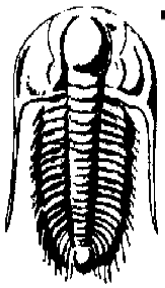


TRILOBITE TESTING, INC.

# DRILL STEM TEST REPORT

Prepared For: **Sam Gary**

1515 Wynkoop Ste 700
Denver Co 80202

ATTN: Neil Sharp

## 30-16-15-Barton-Ks

## Steinert et al # 1-30

Start Date: 2010.12.14 @ 02:05:17

End Date: 2010.12.14 @ 11:13:47

Job Ticket #: 041353 DST #: 1

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

# DRILL STEM TEST REPORT

Sam Gary

1515 Wynkoop Ste 700
Denver Co 80202

ATTN: Neil Sharp

**Steinert et al # 1-30**

**30-16-15-Barton-Ks**

Job Ticket: 041353 **DST#: 1**

Test Start: 2010.12.14 @ 02:05:17

## GENERAL INFORMATION:

Formation: **KC**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 03:58:17
Time Test Ended: 11:13:47

Test Type: Conventional Bottom Hole
Tester: Dan Bangle
Unit No: 38

**Interval: 3330.00 ft (KB) To 3375.00 ft (KB) (TVD)**
Total Depth: 3375.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2005.00 ft (KB)
1997.00 ft (CF)
KB to GR/CF: 8.00 ft

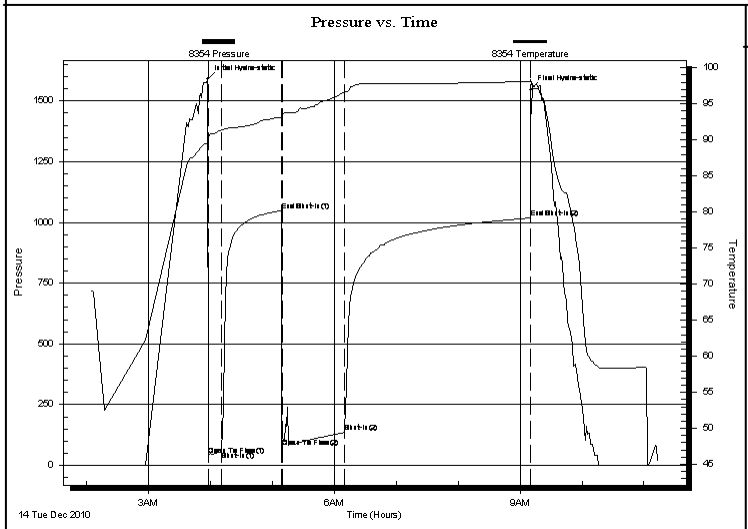
**Serial #: 8354** **Inside**

Press@RunDepth: 134.87 psig @ 3334.00 ft (KB)
Start Date: 2010.12.14 End Date: 2010.12.14
Start Time: 02:05:18 End Time: 11:13:47

Capacity: 8000.00 psig
Last Calib.: 2010.12.14
Time On Btm: 2010.12.14 @ 03:57:47
Time Off Btm: 2010.12.14 @ 09:10:17

TEST COMMENT: IF-Slid tool 8' to bottom - Weak building to 10"

FF-Slid tool 2' Weak building to strong B-B in 45 min
FSI-Weak surface blow died in 20 min




## PRESSURE SUMMARY

| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation |
|---|---|---|---|
| 0 | 1588.71 | 89.65 | Initial Hydro-static |
| 1 | 40.52 | 89.63 | Open To Flow (1) |
| 13 | 57.31 | 91.34 | Shut-In(1) |
| 72 | 1049.05 | 93.18 | End Shut-In(1) |
| 72 | 77.07 | 92.67 | Open To Flow (2) |
| 132 | 134.87 | 96.60 | Shut-In(2) |
| 313 | 1018.47 | 98.12 | End Shut-In(2) |
| 313 | 1546.31 | 98.39 | Final Hydro-static |

## Recovery

| Length (ft) | Description | Volume (bbl) |
|---|---|---|
| 120.00 | OCMdyW 10%o 80%w 10%m | 1.41 |
| 120.00 | HMCGsyO 10%g 70%o 20%m | 1.68 |
| 60.00 | OCGsyM 10%g 20%o 70%m | 0.84 |
| 0.00 | 310 GIP | 0.00 |
| | | |
| | | |

## Gas Rates

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

# DRILL STEM TEST REPORT

Sam Gary

1515 Wynkoop Ste 700
Denver Co 80202

ATTN: Neil Sharp

**Steinert et al # 1-30**

**30-16-15-Barton-Ks**

Job Ticket: 041353 **DST#: 1**

Test Start: 2010.12.14 @ 02:05:17

## GENERAL INFORMATION:

Formation: **KC**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 03:58:17
Time Test Ended: 11:13:47

Test Type: Conventional Bottom Hole
Tester: Dan Bangle
Unit No: 38

**Interval: 3330.00 ft (KB) To 3375.00 ft (KB) (TVD)**
Total Depth: 3375.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2005.00 ft (KB)
1997.00 ft (CF)
KB to GR/CF: 8.00 ft

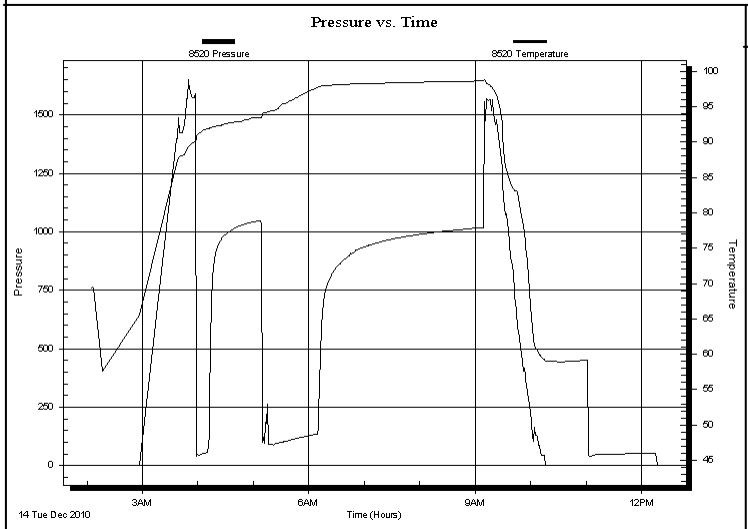
**Serial #: 8520** **Outside**

Press@RunDepth: psig @ 3334.00 ft (KB)
Start Date: 2010.12.14 End Date: 2010.12.14
Start Time: 02:05:02 End Time: 12:18:01

Capacity: 8000.00 psig
Last Calib.: 2010.12.14
Time On Btm:
Time Off Btm:

TEST COMMENT: IF-Slid tool 8' to bottom - Weak building to 10"

FF-Slid tool 2' Weak building to strong B-B in 45 min
FSI-Weak surface blow died in 20 min




## PRESSURE SUMMARY

| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation |
|---|---|---|---|

## Recovery

| Length (ft) | Description | Volume (bbl) |
|---|---|---|
| 120.00 | OCMdyW 10%o 80%w 10%m | 1.41 |
| 120.00 | HMCGsyO 10%g 70%o 20%m | 1.68 |
| 60.00 | OCGsyM 10%g 20%o 70%m | 0.84 |
| 0.00 | 310 GIP | 0.00 |
| | | |
| | | |

## Gas Rates

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

# DRILL STEM TEST REPORT

Sam Gary

1515 Wynkoop Ste 700
Denver Co 80202

ATTN: Neil Sharp

**Steinert et al # 1-30**

**30-16-15-Barton-Ks**

Job Ticket: 041353 **DST#: 1**

Test Start: 2010.12.14 @ 02:05:17

## GENERAL INFORMATION:

Formation: **KC**
Deviated: No Whipstock: ft (KB)
Time Tool Opened: 03:58:17
Time Test Ended: 11:13:47

Test Type: Conventional Bottom Hole
Tester: Dan Bangle
Unit No: 38

**Interval: 3330.00 ft (KB) To 3375.00 ft (KB) (TVD)**
Total Depth: 3375.00 ft (KB) (TVD)
Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2005.00 ft (KB)
1997.00 ft (CF)
KB to GR/CF: 8.00 ft

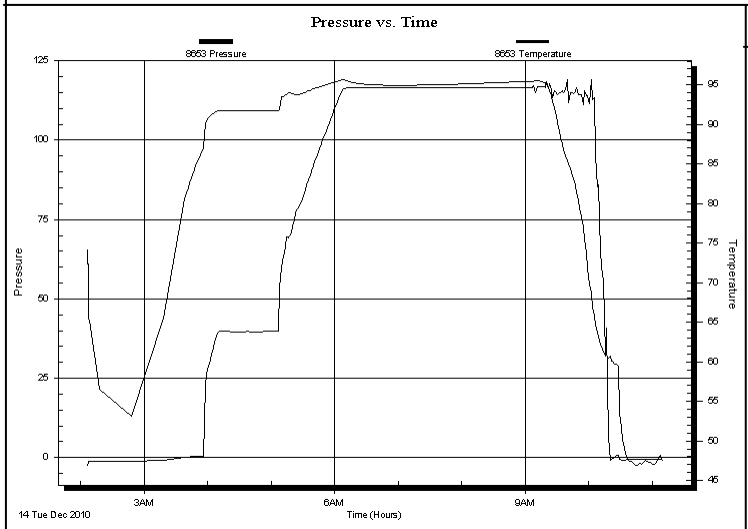
**Serial #: 8653** **Inside**

Press@RunDepth: psig @ 3296.00 ft (KB)
Start Date: 2010.12.14 End Date: 2010.12.14
Start Time: 02:05:52 End Time: 11:10:21

Capacity: 8000.00 psig
Last Calib.: 2010.12.14
Time On Btm:
Time Off Btm:

TEST COMMENT: IF-Slid tool 8' to bottom - Weak building to 10"

FF-Slid tool 2' Weak building to strong B-B in 45 min
FSI-Weak surface blow died in 20 min




## PRESSURE SUMMARY

| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation |
|---|---|---|---|

## Recovery

| Length (ft) | Description | Volume (bbl) |
|---|---|---|
| 120.00 | OCMdyW 10%o 80%w 10%m | 1.41 |
| 120.00 | HMCGsyO 10%g 70%o 20%m | 1.68 |
| 60.00 | OCGsyM 10%g 20%o 70%m | 0.84 |
| 0.00 | 310 GIP | 0.00 |
| | | |
| | | |

## Gas Rates

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

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Sam Gary

1515 Wynkoop Ste 700
Denver Co 80202

ATTN: Neil Sharp

**Steinert et al # 1-30**

**30-16-15-Barton-Ks**

Job Ticket: 041353 **DST#: 1**

Test Start: 2010.12.14 @ 02:05:17

## Tool Information

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Drill Pipe: | Length: | 3270.00 ft | Diameter: | 3.80 | inches | Volume: | 45.87 | bbl | |
| Heavy Wt. Pipe: | Length: | 0.00 ft | Diameter: | 0.00 | inches | Volume: | 0.00 | bbl | |
| Drill Collar: | Length: | 30.00 ft | Diameter: | 2.25 | inches | Volume: | 0.15 | bbl | |
| | | | | | | Total Volume: | 46.02 | bbl | |

| | |
|---|---|
| Drill Pipe Above KB: | 5.00 ft |
| Depth to Top Packer: | 3330.00 ft |
| Depth to Bottom Packer: | ft |
| Interval betw een Packers: | 44.00 ft |
| Tool Length: | 79.00 ft |
| Number of Packers: | 2 Diameter: 6.75 inches |

| | | |
|---|---|---|
| Tool Weight: | | 3800.00 lb |
| Weight set on Packer: | | 25000.00 lb |
| Weight to Pull Loose: | | 80000.00 lb |
| Tool Chased | | 10.00 ft |
| String Weight: | Initial | 48000.00 lb |
| | Final | 50000.00 lb |

