

NRC INSPECTION MANUAL

NMSS/DFM

INSPECTION MANUAL CHAPTER 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**

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TABLE OF CONTENTS

2690-01	PURPOSE	1
2690-02	OBJECTIVES.....	1
2690-03	DEFINITIONS.....	1
2690-04	RESPONSIBILITIES AND AUTHORITIES	3
2690-05	PROGRAM DESCRIPTION	5
05.01	Inspection Program for ISFSI Activities	5
05.02	Inspection Program for Transportation Packagings	5
05.03	Risk-Informed Safety Focus Areas	5
05.04	Planning, Scheduling, and Tracking of Inspection Activities.....	6
05.05	DFM Scheduling of Vendor and Fabricator Inspections	6
05.06	Integrated Inspection Plan	6
05.07	Applicability of Very Low Safety Significance Issue Resolution Process (VLSSIR) ...	7
05.08	Regional Inspection Reports	7
05.09	Headquarters Inspection Reports	8
05.10	Enforcement Action Follow-up	8
05.11	Management Entrance and Exit Meetings	9
05.12	Review of Open Allegations.....	9
05.13	Witnessing Unsafe Conditions	9
05.14	Inspector Qualification	9
05.15	Coordination of Technical Support for Inspection Activities.....	10
2690-06	REFERENCES	11
Appendix A:	Inspection Program Guidance for ISFSIs	14
2690A-01	SCOPE	14
2690A-02	INSPECTION FREQUENCIES	14
2690A-03	CONDUCT OF SUPPLEMENTAL OR REACTIVE INSPECTIONS.....	18
2690A-04	INSPECTION PROGRAM COMPLETION	19
Appendix B:	Inspection Program Guidance for Transportation Packagings	20
2690B-01	SCOPE	20
2690B-02	INSPECTION FREQUENCY.....	20
Appendix D:	Guidance for Risk Informed Inspection Prioritization	22
2690D-01	SCOPE	22
Appendix E:	Guidance for Risk-Informed Review of 72.48 Evaluations	29
2690E-01	SCOPE	29
Appendix F:	Inspection Program Modifications During Pandemics, Epidemics, or Other Widespread Illnesses or Diseases	31
2690F-01	PURPOSE	31
2690F-02	OBJECTIVES	31
2690F-03	APPLICABILITY	31
2690F-04	DEFINITIONS.....	32
2690F-05	RESPONSIBILITIES AND AUTHORITIES	32
2690F-06	REQUIREMENTS	32
2690F-07	GUIDANCE	32
2690F-08	REFERENCES	35
Revision History for IMC 2690.....		Att1-1

2690-01 PURPOSE

To establish the U.S. Nuclear Regulatory Commission's (NRC) inspection program for independent spent fuel storage installations (ISFSIs), dry storage systems (DSSs), and transportation packagings.

2690-02 OBJECTIVES

- 02.01 To establish the general policy and responsibilities for the inspection of ISFSIs, DSSs, and transportation packagings.
- 02.02 To define the program for inspections related to ISFSIs, the design, fabrication, and testing of DSSs, and the design, fabrication, testing, and maintenance of transportation packagings to ensure that these activities do not pose an undue risk to public health and safety.
- 02.03 To establish a consistent process of inspection to ensure the health and safety of workers and the public, protect the environment, and promote the common defense and security.

2690-03 DEFINITIONS

ISFSI. An independent spent fuel storage installation (ISFSI) is a complex designed and constructed for the interim storage of spent nuclear fuel, solid reactor-related greater-than-Class C (GTCC) waste, and other radioactive materials associated with spent fuel and reactor-related GTCC waste storage. An ISFSI which is located on the site of another facility licensed under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 72 or a facility licensed under 10 CFR Part 50, and which shares common utilities and services with that facility or is physically connected with that other facility may still be considered independent. Generally, GTCC casks are loaded under the guidance of Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program" and IMC 2561, "Decommissioning Power Reactor Inspection Program," however monitoring is performed under this IMC.

DSS. Dry storage system (DSS) is the term used to describe the physical system, either a cask or a canister in its shielding overpack, which holds the spent fuel and is a component of the ISFSI. An ISFSI may contain several different DSS designs.

For this inspection program, four different entities will be discussed.

- a. Licensee. An organization that is operating an ISFSI for the storage of spent fuel and other radioactive materials associated with spent fuel under a 10 CFR Part 72 license. Licensees are of two types, specific and general and are ultimately responsible for ensuring that the ISFSI is designed, fabricated, constructed, and operated in accordance with the requirements contained in 10 CFR Part 72 and the specific license or the general license Certificate of Compliance (CoC). The licensee may also fabricate DSS components or construct ISFSI structures, such as the storage pad.
- b. Vendor. An organization, typically independent from the licensee, that is responsible for the design of a particular DSS and ensuring that design commitments contained in the safety analysis report (SAR) are met during the fabrication of the DSS. For a general license ISFSI, the vendor is also typically the CoC holder for the DSS. For a specific license ISFSI, there is no CoC, and the SAR contains the relevant information on the

design and fabrication of the DSS. Regardless of the type of license, the vendor is also responsible for ensuring that the DSS is designed and fabricated in accordance with applicable requirements.

- c. CoC Holder. A vendor that has obtained NRC approval for a specific DSS under 10 CFR Part 72, Subpart L. The issuance of a CoC to the vendor authorizes the use of the DSS in an ISFSI under the general license.
- d. Fabricator. An organization that is physically building the DSS components and receives design oversight from either the vendor, licensee, or both. The fabricator is responsible for manufacturing the DSS in accordance with the vendor's requirements and drawings.

Away-From-Reactor (AFR). An AFR is a 1) specifically licensed ISFSI whose associated support programs are not conducted under a 10 CFR Part 50 license, or 2) any generally 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.

Integrated Inspection Plan (IIP). An integrated inspection plan (IIP) is a document developed and approved by a regional branch chief for each new ISFSI site and for any site switching dry cask storage systems (see Section 05.06). The IIP provides supplemental guidance for planning and scheduling the numerous inspections and any technical reviews that are required before initial loading of spent fuel into the ISFSI. The IIP is intended to ensure that adequate resources are applied to perform the necessary inspections before initial loading of spent fuel into the ISFSI.

Inspection Frequencies

- a. When Required. The inspection effort should be performed when the activity or event occurs at the facility as specified in Appendix A or B.
- b. Quarterly. The inspection effort will be performed once each calendar quarter.
- c. Triennial. The inspection will be performed at least once during Reactor Oversight Process (ROP) cycles 1-3, ROP cycles 4-6, ROP cycles 7-9, etc. It is intended for this to be based on a rolling 3-year cycle. See IMC 2515 Attachment 1 for ROP cycles.

Period of Extended Operation (PEO). The period of extended operation is the period (e.g., 20 or 40 years) commencing immediately after the expiration of a licensee's or CoC holder's initial license or CoC, respectively. Examples of determining the PEO are provided in 76 *Federal Register* 8890, February 16, 2011.

Deviation Deviations are defined as not completing all inspection procedure requirements as defined in the individual inspection procedure or not completing the inspection procedure within the required frequency as defined in Appendix A or B of this IMC.

Very Low Safety Significance Issue Resolution Process (VLSSIR Process) A process used to discontinue inspection of an issue involving an unresolved licensing basis question in which (1) the resolution of the issue would require considerable staff effort; and (2) the agency has chosen to not expend further effort to resolve the question because the issue would be no greater than green under the ROP or severity level (SL) IV under the traditional enforcement process if it were determined to be a violation.

Director, Division of Fuel Management (DFM).

- a. Directs the activities of DFM and is responsible for their implementation.
- b. Approves revisions to the inspection program and procedures for activities related to ISFSIs, DSSs, and transportation packagings.
- c. Oversees DFM and regional implementation of the spent fuel and transportation oversight program.

Chief, Inspection and Oversight Branch (IOB), DFM.

- a. Develops and implements the agency's ISFSI and transportation packaging inspection programs.
- b. Develops and assesses the overall effectiveness and consistency of the ISFSI and transportation packaging inspection programs.
- c. Develops, modifies, and revises inspection program guidance [NRC IMCs and inspection procedures (IPs)] under DFM's purview to ensure that ISFSI and transportation packaging related activities are conducted in accordance with appropriate regulations and standards. Incorporates lessons learned into the inspection program for IMCs and IPs under DFM's purview. Recommends changes to other organizations for IMCs and IPs under their purview.
- d. Serves as a resource for providing technical expertise for questions on DSSs or ISFSIs (e.g., DSS design requirements, ISFSI citing criteria, accident analysis, or conditions contained in the specific license or CoC), and transportation packagings.
- e. Manages the assignment, scheduling, and performance of inspections of DSS and transportation packaging vendors (including CoC holders) and fabricators, including ISFSI onsite fabricators.
- f. Provides DFM inspection resources to support region-led inspections of ISFSIs. Plans, schedules, and coordinates, with the Regional Branch Chief, as necessary, inspections of ISFSI vendors, fabricators, and CoC holders.
- g. Serves as the point of contact for Office of Nuclear Reactor Regulation (NRR) Project Manager (PM) or Regional Branch Chief requests to obtain DFM resources. Implements guidance in Section 05.15 for regional inspector requests for assistance.
- h. Serves as the point of contact for collecting operational experience.
- i. Participates with the Regional Branch Chief in the development of an IIP for each new ISFSI site or change in DSS types (see Section 05.06).
- j. Interfaces, as necessary, with NRR project and technical division staffs, regarding the inspection of ISFSI activities at 10 CFR Part 50 reactor sites.
- k. Receives, reviews, and maintains documentation of deviations from the inspection program.

