

Decommissioning Process “Fuel Debris Retrieval”Investigation Subject **“Retrieval”**Issue **“Continuous maintaining and ensuring safety function”****Needs****1. Examining maintenance needs for each safety function and establishing a remote repair method if necessary****Desired state and reasons for it**

- In fuel debris retrieval, it is assumed that various types of safety equipment, both existing and new, will be used. It is desirable to consider the necessity of a maintenance and repair method in order to ensure continuous functioning during the fuel debris retrieval period.

Current state against ideal

- Although different from safety equipment, investigation is underway on remote maintenance technology and facilities for equipment related to fuel debris retrieval Government-led R&D Program on Decommissioning and Contaminated Water Management.

Issues to be resolved

- It is necessary to consider how to cope with a contingency, such as securing a maintenance work area, so that a quick action can be taken in the event of an accident or trouble. It is necessary to review the dose reduction work in the reactor building and the PCV internal investigation work that have been carried out so far, and utilize the review results in implementation of advance measures such as preparation, planning, and training for other work.
- With regard to important safety assurance facilities such as the circulation system for cooling fuel debris, the nitrogen gas separator, and the PCV gas management system, TEPCO is conducting inspections and maintenance, remote monitoring and patrols based on its maintenance plan. It is important to continue to ensure that the functions of these facilities do not stop, not only in terms of facility maintenance, but also in terms of management and operation, including measures to maintain their functions.
- When installing new equipment and facilities, it is important to prevent defects in them in the field, to the extent possible. Efforts should be made to ensure the implementation of quality assurance through design reviews, testing and inspection.
- In terms of management and operation, for example, it is important to establish a remote maintenance and repair method as needed. On the other hand, it is necessary to improve the durability and the ease of maintenance of equipment and facilities.

2. Continuously monitoring the aging of the safety functions

Desired state and reasons for it

- Since fuel debris retrieval is expected to last for a long period of time, it is desirable to monitor the aging of the safety equipment and take measures to control aging as necessary.

Current state against ideal

- Previous investigations indicate that the main structural components such as the reactor building, the PCV and the RPV, and the pedestal supporting the RPV have a relatively large seismic margin against 600Gal earthquake ground motion, even after considering the damage caused by the accident, aging due to 40 years of corrosion, and the load of the equipment necessary for fuel debris retrieval. For further corrosion inhibition measures, Government-led R&D Program on Decommissioning and Contaminated Water Management has developed a system to prevent corrosion of structural materials in the RPV and the PCV and necessary piping over a long period of decommissioning work to maintain their current status.

Issues to be resolved

- For the PCV, the RPV and the piping, tests have been conducted to confirm the effectiveness of corrosion inhibitors for steel, considering the effects of the radiation environment and seawater input. Candidate effective corrosion inhibitors have been selected for overall and localized corrosion. On the other hand, in order to mitigate the effect of corrosion inhibitors on the existing circulating water cooling and purification system, it has been pointed out that the concentration of corrosion inhibitors should be reduced in the preliminary stage of purification. In the future investigation of the PCV circulating cooling system, it is necessary to comprehensively pursue measures for corrosion inhibition and measures for satisfying other requirement functions.

Relevant Issues

- FDR-211 "Ensuring structural integrity of PCV and buildings"
- FDR-212 "Ensuring integrity of system equipment and area"