Transportation and Storage Requirements

Robert M. Bernero, Director
Office of Nuclear Material
Safety and Safeguards

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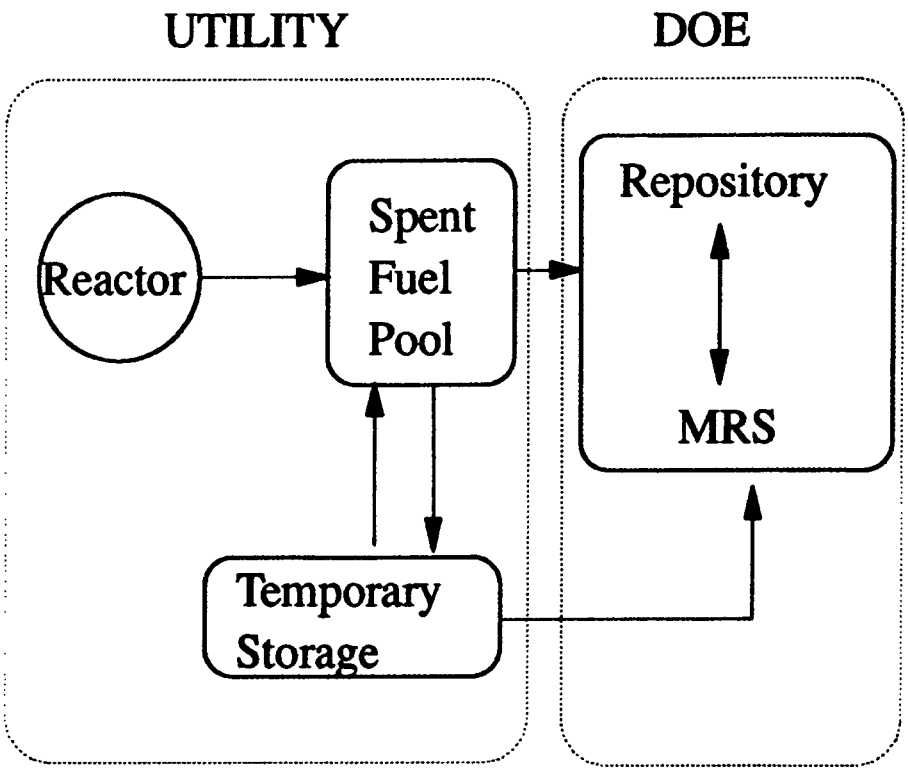
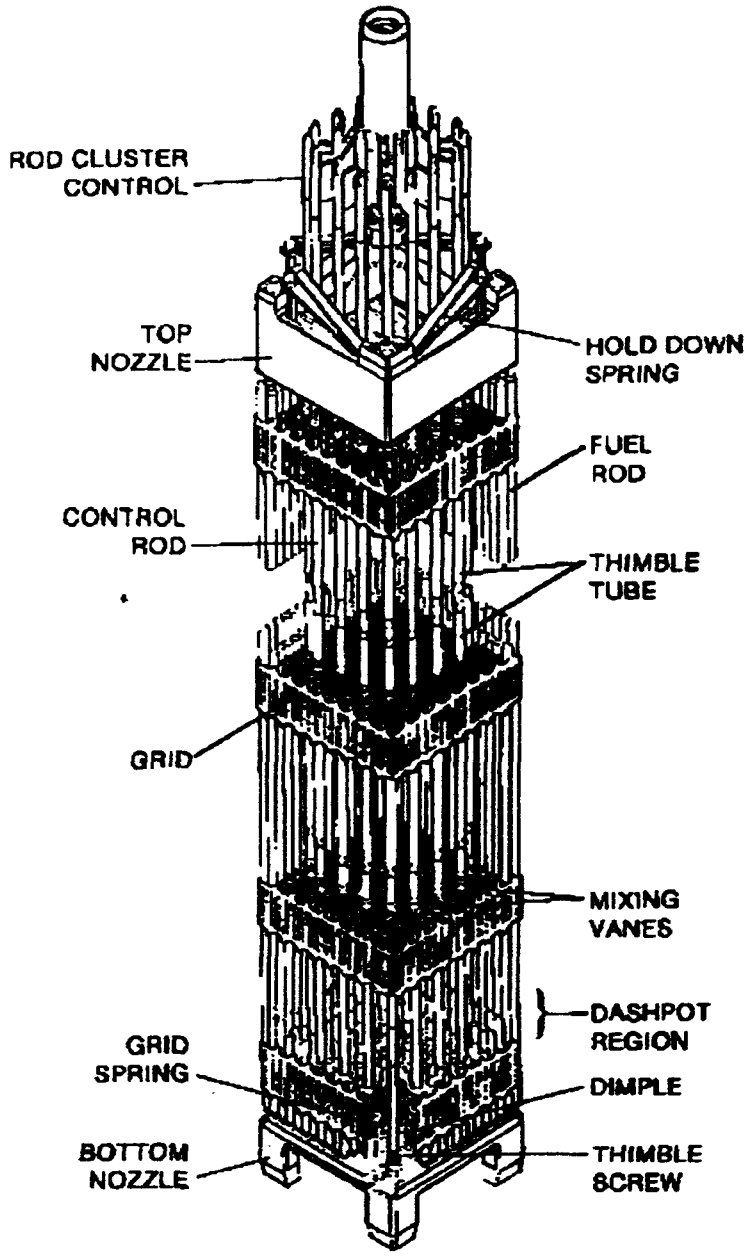
Topics