DFM Project Manager (DFM/PM).

- a. For all assigned ISFSIs, serves as the point of contact for licensee and CoC holders regarding technical and regulatory issues that affect the ISFSI. The NRR/PM is the point of contact for ISFSI issues that affect the reactor's structures, systems, and components (SSCs) (see Section 04.07).
- b. For all assigned 10 CFR Part 50 reactor site ISFSIs, serves as the point of contact for the NRR/PM where reactor operations affect the ISFSI.
- c. For all assigned 10 CFR Part 50 reactor site ISFSIs, serves as the point of contact for the NMSS/Division of Decommissioning, Uranium Recovery, and Waste Programs (DUWP) PM where reactor decommissioning operations affect the ISFSI.

Regional Administrator.

- a. Oversees and provides program direction for implementation of the ISFSI inspection program elements that are performed by the regional office.
- b. Ensures, within assigned budget limitations, that the regional office staff includes an adequate number of qualified inspectors to implement the inspection program described in this IMC.

Regional Division Director.

- a. Manages the implementation of the ISFSI inspection program as assigned by the Regional Administrator.
- b. Directs the execution of the ISFSI inspection program elements that are performed by the division.
- c. Ensures that allocated inspection resources are appropriately scheduled for the inspection of the Region's ISFSIs.
- d. Ensures that necessary reactive inspection resources are applied to deal with events and problems at the Region's ISFSIs, as required.

Regional Branch Chief.

- a. For each assigned ISFSI, manages the planning, scheduling, and performance of inspections of ISFSIs using the inspection resources allocated by the regional planning processes.
- b. Assures regional inspection activities address the five risk-informed safety focus areas and that inspection focus is based on the prioritization tables in Appendices D and E of this IMC.
- c. For each assigned ISFSI, contacts the DFM/Branch Chief IOB, including the DFM/PM for awareness purposes as necessary, to request DFM resources consistent with the guidance in Section 05.15, in response to any events, problems, or other needed assistance.

- d. For each assigned ISFSI, maintains the Replacement Reactor Program System (RRPS) and notifies the DFM/Branch Chief IOB of any changes to inspection frequencies for the inspections listed in Appendices A and B of this IMC.
- e. For each new ISFSI site and for any licensee switching dry cask storage systems, creates an IIP in accordance with Section 05.06. Provides feedback and any lessons learned to the applicable DFM/PM and Branch Chief IOB.

NRR Project Manager (NRR/PM).

- a. Serves as the headquarters point of contact on issues where the operation of an ISFSI, located at a 10 CFR Part 50 reactor site, affects the reactor's SSCs (e.g., 10 CFR 50.59 issues). Informs the DFM/PM if any such issues are identified and of any technical and regulatory issues related to a particular ISFSI.
- b. Serves as the point of contact for the DFM in obtaining NRR resources and support on ISFSI issues, for an ISFSI located at a 10 CFR Part 50 reactor site.
- c. Contacts the assigned DFM/PM with any requests for DFM resources and support on issues where the ISFSI is affecting the 10 CFR Part 50 reactor site.
- d. Serves as the headquarters point of contact for public and media inquiries on ISFSI issues, for an ISFSI located at a reactor site. Contacts the assigned DFM/PM for additional information or guidance as required.

2690-05 PROGRAM DESCRIPTION

05.01 Inspection Program for ISFSI Activities

The program requirements for inspecting either a general or specific licensed ISFSI and DSS vendors and fabricators is described in Appendix A of this IMC.

05.02 Inspection Program for Transportation Packagings

The program requirements for inspecting transportation packagings is described in Appendix B of this IMC.

05.03 Risk-Informed Safety Focus Areas

Items that result in unintended radiological exposure, damage to the fuel, a confinement breach, or impact an operating plant are unacceptable and are considered risk significant. Fuel damage and canister breach could place the canister into an unanalyzed condition. Inspectors shall review items associated with the below five risk-informed safety focus areas to determine if licensee performance provides reasonable assurance of adequate protection.

- a. Occupational exposure
- b. Public exposure
- c. Fuel management
- d. Confinement/canister integrity
- e. Impact to plant operation

These focus areas were chosen to address potential issues of greatest safety significance for a dry cask storage program. The occupational and public exposure focus areas encompass the direct impact of dry cask operations on workers and the public. The fuel management and confinement/canister integrity focus areas are those that encompass radiological barriers to workers and the public. The impact to plant operation focus area encompasses activities that may impact site operations and the core damage frequency and large early release frequency (LERF) risk metrics of the NRC's Safety Goal Policy for operating reactors.

Appendix D "Guidance for Risk-Informed Inspection Prioritization," of this IMC provides detailed guidance for the prioritization of inspection activities at ISFSIs. Appendix E "Guidance for Risk-Informed Review of 72.48 Evaluations," of this IMC provides detailed guidance for the prioritization of review of 10 CFR 72.48 evaluations at ISFSIs, vendors, and fabricators.

05.04 Planning, Scheduling, and Tracking of Inspection Activities

Each region shall, at a minimum, use RRPS for planning, scheduling, and recording of completed inspections of ISFSI activities. The Regional Branch Chief should maintain a three-year rolling inspection schedule to aid in the determination of required Full Time Equivalent (FTE) resources needed to successfully implement inspection program requirements. To determine resource needs, inspectors should maintain frequent communication with their licensees. A Technical Assistance Request (TAR), for example, may take six months or more to resolve. If it's known that a TAR or other significant assistance will be needed, the inspector should strive to identify these needs as early as possible through periodic communication with their licensees.

05.05 DFM Scheduling of Vendor and Fabricator Inspections

The scheduling of vendor and fabricator inspections should consider vendor or fabricator performance and recent vendor or fabricator inspections performed for other ISFSI licensees. Additional inspections may be conducted as required. The DFM will inform any affected regions of the schedule for inspecting vendors or fabricators and any schedule changes as soon as the need for the change is identified. The DFM will inform the applicable region of any fabricator inspections at general or specific licensee sites.

05.06 Integrated Inspection Plan

For a new specific or general license ISFSI site being constructed, or for any change in DSS type, the applicable Regional Branch Chief, with input and assistance from the DFM if desired, shall develop an IIP in accordance with the guidance listed below.

- a. For new ISFSI sites, all IPs shall be performed as identified in the IIP. For sites switching dry cask storage systems, a gap analysis shall be performed to determine which IPs or portions of IPs should be performed.
- b. The IIP should indicate licensee milestones, planned inspection dates, inspection procedures to be used, and inspection resources needed.

05.07 Applicability of Very Low Safety Significance Issue Resolution Process (VLSSIR)

The VLSSIR process as described below is applicable to the Office of Nuclear Material Safety and Safeguards business lines.

NOTE: The VLSSIR process cannot be used to resolve known compliance issues, issues where there is a clear indication that a noncompliance **occurred but certain details concerning the issue have not been finalized (e.g., specific date, time, location), nor should it be used to establish a staff position.**

In some cases, an inspector may identify an issue that results in an unresolved licensing basis question which may take staff considerable effort to resolve. In the context of VLSSIR, the term "licensing basis" refers to all regulations, license conditions, and requirements applicable to a facility or licensee, including, but not limited to, the licensee's written commitments for ensuring compliance. In determining how to proceed, the inspector should consider the significance of the facility or licensee, including, but not limited to, the licensee's written commitments for ensuring compliance. In determining how to proceed, the inspector should consider the significance of the issue.¹ The inspector should refer to the guidance available in IMC 0610, Appendix G, "Screening and Documentation of Very Low Safety Significance Issue Resolution Process," to determine if the issue is no greater than severity level (SL) IV if determined to be a non-compliance.² **If the issue is no greater than SL IV, further evaluation of the issue can be discontinued using the VLSSIR process. If further inspection of the issue cannot be discontinued using the VLSSIR process, then resolution of the issue should be continued following existing processes, including the identification of an unresolved issue and/or use of the headquarters technical support for regional activities, e.g., Technical Assistance Request (TAR) process.**

If inspection of an issue is discontinued using the VLSSIR process, no further staff effort to resolve the issue is necessary. Documentation of the issue, in accordance with IMC 0610, Appendix G, and IMC 0611, as appropriate, should provide an appropriate level of inspection closure, knowledge management, and transparency.

Issues identified **associated with the 10 CFR Part 50 license and not the 10 CFR Part 72 license should utilize the guidance associated with the VLSSIR process identified in IMC 0612.**

Once a VLSSIR is documented the staff should generally refrain from spending additional inspection resources on the issue.

05.08 Regional Inspection Reports

Inspections conducted at operating reactor sites shall be documented in accordance with Section 13.02 of IMC 0611, "Power Reactor Inspection Reports." Inspection reports at

¹ Although the definition for VLSSIR refers to "safety significance," the VLSSIR process applies to a broad range of regulated areas related to safety, including security, emergency planning and preparedness, documentation control, and reporting.

