

Form C-122
Revised 9-1-65

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Type Test ☒ Initial ☐ Annual ☐ Special		Test Date 8-2-79
Company Yates Petroleum Corp.		Connection Transwestern Pipeline Company
Pool Richard Knob Atoka-Morrow		Formation Atoka-Morrow
Completion Date 2-20-79	Total Depth 8476' KB	Plug Back TD 8355' KB
Elevation 3577' KB	Farm or Lease Name Federal "CR"	
Csg. Size 4-1/2"	Wt. 11.6#	d 4.000
Set At 8476' KB	Perforations: From 7997 To 8343' KB	
Tbg. Size 2-3/8"	Wt. 4.7#	d 1.995
Set At 7970' KB	Perforations: From To	
Type Well - Single - Bradenhead - G.G. or G.O. Multiple Single		Packer Set At 7970' KB
Producing Thru Tubing		Reservoir Temp. °F 141 @ 8250
Mean Annual Temp. °F 62		Baro. Press. - P _a 13.2
L 8244	H 8244	G _g .665
% CO ₂ 0.89	% N ₂ 0.60	% H ₂ S Nil
Prover 2"	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. h _w	Temp. °F	Press. p.s.i.g.	Temp. °F	
1	2.067	x	0.875	260	9	70	2300	79	1 hour
2				260	17	70	2189	81	1 hour
3				260	34	70	2036	83	1 hour
4				260	63	70	1671	85	1 hour
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	3.729	49.59	273.2	.9905	1.235	1.026	232
2	3.729	68.15	273.2	.9905	1.235	1.026	319
3	3.729	96.38	273.2	.9905	1.235	1.026	451
4	3.729	131.19	273.2	.9905	1.235	1.026	614
5							

NO.	P _t	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	A.P.I. Gravity of Liquid Hydrocarbons	Specific Gravity Separator Gas	Specific Gravity Flowing Fluid	Critical Pressure	Critical Temperature
1	0.407	530	1.419	.950	316.5	55.2	0.656	XXXXXX	671.5	373.5
2	0.407	530	1.419	.950				XXXXX		
3	0.407	530	1.419	.950						
4	0.407	530	1.419	.950						
5										

$P_c = 3093.2$ $P_c^2 = 9568$ (1) $\frac{P_c^2}{P_c^2 - P_w^2} = 1.9128$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1.4398$

NO.	P _t	P _w	P _w ²	P _c ² - P _w ²
1			8730	838
2			7916	1652
3			6837	2731
4			4566	5002
5				

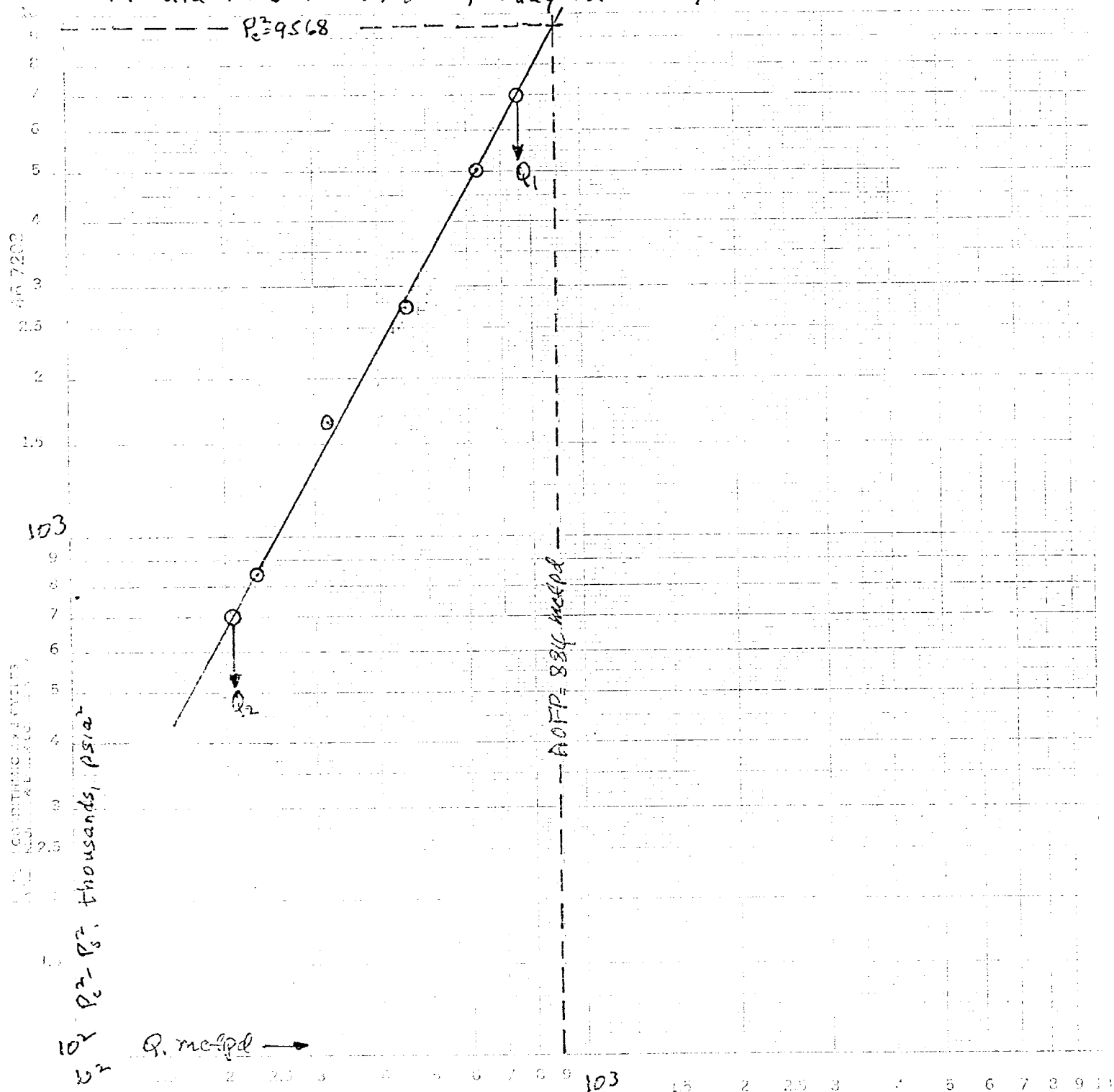
AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 884$

