
INSPECTION MANUAL CHAPTER 2545

NON-POWER PRODUCTION AND UTILIZATION FACILITY INSPECTION PROGRAM—OPERATIONS PHASE

Effective Date: 01/01/2027

2545-01 PURPOSE

The purpose of this Inspection Manual Chapter (IMC) is to define the inspection program for non-power production and utilization facilities.

2545-02 OBJECTIVES

- 02.01 To verify that licensees operate their facilities and conduct related activities in compliance with applicable regulatory requirements.
- 02.02 To identify significant safety issues that may have potential generic applicability.
- 02.03 To ensure timely follow-up of open items.

2545-03 APPLICABILITY

This inspection program applies to all facilities licensed under §50.21(a) or (c), or §50.22, as applicable, of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities." The program is implemented from the time the NRC issues an operating license until the NRC issues a possession-only license.

2545-04 DEFINITIONS

- 04.01 Classes of Facilities for Operations Inspections.
 - a. Class I. Facilities licensed to operate at steady-state power levels of 2 MWt or greater.
 - b. Class II. Facilities licensed to operate at steady-state power levels of less than 2 MWt.
 - c. Class III. Facilities on extended shutdown for reasons other than performance.
- 04.02 Categories of Facilities for Safeguards Inspections.
 - a. Category I. Facilities possessing non-exempt special nuclear material (SNM) in formula quantities, as defined in 10 CFR 73.2.
 - b. Category II. Facilities possessing non-exempt SNM in quantities of moderate strategic significance (MSS), as defined in 10 CFR 73.2.

- c. Category III. Facilities possessing non-exempt SNM in quantities of low strategic significance (LSS), as defined in 10 CFR 73.2.

04.03 Inspection Cycles.

- a. Annual. The inspection effort is performed once per calendar year.
- b. Biennial. The inspection effort is performed once every 2 calendar years.
- c. Triennial. The inspection effort is performed once every 3 calendar years.

04.04 Issue of Concern.

A well-defined observation or collection of observations potentially impacting safety or security which may warrant further inspection, evaluation, or regulatory action.

04.05 Unresolved Item.

An issue of concern associated with inspection activity which requires more information to determine if the concern constitutes a violation or if a violation is more than minor in significance.

04.06 Violation.

The failure to comply with a legally binding regulatory requirement, such as a statute, regulation, order, license condition, or technical specification.

04.07 Open Item.

A matter, such as a violation, unresolved item, or event notification, that requires further inspection.

2545-05 RESPONSIBILITIES AND AUTHORITIES

05.01 Director, Office of Nuclear Reactor Regulation

Provides overall direction for the inspection program.

05.02 Director, Division of Licensing Projects II

Develops and directs the implementation of policies, programs, and procedures for inspecting licensees; assesses the effectiveness, uniformity, and completeness of implementation of the inspection program; approves changes to the inspection program; and coordinates with other offices to obtain technical assistance, as necessary.

05.03 Chief, NPUF Branch

Ensures adequate resources for implementing and completing the inspection program; reviews and approves inspection plans and schedules; determines whether circumstances necessitate inspections in addition to the routine inspection program; ensures enforcement actions are in accordance with NRC guidance; ensures adequate

resources for completing and maintaining inspector qualifications; and proposes enhancements to the inspection program.

05.04 Inspectors

Completes the applicable inspector qualification program and maintains their qualification; plans, schedules, and conducts inspections in accordance with applicable NRC policies, procedures, and inspection programs; verifies licensee compliance with applicable regulatory requirements and assesses licensee performance; ensures inspection results are properly characterized and documented in accordance with NRC guidance; and proposes enhancements to the inspection program.

2545-06 REQUIREMENTS

06.01 Background

The inspection program is primarily based on the “minimum amount of regulation” standard established in Section 104 of the Atomic Energy Act of 1954. Although this standard applies specifically to facilities with Class 104 licenses, it is also applied to Class 103 facilities covered by this program. Consistent with this standard, the program establishes a uniform inspection methodology for each operations class and safeguards category of facility. This methodology represents the minimum level of inspection necessary for the NRC to determine whether a licensee operates its facility and conducts licensed activities in a manner that protects public health and safety without undue risk. Accordingly, each facility receives a baseline level of inspection, regardless of performance.

