UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

March 11, 2015

The Honorable Stephen G. Burns
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: DRAFT SECY PAPER, "CUMULATIVE EFFECTS OF REGULATION PROCESS ENHANCEMENTS AND RISK PRIORITIZATION INITIATIVE: RESPONSE TO COMMISSION DIRECTION AND RECOMMENDATIONS"

Dear Chairman Burns:

During the 622nd meeting of the Advisory Committee on Reactor Safeguards, March 6-7, 2015, we met with representatives of the NRC staff to review a draft of the SECY paper on "Cumulative Effects of Regulation Process Enhancements and Risk Prioritization Initiative: Response to Commission Direction and Recommendations." We also had the benefit of discussions with representatives of the Nuclear Energy Institute (NEI) and written comments from the Union of Concerned Scientists.

Our Subcommittee on Reliability and Probabilistic Risk Assessment reviewed the draft SECY paper during a meeting on February 20, 2015. Representatives of NEI and the pilot plants briefed the subcommittee on details of six pilot demonstrations of the risk-informed prioritization process during a meeting on November 3, 2014. We also had the benefit of the documents referenced.

CONCLUSION AND RECOMMENDATIONS

1. We endorse the staff's recommendations to implement Option 2 and to proceed with a trial application of Option 3.

2. The staff should explicitly include risk information as an input to decisions and priorities for proposed regulatory actions regardless of the Commission's decisions about specific options or approaches presented in this SECY paper.

3. A challenging aspect of the proposed risk-informed prioritization process involves the methods by which risk information and other metrics will be used to develop consistent measures of the significance of issues that affect plant safety, security, emergency preparedness, radiation protection, and equipment reliability. If the Commission endorses a prioritization process, the staff should expedite development of regulatory guidance for its use and reviews.

BACKGROUND

The draft SECY paper on "Cumulative Effects of Regulation Process Enhancements and Risk Prioritization Initiative: Response to Commission Direction and Recommendations" was developed in response to Commission direction in SRM-COMSECY-14-0014. The Commission's 1992 Policy Statement on Integrated Schedules endorses voluntary development and implementation of plant-specific integrated schedules for compliance with regulatory requirements and performance of licensee-initiated activities. According to that policy, scheduling priorities would account for the safety significance of each activity. The 1992 policy indicated that the prioritization methodology and schedules would be determined by each licensee and submitted to the staff for review. The current SECY paper reflects a renewed interest in the prioritization concept and describes options for its implementation.

Our comments are based on a preliminary draft of the SECY paper that was issued to support our February 20, 2015 Subcommittee meeting. The paper describes four options for Commission consideration:

Option 1: Maintain the status quo

Option 2: Augment existing regulatory processes for power reactors with the proposed practices to address the cumulative effects of regulation and the risk prioritization initiative

Option 3: Establish voluntary alternative plant-specific implementation schedules in prospective new rules for power reactors

Option 4: Initiate rulemaking to allow risk-prioritized scheduling flexibility by power reactor licensees

Options 2, 3, and 4 extend this initiative progressively from voluntary requests for changes to regulatory implementation schedules to rulemaking that could obviate the need for exemptions and allow licensees to prioritize regulatory issues using plant-specific risk information. The staff has recommended implementation of Option 2 and a pilot application of Option 3.

DISCUSSION

The intent of the risk prioritization initiative is to provide a rational process that can be used by nuclear power plant licensees and the staff to characterize and prioritize regulatory and plant-identified activities according to their safety significance. The process would use risk information and other metrics to evaluate existing and emerging issues, and develop priorities for their resolution. The proposed process would not be applied to activities that are required for compliance with an NRC finding of adequate protection of public health and safety.

Priorities would be developed on a plant-specific basis, accounting for unique attributes of the facility design, site characteristics, and operating practices that affect the overall risk profile. The prioritization process is intended to be multi-disciplinary, transparent, objective, and, to the extent feasible, quantitative. The use of this process should also provide tangible incentives for the extension of existing probabilistic risk assessment (PRA) models. Full-scope PRAs will improve the ability of licensees and the staff to better understand how regulatory decisions affect nuclear power plant risk. We endorse the use of these concepts to focus licensee and regulatory efforts on issues that have the most important benefit to plant safety.

