

The Preliminary Review for the Cross-Cutting Issues in the US Nuclear Regulatory Inspection Framework

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1. Introduction

The research for the development of risk-informed and performance-based regulatory inspection is ongoing in KINS. In the USNRC, the cross-cutting issue is one of the main components the risk-informed and performance-based regulatory inspection process as shown in figure 1, which is named as ROP (Reactor Oversight Process). The following three cross-cutting areas implicitly affect all of the safety cornerstones in ROP.

- Human Performance
- Safety Conscious Work Environment
- Problem Identification and Resolution

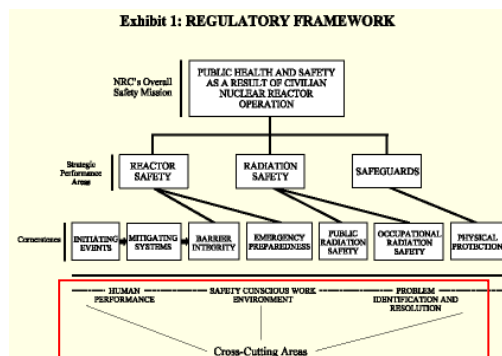


Figure 1. US Regulatory Framework and Cross-Cutting Area

In this study, the preliminary review for the inspection practices of cross-cutting issues in the US and Korean safety regulatory system were performed. The elements of the cross-cutting issues were recently modified to emphasize the importance of safety culture, and the graded approach was applied for the inspection of cross-cutting issues in USNRC. The graded approach for the inspection of cross-cutting issues will be also needed to Korean safety regulatory system in the future.

2. The review of the cross-cutting issues in US Regulatory Inspection Framework

The Nuclear Regulatory Commission (NRC) recognized the importance of nuclear plant operators establishing and maintaining a strong safety culture. In a January 24, 1989 policy statement (Federal Register),

the Commission described its expectations for such a safety culture and how it supports the agency's mission to protect public health and safety.

The Davis-Besse event reemphasized the importance of safety culture and demonstrated that significant problems can occur as a direct result of safety culture weaknesses that aren't recognized and addressed early. Following an event at a nuclear power plant where the licensee determined that the causes that led to the event were indicative of a weak safety culture, NRC lessons learned pointed toward the need for additional NRC efforts to evaluate a licensee's safety culture. As part of this effort, the NRC reviewed the agency's Reactor Oversight Process (ROP) to determine how it can be enhanced to more fully address safety culture and engaged stakeholders through Public. The Commission issued SECY-06-0122, dated May 24, 2006 [1], which describes the safety culture initiative activities and the outcomes of those activities, including the changes made to the ROP to more fully address safety culture. A Regulatory Issue Summary 2006-13, "Information on the Changes Made to the Reactor Oversight Process to More Fully Address Safety Culture," [2] was issued on July 31, 2006 to provide information to nuclear power reactor licensees on the revised ROP.

USNRC safety culture working group developed the safety culture components based on its research of industry and international documents and the experience of the working group members. The elements of the cross-cutting issues were recently modified to emphasize the importance of safety culture, as shown in table 1.

Table 1. Changes in Safety Culture Components (RIS 2006-13)

Areas		Components (Before Revision)	Components (After Revision, RIS 2006-13)
Cross Cutting Area	Problem Identification and Resolution	- Review - Assessment - Corrective Action	- CAP - Self and Independent Assessments - Operational Experience
	Human Performance	- Personnel - Resource - Organization	- Decision Making - Resources - Work Control - Work Practices
	Safety Conscious Work Environment	- Environment for Raise Concerns	- Environment for Raise Concerns - Preventing, Detecting and Mitigating Perceptions of Retaliation
Other Safety Culture Components		N/A	- Accountability - Continuous Learning Environment - Organizational Change Management - Safety Policies

Also, the graded approach was applied for the inspection of cross-cutting issues in USNRC. The IP

95001[3], 95002[4], 95003[5] which is the graded inspection procedure was modified to enhance safety culture of licensee. The framework of graded approach for the safety culture assessment is shown in figure 2. The NRC may request a licensee have an independent assessment of their safety culture performed when the NRC identified through the conduct of supplemental inspection procedure, and the licensee did not recognize, that one or more components of safety culture caused or significantly contributed to the risk significant performance issues (degraded response column). Furthermore, the NRC should conduct independent safety culture assessment of licensee in unacceptable performance column.

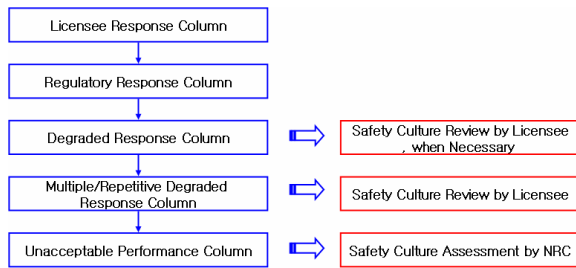


Figure 2. Graded Approach for Safety Culture Assessment in USNRC

3. Conclusion - The insights on the cross-cutting issues in Korean Regulatory Framework

The terminology “cross-cutting issues” are not used in the current nuclear regulatory system in Korea. However, the following attributes of licensee management technology are evaluated in the periodic NPP inspections in Korea [6].

- Operating Organization and Employee's Qualification
- Education and Training
- Emergency Operation Procedure
- Operational Experience Feedback
- Human Factor Management

Therefore, it can be regarded that some of cross-cutting components are already incorporated in Korean periodic NPP inspection framework as shown in figure 3.

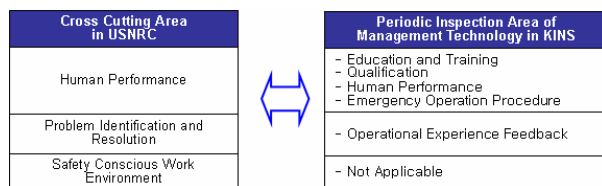


Figure 3. Comparison cross-cutting issue treatment in US and Korea

However, some specific cross-cutting components may be not included or different compared to US nuclear regulatory system. For example, there is no explicit process for the graded approach in the safety culture inspection in Korea. The explicit graded approach for the inspection of cross-cutting issues may needed to be developed in the Korean safety regulatory system.

REFERENCES

[1] USNRC, RIS 2006-13, "Information on the Changes Made to the Reactor Oversight Process to More Fully Address Safety Culture", 2006
 [2] USNRC, SECY-06-0122, "Safety Culture Initiative Activities to Enhance the ROP and Outcome of the Initiatives", 2006
 [3] USNRC, IP 95001, "Inspection For One Or Two White Inputs In A Strategic Performance Area", 2006
 [4] USNRC, IP 95002, "Inspection For One Degraded Cornerstone Or Any Three White Inputs In a Strategic Performance Area", 2006
 [5] USNRC, IP 95003, "Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs, or One Red Input", 2006
 [6] MOST, "National Report for the Convention on Nuclear Safety", 2007