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NEW MEXICO OIL CONSERVATION COMMISSION
One-point Back Pressure Test for Gas Wells
(Deliverability)

Form C-122-C
491-54

Pool Atoka-Penn (Gas) Formation Pennsylvanian County Eddy
Initial ____ Annual X Special ____ Date of test 10/14 & 15, 1962
Company Nearburg & Ingram Lease Hawkins Well No. 2
Unit C Sec. 27 Twp. 18-S Rge. 26-E Purchaser Transwestern Pipeline Company
Casing 5½" Wt. 15½-17 I.D. -- Set at 9333 Perf. 9150 To 9158
Tubing 2-7/8 Wt. 6½ I.D. 2.441 Set at 9108 Perf. None To --
Gas Pay: From 9150 To 9171 L 9108 x G mix .652 = GL 5938 Bar.Press. 13.2
Producing Thru: Casing ____ Tubing X Type Well Single (gas)
Single- Bradenhead-G.G. or G.O. Dual

FLOW DATA

Started Date	Started time	Taken Date	Taken time	Duration Hours	Type Taps	Line Size	Orfice Size	Static Press.	Differ-ential	Flow Temp.
10/14/62	10: AM PM	10/15	10: AM PM	24	Flange	4"	1.375	785	63	82

FLOW CALCULATIONS

Static Pressure P_f	Differ-ential h_w	Meter Extension $\sqrt{P_f h_w}$	24-Hour Coeff-icient	Gravity Factor F_g	Temp. Factor F_t	Compress-ability F_{pv}	Rate of Flow MCF/Da. @ 15.025 psia Q
798	63	224.2	11.71	.9602 .9593	0.9795	1.066 1.072	2632.3 2644.5

SHUT-IN DATA

Shut-in Date	Shut-in Time	Press. Taken Date	Press. Taken Time	Duration Hours	Wellhead Pressure (P_c) psia Tubing	Wellhead Pressure (P_c) psia Casing
10/12/62	10: AM PM	10/14	10: AM PM	48	2813	--

FLOW DATA

W.H. Working Pressure (P_w) and (P_t) psia Tubing	W.H. Working Pressure (P_w) and (P_t) psia Casing
1925 (observed) 1938.2	--

FRICTION CALCULATIONS (if necessary)

$F_c = 5.866$; $(1-e^{-s}) = 0.335$ $FcQ = 15.39$ $(FcQ)^2 = 236.85$
$(FcQ)^2 (1 - e^{-s}) = 79.34$ $Pw^2 = 3705.6 + 79.3 = 3784.9$

SUMMARY

P_c = 2813 psia
Q = 2632.3 MCF/Da.
P_w = 1945.5 psia
P_d = 2250 psia
D = 1803 MCF/Da.

DELIVERABILITY CALCULATIONS

1958.7 1931

P_w 1945.5 P_c 2826.5 $P_w + P_c$ .6883

$1 - \frac{P_w}{P_c}$ .3117 3069 $1 + \frac{P_w}{P_c}$ 1.6883 1.6931 $\left|1 - \frac{P_w}{P_c}\right| \left|1 + \frac{P_w}{P_c}\right| = M$ .5262 5196

.36 + M .6841 Log 9.83512 - 10 x (n) 1.0000 = 9.83512 - 10 +

6928 9.840668-10

Log Q = 3.42029
Log D = 3.25541
1.840605-10
Antilog = 1803.0 = D

COMPANY Nearburg & Ingram
ADDRESS P.O. Box 1757 - Roswell, New Mexico
AGENT and TITLE James B. McPeters - Production Engineer
WITNESSED L. M. Reed
COMPANY Transwestern Pipeline Company 2.422344

REMARKS 3.262952

1832

This form is to be used for reporting deliverability tests in the designated Dry Gas Pools of Lea County as ordered by New Mexico Oil Conservation Commission Directive dated March 15, 1954, which directive was provided for by Orders R-365-A through R-376-A. For details regarding this test please refer to the above mentioned Directive.

NOMENCLATURE

Q = Actual 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_d = Deliverability pressure; 80 % of 72 hour individual wellhead shut-in pressure (P_c). 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

D = Deliverability at Deliverability pressure (P_d) MCF/da. @ 15.025 psia and 60° F.

P_f = Static 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.

DELIVERABILITY FORMULA

$$D = Q \left[\frac{.36}{\left(1 - \frac{P_w}{P_c}\right)\left(1 + \frac{P_w}{P_c}\right)} \right]^n$$

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.