

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

Form C-122  
Revised 9-1-65

C/SF  
C-122

RECEIVED

|                                                                                                                                                 |  |                                           |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------|--|
| Type Test<br><input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special    Test Date: 2-25-82 |  | APR 1 9 1982                              |  |
| Company<br>Yates Petroleum Corporation ✓                                                                                                        |  | Connection<br>Transwestern Pipeline       |  |
| Pool<br>Pecos Slope Abo Gas                                                                                                                     |  | Formation<br>Abo                          |  |
| Completion Date<br>1-8-82                                                                                                                       |  | Total Depth<br>4300'                      |  |
| Casing Size<br>4 1/2"                                                                                                                           |  | Perforations:<br>From 3733 To 3829        |  |
| Well No.<br>#3                                                                                                                                  |  | Form or Lease Name<br>South Alkali LK Fed |  |
| Completion Date<br>1-8-82                                                                                                                       |  | Total Depth<br>4300'                      |  |
| Casing Size<br>4 1/2"                                                                                                                           |  | Perforations:<br>From 3733 To 3829        |  |
| Well No.<br>#3                                                                                                                                  |  | Form or Lease Name<br>South Alkali LK Fed |  |
| Type Well - Single - Drivenhead - G.C. or G.O. Multiple<br>single                                                                               |  | Packer Set At<br>none                     |  |
| Producing thru<br>tubing                                                                                                                        |  | Reservoir Temp. °F<br>97    3818          |  |
| Mean Annual Temp. °F<br>62                                                                                                                      |  | Baro. Press. in P <sub>h</sub><br>13.2    |  |
| L<br>3820                                                                                                                                       |  | H<br>3820                                 |  |
| C <sub>g</sub><br>.676                                                                                                                          |  | % CO <sub>2</sub><br>4.33                 |  |
| % H <sub>2</sub><br>6.99                                                                                                                        |  | % H <sub>2</sub> S<br>0                   |  |
| Prover<br>-                                                                                                                                     |  | Meter Run<br>2"                           |  |
| Tape<br>Flanged                                                                                                                                 |  | County<br>Chaves                          |  |
| State<br>New Mexico                                                                                                                             |  | Well No.<br>#3                            |  |
| Unit<br>K                                                                                                                                       |  | Sec.<br>11                                |  |
| Twp.<br>6s                                                                                                                                      |  | Rge.<br>25e                               |  |

| 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> 7 | Temp. °F | Press. p.s.i.g. | Temp. °F | Press. p.s.i.g. | Temp. °F |                  |
| 51        |                  |   |              |                 |                        |          | 1002            |          |                 |          |                  |
| 1.        | 2.067 x 1.125    |   |              | 280             | 12.0                   | 65       | 867             | 58       |                 |          | 24 hrs.          |
| 2.        | 2.067 x 1.125    |   |              | 280             | 15.6                   | 65       | 833             | 58       |                 |          | 24 hrs.          |
| 3.        | 2.067 x 1.125    |   |              | 280             | 30.8                   | 65       | 776             | 58       |                 |          | 24 hrs.          |
| 4.        | 2.067 x 1.125    |   |              | 250             | 68.0                   | 66       | 640             | 58       |                 |          | 24 hrs.          |
| 5.        |                  |   |              |                 |                        |          |                 |          |                 |          |                  |

| 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                         | 6.393                 | 59.3             | 293.2                   | .9952                 | 1.216                         | 1.024                                    | 470                  |
| 2                         | 6.393                 | 67.7             | 283.2                   | .9952                 | 1.216                         | 1.024                                    | 536                  |
| 3                         | 6.393                 | 95.0             | 293.2                   | .9952                 | 1.216                         | 1.024                                    | 753                  |
| 4                         | 6.393                 | 133.8            | 263.2                   | .9948                 | 1.216                         | 1.022                                    | 1057                 |
| 5                         |                       |                  |                         |                       |                               |                                          |                      |

| NO. | P <sub>i</sub> | Temp. °R | T <sub>i</sub> | z    | Gas Liquid Hydrocarbon Ratio          | Dry   | Mcf/bbl.     |
|-----|----------------|----------|----------------|------|---------------------------------------|-------|--------------|
| 1   | .44            | 525      | 1.48           | .953 | A.P.I. Gravity of Liquid Hydrocarbons | --    | Deq.         |
| 2   | .44            | 525      | 1.48           | .953 | Specific Gravity Separator Gas        | .676  | XXXXXXX      |
| 3   | .44            | 525      | 1.48           | .953 | Specific Gravity Flowing Fluid        | XXXXX | .676         |
| 4   | .39            | 526      | 1.48           | .958 | Critical Pressure                     | 674   | P.S.I.A. 674 |
| 5   |                |          |                |      | Critical Temperature                  | 355   | P.S.I.A. 355 |

| NO. | P <sub>i</sub> <sup>2</sup> | P <sub>w</sub> <sup>2</sup> | R <sub>w</sub> <sup>2</sup> | P <sub>c</sub> <sup>2</sup> - P <sub>w</sub> <sup>2</sup> |
|-----|-----------------------------|-----------------------------|-----------------------------|-----------------------------------------------------------|
| 1   | 774.8                       |                             | 777.8                       | 252.8                                                     |
| 2   | 716.1                       |                             | 720.0                       | 310.6                                                     |
| 3   | 622.8                       |                             | 630.7                       | 399.9                                                     |
| 4   | 426.7                       |                             | 442.4                       | 588.2                                                     |
| 5   |                             |                             |                             |                                                           |

