

# TESTING, INSPECTION, AND MAINTENANCE FREQUENCIES FOR FIRE DETECTION AND ALARM SYSTEMS

## Fire and Life-Safety Group (FLS)

FLS has organized the following information regarding testing frequencies for fire detection and alarm systems. All of the following information can be found in the 2007 edition of the National Fire Alarm and Signaling Code (NFPA-72). For definitions, details, and procedures, please refer to the 2007 edition of NFPA-72. Please note that the following table summarizes the requirements of NFPA-72, some of which may not be applicable to all campus buildings.

### Testing requirements of NFPA-72:

10.4.3 Testing shall be performed in accordance with the schedules in Table 10.4.3, except as modified in other paragraphs of 10.4.3, or more often if required by authority having jurisdiction.

Exception: Devices or equipment that is inaccessible for safety considerations (e.g., continuous process operations, energized electrical equipment, radiation, and excessive height) is to be tested during scheduled shutdowns if approved by the authority having jurisdiction but is not to be tested at intervals exceeding 18 months.

**Table 10.4.3 – Testing Frequencies**

COMPONENT	INITIAL/ REACCEPTANCE	MONTHLY	QUARTERLY	SEMI- ANNUALLY	ANNUALLY
<b>1 Control Equipment - Building systems connected to supervising station</b>					
a) Functions	X	-	-	-	X
b) Fuses	X	-	-	-	X
c) Interfaced equipment	X	-	-	-	X
d) Lamps and LEDs	X	-	-	-	X
e) Primary (main) power supply	X	-	-	-	X
f) Transponders	X	-	-	-	X
<b>2 Control equipment - Building systems not connected to supervising station</b>					
a) Functions	-	-	X	-	-
b) Fuses	-	-	X	-	-
c) Interfaced equipment	-	-	X	-	-
d) Lamps and LEDs	-	-	X	-	-
e) Primary (main) power supply	-	-	X	-	-
f) Transponders	-	-	X	-	-
<b>3 Engine-driven generator - Central station facilities and fire alarm systems</b>					
	X	X	-	-	-

**4 Engine-driven generator - Public fire alarm reporting systems**

X (weekly)

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COMPONENT	INITIAL/ REACCEPTANCE	MONTHLY	QUARTERLY	SEMI- ANNUALLY	ANNUALLY
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**5 Batteries - Central station facilities**

a) Lead-acid type

1. Charger test (replace battery as needed)
2. Discharge test (30 minutes)
3. Load voltage test
4. Specific gravity

X	-	-	-	X
X	X	-	-	-
X	X	-	-	-
X	-	-	X	-

b) Nickel-cadmium type

1. Charger test (replace battery as needed)
2. Discharge test (30 minutes)
3. Load voltage test

X	-	X	-	-
X	-	-	-	X
X	-	-	-	X

c) Sealed lead-acid type

1. Charger test (replace battery within 5 years after manufacture or more frequently as needed)
2. Discharge test (30 minutes)
3. Load voltage test

X	X	-	-	-
-	X	X	-	-
X	X	-	-	-
X	X	-	-	-

**6 Batteries - Fire alarm systems**

a) Lead-acid type

1. Charger test (replace battery as needed)
2. Discharge test (30 minutes)
3. Load voltage test
4. Specific gravity

X	-	-	-	X
X	-	-	X	-
X	-	-	X	-
X	-	-	X	-

b) Nickel-cadmium type

1. Charger test (replace battery as needed)
2. Discharge test (30 minutes)
3. Load voltage test

X	-	-	-	X
X	-	-	-	X
X	-	-	X	-

c) Primary type (dry cell)

1. Load voltage test

X	X	-	-	-
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d) Sealed lead-acid type

1. Charger test (replace battery within 5 years after manufacture or more frequently as needed)
2. Discharge test (30 minutes)
3. Load voltage test

X	-	-	-	X
X	-	-	-	X
X	-	-	X	-

**7 Batteries - Public fire alarm reporting systems**

(From street locations to the communications center)

X (daily)

