

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

DATE 12/16/1992

COMPANY Yates Petroleum Corp LEASE Foundation ALO Federal Com WELL NO. 1

LOCATION: Unit J Section 11 Township 20S Range 30E

L 12034 H 12034 L/H 1.000 G 0.646 %CO₂ 0.787 %N₂ 1.271 %H₂S 0.000

d 2.441 Fr 0.010495 GH 7770.4 Pcr 671.7 Tcr 366.2

LINE	1st Rate	2nd Rate	3rd Rate	4th Rate	5th Rate
1 Qm	0.653	0.925	1.090	1.370	
2 Tw(W.H.°R)	522	522	522	522	
3 Ts(B.H.°R)	636	636	636	636	
4 T = (Tw+Ts) / 2	578.7	578.7	578.7	578.7	
5 Z (Est.)	0.897	0.900	0.904	0.908	
6 TZ	518.8	521.0	523.3	525.4	
7 GH / TZ	14.977	14.915	14.849	14.790	
8 e ^Λ s(Table XIV)	1.754	1.750	1.746	1.742	
9 1-e ^Λ -s(Table XIV)	0.430	0.429	0.427	0.426	
10 Pt	758.2	725.2	691.2	658.2	
11 Pt ² / 1000	574.9	525.9	477.8	433.2	
12 Fr (Table XV)	0.010495	0.010495	0.010495	0.010495	
13 Fc = FrTZ	5.445	5.468	5.492	5.514	
14 FcQm	3.56	5.06	5.99	7.56	
15 L / H(FcQm) ²	12.6	25.6	35.9	57.1	
16 Fw = L / H(FcQm) ² (1-e ^Λ -s)	5.43	10.95	15.30	24.30	
17 Pw ² = Pt ² +Fw	580.3	536.9	493.1	457.5	
18 Ps ² = e ^Λ sPw ²	1017.6	939.5	860.6	796.9	
19 Ps	1008.8	969.3	927.7	892.7	
20 P = (Pt+Ps) / 2	883.5	847.2	809.5	775.4	
21 Pr = (P / Pcr)	1.32	1.26	1.21	1.15	
22 Tr = (T / Tcr)	1.58	1.58	1.58	1.58	
23 Z (Table XI)	0.897	0.900	0.904	0.908	