Development of the Site Environmental Data Management System in SITES
: Improvement method of Input & Output Function

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1. Introduction

Site Information and Total Environmental database management System (SITES) has been developed for the effective management of the environmental site information of the radioactive waste management site. During the operation of the disposal site and after its closure, continuous monitoring for its safety is required for the institutional periods (300 years) at regulator's request. SITES is an integrated program for overall data analysis, environmental monitoring, and safety analysis that are produced from the site investigation and environmental assessment of the relevant nuclear facility [1, 3]. SITES is composed of three sub-systems such as Site Environment Characterization database for Unified and Reliable Evaluation system (SECURE), Safety Assessment INTegration system (SAINT) and Site Useful Data Analysis and ALarm system (SUDAL). In this paper, the improved methods of Input & Output function in SECURE are introduced. [3]

2. The necessity of improved input and output function in SECURE

Among sub-systems, SECURE is for data management of the site characterizations and environmental reports of a radwaste repository. The data are classified three categories, which are site characteristic information (topography/geology, meteorology, hydrology, seismic/geophysics, geotechnical engineering, geochemistry), general environmental information (natural environment, life/human environment, social economic environment), and radioactive environmental information (radiological environment, engineered barrier system, radwaste characterization, source term). (as shown in Figure 1)
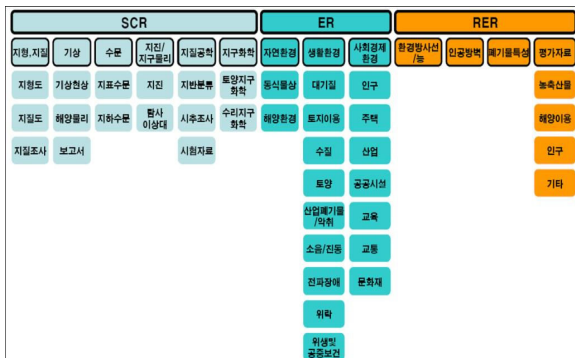

Fig.1 Systematic Diagram of SECURE

The information is applied to SQL server 2000 using data modeling method. Besides, the improvements of input and output function are performed considering user's convenience because the core functions of SECURE are rapidness and accuracy of data input and effectiveness of data output.

3. The improvements in input and output function in SECURE

3.1 Input function upgrade

SECURE is a C/S application that is developed by dot net platform basis, and programming language is C#. The existing SECURE used the method of GUI (graphic user interface) for user's direct inputting. However this method is inconvenient for users when they input a number of data. Therefore upgraded input method that is the method of EXCEL file loading is added.
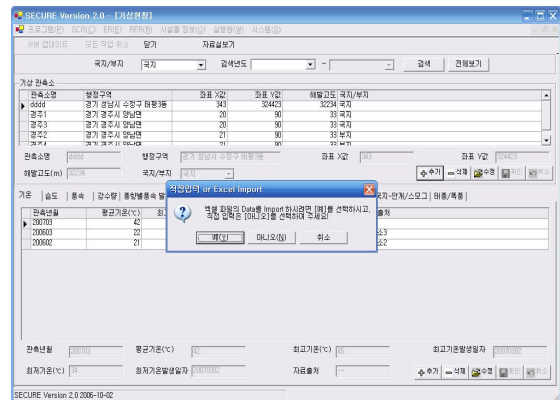

Fig. 2 Figure of EXCEL Input File loading

As shown in Fig.2, when the data are added, users can select input method between GUI and EXCEL input method. If the users select the EXCEL input method, each file that is made by given format can be loaded appropriate data table in SECURE.

3.2 Output function upgrade

SECURE DB can store various surveyed data as shown Fig. 1. For the convenient data control in each category, various types of physical table are maintained in their relationships.

The existing SECURE output method is to present output function that is EXCEL and printer loading function for only one data table in each category. However this function limits practical data use because it can not express the relationships among data tables. To solve this problem, "integrated report" function that

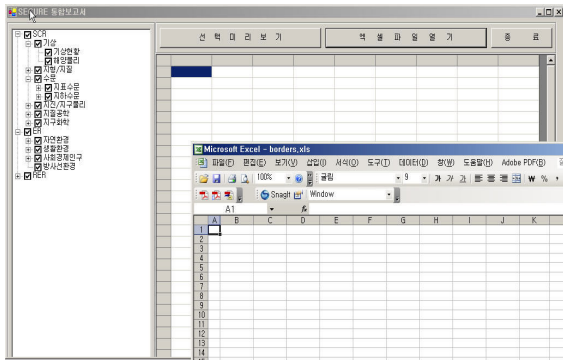makes unified data management possible is additionally developed.

Fig. 3 Figure of integrated report

As shown in Fig.3, user can selectively collect the relative output data through the left side of the picture. Also, collected data can be represented on the right side previously. The identified data can be stored with EXCEL file type and then the stored data can be processed by users for the various purposes.

3. Conclusion

The EXCEL file loading function will save working time and man power when data are inputted. Besides, upgraded data output function makes various data format be transformed.

The upgrade of input and output function on SECURE is performed for user's convenience. This improved function will enhance the usefulness and effectiveness of SECURE.

REFERENCES

[1] S. M. Park, C. G. Rhee, J. B. Park, H. J. Lee, and C. L. Kim, "Database Modeling of the Site and Environmental Information for a Radioactive Waste Repository", *Journal of the Korean Nuclear Society*, **Vol. 36**, *No. 3*, pp. 263-275, (June 2004).

[2] Do Young Ko, Se-Moon Park and Chang-Lak Kim, "A Study on the Design of SEMS Module for SITES Development", *J. of the Korean Radioactive Waste Society*, **Vol.2(4)**, pp. 263-269(Dec. 2004).

[3] Se-Moon Park, Bong Yo Yoon, Dae Jung Kim, and Chang-Lak Kim, "A Study on Development of Monitoring & Assessment Module for SITES", *An International Journal of the Korean Nuclear Society*, **Vol. 38**, *No. 4.* (will be published in Aug. 2006).

[4] Waterloo Hydrogeologic Inc. "Visual MODFLOW User's Manual", p.311, 2000.

[5] L. J. Hartley, C. P. Jackson and S. P. Watson, "NAMMU (Release 6.3) User Guide", AEA-ES-0138, AEA Technology, Harwell UK, 1996

[6] Korea Hydro & Nuclear Power Co., Ltd., "User's Manual for SAGE and QUARK", 2004-Env-B23 (in Korean), Radwaste Disposal Research Group, Nuclear Environment Technology Institute, Aug. 2004.

[7] Jin Beak Park, Joo Wan Park, Chang Lak Kim, Daisuke Kawasaki and Joonhong Ahn, "Safety Assessment Codes for the Near-Surface Disposal of Low and Intermediate-Level Radioactive Waste with the Compartment Model: SAGE and VR-KHNP," Waste Management '05, Feb. 27-Mar. 3, Tucson, Arizona /2005.

[8] Quintessa Limited, "AMBER Version 4.4 Reference Guide, Version 1.01e," Henley-on-Thames, UK, 2003.