Tool Comments:

| Tool Description | Length (ft) | Serial No. | Position | Depth (ft) | Accum. Lengths | |
|---|---|---|---|---|---|---|
| Change Over Sub | 1.00 | | | 3296.00 | | |
| Recorder | 0.00 | 8653 | Inside | 3296.00 | | |
| Blank Spacing | 4.00 | | | 3300.00 | | |
| Shut In Tool | 5.00 | | | 3305.00 | | |
| Sampler | 3.00 | | | 3308.00 | | |
| Hydraulic tool | 5.00 | | | 3313.00 | | |
| Jars | 5.00 | | | 3318.00 | | |
| Safety Joint | 3.00 | | | 3321.00 | | |
| Packer | 5.00 | | | 3326.00 | 35.00 | Bottom Of Top Packer |
| Packer | 4.00 | | | 3330.00 | | |
| Stubb | 1.00 | | | 3331.00 | | |
| Perforations | 2.00 | | | 3333.00 | | |
| Change Over Sub | 1.00 | | | 3334.00 | | |
| Recorder | 0.00 | 8354 | Inside | 3334.00 | | |
| Recorder | 0.00 | 8520 | Outside | 3334.00 | | |
| Drill Pipe | 31.00 | | | 3365.00 | | |
| Change Over Sub | 1.00 | | | 3366.00 | | |
| Perforations | 5.00 | | | 3371.00 | | |
| Bullnose | 3.00 | | | 3374.00 | 44.00 | Bottom Packers & Anchor |
| **Total Tool Length:** | **79.00** | | | | | |

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Sam Gary

1515 Wynkoop Ste 700
Denver Co 80202

ATTN: Neil Sharp

**Steinert et al # 1-30**

**30-16-15-Barton-Ks**

Job Ticket: 041353 **DST#: 1**

Test Start: 2010.12.14 @ 02:05:17

## 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: | 70000 ppm |
| Viscosity: | 50.00 sec/qt | Cushion Volume: | bbl | | |
| Water Loss: | 8.37 in³ | Gas Cushion Type: | | | |
| Resistivity: | ohm.m | Gas Cushion Pressure: | psig | | |
| Salinity: | 4900.00 ppm | | | | |
| Filter Cake: | inches | | | | |

## Recovery Information

Recovery Table

| Length ft | Description | Volume bbl |
|---|---|---|
| 120.00 | OCMdyW 10%o 80%w 10%m | 1.410 |
| 120.00 | HMCGsyO 10%g 70%o 20%m | 1.683 |
| 60.00 | OCGsyM 10%g 20%o 70%m | 0.842 |
| 0.00 | 310 GIP | 0.000 |

Total Length: 300.00 ft Total Volume: 3.935 bbl

Num Fluid Samples: 0 Num Gas Bombs: 0 Serial #:

Laboratory Name: Laboratory Location:

