

A Study on Performance of Adjuster Rod System and Banking Scheme in Operational Transient of CANDU-6 RUFIC Core

Soon Young Kim and Ho Chun Suk
Korea Atomic Energy Research Institute
150 Dukjin, Yusong, Daejeon, Korea 305-353

Abstract

The performance of adjuster rod system in four operational transients of CANDU-6 RUFIC (Recovered Uranium Fuel In CANDU) core was preliminarily assessed, where the operational transients include startup after a short shutdown, startup after a poison-out shutdown, shim mode operation, and a stepback to 60% full power. The results of the preliminary assessment indicated that the adjuster rod system as currently designed and installed in the CANDU-6 NU (Natural Uranium) core will adequately meet the functional requirements in the RUFIC core. Comparing to the performance of adjuster rod system in the NU core, the total worth of the adjuster system in the RUFIC core is reduced, leading to less xenon override capability and shimming capability. In spite of the reduction of total worth, however, the overall performance of adjuster rod system in the operation transient of the RUFIC core is expected to still be satisfied. An alternative adjuster-banking scheme is also included in the assessment. The alternative adjuster-banking scheme involves rods in Bank 1 and Bank 7 being re-distributed within the two banks. The overall results from the transients studied indicated that the alternative banking scheme does show some better performance characteristics and merits.