

**Request for Additional Information  
First Batch**

**Docket No. 72-1032  
Certificate of Compliance No. 1032  
Amendment No. 10 to the HI-STORM Flood/Wind  
Multipurpose Canister Storage System**

The staff identified additional information needed in connection with its review of the application of Amendment No. 10 to the Certificate of Compliance (CoC) No. 1032 for HI-STORM Flood/Wind (FW) Multipurpose Canister Storage System as provided in the request for additional information (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 Title 10 of the *Code of Federal Regulations* (10 CFR), Part 72.

**Thermal RAI**

**RAI 5-1** Explain how a calculated temperature difference between the average overpack air outlet temperature and independent spent fuel storage installation (ISFSI) ambient temperature would be used, for overpacks installed with temperature monitoring equipment.

Section 4.4.8 of the final safety analysis report (FSAR) states that for overpacks installed with temperature monitoring equipment, the difference between the average overpack air outlet temperature and ISFSI ambient temperature shall be computed. However, the FSAR does not include additional clarification of how this temperature difference is used for safety determination. Also, the FSAR does not include a numerical value that should be used as acceptable criteria.

The staff needs this information to have assurance predicted temperatures remain below allowable limits during long-term storage.

This information is needed to determine compliance with 10 CFR 72.236(b), and 72.236(f)

**RAI 5-2** Clarify what rationale is used for not providing an experimental test model to determine the technical adequacy of HI-STORM FW Extended Configuration thermal design.

Section 4.II.4.3 of the FSAR states that the rationale for not requiring an experimental test model provided in FSAR section 4.3 remains applicable in its entirety. However, the FSAR does not seem to provide this information. The staff needs this information to determine the adequacy of predicted thermal results to make sure no thermal limits would be exceeded during normal storage conditions.

This information is needed to determine compliance with 10 CFR 72.236(b), and 72.236(f)

- RAI 5-3** Provide analysis results that demonstrate HI-STORM FW standalone and Extended Configuration allowable temperature limits will not be exceeded during normal conditions of storage, for the case when normal rain would block inlet vents, and the blockage could go undetected for long periods of time. Otherwise, explain how any blockage caused by accumulated rain would be cleared, to allow normal air flow through the cask air passages.

When reviewing the cask design drawings of the HI-STORM FW standalone and Extended Configuration, the staff noticed that the inlet vents are located about 3-4 feet from ground level, which could create a low point in the internal ventilation flow path below the height of the inlet vents. Previous HI-STORM FW designs show that all inlet vents are at ground level which allows any rainwater that could enter the system to drain out of the inlet vents. With the new design of the inlet vents, it does not seem possible (without user actions) to remove rainwater or flood water from the lower portion of the ventilation flow path. A cask user would not realize rainwater has accumulated in the bottom of the cask, unless the cask is instrumented with temperature monitoring equipment. Therefore, the blockage caused by accumulated rain could go undetected for long periods of time, such as the allowable normal temperature limits could be exceeded. The staff is aware that the applicant has performed a full-blockage event of the inlet vents. However, for that event, the applicant assumed a transitory situation that directs the cask use to perform some actions to correct the problem. However, a blockage or air passages, caused by normal rain could go undetected for a long time, possibly exceeding normal allowable temperature limits. The staff needs this information to determine the adequacy of predicted thermal results to make sure no thermal limits would be exceeded during normal storage conditions.

This information is needed to determine compliance with 10 CFR 72.236(f)

### **Operating Procedures and System RAI**

- RAI 11-1** Identify and provide the licensing drawings, materials information, and analysis parameters applicable to the important-to-safety (ITS) Redundant Closure Lid mentioned in the proposed FSAR section 9.II and listed in table 9.II.2 for the lower cask body. Identify the maximum period of time for which the lid is designed to remain in place on the lower cask body prior to upper cask installation. Provide a justification as to why the Redundant Closure Lid is not included on the inspection checklist in FSAR table 9.II.2.3.

FSAR section 9.II table 9.II.2.1 describes the ITS Redundant Closure Lid as a "temporary lid to confine the lower cask body...while the upper cask body is either loaded or unloaded." The physical details of this lid, including its materials of construction and attachment details do not appear to have been provided in the FSAR, nor have the associated analyses for what loadings the lid is designed to withstand. It does not appear to be explicitly stated in the FSAR that the HI-STORM Extended Configuration System is installed in pairs; therefore, it seems possible that a lower cask may be installed during one loading campaign while

the upper cask may be installed months or years later in a future campaign, thus, necessitating that the extent of the temporary nature of the lid's installation be clarified. Finally, since the Redundant Closure Lid appears to be unique to the Extended Configuration System, it seems appropriate that it appear on the inspection checklist in table 9.II.2.3.

This information is required to satisfy the requirements of 10 CFR 72.236(l).

**RAI 11-2** During steps 22, 24, and 25, provided in the FSAR section 9.II.2.6, "Placement of HI-STORM FW Extended Configuration into Storage," and steps 1 to 3 of FSAR section 9.II.4.2, "HI-STORM FW Extended Configuration Recovery from Storage," the upper cask and the lower cask appear to be in unanalyzed conditions because FSAR section 12.II.2.1 states that a non-mechanistic tipover evaluation is not required for the HI-STORM FW Extended Configuration. Explain how this is the case when upper and lower casks are not anchored during "transitional" conditions, i.e., where they are not yet fully installed or not engaged with a transporter lifting device.

Step 22 indicates that the upper cask body is to be positioned "near to" the HI-STORM FW lower cask body on the ISFSI pad. It is not clear whether the upper cask is still engaged with the transporter lifting device at the point it is placed on the ISFSI pad "near" the lower cask. If it is on the ISFSI pad but not engaged with the transporter lifting device and a natural phenomenon event, (e.g., a seismic event or tornado missile strike), were to occur, sliding or tipping of the upper cask may occur, allowing it to collide with the lower cask, which would be an unanalyzed condition. Clarify whether the upper cask is still engaged with the transporter lifting device during this step. Steps 24 and 25 indicate that the upper cask body is to be positioned on top of the HI-STORM FW lower cask body before and during the bolting process of the upper cask to the lower cask. It is not clear whether the upper cask is still engaged with the transporter lifting device prior to and for the duration of the bolting process or whether an ancillary stability restraint device is put in place. If neither were the case and a natural phenomenon event occurred, it is possible that the unbolted or partially-bolted upper cask would not remain in its original position on top of the lower cask, resulting in an unanalyzed condition. Explain how stability is ensured for the upper cask while it is located on top of the lower cask, prior to and during the bolting process. Steps 1 to 3 of FSAR section 9.II.4.2 describe the disassembly of the Extended Configuration System on the ISFSI pad for MPC retrieval. Step 1 instructs that all bolts at the base of both upper and lower casks be disengaged simultaneously, potentially creating an unanalyzed condition. Explain how these potential stability issues will be managed for Steps 1-3. Finally, the procedure does not discuss transfer of the lower cask body; explain how this will be managed.

This information is required to satisfy the requirements of 10 CFR 72.236(l) and 72.236(m).

**RAI 11-3** Verify whether “as required” is intended in step 9 of SAR section 9.II.2.6.

For SAR section 9.II.2.6 step 9, the words “as required” at the end of the instruction to secure the lower cask to the ISFSI pad seem to be erroneous, as in order for the Extended Configuration System to perform as designed, the anchorage of the lower cask is necessary.

This information is required to satisfy the requirements of 10 CFR 72.236(l).