



# COMPENSATED DENSITY NEUTRON LOG

Company John O' Farmer, Inc.

Well Nuss C#1

Field Reed

County Ellis

State KS

Location:

API #: 15 051 26887

920' FSL & 1585' FEL

SEC 32 TWP 12S RGE 17W

Permanent Datum Ground Level Elevation 2061'  
Log Measured From KB 8' AGL  
Drilling Measured From KB

Elevation  
K.B. 2069'  
D.F. 2068'  
G.L. 2061'

Date

8/28/17

Run Number

One

Depth Driller

3680'

Depth Logger

3683'

Bottom Logged Interval

3662'

Top Log Interval

3000'

Casing Driller

8 5/8" @ 220'

Casing Logger

220'

Bit Size

7 7/8"

Type Fluid in Hole

Chemical

Density / Viscosity

9.149

pH / Fluid Loss

10.0/8.8

Source of Sample

Calculated

Rm @ Meas. Temp

0.63@84degf

Rmf @ Meas. Temp

0.50@84degf

Rmc @ Meas. Temp

0.81@84degf

Source of Rmf / Rmc

Calculated

Rm @ BHT

0.44@108degf

Time Circulation Stopped

1:00 P.M.

Time Logger on Bottom

4:30 p.m.

Maximum Recorded Temperature

108degf

Equipment Number

T173

Location

Hays, KS

Recorded By

L. Smith

Witnessed By

Mr. Austin Klaus

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, 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. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

## Comments

North on Toulon Ave. to Emmeram Rd.,  
Then East 3/4 mi. on Emmeram Rd.,  
North into location

Thank you for using Gemini Wireline  
785-625-1182

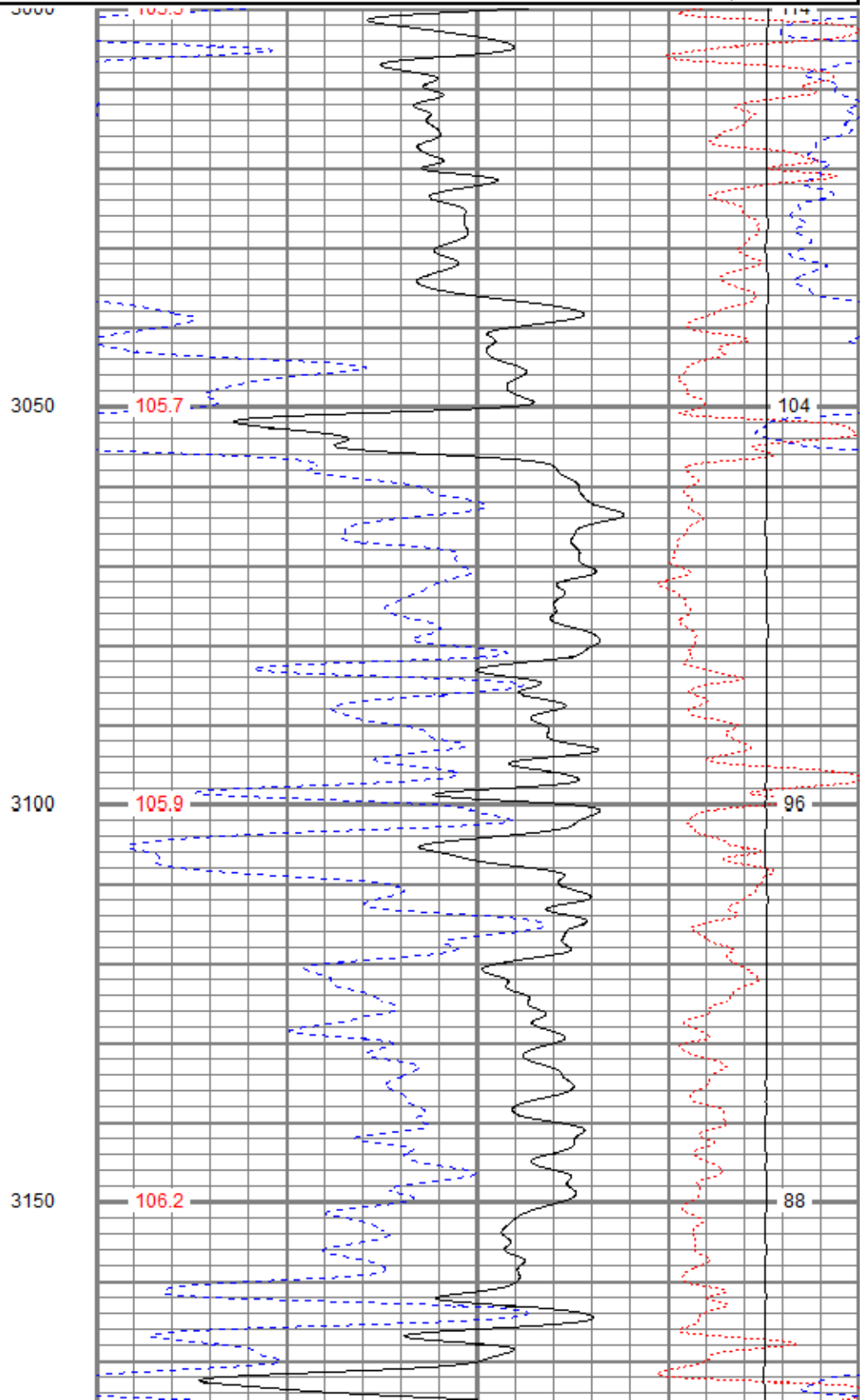
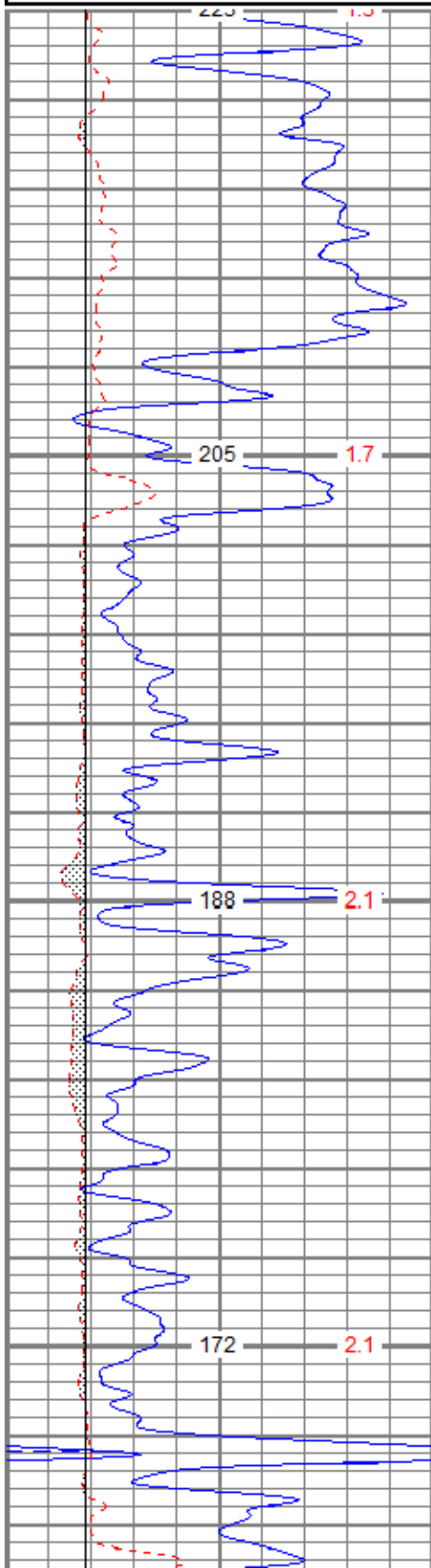


