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

September 3, 2019

Ms. Joyce Tomlinson
Adjunct Licensing Manager
Holtec International
Holtec Technology Campus
1 Holtec Blvd.
Camden, NJ 08104

SUBJECT: AMENDMENT NO. 5 TO CERTIFICATE OF COMPLIANCE NO. 1032 FOR THE HI-STORM FLOOD/WIND MULTIPURPOSE CANISTER STORAGE SYSTEM – REQUEST FOR ADDITIONAL INFORMATION

Dear Ms. Tomlinson:

By letter dated June 15, 2018, [Agencywide Documents Access and Management System (ADAMS) Accession No. ML18179A100], as supplemented by letter dated April 1, 2019 (ADAMS Accession No. ML19108A081), April 30, 2019 (ADAMS Accession No. ML19127A267), and June 14, 2019 (ADAMS Accession No. ML19177A239), Holtec International submitted to the U.S. Nuclear Regulatory Commission (NRC) an application for Certificate of Compliance No. 1032, Amendment No. 5, for the HI-STORM Flood/Wind (FW) Multipurpose Canister Storage System.

On June 19, 2019, the NRC issued a letter accepting this amendment application for review and provided the review schedule. Subsequently, Holtec requested an effective date of June 2020 for this amendment to support Oyster Creek decommissioning. After evaluating the workload, the NRC staff reprioritized casework and revised the schedule. The new schedule allows the staff to complete a draft certificate of compliance and safety evaluation report for rulemaking by the end of 2019, based on having only one request for additional information (RAI) and Holtec satisfactorily responding to the RAI by October 31, 2019.

The NRC staff reviewed your application and determined the need for additional information as identified in the RAI in the enclosures to this letter. We request that you provide the response to the RAI within 30 days from the date of this letter. If you are unable to meet this deadline, please notify us in writing, within two weeks of receipt of this letter, of your new submittal date and the reasons for the delay.

The staff also noticed some inconsistencies between the applications for Amendments No. 4 and 5. For example, Table 5.0.3 was added in both Amendments No. 4 and 5, and it is not clear whether this is a numbering issue or the Table 5.0.3 in Amendment No. 5 is replacing the new Table 5.0.3 in Amendment No. 4. While the reviewers only focus on the proposed changes in Amendment No. 5, these inconsistencies are confusing and could cause extra time in review. When you respond to this RAI, please submit a complete set of proposed changes in Amendment No. 5, which incorporates RAI responses and proposed changes in Amendment No. 4.

Please reference Docket No. 72-1032, CAC No. 001208, and EPID: L-2018-LLA-0031 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.: 001208
EPID: L-2017-LLA-0031

Enclosures:
1. RAI
2. RAI (Proprietary)

SUBJECT: AMENDMENT NO. 5 TO CERTIFICATE OF COMPLIANCE NO. 1032 FOR THE HI-STORM FLOOD/WIND MULTIPURPOSE CANISTER STORAGE SYSTEM – REQUEST FOR ADDITIONAL INFORMATION, DOCUMENT DATE: September 3, 2019

ADAMS PKG No.: ML19247B716 **LTR: ML19247B718**
ENCL 2: ML19247B719 *concur via email

OFFICE:	DSFM	DSFM	DSFM	DSFM	DSFM
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DATE:	8/28/2019	8/29/2019	8/16/2019	8/16/2019	8/28/2019
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DATE:	8/12/2019	8/16/2019	8/28/2019	8/12/2019	9/3/2019

Request for Additional Information

Docket No. 72-1032
Certificate of Compliance No. 1032
Amendment No. 5 to the HI-STORM Flood/Wind
Multipurpose Canister Storage System

General Information RAI

1-1 Clarify the change to the definition of repaired/reconstituted fuel assembly and provide the definition for damaged fuel isolator (DFI) and blended low enriched uranium (BLEU) in the final safety analysis report (FSAR) Glossary.

