

Study on Severe Accident Progression and Source Terms in Fukushima Dai-ichi NPPs

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It has been past three years since the severe accident of TEPCO's Fukushima Daiichi Nuclear Power Plants. Decommissioning of severe damaged plants is in progress. In parallel, onsite R&D for investigation of the accident is undergoing. However, due to technical difficulties for investigation such as high radiation, leakage of contaminated water, etc., available information, especially for the inside of primary containment vessel, is limited. Therefore, computational simulation is useful method to understand the accident progression. This study focused on estimation of performance of safety systems under beyond design basis conditions. Calculation revealed how degraded safety systems affected accident progression.

After the core was damaged, integrity of PCV and its leak tightness was challenged. Finally, a large amount of radioactive materials were released to the environment. Northwest part of Fukushima prefecture was significantly contaminated. Based on the above calculation, source terms from Units 1 through 3 were estimated.

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