TRAC-M/F77 Code Assessment for the Direct Vessel Injection Test During LBLOCA Reflood Phase

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Abstract

Introducing Direct Vessel Injection (DVI) to KNGR ECCS, it is more necessary to assess the capability and limit of codes could be utilized in audit calculation. Tests and data related to DVI are limited to several UPTF tests for LBLOCA reflood. In this study, The capability of TRAC-M/F77 code in predicting phenomena related ECC entrainment under downcomer injection condition during reflood phase is evaluated using the experiment data of the UPTF Test 21D. The facility is modeled in detail, and the test condition is simulated. The calculation result is compared with the applicable measurement data and discussed in terms of the pressure response, and water level in downcomer and core. It is found that TRAC code could predict the pressure and water level responses of the test system simulating LBLOCA reflood phase relatively good and that the predicted value of TRAC calculation shows conservatism at sensitivity study.

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Scientific Design of the KAERI Integral Test Loop (ITL) Facility

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ABSTRACT

Scientific design of the facility for the integral effect test to simulate Korean PWR plants is presented in this study. After briefly describing the test objectives, preliminary test requirements and test matrices, the design requirements of the integral test loop (ITL) are introduced. Based on the design requirements, the ITL is designed according to the step-wise scaling (the modified volume scaling methodology) to satisfy the geometric, kinematic, dynamic and energetic similarities between the plant (KSNP) and the test facility. And finally the design description is presented for major components and systems of the ITL.