
RESPONSE TO AUDIT ISSUES

APR1400 Topical Reports

Korea Electric Power Corporation / Korea Hydro & Nuclear Power Co., LTD

Docket No. PROJ0782

Review Section	TR Realistic Evaluation Methodology for LBLOCA of the APR1400
Application Section	Topical Report: APR1400-F-A-TR-12004 Realistic Evaluation Methodology for Large-Break LOCA of the APR1400
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The guidance in RG 1.157, Section 3.4.2 establishes acceptable controls for the calculation of bypass flow. Address the following concerns about the ECCS bypass bias determination discussed in Section 4.2.3.1 of the topical report:

- d. UPTF-21A and -21B involve downcomer injection of ECCS. Justify the selection of UPTF-4A with cold leg injection for determination of the ECCS bypass bias over the tests with a configuration similar to that in APR1400.

Response

The ECC bypass during end-of-blowdown and refill period is mainly dependent on the flow mixing behavior below the cold leg bottom. Also, due to the high elevation of the DVI injection in the APR1400 design, the distance that the steam and ECC water are expected to contact until they go through broken cold leg is almost the same as that of CLI plant. Therefore, it has been considered that the ECC injection type is less important in comparison to the depressurization process.

There are UPTF-21A and -21B tests targeted to investigate the ECC bypass mechanism during end-of-blowdown with DVI injection, however, the test configurations of those tests are not exactly the same as the LBLOCA conditions during end-of-blowdown and refill period; the broken hot leg break valve and the pump simulators were closed. The initial pressure in primary system and containment simulator was set at approximately 0.3 MPa, thus the depressurization process was not investigated through the tests. In other words, UPTF-21A, -21B tests are tests to investigate steady-state downcomer CCFL behavior only with DVI geometry, where the steam flow rates injected from the core simulator were determined from the end-of-blowdown and refill condition, respectively.

In conclusion, UPTF-4A test is the only UPTF test, which simulated the transient ECC bypass during end-of-blowdown and refill period. Therefore, it is the only possible test to quantify the ECC bypass bias during the period.

Impact on DCD

There is no impact on the DCD.

Impact on PRA

There is no impact on the PRA.

Impact on Technical Specifications

There is no impact on the Technical Specifications.

Impact on Technical/Topical/Environmental Report

There is no impact on any Technical, Topical, or Environmental Report.