

May 18, 2012

Mr. Richard W. Boyle, Chief
Sciences Branch
Division of Engineering and Research
Office of Hazardous Materials Safety
U.S. Department of Transportation
1200 New Jersey Ave., S.E.
Washington, D.C. 20590

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE MODEL NO. TN-BGC1 PACKAGE

Dear Mr. Boyle:

By letter dated March 2, 2012, the Department of Transportation requested that NRC staff performs a review of the French Certificate of Approval No. F/313/B(U)F-96, Revision I, for the Model No. TN-BGC1 package, to make a recommendation concerning the revalidation of the package for import and export use. The review was limited to the addition of uranium tetrafluoride as an approved content. In connection with the staff's detailed technical review, we need the information identified below:

RAI No. 1

Clarify the corrosion effect on the package due to the transport of uranium tetrafluoride.

Uranium tetrafluoride can react with moisture to form hydrofluoric acid, which can be corrosive to the stainless steel or aluminum primary holding boxes and the silicone O-rings. The potential corrosion and its cumulative effect (after 5 years, 10 years, etc.) on certain areas, such as the O-ring groove, etc., is not discussed in the application.

This information is required to determine if the Model No. TN-BGC1 package meets the requirements of paragraphs 642 and 651(a) of IAEA TS-R-1.

RAI No. 2

Clarify whether Content No.11 includes radionuclides, beyond ^{235}U and ^{238}U , that would necessitate a limited A_2 value.

Chapter 3.4 of the application states that a package with Contents No. 2, 4, 7, 11, and 26 should have a pre-transport leak test to meet $6.65\text{E-}5 \text{ Pa} \cdot \text{m}^3/\text{s}$ for a maximum activity of $44 A_2/\text{g}$.

According to Chapter 1 of the application, Contents No. 2, 4, 7, 11, and 26 include uranium oxide powder, metal uranium bars, uranium oxide, uranium-bearing materials, and TRIGA fuel. These contents include ^{235}U and ^{238}U radionuclides which have unlimited A_2 values and negligible decay heat.

- a) Are there other radionuclides in Content No. 11 that would result in a limit to the A_2 quantity?
- b) Provide a clear definition of the contents and the calculation that shows why the activity is limited to $26 A_2/\text{g}$ for the current revalidation.

This information is required to determine if the Model No. TN-BGC1 meets the requirements of paragraph 501 of IAEA TS-R-1.

RAI No. 3

Confirm that the application's conclusion of "no loss or dispersion of the packaging content" applies to uranium tetrafluoride in powder form.

There appears to be an inconsistency between the application and the Certificate of Approval. Appendix No. 11 of the Certificate of Approval mentions there are uranium powders (page 2 of 4) whereas Chapter 1 of the application states that Content No. 11 "consists of uranium-bearing materials in solid form, to the exclusion of powders."

Please confirm that the application's conclusion, i.e., that there is no loss or dispersion of the packaging content, applies to the uranium tetrafluoride in powder form.

This information is required to determine if the Model No. TN-BGC1 package meets the requirements of paragraphs 501 and 657 of IAEA TS-R-1.

RAI No. 4

Provide the total activity of the TN-BGC1 package, loaded with UF_4 , to determine the thermal test period.

The applicant specified that a maximum allowable mass of ^{235}U in the Model No. TN-BGC1 package is 7,000 grams in Appendix 11 (Content No. 11) and the maximum specific activity of UF_4 is $26 A_2/\text{g}$ in Ref-07-00054095-100. With the maximum mass and specific activity given in the application, the total activity of UF_4 can be greater than $3000A_2$ and the package can be then categorized as a Type C package, if transported by air, whereas a 60 minute thermal test is required instead of a 30 minute thermal test.

This information is required to determine if the Model No. TN-BGC1 package meets the requirements of paragraph 736 of IAEA TS-R-1.

The applicant should notify the Department of Transportation when it can provide the requested information.

Please reference Docket No. 71-3034 and TAC No. L24629 in future correspondence related to this revalidation action. If you have any questions regarding this matter, you may contact me at (301) 492-3408.

Sincerely,

/RA/

Pierre M. Saverot, Project Manager
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-3034
TAC No. L24629

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