

Form C-122

OCT 24 '90

RATE OF FLOW CALCULATIONS

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NO	Coefficient (24 HOUR)	$\frac{1}{\sqrt{hwP_m}}$	Pressure P _m	Flow Temp Factor F _t	Gravity Factor F _g	Super Compress. Fact. F _{pv}	Rate of Flow Q, Mcfd
1.	10.204	63.34	573.20	.993	1.258	1.046	845
2.	10.204	98.60	623.20	.991	1.258	1.049	1315
3.	10.204	108.96	628.20	.991	1.258	1.050	1455
4.	10.204	117.49	633.20	.989	1.258	1.049	1564
5.	0.000	0.00	0.00	0.000	0.000	0.000	0

NO	Pr	Temp. °R	Tr	Z	
1.	.86	527	1.49	.915	Gas Liquid Hydrocarbon Ratio 136.000 Mcf/bbl.
2.	.93	530	1.50	.909	R.P.I. Gravity of Liquid Hydrocarbons 64.800 Deg.
3.	.94	529	1.49	.908	Specific Gravity Separator Gas .632 xxxxxxxxxxxxxxxx
4.	.94	532	1.50	.909	Specific Gravity Flowing Fluid xxxxx .652
5.	0.00	0	0.00	0.000	Critical Pressure 670.4 PSIA 669.6 PSIA
					Critical Temperature 354.4°R 361.0°R

Pc	1973.2	Pc ²	3893.5
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N0	Pt ²	Pw	Pw ²	Pc ² -Pw ²
1.	2935.1	1714.6	2939.7	953.8
2.	2631.5	1625.7	2642.9	1250.7
3.	1905.0	1385.3	1919.1	1974.4
4.	1714.0	1315.5	1730.5	2163.0
5.	0.0	0.0	0.0	0.0

$$\frac{P_c^2}{P_c^2 - P_w^2} = \frac{1.7962}{1} \quad (1)$$

$$\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = \frac{1.5523}{1} \quad (2)$$

$$ROF = Q \left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = \frac{2428 \text{ Mcfd}}{1}$$

Absolute Open Flow	2428 Mcfd @ 15.025	Angle of Slope, θ	37	Slope, n	.751
Remarks:					

Approved By:	Conducted By: David Weaver	Calculated By: Andrea Carpenter	Checked By:
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WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (Pw) C-122D

Adopted 9-1-65

DATE 10/24/90

COMPANY Yates Petroleum Corporation LEASE Energy AFY State WELL NO. 1

LOCATION: Unit C Section 36 Township 9S Range 26E

L 5931.0 H 5931.0 L/H 1.000 G .652 %CO₂ 1.27 %N₂ 3.60 %H₂S 0.00

d 2.441 Fr .010495 GH 3868.4 Pcr 669.6 Tcr 361.0

LINE	1st Rate	2nd Rate	3rd Rate	4th Rate	5th Rate
1 Qm	.845	1.315	1.455	1.564	0.000
2 Tw(W.H.°R)	522.0	522.0	522.0	522.0	0.0
3 Ts(B.H.°R)	625.0	625.0	625.0	625.0	0.0
4 T=(Tw+Ts)/2	573.5	573.5	573.5	573.5	0.0
5 Z(Est.)	.827	.831	.846	.852	0.000
6 TZ	474.2	476.7	485.4	488.4	0.0
7 GH/TZ	8.157	8.115	7.970	7.921	0.000
8 e ^s (Table XIV)	1.358	1.356	1.348	1.346	0.000
9 1-e ^{-s} (Table XIV)	.264	.262	.258	.257	0.000
10 Pt	1713.2	1622.2	1380.2	1309.2	0.0
11 Pt ² /1000	2935.1	2631.5	1905.0	1714.0	0.0
12 Fr(Table XV)	.010495	.010495	.010495	.010495	0.000000
13 Fc=FrTZ	4.977	5.003	5.094	5.125	0.000
14 FcQm	4.203	6.577	7.413	8.015	0.000
15 L/H(FcQm) ²	17.665	43.259	54.958	64.242	0.000
16 Fw=L/H(FcQm) ² (1-e ^{-s})	4.655	11.350	14.198	16.509	0.000
17 Pw ² =Pt ² +Fw	2939.7	2642.9	1919.1	1730.5	0.0
18 Ps ² =e ^s Pw ²	3991.7	3582.9	2587.6	2329.0	0.0
19 Ps	1997.9	1892.9	1608.6	1526.1	0.0
20 P=(Pt+Ps)/2	1855.6	1757.5	1494.4	1417.7	0.0
21 Pr=(P/Pcr)	2.77	2.62	2.23	2.12	0.00
22 Tr=(T/Tcr)	1.59	1.59	1.59	1.59	0.00
23 Z(Table XI)	.827	.831	.846	.852	0.000

Company	Yates Petroleum Corporation
Well	Energy AFY State No. 1
Location	C, 36-9S-26E
County	Chaves
Date	10/24/90

