



NUREG-1885, Revision 17

Report to Congress on the Security Inspection Program for Operating Commercial Power Reactors and Category I Fuel Cycle Facilities: Results and Status Update

Annual Report for Calendar Year 2023

Office of Nuclear Security and Incident Response

AVAILABILITY OF REFERENCE MATERIALS IN NRC PUBLICATIONS

NRC Reference Material

As of November 1999, you may electronically access NUREG-series publications and other NRC records at the NRC's Library at www.nrc.gov/reading-rm.html. Publicly released records include, to name a few, NUREG-series publications; *Federal Register* notices; applicant, licensee, and vendor documents and correspondence; NRC correspondence and internal memoranda; bulletins and information notices; inspection and investigative reports; licensee event reports; and Commission papers and their attachments.

NRC publications in the NUREG series, NRC regulations, and Title 10, "Energy," in the *Code of Federal Regulations* may also be purchased from one of these two sources:

1. The Superintendent of Documents

U.S. Government Publishing Office
Washington, DC 20402-0001
Internet: <https://bookstore.gpo.gov/>
Telephone: (202) 512-1800
Fax: (202) 512-2104

2. The National Technical Information Service

5301 Shawnee Road
Alexandria, VA 22312-0002
Internet: <https://www.ntis.gov/>
1-800-553-6847 or, locally, (703) 605-6000

A single copy of each NRC draft report for comment is available free, to the extent of supply, upon written request as follows:

Address: **U.S. Nuclear Regulatory Commission**
Office of Administration
Digital Communications and Administrative
Services Branch
Washington, DC 20555-0001
E-mail: Reproduction.Resource@nrc.gov
Facsimile: (301) 415-2289

Some publications in the NUREG series that are posted at the NRC's Web site address www.nrc.gov/reading-rm/doc-collections/nuregs are updated periodically and may differ from the last printed version. Although references to material found on a Web site bear the date the material was accessed, the material available on the date cited may subsequently be removed from the site.

Non-NRC Reference Material

Documents available from public and special technical libraries include all open literature items, such as books, journal articles, transactions, *Federal Register* notices, Federal and State legislation, and congressional reports. Such documents as theses, dissertations, foreign reports and translations, and non-NRC conference proceedings may be purchased from their sponsoring organization.

Copies of industry codes and standards used in a substantive manner in the NRC regulatory process are maintained at—

The NRC Technical Library

Two White Flint North
11545 Rockville Pike
Rockville, MD 20852-2738

These standards are available in the library for reference use by the public. Codes and standards are usually copyrighted and may be purchased from the originating organization or, if they are American National Standards, from—

American National Standards Institute

11 West 42nd Street
New York, NY 10036-8002
Internet: www.ansi.org
(212) 642-4900

Legally binding regulatory requirements are stated only in laws; NRC regulations; licenses, including technical specifications; or orders, not in NUREG-series publications. The views expressed in contractor prepared publications in this series are not necessarily those of the NRC.

The NUREG series comprises (1) technical and administrative reports and books prepared by the staff (NUREG-XXXX) or agency contractors (NUREG/CR-XXXX), (2) proceedings of conferences (NUREG/CP-XXXX), (3) reports resulting from international agreements (NUREG/IA-XXXX), (4) brochures (NUREG/BR-XXXX), and (5) compilations of legal decisions and orders of the Commission and the Atomic and Safety Licensing Boards and of Directors' decisions under Section 2.206 of the NRC's regulations (NUREG-0750), (6) Knowledge Management prepared by NRC staff or agency contractors (NUREG/KM-XXXX).

DISCLAIMER: This report was prepared as an account of work sponsored by an agency of the U.S. Government. Neither the U.S. Government nor any agency thereof, nor any employee, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for any third party's use, or the results of such use, of any information, apparatus, product, or process disclosed in this publication, or represents that its use by such third party would not infringe privately owned rights.

Report to Congress on the Security Inspection Program for Operating Commercial Power Reactors and Category I Fuel Cycle Facilities: Results and Status Update

Annual Report for Calendar Year 2023

Manuscript Completed: July 2024

Date Published: September 2024

ABSTRACT

This report fulfills the requirements of Section 170D.e of the Atomic Energy Act of 1954 (42 U.S.C. §2210 d.(e)), as amended, which states, “not less often than once each year, the Commission shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Energy and Commerce of the House of Representatives a report, in classified form and unclassified form, that describes the results of each security response evaluation conducted and any relevant corrective action taken by a licensee during the previous year.” Additionally, Section 170D.a of the Atomic Energy Act of 1954 (42 U.S.C. §2210 d.(a)), as amended, grants the U.S. Nuclear Regulatory Commission (NRC) the authority to determine which licensed facilities must undergo these security evaluations. The NRC is reporting the security response evaluation results for the Nation’s fleet of operating commercial nuclear power plants (NPPs) and Category I (CAT I) fuel cycle facilities, given the significance of the nature, form, and quantity of nuclear material at these facilities. With respect to NPPs, the scope of this report includes those undergoing decommissioning but not yet transitioned to a dry storage independent spent fuel storage installation and those undergoing a restart due to the continued implementation of Title 10 of the *Code of Federal Regulations* Part 73, “Physical Protection of Plants and Materials.” This report includes a comprehensive overview of the combined results of the security programs for calendar year (CY) 2023. To aid in understanding the context of how the NRC conducts inspections, this report also provides descriptions and programmatic status updates for relevant NRC programs, including the Reactor Oversight Process (ROP), security inspection programs for NPPs and CAT I fuel cycle facilities, and NRC’s force-on-force (FOF) inspection program.

