



National Spent Nuclear Fuel Program

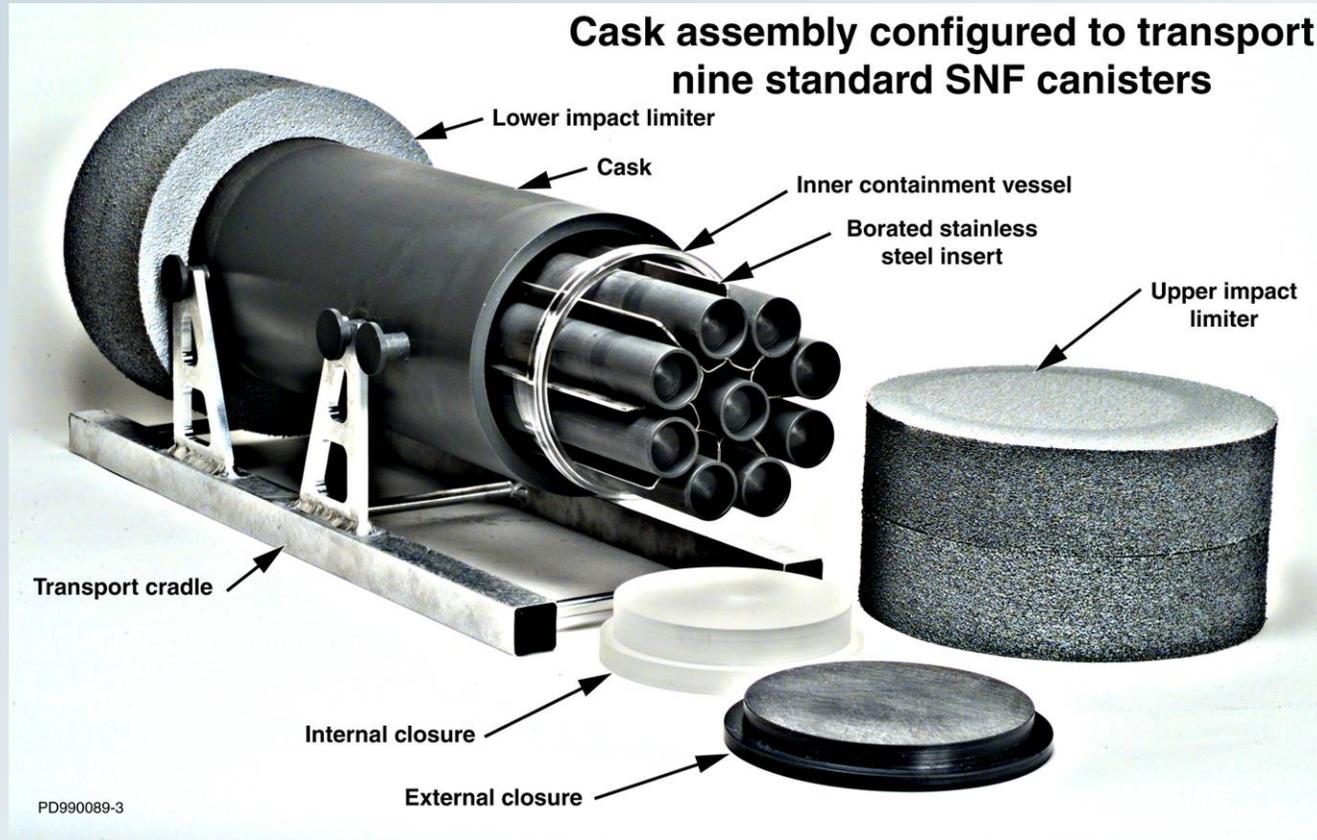
Crediting Leaktightness of DOE SNF Standardized Canister in Transportation Safety Analyses

**NRC Transportation Meeting
December 6, 2006**

*Providing for safe,
efficient transportation of
DOE spent nuclear fuel*



Potential Cask Configuration



Meeting Agenda

- 10:00 a.m. Introductions
- 10:10 a.m. Meeting Objectives**
- 10:30 a.m. DOE-EM SNF Canister Integrity
- 11:00 a.m. DOE-EM Canister Criticality Safety
- 11:15 a.m. Summary and Conclusions
- 11:30 a.m. Staff Feedback
- 11:45 a.m. Public Comments
- 12:00 p.m. Adjourn





National Spent Nuclear Fuel Program

Meeting Objectives

**NRC Transportation Meeting
December 6, 2006**

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*Providing for safe,
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Meeting Objectives

- *Status progress of topical report and supporting technical efforts*
- *Keep the dialog open*
- *Invite/encourage focused technical meetings*

Overview of Draft Topical Report

- *Purpose: To obtain NRC review and approval for crediting canister leak-tightness for criticality safety*
- *Scope: DOE Standardized SNF Canister containing one or more fuel-loaded Type 1a baskets*
- *Content and organization per NRC Regulatory Guide 7.9*

Draft Topical Report

1. General Information
2. Structural Evaluation
3. Thermal Evaluation
4. Containment
5. Shielding Evaluation
6. Criticality Evaluation
7. Package Operations
8. Acceptance Tests and Maintenance Program

Criticality Safety Approach for DOE SNF

- *Canisters will remain leaktight during normal and hypothetical accident conditions.*
- *In the absence of moderator intrusion into the canister, criticality is not credible.*

Summary of Staff Comments from Previous Mtg.

- *Technical*
 - *Applicability of modeling to actual fuel loadings*
 - *Temperature effects*
 - *Applicable codes and standards*
- *Procedural*
 - *Succinctly identify what the Topical Report will request the NRC to approve.*
 - *Specify how this Topical Report will Interface with a COC Application for a future transportation package.*
 - *Clarify how 10CFR71.55 requirements will be satisfied.*

The Topical Report seeks NRC review and approval for crediting the DOE standardized canister as a leak-tight boundary in the criticality analyses prescribed by 10CFR71.55 for both the normal transport conditions and hypothetical accident conditions.

Interfacing with C of C Application for Future Transportation Package

- *Cask performance assumptions credited in the canister structural analyses will be clearly specified.*
- *The C of C application must demonstrate that the cask meets the specified performance requirements.*
- *Cask vendor will perform the criticality analyses for the fully loaded cask array.*

10CFR 71.55 Requirements

- *The DOE Standardized SNF Canister Satisfies 10CFR71.55(b)*
- *The DOE Standardized SNF Canister Satisfies 10CFR71.55(e)*

10CFR 71.55

- b) *Requires that the package remain subcritical if water were to leak into (or out of) the containment system so that maximum reactivity would be attained with...*
- 1) *the most reactive credible configuration consistent with the chemical and physical form of the material,*
 - 2) *moderation by water to the most reactive credible extent, and*
 - 3) *Optimum reflection on all sides.*

10CFR 71.55

- e) *Requires that the package remain subcritical under the tests specified in 10CFR71.73, assuming.....*
- 1) *the most reactive credible configuration consistent with the damaged condition of the package and the chemical and physical form of the material,*
 - 2) *moderation by water to the most reactive credible extent consistent with the damaged condition of the package, and*
 - 3) *Full reflection by water on all sides, as close as is consistent with the damaged condition of the package.*

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