



NRC Licensing Overview

Spent Nuclear Fuel Storage and Transportation

Meeting of HBU Dry Cask Storage Demonstration
Idaho Falls, Idaho

David W. Pstrak
U.S. Nuclear Regulatory Commission

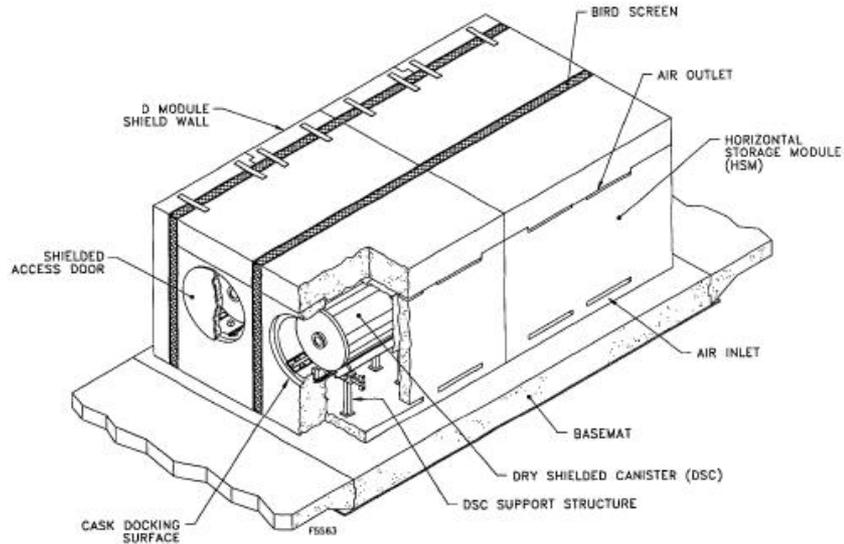
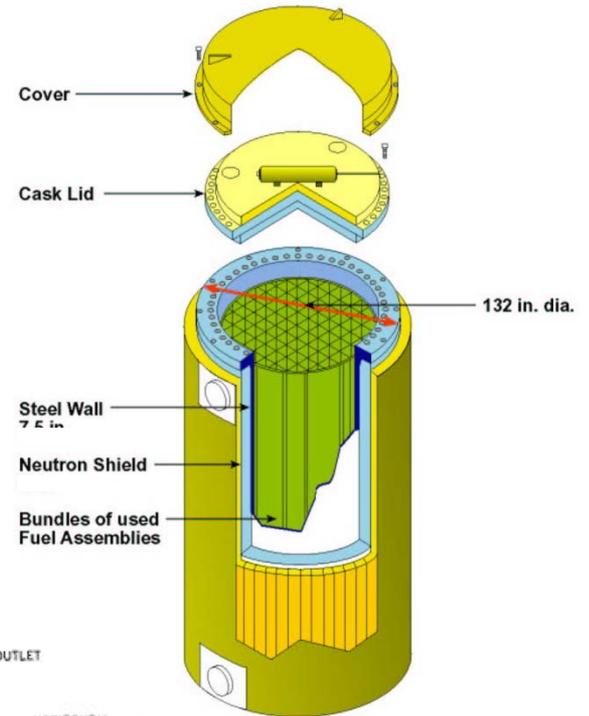
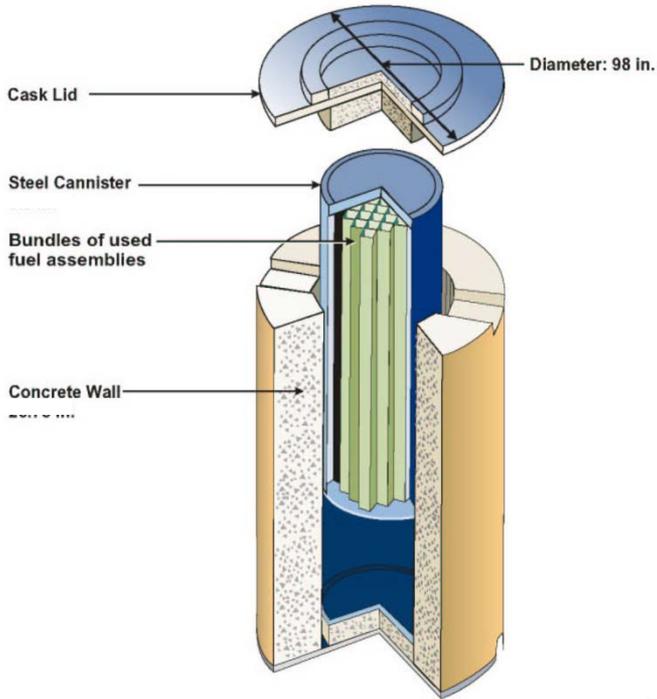
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Any such positions or commitments will be provided in writing through separate NRC correspondence, if needed.

