

Experimental Study of Liquid Holdup in Pressurizer in Case of Loss-of-  
Residual-Heat-Removal during Mid-loop Operation

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Abstract

A separate effect test facility consisting of hot-leg, surge line and pressurizer is installed to investigate the gas flow into the pressurizer and the entrained water holdup in the pressurizer. The collapsed and mixture levels are measured with changes of gas flow rate during the liquid holdup process. Onset of liquid collapse, CCFL and frictional drop in the surge line are examined during the water collapse process. Scaling analysis is performed to have scale similarities between test facility and real plant. CCFL and velocity similitude are applied to geometric scale parameters in the test facility. Scale similarity for the collapsed and mixture levels are examined. The collapsed level has a similarity from the present scaling methodologies. The mixture level also has a similarity in case that the void fraction is preserved. Preliminary experimental results are obtained for the liquid holdup process. The collapsed level becomes a control parameter instead of the water level in hot-leg together with the gas flow rate.