

U.S. Nuclear Regulatory Commission Public Meeting Summary

December 15, 2023

Title: Proposed Rule: Regulatory Framework for Fusion Systems

Meeting Identifier: [20231014](#)

Date of Meeting: November 9, 2023

Location: Webinar (via Microsoft Teams)

Type of Meeting: Information Meeting with a Question-and-Answer Session

Purpose of Meeting:

The U.S. Nuclear Regulatory Commission (NRC) staff hosted three public meetings on the proposed rule that would form the regulatory framework for fusion systems under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material." The purpose of the three meetings was to share the staff's progress on the preliminary proposed rule language (on October 11, 2023), preliminary draft guidance (NUREG-1556, "Consolidated Guidance About Materials Licenses," Volume 22) (on November 1, 2023), and specific topics (on November 9, 2023). The November 9, 2023, meeting, the third of the three, focused on certain specific topics. The staff encouraged feedback from all stakeholders during these meetings. The staff will consider the feedback; however, no formal responses will be issued. This feedback discussion was intended to help staff develop the proposed rule.

General Details:

The NRC is proposing to amend its regulations in 10 CFR 30 to provide a regulatory framework for fusion energy systems.

As part of the proposed rule, the NRC staff also intends to issue, for public comment, the following supporting materials:

- draft guidance under a new volume (Volume 22) of NUREG-1556
- a draft regulatory analysis (cost analysis)
- an environmental assessment
- a supporting statement for any proposed information collections under the Paperwork Reduction Act

This November 9, 2023, meeting focused on certain specific topics including material security, emergency preparedness (which included three questions for the attendees), waste management, contents of application: facility and equipment, and contents of application: tritium bioassay. The virtual meeting consisted of one NRC presentation followed by a question-and-answer session where the public was invited to pose any feedback and questions to the NRC. The meeting was well attended by 115 participants, including academia, Agreement States, federal agencies, fusion industry, Fusion Industry Association, international stakeholders, non-government organizations, other

members of the public, and NRC staff. The meeting was transcribed, and the transcription can be found in ADAMS [ML23258A181](#).

Summary of Presentation:

Dennis Andrukat of the NRC opened the meeting, introducing himself as the rulemaking project manager for this rule and acting as the meeting's facilitator. Mr. Andrukat described the purpose of the meeting which was to provide specific topics of the preliminary proposed rule and guidance, and to listen to public feedback on what the rulemaking should accomplish. Mr. Andrukat then discussed the meeting logistics and advised participants on the features of the webinar platform. Mr. Andrukat noted the agenda in which the first half of the meeting included presentations by the NRC staff and various stakeholders, followed by a short break (which was not needed), and the remaining half of the public meeting consisted of an open question and answer session. Mr. Andrukat provided instructions for how members of the public attending via Microsoft Teams or via the phone could ask questions or offer comments. Mr. Andrukat communicated that the meeting will help the NRC staff better understand stakeholder ideas and concerns related to the development of the proposed rule. Mr. Andrukat encouraged public participation during the meeting from all stakeholders but noted that the NRC will not provide any formal responses to the feedback and questions offered during the meeting. Mr. Andrukat noted that this meeting was going to be transcribed and speakers need to identify themselves and their affiliation for the record. Mr. Andrukat then introduced the speakers for this public meeting.

Mr. Andrukat then turned the meeting over to the NRC's Adelaide Giantelli, Branch Chief of the State Agreement and Liaison Programs Branch (SLPB) in the Division of Materials Safety, Security, State, and Tribal Programs (MSST) in the Office of Nuclear Material Safety and Safeguards (NMSS). Ms. Giantelli welcomed everyone and gave the opening remarks before turning the meeting back over to Mr. Andrukat.

Mr. Andrukat provided additional meeting logistics and then turned the meeting over to the rulemaking's technical lead: the NRC's Duncan White, NMSS/MSST/SLPB, who commenced with the presentations. Mr. White began his slide presentation by providing a very brief overview of the rulemaking and introduction to today's presentation.

Afterwards, the following presenters give their presentations:

- Duane White, NRC's Office of Nuclear Security and Incident Response (NSIR), presented on material security. A short question-and-answer session was held for material security related questions before Mr. White's early departure from the meeting. A summary of the material security feedback is presented in the public feedback ad questions section below.
- Cindy Rosales-Cooper, NSIR, presented on emergency preparedness.
- Dr. Christianne Ridge, NMSS, presented on waste management.
- Diego Saenz, State of Wisconsin, presented on Content of Application: Facility and Equipment
- Allyce Bolger, NMSS, presented on Content of Application: Tritium Bioassay.

