



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
WASHINGTON, D.C. 20555-0001

July 28, 2016

Ms. Kimberly Manzione
Licensing Manager
Holtec International
Holtec Center
One Holtec Drive
Marlton, NJ 08053

**SUBJECT: AMENDMENT NO. 3 TO CERTIFICATE OF COMPLIANCE NO. 1032 FOR THE
HI-STORM FLOOD/WIND MULTIPURPOSE CANISTER STORAGE SYSTEM –
SECOND REQUEST FOR ADDITIONAL INFORMATION**

Dear Ms. Manzione:

By letter dated December 18, 2015 (Agencywide Document Access and Management System (ADAMS) Accession No. ML15364A561), as modified on April 22, 2016 (ADAMS Accession No. ML16113A398), and as supplemented on June 22, 2016 (ADAMS Accession No. ML16180A360), Holtec International submitted an amendment request to the U.S. Nuclear Regulatory Commission for the HI-STORM Flood/Wind Multipurpose Canister Storage System Certificate of Compliance (CoC) No. 1032.

The NRC staff reviewed your application and determined the need for additional information as identified in the Second Round of Requests for Additional Information (RAIs) in the enclosure to this letter. We request that you provide the responses to these RAIs by August 22, 2016. Please inform us in writing at your earliest convenience, but no later than August 12, 2016, if you are not able to provide the information by the requested date. You should also include a new proposed submittal date and the reasons for the delay to assist us in rescheduling your review. This information was discussed with your staff in a conference call on July 26, 2016.

Please reference Docket No. 72-1032 and CAC No. L25076 in future correspondence related to this licensing action. If you have any questions, please contact me at 301-415-1018.

Sincerely,

/RA/

Yen-Ju Chen, Sr. Project Manager
Spent Fuel Licensing Branch
Division of Spent Fuel Management
Office of Nuclear Material Safety
and Safeguards

Docket No.: 72-1032
CAC No.: L25076

Enclosure:
HI-STORM 100 FW Amendment No. 3 2nd RAI

Ms. Kimberly Manzione
 Licensing Manager
 Holtec International
 Holtec Center
 One Holtec Drive
 Marlton, NJ 08053

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Docket No.: 72-1032
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Enclosure:
 HI-STORM 100 FW Amendment No. 3 2nd RAI
 Distribution: SFST r/f
 File location: G:\SFST\HI-STORM FW\Amendment 3\RAI #2 Input\HI-STORM FW Amd 3 Second RAI Rev 1.docx
ADAMS Accession No.: ML16211A005

OFC:	DSFM	DSFM	DSFM	DSFM	DSFM
NAME:	YChen	WWheatley by email	VWilson by email	ZLi for MRahimi by email	JMcKirgan
DATE:	7/27/2016	7/28/2016	7/28/2016	7/28/2016	7/28/16

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Second Round of Request for Additional Information
Docket No. 72-1032
Holtec International
HI-STORM 100 Flood/Wind
Multipurpose Canister Storage System
Certificate of Compliance No. 1032
Amendment No. 3

By letter dated December 18, 2015 (Agencywide Document Access and Management System (ADAMS) Accession No. ML15364A561), as modified on April 22, 2016 (ADAMS Accession No. ML16113A398), and as supplemented on June 22, 2016 (ADAMS Accession No. ML16180A360), Holtec International (Holtec) submitted an amendment request to the U.S. Nuclear Regulatory Commission for the HI-STORM Flood/Wind Multipurpose Canister (MPC) Storage System Certificate of Compliance (CoC) No. 1032. The proposed changes include the inclusion of burnup credit for the MPC-37 and revision of Condition 8.

The U.S. Nuclear Regulatory Commission staff (the staff) issued a request for additional information (RAI) on May 24, 2016, and Holtec provided its response on June 22, 2016 (ADAMS Accession No. ML16180A360). The staff identified additional information needed in connection with its review of the application as provided in the second round of RAI discussed below. Each question describes information needed by the staff to complete its review of the application and to determine whether the applicant has demonstrated compliance with regulatory requirements in 10 CFR Part 72.

