

NEW MEXICO OIL CONSERVATION COMMISSION
MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122

Type Test ☒ Initial ☐ Annual ☐ Special						Test Date 1/30/04		30-025-36402	
Company Yates Petroleum Corporation				Connection 2/7/04					
Pool Wildcat Morrow				Formation Morrow				Unit	
Completion Date 2/2/04		Total Depth 14141		Plug Back TD 13847		Elevation 4066		Farm or Lease Name Mandrell State Unit	
Csg. Size 4.500	Wt. 11.600	d 4.000	Set At 14141	Perforations: From 13051 To 13067		Well No. 1			
Tbg. Size 2.375	Wt. 4.700	d 1.995	Set At 12990	Perforations: From 13051 To 13067		Unit D	Sec. 19	Twp. 14S	Rge. 35E
Type Well Single				Packer Set At 12990		County Lea			
Producing Thru Tubing		Resv. Temp. °F 185 @ 12950		Mean Temp. °F 62		Baro. Press. - Pa 13.2		State NM	
L 12990	H 12990	Gg 0.698	%CO ₂ 1.204	%N ₂ 1.825	%H ₂ S 0.000	Prover 0.000	Meter Run 2.000	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
Sl.	0.000	x	0.000	0	0.0	0	3300	0			0
1.	2.067	x	1.000	300	53.0	60	2600	60			24
2.	2.067	x	1.000	300	130.0	60	1833	60			24
3.	2.067	x	1.000	300	191.0	60	1067	60			24
4.	2.067	x	1.000	300	223.0	60	300	60			24
5.		x									

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{hwP_m}$	Pressure P _m	Flow Temp. Factor F _t	Gravity Factor F _g	Super Compress. Factor, F _{pv}	Rate of Flow Q, Mcfd
1.	4.946	128.8	313.2	1.0000	1.197	1.034	789
2.	4.946	201.8	313.2	1.0000	1.197	1.034	1236
3.	4.946	244.6	313.2	1.0000	1.197	1.034	1498
4.	4.946	264.3	313.2	1.0000	1.197	1.034	1618
5.							

NO.	Pr	Temp °R	Tr	Z	Gas Liquid Hydrocarbon Ratio	56	Mc/bbl.
1.	0.47	520	1.36	0.934	A.P.I. Gravity of Liquid Hydrocarbons	50.000	Deg.
2.	0.47	520	1.36	0.934	Specific Gravity Separator Gas	0.698	
3.	0.47	520	1.36	0.934	Specific Gravity Flowing Fluid	XXXXXXXXXX	
4.	0.47	520	1.36	0.934	Critical Pressure	671	
5.					Critical Temperature	381	

P _c	3313.2	P _c	10977.3
NO.	P _i	P _w	P _c - P _w
1.	6828.8	2617.5	6851.4
2.	3408.5	1860.2	3460.2
3.	1166.8	1118.1	1250.1
4.	98.1	464.5	215.8
5.			

(1) $\frac{P_c}{P_c - P_w} = 1.460$

AOF = Q $\left[\frac{P_c}{P_c - P_w} \right]^n = 1640$

(2) $\frac{P_c}{P_c - P_w} = 1.327$

Absolute Open Flow	1640	Mcfd @ 15.025	Angle of Slope θ	37	Slope, n	0.747
Remarks:						

Approved By Commission: <i>Paul B. Kautz</i>	Conducted By: Jeremy Fitzer	Calculated By: Misty Carter	Checked By: George Freeman
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WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (Pw) C-122D

