

## MULTIPOINT AND ONE POINT BACK PRESSURE

RECEIVED BY GAS WELL

Revised Version

SEP 02 1983

c-15F  
File

|                                                          |  |                                                                                                                      |  |                              |  |                                       |  |
|----------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------|--|------------------------------|--|---------------------------------------|--|
| Type Test                                                |  | <input checked="" type="checkbox"/> Initial 4-POINT <input type="checkbox"/> Annual <input type="checkbox"/> Special |  | Test Date<br>602 C-83        |  | ARTESIA, OFFICE                       |  |
| Company<br>WALLIS EXPLORATION                            |  |                                                                                                                      |  | Connection<br>AIR NEW WELL   |  |                                       |  |
| Pool<br><i>Same Point</i>                                |  |                                                                                                                      |  | Formation<br>GRAYBERG        |  |                                       |  |
| Completion Date<br>6-12-83                               |  | Total Depth<br>1732                                                                                                  |  | Plug Hole<br>1732            |  | Elevation<br>3581                     |  |
| Well Size<br>4.500                                       |  | Wi.<br>10.5                                                                                                          |  | Set At<br>4.052              |  | 1677                                  |  |
| Perforations:<br>From 1717                               |  | To<br>1730                                                                                                           |  | Well No.<br>1                |  |                                       |  |
| Tub. Size<br>2.375                                       |  | Wi.<br>4.7                                                                                                           |  | Set At<br>1.995              |  | 1714                                  |  |
| Perforations:<br>From 0                                  |  | To<br>0                                                                                                              |  | Unit<br>E                    |  | Sec. 10                               |  |
| Type Well - Single - (Floodhead - G.O. or G.O. Multiple) |  | Packer Set At<br>0                                                                                                   |  | County<br>CHAVES             |  |                                       |  |
| Producing Thru<br>TUBING                                 |  | Reservoir Temp. °F<br>99 @ 1723                                                                                      |  | Mean Annual Temp. °F<br>60.0 |  | Baro. Press. - P <sub>g</sub><br>13.2 |  |
| State<br>NEW MEXICO                                      |  |                                                                                                                      |  |                              |  |                                       |  |
| L<br>1723                                                |  | H<br>1723                                                                                                            |  | Q <sub>g</sub><br>0.840      |  | % CO <sub>2</sub><br>0                |  |
|                                                          |  |                                                                                                                      |  | % N <sub>2</sub><br>61.06    |  | % H <sub>2</sub> S<br>0               |  |
| Prover<br>2.0                                            |  | Meter Run<br>0                                                                                                       |  | Type                         |  |                                       |  |

| FLOW DATA |                  |   |              |                 |                      | TUBING DATA |                 | B.H.P. 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. | CHOKE            | Duration of Flow |
| SI        |                  |   |              |                 |                      |             | 759             |             | 794             |                  | 212.0            |
| 1.        | 2.00             | X | 0.063        | 85              | 0                    | 72          | 683             | 72          | 719             | 4/64             | 1.0              |
| 2.        | 2.00             | X | 0.063        | 130             | 0                    | 78          | 652             | 78          | 687             | 6/64             | 1.0              |
| 3.        | 2.00             | X | 0.063        | 180             | 0                    | 85          | 605             | 85          | 637             | 8/64             | 1.0              |
| 4.        | 2.00             | X | 0.063        | 270             | 0                    | 90          | 537             | 90          | 563             | 10/64            | 1.0              |
| 5.        |                  |   |              |                 |                      |             |                 |             |                 |                  |                  |