(1)  $\frac{P_c^2}{P_i^2 - P_w^2} = 1.7521$

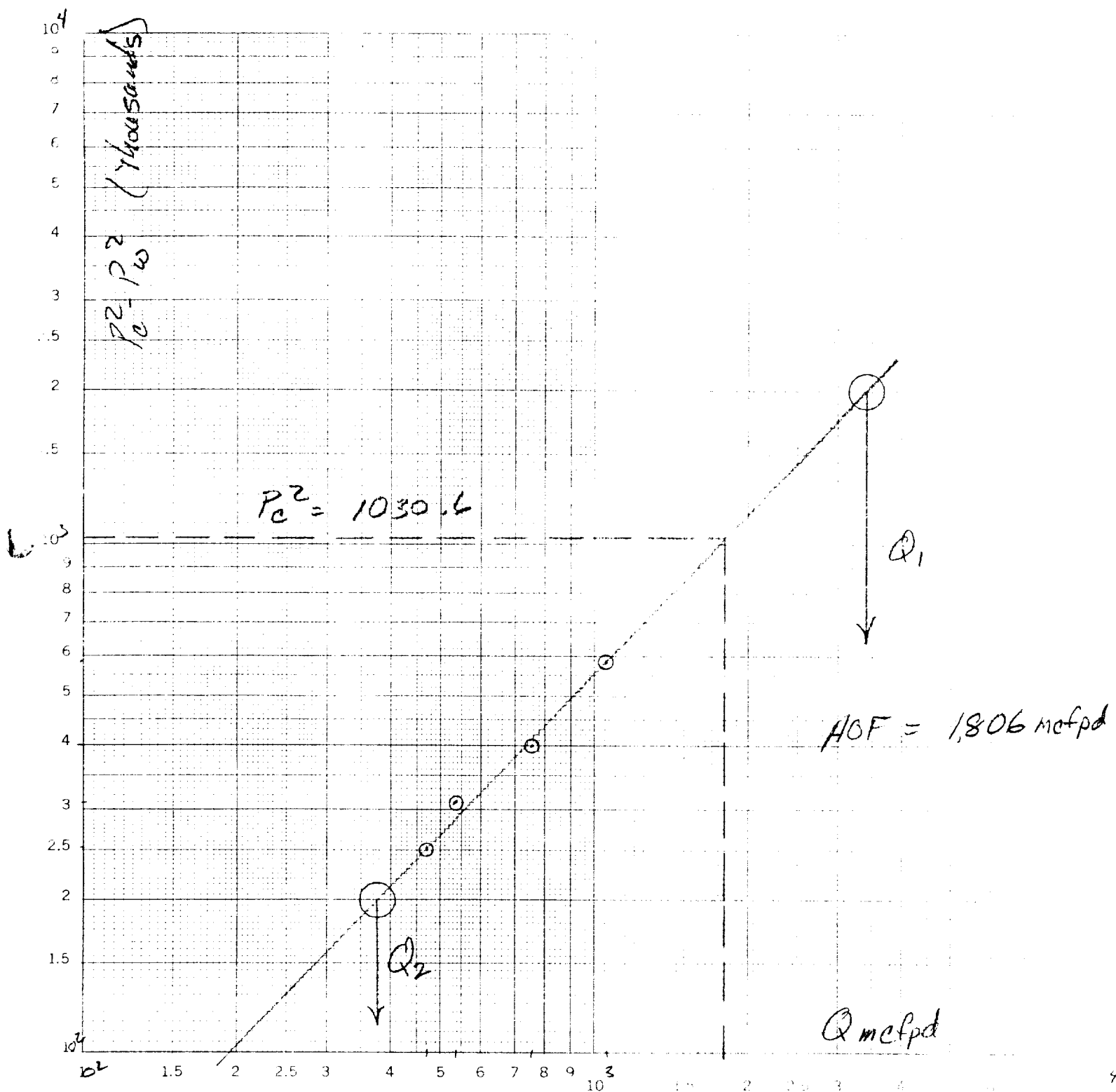
AGF = C  $\left[ \frac{P_i^2}{P_c^2 - P_w^2} \right]^n = 1806 \text{ mcfpd}$

