



American Nuclear Society

Update from ANS Standards

by
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ANS Standards Board Chair

U.S. Nuclear Regulatory Commission Standards Forum
September 25, 2025

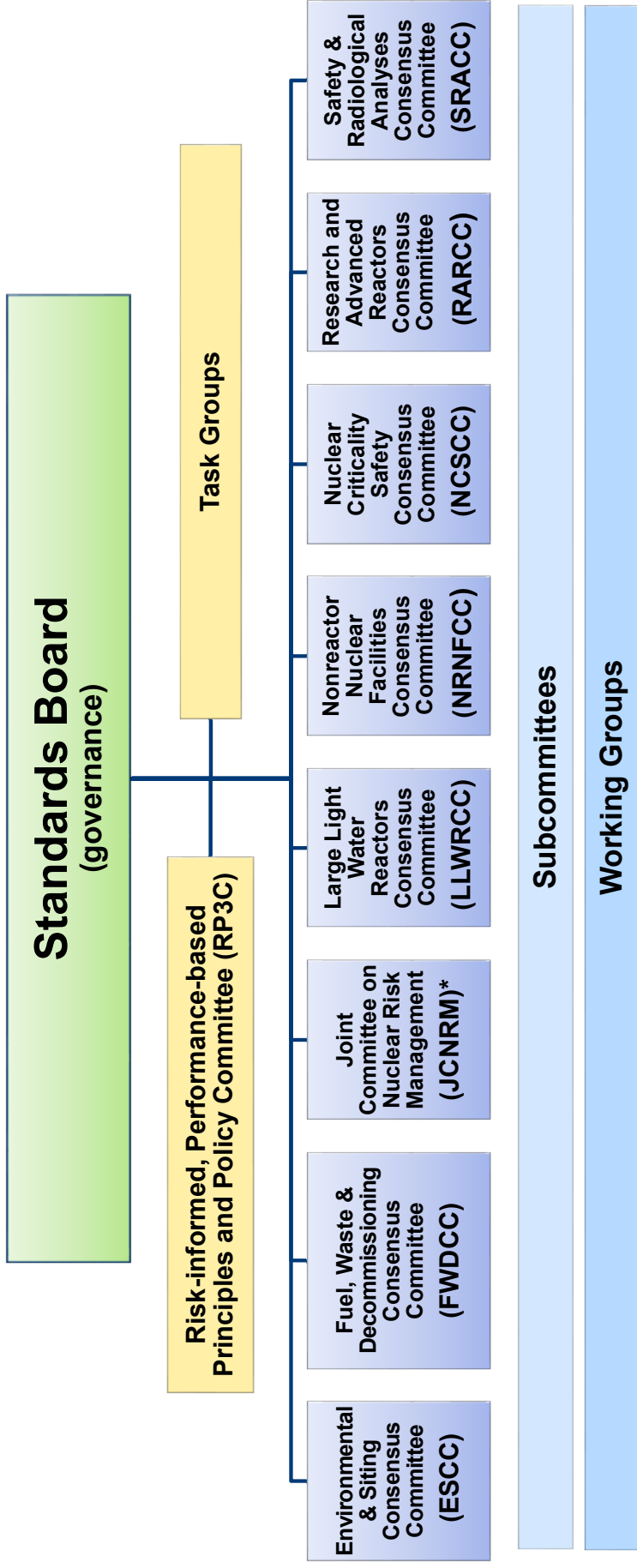
ANS Presentation - 2025 NRC Standards Forum

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ANS Standards Overview

- ANS Standards Committee responsible for standards addressing the:
 - Design
 - Analysis, and
 - Operation...of components, systems, and facilities related to the application of nuclear science and technology
 - **but NOT for the application of radiation for medical purposes**
- Established in 1957
 - Produced earliest nuclear industry standards
 - Accredited by American National Standards Institute (ANSI) in 1967
- Maintains 92 current ANSI standards across 8 consensus committees

The ANS Standards Committee



*JCNRM is a joint ANS/ASME consensus committee.

