

WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (P_w)

Form C-122D
Adopted 9-1-65

COMPANY Beard Oil Co. LEASE Hagstrom WELL NO. # 1 DATE 3-29-78

LOCATION: Unit K Section 8 Township 17 Range 24

L 6975 H 6975 L/H 1.000 G .606 % CO₂ _____ % N₂ _____ % H₂S _____

d 1.995 F_r .018231 GH 4.227 P_{cr} 671 T_{cr} 362
1st 2nd 3rd 4th

LINE	1st Trial	2nd Trial	1st Trial	2nd Trial	1st Trial	2nd Trial	1st Trial	2nd Trial		
1 Q _m	.306	.306	.453	.453	.626	.626	.875	.875		
2 T _w (W.H. °R)	534	534	534	534	534	534	534	534		
3 T _s (B.H. °R)	604	604	604	604	604	604	604	604		
4 T = ($\frac{T_w + T_s}{2}$)	569	569	569	569	569	569	569	569		
5 Z (Est.)	.837	.829	.842	.833	.851	.841	.868	.859		
6 T _Z	476.3	471.7	479.1	474.0	484.2	478.5	493.9	488.8		
7 GH/T _Z	8.876	8.961	8.823	8.918	8.730	8.833	8.559	8.648		
8 e ^s (Table XIV)	1.395	1.399	1.392	1.397	1.387	1.393	1.378	1.383		
9 1-e ^s (Table XIV)	.283	.285	.282	.284	.279	.282	.275	.277		
10 P _t	1513.2	1513.2	1443.2	1443.2	1333.2	1333.2	1133.2	1133.2		
11 P _t ² /1000	2289.8	2289.8	2082.8	2082.8	1777.4	1777.4	1284.1	1284.1		
12 F _r (Table XV)	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231		
13 F _c = F _r T _Z	8.683	8.600	8.734	8.641	8.828	8.724	9.004	8.911		
14 F _c Q _m	2.657	2.631	3.957	3.914	5.526	5.461	7.879	7.797		
15 L/H (F _c Q _m) ²	7.059	6.925	15.655	15.323	30.539	29.825	62.073	60.792		
16 F _w = L/H (F _c Q _m) ² (1-e ^{-s})	1.998	1.976	4.410	4.356	8.526	8.410	17.041	16.838		
17 P _w ² = P _t ² + F _w	2291.8	2291.8	2087.2	2087.2	1785.9	1785.8	1301.2	1301.0		
18 P _s ² = e ^s P _w ²	3196.8	3207.1	2905.8	2916.1	2477.6	2487.1	1793.6	1799.4		
19 P _s	1788.0	1790.8	1704.6	1707.7	1574.1	1577.1	1339.3	1341.4		
20 P = ($\frac{P_t + P_s}{2}$)	1650.6	1652.0	1573.9	1575.4	1453.6	1455.1	1236.2	1237.3		
21 P _r = (P/P _{cr})	2.46	2.46	2.35	2.35	2.17	2.17	1.84	1.84		
22 T _r = (T/T _{cr})	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57		
23 Z (Table XI)	.829	.829	.833	.833	.841	.841	.859	.859		