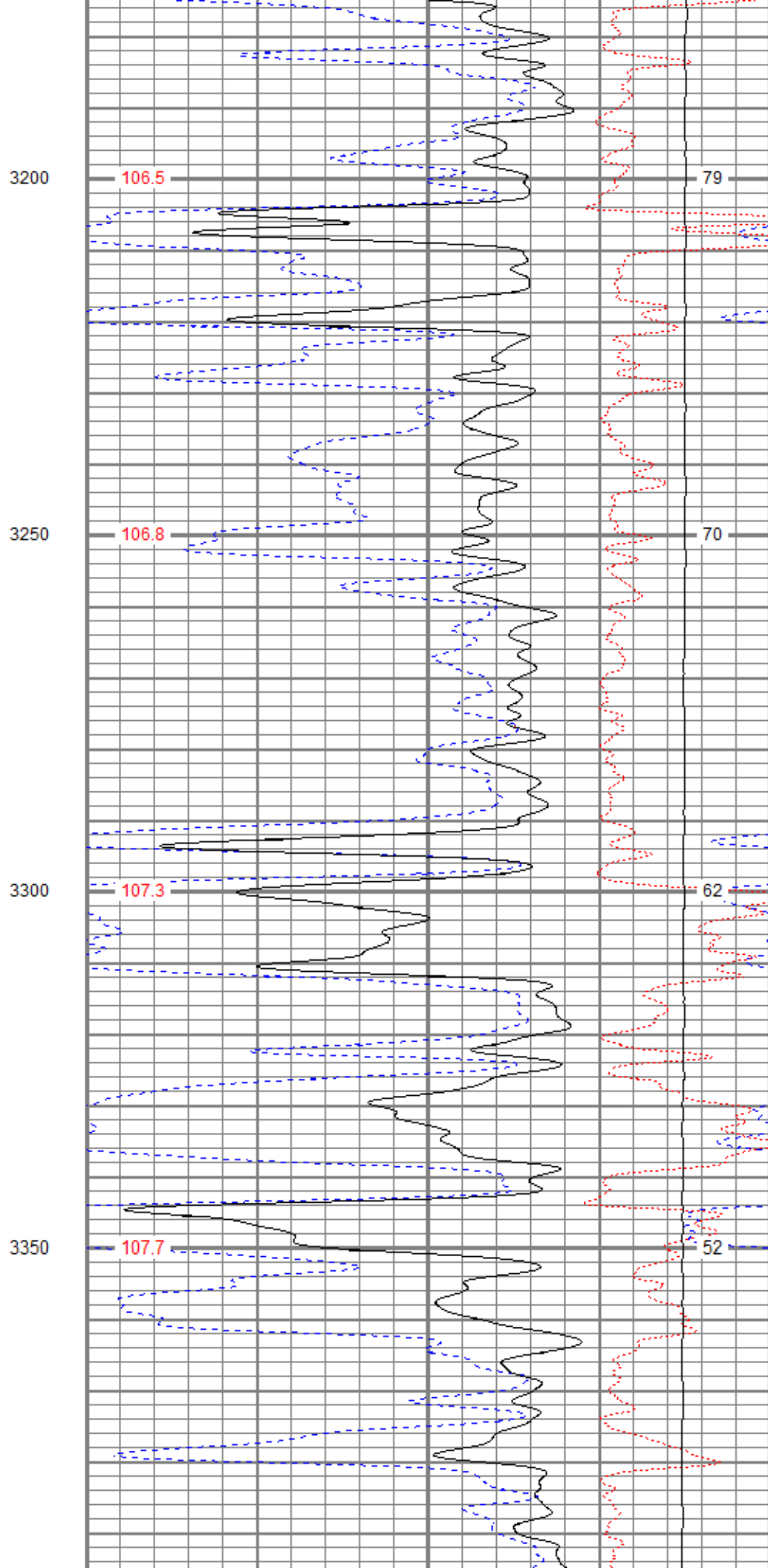
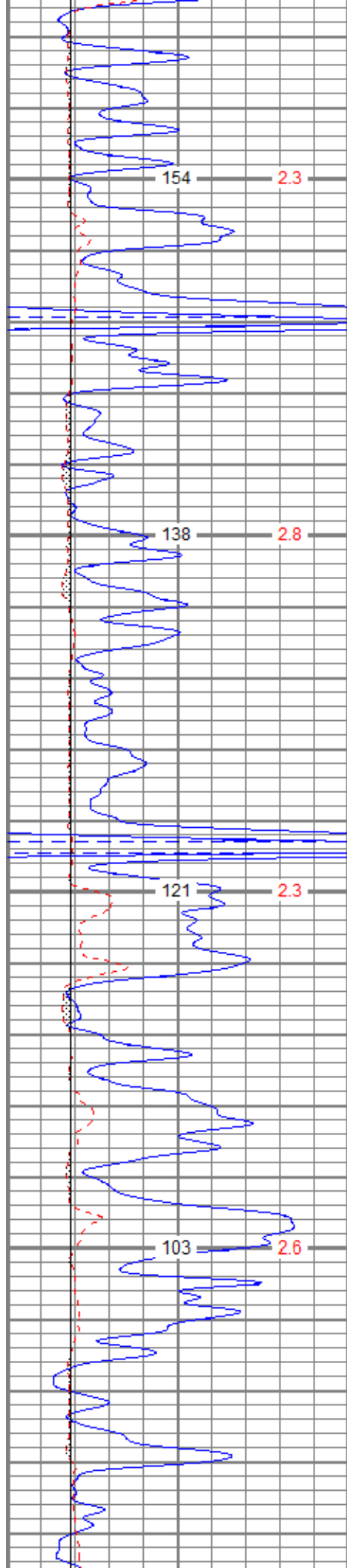
# Main Pass