² IMC 0610, Appendix G, is being updated to incorporate guidance on the application of the VLSSIR process. In the meantime, staff may use the interim staff guidance provided in the NMSS OD memo on VLSSIR process application by materials business lines (ML22353A599), to determine if the issue is no greater than SL IV.

operating reactor sites normally should be integrated into the resident inspector's quarterly report. All other inspections will be documented similar in scope to operating reactor site reports in accordance with IMC 0610, "Nuclear Material Safety and Safeguards Inspection Reports." Inspection reports shall contain the relevant 10 CFR Part 72 docket number and, for specific licensees, the license number. These reports shall be transmitted to licensees in accordance with regional requirements as appropriate.

Inspection findings at operating reactor sites that are related to operating reactor equipment, or a ROP program or process shall be evaluated consistent with guidance in IMC 0612, "Issue Screening" and for cross cutting aspects as appropriate. Traditional enforcement is used for ISFSI-specific activities to ensure consistent NRC enforcement decisions whether the site is under an operating power reactor, decommissioning power reactor, or AFR inspection program.

When documenting the VLSSIR process application, inspectors may use the Reactor Program Systems (RPS) to save and manage inspection reports and supporting information. The RPS already has a search capability and a utility that the staff can use to track use and entries into the system, including any VLSSIR use/entries.

05.09 Headquarters Inspection Reports

Inspections led by Headquarters shall be documented using a narrative report format in accordance with the guidance in IMC 0610 and IMC 0617, as applicable. Inspectors shall consider the guidance in IMC 0610 when evaluating inspection findings. Inspectors may also refer to the guidance in IMC 0617, Appendix E, as applicable, when evaluating inspection findings to determine if they have more than minor safety significance.

Inspection reports shall contain the relevant 10 CFR Part 72 and/or Part 71 docket number(s). These reports shall be transmitted to licensees in accordance with Headquarters requirements as appropriate.

When documenting the VLSSIR process application, inspectors may use the Reactor Program Systems (RPS) to save and manage inspection reports and supporting information. The RPS already has a search capability and a utility that the staff can use to track use and entries into the system, including any VLSSIR use/entries.

05.10 Enforcement Action Follow-up

If a licensee has open items resulting from traditional enforcement including violations, deviations, Confirmatory Action Letters (CALs), Confirmatory Orders, and Confirmatory Orders associated with the Alternative Dispute Resolution (ADR) process; inspectors shall review and disposition the items in accordance with the NRC enforcement policy and manual. Any in-office or on-site inspection or follow-up review should be conducted in accordance with the appropriate inspection procedure including IP 92702, "Follow-up on Traditional Enforcement Actions Including Violations, Deviations, Confirmatory Action Letters, Confirmatory Orders, and Alternative Dispute Resolution Confirmatory Orders," IP 92722, "Follow Up Inspection for Any Severity Level I or II Traditional Enforcement Violation or for Two or More Severity Level III Traditional Enforcement Violations in a 12 Month Period," and IP 92723, "Follow Up Inspection for Three or More Severity Level IV Traditional Enforcement Violations in the Same Area in a 12-Month Period."

05.11 Management Entrance and Exit Meetings

Inspectors are required to meet with licensee management as part of every inspection. Inspectors should hold an entrance and exit meeting with the senior licensee representative who has responsibility for the areas to be inspected. Each inspection conducted must include discussing inspection results with licensee management. At the conclusion of an inspection, inspectors must discuss their preliminary findings with the licensee's management. Additional expectations and requirements on the conduct of entrance and exit meetings can be found in IMC 2515-12, Section 12.01, "Management Entrance and Exit Meetings".

05.12 Review of Open Allegations

Inspectors (DFM and region-based) shall review all open allegations pertaining to areas which they will be inspecting as part of their inspection preparation. The purpose of this review is to allow the inspectors to become aware of concerns in the areas which they may be inspecting. However, all qualified inspectors should be cognizant of the procedures to follow in the event any allegation (even if it is outside their area of expertise) is disclosed to them and shall follow the direction of the Allegation Review Board, and the requirements of Management Directive 8.8, "Management of Allegations."

05.13 Witnessing Unsafe Conditions

A goal of the NRC inspection program is to witness licensee activities in as close to a normal environment as possible. From the assessment of these observations, conclusions are drawn relative to the licensee's ability to properly conduct licensed activities. Notwithstanding this goal, under no circumstances will an NRC inspector knowingly allow an unsafe work practice or a violation which could lead to an unsafe situation to occur or continue in his/her presence to provide a basis for enforcement action. When NRC personnel identify unsafe work practices or violations which could lead to an unsafe situation, they shall make every reasonable attempt to prevent them from occurring or continuing in their presence. When such situations are identified, a licensee representative shall promptly be notified so that corrective or preventive measures can be taken. This action shall be taken without regard for any impact it may have on the ability of the NRC to take future enforcement action.

05.14 Inspector Qualification

Safety inspection of activities associated with ISFSIs (e.g., DSS fabrication, support pad construction, loading and unloading procedures) shall be performed by qualified inspectors in accordance with IMC 1246, Appendix B3, "Training Requirements and Qualification Journal for Independent Spent Fuel Storage Installation Inspector," or IMC 1246, Appendix B2, "Training Requirements and Qualification Journal for Spent Fuel Storage and Transportation Inspector," as appropriate. Training requirements for inspectors qualified under IMC 1245, Appendix C1, "Reactor Operations Inspector Technical Proficiency Training and Qualification Journal," IMC 1245, Appendix C2, "Reactor Engineering Inspector Technical Proficiency Training and Qualification Journal," or IMC 1245 Appendix C3, "Health Physics Inspector Technical Proficiency Training and Qualification Journal" is provided in IMC 1246, Appendix B3. If expertise is needed from a non-ISFSI qualified individual, see Section 05.15 for additional guidance.

Safety inspection of activities associated with transportation packagings (e.g., package design, fabrication, and maintenance) shall be performed by qualified inspectors in accordance with IMC 1246, Appendix B2, "Training Requirements and Qualification Journal for Spent Fuel Storage and Transportation Inspector."

Security inspection of activities associated with ISFSIs shall be performed by qualified inspectors in accordance with IMC 1245, Appendix C13, "Independent Spent Fuel Storage Installation Security Inspector Technical Proficiency Training and Qualification Journal," or IMC 1246, Appendix B4, "Independent Spent Fuel Storage Installation Security Inspector Technical Proficiency Training and Qualification Journal."

05.15 Coordination of Technical Support for Inspection Activities

Inspectors are technically qualified in the areas in which they inspect, though there are instances where inspectors may seek different levels of technical guidance or assistance in inspection activities. This may include seeking support from Headquarter (HQ) technical staff or regional inspectors with specific areas of expertise. Inspectors should consider reaching out to their peers in the other Regions as a resource to discuss inspection related questions and concerns. It's possible, similar questions or concerns have been previously raised or addressed in another Region. Collaborating with inspectors across the Regions assists with effective and efficient oversight. Additionally, each Region possesses inspectors with expertise in a breadth of topics. Although HQ or regional experts might not be qualified ISFSI inspectors, they can be used as a resource for specific topics related to health physics, structures, security, fire protection, emergency preparedness, quality assurance, etc. If these experts are used to assist on an ISFSI inspection, they must be supervised by a fully qualified ISFSI inspector and are subject to Regional Branch Chief approval.

It is important that the inspectors and the technical support staff clearly communicate the context for the questions along with the questions themselves, and the level of support the inspectors are seeking. Whatever the level of support, the inspectors must make it clear what the expectations are for the support they are seeking. The time spent supporting an inspection needs to be captured to the appropriate Cost Activity Code CAC/EPID and the requesting and supporting organization(s) should align on where the time will be charged (inspection or an inspection support CAC). The following guidelines are for requests to HQ which are seeking to understand and to inform documents developed, finalized, and approved by the inspecting organization.

- a. Minimal Effort Needed (≤ 4 hours): Inspectors have a question in a technical area they are inspecting (or preparing to inspect) and contact a technical point of contact in the region (could be an ISFSI inspector in another region or other regional inspector as described above) or HQ with specific questions. These occur frequently and typically take minutes to a couple of hours to respond. The time and level of support efforts are self-managed between the inspector and HQ staff. A response from HQ staff to the inspectors is typically verbal or via email. When a technical staff member is directly contacted by an inspector, it's reasonable and acceptable for that staff member to respond that they are unable to support given their current workloads. If that's the case, the inspector should continue to elevate the request for help through the following steps, as necessary.
- b. Slightly More Effort Needed (4 – 8 hours): Inspectors have a complex question or set of questions that may take more than a few hours for the technical staff to respond to.

The inspectors and HQ technical staff should discuss the level of effort needed for a response. The time and level of support efforts are managed by the inspection and HQ staff with HQ branch chief permission (as indicated above, inspectors must respect the technical staff's time and work priorities). As an initial step, the IOB Branch Chief serves as the DFM point of contact with the regions in assessing technical support needs of the region. A response from HQ staff to the inspector is verbal or via email.

- c. Request for Direct Support Throughout an Inspection (> 8 hours up to the duration of the inspection): Occasionally, an inspection team leader determines the need for HQ technical experts to support their inspection, either remotely or directly onsite throughout the inspection. When this occurs, the inspectors must request the technical staff participation through their branch chief to the IOB Branch Chief, due to the significant amount of time needed. The IOB Branch Chief will determine whether IOB has the resources and expertise to assist in resolving the concern or will coordinate with the other Chiefs in DFM if appropriate. To assist with planning, inspectors should strive to identify and communicate these needs approximately 12 months prior to needing assistance.

