



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

April 4, 2025

The Honorable David A. Wright  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

SUBJECT: SUMMARY REPORT – 723<sup>rd</sup> MEETING OF THE ADVISORY COMMITTEE ON  
REACTOR SAFEGUARDS, MARCH 5 - 6, 2025

Dear Chairman Wright:

During its 723<sup>rd</sup> meeting held March 5 through 6, 2025, which was conducted in person and virtually, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters. The ACRS completed the following correspondence:

LETTER REPORT

Letter report to David A. Wright, Chairman, U.S. Nuclear Regulatory Commission (NRC), from Walter L. Kirchner, Chairman, ACRS:

- “Report on the Safety Aspects of the Subsequent License Renewal Application for the Virgil C. Summer Nuclear Station, Unit 1,” dated March 21, 2025, Agencywide Documents Access and Management System (ADAMS) Accession No. [ML25076A659](#).

MEMORANDA

Memoranda to Dr. Mirela Gavrilas, Executive Director for Operations, U.S. Nuclear Regulatory Commission (NRC), from Marissa G. Bailey, Executive Director, ACRS:

- Documentation of Receipt of Applicable Official NRC Notices to the Advisory Committee on Reactor Safeguards for March 2025, dated March 14, 2025, ADAMS Accession No. [ML25072A283](#),
- March 2025 Advisory Committee on Reactor Safeguards (ACRS) Full Committee – Topical Report (TR), dated March 14, 2025, ADAMS Accession No. [ML25072A248](#), and
- Regulatory Guide (RG), dated March 14, 2025, ADAMS Accession No. [ML25072A241](#).

## HIGHLIGHTS OF KEY ISSUES

a. Report on the Safety Aspects of the Subsequent License Renewal Application for the Virgil C. Summer Nuclear Station, Unit 1

The Committee met with the NRC staff and heard from the industry about this topic and issued its letter dated March 21, 2025, with the following conclusions and recommendations:

1. The established programs and the commitments made by the licensee to manage age-related degradation provide confidence that the facility can be operated in accordance with its current licensing basis for the subsequent period of extended operation without undue risk to the health and safety of the public.
2. The application for the subsequent license renewal of the operating license for the Virgil C. Summer, Unit 1, should be approved.

b. Incorporation by Reference of Institute of Electronic and Electronics Engineers Standard 603-2018 Rulemaking (Update to Title 10 of the *Code of Federal Regulations* 50.55a(h))

The Committee met with the NRC staff on this topic and discussed several issues.

Member Roberts led a meeting of the Digital Instrumentation and Control (DI&C) Subcommittee on February 20, 2025, to receive a briefing from the staff on a proposed rulemaking to incorporate by reference the requirements of the 2018 version of IEEE Standard 603 into regulation. Institute of Electronic and Electronics Engineers (IEEE) 603 is titled "IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations." Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, subsection 55 a(h), currently incorporates by reference the 1991 version of IEEE 603, as well as two versions of an earlier IEEE standard, 279.

While this rulemaking may seem straightforward, there are several issues important to safety that are of interest to the Committee. For one, the 2018 version of IEEE 603 includes guidance for mitigating common cause failures within a protection or safety system, and the proposed rulemaking intends to exclude all but the first sentence of this guidance. Also, there was an earlier attempt in 2015 to incorporate the latest version of IEEE 603 into regulation, and this attempt resulted in several NRC staff non-concurrences, three suggestions from this Committee, and disapproval from the Commission to proceed with the rulemaking. The staff covered that history during their briefing, including how each of the previous issues was resolved in this relatively straightforward proposed rulemaking. Most of the Committee's discussion at the subcommittee meeting related to the scope of the accompanying guidance that would replace the non-endorsed IEEE guidance on common cause failures and resolve open items from the earlier ACRS letter report.

During the subcommittee meeting, the Committee learned that the staff's rulemaking plan had changed shortly before the subcommittee meeting. In the original plan, staff was planning to request public input on the scope of guidance that should accompany the revised rule, with the intent of writing the guidance as part of the final rulemaking. Shortly before our subcommittee meeting, the staff changed that plan to instead draft the accompanying guidance before requesting input from the public. With this change, the staff

work to prepare the proposed rulemaking documents is not complete, and a detailed review by the ACRS is therefore premature. Because of that, we are not asking the staff to make a presentation to the full committee at this time.