Paperwork Reduction Act Statement

NUREG-1885, Revision 17, “Report to Congress on the Security Inspection Program for Operating Commercial Power Reactors and Category I Fuel Cycle Facilities: Results and Status Update,” does not contain information collection requirements and, therefore, is not subject to the requirements of the Paperwork Reduction Act of 1995 (44 U.S.C. §3501 et seq.).

Public Protection Notification

The NRC may not conduct nor sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid Office of Management and Budget control number.

TABLE OF CONTENTS

ABSTRACT	iii
LIST OF FIGURES	vii
LIST OF TABLES	vii
EXECUTIVE SUMMARY	ix
1 SECURITY OVERSIGHT FOR COMMERCIAL NUCLEAR POWER REACTORS AND CATEGORY I FUEL CYCLE FACILITIES	1
1.1 NRC Security Inspections of Licensed Facilities	1
1.2 Reactor Oversight Process Framework	2
1.3 Category I Fuel Cycle Facilities Oversight Process Framework	4
1.4 NRC Enforcement Policy	4
2 CALENDAR YEAR 2023 SECURITY INSPECTION RESULTS.....	7
2.1 Calendar Year 2023 Commercial Nuclear Power Reactor Inspection Results	7
2.2 Calendar Year 2023 Category I Fuel Cycle Facilities Inspection Results	8
2.3 Calendar Year 2023 Overall Security Inspection Results.....	9
3 FORCE-ON-FORCE EVALUATIONS	11
3.1 Force-On-Force Program Description.....	11
3.2 Force-On-Force Inspections in Calendar Year 2023.....	11
3.3 Force-On-Force Exercise Results.....	12
4 CONCLUSION	15
APPENDIX – LIST OF ACRONYMS	17

LIST OF FIGURES

Figure 1	Summary of Security Inspection Program Results for Calendar Year 2023.....	ix
Figure 2	Number of Security Inspections and Findings (2015-2023).....	ix
Figure 3	NRC Security Inspector Observing Security System Testing at an NPP in August 2023.....	1
Figure 4	Reactor Oversight Framework	2
Figure 5	Assessing Significance within the Reactor Oversight Program.....	3
Figure 6	Mock Adversary Team Members Making Entry During FOF Exercise in CY 2023.....	12
Figure 7	Total Force-on-Force Ineffective Exercises by Year.....	13

LIST OF TABLES

Table 1	Combined Security Inspection Results for 2023.....	ix
Table 2	Force-on-Force Inspection Results for 2023	x
Table 3	Summary of Calendar Year 2023 Commercial Nuclear Power Reactors Inspection Results.....	7
Table 4	Summary of Calendar Year 2023 Security Baseline Inspections and Associated Findings for Commercial Nuclear Power Reactors by Inspection Procedure	7
Table 5	Calendar Year 2023 Safeguards and Security Inspection Summary for CAT I Fuel Cycle Facilities	8
Table 6	Calendar Year 2023 Security Baseline Inspections and Associated Findings for CAT I Fuel Cycle Facilities by Inspection Procedure.....	8
Table 7	Combined Security Inspection Results for 2023.....	9
Table 8	Calendar Year 2023 Force-on-Force Inspections Summary.....	12
Table 9	Force-On-Force Exercise Outcomes.....	13

EXECUTIVE SUMMARY

Calendar Year 2023 Security Inspection Results

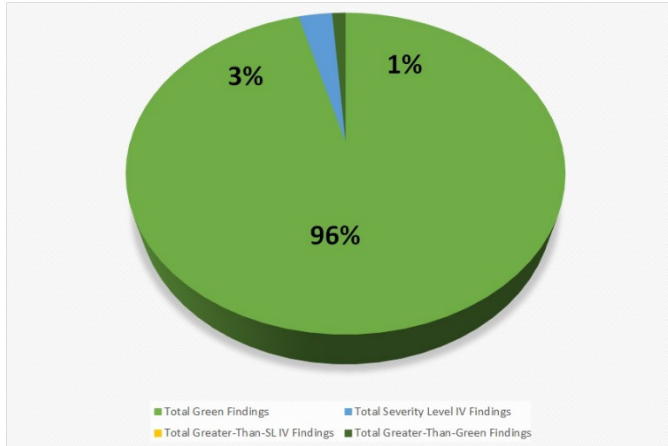


Figure 1 Summary of Security Inspection Program Results for Calendar Year 2023

In CY 2023, NRC performed a total of 184 security inspections at operating NPPs and CAT I fuel cycle facilities to assess the multifaceted security programs these licensees implement to protect and safeguard their sites. The number of total security inspections compared to the previous CY is within the expected range for an average year within the inspection cycle. As shown in Table 1, the CY 2023 inspections resulted in a total of 168 findings, a 17 percent increase in the number of findings compared to CY 2022. Table 1 and Figure 1 also show that the overwhelming majority of security inspection findings issued were of very low security significance (i.e., the combined

Green and Severity Level (SL) IV violations); two findings were greater-than-Green, and there were no greater-than-SL IV findings. The Official Use Only – Security-Related Information version of this report contains additional details on each finding.

