NRC Risk-Informed Steering Committee Charter

Problem Statement:

The degree of technical completeness and quality of the data used to form the basis to support the implementation of PRA methods and approaches have introduced a degree of uncertainty often compensated for by conservatism integrated into modeling assumptions. This has led to variability in results which could bias the insights relied on to support risk-informed decision making. Lack of confidence in PRA quality leads to inefficiencies in regulatory processes. This lack of confidence has burdened the NRC and industry leading to increased scope and delays in regulatory reviews.

Regulatory Guide 1.200 was proposed as a way to determine whether the adequacy of a PRA was sufficient to provide confidence to make regulatory decisions, but it is not clear the original intent of this document has been realized.

Many initiatives have been undertaken to shift from risk-based to risk-informed processes, but more work needs to be done. There are still areas where a level of comfort with leaving purely deterministic practices behind in favor of a risk-informed approach has not been established. To properly focus important resources and support the Commission's PRA policy statement, these areas must be examined and proper actions taken to ensure a risk-informed regulatory framework is applied.

Background:

Probabilistic Risk Assessment (PRA) is recognized as an important tool for regulatory decision making and, as such, has been increasingly utilized--along with defense in depth and safety margin—in licensing, oversight, rulemaking, and event response activities within the agency. Since the NRC issued its PRA policy statement in 1995, licensees' internal event PRA models have reached a point of maturity that allows for identification of the relative risk importance of structures, systems, and components (SSCs) for every operating nuclear power plant. Voluntary adoption of alternative risk-informed regulations, such as Special Treatment Requirements (i.e., 10 CFR 50.69) and NFPA-805 (10 CFR 50.48(c)), have necessitated the advancement of PRA methods--especially fire PRAs. Licensee-initiated requests for risk-informed changes to their plant's licensing basis, such as Risk-Managed Technical Specifications (Technical Specification Initiative 4.B) and Risk-Informed In-Service Inspection have resulted in further improvements in PRA models. In addition, many licensees are performing seismic PRAs in response to post-Fukushima requirements to evaluate site specific seismic hazards.

While there has been progress in advancing the use of PRA as a tool for regulatory decision-making, there have also been some concerns raised by the industry that may inhibit further advancement of PRA as a regulatory decision-making tool. One such concern is that the uncertainty associated with initiating event frequencies and resultant failure probabilities, especially among various external hazards. Consequently, PRA practitioners often employ widely varying levels of conservatism. For example, an external events PRA model (e.g., fire or seismic) may be more conservative than an internal events model. This is because, unlike an

internal events PRA model--which is based on failure rate (λ) and mean time to repair (τ) data and models where there is relatively high confidence--data and models associated with external events are typically less developed and more uncertain. Where testing or operational experience is limited or unavailable, bounding assumptions may have been made or extra margins incorporated into engineering analyses to compensate for the greater uncertainty. While this approach is consistent with a deterministic licensing basis perspective, it can lead to overestimates of risk. More importantly, conservative risk models may mask more significant risk outliers or prevent an accurate ranking of risk contributors or SSC important to safety. Thus, the Risk-informed Steering Committee is chartered to address this and similar problems to provide greater confidence by the NRC, industry and other stakeholders in the use of PRA as a tool to support current and future regulatory applications.

Objective:

The Risk-Informed Steering Committee (RISC) is an NRC senior management committee that will provide strategic direction to the NRC staff to advance the use of risk-informed decision-making in licensing, oversight, rulemaking and other regulatory areas, consistent with the Commission's PRA Policy Statement.[1]

Internal Objectives of the Risk-Informed Steering Committee:

- To establish strategic direction of staff activities aimed at more effective implementation of the Commission's PRA Policy Statement and Phased Approach to PRA Quality
- To develop and communicate a vision for future regulatory use of PRA including aspects not amenable to quantification through PRA (i.e. Security, EP, Radiation Safety, Environmental).
- To provide guidance to the staff relative to the following:
    - Implementation of the Commission Policy Statement on PRA.
    - Implementation of the Phased Approach to PRA quality.
    - Development of a robust regulatory process that can readily accommodate decision-making under uncertainty.
    - Priorities for addressing uncertainties in application of PRA across all hazards including priorities for obtaining additional data through testing and incorporation of operation experience.
    - Treatment and communication of aggregate risk across all contributors, including appropriate consideration of uncertainties.

[1] The Commission's PRA Policy Statement already requires that "PRA evaluations should be as realistic as practicable…" and that "The Commission's safety goals for nuclear power plants and subsidiary numerical objectives are to be used with appropriate consideration of uncertainties…" This direction has been folded into regulatory guidance (RG 1.174 and RG 1.200, for example). Thus, to a certain extent, the concern about realism, uncertainty, and comparability of PRA results should be addressed by utilizing the existing guidance.

External Objectives of the Risk-Informed Steering Committee:

- To engage industry and listen to concerns relative to the use of PRA to support regulatory decision-making.
- To communicate NRC actions with regard to addressing the above stated objectives.
- To discuss what initiative can be taken by the NRC to incentivize industry to continue to develop PRAs to help both reduce uncertainty and provide a framework to make decisions in light of inherent uncertainty in PRA models.
- To discuss industry actions necessary to achieve the vision for future use of PRA to support regulatory decisions.

Scope:
The RISC will focus on identifying areas where new or improved methods are needed to reduce unnecessary conservatism (i.e., increase realism) to meet the above-stated objective. The Committee will pursue NRC approval of such methods (e.g., via Regulatory Guide or adoption of "consensus methods" within the risk community).

Membership: The RISC is comprised of representatives from the following NRC organizations:

- NRO Deputy Office Director
- RES Deputy Office Director
- NRR Deputy Office Director for Engineering and Corporate Support
- NSIR Deputy Office Director
- Regional Administrator, Region 1

The Chair of the Committee is the Director of NRR. The Committee will meet periodically until a program plan has been developed. The Committee shall determine the scope and timing of public outreach to ensure that the program plan has appropriately addressed a broad range of Industry views.