



# Evaluation of the U.S. Nuclear Regulatory Commission's Policies and Procedures for Emergency Evacuation of Disabled Personnel

OIG-24-E-03  
September 27, 2024



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## **MEMORANDUM**

**DATE:** September 27, 2024

**TO:** Mirela Gavrilas  
Executive Director for Operations

**FROM:** Hruta Virkar, CPA */RA/*  
Assistant Inspector General for Audits & Evaluations

**SUBJECT:** EVALUATION OF THE U.S. NUCLEAR REGULATORY  
COMMISSION'S POLICIES AND PROCEDURES FOR  
EMERGENCY EVACUATION OF DISABLED PERSONNEL  
(OIG-24-E-03)

Attached is the Office of the Inspector General's (OIG) evaluation report titled:  
*Evaluation of the U.S. Nuclear Regulatory Commission's Policies and Procedures for  
Emergency Evacuation of Disabled Personnel.*

The report presents the results of the subject evaluation. On September 25, 2024,  
agency staff waived the exit conference and stated that they had no formal comments for  
inclusion in this report.

Please provide information on actions taken or planned on each of the  
recommendation(s) within 30 days of the date of this memorandum.

We appreciate the cooperation extended to us by members of your staff during the  
evaluation. If you have any questions or comments about our report, please contact me  
at 301.415.1982 or Paul Rades, Team Leader, at 301.415.6228.

Attachment:  
As stated

cc: J. Martin, Acting ADO  
M. Meyer, DADO  
S. Miotla, DADO  
J. Jolicoeur, OEDO



# Results in Brief

## Why We Did This Review

Facilities occupied by federal government tenants are required to have occupant emergency plans describing actions that occupants should take to ensure their safety if a fire or other emergency occurs. These plans should address a broad range of hazards and threats, meet facility-specific needs, involve coordination with local emergency responders, and consider applicable codes and regulations.

The OIG initiated this evaluation in response to an employee's allegation.

The objective was to evaluate the extent to which the NRC's emergency evacuation policies and procedures for the agency's headquarters complex consider the needs of personnel with various disabilities.

## ***Evaluation of the U.S. Nuclear Regulatory Commission's Policies and Procedures for Emergency Evacuation of Disabled Personnel***

OIG-24-E-03

September 27, 2024

### What We Found

The Office of the Inspector General (OIG) found that the U.S. Nuclear Regulatory Commission (NRC) headquarters occupant emergency plan includes adequate procedures to facilitate the emergency evacuation of disabled personnel and other personnel needing assistance. However, the agency must remedy problems with two-way communication systems, area of refuge signage, and fire door accessibility to align with safety codes and better support personnel needing assistance during emergency evacuations. Additionally, NRC headquarters personnel could benefit from more frequent limited-scope training to supplement annual full-scope evacuation and accountability drills.

### What We Recommend

This report makes four recommendations to improve two-way communication systems, area of refuge signage, fire door accessibility, and to enhance training for personnel needing or rendering assistance during an emergency evacuation.

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## ABBREVIATIONS AND ACRONYMS

ADA	The Americans with Disabilities Act of 1990
ADM	Office of Administration
EDO	Executive Director for Operations
NFPA	National Fire Protection Association
NRC	U.S. Nuclear Regulatory Commission
OEP	Occupant Emergency Plan
OIG	Office of the Inspector General

# I. BACKGROUND

## Occupant Emergency Plans

All facilities occupied by federal government tenants are required to have occupant emergency plans (OEPs) describing the actions that facility occupants should take to ensure their safety if a fire or other emergency occurs.<sup>1</sup> These plans reduce the threat to personnel, property, and other assets within the facility in the event of an incident inside or immediately surrounding a facility by providing facility-specific response procedures. Effective OEPs:<sup>2</sup>

- Provide clear instruction on roles and responsibilities for all aspects of the preparedness spectrum, from prevention and protection to response and recovery;
- Use an approach that includes procedures to handle a wide range of hazards and threats—such as medical emergencies, bomb threats, suspicious packages, and natural disasters—that could affect a facility;
- Meet the specific characteristics, needs, and criteria for each facility. For example, location-specific procedures are added to address unique threats or hazards such as hazardous material spills or releases of radioactive materials from within or surrounding the facility;
- Involve coordination with local emergency responders;
- Consider safety codes and regulations when developing and implementing emergency planning, such as the International Fire Code and National Fire Protection Association (NFPA) codes; and,
- Address multi-jurisdictional issues regarding mass care, sheltering, and evacuation.

