

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

Form C-122-C

4-1-54

Pool Jalmat Formation Yates County Lea  
Initial Annual Special x Date of test 12-2-55  
Company Texas Pacific Coal & Oil Co. Lease State "A" A/c 1 Well No. 12  
Unit 0 Sec. 9 Twp. 22S, 3 Rge. 36E Purchaser El Paso Natural Gas Company  
Casing 5 1/2 Wt. 14 I.D. 5.012 Set at 3737 Perf. 3150 To 3305  
Tubing 2" Wt. 4.7# I.D. 1.995 Set at 3342 Perf. 3347 To 3350  
Gas Pay: From 3150 To 3305 L 3347 x G 0.650 = GL 2176 Bar. Press. 13.2  
Producing Thru: Casing            Tubing x Type Well Single  
Single- Bradenhead-G.C. or G.O. Dual

FLOW DATA

Started		Taken		Duration Hours	Type Taps	Line Size	Orifice Size	Static Press.	Differ- ential	Flow Temp.
Date	time	Date	time							
12/1/55	9:00AM	12/2/55	9:00 AM	48	F1	4"	1.500	573	12.25	69°F
	PM		PM							

FLOW CALCULATIONS

Static Pressure P <sub>f</sub>	Differ- ential h <sub>w</sub>	Meter Extension $\sqrt{P_f h_w}$	24-Hour Coeff- icient	Gravity Factor F <sub>g</sub>	Temp. Factor F <sub>t</sub>	Compress- ability F <sub>pv</sub>	Rate of Flow MCF/Da. @ 15.025 psia Q
586.2	12.25	84.79	13.99	0.9608	0.9915	1.058	1195.56

SHUT-IN DATA

FLOW DATA

Shut-in		Press. Taken		Duration Hours	Wellhead Pressure (P <sub>c</sub> ) psia		W.H. Working Pressure (P <sub>w</sub> ) and (P <sub>t</sub> ) psia	
Date	Time	Date	Time		Tubing	Casing	Tubing	Casing
12/2/55	9:00 AM	12/3/55	9:00AM	24	643.2		586.2	
	PM		PM					

FRICTION CALCULATIONS(if necessary)

$$P_w = [(585.2)^2 + (9.936 \times 1.196)^2 \times 0.139]^{1/2}$$

$$= [342.96 + (191.22 \times 0.139)]^{1/2}$$

$$= 601.74$$

DELIVERABILITY CALCULATIONS

$$P_w \quad 601.74 \quad P_c \quad 643.2 \quad P_w + P_c \quad 0.9355$$

$$1 - \frac{P_w}{P_c} \quad 0.0645 \quad 1 + \frac{P_w}{P_c} \quad 1.9355 \quad \left(1 - \frac{P_w}{P_c}\right) \left(1 + \frac{P_w}{P_c}\right) = M \quad 0.09904$$

$$.36 + M \quad 3.63489 \quad \text{Log} \quad 0.560396 \quad x(n) \quad 0.82 \quad = \quad 0.45952 \quad +$$

SUMMARY

P<sub>c</sub> = 643.2 psia  
Q = 1195.56 MCF/Da.  
P<sub>w</sub> = 601.74 psia  
P<sub>d</sub> = 514.56 psia  
D = 2258 MCF/Da.

COMPANY Texas Pacific Coal & Oil Company  
ADDRESS P. O. Box 1688 Hobbs, New Mexico  
AGENT and TITLE District Engineer  
WITNESSED Tester  
COMPANY El Paso Natural Gas Company

Log Q = 3.07739  
Log D = 3.53791  
Antilog = 2258.1 = D

REMARKS

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.

$F_{pv}$  = Supercompressibility 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  $P_t$ .