Scope Management System for Decommissioning Project

Kook-Nam Park [a*], Seung-Kook Park [a], Jae-Hyun Ha [a], Young-San Choe [a], Jin-Ho Park [b]
[a]*Korea Atomic Energy Research Institute, 989-111 Daedeok-daero, Yuseong-gu, Daejeon, 34057, Korea*
[b]*NewDecom., 448 Expo-ro, Yuseong-gu, Daejeon, 34125, Korea*

[*]*Corresponding author: knpark@kaeri.re.kr*

1. Introduction

It is difficult to use a scope management system in a decommissioning project instead of the scope management of the construction phase of a nuclear facility. Domestic nuclear facilities decommissioning techniques and activities can be used as data because they are systematically organized into fields. The data were merged with the procedure of the research reactor construction project, and a work classification system was created. Furthermore, KAERI has prepared a decontamination and decommissioning project procedure, was proposed a consistent project document system with engineering companies, construction companies, and production companies. In addition, in this paper, we propose the establishment of a project management system, such as a scope management system for a decontamination and decommissioning project. Through this, we intend to expand the scope of our project not only in the dismantling business of domestic nuclear facilities, but also those overseas.

2. Scope Management in the Project Management

2.1 The Need for a Project System

Fig. 1. Project Management Process.

The main project management process is from integrated management to stakeholder management as shown in Figure 1 [1]. The decommissioning process of a nuclear power plant consists of a dismantling decision, strategy establishment, dismantling plan and evaluation of the facility characteristics, dismantling designing and licensing, preparation of dismantling construction, dismantling, cutting/removing, decontamination and waste disposal, demolition of the buildings, and site restoration [2]. In this work classification, the decommissioning processes are divided into 470 activities.

When large-scale projects are carried out, it is necessary to project management procedures according to the large volume and diversification of the generation of documents. Based on the systematic classification system of the generated documents, the project organization can utilize the information. It is necessary to a document management system that can prepare, review, modify and approve the design documents during project scope management.

2.2 Project Document Management & Document Number Classification

In carrying out the decommissioning project, document numbering is classified into several numbering systems according to the purpose, using codes and numbers. The Work Breakdown Structure consists of a Physical Breakdown Structure (PBS), Organizational Breakdown Structure (OBS), and Functional Breakdown Structure (FBS). The PBS divides the entire project category into three digits for ease of performing the tasks [3]. In the International Structure for Decommissioning Costing of Nuclear Installations (ISDC), the project consisted of 11 groups, reflecting the key activities and major steps of the project [4].

Table 1. PWBS of Decommissioning

0XX Set up project	1XX Planning	2XX Decommissioning Design	3XX Licensing & Bidding	4XX Preparation	5XX Activity (1) non controlled area	6XX Activity (2) Controlled area	7XX Demolition & Waste treatment	8XX Remediation	9XX Management
000 GENERAL	010 GENERAL	020 GENERAL	030 GENERAL	040 GENERAL	050 GENERAL	060 GENERAL	070 GENERAL	080 GENERAL	090 GENERAL
001 Strategy & decision making	011 Preparation the shut down	021 Status study	031 Regulations	041 Detail characterization	051 Decontamination	061 1st decontamination	071 Removal contamination	081 Final survey	091 Project
002 Regulations	012 Operation after C/D	022 Scenario	032 Requirements	042 1st cleaning	052 Cutting	062 Removal	072 Survey	082 Additional activity	092 Organization Man power
003 Decision the Top tier Requirements	013 S/F management	023 Technical Specification	033 Public acceptance(2)	043 Isolation	053 Detail cutting	063 Cutting	073 Demolition activity	083 Residual treatstory characterization	093 Schedule
004 Outline of cost estimation	014 Set up the strategy	024 Method Statement	034 Licensing	044 Modify the radiation Controlled area	054 Waste handling	064 Detail cutting	074 Waste treatment planning	084 Final report	094 Budget
005 Funding mechanism	015 Inventory characterization	025 Work procedure	035 Bidding	045 System Drain & dry	055 Waste treatment	065 Remote cutting	075 Secondary decontamination	085 Free Release	095 Q/A
006 Stakeholders	016 Technology	026 Safety control	036 Supply-chain	046 Utilities	056 Self disposal	066 2nd decontamination	076 Waste characterization		096 Safety & Equipment
007 Public acceptance(1)	017 Waste disposal planning	027 Waste treatment	037 Project management planning	047 Ware house	057	067 Waste Handling	077 Self disposal		097 Safety & Risk
008 Local government influence	018 Safety	028 Environmental impact assessment	038 Installation planning the equipment	048 Security	058	068 Waste treatment	078 Transportation	088	098 Purchasing
009 Site condition	019 Preliminary decommissioning planning	029 Final Decommissioning Planning	039	049 Training & education	059	069 Temporary storage	079 Final disposal	089	099 Public acceptance