Occasionally, when routine channels are exhausted for resolving an issue, or the issue has become protracted or progress has stalled, or for requests that may take more than a reasonable amount of time (as agreed between the inspector/technical staff and their supervisors), then the inspectors must use a formal process such as a TAR or a formal request memorandum, since this is expected to be a significant resource commitment. Examples include providing a basis to dispute a licensee position, or a technical determination stemming from the inspection efforts to make a final inspection determination, or requires other expertise (e.g., civil engineering for pad design reviews, structural for stack-up reviews, legal interpretations, etc.). Given the amount of time it takes to resolve TARs, it is preferred to identify and notify the IOB Branch Chief as early as practicable regarding the possibility of a TAR.

2690-06 REFERENCES

IMC 2515, "Light-Water Reactor Inspection Program – Operations Phase"

IMC 2561, "Decommissioning Power Reactor Inspection Program"

IMC 2691, "Technical Basis for the Independent Spent Fuel Storage Installation Inspection Program"

IMC 0610, "Nuclear Material Safety and Safeguards Inspection Reports" IMC 0611, "Power Reactor Inspection Reports"

IMC 0612, "Issue Screening"

IMC 0616, "Fuel Cycle Safety and Safeguards Inspection Reports"

IMC 0617, Appendix E, "Minor Examples of Vendor and QA Implementation Findings"

IMC 1245, Appendix C1, "Reactor Operations Inspector Technical Proficiency Training and Qualification Journal"

IMC 1245, Appendix C2, "Reactor Engineering Inspector Technical Proficiency Training and Qualification Journal"

IMC 1246, Appendix B2, "Training Requirements and Qualification Journal for Spent Fuel Storage and Transportation Inspector"

IMC 1246, Appendix B3, "Training Requirements and Qualification Journal for Independent Spent Fuel Storage Installation Inspector"

IMC 1246, Appendix B04, "Independent Spent Fuel Storage Installation Security Inspector Technical Proficiency Training and Qualification Journal"

IP 60851, "Design Control of ISFSI Components"

IP 60852, "ISFSI Component Fabrication by Outside Fabricators"

IP 60853, "On-site Fabrication of Components and Construction of an Independent Spent Fuel Storage Installation"

IP 60854, "Preoperational Testing of an Independent Spent Fuel Storage Installation" IP 60855, "Operation of an Independent Spent Fuel Storage Installation"

IP 60856, "Review of 10 CFR 72.212(b) Evaluations" IP 60857, "Review of 10 CFR 72.48 Evaluations"

IP 60858, "Away-From-Reactor Independent Spent Fuel Storage Installation Inspection Guidance"

IP 60859, "Independent Spent Fuel Storage Installation License Renewal Inspection"

IP 81311, "Physical Security Requirements for Independent Spent Fuel Storage Installations" IP 86001, "Design, Fabrication, Testing, and Maintenance of Transportation Packagings"

IP 92702, "Follow-up on Traditional Enforcement Actions Including Violations, Deviations, Confirmatory Action Letters, Confirmatory Orders, and Alternative Dispute Resolution Confirmatory Orders"

IP 92722, "Follow Up Inspection for Any Severity Level I or II Traditional Enforcement Violation or for Two or More Severity Level III Traditional Enforcement Violations in a 12 Month Period"

IP 92723, "Follow Up Inspection for Three or More Severity Level IV Traditional Enforcement Violations in the Same Area in a 12-Month Period"

IP 93812, "Special Inspection Team"

IP 93800, "Augmented Inspection Team"

NUREG/CR-6314, "Quality Assurance Inspections for Shipping and Storage Containers," April 1996.

Regulatory Guide 7.10 Revision 3, "Establishing Quality Assurance Programs for Packing Used in the Transport of Radioactive Material," June 2015.

END

APPENDICES

- A. "Inspection Program Guidance for ISFSIs"
- B. "Inspection Program Guidance for Transportation Packagings"
- C. Reserved
- D. "Guidance for Risk-Informed Inspection Prioritization"
- E. "Guidance for Risk-Informed Review of 72.48 Evaluations"
- F. "Inspection Program Modifications During Pandemics, Epidemics, or Other Widespread Illnesses or Diseases"

Appendix A: Inspection Program Guidance for ISFSIs

2690A-01 SCOPE

This appendix describes the inspection program for CoC Holders and Fabricators of DSS SSCs. This appendix also describes the inspection program for ISFSI activities authorized under the provisions of a general or specific license including those associated with a 10 CFR Part 50 reactor site and whose support programs are being conducted under the reactor sites' 10 CFR Part 50 license.

The NRC staff should evaluate whether additional IPs not specified in Appendix A should be performed in coordination with DFM when generating an IIP for specific license ISFSIs not associated with a 10 CFR Part 50 license to ensure adequate oversight.

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 including the period of extended operation.

Most inspections are conducted on-site using direct observations and performing on-site reviews of documentation and interviews with personnel. Where appropriate, supplementing on-site with remote inspection techniques may be used when warranted, e.g., document reviews, interviews. Direct observation shall be regarded as the preferred method of inspection. Remote inspection of activities that are normally directly observed should be considered only in rare or unusual circumstances and headquarters or regional management approval must be received, as applicable. Partial remote inspections may be approved by branch chiefs, but full remote inspections shall be approved by division management. For the purposes of this

Appendix, ISFSI activities are viewed as occurring in the following four phases: (Phase activities may occur concurrently)

- a. Phase 1: Design, fabrication, and DSS construction
- b. Phase 2: Pad construction and preoperational testing
- c. Phase 3: Spent fuel loading, unloading and routine storage operations
- d. Phase 4: Storage monitoring at an AFR.

2690A-02 INSPECTION FREQUENCIES

The following sections indicate initial "no-later-than" (NLT) dates for each IP. These dates indicate the first instance each inspection shall be completed for each new ISFSI, CoC holder or fabricator. Once the initial inspection has been performed for each new ISFSI, CoC holder or fabricator, inspections shall continue in accordance with the indicated frequency until licensed activities cease.

CONDUCT OF PHASE 1 – DESIGN, FABRICATION AND DSS CONSTRUCTION

Phase 1 inspections are performed by DFM/IOB of CoC holders and their DSS fabricator(s). Additional inspection guidance for the conduct of Phase 1 inspections is in NUREG/CR-6314, "Quality Assurance Inspections for Shipping and Storage Containers."

Table A-1

IP	SUBJECT	INITIAL NLT	FREQUENCY
60851	Design control of ISFSI components	Beginning of initial DSS fabrication	Every three years ³
60852	ISFSI component fabrication by outside fabricators	Completion of initial DSS fabrication ¹	Every three years while fabrication activities are ongoing ³
60853	On-Site fabrication of components and construction of an ISFSI	Completion of initial DSS onsite construction ²	Every three years while construction activities are ongoing ³
60857	Review of 10 CFR 72.48 evaluations	As needed to support above IPs	As needed to support above IPs

¹ Note: If several casks are being fabricated at one time, then the milestone associated with IP 60852 should be completed before the fabricator finishes manufacturing the last of that series of casks. These inspection requirements apply to each fabricator and/or fabrication facility.

Consideration should be given to inspect fabrication of new DSS designs being fabricated if outside of the routine inspection frequency, dependent on the scope and significance of the design changes from previous designs.

² Note: Only Inspection Requirements of IP 60853 Sections 02.01, 02.02, and 02.03 are performed during Phase 1 inspections. This applies only to the DSS vendors performing construction activities onsite at general or specific licensee facilities.

³ Note: The inspection frequency may be extended to the end of the corresponding fiscal year.

CONDUCT OF PHASE 2 – PAD CONSTRUCTION AND PREOPERATIONAL TESTING

Phase 2 inspections are performed by the Regional Offices on general or specific ISFSI licensees. For ISFSIs associated with a 10 CFR Part 50 reactor site, if the licensee credits the 10 CFR Part 50 programs (e.g., quality assurance, safety evaluations, radiation protection, emergency preparedness, or security) that support operation of the ISFSI, the programs are reviewed under the IMC 2515 inspection program. Consequently, for an ISFSI associated with a 10 CFR Part 50 reactor site, the IMC 2690 inspection program is primarily directed at verifying that activities related to the ISFSI have been properly incorporated into the existing licensee programs such that a full reinspection of the licensee's or applicant's programs is not required. These inspections set the baseline for future safe loading and monitoring operations.

Selected IPs should be re-performed if a licensee intends to use a new model DSS, when a separate DSS is already in use at the same ISFSI. Additionally, selected IPs should be re-

performed if a licensee intends to construct a new ISFSI pad when an existing ISFSI pad is already in use at the same ISFSI. A gap assessment should be performed to determine the level of inspection and timeliness for the new activity. If assistance is needed in performing the gap assessment, the Regional Office should contact DFM for assistance.

Table A-2

IP	SUBJECT	INITIAL NLT	FREQUENCY
60853	On-Site fabrication of components and construction of an ISFSI	Completion of ISFSI pad construction	When Required
60854	Pre-operational testing of an ISFSI	Before initial loading begins	When Required
60856	Review of 10 CFR 72.212(b) Evaluations, if applicable	Before initial loading begins	When Required
60857	Review of 10 CFR 72.48 evaluations	As needed to support above IPs	As needed to support above IPs
81311	Physical security requirements for ISFSIs	Before fuel is stored at the ISFSI	When additional pads are constructed or changes in security.

