

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

DATE 08/20/94

COMPANY Yates Petroleum Corp LEASE Lake Shore XH Federal WELL NO. 1

LOCATION: Unit F Section 11 Township 21S Range 263

L 9693 H 9693 L/H 1.000 G 0.602 %CO₂ 0.724 %N₂ 1.321 %H₂S 0.000

d 2.441 Fr 0.010495 GH 5835.2 Pcr 672.9 Tcr 351.8

LINE	1st Rate	2nd Rate	3rd Rate	4th Rate	5th Rate
1 Qm	1.682	2.178	2.307	2.927	
2 Tw(W.H.°R)	522	522	522	522	
3 Ts(B.H.°R)	648	648	648	648	
4 T = (Tw+Ts) / 2	584.7	584.7	584.7	584.7	
5 Z (Est.)	0.847	0.846	0.850	0.858	
6 TZ	495.2	494.8	497.0	501.5	
7 GH / TZ	11.784	11.792	11.742	11.636	
8 e ^s (Table XIV)	1.556	1.556	1.553	1.547	
9 1-e ^s (Table XIV)	0.357	0.357	0.356	0.354	
10 Pt	2313.2	2076.2	1840.2	1603.2	
11 Pt ² / 1000	5350.9	4310.6	3386.3	2570.3	
12 Fr (Table XV)	0.010495	0.010495	0.010495	0.010495	
13 Fc = FrTZ	5.197	5.193	5.215	5.263	
14 FcQm	8.74	11.31	12.03	15.40	
15 L / H(FcQm) ²	76.4	128.0	144.7	237.3	
16 Fw = L / H(FcQm) ² (1-e ^s)	27.29	45.73	51.55	83.89	
17 Pw ² = Pt ² +Fw	5378.2	4356.3	3437.9	2654.1	
18 Ps ² = e ^s Pw ²	8366.8	6779.0	5339.7	4106.4	
19 Ps	2892.5	2603.7	2310.8	2026.4	
20 P = (Pt+Ps) / 2	2602.9	2339.9	2075.5	1814.8	
21 Pr = (P / Pcr)	3.87	3.48	3.08	2.70	
22 Tr = (T / Tcr)	1.66	1.66	1.66	1.66	
23 Z (Table XI)	0.847	0.846	0.850	0.858	