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

March 23, 2022

The Honorable Christopher T. Hanson
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: PRELIMINARY PROPOSED RULE LANGUAGE AND GUIDANCE TO ALIGN LICENSING PROCESSES AND LESSONS LEARNED FROM RECENT REACTOR LICENSING ACTIVITIES

Dear Chairman Hanson:

During the 693rd meeting of the Advisory Committee on Reactor Safeguards, March 2-4, 2022, we completed our review and evaluation of draft documents prepared by the staff to support rulemaking to align the licensing processes under Title 10 of the *Code of Federal Regulations* (10 CFR) Parts 50 and 52 and address lessons learned from new reactor licensing activities. We were briefed by staff on this topic during our November 2014, March 2021, and March 2022 meetings. Our Regulatory Policies and Practices Subcommittee was also briefed during its September 20, 2019, February 1, 2022, and February 18, 2022, meetings. In addition, we were informed by comments provided by external stakeholders during the meetings and the referenced documents.

CONCLUSION AND RECOMMENDATIONS

1. The proposed changes to the regulation and accompanying guidance documents address the identified objectives for this rulemaking. Staff should proceed with this rulemaking package.

2. We offer several comments that staff should consider as they move forward with this package.

BACKGROUND

For several decades, new reactor licensing and guidance development activities focused primarily on the licensing processes in 10 CFR Part 52 rather than those in 10 CFR Part 50. Although the licensing process under 10 CFR Part 50 provides reasonable assurance of public health and safety, it has not been aligned with specific requirements found in 10 CFR Part 52. For example, 10 CFR Part 52 formalized expectations related to the Commission's Severe Accident Policy Statement, codifying requirements related to Three Mile Island (TMI), severe

accidents, and probabilistic risk assessments (PRAs). As a result, the two licensing processes may not provide the same levels of safety, security, or environmental protection. In addition, lessons learned from recent licensing activities should be considered in the overall alignment of 10 CFR Parts 50 and 52.

Furthermore, the rationale and perceived safety benefits associated with technical requirements in 10 CFR Parts 50 and 52 were heavily influenced by the presumption that they would be applied to light-water reactors (LWRs). Although 10 CFR Part 53 may ultimately provide a more flexible licensing option, its codification is still years away. For the immediate future, all applicants (including non-LWR concepts) must use either 10 CFR Part 50 or 10 CFR Part 52.

In SRM-SECY-15-0002, the Commission tasked the staff to proceed with an integrated rulemaking effort to align the licensing requirements in 10 CFR Parts 50 and 52 and directed the staff to incorporate lessons learned from recent new power-reactor licensing reviews. As documented in SECY-19-0084 and SECY-19-0034, the objectives and scope of the rulemaking activities evolved as this effort progressed. Currently, staff proposes to issue a package of draft rulemaking documents that includes changes to 10 CFR Parts 50 and 52 regulatory requirements and associated documents, such as regulatory guides and affected chapters of the Standard Review Plan (SRP). We commend the staff on their effort to prepare this licensing package and for their thorough responses to our questions and comments.

DISCUSSION

Alignment of 10 CFR Parts 50 and 52

The proposed changes to the regulation and associated guidance documents will require applicants for design certifications (DCs), standard design approvals (SDAs), construction permits (CPs), operating licenses (OLs), combined licenses (COLs), or manufacturing licenses (MLs) to: (1) address prevention and mitigation of severe accidents; (2) complete a PRA; (3) address technically relevant TMI action items in 10 CFR 50.34(f); and (4) describe fire-protection measures as required in 10 CFR 50.48. These changes offer several safety and regulatory-efficiency benefits.

The proposed changes are designed to align 10 CFR Parts 50 and 52 on the use of PRA in the design of the facility, and to ensure that similar risk information is provided in applications for new power-reactor CPs or OLs under 10 CFR Part 50. This is desirable, since recent licensing experience under 10 CFR Part 52 indicates that PRA results have provided a useful foundation for risk-informing licensing reviews. The proposed rulemaking changes will also allow DC applicants and CP and COL holders to risk-inform the categorization of structures, systems, and components using PRA results as defined in 10 CFR 50.69, and provide more flexibility with respect to maintaining the plant PRA. During our review, we identified several topics that could benefit from additional clarification:

- We questioned the required level of detail for an “essentially complete conceptual design” for CP applications under 10 CFR Part 50. Staff plans to substitute “preliminary design” for “essentially complete conceptual design” should reduce confusion. We support staff efforts to provide additional guidance regarding the level of detail for a preliminary design.