So, Member Roberts proposed that the Committee's next action would be to review the draft guidance when the staff is ready to provide it. The Committee would then evaluate the need for ACRS review of the draft guidance in the same manner the Committee considers the need to review revisions to regulatory guides. Specifically, member Roberts will review the guidance and then provide a recommendation in the Planning and Procedures portion of a full committee meeting as to whether the Committee should review the guidance prior to release for public comment. In the meantime, the ACRS staff has reserved a time slot in June as a placeholder in case we determine a subsequent subcommittee review of the guidance is necessary. The Committee accepted all the suggestions above.

c. Discussions During the Planning and Procedures Session

1. The Committee discussed the Full Committee (FC) and Subcommittee (SC) schedules through August 2025 as well as the planned agenda items for FC meetings.
2. The ACRS Executive Director led a discussion of significant notices issued by the Agency since the last Full Committee meeting in February 2025. The Executive Director documented this activity in a memorandum dated March 14, 2025, ADAMS Accession No. [ML25072A283](#).
3. The Committee briefly discussed the SC meetings that were held since the last ACRS FC meeting in February 2025, which included the following:
  - February 18: NuScale Standard Design Approval Application, Chapters 6, 17.4 and 19;
  - February 19: Digital Instrumentation and Control: Update to 10 CFR 50.55a(h); and
  - March 4: NuScale Extended Passive Cooling and Reactivity Control Methodology, and Non-Loss-of-Coolant Accident Analysis Methodology TRs.
4. The Executive Director also led a discussion of a draft regulatory guide regarding possible review by the Committee. The Executive Director documented this activity in a memorandum dated March 14, 2025, ADAMS Accession No. [ML25072A241](#).
5. The Executive Director also led a discussion of one topical report that was reviewed by lead member who gave a recommendation to the Committee about the need to review the documents. The Executive Director documented this activity in a memorandum dated March 14, 2025, ADAMS Accession No. [ML25072A248](#).
6. Member Ballinger led a discussion of recommendations regarding review of the Electric Power Research Institute (EPRI) Technical Report, "Enhanced Risk-Informed Categorization Methodology for Pressure Boundary Components," EPRI Report 3002025288, June 2023.

This report is an update to an earlier EPRI report of the same title, EPRI Technical Report 3002015999, November 2019. This earlier report describes a method for

categorization of structures, systems and components (SSCs) according to their safety significance. The process is defined in Nuclear Energy Institute (NEI) 00-04, Rev. 0 (10 CFR 50.69, SSC Categorization Guidelines, Endorsed in RG 1.201).

The NEI 00-04 document provides detailed guidance for the categorization of structures, systems and component for licensees that choose to adopt 10 CFR 50.69. The guidance is based on the principles of Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis."

NRC regulations specify the equipment necessary to meet the deterministic regulatory basis as "safety-related." This equipment is subject to "special treatment regulations." Other plant equipment is categorized as "non-safety-related," and is not subject to special treatment requirements. However, there is a set of non-safety-related equipment that are subject to several special treatment requirements or at least a subset of those requirements. This third set is often referred to as "important-to-safety." Licensees often apply augmented quality controls to these "important-to-safety" SSCs.

10 CFR 50.69 does not replace the existing "safety-related" and "non-safety-related" categorizations. Rather, 10 CFR 50.69 divides these categories into two subcategories based on high or low safety significance. The 10 CFR 50.69 categorization scheme is depicted in Figure 1.

