

MULTI-POINT BACK PRESSURE TEST FOR GAS WELLS

Pool Four Lakes Devonian Formation Devonian County Lea
Initial (Recomplete) Annual _____ Special _____ Date of Test 2-22-62
Company Humble Oil & Refining Co. Lease South Four Lakes Unit Well No. 2
Unit D Sec. 1 Twp. 12-S Rge. 24-E Purchaser El Paso Natural Gas Co.
Casing 7" Wt. 29 lb. I.D. 6.184 Set at 12,874 Perf. 12,730 To 12,867
Tubing 2" Wt. 4.6 I.D. 1.995 Set at 12,772 Perf. - To -
Gas Pay: From 12,730 To 12,867 L - xG - -GL - Bar.Press. 13.2
Producing Thru: Casing _____ Tubing X Type Well GO Dual
Single-Bradenhead-G. G. or G.O. Dual
Date of Completion: 2-26-62 Packer Baker Model D Reservoir Temp. -

OBSERVED DATA

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

No.	Flow Data					Tubing Data		Casing Data		Duration of Flow Hr.
	(Prover) (Line) Size	(Choke) (Orifice) Size	Press. psig	Diff. h _w	Temp. °F.	Press. psig	Temp. °F.	Press. psig	Temp. °F.	
SI	4"	1.000			84	1577	-	-	-	
1.	4"	1.000	672	39.06	84	823	-	-	-	20
2.	4"	1.000	676	29.16	81	950	-	-	-	6
3.	4"	1.000	681	20.25	79	960	-	-	-	17
4.	4"	1.000	687	12.96	74	960	-	-	-	6
5.	4"	1.000	699	7.29	71	1005	-	-	-	17

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.	6.133	143.60	685.2	.9777	.8990	1.006	953.8
2.	6.133	141.77	689.2	.9804	.8990	1.006	828.8
3.	6.133	116.83	674.2	.9828	.8990	1.009	684.9
4.	6.133	93.89	680.2	.9862	.8990	1.009	536.1
5.	6.133	70.00	672.2	.9896	.8990	1.003	413.7

PRESSURE CALCULATIONS (See Attached Sheet)

Gas Liquid Hydrocarbon Ratio 5045 cf/bbl. Specific Gravity Separator Gas .749
Gravity of Liquid Hydrocarbons 54.7 deg. Specific Gravity Flowing Fluid -
T_c _____ (1-e⁻⁸) - P_c - P_c² -

(Data obtained with a BHP bomb)

No.	P _w P _t (psia)	P _t ²	F _c Q	(F _c Q) ²	(F _c Q) ² (1-e ⁻⁸)	P _w ²	P _c ² -P _w ²	Cal. P _w	P _w / P _c
1.									
2.									
3.									
4.									
5.									

Absolute Potential: 3000 MCFPD; n 1.000
COMPANY Humble Oil & Refining Company
ADDRESS Box 2347, Hobbs, New Mexico
AGENT and TITLE R. E. Alworth, District Superintendent
WITNESSED J. C. Wemack and M. F. Robertson; calculated by John W. Sauer and L. E. Glasgow
COMPANY Humble Oil & Refining Company

REMARKS

Because of the depth and gas-oil ratio, a bottom hole pressure gage was used to obtain pressure data. See data on attached sheet which gives low-pressure separator gas volumes and bottom hole pressure data. On the attached plot, the point for the fifth rate was disregarded, and a line drawn thru the other four points. Since the slope was greater than 1.0 and since on previous tests the slope has been greater than 1.0, a line with a slope of 1.0 was drawn thru the point corresponding to the highest rate of flow.

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} = 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 .

MULTI-POINT BACK PRESSURE TEST DATA
South Four Lakes Unit 3
(Continued)

Four Lakes Devonian Pool, Devonian Formation, Lea County, Humble Oil & Refining Co.

OBSERVED DATA

Low Pressure Separator
Tested Through Meter

Type Taps _____ Flange _____

No.	Flow Data			Tubing Data		Casing Data		Duration of Flow Hr.
	(Prover) (Line) Size	(Choke) (Orifice) Size	Press. psig	Diff. in.	Temp. °F	Press. psig	Temp. °F	
SI								
1.	4"	1.25	13	19.8	43	-	-	20
2.	4"	1.25	13	18.9	43	-	-	6
3.	4"	1.25	6	19.4	43	-	-	17
4.	4"	1.25	25	7.3	43	-	-	6
5.	4"	1.25	16	5.8	43	-	-	17

Low Pressure Separator

FLOW CALCULATIONS

No.	Coefficient (24-Hour)	$\frac{1}{h_{sp}}$	Pressure psia	Flow Temp. Factor °F	Gravity Factor °F	Compress. Factor °F	Rate of Flow Q-MCFPD @15.025 psia
1.	9.643	22.78	26.2	1.0168	0.7226	1.00	161.4
2.	9.643	22.25	26.2	1.0168	0.7226	1.00	157.6
3.	9.643	19.30	19.2	1.0168	0.7226	1.00	136.7
4.	9.643	16.70	38.2	1.0168	0.7226	1.00	118.3
5.	9.643	13.01	29.2	1.0168	0.7226	1.00	92.2

