



## DRILL STEM TEST REPORT

Prepared For: **Sam Gary**

1515 Wynkoop St. Ste 700  
Denver, CO  
80202

ATTN: Neal Sharp

**31-15-15/Russell**

**Miller et al 1-31**

Start Date: 2011.03.26 @ 16:51:54

End Date: 2011.03.27 @ 00:50:23

Job Ticket #: 41855                      DST #: 2

Trilobite Testing, Inc  
PO Box 362 Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Sam Gary  
1515 Wynkoop St. Ste 700  
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80202  
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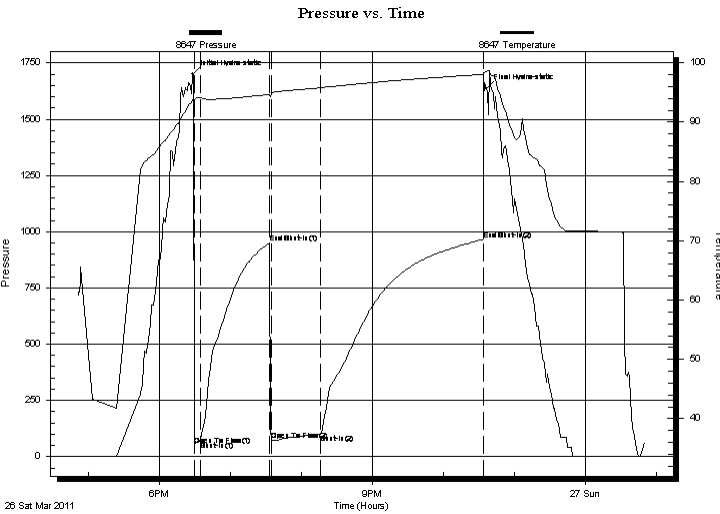
**Miller et al 1-31**  
**31-15-15/Russell**  
Job Ticket: 41855      **DST#: 2**  
Test Start: 2011.03.26 @ 16:51:54

## GENERAL INFORMATION:

Formation: **LKC "H-J"**  
Deviated: No Whipstock:      ft (KB)  
Time Tool Opened: 18:29:23  
Time Test Ended: 00:50:23  
Interval: **3336.00 ft (KB) To 3385.00 ft (KB) (TVD)**  
Total Depth: 3385.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition:  
Test Type: Conventional Bottom Hole  
Tester: Brian Fairbank  
Unit No: 41  
Reference Elevations: 1914.00 ft (KB)  
1904.00 ft (CF)  
KB to GR/CF: 10.00 ft

**Serial #: 8647      Fluid**  
Press @ Run Depth: 100.64 psig @ 3302.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2011.03.26      End Date: 2011.03.27      Last Calib.: 2011.03.27  
Start Time: 16:51:54      End Time: 00:50:23      Time On Btm: 2011.03.26 @ 18:28:23  
Time Off Btm: 2011.03.26 @ 22:35:53

**TEST COMMENT:** IFP - 5 - weak to good blow 1/2" - 9"  
ISI - 60 - no blow back  
FFP - 45 - BOB 45 sec  
FSI - 135 - 1" blow back - died 4 min



## PRESSURE SUMMARY

| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation           |
|-------------|-----------------|--------------|----------------------|
| 0           | 1699.21         | 93.81        | Initial Hydro-static |
| 1           | 51.19           | 92.95        | Open To Flow (1)     |
| 6           | 66.08           | 94.15        | Shut-In(1)           |
| 65          | 950.26          | 94.69        | End Shut-In(1)       |
| 66          | 72.58           | 94.64        | Open To Flow (2)     |
| 108         | 100.64          | 95.81        | Shut-In(2)           |
| 245         | 965.74          | 98.05        | End Shut-In(2)       |
| 248         | 1636.49         | 98.57        | Final Hydro-static   |

## Recovery

| Length (ft) | Description                     | Volume (bbl) |
|-------------|---------------------------------|--------------|
| 50.00       | GM & WCO 10%G, 65%O, 15%W, 10%M | 0.70         |
| 60.00       | GW & MCO 30%G, 40%O, 10%W, 20%M | 0.84         |
| 50.00       | GOCM 10%G, 10%O, 80%M           | 0.70         |
| 0.00        | 710' GIP                        | 0.00         |
|             |                                 |              |
|             |                                 |              |

## Gas Rates

| Choke (inches) | Pressure (psig) | Gas Rate (Mcf/d) |
|----------------|-----------------|------------------|
|                |                 |                  |







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**TOOL DIAGRAM**

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**Miller et al 1-31**  
**31-15-15/Russell**  
Job Ticket: 41855      **DST#: 2**  
Test Start: 2011.03.26 @ 16:51:54

**Tool Information**

|                           |                    |                       |                                |                                    |
|---------------------------|--------------------|-----------------------|--------------------------------|------------------------------------|
| Drill Pipe:               | Length: 3315.00 ft | Diameter: 3.80 inches | Volume: 46.50 bbl              | Tool Weight: 2500.00 lb            |
| Heavy Wt. Pipe:           | Length: 0.00 ft    | Diameter: 0.00 inches | Volume: 0.00 bbl               | Weight set on Packer: 25000.00 lb  |
| Drill Collar:             | Length: 0.00 ft    | Diameter: 0.00 inches | Volume: 0.00 bbl               | Weight to Pull Loose: 48000.00 lb  |
|                           |                    |                       | <u>Total Volume: 46.50 bbl</u> | Tool Chased 0.00 ft                |
| Drill Pipe Above KB:      | 13.00 ft           |                       |                                | String Weight: Initial 45000.00 lb |
| Depth to Top Packer:      | 3336.00 ft         |                       |                                | Final 46000.00 lb                  |
| Depth to Bottom Packer:   | ft                 |                       |                                |                                    |
| Interval between Packers: | 49.00 ft           |                       |                                |                                    |
| Tool Length:              | 83.00 ft           |                       |                                |                                    |
| Number of Packers:        | 2                  | Diameter: 6.75 inches |                                |                                    |

Tool Comments:

| <b>Tool Description</b> | <b>Length (ft)</b> | <b>Serial No.</b> | <b>Position</b> | <b>Depth (ft)</b> | <b>Accum. Lengths</b> |
|-------------------------|--------------------|-------------------|-----------------|-------------------|-----------------------|
|-------------------------|--------------------|-------------------|-----------------|-------------------|-----------------------|

|                 |       |      |         |         |                               |
|-----------------|-------|------|---------|---------|-------------------------------|
| Recorder        | 0.00  | 8647 | Fluid   | 3302.00 |                               |
| pup joint       | 5.00  |      |         | 3307.00 |                               |
| Shut In Tool    | 5.00  |      |         | 3312.00 |                               |
| Sampler         | 2.00  |      |         | 3314.00 |                               |
| Hydraulic tool  | 5.00  |      |         | 3319.00 |                               |
| Jars            | 5.00  |      |         | 3324.00 |                               |
| Safety Joint    | 2.00  |      |         | 3326.00 |                               |
| Packer          | 5.00  |      |         | 3331.00 | 34.00 Bottom Of Top Packer    |
| Packer          | 5.00  |      |         | 3336.00 |                               |
| Stubb           | 1.00  |      |         | 3337.00 |                               |
| Perforations    | 2.00  |      |         | 3339.00 |                               |
| Change Over Sub | 1.00  |      |         | 3340.00 |                               |
| Blank Spacing   | 31.00 |      |         | 3371.00 |                               |
| Change Over Sub | 1.00  |      |         | 3372.00 |                               |
| Recorder        | 0.00  | 8372 | Inside  | 3372.00 |                               |
| Recorder        | 0.00  | 8365 | Outside | 3372.00 |                               |
| Perforations    | 10.00 |      |         | 3382.00 |                               |
| Bullnose        | 3.00  |      |         | 3385.00 | 49.00 Bottom Packers & Anchor |

**Total Tool Length: 83.00**



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**FLUID SUMMARY**

Sam Gary  
1515 Wynkoop St. Ste 700  
Denver, CO  
80202  
ATTN: Neal Sharp

**Miller et al 1-31**  
**31-15-15/Russell**  
Job Ticket: 41855      **DST#: 2**  
Test Start: 2011.03.26 @ 16:51:54

## Mud and Cushion Information

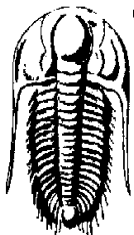
|                                  |                            |                           |         |
|----------------------------------|----------------------------|---------------------------|---------|
| Mud Type: Gel Chem               | Cushion Type:              | Oil API:                  | deg API |
| Mud Weight: 9.00 lb/gal          | Cushion Length: ft         | Water Salinity: 28000 ppm |         |
| Viscosity: 62.00 sec/qt          | Cushion Volume: bbl        |                           |         |
| Water Loss: 8.37 in <sup>3</sup> | Gas Cushion Type:          |                           |         |
| Resistivity: ohm.m               | Gas Cushion Pressure: psig |                           |         |
| Salinity: 2000.00 ppm            |                            |                           |         |
| Filter Cake: inches              |                            |                           |         |

## Recovery Information

Recovery Table

| Length<br>ft | Description                     | Volume<br>bbl |
|--------------|---------------------------------|---------------|
| 50.00        | GM & WCO 10%G, 65%O, 15%W, 10%M | 0.701         |
| 60.00        | GW & MCO 30%G, 40%O, 10%W, 20%M | 0.842         |
| 50.00        | GOCM 10%G, 10%O, 80%M           | 0.701         |
| 0.00         | 710' GIP                        | 0.000         |

Total Length: 160.00 ft      Total Volume: 2.244 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments:



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# DRILL STEM TEST REPORT

**GAS RATES**

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**Miller et al 1-31**  
**31-15-15/Russell**  
Job Ticket: 41855      **DST#: 2**  
Test Start: 2011.03.26 @ 16:51:54

