

**UNIVERSITY OF ROCHESTER
ENVIRONMENTAL HEALTH & SAFETY**

Policy No.: FS011	Approved by: Mark Cavanaugh
Title: Fire Alarm Device Testing	Date: 1/2/2020
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Prepared by: Mark Militello	

I. PURPOSE

This procedure establishes the methods used to test individual fire alarm devices.

II. PERSONNEL AFFECTED

Fire Safety personnel responsible for the testing.

III. DEFINITIONS

EH&S – Environmental Health & Safety

NFPA – National Fire Protection Association

IV. RESPONSIBILITIES

The Fire Safety Specialist or Fire Safety Inspector II will contact the University Public Safety Dispatch Office and advise them you will be device testing on the fire alarm system for the specific area and to disregard all troubles and fire alarms for that system. Refer to the device testing matrix sheets for actual locations and description of devices to be tested. Refer to specific device testing information and frequencies in NFPA 72 (2013 edition) National Fire Alarm Code.

Also notify Facilities Dispatch and advise them you will be doing device testing and the location of the testing (X3-4567).

V. PROCEDURES

- A.** Follow the Fire Alarm System Disconnect/Reconnect procedures for that specific fire alarm system. These procedures are outlined in a separate set of instructions found in the EH&S database “fire” folder I:\fire\Fire alarm procedures and in a hardcopy manual located at the EH&S office.
- B.** Once the panel has been placed in by-pass mode, the inspector can begin testing the individual devices. Depending on the type of system, additional personnel may be required to assist.
- C.** Point-addressable fire alarm systems (Ex: Simplex 4020/4120/4100U, EST, & Notifier) will display each point as the device alarms into the panel. Resets will be required after a specific amount of alarms are logged into that particular system query.
- D.** Conventional zoned fire alarm systems (Ex: Johnson FCI) will alarm only one device at a time on the specified zones. A reset is required between testing devices on a specific zone for it to show a new alarm.
- E.** Most devices (smoke & heat detectors) will have an indicating LED light somewhere on the base showing that the particular device is in alarm. Some older smoke and heat detectors will not have an indicating light.
- F.** To test a smoke detector, spray a small amount of aerosol smoke into the sensing chamber. Within a few seconds, the device should come into alarm.

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NOTE: some model detectors require a larger amount of smoke to activate.

NOTE: Systems with verification Smoke detectors will require additional smoke and time for the first device the go into alarm during the verification process.

NOTE: Using the Solo Tester smoke head will help to concentrate the aerosol smoke in the device.

NOTE: Steps to decrease sensitivity for smoke detectors in buildings with Davis Ulmer Siemens panels:

- 1: "Enter" button
- 2: "Test" button
- 3: Hit #3 five (5) times and enter
- 4: Left arrow to find "ASD devices"
- 5: Once found hit "Enter"

To make devices and panel normal again, repeat steps 1-5.

- G.** Once the device is in alarm, spray some canned air into the chamber to clear out residual smoke inside. Perform a reset on the system if necessary and proceed to the next smoke detector.
- H.** To test a heat detector, using a heat gun or hairdryer, direct the heated air towards the detector-sensing element or heat collection disc (depending on type of detector) for a few seconds.
NOTE: DO NOT hold the heating device too close to the detector or it can damage the sensing element/melt the device. Keep the heat source back approximately 5-6" from the sensor.
- I.** Wait a few minutes for the device to cool off and reset the system if necessary before proceeding. Non-restorable devices need to be replaced if they activate. To test non-restorable heat detectors requires a jumper wire. Fixed temperature/rate-of-rise restorable devices require care as to not over heat and pop the heat disc.
- J.** Carbon monoxide detectors can be tested in a similar fashion to smoke detectors. A small amount of canned compressed carbon monoxide gas is sprayed into the detector to activate the device. The canned gas will work with the Solo test head or the Testifire multifunction test head that uses a carbon monoxide test cartridge.
- K.** Manual pull stations are tested using the pull down arm or plate located on the front of the device. These device covers need to be fully opened up to reset by either throwing the toggle switch to the up position or allowing the toggle switch to automatically reset once the cover has been opened. Be sure you have the correct key or tool to reset the pull station before testing.
- L.** Duct detectors are tested by spraying a small amount of smoke into the sensing chamber. The outside cover of the device needs to be opened up prior

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to doing this. Some devices are equipped with a remote test switch if the device is inaccessible. Fan shutdown and damper controls may be wired to activate if a specific duct detector is in alarm. In some cases, Facilities personnel test these devices during air handler maintenance. The device should be reset to ensure fans restart and dampers open up prior to proceeding, unless those features are by-passed at the fire alarm panel.