Major Cask Technologies



STORAGE LICENSING PROCESS

Options for Spent Fuel Storage Licensing

- **Site Specific License**
 - Available to Part 50 (reactor) licensees and other applicants
 - Required for away-from-reactor sites
 - Application submitted to NRC for approval
 - Opportunity for Public Hearing
 - Subject to inspection (site construction, cask fabrication, dry runs, cask loading)
- **Certificate of Compliance (General License)**
 - Available only to Part 50 licensees
 - Requires use of certified cask design
 - Requires site evaluation for compatibility with cask design
 - Subject to 72.212 evaluation and oversight
 - Subject to inspection (site construction, cask fabrication, dry runs, cask loading)

Site-Specific Process

- **Pre-Application Meetings**
- **Submittal of License Request**
- **Notice of Docketing & Opportunity for Hearing**
- **License Review**
 - Independent NRC Audit Review
 - Requests for Additional Information
 - Public Meetings
- **NEPA Environmental Impact Statement**
- **Adjudicatory Proceedings** (if granted)
- **License to Construct and Operate**
 - NRC Inspection Oversight of Construction & Operations

Cask Certification Process

- **Pre-Application Meetings**
- **Submittal of CoC Request (by vendor)**
- **Certification Review**
 - **Independent NRC Audit Review**
 - **Requests for Additional Information**
 - **Public Meetings**
- **Generic Environmental Impact Statement Exists**
- **Opportunity for Public Comment in Rulemaking**
- **Certificate Issued for use by any General Licensee**

NRC Storage Licensing Timelines

- **New Storage Facility License**
 - 2 to 3 years
- **Amendment to Storage Facility License**
 - 6 months to 2 years
- **New Certificate**
 - 1 to 2 years
- **Amendment to Certificate**
 - 9 months to 2 years

STORAGE REVIEW AREAS

Areas of Evaluation

- Principal Design Criteria
- Structural
- Thermal
- Shielding
- Criticality
- Confinement
- Operating Procedures
- Acceptance Tests and Maintenance Program
- Radiation Protection
- Accident Analyses
- Conditions for Use
- Quality Assurance
- Decommissioning

Hazards Considered

- Normal Operations
- Off-Normal Operations
- Design Basis Man-Made Accidents
- Design Basis Natural Phenomena
(e.g., Tornados, earthquakes, floods, lightning, tsunami, hurricanes)

Technical Review Guidelines

- Standard Review Plan for Spent Fuel Dry Storage Facilities (NUREG-1567)
 - Regulatory Requirements
 - Acceptance Criteria
 - Review Procedures
 - Evaluation Findings
- Interim Staff Guidance Documents

TRANSPORTATION CERTIFICATION PROCESS

Options for Transportation Certification

- **Certificate of Compliance (General License)**
 - Available to all NRC licensees
 - Certificate application submitted to NRC for approval
 - Requires package to meet general design and fissile package requirements for hypothetical accident conditions
 - Number of shipments usually not a factor in the safety determination
- **Special Package Authorization (10 CFR 71.41d)**
 - May be considered for one-time shipments with appropriate compensatory measures
 - When compliance with the normal transportation provisions is impracticable
 - Overall level of safety in transport for shipments is demonstrated by alternate means and is equivalent to that which would be provided if all the applicable requirements had been met.

Certification Process

- **Pre-Application Meetings**
- **Submittal of Application**
- **Certification Review**
 - **Independent NRC Audit Review**
 - **Requests for Additional Information**
 - **Public Meetings**
- **Design Certification**

NRC Transportation Cert Times

- **New Spent Fuel CoC**
 - 1 to 2 years
- **Amendment to Spent Fuel CoC**
 - 3 months to 2 years
- **Special Package Authorization**
 - 1 to 3 years

Technical Review Guidelines

- Standard Review Plan for Spent Fuel Transportation Packages (NUREG-1609)
- Interim Staff Guidance Documents

Regulatory Insights

**Assuming Cask Designed with
Containment Penetrations Used for
National Demonstration Program**

Potential Storage Issues

(Assuming cask with penetrations and instrumentation)

- Confinement
 - 72.104: Any real individual shall not receive more than 25 mrem/yr from planned discharges during normal operations
 - 72.106 : Any individual on controlled area boundary shall not receive more than 5 rem from any design basis accident
- Retrievability
 - 72.122(I) – No significant cladding degradation leading to gross ruptures
- Licensing Precedent
 - DOE TMI-2 ISFSI has confinement boundary penetration into storage canister which is vented through HEPA filter

Potential Transport Issues

(Assuming package with penetrations and instrumentation)

- Containment
 - 71.51: No loss or dispersal of radioactive contents--as demonstrated to a sensitivity of 10^{-6} A₂ per hour during normal conditions of transportation.
 - ANSI N14.5: Provides design and leak testing standards to satisfy regulation
 - 71.43(e): A package valve or other device, the failure of which would allow radioactive contents to escape, must be protected against unauthorized operation and must be provided with an enclosure to retain any leakage.

Potential Transport Issues (cont.)

(Assuming package with penetrations and instrumentation)

- Criticality
- 71.55(b): A package used for the shipment of fissile material must be so designed and constructed and its contents so limited that it would be subcritical if water were to leak into the containment system.
- 71.55 (c): The Commission may approve exceptions to the requirements of paragraph (b) of this section if the package incorporates special design features that ensure that no single packaging error would permit leakage, and if appropriate measures are taken before each shipment to ensure that the containment system does not leak.
- 71.55(d): package used for the shipment of fissile material must be so designed and constructed and its contents so limited that under the normal conditions of transport the contents would be subcritical; and the geometric form of the package contents would not be substantially altered.