The Summary of Proposed Changes states that Certificate of Compliance (CoC) Appendix A, definition of Repaired/Reconstituted Fuel Assembly has been modified. However, it does not seem that the definition has been changed in the application.

The Summary of Proposed Changes also states that the definitions of DFI and BLEU are added to Appendix A and FSAR. Appendix A was updated with the two definitions; however, the FSAR Glossary does not have the definition of DFI and BLEU.

The staff needs this information to determine if the amendment application meets the regulatory requirements of 10 CFR 72.236.

Structural RAI

3-1. Provide the following information regarding the addition of the four new fuel types, 10x10I, 11x11A, 7x7C, and 8x8G:

1) What is the weight of each new fuel type? Is the total weight of the storage system with the additional weight of new fuel type still bounded by the maximum allowable weight of the storage system?
2) Is the location of the center of the gravity (CG) of the storage system changed by the addition of the new fuel type? If the location of the CG is changed, provide the location of the CGs before and after the addition of the new fuel type.

The applicant proposed to add four new fuel types to the approved contents in CoC No. 1032. However, no information (e.g., CG, weight, etc.) is presented in the application. The staff needs this information to determine compliance with the requirements of 10 CFR 72.236(g) and (l).

3-2. Provide the following information regarding the addition of DFI:

1) What is the weight of the DFI? Is the total weight of the storage system with the additional weight of the DFI still bounded by the maximum allowable weight of the storage system?

2) Is the location of the CG of the storage system changed by the addition of the DFI? If the location of the CG is changed, provide the location of the CGs before and after the addition of the DFI.
3) Are there any interactions between the DFIs and the fuel assemblies during the postulated accident events? If there are interactions during the accident events, what are the maximum induced impact or contact stress between them and a factor of safety with respect to an appropriate code (e.g., ASME Code, Section III)?
4) Explain how the DFIs are installed and secured in a storage system to perform its intended functions during the accident events.

The applicant proposed to add DFIs in the multi-purpose dry storage canister (MPC) system. However, no analysis or information for the DFI is presented in the application. The staff needs this information to determine compliance with the requirements of 10 CFR 72.236(l).

3-3. Provide the following analyses:

1) Appendix E - Response of HI-TRAC VW Version V to Tornado Wind Load and Large Missile Impact.
2) Appendix F - Missile Penetration Analysis for HI-TRAC VW Version V.
3) Supplement No. 23 - HI-TRAC VW Version V Bottom Lid Analysis.
4) Supplement No. 24 - HI-TRAC VW Version V Water Jacket Analysis.

The applicant proposed to add two versions of the standard HI-TRAC VW, which are Version V and Version V2. The applicant provided the analyses for the HI-TRAC VW Version V2 in the application. However, no analyses for the HI-TRAC VW Version V are presented in the application. The staff needs this information to determine compliance with the requirements of 10 CFR 72.146(a) and 72.236(b) and (l).

Thermal RAI

4-1. Provide calculations and analysis results for cases when cyclic vacuum drying is used.

Section 4.5.2.3 of the FSAR states: “If the peak cladding temperature cannot be maintained below the ISG-11, Revision 3 limit under a vacuum condition of infinite duration, cycles of vacuum drying resulting in heatup followed with cooling by helium are performed until drying criteria specified in Chapter 9 is achieved”. The applicant provided a summary of the methodology and assumptions for cyclic vacuum drying. However, the application does not include any calculations or analysis results to show how the calculations are performed for multiple cycles. The staff needs this information to verify cyclic vacuum drying will not result in temperatures exceeding the criteria specified in ISG-11, Revision 3 for multiple drying cycles.

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

Shielding RAI

6-1 Provide the fuel parameters that characterizes the radiological source term for the fuel assemblies allowed for loading in the HI-STORM FW storage system to be included in Appendix B of the CoC (Technical Specifications).

