



The Role of the U.S. Nuclear Regulatory Commission in the Transportation of Spent Nuclear Fuel

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Tribal Radioactive Materials Transportation Committee Meeting

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Key Messages and Topics

- The U.S. Nuclear Regulatory Commission (NRC) is an independent regulator of civilian nuclear activities
- The NRC and the U.S. Department of Transportation (DOT) co-regulate the safe and secure transportation of radioactive material, including spent nuclear fuel, in the U.S.
- NRC's role regarding the transport of spent nuclear fuel is focused on ensuring our licensees safely prepare, secure, and receive shipments
- The NRC is assessing its readiness for possible large-scale private shipments of spent nuclear fuel

Radioactive Material Transportation

- Transportation of radioactive materials is conducted in accordance with International Atomic Energy Agency (IAEA) standards established in 1961
 - Adopted by almost all international transport organizations and Member States as the basis for their national regulations, including the U.S.
 - Applicable to national and international transport of radioactive material by all modes of transport
 - NRC and DOT regularly harmonize domestic regulations with IAEA standards



Type B waste package



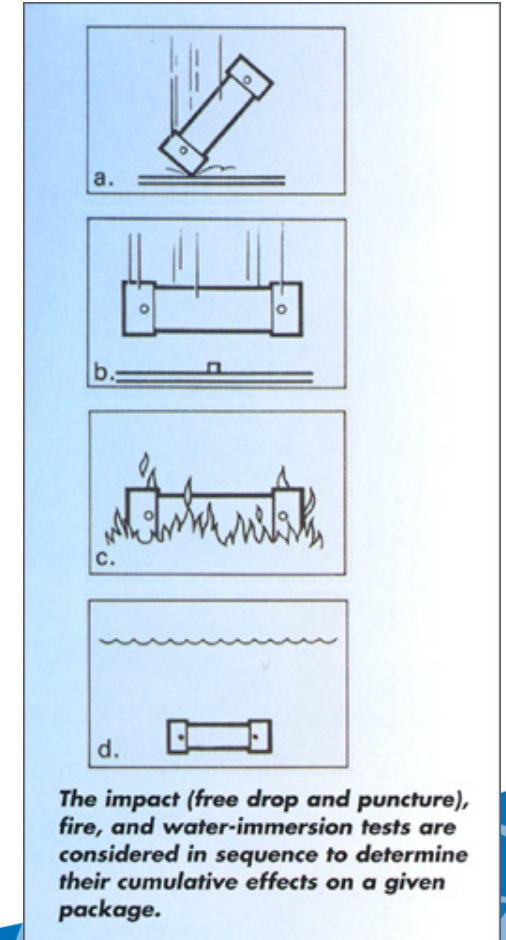
West Valley spent fuel shipment

Radioactive Material Transportation Responsibilities

- **NRC and DOT co-regulate transportation of radioactive material, including commercial spent fuel**
 - NRC/DOT Memorandum of Understanding: responsibilities for safety of radioactive materials transportation
- DOT (49 CFR)
 - Develops and enforces standards for transporting hazardous materials, including hazard Class 7 (radioactive) material
 - Oversees vehicle safety, routing, shipping papers, communications (i.e., markings, labels, placards) emergency response and shipper training
 - Regulates carriers, modes of transport (rail, road, air, water)
- NRC (10 CFR)
 - Approves the design, fabrication, use, and maintenance for transportation packages
 - Issues Certificates of Compliance for approved package designs
 - Adds additional security measures to established DOT security requirements

NRC's Role in Ensuring the Safe Transport of Spent Nuclear Fuel

- Under NRC regulations, any entity licensed to possess commercial spent fuel is granted a general license to transport licensed material in an NRC-approved package
- NRC establishes regulations for:
 - Package design standards for transportation of spent fuel (10 CFR Part 71)
 - Physical security requirements for transportation of spent fuel (10 CFR Part 73)
 - Dry cask storage system design requirements for spent fuel (10 CFR Part 72)
- NRC also
 - evaluates, approves, and authorizes for use transportation package designs; issues certificates
 - requires licensees to notify and coordinate with States, Tribes, and local law enforcement prior to shipments
 - inspects and oversees certificate holders, package fabricators, and licensee shippers
 - meets with Federal, State, and Tribal government to discuss transportation



Hypothetical accident condition tests

NRC's Transportation Regulatory Readiness Review

- Goal: Evaluate the NRC's readiness, as a regulator, to support a national campaign for commercial transportation of spent nuclear fuel
- Project Outline available on NRC's public website, in the Agency wide Documents Access and Management System (ADAMS) No. ML20356A271.

NRC's Transportation Readiness Review (cont.)



Project Phases

- The Regulatory Readiness Review project consists of three phases:
 - **Phase 1:** Assess existing regulations, guidance, and internal and external communication procedures
 - **Phase 2:** Compile a report of the assessment results w/recommendations
 - **Phase 3:** Prepare an implementation "roadmap" consistent with the staff conclusions and recommendations
- Public documentation of the project results is scheduled to be available no later than May 2021.

NRC's Communication Plans

- Existing communication channels
 - Tribal Radioactive Materials Transportation Committee
 - National Transportation Stakeholders Forum
 - State Regional Groups
 - DHS Transportation Security Working Group
 - NRC public website, Facebook, and Twitter
- Possible additional outreach methods

Conclusions

- NRC and DOT have a well-established and strong regulatory framework for the safe and secure transportation of spent nuclear fuel
- NRC will continue to assess the regulatory framework and related activities to ensure the continued safe and secure transportation of spent nuclear fuel
- NRC is working toward additional communication and outreach opportunities on spent nuclear fuel transportation

THANK YOU!

Information References

Available in ADAMS on the NRC website

- NRC Transportation Studies and Reports:
 - NUREG-0170: "Final Environmental Statement on the Transportation of Radioactive Material by Air and Other Modes" (1977) [ML12192A283 for Vol. 1 and ML022590370 for Vol. 2]
 - NUREG/CR-4829: "Shipping Container Response to Severe Highway and Railway Accident Conditions" (1987) [ML070810403 and ML070810404]
 - NUREG/CR-6672: "Reexamination of Spent Fuel Shipment Risk Estimates" (2000) [ML003698324]
 - NUREG/CR-6886: "Spent Fuel Transportation Package Response to the Baltimore Tunnel Fire Scenario" (2009) [ML090570742]
 - NUREG-2125: "Spent Fuel Transportation Risk Assessment –Final Report" (2014) [ML14031A323]
 - NUREG/CR-7209: "A Compendium of Spent Fuel Transportation Package Response Analyses to Severe Fire Accident Scenarios – Final Report" (2017) [ML17066A101]

Information References (cont.)

Available in ADAMS on the NRC website



- NRC Transportation Studies and Reports:
 - NUREG/BR-0292, Rev. 2: "Safety of Spent Fuel Transportation" (2017) [ML16237A133]
 - NUREG-0561, Rev 2: "Physical Protection of Shipments of Irradiated Reactor Fuel" (2013) [ML13120A230]