

SPENT FUEL PROJECT OFFICE

NRC Role in Transportation



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NRC Role in Shipment of Spent Nuclear Fuel

- ▶ Package Certification
- ▶ QA and Inspection of Package Fabrication
- ▶ Physical Protection
- ▶ Enforcing DOT Regulations
- ▶ Emergency Response

DOT/NRC Memorandum of Understanding - July 2, 1979

▶ DOT

- ▷ Serves as national competent authority for transportation of radioactive material
- ▷ Develops standards/requirements Type A and LSA packages

▶ NRC

- ▷ Develops standards/approves Type B and fissile material packages
- ▷ Lead role in investigating accidents where damage occurs to NRC approved packages

DOT/NRC Memorandum of Understanding - July 2, 1979

▶ DOT and NRC

- ▷ Information exchange, consultation and assistance within areas of special competence
- ▷ Inspection and enforcement programs within individual areas of jurisdiction

Transportation Safety

Accident History

Package Type	Number of Accidents	Number Involved	Number Failed
Strong/ Tight	47	1354	76
Type A	199	2201	73
Type B	55	87	0

Design Basis: **Normal Conditions**

- ▶ Heat and Cold
- ▶ Increased/Decreased External Pressure
- ▶ Vibration
- ▶ Water Spray
- ▶ Free and Corner Drop
- ▶ Compression
- ▶ Penetration

Type B Hypothetical Accident Criteria

- ▶ Hypothetical accident test conditions determined internationally
 - ▷ Impact
 - ▷ Puncture
 - ▷ Thermal (fire)
 - ▷ Immersion
- ▶ Acceptance limits
 - ▷ Material release
 - ▷ Exposure limit
 - ▷ Subcritical

SNF Transport Systems

► 8 Transport Casks for LWR SNF

- IF-300 (7 PWR, 17-18 BWR)
- TN-9 (7 BWR)
- NLI-1/2 (1 PWR, 2 BWR)
- NLI-10/24 (10 PWR, 24 BWR)
- TN-8, TN-8L (3 PWR)
- NAC-LWT (1 PWR, 2 BWR)
- TN-BRP (44 BWR)
- TN-REG (20 PWR)

Casks in Approval Process

▶ DUAL PURPOSE (Storage/Transport) CASKS

▷ NAC-STC (26 PWR)

▷ Holtec HI-STAR / HI-STORM

- Dresden (HI-STAR 100)
- Private Fuel Storage Facility

▷ Nuclear Assurance Corporation

- STC/ MPC - Yankee Rowe
- UMS - Palo Verde

▷ Sierra Nuclear TRANSTOR

- Trojan

▷ Vectra MP-187

- Rancho Seco

Past Performance of Vendors, Fabricators, and Utilities

- ▶ Problems Identified:
 - ▷ Welding
 - ▷ Compatibility of Materials
 - ▷ Compliance with Tests

Past Performance of Vendors, Fabricators, and Utilities

- ▶ Fabricators not familiar with QA program and principles
- ▶ Ineffective oversight by vendor and utility
- ▶ Poor documentation of 72.48 changes

NRC Enforcement of DOT Regulations

- ▶ 10 CFR 71.5: NRC requirement for licensees to comply with DOT regulations
- ▶ Each year, inspectors from NRC's 4 regional offices conduct about 2000 license inspections
- ▶ At most of these inspections, licensees transportation activities are reviewed
- ▶ Violations may result in civil penalty, depending on severity

Protection against Sabotage, Theft, or Diversion

▶ Objectives

- ▷ Minimize likelihood of sabotage
- ▷ Facilitate location and recovery

▶ Approach

- ▷ Provide detection, assessment of attempt to access or control shipments
- ▷ Provide notification to response forces
- ▷ Impede sabotage attempt

General Requirements: 10 CFR Part 73.37

- ▶ Communications Center: redundant capability
- ▶ Escorts:
 - ▷ threat procedures, instructions, training
 - ▷ armed escorts in urban areas
- ▶ Local law enforcement agencies (LEA)
- ▶ Advance notification and route approval
- ▶ Avoidance of intermediate stops
- ▶ Vehicle immobilization

Emergency Response Role of the NRC

- ▶ Assures that State Agencies, DOE and other affected Agencies are informed of the accident
- ▶ Provide information on the NRC-certified packages
- ▶ Offers other technical advice as requested.
- ▶ Only assumes radiological control of the incident scene until State or Local authorities arrive.

NRC's Emergency Response Role

- ▶ Policy Statement
- ▶ Survey of State Emergency Response Capabilities
- ▶ FRPCC Member