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State of New Mexico  
Energy, Minerals and Natural Resources Department

Form C-122  
Revised 4-1-91

OIL CONSERVATION DIVISION

P.O. Box 2088  
Santa Fe, New Mexico 87504-2088

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OCD - ARTESIS

C/SF

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

|                                                                                                                           |  |                           |  |                                  |  |                                                               |  |
|---------------------------------------------------------------------------------------------------------------------------|--|---------------------------|--|----------------------------------|--|---------------------------------------------------------------|--|
| Operator<br>OXY USA                                                                                                       |  |                           |  | Lease or Unit Name<br>BIRD STATE |  |                                                               |  |
| Type Test<br><input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special |  |                           |  | Test Date<br>29-SEP-97           |  | Well No.<br>30-2                                              |  |
| Completion Date                                                                                                           |  | Total Depth<br>11,400     |  | Plug Back TD                     |  | Elevation                                                     |  |
| Csg. Size<br>4.5                                                                                                          |  | Wt.<br>17                 |  | Set At<br>11,400                 |  | Perforations:<br>11,086 To: 11,147<br>From: 11,304 To: 11,316 |  |
| Tbg. Size<br>2.375                                                                                                        |  | Wt.<br>4.7                |  | Set At<br>10,974                 |  | Perforations:<br>From: To:                                    |  |
| Type Well - Single - Bradenhead - G.G. or G.O. Multiple<br>SINGLE GAS WELL                                                |  |                           |  | Packer Set At                    |  | Formation<br>MORROW                                           |  |
| Producing Thru<br>TUBING                                                                                                  |  | Reservoir Temp. °F<br>180 |  | Mean Annual Temp. °F<br>60       |  | Baro. Press - P <sub>a</sub><br>13.2                          |  |
| L<br>11,201                                                                                                               |  | H<br>11,201               |  | Gg<br>0.635                      |  | % CO <sub>2</sub><br>0.96                                     |  |
|                                                                                                                           |  |                           |  | % N <sub>2</sub><br>0.37         |  | % H <sub>2</sub> S<br>--                                      |  |
|                                                                                                                           |  |                           |  | Prover                           |  | Meter Run<br>4,031                                            |  |
|                                                                                                                           |  |                           |  |                                  |  | 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>h <sub>w</sub> | Temp.<br>°F | Press.<br>p.s.i.g. | Temp.<br>°F | Press.<br>p.s.i.g. |                        | Temp.<br>°F |
| SI        |                        |   |                 |                    |                         |             | 2200               | 60          |                    |                        | 75.0        |
| 1.        | 4.03                   | X | 0.75            | 405                | 8.8                     | 80          | 2135               | 80          |                    |                        | 1.0         |
| 2.        | 4.03                   | X | 0.75            | 405                | 13.4                    | 79          | 2056               | 79          |                    |                        | 1.0         |
| 3.        | 4.03                   | X | 0.75            | 414                | 54.2                    | 75          | 1893               | 75          |                    |                        | 1.0         |
| 4.        | 4.03                   | X | 0.75            | 423                | 117.9                   | 68          | 1689               | 68          |                    |                        | 1.0         |
| 5.        |                        |   |                 |                    |                         |             |                    |             |                    |                        |             |

| RATE OF FLOW CALCULATIONS |                          |                  |                            |                          |                       |                                            |                         |
|---------------------------|--------------------------|------------------|----------------------------|--------------------------|-----------------------|--------------------------------------------|-------------------------|
| NO.                       | COEFFICIENT<br>(24 HOUR) | $\sqrt{h_w P_m}$ | Pressure<br>P <sub>m</sub> | Flow Temp.<br>Factor Ft. | Gravity Factor<br>Fg. | Super Compress.<br>Factor, F <sub>pv</sub> | Rate of Flow<br>Q, Mcfd |
| 1.                        |                          | 60.68            | 418.4                      | 0.9814                   | 1.2549                | 1.0350                                     | 204                     |
| 2.                        |                          | 74.84            | 418.0                      | 0.9819                   | 1.2549                | 1.0351                                     | 252                     |
| 3.                        |                          | 152.08           | 426.7                      | 0.9856                   | 1.2549                | 1.0369                                     | 515                     |
| 4.                        |                          | 226.65           | 435.7                      | 0.9923                   | 1.2549                | 1.0396                                     | 785                     |
| 5.                        |                          |                  |                            |                          |                       |                                            |                         |

| NO. | P <sub>r</sub> | Temp. °R | T <sub>r</sub> | Z     | Gas Liquid Hydrocarbon Ratio          | Mcf/bbl.                  |
|-----|----------------|----------|----------------|-------|---------------------------------------|---------------------------|
| 1.  | 0.62           | 540      | 1.47           | 0.934 | A.P.L. Gravity of Liquid Hydrocarbons | 0 Deg.                    |
| 2.  | 0.62           | 539      | 1.47           | 0.933 | Specific Gravity Separator Gas        | 0.635 XXXXXXXXXX          |
| 3.  | 0.63           | 535      | 1.46           | 0.930 | Specific Gravity Flowing Fluid        | XXXXXX 0.635              |
| 4.  | 0.65           | 528      | 1.44           | 0.925 | Critical Pressure                     | 674 P.S.I.A. 674 P.S.I.A. |
| 5.  |                |          |                |       | Critical Temperature                  | 367 R 367 R               |