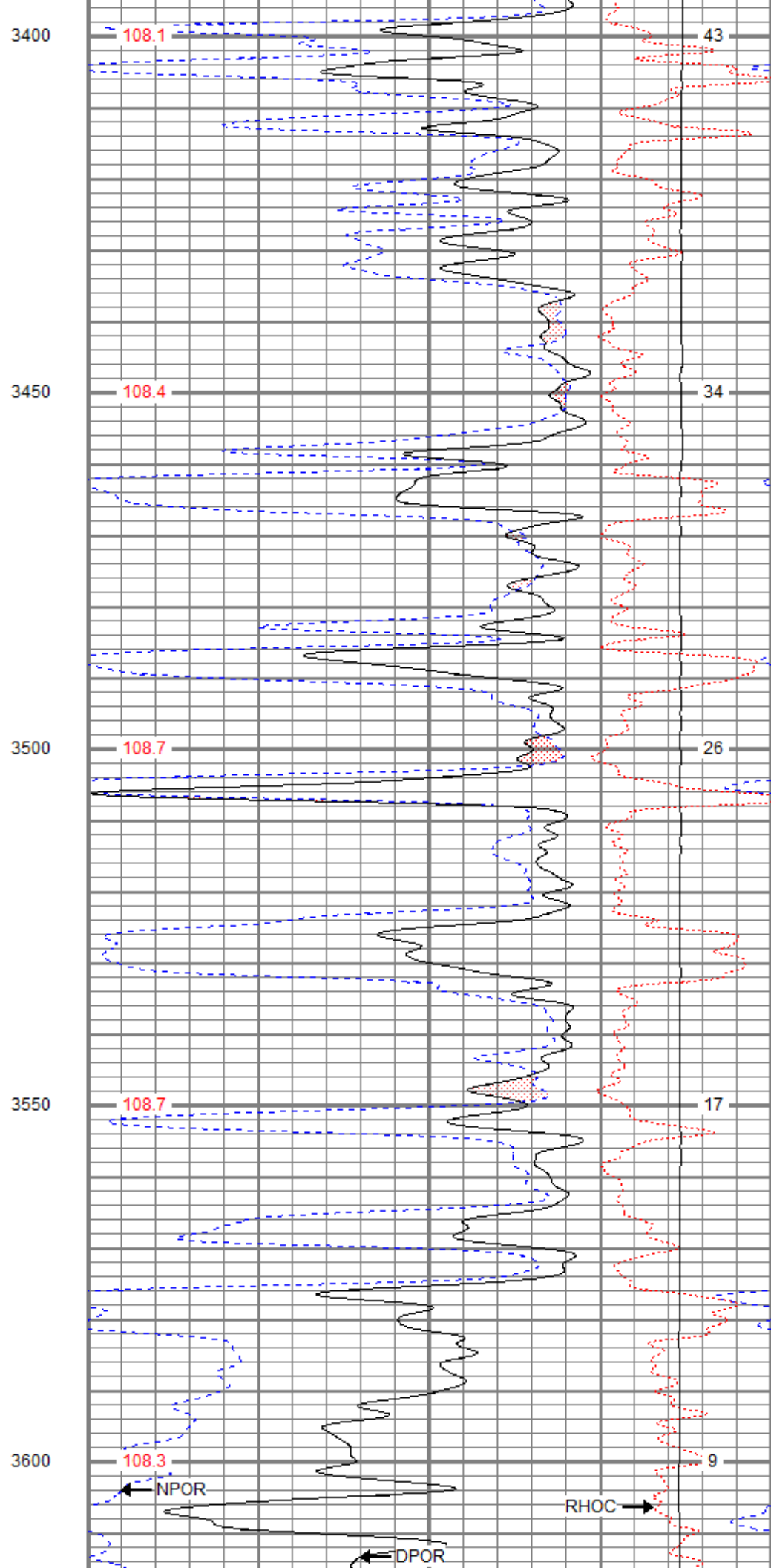
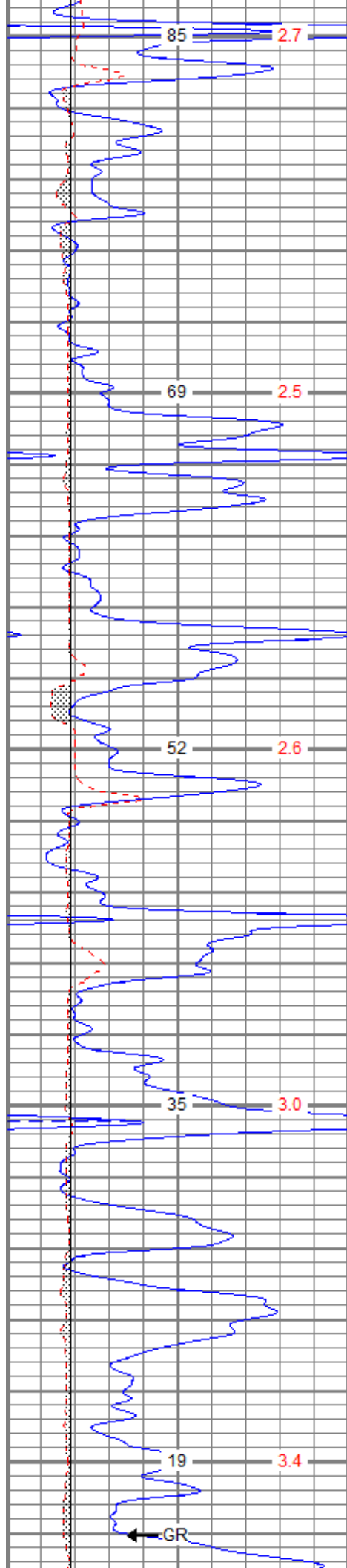
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 Presentation Format DIGITA~1  
 Dataset Creation Mon Aug 28 17:43:23 2017  
 Charted by Depth in Feet scaled 1:240

