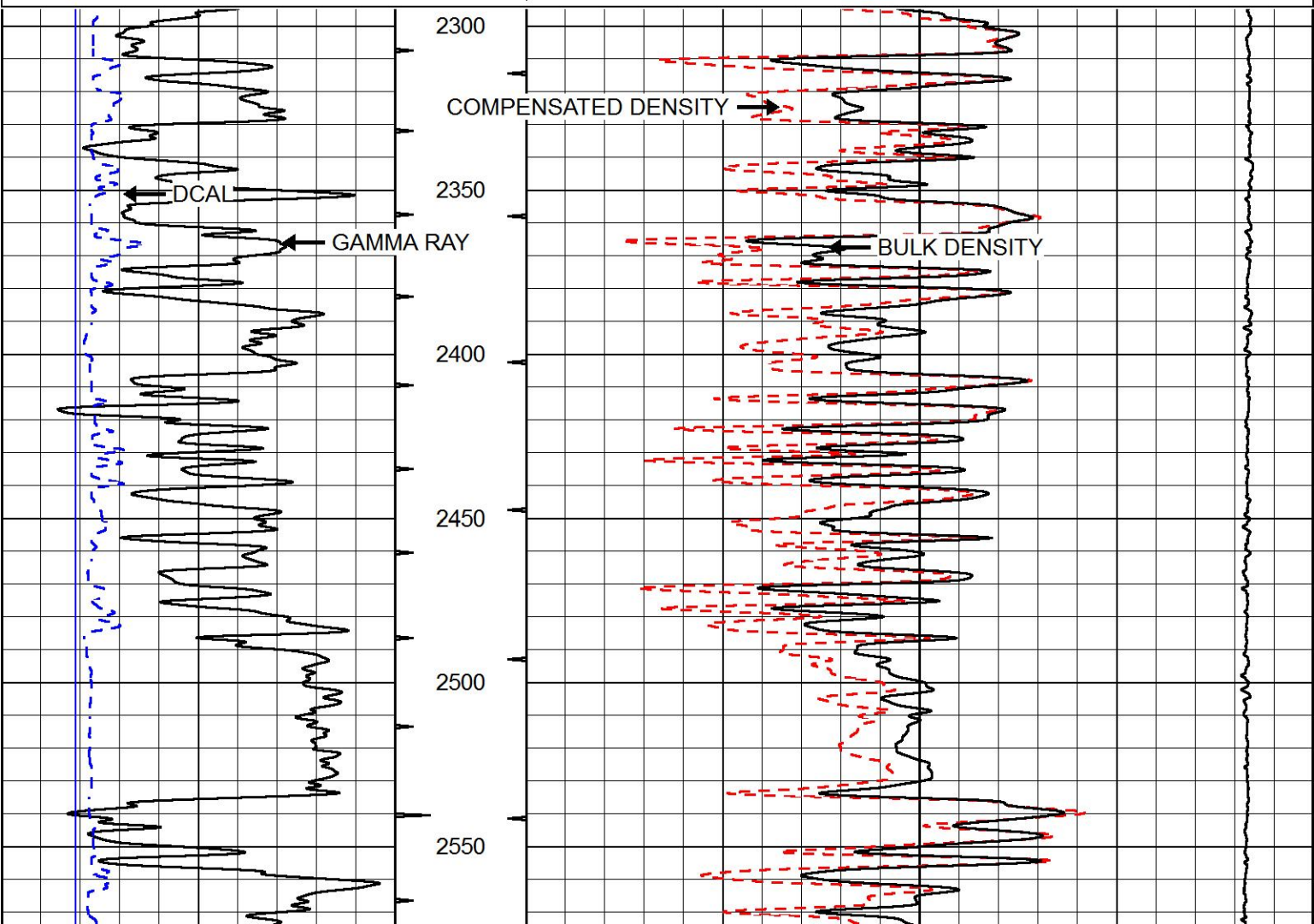
|                                                                                                                               |      |  |  |  |  |  |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------|------|--|--|--|--|--|--|--|--|
| CILM                                                                                                                          | 4.70 |  |  |  |  |  |  |  |  |
| SP                                                                                                                            | 0.20 |  |  |  |  |  |  |  |  |
| Dataset: berexco_heaton_10.db: field/well/stack/pass3.1<br>Total length: 35.50 ft<br>Total weight: 620.00 lb<br>O.D.: 4.00 in |      |  |  |  |  |  |  |  |  |

