

September 14, 2006

MEMORANDUM TO: William H. Ruland, Deputy Director  
Licensing and Inspection Directorate  
Spent Fuel Project Office, NMSS

FROM: Christopher M. Regan, Senior Project Manager */RAI/*  
Licensing Section  
Licensing and Inspection Directorate  
Spent Fuel Project Office, NMSS

SUBJECT: SUMMARY OF SEPTEMBER 8, 2006, MEETING WITH HOLTEC  
INTERNATIONAL REGARDING THERMAL ISSUES ASSOCIATED  
WITH PROPOSED AMENDMENT TO THE HI-STORM 100  
CERTIFICATE OF COMPLIANCE 1014 (TAC NO. L23850)

On September 8, 2006, the Nuclear Regulatory Commission (NRC) staff from the Spent Fuel Project Office met with representatives of Holtec International (Holtec) at NRC Headquarters in Rockville, Maryland. The purpose of the meeting was to provide Holtec with the opportunity to present details of its thermal analyses relating to staff concerns regarding information provided in response to the NRC's second Request for Additional Information (RAI) dated June 6, 2006. The RAI pertained to the proposed amendment to the 10 CFR Part 72 Certificate of Compliance (CoC) for the HI-STORM 100 dry cask storage system. In addition, the staff was prepared to present the specific details of its concerns regarding Holtec's analytical methods in the thermal discipline. The desired outcome was to have a mutual understanding of the outstanding thermal issues and have an agreed upon approach for resolution of the staff's concerns in the thermal area. The meeting was noticed on August 25, 2006. Enclosure 1 is a list of attendees; Enclosure 2 contains the NRC presentation slides.

The staff began by presenting the historical background of the technical review of the amendment application. This included reference to conference calls held between Holtec and the staff in early August regarding thermal issues and disagreement over the analytical methods used by Holtec. At that time, these issues were communicated to Holtec. Also, in those conference calls, the staff suggested an approach to address the outstanding thermal issues which would resolve the technical disagreement. At that time, Holtec declined to agree that the staff's suggested approach was appropriate.

After the historical perspective was provided, the staff reviewed for the meeting attendees the details of its concerns with the methods used by Holtec to calculate peak fuel cladding temperatures (Enclosure 2). These issues focused principally on the methods used by Holtec to calculate the friction factor in the "porous media model" computer analysis. The staff considered Holtec's approach non-conservative but noted that the results indicated, for the cases analyzed, the peak fuel cladding temperatures were still below acceptable limits. Holtec provided evidence of a parametric study that showed that the peak fuel cladding temperatures calculated using both the staff's suggested method and by the method, as submitted by Holtec, yielded temperatures that were in agreement.

The staff insisted that the method suggested by the staff would more accurately represent the thermal dynamic taking place inside each fuel assembly, specifically the fuel heated region. The staff stated that a model that discretely considered the heated and non-heated regions in the fuel assembly using the "wall shear stress" method would address the staff's concerns and resolve the technical disagreement. The staff considered its suggested approach to be a more conservative method and one which would preclude any concerns with implementation of an approved analysis in the future, should any changes be made to it as permitted by 10 CFR 72.48. It is for this reason the staff noted that the approach suggested by the staff, if agreed to by Holtec, should be used as the licensing basis for approval of the amendment request. As such, any and all information in the Final Safety Analysis Report (FSAR), as currently submitted for review, that references the original methodology proposed by Holtec should be revised to reflect the new approach that addresses the staff's concerns.

Holtec agreed to revise the analysis and use the staff's suggested approach. Specifically, the analysis will model the heated fuel region and non-heated regions. Holtec would perform cases for the MPC-68, for the boiling water reactor (BWR) case, and the MPC-32, for the pressurized water reactor (PWR) case. The analyses will be run considering water rods would be blocked. After completing these analyses, the staff agreed to a conference call with Holtec in a approximately a weeks time to permit Holtec to share the results of the analysis. At this time, the staff would be able to convey any additional concerns before Holtec would proceed with the more significant FLUENT analyses for the entire storage system.

The staff shared the current status of the review schedule in the other disciplines and indicated that the additional thermal analyses to be performed by Holtec may result in a delay but that this was highly dependent on when Holtec submits the additional information. No regulatory decisions were made by the NRC during the meeting on the material presented. There were no questions from the members of the public.

Docket No. 72-1014

TAC No. L23850

Enclosures: 1. Attendance List  
2. Presentation Slides

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**Enclosure 1**

**Attendee List**

**Meeting with Holtec International  
HI-STORM 100 Amendment Application Thermal Issues  
September 8, 2006**

ATTENDANCE LIST

<u>Name</u>	<u>Affiliation</u>
Ed Hackett	NRC/NMSS/SFPO
Bill Ruland	NRC/NMSS/SFPO
Christopher Regan	NRC/NMSS/SFPO
Jorge Solis	NRC/NMSS/SFPO
Bob Tripathi	NRC/NMSS/SFPO
Bob Shewmaker	NRC/NMSS/SFPO
Larry Campbell	NRC/NMSS/SFPO
Gordon Bjorkman	NRC/NMSS/SFPO
Michel Call	NRC/NMSS/SFPO
Stephan Anton	Holtec International
Kris Singh	Holtec International
Alan Soler	Holtec International
Debebrata Mitra-Majumdar	Holtec International
Thecla Fabian	Fuel Cycle Week
Maureen Conley	Platts/McGraw-Hill

## **Enclosure 2**

### **Presentation Slides**