Recovery Comments: Samlper
2000ml oil

Sam Gary

1515 Wynkoop Ste 700
Denver Co 80202

ATTN: Neil Sharp

**Steinert et al # 1-30**

**30-16-15-Barton-Ks**

Job Ticket: 041353 **DST#: 1**

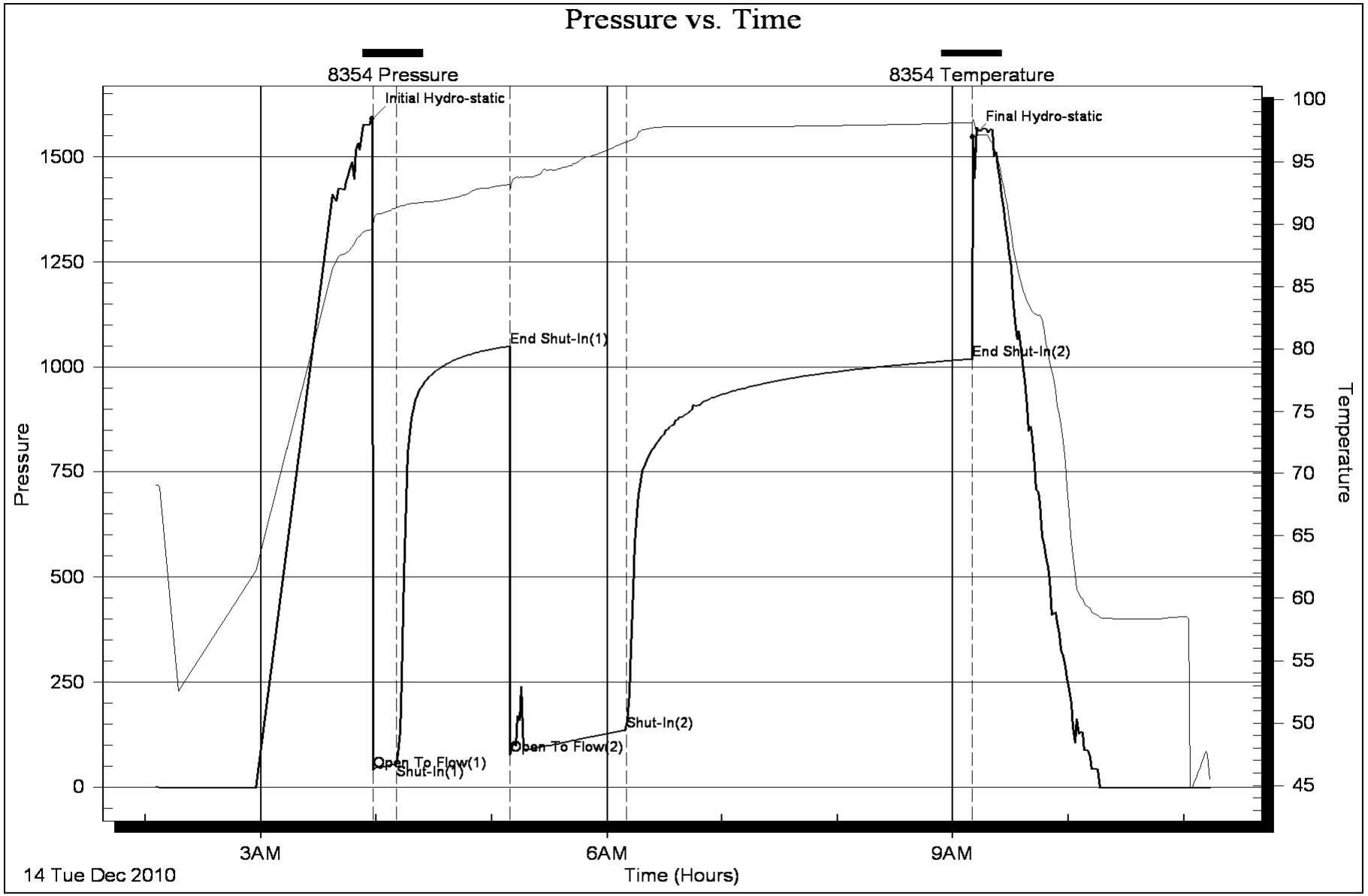
Test Start: 2010.12.14 @ 02:05:17

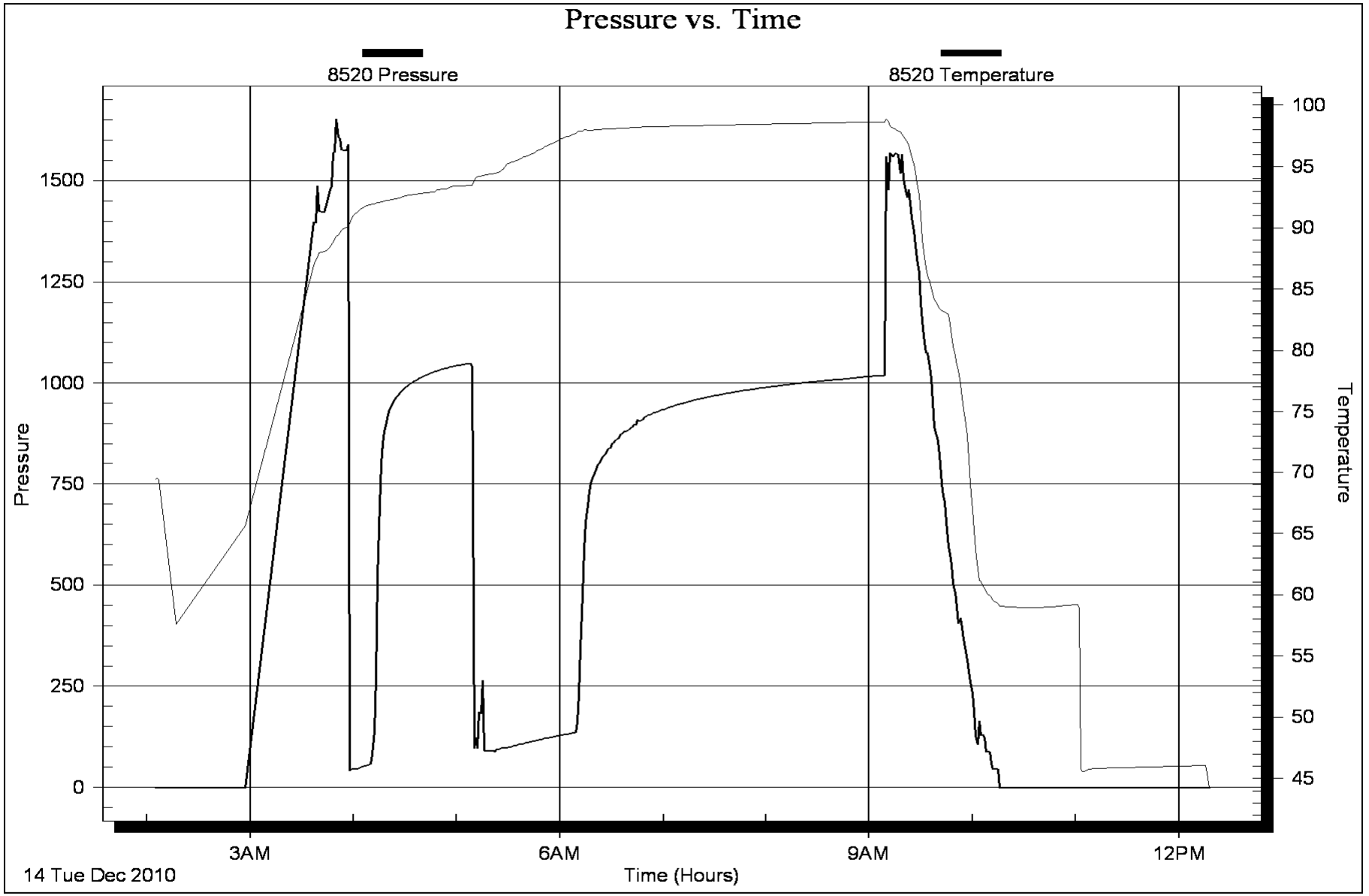
## Gas Rates Information

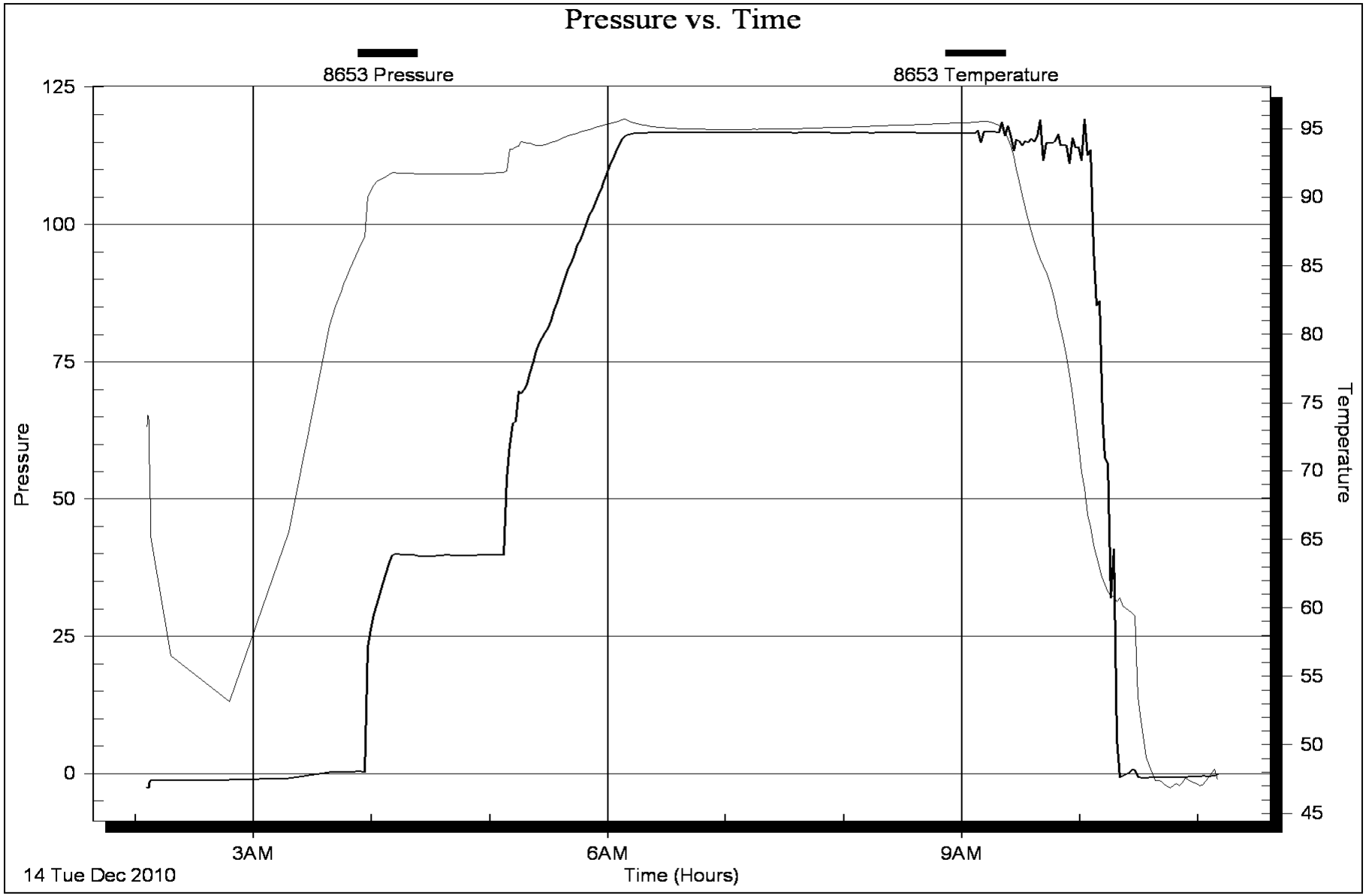
Temperature: 59 deg C
Relative Density: 0.65
Z Factor: 0.8

Gas Rates Table

| Flow Period | Elapsed Time | Choke (mm) | Pressure (kPaa) | Gas Rate ($m^3/d$) |
|---|---|---|---|---|
| | | 0.00 | 0.00 | 0.00 |


Pressure vs. Time
8354 Pressure
8354 Temperature
Initial Hydro-static
Final Hydro-static
End Shut-In(1)
End Shut-In(2)
Open To Flow(1)
Shut-In(1)
Open To Flow(2)
Shut-In(2)
Pressure
Temperature
1500
1250
1000
750
500
250
0
100
95
90
85
80
75
70
65
60
55
50
45
3AM
6AM
9AM
14 Tue Dec 2010
Time (Hours)


Pressure vs. Time
8520 Pressure
8520 Temperature
Pressure
1500
1250
1000
750
500
250
0
Temperature
100
95
90
85
80
75
70
65
60
55
50
45
3AM
6AM
9AM
12PM
14 Tue Dec 2010
Time (Hours)


Pressure vs. Time
8653 Pressure
8653 Temperature
125
100
75
50
25
0
Pressure
95
90
85
80
75
70
65
60
55
50
45
Temperature
3AM
6AM
9AM
Time (Hours)
14 Tue Dec 2010

# DRILL STEM TESTING - DATA LISTING

Sam Gary

1515 Wynkoop Ste 700
Denver Co 80202

ATTN: Neil Sharp

**Steinert et al # 1-30**

**30-16-15-Barton-Ks**

Job Ticket: 041353 **DST#: 1**

Test Start: 2010.12.14 @ 02:05:17

| **Serial # 8354** **Inside** | | | | **Serial # 8354** **Inside** | | | |
|---|---|---|---|---|---|---|---|
| Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) |
| | 0.0 | -0.88 | 69.1 | | 109.5 | 1574.94 | 89.5 |
| | 0.1 | -0.89 | 69.1 | | 111.0 | 1574.62 | 89.5 |
| | 0.2 | -0.89 | 69.1 | | 112.0 | 1587.89 | 89.6 |
| | 0.3 | -0.91 | 69.1 | | 112.2 | 1588.74 | 89.6 |
| | 0.4 | -0.91 | 69.1 | Initial Hydro-static | 112.5 | 1588.71 | 89.6 |
| | 0.5 | -0.92 | 69.1 | | 112.7 | 162.04 | 89.2 |
| | 0.6 | -0.94 | 69.1 | Open To Flow (1) | 113.0 | 40.52 | 89.6 |
| | 0.7 | -0.93 | 69.0 | | 113.2 | 40.46 | 90.0 |
| | 0.8 | -0.93 | 69.0 | | 114.7 | 43.04 | 90.8 |
| | 0.9 | -0.95 | 69.0 | | 116.2 | 45.88 | 90.8 |
| | 1.0 | -0.94 | 69.0 | | 117.7 | 47.17 | 90.9 |
| | 1.1 | -0.94 | 69.0 | | 119.2 | 48.49 | 90.9 |
| | 1.2 | -0.92 | 69.0 | | 120.7 | 50.85 | 91.0 |
| | 1.3 | -0.91 | 69.0 | | 122.2 | 53.16 | 91.1 |
| | 1.4 | -0.93 | 69.0 | | 123.7 | 55.71 | 91.3 |
| | 1.5 | -0.92 | 69.0 | | 124.7 | 56.59 | 91.3 |
| | 1.6 | -0.90 | 69.0 | | 125.0 | 57.32 | 91.3 |
| | 1.7 | -0.91 | 69.0 | Shut-In(1) | 125.2 | 57.31 | 91.3 |
| | 1.8 | -0.96 | 68.9 | | 125.5 | 61.25 | 91.3 |
| | 1.9 | -1.04 | 68.9 | | 125.7 | 69.10 | 91.4 |
| | 12.0 | -1.22 | 52.6 | | 126.0 | 78.35 | 91.4 |
| | 72.0 | 594.83 | 81.3 | | 127.5 | 179.21 | 91.4 |
| | 93.0 | 1399.40 | 86.8 | | 129.0 | 503.56 | 91.5 |
| | 94.5 | 1426.37 | 87.3 | | 130.5 | 753.50 | 91.6 |
| | 96.0 | 1423.58 | 87.5 | | 132.0 | 846.83 | 91.6 |
| | 97.5 | 1422.28 | 87.6 | | 133.5 | 892.04 | 91.6 |
| | 99.0 | 1441.65 | 87.7 | | 135.0 | 921.61 | 91.7 |
| | 100.5 | 1472.08 | 87.9 | | 136.5 | 939.60 | 91.7 |
| | 102.0 | 1487.08 | 88.2 | | 138.0 | 952.30 | 91.7 |
| | 103.5 | 1517.38 | 88.6 | | 139.5 | 962.48 | 91.7 |
| | 105.0 | 1532.26 | 88.9 | | 141.0 | 971.25 | 91.8 |
| | 106.5 | 1562.90 | 89.2 | | 142.5 | 978.40 | 91.8 |
| | 108.0 | 1576.93 | 89.4 | | 144.0 | 984.65 | 91.8 |

Printing every 6 samples

| Serial # 8354 Inside | | | | Serial # 8354 Inside | | | |
|---|---|---|---|---|---|---|---|
| Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) |
| | 145.5 | 990.17 | 91.8 | | 199.7 | 94.60 | 94.0 |
| | 147.0 | 995.08 | 91.9 | | 201.2 | 95.82 | 94.4 |
| | 148.5 | 999.55 | 91.9 | | 202.7 | 97.05 | 94.3 |
| | 150.0 | 1003.71 | 91.9 | | 204.2 | 97.92 | 94.3 |
| | 151.5 | 1007.61 | 92.0 | | 205.7 | 98.99 | 94.3 |
| | 153.0 | 1011.34 | 92.0 | | 207.2 | 100.83 | 94.3 |
| | 154.5 | 1014.42 | 92.1 | | 208.7 | 102.45 | 94.4 |
| | 156.0 | 1017.76 | 92.1 | | 210.2 | 104.18 | 94.5 |
| | 157.5 | 1020.29 | 92.2 | | 211.7 | 105.61 | 94.5 |
| | 159.0 | 1023.07 | 92.3 | | 213.2 | 107.01 | 94.6 |
| | 160.5 | 1025.62 | 92.3 | | 214.7 | 108.74 | 94.7 |
| | 162.0 | 1027.84 | 92.4 | | 216.2 | 110.54 | 94.7 |
| | 163.5 | 1030.09 | 92.6 | | 217.7 | 111.29 | 94.9 |
| | 165.0 | 1031.96 | 92.7 | | 219.2 | 113.11 | 95.0 |
| | 166.5 | 1033.91 | 92.8 | | 220.7 | 114.55 | 95.1 |
| | 168.0 | 1035.63 | 92.8 | | 222.2 | 115.73 | 95.3 |
| | 169.5 | 1037.33 | 92.8 | | 223.7 | 117.15 | 95.4 |
| | 171.0 | 1038.75 | 92.9 | | 225.2 | 118.50 | 95.4 |
| | 172.5 | 1040.12 | 92.9 | | 226.7 | 120.20 | 95.5 |
| | 174.0 | 1041.52 | 92.9 | | 228.2 | 121.39 | 95.5 |
| | 175.5 | 1042.83 | 93.0 | | 229.7 | 122.94 | 95.6 |
| | 177.0 | 1044.09 | 93.0 | | 231.2 | 124.05 | 95.7 |
| | 178.5 | 1045.34 | 93.1 | | 232.7 | 125.37 | 95.8 |
| | 180.0 | 1046.43 | 93.1 | | 234.2 | 126.77 | 95.9 |
| | 181.5 | 1047.36 | 93.1 | | 235.7 | 128.36 | 96.0 |
| | 183.0 | 1048.39 | 93.1 | | 237.2 | 129.59 | 96.1 |
| | 183.5 | 1048.90 | 93.2 | | 238.7 | 130.65 | 96.2 |
| | 183.7 | 1048.98 | 93.2 | | 240.2 | 132.01 | 96.3 |
| End Shut-In(1) | 184.0 | 1049.05 | 93.2 | | 241.7 | 133.31 | 96.4 |
| Open To Flow (2) | 184.2 | 77.07 | 92.7 | | 243.2 | 134.26 | 96.5 |
| | 184.5 | 199.79 | 93.0 | | 244.0 | 134.81 | 96.6 |
| | 184.7 | 115.58 | 92.9 | | 244.2 | 134.92 | 96.6 |
| | 186.2 | 138.31 | 93.7 | Shut-In(2) | 244.5 | 134.87 | 96.6 |
| | 187.7 | 140.13 | 93.8 | | 244.7 | 143.23 | 96.6 |
| | 189.2 | 218.25 | 93.8 | | 245.0 | 157.04 | 96.6 |
| | 190.7 | 99.31 | 93.7 | | 245.2 | 171.06 | 96.6 |
| | 192.2 | 89.92 | 93.8 | | 246.7 | 299.81 | 96.7 |
| | 193.7 | 90.00 | 93.8 | | 248.2 | 499.68 | 96.8 |
| | 195.2 | 89.91 | 93.8 | | 249.7 | 636.91 | 97.0 |
| | 196.7 | 90.46 | 93.8 | | 251.2 | 702.13 | 97.4 |
| | 198.2 | 93.27 | 93.9 | | 252.7 | 748.76 | 97.5 |

