**Status Report of High Priority Standards**

1. **Priority from ARCSC Survey #1 Validated via ARCSC Survey #2**
   * + ANS-2.26-202x, *Categorization of Nuclear Facility Structures, Systems, and Components for Seismic Design* [revision of ANSI/ANS-2.26-2004 (R2021)

Need:

* Harmonization with LMP and limit states (ACI 349).
* Graded criteria for reactor risk profile is greatly appreciated. (NEI)
* Agree that further work to clarify risk-informed methods of establishing seismic design criteria will be immensely beneficial to developers. (BWXT)
* Need to coordinate / harmonize all seismic C&S. (GE-H)
* Use of ANS-2.26 is near term but not implementing LMP. (Oklo)

Note: The SDC-1 classification originates from ANS-2.26, which establishes the seismic categorization framework for nuclear facilities. This standard serves as a fundamental reference for all nuclear facilities and is incorporated into other nuclear-related seismic design standards, including ASCE seismic standards. ANS and ASCE support each other’s working groups.

Status:

* Harmonization with LMP adopts the enhanced RIPDB approach outlined in NRC DG 1410 and NRC DG 1307; Options 2 – 3. Option 2 follows NRC Research Information Letter (RIL) 2021-04 and leverages NEI 18-04.  Option 3 integrates risk ranking methods useful in life extension and re-evaluation of risk following periodic seismic updates.
* Graded criteria for reactor risk profile are embraced through incorporation of the frequency consequence (F-C) curve from NEI 18-04.  The risk-informed design objectives are coupled with seismic PRA (SPRA) as an option within ANS-2.26 (Option 2).  Integrated Decision-making Process (IDP) iterations are harmonized with both SDC classification and limit state assignment.
* Integrating feedback from the ASCE 43 working group, the ties between SDC and ASCE 43 have been relegated to ASCE 7 for SDC-1/2, with ASCE 43 focusing on SDC-3/4/5.
* Guidance from previous appendices were brought into the frontmatter of the standard and a new appendix was added to provide an example application of the RIPDB options.
* Additional feedback was sought from Survey #2 commenters for clarification with invitation to join the working group.
* The expanded working group confirmed the intent of the PINS to include commercial power reactors.
* Further work to clarify risk-informed methods of establishing seismic design criteria to commercial power reactors is required to accommodate commercial power reactors.
* The timeline for working group approval of a draft is Summer 2026.
  + - ANS-6.4-202x*, Specification for Radiation Shielding Materials* [revision of ANSI/ANS-6.4-2006 (R2021)]

Need:

* Address shielding design for non LWR and specialized shielding materials (GE-H)
* High value potential for structures that would be considered containment for a LLWR but whose function is primarily shielding for non LWRs relying on TRISO for "functional containment" (NEI)
* Update to latest information available from industry, especially chapter 5 (characterization of concrete) and the first part of chapter 8 (radiation effects, minimum water content, bulk shielding). (X-energy)

Status: A PINS for the revision was approved and submitted to ANSI 4/16/25. The revision will address hybrid transport methods and add MicroShield and SCALE to the appendix listing computer codes. The revision will address the presence of hydrogen content in serpentine ore and the minimum neutron energy to be considered for concrete degradation. Also, clarification will provide additional considerations when concrete serves the dual role of shield and structural element. Text provided by Andrew Whittaker in response to a comment he submitted on ARCSC Survey #1 will be incorporated into Sec. 8.1.2, Structural considerations, in the revision. A PIP has been completed. The draft is expected to be approved by the working group September 2025.

* + - ANS-54.8-202x, *Liquid Metal Fire Protection* [proposed new standard/supersedes ANS-54.8-1988 (W1998)]

Need:

* New approaches for sodium fire protection and suppression should be accounted for in the standard. (GE-H)
* Critical (TerraPower)
* ANS-54.8-1988, Liquid Metal Fire Protection in LMR Plants, should be updated and released to support design of modern LMR. This is a large gap in SFR design. (GE-H)

Note: This standard will be updated in a 2-step process. The first step is to resurrect the 1988 standard with minimal changes to be completed ASAP. The second step will be a more thorough revision of the full standard using RIPB methods. Support is being provided through DOE to expedite.

