

WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (P_w)

COMPANY Atlantic Richfield LEASE State 157D WELL NO. 7 DATE 1-11-79

LOCATION: Unit N Section 12 Township 22 Range 36

L 2650 H 2650 L/H 1.000 G .672 % CO₂ % N₂ % H₂S

d 1.995 F_r .018231 GH 1781 P_{cr} 669 T_{cr} 382

TABLE IX & X TABLE IX & X

LINE	1st	RATE	2nd	RATE	3rd	RATE	4th	RATE	
1 Q _m	.287	.287	.630	.630	.961	.961	1.308	1.308	
2 T _w (W.H. °R)	534	534	534	534	534	534	534	534	
3 T _s (B.H. °R)	561	561	561	561	561	561	561	561	
4 T = $(\frac{T_w + T_s}{2})$	547.5	547.5	547.5	547.5	547.5	547.5	547.5	547.5	
5 Z (Est.)	.892	.991	.901	.898	.919	.916	.947	.942	
6 T _Z	488.4	542.6	493.3	491.7	503.2	501.5	518.0	515.7	
7 CH/T _Z	3.647	3.283	3.610	3.622	3.540	3.551	3.435	3.453	
8 e ^s (Table XIV)	1.147	1.131	1.145	1.146	1.142	1.142	1.137	1.138	
9 1-e ^s (Table XIV)	.128	.116	.127	.127	.124	.125	.121	.121	
10 P _t	607.2	607.2	556.2	556.2	455.2	455.2	292.2	292.2	
11 P _t ² /1000	368.7	368.7	309.4	309.4	207.2	207.2	85.4	85.4	
12 F _r (Table XV)	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231	
13 F _c = F _r T _Z	8.903	9.892	8.993	8.963	9.173	9.143	9.452	9.403	
14 F _c Q _m	2.56	2.84	5.67	5.65	8.82	8.79	12.36	12.30	
15 L/H (F _c Q _m) ²	6.53	8.06	32.10	31.89	77.71	77.20	152.86	151.25	
16 F _w = L/H (F _c Q _m) ² (1-e ^{-s})	.83	.93	4.06	4.05	9.66	9.63	18.48	18.37	
17 P _w ² = P _t ² + F _w	369.5	369.6	313.4	313.4	216.9	216.8	103.9	103.8	
18 P _g ² = e ^s P _w ²	423.7	418.0	358.9	359.0	247.7	247.7	118.1	118.1	
19 P _s	650.9	646.6	599.1	599.2	497.6	497.7	343.7	343.7	
20 P = $(\frac{P_t + P_s}{2})$	629.1	626.9	577.6	577.7	476.4	476.5	318.0	317.9	
21 P _r = (P/P _{cr})	.94	.94	.86	.86	.71	.71	.48	.48	
22 T _r = (T/T _{cr})	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	
23 Z (Table XI)	.991	.991	.898	.898	.916	.916	.942	.942	