

# ***Report from the U.S. Nuclear Regulatory Commission on the Transportation of Radioactive Material in Type B Packages and Related Activities***

The Council of State Governments  
Midwestern Radioactive Materials Transportation Committee Meeting

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## Overview

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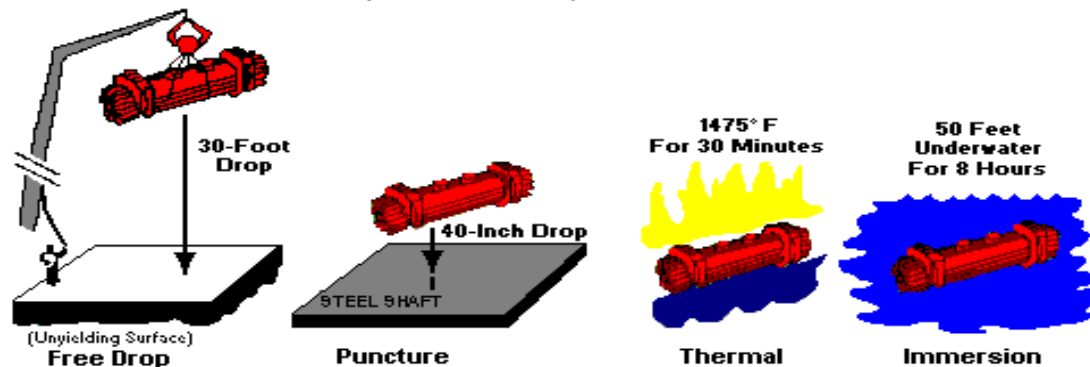
- ▶ NRC's Role in Regulating Shipments of Spent Nuclear Fuel
- ▶ Package Testing
- ▶ Radioactive Materials that Require a Type B Transportation Package
- ▶ Package Review Times
- ▶ Consolidated Interim Storage Facilities
- ▶ NRC Transportation Studies and Related Information
- ▶ Questions

# NRC's Role in Regulating Spent Nuclear Fuel Shipments

- Certification of Shipping Casks
- Inspection of Cask Designers and Fabricators
- Enforcement of NRC and DOT safety rules
- Enforcement of Physical Protection Measures
- Emergency Response – assistance to first responders

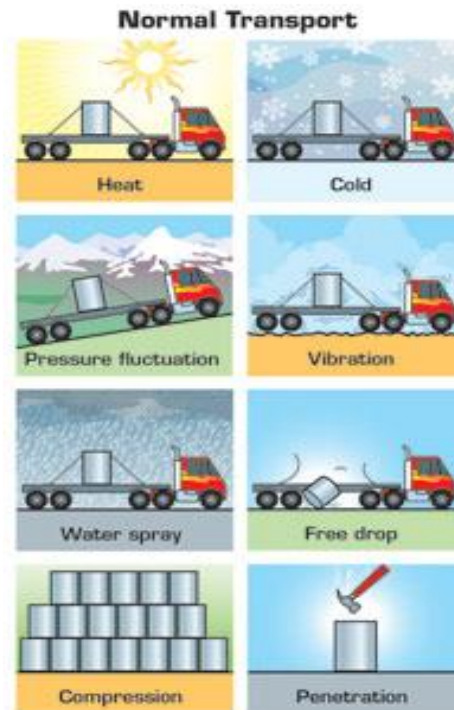
# NRC's Role in Regulating Spent Nuclear Fuel Shipments

- Spent fuel shipping packages are certified to be accident resistant. They must withstand:
  - 30-foot drop onto unyielding surface.
  - 40-inch drop onto a steel puncture pin.
  - 30-minute fully engulfing 1475° F fire.
  - Immersion test (50 feet).