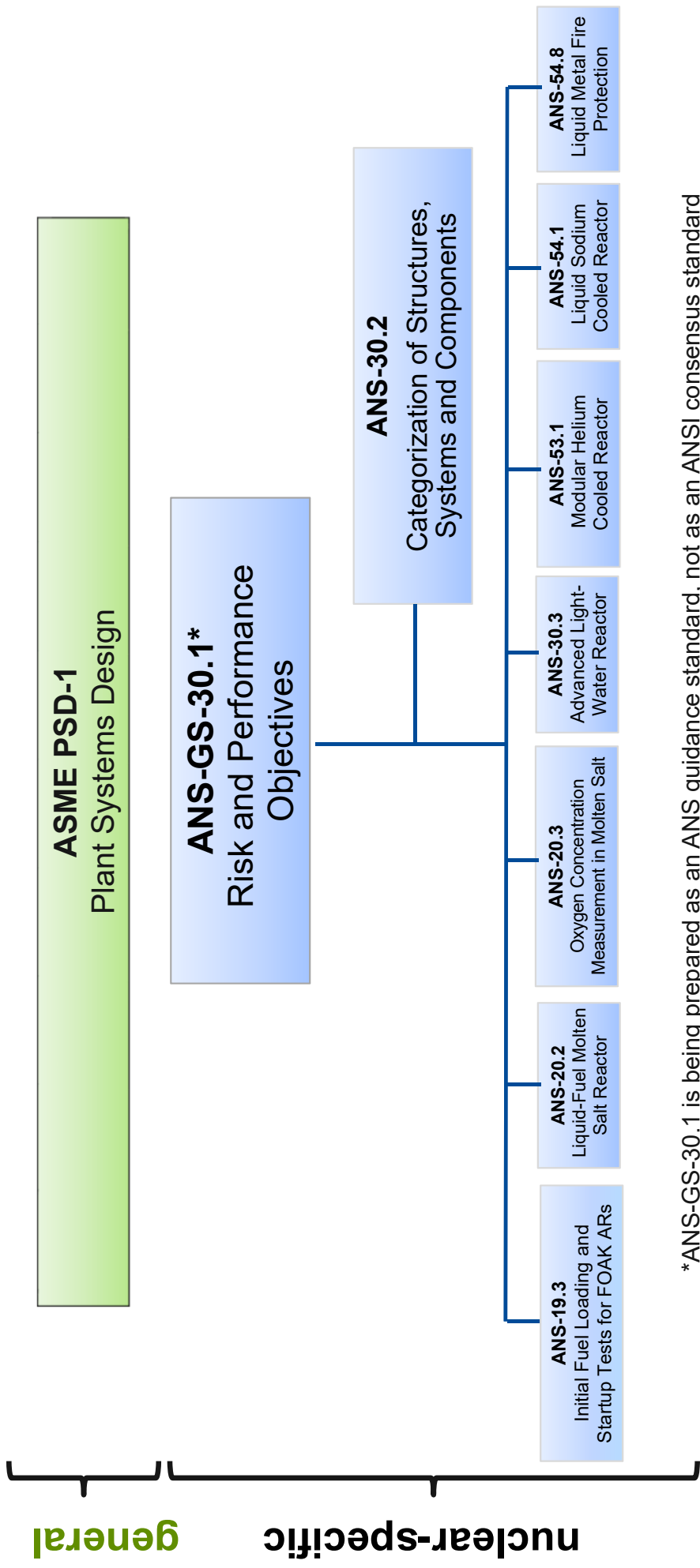
ANS Standards: Preparing for the Future

- Leadership of and support for the Advanced Reactor Codes and Standards Collaborative (ARCSC)—an element of the North American Advanced Reactor Roadmap
- Evaluating need for new standards (and organizational structures) to address nuclear-related applications of:
 - advanced reactors/SMRs
 - artificial intelligence (machine learning)
 - space power and propulsion
 - fusion
- Modest restructuring of ANS Standards Committee in 2025 for better alignment to support the future standards needs of the industry
- Pursuing increased ANS Standards Board membership to broaden representation from emerging technology sectors
- Promoting greater understanding and application of risk-informed and/or performance-based (RIPB) methods in ANS standards where practical

