July 19, 2007

MEMORANDUM TO: Robert J. Lewis, Acting Deputy Director
Licensing and Inspection Directorate
Division of Spent Fuel Storage and Transportation, NMSS

Stewart W. Brown, Senior Project Manager **/RA/**
Licensing Branch
Division of Spent Fuel Storage and Transportation, NMSS

SUBJECT: SUMMARY OF THE JULY 5, 2007, MEETING WITH HOLTEC INTERNATIONAL TO DISCUSS THE MODEL NO. HI-STAR 180 TRANSPORTATION PACKAGE

Background

On July 5, 2007, U.S. Nuclear Regulatory Commission (NRC) staff members met with Holtec International (Holtec) representatives in Rockville, Maryland. This meeting was to discuss results of the staff's acknowledgment review of Holtec's April 11, 2007, application for design certification approval of the Model No. HI-STAR 180 Transportation Package. This was Holtec's second submittal of the Model No. HI-STAR 180 application.

The meeting was noticed on June 25, 2007 (ADAMS No. ML071760254). A copy of the list of meeting attendance is attached (Attachment 1).

Discussion

Based on the staff's acknowledgment review of Holtec's April 11, 2007, HI-STAR 180 application, the staff found this revised application to be substantially improved when compared to Holtec's first application. However, the staff still found the application appeared not to provide sufficient information to allow the staff to begin a technical review. The general areas included the Metamic HT basket material testing results, assumptions and physical attributes used to model and benchmark the structural analyses, and basis for no physical testing of the water exclusion boundary as recommended in ISG-19, Moderator Exclusion under Hypothetical Accident Conditions and Demonstrating Subcriticality of Spent Fuel under the Requirements of 10 CFR 71.55(e). Therefore, the staff requested a meeting with Holtec to discuss these findings. A copy of the meeting agenda is attached (Attachment 2).

During the introductory portion of the meeting the staff provided Holtec with copies of Office Instruction SFST-14, "Acknowledgment Reviews" (Attachment 3) and SFST-15, "Interactions between Applicants and SFST Staff (A.K.A. - Rules of Engagement)" (Attachment 4). During the meeting Holtec provided three handouts. One of the three handouts was marked as containing proprietary information. This handout was retrieved by Holtec at the end of the meeting. The staff cautioned Holtec that this meeting was open to the public and that NRC could not and would not protect either the information contained in the handout or information discussed in this venue. Holtec confirmed that they understood this and proceeded with their

presentation. The other two handouts are attached: (1) Qualifying the AL-STAR 180 Impact Limiter Using LS-DYNA Benchmarked on Scale Model Tests on HI-STAR 100 (Attachment 5) and (2) HI-STAR 180 Moderator Exclusion (Attachment 6).

The following were the technical areas discussed:

Creep Testing Results

The Holtec application proposed the use of a new, proprietary, aluminum alloy for the canister fuel basket which could be susceptible to creep rupture. Thus, long-term (10,000 hours) creep rupture data needs to be submitted for review.

In the application Holtec submitted some in-progress (roughly 4000 hours) results of ongoing creep tests. The staff found the data to be minimal. Some of it was obviously inconsistent. The staff questioned the data analysis approach for extrapolation to a longer term period. Absent longer term test data for temperatures above a certain level, there appeared to be no basis to support data extrapolation.

During the meeting, the applicant clarified the material testing approach and design details of the fuel basket. The applicant noted that the data submitted could also be somewhat misleading since the tests were being conducted at much higher temperatures and stresses than those of the basket operating conditions. The applicant also stated there was a much larger body of longer term creep test data available that would be submitted for staff review.

A path forward for the staff to begin the technical review was discussed. The key parameters to success are consistent with the stated significantly lower operating stress and temperature for 10,000 hours. A sufficient quantity of data is needed to show that the inherent scatter in material properties will not compromise performance.

Assumptions Used to Model and Benchmark the Structural Analyses

The staff noted, based on the information provided by Holtec in its April 11 application, that Holtec used the results of a quarter-scale physical test to benchmark its full-scale analytical model. The staff noted that use of quarter-scale impact limiter honeycomb mesh grid sizing cannot be used as a benchmark for a full-scale analytical model. Holtec stated that while it used a quarter-scale physical model for testing, the impact limiter model used full-scale honeycomb mesh grid sizing. Further, Holtec noted that it provided this information in another submittal which was approved by the staff around the year 2000. The staff informed Holtec that each submittal must be a stand-alone document and suggested that Holtec include this information in the HI-STAR 180 application.

No Physical Testing of the Containment Barrier as Recommended in ISG-19

Holtec noted that it proposed a two barrier system and the ability of these barriers to function as intended could be demonstrated by analyses. Further, Holtec noted that the staff had sufficient information to begin a technical review of its proposal.

Attachments:
1. List of Attendees
2. Meeting Agenda
3. SFST-14
4. SFST-15
5. Handout No. 1
6. Handout No. 2

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