NRC INSPECTION MANUAL

INSPECTION PROCEDURE 60853

ONSITE FABRICATION OF COMPONENTS AND CONSTRUCTION OF AN INDEPENDENT SPENT FUEL STORAGE INSTALLATION

Effective Date: 08/17/2023

PROGRAM APPLICABILITY: IMC 2690

60853-01 INSPECTION OBJECTIVE

- 01.01 To review and assess whether Independent Spent Fuel Storage Installation (ISFSI) dry storage system (DSS) components are fabricated/constructed in accordance with the guidance and requirements outlined in:
 - 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 (TSs); and
 - e. Title 10 of the *Code of Federal Regulations* (CFR) Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste."
- 01.02 To determine whether the licensee is properly reviewing ISFSI construction activities for determination of no adverse impact onsite operations or TSs.

60853-02 INSPECTION REQUIREMENTS

- 02.01 Determine whether:
 - a. Materials, components, and other equipment and services received by the fabricator or licensee meet 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 TSs;
 - c. 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.

- 02.02 With regard to onsite DSS fabrication activities, 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 TSs;
 - b. The licensee, vendor, and fabricator personnel have established an effective method for tracking, evaluating, and dispositioning changes or modifications to the DSS component design;
 - c. For selected design changes, the applicable documentation is complete and accurate, including relevant 10 CFR 50.59 "Changes, tests, and experiments," or 10 CFR 72.48, "Changes, tests, and experiments," evaluations (e.g., the heavy haul path, fabrication facilities, etc.);
 - d. Individuals performing quality-related activities are trained and certified where required;
 - e. The onsite fabricator's personnel are familiar with the specified design, designated fabrication techniques, testing requirements, and quality controls (QC) associated with the construction of the DSS.
- 02.03 With regard to onsite DSS fabrication quality assurance (QA) activities, determine whether:
 - a. DSS components are being fabricated per an NRC-approved QA program in accordance with the applicable requirements in 10 CFR 72.140 and 10 CFR Part 21 implementing procedures and fabrication specifications;
 - b. The fabricator, if a separate entity from the licensee or CoC holder responsible for the fabrication activities, has been audited by either the licensee or CoC holder as required by 10 CFR 72.154 and the approved QA program;
 - c. For selected deficiencies from audits, surveillances, and/or self-assessments issued in the previous two years, the deficiencies were appropriately handled with corrective actions implemented in a time frame commensurate with their safety significance;
 - d. Nonconformance reports documenting the deficiencies have been initiated and resolved, and corrective actions for identified fabrication deficiencies have been implemented in a time frame commensurate with their significance.
- 02.04 With respect to ISFSI pad design:
 - a. For general-licensed ISFSIs, verify that the licensee completed evaluations which demonstrate that the ISFSI storage pads and areas have been designed to adequately support the static and dynamic loads of the stored DSSs, considering potential amplification of earthquakes through soil-structure interaction, and soil liquefaction potential or other soil instability due to vibratory ground motion; or
 - b. For specific-licensed ISFSIs, verify that design requirements contained in the SAR, SER, and license or TSs have been properly incorporated into documents governing construction of the ISFSI storage pad.

- 02.05 For pad construction observations, verify:
 - a. Subsoil has been compacted or otherwise treated to meet the specifications defined in the SAR, SER, CoC, and, if applicable, the site-specific license and TSs;
 - b. Subsoil has been properly treated (including removal of organic material such as roots) to meet the requirements specified for the ISFSI pad;
 - c. The correct size, grade, and spacing of reinforcing steel is installed per the pad's specifications;
 - d. Restrictions on batch composition and time between mixing and placement of concrete are met;
 - e. Concrete is properly placed in adequate forms, consolidated (vibrated), finished, and cured;
 - f. Slump and air entrainment tests fall within the specified values;
 - g. The overall dimensions, orientation, and levelness of the pad meet the design specifications;
 - h. Compressive strength samples are collected, cured, and tested, per specifications, and tests indicate whether the concrete meets the specified minimum design strength;
 - i. Appropriate QC/QA involvement in and oversight of pad construction activities;
 - j. Through interviews with selected workers and supervisors, that individuals are familiar with the design and construction specifications for the ISFSI pad.
- 02.06 For other ISFSI-related items and activities, such as construction or modification of roadways/railways, buildings, security systems, and other support systems, such as cranes, verify:
 - a. For specific-licensed ISFSIs, that the design requirements contained in the SAR, SER, and license or TSs have been properly incorporated into documents governing construction or modification of these items;
 - b. For general-licensed ISFSIs, that design requirements contained in the 10 CFR 72.212(b) evaluations have been properly incorporated into documents governing construction or modification of these items;
 - c. If construction or modification activities are observed, then verify through interviews with selected workers and supervisors, that individuals are familiar with the design and construction specifications for the activity and that there is appropriate QC/QA involvement in and oversight of the activity.

