

Document Number: GLM-QS-1700.1.31

Revision: Revision B

Effective Date: 5/14/2012

Expiration Date: 5/14/2017

Glenn Safety Manual – Chapter 31

Fire Protection w/Change 2 (9/30/2015)

Approved by: QS/Chief, Safety and Health Division

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Change Record

| Rev. | Effective Date | Expiration Date | GRC25, Change Request # | Description |
|----------|----------------|-----------------|-------------------------|---|
| 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 (IFC), Ohio Building Code (OBC) and Ohio Fire Code (OFC)" 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. |
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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

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 May 2012. The current version is located on the Glenn Research Center intranet within the BMS Library. *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.

2.0 APPLICABILITY

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 and Plum Brook Station.

3.0 BACKGROUND

Fire protection of facilities and occupants is an extremely critical aspect of living and working in today's society. Through comprehensive inspections and training of the facilities and occupants, GRC will provide a fire-safe environment to work.

4.0 POLICY

The GRC shall follow the requirements of NASA STD (Standard) 8719.11A, November 2008, "Safety Standard for Fire Protection." Fire protection support activities are conducted in compliance with fire safety standards, NASA directives and regulations, general industry practices and documents referenced in Section 8.0 of this Chapter, in a manner appropriate for the associated hazards. Where requirements are conflicting, the most stringent shall apply.

5.0 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 Safety and Health Division Chief

The Safety and Health Division (SHeD) Chief shall have the overall management responsibility for planning, directing, and executing a comprehensive fire protection program composed of the following elements:

- Hot work program
- Building safety (fire) inspections
- Control of flammable and combustible materials
- Fire safety training
- Emergency action planning
- Pre-fire (incident) planning
- Fire (mishap) investigation

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- Audit the fire protection inspection, testing, recordkeeping and maintenance programs. Coordination of activities with outside fire departments
- General fire code enforcement

5.2 Authority Having Jurisdiction

Authority having jurisdiction (AHJ) is a title assigned to an individual having the final say on compliance concerns in regards to fire protection. The AHJ shall be designated by the Center Director in writing. The AHJ shall have specific responsibilities to implement a fire protection engineering program that is composed of the following elements:

- Development of annual facility fire risk assessments
- Advocacy for fire protection improvements through the construction of facilities (CoF) and institutional facilities processes
- Life-cycle review of fire protection systems
- Verify and witness acceptance testing of fire protection systems
- Interpretation of national consensus model fire and building codes and related standards and guidelines
- Review of construction documents for fire safety requirements
- Review of alternately compliant arrangements not in strict accordance with the prescriptive measures of the local building codes, where a performance-based design has been implemented
- Review of facility design drawings for inclusion of adequate fire protection features and systems and for compliance with applicable codes and criteria
- Issuing building occupancy certificates
- Agency-wide point of contact as “Fire Protection Coordinator” as a liaison to NASA Headquarters
- Oversight of fire protection, prevention, and response programs implemented by partner organizations for compliance with NASA Agency requirements
- General building code compliance
- Annual briefing of Center Director’s office on state of the overall fire safety program
- Will assist the mechanical systems manager and protective systems manager in engineered fire protection solutions.

5.3 Supervisors

Supervisors shall be responsible for maintaining their operations in a fire-safe manner and in accordance with the requirements of this chapter and the policies of SHED.

5.4 All GRC Employees

All employees at GRC shall be responsible for understanding and conforming to the policies, fire-safe practices, and provisions of this chapter.

6.0 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 the NASA STD 8719.11A, November 2008, “Safety Standard for Fire Protection.” Program objectives are described in the following paragraphs.

