# Spent Fuel Project Office
# Interim Staff Guidance - 14
# Supplemental Shielding

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**Issue:** Guidance regarding supplemental shielding that may be installed at an independent spent fuel storage installation (ISFSI) to meet the requirements of 10 CFR 72.104(a).

**Discussion:**

Recent design reviews of dry cask storage systems have identified the possible installation of supplemental shielding by general or site-specific licensees to meet the requirements of 10 CFR 72.104(a) regarding the dose limits for normal conditions of operation. Supplemental shielding, such as an earthen berm or concrete wall surrounding the general licensee's ISFSI, is not a part of the cask system design approved under 10 CFR Part 72, Subpart L. The staff considers engineered features for shielding purposes, such as berms or shield walls, to be important to safety. This staff guidance addresses supplemental shielding that may be installed by a general licensee and its classification as an important to safety component. Moreover, supplemental shielding at an ISFSI for a site-specific licensee would be included in the Safety Analysis Report (SAR).

**Regulatory Basis:**

Title 10, Code of Federal Regulations (10 CFR), Sections 72.104(a) and 106(b) define the dose equivalent requirements for normal and accident conditions respectively. Requirements for design and quality standards commensurate with importance to safety are contained in 10 CFR 72.122(a) and 10 CFR 72.122(b).

**Applicability:**

This interim staff guidance (ISG) is applicable to 10 CFR Part 72 ISFSI facilities and associated standard review plans NUREG-1536, "Standard Review Plan for Dry Cask Storage Systems," Section 12.V, and NUREG-1567, "Standard Review Plan for Spent Fuel Dry Storage Facilities," Sections 7 and 11.

**Technical Review Guidance:**

An applicant for cask approval through a certificate of compliance (CoC) under 10 CFR 72 Subpart L (the cask designer) provides analyses for a typical array of casks to show that the cask design meets the requirements of 10 CFR 72.104(a). In some cases, the cask designer's calculations must use distances greater than the 100 meter minimum controlled area boundary to show the ability to meet the dose limits in 10 CFR 72.104(a).

Variables in site specific conditions may cause a general or site-specific licensee to establish a controlled area boundary at a distance that is less than that assumed in the safety analysis report. As an alternative to distance, a general or site-specific licensee may design and install supplemental shielding to ensure compliance with 10 CFR 72.104(a) for normal operations and anticipated occurrences. The supplemental shielding would be classified as important to safety.

For the general licensee, the supplemental shielding would be incorporated into the site-specific evaluations required by 10 CFR 72.212(b). The site-specific licensee would include the description and analysis of the supplemental shielding in its SAR.

If the cask designer demonstrates compliance with 10 CFR 72.106(b) at a 100 meter minimum controlled area boundary, then supplemental shielding, installed by a general or site-specific licensee, would not be required to perform a post-accident safety function since the cask designer demonstrated that the requirements of 10 CFR 72.106(b) are met at the minimum site boundary without supplemental shielding.

The design of the supplemental shielding to perform safety functions during normal operations and anticipated occurrences, but not following accidents, is analogous to the neutron shielding requirements applicable to many dry storage cask designs. For example, the cask neutron shielding is classified as important to safety and is required to perform its intended function for normal operations and anticipated occurrences. Typically, the cask neutron shielding is not required to perform a post-accident safety function because the cask designer demonstrated that the requirements of 10 CFR 72.106(b) can be met without the neutron shielding.

**Recommendation:**

NUREG-1536, "Standard Review Plan for Dry Cask Storage Systems," Section 12.V, should be modified to reflect the following guidance regarding supplemental shielding installed by general licensees.

For casks approved for use by general licensees in accordance with 10 CFR 72 Subpart L, the Technical Specifications (TS) issued with cask approval should specify requirements to address supplemental shielding. The requirements should be in TS Section 4.3, "Site-Specific Parameters and Analyses," as indicated below:

> Supplemental Shielding: In cases where engineered features (e.g. earthen berms, shield walls) are used to ensure that the requirements of 10 CFR 72.104(a) are met, such features are to be considered important to safety and must be appropriately evaluated under 10 CFR 72.212(b).

NUREG-1567, "Standard Review Plan for Spent Fuel Dry Storage Facilities," Sections 7 and 11 should be modified to reflect the installation of supplemental shielding, its classification as important to safety, and the description and the analysis of the supplemental shielding in the site specific licensee's SAR.

**Approved** **/RA/ original signed by** /s/ June 13, 2000
**E. William Brach** **Date**