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Regulatory Perspectives on Transportability of Spent Fuel Dry Storage Systems

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Part 72 Regulatory Requirements

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- 10 CFR 72.236 (m),"To the extent practicable in the design of spent fuel storage casks, consideration should be given to compatibility with removal of the stored spent fuel from a reactor site, transportation, and ultimate disposition by the Department of Energy."

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Part 72 Regulatory Requirements (Cont.)

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- 10 CFR 72.122 (h)(1) "The spent fuel cladding must be protected during storage against degradation that leads to gross rupture or the fuel must be otherwise confined such that degradation of the fuel during storage will not pose operation safety problems with respect to its removal ...."

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Part 72 Regulatory Requirements (Cont.)

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- 10 CFR 72.122 (l) “Storage systems must be designed to allow ready retrieval of spent fuel, high-level radioactive waste, and reactor-related GTCC waste for further processing or disposal.”

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Part 71 Regulatory Requirements

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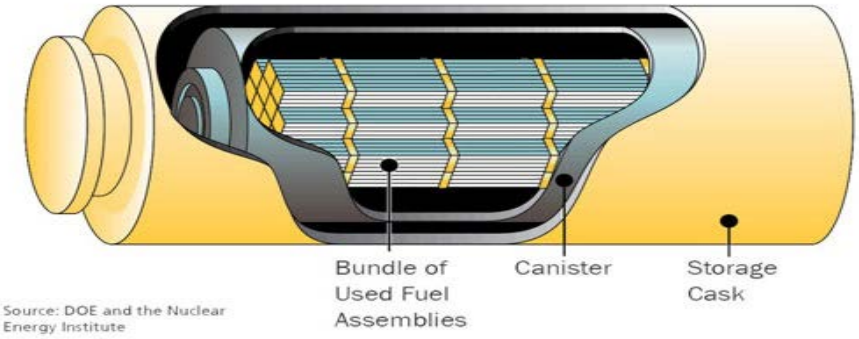
- Part 71 transportation requirements are performance based
  - Provides flexibilities in assigning safety functions to system components
- Storage system components relied on for safety during transportation must satisfy Certificate of Compliance conditions
  - Content
  - Packaging



Source: DOE and the Nuclear Energy Institute

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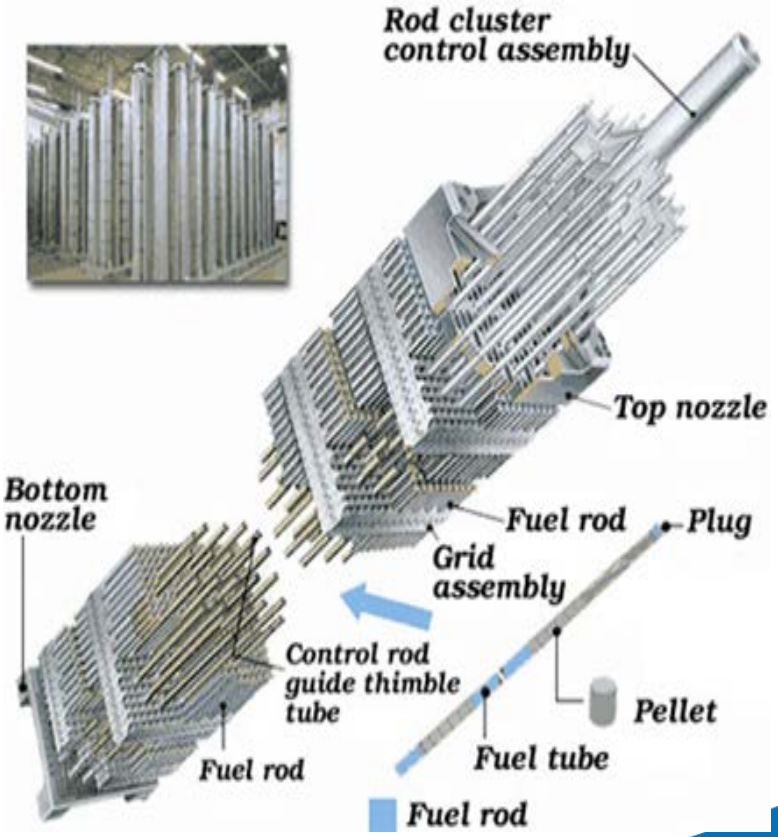
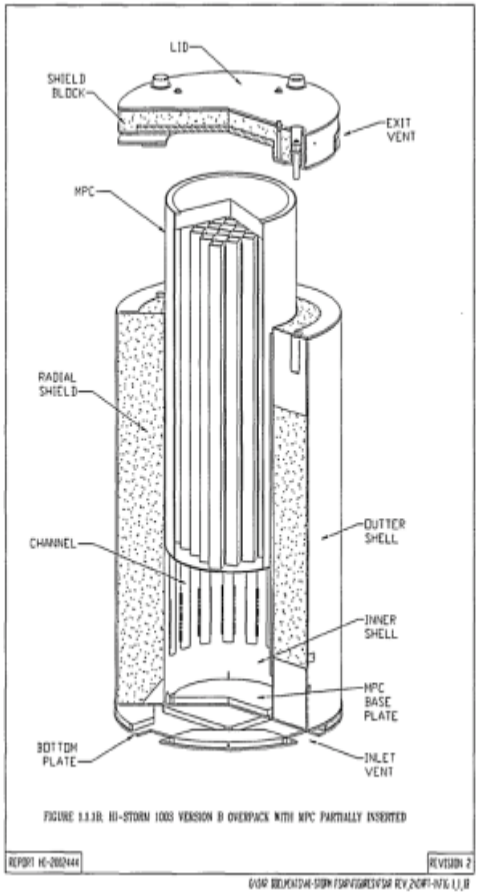
Content

