

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>2/18/83                  |  |
| Company<br>HNG Oil Company                                                                                                |  |                                     |  | Connection<br>Trans Western           |  |
| Pool<br>Wildcat                                                                                                           |  |                                     |  | Formation<br>Morrow                   |  |
| Completion Date<br>11/7/82                                                                                                |  | Total Depth<br>15660'               |  | Plug Back TD<br>15613'                |  |
|                                                                                                                           |  |                                     |  | Elevation<br>3441'GL                  |  |
| Farm or Lease Name<br>Diamond 6 Federal                                                                                   |  |                                     |  |                                       |  |
| Csg. Size<br>4 1/2" Liner                                                                                                 |  | Wt.<br>15.5                         |  | d<br>3.826                            |  |
|                                                                                                                           |  |                                     |  | Set At<br>15660'                      |  |
| Perforations:<br>From 14897'                                                                                              |  |                                     |  | To 15556'                             |  |
| Trg. Size<br>2 7/8"                                                                                                       |  | Wt.<br>7.9                          |  | d<br>2.323                            |  |
|                                                                                                                           |  |                                     |  | Set At<br>14695'                      |  |
| Perforations:<br>From                                                                                                     |  |                                     |  | Open Ended<br>To                      |  |
| Type Well - Single - Bradenhead - G.G. or G.O. Multiple<br>Single                                                         |  |                                     |  |                                       |  |
| Packer Set At<br>14695'                                                                                                   |  |                                     |  |                                       |  |
| Producing Thru<br>Tubing                                                                                                  |  | Reservoir Temp. °F<br>222° @ 15570' |  | Mean Annual Temp. °F<br>60            |  |
|                                                                                                                           |  |                                     |  | Baro. Press. - P <sub>a</sub><br>13.2 |  |
| New Mexico                                                                                                                |  |                                     |  |                                       |  |
| L<br>15570'                                                                                                               |  | H<br>-                              |  | G <sub>g</sub><br>0.5803              |  |
|                                                                                                                           |  |                                     |  | % CO <sub>2</sub><br>0.636            |  |
|                                                                                                                           |  |                                     |  | % N <sub>2</sub><br>0.411             |  |
|                                                                                                                           |  |                                     |  | % H <sub>2</sub> S<br>-               |  |
|                                                                                                                           |  |                                     |  | Prover<br>-                           |  |
|                                                                                                                           |  |                                     |  | Meter Run<br>3.068                    |  |
|                                                                                                                           |  |                                     |  | Taps<br>F                             |  |

| 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 |                  |
| 1.        | 3.068            | ** | 2.250        | 745             | 4                    | 90       | 7723                | 60       | PACKER          |          | 72.0 hrs         |
| 2.        | 3.068            |    | 2.250        | 755             | 10                   | 77       | 7449                | 60       |                 |          | 1.0 hr           |
| 3.        | 3.068            |    | 2.250        | 790             | 25                   | 46       | 7015                | 60       |                 |          | 1.0 hr           |
| 4.        | 3.068            |    | 2.250        | 980             | 28                   | 46       | 5444                | 60       |                 |          | 2.75 hrs         |
| 5.        |                  |    |              |                 |                      |          | 4300                | 60       |                 |          | 0.25 hr          |

| RATE OF FLOW CALCULATIONS |                       |                  |                         |                       |                               |                                         |                      |
|---------------------------|-----------------------|------------------|-------------------------|-----------------------|-------------------------------|-----------------------------------------|----------------------|
| NO.                       | Coefficient (24 Hour) | $\sqrt{h_w P_m}$ | Pressure P <sub>m</sub> | Flow Temp. Factor Ft. | Gravity Factor F <sub>g</sub> | Super Compress. Factor, F <sub>pv</sub> | Rate of Flow Q, Mcfd |
| 1                         | 28.78                 | 55.07            | 758.2                   | 0.9723                | 1.313                         | 1.047                                   | 2118.45              |
| 2                         | 28.78                 | 87.65            | 768.2                   | 0.9840                | 1.313                         | 1.053                                   | 3431.87              |
| 3                         | 28.78                 | 141.70           | 803.2                   | 1.014                 | 1.313                         | 1.070                                   | 5809.61              |
| 4                         | 28.78                 | 166.76           | 993.2                   | 1.014                 | 1.313                         | 1.086                                   | 6939.29              |
| 5                         |                       |                  |                         |                       |                               |                                         |                      |

