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Glenn Safety Manual – Chapter 27

Fire Protection and Building Emergency Evacuation w/Change 2 (10/24/2022)

Approved by: QS/Chief, Safety and Health Division

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Change Record

| Rev. | Effective Date | Expiration Date | GRC25, Change Request # | Description |
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| B | 5/14/2012 | 5/14/2017 | 56 | Bi-annual scheduled update, responsibility changes. |
| Change 1 | 4/15/2014 | 5/14/2017 | N/A | Administrative changes to add front cover and change history log to comply with NPR 1400.1. Deleted “It is the GRC management policy that a fire protection program be established and implemented in accordance with” and inserted “The GRC shall follow the requirements of” “and documents referenced in Section 8.0 of this Chapter” “Where requirements are conflicting, the most stringent shall apply” in Section 4.0 Policy.” Inserted “International Building Code (IBC), International Fire Code, Ohio Building Code and Ohio Fire Code” and also inserted “Building Codes, Fire Codes, Local Building Codes, Local Fire Codes” in Section 8.0. |
| Change 2 | 9/30/2015 | 5/14/2017 | N/A | Administrative change to remove hyperlinks. |
| C | 6/26/2017 | 6/26/2022 | 17-019 | Five year scheduled review/revisions. |
| Change 1 | 4/9/2018 | 6/26/2022 | N/A | Administrative changes to the reference section. Added the following references: NFPA 37, OSHA 29 CFR 1910.165, International Fire Service Training Association’s Fire Inspection and Code Enforcement Manual, and the International Fire Service Training Association’s Plans Examiner for Fire and Emergency Services Manual. |
| D | 7/15/2019 | 7/15/2024 | 19-003 | Updated to meet number/letter formatting per GLPR 1410.1. This revision incorporated Glenn Safety Manual Chapter (GSM) 31, Fire Protection into GSM Chapter 27 Building Emergency Evacuation, renaming GSM Chapter 27 to Fire Protection and Building Emergency Evacuation. There are no changes in requirements and responsibilities. |
| Change 1 | 5/13/2021 | 7/15/2024 | N/A | Administrative changes to update NPR and Neil A. Armstrong Test Facility |
| Change 2 | 10/25/2022 | 7/15/2024 | N/A | Administrative change to clarify current requirement regarding “clearance around the heater shall be maintained per manufacturer’s instructions.” |

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**Include all information for each revision. Do not remove old revision data. Add new rows to table when space runs out by pressing the tab key in the last row, far right column.

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Chapter 31—Fire Protection and Building Emergency Evacuation

NOTE: The current version of this chapter is maintained and approved by the Safety and Health Division (SHeD). The last revision date of this chapter was July 2019. The current version is located on the Glenn Research Center intranet within the Business Management System (BMS). Approved by: Chief of Safety and Health Division.

1.0 PURPOSE

This chapter addresses Glenn Research Center (GRC) policy guidance for fire protection provisions to prevent loss of life, property, and research capability. The Safety and Mission Assurance Directorate (SMAD) is committed to operate in a manner to ensure a fire-safe work environment. This chapter also describes the GRC Building Emergency Evacuation Program, including basic procedures and responsibilities.

2.0 APPLICABILITY

2.1 The provisions of this chapter are applicable to all NASA employees and to all other agencies, organizations, and contractor personnel who design, construct, inspect, operate, maintain, or manage facilities or systems within the confines of the GRC at Lewis Field (LF) and Neil A. Armstrong Test Facility (GRC-ATF). Evacuation procedures are applicable during fires and other occurrences for which evacuation is appropriate, including low oxygen or toxic spills in buildings. Shelter provisions may be invoked for hazardous conditions outside the building (e.g., weather conditions, chemical spill, security incident, etc.).

2.2 In this chapter, all mandatory actions (i.e., requirements) are denoted by statements containing the term “shall.” The terms “may” or “can” denote discretionary privilege or permission, “should” denotes a good practice and is recommended, but not required, “will” denotes expected outcome, and “are” or “is” denotes descriptive material.

3.0 BACKGROUND

Fire protection of facilities and occupants is an extremely critical aspect of living and working in today’s society. Through comprehensive facility inspections and training of the occupants, GRC will provide a fire-safe working environment in which to work. Emergency evacuation plans are created to assist occupants in exiting the building by indicated egress routes. Plans include any procedures for assisting employees with special needs as well as procedures for buildings that might have associated critical operations.