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6.1 AHJ Requirements

- AHJ shall facilitate an ongoing program of fire hazard risk assessment surveys of critical or hazardous or highly populated facilities to identify fire safety deficiencies.
- The AHJ shall serve as the advocate for correcting fire protection deficiencies via locally funded and CoF projects.
- The AHJ shall 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.
- AHJ shall review facility design drawings to ensure adequate fire protection features and systems are included and are compliant with applicable codes. 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. 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.
- AHJ shall be selected and designated in writing by the Center Director. The AHJ shall meet one of the following as minimum requirements:
 1. Shall have a degree in fire protection engineering, shall be registered in the State of Ohio as a professional engineer (PE) and shall have trade certification with the State of Ohio or the International Code Council as a building official or as a fire inspector. Shall have a minimum of 5 years experience in performing fire protection engineering, fire risk assessments and facility safety inspection.
 2. Shall have a degree in any area of engineering, shall be registered in the State of Ohio as a professional engineer (PE) and shall have trade certification with the State of Ohio or the International Code Council as a building official or as a fire inspector. Shall have a minimum of 10 years experience in performing fire protection analysis, fire risk assessments and facility safety inspection.
 3. Shall have a masters degree in any area of industrial safety, industrial management or environmental science, shall be registered with the Board of Certified Safety Professionals as a Certified Safety Professional (CSP) and shall have trade certification with the State of Ohio or the International Code Council as a building official or as a fire inspector. Shall have a minimum of 15 years experience in performing fire protection analysis, fire risk assessments and facility safety inspection.
- AHJ shall appoint an individual to perform a fire inspection report of cause and origin per National Fire Protection Association (NFPA) 921 for every fire incident. This report shall be part of the interim response team effort and shall be made available to the AHJ, the SHeD Chief, and any mishap investigator, board, or team. The person performing the investigation shall be certified as a Certified Fire Investigator or Certified Fire and Explosion Investigator or hold a State of Ohio certification in fire investigation.

6.1 Verification of compliance with these requirements is done by the Facilities Division during periodic evaluation and audits.

6.2 SHeD Requirements

- SHeD shall 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. SHeD 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.

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- SHeD shall 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 or the environment, which will be addressed through the design review process and the, safety permit process.
- SHeD shall be responsible for implementing an aggressive facility inspection program. This inspection program will assure a fire prevention program for the control of housekeeping, combustibile loading, hot work operations, hazardous materials, and ignition sources such as smoking and portable heating devices.
- SHeD and the Glenn Emergency Management Coordinator and the local fire department shall discuss routine and unique hazards at GRC and appropriate responses.
- SHeD shall report and investigate all fires per the requirements of NASA STD 8719.11A, November 2008. All investigations and reports shall be coordinated with the appointed Fire Investigator as defined in 6.1 of this Chapter when applicable.
- SHeD shall 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.

6.2 Verification of compliance with these requirements is done by SHeD during periodic evaluation and audits.

6.3 Shared Requirements

- SHeD and the AHJ shall work in conjunction to ensure implementation of a comprehensive fire safety program. Though each organization has primary responsibility for specific elements of the program, each will work together to ensure that all requirements are met. SHeD shall be responsible primarily for fire prevention and fire code enforcement similar to a city's Fire Prevention Official. The AHJ shall be primarily responsible for technical oversight and engineering similar to a city's Building Official and Fire Marshal.

7.0 RECORDS

Reports and documentation of corrective actions from building inspections.— Maintained by SHeD.

FHAs and design reviews.—Maintained by the Facilities Division.

8.0 REFERENCES

| Document Number | Document Name |
|---|---|
| NASA STD 8719.11A, November 2008 | Standard for Fire Protection |
| NPR 8715.3C | NASA Safety Program Requirements |
| GLM-QS-1700.1 | NASA Glenn Safety Manual, Oxygen Chapter 5 |
| National Fire Protection Association (NFPA) | Fire Codes and Standards |
| International Building Code (IBC) | Building Codes |
| International Fire Code (IFC) | Fire Codes |
| Ohio Building Code (OBC) | Local Building Codes |
| Ohio Fire Code (OFC) | Local Fire Codes |

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APPENDIX A.—DEFINITIONS AND ACRONYMS

Authority having jurisdiction (AHJ)

Construction of Facilities (CoF)

Facility Hazard Assessment (FHA)

Glenn Research Center (GRC)

National Fire Protection Association (NFPA)

Safety and Health Division (SHeD)

Safety and Mission Assurance Directorate (SMAD)

Standard (STD)

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