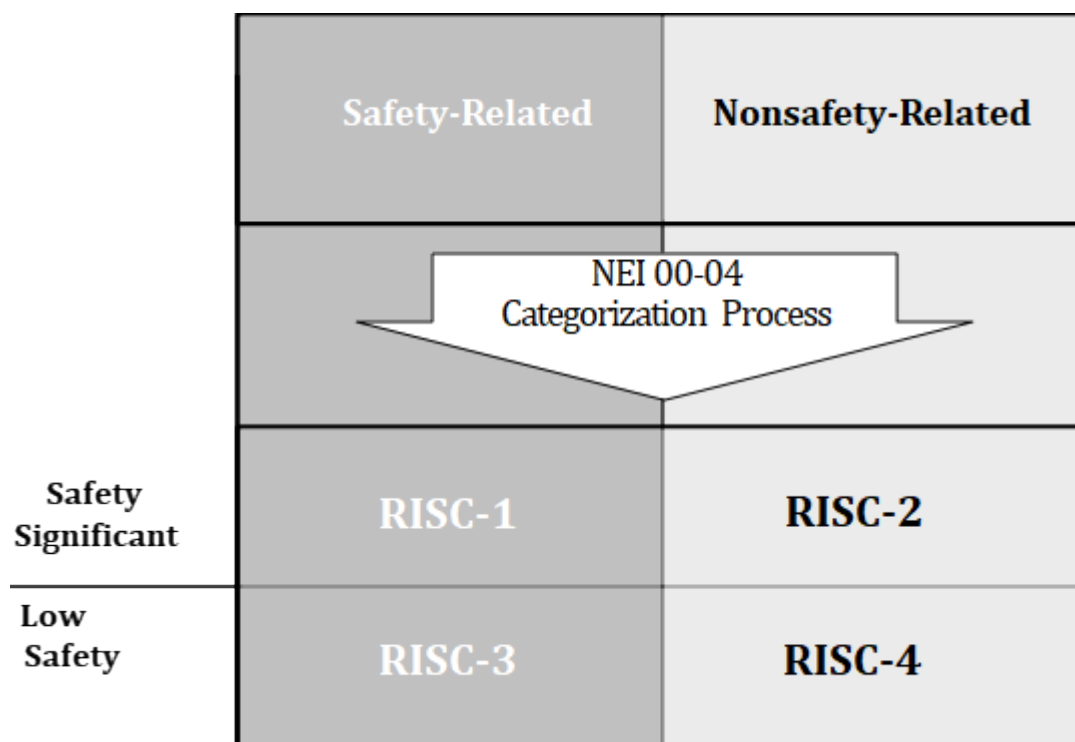


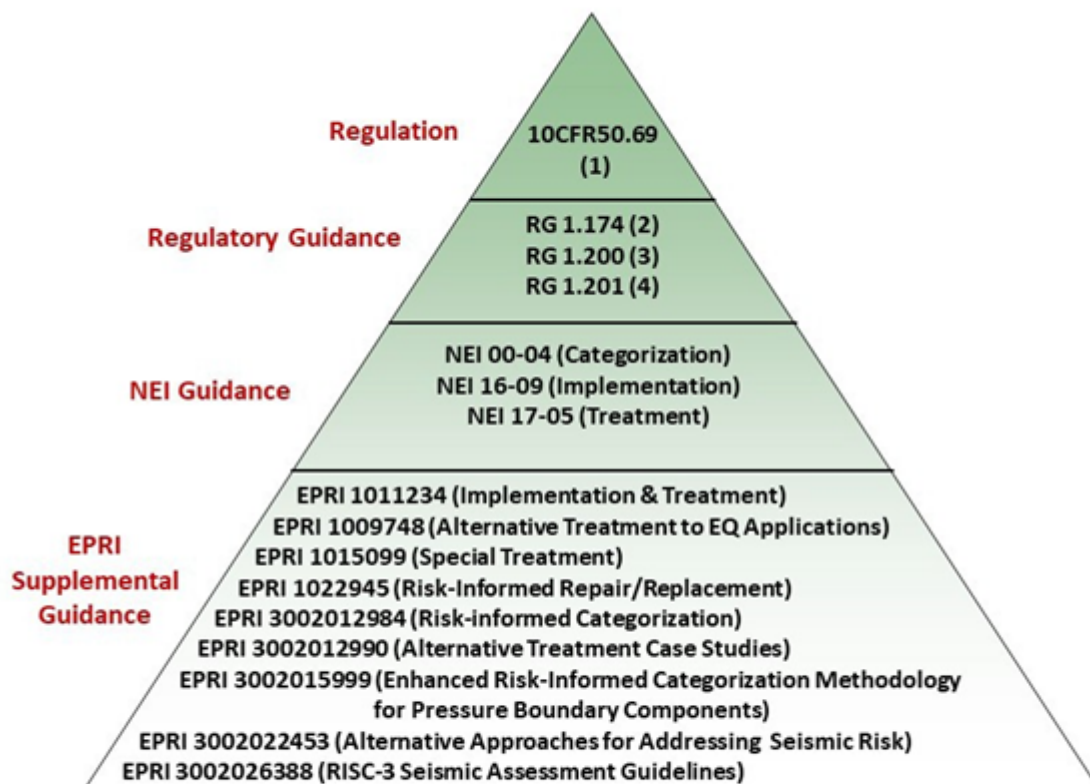
Figure 1 (From NEI 00-04) Risk-Informed Safety Classifications