4.0 POLICY AND MEASUREMENT/VERIFICATION

4.1 GRC Policy

4.1.1 GRC shall follow the requirements of 29 Code of Federal Regulations (CFR) 1910.38, Occupational Safety and Health Standards, Emergency Action Plans; NASA Procedural Requirement (NPR) 8715.1B, NASA Safety and Health Programs ; and NASA Standard (STD) 8719.11, Safety Standard for Fire Protection.

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4.1.2 Fire protection support activities are conducted in compliance with fire safety standards, NASA directives and regulations, general industry practices, and documents referenced in Section 10.0 of this chapter, in a manner appropriate for the associated hazards. Where requirements are conflicting, the most stringent shall apply.

4.2 Measurement and Verification

Compliance with the responsibilities and requirements of this chapter are measured and verified through the use of programmatic self-assessments, regulatory and Agency audits, and internal field inspections.

5.0 FIRE PROTECTION RESPONSIBILITIES

Fire safety is an integral part of the overall Glenn Safety Program. The fire safety program cuts across multiple organizations. These organizations share responsibility in implementing a comprehensive fire safety program. The subsections below identify these responsibilities.

5.1 Operational Safety Branch (OSB)

The OSB shall

- a. Have the overall management responsibility for planning, directing, and executing a comprehensive fire protection program composed of the following elements:
 - (1) Hot work program
 - (2) Fire inspections
 - (3) Control of flammable and combustible materials
 - (4) Fire safety training to include Fire Extinguisher Training and any other fire safety training deemed necessary
 - (5) Building emergency evacuation planning and training
 - (6) Pre-fire (incident) planning
 - (7) Auditing of fire protection inspection, testing, recordkeeping, and maintenance programs
 - (8) General fire code enforcement
- b. Appropriately review and correct fire safety violations by a formal fire protection design review process to facilitate fire protection and life safety deficiency resolution in the earliest design phases of processes or research that takes place. The OSB will designate the review person or committee as appropriate, when requested by the project team. This process will aid in preventing vital programs or projects from suffering unacceptable delays as a result of fire or its perils.
- c. Develop plans for the control of flammable materials and hazardous operations to ensure that fire does not cause a release of hazardous material that may threaten public health and safety

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or the environment, which will be addressed through the design review process and the safety permit process.

- d. Be responsible for implementing a fire prevention inspection program. This inspection program will assure a fire prevention program for the control of housekeeping, combustibles loading, hot work operations, hazardous materials, and ignition sources such as smoking and portable heating devices.
- e. Discuss routine and unique hazards at GRC and appropriate responses.
- f. If appointed as the Fire Investigator by the Authority Having Jurisdiction (AHJ) as defined in 5.3 of this chapter, report and investigate all fires per the requirements of NASA-STD-8719.11.
- g. Be responsible for ensuring compliance with local, state, and Federal law and National codes and criteria for fire protection, implementation of operational fire protection devices, and for directing fire protection technical support to projects and operations, which will all be addressed through the design review process.
- h. Work in conjunction with the AHJ to ensure implementation of a comprehensive fire safety program. The program consists of the elements set forth in NASA-STD-8719.11. Although each organization has primary responsibility for specific elements of the program, each will work together to ensure that all requirements are met.
 - (1) OSB shall be primarily responsible for fire prevention and fire code enforcement, similar to a city's Fire Prevention Official.
 - (2) The AHJ shall be primarily responsible for technical oversight and engineering, similar to a city's Building Official and Fire Marshal.

5.2 Center Director

The Center Director shall select and designate the Authority Having Jurisdiction (AHJ) in writing in compliance with NPR 8715.1B, section 5.2.

5.3 Authority Having Jurisdiction (AHJ)

5.3.1 Authority Having Jurisdiction (AHJ) is a title assigned to an individual having the final say on compliance concerns with regard to fire protection. The AHJ shall be designated by the Center Director in writing.

5.3.2 The AHJ shall have specific responsibilities to implement a fire protection engineering program. The AHJ or Designee shall

- a. Develop annual facility fire risk assessments.
- b. Advocate for fire protection improvements through the construction of facilities (CoF) and institutional facilities processes.
- c. Perform life-cycle review of fire protection systems.

