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Estimating of the Earthquake Magnitudes from the Parameters of Seismogenic faults in Korea

Chang-Bock Im (1), Chun-Joong Chang (2), and Taek-Mo Shim (3)

(1) Korea Institute of Nuclear Safety (KINS), Structural Systems & Site Assessment Dept., P.O.Box 114, Yuseong, Daejeon, 305-600, Republic Of Korea (k136icb@kins.re.kr), (2) Korea Electric Power Research Institute(KEPRI), 103-16 Munji-dong, Yuseong, Daejeon, 305-380, Republic of Korea (cjchang@kepri.re.kr), (3) Korea Institute of Nuclear Safety (KINS), Engineering Research Dept., P.O.Box 114, Yuseong, Daejeon, 305-600, Republic Of Korea (k147stm@kins.re.kr)

20 units are operating and 8 units are under construction at 4 nuclear power plant sites in Korea. Through the detailed investigation of the geological and seismological characteristics of the plant site and its surrounding area, the nuclear power plant shall be appropriately estimated and considered a specific design earthquake at a proposed site without undue risk to the health and safety of the public. The size of the region to be investigated and the type of data pertinent to the estimation should be determined based on the geological and seismological characteristics of the region surrounding the proposed site. Nuclear regulation requires that nuclear power plant structures, systems, and components important to safety be designed to withstand the effects of earthquakes.
Recently, Quaternary tectonic faults have been found at some coastal areas of the southeastern part of Korean peninsula. Because some of these faults are developed near the plant sites, they need to be considered in assessing the geologic and seismic hazards for nuclear power plants. To estimate the maximum potential earthquake, the geological information such as rupture length, rupture area, displacement, slip rate, recurrence interval, and so on should be investigated. However, in most case of these Quaternary faults in Korea, because of the low rate of seismicity and unclear relationship between instrumental macro-seismicity and fault, it is involved uncertainty to estimate accurately the maximum potential earthquake that may affect the safety of the plant.
In this study, we firstly review the various empirical methods for the potential earthquakes from above geological information of seismogenic faults. And we also discuss the reasonable methods, including the probabilistic seismic hazards, and their improvements in estimating of a specific design earthquakes for Korea nuclear power plant sites.