



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

June 1, 2023

The Honorable Christopher T. Hanson  
Chair  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

**SUBJECT: SUMMARY REPORT – 704<sup>th</sup> MEETING OF THE ADVISORY COMMITTEE ON REACTOR SAFEGUARDS, APRIL 5-7, 2023**

Dear Chair Hanson:

During its 704<sup>th</sup> meeting, April 5-7, 2023, which was conducted in person and virtually, the Advisory Committee on Reactor Safeguards (ACRS) discussed several matters. The ACRS completed the following correspondence:

**MEMORANDA**

Memoranda to Daniel H. Dorman, Executive Director for Operations (EDO), NRC, from Scott W. Moore, Executive Director, ACRS:

- Documentation of Receipt of Applicable Official NRC Notices to the Advisory Committee on Reactor Safeguards for April 2023, dated April 18, 2023, ADAMS Accession No. ML23101A106, and
- Regulatory Guides (RGs) dated April 18, 2023, ADAMS Accession No. ML23101A112.

**HIGHLIGHTS OF KEY ISSUES**

1. **International Outreach Activities and Retreat Follow-up Items**

Chairman Rempe led a discussion of an international outreach activity that was conducted in March 2023 with representatives from advisory committees supporting regulators in Finland, France, Japan, and the United Kingdom. Sessions held as part of this outreach activity focused on topics affecting the operating fleet and new challenges. During this discussion, ACRS members provided suggestions regarding the meeting conduct and organization, insights and findings gained from this activity, and suggestions for future actions. ACRS member input, along with input from representatives from other participating advisory committees, will be summarized in a publicly-available document that includes meeting presentations.

Regarding retreat follow-up items, Member Halnon led a discussion on draft guidance for ACRS members and ACRS staff to standardize expectations for Committee reviews of new reactor designs. The guidance documents good practices and lessons learned from recent reactor reviews and will assist members, especially first-time lead members, in organizing and conducting such reviews. Member Halnon will incorporate suggestions offered by members during the discussion into the draft guidance. The final version will be attached to the current workload balance document (that includes the subcommittee structure and membership table along with other guidance available to ACRS members).

## 2. Roadmap of Digital Instrumentation and Control (DI&C) Regulatory Requirements, Industry and Staff Guidance

NRC staff provided a briefing on a roadmap they had developed to clarify how regulations and guidance documents fit together to provide safety standards for DI&C systems used in U.S. nuclear power plants. During earlier DI&C subcommittee meetings (and reiterated in the 701<sup>st</sup> Full Committee meeting brief on Regulatory Guidance 1.152), Committee members and consultants voiced questions, such as:

- How does a person in the field, who's not been doing this before, determine which guidance to use or not use?
- How will a person navigate through the various DI&C RGs and Interim Staff Guidance (ISG) as they prepare their application documents?
- How will the person know whether to use certain parts of ISG-04?
- Is there a roadmap or something similar?

During these earlier meetings, staff stated that they do not have the best roadmap, but they have been working with industry to make it clear how the regulations and guidance fit together. Staff observed that this has certainly been a communications challenge, and they agreed to try to develop a roadmap that clearly delineates how the RGs and ISG address the rules and regulations and review guidelines for a subsequent Full Committee meeting information briefing.

During the 704<sup>th</sup> Full Committee meeting, the staff presented their suggested roadmap of eight I&C Regulatory Infrastructure Technical Areas and one relating RGs to Cyber Security. Each area started with the Regulatory Requirements from Title 10 of the *Code of Federal Regulations* (10 CFR) Parts 50, 52 and 21, then pointed to the applicable RGs and industry standards, and ended with relevant Branch Technical Positions and ISGs that supplement NUREG-0800, Chapter 7. Staff incorporated one additional area to address 10 CFR 73.1, 73.54, and 73.77 requirements for cyber security, pointing to the applicable RGs and NUREG-0800 review guidance.

The staff did an excellent job of developing a clear and very usable roadmap to guide applicants through the I&C development process. Members found the information very useful in understanding the link between regulatory requirements, guidance available to the industry and NRC staff standards for review of DI&C systems used in new operating reactors. The Committee suggested that the roadmap be put in a document format (similar to the form in which it was presented) and be made available on the NRC public website.

3. Terrapower Sodium Reactor Design Presentation and Three-dimensional (3-D) Plant Walkthrough

Terrapower representatives provided an overview presentation for their Sodium reactor design and, in a closed proprietary session, showed the Committee members a three-dimensional walkthrough of a virtual Sodium power plant.

4. Discussion of Kairos Topics by the Committee

Members summarized the reviewed chapters of the Kairos Hermes Construction Permit Application Preliminary Safety Analysis Report (PSAR) and associated staff Safety Evaluations (SEs). Member Petti outlined the ACRS review letter report that will be finalized during the May Full Committee meeting.

