NEW MEXICO OIL CONSERVATION COMMISSION

HOBBS OFFICE OCC

Form C-122

Revised 12-1-55

MULTI-POINT BACK PRESSURE TEST FOR GAS WELLS

1957 FEB 11 AM 10:10

Pool Eumont Formation 7 Rivers County Lea

Initial ____ Annual ____ Special X Date of Test 1-14-57

Company Amerada Petroleum Corporation Lease Federal "D" Well No. 5

Unit M Sec. 26 Twp. 20-S Rge. 36-E Purchaser El Paso Natural Gas

Casing 7" Wt. 23# I.D. 6.366" Set at 3955' Perf. 3360' To 3460'

Tubing 2½" Wt. 9.3# I.D. 2.441" Set at 3928 Perf. - To -

Gas Pay: From 3360' To 3460' L 3360' xG .670 -GL 2251 Bar.Press. 13.2

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

Single-Bradenhead-G. G. or G.O. Dual

Date of Completion: 2-3-55 Packer 3791' Reservoir Temp. ____

OBSERVED DATA

Tested Through (Prover) (~~Choke~~) (~~Meter~~) Type Taps Flange

| No. | Flow Data (Prover) (~~Choke~~) Size | (~~Choke~~) (Orifice) Size | Press. psig | Diff. $h_w$ | Temp. °F. | Tubing Data Press. psig | Tubing Data Temp. °F. | Casing Data Press. psig | Casing Data Temp. °F. | Duration of Flow Hr. |
|---|---|---|---|---|---|---|---|---|---|---|
| SI | | | | | | | | 596 | | 72 |
| 1. | 2" | .125 | 554 | | 67 | | | 554 | | 3 |
| 2. | 2" | .187 | 500 | | 67 | | | 500 | | 3 |
| 3. | 2" | .218 | 453 | | 63 | | | 453 | | 3 |
| 4. | 2" | .250 | 413 | | 64 | | | 413 | | 3 |
| 5. | 2" | .250 | 409 | | 64 | | | 409 | | 24 |

FLOW CALCULATIONS

| No. | Coefficient (24-Hour) | $\sqrt{h_w p_f}$ | Pressure psia | Flow Temp. Factor $F_t$ | Gravity Factor $F_g$ | Compress. Factor $F_{pv}$ | Rate of Flow Q-MCFPD @ 15.025 psia |
|---|---|---|---|---|---|---|---|
| 1. | .3418 | | 567.2 | .9933 | .9463 | 1.062 | 194 |
| 2. | .7851 | | 513.2 | .9933 | .9463 | 1.055 | 400 |
| 3. | 1.0834 | | 466.2 | .9971 | .9463 | 1.052 | 501 |
| 4. | 1.4030 | | 426.2 | .9962 | .9463 | 1.047 | 590 |
| 5. | 1.4030 | | 422.2 | .9962 | .9463 | 1.047 | 584 |

PRESSURE CALCULATIONS

Gas Liquid Hydrocarbon Ratio - cf/bbl.

Gravity of Liquid Hydrocarbons - deg.

$F_c$ .865 $(1-e^{-s})$ .143

Specific Gravity Separator Gas -

Specific Gravity Flowing Fluid -

$P_c$ 609.2 $P_c^2$ 371.1

| No. | $P_w$ / $P_t$ (psia) | $P_t^2$ | $F_cQ$ | $(F_cQ)^2$ | $\frac{(F_cQ)^2}{(1-e^{-s})}$ | $P_w^2$ | $P_c^2-P_w^2$ | Cal. $P_w$ | $\frac{P_w}{P_c}$ |
|---|---|---|---|---|---|---|---|---|---|
| 1. | 567.2 | 321.7 | .16 | .03 | .004 | 321.7 | 49.4 | 527.2 | .87 |
| 2. | 513.2 | 263.3 | .35 | .12 | .017 | 263.3 | 107.8 | 513.2 | .84 |
| 3. | 466.2 | 217.3 | .43 | .18 | .025 | 217.3 | 153.8 | 466.2 | .77 |
| 4. | 426.2 | 181.6 | .51 | .26 | .037 | 181.6 | 189.5 | 426.2 | .70 |
| 5. | 422.2 | 178.2 | .52 | .25 | .036 | 178.2 | 192.9 | 422.2 | .69 |

Absolute Potential: 920 MCFPD; n .65

COMPANY Amerada Petroleum Corporation

ADDRESS Monument, New Mexico

AGENT and TITLE W.G. Abbott District Engineer W.G. Abbott

WITNESSED J.R. Frew

COMPANY El Paso Natural Gas Company

REMARKS

ELVIS A. UTZ
GAS ENGINEER

## 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 $P_t$.