

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

DATE 1/23/2000

COMPANY Yates Petroleum Corp LEASE MALONE ASA FEDERAL WELL NO. 2

LOCATION: Unit A Section 12 Township 22S Range 23E

L 8000 H 8000 L/H 1.000 G 0.651 %CO₂ 0.672 %N₂ 0.840 %H₂S 0.000

d 2.441 Fr 0.010495 GH 5208.0 P_{cr} 671.7 T_{cr} 369.4

LINE	1st Rate	2nd Rate	3rd Rate	4th Rate	5th Rate
1 Qm	6.294	6.629	6.948	7.168	
2 Tw(W.H.°R)	520	520	520	520	
3 Ts(B.H.°R)	585	585	585	585	
4 T = (Tw+Ts) / 2	552.2	552.2	552.2	552.2	
5 Z (Est.)	0.880	0.889	0.897	0.905	
6 TZ	485.8	490.7	495.2	499.7	
7 GH / TZ	10.720	10.614	10.517	10.422	
8 e ^{as} (Table XIV)	1.495	1.489	1.483	1.478	
9 1-e ^{as} (Table XIV)	0.331	0.328	0.326	0.324	
10 Pt	613.2	526.2	440.2	353.2	
11 Pt ² / 1000	376.0	276.9	193.8	124.8	
12 Fr (Table XV)	0.010495	0.010495	0.010495	0.010495	
13 Fc = FrTZ	5.099	5.150	5.197	5.244	
14 FcQm	32.09	34.14	36.11	37.59	
15 L / H(FcQm) ²	1029.8	1165.4	1303.9	1412.9	
16 Fw = L / H(FcQm) ² (1-e ^{as})	340.88	382.66	424.96	457.10	
17 Pw ² = Pt ² +Fw	716.9	659.5	618.7	581.8	
18 Ps ² = e ^{as} Pw ²	1071.6	982.0	917.9	860.1	
19 Ps	1035.2	991.0	958.1	927.4	
20 P = (Pt+Ps) / 2	824.2	758.6	699.1	640.3	
21 Pr = (P / P _{cr})	1.23	1.13	1.04	0.95	
22 Tr = (T / T _{cr})	1.49	1.49	1.49	1.49	
23 Z (Table XI)	0.880	0.889	0.897	0.905	