

WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (P_w)

C-122D
Adapted 9-1-65

COMPANY Yates Ref. Corp. LEASE Kelham Hill Field WELL NO. 1 DATE 11-14-78

LOCATION: Unit K Section 25 Township 16 S Range 24 E

L 4802 H 4502 L/H 1.000 G 0.660 % CO₂ 0.26 % N₂ 0.72 % H₂S N/A
 $P_{ci} = \frac{1.57 \times 10^{-4} (3.48 \times 10^4)^{1.75}}{4.5 \times 10^{-4} (1.000)^{1.75} (4950)^{1.75}}$ $P_{ci} = 1.218 \times 10^{-3}$ GH 7.000 $P_{ci} = 1.218 \times 10^{-3}$ TABLE IX & X

LINE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1 Q _m	—	0.071	0.103	0.142	0.176																		
2 T _w (W.H. °R)	505	518	522	526	529																		
3 T _s (B.H. °R)	566	565	565	564	564																		
4 T = (L _w + T _s)	535.5	544.5	543.5	545	546.5	535.5	524.5	543.5	544.5	544.5	544.5	544.5	544.5	544.5	544.5	544.5	544.5	544.5	544.5	544.5	544.5	544.5	544.5
5 Z (Est.)	14.52	14.62	14.74	14.84	14.92	14.92	14.92	14.92	14.92	14.92	14.92	14.92	14.92	14.92	14.92	14.92	14.92	14.92	14.92	14.92	14.92	14.92	14.92
6 TZ	402.70	402.70	402.70	402.70	402.70	402.70	402.70	402.70	402.70	402.70	402.70	402.70	402.70	402.70	402.70	402.70	402.70	402.70	402.70	402.70	402.70	402.70	402.70
7 GH/TZ	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018
8 e ^s (Table XIV)	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11	1.23E-11
9 1-e ^s (Table XIV)		0.98439	0.98388	0.98319	0.98246																		
10 P _i	1928.6	1640.2	1560.2	1447.2	1297.2	1928.6	1640.2	1560.2	1447.2	1297.2	1928.6	1640.2	1560.2	1447.2	1297.2	1928.6	1640.2	1560.2	1447.2	1297.2	1928.6	1640.2	1560.2
11 P _i 2/1000	3021.3	2640.2	2452.18	2094.4	1631.24	3021.3	2640.2	2452.18	2094.4	1631.24	3021.3	2640.2	2452.18	2094.4	1631.24	3021.3	2640.2	2452.18	2094.4	1631.24	3021.3	2640.2	2452.18
12 F _i (Table XIV)	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375	0.0000000375
13 F _c = F _i TZ		5.810	5.420	6.1595	6.3685																		
14 F _c Q _m		0.0012	0.0011	0.00095	0.000895																		
15 L/H (F _c Q _m) ²		0.0000000000	0.0000000000	0.0000000000	0.0000000000																		
16 F _w = L/H (F _c Q _m) ² (1-e ⁻⁹)		0.004	0.004	0.018	0.032																		
17 P _w ² = P _i ² + F _w		2690.30	2452.18	2094.4	1631.24																		
18 P _w ² = e ^s P _w ²	4022.6	3550.1	3222.8	2777.48	2104.2	4022.6	3550.1	3222.8	2777.48	2104.2	4022.6	3550.1	3222.8	2777.48	2104.2	4022.6	3550.1	3222.8	2777.48	2104.2	4022.6	3550.1	3222.8
19 P _s	2025.3	1886.0	1795.2	1650.9	1450.6	2025.3	1886.0	1795.2	1650.9	1450.6	2025.3	1886.0	1795.2	1650.9	1450.6	2025.3	1886.0	1795.2	1650.9	1450.6	2025.3	1886.0	1795.2
20 P = (P _i + P _s)	1879.4	1762.4	1682.9	1547.9	1363.4	1879.4	1762.4	1682.9	1547.9	1363.4	1879.4	1762.4	1682.9	1547.9	1363.4	1879.4	1762.4	1682.9	1547.9	1363.4	1879.4	1762.4	1682.9
21 P _i = (P/P _{ci})	2.1992	2.630	2.507	2.31	2.034	2.1992	2.630	2.507	2.31	2.034	2.1992	2.630	2.507	2.31	2.034	2.1992	2.630	2.507	2.31	2.034	2.1992	2.630	2.507
22 T _i = (T/T _{ci})	1.449	1.465	1.471	1.471	1.471	1.449	1.465	1.471	1.471	1.471	1.449	1.465	1.471	1.471	1.471	1.449	1.465	1.471	1.471	1.471	1.449	1.465	1.471
23 Z (Table XI)	0.951	0.928	0.915	0.911	0.911	0.951	0.928	0.915	0.911	0.911	0.951	0.928	0.915	0.911	0.911	0.951	0.928	0.915	0.911	0.911	0.951	0.928	0.915