- Other words and phrases also have the potential to lead to regulatory inefficiencies. For example, words such as “credible” and “substantial” are not consistently used in the

regulations and guidance; clearer definitions and associated expectations could lead to more consistent application of regulatory requirements. Improved clarity and regulatory predictability are objectives of this rulemaking; failing to make these suggested clarifications may constitute a missed opportunity.

10 CFR Part 52 Process Improvements

Proposed changes to 10 CFR Part 52 regulations and guidance are designed to increase flexibility, reduce unnecessary regulatory burden, and provide more clarity. More flexibility would be granted in operator licensing during construction, and credit would be given for experience at comparable facilities. Under certain conditions, requirements related to physical security, fitness for duty, and emergency planning would become more flexible. Expiration dates and renewal requirements for DCs, SDAs, and MLs would be eliminated; and several reporting requirements would also be reduced.

As a result of our review, we have two observations:

- Staff provided several clarifications and modifications affecting the change process for approved designs (including adding definitions for terms such as “essentially complete design” or Tier 1, Tier 2, and Tier 2*). COL applicants and licensees will be allowed to use 10 CFR 50.59 processes to change information related to Tier 2 without prior NRC approval. We concur with the staff decision to continue precluding use of a 10 CFR 50.59-like process for changes to Tier 1 and Tier 2* information.

- Changes in 10 CFR Parts 50 and 52 were initially developed to address LWR submittals by highly experienced vendors. For example, NRC has reduced reporting requirements for changes or errors in evaluation models for emergency core cooling systems, based on the small number of such problems among current SDA or DC applicants. We caution that this may not be the case for future designs with new and unique evaluation models.

Other Considerations

We note that Chapter 19 of the SRP charges staff with ensuring that “The PRA reasonably reflects the as-designed, as-built, and as-operated plant, and the PRA maintenance program will ensure that the PRA will continue to reflect the as-designed, as-built, and as-operated plant…” However, the process under 10 CFR Part 52 does not provide a step prior to fuel load where the PRA is required to be inspected. This may reflect a missed opportunity to identify potential safety problems in the completed plant.

Also, we were informed that this rulemaking effort does not address applications for reactors being transported to and from a site with a loaded core. We suggest this be noted in the preamble. It appears that processes associated with this new application would be subject to multiple regulations for possession, manufacturing, transport and operation. Staff explores licensing concepts related to this new application in SECY-20-0093 and, more recently, in a white paper dated September 10, 2021. Since existing regulations were not intended to apply to fueled transportable microreactors, we support the staff’s holistic look at these regulations with the goals of improving regulatory efficiency, allowing for risk-informed approaches, and

addressing potential interface concerns. We plan to explore with the staff, in future interactions, whether a roadmap or other guidance may benefit applicants and the agency as they address such issues.

SUMMARY

The proposed changes to the regulation and accompanying guidance documents address the objectives of aligning the licensing processes under 10 CFR Parts 50 and 52 and incorporating selected lessons learned from recent reactor-licensing activities. Staff should proceed with this rulemaking package. In this letter, we offer several comments that staff should consider as they move forward with this package.

We are not requesting a formal response from the staff to this letter report.

Sincerely,

Signed by Rempe, Joy
on 03/23/22

Joy L. Rempe, Chairman

REFERENCES

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2. U.S. Nuclear Regulatory Commission, “Status of Rulemaking to Align Licensing Processes and Lessons Learned from New Reactor Licensing (RIN 3150-AI66),” SECY-19-0084, August 27, 2019 (ML19161A194).

3. U.S. Nuclear Regulatory Commission, “Staff Requirements—SECY-15-0002, "Proposed Updates of Licensing Policies, Rules, and Guidance for Future New Reactor Applications,” SRM-SECY-15-0002, September 22, 2015 (ML15266A023).

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5. U.S. Nuclear Regulatory Commission, “Improving Design Certification Content,” SECY-19-0034, April 8, 2019 (ML19080A034).

6. U.S. Nuclear Regulatory Commission, NUREG–0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition” (ML083580020).

7. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.174, Revision 3, “An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis,” January 2018 (ML17317A256).

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10. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.187, Revision 3, “Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments,” June 2021 (ML21109A002).

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14. U.S. Nuclear Regulatory Commission, Regulatory Guide 4.7, Revision 3, “General Site Suitability Criteria for Nuclear Power Stations,” March 2014 (ML12188A053).

15. U.S. Nuclear Regulatory Commission, Standard Review Plan (NUREG-0800), Chapter 19, Revision 3, “Probabilistic Risk Assessment and Severe Accident Evaluation for New Reactors,” December 2015 (ML15089A068).

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March 23, 2022

SUBJECT: DRAFT PROPOSED RULE REGARDING ALIGNMENT OF LICENSING PROCESSES AND LESSONS LEARNED FROM NEW REACTOR LICENSING

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