(2)  $\left[ \frac{P_i^2}{P_c^2 - P_w^2} \right]^n = 1.7087$

|                               |      |                            |                |                   |
|-------------------------------|------|----------------------------|----------------|-------------------|
| Absolute Open Flow            | 1806 | Mcf/d @ 15.025             | Slope of Slope | Slope, n .955     |
| Remarks:                      |      |                            |                |                   |
| Approved By Commission: _____ |      |                            |                |                   |
| Conductor By: David Weaver    |      | Calculator By: Al Springer |                | Checked By: _____ |

South Alkali- LR Fld. #3  
 unit (K) Sec 11 - 6S- 25E  
 Chaves, New Mexico



$$(P_c^2 - P_w^2)_1 = 2000$$

$$(P_c^2 - P_w^2)_2 = 200$$

$$Q_1 = 3,410$$

$$Q_2 = 278$$

$$\log Q_1 = 3.53275$$

$$\log Q_2 = 2.57949$$

$$n = .95526 \approx .955$$

WORKSHEET FOR CALCULATION OF ST. C COLUMN WELLHEAD PRESSURE (P<sub>WC</sub>)

COMPANY Yates Petroleum Corp LEASE South Alkali Creek WELL NO. #1 DATE 4/14/82

LOCATION: Unit K Section 11 Township 6S Range 25E

L 3820 H 3820 L/H 1.000 G .616 % CO<sub>2</sub> 4.33 % N<sub>2</sub> 6.99 % H<sub>2</sub>S 0

d 1.995 F<sub>T</sub> .01823 GH 2582 P<sub>CT</sub> 674 T<sub>CT</sub> 353

TABLE IX & X

| LINE                                                                                      | 1 <sup>st</sup> rate | 2 <sup>nd</sup> rate | 3 <sup>rd</sup> rate | 4 <sup>th</sup> rate |  |
|-------------------------------------------------------------------------------------------|----------------------|----------------------|----------------------|----------------------|--|
| 1 Q <sub>m</sub>                                                                          | .490                 | .536                 | .753                 | 1.057                |  |
| 2 T <sub>w</sub> (W.H. °R)                                                                | 578                  | 578                  | 578                  | 578                  |  |
| 3 T <sub>s</sub> (B.H. °R)                                                                | 557                  | 557                  | 557                  | 557                  |  |
| 4 T = $(\frac{T_w + T_s}{2})$                                                             | 537.5                | 537.5                | 537.5                | 537.5                |  |
| 5 Z (Est)                                                                                 | .873                 | .877                 | .884                 | .901                 |  |
| 6 T <sub>2</sub>                                                                          | 469.24               | 471.39               | 475.13               | 484.3                |  |
| 7 GH/TZ                                                                                   | 5.503                | 5.477                | 5.434                | 5.332                |  |
| 8 e <sup>s</sup> (Table XIV)                                                              | 1.229                | 1.228                | 1.226                | 1.221                |  |
| 9 1-e <sup>s</sup> (Table XIV)                                                            | .186                 | .186                 | .184                 | .181                 |  |
| 10 P <sub>t</sub>                                                                         | 880.2                | 846.2                | 789.2                | 653.2                |  |
| 11 P <sub>t</sub> <sup>2</sup> /1000                                                      | 774.8                | 716.1                | 622.8                | 426.7                |  |
| 12 F <sub>t</sub> (Table XV)                                                              | .04823               | .04823               | .04823               | .04823               |  |
| 13 F <sub>c</sub> = F <sub>t</sub> TZ                                                     | 8.554                | 8.543                | 8.662                | 8.829                |  |
| 14 F <sub>c</sub> Q <sub>m</sub>                                                          | 4.020                | 4.606                | 6.522                | 9.332                |  |
| 15 L/H (F <sub>c</sub> Q <sub>m</sub> ) <sup>2</sup>                                      | 16.164               | 21.216               | 42.543               | 87.082               |  |
| 16 F <sub>w</sub> = L/H (F <sub>c</sub> Q <sub>m</sub> ) <sup>2</sup> (1-e <sup>s</sup> ) | 3.007                | 3.946                | 7.828                | 15.766               |  |
| 17 P <sub>w</sub> <sup>2</sup> = P <sub>t</sub> <sup>2</sup> + F <sub>w</sub>             | 777.8                | 725.0                | 635.7                | 442.4                |  |
| 18 F <sub>s</sub> <sup>2</sup> = e <sup>s</sup> P <sub>w</sub> <sup>2</sup>               | 955.9                | 884.2                | 773.2                | 540.2                |  |
| 19 F <sub>s</sub>                                                                         | 977.7                | 940.3                | 879.3                | 735.0                |  |
| 20 P = $(\frac{P_t + P_s}{2})$                                                            | 928.9                | 893.2                | 834.3                | 694.1                |  |
| 21 P <sub>T</sub> <sup>2</sup> (P/P <sub>st</sub> )                                       | 1.38                 | 1.33                 | 1.27                 | 1.03                 |  |
| 22 T <sub>r</sub> = (T/T <sub>st</sub> )                                                  | 1.51                 | 1.51                 | 1.51                 | 1.51                 |  |
| 23 Z (Table XI)                                                                           | .873                 | .877                 | .884                 | .901                 |  |