

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

DATE 10/22/1993

COMPANY Yates Petroleum Corp LEASE Brannigan ANF Federal WELL NO. 1

LOCATION: Unit D Section 6 Township 22S Range 24E

L 7004 H 7004 L/H 1.000 G 0.657 %CO₂ 0.654 %N₂ 0.770 %H₂S 0.764

d 2.441 Fr 0.010495 GH 4601.6 Pcr 676.5 Tcr 372.5

LINE	1st Rate	2nd Rate	3rd Rate	4th Rate	5th Rate
1 Qm	0.459	0.835	1.125	1.297	
2 Tw(W.H.°R)	522	522	522	522	
3 Ts(B.H.°R)	598	598	598	598	
4 T = (Tw+Ts) / 2	559.7	559.7	559.7	559.7	
5 Z (Est.)	0.952	0.961	0.969	0.977	
6 TZ	533.1	538.0	542.5	546.8	
7 GH / TZ	8.632	8.554	8.482	8.416	
8 e ^{As} (Table XIV)	1.382	1.378	1.374	1.371	
9 1-e ^{As} (Table XIV)	0.277	0.274	0.272	0.271	
10 Pt	293.2	233.2	173.2	113.2	
11 Pt ² / 1000	86.0	54.4	30.0	12.8	
12 Fr (Table XV)	0.010495	0.010495	0.010495	0.010495	
13 Fc = FrTZ	5.595	5.646	5.694	5.738	
14 FcQm	2.57	4.71	6.40	7.44	
15 L / H(FcQm) ²	6.6	22.2	41.0	55.4	
16 Fw = L / H(FcQm) ² (1-e ^{As})	1.82	6.10	11.17	15.00	
17 Pw ² = Pt ² +Fw	87.8	60.5	41.2	27.8	
18 Ps ² = e ^{As} Pw ²	121.3	83.3	56.6	38.1	
19 Ps	348.3	288.7	237.9	195.3	
20 P = (Pt+Ps) / 2	320.8	261.0	205.5	154.2	
21 Pr = (P / Pcr)	0.47	0.39	0.30	0.23	
22 Tr = (T / Tcr)	1.50	1.50	1.50	1.50	
23 Z (Table XI)	0.952	0.961	0.969	0.977	