60853-03 INSPECTION GUIDANCE

03.01 Definitions

- <u>Participants</u>. 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 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," section 03, for definitions of these terms.
- b. <u>Safety Classification</u>. 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 DSS 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."

03.02 General Guidance

The inspectors should refer to the risk prioritization table in IMC 2690, appendix D. A majority of the inspector's focus should include review of the highest Priority Level items. The totality of items selected for inspection should also address the five safety focus areas described in IMC 2691, section 04.05, as applicable.

- a. <u>Overall Focus</u>. The inspection focus should be to determine whether:
 - The fabricator is constructing onsite 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 TSs. DSS components must be constructed under an NRC-approved QAP, which may be either the licensee's, CoC holder's, or the fabricator's.
 - 2. The ISFSI and its storage pad are designed and constructed in accordance with the site-specific license and TSs or in accordance with the DSS CoC, as applicable. Licensees for a general-licensed ISFSI have reviewed ISFSI activities, such as pad construction, for determination of no adverse impact onsite operations or TSs.
- b. <u>Additional Assistance</u>. The inspectors may obtain additional assistance for both technical and design questions from the cognizant Division of Fuel Management (DFM) Project Manager (PM).

- c. <u>ISFSI SSCs Safety Classification</u>. Before performing an inspection of ISFSI SSCs, the inspectors should review the licensee's design-basis documents to determine whether the licensee has applied an appropriate safety classification to the SSC. Note that site-specific variations in ISFSI designs may affect the safety classification of some SSCs. In determining the specific level of effort for the inspection, inspectors should risk inform the level of effort associated with each SSC based upon its safety classification.
- d. <u>ISFSI SSCs Not Important to Safety</u>. 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 SAR and supporting engineering documents.
- e. <u>Design Changes</u>. 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 general license. Licensees, vendors and CoC holders are authorized 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 in accordance with 10 CFR 72.48. Refer to IP 60857, "Review of 10 CFR 72.48 Evaluations," for additional guidance in this area.
- f. <u>Component Functionality</u>. 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 TSs 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. <u>Document Review</u>. Before any onsite inspection activity, for each DSS in use, the inspectors should review (as applicable) the:
 - 1. SAR and corresponding NRC SER;
 - 2. CoC;
 - 3. Site-specific license and TSs;
 - 4. 10 CFR 72.212(b) evaluations for general license ISFSIs;
 - 5. 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 TSs. As DSS designs vary, be careful to review the appropriate documentation. The inspectors can obtain copies of these documents from the appropriate regional division or cognizant DFM PM.

h. <u>Fabrication Inspections</u>. Because fabricators build components for several licensees, the fabricators may have been previously inspected by the Nuclear Material 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 in order to assess the fabricator's effectiveness in addressing the weaknesses.

i. Questions or concerns could be identified during an inspection where the inspector requires additional assistance. Additional guidance can be found in IMC 2690, section 05.15, for obtaining additional assistance.

03.03 Specific Guidance

a. Inspection Requirement 02.01. The inspectors should verify that the procurement specifications conform to the design requirements contained in the SAR, CoC, and other applicable engineering documents. Emphasis should be placed on instances in which components or raw materials do not meet the procurement specifications thus representing a nonconforming condition. The inspectors should 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). The inspectors should verify that the licensee's or CoC holder's design change process has evaluated and handled these nonconformances, if necessary. Reference section 03.03.c.3 of this procedure for guidance on the evaluation of nonconformances.

Supplemental guidance on the quality classification levels of ISFSI components can be found in NUREG/CR-6407.

