

**NEW MEXICO OIL CONSERVATION COMMISSION**  
**MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL**

Form C-122

|                                                                                                                           |               |                               |                           |                                      |                            |                           |                    |
|---------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------|---------------------------|--------------------------------------|----------------------------|---------------------------|--------------------|
| Type Test<br><input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special |               |                               |                           | Test Date<br>11/7/03                 |                            | 30-025-36258              |                    |
| Company<br>Yates Petroleum Corporation                                                                                    |               |                               |                           | Connection<br>11/13/03               |                            |                           |                    |
| Pool<br>Sand Springs, Atoka-Morrow                                                                                        |               |                               |                           | Formation<br>Morrow                  |                            | Unit                      |                    |
| Completion Date<br>11/7/03                                                                                                |               | Total Depth<br>12590          |                           | Plug Back TD<br>12510                |                            | Elevation<br>4133         |                    |
| Farm or Lease Name<br>Twain BCW State                                                                                     |               |                               |                           |                                      |                            |                           |                    |
| Csg. Size<br>5.500                                                                                                        | Wt.<br>17.000 | d<br>4.892                    | Set At<br>12590           | Perforations:<br>From 12114 To 12184 |                            | Well No.<br>1             |                    |
| Tbg. Size<br>2.875                                                                                                        | Wt.<br>6.500  | d<br>2.441                    | Set At<br>12031           | Perforations:<br>From 12114 To 12184 |                            | Unit<br>D                 | Sec.<br>12         |
|                                                                                                                           |               |                               |                           |                                      |                            | Twp.<br>11S               | Rge.<br>34E        |
| Type Well<br>Single                                                                                                       |               |                               |                           | Packer Set At<br>12031               |                            | County<br>Lea             |                    |
| Producing Thru<br>Tubing                                                                                                  |               | Resv. Temp. °F<br>176 @ 12000 |                           | Mean Temp. °F<br>62                  |                            | Baro. Press. - Pa<br>13.2 |                    |
|                                                                                                                           |               |                               |                           |                                      |                            | State<br>NM               |                    |
| L<br>12031                                                                                                                | H<br>12031    | Gg<br>0.678                   | %CO <sub>2</sub><br>0.946 | %N <sub>2</sub><br>1.196             | %H <sub>2</sub> S<br>0.000 | Prover<br>0.000           | Meter Run<br>2.000 |
|                                                                                                                           |               |                               |                           |                                      |                            | Taps<br>Flange            |                    |

  

| FLOW DATA |                        |   |                 |                    |             | TUBING DATA |                    | CASING DATA |                    | Duration<br>of<br>Flow |             |
|-----------|------------------------|---|-----------------|--------------------|-------------|-------------|--------------------|-------------|--------------------|------------------------|-------------|
| NO.       | Prover<br>Line<br>Size | X | Orifice<br>Size | Press.<br>p.s.i.g. | Diff.<br>hw | Temp.<br>°F | Press.<br>p.s.i.g. | Temp.<br>°F | Press.<br>p.s.i.g. |                        | Temp.<br>°F |
| Sl.       | 0.000                  | x | 0.000           | 0                  | 0.0         | 0           | 2600               | 0           |                    |                        | 0           |
| 1.        | 2.067                  | x | 1.375           | 700                | 13.0        | 60          | 2330               | 60          |                    |                        | 24          |
| 2.        | 2.067                  | x | 1.375           | 700                | 55.0        | 60          | 1787               | 60          |                    |                        | 24          |
| 3.        | 2.067                  | x | 1.375           | 700                | 97.0        | 60          | 1243               | 60          |                    |                        | 24          |
| 4.        | 2.067                  | x | 1.375           | 700                | 127.0       | 60          | 700                | 60          |                    |                        | 24          |
| 5.        |                        | x |                 |                    |             |             |                    |             |                    |                        |             |

  

| RATE OF FLOW CALCULATIONS |                          |               |                |                             |                         |                                   |                         |
|---------------------------|--------------------------|---------------|----------------|-----------------------------|-------------------------|-----------------------------------|-------------------------|
| NO.                       | Coefficient<br>(24 Hour) | $\sqrt{hwPm}$ | Pressure<br>Pm | Flow Temp.<br>Factor<br>Ft. | Gravity<br>Factor<br>Fg | Super<br>Compress.<br>Factor, Fpv | Rate of Flow<br>Q, Mcfd |
| 1.                        | 10.200                   | 96.3          | 713.2          | 1.0000                      | 1.214                   | 1.079                             | 1288                    |
| 2.                        | 10.200                   | 198.1         | 713.2          | 1.0000                      | 1.214                   | 1.079                             | 2648                    |
| 3.                        | 10.200                   | 263.0         | 713.2          | 1.0000                      | 1.214                   | 1.079                             | 3517                    |
| 4.                        | 10.200                   | 301.0         | 713.2          | 1.0000                      | 1.214                   | 1.079                             | 4024                    |
| 5.                        |                          |               |                |                             |                         |                                   |                         |

  

| NO. | Pr   | Temp °R | Tr   | Z     | Gas Liquid Hydrocarbon Ratio | Mcf/bbl. |
|-----|------|---------|------|-------|------------------------------|----------|
| 1.  | 1.06 | 520     | 1.38 | 0.858 | 20                           |          |
| 2.  | 1.06 | 520     | 1.38 | 0.858 | 57.500                       |          |
| 3.  | 1.06 | 520     | 1.38 | 0.858 |                              |          |
| 4.  | 1.06 | 520     | 1.38 | 0.858 |                              |          |
| 5.  |      |         |      |       |                              |          |