The NRC may conduct additional inspections or take other regulatory actions in response to factors such as performance concerns or significant events at a facility. These activities are outside the scope of the baseline inspection program, and guidance for them is provided in the following section of this manual chapter.

06.02 Baseline Inspection Program

The baseline inspection program includes two primary types of inspections: operations and safeguards. Operations inspection procedures address areas such as operation, maintenance, operator requalification, experiments and facility changes, fuel movement and inspections, emergency preparedness, and radiation protection. Safeguards procedures focus on physical protection, access control, material control and accounting, protection of safeguards information, and reporting of safeguards events.

A facility’s operations class or safeguards category determines how frequently it is inspected. Facilities licensed for higher power levels or larger amounts of SNM may have more regulatory requirements and usually perform more licensed activities. Because of this, they are inspected more often. The table below shows the baseline inspection procedures for operations and safeguards, along with how often each one is implemented. Appendices A (operations) and B (safeguards) list each procedure’s number, title, and applicable class or category. Note that facilities with non-exempt SNM below the LSS threshold are inspected at the Category III safeguards frequency, and safeguards procedures for in-transit SNM protection are used only when needed.

Inspection Type	Inspection Cycle		
	Annual	Biennial	Triennial
Operations	Class I	Class II	Class III
	69014.A-I 86740	69014.A-I 86740	69014.J 86740
Safeguards	Category I	Category II	Category III
	81601 81606-8 81614	81602 81606-8 81612 81614	81603 81606-8 81613 81614

Facilities may also have licenses for Category 1 or 2 quantities of radioactive material, as defined in 10 CFR 37.5. Since these procedures share key elements with other safeguards procedures, they are also considered safeguards procedures and should be implemented during every other safeguards inspection. For these facilities, the applicable procedures are outlined in the following table.

Inspection Type	10 CFR Part 37 License	
Safeguards	Category 1	Category 2
	81621 81622	81621 81622

The baseline inspection program for a facility is considered complete for any given inspection cycle if all the applicable operations and safeguards procedures are implemented within their respective inspection cycles.

06.03 Entrance and Exit Meetings.

Inspectors should offer to conduct an entrance meeting with a licensee representative to review the inspection scope and address any logistical considerations. Throughout an inspection, inspectors shall maintain open communication with the licensee, discussing any potential violations or observations prior to the exit meeting. At the conclusion of an inspection, inspectors shall conduct an exit meeting to formally present the preliminary results. Both entrance and exit meetings should be scheduled to minimize disruption to licensee activities essential to the safe operation of the facility.

The exit meeting is intended to summarize the inspection scope and the licensee's performance. The inspector should clearly state that these results are subject to management review and approval, and that any changes will be communicated to the licensee as soon as possible. If the results include a potential violation, the inspector should state the applicable requirement and explain how it was not met. If the licensee strongly disagrees with the inspection results or raises significant concerns, the inspector should promptly notify their supervisor. If the licensee expresses interest in receiving inspection-related observations, the inspector may provide them as

appropriate. The inspector should also confirm that any proprietary information reviewed during the inspection has been returned.

06.04 Inspection Reports.

Inspectors shall prepare inspection reports and the inspections results in accordance with IMC 0615, "Non-Power Production and Utilization Facility Inspection Reports."

2545-07 GUIDANCE

07.01 Inspection Approach

The baseline inspection program is expected to be conducted primarily on site. Inspections involve direct observation of facility operations and licensed activities, interviews with licensee personnel, and record reviews using established procedures. Under a performance-based approach, inspectors should prioritize direct observation to assess whether the licensee's policies, programs, procedures, and training effectively support safe operations and compliance with regulatory requirements. Therefore, to maximize effectiveness, inspections should be scheduled when the facility is operating or when safety-significant activities such as maintenance, modifications, fuel inspections or movements, or emergency drills are planned.

