

WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (P_w)

Form C-122D
Adopted 9-1-65

COMPANY Atlantic Richfield Co. LEASE McDonald State (WN) WELL NO. 24 DATE 06/17/74

LOCATION: Unit E Section 25 Township 22 Range 36

L 3070 H 3070 L/H 1.000 G .658 % CO₂ % N₂ % H₂S

d 1.995 F_r .018231 GH 2020 P_{cr} 670 T_{cr} 375

TABLE IX & X

LINE	1st Rate		2nd Rate		3rd Rate		4th Rate	
	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2	Trial 1	Trial 2
1 Q _m	.713	.713	1.070	1.070	1.368	1.368	1.704	1.704
2 T _w (W.H. °R)	534	534	534	534	534	534	534	534
3 T _s (B.H. °R)	560	560	560	560	560	560	560	560
4 T = ($\frac{T_w + T_s}{2}$)	547	547	547	547	547	547	547	547
5 Z (Est.)	.916	.912	.925	.921	.932	.927	.942	.936
6 TZ	501.1	498.9	506.0	503.8	509.8	507.1	515.3	512.0
7 GH/TZ	4.032	4.049	3.992	4.010	3.962	3.984	3.920	3.945
8 e ^s (Table XIV)	1.163	1.164	1.161	1.162	1.160	1.161	1.158	1.159
9 1-e ^s (Table XIV)	.140	.141	.139	.140	.138	.139	.137	.138
10 P _t	502.2	502.2	444.2	444.2	396.2	396.2	338.2	338.2
11 P _t ² /1000	252.2	252.2	197.3	197.3	157.0	157.0	114.4	114.4
12 F _r (Table XV)	.018231	.018231	.018231	.018231	.01823	.018231	.018231	.018231
13 F _c = F _r TZ	9.135	9.095	9.224	9.185	9.294	9.244	9.394	9.334
14 F _c Q _m	6.513	6.485	9.870	9.827	12.715	12.646	16.007	15.905
15 L/H (F _c Q _m) ²	42.4	42.0	97.4	96.6	161.7	159.9	256.2	253.0
16 F _w = L/H (F _c Q _m) ² (1-e ^{-s})	5.952	5.924	13.546	13.483	22.321	22.193	35.031	34.792
17 P _w ² = P _t ² + F _w	258.2	258.1	210.9	210.8	179.3	179.2	149.4	149.2
18 P _s ² = e ^s P _w ²	300.3	300.5	244.9	245.0	208.0	208.0	173.1	173.0
19 P _s	548.0	548.1	494.9	495.0	456.1	456.1	416.0	415.9
20 P = ($\frac{P_t + P_s}{2}$)	525.1	525.2	469.5	469.6	426.1	426.2	377.1	377.0
21 P _r = (P/P _{cr})	.78	.78	.70	.70	.64	.64	.56	.56
22 T _r = (T/T _{cr})	1.46	1.46	1.46	1.46	1.46	1.46	1.46	1.46
23 Z (Table XI)	.912	.912	.921	.921	.927	.927	.936	.936