CONDUCT OF PHASE 3 – SPENT FUEL LOADING, UNLOADING AND ROUTINE STORAGE OPERATIONS

Phase 3 inspections are performed by the Regional Offices on General or Specific ISFSI licensees.

After initial cask loading, inspection activities should focus on loading/unloading activities, modifications, 10 CFR 72.48 safety evaluations, 10 CFR 72.212(b) evaluations and aging management programs as applicable, and surveillance monitoring of active ISFSIs.

Inspectors shall use the following guidance in scheduling triennial inspections of ISFSI operational activities. If the licensee plans to perform loading activities during the triennial cycle, inspections should be performed during loading activities. If no loading activities are scheduled during the cycle, then a monitoring only inspection should be performed. Inspections should be scheduled to minimize large gaps between inspections given the flexibility provided by the triennial cycle. If a licensee performs unloading activities, those activities should be inspected even if the triennial inspection of ISFSI operational activities for that licensee has already been completed in the same cycle, or as determined by DFM.

Table A-3

IP	SUBJECT	INITIAL NLT	FREQUENCY
60855	Operation of an ISFSI	Initial Cask Loading	Triennial (Quarterly During Continuous Offload, All DSS Unloading Activities) ^{1,2}
60857	Review of 10 CFR 72.48 evaluations	As needed to support above IP	As needed to support IPs
60859	Independent Spent Fuel Storage Installation (ISFSI) License Renewal Inspection	Once when a licensee enters the period of extended operation at the first available opportunity not to exceed the end of the next triennial inspection period	Once for each storage system located at an ISFSI site ³
81311	Physical security requirements for ISFSIs	Within 3 years of initial cask loading ⁴	Once every 3 years ⁴

¹Note: Continuous Offload. When a site, typically after permanent cessation of operations, performs a continuous loading campaign with the intent of offloading the spent fuel pool.

²Note: All unloading activities shall be inspected or as determined by DFM.

³Note: For awareness, some ISFSI sites may have more than one aging management program (AMP) based on the type of storage systems and the type of licenses used at the facility. For example, if a site has a specific license and a general license with different types of storage systems, then there could be as many as four AMPs. However, the inspection staff will only need to conduct one baseline inspection for that ISFSI site.

⁴Note: Not required for ISFSIs within an operating reactor's protected area. These ISFSIs are inspected in accordance with IMC 2201, "Security Inspection Program for Operating Commercial Nuclear Power Reactors."

CONDUCT OF PHASE 4 – STORAGE MONITORING AT AN AFR

Phase 4 inspections are performed by the Regional Offices on General or Specific ISFSI licensees.

An AFR ISFSI is defined in Section 03.04 and the facility does not, or no longer receives oversight from another NRC inspection program (e.g., IMC 2500 series IPs associated with operating or decommissioning reactor facilities).

Table A-4

IP	SUBJECT	INITIAL NLT	FREQUENCY
60858	Away from Reactor ISFSI Inspection Guidance	Initial operation of an AFR ISFSI ¹	Triennial
60857	Review of 10 CFR 72.48 evaluations	As needed to support above IP	As needed to support IPs
60859	Independent Spent Fuel Storage Installation (ISFSI) License Renewal Inspection	Once when a licensee enters the period of extended operation at the first available opportunity not to exceed the end of the next triennial inspection period.	Once for each storage system located at an ISFSI site
81311	Physical security requirements for ISFSIs	Initial operation of an AFR ISFSI ¹	Once every 3 years

¹Note: Initial operation of an AFR ISFSI for general licensees begins with the approval of the license amendment demonstrating completion of decommissioning and final survey activities related to reactor operations. For specific licensees co-located with power reactors, initial operation begins with the termination of the Part 50 reactor license associated with the ISFSI. Inspections previously performed at the facility under IP 60855 and IP 81311 can be credited as the initial Phase 4 inspection.

2690A-03 CONDUCT OF SUPPLEMENTAL OR REACTIVE INSPECTIONS

The frequencies discussed in this Appendix and their associated level of effort defined within the inspection procedure represent the minimum amount of oversight. Division management may increase the inspection frequency and/or level of effort of the inspections based on licensee's performance. A significant increase in the level of effort, defined as more than 40 hours, or an increase in inspection frequency should be discussed and coordinated with DFM. Examples of licensee performance where more inspection may be performed include repetitive violations, or a Severity Level I, II, or III violation from the most recent inspection. Additional inspection effort should be targeted within the five safety focus areas most affected by the above examples to aid the NRC in their determination for the reasons of degraded performance.

Division management may also increase the inspection frequency and/or inspection hours of the inspections if an event occurs that warrants a reactive inspection. Events should be evaluated for significance to determine if any additional inspection effort is warranted and if so, whether an in-office review or in-field review is appropriate. Management Directive 8.3 "NRC Incident Investigation Program" and IMC 0309, "Reactive Inspection Decision Basis for Reactors" may be used to document the decision and approval for conducting a reactive inspection.

Additionally, the decision and the basis of the decision to not pursue a reactive inspection should also be documented. Reactive inspections of abnormal situations and events may use the IPs in this Appendix, as applicable. However, this inspection guidance may be supplemented by other IPs from the IMC 2515 and IMC 2561 inspection programs, as appropriate.

The DFM/PM and the Regional Branch Chief should coordinate with the cognizant NRR/PM, as necessary, regarding any planned Special Inspection Team (SIT), Augmented Inspection Team (AIT), or Incident Investigation Team (IIT) inspections at ISFSIs located at Part 50 licensees.

During the conduct of inspection activities, if additional inspection effort is needed outside of the circumstances described above, the inspectors shall consult with the regional branch chief for approval.

2690A-04 INSPECTION PROGRAM COMPLETION

Inspection program completion is defined as the completion of all inspection procedures in accordance with Section 2690A-02 or 2690B-02, including both initial and recurring frequency inspections. Licensee and vendor schedules are beyond the control of NRC staff. Therefore, an unforeseen delay in a licensee or vendor schedule that results in not meeting an inspection requirement does not reflect non-completion of the inspection program, however notification shall be provided to the DFM/Branch Chief IOB. In such cases, the inspection should be completed as soon as possible.

If there is a deviation in the inspection program, the responsible office shall notify the DFM/Branch Chief IOB, as soon as practical but no later than 30 days after the inspection procedure due date. The notification should include a narrative discussion explaining the circumstances of the deviation and documenting what if any additional actions were taken to continue to provide reasonable assurance of adequate protection

Appendix B: Inspection Program Guidance for Transportation Packagings

2690B-01 SCOPE

This appendix provides guidance related to the inspection program for activities related to the design, modification, fabrication, assembly, testing, procurement, repair, and maintenance of transportation packagings.

Inspections are performed by DFM/IOB to establish that radioactive material transportation packaging activities are performed in accordance with commitments and requirements specified in the CoC, SAR, NRC-approved Quality Assurance Program for Transportation of Radioactive Materials, and 10 CFR Part 71, and to determine that the transportation packaging is safe to use based on observation of activities, and an examination of permanent quality records and other supporting documentation. The SAR describes design, fabrication, test, and maintenance commitments and functions for a given transportation packaging.

2690B-02 INSPECTION FREQUENCY

Inspection guidance for transportation packagings is provided by IP 86001, "Design, Fabrication, Testing, and Maintenance of Transportation Packagings." Additional inspection guidance is in NUREG/CR-6314, "Quality Assurance Inspections for Shipping and Storage Containers" and Regulatory Guide 7.10, "Establishing Quality Assurance Programs for Packaging Used in the Transport of Radioactive Material."

After the initial transportation packaging fabrication inspection, inspections should be performed during future fabrication activities based on one or more of the following: 1) length of time between fabrication of the packagings, 2) CoC holder and fabricator performance, or 3) operating experience for packaging use.

Table B-1

IP	SUBJECT	INITIAL NLT	FREQUENCY
86001	Design, QA Program, and Maintenance (as applicable) Inspection for transportation packagings	Beginning of initial fabrication	Every five years ³
86001	Fabrication Inspection for transportation packagings	Completion of initial packaging fabrication ^{1,2}	When required
86001	Fabrication Inspection for Waste Isolation Pilot Plant (WIPP) transportation packagings	Completion of WIPP transportation container fabrication ⁴	Fabrication of each new WIPP container

¹Note: If several packagings are being fabricated at one time, then the milestone should be completed before the fabricator finishes manufacturing the last of that series of packagings.

These inspection requirements apply to each fabricator and/or fabrication facility and each new package design being fabricated.

²Note: This inspection milestone also applies to completion of the initial fabrication of a packaging at a new fabricator if the packaging has previously been fabricated elsewhere.

³Note: The inspection frequency may be extended to the end of the corresponding fiscal year.

⁴Note: If several packagings are being fabricated at one time, then the milestone should be completed before the fabricator finishes manufacturing the last of that series of packagings.

Appendix D: Guidance for Risk Informed Inspection Prioritization

2690D-01 SCOPE

As described in IMC 2691, “Technical Basis for the Independent Spent Fuel Storage Installation Inspection Program,” five safety focus areas were established to monitor licensee performance to have reasonable assurance of adequate protection.

