

## Statistic Analysis of Operating Experience Using DIOS

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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, KINS have launched a top brand project since early 2007, which called the "Tracking System for the Implementation of Nuclear Regulation: R-TRACER[1]" The one of main contents of R-TRACER is promoting nuclear safety by interconnecting the information of the events and that of safety review and regulatory inspection.

### 2. Development of the DIOS

As the one of R-TRACER modules, DIOS means the Dissemination of Information for OEF System. DIOS provides a platform for the collection, classification, and effective dissemination of operating experience information with regulatory inspectors.

#### 2.1 Classification code of DIOS

The domestic and foreign OE(Operating Experience) information must be classified to understand the essential characteristic of the events. IAEA and OECD/NEA used IRS(Incident Reporting System) watched code list to provide characteristic of the events/issues, the following categories should be considered[2]:

1. Reporting categories
2. Plant status prior to the event
3. Failed/affected systems
4. Failed/affected components
5. Cause of the event
6. Effects on operation
7. Characteristics of the incident
8. Nature of failure or error
9. Nature of recovery action

Also, DIOS are based on IRS watched code list to communicate the international regulatory bodies

#### 2.2 The construction of DIOS database

Links between national and international systems for operational experience feedback broaden the sources of information on safety significant events, on the related lessons learned, and on the corrective actions taken at the plant or national level[3].

Using DIOS system, KINS will have constructed prototype database focusing on retrieval conveniences for events of both domestic NPPs and foreign NPPs, where specific information are used as specified in Table 1.

Table 1. Major Information used for the DIOS DB[4]

Info. Categories	Contents
Events Info. In Reporting Rule	Events 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 kind 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 Reports, 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
Info. from Others	SOER from INPO, etc

#### 2.3 Statistic analysis of foreign events

In this paper, 350 LERs are statistically analyzed since 2003 and figure 1 shows the statistic results of LER 350 events. According to the results, the number of event on the field of I & C and electrical systems are more than the others and essential aux. system is followed. This result is similar to our country. In failed or affected components, mechanical components are occupied 37% and the main reason is related with valves and level transmitter and so on. Also direct cause

due to event in nuclear plants is human error and mechanical cause. The main form of human error is slip or lapse.

[3] IAEA, A System for the Feedback of Experience from Events in Nuclear Installations. IAEA Safety Guide, 2006.

[4] B. H. Koo, S. J. Kim, M. C. Kim, K. Y. Lee, I. S. Lee, J. T. Kim and D. H. Lee, Development of Tracking System for the Implementation of Nuclear Regulation, KINS, 2008.

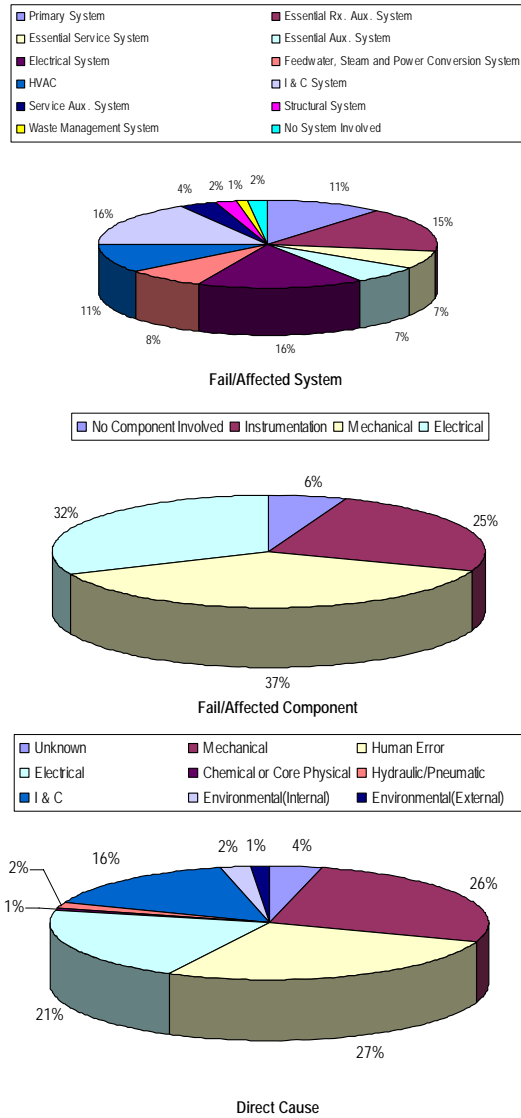


Figure 1. Statistic Results According to Watched Code

### 3. Conclusions

KINS have performed to collect the OEF information steadily and also to classify the national and foreign OEF information according to international code. In the results of analyzing 350 LERs, statistic results is similar to our country and if a number of OEF information is analysis, we will get the various lessons learned.

### REFERENCES

[1] C. J. Lee, S. J. Kim, M. C. Kim and D. H. Lee, Tracking System for the Implementation of Nuclear Regulation: R-TRACER, Transactions of the KNS Meeting, 2008.  
[2] IAEA/NEA, IAEA/NEA Incident Reporting System Guidelines(Draft), Joint IAEA/NEA IRS, 2008.