Table 1 Combined Security Inspection Results for 2023

184	Total number of security inspections conducted
168	Total number of inspection findings
161	Total number of Green findings
2	Total number of greater-than-Green findings
5	Total number of SL IV violations
0	Total number of greater-than-SL IV violations

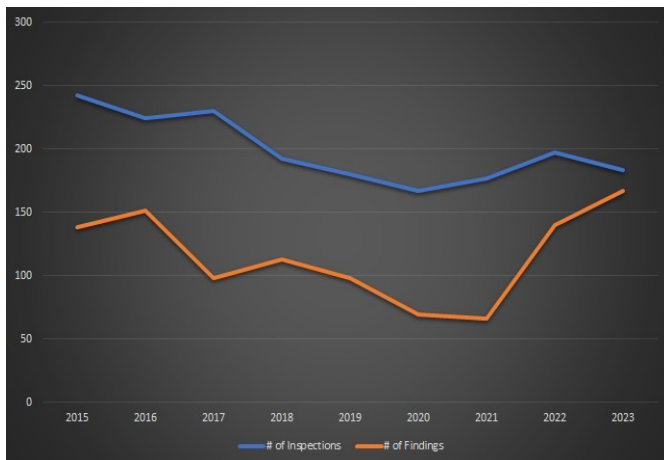


Figure 2 Number of Security Inspections and Findings (2015-2023)

The number of inspections completed in CY 2023 represents a return to the average number of inspections prior to the start of the COVID-19 public health emergency; however, inspection findings are elevated when compared to that same time period (see Figure 2). The elevated number of security findings is, in part, due to incorporation of cybersecurity baseline inspections into the ROP in CY 2022.

Table 2 summarizes the results of the FOF inspection program for commercial NPPs in CY 2023. As indicated in the table, there were a total of 18 FOF inspections with

35 FOF exercises conducted during the year. There were no FOF exercises at CAT I fuel cycle facilities in CY 2023.

Table 2 Force-on-Force Inspection Results for 2023

18	Total number of FOF inspections conducted
33	Total number of effective exercises
1	Total number of indeterminate exercises
0	Total number of marginal exercises
1	Total number of ineffective exercises

CY 2024 at a Glance

The NRC continues to look for opportunities to risk-inform and modernize its security oversight program to ensure that licensee security programs continue to provide reasonable assurance of adequate protection of public health and safety and the common defense and security. One example is the NRC’s ongoing self-assessment of the Baseline Security Significance Determination Process to identify areas for improvement including consistency across the agency when screening security inspection findings, further risk-informing the process, and other potential enhancements as identified by staff. The NRC will continue to solicit feedback from external stakeholders and share progress and outcomes throughout the assessment.

In CY 2024, the NRC will continue to advance efforts to increase realism in the FOF program. The agency will also continue to monitor the implementation of the cybersecurity inspection program through the second biennial ROP inspection cycle and implement lessons learned from the first biennial cycle. Finally, the NRC will continue its important mission of monitoring for potential threats to NPPs and CAT I fuel cycle facilities, communicating time-sensitive information to licensees, and assessing the need for any changes to the design-basis threats (DBTs) applicable to these facilities.

1 SECURITY OVERSIGHT FOR COMMERCIAL NUCLEAR POWER REACTORS AND CATEGORY I FUEL CYCLE FACILITIES

1.1 NRC Security Inspections of Licensed Facilities



Figure 3 NRC Security Inspector Observing Security System Testing at an NPP in August 2023

The NRC licenses and regulates the Nation's civilian use of radioactive materials to provide reasonable assurance of adequate protection of public health and safety to promote the common defense and security and to protect the environment. Consistent with its security mission, the NRC requires that NPPs and CAT I fuel cycle facilities design, establish, and maintain security programs that provide reasonable assurance of adequate protection against the DBTs of radiological sabotage. CAT I fuel cycle facilities must protect against an additional DBT of theft or diversion of a formula quantity of strategic special nuclear material (SSNM).¹ These DBTs are comprised of a set of adversary characteristics, equipment, attack mechanisms, and tactics that NPPs and CAT I fuel cycle facilities must be able to defend against.

To verify that NPPs and CAT I fuel cycle facilities are capable of defending against the applicable DBTs, the NRC regularly performs security oversight activities to assess licensee performance and verify compliance with security requirements. These oversight activities include monitoring daily licensee activities and

performing routine inspections that closely focus on a cross section of areas that the agency has determined have the greatest impact on security. These areas include: personnel access authorization; access control; equipment performance, testing, and maintenance; protective strategy evaluation and performance evaluation program; protection of safeguards information; security training; fitness-for-duty; material control and accounting; transportation security; cybersecurity; and target set identification.

¹ "Strategic Special nuclear material" (SSNM) is defined in Title 10 of the *Code of Federal Regulations* 73.2 as uranium-235 (contained in uranium enriched to 20 percent or more in the U-235 isotope), uranium-233, or plutonium.

