



# Independent Spent Fuel Storage Installation Inspection Program Structure and Procedures

**Taiwan ISFSI Workshop**

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- Manual Chapter 2690
- NMSS/NRR Memorandum
- Introduction to Inspection Procedures 60851 through 60858
- NUREG 6314

## Purpose:

- To define the inspection program requirements for the dry storage of spent reactor fuel and other radioactive materials associated with spent fuel storage at an independent spent fuel storage installation (ISFSI)

## Objectives:

- Establish the general policy and responsibilities for the inspection of ISFSIs
- Define the program for inspecting ISFSIs and related activities
- Provide a framework to achieve a uniform level of inspection

## Responsible Organizations:

- Office of Nuclear Material Safety and Safeguards (NMSS)
- Division of Spent Fuel Storage and Transportation (SFST); part of NMSS
- Office of Nuclear Reactor Regulation (NRR)
- Regional Offices

# Manual Chapter

## 2690

### NMSS/SFST

- Develops and implements the Agency's regulatory, licensing, and inspection programs for the storage of nuclear reactor spent fuel
- Develops and assesses the overall effectiveness of the spent fuel dry storage inspection program
- Develops, modifies, and revises inspection program guidance; MCs and IPs (inspection procedures)
- Serves as a source of technical expertise for questions on DCSS' or ISFSIs

## Manual Chapter

### 2690

### NMSS/SFST

- Manages the assignment, scheduling, and performance of inspections of ISFSI vendors (including CoC holders) and fabricators
- Provides SFST inspection resources to support region-led inspections of ISFSIs
- Interfaces, as necessary, with the various NRR Office, project and technical division staffs, regarding the inspection of ISFSI activities at 10 CFR Part 50 reactor sites

# Manual Chapter 2690 Regional Offices

- Manage the planning, scheduling, and performance of inspections of ISFSIs using the inspection resources allocated by the regional planning processes
- Ensure that accountability is maintained over the implementation of the inspection program per the guidance in Sections 05.03 and 05.05 of MC 2690

# Manual Chapter 2690 Regional Offices

- Contacts SFST, as necessary, to request SFST resources in response to any events or problems at assigned ISFSIs
- Ensures that inspections of ISFSI activities are documented in accordance with Sections 05.07 and 05.08 of MC 2690

# Manual Chapter

## 2690

### NRR

- Retains oversight of spent fuel at reactors, until the fuel has either been safely stored in an ISFSI or transferred offsite
- Provides inspection resources, as requested, to NMSS or the Regions for routine and reactive ISFSI inspection activities performed at 10 CFR Part 50 licensees

# Manual Chapter 2690 Reporting Process

- Results of inspections conducted by the regional offices shall be documented in accordance with regional requirements
- Results of inspections conducted by headquarters (SFST) shall be documented as described in Section 05.07 of MC 2690

## Manual Chapter

### 2690

## SFST Reporting Process

- Inspection results shall be documented in inspector notes or in narrative report format depending on inspection outcome
- When using inspector notes, NRC Form 591 shall be used to document the result of the inspection with respect to enforcement status
- At SFST discretion, narrative reports may be used in lieu of Form 591

# Manual Chapter 2690 Appendix A

- Describes the inspection program for ISFSI activities authorized under the provisions of a general or specific license for an ISFSI associated with a 10 CFR Part 50 reactor site and whose support programs are conducted under the reactor site's 10 CFR Part 50 license
- Guidance is provided on the scheduling and conduct of inspections during various phases of ISFSI activities: design, fabrication, and construction; preoperational testing; loading and unloading; and storage monitoring

# Manual Chapter 2690 Appendix B

- Describes the inspection program for AFR ISFSIs as defined in Section 03.06 of IMC 2690
- Guidance is provided on scheduling and conducting inspections of the applicant's programs that support operation of the ISFSI and of design, fabrication, construction, preoperational testing, loading and unloading, and storage-monitoring activities

## **NMSS/NRR MOU**

- The Office of Nuclear Materials Safety and Safeguards (NMSS) and the Office of Nuclear Reactor Regulation (NRR) have agreed to work together to support the regulatory inspection of Independent Spent Fuel Storage Installations.
- Fractional sharing of budgetary resources
- Coordinated support from Headquarters, Regional, and Resident Staff for effective oversight of ISFSI activities.

