

**Request for Additional Information (Non-Proprietary)**  
**TN Americas LLC**  
**Docket No. 71-9301**  
**Model No. TNF-XI Package**

**2.0 Materials**

- 2-1 Provide the basis that pyrophoricity is prevented with Content 7.

Content 7 has scrap, and residues of incinerator ashes or earth, sand and residues from dissolution. Additionally, the aluminum impurity level is up to 5000 ppm in the uranium oxide powder. ASTM C753 limits 300 ppm of aluminum impurity. As the scrap is less than sub-mm (or scrap spherule radius of 0.10 cm) in size and may include aluminum, it is unclear whether the scrap is well inerted without moisture or oxygen to prevent potential pyrophoricity. Additionally, the applicant conservatively assumed in qualification at normal conditions that the mass loss of Bora resin is due to water evaporation. The applicant should justify that any water generated due to degradation of Bora resin or plastic bags will not react with powdered metals in the content, which may result in pyrophoric conditions.

This information is needed to determine compliance with the requirements of 10 CFR 71.43(d).

- 2-2 Confirm that flammable gases generated from potential thermolysis or radiolysis of Content 7 (e.g., Bora resin or plastic bags) will not compromise package safety.

In previous amendments, the applicant conducted thermal analysis of materials (e.g., Bora resin or plastic bags) and demonstrated materials (water) loss was minimal. The staff reviewed the analyses and concludes that the amount of flammable gases due to material loss is not a safety concern. For the current amendment, the applicant needs to confirm materials (water) loss for Content 7.

This information is needed to determine compliance with the requirements of 10 CFR 71.43(d).

**6.0 Criticality**

- 6-1 Clarify if [ ] is the intended content. If so, determine the combined quantity limits on fissile material and [ ] that meet the criticality safety requirements of 10 CFR 71.55 and 71.59.

In Section B.6.3.5 of the Safety Analyses Report (SAR), the applicant states: “[i]n addition, [ ] are evaluated in order to identify the most reactive reflector.” In the same section, the applicant also states that [ ] is the most reactive in-cavity reflector material. However, the proposed revision of the CoC does not mention [ ] and merely states, “presence of material containing more hydrogen than polyethylene is not allowed.” In addition, no [ ]-containing benchmarks were included in the previous bias determination described in Section A.6.8 of the SAR. Based on the information in the proposed CoC and the SAR, the staff is unable to determine whether [ ] is an intended content or not. The applicant needs to provide the following: clarification whether [ ] is the intended

content and provide criticality safety analyses for this content consistent with the [[ ]] and fissile material composition and quantity; determine a USL for [[ ]] moderated and reflected systems with additional, applicable benchmark evaluations; and demonstrate that the package maximum reactivity containing this content meets the regulatory requirements for criticality safety.

This information is necessary to determine compliance with 10 CFR 71.55(b), 71.55(d), 71.55(e), and 71.59.