To assure that the cask shielding design is adequate for the allowable contents, it is imperative to include fuel parameters, in the Technical Specifications, that can adequately define the source terms which include the strengths and spectra of the neutrons and gammas emitted from the spent fuel. The applicant has developed a set of equations in Section 2.1.6.1 of the SAR to define the fuel assemblies allowable for loading based on the shielding design of the dry storage system. The staff requests that the applicant adds this set of equations (including the necessary coefficients) to Technical Specification, Appendix B of the Certificate of Compliance, so that the source terms of the spent fuel is directly correlated to the characteristics of the allowable contents.

This information is needed for the staff to determine that the cask system is capable of meeting regulatory requirements of 10 CFR 72.234(a) and 72.236(d). Section 72.234(a) of 10 CFR requires that the cask design meets the requirements of 72.236, and 72.236(d) requires that cask design is capable of meeting the dose limits set forth in 72.104 and 72.106. In accordance with the regulatory requirements of 10 CFR 72.236(a), specifications must be given for the spent fuel to be stored in the cask.

6-2 Provide the limiting loading pattern and source terms used for calculating limiting dose and dose rates for the HI-TRAC VW, HI-TRAC VW Version V2, and the overpack of the HI-STORM FW storage system. Also, provide the burnup and cooling times used to determine these source terms for all locations for the MPC-37 and MPC-89.

Within the HI-STORM FW/HI-TRAC VW, there are multiple loading patterns and multiple regions within these loading patterns and multiple decay heat values allowed within each region, and multiple burnup/enrichment combinations that can be stored for each decay heat. The staff requests that the applicant provide the loading pattern, and source terms and burnup/enrichment combinations it used to determine the limiting dose and dose rate for the MPC-37 and MPC-89 in Tables 5.1.1, 5.1.2a, 5.1.2b, 5.1.4b, 5.1.5 (5.1.7, 5.1.3), 5.1.6a (5.1.8a), and 5.1.6b (5.1.8b) of the SAR. The staff needs this information to verify the source term and dose and dose rates calculated by the applicant is reasonably bounding and appropriately reported within these tables. The staff requests that the applicant include this information for any new tables that may be added in responding to other RAIs, such as RAI 6-8.

This information is needed for the staff to determine that the cask system is capable of meeting regulatory requirements of 10 CFR 72.236(d) which requires a dry storage system meets the dose limits as prescribed in 10 CFR 72.104 and 106.

6-3 See Enclosure 2.

6-4 Update Chapter 9 to describe the method for selecting allowable fuel assemblies.

Section 72.146(a) of 10 CFR states that the applicant must establish measures to correctly translate design basis requirements into appropriate procedures.

The applicant provides a method for determining the required cooling times for a given burnup and initial enrichment for the allowable new spent fuel contents in the HI-STORM FW system. The staff requests that the applicant update Section 9.2.3 of the SAR to describe the method for the correlations from Section 2.1.6.1 of the SAR and the loading patterns from Section 1.2.3 of the SAR. The staff requests that the applicant specifically address the following concerns:

1) The referenced decay heat values for the minimum cooling time and enrichment correlations in Chapter 2 of the SAR do not match those in the loading patterns from Section 1.2.3 of the SAR.

2) Clarify the minimum allowable cooling time as there are multiple minimum cooling times used throughout the SAR. Specifically, the staff observed that cooling time in Table 2.1-1 of CoC Appendix B (TS), the cooling time calculated from the correlation in Section 2.1.6.1 of the SAR, and the cooling times in Tables 5.0.3, 5.0.4a, b and c of the SAR are different. For some burnup levels, the correlation in Section 2.1.6.1 of the SAR gives a minimum cooling time that is shorter than the cooling time used in the Tables in Chapter 5 of the SAR, which is shorter than the cooling time allowed by Table 2.1-1 of the TS. For example, at 10,000 MWd/MTU, the correlation in Section 2.1.6.1 of the SAR gives a minimum cooling time of 0.42 years, Table 5.0.3 of the SAR rounds this up to 1 year and Table 2.1-1 of the SAR has a minimum cooling time for the MPC-37 of 2 years. The applicant needs to clarify that the longest cooling time of the three (in this case 2 years) is what is allowed.

