

NOTATION VOTE

RESPONSE SHEET

TO: Annette Vietti-Cook, Secretary
FROM: Commissioner Baran
SUBJECT: SECY-18-0060: Achieving Modern Risk-Informed Regulation

Approved X Disapproved X Abstain Not Participating

COMMENTS: Below Attached X None

Entered in "STARS"

Yes X

No



SIGNATURE
7/31/19

DATE

Commissioner Baran's Comments on SECY-18-0060, Achieving Modern Risk-Informed Regulation

In January 2018, the Executive Director for Operations established a team composed of NRC staff "to identify potential transformational changes to NRC's regulatory framework, culture, and infrastructure" with a "focus on transformation that enables the safe and secure use of new technologies."¹ The staff's paper is based on the work of the Transformation Team and proposes four initiatives: (1) developing a performance-based, technology-inclusive regulation for the licensing of non-light-water reactors; (2) developing a new digital instrumentation and control regulation based on high-level, performance-based safety design principles; (3) developing "an agency-wide process and organizational tools to expand the systematic use of qualitative and quantitative risk and safety insights"; and (4) initiating a rulemaking to revise 10 CFR § 50.59 "to allow licensees additional flexibility to make facility changes without prior NRC approval."²

In my view, it makes sense to consider transformational change when a new technology challenges NRC's existing regulatory approach or when the agency has historically struggled to regulate effectively in a particular area. On the other hand, when a regulatory process has worked well over the years, it is better to pursue targeted refinements aimed at solving clearly defined problems. Whether NRC is considering a major, transformational change or a more modest, incremental change, we must keep our focus squarely on our safety and security mission. Transformation at NRC can't be about rolling back safety and security standards to save money. And it can't be about fewer inspections or weaker oversight. That would take NRC in the wrong direction.

When considered with these criteria in mind, some of the transformational changes proposed by the staff pass muster and others do not. That is also true of potential regulatory changes that the staff did not address in this paper. There are ideas we should explore as part of this effort and other ideas we should reject as inconsistent with our mission as an independent safety regulator.

Non-Light-Water Reactors

The staff recommends developing a performance-based, technology-inclusive regulation for the licensing of non-light-water reactors. The staff envisions a rulemaking that would establish design and operation criteria "based on high-level nuclear safety principles that are unwavering over time and applicable regardless of the type of technology."³ This approach would be consistent with the rulemaking required by recently enacted legislation.⁴

I agree with the staff that there is a strong case for updating NRC's regulations to account for non-light-water reactor technologies. NRC's current power reactor regulations were written for light-water reactors, which make up the entire existing fleet. So it makes sense to update those requirements to address different technologies. I approve the staff's recommendation and look forward to reviewing a rulemaking plan. As the staff proceeds with this effort, it will be important to balance these broad rulemaking activities with the need to focus

¹ SECY-18-0060 at 1.

² *Id.* at 2.

³ SECY-18-0060 Enclosure 5 at 11.

⁴ See P.L. 115-439.

sufficient resources on the design-specific work related to particular non-light-water reactor licensing submittals.

Digital Instrumentation and Control

The staff also recommends developing a new digital instrumentation and control regulation based on high-level, performance-based safety design principles rather than on highly prescriptive standards. The new rule likely would move away from exclusive reliance on the Institute of Electrical and Electronics Engineers (IEEE) standards and establish a process by which applicants could meet alternative standards that have been successfully used in other U.S. industries, as well as in the nuclear sector in other countries.

NRC's regulatory approach to digital instrumentation and control would seem to be a strong candidate for transformative change. Over the years, NRC has struggled with this complex set of issues. It has proven to be a real challenge to ensure that digital upgrades are done safely and do not introduce any unacceptable risks, while establishing a reliable regulatory framework for making these upgrades. Moreover, though digital technology has been around for decades and is used extensively in other sectors of the economy, U.S. nuclear power plants still rely primarily on analog technology and components. As a practical matter, digital represents a "new" technology that challenges our existing regulatory framework. Because digital instrumentation and control technology has rapidly evolved in recent decades and will continue to do so, it is particularly ill-suited to rigid standards and prescriptive guidance. If other sectors or nuclear regulators in other countries have had success with non-IEEE standards, it makes sense for NRC to evaluate whether compliance with alternative consensus standards could be an acceptable way of meeting NRC's safety and security requirements.