The NRC conducts performance-based security response FOF inspections at NPPs and CAT I fuel cycle facilities. The NRC uses FOF inspections to evaluate the effectiveness of a licensee’s protective strategy through an integrated response exercise during which the licensee’s security force executes its protective strategy in response to a simulated attack by an opposing force with the characteristics and attributes of the DBT. These simulated attack scenarios are designed to probe and challenge potential weaknesses in the sites’ protective strategies. Additional information regarding these FOF inspections is contained in Section 4 of this report.

The NRC’s security baseline inspections, including FOF inspections, verify that security programs at NPPs and CAT I fuel cycle facilities have been adequately designed, implemented, and maintained in a manner consistent with regulatory requirements, and that these security programs effectively integrate to provide adequate protection against the DBTs.

While NPPs and CAT I fuel cycle facilities licensed by the NRC must provide assurance of protection against the applicable DBT and are subject to periodic baseline security inspections, including FOF inspections, the NRC’s oversight and enforcement process framework differs slightly for these two types of facilities, as described in the sections below.

1.2 Reactor Oversight Process Framework

The ROP is the NRC's process to inspect, measure, and assess the safety and security performance of NPPs. The ROP encompasses three strategic performance areas and measures NPP performance in seven specific “cornerstones of safety” as shown in Figure 4. Performance is also measured across three cross-cutting areas, which can affect each of the cornerstones across all the strategic performance areas. Additional information regarding the ROP can be found on the NRC’s public website at <https://www.nrc.gov/reactors/operating/oversight/rop-description.html>.

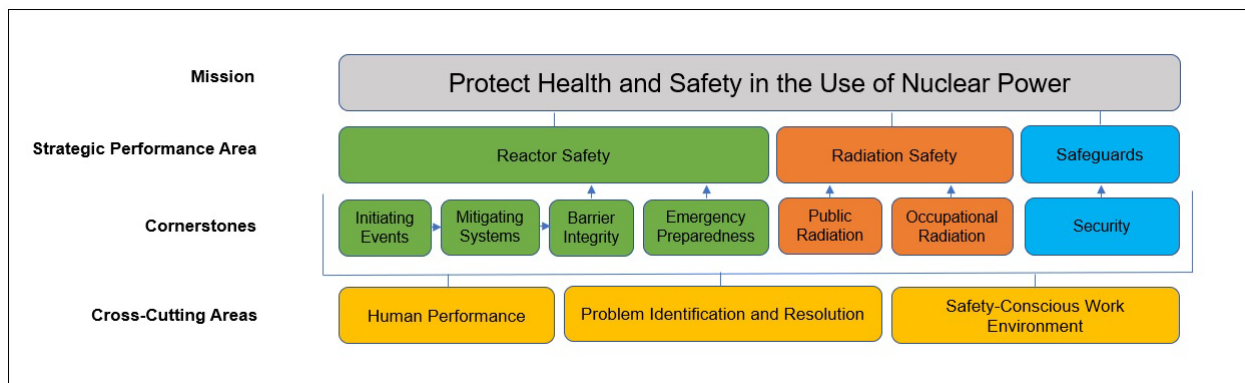


Figure 4 Reactor Oversight Framework

The NRC evaluates NPP performance under the ROP by analyzing two inputs: performance indicators (PIs) reported by the licensees and inspection findings identified through the NRC's inspection programs.

Performance Indicators

The NRC established PIs to quantitatively measure licensee performance in risk-significant areas of each cornerstone in the ROP. Each PI has objective criteria and thresholds for measuring acceptable performance using a color-coded system. Licensees submit PI data

quarterly and the NRC regularly conducts inspections to verify the accuracy and completeness of the submittals. Publicly available PI data is posted at <https://www.nrc.gov/reactors/operating/oversight/pi-summary.html>.

The NRC established one PI under the security cornerstone that measures the operability of intrusion detection systems at NPPs. This PI provides insight into the effectiveness of the licensees' maintenance of these systems and provides a method of monitoring security equipment degradation that could adversely impact reliability.

All NPP licensees maintained a Green security PI for CY 2023. Specific details about the security PIs are withheld from public disclosure to ensure that security-related information is not made available to a potential adversary.

Inspection Findings

Findings identified during NRC security inspections are evaluated under a security significance determination process and assigned a significance level using a color-coded system similar to PIs. These findings can range from Green to Red in significance described below as shown in Figure 5.

- **Green** indicates a finding of very low safety or security significance.
- **White** indicates a finding of low-to-moderate safety or security significance.
- **Yellow** indicates a finding of substantial safety or security significance.
- **Red** indicates a finding of high safety or security significance.

Most security findings are determined to be of very low security significance (i.e., Green) with no need for further regulatory action after the performance deficiencies² have been corrected. For those findings that have a greater potential for adversely impacting security at an NPP (i.e., White, Yellow, Red), the NRC will apply additional regulatory action as determined by the NRC's action matrix.