The 10 CFR 50.69 SSC categorization process is an integrated decision-making process that is provided in detail in NEI-00-04. The process considers risk insights, new technical information and operational feedback through the involvement of a group of experienced

licensee-designated professionals. This group, known as the Integrated Decision-making Panel (IDP), is supported by additional working level groups of licensee-designated personnel, as determined by the licensee.

Figure 2, from EPRI Report 3002025288, shows the relationships between 10 CFR 50.69 and the various NRC, NEI and EPRI guidance documents. The EPRI Report 3002025288, not shown in Figure 2, is an update to the earlier EPRI report of the same title, EPRI Technical Report 3002015999, November 2019 and both are based on NEI 00-04.

The EPRI Report 3002025288 documents the results of an effort to determine if additional streamlining of the categorization process could be achieved beyond that in the original process. The conclusion of the investigation was that, indeed, additional streamlining of the categorization process could be achieved by making use of American Society of Mechanical Engineers (ASME) Code Case N-716-1, modified to address 10CFR50.69 scope coupled with “identification of what impacts missing scope.” Code Case N-716-1 would be used as the starting point to develop a generic set of missing Class 2 and 3 systems. The process would also add Conditional Core Damage Probability and Conditional Large Early Release Probability to existing plant-specific screening to address defense in depth issues.



**Notes:**

- (1) "50.69 Risk-informed categorization and treatment of structures, systems and components for nuclear power reactors"
- (2) "An approach for using probabilistic risk assessment in risk-informed decisions on plant-specific changes to the licensing basis"
- (3) "An approach for determining the technical adequacy of probabilistic risk assessment results for risk-informed activities"
- (4) "Guidance for categorizing structures, systems and components in nuclear power plants according to their safety significance"

Figure 2 (From EPRI Report 3002025288) Relationship with the 10CFR50.69 Rule and Other Guidance Documents.

The EPRI Report 3002025288 represents the most recent results of efforts to streamline the 50.69 screening process. However, the 50.69 process has been in place since 2004 and has been used by licensees since that time. Thus, the author recommends that the Committee not review the document. However, given the evolution of the risk-informing process, a technical briefing by the staff may be appropriate.

Member Ballinger recommended that the committee NOT review this TR but invites committee discussion on the merits of a review. The Committee agreed with the recommendation.

7. Vice Chairman Halnon led a discussion of the planned visits to the Seabrook Nuclear Station to further investigate the Alkali Silica Reaction issue and to the Newington site, April 17 and 18, 2025. There will be a Plant Operations Subcommittee meeting about the Seabrook Alkali Silica Reaction (ASR) topic on April 17, 2025.

The following Members, Consultants and Staff will be attending the visit:

Kirchner	Bier	Bailey
Halnon	Petti	Burkhart
Martin	Roberts	Krsek
Palmtag	Nguyen	
Harrington	Bley	
Ballinger		

The ACRS staff will send more information on logistics.

8. Member-at-Large Petti led a discussion on the topic of the resumption of review of the 10 CFR Part 53 Rulemaking Package.

The Office of Nuclear Reactor Regulation (NRR) Project Manager on the Part 53 rule efforts made the following proposal for the ACRS' resumption of the Part 53 rule review:

- The public comment period on the draft rule with the revisions made after the Commission review (published October 31, 2024), in the *Federal Register* is nearing its end on February 28, 2025. The following proposed dates are consistent with a schedule that requires the Revised Rule be delivered to the Commission on May 1, 2026.
- July 22, 2025, Subcommittee Meeting – Discuss the entirety of the public comments received on the draft rule – no resolutions will be discussed (they will not have finished with this effort yet) (1 day).
- November 18, 2025, Subcommittee Meeting – Present the revised rulemaking package in its entirety (1 day).
- Special one day January 2026 Full Committee Meeting – Present the revised rulemaking package and FC write its final Letter Report the new rule. This would

need to be a specially approved January Full Committee meeting just for this effort because there is no January 2026 Full Committee on the already approved schedule.

