

C/SK  
File

10/26/91

Form C-122

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

41-96  
82730

|                                                                                                                           |  |                               |  |                                             |                       |  |
|---------------------------------------------------------------------------------------------------------------------------|--|-------------------------------|--|---------------------------------------------|-----------------------|--|
| Type Test<br><input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special |  |                               |  |                                             | Test Date<br>10/26/91 |  |
| Company<br>Yates Petroleum Corporation                                                                                    |  |                               |  | Connection<br>Transwestern Pipeline Company |                       |  |
| Pool<br>Abo: <i>Pecos slope</i>                                                                                           |  |                               |  | Unit                                        |                       |  |
| Completion Date<br>1/22/89                                                                                                |  | Total Depth<br>4300.0'        |  | Plug Back TD<br>4267.0'                     |                       |  |
| Csg Size<br>4.500"                                                                                                        |  | Wt.<br>9.500#                 |  | Elevation<br>3519.5'                        |                       |  |
| d<br>4.090"                                                                                                               |  | Set At<br>4300.0'             |  | Farm or Lease Name<br>Hargrove AFH          |                       |  |
| Tbg Size<br>2.375"                                                                                                        |  | Wt.<br>4.700#                 |  | Well No.<br>1                               |                       |  |
| d<br>1.995"                                                                                                               |  | Set At<br>3767.0'             |  | Unit Sec Twp Rge<br>H 8 10S 25E             |                       |  |
| Type Well<br>Single                                                                                                       |  |                               |  | Packer Set At<br>3767.0'                    |                       |  |
| Producing Thru<br>Tubing                                                                                                  |  | Resv. Temp. °F<br>114 @ 3746' |  | Baro. Press. - Pa<br>13.2 psia.             |                       |  |
| L<br>3767.0'                                                                                                              |  | H<br>3767.0'                  |  | State<br>New Mexico                         |                       |  |
| Gg<br>.660                                                                                                                |  | XCO2<br>.37                   |  | XN2<br>8.77                                 |                       |  |
| XH2S<br>0.00                                                                                                              |  | Proven<br>0.000"              |  | Meter Run<br>2.000"                         |                       |  |
| Taps<br>Flange                                                                                                            |  |                               |  |                                             |                       |  |

| FLOW DATA |                            |             |          |          | TUBING DATA |          | CASING DATA |          | Duration of Flow |
|-----------|----------------------------|-------------|----------|----------|-------------|----------|-------------|----------|------------------|
| NO        | Prover Orifice Size X Size | Press. psig | Diff. hw | Temp. °F | Press. psig | Temp. °F | Press. psig | Temp. °F |                  |
| SI        | 0.000 X 0.000              | 0           | 0.0      | 58       | 1000        | 0        | 0           | 0        | 0 hrs.           |
| 1.        | 2.067 X 1.250              | 130         | 3.0      | 65       | 880         | 62       | 0           | 0        | 24 hrs.          |
| 2.        | 2.067 X 1.250              | 145         | 7.0      | 61       | 820         | 62       | 0           | 0        | 24 hrs.          |
| 3.        | 2.067 X 1.250              | 155         | 15.8     | 60       | 476         | 62       | 0           | 0        | 24 hrs.          |
| 4.        | 2.067 X 1.250              | 160         | 19.1     | 58       | 317         | 62       | 0           | 0        | 24 hrs.          |
| 5.        | 0.000 X 0.000              | 0           | 0.0      | 0        | 0           | 0        | 0           | 0        | 0 hrs.           |

RATE OF FLOW CALCULATIONS

| NO | Coefficient (24 HOUR) | 1/hwPm | Pressure Pm | Flow Temp Ft. | Gravity Factor Fg | Super Compress. Fact. Fpv | Rate of Flow Q, Mcfd |
|----|-----------------------|--------|-------------|---------------|-------------------|---------------------------|----------------------|
| 1. | 8.134                 | 20.73  | 143.20      | .995          | 1.231             | 1.011                     | 209                  |
| 2. | 8.134                 | 33.28  | 158.20      | .999          | 1.231             | 1.011                     | 337                  |
| 3. | 8.134                 | 51.55  | 168.20      | 1.000         | 1.231             | 1.012                     | 523                  |
| 4. | 8.134                 | 57.52  | 173.20      | 1.002         | 1.231             | 1.013                     | 584                  |
| 5. | 0.000                 | 0.00   | 0.00        | 0.000         | 0.000             | 0.000                     | 0                    |

|                                       |  |  |  |            |  |              |  |
|---------------------------------------|--|--|--|------------|--|--------------|--|
| Gas Liquid Hydrocarbon Ratio          |  |  |  | Dry        |  | Mcf/bbl.     |  |
| A.P.I. Gravity of Liquid Hydrocarbons |  |  |  | 0.000      |  | Deg.         |  |
| Specific Gravity Separator Gas        |  |  |  | .660       |  | xxxxxxxxxxxx |  |
| Specific Gravity Flowing Fluid        |  |  |  | .660       |  | .660         |  |
| Critical Pressure                     |  |  |  | 656.8 PSIA |  | 656.8 PSIA   |  |
| Critical Temperature                  |  |  |  | 350.6°R    |  | 350.6°R      |  |