| P <sub>c</sub> 2213.2 P <sub>c</sub> <sup>2</sup> 4898 |                             |                |                             |                                                           | 1) $\frac{P_c^2}{P_c^2 - P_w^2} = 2.4442$                     |  | (2) $\left[ \frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 2.0559$ |  |
|--------------------------------------------------------|-----------------------------|----------------|-----------------------------|-----------------------------------------------------------|---------------------------------------------------------------|--|-------------------------------------------------------------|--|
| NO.                                                    | P <sub>c</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> | AOF = Q $\left[ \frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1615$ |  |                                                             |  |
| 1.                                                     | 4615                        | 2127           | 4524                        | 374                                                       |                                                               |  |                                                             |  |
| 2.                                                     | 4282                        | 2050           | 4201                        | 697                                                       |                                                               |  |                                                             |  |
| 3.                                                     | 3632                        | 1893           | 3585                        | 1314                                                      |                                                               |  |                                                             |  |
| 4.                                                     | 2896                        | 1701           | 2894                        | 2004                                                      |                                                               |  |                                                             |  |
| 5.                                                     |                             |                |                             |                                                           |                                                               |  |                                                             |  |

Absolute Open Flow 1615 Mcfd @ 15.025 Angle of Slope  $\theta$  51.1 Slope, n 0.806

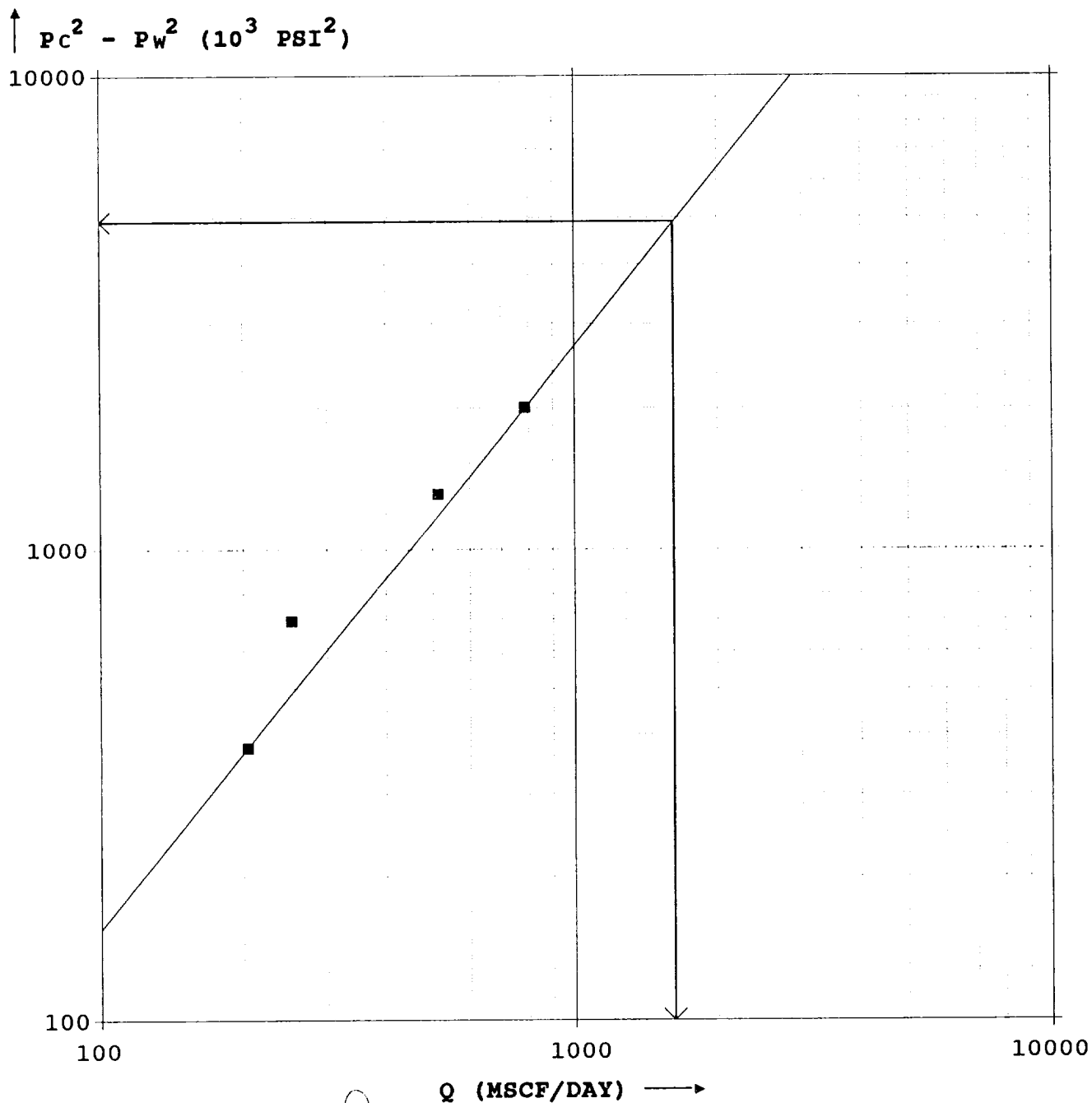
Remarks: COMPUTED FROM SURFACE PRESSURE DATA.

Approved By Division \_\_\_\_\_ Conducted By: Larry Davis by [Signature] Calculated By: [Signature] Checked By: \_\_\_\_\_

# BACK PRESSURE CURVE

CLIENT: OXY USA  
WELL: T-Bird State #30-2

Test Date: 29-SEP-1997  
County: Eddy, NM



Well Tester:

*Larry Davis by MS*

SCHLUMBERGER Testing

$\theta = 51.131$  degrees  
 $n = 0.8060$   
AOF = 1615.0 MSCF/DAY