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The Model Establishment and Analysis of TRACE/MELCOR for Kuosheng Nuclear Power Plant Spent Fuel Pool

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Abstract : Kuosheng nuclear power plant (NPP) is a BWR/6 plant in Taiwan. There is more concern for the safety of NPPs in Taiwan after Japan Fukushima NPP disaster occurred. Hence, in order to estimate the safety of Kuosheng NPP spent fuel pool (SFP), by using TRACE, MELCOR, and SNAP codes, the safety analysis of Kuosheng NPP SFP was performed. There were two main steps in this research. First, the Kuosheng NPP SFP models were established. Second, the transient analysis of Kuosheng SFP was done by TRACE and MELCOR under the cooling system failure condition (Fukushima-like condition). The results showed that the calculations of MELCOR and TRACE were very similar in this case, and the fuel uncover happened roughly at 4th day after the failure of cooling system. The above results indicated that Kuosheng NPP SFP may be unsafe in the case of long-term SBO situation. In addition, future calculations were needed to be done by the other codes like FRAPTRAN for the cladding calculations.

Keywords : TRACE, MELCOR, SNAP, spent fuel pool
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