

## The Establishment of Probabilistic Risk Assessment Analysis Methodology for Dry Storage Concrete Casks Using SAPHIRE 8

**Authors :** J. R. Wang, W. Y. Cheng, J. S. Yeh, S. W. Chen, Y. M. Ferng, J. H. Yang, W. S. Hsu, C. Shih

**Abstract :** To understand the risk for dry storage concrete casks in the cask loading, transfer, and storage phase, the purpose of this research is to establish the probabilistic risk assessment (PRA) analysis methodology for dry storage concrete casks by using SAPHIRE 8 code. This analysis methodology is used to perform the study of Taiwan nuclear power plants (NPPs) dry storage system. The process of research has three steps. First, the data of the concrete casks and Taiwan NPPs are collected. Second, the PRA analysis methodology is developed by using SAPHIRE 8. Third, the PRA analysis is performed by using this methodology. According to the analysis results, the maximum risk is the multipurpose canister (MPC) drop case.

**Keywords :** PRA, dry storage, concrete cask, SAPHIRE

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