  

| NO. | Pr     | Pw     | Pw <sup>2</sup> | Pc <sup>2</sup> - Pw <sup>2</sup> | (1) $\frac{Pc^2}{Pc^2 - Pw^2} =$ | (2) $\left[ \frac{Pc^2}{Pc^2 - Pw^2} \right]^n =$ |
|-----|--------|--------|-----------------|-----------------------------------|----------------------------------|---------------------------------------------------|
| 1.  | 5490.6 | 2347.2 | 5509.2          | 1319.6                            | 1.335                            | 1.244                                             |
| 2.  | 3240.7 | 1820.3 | 3313.6          | 3515.2                            |                                  |                                                   |
| 3.  | 1578.0 | 1308.4 | 1712.0          | 5116.8                            |                                  |                                                   |
| 4.  | 508.7  | 847.2  | 717.7           | 6111.1                            |                                  |                                                   |
| 5.  |        |        |                 |                                   |                                  |                                                   |

  

|                            |  |                |                        |                   |
|----------------------------|--|----------------|------------------------|-------------------|
| Absolute Open Flow<br>4375 |  | Mcf/d @ 15.025 | Angle of Slope<br>θ 37 | Slope, n<br>0.756 |
| Remarks:                   |  |                |                        |                   |

  

|                             |                             |                                |                               |
|-----------------------------|-----------------------------|--------------------------------|-------------------------------|
| Approved By Commission:<br> | Conducted By:<br>Noel Gomez | Calculated By:<br>Misty Carter | Checked By:<br>George Freeman |
|-----------------------------|-----------------------------|--------------------------------|-------------------------------|

# WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (Pw) C-122D

DATE 11/7/03

COMPANY Yates Petroleum Corporation LEASE Twain BCW State WELL NO. 1

LOCATION: Unit D Section 12 Township 11S Range 34E

L 12031 H 12031 L/H 1.000 G 0.818 %CO<sub>2</sub> 0.946 %N<sub>2</sub> 1.196 %H<sub>2</sub>S 0.000

d 2.441 Fr 0.010495 GH 9839.0 Pcr 666.5 Tcr 422.9

| LINE                                                   | 1st Rate | 2nd Rate | 3rd Rate | 4th Rate | 5th Rate |
|--------------------------------------------------------|----------|----------|----------|----------|----------|
| 1 Qm                                                   | 1.288    | 2.648    | 3.517    | 4.024    |          |
| 2 Tw(W.H.°R)                                           | 520      | 520      | 520      | 520      |          |
| 3 Ts(B.H.°R)                                           | 636      | 636      | 636      | 636      |          |
| 4 T = (Tw+Ts) / 2                                      | 577.7    | 577.7    | 577.7    | 577.7    |          |
| 5 Z (Est.)                                             | 0.720    | 0.682    | 0.702    | 0.799    |          |
| 6 TZ                                                   | 416.1    | 393.9    | 405.5    | 461.4    |          |
| 7 GH / TZ                                              | 23.648   | 24.980   | 24.262   | 21.325   |          |
| 8 e <sup>Λ</sup> s(Table XIV)                          | 2.428    | 2.551    | 2.483    | 2.225    |          |
| 9 1-e <sup>Λ</sup> -s(Table XIV)                       | 0.588    | 0.608    | 0.597    | 0.551    |          |
| 10 Pt                                                  | 2343.2   | 1800.2   | 1256.2   | 713.2    |          |
| 11 Pt <sup>2</sup> / 1000                              | 5490.6   | 3240.7   | 1578.0   | 508.7    |          |
| 12 Fr (Table XV)                                       | 0.010495 | 0.010495 | 0.010495 | 0.010495 |          |
| 13 Fc = FrTZ                                           | 4.366    | 4.134    | 4.256    | 4.842    |          |
| 14 FcQm                                                | 5.62     | 10.95    | 14.97    | 19.49    |          |
| 15 L / H(FcQm) <sup>2</sup>                            | 31.6     | 119.8    | 224.1    | 379.7    |          |
| 16 Fw = L / H(FcQm) <sup>2</sup> (1-e <sup>Λ</sup> -s) | 18.58    | 72.89    | 133.95   | 209.07   |          |
| 17 Pw <sup>2</sup> = Pt <sup>2</sup> +Fw               | 5509.2   | 3313.6   | 1712.0   | 717.7    |          |
| 18 Ps <sup>2</sup> = e <sup>Λ</sup> sPw <sup>2</sup>   | 13374.3  | 8454.7   | 4250.4   | 1596.7   |          |
| 19 Ps                                                  | 3657.1   | 2907.7   | 2061.7   | 1263.6   |          |
| 20 P = (Pt+Ps) / 2                                     | 3000.1   | 2353.9   | 1658.9   | 988.4    |          |
| 21 Pr = (P / Pcr)                                      | 4.50     | 3.53     | 2.49     | 1.48     |          |
| 22 Tr = (T / Tcr)                                      | 1.37     | 1.37     | 1.37     | 1.37     |          |
| 23 Z (Table XI)                                        | 0.720    | 0.682    | 0.702    | 0.799    |          |



