C-122D
Adopted 9-1-65

# WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE ($P_w$)

COMPANY Y PC LEASE Siegrist 32 State WELL NO. 1 DATE 11-2-75

LOCATION: Unit C Section 30 Township 18S Range 24E

L 8440 H 5400 L/H _____ G .60 % $CO_2$ 0.58 % $N_2$ 0.48 % $H_2S$ Nil

d 2.0005 $F_r$ .017626 GH 5097.0 $P_{cr}$ 673 (TABLE IX & X) $T_{cr}$ 357 (TABLE IX & X)

| LINE | S1 | 1 | 2 | 3 | 4 | S1 | | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 $Q_m$ | - | 2.727 | 1.054 | 1.424 | 1.761 | | | 1.054 | | 1.76 |
| 2 $T_w$ (W.H. °R) | 521 | 516 | 520 | 524 | 527 | | | | | |
| 3 $T_s$ (B.H. °R) | 601 | 600 | 600 | 599 | 599 | | | | | |
| 4 $T = (\frac{T_w + T_s}{2})$ | 536 | 558 | 560 | 561.5 | 563 | | 558 | 560 | 561.5 | 563 |
| 5 Z (Est.) | .8115 | .804 | .802 | .805 | .815 | | | | | 0.814 |
| 6 TZ | 485.19 | 448.63 | 449.12 | 452.01 | 458.85 | | | | | 458.25 |
| 7 GH/TZ | 11.299 | 11.363 | 11.350 | 11.278 | 11.110 | | | | | 11.124 |
| 8 $e^S$ (Table XIV) | 1.5276 | 1.5313 | 1.5306 | 1.5264 | 1.5165 | | | | | 1.5176 |
| 9 $1-e^{-S}$ (Table XIV) | | 0.3469 | 0.3466 | 0.3449 | 0.3409 | | | | | 0.3411 |
| 10 $P_t$ | 2697.2 | 2446.2 | 2275.2 | 2046.2 | 1783.2 | | 2446.2 | 2275.2 | 2046.2 | 1783.2 |
| 11 $P_t^2/1000$ | 7274.9 | 5983.9 | 5176.5 | 4186.9 | 3179.8 | | | | | 3179.8 |
| 12 ~~$F_r$ (Table V)~~ $\cdot 0375 \frac{S}{GH}$ | 0.42371 | 0.42610 | 0.42564 | 0.42292 | 0.41662 | | | | | 0.41713 |
| 13 $F_c = F_r TZ$ | | 7.9075 | 7.9162 | 7.967 | 8.0577 | | | | | 8.0496 |
| 14 $F_c Q_m$ | | 5.749 | 8.344 | 11.345 | 14.242 | | | | | 14.225 |
| 15 $L/H (F_c Q_m)^2$ | | 33.04 | 69.62 | 128.7 | 203.8 | | | | | 202.3 |
| 16 $F_w = L/H(F_c Q_m)^2(1-e^{-S})$ | | 11.5 | 24.1 | 44.4 | 69.1 | | | | | 69.0 |
| 17 $P_w^2 = P_t^2 + F_w$ | | 5995.4 | 5200.6 | 4231.3 | 3248.9 | | | | | 3248.9 |
| 18 $P_s^2 = e^S P_w^2$ | 11110.2 | 9180.7 | 7960.0 | 6455.9 | 4920.2 | | | | | 4930.4 |
| 19 $P_s$ | 3333.2 | 3030.0 | 2821.4 | 2541.4 | 2219.9 | | | | | 2220.4 |
| 20 $P = (\frac{P_t + P_s}{2})$ | 3015.2 | 2738.1 | 2548.3 | 2293.8 | 2001.5 | | | | | 2001.8 |
| 21 $P_r = (P/P_{cr})$ | 4.48 | 4.068 | 3.786 | 3.408 | 2.974 | | | | | 2.974 |
| 22 $T_r = (T/T_{cr})$ | 1.559 | 1.553 | 1.568 | 1.573 | 1.577 | | | | | 1.570 |
| 23 Z (Table XI) | .8113 | 0.804 | 0.802 | 0.805 | 0.815 | | | | | 0.814 |