The NRC's Role:

Judging the Safety of a Proposed Repository

Bill Reamer
Deputy Director
Division of Waste Management
(301) 415-6537 email: cbr@nrc.gov
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Who is the U.S. NRC?

- Independent agency
- Experienced regulator
- Mission: protect public health, safety and the environment
- NRC charged with regulating any Department of Energy (DOE) repository

What is NRC's Role at Yucca Mountain?

- Set rules that
  - protect public and worker safety
  - are consistent with final U.S. Environmental Protection Agency (EPA) standards for Yucca Mountain
- Public prelicensing interactions
- Decisions on construction and operation
- Assure DOE obeys rules

How Will NRC Carry Out Its Role?

- Review all information objectively
- Make open decisions based on the facts
- Maintain an open, public process

How Will NRC Carry Out Its Role? (cont.)

- Use step-wise licensing process
  - Construction
  - Operation
  - Retrieval Period and Closure

Who makes the decisions at NRC?

- Five NRC Commissioners
  - Appointed by the President
  - At most 3 of any one political party
  - 5-year term of service
  - Chairman designated by the President
  - Accomplished scientists, engineers, attorneys

What is the role of NRC's professional staff?

- Carry out Commission policies
- Recommend health & safety regulations
- Evaluate license applications
- Advise Commission on safety matters
- Communicate with the public

What special expertise does NRC have to evaluate repository safety?

- NRC professional Staff
- Independent contractor, Center for Nuclear Waste Regulatory Analyses (CNWRA)
  - Technical assistance
  - Research support

Special NRC Expertise? (cont.)

- Facilities
  - Laboratories for independent investigations
  - Modeling and computing facilities
- Field studies and inspections
- On-site Representatives

On-Site Representatives Office

Location
1551 Hillshire Drive Suite A
Las Vegas, NV 89134

Mailing Address
U.S. NRC On-site
Representatives Office
P.O. Box 371048
Las Vegas, NV 89137-1048

Hours
7:00 am – 3:15 pm M-F

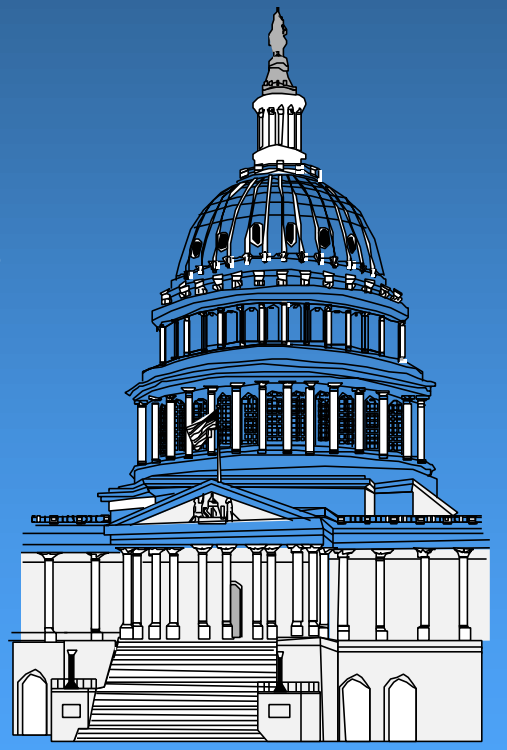
Phone
(702) 794-5045

Staff

Robert M. Latta
Jack D. Parrott
Vivian Mehrhoff

NRC must decide whether to allow DOE to construct a repository

- If DOE submits a license application, Congress directs NRC to decide within 3 years
- Congress also requires NRC to provide for a full and fair public hearing



Before NRC would hold a hearing on Yucca Mountain…

DOE Issues Final Environmental Impact Statement (EIS)

DOE Recommends Site

Presidential Decision

Notice of State Disapproval?

Then

Before NRC would hold a hearing on Yucca Mountain… (cont'd)

Congressional decision

DOE Submits a License Application

NRC Accepts Application for Review?

NRC Staff Completes Safety Review?

