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

November 13, 2012

The Honorable Allison M. Macfarlane
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: SECY-12-0110, "CONSIDERATION OF ECONOMIC CONSEQUENCES WITHIN THE U.S. NUCLEAR REGULATORY COMMISSION'S REGULATORY FRAMEWORK"

Dear Chairman Macfarlane:

During the 599th meeting of the Advisory Committee on Reactor Safeguards, November 1-3, 2012, we completed our review of Commission Paper SECY-12-0110, "Consideration of Economic Consequences within the U.S. Nuclear Regulatory Commission's Regulatory Framework," dated August 14, 2012. Our Subcommittee on Regulatory Policies and Practices and our Subcommittee on Reliability and PRA also reviewed this matter during a joint meeting on October 2, 2012. During these meetings, we had the benefit of discussions with representatives of the NRC staff and received input from Pilgrim Watch and Greenpeace. We also had the benefit of the documents referenced.

CONCLUSIONS AND RECOMMENDATIONS

1. We support Option 3 in SECY-12-0110 to explore whether changes to the regulatory framework are needed to further consider adverse economic consequences from severe accidents. Possible changes to the treatment of economic consequences should not be considered in isolation from other on-going initiatives that may affect Commission policy.

2. Option 3 in SECY-12-0110 is linked to resolution of Fukushima Near-Term Task Force Recommendation 1 and the Risk Management Task Force recommendations in NUREG-2150, "A Proposed Risk Management Regulatory Framework." There is a risk that decisions which address multiple issues related to the treatment of severe accidents and beyond-design-basis events on a topic by topic basis could give rise to unintended regulatory inconsistencies. Therefore, staff guidance and methods for consideration of the economic consequences from severe accidents should be developed in the context of these broader policy decisions.

3. In support of our Recommendation 2 above, decisions need to be made on how broad categories of severe accident consequences (e.g., risks to public health, land and water contamination, and other consequences) will be treated within the NRC's risk-informed regulatory framework.

4. The methodology used for evaluations of the economic consequences from severe accidents should be improved, even if no changes are made in the regulatory framework. The priorities assigned for those improvements and their required technical attributes will depend on how that information will be used in regulatory decisions.

DISCUSSION

As noted in SECY-12-0110, the economic consequences from severe accidents are considered in the evaluations of Severe Accident Mitigation Alternatives (SAMAs) that are conducted during the renewals of current operating licenses, and the evaluations of Severe Accident Mitigation Design Alternatives (SAMDAs) that are conducted during the certifications and licensing of new reactor designs. Economic consequences are also considered in cost-benefit analyses that are performed to evaluate a proposed backfit, but only if the proposal first satisfies the criterion that it provides a "substantial increase" in protection to public health and safety or common defense and security. In light of the accidents at Fukushima Daiichi, the NRC now faces a question regarding whether appropriate weight is afforded to offsite economic consequences in fully-integrated risk-informed regulatory decisions. The answer to that question is a matter of Commission policy that could affect the fundamental structure of the regulatory framework, and would certainly affect how the regulations are implemented in practice.

The NRC has a statutory mandate and obligation to regulate nuclear facilities in a manner that assures adequate protection of public health and safety. The NRC also has discretionary authority to promulgate regulations for the purpose of avoiding or mitigating offsite property damage. One possible outcome from Commission deliberations could be an integrated policy that addresses quantitative objectives for the management of economic consequence risks, in addition to continued protection of public health and safety from accidents that may occur at NRC-licensed facilities. If the Commission were to establish economic consequence risk objectives as a complement to the quantitative health objectives, a statement of more specific goals that would guide regulatory implementation of those objectives would then follow.

