

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

DATE 3/22/1999

COMPANY Yates Petroleum Corp LEASE SHELL LUSK ANB WELL NO. 2

LOCATION: Unit E Section 11 Township 16S Range 35E

L 11659 H 11659 L/H 1.000 G 0.716 %CO₂ 0.465 %N₂ 3.372 %H₂S 0.000

d 1.995 Fr 0.017777 GH 8347.8 Pcr 664.3 Tcr 384.1

LINE	1st Rate	2nd Rate	3rd Rate	4th Rate	5th Rate
1 Qm	1.429	2.347	2.936	3.294	
2 Tw(W.H.°R)	520	520	520	520	
3 Ts(B.H.°R)	632	632	632	632	
4 T = (Tw+Ts) / 2	575.7	575.7	575.7	575.7	
5 Z (Est.)	0.830	0.856	0.881	0.903	
6 TZ	477.9	492.8	507.1	520.1	
7 GH / TZ	17.466	16.941	16.463	16.051	
8 e ^s (Table XIV)	1.925	1.888	1.854	1.826	
9 1-e ^{-s} (Table XIV)	0.481	0.470	0.461	0.452	
10 Pt	1013.2	783.2	553.2	323.2	
11 Pt ² / 1000	1026.6	613.4	306.0	104.5	
12 Fr (Table XV)	0.017777	0.017777	0.017777	0.017777	
13 Fc = FrTZ	8.496	8.760	9.014	9.246	
14 FcQm	12.14	20.56	26.47	30.46	
15 L / H(FcQm) ²	147.4	422.7	700.4	927.7	
16 Fw = L / H(FcQm) ² (1-e ^{-s})	70.85	198.78	322.58	419.27	
17 Pw ² = Pt ² +Fw	1097.4	812.2	628.6	523.7	
18 Ps ² = e ^s Pw ²	2112.6	1533.0	1165.6	956.4	
19 Ps	1453.5	1238.2	1079.6	977.9	
20 P = (Pt+Ps) / 2	1233.3	1010.7	816.4	650.6	
21 Pr = (P / Pcr)	1.86	1.52	1.23	0.98	
22 Tr = (T / Tcr)	1.50	1.50	1.50	1.50	
23 Z (Table XI)	0.830	0.856	0.881	0.903	