# Introduction to Inspection Procedures

- **60851, DESIGN CONTROL OF ISFSI COMPONENTS**

## INSPECTION OBJECTIVES

- 1. To determine that the design control program described in a licensee's or certificate of compliance (CoC) holder's quality assurance program (QAP) is effectively implemented.
- 2. To determine that 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).
- 3. To determine that 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 U.S. NRC approval;
  - c. Create a significant increase in occupational exposure; or
  - d. Have a significant unreviewed environmental impact.

# Introduction to Inspection Procedures

(Continued)

- **60852, ISFSI COMPONENT FABRICATION BY OUTSIDE FABRICATORS**

## INSPECTION OBJECTIVES

- 1. To determine whether a dry cask storage system (DCSS), 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).
- 2. To determine whether the outside fabricator's activities are conducted in accordance with NRC-approved Quality Assurance Program (QAP) requirements.

# Introduction to Inspection Procedures

(Continued)

- **60853, ON-SITE FABRICATION OF COMPONENTS AND CONSTRUCTION OF AN ISFSI**

## INSPECTION OBJECTIVES

- 1. To determine whether Independent Spent Fuel Storage Installation (ISFSI) dry cask storage system (DCSS) components are fabricated in accordance with:
  - a. The Safety Analysis Report (SAR);
  - b. The Quality Assurance Program (QAP);
  - c. The Safety Evaluation Report (SER);
  - d. The Certificate of Compliance (CoC), or the site-specific license and technical specifications (TS); and
  - e. 10 CFR Part 72.
- 2. To determine whether ISFSI construction activities are conducted in accordance with the QAP.
- 3. To determine whether the licensee has reviewed ISFSI activities for determination of no adverse impact on site operations or TS.

# Introduction to Inspection Procedures

(Continued)

- **60854, PREOPERATIONAL TESTING OF AN INDEPENDENT SPENT FUEL STORAGE INSTALLATION**

**INSPECTION OBJECTIVES**

- **1. Determine by direct observation and independent evaluation whether:**
  - a. The licensee has developed, implemented, and evaluated preoperational testing activities to safely load spent fuel from the spent fuel pool (SFP) into a dry cask storage system (DCSS) and to transfer the loaded DCSS to the independent spent fuel storage installation (ISFSI).
  - b. The licensee has developed, implemented, and evaluated a preoperational test program in order to safely retrieve spent fuel from an ISFSI and transfer it to either the SFP or a separate cask or canister.
  - c. The licensee has fulfilled all test acceptance criteria and all identified deficiencies are resolved before receipt of fuel at the ISFSI; and
  - d. The licensee has made changes to appropriate plant programs and procedures to support operation of the ISFSI.

# Introduction to Inspection Procedures

(Continued)

- **60854, PREOPERATIONAL TESTING OF AN INDEPENDENT SPENT FUEL STORAGE INSTALLATION**

## INSPECTION OBJECTIVES (Continued)

- 2. Determine that the activities in Section 01.01 are accomplished in accordance with the commitments and requirements contained in the Safety Analysis Report (SAR), NRC's Safety Evaluation Report (SER), Certificate of Compliance (CoC) for the DCSS design being used under a general license or the license and technical specifications (TS) for an ISFSI operated under a specific license, the licensee's Quality Assurance (QA) program, and 10 CFR Part 72.
- 3. Independently assess, at the completion of the preoperational testing program, the licensee's readiness to load spent fuel into the ISFSI or retrieve spent fuel from the ISFSI.

# Introduction to Inspection Procedures

(Continued)

## 60855, OPERATION OF AN INDEPENDENT SPENT FUEL STORAGE INSTALLATION

### INSPECTION OBJECTIVES

- Determine by direct observation and independent evaluation whether the licensee is operating the independent spent fuel storage installation (ISFSI) in conformance with the commitments and requirements contained in the Safety Analysis Report (SAR), U.S. Nuclear Regulatory Commission's (NRC's) Safety Evaluation Report (SER), Certificate of Compliance (CoC) for the dry cask storage system (DCSS) design being used under a general license or the license and technical specifications (TS) for an ISFSI operated under a specific license, the licensee's Quality Assurance Program (QAP), and 10 CFR Part 72.

# Introduction to Inspection Procedures

(Continued)

## 60856, REVIEW OF 10 CFR 72.212(b) EVALUATIONS

### INSPECTION OBJECTIVES

- Section 72.210 of Title 10 of the Code of Federal Regulations (10 CFR 72.210) grants a general license for the storage of spent fuel in an independent spent fuel storage installation (ISFSI) at power reactor sites to any person authorized to possess or operate nuclear power reactors under 10 CFR Part 50. Section 72.210 gives the conditions for this general license and 72.212(b) delineates requirements that the general licensee shall meet. This inspection procedure (IP) provides guidance for determining whether a general licensee has met these requirements before operating its ISFSI.