Printing every 6 samples

| Serial # 8354 Inside | | | | Serial # 8354 Inside | | | |
|---|---|---|---|---|---|---|---|
| Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) |
| | 254.2 | 764.95 | 97.6 | | 315.7 | 959.78 | 97.8 |
| | 255.7 | 781.78 | 97.6 | | 317.2 | 961.21 | 97.8 |
| | 257.2 | 797.70 | 97.7 | | 318.7 | 962.73 | 97.8 |
| | 258.7 | 807.59 | 97.7 | | 320.2 | 963.96 | 97.8 |
| | 260.2 | 817.75 | 97.8 | | 321.7 | 965.50 | 97.8 |
| | 261.7 | 826.67 | 97.8 | | 323.2 | 966.83 | 97.8 |
| | 263.2 | 835.63 | 97.8 | | 324.7 | 968.12 | 97.8 |
| | 264.7 | 850.81 | 97.8 | | 326.2 | 969.25 | 97.8 |
| | 266.2 | 852.40 | 97.8 | | 327.7 | 970.39 | 97.8 |
| | 267.7 | 859.85 | 97.8 | | 329.2 | 971.49 | 97.8 |
| | 269.2 | 864.12 | 97.8 | | 330.7 | 972.89 | 97.8 |
| | 270.7 | 874.60 | 97.8 | | 332.2 | 974.02 | 97.8 |
| | 272.2 | 880.26 | 97.8 | | 333.7 | 975.20 | 97.8 |
| | 273.7 | 881.55 | 97.8 | | 335.2 | 976.28 | 97.8 |
| | 275.2 | 886.03 | 97.8 | | 336.7 | 977.40 | 97.8 |
| | 276.7 | 890.41 | 97.8 | | 338.2 | 978.34 | 97.8 |
| | 278.2 | 896.59 | 97.8 | | 339.7 | 979.45 | 97.8 |
| | 279.7 | 907.66 | 97.8 | | 341.2 | 980.44 | 97.9 |
| | 281.2 | 906.94 | 97.8 | | 342.7 | 981.51 | 97.9 |
| | 282.7 | 909.00 | 97.8 | | 344.2 | 982.40 | 97.9 |
| | 284.2 | 915.68 | 97.8 | | 345.7 | 983.39 | 97.9 |
| | 285.7 | 919.94 | 97.8 | | 347.2 | 984.37 | 97.9 |
| | 287.2 | 921.77 | 97.8 | | 348.7 | 985.22 | 97.9 |
| | 288.7 | 925.01 | 97.8 | | 350.2 | 986.18 | 97.9 |
| | 290.2 | 927.17 | 97.8 | | 351.7 | 986.96 | 97.9 |
| | 291.7 | 929.57 | 97.8 | | 353.2 | 987.84 | 97.9 |
| | 293.2 | 931.86 | 97.8 | | 354.7 | 988.68 | 97.9 |
| | 294.7 | 934.08 | 97.8 | | 356.2 | 989.53 | 97.9 |
| | 296.2 | 936.46 | 97.8 | | 357.7 | 990.36 | 97.9 |
| | 297.7 | 938.74 | 97.8 | | 359.2 | 991.28 | 97.9 |
| | 299.2 | 940.88 | 97.8 | | 360.7 | 992.04 | 97.9 |
| | 300.7 | 942.85 | 97.8 | | 362.2 | 992.80 | 97.9 |
| | 302.2 | 944.80 | 97.8 | | 363.7 | 993.69 | 97.9 |
| | 303.7 | 946.55 | 97.8 | | 365.2 | 994.37 | 97.9 |
| | 305.2 | 948.18 | 97.8 | | 366.7 | 995.14 | 97.9 |
| | 306.7 | 949.89 | 97.8 | | 368.2 | 995.95 | 97.9 |
| | 308.2 | 951.52 | 97.8 | | 369.7 | 996.71 | 97.9 |
| | 309.7 | 953.28 | 97.8 | | 371.2 | 997.38 | 97.9 |
| | 311.2 | 954.87 | 97.8 | | 372.7 | 998.20 | 97.9 |
| | 312.7 | 956.60 | 97.8 | | 374.2 | 998.88 | 97.9 |
| | 314.2 | 958.04 | 97.8 | | 375.7 | 999.48 | 97.9 |

Printing every 6 samples

| Serial # 8354 Inside | | | | Serial # 8354 Inside | | | |
|---|---|---|---|---|---|---|---|
| Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) |
| | 377.2 | 1000.35 | 97.9 | | 431.5 | 1565.49 | 97.2 |
| | 378.7 | 1000.85 | 98.0 | | 433.0 | 1556.81 | 97.1 |
| | 380.2 | 1001.74 | 98.0 | | 434.5 | 1561.59 | 96.5 |
| | 381.7 | 1002.44 | 98.0 | | 436.0 | 1499.58 | 96.1 |
| | 383.2 | 1002.83 | 98.0 | | 437.5 | 1561.65 | 95.5 |
| | 384.7 | 1003.50 | 98.0 | | 439.0 | 1443.08 | 94.5 |
| | 386.2 | 1004.06 | 98.0 | | 440.5 | 1356.73 | 93.3 |
| | 387.7 | 1004.67 | 98.0 | | 442.0 | 1340.19 | 92.3 |
| | 389.2 | 1005.32 | 98.0 | | 443.5 | 1244.26 | 90.9 |
| | 390.7 | 1006.01 | 98.0 | | 445.0 | 1236.69 | 89.4 |
| | 392.2 | 1006.53 | 98.0 | | 446.5 | 1163.69 | 87.7 |
| | 393.7 | 1007.04 | 98.0 | | 448.0 | 1066.46 | 86.6 |
| | 395.2 | 1007.67 | 98.0 | | 449.5 | 1042.22 | 85.6 |
| | 396.7 | 1008.22 | 98.0 | | 451.0 | 1010.61 | 84.8 |
| | 398.2 | 1008.78 | 98.0 | | 452.5 | 941.64 | 84.1 |
| | 399.7 | 1009.38 | 98.0 | | 454.0 | 848.49 | 83.5 |
| | 401.2 | 1009.91 | 98.0 | | 455.5 | 804.04 | 83.1 |
| | 402.7 | 1010.52 | 98.0 | | 457.0 | 761.77 | 82.8 |
| | 404.2 | 1011.37 | 98.0 | | 458.5 | 716.88 | 82.7 |
| | 405.7 | 1011.87 | 98.0 | | 460.0 | 675.59 | 82.7 |
| | 407.2 | 1012.63 | 98.1 | | 461.5 | 611.80 | 82.0 |
| | 408.7 | 1013.25 | 98.1 | | 463.0 | 549.05 | 80.5 |
| | 410.2 | 1013.77 | 98.1 | | 464.5 | 485.11 | 79.3 |
| | 411.7 | 1014.30 | 98.1 | | 466.0 | 409.08 | 78.2 |
| | 413.2 | 1014.84 | 98.1 | | 467.5 | 408.09 | 77.2 |
| | 414.7 | 1015.34 | 98.1 | | 469.0 | 391.37 | 75.5 |
| | 416.2 | 1015.89 | 98.1 | | 470.5 | 374.10 | 74.3 |
| | 417.7 | 1016.46 | 98.1 | | 472.0 | 311.92 | 72.7 |
| | 419.2 | 1016.87 | 98.1 | | 473.5 | 262.70 | 70.0 |
| | 420.7 | 1017.21 | 98.1 | | 475.0 | 231.40 | 66.8 |
| | 422.2 | 1018.24 | 98.1 | | 476.5 | 168.22 | 64.1 |
| | 423.7 | 1018.41 | 98.1 | | 478.0 | 105.10 | 61.9 |
| | 424.2 | 1018.49 | 98.1 | | 479.5 | 162.85 | 60.6 |
| | 424.5 | 1018.50 | 98.1 | | 481.0 | 131.21 | 60.1 |
| End Shut-In(2) | 424.7 | 1018.47 | 98.1 | | 482.5 | 87.54 | 59.8 |
| Final Hydro-static | 425.0 | 1546.31 | 98.4 | | 484.0 | 87.51 | 59.4 |
| | 425.2 | 1602.47 | 98.3 | | 485.5 | 87.48 | 59.2 |
| | 425.5 | 1532.78 | 98.2 | | 487.0 | 43.60 | 58.9 |
| | 427.0 | 1569.40 | 97.2 | | 488.5 | 43.59 | 58.7 |
| | 428.5 | 1561.78 | 97.1 | | 490.0 | 43.52 | 58.7 |
| | 430.0 | 1566.21 | 97.1 | | 491.5 | -1.23 | 58.4 |

Printing every 6 samples

| Serial # 8354 Inside | | | | Serial # 8520 Outside | | | |
|---|---|---|---|---|---|---|---|
| Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) |
| | 493.0 | -1.26 | 58.4 | | | | |
| | 494.5 | -1.30 | 58.4 | | | | |
| | 496.0 | -1.29 | 58.4 | | | | |
| | 497.5 | -1.30 | 58.4 | | | | |
| | 499.0 | -1.30 | 58.4 | | | | |
| | 500.5 | -1.31 | 58.3 | | | | |
| | 502.0 | -1.30 | 58.3 | | | | |
| | 503.5 | -1.31 | 58.3 | | | | |
| | 505.0 | -1.32 | 58.3 | | | | |
| | 506.5 | -1.30 | 58.3 | | | | |
| | 508.0 | -1.30 | 58.3 | | | | |
| | 509.5 | -1.33 | 58.3 | | | | |
| | 511.0 | -1.32 | 58.3 | | | | |
| | 512.5 | -1.31 | 58.3 | | | | |
| | 514.0 | -1.30 | 58.3 | | | | |
| | 515.5 | -1.31 | 58.3 | | | | |
| | 517.0 | -1.30 | 58.3 | | | | |
| | 518.5 | -1.30 | 58.3 | | | | |
| | 520.0 | -1.28 | 58.3 | | | | |
| | 521.5 | -1.29 | 58.4 | | | | |
| | 523.0 | -1.32 | 58.4 | | | | |
| | 524.5 | -1.36 | 58.4 | | | | |
| | 526.0 | -1.38 | 58.4 | | | | |
| | 527.5 | -1.33 | 58.5 | | | | |
| | 529.0 | -1.31 | 58.5 | | | | |
| | 530.5 | -1.32 | 58.5 | | | | |
| | 532.0 | -1.30 | 58.5 | | | | |
| | 533.5 | -1.30 | 58.5 | | | | |
| | 535.0 | -1.34 | 58.5 | | | | |
| | 536.5 | -1.40 | 58.4 | | | | |
| | 538.0 | -1.42 | 44.8 | | | | |
| | 539.5 | -1.54 | 45.0 | | | | |
| | 541.0 | -1.51 | 45.6 | | | | |
| | 542.5 | -1.51 | 46.2 | | | | |
| | 544.0 | -1.51 | 46.8 | | | | |
| | 545.5 | -1.45 | 47.5 | | | | |
| | 547.0 | -1.44 | 47.5 | | | | |
| | 548.5 | -1.59 | 45.8 | | | | |

Printing every 6 samples

# DRILL STEM TESTING - DATA LISTING

Sam Gary

1515 Wynkoop Ste 700
Denver Co 80202

ATTN: Neil Sharp

**Steinert et al # 1-30**

**30-16-15-Barton-Ks**

Job Ticket: 041353 **DST#: 1**

Test Start: 2010.12.14 @ 02:05:17

| **Serial # 8520** | **Outside** | | | **Serial # 8520** | **Outside** | | |
|---|---|---|---|---|---|---|---|
| Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) |
| | 0.0 | -0.88 | 69.4 | | 109.5 | 1575.15 | 89.9 |
| | 0.1 | -0.87 | 69.4 | | 111.0 | 1574.44 | 90.0 |
| | 0.2 | -0.89 | 69.5 | | 112.5 | 1611.81 | 90.2 |
| | 0.3 | -0.90 | 69.5 | | 114.0 | 44.05 | 90.8 |
| | 0.4 | -0.92 | 69.5 | | 115.5 | 45.38 | 91.1 |
| | 0.5 | -0.91 | 69.5 | | 117.0 | 45.62 | 91.3 |
| | 0.6 | -0.93 | 69.5 | | 118.5 | 48.07 | 91.4 |
| | 0.7 | -0.94 | 69.5 | | 120.0 | 50.21 | 91.6 |
| | 0.8 | -0.94 | 69.5 | | 121.5 | 52.02 | 91.7 |
| | 0.9 | -0.94 | 69.5 | | 123.0 | 54.20 | 91.8 |
| | 1.0 | -0.95 | 69.5 | | 124.5 | 56.18 | 91.9 |
| | 1.1 | -0.96 | 69.5 | | 126.0 | 81.64 | 91.9 |
| | 1.2 | -0.94 | 69.5 | | 127.5 | 189.24 | 92.0 |
| | 1.3 | -0.95 | 69.4 | | 129.0 | 520.98 | 92.0 |
| | 1.4 | -0.97 | 69.4 | | 130.5 | 761.35 | 92.1 |
| | 1.5 | -0.97 | 69.4 | | 132.0 | 849.57 | 92.1 |
| | 1.6 | -0.97 | 69.4 | | 133.5 | 893.76 | 92.2 |
| | 1.7 | -0.96 | 69.4 | | 135.0 | 922.73 | 92.2 |
| | 1.8 | -0.96 | 69.4 | | 136.5 | 940.31 | 92.3 |
| | 1.9 | -0.97 | 69.3 | | 138.0 | 952.84 | 92.3 |
| | 12.0 | -1.03 | 57.6 | | 139.5 | 962.96 | 92.4 |
| | 72.0 | 551.80 | 81.8 | | 141.0 | 971.51 | 92.4 |
| | 93.0 | 1395.96 | 87.4 | | 142.5 | 978.66 | 92.5 |
| | 94.5 | 1425.94 | 87.8 | | 144.0 | 984.90 | 92.5 |
| | 96.0 | 1423.55 | 88.0 | | 145.5 | 990.42 | 92.6 |
| | 97.5 | 1422.03 | 88.0 | | 147.0 | 995.15 | 92.6 |
| | 99.0 | 1441.27 | 88.1 | | 148.5 | 999.65 | 92.7 |
| | 100.5 | 1471.56 | 88.3 | | 150.0 | 1004.26 | 92.7 |
| | 102.0 | 1486.75 | 88.5 | | 151.5 | 1007.69 | 92.8 |
| | 103.5 | 1516.98 | 89.0 | | 153.0 | 1011.16 | 92.8 |
| | 105.0 | 1651.45 | 89.3 | | 154.5 | 1014.41 | 92.8 |
| | 106.5 | 1562.62 | 89.6 | | 156.0 | 1017.76 | 92.8 |
| | 108.0 | 1576.90 | 89.8 | | 157.5 | 1020.57 | 92.9 |