This information is needed for the staff to determine that the cask system is capable of meeting regulatory requirements of 10 CFR 72.236(d) which requires a dry storage system meets the dose limits as prescribed in 10 CFR 72.104 and 106.

6-5 Revise the dose and dose rate evaluations to include the particle (both neutron and gamma) streaming effects through the annulus between the HI-TRAC VW and the MPC, or update Chapter 9 of the SAR to include the lead snakes needed to reduce streaming effects for all applicable MPCs.

Note to SAR Table 5.1.1, "*Maximum Dose Rates from the HI-TRAC VW for Normal Conditions MPC-37 Design Basis Fuel Regionalized Loading Based on Figures 1.2.3 through 1.2.5*," as well as Tables 5.1.2a and b, states: *"Streaming may occur through the annulus. However, during handling/operations the annulus is filled with water and lead snakes are typically present to reduce the streaming effects. Further, operators are not present on top of the transfer cask."* These statements are inconsistent with those from Chapter 11, "Radiation Protection," and Chapter 9, "Operating Procedures." The staff did not find in Chapter 9 where lead snakes were to be used to reduce streaming effects. The staff requests that the applicant revise the dose and dose rate evaluations to include particle (both gamma and neutron) streaming effects through the annulus or update Chapter 9 of the SAR to include the lead snakes as a required supplemental shielding device to reduce the radiation level on the HI-TRAC VW. As the new analysis represents bounding versus representative source terms and the new loading patterns are limiting over previously approved ones for evaluating external dose and dose rate as referenced in Chapter 11 of the SAR, the staff is requesting this information to be sure that the maximum dose rates in Table 5.1.1 of the SAR correctly reflect the maximum

dose rates or that required supplemental shielding is appropriately specified for a bounding source term.

This information is needed for the staff to determine that the cask system is capable of meeting regulatory requirements of 10 CFR 72.236(d) which requires a dry storage system meets the dose limits as prescribed in 10 CFR 72.104 and 106.

6-6 Provide information on how the non-fuel hardware (NFH) is considered within the fuel qualification analyses.
The applicant updated Table 2.1.1a of the SAR to state that the minimum cooling time for non-fuel hardware within the MPC-37 is reduced from 3 to 2 years. The staff requests that the applicant provide information on how this change to the allowable non-fuel hardware was considered within the shielding evaluation. The applicant did not submit any changes to Section 5.4.4 of the SAR which discusses how non-fuel hardware was considered within the evaluation. This section states that: *"All dose rates with NFH in this chapter therefore assume BPRA in every assembly." "… burnup and cooling time combinations for BPRAs in Table 2.1.25 of the HI-STORM 100 FSAR are conservative."* Table 2.1.25 of the HI-STORM 100 FSAR Revision 7 (ML082401614) states that the minimum cooling time used for the BPRAs is 3 years, and 4 years for NSA (neutron source assembly), and 5 years for Control Components and APSRs. Based on the dose rate tables within the SAR, most of the dose rate for the HI-TRAC VW, HI-TRAC VW Version V2, and the HI-STORM FW overpack come from the gamma contributions making the presence of non-fuel hardware significant for estimating dose rates. In addition, Co-60 is a significant radiation source for non-fuel hardware, which has a half-life of 5.27 years and would be a significant gamma source for the cooling times allowed. As such, the staff is concerned that the gamma source from non-fuel hardware may impact the required minimum cooling times of the fuel.

This information is needed for the staff to determine that the cask system is capable of meeting regulatory requirements of 10 CFR 72.236(d) which requires a dry storage system meets the dose limits as prescribed in 10 CFR 72.104 and 106.

6-7 Clarify the additional fuel density for the BWR fuel region for the calculations involving the XL lid.

