

## A Proposal of the NPP Engineering Workstation(NEWS)

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### 1. Introduction

Various engineering technologies which satisfy plant safety security, performance management and licensing requirements were effectively managed combining united information communication, application, current status etc. It is time for complex technology management to produce maximum performance under limited circumstance of management.

In order to improve performance and reliability of nuclear power plant, various technical licensing requirements, plant operation information are applied.

For developing IT(Information Technology) based engineering management system is one of the world leading technical area and benefit from its application is considered something, deliberate strategy has to be taken through investigating circumstances of management and current engineering processes. This study provides information strategic planning to develop the engineering management system and proposed a plan for the decision of system development.

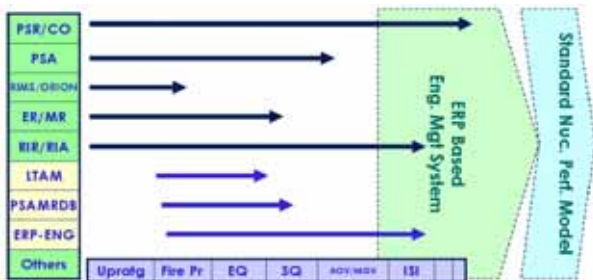


Fig. 1 Management of Nuclear Power Engineering

### 2. AS-IS Evaluation

Information strategic planning is established for a comprehensive application and management of IT based engineering processes in harmony with current information environments. Domestic and international practices of engineering applications are reviewed to set the scope of the NPP engineering system. Information strategic planning had been properly performed to meet the need of engineering IT management and provided results, business architecture, data architecture and application architecture are developed.

23 engineering tasks are derived after a thorough review and analysis of engineering technologies from domestic and international operating NPPs and also, engineering processes and related data are analyzed and IT status of the engineering are reviewed.

Table 1 Status of IT Application

| item | Technical work         | ERP | EWS | K-TOP | PRINS | RIMS | MENTOS | PIP | PITEP | KONIS | Remark |
|------|------------------------|-----|-----|-------|-------|------|--------|-----|-------|-------|--------|
| 1    | ISI                    |     |     |       |       |      |        |     |       |       |        |
| 2    | IST                    |     |     |       |       |      |        |     |       |       |        |
| 3    | Surveillance Test      |     |     |       |       |      |        |     |       |       |        |
| 4    | ILRT                   |     |     |       |       |      |        |     |       |       |        |
| 5    | Pipe Reduction Program |     |     |       |       |      |        |     |       |       |        |
| 6    | S/G Management         |     |     |       |       |      |        |     |       |       |        |
| 7    | .....                  |     |     |       |       |      |        |     |       |       |        |

### 3. TO-BE Model

Engineering technologies are categorized into document based engineering tasks and professional engineering tasks. Engineering technologies are categorized into 5 technology areas as integrity, reliability, safety assessment, technology management and others.

Reviewing how to incorporate Plant Management system of ERP (enterprise resources planning) with the engineering tasks to be computerized, NPP Engineering Workstation (NEWS) on the legacy of ERP was proposed, expanded from current engineering workstation in field, to interconnect plant design, operation, maintenance, management data.

Data interconnecting way between ERP and NEWS was studied to develop NEWS system. Task modules to each engineering technology was developed after analyzing relationship of engineering processes and data then engineering IT module tree was worked for the future use of program development. In order to make legacy type of NEWS with the engineering IT modules, roles between ERP and NEWS is defined and engineering data process diagram was developed for the future utilization of system design.

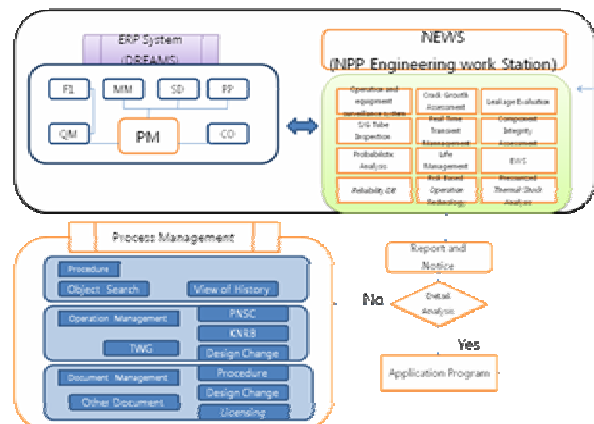


Fig 2. NPP Engineering Workstation

In order to develop NEWS, evaluate engineering data and basic information module, classify five fields, namely equipment integrity, equipment reliability, safety analysis, technology management, and other technology. By example, equipment integrity as follows,

Table 2. Elements of Equipment Integrity

| Field               | Engineering work       | Information Module                             |
|---------------------|------------------------|--|
| Equipment Integrity | ISI                    | ISI Inspection plan                            |
|                     |                        | ISI Implementation and Assessment              |
|                     |                        | Report and Management                          |
|                     | IST                    | Test preparation                               |
|                     |                        | Test Implementation                            |
|                     |                        | Action after Test                              |
|                     | Surveillance Test      | Planning and Preparation                       |
|                     |                        | Implementation and Judgment                    |
|                     |                        | Dissatisfaction handling And Report Drawing Up |
|                     | ILRT                   | Test preparation                               |
|                     |                        | Test Implementation                            |
|                     |                        | Test closure                                   |
|                     | Pipe Reduction program | Evaluation and Inspect                         |
|                     |                        | Implementation                                 |
|                     |                        | Assessment and Documentation                   |
|                     | S/G management         | Preparation Work                               |
|                     |                        | Inspection and Assessment                      |
|                     |                        | Documentation                                  |

Fig. 3 Assessment Process of Equipment Integrity

**5. Conclusions**

A series of process as design and development, test, application and revision are among the anticipated follow-up measures in regard to NEWS system development.

Additional review of the relations between accounting, personnel administration and current engineering in the ERP system and other supplemental engineering related information tasks have to be thoroughly reviewed and assessed to make the best engineering information system.

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Fig 3. explain how to handle the equipment integrity in NEWS and module inter - relation, data flow design