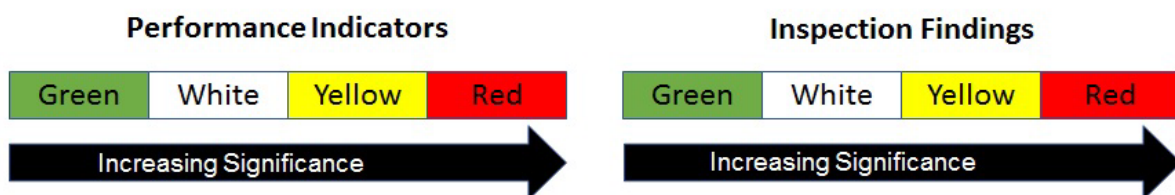


Figure 5 Assessing Significance within the Reactor Oversight Program

Action Matrix

The NRC collects information from inspection findings and PIs to make objective conclusions about the licensee's safety and security performance. The NRC then determines the appropriate level of agency response using an action matrix. Depending on the number and significance of

² The NRC defines a performance deficiency as the licensee's failure to satisfy one or more regulatory requirements or self-imposed standards where such failure was reasonably foreseeable and preventable.

inspection findings and PIs at an NPP, the NRC's response can include supplemental inspections and a range of appropriate regulatory actions up to and including orders to shut down the NPP. Information on current NPP performance is provided on the NRC's public website at <https://www.nrc.gov/reactors/operating/oversight/plant-by-plant-summaries.html>. Information regarding security findings is identified in the publicly available action matrix summary as either very low significance (i.e., Green) or greater-than-Green significance (i.e., White, Yellow, or Red). The NRC does not disclose the specific significance of greater-than-Green findings to ensure that potentially useful information regarding NPP security vulnerabilities is not provided to possible adversaries.

1.3 Category I Fuel Cycle Facilities Oversight Process Framework

The NRC maintains regulatory oversight of safeguards³ and security programs at two CAT I fuel cycle facilities: BWX Technologies, Inc., located in Lynchburg, Virginia, and Nuclear Fuel Services, Inc., located in Erwin, Tennessee. Each CAT I fuel cycle facility is licensed to use and process a formula quantity of SSNM. The SSNM must be protected against acts of radiological sabotage as well as theft and diversion. The NRC conducts periodic security inspections at these facilities to ensure these licensees are maintaining adequate protection of their sites.

The primary objectives of the NRC's CAT I fuel cycle facility safeguards and security oversight program are to determine if the fuel cycle facilities are operating securely and pursuant to the NRC's regulatory requirements and orders, detect indications of declining security performance, investigate specific security events and weaknesses, and identify generic security issues. The NRC inspects highly-enriched uranium-related physical security areas annually, biennially, or triennially using established inspection procedures (IPs). The results of these inspections contribute to an overall assessment of licensee performance. Inspection reports for CAT I fuel cycle facilities can be found on the NRC's public website at <https://www.nrc.gov/info-finder/fc/index.html#facility-list>. Like NPPs, detailed information regarding security violations at CAT I fuel cycle facilities is withheld from public disclosure.

Since CAT I fuel cycle facilities are not subject to the ROP, performance issues identified at these sites are not assigned a color-coded finding. All violations identified at CAT I fuel cycle facilities are assessed and assigned SLs in accordance with the NRC Enforcement Policy.

The NRC has not established PIs for CAT I fuel cycle facility licensees.

1.4 NRC Enforcement Policy

The NRC's enforcement authority is derived from the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974, as amended. The enforcement program has two goals: (1) deter noncompliance by emphasizing the importance of adherence to NRC requirements, and (2) encourage prompt identification and prompt comprehensive correction of violations of NRC requirements. The NRC's Enforcement Policy can be found on the NRC's public website at <https://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>.

³ Safeguards refers to the use of material control and accounting programs to verify that all special nuclear material is properly controlled and accounted for, as well as the physical protection (or physical security) equipment and security forces.

When inspections and investigations identify violations of NRC requirements, the NRC uses three primary enforcement sanctions: notices of violation, civil penalties, and orders to modify, suspend, or revoke a license. Notices of violation and civil penalties are issued based on violations. The NRC may issue orders in response to violations or because of a public health and safety or common defense and security issue. The NRC's enforcement program applies to NPP and CAT I fuel cycle facility licensees.

Under its traditional enforcement process, the NRC assesses significance by assigning a severity level (SL) to all violations. The traditional enforcement process has established four SLs that demonstrate the relative importance of a violation:

- **SL I** violations are those that resulted in, or could have resulted in, serious safety or security consequences.
- **SL II** violations are those that resulted in, or could have resulted in, significant safety or security consequences.
- **SL III** violations are those that resulted in, or could have resulted in, moderate safety or security consequences.
- **SL IV** violations are those that are less serious but are of more-than-minor concern, that resulted in no or relatively inappreciable potential safety or security consequences.

Traditional enforcement is also used at NPPs to address certain aspects of violations (e.g., willfulness and individual actions) that cannot be addressed solely through the ROP. These violations include those that resulted in actual safety or security consequences, affected the ability of the NRC to perform its regulatory oversight function, or involve willfulness.

2 CALENDAR YEAR 2023 SECURITY INSPECTION RESULTS

2.1 Calendar Year 2023 Commercial Nuclear Power Reactor Inspection Results

Table 3 summarizes the results of the security baseline inspection program for NPPs in CY 2023. As indicated in this table, 163 out of 165 security findings at NPPs issued in CY 2023 were of very low security significance (i.e., Green or SL IV violations) and two were of greater-than-Green significance.