5. Discussions at the Planning and Procedures (P&P) Session

- a. The Committee discussed the Full Committee and Subcommittee schedules through August 2023 as well as the planned agenda items for Full Committee meetings.
- b. The ACRS Executive Director led a discussion of significant notices issued by the Agency since the last Full Committee meeting in March 2023 (this activity is documented in the memorandum dated April 18, 2023).
- c. The ACRS Executive Director led a discussion of two regulatory guides that the Committee was asked about regarding interest in review. The Executive Director documented the Committee's decision in the memorandum dated April 18, 2023.
- d. Chairman Rempe led a discussion on the status of the final scheduling note containing the agenda for the Commission meeting with the ACRS on June 9, 2023. The topics and presenters in the final scheduling note include:
  - Overview: Chairman Rempe
  - SHINE Operating License Application Review: Member Ballinger
  - NuScale Emergency Planning Zone Sizing Topical Report: Vice Chairman Kirchner
  - 10 CFR Part 53 and Draft SECY White Paper on Regulating Fusion Energy Systems: Member-at-large Petti

In this meeting, the presenters conducted a run-through of their draft slides for these topics. Subsequent to the 704<sup>th</sup> Full Committee meeting, ACRS was notified that the Commission preferred a briefing on the committee's review of the Kairos Hermes construction permit application instead of the committee's review of the draft SECY white paper on regulating fusion energy systems.

- e. Member Ballinger led a discussion of the visit to the Westinghouse Fuel Facility. The Metallurgy and Reactor Fuels Subcommittee is planning a visit to the Westinghouse fuel fabrication facility in Columbia, SC, during Subcommittee week in September (9/19-9/20). A draft schedule and agenda are being prepared.

- f. Vice Chairman Kirchner provided an update on various NuScale standard design approval (SDA) application topics including:
- The NuScale SDA application acceptance review has been completed, and the application is considered tendered and not docketed as the NRC staff have identified additional information needed to complete its review. The staff have started their review of portions of the application not affected by these information needs.
  - Vice Chairman Kirchner also provided an update of the staff's evaluation of NuScale Topical Report TR - 107522, "Applicability Range Extension of NSP4 Critical Heat Flux Correlation Supplement 1 to TR-0116-21012-P-A," Revision 1. This revision is a supplement to a topical report the Committee reviewed and commented upon in a letter dated June 15, 2018 (ML18166A303). In November 2022, the Committee agreed with Members Kirchner and March-Leuba's recommendation to not review this topical report (ML22327A162). Vice Chairman Kirchner asked to see the associated safety evaluation report when it was completed, which the staff has done (ML23066A094). The staff's safety evaluation report can be found at ADAMS Accession Number ML23065A006. A NuScale subcommittee meeting on this subject is scheduled for August 23, 2023.
  - NuScale submitted for staff review Topical Report TR-121172-NP, Revision 0, "Carbon Free Power Project (CFPP) Nuclear Quality Assurance (QA) Program Description," on behalf of CFPP, LLC. The staff has completed its evaluation of the quality assurance program description (ML230066A267). The staff evaluated this "limited scope" quality assurance program description as acceptable against the requirements of 10 CFR Part 50, Appendix B, the Standard Review Plan (NUREG-0800, Section 17.5), and RG 1.28, Rev. 4 (the latter endorses ASME NQA-1 2008 and 2009a Addendum). The staff approves the QA program description as acceptable for Appendix B Criteria 1-7 and 16-18. The staff has asked if the Committee wants to review this NuScale topical report and the staff's associated safety evaluation. Lead Member Kirchner recommends to not review this topical report and proposes to place this paragraph in the Summary Report. The Committee agreed.
- g. Member March-Leuba led a discussion about generic topical reports. He stated that he would work with the ACRS staff and NRC staff to provide a list of generic topical reports that are being reviewed by the NRC staff. Member March-Leuba indicated that the Committee could then review the list and identify which documents merit additional consideration by ACRS.
- h. Member Halnon led a discussion about the planned visit to Region IV in July 2023. Activities will likely include a visit to the Abilene Christian University (ACU) Next Lab, Comanche Peak, and Region IV offices, including holding a Plant Operations subcommittee meeting. The trip will be the week of July 24, 2023. A visit to the ACU Next Lab is scheduled for Tuesday, July 25, 2023; a visit to Region IV headquarters for Wednesday, July 26, 2023; and a site visit to Comanche Peak nuclear power plant on Thursday, July 27, 2023. Member Halnon and the ACRS staff will work with Committee members to arrange logistics for the visit.

- i. The Committee discussed two reconciliations on (1) the Final Letter on Draft 10 CFR Part 53 Rulemaking Language, and (2) the Proposed Draft RG 1.152, Revision 4, "Criteria for Programmable Digital Devices in Safety-Related Systems of Nuclear Power Plants."

Regarding the 10 CFR Part 53 topic, the Committee discussed the staff's response and that the SECY paper containing the draft rule language is with the Commission for their vote and guidance. During this discussion, the required operator qualifications were specifically addressed. It was decided that no further action on this topic is required at this time, but the Committee may weigh in during their review of the Final Rule Language.

Regarding draft RG 1.152, the Committee decided that no further action was necessary.

- j. There was a closed session of the P&P to discuss administrative and personnel issues.

#### 6. Scheduled Topics for the 705<sup>th</sup> ACRS Meeting

The following topics were on the agenda for the 705<sup>th</sup> ACRS meeting which took place May 3-5, 2023:

- Kairos Letter
- X-Energy Design Overview Presentation
- NRC's Office of Nuclear Regulatory Research: Code Investment Plan

Sincerely,



Signed by Rempe, Joy  
on 06/01/23

Joy L. Rempe  
Chairman

June 1, 2023

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