

## **IMPROVEMENTS TO THE RISK-INFORMED REGULATION IMPLEMENTATION PLAN**

### **Purpose**

The purpose of this enclosure is to respond to the Commission's June 1, 2006, staff requirements memorandum (SRM) M060503B resulting from the May 3, 2006, Commission briefing on the "Status of Risk-Informed and Performance-Based Reactor Regulation." In that SRM, the Commission stated the following:

The staff should improve the risk-informed regulation implementation plan (RIRIP) so that it is an integrated master plan for activities designed to help the agency achieve the Commission's goal of a holistic, risk-informed and performance-based regulatory structure. The plan should continue to give priority to risk-informed activities underway and incorporate lessons learned from earlier activities as appropriate.

### **Background**

In SECY-00-0213, the staff provided the Commission with the first complete version of the RIRIP. As described in former-Chairman Jackson's letter of June 18, 1999, to Senator Thompson and others, the staff developed the RIRIP in response to a General Accounting Office recommendation. The first RIRIP was a plan that contained (1) a statement of objectives and their relevance to the probabilistic risk assessment (PRA) policy statement and the agency's Strategic Plan; (2) a set of criteria and a process for deciding what areas should be risk informed; (3) guidelines for risk-informed activities; (4) a summary of activities planned to implement the risk-informed regulatory strategies that are described in the agency's Strategic Plan; (5) a description of an internal communications plan for soliciting and considering staff input and feedback on the agency's plan and progress toward implementing risk-informed regulatory initiatives; (6) a description of a training program to ensure that the staff has the knowledge and skills needed to implement risk-informed regulations; and (7) success measures.

The RIRIP is intended to coordinate the staff's activities in implementing the Commission's 1995 PRA policy statement. In particular, the policy describes the Commission's vision that "the use of PRA technology should be increased in all regulatory matters to the extent supported by the state-of-the-art in PRA methods and data and in a manner that complements the U.S. Nuclear Regulatory Commission's (NRC's) deterministic approach and supports the NRC's traditional defense-in-depth philosophy." Furthermore, the Commission indicated that PRA and associated analyses (e.g., sensitivity studies, uncertainty analyses, and importance measures) should be used in regulatory matters, where practical within the bounds of the state-of-the-art, to reduce unnecessary conservatism associated with current regulatory requirements, regulatory guides, license commitments, and staff practices. The RIRIP describes the staff's plans to achieve that vision by applying criteria to selected regulatory requirements and practices: applying risk-informed analysis to those requirements and practices; and developing the necessary data, methods, guidance, and training. The plan is also intended to explain the agency's activities, philosophy, and approach to risk-informed regulatory policy to internal and external stakeholders.

## Discussion

The challenge in developing RIRIP over the years has been in identifying and specifying activities that are both necessary and sufficient to implement the Commission's PRA policy statement. For the past several years, the focus of RIRIP has been on two of the Nuclear Regulatory Commission's (NRC's) Strategic Plan goals (i.e., safety and effectiveness) and supporting strategies. The RIRIP activities support the NRC's programs in the reactor, materials, and waste arena; however, there are significant differences in the scope, form, and content of RIRIP activities underway in these various arenas. These differences result from the varying nature of the activities regulated and the availability and maturity of risk assessment methods and tools.

As discussed during the May 3, 2006, Commission meeting with the nuclear industry regarding risk-informed and performance-based regulation, the staff believes that risk-informed initiatives have enhanced all aspects of the NRC's regulatory programs and that steady progress is occurring in implementing the Commission's PRA policy and directions. However, the staff recognizes that the NRC's regulations and processes could be improved and better integrated. To implement the Commission's holistic, risk-informed, and performance-based regulatory structure, the staff concludes that a new framework is needed for RIRIP to provide an integrated master plan across NRC's business functional areas (i.e., licensing/certification, rulemaking/guidance development, and oversight).

In response to the SRM, the staff met with the NRC's PRA Steering Committee (PRASC), which is composed of the Office Directors of Nuclear Material Safety and Safeguards (NMSS), Nuclear Reactor Regulation (NRR), Nuclear Security and Incident Response (NSIR), Nuclear Regulatory Research (RES), and Enforcement (OE); one Regional Administrator; and a representative of the Office of the General Counsel (OGC). The steering committee meeting focused on reviewing its charter in relation to RIRIP and evaluating options for reinvigorating RIRIP in response to the Commission's direction. With regard to RIRIP, the PRASC is responsible for (1) providing strategic direction regarding use of PRA technology and risk information in regulatory matters in support of the agency's mission and (2) overseeing implementation of interoffice risk-informed regulation. The PRASC concluded that the NRC needed a better framework for planning RIRIP activities and assessing their effectiveness. The planning process should establish a clearer vision and specific goals for where the agency should be in risk-informing activities for the next 1–5 year period. In addition, where feasible, the agency should establish a vision and specific goals for the 5–10 year time period. The agency needs to establish these goals so that it can determine which RIRIP activities to perform and what resources are necessary. Once it has identified the vision and goals, the staff will evaluate the existing RIRIP activities to determine the extent to which they support these goals. From the results of this analysis, the staff can determine which RIRIP activities should continue, which activities should be sunset, and any new activities necessary to achieve the vision and goals. Table 1 provides a conceptual organization for the RIRIP planning template.

The new effectiveness review process would focus on determining whether completed RIRIP activities had achieved the desired outcomes and, if not, why not. In addition, the effectiveness review process would identify any needed corrective actions and lessons to be adopted as best practices for future activities. The staff will evaluate the assessment feedback mechanisms that are part of the NRC's Reactor Oversight Process and Operating Experience Program for

insights to develop the RIRIP effectiveness process.

