



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

November 13, 2015

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

SUBJECT: DRAFT SECY PAPER, "RECOMMENDATIONS ON ISSUES RELATED TO  
IMPLEMENTATION OF A RISK MANAGEMENT REGULATORY FRAMEWORK"

Dear Chairman Burns:

During the 629<sup>th</sup> meeting of the Advisory Committee on Reactor Safeguards (ACRS), November 4-7, 2015, we met with representatives of the NRC staff to review a draft of the SECY paper, "Recommendations on Issues Related to Implementation of a Risk Management Regulatory Framework." We also had the benefit of discussions with representatives of the PWR Owners Group, the BWR Owners Group, and the Nuclear Energy Institute. Our Subcommittee on Reliability and Probabilistic Risk Assessment held meetings on this matter on September 4, 2013, October 17, 2014, February 20, 2015, June 8, 2015, and October 19, 2015. We also had the benefit of the referenced documents.

**CONCLUSIONS AND RECOMMENDATIONS**

1. The principles of a risk management regulatory framework should be established as a vision for how the agency will regulate 10 to 15 years in the future.
2. The staff should work with licensees to develop a voluntary approach for a risk-informed alternative licensing basis. This approach should evolve from initial applications by interested operating reactor licensees. Having a comprehensive framework in place will be especially important for future licensing and oversight of new reactors.
3. We agree with the staff's conclusion to not establish a formal "design-basis extension" category of events at this time.
4. A Commission policy statement that includes the definition, objectives, and principles of defense in depth can be deferred until there is clear direction to move forward with a regulatory framework that encompasses an integrated risk-informed defense-in-depth concept.
5. A new or revised Commission policy statement on agency-wide adoption of a risk management regulatory framework is not needed.

## **BACKGROUND**

In a February 11, 2011 memorandum, the Commission Chairman established a Risk Management Task Force (RMTF), with the charter to “develop a strategic vision and options for adopting a more comprehensive and holistic risk-informed, performance-based regulatory approach for reactors, materials, waste, fuel cycle, and transportation that would continue to ensure the safe and secure use of nuclear material.” In April 2012, the RMTF published its report as NUREG-2150, “A Proposed Risk Management Regulatory Framework.” This report proposes a risk management regulatory framework (RMRF) for “how the agency should be regulating 10 to 15 years in the future.” The report recommends that the NRC formally adopt the proposed RMRF by issuing a Commission policy statement. As proposed, the RMRF would be applicable to both safety and security, and would apply to the activities of the entire agency (i.e., all regulated areas). The RMTF report also provides specific recommendations for each regulated program area.

On June 14, 2012, the Chairman issued a tasking memorandum directing the staff to “review NUREG-2150 and provide a paper to the Commission that would identify options and make recommendations, including the potential development of a Commission policy statement. In developing its options, the staff should consider how modifications to the regulatory framework could be incorporated into important agency policy documents, such as the Strategic Plan.”

In parallel, the staff developed SECY-13-0132, which proposed three potential regulatory improvement activities to disposition Recommendation 1 from the Fukushima Near-Term Task Force (NTTF) report, “Recommendations for Enhancing Reactor Safety in the 21st Century.” Recommendation 1 was to establish a “logical, systematic, and coherent regulatory framework for adequate protection that appropriately balances defense-in-depth and risk considerations.” In the Staff Requirements Memorandum on SECY-13-0132, the Commission closed NTTF Recommendation 1. The Commission directed the staff to reevaluate the objectives of the staff’s proposed Improvement Activity 1 (establish a new design-basis extension category) and Improvement Activity 2 (establish Commission expectations for defense in depth) “in the context of the Commission direction on a long-term Risk Management Regulatory Framework (RMRF), more specifically, the proposed policy statement.” The Commission also directed the staff to include in the Commission Paper on the RMRF a description of any interrelationships of ongoing risk-informed initiatives to ensure the activities are well coordinated, and effectively planned and implemented.

## **DISCUSSION**

As we noted in our November 20, 2013 letter report on the proposed disposition of NTTF Recommendation 1, the ACRS has long advocated a regulatory framework that embodies the concepts of risk and defense-in-depth as fundamental elements of a rational, objective, and integrated decision-making process. The principles of a risk management regulatory framework should be established as a vision for how the agency will regulate 10 to 15 years in the future.

The staff's evaluation of the proposed RMRF notes that the current regulatory process has successfully addressed emergent issues that have potential safety impact. It cites the regulatory improvements and industry initiatives implemented in response to the Fukushima Dai-ichi accident as examples of that process. Unfortunately, similar observations and conclusions were made in the wake of the accident at Three Mile Island. One intent of the proposed RMRF is to transition from a regulatory framework that is often reactive to episodic events and emergent safety concerns to a framework which benefits from a more comprehensive assessment of risk (i.e., what can go wrong, how likely is it, and what are the consequences). Thus, the need for the proposed RMRF is not eliminated by recent responses to the Fukushima Dai-ichi accident. On the contrary, if it had been in place, that framework would have supported more efficient and effective regulatory assessment and guidance for each proposed activity.

