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March 26, 2014

John Goshen, P.E., Project Manager – Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety and Safeguards

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Docket No. 72-1040
Certificate of Compliance (CoC) No. 1040

Subject: Comments on NRC Draft Certificate of Compliance (CoC) and Safety Evaluation Report (SER) for HI-STORM UMAX (TAC No. L24664)

References: [1] "Draft Proposed Certificate of Compliance and Preliminary Safety Evaluation for the Holtec International HI-STORM UMAX Canister Storage System (TAC No. L24664)," ADAMS Package Number ML14084A193

Dear Mr. Goshen:

Thank you for providing Holtec the opportunity to review the Preliminary Safety Evaluation Report (SER), Certificate of Compliance (CoC), and associated Technical Specifications (TS) for the HI-STORM UMAX (Reference [1]).

In Attachment 1 (total 4 pages) please find Holtec's comments on the subject documents.

If you have any questions, then please contact me at (856)-797-0900 ext. 3951

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Sincerely,

Kimberly Manzione, PE
Acting Licensing Manager,
Holtec International

cc: (letter only w/o Attachments)
Michele Sampson, USNRC
HUG Licensing Subcommittee (via email)

Attachment 1: Holtec Comments on Draft Proposed SER and CoC

Comments on NRC's Proposed HI-STORM UMAX SER and CoC

1) **SER**

a) **Section 1**

i) Page 1, Section 1.2, the third sentence should read "...(FW) System as describe***d*** in the HI-STORM FW..."

ii) Page 2 (and throughout SER) uses the term "overpack." Holtec typically uses the term "Storage Module."

iii) Page 2 – Please fix the hyphens between "away-from a-reactor"

iv) Page 2 – 1st paragraph, please remove "in" in the following sentence "..it to also store all MPCs certified ~~in~~ for...".

b) **Section 2**

i) Page 3, Section 2.2.1 - please replace "maximum initial uranium mass," with "maximum initial ***enrichment***," since the FW FSAR defines enrichment values not mass.

ii) Page 3, Section 2.2.2 – this sentence should read, "...natural phenomena for which the HI-STORM ~~FW~~ ***UMAX*** system is analyzed."

iii) Page 3, Section 2.3.1 – this section should reference FSAR Section 2.11 instead of 2.09

c) **Section 3**

i) Page 4, Section 3.2.1.1, the description of the CEC should not include a description of "an engineered fill." "The CEC rests on the SFP and is surrounded laterally by ~~an engineered fill or~~ a self-hardening engineered subgrade."

ii) Page 5, Section 3.2.1.2, the last sentence should say, "...the HI-STORM *UMAX* Canister Storage System application."

iii) Page 5, Section 3.2.1.3, the last sentence should say, "...the HI-STORM *UMAX* Canister Storage System application."

iv) Page 6, Section 3.2.2.3, revise the first sentence as follows, "~~Allowable stresses or performance criteria for~~ ***The*** ITS components ***of the HI-STORM UMAX system*** are identified on the design drawings in FSAR Section 1.5."

v) Page 6, Section 3.2.3.1, 1st bullet should say, "Shell elements were used ***for*** divider shell and CEC."

vi) Page 6, Section 3.2.3.1, 4th bullet should say, "The bounding MPC was modeled in the VVM ***as*** ~~is~~ a rigid cylinder which yielded..."

vii) Page 7, Section 3.2.3.3, in the last sentence "for" should be deleted, "such as the SSI evaluation ~~for~~ to provide a level of conservatism."

viii) Page 8, Section 3.4.3.3, the second sentence should be revised, "Maximum temperature***s*** and pressures..."

ix) Page 10, Section 3.4.3.7, Item A, last sentence should be revised, "The applicant used the peak interface ***loads*** in the structural..."

x) Page 11, Section 3.4.3.7, Item C, the description of Simulation Model V should read, "similar to Model ***I***," not Model III

xi) Page 11, Section 3.4.3.7, Item C, last sentence, suggest modifying to read, "... the NRC ***can*** ~~did~~ not accept the use..."

d) Section 4

i) Page 13, Section 4.1, Item 1, the reference in this item should be to FSAR Table 2.3.7 for fuel cladding temperature

ii) Page 14, Section 4.1, Item 2, the reference in this item should be to FSAR Table 2.3.5 for design pressures

iii) Page 14, Section 4.1, Item 3, the reference in this item should be to FSAR Table 2.3.7 for cask material temperatures

iv) Page 14, Section 4.2, in the third sentence on VVM materials, "insulation" should be added

v) Page 14, Section 4.3, in the first sentence, the reference for material and components designated as ITS should be FSAR Table 2.3.1

vi) Page 14, Section 4.3, the first paragraph refers to FSAR Table 4.3.1 for fuel cladding temperature limits in two places, the correct reference should be FSAR Table 2.3.7.

vii) Page 16, Section 4.1.3, the second paragraph describes a three-region configuration. Due to changes made based on the thermal RAIs the three-region configuration is no longer used in the UMAX, and this should be removed.

viii) Page 16, Section 4.1.3, in the second paragraph, the reference for heat load summary should be FSAR Tables 2.1.8 and 2.1.9

ix) Page 16, Section 4.2 is a duplicate number, should be 4.5

x) Page 16, Section 4.2 (to be renumbered as 4.5), this section only describes the VVM thermal model, and a reference should be added to the FW docket for the MPC and basket thermal models

xi) Page 16, Section 4.2 (to be renumbered as 4.5), in the second paragraph, "k-co," should be "k-ω"

xii) Page 17, Section 4.2 (to be renumbered as 4.5), item 1, delete the first "higher" from the last sentence

xiii) Page 18, Section 4.2 (to be renumbered as 4.5), item 2, the reference for soil temperature should be FSAR Table 2.3.6

xiv) Page 18, Section 4.2 (to be renumbered as 4.5), in the paragraph after item 3, "HI-TORM" should be corrected to "HI-*S*TORM"

xv) Page 18, Section 4.6, the description of the thermal evaluation states that the storage scenarios assume a sea level ISFSI. This is incorrect; the thermal evaluations have been performed up to an elevation of 1500 ft, which is documented in FSAR Section 4.4.7. Please modify the paragraph to state that site-specific evaluations are required if location elevation is above 1500 ft.

