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

Form C-122

dist File

| | | | | |
|---|---|---|---|---|
| Type Test: [X] Initial [ ] Annual [ ] Special | | | Test Date: 12/09/1993 | |
| Company: Yates Petroleum Corp | Connection: Transwestern Pipeline Co | | | |
| Pool: Abo | Formation: Pecos Slope | | | Unit: |
| Completion Date: 12/02/1993 | Total Depth: 4200 | Plug Back TD: 4152 | Elevation: 3716 | Farm or Lease Name: Sacra SA Com |
| Csg. Size: 4.500 / Wt.: 10.500 / d: 4.052 / Set At: 4200 | Perforations: From 3613 To 3806 | | | Well No.: 11 |
| Tbg. Size: 2.375 / Wt: 4.700 / d: 1.995 / Set At: 3495 | Perforations: From 3613 To 3806 | | | Unit: G / Sec.: 35 / Twp.: 6S / Rge.: 25E |
| Type Well: Single | Packer Set At: 3495 | | | County: Chaves |
| Producing Thru: Tubing | Resv. Temp. °F: 100 @ 4000 | Mean Temp. °F: 62 | Baro. Press. - Pa: 24.0 | State: New Mexico |

| L | H | Gg | $\%CO_2$ | $\%N_2$ | $\%H_2S$ | Prover | Meter Run | Taps |
|---|---|---|---|---|---|---|---|---|
| 3495 | 3495 | 0.641 | 0.010 | 4.937 | 0.000 | 0.000 | 3.000 | Flange |

| | FLOW DATA | | | | | TUBING DATA | | CASING DATA | | |
|---|---|---|---|---|---|---|---|---|---|---|
| NO. | Prover Line Size | X | Orifice Size | Press. p.s.i.g. | Diff. hw | Temp. °F | Press. p.s.i.g. | Temp. °F | Press. p.s.i.g. | Temp. °F | Duration of Flow |
| SI. | 0.000 | x | 0.000 | 0 | 0.0 | 0 | 275 | 0 | | | 0 |
| 1. | 3.068 | x | 1.000 | 80 | 6.0 | 55 | 250 | 62 | | | 24 |
| 2. | 3.068 | x | 1.000 | 73 | 29.2 | 44 | 193 | 62 | | | 24 |
| 3. | 3.068 | x | 1.000 | 80 | 59.0 | 47 | 137 | 62 | | | 24 |
| 4 | 3.068 | x | 1.000 | 80 | 81.0 | 45 | 80 | 62 | | | 24 |
| 5. | | X | | | | | | | | | |

RATE OF FLOW CALCULATIONS

| NO | Coefficient (24 Hour) | $\sqrt{hwPm}$ | Pressure Pm | Flow Temp. Factor Ft. | Gravity Factor Fg | Super Compress. Factor, Fpv | Rate of Flow Q, Mcfd |
|---|---|---|---|---|---|---|---|
| 1. | 4.789 | 25.0 | 104.0 | 1.0048 | 1.249 | 1.009 | 152 |
| 2. | 4.789 | 53.2 | 97.0 | 1.0158 | 1.249 | 1.009 | 326 |
| 3. | 4.789 | 78.3 | 104.0 | 1.0127 | 1.249 | 1.010 | 479 |
| 4. | 4.789 | 91.8 | 104.0 | 1.0148 | 1.249 | 1.010 | 563 |
| 5 | | | | | | | |

| NO. | Pr | Temp °R | Tr | Z |
|---|---|---|---|---|
| 1 | 0.16 | 515 | 1.45 | 0.982 |
| 2 | 0.15 | 504 | 1.42 | 0.982 |
| 3. | 0.16 | 507 | 1.42 | 0.981 |
| 4 | 0.16 | 505 | 1.42 | 0.981 |
| 5 | | | | |

| | | |
|---|---|---|
| Gas Liquid Hydrocarbon Ratio | 0 Mcf/bbl. | |
| A.P.I. Gravity of Liquid Hydrocarbons | 0.000 Deg. | |
| Specific Gravity Separator Gas | 0.641 | XXXXXXXXXX |
| Specific Gravity Flowing Fluid | XXXXXXXXXX | 0.641 |
| Critical Pressure | 662 P.S.I.A. | 662 P.S.I.A. |
| Critical Temperature | 356 °R | 356 °R |