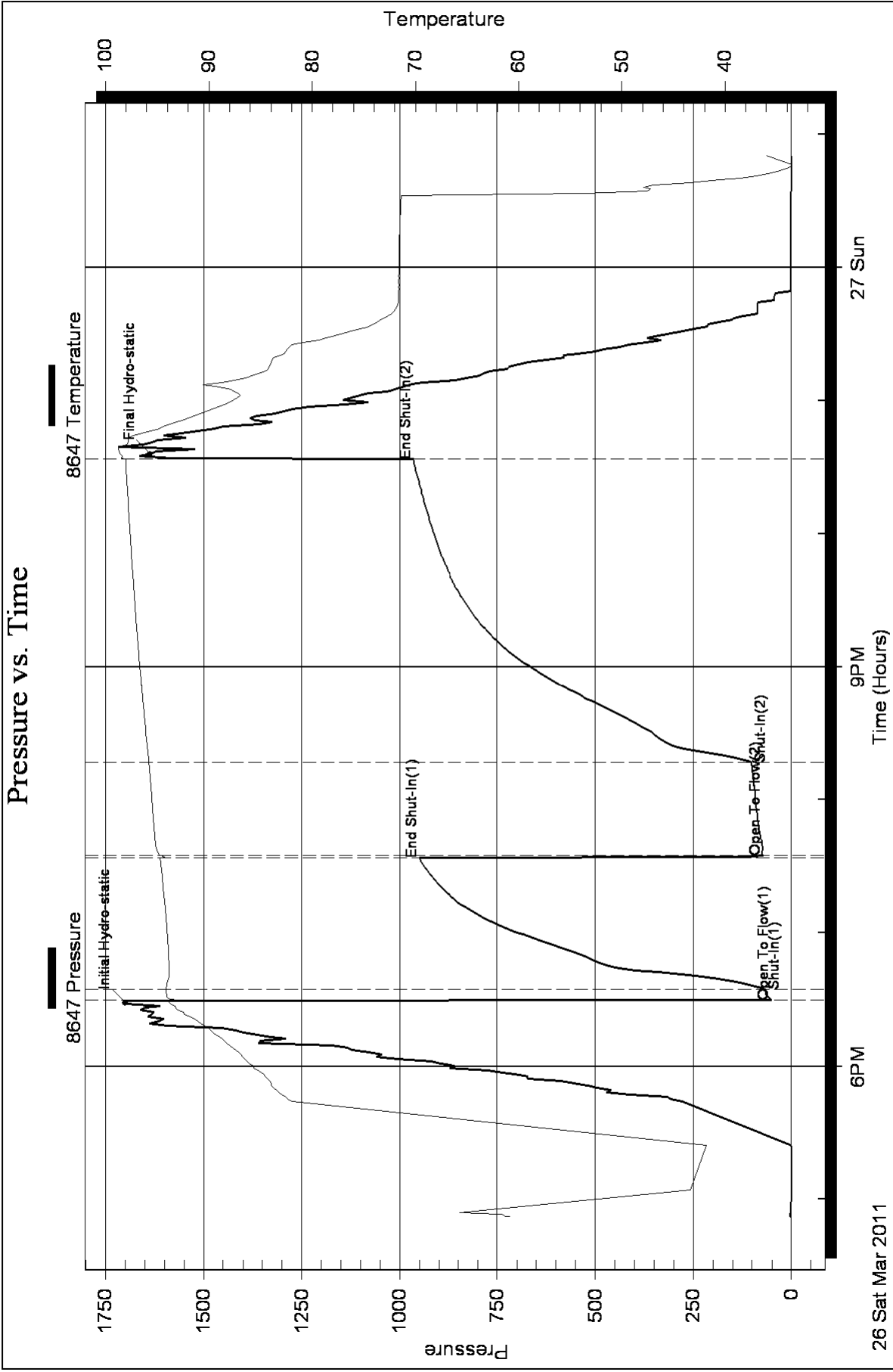
## Gas Rates Information

Temperature: 59 deg C  
Relative Density: 0.65  
Z Factor: 0.8

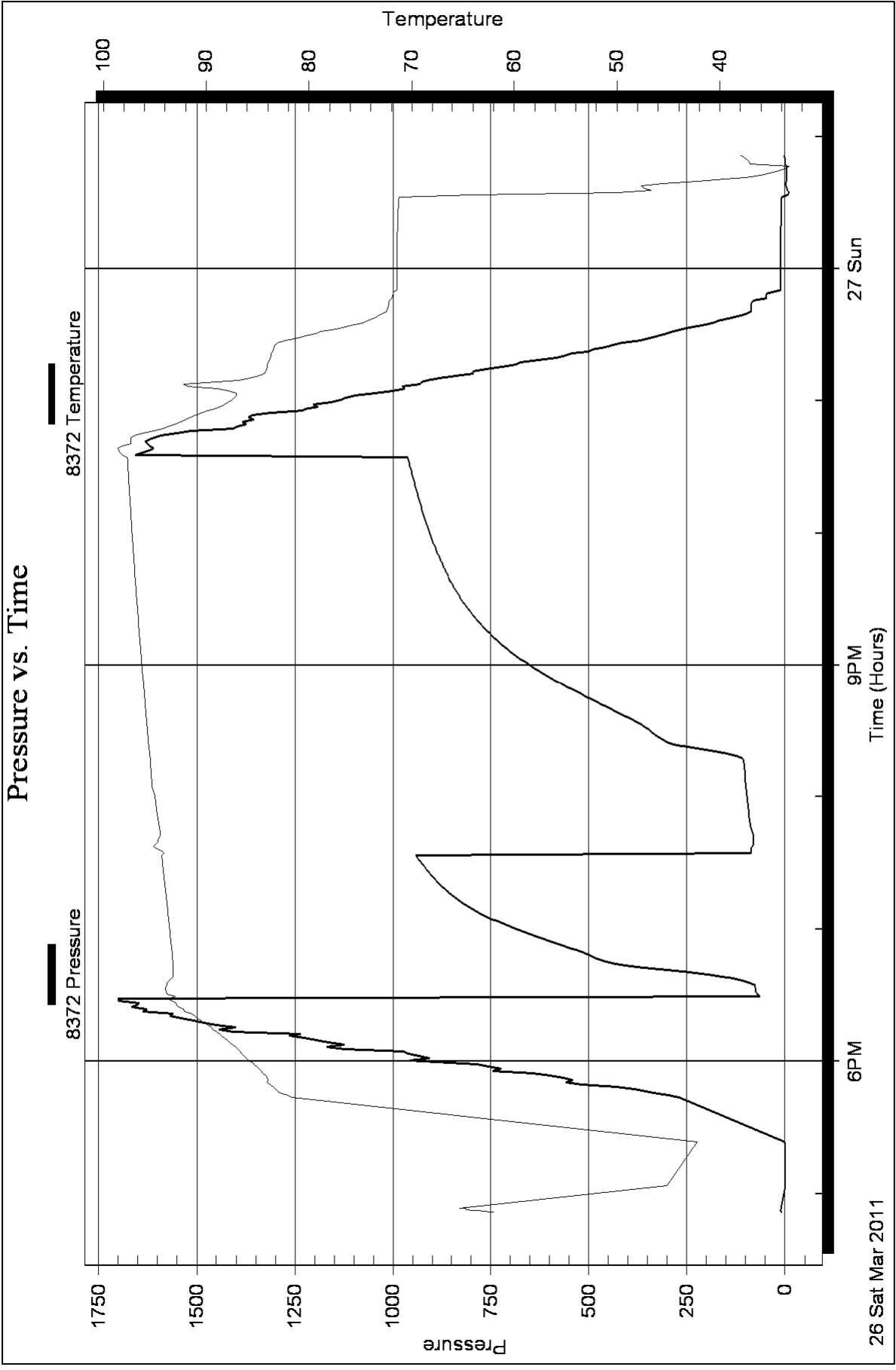
Gas Rates Table

| Flow Period | Elapsed Time | Choke (mm) | Pressure (kPaa) | Gas Rate (m <sup>3</sup> /d) |
|-------------|--------------|------------|-----------------|------------------------------|
|             |              | 0.00       | 0.00            | 0.00                         |

# Pressure vs. Time





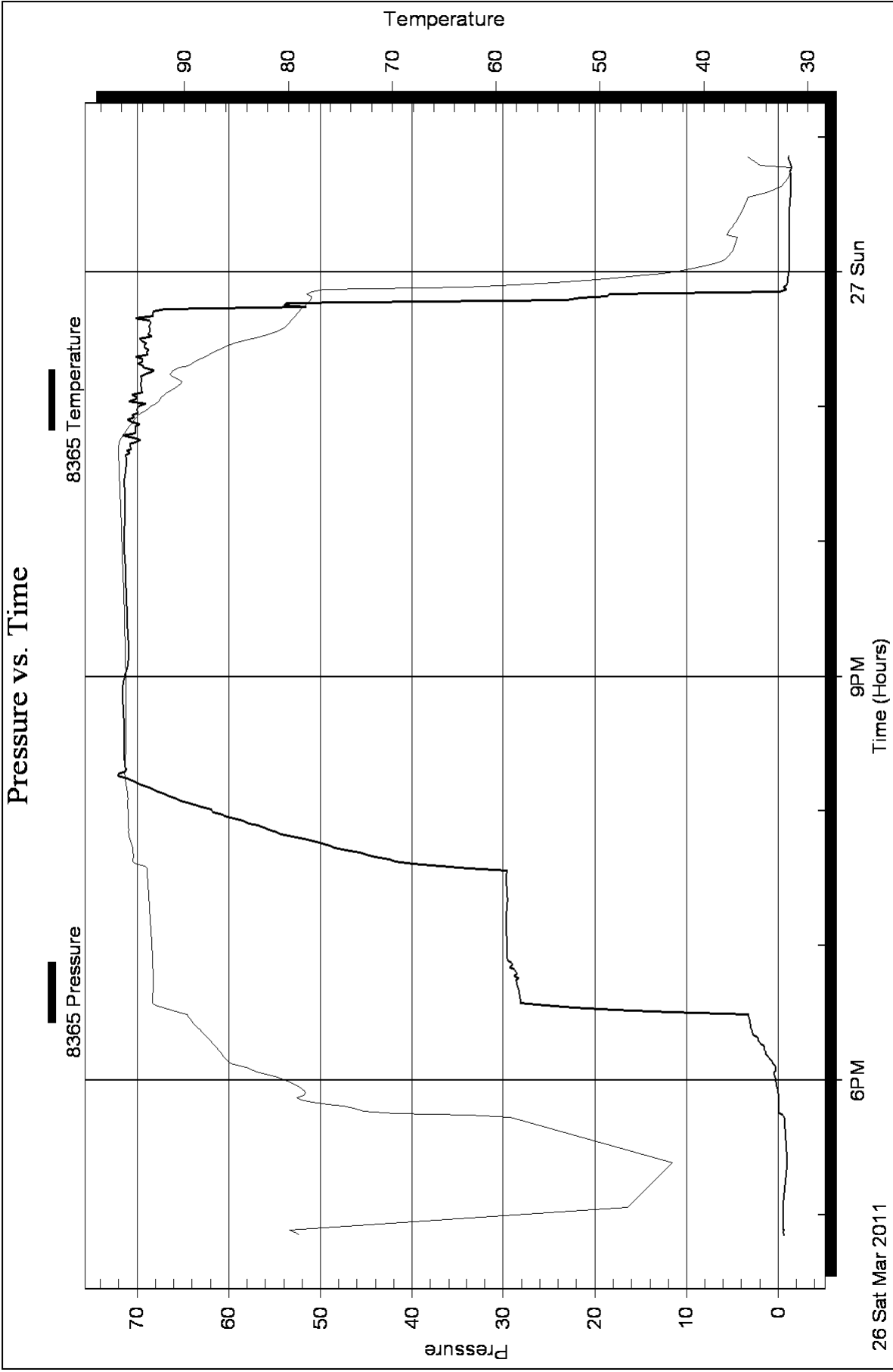


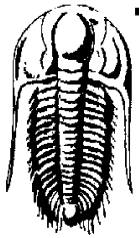
Serial #: 8365

Outside Sam Gary

31-15-15/Russell

DST Test Number: 2





**TRILOBITE  
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## DRILL STEM TESTING - DATA LISTING

Sam Gary  
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**Miller et al 1-31**  
**31-15-15/Russell**  
Job Ticket: 41855      **DST#: 2**  
Test Start: 2011.03.26 @ 16:51:54

