

**Request for Additional Information  
NAC International  
Docket No. 71-9235  
Certificate of Compliance No. 9235  
Model No. NAC-STC Transportation Package**

By application dated March 15, 2016, as supplemented on July 19, 2016, (Agencywide Documents Access and Management System (ADAMS) Nos. ML16098A007 and ML16210A212) NAC International (NAC) submitted an application for an amendment to Certificate of Compliance No. 9235, for the Model No. NAC-STC transportation package. This request for additional information (RAI) identifies information needed by the U.S. Nuclear Regulatory Commission staff in connection with its review of the application. The requested information is listed by chapter number and title in the applicant's safety analysis report. The staff used the guidance provided in NUREG-1617, "Standard Review Plan for Transportation Packages for Spent Nuclear Fuel," in its review of the application.

As a result of your responses to our last RAI, each question describes information needed by the staff for it to complete its review of the application and to determine whether the applicant has demonstrated compliance with regulatory requirements.

**Chapter 4 – Containment Evaluation**

Provide the following additional information regarding the seals and O-rings:

- a. descriptions on Drawing No. 423-803, Sheet 1 of 2, Rev. 13 for all inner lid containment boundary seals, and provide descriptions on Drawing No. 423-806 Rev. 11 for all port cover plate containment boundary seals, and
- b. descriptions on the licensing drawings of seals or O-rings that are necessary to perform leakage rate testing.

These descriptions should specifically include seal dimensions, and tolerances for the Viton O-rings and metallic seals, specifically items 6, 7, 12, 15, 16, and 22 on Drawing No. 423-803, Sheet 1 of 2, Rev. 13 and items 4, 5, 6, 8, and 9 on Drawing No. 423-806, Rev. 11. The descriptions of the metallic seals should also include the specific material(s), and manufacturer for the metal seals. Ensure that all drawings show the metallic containment boundary seals temperature limits.

Interim Staff Guidance No. 20 (ISG-20), "Transportation Package Design Changes Authorized Under 10 CFR Part 71 Without Prior NRC Approval," and NUREG/CR-5502, "Engineering Drawings for 10 CFR Part 71 Package Approvals," both provide the level of description for important to safety components, which includes the containment boundary seals. ISG-20, describes, "... the O-ring seals on a spent fuel cask provide a safety function (containment), ... The reviewer should verify that the drawings for the spent fuel cask show the seal surface and O-ring groove details, including surface finish, groove dimensions within strict tolerances, O-ring size, type, and material." NUREG/CR-5502 describes in Section 3.3.3, "Dimensions and materials of constructions of flanges, seals, lids, coverplates, and closure rings," and "Containment seal specifications." This information ensures the important to safety seals and O-rings of the containment design have been described.

NAC's response to RAI 4-2, in letter dated July 21, 2016 (ADAMS Accession No. ML16229A141) response provided was generic, did not adequately address the RAI on the

important to safety containment boundary seals, and did not include specific descriptions of the seals as requested above and detailed below,

Items 6, 7, 12, 15, and 22 on Drawing No. 423-803, Sheet 1 of 2, Rev. 13 are inner lid containment boundary seals, descriptions of these items (which are important to safety) have not been provided. Items 4, 5 and 6 on Drawing No. 423-806, Rev. 11, are port cover plate containment boundary seals, descriptions of these items (which are important to safety) have not been provided. Descriptions on the drawings of the seals or O-rings that are necessary to perform leakage rate testing on the containment boundary seals or O-rings (e.g. item 16 on Drawing No. 423-803, Sheet 1 of 2, Rev. 13) have not been provided, but these components are also important to safety.

This information is needed to determine compliance with Title 10 of the *Code of Federal Regulations* (10 CFR) 71.33 and 71.51.

### **Chapter 7 – Operating Procedures Evaluation**

Describe the fabrication, maintenance, periodic, and pre-shipment leakage rate test for the inner lid inner metallic seal for low burnup fuel (Containment Conditions B1 and B2 in Table 7.4-1 of the application) in Section 7.1.3.1 of the application.

RAI 7-1 response in NAC's letter dated July 21, 2016 that included modifications to Step 22 of Section 7.1.3.1 of the application addressed the leakage rate testing of the inner lid inner metallic seal for high burnup fuel, and Step 22 had already included the leakage rate testing of the inner lid inner Viton O-ring for low burnup fuel, but does not address the leakage rate testing of the inner lid inner metallic seal for low burnup fuel which is part of Containment Conditions B1 and B2 in Table 7.4-1 of the application).

This information is needed to determine compliance with 10 CFR 71.51.

#### **Observation:**

Clarify the steps of Section 7.1.3.1 of the application that specify the fabrication, maintenance, periodic, and pre-shipment leakage rate test (Containment Condition A in Table 7.4-1 of the application) for the inner lid outer metallic seal, inner lid interseal test port threaded plug with metallic seal, vent and drain port coverplate outer metallic seals, and vent and drain port coverplate interseal port threaded plug with metallic seals.

The steps in Section 7.1.3.1 that address the fabrication, maintenance, periodic, and pre-shipment leakage rate tests to the leaktight criterion for the containment boundary seals in Table 7.4-1 (Containment Condition A) of the application should clearly describe each of the containment boundary seals tested, the gas detector for each type of gas detected, and the leakage rate test acceptance criterion and associated test sensitivity. It appears that steps 34 and 36 of Section 7.1.3.1 of the application describe a pressure drop test, not an evacuated envelope leakage rate test, nor is the aforementioned leakage rate testing information described. A pressure drop test is not adequate to test to the leaktight acceptance criterion.

This information is needed to ensure compliance with 10 CFR 71.51.