The applicant updated Table 5.3.2 of the SAR to include different BWR fuel region compositions for the calculations involving the XL or standard lid design. Although the additional composition for the XL lid is lower in density, and may produce less self-shielding, the applicant did not state the reason for this change in density. If it is because the applicant used a different design basis fuel assembly for these evaluations, a fuel assembly lower in mass would produce a lower source term. The applicant needs to explain why there are different BWR fuel region mixtures for calculations involving different lids as the allowable contents for these two lids are the same. If the designs with the different lids are meant to allow different fuel assembly types, this should be specified in the TS.

This information is needed for the staff to determine that the cask system is capable of meeting regulatory requirements of 10 CFR 72.236(d) which requires a dry storage system meets the dose limits as prescribed in 10 CFR 72.104 and 106.

6-8 State why accident condition dose rates for MPC-89 use the loading pattern from Figure 1.2.7 of the SAR rather than the loading pattern from Figure 1.2.6 of the SAR.

The applicant proposes two loading patterns for the MPC-89, Figures 1.2.6 and 1.2.7 of the SAR. Table 5.1.4b of the SAR contains the accident condition dose rates for the MPC-89 based on the loading pattern in Figure 1.2.6 of the SAR. However, based on normal condition dose rates in Tables 5.1.2a and 5.1.2b of the SAR, the MPC-89 with the loading pattern in Figure 1.2.7 of the SAR has higher dose rates. The staff requests that the applicant explain why accident condition dose rates are based on the loading pattern in Figure 1.2.6 rather than 1.2.7 of the SAR.

This information is needed for the staff to determine that the cask system is capable of meeting regulatory requirements of 10 CFR 72.236(d) which requires a dry storage system meets the dose limits as prescribed in10 CFR 72.106.

6-9 Revise the maximum allowable Technical Specification dose rate at the lid or the location for the measurement so that they are consistent and appropriate for all HI-STORM FW lids.

The maximum dose rate allowed by TS in Section 5.3.4.a of Appendix A of the CoC is in line with the maximum dose rate evaluated by the applicant in Tables 5.1.5, 5.1.6a, and 5.1.6b of the SAR which is located at the “mid” section of the lid above the vertical section of the outlet vent. However, the location at which the measurement is required to be taken does not correspond to this location where the TS dose limit is calculated. Section 5.3.8 of Appendix A of the CoC states: *“A dose rate measurement shall be taken on the top of the OVERPACK at approximately the center of the lid.”* Tables 5.1.5, 5.1.6a and 5.1.6b of the SAR shows that for the “center” of the lid or the “outer” part of the lid (as defined in the notes to the above tables), the evaluated dose rate is less than a third of the TS limit. The applicant needs to modify Section 5.3.4.a of CoC Appendix A to either reduce the maximum allowable dose rate at the lid to be in line with the dose rate values at the “center” according to Tables 5.1.5, 5.1.6a, and 5.1.6b of the SAR, or modify the location at which the measurement is taken as specified by Section 5.3.8.a of CoC Appendix A to coincide with the location of the maximum dose rate values from Tables 5.1.5, 5.1.6a, and 5.1.6b of the SAR (i.e. the “mid” section of the lid above the vertical section of the outlet vent).

This information is needed for the staff to determine that the cask system is capable of meeting regulatory requirements of 10 CFR 72.236(d) which requires a dry storage system meets the dose limits as prescribed in 10 CFR 72.104 and 106.

6-10 Justify the source term used for the shielding design of the HI-STORM FW storage system for the MPC-89 canister under design basis accident conditions.

The applicant shows the accident condition source terms for the MPC-89 in Tables 5.2.5 and 5.2.14 of the SAR for gammas and neutrons, respectively. This includes a single burnup and cooling time, and the corresponding enrichment from Tables 5.0.4a and 5.0.4b of the SAR. The current amendment proposes two regionalized loading patterns for the MPC-89. The single burnup/cooling time/enrichment combination is not bounding for all source terms allowed by the loading patterns in Figures 1.2.6 and 1.2.7 of the SAR. Per the equation in Section 2.1.6.1 of the SAR and the correlation coefficients in

Table 2.1.9 from the SAR, the cooling time is not conservative for the locations with allowable decay heat of 0.32, 0.5, and 0.75 kW.

