

# NRC Activities Related to Spent Fuel Storage and Transportation



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Council of State Governments Midwestern Radioactive Materials  
Transportation Committee  
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# Overview

- NRC
- Physical Protection
- Extended Storage
- Waste Confidence
- Spent Fuel Pool Study
- Yucca Mountain Decision
- Summary



# NRC

- Who We Are
- Mission
- Goals
- What We Regulate
- What We Don't Regulate



## NRC (continued)

- Who We Are
  - Headed by a 5-member Commission
  - Nominated by the President and confirmed by the Senate
  - Headquarters in Rockville, MD
  - Four Regional offices
  - Nearly 4,000 employees



# NRC (continued)



- **Mission**
  - To license and regulate the civilian use of byproduct, source, and special nuclear materials to ensure adequate protection of the public health and safety, promote the common defense, and protect the environment.



# NRC (continued)



- Goals
  - Safety: Ensure the protection of public health and safety and the environment.
  - Security: Ensure the secure use and management of radioactive material.



# NRC (continued)



- What We Regulate
  - Nuclear reactors – commercial power reactors, research reactors, and test reactors, and new reactor designs
  - Nuclear materials – radioactive materials for medical, industrial, and academic use
  - Nuclear waste – transportation, storage, and disposal of nuclear material and waste, decommissioning of nuclear facilities
  - Nuclear security – physical security of nuclear facilities and materials from sabotage or attacks





## NRC (continued)

- What We Don't Do
  - Regulate nuclear weapons, military reactors, or space vehicle reactors
  - Lobby for nuclear power
  - Own or operate nuclear power plants
  - Regulate naturally occurring radon, X-rays and material produced in particle accelerators

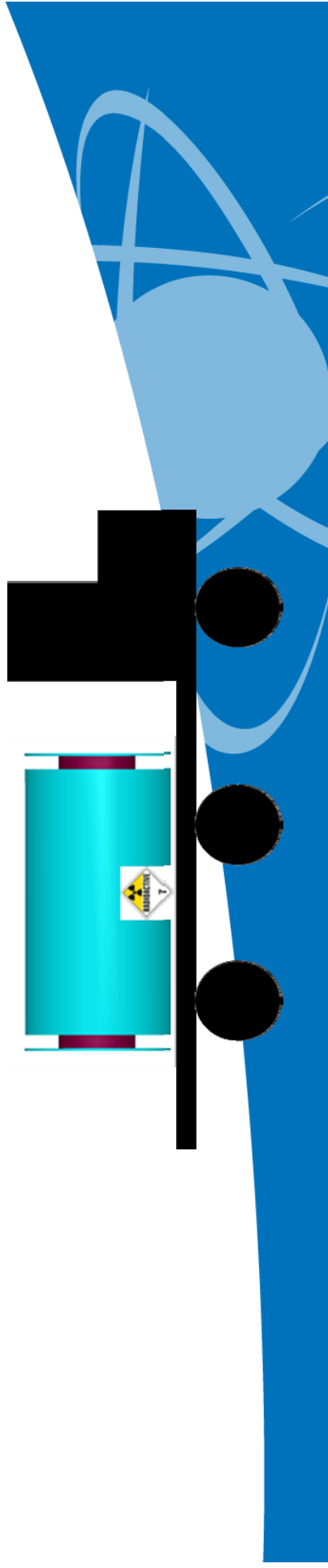




# NRC's Role in Transportation



- Review and approve Type B and fissile transportation packages
- Inspect cask designers, fabricators, shippers, and shipments
- Co-regulate with the U.S. DOT
- Co-U.S. representatives to the IAEA Transportation Safety Standards Committee

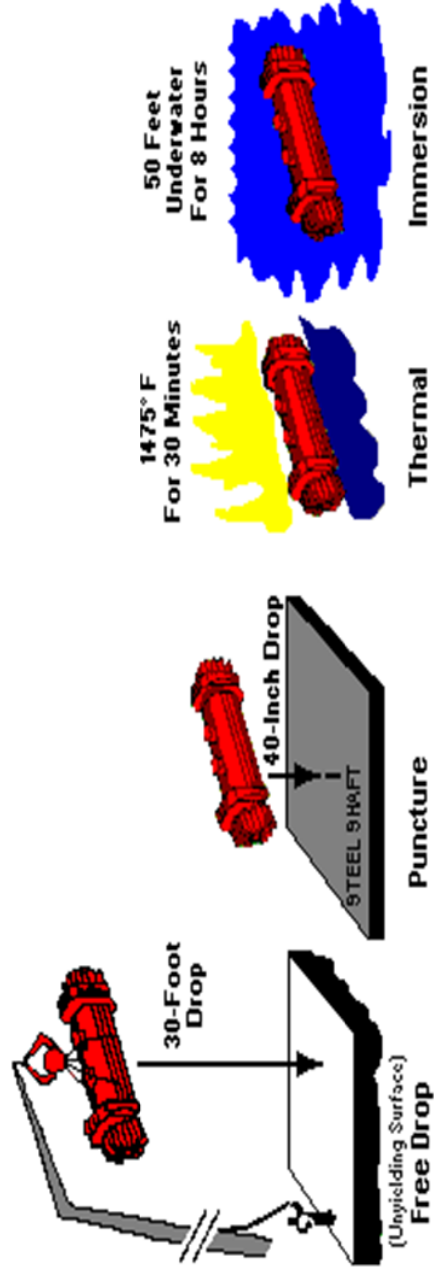
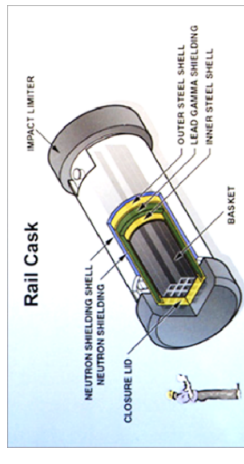


