Risk Assessment Framework and Spent Fuel Transportation/Storage Example

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Abstract

The risk information plays more and more important role in recent safety issues. This talks is to give an overview of risk assessment framework and to provide an interesting example. As capacity of onsite spent fuel storage facility meets its limitation, spent fuels need to be transported to other spaces. This study reveals new insights from the risk analysis for spent fuel transportation and interim storage. Due to coastal location of plants in Korea, spent fuels may be transported by ship rather than by train or truck. This study focused on three different kinds of accident: aircraft crash on interim storage, drop accident during onsite transportation, and maritime transportation accidents. Accident probabilities were calculated based on probabilistic distribution, historical data, and structure analysis. Risks were calculated from accident probabilities and consequences. Then, case studies for risk calculation were performed using developed software. Due to the integrity of casks, the estimated risks were reasonably small; however, it is highly dependent on accident conditions. Therefore, appropriate strategy for regulation and management for spent fuel transportation and interim storage is required to be developed based on risk analysis considering accident conditions.