How would NRC decide whether to accept DOE's application for review ?

- Does it
  - Contain all required information?
  - Enough documentation to support DOE's safety claims?
  - Comply with document access requirements?
- If yes, detailed technical review begins

How Does NRC Address Safety Issues?

- Bring in our independent experts
- Require more information from DOE, as needed
- Do our own testing
- Document our conclusions

On what basis would NRC adopt DOE'S Final EIS?

- Law requires NRC to adopt DOE's final EIS unless:
  - Action to be taken by NRC differs from action described in the license application, or
  - Significant and substantial new information or new considerations.

What Type of Hearing?

- If a hearing occurs
  - Formal
  - Well-established rules
  - Open
  - Objective decision based on record

Formal, Trial-type Hearing Process

- Board of administrative judges
- Participants
  - NRC staff
  - DOE
  - Interveners
  - “Interested” tribal, state, and local governments

Evidentiary Hearing

- DOE has burden of proof
- Intervenors must present evidence to support their issues
- NRC staff testifies on its independent evaluation of safety

Possible outcomes of NRC's Licensing Process:

- Deny the Application
- Grant a License with Conditions
- Grant a License

Summary

If DOE submits a license application

- Any NRC decision will be based on a full and fair public hearing
- The hearing would follow formal, well-established rules to ensure an open, objective decision

Recent NRC Activities:

Preparing to Judge the Safety of a Potential Repository

Janet Schlueter, Chief
High-level Waste Branch
Division of Waste Management
Phone: (301) 415-7264 email: jrs1@nrc.gov
April 2002

NRC will be ready to judge the safety of a potential repository

- Protective Standards and Regulations are in place
- Public Prelicensing meetings with DOE
- Yucca Mountain Review Plan

NRC Regulations implement EPA's Yucca Mountain Standards

- NRC proposed regulations for Yucca Mountain in February 1999
- Extended public comment period
- Final EPA Standards published June 2001
- Final NRC regulations published November 2001

NRC values public comments on its regulatory program

- Six public meetings in Nevada on NRC's proposed regulations
- More than 1000 individual comments
- Major changes reflect public concerns

What were the major concerns of Nevada's citizens?

- Wait for final EPA standards
- Adopt EPA's limits for individual protection
- Provide separate criteria for protection of groundwater
- Retain a formal hearing process

NRC's final regulations address Nevadans' concerns

- Final NRC regulations
  - issued 5 months after final EPA standards
  - Include EPA limits for individual protection
  - Include EPA's separate limits for groundwater
- NRC will retain a formal hearing process for Yucca Mountain

NRC's Role in Site Recommendation

- At this time, NRC takes no position on whether a repository should be located at Yucca Mountain
- NRC views will be shaped by much further analyses
- Any safety decision comes much later, if at all
- Law allows for NRC interactions with DOE before licensing

NRC interactions with DOE

- Public technical exchanges
- Preliminary comments on sufficiency of site characterization and waste form
- Comments on DOE's FEIS

What were NRC's preliminary sufficiency comments ?

- DOE has, or has agreed to get, sufficient information for a potential application
- Based on DOE's agreements to do so, an acceptable (i.e. acceptable for review) application is achievable
- DOE will need more information if it selects a different design concept

What were NRC's comments on DOE's Final EIS?

- FEIS addressed NRC comments on earlier drafts
- Analyses appear to bound range of impacts; Expect further refinement to allow for more precise estimates
- More reviews may be needed and they will need to be complete before submission of a potential application

What are NRC's "Key Technical Issues (KTIs)?"

- Major topics NRC staff uses to guide its review of DOE's site characterization
- Important for understanding if repository will be safe
- Framework for NRC's regulations, sufficiency review, and Yucca Mountain Review Plan

How will NRC judge if DOE has enough information about a KTI?

- Acceptance criteria based on issue's significance to safety
- Criteria and their technical bases documented in a series of public reports
- Yucca Mountain Review Plan (YMRP) collects these criteria in one document

How will NRC use the Yucca Mountain Review Plan?