Stakeholder comments did not support the proposed Option 2 in the draft "NRC Staff White Paper on Options for Responding to the June 14, 2012 Chairman's Tasking Memorandum on 'Evaluating Options Proposed for a More Holistic Risk-Informed, Performance-Based Regulatory Approach'." The staff's articulation of that option suffers from statements that seem to impose ill-defined burdens without clearly commensurate benefits. It is natural that licensees would be skeptical. That skepticism is born from the recent difficult experience with implementation of complex voluntary initiatives such as the transition to risk-informed fire protection programs under National Fire Protection Association Standard 805, and a business environment of limited resources.

Despite industry reservations, some licensees have expressed interest in pursuing Option 2. Further pursuit of Option 2 in concert with licensees will require a more detailed exposition of that option.

The history of risk-informed regulation is punctuated by progressive innovations made by individual licensees within a regulatory environment that encourages improved use of risk insights. Applicants for new reactor design certifications and promoters of the next generation of reactors have also emphasized the need for a more comprehensive risk-informed licensing framework. The initiatives proposed in Option 2 of the staff's white paper provide an opportunity for the agency and the industry to pilot these concepts in the context of well-established principles and requirements for currently operating reactors. The staff should work with the industry to develop a voluntary approach for a risk-informed alternative licensing basis. In addition to possible near-term benefits for the voluntary participants, this approach provides the needed experience and understanding of expectations for the desired transition to future reactor licensing.

Sections II, III, and IV of the staff's draft SECY paper address, respectively, the re-evaluation of proposed Improvement Activities 1 and 2 from NTTF Recommendation 1, consideration of a Commission policy statement on agency-wide adoption of a risk management regulatory framework, and a description of the interrelationships among ongoing risk-informed initiatives. Our observations, conclusions, and recommendations on the material in Sections II and III follow from our preceding discussion of a path forward for the RMRF. We have no comments on the material in Section IV.

It is premature to establish a formal "design-basis extension" category of events with corresponding regulatory requirements. The NTTF recommended development of regulatory requirements to address "extended design-basis" events, and the RMTF described a functionally similar "design-enhancement" category. Those concepts merit careful consideration prior to any implementation. They are addressed partially by approaches that are used for enhanced regulatory treatment of non-safety systems that are important to safety for new reactor designs. The proposed RMRF extends that paradigm further to consider a more fundamental risk-informed basis for plant licensing. Identification and regulatory treatment of conditions that transcend the traditional concept of safety-related protection against design-basis events should benefit from initial voluntary experience, especially if it were within a comprehensive risk-informed regulatory framework.

A Commission policy statement that includes the definition, objectives, and principles of defense in depth should be deferred until there is clear direction to move forward with a regulatory framework that encompasses an integrated risk-informed defense-in-depth concept. That framework is essential to provide objective measurement of the effectiveness of installed barriers, systems for the prevention and mitigation of severe accidents, and personnel actions, including an assessment of the corresponding uncertainties. Proposals based on defense in depth could then be evaluated within an objective risk-informed context to provide assurance that adequate safety margins are maintained.

A new or revised Commission policy statement on agency-wide adoption of a risk management regulatory framework is not needed. The current policy statement encourages the use of risk analysis wherever it is practicable.

We look forward to continuing our interactions with the staff to further develop and refine these concepts for an enhanced future agency regulatory framework.

Sincerely,

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John W. Stetkar  
Chairman

## REFERENCES

1. U.S. Nuclear Regulatory Commission, Draft SECY-2015-XXXX, "Recommendations on Issues Related to Implementation of a Risk Management Regulatory Framework," October 8, 2015 (ML15280A337).
2. U.S. Nuclear Regulatory Commission, "NRC Staff White Paper on Options for Responding to the June 14, 2012 Chairman's Tasking Memorandum on 'Evaluating Options Proposed for a More Holistic Risk-Informed, Performance-Based Regulatory Approach'," April 20, 2015 (ML15107A402).

3. U.S. Nuclear Regulatory Commission, SRM-SECY-13-0132, "NRC Staff Recommendation for the Disposition of Recommendation 1 of the Near-Term Task Force Report," May 19, 2014 (ML14139A104).
4. U.S. Nuclear Regulatory Commission, SECY-13-0132, "NRC Staff Recommendation for the Disposition of Recommendation 1 of the Near-Term Task Force Report," December 6, 2013 (ML13329A336).
5. Advisory Committee on Reactor Safeguards, "Draft Commission Paper, 'NRC Staff Recommendation for the Disposition of Recommendation 1 of the Near-Term Task Force Report'," November 20, 2013 (ML13318A135).
6. Memorandum from Gregory B. Jaczko, "Evaluating Options Proposed for a More Holistic Risk-Informed, Performance-Based Regulatory Approach," June 14, 2012 (ML121660102).
7. U.S. Nuclear Regulatory Commission, NUREG-2150, "A Proposed Risk Management Regulatory Framework," April 2012 (ML12109A277).
8. U.S. Nuclear Regulatory Commission, SECY-11-0093, "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).
9. Memorandum from Gregory B. Jaczko, "Assessment of Options for More Holistic Risk-Informed, Performance-Based Regulatory Approach," February 11, 2011 (ML110460611).

3. U.S. Nuclear Regulatory Commission, SRM-SECY-13-0132, "NRC Staff Recommendation for the Disposition of Recommendation 1 of the Near-Term Task Force Report," May 19, 2014 (ML14139A104).
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