| Serial # 8647 Fluid |             |                 |               | Serial # 8647 Fluid |             |                 |               |
|---------------------|-------------|-----------------|---------------|---------------------|-------------|-----------------|---------------|
| Comments            | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments            | Time (Min.) | Pressure (psig) | Temp. (deg F) |
|                     | 0.0         | 2.13            | 60.9          |                     | 1.6         | 2.49            | 64.7          |
|                     | 0.1         | 2.19            | 61.0          |                     | 1.7         | 2.48            | 65.0          |
|                     | 0.1         | 2.17            | 61.1          |                     | 1.8         | 2.48            | 65.2          |
|                     | 0.2         | 2.17            | 61.2          |                     | 1.8         | 2.49            | 65.4          |
|                     | 0.2         | 2.16            | 61.2          |                     | 1.9         | 2.49            | 65.5          |
|                     | 0.3         | 2.19            | 61.3          |                     | 1.9         | 2.50            | 65.6          |
|                     | 0.3         | 2.20            | 61.3          |                     | 2.0         | 2.53            | 65.7          |
|                     | 0.3         | 2.21            | 61.4          |                     | 12.0        | -0.29           | 43.3          |
|                     | 0.4         | 2.23            | 61.4          |                     | 42.0        | 0.25            | 43.7          |
|                     | 0.4         | 2.25            | 61.4          |                     | 53.0        | 307.98          | 82.3          |
|                     | 0.5         | 2.24            | 61.4          |                     | 54.5        | 367.05          | 82.8          |
|                     | 0.6         | 2.25            | 61.4          |                     | 56.0        | 470.64          | 83.2          |
|                     | 0.6         | 2.24            | 61.4          |                     | 57.5        | 449.93          | 83.6          |
|                     | 0.6         | 2.25            | 61.4          |                     | 59.0        | 520.12          | 84.0          |
|                     | 0.7         | 2.27            | 61.4          |                     | 60.5        | 579.55          | 84.0          |
|                     | 0.8         | 2.29            | 61.4          |                     | 62.0        | 673.10          | 84.3          |
|                     | 0.8         | 2.31            | 61.4          |                     | 63.5        | 677.55          | 84.6          |
|                     | 0.9         | 2.33            | 61.5          |                     | 65.0        | 735.14          | 84.9          |
|                     | 0.9         | 2.34            | 61.5          |                     | 66.5        | 798.53          | 85.5          |
|                     | 0.9         | 2.35            | 61.7          |                     | 68.0        | 858.59          | 85.8          |
|                     | 1.0         | 2.37            | 61.8          |                     | 69.5        | 953.19          | 86.2          |
|                     | 1.0         | 2.40            | 62.0          |                     | 71.0        | 1005.96         | 86.5          |
|                     | 1.1         | 2.44            | 62.2          |                     | 72.5        | 1015.50         | 86.8          |
|                     | 1.1         | 2.48            | 62.4          |                     | 74.0        | 1078.14         | 87.1          |
|                     | 1.2         | 2.52            | 62.6          |                     | 75.5        | 1215.90         | 87.5          |
|                     | 1.3         | 2.52            | 62.8          |                     | 77.0        | 1174.34         | 88.0          |
|                     | 1.3         | 2.55            | 63.1          |                     | 78.5        | 1238.80         | 88.4          |
|                     | 1.4         | 2.54            | 63.3          |                     | 80.0        | 1291.14         | 88.7          |
|                     | 1.4         | 2.55            | 63.6          |                     | 81.5        | 1352.96         | 89.1          |
|                     | 1.5         | 2.55            | 63.8          |                     | 83.0        | 1398.76         | 89.6          |
|                     | 1.5         | 2.54            | 64.1          |                     | 84.5        | 1454.81         | 89.9          |
|                     | 1.5         | 2.52            | 64.3          |                     | 86.0        | 1594.52         | 90.4          |
|                     | 1.6         | 2.51            | 64.5          |                     | 87.5        | 1540.61         | 91.0          |

Printing every 3 samples

| Serial # 8647 Fluid  |             |                 |               | Serial # 8647 Fluid |             |                 |               |
|----------------------|-------------|-----------------|---------------|---------------------|-------------|-----------------|---------------|
| Comments             | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments            | Time (Min.) | Pressure (psig) | Temp. (deg F) |
|                      | 89.0        | 1601.99         | 91.4          |                     | 138.5       | 823.97          | 94.2          |
|                      | 90.5        | 1638.16         | 92.2          |                     | 140.0       | 836.95          | 94.2          |
|                      | 92.0        | 1625.98         | 92.4          |                     | 141.5       | 848.83          | 94.3          |
|                      | 93.5        | 1654.89         | 93.1          |                     | 143.0       | 859.96          | 94.3          |
| Initial Hydro-static | 95.0        | 1611.81         | 93.2          |                     | 144.5       | 870.02          | 94.3          |
|                      | 95.5        | 1698.61         | 93.4          |                     | 146.0       | 879.63          | 94.4          |
|                      | 96.0        | 1698.45         | 93.7          |                     | 147.5       | 888.54          | 94.4          |
|                      | 96.5        | 1699.21         | 93.8          |                     | 149.0       | 896.99          | 94.4          |
|                      | 97.0        | 1699.35         | 93.9          |                     | 150.5       | 905.13          | 94.5          |
| Open To Flow (1)     | 97.5        | 51.19           | 92.9          |                     | 152.0       | 912.51          | 94.5          |
|                      | 98.0        | 53.61           | 93.8          |                     | 153.5       | 919.36          | 94.5          |
|                      | 99.5        | 62.74           | 94.0          |                     | 155.0       | 925.90          | 94.6          |
|                      | 101.0       | 63.87           | 94.2          |                     | 156.5       | 931.96          | 94.6          |
|                      | 101.5       | 64.76           | 94.2          |                     | 158.0       | 937.72          | 94.6          |
| Shut-In(1)           | 102.0       | 67.73           | 94.2          |                     | 159.5       | 943.35          | 94.6          |
|                      | 102.5       | 66.08           | 94.1          |                     | 160.5       | 946.86          | 94.7          |
|                      | 103.0       | 76.87           | 94.1          |                     | 161.0       | 948.51          | 94.7          |
|                      | 103.5       | 87.48           | 94.1          | End Shut-In(1)      | 161.5       | 950.26          | 94.7          |
|                      | 104.0       | 98.67           | 94.1          |                     | 162.0       | 120.74          | 94.3          |
|                      | 105.5       | 136.37          | 94.0          | Open To Flow (2)    | 162.5       | 72.58           | 94.6          |
|                      | 107.0       | 185.66          | 93.9          |                     | 163.0       | 73.88           | 94.8          |
|                      | 108.5       | 252.94          | 93.9          |                     | 164.5       | 74.47           | 95.0          |
|                      | 110.0       | 340.91          | 93.9          |                     | 166.0       | 72.48           | 95.1          |
|                      | 111.5       | 420.81          | 93.9          |                     | 167.5       | 74.42           | 95.2          |
|                      | 113.0       | 465.02          | 93.9          | 169.0               | 74.88       | 95.2            |               |
|                      | 114.5       | 490.91          | 93.9          | 170.5               | 77.45       | 95.2            |               |
|                      | 116.0       | 509.83          | 93.9          | 172.0               | 79.70       | 95.2            |               |
|                      | 117.5       | 529.38          | 93.9          | 173.5               | 80.75       | 95.3            |               |
|                      | 119.0       | 553.25          | 93.9          | 175.0               | 82.40       | 95.3            |               |
|                      | 120.5       | 577.61          | 93.9          | 176.5               | 83.82       | 95.3            |               |
|                      | 122.0       | 603.23          | 93.9          | 178.0               | 84.88       | 95.3            |               |
|                      | 123.5       | 628.40          | 94.0          | 179.5               | 85.83       | 95.4            |               |
|                      | 125.0       | 653.05          | 94.0          | 181.0               | 86.59       | 95.4            |               |
|                      | 126.5       | 676.47          | 94.0          | 182.5               | 87.51       | 95.4            |               |
|                      | 128.0       | 698.98          | 94.0          | 184.0               | 88.59       | 95.4            |               |
|                      | 129.5       | 720.62          | 94.1          | 185.5               | 89.44       | 95.5            |               |
|                      | 131.0       | 741.16          | 94.1          | 187.0               | 90.51       | 95.5            |               |
|                      | 132.5       | 760.42          | 94.1          | 188.5               | 91.12       | 95.5            |               |
|                      | 134.0       | 778.17          | 94.1          | 190.0               | 92.26       | 95.5            |               |
|                      | 135.5       | 794.65          | 94.2          | 191.5               | 93.15       | 95.6            |               |
|                      | 137.0       | 809.88          | 94.2          | 193.0               | 93.97       | 95.6            |               |

Printing every 3 samples

| Serial # 8647 | Fluid       |                 |               | Serial # 8647 | Fluid       |                 |               |
|---------------|-------------|-----------------|---------------|---------------|-------------|-----------------|---------------|
| Comments      | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments      | Time (Min.) | Pressure (psig) | Temp. (deg F) |
|               | 194.5       | 94.82           | 95.6          |               | 251.0       | 691.42          | 96.7          |
|               | 196.0       | 95.85           | 95.6          |               | 252.5       | 703.33          | 96.8          |
|               | 197.5       | 96.67           | 95.7          |               | 254.0       | 714.40          | 96.8          |
|               | 199.0       | 97.83           | 95.7          |               | 255.5       | 725.02          | 96.8          |
|               | 200.5       | 98.69           | 95.7          |               | 257.0       | 735.14          | 96.8          |
|               | 202.0       | 99.66           | 95.8          |               | 258.5       | 744.78          | 96.9          |
|               | 203.5       | 100.70          | 95.8          |               | 260.0       | 753.85          | 96.9          |
|               | 204.0       | 100.71          | 95.8          |               | 261.5       | 762.26          | 96.9          |
| Shut-In(2)    | 204.5       | 100.64          | 95.8          |               | 263.0       | 770.40          | 96.9          |
|               | 205.0       | 104.75          | 95.8          |               | 264.5       | 778.37          | 97.0          |
|               | 205.5       | 115.70          | 95.8          |               | 266.0       | 785.90          | 97.0          |
|               | 206.0       | 126.72          | 95.8          |               | 267.5       | 793.25          | 97.0          |
|               | 207.5       | 164.92          | 95.9          |               | 269.0       | 800.26          | 97.0          |
|               | 209.0       | 214.91          | 95.9          |               | 270.5       | 806.88          | 97.1          |
|               | 210.5       | 267.91          | 95.9          |               | 272.0       | 813.35          | 97.1          |
|               | 212.0       | 302.20          | 96.0          |               | 273.5       | 819.28          | 97.1          |
|               | 213.5       | 320.55          | 96.0          |               | 275.0       | 825.20          | 97.1          |
|               | 215.0       | 334.30          | 96.0          |               | 276.5       | 830.85          | 97.2          |
|               | 216.5       | 345.82          | 96.1          |               | 278.0       | 836.30          | 97.2          |
|               | 218.0       | 356.27          | 96.1          |               | 279.5       | 841.54          | 97.2          |
|               | 219.5       | 369.32          | 96.1          |               | 281.0       | 846.45          | 97.2          |
|               | 221.0       | 383.59          | 96.1          |               | 282.5       | 851.28          | 97.2          |
|               | 222.5       | 398.99          | 96.2          |               | 284.0       | 856.12          | 97.3          |
|               | 224.0       | 414.83          | 96.2          |               | 285.5       | 860.62          | 97.3          |
|               | 225.5       | 431.45          | 96.2          |               | 287.0       | 864.98          | 97.3          |
|               | 227.0       | 448.66          | 96.3          |               | 288.5       | 869.31          | 97.3          |
|               | 228.5       | 465.88          | 96.3          |               | 290.0       | 873.31          | 97.4          |
|               | 230.0       | 483.46          | 96.3          |               | 291.5       | 877.30          | 97.4          |
|               | 231.5       | 500.88          | 96.4          |               | 293.0       | 881.06          | 97.4          |
|               | 233.0       | 517.58          | 96.4          |               | 294.5       | 884.86          | 97.4          |
|               | 234.5       | 533.78          | 96.4          |               | 296.0       | 888.42          | 97.5          |
|               | 236.0       | 549.85          | 96.5          |               | 297.5       | 892.06          | 97.5          |
|               | 237.5       | 566.10          | 96.5          |               | 299.0       | 895.35          | 97.5          |
|               | 239.0       | 581.59          | 96.5          |               | 300.5       | 898.45          | 97.5          |
|               | 240.5       | 597.09          | 96.5          |               | 302.0       | 901.49          | 97.5          |
|               | 242.0       | 612.17          | 96.6          |               | 303.5       | 904.66          | 97.6          |
|               | 243.5       | 626.71          | 96.6          |               | 305.0       | 907.69          | 97.6          |
|               | 245.0       | 640.76          | 96.6          |               | 306.5       | 910.51          | 97.6          |
|               | 246.5       | 654.13          | 96.7          |               | 308.0       | 913.24          | 97.6          |
|               | 248.0       | 667.11          | 96.7          |               | 309.5       | 916.00          | 97.6          |
|               | 249.5       | 679.63          | 96.7          |               | 311.0       | 918.71          | 97.7          |