# Introduction to Inspection Procedures

(Continued)

## 60857, REVIEW OF 10 CFR 72.48 EVALUATIONS

### INSPECTION OBJECTIVES

- In 10 CFR Part 72, “Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste,” Section 72.48, “Changes, tests and experiments,” contains requirements for the process by which licensees (specific and general) and certificate holders may make changes, under certain conditions, to their facilities (independent spent fuel storage installation (ISFSI) or monitored retrievable storage facility), spent fuel storage cask designs, and procedures, as described in the final safety analysis report (FSAR), as updated, without prior U.S. Nuclear Regulatory Commission (NRC) approval.
- This procedure is primarily intended to provide guidance to inspectors in assessing the effectiveness of licensee or certificate holder performance of 10 CFR 72.48 evaluations, and in ensuring that any required license or certificate of compliance (CoC) amendments have been obtained. A secondary focus of this inspection procedure (IP) is a programmatic review of the licensee or certificate holder’s 10 CFR 72.48 procedures and training.

# Introduction to Inspection Procedures

(Continued)

## 60858, AWAY-FROM-REACTOR ISFSI INSPECTION GUIDANCE

### INSPECTION OBJECTIVES

- Determine by direct observation and independent evaluation whether the licensee is operating and maintaining independent spent fuel storage installation (ISFSI) programs at away-from-reactor (AFR) ISFSIs in conformance with the commitments and requirements contained in the Safety Analysis Report (SAR), Nuclear Regulatory Commission's (NRC's) Safety Evaluation Report (SER), Certificate of Compliance (CoC) for the dry cask storage system (DCSS) design being used under a general license or the license and Technical Specifications (TS) for an ISFSI operated or maintained under a specific license, the licensee's Quality Assurance (QA) program, and 10 CFR Part 72.

# Introduction to Inspection Procedures

(Continued)

## 60858, AWAY-FROM-REACTOR ISFSI INSPECTION GUIDANCE

### INSPECTION OBJECTIVES (Continued)

- An AFR ISFSI, as defined in Inspection Manual Chapter (IMC) 2690, is 1) a specific licensed ISFSI whose associated support programs are not conducted under a 10 CFR Part 50 license, or 2) any general licensed ISFSI where decommissioning and final survey activities related to reactor operations are completed and the only remaining operation conducted under the 10 CFR Part 50 license is the operation of the general licensed ISFSI. This inspection procedure (IP) provides specific guidance for the inspection of programs associated with operational AFR ISFSIs (i.e., QA, safety evaluations, radiation protection, emergency preparedness, and training) that are not reviewed by IMC 2500 series IPs associated with operating or decommissioning reactor facilities.

- **NUREG 6314, “Quality Assurance Inspections for Shipping and Storage Containers”**

6314 was developed to provide a structured and consistent approach to inspections.

Used as a guide by NRC inspectors for conducting quality assurance inspections of transportation packaging and dry spent fuel storage system suppliers (Note below).

Suppliers are defined as designers, fabricators, distributors, users, or owners of dry storage systems for radioactive materials

# **NUREG 6314**

## **(Continued)**

NUREG 6314 is typically used by SFST Inspection Staff during inspections to determine regulatory compliance with Title 10 of the Code of Federal Regulations, Part 72, Subpart G; and supplier's quality assurance program commitments.

# **NUREG 6314**

## **(Continued)**

- The method used in this document treats each activity at a facility as a separate performance element, and combines the activities within the framework of an “inspection tree or map”.
- The method separates each performance element into several areas for inspection and identifies guidelines, based on regulatory requirements, to qualitatively evaluate each area.

# **NUREG 6314**

## **(Continued)**

### **4.3 Fabrication Controls (3.)**

- The fabrication process is required to be controlled and verifiable from the onset of design through the completion of the manufacturing process.
- The areas include material procurement, fabrication and assembly, test and inspection, and equipment. In house, contractor, or vendor supplied fabrication controls are evaluated using identical criteria.
- The types of documents to be reviewed include design documents, procurement documents, fabrication documents (e.g., travelers), process documents (e.g., machining and welding), procedures, test documents, NDE records, and management control documents.
- The fabrication controls checklists are provided in Appendix C of the NUREG.

