Nuclear Waste Partnership
An Amentum-led partnership with BWXT and Orano

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71-9305

July 20, 2021

ATTN: Document Control Desk
Director, Division of Fuel Management
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: REPORT PURSUANT TO 10 CFR 71.95

Dear Ms. Helton:

Nuclear Waste Partnership (NWP) LLC, on behalf of the U.S. Department of Energy Carlsbad Field Office (DOE/CBFO), submits this letter to report a condition pursuant to 10 CFR 71.95 regarding the use of the Type B packaging model number TRUPACT-III. This packaging operate under the U.S. Nuclear Regulatory Commission (NRC) Certificate of Compliance (CofC) Number 71-9305. During the shipment of contact-handled (CH) transuranic (TRU) waste to the Waste Isolation Pilot Plant (WIPP) from the Savanah River National Laboratory in Aiken, South Carolina, the requirements in Condition 12(b) of CofC No. 71-9305 were not followed in their entirety.

Following is a description of the events, reported in accordance with 10 CFR 71.95 (c):

(1) A brief abstract describing the major occurrences during the event, including all component or system failures that contributed to the event and significant corrective action taken or planned to prevent recurrence.

Seventeen CH-TRU waste shipments made between January 6, 2014, at 10:05 and October 9, 2020, at 16:20 originating from the Savanah River National Laboratory in Aiken, South Carolina, and bound for the WIPP Site in New Mexico were found to be noncompliant to condition 12(b) of CofC No. 71-9305.

Section 8.1.4.2.3 of the TRUPACT-III Safety Analysis Report (SAR) requires that the closure bolts for the lid to be torqued to 1,092 – 1,269 lb-ft, during the containment structure integrity helium leak testing, during the 5-year package maintenance activities. Additionally, Section 8.2.2.2.2 of the TRUPACT-III SAR requires the closure bolts for the lid to be torqued to 1,092 – 1,269 lb-ft during the annual maintenance helium leak testing activities for the main containment O-rings. Contrary to these requirements, the closure lid bolts were torqued to a value of 590 lb-ft during the helium leak testing activities during the annual and 5-year maintenance cycles for each of the six TRUPACT-III units in service. It should be noted that the required pre-shipment leakage rate tests delineated in Section 7.1.5 of the TRUPACT-III SAR were performed in complete compliance prior to every loaded Type B package shipment.

To ensure verbatim compliance with the TRUPACT-III SAR Sections 8.1.4.2.3 and 8.2.2.2.2 closure lid bolt torque values required during annual and 5-year maintenance activities and to preclude recurrence, the following interim corrective/preventative actions were implemented:

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- All six TRUPACT-III units have been removed from service.
- All six TRUPACT-III units are being brought back to the NWP maintenance subcontractor's facility to have the helium leak tests of the containment structure integrity and the main containment O-ring seal performed in accordance with the applicable sections of the SAR for those activities prior to being returned to service.

(2) A clear, specific, narrative description of the event that occurred so that knowledgeable readers conversant with the requirements of part 71, but not familiar with the design of the packaging, can understand the complete event. The narrative description must include the following specific information as appropriate for the particular event.

The NRC-issued CoC No. 71-9305 condition 12(b) states: "Each package shall be tested and maintained in accordance with Chapter 8 of the application, as supplemented." In the instances described above, the six TRUPACT-III units were not maintained in accordance with Chapter 8 of the SAR relative to the torque values applied to the closure bolts during the containment structure integrity and main containment O-ring seal helium leak test activities delineated in Sections 8.1.4.2.3 and 8.2.2.2.2 of the TRUPACT-III SAR for the time period identified above during the required annual and 5-year maintenance activity cycles.

(2)(i) Status of components or systems that were inoperable at the start of the event and that contributed to the event;

This criterion is not applicable to the events because there were no components or systems that were inoperable at the start of the events.

(2)(ii) Dates and approximate times of occurrences;

The shipments were made between January 6, 2014, at 10:05 and October 9, 2020, at 16:20.

(2)(iii) The cause of each component or system failure or personnel error, if known;

No components or systems failed.

(2)(iv) The failure mode, mechanism, and effect of each failed component, if known;

This criterion is not applicable to the events because no components failed.

(2)(v) A list of systems or secondary functions that were also affected for failures of components with multiple functions;

This criterion is not applicable to the events because no components failed.

