

$$\frac{\lambda}{T} - \frac{\lambda}{\sqrt{\frac{2\pi\lambda}{g \tanh\left(\frac{2\pi d}{\lambda}\right)}}} - \frac{\left(\frac{4\pi}{\lambda}\right)}{\sinh\left(\frac{4\pi d}{\lambda}\right)} U_c(0) \int_{-d}^0 \left(\frac{d+z}{d}\right)^{\frac{1}{7}} \cosh\left[\frac{4\pi(z+d)}{\lambda}\right] dz = 0$$

T = wave time period = 10.04 seconds

g = acceleration due to gravity = 9.81 m/s²

d = water depth = 481.18 m;

U_c(0) = current velocity at water surface = 1.33 m/s

Solve the equation by iteratively changing λ until the equation becomes 0.