

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

|                                                                                                                           |  |             |                                    |                 |                            |                                        |                                       |                         |                                     |                          |  |
|---------------------------------------------------------------------------------------------------------------------------|--|-------------|------------------------------------|-----------------|----------------------------|----------------------------------------|---------------------------------------|-------------------------|-------------------------------------|--------------------------|--|
| Type Test<br><input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special |  |             |                                    |                 |                            |                                        |                                       |                         |                                     | Test Date<br>4/16/82     |  |
| Company<br>Tenneco Oil Company                                                                                            |  |             |                                    |                 | Connection<br>None         |                                        |                                       |                         |                                     |                          |  |
| Field<br>Lusk                                                                                                             |  |             |                                    |                 | Formation<br>Morrow        |                                        |                                       |                         |                                     | Unit                     |  |
| Completion Date<br>4/9/82                                                                                                 |  |             | Total Depth<br>12850'              |                 | Plug Back TD<br>12713'     |                                        | Elevation<br>3557' GL                 |                         | Farm or Lease Name<br>Federal HH 33 |                          |  |
| Casing Size<br>5 1/2"                                                                                                     |  | Wt.<br>17.0 |                                    | Set At<br>4.892 |                            | Perforations:<br>From 12545' To 12552' |                                       | Well No.<br>1           |                                     |                          |  |
| Tubing Size<br>2 3/8"                                                                                                     |  | Wt.<br>4.6  |                                    | Set At<br>1.995 |                            | Perforations:<br>Open Ended            |                                       | Unit<br>G 33            |                                     | Twp. 19s<br>Rge. 32e     |  |
| Type Well - Single - Ironhead - G.G. or G.O. Multiple<br>Single                                                           |  |             |                                    |                 |                            |                                        |                                       | Packer Set At<br>11992' |                                     | County<br>Lea            |  |
| Producing Thru<br>Tubing                                                                                                  |  |             | Reservoir Temp. °F<br>172 @ 11980' |                 | Mean Annual Temp. °F<br>60 |                                        | Baro. Press. - P <sub>a</sub><br>13.2 |                         | State<br>New Mexico                 |                          |  |
| L                                                                                                                         |  | H           |                                    | G <sub>a</sub>  |                            | % CO <sub>2</sub>                      |                                       | % N <sub>2</sub>        |                                     | % H <sub>2</sub> S       |  |
| 12549                                                                                                                     |  | -           |                                    | 0.6452          |                            | 1.217                                  |                                       | 0.580                   |                                     | -                        |  |
|                                                                                                                           |  |             |                                    |                 |                            |                                        |                                       | Prover                  |                                     | Meter Run<br>2.900 X 1.0 |  |
| Flg                                                                                                                       |  |             |                                    |                 |                            |                                        |                                       |                         |                                     |                          |  |

| FLOW DATA |                  |        |              |                 |                      |          | TUBING DATA         |          | CASING DATA     |          | Duration of Flow |
|-----------|------------------|--------|--------------|-----------------|----------------------|----------|---------------------|----------|-----------------|----------|------------------|
| NO.       | Prover Line Size | X      | Orifice Size | Press. p.s.i.g. | Diff. h <sub>w</sub> | Temp. °F | Press. p.s.i.g. DWT | Temp. °F | Press. p.s.i.g. | Temp. °F |                  |
| 51        |                  |        |              |                 |                      |          | 4019                | 60       | PACKER          |          | 68.75 hr         |
| 1.        | 2.900            | 4.5/64 | 1.00         | 600             | 5"                   | 90       | 3630                | 60       |                 |          | 1.0 hr           |
| 2.        | 2.900            | 6/64   | 1.00         | 600             | 6"                   | 85       | 3584                | 60       |                 |          | 1.0 hr           |
| 3.        | 2.900            | 7.5/64 | 1.00         | 620             | 23"                  | 89       | 3053                | 60       |                 |          | 1.0 hr           |
| 4.        | 2.900            | 9.5/64 | 1.00         | 630             | 28"                  | 81       | 2715                | 60       |                 |          | 1.0 hr           |
| 5.        |                  |        |              |                 |                      |          |                     |          |                 |          |                  |