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a) Lead-acid type

1. Charger test (replace battery as needed)
2. Discharge test (2 hours)
3. Load voltage test
4. Specific gravity

X	-	-	-	X
X	-	X	-	-
X	-	X	-	-
X	-	-	X	-

b) Nickel-cadmium type

1. Charger test (replace battery as needed)
2. Discharge test (2 hours)

X	-	-	-	X
X	-	-	-	X

3. Load voltage test

X

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X

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COMPONENT	INITIAL/ REACCEPTANCE	MONTHLY	QUARTERLY	SEMI- ANNUALLY	ANNUALLY
c) Sealed lead-acid type					
1. Charger test (replace battery within 5 years after manufacture or more frequently as needed)	X	-	-	-	X
2. Discharge test (2 hours)	X	-	-	-	X
3. Load voltage test	X	-	X	-	-
<b>8 Fiber-Optic Cable Power</b>	X	-	-	-	X
<b>9 Control Unit Trouble Signals</b>	X	-	-	-	X
<b>10 Conductors – Metallic</b>	X	-	-	-	-
<b>11 Conductors – Nonmetallic</b>	X	-	-	-	-
<b>12 Emergency Voice / Alarm Communications Equipment</b>	X	-	-	-	X
<b>13 Retransmission Equipment</b>	X	-	-	-	-
<b>14 Remote Annunciators</b>	X	-	-	-	-
<b>15 Initiating Devices</b>					
a) Duct detectors	X	-	-	-	-
b) Electromechanical releasing device	X	-	-	-	X
c) Fire extinguishing system(s) or suppression system(s) switches	X	-	-	-	X
d) Fire-gas and other detectors	X	-	-	-	X
e) Heat detectors	X	-	-	-	X
f) Fire alarm boxes	X	-	-	-	X
g) Radiant energy fire detectors	X	-	-	X	-
h) System smoke detectors - functional*	X	-	-	-	X
i) Smoke detectors - sensitivity**	RE: footnote				
j) Single and multiple-station smoke alarms	X	-	-	-	X
k) Single and multiple-station heat alarms	X	-	-	-	X
l) Supervisory signal devices (except valve tamper switches)	X	-	X	-	-
m) Waterflow devices	X	-	-	X	-
n) Valve tamper switches	X	-	-	X	-
<b>16 Guard's tour equipment</b>	X	-	-	-	X
<b>17 Interface equipment</b>	X	-	-	-	X
<b>18 Special hazard equipment</b>	X	-	-	-	X
<b>19 Alarm notification appliances</b>					
a) Audible devices	X	-	-	-	X
b) Audible textual notification appliances	X	-	-	-	X

c) Visual devices	X	-	-	-	X
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COMPONENT	INITIAL/ REACCEPTANCE	MONTHLY	QUARTERLY	SEMI- ANNUALLY	ANNUALLY
<b>20 Off-premises transmission equipment</b>	X	-	X	-	-
<b>21 Supervising station fire alarm systems – transmitters</b>					
a) Digital alarm communicator transmitter (DACT)	X	-	-	-	X
b) Digital alarm radio transmitter (DART)	X	-	-	-	X
c) McCulloh transmitter	X	-	-	-	X
d) Radio alarm transmitter (RAT)	X	-	-	-	X
<b>22 Special procedures</b>	X	-	-	-	X
<b>23 Supervising station fire alarm systems – receivers</b>					
a) Digital alarm communicator receiver (DACR)	X	X	-	-	-
b) Digital alarm radio receiver (DARR)	X	X	-	-	-
c) McCulloh systems	X	X	-	-	-
d) Two-way RF multiplex	X	X	-	-	-
e) Radio alarm supervising station receiver (RASSR)	X	X	-	-	-
f) Radio alarm repeater station receiver (RARSR)	X	X	-	-	-
g) Private microwave	X	X	-	-	-

**\* Specific requirements for smoke detector testing from NFPA-72:**

- 10.4.3.4.1 Two or more detectors shall be tested on each initiating circuit annually.
- 10.4.3.4.2 Different detectors shall be tested each year, with records kept by the building owner specifying which detectors have been tested.
- 10.4.3.4.3 Within 5 years, each detector shall have been tested.

**\*\* Smoke detector sensitivity testing requirements of NFPA-72:**

- 10.4.3.2.1 Sensitivity of smoke detectors and single- and multiple-station smoke alarms (in other than one- and two-family dwellings) shall be checked within 1 year after installation.
- 10.4.3.2.2 Sensitivity shall be checked every alternate year thereafter unless otherwise permitted by compliance with 10.4.3.2.3.
- 10.4.3.2.3 After the second required calibration test, if sensitivity tests indicate that the device has remained within its listed and marked sensitivity range (or 4 percent obscuration gray smoke, if not marked), the length of time between calibration tests shall be permitted to be extended to a maximum of 5 years.
- 10.4.3.2.3.1 If the frequency is extended, records of nuisance alarms and subsequent trends of these alarms shall be maintained.

