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NEW MEXICO OIL CONSERVATION COMMISSION

HOBBS OFFICE OCC

Form C-122

Revised 12-1-55

1958 JUL 31 AM 10:56  
MULTI-POINT BACK PRESSURE TEST FOR GAS WELLS

Pool Atoka Formation Penn County Adair  
Initial 1 Annual        Special        Date of Test 7-17-58  
Company Standard Oil Company of Texas Lease C. R. Martin Well No. 1  
Unit J Sec. 13 Twp. 18 S Rge. 26 E Purchaser No Pipe Line connection  
Casing 3.3 Wt. 17 I.D.        Set at 9000 Perf. 8966 To 9016  
Tubing 4 Wt. 4.7 I.D. 1.993 Set at 8936 Perf. 8933 To 36  
Gas Pay: From 8966 To 9016 L 8933 xG .003 -GL 8101 Bar.Press. 13.2  
Producing Thru: Casing        Tubing 1 Type Well Single  
Single Full bore Single-Bradenhead-G. G. or G.O. Dual  
Date of Completion: 7-3-58 Packer Retractable Cams Reservoir Temp. 135

OBSERVED DATA

Tested Through (Pressure) (Choke) (Meter) Type Taps Flange

| No. | Flow Data   |                |             | Tubing Data          |           | Casing Data |           | Duration of Flow Hr. |
|-----|-------------|----------------|-------------|----------------------|-----------|-------------|-----------|----------------------|
|     | (Line) Size | (Orifice) Size | Press. psig | Diff. h <sub>w</sub> | Temp. °F. | Press. psig | Temp. °F. |                      |
| SI  |             |                |             |                      |           |             |           | 78 hours             |
| 1.  | 3           | 1.675          | 630         | 23.25                | 38.20     | 2753        | 80        | 1.25                 |
| 2.  | 3           | 1.675          | 760         | 32.32                | 38.51     | 2732        | 86        | 1.75                 |
| 3.  | 3           | 1.675          | 880         | 38.38                | 38.80     | 2704        | 83        | 1.25                 |
| 4.  | 3           | 1.675          | 970         | 40.40                | 38.45     | 2637        | 90        | 20.25                |
| 5.  |             |                |             |                      |           |             |           |                      |

FLOW CALCULATIONS

| No. | Coefficient (24-Hour) | $\sqrt{h_w P_f}$ | Pressure psia | Flow Temp. Factor F <sub>t</sub> | Gravity Factor F <sub>g</sub> | Compress. Factor F <sub>pv</sub> | Rate of Flow Q-MCFPD @ 15.025 psia |
|-----|-----------------------|------------------|---------------|----------------------------------|-------------------------------|----------------------------------|------------------------------------|
| 1.  | 23.60                 | 125.76           | 643.2         | 1.0302                           | .9682                         | 1.090                            | 1308                               |
| 2.  | 23.60                 | 137.30           | 773.2         | 1.0078                           | .9682                         | 1.007                            | 3937                               |
| 3.  | 23.60                 | 147.44           | 833.2         | 1.0296                           | .9682                         | 1.104                            | 4378                               |
| 4.  | 23.60                 | 158.31           | 983.2         | 1.0167                           | .9682                         | 1.117                            | 3136                               |
| 5.  |                       |                  |               |                                  |                               |                                  |                                    |

PRESSURE CALCULATIONS

Gas Liquid Hydrocarbon Ratio 60.761 cf/bbl.  
Gravity of Liquid Hydrocarbons 39.6 deg.  
P<sub>c</sub> 9.936 (1-e<sup>-s</sup>) .343 .343  
Specific Gravity Separator Gas .641  
Specific Gravity Flowing Fluid .683  
P<sub>c</sub> 2843.2 P<sub>c</sub> 8063.8

| No. | P <sub>w</sub> P <sub>t</sub> (psia) | P <sub>t</sub> <sup>2</sup> | F <sub>c</sub> Q | (F <sub>c</sub> Q) <sup>2</sup> | (F <sub>c</sub> Q) <sup>2</sup> (1-e <sup>-s</sup> ) | P <sub>w</sub> <sup>2</sup> | P <sub>c</sub> <sup>2</sup> -P <sub>w</sub> <sup>2</sup> | Cal. P <sub>w</sub> | P <sub>w</sub> P <sub>c</sub> |
|-----|--------------------------------------|-----------------------------|------------------|---------------------------------|------------------------------------------------------|-----------------------------|----------------------------------------------------------|---------------------|-------------------------------|
| 1.  | 2763.2                               | 7,563                       | 32.829           | 1077.74                         | 349.66                                               | 8032.7                      | 31.1                                                     | 2834.2              | 99.7                          |
| 2.  | 2735.2                               | 7,481                       | 38.110           | 1452.28                         | 324.27                                               | 8003.9                      | 17.9                                                     | 2829.3              | 99.3                          |
| 3.  | 2717.2                               | 7,383                       | 43.407           | 1884.07                         | 789.89                                               | 8002.7                      | -8.9                                                     | 2844.6              | 100.1                         |
| 4.  | 2630.2                               | 7,024                       | 51.031           | 2604.16                         | 893.23                                               | 7917.2                      | 166.6                                                    | 2813.6              | 99.0                          |
| 5.  |                                      |                             |                  |                                 |                                                      |                             |                                                          |                     |                               |

Absolute Potential: 43,000 MCFPD; n .30

COMPANY West Texas Engineering Service, Inc.  
ADDRESS 2309 West South Front Street - Midland, Texas  
AGENT and TITLE E. W. Harrington, Field Petroleum Engineer  
WITNESSED         
COMPANY       

REMARKS

\* Point No. 3 is in error since P<sub>w</sub><sup>2</sup> calculates to be greater than P<sub>c</sub><sup>2</sup>.

## 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 600 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.
- $F_{pv}$  = Supercompressibility 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  $P_t$ .

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