Technical Advisory Committee of the Nuclear Risk Research Center
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SUBJECT: FRAMEWORK AND INFRASTRUCTURE FOR SUPPORTING
INDUSTRY READINESS FOR ROP IMPLEMENTATION

Dear Dr. Apostolakis:

The Japan Nuclear Regulation Authority (NRA) plans to implement a risk-informed Reactor Oversight Process (ROP) to collect information about licensees' performance, assess the information for its safety significance, and provide for appropriate licensee and NRA response. We were informed that this ROP is similar to that deployed by the United States Nuclear Regulatory Commission (NRC).
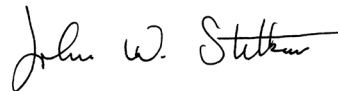
The U.S. NRC's ROP contains many elements, one of which is a risk-informed scale for assessing the safety significance of inspection findings. The intent of the scaling is to establish appropriate regulatory response to different levels of licensee performance. The basis for establishing thresholds related to these levels of performance was the metrics that have been adopted in Regulatory Guide 1.174 for the characterization of risk; namely core damage frequency (CDF) and large early release frequency (LERF). The Significance Determination Process (SDP) for a finding is typically performed in three phases, with a progressively increasing level of complexity and sophistication of the risk assessment that is needed to ensure realistic characterization of an event or a finding. In this phased framework, the reasonableness of the Phase 2 pre-populated risk characterization tables is important to avoid unnecessary entry to Phase 3. Additionally, the Phase 3 SDP is typically complicated and requires a significant level of interactions between the licensee and the regulator. Therefore, the U.S. experience shows that it is beneficial to have guidance available for consistently and realistically developing Phase 2 SDP tables and for conducting the Phase 3 risk assessments.

During our 12th meeting, November 11-15, 2019, we met with representatives of the Risk-Informed Decision Making (RIDM) Promotion Team to discuss a number of activities which included support of the ROP, as well as the industry's action plan for implementation of other risk-informed processes and programs. The objectives of these discussions were to allow us to develop a better understanding of these initiatives and to provide our insights regarding potential areas of improvements.

The NRRC is actively assisting the Japanese nuclear industry's development of state-of-the-practice PRA methodologies to be used for creating risk assessment models and tools in support of risk-informed decision-making programs, with a particular near-term focus being support for deployment of the ROP. However, we are not aware of any tools or guidance that may have been developed to facilitate effective and efficient implementation of key elements of the ROP, such as the SDP. We are also not aware of the risk scaling that is used to assess the severity of an inspection finding and the basis for this risk ranking scale. Knowledge about these aspects of the ROP and understanding of their technical bases are important to enable us to provide our assessment of the NRRC's research activities in support of ROP implementation and related future RIDM initiatives.

During our May 2020 meeting, we request a briefing from the organization that is responsible for the industry's readiness for ROP implementation. In particular, we would appreciate a detailed presentation on the risk-informed elements of the Japanese ROP, including the risk scaling of findings, the basis for this risk scaling, and the expected process for the execution of risk ranking.

Sincerely,

John W. Stetkar
Chairman

REFERENCES

1.   U.S. Nuclear Regulatory Commission, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," Regulatory Guide 1.174, Revision 3, January 2018.