



# **NRC and NEI/Industry Spent Fuel Activities Prioritization Public Meeting (Observation Meeting)**

Meeting with Nuclear Energy Institute  
and Members from the Spent Fuel Industry

**December 15, 2022**

# Agenda

Topic	Time	Speakers
Introduction	1:00 PM	NRC & NEI
NRC Presentation	1:10 PM	NRC
Industry Presentation	1:25 PM	NEI
Open Discussion	1:40 PM	NRC & NEI
Summary Review & Closing Remarks	2:40 PM	NRC & NEI
Opportunity for Public Comment	2:45 PM	Public

# Introductions/Opening Remarks

**Shana Helton, Director**

Division of Fuel Management

Office of Nuclear Material Safety and Safeguards

**Mark Richter, Technical Advisor**

Nuclear Energy Institute (NEI)

# NRC Presentation

# Background: How We Got Here

- **2019** – NEI White Paper, “Discussing spent fuel performance margins along with some recommendations to be implemented,” November 2019 ([ADAMS Accession No. ML19318D971](#))
- **2021** - Implementation of the Recommendations of Industry’s November 8, 2019, White Paper, “Defining Spent Fuel Performance Margins,” January 2021 ([ML21025A356](#))
- **2021** - Summary of April 13, 2021, “Observation Public Workshop on Spent Fuel Performance Margins,” June 2021, ([ML21139A109](#))

# NRC Priorities

- Maintain a highly qualified workforce through recruitment, hiring, qualification, and training activities as informed by Strategic Workforce Planning
- Safety, security, and environmental reviews of licensing applications for casks (including related rulemakings), independent spent fuel storage installation (ISFSIs) (including renewals), and consolidated interim storage facility (CISF)
- Safety and security reviews of transportation packages (including renewals and revalidations)
- Licensing accident tolerant and advanced fuels
  - Enhance the technical basis for review of transportation packages with batch quantities of fresh accident tolerant fuel (ATF)

# NRC Priorities (continued)

- Continue risk-informed initiatives, including incorporating technical information into guidance for spent fuel licensing
  - Continued application of the Risk Tool, Be riskSMART, and other risk-informed tools
- Conduct oversight activities, including revision of inspection guidance, inspector training and qualification, aging management inspections, and safety inspections of ISFSI pad construction, dry-run operations, initial loading operations, and routine operations
- International engagement regarding storage and transportation activities to compare regulatory frameworks, share research information, and harmonize with international standards
- Closure on the ISFSI short-term operations issue

# Phenomena Identification and Ranking Table (PIRTs)

- **Used Fuel Cladding Performance PIRT (June 2020)**  
<https://www.epri.com/research/products/000000003002018439>
  - Evaluated state of knowledge as a basis for potential changes to criteria to prevent gross rupture
- **Thermal Modeling PIRT (June 2020)**  
<https://www.epri.com/research/products/000000003002018441>
  - Identified and ranked opportunities to quantify and reduce uncertainty in cask thermal analyses through focused research and development (R&D) modeling
- **Decay Heat PIRT (July 2020)**  
<https://www.epri.com/research/products/000000003002018440>
  - Identified, evaluated, and ranked the various parameters that affect the accurate prediction of decay heat
- **Spent Fuel Cladding Gross Rupture PIRT (December 2021)**  
<https://www.epri.com/research/products/000000003002020929>
  - Basis for potential revision to definition of gross rupture (practical, safety-focused)



# Accomplishments

- **Regulatory Guide 3.72, "Guidance for Implementation of 10 CFR 72.48, Changes, Tests, and Experiments" (Rev. 1 issued Sept. 2020)**  
(<https://www.nrc.gov/docs/ML2022/ML20220A185.pdf>)
  - Endorsed NEI 12-04, Guidelines for 10 CFR 72.48 implementation
- **Evaluation of Increased Peak Temperatures for Spent Fuel Cladding Performance during Dry Storage," PNNL-30430 (July 2021)**  
<https://www.nrc.gov/docs/ML2027/ML20276A067.pdf/ML21176A031>
  - Enhance understanding of the safety margins associated with the peak cladding temperature (e.g., current 400°C threshold); input to Alternative Fuel Performance Metrics PIRT
- **Approval of Thermal Topical Report (September 2021)**  
<https://www.nrc.gov/docs/ML2130/ML21302A147.pdf>
  - Approved allowance of heat load patterns in two storage systems

# Further Risk-informed Accomplishments

- **COVID enforcement guidance memorandum, revised inspection guidance, and relief requests**
  - <https://www.nrc.gov/about-nrc/covid-19/materials/index.html>
- **Enforcement Guidance Memorandum (EGM) 22-01, "Enforcement Discretion For Noncompliance of Tornado Hazards Protection Requirements at Independent Spent Fuel Storage Installations, April 2022"**  
<https://www.nrc.gov/docs/ML2208/ML22087A496.pdf>
  - Recognized the low probability of tornado events in conjunction with formally documented administrative controls
- **First-time use of the Very Low Safety Significance Issue Resolution (VLSSIR) Process in the materials arena** [Joseph M. Farley Nuclear Plant - Integrated Inspection Report 05000348/2022002 And 05000364/2022002](#)
  - Closed an issue related to use of administrative controls when conducting cask transfer operations outside of the fuel handling building in a different configuration to those analyzed in the final safety analysis report (FSAR)

# Current Activities

- **Graded Approach ([ADAMS Accession No. ML19353D337](#))**
  - Completed the graded approach pilot in September 2020
  - Served as a positive step forward in risk-informing the format and content of storage certificate of compliances (CoCs) and appendices
  - Variations have been used by some vendors in a few applications currently under review
- **Risk Tool ([ADAMS Accession No. ML20324A110](#))**
  - Risk tool – serves to support staff in their dry cask storage reviews to determine the appropriate risk
  - The risk tool has been used in a few technical reviews
  - The risk tool is a “living document”

# Current Activities (continued)

- **Alternative Fuel Performance Metrics PIRT (To be issued in 2023)**
  - Perspectives on whether/how current guidance on fuel drying may be revised (e.g., considering any margins in current 400°C threshold)
- **Topical Reports**
  - Shielding Topical Report (ADAMS Accession No. ML22038A943)
- **Regulatory Guidance for the use of Administrative Controls during Short Term Operations (planned issuance in 2023)**

# NEI Presentation

# Open Discussion Between NRC and NEI

# Summary Review & Closing Remarks

# Opportunity for Public Comment



# If You Have Additional Questions to Be Asked of NRC Staff, Contact

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