

Decommissioning Process “Dismantling PCV/RPV/Buildings”Investigation Subject **“Structural integrity”**Issue **“Understanding the structural integrity of PCV and the buildings, etc.”****Needs****1. Confirming current and long-term structural integrity**

Dismantling PCV/RPV/Buildings : [Long 1]

Desired state and reasons for it

- Before and during dismantling the PCV/RPV/building, it is necessary to ensure their structural integrity and seismic safety. Therefore, it is desirable to be able to evaluate the structural integrity and seismic safety at the present time, as well as to predict and evaluate aging deterioration, including the presence or absence of deterioration modes that become apparent after a long and complex history (e.g., corrosion).
- It is also desirable to be able to make a comprehensive judgment of the integrity of the buildings by monitoring both sudden changes and the changes that occur over time.

Current state against ideal

- Integrity evaluation methods for the PCV/RPV/buildings have been developed, and long-term maintenance management plans considering the progress of deterioration have been formulated and are in operation. In addition, for the integrity of the Unit 1 to 3 reactor buildings, the internal investigation of the building and trend analysis using seismographs is being continuously conducted.
- In particular, during the investigation inside the containment vessel of Unit 1, the inside of the pedestal was found to have exposed inner wall reinforcement and inner skirt, and thus a safety assessment in the pedestal support function is being conducted to take this fact into account.
- The survey method of integrity in the high-dose building is still under investigation.

Issues to be resolved

- It is necessary to evaluate the soundness of the building as appropriate based on the facts that will be revealed by the PCV/RPV/building interior investigations, etc. to be conducted in the future. Also, it is considered necessary to advance the evaluations of the decline in integrity with aging and of the decline in strength due to dismantling.
- It is considered necessary to develop a survey method for integrity and monitoring technology in high-dose buildings.

2. Ensuring the structural integrity

Dismantling PCV/RPV/Buildings : [Long 2]

Desired state and reasons for it

- To dismantle the PCV/RPV/buildings safely, it is desirable that measures (management and maintenance activities, etc.) are taken to ensure structural integrity and seismic safety, considering the results of prediction and evaluation of degradation modes and aging.

Current state against ideal

- In the "Mid-and-Long-Term Decommissioning Action Plan 2022" released by TEPCO on March 31, 2022, the process of installing a large cover for Unit 1, etc. was reviewed in consideration of the application of the new seismic design policy presented by the Nuclear Regulatory Commission.
- In addition, during the investigation inside the containment vessel of Unit 1, the inside wall reinforcement and inner skirt were found to be exposed inside the pedestal. In response to this fact, a safety assessment in the pedestal support function is being conducted.

Issues to be resolved

- Reasonable countermeasures need to be implemented based on the results of NEEDS 1. In implementing countermeasures, it is considered necessary to keep in mind that the impact on dismantling operations must be minimized and the increase in the amount of waste must also be controlled.
- The safety assessment based on the results of the Unit 1 internal investigation indicated that the structural integrity of the reactor building as a whole will be sufficiently maintained even if extreme events are assumed. However, premises and input values for the evaluation had to be based on assumptions, it will be important to reflect the facts that will become clear during the internal investigation and debris removal work to be conducted in the future.

Relevant Issues

- DRB-301 "Removing in-core structures and dismantling buildings"