

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

Form O-177  
Revised 6-1-65

|                                                                                                                           |                                 |                                            |                                       |
|---------------------------------------------------------------------------------------------------------------------------|---------------------------------|--------------------------------------------|---------------------------------------|
| Type Test<br><input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special |                                 | Test Date<br>4-11-78                       |                                       |
| Company<br>Amoco Production Company                                                                                       |                                 | Connection<br>Northern Natural Gas Company |                                       |
| Pool<br>Langlie Mattix                                                                                                    |                                 | Formation<br>Queen                         |                                       |
| Completion Date<br>12-24-77                                                                                               |                                 | Total Depth<br>3600                        | Plug Back TD<br>3558                  |
| Elevation<br>3270                                                                                                         |                                 | Farm or Lease Name<br>Myers "B" Federal    |                                       |
| Csg. Size<br>7.000                                                                                                        | Wt.<br>20.0                     | d<br>6.456                                 | Set At<br>3600                        |
| Perforations:<br>From 3187 To 3317                                                                                        | Well No.<br>28                  |                                            |                                       |
| Tub. Size<br>2.375                                                                                                        | Wt.<br>4.6                      | d<br>1.995                                 | Set At<br>3330                        |
| Perforations:<br>From 0 To 0                                                                                              | Unit<br>D                       |                                            |                                       |
| Type Well - Single - Brodenhead - G.G. or G.O. Multiple<br>Single                                                         |                                 | Packer Set At<br>0                         | County<br>Lea                         |
| Producing Thru<br>Tubing                                                                                                  | Reservoir Temp. °F<br>86 @ 3250 | Mean Annual Temp. °F<br>60.0               | Baro. Press. - P <sub>a</sub><br>13.2 |
| State<br>New Mexico                                                                                                       |                                 | Prover<br>0                                | Meter Run<br>4.0                      |
| L<br>3250                                                                                                                 | H<br>3250                       | G <sub>g</sub><br>0.696                    | % CO <sub>2</sub><br>3.29             |
| % N <sub>2</sub><br>1.26                                                                                                  | % H <sub>2</sub> S<br>0         | Taps<br>0                                  | Pipe                                  |

## FLOW DATA

| NO. | Prover Line Size | X | Orifice Size | Press. p.s.i.g. | Diff. hw | Temp. °F | TUBING DATA     |          | CASING DATA     |          | Duration of Flow |
|-----|------------------|---|--------------|-----------------|----------|----------|-----------------|----------|-----------------|----------|------------------|
|     |                  |   |              |                 |          |          | Press. p.s.i.g. | Temp. °F | Press. p.s.i.g. | Temp. °F |                  |
| 1.  | 4.03             | X | 1.750        | 69.             | 5.0      | 42       | 200             | 48       |                 |          | 24.0             |
| 2.  | 4.03             | X | 1.750        | 72.             | 9.5      | 43       | 192             | 61       | 0               | 0        | 1.0              |
| 3.  | 4.03             | X | 1.750        | 75.             | 15.0     | 48       | 186             | 62       | 0               | 0        | 1.0              |
| 4.  | 4.03             | X | 1.750        | 78.             | 20.0     | 52       | 177             | 64       | 0               | 0        | 1.0              |
| 5.  |                  |   |              |                 |          |          | 172             | 68       | 0               | 0        | 1.0              |

## RATE OF FLOW CALCULATIONS

| NO. | Coefficient (24 Hour) | $\sqrt{h_w P_m}$ | Pressure P <sub>m</sub> | Flow Temp. Factor Ft. | Gravity Factor F <sub>g</sub> | Super. Compress. Factor, F <sub>pv</sub> | Rate of Flow Q, Mcfd |
|-----|-----------------------|------------------|-------------------------|-----------------------|-------------------------------|------------------------------------------|----------------------|
| 1.  | 16.80                 | 20.27            | 82.2                    | 1.0178                | 1.1987                        | 1.0096                                   | 420                  |
| 2.  | 16.80                 | 28.45            | 85.2                    | 1.0168                | 1.1987                        | 1.0099                                   | 588                  |
| 3.  | 16.80                 | 36.37            | 88.2                    | 1.0117                | 1.1987                        | 1.0100                                   | 749                  |
| 4.  | 16.80                 | 42.71            | 91.2                    | 1.0078                | 1.1987                        | 1.0101                                   | 876                  |

| NO. | P <sub>i</sub> | Temp. °R | T <sub>r</sub> | Z     | Gas Liquid Hydrocarbon Ratio | A.P.I. Gravity of Liquid Hydrocarbons | Specific Gravity Separator Gas | Specific Gravity Flowing Fluid | Critical Pressure | Critical Temperature |
|-----|----------------|----------|----------------|-------|------------------------------|---------------------------------------|--------------------------------|--------------------------------|-------------------|----------------------|
| 1.  | 0.12           | 502      | 1.32           | 0.981 | 0                            | 0                                     | 0.696                          | X X X X X X X X                | 680               | 380                  |
| 2.  | 0.13           | 503      | 1.33           | 0.980 |                              |                                       |                                |                                |                   |                      |
| 3.  | 0.13           | 508      | 1.34           | 0.980 |                              |                                       |                                |                                |                   |                      |
| 4.  | 0.13           | 512      | 1.35           | 0.980 |                              |                                       |                                |                                |                   |                      |
| 5.  |                |          |                |       |                              |                                       |                                |                                |                   |                      |

| P <sub>c</sub> 213.4 | P <sub>c</sub> <sup>2</sup> 46 |                |                             |                                                           |  |
|----------------------|--------------------------------|----------------|-----------------------------|-----------------------------------------------------------|--|
| NO.                  | P <sub>i</sub> <sup>2</sup>    | P <sub>w</sub> | P <sub>w</sub> <sup>2</sup> | P <sub>c</sub> <sup>2</sup> - P <sub>w</sub> <sup>2</sup> |  |
| 1                    | 42                             | 211            | 44                          | 1                                                         |  |
| 2                    | 40                             | 210            | 44                          | 1                                                         |  |
| 3                    | 36                             | 209            | 44                          | 2                                                         |  |
| 4                    | 34                             | 211            | 45                          | 1                                                         |  |
| 5                    |                                |                |                             |                                                           |  |

$$(1) \frac{P_c^2}{P_c^2 - P_w^2} = 24.5026$$

$$(2) \left[ \frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 19.587$$

$$AOF = Q \left[ \frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 14670$$

Absolute Open Flow 14670 Mcfd @ 15.025 Angle of Slope 47.5 Slope, n .93

Remarks: Point No. 4 not used in AOF calculations.

Approved By: Jerry Sexton, Dist. 1, Supv.  
 Conducted By: John West Engineering  
 Calculated By: CJT (Amoco)  
 Checked By: RMB (Amoco)