On the other hand, I am concerned that a near-term rulemaking to establish this new regulatory framework could shift focus away from the current efforts to improve key guidance documents, at a time when significant progress is being made. I do not want to lose the momentum we have right now. And if updated guidance is able to effectively resolve the major regulatory challenges and provide a predictable framework for making digital upgrades, I have a hard time seeing the case for setting that guidance aside and starting from scratch with a new rule. Instead of deciding now whether to initiate a rulemaking sometime down the road, I think it would be better to first see whether updating the guidance proves to be an effective solution. Although I am open-minded about ultimately pursuing a transformative digital instrumentation and control rulemaking, I believe the staff should complete the ongoing efforts, allow the new guidance to be used for a period of time, and then determine the extent to which the new guidance has resolved the challenges in this area. Based on its evaluation, the staff should provide a notation vote paper to the Commission with a recommendation about whether a rulemaking is needed.

Agency-Wide Licensing Process Changes

A more amorphous staff recommendation is to make changes to the licensing processes across the agency by: (1) developing "agency-level guidance that facilitates staff's increased use of risk and safety insights (both qualitative and quantitative) to determine the appropriate scope and depth of safety, security, and environmental reviews"; and (2) expanding the use of organizational tools, such as expert panels, guiding coalitions, and tiger teams, "to facilitate more timely licensing decisions."⁵ As part of this recommendation, the staff paper refers to

⁵ SECY-18-0060 at 8-9.

accepting more risk and uncertainty in areas characterized as being of low safety significance, “reduc[ing] the degree of independent analysis” by NRC, and significantly reducing “the length and detail of both the safety and environmental documents” associated with licensing reviews.⁶

While I agree that it generally makes sense to focus safety reviews on risk-significant aspects of an application, the agency already has several initiatives underway to optimize the use of risk insights. For example, the staff is currently implementing plans to update risk-informed decision-making guidance, enhance training, refine probabilistic risk assessment modeling assumptions, and advance a number of risk-informed licensing initiatives.⁷ In addition, Office Directors have provided guidance to staff reviewers on the scope of licensing reviews. And with respect to accident tolerant fuel and non-light-water reactor technologies, the staff is already thinking through how it could use non-NRC codes in rigorous, independent licensing reviews. It is not clear from the paper what gap is being filled by the recommended activities.

Moreover, I am not convinced that agency-wide risk guidance applicable to all types of licensing reviews is necessary, desirable, or even feasible. NRC conducts a broad range of licensing reviews for very different types of facilities and materials with varying levels of risk information available. Any regulatory guidance that would apply to operating power reactors, research and test reactors, new reactor applicants, fuel cycle facilities, low-level waste disposal facilities, medical isotope production facilities, and industrial, commercial, and medical users of radioactive materials would have to be so high-level that I question whether it would be particularly useful.

I do not support guidance changes aimed at reducing the length and detail of National Environmental Policy Act environmental reviews. The agency has often struggled with including sufficient detail in these important reviews. Efforts to “streamline” environmental impact statements would be counterproductive and could have significant adverse unintended consequences.

Although the organizational tools discussed by the staff have been used at times by the agency, the staff paper does not explain how the use of the tools would be expanded across the agency or what practical effects this would have. There is no real case made for why it would be a good idea to increase the use of these tools or how they are superior to existing processes.

For these reasons, I disapprove implementing a set of far-reaching, ill-defined concepts to all licensing reviews agency-wide. I would be open to a more detailed proposal to pilot some of these guidance changes and organizational tools for the reviews in a specific new technology area, such as accident tolerant fuels or non-light-water reactors, where updated licensing processes are already under development.

Revisions to § 50.59

A final staff recommendation is to revise NRC's § 50.59 regulation to provide licensees additional flexibility to make changes to nuclear power plants without prior NRC approval. Under the revised regulation, fewer plant changes would require license amendment requests and substantially fewer plant changes would even require licensee screenings under § 50.59. As proposed by the staff, these changes would build off the risk-informed categorization of plant

⁶ SECY-18-0060 Enclosure 5 at 5-6.

⁷ See, e.g., SECY-17-0112, “Plans for Increasing Staff Capabilities to Use Risk Information in Decision-Making Activities.”

components performed by some licensees under § 50.69, a regulation that allows licensees to seek NRC approval for different regulatory treatment of certain categories of components based on site-specific probabilistic risk assessments.

When I apply my criteria for determining whether a transformational change is appropriate, these proposed changes to § 50.59 do not pass the test. They represent a significant reduction in NRC's oversight of nuclear reactor safety. They do not involve adapting to or preparing for new technologies. And there is no identified problem that calls for major changes. I can understand why licensees would prefer to submit fewer license amendment requests or perform fewer § 50.59 screenings, but the staff paper does not present a persuasive safety case for why these outcomes would improve safety or otherwise benefit the public. The paper offers no specific examples of types of license amendment requests that the staff views as unwarranted or problematic.