| RATE OF FLOW CALCULATIONS |                       |                  |                         |                                  |                               |                                         |                       |
|---------------------------|-----------------------|------------------|-------------------------|----------------------------------|-------------------------------|-----------------------------------------|-----------------------|
| NO.                       | Coefficient (24 Hour) | $\sqrt{h_w P_m}$ | Pressure P <sub>m</sub> | Flow Temp. Factor F <sub>t</sub> | Gravity Factor F <sub>g</sub> | Super Compress. Factor, F <sub>pv</sub> | Rate of Flow Q, Mscfd |
| 1                         | 4.801                 | 55.37            | 613.2                   | .9723                            | 1.245                         | 1.048                                   | 337.24                |
| 2                         | 4.801                 | 60.66            | 613.2                   | .9768                            | 1.245                         | 1.049                                   | 371.52                |
| 3                         | 4.801                 | 120.68           | 633.2                   | .9732                            | 1.245                         | 1.050                                   | 737.10                |
| 4                         | 4.801                 | 134.20           | 643.2                   | .9804                            | 1.245                         | 1.053                                   | 828.10                |
| 5                         |                       |                  |                         |                                  |                               |                                         |                       |

| NO. | P <sub>t</sub> | Temp. °R | T <sub>r</sub> | Z    | Gas Liquid Hydrocarbon Ratio 21.05            |  |  |  |
|-----|----------------|----------|----------------|------|-----------------------------------------------|--|--|--|
| 1   | 0.91           | 550      | 1.50           | .910 | A.P.I. Gravity of Liquid Hydrocarbons 54 @ 60 |  |  |  |
| 2   | 0.91           | 545      | 1.49           | .908 | Specific Gravity Separator Gas 0.6452         |  |  |  |
| 3   | 0.94           | 549      | 1.50           | .907 | Specific Gravity Flowing Fluid X X X X X      |  |  |  |
| 4   | 0.95           | 541      | 1.48           | .902 | Critical Pressure 677 P.S.I.A                 |  |  |  |
| 5   |                |          |                |      | Critical Temperature 366 °F                   |  |  |  |

| 1. 5658.2 * P <sub>t</sub> <sup>2</sup> 32015.2 |                |                |                             | (1) $\frac{P_t^2}{P_t^2 - P_w^2} = 6.094$ |                                                           | (2) $\left[ \frac{P_t^2}{P_t^2 - P_w^2} \right]^n = 4.307$ |  |
|-------------------------------------------------|----------------|----------------|-----------------------------|-------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------|--|
| NO.                                             | P <sub>t</sub> | P <sub>w</sub> | P <sub>t</sub> <sup>2</sup> | P <sub>w</sub> <sup>2</sup>               | P <sub>t</sub> <sup>2</sup> - P <sub>w</sub> <sup>2</sup> |                                                            |  |
| 1                                               |                | 5173.2         | 26762.0                     | 5253.2                                    |                                                           |                                                            |  |
| 2                                               |                | 5101.2         | 26022.2                     | 5993.0                                    |                                                           |                                                            |  |
| 3                                               |                | 4464.2         | 19929.1                     | 12086.1                                   |                                                           |                                                            |  |
| 4                                               |                | 3961.2         | 15691.1                     | 16324.1                                   |                                                           |                                                            |  |
| 5                                               |                |                |                             |                                           |                                                           |                                                            |  |

AOF = Q  $\left[ \frac{P_t^2}{P_t^2 - P_w^2} \right]^n = 1453$

|                         |  |                |  |                         |  |               |  |
|-------------------------|--|----------------|--|-------------------------|--|---------------|--|
| Absolute Open Flow 1453 |  | Mscfd @ 15.025 |  | Angle of Slope @ 51° 3' |  | Slope, n .808 |  |
|-------------------------|--|----------------|--|-------------------------|--|---------------|--|

Remarks: \* BOTTOM HOLE PRESSURE @ (-8992)12549' USED FOR PRESSURE CALCULATIONS  
WELL PRODUCED 4.5 BD IN 4.0 HRS = 27.0 BD/D

|                          |                                           |                               |                            |
|--------------------------|-------------------------------------------|-------------------------------|----------------------------|
| Approved By Division<br> | Conducted By<br>JARREL WELL TESTING, INC. | Calculated By<br>D. Dickerson | Checked By<br>D. Dickerson |
|--------------------------|-------------------------------------------|-------------------------------|----------------------------|