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- d. Verify and witness acceptance testing of fire protection systems.
- e. Interpret national consensus model fire and building codes and related standards and guidelines.
- f. Review construction documents for fire safety requirements.
- g. Review alternately compliant arrangements not in strict accordance with the prescriptive measures of the local building codes, where a performance-based design has been implemented.
- h. Review facility design drawings for inclusion of adequate fire protection features and systems and for compliance with applicable codes and criteria.
 - (1) Design requirements shall provide an acceptable degree of life safety to facility personnel and a reliable water supply and water supply system (source, pumps, valves, and hydrants) of sufficient capacity for the maximum credible fire.
 - (2) The requirements will achieve these goals by developing and maintaining Facility Hazard Assessments (FHAs) for new facilities and by providing automatic suppression and detection systems in all areas at risk for serious property damage and/or program interruption.
- i. Issue building occupancy certificates.
- j. Approve all fire safety training curriculums.
- k. Serve as Agency-wide point of contact (POC) as Fire Protection Coordinator and as liaison to NASA Headquarters.
- l. Provide oversight of fire protection, prevention, and response programs implemented by partner organizations for compliance with NASA Agency requirements.
- m. Ensure general building code compliance.
- n. Provide annual briefing of Center Director's office on state of the overall fire safety program.
- o. Assist the mechanical systems manager and protective systems manager in ensuring compliance with fire protection systems.
- p. Establish which buildings are active or inactive with regard to the fire prevention inspection program.
- q. Coordinate activities with outside fire departments through the Office of Protective Services (OPS).
- r. Facilitate an ongoing program of fire hazard risk assessment surveys of critical or hazardous or highly populated facilities to identify fire safety deficiencies.
- s. Serve as the advocate for correcting fire protection deficiencies via locally funded and CoF projects.

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- t. Assist in ensuring the adequacy of designs from a fire code compliance, contractual, and cost benefit standpoint for major construction projects. This will be accomplished through an established fire protection design review process.
- u. Appoint a Fire Investigator to perform a fire investigation report of cause and origin per National Fire Protection Association (NFPA) 921 for every fire incident. This report shall be part of the GRC Incident Response Team effort and shall be made available to the AHJ, the SHed Chief, and any mishap investigator, board, or team.

5.4 Supervisors

Supervisors shall

- a. Maintain their operations in a fire-safe manner and in accordance with the requirements of this chapter and the policies of SHed.
- b. Ensure that where portable fire extinguishers are provided for employee use and when the employees' duties require them to use a fire extinguisher, they receive training in accordance with 29 CFR 1910.157. Training would include System for Administration, Training, and Educational Resources for NASA (SATERN) course number GRC-4R2040 or an equivalent educational program.
- c. In the event of an imminent danger situation, assist in the evacuation process according to the provisions in this chapter.

5.5 All GRC Employees

All employees at GRC shall

- a. Understand and conform to the policies, fire-safe practices, and provisions of this chapter.
- b. Where fire extinguishers are provided and are required to perform a job or task, obtain training in accordance with 29 CFR 1910.157. Training would include SATERN course number GRC-4R2040 or an equivalent educational program.
- c. Conduct any personal use of tobacco in compliance with the GRC Smoking Policy, Glenn Policy Directive (GLPD) 1820.2.

5.6 Office of Protective Services (OPS) and Emergency Management Coordinator

5.6.1 In the event of a fire, OPS shall coordinate all activities in conjunction with the local fire department.

5.6.2 In conjunction with SHed, OPS shall discuss unique hazards at GRC and appropriate responses with the local fire department.

5.7 Facilities Division (FD)

5.7.1 The FD shall maintain all inspection/testing documentation on fire alarm and fire suppression equipment according to the codes set forth by the local fire code and NFPA.

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5.7.2 The FD (Building Managers) shall assist Supervisors during an imminent danger event to evacuate employees and mitigate the hazard.

6.0 FIRE PROTECTION REQUIREMENTS

The fire protection program is intended to provide and maintain a level of fire protection at GRC that meets and/or exceeds the objectives and criteria stated in NASA-STD-8719.11. Program objectives are described in the following sections.

6.1 Heating Equipment

6.1.1 The use of personal space heaters shall adhere to the following conditions:

- a. Clearance around the heater shall be maintained per manufacturer's instructions with a minimum of three feet from combustible materials.
- b. The heater shall be used in strict accordance with its manufacturer's instructions.
- c. The heater shall be turned off when not in use.
- d. The heater shall be inspected daily and removed from service if found damaged or unsafe.
- e. Heaters marked for "Household" use shall not be used at GRC.
- f. Only heaters with a tip-over safety switch and overheat switch shall be used.
- g. Only heaters Underwriters Laboratories (UL) listed to Standard 1278 or Factory Mutual (FM) Approved shall be used.
- h. The heater shall not be plugged into an extension cord, surge protector, or outlet adapter of any type.
- i. The heater shall not exceed 1500 watts.
- j. If the heater is subject to any product recall, it shall be removed from service immediately.
- k. Heaters modified in any way shall not be used.

6.1.2 The AHJ and OSB have the authority to inspect the appliance and require that its use be discontinued if any safety concerns are found.

