

Attachment 1 to Holtec Letter 5021049  
HI-STORM UMAX Amendment 3 RAI Responses

**RAI - Thermal Evaluation**

Provide a thermal model that demonstrates peak cladding temperature is accurately predicted for the 24PT1 DSC when stored in the HI-STORM UMAX system.

Section I.4.4.1 of the FSAR describes the canister thermal model used to analyze the 24PT1 dry-shielded canister (DSC) when stored in the HI-STORM UMAX system. However, the applicant's modeling approach and analysis results of the HI-STORM-UMAX thermal design's predicted peak cladding temperatures rely on a homogenized DSC model. Also the application does not contain information (for example, validation or benchmarking studies performed for similar designs) to demonstrate the homogenized canister modeling approach used in the application is sufficient and conservative in the calculation of the peak cladding temperatures. Accurate prediction of peak cladding temperature is necessary to demonstrate compliance with 10 CFR 72.236(b) which requires that design bases and design criteria must be provided for structures, systems, and components important to safety and 10 CFR 72.236(f) which requires that the spent fuel storage cask must be designed to provide adequate heat removal capacity without active cooling systems. In the amendment request, the applicant did not provide adequate design basis analyses which demonstrate the cask would provide adequate heat removal capacity without exceeding the peak clad temperature limit. Staff has previously accepted thermal analysis that relies on homogenized fuel assemblies when accompanied by appropriate justification (see Section 4.5.4.1.2 of NUREG-1536 and Section 2.2 of NUREG-2208 for additional guidance on acceptable thermal models).

This information is needed to determine compliance with 10 CFR 72.236(b) and 10 CFR 72.236(f).

**Holtec Response:**

The HI-STORM UMAX Supplement I.4 is revised to incorporate a suitable benchmarking study validating the homogenized DSC model. The study concludes homogeneous canister modeling is an appropriately conservative method to model storage of the 24PT1 DSC in the HI-STORM UMAX system. The study also includes an evaluation of modeling uncertainties and their effect on the HI-STORM UMAX safety analyses. The uncertainty evaluation concludes that the 24PT1-DSC safety evaluation in the HI-STORM UMAX system is not affected. The Supplement's updated text and tables are shown highlighted in yellow to facilitate review.