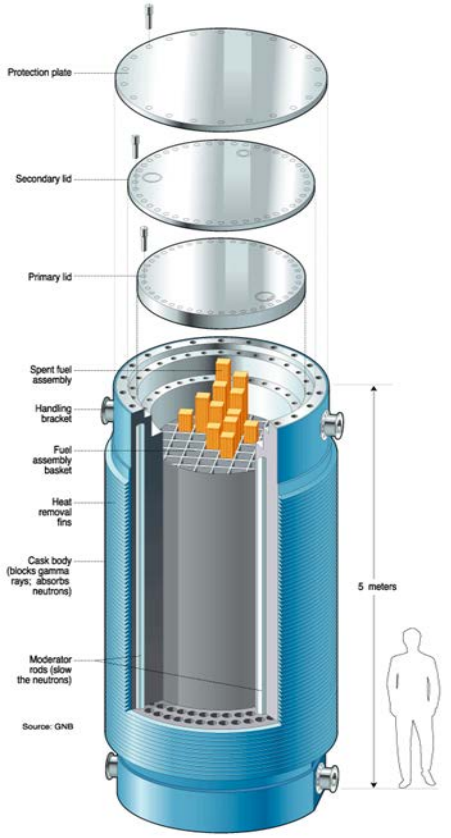
- What is the role of spent fuel in satisfying transportation safety functions?
  - Containment?
    - Cladding
    - Fuel fraction release from cladding
  - Criticality Safety?
    - Maintaining fuel geometry
    - Burnup Credit



Packaging

- What component of dry storage system is relied on as part of packaging performing safety functions?
  - Basket
  - Canister
  - Overpack





Packaging (cont.)

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- Qualifying different storage systems as transportation packages require different operations
  - Direct load systems
  - Canister based systems
  - “Chain-of-Custody” including AMP

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Transportation Package

- NRC has processed some applications for storage-to-transportation
  - VSC-24
  - TN-40
  - MP-197
  - HI-STORM/HI-STAR

NRC Guidance

- Examining Part 71/Part 72 compatibility
  - High Burnup Regulatory Information Summary
  - Re-Examining Interim Staff Guidance -2 on Fuel Retrievability
- Issuing NUREG-1927, Rev. 1 on Renewals