

WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (Pw) C-122D

DATE 10/30/1994

COMPANY Yates Petroleum Corp LEASE McClellan MB Federal WELL NO. 5

LOCATION: Unit E Section 31 Township 5S Range 25E

L 3702 H 3702 L/H 1.000 G 0.645 %CO₂ 0.022 %N₂ 5.882 %H₂S 0.000

d 1.995 Fr 0.017777 GH 2387.8 Pcr 660.7 Tcr 354.3

LINE	1st Rate	2nd Rate	3rd Rate	4th Rate	5th Rate
1 Qm	0.807	0.875	1.057	1 116	
2 Tw(W.H.°R)	522	522	522	522	
3 Ts(B.H.°R)	558	558	558	558	
4 T = (Tw+Ts) / 2	539.7	539.7	539.7	539.7	
5 Z (Est.)	0.952	0.962	0.971	0 979	
6 TZ	513.6	518.9	523.8	528.5	
7 GH / TZ	4.649	4.601	4.559	4.518	
8 e ^s (Table XIV)	1.190	1.188	1.186	1.185	
9 1-e ^s (Table XIV)	0.160	0.158	0.157	0.156	
10 Pt	313.2	243.2	173.2	103.2	
11 Pt ² / 1000	98.1	59.1	30.0	10.7	
12 Fr (Table XV)	0.017777	0.017777	0.017777	0.017777	
13 Fc = FrTZ	9.130	9.225	9.311	9.394	
14 FcQm	7.37	8.07	9.84	10.48	
15 L / H(FcQm) ²	54.3	65.2	96.8	109.9	
16 Fw = L / H(FcQm) ² (1-e ^s)	8.68	10.33	15.22	17.13	
17 Pw ² = Pt ² +Fw	106.8	69.5	45.2	27.8	
18 Ps ² = e ^s Pw ²	127.1	82.6	53.6	32.9	
19 Ps	356.5	287.3	231.6	181.4	
20 P = (Pt+Ps) / 2	334.9	265.3	202.4	142.3	
21 Pr = (P / Pcr)	0.51	0.40	0.31	0.22	
22 Tr = (T / Tcr)	1.52	1.52	1.52	1.52	
23 Z (Table XI)	0.952	0.962	0.971	0.979	