Consistent use of risk information by the staff at an early stage of the regulatory decision-making process will improve understanding of the safety significance of proposed regulatory actions. This information should direct attention to those issues that have the greatest impact on public health and safety, and thereby reduce the scheduling burden from proposed regulatory actions with minimal risk benefits.

The staff and the industry have extensive experience with the use of quantitative and qualitative risk information to assess the significance of issues that affect plant safety. A challenging aspect of the proposed process is the development of methods by which risk information can be combined with other metrics to rank the significance of issues that affect security, emergency preparedness, radiation protection, and equipment reliability. The industry's pilot applications tested the process by which these issues are aggregated to develop an integrated set of ordered priorities. Careful scrutiny of the metrics and additional experience with this process will be needed for assurance that it consistently provides results that appropriately combine these diverse attributes.

Our review was based on a preliminary draft of the SECY paper, which could differ in some respects from the version that is considered by the Commission. We benefited substantially from our discussions with the staff and the industry, which clarified specific elements of each proposed option. It is apparent that the current status, Option 1, is imposing a substantial scheduling burden on licensees. The following items briefly summarize some issues that influenced our conclusions and recommendations regarding the other options.

Option 2

The section on "Considerations for Implementing a Risk Prioritization Initiative" seems to indicate that commitments and schedules for corrective actions to be taken in response to NRC inspection findings should be excluded from the risk-informed prioritization process. We were informed that the staff's intent is to exclude licensee commitments to resolve minor inspection findings as part of a plant's routine corrective action program. The staff explained that the proposed process can be used to prioritize corrective actions for inspection findings when a licensee schedule has been established through a docketed commitment. We endorse this interpretation of the scope of the prioritization process. It preserves resolution of minor issues through a well-established corrective action process. Application of the prioritization process to inspection findings that require more substantial commitments of time and resources will allow licensees and the staff to account for the risk significance of those issues in an integrated manner with other planned licensee actions, including responses to self-identified issues that may be more important to overall plant safety.

Option 2 proposes to pilot the use of an NRC expert panel that would evaluate proposed regulatory issues across the operating reactors business line and apply risk information as an input for agency decisions to prioritize issues for further consideration. The staff explained that risk-informed perspectives are not currently included systematically in agency decisions to prioritize proposed regulatory actions. The Commission has a long-standing policy for the use of risk information. The staff should explicitly include risk information as an input to decisions and priorities for proposed regulatory actions whenever possible, regardless of the Commission's decisions about specific options or approaches presented in this SECY paper.

Option 3

Option 2 allows licensees to use a risk-informed prioritization methodology as a basis to request exemptions and changes to implementation schedules for existing regulatory commitments. Option 3 extends that process to allow licensees to submit a risk-informed, plant-specific implementation plan when the NRC adopts a new rule. Thus, Option 3 is a subtle extension because Option 2 can be used to request risk-informed changes to the implementation plans for compliance with an existing rule. The staff explained that Option 2 uses well-established processes for staff reviews of exemption requests, augmented by the risk-informed prioritization methods, to determine the adequacy of a licensee's proposed schedule. Option 3 may introduce additional complexity in the rulemaking process to accommodate compliance schedules that would apply generally, with voluntary variations for risk-informed plant-specific plans. We agree that these differences in the rulemaking process merit examination of their practical implementation through a pilot application for a rule that is suitable for risk-informed prioritization.

Option 4

The rulemaking in Option 4 would establish a voluntary process that enables licensees to make plant-specific, risk-informed changes to implementation schedules for certain regulatory issues without requesting prior NRC approval. The proposed rule might also permit licensees to propose alternatives or eliminate some requirements if adequate justification were provided to demonstrate their low risk significance. To implement this option, a licensee would need to have and maintain a PRA with demonstrated scope and technical quality that are adequate to support these decisions, in a manner similar to the PRA requirements for current risk-informed performance-based licensing initiatives.