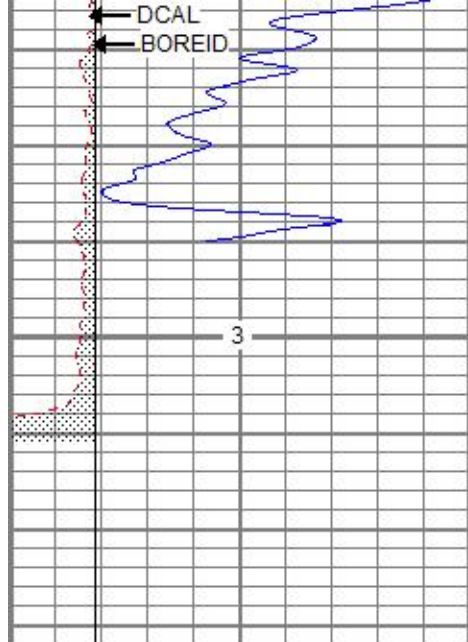
|   |             |            |
|---|-------------|------------|
| 0 | GR (GAPI)   | 150        |
| 6 | DCAL (in)   | 16         |
| 6 | BOREID (in) | 16         |
|   | TBHV (ft3)  | DEVI (deg) |

|                |       |           |             |      |
|----------------|-------|-----------|-------------|------|
| 30             |       | NPOR (pu) |             | -10  |
| 30             |       | DPOR (pu) |             | -10  |
| 70             |       | DPOR (pu) |             | 30   |
| TEMP<br>(degF) | -0.25 |           | RHOC (g/cc) | 0.25 |
|                | 8000  |           | LTEN (lb)   | 0    |
|                |       |           | ABHV (ft3)  |      |



