

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

PRELIMINARY SAFETY EVALUATION REPORT

DOCKET NO. 72-1014 HOLTEC INTERNATIONAL CERTIFICATE OF COMPLIANCE NO. 1014 HI-STORM 100 CASK SYSTEM AMENDMENT NO. 17

SUMMARY

This safety evaluation report (SER) documents the U.S. Nuclear Regulatory Commission (NRC) staff's review and evaluation of the amendment request to amend renewed Certificate of Compliance (CoC) No. 1014 for the HI-STORM 100 Cask System. By letter dated July 30, 2021, Holtec International (Holtec, the applicant) submitted an amendment to CoC No. 1014 to update the description of the system in the CoC and final safety analysis report (FSAR) to clarify that only the portions of multi-purpose canister (MPC) components that come into contact with the pool water need to be made of stainless steel or aluminum (Holtec 2021b). The previous description stated that MPC components that may come into contact with pool water are made entirely of stainless steel or aluminum. The amended CoC, when codified through rulemaking, will be denoted as renewed Amendment No. 17 to CoC No. 1014.

The staff's evaluation is based on a review of the applicant's amendment application and whether it meets the applicable requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 72 for dry storage of spent nuclear fuel. The staff's evaluation focused on modifications requested in the amendment as supported by the submitted revised FSAR (see Attachment 3 of Holtec 2021b) and did not reassess previous revisions of the FSAR nor previous amendments to the CoC. In its review, the staff followed the guidance in NUREG-2215, "Standard Review Plan for Spent Fuel Dry Storage Systems and Facilities" (NRC 2020).

1.0 GENERAL DESCRIPTION

The objective of this chapter is to review the changes requested to renewed CoC No. 1014 for the HI-STORM 100 Cask System to ensure that the applicant provided an adequate description of the pertinent features of the storage system and the changes requested in the application. The applicant proposed to update the HI-STORM 100 system description in FSAR section 1.2.1.1, as well as the CoC, to clearly indicate that only the portions of the MPC components that come into contact with the pool water need to be made of stainless steel or aluminum. Staff reviewed the changes and determined that the changes to both the FSAR and CoC are editorial in nature. Staff also provided a more detailed evaluation of the change in section 8.0 of this SER. Based on a review of the application information, staff finds the change acceptable.

2.0 PRINCIPAL DESIGN CRITERIA

The applicant did not propose any changes that affect the staff's previous evaluation of the principal design criteria that was provided in previous safety evaluations for CoC No. 1014, Renewed Initial Certificate and Amendment Nos. 1 through 15. Therefore, the staff determined that a new evaluation was not required.

3.0 STRUCTURAL EVALUATION

The applicant did not propose any changes that affect the staff's previous structural evaluation that was provided in previous safety evaluations for CoC No. 1014, Renewed Initial Certificate and Amendment Nos. 1 through 15. Therefore, the staff determined that a new evaluation was not required.

4.0 THERMAL EVALUATION

The applicant did not propose any changes that affect the staff's thermal evaluation provided in previous safety evaluations for CoC No. 1014, Renewed Initial Certificate and Amendment Nos. 1 through 15. Therefore, the staff determined that a new evaluation was not required.

5.0 CONFINEMENT EVALUATION

The applicant did not propose any changes that affect the staff's confinement evaluation provided in previous safety evaluations for CoC No. 1014, Renewed Initial Certificate and Amendment Nos. 1 through 15. Therefore, the staff determined that a new evaluation was not required.

6.0 SHIELDING EVALUATION

The applicant did not propose any changes that affect the staff's shielding evaluation provided in previous safety evaluations for CoC No. 1014, Renewed Initial Certificate and Amendment Nos. 1 through 15. Therefore, the staff determined that a new evaluation was not required.

7.0 CRITICALITY EVALUATION

The applicant did not propose any changes that affect the staff's criticality evaluation provided in previous safety evaluations for CoC No. 1014, Renewed Initial Certificate and Amendment Nos. 1 through 15. Therefore, the staff determined that a new evaluation was not required.

8.0 MATERIALS EVALUATION

The objective of the staff's review is to evaluate whether the proposed clarification to the storage system description in the CoC and FSAR represents a change to the system design and, if so, evaluate the effects of the change on the ability of the storage system to meet the requirements of 10 CFR Part 72.

The staff reviewed the CoC and FSAR, including the associated drawings, and noted that the proposed changes have no effect on the system design as evidenced by:

• The CoC and FSAR description updates proposed no changes to the drawings in Section 1.5 of the FSAR. In addition, staff reviewed the drawings and determined that the description updates are consistent with the drawings because the drawings already note that the MPC lid may be either a one-piece design made entirely of stainless steel, or a two-piece design with the top part made entirely of stainless steel and the bottom part made of either stainless steel or carbon steel, with all surfaces that may come in contact with pool water coated or covered with stainless steel. • The CoC and FSAR description updates proposed no changes to the materials and components tables of FSAR Section 2. In addition, staff reviewed the materials and components tables of FSAR Section 2 and determined that they already identify that the bottom part of the MPC Lid two-piece design can be made of either stainless steel or carbon steel.