| NO. | R <sub>f</sub> | Temp. °R | T <sub>f</sub> | Z     | Gas Liquid Hydrocarbon Ratio _____ Dry Gas _____ Mcf/bbl.         |  |
|-----|----------------|----------|----------------|-------|-------------------------------------------------------------------|--|
| 1   | 1.12           | 550      | 1.59           | 0.913 | A.P.I. Gravity of Liquid Hydrocarbons _____ Deg.                  |  |
| 2   | 1.14           | 537      | 1.55           | 0.902 | Specific Gravity Separator Gas _____ 0.5803 _____ X X X X X X X X |  |
| 3   | 1.19           | 506      | 1.46           | 0.873 | Specific Gravity Flowing Fluid _____ X X X X X                    |  |
| 4   | 1.47           | 506      | 1.46           | 0.848 | Critical Pressure _____ 675 _____ P.S.I.A. _____ P.S.I.A.         |  |
| 5   |                |          |                |       | Critical Temperature _____ 346 _____ R _____ R                    |  |

| P <sub>c</sub> 9823.2    P <sub>c</sub> <sup>2</sup> 96495.3 |                             |                  |                             |                                                           |
|--------------------------------------------------------------|-----------------------------|------------------|-----------------------------|-----------------------------------------------------------|
| NO.                                                          | P <sub>i</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                                                            |                             | 9556.2           | 91321.0                     | 5174.3                                                    |
| 2                                                            |                             | 9156.2           | 83836.0                     | 12659.3                                                   |
| 3                                                            |                             | 7724.2           | 59663.3                     | 36832.0                                                   |
| 4                                                            |                             | 6818.2           | 46487.9                     | 50007.4                                                   |
| 5                                                            |                             |                  |                             |                                                           |

$$(1) \frac{P_c^2}{P_c^2 - P_w^2} = 1.93$$

$$AOF = Q \left[ \frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 9784.4$$

$$(2) \left[ \frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1.41$$

|                                                   |  |                                |  |                      |  |
|---------------------------------------------------|--|--------------------------------|--|----------------------|--|
| Absolute Open Flow _____ 9784 _____ Mcfd @ 15.025 |  | Angle of Slope @ _____ 62° 37' |  | Slope, n _____ 0.518 |  |
|---------------------------------------------------|--|--------------------------------|--|----------------------|--|

