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NRC/TN Pre-application Meeting
Revision of CoC 9302

MP197HB Transport Cask

February 05, 2009

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Agenda

- General Overview: Revision 3 to CoC 9302
- Changes to Transport Cask and Licensed Payload
- Description of
  - Structural Analyses
  - Thermal Analyses
  - Nuclear (Criticality and Shielding) Analyses
- Recap
- Questions

General Overview: Revision 3 to CoC 9302

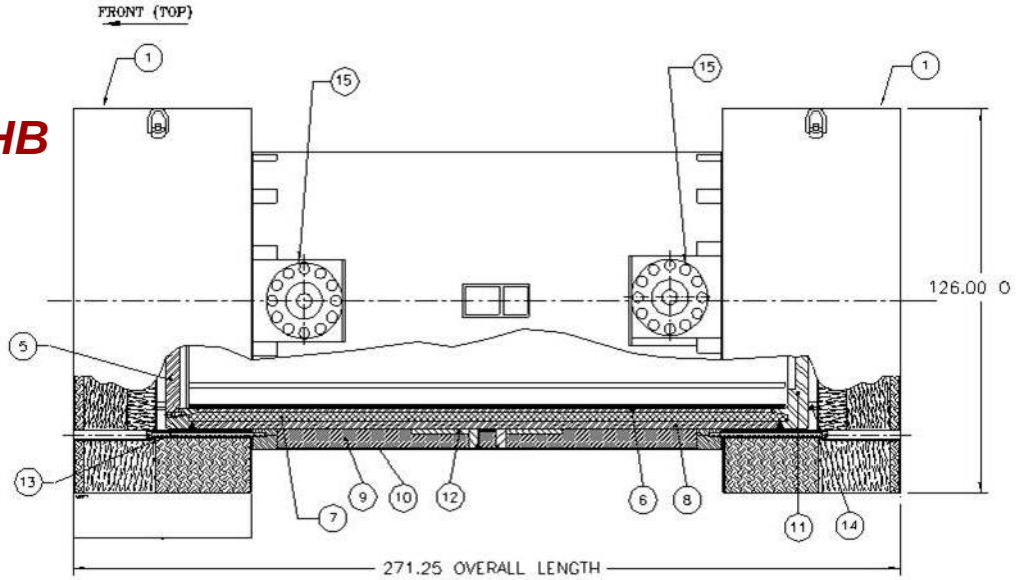
- Reasons for revision request
- MP197HB a modified MP197 cask
- Added existing storage licensed Dry Shielded Canisters (DSCs) as payload
- Addition of new DSCs as payload
  - 37PTH
  - 69BTH
  - RWC
- Addition of failed fuel in individual failed fuel cans to two existing DSCs
- Licensing analysis approach
- Safety analysis report format

Reasons for Revision Request

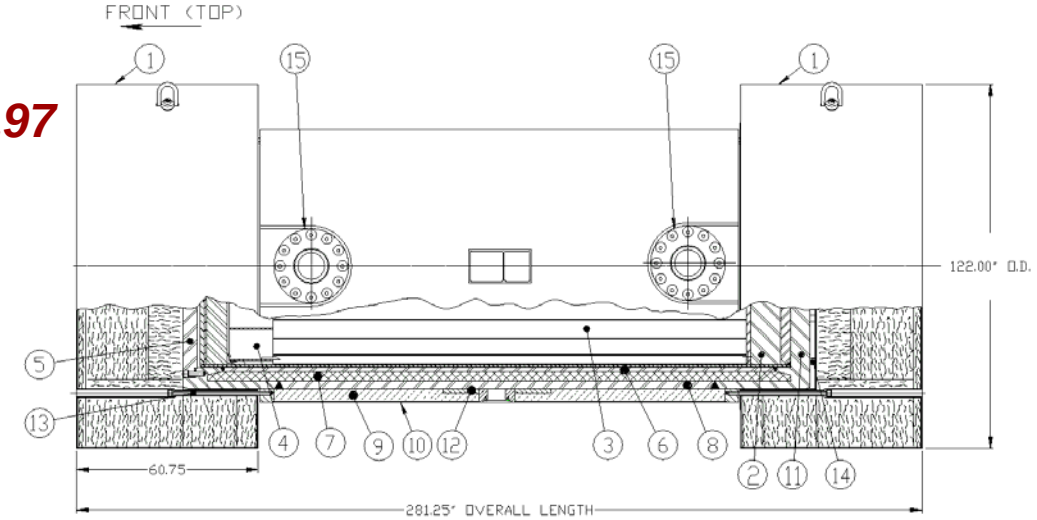
- Several TN customers have stored spent nuclear fuel and are obligated to have a transport capability for moving the fuel off-site
- Higher capacity DSCs as payloads deemed necessary to meet customer needs
- Several DSCs developed for storage and transportation and currently licensed for storage need a licensed transport package
- Failed fuel capability has been added for one PWR and one BWR DSC to meet customer needs
- Diameter of MP197 increased to allow one transport cask to carry DSCs with two different diameters
- A canister has been added that will allow transport of radioactive waste (B, C and greater than Class C)