Printing every 6 samples

| Serial # 8520 Outside | | | | Serial # 8520 Outside | | | |
|---|---|---|---|---|---|---|---|
| Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) |
| | 159.0 | 1023.05 | 92.9 | | 220.5 | 114.62 | 96.2 |
| | 160.5 | 1025.58 | 92.9 | | 222.0 | 115.82 | 96.3 |
| | 162.0 | 1027.92 | 92.9 | | 223.5 | 117.44 | 96.4 |
| | 163.5 | 1030.06 | 93.1 | | 225.0 | 118.76 | 96.5 |
| | 165.0 | 1031.98 | 93.1 | | 226.5 | 120.33 | 96.6 |
| | 166.5 | 1033.84 | 93.2 | | 228.0 | 121.32 | 96.7 |
| | 168.0 | 1035.53 | 93.2 | | 229.5 | 122.92 | 96.8 |
| | 169.5 | 1037.31 | 93.2 | | 231.0 | 124.20 | 96.9 |
| | 171.0 | 1038.73 | 93.3 | | 232.5 | 125.33 | 97.0 |
| | 172.5 | 1040.16 | 93.4 | | 234.0 | 126.81 | 97.1 |
| | 174.0 | 1041.55 | 93.4 | | 235.5 | 128.58 | 97.2 |
| | 175.5 | 1042.84 | 93.4 | | 237.0 | 129.62 | 97.3 |
| | 177.0 | 1044.00 | 93.4 | | 238.5 | 130.90 | 97.4 |
| | 178.5 | 1045.21 | 93.4 | | 240.0 | 132.24 | 97.5 |
| | 180.0 | 1046.33 | 93.4 | | 241.5 | 133.39 | 97.5 |
| | 181.5 | 1047.21 | 93.4 | | 243.0 | 134.45 | 97.6 |
| | 183.0 | 1048.54 | 93.5 | | 244.5 | 135.82 | 97.8 |
| | 184.5 | 292.54 | 93.4 | | 246.0 | 230.51 | 97.9 |
| | 186.0 | 122.47 | 94.1 | | 247.5 | 409.81 | 97.9 |
| | 187.5 | 96.78 | 94.2 | | 249.0 | 587.10 | 98.0 |
| | 189.0 | 181.74 | 94.2 | | 250.5 | 678.13 | 98.0 |
| | 190.5 | 136.73 | 94.2 | | 252.0 | 730.54 | 98.0 |
| | 192.0 | 90.03 | 94.3 | | 253.5 | 757.01 | 98.0 |
| | 193.5 | 89.94 | 94.3 | | 255.0 | 776.88 | 98.0 |
| | 195.0 | 89.86 | 94.4 | | 256.5 | 796.86 | 98.0 |
| | 196.5 | 90.86 | 94.4 | | 258.0 | 802.57 | 98.0 |
| | 198.0 | 93.15 | 94.5 | | 259.5 | 813.00 | 98.0 |
| | 199.5 | 94.43 | 94.6 | | 261.0 | 822.81 | 98.0 |
| | 201.0 | 95.95 | 94.7 | | 262.5 | 832.91 | 98.1 |
| | 202.5 | 96.97 | 94.9 | | 264.0 | 839.28 | 98.1 |
| | 204.0 | 97.97 | 95.2 | | 265.5 | 851.28 | 98.1 |
| | 205.5 | 99.07 | 95.3 | | 267.0 | 858.47 | 98.1 |
| | 207.0 | 100.77 | 95.4 | | 268.5 | 862.12 | 98.1 |
| | 208.5 | 102.33 | 95.4 | | 270.0 | 872.66 | 98.1 |
| | 210.0 | 103.96 | 95.5 | | 271.5 | 880.10 | 98.1 |
| | 211.5 | 105.76 | 95.6 | | 273.0 | 880.51 | 98.2 |
| | 213.0 | 106.95 | 95.8 | | 274.5 | 883.99 | 98.2 |
| | 214.5 | 108.52 | 95.8 | | 276.0 | 888.62 | 98.2 |
| | 216.0 | 110.45 | 95.9 | | 277.5 | 892.78 | 98.2 |
| | 217.5 | 111.47 | 96.0 | | 279.0 | 897.48 | 98.2 |
| | 219.0 | 113.27 | 96.1 | | 280.5 | 908.55 | 98.2 |

Printing every 6 samples

| Serial # 8520 Outside | | | | Serial # 8520 Outside | | | |
|---|---|---|---|---|---|---|---|
| Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) |
| | 282.0 | 907.91 | 98.2 | | 343.5 | 981.96 | 98.4 |
| | 283.5 | 910.90 | 98.2 | | 345.0 | 983.02 | 98.4 |
| | 285.0 | 917.81 | 98.2 | | 346.5 | 984.00 | 98.4 |
| | 286.5 | 920.47 | 98.2 | | 348.0 | 984.91 | 98.4 |
| | 288.0 | 923.44 | 98.3 | | 349.5 | 985.66 | 98.4 |
| | 289.5 | 926.63 | 98.3 | | 351.0 | 986.75 | 98.5 |
| | 291.0 | 928.80 | 98.3 | | 352.5 | 987.44 | 98.5 |
| | 292.5 | 930.90 | 98.3 | | 354.0 | 988.33 | 98.5 |
| | 294.0 | 933.12 | 98.3 | | 355.5 | 989.15 | 98.5 |
| | 295.5 | 935.68 | 98.3 | | 357.0 | 990.08 | 98.5 |
| | 297.0 | 937.88 | 98.3 | | 358.5 | 990.83 | 98.5 |
| | 298.5 | 940.09 | 98.3 | | 360.0 | 991.66 | 98.5 |
| | 300.0 | 942.04 | 98.3 | | 361.5 | 992.55 | 98.5 |
| | 301.5 | 943.98 | 98.3 | | 363.0 | 993.43 | 98.5 |
| | 303.0 | 945.86 | 98.3 | | 364.5 | 994.09 | 98.5 |
| | 304.5 | 947.61 | 98.3 | | 366.0 | 994.96 | 98.5 |
| | 306.0 | 949.19 | 98.3 | | 367.5 | 995.61 | 98.5 |
| | 307.5 | 950.85 | 98.3 | | 369.0 | 996.46 | 98.5 |
| | 309.0 | 952.64 | 98.3 | | 370.5 | 997.16 | 98.5 |
| | 310.5 | 954.23 | 98.3 | | 372.0 | 998.00 | 98.5 |
| | 312.0 | 956.19 | 98.3 | | 373.5 | 998.63 | 98.5 |
| | 313.5 | 957.55 | 98.3 | | 375.0 | 999.20 | 98.5 |
| | 315.0 | 959.25 | 98.3 | | 376.5 | 1000.05 | 98.5 |
| | 316.5 | 960.66 | 98.3 | | 378.0 | 1000.60 | 98.5 |
| | 318.0 | 962.16 | 98.3 | | 379.5 | 1001.54 | 98.5 |
| | 319.5 | 963.54 | 98.3 | | 381.0 | 1001.92 | 98.5 |
| | 321.0 | 964.89 | 98.3 | | 382.5 | 1002.52 | 98.5 |
| | 322.5 | 966.37 | 98.4 | | 384.0 | 1003.26 | 98.5 |
| | 324.0 | 967.60 | 98.4 | | 385.5 | 1003.79 | 98.5 |
| | 325.5 | 968.88 | 98.4 | | 387.0 | 1004.55 | 98.5 |
| | 327.0 | 969.88 | 98.4 | | 388.5 | 1005.05 | 98.5 |
| | 328.5 | 971.25 | 98.4 | | 390.0 | 1005.66 | 98.6 |
| | 330.0 | 972.34 | 98.4 | | 391.5 | 1006.32 | 98.6 |
| | 331.5 | 973.61 | 98.4 | | 393.0 | 1006.86 | 98.6 |
| | 333.0 | 974.65 | 98.4 | | 394.5 | 1007.42 | 98.6 |
| | 334.5 | 975.94 | 98.4 | | 396.0 | 1008.01 | 98.6 |
| | 336.0 | 976.96 | 98.4 | | 397.5 | 1008.50 | 98.6 |
| | 337.5 | 977.96 | 98.4 | | 399.0 | 1009.11 | 98.6 |
| | 339.0 | 978.93 | 98.4 | | 400.5 | 1009.66 | 98.6 |
| | 340.5 | 980.02 | 98.4 | | 402.0 | 1010.28 | 98.6 |
| | 342.0 | 981.06 | 98.4 | | 403.5 | 1010.98 | 98.6 |

Printing every 6 samples

| Serial # 8520 Outside | | | | Serial # 8520 Outside | | | |
|---|---|---|---|---|---|---|---|
| Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) |
| | 405.0 | 1011.71 | 98.6 | | 466.5 | 435.08 | 78.5 |
| | 406.5 | 1012.09 | 98.6 | | 468.0 | 418.02 | 77.2 |
| | 408.0 | 1012.76 | 98.6 | | 469.5 | 401.44 | 75.6 |
| | 409.5 | 1013.62 | 98.6 | | 471.0 | 345.22 | 74.4 |
| | 411.0 | 1014.03 | 98.6 | | 472.5 | 302.36 | 72.0 |
| | 412.5 | 1014.51 | 98.6 | | 474.0 | 259.78 | 69.0 |
| | 414.0 | 1015.15 | 98.6 | | 475.5 | 196.79 | 66.1 |
| | 415.5 | 1015.62 | 98.6 | | 477.0 | 126.92 | 63.7 |
| | 417.0 | 1016.20 | 98.6 | | 478.5 | 122.84 | 61.4 |
| | 418.5 | 1016.41 | 98.6 | | 480.0 | 128.84 | 61.1 |
| | 420.0 | 1017.24 | 98.6 | | 481.5 | 131.39 | 60.6 |
| | 421.5 | 1017.66 | 98.6 | | 483.0 | 87.73 | 60.2 |
| | 423.0 | 1018.35 | 98.6 | | 484.5 | 87.78 | 60.0 |
| | 424.5 | 1018.47 | 98.7 | | 486.0 | 59.81 | 59.8 |
| | 426.0 | 1477.03 | 98.7 | | 487.5 | 44.06 | 59.5 |
| | 427.5 | 1567.58 | 98.3 | | 489.0 | 44.04 | 59.4 |
| | 429.0 | 1560.03 | 98.1 | | 490.5 | -1.08 | 59.2 |
| | 430.5 | 1568.21 | 98.0 | | 492.0 | -0.84 | 59.1 |
| | 432.0 | 1565.08 | 97.9 | | 493.5 | -0.86 | 59.0 |
| | 433.5 | 1647.73 | 97.8 | | 495.0 | -0.88 | 59.0 |
| | 435.0 | 1505.53 | 97.5 | | 496.5 | -0.88 | 59.0 |
| | 436.5 | 1509.80 | 97.2 | | 498.0 | -0.86 | 59.0 |
| | 438.0 | 1477.77 | 96.7 | | 499.5 | -0.84 | 59.0 |
| | 439.5 | 1374.70 | 96.0 | | 501.0 | -0.85 | 59.0 |
| | 441.0 | 1375.12 | 95.2 | | 502.5 | -0.85 | 59.0 |
| | 442.5 | 1264.63 | 94.1 | | 504.0 | -0.87 | 59.0 |
| | 444.0 | 1271.77 | 92.7 | | 505.5 | -0.87 | 58.9 |
| | 445.5 | 1194.73 | 89.9 | | 507.0 | -0.88 | 58.9 |
| | 447.0 | 1100.70 | 87.6 | | 508.5 | -0.87 | 58.9 |
| | 448.5 | 1092.05 | 86.3 | | 510.0 | -0.91 | 58.9 |
| | 450.0 | 1039.57 | 85.6 | | 511.5 | -0.92 | 58.9 |
| | 451.5 | 982.67 | 84.9 | | 513.0 | -0.91 | 59.0 |
| | 453.0 | 890.62 | 84.2 | | 514.5 | -0.87 | 59.0 |
| | 454.5 | 853.69 | 83.7 | | 516.0 | -0.86 | 59.0 |
| | 456.0 | 820.41 | 83.4 | | 517.5 | -0.85 | 59.0 |
| | 457.5 | 766.60 | 83.2 | | 519.0 | -0.84 | 59.0 |
| | 459.0 | 704.33 | 83.1 | | 520.5 | -0.83 | 59.0 |
| | 460.5 | 640.38 | 83.0 | | 522.0 | -0.81 | 59.0 |
| | 462.0 | 576.21 | 82.1 | | 523.5 | -0.80 | 59.0 |
| | 463.5 | 518.00 | 80.8 | | 525.0 | -0.83 | 59.1 |
| | 465.0 | 481.05 | 79.5 | | 526.5 | -0.86 | 59.1 |