- Guidance for NRC staff
- Basis for NRC staff review of a potential license application
- Describes how NRC staff will decide if an application for a potential repository complies with NRC's regulations

Public Comments

- Draft Yucca Mountain Review Plan available for public review and comment
  - Posted on NRC website early March
  - Published March 29, 2002
- Public meetings in May
- Comments accepted through June 28

Summary

- NRC will be ready, if Congress allows the President's designation of Yucca Mountain to take effect
  - Protective Standards and Regulations are in place
  - NRC has secured DOE's agreement to provide sufficient information so that NRC can conduct a full and fair licensing review

Regulatory Perspectives on Transportation of Spent Nuclear Fuel

Chester Poslusny
Spent Fuel Project Office
U.S. Nuclear Regulatory Commission
(301) 415-1341 email: cxp1@nrc.gov

Discussion Topics

- DOT and NRC Transportation Oversight
- Safety Record
- Transportation Studies
- Security Requirements for Shipments
- NRC Actions Post 9/11
- Conclusions

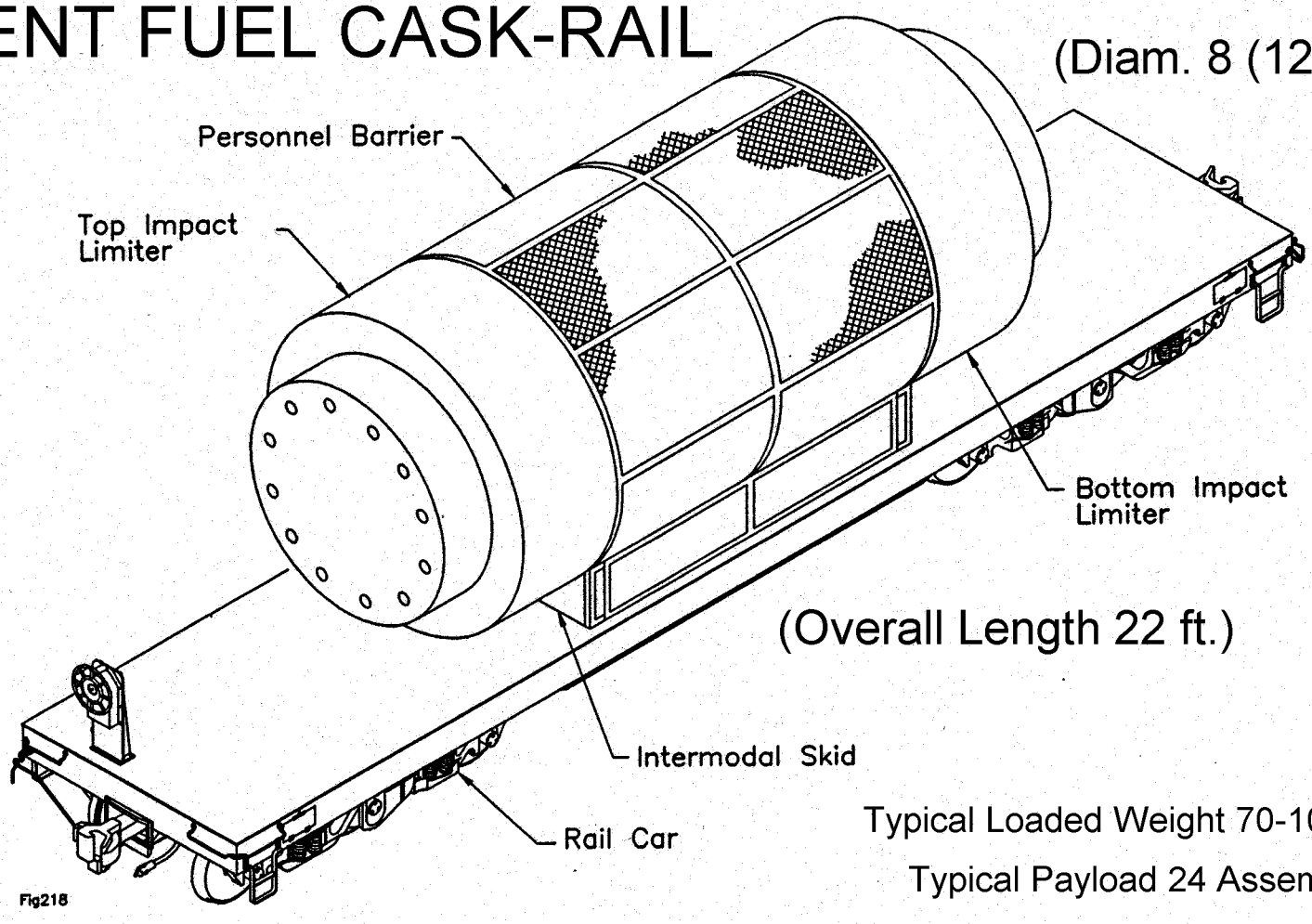
Role of the U.S. Department of Transportation (DOT)