07.02 Inspection Scheduling

Inspectors should coordinate scheduling with licensee personnel to ensure appropriate support and access, while following a performance-based inspection approach. Operations and safeguards inspections within the baseline program may be scheduled at any time during the facility's calendar year inspection cycle. Under this program, there is no grace period except in cases of unavoidable or extenuating circumstances. Inspections that cannot be completed within the defined cycle should be conducted as soon as practicable. An inspection may consist of implementing a subset of the applicable group of operations or safeguards procedures that define the baseline program. Inspection timing should be optimized to prevent excessively short or long intervals between inspections, minimizing impact on the facility while maintaining effective oversight. Each facility should receive at least one inspection per calendar year under this program.

07.03 Inspection Planning

Inspectors should plan inspections in advance by identifying the applicable procedures and estimating the required effort. This estimate should include the nominal hours specified in the procedures, plus any additional time anticipated for follow-up on open items, events, or allegations. Inspections should be conducted only for the time necessary to complete them efficiently, rather than strictly adhering to the hours listed in the procedures. However, unforeseen circumstances may arise during an inspection that falls either within or beyond the original scope. In such cases, inspectors should exercise professional judgment, consulting with their supervisor as needed, to determine whether additional effort is warranted, while ensuring that the original inspection objectives are met.

07.04 Supplemental Inspections

The baseline inspection program constitutes an appropriate level of inspection at facilities whose performance adequately protects public health and safety. Facilities whose performance does not meet this standard may receive additional plant specific supplemental inspections. The scope of the supplemental inspections will be based on the significance of the identified performance issues. Though not specifically applicable to facilities covered by this manual chapter, other NRC guidance documents such as IMC 0350, "Oversight of Reactor Facilities in a Shutdown Condition Due to Significant Performance And/or Operational Concerns," and IMC 2515 Appendix B, "Supplemental Inspection Program," may be used to inform the NRC's response. Supplemental inspections may either complement or temporarily replace inspections performed under the baseline inspection program.

07.05 Events and Event Notifications

Events with low safety significance, such as uncomplicated reactor trips, may be reviewed during the next scheduled inspection to verify they were not complicated by the loss of mitigation equipment or other contributing factors. Follow-up on more significant safety events falls outside the scope of the baseline inspection program and is addressed through reactive inspections. NRC management determines whether such follow-up is warranted on a case-by-case basis. Guidance for evaluating the appropriate NRC response is provided in Management Directive 8.3, "NRC Incident Response Program," and in "Reactive Inspection Guidance for Non-Power Production and Utilization Facilities." Reactive inspections may either complement or temporarily replace inspections performed under the baseline program.

07.06 Generic Safety Issues

Inspection results, operators' exams, license reviews, or operating experience may reveal a generic safety issue. In such cases, the NRC should evaluate whether the issue applies to each facility and determine if additional inspection effort is warranted on a facility-specific basis. When additional effort is needed, it may be incorporated into the next relevant operations or safeguards inspection as a routine follow-up activity or conducted as a one-time inspection using a temporary instruction. Likewise, additional inspection effort may be required for major activities at a facility, such as significant design changes or restarting operations after an extended shutdown, when the expected effort exceeds what could reasonably be considered routine follow-up or when the timing of the activity does not align with the next baseline inspection. These situations will also be assessed individually for each facility.

07.07 Inspection Procedures

Inspectors should follow the requirements and guidance in the inspection procedures referenced in this manual chapter. However, because these procedures are designed to cover a wide range of facility types, not all requirements will apply to every facility. Inspectors should also avoid duplicating efforts when similar requirements appear in multiple procedures during the same inspection. In some cases, a procedure may not need to be fully implemented. For example, if the licensee has not conducted any transportation activities since the last relevant inspection, the inspector only needs to confirm that no such activities occurred. Ultimately, inspectors should focus on meeting

the overall objectives of each procedure rather than completing every individual inspection requirement.