Table 3 Summary of Calendar Year 2023 Commercial Nuclear Power Reactors Inspection Results

Total number of security inspections conducted	173
Total number of inspection findings	165
Distribution of Inspection Findings:	
Total number of Green findings	161
Total number of greater-than-Green findings	2
Total number of SL IV violations	2
Total number of greater-than-SL IV violations	0

Table 4 summarizes the number of findings related to each security IP for NPPs. The areas with the most inspection findings within the security baseline inspection program are cybersecurity, access control, and fitness-for-duty. Cybersecurity inspections have consistently resulted in the highest number of security inspection findings since the baseline cybersecurity inspection program was implemented in CY 2022.

Table 4 Summary of Calendar Year 2023 Security Baseline Inspections and Associated Findings for Commercial Nuclear Power Reactors by Inspection Procedure 71130

	Number of IP Completions in CY23	Number of Findings in CY23
01 – Access Authorization	23	8
02 – Access Control	54	16
03 – Contingency Response – Force-on-Force Inspections	18	4
04 – Equipment Performance, Testing, and Maintenance	28	10
05 – Protective Strategy Evaluation and Performance Evaluation Program	15	10
06 – Protection of Safeguards Information	5	2
07 – Security Training	31	3
08 – Fitness-for-Duty Program	35	15
09 – Security Plan Changes	54	0
10 – Cybersecurity	32	94
11 – Materials Control and Accounting	12	1
14 – Review of Power Reactor Target Sets	13	2
TOTAL:	320⁴	165

⁴ More than one baseline IP is often completed during a security inspection at an NPP. Therefore, the total number of IP completions is higher than the total number of inspections documented in Table 3.

2.2 Calendar Year 2023 Category I Fuel Cycle Facilities Inspection Results

Table 5 summarizes the overall results of the safeguards and security inspection program for CAT I fuel cycle facilities during CY 2023. All security violations issued in CY 2023 at CAT I fuel cycle facilities were of very low security significance (i.e., SL IV violations). There were no greater-than-SL IV violations.

Table 5 Calendar Year 2023 Safeguards and Security Inspection Summary for CAT I Fuel Cycle Facilities

Total number of security inspections conducted	11
Total number of inspection violations	3
Distribution of Inspection Violations:	
Total number of SL IV violations*	3
Total number of greater-than-SL IV violations	0

Table 6 summarizes the associated findings related to each security IP for CAT I fuel cycle facilities. The areas with the most inspection findings within the security baseline inspection program are access control and materials control and accounting. This is consistent with previous years' security baseline inspection results.

Table 6 Calendar Year 2023 Security Baseline Inspections and Associated Findings for CAT I Fuel Cycle Facilities by Inspection Procedure

Inspection Procedures	Number of IP Completions at CAT I Fuel Cycle Facilities in CY 23	Number of CAT I Fuel Cycle Violations in CY 23
81700.01 – SSNM Security Controls	0	0
81700.02 – Access Control Measures	4	2
85305– Item Control	4	1
81700.04 – Equipment Performance, Testing and Maintenance	1	0
81700.05 – Protective Strategy Evaluation	2	0
81700.06 – Licensee Conducted Force-On-Force	0	0
81700.07 – Security Training	0	0
81700.08 – Fitness-for-Duty Program	0	0
81700.09 – Security Measures	0	0
81700.10 – Protection of Safeguards Information	0	0
81700.11 – Annual Observation of Licensee Conducted Force-On-Force	0	0
TOTAL:	11	3

2.3 Calendar Year 2023 Overall Security Inspection Results

Table 7 summarizes the combined number of security inspections and findings in CY 2023.

Table 7 Combined Security Inspection Results for 2023

173	Total number of security inspections conducted at commercial nuclear power reactors
11	Total number of security inspections conducted at Category I fuel cycle facilities
184	Total number of security inspections
161	Total number of Green findings at NPPs
2	Total number of greater-than-Green findings at NPPs
2	Total number of SL IV violations at NPPs
0	Total number of greater-than-SL IV violations at NPPs
3	Total number of SL IV violations at CAT I Fuel Cycle Facilities
0	Total number of greater-than-SL IV violations at CAT I Fuel Cycle Facilities
168	Total number of inspection findings

3 FORCE-ON-FORCE EVALUATIONS

3.1 Force-On-Force Program Description

A FOF inspection is a two-phased, performance-based inspection that is designed to verify and assess a licensee's ability to defend against the applicable DBTs of radiological sabotage and/or theft or diversion of SSNM through implementation of its protective strategy. These FOF inspections are conducted at each NPP and CAT I fuel cycle facility on a triennial cycle.

During the first phase of the inspection, NRC security inspectors conduct briefings and site walkdowns to assess the number of defenders, their protective positions, and the licensee's overall protective strategy. The inspectors also conduct table-top drills on a mock-up of the facility to evaluate the effectiveness of the licensee's security strategy against a series of attack scenarios. The role of local, State, and Federal law enforcement and emergency planning officials is also discussed in the table-top drills. Using information obtained from the table-top drills, briefings, site walkdowns, security procedures, and previous inspection reports, the NRC inspection team, with technical support from active-duty members of the U.S. Special Operations Command, develops attack scenarios designed to probe and challenge potential weaknesses in the site's protective strategy.

