

$$t_1 := \text{time}(0)$$

$$\mu\text{rad} \equiv 10^{-6} \cdot \text{rad}$$

$$\text{mrad} \equiv 10^{-3} \cdot \text{rad}$$

$$\mu\text{m} \equiv 10^{-6} \text{ m}$$

$$\text{nm} := 10^{-9} \text{ m}$$

$$\text{ms} \equiv 10^{-3} \cdot \text{s}$$

$$\mu\text{s} \equiv 10^{-6} \text{ s}$$

$$\text{ns} \equiv 10^{-9} \cdot \text{s}$$

$$\text{kt} \equiv 1852 \frac{\text{m}}{\text{hr}}$$

$$\text{nmi} := 1852 \cdot \text{m}$$

$$^{\circ}\text{C} \equiv \text{K}$$

$$c \equiv 2.99792458 \cdot 10^8 \frac{\text{m}}{\text{s}}$$

$$h \equiv 6.62606876 \cdot 10^{-34} \text{ J} \cdot \text{s}$$

$$r_e \equiv 6378140 \cdot \text{m}$$

$$\sigma \equiv 5.670400 \cdot 10^{-8} \cdot \frac{\text{watt}}{\text{m}^2 \cdot \text{K}^4}$$

$$\text{mJ} \equiv 10^{-3} \text{ J}$$

$$\text{MW} \equiv 10^6 \text{ W}$$

$$\text{nW} \equiv 10^{-9} \text{ W}$$

$$\mu\text{W} \equiv 10^{-6} \text{ W}$$

$$\text{mW} \equiv 10^{-3} \text{ W}$$

$$\text{time}(0) - t_1 = 0.0000$$

$$\text{echarge} := 1.602 \cdot 10^{-19} \cdot \text{coul}$$

$$\mu\text{V} := 10^{-6} \cdot \text{V}$$

$$\text{kft} := 1000 \cdot \text{ft}$$

$$\text{mW} := 0.001 \cdot \text{W}$$

$$\text{nV} := 10^{-9} \cdot \text{V}$$

$$\mu\text{W} := 10^{-6} \cdot \text{W}$$

$$\text{nA} := 10^{-9} \cdot \text{A}$$

$$\mu\text{flick} := \frac{\mu\text{W}}{\text{cm}^2 \cdot \mu\text{m} \cdot \text{sr}}$$

$$y_2 := 2270 \text{ mm}$$

$$y_1 := 2041 \text{ mm}$$

$$a := \frac{(y_2 + y_1)}{2} - 1400 \text{ mm} = 0.7555 \text{ m}$$

$$\text{len}_{\text{EFL}} := 50.4 \text{ m}$$

$$x_1 := -24.411934 \text{ m}$$

$$x_2 := 25.741703 \text{ m}$$

$$y_2 - y_1 = 0.2290 \text{ m}$$

$$\text{given} \quad y_2 - y_1 = a \cdot \cosh\left(\frac{x_2}{a}\right) - a \cdot \cosh\left(\frac{x_1}{a}\right)$$

$$a \cdot \sinh\left(\frac{x_2}{a}\right) - a \cdot \sinh\left(\frac{x_1}{a}\right) = \text{len}_{\text{EFL}}$$

$$a \cdot \cosh\left(\frac{x_1}{a}\right) - a < y_1 \quad \text{a} := \text{minerr}(a) = 146.3317 \text{ m}$$

$$\text{Given} \quad y_2 - y_1 = a \cdot \cosh\left(\frac{x_2}{a}\right) - a \cdot \cosh\left(\frac{x_1}{a}\right)$$

$$a \cdot \sinh\left(\frac{x_2}{a}\right) - a \cdot \sinh\left(\frac{x_1}{a}\right) = \text{len}_{\text{EFL}}$$

$$\begin{pmatrix} x_2 \\ x_1 \end{pmatrix} := \text{find}(x_2, x_1) = \begin{pmatrix} 25.741703 \\ -24.411934 \end{pmatrix} \text{ m}$$

$$a \cdot \sinh\left(\frac{x_2}{a}\right) - a \cdot \sinh\left(\frac{x_1}{a}\right) = 50.4000 \text{ m}$$

$$a \cdot \cosh\left(\frac{x_2}{a}\right) - a \cdot \cosh\left(\frac{x_1}{a}\right) = 0.2290 \text{ m}$$