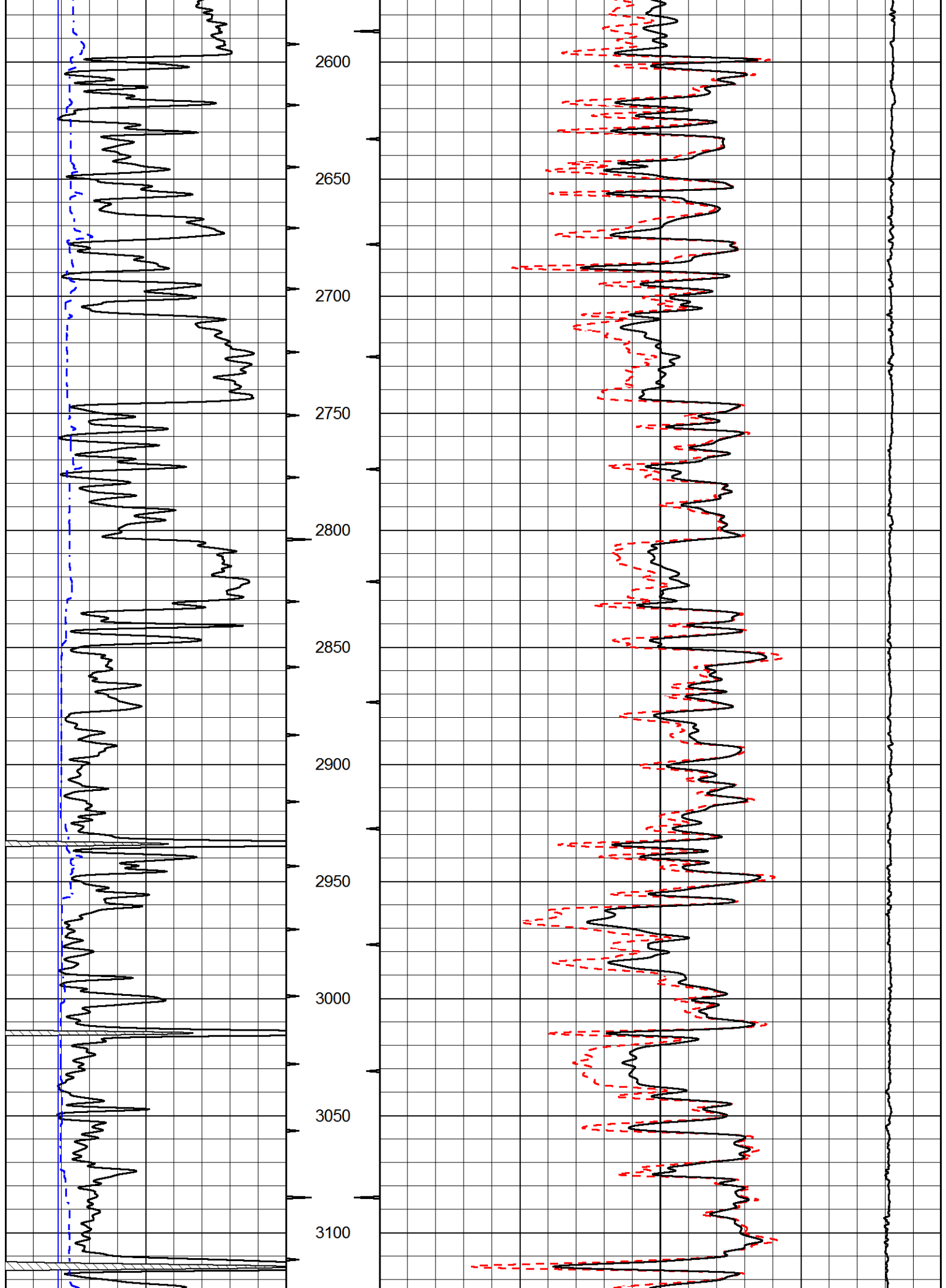


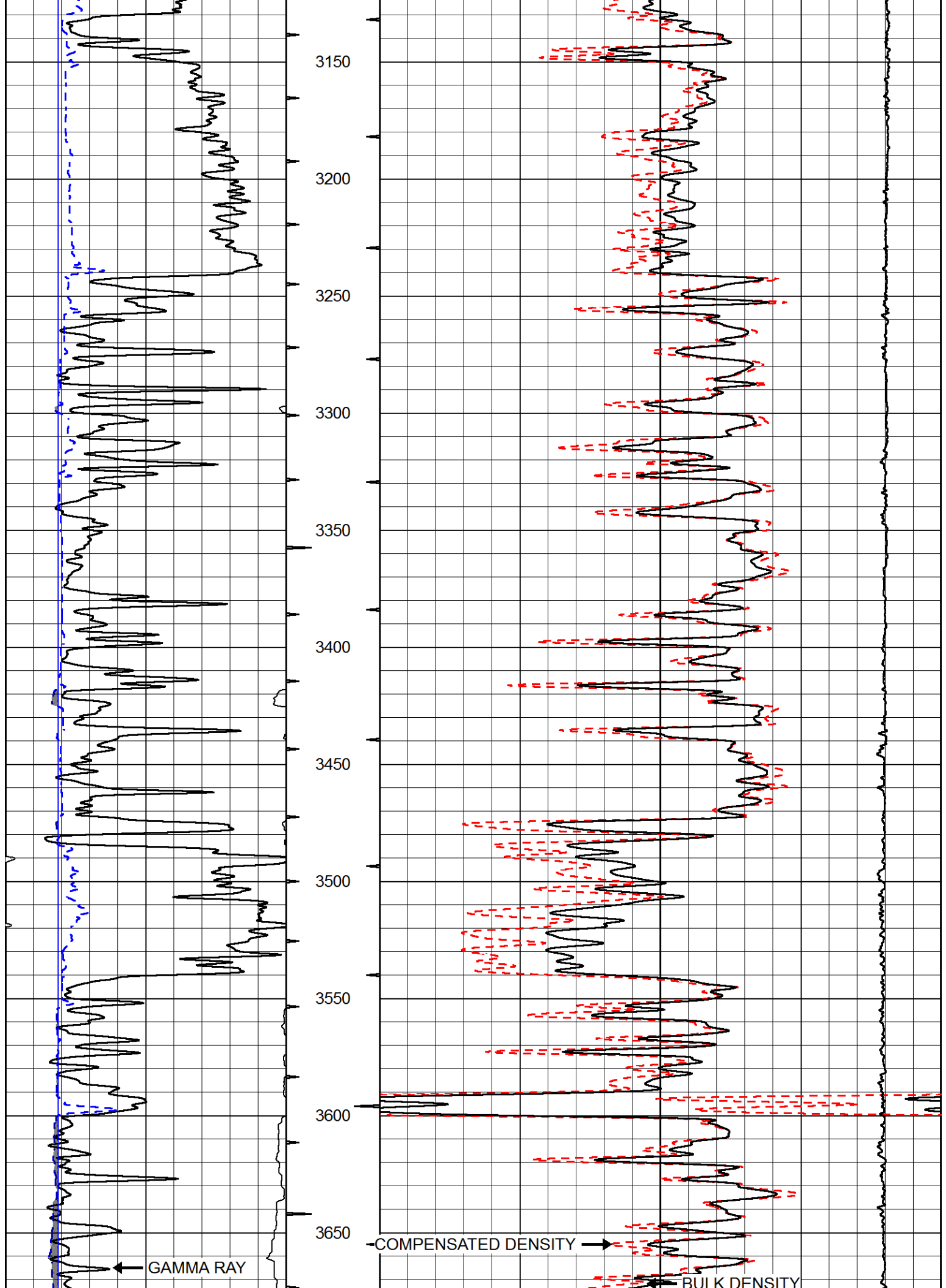
# MAIN PASS

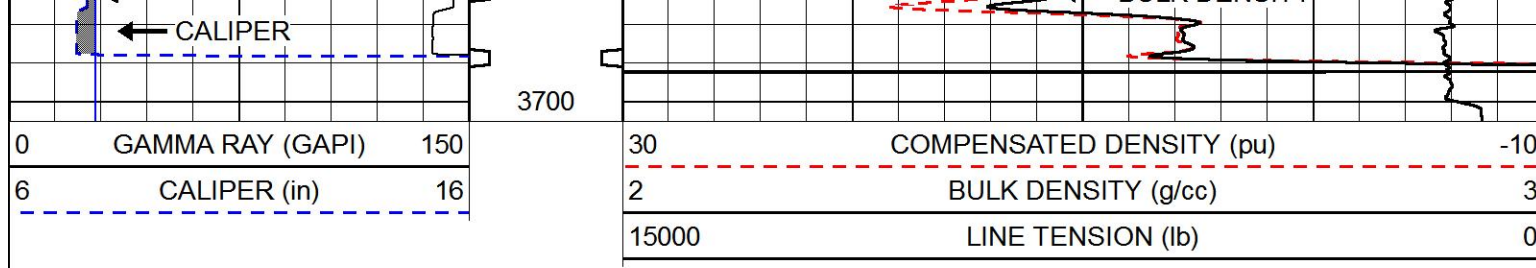
|                     |                            |
|---------------------|----------------------------|
| Database File       | berexco_heaton_10.db       |
| Dataset Pathname    | stack/pass3.1              |
| Presentation Format | cdl                        |
| Dataset Creation    | Wed Jan 09 23:00:01 2019   |
| Charted by          | Depth in Feet scaled 1:600 |

|   |                  |     |       |                          |     |
|---|------------------|-----|-------|--------------------------|-----|
| 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   |





