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Update of ANS Advanced Reactor Standards

By George Flanagan

Past Chairman of the ANS Standards Board

**Chairman of the Research and Advanced Reactor
Consensus Committee**

Presented to:

NRC Standards Forum

September 26, 2017



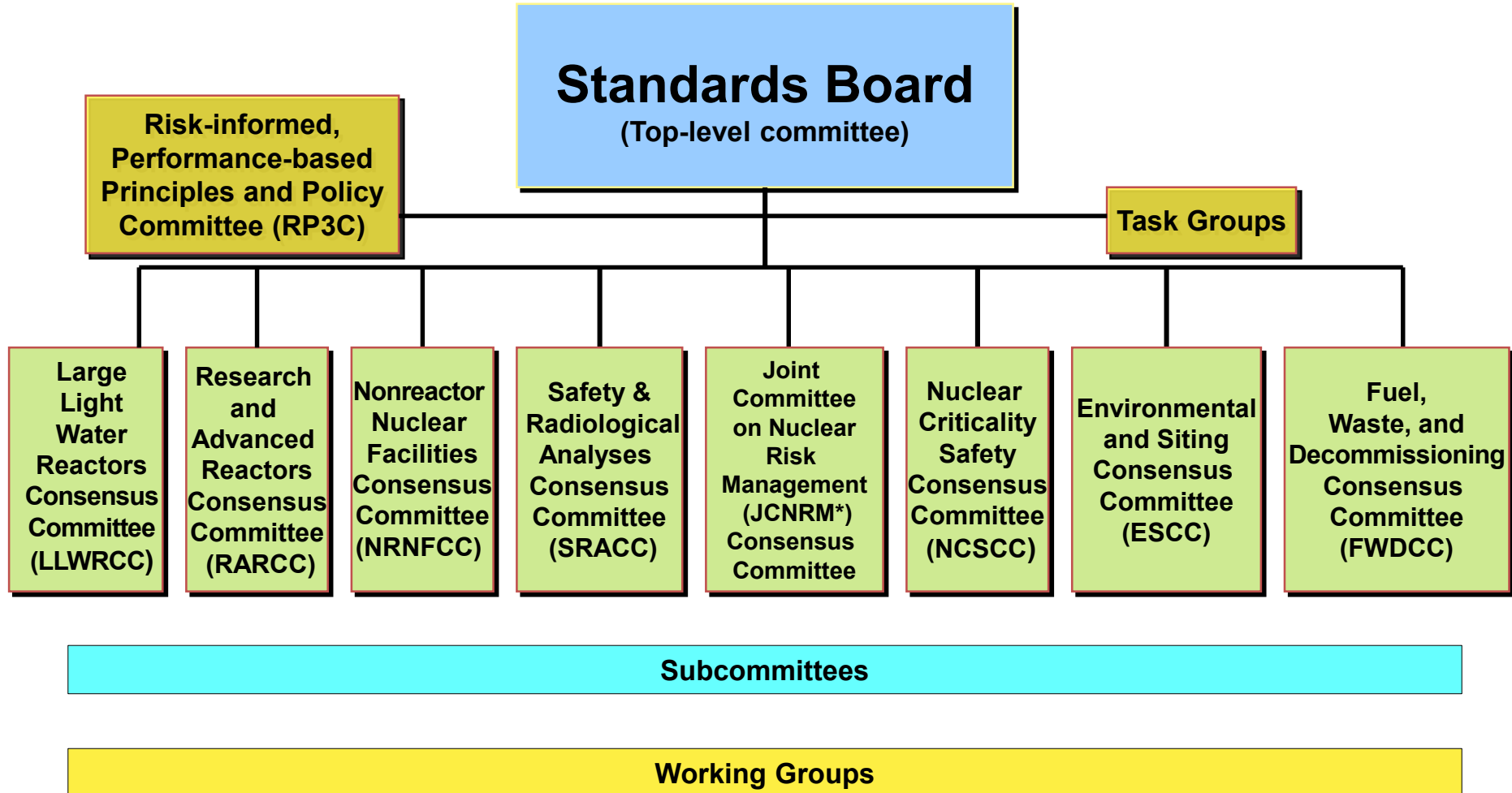
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Agenda

- ANS Committee Structure
- Research & Advanced Reactors Consensus Committee
- Status of ANS Advanced Reactor Standards
- Proposal



The ANS Standards Committee



*The JCNRM is a joint ANS and ASME committee.



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Research and Advanced Reactors Consensus Committee (RARCC)

George F. Flanagan (Chair), ORNL

Scope:

The RARCC is responsible for the preparation and maintenance of voluntary consensus standards for the design, operation, maintenance, operator selection and training, and quality requirements for current and future research and test reactors including pulsed critical facilities, reactors used for the production of isotopes for industrial, educational, and medical purposes and current and advanced non-large LWRs. The scope includes but is not limited to: water-cooled and non-water cooled Small Modular Reactors, Generation III+ and IV reactors, and future non-light water cooled/moderated large commercial reactors.

The RARCC standards include but are not limited to the design and operation of the nuclear island, the balance of plant, and other systems within the plant boundary affecting safety and operations.

ANS Advanced Reactor Standards



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- Standards discussed during morning session
 - ANSI/ANS-53.1-2011 (R2016), “Nuclear Safety Design Process for Modular Helium-Cooled Reactor Plants” (current standard)
 - ANS-54.1, “Nuclear Safety Criteria and Design Process for Sodium Fast Reactor Nuclear Power Plants” (historical revision of ANS-54.1-1989)



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ANS Advanced Reactor Standards (Cont'd)

- ANS-20.1, “Nuclear Safety Design Criteria for Fluoride Salt-Cooled High-Temperature Reactor Nuclear Power Plants” (new standard under development)
- ANS-20.2, “Nuclear Safety Design Criteria and Functional Performance Requirements for Liquid-Fuel Molten-Salt Reactor Nuclear Power Plants” (new standard under development)
- ANS-30.1, “Integrating Risk and Performance Objectives into New Reactor Nuclear Safety Designs” (new standard under development)
- ANS-30.2, “Categorization and Classification of Structures, Systems, and Components for New Nuclear Power Plants” (new standard under development)
 - Awaiting results from joint DOE/Utility Licensing Framework Modernization Project

ANS Proposal for Coalition of the Willing



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- ANS volunteers to take the lead to host a workshop to discuss advanced reactor standards development
 - Purpose: Develop a strategic vision for advanced reactors standards development
 - Attendees from SDOs, industry (including NEI and EPRI), NRC, and DOE
 - Located in the D.C. area to support attendance by NRC and DOE, early 2018
 - Suggested time and location to be determined
 - Possible locations
 - RIC
 - DOE
 - NRC
 - NEI
 - Results from the DOE-sponsored work to identify and rank the gaps in SFR standards might serve as a strawman (results reported in the afternoon session of this forum) along with information generated by the joint DOE/Industry Advanced Reactor Licensing Modernization Framework Program