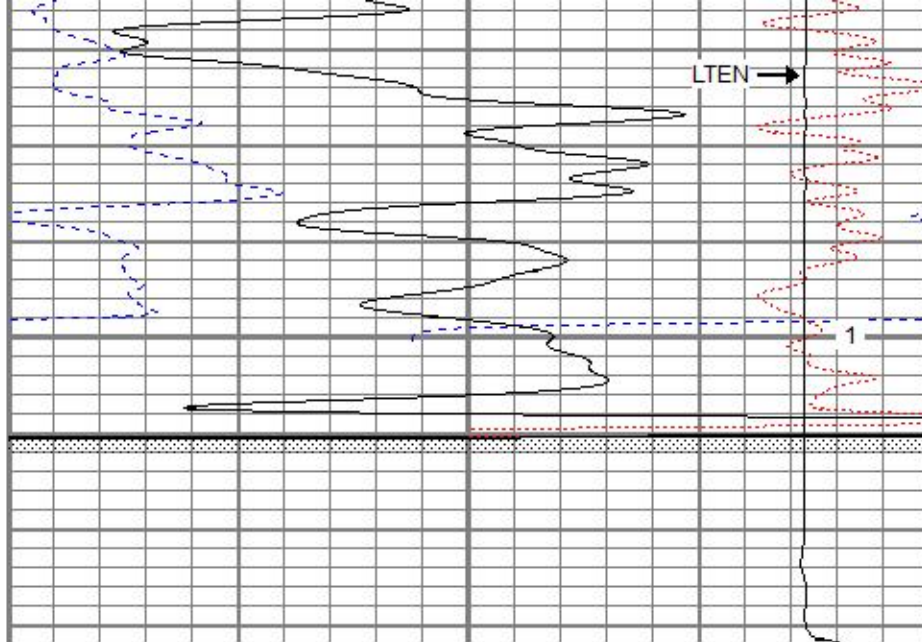






|   |             |            |
|---|-------------|------------|
| 0 | GR (GAPI)   | 150        |
| 6 | DCAL (in)   | 16         |
| 6 | BOREID (in) | 16         |
|   | TBHV (ft3)  | DEVI (deg) |

3650



|             |           |                  |
|-------------|-----------|------------------|
| 30          | NPOR (pu) | -10              |
| 30          | DPOR (pu) | -10              |
| 70          | DPOR (pu) | 30               |
| TEMP (degF) | -0.25     | RHOC (g/cc) 0.25 |
|             | 8000      | LTEN (lb) 0      |
|             |           | ABHV (ft3)       |

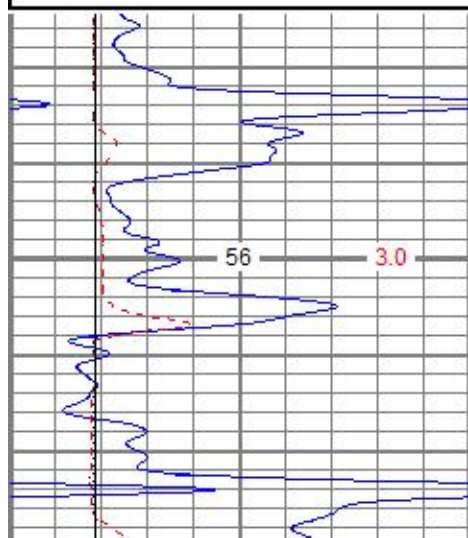


# Repeat Pass

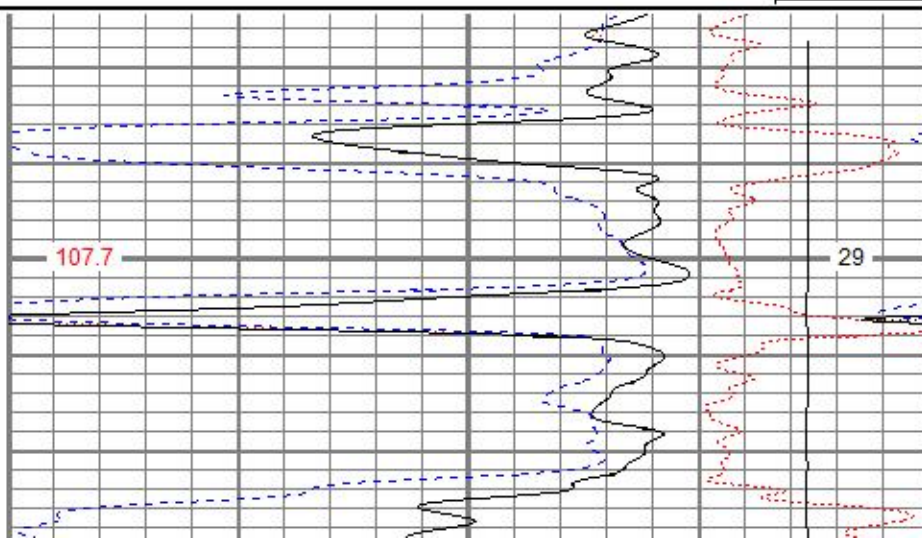
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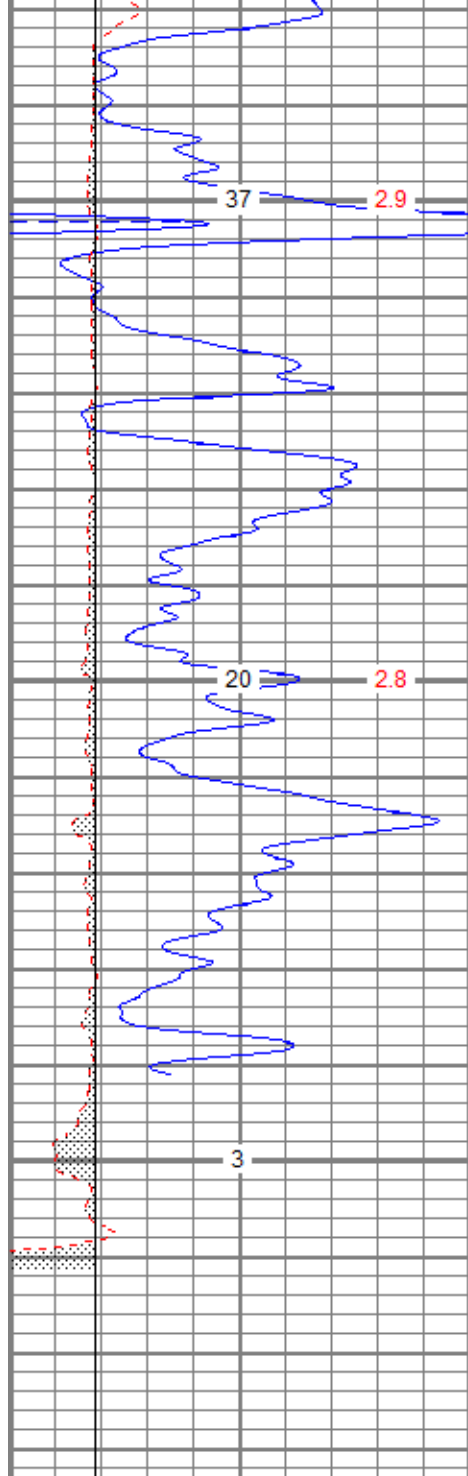
|   |             |            |
|---|-------------|------------|
| 0 | GR (GAPI)   | 150        |
| 6 | DCAL (in)   | 16         |
| 6 | BOREID (in) | 16         |
|   | TBHV (ft3)  | DEVI (deg) |