6.1.3 A Portable Heating Device Permit shall be obtained through the AHJ for the use of temporary heaters (salamander, torpedo).

6.2 Requesting Relief—Waivers

6.2.1 All NASA standards, policies, and requirements shall be followed in reference to fire protection.

6.2.2 In the event that a standard, policy, or requirement cannot be met, a waiver shall be submitted using the process outlined on form GRC83, Safety and Health Requirement Relief Request.

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6.3 Smoking Requirements (*GLPD 1820.2*)

Smoking is permitted only in designated smoking locations. Refer to GLPD 1820.2 for the requirements.

6.4 Food Preparation Areas (*NASA-STD-8719.11, International Building Code (IBC) 605.7*)

6.4.1 Coffee makers, refrigerators, crock pots, toasters, and microwaves are the only appliances permitted for general office food preparation.

6.4.2 Toaster ovens or stoves/ovens/ranges are not approved for use unless used in a food preparation area that follows the requirements of NASA-STD-8719.11.

6.4.3 Stoves/ovens/ranges shall

- a. Be used only in facilities designed as food preparation areas with automatic fire extinguishing and exhaust systems (NASA STD 8719.11).
- b. Be UL listed or FM approved (IBC 605.7).
- c. Be used for their intended purpose of food preparation per manufacturer's recommendations.

6.5 Fire Prevention Inspection Requirements (*NASA-STD-8719.11, NFPA 1031*)

6.5.1 All fire prevention inspections shall follow the requirements and procedures in the Glenn Safety Manual (GSM), Chapter 24, Facility Safety and Health Inspection, unless stated differently in this section.

6.5.2 The OSB shall

- a. Establish a formal schedule of fire prevention inspections for all facilities. All active buildings shall be inspected according to the frequency schedule set forth in NASA-STD-8719.11.
- b. Annually inspect any facility that is in an inactive status. Prior to reactivation, the facility will undergo a fire prevention inspection to identify potential hazards.
- c. Schedule all fire prevention inspections through the Code QS Division office. Followup inspections shall be performed to ensure the identification and abatement of hazardous conditions and to verify the implementation of abatement plans.
- d. Notify the facility manager, building manager, union representatives, additional inspectors, and organizational POCs of the date and time of the fire prevention inspections.
- e. Conduct additional fire prevention inspections at the request of safety and health committees or supervisors, or upon notice of an unsafe or unhealthful condition.
- f. Ensure that a copy of each inspection is filed and retained for a period of 2 years after abatement and made available to the Occupational Safety and Health Administration (OSHA) or the AHJ upon request (electronic versions are acceptable for recordkeeping purposes).

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6.5.3 Fire prevention inspections shall be conducted with fire inspectors in accordance with NFPA 1031.

6.5.4 Fire Inspectors shall

- a. Be certified to perform fire prevention inspections through one of the following organizations: International Code Council, National Fire Protection Association (NFPA), or the State Fire Marshal's Office.
- b. Issue all findings found during an inspection through SHEtrak as an equivalent document to NASA form NF130, Notice of Unsafe or Unhealthful Condition.
- c. Assign a hazard level to each finding that reflects the severity of the hazard.
- d. Follow the abatement plan approval procedures set forth in Chapter 24 of the GSM.
- e. Report imminent danger conditions to the Supervisor of the area and the Building Manager, who will remove employees from exposure to the imminent danger condition. Additionally, the Supervisor and Building Manager will begin abatement of the imminent danger condition by placing barricades/cones to provide initial mitigation of the hazard.
- f. Issue findings no later than 3 days after completion of the fire inspection. If the findings cannot be issued within the 3 days, reasons for the delay must be documented and notification of the pending findings must be sent to the Building Manager and Supervisor of the area.

6.6 Fire Extinguisher Training Requirements (29 CFR 1910.157)

6.6.1 The OSB shall offer training to employees throughout the year that is in accordance with OSHA 1910.157. The GRC training is available through SATERN under course number GRC-4R2040.

6.6.2 Employees who are required to use fire extinguishers do to their type of work shall be instructed in the use of a fire extinguisher.

6.6.3 Training shall be taken on an annual basis.

6.6.4 Employees who have not been trained to use fire extinguishers shall not be required to use the fire extinguishers.

6.6.5 The training shall include

- a. All types of fire extinguishers that employees may reasonably be expected to encounter.
- b. A hands-on exercise under the same conditions which employees would be expected to encounter

6.6.6 The training shall be conducted by a fire extinguisher instructor.

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7.0 BUILDING EMERGENCY EVACUATION RESPONSIBILITIES

7.1 Building Evacuation Wardens and Alternates

7.1.1 Building Evacuation Wardens and Alternates are responsible for directing and supervising the planned and controlled movement of all personnel out of GRC buildings to assigned muster points.