This concluded the presentation portion of the meeting.

Public Feedback and Questions:

Below is a summary of the feedback provided by the stakeholders for the NRC staff to consider as the NRC staff develops the draft proposed rule and guidance.

- In general, stakeholders continued to have no objection for the proposed use of a 10 CFR Part 30 byproduct material regulatory framework and appreciated hearing the staff's preliminary thoughts on the specific topics presented.
- The NRC staff's presentation offered several comments, questions, and suggestions for the NRC staff to consider including, guidance, contents of application, and the topics discussed.
- Numerous stakeholders presented feedback related to material security, including:
 - A stakeholder asked about the thresholds in 10 CFR Part 37, and any process for determining and identifying materials that may be irradiated, and the basis for the list of the materials instead of a Category 1 or 2 determination.
 - A stakeholder asked the staff to elaborate on staff's proposal to not add tritium (which is not a new isotope) to the list for 10 CFR Part 37.
 - A stakeholder asked if there is any list of isotopes available where the NRC has already evaluated to be considered for the tables in 10 CFR Part 37, but decided it wasn't necessary to be included.
- Numerous stakeholders presented feedback related to the emergency preparedness (EP) questions¹ presented by the NRC staff, including:
 - A stakeholder presented a general concern that the EP questions may be adding or treating fusion differently than other byproduct material licensees.
 - Several stakeholders presented comments on EP Question 1 including:
 - The use of the terminology compared to NUREG-0654.
 - Emergency classification definitions, specifically the general emergency definition, and comparing fusion systems to fission nuclear power plants which have progressing emergency events and potentially different offsite risks.
 - A concern the rulemaking scope may be extending to all of 10 CFR Part 30.
 - Connecting specific performance-based criteria to the overall fusion system's operations.
 - The application and categorization of 10 CFR Part 37 Appendix A threshold quantities across a site.
 - Two stakeholders presented comments on EP Question 2 including:
 - The scope of the Commission's direction in SRM-SECY-23-0001 in deciding to a 10 CFR Part 30 by product material framework.
 - The Schedule C threshold and guidance.
 - Two stakeholders (one Agreement State stakeholder and one fusion designer stakeholder) provided comments on EP Question 3, including

¹ See [ML23258A180](#) – 11/9/2023 – Public Meeting Presentation, slides #13-15

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that the current requirements, guidance, tools, and preliminary rulemaking requirements and guidance appear to be sufficient.

- Numerous stakeholders presented feedback related to waste management, including:
 - A stakeholder asked for the basis for it not articulating a specific value and meaning on the existing 10 CFR 61.402 regarding the proposed change, to 20.2008, the existing guidance in the 10 CFR Part 61 and 10 CFR 61.402 which focuses on protections for individuals who inadvertently intrude, and the reference to using 5 mSv dose threshold.
 - A stakeholder asked about the decay in storage for disposal of radioactive waste.
- In general, stakeholders appreciated the staff's progress and interaction opportunities.

Closing:

Mr. Andrukat made brief closing remarks, thanking everyone for their time and attention. Mr. Andrukat displayed a slide with the rule's www.regulations.gov Docket ID number (NRC-2023-0071), the public repository for key documents related to the development of this rulemaking, as well as contact information and the NRC's new public website for [Fusion Systems](#).

Mr. Andrukat informed participants of the [public meeting feedback form](#) available on the [NRC Public Meeting Schedule website](#) and ended the meeting by stating that the NRC looks forward to the public's comments on the proposed rule.

The meeting ended early at 3:01pm ET.

Action Items/Next Steps:

- The staff will review the public meeting's feedback for consideration in the drafting of the rule and guidance.

