

## FESHM 6030: DISABLEMENT OF FIRE PROTECTION & OTHER RELATED SAFETY SYSTEMS PROGRAM

### Revision History

<b>Author</b>	<b>Description of Change</b>	<b>Revision No. &amp; Date</b>
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## 1.0 INTRODUCTION

Automatic fire detection and suppression systems are installed in most areas of Fermilab, offering varying levels of protection. Activation of these systems all result in a response from the Fermilab Fire Department. It is important that such systems remain in service to provide adequate fire protection for life safety and property protection. On occasion, it is necessary that such systems be temporarily disabled for reasons of new construction, modifications, or where welding, torch cutting, grinding, sanding, or other work may cause unwanted activation of fire detection and/or suppression systems. Because such disablements must be controlled and minimized, this chapter outlines the responsibilities and procedures to request, perform, and track system disablements, re-enablements, and impairments. This chapter relates to any detection/suppression system, including but not limited to flammable gas detection, carbon monoxide, oxygen detectors, etc. that dispatches the Fermilab's Fire Department.

It is equally important that when inspection, testing, and maintenance operations are carried out, proper planning and impairment procedures are followed to minimize the time systems are out of service, and to have in place a means to readily return systems to service in an event of an emergency. Coordination with Fermilab Fire Department, Communication Center, as well as close supervision to outside subcontractors.

## 2.0 REFERENCES

- FM 2-81, Factory Mutual Global, Fire Protection System Inspection Data Sheet, 2012 edition
- International Fire Code (IFC) 2015 Edition
- National Fire Protection Association (NFPA) 1 Fire Code, 2015 Edition
- NFPA 25, Standard for Inspection, Testing, & Maintenance of Water-Based Fire Protection Systems, 2014
- NFPA 72, National Fire Alarm & Signaling Code, 2013
- Fermilab Environmental Safety & Health Manual (FESHM) Chapter 2050 Building Manager Program
- FESHM Chapter 6010 Elements of a Fire Protection Program
- FESHM Chapter 6013 Facility Incident Reporting Utility System (FIRUS)
- FESHM Chapter 6014 Fire Watch
- FESHM Chapter 6030 Disablement of Fire Protection Systems
- FESHM Chapter 7010 ES&H Program for Construction

## 3.0 DEFINITIONS

- **After Hours** – Monday through Friday between 3:30 PM and 7:00 AM, holidays, and weekends.
- **Automatic Fire Suppression Systems** – Sprinklers, Halon, foam, Carbon Dioxide, water mist, and dry and wet chemical systems.

- **CMMS** – Computerized Maintenance Management System operated and maintained by FESS.
- **Disablement** – The process of shut-down or impairment of a fire protection system and documentation, and notification.
- **Fire Detection Systems** - Smoke detectors, thermal detectors, ultra-violet flame detectors, manual pull stations, water flow alarm detectors, etc., connected to a fire alarm control panel.
- **Fire Suppression System** – Automatic sprinkler system, including dry, pre-action, and deluge systems. This also includes water mist and special fixed fire extinguishing systems, such as Halon, CO<sub>2</sub>, FM-200, and Inergen.
- **Impairment Coordinator** – Designated representative who coordinates the impairment of the fire detection or suppression system.
- **ESH&Q-Fire Protection Engineer (ESH&Q-FPE)** - Highly trained and educated professional responsible for overseeing the overall implementation and oversight of the Fermilab Fire Protection Program.
- **Fire Systems Maintenance (FSM)** – Individual trained in the inspection, testing, and maintenance of fire protection systems throughout the Laboratory (including Water Based Systems, Fire Alarm Components, and Special Systems). The FSM Technicians or delegated designees conduct the actual disablements.
- **Impairment** – The status of any component or portion of a fire detection/suppression system that is not 100% functional. Impairments can either be emergency or preplanned. There are four types of impairments:
  - Inspection, Testing, and routine maintenance of fire detection/suppression systems.
  - Disablement of a fire detection/suppression component or components of a system.
  - Disablement (short term) of a fire detection/suppression system for less than 48 hours.
  - Disablement (long term) of a fire detection/suppression system for greater than 48 hours.
- **Normal Work Hours** – Monday through Friday between 7:00am to 3:00pm, excluding holidays.