# NRC's Role in Regulating Spent Fuel Shipments



United States Nuclear Regulatory Commission  
*Protecting People and the Environment*

- Certification of shipping casks
- Inspection of cask designers and fabricators
- Enforcement of DOT and NRC safety rules
- Enforcement of physical protection measures
- Emergency response – assistance to first responders, lead Federal Agency



# Physical Protection

- Advance Notification to Native American Tribes of Transportation of Certain Types of Nuclear Waste
  - 77 FR 34194, June 11, 2012
  - Effective date: August 10, 2012
  - Compliance date: June 11, 2013
- Physical Protection of Irradiated Reactor Fuel in Transit
  - 78 FR 29520, May 20, 2013
  - Effective Date: August 19, 2013



# 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 – ensure the safe and secure use of radioactive materials while protecting people and the environment



- 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



# 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



# 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
  - Swell 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 to research these areas





# Waste Confidence

- 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



# Waste Confidence



- 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



# Waste Confidence



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



# Waste Confidence



- Extensive Outreach
  - 75-day comment period
  - Comment period ends on December 20, 2013
  - Conducted 13 public meetings, webcasts, and teleconferences
  - Comments still encouraged
    - On the web: <http://www.regulations.gov>
    - Email: [Rulemaking.comments@nrc.gov](mailto:Rulemaking.comments@nrc.gov)
    - FAX: Secretary, NRC 301-415-1101
    - Mail: Secretary, U.S. NRC, Washington, DC 20555-0001,  
Attn: Rulemakings and Adjudications Staff

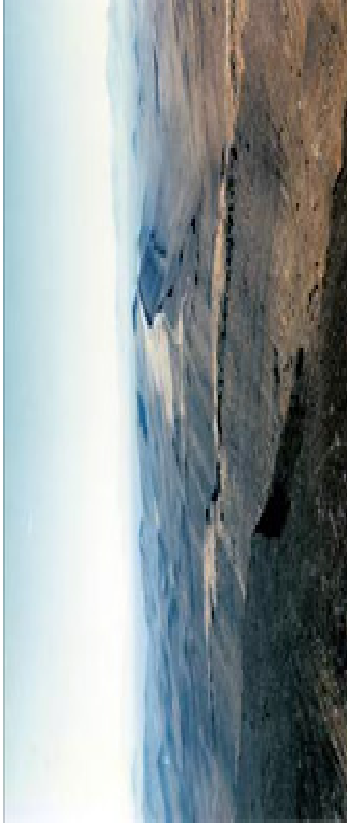


- “Consequence Study of a Beyond-Design Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor”
  - Low likelihood of a release
  - Severe earthquake on a spent fuel pool
  - Pools adequately protect public health and safety



# Yucca Mountain Decision

- 2008
  - DOE submitted application for construction authorization
- 2010
  - DOE filed a motion to withdraw the application with the Atomic Safety and Licensing Board
  - NRC staff was directed to stop work on the Safety Evaluation



# Yucca Mountain Decision

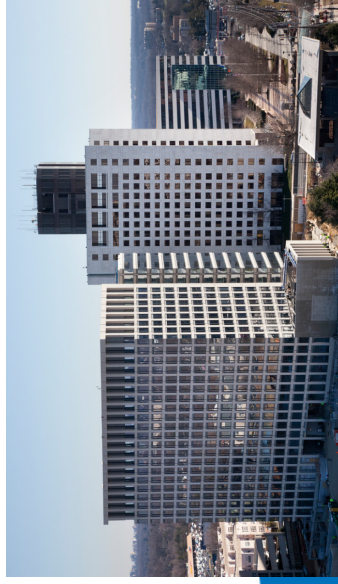
- 2013
  - August: U.S. Court of Appeals for the District of Columbia Circuit
    - NRC ordered to continue its review
    - Use existing funds, or
    - Until Congress authoritatively says otherwise
  - November: Commission orders staff to complete the Safety Evaluation Review
    - Asked DOE to prepare a supplemental EIS
    - Load Licensing Support Network document collection in ADAMS





# Summary

- NRC: remains focused on its mission
- Physical Protection: NRC codified the security orders
- Extended Storage: NRC is engaged in multi-year initiatives concerning storage and transportation of spent fuel
- Waste Confidence: comments encouraged on proposed rule
- Spent Fuel Pool Study: pools provide adequate protection
- Yucca Mountain – prepping to move forward



# Questions