ACRS Perspectives

Option 4 would achieve the desired goal to use objective quantitative risk information to focus regulatory and licensee actions on plant-specific issues that have the most important impacts on public health and safety. It would provide a more rational basis for elements of the existing regulatory process and remove inefficiencies from actions that may not account adequately for differences in plant-specific and site-specific risk across the operating reactor fleet. The basis in rulemaking would also reduce the need for staff reviews of exemption requests to justify

changes to priorities for regulatory issues of low risk significance. However, implementation of Option 4 would require a substantial commitment of staff time and resources, with as-yet unknown practical acceptance by the industry. For example, it is not evident how many licensees may be willing to extend the scope and quality of their existing PRA models to support such an initiative. Therefore, we agree with the staff's conclusion that implementation of Option 4 at this time is premature.

We endorse the staff's recommendations to implement Option 2 and a pilot application of Option 3. Option 2 will provide the staff and licensees with practical experience using the risk-informed prioritization process for plant-specific regulatory applications beyond the limited pilot testing of the draft methodology. It will also provide valuable feedback on the industry's level of participation in these voluntary applications. The proposed pilot application of Option 3 will provide experience implementing this risk-informed prioritization approach in the rulemaking process. This should identify and resolve issues not readily apparent from the conceptual summary.

As described above, the NRC expert panel proposed in Option 2 should be implemented as a fundamental element of the NRC's regulatory decision-making process, even if the Commission decides to retain the "status quo" in Option 1.

If the Commission decides to implement the proposed risk-informed prioritization process that is embodied in Option 2, 3, or 4, the staff should expedite the development of regulatory guidance for its use and reviews. The industry has devoted substantial time and effort to support the development of this initiative during the two years since it was originally proposed. We have been briefed on NEI's draft implementation guidelines and their use in limited pilot demonstrations at six sites. The implementation guidelines have since been updated to address lessons learned during those pilot applications. The staff has also reported on their participation and observations from the pilot demonstrations. The industry has expressed enthusiasm for the process and an eagerness to use it for practical regulatory applications. Timely development of regulatory guidance would benefit substantially by capturing this recent experience and building upon the commitments by all stakeholders.

The staff has noted that the development of regulatory guidance for the prioritization process is a key common requirement for each of the proposed initiative options. That effort requires careful consideration of the prioritization methodology; how that methodology integrates the assessments of safety, security, emergency preparedness, radiation protection, and equipment reliability; and how quantitative risk information is balanced against qualitative judgment. The staff should keep us informed of their review of the industry implementation guidance and development of the associated regulatory guidance.

Sincerely,

/RA/

John W. Stetkar
Chairman

REFERENCES

1. Nuclear Regulatory Commission, "Final Policy Statement on Integrated Schedules," 57 FR 43886, September 23, 1992

2. Preliminary Draft SECY Paper, "Cumulative Effects of Regulation Process Enhancements and Risk Prioritization Initiative: Response to Commission Direction and Recommendations," prepared for meeting of ACRS Subcommittee on Reliability and Probabilistic Risk Assessment, February 9, 2015 (ML15036A181)

3. Staff Requirements Memorandum, "Staff Requirements – COMSECY-14-0014 – Cumulative Effects of Regulation and Risk Prioritization Initiative: Update on Recent Activities and Recommendations for Path Forward," SRM-COMSECY-14-0014, July 18, 2014 (ML14199A187)

4. Staff Requirements Memorandum, "Staff Requirements – COMGEA-12-0001 / COMWDM-12-0002 – Proposed Initiative to Improve Nuclear Safety and Regulatory Efficiency," February 6, 2013 (ML13037A541)

5. "Summary of the NRC Staff Observations on the Nuclear Energy Institute Demonstration Pilots for Prioritizing and Scheduling Implementation," October 2014 (ML14302A269)

6. Nuclear Energy Institute, "Report on Prioritization and Scheduling Pilot," December 2014 (ML14349A378)

7. Nuclear Energy Institute, "Guidelines for Prioritization and Scheduling Implementation," NEI 14-10, Revision 0, November 2014 (ML14325A681)

8. David Lochbaum, Union of Concerned Scientists, “Comments Before the ACRS Subcommittee on Reliability and PRA on February 20, 2015,” February 20, 2015 (ML15058A784)

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1. Nuclear Regulatory Commission, "Final Policy Statement on Integrated Schedules," 57 FR 43886, September 23, 1992

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