## 4.0 RESPONSIBILITIES

### 4.1 Division/Section/Center Heads (D/S/C)

Heads of divisions, sections, and centers are responsible for assuring that fire detection/suppression systems are disabled only when necessary and are re-enabled at the earliest opportunity. This responsibility must be communicated through the management levels to include Building Managers, Division Safety Officers, Task Managers, Construction Coordinators, Service Coordinators, and designees.

### 4.2 Division Safety Officer (DSO)

The DSO or designee must be consulted by the division's building manager prior to a long term disablement is issued. In case of a Section building manager, then the ESH&Q Occupational Safety/Construction Oversight (OSCO) manager or designee must be consulted

In addition, the DSO (ESH&Q-OSCO) or designee may require further actions during the time of system disablement or impairment, such as frequent checks of affected areas, fire watches, etc.

#### **4.3 Building Manager (BM)**

The Building Manager or designee shall authorize long term disablements by using the Fire Detection/Suppression System Long Term Disablement Request Form and follow the procedures outlined in this chapter. (The form requires the signature of the division/section head). The BM must consult with DSO or ESH&Q-OSCO prior to authorizing the long term disablement.

The Building Manager or delegate is responsible for the following the specific procedures outlined in this chapter when disabling and re-enabling detection, such as flammable gas detection, carbon monoxide detection, rack protection detection, oxygen deficiency detection, etc. that dispatches the Fermilab's Fire Department and is not part of the FESS Fire System Maintenance's responsibility. On these occasions, the Building Manager or designee must document and distribute the Fire Detection/Suppression System Long Term Disablement Request Form to the appropriate personnel.

#### **4.4 Facilities Engineering Service Section (FESS)**

The FESS Fire Systems Maintenance (FSM) group is responsible for following the specific procedures outlined in this chapter when disabling and re-enabling fire detection/suppression systems upon the proper request of personnel in the division/section/center or in an emergency. The FSM must document and distribute the Fire Detection/Suppression System Long Term Disablement Request Form to appropriate personnel. If required, the FSM may delegate disablements to trained personnel by following the requirements in the "Delegated Disablement Procedures" section of this chapter. The FSM is responsible for training and instructing individuals in proper disablement procedures.

The FSM will review all disablements at least weekly. If a short-term disablement exceeds 48 hours, an FSM will instruct division safety personnel to submit the required Fire Detection/Suppression System Long Term Disablement Request Form. The FSM Technicians will audit the status of all outstanding long term disablements report any significant deficiencies or issues to the appropriate division/section/center and the ESH&Q-Fire Protection Engineer.

As requested or at the direction of division/section/center management, the FSM supervisor or designee will prepare a monthly disablement/impairment report for appropriate D/S/C management, safety personnel, and the ESH&Q-FPE. This report is a "snapshot" of the status of affected fire detection/suppression systems throughout Fermilab.

#### **4.5 Communication Center**

The Communications Center and Security shall make appropriate notifications of personnel in accordance with current Security procedures and the requirements of this chapter.

The Fermilab's Fire Department (FFD) shift officer is authorized to request disablement on an emergency basis where system failures occur or as a result of other off-hours problems.

#### **4.6 Environment, Safety, Health, and Quality (ESH&Q)**

The ESH&Q Fire Protection Engineer (ESH&Q-FPE) reviews all long term disablements. If necessary, the ESH&Q-FPE will investigate unresolved disablements and report them to the ESH&Q Section Head.