- M.** Beam detectors are tested using a sensitivity screen that is placed in the transmitting beam between the projecting and receiving sides of the device. If the device senses this is enough of a blockage of the light beam (as opposed to a small obstruction) it will alarm. Beam detectors are located in a few buildings between River Campus, Eastman and the Medical Center.
- N.** Audio/Visual and Hold Opens can be tested by not bypassing these devices at the panel and activating any fire alarm to allow for the signals to be sounded and the doors to be released. You may also observe and document the operation of an audible, visual or hold open device during a fire drill. (Have Public Safety Dispatch make an overhead page to disregard the fire alarm as the system is being tested, and the fire doors will be closing)
- O.** Follow the manufacturer's specifications if you are testing fire/smoke dampers (fusible link and mechanical) and vertical fire doors (rolling window and door shutters) as these require additional testing assistance and can cause injury and/or not operate properly if they are not re-set correctly. This testing is normally completed by Facilities.
- P.** Smoke purge systems require assistance from Facilities personnel due to the complex nature of the systems. A separate procedure is developed for addressing these systems and can be found in the bookshelf in the fire safety library.
- Q.** Water flow alarms are tested by operating the test valve on the sprinkler system by simulating flow through a standard sprinkler head ½" orifice. Consult the sprinkler systems testing matrix sheets for information. If system is supplied by a fire pump the fire pumps needs to be taken off line. Follow fire pump disconnect/reconnect procedure FS014.
- R.** Valve tamper switches are tested by closing the valve and monitoring for an alarm (trouble or supervisory; depending on the fire alarm panel) within the first few turns of that valve. Refer to the valve tamper testing matrix sheets for information.
- S.** Fire phones can be tested through handheld receivers plugged into wall outlets or through wall mounted box units, depending on how that fire alarm system is designed. Not all fire alarm panels have fire phones. The field phone locations will ring into the fire alarm panel and the operator at the panel verifies the call was received and answers to the field operator. If hand held

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phone receivers are used, test each receiver throughout the course of the testing.

- T.** Magnetic door locks may be required to deactivate under fire alarm conditions dependent on the door security for a particular area. Refer to the fire alarm procedures for this type of device testing.
- U.** Test elevator recall by inserting test smoke in the lobby smoke detector and verify the elevator gets recalled to the primary floor. For the smoke detector in the lobby of the primary floor, verify the elevator gets recalled to the alternate floor.
- V.** Fire service elevator test is done by Facilities using the following steps.
 - 1. Take a copy of the elevator recall key, insert it in the corridor/elevator lobby keyed switch on the level best used by the responding fire department, and turn it to the “Test” position. This key should be available from the elevator service company.
 - 2. This will recall all the elevators in that bank to the floor that you are on. The elevator will ‘recall’ to that floor and open the doors. The controls inside the elevator will not respond to normal touch and the elevator car will sit there waiting for someone to take control. The elevators will be “out of service” during this test, so plan on doing this test when it will least impact your operations.
 - 3. Remove the key from the recall corridor switch (leave the switch still in the “Test” position) and enter one of the elevator cars. Take the key and insert it in the keyed switched labeled “Fire Fighter Service” and turn it to the “Test” position (It should say “Test”, but if not, turn the switch anyway). Now you have manual control on the elevator buttons inside the car.
 - 4. Push and hold the button to another floor, holding it until the doors closed. The elevator will travel to that floor, but the doors will not open. If you push the “Door Open” button, then the doors will open, and stay that way until another floor button is pressed.
 - 5. Return the elevator car to the recall floor and test any other cars in that bank. Remove the key and go back to the corridor switch and return the switch to the normal setting.
- W.** Smoke duct detectors will be tested by facilities or in conjunction with facilities as smoke dampers and HVAC systems need to be observed and reset after the test.
- X.** Once all the devices have been tested, return to the panel, verify no devices are still in alarm, reset as needed and restore the system per the procedures.

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Contact Public Safety Dispatch to advise them testing is complete and to regard all alarms as normal.

- Y.** Document all testing results on your testing sheets by indicating those that passed with a “P” and those that failed with a “F”. Place an “X” for devices that were unable to be tested and document in the comment section the reason for not testing. Save your testing records in the appropriate files for your systems. You must maintain at least three years of testing records for each system.

VI. REFERENCES

EH&S Fire Alarm Disconnect/Reconnect Procedures
NFPA 72 (2007 Edition) National Fire Alarm Code

VII. APPENDICES/FORMS

N/A

VIII. REVISION HISTORY

Date	Revision No.	Description
3/24/2009	New	Initial development of this policy
8/23/2011	1	Review of policy- updated NFPA 72 edition to 2007 (from 2002)
11/29/2011	2	In Section V, added item “J” for testing carbon monoxide detectors and added item “P” for testing smoke purge systems
6/21/2016	3	Review and update
8/17/2017	4	Addition of information for decreasing sensitivity
1/2/2020	5	Added instruction of fire service elevator test.