Conceptual Analysis of Graded Regulation for physical Protection Using Risk and Performance Information

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I. Introduction

● Research Purpose

- Thorough confirmation of physical protection is required as the number of facilities subject to physical protection regulation internally and externally and public interest in nuclear power plant threats increases.

- Compared to the increase in regulatory work, the necessity for regulatory methods increase to efficiently and effectively utilize regulatory resources in a situation where available regulatory manpower is limited

- Accordingly, this paper intends to improve the effectiveness and efficiency of physical protection regulations by differentiating regulatory activities for each facility based on the performance and characteristics of protection performance of regulated facilities.

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II. Analysis of Graded Regulation

● Risk-informed Periodic Inspection

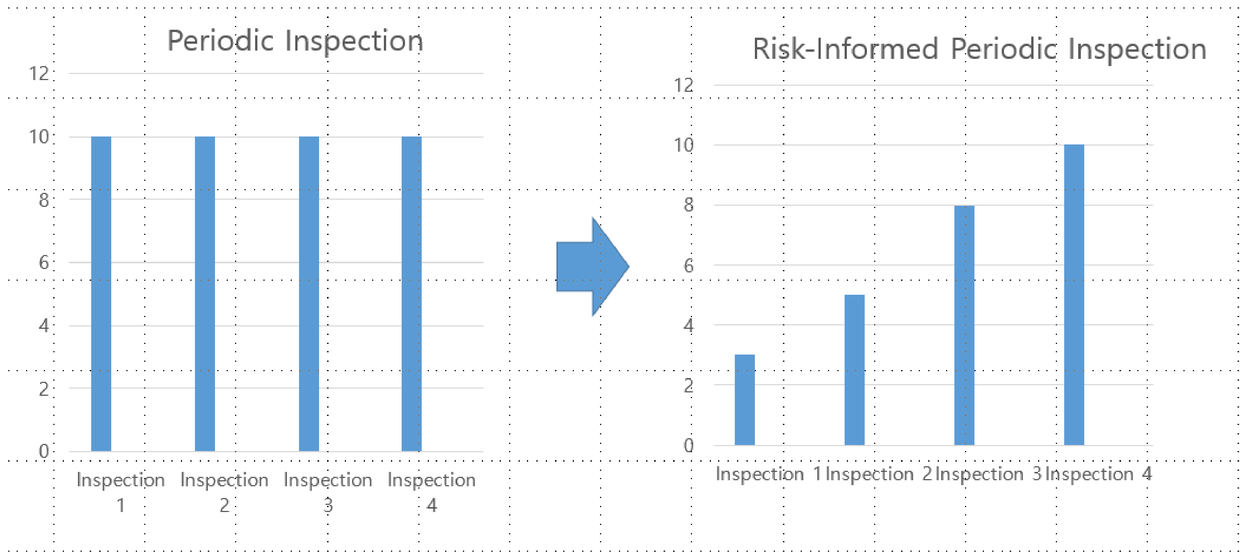
- Risk-informed periodic inspection means such kind of method to rationally adjust inspection contents, input manpower and time of existing periodic inspection items by using risk information.

- Determination of importance by deriving information on accidents and failures related to physical protection and findings and recommendations derived from regular physical protection inspections.

- In case of current periodic inspection, the identical manpower and period shall be allocated for all inspection list and items. Also, periodic inspections, vulnerability assessments, training assessments performed individually.

- Risk-informed periodic inspection was reflected in the importance of inspection items such as findings, accidents of physical protection boundaries, and failure results.

- It was significant in terms of establishing systematic links to periodic inspection, vulnerability assessments, and training assessments



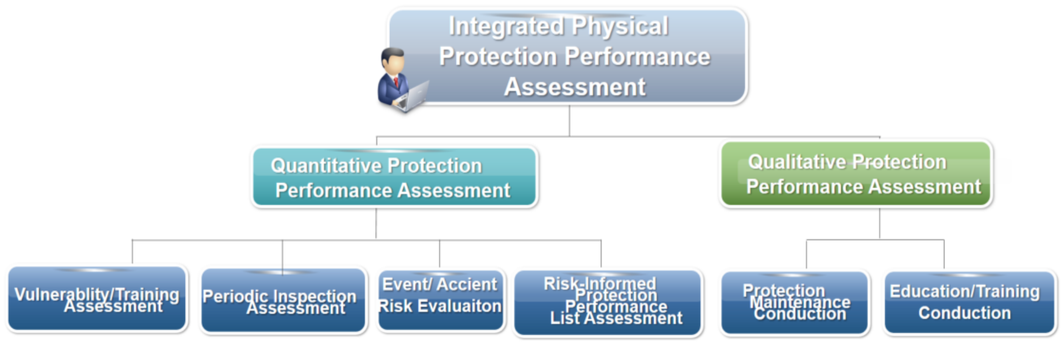
▲ Brief concept of risk-informed periodic inspection

● Integrated Physical Protection Performance Assessment

- Integrated physical protection performance assessment means comprehensive evaluation of periodic inspection, vulnerability evaluation, training evaluation, and protection-related performance to determine the protection performance grade by synthesizing each individual protection performance evaluation item for each nuclear facility.

- a quantifiable method is established under a consistent standard, and weights are given reflecting the difference in importance of each item in the synthesis process similar to U.S. NRC, develop SDP (Significance Determination Process) to evaluate importance

- The integrated physical protection performance assessment is classified into quantitative protection performance assessment and qualitative protection performance assessment



▲ Conceptual scheme of integrated physical protection performance assessment

III. Conclusion

● Analysis of Graded Regulation for Physical Protection

- Risk-informed periodic inspection means such kind of method to rationally adjust inspection contents, input manpower and time of existing periodic inspection items by using risk information

- -Integrated physical protection performance assessment means comprehensive evaluation of periodic inspection, vulnerability evaluation, training evaluation, and protection-related performance to determine the protection performance grade by synthesizing each individual protection performance evaluation item for each nuclear facility.