

RECEIVED

NEW MEXICO OIL CONSERVATION COMMISSION

MAY 16 1966

Form C-122

MULTI-POINT BACK PRESSURE TEST FOR GAS WELLS

O. C. C. Revised 12-1-55
CARTESIA, OFFICE

Pool Undesignated Formation Narrow County Eddy

Initial XX Annual Special Date of Test 12-27-57

Company Union Oil Company of California Lease Crawford (26) Well No. 1

Unit J Sec. 26 Twp. 24-6 Rge. 26-2 Purchaser -

Casing 5 1/2 Wt. 17 1/2 I.D. Set at 10,689' Perf. 11,437' To 11,451'

OLiner 4" O.D. 11.3 1/2 10,583-11,580' 11,060' 11,074'

Tubing 2 3/8 Wt. 4.7 I.D. Set at 10,991 Perf. Open Ended To -

Gas Pay: From 11,060' To 11,451' L 10,991 xG .611 -GL 6710 Bar.Press. 11.2 est.

Producing Thru: Casing Tubing XX Type Well Singles

Date of Completion: 12-27-57 Packer @ 10,379' Reservoir Temp. 194° F

T.D. 11,522'
B.T.D. 11,512'

OBSERVED DATA

Tested Through (Branon) (Shoke) (Meter) Type Taps Flange

| No. | Flow Data | | | | | Tubing Data | | Casing Data | | Duration of Flow Hr. |
|-----|----------------------|------------------------|-------------|----------------------|-----------|-----------------|-----------|-------------|-----------|----------------------|
| | (Branon) (Line) Size | (Shoke) (Orifice) Size | Press. psig | Diff. h _w | Temp. °F. | Press. DWG psig | Temp. °F. | Press. psig | Temp. °F. | |
| SI | 4.026 ID | 2.75 | - | - | - | 3777 | 66 | - | - | 7 days |
| 1. | 4.026 | 2.75 | 680 | 2.5 | 63 | 3658 | 70 | Phr | - | 1:45 |
| 2. | 4.026 | 2.75 | 710 | 4.5 | 64 | 3620 | 73 | Phr | - | 1:38 |
| 3. | 4.026 | 2.75 | 660 | 10 | 59 | 3525 | 73 | Phr | - | 1:55 |
| 4. | 4.026 | 2.75 | 695 | 14 | 57 | 3598 | 76 | Phr | - | 1:50 |
| 5. | 4.026 | 2.75 | 683 | 23.2 | 64 | 3267 | 80 | Phr | - | 1:15 |

FLOW CALCULATIONS

| No. | Coefficient (24-Hour) | $\sqrt{h_{wpf}}$ | Pressure psia | Flow Temp. Factor F _t | Gravity Factor F _g | Compress. Factor F _{pv} | Rate of Flow Q-MCFPD @ 15.025 psia |
|-----|-----------------------|------------------|---------------|----------------------------------|-------------------------------|----------------------------------|------------------------------------|
| 1. | 53.05 | 41.9 | 703.2 | 0.9971 | 1.0151 | 1.061 | 2.387 |
| 2. | 53.05 | 57 | 723.2 | 0.9968 | 1.0151 | 1.060 | 3.241 |
| 3. | 53.05 | 82.15 | 673.2 | 1.0010 | 1.0151 | 1.058 | 4.685 |
| 4. | 53.05 | 103.3 | 668.2 | 1.0089 | 1.0151 | 1.058 | 5.808 |
| 5. | 53.05 | 128 | 706.2 | 0.9968 | 1.0151 | 1.060 | 7.879 |

PRESSURE CALCULATIONS

Gas Liquid Hydrocarbon Ratio 100,000 cf/bbl.
Gravity of Liquid Hydrocarbons 42.0 deg. @ 60° F
T_c 9.936 (1-e^{-s}) .375
Specific Gravity Separator Gas .5826
Specific Gravity Flowing Fluid .617
P_c 3790.2 P_c² 14,365 x 10⁵

| 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. | 3671.2 | 13,478 | 23.7 | 512 | 192 | 13,670 | 695 | 3700 | .977 |
| 2. | 3631.2 | 13,200 | 32.2 | 1040 | 380 | 13,580 | 775 | 3682 | .971 |
| 3. | 3538.2 | 12,519 | 46.6 | 2165 | 614 | 13,333 | 1032 | 3650 | .964 |
| 4. | 3411.2 | 11,636 | 58.6 | 3439 | 1246 | 12,922 | 1443 | 3592 | .965 |
| 5. | 3280.2 | 10,760 | 72.3 | 5230 | 1950 | 12,710 | 1655 | 3562 | .966 |

Absolute Potential: 62,000 MCFPD; n 1.00000

COMPANY Union Oil Company of California

ADDRESS 619 West Tenth Avenue - Midland, Texas

AGENT and TITLE Jack Schunkel, Petroleum Engineer

WITNESSED Jack Brian

COMPANY Apex Engineering Company

REMARKS

The final flow rate of 7,879 MCF/D was near the limit of the testing equipment. Therefore it was not possible to draw P_w down 30% compared to P_c. The 24 hour stabilized flow rate will be obtained when connection is made to the pipeline.

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 .