

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>4-6-92                    |                                            |
| Company<br>Santa Fe Energy                                                                                                |              |                                   | Connection<br>RECEIVED           |                                        |                                            |
| Pool<br>Dublin Ranch <i>Atoka</i>                                                                                         |              |                                   | Formation<br>Strawn <i>Atoka</i> |                                        | Unit<br>APR 11 1992                        |
| Completion Date<br>12-21-91                                                                                               |              | Total Depth<br>12880              | Plug Back TD<br>11270            |                                        | Farm or Lease Name<br>NE Loving 34 Fed.    |
| Csg. Size<br>7.00                                                                                                         | Int.<br>26.0 | d<br>6.276                        | Set At<br>11930                  | Perforations:<br>From 11232 To 11238   | Well No.<br>One                            |
| Tub. Size<br>2.375                                                                                                        | Int.<br>4.70 | d<br>1.995                        | Set At<br>11112                  | Perforations:<br>From To               | Unit Sec. Twp. Rge.<br><i>6</i> 34 22S 28E |
| Type Well - Single - Irradiation - G.C. or G.O. Multiple<br>Single                                                        |              |                                   |                                  | Packer Set At<br>11116                 | County<br>Eddy                             |
| Producing Thru<br>L 11235 H 11235                                                                                         |              | Reservoir Temp. °F<br>186 @ 11235 | Mean Annual Temp. °F<br>60.0     | Baro. Press. - P <sub>g</sub><br>13.20 | State<br>NM                                |
| G <sub>g</sub><br>0.750                                                                                                   |              | % CO <sub>2</sub>                 | % N <sub>2</sub>                 | % H <sub>2</sub> S                     | Prover<br>Meter Run 3.1 Taps Flange        |

  

| 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. | Temp. °F    | Press. p.s.i.g. |                  | Temp. °F |
| 51        |                  |   |              |                 |                      |             |                 |             | 5270            | 186              | 160.0    |
| 1.        | 3.07             | X | 0.750        | 638             | 18.5                 | 67          |                 |             | 4640            | 186              | 1.0      |
| 2.        | 3.07             | X | 0.750        | 640             | 22.2                 | 72          |                 |             | 4010            | 186              | 1.0      |
| 3.        | 3.07             | X | 0.750        | 640             | 19.0                 | 75          |                 |             | 3555            | 186              | 1.0      |
| 4.        | 3.07             | X | 0.750        | 640             | 29.0                 | 75          |                 |             | 3043            | 186              | 1.0      |
| 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, Mcfd |
| 1                         | 2.67                  | 109.76           | 651.2                   | .9933                            | 1.1547                        | 1.0928                                  | 368                  |
| 2                         | 2.67                  | 120.42           | 653.2                   | .9887                            | 1.1547                        | 1.0895                                  | 400                  |
| 3                         | 2.67                  | 111.40           | 653.2                   | .9859                            | 1.1547                        | 1.0874                                  | 368                  |
| 4                         | 2.67                  | 137.63           | 653.2                   | .9859                            | 1.1547                        | 1.0874                                  | 455                  |
| 5                         |                       |                  |                         |                                  |                               |                                         |                      |

  

|     |                |          |                |       |                                                  |
|-----|----------------|----------|----------------|-------|--------------------------------------------------|
| NO. | P <sub>r</sub> | Temp. °R | T <sub>r</sub> | Z     | Gas Liquid Hydrocarbon Ratio _____ Mcf/bbl.      |
| 1   | .98            | 527      | 1.30           | 0.837 | A.P.I. Gravity of Liquid Hydrocarbons _____ Deg. |
| 2   | .98            | 532      | 1.31           | 0.842 | Specific Gravity Separator Gas _____ 0.750       |
| 3   | .98            | 535      | 1.32           | 0.846 | Specific Gravity Flowing Fluid _____ X X X X X   |
| 4   | .98            | 535      | 1.32           | 0.846 | Critical Pressure _____ 665 P.S.I.A.             |
| 5   |                |          |                |       | Critical Temperature _____ 405 R                 |

  

|                                                |                             |                             |                                                           |  |
|------------------------------------------------|-----------------------------|-----------------------------|-----------------------------------------------------------|--|
| P <sub>r</sub> = 3900.4 P <sub>s</sub> = 15213 |                             |                             |                                                           |  |
| NO.                                            | P <sub>r</sub> <sup>2</sup> | P <sub>s</sub> <sup>2</sup> | P <sub>r</sub> <sup>2</sup> - P <sub>s</sub> <sup>2</sup> |  |
| 1                                              | 21652                       | 3357                        | 11271                                                     |  |
| 2                                              | 16186                       | 2836                        | 8041                                                      |  |
| 3                                              | 12732                       | 2477                        | 6136                                                      |  |
| 4                                              | 9340                        | 2097                        | 4396                                                      |  |
| 5                                              |                             |                             |                                                           |  |

  

$$(1) \frac{P_r^2}{P_r^2 - P_s^2} = 1.4064$$

$$AOF = Q \left[ \frac{P_r^2}{P_r^2 - P_s^2} \right]^n = 540$$

$$(2) \left[ \frac{P_r^2}{P_r^2 - P_s^2} \right]^n = 1.1859$$

  

|                                                                                  |                                   |                                   |
|----------------------------------------------------------------------------------|-----------------------------------|-----------------------------------|
| Absolute Open Flow _____ 540 _____ Mcfd @ 15.025                                 | Angle of Slope @ _____ 63.4 _____ | Slope, n _____ 0.500 _____        |
| Remarks: Bottomhole pressure from Instrument #2097 Starburst Electronic Recorder |                                   |                                   |
| Approved By Division _____                                                       | Conducted By: <i>J.P. Brown</i>   | Calculated By: <i>[Signature]</i> |
| Checked By: _____                                                                |                                   |                                   |