DATE 1/30/04

COMPANY Yates Petroleum Corporation LEASE Mandrell State Unit WELL NO. 1

LOCATION: Unit D Section 19 Township 14S Range 35E

L 12990 H 12990 L/H 1.000 G 0.752 %CO₂ 1.204 %N₂ 1.825 %H₂S 0.000

d 1.995 Fr 0.017777 GH 9772.4 Pcr 668.8 Tcr 399.1

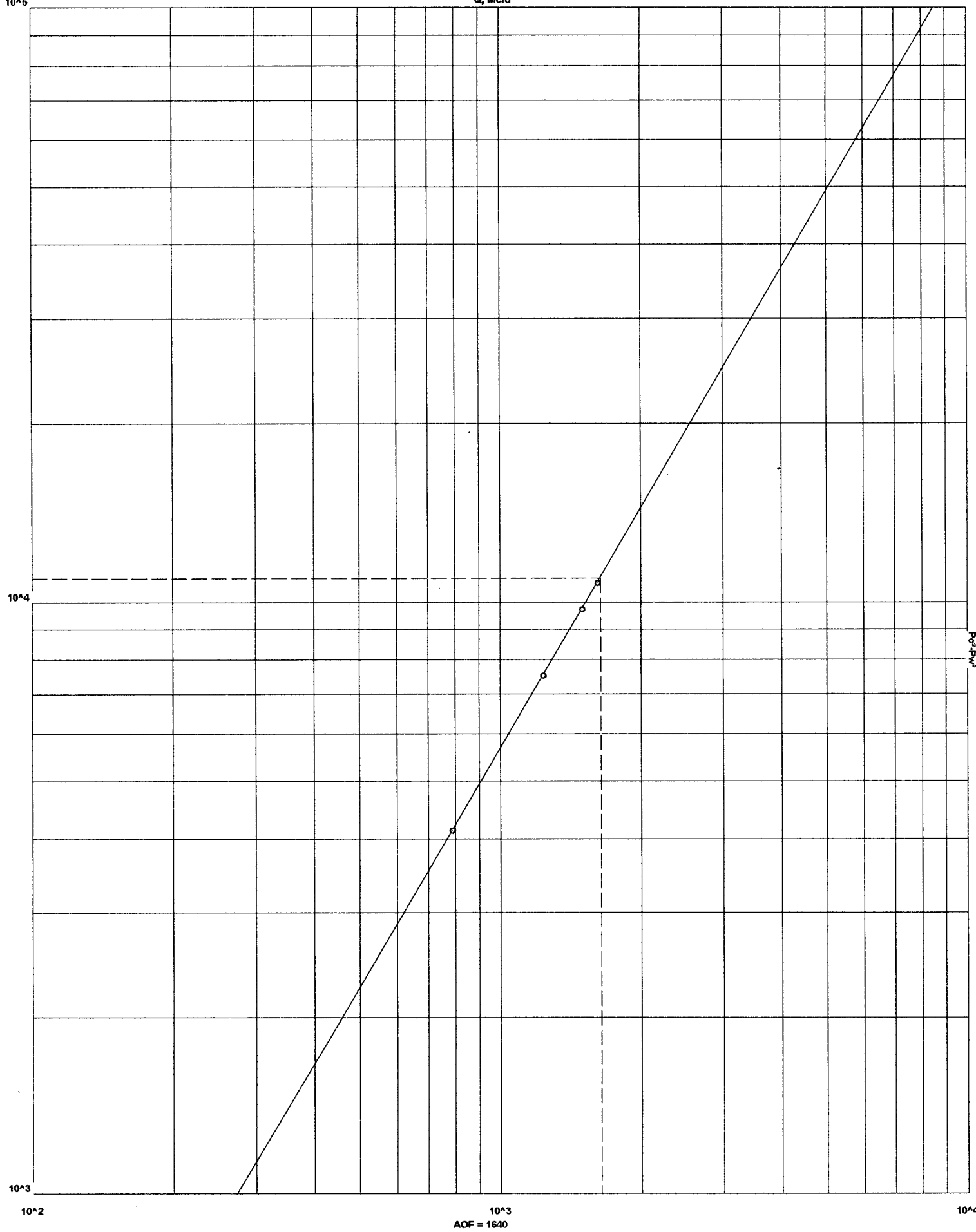
LINE	1st Rate	2nd Rate	3rd Rate	4th Rate	5th Rate
1 Qm	0.789	1.236	1.498	1.618	
2 Tw(W.H.°R)	520	520	520	520	
3 Ts(B.H.°R)	645	645	645	645	
4 T = (Tw+Ts) / 2	582.2	582.2	582.2	582.2	
5 Z (Est.)	0.783	0.744	0.796	0.920	
6 TZ	456.1	433.2	463.6	535.8	
7 GH / TZ	21.426	22.559	21.077	18.240	
8 e ^Λ s(Table XIV)	2.233	2.329	2.204	1.982	
9 1-e ^Λ -s(Table XIV)	0.552	0.571	0.546	0.495	
10 Pt	2613.2	1846.2	1080.2	313.2	
11 P _t ² / 1000	6828.8	3408.5	1166.8	98.1	
12 Fr (Table XV)	0.017777	0.017777	0.017777	0.017777	
13 Fc = FrTZ	8.108	7.701	8.242	9.524	
14 FcQm	6.40	9.52	12.35	15.41	
15 L / H(FcQm) ²	40.9	90.5	152.4	237.6	
16 Fw = L / H(FcQm) ² (1-e ^Λ -s)	22.60	51.72	83.27	117.71	
17 Pw ² = P _t ² +Fw	6851.4	3460.2	1250.1	215.8	
18 Ps ² = e ^Λ sPw ²	15301.8	8060.0	2755.5	427.7	
19 Ps	3911.8	2839.0	1660.0	654.0	
20 P = (Pt+Ps) / 2	3262.5	2342.6	1370.1	483.6	
21 Pr = (P / Pcr)	4.88	3.50	2.05	0.72	
22 Tr = (T / Tcr)	1.46	1.46	1.46	1.46	
23 Z (Table XI)	0.783	0.744	0.796	0.920	

Company Yates Petroleum Corporation
Well Mandrell State Unit #1
Location D 19-14S-35E

County
Date

Lea
1-30-04

Q, Mcfd



AOF = 1640