INSPECTION PROCEDURE 60851

# DESIGN CONTROL OF ISFSI COMPONENTS

PROGRAM APPLICABILITY: 2690

## 60851-01 INSPECTION OBJECTIVES

01.01 To determine whether the design control program described in a licensee's or certificate of compliance (CoC) holder's quality assurance (QA) program is effectively implemented.

01.02 To determine whether design changes implemented by the licensee or CoC holder have been properly evaluated for their impact on the functionality of dry cask storage system (DCSS) components used in an independent spent fuel storage installation (ISFSI).

01.03 To determine whether these design changes have been evaluated to ensure that the change does not:

a. require a change to the conditions in the license or the CoC;

b. require prior NRC approval;

c. create a significant increase in occupational exposure; or

d. have a significant unreviewed environmental impact.

## 60851-02 INSPECTION REQUIREMENTS

02.01 Determine whether the licensee's or CoC holder's QA program implementing procedures are in place and used effectively.

02.02 Determine whether:

a. a method exists to ensure that design changes initiated by the vendor or CoC holder are communicated to the licensee;

b. the licensee was notified of the design changes in a timely manner to minimize production or operations impacts; and

c. the licensee has reviewed and/or approved these design changes that were approved by the vendor or CoC holder.

02.03 Determine whether any nonconforming conditions, which were resolved by design changes, have been reviewed and approved by the licensee or CoC holder (if authorized by the CoC).

02.04 Determine whether all nonconforming conditions identified before completion of fabrication were appropriately resolved before the DCSS components affected were released to the licensee.

02.05 Determine whether the licensee, vendor, and fabricator personnel have established an effective method for tracking, evaluating, and dispositioning changes or modifications to the DCSS component design.

02.06 For selected design changes, determine whether the applicable documentation is complete and accurate, including relevant 10 CFR 50.59 or 72.48 evaluations.

## 60851-03 INSPECTION GUIDANCE

Definitions

a. Participants: The terms “licensee,” “vendor,” “CoC holder,” “fabricator,” “general licensee,” and “site-specific licensee” are terms you will commonly encounter while reviewing ISFSI activities. Refer to Inspection Manual Chapter (IMC) 2690, “Inspection Program for Dry Storage of Spent Reactor Fuel at Independent Spent Fuel Storage Installations,” Section 03, for definitions of these terms.

b. Safety Classification: ISFSI systems, structures, and components (SSCs) are classified as either “important to safety” or “not important to safety” by the ISFSI designer.

   If “important to safety,” the SSC will typically either:

   1. maintain the functions or conditions (i.e., confinement, criticality, shielding, and heat removal) necessary to store spent fuel safely;

   2. prevent significant damage to the spent fuel container (DCSS) during handling and storage; or

   3. provide reasonable assurance that spent fuel can be received, handled, packaged, stored, and retrieved without undue risk to public health and safety.

   If an SSC does not perform any of the preceding functions, it may be classified as “not important to safety.”

General Guidance

a. Additional Assistance. You may obtain additional assistance for both technical and design questions from the cognizant Spent Fuel Project Office (SFPO) project manager (PM). For questions involving ISFSI operations and how the ISFSI design can affect overall site operations, contact the SFPO PM who may request

NRR assistance if needed. Note that additional guidance for review of ISFSI storage pad designs is located in Appendix A of IP 60856, "Review of 10 CFR 72.212(b) Evaluations."

b. ISFSI SSCs Safety Classification. Before performing an inspection of ISFSI SSCs, the inspector should review the licensee's design basis documents to determine whether the licensee has applied an appropriate safety classification to a particular SSC. Note that site-specific variations in ISFSI designs may affect the safety classification of some SSCs.

c. ISFSI SSCs Not Important to Safety. For this class of SSCs, the licensee's use of generally accepted commercial-grade standards, practices, and materials in design, fabrication, and construction activities is acceptable. However, these SSCs must still conform to the design requirements described in the safety analysis report (SAR) and supporting engineering documents.

d. Design Changes. Each DCSS design has been approved by the NRC through the licensing process, for a site-specific license, or the 10 CFR Part 72, Subpart L, process for a general license. All changes to the design described in the SAR must be approved by the licensee or CoC holder. Approval authority for changes can be difficult for the inspector to determine. In such cases, you can find additional guidance in IMC 2690, Section 05.09.

e. Component Functionality. Functionality is the ability of a component to meet its design requirements. Some components may have multiple design requirements and several functions. These requirements and functions are defined in the SAR, safety evaluation report (SER), and, as applicable, the CoC or the site-specific license and technical specifications for the DCSS. For example, the cask support basket that separates the individual fuel bundles serves several functions: structural integrity, criticality control, heat transfer, and radiation shielding. Assistance in identifying the function(s) of a given component may be obtained from SFPO.

f. Document Review. Before any onsite inspection activity, for each DCSS in use, review (as applicable) the

1. safety analysis report and corresponding NRC safety evaluation report;

2. certificate of compliance;

3. site-specific license and technical specifications; and

4. 72.48 evaluations performed since the last update to the DCSS SAR.