From the earliest discussions about the use of safety goals as a guiding principle for risk-informed regulatory decisions, the ACRS has advocated an integrated process that fully considers all sources of risk and a spectrum of possible severe accident consequences. We retain that perspective. In that context, decisions about the treatment of economic consequences should be considered as part of the more fundamental structure of the NRC's risk-informed regulatory framework itself. Examination of specific topics in isolation could result in fragmented conclusions that do not adequately consider the relationships among all issues that are being examined by the staff and the Commission. We support Option 3 to explore further the merits of potential changes to the regulatory framework with regard to the treatment of economic consequences, but not in isolation from other on-going initiatives that may affect Commission policy.

The NRC's focus on minimizing severe public health consequences from nuclear power plant accidents has been very effective. Improved knowledge and experience from the performance of full-scope probabilistic risk assessments (PRAs) domestically and internationally adds

confidence to that conclusion. Our awareness of the scope and complexity of interactions among hazards and vulnerabilities at a particular facility, the importance of site-specific factors that influence the consequences from a severe accident, and our fundamental understanding of risk have evolved substantially since those concepts were first developed in WASH-1400, "Reactor Safety Study: An Assessment of Accident Risks In U.S. Commercial Nuclear Power Plants," and amplified in NUREG-1150, "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants." Risk-informed improvements to plant structures, equipment, operating practices, personnel training, and offsite emergency planning have substantially reduced both the frequency and the consequences from accident scenarios that were previously identified as potential threats to severe public health effects, including fatalities and observable increases in the incidence of cancers. Proposed new plant designs provide even larger margins of safety, with extremely small estimates of public health risk.

This historical focus on the prevention of health consequences has produced the desired results. The legacy from the accidents at Three Mile Island and Fukushima Daiichi and the conclusions from numerous full-scope PRAs of currently operating nuclear power plants have shown that accidents which may result in offsite injuries or fatalities are very rare events. Yet, the events at Fukushima have demonstrated that the consequences from severe accidents can result in contamination of surrounding land and water resources, with ensuing effects on regional infrastructure, temporary or permanent relocation of the populace, and potentially substantial economic costs. As shown by the earliest PRAs, land contamination and economic consequences can be important constituents in the full spectrum of risks from nuclear power plant accidents. However, regulatory policies and practices have given less attention to this element of the risk profile, in deference to a primary emphasis on health consequences.

Commission policy determines the prominence and degree to which quantitative risk information is used within the regulatory framework. Commission policy can also determine how broad categories of severe accident consequences (e.g., risks to public health, land and water contamination, and other consequences) are treated within the context of risk-informed regulatory decisions. A revamped regulatory framework might include a specified risk goal for contamination of offsite land and water resources. Alternatively, those elements of the risk profile might be addressed within the "Design Enhancement Category" of the risk management framework that is proposed in NUREG-2150. Retention of the current regulatory framework with focused enhancements for specific issues might provide a third conceptual treatment.

The NRC faces near-term decisions on challenging issues that are closely interrelated: resolution of Fukushima Near-Term Task Force Recommendation 1, resolution of the Risk Management Task Force recommendations in NUREG-2150, regulatory treatment of the economic consequences from severe accidents, and guidance for the installation of filters in containment hardened venting systems. Because of the relationships among these issues, considering them together rather than making decisions about each in isolation can avoid unexpected conflicts and support setting priorities among requirements to be implemented.

The staff and public stakeholders have highlighted shortcomings and inconsistencies in the methodology that is currently used in SAMA and SAMDA analyses. Option 2 in SECY-12-0110 acknowledges many of these issues and proposes to address them on a prioritized basis, subject to resource constraints. We agree that these issues should be examined critically. The methodology should be improved to provide more realistic estimates of economic consequences, even if no fundamental changes in policy are made. However, the priorities and comprehensiveness of improvements to elements of the methods, models, assumptions, data, degree of realism, and treatment of associated uncertainties in risk-informed conclusions should be commensurate with the use of those conclusions in regulatory decisions. Thus, near-term technical resolutions should remain subsidiary to the more fundamental policy question regarding the regulatory prominence of managing economic consequences as a complement to protection of public health and safety.

We look forward to working closely with you and the staff, as you engage in these difficult and important decisions.