|             |           |                  |
|-------------|-----------|------------------|
| 30          | NPOR (pu) | -10              |
| 30          | DPOR (pu) | -10              |
| 70          | DPOR (pu) | 30               |
| TEMP (degF) | -0.25     | RHOC (g/cc) 0.25 |
|             | 8000      | LTEN (lb) 0      |
|             |           | ABHV (ft3)       |



3500



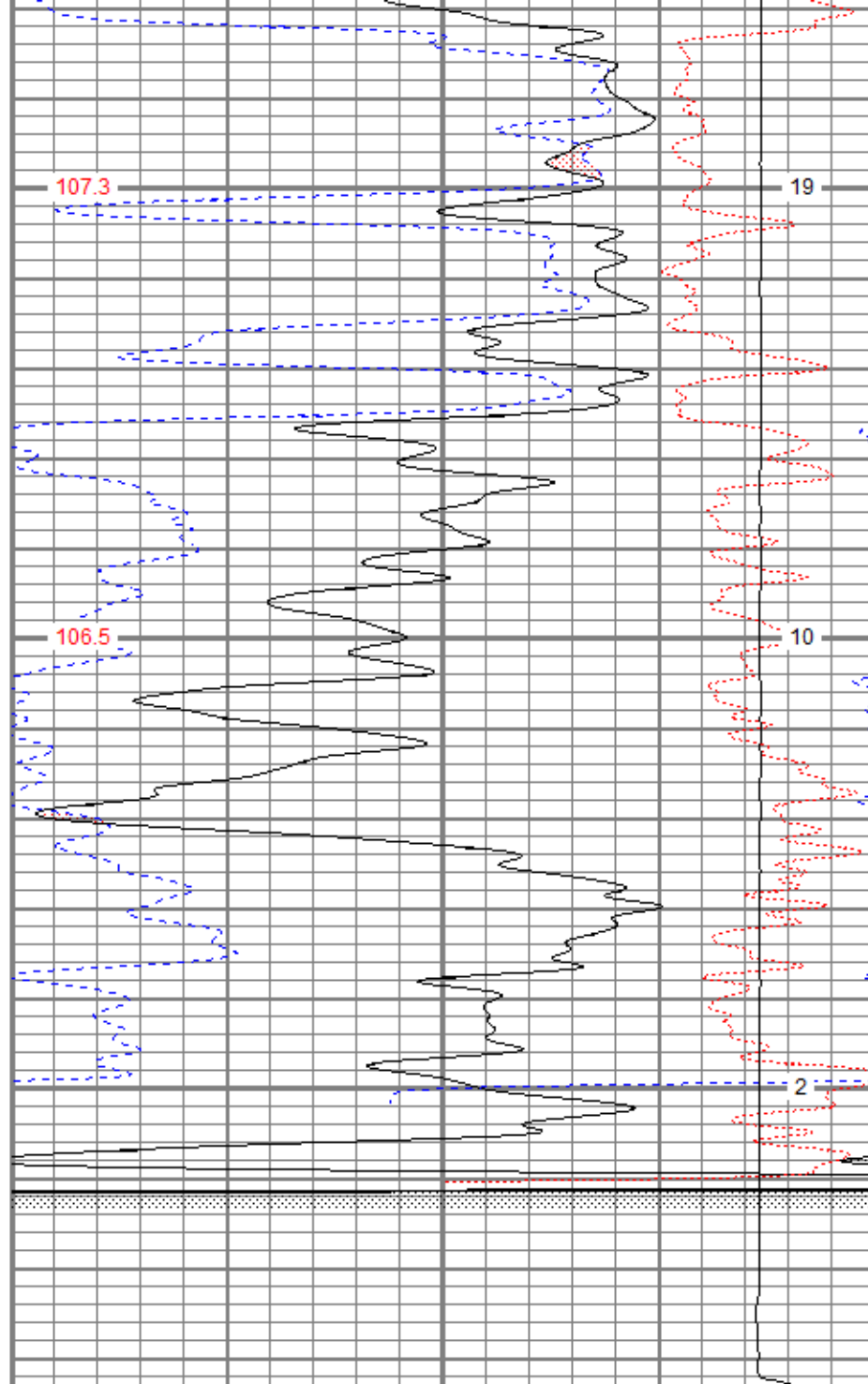


|   |             |            |
|---|-------------|------------|
| 0 | GR (GAPI)   | 150        |
| 6 | DCAL (in)   | 16         |
| 6 | BOREID (in) | 16         |
|   | TBHV (ft3)  | DEVI (deg) |