This information is needed for the staff to determine that the cask system is capable of meeting regulatory requirements of 10 CFR 72.236(d) which requires a dry storage system meets the dose limit as prescribed in 10 CFR 72.106.

6-11 See Enclosure 2.

6-12 See Enclosure 2.

6-13 See Enclosure 2.

6-14 Justify the higher Co-60 level in BLEU fuel.

The staff is not aware of any additional fission products or actinides that decay to Co-60 from the down blending of higher enriched uranium or there is a special need for the fuel assemblies made from BLEU fuel to have higher Co-60 in the fuel hardware. Therefore, the staff is requesting that the applicant explain the additional source or Co-60 so that the staff may evaluate the source term.

This information is needed for the staff to determine that the cask system is capable of meeting regulatory requirements of 10 CFR 72.236(d) which requires a dry storage system meets the dose limits as prescribed in 10 CFR 72.104 and 106.

6-15 See Enclosure 2.

6-16 See Enclosure 2.

Materials RAI

8-1. Provide the following additional information on the HI-TRAC Version V and Version V2 transfer casks described in FSAR Section 1.2.1.3:

1) Licensing drawing of the components with dimensions and tolerances for the HI-TRAC Version V transfer cask.
2) Parts list with material specifications and quality category information for the HI-TRAC Version V transfer cask.
3) Material temperature limits (FSAR Table 2.2.3) for HI-TRAC Version V and Version V2 transfer cask components.

The applicant references the HI-TRAC Version V transfer cask Drawing 11006 in FSAR Section 1.5, but the drawing and the parts list with material specifications and quality category information were not provided in the amendment request. FSAR Table 2.2.3 contains information on component temperatures for normal conditions, short-term events, and off-normal and accident conditions; however, it is unclear if the existing entries for the HI-TRAC VW component temperature limits are applicable to the HI-TRAC Version V and Version V2.

The staff needs this information to proceed with its review to determine if the amendment application meets the regulatory requirements of 10 CFR 72.236(b).

8-2. Provide cladding, MPC component and HI-TRAC Version V component temperatures for a blocked vent accident for the HI-TRAC version V transfer cask.

The applicant provided information on cladding, HI-TRAC and MPC component temperatures for blocked vents on the HI-TRAC Version V2 in Table 4.6.10. It is not clear from Table 4.6.10 (e.g., no footnote) or FSAR Section 4.6.2.7 whether the cladding and component temperatures calculated for the Version V2 bound the temperatures for the Version V. FSAR Table 4.6.7 which provides accident pressures for blocked vents on the Version V2 indicates, via a footnote, that the pressure values for the Version V2 bound the Version V. No such information is provided in Table 4.6.10.

The staff needs this information to proceed with its review to determine if the amendment application meets the regulatory requirements of 10 CFR 72.236(b), (c) and (f).

8-3. Provide the following information for the DFI described in FSAR Figure 1.2.9:

1) Licensing drawing with dimensions and tolerances in accordance with the guidance included in NUREG/CR-5502 (1998).
2) Material specifications and applicable design code for the component.
3) Allowable normal, off-normal, and accident temperature limits for the DFI consistent with the materials of construction and the applicable design code.

The applicant stated that the load bearing members of the DFI will be designed to satisfy Level D stress limits per ASME Section III, Appendix F and that the materials of construction would be stainless steel or nickel alloy and the safety class for the DFI is important to safety (ITS) Category C. The applicant did not provide a licensing drawing for the DFI, material specifications, or component temperature limits.

The staff needs this information to proceed with its review to determine if the amendment application meets the regulatory requirements of 10 CFR 72.236(b) and (g).

8-4. Provide the material specifications for the HI-TRAC Version V2 transfer cask Item #3, I-Piece, in FSAR Drawing 11283, Sheet 1 of 3.