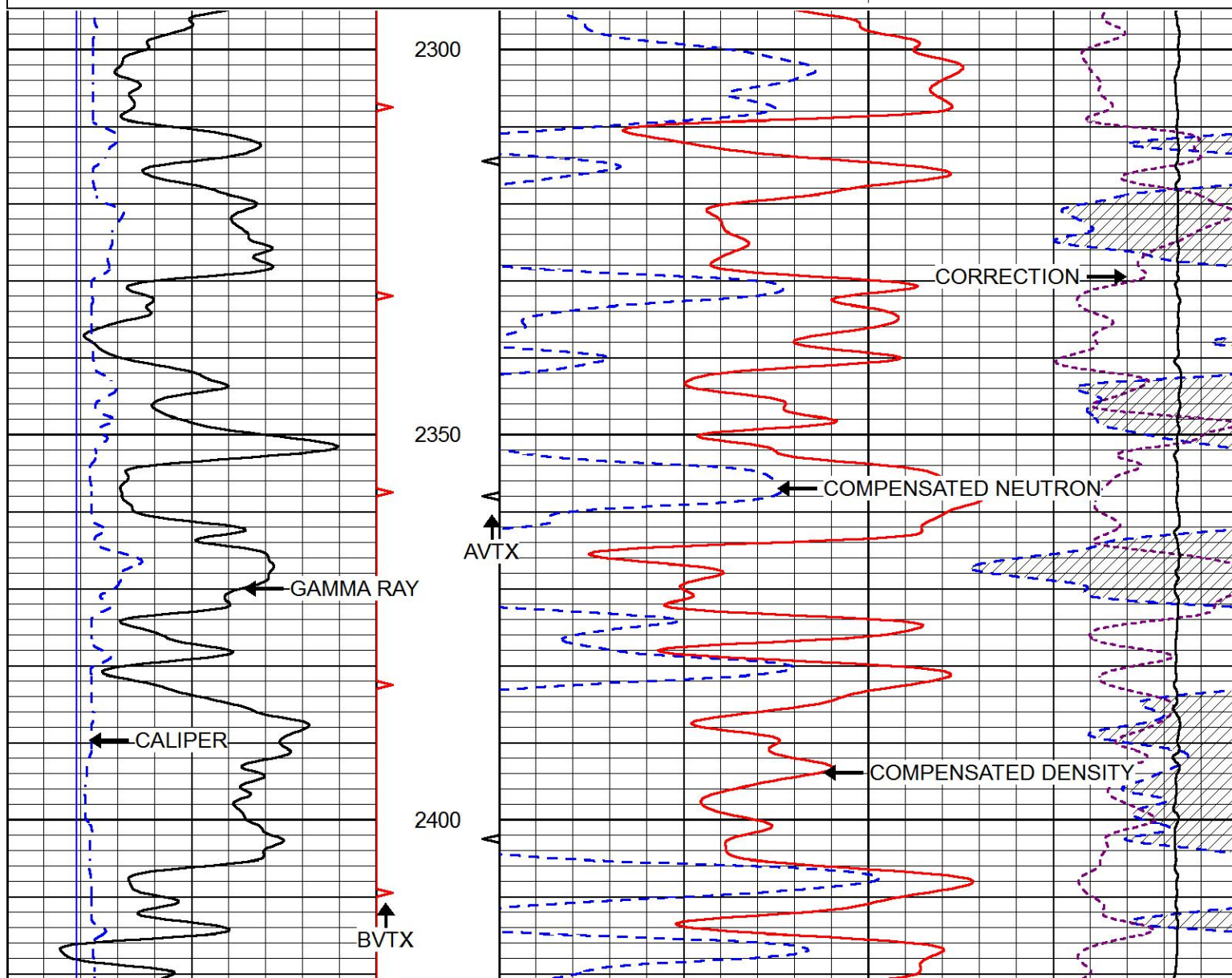


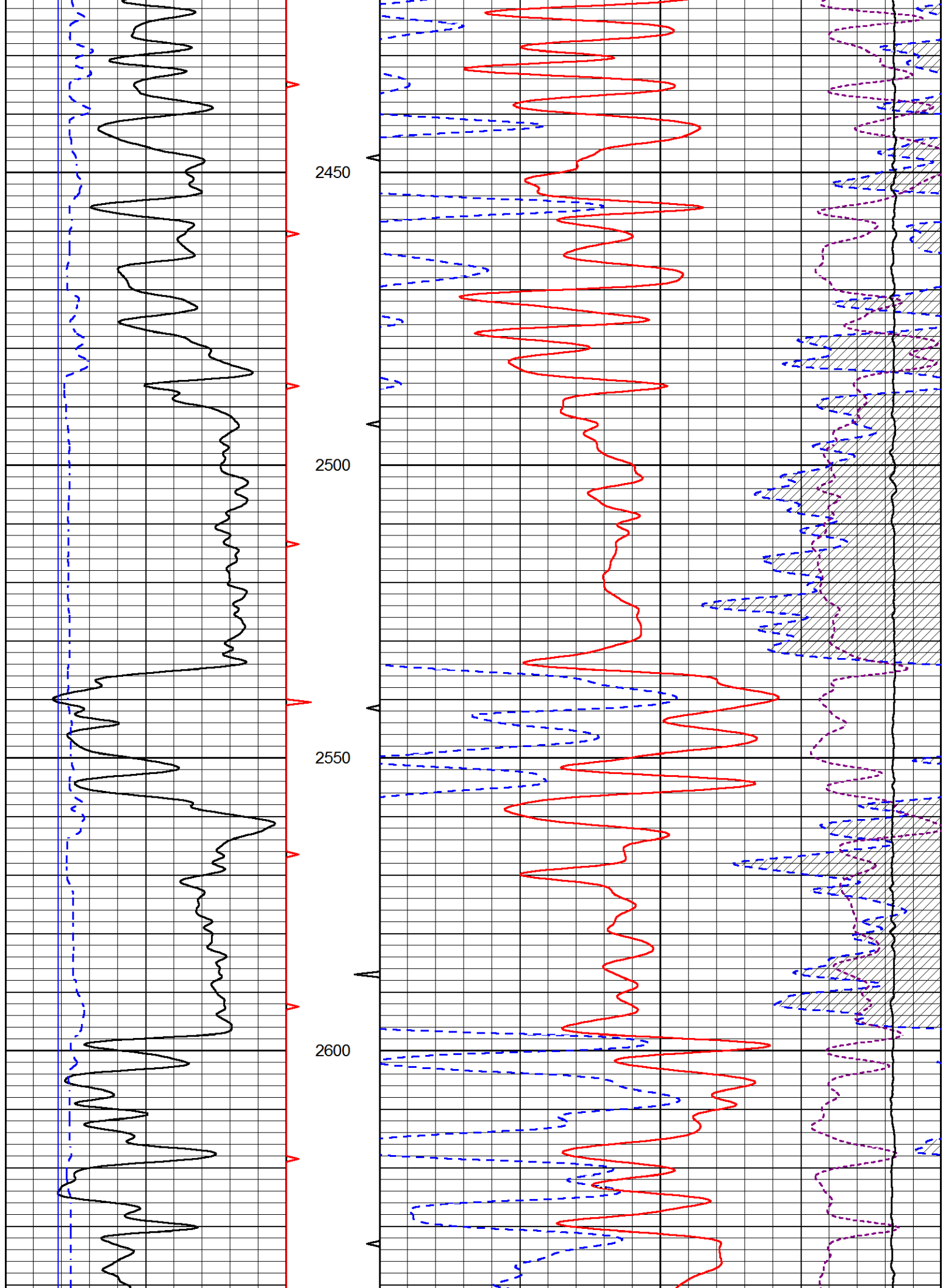


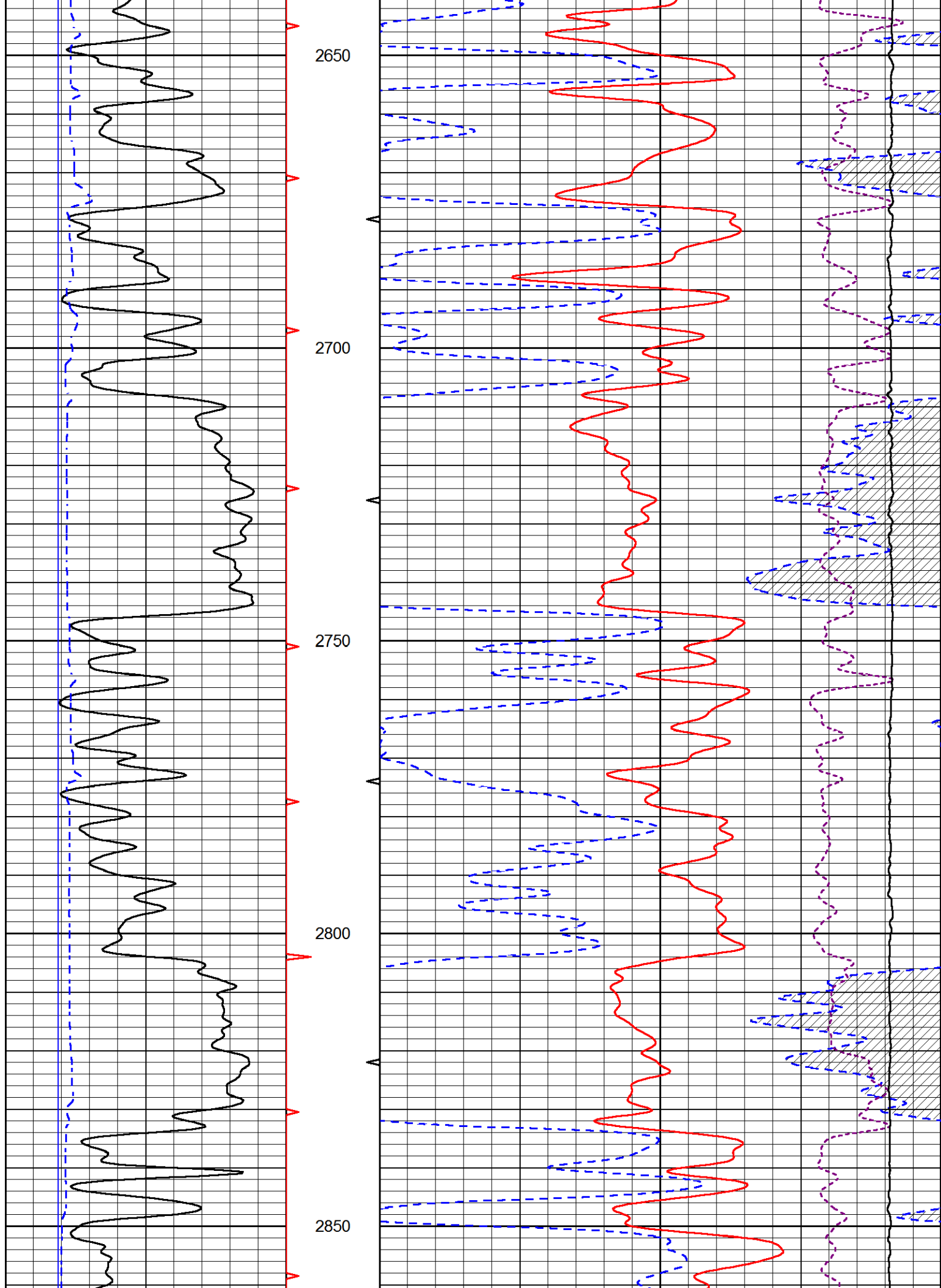
# MAIN PASS

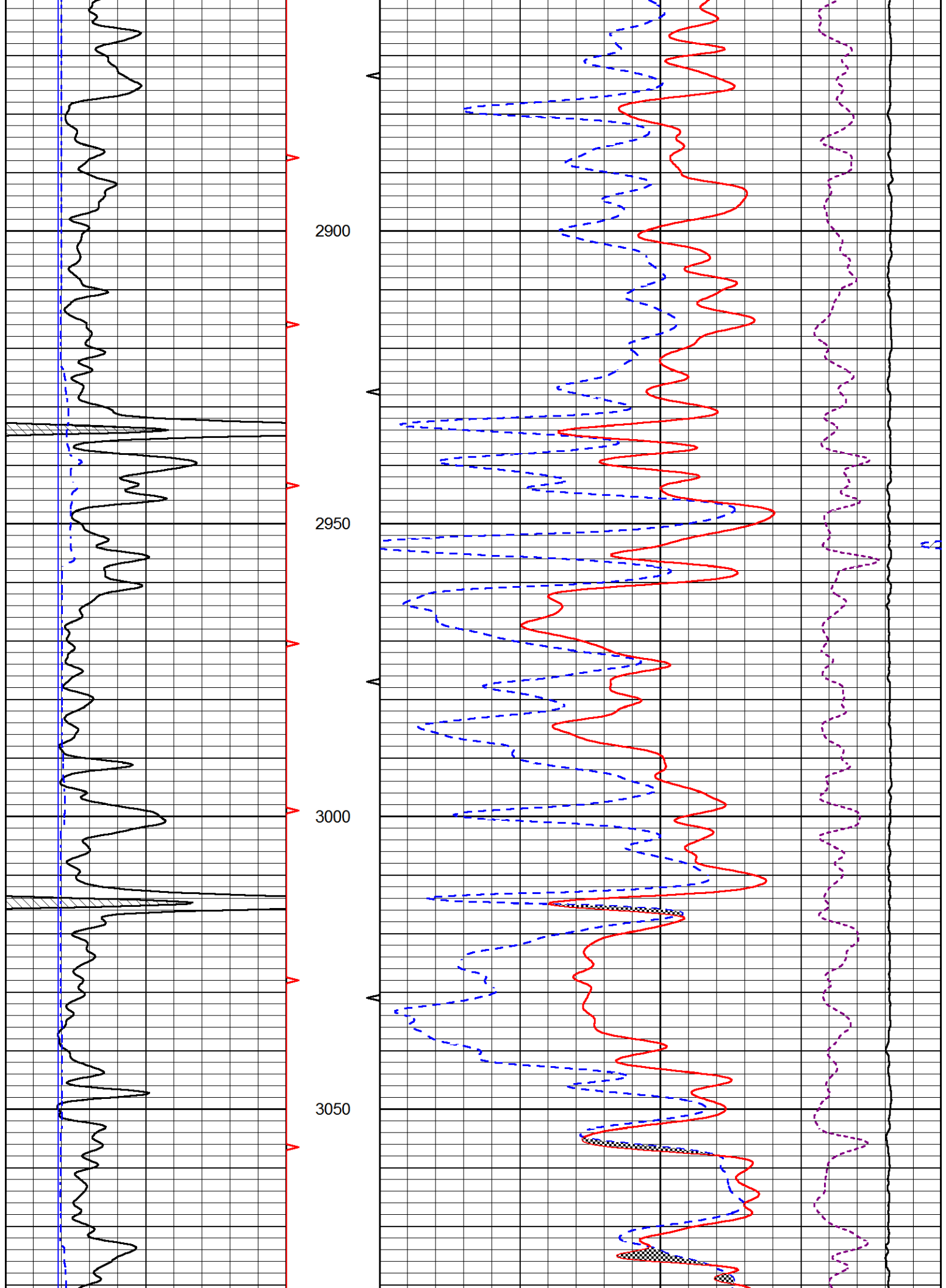
Database File: berexco\_heaton\_10.db  
 Dataset Pathname: stack/pass3.1  
