Drainage Radius Calculation Example

Initial gas-in-place formula:

1) $G_i = 1546.2\ phi\ (1\ -Swi)p_i\ A\ h/(ziT)$

Reservoir's initial gas-in-place can be represented as:

2) $Gi = \frac{UltG_p}{RF}$

Substitute Gi (2) and rearrange gas-in-place formula (1) to solve for A, Area:

$\frac{UltG_p}{RF} = 1546.2\ phi\ h\ (1\ -Swi)p_iA/(z_i\ T)$

3) $A = (z_i\ T\ \frac{UltG_p}{RF})/(1546.2\ phi\ h\ (1\ -Swi)p_i)$

Example calculation for drainage area and radius using well 30021204640000
(first well on tabular list...Exhibit Number 7)

$A = (0.7549 \times 550 \times \frac{1{,}343{,}000}{0.65})/(1546.2 \times 8.1 \times (1 - 0.132) \times 644$

$A = 858{,}112{,}250.77/6966366.2 = 122.57\ Acres$ 

Matches 123.2 acres on tabular list...difference significant digits

Area of a circle is $A = \pi r^2$

$122.57\ \text{acres} \times 43560\frac{ft^2}{acre} = \pi \times r^2$

$r = \sqrt{122.57\ \text{acres}\ \times 43560\frac{ft^2}{acre}/\pi} = 1303.7\ \text{ft}$ 

Matches 1307 ft on tabular list...difference significant digits