FSAR Drawing 11283, Sheet 1 of 3, Additional Note #3 indicates applicable codes and standards are in FSAR Tables 1.2.6 and 1.2.7. HI-STORM FW Revision 5, Table 1.2.6 (ML17179A444) states that the certification of material references the stipulations of NF-2130 (b) and (c) and explains that materials for ITS components shall be certified to the applicable Section II of the ASME Code or equivalent ASTM Specification. FSAR Table 1.2.7 indicates material specifications are ASME Section II. The bill of materials identifies the material as NITRONIC 60 which is not an ASME or ASTM specification; it is a trade name.

The staff needs this information to proceed with its review to determine if the amendment application meets the regulatory requirements of 10 CFR 72.236(b).

Radiation Protection

11-1 See Enclosure 2.

11-2 Compare the operation of decontaminating and fastening the neutron shield canister (NSC) to the HI-TRAC VW Version V2 to that of filling the neutron shield of the HI-TRAC VW in order to justify dose estimates in Table 11.3.2 of the SAR.

Page 1-45 of the SAR states that for the Version V2 transfer cask that the neutron shield cylinder is removable and *"…the detachable NSC is fastened to the cask body at the earliest point in the loading evolution when the lift capacity and geometric constraints are no longer controlling."* Page 9-8 of the SAR states: *"For HI-TRAC VW Version V2, following decontamination, HI-TRAC VW is loaded into the Neutron Shield Cylinder (NSC) Assembly in the preparation area and attached to the NSC via fasteners/bolts."* Section 9.2.4 of the SAR, step 1.j states: *"For HI-TRAC VW Version V2, the HI-TRAC is placed in the NSC assembly and attached to the NSC using fasteners after decontamination of the HI-TRAC outer surfaces."*

In RSI 11-1, the staff requested that the applicant update SAR Chapter 11, "Radiation Protection," with revised doses to workers considering the HI-TRAC VW Version V2 loading procedures. The applicant listed some reasons why it believes that doses for the HI-TRAC VW Version V2 would be lower in dose and why updating the Table 11.3.2 of the SAR was not necessary. However, the applicant did not provide information sufficient for the staff to evaluate how the applicant considered the decontamination of and attaching of the neutron shield cylinder to the HI-TRAC VW Version V2, which would be different from filling the neutron shield for the previously approved HI-TRAC VW. The staff requests that the applicant provide comparison of the operation of decontaminating and fastening the NSC to the HI-TRAC VW Version V2 to that of filling the neutron shield of the HI-TRAC VW including locations of personnel and estimated time to complete the evolution so that it can determine if the loading operations and dose estimates in Table 11.3.2 of the SAR are appropriate for the HI-TRAC VW Version V2.

This information is needed for the staff to evaluate the capability of the cask system to control and limit occupational exposures within the limits in 10 CFR Part 20 and to meet the objective of maintaining exposures ALARA and to evaluate the capability of the cask system to meet dose limits in 10 CFR 71.104 and 106 and to evaluate compliance with 10 CFR 72.236(d).

11-3 Update Table 11.3.2 or Chapter 9 of the operating procedures to be consistent with the use of additional/auxiliary shielding.

Several steps in Table 11.3.2 of the SAR include additional and/or auxiliary shielding; however, Chapter 9 of the SAR does not state when and where the additional or auxiliary shielding is to be used. The staff requests that the applicant either update Table 11.3.2 of the SAR to include dose to workers when additional/auxiliary shielding is not used or include within the steps of Chapter 9 of the SAR where and when additional/auxiliary shielding is required.

This information is needed for the staff to evaluate the capability of the cask system to control and limit occupational exposures within the limits in 10 CFR Part 20 and to meet the objective of maintaining exposures ALARA and to evaluate the capability of the cask system to meet dose limits in 10 CFR 71.104 and 106 and to evaluate compliance with 10 CFR 72.236(d).