07.08 Very Low Safety Significant Issue Resolution (VLSSIR) Process

Inspectors should adhere to the NRC's current enforcement guidance when addressing violations. However, during an inspection, they may identify an issue of concern where ambiguity exists in areas such as the design or licensing basis or the applicability of regulatory requirements. If the issue, once resolved, would not exceed a Severity Level IV violation and resolving it would require substantial effort without significantly advancing the NRC's safety or security goals, the NRC may choose not to pursue additional inspection effort. Before taking this approach, inspectors must consult with their supervisor to confirm that this is the most appropriate course of action. Inspectors should also ensure the licensee understands that this process is not intended to resolve disagreements between the NRC and the licensee, does not establish an NRC position, and the NRC may revisit the issue in the future if warranted. The issue will be documented in the inspection report and will not require any response from the licensee. Additionally, open URIs may be assessed to determine whether they should be closed using the VLSSIR process.

07.09 Witnessing Unsafe Situations

If an inspector observes a work practice or activity that could result in an unsafe condition or a violation of regulatory requirements, the inspector should make every reasonable effort to prevent it from occurring or continuing in their presence. Upon identifying such a situation, the inspector shall promptly notify the licensee to enable the implementation of corrective or preventive actions. This action shall be taken without regard for any impact it may have on the ability of the NRC to take future enforcement action.

07.10 Change in Operations Class

A licensee may shut down and cease operations for an extended period for reasons such as maintenance or modifications. For this circumstance, "extended" refers to any actual or anticipated duration longer than the normal operations inspection frequency for that facility. In such cases, the NRC may decide that the facility be temporarily reclassified as Class 3, and the Class 3 inspection program would apply until operations resume. Once operations restart, the facility would return to its normal classification for operational inspections. If a licensee decides to permanently cease operations, it will also be reclassified as Class 3 until the licensee obtains a possession-only license, at which point oversight and inspection responsibilities transfer to the NRC's Office of Nuclear Materials Safety and Safeguards (NMSS). Note that changes in operations class do not affect the facility's safeguards category for inspections.

07.11 Inspection Documents and Records.

During an inspection, inspectors request and review documents and records provided by the licensee. Inspectors should follow the guidance in IMC 0620, "Inspection Documents and Records," which establishes standardized practices for requesting, creating, controlling, and dispositioning inspection-related documents and records. IMC 0620 ensures that sensitive information is handled appropriately, that records are maintained in accordance with NRC requirements, and that document control processes support

transparency and traceability throughout the inspection. Adhering to this guidance helps protect proprietary or security-related information, maintain consistency across inspections, and ensure compliance with agency policies for recordkeeping and information management.

07.12 Program Feedback.

The inspection program is designed to be dynamic and to respond to changes in the non-power production and utilization facility community and lessons learned from operational experience. To support this, NRC staff are expected to identify issues and challenges encountered during implementation, including any associated inspection manual chapters and inspection procedures, and recommend improvements for consideration. Feedback should be submitted as outlined in IMC 0801, "Inspection Program Feedback Process." This process ensures that recommendations are evaluated and incorporated as needed to improve the effectiveness of the inspection program.

2545-08 REFERENCES

Atomic Energy Act of 1954, As Amended, July 9, 2024

IMC 0040, "Preparation, Revision, Issuance, and Ongoing Oversight of NRC Inspection Manual Documents"

IMC 0350, "Oversight of Reactor Facilities in a Shutdown Condition Due to Significant Performance And/or Operational Concerns"

IMC 0610 App G, "Screening and Documentation of Very Low Safety Significance Issue Resolution Process"

IMC 0612, "Issue Screening"

IMC 0615, "Non-Power Production and Utilization Facility Inspection Reports"

IMC 0620, "Inspection Documents and Records"

IMC 0801, "Inspection Program Feedback Process"

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

IMC 2515 App B, "Supplemental Inspection Program"