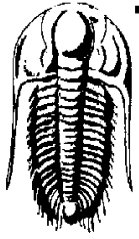
Printing every 3 samples

| Serial # 8647      |             |                 |               | Serial # 8647 |             |                 |               |
|--------------------|-------------|-----------------|---------------|---------------|-------------|-----------------|---------------|
| Comments           | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments      | Time (Min.) | Pressure (psig) | Temp. (deg F) |
|                    | 312.5       | 921.28          | 97.7          |               | 363.5       | 1239.56         | 89.9          |
|                    | 314.0       | 924.04          | 97.7          |               | 365.0       | 1232.02         | 89.1          |
|                    | 315.5       | 926.60          | 97.7          |               | 366.5       | 1172.71         | 88.3          |
|                    | 317.0       | 929.18          | 97.7          |               | 368.0       | 1144.80         | 87.6          |
|                    | 318.5       | 931.71          | 97.8          |               | 369.5       | 1064.14         | 87.0          |
|                    | 320.0       | 934.12          | 97.8          |               | 371.0       | 1080.73         | 87.2          |
|                    | 321.5       | 936.45          | 97.8          |               | 372.5       | 973.47          | 87.1          |
|                    | 323.0       | 938.81          | 97.8          |               | 374.0       | 989.15          | 89.4          |
|                    | 324.5       | 941.01          | 97.8          |               | 375.5       | 958.08          | 89.5          |
|                    | 326.0       | 943.26          | 97.9          |               | 377.0       | 857.91          | 87.5          |
|                    | 327.5       | 945.34          | 97.9          |               | 378.5       | 851.62          | 86.2          |
|                    | 329.0       | 947.48          | 97.9          |               | 380.0       | 785.00          | 85.2          |
|                    | 330.5       | 949.72          | 97.9          |               | 381.5       | 767.74          | 84.5          |
|                    | 332.0       | 952.23          | 97.9          |               | 383.0       | 720.91          | 84.1          |
|                    | 333.5       | 954.59          | 98.0          |               | 384.5       | 685.79          | 84.0          |
|                    | 335.0       | 956.85          | 98.0          |               | 386.0       | 624.66          | 83.9          |
|                    | 336.5       | 958.94          | 98.0          |               | 387.5       | 554.88          | 83.6          |
|                    | 338.0       | 961.15          | 98.0          |               | 389.0       | 545.50          | 82.7          |
|                    | 339.5       | 963.10          | 98.0          |               | 390.5       | 484.53          | 82.4          |
|                    | 340.5       | 964.42          | 98.0          |               | 392.0       | 436.32          | 82.2          |
|                    | 341.0       | 965.19          | 98.0          |               | 393.5       | 413.61          | 81.3          |
| End Shut-In(2)     | 341.5       | 965.74          | 98.1          |               | 395.0       | 331.96          | 79.4          |
|                    | 342.0       | 1582.59         | 98.4          |               | 396.5       | 330.55          | 78.4          |
|                    | 342.5       | 1576.95         | 98.2          |               | 398.0       | 307.60          | 77.0          |
|                    | 343.0       | 1662.19         | 98.4          |               | 399.5       | 274.88          | 75.7          |
|                    | 343.5       | 1647.60         | 98.5          |               | 401.0       | 215.01          | 74.6          |
| Final Hydro-static | 344.0       | 1636.49         | 98.6          |               | 402.5       | 184.99          | 74.0          |
|                    | 344.5       | 1627.90         | 98.6          |               | 404.0       | 151.43          | 73.4          |
|                    | 345.0       | 1620.78         | 98.7          |               | 405.5       | 124.31          | 72.9          |
|                    | 345.5       | 1595.02         | 98.7          |               | 407.0       | 87.46           | 72.3          |
|                    | 347.0       | 1716.72         | 98.6          |               | 408.5       | 86.30           | 72.0          |
|                    | 348.5       | 1641.24         | 97.8          |               | 410.0       | 86.29           | 71.8          |
|                    | 350.0       | 1617.68         | 97.8          |               | 411.5       | 85.46           | 71.7          |
|                    | 351.5       | 1609.45         | 97.7          |               | 413.0       | 42.69           | 71.7          |
|                    | 353.0       | 1557.29         | 96.5          |               | 414.5       | 42.43           | 71.7          |
|                    | 354.5       | 1451.05         | 95.3          |               | 416.0       | 41.82           | 71.6          |
|                    | 356.0       | 1450.62         | 94.4          |               | 417.5       | 0.61            | 71.6          |
|                    | 357.5       | 1400.22         | 93.4          |               | 419.0       | 0.62            | 71.6          |
|                    | 359.0       | 1367.68         | 92.6          |               | 420.5       | 0.64            | 71.6          |
|                    | 360.5       | 1319.60         | 91.8          |               | 422.0       | 0.63            | 71.6          |
|                    | 362.0       | 1317.72         | 90.8          |               | 423.5       | 0.62            | 71.6          |

Printing every 3 samples

| <b>Serial # 8647 Fluid</b> |             |                 |               | <b>Serial # 8372 Inside</b> |             |                 |               |
|----------------------------|-------------|-----------------|---------------|-----------------------------|-------------|-----------------|---------------|
| Comments                   | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments                    | Time (Min.) | Pressure (psig) | Temp. (deg F) |
|                            | 425.0       | 0.62            | 71.6          |                             |             |                 |               |
|                            | 426.5       | 0.64            | 71.6          |                             |             |                 |               |
|                            | 428.0       | 0.65            | 71.6          |                             |             |                 |               |
|                            | 429.5       | 0.64            | 71.6          |                             |             |                 |               |
|                            | 431.0       | 0.66            | 71.6          |                             |             |                 |               |
|                            | 432.5       | 0.67            | 71.6          |                             |             |                 |               |
|                            | 434.0       | 0.66            | 71.6          |                             |             |                 |               |
|                            | 435.5       | 0.68            | 71.6          |                             |             |                 |               |
|                            | 437.0       | 0.66            | 71.6          |                             |             |                 |               |
|                            | 438.5       | 0.66            | 71.6          |                             |             |                 |               |
|                            | 440.0       | 0.66            | 71.6          |                             |             |                 |               |
|                            | 441.5       | 0.67            | 71.6          |                             |             |                 |               |
|                            | 443.0       | 0.68            | 71.6          |                             |             |                 |               |
|                            | 444.5       | 0.68            | 71.6          |                             |             |                 |               |
|                            | 446.0       | 0.66            | 71.5          |                             |             |                 |               |
|                            | 447.5       | 0.65            | 71.5          |                             |             |                 |               |
|                            | 449.0       | 0.64            | 71.5          |                             |             |                 |               |
|                            | 450.5       | 0.62            | 71.5          |                             |             |                 |               |
|                            | 452.0       | 0.63            | 71.5          |                             |             |                 |               |
|                            | 453.5       | 0.63            | 71.5          |                             |             |                 |               |
|                            | 455.0       | 0.63            | 71.5          |                             |             |                 |               |
|                            | 456.5       | 0.63            | 71.5          |                             |             |                 |               |
|                            | 458.0       | 0.64            | 71.4          |                             |             |                 |               |
|                            | 459.5       | 0.70            | 71.4          |                             |             |                 |               |
|                            | 461.0       | 0.91            | 53.6          |                             |             |                 |               |
|                            | 462.5       | -0.24           | 47.0          |                             |             |                 |               |
|                            | 464.0       | -0.50           | 47.9          |                             |             |                 |               |
|                            | 465.5       | -0.46           | 45.1          |                             |             |                 |               |
|                            | 467.0       | -0.83           | 40.5          |                             |             |                 |               |
|                            | 468.5       | -0.77           | 37.7          |                             |             |                 |               |
|                            | 470.0       | -0.67           | 35.9          |                             |             |                 |               |
|                            | 471.5       | -0.54           | 34.6          |                             |             |                 |               |
|                            | 473.0       | -0.75           | 33.7          |                             |             |                 |               |
|                            | 474.5       | -0.58           | 33.8          |                             |             |                 |               |
|                            | 476.0       | -0.45           | 34.8          |                             |             |                 |               |
|                            | 477.5       | -0.37           | 35.7          |                             |             |                 |               |
|                            | 478.5       | -0.26           | 36.4          |                             |             |                 |               |

Printing every 3 samples



**TRILOBITE  
TESTING, INC.**

**DRILL STEM TESTING - DATA LISTING**

Sam Gary  
1515 Wynkoop St. Ste 700  
Denver, CO  
80202  
ATTN: Neal Sharp

**Miller et al 1-31**  
**31-15-15/Russell**  
Job Ticket: 41855      **DST#: 2**  
Test Start: 2011.03.26 @ 16:51:54

| <b>Serial # 8372 Inside</b> |             |                 |               | <b>Serial # 8372 Inside</b> |             |                 |               |
|-----------------------------|-------------|-----------------|---------------|-----------------------------|-------------|-----------------|---------------|
| Comments                    | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments                    | Time (Min.) | Pressure (psig) | Temp. (deg F) |
|                             | 0.0         | 8.87            | 62.0          |                             | 1.6         | 10.84           | 64.7          |
|                             | 0.1         | 8.76            | 62.2          |                             | 1.7         | 10.61           | 64.7          |
|                             | 0.1         | 9.18            | 62.3          |                             | 1.8         | 10.50           | 64.7          |
|                             | 0.2         | 9.54            | 62.4          |                             | 1.8         | 11.01           | 64.8          |
|                             | 0.2         | 9.55            | 62.5          |                             | 1.9         | 11.56           | 65.0          |
|                             | 0.3         | 9.51            | 62.6          |                             | 1.9         | 11.61           | 65.1          |
|                             | 0.3         | 9.39            | 62.7          |                             | 2.0         | 11.61           | 65.3          |
|                             | 0.3         | 9.34            | 62.7          |                             | 12.0        | -1.28           | 45.1          |
|                             | 0.4         | 9.31            | 62.7          |                             | 42.0        | 2.20            | 43.3          |
|                             | 0.4         | 9.26            | 62.7          |                             | 53.0        | 296.73          | 82.1          |
|                             | 0.5         | 9.17            | 62.8          |                             | 54.5        | 377.20          | 82.7          |
|                             | 0.6         | 9.30            | 62.8          |                             | 56.0        | 383.68          | 83.2          |
|                             | 0.6         | 10.72           | 62.9          |                             | 57.5        | 444.60          | 83.6          |
|                             | 0.6         | 10.96           | 63.2          |                             | 59.0        | 558.60          | 84.0          |
|                             | 0.7         | 11.74           | 63.5          |                             | 60.5        | 530.48          | 84.0          |
|                             | 0.8         | 11.83           | 63.8          |                             | 62.0        | 597.94          | 84.2          |
|                             | 0.8         | 11.82           | 64.0          |                             | 63.5        | 658.24          | 84.6          |
|                             | 0.9         | 11.74           | 64.2          |                             | 65.0        | 723.27          | 84.9          |
|                             | 0.9         | 11.66           | 64.4          |                             | 66.5        | 828.56          | 85.2          |
|                             | 0.9         | 11.55           | 64.5          |                             | 68.0        | 854.44          | 85.4          |
|                             | 1.0         | 11.44           | 64.6          |                             | 69.5        | 881.25          | 86.0          |
|                             | 1.0         | 11.32           | 64.6          |                             | 71.0        | 933.52          | 86.3          |
|                             | 1.1         | 11.24           | 64.6          |                             | 72.5        | 1003.57         | 86.6          |
|                             | 1.1         | 11.13           | 64.6          |                             | 74.0        | 1121.44         | 86.9          |
|                             | 1.2         | 11.05           | 64.7          |                             | 75.5        | 1104.12         | 87.3          |
|                             | 1.3         | 10.96           | 64.7          |                             | 77.0        | 1165.19         | 87.7          |
|                             | 1.3         | 10.88           | 64.7          |                             | 78.5        | 1293.75         | 88.1          |
|                             | 1.4         | 10.81           | 64.7          |                             | 80.0        | 1264.20         | 88.5          |
|                             | 1.4         | 10.72           | 64.7          |                             | 81.5        | 1319.61         | 88.9          |
|                             | 1.5         | 10.66           | 64.7          |                             | 83.0        | 1442.36         | 89.3          |
|                             | 1.5         | 10.62           | 64.7          |                             | 84.5        | 1414.82         | 89.7          |
|                             | 1.5         | 10.59           | 64.7          |                             | 86.0        | 1481.47         | 90.2          |
|                             | 1.6         | 10.67           | 64.7          |                             | 87.5        | 1611.85         | 90.6          |

