PROBLEM 11-8N QUESTION

HEM Pressure Loss Problem

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

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

p = 7.2 MPa

Compute the pressure loss under homogeneous equilibrium assumptions for the following additional conditions:

a. Adiabatic channel with inlet flow quality of 0.15.

b. Uniform axial heat flux of sufficient magnitude to heat the entering saturated coolant to an exit quality of 0.15.