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TRACE/FRAPTRAN Analysis of Kuosheng Nuclear Power Plant Dry-Storage System

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Abstract : The dry-storage systems of nuclear power plants (NPPs) in Taiwan have become one of the major safety concerns. There are two steps considered in this study. The first step is the verification of the TRACE by using VSC-17 experimental data. The results of TRACE were similar to the VSC-17 data. It indicates that TRACE has the respectable accuracy in the simulation and analysis of the dry-storage systems. The next step is the application of TRACE in the dry-storage system of Kuosheng NPP (BWR/6). Kuosheng NPP is the second BWR NPP of Taiwan Power Company. In order to solve the storage of the spent fuels, Taiwan Power Company developed the new dry-storage system for Kuosheng NPP. In this step, the dry-storage system model of Kuosheng NPP was established by TRACE. Then, the steady state simulation of this model was performed and the results of TRACE were compared with the Kuosheng NPP data. Finally, this model was used to perform the safety analysis of Kuosheng NPP dry-storage system. Besides, FRAPTRAN was used tocalculate the transient performance of fuel rods.

Keywords : BWR, TRACE, FRAPTRAN, dry-storage
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