# POLICY ISSUE
## NOTATION VOTE

## RESPONSE SHEET

**TO:** Carrie M. Safford, Secretary

**FROM:** Chairman Wright

**SUBJECT:** SECY-24-0008: Micro-Reactor Licensing and Deployment Considerations: Fuel Loading and Operational Testing at a Factory

**Approved** X **Disapproved** ____ **Abstain** ____ **Not Participating** ____

**COMMENTS:** **Below** ____ **Attached** X **None** ____

DAVID WRIGHT

Digitally signed by DAVID WRIGHT
Date: 2025.03.21 07:56:39 -04'00'

**Signature**

**Entered in STAR**

**Yes** X

**No** ____

**Commissioner Wright's Comments on SECY-24-0008, "Micro-Reactor Licensing and Deployment Considerations: Fuel Loading and Operation Testing at a Factory"**

In SECY-24-0008, the staff provides options for regulating certain aspects of fuel loading and operational testing of commercial factory-fabricated microreactors. In particular, the staff developed options related to three policy issues: (1) the use of features to preclude criticality to determine whether a reactor is considered to be "in operation, (2) the type of license(s) that would be required to enable loading fuel at a factory, and (3) licensing approaches to enable operational testing at a factory. I appreciate the staff's efforts in developing innovative options for the Commission's consideration.

Microreactors are a powerful example of the dynamic shift in the nuclear landscape. Conceptually, they're very different than the large light-water reactors that make up the current operating fleet. They're 100 to 1,000 times smaller than conventional nuclear reactors and can be fully factory-built and installed on-site.[1] The possibilities for fabrication, deployment, and utilization are vast. Given the scalability and potential flexibility of microreactors, we are seeing increased interest in their use from a variety of entities with various business models and use cases in mind. We must focus on enabling the safe use of these novel and innovative nuclear concepts, making sure our regulatory approach is not unnecessarily burdensome.

I applaud the staff for thinking creatively about how to efficiently license microreactors in a risk-informed manner within the confines of our current regulatory framework. I believe that the staff has appropriately tailored the options and recommendations for the policy issues found in SECY-24-0008 to the characteristics of a factory-fabricated microreactor. Specifically, the staff provided a recommended option that a factory-fabricated module that includes features to preclude criticality would not be considered "in operation" when loaded with fuel. This is a departure from the Commission's traditional view of a reactor being "in operation" once fuel is first loaded. I believe this approach is fitting for the currently envisioned deployment models for factory-fabricated microreactors.[2] I expect these features to be highly reliable—as the staff notes, these "[f]eatures to preclude criticality would ensure that a factory-fabricated module would not attain criticality with sufficient margin and that the potential hazard associated with loading fuel would be even less than the 'minimal' hazards for fuel loading of reactors…" Therefore, I approve Option 1b in SECY-24-0008. When implementing this position, it will be important to clarify the details of what constitutes "features to preclude criticality" and be sure that unintentional contradictions with 10 CFR Part 70 are not introduced, specifically in relation to the double contingency principle.

The staff also presented an approach for loading fuel at the factory without requiring a facility operating license under 10 CFR Part 50 or a combined license under 10 CFR Part 52, contingent upon the Commission approving Option 1b. In this scenario, a manufacturing license would authorize possession of the module, and a 10 CFR Part 70 license for possession of special nuclear material would authorize fuel loading. As the staff notes, "requirements for 10 CFR Part 70 licenses better match the technical and safety aspects of loading fuel into a

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[1] Idaho National Laboratory, *Microreactors*, https://inl.gov/trending-topics/microreactors/#:~:text=What%20are%20microreactors%3F,provide%20heat%20for%20industrial%20applications (last visited Dec. 5, 2024).

[2] *See* AEC-R 2/15, "Proposed Revision of 10 CFR, Part 50, Licensing of Production and Utilization Facilities," dated July 15, 1960 (ML21237A274). The Atomic Energy Commission (AEC) staff explained why it did not agree with a comment on the proposed rule suggesting that fuel loading and initial operational testing be authorized under a construction permit; the Commission did not adopt the commenter's suggestion.

micro-reactor with features to preclude criticality than the requirements of 10 CFR Part 50 and 10 CFR Part 52." I agree with this approach and approve Option 2b.

Finally, the staff presented options for operational testing at a factory. The staff's recommendation would provide an alternative approach for applicants under 10 CFR Part 50 by applying most of the safety regulations for non-power reactors to licensing of fuel loading and operational testing. I believe this option is a good example of risk-informing the agency's regulatory approach, and I approve Option 3b.

While I approve the staff's recommended options 1b, 2b, and 3b, I also want to emphasize that the staff should not prohibit the regulatory paths presented by the other options. For example, in SECY-24-0008, the staff notes that Options 3a and 3b are not mutually exclusive, and it would be up to the manufacturer to decide if the approach described in Option 3b were advantageous. In this way, the staff should allow applicants to choose the regulatory path that is most suitable for their deployment model. This was the very philosophy underpinning my vote in SECY-23-0021.

Finally, I want to acknowledge Congress' direction in Section 208 of the ADVANCE Act, which states that the "Commission shall…develop risk-informed and performance-based strategies and guidance to license and regulate micro-reactors… including strategies and guidance for…. risk analysis methods, including alternatives to probabilistic risk assessments."[3] I think we should apply this regulatory direction to more than just microreactors. Therefore, I encourage the staff to continue to think outside the box and exercise innovative strategies.

[3] ADVANCE Act of 2024, Pub. L. No. 118-67, tit. II, § 201.