

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

Form C-122

|                                                                                                                                  |  |                             |  |                              |                               |                                                      |  |                                                |  |
|----------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------|--|------------------------------|-------------------------------|------------------------------------------------------|--|------------------------------------------------|--|
| <b>Type Test</b><br><input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special |  |                             |  |                              |                               | <b>Test Date</b><br>Oct 24, 1996                     |  |                                                |  |
| <b>Company</b><br>Williams Production Company                                                                                    |  |                             |  |                              | <b>Connection</b>             |                                                      |  |                                                |  |
| <b>Pool Basin</b>                                                                                                                |  |                             |  |                              | <b>Formation</b><br>Dakota    |                                                      |  |                                                |  |
| <b>Unit</b><br>Rosa                                                                                                              |  |                             |  |                              |                               |                                                      |  |                                                |  |
| <b>Completion Date</b><br>10-02-96                                                                                               |  | <b>Total Depth</b><br>8109' |  | <b>Plug Back TD</b><br>8087' |                               | <b>Elevation</b><br>6388'                            |  | <b>Farm or Lease Name</b><br>Rosa Unit         |  |
| <b>Casing Size</b>                                                                                                               |  | <b>Weight</b><br>d          |  | <b>Set At</b>                |                               | <b>Perforations:</b><br>From                      To |  | <b>Well No.</b><br>234M                        |  |
| <b>Tubing Size</b><br>1-1/2"                                                                                                     |  | <b>Weight</b><br>2.9#       |  | <b>d</b>                     |                               | <b>Set at</b><br>7985'                               |  | <b>Perforations:</b><br>From 7934'    To 8019' |  |
| <b>Unit</b><br>F                                                                                                                 |  | <b>Sec</b><br>29            |  | <b>Twp</b><br>31N            |                               | <b>Rng</b><br>5W                                     |  |                                                |  |
| <b>Type Well - Single - Bradenhead - GG or GO Multiple</b>                                                                       |  |                             |  |                              | <b>Packer Set At</b><br>6150' |                                                      |  | <b>County</b><br>Rio Arriba                    |  |
| <b>Producing Thru Tubing</b>                                                                                                     |  | <b>Reservoir Temp. °F</b>   |  | <b>Mean Annual Temp. °F</b>  |                               | <b>Barometer Pressure - P<sub>a</sub></b>            |  | <b>State</b><br>New Mexico                     |  |
| <b>L</b>                                                                                                                         |  | <b>H</b>                    |  | <b>Gq</b><br>.6              |                               | <b>%CO<sub>2</sub></b>                               |  | <b>%N<sub>2</sub></b>                          |  |
|                                                                                                                                  |  |                             |  |                              |                               | <b>%H<sub>2</sub>S</b>                               |  | <b>Prover</b><br>3/4"                          |  |
|                                                                                                                                  |  |                             |  |                              |                               |                                                      |  | <b>Meter Run</b>                               |  |
|                                                                                                                                  |  |                             |  |                              |                               |                                                      |  | <b>Taps</b>                                    |  |

| FLOW DATA |             |                |                   |                | TUBING DATA       |                | CASING DATA       |                |             |
|-----------|-------------|----------------|-------------------|----------------|-------------------|----------------|-------------------|----------------|-------------|
| NO.       | Prover Line | X Orifice Size | Pressure p.s.i.q. | Temperature °F | Pressure p.s.i.q. | Temperature °F | Pressure p.s.i.q. | Temperature °F | Duration of |
| SI        |             | 2" X 3/4"      |                   |                | 2564              |                |                   |                | 0           |
| 1.        |             |                |                   |                | 177               | 59°            |                   |                | 0.5 hr      |
| 2.        |             |                |                   |                | 133               | 57°            |                   |                | 1.0 hr      |
| 3.        |             |                |                   |                | 107               | 57°            |                   |                | 1.5 hrs     |
| 4.        |             |                |                   |                | 96                | 57°            |                   |                | 2.0 hrs     |
| 5.        |             |                |                   |                | 78                | 57°            |                   |                | 3.0 hrs     |

