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C-A OPERATIONS PROCEDURES MANUAL

1.9 Fire Safety Program

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Hand Processed Changes

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Approved: \_\_\_\_\_ *Signature on File* \_\_\_\_\_  
Collider-Accelerator Department Chairman Date

R. Karol

## 1.9 Fire Safety Program

### 1. Purpose

The fire safety program shall be maintained to minimize fire risks to C-A employees, equipment, and property, and to maintain continuity of C-A operations.

1.1 The C-A fire safety program for existing facilities and the plans and specifications for new or modified facilities programs, experiments, and projects shall comply with the [Fire Safety](#) subject area of the [BNL Standards Based Management Systems \(SBMS\)](#). The program shall:

1.1.1 Assess the risk from fire within individual Fire Areas of a facility to minimize the potential for a fire.

1.1.2 Provide means of egress to minimize threats to life and health.

1.1.3 Provide fire protection systems to limit equipment and property damage and minimize program delays.

1.1.4 Provide local fire alarms to alert building occupants and to transmit signals to the Fire/Rescue Group and other BNL Emergency systems.

### 2. Responsibilities

2.1 The Department Chairman shall appoint the C-A ESSHQ Division Head, or designee, as responsible individual for remaining aware of the status of the fire protection program.

2.2 Supervisors shall inform management of all problems with the program which are not immediately corrected.

2.3 The C-AD Department shall inform the BNL Fire Department when operating conditions change that can affect emergency response to C-A facilities, i.e., operating status, emergency contacts, etc.

2.4 Building Managers shall maintain the Fire Run Cards up to date regarding any inventories of hazardous materials, pyrophoric materials, combustible metals, oxidizers, etc., so that responding emergency personnel are aware of hazards they may encounter when responding to emergencies.

### 3. Prerequisites

3.1 Variances or exemptions from BNL DOE fire safety standards require review and approval as required in 10CFR851.

3.2 Impairment of fire protection equipment shall be reviewed and implemented in

accordance with the [Impairing Systems Section of the Fire Safety Subject Area](#).

- 3.3 Flammable gas systems shall be reviewed and approved by the C-A Department before they are purchased or constructed.

#### 4. **Precautions**

- 4.1 Whenever fire protection systems are impaired, control measures consistent with the [Impairing Systems Section in the Fire Safety Subject Area](#) shall be implemented.
- 4.2 Supervisors shall inform BNL Fire/Rescue Group of the location and hazards of all experimental and temporary flammable gas systems.
- 4.3 Supervisors shall inform the C-A ESH Coordinator and the Fire Captain of the location, hazards, and precautions required in areas that contain or may contain flammable atmospheres .

#### 5. **Procedures**

- 5.1 Means of Egress or Exits and Life Safety

**Note:**  
Means of egress within new construction shall be in accordance with the New York State Building Codes. Buildings that pre-date 2004 shall be in compliance with NFPA 101, Life Safety Code and OSHA 1910. Contact the BNL Fire Protection Engineer for assistance.

- 5.1.1 Exits from facilities shall be adequate in number, unobstructed, and shall have appropriate marking and illumination. Travel distances shall be in accordance with the [Means of Egress and Life Safety Section in the Fire Safety Subject Area](#).
  - 5.1.2 Any alterations affecting means of egress shall be reviewed with the BNL Fire Protection Engineer to ensure adherence to the applicable Codes.
- 5.2 Impairment of Fire Protection Systems
    - 5.2.1 To impair fire detection or suppression systems, follow the requirements of the [Impairing Systems Section of the Fire Safety Subject Area](#), [C-A-OPM Series 2.5, Accelerator Safety Envelope Parameter Procedures](#) and [C-A-OPM 3.24, Procedures to be Implemented for Facility Fire Detection and Suppression System Problems and Failures](#).

- 5.2.2 Only Plant Engineering Department personnel shall impair fire protection systems and tag same.
- 5.2.3 Report any system which is impaired but not tagged to the Fire Captain of Fire/Rescue immediately.
- 5.2.4 Supervisors shall implement control measures when fire systems have been impaired, as directed by the C-A ES&H Coordinator or Fire Captain.
- 5.3 Temporary and Experimental Flammable Gas Systems
  - 5.3.1 Supervisors shall ensure that systems are constructed and used in accordance with the [Temporary and Experimental Gas Systems Section of the Fire Safety Subject Area](#), and [C-A-OPM 9.2.7](#).
  - 5.3.2 Supervisors shall ensure that the system, including methods of storage and piping systems, meets requirements and codes, and shall maintain drawings, specifications, and operating/emergency procedures for all systems under their purview.
  - 5.3.3 Supervisors shall train all system users in proper operations and maintain training records.
  - 5.3.4 Use of flammable gas shall always be kept to a minimum. Spare tanks shall be stored outside, as far away from the building as practical. Only one spare tank (connected or unconnected) is permitted in the work area.
- 5.4 Locations Containing Flammable Atmospheres
  - 5.4.1 Supervisors shall determine locations where flammable atmospheres are or may be present (classified locations) in accordance with the [Facility Design Criteria Section in the Fire Safety Subject Area](#), with assistance from the BNL Fire Protection Engineer.
  - 5.4.2 Supervisors shall assure, in consultation with the Fire Protection Engineer, that locations are appropriately classified, that boundaries of classified locations are clearly delineated, and that ignition sources are not introduced.
  - 5.4.3 Supervisors shall assure that all C-A personnel who may work in classified locations are trained in accordance with the recommendations of the Fire Protection Engineer.

