



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

09/09/2026

MEMORANDUM TO: Greg Oberson, Branch Chief
Advanced Reactor Science Branch 1
Division of Advanced Reactor Science
Office of Advanced Reactors

FROM: Cory G. Parker, Materials Engineer **/RA/**
Advanced Reactor Engineering Branch 3
Division of Advanced Reactor Engineering
Office of Advanced Reactors

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF
JUNE 15, 2026, U.S. NUCLEAR REGULATORY
COMMISSION/INDSUTRY ADVANCED REACTOR MATERIALS
TECHNICAL EXCHANGE PUBLIC MEETING

On June 15, 2026, the U.S. Nuclear Regulatory Commission (NRC) staff held a hybrid public meeting to discuss general materials issues in the development and construction of advanced reactors. Attendees including NRC staff, and representatives from TerraPower, X-energy, EPRI, the Nuclear Energy Institute (NEI), Structural Integrity Associates, and independent consultants, including members of ASME code-writing committees participated both online and in person. There was no closed session for this meeting.

Overview

The public meeting focused on structural materials issues affecting deployment of non-light-water (non-LWR) advanced reactors. It was facilitated by Office of Advanced Reactors (OAR) materials engineering staff. NRC staff stressed that no regulatory positions were being set; the goal was to determine industry concerns and inform future guidance. The day was split into four sessions - deployment, codes and standards, materials management programs, and licensing - each opened with a short NRC presentation, an anonymous live poll, and open discussion.

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Deployment

The first session framed “deployment” as the overall path from reactor concept to operation - code selection, materials qualification, licensing, materials management programs (e.g., Reliability and Integrity Management, or RIM), and fabrication. Polling found materials qualification the step requiring the most work, with materials management and licensing close behind. Much of the discussion centered on the absence of a unified, industry-wide basis for evaluating long-term material degradation. One member of the public argued that despite frameworks like the Licensing Modernization Project (LMP) and NEI 18-04, there is no consolidated industry position on which degradation mechanisms are credible for a given technology or how to set reliability targets, creating inconsistency among competing designers. NRC staff noted a recent review had discovered similar gaps in turning RIM into a concrete implementation. NEI proposed a pre-competitive, cross-vendor effort - potentially led jointly by NEI and EPRI - to build shared degradation frameworks, echoing the light-water industry’s earlier NEI 03-08 initiative.

Design Codes and the Code Process

The second session covered use of industrial (non-nuclear) codes such as ASME Section VIII and B31.1/B31.3 versus nuclear codes such as Section III, Division 5 and Section XI, Division 2. NRC staff explained there is no requirement mandating a specific code, though General Design Criterion 1 requires quality standards commensurate with safety significance, and the NRC has endorsed Section III, Division 5 and Section XI, Division 2 via regulatory guides (1.87 and 1.246). Polling identified cost and schedule efficiency as the top driver of interest in industrial codes for components that are safety-significant but not “safety-related.” Discussion cited precedents (for example Section VIII) and the lack of a single, harmonized definition of “safety-related” and “non-safety-related with special treatment” (NSRST) across Part 50, Part 52, LMP, Part 53, and the still-developing Part 57. Staff said a single cross-framework definition would be difficult but pointed to guidance (NEI 18-04, NEI 21-07, Reg. Guide 1.87 Appendix A) mapping the terms. Uncertainty about NRC expectations was seen as a leading barrier to broader code adoption; industry asked that safety evaluations be written broadly enough to be reused by later applicants, given the volume of anticipated micro-reactor applications under Part 53 and NRC staff noted the challenge since safety evaluations are specific to each application. Participants also noted that far fewer people actively write ASME code cases than work on RIM, and that low balloting engagement can slow code case adoption.

