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NRC Preparations for Potential Large-Scale Commercial Shipments of Spent Nuclear Fuel

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Topics

- NRC Regulatory Readiness Review: Scope, Results, Recommended Enhancements
- Current Storage of Spent Nuclear Fuel
- Oversight Roadmap: Roles and Responsibilities of the NRC and other Federal Agencies

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Review Scope

- Regulatory framework for safety and security
- Nineteen assessment areas, including:
  - Applicable regulations, guidance, and procedures
  - Respective roles of Federal, State, and Tribal agencies
  - Interagency agreements and cooperation
  - Prior experience with SNF transportation
  - Prior evaluations and risk assessments
  - Information needs
  - Inspection and other oversight
  - Outreach

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Key Results

- The NRC has a well-established and strong regulatory framework for the safe and secure transportation of spent nuclear fuel
- The NRC's regulatory framework for transportation is well integrated with the overall Federal structure
- No major changes needed to NRC regulations or guidance
- Enhance inspection procedures for greater efficiency
- Expand public engagement and communications

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Recommended Enhancements

- Pre-shipment and receipt inspections
  - Update and consolidate applicable procedures for greater efficiency
  - Ensure that inspectors are trained and qualified on the new procedures
- Public outreach
  - Provide more outreach and public interaction on spent nuclear fuel transportation safety and security

Other Review Outcomes

- *Identified* information needs to support NRC's oversight of the transportation campaign
- *Identified* areas that could potentially require a future policy action by the Commission
- *Developed* a high-level roadmap for regulatory oversight during the different stages of a transportation campaign

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Current Storage of Spent Nuclear Fuel in the U.S.

- Almost all commercial spent nuclear fuel in the U.S. is stored at operating or former nuclear power plant sites
- The NRC licenses and oversees 84 spent fuel storage facilities in 36 states
- More than 3,930 dry storage casks are now in service
- The NRC currently certifies 19 different dry storage cask designs for use at storage sites

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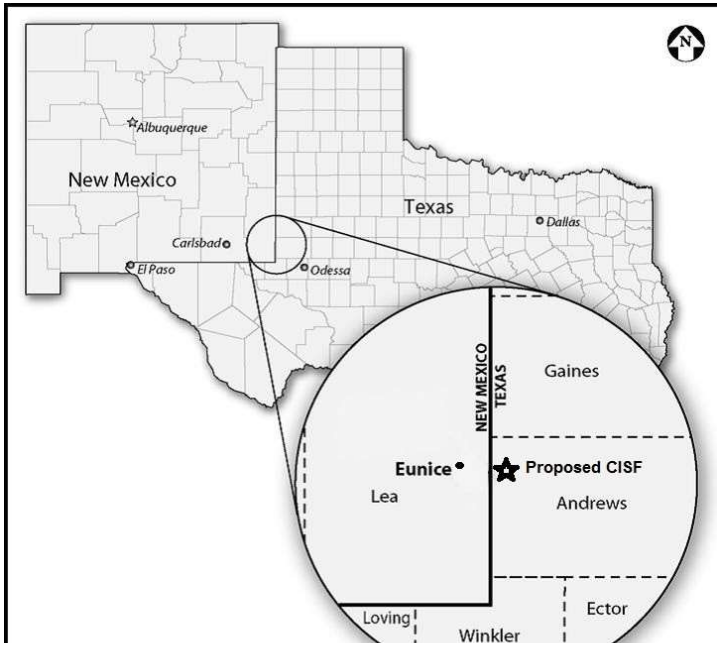
Proposed Consolidated Interim Storage

- The NRC is currently reviewing a license application for a proposed consolidated interim storage facility (CISF) in New Mexico
- The NRC issued a license for a CISF in west Texas (Sept 2021)
- Licensing and construction of one or both CISFs would lead to large-scale commercial shipments of spent nuclear fuel



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Oversight Roadmap: Agency Roles and Responsibilities

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NRC's Regulatory Responsibilities

- Establish and maintain the regulations for transportation and storage packages and the transportation security regulations
- Certification of transportation packages
- Oversight of shipments being prepared and received
- Review and approval of security plans and routes for shipments
- Coordination with other Federal agencies, other partners, stakeholders, and the public

Oversight Roadmap

Shipping Site

In Transit

Receiving Site

Event Response

Oversight Roadmap

Shipping Site

Package Certification
Site Operations
Pre-shipping Inspections
QA Inspections

In Transit

Receiving Site

Receipt Inspections
Site Operations

Event Response

NRC Roles

Oversight Roadmap

Shipping Site

In Transit

Receiving Site

DOT Roles

FRA
PHMSA
FMCSA

Event Response

FRA = Federal Railroad Administration
PHMSA = Pipeline and Hazardous Materials Safety Administration
FMCSA = Federal Motor Carrier Safety Administration

Oversight Roadmap

Shipping Site

In Transit

Receiving Site

DHS Roles

Security Planning

FEMA

Event Response

FEMA = Federal Emergency Management Agency

Oversight Roadmap

Shipping Site

In Transit

Receiving Site

Local Roles

States
Tribes

Event Response

Oversight Roadmap

Shipping Site

In Transit

Receiving Site

DOE Roles

Outreach

R&D

Event Response

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Key Messages

- The NRC has a well-established and strong regulatory framework for the safe and secure transportation of spent nuclear fuel
- The NRC's regulatory framework for transportation is well integrated with the overall Federal structure that supports transportation activities
- Transportation of spent nuclear fuel has already occurred in the U.S. with no safety or security issues
- The NRC has confidence that spent nuclear fuel can continue to be transported safely and securely

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Further Reading

- *Regulatory Readiness Review Report* is available in the NRC Agencywide Documents Access and Management System (ADAMS) [ML21298A164]
- *Summary of the review results* as reported to the NRC Commission (SECY-21-0101) [ML21300A344]
- *Recent NRC transportation risk analysis*: NUREG-2125, "Spent Fuel Transportation Risk Assessment," (January 2014) [ML3249A329]

More transportation-related NRC publications are included in Appendix C of the Readiness Report