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RELAP5 Simulation of the Small Inlet Header Break Test B8604 Conducted in the RD-14 Test Facility

Sukho Lee, Manwoong Kim
Korea Institute of Nuclear Safety
P.O. Box 114, Yusung
Taejon, Korea 305-600

Abstract

A small inlet header break experiment in the RD-14 test facility was simulated with RELAP5/MOD3 code. The RELAP5 has been developed for best-estimate transient simulation of pressurized water reactors and associated systems, but it has not been assessed for a CANDU reactor. Therefore, this study has been initiated with an aim to identify the code applicability in CANDU reactors. The RELAP5 results were compared with experimental data and those of CATHENA performed by AECL. The RELAP5 analyses demonstrate the code's capability to predict, with sufficient accuracy, the main phenomena occurring in the transient, both qualitative and quantitative view. However, some discrepancies in the depressurization of the primary heat transport system after the break and the consequent time delay of the major phenomena were observed.