7.1.2 Building Evacuation Wardens shall

- a. Ensure that personnel move to the muster point in the event that an evacuation signal or a shelter signal has sounded.
- b. Ensure the safe flow of personnel along approved evacuation routes.
- c. Check assigned area to ensure personnel have evacuated the area.
- d. Assist persons with a disability and/or special needs in accordance with preplanned procedures (see form GRC885, Disability and Special Needs Employee Emergency Evacuation Plan).
- e. Recognize the presence of potential hazards and know the building's evacuation routes in order to provide appropriate direction to personnel to travel safely to the muster point.
- f. Once outside, if there are any circumstances that require further assistance in helping occupants out of the building, notify the Incident Commander.
- g. If there are no further circumstances and all assigned areas have been checked, proceed to the muster point and wait for further directions from the Incident Commander.
- h. Contact their Supervisor to inform them of the emergency situation and any known missing persons. At that time, the Building Evacuation Warden might assist the Supervisor in the accountability process.
- i. Assist GRC Protective Services personnel in preventing unauthorized entry into buildings and loss or theft of Government and private property.
- j. Cooperate with all emergency personnel

7.2 Individual Employees

7.2.1 Individual employees shall know the following:

- a. The evacuation procedures applicable to each of their work locations.
- b. The location of fire alarm pull boxes.
- c. The location of automatic external defibrillator (AED) boxes.
- d. A secondary exit route in case primary exit route is blocked.
- e. How to respond when an evacuation alarm sounds:
 - (1) Stop work.

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- (2) Turn off computers or any electrical device if this can be done safely.
 - (3) Immediately evacuate the building, assisting visitors, individuals with disabilities, service animals, interns, etc., along the approved evacuation routes to a safe area.
 - (4) Close, but do not lock office doors.
 - (5) Do not use elevators.
- f. That only trained certified firefighters or emergency response personnel are to fight fires. Employees are not to fight fires except in cases where the fire is incipient (just starting or beginning) in nature and the employee has completed GRC fire extinguisher training or equivalent. The GRC training is available through SATERN under course number GRC-4R2040.

7.2.2 Individual employees shall

- a. Report to their Supervisor, Building Evacuation Warden, or Alternate once safely outside the building. Supervisors have assigned the Evacuation Wardens for each building.
- b. Stay at the designated muster point until told to report to a shelter area or until informed by the Incident Commander or emergency personnel that the building is safe to reenter.
- c. Maintain clear and unobstructed egress routes.
- d. Review the SHED website for evacuation routes for their present location.
- e. Review the evacuation plan with any visitors, students, interns, or other personnel under their supervision and assist them out of the building in the event of an emergency.

7.2.3 If applicable, employees shall complete GRC885, Disability and Special Needs Employees Emergency Evacuation Plan, to inform emergency responders if they require assistance during an emergency.

7.3 Supervisors

Supervisors shall

- a. Review the GRC Building Evacuation Program annually with their employees.
- b. Assign Building Evacuation Wardens and Alternates for each area and ensure this responsibility is specified in the employee's performance plan.
- c. Select one of the designated muster points for their employees to assemble.
- d. Instruct Building Evacuation Wardens and employees of their responsibilities under the emergency evacuation plan. The training is available through SATERN course number GRC-016-16, Building Emergency Evacuation Training for Assigned Evacuation Wardens.
- e. Develop an evacuation procedure for employees assigned to them who have disabilities and/or special needs. This procedure shall be supplied to and reviewed by the Fire Protection Coordinator (see Section 8.7).

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- f. Ensure that a barrier-free (free of boxes, supplies, furniture, etc.) emergency route of travel out of the building is available in each building where they have employees. A person using a wheelchair must be able to travel unassisted through the path to a public way to reach an area of refuge or the muster point.
- g. Ensure that a specific written procedure is developed for any critical operation that would delay evacuation. This procedure shall be supplied to and reviewed by the Fire Protection Coordinator, the Safety Committee Chair, and/or the Facility Manager, as appropriate.
- h. Maintain an up-to-date list of all their employees, including name, building, room number, work phone, home phone, and cell phone, in order to contact and account for all employees.

7.4 Building Managers and Facility Managers

Building Managers shall

- a. Maintain and post current building evacuation maps throughout the building.
- b. Notify the Fire Protection Coordinator of any proposed or planned changes to the building or any activities that may affect the evacuation plan, including any plans for lockdown of facilities for classified programs.

