



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

May 31, 2018

Mr. Wren Fowler
Licensing Manager
NAC International
3930 East Jones Bridge Road, Suite 200
Norcross, GA 30092

SUBJECT: APPLICATION FOR THE MODEL NO. NAC-STC – REQUEST FOR
ADDITIONAL INFORMATION

Dear Mr. Fowler:

By application dated December 8, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17353A026), NAC International submitted an application for amendment 20 to Certificate of Compliance No. 9235 for the Model No. NAC-STC package.

In connection with the U.S. Nuclear Regulatory Commission (NRC) staff review, we need the information identified in the enclosure to this letter. Additional information requested by this letter should be submitted in the form of revised pages. Please provide your response within 2 months from the date of this letter.

In addition, staff identified that one drawing in the NAC-STC amendment 20 package, Drawing No. 423-802, Revision 24 contains unapproved changes from a previous version, Revision 23, currently under review in the NAC-STC amendment 19 package (see Enclosure 3 of Document ED20170125 (page 2) in the subject package). The staff is unable to approve Drawing No. 423-802, Revision 24, if the changes in Revision 23 have been incorporated but not yet approved by the NRC staff. In the event that the review of amendment 20 is completed before that of amendment 19, the staff's Safety Evaluation Report for amendment 20 will exclude the drawing 423-802, Revision 24, until such time that the results of the amendment 19 review are available. If amendment 19 is completed before amendment 20, and no issues are identified with the drawing, the staff will include it in its conclusion.

Please reference Docket No. 71-9235 and Enterprise Project Identifier No. L-2017-LLA-0418 in future correspondence related to this request. The staff is available to meet to discuss your proposed responses. If you have any questions, I may be contacted at (301) 415-5196.

Sincerely,

/RA/

Nishka Devaser, Project Manager
Spent Fuel Licensing Branch
Division of Spent Fuel Management
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-9235
EPID No. L-2017-LLA-0418

Enclosure:
Request for Additional Information

APPLICATION FOR THE MODEL NO. NAC-STC-REQUEST FOR ADDITIONAL INFORMATION, DOCUMENT DATE: May 31, 2018

Distribution: DSFM r/f,

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ADAMS Package No.: ML18152A681 *via e-mail

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|-------------|-----------|------------|-----------|----------|--------------------|
| OFC | DSFM | DSFM | DSFM | DSFM | DSFM |
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| DATE | 05/01/18 | 05/01/18 | 05/01/18 | 05/08/18 | 05/09/18 |
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| NAME | SEverard* | HGonzalez | JMcKirgan | | |
| DATE | 05/02/18 | 05/29/18 | 05/31/18 | | |

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

Regarding Safety Analysis Report: STC High Burnup Fuel Shield Ring Configuration
Submitted: December 2017

By application dated December 8, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17353A026), NAC International (NAC) submitted an application for amendment 20 of Certificate of Compliance No. 9235, for the Model No. NAC-STC transportation package. This request for additional information identifies information needed by the U.S. Nuclear Regulatory Commission staff (the staff) in connection with its review of the application. The staff used guidance provided in NUREG-1617, "Standard Review Plan for Transportation Packages for Spent Nuclear Fuel," in its review of the application.

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.

Materials Evaluation

1. Justify the acceptance criteria (specification limits) assumed for the high-temperature properties of the elastomeric inner lid o-ring during the fire transient condition.

The applicant provided laboratory test data for the high-temperature properties of the o-ring during the fire transient condition, per the requirement in Title 10 of the *Code of Federal Regulations* (10 CFR) 71.73(c)(4) (Figure R-3, Calculation 423-3000, Revision 5). The data was acquired at a higher temperature than the actual maximum temperature that would be reached by the inner lid o-ring during the hypothetical fire condition. The laboratory test report defines an acceptance criteria (specification limits) for allowable changes to the o-ring properties; however, the application does not define the adequacy of these specification limits per the assumptions in the design-basis containment and structural analyses or models. The test results should demonstrate adequate margin of safety for the assumed specification limits.

The information is necessary to ensure compliance with 10 CFR 71.35(a).

2. Clarify if the optional ceramic fiber insulation serves any safety function in the transportation package.

The revised package design includes a ceramic fiber paper used to provide insulation at the corners of the lead at each end of the cask during the hypothetical fire accident condition. Section 3.3.2 of the application states that the paper insulation is optional for the directly loaded NAC-STC package since the fire accident analysis shows that the lead temperature is maintained in its safe operating range even without its presence. The staff interprets the statement to imply that the ceramic fiber paper does not serve a safety function, please confirm if this is the case. If the configuration of the insulation is credited in the design-basis thermal safety analyses, then the applicant should justify that the ceramic fiber material will be able to sustain expected doses during transport and hypothetical fire transient

Enclosure

temperatures (i.e., define a safe operating range in Section 3.3.2 and Section 3.8.3.2 of the application).

The information is necessary to ensure compliance with 10 CFR 71.35(a).

3. Justify the adequacy of both the thermal and radiation resistance of the silicone caulk used for fixing/bonding of the optional ceramic fiber insulation.

Drawing No. 423-802, Revision 24, states that the optional ceramic fiber paper insulation may be fixed with a generic silicon caulk. If the configuration of the ceramic fiber insulation is credited in the design-basis thermal safety analyses, then the applicant should justify that the caulk material will be able to sustain expected doses and hypothetical fire transient temperatures.

The information is necessary to ensure compliance with 10 CFR 71.35(a).

4. Clarify in the pertinent drawings if the shield ring assembly may be used for Assembly 97, "STC-HBU".

Enclosure 3 of Document ED20170125 (page 2) states that the shield ring assembly applies to both Assembly 99, "STC", and Assembly 97, "STC-HBU" (see changes to Drawing No. 423-900, Revision 9). However, Drawing No. 423-927, Revision 0P, does not identify the shield ring assembly to apply to Assembly 97, "STC-HBU". The application must include a description of the proposed package in sufficient detail to identify the package accurately and provide a sufficient basis for evaluation of the package.

The information is necessary to ensure compliance with 10 CFR 71.33.

5. Clarify Drawing No. 423-927, 0P to:
 - Clarify top/bottom and side view of shield ring assembly (define location of cask body and impact limiters in each view);
 - Define acceptance criteria and non-destructive examination for all safety-related welding in the assembly;
 - Clarify location of cask body bolts (item 7) and thread inserts (item 13) in top or bottom view;
 - Clarify location of hex bolts (item 8) and flat washer (item 9) in side view;
 - Clarify relative placement of top sector (item 2) and top sector weldment (item 1); and,
 - Define applicability of Note 1.

The viewer perspectives and locations of certain subcomponents are unclear in the drawing.

The information is necessary to ensure compliance with 10 CFR 71.33(a)(5).