January 15, 2009

Mr. Richard W. Boyle
Chief, Radioactive Materials Branch
Office of Hazardous Materials
Technology
U.S. Department of Transportation
1200 New Jersey Ave., S.E.
Washington, DC 20590

SUBJECT: REVIEW OF GERMAN CERTIFICATE OF APPROVAL D/4365/AF-96 (REV. 0) FOR THE ANF-50 PACKAGE – REQUEST FOR ADDITIONAL INFORMATION

Dear Mr. Boyle:

This refers to your application dated December 28, 2006, which we received on August 9, 2007, as supplemented February 29 and September 11, 2008, requesting our recommendation concerning revalidation of German Certificate of Approval D/4365/AF-96 (Rev. 0), for the Model No. ANF-50 package.

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 pages. To assist us in scheduling staff review of your response, we request that you provide this information by March 31, 2009. If you are unable to provide a response by that date, our review may be delayed.

If you have any questions regarding this matter, we would be pleased to meet with you and your staff. I may be contacted at (301) 492-3326.

Sincerely,

**/RA/**
Nancy L. Osgood, Senior Project Manager
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-3080
TAC No. L24192

Enclosure: Request for Additional Information

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| **OFC** | SFST | SFST | SFST | SFST | SFST | |
| **NAME** | LCampbell | CRegan | MWaters | MDeBose | EJBenner | |
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**REQUEST FOR ADDITIONAL INFORMATION**
**Model No. ANF-50 Package**
**German Certificate of Approval No. D/4365/AF-96 (Rev. 0)**
**Docket No. 71-3080**

By application dated December 28, 2006, received on August 9, 2007, the U.S. Department of Transportation requested our recommendation regarding revalidation of German Certificate of Approval D/4365/AF-96 (Rev. 0). Additional information was provided by supplements dated February 29 and September 11, 2008. This request identifies additional information needed by the Nuclear Regulatory Commission staff in connection with its review of the application. The requested information is listed by chapter number and title in NUREG-1609, "Standard Review Plan for Transportation Packages," which was used by the staff in its review of the application. This request 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 of TS-R-1 (2005 Edition).

## 1. GENERAL INFORMATION

1-1 Revise the application to include materials of construction, along with applicable codes and standards, for the packaging structures and components that are important to safety.

The packaging drawings specify the materials of construction only by a numerical reference. These numerical references (e.g., 1.4306, 1.4404, 1.4541, 1.4550, etc.) are not recognized by staff. The materials of construction for the packaging components should be identified by a material name and a corresponding material code and standard (e.g., ASTM, ASME, or equivalent German Codes).

This information is needed to determine compliance with para. 638 of TS-R-1.

1-2 Revise the O-ring seal specification in Drawing AD-003759-001, to be consistent with the conclusions of the pressure test performed for this package.

Based on the results of the pressure test in Report A1C-131450-1, entitled “Pressure test at an ANF-50 container,” the applicant stated that the seal thickness tolerance should be 3 + 0.3 mm to ensure leaktightness. However, the seal thickness tolerance is not given in the engineering drawings.

This is needed to show compliance with TS-R-1 para. 669.

## 2. STRUCTURAL

2-1 Revise the application to address the following items with respect to package lifting and tie-down:

a. Clearly show how the package is lifted and tied-down, including sketches and free-body diagrams.

b. Clearly identify any lifting or tie-down attachments that are a structural part of the package.

c. Provide an analysis of any lifting or tie-down attachments that are a structural part of the package that shows that they withstand normal and accident conditions.

d. Provide an assessment of the lifting and tie down attachments that shows that failure under excessive load would not damage the package.

e. Show how the various external members of the package are either evaluated for the lifting and tie-down loads or are rendered inoperable for package lifting and tie-down.

f. Provide "Data Sheet for the Shipping Container ANF-50, attachment means, Drawing ANF 3-1 27-3763-03." This is listed in the "List of the Attachments" as Register 3, however, the data sheet was not included with the application.

The application states (see Section 7.1.1, paras. 607 and 608, and Section 7.1.2, para. 723): Due to its shape and stackability the package should be safely and easily fastened on the means of transport with the aid of lashing straps. The ANF-50 shipping container is handled in accordance with the handling instructions IMDG Code, 2002 edition. However, no information is given that shows how the package is lifted or tied-down. On page 42 (Section 7.1.2, following para. 637), the application states that Section 8 contains verification that the package meets the requirements under normal and accident conditions. Section 8 does not appear to contain information regarding tie down attachments.

In addition, it does not appear that tie-downs were analyzed for the appropriate loadings (see, for example, IAEA TS-G-1.1 (ST-2) Appendix V). Because of the package design (an open, bird-cage type of construction), it is not clear how the package is lifted or tied down, and how incorrect lifting and tie-down is prevented.

This information is needed in order to determine compliance with TS-R-1 paras. 607, 608, and 636.

2-2 Provide an analysis for the stacking test for the maximum package mass.

Section 8.2.4, para. 723, of the application assesses the effects of the compression test on the package. Stacking test conditions were analyzed using total mass of 248 kg. However, appendix report A1C-1310729-0 indicates that a mass of 229 kg was used.

This information is needed in order to determine compliance with TS-R-1 para. 723.

## 6. CRITICALITY

6-1 Provide representative sample input files, including those that are considered to be most limiting, that were used in performing the criticality safety evaluation for the ANF-50 package.

The computer input files are needed to provide additional assurance regarding the criticality safety evaluation of the package. Representative modeling samples of each geometry configuration, as well as modeling samples of the bounding or most reactive

configurations, should be submitted. Since the demonstration of criticality safety of the ANF-50 relies on the calculated results, staff needs additional assurance that the content and methodology of the computer models is adequate to ensure that the package meets the fissile material safety standards.

This information is necessary to determine compliance with TS-R-1, paras. 681 and 681.

## 7. PACKAGE OPERATIONS

7-1 Revise the package handling and maintenance procedures (ANFG-11.101) to address the following:

a. “Loading Process (pellets),” Section 5.3.2, step 11, and "Loading Process (scrap)," Section 5.3.4, step 6, both refer to section 5.3.1, steps 22-32. However, some of the steps are redundant or are not appropriate (e.g., removal of labeling for shipment of scrap). These instructions should be corrected.
b. Include steps to ensure that the pellet box EPDM seal is properly installed, secured, and free of defects in Sections 5.3.2, “Loading Process (pellets)” and Section 5.3.4, “Loading Process (scrap).”
c. Include steps to ensure that the visible welds are inspected for any signs of defects or wear, such as cracking.
d. Include steps to specify that the bolts are inspected for signs of wear, damage, or defects, and that each closure device is properly installed.
e. Include steps to specify that the insulation plates are inspected for excessive wear or damage and are properly installed

The document includes the general provision that the maintenance includes “Visual inspection of overall condition.” However, certain visual inspections, as identified above, should be specifically addressed. This information is needed to show compliance with TS-R-1 para. 502.