Sincerely,

/RA/

J. Sam Armijo
Chairman

Additional Comments by ACRS Members Sam Armijo, Jack Sieber, and Dana Powers

We support Option 2 (Enhanced Consistency of Regulatory Analysis Guidelines) in SECY -12-0110 for the following reasons:

- Option 2 is consistent with the NTTF conclusion that the NRC's current approach to land contamination is sound.

- Implementation of Option 2 would correct deficiencies and inconsistencies in current NRC approaches, and would provide regulatory stability. If this option is selected by the Commission, the staff would improve guidance for estimating offsite economic costs based on up-to-date data and advancements in accident consequence assessments, and would develop new guidance for other regulatory applications. Option 2 would require fewer staff resources, than Option 3 and the improvements could be completed sooner.

- The issues of land contamination and economic consequences have been addressed by the Congress (Price Anderson Legislation) by licensees (property and liability insurance) and by current NRC regulatory practices (SAMAs and SAMDAs).

- We are concerned that implementation of Option 3 (Exploring the Merits of Potential Changes to the Regulatory Framework) will lead to far more than an exploration of alternatives to enhance regulatory treatment of economic consequences. This effort will require the commitment of substantial staff resources for several years, create a regulatory momentum of its own, and potentially raise NRC regulation of land contamination and economic consequences to be on an equal footing with protection of health and safety. We believe that staff resources devoted to the protection of health and safety should not be diluted unless there is a compelling benefit. We see no such benefit with Option 3.

REFERENCES

1. SECY-12-0110, "Consideration of Economic Consequences within the U.S. Nuclear Regulatory Commission's Regulatory Framework," August 14, 2012 (ML12173A479)

2. "Recommendations for Enhancing Reactor Safety in the 21st Century, The Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," July 12, 2011 (ML111861807)

3. NUREG-2150, "A Proposed Risk Management Regulatory Framework," US NRC, April 2012 (ML12109A277)

4. WASH-1400 (NUREG-75/014), "Reactor Safety Study: An Assessment of Accident Risks In U.S. Commercial Nuclear Power Plants," U.S. NRC, October 1975 (ML070610293)

5. NUREG-1150, "Severe Accident Risks: An Assessment for Five U.S. Nuclear Power Plants," U.S. NRC, December 1990 (ML040140729)

6. "Comment Regarding Advisory Committee on Reactor Safeguards (ACRS) Meeting of the ACRS Subcommittee on Reliability and PRA," Pilgrim Watch, October 15, 2012 (ML122910877)

7. "Price Anderson Coverage Cleanup Costs," Pilgrim Watch, October 22, 2012 (ML12313A338)

8. ACRS Letter, "ACRS Comments on an Implementation Plan for the Safety Goal Policy," May 13, 1987 (ML033020017)

9. ACRS Letter, "Risk-Based Regulatory Acceptance Criteria for Plant-Specific Application of Safety Goals," April 11,1997 (ML051640696)

10. ACRS Letter, "Elevation of CDF to a Fundamental Safety Goal and Possible Revision of the Commission's Safety Goal Policy Statement," May 11,1998 (ML091200476)

11. ACRS Letter, “Status of Efforts on Revising the Commission’s Safety Goal Policy Statement,” April 19,1999 (ML091280164)

12. ACRS Letter, “Report on Two Policy Issues Related to New Plant Licensing,” September 21, 2005 (ML052640580)

13. ACRS Letter, “Risk-Informed Regulatory Guidance for New Reactors,” July 27, 2010 (ML102140211)

14. ACRS Letter, “Status of Efforts on Revising the Commission’s Safety Goal Policy Statement,” April 19,1999 (ML091280164)

15. ACRS Letter, “Report on Two Policy Issues Related to New Plant Licensing,” September 21, 2005 (ML052640580)

16. ACRS Letter, “Risk-Informed Regulatory Guidance for New Reactors,” July 27, 2010 (ML102140211)

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