# NUREG 6314

## (Continued)

NUREG/CR-6314

Use of Inspection Tree

### Inspection Tree Major Elements

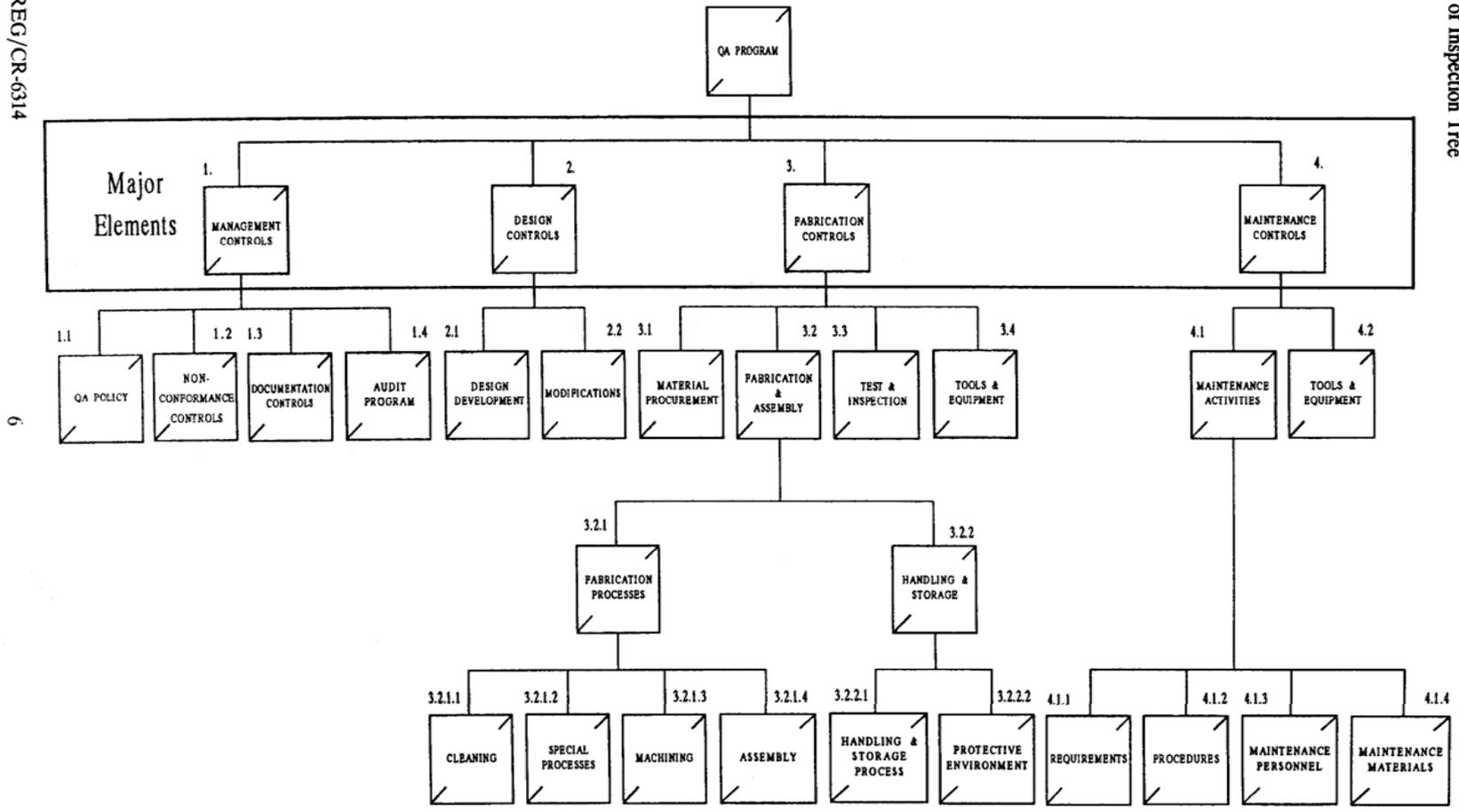


Figure 1. Inspection tree major elements.



# Summary

- Manual Chapter 2690 provides much of the direction for the use of ISFSI inspection procedures 60851-60858
- NMSS/NRR Memorandum provides the agreement for support of both Part 50 portion of ISFSI Activities.
- Inspection Procedures 60851 through 60858 are the working level documents for ISFSI Inspection.
- NUREG 6314 provides guidance to ensure thorough quality assurance inspections