

**IMPROVEMENT OF THE CCFL MODEL
OF THE RELAP5/MOD3.2.2B CODE IN A HORIZONTAL PIPE**

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ABSTRACT

To demonstrate the applicability of RELAP5 to the prediction of the onset of flooding in the hot leg at the reflux condensation phase during mid-loop operation, numerical analysis is performed for the counter-current flow in a horizontal pipe with the inclined riser using the RELAP5/MOD3.2.2b code. It is found that the RELAP5, simulating the CCFL phenomena using interfacial friction along with the flow regime map in the horizontal pipe, produces unsatisfactory results. Under the CCFL condition, it is observed that large oscillation exists in the flow rate, void fraction, and etc. and the liquid flow rate is much lower than that predicted by the CCFL model measured in the experiment. The CCFL model of RELAP5 for the vertical volume is extended to the model for the horizontal and inclined volumes. The horizontal volume flow regime map and interfacial friction model coupled to the CCFL model are modified. And a new correlation developed from Kang's experiment is implemented to the CCFL model of RELAP5. With this modified RELAP5, the analysis of CCFL phenomena in the horizontal pipe and hot leg geometry is performed, and produces reasonable results in comparison with experimental data.