

# Development Risk Evaluation Methods and Measures for Fault Movement by Engineering Approach

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The Atomic Energy Society of Japan (AESJ) would like to promote “Development Risk Evaluation Methods and Measures for Fault Movement by Engineering Approach” by establishing a study committee.

In Japan, as a frequent earthquake country, impact of earthquake and tsunami have been considered when selecting the site and designing the industrial facilities. Of course, nuclear power plant is one of such facilities. When the Great East Japan Earthquake occurred on March 11, 2011, the components and pipes in the primary containment vessel (PCV) of the Fukushima Daiich Nuclear Power Plants of Tokyo Electric Power Company were not damaged by the earthquake, as mentioned in the AESJ’s Report by the Investigation Committee on Fukushima Daiichi NPS Accident investigation. However, the station blackout and multi-units severe accidents were induced by huge tsunami of height beyond the design basis.

From these lessons learned, the new regulation criteria have been established based on the strategy of defense-in-depth, requiring a various countermeasures not limited to earthquake and tsunami but also against other natural disasters. This new criteria will be applied when reviewing the restart applications of operating plants that are currently under shutdown. In order to enhance safety, AESJ think it important the development risk evaluation methods and measures for fault movement by engineering approach.

This committee evaluated development Risk Evaluation Methods and Measures for Fault Movement by Engineering Approach.

(1)An open fruitful discussion by experts in the area of earthquake, geology, geotechnical, civil, and aseismic design as well as other stakeholders such as academia professors, nuclear reactor engineers, regulators, and licensees,

(2)Investigation to select the most advanced scientific and rational judgement based on the domestic and global knowledge obtained so far, and,

(3)Continuous discussions and efforts in the global field in order to collect and organize this knowledge and reflect the global standers and nuclear regulations, such as definition and evaluation method for the active and prevention of severe accidents based on the accumulated database in the world.

There are several faults definitions for active and non-active faults. Damage evaluation for Faults Movements, damaged components and piping for PWR. Almost all the damage in primary piping in PWRs are the event of LOCA Scenario. Piping damages were simulated by FEM Analysis under faults displacement in reactor building. We would like to point out the importance of auxiliary cooling system, recovery of containment cooling by mobile system and recover of heat sink will be attained.