Division of Spent Fuel Management Overview

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INMM Spent Fuel Management Seminar 2018
January 24, 2018
Overview

• NRC Spent Fuel Storage and Transportation Program
• Overview of Transportation-Part 71
• 2017 at a Glance
• 2017 Accomplishments
• Key Issues
• Current Environment
• Current Initiatives & Activities
• Spent Fuel Future
NRC Spent Fuel Storage and Transportation Program

• Licensing, Certification, Inspection:
  – Spent fuel storage facilities
  – Spent fuel dry cask storage systems
  – Radioactive material transportation packaging
  – Vendor, QA, and ISFSI inspections

• Coordination with:
  – Other NRC offices/divisions/Regions
  – Tribes
  – State and Federal agencies (primarily DOT and DOE; also DHS, EPA)
  – Foreign regulatory agencies
  – International safety committees

• Public outreach
Independent Spent Fuel Storage Installations (ISFSIs)

U.S. Independent Spent Fuel Storage Installations (ISFSI)

- Midwest
  - Dresden
  - GE Morris (wet)
  - Braidwood
  - LaSalle
  - Byron
  - Duane Arnold
  - Quad Cities
  - Clinton

- Northeast
  - Maine Yankee
  - Seabrook
  - Vermont Yankee
  - Yankee Rowe
  - Pilgrim
  - Haddam Neck
  - Millstone
  - Indian Point
  - Susquehanna
  - Three Mile Island
  - Limerick
  - Peach Bottom
  - Oyster Creek
  - Hope Creek
  - Salem
  - Calvert Cliffs

Current as of August 2017

Legend:
- Reactor sites operating a general licensed ISFSI
- Reactor sites pursuing a general licensed ISFSI
- Sites are pursuing a future specific licensed ISFSI
- Reactor sites have not announced intentions regarding ISFSI

Map showing locations of ISFSIs across the U.S.
Overview of Transportation - Part 71

• Approximately 85 Certificates of Compliance (CoCs)
• 50-70 transportation cases each year
• Support transport of nuclear materials used in:
  – Medical and industrial applications
  – Power and research reactors
  – Fuel cycle facilities
  – Of course, spent fuel from reactors
• Work closely with DOT in both domestic and international transportation
• Also coordinate with DOE, States, Tribes, and IAEA
2017 at a Glance

- More than 2,700 storage systems deployed around the U.S. and growing
- Completed 48 transportation cases
- Completed 11 storage cases
- Annual DSFM Regulatory Conference
- Continued stakeholder interactions through 42 public meetings
2017 Accomplishments

• Licensing Actions
  – Standardized NUHOMS CoC 1004 renewal
  – VSC-24 general license renewal
  – North Anna amendment for DOE/EPRI demonstration cask

• Additional Initiatives
  – Draft NUREG-2214, “Managing Aging Processes in Storage (MAPS)”
  – Draft NUREG-7198, Rev.1, “Mechanical Fatigue Testing of High-Burnup Fuel for Transportation Applications”
  – Comments on NEI 12-04, "Guidelines for 10 CFR 72.48 Implementation"
Key Issues (1):
High Burn Up Fuel

• High Burnup Fuel (HBF) Demonstration Project
  – Long-term demonstration program to provide the confirmation of continued safe storage of HBF
  – The NRC is closely monitoring
  – Issued the North Anna License Amendment for the HBF Demonstration cask

• High Burnup Fuel Testing
  – Specifically focused on effect of hydride reorientation on structural response to conditions experienced during transportation
  – Storage considerations

• Develop NUREG guidance on high burnup fuel
Key Issues (2): Transportation Considerations for Consolidated Storage

- Storage systems must be designed to ensure adequate safety under normal and accident conditions [10 CFR 72.128(a)(3)]
  - Impact of normal conditional of transport (e.g., vibration, drop, etc.) needs to be considered
  - Adequate evaluations/examinations need to be provided for loaded/aged canisters subjected to transportation
  - Staff is developing guidance on 72-71-72 implementation
Key Issues (3):
Graded Approach

• An approach to dry storage regulation that considers the relative safety importance of systems, structures and components

• Areas of evaluation based on safety functions, defense-in-depth, and potential impact of noncompliance.

• Focus on aspects of spent fuel storage with highest safety implications

• Collaborating with industry through Regulatory Issue Resolution Protocol process to leverage collective wisdom
Current Environment

• Amendments, new, and renewal applications continue to role in

• Anticipate increased workload

• Influences and uncertainties
Current Initiatives & Activities

• Enhancing and modifying internal processes
  – Developing, clarifying, and consolidating guidance
    • Consolidation of SRPs provides for technical consistency
    • Draft NUREG-7198, Rev.1, “Mechanical Fatigue Testing of High-Burnup Fuel for Transportation Applications”

• Employing Improvements to Enhance Efficiency and Agility in Reviews
  – NUREG-2152 (CFD Best Practices Guidelines for dry casks)
  – Use of the Graded Approach for confirmatory analyses
  – Thermal Research Initiatives
    • EPRI/DOE thermal modeling initiative
Current Initiatives & Activities

- Expectations for Change Process (10 CFR 72.48)
- Leveraging Technical Assistance to the Regions
- Management Oversight Enhanced
Spent Fuel Future

• Maintain focus on licensing, certification, and oversight activities

• Develop essential licensing and certificate guidance documents

• Conduct essential research in support of licensing and certification actions

• Enhance communication with and outreach to our stakeholders
Conclusion

• New technical advancements continue to influence the way we regulate

• Actively streamlining our processes and programs

• Spent fuel workload will continue to increase, leading to new challenges and scenarios that must be addressed

• The future is filled with opportunities, and changes. We will remain an effective, efficient and agile regulator.