

## MULTI-POINT BACK PRESSURE TEST FOR GAS WELLS

Pool Antelope Ridge Formation Devonian County Lea  
Initial X Annual \_\_\_\_\_ Special \_\_\_\_\_ Date of Test 2-7-65  
Company Shell Oil Company Lease Antelope Ridge Unit Well No. 4-1  
Unit B Sec. 4 Twp. 24S Rge. 34E Purchaser Shell Oil Company  
Casing 7 5/8" 33.7# 6.765 13,590'  
5 1/2" Wt. 20.0# I.D. 4.778 Set at 14,990' Perf. 14,692' To 14,823'  
Tubing 2 1/2" Wt. 6.5# I.D. 2.441 Set at 14,584' Perf. \_\_\_\_\_ To \_\_\_\_\_  
Gas Pay: From 14,692' To 14,823' L 14,504' NG GL Bar. Press. 13.2  
Producing Thru: Casing \_\_\_\_\_ Tubing X Type Well G.C. Dual  
Single-Bradenhead-G. G. or G.O. Dual  
Date of Completion: 2-3-65 Packer 13,542' Reservoir Temp. \_\_\_\_\_

## OBSERVED DATA

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

No.	Flow Data			Tubing Data		Casing Data		Duration of Flow Hr.
	(Packer) (Line) Size	(Choke) (Orifice) Size	Press. psig	Diff. h <sub>w</sub>	Temp. °F.	Press. psig	Temp. °F.	
SI								
1.	4"	2.500	800	8.0	93	4469	62°	5
2.	4"	2.500	800	20.0	78	4214	76°	3
3.	4"	2.500	840	35.0	68	3880	74°	3
4.	4"	2.500	840	56.0	66	3450	76°	3
5.						2850	80°	4

## FLOW CALCULATIONS

No.	Coefficient (24-Hour)	$\sqrt{h_{wpf}}$	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.	42.13	80.6	813.2	.9697	.9535	1.072	3,366
2.	42.13	127.5	813.2	.9831	.9535	1.076	5,418
3.	42.13	172.8	853.2	.9924	.9535	1.089	7,502
4.	42.13	218.6	853.2	.9943	.9535	1.089	9,509
5.							

## PRESSURE CALCULATIONS

Gas Liquid Hydrocarbon Ratio 38,659 cf/bbl.  
Gravity of Liquid Hydrocarbons 62.3 deg.  
F<sub>c</sub> \_\_\_\_\_ (1-e<sup>-s</sup>)  
Specific Gravity Separator Gas .660  
Specific Gravity Flowing Fluid \_\_\_\_\_  
P<sub>f</sub> 6303.2 P<sub>f</sub><sup>2</sup> 39,730

## BHP measured with BHP bomb

No.	P <sub>s</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>s</sub> <sup>2</sup>	P <sub>f</sub> <sup>2</sup> - P <sub>s</sub> <sup>2</sup>	Cal. P <sub>w</sub>	P <sub>w</sub> P <sub>c</sub>
1.	6661.2					36,738	2992		
2.	5744.2					32,996	6734		
3.	5311.2					28,742	10,988		
4.	4835.2					23,379	16,351		
5.									

Absolute Potential: 16,350 MCFPD; n .608COMPANY Shell Oil CompanyADDRESS P. O. Box 1858, Roswell, New MexicoAGENT and TITLE A. L. Ellerd, Gas Tester

WITNESSED \_\_\_\_\_

COMPANY \_\_\_\_\_

REMARKS \_\_\_\_\_

## 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  $P_t$ .

**GAS WELL  
BACK PRESSURE CURVE**

County LEA Field ANTELOPE RIDGE  
 Operator SHELL OIL COMPANY  
 Lease ANTELOPE RIDGE UNIT Well No. 4-1  
 Volume 16,350 MCF/24 hr.  
 Date FEBRUARY 7, 1965