| RATE OF FLOW CALCULATIONS |                       |                  |                         |                   |                |                 |              |
|---------------------------|-----------------------|------------------|-------------------------|-------------------|----------------|-----------------|--------------|
| NO.                       | Coefficient (24 Hour) | $\sqrt{h_w P_m}$ | Pressure P <sub>m</sub> | Flow Temp. Factor | Gravity Factor | Super Compress. | Rate of Flow |
| 1.                        | 9.604                 |                  | 90                      | 1.0029            | 1.29           | 1.006           | 1125         |
| 2.                        |                       |                  |                         |                   |                |                 |              |
| 3.                        |                       |                  |                         |                   |                |                 |              |
| 4.                        |                       |                  |                         |                   |                |                 |              |

| NO. | P <sub>r</sub> | Temp. °R | T <sub>r</sub> | Z | Gas Liquid Hydrocarbon Ration _____ Mcf/bbl.<br>A.P.I. Gravity of Liquid Hydrocarbons _____ Deg.<br>Specific Gravity Separator _____ XXXXXX<br>Specific Gravity Flowing Fluid _____<br>Critical Pressure _____ p.s.i.a. _____ p.s.i.a.<br>Critical Temperature _____ R _____ R |  |
|-----|----------------|----------|----------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1.  |                |          |                |   | <div style="text-align: center;"> </div>                                                                                                                                                                                                                                       |  |
| 2.  |                |          |                |   |                                                                                                                                                                                                                                                                                |  |
| 3.  |                |          |                |   |                                                                                                                                                                                                                                                                                |  |
| 4.  |                |          |                |   |                                                                                                                                                                                                                                                                                |  |
| 5.  |                |          |                |   |                                                                                                                                                                                                                                                                                |  |

| P <sub>c</sub> 2576 |                | P <sub>w</sub> 6635776 |                             | DIST. 3                                                   |                                                                                                                                                                      |
|---------------------|----------------|------------------------|-----------------------------|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NO                  | P <sub>i</sub> | 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.                  |                | 90                     | 8100                        | 6627676                                                   | (1) $\frac{P_c^2}{P_c^2 - P_w^2} = 1.0012$ (2) $\frac{[P_c^2 - P_w^2]}{[P_c^2 - P_w^2]} = 1.0009$<br><br>AOF = Q $\left[ \frac{P_c^2}{P_c^2 - P_w^2} \right] = 1126$ |
| 2.                  |                |                        |                             |                                                           |                                                                                                                                                                      |
| 3.                  |                |                        |                             |                                                           |                                                                                                                                                                      |
| 4.                  |                |                        |                             |                                                           |                                                                                                                                                                      |

|                                                 |  |                             |  |                     |  |
|-------------------------------------------------|--|-----------------------------|--|---------------------|--|
| <b>Absolute Open Flow</b> 1126    Mcfd @ 15.025 |  | <b>Angle of Slope</b> _____ |  | <b>Slope, n</b> .75 |  |
|-------------------------------------------------|--|-----------------------------|--|---------------------|--|

|                                        |  |                                    |  |
|----------------------------------------|--|------------------------------------|--|
| <b>Remarks:</b>                        |  |                                    |  |
| <b>Approved By Commission:</b>         |  | <b>Conducted By:</b><br>C. Charley |  |
| <b>Calculated By:</b><br>Susan Griguin |  | <b>Checked By:</b>                 |  |

# WELLBORE DIAGRAM

Location: 1850' FNL, 1800' FWL  
SE/4 NW/4 Section 29, T31N, R5W  
Rio Arriba Co., NM

Elevation = 6388' GR  
KB = 14'

RECEIVED  
NOV - 5 1996  
OIL CON. DIV.  
DIST. 3

| TOPS            | DEPTH |
|-----------------|-------|
| OJO ALAMO       | 2527' |
| KIRTLAND        | 2639' |
| FRUITLAND       | 3067' |
| PICTURED CLIFFS | 3254' |
| LEWIS           | 3530' |
| CLIFF HOUSE     | 5449' |
| MENEFEE         | 5499' |
| POINT LOOKOUT   | 5712' |
| MANCOS          | 5942' |
| GALLUP          | 6500' |
| GREENHORN       | 7750' |
| GRANEROS        | 7805' |
| DAKOTA          | 7932' |