- b. <u>Inspection Requirement 02.02</u>. Guidance for onsite DSS fabrication activities.
 - 1. <u>Inspection Requirement 02.02.a.</u> 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:
 - (a) Incomplete documentation of actual fabrication activities in fabrication traveler documents;
 - (b) Failure to explicitly state required critical component dimensions, such as minimum allowable wall thickness, on fabrication traveler documents;
 - (c) 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;
 - (d) Design changes made outside of the approved design change process (e.g., by letter or memorandum);
 - (e) Inadequate oversight of fabrication activities by the licensee or CoC holder;
 - (f) Fabrication of a component to a different safety classification than that shown in the design specifications;

2. <u>Inspection Requirement 02.02.b.</u> The inspectors should 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. The quality of such documentation should be evaluated. The thoroughness of documentation and the independence of reviews, particularly for those design changes that resolve nonconformances and field change requests should be assessed. The inspectors should check that evaluations contain a discussion of the effect on component functionality. The inspectors can find information on component functionality in the SAR, SER, CoC, or, as applicable, the site-specific license and TSs.

The adequacy of the timing of design change reviews should be determined. 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," the inspectors should verify that the licensee does not use the DSS until all design changes have been evaluated and appropriately dispositioned.

- 3. <u>Inspection Requirement 02.02.c.</u> The inspectors should verify that design-basis accidents, such as a DSS tip-over or a drop from a maximum specified height, are addressed in the SAR; however, the inspectors may obtain assistance from the cognizant DFM PM in determining whether a change requires NRC approval for a particular DSS design.
- 4. <u>Inspection Requirement 02.02.d.</u> 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.
- 5. <u>Inspection Requirement 02.02.e.</u> The inspectors should determine, through interviews with selected personnel, whether personnel are knowledgeable in these areas.
- c. <u>Inspection Requirement 02.03</u>. Guidance for onsite DSS fabrication QA activities.
 - 1. <u>Inspection Requirement 02.03.a</u>. The inspectors should determine, through review of implementing procedures and fabrication specifications, whether they have been approved in accordance with the Quality Assurance Program. The inspectors should also determine whether oversight is performed during fabrication activities by the licensee or CoC holder as required by the NRC-approved QA program. Oversight may be performed, for example, by supervision and/or QA personnel.
 - 2. <u>Inspection Requirements 02.03.b-c</u>. The inspectors should determine if and when the licensee's or CoC holder's QA staff or other licensees' or CoC holders' QA staffs have audited fabricator activities. The inspectors can obtain information about audits of specific fabricators from the licensee's or CoC holder'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). The inspectors should 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 are made where required.

- 3. <u>Inspection Requirement 02.03.d.</u> 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 shall be dispositioned before the DSS is released to the licensee, unless otherwise authorized by the licensee through a conditional release of the DSS. The inspectors should 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.
- d. Inspection Requirement 02.04. Guidance on ISFSI pad design.

NUREG-2215, section 4.5 contains additional guidance on design and analysis of reinforced concrete structures.

1. The inspectors should determine whether the reactor site soil structures differ from the soil structures under the ISFSI storage pad, the ground acceleration associated with the safe shutdown earthquake (SSE), and the elevation at which this ground acceleration was applied to the reactor structures.

This information to determine whether the licensee used appropriate assumptions in the seismic and liquefaction analyses for the storage pad should be reviewed.

The inspectors should verify that the ISFSI site's seismic ground motion acceleration analysis envelops the seismic ground motion acceleration specified in the DSS SAR design bases. The inspectors should also verify that the ISFSI site's seismic ground motion acceleration has been used in the pad's soil liquefaction analysis.

If the soil structures under the ISFSI storage pad are different from the soil structures under the reactor site, the licensee's analysis should consider these differences by providing an accurate analysis of the seismic conditions under the ISFSI storage pad. Similarly, if the seismic acceleration used in the reactor site Updated Final Safety Analysis Report (UFSAR) was applied at the base of the seismic Category I reactor containment building foundation, the licensee's analysis should translate this acceleration to the free field ground surface for the ISFSI storage pad and its foundations.

 The inspectors should assess the licensee's conclusions about the acceptability of the storage pad's design with respect to the site's hydrology, geology and seismology.

