Reynolds Number is defined by

$$Re = \frac{\rho\left[\frac{kg_m}{m^3}\right] q\left[\frac{m^3}{s}\right]}{\mu\left[\frac{kg_m}{m.s}\right] r_w[m]} \tag{1}$$

where

$$\rho\left[\frac{kg_m}{m^3}\right] = \rho\left[\frac{lb_m}{ft^3}\right] \times \frac{0.4536}{1}\frac{kg}{lb_m} \times \frac{3.2808^3}{1}\frac{ft^3}{m^3} \tag{2}$$

$$q\left[\frac{m^3}{s}\right] = q\left[\frac{bbl}{d}\right] \times \frac{5.6146}{1}\frac{ft^3}{bbl} \times \frac{1}{3.2808^3}\frac{m^3}{ft^3} \times \frac{1}{86400}\frac{d}{s} \tag{3}$$

$$\mu\left[\frac{kg_m}{m.s}\right] = \mu[cp] \times \frac{10^{-3}}{1}\frac{\left(\frac{kg_m}{m.s}\right)}{cp} \tag{4}$$

$$r_w[m] = r_w[ft] \times \frac{1}{3.2808}\frac{m}{ft} \tag{5}$$

Substitute (2-5) into (1), obtain

$$Re = 0.097\,\frac{\rho\left[\frac{lb_m}{ft^3}\right] q\left[\frac{bbl}{d}\right]}{\mu[cp] \times r_w[ft]} \tag{6}$$

$$\text{UnitConverter} := \frac{0.4536 \cdot 3.2808^3 \cdot \frac{5.6146}{\left(3.2808^3 \cdot 86400\right)}}{\frac{10^{-3}}{3.2808}} = 0.097$$