The NRC has OEPs for its headquarters and regional office buildings. The headquarters OEP was most recently updated in December 2023 and provides instructions for responding to different types of hazards, including sheltering in place and building evacuation.

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<sup>1</sup> Title 41 Code of Federal Regulations (C.F.R.) Part 102-74.230 establishes the requirement for developing, implementing and maintaining an Occupant Emergency Plan.

<sup>2</sup> This bulleted list is derived from the Department of Homeland Security's *Federal Protective Service Guidance for Occupant Emergency Planning*

The NRC headquarters OEP addresses evacuation of personnel needing assistance—which may include but are not limited to people with declared disabilities<sup>3</sup>—by instructing them to first call 911, then call NRC security, and then wait in an area of refuge<sup>4</sup> for first responders to evacuate them from the building. In limited circumstances, NRC security personnel may also help evacuate personnel needing assistance.

While some federal agencies pre-position emergency stair travel devices in their buildings to support the evacuation of mobility impaired personnel, the NRC does not do this at headquarters buildings. Local firefighters tasked with responding to emergencies at the NRC headquarters complex are, however, equipped with these devices. Guidance documents developed by the NFPA,<sup>5</sup> the Rehabilitation Engineering & Assistive Technology Society of North America,<sup>6</sup> and the National Institute of Standards and Technology<sup>7</sup> address the use of these devices. These documents emphasize the importance of assessing user needs prior to purchase, training users and others who might operate the devices while rendering assistance, and maintaining the devices while not in use. On April 23, 2024 the NRC staff met with the OIG and raised concerns about safety and litigation risks associated with improper use of these devices by untrained personnel.

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<sup>3</sup> The Americans with Disabilities Act of 1990 (ADA), as amended defines a person with a disability as someone who has a physical or mental impairment that substantially limits one or more major life activities, has a history or record of such an impairment (e.g., cancer in remission), or is perceived by others as having such an impairment (e.g., severe burn scars). Not all disabled people have declared, self-identified disabilities, and not all disabilities are visible. Further, some people who do not meet the ADA definition of “disabled” might nevertheless need assistance during an emergency evacuation.

<sup>4</sup> An area of refuge is a space where persons unable to use stairways can remain temporarily to await assistance during an emergency evacuation. Areas of refuge must be separated from adjacent spaces by smoke barriers or horizontal exits but can also be in the fire-rated enclosure of an interior exit stairway.

<sup>5</sup> “Emergency Evacuation Planning Guide for People with Disabilities,” National Fire Protection Association, November 2022.

<sup>6</sup> “RESNA Position Paper on the Use of Evacuation Chairs,” Rehabilitation Engineering & Assistive Technology Society of North America, April 27, 2014.

<sup>7</sup> NIST Technical Note 1824, “Guidance on Fire Emergency Procedures for Emergency Stair Travel Devices,” National Institute of Standards and Technology, November 2013.

The NRC holds annual evacuation drills at its headquarters complex to train personnel on evacuation and accountability procedures. Following these drills, NRC facilities management staff from the Office of Administration (ADM) perform after-action reviews to assess the performance of agency staff and the NRC's contractor security officers.

## **NRC Headquarters Complex**

The NRC headquarters complex is located in Rockville, Maryland. Approximately 1800 of 2860 agency employees,<sup>8</sup> and more than 120 contractor personnel, work in two headquarters buildings—One White Flint North and Two White Flint North. The NRC also occupies 1.5 of 14 floors in the Three White Flint North building, primarily for Headquarters Operations Center and data center activities.<sup>9</sup> The remaining building space is occupied by other federal government tenants.

## **II. OBJECTIVE**

The objective was to evaluate the extent to which the NRC's emergency evacuation policies and procedures for the agency's headquarters complex consider the needs of personnel with various disabilities.

## **III. FINDINGS**

The OIG found that the NRC headquarters occupant emergency plan includes adequate procedures to facilitate emergency evacuation of disabled personnel and other personnel needing assistance. However, the agency must remedy problems with two-way communication, area of refuge signage, and fire door accessibility to align with safety codes and better support personnel needing assistance during emergency evacuations. Additionally, NRC headquarters personnel could benefit from more frequent limited-scope training to supplement annual full-scope evacuation and accountability drills.