In this paper, however, we divide the project into 10 parts. Among them, four dismantling groups were allocated many areas of decommissioning work. As shown in Table 1, the 10 groups divided into 100 sub-activities were subdivided into 1000 activities. OBS and FBS are also prepared in the project procedure.

3. Scope Management System Configuration and Implementation

The system will be developed to computerize the project scope management suitable for a decommissioning project. A document management system and organization and member operating system are established to analyze the project execution and information system. KAERI integrated the document management system for each project and called it the KAERI Advanced Nuclear Safety Information Management system (ANSIM). [5]

Figure 2 Supply Chain of the Decommissioning Project

The supply chain of the decommissioning project is shown in Figure 2. The KAERI also conducts decommissioning concept design, system design, licensing, etc., and the engineering company performs the basic and detailed design, and the construction company performs the actual dismantling activities. The supply chain will be provided technical support for the Engineering, Procurement, and Construction (EPC).

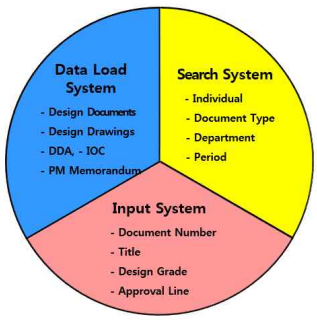

Fig. 3. Scope Management System.

The scope management system as shown in Figure 3, implements the input system, the data load system, and the search system. In the input system, enter the document number, title, design grade, approval line, etc. of the design document online. The data loading system uploads the source files and PDF files of the prepared design documents, design drawings, design calculations, and so on. The input system and the data loading system are provided in a document management folder and show the document status before approval during document management. The search system searches and classifies the approved design documents, design drawings, minutes, DDAs, IOCs and PM memos, and provides the data based on the individual, document, department, and period [6].

4. Conclusions

The scope management system of the decommissioning project is to adopt the KAERI ANSIM system considering the domestic project and future export business. The document classification system is classified according to the Project Procedure Manual, Quality Assurance Manual and Quality Assurance Procedure. The scope management system consisted of a project management folder, document management folder, document storage folder, external document management folder, and organization management folder.

Through such a scope management system, information assets with long experience and knowledge were efficiently managed in connection with the management strategy. This is expected to contribute not only to a revitalization of research but also to the construction of other large nuclear facilities, the dismantling of decontamination, and their export.

REFERENCES

[1] Project Management Institute (PMI), "A Guide to the Project Management Body of Knowledge", Fifth Edition, pp 60-140, 2013.
[2] Jin Ho Park, etc., "Evaluation of Decommissioning Related Technologies Obtained by Nuclear Expert Companies and Their applicability", pp 7-75, 2014.
[3] Ki Ae Jeong, etc., "A Study on the Classification System of National Construction Project based on WBS", Information Management Research, 41(1), pp 13-15, KISTI, 2010.
[4] Nuclear Energy Agency, Radioactive Waste Management, "International Structure for Decommissioning Costing of Nuclear Installations" pp 7-10, 2012.
[5] Kook-Nam Park, Young-Cheol Ko, etc., "Establishment of Document Control System for the JRTR Project" *Journal of Society of Korea Industrial and Systems Engineering*, Vol. 34, No 4, pp 49-56, 2011.
[6] Kook-Nam Park etc., "Document Management for Jordan Research and Training Reactor Project by ANSIM", *Journal of Society of Korea Industrial and Systems Engineering*, Vol. 39, No 2, pp 113-118, 2016.