Hydrological data should include the effects of potential flooding and soil erosion on the ISFSI site. Geotechnical data from soil borings and standard penetration tests (SPTs) should include soil descriptions, groundwater table level, effects of long-term consolidation of soil beneath the pad, and the potential for swelling on excavation or removal of overburden. Geological information should include evidence that the soil borings were to the proper depth (i.e., bedrock or very dense material, as evidenced by high SPT blow counts), the thicknesses of soil layers below the storage pad, and other significant properties of the soil layers (i.e., unit weight, Poisson's ratio, low-strain shear modulus, moisture content, fines content, relative density, and shear-wave velocity).

- 3. The inspectors should verify that the licensee's evaluation addresses the following criteria:
 - (a) The pad's design supports the static load of the DSS.
 - (b) The pad's design considers the total and differential settlements for both static and seismic loadings.
 - (c) The pad's design uses ultimate and allowable soil-bearing capacities, including appropriate safety factors, that are less than the actual soil-bearing capacity.
 - (d) If the licensee needs to perform soil remediation and replace soil with engineered fill, the inspectors should verify that post modification soil properties are determined by test and used in the final design analyses that use soil properties.
 - (e) The pad's design uses the soil liquefaction analysis to evaluate the stability of any slopes adjacent to the ISFSI. Adjacent slopes are stable or any potential soil movement during a seismic event will not adversely affect the safety of the ISFSI.
 - (f) The licensee's analysis should show that the ISFSI storage pad will adequately support both static and dynamic loads, as required by 10 CFR 72.212(b)(5)(ii). This analysis should include the methods used to calculate the total and differential settlements of the pad, the ultimate and allowable soil-bearing capabilities, and the stresses and strains resulting from the sequential, partial, and total loads the pad could experience.
 - (g) These calculations should be able to realistically model both static and dynamic soil-structure interaction (SSI) phenomena. The analysis should recognize the uncertainties in SSI phenomena, including: (1) the soil and rock configuration, material characteristics, and lack of symmetry in the soil deposits; (2) modeling of soil constituents and soil properties; (3) the effects of a varying water table over time; (4) the effects of soil swelling and corresponding reversed tensile and compressive stresses on the storage pad; and (5) the effects of partial separation of, or loss of contact between, the storage pad and the soil during sequential loading of DSSs or seismic events.
 - (h) If the modeling method used a finite element analysis, the criteria for determining the location of the side and bottom boundaries should be assessed.
- e. Inspection Requirement 02.05. Guidance on ISFSI pad construction.
 - Inspection Requirements 02.05.a b. The inspectors should determine, through review of soil preparation documentation, whether the acceptance criteria (e.g., organic material removal, compaction, etc.) defined in the specifications have been met.

- 2. <u>Inspection Requirement 02.05.c</u>. The inspectors should determine, through review of purchase orders, specifications, construction drawings, and pad walkdown prior to concrete placement, that the rebar is correct.
- 3. <u>Inspection Requirement 02.05.d</u>. The inspectors should determine, through review of truck delivery tickets, whether the times and delivery truck drum rotations are acceptable.
- 4. <u>Inspection Requirement 02.05.e</u>. The inspectors should determine, through observation of concrete placement activities, whether they are being conducted in accordance with approved procedures and American Concrete Institute (ACI) standards.
- 5. <u>Inspection Requirement 02.05.f.</u> The inspectors should determine, through observation of concrete sample testing, whether the testing is done per approved procedures and American Society for the Testing of Materials (ASTM)/ACI standards and that the values satisfy the acceptance criteria.
- 6. <u>Inspection Requirement 02.05.g</u>. The inspectors should determine, through construction drawings and a walkdown of the formwork prior to concrete placement, whether the overall parameters meet the design specifications.
- 7. <u>Inspection Requirement 02.05.h</u>. The inspectors should determine, through observation of concrete sample testing, whether the testing is done per approved procedures and ASTM/ACI standards. There should be an emphasis on the process for casting samples, typically cylinders, and that the in-field storage conditions for the samples are in accordance with ASTM C31/C31M.

The inspectors should determine whether the compressive strength values of the samples satisfy the acceptance criteria. Note that the samples collected for testing will not be tested for 7 and/or 28 days. Therefore, the results will not be known until several weeks after concrete placement. Also note that extra (backup) samples may be taken as a precaution in case of an anomaly with the samples tested.