Specific Gravity Separator Gas 1.149

TOTAL VOLUME

No.	Hi-Press. Volume	Lo-Press. Volume	Total
1.	953.8	161.4	1115.2
2.	828.8	157.6	986.4
3.	686.9	136.7	823.6
4.	556.1	118.3	674.4
5.	415.7	92.2	507.9

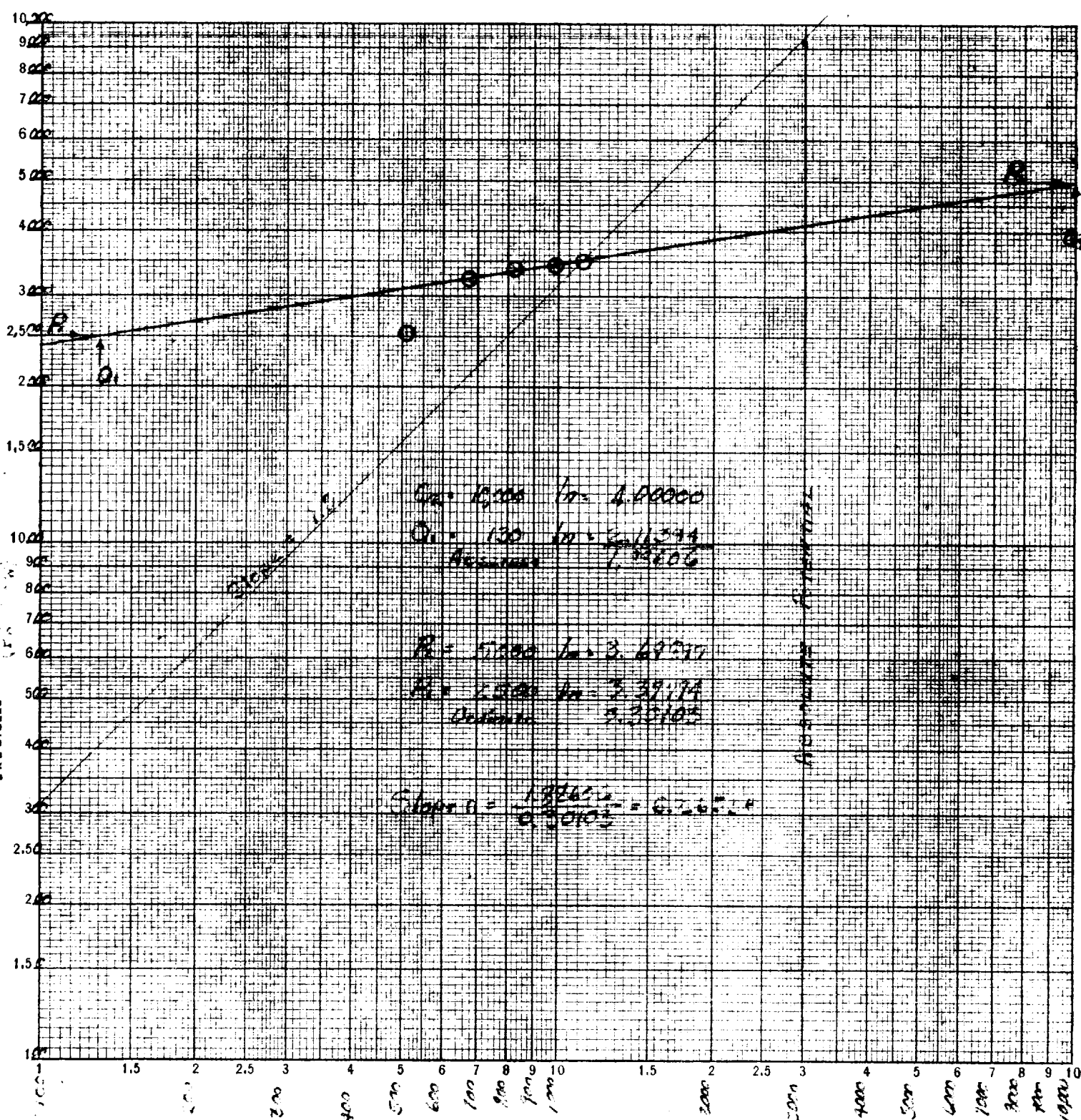
BOTTOM HOLE PRESSURE DATA

No.	BHP	$(BHP)^2 \times 10^{-3}$	$(SI BHP)^2$	$(FL BHP)^2$
SI	3074	9,449	-	-
1.	2441	5,958	3,491	-
2.	2450	6,003	3,446	-
3.	2461	6,057	3,392	-
4.	2496	6,230	3,219	-
5.	2629	6,912	2,537	-

JWS:LEB/mcb
Humble Oil & Refining Co.
Box 2347
Hobbs, New Mexico

SECRET
EXCLUDED FROM AUTOMATIC
DECLASSIFICATION
(Semiannual)

1. The information in this document is classified "Secret" because it contains information that is so classified.



4. MCFD 17.015 (b)(1)