ANS Standards: Promotion of RIPB Methods

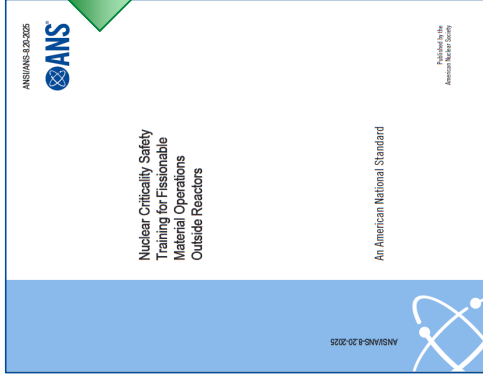
- The ANS Standards Committee actively promotes incorporation of RIPB approaches in standards when and where appropriate
 - By policy, all ANS working groups consider RIPB when developing new or revising existing standards
 - 27 standards projects in development using RI, PB, RIPB, or a graded approach
- Risk-informed, Performance-based Principles and Policy Committee (RP3C) advises the ANS Standards Board and serves as an advisory resource for the Standards Committee
- Trial use guidance document ***Incorporating Risk-Informed and Performance-Based Approaches/Attributes in ANS Standards*** available online (to be updated)
https://www.ans.org/file/6137/RIPB_GD_Rev_Issued_3-28-22_4_Trial-Use.pdf
- RP3C Community of Practice (CoP) series provides forum for best practices & case studies
 - hosted virtually the last Friday of the month
 - open to everyone interested
 - links to 56 presentations since February 2020 and upcoming CoP on [RP3C CoP webpage](#)
 - send requests to join the CoP distribution list or for more information to standards@ans.org

ANS Standards: Hierarchy For Advanced Reactor Design



*ANS-GS-30.1 is being prepared as an ANS guidance standard, not as an ANSI consensus standard

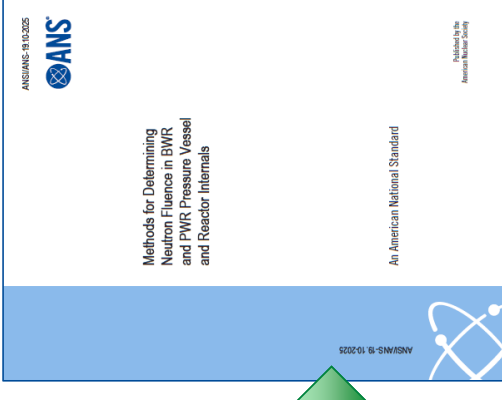
ANS Standards: Recently Published



ANSI/ANS-8.20-2025, Nuclear Criticality Safety Training for Fissionable Material Operations Outside Reactors



ANSI/ANS-19.10-2025, Methods for Determining Neutron Fluence in BWR and PWR Pressure Vessel and Reactor Internals



ANSI/ANS-54.8-2025, Liquid Metal Fire Protection in LMR Plants

- Identified as high priority by industry in ARCSC gap assessment survey.
- Stage 1: modest update of withdrawn standard **completed in 15 months**
- Stage 2: full revision with RIPB methods nearing completion. Optimistically, ballooting may begin early 2026. NRC endorsement will be sought.



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ANS Priorities from ARCSC Gap Assessment Survey



- ANS-2.26-202x, *Categorization of Nuclear Facility Structures, Systems, and Components for Seismic Design* [revision of ANSI/ANS-2.26-2004 (R2021)]
STATUS: Working group approval of draft anticipated summer 2026
 - ANS-6.4-202x, *Nuclear Analysis and Design of Concrete Radiation Shielding for Nuclear Power Plants* [revision of ANSI/ANS-6.4-2006 (R2021)]
STATUS: Working group approval of draft anticipated September/October 2025
 - ANS-54.8-202x, *Liquid Metal Fire Protection* (revision of ANSI/ANS-54.8-2025)
STATUS: **Stage 1 completed/issued 9/2/25**. Working group approval of Stage 2 draft optimistically anticipated by end of year; balloting to begin early 2026
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- ANS-15.8-202x, *The Quality Assurance Program Requirements for Research Reactors* [revision of ANSI/ANS-15.8-1995 (R2023)]
STATUS: Project Initiation Notification Systems (PINS) form in approval. Schedule TBD
 - ANS-53.1-202x, *Nuclear Safety Design Process for Modular Helium-Cooled Reactor Plants* [revision of ANSI/ANS-53.1-2011 (R2021)]
STATUS: Working group approval of draft anticipated early 2026

