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Post-LOCA Long Term Cooling Performance in Korean Standard Nuclear Power Plants

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Abstract

The post-LOCA long term cooling (LTC) performance of the Korean Standard Nuclear Power Plant (KSNPP) is analyzed for both small break LOCA and large break LOCA. The RELAP5/MOD3.2.2 code is used to calculate the LTC sequences based on the LTC plan of the KSNPP. A standard input model is developed such that LOCA and the followed LTC sequence can be calculated in a single run for both small break LOCA and large break LOCA. A spectrum of small break LOCA ranging from 0.02 to 0.5 ft^2 of break area and a double-ended guillotine break are analyzed. Through the code calculations, the thermal-hydraulic behavior and the boron behavior are evaluated and the effect of the important manual action including the safety injection tank isolation in LTC procedure is investigated.