During the second phase of the inspection, a mock adversary force carries out the attack scenarios developed by the NRC inspection team during a performance-based exercise. At NPPs, the mock adversary force attempts to reach and simulate destroying enough safety equipment to set in motion an event that would damage the reactor's core or spent fuel pool, and potentially cause a release of radiation to the environment. At CAT I fuel cycle facilities, a similar process is used to assess the effectiveness of a licensee's protective strategy capabilities relative to the DBTs of radiological sabotage and theft or diversion of SSNM. The security force at each facility attempts to interdict the mock adversary force and prevent them from achieving radiological sabotage or the theft or diversion of SSNM. During these exercises, the licensee maintains both its normal security force, which is not involved in the exercise, and a second security force that actively participates in the exercise. The use of weapons and explosives is simulated using electronic equipment and other means.

The purpose of these exercises is to identify any significant deficiencies in the protective strategy. Any such deficiencies are promptly reviewed and compensatory measures are established when appropriate while the licensee implements long-term corrective actions. These exercises provide the most realistic evaluation of the licensee's protective strategy, short of an actual attack. Additional information on the NRC's FOF program can be found on the NRC's public website at <https://www.nrc.gov/security/faq-force-on-force.html>.

3.2 Force-On-Force Inspections in Calendar Year 2023

Calendar Year 2023 marked the first year of the seventh triennial FOF inspection cycle. The NRC staff conducted a total of 18 NRC-evaluated FOF inspections at NPPs during CY 2023. The NRC completed these inspections utilizing IP 71130.03, "Contingency Response – Force-on-Force Testing."

There were no NRC-evaluated FOF inspections scheduled at CAT I fuel cycle facilities in CY 2023.

3.3 Force-On-Force Exercise Results



Figure 6 Mock Adversary Team Members Making Entry During FOF Exercise in CY 2023

The NRC categorizes FOF exercise results as: 1) effective; 2) indeterminate; 3) marginal; or 4) ineffective. An effective exercise is one in which the licensee demonstrates effective implementation of its protective strategy in accordance with security plans approved by the NRC and related implementation procedures, regulatory requirements, or other Commission requirements, such as orders or confirmatory action letters. An indeterminate exercise is one in which the results were significantly skewed by an anomaly or anomalies, resulting in the inability to determine the outcome of the exercise (e.g., site responders neutralize the adversaries using procedures or practices unanticipated by the design of the site protective strategy or in conflict with the training of security personnel to implement the site protective strategy, or significant exercise control failures were experienced).

A marginal exercise is one in which the licensee’s performance prevented the loss of a complete target set; however, the site’s response force did not neutralize the adversary before the adversary simulated the loss of a subset of target set elements. An ineffective exercise is one in which the licensee did not demonstrate effective implementation of its protective strategy in accordance with plans approved by the NRC and related implementation procedures, regulatory requirements, or other Commission requirements, such as orders or confirmatory action letters.

A marginal exercise is one in

Table 8 summarizes the 18 FOF inspections conducted in CY 2023.

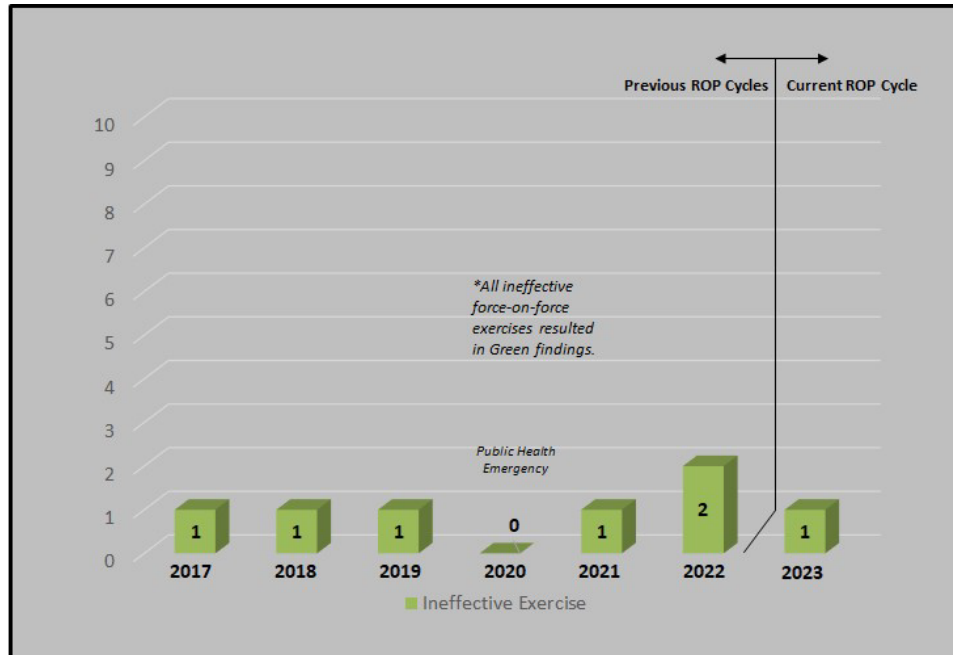
Table 8 Calendar Year 2023 Force-on-Force Inspections Summary

Total number of FOF inspections conducted (two exercises per inspection) using IP 71130.03	18
Total number of FOF inspections conducted at a CAT I fuel cycle facility (two exercises per inspection) using IP 96001	0

Table 9 lists the outcomes for exercises conducted in CY 2023. The results of the re-inspection are included in the effective exercise outcomes.

