

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>3-10-81                  |           |                            |             |
| Company<br>Southland Royalty Company                                                                                      |              |                         |                   | Connection<br>Southern Union Gathering             |                    |                                       |           |                            |             |
| Pool<br>Blanco                                                                                                            |              |                         |                   | Formation<br>Mesa Verde                            |                    |                                       |           | Unit                       |             |
| Completion Date<br>2-3-81                                                                                                 |              | Total Depth<br>6942'    |                   | Plug Back TD<br>6886'                              |                    | Elevation<br>5862' GR                 |           | Farm or Lease Name<br>Hare |             |
| Coq. Size<br>5.500                                                                                                        | Wt.<br>15.5# | d<br>4.892              | Set At<br>6932'   | Perforations:<br>From 4016' To 4439' (CH)<br>(Men) |                    | Well No.<br>15-M                      |           |                            |             |
| Thq. Size<br>1.900                                                                                                        | Wt.<br>2.76# | d<br>1.610              | Set At<br>4650'   | Perforations:<br>From 4528' To 4675' (PL)          |                    | Unit<br>0                             | Sec.<br>3 | Twp.<br>29N                | Rge.<br>10W |
| Type Well - Single - Bradenhead - G.G. or G.O. Multiple<br>GG Multiple                                                    |              |                         |                   |                                                    |                    | Packer Set At<br>4814'                |           | County<br>San Juan         |             |
| Producing Thru<br>Tubing                                                                                                  |              | Reservoir Temp. °F<br>p |                   | Mean Annual Temp. °F                               |                    | Baro. Press. - P <sub>a</sub><br>12.2 |           | State<br>New Mexico        |             |
| L                                                                                                                         | H            | Gg<br>.700              | % CO <sub>2</sub> | % N <sub>2</sub>                                   | % H <sub>2</sub> S | Prover                                | Meter Run | Taps                       |             |

  

| 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        |                        |   |                 |                    |                         |             | 1209               |             | 1209               |             |                        |
| 1.        | 2"                     |   | 3/4"            |                    |                         |             | 91                 |             | 922                |             | 1 hr                   |
| 2.        |                        |   |                 |                    |                         |             | 85                 |             | 882                |             | 2 hrs                  |
| 3.        |                        |   |                 |                    |                         |             | 65                 |             | 852                |             | 3 hrs                  |
| 4.        |                        |   |                 |                    |                         |             |                    |             |                    |             |                        |
| 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<br>F <sub>t</sub> | Gravity<br>Factor<br>F <sub>g</sub> | Super<br>Compress.<br>Factor, F <sub>pv</sub> | Rate of Flow<br>Q, Mcfd |
| 1                         | 12.365                   |                  | 77.2                       | 1.0000                                 | .9258                               | 1.0000                                        | 884                     |
| 2.                        |                          |                  |                            |                                        |                                     |                                               |                         |
| 3.                        |                          |                  |                            |                                        |                                     |                                               |                         |
| 4.                        |                          |                  |                            |                                        |                                     |                                               |                         |
| 5.                        |                          |                  |                            |                                        |                                     |                                               |                         |

  

| NO. | P <sub>t</sub> | Temp. °R | T <sub>f</sub> | Z | Gas Liquid Hydrocarbon Ratio          | Mcf/bbl.        |
|-----|----------------|----------|----------------|---|---------------------------------------|-----------------|
| 1   |                |          |                |   | A.P.I. Gravity of Liquid Hydrocarbons | Deg.            |
| 2.  |                |          |                |   | Specific Gravity Separator Gas        | X X X X X X X X |
| 3.  |                |          |                |   | Specific Gravity Flowing Fluid        | X X X X X       |
| 4.  |                |          |                |   | Critical Pressure                     | P.S.I.A.        |
| 5.  |                |          |                |   | Critical Temperature                  | R               |

  

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| NO. | P <sub>t</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) $\frac{P_c^2}{P_c^2 - P_w^2} =$ | (2) $\left[ \frac{P_c^2}{P_c^2 - P_w^2} \right]^n =$ |
|-----|-----------------------------|----------------|-----------------------------|-----------------------------------------------------------|-------------------------------------|------------------------------------------------------|
| 1   |                             | 864.2          | 746841.6                    | 744487.8                                                  | 2.0032                              | 1.6838                                               |
| 2   |                             |                |                             |                                                           |                                     |                                                      |
| 3   |                             |                |                             |                                                           |                                     |                                                      |
| 4   |                             |                |                             |                                                           |                                     |                                                      |
| 5   |                             |                |                             |                                                           |                                     |                                                      |

  

AOF = Q  $\left[ \frac{P_c^2}{P_c^2 - P_w^2} \right]^n =$  1488

Absolute Open Flow 1488 Mcfd @ 15.025 Angle of Slope @ Slope, n .75

  

Remarks:

  

|                      |                             |                               |                               |
|----------------------|-----------------------------|-------------------------------|-------------------------------|
| Approved By Division | Conducted By:<br>Dean Lingo | Calculated By:<br>James Smith | Checked By:<br>L. O. Van Ryan |
|----------------------|-----------------------------|-------------------------------|-------------------------------|