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

March 20, 2023

Heath Baldner
Licensing Manager
NAC International
3930 East Jones Bridge Road, Suite 200
Norcross, GA 30092

SUBJECT: REVISION 73 OF CERTIFICATE OF COMPLIANCE NO. 9225 FOR THE MODEL NO. NAC-LWT PACKAGE – REQUEST FOR ADDITIONAL INFORMATION

Dear Heath Baldner:

By application dated October 28, 2022 (Agencywide Documents Access and Management System [ADAMS] Accession No. ML22301A183), NAC International applied for amendment to Certificate of Compliance No. 9225 for the Model No. NAC-LWT package.

In connection with our review, the U.S. Nuclear Regulatory Commission needs 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 30 days from the date of this letter.

Please reference Docket No. 71-9225 and Enterprise Project Identifier No. L-2022-LLA-0158 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,

Signed by Devaser, Nishka
on 03/20/23

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

Docket No. 71-9225
EPID L-2022-LLA-0158

Enclosure:
Request for Additional Information

Request for Additional Information
Docket No. 71-9225
Model No. NAC-LWT Package
Certificate of Compliance No. 9225
Revision No. 73

By application dated October 28, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22301A183), NAC International submitted an application for amendment to Certificate of Compliance (CoC) No. 9225 for the Model No. NAC-LWT package. This request for additional information identifies information needed by the U.S. Nuclear Regulatory Commission staff (NRC or the staff) in connection with its review of the application. The staff used guidance provided in NUREG-2216, "Standard Review Plan for Transportation Packages for Spent Fuel and Radioactive Material," in its review of the application.

The questions below describe 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 2A: Structural Analysis

RAI 2A-1. Provide responses to the following requests related to safety analysis report (SAR), revision 22A:

a. Update figure 1.2.3-24 to show relevant dimension and material specification.

   SAR section 2.9.6 evaluates the BUP-500 capsule, but relevant dimensions and material information are not shown in figure 1.2.3-24, which shows the configuration of the capsule and provides the basis for the evaluation. The design information is needed in sufficient detail to ensure that the structural capacity of the component meets the regulatory requirements.

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

b. Clarify the requirement for installation of a second capsule in step 19 of SAR section 7.1.21, “Procedure for the Dry Loading of BUP-500 Capsules into the NAC-LWT cask.”

   Step 19 currently states, “If a second BUP-500 capsule is to be loaded, repeat step 18.” This infers that loading of a second capsule may not be needed. Contrary to this, the space within a basket needs to be filled with two capsules and three spacers to restrict their movement, as shown on Drawing 315-40-195, Rev. 0P, “LWT transport cask shipping configuration for BUP-500.” This configuration is the basis for the structural evaluations contained in SAR section 2.6.12.17.2, 2.7.7.19.2 and 2.9.6. The procedure needs to be in alignment with the configuration shown on the licensing drawing.

This procedural step needs to be clarified to satisfy the requirements of 10 CFR 71.71, Normal Conditions of Transport and 10 CFR 71.73, Hypothetical Accident Conditions.

RAI 2A-2. Provide responses to the following requests related to Drawings 315-40-191, 315-40-192, 315-40-193 and 315-40-196 Rev. 0P of the SAR:

a. Revise note 1 on these drawings to either specify temper for the required alloy or specify minimum required tensile and yield strengths and required thermal properties.

   Per note 1 on SAR Drawings 315-40-191, 315-40-192 and 315-40-196, the material for the basket insert and container body is to be aluminum or aluminum alloy with yield strength, ultimate strength, and thermal conductivity greater than or equal to the material properties of the specified alloy. The alloy comes in different temper with different mechanical properties, and for some temper, the minimum tensile/yield strength are not even specified by relevant American Society for Testing and Materials (ASTM) specifications. In the absence of the required temper of the material or required material property values, note 1 does not adequately describe the required material and the associated basis for its evaluation.

b. Provide bolt hole location dimensions for Item 1 on Drawing 315-40-193, which are missing.

   The bolt hole location dimensions determine bolt locations, which is the basis for evaluation of bolt stresses contained in SAR section 2.6.12.17.1 and 2.7.7.19.1.

   This information is needed to determine compliance with 10 CFR 71.71(c)(7) and 10 CFR 71.73(c)(1).

Chapter 2B: Materials Analysis

RAI 2B-1. Justify the absence of information pertaining to welding specifications (including location and nondestructive examination) and coatings/material treatments that perform a safety function in the new drawings for the WESF Basket assembly, WESF Container Assembly, WESF Lid Spacer, BUP-500 Basket assembly, and BUP-500 Cavity Spacer provided in Volume 1 of the SAR.

This information is needed to confirm compliance with 10 CFR 71.33(a) and 71.43(f).

RAI 2B-2. Justify the absence of a material certification standard (American Society of Mechanical Engineers, ASTM, SAE International, etc.) for important to safety components in the SAR that do not comprise the containment boundary.

- Drawing 315-40-191, provides no material certification for the alloy used to fabricate the WESF Capsule PWR Basket Insert.

- Drawing 315-40-192, provides no material certification for the alloy used to fabricate the WESF Capsule Container Body and Bottom.

- Drawing 315-40-196, provides no material certification for the alloy used to fabricate the BUP-500 PWR Basket Insert.

This information is needed to confirm compliance with 10 CFR 71.31(c).