- a. Occupational Exposure
- b. Public Exposure
- c. Fuel Management
- d. Confinement/Canister Integrity
- e. Impact to Plant Operation

Available spent fuel risk analyses, nuclear byproduct material radiological safety significance factors described in IMC 2691, as well as subject matter expertise gained from dry cask storage inspections since the beginning of the program were evaluated to inform this guidance.

Standard inspection activities were evaluated and prioritized in accordance with their relative risk. Priority level 1 activities were determined to have the highest amount of risk, necessitating the greatest level of inspection effort while priority level 3 activities were determined to have the lowest amount of risk, necessitating the lowest level of inspection effort. The inspection resources section in each procedure dictates the overall level of effort estimated to be spent to complete the inspection procedure. Inspectors should use the guidance in the table below to prioritize activities for the applicable inspection procedure, however, site-specific conditions should be evaluated to determine if any reprioritization is necessary following branch chief approval.

Table D-1

Inspection Procedure	Activity	Priority Level
<u>60853</u>	<u>On-Site Fabrication of Components and Construction of an Independent Spent Fuel Storage Installation</u>	
<u>2.01</u>	<u>Specifications</u>	2
<u>2.02 & 2.03</u>	<u>On-site DSS Fabrication</u>	3
2.04	ISFSI Pad Design	
	Pad Engineering Evaluation (Important to Safety)	2
	Pad Engineering Evaluation (Not Important to Safety)	3
<u>2.05</u>	<u>Pad Construction Activities</u>	
	Important to Safety	2
	Not Important to Safety	3

<u>2.06</u>	<u>Other ISFSI-Related Items and Activities</u>	2
<u>60854</u>	<u>Preoperational Testing of an Independent Spent Fuel Storage Installation</u>	
<u>2.01</u>	<u>Review of Procedures</u>	
	Loading and Unloading Procedures	¹ Note
2.02	Preoperational Testing	
	Observation of Preoperational Activities	¹ Note
	Verification of Meeting Preoperational Requirements	1
	Preoperational Training	3
<u>2.03</u>	<u>ISFSI Programs</u>	
	Impact on Plant Operations	2
	Control of Heavy Loads Program	1
	Crane Maintenance and Inspection	1
	Special Lifting Device Design	1
	Special Lifting Device and Sling Maintenance and Inspection	1
	Crane Operations	1
	Load Drop Evaluation	1
	Crane Design	1
	Crane Testing	1
	Building Super Structure Load Evaluation	1
	Lay Down Area Structure Load Evaluation	1
	Lay Down Area Stability Evaluation	1
	Haul Path Evaluation (Movement Over Safety Related SSCs)	1
	Haul Path Evaluation (Movement Not Over Safety Related SSCs)	3
	Cask Transporter (Lifting Above Drop Evaluation)	1
	Cask Transporter (Lifting Below Drop Evaluation)	3
	Cask Transfer Facility	1
	Radiation Protection Program	2
	Emergency Preparedness Program	3
	Maintenance and Surveillance Program	3
	Fire Protection Program	2
	Combustible Material Control	1
	Training Program	3
	Environmental Monitoring Program	1

	10 CFR 72.104 Compliance (Direct Radiation Only)	2
	10 CFR 72.104 Compliance (Effluent Release)	1
	10 CFR 72.106 Compliance (Direct Radiation Only)	3
	10 CFR 72.106 Compliance (Effluent Release)	2
	QA Program	2
	Design Change Program	2
	Change Evaluations	² Note
<u>2.04</u>	<u>Quality Assurance Program</u>	
	Corrective Actions	³ Note
	ISFSI Self-Assessment, Audit and	2
	Surveillances	
<u>60855</u>	<u>Operation of an Independent Spent Fuel Storage Installation</u>	
2.01	Changes Test and Experiments and 72.212 Reviews	
	Change Evaluations	² Note
<u>2.02</u>	<u>Observation of Loading Activities</u>	
	Transfer Cask Preparation	3
	Transfer Cask Lift to Pool	2
	Boron Measurement	2
	Canister Fuel Loading	1
	Canister Fuel Loading Verification	2
	Canister Lid/Plug Placement	2
	Transfer Cask Lift to Dry Pit	1
	Canister Welding	1
	Canister NDE	1
	Canister Pressure Test	2
	Canister Bulk Dewatering	2
	Canister Drying	1
	Canister Backfill	1
	Canister Helium Leak Test	1
	Transfer Cask Radiation Surveys	1
	Transfer Cask Lift to Stack-up (V) - Activity is only applicable to vertical cask loadings	1
	Canister Transfer (V)	1
	Storage Cask Lid Placement (V)	3
	Transfer Cask Down Ending (H) - Activity is only applicable to horizontal cask loadings	1

	Storage Cask Removal from Building	3
	Cask Transfer to Pad	3
	Canister Insertion into Module (H)	2
	Storage Cask/Module Radiation Survey	2
	Control of Heavy Loads Operations, Maintenance, and Inspection	⁴ Note
<u>2.03</u>	<u>Fuel Selection</u>	
	Determination of Intact or Damaged	1
	Dimensions and material of fuel assemblies	2
	Non-fuel hardware parameters	2
	Burnup, Enrichment, Heat Load, Cooling Time Input Verification	2
	Burnup, Enrichment, Heat Load, Cooling Time Parameters	1
<u>2.04</u>	Maintenance and Surveillance Program	
	Shielding Effectiveness Test	1
	ISFSI Pad Material Condition	3
	ISFSI Shielding Berm Material Condition	3
	DSS Temperature of Vent Monitoring	1
	ISFSI Slope Stability	2
	DSS Material Condition	1
	Combustible Material Control	1
	Storage Cask/Module Radiation Survey	2
2.05	Quality Assurance Program	
	Corrective Actions	³ Note
	ISFSI Self-Assessment, Audit and Surveillances	2
2.06	Aging Management Program	1
60856	Review of 10 CFR 72.212(b) Evaluations	
2.01	Review of Licensee Evaluations	
	Cask Transporter (Lifting Above Drop Evaluation)	1
	Cask Transporter (Lifting Below Drop Evaluation)	3
	Cask Transfer Facility	1
	10 CFR 72.104 Compliance (Direct Radiation Only)	2
	10 CFR 72.104 Compliance (Effluent Release)	1
	10 CFR 72.106 Compliance (Direct Radiation Only)	3

	10 CFR 72.106 Compliance (Effluent Release)	2
2.02	Review of Site Characteristics	
	Reactor Site Parameter Evaluation	2
	Site Specific Fire and Explosion Evaluations	1
	Site Specific Flooding Evaluation	1
	Cask Tipover Evaluation	3
	Processing Area Ambient Temperature Evaluation	1
2.03	Review of ISFSI Activities for Determination of No Adverse Impact on Site Operations	
	Control of Heavy Loads Program	1
	Crane Maintenance and Inspection	1
	Special Lifting Device Design	1
	Special Lifting Device and Sling Maintenance and Inspection	1
	Crane Operations	1
	Load Drop Evaluation	1
	Crane Design	1
	Crane Testing	1
	Building Super Structure Load Evaluation	1
	Lay Down Area Structure Load Evaluation	1
	Lay Down Area Stability Evaluation	1
	Haul Path Evaluation (Movement Over Safety Related SSCs)	1
	Haul Path Evaluation (No Movement Over Safety Related SSCs)	3
2.04	Review of Programs Impacted by ISFSI Operation	
	Emergency Preparedness Program	3
	Quality Assurance Program	2
	Radiation Protection Program	2
	Training Program	3
2.05	ISFSI Procedures	
	Loading and Unloading Procedures	¹ Note
<u>2.06</u>	Review of 10 CFR 72.48 Evaluations.	
	Change Evaluations	² Note
<u>60858</u>	<u>Away-From-Reactor Independent Spent Fuel Storage Installation Inspection Guidance</u>	
2.01	Changes Test and Experiments and 72.212 Reviews	

	Design Control Program	2
	Change Evaluations	² Note
<u>2.02</u>	Radiation Protection Program	
	Material Control and Accountability	1
	General Surveys	2
	Technical Specification Surveys	1
	Survey Equipment	2
	Radiation Protection Program Training	3
	ALARA Program	3
	Annual Collective Dose to Workers	3
<u>2.03</u>	Emergency Preparedness Program	
	Training	3
	Emergency Action Level Changes	1
	Implementing Procedure Changes	2
	Drill and Exercises	2
	Offsite Coordination	3
<u>2.04</u>	Maintenance and Surveillance Program	
	Shielding Effectiveness Test	1
	ISFSI Pad Material Condition	3
	ISFSI Shielding Berm Material Condition	3
	DSS Vent Monitoring	1
	ISFSI Slope Stability	2
	DSS Material Condition	1
	Combustible Material Control	1
<u>2.05</u>	Environmental Monitoring Program	
	10 CFR 72.104 Compliance (Direct Radiation Only)	2
	10 CFR 72.104 Compliance (Effluent Release for Wet Storage)	1
	10 CFR 72.104 Compliance (Effluent Release for Dry Storage)	3
	Annual Reporting Requirements	2
<u>2.06</u>	<u>Quality Assurance Program</u>	
	Corrective Action Program (QAP Required)	2
	Corrective Actions	³ Note
	Non-Corrective Action Program (Non-QAP Required)	3

	ISFSI Self-Assessment, Audit and Surveillance Plan	2
	Plant Review Committee	2
<u>2.07</u>	Aging Management Program	1

¹Note: Specific operational procedures should be reviewed in accordance with their prioritization discussed in the IP 60855 section.

