

A Study on the Inlet Jet Flow along Circumferential Walls for CANDU-6 Moderator Analysis

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Abstract

A CFD model for predicting CANDU-6 moderator circulation is established and validated against the experimental data obtained in the Stern Laboratories Inc. (SLI) in Hamilton, Ontario. The simulations are performed on the isothermal test condition; with a mass flow rate of 2.4 kg/s and no heat load. For the simulation, a three-dimensional CFD code, CFX-4 (AEA Technology), is used. The predicted flow pattern and the velocity components at some selected locations are in good agreement with the experimental measurements and the former predictions performed by MODTURC_CLAS [1,2]. The comparison between the predicted and the LDA measured vertical velocity components indicates that the hydraulic resistance model used by both CFX-4 and MODTURC_CLAS under-estimates the magnitude of flow velocities in the core region. Sensitivity study of turbulence model implies that further refinement and tune-up of the turbulence model is required for the future work.