

NRC Staff and Codes and Standards Development Related to non-LWRs

NRC Standards Forum
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Shivani Mehta
Regulatory Guidance and Generic Issues Branch
NRC/RES/DE/RGGIB

SDOs

Primary SDOs:

- **ASME**
 - Section III, Division 5 – High Temperature Materials
- **ANS**
 - Risk-informed Principles and Policy Committee
 - Research and Advanced Reactor Consensus Committee
 - Standards Development
- **ASME/ANS**
 - JCNRM Working Group on non-LWR PRA

ASME Section III, Div 5

- NRC staff on 11 working groups and Subgroups
 - Sub Group Elevated Temp. Design
 - Sub Group High Temp. Reactors
 - Task Group on Alloy 617
 - WG High Temp. Liquid-Cooled Reactors
 - WG High Temp. Gas-Cooled Reactors
 - WG Analysis Methods
 - WG Creep-Fatigue
 - WG Allowable Stress Criteria
 - WG High Temp. Flaw Evaluation
 - WG Elevated Temperature Construction
 - WG Graphite and Composite Materials
 - WG Graphite and Composite Design

ASME Section III, Div 5 – Current Work

1. Currently approving the use of Alloy 617 for high temperature components. Most major sections (Article HAB) are complete and balloting is underway.
2. Currently developing rules for graphite and ceramic composite (C-C and SiC-SiC) components (Articles HHA and HHB, respectively)
3. Currently reviewing the Quality Assurance (Article HAB) requirements for high temperature reactor components. ASME Task Group for “General Requirements for Graphite and Composite Core Components” is being converted into a Working Group.

ANS – Committees

- Risk-informed Performance-based Principles and Policy Committee
 - Bill Reckley is the NRC representative on RP3C
- Research and Advanced Reactor Consensus Committee
 - NRC has two staff that split membership on the RARCC
 - Al Adams votes on issues related to the Operation of Research Reactors Subcommittee
 - Jan Mazza votes on issues related to the Advanced Initiatives Subcommittee

ANS Standards – RARCC

Operation of Research Reactors

Standards

- 2017 review of applicability of ANS 15 standards to Gen-IV type test reactors:
 - ANS 15.1 Development of Technical Specifications for Research Reactors
 - ANS 15.2 Quality Control for Plate-Type Uranium-Aluminum Fuel Elements
 - ANS 15.4 Selection and Training of Personnel for Research Reactors
 - ANS 15.8 Quality Assurance for Research Reactors
 - ANS 15.11 Radiation Protection for Research Reactors
 - ANS 15.16 Emergency Planning for Research Reactors
 - ANS 15.21 Format and Content for Safety Analysis Reports for Research Reactors

ANS Standards – RARCC

Advanced Initiatives Standards



Standard	Status
ANS 53.1 “Nuclear Safety Design Process for Modular Helium-cooled Reactor Plants	Issued 2011 Reaffirmation 2016
ANS 54.1 “Nuclear Safety Criteria and Design Process for Liquid-Sodium-Cooled-Reactor Reactor Nuclear Power Plants” (Draft in Development)	Draft submitted to the RARCC – Advanced Initiatives Subcommittee. Draft to be revised by 10/6/17 by 54.1 WG. The working group will consider the NRCs slides and discussion during the 8/24/17 Public Meeting to Discuss ARDC when finalizing the draft. The final draft will be submitted to the RARCC for balloting.
ANS 20.1 “Nuclear Safety Design Criteria for Fluoride Salt-Cooled High-Temperature Reactor Nuclear Power Plants” (Draft in Development)	PINS submitted to ANSI 2/26/14. This WG has been dormant for some time but has a meeting scheduled on 10/30/17 during the ANS Winter Meeting.
ANS 20.2 “Nuclear Safety Design Criteria and Functional Performance Requirements for Liquid-Fuel Molten-Salt Reactor Nuclear Power Plants” Initiating Project Initiation Notification System (Draft in Development)	PINS submitted to ANSI 7/7/16. Working group has held several meetings and conference calls. Draft is in development. Conference call will be in October.
ANS 30.1 “Integrating Risk and Performance Objectives into New Reactor Nuclear Safety Designs” (Proposed)	PINS submitted to ANSI 7/31/16.
ANS 30.2 “Categorization and Classification of Structures, Systems, and Components for New Nuclear Power Plants” (Proposed)	PINS submitted to ANSI 7/7/16.

Potential Areas

- NRC staff welcome input on additional areas that industry is interested in, such as:
 - Seismic isolation
 - Needed for non-LWRs?
 - Tech neutral Digital I&C
 - New Commission direction is to ensure that all new guidance documents are able to address any type of reactor: LWR, advanced, and/or non-LWR.

Questions?