Printing every 3 samples



| Serial # 8372 Inside |             |                 |               | Serial # 8372 Inside |             |                 |               |
|----------------------|-------------|-----------------|---------------|----------------------|-------------|-----------------|---------------|
| Comments             | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments             | Time (Min.) | Pressure (psig) | Temp. (deg F) |
|                      | 89.0        | 1567.68         | 91.1          |                      | 150.5       | 890.23          | 94.1          |
|                      | 90.5        | 1639.63         | 91.9          |                      | 152.0       | 898.24          | 94.1          |
|                      | 92.0        | 1627.42         | 92.2          |                      | 153.5       | 905.67          | 94.1          |
|                      | 93.5        | 1661.29         | 92.8          |                      | 155.0       | 912.77          | 94.2          |
|                      | 95.0        | 1646.06         | 92.9          |                      | 156.5       | 919.37          | 94.2          |
|                      | 96.5        | 1698.87         | 93.6          |                      | 158.0       | 925.62          | 94.2          |
|                      | 98.0        | 65.16           | 93.0          |                      | 159.5       | 931.73          | 94.3          |
|                      | 99.5        | 70.53           | 93.9          |                      | 161.0       | 937.40          | 94.3          |
|                      | 101.0       | 74.61           | 94.0          |                      | 162.5       | 937.01          | 94.3          |
|                      | 102.5       | 76.22           | 93.9          |                      | 164.0       | 85.60           | 94.4          |
|                      | 104.0       | 90.63           | 93.8          |                      | 165.5       | 85.24           | 95.0          |
|                      | 105.5       | 118.39          | 93.5          |                      | 167.0       | 78.66           | 94.9          |
|                      | 107.0       | 160.25          | 93.2          |                      | 168.5       | 81.42           | 94.7          |
|                      | 108.5       | 218.54          | 93.2          |                      | 170.0       | 79.28           | 94.6          |
|                      | 110.0       | 299.01          | 93.2          |                      | 171.5       | 80.70           | 94.4          |
|                      | 111.5       | 385.92          | 93.2          |                      | 173.0       | 83.95           | 94.5          |
|                      | 113.0       | 440.09          | 93.2          |                      | 174.5       | 86.35           | 94.5          |
|                      | 114.5       | 470.57          | 93.3          |                      | 176.0       | 87.78           | 94.6          |
|                      | 116.0       | 491.76          | 93.3          |                      | 177.5       | 88.67           | 94.6          |
|                      | 117.5       | 509.73          | 93.3          |                      | 179.0       | 90.38           | 94.7          |
|                      | 119.0       | 532.28          | 93.3          |                      | 180.5       | 91.26           | 94.7          |
|                      | 120.5       | 556.23          | 93.4          |                      | 182.0       | 92.15           | 94.8          |
|                      | 122.0       | 580.86          | 93.4          |                      | 183.5       | 92.86           | 94.9          |
|                      | 123.5       | 605.83          | 93.4          |                      | 185.0       | 93.87           | 94.9          |
|                      | 125.0       | 630.33          | 93.5          |                      | 186.5       | 94.72           | 94.9          |
|                      | 126.5       | 654.09          | 93.5          |                      | 188.0       | 95.51           | 95.0          |
|                      | 128.0       | 676.60          | 93.5          |                      | 189.5       | 96.24           | 95.0          |
|                      | 129.5       | 698.69          | 93.6          |                      | 191.0       | 97.35           | 95.1          |
|                      | 131.0       | 719.23          | 93.6          |                      | 192.5       | 99.07           | 95.2          |
|                      | 132.5       | 739.23          | 93.6          |                      | 194.0       | 99.30           | 95.3          |
|                      | 134.0       | 757.44          | 93.7          |                      | 195.5       | 99.71           | 95.3          |
|                      | 135.5       | 774.45          | 93.7          |                      | 197.0       | 100.32          | 95.3          |
|                      | 137.0       | 790.14          | 93.7          |                      | 198.5       | 100.87          | 95.3          |
|                      | 138.5       | 804.86          | 93.8          |                      | 200.0       | 101.64          | 95.4          |
|                      | 140.0       | 818.38          | 93.8          |                      | 201.5       | 102.24          | 95.4          |
|                      | 141.5       | 831.02          | 93.9          |                      | 203.0       | 102.83          | 95.4          |
|                      | 143.0       | 842.69          | 93.9          |                      | 204.5       | 103.77          | 95.4          |
|                      | 144.5       | 853.31          | 93.9          |                      | 206.0       | 108.31          | 95.5          |
|                      | 146.0       | 863.39          | 94.0          |                      | 207.5       | 135.17          | 95.5          |
|                      | 147.5       | 872.73          | 94.0          |                      | 209.0       | 176.75          | 95.5          |
|                      | 149.0       | 881.80          | 94.0          |                      | 210.5       | 229.18          | 95.6          |

Printing every 3 samples

| Serial # 8372 Inside |             |                 |               | Serial # 8372 Inside |             |                 |               |
|----------------------|-------------|-----------------|---------------|----------------------|-------------|-----------------|---------------|
| Comments             | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments             | Time (Min.) | Pressure (psig) | Temp. (deg F) |
|                      | 212.0       | 275.32          | 95.6          |                      | 273.5       | 804.05          | 96.7          |
|                      | 213.5       | 301.36          | 95.6          |                      | 275.0       | 810.37          | 96.7          |
|                      | 215.0       | 316.52          | 95.7          |                      | 276.5       | 816.31          | 96.7          |
|                      | 216.5       | 329.21          | 95.7          |                      | 278.0       | 822.15          | 96.8          |
|                      | 218.0       | 340.23          | 95.7          |                      | 279.5       | 827.72          | 96.8          |
|                      | 219.5       | 351.39          | 95.7          |                      | 281.0       | 833.07          | 96.8          |
|                      | 221.0       | 364.49          | 95.8          |                      | 282.5       | 838.37          | 96.8          |
|                      | 222.5       | 379.04          | 95.8          |                      | 284.0       | 843.36          | 96.8          |
|                      | 224.0       | 394.09          | 95.8          |                      | 285.5       | 848.23          | 96.9          |
|                      | 225.5       | 410.11          | 95.8          |                      | 287.0       | 852.94          | 96.9          |
|                      | 227.0       | 426.67          | 95.9          |                      | 288.5       | 857.47          | 96.9          |
|                      | 228.5       | 443.71          | 95.9          |                      | 290.0       | 862.00          | 96.9          |
|                      | 230.0       | 460.88          | 95.9          |                      | 291.5       | 866.30          | 97.0          |
|                      | 231.5       | 478.16          | 95.9          |                      | 293.0       | 870.44          | 97.0          |
|                      | 233.0       | 495.33          | 96.0          |                      | 294.5       | 874.46          | 97.0          |
|                      | 234.5       | 511.70          | 96.0          |                      | 296.0       | 878.24          | 97.0          |
|                      | 236.0       | 527.63          | 96.0          |                      | 297.5       | 882.12          | 97.0          |
|                      | 237.5       | 543.59          | 96.1          |                      | 299.0       | 885.79          | 97.1          |
|                      | 239.0       | 559.35          | 96.1          |                      | 300.5       | 889.31          | 97.1          |
|                      | 240.5       | 574.70          | 96.1          |                      | 302.0       | 892.75          | 97.1          |
|                      | 242.0       | 589.79          | 96.1          |                      | 303.5       | 896.05          | 97.1          |
|                      | 243.5       | 604.55          | 96.2          |                      | 305.0       | 899.20          | 97.2          |
|                      | 245.0       | 618.73          | 96.2          |                      | 306.5       | 902.22          | 97.2          |
|                      | 246.5       | 632.37          | 96.2          |                      | 308.0       | 905.32          | 97.2          |
|                      | 248.0       | 645.61          | 96.2          |                      | 309.5       | 908.22          | 97.2          |
|                      | 249.5       | 658.34          | 96.3          |                      | 311.0       | 911.03          | 97.2          |
|                      | 251.0       | 670.74          | 96.3          |                      | 312.5       | 913.71          | 97.3          |
|                      | 252.5       | 682.38          | 96.3          |                      | 314.0       | 916.71          | 97.3          |
|                      | 254.0       | 694.12          | 96.3          |                      | 315.5       | 919.34          | 97.3          |
|                      | 255.5       | 705.06          | 96.4          |                      | 317.0       | 922.01          | 97.3          |
|                      | 257.0       | 715.44          | 96.4          |                      | 318.5       | 924.68          | 97.3          |
|                      | 258.5       | 725.41          | 96.4          |                      | 320.0       | 927.30          | 97.4          |
|                      | 260.0       | 734.87          | 96.5          |                      | 321.5       | 929.77          | 97.4          |
|                      | 261.5       | 744.08          | 96.5          |                      | 323.0       | 932.24          | 97.4          |
|                      | 263.0       | 752.39          | 96.5          |                      | 324.5       | 934.70          | 97.4          |
|                      | 264.5       | 760.64          | 96.5          |                      | 326.0       | 936.93          | 97.4          |
|                      | 266.0       | 768.61          | 96.6          |                      | 327.5       | 939.23          | 97.5          |
|                      | 267.5       | 776.21          | 96.6          |                      | 329.0       | 941.39          | 97.5          |
|                      | 269.0       | 783.61          | 96.6          |                      | 330.5       | 943.69          | 97.5          |
|                      | 270.5       | 790.78          | 96.6          |                      | 332.0       | 945.92          | 97.5          |
|                      | 272.0       | 797.42          | 96.7          |                      | 333.5       | 948.34          | 97.5          |

