

NUCLEAR REGULATORY COMMISSION

10 CFR Parts 50 and 70

[NRC-2015-0016]

RIN 3150-AJ53

Spent Fuel Reprocessing

AGENCY: Nuclear Regulatory Commission.

ACTION: Discontinuation of rulemaking activity.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is discontinuing a rulemaking activity that would have amended the NRC's regulations to add a new part to the existing regulatory framework specific to nuclear spent fuel reprocessing facilities. The purpose of this action is to inform members of the public that this rulemaking activity is being discontinued and to provide a brief discussion of the NRC's decision. This rulemaking activity will no longer be reported in the NRC's portion of the Unified Agenda of Regulatory and Deregulatory Actions (the Unified Agenda).

DATES: As of **[INSERT DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**, the rulemaking activity discussed in this document is discontinued.

ADDRESSES: Please refer to Docket ID NRC-2015-0016 when contacting the NRC about the

availability of information for this action. You may obtain publicly-available information related to this action by any of the following methods:

- **Federal Rulemaking Web Site:** Go to <https://www.regulations.gov> and search for Docket ID NRC-2015-0016. Address questions about NRC dockets to Dawn Forder; telephone: 301-415-3407; e-mail: Dawn.Forder@nrc.gov. For technical questions, contact the individual listed in the FOR FURTHER INFORMATION CONTACT section of this document.

- **NRC's Agencywide Documents Access and Management System (ADAMS):** You may obtain publicly-available documents online in the ADAMS Public Documents collection at <https://www.nrc.gov/reading-rm/adams.html>. To begin the search, select "[Begin Web-based ADAMS Search](#)." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to pdr.resource@nrc.gov. For the convenience of the reader, instructions about obtaining materials referenced in this document are provided in the "Availability of Documents" section.

FOR FURTHER INFORMATION CONTACT: Jonathan Marcano, Office of Nuclear Material Safety and Safeguards, telephone: 301-415-6731; e-mail: Jonathan.Marcano@nrc.gov; U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

SUPPLEMENTARY INFORMATION:

I. Background

Industry interest was the primary impetus for the NRC to update the regulatory framework for reprocessing light-water reactor spent fuel. In Staff Requirements Memorandum (SRM)-SECY 13 0093, "Staff Requirements—SECY-13-0093—Reprocessing Regulatory Framework—Status and Next Steps," the Commission approved the NRC staff's

recommendation to develop a reprocessing-specific rule. It directed the staff's "continued development of the regulatory framework be limited in scope—for the time being—to the resolution of Gap 5, 'Safety and Risk Assessment Methodologies and Considerations for a Reprocessing Facility.'" Gap 5 was focused on the development of analytical methods for the quantitative assessment of risks associated with reprocessing facility accidents to inform the basis for the development of regulatory requirements and regulatory guidance.

Based on the level of industry interest and the Commission's direction, from 2013 to 2016 the staff focused its efforts on assessing the quantitative risk associated with reprocessing facility accidents (i.e., Gap 5). In 2016, the staff found that industry interest in constructing and operating a commercial light-water reactor spent fuel reprocessing facility had declined. As a result, in 2016, the NRC temporarily stopped work on the spent fuel reprocessing regulatory framework because of other, higher priorities related to spent fuel storage and transportation, as well as budgetary constraints.

II. Discussion

To inform its decision making, the NRC reached out to interested stakeholders to determine the degree of stakeholder interest in constructing, operating, and licensing a spent fuel reprocessing facility. Specifically, the NRC held a Category 3 public meeting on March 4, 2020; participating stakeholders included Nuclear Energy Institute (NEI), the U.S. Department of Energy (DOE), the Union of Concerned Scientists (UCS), industry representatives, environmental groups, and private citizens. NEI and industry representatives voiced their support for continuing the rulemaking primarily on the basis of a need for a clear and stable regulatory framework for reprocessing and to support advanced reactor licensing. However, no industry stakeholders indicated that they plan to submit an application to the NRC for a reprocessing facility in the foreseeable future. Other stakeholders, such as UCS and members

of the public, indicated they do not support the continuation of the rulemaking because of proliferation and other concerns.

