U.S. NUCLEAR REGULATORY COMMISSION

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REGULATORY GUIDE

OFFICE OF NUCLEAR REGULATORY RESEARCH

REGULATORY GUIDE 3.60
(Task CE 410-4)

DESIGN OF AN INDEPENDENT SPENT FUEL STORAGE INSTALLATION (DRY STORAGE)

A. INTRODUCTION

Subpart F, "General Design Criteria," of 10 CFR Part 72, "Licensing Requirements for the Storage of Spent Fuel in an Independent Spent Fuel Storage Installation (ISFSI)," presents the general design criteria that are applicable to an ISFSI. This regulatory guide provides guidance acceptable to the NRC staff for use in the design of a dry storage ISFSI that will comply with these general design criteria.

Any information collection activities mentioned in this regulatory guide are contained in requirements in 10 CFR Part 72, which provides the regulatory basis for this guide. The information collection requirements in 10 CFR Part 72 have been cleared under OMB Clearance No. 3150-0132.

B. DISCUSSION

Group 57.7 of Subcommittee ANS-55 (Fuel and Waste Management) of the American Nuclear Society has developed ANSI/ANS-57.9-1984, "Design Criteria for an Independent Spent Fuel Storage Installation (Dry Storage Type)."* It was approved as an American National Standard in December 1984, and it defines the design criteria for a dry-type independent spent fuel storage installation.

C. REGULATORY POSITION

ANSI/ANS-57.9-1984 is acceptable to the NRC staff for use in the design of an ISFSI that uses a dry environment as the mode of storage subject to the following:

1. ANSI/ANS-57.9-1984 refers to a companion standard for design input of siting parameters, ANSI/ANS-2.19-1981, "Guidelines for Establishing Site-Related Parameters for Site Selection and Design of an Independent Spent Fuel Storage Installation (Water-Pool Type)," which has not been endorsed by the NRC. Until ANSI/ANS-2.19-1981 is endorsed by the NRC, the users of ANSI/ANS-57.9-1984 should seek guidance from the NRC staff on siting parameters that are used as design input.

2. Section 2.8 of ANSI/ANS-57.9-1984 defines a new term, "important confinement features," to classify structures, systems, and components with regard to the degree of their importance to safety. An existing term, "important to safety," is presently defined in 10 CFR Part 72 and is applicable for use. The term "important to safety" should be used instead of "important confinement features" as used in the standard.

3. Section 5.4.5.1 requires that engineered foundations take into account the potential for soil liquefaction during Design Event IV occurrences. This section should not be applied to portable storage system modules (i.e., metal storage casks) that can continue to provide confinement independently of storage foundation failure.

4. Section 5.4.6.1.1 should be supplemented to ensure that the storage system module will either withstand the maximum credible drop without compromising the integrity of the shielding structure or provide the capability for unloading the module. This section should be supplemented with the following: "If the storage system module is portable, provide the capability for withstanding the maximum credible drop during transport without compromising the integrity of the shielding structure or provide the capability for unloading an individual storage module for Design Event III."

5. Section 6.2.2.1.2(2) indicates that, in the design analysis of sealed containers, material properties should be determine at a temperature 50°C above the design

*Copies may be obtained from the American Nuclear Society, 555 North Kensington Avenue, La Grange Park, Illinois 60525.

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This guide was issued after consideration of comments received from the public. Comments and suggestions for improvements in these guides are encouraged at all times, and guides will be revised, as appropriate, to accommodate comments and to reflect new information or experience.

Written comments may be submitted to the Rules and Procedures Branch, DRR, ADM, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

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temperature for the fuel unit handling and the storage areas. Rather than using 50°C, material properties of the sealed containers should be determined at temperatures appropriate for off-normal and accident conditions.

6. Section 6.4.1.3 of ANSI/ANS-57.9-1984 indicates that, if the fuel unit heat generation rate is calculated, ANSI/ANS-5.1-1979 is to be used as the basis for the calculation. However, the calculational methods in Regulatory Guide 3.54, "Spent Fuel Heat Generation in an Independent Spent Fuel Storage Installation," should be used rather than ANSI/ANS-5.1.

7. Section 6.17.2.2.2 should be supplemented to add Section III of the ASME Boiler and Pressure Vessel Codes, as appropriate, in addition to Section VIII.

8. Section 7 of ANSI/ANS-57.9-1984 lists the codes and standards that are referenced in the standard. Endorsement of ANSI/ANS-57.9-1984 by this regulatory guide does not constitute an endorsement of the referenced codes and standards.

9. ANSI/ANS-57.9-1984 includes a number of appendices. Endorsement of the standard by this regulatory guide does not constitute an endorsement of the appendices.

D. IMPLEMENTATION

The purpose of this section is to provide information to applicants regarding the NRC staff's plans for using this regulatory guide.

Except in those cases in which an applicant proposes an acceptable alternative method for complying with specified portions of the Commission's regulations, the method described in this guide will be used in the evaluation of applications for a dry storage ISFSI submitted under 10 CFR Part 72.

VALUE/IMPACT STATEMENT

A draft value/impact was published with the draft guide (Task CE 410-4) when the guide was published for public comment in November 1985. No changes were necessary, so a separate value/impact statement for the final guide has not been prepared. A copy of the draft value/impact statement is available for inspection and copying for a fee in the Commission's Public Document Room at 1717 H Street NW., Washington, DC 20555, under Task CE 410-4.

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