| RATE OF FLOW CALCULATIONS |                       |                 |                         |                                  |                               |                                        |                      |
|---------------------------|-----------------------|-----------------|-------------------------|----------------------------------|-------------------------------|----------------------------------------|----------------------|
| NO.                       | Coefficient (24 Hour) | $\sqrt{h_{wp}}$ | Pressure P <sub>m</sub> | Flow Temp. Factor F <sub>t</sub> | Gravity Factor F <sub>g</sub> | Super Compress. Factor F <sub>sp</sub> | Rate of Flow Q, Mcfd |
| 1                         | 0.06                  | 0               | 98.2                    | 0.9887                           | 1.0911                        | 1.0031                                 | 7.                   |
| 2                         | 0.06                  | 0               | 143.2                   | 0.9831                           | 1.0911                        | 1.0043                                 | 10.                  |
| 3                         | 0.06                  | 0               | 193.2                   | 0.9768                           | 1.0911                        | 1.0055                                 | 13.                  |
| 4                         | 0.06                  | 0               | 283.2                   | 0.9723                           | 1.0911                        | 1.0077                                 | 19.                  |
| 5                         |                       |                 |                         |                                  |                               |                                        |                      |

| NO. | P <sub>1</sub> | Temp. °R | Q    | Z     | Gas Liquid Hydrocarbon Ratio | A.P.I. Gravity of Liquid Hydrocarbons | Specific Gravity Separator Gas | Specific Gravity Flowing Fluid | Critical Pressure | Critical Temperature |
|-----|----------------|----------|------|-------|------------------------------|---------------------------------------|--------------------------------|--------------------------------|-------------------|----------------------|
| 1   | 0.18           | 532      | 1.99 | 0.994 | 0                            | 0                                     | 0.840                          | XXXXXX                         | 555               | 267                  |
| 2   | 0.26           | 538      | 2.01 | 0.991 |                              |                                       |                                | XXXXXX                         |                   |                      |
| 3   | 0.35           | 545      | 2.04 | 0.989 |                              |                                       |                                |                                |                   |                      |
| 4   | 0.51           | 550      | 2.06 | 0.985 |                              |                                       |                                |                                |                   |                      |
| 5   |                |          |      |       |                              |                                       |                                |                                |                   |                      |

| NO. | P <sub>1</sub> <sup>2</sup> | P <sub>w</sub> <sup>2</sup> | R <sub>w</sub> <sup>2</sup> | P <sub>1</sub> <sup>2</sup> - R <sub>w</sub> <sup>2</sup> |
|-----|-----------------------------|-----------------------------|-----------------------------|-----------------------------------------------------------|
| 1   | 536                         | 695                         | 483                         | 104                                                       |
| 2   | 490                         | 665                         | 442                         | 145                                                       |
| 3   | 423                         | 617                         | 381                         | 206                                                       |
| 4   | 332                         | 547                         | 299                         | 287                                                       |
| 5   |                             |                             |                             |                                                           |

$$(1) \frac{P_g^2}{P_1^2 - R_w^2} = 2.0412$$

$$AOF = Q \left[ \frac{R_w^2}{P_1^2 - R_w^2} \right]^n = 39$$

$$(2) \left[ \frac{R_w^2}{P_1^2 - R_w^2} \right]^n = 2.0412$$

|                    |    |                |                |      |          |       |
|--------------------|----|----------------|----------------|------|----------|-------|
| Absolute Open Flow | 39 | Mcf/d @ 15.025 | Angle of Slope | 45.0 | Slope, n | 1.000 |
|--------------------|----|----------------|----------------|------|----------|-------|