²Note: Review of specific changes should be in accordance with the issues risk prioritization associated with that change. Inspectors may need to refer to guidance for IP 60854 or IP 60856 for this guidance.

³Note: Review of specific corrective action documents should be in accordance with the issue's risk prioritization.

⁴Note: Specific guidance on Crane Operations, Maintenance and Inspection is discussed under IP 60854 and IP 60856 and is not repeated in this section barring significant changes.

Appendix E: Guidance for Risk-Informed Review of 72.48 Evaluations

2690E-01 SCOPE

The guidance in the table below is to provide guidance for prioritizing review of 10 CFR 72.48 evaluations. The graded-approach tables rate storage system components from priority 1 to 3 based on potential impact on safety. Priority 1 items are components that are important to safety and changes that could increase risk. Priority 2 items are components and changes that could potentially cause a low increase in risk. Priority 3 items are components and changes that could have very low or no impact on risk.

Table E-1

Components in Concrete Shielded Type Storage System		
<u>Priority 1</u>	Priority 2	Priority 3
Drain port plug Inner cask bottom head Inner cask lid Inner cask lid seals Inner cask shell Inner cask shell upper head Lid closure hardware (bolts) Lifting lug/trunnion bolts Pressure relief device Vent and drain port plug and pressure relief device seals Vent port plug Lifting lugs/trunnions/grapples Leak check port plug Basket assembly Neutron absorbers	Scratches on the surface of the canister shell. Base metal repairs done to a DSC shell for license compliance. Repair plan to restore the outer top cover plate to acceptable condition. Any change that would require update to technical specification. Repair of malfunction of an SSC important to safety. Access door lifting lugs (HSM) Concrete base unit and roof slab Concrete structure access bolts Gamma shielding Inner cask top shielding plug Neutron shielding Shielded Access Door (HSM) Transfer cask Repairs to cracks in concrete HSM with grout. Repairs to HSM area with exposed reinforcement using approved concrete mix.	Cask hardware (keepers – small bolts and nuts, cotter pins, detent pins, lockwires, lanyards) Repair to a locally under-sized inner liner ID by locally reducing slightly the rail thickness. Scratches along the inner liner plate. Repairs to out of tolerance on the inner Top Cover Plate thickness. Nonconformance (minor) from the ideal cylindricity requirement. Concrete support pad Roof slab lifting eyes Security lockwire and seals Using concrete slump that is lower than specified to fabricate HSM component. Repair concrete around lightning protection plate. Repair to base portion of HSM concrete to restore dimension. Repair concrete voids which exceed the acceptance criteria. Repair to 1" thick upper vent embed plates. Repair HSM door minor dimensional tolerance nonconformance. Minor HSM side wall thickness nonconformance.

	<p>Inner cask support structure.</p> <p>Storage of spent fuel assemblies containing foreign material debris within a DSC.</p> <p>HSM air vents.</p> <p>HSM heat shield.</p> <p>HSM bird screen.</p> <p>Basket to shell gap exceeding drawing requirements.</p>	<p>Repair requiring trimming the edges of the aluminum basket plates.</p> <p>Repair of nonconforming condition of basket plate support bar in the DSC basket.</p> <p>Repair outside leading edge of the damaged fuel end cap so is tapered and can fit into basket cell of canister.</p> <p>Replacement of side heat shield anchors in the HSM.</p> <p>Cracks on the outlet vent cover on HSM.</p>
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Table E-2

Components in Metal Shielded Type Storage System		
Priority 1	Priority 2	Priority 3
<p>Drain port plug</p> <p>Inner cask bottom head</p> <p>Inner cask lid</p> <p>Inner cask lid seals</p> <p>Inner cask shell</p> <p>Inner cask shell upper head</p> <p>Lid closure hardware (bolts)</p> <p>Lifting lugs/trunnions/grapples</p> <p>Lifting lug/trunnion bolts</p> <p>Outer cask inner shell</p> <p>Outer cask lid</p> <p>Outer cask lid seal</p> <p>Outer cask shell bottom head</p> <p>Outer cask shell upper head</p> <p>Pressure relief device</p> <p>Vent and drain port plug and pressure relief device seals</p> <p>Vent port plug</p> <p>Leak check port plug</p> <p>Outer cask lid</p> <p>Outer cask shell bottom head</p> <p>Outer cask shell upper head</p> <p>Temperature control components (fins, radiant heat shields, or other thermal control methods)</p>	<p>Gamma shielding</p> <p>Neutron shielding</p> <p>Outer cask outer shell</p> <p>Transfer cask</p> <p>Basket assembly</p> <p>Neutron absorbers</p>	<p>Cask hardware (keepers – small bolts and nuts, cotter pins, detent pins, lockwires)</p> <p>Concrete support pad</p> <p>Protective cover</p> <p>Shielding shell</p> <p>Inner cask support structure</p> <p>Outer cask outer shell</p>

Appendix F: Inspection Program Modifications During Pandemics, Epidemics, or Other Widespread Illnesses or Diseases

2690F-01 PURPOSE

Pandemics, epidemics, or other widespread illnesses or diseases primarily affect people and develop more gradually, spread more widely, and could persist longer than other natural phenomena. During these times, the U.S. Nuclear Regulatory Commission's (NRC's)

Inspection implementing strategy should be agile and allow for flexibility in the completion of the ISFSI and transportation packaging inspection program at affected facilities. The inspection program provides reasonable assurance that licensees and Certificate of Compliance (CoC) holders are in compliance with their licenses, certificates, and the applicable regulations.

Licensees and CoC holders have the ultimate responsibility to safely operate their facilities and/or perform their authorized activities in accordance with their licenses and certificates.

During the time of a pandemic, epidemic, or other widespread illness or disease, the NRC will use a graded approach to meet the objectives of the oversight program. A graded approach allows for deferring/rescheduling planned inspections, changing the inspection periodicity, adjusting inspection levels (number of completed inspection activities), conducting inspections leveraging remote means, or a combination of these actions, while seeking to maintain as much of the normal inspection program as possible. This is based on the conditions being experienced and information and guidance from Federal, State, and local government agencies, keeping in full view the health and safety of the personnel involved.

On June 1, 2020, the Office of Nuclear Materials Safety and Safeguards (NMSS) issued a memorandum entitled "Inspection Guidance During Transition from COVID-19 Mandatory Telework for the Nuclear Materials and Waste Safety Programs" (Accession No. ML20143A2810). This appendix formalizes the guidance provided by the memorandum and provides specific guidance as it relates to inspection programs for independent spent fuel storage installations (ISFSIs), dry storage systems (DSSs), and transportation packagings.

2690F-02 OBJECTIVES

To provide direction for modifying the ISFSI and transportation packaging inspection program in the event of a pandemic, epidemic, or other widespread illness or disease.

2690F-03 APPLICABILITY

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."

NMSS or the regional offices may supplement, alter, or suspend the provisions of this guidance by memorandum as the situation warrants. The Director of the Division of Fuel Management (DFM) (and the Branch Chief of the Inspections and Oversight Branch (IOB)) should be consulted when conditions requiring additional guidance are warranted.

2690F-04 DEFINITIONS

Headquarters Based Inspections: Inspection performed by inspectors in the DFM, including Inspection Procedure (IP) 60851, IP 60852, IP 60853, and IP 60857.

Region Based Inspections: Inspection performed by regional inspectors, including IP 60853, IP 60854, IP 60855, IP 60856, IP 60857, and IP 60858.

2690F-05 RESPONSIBILITIES AND AUTHORITIES

See IMC 2690

2690F-06 REQUIREMENTS

See IMC 2690

2690F-07 GUIDANCE

In the event of a pandemic, epidemic, or other widespread illness or disease, the following considerations are in effect:

- a. The regions and headquarters are expected to make a reasonable effort to complete the inspection program. However, the Regional Administrator or Director of DFM, with concurrence from the Director of NMSS can suspend implementation of the inspection program should conditions warrant. If this should occur, the primary function of inspectors and the implementing office would be to maintain situational awareness and the ability to respond to emergency situations.
- b. Regions should continue to adequately evaluate and respond to events at a facility during a pandemic, epidemic, or other widespread illness or disease. If onsite response by NRC personnel is not possible, then the regions should collect information on the event remotely.
- c. Inspectors should coordinate oversight activities of independent spent fuel storage installations (ISFSIs) at operating reactors as needed with resident inspector staff. Regional inspectors shall follow guidance provided in IMC 2515 Appendix E, "Inspection Program Modifications During Pandemics, Epidemics, or Other Widespread Illnesses or Diseases." Regional inspectors should support the resident inspectors as needed to ensure the safety of ISFSIs at operating reactors.
- d. For ISFSIs without a resident inspector, at the onset (declaration) of the pandemic, epidemic, or other widespread illness or disease and periodically thereafter, the inspectors should verify that the licensees have sufficient staffing levels in key positions (e.g., operations, emergency response organization, security) to ensure that the facilities are operated safely and that licensee activities do not pose an undue risk to public health and safety. Additionally, the inspectors should evaluate deferred maintenance and other activities, use of overtime, and the need for licensing or other regional support.

The licensee's operational status may be an additional consideration when determining modifications to the inspection program and any necessary site coverage.

