September 30, 2008

MEMORANDUM TO: Nader Mamish, Deputy Director
Licensing and Inspection Directorate
Division of Spent Fuel Storage and Transportation, NMSS

FROM: Pierre Saverot, Project Manager **/RA/**
Licensing Branch
Division of Spent Fuel Storage and Transportation, NMSS

SUBJECT: SUMMARY OF SEPTEMBER 24, 2008, MEETING WITH HOLTEC INTERNATIONAL REGARDING CLARIFICATION AND DISCUSSION OF PROPOSED RESPONSES FOR THE HI-STAR 60 PACKAGE

Background

On August 30, 2007, Holtec International (Holtec) submitted an application requesting a Certificate of Compliance (CoC) for the HI-STAR 60 Transportation Package. On August 8, 2008, a teleconference call was held with Holtec regarding the structural analyses that were not sufficient to make a safety finding and NRC staff outlined five alternative methodologies for performing structural analyses on the HI-STAR 60 package. A Request for Additional Information (RAI), sent to Holtec on September 3, 2008, was followed by a conference call on September 18, 2008, to clarify the RAIs and discuss potential changes to the HI-STAR 60 application that may be necessary due to the expected wording of the CoC. The purpose of this September 24, 2008, meeting was to allow Holtec to present and discuss RAI proposed responses in selected areas and solicit comments from the staff on additional information to include in Holtec's responses.

Discussion

The technical discussion focused on the following issues:

Fuel Related Issues

- Holtec will adopt ISG-1 Rev. 2 and remove from its application all references to the Indian Point 1 fuel type.
- Holtec requested clarification on the need to provide and justify cladding performance limits for the QNPC fuel and indicated that ISG-11 Rev. 3 does not make any explicit reference to plant operating conditions. Staff indicated that the mechanical/nuclear/material/design/performance parameters of the fuel were neither available in the HI-STAR 60 application nor at the NRC database (through the usual vendors' Topical Reports) and that it could not make any determination on compliance with regulatory requirements, e.g., 10 CFR 71.5,

71.51, 71.55, 71.59, 71.71, etc., for lack of specific data on the Qinshan fuel. Staff explained that it needs "supportable evidence" on any fuel parameter used to make a safety case in the SAR. Such parameters may include fuel assembly and rod design specifications, materials used, cladding stress and strain, clad oxidation and hydriding, fuel rod internal pressure, etc. Staff indicated that analyses must not use unstated assumptions or parameters and that Holtec could either choose the closest equivalent U.S. type fuel for licensing review in order to remove current uncertainties in the SAR or compile information on the Qinshan fuel that would be filed under a proprietary information notice. Holtec agreed to compile a list of important fuel parameters and share that information with the staff during a teleconference call.

Thermal Issues

- Holtec underlined that the cladding temperature during vacuum drying was 399^0C "under steady state conditions" and said it will provide reasonable estimates of uncertainties. Staff requested clarification on the meaning of steady state conditions during vacuum drying and indicated that Holtec should (i) verify that the maximum cladding temperature is conservatively realistic, in view of the 400^0C limit in ISG-11 for U.S. fuel; (ii) be explicit on assumptions used in the stress equations to prove that the hoop stress is below 90MPa. Regarding the impact limiter temperatures, Holtec is trying to determine the temperature limit of the epoxy in the crush material. Staff indicated that it needs to have the crush material modeled in more detail to have an accurate representation on how material properties are affected with temperatures along with their effect onto the honeycomb materials.

Structural Issues

- Further to the August 8, 2008, conference call, Holtec will reduce to a minimum the approval of alternative materials and delete references to substitutions, e.g., ASTM vs. ASME. Holtec will qualify the cask and basket using static calculations and bounding decelerations and use the higher value from either LS-DYNA or the Differential Equation approach. Regarding puncture tests, Holtec will present LS-DYNA solutions coupled with simple calculations for the lid and not use ANSYS to perform quality static analysis calculations. Staff agreed and said this represented added assurance.
- Staff clarified the assumptions to be used for gaps prior to and during accident conditions. The NRC staff position is the following: whatever gap there is in the design, such gap needs to be evaluated. The maximum gaps for the basket and for the fuel assembly have to be evaluated because, in an actual accident, both the impact on the fuel cladding integrity and on the bolted closure system must be assessed. In the HI-STAR 60 case, the lid and the lid bolts seem to be the driver.

- Staff reiterated its concern for dose rates at post-accident conditions for a transportation package. ASME Subsection NF Class 3 materials may not be adequate because Class 3 components do not have to maintain containment boundary and thus may not prevent cracking of the gamma shield with resulting radiation streaming. Staff stated that it would like to see fracture mechanics calculations instead of Charpy values. Staff also stated that Regulatory Guides 7.11 and 7.12 may be revised in 2009.

Metamic Issues

- Staff reiterated its concern that the description of Metamic acceptance testing was too vague and needed to be improved with the "right wording in the right place". Staff indicated that Holtec should (i) differentiate acceptance testing from qualification testing; (ii) clarify inspection tests; (iii) include critical characteristics and procedures as well as reference reports in Chapter 8 of the SAR. In general, NRC staff encouraged Holtec to "back up" quantitative data to bolster staff's confidence in determining compliance with regulatory requirements.

Other Issues

- Holtec agreed with NRC staff on the requests for clarifications and justifications in Chapters 4, 5, 6, and 7 of the SAR.

The Licensing Branch Chief said that he will keep the dialogue open to avoid miscommunications and give Holtec clear guidance.

The enclosures are the agenda, the list of meeting attendees, and a copy of the slides Holtec presented at the meeting. Holtec anticipates sending in their RAI responses by the end of October. The staff did not make any regulatory commitments at the meeting.

Docket No. 71-9336
TAC No. L24121

Enclosures:
1. Meeting Agenda
2. List of Meeting Attendees
3. Holtec handouts "HI-STAR 60 RAIs. Presentation to NRC" dated September 24, 2008

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NAME	PSaverot		MDeBose		EBenner			
DATE	9/25/2008		9/26/08		9/30/08			

C=Without attachment/enclosure E=With attachment/enclosure N=No copy **OFFICIAL RECORD COPY**

Agenda
September 24, 2008, 1:00 p.m. – 3:00 p.m.
HOLTEC International

- Introduction
- RAI Overview
- Metamic Qualification
- Fuel-Related Questions
- Structural Questions
- Thermal Questions
- Summary

Meeting Between HOLTEC International and the
Nuclear Regulatory Commission
September 24, 2008
Meeting Attendees

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HOLTEC INTERNATIONAL

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