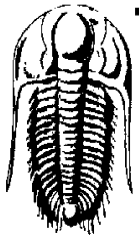
Printing every 3 samples

| Serial # 8372 Inside |             |                 |               | Serial # 8372 Inside |             |                 |               |
|----------------------|-------------|-----------------|---------------|----------------------|-------------|-----------------|---------------|
| Comments             | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments             | Time (Min.) | Pressure (psig) | Temp. (deg F) |
|                      | 335.0       | 950.65          | 97.6          |                      | 396.5       | 334.81          | 81.9          |
|                      | 336.5       | 953.01          | 97.6          |                      | 398.0       | 322.98          | 80.4          |
|                      | 338.0       | 955.26          | 97.6          |                      | 399.5       | 298.57          | 79.0          |
|                      | 339.5       | 957.32          | 97.6          |                      | 401.0       | 262.86          | 77.4          |
|                      | 341.0       | 959.58          | 97.6          |                      | 402.5       | 205.81          | 76.2          |
|                      | 342.5       | 961.51          | 97.7          |                      | 404.0       | 177.49          | 74.8          |
|                      | 344.0       | 1656.91         | 98.2          |                      | 405.5       | 147.85          | 74.1          |
|                      | 345.5       | 1630.07         | 98.4          |                      | 407.0       | 120.29          | 73.4          |
|                      | 347.0       | 1610.32         | 98.6          |                      | 408.5       | 87.41           | 72.7          |
|                      | 348.5       | 1634.24         | 97.5          |                      | 410.0       | 85.95           | 72.4          |
|                      | 350.0       | 1630.82         | 97.3          |                      | 411.5       | 85.91           | 72.3          |
|                      | 351.5       | 1613.50         | 97.4          |                      | 413.0       | 84.78           | 72.2          |
|                      | 353.0       | 1591.47         | 97.0          |                      | 414.5       | 47.59           | 72.1          |
|                      | 354.5       | 1538.71         | 95.5          |                      | 416.0       | 46.50           | 71.9          |
|                      | 356.0       | 1405.94         | 94.3          |                      | 417.5       | 45.98           | 71.8          |
|                      | 357.5       | 1433.85         | 93.4          |                      | 419.0       | 9.61            | 71.5          |
|                      | 359.0       | 1383.40         | 92.5          |                      | 420.5       | 9.60            | 71.5          |
|                      | 360.5       | 1324.13         | 91.7          |                      | 422.0       | 9.59            | 71.5          |
|                      | 362.0       | 1357.92         | 91.0          |                      | 423.5       | 9.57            | 71.5          |
|                      | 363.5       | 1302.61         | 90.1          |                      | 425.0       | 9.56            | 71.5          |
|                      | 365.0       | 1223.95         | 89.3          |                      | 426.5       | 9.54            | 71.5          |
|                      | 366.5       | 1214.08         | 88.5          |                      | 428.0       | 9.52            | 71.5          |
|                      | 368.0       | 1159.53         | 87.9          |                      | 429.5       | 9.50            | 71.5          |
|                      | 369.5       | 1100.65         | 87.2          |                      | 431.0       | 9.47            | 71.5          |
|                      | 371.0       | 1098.22         | 87.0          |                      | 432.5       | 9.46            | 71.5          |
|                      | 372.5       | 1081.19         | 87.6          |                      | 434.0       | 9.46            | 71.5          |
|                      | 374.0       | 970.20          | 88.9          |                      | 435.5       | 9.48            | 71.5          |
|                      | 375.5       | 983.18          | 93.0          |                      | 437.0       | 9.51            | 71.4          |
|                      | 377.0       | 926.30          | 88.9          |                      | 438.5       | 9.57            | 71.4          |
|                      | 378.5       | 891.45          | 86.2          |                      | 440.0       | 9.61            | 71.4          |
|                      | 380.0       | 837.31          | 84.9          |                      | 441.5       | 9.62            | 71.4          |
|                      | 381.5       | 773.02          | 84.2          |                      | 443.0       | 9.58            | 71.4          |
|                      | 383.0       | 762.26          | 84.1          |                      | 444.5       | 9.51            | 71.4          |
|                      | 384.5       | 690.05          | 84.1          |                      | 446.0       | 9.42            | 71.4          |
|                      | 386.0       | 673.11          | 84.0          |                      | 447.5       | 9.33            | 71.4          |
|                      | 387.5       | 625.67          | 83.8          |                      | 449.0       | 9.24            | 71.4          |
|                      | 389.0       | 560.49          | 83.7          |                      | 450.5       | 9.17            | 71.4          |
|                      | 390.5       | 548.23          | 83.6          |                      | 452.0       | 9.07            | 71.4          |
|                      | 392.0       | 490.22          | 83.5          |                      | 453.5       | 8.96            | 71.4          |
|                      | 393.5       | 438.22          | 83.4          |                      | 455.0       | 8.85            | 71.3          |
|                      | 395.0       | 414.15          | 83.0          |                      | 456.5       | 8.79            | 71.3          |

Printing every 3 samples

| <b>Serial # 8372 Inside</b> |             |                 |               | <b>Serial # 8365 Outside</b> |             |                 |               |
|-----------------------------|-------------|-----------------|---------------|------------------------------|-------------|-----------------|---------------|
| Comments                    | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments                     | Time (Min.) | Pressure (psig) | Temp. (deg F) |
|                             | 458.0       | 8.73            | 71.3          |                              |             |                 |               |
|                             | 459.5       | 8.66            | 71.3          |                              |             |                 |               |
|                             | 461.0       | 8.60            | 71.3          |                              |             |                 |               |
|                             | 462.5       | -9.79           | 54.0          |                              |             |                 |               |
|                             | 464.0       | -6.60           | 46.7          |                              |             |                 |               |
|                             | 465.5       | -2.86           | 47.5          |                              |             |                 |               |
|                             | 467.0       | -3.34           | 45.6          |                              |             |                 |               |
|                             | 468.5       | -4.41           | 40.7          |                              |             |                 |               |
|                             | 470.0       | -5.13           | 37.5          |                              |             |                 |               |
|                             | 471.5       | -4.82           | 35.5          |                              |             |                 |               |
|                             | 473.0       | -5.08           | 34.3          |                              |             |                 |               |
|                             | 474.5       | -4.14           | 33.4          |                              |             |                 |               |
|                             | 476.0       | -1.66           | 37.1          |                              |             |                 |               |
|                             | 477.5       | -0.89           | 37.2          |                              |             |                 |               |
|                             | 479.0       | -0.18           | 37.7          |                              |             |                 |               |
|                             | 480.5       | 0.79            | 38.4          |                              |             |                 |               |

Printing every 3 samples



**TRILOBITE  
TESTING, INC.**

## DRILL STEM TESTING - DATA LISTING

Sam Gary  
1515 Wynkoop St. Ste 700  
Denver, CO  
80202  
ATTN: Neal Sharp

**Miller et al 1-31**  
**31-15-15/Russell**  
Job Ticket: 41855      **DST#: 2**  
Test Start: 2011.03.26 @ 16:51:54

| Serial # 8365 Outside |             |                 |               | Serial # 8365 Outside |             |                 |               |
|-----------------------|-------------|-----------------|---------------|-----------------------|-------------|-----------------|---------------|
| Comments              | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments              | Time (Min.) | Pressure (psig) | Temp. (deg F) |
|                       | 0.0         | -0.54           | 79.0          |                       | 1.6         | -0.56           | 79.7          |
|                       | 0.1         | -0.59           | 79.0          |                       | 1.7         | -0.55           | 79.8          |
|                       | 0.1         | -0.63           | 79.0          |                       | 1.8         | -0.54           | 79.8          |
|                       | 0.2         | -0.61           | 79.0          |                       | 1.8         | -0.58           | 79.8          |
|                       | 0.2         | -0.60           | 79.1          |                       | 1.9         | -0.65           | 79.8          |
|                       | 0.3         | -0.58           | 79.1          |                       | 1.9         | -0.63           | 79.9          |
|                       | 0.3         | -0.59           | 79.1          |                       | 2.0         | -0.57           | 79.9          |
|                       | 0.3         | -0.60           | 79.1          |                       | 12.0        | -0.49           | 47.3          |
|                       | 0.4         | -0.59           | 79.1          |                       | 42.0        | -0.96           | 43.0          |
|                       | 0.4         | -0.59           | 79.2          |                       | 53.0        | -0.52           | 62.6          |
|                       | 0.5         | -0.59           | 79.2          |                       | 54.5        | -0.05           | 72.1          |
|                       | 0.6         | -0.58           | 79.2          |                       | 56.0        | -0.04           | 73.7          |
|                       | 0.6         | -0.58           | 79.2          |                       | 57.5        | -0.03           | 75.4          |
|                       | 0.6         | -0.58           | 79.2          |                       | 59.0        | -0.06           | 77.7          |
|                       | 0.7         | -0.58           | 79.3          |                       | 60.5        | -0.07           | 78.9          |
|                       | 0.8         | -0.59           | 79.3          |                       | 62.0        | -0.04           | 78.5          |
|                       | 0.8         | -0.58           | 79.3          |                       | 63.5        | 0.02            | 78.4          |
|                       | 0.9         | -0.58           | 79.3          |                       | 65.0        | 0.09            | 78.8          |
|                       | 0.9         | -0.58           | 79.4          |                       | 66.5        | 0.15            | 79.2          |
|                       | 0.9         | -0.57           | 79.4          |                       | 68.0        | 0.21            | 79.9          |
|                       | 1.0         | -0.56           | 79.4          |                       | 69.5        | 0.30            | 80.8          |
|                       | 1.0         | -0.56           | 79.4          |                       | 71.0        | 0.41            | 81.9          |
|                       | 1.1         | -0.56           | 79.5          |                       | 72.5        | 0.17            | 83.2          |
|                       | 1.1         | -0.56           | 79.5          |                       | 74.0        | 0.22            | 83.8          |
|                       | 1.2         | -0.55           | 79.5          |                       | 75.5        | 0.56            | 85.2          |
|                       | 1.3         | -0.54           | 79.5          |                       | 77.0        | 0.68            | 85.8          |
|                       | 1.3         | -0.54           | 79.6          |                       | 78.5        | 0.95            | 86.1          |
|                       | 1.4         | -0.54           | 79.6          |                       | 80.0        | 1.28            | 86.3          |
|                       | 1.4         | -0.55           | 79.6          |                       | 81.5        | 1.42            | 86.6          |
|                       | 1.5         | -0.56           | 79.6          |                       | 83.0        | 1.53            | 86.9          |
|                       | 1.5         | -0.56           | 79.7          |                       | 84.5        | 1.78            | 87.2          |
|                       | 1.5         | -0.56           | 79.7          |                       | 86.0        | 2.12            | 87.4          |
|                       | 1.6         | -0.56           | 79.7          |                       | 87.5        | 2.21            | 87.7          |

Printing every 3 samples

| Serial # 8365 Outside |             |                 |               | Serial # 8365 Outside |             |                 |               |
|-----------------------|-------------|-----------------|---------------|-----------------------|-------------|-----------------|---------------|
| Comments              | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments              | Time (Min.) | Pressure (psig) | Temp. (deg F) |
|                       | 89.0        | 2.73            | 88.1          |                       | 150.5       | 29.51           | 93.4          |
|                       | 90.5        | 2.55            | 88.4          |                       | 152.0       | 29.55           | 93.4          |
|                       | 92.0        | 2.95            | 88.7          |                       | 153.5       | 29.57           | 93.4          |
|                       | 93.5        | 3.01            | 89.0          |                       | 155.0       | 29.60           | 93.5          |
|                       | 95.0        | 3.07            | 89.3          |                       | 156.5       | 29.63           | 93.5          |
|                       | 96.5        | 3.16            | 89.5          |                       | 158.0       | 29.62           | 93.5          |
|                       | 98.0        | 3.24            | 89.7          |                       | 159.5       | 29.61           | 93.5          |
|                       | 99.5        | 15.07           | 91.0          |                       | 161.0       | 29.61           | 93.6          |
|                       | 101.0       | 22.26           | 92.0          |                       | 162.5       | 29.52           | 93.6          |
|                       | 102.5       | 26.76           | 93.0          |                       | 164.0       | 36.93           | 93.8          |
|                       | 104.0       | 28.06           | 93.1          |                       | 165.5       | 40.97           | 94.8          |
|                       | 105.5       | 28.18           | 93.0          |                       | 167.0       | 42.50           | 94.9          |
|                       | 107.0       | 28.20           | 93.0          |                       | 168.5       | 44.80           | 94.9          |
|                       | 108.5       | 28.26           | 93.0          |                       | 170.0       | 45.67           | 94.9          |
|                       | 110.0       | 28.37           | 93.0          |                       | 171.5       | 47.43           | 95.0          |
|                       | 111.5       | 28.47           | 93.0          |                       | 173.0       | 49.05           | 95.0          |
|                       | 113.0       | 28.61           | 93.0          |                       | 174.5       | 50.54           | 95.1          |
|                       | 114.5       | 28.39           | 93.0          |                       | 176.0       | 51.77           | 95.2          |
|                       | 116.0       | 28.52           | 93.0          |                       | 177.5       | 53.30           | 95.3          |
|                       | 117.5       | 28.74           | 93.0          |                       | 179.0       | 54.82           | 95.3          |
|                       | 119.0       | 29.26           | 93.0          |                       | 180.5       | 56.14           | 95.3          |
|                       | 120.5       | 29.04           | 93.0          |                       | 182.0       | 56.90           | 95.4          |
|                       | 122.0       | 29.49           | 93.0          |                       | 183.5       | 58.04           | 95.4          |
|                       | 123.5       | 29.53           | 93.0          |                       | 185.0       | 59.37           | 95.4          |
|                       | 125.0       | 29.57           | 93.1          |                       | 186.5       | 60.62           | 95.4          |
|                       | 126.5       | 29.57           | 93.1          |                       | 188.0       | 61.75           | 95.4          |
|                       | 128.0       | 29.57           | 93.1          |                       | 189.5       | 62.54           | 95.4          |
|                       | 129.5       | 29.57           | 93.1          |                       | 191.0       | 63.42           | 95.4          |
|                       | 131.0       | 29.57           | 93.1          |                       | 192.5       | 64.44           | 95.4          |
|                       | 132.5       | 29.58           | 93.2          |                       | 194.0       | 65.68           | 95.4          |
|                       | 134.0       | 29.59           | 93.2          |                       | 195.5       | 66.60           | 95.4          |
|                       | 135.5       | 29.59           | 93.2          |                       | 197.0       | 67.65           | 95.5          |
|                       | 137.0       | 29.59           | 93.2          |                       | 198.5       | 68.40           | 95.5          |
|                       | 138.5       | 29.63           | 93.2          |                       | 200.0       | 69.48           | 95.6          |
|                       | 140.0       | 29.64           | 93.3          |                       | 201.5       | 70.30           | 95.6          |
|                       | 141.5       | 29.63           | 93.3          |                       | 203.0       | 71.12           | 95.6          |
|                       | 143.0       | 29.62           | 93.3          |                       | 204.5       | 72.06           | 95.7          |
|                       | 144.5       | 29.58           | 93.3          |                       | 206.0       | 71.26           | 95.7          |
|                       | 146.0       | 29.54           | 93.3          |                       | 207.5       | 71.24           | 95.7          |
|                       | 147.5       | 29.51           | 93.4          |                       | 209.0       | 71.31           | 95.7          |
|                       | 149.0       | 29.49           | 93.4          |                       | 210.5       | 71.35           | 95.6          |

