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2004 MAR 23 PM 3: 20

Rules and Directives
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1/13/04
69 FR 2014
(5)

E-RFDS = ADM-23

Call = N. Osgood

United States Nuclear Regulatory Commission (U.S.N.R.C.)

Template = ADM-213

Comments on Draft Regulatory Guide DG-2003, 'Standard Format and Content of Part 71 Applications for Approval of Packaging for Radioactive Material'

Submitted by Philip W. Noss, Packaging Technology, Inc., March 23, 2004

General: The format resembles the existing draft Regulatory Guide 7.9. Sections which are new or revised, however, often result in:

- Material presented prematurely, i.e., before it can be adequately introduced, thus breaking the natural flow of thought
- Material presented redundantly, i.e., the same material requested in two or more locations. Following the proposed format will result in either excessive SAR size or in excessive use of the general term, "See Section X for a discussion of ..."

Specific Comments:

Section 2.5, General Considerations

The information requested in this section seems to be somewhat premature. Under Section 2.5.1, Evaluation by Test, essentially all of the information on the test program is requested to be discussed in detail. However, the load cases are normally presented and discussed in later sections, such as 2.6, Normal Conditions of Transport, or 2.7, Hypothetical Accident Evaluations. Similarly, Section 2.5.2, Evaluation by Analysis, requests a detailed discussion of all of the analytical procedures and calculational details. This information is relevant and should by all means be supplied, but it is more appropriately located in the sections where it is used.

For example, a finite element analysis might be used to determine the stresses resulting from the pressure case in Section 2.6.1.3, Stress Calculations. This section currently (and appropriately) comes after the internal operating pressure and temperature are established in Section 2.6.1.1, Summary of Pressures and Temperatures. In fact, the proposed format still shows the same placement of this information. This placement also follows a logical flow of discussion: Establish the general load case (Normal Conditions of Transport) --> establish the specific load case (maximum pressure and temperature) --> perform stress analysis (using, in this example, FEA) --> compare stresses to allowables. Therefore, it is not clear to this commenter what is gained by supplying detailed model information in a prior section (the new Section 2.5.2). And, since numerous analyses are performed for a typical package, each of which might use a different calculational technique, which might be manual or computer based, and be of a different part of the package, it is not clear how these can all be described in one place without a great deal of confusion. Similar comments could be adduced concerning the tests which might be performed (Section 2.5.1).

It is suggested that Section 2.5 be eliminated, since all of the data now requested there is more appropriately addressed in the individual analyses which follow in the evaluations of Normal Conditions of Transport and Hypothetical Accident Conditions.

Section 3.3, General Considerations

As for Section 2.5, this information seems to be placed ahead of its natural position, and all of the same comments apply here. The sections which follow, namely 3.4, Thermal Evaluation under Normal Conditions of Transport, and 3.5, Thermal Evaluation under Hypothetical Accident Conditions, make a clear and necessary distinction between the two major load cases, and for this reason, the load case details, modeling details, and results are more appropriately discussed in them. Note is also taken of the fact that the same information requested in Section 3.3 is currently requested within Sections 3.4 and 3.5. Thus, Section 3.3 seems both premature and redundant.

Section 3.3.3, Margins of Safety, also requires a discussion of information that has, at this place in the chapter, not been developed or presented.

It is suggested that Section 3.3 be eliminated, since all of the data now requested there is more appropriately addressed in the two sections which follow, namely Section 3.4 and Section 3.5.

Section 3.4, Thermal Evaluation under Normal Conditions of Transport

It is suggested that discussion of the analytical or test model be included in this section. Note also that discussion of the fire performance of the package is inappropriate in this section (see Section 3.4.3, Maximum Thermal Stresses).

It is suggested that a discussion of general package performance under Normal Conditions of Transport be included at the end of this section.

Section 3.5, Thermal Evaluation under Hypothetical Accident Conditions

In subsection 3.5.1, Initial Conditions, it is suggested that the maximum pre-fire temperature, calculated using maximum decay heat and no solar, be identified as a relevant initial condition.

It is suggested that a discussion of general package performance under Hypothetical Accident Conditions be included at the end of this section.

Section 8.1.2, Weld Examinations

It is noted that weld examination is discussed fully in a new section 2.3.2, Examination. It is suggested that weld inspection information not be included in two places. Either eliminate Section 8.1.2, or move all of the information of Section 2.3.2 to Section 8.1.2.