RAI 2B-3. Justify the absence of code/standards for welding criteria, including welding processes, filler metal, qualification procedures, heat treatment, examination, and testing for important to safety components associated with the new WESF and BUP-500 Fuel Basket Assemblies.

This information is needed to confirm compliance with 10 CFR 71.31(c), 71.33(a), and 71.43(f).

Chapter 5: Shielding Analysis

RAI 5-1. Explain the calculation and use of the MCNP tally multipliers.

Section 6.1 of the calculation package states the MCNP tally multipliers for the BUP-500 and SrF_2 capsules, respectively. It is unclear from the calculation package and provided MCNP input files how the values were calculated and why they were used in MCNP.

This information is needed to ensure that the package meets the external dose rate requirements of 10 CFR 71.47 and 10 CFR 71.51.

RAI 5-2. Provide the measurement uncertainty for the strontium (Sr) inventory in each capsule type.

SAR section 4 gives the BUP-500 canister Sr inventory. The applicant then increased these values by a factor of approximately 10 percent for use in the model inputs. The amounts given in the SAR do not include the associated measurement uncertainty. The staff is unable to conclude if a factor of approximately 10 percent is appropriately conservative without the measurement uncertainty. Section 5.4.4.4 of NUREG-2216, states, "*Ensure that the analysis also appropriately identifies and accounts for uncertainties in the analysis, as appropriate.*"

This information is needed to ensure that the package meets the external dose rate requirements of 10 CFR 71.47 and 10 CFR 71.51.

Chapter 7: Operations Analysis

RAI 7-1. Modify operational step 25 of 7.1.20 for the verification of the 0.5 to 0.8 inch required gap between the WESF lid spacer and the top of the WESF capsule container assembly, including how to measure the gap and determine whether the spacer shim needs to be installed to meet the gap requirement.

In step 25 of 7.1.20 the application states to “Install the WESF lid spacer to the closure lid and, if applicable, the WESF lid spacer shim…” On Drawing No. 315-40-190, Rev. 0P, note 1 specifies a gap of 0.5 to 0.8 inches between the WESF lid spacer and the top WESF capsule container assembly. However, the procedure step 25 only states to install the WESF lid spacer shim if applicable with no operational steps on how to measure and verify the required gap is met to determine whether to install the spacer shim or not.

This information is needed to determine compliance with 10 CFR 71.87 and 71.51.

RAI 7-2. Modify the package operations descriptions in SAR section 7.1.21 for the BUP-500 capsules to address the following:

a. Move the neutron shield tank inspection requirements in step 8 after rotating the cask to a vertical position and moving it to a base plate/cell transfer cart/unloading fixture, etc. All other loading operational sequences in the SAR require these inspections after the cask is in the vertical position and off the trailer/container.

b. Modify operational steps 11 and 12 to remove the closure lid bolts before the lid removal fixture is attached. This will ensure there are no potential issues removing the lid bolts while the lid removal fixture is attached. All other operational sequences in the SAR require attachment of the lid removal fixture after closure lid bolt removal.

c. Modify step 14 to include the requirements to inspect the closure lid Teflon O-ring seal and replacement if damaged, removal and replacement of the metallic O-ring with an approved spare, and visual inspection and cleaning of the metallic O-ring groove and lid recess seating surfaces for cleanliness, damage, or degradation. Metallic O-ring replacement and Teflon O-ring seal inspection and replacement as necessary are requirements in SAR chapter 8 (table 8.2-1). Also include radiological and cleanliness lid placement controls. The operational sequence requirements should be the same as for the WESF capsules.

d. Include a requirement after contents are loaded to perform independent verification of the loaded contents. This is required in the WESF capsule loading steps and other SAR operational sections and should be consistent to ensure proper contents are loaded.

e. Include before the lid bolts are tightened to the required torque value a verification of proper lid seating, a requirement to install the lid bolts hand tight, and a requirement to remove the lid removal fixture from the top of the cask. These are required in the WESF capsule loading steps and other SAR operational sections and should be consistent to ensure proper package closure.

f. Include operational sequence requirements to pressurize the cavity to force out residual water before performing vacuum drying. This is required in the

WESF capsule loading steps and other SAR operational sections and should be consistent to ensure proper package drying.

This information is needed to determine compliance with 10 CFR 71.87 and 71.51.

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DISTRIBUTION: Docket No. 71-9225

ADAMS Accession No.: Ltr ML23058A425

OFFICE	NMSS/DFM/STLB	NSIR/DPR	NMSS/DFM/IOB	NMSS/DFM/MSB
NAME	NDevaser *ND*	JGoodridge WWheatley for *WW*	JTapp *JT*	BPatel *BP*
DATE	Feb 28, 2023	Mar 1, 2023	Mar 1, 2023	Mar 1, 2023
OFFICE	NMSS/DFM/MSB	NMSS/DUWP/LLWPB	NMSS/DFM/CTCFB	NMSS/DFM/IOB
NAME	LHowe *LH*	NDenney *ND*	JPiotter *JP*	ARivera-Varona *AR*
DATE	Mar 7, 2023	Mar 1, 2023	Mar 9, 2023	Mar 14, 2023
OFFICE	NMSS/DFM/MSB	NMSS/DFM/STLB	NMSS/DFM/STLB	
NAME	TBoyce *TB*	YDiaz-Sanabria BWhite for *BW*	NDevaser *ND*	
DATE	Mar 10, 2023	Mar 20, 2023	Mar 20, 2023	

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