Transactions of the Korean Nuclear Society Spring Meeting
Jeju, Korea, May 10-11, 2007

A Decommissioning Information Management System

S. K. Park, S. B. Hong, U. S. Chung and J.H. Park
150 Duckjin-dong Yuseong Daejeon, Korea
KAERI, D&D Technology Development Division, jhpark1@kaeri.re.kr

1. Introduction

In 1996, it was determined that research reactors, the KRR-1 and the KRR-2, would be shut down and dismantled. A project for the decommissioning of these reactors was launched in January 1997 with the goal of a completion by 2008. The total budget of the project was 19.4 million US dollars, including the cost for the waste disposal and for the technology development. The work scopes during the decommissioning project were the dismantling of all the facilities and the removal of all the radioactive materials from the reactor site. After the removal of the entire radioactivity, the site and buildings will be released for an unconditional use.

A separate project for the decommissioning of the uranium conversion plant was initiated in 2001. The plant was constructed for the development of the fuel manufacturing technologies and the localization of nuclear fuels in Korea. It was shut downed in 1993 and finally it was concluded in 2000 that the plant would be decommissioned. The project will be completed by 2008 and the total budget was 9.2 million US dollars. During this project, all vessels and equipment will be dismantled and the building surface will be decontaminated to be utilized as general laboratories.

Various information systems have been developed and used at decommissioning sites in many countries[1~4] Their purposes were also various; from planning a project to record keeping for a post management. At the KAERI, an information management system, named DECOMMIS, was developed for an effective project management and the function of the system was extended to record keeping for the preparation of future projects, data analysis for the R&D of decommissioning technologies and data sorting for reports on the wastes at the sites to a national radioactive waste DB, WACID. In this paper, the system of DECOMMIS will be introduced.

2. Information Management System

2.1 System structure

The above mentioned information management system is composed of a decommissioning data input system (DDIS) and a decommissioning data processing and output system (DDPS). All the data from the dismantling works is inputted at the sites through the DDIS and the data is processed in a simplified and formatted manner to provide useful information to the users of the decommissioning data (see figure1). All the hardware are PC grade computers with Pentium CPU, and the software ORACLE, operated on WINDOW, was selected because it was widely used at KAERI for their internal communications. The system was designed to operate on the internal LAN of the KAERI and to input the data at the PC of the section head, but because the decommissioning site of the KRR-1 and KRR-2 is located in Seoul, data files were made and transferred to the system manager by e-mail to add the data to the main DB server.

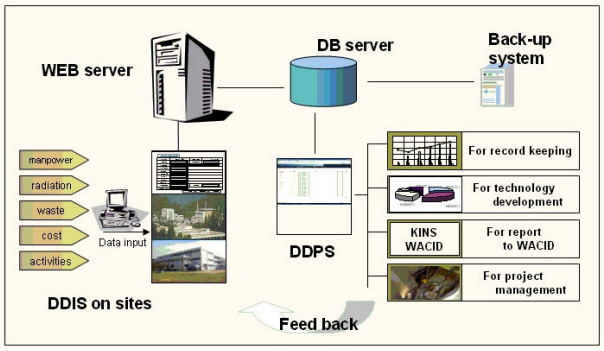

Fig.1. The Structure of DECOMMIS System

2.2 Data Input system

One of the most important requirements in the input system is to input the correct data. Incorrect data would be caused from errors in typing and differences between persons who inputted the data. A maximized utilization of the codes in a tabulated input space and a minimization of the text inputted were selected to meet the requirements.

Another important issue was the inputting work itself. An input system after a summary by site managers required extra man-power and resulted in a cost increase and a time lag between the works and the evaluation of the data. To avoid these weak points an input system, directly by the individual workers, could be a solution, but the capability of the workers for the computer was not so high. All the decommissioning activities were classified into several work areas, by considering the work characteristics at sites and the existing organization of the KAERI. The data from each area, which corresponds to a section of the organization, were inputted by the section head and all the data on the decommissioning activities could be gathered immediately after the decommissioning activities without any duplication or omission.

The kinds and the classification of the data to be

inputted are shown in table 1. The data was divided according to the periodicity of the data generation; daily and not-periodic generation. The packaging of waste into drums and containers was carried out two to five times in a month and the data on a waste package was classified into not-periodic generation data because the data on the waste drums or containers was inputted after the packaging. For the record keeping, the photos of the works and facilities, and all the technical documents such as the procedures and manuals were also inputted into DECOMMIS.

Table 2. Kinds of data inputted to DECOMMIS

Work areas	**Daily generation data**	**Not-periodic generation data**
Work details (D&D)	Name of project Summary and remarks Detail description of all activities	Photos of dismantling works, facilities, wastes and so on.
Project	Man power consumption	Cost output
Radiation protection	Personal exposure dose Monitoring of working condition Surveillances of space activity	Surface contamination Work permission
Waste management	Solid waste Liquid waste Ventilation system operation	Definition of drum/container Characteristics of waste Decontamination work record
QC	QC activities	
Technical support	Technical supporting activities	Technical documents
Common	Equipment management Internal/external training	

2.3 Data Out system

The data, collected through the DDIS system, is processed through the DDPS to show the adequate variables for the management. It will be very important to select these variables and define their meanings because they would provide the basic information for an exact understanding of the progress of the projects and for a determination of the points to change the project steps. These variables are divided into several groups according to their purpose; man power consumption, waste management, radiation protection, budget and cost, projects and others. Daily reports, an example of output variable, were written for the approval from the site managers of the main contractor. All the data for the daily reports were already inputted to DECOMMIS by section heads and the site manager of the main contractor can read a daily report and print it as hard copies.

For the data processing, connections between data fields were necessary. For example, the packaging of radioactive waste into 4 m^3 containers would be continued for a long time and in order to evaluate man power consumption for packing the wastes, all the man hours of each working day should be summed. In this case a connection between a waste data field and a man power data field was necessary to sort the correct data from both fields. For this, a work serial number was defined for every specific work and all the data was inputted under the selected serial number.

There are many formats to show the results of a data processing. A table format of intermediate data was selected for the data output because data in tables would be more flexible and widely applicable for an evaluation of the data than the figure and picture forms.

3. Conclusion

A decommissioning data information system was developed for a project management, record keeping for next projects, and an analysis of the data for the R&D of decommissioning technologies. In 2006, more than 500,000 data records were inputted. The system was already utilized for the information generation for the WACID. And it is expected to utilize this data for the management of a project.

REFERENCES

[1] M Yokota and S. Yanagihara, Decommissioning Project Management: The Japan Power Demonstration Reactor Decommissioning Program, IAEA TECDOC-614, p.119-134, 1993.
[2] Val Drake, UKAEA's Decommissioning and Liabilities Management Tools, LTMRNF August, 2002.
[3] J. M Defaud, REXDIN Data Base for recordkeeping in decommissioning. Proc. of 3rd Technical Information Exchange Meeting between KAERI and CEA, held in Marcoule, Apr. 19-23, 2004.
[4] EWN-The Greifswald Nuclear Power Plant Site; www.eu-decom.be/europe/pilot/ewn/