9. Technical Assistant Krsek led a discussion about the topics and presenters to propose to the Commission in a proposed draft scheduling note for the Commission meeting with the ACRS on June 6, 2025.

The following topics and presenters will be provided in the proposed draft scheduling note:

- Introduction and Overview: Chairman Kirchner
- Increased Enrichment Draft Rule Language: Member Ballinger
- NuScale Standard Design Approval Application (SDAA) Review: Chairman Kirchner
- Terrapower Sodium Review: Member Roberts
- ACRS Preliminary Approach to Advanced Reactor Reviews: Vice Chairman Halnon

10. Member Ballinger led a discussion about a recommendation regarding potential review of the fuel fabrication facility application by TRISO-X, LLC.

The TRISO-X, LLC, submitted an application to process and use special nuclear material in the TRISO-X fuel fabrication facility. The proposed facility will use uranium enriched to less than 20% in the production of TRISO-based fuel to support several advanced reactors that are being considered for development. The facility will be located in Roane County, TN, within the city limits of Oak Ridge. The committee has previously reviewed the license application for the mixed oxide fuel fabrication facility (see ACRS letters dated February 24, 2005, and September 27, 2010). Member Ballinger has reviewed the application and has concluded that, apart from criticality safety requirements, the facility is a standard industrial facility that will comply with all codes and standards.

Criticality safety requirements are adequately addressed by compliance with 10 CFR Part 70, Domestic Licensing of Special Nuclear Material.

Based on a review of relevant documents and previous ACRS reviews of similar facilities, Member Ballinger recommends that the committee not review this application. The Committee agreed with this recommendation.

11. Chairman Kirchner led a discussion about review of the NuScale standard design approval application chapter memoranda for Chapter 3, "Design of Structures, Components, Equipment, and Systems" (Vice Chairman Halnon); Chapter 5, "Reactor Coolant System and Connecting Systems" (Member Harrington), Chapter 6, "Engineered Safety Features" (Member Harrington), Chapter 8, "Electric Power" (Member Roberts); and Section 17.4, "Reliability Assurance Program" (Member Sunseri). The memos were finalized.

12. There were no reconciliations to discuss at this FC meeting.

13. Under additional topics, the following were discussed:

- A construction permit application to build an X-energy reactor will be submitted to the NRC by the end of March 2025; and
- Technical Assistant Krsek requested input from the members about what they would like to hear in the upcoming presentation in the April FC meeting on the ADVANCE Act.

14. A closed session was conducted to discuss proprietary and administrative information.

15. The following topics are on the agenda of the 724<sup>th</sup> ACRS Full Committee meeting, which will be held on April 2 through 4, 2025:

- NuScale SDAA topics including the topical reports on extended passive cooling and reactivity control methodology and non-Loss-of-Coolant Accident methodology;
- Terrestrial Energy topical report on principal design criteria; and
- ADVANCE Act information briefing.

Sincerely,



Signed by Kirchner, Walter  
on 04/04/25

Walter L. Kirchner  
Chairman

Enclosure:  
List of Acronyms



April 4, 2025

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**Accession No:** ML25085A309    **Publicly Available (Y/N):** Y    **Sensitive (Y/N):** N  
**If Sensitive, which category?**

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<b>OFFICE</b>	ACRS	SUNSI Review	ACRS	ACRS
<b>NAME</b>	LBurkhart	LBurkhart	RKrsek	WKirchner
<b>DATE</b>	3/27/2025	3/27/2025	4/03/2025	4/04/2025

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**LIST OF ACRONYMS**

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
ACRS	Advisory Committee on Reactor Safeguards
ADAMS	Agencywide Documents Access and Management System
ASME	American Society of Mechanical Engineers
ASR	Alkali Silica Reaction
DI&C	Digital Instrumentation and Control
EPRI	Electric Power Research Institute
FC	Full Committee
IDP	Integrated Decision-making Panel
IEEE	Institute of Electronic and Electronics Engineers
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
RG	Regulatory Guide
SC	Subcommittee
SDAA	Standard Design Approval Application
SSC	Systems, Structures and Components
TR	Topical Report