- Hazardous materials shipment safety
- Hazard communication
- Routing
- International Coordination

Role of the U.S. Nuclear Regulatory Commission (NRC)

- Certify casks as accident resistant
  - Comprehensive review
  - Stringent test/analysis requirements
  - Role of quality assurance (QA)
- Inspect:
  - Cask designers,
  - Fabricators,
  - Shippers and shipments
  - QA programs

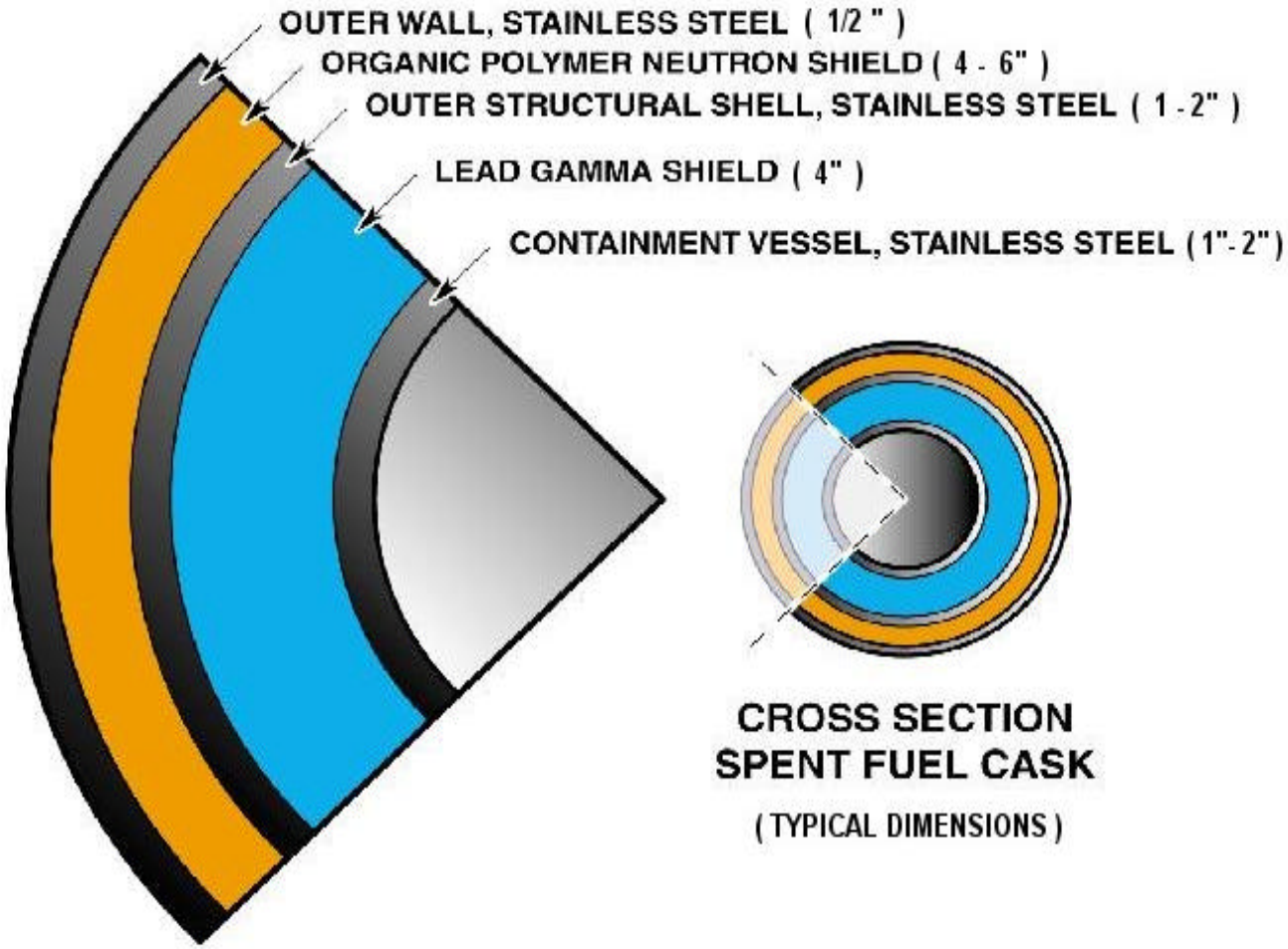
SPENT FUEL CASK-RAIL



Typical Loaded Weight 70-100 Tons

Typical Payload 24 Assemblies

LAYERS OF PROTECTION

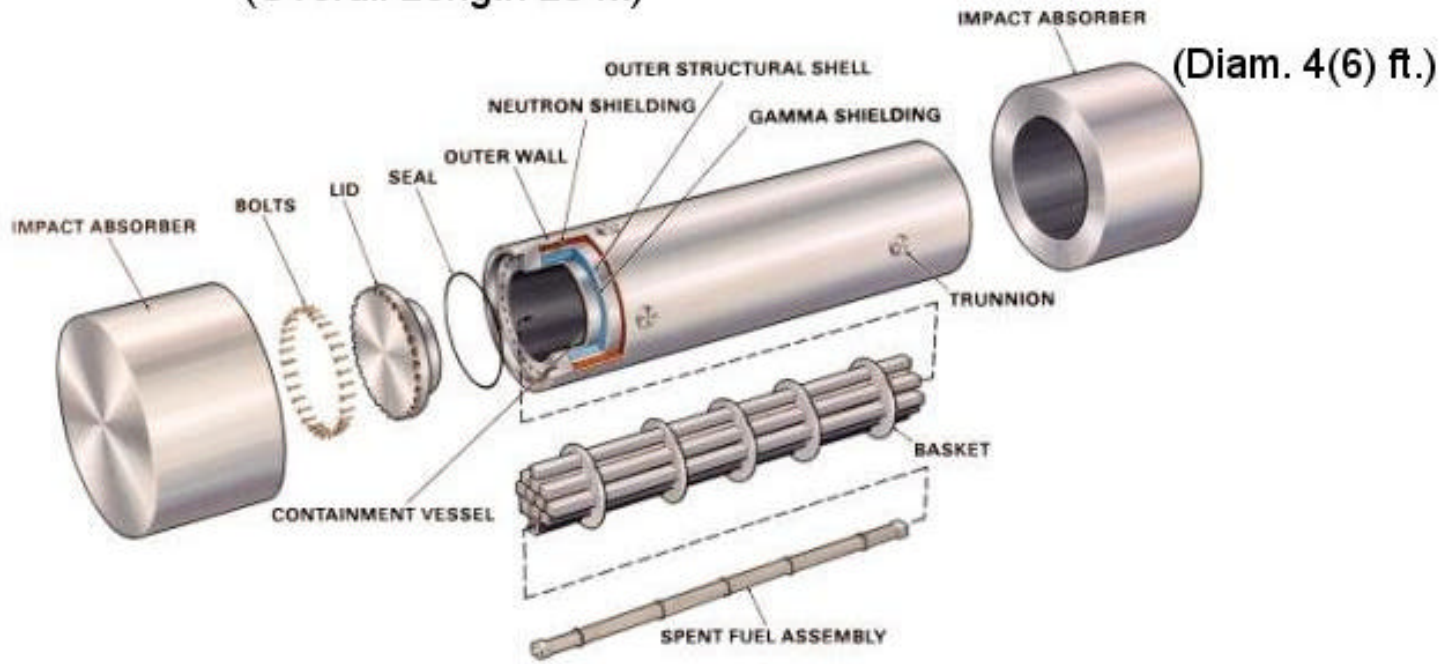


CROSS SECTION
SPENT FUEL CASK

(TYPICAL DIMENSIONS)

