

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

DATE 09/14/1992

COMPANY Yates Petroleum Corp LEASE Vandiver AIM WELL NO. 1

LOCATION: Unit E Section 17 Township 18S Range 26E

L 8773 H 8773 L/H 1.000 G 0.651 %CO₂ 0.378 %N₂ 0.304 %H₂S 0.000

d 2.441 Fr 0.010495 GH 5707.7 Pcr 671.4 Tcr 371.2

LINE	1st Rate	2nd Rate	3rd Rate	4th Rate	5th Rate
1 Qm	0.894	1.297	2.073	2.488	
2 Tw(W.H.°R)	522	522	522	522	
3 Ts(B.H.°R)	611	611	611	611	
4 T = (Tw+Ts) / 2	566.2	566.2	566.2	566.2	
5 Z (Est.)	0.784	0.788	0.793	0.800	
6 TZ	444.1	446.1	449.0	452.9	
7 GH / TZ	12.851	12.795	12.712	12.601	
8 e ^Λ s(Table XIV)	1.619	1.616	1.611	1.604	
9 1-e ^Λ -s(Table XIV)	0.382	0.381	0.379	0.377	
10 Pt	1923.2	1800.2	1676.2	1553.2	
11 Pt ² / 1000	3698.7	3240.7	2809.6	2412.4	
12 Fr (Table XV)	0.010495	0.010495	0.010495	0.010495	
13 Fc = FrTZ	4.661	4.681	4.712	4.754	
14 FcQm	4.17	6.07	9.77	11.83	
15 L / H(FcQm) ²	17.4	36.8	95.4	139.8	
16 Fw = L / H(FcQm) ² (1-e ^Λ -s)	6.65	14.05	36.18	52.64	
17 Pw ² = Pt ² +Fw	3705.3	3254.8	2845.8	2465.1	
18 Ps ² = e ^Λ sPw ²	5999.6	5258.2	4584.2	3954.9	
19 Ps	2449.4	2293.1	2141.1	1988.7	
20 P = (Pt+Ps) / 2	2186.3	2046.6	1908.6	1770.9	
21 Pr = (P / Pcr)	3.26	3.05	2.84	2.64	
22 Tr = (T / Tcr)	1.53	1.53	1.53	1.53	
23 Z (Table XI)	0.784	0.788	0.793	0.800	