7.5 Employees with Disabilities and Special Needs

Employees with disabilities and special needs that might require additional evacuation assistance are encouraged to

- a. Contact the Fire Protection Coordinator, their representative from the Office of Human Capital Management, and their Supervisor to develop a Disability and Special Needs Employee Emergency Evacuation Plan (form GRC885) specific to their needs. Refer to Section 8.7 for further direction on policy and procedure development.
- b. Know and understand their specific emergency evacuation plan.
- c. Be responsible for making their whereabouts known at all times.
- d. Notify their supervisor of any change in their condition that could affect their performance during an emergency.

7.6 Office of Protective Services (OPS)

The Office of Protective Services shall

- a. Monitor emergency alarms and provide initial response to these alarms.
- b. Respond to emergencies and control vehicle traffic and personnel.
- c. Coordinate emergency resources and escort emergency vehicles to the scene.
- d. Arrive at the scene of the emergency, take charge of the evacuation, provide information to the responding fire department, and coordinate recovery efforts.
- e. Prevent unauthorized entry into building(s) and loss or theft of Government and private property.

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- f. Notify employees at the muster points that it is safe to reenter the building after the building has been deemed safe to occupy by the Incident Commander.
- g. Identify a shelter location for inclement weather and coordinate the transportation of employees with disabilities, special needs, and/or service animals, as well as other building occupants.
- h. Recover walkers, crutches, medicine, and any other adaptive devices needed by employees with disabilities and/or special needs.
- i. Follow the responsibilities set forth in the Emergency Management Plan.

7.7 Fire Protection Coordinator

The Fire Protection Coordinator shall

- a. Provide overall coordination for evacuation preplanning and preparation of Building Evacuation Plans.
- b. Provide consultation services for the Safety Permit Program to ensure that any hazards that may affect life safety or any evacuation procedures are addressed in the safety permit.
- c. Ensure that annual Safety Training in the Execution of Emergency Procedures (STEEP) exercises are conducted with assistance from the OPS and employees with disabilities, if applicable, to help identify needs that both the employee/employer are unaware of.
- d. Maintain records of STEEP exercises.
- e. Ensure that emergency evacuation training is available annually for all employees.
- f. Ensure that copies of the evacuation plans are available to all employees, either through a hard copy or a posting on the SHED web site.
- g. Work with the Facilities Division and the Office of Human Capital Management to ensure that occupants with disabilities have an emergency alarm/strobe near their office or work location.
- h. Monitor the locations of all employees with special needs at the Center and ensure that proper alarm devices and safety procedures are provided to accommodate safe egress.
- i. Review all Disability and Special Needs Employee Emergency Evacuation Plans for compliance with the program.
- j. Review Building Evacuation Plans annually.

7.8 Contracting Officer's Representative

Contracting Officer's Representatives are responsible for ensuring that contractor management is aware of GRC's evacuation procedures and the appropriate Building Evacuation Plan.

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8.0 BUILDING EMERGENCY EVACUATION REQUIREMENTS

8.1 Building Evacuation Plans (*OSHA, 29 CFR 1910.38*)

This section specifies the content of individual Building Evacuation Plans.

8.1.1 A Building Evacuation Plan shall be developed for each building that contains more than 10 employees. A generic evacuation plan shall be developed for buildings that contain 10 employees or less.

8.1.2 The Fire Protection Coordinator, in coordination with area Supervisors, Building Managers, and the OPS, shall develop a Building Evacuation Plan for each facility and/or building that contains more than 10 employees.

8.1.3 Each plan shall take into consideration the potential hazards in the area, type of occupancy, research activities, daily activities, and personnel assigned to the area. Once a plan is developed, the Chief of the Operational Safety Branch approves it.

8.1.4 Building Evacuation Plans shall include the following:

- a. Evacuation diagram illustrating the primary and alternate routes to an exit.
- b. Alarm system used to notify personnel to evacuate the area.
- c. Locations of alarm pull boxes, fire extinguishers, and AED equipment.
- d. Muster point outside the building where all personnel will gather and be accounted for in the event of an emergency.
- e. Muster points inside the building or other shelter locations where all personnel will gather and be accounted for in the event of a tornado or other hazardous conditions (if applicable).
- f. Identification of special evacuation procedures and/or shutdown requirements.

8.2 Evacuation Signals

8.2.1 An evacuation alarm sounding and flashing strobe light within or outside of a building always means that employees shall evacuate the building or facility immediately.

8.2.2 In simple buildings where there are no evacuation alarm pull boxes, a direct voice communication, shouting "Emergency! Get out!" will be used instead of an alarm.