MP197HB: A Modified MP197 Cask

MP197HB



MP197



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MP197HB: A Modified MP197 Cask

Parameter	NUHOMS® MP197	NUHOMS® MP197HB
Structural material	Stainless steel	Low alloy steel
Neutron shielding	Borated Polyester Resin	Vyal - B
Cask cavity sleeve	None	2 Diameters
Cask cavity spacers	None	Depends on DSC length
External fins	None	Depends on heat load
Thermal shield	Lid end	Lid and bottom end
Failed Fuel	None	Used in 61BTH and 24PTH
Damaged Fuel	None	Same as storage license for existing DSCs

MP197HB: A Modified MP197 Cask

Nominal Dimensions (in.)	NUHOMS®-MP197	NUHOMS®-MP197HB
Packaging overall length with impact limiters	**281.25**	**271.25**
Packaging overall length without impact limiters	**208.0**	**210.25**
Cask impact limiter outside diameter	**122.0**	**126.00**
Cask outside diameter (w/o impact limiters)	**91.50**	**97.75**
Cask cavity diameter	**68.0**	**70.50**
Cask cavity length	**197.0**	**199.25**
Cask lead gamma shield thickness	**3.25**	**3.00**
Cask body outer shell thickness	**2.50**	**2.75**
Cask resin and aluminum box thickness	**4.50**	**6.25**
Nominal Weights (tons)		
Empty weight of packaging without impact limiters	**74.4**	**80.3**
Total loaded weight of packaging (without transport skid)	**132.6**	**149.5**

MP197HB Increased Payload Capabilities

- **Authorized payload will include 11 DSCs:**

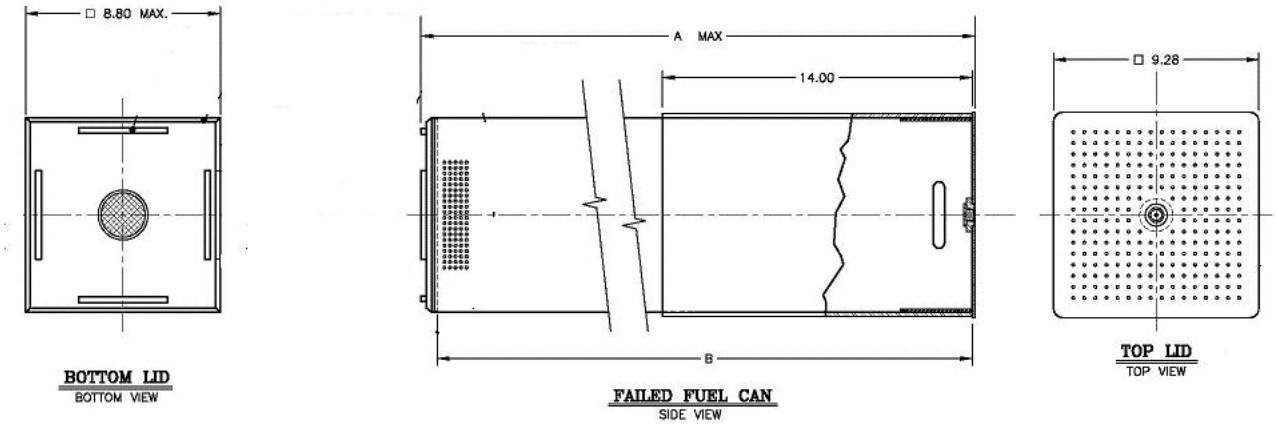
PWR	BWR	
•*24PT4*	•*61BT*	•*RWC***
•*32PT*	•*61BTH**	
•*24PTH**	•*69BTH***	
•*32PTH*		
•*32PTH Type 1*		
•*32PTH1*		
•*37PTH***		