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<sup>8</sup> The NRC was authorized up to 2,859.6 full-time equivalent personnel for Fiscal Year 2023. However, actual staffing levels vary based on attrition rates.

<sup>9</sup> The NRC plans to vacate the Three White Flint North building by 2027.



## 1. Communications, Signage, and Fire Doors Need Maintenance

The NRC headquarters OEP requires personnel needing emergency evacuation assistance to call first responders and wait for assistance in designated areas of refuge. NFPA safety codes specify technical requirements for areas of refuge and fire doors. OIG auditors found problems in two-way communications systems, signage, and fire doors that could hinder employees' ability to seek assistance or render assistance to other personnel in accordance with the OEP. Remedying these problems is critical to the successful implementation of the NRC headquarters OEP and minimizing safety risk to employees during drills or actual emergencies requiring the evacuation of headquarters buildings.

### What Is Required

#### NFPA Safety Codes

Title 41 Code of Federal Regulations (C.F.R.) Part 102-74, Subpart B "Facility Management," states, "executive agencies must provide occupancy services that substantially conform to nationally recognized standards."

NRC Management Directive 10.130, *Safety and Occupational Health Program*, states "it is the policy of the U.S. Nuclear Regulatory Commission to establish and manage a safety and occupational health program as required by Executive order and Federal and State laws and regulations." In addition, the directive states that "it is also NRC policy to establish and maintain an Occupant Emergency Program."

NFPA 101, *Life Safety Code*, section 7.2.12.1 (Areas of Refuge) requires two-way communication systems that allow communications between areas of refuge and a central control point. Additionally, doors leading to stairwell landings that serve as areas of refuge shall be identified by signage that conforms with International Code Council accessibility standards.<sup>10</sup>

NFPA 80, *Standard for Fire Doors and Other Opening Protectives*, states while "adequate spring power is essential for hydraulic door closers to close a fire door with sufficient force to overcome the resistance of the latching

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<sup>10</sup> Specifically, ICC/ANSI A117.1, *Accessible and Usable Buildings and Facilities*.

mechanism...too much spring power causes opening resistance and makes it difficult for the handicapped, the infirm, and young children to open doors.”

## What We Found

### **Problems Exist with Two-Way Communication Systems, Signage, and Fire Doors Leading to Areas of Refuge**

OIG auditors systematically examined areas of refuge and adjacent elevator banks throughout the above ground and subterranean levels of the One and Two White Flint North buildings, with emphasis on compliance with NFPA 101 requirements for areas of refuge. The auditors observed the following:

- *Lack of working phones.* In One White Flint North elevator banks, some phones were either hidden from plain view, disconnected, not present, or connected to a jack without a dial tone. In addition, some elevator banks in Two White Flint North had dedicated red emergency phones with signage for calling the NRC central alarm station number; however, these phones were not present in all elevator banks examined by OIG auditors. NRC staff acknowledged that the agency’s transition to Voice Over Internet Protocol telephone service had compromised the functionality of telephones in the headquarters complex.

Additionally, OIG auditors tested their personal cellular phone signals in areas of refuge and found varying signal strengths, depending on the floors’ location. Cellular phone signals were weak or non-existent on some subterranean floors, and one auditor noticed that “SOS” calling was unavailable on one floor.

- *Absence of signage designating areas of refuge.* While OIG auditors observed floorplan maps in each elevator bank with areas of refuge marked on the maps, no signs were posted in areas of refuge as required by the NFPA 101 code. Additionally, OIG auditors found outdated emergency instructions posted on fire doors leading to areas of refuge on three different floors.
- *Wide range of force required to open fire doors leading to areas of refuge.* OIG auditors used a consumer-grade scale to test the opening force of fire doors leading to areas of refuge in the One and Two White Flint North buildings. They found the opening forces measured across

the doors' full sweep ranged between approximately 6 and 22 lbs. Additionally, OIG auditors asked an employee with a mobility impairment to test the fire door leading to the area of refuge closest to the employee's workstation. The employee showed difficulty opening the door without assistance and reported that someone with a more severe disability or a service animal would not likely be able to open the door without assistance. NRC staff told OIG auditors that the fire doors need sufficient closing force to serve their intended purpose and that stairwell pressurization changes that would occur during a fire would likely impact the fire door opening or closing force.