8.3 Escape Procedure and Routes

8.3.1 In general, when the evacuation alarm is heard, a fire is seen, or another emergency condition becomes known, employees shall promptly secure the equipment in use and vacate the premises to the designated muster point where they will remain until released by the Incident Commander or emergency personnel.

8.3.2 Employees will take the designated safe route to an exit, warning others along the way.

8.3.3 The first person to arrive at an evacuation alarm pull box or exit will sound the alarm and proceed to a muster point.

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8.3.4 The route followed during evacuation will be in accordance with the designated Building Evacuation Plan or as directed by a Building Evacuation Warden.

8.4 Critical Operations

8.4.1 Employees may be required to shut down gas and/or electrical systems and other special equipment that could be damaged if left operating or could create additional hazards to emergency responders (such as releasing hazardous materials).

8.4.2 Any delay in evacuation for a critical operation (other than staying to secure an operation that will result in only a very short delay) shall be preplanned and covered by a specific procedure that is approved by the supervisor, Safety Committee Chair, and Fire Protection Coordinator.

8.4.3 Copies of the approved procedure shall be included in the Building Evacuation Plan.

8.5 Occupant Accountability

Upon arrival at the designated muster point, each Building Evacuation Warden shall verify that all employees of their organizational component have reached safety. Names and last known location of missing employees will be reported to their Supervisor to be relayed to the Incident Commander or any other onsite response personnel, if needed.

8.6 Preferred Means of Reporting

8.6.1 Any person who discovers a fire or other emergency shall, from a safe location, immediately dial 911 on the nearest internal GRC telephone to report the fire and request assistance needed. The caller will state his or her name, location, and type of help needed, and will stay on the telephone until released by the dispatcher.

8.6.2 Personnel utilizing cell phones or outside phones will call (216) 433-8888 at LF and (419) 621-3222 at GRC-ATF.

8.7 Emergency Evacuation Procedures for Employees With Disabilities and/or Special Needs

This plan is designed to provide assistance to employees with mobility, speech, or cognitive disabilities as well as employees who are blind or have low vision and employees who are deaf or hard of hearing.

8.7.1 Disability and Special Needs Terminology

- a. **Mobility** includes people who use one or more devices, such as canes, walkers, crutches, a power-driven or manually operated wheelchair, or a three-wheeled cart or scooter.
- b. **Speech disabilities** includes people who have an impairment that causes some level of loss of the ability to speak or to verbally communicate clearly.
- c. **Cognitive disabilities** includes people who have some decreased or impaired level of ability to process or understand the information received by the senses.

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- d. **Blind or low vision** includes people with partial or total vision loss who depend on their sense of touch and hearing to perceive the environment around them.
- e. **Deaf or hard of hearing** includes people with total or partial hearing loss and who may use lip reading, sign language, speech reading, and/or hearing aids that amplify and clarify sound to communicate clearly.

8.7.2 Disability and Special Needs Employee Emergency Evacuation Plan

8.7.2.1 A written emergency evacuation plan shall be developed for all employees who have declared themselves to have a physical disability identified by 28 CFR 36, the Americans with Disabilities Act (ADA).

8.7.2.2 The employee’s Supervisor, in consultation with SHeD and their representative from the Office of Human Capital Management, shall prepare the specific evacuation plan (see form GRC885, Disability and Special Needs Employee Emergency Evacuation Plan).

8.7.2.3 The plan shall define provisions for emergency egress, including the method of egress, route of egress, area of rescue assistance, contingency route(s), and duties of other employees assisting the individual.

8.7.2.4 Affected employees will be given a copy of their Disability and Special Needs Employee Emergency Evacuation Plan by their Supervisor.

8.7.2.5 Wherever possible, such persons shall have their normal duty station located on the ground-floor level of buildings.

8.7.2.6 If the employee must work alone, an appropriate level of the “Buddy System” (Glenn Safety Manual, Chapter 22) shall be used. This should be outlined in the employee’s Disability and Special Needs Employee Emergency Evacuation Plan.

8.7.2.7 Disability and Special Needs Employee Emergency Evacuation Plans shall be updated and reapproved by the Fire Protection Coordinator when there are any changes to the plan.

8.8 Training

8.8.1 Supervisors

Supervisors shall receive training from the Fire Protection Coordinator on their responsibilities during an emergency evacuation and when changes or additions to the procedures are made. The training is available through SATERN course number GRC-4R1586, Supervisor’s Role in Emergency Building Evacuation.

8.8.2 Building Evacuation Wardens and Alternates

Building Evacuation Wardens and Alternates shall receive training in their evacuation plan responsibilities. The training is available through SATERN course number GRC-016-16, Building Emergency Evacuation Training for Assigned Evacuation Wardens.