In May 2020, after the public meeting, NEI and the American Nuclear Society (ANS) sent letters to the NRC with further feedback on the need for rulemaking. NEI stated that developers with advanced reactor designs that may eventually source their fuel from the spent fuel of other reactors are generally not planning to do so in the near future. NEI encouraged the NRC to assess the technologies for advanced reactors before making any decisions on the reprocessing rulemaking. It also suggested that the NRC should not charge existing facilities with fees for work on a reprocessing rule. ANS encouraged the NRC to continue with the rulemaking, which is consistent with the ANS policy position that recycling (i.e., the combination of reprocessing and fuel fabrication) may significantly enhance uranium resource utilization by reclaiming a larger fraction of the unused energy in used fuel, which could minimize the volume and toxicity of radioactive waste requiring disposal in a geologic repository. The ANS also stated that the lack of an efficient, technically robust, and technology-inclusive regulatory foundation for reprocessing and recycling is a barrier to innovation in advanced reactor designs.

The NRC also engaged organizations and vendors in the advanced reactor community to assess their interest in and specific needs for reprocessing, such as the use of fuel recovered from the existing spent fuel feedstock. Based on these interactions, the NRC concluded that, in addition to using fresh fuel obtained from enrichment and fabrication, some advanced reactor designs have the capability to eventually source their fuel from the spent fuel of other reactors, but there was limited interest in pursuing reprocessing activities in the near future (within 10 to 20 years).

The NRC also engaged staff from DOE's Office of Nuclear Energy to exchange information regarding developments in reprocessing efforts and technologies, particularly in reprocessing of spent fuel for advanced reactors. Current DOE efforts in the area of reprocessing are aimed at providing a limited near-term supply of high-assay low-enriched

uranium (HALEU) for initial advanced reactor designs. These DOE reprocessing initiatives do not require NRC licensing. The NRC is supporting other commercial initiatives involving HALEU fuel. However, the NRC is not aware of any other DOE initiatives to reprocess spent fuel (i.e., light water reactor fuel) or potential commercial efforts to reprocess spent HALEU fuel for reuse in advanced reactors.

The NRC’s decision to discontinue this rulemaking is based on the estimated costs to conduct the rulemaking and the limited interest expressed or expected from industry to build any type of facility involving reprocessing technologies in the near-term. The staff estimates that \$2.5 million would be needed to complete a regulatory basis, develop and issue guidance, and develop a proposed and final rule. Given the estimated costs and the limited interest expressed or expected from potential applicants and advanced reactor designers in building facilities involving reprocessing technologies in the near-term, the staff concludes that a continued rulemaking effort is not currently justified. Therefore, while a rule would provide additional clarity for potential applicants, it is not cost-justified at this time.

III. Availability of Documents

The documents identified in the following table are available to interested persons in the ADAMS Public Documents collection.

DOCUMENT	ADAMS ACCESSION NO.
SRM-SECY-13-0093, “Reprocessing Regulatory Framework – Status and Next Steps,” dated November 4, 2013.	ML13308A403
Summary of March 4, 2020 Public Meeting to Discuss Status of Spent Fuel Reprocessing Rulemaking, dated March 16, 2020.	ML20077K146
SRM-SECY-15-0129, “Commission Involvement in Early Stages of Rulemaking,” dated February 3, 2016.	ML16034A441

E-mail and Letter from RMcCullum: NEI Comments on Spent Fuel Reprocessing Rulemaking, dated May 28, 2020.	ML20154K554
E-mail and Letter from JStarkey: ANS Comments on Spent Fuel Reprocessing Rulemaking, dated May 28, 2020.	ML20154K530
SECY-XX-XXXX, "Discontinuation of Rulemaking – Spent Fuel Reprocessing," dated Month XX, XXXX.	ML20301A387

IV. Conclusion

The NRC is no longer pursuing rulemaking for spent fuel reprocessing facilities for the reasons discussed in this document. In the next edition of the Unified Agenda, the NRC will update the entry for this rulemaking activity and reference this document to indicate that the rulemaking activity is no longer being pursued. This rulemaking activity will appear in the completed actions section of that edition of the Unified Agenda but will not appear in future editions. If the NRC decides to pursue similar or related rulemaking activities in the future, it will inform the public through new rulemaking entries in the Unified Agenda.

Dated Month Day, 2021.

For the Nuclear Regulatory Commission.

Annette L. Vietti-Cook,
Secretary of the Commission.