Printing every 6 samples

| Serial # 8520 Outside | | | | Serial # 8653 Inside | | | |
|---|---|---|---|---|---|---|---|
| Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) |
| | 528.0 | -0.89 | 59.1 | | | | |
| | 529.5 | -0.87 | 59.1 | | | | |
| | 531.0 | -0.86 | 59.1 | | | | |
| | 532.5 | -0.89 | 59.1 | | | | |
| | 534.0 | -0.91 | 59.2 | | | | |
| | 535.5 | -0.91 | 59.2 | | | | |
| | 537.0 | -1.00 | 59.0 | | | | |
| | 538.5 | -1.00 | 45.6 | | | | |
| | 540.0 | -1.06 | 45.6 | | | | |
| | 541.5 | -1.04 | 45.7 | | | | |
| | 543.0 | -1.03 | 45.7 | | | | |
| | 544.5 | -1.02 | 45.8 | | | | |
| | 610.5 | -1.12 | 46.1 | | | | |
| | 612.0 | -0.94 | 44.6 | | | | |
| | 613.0 | -1.15 | 46.3 | | | | |

Printing every 3 samples

# DRILL STEM TESTING - DATA LISTING

Sam Gary

1515 Wynkoop Ste 700
Denver Co 80202

ATTN: Neil Sharp

**Steinert et al # 1-30**

**30-16-15-Barton-Ks**

Job Ticket: 041353 **DST#: 1**

Test Start: 2010.12.14 @ 02:05:17

| **Serial # 8653** **Inside** | | | | **Serial # 8653** **Inside** | | | |
|---|---|---|---|---|---|---|---|
| Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) |
| | 0.0 | -2.50 | 73.3 | | 1.6 | -1.26 | 67.1 |
| | 0.1 | -2.54 | 73.5 | | 1.7 | -1.24 | 66.8 |
| | 0.1 | -2.58 | 73.7 | | 1.8 | -1.22 | 66.5 |
| | 0.2 | -2.57 | 73.9 | | 1.8 | -1.21 | 66.2 |
| | 0.2 | -2.55 | 74.0 | | 1.9 | -1.23 | 65.9 |
| | 0.3 | -2.56 | 74.1 | | 1.9 | -1.21 | 65.5 |
| | 0.3 | -2.56 | 74.1 | | 2.0 | -1.21 | 65.2 |
| | 0.3 | -2.55 | 74.1 | | 12.0 | -1.23 | 56.5 |
| | 0.4 | -2.56 | 74.1 | | 42.0 | -1.17 | 53.1 |
| | 0.4 | -2.56 | 74.1 | | 72.0 | -0.85 | 65.5 |
| | 0.5 | -2.53 | 74.1 | | 92.5 | 0.21 | 80.6 |
| | 0.6 | -2.53 | 74.1 | | 94.0 | 0.21 | 81.3 |
| | 0.6 | -2.55 | 74.0 | | 95.5 | 0.21 | 82.0 |
| | 0.6 | -2.52 | 73.9 | | 97.0 | 0.24 | 82.6 |
| | 0.7 | -2.49 | 73.9 | | 98.5 | 0.28 | 83.1 |
| | 0.8 | -2.45 | 73.7 | | 100.0 | 0.29 | 83.7 |
| | 0.8 | -2.44 | 73.5 | | 101.5 | 0.31 | 84.2 |
| | 0.9 | -2.40 | 73.2 | | 103.0 | 0.33 | 84.7 |
| | 0.9 | -2.41 | 72.7 | | 104.5 | 0.34 | 85.2 |
| | 0.9 | -2.43 | 72.4 | | 106.0 | 0.35 | 85.7 |
| | 1.0 | -2.39 | 72.3 | | 107.5 | 0.36 | 86.2 |
| | 1.0 | -1.75 | 70.9 | | 109.0 | 0.36 | 86.7 |
| | 1.1 | -1.63 | 70.6 | | 110.5 | 0.34 | 87.1 |
| | 1.1 | -1.56 | 70.3 | | 112.0 | 22.93 | 90.1 |
| | 1.2 | -1.50 | 69.8 | | 113.5 | 26.25 | 90.4 |
| | 1.3 | -1.46 | 69.5 | | 115.0 | 28.96 | 90.9 |
| | 1.3 | -1.42 | 69.3 | | 116.5 | 30.80 | 91.1 |
| | 1.4 | -1.40 | 69.0 | | 118.0 | 32.61 | 91.3 |
| | 1.4 | -1.36 | 68.7 | | 119.5 | 34.57 | 91.4 |
| | 1.5 | -1.34 | 68.4 | | 121.0 | 36.42 | 91.5 |
| | 1.5 | -1.32 | 68.1 | | 122.5 | 38.16 | 91.6 |
| | 1.5 | -1.30 | 67.8 | | 124.0 | 39.62 | 91.8 |
| | 1.6 | -1.28 | 67.5 | | 125.5 | 39.89 | 91.8 |

Printing every 3 samples

| Serial # 8653 Inside | | | | Serial # 8653 Inside | | | |
|---|---|---|---|---|---|---|---|
| Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) |
| | 127.0 | 39.89 | 91.8 | | 188.5 | 69.67 | 93.8 |
| | 128.5 | 39.86 | 91.8 | | 190.0 | 69.32 | 94.1 |
| | 130.0 | 39.83 | 91.8 | | 191.5 | 69.95 | 94.0 |
| | 131.5 | 39.80 | 91.8 | | 193.0 | 70.87 | 93.9 |
| | 133.0 | 39.78 | 91.7 | | 194.5 | 73.11 | 93.9 |
| | 134.5 | 39.75 | 91.7 | | 196.0 | 74.85 | 93.8 |
| | 136.0 | 39.71 | 91.7 | | 197.5 | 76.95 | 93.8 |
| | 137.5 | 39.65 | 91.7 | | 199.0 | 78.41 | 93.8 |
| | 139.0 | 39.56 | 91.7 | | 200.5 | 79.42 | 93.8 |
| | 140.5 | 39.51 | 91.7 | | 202.0 | 80.32 | 93.8 |
| | 142.0 | 39.48 | 91.7 | | 203.5 | 81.12 | 93.9 |
| | 143.5 | 39.47 | 91.7 | | 205.0 | 82.51 | 94.0 |
| | 145.0 | 39.54 | 91.7 | | 206.5 | 84.49 | 94.1 |
| | 146.5 | 39.63 | 91.7 | | 208.0 | 85.79 | 94.1 |
| | 148.0 | 39.66 | 91.7 | | 209.5 | 87.43 | 94.2 |
| | 149.5 | 39.69 | 91.7 | | 211.0 | 88.77 | 94.3 |
| | 151.0 | 39.73 | 91.7 | | 212.5 | 90.51 | 94.4 |
| | 152.5 | 39.73 | 91.7 | | 214.0 | 92.07 | 94.5 |
| | 154.0 | 39.71 | 91.7 | | 215.5 | 93.13 | 94.5 |
| | 155.5 | 39.70 | 91.7 | | 217.0 | 94.58 | 94.6 |
| | 157.0 | 39.70 | 91.7 | | 218.5 | 96.37 | 94.7 |
| | 158.5 | 39.67 | 91.7 | | 220.0 | 97.19 | 94.7 |
| | 160.0 | 39.66 | 91.7 | | 221.5 | 98.74 | 94.8 |
| | 161.5 | 39.67 | 91.7 | | 223.0 | 100.22 | 94.9 |
| | 163.0 | 39.68 | 91.7 | | 224.5 | 101.76 | 94.9 |
| | 164.5 | 39.68 | 91.7 | | 226.0 | 102.63 | 95.0 |
| | 166.0 | 39.70 | 91.7 | | 227.5 | 103.94 | 95.1 |
| | 167.5 | 39.72 | 91.7 | | 229.0 | 105.41 | 95.1 |
| | 169.0 | 39.74 | 91.7 | | 230.5 | 106.42 | 95.2 |
| | 170.5 | 39.73 | 91.7 | | 232.0 | 107.86 | 95.3 |
| | 172.0 | 39.76 | 91.7 | | 233.5 | 109.18 | 95.3 |
| | 173.5 | 39.78 | 91.8 | | 235.0 | 110.71 | 95.4 |
| | 175.0 | 39.78 | 91.8 | | 236.5 | 111.75 | 95.4 |
| | 176.5 | 39.79 | 91.8 | | 238.0 | 113.14 | 95.5 |
| | 178.0 | 39.79 | 91.8 | | 239.5 | 114.21 | 95.6 |
| | 179.5 | 39.79 | 91.8 | | 241.0 | 115.45 | 95.6 |
| | 181.0 | 39.79 | 91.8 | | 242.5 | 116.10 | 95.7 |
| | 182.5 | 53.65 | 91.9 | | 244.0 | 116.33 | 95.6 |
| | 184.0 | 59.89 | 93.5 | | 245.5 | 116.45 | 95.5 |
| | 185.5 | 63.82 | 93.5 | | 247.0 | 116.51 | 95.4 |
| | 187.0 | 64.22 | 93.7 | | 248.5 | 116.55 | 95.4 |