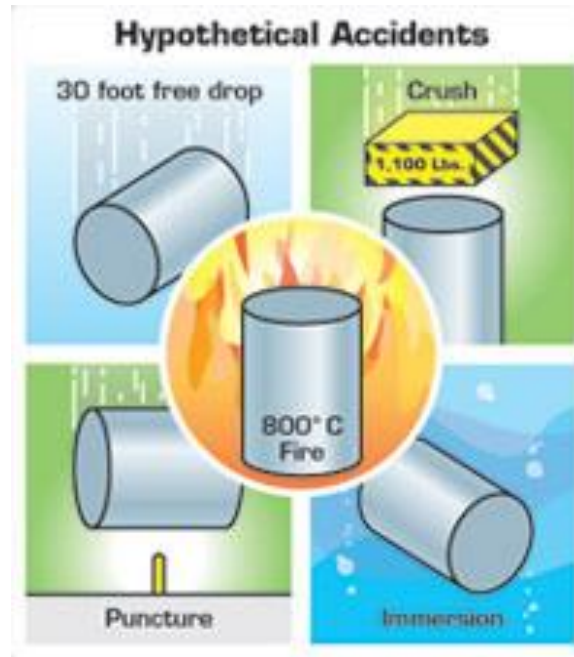
# Normal Conditions of Transport Tests for Type B Packages 10 CFR 71.71

1. Heat
2. Cold
3. Pressure changes
4. Vibration
5. Water spray
6. Free drop
7. Compression
8. Penetration



# Hypothetical Accident Condition Tests for Type B Packagings 10 CFR 71.73

1. Free Drop
2. Crush
3. Puncture
4. Thermal
5. Immersion - fissile package
6. Immersion - all packages



## Radioactive Materials that Require a Type B Transportation Package

- Type B quantities of radioactive material
  - $> A_1$  or  $A_2$
- Highway Route Controlled Quantities (HRCQ)
  - $> 3,000 \times A_1$  or  $A_2$  , or
  - $> 27,000$  Curies
- Category 1 and Category 2 materials
  - 10 CFR Part 37
- Spent nuclear fuel

# NRC Review Time for Transport and Storage Applications

## ▶ Amendments

- ▶ Fresh fuel transport package - up to 1 year
- ▶ Spent fuel transport package - 1 to 2 years
- ▶ Spent fuel storage cask - 1 to 2 years

## ▶ New package designs

- ▶ Fresh fuel transport package - 1 to 1.5 years
- ▶ Spent fuel transport package - 2 years
- ▶ Spent fuel storage cask - 2 years



# Radiation Level Limits

- ▶ 10 CFR 71.87
- ▶ 49 CFR 173.441
- ▶ Package
  - ▶ 200 mr/hr
  - ▶ 1,000 mr/hr (closed)
- ▶ Vehicle
  - ▶ 200 mr/hr
- ▶ 2 meters from vehicle
  - ▶ 10 mr/hr
- ▶ Occupied spaces of the vehicle
  - ▶ 2 mr/hr



# Consolidated Interim Storage Facilities (CISF)

- **Waste Control Specialists (WCS) Application**
  - ▶ Application received April 2016 for proposed site in Andrews County, TX
  - ▶ Accepted by NRC in January 2017 for review
  - ▶ Suspension requested by WCS in April 2017
  - ▶ NRC suspended WCS CISF application review
  - ▶ New applicant Interim Storage Partners, LLC (ISP) requested resumption of the NRC review (Jan 2018)
  - ▶ NRC anticipates completing its safety and environmental review in mid-2021
- **Holtec Application**
  - ▶ Application received March 2017 for proposed site in Lea County, NM
  - ▶ Application accepted for review (February 2018), and is currently in Technical Review
  - ▶ Staff issued 4 requests for additional information; Holtec has responded to all
  - ▶ NRC conducted 6 public scoping meetings in 2018 as part of the environmental review process
  - ▶ NRC anticipates completing its safety and environmental review in early-2021

# Harmonization with the IAEA Transportation Standards

- ▶ Issues paper (Nov 2016) [ML16299A298]
- ▶ Regulatory Basis Completed (Sept 2019)
- ▶ Schedule
  - ▶ Draft Proposed Rule (Oct 2020)\*
  - ▶ Draft Regulatory Guidance (March 2021)\*
  - ▶ Final Rule (Jan 2022)
  - ▶ Final Regulatory Guidance (April 2022)
- ▶ Working with U.S. Department of Transportation

\* Indicates public comment opportunity

## NRC Transportation Studies and Related Information

- ▶ 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]

## NRC Transportation Studies and Related Information (continued)

- ▶ 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]
- ▶ 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]

# Questions?

Thank you for your attention.