Considerations for Nuclear Power Plant Decommissioing Project Management and Areas to be Managed

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Introduction

For licensees who have no experience in dismantling nuclear facilities, there will be some considerations in order to manage the decommissioning project efficiently. In Korea, we have experience in project management in the field of NPP (Nuclear Power Plant) construction and operation, and from this, there will be parts that will be applied to the decommissioning project. However, decommissioning project needs to reflect its unique characteristics different from the existing construction and operation, and the management area and project management based on these considerations will have to be made. Therefore, this study aims to present matters to be considered and management areas for the decommissioning project based on international guides and references.

Methods and Results

This section describes some considerations related to decommissioning project management presented in IAEA safety standards and some other related technical documentations.

▪ Differences between decommissioning and operational states [1]

Decommissioning	Operations
➢ Temporary design life of structures to assist dismantling	➢ Permanent design of structures for operation
➢ Safety management systems based on decommissioning tasks	➢ Safety management systems on operating nuclear facility
➢ Control based on as-built structures	➢ Control based on drawings
➢ Reduced safety risks but changing situation	➢ Significant safety risks but permanent and routine
➢ Management of changing situation during decommissioning	➢ Management of steady state during operation
➢ Reduced administrative infrastructure	➢ Steady state administration infrastructure
➢ Retraining staff for new activities	➢ Routine training and refresher training
➢ Visible end of employment-refocus their work objective	➢ Permanent employment with routine objectives
➢ New or developing regulations/regulatory requirements	➢ Established and developed regulations for operation

▪ Project Management Guidance

Project management guidance available worldwide that can be referred to will be IAEA publications. In particular, GSR Part 2 (Leadership and Management for Safety) provides guidelines applicable to decommissioning projects. Selected requirements from GSR Part 2 and their applicability to nuclear facilities project management is summarized in IAEA publication [2]. Among these requirements, matters to be considered in relation to decommissioning can be established, and in particular, it will be possible to review parts that need to be newly or supplemented as they are distinguished from other nuclear projects

Requirement	Applicable to project management
➢ Requirement 1: Achieving the fundamental safety objective	➢ Requires licensees to ensure the fundamental safety objective
➢ Requirement 2: Demonstration of leadership for safety by managers	➢ Requires managers to demonstrate leadership and commitment to safety
➢ Requirement 3: Responsibility of senior management for the management system	➢ Requires senior management to establish, sustain and continually improve a management system for safety
➢ Requirement 4: Goals, strategies, plans and objectives	➢ Requires nuclear power project goals to not compromise safety
➢ Requirement 5: Interaction with interested parties	➢ Requires that communication with interested parties
➢ Requirement 6: Integration of the management system	➢ Requires systems to address safety, health, security, quality, human and organizational factors
➢ Requirement 7: Application of the graded approach to the management system	➢ Graded approaches are to be documented that take into account safety significance and complexity
➢ Requirement 8: Documentation of the management system	➢ Requires the management system for a nuclear project be documented
➢ Requirement 9: Provision of resources	➢ Requires resources such as individuals, work environment, knowledge, information, suppliers, material and financial resources
➢ Requirement 10: Management of processes and activities	➢ Requires project processes and activities to be developed
➢ Requirement 11: Management of the supply chain	➢ Requires arrangements to be in place with vendors and contractors
➢ Requirement 12: Fostering a culture for safety	➢ Requires individuals in organization
➢ Requirement 13: Measurement, assessment and improvement of the management system	➢ Requires management systems to enhance safety performance
➢ Requirement 14: Measurement, assessment and improvement of leadership for safety and of safety culture	➢ Requires senior management to regularly commission assessments

▪ Areas to be Managed in Nuclear Projects

The areas of management that normally be considered and contents considered in an example case are summarized in following table.

Areas to be considered in nuclear project [2]	An example case in decommissioning [3]
▪ Integration ▪ Scope ▪ Time ▪ Cost ▪ Quality ▪ Human resources ▪ Communications ▪ Stakeholders and interested parties ▪ Risk ▪ Procurement ▪ Health, safety & environment ▪ Lessons learned and operating experience	▪ Dismantling planning ▪ Exposure dose evaluation ▪ Dismantling support ▪ Health and safety ▪ Decontamination management ▪ Human resource and procurement ▪ Surveillance & security ▪ Radwaste management ▪ Radwaste storage & final repository

▪ Conclusions

In this study, factors to be considered in nuclear projects and the contents of management areas were investigated. A case that actually experienced decommissioning was also reviewed, and the management areas were compared. We hope that these contents can be utilized as basic data on factors and areas to be managed while preparing for nuclear decommissioning project.

Reference

[1] IAEA, Organization and Management for Decommissioning of Large Nuclear Facilities, Technical Reports Series No. 399, VIENNA, 2001.
[2] IAEA, Management of Nuclear Power Plant Projects, No. NG-T-1.6, International Atomic Energy Agency, p.15, 2020.
[3] I. H. Chou, C. F. Fan, Development Integrated Decommissioning Information Management System (IDIMS) of Nuclear Facilities, 2012