Printing every 3 samples

| Serial # 8653 Inside | | | | Serial # 8653 Inside | | | |
|---|---|---|---|---|---|---|---|
| Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) |
| | 250.0 | 116.57 | 95.3 | | 311.5 | 116.68 | 95.0 |
| | 251.5 | 116.58 | 95.3 | | 313.0 | 116.67 | 95.0 |
| | 253.0 | 116.61 | 95.2 | | 314.5 | 116.67 | 95.0 |
| | 254.5 | 116.63 | 95.2 | | 316.0 | 116.68 | 95.0 |
| | 256.0 | 116.67 | 95.2 | | 317.5 | 116.67 | 95.0 |
| | 257.5 | 116.70 | 95.1 | | 319.0 | 116.67 | 95.0 |
| | 259.0 | 116.71 | 95.1 | | 320.5 | 116.68 | 95.0 |
| | 260.5 | 116.72 | 95.1 | | 322.0 | 116.66 | 95.0 |
| | 262.0 | 116.71 | 95.1 | | 323.5 | 116.65 | 95.0 |
| | 263.5 | 116.71 | 95.1 | | 325.0 | 116.65 | 95.0 |
| | 265.0 | 116.70 | 95.0 | | 326.5 | 116.66 | 95.0 |
| | 266.5 | 116.69 | 95.0 | | 328.0 | 116.65 | 95.0 |
| | 268.0 | 116.68 | 95.0 | | 329.5 | 116.63 | 95.0 |
| | 269.5 | 116.68 | 95.0 | | 331.0 | 116.64 | 95.0 |
| | 271.0 | 116.66 | 95.0 | | 332.5 | 116.65 | 95.0 |
| | 272.5 | 116.66 | 95.0 | | 334.0 | 116.65 | 95.0 |
| | 274.0 | 116.67 | 95.0 | | 335.5 | 116.66 | 95.0 |
| | 275.5 | 116.67 | 95.0 | | 337.0 | 116.68 | 95.0 |
| | 277.0 | 116.67 | 95.0 | | 338.5 | 116.68 | 95.0 |
| | 278.5 | 116.66 | 95.0 | | 340.0 | 116.69 | 95.1 |
| | 280.0 | 116.67 | 95.0 | | 341.5 | 116.70 | 95.1 |
| | 281.5 | 116.66 | 95.0 | | 343.0 | 116.70 | 95.1 |
| | 283.0 | 116.66 | 95.0 | | 344.5 | 116.70 | 95.1 |
| | 284.5 | 116.67 | 94.9 | | 346.0 | 116.67 | 95.1 |
| | 286.0 | 116.67 | 94.9 | | 347.5 | 116.65 | 95.1 |
| | 287.5 | 116.67 | 94.9 | | 349.0 | 116.62 | 95.1 |
| | 289.0 | 116.66 | 94.9 | | 350.5 | 116.60 | 95.1 |
| | 290.5 | 116.66 | 94.9 | | 352.0 | 116.59 | 95.1 |
| | 292.0 | 116.65 | 94.9 | | 353.5 | 116.59 | 95.1 |
| | 293.5 | 116.67 | 94.9 | | 355.0 | 116.61 | 95.1 |
| | 295.0 | 116.66 | 94.9 | | 356.5 | 116.63 | 95.1 |
| | 296.5 | 116.65 | 94.9 | | 358.0 | 116.65 | 95.1 |
| | 298.0 | 116.67 | 94.9 | | 359.5 | 116.66 | 95.1 |
| | 299.5 | 116.67 | 94.9 | | 361.0 | 116.68 | 95.1 |
| | 301.0 | 116.65 | 94.9 | | 362.5 | 116.67 | 95.1 |
| | 302.5 | 116.67 | 94.9 | | 364.0 | 116.67 | 95.1 |
| | 304.0 | 116.68 | 94.9 | | 365.5 | 116.65 | 95.2 |
| | 305.5 | 116.68 | 94.9 | | 367.0 | 116.64 | 95.2 |
| | 307.0 | 116.70 | 94.9 | | 368.5 | 116.63 | 95.2 |
| | 308.5 | 116.68 | 95.0 | | 370.0 | 116.64 | 95.2 |
| | 310.0 | 116.69 | 94.9 | | 371.5 | 116.64 | 95.2 |

Printing every 3 samples

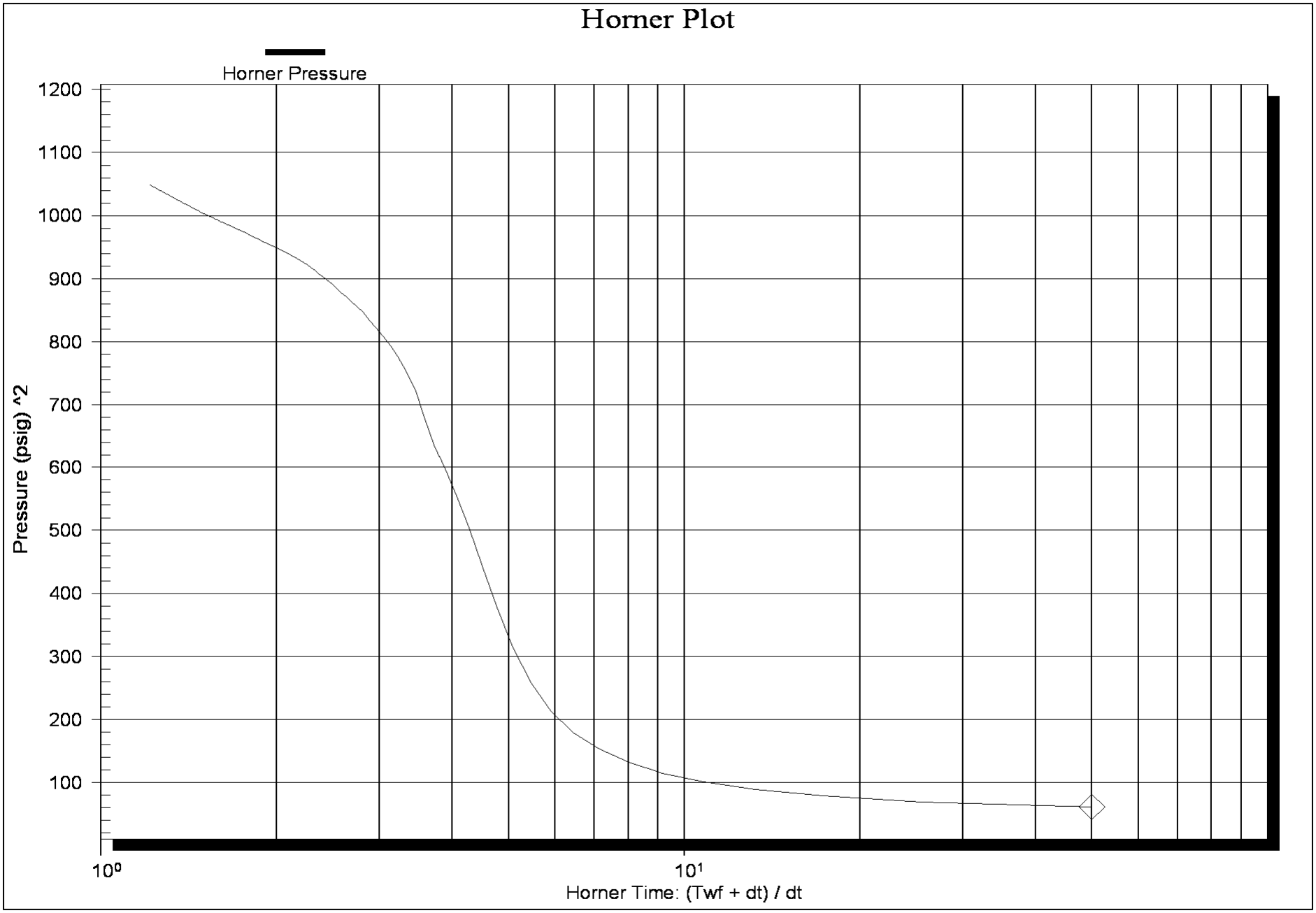
| Serial # 8653 Inside | | | | Serial # 8653 Inside | | | |
|---|---|---|---|---|---|---|---|
| Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) | Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) |
| | 373.0 | 116.65 | 95.2 | | 434.5 | 118.58 | 95.1 |
| | 374.5 | 116.67 | 95.2 | | 436.0 | 116.22 | 94.8 |
| | 376.0 | 116.67 | 95.2 | | 437.5 | 117.92 | 94.3 |
| | 377.5 | 116.68 | 95.2 | | 439.0 | 115.98 | 93.7 |
| | 379.0 | 116.70 | 95.2 | | 440.5 | 113.38 | 92.9 |
| | 380.5 | 116.68 | 95.2 | | 442.0 | 115.50 | 92.1 |
| | 382.0 | 116.66 | 95.2 | | 443.5 | 115.15 | 91.2 |
| | 383.5 | 116.66 | 95.3 | | 445.0 | 114.45 | 90.2 |
| | 385.0 | 116.66 | 95.3 | | 446.5 | 115.14 | 89.2 |
| | 386.5 | 116.66 | 95.3 | | 448.0 | 114.92 | 88.4 |
| | 388.0 | 116.67 | 95.3 | | 449.5 | 115.65 | 87.5 |
| | 389.5 | 116.66 | 95.3 | | 451.0 | 115.02 | 86.8 |
| | 391.0 | 116.65 | 95.3 | | 452.5 | 116.06 | 86.1 |
| | 392.5 | 116.62 | 95.3 | | 454.0 | 119.02 | 85.5 |
| | 394.0 | 116.59 | 95.3 | | 455.5 | 111.68 | 85.0 |
| | 395.5 | 116.60 | 95.3 | | 457.0 | 114.85 | 84.5 |
| | 397.0 | 116.61 | 95.3 | | 458.5 | 114.97 | 83.9 |
| | 398.5 | 116.62 | 95.3 | | 460.0 | 114.76 | 83.2 |
| | 400.0 | 116.63 | 95.3 | | 461.5 | 115.16 | 82.3 |
| | 401.5 | 116.62 | 95.4 | | 463.0 | 116.42 | 81.3 |
| | 403.0 | 116.60 | 95.4 | | 464.5 | 114.40 | 80.4 |
| | 404.5 | 116.61 | 95.4 | | 466.0 | 114.48 | 79.5 |
| | 406.0 | 116.59 | 95.4 | | 467.5 | 114.45 | 78.4 |
| | 407.5 | 116.59 | 95.4 | | 469.0 | 111.15 | 77.1 |
| | 409.0 | 116.59 | 95.4 | | 470.5 | 115.75 | 75.6 |
| | 410.5 | 116.59 | 95.4 | | 472.0 | 113.91 | 73.8 |
| | 412.0 | 116.59 | 95.4 | | 473.5 | 114.10 | 71.9 |
| | 413.5 | 116.57 | 95.4 | | 475.0 | 111.61 | 69.9 |
| | 415.0 | 116.57 | 95.4 | | 476.5 | 119.14 | 68.7 |
| | 416.5 | 116.55 | 95.4 | | 478.0 | 112.67 | 66.8 |
| | 418.0 | 116.55 | 95.4 | | 479.5 | 113.52 | 65.9 |
| | 419.5 | 116.53 | 95.5 | | 481.0 | 95.56 | 64.6 |
| | 421.0 | 116.56 | 95.5 | | 482.5 | 85.27 | 63.7 |
| | 422.5 | 117.07 | 95.5 | | 484.0 | 86.05 | 63.1 |
| | 424.0 | 114.96 | 95.6 | | 485.5 | 64.95 | 62.3 |
| | 425.5 | 116.83 | 95.6 | | 487.0 | 57.37 | 61.7 |
| | 427.0 | 116.88 | 95.5 | | 488.5 | 56.42 | 61.2 |
| | 428.5 | 116.89 | 95.5 | | 490.0 | 31.94 | 60.9 |
| | 430.0 | 116.89 | 95.4 | | 491.5 | 40.92 | 60.8 |
| | 431.5 | 116.85 | 95.3 | | 493.0 | 6.34 | 60.5 |
| | 433.0 | 116.71 | 95.2 | | 494.5 | -0.72 | 60.7 |