#### **4.7 Impairment Coordinator**

Typically building managers, task managers, construction coordinators, service coordinators, or fire system maintenance technicians act as an impairment coordinator. Prior to beginning the impairment process, the coordinator will verify the following.

- Type of impairment, that is, individual system components or entire system, and the duration of the impairment.
- The areas of the facility involved have been inspected and the increase risks determined, such as the hazardous operations in the impaired area is minimized or stopped until system is back in service.
- Is it unplanned or a planned impairment, can a section of the system be isolated, so that partial protection is in service. If not, can any planned work be completed on a priority basis so that the amount of time of impairment is minimized; thereby, reducing the risk of the laboratory.
- Notification of all impairment to Fermilab Fire Department.
- Disablements of systems greater than 48 hours must generate a long term disablement.

### **5.0 PLANNED DISABLEMENT REQUESTS**

The following pertains to fire detection/suppression systems that are maintained by FESS-FSM. For other detection that dispatches Fermilab's Fire Department and are not maintained by FESS-FSM, the requestor must contact the Division/Section/Center's Building Manager.

**5.1 Planned Disablement** - All planned (non-emergency) disablement requests must be made to the FESS-FSM group during normal work hours. The number is x2924.

- 5.1.1.** All planned disablement requests shall be submitted with advance notice of at least 1 work day for disablements during normal work hours and at least 2 work days for disablements during after-hours.

5.1.2. Short-term disablements may be requested by contacting the FESS-FSM Technicians directly (by phone, page, etc).

5.1.3. The following information is needed when requesting a disablement:

- Description of area to be disabled (building name, specific location)
- Identification of the system requiring disablement
- Date and time the disablement is needed
- Reason for disablement (welding, construction, etc.)
- Site contact (task manager, construction coordinator, service coordinator, supervisor, etc.) name, extension, page numbers
- Requestor name
- Project/Task code (**required for after-hours work**)
- Estimated length of time of disablement.

**5.2 The FSM Group** - Is responsible for entering this information into CMMS.

5.2.1. There are occasions when the FSM group will initiate a request for disablement (e.g., if a system sensor is indicating needed maintenance). In this event, FSM will request the disablement and obtain approvals from the building manager, safety personnel, etc. If unavailable, the FSM group will notify appropriate individuals by voice mail, email, etc.

5.2.2. The FESS-FSM technicians will perform all disablement, unless otherwise delegated by the FSM group. *Note: The individual delegated is responsible for re-enablement at the earliest opportunity.*

5.2.3. The minimum amount of fire detection/suppression systems shall be disabled (depending on system design and configuration) ensuring maximum building/equipment protection.

5.2.4. The FESS-FSM technician will notify the Communication Center, the Fermilab Fire Department, and any other applicable groups (e.g., Main Control Room) of the disablement and will convey any additional pertinent information prior to disablement.

5.2.5. The FESS-FSM technician (or delegate) will receive a disablement tag number. Upon disablement, the completed disablement tag shall be placed on the panel or affected system. If other systems are associated with the disabled system, each portion of the affected system shall be listed in the comments area on the front of the tag.

5.2.6. Requesting division/section/center worksite contacts or designees (including subcontractors) must inform the FESS-FSM Technicians of any changes in scope of

wok affecting the disablement (extensions, affected areas, etc.). The FESS-FSM Technicians will make the necessary changes to the system.

- 5.2.7. The worksite contact (building manager, task manager, subcontractor, etc.) shall notify the FESS-FSM technician (or delegate) for system re-enablement as early as possible.
- 5.2.8. Upon re-enablement of the affected fire detection/suppression system(s), the FESS-FSM technician (or delegate) shall notify the Communication Center, the FFD, and applicable division/section/center personnel that the system is in service. Upon verification with the Communication Center that the system is clear on FIRUS, the tag is removed, completed with the time/date of re-enablement, initialed, and returned to FESS Operations/Engineering.

