
INSPECTION PROCEDURE 60852

ISFSI COMPONENT FABRICATION BY OUTSIDE FABRICATORS

Effective Date: 08/17/2023

PROGRAM APPLICABILITY: IMC 2690

60852-01 INSPECTION OBJECTIVES

- 01.01 To determine whether a dry storage system (DSS), fabricated by an offsite entity and for use in an independent spent fuel storage installation (ISFSI), is constructed in accordance with the commitments and requirements specified in the safety analysis report (SAR), the U.S. Nuclear Regulatory Commission's (NRC's) corresponding safety evaluation report (SER), 10 CFR Part 72 and, as applicable, the certificate of compliance (CoC) or the site-specific license and technical specifications (TS).
- 01.02 To determine whether the outside fabricator's activities are conducted in accordance with NRC-approved Quality Assurance Program (QAP) requirements.

60852-02 INSPECTION REQUIREMENTS

- 02.01 Determine whether the fabrication specifications are consistent with the design commitments and requirements documented in the SAR, and, as applicable, the CoC or the site-specific license and TS.
- 02.02 Determine whether corrective actions for identified fabrication deficiencies have been implemented in a time frame commensurate with their significance, and whether nonconformance reports documenting the deficiencies have been initiated and resolved.
- 02.03 Determine whether individuals performing quality-related activities are trained and certified where required.
- 02.04 Determine whether the offsite fabricator's personnel are familiar with the specified design, designated fabrication techniques, testing requirements, and quality controls (QCs) associated with the construction of the DSS.
- 02.05 Determine whether:
- a. Materials, components, and other equipment received by the fabricator meet DSS design procurement specifications.
 - b. The procurement specifications conform to the design commitments and requirements contained in the SAR and, as applicable, the CoC or the site-specific license and TS.

- 02.06 Determine whether DSS components are being fabricated per approved quality assurance (QA) and 10 CFR Part 21 implementing procedures and fabrication specifications.
- 02.07 With regard to fabrication activities, determine whether:
- They are conducted under an NRC-approved QAP (10 CFR 72.140).
 - The provisions of 10 CFR Part 21, "Reporting of Defects and Noncompliance," for reporting defects that could cause a substantial safety hazard have been implemented.
 - The fabricator's personnel are familiar with the reporting requirements of 10 CFR Part 21.
 - The fabricator has complied with 10 CFR 21.6, "Posting requirements."
- 02.08 With regard to QA activities, determine whether:
- The fabricator has been audited by either the licensee or CoC holder.
 - For selected audits and inspection findings from (as applicable) QA audit or surveillance and/or inspection reports issued in the previous 2 years, the findings were appropriately handled with corrective actions implemented in a time frame commensurate with their safety significance.
 - Supervision and QC/QA personnel perform appropriate oversight during fabrication activities.

60852-03 INSPECTION GUIDANCE

03.01 Definitions

- Participants. The terms "licensee," "vendor," "CoC holder," "fabricator," "general licensee," and "site-specific licensee" are terms the inspectors 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.
- 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:

- Maintain the functions or conditions (i.e., confinement, criticality, shielding, and heat removal) necessary to store spent fuel safely;
- Prevent significant damage to the spent fuel container (DSS) during handling and storage; or
- 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.”

03.02 General Guidance

- a. Overall Focus. The inspection focus is to determine whether the fabricator is constructing ISFSI components in accordance with an NRC-approved QAP, and whether the DSS component, as fabricated, will perform its intended function as stated in the SAR and, as applicable, the CoC or the site-specific license and TS. DSS components must be constructed under an NRC-approved QAP, which may be either the licensee’s, CoC holder’s, or the fabricator’s. Refer to inspection procedure (IP) 60851, “Design Control of ISFSI Components,” for guidance on inspecting design changes.
- b. Additional Assistance. The inspectors may obtain additional assistance for both technical and design questions from the cognizant (DFM) project manager (PM).
- c. ISFSI SSCs Safety Classification. Before performing an inspection of ISFSI SSCs, the inspectors should review the CoC holder’s or licensee’s design basis documents to determine whether an appropriate safety classification to a particular SSC was applied. Note that site-specific variations in ISFSI designs may affect the safety classification of some SSCs.
- d. ISFSI SSCs Not Important to Safety. For this class of SSCs, the CoC holder’s or 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 SAR and supporting engineering documents.
- e. Design Changes. Each DSS 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 CoC holder. Effective with a rule change that became effective April 5, 2001, licensees, vendors and CoC holders are all authorized by the provisions of 10 CFR 72.48 to make changes to the ISFSI or DSS described in the SAR, to approve changes to procedures described in the SAR, or to perform tests or experiments not described in the SAR without prior NRC approval. Refer to IP 60857, “Review of 10 CFR 72.48 Evaluations,” for additional guidance in this area.
- f. 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, SER, and, as applicable, the CoC or the site-specific license and TS for the DSS. 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 DFM.
- g. Document Review. Before any onsite inspection activity, for each DSS in use, review (as applicable) the:
 1. SAR and corresponding NRC SER;
 2. CoC;

3. Site-specific license and TS; and
 4. 10 CFR 72.48 evaluations performed since the last update to the **DSS** SAR. SARs and SERs describing **DSS** components have been written for each type of approved **DSS**. Information on operational commitments for a particular **DSS** may also be found in the CoC or the site-specific license and TS. As **DSS** designs vary, be careful to review the appropriate documentation.
- h. Since fabricators **may** build components for several licensees or **CoC holders**, the fabricators may have been previously inspected by the **Office of Nuclear Materials Safety and Safeguards (NMSS)**, **Nuclear Reactor Regulation (NRR)**, or regional staff. The inspectors can obtain information on inspections of ISFSI vendors and fabricators from **NMSS/DFM**. These reports should be reviewed for identified fabricator program weaknesses that the inspectors may want to consider inspecting to assess the fabricator's effectiveness in addressing the weaknesses.

