

MULTI-POINT BACK PRESSURE TEST FOR GAS WELLS

Pool Formation Marrow County Lea

Initial X Annual Special Date of Test 10-30/11-61

Company El Paso Natural Gas Company Lease Lusk Deep Unit Well No. 3

Unit E Sec. 20 Twp. 19-S Rge. 32-E Purchaser None

Casing 5 1/2 Wt. 17.0 I.D. Set at 12,439 Perf. 12,370 To 12,390

Tubing 2 1/16 Wt. 3.25 I.D. 1.693 Set at 12,345 Perf. 1 To

Gas Pay: From 12,370 To 12,390 L 12,345 xG MLx. - .850 GL 10,493 Bar.Press. 13.2

Producing Thru: Casing Tubing X Type Well G. O. Dual

Date of Completion: Packer Dual 11,284 Single-Bradenhead-G. G. or G.O. Dual

Elevation - 3574 G. L. Reservoir Temp. 145° F

OBSERVED DATA

Tested Through (Gauge) (Meter) Type Taps Flange

| No. | Flow Data | | | | | Tubing Data | | Casing Data | | Duration of Flow Mins. Secs. |
|-----|----------------|-------------------|----------------|-------------------------|--------------|----------------|--------------|---------------------------------|--------------|---------------------------------|
| | (Line) Size | (Orifice) Size | Press. psig | Diff. h _w | Temp. °F. | Press. psig | Temp. °F. | Press. Choke Size PSIG | Temp. °F. | |
| SI | | | | | | | | | | |
| 1. | 3.000 | 2.000 | 615 | 10 | 80 | 3845 | | | | 105 |
| 2. | 3.000 | 2.000 | 661 | 23 | 71 | 3652 | | 11/64 | | 85 |
| 3. | 3.000 | 2.000 | 693 | 36 | 64 | 3482 | | 14/64 | | 95 |
| 4. | 3.000 | 2.000 | 705 | 50 | 63 | 3305 | | 16/64 | | 75 |
| 5. | 3.000 | 2.000 | 676 | 9 | 66 | 3132 | | 18/64 | | 1440 |
| | | | | | | 3598 | | 11/64 | | |

FLOW CALCULATIONS

| No. | Coefficient (24-Hour) | $\sqrt{h_{wpf}}$ | Pressure psia | Flow Temp. Factor F _t | Gravity Factor F _g | Compress Factor F _{pv} | Low Press. Vol | Rate of Flow Q-MCFPD @ 15.025 psia | Total |
|-----|--------------------------|------------------|------------------|--|-------------------------------------|---------------------------------------|----------------------|--|-------|
| 1. | 27.52 | 79.26 | 628.2 | 0.9813 | 0.9608 | 1.056 | 107.0 | 2171 | 2278 |
| 2. | 27.52 | 124.52 | 674.2 | .9896 | .9608 | 1.068 | 164.0 | 3479 | 3643 |
| 3. | 27.52 | 159.45 | 706.2 | .9962 | .9608 | 1.078 | 225.0 | 4528 | 4753 |
| 4. | 27.52 | 189.50 | 718.2 | .9971 | .9608 | 1.078 | 300.0 | 5386 | 5686 |
| 5. | 27.52 | 78.76 | 689.2 | .9943 | .9608 | 1.069 | 143.0 | 2213 | 2356 |

PRESSURE CALCULATIONS

Gas Liquid Hydrocarbon Ratio 12,559 cf/bbl.
 Gravity of Liquid Hydrocarbons 55.5 deg.
 F_c 15.255 * (1-e^{-S}) 0.514
 * Calculated F_c
 Specific Gravity Separator Gas 650 Est.
 Specific Gravity Flowing Fluid 7567
 P_c 3858.2 P_c² 14885.7

| No. | P _w P _t (psia) | P _t ² | F _c Q | (F _c Q) ² | (F _c Q) ² (1-e ^{-S}) | P _w ² | P _c ² -P _w ² | Cal. P _w | P _w P _c |
|-----|---|-----------------------------|------------------|---------------------------------|---|-----------------------------|--|------------------------|----------------------------------|
| 1. | 3665.2 | 13433.7 | 34.75 | 1207.6 | 620.7 | 14054.4 | 831.3 | 3748.9 | 0.9717 |
| 2. | 3495.2 | 12216.4 | 55.57 | 3088.0 | 1587.2 | 13801.6 | 1082.1 | 3715.3 | .9630 |
| 3. | 3318.2 | 11010.4 | 72.51 | 5257.7 | 2702.4 | 13712.8 | 1172.9 | 3703.1 | .9598 |
| 4. | 3145.2 | 9892.3 | 86.74 | 7523.8 | 3867.2 | 13729.5 | 1186.2 | 3709.4 | .9614 |
| 5. | 3611.2 | 13040.8 | 35.94 | 1291.7 | 663.9 | 13704.7 | 1181.0 | 3702.0 | .9595 |

Absolute Potential: 30,000 MCFPD; n 1.000000

COMPANY El Paso Natural Gas Company

ADDRESS P. O. Box 1384 - Jal, New Mexico

AGENT and TITLE Peyton H. Randolph - Engineer Peyton H. Randolph

WITNESSED R. A. Mikel, Bobby Boas, David Dyer

COMPANY El Paso Natural Gas Company

REMARKS

INSTRUCTIONS

This form is to be used for reporting multi-point back pressure tests on gas wells in the State, except those on which special orders are applicable. Three copies of this form and the back pressure curve shall be filed with the Commission at Box 871, Santa Fe.

The log log paper used for plotting the back pressure curve shall be of at least three inch cycles.

NOMENCLATURE

Q = Actual rate of flow at end of flow period at W. H. working pressure (P_w).
MCF/da. @ 15.025 psia and 60° F.

P_c = 72 hour wellhead shut-in casing (or tubing) pressure whichever is greater.
psia

P_w = Static wellhead working pressure as determined at the end of flow period.
(Casing if flowing thru tubing, tubing if flowing thru casing.) psia

P_t = Flowing wellhead pressure (tubing if flowing through tubing, casing if flowing through casing.) psia

P_f = Meter pressure, psia.

h_w = Differential meter pressure, inches water.

F_g = Gravity correction factor.

F_t = Flowing temperature correction factor.

F_{pv} = Supercompressability factor.

n = Slope of back pressure curve.

Note: If P_w cannot be taken because of manner of completion or condition of well, then P_w must be calculated by adding the pressure drop due to friction within the flow string to P_t .