

February 1, 2005

MEMORANDUM TO: Brian E. Thomas, Acting Deputy Director  
Licensing and Inspection Directorate  
Spent Fuel Project Office, NMSS

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

SUBJECT: SUMMARY OF JANUARY 19, 2005, MEETING WITH HOLTEC  
INTERNATIONAL REGARDING THERMAL ANALYSIS TECHNICAL  
ISSUES ASSOCIATED WITH REVIEW OF AMENDMENT 3 TO THE HI-  
STORM 100 CERTIFICATE OF COMPLIANCE (TAC NO. L23799)

On January 19, 2005, the Nuclear Regulatory Commission (NRC) staff from the Spent Fuel Project Office and the Office of Nuclear Regulatory Research met with representatives of Holtec International (Holtec) at NRC Headquarters in Rockville, Maryland. The purpose of the meeting was to provide Holtec the opportunity to present revised thermal analyses and methodologies submitted to the NRC in response to the staff's September 17, 2004, letter. Two technical reports were submitted to the NRC on October 21, 2004, and December 29, 2004. These revised analyses and methodologies have been submitted in support of proposed Amendment 3 to the 10 CFR Part 72 Certificate of Compliance (CoC) for the HI-STORM 100 dry cask storage system described as the HI-STORM 100U. The meeting was noticed on January 7, 2005. Attachment 1 is a list of attendees and Attachments 2 and 3 are the meeting presentation slides.

Holtec began the meeting by presenting the details of confirmatory analyses and the benchmarking of methods used to demonstrate turbulent flow in the annular space between the HI-STORM 100 overpack and the Multi-Purpose Canister (MPC) (Attachment 2). This presentation summarized information submitted in the October 21, 2004, letter to the NRC. During the course of this presentation and associated discussion Holtec agreed to consider the following: 1) additional discussion on why there is a 15% over-prediction of temperatures from the benchmarked data; 2) presentation of sensitivity studies of model configuration, i.e., mesh and cell size; 3) further review of the EPRI report, "Performance Testing and Analyses of the VSC-17 Ventilated Concrete Cask," EPRI TR-100305, May 1992, and the assumptions and data used for benchmarking, most notably the inlet and outlet vent configuration and size; 4) additional analysis using a vacuum case which would eliminate the effects of natural circulation on heat transfer; and 5) additional consideration of the variations of  $k_{eff}$  on temperatures. Additionally, the NRC indicated that a draft NUREG/CR report is being prepared for issuance that contains information that Holtec should consider in their analyses.

Holtec also presented material specific to determining hydraulic resistance parameters for BWR and PWR fuel assemblies for HI-STORM system thermal modeling (Attachment 3). This presentation summarized information submitted in the December 29, 2004, letter to the NRC. The staff commented that review of the Holtec models associated with this analysis are

currently underway. At the request of the NRC Holtec agreed to provide the staff with a diagram/schematic of how a spent fuel assembly looks when loaded and sitting on the bottom spacer inside the MPC.

In summary, the staff thanked Holtec for the material that was presented and agreed that continued dialogue is necessary if the thermal issues are to be resolved. Additionally, it was noted that resolution of the thermal issues is critical to commencement of the review of Amendment 3 to the HI-STORM 100 CoC submitted on December 30, 2004. Failure to resolve the outstanding thermal technical issues could have an impact on approval of Amendment 3. No regulatory decisions were made by the NRC on the material presented during the meeting.

Docket No. 72-1014

TAC NO. L23799

- Attachments:
1. Attendance List
  2. Presentation: Benchmarking Heat Transfer Correlations for Annulus Flow in the HI-STORM System
  3. Presentation: Determining Hydraulic Resistance Parameters for BWR and PWR Fuel Assemblies for HI-STORM System Thermal Modeling

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<b>OFC</b>	SFPO		SFPO		SFPO	
<b>NAME</b>	CRegan*		EZiegler*		JMonninger	
<b>DATE</b>	01/ 21/05		01/21/05		02/1/05	

Official Record Copy

## **Attachment 1**

## **Attendee List**

**Meeting with Holtec International  
Discussion of Thermal Technical Issues  
January 19, 2005**

ATTENDANCE LIST

<u>Name</u>	<u>Affiliation</u>
Wayne Hodges	NRC/NMSS/SFPO
John Monninger	NRC/NMSS/SFPO
Christopher Regan	NRC/NMSS/SFPO
Larry Campbell	NRC/NMSS/SFPO
Allen Hansen	NRC/NMSS/SFPO
Jorge Solis	NRC/NMSS/SFPO
Antonio Diaz	NRC/NMSS/SFPO
Ghani Zigh	NRC (RES)
Alan Soler	Holtec
D. Mitra-Majumdar	Holtec
Stephan Anton	Holtec
Indresh Rampall	Holtec
Maureen Conley	McGraw-Hill (via telephone)

## **Attachment 2**

### **Presentation Slides**

## **Attachment 3**

### **Presentation Slides**