## 5.5 Cutting and Welding

- 5.5.1 Procedures for gas and electric cutting and welding operations, including PPE and Fire Watch requirements, shall follow the operational and permitting requirements of the [Cutting and Welding Section in the Fire Safety Subject Area](#).
- 5.5.2 Supervisors shall designate safe areas for routine cutting and welding by obtaining a cutting/welding permit from the Fire Rescue Group. Any deviation from the permit requires a re-review by the Fire Rescue Group.
- 5.5.3 Supervisors shall ensure that all personnel engaged in cutting and welding are trained on the hazards, safe techniques, and necessary safety precautions.

## 5.6 Flammable and Combustible Liquids

- 5.6.1 Use and storage of flammable liquids shall comply with the requirements in the [Flammable and Combustible Liquids Section of the Fire Safety Subject Area](#).
- 5.6.2 Supervisors shall ensure that flammable liquids are dispensed, transferred, used, and stored in accordance with the Fire Safety subject area.
- 5.6.3 Supervisors shall ensure that employees are trained in the safe use, storage, and handling of flammable liquids that they use.

## 5.7 Hydrogen Systems

- 5.7.1 The use and storage of hydrogen must comply with the requirements of the [Hydrogen Systems Section of the Fire Safety Subject Area](#).
- 5.7.2 Use the minimum hydrogen inventory that is practical.
- 5.7.3 Any use of hydrogen must also follow the recommendations of the Fire Protection Engineer.
- 5.7.4 Supervisors shall ensure that hydrogen is dispensed, transferred, used, and stored in accordance with the Fire Safety subject area
- 5.7.5 Supervisors shall ensure that employees are trained in the safe use, storage, and handling of hydrogen that they use.

## 5.8 Pyrophoric Materials and Combustible Metals

- 5.8.1 The use and storage of pyrophoric materials and combustible metals must comply with the requirements of the [Pyrophoric Materials and Combustible](#)

[Metals Section of the Fire Safety Subject Area.](#)

- 5.8.2 Use the minimum inventory of pyrophoric materials or combustible metals that is practical.
  - 5.8.3 Any use of pyrophoric materials or combustible metals must also follow the recommendations of the Fire Protection Engineer.
  - 5.8.4 Supervisors shall ensure that pyrophoric materials or combustible metals are dispensed, transferred, used, and stored in accordance with the Fire Safety subject area.
  - 5.8.5 Supervisors shall ensure that employees are trained in the safe use, storage, and handling of pyrophoric materials or combustible metals that they use.
- 5.9 Oxidizers
- 5.9.1 The use and storage of oxidizers must comply with the requirements of the [Oxidizers Section in the Fire Safety Subject Area.](#)
  - 5.9.2 Use the minimum inventory of oxidizer materials that is practical.
  - 5.9.3 Any use of oxidizers must also follow the recommendations of the Fire Protection Engineer.
  - 5.9.4 Supervisors shall ensure that oxidizers are dispensed, transferred, used, and stored in accordance with the Fire Safety subject area.
  - 5.9.5 Supervisors shall ensure that employees are trained in the safe use, storage, and handling of oxidizing materials that they use.
- 5.10 High-Valued Electronic Facilities (Computer and Experimental)
- 5.10.1 If electronic equipment is present in an area that exceeds a value of \$100,000 or if they are related to systems vital to programmatic or infrastructure processes at BNL, the requirements in the [High-valued Electronic Facilities \(Computer and Experimental\) Section of the Fire Safety Subject Area.](#)
- 5.11 Portable Structures, Trailers, and Tents
- 5.11.1 All portable structures (temporary or permanent; BNL-owned, rented, contractor-owned, or owned by an outside agency) must comply with the construction and placement requirements of the [Portable Structures, Trailers, and Tents Section of the Fire Safety Subject Area.](#)

## 5.12 Other Fire Safety Requirements

5.12.1 Other fire safety requirements are in the Fire Safety subject area. These requirements shall be implemented if they apply to any situation at C-AD facilities:

### 5.12.2

- [Controlling Ignition Sources](#)
- [Preventing Fires Caused by Combustible Materials](#)
- [Portable Fire Extinguishers](#)
- [Analyzing Fire Hazards](#)
- [Fire Walls and Doors](#)
- [Wildland Fire Safety](#)

## 6. **Documentation**

As required by the Fire Safety subject area.

## 7. **References**

7.1 SBMS Subject Area, [Fire Safety](#).

7.2 ANSI Z49.1, "Safety in Welding, Cutting and Allied Processes," Sections 4.3 and E4.3, (1999).

## 8. **Attachments**

None