## **Why This Is Important**

### **Functional Building Equipment Is Key to Employee Safety**

Problems with two-way communication systems, signage, and fire door opening force must be remedied to ensure safe, orderly evacuation of personnel who might need assistance during an emergency, and to ensure their health and safety while waiting for evacuation assistance. Additionally, these changes can expedite emergency evacuations by helping first responders more readily identify and locate personnel needing assistance.

### **Recommendations**

The OIG recommends that the Executive Director for Operations (EDO):

- 1.1. Establish working two-way communication systems adjacent to areas of refuge in accordance with NFPA 101 standards;
- 1.2. Install area of refuge signage in accordance with NFPA 101 standards and remove any signage showing incorrect or outdated emergency information; and,
- 1.3. Assess the force required to open fire doors leading to areas of refuge under a range of conditions, and as practicable, adjust fire door opening force to the minimum allowable level.

## **2. More Frequent Drills Would Improve Employee Readiness for Emergency Response**

NFPA emergency planning guidance emphasizes the importance of regular drills to optimize building occupants' responses during real emergencies. The NRC conducts annual full-scope evacuation and accountability drills, and after-action reviews conducted following recent drills showed employee drill responses needed improvement. Understanding of the headquarters OEP by everyone involved—NRC staff, contractors, and emergency responders—is crucial to safe evacuation of personnel during a real emergency.

### **What Is Required**

#### **Regular Drills Are Key to Successful Implementation of Emergency Evacuation Plans**

According to NFPA guidance, regular practice of the evacuation plan by all building occupants helps everyone understand and know their responsibilities in emergency evacuations. Practice also aids in identifying plan weaknesses that would prevent the plan's successful execution in a real emergency. While standard evacuation drills are essential, building management should conduct them both unannounced and announced. The more practiced the plan is, the more likely it will be successfully executed in an actual emergency.<sup>11</sup>

### **What We Found**

#### **Performance in Annual Drills Could Be Improved**

The NRC conducts annual full-scope evacuation and accountability drills at its headquarters complex to train and test employees' understanding of the headquarters OEP. Following these drills, NRC staff assess the response of agency personnel and the performance of security staff and contractors responsible for emergency response functions. All employees on duty—teleworking or working onsite—are required to report their status and need for evacuation assistance, if applicable, using an email or phone messaging service. After-action reviews from the most recent drills (2022 and 2023)

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<sup>11</sup> "Emergency Evacuation Planning Guide for People with Disabilities," National Fire Protection Association, November 2022.



showed minor problems with employee responses and proposed corrective actions. Notably, the 2023 drill showed sub-optimal responses from personnel needing assistance, and NRC staff suggested that more frequent training would improve employee familiarity with emergency procedures.<sup>12</sup>

## Why This Is Important

### Preparedness Is Key to Safety

Correct execution of the NRC headquarters OEP requires all personnel to understand their roles and responsibilities for emergency response and, if necessary, safe evacuation from the headquarters buildings. More frequent training, particularly for people who might need assistance or render assistance during an emergency evacuation, would increase the likelihood of safe, orderly evacuations and reduce the risk of injuries or fatalities resulting from incorrect responses by building occupants and emergency responders. Further, relatively low occupancy rates in NRC headquarters buildings<sup>13</sup> increase the need for all personnel to know their emergency roles and be prepared to act independently if colleagues are unavailable to assist them during an emergency.

### Recommendation

The OIG recommends that the EDO:

- 2.1. Develop and implement more frequent limited-scope drills, emphasizing roles and responsibilities for personnel needing or rendering emergency evacuation assistance.

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<sup>12</sup> Local firefighters interviewed for this evaluation agreed that more frequent training improves emergency response. However, they did not report any significant problems in supporting NRC staff during these drills.

<sup>13</sup> Average daily occupancy in the two main headquarters buildings is 675 personnel, with approximately 1800 personnel assigned to these buildings. Actual building occupancy during an emergency evacuation could be higher or lower than average headcount.

## IV. CONSOLIDATED LIST OF RECOMMENDATIONS

The OIG recommends that the Executive Director for Operations:

- 1.1 Establish working two-way communications systems adjacent to areas of refuge in accordance with NFPA 101 standards;
- 1.2 Install area of refuge signage in accordance with NFPA 101 standards and remove any signage showing incorrect or outdated emergency information;
- 1.3 Assess the force required to open fire doors leading to areas of refuge under a range of conditions, and as practicable, adjust fire door opening force to the minimum allowable level; and,
- 2.1. Develop and implement more frequent limited-scope drills, emphasizing roles and responsibilities for personnel needing or rendering emergency evacuation assistance.