(2)(vi) The method of discovery of each component or system failure or procedural error;

On May 20, 2021, the NWP maintenance subcontractor that performs the annual and 5-year maintenance activities for the TRUPACT-III self-identified during an annual helium leak test evolution of TRUPACT-III Unit #001. After the self-identification process, the subcontractor contacted NWP via telephone to discuss the discovery of the noncompliant closure lid torque value.

(2)(vii) For each human performance-related root cause, a discussion of the cause(s) and circumstances;

A review of the approved relevant subcontractor helium leak testing procedures clearly identified that the applicable torque value to be used to tighten the TRUPACT-III lid closure bolts for both of the annual and 5-year maintenance helium leak testing activities were in compliance with both Sections 8.1.4.2.3 and 8.2.2.2.2 of the TRUPACT-III SAR; however, the subcontractor work instructions used to prepare the TRUPACT-III for the annual and 5-year maintenance helium leak testing activities referenced a section of the DOE/CBFO-approved TRUPACT-III Operations Manual that allowed for a lower torque value to be applied. The torque value referenced the values implemented during empty packaging shipment activities (reference TRUPACT-III SAR Section 7.2.5.11).

Prior to January 1, 2014, all TRUPACT-III annual and 5-year helium leak testing activities were performed using the TRUPACT-III SAR required torque values when installing the closure lid for the required helium leak testing activities (as verified on multiple occasions by NWP Packaging group personnel). After January 1, 2014, the NWP subcontractor performing the Type B packaging maintenance activities, changed parent company owners. The change in parent companies instituted a new format for the work instructions used to direct the work on the floor. The new format moved away from using specific values (i.e., torque values from the SAR) and instead began referencing the specific portions of the DOE/CBFO TRUPACT-III Operations Manual. The DOE/CBFO Operations Manual had been reviewed for compliance with Chapters 7 and 8 of the TRUPACT-III SAR and found compliant by the NWP Packaging Group. During this time of changing work instruction format, the incorrect reference to the DOE/CBFO Operations Manual was cited; this error went unnoticed until May 20, 2021.

(2)(viii) The manufacturer and model number (or other identification) of each component that failed during the event; and

Manufacturer and model numbers associated with component failure are not applicable because no components failed.

(2)(ix) For events occurring during use of a packaging, the quantities and chemical and physical form(s) of the package contents.

A total of 17 TRUPACT-III shipments were affected by the events above, all of which contained contents that meet the applicable conditions of CoC 71-9305. A detailed listing of all quantities for each shipment can be provided upon request.

(3) An assessment of the safety consequences and implications of the event. This assessment must include the availability of other systems or components that could have performed the same function as the components and systems that failed during the event.

There were no systems or components that failed during the events. There were no safety consequences or implications of the events.

(4) A description of any corrective actions planned as a result of the event, including the means employed to repair any defects, and actions taken to reduce the probability of similar events occurring in the future.

In addition to the interim corrective actions identified in (1) above, the following corrective actions are planned/implemented:

- The NWP subcontractor work instructions have been revised to specifically state the required torque values for the TRUPACT-III closure lid bolts. These work instructions have been submitted to NWP for review and approval prior to authorization to proceed was granted.

- The NWP subcontractor work instructions have been revised to insert an NWP customer hold/witness point for the final closure lid bolt torque value verification immediately prior to performance of the annual and 5-year helium leak testing activities.

- The NWP Packaging group will perform a complete review of all applicable vendor procedures and documents (including work instructions) to ensure that each TRUPACT-III SAR mandated requirement reflected in Chapter 8, Section 8.2, "Maintenance Program," is being implemented as required in the NRC-issued CofC.

(5) Reference to any previous similar events involving the same packaging that are known to the licensee or certificate holder.

There have been no similar events related to helium leak testing of the TRUPACT-III during annual and 5-year maintenance activities.

(6) The name and telephone number of a person within the licensee's organization who is knowledgeable about the event and can provide additional information.

T.E. Sellmer, Manager, NWP, Packaging and Information Systems, (575) 234-7396 or (575) 302-7583.

(7) The extent of exposure of individuals to radiation or to radioactive materials without identification of individuals by name.

There were no exposures to individuals as a result of the event. All pre-shipment surveys satisfied the regulatory dose rate limits.

If you have any questions or require additional information regarding this report, please contact me at (575) 234-7396 or (575) 302-7583.

Sincerely,

TODD SELLMER (Affiliate) Digitally signed by TODD SELLMER (Affiliate) Date: 2021.07.19 16:26:01 -06'00'

T. E. Sellmer, Manager
Packaging and Information Systems

TES:clm

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