

relief valve (POSRV) system on the pressurizer for HPSIP, and increasing capacity of the heat exchanger of the shutdown cooling system (SCS) or relaxing the design requirements of nuclear steam supply system (NSSS) for LPSIP.

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**Evaluation of Analytically Scaled Model for Small Break Loss of Coolant Accident at
Low Power**

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Abstract

The present paper performs analytical evaluations for the potential distortions caused by the scaled models using RELAP5/MOD3 computer codes. By use of scaling analysis, two scaled models with same volumetric ratio are constructed for Korean Next Generation Reactor (KNGR), which is an advanced light water reactor. The scaling methodology adopted in this paper preserves two-phase natural circulation similarities between prototype and scaled models. One scaled model is at full height with reduced flow area. The other model is at reduced height with reduced flow area. By using appropriate scale factors the RELAP5/MOD3 input models are developed. Then, the transient responses of two ideal scaled models are simulated for Small Break Loss of Coolant Accident (SBLOCA) by using RELAP5/MOD3 computer code. The transient responses of two scaled models are compared with those of the prototype. The results indicate that qualitative and quantitative similarities are well preserved for both models during SBLOCA with different break sizes.