 Presentation Format: cndlspec  
 Dataset Creation: Wed Jan 09 23:00:01 2019  
 Charted by: Depth in Feet scaled 1:240

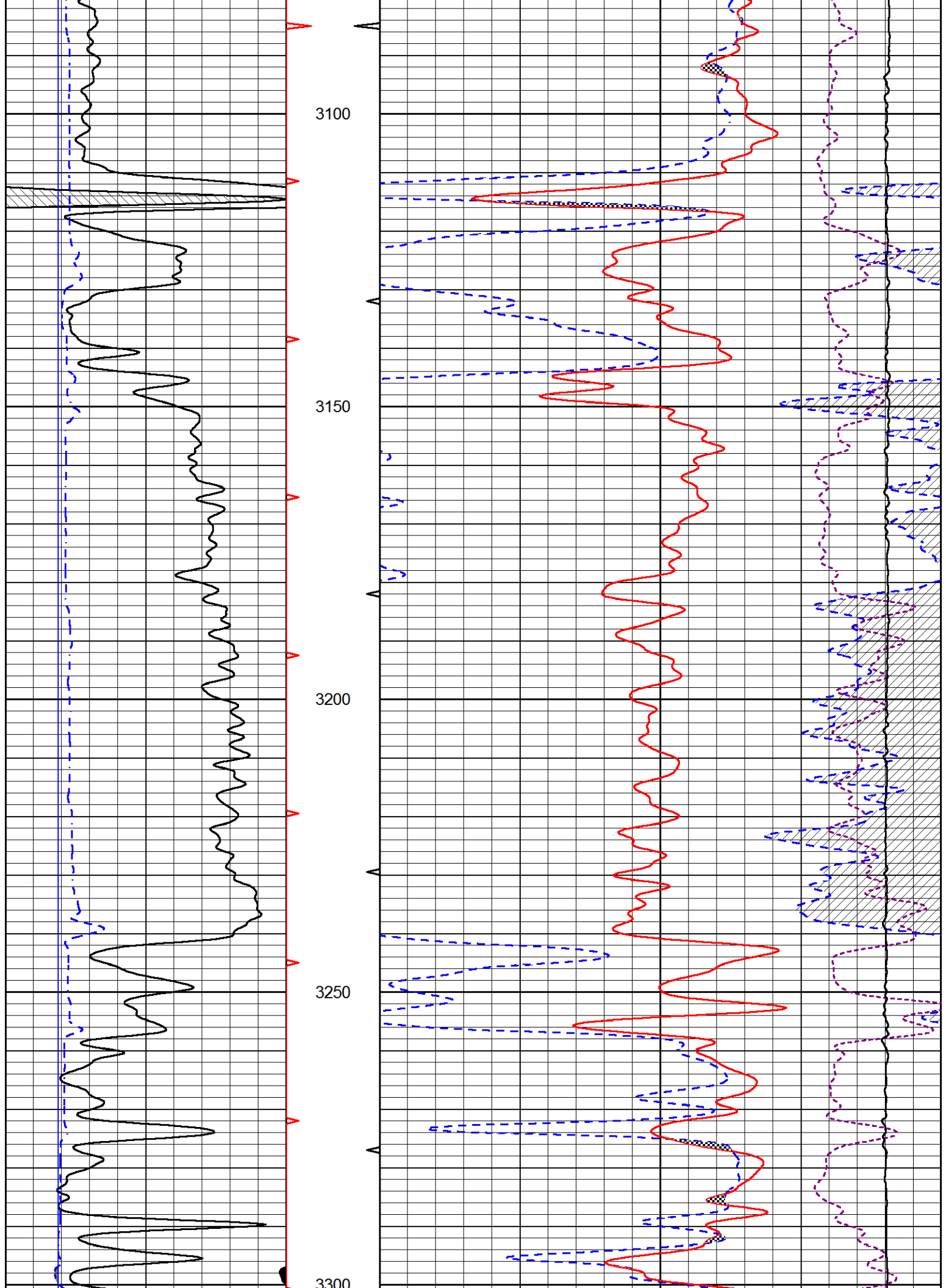
|   |                  |     |       |                   |      |
|---|------------------|-----|-------|-------------------|------|
| 0 | GAMMA RAY (GAPI) | 150 | 30    | CNLS (pu)         | -10  |
| 6 | dcal (in)        | 16  | 30    | DPOR (pu)         | -10  |
| 6 | BIT SIZE (in)    | 16  | 15000 | LINE TENSION (lb) | 0    |
|   |                  |     | -0.25 | RHOC (g/cc)       | 0.25 |