xvi) Page 18, Section 4.6, in the paragraph that states "The applicant calculated the MPC..." the last sentence should refer to FSAR Table 2.3.5, instead of FSAR Table 2.3.

xvii) Page 18, Section 4.6, in the last paragraph, suggest replacing the word "error" with "uncertainty," in the first sentence. As written, the reader may think there are errors in the result, which contradicts the conclusions made in Section 4.9.

xviii) Page 20, Section 4.3 should be 4.7

xix) Page 20, Section 4.3 (renumbered as 4.7), states that "the applicant incorporated by reference all short-term operations..." This is incorrect, since explicit thermal analysis of

vacuum drying condition and normal onsite transfer using HI-TRAC VW were performed to address the thermal RAIs. These evaluations have been explicitly included in Section 4.5 of the UMAX FSAR. The other short term operation thermal models are still incorporated by reference.

xx) Page 20, Section 4.4 should be 4.8 (including following sections and subsections).

e) Section 5

i) Page 23, there are two Section 5.1 headings shown, suggest renumbering.

ii) Page 23, Section 5, suggest adding a reference to the HI-STORM FW docket which describes the details of the MPCs and their confinement.

f) Section 6

i) Page 25, Section 6.3, in the 3rd paragraph, starting "The HI-STORM UMAX VVM is..." remove "thick-walled" before "steel containers," and change "represents" to "represented"

ii) Page 26, Section 6.5, the last sentence should be edited to say, "*The* dose rates profiles across the lid and the ISFSI pad *is* provided in FSAR Tables ***5.4.2 and 5.4.3.***"

iii) Page 27, Section 6.5.3, change "a range of typical ISFSIs" to "***on contact, at 1m, and at 100m distance.***" Also change "Tables 5.1.1, and 5.1.2," to "***Tables 5.1.1, 5.1.2, and 5.1.3.***"

g) Section 7

i) No comments

h) Section 8

i) Throughout the section "Metamic HT" should be "Metamic-HT"

ii) Page 30, the paragraph starting with "The HI-STORM UMAX Canister..." identifies Metamic-HT as a new material not previously evaluated by the staff for storage. This is not correct, since Metamic-HT was evaluated and approved for the HI-STORM FW. Please revise this paragraph accordingly.

iii) Page 30, Section 8.1.1, suggest referencing the HI-STORM FW in this section since the baskets were approved for use in that docket.

iv) Page 31, Section 8.1.1, the last sentence should read, "The staff found this to ***be*** in accordance with..."

v) Page 31, Section 8.1.2, the paragraph that starts, "Although the CEC..." refers to "foundation anchor housings," but the UMAX system does not contain foundation anchor housings. Please delete this sentence.

vi) Page 32, Section 8.1.4, the last sentence of the first paragraph states that the interior of the CEC and thickness test will be performed once every 20 years. However, Appendix B, Section 3.6 states that the test will be performed on only the VVM determined to be most vulnerable to corrosion. Please clarify this in the SER.

vii) Page 34, Section 8.1.6, the first line references "10 CFR Part 71 transportation CoCs," should this be "10 CFR Part 72 storage CoCs"?

i) Section 9

i) Page 36, Section 9.1 – the first sentence should read "The HI-STORM UMAX ***and*** HI-STORM FW..."

ii) Page 37, F9.6 – this finding refers to Section 11 of the SER for operational restrictions, is this the intended reference? Should it be Section 11 of the FSAR?

iii) Page 37, F9.2, describes a bolted closure plate; and there is no bolted closure plate in the UMAX system.

j) Section 10

i) No comments

k) Section 11

i) Page 37, Section 11, states that accident analyses are evaluated in sections 3 through 9 and 11. The "and 11" should be removed, since this is section 11.

l) Section 12

i) Page 37, Section 12.1, the last sentence should read, "The evaluation is based on information provided by the applicant in the HI-STORM ***UMAX*** Canister Storage System..."

m) Section 13

No comments

n) Section 14

No comments

2) CoC

3) CoC Appendix A

a) Table of Contents – after "2.0 NOT USED" the 2.0-1 should be deleted

b) SR 3.1.2, Page 3.1.2-2, the temperature difference between outlet duct and ambient temperature should be 87°F for MPC-37

4) CoC Appendix B

a) Section 2.1.2 – the first sentence should refer to "Figures 2.3-1 through 2.3-7 and 2.3-***10***" instead of 2.3-12 for the MPC-89

b) Table 2.1-1 (page 4 of 4), in item II.B the reference should be to Figure 2.3-10 instead of 2.3-12

c) App B, Section 3.4, item 9 - taken out of context, there could be confusion on the distance from the ISFSI where excavation activities were permitted versus which need a license amendment. Words should be added to clarify the distances involved, suggest using the "Space B" and "Space D" terminology from Figure 3-1.

d) Table 3-4, the fourth row should be revised to say:

Rebar Size* and Layout* ***(nominal)***	#11 @ 9" each face, each direction

This will ensure consistency between the CoC and FSAR (Table 2.3.2)