## V. NRC COMMENTS

NRC staff reviewed a draft version of this report and concurred with its recommendations. Additionally, the staff indicated they had no comments for inclusion in the final report. The NRC waived the exit conference on September 25, 2024.

## OBJECTIVE, SCOPE, AND METHODOLOGY

### Objective

The objective was to evaluate the extent to which the NRC's emergency evacuation policies and procedures for the agency's headquarters complex consider the needs of personnel with various disabilities.

### Scope

This evaluation focused on emergency plans and procedures for the NRC's headquarters complex in Rockville, Maryland. We conducted this evaluation at NRC headquarters in Rockville, Maryland from December 2023 to April 2024.

### Methodology

The OIG reviewed relevant criteria for this evaluation, including, but not limited to:

- U.S. Access Board standards for emergency building egress;
- General Services Administration, "Occupant Emergency Program Guide," March 2002;
- National Fire Protection Association 101, "Life Safety Code," 2024 edition;
- National Fire Protection Association 80, "Standard for Fire Doors and Other Opening Protectives," 2022 edition; and,
- National Fire Protection Association, "Emergency Evacuation Planning Guide for People with Disabilities," November 2022

In addition, the OIG interviewed NRC staff responsible for developing and implementing emergency plans at the agency headquarters complex and a counterpart from another federal agency; NRC staff representatives from the agency's Reasonable Accommodations Program and Advisory Committee for Employees with Disabilities; an NRC employee who would likely need



assistance during an emergency evacuation or drill; and, local firefighters responsible for responding to emergencies at the NRC headquarters complex.

The OIG conducted this evaluation in accordance with the Council of the Inspectors General on Integrity and Efficiency's *Quality Standards for Inspection and Evaluation*. The OIG believes that the evidence obtained provides a reasonable basis for our findings and conclusions based on the evaluation objectives. Throughout the evaluation, auditors considered the possibility of fraud, waste, and abuse in the program.

The evaluation was conducted by Paul Rades, Team Leader; Connor McCune, Senior Auditor; and, Jocelyn Rivera, Management Analyst.

## TO REPORT FRAUD, WASTE, OR ABUSE

### Please Contact:

Online: [Hotline Form](#)  
Telephone: 1.800.233.3497  
TTY/TDD: 7-1-1, or 1.800.201.7165  
Address: U.S. Nuclear Regulatory Commission  
Office of the Inspector General  
Hotline Program  
Mail Stop O12-A12  
11555 Rockville Pike  
Rockville, Maryland 20852

## COMMENTS AND SUGGESTIONS

If you wish to provide comments on this report, please email the OIG using this [link](#).

In addition, if you have suggestions for future OIG audits, please provide them using this [link](#).

## NOTICE TO NON-GOVERNMENTAL ORGANIZATIONS AND BUSINESS ENTITIES SPECIFICALLY MENTIONED IN THIS REPORT

Section 5274 of the James M. Inhofe National Defense Authorization Act for Fiscal Year 2023, Pub. L. No. 117-263, amended the Inspector General Act of 1978 to require OIGs to notify certain entities of OIG reports. In particular, section 5274 requires that, if an OIG specifically identifies any non-governmental organization (NGO) or business entity (BE) in an audit or other non-investigative report, the OIG must notify the NGO or BE that it has 30 days from the date of the report's publication to review the report and, if it chooses, submit a written response that clarifies or provides additional context for each instance within the report in which the NGO or BE is specifically identified.

If you are an NGO or BE that has been specifically identified in this report and you believe you have not been otherwise notified of the report's availability, please be aware that under section 5274 such an NGO or BE may provide a written response to this report no later than 30 days from the report's publication date. Any response you provide will be appended to the published report as it appears on our public website, assuming your response is within the scope of section 5274. Please note, however, that the OIG may decline to append to the report any response, or portion of a response, that goes beyond the scope of the response provided for by section 5274. Additionally, the OIG will review each response to determine whether it should be redacted in accordance with applicable laws, rules, and policies before we post the response to our public website.

Please send any response via email using this [link](#). Questions regarding the opportunity to respond should also be directed to this same address.