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8.8.3 Individual Employees

8.8.3.1 Upon initial assignment, the immediate Supervisor shall review with each individual employee those parts of the Glenn Emergency Evacuation Plan that the employee must know to protect himself or herself in the event of an emergency.

8.8.3.2 The supervisor shall also review with the employee any changes in the employee's responsibilities or any designated actions under the plan.

8.8.3.3 When present, employees shall participate in all STEEP exercises at their location as though the incidents were real. The training is available through SATERN course number GRC-016-16.

9.0 RECORDS

Records are maintained as follows:

- a. Reports and documentation of inspections and abatement plans from fire prevention inspections.—Maintained by OSB in SHEtrak.
- b. Fire hazard risk assessments surveys of critical or hazardous or highly populated facilities.—Maintained by the AHJ.
- c. Facility hazard analysis and design reviews.—Maintained by the Facilities Division (FD).
- d. Inspection/testing documentation of fire alarm and fire suppression equipment.—Maintained by the FD.
- e. Acceptance testing results.—Maintained by the FD.
- f. Fire extinguisher training records.—Maintained within SATERN or by contractor.
- g. Portable heating device permit.—Maintained by the AHJ.
- h. Safety and health requirement relief request.—Maintained by the AHJ.
- i. STEEP drills.—Maintained by Fire Protection Coordinator.
- j. Supervisor training.—Maintained by the Human Capital Development Branch.
- k. Building Evacuation Plans.—Maintained by Fire Protection Coordinator.
- l. Disability and Special Needs Employee Emergency Evacuation Plans (GRC885).—Maintained by the employee's Supervisor.
- m. Critical operation plans.—Maintained by that operation's Supervisor.
- n. Building Evacuation Warden training.—Maintained by the Human Capital Development Branch.
- o. Employee training documentation on the evacuation procedure.—Maintained by the Supervisor.

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10.0 REFERENCES

| Document Number | Document Name |
|---|---|
| Executive Order 13347 | Individuals With Disabilities in Emergency Preparedness |
| 28 CFR, Part 36 | Americans With Disabilities Act |
| 29 CFR 1910.38 | Occupational Safety and Health Standards, Emergency Action Plans |
| 29 CFR 1910.157 | Occupational Safety and Health Standards, Portable Fire Extinguisher Regulation |
| 29 CFR 1910.165 | Occupational Safety and Health Standards, Employee Alarm Systems |
| NFPA 921 | Guide for Fire and Explosion Investigations |
| NFPA 1031 | Standard for Professional Qualifications for Fire Inspector and Plan Examiner |
| International Fire Service Training Association | Fire Inspection and Code Enforcement Manual |
| International Fire Service Training Association | Training Association Plans Examiner for Fire and Emergency Services Manual |
| International Building Code (IBC) | Building Codes |
| International Fire Code | Fire Codes |
| Ohio Building Code | Local Building Codes |
| Ohio Fire Code | Local Fire Codes |
| N/A | Emergency Management Plan |
| NPR 8715.1B | NASA Safety and Health Programs |
| GLP-QS-1800.1 | Occupational Health Programs Manual, Chapter 12 |
| GLP-QS-8715.1.31 | NASA Glenn Safety Manual, Facility Safety and Health Inspection, Chapter 24 |
| NASA-STD-8719.11 | Safety Standard for Fire Protection |

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APPENDIX A.—ACRONYMS

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|---------|---|
| ADA | Americans With Disabilities Act |
| AED | Automatic External Defibrillator |
| AHJ | Authority Having Jurisdiction |
| CFR | Code of Federal Regulations |
| CoF | Construction of Facilities |
| FD | Facilities Division |
| FHA | Facility Hazard Assessment |
| FM | Factory Mutual |
| GLPD | Glenn Policy Directive |
| GRC | Glenn Research Center |
| GRC-ATF | Neil A. Armstrong Test Facility |
| GSM | Glenn Safety Manual |
| IBC | International Building Code |
| LF | Lewis Field |
| NFPA | National Fire Protection Association |
| NPR | NASA Procedural Requirement |
| OPS | Office of Protective Services |
| OSB | Operational Safety Branch |
| OSHA | Occupational Safety and Health Administration |
| POC | Point of Contact |
| SATERN | System for Administration, Training, and Educational Resources for NASA |
| SHeD | Safety and Health Division |
| SHetrak | Safety, Health, Environmental Tracking System |
| SMAD | Safety and Mission Assurance Directorate |
| STD | Standard |
| STEEP | Safety Training in the Execution of Emergency Procedures |
| UL | Underwriters Laboratories |

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