Chapter 6

6-1 Clarify the request for:

- a) adding intact 16x16A fuel assemblies in all 37 locations as authorized contents of the MPC-37 for the HI-STORM FW, Amendment No. 3, and
- b) increasing the concentration of boron for undamaged 14x14 and 16x16 fuel assemblies with a maximum initial enrichment of 5.0% U-235.

In the previous RAI 6-1, the staff requested the applicant to provide justification and supporting analyses for increasing the concentration of boron for undamaged 14x14 and 16x16 fuel assemblies with a maximum initial enrichment of 5.0% U-235. In the applicant's response to previous RAI 6-1, the applicant noted that the purpose for requesting the increase of the boron concentration in the contents requested for the Model No. HI-STORM FW, Amendment No. 3, was to support the option of loading intact fuel assembly class 16x16A in damaged fuel containers (DFCs) in all 37 locations of the MPC-37 basket in the application for HI-STORM FW, Amendment No. 2. The applicant further states that "the application for HI-STORM FW, Amendment No. 2, did not properly include the update to the CoC Appendix A to match the FSAR table, and so it was included in this amendment (Amendment No. 3) for completeness."

In the amendment request for HI-STORM FW, Amendment No. 2, the applicant stated the following:

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“Storage of intact fuel in DFCs in the HI-STORM FW system is not permitted; accordingly, the HI-STORM FW CoC 1032 has not been modified for this change.”

The staff notes that there is no need for increasing the boron concentration because loading of intact 16x16A fuel assemblies in DFC's in all 37 basket locations is not currently allowed in the HI-STORM FW. It is unclear whether or not the applicant intended to include this change in Amendment No. 3. The staff requests clarification from the applicant on whether it wants to add intact 16x16A fuel assemblies in DFCs in all 37 locations as authorized contents in Model No. HI-STORM FW, Amendment 3, or if it just wishes to increase the boron concentration.

The staff needs this information to determine compliance with 10 CFR 72.11(a).

6-2 Justify and explain the rationale for using the data of the 15x15H, 15x15B, and 16x16A as representative assembly classes for the burnup credit analyses. Include at least the following information as part of your response:

- a) charts, graphs, and/or a narrative description that show the k-eff's evaluated at the burnup from the generated polynomial fits (for regionalized and uniform loading) as a function of enrichment bounding all assembly classes at a range of burnups/enrichments and not exceeding the upper subcriticality limit; and
- b) an explanation about how the data for flat burnup help to demonstrate the representative assembly classes are appropriate.

In the previous RAI 6-2, the staff asked for additional information to justify the use of the 15x15H, 15x15B, and 16x16A as the representative assembly classes for creating the allowable loading using burnup credit. In response to RAI 6-2, the applicant directed the staff to document HI-2156424, “Criticality Evaluation of HI-STAR 190,” submitted as part of the HI-STAR 190 application. The applicant cited tables from this document as justification for selecting the representative fuel assembly classes. The staff was able to identify 15x15H, 15x15B, and 16x16A assembly classes as the most reactive for the conditions in Table 6.0.1. However, it is unclear to the staff to interpret the information presented in the tables cited as part of the applicant's justification (i.e., Tables 6.B.23(c), 6.B.23(d), and 6.1.1). These tables appear to include reactivity evaluations for all assembly classes using burnup calculated with:

- 1) the polynomial fits as a function of enrichment for a burnup profile and
- 2) flat profile for both cooling times for the regionalized loading configuration.

As such, the staff is not able to reach a conclusion based on how this information is presented and understand why this data is presented for both a flat burnup and a profiled burnup.

The staff requests that the applicant explain how the data demonstrate that the representative assembly classes are appropriate.

The staff needs this information to determine compliance with 10 CFR 72.236(c).