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## Activities Related to Storage of Spent Nuclear Fuel



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NTSF Session: Interface Between Storage and Transportation

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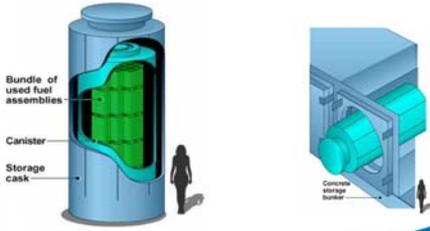
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## Overview

- Storage of Spent Nuclear Fuel
- Extended Storage
- Waste Confidence Current Status
- Yucca Mountain Update
- Summary

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## Storage of Spent Nuclear Fuel



Bundle of used fuel assemblies  
Canister  
Storage cask  
Concrete storage bunker

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## Storage of Spent Nuclear Fuel



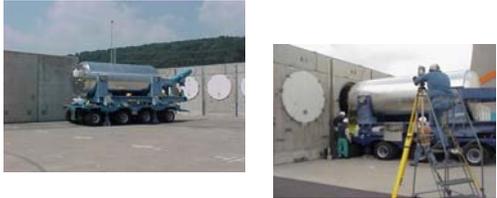
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## Storage of Spent Nuclear Fuel



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## Storage of Spent Nuclear Fuel



  
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### Roles of the Division of Spent Fuel Storage and Transportation

- Licensing and Certification
  - License spent fuel storage facilities
  - Certify spent fuel dry cask storage systems
  - Certify radioactive material transportation packages
- Inspection and Quality Assurance
  - Inspect Vendors, Fabricators, Suppliers, and Users
  - Assist Regions in Cask Operations
  - Approve Quality Assurance Programs
- Policy and Rulemaking:
  - Develops Policy, Regulations, and Guidance
  - Coordinate with Federal, State, Tribes, and International Agencies
  - Public Outreach on storage and transportation activities

  
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### Extended Storage

- Current Policy Environment
  - U.S. national policy for disposition of spent nuclear fuel is in transition
    - Extended (dry) storage of spent fuel may be necessary
    - Alternative disposal options may emerge
  - NRC's mission remains the same – license and ensure the safe and secure use of radioactive materials while protecting people and the environment



  
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### Extended Storage

- Enhance technical knowledge for regulating extended storage
  - Identify technical issues associated with long-term storage and subsequent transportation
  - Perform focused research on technical areas of regulatory significance
- Identify needed revisions to the regulatory framework

  
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### Extended Storage Current Work

- Finalize report on *Technical Information Needs Affecting Potential Regulation of Extended Storage and Transportation*
  - Responded to public comments
  - Made adjustments to the priority areas
  - Added clarity of the issues
- Technical investigations ongoing

  
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### Extended Storage Technical Needs

- Focus on potential degradation phenomena for dry storage systems
- Highest priority technical information needs:
  - Stress corrosion cracking of stainless steel canisters and welds
  - Swelling of fuel over time, including fuel fragmentation
  - More realistic thermal models for longer time periods
  - Effects of residual moisture after drying
  - In-service monitoring methods
- Additional areas in next priority level include degradation processes for cladding, hardware, concrete
- NRC has engaged with national labs and the CNWRA to research these areas

  
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### Waste Confidence

- First adopted by NRC in 1984
- Updated by NRC in 2010
- The 2010 Rule was vacated and remanded in 2012 by the Circuit Court of Appeals
  - NRC failed to address
    - Spent fuel pool fires
    - Spent fuel pool leaks
    - Scenario of no repository
- NRC stood up a new Directorate (8/2012)
- Published the Draft GEIS in September 2013



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- **Generic Environmental Impact Statement**
  - Describes the environmental impacts of continuing to store spent fuel beyond the licensed life for operations of a reactor
  - Includes spent fuel storage at reactor sites and at other NRC-licensed spent fuel storage facilities



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- **Generic Environmental Impact Statement**
  - Environmental impacts are assessed for three timeframes of continued storage
    - Short-term
    - Long-term
    - Indefinite




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- **Completed Extensive Outreach**
  - Comment period ended on December 20, 2013
  - Conducted 13 public meetings, webcasts, and teleconferences
- **Status**
  - Staff reviewing comments
  - Draft documents to the Commission in summer 2014
  - The final GEIS and final Rule expected to be published in Fall of 2014



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- **2008**
  - DOE submitted License Application for construction authorization of a repository at Yucca Mountain
  - NRC Staff adoption determination for DOE Environmental Impact Statement
- **2010**
  - DOE filed a motion to withdraw the application with the Atomic Safety and Licensing Board
  - NRC suspended review of the license application




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- **2011**
  - Suit filed with the Court of Appeals for the District of Columbia Circuit seeking resumption of the NRC review
- **2013**
  - August: U.S. Court of Appeals for the District of Columbia Circuit issued Order
    - NRC directed to proceed with licensing process
    - Use existing funds, or
    - Until Congress authoritatively says otherwise




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- **2013**
  - November: Commission directed staff to complete the Safety Evaluation Report
    - Requested DOE to prepare the supplemental EIS
    - Load Licensing Support Network document collection into ADAMS
    - Continued to hold the adjudicatory proceedings in abeyance



## Yucca Mountain

- 2014
  - Commission Order and Staff Requirements Memorandum (January)
  - “. . . we expect the staff to complete a robust review addressing all applicable regulatory requirements . . . ”
  - DOE – Supplement to the EIS (February)
    - DOE notified NRC that it would not prepare a supplement to its EIS
    - DOE would update 2009 Technical Report

## Yucca Mountain

- Completing the SER
  - SER planned for completion by January 2015
  - Review team established
  - Using previous work
  - Loading documents into ADAMS; references in SER will be publicly available

## Summary

- Storage of Spent Nuclear Fuel: 54 ISFSIs currently operating
- Extended Storage: NRC is engaged in multi-year initiatives concerning extended storage and transportation of spent fuel
- Waste Confidence: staff on schedule for issuance of final rule in fall 2014
- Yucca Mountain: staff completing the SER
- Information is available at <http://www.nrc.gov>



## Questions?

