Phase: **Design**

Decommissioning Process **"Fuel Debris Retrieval"**
Investigation Subject **"Structural integrity"**
Issue **"Ensuring integrity of system equipment and areas"**

Needs

1. Installing system equipment and areas

Fuel Debris Retrieval：【Mid】

Desired state and reasons for it

- In order to properly install and operate the system equipment (including containers, work cells, equipment, and devices) for fuel debris retrieval, it is desirable to understand the current environmental conditions.
- In order to properly install and operate the system equipment (including negative pressure control system, cooling system, criticality control system, and other measurement systems), it is desirable to satisfy the functional requirements of each system and establish a method for managing the system equipment as a whole.

Current state against ideal

- Although the following milestones were set for fuel debris retrieval: experimental retrieval (Unit 2), gradual expansion of the scale of retrieval (Unit 2), and further expansion of the scale of retrieval (Unit1／Unit 3), and the pilot fuel debris retrieval was scheduled to start by the end of 2021, it is rescheduled to start in the latter half of FY2023 in order to increase the safety and reliability of the retrieval work considering the COVID-19 pandemic, the mock-up test being conducted at the Naraha Remote Engineering Development Center since February 2022, and the status of the preparatory work at the Unit 2 site. During each retrieval operation, retrieval equipment and safety systems will be fabricated and installed.

Issues to be resolved

- In the pilot retrieval, the main preparations will be the improvement of the environment in the building and the fabrication and installation of retrieval equipment. On the other hand, in the gradual expansion of the scale of retrieval, it is necessary to install not only fuel debris retrieval facilities but also safety systems (including a confinement system, a cooling maintenance system, and a criticality control), storing facilities for fuel debris, and maintenance facilities. In the further expansion of the scale of retrieval, it is necessary to install the system equipment for Unit 1 and Unit 3, reflecting the lessons learned from Unit 2.

2. Ensuring the long-term integrity of system equipment and areas

Fuel Debris Retrieval：【Mid】

Desired state and reasons for it

- In order to maintain the system equipment for a long period of time, it is desirable to predict the long-term life of the system and take corrosion prevention measures after identifying the effects of corrosion and radioactive particles on the piping and work cells used in the system.

Current state against ideal

- A continuous monitoring system for grid facilities is being investigated in Government-led R&D Program on Decommissioning and Contaminated Water Management, and the accumulation of daily data are considered to also lead to long-term integrity assessments.

Issues to be resolved

- In order to maintain system integrity, it is necessary to examine a wide range of existing and newly constructed systems for corrosion caused by seawater and other factors, identify the equipment and timing for which countermeasures should be taken, and prepare against aging

Relevant Issues

- FDR-303 “Continuously maintaining and ensuring safety function”