03.03 Specific Guidance

(Note: The following inspection activities should be performed primarily at the fabricator's facility. However, document reviews may be performed elsewhere as conditions require. It may also be advantageous to inspect subcontractors used by the fabricator if time permits.)

- a. Inspection Requirement 02.01. Fabrication specifications include, but are not limited to, component material specifications, fabrication techniques, examination techniques, and required dimensions and tolerances. Previously identified problems related to **DSS** component fabrication include:
 1. Incomplete documentation of actual fabrication activities in fabrication traveler documents;
 - (a) Failure to explicitly state required critical component dimensions, such as minimum allowable wall thickness, on fabrication traveler documents;
 - (b) Failure to require verification of critical component dimensions using a specified non-destructive examination (NDE) technique (i.e., ultrasonic testing) as required in the **DSS** design documentation;
 - (c) Design changes made outside of the approved design change process (e.g., by letter or memorandum);
 - (d) Inadequate oversight of fabrication activities by the licensee or CoC holder; and
 - (e) Fabrication of a component to a different safety classification than that shown in the design specifications.
- b. Inspection Requirement 02.02. For nonconformance reports in which the adverse condition is determined to be acceptable "as is," the report should contain sufficient information to justify why the nonconforming condition does not compromise the ability of the component to perform its intended function(s). Nonconformances should be dispositioned before the **DSS** is released to the licensee, unless otherwise authorized by the licensee. Review nonconforming conditions that are resolved by design changes to

ensure that component function is not compromised. The inspectors may obtain assistance in determining component function from NMSS/DFM. Also, the inspectors can find supplemental information on inspecting design changes in IP 60851.

- c. Inspection Requirement 02.03. Fabricator personnel performing quality functions may be welders, NDE inspectors, QC staff, and QA auditors. A program for certification of each of these personnel should have been defined and implemented by the fabricator and approved by the licensee prior to performance of quality activities by these individuals.
- d. Inspection Requirement 02.04. No specific guidance.
- e. Inspection Requirement 02.05. Verify that the procurement specifications conform to the design requirements contained in the SAR, CoC, and other applicable engineering documents. Place emphasis on instances in which components or raw materials do not meet the procurement specifications thus representing a nonconforming condition. **Verify that there is a documented method for the identification and control of nonconforming material and components, including counterfeit, fraudulent or suspect items (CFSI), to preclude inadvertent use. CFSI is defined as items that are intentionally manufactured or altered to imitate a legitimate product with the legal right to do so (Counterfeit); intentionally misrepresented with the intent to deceive (Fraudulent); or reasonably suspected of being Counterfeit or Fraudulent (Suspect).** Verify that the licensee's or CoC holder's design change process has evaluated and handled these nonconformances. Reference section 03.03.b of this IP for guidance on the evaluation of nonconformances.

The inspectors can find supplemental guidance on the quality classification levels of ISFSI components from references found in section 05 of this IP.

- f. Inspection Requirement 02.06. The inspectors may find a discussion of the required methods of fabrication in the SAR or CoC and, if applicable, the site-specific license.
- g. Inspection Requirement 02.07. No specific guidance.
- h. Inspection Requirement 02.08. Determine if and when the licensee's QA staff or other licensees' QA staffs have audited fabricator activities. The inspectors can obtain information about audits of specific fabricators from the licensee's QA staff.

The inspectors should obtain and review copies of audits and surveillances performed by onsite QA personnel (the fabricator's or other oversight groups such as the CoC holder's or licensee's). Assess the quality and depth of the audits and surveillances and determine if appropriate corrective actions were implemented for negative findings. The inspectors should also review fabrication documents, such as travelers, to ensure that hold points are identified and QA signatures made where required.

60852-04 INSPECTION RESOURCES

To prepare for these inspections, each inspector should spend approximately 16 hours on in-office review. Inspection activities will require approximately 30 hours, each, by three inspectors at the vendor's or fabricator's facilities. Documentation is estimated to require 16 hours for each inspector. **The DFM** Inspection and **Oversight** Branch will primarily conduct the inspection of fabricators and vendors, with assistance from other NMSS and regional inspectors. Inspection hours may vary, depending on the amount of activity occurring at the fabricators.

60852-05 REFERENCES

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

IMC 2690, "Inspection Program for Storage of Spent Reactor Fuel and Reactor-Related Greater-Than-Class C Waste at Independent Spent Fuel Storage Installations and for 10 CFR Part 71 Transportation Packagings," January 2021

IP 60851, "Design Control of ISFSI Components"

IP 60857, "Review of 10 CFR 72.48 Evaluations"

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

END

Attachment 1: Revision History for IP 60852

Commitment Tracking Number	Issue Date	Description of Change	Description of Training Required and Completion Date	Comment Resolution and Closed Feedback Form Accession Number (Pre-Decisional Non-Public Information)
N/A	ML073090636 01/16/08 CN 08-003	This document has been revised to change SFPO to SFST and some minor editorial changes. No other changes were proposed by 10/23/2007.	N/A	N/A
N/A	ML23216A051 08/17/23 CN 23-024	Revised to incorporate CFSI guidance and minor editorial changes.	Yes, Verbal discussion of changes during next ISFSI inspector counterpart call Due date id 10/31/2023.	ML23216A048