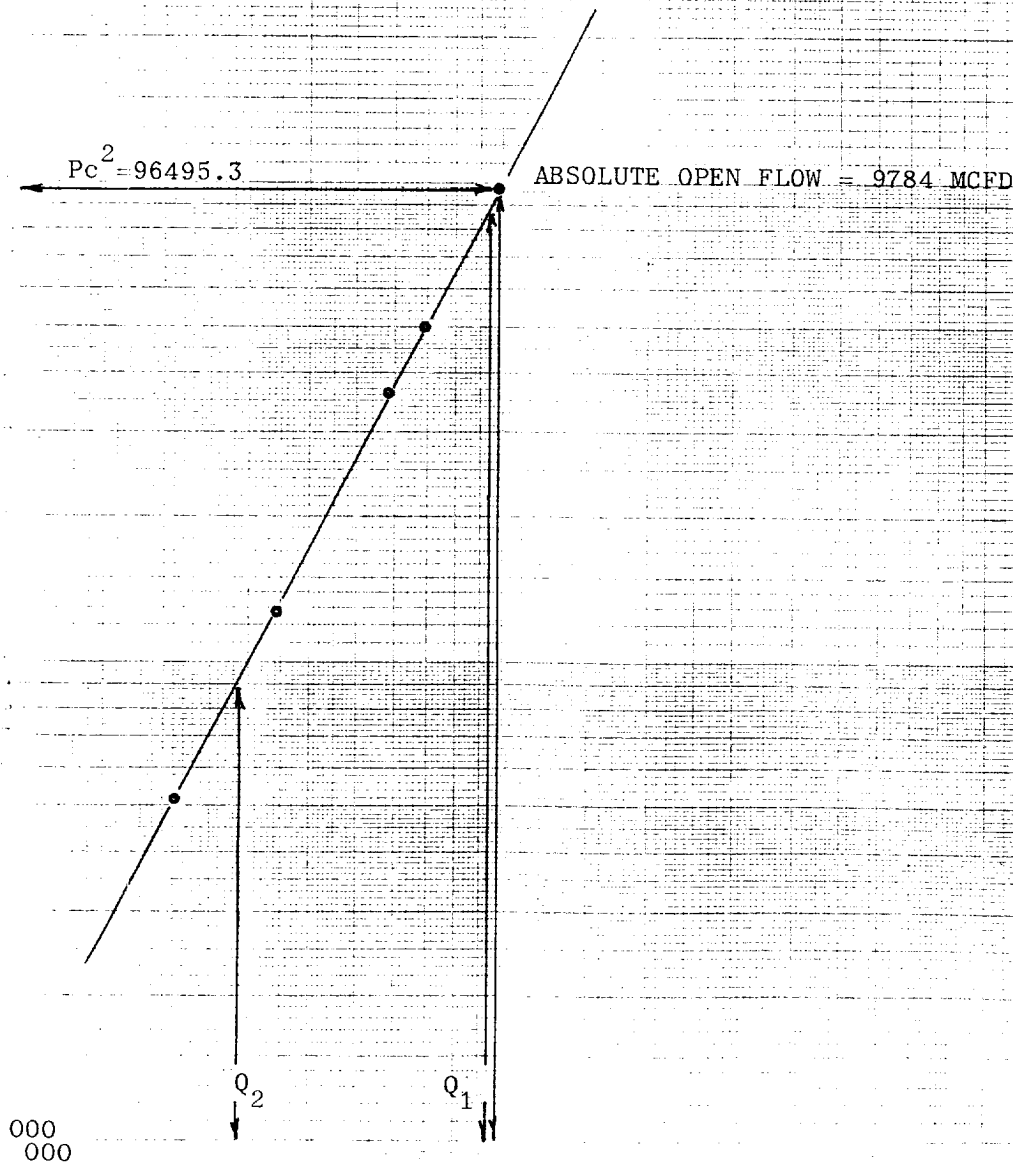
Remarks: \* BOTTOM HOLE PRESSURE @ (-12129)15570' USED FOR PRESSURE CALCULATIONS  
\*\* DIAPHRAM ACTUATED CHOKE

|                            |                                           |                                  |                                            |
|----------------------------|-------------------------------------------|----------------------------------|--------------------------------------------|
| Approved By Division _____ | Conducted By:<br>JARREL WELL TESTING, INC | Calculated By:<br>Joe A. Coleman | Checked By:<br>PE # 2208<br>Joe A. Coleman |
|----------------------------|-------------------------------------------|----------------------------------|--------------------------------------------|

COMPANY: HNG Oil Company  
 WELL: Diamond 6 Federal, No. 1  
 LOCATION: G 6 25s 34e  
 COUNTY: Lea  
 DATE: February 18, 1983

DIEZIGER CORPORATION  
 MADE IN U.S.A.  
 $P_c^2 - P_w^2$  (Thousands)



Q-MCFD

$$Q_1 = 9400 \text{ MCFD}; \quad \text{Log } Q_1 = 3.97313$$

$$Q_2 = 2850 \text{ MCFD}; \quad \text{Log } Q_2 = 3.45485$$

$$N = \frac{0.51828}{0.518} = 0.518$$