- 8. <u>Inspection Requirement 02.05.i</u>. The inspectors should determine, through observation of construction activities, whether QC/QA oversight is apparent at the construction site and at the sample collection area.
- 9. Inspection Requirement 02.05.j. No specific guidance.
- f. Inspection Requirement 02.06. No specific guidance.

60853-04 INSPECTION RESOURCES

Inspection Requirements 02.01, 02.02, and 02.03 are performed in accordance with Phase 1 ISFSI inspections described in IMC 2690, appendix A. The estimated average time to complete the inspection requirements is 64 hours of direct inspection per inspection occurrence.

Inspection Requirements 02.01, 02.04, 02.05, and 02.06 are performed in accordance with Phase 2 ISFSI inspections described in IMC 2690, appendix A. The estimated average time to

complete the inspection requirements for a new licensee or for a site switching DSS systems is 120 hours of direct inspection per inspection occurrence.

In determining the specific level of effort for the inspection, inspectors should risk inform the level of effort associated with each SSC based upon its safety classification.

60853-05 PROCEDURE COMPLETION

Inspection procedure completion is based upon completion of the inspection procedure requirements. The inspection procedure shall be completed in accordance with the inspection procedure frequency requirements specified in IMC 2690, appendix A.

60853-06 REFERENCES

- 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"
- IMC 2691, "Technical Basis for the Independent Spent Fuel Storage Installation Inspection Program"
- IP 60851, "Design Control of ISFSI Components"
- IP 60856, "Review of 10 CFR 72.212(b) Evaluations"
- IP 60857, "Review of 10 CFR 72.48 Evaluations"
- NUREG/CR-6407, "Classification of Transportation and Dry Spent Fuel Storage System Components According to Importance to Safety," February 1996.
- NUREG-2215, "Standard Review Plan for Spent Fuel Dry Storage Systems and Facilities," April 2020
- NRC Information Notice (IN) 95-28, "Emplacement of Support Pads for Independent Spent Fuel Dry Storage Installations at Reactor Sites," June 5, 1995
- NRC IN 95-29, "Oversight of Design and Fabrication Activities for Metal Components Used in Spent Fuel Dry Storage Systems," June 7, 1995
- NRC IN 2000-11, "Licensee Responsibility for Quality Assurance Oversight of Contractor Activities Regarding Fabrication and Use of Spent Fuel Storage Cask Systems," August 7, 2000
- NRC IN 2008-17, "Construction Experience with Concrete Placement," October 22, 2008
- ACI 301, "Specification for Structural Concrete"
- ACI 302.1, "Guide for Concrete Floor and Slab Construction"
- ACI 305.1, "Specification for Hot Weather Concreting"

ACI 306.1, "Standard Specification for Cold Weather Concreting"

- ACI 308.1, "Specification for Curing Concrete"
- ACI 318," Building Code Requirements for Structural Concrete"
- ACI 349, "Code Requirements for Nuclear Safety-Related Concrete Structures"
- American Society for the Testing of Materials (ASTM) C31/C31M, "Standard Practice for Making and Curing Concrete Test Specimens in the Field"
- ASTM C39/ C39M, "Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens"
- ASTM C94/C94M, "Standard Specification for Ready-Mixed Concrete"
- ASTM C138/C138M, "Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete"
- ASTM C143/C143M, "Test Method for Slump of Hydraulic-Cement Concrete"
- ASTM C172," Standard Practice for Sampling Freshly Mixed Concrete"
- ASTM C173/C173M, "Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method"
- ASTM C192/C192M, "Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory"
- ASTM C231/C231M, "Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method"

END

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required Completion Date	Comment Resolution and Closed Feedback Form Accession Number (Pre- Decisional, Non- Public Information)
N/A	ML073100093 01/16/08 CN 08-003	This document has been revised to change SFPO to SFST and some minor editorial changes. No other major changes are proposed by 10/22/2007.	N/A	N/A
N/A	ML20177A414 09/11/20 CN 20-042	Revised to update inspection hours. Also revised to clarify and enhance the inspection requirements and guidance as a result of the risk-informed review of the inspection process.	Yes. Verbal discussion of changes during inspector training session on revised ISFSI inspection program. Due date is 12/31/2020	ML20177A415
N/A	ML23216A052 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 is 10/31/2023	ML23216A049

Attachment 1: Revision History for IP 60853