Public Meeting Documents:

- [ML23258A174](#) – ADAMS PACKAGE: 11/9/2023 – Public Meeting -- Proposed Rule: Regulatory Framework for Fusion Systems
 - [ML23254A327](#) – 11/9/2023 – Notice of Public Meeting to Discuss the Proposed Rule: Regulatory Framework for Fusion Systems
 - [ML23258A180](#) – 11/9/2023 – Public Meeting Presentation – Proposed Rule: Regulatory Framework for Fusion Systems
 - [ML23258A181](#) – 11/9/2023 – Public Meeting Transcript – Proposed Rule: Regulatory Framework for Fusion Systems
 - [ML23258A182](#) – 11/9/2023 – Public Meeting Summary -- Proposed Rule: Regulatory Framework for Fusion Systems

Information Referenced:

- [ML23258A169](#) – 11/1/2023 – Public Meeting Summary -- Proposed Rule: Regulatory Framework for Fusion Systems

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- [ML23258A146](#) – 10/11/2023 – Public Meeting Summary -- Proposed Rule: Regulatory Framework for Fusion Systems
- [ML23258A145](#) – Handout: Preliminary Proposed Rule Language – October 2023
- [ML22273A178](#) – SECY-23-0001, “Options for Licensing and Regulating Fusion Energy Systems,” dated January 3, 2023
- [ML23103A449](#) – SRM-SECY-23-0001, “STAFF REQUIREMENTS – SECY-23-0001 – Options for Licensing and Regulating Fusion Energy Systems,” dated April 13, 2023
- NUREG-0654, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants”
<https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0654/index.html>
- NUREG-1556, "Consolidated Guidance About Materials Licenses"
<https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1556/index.html>
- NUREG-2155, “Implementation Guidance for 10 CFR Part 37, "Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material"
<https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr2155/index.html>
- NRC Public Website for Fusion Systems
<https://www.nrc.gov/materials/fusion-energy-systems.html>
- NRC’s Public Rulemaking Website - Regulatory Framework for Fusion Systems
<https://rulemaking.nrc.gov/Rules/Detail/2185>
- Regulations.gov Website for Docket ID: NRC-2023-0071
<https://www.regulations.gov/docket/NRC-2023-0071>
- NRC’s Agreement States Website
<https://www.nrc.gov/agreement-states.html>

LIST OF ATTENDEES*

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NRC

Aaron Kwok
Adelaide Giantelli**
Allyce Bolger**
Barry Miller
Binesh Tharakan
Boby Abu-Eid
Catherine Kanatas
Caty Nolan
Caylee Kenny
Charles Murray
Christian Einberg
Christianne Ridge**
Christopher Ulmer
Cindy Rosales-Cooper
Daniel Dimarco
Dave McIntyre
Dennis Andrukat**
Don Johnson
Donald Palmrose
Duane White**
Duncan White**
Ethan Licon
Francheska Colón González
Gary Purdy
Greg Bowman
Helen Chang
Howard Benowitz
Isaac Johnston
Jackie Cook
Jeff Poehler
Jessica Bielecki
Joey Rolland
Jonathan Fiske
Joseph Staudenmeier
June Cai
Lee Smith
Linda Howell
Lisa Dimmick
Mari de Jesus
Michael Waters
Michelle Albert
Nanette Valliere
Ossy Font
Patricia Cline-Thomas
Robert Fisher
Robert Tregoning
Ronald Raunikar
Sarah Spence
Scott Burnell
Soly Soto Lugo
Suzanne Dennis
Ted Smith
Todd Smith
Vicki Bier

EXTERNAL STAKEHOLDERS

Adam Ekstedt
Alex Damiani
Alyse Peterson
Andrew Holcomb
Andrew Holland
Andrew Proffitt
Andrew Zach
Anthony Garcia
Ashley Forbes
Auggie Ong
Bethany Colling
Bill Dundulis
Brenda Tubbs
Chris Ajemian
Corinne Mitchell
Dale Hitchcock
Daniel Samson
Dave Babineau
Devin Mussell
Diego Saenz**
Don Gregoire
Emily Brower
Eric Sezgen
Evan Koelker
Floyd DesChamps
Hawkins DeFrance
Ian Irvin
Ian Miner
Jana Bergman
Jane Hotchkiss
Jennifer Ganten
John Siciliano
Karen Gibson
Kinsey Boehl
Leigh Lloveras
Lisa Davies
Masashi Shimada
Matt Hendrickson
Matthew Lipka
Melvin Weatherly
Michael Costello
Mike O'Neill
Nathaniel Kishbaugh
Pascal Dumont
Patrick White
Phillip Peterson
Rich Hawryluk
Robert Jennings
Robert Sindelar
Sally Forbes
Scott Clausen
Scott Hsu
Sidney Fowler
Stefanie Blum
Stephen Burdick
Steven Arndt
Todd Clark
Tyler Ellis
Victoria Diana Hypes-Mayfield

* List does not contain attendees who participated via a phone line or who did not provide first and last names.

** Presenter