

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
Revised 9-1-65

RECEIVED

Type Test ☒ Initial ☐ Annual ☐ Special				Test Date 10-2-81		OCT 30 1981	
Company Yates Petroleum Corporation /				Connection Transwestern Pipeline Company		O. C. D. ARTESIA, OFFICE	
Pool <u>Pecos Slope - Abo Gas</u> Undesignated Abo				Formation Abo		Unit NM10893	
Completion Date 7-13-81		Total Depth 4400'		Plug Back TD 4373'		Elevation 3830' GR	
Csg. Size 4 1/2"		Wt. 9.5#		d 4.090"		Set At 4386' KB	
Perforations: From 3850'		To 3997'		Well No. 2			
Thg. Size 2-7/8"		Wt. 6.5#		d 2.441"		Set At 3813' KB	
Perforations: From		To		Unit K		Sec. Twp. Rje. 10 7S 25E	
Type Well - Single - Brdenhead - G.G. or G.O. Multiple Single				Packer Set At 3813' KB		County Chaves	
Producing Thru Tubing		Reservoir Temp. °F 99° @ 4385'		Mean Annual Temp. °F 62		Baro. Press. - P _a 13.2	
State New Mexico							
L 3813		H 3813		G _g 0.652		% CO ₂ 0.99	
% N ₂ 5.63		% H ₂ S 0		Prover ----		Meter Run 2"	
Taps Flange							

FLOW DATA							TUBING DATA		CASING DATA		Duration of Flow
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. hw	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	
SI							980		Pkr		days
1.	2.067 x 0.875			300	25	77	850	78			24 hrs
2.	2.067 x 0.875			330	38	75	820	77			24 hrs
3.	2.067 x 0.875			455	69	65	650	76			24 hrs
4.	2.067 x 0.875			490	80	62	610	77			24 hrs
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor F _t	Gravity Factor F _g	Super Compress. Factor, F _{pv}	Rate of Flow Q, Mcfd
1	4.166	88.49	313.2	0.9840	1.238	1.025	460
2	4.166	114.20	343.2	0.9859	1.238	1.028	597
3	4.166	179.74	468.2	0.9952	1.238	1.041	960
4	4.166	200.64	503.2	0.9981	1.238	1.045	1079
5.							

NO.	P _t	Temp. °R	T _t	Z	Gas Liquid Hydrocarbon Ratio _____ Mcf/bbl.
1.	0.472	537	1.492	0.951	A.P.I. Gravity of Liquid Hydrocarbons _____ Deg.
2.	0.517	535	1.486	0.946	Specific Gravity Separator Gas 0.652
3.	0.705	525	1.458	0.922	Specific Gravity Flowing Fluid X X X X X
4.	0.758	522	1.450	0.915	Critical Pressure 664 P.S.I.A.
5.					Critical Temperature 360 R

P _c 993.2 P _c ² 986.4			
NO.	P _t ²	P _w	P _w ²
1	745.1		746.1
2	694.2		695.9
3	439.8		444.3
4	388.4		394.1
5			

(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 1.820$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1.646$

AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1,600$

Absolute Open Flow <u>1,600</u> Mcfd @ 15.025		Angle of Slope θ _____		Slope, n <u>0.832</u>	
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Remarks: Static pressures by Bennett Wireline. Flowing pressures by DWT calculations.
Worksheet C122D attached.

Approved by Commission:	Conducted By: David Weaver	Calculated By: Albert R. Stall	Checked By:
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7 (Month)

$$L_2 \varphi_1 = 3.5698$$

$$r_1 = 0.93174 \approx 0.852$$

WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (P_w)C-122D
Assigned 9-1-65COMPANY Yates Petroleum Corp LEASE County MP Federal WELL NO. 2 DATE 10-29-81LOCATION: Unit K Section 10 Township 7S Range 25EL 3813 H 3813 L/H 1 G 0.652 % CO₂ 0.99 % N₂ 5.63 % H₂S 0d 2.441 F_r 0.010763 GH 2486 P_{cr} 664 T_{cr} 360