- e. For ISFSIs without a resident inspector and for CoC holders, the inspectors should discuss with their licensees and CoC holders the need to maintain situational awareness of the licensees' or CoC holders' ability to cope with the challenges associated with a pandemic. They should use Regulatory Issue Summary 2010-04, "Monitoring the Status of Regulated Activities during a Pandemic," dated May 25, 2010, and other appropriate guidance as a resource.

The regulatory issue summary includes several questions that inspectors should consider during routine business contacts with licensees and CoC holders. The information obtained will enable the NRC to effectively respond to licensees and CoC holders with potential challenges. Inspectors should recognize that during a pandemic, epidemic, other widespread illness or disease, licensees' and CoC holders' resources may be strained. Therefore, inspectors should work with licensees and CoC holders to obtain the best information possible given the circumstances.

- f. Inspectors should be cautious when accessing licensee and CoC holder facilities during a pandemic, epidemic, or other widespread illness or disease using conservative good judgment so as not to unnecessarily risk the health of licensee and CoC holder employees. A graded approach based on the current licensee, or CoC holder response posture should be considered for determining inspector site access.

To minimize the spread of infections, NRC staff members at or visiting sites should strive to follow any licensee or CoC holder plans in place. Additionally, inspectors should follow any applicable Federal, State, or local health screening guidance in effect to determine if it is appropriate to enter a site and interact with licensee or CoC holder personnel.

If licensees or CoC holders are conducting health screenings to permit site access, inspectors should generally comply with those requests similar to their adherence to Occupational Safety and Health Administration or other industrial safety requirements. Inspectors should contact their management if the licensee or CoC holder implements changes to normal access to the site and coordinate with management if unfettered site access in accordance with 10 CFR 72.82(c)(3) and 10 CFR 50.70(b)(3) is denied or restricted.

- g. During the pandemic, epidemic, or other widespread illness or disease, the regions and headquarters should consider modifications to the inspections as follows:

- 1. Local implementation of limited social distancing (e.g., canceling after-school activities, limiting public gatherings, or advising nonessential workers to remain home)

- (a) Region-based inspections: Assess the potential to postpone or reschedule onsite inspections.

- Evaluate whether IP 60855 and IP 60858 frequency-based inspection activities may be postponed and still meet IMC 2690 requirements.
 - Evaluate whether IP 60853, IP 60854, and IP 60856 inspection may be performed remotely.

- Assess the potential to perform inspection activities through remote/virtual means.
 - Identify opportunities to leverage technology to inspect remotely. Potential candidates include, but are not limited to, ISFSI monitoring inspections, review of Title 10 of the *Code of Federal Regulations* (10 CFR) 72.212 evaluations, review of 10 CFR 72.48 evaluations, etc.
- (b) Headquarters-based inspections: Assess the potential to postpone or reschedule onsite inspections.
- Evaluate whether IP 60851, IP 60852, and IP60853 frequency based inspection activities may be postponed and still meet IMC 2690 requirements.
 - Evaluate whether IP 60851 and IP 60852 initial inspection activities may be postponed and still meet IMC 2690 requirements.
 - Assess the potential to perform inspection activities through remote/virtual means.
 - Identify opportunities to leverage technology to inspect remotely. Potential candidates include, but are not limited to, review of the programmatic aspects of quality assurance program (QAP) implementation including associated documentation and evaluations if not the initial inspection, review of 10 CFR 72.212 evaluations to support regional inspections, review of 10 CFR 72.48 evaluations, etc.
2. Local or national state of emergency or widespread implementation of aggressive social distancing (e.g., closure of schools, public parks, and nonessential businesses; requiring nonessential workers to remain home)
- (a) Region-based inspections: Consider deferring/postponing all onsite inspection activities.
- Assess inspection procedure objectives and licensee personnel support to determine whether procedures can be performed remotely.
- (b) Headquarters-based inspections: Consider deferring/postponing all onsite inspection activities.
- Assess inspection procedure objectives and licensee and CoC holder personnel support to determine whether procedures can be performed remotely.
3. Implementation of the NRC Continuity of Operations Plan
- (a) Implement site coverage, facility status monitoring, and emergency response in accordance with the NRC Continuity of Operations Plan.
- h. Open communications and coordination between DFM and Regional Offices is important during a declared pandemic, epidemic, or other widespread illness or disease. Alignment should be reached on a case-by-case basis on the capability to perform

remote inspections to fulfill IMC 2690 requirements, need to perform onsite inspections, and deferral of inspections.

1. The DFM/Branch Chief IOB should coordinate communications with the responsible regional branch chief for oversight activities to ensure a consistent approach to inspections.
2. The responsible branch chief should document the adequacy of methods for performing remote inspections on a case-by-case basis in a memorandum to file. These methods should be discussed between the DFM/Branch Chief IOB and the responsible regional branch chief, as applicable, to ensure they meet the applicable inspection procedure requirements.
3. Onsite inspections should be discussed between the DFM/Branch Chief IOB and the responsible regional branch chief, as applicable, to ensure the applicable inspection procedure requirements, licensee performance, available remote inspection methods, and site conditions warrant an onsite inspection presence.
 - (a) Onsite inspections should be communicated by the Regional Administrator or Director, DFM for region or headquarters-based inspections accordingly to the Office of the Executive Director for Operations.
4. Planned deviations in the inspection frequency from the requirements of IMC 2690 due to an inspection deferral should be communicated quarterly in a memorandum to the DFM/Branch Chief IOB.
5. An inspection deferral that will still be completed within the frequency from the requirements of IMC 2690 does not require coordination with the DFM/Branch Chief IOB if the inspection requirements can still be met once deferred.
 - i. The NRC should consider the threshold at which onsite response is needed for an event. For example, the NRC may be able to perform some level of remote monitoring depending on the accessibility of the licensee's network. If direct onsite response is appropriate, the regions could consider limiting the response, such as having a single inspector respond to the emergency response facility or technical support center only.
 - j. The NRC should reduce, as appropriate, management site visits required in accordance IMC 0102, "Oversight and Objectivity of Inspectors and Examiners at Reactor Facilities."

2690F-08 REFERENCES

IMC 0102, "Oversight and Objectivity of Inspectors and Examiners at Reactor Facilities"

IMC 2515, Appendix E, "Inspection Program Modifications During Pandemics, Epidemics, or Other Widespread Illnesses or Diseases"

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"

IP 60851, "Design Control of ISFSI Components"

IP 60852, "ISFSI Component Fabrication by Outside Fabricators"

IP 60853, "On-site Fabrication of Components and Construction of an Independent Spent Fuel Storage Installation"

IP 60854, "Preoperational Testing of an Independent Spent Fuel Storage Installation" IP 60855, "Operation of an Independent Spent Fuel Storage Installation"

IP 60856, "Review of 10 CFR 72.212(b) Evaluations" IP 60857, "Review of 10 CFR 72.48 Evaluations"

IP 60858, "Away-From-Reactor Independent Spent Fuel Storage Installation Inspection Guidance"

Regulatory Issue Summary 2010-04, "Monitoring the Status of Regulated Activities during a Pandemic"

Revision History for IMC 2690

Commitment Tracking Number	Accession Number Issue Date Change Notice	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	08/04/08 CN 08-022	Incorporate guidance for follow-up of traditional enforcement including Alternate Dispute Resolution (ADR) open items.	N/A	N/A
N/A	07/22/09 CN 09-018	Incorporate a new Section 05.11, "Review of Open Allegation(s). Delete the first sentence in Section 05.07a.	N/A	N/A
N/A	11/09/09 CN 09-026	Incorporate a new Section 05.12, "Witnessing Unsafe Conditions" Editorial correction to Section 03.06 "Away-from Reactor (AFR)"	N/A	N/A
DSFST20110 0007	ML120390415 03/09/12 CN 12-004	Incorporated an expected inspection frequency for conducting routine ISFSI safety inspections at reactor and away from reactor sites in Tables A-2 & B-2 per OIG Audit Report OIG-11-A-12 recommendation 2. Removed exceptions from IP 60855 Subject in Tables A-1 & B-1. Revised Table A-1 format. Expanded section 05.01, "Inspection Program for 10 CFR Part 50 ISFSI Activities." Expanded current section 2690-06, "References." Made numerous editorial changes. Moved definition of inspection frequencies to Appendixes A & B. Added IP 81311 to Tables A-1, A- 2, B-1 and B-2. Added IP 60856 to Table B-1 and associated note.	N/A	ML120390405

Commitment Tracking Number	Accession Number Issue Date Change Notice	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	ML20338A192 12/15/20 CN 20-072	Major Revision. Revised the title; added five safety focus areas for inspection; revised definitions and responsibilities; added sections on the review of potential issues involving lack of clarity in the licensing basis, entrance and exit meetings, and coordination of headquarters technical support for inspection activities; revised IIP guidance; revised inspection report guidance for both the regions and headquarters; added, revised and clarified inspection frequencies and scope; clarified qualification and training requirements and added qualification requirement supplement; addition of risk prioritization tools; addition of pandemic guidance.	Yes. Verbal discussion of changes during inspector training session. 12/31/2020	ML20338A188
N/A	ML24212A117 10/16/24 CN 24-028	Revision: Adding VLSSIR process description and implementation guidance. This revision also clarifies roles and responsibilities, aligns requirements for requesting inspection assistance, revises inspector qualification requirement scope, removes inspector qualification requirement supplement for operating reactor inspectors, and revises headquarters inspection report guidance.	Training will be provided	N/A