## 6.0 EMERGENCY DISABLEMENTS

The following pertains to fire detection/suppression systems that are maintained by FESS-FSM. For other detection that dispatches Fermilab's Fire Department and are not maintained by FESS-FSM, the Division/Section's Building Manager must be contacted.

- 6.1 **Normal Work Hours** - During normal work hours, requests of emergency disablements shall be made directly to the FESS-FSM Technicians (x2924 or on-site pager 0269). They will respond and evaluate the disablement at that time.
  - 6.1.1. The FSM technician or designee will conduct or oversee the disablement process and documentation (including transfer of the work to a subcontractor). A temporary disablement tag will be used.
  - 6.1.2. The next business day, the FSM technician will enter the information into the Disablement Tag Log.
  - 6.1.3. Upon re-enablement of the affected fire detection/suppression system(s), the FSM technician (or delegate) shall notify the Communication Center, the FFD, BM, DSO, and applicable division/section personnel that the system is in service. Upon verification with the Communication Center that the system is clear on FIRUS, the tag is removed, completed with the time/date of re-enablement, initialed, and returned to FESS Operation/Engineering

**6.2 After Normal Work Hours** - All after hours requests for emergency disablements shall be made to the Communication Center (x3414).

**6.2.1.** The Communication Center dispatcher shall notify the on-call FSM technician in accordance with the most current Communication Center Procedure.

**6.2.2.** The on-call FSM technician will evaluate the disablement request and determine whether the disablement will proceed and how it will be performed (by the FSM technician, subcontractor, etc.).

**6.2.3.** FSM technician will notify the Communication Center, the Fermilab's Fire Department, the Building Manager, Division Safety Officer (DSO) of the affected division/section, and any other applicable groups (e.g., Main Control Room) of the disablement and will convey any additional pertinent information.

## **7.0 DELEGATED DISABLEMENT PROCEDURES**

The FSM technician is authorized to delegate disablement of fire detection/suppression systems. Disablement (and re-enablement) of fire detection/suppression systems can be delegated to:

- Fermilab employees and visiting scientists,
- Task Managers, Construction Coordinators, and Service Coordinators, or
- Subcontractors.

### **7.1 Fermilab Employees and Visiting Scientists**

Fermilab employees and visiting scientists may conduct routine disablements and re-enablements of fire detection/suppression systems. The disablement procedures are limited to basic procedures as directed by the FSM technicians for ongoing processes or tasks in a building or area. Individuals must receive instructions on the specific disablement procedures of the fire protection system from FSM personnel or knowledgeable individuals from the affected division/section prior to performing any disablement. These specific disablement procedures may include elements of the procedures outlined in other sections of this chapter. Delegated personnel shall re-enable the fire detection/suppression system at the earliest opportunity.

### **7.2 Task Managers, Construction Coordinators, and Service Coordinators**

Task Managers, Construction Coordinators, and Service Coordinators occasionally have responsibility to manage disablement and re-enablement procedures during the course of a specific project. These individuals are responsible for planning such disablements and contacting the FSM group for instruction. The FSM group is responsible for training these individuals on correct procedures and limiting the scope of these procedures.

### 7.3 Subcontractors

- Subcontractors maintain much of the fire detection/suppression systems throughout Fermilab. This includes preventive maintenance of existing systems, response to malfunctions of the systems, and special system operations during specific projects.
- Subcontractors may include fire protection system specialists, service contractors, or construction contractors working on a particular project.
- The FSM group is responsible for authorizing and approving the scope of all subcontractor disablements and re-enablements. This includes emergency response, preventive maintenance, and specific procedures for a given project. The scope of the subcontractors work must be specifically detailed and communicated to affected personnel within all divisions and sections. *Approval and authorization does not have to occur for each and every disablement during the approved scope of work. However, the usual notifications required by this chapter are still necessary.*
- The FSM group may suspend delegated privileges if the procedures are not followed satisfactorily – especially prompt re-enablement of affected systems.