10.4.3.2.3.2 In zones or in areas where nuisance alarms show any increase over the previous year, calibration tests shall be performed.

**Other testing requirements of NFPA-72:**

10.4.3.1 If automatic testing is performed at least weekly by a remotely monitored fire alarm control unit specifically listed for the application, the manual testing frequency shall be permitted to be extended to annually. Table 10.4.3 shall apply.

10.4.3.3 Test frequency of interfaced equipment shall be the same as specified by the applicable NFPA standards for the equipment being supervised.

10.4.8 Tests of all circuits extending from the central station shall be made at intervals of not more than 24 hours.

**Inspection requirements of NFPA-72:**

10.3.1 Visual inspections shall be performed in accordance with the schedules in Table 10.3.1 or more often if required by the authority having jurisdiction.  
Exception: Devices or equipment that are inaccessible for safety considerations shall be inspected during scheduled shutdowns if approved by the authority having jurisdiction. Extended intervals shall not exceed 18 months.

**Table 10.3.1 – Inspection Frequencies**

COMPONENT	INITIAL/ REACCEPTANCE	MONTHLY	QUARTERLY	SEMI- ANNUALLY	ANNUALLY
<b>1 Control equipment: fire alarm systems monitored for alarm, supervisory, and trouble signals</b>					
a) Fuses	X	-	-	-	X
b) Interfaced equipment	X	-	-	-	X
c) Lamps and LEDs	X	-	-	-	X
d) Primary (main) power supply	X	-	-	-	X
<b>2 Control equipment: fire alarm systems unmonitored for alarm, supervisory, and trouble signals</b>					
a) Fuses	X (weekly)	-	-	-	-
b) Interfaced equipment	X (weekly)	-	-	-	-
c) Lamps and LEDs	X (weekly)	-	-	-	-
d) Primary (main) power supply	X (weekly)	-	-	-	-
<b>3 Batteries</b>					
a) Lead-acid	X	X	-	-	-
b) Nickel-cadmium	X	-	-	X	-
c) Primary (dry cell)	X	X	-	-	-
d) Sealed lead-acid	X	-	-	X	-

COMPONENT	INITIAL/ REACCEPTANCE	MONTHLY	QUARTERLY	SEMI- ANNUALLY	ANNUALLY
<b>4 Transient suppressors</b>	X	-	-	X	-
<b>5 Control unit trouble signals</b>	X (weekly)	-	-	X	-
<b>6 Fiber-optic cable connections</b>	X	-	-	-	X
<b>7 Emergency voice/alarm communications equipment</b>	X	-	-	X	-
<b>8 Remote annunciations</b>	X	-	-	X	-
<b>9 Initiating devices</b>					
a) Air sampling	X	-	-	X	-
b) Duct detectors	X	-	-	X	-
c) Electromechanical releasing devices	X	-	-	X	-
d) Fire extinguishing system(s) or suppression system(s) switches	X	-	-	X	-
e) Fire alarm boxes	X	-	-	X	-
f) Heat detectors	X	-	-	X	-
g) Radiant energy fire detectors	X	-	X	-	-
h) Smoke detectors	X	-	-	X	-
i) Supervisory signal devices	X	-	X	-	-
j) Waterflow devices	X	-	X	-	-
<b>10 Guard's tour equipment</b>	X	-	-	X	-
<b>11 Interface equipment</b>	X	-	-	X	-
<b>12 Alarm notification appliances</b>	X	-	-	X	-
<b>13 Supervising station fire alarm systems – transmitters</b>					
a) Digital alarm communicator transmitter (DACT)	X	-	-	X	-
b) Digital alarm radio transmitter (DART)	X	-	-	X	-
c) McCulloh transmitter	X	-	-	X	-
d) Radio alarm transmitter (RAT)	X	-	-	X	-
<b>14 Special Procedures</b>	X	-	-	-	-
<b>15 Supervising station fire alarm systems – receivers</b>					
a) Digital alarm communicator receiver (DACR)	X	X	-	-	-
b) Digital alarm radio receiver (DARR)	X	-	-	X	-
c) McCulloh systems	X	-	-	X	-
d) Two-way RF multiplex	X	-	-	X	-
e) Radio alarm supervising station receiver (RASSR)	X	-	-	X	-
f) Radio alarm repeater station receiver (RARSR)	X	-	-	X	-
g) Private microwave	X	-	-	X	-

**Maintenance Requirements of NFPA-72:**

- 10.5.2 The frequency of maintenance of fire alarm system equipment shall depend on the type of equipment and the local ambient conditions.