SARs and SERs describing DCSS components have been written for each type of approved DCSS. Information on operational commitments for a particular DCSS may also be found in the CoC or the site-specific license and technical specifications. As DCSS designs vary, be careful to review the appropriate documentation. You can obtain copies of these documents from the appropriate regional division or cognizant SFPO PM.

Specific Guidance

(Note: The following inspection activities should be performed at the ISFSI location; however, document reviews may be performed elsewhere as conditions require.)

03.01 The licensee's or CoC holder's QA program should have been previously reviewed and approved by the NRC. Verify that design control and related activities (e.g., document control, special processes, or resolution of nonconforming conditions) are conducted under an approved QA program. Review completed audits and fabrication records, interview selected personnel, and/or review procedures. Review any related licensee QA audits or SFPO/NMSS inspections regarding DCSS design changes and determine whether corrective actions for the audit or inspection findings have been effectively implemented.

03.02 If the licensee has imposed requirements on the vendor or CoC holder to notify it of any design changes initiated by the vendor or CoC holder, determine whether the vendor or CoC holder is complying with these requirements. Review QA audits of the vendor's or CoC holder's activities in this area.

03.03 No specific guidance.

03.04 Determine whether there is a process in place under the QA program to keep track of design changes. Assess the adequacy of design interface activities, communications, evaluations and safety screenings, and documentation of changes.

03.05 Determine, through review of records, inspection of equipment and components, and/or interviews with selected personnel, whether the licensee or CoC holder has performed design changes and modifications. Evaluate the quality and timeliness of such documentation. Assess the thoroughness of documentation and the independence of reviews, particularly for those design changes that resolve nonconformances and field change requests. Check that evaluations contain a discussion of the effect on component functionality. You can find information on component functionality in the SAR, SER, CoC, or, as applicable, the site-specific license and technical specifications.

Determine the adequacy of the timing of design change reviews. Ideally the licensee or CoC holder should complete the reviews before the component is fabricated. However, if the licensee elects to proceed with fabrication "at risk," verify that the licensee does not use the DCSS until all design changes have been evaluated and appropriately dispositioned.

03.06 Design-basis accidents, such as a DCSS tipover or a drop from a maximum specified height, are addressed in the SAR; however, you may obtain assistance from the cognizant SFPO PM in determining whether a change requires NRC approval for a particular DCSS design.

## 60851-04 INSPECTION RESOURCES

To prepare for these inspections each inspector should spend approximately 32 hours on in-office review. Inspection activities will require approximately 40 hours, each, by three inspectors. Inspections may take place at the licensee's or CoC holder's facilities. Documentation is estimated to require 32 hours for each inspector. SFPO vendor

inspection staff is expected to have the lead in inspecting CoC holders, and any associated vendors or fabricators, with assistance from regional inspection staff. Regional inspection staff is expected to have the lead in inspecting licensees, with assistance from SFPO.

60851-05 REFERENCES

NUREG-1536, “Standard Review Plan for Dry Cask Storage Systems,” January 1997.

NUREG-1567, “Standard Review Plan for Spent Fuel Dry Storage Facilities,” March 2000.

NUREG/CR-6407, "Classification of Transportation Packaging and Dry Spent Fuel Storage System Components According to Importance to Safety," February 1996.

NRC Information Notice 95-29, “Oversight of Design and Fabrication Activities for Metal Components Used in Spent Fuel Dry Storage Systems,” June 7, 1995.

NRC Inspection Manual Chapter 2690, “Inspection Program for Dry Storage of Spent Reactor Fuel at Independent Spent Fuel Storage Installations,” December, 2001.

NRC Inspection Procedure 60856, “Review of 10 CFR 72.212(b) Evaluations,” November, 1999.

10 CFR § 50.59, “Changes, tests, and experiments.”

10 CFR § 72.48, “Changes, tests, and experiments.”

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