

Triga-2000 research reactor thermal-hydraulic analysis using relap/scdapsim/mod3.4

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Abstrak

Any events presumed to risk the safety of a nuclear reactor should be analyzed. In a research reactor, the applicability of best estimate thermal-hydraulic codes has been assessed for safety analysis purposes. In this paper, the applicability of the RELAP/SCDAPSIM/MOD3.4 thermal-hydraulic code to one Indonesian research reactor, which is named TRIGA-2000, is performed. The aim is to validate the model and use the model to analyze the thermal-hydraulic characteristics of TRIGA-2000 for main transient events considered in the Safety Analysis Report. The validation was done by comparing the calculation results with experimental data mainly in steady state conditions. The comparison of calculation results with the measurement data showed good agreement with little discrepancies. Based on these results, simulations for thermal-hydraulic analyses were performed for loss of coolant transients. The calculation results also properly depicted the physic of the thermal-hydraulic phenomena following the loss of coolant transients. These results showed the adequacy of the model. It could be shown that the engineered safety features of TRIGA-2000 play an important role in keeping the reactor safe from the risk of postulated loss of a coolant accident.