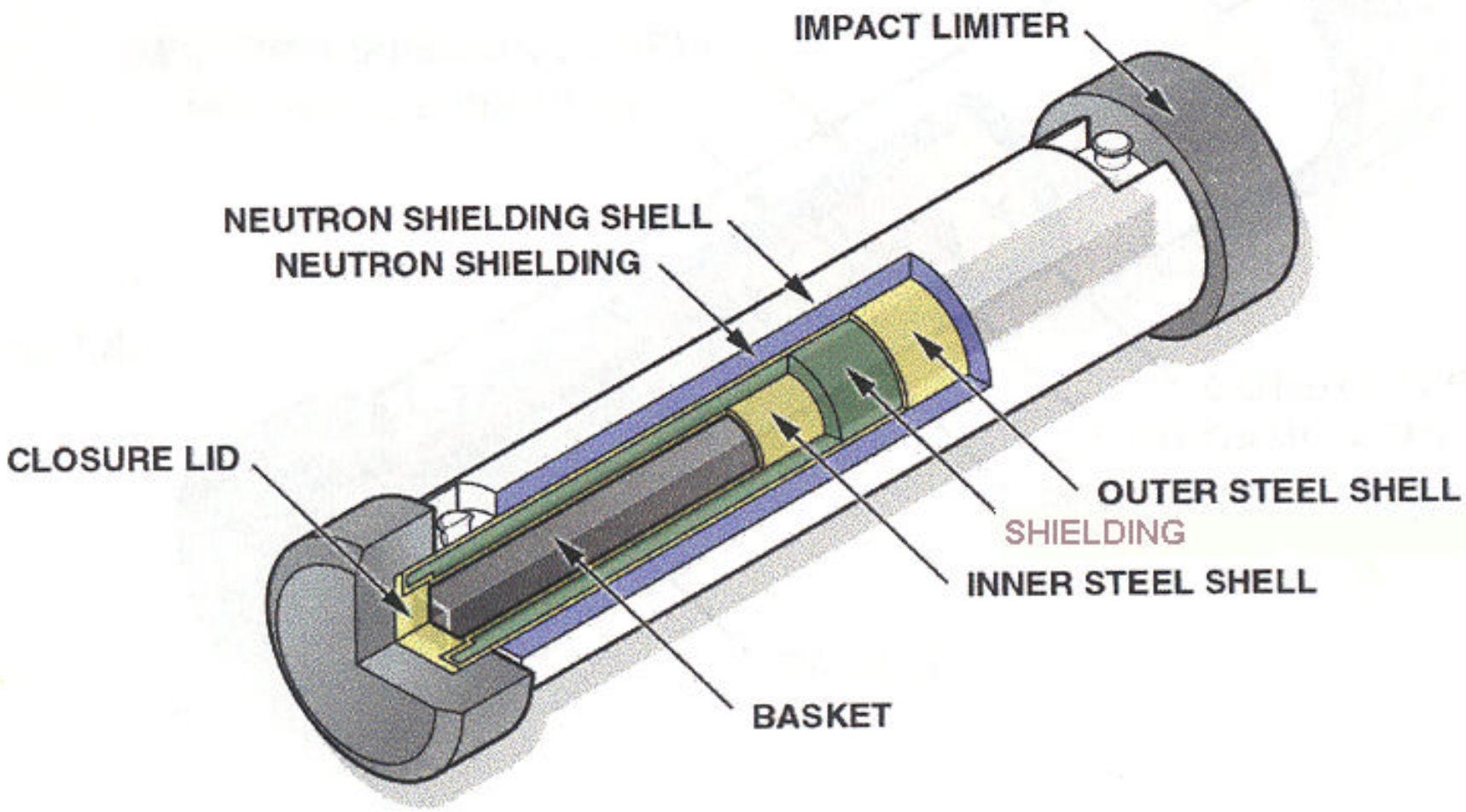
SPENT FUEL CASK-TRUCK

(Overall Length 20 ft.)



Typical Loaded Weight 50,000 #, Fuel 4,000 #

Payload 4-9 Fuel Assemblies


IMPACT LIMITER
NEUTRON SHIELDING SHELL
NEUTRON SHIELDING
CLOSURE LID
OUTER STEEL SHELL
SHIELDING
INNER STEEL SHELL
BASKET

TRUCK CASK

Role of the U.S. Nuclear Regulatory Commission (NRC) (cont.)

- Set rules for protection against theft and sabotage
  - Prevention
  - Vigilance
  - Detection
  - Response
- Enforce NRC and DOT rules
  - Result from inspection findings
  - Violations -penalties ,termination,shutdown

NRC Rules Consider:

- Routine transport conditions
- Cask safety in accident conditions
- Protection against theft or sabotage

Conditions for Transport of Radioactive Material

- A shipper must:
  - Identify Materials and Activities
  - Select Proper Packaging
  - Verify Safe Radiation Levels

Shipper must have/use:

- Approved routes and protection plan
- Markings, labels and shipping papers
- Proper and sufficient training
- Routine and emergency procedures

Favorable History

- About 1,300 spent fuel shipments over 20 years
- ZERO spent fuel package failures
- 10,000 daily shipments of radioactive materials (all types)

Transportation Studies

- NRC risk studies support regulations (3 completed, 1 in progress)
  Results show:
  - Routine shipments: cumulative exposure to public extremely low
  - Approved cask designs are robust under severe accident conditions

Package Performance Study

- Severe impact and fire accidents
- Full scale testing being considered
- Re-validate codes/models and adequacy of regulations

Package Performance Study (cont.)