Pc 299.0 $Pc^2$ 89.4

| NO. | $Pt^2$ | Pw | $Pw^2$ | $Pc^2 - Pw^2$ |
|---|---|---|---|---|
| 1. | 75.1 | 274.5 | 75.4 | 14.0 |
| 2 | 47.1 | 220.1 | 48.5 | 40.9 |
| 3. | 25.9 | 170.0 | 28.9 | 60.5 |
| 4 | 10.8 | 122.2 | 14.9 | 74.5 |
| 5. | | | | |

(1) $\frac{Pc^2}{Pc^2 - Pw^2} = 1.477$ (2) $\left[\frac{Pc^2}{Pc^2 - Pw^2}\right]^n = 1.360$

$AOF = Q \left[\frac{Pc^2}{Pc^2 - Pw^2}\right]^n = 651$

| | | | | | |
|---|---|---|---|---|---|
| Absolute Open Flow | 651 Mcfd @ 15.025 | Angle of Slope θ | 38 | Slope, n | 0.787 |

Remarks:

| Approved By Commission: | Conducted By: | Calculated By: | Checked By: |
|---|---|---|---|
| | David Weaver | Andrea Carpenter | |

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

DATE 12/09/1993

COMPANY Yates Petroleum Corp LEASE Sacra SA Com WELL NO. 11

LOCATION: Unit G Section 35 Township 6S Range 25E

L 3495 H 3495 L / H 1.000 G 0.641 %$CO_2$ 0.010 %$N_2$ 4.937 %$H_2S$ 0.000

d 1.995 Fr 0.017777 GH 2240.3 Pcr 662.3 Tcr 355.7

| LINE | 1st Rate | 2nd Rate | 3rd Rate | 4th Rate | 5th Rate |
|---|---|---|---|---|---|
| 1 Qm | 0.152 | 0.326 | 0.479 | 0.563 | |
| 2 Tw(W.H.°R) | 522 | 522 | 522 | 522 | |
| 3 Ts(B.H.°R) | 560 | 560 | 560 | 560 | |
| 4 T = (Tw+Ts) / 2 | 540.7 | 540.7 | 540.7 | 540.7 | |
| 5 Z (Est.) | 0.958 | 0.967 | 0.975 | 0.983 | |
| 6 TZ | 518.2 | 522.7 | 527.0 | 531.3 | |
| 7 GH / TZ | 4.323 | 4.286 | 4.251 | 4.217 | |
| 8 e^s(Table XIV) | 1.176 | 1.174 | 1.173 | 1.171 | |
| 9 1-e^-s(Table XIV) | 0.150 | 0.148 | 0.147 | 0.146 | |
| 10 Pt | 274.0 | 217.0 | 161.0 | 104.0 | |
| 11 $Pt^2$ / 1000 | 75.1 | 47.1 | 25.9 | 10.8 | |
| 12 Fr (Table XV) | 0.017777 | 0.017777 | 0.017777 | 0.017777 | |
| 13 Fc = FrTZ | 9.212 | 9.292 | 9.369 | 9.445 | |
| 14 FcQm | 1.40 | 3.03 | 4.49 | 5.31 | |
| 15 L / $H(FcQm)^2$ | 1.9 | 9.2 | 20.1 | 28.2 | |
| 16 Fw = L / $H(FcQm)^2(1-e^{-s})$ | 0.29 | 1.36 | 2.97 | 4.13 | |
| 17 $Pw^2 = Pt^2+Fw$ | 75.4 | 48.5 | 28.9 | 14.9 | |
| 18 $Ps^2 = e^{s}Pw^2$ | 88.6 | 56.9 | 33.9 | 17.5 | |
| 19 Ps | 297.7 | 238.5 | 184.1 | 132.3 | |
| 20 P = (Pt+Ps) / 2 | 285.9 | 227.8 | 172.5 | 118.2 | |
| 21 Pr = (P / Pcr) | 0.43 | 0.34 | 0.26 | 0.18 | |
| 22 Tr = (T / Tcr) | 1.52 | 1.52 | 1.52 | 1.52 | |
| 23 Z (Table XI) | 0.958 | 0.967 | 0.975 | 0.983 | |

Company: Yates Petroleum Corp
Well: Sacra SA Com #11
Location: G 35-6S-25E

County: Chaves
Date: 12-09-1993