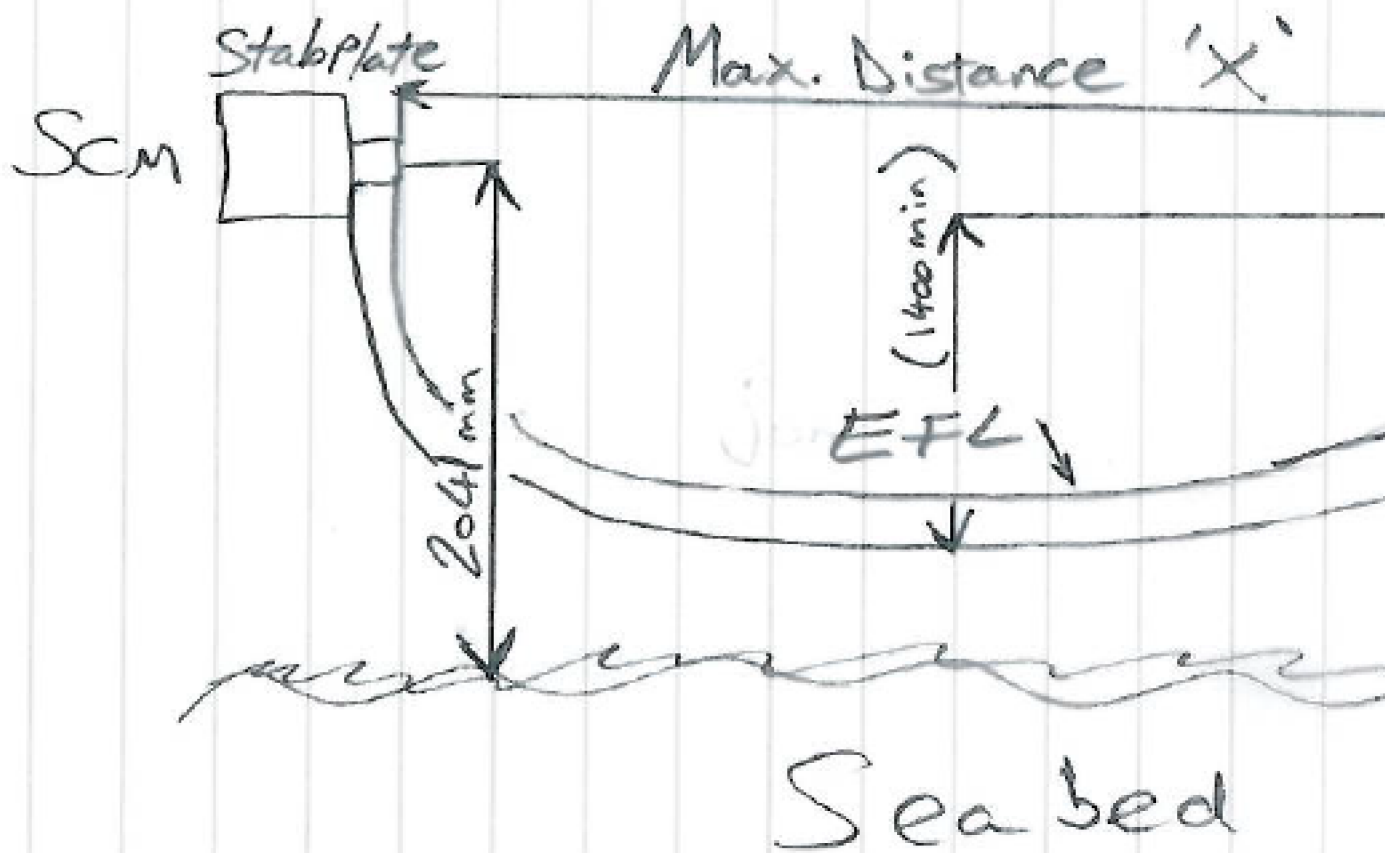
$$a \cdot \cosh\left(\frac{x_2}{a}\right) = 148.6017 \text{ m}$$

$$a \cdot \cosh\left(\frac{x_1}{a}\right) = 148.3727 \text{ m}$$

$$x_2 - x_1 = 50.1536 \text{ m}$$

$$a \cdot \cosh\left(\frac{x_1}{a}\right) - a = 2.0410 \text{ m}$$

Length of Shortest



$$EFL = 50.4 \text{ m}$$