Printing every 3 samples

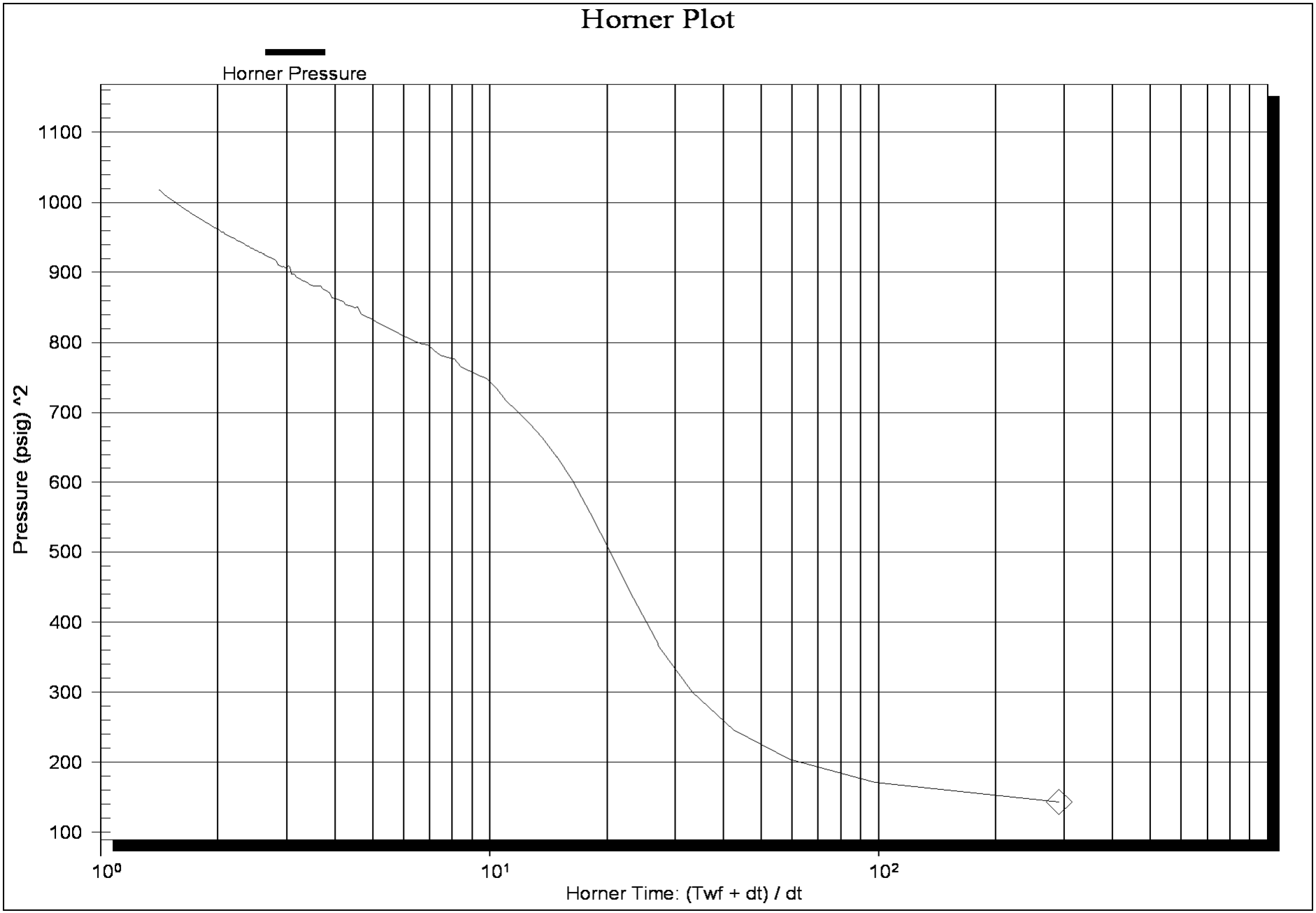
| Serial # 8653 | Inside | | |
|---|---|---|---|
| Comments | Time (Min.) | Pressure (psig) | Temp. (deg F) |
| | 496.0 | -0.44 | 60.1 |
| | 497.5 | -0.20 | 59.9 |
| | 499.0 | 0.07 | 59.8 |
| | 500.5 | 0.62 | 59.6 |
| | 502.0 | 0.71 | 59.4 |
| | 503.5 | -0.52 | 53.5 |
| | 505.0 | -0.75 | 51.8 |
| | 506.5 | -0.79 | 50.2 |
| | 508.0 | -0.76 | 49.1 |
| | 509.5 | -0.71 | 48.5 |
| | 511.0 | -0.68 | 47.9 |
| | 512.5 | -0.66 | 47.4 |
| | 514.0 | -0.66 | 47.4 |
| | 515.5 | -0.65 | 47.3 |
| | 517.0 | -0.67 | 47.1 |
| | 518.5 | -0.68 | 47.0 |
| | 520.0 | -0.68 | 46.9 |
| | 521.5 | -0.67 | 47.0 |
| | 523.0 | -0.68 | 47.2 |
| | 524.5 | -0.66 | 47.0 |
| | 526.0 | -0.65 | 47.2 |
| | 527.5 | -0.64 | 47.5 |
| | 529.0 | -0.61 | 47.5 |
| | 530.5 | -0.58 | 47.4 |
| | 532.0 | -0.56 | 47.3 |
| | 533.5 | -0.54 | 47.2 |
| | 535.0 | -0.52 | 47.0 |
| | 536.5 | -0.49 | 47.1 |
| | 538.0 | -0.45 | 47.3 |
| | 539.5 | -0.58 | 47.6 |
| | 541.0 | -0.43 | 47.9 |
| | 542.5 | -0.42 | 48.2 |
| | 544.0 | -0.15 | 47.5 |
| | 544.5 | 0.60 | 46.6 |

Printing every 3 samples

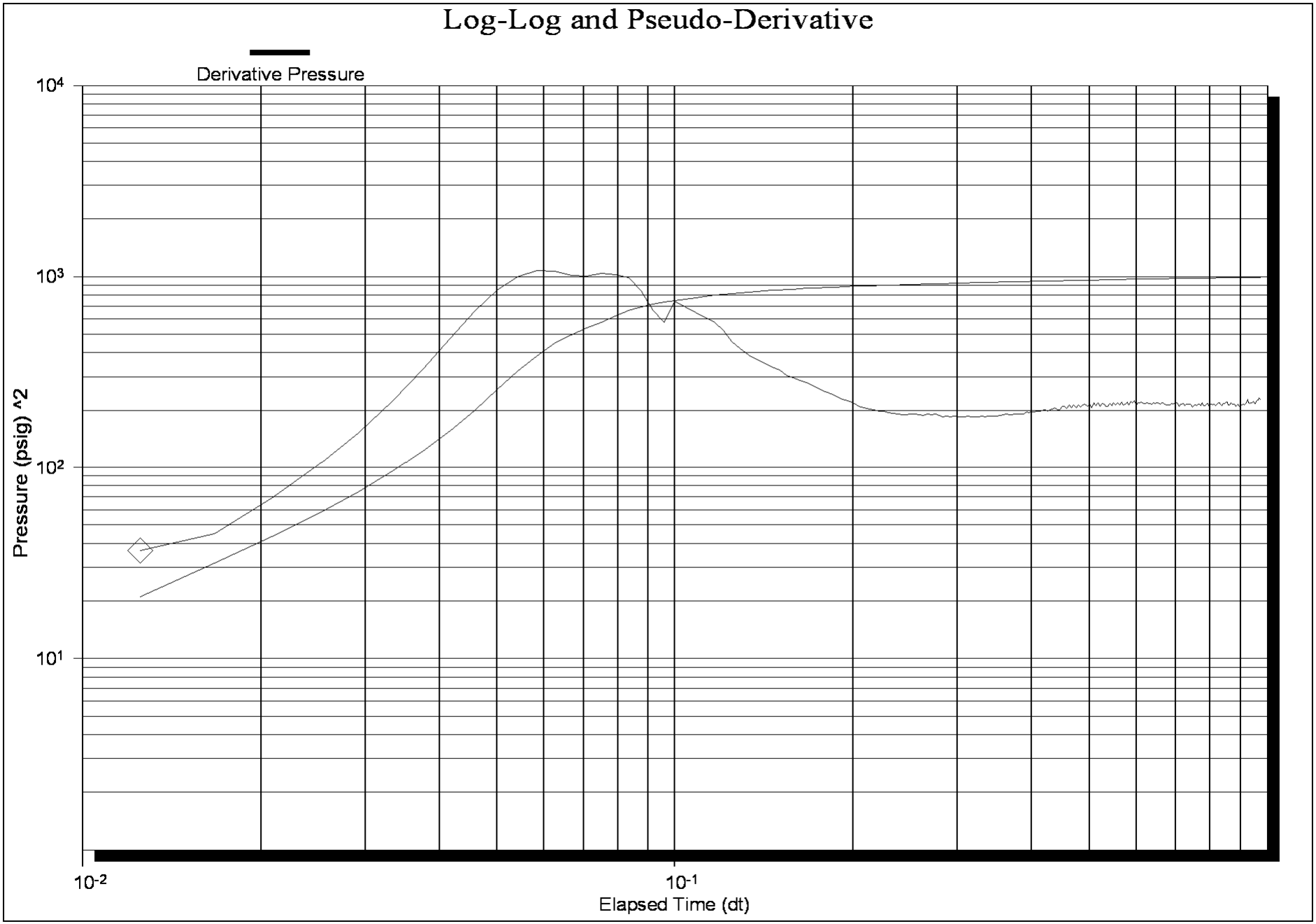
Sam Gary 2010.12.14 @ 02:05:17 30-16-15-Barton-Ks

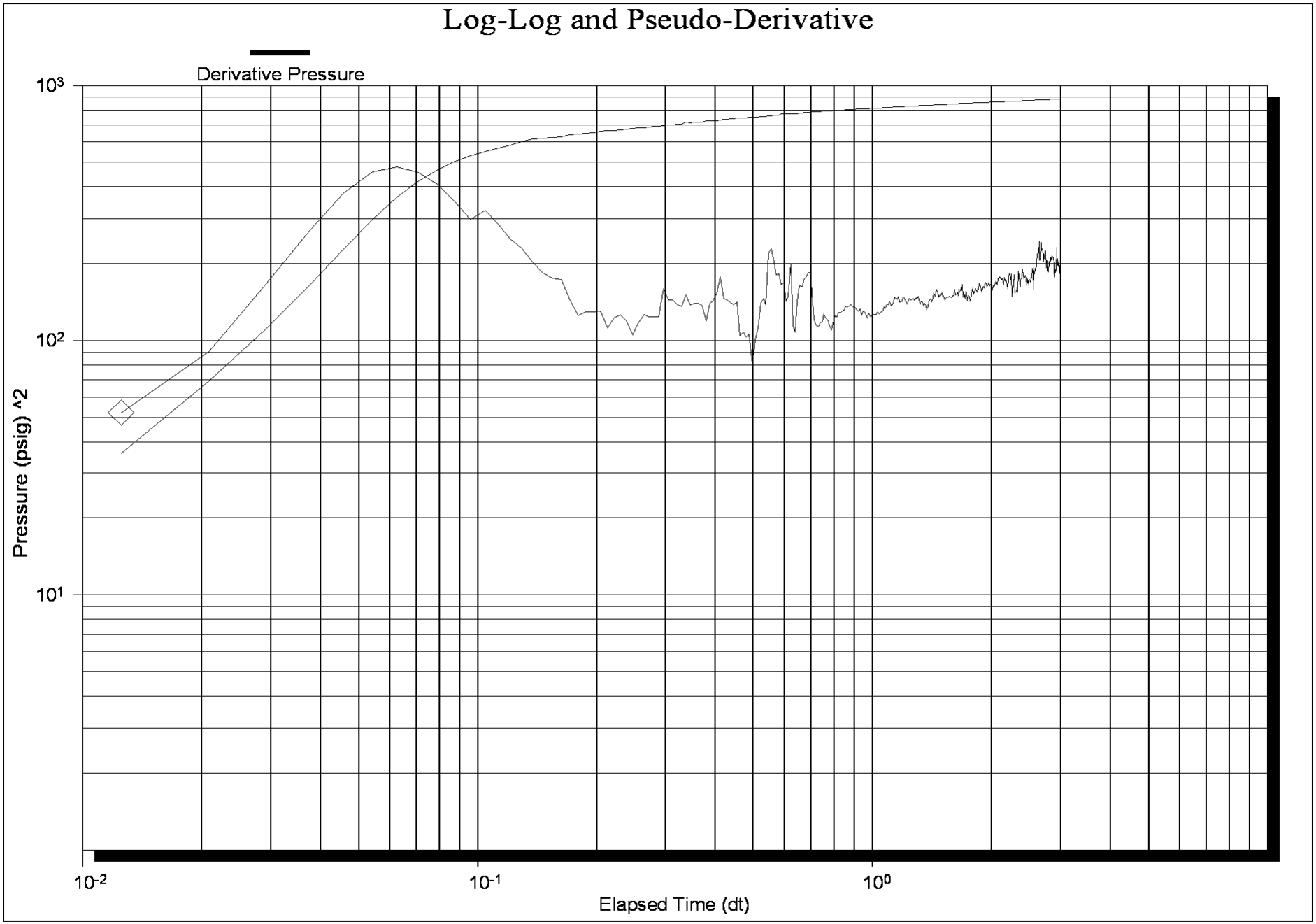



Serial Number: 8354 (Inside) P* : Slope (m) : kpa/log cycle Flow Cycle: 1




Serial Number: 8354 (Inside) P* : Slope (m) : kpa/log cycle Flow Cycle: 2


Log-Log and Pseudo-Derivative
Derivative Pressure
10^4
10^3
10^2
10^1
Pressure (psig) ^2
10^-2
10^-1
Elapsed Time (dt)


Log-Log and Pseudo-Derivative
Derivative Pressure
10³
10²
10¹
Pressure (psig) ^2
10⁻²
10⁻¹
10⁰
Elapsed Time (dt)