3550

3600

3650



|                |  |           |             |            |
|----------------|--|-----------|-------------|------------|
| 30             |  | NPOR (pu) |             | -10        |
| 30             |  | DPOR (pu) |             | -10        |
| 70             |  | DPOR (pu) |             | 30         |
| TEMP<br>(degF) |  | -0.25     | RHOC (g/cc) | 0.25       |
|                |  | 8000      | LTEN (lb)   | 0          |
|                |  |           |             | ABHV (ft3) |

### Calibration Report

Database File jofnussc#1oh.db  
 Dataset Pathname pass1  
 Dataset Creation Mon Aug 28 17:04:21 2017

### Dual Induction Calibration Report

Serial-Model: 5375-G  
 Surface Cal Performed: Tue Aug 15 10:21:23 2017  
 Downhole Cal Performed: Tue Aug 15 10:22:14 2017  
 After Survey Verification Performed: Tue Aug 15 10:22:14 2017

| Surface Calibration |        |       |            |       |         |         |         |       |
|---------------------|--------|-------|------------|-------|---------|---------|---------|-------|
| Readings            |        |       | References |       |         | Results |         |       |
| Loop:               | Air    | Loop  |            | Air   | Loop    |         | m       | b     |
| Deep                | -0.003 | 0.635 | V          | 0.000 | 350.000 | mmho/m  | 548.445 | 1.715 |
| Medium              | -0.001 | 0.717 | V          | 0.000 | 400.000 | mmho/m  | 556.583 | 0.684 |
| Internal:           | Zero   | Cal   |            | Zero  | Cal     |         | m       | b     |
| Deep                | -0.003 | 0.635 | V          | 0.000 | 350.000 | mmho/m  | 548.268 | 1.663 |
| Medium              | -0.001 | 0.718 | V          | 0.000 | 400.000 | mmho/m  | 556.234 | 0.694 |

| Downhole Calibration |        |         |            |         |         |         |         |        |
|----------------------|--------|---------|------------|---------|---------|---------|---------|--------|
| Readings             |        |         | References |         |         | Results |         |        |
| Internal:            | Zero   | Cal     |            | Zero    | Cal     |         | m       | b      |
| Deep                 | 0.131  | 349.928 | mmho/m     | 0.052   | 350.165 | mmho/m  | 1.001   | -0.079 |
| Medium               | -0.084 | 400.178 | mmho/m     | -0.010  | 400.241 | mmho/m  | 1.000   | 0.073  |
| Shallow              | 2.425  | 0.005   | V          | 500.000 | 2.000   | Ohm-m   | 205.838 | 0.894  |

| After Survey Verification |       |       |         |         |         |         |       |        |
|---------------------------|-------|-------|---------|---------|---------|---------|-------|--------|
| Readings                  |       |       | Targets |         |         | Results |       |        |
| Internal:                 | Zero  | Cal   |         | Zero    | Cal     |         | m'    | b'     |
| Deep                      | 0.000 | 0.000 | mmho/m  | 0.131   | 349.928 | mmho/m  | 1.001 | -0.079 |
| Medium                    | 0.000 | 0.000 | mmho/m  | -0.084  | 400.178 | mmho/m  | 1.000 | 0.073  |
| Shallow                   | 0.000 | 0.000 | Ohm-m   | 500.000 | 2.000   | Ohm-m   | 1.000 | 0.000  |

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

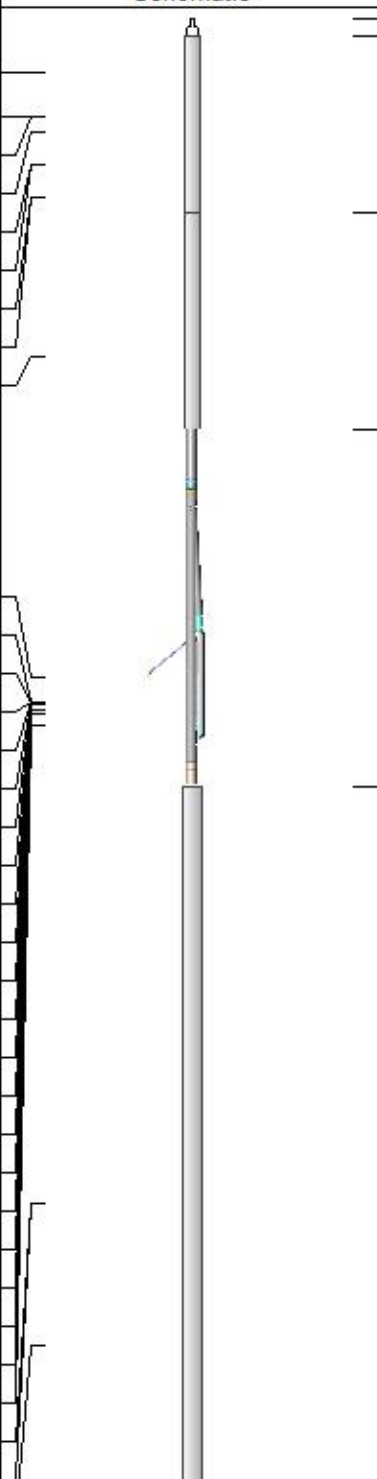
| Neutron Calibration Report |                 |          |
|----------------------------|-----------------|----------|
| Serial Number:             | 2017            |          |
| Tool Model:                | lithgearhart    |          |
| Performed:                 | (Not Performed) |          |
| Calibrator Value:          | 1               | NAPI     |
| Calibrator Reading:        | 1               | cps      |
| Sensitivity:               | 1               | NAPI/cps |