Printing every 3 samples

| Serial # 8365 Outside |             |                 |               | Serial # 8365 Outside |             |                 |               |
|-----------------------|-------------|-----------------|---------------|-----------------------|-------------|-----------------|---------------|
| Comments              | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments              | Time (Min.) | Pressure (psig) | Temp. (deg F) |
|                       | 212.0       | 71.38           | 95.6          |                       | 273.5       | 71.06           | 95.7          |
|                       | 213.5       | 71.39           | 95.6          |                       | 275.0       | 71.07           | 95.7          |
|                       | 215.0       | 71.39           | 95.6          |                       | 276.5       | 71.07           | 95.8          |
|                       | 216.5       | 71.40           | 95.6          |                       | 278.0       | 71.08           | 95.8          |
|                       | 218.0       | 71.41           | 95.6          |                       | 279.5       | 71.09           | 95.8          |
|                       | 219.5       | 71.42           | 95.6          |                       | 281.0       | 71.10           | 95.8          |
|                       | 221.0       | 71.42           | 95.6          |                       | 282.5       | 71.11           | 95.8          |
|                       | 222.5       | 71.42           | 95.6          |                       | 284.0       | 71.14           | 95.8          |
|                       | 224.0       | 71.42           | 95.6          |                       | 285.5       | 71.16           | 95.8          |
|                       | 225.5       | 71.42           | 95.6          |                       | 287.0       | 71.17           | 95.8          |
|                       | 227.0       | 71.41           | 95.6          |                       | 288.5       | 71.17           | 95.8          |
|                       | 228.5       | 71.42           | 95.6          |                       | 290.0       | 71.17           | 95.8          |
|                       | 230.0       | 71.43           | 95.6          |                       | 291.5       | 71.17           | 95.9          |
|                       | 231.5       | 71.44           | 95.6          |                       | 293.0       | 71.17           | 95.9          |
|                       | 233.0       | 71.47           | 95.6          |                       | 294.5       | 71.19           | 95.9          |
|                       | 234.5       | 71.50           | 95.6          |                       | 296.0       | 71.20           | 95.9          |
|                       | 236.0       | 71.51           | 95.6          |                       | 297.5       | 71.23           | 95.9          |
|                       | 237.5       | 71.52           | 95.6          |                       | 299.0       | 71.26           | 95.9          |
|                       | 239.0       | 71.52           | 95.6          |                       | 300.5       | 71.30           | 95.9          |
|                       | 240.5       | 71.53           | 95.6          |                       | 302.0       | 71.32           | 95.9          |
|                       | 242.0       | 71.53           | 95.6          |                       | 303.5       | 71.36           | 95.9          |
|                       | 243.5       | 71.53           | 95.6          |                       | 305.0       | 71.37           | 96.0          |
|                       | 245.0       | 71.52           | 95.6          |                       | 306.5       | 71.38           | 96.0          |
|                       | 246.5       | 71.48           | 95.6          |                       | 308.0       | 71.40           | 96.0          |
|                       | 248.0       | 71.41           | 95.6          |                       | 309.5       | 71.40           | 96.0          |
|                       | 249.5       | 71.30           | 95.6          |                       | 311.0       | 71.39           | 96.0          |
|                       | 251.0       | 71.20           | 95.6          |                       | 312.5       | 71.38           | 96.0          |
|                       | 252.5       | 71.09           | 95.6          |                       | 314.0       | 71.36           | 96.0          |
|                       | 254.0       | 71.00           | 95.6          |                       | 315.5       | 71.36           | 96.0          |
|                       | 255.5       | 70.94           | 95.6          |                       | 317.0       | 71.34           | 96.1          |
|                       | 257.0       | 70.90           | 95.6          |                       | 318.5       | 71.34           | 96.1          |
|                       | 258.5       | 70.87           | 95.7          |                       | 320.0       | 71.34           | 96.1          |
|                       | 260.0       | 70.87           | 95.7          |                       | 321.5       | 71.34           | 96.1          |
|                       | 261.5       | 70.87           | 95.7          |                       | 323.0       | 71.33           | 96.1          |
|                       | 263.0       | 70.88           | 95.7          |                       | 324.5       | 71.33           | 96.1          |
|                       | 264.5       | 70.91           | 95.7          |                       | 326.0       | 71.30           | 96.1          |
|                       | 266.0       | 70.95           | 95.7          |                       | 327.5       | 71.28           | 96.1          |
|                       | 267.5       | 70.97           | 95.7          |                       | 329.0       | 71.28           | 96.2          |
|                       | 269.0       | 71.00           | 95.7          |                       | 330.5       | 71.30           | 96.2          |
|                       | 270.5       | 71.03           | 95.7          |                       | 332.0       | 71.32           | 96.2          |
|                       | 272.0       | 71.06           | 95.7          |                       | 333.5       | 71.37           | 96.2          |

Printing every 3 samples

| Serial # 8365 Outside |             |                 |               | Serial # 8365 Outside |             |                 |               |
|-----------------------|-------------|-----------------|---------------|-----------------------|-------------|-----------------|---------------|
| Comments              | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments              | Time (Min.) | Pressure (psig) | Temp. (deg F) |
|                       | 335.0       | 71.38           | 96.2          |                       | 396.5       | 69.41           | 85.5          |
|                       | 336.5       | 71.38           | 96.2          |                       | 398.0       | 69.48           | 84.4          |
|                       | 338.0       | 71.33           | 96.2          |                       | 399.5       | 68.61           | 83.0          |
|                       | 339.5       | 71.26           | 96.2          |                       | 401.0       | 68.85           | 81.8          |
|                       | 341.0       | 71.22           | 96.3          |                       | 402.5       | 69.38           | 80.9          |
|                       | 342.5       | 71.17           | 96.3          |                       | 404.0       | 68.67           | 80.3          |
|                       | 344.0       | 71.12           | 96.3          |                       | 405.5       | 68.63           | 80.0          |
|                       | 345.5       | 71.12           | 96.3          |                       | 407.0       | 68.68           | 79.7          |
|                       | 347.0       | 71.29           | 96.3          |                       | 408.5       | 68.31           | 79.5          |
|                       | 348.5       | 72.34           | 96.3          |                       | 410.0       | 68.27           | 79.1          |
|                       | 350.0       | 70.66           | 96.3          |                       | 411.5       | 68.30           | 78.8          |
|                       | 351.5       | 70.75           | 96.3          |                       | 413.0       | 51.61           | 78.6          |
|                       | 353.0       | 70.20           | 96.2          |                       | 414.5       | 53.83           | 78.3          |
|                       | 354.5       | 70.40           | 96.1          |                       | 416.0       | 23.08           | 77.9          |
|                       | 356.0       | 71.50           | 95.9          |                       | 417.5       | 17.30           | 77.8          |
|                       | 357.5       | 70.16           | 95.7          |                       | 419.0       | 18.41           | 78.2          |
|                       | 359.0       | 70.17           | 95.5          |                       | 420.5       | -0.17           | 77.3          |
|                       | 360.5       | 70.17           | 95.2          |                       | 422.0       | -0.56           | 62.9          |
|                       | 362.0       | 70.65           | 95.0          |                       | 423.5       | -0.96           | 56.2          |
|                       | 363.5       | 70.19           | 94.7          |                       | 425.0       | -1.04           | 51.2          |
|                       | 365.0       | 70.55           | 94.4          |                       | 426.5       | -1.08           | 47.5          |
|                       | 366.5       | 69.31           | 93.9          |                       | 428.0       | -1.14           | 44.0          |
|                       | 368.0       | 69.97           | 93.4          |                       | 429.5       | -1.19           | 41.9          |
|                       | 369.5       | 69.80           | 93.0          |                       | 431.0       | -1.23           | 40.4          |
|                       | 371.0       | 70.90           | 92.5          |                       | 432.5       | -1.24           | 38.9          |
|                       | 372.5       | 69.97           | 92.2          |                       | 434.0       | -1.25           | 38.0          |
|                       | 374.0       | 70.57           | 91.9          |                       | 435.5       | -1.26           | 37.7          |
|                       | 375.5       | 69.33           | 91.5          |                       | 437.0       | -1.25           | 37.4          |
|                       | 377.0       | 69.46           | 90.9          |                       | 438.5       | -1.24           | 37.2          |
|                       | 378.5       | 69.62           | 90.4          |                       | 440.0       | -1.24           | 37.1          |
|                       | 380.0       | 69.57           | 90.2          |                       | 441.5       | -1.23           | 37.0          |
|                       | 381.5       | 70.62           | 90.9          |                       | 443.0       | -1.21           | 36.8          |
|                       | 383.0       | 69.16           | 91.4          |                       | 444.5       | -1.22           | 37.8          |
|                       | 384.5       | 69.31           | 91.3          |                       | 446.0       | -1.22           | 37.7          |
|                       | 386.0       | 69.31           | 90.5          |                       | 447.5       | -1.23           | 37.5          |
|                       | 387.5       | 69.20           | 89.4          |                       | 449.0       | -1.24           | 37.2          |
|                       | 389.0       | 69.38           | 89.0          |                       | 450.5       | -1.25           | 37.0          |
|                       | 390.5       | 69.19           | 88.3          |                       | 452.0       | -1.26           | 36.8          |
|                       | 392.0       | 68.80           | 87.6          |                       | 453.5       | -1.26           | 36.6          |
|                       | 393.5       | 67.49           | 87.0          |                       | 455.0       | -1.25           | 36.4          |
|                       | 395.0       | 69.18           | 86.3          |                       | 456.5       | -1.25           | 36.3          |