Materials Management Programs (RIM)

NRC staff introduced Section XI, Division 1 (the longstanding, prescriptive LWR in-service inspection code) and Division 2 (a newer, technology-neutral, reliability-based framework for advanced reactors), describing the RIM process as identifying components scoped into the program, assessing degradation modes, setting reliability targets, and implementing monitoring or design strategies to meet them. Most attendees plan to use Division 2 (RIM), though about a quarter expect some combination of Division 1, Division 2, and other standards. Discussion focused on applying Division 1 to components it wasn’t designed for (citing an early advanced light-water reactor that proposed it for an ill-suited high-pressure containment vessel), noting Division 2 still requires a full RIM process rather than being a drop-in replacement. Discussion also covered scope ambiguity (RIM can apply to non-pressure-retaining components, unlike Division 1), and difficulty setting defensible reliability targets with limited operating experience and PRA maturity. One member of the public discussed the 1990s ACRS debate on

“structuralist” versus “rationalist” defense-in-depth, arguing a formal, margins-based approach should complement PRA-only methods given the uncertainties involved.

Licensing Process

The closing session reviewed available licensing pathways - Parts 50 and 52, the newly finalized Part 53, the LMP (Reg. Guide 1.233), and the proposed Part 57 - distinguished by design maturity (preliminary vs. final) and reliance on risk-informed versus deterministic requirements. Polling on lessons learned highlighted the value of early, sustained pre-application engagement; a desire for more consistent, timely closure of technical issues (especially for novel materials, industrial codes, functional containment, and graded safety classification); and requests for durable staff positions less likely to be reopened absent new safety-significant information. Staff confirmed updates to Reg. Guides 1.87 and 1.246 (aligning with 2025 ASME editions) are underway. A closing exchange raised whether NRC and industry should proactively address, for advanced non-LWR applicants using Part 52, a known friction point where Section XI in-service program finalization intersects with ITAAC closure.

No regulatory decisions were made at this meeting. The public meeting notice posted on the NRC public website can be found at ADAMS ML26119A667. The enclosure to this summary provides a list of meeting attendees.

Enclosure:
List of attendees

SUBJECT: U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF JUNE 15, 2026,
INDUSTRY / U.S. NUCLEAR REGULATORY COMMISSION MATERIALS
PROGRAMS ADVANCED REACTOR TECHNICAL INFORMATION EXCHANGE
PUBLIC MEETING
DATED: SEPTEMBER 9, 2026

DISTRIBUTION:

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ADAMS Accession Number:

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Presentations:

2026 Advanced Reactor Materials Tech Exchange - Intro and Session 1

Slides - **ML26196A050**

2026 Advanced Reactor Materials Tech Exchange – Session 2 Slides - **ML26196A070**

2026 Advanced Reactor Materials Tech Exchange – Session 3 Slides - **ML26196A078**

2026 Advanced Reactor Materials Tech Exchange – Session 4 Slides - **ML26196A085**

Meeting Notice: ML26119A667

Memo: ML26202A359

**U.S. NUCLEAR REGULATORY COMMISSION SUMMARY OF
JUNE 15, 2026, INDUSTRY / U.S. NUCLEAR REGULATORY COMMISSION
MATERIALS PROGRAMS ADVANCED REACTOR TECHNICAL
INFORMATION EXCHANGE PUBLIC MEETING**

LIST OF ATTENDEES

June 15, 2026

Name	Organization
Vince Voltaggio	NRC
Brett Klukan	NRC
Meg Audrain	NRC
Evan Petrillos	NRC
Bruce Lin	NRC
Matt Heiser	NRC
Cory Parker	NRC
Joseph Bass	NRC
Greg Maycard	NRC
Rob Dragon	NRC
Isaac Shando	NRC
Jeremy Buchanan	NRC
Tom Roberts	Consultant
Chris Wax	Structural Integrity Associates
Chris Fanning	Radiant
Sam Sham	X-energy
Unnamed attendee	X-energy
Dave Rudland	Rudland Consulting
Marcus Burkhart	Domain Engineering
John Meyer	NEI
Tim Stoldrer	NEI
Cem Topbasi	EPRI
Jeff Koza-Reinders	TerraPower
Cedric Sallaberry	Not stated
Robert Moyete	Not stated
Crystal Slavin	Not stated
Roman Celin	Not stated
Leanne Galanek	X-energy
Narasimha Prasad Kadambi	Retired NRC staff

Enclosure