| Temperature Calibration Report |                 |      |         |      |  |
|--------------------------------|-----------------|------|---------|------|--|
| Serial Number:                 | WithMC          |      |         |      |  |
| Tool Model:                    | WMC             |      |         |      |  |
| Performed:                     | (Not Performed) |      |         |      |  |
|                                | Reference       |      | Reading |      |  |
| Low Reference:                 | 0.00            | degF | 0.00    | degF |  |
| High Reference:                | 1.00            | degF | 1.00    | degF |  |
| Gain:                          | 1.00            |      |         |      |  |
| Offset:                        | 0.00            |      |         |      |  |
| Delta Spacing                  | 1               |      |         |      |  |

| Inclinometer Calibration Report |                          |            |          |           |     |
|---------------------------------|--------------------------|------------|----------|-----------|-----|
| Performed:                      | Mon Aug 07 09:05:18 2017 |            |          |           |     |
|                                 | Low Read.                | High Read. | Low Ref. | High Ref. |     |
| X Accelerometer                 | 205.00                   | 1843.00    | -1.00    | 1.00      | gee |
| Y Accelerometer                 |                          |            |          |           |     |

|                 |        |         |       |      |     |
|-----------------|--------|---------|-------|------|-----|
| Y Accelerometer | 205.00 | 1843.00 | -1.00 | 1.00 | gee |
| Z Accelerometer |        |         |       |      | gee |

| Gamma Ray Calibration Report |                 |          |  |  |  |
|------------------------------|-----------------|----------|--|--|--|
| Serial Number:               | WithMC          |          |  |  |  |
| Tool Model:                  | WMC             |          |  |  |  |
| Performed:                   | (Not Performed) |          |  |  |  |
| Calibrator Value:            | 1.0             | GAPI     |  |  |  |
| Background Reading:          | 0.0             | cps      |  |  |  |
| Calibrator Reading:          | 1.0             | cps      |  |  |  |
| Sensitivity:                 | 1.0000          | GAPI/cps |  |  |  |

| Sensor | Offset (ft) | Schematic                                                                          | Description                  | Length (ft) | O.D. (in) | Weight (lb) |
|--------|-------------|------------------------------------------------------------------------------------|------------------------------|-------------|-----------|-------------|
|        |             |  | CHD-STD                      | 0.50        | 1.69      | 1.00        |
| GR     | 40.07       |                                                                                    |                              |             |           |             |
| ACCY   | 38.91       |                                                                                    | ADT-WMC (WithMC)             | 4.58        | 3.50      | 120.00      |
| ACCX   | 38.91       |                                                                                    | Admyr Telemetry With Mudcell |             |           |             |
| SSTAT  | 38.49       |                                                                                    |                              |             |           |             |
| PSTAT  | 37.66       |                                                                                    |                              |             |           |             |
| ASTAT  | 37.66       |                                                                                    |                              |             |           |             |
| GRD    | 36.82       |                                                                                    | NEU-lithgearhart (2017)      | 5.65        | 3.50      | 85.00       |
| TEMP   | 36.82       |                                                                                    | gearhart for litho           |             |           |             |
| NEU    | 32.66       |                                                                                    |                              |             |           |             |
| LStat  | 24.30       |                                                                                    | ADT1LITH-A (1)               | 9.29        | 3.50      | 240.00      |
| LS8    | 23.64       |                                                                                    | Admyr Litho Density Tool     |             |           |             |
| LS7    | 23.64       |                                                                                    |                              |             |           |             |
| LS6    | 23.64       |                                                                                    |                              |             |           |             |
| LS5    | 23.64       |                                                                                    |                              |             |           |             |
| LS4    | 23.64       |                                                                                    |                              |             |           |             |
| LS3    | 23.64       |                                                                                    |                              |             |           |             |
| LS2    | 23.64       |                                                                                    |                              |             |           |             |
| LS1    | 23.64       |                                                                                    |                              |             |           |             |
| LSV    | 23.64       |                                                                                    |                              |             |           |             |
| LSD    | 23.62       |                                                                                    |                              |             |           |             |
| SSV    | 23.43       |                                                                                    |                              |             |           |             |
| SS8    | 23.43       |                                                                                    |                              |             |           |             |
| SS7    | 23.43       |                                                                                    |                              |             |           |             |
| SS6    | 23.43       |                                                                                    |                              |             |           |             |
| SS5    | 23.43       |                                                                                    |                              |             |           |             |
| SS4    | 23.43       |                                                                                    | DIL-G (5375)                 | 21.47       | 4.00      | 345.00      |
| SS3    | 23.43       |                                                                                    | Gearhart                     |             |           |             |
| SS2    | 23.43       |                                                                                    |                              |             |           |             |
| SS1    | 23.43       |                                                                                    |                              |             |           |             |
| DCAL   | 23.37       |                                                                                    |                              |             |           |             |
| SSD    | 23.04       |                                                                                    |                              |             |           |             |
| SP     | 10.60       |                                                                                    |                              |             |           |             |
| CILD   | 10.60       |                                                                                    |                              |             |           |             |