Selected major milestones for the proposed RIRIP improvements are provided in Table 2. Figure 1 provides an overview of the proposed new RIRIP framework including the planning and effectiveness process. Specific elements are discussed below:

- **Evaluate current environment.** NRC Senior Management through the PRASC will evaluate the current environment and integrate Commission direction and stakeholder input through a strategic direction-setting function. This includes the initial development of the arena vision and goals and identification of risk-informed activities for the short and long term. As the environment evolves and using the results of the RIRIP effectiveness reviews, NRC Senior Management will modify and update the goals consistent with the established vision. NRC Senior Management will periodically interact with stakeholders on risk-informed initiatives.
- **Establish target environment.** The office division directors direct the implementation of risk-informed activities to achieve the RIRIP goals and set the overall risk-informed environment using office management tools and resources. Integration of activities across the NRC is facilitated through periodic interoffice meetings and establishment of standing committees, such as the NRC Risk Management Team (RMT) which addresses common risk-informed issues in the reactor safety arena. The RMT, which meets every 2 weeks, includes division-level participation from NRR and RES. The development of other division-level organizations similar to the RMT for the other arenas would improve oversight of regulatory activities.
- **Implement target environment.** The branch chiefs, through their staff, implement the program plans for risk-informed activities and set the overall risk-informed environment on a day-to-day basis.
- **Assess effectiveness.** The staff will propose to the PRASC a list of completed RIRIP that should be considered for the effectiveness review. The review would focus on assessing whether the activities had achieved their desired outcomes and on identifying improvements and best practices to be used for future risk-informed efforts.

**TABLE 1— REPRESENTATIVE HIGH-LEVEL RIRIP PLANNING TEMPLATE**

<b>REACTOR ARENA—OPERATING REACTORS</b>	
Risk-Informed Vision:	
Licensing Functional Area Goals (1–5 years) A. B. Activities to Achieve Goals 1. 2. 3.	Licensing Functional Area Goals (5–10 years) A. B. Activities to Achieve Goals 1. 2. 3.
Rulemaking Functional Area Goals (1–5 years) A. B. Activities to Achieve Goals 1. 2. 3.	Rulemaking Functional Area Goals (5–10 years) A. B. Activities to Achieve Goals 1. 2. 3.
Oversight Functional Area Goals (1–5 years) A. B. Activities to Achieve Goals 1. 2. 3.	Oversight Functional Area Goals (5–10 years) A. B. Activities to Achieve Goals 1. 2. 3.

Note: For each activity identified above, the staff would develop and maintain a detailed specific program plan as part of the RIRIP. Potentially, there would be no goals or supporting activities for some areas.

**TABLE 2 — RIRIP IMPROVEMENT MILESTONES**

<b>Selected Major Milestones</b>				
<b>Milestone</b>	<b>Original Date</b>	<b>Revised Date</b>	<b>Completion Date</b>	<b>Lead Organization</b>
Develop vision and functional area goals (submitted as part of semiannual RIRIP report)	April 2007			RES/NRR/NMSS/ NRO/FSME
Determine RIRIP activities necessary to meet goals	August 2007			RES/NRR/NMSS/ NRO/FSME
Communicate RIRIP vision, goals, and activities	October 2007			RES/NRR/NMSS/ NRO/FSME
Complete first effectiveness review	October 2008			RES/NRR/NMSS/ NRO/FSME

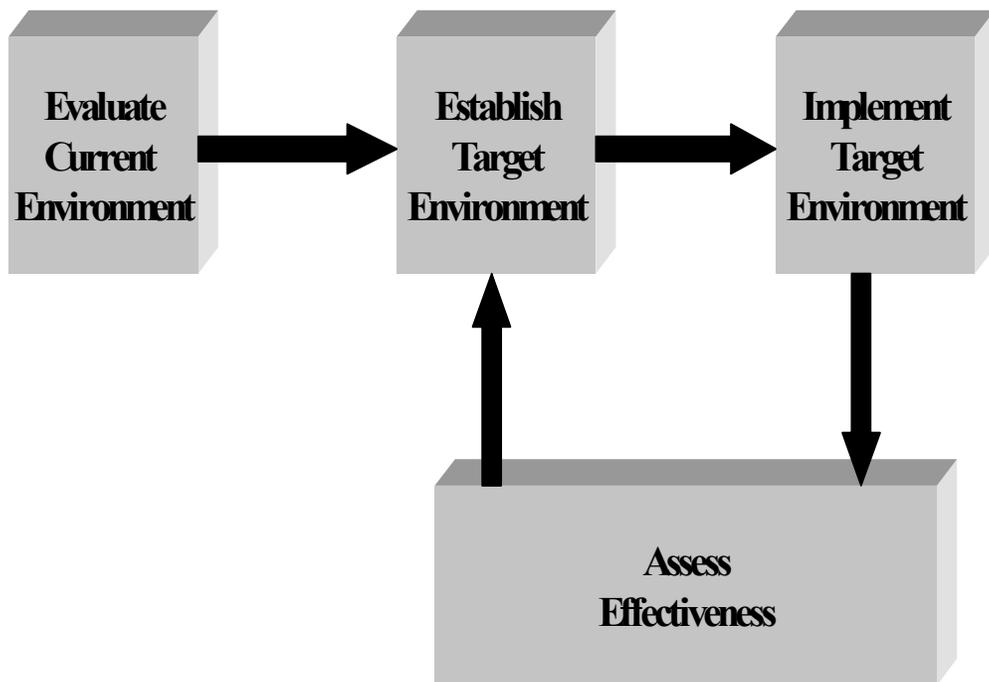


Figure 1 - New RIRIP Process Framework