

WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (P_w)

Form C-1122D
Adopted 9-1-65

COMPANY BEARD OIL COMPANY LEASE HANLAD WELL NO. #1 DATE 9-15-78

LOCATION: Unit M Section 17 Township 17 Range 24

L 4670 H 4670 L/H 1,000 G .713 % CO₂ 7.17 % N₂ 1.28 % H₂S

d 4.494 F_i .0048045 GH 3330 P_{cr} 697 T_{cr} 380
TABLE IX & X TABLE IX & X

LINE	RATE # 1	RATE # 2	RATE # 3	RATE # 4				
1 Q _m	.449	.449	.641	.641	.898	.898	.415	.415
2 T _w (W.H. °R)	534	534	534	534	534	534	534	534
3 T _s (B.H. °R)	581	581	581	581	581	581	581	581
4 T = ($\frac{T_w + T_s}{2}$)	558	558	558	558	558	558	558	558
5 Z (Est.)	.820	.810	.843	.836	.899	.894	.934	.929
6 T _Z	457.6	452.0	470.4	466.5	501.6	498.9	521.2	518.4
7 GH/T _Z	7.278	7.368	7.079	7.138	6.638	6.675	6.389	6.424
8 e ^s (Table XIV)	1.314	1.319	1.304	1.307	1.283	1.284	1.271	1.272
9 1-e ^s (Table XIV)	.2388	.2414	.2332	.2349	.2204	.2215	.2131	.2141
10 P _i	1433.2	1433.2	1183.2	1183.2	713.2	713.2	463.2	463.2
11 P _i ² /1000	2054.1	2054.1	1400.0	1400.0	508.7	508.7	214.6	214.5
12 F _i (Table XV)	.0048045	.0048045	.0048045	.0048045	.0048045	.0048045	.0048045	.0048045
13 F _c = F _i T _Z	2.198	2.172	2.260	2.241	2.410	2.397	2.504	2.491
14 F _c Q _m	.9871	.9750	1.449	1.437	2.164	2.152	1.039	1.034
15 L/H (F _c Q _m) ²	.9743	.9507	2.099	2.064	4.684	4.632	1.080	1.068
16 F _w = L/H (F _c Q _m) ² (1-e ^s)	.2327	.2295	.4893	.4847	1.032	1.026	.2301	.2287
17 P _w ² = P _i ² + F _w	2054.3	2054.3	1400.5	1400.4	509.7	509.7	214.8	214.8
18 P _s ² = e ^s P _w ²	2698.9	2708.0	1826.2	1830.3	653.8	654.7	272.9	273.3
19 P _s	1642.8	1645.6	1351.4	1352.9	808.5	809.1	522.4	522.8
20 P = ($\frac{P_i + P_s}{2}$)	1538.8	1539.4	1267.3	1268.0	760.9	761.2	492.8	493.0
21 P _r = (P/P _{cr})	2.21	2.21	1.82	1.82	1.09	1.09	.71	.71
22 T _r = (T/T _{cr})	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47
23 Z (Table XI)	.810	.810	.836	.836	.894	.894	.929	.929