

WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (Pw) C-122D

Adopted 9-1-65

DATE 09/17/90

COMPANY Yates Petroleum Corporation LEASE Eland AFC Fed Com WELL NO. 1

LOCATION: Unit N Section 13 Township 20S Range 29E

L 10800.0 H 10800.0 L/H 1.000 G .882 %CO₂ .33 %N₂ 1.08 %H₂S 0.00

d 2.441 Fr .010495 GH 9529.1 Pcr 661.7 Tcr 445.6

LINE	1st Rate	2nd Rate	3rd Rate	4th Rate	5th Rate
1 Qm	.625	.885	.990	1.237	0.000
2 Tw(W.H.°R)	522.0	522.0	522.0	522.0	0.0
3 Ts(B.H.°R)	629.0	629.0	629.0	629.0	0.0
4 T=(Tw+Ts)/2	575.5	575.5	575.5	575.5	0.0
5 Z(Est.)	.809	.799	.785	.766	0.000
6 TZ	465.8	459.6	452.0	440.7	0.0
7 GH/TZ	20.459	20.732	21.082	21.625	0.000
8 e ^s (Table XIV)	2.155	2.176	2.206	2.250	0.000
9 1-e ^{-s} (Table XIV)	.536	.540	.547	.556	0.000
10 Pt	3238.2	3161.2	3064.2	2920.2	0.0
11 Pt ² /1000	10485.9	9993.2	9389.3	8527.6	0.0
12 Fr(Table XV)	.010495	.010495	.010495	.010495	0.000000
13 Fc=FrTZ	4.885	4.824	4.740	4.625	0.000
14 FcQm	3.051	4.269	4.694	5.723	0.000
15 L/H(FcQm) ²	9.310	18.227	22.033	32.753	0.000
16 Fw=L/H(FcQm) ² (1-e ^{-s})	4.990	9.849	12.045	18.195	0.000
17 Pw ² =Pt ² +Fw	10490.9	10003.1	9401.3	8545.7	0.0
18 Ps ² =e ^s Pw ²	22605.9	21763.9	20738.6	19226.1	0.0
19 Ps	4754.6	4665.2	4554.0	4384.8	0.0
20 P=(Pt+Ps)/2	3996.4	3913.2	3809.1	3652.5	0.0
21 Pr=(P/Pcr)	6.04	5.91	5.76	5.52	0.00
22 Tr=(T/Tcr)	1.29	1.29	1.29	1.29	0.00
23 Z(Table XI)	.809	.799	.785	.766	0.000