



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

May 6, 2015

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

SUBJECT: REVIEW OF THE CERTIFICATE OF COMPLIANCE NO. 9225, FOR THE
MODEL NO. NAC-LWT PACKAGE—REQUEST FOR ADDITIONAL
INFORMATION

Dear Mr. Fowler:

By letter dated February 25, 2015, NAC International (NAC) submitted an application in accordance with Title 10 of the *Code of Federal Regulations* Part 71 to amend Certificate of Compliance No. 9225 for the Model No. NAC-LWT package to add a SLOWPOKE core as authorized contents.

In connection with our 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 safety analysis report pages. Please provide your response within 4 weeks from the date of this letter. If you are unable to provide a response by that date, our review may be delayed.

Please reference Docket No. 71-9225 and TAC No. L24998 in future correspondence related to this request. The staff is available to meet to discuss your proposed responses. If you have any questions regarding this matter, I may be contacted at (301) 415-6577.

Sincerely,

/RA/

Bernard White, Senior Project Manager
Spent Fuel Licensing Branch
Division of Spent Fuel Management
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-9225
TAC No. L24998

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

By letter dated February 25, 2015, NAC International (NAC) submitted an application in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Part 71 to amend Certificate of Compliance No. 9225 for the Model No. NAC-LWT package. The application requested adding a SLOWPOKE core as authorized contents. This request for additional information 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 (SAR). NUREG-1617, "Standard Review Plan for Transportation Packages for Spent Nuclear Fuel," was used by the staff 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.

Chapter 3 – Thermal Evaluation

1. Justify the use of steady state component temperatures calculated for normal conditions of transport when calculating the maximum component temperatures for hypothetical accident conditions.

It is unclear to the NRC staff why the use of normal conditions of transport component temperatures calculated from a shell temperature of 214°F and subsequent change in component temperatures (ΔT s) reported in the unlabeled table in Section 3.5.3.19, page 3.5-16, is appropriate when calculating component temperatures with a hypothetical accident conditions shell temperature of 334°F. Provide additional text and/or calculations that support the information presented in the safety analysis report.

This information is necessary to determine compliance with 10 CFR 71.73.

Chapter 5 – Shielding Evaluation

1. Clarify the text in Section 5.3.23.1 that explains why the parameters used in the TRITON analyses produce bounding source terms.

The discussion in Section 5.3.23.1 of the application is not clear. It states that: "*Inputs for irradiation and material parameters required by TRITON are given in Table 5.3.23-2. Key parameters differing between the input and analysis are reduced enrichment, increased fuel mass, and increased irradiation time. All parameters are revised to produce bounding source terms.*" Section 1.2.3.15 of the application states: "Key physical, radiation protection and thermal characteristics of the SLOWPOKE fuel core are listed in Table 1.2-17." When comparing Table 5.2.23-2 with that of Table 1.2-17, the values are the same. Inspection of the TRITON input file in Figure 5.3.23-2 appears to show that these same values were used in the TRITON input file to generate the source term. The discussion at the beginning of Section 5.3.23.1 seems to indicate that parameters used to generate the source term are changed to produce a more bounding

source term, however this does not appear to be the case. Explain what is meant in the statement “key parameters differing between the input and analysis” means.

This information is needed for the staff to determine compliance with 10 CFR 71.47 and 10 CFR 71.51(a)(2).

2. Clarify the lead slump assumptions for the NAC-LWT SLOWPOKE Core model.

Section 5.3.23.2 of the application states: *“Common to both the normal and accident condition models is a 0.1374 cm gap between the lead outer diameter and the cask outer shell. A lead gap slump is evaluated under hypothetical accident conditions. The lead gap volume is applied to both the axial slump and radial slump simultaneously.”* Revise the application to clarify the extent of axial lead slump after an end drop and radial lead slump after a side drop. Section 5.3.23.2 appears to state that the 0.1374 cm gap includes axial lead slump after an end drop. Either ensure consistency with the lead slump calculations in Chapter 2 or justify that the amount of lead slump is appropriate.

This information is needed to determine compliance with regulations in 10 CFR 71.51(a)(2).

3. Discuss the axial burnup profile of the SLOWPOKE Core.

Although Section 5.3.23.1 of the application discusses how the most conservative radial location was chosen for the SLOWPOKE Core fuel model, it does not include a discussion on the axial burnup profile. Discuss axial burnup and axial peaking of the SLOWPOKE core and how this was accounted for in the shielding model of the SLOWPOKE core fuel model.

This information is needed to determine compliance with dose rate regulations in 10 CFR 71.47(b) and 10 CFR 71.51(a)(2)

4. Provide MCNP output files and weight windows input files.

The staff reviews output files from the dose rate calculation to ensure such things as proper convergence and that the calculated radiation levels agree with those reported in the application. The staff cannot run the submitted input files in Figures 5.2.23-7 and 5.2.23-11 of the application without the weight windows input file (wwinp). In addition, the staff needs to verify that the package dimensions and shielding features are modeled appropriately. The NAC-LWT SLOWPOKE core MCNP input file is complex and staff would prefer to use MCNP visualization tools to reduce review time rather than deconstruct the input file. Provide (1) the weight windows input file(s) and (2) associated output files for the input files in Figures 5.2.23-7 and 5.2.23-11.

This information is needed to verify compliance with 10 CFR 71.47(b) and 10 CFR 71.51(a)(2).