IMC 2545, "Research and Test Reactor Inspection Program"

IMC 2800, "Materials Inspection Program"

MD 8.3, "NRC Incident Investigation Program" (ML22294A067)

NUREG-1379, "NRC Editorial Style Guide," Revision 4 (ML25098A236)

NUREG-1537, Part 1, "Guidelines for Preparing and Reviewing the Applications for the Licensing of Non-Power Reactors" (ML042430055)

NUREG-1614, "Strategic Plan: Fiscal Years 2022-2026," Volume 8 (ML22067A170)
Part 9900: Technical Guidance, "Operation – Safety and Compliance"
"Reactive Inspection Guidance for Non-Power Production and Utilization Facilities"
(ML22257A161)

END

List of Appendices:

Appendix A: Operations Inspection Procedures

Appendix B: Safeguards Inspection Procedures

List of Attachments:

Attachment 1: Revision History for IMC 2545

Appendix A: Operations Inspection Procedures

Procedure Number	Title	Class Applicability
69014.A	Inspection of Operations and Maintenance at Non-Power Production and Utilization Facilities	I, II
69014.B	Inspection of Procedures at Non-Power Production and Utilization Facilities	I, II
69014.C	Inspection of Operator Licenses and Requalification at Non-Power Production and Utilization Facilities	I, II
69014.D	Inspection of Surveillances and Limiting Conditions for Operation at Non-Power Production and Utilization Facilities	I, II
69014.E	Inspection of Experiments at Non-Power Production and Utilization Facilities	I, II
69014.F	Inspection of Radiation Protection and Environmental Monitoring at Non-Power Production and Utilization Facilities	I, II
69014.G	Inspection of Reviews, Audits, and Design Changes at Non-Power Production and Utilization Facilities	I, II
69014.H	Inspection of Emergency Preparedness at Non-Power Production and Utilization Facilities	I, II
69014.I	Inspection of Fuel Handling at Non-Power Production and Utilization Facilities	I, II
69014.J	Inspection of Class III Facilities	III
86740	Inspection of Transportation Activities	I, II, III

Appendix B: Safeguards Inspection Procedures

Procedure Number	Title	Category Applicability
81601	Fixed Site Physical Protection of Formula Quantities of Strategic Special Nuclear Material – Non-Power Reactors	I
81602	Fixed Site Physical Protection of Special Nuclear Material of Moderate Strategic Significance – Non-Power Reactors	II
81603	Fixed Site Physical Protection of Special Nuclear Material of Low Strategic Significance – Non-Power Reactors	III
81606	Material Control and Accounting – Non-Power Reactors	I, II, III
81607	Protection of Safeguards Information and Safeguards Information Modified Handling – Non-Power Reactors	I, II, III
81608	Reporting of Safeguards Events – Non-Power Reactors	I, II, III
81612	In Transit Physical Protection of Special Nuclear Material of Moderate Strategic Significance and Receipt of New Reactor Fuel – Non-Power Reactors	II
81613	In Transit Physical Protection of Special Nuclear Material of Low Strategic Significance and Receipt of New Reactor Fuel – Non-Power Reactors	III
81614	In Transit Physical Protection of Irradiated Reactor Fuel – Non-Power Reactors	I, II, III
81621	Fixed Site Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material – Non-Power Reactors	I, II, III
81622	In Transit Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material and 100 Grams or Less of Irradiated Reactor Fuel – Non-Power Reactors	I, II, III

Attachment 1: Revision History for IMC 2545

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)
	ML040710195 06/23/2004 CN 04-018	Revised to support issuance of IMC 0615, Research and Test Reactor Inspection Reports.	None	
	ML19190A266 03/13/20 CN 20-015	Revised to support minor or conforming changes for updated inspection procedures for research and test reactor programs. Includes minor changes to document format for consistency with agency standard.	None	ML19205A354
	ML26161A027 09/10/26 CN 26-039	Updated to substantially revise RTR inspection program guidance that had not been updated since 2004, causing mismatches with current practices.	None	N/A