

Probabilistic Safety Assessment of Koeberg Spent Fuel Pool

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Abstract : The effective management of spent fuel pool (SFP) safety has been raised as one of the emerging issues to further enhance nuclear installation safety after the Fukushima accident on March 11, 2011. Before then, SFP safety-related issues have been mainly focused on (a) controlling the configuration of the fuel assemblies in the pool with no loss of pool coolants and (b) ensuring adequate pool storage space to prevent fuel criticality owing to chain reactions of the fission products and the ability for neutron absorption to keep the fuel cool. A probabilistic safety (PSA) assessment was performed using the systems analysis program for hands-on integrated reliability evaluations (SAPHIRE) computer code. Event and fault tree analysis was done to develop a PSA model for the Koeberg SFP. We present preliminary PSA results of events that lead to boiling and cause fuel uncovering, resulting in possible fuel damage in the Koeberg SFP.

Keywords : computer code, fuel assemblies, probabilistic risk assessment, spent fuel pool

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