Tracking System for the Implementation of Nuclear Regulation: R-TRACER

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1. Introduction

As the number of operating nuclear power plants (NPPs) increased up to 20 and their aging steadily progressed, a comprehensive and systematic system for the nuclear safety supervision would be needed as a national level. Also, in order to make an excellent product by integrating national regulatory capabilities, and to increase the public confidence on in-situ regulations, our company, KINS have launched a top brand project since early 2007, which called the "Tracking System for the Implementation of Nuclear Regulation: R-TRACER." The R-TRACER has an objective to comprehensively coordinate, manage, and confirm regarding nuclear safety regulation.

2. Overview of the R-TRACER

The meaning of the R-TRACER encompasses the regulatory tracer which gives a goal to trace and regulate the radiological threatening attributes so that we can modulate and partly eliminate the nuclear uneasiness in the public.

The main contents of the R-TRACER are; 1) managing the issues from safety review and inspection, utility's follow-up actions from the findings and recommendations of various events (i.e. accidents and incidents), and implementation of the operating experience feedback (OEF) in a real-time basis, 2) efficiently coordinating related affairs and exchanging information between major organizations concerned (i.e., MEST, KINS and KHNP), 3) promoting nuclear safety by interconnecting the information of the events and that of safety review and regulatory inspection.

To get a full achievement for the objective of the project, we want to develop an interactive web-based operating system, as shown in Fig. 1, which can provide case-by-case implementation status on the nuclear regulatory subjects, and make a direct interaction between organizations. With the desire developing such system; at first, the OEF data base has been constructed as a fundamental for the operation of the R-TRACER system; second, the IT-based infra such as internal data access system (e.g. MIDAS) has been provided for the web-based tracking system and its effective utilization; third, the identity of the R-TRACER brand has been developed. Detailed contents are as follows [1]:

a) Basic technology for the operation of tracking system
- Development of Korean-specific system through the survey of the regulatory tracking system of the IAEA and other foreign countries
- Construction of prototype data base focusing on retrieval conveniences for events of both domestic NPPs and foreign NPPs, where specific information are used as specified in Table 1
- Methodology for identifying human related root causes and activities in the events

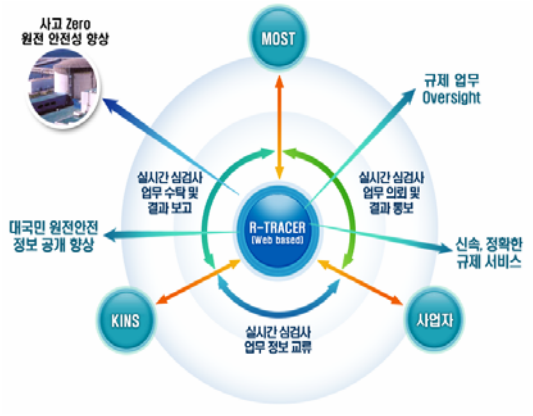

Fig. 1. The View of Interactive Web-based R-TRACER

b) Development of the web-based tracking system for the implementation of nuclear safety regulation
- Realization of the tracking system for follow-up actions of events occurring at NPPs
- Construction of the hardware and IT-based infra for the tracking system which capable of dealing with matters on the web-site and utilizing the results of regulatory safety review and inspections

c) P.R. and development of the BI (brand identity) of the R-TRACER
- Development of BI suitable for the purpose, the vision and the mission of the R-TRACER through benchmarking of similar brands
- Promotion of the brand value of the R-TRACER and P.R. the brand to the public and technical staffs in nuclear field

Table 1: Major Information used for the prototype data base

Info. Categories	Contents
Events Info. in Reporting Rule [2]	• Event Info. • Info. on Corrective Actions
Events Info. out of Reporting Rule	• Event Info. • Info. on LCO-related situations • Info. on Safety Barrier-related SCC's unavailability • Info. on K-HPES

Info. on Review & Inspection	• All kinds of Info. on Regulatory Inspection • Info. on Regulatory Review
Research Info.	• Domestic Research Results • Overseas Research Results
Info. on Events of USA	• LER(Licensee Event Report) • ENR(Event Notification Report) • PNO(Pre. Notification Report) • Part 21 Reports
Info. from Analysis and Assessment by USA	• BL(Bulletin) • GL(Generic Letter) • IN(Information Notice) • SECY papers • NUREGs • ADAMS Info.
Info. from IAEA	• INES & IRS DB • Topical Report, etc.
Info. from OECD/NEA	• Event Info. registered in the OECD/NEA projects • Special DB (OPDE, ICDE, FIRE, COMPSIS) • Info. from the Working Groups • Topical Study/Workshop, etc.
Info. from Others	• SOER from INPO, etc.

3. The Progress of the R-TRACER

During the first R&D year, the web-based tracking system for the follow-up actions of events and basic data infra were constructed as shown in Fig. 2. The main view of the system consists of 6 headings for the implementation, such as reporting of events (5 cases), investigation, follow-up actions, implementation status of follow-up actions, review on the implementation of follow-up actions, and quarterly reporting. In addition, for the effective construction and operation of the R-TRACER, supporting tools were taken; 1) information retrieval system by constructing event data base of both domestic plants and overseas plants, 2) investigation procedure for the root causes of human related events (i.e., HuRAM [3]).

As a top brand project of KINS, the brand identity of the R-TRACER was developed. The image of KINS and R-TRACER brand will be improved through its development and P.R.

In the future, using the R-TRACER it is expected that; 1) nuclear safety issues can be controlled thoroughly under IT-based supporting system, 2) the government (MEST) and the licensee (KHNP), as well as KINS, can directly deal with the official matters without the official documents promptly, 3) the oversight on the nuclear regulatory information can be implemented and public release of nuclear safety information would be expanded.

It may be possible to get a world top-class nuclear safety tracking system with efficiency, effectiveness and high quality by introducing the R-TRACER. It is also expected that the public confidence on the nuclear society would be promoted dramatically and the level of our country would be promoted by introducing the system.

In the second R&D year (2008), the fundamental technology for supporting OEF will be developed. Since we have a desire to make a tracking system for the safety issues of review and inspection in the third R&D year (2009), full scope system on the tracking for the implementation of nuclear regulation will be finally come out in 2010.

Fig. 2. The main view of the R-TRACER (demo version)

4. Conclusions

The R-TRACER has been developed as a top brand project since 2007 with 3-years′ R&D in KINS. We expect that the R-TRACER can play an important role for the enhancement of national nuclear safety regulation. This expectation is primarily based on the following conclusions:

1) It can give practical tracking process for follow-up actions of domestic events and safety issues,
2) Ultimately, it can assist to make an effective national framework regarding OEF.

REFERENCES

[1] C. J. Lee, et al., Development of Tracking System for the Implementation of Nuclear Regulation: R-TRACER, KINS/ER-134, Vol.1, Dec. 2007.
[2] No.2005-07, Regulation on Reporting and Public Announcement of Accidents and Incidents for Nuclear Power Utilization Facilities, Notice of the Minister of Science and Technology, May 2005.
[3] J. K. Park, et al., A Study on the Development of HuRAM (Human related event Root cause Analysis Method), KINS/HR-872, Feb. 2008.