PROBLEM 12-6N QUESTION

Thermal Parameters In A Heated Channel In Two-Phase Flow

Consider a 3 meter long water channel of circular cross-sectional area $1.5 \times 10^{-4} \text{m}^2$ operating at the following conditions:

$\dot{m} = 0.29 \text{ kg/s}$

$p = 7.2 \text{ MPa}$

$h_{\text{in}} = \text{saturated}$

$q'' = \text{axially uniform}$

$x_{\text{exit}} = 0.15$

Compute and plot as a function of axial position:

1. Fluid temperature,

2. Wall temperature, and

3. CHFR for the axial locations where the Hench-Levy limit lines (page 561) are valid.