Status: The draft for Step 1 has been completed. The draft was issued to the Advanced Initiatives Subcommittee, LLWRCC, and JCNRM SCoRA for review. Only minimal comments were received and addressed. The draft was issued to the RARCC for approval with a close date of June 20, 2025. Public review closes August 5, 2025. ANSI approval could come as early as the end of August. The draft for Step 2 is currently being developed. The current goal is to have working group approval of the Step 2 draft by the end of July 2025.

* Generic guidance on risk-informed, performance-based design process (proposed revision of the RP3C GD)

Need:

* Providing standard to implement risk informed design process would support licensing (Part 53) and design (LMP & RIM) (GE-H)
* Yes, such a new standard would help including in supporting licensing review by clarifying expectations and practices. (X-energy)

Status: A task group is being formed under ARCSC to explore the need for RIPB standards and/or guidance. Per the discussion at the 4/24/25 RP3C / CC Chair meeting, it would be very challenging for one standard to serve all. A single, one-stop shop standard may not be practical. RP3C will discuss how they can recognize these needs and gaps with an update of the RP3C GD at their meeting on 6/16/25. The sweet spot may be to understand exactly what the current state of the GD is to see what additional guidance is needed and roll that into a revision of the GD. Labeling this document as an ANS standard seems misleading.

1. **Priority from ARCSC Survey #1 Not Validated via ARCSC Survey #2**
   * + ANS-15.8-202x, *The Quality Assurance Program Requirements for Research Reactors* [revision of ANSI/ANS-15.8-1995 (R2023)]

Need:

* Not directly involved in research reactor development. Need to define how changes would impact FOAK design and licensing. (GE-H)
* My focus is commercial reactors, so little value added for my scope of work. (NEI)
* Maybe not ANS-15.8 explicitly, but further effort to develop grading guidance for ASME NQA-1 Subparts for R&D activities could be equally helpful for entities with established (or establishing) NQA-1 programs that will also operate non-power reactor facilities. (BWXT)
* Kairos is already using ANS-15.8 as well as virtually all of the NRC licensed university reactors.
* The NRC has indicated potential use for the micro reactors which are doing their safety analysis report for construction licensing using NUREG 1537 instead of NUREG 0800. NUREG 1537 is for test and research reactors and points to ANS-15.8.

Note: This standard is not applicable to the survey responders and therefore the results may not be relevant to the need for the update of ANS-15.8. The working group has representations from Kairos, X-energy, Texas A&M, University of Missouri, and Shine Technologies.

Status: The PINS for this project was approved 10 years ago and needs to be updated to reflect the current work. The proposed scope of work is copied below:

Revise standard areas where supporting references have been updated. Address RARCC comments to the extent possible in the areas of graded approach, design, areas of the standard where industry advancements may be relevant with input from industry companies actively using the standard for FOAK areas. The working group will complete an updated review of NQA-1 to applicable areas to determine if benefit can be derived. General consensus of the working group is to avoid adding any degree of prescriptiveness to the standard.

A draft is anticipated to be approved by the working group in October 2025.

* + - ANS-53.1-202x, *Nuclear Safety Design Process for Modular Helium-Cooled Reactor Plants* [revision of ANSI/ANS-53.1-2011 (R2021)]

Need:

* GE-H is not directly involved in HTGR but how Triso fuel and containment is considered will have impact on functional containments. (GE-H)
* Ideally, the standard could be updated for better harmonization with design-agnostic guidance in licensing modernization project standards such as NEI 18-04. (X-energy)
* Prescriptive performance is assigned to SSCs in BDBEs which might not be consistent with other licensing modernization project standards such as NEI 18-04. (X-energy)
* Certain of the suggested required safety functions may be more appropriately characterized as PRA functions, but this would flow down from design-specific PRA analysis, so might be over-constraining." (X-energy)

Note: The working group has representation from X-energy and TerraPower.

Status: A revision is in development. We are completing the outline text, clarifying the old materials of sections. Some of those detailed topics will move to appendices, others will be more direct and trimmed down. Completion of a draft is anticipated in October/November 2025.

1. **Other Priority Standards**

* ANS-58.2, *Design Basis for Protection of Light Water Nuclear Power Plants Against the Effects of Postulated Pipe Rupture* [proposed new standard/supersedes ANS-58.2-1988 (W1998)]

Need: ANS has received two inquiries questioning the validity of Equation D-10. An unpublished, unavailable EPRI report is thought to be the basis for this equation. Verifying the equation is complicated and requires significant resources.

Status: EPRI has approved the proposal to support the research needed to validate the equation.