

A Review of the Overseas Decommissioning Plans and Domestic Preparations

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1. Introduction

When a nuclear reactor reaches its design life, typically, it adopts a dismantling strategy as immediate to eliminate future uncertainties after a certain period of safety management. It is essential to prepare the decommissioning plans for a nuclear power plant (NPP) for the safe decommissioning of the NPP, minimization of the generation of decommissioning plans. Kori unit 1 and Wolsong unit 1 will be destined to their decommissioning in Korea in the future. In this paper, therefore, the draft guidelines of decommissioning plans for NPP were developed by considering the domestic situation, based on the comparative analyses of the regulatory guidelines of the decommissioning plans in U.S, France.

2. Methods and Results

The International Atomic Energy Agency (IAEA) provide guidelines and reports related to the safety of many nuclear power facilities worldwide. Especially, for safety, standards for regulatory standards are presented and developed. The IAEA requires that operators who establish a decommissioning strategy must plan decommissioning in compliance with the national policy and waste management of the relevant year. It is defined to Table 1. These are items and detailed of the decommissioning plan recommended by the IAEA. The countries of NPP have guidelines for preparing their decommissioning plans.

Table 1: IAEA's Safety Standards

Chapter	Contents
1	Introduction
2	Facility Description
3	Decommissioning Strategy
4	Project Management
5	Decommission Activities
6	Surveillance and Maintenance
7	Schedule for surveillance
8	Waste containing both radionuclides
9	Safety Assessment
10	Environmental Assessment
11	Health and Safety
12	Quality Assurance
13	Emergency Planning

14	Physical Security and Safeguards
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2.1 USA

The United States is the country with the largest number of nuclear facilities and has extensive experience in decommissioning project. The U.S. Nuclear Regulatory Commission (NRC) fully regulates all decommissioning projects. In accordance with U.S. Federal Law 10CFR50.82, the reactor operator must submit a Post-shutdown Decommissioning Activity Report (PSDAR) to NRC within two years of the permanent shutdown of the reactor. It is defined to Table 2. PSDAR must include the results of the results of an environmental impact assessment reflecting the planned decommissioning activities, schedule of major decommissioning activities, expected cost, and site characteristics. Among these, environmental impact assessments that reflect site characteristics are NUREG-0586.

Table 2: Contents in PSDAR (U.S. Reg. Guide 1.185)

Chapter	Contents
1	Introduction
2	Background
3	Description of Planned Act
4	Schedule of Planned Act
5	Estimate of Expected Cost
6	Environmental Impacts
7	References

2.2 France

France is a nuclear powerhouse with the world's highest dependence on nuclear power, with nuclear power accounting for two-thirds of total electricity production. Demand for decommissioning is also high due to intensifying dependence on nuclear power, and one-third of all nuclear power plants will have their design life completed by 2020, so they have been actively preparing for decommissioning nuclear power plants. France's dismantling of nuclear power plants are thoroughly influenced by the government. The fig 1

shows the implementation system of the French decommissioning project.

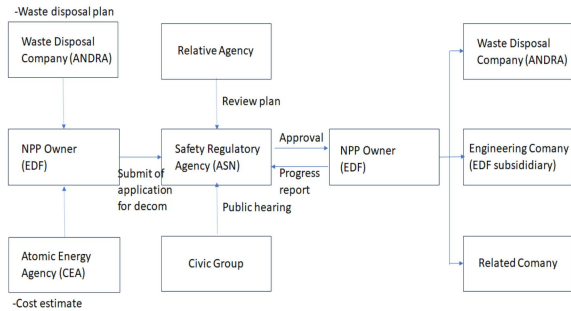


Fig. 1. France decommissioning Procedure

A characteristic of the French nuclear power plant decommissioning structure is that all stakeholders in the decommissioning project are state-owned enterprises and public institutions. The point is that a unified promotion system has been established. As key players in the decommissioning project, individual organizations are subject to the French governments under mediation, we jointly pursue decommissioning projects through an active collaboration structure and, when necessary, jointly operate specialized organizations.

2.3 Korea

In Korea, research on decommission began from the Kori Unit 1 continued to operate, and the law for the decommission safety regulatory system was amended in 2011. Accordingly, the items to be prepared in the decommission plans are specified in the Nuclear Safety and Security Commission (NSSC) Notice No.2021-10. The Final Decommissioning Plan (FDP) must be prepared as a document before the decommissioning is carried out, and the items to be presented are shown in Table 3..

Table 3: Korea Final Decommissioning Plan

Chapter	Contents
1	Introduction
2	Project Management
3	Site & Environmental State
4	Decommissioning Strategy
5	Decommissioning Feasibility Designs
6	Safety Assessment
7	Radiation Protection
8	Decommissioning Activity
9	Radioactive Waste Management
10	Environmental Assessment
11	Fire Protection

The recommendations related to decommissioning have been inspected by the IAEA, and are required to obtain permission for the above items from the regulatory authority. Prior to the FDP, there is an Initial Decommissioning Plan (IDP) in licensing documents related to decommissioning in the construction and operation stage of the facility, and both IDP and FDP operators must obtain approval from the regulatory body to initiate construction, operation, and decommissioning.

3. Conclusions

Depending on the structure and policy environment of each nuclear power industry, major countries can choose between state-led and private leading and compromise-type nuclear power plant decommissioning promotion system was established. All types commonly distinguish the roles of stakeholders at each stage of implementation, and the government establishes the monitoring role through regulatory agencies at each stage of dismantlement to define the framework for the promotion of the decommissioning project.

As an implication of the case analysis of major countries, first of all, the roles and responsibilities of actors should be divided at the structural level.

In the case of Korea, which is pursuing state-led projects, there is a need to clearly establish the division of roles between stakeholders consisting of state-run enterprises and public institutions to promote systematic projects.

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