ANS Standards on the Horizon

- ANS-2.35-202x, *Guidelines for Estimating Present & Projecting Future Socioeconomic Impacts from Construction, Operations, and Decommissioning of Nuclear Facilities* (proposed new standard)—out for public review; publication expected by end of 2025
- ANS-2.36-202x, *Accident Analysis for Aircraft Crash into Reactor and Nonreactor Nuclear Facilities*—draft completion expected by end of 2025
- ANS-6.4-202x, *Nuclear Analysis and Design of Concrete Radiation Shielding for Nuclear Power Plants* [(revision of ANSI/ANS-6.4-2006 (R2021))—draft completion expected September/October 2025
- ANS-15.11-202x, *Radiation Protection & Research Reactors* [revision of ANSI/ANS-15.11-2016 (R2021)]—in ballot/comment resolution process
- ANS-54.8-202x, *Liquid Metal Fire Protection* (revision of ANSI/ANS-54.8-2025)—draft completion expected by end of 2025
- ANS-56.2-202x, *Containment Isolation Provisions for Fluid Systems* [proposed new standard/supersedes ANS-56.2-1984 (W1999)]—in ballot/comment resolution process
- ANS-60.1-202x, *Civilian Nuclear Export Controls* (proposed new standard)—draft completion expected by end of 2025

Benefits from NRC Endorsement of Standards

For the NRC...

- Fulfills legal and policy mandates prioritizing government adoption of voluntary consensus standards (where appropriate)
- Streamlines regulatory review
- Demonstrates positive, proactive engagement of NRC with stakeholders

For the stakeholder (developer, licensee, etc.)...

- Reduces regulatory uncertainty
- Reduces gap between industry practices and regulatory requirements
- Streamlines regulatory review
- Signals technical rigor, safety, and regulatory applicability

For the SDO...

- Strengthens SDO reputation (including ability to attract and retain volunteers)
- Encourages broader adoption and application
- Confirms purpose and content of standard



Thoughts on Enhancing the Endorsement Process

- Standards endorsement is a two-way street, requiring commitment by SDO and NRC to an open, transparent process
 - Take advantage of opportunity provided by NRC Standards Executive
 - Early engagement is essential, informing NRC of priority standards early to inform resource allocation
- NRC participation on development and maintenance of key standards is already extensive—an opportunity to leverage official agency coordination and representation for “approval by default” of standards under certain conditions (e.g., no sustained objections, etc.)

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Management Directive MD 6.5: NRC Participation in the Development and Use of Consensus Standards. October 28, 2016

Endorsing, Approving for Use, and Referencing Consensus Standards

1. *The citation of a standard may occur in various types of NRC documents, such as regulations, regulatory guides (RGs), NUREGs, generic correspondence, safety evaluation reports (SERs), inspection manual chapters (IMCs), inspection procedures (IPs), etc. A citation of a standard may have differing significance depending on the context.*
2. *Endorsement, approval for use, and the referencing of standards may be implemented by two methods; (1) incorporation by reference (IBR) as part of rulemaking in accordance with 1 CFR Part 51, and (2) by citation in NRC documents.*
3. *IBR applies to standards that are endorsed or approved for use through rulemaking and that are required to be implemented by applicants or licensees in accordance with NRC regulations. An example of an IBR is the incorporation of portions of the ASME Boiler and Pressure Vessel Code in 10 CFR 50.55a.*
4. *In a RG, or when a NUREG is used for regulatory guidance, the reference to a standard may mean that it is a condition of being within the scope of the guidance. If the NRC is not incorporating by reference a standard in an NRC regulation, then the preferred method of endorsing or approving for use standards is to communicate the NRC's position in a guidance document such as a regulatory guide.*
5. *In other NRC documents, the context of endorsing, approving for use, or referencing a standard may vary. Examples include a suggestion or a pointer to best practices, a description of an acceptable method to meet NRC staff positions, or simply a listing in a bibliography.*
6. *Regardless of how NRC documents endorse, approve for use, or reference a standard, the NRC may establish conditions (limitations and modifications) on how the standard is to be used.*
7. *Not all issued standards, new or revised, will be endorsed or approved for use by the NRC. Only standards that help to meet a demonstrated need in support of regulatory activities will be endorsed or approved for use.*