

WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (P_w)

Form O-1221
Adopted 9-1-65

COMPANY Beard Oil Company LEASE Harold WELL NO. 1 DATE 8/25/78

LOCATION: Unit NE Section 17 Township 17 Range 24

L 7026 H 7026 1/H 1.000 G .617 % CO₂ _____ % N₂ _____ % H₂S _____

d 1.995 F .019231 CR 4.335 P_{cr} 671 T_{cr} 365
403 TABLE IX & X

LINE	1st		2nd		3rd		4th		5th	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	1st	2nd
1 Q _m	.563	.563	.734	.734	1.093	1.093	1.393	1.393		
2 T _w (W.H. °R)	534	534	534	534	534	534	534	534		
3 T _s (B.H. °R)	606	606	606	606	606	606	606	606		
4 T = ($\frac{T_w + T_s}{2}$)	570	570	570	570	570	570	570	570		
5 Z (Est.)	.948	.949	.963	.960	.905	.927	.928	.920		
6 TZ	433.1	178.9	424.0	430.2	505.9	511.0	509.0	524.4		
7 GH/TZ	9.963	9.054	9.762	9.843	8.404	8.472	8.445	8.367		
8 α ^s (Table XIV)	1.400	1.404	1.392	1.393	1.370	1.374	1.360	1.363		
9 1-α ^s (Table XIV)	.236	.283	.290	.282	.279	.273	.255	.267		
10 P ₁	1543.2	1513.2	1246.2	1216.2	826.2	826.2	433.2	633.2		
11 P _t ² /1000	2331.5	2331.5	1553.0	1553.0	699.2	699.2	400.9	400.9		
12 Γ _r (Table XV)	.019231	.019231	.019231	.019221	.019231	.019231	.019231	.019231		
13 F _c = F _r TZ	8.812	8.729	9.020	8.937	9.404	9.321	9.643	9.560		
14 Γ _c Q _m	4.96	4.91	7.07	7.01	10.33	10.23	13.43	13.32		
15 L/H (F _c Q _m) ²	24.6	24.2	50.0	49.1	106.6	104.8	180.5	177.4		
16 F _w = L/H (F _c Q _m) ² (1-e ⁻⁹)	7.03	6.95	14.00	13.96	28.82	28.53	47.75	47.27		
17 P _w ² = P _t ² + F _w	2338.5	2338.4	1567.0	1566.9	728.1	727.8	444.9	443.2		
18 P _s ² = α ^s P _w ²	3343.4	3354.0	2126.6	2122.0	1174.8	1172.2	610.1	611.1		
19 P _s	1828.5	1831.4	1475.3	1474.5	1084.9	1081.1	781.1	781.7		
20 P = ($\frac{P_1 + P_s}{2}$)	1535.8	1627.3	1360.8	1361.9	917.5	913.1	707.2	707.5		
21 P _r = (P/P _{cr})	2.51	2.51	2.03	2.03	1.37	1.37	1.05	1.05		
22 T _r = (T/T _{cr})	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56		
23 Z (Table XI)	.840	.840	.860	.860	.897	.897	.920	.923		