On the other hand, there are numerous cases over the years where existing flexibilities under § 50.59 have been mis-used. The most prominent example is the steam generator tube leaks at the San Onofre plant in 2012, which ultimately led the plant to shut down. In that case, the licensee failed to conduct a proper § 50.59 evaluation to determine whether a license amendment was required.⁸ More recently, in 2017, as part of an inspection for license renewal at the Waterford plant, NRC inspectors identified that the licensee had begun using an analytical code to evaluate reactor vessel fluence that was not previously approved for use at the facility and was a departure from the method of evaluation described in the updated final safety analysis report. Also in 2017, as part of a triennial engineering inspection, NRC identified that the licensee failed to obtain a license amendment prior to implementing a change at North Anna that increased the likelihood of a malfunction of a safety-related flood protection berm. These are not isolated occurrences. Since issuance of the current § 50.59 rule in 2001, NRC inspectors have identified over 200 findings and violations related to licensee implementation of this rule. Given this history, I do not believe the regulation should be weakened to scale back NRC oversight in this area.

I am also concerned that the proposed revisions to § 50.59 would go even further than § 50.69, which has not yet been widely implemented. Before we go beyond this already expansive regulation, we should allow for a period of § 50.69 implementation and fully evaluate the results.

For these reasons, I disapprove the recommended rulemaking to revise § 50.59.

Potential Changes Not Discussed in the Paper

Many other ideas for transformative changes have come from within the agency and from external stakeholders. As we consider these ideas, we need to be thorough in our analysis of the impacts of potential changes. Our number one priority must be our safety and security mission.

Several of the transformation concepts being discussed involve the Reactor Oversight Process. The Reactor Oversight Process is NRC's basic framework for overseeing the safety of the nation's nuclear power plants. It affects every power reactor in the country. The ROP has generally been an effective safety framework, and I do not support weakening it.

⁸ NRC Regulatory Issue Summary 2016-03, "10 CFR 50.59 Issues Identified in NRC's San Onofre Steam Generator Tube Degradation Lessons Learned Report" at 3.

As we think about areas where the agency has repeatedly struggled over the years and where significant changes may be warranted, I believe we should focus additional attention on two areas: the rulemaking process and the agency's ability to quickly access and understand the licensing basis of each nuclear power plant.

During my time on the Commission, I have seen several rulemakings that have taken a decade or longer to complete. I think everyone agrees that this is far too long, even for a complex rule. Rulemaking is an important regulatory tool, and we need to ensure that it is effective tool at NRC. In some cases, we may use rulemaking to address a pressing safety or security problem. In other cases, a rule may be necessary to allow for greater technological innovation or new approaches to longstanding regulatory issues. We should not allow unnecessarily protracted rulemakings to be an obstacle to getting the right standards in place. In order to improve the timeliness of NRC rulemakings, the staff should look at what processes, practices, and strategies have worked well at NRC and other federal regulatory agencies and which have not. For example, the staff should assess whether targeted rulemakings focused on one or two regulatory changes proceed more smoothly than broad rulemakings that make many, sometimes unrelated changes to a regulation. The staff should also assess whether all of the current steps in NRC's rulemaking process are appropriate for every rule. NRC's rulemaking process includes steps, such as the draft regulatory basis and regulatory basis, that other agencies' rulemaking processes do not. For highly technical rules, these steps may add considerable value. For rules that are not technically complex, they may unnecessarily slow down the process. Based on an evaluation of the factors and practices that have been shown to contribute to timely, effective rulemakings (and those that have not), the staff should offer its recommendations for any changes to the rulemaking process in a notation vote paper submitted to the Commission within one year.

To be a successful regulator, NRC also must be able to promptly access and understand the regulatory requirements applicable to each individual nuclear power plant. A solid understanding of each plant's licensing basis is a prerequisite for effective oversight and enforcement. However, because these requirements are contained in voluminous documents that are often decades old, this foundational regulatory step is too often a challenge for the agency. Digitization of licensing basis documents is underway and may assist in quickly locating records of license requirements. And the staff is looking at whether the Task Interface Agreement process can be updated to provide more timely answers to questions from inspectors about the licensing basis of a plant. But I believe the staff should perform a holistic review of how to enhance the agency's capabilities in this area. The staff should complete its review and provide the results to the Commission within one year.

Conclusion

To do the best job for the American people, NRC needs to be open to new ideas and new approaches. But we also need to carefully and thoroughly evaluate proposed regulatory changes to ensure that they will have a positive impact on safety. That's our core mission and must remain our top priority.