DSCs offering failed fuel can options

****** ***New DSCs not currently included in any storage systems (Described in the following slides.)***

Addition of Failed Fuel Cans (FFCs)

- An option of the 24PTH and 61BTH DSCs
- FFC fits inside the existing (unmodified) basket
- Design of FFC similar to the 24PT1/24PT4 DSCs in CoC 1029
- Fully loaded FFC may be lifted out of the DSC
- 61BTH may carry up to 4 FFCs
- 24PTH may carry up to 8 FFCs



Addition of New Dry Shielded Canisters, 37PTH, 69BTH, RWC

- **69BTH**
  - **New DSC design same as the current 61BTH except the diameter is larger to allow increased capacity**
  - **Same basket design**
- **37PTH**
  - **New DSC design same as the current 32PT except the diameter is larger to allow increased capacity**
  - **Same basket design**
- **Radioactive Waste Canister (RWC)**
  - **Designed to transport irradiated and low level waste**
  - **Up to 25,000 A2 and 2 kW maximum thermal load**
  - **Canister external features same as spent fuel DSCs**
  - **Structural, thermal and shielding parameters bounded by spent fuel DSCs**

Licensing Analysis Approach

- **Overview**
  - **Cask design similar to previously licensed products**
  - **Cask is a derivative of the MP197**
  - **The new DSCs, 69BTH, and 37PTH are derived from the current 61BT and 32PT which are licensed for storage**
  - **Design of the FFC based on existing licensed design**
  - **Design of RWC derived from canister of the current 32PTH1 which is licensed for storage**

Licensing Analysis Approach

- **Structural**
  - **Impact analyses based on MP197 (61BT) drop test**
    - **1/3 scale testing used as benchmark for LS-DYNA**
    - **Full scale LS-DYNA model of MP197HB used to determine loads**
  - **Multiple payloads evaluated by selecting appropriate bounding configurations**
- **Thermal**
  - **Thermal loads bounded when possible by evaluating Part 72 licensing analyses**
  - **Higher heat payloads (> 26 kW) may use external fins for increased margin (not required to meet Part 71 limits)**

Licensing Analysis Approach

- **Shielding**
  - **Payloads evaluated for representative NCT case**
  - **Payloads evaluated for bounding HAC case**

Licensing Analysis Approach

- **Criticality**
  - **BWR payloads evaluated using fresh fuel methodology**
    - **New analysis performed for 61BTH with failed fuel and 69BTH DSCs**
    - **Part 72 calculation used for other DSCs**
  - **PWR evaluation uses fresh fuel and Burnup Credit (BUC) methodologies**
    - **BUC calculations done for all PWR DSCs except for 24PT4 which uses fresh fuel methodology**

Safety Analysis Report Format

- **The format will follow Reg. Guide 7.9**
- **Chapter 1 of the existing SAR will be revised to include reference to Appendix A**
- **Application will consist of a self-contained Appendix A (formatted per RG 7.9) in the current MP197 SAR, Docket 71-9302**
- **Appendix A will include detailed descriptions, drawings, and supporting calculations of the MP197HB cask and the DSCs to be included as authorized payloads**

Recap

- **The application is largely based on previous submittals, thus limiting use of new methodologies to Burnup Credit for criticality evaluation**
- **Bounding values used in many evaluations simplifies calculations**
- **Lessons learned based on recent NRC interactions with all vendors are already accounted for in this CoC revision**

Questions