

Spent Fuel Project Office Interim Staff Guidance - 10, Revision 1

Issue: Alternatives to the ASME Code

There is no existing American Society of Mechanical Engineers (ASME) Code for the design and fabrication of spent fuel dry storage casks. Therefore, ASME Code Section III, is referenced by NUREG-1536, "Standard Review Plan for Dry Cask Storage Systems," as an acceptable standard for the design and fabrication of dry storage casks. However, since dry storage casks are not pressure vessels, ASME Code Section III, cannot be implemented without allowing some alternatives to its requirements.

Discussion:

Title 10, Code of Regulations (10 CFR) Part 72, was established to provide requirements and criteria for the issuance of licenses to receive, transfer, and possess power reactor spent fuel and other radioactive materials associated with spent fuel storage. However, to date, no industry code or standard exists for the design and fabrication of dry cask storage systems. Therefore, the industry adopted and NRC accepted the use of ASME Code Section III.

ASME Code Section III was developed to provide guidance to design and fabricate pressure vessels. Since spent fuel dry storage systems are not required to be pressure vessels in every aspect (e.g., they do not require relief valves) not all of the requirements of the code apply or are practical. Therefore, in the past, NRC has allowed specific alternatives to the code on a case-by-case basis for those requirements that were not applicable or practical to implement for fuel dry storage cask systems. Such alternatives are always restricted to a specific situation or condition and are not granted on a blanket or recurring basis. Additionally, alternatives may not be employed in any other instances or by any other party unless given prior review and approval by the NRC staff for a specific application.

Early spent fuel dry cask storage licenses and certificates of compliance were issued without documenting commitments as to which specific alternatives to ASME Code Section III were approved. Poor quality assurance practices during design and fabrication led to additional, and in some cases unacceptable, deviations from the Code without appropriate certificate holder design review or prior NRC review and approval.

Recommendation¹:

Commitments to ASME Code Section III, with proposed alternatives to the Code, should be documented in the application. Likewise, staff-approved alternatives to the Code should be incorporated in the 10 CFR Part 72 license, certificate of compliance, or technical specifications issued by NRC. In addition, to ensure that problems similar to those identified with the use of ASME Code Section III do not exist in other areas important to safety, all codes and standards applied to components important to safety and associated approved alternatives as committed to by the applicant should be included in the license, certificate of compliance, or technical specification.

¹Current license or certificate of compliance holders, may request that this process be added to their license or certificate of compliance by seeking an amendment.

