

## Wolsong 2,3&4 Fuel Channel Analysis During a Large Break Loss of Coolant Accident with Loss of ECCS Injection

Hyoung Tae Kim, Bo Wook Rhee, and Byung-Joo Min

Korea Atomic Energy Research Institute

150 Dukjin-dong, Yusong-gu, Daejeon 305-353, Korea

### Abstract

Wolsong 2,3&4 fuel channel analysis during a large break loss of coolant accident with loss of ECCS injection (LOCA/FOECC) is performed to obtain the heat load to moderator. Because the single channel analysis requires the establishment of the safety codes and their input decks, the present study follows the same safety analysis methodology found in FSAR of Wolsong 2,3&4. From this work we obtain the safety tools such as CATHENA MOD3.5b/Rev.1 and CHAN-II/A MOD2 codes, and their code modeling in a form of code input deck. The analysis the fuel and pressure tube (PT) temperatures, and PT circumferential strains at the end of front-end as well as fuel channel depressurization are calculated using CATHENA code and used as initial and boundary conditions for back-end analysis. The back-end period under the conditions of prolonged low steam flow is analyzed by CHAN-II code to determine parametrically the limiting steam flow rate that maximizes the fuel temperatures. Finally, the heat load from a single channel to moderator is calculated by CATHENA for front-end and by CHAN-II for back-end, which is used as input to a moderator analysis.