Table 9 Force-On-Force Exercise Outcomes

Total number of effective exercises	33
Total number of indeterminate exercises	1
Total number of marginal exercises	0
Total number of ineffective exercises	1
Total number of canceled (fully integrated) exercises	0



Ineffective Exercise – an exercise where the licensee did not demonstrate effective implementation of its protective strategy in accordance with plans approved by the NRC and related implementation procedures, regulatory requirements, or other Commission requirements, such as orders or confirmatory action letters affecting protective strategy for the conduct of the FOF exercise.

Figure 7 Total Force-on-Force Ineffective Exercises by Year

4 CONCLUSION

As evidenced in this report, sustained performance has been demonstrated in NPP and CAT I fuel cycle security during CY 2023. Sites employ defense-in-depth strategies to protect against the theft and diversion of radiological materials as well as radiological sabotage, including well-trained security forces, robust physical barriers, intrusion detection systems, surveillance systems, and reactor controls.

The agency recognizes the need for continued vigilance and high levels of security at NRC-licensed facilities. As a result, the NRC's security oversight programs continue to probe for any vulnerabilities or deficiencies in site protective strategies and security programs and takes prompt action where identified. In addition, baseline inspections, including FOF and cybersecurity inspections, continue to provide performance-based insights regarding licensee readiness to protect their sites. In these ways, the NRC security inspection program ensures that NRC licensees remain aware of and prepared to protect against a wide range of threats.

Additional information regarding the NRC's security oversight programs can be found on the NRC's public website at <https://www.nrc.gov/security.html>.

APPENDIX – LIST OF ACRONYMS

CAT I	Category I
COVID-19	coronavirus disease 2019
CY	calendar year
DBT	design-basis threat
FOF	force-on-force
IP	inspection procedure
NPP	nuclear power plant
NRC	U.S. Nuclear Regulatory Commission
PI	performance indicator
ROP	reactor oversight process
SDP	significance determination process
SL	severity level
SSNM	strategic special nuclear material

BIBLIOGRAPHIC DATA SHEET

(See instructions on the reverse)

2. TITLE AND SUBTITLE

Report to Congress on the Security Inspection Program for Operating Commercial Power Reactors and Category I Fuel Cycle Facilities: Results and Status Update

Annual Report for Calendar Year 2023

3. DATE REPORT PUBLISHED

MONTH

September

YEAR

2024

4. FIN OR GRANT NUMBER

5. AUTHOR(S)

Daryl Johnson, NSIR

6. TYPE OF REPORT

Technical

7. PERIOD COVERED (Inclusive Dates)

CY 2023

8. PERFORMING ORGANIZATION - NAME AND ADDRESS (If NRC, provide Division, Office or Region, U. S. Nuclear Regulatory Commission, and mailing address; if contractor, provide name and mailing address.)

Division of Security Operations
Office of Nuclear Security & Incident Response
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

9. SPONSORING ORGANIZATION - NAME AND ADDRESS (If NRC, type "Same as above", if contractor, provide NRC Division, Office or Region, U. S. Nuclear Regulatory Commission, and mailing address.)

Same as above

10. SUPPLEMENTARY NOTES

11. ABSTRACT (200 words or less)

This report fulfills the requirements of Section 170D.e of the Atomic Energy Act of 1954 (42 U.S.C. §2210 d(e)), as amended, which states, "not less often than once each year, the Commission shall submit to the Committee on Environment and Public Works of the Senate and the Committee on Energy and Commerce of the House of Representatives a report, in classified form and unclassified form, that describes the results of each security response evaluation conducted and any relevant corrective action taken by a licensee during the previous year." Additionally, Section 170D.a of the Atomic Energy Act of 1954 (42 U.S.C. §2210 d(a)), as amended, grants the U.S. Nuclear Regulatory Commission (NRC) the authority to determine which licensed facilities must undergo these security evaluations. The NRC is reporting the security response evaluation results for the Nation's fleet of operating commercial nuclear power plants (NPPs) and Category I (CAT I) fuel cycle facilities, given the significance of the nature, form, and quantity of nuclear material at these facilities. With respect to NPPs, the scope of this report includes those undergoing decommissioning but not yet transitioned to a dry-storage independent spent fuel storage installation due to the continued implementation of Title 10 of the Code of Federal Regulations Part 73, "Physical Protection of Plants and Materials." This report includes a comprehensive overview of the combined results of the security programs for calendar year (CY) 2023.

12. KEY WORDS/DESCRIPTORS (List words or phrases that will assist researchers in locating the report.)

Category I Fuel Cycle Facilities
Commercial Power Reactors
Congressional Report
Force-on-Force Inspections
Report to Congress
Security Inspection Program
Security Response Evaluation Program
Security
Nuclear Security

13. AVAILABILITY STATEMENT

unlimited

14. SECURITY CLASSIFICATION

(This Page)

unclassified

(This Report)

unclassified

15. NUMBER OF PAGES

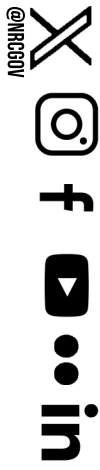
16. PRICE



Federal Recycling Program



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, DC 20555-0001
OFFICIAL BUSINESS



NUREG-1885, Revision 17

**Report to Congress on the Security Inspection Program for Operating
Commercial Power Reactors and Category I Fuel Cycle Facilities: Results and
Status Update – Annual Report for Calendar Year 2023**

September 2024