The staff had previously evaluated the possible use of carbon steel in MPC components, as evidenced by the NRC's description of the HI-STORM 100 Cask System provided in NUREG-2214, "Managing Aging Processes in Storage (MAPS) Report" (NRC 2019). Section 4.3.2 and table 4-7 of NUREG-2214 described the bottom portion of the two-piece lid having a material option of steel coated with stainless steel.

Finally, the staff considered whether the proposed revision would change the staff's prior conclusions for the renewal of CoC No. 1014 (NRC 2023). The staff verified that, in table 3.3-1 of the application for renewal, "Aging Management Review of MPC Enclosure Vessel Subcomponents," the applicant appropriately evaluated the potential aging mechanisms and effects for the two-piece lid, including the option to use carbon steel on the bottom portion of the lid (Holtec 2021a). Consequently, the staff finds that the aging management activities approved for the renewed storage term for CoC No. 1014 remain adequate to ensure that SSCs will maintain their intended functions for the period of extended operation.

Based on the staff's review of the drawings, FSAR text, and CoC, the staff finds that the proposed change to the system description is consistent with the storage system design previously reviewed and approved by the staff. The applicant is proposing an editorial change to the CoC and FSAR that is consistent with the storage system materials of construction. The revision neither revised the system design, nor introduced new technical considerations that were not already considered in the staff's prior review of the HI-STORM 100 system. Therefore, the staff finds the revision to the CoC and FSAR to be acceptable.

9.0 OPERATING PROCEDURES EVALUATION

The applicant did not propose any changes that affect the staff's operating procedures evaluation provided in previous safety evaluations for CoC No. 1014, Renewed Initial Certificate and Amendment Nos. 1 through 15. Therefore, the staff determined that a new evaluation was not required.

10.0 ACCEPTANCE TESTS AND MAINTENANCE PROGRAM EVALUATION

The applicant did not propose any changes that affect the staff's acceptance tests and maintenance program evaluation provided in previous safety evaluations for CoC No. 1014, Renewed Initial Certificate and Amendment Nos. 1 through 15. Therefore, the staff determined that a new evaluation was not required.

11.0 RADIATION PROTECTION EVALUATION

The applicant did not propose any changes that affect the staff's radiation protection evaluation provided in previous safety evaluations for CoC No. 1014, Renewed Initial Certificate and Amendment Nos. 1 through 15. Therefore, the staff determined that a new evaluation was not required.

12.0 ACCIDENT ANALYSIS EVALUATION

The applicant requested no changes to the principal design criteria related to the SSCs important to safety. For this reason, the staff finds the applicant complied with the relevant general criteria established in 10 CFR Part 72, and does not require an accident analysis evaluation of the principal design criteria.

13.0 TECHNICAL SPECIFICATIONS

The applicant did not propose any changes to the HI-STORM 100 Cask System technical specifications. Therefore, the staff determined that a new evaluation was not required.

14.0 QUALITY ASSURANCE EVALUATION

The applicant did not propose any changes that affect the staff's quality assurance program evaluation provided in previous safety evaluations for CoC No. 1014, Renewed Initial Certificate and Amendment Nos. 1 through 15. Therefore, the staff determined that a new evaluation was not required.

15.0 CONCLUSIONS

The staff has performed a comprehensive review of the amendment application, during which the following requested changes to the HI-STORM 100 Cask System were considered:

Update the system description in the CoC to clearly indicate that only the portions of MPC components that come into contact with the pool water need to be made of stainless steel or aluminum.

Based on the statements and representations provided by the applicant in its amendment application, the staff concludes that the changes described above to the HI-STORM 100 Cask System do not affect the ability of the cask system to meet the requirements of 10 CFR Part 72. Amendment No. 17 to CoC No. 1014 for the HI-STORM 100 Cask System should be approved.

Issued with Renewed Certificate of Compliance No. 1014, Amendment No. 17 On _____.

References

Holtec. 2021a. "Holtec International, Submittal of RAI Clarification Responses on HI-STORM 100 License Renewal—Updated Attachment." Holtec Letter 5014923. April 23, 2021. Agencywide Documents Access and Management System (ADAMS) Accession No. ML21113A201.

Holtec. 2021b. "HI-STORM 100 Multipurpose Canister Storage System Amendment 17 Request." Holtec Letter 5014929. July 30, 2021. ADAMS Accession No. ML21211A603.

NRC. 2019. "Managing Aging Processes in Storage (MAPS) Report." NUREG-2214. Final Report. July 2019. ADAMS Accession No. ML19214A111.

NRC. 2020. "Standard Review Plan for Spent Fuel Dry Storage Systems and Facilities." NUREG-2215. Final Report. April 2020. ADAMS Accession No. ML20121A190.

NRC. 2023. "Renewal of Initial Certificate and Amendment Nos. 1 – 15 of the Certificate of Compliance No. 1014 for the HI-STORM 100 Cask System." June 2023. ADAMS Accession No. ML23068A384.