## STIMULATION

Cliff House/Menefee: 5462' - 5691'

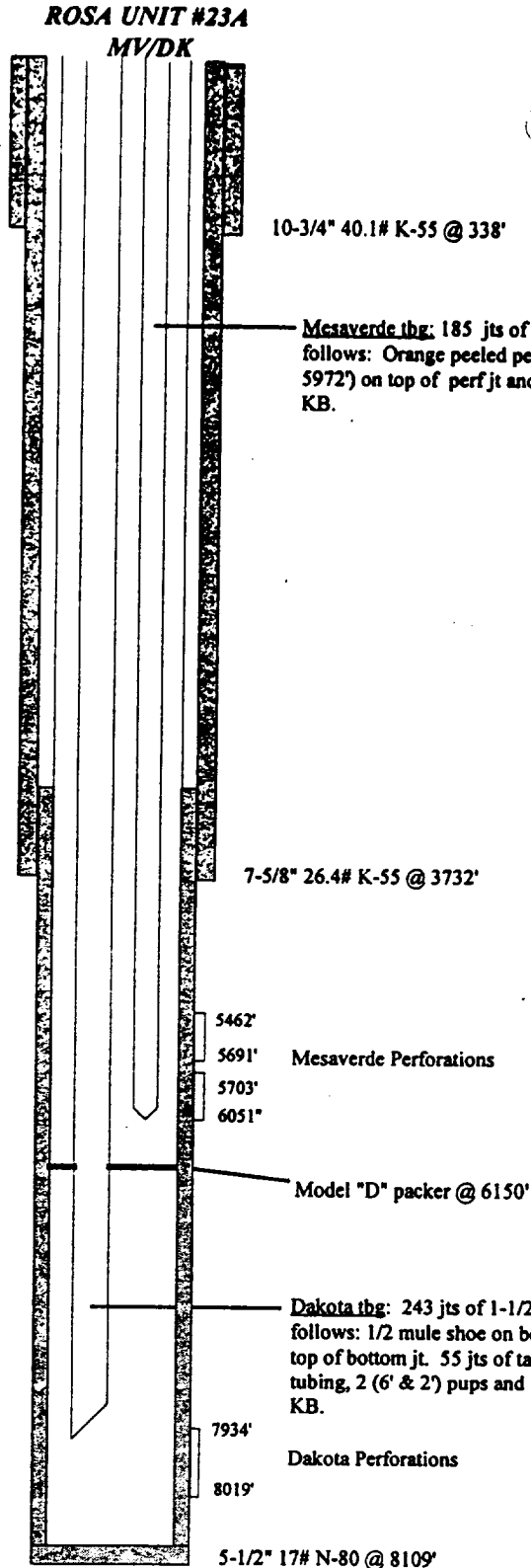
80,000# of 20/40 sand in 1626 BBL's of slick water.

Point Lookout: 5703' - 6051'

81,000# of 20/40 sand in 1978 BBL's of slick water.

Dakota: 7934' - 8019'

60,000# of 20/40 Ottawa sand & 10,000# of 20/40 resin coated sand in 658 BBL's of 35# CMHPG gel X-linked w/Zirconium in a 60 quality foam.



| HOLE SIZE | CASING        | CEMENT | VOLUME      | TOP OF CMT |
|-----------|---------------|--------|-------------|------------|
| 14-3/4"   | 10-3/4" 40.1# | 285 sx | 336 cu.ft.  | SURFACE    |
| 9-7/8"    | 7-5/8" 26.4#  | 810 sx | 1504 cu.ft. | SURFACE    |
| 6-3/4"    | 5-1/2" 17#    | 435 sx | 602 cu.ft.  | (CBL)      |

4450'