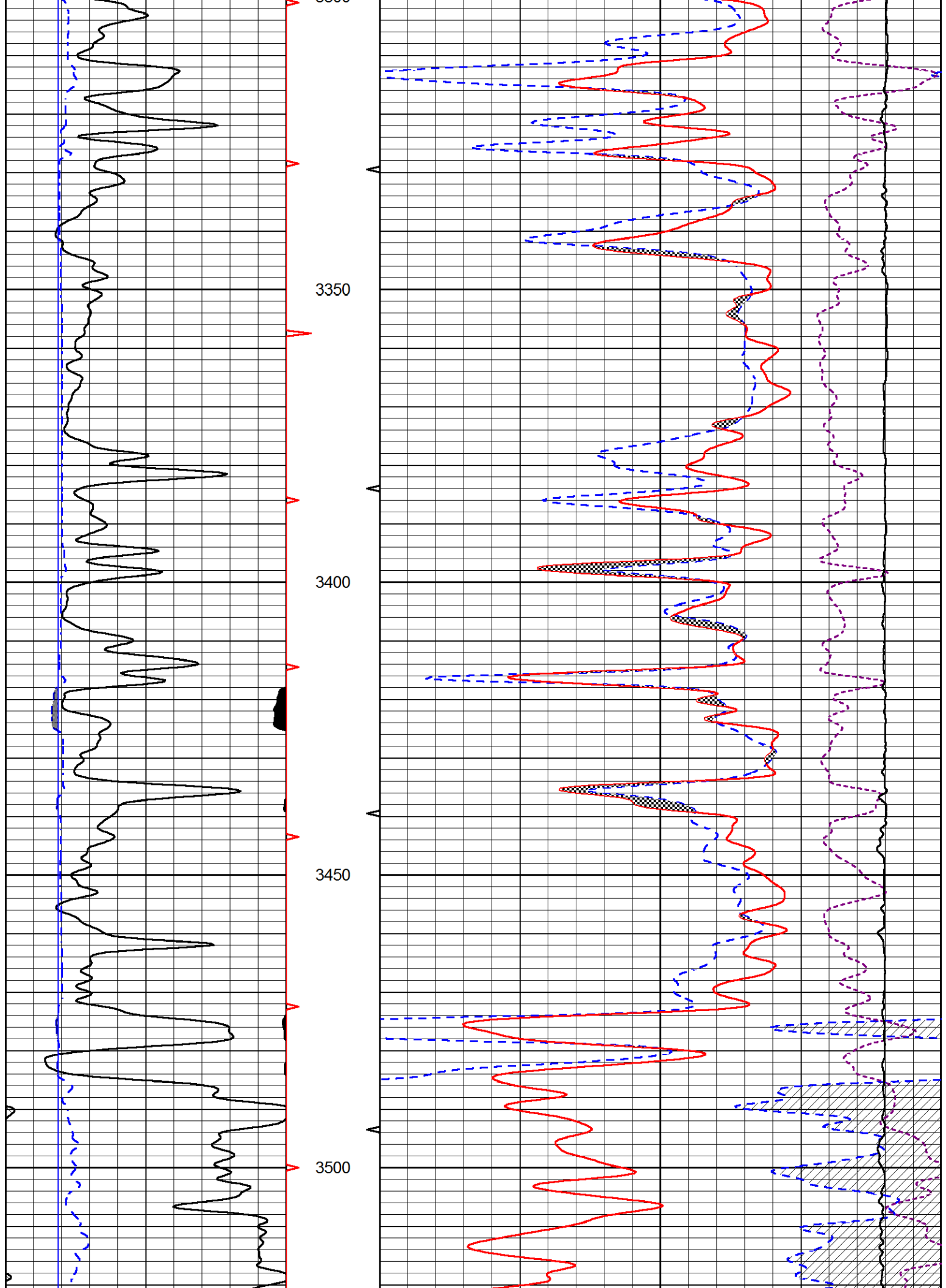


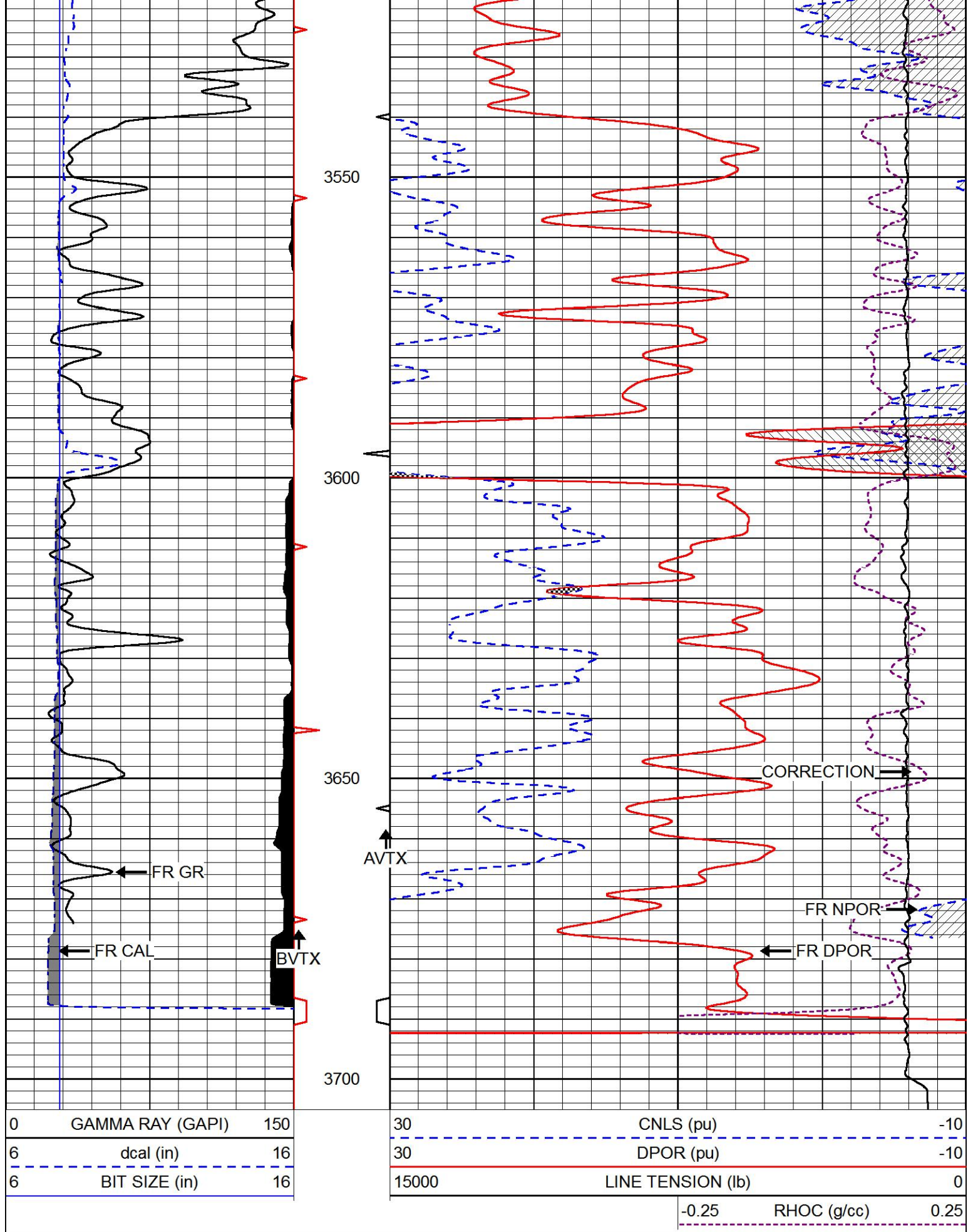










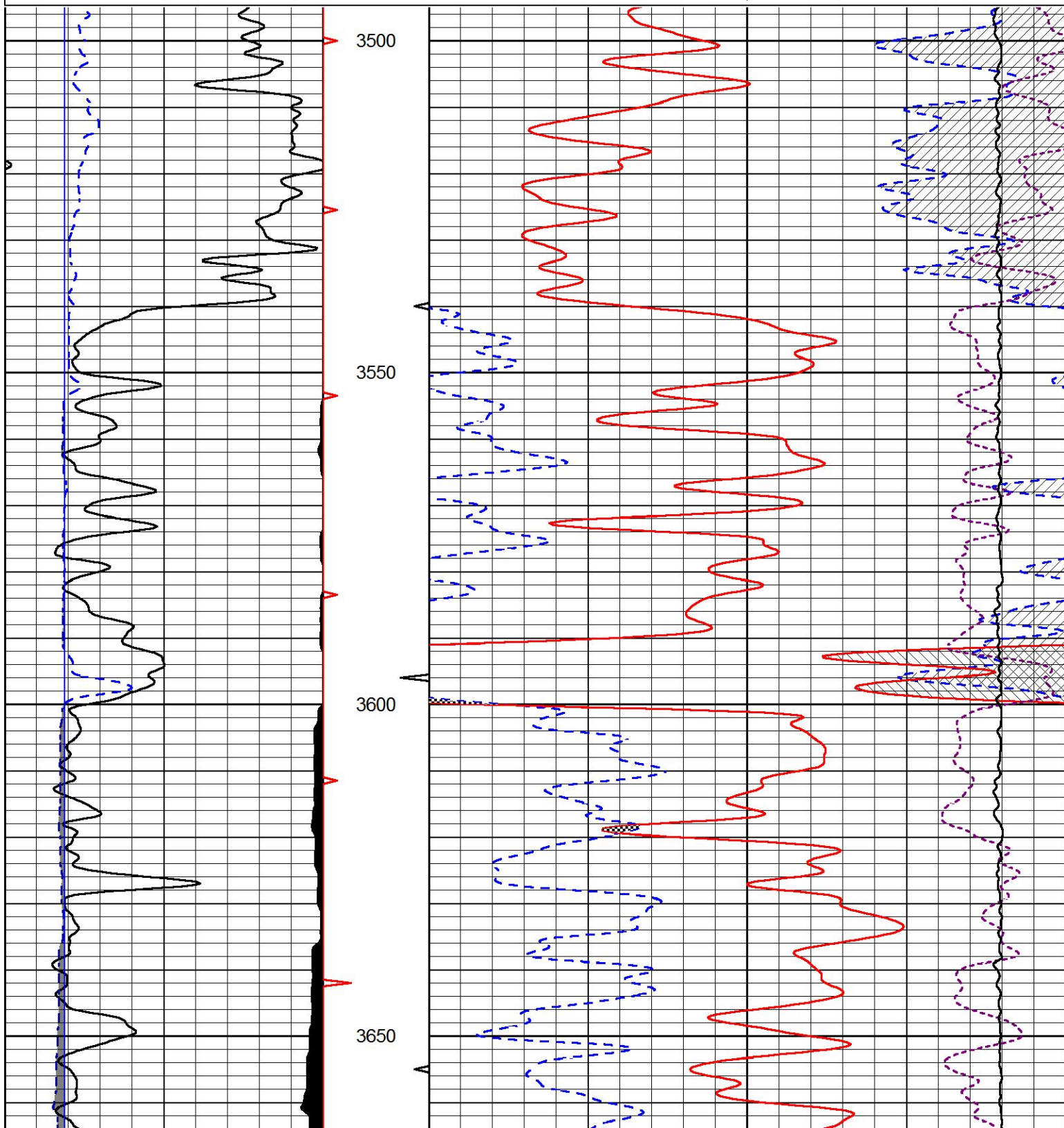


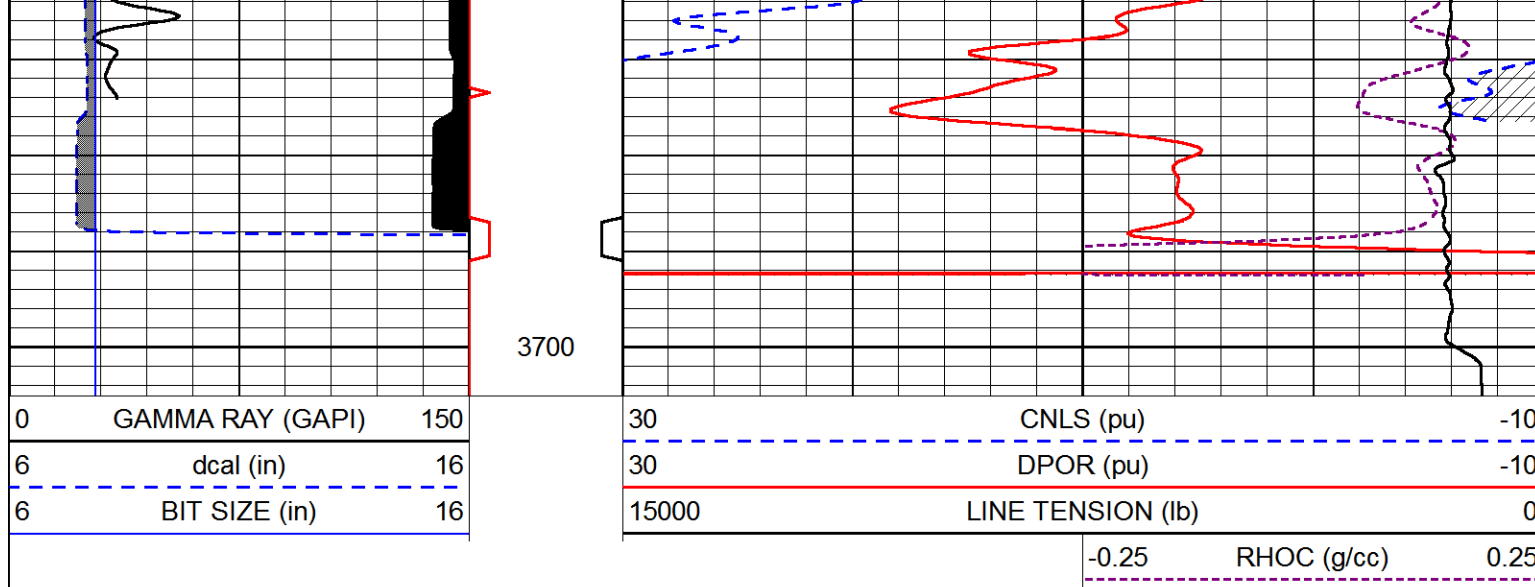
REPEAT SECTION

Database File berexco\_heaton\_10.db  
 Dataset Pathname stack/pass2.1  
 Presentation Format cndlspec  
 Dataset Creation Wed Jan 09 23:00:18 2019  
 Charted by Depth in Feet scaled 1:240

|   |                  |     |
|---|------------------|-----|
| 0 | GAMMA RAY (GAPI) | 150 |
| 6 | dcal (in)        | 16  |
| 6 | BIT SIZE (in)    | 16  |

|       |                   |            |
|-------|-------------------|------------|
| 30    | CNLS (pu)         | -10        |
| 30    | DPOR (pu)         | -10        |
| 15000 | LINE TENSION (lb) | 0          |
|       | RHOC (g/cc)       | -0.25 0.25 |





| Calibration Report |                          |
|--------------------|--------------------------|
| Database File      | berexco_heaton_10.db     |
| Dataset Pathname   | stack/pass3.1            |
| Dataset Creation   | Wed Jan 09 23:00:01 2019 |

### Dual Induction Calibration Report

|                        |                          |
|------------------------|--------------------------|
| Serial-Model:          | PSI 988-M&W              |
| Calibration Performed: | Tue Nov 20 10:50:19 2018 |

| Loop:  | Readings |          | References |         |        | Results |         |
|--------|----------|----------|------------|---------|--------|---------|---------|
|        | Air      | Loop     | Air        | Loop    |        | Gain    | Offset  |
| Deep   | 178.615  | 710.235  | 0.000      | 255.800 | mmho/m | 0.525   | -44.000 |