- Industry and international participation
- Public outreach
- Support for design and review efforts

Planned Independent Studies

- National Academy of Science
  - Peer review of Package Performance Study
  - Review of transportation risks

NRC Security Requirements for Fuel Shipments (10 CFR 73.37)

- **Objective:**
  - Protect against sabotage and prevent theft
  - Minimize possibility of radiological sabotage/theft
- **Means:**
  - Prevention
  - Early detection and assessment
  - Notification of response forces

Security Measures

- Advanced Notification of States and NRC
- Physical protection plan
- Procedures and training

Security Measures (cont.)

- NRC route and plan approval
- Escorts
- Surveillance, communication
- Routes not pre-announced to public

Security Measures (cont.)

- Safe havens
- Immobilization
- Coordination with State and Local law enforcement

NRC Actions Post 9/11 Re. Spent Fuel Transportation

- Safeguards assessment team
- Issued advisories
- Interim compensatory measures

Other Actions Post 9/11

- Facilities remain in high security posture and continue normal operation
- NRC liaison with Off. Homeland Sec., other key federal agencies, and states
- NRC interaction with FAA re over flights
- NRC shut down and revised web site

Long-Term NRC Actions

- Top to bottom examination of programs
- Vulnerability studies for cask designs
- Re-examination of balance between security and openness to public

Conclusion:

- **Safe and secure transportation of spent fuel provided by:**
  - **Comprehensive regulations**
  - **Regulatory oversight and enhancements**
  - **Significant experience base & safety record**
  - **Robust cask designs**