- Safety of Long Term Storage
- Safeguards Consideration for Storage
- Status of Storage and Transportation Program

The System


UTILITY
DOE
Reactor
Spent
Fuel
Pool
Repository
MRS
Temporary
Storage

Typical Spent Fuel Assembly



LWR Fuel Assemblies

- PWR
  - Width
    - 7.6-8.5 Inches
  - Length
    - **11.4-16.6** Feet
  - Weight
    - 1,096-1,515 Lbs
- BWR
  - Width
    - 4-6.5 Inches
  - Length
    - **6.8-14.7** Feet
  - Weight
    - 328-619 Lbs

Safety of Long Term Storage of Spent Fuel

- Original finding issued in 1984 (49 FR 34658)
  - Spent fuel can be stored safely for at least 30 years beyond expiration of reactor's operating license - (40 year license + 30 years, or at least 70 years).
- Finding modified in 1990 (55 FR 38474)
  - Spent fuel can be stored safely for at least 30 years beyond the licensed life of operations - (40 year license + 30 year renewal + 30 years, or at least 100 years)
- Neither finding represents a technical limit for safe storage.

Safety of Long Term Storage of Spent Fuel

- Commission's findings based on:
  - Long term integrity of spent fuel in pool storage
  - Structure and component safety for extended pool operation
  - Safety of dry storage
  - Low potential risks from accidents or acts of sabotage

Potential Risks from Accidents or Acts of Sabotage

- Storage pools and facilities designed to withstand accidents and external hazards.
- Dispersal mechanism limited for conceivable accidents (i.e., absence of high temperature or pressure).
- Consequences of sabotage limited because of material form, and size and weight of protective structures.
- Proposed rule for Independent Spent Fuel Storage to be published July 1994.
  - Consequences of large scale explosive attack currently under staff evaluation.

Approved Spent Fuel Transportation Casks

Model No.	Certificate Holder	Capacity	Weight (lb) Mode	# Built
NLI 1/2	Nuclear Assurance Corp	1 PWR or 2 BWR	50,000 Truck	5
NAC-LWT	Nuclear Assurance Corp	1 PWR or 2 BWR	50,000 Truck	5
TN-8	Transnuclear Inc	3 PWR	80,000 OW Truck	2
TN-9	Transnuclear Inc	7 BWR	80,000 OW Truck	2
IF-300	Pacific Nuclear	7 PWR or 18 BWR	140,000 Rail	4
NLI-10/24	Nuclear Assurance Corp	10 PWR or 24 BWR	195,000 Rail	2

Approved Spent Fuel Storage Systems

Model No.	Licensee	Capacity	System
MVDS	Fort St. Vrain	Site Inventory	Vault
Castor V/21	Surry	21 PWR	Cask
MC-10	Surry	24 PWR	Cask
NAC-I28	Surry	28 PWR	Cask
TN-24	None	24 PWR	Cask
TN-40	Prairie Island	40 PWR	Cask
NUHOMS 7P	H.B. Robinson	7 PWR	Canister Assembly
NUHOMS 24P	Oconee Calvert Cliffs	24 PWR	Canister Assembly
VSC-24	Palisades Arkansas* Point Beach*	24 PWR	Canister Assembly

* Potential Users

Proposed Cask Designs

- Dual-, Multi-Purpose Casks
  - Minimize Fuel Handling
  - Proposed designs must satisfy regulations for each use:
    - Part 71 for Transportation
    - Part 72 for Storage
    - Part 60 for Disposal

Dual-, Multi-Purpose Casks

- Current Status
  - One Dual Purpose Design Under Review
    - NAC-STC
  - Another application expected shortly
    - NUHOMS-MP 187
- Staff is meeting with DOE to discuss the Multi-Purpose Canister Concept

NAC-STC

- A traditional cask design with impact limiters for transportation
- Transportation review should be completed early in 1994
  - Limiting factors involve structural design of basket
- Applicant to resubmit storage application after transport review is completed

NUHOMS-MP 187

- Canister system using a reinforced concrete Horizontal Storage Module (HSM) as an overpack
- Several pre-application meetings held with applicant
- Intended for use at Rancho Seco
- Application expected imminently
- Applicant plans to request approval to use the transport overpack as a vertical storage alternative to the HSM

Multi-Purpose Canister (MPC)

- A sealed canister with different overpacks for use during storage, transportation and disposal
- Originally proposed to DOE by industry
- Design(s) in conceptual stage
- For disposal, the design would be approved as part of the repository licensing process
- Issues
  - The repository has not been designed
  - Disposal environment has not been completely characterized
  - Could limit options at design interfaces