

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

DATE 12/12/95

COMPANY Yates Petroleum Corp LEASE Zinnia Federal Unit WELL NO. 1

LOCATION: Unit E Section 27 Township 20s Range 29e

L 12550 H 12550 L/H 1.000 G 0.769 %CO₂ 0.155 %N₂ 1.266 %H₂S 0.000

d 2.441 Fr 0.010495 GH 9651.0 Pcr 664.6 Tcr 408.0

LINE	1st Rate	2nd Rate	3rd Rate	4th Rate	5th Rate
1 Qm	0.107	0.180	0.219	0.237	
2 Tw(W.H.°R)	520	520	520	520	
3 Ts(B.H.°R)	638	638	638	638	
4 T = (Tw+Ts) / 2	578.7	578.7	578.7	578.7	
5 Z (Est.)	0.855	0.896	0.937	0.979	
6 TZ	494.5	518.2	542.4	566.5	
7 GH / TZ	19.518	18.623	17.792	17.037	
8 e ^Λ s(Table XIV)	2.079	2.010	1.949	1.894	
9 1-e ^Λ -s(Table XIV)	0.519	0.503	0.487	0.472	
10 Pt	663.2	473.2	283.2	93.2	
11 Pt ² / 1000	439.8	223.9	80.2	8.7	
12 Fr (Table XV)	0.010495	0.010495	0.010495	0.010495	
13 Fc = FrTZ	5.189	5.439	5.693	5.945	
14 FcQm	0.56	0.98	1.25	1.41	
15 L / H(FcQm) ²	0.3	1.0	1.6	2.0	
16 Fw = L / H(FcQm) ² (1-e ^Λ -s)	0.16	0.48	0.76	0.94	
17 Pw ² = Pt ² +Fw	440.0	224.4	81.0	9.6	
18 Ps ² = e ^Λ sPw ²	914.7	451.1	157.8	18.2	
19 Ps	956.4	671.7	397.2	135.0	
20 P = (Pt+Ps) / 2	809.8	572.4	340.2	114.1	
21 Pr = (P / Pcr)	1.22	0.86	0.51	0.17	
22 Tr = (T / Tcr)	1.42	1.42	1.42	1.42	
23 Z (Table XI)	0.855	0.896	0.937	0.979	