| Medium | 161.982  | 1441.110 | 0.000      | 255.800 | mmho/m | 0.380   | -17.000 |

### Compensated Density Calibration Report

|                               |                          |
|-------------------------------|--------------------------|
| Serial-Model:                 | 934-5002-M&W             |
| Source / Verifier:            | /                        |
| Master Calibration Performed: | Wed Aug 29 11:03:55 2018 |

| Master Calibration  |         |      |                             |         |               |  |
|---------------------|---------|------|-----------------------------|---------|---------------|--|
|                     | Density |      | Far Detector                |         | Near Detector |  |
|                     |         |      |                             |         |               |  |
| Magnesium           | 1.755   | g/cc | 3720.16                     | 2661.79 | cps           |  |
| Aluminum            | 2.680   | g/cc | 696.57                      | 1725.83 | cps           |  |
| Spine Angle = 75.50 |         |      | Density/Spine Ratio = 0.535 |         |               |  |
|                     | Size    |      | Reading                     |         |               |  |
|                     |         |      |                             |         |               |  |
| Small Ring          | 4.00    | in   | 1.16                        |         |               |  |
| Large Ring          | 16.00   | in   | 1.02                        |         |               |  |

### Compensated Neutron Calibration Report

|                        |                          |
|------------------------|--------------------------|
| Serial Number:         | tk10-MW                  |
| Tool Model:            | M&W                      |
| Calibration Performed: | Wed Nov 16 11:21:36 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-M&W                   |             |               |
| Tool Model:                  | M&W                      |             |               |
| Calibration Performed:       | Tue Apr 11 17:08:01 2017 |             |               |
| Calibrator Value:            | 1000.0                   | GAPI        |               |
| Background Reading:          | 0.0                      | cps         |               |
| Calibrator Reading:          | 6.2                      | cps         |               |
| Sensitivity:                 | 0.5200                   | GAPI/cps    |               |

|                                                                                   |         |              |
|-----------------------------------------------------------------------------------|---------|--------------|
|  | Company | BEREXCO, LLC |
|                                                                                   | Well    | HEATON #10   |
|                                                                                   | Field   | MEULLER      |
|                                                                                   | County  | STAFFORD     |
|                                                                                   | State   | KANSAS       |