Transactions, SMiRT-24
BEXCO, Busan, Korea - August 20-25, 2017
Special Session for IAEA EESS WA2.3
(Hybrid Simulation to Assess Performance of Seismic Isolation in NPPs)

NON-LINEAR SEISMIC ANALYSIS OF BASE-ISOLATED PROTOTYPE GENERATION-IV SODIUM-COOLED FAST REACTOR

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ABSTRACT

During the past decades, structural researchers have widely conducted researches on the analysis/design of the base isolated Nuclear Power Plant (NPP). Recently, a seismic analysis/design for Advanced Power Reactor (APR) 1400 has been performed, and design standards relevant to seismic isolation, that is, ASCE 4-16 and KEPIC-STC, are released with updated contents. The modeling and nonlinear analysis methodology of the base-isolated NPP structure is one of the significant concerns in civil structural engineering work. In Korea, PGSFR (Prototype Generation-IV Sodium-cooled Fast Reactor) is under development with adaptation of seismic isolation system as a future NPP.

In this paper, nonlinear seismic analysis for PGSFR structures is discussed. Three-directional peak ground response acceleration (PGA: 0.3g) are applied as design based earthquake (DBE) based on NRC 1.60. Comparative studies of seismic responses of interested floors are shown using various isolation devices