

August 3, 2001

Mr. Brian Gutherman
Licensing Manager
Holtec International
555 Lincoln Drive West
Marlton, NJ 08053

SUBJECT: HI-STORM AMENDMENT REQUEST ACCEPTANCE REVIEW

Dear Mr. Gutherman:

By letters dated July 3, and July 25, 2001, Holtec International (Holtec) responded to a Nuclear Regulatory Commission (NRC) request for additional information (RAI). The RAI response included a number of design and analysis changes that were not part of the amendment request dated August 31, 2000. These changes include, but are not limited to, a redesign of the HI-STORM 100 S lid, a redesign of the HI-STORM 100 A anchoring system, a redesign of the HI-STORM 100 S shielding and a new high-burnup creep methodology. The staff has completed an acceptance review of the RAI responses and concluded that in some areas information is missing or inadequate. The areas where additional information is needed to begin the review are identified in the enclosure.

The staff has found that the remainder of the information is adequate to begin the technical review. Because of the changes in the application dated August 31, 2000, we have terminated the review under TAC L23082. The review of the revised applications, dated July 3, and July 25, 2001, will begin under TAC L23344. Following Holtec's submittal of the information identified in the enclosure, the staff will develop a new review schedule to be forwarded to Holtec.

If you have any questions please call me at 301-415-2947.

Sincerely,

/s/ /RA/

Christopher Jackson, Project Manager
Licensing Section
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

Enclosure: Acceptance Review Results

Docket No. 72-1014
TAC No. L23082
TAC No. L23344

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ACCEPTANCE REVIEW RESULTS

Acceptance Review Issues on New Design Information

1. Proposed FSAR (Page 1.0-3) states, "Drawing users should always consult the latest revisions of drawings/BOMs in work activities. The latest revisions of these documents are available through Holtec International." This statement should be removed because it may cause confusion. Certificate Holders are required to provide cask users with the documentation associated with each cask used.
2. Table 2.A.1 indicates that the anchor receptacle and embedment ring are permitted to be carbon steel. The corrosion potential and the void space in the anchor receptacle indicate that there may be future removal and reinstallation problems. The carbon steel material may be unacceptable in this concept. Please indicate the considerations given to the material chosen and the long-term functioning of the anchorage system.
3. From Figure 2.A.1 and Table 2.A.1 it is not clear which ring is the "embedment ring." Explain whether both the "top ring embedded in the pad" and the "anchor ring" are considered embedment rings.
4. On Page 2.A-2 it is stated that, "The details of the rebars in the pad (which are influenced by the geotechnical characteristics of the foundation and its connection to the underlying continuum) are not shown in Figure 2.A.1." It should also be noted that the reinforcing steel (pattern and quantity) may also be influenced by the demands of the anchorage forces. Provide an expanded discussion regarding the reinforcing steel in the pad.
5. The "Summary of Significant Changes to Hi-Storm 100 S" indicates that the minimum concrete density has been increased from 146 pcf to 155 pcf as a result of the removal of the inner steel shield from the overpack. While Appendix 1.D has been revised, Section 3.3.2.3, "Concrete," and Table 3.3.5 have not been revised. Please revise Section 3 to be consistent with the new minimum concrete density for the 100 S overpack. Additionally, the Certificate of Compliance (CoC) describes the concrete as "plain concrete." The description of the concrete in the CoC should indicate that the concrete density needs to be controlled.
6. The minimum concrete density for the 100 S is considered to be above the density of normal weight concrete. Describe how ASTM C-138 test results for the unit weight of freshly mixed concrete will be utilized in the unit weight used for shielding calculations which are for the concrete in its hardened state. What is the basis of the unit weight used in the shielding calculations? Will correlation testing between ASTM C-138 and ASTM C-642 be conducted?
7. Proposed Change 33 requires clarification. Specifically, it appears that all of the design changes made from the previous application are not described. The table in the "List of Effective Pages," section only describes the "significant" changes. As a result, provide a list all changes to the design and drawings from the previous application and provide a basis for the changes.
8. Proposed FSAR Section 8.1.1.2 describes moving the HI-STORM 100 out of the Part 50 structure without the lid installed. However, there is no justification for why movement of the HI-STORM outside of the Part 50 structure is acceptable. Provide an explanation why this evolution is acceptable. Include in the explanation the time the evolution is expected to take, limits on traveling distances, the expected occupational and offsite exposure and the design

considerations for the cask to withstand accident conditions in this configuration.

9. Clarify the meaning of the last sentence in the "Note" at the bottom of Page 8.1-14.

10. The second note on Page 8.1-18 requires clarification. Other equipment configurations cannot be evaluated without the configurations being described in the FSAR. Remove reference to the other equipment configurations or provide a description and safety basis.

11. Proposed FSAR Section 10.3 appears to be missing all the change bars, redline strikeouts, etc. Provide a proposed FSAR Section that identifies changes consistent with the remainder of the document.

Acceptance Review Issues on Request for Additional Information (RAI) Responses

1. The response to RAI 4.A.5, does not provide a technical justification for the use of the Critical Strain Energy Density (CSED) approach for fuels with burnup greater than 63.5 GWd/MTU. Clarify why the Holtec creep model is valid above 63.5 GWd/MTU and clarify the extent to which the CSED approach is credited as the basis for the Holtec creep model.

2. Holtec's response to RAI 4.A.6 states that cladding metal with significant hydrides will be integral to the fuel cladding metal mass, will have localized areas of increased strength, and will be available for load bearing functions. Provide a reference or test results that support this conclusion for fuel cladding applications.

3. Holtec's response to RAI 4.A.8, does not address off-normal and accident conditions with regard to structural integrity of the cladding with significant oxides and hydrides. Provided a basis for concluding that fuel with heavily oxidized and hydrided clad will remain intact during off-normal and accident conditions (i.e., impacts from the cask drop tip over as well as the temperature transients with the potential for annealing).

4. The response to RAI 8.1 describes proposed FSAR changes. However, these changes are not made in the proposed FSAR. Provide proposed FSAR changes that are consistent with the RAI response.

5. The response to RAI 8.2 does not address the question. References to "other configurations" or "alternate configurations" need to either be described in the FSAR in the same detail as the existing HI-TRAC design concept or removed. The staff cannot evaluate the procedures without understanding the permitted configurations or design concepts.

Additional Issues

1. Proposed change number 6 removes the CoC requirements for Pre-Operational Testing and Training Exercises. The bases for the removal was, in part, the ongoing effort to develop improved standard technical specifications and 10 CFR 72.192. After the issuance of the RAI in early May 2001, NUREG-1745, "Standard Format and Content for Technical Specifications for 10 CFR Part 72 Cask Certificates of Compliance," was published. The CoC pre-operational testing and training exercise requirements are maintained in NUREG-1745. Additionally, 10 CFR 72.192 does not apply to general licenses. As a result, the Pre-Operational Testing and Training Exercises should be returned to the CoC.

2. Item 3.4 of Appendix B to the CoC should be numbered more clearly. Items 3.4.4 could easily be misinterpreted as item 3.3.b.4.