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PDR 71-6581

August 6, 1980

Mr. C. E. MacDonald, Chief
Transportation Cerification Branch
Division of Fuel Cycle and Material Safety
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Reference: 1) Letter, C. E. MacDonald to L. E. Hansen, dated July 7, 1980.

2) Docket No. 71-6581

Dear Mr. MacDonald:

In response to the questions transmitted via your letter of July 7, 1980 (Reference 1), enclosed are eight copies of revised pages for inclusion in our consolidated license renewal application for the Model 51032-1 and -1a packages. In addition to revisions incorporated in response to the noted questions, several existing clerical errors were corrected and provisions were included for handling fuel elements in which multiple fissile enrichments may exist within each fuel rod.

Each copy of this revision to the consolidated application is accompanied by a summary of the changes and a guide for inclusion of the revised pages in your copies of XN-52, Rev. 1. All changes on the enclosed revised pages are indicated by a line in the margin as requested in your letter of July 7, 1980. Also, specific responses to your questions of July 7, 1980 are provided in Attachment I for further clarity.

If you have any questions with regard to the information contained herein please contact me on (509) 375-7288.

Sincerely,

Leo E Hansen

Leo E. Hansen, Senior Specialist
Criticality Safety and Physical Security

LEH:slr

Enclosure

ATTACHMENT I

RESPONSES TO QUESTIONS OF JULY 7, 1980

Question: 1.

The discussion in Section 10.1.2.2 (page 10-6) is not adequate to show that the aluminum clips are acceptable for the following reasons:

a. *The text does not provide a sketch or otherwise clarify that the aluminum clamps were loaded for the load-deflection test (Figure 10.1) in the same manner as they would be loaded under accident conditions when installed in the container.*

b. *Figure 10.1 does not show that an aluminum clamp can develop as large a resisting force as a steel clamp.*

c. *Figure 10.1 does not show that the energy to deform an aluminum clamp is as large as the energy to deform a steel clamp.*

d. *Figure 10.1 does not show that an aluminum clamp can deform as much as a steel clamp without failing.*

e. *The text does not show that the clamps are adequate for the fire test.*

Response: 1 a)

Wording was added to the text of Section 10.1.2.2 (page 10-8) to indicate the manner in which clamp assemblies were loaded in the test configuration. In particular, loads were applied such that they would be perpendicular to the clamp bracket which spans the strongback. This loading simulates the manner in which clamps are loaded in a cover drop accident and is the most severe test of the entire clamp assembly.

Response: 1 b)

The wording of Section 10.1.2.2 relative to the test results given in Figure 10.1 was somewhat misleading. The intent was not to show that the aluminum clamps were as strong as the steel clamps as implied, but rather, to demonstrate that the aluminum clamps would not fail nor permit significantly different deflections relative to steel clamps when used for shipments of the lower weight BWR fuel elements with associated reduced loadings under accident conditions. The wording of Section 10.1.2.2 has been modified accordingly.

Response: 1 c.

Figure 10.1 relates only the steel and aluminum clamp performance and does not include consideration of the clamp brackets which span the strongback. Performance of the clamp bracket was evaluated via drop tests (Model 51032-1) or separate component tests (Model 51032-1a). Energy absorption by the clamp assemblies primarily results from deformation of the bracket member and not by deformation of the attached clamp. Hence, the referenced tests were only designed to show that the clamps were capable of transmitting applied forces to the bracket without failure.

Response: 1 d)

By specification of the minimum number of required clamp assemblies for specified numbers of attached shock mounts as a function of fuel element weight, the loading of each clamp under accident conditions can be limited to the maximum forces applied in the tests. Consequently, relative deformation of steel and aluminum clamps prior to failure is not important to the integrity of the package.

Response: 1 e)

Consideration of the thermal environment (fire) test has been included in a new section (Section 10.4). As discussed therein, although the aluminum clamps may melt and permit movement of the fuel elements the associated steel members will confine the fuel within limiting separation assumed in all related safety analysis calculations.

Question: 2.

Provide a table which shows the minimum number of separator blocks, full clamps, shock mounts and restraining bars that will be utilized for different strongbacks and for various types of fuel in the Model 51032-1 and the Model 51032-1a packages.

Response: 2.

New Tables 2-II through 2-IX were added to specify minimum required numbers of the various components within Model 51032-1 and -1a containers. The criteria to be met in specifying the required number of components was included in Section 2.1.2 and referenced in Section 2.2.2. Equations derived to satisfy those criteria and used as a means of computing the required number of components specified in Tables 2-II through 2-IX are given and discussed in Section 10. These relationships are valid for all strongbacks with limitations on package content weight in the short strongback due to the reduced number of available shock mounts. (Minor differences would result in actual relationships due to a difference in the strongback weight. As applied, however, the relationships are conservative for all strongbacks).