Establishment of Database Program for In-service Test Management in Nuclear Power Plants

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1. Introduction

In-service Test (IST) of the nuclear power plant is very important to maintain the safety of the plants. The safety features of nuclear power plant are based on the operation of pumps and valves. Therefore, it is an essential basis for the safety of nuclear power plant to keep operational readiness of pumps and valves. Because of the importance of the IST, most of nuclear power plants should designate the IST department and personnel.

Because the nuclear power plants of Korea have several types and the designs and operations are different from each other, the methods and experiences are various for the management of the IST program. However, there are no medium to communicate with each other and exchange the tips and information about IST program and education and discussion would be required to apply a consistent code. The nature of the IST Standardization Management Data Base (SMDB) is to exchange opinions and documents about IST program and all materials could be uploaded to. IST research project and enter the result of his analysis is the ability to provide the IST Results Analysis Data Base(RADB)

2. Design and Build up of Database

2.1. Common issues

Both programs were developed, and was verified under the development environment of;

- Web Server : Apache 2.2.5 Above
- Language : JSP, Java Script
- DBMS : Oracle 9g+

Fig. 1. Index page of IST Database program

And Only authenticated users can approach this system. These program users are consistent since it uses the same database. Uses the same authentication so that the page is shown in Figure 1.

2.2 SMDB

SMDB is completed and used by IST manager, among which is responsible through information sharing and document archiving capabilities are. It is similar to online community. On board someone tells another about knowhow for IST testing and can get answers.

Fig. 2 Search page of IST-SMDB

It consists of five menus. "Document" is a function to manage of technical documents or general documents. "Notice" is a function to notice technical announcements or general announcements. "Information Sharing" is a function to share the test information, general information, and can write individual articles. "Member" is a function to view the latest list that is manager of each plant. "Administrator" is a function to manage user fot IST Program.

SMDB is a simple program. So user can learn it's way easily. As mentioned above, it's like a online community. If you have joined any café, you can understand it's usage faster.

2.3 RADB

RADB for the IST test results to provide input and analysis. So far, the records were kept in the paper. Because the information searching was difficult, it can't use well the database. This program provides an easy input of data and analyzing trends which is ensured the safety of pumps and valves. But RADB is under development. Major modules were completed except web-design.
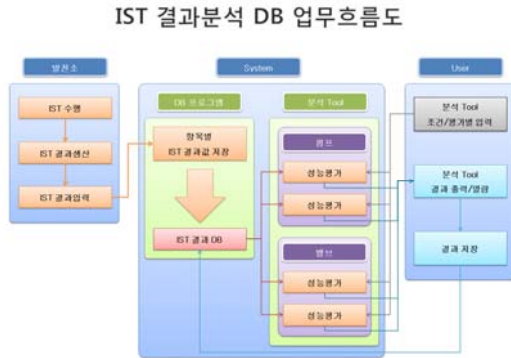

Fig. 3 Flowchart of IST-RADB

Figure 3 can be explained as follows. Result Analysis is started by plant's testing. Each manager records result values in paper, and enter it to IST-RADB. All data are saved to RADB Database System. And if someone wants to view the trending analysis, he or she accesses this.

RADB is consisted by four modules. The first is a making procedure. The second is a making format. The third is scheduling module by using calendar. And the last is inserting result values.

IST in plant is procedure-based work. So all result are inserted by classification for procedure. Some parameters as title, number, etc., are needed to establish it. After making procedure, you must to generate formats. Because of writing form's difference, each user can set input format. And you have to set default values. Default values are repeated. So it makes you convenient to entering data. Next, you must make testing schedules. Testing date is automatically created by period of testing. But confirm by manager is activate it. If you completed this process, Finally you can input result on the approved date. You must fill all blank input boxes and select pull-down boxes. And save it. This is the way to RADB Program.

3. Conclusion

IST-SMDB and IST-RADB are developed for user's convenience. So I had taken care of user-friendly interface. Of course, these programs are not yet perfect. But through several modifications both programs will be more powerful, more needed

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