TABLE IX & X

LINE	1 ST TRIAL	2 ND TRIAL	3 RD TRIAL	4 TH TRIAL	5 TH TRIAL	6 TH TRIAL	7 TH TRIAL	8 TH TRIAL	9 TH TRIAL	10 TH TRIAL	11 TH TRIAL	12 TH TRIAL	13 TH TRIAL	14 TH TRIAL	15 TH TRIAL	16 TH TRIAL	17 TH TRIAL	18 TH TRIAL	19 TH TRIAL	20 TH TRIAL	21 TH TRIAL	22 TH TRIAL	23 TH TRIAL
1 Q _m	460	597	960	960	960	960	960	960	960	960	960	960	960	960	960	960	960	960	960	960	960	960	960
2 T _w (W.H. OR)	538	538	538	538	538	538	538	538	538	538	538	538	538	538	538	538	538	538	538	538	538	538	538
3 T _s (B.H. OR)	559	559	559	559	559	559	559	559	559	559	559	559	559	559	559	559	559	559	559	559	559	559	559
4 T _i = $\frac{F_r T_w + T_s}{2}$	548.5	548.5	548.5	548.5	548.5	548.5	548.5	548.5	548.5	548.5	548.5	548.5	548.5	548.5	548.5	548.5	548.5	548.5	548.5	548.5	548.5	548.5	548.5
5 Z (Est.)	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946	0.946
6 TZ	518.9	486.49	486.49	486.49	486.49	486.49	486.49	486.49	486.49	486.49	486.49	486.49	486.49	486.49	486.49	486.49	486.49	486.49	486.49	486.49	486.49	486.49	486.49
7 GH/TZ	4791	5174	5174	5174	5174	5174	5174	5174	5174	5174	5174	5174	5174	5174	5174	5174	5174	5174	5174	5174	5174	5174	5174
8 e ^s (Table XIV)	1.197	1.214	1.214	1.214	1.214	1.214	1.214	1.214	1.214	1.214	1.214	1.214	1.214	1.214	1.214	1.214	1.214	1.214	1.214	1.214	1.214	1.214	1.214
9 1-e ^s (Table XIV)	0.165	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176	0.176
10 P _t	863.2	863.2	863.2	863.2	863.2	863.2	863.2	863.2	863.2	863.2	863.2	863.2	863.2	863.2	863.2	863.2	863.2	863.2	863.2	863.2	863.2	863.2	863.2
11 P _t 2/1000	745.1	745.1	745.1	745.1	745.1	745.1	745.1	745.1	745.1	745.1	745.1	745.1	745.1	745.1	745.1	745.1	745.1	745.1	745.1	745.1	745.1	745.1	745.1
12 F _r (Table XV)	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763	0.010763
13 F _c = F _r TZ	5.585	5.172	5.172	5.172	5.172	5.172	5.172	5.172	5.172	5.172	5.172	5.172	5.172	5.172	5.172	5.172	5.172	5.172	5.172	5.172	5.172	5.172	5.172
14 F _c Q _m	2.5691	2.379	2.379	2.379	2.379	2.379	2.379	2.379	2.379	2.379	2.379	2.379	2.379	2.379	2.379	2.379	2.379	2.379	2.379	2.379	2.379	2.379	2.379
15 L/H (F _c Q _m) ²	6.6001	5.659	5.659	5.659	5.659	5.659	5.659	5.659	5.659	5.659	5.659	5.659	5.659	5.659	5.659	5.659	5.659	5.659	5.659	5.659	5.659	5.659	5.659
16 F _w = L/H (F _c Q _m) ² (1-e ^{-s})	1.0890	0.9960	0.9960	0.9960	0.9960	0.9960	0.9960	0.9960	0.9960	0.9960	0.9960	0.9960	0.9960	0.9960	0.9960	0.9960	0.9960	0.9960	0.9960	0.9960	0.9960	0.9960	0.9960
17 P _w ² = P _t ² + F _w	746.19	746.10	746.10	746.10	746.10	746.10	746.10	746.10	746.10	746.10	746.10	746.10	746.10	746.10	746.10	746.10	746.10	746.10	746.10	746.10	746.10	746.10	746.10
18 P _s ² = e ^s P _w ²	893.19	905.77	905.77	905.77	905.77	905.77	905.77	905.77	905.77	905.77	905.77	905.77	905.77	905.77	905.77	905.77	905.77	905.77	905.77	905.77	905.77	905.77	905.77
19 P _s	945	951.72	951.72	951.72	951.72	951.72	951.72	951.72	951.72	951.72	951.72	951.72	951.72	951.72	951.72	951.72	951.72	951.72	951.72	951.72	951.72	951.72	951.72
20 P = $\frac{P_t + P_s}{2}$	904	907.46	907.46	907.46	907.46	907.46	907.46	907.46	907.46	907.46	907.46	907.46	907.46	907.46	907.46	907.46	907.46	907.46	907.46	907.46	907.46	907.46	907.46
21 P _r = (P/P _{cr})	1.3616	1.3667	1.3667	1.3667	1.3667	1.3667	1.3667	1.3667	1.3667	1.3667	1.3667	1.3667	1.3667	1.3667	1.3667	1.3667	1.3667	1.3667	1.3667	1.3667	1.3667	1.3667	1.3667
22 T _r = (T/T _{cr})	1.5236	1.5236	1.5236	1.5236	1.5236	1.5236	1.5236	1.5236	1.5236	1.5236	1.5236	1.5236	1.5236	1.5236	1.5236	1.5236	1.5236	1.5236	1.5236	1.5236	1.5236	1.5236	1.5236
23 Z (Table XI)	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876

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