Absolute Open Flow	884	Mcfd @ 15.025	Angle of Slope	57.4 deg	Slope, n	.5622
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Remarks: Static pressures by Bennett Wireline; flowing pressures by DWT.
 Calculations worksheet C-122D attached.

Approved By Commission:	Conducted By:	Calculated By:	Checked By:
	Don Weaver	Eddie Mahfood	

YPC- Federal CR No. 4, K-33-175-25E
 Richard Knob Atoka Morrow, Eddy Co. N. Mex.



$Q_1 = 755 \text{ mcfpd}$ $\log Q_1 = 2.8780$
 $Q_2 = 207 \text{ mcfpd}$ $\log Q_2 = 2.3160$
 $n = 0.5620$

WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (Pw)

COMPANY YPC LEASE Technical CR WELL NO. 41 DATE 8-2-72

LOCATION: Unit K Section 33 Township 17S Range 25E

L 8244 H 8244 L/H 1.000 G 1665 % 0.59 % N₂ 0.88 % H₂S Nil

d 2.0927 F_r 1014729 GH 5482 P_{cr} 720 * T_{cr} 394.5 *

1/2 - 1470 (3.48) 31720.6
1/4 - 234 (16.00) 4388.2
8244 (4.39) 36104.6

* Includes 153% Water Vapor

LINE	SI	1	2	3	4	SI	1	2	3	4	SI	1	2	3	4
1 Q _m		0.232	0.319	0.451	0.614			0.232	0.319	0.451			0.232	0.319	0.451
2 T _w (W.H. °R)	538	539	541	543	545										
3 T _s (B.H. °R)	601	601	600	600	599										
4 T = (T _w + T _s) / 2	569.5	570	570.5	571.5	572										
5 Z (Est.)	1.738	1.738	1.736	1.739	1.758										
6 TZ	420.35	420.66	419.89	422.34	433.58										
7 GH/TZ	13.042	13.032	13.056	12.980	12.644										
8 e ^s (Table XIV)	1.6308	1.6302	1.63165	1.6270	1.6066										
9 1-e ^s (Table XIV)		0.3866	0.3871	0.3884	0.3976										
10 P ₁	2422.2	2313.2	2202.2	2049.2	1684.2										
11 P ₁ 2/1000	5867.0	5350.9	4849.7	4199.2	2836.5										
12 F _r (Table XV) S _r	0.48906	0.48870	0.48959	0.48675	0.47414										
13 F _c = F _r TZ		6.1959	6.1845	6.2206	6.3866										
14 F _c Q _m		1.4374	1.973	2.8055	3.921										
15 L/H (F _c Q _m) ²		2.066	3.892	7.87	15.77										
16 F _w = L/H (F _c Q _m) ² (1-e ^s)		0.8	1.5	3.0	5.8										
17 P _w ² = P ₁ ² + F _w		5351.7	4851.2	11202.2	2842.3										
18 P _s ² = e ^s P _w ²		9568.0	8721.3	7915.5	4566.4										
19 P _s		3093.2	2953.7	2813.4	2136.9										
20 P = (P ₁ + P _s) / 2		2759.7	2633.4	2332.0	1910.6										
21 P _r = (P/P _{cr})		3.830	3.658	3.239	2.654										
22 T _r = (T/T _{cr})		1.444	1.445	1.448	1.450										
23 Z (Table XI)		1738	0.737	0.736	0.739	0.758									