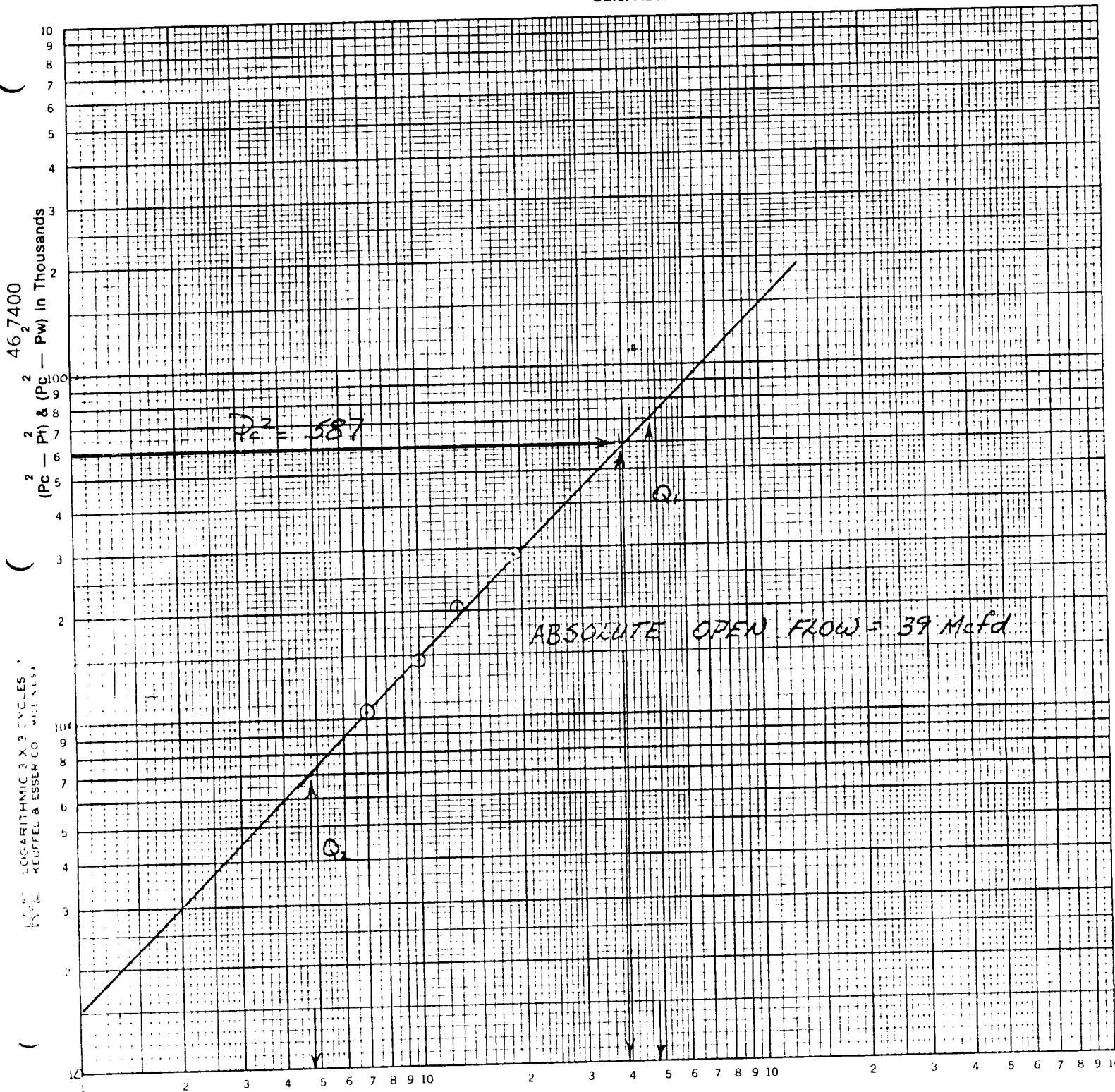
Remarks: BOTTOM HOLE PRESSURES MEASURED WITH AMERADA PRESSURE ELEMENTS.

|                        |              |               |            |
|------------------------|--------------|---------------|------------|
| Approved By Commission | Conducted By | Calculated By | Checked By |
|------------------------|--------------|---------------|------------|

# BACK PRESSURE CURVE

Operator WALLACE EXPLORATION Lease HOWELL Well No. 1  
 County CHAVES Field \_\_\_\_\_ Location 10 14S 28E  
 Date of Test 6-23-83 Slope "n" 1.000 Angle of Slope 45  
 Calc. Abs. Potential 39 MCF/D



$$\Delta P_1^2 = P_c^2 - P_{w1}^2 = 700$$

$$\Delta P_2^2 = P_c^2 - P_{w2}^2 = 70$$

$$Q_1 = 48$$

$$Q_2 = 10$$

$$\log Q_1 = 1.6812$$

$$\log Q_2 = .6812$$

$$n = 1.000$$