



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

August 10, 1999

MEMORANDUM TO: Donald A. Cool, Director  
Division of Industrial and Medical  
Nuclear Safety  
Office of Nuclear Material Safety  
and Safeguards

FROM:

*David B. Matthews*  
David B. Matthews, Director  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

SUBJECT: FINAL RULE TO REVISE THE 10 CFR PART 72 LIST OF APPROVED  
SPENT FUEL STORAGE CASKS (HOLTEC HI-STAR 100)  
(Yellow Ticket: 019990196)

NRR has reviewed and concurs on the final rulemaking package. Minor editorial  
comments are marked on the affected pages (attached).

Attachment: As stated.

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## Summary of Public Comments on the Proposed Rule

The NRC received nine comment letters on the proposed rule. The commenters included the applicant, the State of Utah, an individual member of the public, industry representatives, and several utilities. Copies of the public comments are available for review in the NRC Public Document Room, 2120 L Street, NW (Lower Level), Washington, DC 20003-1527.

### Comments on Direct Final Rule

As part of the proposed rulemaking, the NRC staff requested public comment on a Direct Final Rulemaking process for future amendments to the list of approved spent fuel storage casks in 10 CFR 72.214. Direct final rulemaking is a technique for expediting the issuance of noncontroversial rules. Under this procedure, the NRC would publish the proposed amendment to the list as both a proposed and final rule in the Federal Register simultaneously. A direct final rule would normally become effective 75 days after publication in the Federal Register unless the NRC receives significant adverse comments on the direct final rule <sup>within</sup> ~~with~~ 30 days after publication. If significant adverse comments are received, the NRC withdraws the direct final rule and addresses the comments received as comments on the proposed rule and will subsequently issue a final rule. X

Comment: One commenter was in support of the direct final rule process for future revisions to the listing in 10 CFR 72.214 stating that it was imperative that the regulatory process be streamlined when there is no adverse safety concern. Two commenters were opposed to a direct final rule process stating that a direct final rule would diminish the public role in commenting on the approval of spent nuclear fuel casks and thereby being able to affect the

An analysis of the oxidation rate has shown that when an increased rate of oxidization of the fuel cladding is considered, the HI-STAR 100 design has provided reasonable assurance that the cladding will maintain its integrity.

The g-load for high burn-up fuel with thickness of cladding reduced by 17% is calculated in the spreadsheet<sup>1</sup> to be 50.81g (column C). Although the HI-STAR 100 Cask System is designed to withstand a maximum deceleration of 60g, the actual predicted maximum side drop deceleration is less than 50g's. As shown in HI-STAR 100 storage SAR (Holtec Report HI-941184), the maximum side drop g-loading is 49.7g's. In the HI-STAR transportation SAR (Holtec Report HI-951251), the maximum g-loading for the side drop is 46g's. Thus, even when thinner cladding thickness due to increased rate of oxidization is considered, the calculated g-load<sup>1</sup> that the fuel rod cladding can withstand (50.8), shown by the commenter is still larger than the predicted maximum g-load for a hypothetical cask side drop accident condition.

Based on the authorized contents, NRC determined that increased rate of oxidization of cladding should not be a concern for the HI-STAR 100 Cask Systems. Therefore, the NRC disagrees with the comment that the lift height must be reduced for the Hi-Star 100 cask.

Comment: One commenter stated that Holtec's SAR for the HI-STAR 100 storage cask relies upon a 1987 report by LLNL<sup>2</sup> for its estimate of g force that will damage fuel cladding. The LLNL report fails to take into account the increased brittleness of irradiated fuel assemblies.<sup>3</sup> Because the irradiated fuel assemblies may have been embrittled, they would also be less

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<sup>1</sup>State of Utah, "Comments on Proposed Rule to add Holtec HI-STAR 100 Cask System to the List of Approved Spent Fuel Storage Casks." (March 26, 1999)

<sup>2</sup> LLNL Report.

<sup>3</sup> See e.g, UCID-21246, Table 4, which makes no distinction between Young's modulus and yield strength of a range of fuel assemblies.

required to confirm the heat transfer capabilities of the inner and intermediate shells and radial channels. Annual cask inspection will check the exterior surface conditions at which time the paint will be examined and touched up in local areas as necessary. The NRC does not believe that identifying a specific brand name of paint is required. There are several suppliers who manufacturer paints with the specified emissivity. The NRC has reviewed the applicant's analysis and found that paints with an emissivity greater than 0.85 is acceptable.

Comment: One commenter questioned the drain down time and asked how frequently the water is checked. The commenter requested information on what happens if the MPC can't be vacuum dried successfully, and when the fuel needs to be put back in the pool.

Response: The drain down time is not specified in the TS but is part of the vacuum drying procedure. The TS state that the vacuum drying must be completed within 7 days. There is not a specific procedure in the application to monitor the water content, however that will be addressed by the cask user on a site-specific basis. This is beyond the scope of this rulemaking. If the drying process is unsuccessful and the TS requirements can not be met within 30 days, the fuel assemblies must be moved from the cask and be replaced in the fuel pool.

Comments: One commenter requested information on the cask storage array on the pad and the radiation affect from other casks in a full cask array. The commenter further requested information on how the applicant/certificate holder/licensee will examine and/or test the HI Star 100 and who was actually responsible for the test. The commenter questions whether a domed cask cover would be better for runoff and sky shine concerns.

Comment: It was suggested that controlling the bases for the technical specifications as part of the Certificate of Compliance (CoC) would result in administrative burdens to all involved. Such bases are not controlled as part of power reactor licenses. } close gap

Response: The staff agrees. Therefore, the bases have been relocated to an appendix to the SAR.

Comment: A number of commenters also raised concerns with the inclusion of the extensive fuel specifications (formerly Section 2.0) and a very lengthy design specification section (formerly Section 4.0).

Response: The staff agrees that placement of much of this information in the technical specifications is unwarranted. Therefore, much of the information regarding fuel specifications and some of the design and codes information was moved from the technical specifications to a separate appendix to the CoC. The staff did, however, maintain some of the information regarding requirements for bases controls by adding it to a revised Section 3.0, "Administrative Controls and Programs" of the technical specifications.

Upon consideration of public comments and further consideration within the NRC, the staff has determined that the structure of Technical Specification Section 3.1-Spent Fuel Storage Cask (SFSC) Integrity, did not provide appropriately clear guidance. Therefore, the staff has revised this section of the technical specifications and associated bases to reflect a more logical and focused approach. The number of limiting conditions for operations (LCOs) in this section has been reduced to three. The staff believes that this will enhance the usefulness of the technical specifications.

In section 72.214, Certificate of Compliance (CoC) 1008 is added to read as follows:

§ 72.214 List of approved spent fuel storage casks.

\* \* \* \* \*

Certificate Number: 1008

SAR Submitted by: Holtec International

SAR Title: HI-STAR 100 Cask System Topical Safety Analysis Report

Docket Number: 72-1008

Certification Expiration Date: (20 years after final rule effective date)

Model Numbers: ~~HI-STAR~~ HI-STAR 100

Dated at Rockville, Maryland, this \_\_\_\_\_ day of \_\_\_\_\_, 1999.

For the Nuclear Regulatory Commission.

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William D. Travers,  
Executive Director for Operations.