

54. Reference to Fig. 34-24 may help in the visualization of why there appears to be a “circle of light” (consider revolving that picture about a vertical axis). The depth and the radius of that circle (which is from point a to point f in that figure) is related to the tangent of the angle of incidence. Thus, the diameter D of the circle in question is

$$D = 2h \tan \theta_c = 2h \tan \left[\sin^{-1} \left(\frac{1}{n_w} \right) \right] = 2(80.0 \text{ cm}) \tan \left[\sin^{-1} \left(\frac{1}{1.33} \right) \right] = 182 \text{ cm} .$$