$P_c = 1013.2$     $P_{c2} = 1026.6$   

$$NO \quad P_{t2} \quad P_w \quad P_{w2} \quad P_{c2} - P_{w2} \quad (1) \quad \frac{P_{c2}}{P_{c2} - P_{w2}} = 1.1257 \quad (2) \quad \left[ \frac{P_{c2}}{P_{c2} - P_{w2}} \right]^n = 1.0920$$

|    |       |       |       |         |
|----|-------|-------|-------|---------|
| NO | Pt2   | Pw    | Pw2   | Pc2-Pw2 |
| 1. | 797.8 | 893.5 | 798.4 | 228.2   |
| 2. | 694.2 | 834.1 | 695.7 | 330.9   |
| 3. | 239.3 | 493.0 | 243.1 | 783.5   |
| 4. | 109.0 | 337.4 | 113.9 | 912.7   |
| 5. | 0.0   | 0.0   | 0.0   | 0.0     |

$AOF = Q \left[ \frac{P_{c2}}{P_{c2} - P_{w2}} \right]^n = 638 \text{ Mcfd}$

Absolute Open Flow      638 Mcfd @ 15.025      Angle of Slope, 0      37      Slope, n .743

Remarks:

Conducted By:      Calculated By:      Checked By:

WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (Pw) C-122D

Adopted 9-1-65

DATE 5/13/91

COMPANY Yates Petroleum Corporation LEASE Hargrove AFH WELL NO. 1

LOCATION: Unit H Section 8 Township 10S Range 25E

L 3767.0 H 3767.0 L/H 1.000 G .660 %CO<sub>2</sub> .37 %N<sub>2</sub> 8.77 %H<sub>2</sub>S 0.00

d 1.995 Fr .017777 GH 2486.2 Pcr 656.8 Tcr 350.6

| LINE                                               | 1st Rate | 2nd Rate | 3rd Rate | 4th Rate | 5th Rate |
|----------------------------------------------------|----------|----------|----------|----------|----------|
| 1 Qm                                               | .209     | .337     | .523     | .584     | 0.000    |
| 2 Tw(W.H.°R)                                       | 522.0    | 522.0    | 522.0    | 522.0    | 0.0      |
| 3 Ts(B.H.°R)                                       | 574.0    | 574.0    | 574.0    | 574.0    | 0.0      |
| 4 T=(Tw+Ts)/2                                      | 548.0    | 548.0    | 548.0    | 548.0    | 0.0      |
| 5 Z(Est.)                                          | .885     | .892     | .934     | .955     | 0.000    |
| 6 TZ                                               | 484.8    | 488.6    | 512.0    | 523.6    | 0.0      |
| 7 GH/TZ                                            | 5.128    | 5.089    | 4.856    | 4.749    | 0.000    |
| 8 e <sup>s</sup> (Table XIV)                       | 1.212    | 1.210    | 1.200    | 1.195    | 0.000    |
| 9 1-e <sup>-s</sup> (Table XIV)                    | .175     | .174     | .166     | .163     | 0.000    |
| 10 Pt                                              | 893.2    | 833.2    | 489.2    | 330.2    | 0.0      |
| 11 Pt <sup>2</sup> /1000                           | 797.8    | 694.2    | 239.3    | 109.0    | 0.0      |
| 12 Fr(Table XV)                                    | .017777  | .017777  | .017777  | .017777  | 0.000000 |
| 13 Fc=FrTZ                                         | 8.624    | 8.690    | 9.103    | 9.308    | 0.000    |
| 14 FcQm                                            | 1.801    | 2.926    | 4.757    | 5.440    | 0.000    |
| 15 L/H(FcQm) <sup>2</sup>                          | 3.242    | 8.559    | 22.626   | 29.598   | 0.000    |
| 16 Fw=L/H(FcQm) <sup>2</sup> (1-e <sup>-s</sup> )  | .567     | 1.486    | 3.766    | 4.828    | 0.000    |
| 17 Pw <sup>2</sup> =Pt <sup>2</sup> +Fw            | 798.4    | 695.7    | 243.1    | 113.9    | 0.0      |
| 18 Ps <sup>2</sup> =e <sup>s</sup> Pw <sup>2</sup> | 967.5    | 841.9    | 291.6    | 136.1    | 0.0      |
| 19 Ps                                              | 983.6    | 917.5    | 540.0    | 368.9    | 0.0      |
| 20 P=(Pt+Ps)/2                                     | 938.4    | 875.4    | 514.6    | 349.5    | 0.0      |
| 21 Pr=(P/Pcr)                                      | 1.43     | 1.33     | .78      | .53      | 0.00     |
| 22 Tr=(T/Tcr)                                      | 1.56     | 1.56     | 1.56     | 1.56     | 0.00     |

|          |                             |
|----------|-----------------------------|
| Company  | Yates Petroleum Corporation |
| Well     | Hargrove AFH No. 1          |
| Location | H, 8-10S-25E                |
| County   | Chaves                      |
| Date     | 5/13/91                     |