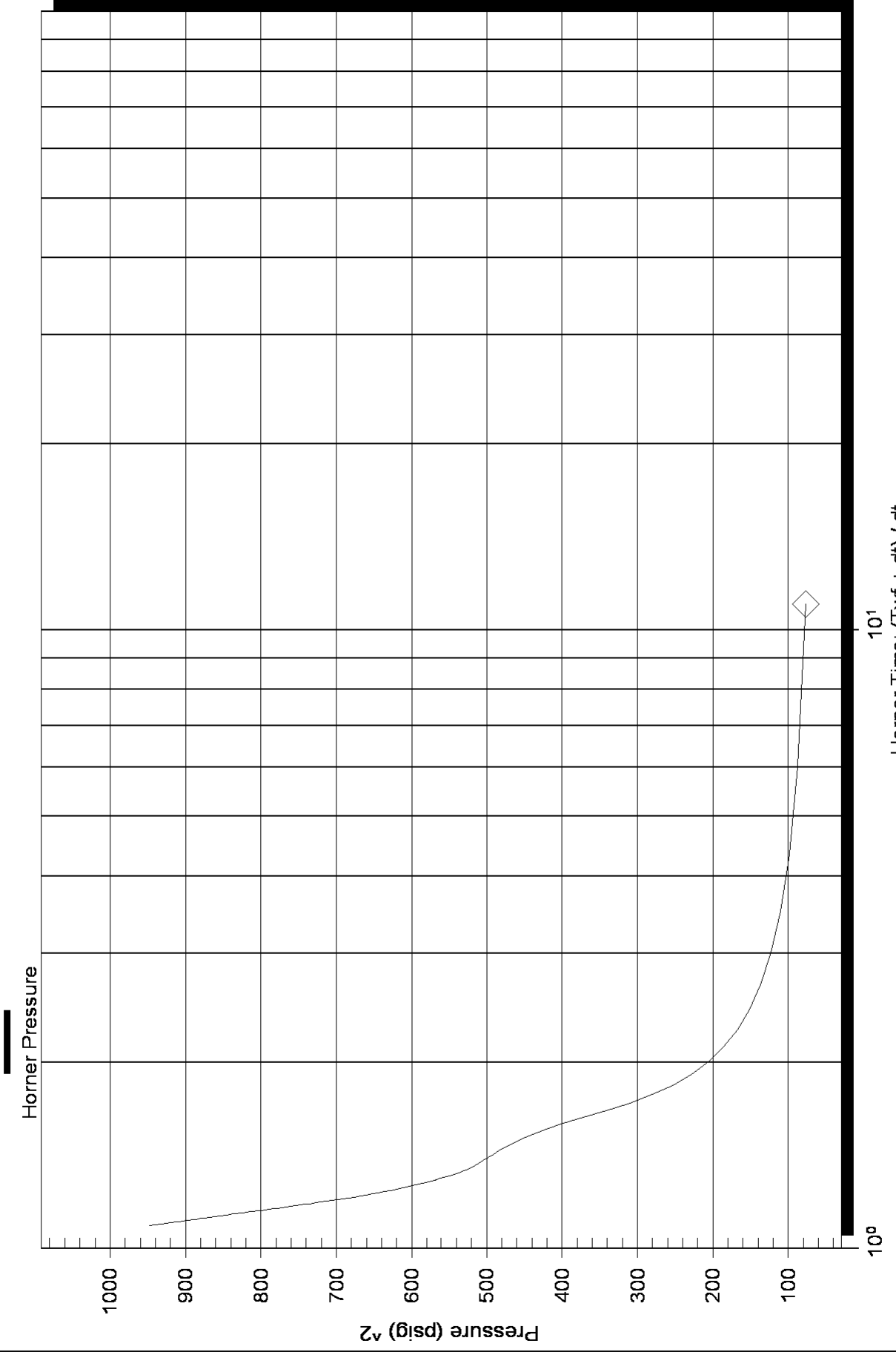
Printing every 3 samples



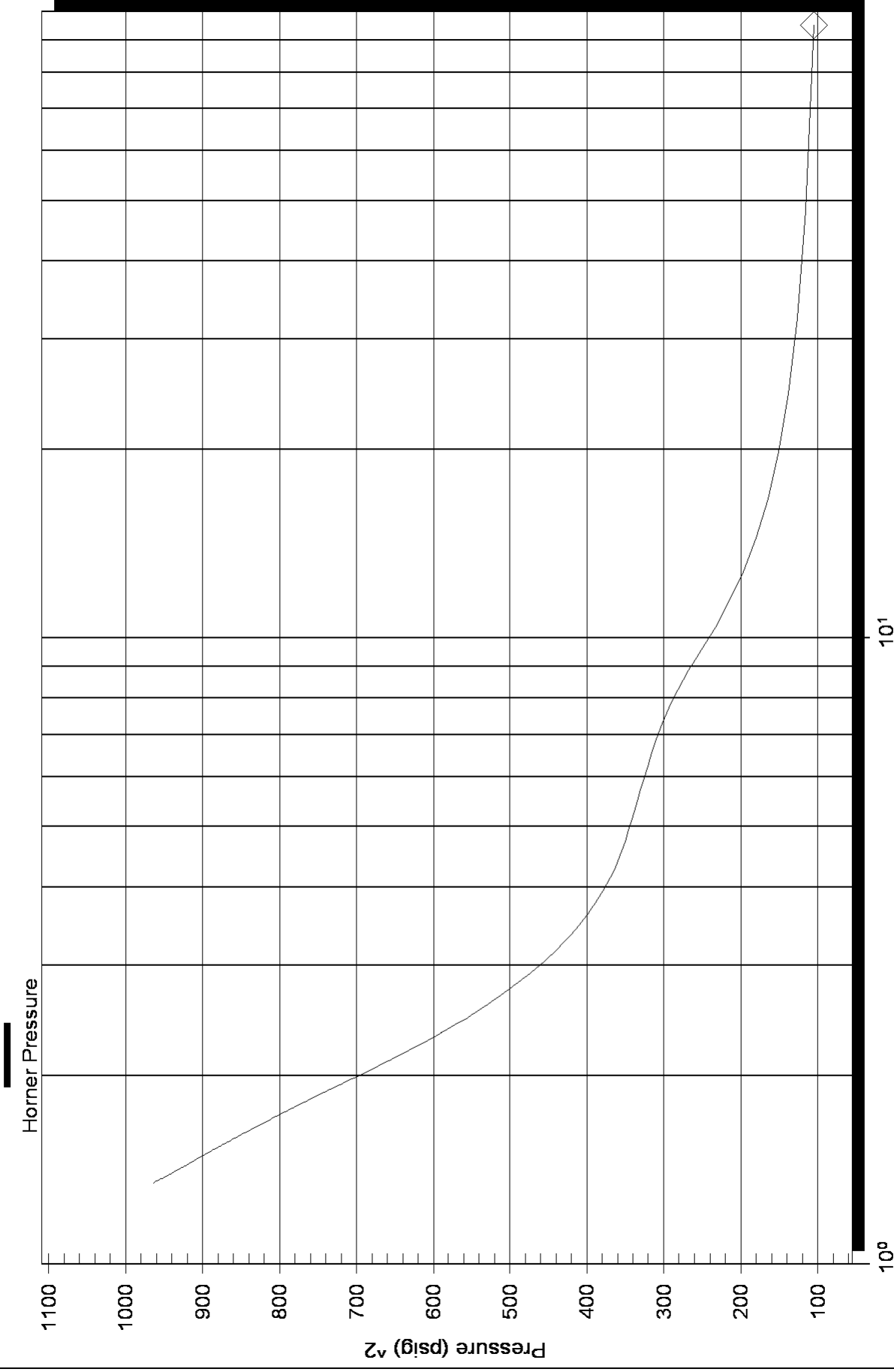
| <b>Serial # 8365</b> |                | <b>Outside</b>     |                  |
|----------------------|----------------|--------------------|------------------|
| Comments             | Time<br>(Min.) | Pressure<br>(psig) | Temp.<br>(deg F) |
|                      | 458.0          | -1.26              | 36.1             |
|                      | 459.5          | -1.28              | 36.0             |
|                      | 461.0          | -1.31              | 35.8             |
|                      | 462.5          | -1.36              | 35.4             |
|                      | 464.0          | -1.38              | 34.0             |
|                      | 465.5          | -1.40              | 33.1             |
|                      | 467.0          | -1.41              | 32.5             |
|                      | 468.5          | -1.41              | 32.2             |
|                      | 470.0          | -1.41              | 32.0             |
|                      | 471.5          | -1.39              | 31.8             |
|                      | 473.0          | -1.33              | 31.7             |
|                      | 474.5          | -1.38              | 31.6             |
|                      | 476.0          | -1.38              | 34.6             |
|                      | 477.5          | -1.27              | 35.1             |
|                      | 479.0          | -1.13              | 35.5             |
|                      | 480.5          | -1.16              | 36.0             |

Printing every 3 samples

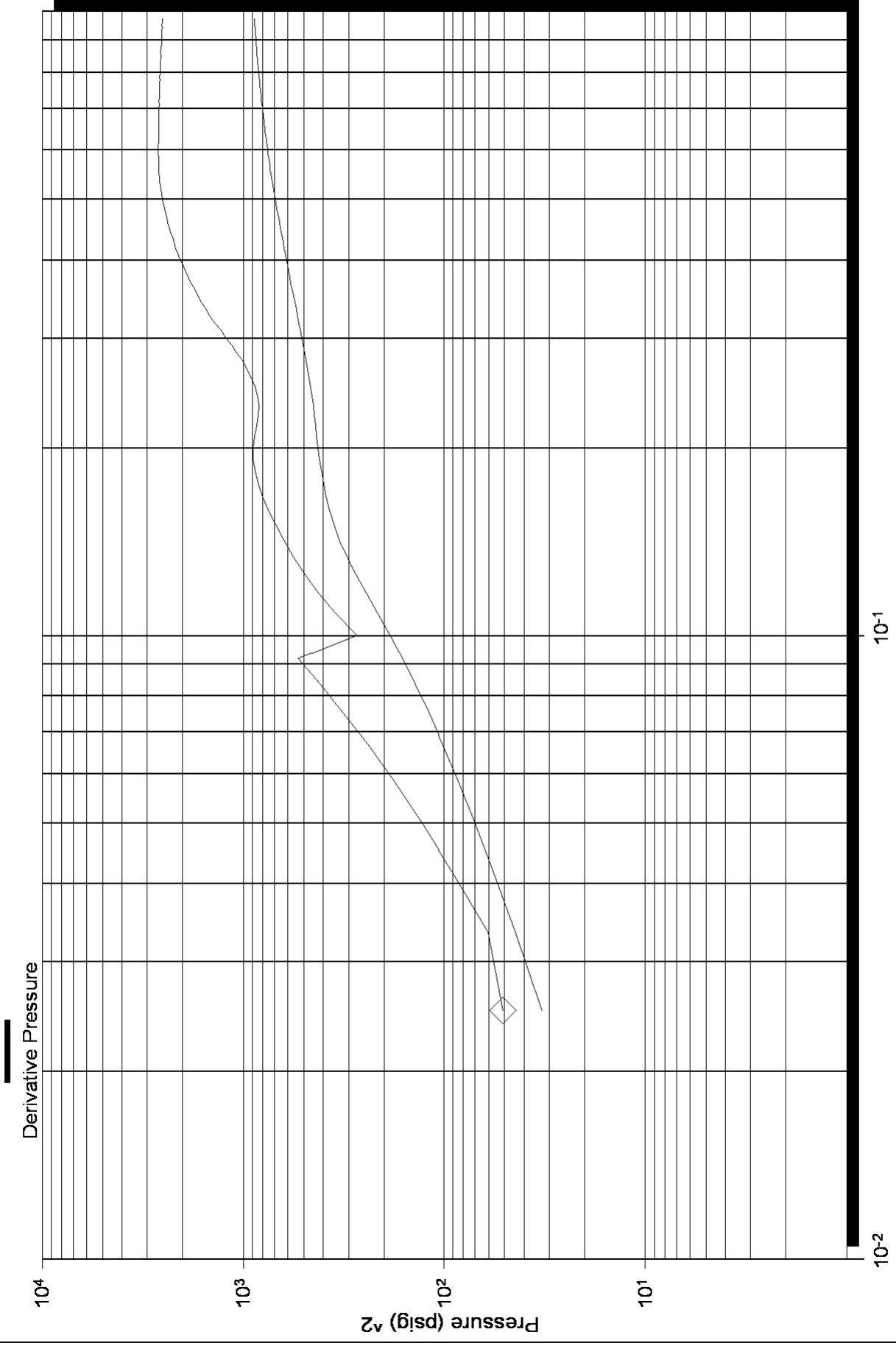
### Homer Plot



### Homer Plot



# Log-Log and Pseudo-Log-Log



# Log-Log and Pseudo-Derivative

